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ServoFit® Precision Gearheads

*Geared to a higher
standard™*



STÖBER



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ServoFit® Precision Gearheads



Welcome to STOBER!

Thank you for your interest in the servo gear reducers offered by STOBER Drives, Inc.!

In 1934, the Stöber brothers founded a small shop in Pforzheim, Germany that made machines and repaired engines. Today, STOBER is an international organization with offices in ten countries.

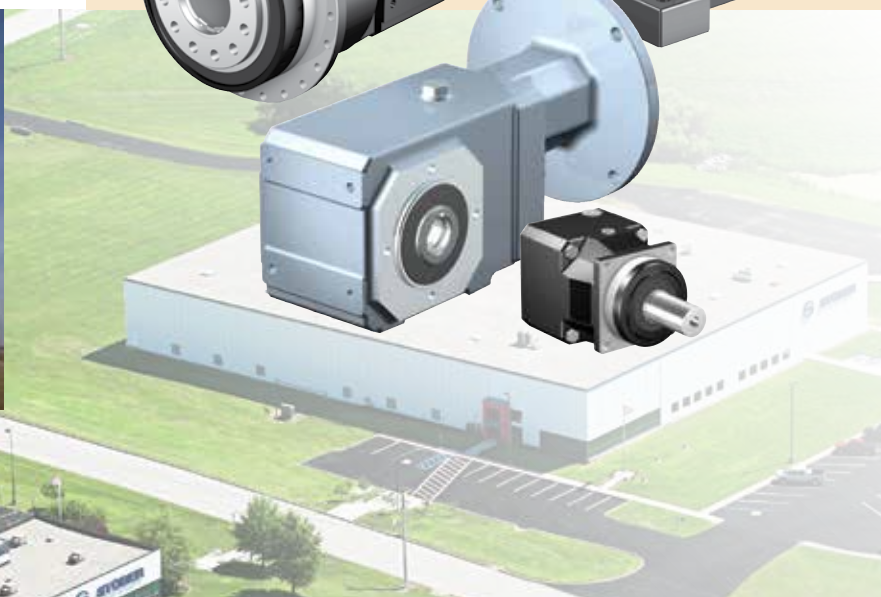
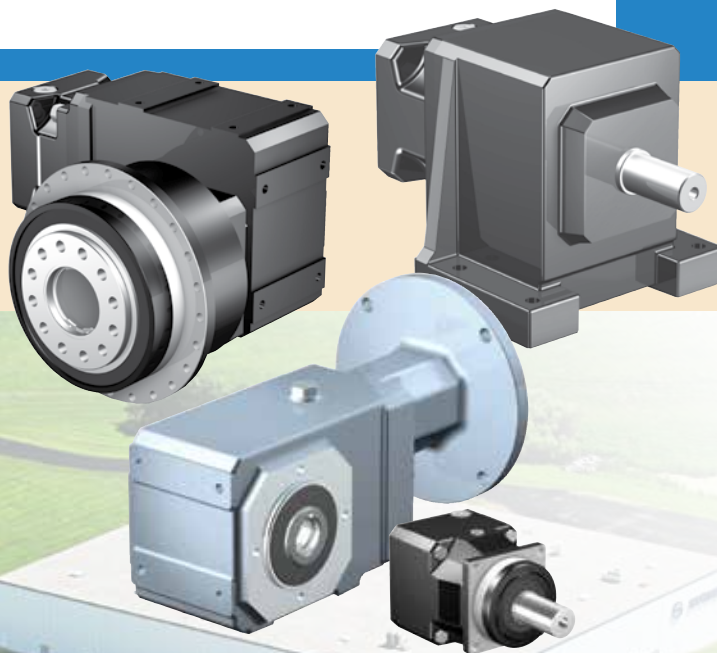
This 80 year heritage has given us expertise in servo gearing for which STOBER is recognized worldwide as the “gold standard.” STOBER products are of the highest quality and use only the best components.

This catalog covers our comprehensive servo gearbox products — ServoFit® Precision Planetary and Modular Gearheads. STOBER is recognized across the United States for its solution design, product durability, and service support. We look forward to the opportunity to work with you, and to help with your servo gearing needs.

Peter Feil, General Manager, STOBER Drives, Inc.



STOBER Drives Inc. was founded in 1991. Our Maysville, Kentucky campus includes 85,000 square feet of sales and service offices, assembly, manufacturing, and warehousing space for German-engineered STOBER products for 1 day shipment nationwide.



Geared to a higher standard™

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All manufactured components are inspected before being released to assembly. Our quality inspection team ensures every part meets tolerances and is in spec.

Unsurpassed:

STOBER products are designed and built to perform for the toughest applications. Reliability, adaptability and maintainability are our focus, and durability is truly our trademark.

Solution Designs that build quality around every requirement.

Product Durability that enhances the reliability and life of every application.

Service Support that is empowered to meet and exceed client expectations.



STOBER Serviced Industries:

- Beverage
- Food Processing
- Packaging
- Machine Tool
- Robotics
- Material Handling
- Semiconductor
- Printing

Converting and many others...



ServoFit® Precision Gearheads

The Best you Can Buy...

At STOBBER, offering the best is not a buzz word — it is our passion and way of life. We offer the best product, provided by the best people and processes, and backed by the best service.

Why is STOBBER considered the industry Gold Standard? Our products are backed with superior service, outstanding quality, and the STOBBER guarantee.

- STOBBER gearheads survive in the toughest environments, providing long life under extreme conditions. Their high reliability and durability saves non-productive downtime and cost
- Our product reliability is backed by one of the best warranties in the industry
- We build and ship in 1 day saving you inventory hassle and cost
- Adapts to any servo motor

The ServoFit® Difference

A STOBBER ServoFit® Gearhead helps optimize your total operational performance with:

- High torsional stiffness, superior accuracy
- Smoother running, better efficiency
- Leakage free, maintenance free
- Runs cool – a difference you can feel
- Runs measurably quieter – 16 times more quiet*
- Lower backlash
- The versatility and interchangeability of our components allow most products to be assembled and shipped in 1 day

* Noise Level

If a planetary is loud — something is WRONG!

STOBBER ServoFit planetary = 60 dB(A)

Convention spur gear planetary = 70-72 dB(A)

Bottom line: 1 conventional gearhead produces the same noise level as 16 STOBBER planetary gearheads with HeliCamber™ gearing

Striving Harder to Deliver the Best Gear Solutions

STOBBER Drives has been assembling products at our Maysville, Kentucky facility for over twenty years. Our expertise in the production and assembly of low-backlash gear units produces products that comply with the highest quality standards.

But, we don't remain satisfied with the status quo. We are continuously improving our modern machining production center including numerous recent acquisitions to improve our manufacture time and to ensure maximum quality levels.

All reducer components (gears, covers, material, etc.) are backed by a five year warranty. Normal wear items (oil seals, bearings, etc.) are covered for two years.

Vision: To be recognized as the gold standard

Mission: To provide the most reliable drive solutions for demanding applications in the shortest lead-time

Values: Seeking the best; operating with integrity; serving others, growth through learning





Geared to a higher standard™



Assembly stages of "F" Series gearheads: Paint curing oven allows for one day assembly and higher paint durability (left); units awaiting final inspection prior to shipment (right).

Service Support for a Lifetime

We stand behind every drive we sell, which is why our service support is also the gold standard in the industry:

STOBER takes pride in offering knowledgeable, factory-trained USA-based service support for our customers. When you call, you won't get a call center on the other side of the globe. Your call is answered in 3 rings or less, letting you know you've found a support system that values your time.

Our easy order method insures you maintain a single contact throughout the process. And, your service representatives are directly responsible for your account. After the sale, our products are easy to install, but if you do have a question or a problem, we provide application and installation support anywhere in the US. With over 80 years gearing & 30 years motor and electronics experience, we have the expertise to solve your most difficult problems.

Application Support Programs

- For support during normal business hours: call 800-711-3588 or email sales@stober.com
- 24/7 emergency customer service hotline: 606.563.6035
- Consultative product support team available via phone or live chat on our website
- Application Sizing Software
- Online web tools: CAD and configurator
- On-site training available
- Emergency shipments available 24/7



Key STOBER Numbers

- 1 day shipping
- 1 hour quoting
- 3 rings or less when you call in — we answer the phone, not an automated switchboard!
- 100% inspected and tested during assembly for seal pressure test and ratio verification. STOBER also observes the reducer for any abnormal noise or vibrations during testing
- 5 year warranty
- 24/7 customer service



STOBER Staff Team Members

Facing page: Earl Bennington, Warehouse Team Leader, 1992, and Anita Truesdell, Picker, 2007;
From top, left to right: Stephanie Berry, Sales Engineer, 2006; Brian Sharp, Product Management Team Leader, 2003; Rick McCall, Machinist, 2007; Lee Thomas, Plant Manager, 2003

The ServoFit® Precision Gearhead Difference

The following outlines some of our quality standards and unique STÖBER features that set ServoFit gearheads apart from all others...

Food and Corrosion Resistant Duty

P PKX PK C F K/KL KSS

Lifetime lubrication; double output seals (where possible); maintenance free design; stainless output bushing, shaft, or bore — finish is USDA approved for food processing and handling; heat cured.

KSS for extreme high pressure food washdown!

- IP69K certified for extreme high pressure food washdown (sprayed at close distance at 100 bars or 1,450 PSI)
- Certified against dust and water ingress
- 304 stainless steel cast housing

Explosion Proof

P PA PH PHA PHQ PHQA
PKX PHKX C F K

ATEX is often used in process control and converting where unstable gases and dust can be found

ATEX is a directive consisting of two European directives describing equipment or work environment allowed in an environment with an explosive atmosphere. ATEX derives its name from the ATmospheres EXplosible.

Please consult our product support team for assistance selecting an ATEX gearbox.

Large Input Planetary

P PA PE PH PHA PHQ PHQA KS

Equipping a ServoFit gearhead with the large input option allows a larger shaft diameter motor to be used, keeping gearhead size and cost down! This input is ideal for inertia matching.

ServoCool®

P PA PH PHA



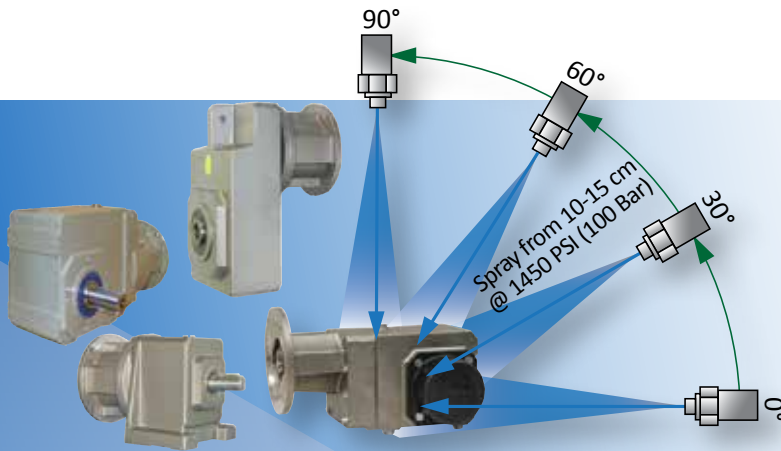
ServoFit gearheads with the air cooled ServoCool® option reduces the operating temperature 22°C (increases the ambient temperature limit 22°C), increases the output speed 54% and improves the servo motor rating 25%.

Servo motors are connected to ServoFit® gearheads by using a motor adapter.

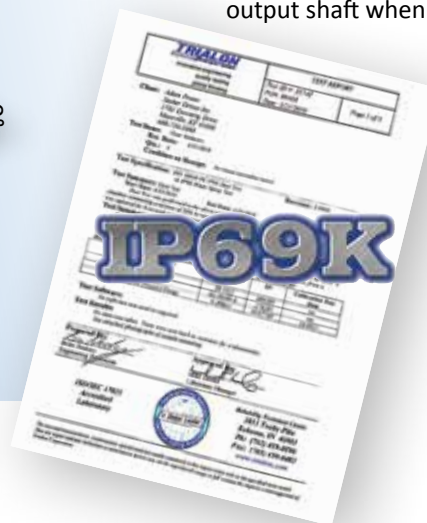
Spiral Groove Hollow Bore

F K KL KS KSS

The inside diameter on our hollow bore units feature a spiral (rifle) bore design providing an anti-seize lubricating groove. This enables the ServoFit gearhead to slide off freely when servicing without damage to the output shaft. With conventional smooth-surface hollow bore designs, any anti-seize lubricant applied during installation of the output shaft has no where to go except out the other end. Invariably, these designs will seize, making it necessary to cut off the output shaft when servicing.



Above: KSS ServoFit Gearheads are IP69K certified to withstand frequent pressure cleaning operations typical in the food industry and elsewhere. Other STÖBER products, including C, F and K Series, are optionally available with IP69K compliant protection.



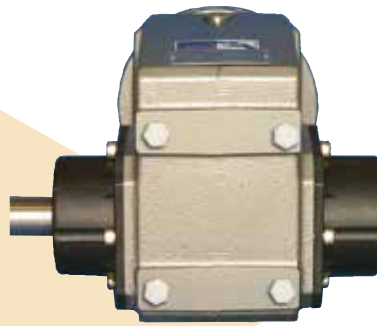
Unique STÖBER Quality and Design Features

Wobble Free Bushing

F K KL KSS

The STÖBER “Wobble Free” bushing is a unique (U.S. Patent Number 5,496,127), bushing system which can be supplied on a single side or double sides. Each case size can be provided with a variety of bushing bores. The unit is selected based on torque rating, output speed or ratio, and the shaft size of the driven equipment.

- A distinct support side and a clamp side, the dual tapered cones will overcome a wide range of tolerances normally found with standard shaft materials. No shaft key necessary.
- Many unit sizes can be supplied with output covers on one or both sides which protect the seals and also cover the rotating bushing
- The reducer output bore can be changed any time by changing the bushing kit
- The quill, all bushing parts, and hardware can be supplied stainless steel to provide corrosion resistance for washdown applications



Double Sided Bushing:

This unique design allows the unit to be mounted on the shaft from either side of the reducer by reversing the clamp side and support side bushings. The clamp side is determined by the customer but is usually the easily accessible outside bushing.

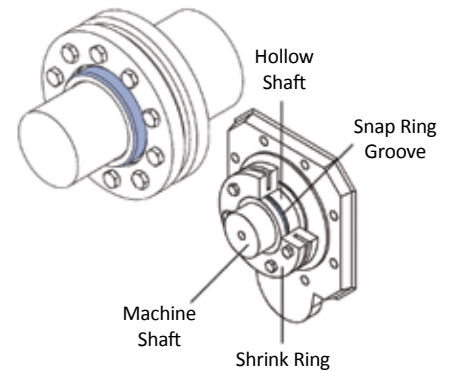
The double sided bushing is not installed into the unit at assembly, but with easy-to-follow installation instructions, the unit and bushing can be mounted on the machinery quickly – without any special tools.

Single Sided Bushing :

The single sided bushing is assembled at the time of the order. The bushing side extension must be specified by the customer before assembly. The bushing is installed into the unit for shipping and is not interchangeable once the unit is assembled.

Shrink Ring Connection

F K KL KS



F, K, KL and KS Series gearheads with a hollow bore can be connected to a finished machine drive shaft by frictional engagement through compression of a shrink ring on the hollow shaft.

This shaft-hub connection is totally free of backlash. Because of its self-centering property, it can transmit high torques and axial thrusts with great accuracy.

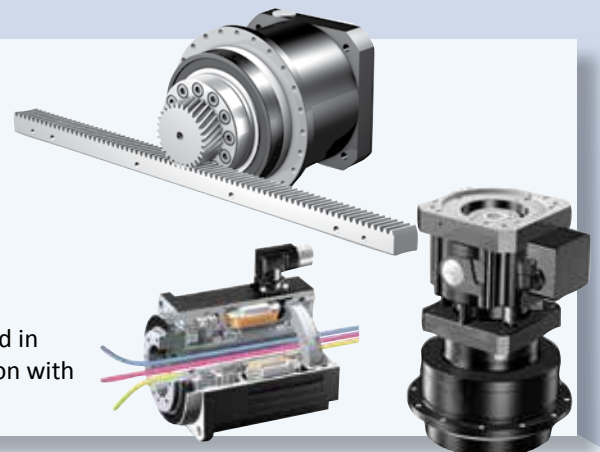
Gear units supplied with a shrink ring, are shipped with the ring installed on the hollow shaft end, ready for assembly.

See page 331 for More ServoFit Gearhead Compatible Products...

EZ Series Servo Motors available to fit all ServoFit gearheads

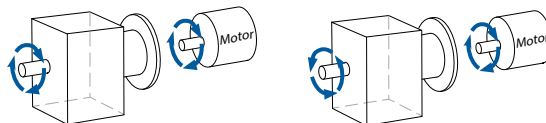
Rack and Pinion ServoFit gearhead systems are a ready to install engineered solution for precision automation applications requiring forces up to 122 kN (27,400 lbs.) with linear backlash as low as 7 µm

ServoStop automatic, electrically-actuated integrated holding brake used in place of a servo motor brake for dynamic safety braking, or in conjunction with the servo motor brake for redundancy in safety applications



ServoFit® Precision Gearheads

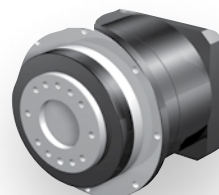
Inline & Offset Inline Gearheads



P/PA – Shaft Output *

STOBER P Series is the cornerstone of most of our inline family of precision planetary gearheads. They are the most accurate and efficient planetary gearheads available. HeliCamber® gear technology provides minimum wear, low backlash and low noise. The PA Advanced Series takes backlash to the absolute minimum, and performance to the max.

- 3:1 to 100:1
- Up to 2,000 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: P: <3 arc min; PA: <1 arc min



PH/PHA/PHQ/PHQA – Flange Output*

STOBER PH family gearheads offer a rotating flange output version of the P Series. The PHA Advanced Series takes backlash to the absolute minimum, and the PHQ and PHQA feature “Quattro” power planetary gearing for extreme torque and ratio capabilities.

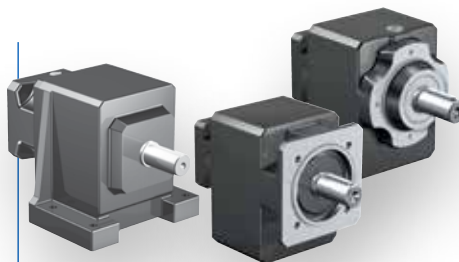
- 4:1 to 600:1
- Up to 13,000 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: PH/PHQ: <3 arc min;
PHA/PHQA: <1 arc min



PE – Shaft Output*

STOBER PE Series ServoFit® Precision Planetary Gearheads are available for applications where very low backlash is not a criteria. They are an economical helical tooth planetary, comparable in quality to other STOBER units.

- 3:1 to 100:1
- Up to 160 Nm torque (nom)
- Up to 8,000 RPM input speed
- Backlash: < 8 arc min



C – Shaft Output*

STOBER C Series gear drives offer performance, durability, and economy for a wide range of applications. High efficiency helical gearing keeps motor size to a minimum while running almost silently.

- 2:1 to 276:1
- Up to 6,300 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: < 14 arc min

F – Versatile Outputs*

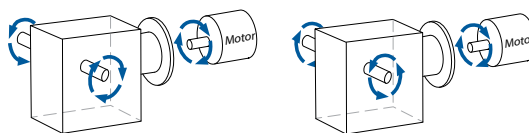
STOBER F Series gear drives are a popular choice for applications that require high performance, efficiency, durability, and flexibility. F Series are available with a wide selection of configurations to match almost any mounting requirement.

- 4:1 to 551:1
- Up to 1,100 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: < 10 arc min

* See page 326 for comparison of all output options and sizes available

Overview Selection At-a-Glance

Right Angle Gearheads



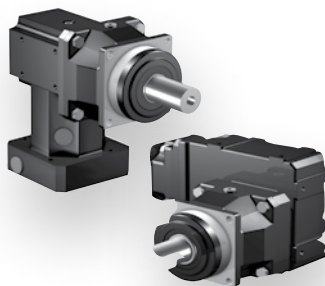
Many right angle gearheads offer output on either or both sides



K – Versatile Outputs*

STOBER K Series helical/bevel gear drives are the most popular and versatile ServoFit right angle gearheads. They are the optimal drive for truly demanding continuous-duty applications, offering higher efficiencies than conventional worm gear drives or planetary gearheads.

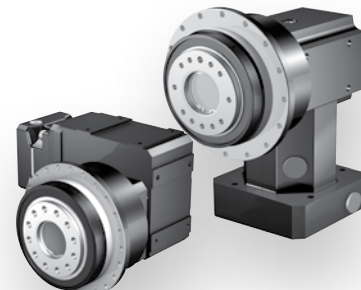
- 4:1 to 381:1
- Up to 12,000 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash <10 arc min



PKX/PK – Shaft Output*

STOBER PKX and PK Series precision planetary gearheads combine the P Series gearhead with the low ratio “KX” right angle platform or the reduced backlash K Series platform.

- Ratios: 3:1 to 300:1;
- Up to 2,000 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: PKX: ≤4 arc min;
PK: ≤3.5 arc min



PHKX/PHK/PHQK – Flange Output*

STOBER PH right angle gearhead configurations offer a rotating flange output combining the P Series gearhead with the low ratio “KX” or reduced backlash K Series. The PHQK features the “Quattro” power planetary gearing for extreme torque and ratio capabilities.

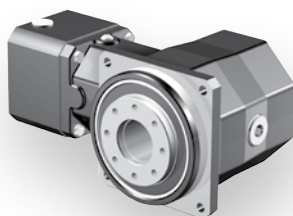
- 4:1 to 591:1
- Torque: 13,000 Nm (nom)
- Up to 6,000 RPM input speed
- Backlash <3.5 arc min



KL – Versatile Outputs*

The STOBER KL Series offers the same output and housing versatility as the K series, but is much more compact and ideal for smaller gearhead size applications.

- 4:1 to 32:1
- Up to 50 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: ≤20 arc min



KS – Versatile Outputs*

STOBER KS Series precision planetary gearheads use time-tested helical gearing and finish ground spiral bevel gears to provide a low backlash unit, that is smooth running, with high efficiency, high power density, and high input speed capacity..

- 6:1 to 200:1
- Up to 250 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: < 4 arc min



SS304

KSS – Versatile Outputs*

STOBER is proud to offer our quality-proven, high-efficiency KSS Series Helical/Bevel speed reducer in a stainless steel housing necessary for the toughest washdown applications.

- 4:1 to 70:1
- Up to 346 Nm torque (nom)
- Up to 6,000 RPM input speed
- Backlash: < 10 arc min

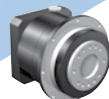
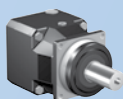


ServoFit® Precision Gearheads

Versatility

STOBER Drives offers the world's largest variety of gearheads to fit virtually all servo needs.

INLINE & OFFSET INLINE GEARHEADS



Performance, Configurations and Options

		P	PA	PH	PHA	PHQ	PHQA	PE	C	F
		page 14		page 48				page 94	page 106	page 144
Input	Large Input	•	•	•	•	•	•	•		
	ServoCool	•	•	•	•					
Output (see page 326 for details)	Solid Shaft	•	•					•	•	•
	Hollow Bore									•
	Rotating Flange			•	•	•	•		•	•
	Shrink Ring									•
	Single Bushing									•
	Double Bushing									•
	Flange								•	•
Housing	Foot Mount								•	•
	Tapped Holes								•	•
	IP65	•	•	•	•	•	•	IP64	•	•
Protection	IP69K Washdown								Opt	Opt
	ATEX Certified	Opt	Opt	Opt	Opt	Opt	Opt		Opt	Opt
	304SS Housing									
Paint/Coatings	Standard Black	•	•	•	•	•	•	•	•	•
	Food Duty	•							•	•
	Corrosion Resistant Duty								•	•
Added Functionality	ServoStop*	•	•	•	•				•	•
	Rack and Pinion*	•	•	•				•		
Performance + Good +++ Better +++++ Best	Continuous RPM	+++	+++	++	++	++	++	+++	+++	++
	Stiffness	+++	+++	++	++++	+++++	+++++	+	+	++++
	Torque Density	+++	+++	++	++++	+++++	+++++	+	+	++++
Precision ArcMin Backlash	1	•		Opt		Opt				
	1-3			•		•			•	
	3-5				•					
	5-10						Opt			Opt
	10-15		•				•			•
	15-20							•		
Nominal Output Torque Ranges Nm	0-50	•	•	•	•			•	•	•
	50-200	•	•	•	•			•	•	•
	200-1,000	•	•		•	•	•	•	•	•
	1,000-5,000	•	•		•	•	•	•	•	•
	5,000-10,000					•	•	•	•	•
	10,000-23,000					•	•			

* See page 331 for more information



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Overview Selection At-a-Glance

RIGHT ANGLE GEARHEADS



	K	KL	PKX	PK	PHKX	PHK	PHQK	KS	KSS
	page 166		page 218		page 252			page 298	page 312
								•	
	•	•	•	•				•	•
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	•	•						•	•
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	Opt	Opt							•
	Opt		Opt		Opt	Opt	Opt	Opt	•
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	•	•	•	•				•	
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	++++	++	+	++	+	++	++	+++	+++
	+	+	+++	++	++++	+++	+++++	++	+
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				•					
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	•						•		



ServoFit® Application-Tailored Solutions

Industry	Ideal Gearhead Applications	Recommended STÖBER Gearhead
Aerospace	<ul style="list-style-type: none"> Automated Guided Vehicles (AGV) Drilling and Riveting Machine Tool Testing and Inspection 	<ul style="list-style-type: none"> Carbon Fiber Placement Fuselage Space Tracking Systems Wing assembly
Automation	<ul style="list-style-type: none"> Assembly turn tables Linear presses Robotics auxiliary axis Palletizing 	<ul style="list-style-type: none"> Custom assembly machines Radar Pipe and wire bending
Automotive Manufacturing	<ul style="list-style-type: none"> Transfer lines Robotic auxiliary Machining Tire manufacturing Carbon fiber production 	<ul style="list-style-type: none"> Metal cutting and bending Pick and place Index tables Electronics assembly
Converting	<ul style="list-style-type: none"> Cutting Tension Control Web Lines 	<ul style="list-style-type: none"> Winding Paper Converting
Machine Tool	<ul style="list-style-type: none"> Horizontal and vertical mills Large gantry cranes Carbon fiber placement Flame, laser, water jet, and plasma cutting Back gauging 	<ul style="list-style-type: none"> Grinding X-Y tables Indexing tables Chip conveyors Bending and forming Tool changers
Material Handling	<ul style="list-style-type: none"> Pick and place Line diverter Sorting/diverting 	<ul style="list-style-type: none"> Linear transfer Palletizing
Medical	<ul style="list-style-type: none"> Imaging Radiation Centrifuge 	
Packaging	<ul style="list-style-type: none"> Continuous or intermittent filling applications 	
Plastics/Composites	<ul style="list-style-type: none"> Often used to replace hydraulic actuators in injection molding Injection molding Carbon fiber placement 	<ul style="list-style-type: none"> Extrusion lines Blow molding Thermoforming Rubber molding
Printing	<ul style="list-style-type: none"> Labels Flexographic printing 	<ul style="list-style-type: none"> Circuit Boards Sheet
Robotics	<ul style="list-style-type: none"> Delta Pick and place Telescoping arms 	<ul style="list-style-type: none"> Auxiliary axis to rotate and move robot Positioning axis
Semiconductor	<ul style="list-style-type: none"> Wafer polishing Wafer handling 	<ul style="list-style-type: none"> Circuit web printing
Valve Control	<ul style="list-style-type: none"> Ideal for handling rapid dithering positioning Ball, gate, and globe valves 	<ul style="list-style-type: none"> Throttle/governor valves Chokes Process valves ATEX explosion proof available

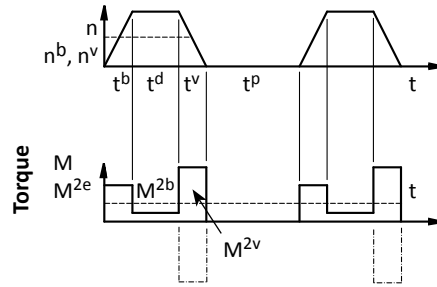
Gearhead Sizing to your Specific Application Requirements

Sizing/Selection

Use the chart on the facing page and below to determine the best series and the right size gearhead to meet your specific application requirements. In each product section of this catalog, the necessary data and a "Load/Life/Speed Calculation" section are provided to help you work through these equations..

By all means, please feel free to call or email (sales@stober.com), if you have any questions or need assistance determining the best solution for your application.

Cycle Run



$$M_{2e} = \sqrt[3]{\frac{n_{2b} \cdot t_b \cdot M_{2b}^3 + \dots + n_{2n} \cdot t_n \cdot M_{2n}^3}{n_{2b} \cdot t_b + \dots + n_{2n} \cdot t_n}}$$

Service Factor

Apply to Nominal Rating ONLY

P, PA, PE PH, PHA PHV, PHVA, PHQ, PHQA, KS	PKX, PK, PHKX, PHK, PHQK, C, F, K, KSS
--	---

Load Factor f_B

Operating Mode

Continuous	1.0	1.0
Cyclic	1.0	1.25
Cyclic-	1.0	1.4
Reversing		

Running Time Factor f_L

≤8 hours	1.0
≤16 hours	1.15
≤24 hours	1.2

Apply to Input RPM

Temperature Factor f_T

	Without Ventilation	Fan Cooled
<20°C	1.00	0.90
<30°C	1.10	1.00
<40°C	1.25	1.15

Continuous Duty: Drive is considered continuous duty if the running time ($t^r = t^b + t^d + t^v$) is 60% of the complete cycle time ($t^b + t^d + t^v + t^p$) or longer than 20 minutes.

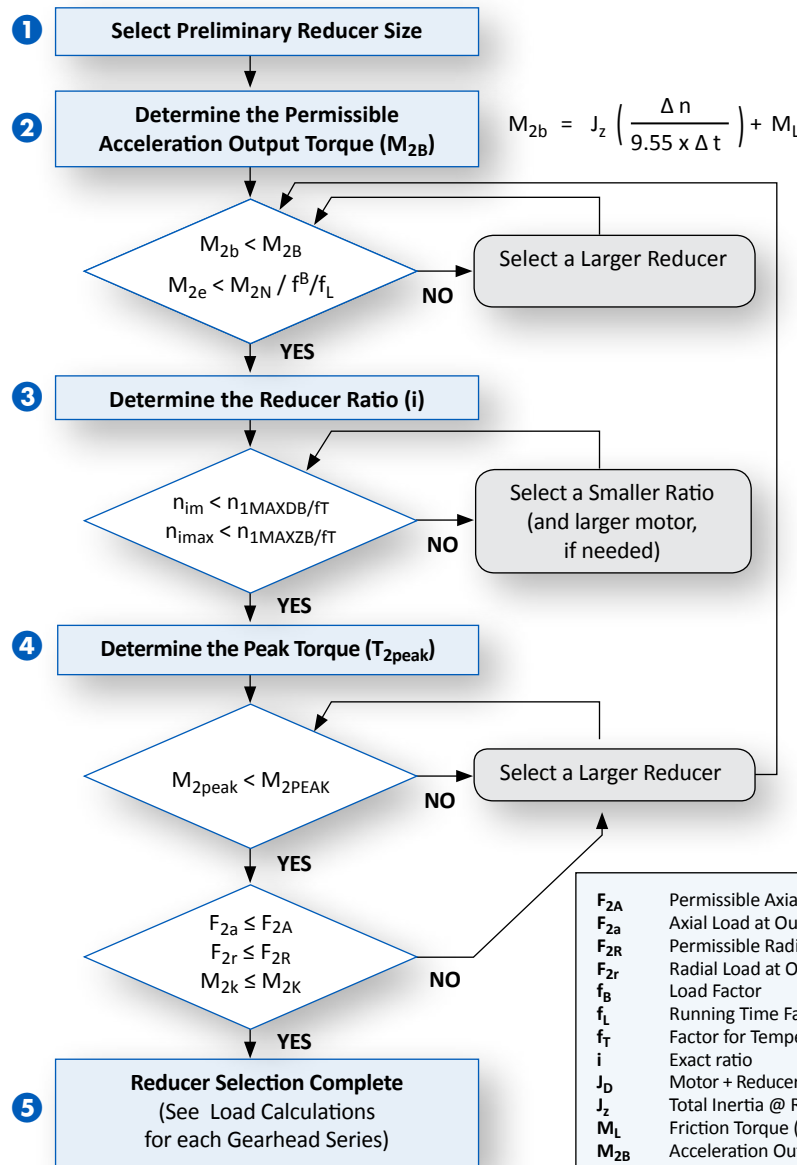
Cyclic Duty: Drive will cycle on and off.

For cyclic operation, the recommended ratio of external (application) inertia to gearhead inertia can be determined by the following equation:

$$\frac{J_z}{i^2} = 4 \cdot J_D$$

The gearhead selected, using the following equation for inertia ratio, will result in the lowest motor torque demand and the optimum drive selection:

$$\frac{J_z}{i^2} = J_D$$



F_{2A}	Permissible Axial Load	M_{2K}	Rated Tilting Torque
F_{2a}	Axial Load at Output Shaft	M_{2k}	Equivalent Tilting Load
F_{2R}	Permissible Radial load	M_{2N}	Nominal Output Torque
F_{2r}	Radial Load at Output Shaft	M_{2peak}	Peak Output Torque
f_B	Load Factor	n_{1db}	Maximum Continuous Input
f_L	Running Time Factor	n_{1zb}	Maximum Cyclic Input
f_T	Factor for Temperature	n_{im}	Maximum Continuous Speed
i	Exact ratio	n_{imax}	Maximum Cyclic Speed
J_D	Motor + Reducer Inertia @ Motor RPM	T_{2PEAK}	Peak Torque
J_z	Total Inertia @ Reducer RPM	t_r	Running Time
M_L	Friction Torque (Losses)	t_b	Acceleration Time
M_{2B}	Acceleration Output Torque	t_d	Duration Time
M_{2b}	Application Acceleration Torque	t_v	Deceleration Time
M_{2e}	Equivalent Torque (Avg RMS Torque)		



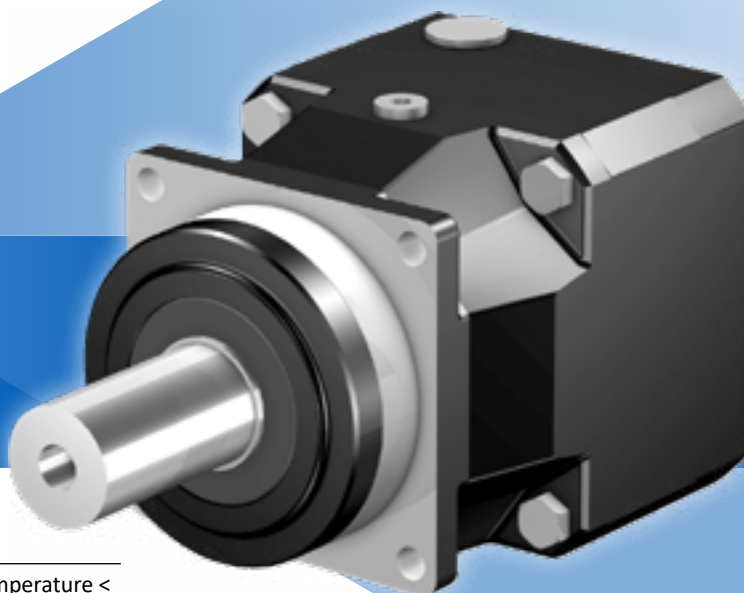
P/PA Series: INLINE — Shaft Output

Features

- 3:1 to 100:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (as low as 60dB(A))
- Bearing options to suit your application needs.
- Large motor input option to accept bigger diameter motor shafts so you don't use an oversized gearbox
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Low no load running torque (see page 19), giving you more torque for your application
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

STÖBER P & PA Series ServoFit® Precision Planetary Gearheads feature HeliCamber® gearing and other components which make them the most accurate and efficient planetary gearheads available. Our gear technology provides minimum wear, low backlash and low noise. Keyed, keyless, bearing options, and more are all available in one day. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.

All P Series and select PA Series SHIP in 1 DAY!
NO EXPEDITE FEE FOR 24 HOUR SERVICE



General Specifications

Ambient Temperature	0° C to +40°C (104° F) [Unit temperature ≤ 90° C Max.]
Backlash	≤1 arcmins, see performance overview chart, page 16
Coating	Standard Black (RAL 790-4); food duty optional (P3 thru P5 only)
Degree of Protection	IP65
Direction of Rotation	Input and output rotate the SAME direction
Efficiency	1 stage 97%; 2 stage 95%
Input RPM	Up to 8,000 rpm
Installation	Requires grade 10.9 fasteners. See page 328, for more information
Lubrication	Lubricated for life – standard Mobil SHC629; option food grade Mobil SHC CIBUS 150
Mounting Position	Unrestricted
Warranty	5 Year Limited (2 years on normal wear items: bearings, seals, etc.)

Comparative Advantages

	P	PA
Precision	Better	Best
Smoothness (low velocity ripple)	Better	Best
Uniformity of motion through full temperature range	Better	Best



Overview




Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the P/PA Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples:

①	P	②	4	③	2	④	1	⑤	S	⑥	P	⑦	R	⑧	0030	⑨	MT	⑩	L
	PA		4		2		1		S		P		D		0030		MF		LC

P/PA Series: INLINE — Shaft Output

Design Option	Part Number Code	Description
① Series	P	Solid shaft inline style planetary
	PA	Solid shaft inline style advanced planetary
② Size	2 3 4	7 sizes of gearhead (size 2 & 9 available for P Series only)
	5 7 8 9	
③ Generation	2	Version of gearhead
④ # of Stages	1	One stage for ratios of ≤ 10:1
	2	Two stage for ratios >10:1
⑤ Housing	S	Standard mounting style
⑥ Output	P	Shaft with key
	G	Plain shaft (no key)
⑦ Bearings	 R	Ball bearing (P Series only)
	 D	Double row angular contact bearing (except P2)
	 Z	Cylindrical roller bearing (P Series only, except P2)
⑧ Ratio	0030	Ratios range from 3:1 to 100:1 (0030=3:1; 0160=16:1; 1000=100:1, etc.)
⑨ Motor Adapter	MT	For P Series only – See motor mounting plate option page 17
	MF	For PA Series only – See motor mounting plate option page 17
⑩ Options	L	Large Input
	C	ServoCool
	F	Food Duty (size P3 thru P5 only)

Options

ServoCool

- Used when a higher input speed is required or when improved performance and longer life is needed
- Reduces operating temperatures; helpful for applications with high ambient temperature
- Ideal for large planetary or units with small ratios

Coatings

- Standard:** For dry areas and normal conditions. All units standard coating, unless ordered with Food Duty
- Food Duty:** Able to withstand severe wet areas and washdown application (size P3 thru P5 only)

Large Input

- Accommodates a larger diameter motor shaft without going to a larger size gearbox

ATEX

- ATMosphere EXplosible — Please contact factory for this option and allow additional time for delivery



P/PA Series: INLINE – Shaft Output

P/PA Series Performance Overview

P Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

		Series-Size		P2		P/PA3		P/PA4		P/PA5		P/PA7		P/PA8		P9	
		# of Stages		1	2	1	2	1	2	1	2	1	2	1	2	1	2
Acceleration Torque	M_{2BMAX}	N		22		65		120		300		700		1600		3000	
Output Torque Nom.	$M_{2N}^{1)}$	N		16		45		85		210		440		1000		2000	
Torsional Stiffness	C_2	Nm/arcmin		1.9		5		11		33		55		176		350	340
Torsional Backlash	$\Delta\phi$	arcmin	P Series PA Series	≤ 6 —	≤ 8 —	≤ 4 ≤ 2	≤ 5 ≤ 3	≤ 4 ≤ 2	≤ 5 ≤ 3	≤ 3 ≤ 1	≤ 4 ≤ 2	≤ 3 ≤ 1	≤ 4 ≤ 2	≤ 3 ≤ 1	≤ 4 ≤ 2	≤ 3 —	≤ 4 —
Input Speed Max.	n_{1MAX}	Continuous Cyclic		4500 8000	4500 8000	4500 8000	4500 8000	4000 7000	4500 8000	3700 6500	4000 7000	3300 6000	3700 6500	2800 4500	3300 6000	2500 4000	2800 4500
With ServoCool Option		Continuous Cyclic	P Series PA Series	— —	— —	— —	— —	4500 6000	— —	5500 6000	4500 5500	5000 5500	5000 5500	4500 5500	4500 5500	4000 5000	4000 6000
Efficiency (@ nom torque)	%			97	95	97	95	97	95	97	95	97	95	97	95	97	95
Weight	kg lbs			1.2 3	1.8 4	2.6 6	3.5 8	4.0 9	5.3 12	6.5 14	8.5 19	12 27	15 33	26 57	32 71	50 110	61 135
Noise	dB(A)			≤ 61	≤ 61	≤ 61	≤ 61	≤ 62	≤ 60	≤ 63	≤ 61	≤ 64	≤ 62	≤ 65	≤ 63	≤ 65	≤ 64

Performance by Bearing Design Option ⁴⁾

R = Ball bearing (P Series Only) D = Double row angular contact bearing Z = Cylindrical roller bearing (P Series Only)

		Series-Size		P2		P/PA3		P/PA4		P/PA5		P/PA7		P/PA8		P9	
Axial Load Max.	R	P Series	N	500		1000		1500		2300		2900		4700		6000	
	D	P Series PA Series	N	—		1400		2250		3500		4500		7500		10,000	
	Z	P Series	N	—		600		1000		1600		2000		3600		5000	
Radial Load Max.	R	P Series	N	1200		2500		4000		6500		8000		13,000		18,000	
	D	P Series PA Series	N	—		2750		4500		7000		9000		15,000		20,000	
	Z	P Series	N	—		3000		5000		8000		10,000		18,000		27,000	
Tilting Moment Max.	R	P Series	Nm	34		88		160		338		536		897		1665	
	D	P Series PA Series	N	—		105		194		406		648		1140		2070	
	Z	P Series	Nm	—		105		200		416		670		1242		2500	

¹⁾ Ratings based on input speed (n_1) of 2000 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula:
where n_1 = Actual Input Speed.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For reduced value see the PA Series.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

⁴⁾ Options R and Z are available with P Series only. See page 18 for output bearing options. Rating based on output speed (n_2) of 100 RPM. For values at other speeds see page 19.



Overview

P/PA Series Motor Mounting Plate Option (Motor information required with MT or MF Motor Adapter Option)

STÖBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

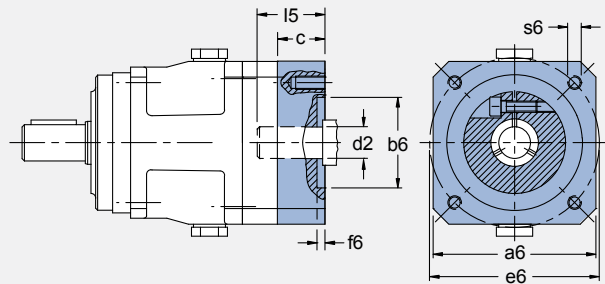
- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STÖBER Technical Support.

Maximum 10 working days for custom motor mounting plates.

Customer Required Dimensions for Properly Sized Motor Mounting Plate

d2	Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)
b6	Pilot Diameter
e6	Bolt Circle Diameter
s6	Bolt Diameter
I5	Motor Shaft Length
f6	Pilot Length
a6	Square Flange (Optional – motor plate will typically be made to match this dimension.)



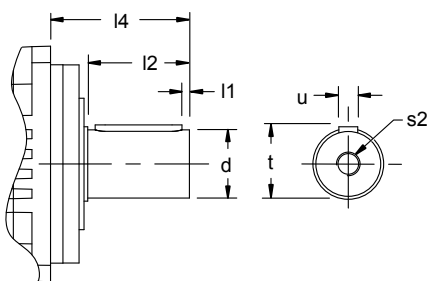
Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

	P221 P222 P/PA322	P221...L P222...L P/PA321 P322...L P/PA422	P/PA321...L P/PA421 P/PA422...L P/PA522	P/PA421...L P/PA521 P/PA522...L P/PA722	P/PA521...L P/PA721 P/PA722...L P/PA822	P/PA721...L P/PA821 P/PA822...L P922	P821...L P921 P922...L
Maximum Allowed Motor Shaft Dia. d2	14	19	24	32	38	48	60
Minimum Allowed Motor Plate Thickness c*	15	18	21	24	25	33	43

* Note that c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

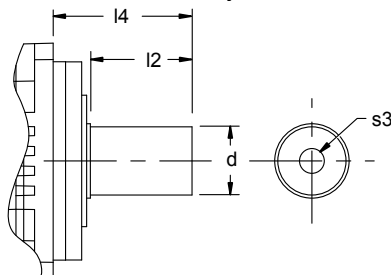
P/PA Series Output Shaft Options ("P" or "G" designated in part number, for example: P421S P 0160 MTL)

P Shaft with Key



Unit	d k6		l1	l2	l4	s2 ⁽¹⁾	t	u ⁽²⁾
	mm	mm	mm	mm	mm		mm	W x H x L
P2	12	+0.012/+0.001	2	22	36	M4	13.5	A4x4x18
P/PA3	16	+0.012/+0.001	2	28	48	M5	18.0	A5x5x22
P/PA4	22	+0.015/+0.002	3	36	56	M8	24.5	A6x6x28
P/PA5	32	+0.018/+0.002	3	58	88	M12	35.0	A10x8x50
P/PA7	40	+0.018/+0.002	4	82	112	M16	43.0	A12x8x70
P/PA8	55	+0.021/+0.002	6	82	112	M20	59.0	A16x10x70
P9	75	+0.021/+0.002	7	105	143	M20	79.5	A20x12x90

G Shaft without Key



Unit	d k6		l2	l4	s3 ⁽¹⁾
	mm	mm	mm	mm	
P2	12	+0.012/+0.001	22	36	M4
P/PA3	16	+0.012/+0.001	28	48	M5
P/PA4	22	+0.015/+0.002	36	56	M8
P/PA5	32	+0.018/+0.002	58	88	M12
P/PA7	40	+0.018/+0.002	82	112	M16
P/PA8	55	+0.021/+0.002	82	112	M20
P9	75	+0.021/+0.002	105	143	M20

⁽¹⁾ The center hole in shafts with keys (Option "P") are machined to DIN 332 T2 shape DR.

⁽²⁾ Feather keys are toleranced according to standard DIN 6885.

P/PA Series: INLINE — Shaft Output

P/PA Series: INLINE – Shaft Output

P/PA Series Output Bearing Options

**R Ball Bearing
(P Series only)**

**D Double Row Angular Contact
Bearing**

**Z Cylindrical Roller Bearing (P
Series only)**


Characteristics:	<ul style="list-style-type: none"> Minimal frictional torque Good radial load capacity Axial load approx. 35% of radial load 	<ul style="list-style-type: none"> Low frictional torque Good radial bearing capacity Axial load approx. 50% of radial load 	<ul style="list-style-type: none"> Very good radial load capacity Axial load approx. 20% of radial load
Applications:	<ul style="list-style-type: none"> Spur geared rack/pinion Couplings Belt with or without light tension 	<ul style="list-style-type: none"> Helical geared rack/pinion Couplings with high axial load Belt with or without light tension 	<ul style="list-style-type: none"> Prestressed belt drive Prestressed spur rack drive Applications with high radial loads and/or high service requirements

Permissible Output Shaft Load and Tilting Moments*

Unit	Z ₂ mm	F _{2A} N	F _{2R} N	F _{2RB} N	M _{2K} Nm	M _{2KB} Nm
R Ball Bearing (P Series only)						
P2	17	500	1200	1300	34	36
P3	21	1000	2500	2500	88	88
P4	22	1500	4000	4500	160	180
P5	23	2300	6500	7000	338	364
P7	26	2900	8000	9000	536	603
P8	28	4700	13,000	18,000	897	1242
P9	40	6000	18,000	27,000	1665	2498
D Double Row Angular Contact Bearing						
P/PA3	24	1400	2750	2750	105	105
P/PA4	25	2250	4500	5000	194	215
P/PA5	29	3500	7000	8000	406	464
P/PA7	31	4500	9000	10,000	648	720
P/PA8	35	7500	15,000	18,000	1140	1368
P9	51	10,000	20,000	30,000	2070	3105
Z Cylindrical Roller Bearing (P Series only)						
P3	21	600	3000	3000	105	105
P4	22	1000	5000	5000	200	200
P5	23	1600	8000	8000	416	416
P7	26	2000	10,000	10,000	670	670
P8	28	3600	18,000	18,000	1242	1242
P9	40	5000	27,000	35,000	2500	3238

* Refer to illustration and load/life/speed definitions on page 19

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A}, F_{2R}, and M_{2K} can be multiplied by a factor of 2.

The permissible load values given are valid with the load applied to the center of the output shaft (x₂).



Overview

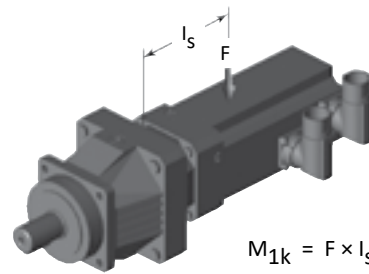
P/PA No Load Running Torque*

Unit		Input Ratio T_R																
		One Stage						Two Stage										
		3	4	5	7	8	10	15	16	20	25	28	32	35	40	50	70	100
P2	Nm	—	0.2	0.2	0.2	0.2	0.1	—	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
P/PA3	Nm	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
P/PA4	Nm	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
P/PA5	Nm	0.8	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
P/PA7	Nm	0.9	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
P/PA8	Nm	1.6	1.3	1.1	0.9	0.7	0.7	0.3	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
P9	Nm	—	2	2	2	—	1.25	—	1.25	1.25	1.25	1.25	—	1.25	1.25	1.25	1.25	1.25

* Torque is measured with the input at 2000 RPM and an ambient temperature of 20° C.

Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load "F" from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity "l_s" of the motor.



$$M_{1k} = F \times l_s \leq M_{1K}$$

M_{1K}	P221 P222 P/PA322	P/PA321 P/PA422	P/PA421 P/PA522	P/PA521 P/PA722	P/PA721 P/PA822	P/PA821 P922	P921
Nm	10	20	40	80	200	400	800

P/PA Series: INLINE — Shaft Output

P/PA Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}}, \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}}, \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

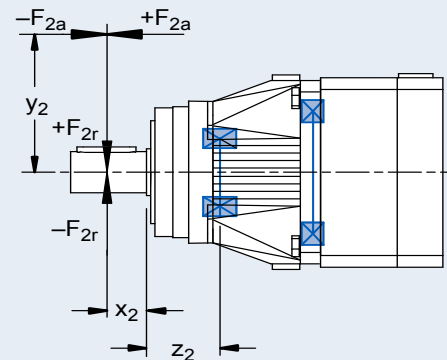
$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot M_{2kb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot M_{2kbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot F_{2rb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot F_{2rbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq F_{2R}$$

Where:

F_{2a}	Axial Load at Output Shaft	M_{2K}	Rated Tilting Torque
F_{2A}	Permissible Axial Load	M_{2k}	Equivalent Tilting Load
F_{2r}	Radial Load at Output Shaft	M_{2KB}	Acceleration Tilting Torque
F_{2R}	Permissible Radial Load	z_2	Distance Factor
F_{2RB}	Acceleration Permissible Radial Load		

All formulas shown are based on METRIC values
Upper case letters are permissible values. Lower case letters are for existing values.



The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle $\leq 40\%$

$$L_h > 10,000 \text{ hours if } M_{2k}/M_{2A} < 1.25 \text{ and } > 1$$

$$L_h > 20,000 \text{ hours if } M_{2k}/M_{2A} > 1.25 \text{ and } > 1.5$$

$$L_h > 30,000 \text{ hours if } M_{2k}/M_{2A} < 1.5$$

bearing life for duty cycle $\geq 40\%$

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic	mm	kgcm ²	Nm
	Nm	Nm	Nm							

P2 (continued next page)

4.000	16	22	44	≤6	P221_0040MT	4500	8000	14	0.1	1.8
					P221_0040MTL			19	0.6	1.9
5.000	16	22	44	≤6	P221_0050MT	4500	8000	14	0.1	1.9
					P221_0050MTL			19	0.6	
7.000	16	22	44	≤6	P221_0070MT	4500	8000	14	0.1	1.8
					P221_0070MTL			19	0.6	
8.000	14	18	36	≤6	P221_0080MT	4500	8000	14	0.1	1.7
					P221_0080MTL			19	0.6	
10.00	12	18	36	≤6	P221_0100MT	4500	8000	14	0.1	1.6
					P221_0100MTL			19	0.6	
16.00	16	22	44	≤8	P222_0160MT	4500	8000	14	0.1	1.8
					P222_0160MTL			19	0.6	
20.00	16	22	44	≤8	P222_0200MT	4500	8000	14	0.1	1.8
					P222_0200MTL			19	0.6	
25.00	16	22	44	≤8	P222_0250MT	4500	8000	14	0.1	1.8
					P222_0250MTL			19	0.6	
28.00	16	22	44	≤8	P222_0280MT	4500	8000	14	0.1	1.8
					P222_0280MTL			19	0.6	
32.00	14	18	36	≤8	P222_0320MT	4500	8000	14	0.1	1.7
					P222_0320MTL			19	0.6	
35.00	16	22	44	≤8	P222_0350MT	4500	8000	14	0.1	1.8
					P222_0350MTL			19	0.6	
40.00	16	22	44	≤8	P222_0400MT	4500	8000	14	0.1	1.8
					P222_0400MTL			19	0.6	

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P2 (continued from previous page)

50.00	16	22	44	≤8	P222_0500MT	4500	8000	14	0.1	1.8
					P222_0500MTL			19	0.6	
56.00	14	18	36	≤8	P222_0560MT	4500	8000	14	0.1	1.7
					P222_0560MTL			19	0.6	
70.00	16	22	44	≤8	P222_0700MT	4500	8000	14	0.1	1.8
					P222_0700MTL			19	0.6	
80.00	14	18	36	≤8	P222_0800MT	4500	8000	14	0.1	1.7
					P222_0800MTL			19	0.6	
100.0	12	18	36	≤8	P222_1000MT	4500	8000	14	0.1	1.6
					P222_1000MTL			19	0.6	

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

P/PA3 (continued next page)

3.000	30	50	64	≤4	P321_0030MT	3500	6000	19	0.8	5.7	
			122		≤2			P321_0030MTL	24		1.5
								P321_0030MTLC	4500	19	1.1
				PA321_0030MF		3500		24	1.7	5.5	
			PA321_0030MFL	4500	24			1.7	5.4		
			PA321_0030MFLC	4500	24			1.7	5.4		
4.000	45	65	85	≤4	P321_0040MT	3700	6500	19	0.7	5.3	
			130		≤2			P321_0040MTL	24		1.4
								P321_0040MTLC	5000	19	1.0
				PA321_0040MF		3700		24	1.7	5.2	
			PA321_0040MFL	5000	24			1.7	5.1		
			PA321_0040MFLC	5000	24			1.7	5.1		
5.000	45	65	130	≤4	P321_0050MT	4000	7000	14	0.6	5.1	
					P321_0050MTL			19	1.3		5.0
					P321_0050MTLC			5000	19	0.9	4.9
			≤2	PA321_0050MF	4000	24		0.6	5.0		
				PA321_0050MFL		5000		24	1.6	5.0	
				PA321_0050MFLC		5000		24	1.6	5.0	
7.000	45	60	130	≤4	P321_0070MT	4500	8000	14	0.6	4.4	
					P321_0070MTL			19	1.3		4.3
					P321_0070MTLC			5500	19	0.9	4.3
			≤2	PA321_0070MF	4500	24		0.5	4.3		
				PA321_0070MFL		5500		24	1.6	4.4	
				PA321_0070MFLC		5500		24	1.6	4.4	
8.000	40	50	100	≤4	P321_0080MT	4500	8000	14	0.6	4.2	
					P321_0080MTL			19	1.3		4.1
					P321_0080MTLC			5500	19	0.9	4.1
			≤2	PA321_0080MF	4500	24		0.5	4.1		
				PA321_0080MFL		5500		24	1.6	4.2	
				PA321_0080MFLC		5500		24	1.6	4.2	

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.
²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)
³⁾ For additional motor shaft sizes, please visit configurator.stober.com
⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.
 * MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool
 ** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA3 (continued next page)

10.00	30	50	100	≤4	P321_0100MT	4500	8000	14	0.6	4.0			
					P321_0100MTL						6000	19	1.2
					P321_0100MTLC								
				≤2	PA321_0100MF	6000		24	1.6				
					PA321_0100MFL								
					PA321_0100MFLC								
12.00	30	50	122	≤5	P322_0120MT	4000	8000	14	0.1	4.2			
					P322_0120MTL						4500	14	0.6
				≤3	PA322_0120MF	6000		19	0.1				
16.00	45	65	130	≤5	P322_0160MT		4500			8000			
					P322_0160MTL						4500	19	0.6
				≤3	PA322_0160MF	6000	24	1.6					
20.00	45	65	130	≤5	P322_0200MT				4500	8000			
					P322_0200MTL						4500	19	0.6
				≤3	PA322_0200MF	6000	24	1.6					
25.00	45	65	130	≤5	P322_0250MT				4500	8000			
					P322_0250MTL						4500	19	0.6
				≤3	PA322_0250MF	6000	24	1.6					
28.00	45	65	130	≤5	P322_0280MT				4500	8000			
					P322_0280MTL						4500	19	0.6
				≤3	PA322_0280MF	6000	24	1.6					
32.00	40	50	100	≤5	P322_0320MT				4500	8000			
					P322_0320MTL						4500	19	0.6
				≤3	PA322_0320MF	6000	24	1.6					
35.00	45	65	130	≤5	P322_0350MT				4500	8000			
					P322_0350MTL						4500	19	0.6
				≤3	PA322_0350MF	6000	24	1.6					
40.00	45	65	130	≤5	P322_0400MT				4500	8000			
					P322_0400MTL						4500	19	0.6
				≤3	PA322_0400MF	6000	24	1.6					

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P/PA3 (continued from previous page)

50.00	45	65	130	≤5	P322_0500MT	4500	8000	14	0.1	4.5
					P322_0500MTL			19	0.6	
				≤3	PA322_0500MF			14	0.1	
56.00	40	50	100	≤5	P322_0560MT	4500	8000	14	0.1	4.1
					P322_0560MTL			19	0.6	
				≤3	PA322_0560MF			14	0.1	
70.00	45	60	130	≤5	P322_0700MT	4500	8000	14	0.1	4.2
					P322_0700MTL			19	0.6	
				≤3	PA322_0700MF			14	0.1	
80.00	40	50	100	≤5	P322_0800MT	4500	8000	14	0.1	4.1
					P322_0800MTL			19	0.6	
				≤3	PA322_0800MF			14	0.1	
100.0	30	50	100	≤5	P322_1000MT	4500	8000	14	0.1	3.9
					P322_1000MTL			19	0.6	
				≤3	PA322_1000MF			14	0.1	

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

P/PA4 (continued next page)

3.000	50	100	240	≤4	P421_0030MT	3000	5500	24	1.9	12.5		
					P421_0030MTC	4500	6000		2.3	11.4		
					P421_0030MTL	3000	5500	32	4.2	12.5		
					P421_0030MTLC	4500	6000		3.2	11.8		
			212	≤2	PA421_0030MF	3000	5500	24	2.3	11.4		
					PA421_0030MFC	4500	6000		2.3	11.4		
					240	≤2	PA421_0030MFL	3000	5500	32	5.4	11.8
							PA421_0030MFLC	4500	6000		5.4	11.8
4.000	85	120	240	≤4	P421_0040MT	3300	6000	24	1.5	12.0		
					P421_0040MTC	5000			1.9	11.4		
					P421_0040MTL	3300		32	3.8	12.0		
					P421_0040MTLC	5000			2.8	11.6		
			212	≤2	PA421_0040MF	3300		24	1.9	11.4		
					PA421_0040MFC	5000			1.9	11.4		
					240	≤2		PA421_0040MFL	3300	32	5.0	11.6
								PA421_0040MFLC	5000		5.0	11.6
5.000	85	120	240	≤4	P421_0050MT	3700	6500	24	1.4	11.7		
					P421_0050MTC	5000			1.8	11.3		
					P421_0050MTL	3700		32	3.7	11.7		
					P421_0050MTLC	5000			2.7	11.5		
			212	≤2	PA421_0050MF	3700		24	1.8	11.3		
					PA421_0050MFC	5000			1.8	11.3		
					240	≤2		PA421_0050MFL	3700	32	4.9	11.5
								PA421_0050MFLC	5000		4.9	11.5
7.000	85	110	240	≤4	P421_0070MT	4000	7000	24	1.3	10.1		
					P421_0070MTC	5500			1.6	10.0		
					P421_0070MTL	4000		32	3.6	10.1		
					P421_0070MTLC	5500			2.6	10.0		
			212	≤2	PA421_0070MF	4000		24	1.6	9.9		
					PA421_0070MFC	5500			1.6	9.9		
					240	≤2		PA421_0070MFL	4000	32	4.8	10.0
								PA421_0070MFLC	5500		4.8	10.0

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

P/PA4 (continued next page)

8.000	80	100	200	≤4	P421_0080MT	4000	7000	24	1.3	9.5	
					P421_0080MTC	5500			1.6	9.4	
					P421_0080MTL	4000		32	3.6	9.5	
					P421_0080MTLC	5500			2.5	9.4	
				≤2	PA421_0080MF	4000		24	1.6	9.4	
					PA421_0080MFC	5500					
					PA421_0080MFL	4000		32	4.8		
					PA421_0080MFLC	5500					
10.00	60	100	200	≤4	P421_0100MT	4000	7000	24	1.3	9.0	
					P421_0100MTC	6000			1.6	8.9	
					P421_0100MTL	4000		32	3.5	9.0	
					P421_0100MTLC	6000			2.5	9.0	
				≤2	PA421_0100MF	4000		24	1.6	8.9	
					PA421_0100MFC	6000					
					PA421_0100MFL	4000		32	4.7		
					PA421_0100MFLC	6000					
12.00	50	100	240	≤5	P422_0120MT	3500	6500	19	0.7	9.9	
					P422_0120MTL	4500			24		1.4
					P422_0120MTLC	4500		1.0			9.8
				≤3	PA422_0120MF	3700		19	0.7	9.9	
					PA422_0120MFL	3700			24		1.7
					PA422_0120MFLC	4500					
16.00	85	120	240	≤5	P422_0160MT	3700	6500	19	0.7	10.5	
					P422_0160MTL	5000			24		1.4
					P422_0160MTLC	5000		1.0			10.4
				≤3	PA422_0160MF	3700		19	0.6	10.5	
					PA422_0160MFL	3700			24		1.7
					PA422_0160MFLC	5000					
20.00	85	120	240	≤5	P422_0200MT	3700	6500	19	0.7	10.8	
					P422_0200MTL	5000			24		1.4
					P422_0200MTLC	5000		1.0			10.7
				≤3	PA422_0200MF	3700		19	0.6		
					PA422_0200MFL	3700			24	1.7	
					PA422_0200MFLC	5000					

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt[®] coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA4 (continued next page)

25.00	85	120	240	≤5	P422_0250MT	4000	7000	19	0.6	10.7
					P422_0250MTL			24	1.3	
					P422_0250MTLC				0.9	
				≤3	PA422_0250MF	4000		19	0.6	
					PA422_0250MFL			24	1.6	
					PA422_0250MFLC				5000	
28.00	85	120	240	≤5	P422_0280MT	4500	8000	19	0.6	10.3
					P422_0280MTL			24	1.3	
					P422_0280MTLC				5500	
				≤3	PA422_0280MF	4500		19	0.5	
					PA422_0280MFL			24	1.6	
					PA422_0280MFLC				5500	
32.00	80	100	200	≤5	P422_0320MT	3700	6500	19	0.7	9.2
					P422_0320MTL			24	1.4	
					P422_0320MTLC				5000	
				≤3	PA422_0320MF	3700		19	0.6	
					PA422_0320MFL			24	1.7	
					PA422_0320MFLC				5000	
35.00	85	120	240	≤5	P422_0350MT	4500	8000	19	0.6	10.6
					P422_0350MTL			24	1.3	
					P422_0350MTLC				5500	
				≤3	PA422_0350MF	4500		19	0.5	
					PA422_0350MFL			24	1.6	
					PA422_0350MFLC				5500	
40.00	85	120	240	≤5	P422_0400MT	4500	8000	19	0.6	10.1
					P422_0400MTL			24	1.2	
					P422_0400MTLC				5500	
				≤3	PA422_0400MF	4500		19	0.5	
					PA422_0400MFL			24	1.6	
					PA422_0400MFLC				5500	

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)

P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

P/PA4 (continued from previous page)

50.00	85	120	240	≤5	P422_0500MT	4500	8000	19	0.6	10.5
					P422_0500MTL			24	1.2	
					P422_0500MTLC	5500		19	0.9	
				≤3	PA422_0500MF	4500		19	0.5	
					PA422_0500MFL			24	1.6	
					PA422_0500MFLC	5500		24	1.6	
56.00	80	100	200	≤5	P422_0560MT	4500	8000	19	0.6	9.2
					P422_0560MTL			24	1.3	
					P422_0560MTLC	5500		19	0.9	
				≤3	PA422_0560MF	4500		19	0.5	
					PA422_0560MFL			24	1.6	
					PA422_0560MFLC	5500		24	1.6	
70.00	85	110	240	≤5	P422_0700MT	4500	8000	19	0.6	9.6
					P422_0700MTL			24	1.2	
					P422_0700MTLC	5500		19	0.9	
				≤3	PA422_0700MF	4500		19	0.5	
					PA422_0700MFL			24	1.6	
					PA422_0700MFLC	5500		24	1.6	
80.00	80	100	200	≤5	P422_0800MT	4500	8000	19	0.6	9.2
					P422_0800MTL			24	1.2	
					P422_0800MTLC	5500		19	0.9	
				≤3	PA422_0800MF	4500		19	0.5	
					PA422_0800MFL			24	1.6	
					PA422_0800MFLC	5500		24	1.6	
100.0	60	100	200	≤5	P422_1000MT	4500	8000	19	0.6	8.8
					P422_1000MTL			24	1.2	
					P422_1000MTLC	5500		19	0.9	
				≤3	PA422_1000MF	4500		19	0.5	
					PA422_1000MFL			24	1.6	
					PA422_1000MFLC	5500		24	1.6	

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA5 (continued next page)

3.000	120	200	259	≤3	P521_0030MT	2500	4500	32	6.3	36.3	
					P521_0030MTC	4000	6000		7.6	30.7	
					P521_0030MTL	2500	4500		38	9.3	36.3
					P521_0030MTLC	4000	6000			7.5	33.0
			457	≤1	PA521_0030MF	2500	4500	32	7.6	30.7	
					PA521_0030MFC	4000	6000		14.4	33.0	
					PA521_0030MFL	2500	4500	38	14.4	33.0	
					PA521_0030MFLC	4000	6000		14.4	33.0	
4.000	210	300	600	≤3	P521_0040MT	3000	5000	32	4.5	32.1	
					P521_0040MTC	4500	6000		5.8	29.4	
					P521_0040MTL	3000	5000		38	7.6	32.1
					P521_0040MTLC	4500	6000			7.6	30.6
			600	≤1	PA521_0040MF	3000	5000	32	5.8	29.4	
					PA521_0040MFC	4500	6000		12.7	30.6	
					PA521_0040MFL	3000	5000	38	12.7	30.6	
					PA521_0040MFLC	4500	6000		12.7	30.6	
5.000	210	300	600	≤3	P521_0050MT	3500	6000	32	4.1	31.1	
					P521_0050MTC	5000			5.4	29.4	
					P521_0050MTL	3500			38	7.2	31.1
					P521_0050MTLC	5000				7.2	30.2
			600	≤1	PA521_0050MF	3500		32	5.4	29.4	
					PA521_0050MFC	5000			12.3	30.2	
					PA521_0050MFL	3500		38	12.3	30.2	
					PA521_0050MFLC	5000			12.3	30.2	
7.000	210	270	600	≤3	P521_0070MT	3700	6500	32	3.7	28.0	
					P521_0070MTC	5000			5.0	27.1	
					P521_0070MTL	3700			38	6.8	28.0
					P521_0070MTLC	5000				6.7	27.5
			600	≤1	PA521_0070MF	3700		32	5.0	27.1	
					PA521_0070MFC	5000			11.9	27.5	
					PA521_0070MFL	3700		38	11.9	27.5	
					PA521_0070MFLC	5000			11.9	27.5	

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

P/PA5 (continued next page)

8.000	200	250	500	≤3	P521_0080MT	3700	6500	32	3.7	26.0
					P521_0080MTC	5500			4.9	25.4
					P521_0080MTL	3700		38	6.7	26.0
					P521_0080MTLC	5500			6.6	25.7
				≤1	PA521_0080MF	3700		32	4.9	25.4
					PA521_0080MFC	5500			38	11.8
					PA521_0080MFL	3700		38		11.8
					PA521_0080MFLC	5500				
10.00	140	250	500	≤3	P521_0100MT	3700	6500	32	3.6	25.0
					P521_0100MTC	6000			4.8	24.7
					P521_0100MTL	3700		38	6.7	25.0
					P521_0100MTLC	6000			6.6	24.8
				≤1	PA521_0100MF	3700		32	4.8	24.7
					PA521_0100MFC	6000			38	11.8
					PA521_0100MFL	3700		38		11.8
					PA521_0100MFLC	6000				
12.00	120	200	457	≤4	P522_0120MT	3000	6000	24	1.6	27.2
					P522_0120MTC	4500			1.9	26.8
					P522_0120MTL	3000		32	3.8	27.2
					P522_0120MTLC	4500			2.8	26.9
				≤2	PA522_0120MF	3300		24	1.9	26.8
					PA522_0120MFC	4500			32	5.1
					PA522_0120MFL	3300		32		5.1
					PA522_0120MFLC	4500				
16.00	210	300	600	≤4	P522_0160MT	3300	6000	24	1.6	27.5
					P522_0160MTC	5000			1.9	27.3
					P522_0160MTL	3300		32	3.8	27.5
					P522_0160MTLC	5000			2.8	27.4
				≤2	PA522_0160MF	3300		24	1.9	27.3
					PA522_0160MFC	5000			32	5.0
					PA522_0160MFL	3300		32		5.0
					PA522_0160MFLC	5000				

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA5 (continued next page)

20.00	210	300	600	≤4	P522_0200MT	3300	6000	24	1.6	28.2		
					P522_0200MTC	5000			1.9	28.0		
					P522_0200MTL	3300			32	3.8	28.2	
					P522_0200MTLC	5000				2.8	28.1	
				≤2	PA522_0200MF	3300		24	1.9	28.0		
					PA522_0200MFC	5000			32	5.0	28.1	
					PA522_0200MFL	3300				24	1.8	28.0
					PA522_0200MFLC	5000						
25.00	210	300	600	≤4	P522_0250MT	3700	6500	24		1.5	28.1	
					P522_0250MTC	5000			1.8	28.0		
					P522_0250MTL	3700			32	3.7	28.1	
					P522_0250MTLC	5000				2.7	28.1	
				≤2	PA522_0250MF	3700		24	1.8	28.0		
					PA522_0250MFC	5000			32	4.9	28.1	
					PA522_0250MFL	3700				24	1.8	28.0
					PA522_0250MFLC	5000						
28.00	210	300	600	≤4	P522_0280MT	4000	7000	24		1.3	26.8	
					P522_0280MTC	5500			1.7	26.7		
					P522_0280MTL	4000			32	3.6	26.8	
					P522_0280MTLC	5500				2.6	26.7	
				≤2	PA522_0280MF	4000		24	1.6	26.7		
					PA522_0280MFC	5500			32	4.8	26.7	
					PA522_0280MFL	4000				24	1.6	26.7
					PA522_0280MFLC	5500						
32.00	200	250	500	≤4	P522_0320MT	3300	6000	24		1.5	25.1	
					P522_0320MTC	5000			1.9			
					P522_0320MTL	3300			32	3.8		
					P522_0320MTLC	5000				2.8		
				≤2	PA522_0320MF	3300		24	1.9			
					PA522_0320MFC	5000			32	5.0		
					PA522_0320MFL	3300				24		1.9
					PA522_0320MFLC	5000						

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

P/PA5 (continued next page)

35.00	210	300	600	≤4	P522_0350MT	4000	7000	24	1.3	27.7		
					P522_0350MTC	5500			1.7			
					P522_0350MTL	4000			32		3.6	
					P522_0350MTLC	5500					2.6	
				≤2	PA522_0350MF	4000		24	1.6	27.6		
					PA522_0350MFC	5500						
					PA522_0350MFL	4000			32		4.8	
					PA522_0350MFLC	5500						
40.00	210	300	600	≤4	P522_0400MT	4000	7000	24	1.3	26.2		
					P522_0400MTC	5500			1.6			
					P522_0400MTL	4000			32		3.5	
					P522_0400MTLC	5500					2.5	
				≤2	PA522_0400MF	4000		24	1.6		27.7	
					PA522_0400MFC	5500						
					PA522_0400MFL	4000			32			4.8
					PA522_0400MFLC	5500						
50.00	210	300	600	≤4	P522_0500MT	4000	7000	24	1.3	27.3		
					P522_0500MTC	5500			1.6			
					P522_0500MTL	4000			32		3.5	
					P522_0500MTLC	5500					2.5	
				≤2	PA522_0500MF	4000		24	1.6		27.7	
					PA522_0500MFC	5500						
					PA522_0500MFL	4000			32			4.8
					PA522_0500MFLC	5500						
56.00	200	250	500	≤4	P522_0560MT	4000	7000	24	1.3	25.1		
					P522_0560MTC	5500			1.7			
					P522_0560MTL	4000			32		3.6	
					P522_0560MTLC	5500					2.6	
				≤2	PA522_0560MF	4000		24	1.6		27.7	
					PA522_0560MFC	5500						
					PA522_0560MFL	4000			32			4.8
					PA522_0560MFLC	5500						

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA5 (continued from previous page)

70.00	210	270	600	≤4	P522_0700MT	4000	7000	24	1.3	26.3
					P522_0700MTC	5500			1.6	
					P522_0700MTL	4000		32	3.5	
					P522_0700MTLC	5500			2.5	
				≤2	PA522_0700MF	4000		24	1.6	
					PA522_0700MFC	5500			32	
					PA522_0700MFL	4000		32		
					PA522_0700MFLC	5500				
80.00	200	250	500	≤4	P522_0800MT	4000	7000	24	1.3	25.1
					P522_0800MTC	5500			1.6	
					P522_0800MTL	4000		32	3.5	
					P522_0800MTLC	5500			2.5	
				≤2	PA522_0800MF	4000		24	1.6	
					PA522_0800MFC	5500			32	
					PA522_0800MFL	4000		32		
					PA522_0800MFLC	5500				
100.0	140	250	500	≤4	P522_1000MT	4000	7000	24	1.3	24.3
					P522_1000MTC	5500			1.6	
					P522_1000MTL	4000		32	3.5	
					P522_1000MTLC	5500			2.5	
				≤2	PA522_1000MF	4000		24	1.6	
					PA522_1000MFC	5500			32	
					PA522_1000MFL	4000		32		
					PA522_1000MFLC	5500				

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P/PA7 (continued next page)

3.000	280	431	538	≤3	P721_0030MT	2200	3700	38	14.8	64.5		
					P721_0030MTC	3400	6000		23.2	54.7		
					500	1036	P721_0030MTL	2200	3700	48	32.7	64.5
							P721_0030MTLC	3400	6000		25.4	58.8
		1001	≤1	PA721_0030MF	2200	3700	38	20.2	54.7			
				PA721_0030MFC	3400	6000		39.1	58.8			
				1036	PA721_0030MFL	2200	3700	48	39.1	58.8		
					PA721_0030MFLC	3400	6000					
4.000	440	700	1381	≤3	P721_0040MT	2500	4500	38	10.1	60.0		
					P721_0040MTC	3600	6000		18.5	54.9		
					1335	≤1	P721_0040MTL	2500	4500	48	27.9	60.0
							P721_0040MTLC	3600	6000		20.7	57.1
				1381	PA721_0040MF	2500	4500	38	15.5	54.9		
					PA721_0040MFC	3600	6000		34.4	57.1		
					1381	PA721_0040MFL	2500	4500	48	34.4	57.1	
						PA721_0040MFLC	3600	6000				
5.000	440	700	1400	≤3	P721_0050MT	3000	5500	38	8.6	57.5		
					P721_0050MTC	4200	6000		17.0	54.4		
					1400	≤1	P721_0050MTL	3000	5500	48	26.4	57.5
							P721_0050MTLC	4200	6000		19.1	55.8
				1400	PA721_0050MF	3000	5500	38	14.0	54.4		
					PA721_0050MFC	4200	6000		32.8	55.8		
					1400	PA721_0050MFL	3000	5500	48	32.8	55.8	
						PA721_0050MFLC	4200	6000				
7.000	440	650	1254	≤3	P721_0070MT	3300	6000	38	7.6	55.0		
					P721_0070MTC	4700			15.7	53.1		
					1254	≤1		P721_0070MTL	3300	48	25.9	55.0
								P721_0070MTLC	4700		16.0	54.0
				1254	PA721_0070MF	3300		38	12.7	53.1		
					PA721_0070MFC	4700			31.8	54.0		
					1254	PA721_0070MFL		3300	48	31.8	54.0	
						PA721_0070MFLC		4700				

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P/PA7 (continued next page)

8.000	400	500	1000	≤3	P721_0080MT	3300	6000	38	7.3	53.0	
					P721_0080MTC	5000			15.4	51.7	
					P721_0080MTL	3300			48	25.6	53.0
					P721_0080MTLC	5000				15.8	52.3
				≤1	PA721_0080MF	3300		38	12.4	51.7	
					PA721_0080MFC	5000			48	31.6	52.3
					PA721_0080MFL	3300					
					PA721_0080MFLC	5000					
10.00	300	500	1000	≤3	P721_0100MT	3300	6000	38	7.0	49.5	
					P721_0100MTC	5500			15.2	48.7	
					P721_0100MTL	3300			48	25.3	49.5
					P721_0100MTLC	5500				15.5	49.1
				≤1	PA721_0100MF	3300		38	12.2	48.7	
					PA721_0100MFC	5500			48	31.3	49.1
					PA721_0100MFL	3300					
					PA721_0100MFLC	5500					
12.00	280	500	1005	≤4	P722_0120MT	2500	5000	32	4.9	52.7	
			1036		P722_0120MTC	4000	6000		6.2	51.9	
					P722_0120MTL	2500	5000		38	8.0	52.7
					P722_0120MTLC	4000	6000			52.3	
				≤2	PA722_0120MF	3000	5000	32	6.2	51.9	
			PA722_0120MFC		4000	6000	38		13.1	52.3	
			PA722_0120MFL		3000	5000					
			PA722_0120MFLC		4000	6000					
16.00	440	700	1340	≤4	P722_0160MT	3000	5000	32	4.6	53.7	
			1381		P722_0160MTC	4500	6000		5.9	53.2	
					P722_0160MTL	3000	5000		38	7.7	53.7
					P722_0160MTLC	4500	6000			53.4	
				≤2	PA722_0160MF	3000	5000	32	5.9	53.2	
			PA722_0160MFC		4500	6000	38		12.8	53.4	
			PA722_0160MFL		3000	5000					
			PA722_0160MFLC		4500	6000					

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P/PA7 (continued next page)

20.00	440	700	1400	≤4	P722_0200MT	3000	5000	32	4.5	53.7
					P722_0200MTC	4500	6000			
					P722_0200MTL	3000	5000	38	7.6	53.7
					P722_0200MTLC	4500	6000			
				≤2	PA722_0200MF	3000	5000	32	5.8	53.3
					PA722_0200MFC	4500	6000			
					PA722_0200MFL	3000	5000	38	12.7	53.5
					PA722_0200MFLC	4500	6000			
25.00	440	700	1400	≤4	P722_0250MT	3500	6000	32	4.1	53.5
					P722_0250MTC	5000				
					P722_0250MTL	3500		38	7.2	53.5
					P722_0250MTLC	5000				
				≤2	PA722_0250MF	3500		32	5.4	53.3
					PA722_0250MFC	5000				
					PA722_0250MFL	3500		38	12.3	53.4
					PA722_0250MFLC	5000				
28.00	440	700	1381	≤4	P722_0280MT	3700	6500	32	3.8	52.9
					P722_0280MTC	5000				
					P722_0280MTL	3700		38	6.9	52.9
					P722_0280MTLC	5000				
				≤2	PA722_0280MF	3700		32	5.1	52.7
					PA722_0280MFC	5000				
					PA722_0280MFL	3700		38	12.0	52.8
					PA722_0280MFLC	5000				
32.00	400	500	1000	≤4	P722_0320MT	3000	5000	32	4.5	51.7
					P722_0320MTC	4500				
					P722_0320MTL	3000		38	7.5	51.7
					P722_0320MTLC	4500				
				≤2	PA722_0320MF	3000		32	5.7	51.5
					PA722_0320MFC	4500				
					PA722_0320MFL	3000		38	12.6	51.6
					PA722_0320MFLC	4500				

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA7 (continued next page)

35.00	440	700	1400	≤4	P722_0350MT	3700	6500	32	3.8	53.1	
					P722_0350MTC	5000			5.0	53.0	
					P722_0350MTL	3700			38	6.9	53.1
					P722_0350MTLC	5000				6.7	
				≤2	PA722_0350MF	3700		32	5.0	53.0	
					PA722_0350MFC	5000			38	12.0	53.1
					PA722_0350MFL	3700					
					PA722_0350MFLC	5000					
40.00	440	700	1381	≤4	P722_0400MT	3700	6500	32		3.7	
					P722_0400MTC	5500			4.9	52.1	
					P722_0400MTL	3700			38	6.7	52.2
					P722_0400MTLC	5500				6.6	
				≤2	PA722_0400MF	3700		32	4.9	52.1	
					PA722_0400MFC	5500			38		11.8
					PA722_0400MFL	3700					
					PA722_0400MFLC	5500					
50.00	440	700	1400	≤4	P722_0500MT	3700	6500	32		3.6	52.7
					P722_0500MTC	5500			4.9	52.6	
					P722_0500MTL	3700			38	6.7	52.7
					P722_0500MTLC	5500				6.6	
				≤2	PA722_0500MF	3700		32	4.9	52.6	
					PA722_0500MFC	5500			38		11.8
					PA722_0500MFL	3700					
					PA722_0500MFLC	5500					
56.00	400	500	1000	≤4	P722_0560MT	3700	6500	32		3.8	51.7
					P722_0560MTC				5.0	51.6	
					P722_0560MTL				38	6.8	51.7
					P722_0560MTLC					6.7	
				≤2	PA722_0560MF	5000		32	5.0	51.6	
					PA722_0560MFC				38		11.9
					PA722_0560MFL						3700
					PA722_0560MFLC						5000

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

P/PA7 (continued from previous page)

70.00	440	650	1254	≤4	P722_0700MT	3700	6500	32	3.6	52.6	
					P722_0700MTC	5500			4.9		
					P722_0700MTL	3700			38		6.7
					P722_0700MTLC	5500					6.6
				≤2	PA722_0700MF	3700		32	4.9		
					PA722_0700MFC	5500			38		11.8
					PA722_0700MFL	3700					
					PA722_0700MFLC	5500					
80.00	400	500	1000	≤4	P722_0800MT	3700	6500	32	3.6	51.7	
					P722_0800MTC	5500			4.9	51.6	
					P722_0800MTL	3700			38	6.7	51.7
					P722_0800MTLC	5500				6.6	
				≤2	PA722_0800MF	3700		32	4.9	51.6	
					PA722_0800MFC	5500			38	11.8	
					PA722_0800MFL	3700					
					PA722_0800MFLC	5500					
100.0	300	500	1000	≤4	P722_1000MT	3700	6500	32	3.6	48.5	
					P722_1000MTC	5500			4.9		
					P722_1000MTL	3700			38		6.7
					P722_1000MTLC	5500					6.6
				≤2	PA722_1000MF	3700		32	4.9		
					PA722_1000MFC	5500			38		11.8
					PA722_1000MFL	3700					
					PA722_1000MFLC	5500					

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt[®] coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA8 (continued next page)

3.000	800	1200	1756	≤3	P821_0030MT	1800	3000	48	64.6	220.0
					P821_0030MTC	3000	4500		70.2	165.4
					P821_0030MTL	1800	3000	60	92.6	220.0
					P821_0030MTLC	3000	4500			201.7
				≤1	PA821_0030MF	1800	3000	48	71.0	165.4
					PA821_0030MFC	3000	4500			
4.000	800	1600	2332	≤3	P821_0040MT	2200	3500	48	41.2	205.0
					P821_0040MTC	3200	5000		46.3	174.7
					P821_0040MTL	2200	3500	60	68.7	205.0
					P821_0040MTLC	3200	5000			195.7
				≤1	PA821_0040MF	2200	3500	48	47.1	174.7
					PA821_0040MFC	3200	5000			
5.000	1000	1600	2899	≤3	P821_0050MT	2500	4000	48	33.9	194.0
					P821_0050MTC	3750	6000		39.5	175.6
					P821_0050MTL	2500	4000	60	61.9	194.0
					P821_0050MTLC	3750	6000			188.6
				≤1	PA821_0050MF	2500	4000	48	40.3	175.6
					PA821_0050MFC	3750	6000			
7.000	1000	1400	2801	≤3	P821_0070MT	2800	4500	48	29.2	176.5
					P821_0070MTC	4500	6000		34.9	167.0
					P821_0070MTL	2800	4500	60	57.2	176.5
					PA821_0070MF					
				≤1	PA821_0070MFC	4500	6000	48	35.6	167.0
8.000	800	1200	2400	≤3	P821_0080MT	2800	4500	48	28.0	166.2
					P821_0080MTC	5000	6000		33.6	159.6
					P821_0080MTL	2800	4500	60	56.0	166.2
					PA821_0080MF					
				≤1	PA821_0080MFC	5000	6000	48	34.4	159.6
10.00	700	1200	2400	≤3	P821_0100MT	2800	4500	48	26.8	153.0
					P821_0100MTC	5500	6000		32.4	149.4
					P821_0100MTL	2800	4500	60	54.8	153.0
					PA821_0100MF					
				≤1	PA821_0100MFC	5500	6000	48	33.2	149.4

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)

P/PA Series: INLINE — Shaft Output



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P/PA8 (continued next page)

12.00	800	1200	2089	≤4	P822_0120MT	2200	4500	38	12.1	156.3
					P822_0120MTC	3300	5000		20.6	152.2
					P822_0120MTL	2200	4500	48	30.0	156.3
					P822_0120MTLC	3300	5000		22.7	154.1
			2396	≤2	PA822_0120MF	2500	4500	38	17.6	152.2
					PA822_0120MFC	3300	5000		36.4	154.1
					PA822_0120MFL	2500	4500	48	36.4	154.1
					PA822_0120MFLC	3300	5000			
16.00	800	1600	3178	≤4	P822_0160MT	2500	4500	38	10.6	168.9
					P822_0160MTC	3400	6000		19.1	166.2
					P822_0160MTL	2500	4500	48	28.5	168.9
					P822_0160MTLC	3400	6000		21.2	167.4
			3178	≤2	PA822_0160MF	2500	4500	38	16.1	166.2
					PA822_0160MFC	3400	6000		34.9	167.4
					PA822_0160MFL	2500	4500	48	34.9	167.4
					PA822_0160MFLC	3400	6000			
20.00	1000	1600	3200	≤4	P822_0200MT	2500	4500	38	10.2	171.8
					P822_0200MTC	3600	6000		18.7	170.0
					P822_0200MTL	2500	4500	48	28.1	171.8
					P822_0200MTLC	3600	6000		20.8	170.8
			3200	≤2	PA822_0200MF	2500	4500	38	15.7	170.0
					PA822_0200MFC	3600	6000		34.5	170.8
					PA822_0200MFL	2500	4500	48	34.5	170.8
					PA822_0200MFLC	3600	6000			
25.00	1000	1600	3200	≤4	P822_0250MT	3000	5500	38	8.8	170.9
					P822_0250MTC	4000	6000		17.3	169.8
					P822_0250MTL	3000	5500	48	26.7	170.9
					P822_0250MTLC	4000	6000		19.4	170.3
			3200	≤2	PA822_0250MF	3000	5500	38	14.3	169.8
					PA822_0250MFC	4000	6000		33.1	170.3
					PA822_0250MFL	3000	5500	48	33.1	170.3
					PA822_0250MFLC	4000	6000			

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

P/PA8 (continued next page)

28.00	800	1600	3178	≤4	P822_0280MT	3300	6000	38	7.8	166.3	
					P822_0280MTC	4500			15.9	165.2	
					P822_0280MTL	3300			48	26.1	166.3
					P822_0280MTLC	4500				16.3	165.7
				≤2	PA822_0280MF	3300		38	12.9	165.2	
					PA822_0280MFC	4500			48	32.1	165.7
					PA822_0280MFL	3300					
					PA822_0280MFLC	4500					
32.00	800	1200	2400	≤4	P822_0320MT	2500	4500	38	9.9	159.3	
					P822_0320MTC	3600	6000		18.3	158.7	
					P822_0320MTL	2500	4500		48	27.7	159.3
					P822_0320MTLC	3600	6000			20.4	159.0
				≤2	PA822_0320MF	2500	4500	38	15.3	158.7	
					PA822_0320MFC	3600	6000		48	34.1	159.0
					PA822_0320MFL	2500	4500				
					PA822_0320MFLC	3600	6000				
35.00	1000	1600	3200	≤4	P822_0350MT	3300	6000	38	7.7	170.0	
					P822_0350MTC	4500			15.8	169.3	
					P822_0350MTL	3300			48	26.0	170.0
					P822_0350MTLC	4500				16.1	169.6
				≤2	PA822_0350MF	3300		38	12.8	169.3	
					PA822_0350MFC	4500			48	31.9	169.6
					PA822_0350MFL	3300					
					PA822_0350MFLC	4500					
40.00	800	1600	3178	≤4	P822_0400MT	3300	6000	38	7.2	162.8	
					P822_0400MTC	5000			15.3	162.3	
					P822_0400MTL	3300			48	25.5	162.8
					P822_0400MTLC	5000				15.6	162.6
				≤2	PA822_0400MF	3300		38	12.3	162.3	
					PA822_0400MFC	5000			48	31.4	162.6
					PA822_0400MFL	3300					
					PA822_0400MFLC	5000					

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P/PA8 (continued next page)

50.00	1000	1600	3200	≤4	P822_0500MT	3300	6000	38	7.1	167.7	
					P822_0500MTC	5000			15.2	167.4	
					P822_0500MTL	3300			48	25.4	167.7
					P822_0500MTLC	5000				15.6	167.5
				≤2	PA822_0500MF	3300		38	12.2	167.4	
					PA822_0500MFC	5000			48	31.4	167.5
					PA822_0500MFL	3300					
					PA822_0500MFLC	5000					
56.00	800	1200	2400	≤4	P822_0560MT	3300	6000	38	7.7	159.3	
					P822_0560MTC	4700			15.8	159.1	
					P822_0560MTL	3300			48	26.0	159.3
					P822_0560MTLC	4700				16.1	159.2
				≤2	PA822_0560MF	3300		38	12.8	159.1	
					PA822_0560MFC	4500			48	31.9	159.2
					PA822_0560MFL	3300					
					PA822_0560MFLC	4500					
70.00	1000	1400	2801	≤4	P822_0700MT	3300	6000	38	7.1	164.5	
					P822_0700MTC	5000			15.2	164.4	
					P822_0700MTL	3300			48	25.4	164.5
					P822_0700MTLC	5000				15.5	164.4
				≤2	PA822_0700MF	3300		38	12.2		
					PA822_0700MFC	5000			48	31.3	
					PA822_0700MFL	3300					
					PA822_0700MFLC	5000					

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt[®] coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P/PA8 (continued from previous page)

80.00	800	1200	2400	≤4	P822_0800MT	3300	6000	38	7.0	159.3	
					P822_0800MTC	5000			15.2	159.2	
					P822_0800MTL	3300			48	25.3	159.3
					P822_0800MTLC	5000				15.5	159.2
				≤2	PA822_0800MF	3300		38	12.2	159.2	
					PA822_0800MFC	5000			48		
					PA822_0800MFL	3300		48			
					PA822_0800MFLC	5000					
100.0	700	1200	2400	≤4	P822_1000MT	3300	6000	38	7.0	148.4	
					P822_1000MTC	5000			15.1	148.3	
					P822_1000MTL	3300			48	25.3	148.4
					P822_1000MTLC	5000				15.5	148.3
				≤2	PA822_1000MF	3300		38	12.1	148.3	
					PA822_1000MFC	5000			48		
					PA822_1000MFL	3300		48			
					PA822_1000MFLC	5000					

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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P/PA Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P9 (continued next page)

4.000	2000	3000	5526	≤3	P921_0040MT	2000	3000	60	98.2	380.0
					P921_0040MTC	3000	4500		93.6	349.3
5.000	2000	3000	6000	≤3	P921_0050MT	2200	3500	60	80.4	360.0
					P921_0050MTC	3500	5000		75.8	341.8
7.000	2000	2700	5399	≤3	P921_0070MT	2500	4000	60	67.1	330.0
					P921_0070MTC	4000	5000		62.5	322.0
10.00	1400	2000	4000	≤3	P921_0100MT	2500	4000	60	59.5	260.0
					P921_0100MTC	4000	5000		54.8	257.5
16.00	2000	3000	5526	≤4	P922_0160MT	2200	3500	48	41.7	340.5
					P922_0160MTC	3200	5000		47.3	334.5
					P922_0160MTL	2200	3500	60	69.7	340.5
					P922_0160MTLC	3200	5000			338.9
20.00	2000	3000	6000	≤4	P922_0200MT	2200	3500	48	41.0	336.4
					P922_0200MTC	3200	5000		46.2	332.6
					P922_0200MTL	2200	3500	60	68.6	336.4
					P922_0200MTLC	3200	5000			335.3
25.00	2000	3000	6000	≤4	P922_0250MT	2500	4000	48	34.3	335.1
					P922_0250MTC	3750	6000		39.9	332.7
					P922_0250MTL	2500	4000	60	62.3	335.1
					P922_0250MTLC	3750	6000			334.5
28.00	2000	3000	5526	≤4	P922_0280MT	2800	4500	48	29.8	334.9
					P922_0280MTC	4000	5000		35.4	332.7
					P922_0280MTL	2800	4500	60	57.8	334.9
35.00	2000	3000	6000	≤4	P922_0350MT	2800	4500	48	29.4	332.8
					P922_0350MTC	4000	6000		35.1	331.4
					P922_0350MTL	2800	4500	60	57.5	332.8

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All P Series and PA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

P9 (continued from previous page)

40.00	2000	3000	5526	≤4	P922_0400MT	2800	4500	48	26.8	328.9
					P922_0400MTC	4500	6000		32.4	327.9
					P922_0400MTL	2800	4500	60	54.8	328.9
50.00	2000	3000	6000	≤4	P922_0500MT	2800	4500	48	26.6	329.0
					P922_0500MTC	4500	6000		32.2	328.3
					P922_0500MTL	2800	4500	60	54.6	329.0
70.00	2000	2700	5399	≤4	P922_0700MT	2800	4500	48	26.5	316.1
					P922_0700MTC	4500	6000		32.1	315.8
					P922_0700MTL	2800	4500	60	54.5	316.1
100.0	1400	2000	4000	≤4	P922_1000MT	2800	4500	48	26.4	255.7
					P922_1000MTC	4500	6000		32.0	255.6
					P922_1000MTL	2800	4500	60	54.4	255.7

P/PA Series: INLINE — Shaft Output

¹⁾ Based on input speed of 2000 RPM. See page 16 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

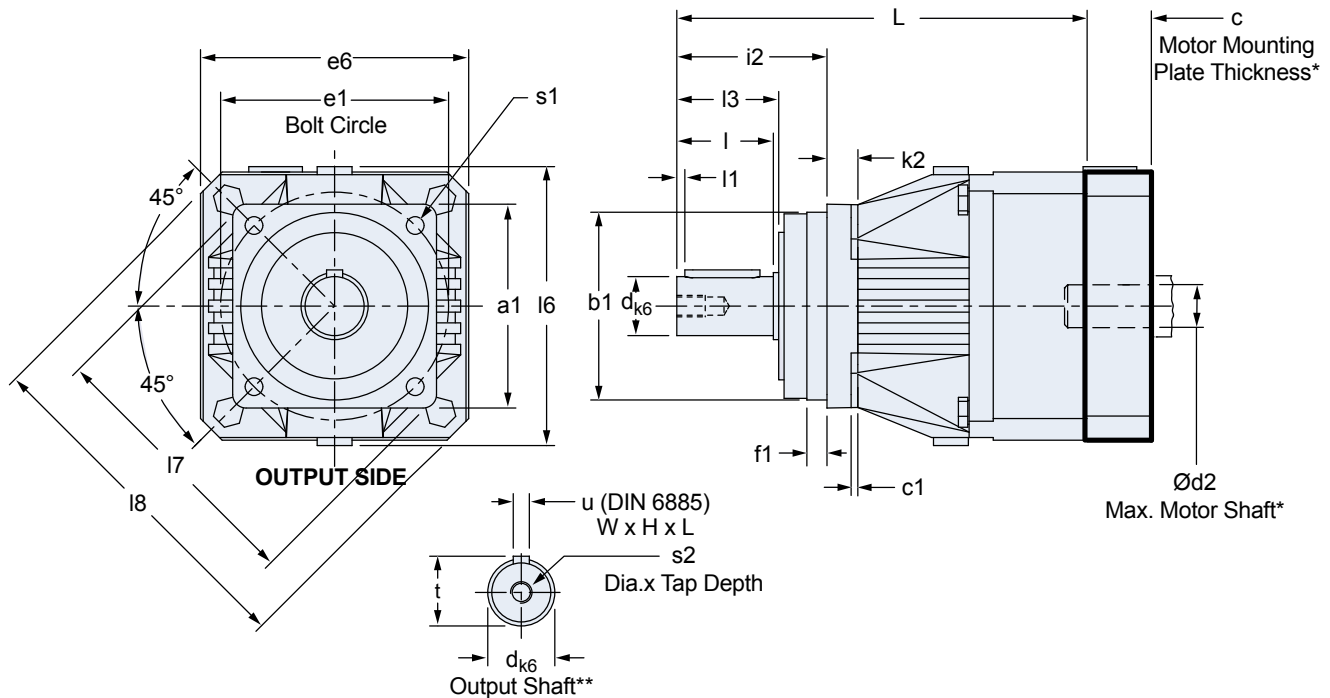
⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling MT = Motor Adapter L = Large Input C = ServoCool

** Designates select PA units available in stock for next day shipping (all P units are in stock for next day shipping)

P/PA Series: INLINE – Shaft Output

Standard Input ServoCool Input Option



* See Motor Mounting Plate Option, page 17 for details.
 ** See Output Shaft Options, page 17 for details.

Table 1 Dimensions (mm)

Unit	a1	b1	h6	c1	d	k6	e1	e6	f1	i2
P2	55	50	+0.000/-0.019	6	12	+0.012/+0.001	63	55	7	36
P/PA3	72	60	+0.000/-0.019	7	16	+0.012/+0.001	75	72	7.5	48
P/PA4	76	70	+0.000/-0.019	9	22	+0.015/+0.002	85	98	7.5	56
P/PA5	101	90	+0.000/-0.022	10	32	+0.018/+0.002	120	115	15	88
P/PA7	145	130	+0.000/-0.025	15	40	+0.018/+0.002	165	145	3.5	112
P/PA8	190	160	+0.000/-0.025	15	55	+0.021/+0.002	215	190	10	112
P9	212	180	+0.000/-0.025	17	75	+0.021/+0.002	250	225	10	143

Table 2 Dimensions (mm)

Unit	k2	l	l1	l3	l6	l7	l8	s1	s2	t	u
P2	—	22	2	24	62	74	80	5.5	M4x10	13.5	A4x4x18
P/PA3	—	28	2	30	79	92	92	5.5	M5x12.5	18	A5x5x22
P/PA4	12	36	3	38	98	103.3	130	6.6	M8x19	24.5	A6x6x28
P/PA5	14	58	3	60	121	139	149	9	M12x28	35	A10x8x50
P/PA7	—	82	4	85	145	—	190	11	M16x36	43	A12x8x70
P/PA8	—	82	6	85	190	—	250	13.5	M20x42	59	A16x10x70
P9	22	105	7	109	225	285	300	17.5	M20x42	79.5	A20x12x90

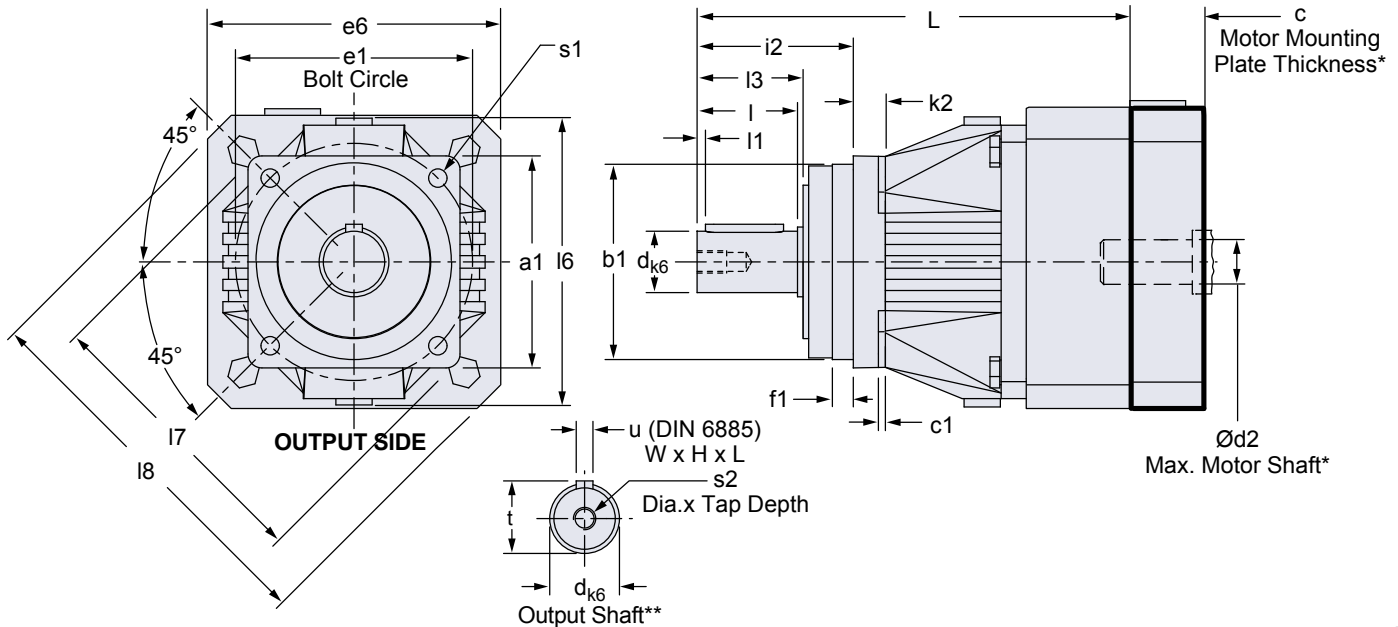
Table 3 Dimensions (mm)

	L	
	Standard	ServoCool
P221	94.5	—
P222	126.5	—
P/PA321	135	—
P/PA322	158.5	—
P/PA421	153	P/PA421_C 176.5
P/PA422	200.5	—
P/PA521	193	P/PA521_C 221
P/PA522	242.5	P/PA522_C 266
P/PA721	242	P/PA721_C 272
P/PA722	294	P/PA722_C 322
P/PA821	283	P/PA821_C 331
P/PA822	350.5	P/PA822_C 380.5
P921	353	P921_C 418
P922	441	P922_C 489



Dimensional Data

Large Input Option



P/PA Series: INLINE — Shaft Output

* See Motor Mounting Plate Option, page 17 for details.
 ** See Output Shaft Options, page 17 for details.

Table 1 Dimensions (mm)

Unit	a1	b1	h6	c1	d	k6	e1	f1	i2
P2_L	55	50	+0.000/-0.019	6	12	+0.012/+0.001	63	7	36
P/PA3_L	72	60	+0.000/-0.019	7	16	+0.012/+0.001	75	7.5	48
P/PA4_L	76	70	+0.000/-0.019	9	22	+0.015/+0.002	85	7.5	56
P/PA5_L	101	90	+0.000/-0.022	10	32	+0.018/+0.002	120	15	88
P/PA7_L	145	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	112
P/PA8_L	190	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	112
P9_L	212	180	+0.000/-0.025	17	75	+0.021/+0.002	250	10	143

Table 3 Dimensions (mm)

Size	e6	L	l8
P221_L	75	111	100
P222_L	75	143	100
P/PA321_L	100	138.3	130
P322_L	75	175	100
P/PA421_L	115	161.5	149
P/PA422_L	100	203.8	130
P/PA521_L	145	207	188
P/PA522_L	115	251	149
P/PA721_L	190	259	250
P/PA722_L	145	308	188
P821_L	225	291	300
P/PA822_L	190	367.5	250
P922_L	225	449	300

Table 2 Dimensions (mm)

Unit	k2	l	l1	l3	l6	l7	s1	s2	t	u
P2_L	—	22	2	24	92	74	5.5	M4x10	13.5	A4x4x18
P/PA3_L	—	28	2	30	130	92	5.5	M5x12.5	18	A5x5x22
P/PA4_L	12	36	3	38	149	103.3	6.6	M8x19	24.5	A6x6x28
P/PA5_L	14	58	3	60	190	139	9	M12x28	35	A10x8x50
P/PA7_L	—	82	4	85	250	—	11	M16x36	43	A12x8x70
P/PA8_L	—	82	6	85	190	—	13.5	M20x42	59	A16x10x70
P9_L	22	105	7	109	225	285	17.5	M20x42	79.5	A20x12x90



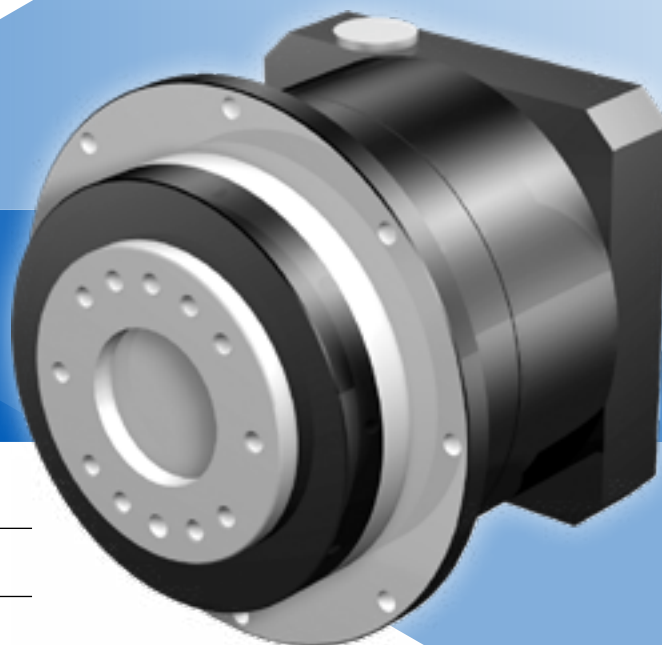
PH Series (A, Q, QA): INLINE — Flange Output

Features

- 4:1 to 600:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (As low as 60 dB(A))
- High load capacity and tilting rigidity through symmetrical bearing arrangement
- FKM seals for extended gearbox life
- Large motor input option to accept bigger diameter motor shafts so you don't use an oversized gearbox
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Low no load running torque, giving you more torque for your application
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

STÖBER PH Series ServoFit® Precision Planetary Gearheads are designed for applications that demand torsional stiffness and tilting rigidity. The advanced lines can handle high accuracy machines. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.

**All PH & PHQ Series
and select PHA Series
SHIP in 1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE



General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <90°C Max]
Backlash	≤1 arcmins (see performance overview page 50)
Coating	Black (RAL 790-4)
Degree of Protection	IP65
Direction of Rotation	Input and output rotate the SAME direction
Efficiency	1 stage 96%; 2 stage 93%; 3 stage 90%
Input RPM	Up to 8,000 RPM
Installation	Requires 12.9 fasteners. See page 328 for more information
Lubrication	Lubricated for life – standard Mobil SHC629; option food grade Mobil SHC CIBUS 150
Mounting Position	Unrestricted except PHQ/PHQA three stage units, see page 51
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

Comparative Advantages

	PH	PHA	PHQ	PHQA
Precision	Better	Best	Better	Best
Smoothness (low velocity ripple)	Better	Best	Better	Best
Uniformity of motion through full temperature range	Better	Best	Better	Best
Stiffness	Better	Best	Better	Best
Torque density	Better	Better	Best	Best





Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the PH Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples:

①	PH	② 3	③ 2	④ 1	⑤ F	⑥ 0050	⑦ MT	⑧ C	
	PHA	3	2	1	F	0050	MF		
	PHQ	9	3	3	F	0720	MT		EL1 *
	PHQA	4	2	1	F	0055	MF	L	

Design Option	Part Number Code	Description
① Series	PH	Rotating flange output planetary
	PHV	Rotating flange output planetary — 3 Stage (size 9-10 only)
	PHA	Rotating flange output advanced planetary
	PHVA	Rotating flange output advanced planetary — 3 Stage (size 9-10 only)
	PHQ	Rotating flange output with Quattro power planetary
	PHQA	Rotating flange output with advanced Quattro power planetary
② Size	3 4 5 7	8 sizes of gearhead (size 3: PH/PHA only; size 11: PHQ only)
	8 9 10 11	
③ Generation	2 3	Version of gearhead (size 3-8 are version 2; size 9-11 are version 3)
④ # of Stages	1	One stage for ratios of $\leq 10:1$
	2	Two stage for ratios $>10:1$
	3	Three stage (PHV/PHVA: Size 9-10; PHQ/PHQA: Size 7-11)
⑤ Housing	F	Flange output
⑥ Ratio	0040	Ratios range from 4:1 to 600:1 (0040=4:1; 0160=16:1; 1000=100:1, etc.)
⑦ Motor Adapter	MT	For PH/PHQ only – See motor mounting plate option page 52
	MF	For PHA/PHQA only – See motor mounting plate option page 52
	ME	PHQA size 10 only
⑧ Options	L	Large Input
	C	ServoCool (PH/PHA only)

*Required mounting position special instruction for three stage units only, see page 51

PH Series (A, Q, QA): INLINE — Flange Output

Options

ServoCool

- Used when a higher input speed is required or when improved performance and longer life is needed
- Reduces operating temperatures; helpful for applications with high ambient temperature
- Ideal for large planetary or units with small ratios

Large Input

Accommodates a larger diameter motor shaft without going to a larger size gearbox

ATEX

ATMosphere EXplosible — Please contact factory for this option and allow additional time for delivery

Coating Option

Available with a multi-layer, industrial 316 stainless steel epoxy coating (contact factory)

Rack and Pinion Systems

PH available with rack and pinion. Contact STÖBER Drives.



Right Angle Configuration

The PHQA is available as a right angle drive. Contact STÖBER Drives for details



PH Series (A, Q, QA): INLINE — Flange Output

PH Performance Overview

PH Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

		Size		3				4				5			
		Series		PH/PHA		PH/PHA		PHQ/PHQA		PH/PHA		PHQ/PHQA			
		# of Stages		1	2	1	2	1	2	1	2	1	2		
Acceleration Torque M_{2BMAX}	Nm			65		130		170		320		430			
Output Torque Nom. ¹ M_{2N}	Nm			45		90		120		220		280			
Torsional Stiffness C_2	Nm/arcmin			≤15		≤35		≤39		≤85		≤99			
Torsional Backlash ²⁾ $\Delta\phi$	arcmin	PH/PHQ		≤4		≤3		≤3		≤3		≤3			
		PHA/PHQA		≤2		≤1		≤1		≤1		≤1			
Input Speed Max. n_{1MAX}	Continuous	3800	4500	3500	4500	2000	4500	3300	4000	2500	4000				
	Cyclic	6000	8000	6000	8000	6000	8000	6000	7000	5000*	7000				
With ServoCool Option	Continuous	—	—	4500	—	—	—	4500	5000	—	—				
	Cyclic	—	—	6000	—	—	—	6000	7000	—	—				
Efficiency (@nom torque)	%	96	94	96	94	96	93	96	94	96	93				
Weight	kg	1.8	1.8	3.9	4.6	3.9	4.5	6.6	8.1	6.6	8.1				
	lbs	4	4	9	10	9	10	15	18	14.5	18				
Noise ³⁾	dB(A)	≤61		≤62		≤60		≤63		≤61					

Performance by Bearing Design Option⁴⁾

Axial Load Max. F_{2AMAX}	N	1650		2150				4150			
Tilting Moment Max. M_{2KMAX}	Nm	100		260				440			
Tilting Stiffness C_{2K}	Nm/arcmin	53		160				380			

* PHQ cyclic speed is 5000; PHQA is 5500

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

¹⁾ Ratings based on input speed (n_1) of 2000 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula:
where n_1 = Actual Input Speed.

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

⁴⁾ Rating based on output speed (n_2) of 100 RPM. For values at other speeds see page 54.



Overview

Note: Overview data is general. Actual data is dependent on case size and ratio

		7			8				9				10				11			
PH/PHA		PHQ/PHQA			PH/PHA		PHQ/PHQA		PH/PHA**		PHQ/PHQA		PH**		PHQ		PHQ			
1	2	1	2	3	1	2	2	3	2	3	2	3	2	3	2	3	2	3		
700		950			2000		2600		5000		6000		7500		10,000		22,000			
440		650			1250		1700		3000		3800		5000		6500		13,000			
≤167		≤213			≤553		≤649		≤1201		≤1220		≤1743		≤2063		≤3538			
≤3 ≤1		≤3 ≤1			≤3 ≤1		≤3 ≤1		≤3 ≤1		≤3 ≤1		≤3 ≤1		≤3 ≤1.5		≤3 —			
3000 5000	3700 6500	2200 5000	3700 6500	4000 7000	2500 4000	3300 6000	3300 6000	3700 6500	2800 4500	2500 4500	2800 4500	3300 6000	2800 4500	2500 4500	2500 4000	2800 4500	2300 3800	2800 4500		
4000 5000	4700 6500	—	—	—	3700 4500	4300 6000	—	—	4000 4500	3200 4500	—	—	4000 4500	3000 4500	—	—	—	—		
96	94	96	93	90	96	94	93	90	96	94	93	90	94	92	93	90	93	90		
12.3 27	14.6 32	12.9 28.4	16.3 36	17.1 38	34.6 76	39.8 88	43.6 96	44.3 98	75.2 166	66.6 147	85.6 189	88.9 196	90.6 200	90 198	118.2 261	132.7 293	242.2 534	242.2 534		
≤64		≤62			≤65		≤63		≤65		≤66		≤65		≤65		≤68			
6150					10,050					33,000					50,000				60,000	
1500					3500					7500					8800				11,000	
500					1550					7500					9500				11,500	

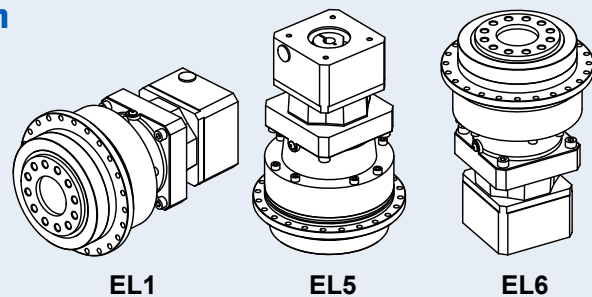
PH Series (A, Q, QA): INLINE — Flange Output

** Size 9 PH/PHA and 10 PH three stage units are designated with PHV or PHVA

PH Series Three-Stage Mounting Position

For all three stage units (PHQ/PHQA: Size 7-11), the amount of lubrication depends on the mounting position.

When ordering any of these three stage units, the mounting position (EL1, EL5 or EL6) **MUST BE SPECIFIED WITH THE ORDER!**



PH Series (A, Q, QA): INLINE — Flange Output

PH Series Motor Mounting Plate Option

(Motor information required with Motor Adapter MT option)

STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

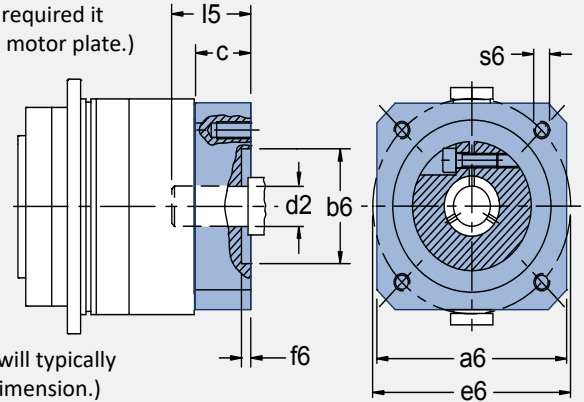
NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate

- d2 Motor Shaft Diameter
(If an adapter bushing is required it will be supplied with the motor plate.)
- b6 Pilot Diameter
- e6 Bolt Circle Diameter
- s6 Bolt Diameter
- l5 Motor Shaft Length
- f6 Pilot Length
(Optional – motor plate will typically be made to match this dimension.)
- a6 Square Flange
(Optional – motor plate will typically be made to match this dimension.)



Motor Mounting Plate Dimensions — mm (Part Number Specific)

d2 Max. Motor Shaft Ø	c Min. Motor Plate Thickness*	Series / Size / # of Stages																				
		3			4		5		7			8			9		10		11			
		1	2		1	2	1	2	1	2	3	1	2	3	2	3	2	3	2	3		
14	15	PH	322																			
		PHA	322																			
19	18	PH	321	322...L		422																
		PHA	321	322...L		422																
		PHQ				422																
		PHQA				422																
24	21	PH	321...L		421	422...L		522														
		PHA	321...L		421	422...L		522														
		PHQ			421	422...L		522			723											
		PHQA			421	422...L		522			723											
32	24	PH			421...L		521	522...L		722												
		PHA			421...L		521	522...L		722												
		PHQ			421...L		521	522...L		722	723...L			823								
		PHQA			421...L		521	522...L		722	723...L			823								
38	25	PH					521...L		721	722...L			822									
		PHA					521...L		721	722...L			822									
		PHV												933								
		PHVA												933								
		PHQ					521...L		721	722...L			822	823...L		933						
		PHQA					521...L		721	722...L			822	823...L		933						
48	33	PH										821		932		1032						
		PHA										821		932		1032						
		PHVA																				
		PHQ							721...L				822...L		932	933...L		1033			1133	
		PHQA							721...L				822...L		932	933...L						
60 ¹⁾	43	PHQ												932...L		1032	1033...L		1132	1133...L		
		PHQA												932...L								

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

¹⁾ Maximum motor shaft diameter is 55 mm for PHQ932...L with ratios above 30:1 and for PHQ1033...L and PHQ1133...L with ratios above 150:1.

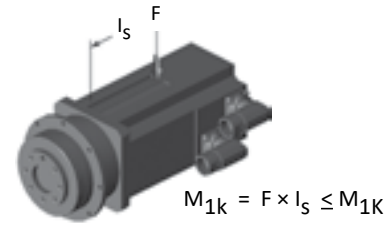


Overview

PH Series Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load "F" from the motor weight, mass acceleration, and vibration

multiplied by the distance from the center of gravity "I_s" of the motor.



M _{1K} Nm	Series / Size / # of Stages																		
	3			4		5		7			8			9		10		11	
	1	2	1	2	1	2	1	2	3	1	2	3	2	3	2	3	2	3	
10	PH	322																	
	PHA	322																	
20	PH	321		422															
	PHA	321		422															
	PHQ			422															
	PHQA			422															
40	PH			421		522													
	PHA			421		522													
	PHQ			421		522		723											
	PHQA			421		522		723											
80	PH					521		722											
	PHA					521		722											
	PHQ					521		722			823								
	PHQA					521		722			823								
200	PH							721			822								
	PHA							721			822								
	PHV												933						
	PHVA												933						
	PHQ							721			822			933					
	PHQA							721			822			933					
400	PH									821		932		1032					
	PHA									821		932		1032					
	PHV														1033				
	PHQ												932		1033		1133		
	PHQA												932		1033		1133		
800	PHQ													1032					
1000	PHQ																1132		

PH Series (A, Q, QA): INLINE — Flange Output

PH Series Permissible Output Shaft Load and Tilting Moments*

Size	Z ₂ mm	F _{2AMAX} N	F _{2R} N	F _{2RB} N	M _{2K} Nm	M _{2KB} Nm	C _{2K} Nm/arcmin
3	62	1650	1613	1613	100	100	53
4	84	2150	3095	3571	260	300	160
5	97	4150	4536	4897	440	475	380
7	88	6150	17,045	17,045	1500	1500	500
8	126	10,050	27,778	27,778	3500	3500	1550
9	155	33,000	48,387	70,968	7,500	11,000	7500
10	171	50,000	51,462	73,099	8,800	12,500	9500
11	231	60,000	47,619	60,606	11,000	14,000	9500

* Refer to illustration and definitions below.

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2R}, F_{2RB} and M_{2K} can be multiplied by a factor of 2.

PH Series (A, Q, QA): INLINE — Flange Output

PH Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

PH/PHA

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

PHQ/PHQA

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}} \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot M_{2kb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot M_{2kbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot F_{2rb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot F_{2rbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq F_{2R}$$

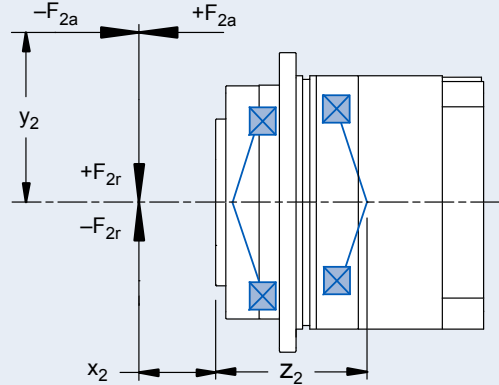
Where:

F_{2a} Axial Load at Output Shaft	M_{2K} Rated Tilting Torque
F_{2A} Permissible Axial Load	M_{2k} Equivalent Tilting Load
F_{2r} Radial Load at Output Shaft	M_{2KB} Acceleration Tilting Torque
F_{2R} Permissible Radial Load	z₂ Distance Factor
F_{2RB} Acceleration Permissible Radial Load	

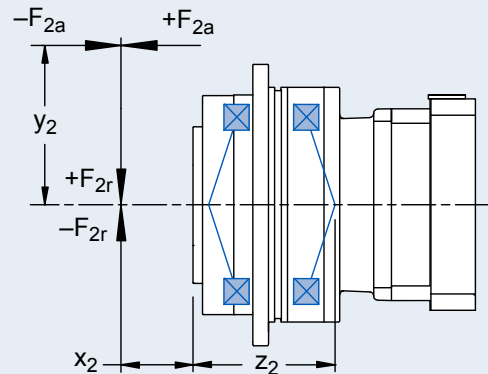
All formulas shown are based on METRIC values

Upper case letters are permissible values. Lower case letters are for existing values.

PH/PHA



PHQ/PHQA



The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle $\leq 40\%$

$$L_h > 10,000 \text{ hours if } M_{2k}/M_{2A} < 1.25 \text{ and } > 1$$

$$L_h > 20,000 \text{ hours if } M_{2k}/M_{2A} > 1.25 \text{ and } > 1.5$$

$$L_h > 30,000 \text{ hours if } M_{2k}/M_{2A} < 1.5$$

bearing life for duty cycle $\geq 40\%$

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH3 (continued next page)

5.000	45	65	130	≤4	PH321_0050MT	3000	6000	19	0.6	15.9	
					PH321_0050MTL			24	1.3		
				≤2	PHA321_0050MF			4000	19	0.6	13.9
					PHA321_0050MFL				24	1.6	15.2
					PHA321_0050MFLC				24	1.6	15.0
7.000	45	60	130	≤4	PH321_0070MT	3500	6000	19	0.6	14.1	
					PH321_0070MTL			24	1.3		
				≤2	PHA321_0070MF			4500	19	0.5	13.1
					PHA321_0070MFL				24	1.6	13.7
					PHA321_0070MFLC				24	1.6	13.7
10.00	30	50	100	≤4	PH321_0100MT	3800	6000	19	0.6	11.0	
					PH321_0100MTL			24	1.2		
				≤2	PHA321_0100MF			4500	19	0.5	10.7
					PHA321_0100MFL				24	1.6	10.9
					PHA321_0100MFLC				24	1.6	10.9
20.00	45	65	130	≤4	PH322_0200MT	4500	8000	14	0.1	14.7	
				PH322_0200MTL	19			0.6	14.9		
				PHA322_0200MF	14			0.1	14.7		
25.00	45	65	130	≤4	PH322_0250MT	4500	8000	14	0.1	14.8	
				PH322_0250MTL	19			0.6	14.9		
				PHA322_0250MF	14			0.1	14.8		
28.00	45	60	130	≤4	PH322_0280MT	4500	8000	14	0.1	14.8	
				PH322_0280MTL	19			0.6	14.9		
				PHA322_0280MF	14			0.1	14.8		
35.00	45	65	130	≤4	PH322_0350MT	4500	8000	14	0.1	14.6	
				PH322_0350MTL	19			0.6	14.7		
				PHA322_0350MF	14			0.1	14.6		
40.00	30	50	100	≤4	PH322_0400MT	4500	8000	14	0.1	12.5	
				PH322_0400MTL	19			0.6			
				PHA322_0400MF	14			0.1			

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic	mm	kgcm ²	Nm
	Nm	Nm	Nm							

PH3 (continued from previous page)

50.00	45	65	130	≤4	PH322_0500MT	4500	8000	14	0.1	14.3
					PH322_0500MTL			19	0.6	
				≤2	PHA322_0500MF			14	0.1	
70.00	45	60	130	≤4	PH322_0700MT	4500	8000	14	0.1	14.6
					PH322_0700MTL			19	0.6	
				≤2	PHA322_0700MF			14	0.1	
100.0	30	50	100	≤4	PH322_1000MT	4500	8000	14	0.1	12.4
					PH322_1000MTL			19	0.6	
				≤2	PHA322_1000MF			14	0.1	

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH4 (continued next page)

4.000	90	130	240	≤3	PH421_0040MT	2300	5000	24	1.7	39.0
					PH421_0040MTL			32	4.0	
					PH421_0040MTLC				3.0	
				≤1	PHA421_0040MF	2300		24	2.0	33.2
					PHA421_0040MFC	3300		32	5.2	35.1
					PHA421_0040MFL	2300				
					PHA421_0040MFLC	3300				
5.000	90	130	240	≤3	PH421_0050MT	2700	6000	24	1.6	37.0
					PH421_0050MTL			32	3.8	
					PH421_0050MTLC				2.8	
				≤1	PHA421_0050MF	2700		24	1.9	33.5
					PHA421_0050MFC	3700		32	5.0	34.7
					PHA421_0050MFL	2700				
					PHA421_0050MFLC	3700				
5.500	120	170	300	≤3	PHQ421_0055MT	2000	6000	24	1.5	41.7
					PHQ421_0055MTL			32	3.7	
					PHQ421_0055MTLC				2.8	
				≤1	PHQA421_0055MF	2000		24	1.8	38.0
					PHQA421_0055MFC	32		5.0	39.2	
					PHQA421_0055MFL					
					PHQA421_0055MFLC					
7.000	90	110	240	≤3	PH421_0070MT	3200	6000	24	1.4	31.0
					PH421_0070MTL			32	3.6	
					PH421_0070MTLC				2.7	
				≤1	PHA421_0070MF	3200		24	1.7	29.3
					PHA421_0070MFC	4200		32	4.9	29.9
					PHA421_0070MFL	3200				
					PHA421_0070MFLC	4200				

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

PH4 (continued next page)

10.00	60	100	200	≤3	PH421_0100MT	3500	6000	24	1.3	21.0
					PH421_0100MTL			32	3.6	
					PH421_0100MTLC				2.6	
				≤1	PHA421_0100MF	3500		24	1.6	20.6
					PHA421_0100MFC	4500		32	4.8	20.8
					PHA421_0100MFL	3500				
					PHA421_0100MFLC	4500				
16.00	90	130	240	≤3	PH422_0160MT	3700	6500	19	0.7	26.7
					PH422_0160MTL			24	1.4	
					PH422_0160MTLC				1.0	
				≤1	PHA422_0160MF	3700		19	0.6	26.1
					PHA422_0160MFL	4500		24	1.7	26.5
					PHA422_0160MFLC					
20.00	90	130	240	≤3	PH422_0200MT	3700	6500	19	0.7	28.9
					PH422_0200MTL			24	1.4	
					PH422_0200MTLC				1.0	
				≤1	PHA422_0200MF	3700		19	0.6	28.5
					PHA422_0200MFL	4500		24	1.7	28.8
					PHA422_0200MFLC					
22.00	120	170	300	≤3	PHQ422_0220MT	3700	6500	19	0.7	37.4
					PHQ422_0220MTL			24	1.4	
					PHQ422_0220MTLC				1.0	
				≤1	PHQA422_0220MF	3700		19	0.6	36.7
					PHQA422_0220MFL	4500		24	1.7	37.2
					PHQA422_0220MFLC					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH4 (continued next page)

25.00	90	130	240	≤3	PH422_0250MT	4000	7000	19	0.7	28.7
					PH422_0250MTL			24	1.3	
					PH422_0250MTLC			4800	0.9	
				≤1	PHA422_0250MF	4000		19	0.6	28.4
					PHA422_0250MFL			24	1.6	28.6
					PHA422_0250MFLC			4800		
27.50	120	170	300	≤3	PHQ422_0280MT	4000	7000	19	0.7	37.1
					PHQ422_0280MTL			24	1.3	
					PHQ422_0280MTLC			4800	0.9	
				≤1	PHQA422_0280MF	4000		19	0.6	36.7
					PHQA422_0280MFL			24	1.6	37.0
					PHQA422_0280MFLC			4800		36.9
28.00	90	130	240	≤3	PH422_0280MT	4500	8000	19	0.6	25.1
					PH422_0280MTL			24	1.3	
					PH422_0280MTLC			5300	0.9	
				≤1	PHA422_0280MF	4500		19	0.5	24.9
					PHA422_0280MFL			24	1.6	25.0
					PHA422_0280MFLC			5300		
35.00	90	130	240	≤3	PH422_0350MT	4500	8000	19	0.6	27.7
					PH422_0350MTL			24	1.3	
					PH422_0350MTLC			5300	0.9	
				≤1	PHA422_0350MF	4500		19	0.5	27.5
					PHA422_0350MFL			24	1.6	27.6
					PHA422_0350MFLC			5300		
38.50	120	170	300	≤3	PHQ422_0390MT	4500	8000	19	0.6	36.6
					PHQ422_0390MTL			24	1.3	
					PHQ422_0390MTLC			5300	0.9	
				≤1	PHQA422_0390MF	4500		19	0.5	36.3
					PHQA422_0390MFL			24	1.6	36.5
					PHQA422_0390MFLC			5300		

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH4 (continued from previous page)

40.00	90	130	240	≤3	PH422_0400MT	4500	8000	19	0.6	24.2	
					PH422_0400MTL						
					PH422_0400MTLC						
				≤1	PHA422_0400MF	4500		19	0.5		24.1
					PHA422_0400MFL						
					PHA422_0400MFLC						
50.00	90	130	240	≤3	PH422_0500MT	4500	8000	19	0.6	27.0	
					PH422_0500MTL						
					PH422_0500MTLC						
				≤1	PHA422_0500MF	4500		19	0.5		26.9
					PHA422_0500MFL						
					PHA422_0500MFLC						
55.00	120	170	300	≤3	PHQ422_0550MT	4500	8000	19	0.6	35.2	
					PHQ422_0550MTL						
					PHQ422_0550MTLC						
				≤1	PHQA422_0550MF	4500		19	0.5		35.1
					PHQA422_0550MFL						
					PHQA422_0550MFLC						
70.00	90	110	240	≤3	PH422_0700MT	4500	8000	19	0.6	26.8	
					PH422_0700MTL						
					PH422_0700MTLC						
				≤1	PHA422_0700MF	4500		19	0.5		26.7
					PHA422_0700MFL						
					PHA422_0700MFLC						
100.0	60	100	200	≤3	PH422_1000MT	4500	8000	19	0.6	20.0	
					PH422_1000MTL						
					PH422_1000MTLC						
				≤1	PHA422_1000MF	4500		19	0.5		19.9
					PHA422_1000MFL						
					PHA422_1000MFLC						

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J1	Torsional Stiffness C2 (per arcmin)
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued next page)

4.000	210	320	600	≤3	PH521_0040MT	2200	5000	32	5.1	98.0					
					PH521_0040MTC	3200					38	6.3	76.7		
					PH521_0040MTL	2200								6.3	85.0
					PH521_0040MTLC	3200									
				≤1	PHA521_0040MF	2200		38	13.2	85.0					
					PHA521_0040MFC	3200									
					PHA521_0040MFL	2200									
					PHA521_0040MFLC	3200									
5.000	220	320	600	≤3	PH521_0050MT	2500	5500	32	4.5	93.0					
					PH521_0050MTC	3500					38	5.7	79.5		
					PH521_0050MTL	2500								5.7	85.1
					PH521_0050MTLC	3500									
				≤1	PHA521_0050MF	2500		38	12.6	85.1					
					PHA521_0050MFC	3500									
					PHA521_0050MFL	2500									
					PHA521_0050MFLC	3500									
5.500	280	425	800	≤3	PHQ521_0055MT	2500	5500	32	4.4	107.3					
					PHQ521_0055MTC	3500					38	5.6	92.4		
					PHQ521_0055MTL	2500								5.6	98.6
					PHQ521_0055MTLC	3500									
				≤1	PHQA521_0055MF	2500		38	12.5	98.6					
					PHQA521_0055MFC	3500									
					PHQA521_0055MFL	2500									
					PHQA521_0055MFLC	3500									
7.000	210	270	598	≤3	PH521_0070MT	3000	6000	32	4.0	77.0					
					PH521_0070MTC	4000					38	5.2	70.8		
					PH521_0070MTL	3000								6.9	73.4
					PH521_0070MTLC	4000									
				≤1	PHA521_0070MF	3000		38	12.1	73.4					
					PHA521_0070MFC	4000									
					PHA521_0070MFL	3000									
					PHA521_0070MFLC	4000									

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued next page)

10.00	140	250	500	≤3	PH521_0100MT	3300	6000	32	3.7	55.0	
					PH521_0100MTC	4500			4.9	53.4	
					PH521_0100MTL	3300			38	6.8	55.0
					PH521_0100MTLC	4500				6.7	54.1
				≤1	PHA521_0100MF	3300		35	4.9	53.4	
					PHA521_0100MFC	4500			38	11.9	54.1
					PHA521_0100MFL	3300					
					PHA521_0100MFLC	4500					
16.00	210	320	600	≤3	PH522_0160MT	3300	6000	24	1.5	64.9	
					PH522_0160MTC	4300			1.9	63.7	
					PH522_0160MTL	3300			32	3.8	64.9
					PH522_0160MTLC	4300				2.8	64.1
				≤1	PHA522_0160MF	3300		24	1.9	63.7	
					PHA522_0160MFC	4300			32	5.0	64.1
					PHA522_0160MFL	3300					
					PHA522_0160MFLC	4300					
20.00	220	320	600	≤3	PH522_0200MT	3300	6000	24	1.6	71.0	
					PH522_0200MTC	4300			1.9	70.1	
					PH522_0200MTL	3300			32	3.8	71.0
					PH522_0200MTLC	4300				2.8	70.4
				≤1	PHA522_0200MF	3300		24	1.9	70.1	
					PHA522_0200MFC	4300			32	5.0	70.4
					PHA522_0200MFL	3300					
					PHA522_0200MFLC	4300					
22.00	280	425	800	≤3	PHQ522_0220MT	3300	6000	24	1.6	94.6	
					PHQ522_0220MTC	4300			1.9	93.3	
					PHQ522_0220MTL	3300			32	3.8	94.6
					PHQ522_0220MTLC	4300				2.8	93.8
				≤1	PHQA522_0220MF	3300		24	1.9	93.3	
					PHQA522_0220MFC	4300			32	5.0	93.8
					PHQA522_0220MFL	3300					
					PHQA522_0220MFLC	4300					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued next page)

25.00	220	320	600	≤3	PH522_0250MT	3700	6500	24	1.5	70.6		
					PH522_0250MTC	4500			1.8	70.0		
					PH522_0250MTL	3700			32	3.7	70.6	
					PH522_0250MTLC	4500				2.7	70.2	
				≤1	PHA522_0250MF	3700		24	1.8	70.0		
					PHA522_0250MFC	4500			32	4.9	70.2	
					PHA522_0250MFL	3700				32	4.9	70.2
					PHA522_0250MFLC	4500					4.9	70.2
27.50	280	425	800	≤3	PHQ522_0280MT	3700	6500	24		1.4	93.7	
					PHQ522_0280MTC	4500			1.7	92.9		
					PHQ522_0280MTL	3700			32	3.6	93.7	
					PHQ522_0280MTLC	4500				2.7	93.2	
				≤1	PHQA522_0280MF	3700		24	1.7	92.9		
					PHQA522_0280MFC	4500			32	4.9	93.2	
					PHQA522_0280MFL	3700				32	4.9	93.2
					PHQA522_0280MFLC	4500					4.9	93.2
28.00	210	320	600	≤3	PH522_0280MT	4000	7000	24		1.3	61.0	
					PH522_0280MTC	5000			1.7	60.7		
					PH522_0280MTL	4000			32	3.6	61.0	
					PH522_0280MTLC	5000				2.6	60.8	
				≤1	PHA522_0280MF	4000		24	1.6	60.6		
					PHA522_0280MFC	5000			32	4.8	60.7	
					PHA522_0280MFL	4000				32	4.8	60.7
					PHA522_0280MFLC	5000					4.8	60.7
35.00	220	320	600	≤3	PH522_0350MT	4000	7000	24		1.3	68.0	
					PH522_0350MTC	5000			1.7	67.7		
					PH522_0350MTL	4000			32	3.6	68.0	
					PH522_0350MTLC	5000				2.6	67.8	
				≤1	PHA522_0350MF	4000		24	1.6	67.6		
					PHA522_0350MFC	5000			32	4.8	67.8	
					PHA522_0350MFL	4000				32	4.8	67.8
					PHA522_0350MFLC	5000					4.8	67.8

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH5 (continued next page)

38.50	280	425	800	≤3	PHQ522_0390MT	4000	7000	24	1.3	91.6	
					PHQ522_0390MTC	5000			1.7	91.2	
					PHQ522_0390MTL	4000			32	3.6	91.6
					PHQ522_0390MTLC	5000				2.6	91.3
				≤1	PHQA522_0390MF	4000		24	1.6	91.1	
					PHQA522_0390MFC	5000			32	4.8	91.3
					PHQA522_0390MFL	4000					
					PHQA522_0390MFLC	5000					
40.00	210	320	600	≤3	PH522_0400MT	4000	7000	24	1.3	58.3	
					PH522_0400MTC	5000			1.6	58.2	
					PH522_0400MTL	4000			32	3.5	58.3
					PH522_0400MTLC	5000				2.5	58.2
				≤1	PHA522_0400MF	4000		24	1.6	58.1	
					PHA522_0400MFC	5000			32	4.7	58.2
					PHA522_0400MFL	4000					
					PHA522_0400MFLC	5000					
50.00	220	320	600	≤3	PH522_0500MT	4000	7000	24	1.3	65.8	
					PH522_0500MTC	5000			1.6	65.7	
					PH522_0500MTL	4000			32	3.5	65.8
					PH522_0500MTLC	5000				2.5	65.7
				≤1	PHA522_0500MF	4000		24	1.6	65.6	
					PHA522_0500MFC	5000			32	4.8	65.7
					PHA522_0500MFL	4000					
					PHA522_0500MFLC	5000					
55.00	280	425	800	≤3	PHQ522_0550MT	4000	7000	24	1.3	87.2	
					PHQ522_0550MTC	5000			1.6	87.0	
					PHQ522_0550MTL	4000			32	3.5	87.2
					PHQ522_0550MTLC	5000				2.5	87.1
				≤1	PHQA522_0550MF	4000		24	1.6	87.0	
					PHQA522_0550MFC	5000			32	4.7	87.1
					PHQA522_0550MFL	4000					
					PHQA522_0550MFLC	5000					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			

PH5 (continued from previous page)

70.00	210	270	598	≤3	PH522_0700MT	4000	7000	24	1.3	65.6	
					PH522_0700MTC	5000			1.6	65.5	
					PH522_0700MTL	4000			32	3.5	65.6
					PH522_0700MTLC	5000				2.5	65.5
				≤1	PHA522_0700MF	4000		24	1.6	65.5	
					PHA522_0700MFC	5000			32		
					PHA522_0700MFL	4000		32			
					PHA522_0700MFLC	5000					
100.0	140	250	500	≤3	PH522_1000MT	4000	7000	24	1.3	51.8	
					PH522_1000MTC	5000			1.6		
					PH522_1000MTL	4000			32		3.5
					PH522_1000MTLC	5000					2.5
				≤1	PHA522_1000MF	4000		24	1.6		
					PHA522_1000MFC	5000			32		4.7
					PHA522_1000MFL	4000		32			4.7
					PHA522_1000MFLC	5000					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

4.000	440	700	1367	≤3	PH721_0040MT	1900	4000	38	11.2	185.0		
					PH721_0040MTC	2400			19.6	143.5		
					PH721_0040MTL	1900			48	29.0	185.0	
					PH721_0040MTLC	2400				21.8	160.0	
			1321	≤1	PHA721_0040MF	1900		38	16.6	143.5		
					PHA721_0040MFC	2400			19.6			
					1367	≤1		PHA721_0040MFL	1900	48	35.4	160.0
								PHA721_0040MFLC	2400			
5.000	440	700	1400	≤3	PH721_0050MT	2200	5000	38	9.3	184.0		
					PH721_0050MTC	3000			17.8	155.4		
					PH721_0050MTL	2200			48	27.2	184.0	
					PH721_0050MTLC	3000				19.9	167.4	
				≤1	PHA721_0050MF	2200		38	14.8	155.4		
					PHA721_0050MFC	3000			17.8			
					≤1	PHA721_0050MFL		2200	48	33.6	167.4	
						PHA721_0050MFLC		3000				
5.500	650	950	1700	≤3	PHQ721_0055MT	2200	5000	38	9.1	235.0		
					PHQ721_0055MTC	3000			17.5	196.8		
					PHQ721_0055MTL	2200			48	26.9	235.0	
					PHQ721_0055MTLC	3000				19.7	212.7	
			1816	≤1	PHQA721_0055MF	2200		38	14.5	196.8		
					PHQA721_0055MFC	3000			17.5			
					1900	≤1		PHQA721_0055MFL	2200	48	33.3	212.7
								PHQA721_0055MFLC	3000			
7.000	440	650	1241	≤3	PH721_0070MT	2500	5000	38	7.9	160.0		
					PH721_0070MTC	3500			16.0	145.2		
					PH721_0070MTL	2500			48	26.2	160.0	
					PH721_0070MTLC	3500				16.4	152.1	
			1242	≤1	PHA721_0070MF	2500		38	13.0	145.2		
					PHA721_0070MFC	3500			16.0			
					1241	≤1		PHA721_0070MFL	2500	48	32.2	152.1
								PHA721_0070MFLC	3500			

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

10.00	300	500	1000	≤3	PH721_0100MT	3000	5000	38	7.2	117.0	
					PH721_0100MTC	4000			15.3	112.9	
					PH721_0100MTL	3000			48	25.5	117.0
					PH721_0100MTLC	4000				15.7	114.9
				≤1	PHA721_0100MF	3000		38	12.3	112.9	
					PHA721_0100MFC	4000			15.3		
					PHA721_0100MFL	3000			48	31.5	114.9
					PHA721_0100MFLC	4000					
16.00	440	700	1367	≤3	PH722_0160MT	3000	5000	32	4.7	136.0	
					PH722_0160MTC	4000			6.0	132.8	
					PH722_0160MTL	3000			38	7.7	136.0
					PH722_0160MTLC	4000				5.9	134.2
				≤1	PHA722_0160MF	3000		32	6.0	132.8	
					PHA722_0160MFC	4000					
					PHA722_0160MFL	3000			38	12.8	134.2
					PHA722_0160MFLC	4000					
20.00	440	700	1400	≤3	PH722_0200MT	3000	5000	32	4.6	149.7	
					PH722_0200MTC	4000			5.9	147.2	
					PH722_0200MTL	3000			38	7.6	149.7
					PH722_0200MTLC	4000				5.8	148.3
				≤1	PHA722_0200MF	3000		32	5.9	147.2	
					PHA722_0200MFC	4000					
					PHA722_0200MFL	3000			38	12.7	148.3
					PHA722_0200MFLC	4000					
22.00	650	950	1700	≤3	PHQ722_0220MT	3000	5000	32	4.7	207.4	
					PHQ722_0220MTC	4000			6.0	203.4	
					PHQ722_0220MTL	3000			38	7.7	207.4
					PHQ722_0220MTLC	4000				5.9	205.2
			1900	≤1	PHQA722_0220MF	3000		32	6.0	203.4	
					PHQA722_0220MFC	4000					
					PHQA722_0220MFL	3000			38	12.8	205.2
					PHQA722_0220MFLC	4000					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

25.00	440	700	1400	≤3	PH722_0250MT	3500	6000	32	4.2	148.8	
					PH722_0250MTC	4200			5.5	147.2	
					PH722_0250MTL	3500			38	7.2	148.8
					PH722_0250MTLC	4200				5.4	147.9
				≤1	PHA722_0250MF	3500		32	5.5	147.2	
					PHA722_0250MFC	4200			38	12.3	147.9
					PHA722_0250MFL	3500				38	12.3
					PHA722_0250MFLC	4200			12.3		147.9
27.50	650	950	1700	≤3	PHQ722_0280MT	3500	6000	32	4.2	205.8	
					PHQ722_0280MTC	4200			5.5	203.3	
					PHQ722_0280MTL	3500			38	7.2	205.8
					PHQ722_0280MTLC	4200				204.4	
				≤1	PHQA722_0280MF	3500		32	5.5	203.3	
					PHQA722_0280MFC	4200			38	12.4	204.4
					PHQA722_0280MFL	3500				38	12.4
					PHQA722_0280MFLC	4200			12.4		204.4
28.00	440	700	1367	≤3	PH722_0280MT	3700	6500	32	3.9	130.9	
					PH722_0280MTC	4500			5.1	129.7	
					PH722_0280MTL	3700			38	6.9	130.9
					PH722_0280MTLC	4500				6.8	130.3
				≤1	PHA722_0280MF	3700		32	5.1	129.7	
					PHA722_0280MFC	4500			38	12.0	130.3
					PHA722_0280MFL	3700				38	12.0
					PHA722_0280MFLC	4500			12.0		130.3
35.00	440	700	1400	≤3	PH722_0350MT	3700	6500	32	3.8	145.7	
					PH722_0350MTC	4500			5.0	144.7	
					PH722_0350MTL	3700			38	6.9	145.7
					PH722_0350MTLC	4500				6.8	145.2
				≤1	PHA722_0350MF	3700		32	5.0	144.7	
					PHA722_0350MFC	4500			38	12.0	145.2
					PHA722_0350MFL	3700				38	12.0
					PHA722_0350MFLC	4500			12.0		145.2

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

38.50	650	950	1700	≤3	PHQ722_0390MT	3700	6500	32	3.8	202.7				
					PHQ722_0390MTC	4500			5.1	201.2				
					PHQ722_0390MTL	3700			38	6.9	202.7			
					PHQ722_0390MTLC	4500				6.8	201.8			
			1900	≤1	PHQA722_0390MF	3700		32	5.1	201.2				
					PHQA722_0390MFC	4500			38	12.0	201.8			
					PHQA722_0390MFL	3700								
					PHQA722_0390MFLC	4500								
40.00	440	700	1367	≤3	PH722_0400MT	3700	6500	32	3.7	126.5				
					PH722_0400MTC	4700			4.9	125.9				
					PH722_0400MTL	3700			38	6.7	126.5			
					PH722_0400MTLC	4700				6.6	126.2			
								≤1	PHA722_0400MF	3700	32	4.9	125.9	
									PHA722_0400MFC	4700		38	11.8	126.2
									PHA722_0400MFL	3700				
									PHA722_0400MFLC	4700				
50.00	440	700	1400	≤3	PH722_0500MT	3700	6500	32	3.6	142.2				
					PH722_0500MTC	4700			4.9	141.7				
					PH722_0500MTL	3700			38	6.7	142.2			
					PH722_0500MTLC	4700				6.6	141.9			
								≤1	PHA722_0500MF	3700	32	4.9	141.7	
									PHA722_0500MFC	4700		38	11.8	141.9
									PHA722_0500MFL	3700				
									PHA722_0500MFLC	4700				
55.00	650	950	1700	≤3	PHQ722_0550MT	3700	6500	32	3.7	195.4				
					PHQ722_0550MTC	4700			4.9	194.7				
					PHQ722_0550MTL	3700			38	6.7	195.4			
					PHQ722_0550MTLC	4700				6.6	195.0			
			1900	≤1	PHQA722_0550MF	3700		32	4.9	194.7				
					PHQA722_0550MFC	4700			38	11.8	195.0			
					PHQA722_0550MFL	3700								
					PHQA722_0550MFLC	4700								

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

70.00	440	650	1241	≤3	PH722_0700MT	3700	6500	32	3.6	141.5	
					PH722_0700MTC	4700			4.9	141.3	
					PH722_0700MTL	3700			38	6.7	141.5
					PH722_0700MTLC	4700				6.6	141.4
			1242	≤1	PHA722_0700MF	3700		32	4.9	141.3	
					PHA722_0700MFC	4700					
					PHA722_0700MFL	3700			38	11.8	141.4
					PHA722_0700MFLC	4700					
88.00	650	950	1700	≤3	PHQ723_0880MT	3300	6000	24	1.6	204.1	
					PHQ723_0880MTC	4300			1.9	203.7	
					PHQ723_0880MTL	3300			32	3.9	204.1
					PHQ723_0880MTLC	4300				2.9	203.8
			1900	≤1	PHQA723_0880MF	3300		24	1.9	203.7	
					PHQA723_0880MFC	4300					
					PHQA723_0880MFL	3300			32	5.1	203.8
					PHQA723_0880MFLC	4300					
100.0	300	500	1000	≤3	PH722_1000MT	3700	6500	32	3.6	111.8	
					PH722_1000MTC	4700			4.9	111.7	
					PH722_1000MTL	3700			38	6.7	111.8
					PH722_1000MTLC	4700				6.6	111.7
			1000	≤1	PHA722_1000MF	3700		32	4.9		
					PHA722_1000MFC	4700					
					PHA722_1000MFL	3700			38	11.8	
					PHA722_1000MFLC	4700					
110.0	650	950	1700	≤3	PHQ723_1100MT	3300	6000	24	1.6	203.7	
					PHQ723_1100MTC	4300			1.9	203.5	
					PHQ723_1100MTL	3300			32	3.8	203.7
					PHQ723_1100MTLC	4300				2.8	203.6
			1900	≤1	PHQA723_1100MF	3300		24	1.9	203.5	
					PHQA723_1100MFC	4500					
					PHQA723_1100MFL	3300			32	5.1	203.6
					PHQA723_1100MFLC	4500					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH7 (continued next page)

137.5	650	950	1700	≤3	PHQ723_1380MT	3700	6500	24	1.5	203.6	
					PHQ723_1380MTC	4500			1.8	203.4	
					PHQ723_1380MTL	3700			32	3.7	203.6
					PHQ723_1380MTLC	4500				2.7	203.5
			1900	≤1	PHQA723_1380MF	3700		24	1.8	203.4	
					PHQA723_1380MFC	4500			32	4.9	203.5
					PHQA723_1380MFL	3700					
					PHQA723_1380MFLC	4500					
154.0	650	950	1700	≤3	PHQ723_1540MT	4000	7000	24	1.3	203.2	
					PHQ723_1540MTC	5000			1.7	203.1	
					PHQ723_1540MTL	4000			32	3.6	203.2
					PHQ723_1540MTLC	5000				2.6	203.1
			1900	≤1	PHQA723_1540MF	4000		24	1.7	203.0	
					PHQA723_1540MFC	5000			32	4.8	203.1
					PHQA723_1540MFL	4000					
					PHQA723_1540MFLC	5000					
192.5	650	950	1700	≤3	PHQ723_1930MT	4000	7000	24	1.3	203.2	
					PHQ723_1930MTC	5000			1.7	203.1	
					PHQ723_1930MTL	4000			32	3.6	203.2
					PHQ723_1930MTLC	5000				2.6	203.1
			1900	≤1	PHQA723_1930MF	4000		24	1.6	203.0	
					PHQA723_1930MFC	5000			32	4.8	203.1
					PHQA723_1930MFL	4000					
					PHQA723_1930MFLC	5000					
220.0	650	950	1700	≤3	PHQ723_2200MT	4000	7000	24	1.3	201.8	
					PHQ723_2200MTC	5000			1.6	201.7	
					PHQ723_2200MTL	4000			32	3.6	201.8
					PHQ723_2200MTLC	5000				2.6	201.7
			1900	≤1	PHQA723_2200MF	4000		24	1.6		
					PHQA723_2200MFC	5000			32	4.8	
					PHQA723_2200MFL	4000					
					PHQA723_2200MFLC	5000					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			
	Nm	Nm	Nm			Cont.	Cyclic			

PH7 (continued from previous page)

275.0	650	950	1700	≤3	PHQ723_2750MT	4000	7000	24	1.3	202.2	
					PHQ723_2750MTC	5000			1.6		
					PHQ723_2750MTL	4000			32		3.5
					PHQ723_2750MTLC	5000					2.5
			1900	≤1	PHQA723_2750MF	4000		24	1.6		
					PHQA723_2750MFC	5000					
					PHQA723_2750MFL	4000			32		4.8
					PHQA723_2750MFLC	5000					
385.0	650	950	1700	≤3	PHQ723_3850MT	4000	7000	24	1.3	200.9	
					PHQ723_3850MTC	5000			1.6	200.8	
					PHQ723_3850MTL	4000			32	3.5	200.9
					PHQ723_3850MTLC	5000				2.6	
			1900	≤1	PHQA723_3850MF	4000		24	1.6		
					PHQA723_3850MFC	5000					
					PHQA723_3850MFL	4000			32	4.8	
					PHQA723_3850MFLC	5000					
550.0	650	950	1700	≤3	PHQ723_5500MT	4000	7000	24	1.3	194.6	
					PHQ723_5500MTC	5000			1.6		
					PHQ723_5500MTL	4000			32		3.5
					PHQ723_5500MTLC	5000					2.6
			1900	≤1	PHQA723_5500MF	4000		24	1.6		
					PHQA723_5500MFC	5000					
					PHQA723_5500MFL	4000			32		4.7
					PHQA723_5500MFLC	5000					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

4.000	881	1600	2308	≤3	PH821_0040MT	1500	3500	48	48.9	634.0	
					PH821_0040MTC	2200			54.0		
				≤1	PHA821_0040MF	1500			54.8		
					PHA821_0040MFC	2200			54.0		
5.000	1101	1700	2870	≤3	PH821_0050MT	1700	4000	48	39.9	566.0	
					PH821_0050MTC	2500			45.1		
				≤1	PHA821_0050MF	1700			45.8		
					PHA821_0050MFC	2500			45.1		
7.000	1000	1600	2772	≤3	PH821_0070MT	2000	4000	48	32.0	474.0	
					PH821_0070MTC	3200			37.6		
				≤1	PHA821_0070MF	2000			38.4		
					PHA821_0070MFC	3200			37.6		
10.00	800	1200	2400	≤3	PH821_0100MT	2500	4000	48	28.2	317.0	
					PH821_0100MTC	3700	4500		33.8		
				≤1	PHA821_0100MF	2500	4000		34.6		
					PHA821_0100MFC	3700	4500		33.8		
16.00	1100	2000	2756	≤3	PH822_0160MT	2500	4500	38	11.1	451.6	
			3145			PH822_0160MTC			3250		19.6
						PH822_0160MTL			2500		29.0
						PH822_0160MTLC			3250		21.7
				≤1	PHA822_0160MF	2500		38	16.6	432.5	
				PHA822_0160MFC	3250	35.4					
				PHA822_0160MFL	2500	48			441.1		
				PHA822_0160MFLC	3250	48			441.1		
20.00	1250	2000	3200	≤3	PH822_0200MT	2500	4500	38	10.6	459.5	
						PH822_0200MTC			3300		19.0
						PH822_0200MTL			2500		28.4
						PH822_0200MTLC			3300		21.1
				≤1	PHA822_0200MF	2500		38	16.0	446.6	
					PHA822_0200MFC	3300			48		452.4
					PHA822_0200MFL	2500			48		446.6
					PHA822_0200MFLC	3300			48		452.4

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

22.00	1700	2600	4000	≤3	PHQ822_0220MT	2500	4500	38	11.0	661.0	
					PHQ822_0220MTC	3300			19.4	639.2	
					PHQ822_0220MTL	2500			48	28.8	661.0
					PHQ822_0220MTLC	3300				21.6	649.0
				≤1	PHQA822_0220MF	2500		38	16.4	639.2	
					PHQA822_0220MFC	3300			48	35.3	649.0
					PHQA822_0220MFL	2500					
					PHQA822_0220MFLC	3300					
25.00	1250	2000	3200	≤3	PH822_0250MT	3000	5500	38	9.1	484.4	
					PH822_0250MTC	3800			17.5	475.2	
					PH822_0250MTL	3000			48	26.9	484.4
					PH822_0250MTLC	3800				19.6	479.4
				≤1	PHA822_0250MF	3000		38	14.5	475.2	
					PHA822_0250MFC	3800			48	33.3	479.4
					PHA822_0250MFL	3000					
					PHA822_0250MFLC	3800					
27.50	1700	2600	4000	≤3	PHQ822_0280MT	3000	5500	38	9.3	656.0	
					PHQ822_0280MTC	3800			17.7	642.1	
					PHQ822_0280MTL	3000			48	27.1	656.0
					PHQ822_0280MTLC	3800				19.8	648.4
			4400	≤1	PHQA822_0280MF	3000		38	14.7	642.1	
					PHQA822_0280MFC	3800			48	33.5	648.4
					PHQA822_0280MFL	3000					
					PHQA822_0280MFLC	3800					
28.00	1100	2000	3145	≤3	PH822_0280MT	3300	6000	38	8.0	434.7	
					PH822_0280MTC	4000			16.1	427.3	
					PH822_0280MTL	3300			48	26.3	434.7
					PH822_0280MTLC	4000				16.4	430.9
				≤1	PHA822_0280MF	3300		38	13.1	427.3	
					PHA822_0280MFC	4000			48	32.2	430.9
					PHA822_0280MFL	3300					
					PHA822_0280MFLC	4000					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

35.00	1250	2000	3200	≤3	PH822_0350MT	3300	6000	38	7.8	448.1	
					PH822_0350MTC	4000			15.9	443.1	
					PH822_0350MTL	3300			48	26.1	448.1
					PH822_0350MTLC	4000				16.2	445.6
				≤1	PHA822_0350MF	3300		38	12.9	443.1	
					PHA822_0350MFC	4000			48	32.0	445.6
					PHA822_0350MFL	3300					
					PHA822_0350MFLC	4000					
38.50	1700	2600	4000	≤3	PHQ822_0390MT	3300	6000	38	7.9	643.0	
					PHQ822_0390MTC	4000			16.0	634.4	
					PHQ822_0390MTL	3300			48	26.2	643.0
					PHQ822_0390MTLC	4000				16.3	638.6
			≤1	PHQA822_0390MF	3300	38		13.0	634.4		
				PHQA822_0390MFC	4000			48	32.1	638.6	
				PHQA822_0390MFL	3300						
				PHQA822_0390MFLC	4000						
40.00	1100	1920	3145	≤3	PH822_0400MT	3300	6000	38	7.2	417.7	
					PH822_0400MTC	4300			15.4	414.3	
					PH822_0400MTL	3300			48	25.6	417.7
					PH822_0400MTLC	4300				15.7	415.9
			≤1	PHA822_0400MF	3300	38		12.4	414.3		
				PHA822_0400MFC	4300			48	31.5	415.9	
				PHA822_0400MFL	3300						
				PHA822_0400MFLC	4300						
50.00	1250	2000	3200	≤3	PH822_0500MT	3300	6000	38	7.2	436.4	
					PH822_0500MTC	4300			15.3	434.0	
					PH822_0500MTL	3300			48	25.5	436.4
					PH822_0500MTLC	4300				15.6	435.2
			≤1	PHA822_0500MF	3300	38		12.3	434.0		
				PHA822_0500MFC	4300			48	31.4	435.2	
				PHA822_0500MFL	3300						
				PHA822_0500MFLC	4300						

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

55.00	1584	2600	4000	≤3	PHQ822_0550MT	3300	6000	38	7.2	615.0	
					PHQ822_0550MTC	4300			15.3	611.1	
					PHQ822_0550MTL	3300			48	25.5	615.0
					PHQ822_0550MTLC	4300				15.7	613.0
			4400	≤1	PHQA822_0550MF	3300		38	12.3	611.1	
					PHQA822_0550MFC	4300			48	31.5	613.0
					PHQA822_0550MFL	3300					
					PHQA822_0550MFLC	4300					
70.00	1000	1600	2772	≤3	PH822_0700MT	3300	6000	38	7.1	420.7	
					PH822_0700MTC	4300			15.2	419.6	
					PH822_0700MTL	3300			48	25.4	420.7
					PH822_0700MTLC	4300				15.5	420.2
			≤1	PHA822_0700MF	3300	38		12.2	419.6		
				PHA822_0700MFC	4300			48	31.3	420.2	
				PHA822_0700MFL	3300						
				PHA822_0700MFLC	4300						
88.00	1700	2600	4000	≤3	PHQ823_0880MT	3000	6000	32	4.8	647.0	
					PHQ823_0880MTC	4500			6.1	644.6	
					PHQ823_0880MTL	3000			38	7.8	647.0
					PHQ823_0880MTLC	4500				6.0	645.7
			4400	≤1	PHQA823_0880MF	3000		32	6.1	644.6	
					PHQA823_0880MFC	4500			38	12.9	645.7
					PHQA823_0880MFL	3000					
					PHQA823_0880MFLC	4500					
100.0	800	1200	2400	≤3	PH822_1000MT	3300	6000	38	7.0	304.5	
					PH822_1000MTC	4300			15.2	304.2	
					PH822_1000MTL	3300			48	25.3	304.5
					PH822_1000MTLC	4300				15.5	304.4
			≤1	PHA822_1000MF	3300	38		12.2	304.2		
				PHA822_1000MFC	4300			48	31.3	304.4	
				PHA822_1000MFL	3300						
				PHA822_1000MFLC	4300						

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J1	Torsional Stiffness C2 (per arcmin)
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued next page)

110.0	1700	2600	4000	≤3	PHQ823_1100MT	3000	5000	32	4.7	647.0
					PHQ823_1100MTC	4500	6000		6.0	645.4
					PHQ823_1100MTL	3000	5000	38	7.7	647.0
					PHQ823_1100MTLC	4500	6000		5.9	646.1
			4400	≤1	PHQA823_1100MF	3500	6000	32	6.0	645.4
					PHQA823_1100MFC	4500		38	12.8	646.1
					PHQA823_1100MFL	3500				
					PHQA823_1100MFLC	4500				
137.5	1700	2600	4000	≤3	PHQ823_1380MT	3500	6000	32	4.2	646.0
					PHQ823_1380MTC	5000			5.5	645.0
					PHQ823_1380MTL	3500		38	7.3	646.0
					PHQ823_1380MTLC	5000			645.4	
			4400	≤1	PHQA823_1380MF	3500	32	5.5	645.0	
					PHQA823_1380MFC	5000	38	12.4	645.4	
					PHQA823_1380MFL	3500				
					PHQA823_1380MFLC	5000				
154.0	1700	2600	4000	≤3	PHQ823_1540MT	3700	6500	32	3.9	645.0
					PHQ823_1540MTC	5000			5.1	644.0
					PHQ823_1540MTL	3700		38	6.9	645.0
					PHQ823_1540MTLC	5000			6.8	644.5
			4400	≤1	PHQA823_1540MF	3700	32	5.1	644.0	
					PHQA823_1540MFC	5000	38	12.0	644.5	
					PHQA823_1540MFL	3700				
					PHQA823_1540MFLC	5000				
192.5	1700	2600	4000	≤3	PHQ823_1930MT	3700	6500	32	3.8	645.0
					PHQ823_1930MTC	5000			5.1	644.4
					PHQ823_1930MTL	3700		38	6.9	645.0
					PHQ823_1930MTLC	5000			6.8	644.6
			4400	≤1	PHQA823_1930MF	3700	32	5.1	644.4	
					PHQA823_1930MFC	5000	38	12.0	644.6	
					PHQA823_1930MFL	3700				
					PHQA823_1930MFLC	5000				

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH8 (continued from previous page)

220.0	1700	2600	4000	≤3	PHQ823_2200MT	3700	6500	32	3.7	641.0	
					PHQ823_2200MTC	5500			4.9	640.5	
					PHQ823_2200MTL	3700			38	6.7	641.0
					PHQ823_2200MTLC	5500				6.6	640.7
			4400	≤1	PHQA823_2200MF	3700		32	4.9	640.5	
					PHQA823_2200MFC	5500			38	11.8	640.7
					PHQA823_2200MFL	3700					
					PHQA823_2200MFLC	5500					
275.0	1700	2600	4000	≤3	PHQ823_2750MT	3700	6500	32	3.7	643.0	
					PHQ823_2750MTC	5500			4.9	642.7	
					PHQ823_2750MTL	3700			38	6.7	643.0
					PHQ823_2750MTLC	5500				6.6	642.8
			4400	≤1	PHQA823_2750MF	3700		32	4.9	642.7	
					PHQA823_2750MFC	5500			38	11.8	642.8
					PHQA823_2750MFL	3700					
					PHQA823_2750MFLC	5500					
385.0	1700	2600	4000	≤3	PHQ823_3850MT	3700	6500	32	3.6	635.0	
					PHQ823_3850MTC	5500			4.9	634.8	
					PHQ823_3850MTL	3700			38	6.7	635.0
					PHQ823_3850MTLC	5500				6.6	634.9
			4400	≤1	PHQA823_3850MF	3700		32	4.9	634.8	
					PHQA823_3850MFC	5500			38	11.8	634.9
					PHQA823_3850MFL	3700					
					PHQA823_3850MFLC	5500					
550.0	1584	2600	4000	≤3	PHQ823_5500MT	3700	6500	32	3.6	611.0	
					PHQ823_5500MTC	5500			4.9	610.9	
					PHQ823_5500MTL	3700			38	6.7	611.0
					PHQ823_5500MTLC	5500				6.6	
			4400	≤1	PHQA823_5500MF	3700		32	4.9	610.9	
					PHQA823_5500MFC	5500			38	11.8	611.0
					PHQA823_5500MFL	3700					
					PHQA823_5500MFLC	5500					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

12.00	3000	4608	6743	≤3	PH932_0120MT	1800	3000	48	74.9	1239.5		
					PH932_0120MTC	2700						
					PH932_0120MTL	1800						
					PH932_0120MTLC	2700						
				≤1	PHA932_0120MF	1800	48	80.9	1110.4			
					PHA932_0120MFC	2700						
16.00	3000	5000	8956	≤3	PH932_0160MT	2200	3500	48	44.4	1211.8		
					PH932_0160MTC	2900						
					PH932_0160MTL	2200						
					PH932_0160MTLC	2900						
				≤1	PHA932_0160MF	2200	48	52.7	1139.0			
					PHA932_0160MFC	2900						
18.00	3000	4500	9000	≤3	PH932_0180MT	1800	3000	48	68.4	1135.0		
					PH932_0180MTC	2700						
					PH932_0180MTL	1800						
					PH932_0180MTLC	2700						
				≤1	PHA932_0180MF	1800		48	74.8	1083.7		
					PHA932_0180MFC	2700						
	3800	6000	6000	10496	≤3	PHQ932_0180MT	1800	4500	48	70.9	1237.4	
						PHQ932_0180MTC	3000					
						PHQ932_0180MTL	1800					
						PHQ932_0180MTLC	3000					
					≤1	PHQA932_0180MF	1800		3000	48	77.2	1176.7
						PHQA932_0180MFC	3000					
20.00	3000	5000	10000	≤3	PH932_0200MT	2500	4000	48	36.8	1187.6		
					PH932_0200MTC	3300						
					PH932_0200MTL	2500						
					PH932_0200MTLC	3300						
				≤1	PHA932_0200MF	2500		48	43.9	1141.8		
					PHA932_0200MFC	3300						

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

24.00	3000	4500	9000	≤3	PH932_0240MT	2200	3500	48	41.0	1124.5		
					PH932_0240MTC	2900			46.6	1095.6		
					PH932_0240MTL	2200			60	69.0	1124.5	
				PH932_0240MTLC	2900	1116.4						
				≤1	PHA932_0240MF	2200		48	49.3	1095.6		
					PHA932_0240MFC	2900				42.1	1225.0	
	3800	6000	12000	≤3	PHQ932_0240MT	2200	5000		60	47.7	1190.8	
					PHQ932_0240MTC	3200				70.1	1225.0	
					PHQ932_0240MTL	2200					1215.5	
				≤1	PHQ932_0240MTLC	3200			48	48.5	1190.8	
					PHQA932_0240MF	2200		3200			5000	
				28.00	3000	5000		10000	≤3	PH932_0280MT	2800	4500
PH932_0280MTC	4000	60	58.7				1120.6					
PH932_0280MTL	2800						1146.6					
≤1	PHA932_0280MF	2800	48				37.5		1120.6			
	PHA932_0280MFC	4000										
30.00	3000	4500					9000		≤3	PH932_0300MT	2500	
				PH932_0300MTC	3500	60		62.6		1096.8		
				PH932_0300MTL	2500					1115.1		
				≤1	PH932_0300MTLC	3500		48	41.7	1096.8		
			PHA932_0300MF		2500	35.2				1213.9		
			3800	6000	12000				≤3		PHA932_0300MFC	3500
	PHQ932_0300MT	2500				63.2	1213.9					
	PHQ932_0300MTC	3750					60			63.2	1207.9	
	≤1	PHQ932_0300MTL				2500			48		41.6	1192.2
		PHQ932_0300MTLC				3750	2500	4000				
	32.00	3000				4608	9216	≤3	PHQA932_0300MF	2500	4500	48
			PHQA932_0300MFC	3750	60				57.4	1092.8		
PH932_0320MT			2800	48						35.8		
≤1			PH932_0320MTC		4000			48	35.8			1092.8
			PH932_0320MTL	2800	2800					4000		
PHA932_0320MF			2800	4000	4000							

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

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⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

PH9 (continued next page)

40.00	2688	4608	9216	≤3	PH932_0400MT	2800	4500	48	27.2	1056.9
					PH932_0400MTC	4000			32.8	1046.0
					PH932_0400MTL	2800			55.2	1056.9
				≤1	PHA932_0400MF	2800		48	34.1	1046.0
					PHA932_0400MFC	4000				
42.00	3000	4500	9000	≤3	PH932_0420MT	2800	4500	48	29.6	1098.7
					PH932_0420MTC	4000			35.2	1088.0
					PH932_0420MTL	2800			57.6	1098.7
				≤1	PHA932_0420MF	2800		48	36.4	1088.0
					PHA932_0420MFC	4000				
	3800	6000	12000	≤3	PHQ932_0420MT	2800	6000	48	29.8	1194.5
					PHQ932_0420MTC	4500			35.4	1181.8
					PHQ932_0420MTL	2800			57.8	1194.5
				≤1	PHQA932_0420MF	2800		48	36.2	1181.8
					PHQA932_0420MFC	4500			6000	
48.00	3000	4500	9000	≤3	PH932_0480MT	2800	4500	48	28.5	1084.2
					PH932_0480MTC	4000			34.2	1076.2
					PH932_0480MTL	2800			56.5	1084.2
				≤1	PHA932_0480MF	2800		48	34.9	1076.2
					PHA932_0480MFC	4000				
60.00	3000	4500	9000	≤3	PH932_0600MT	2800	4500	48	26.7	1060.4
					PH932_0600MTC	4000			32.3	1055.5
					PH932_0600MTL	2800			54.7	1060.4
				≤1	PHA932_0600MF	2800		48	33.6	1055.5
					PHA932_0600MFC	4000				
	3800	6000	12000	≤3	PHQ932_0600MT	2800	6000	48	27.1	1149.3
					PHQ932_0600MTC	5500			32.7	1143.5
					PHQ932_0600MTL	2800			55.1	1149.3
				≤1	PHQA932_0600MF	2800		48	33.5	1143.5
					PHQA932_0600MFC	5500			6000	

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

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PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶	Input Inertia ⁴⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic	mm	kgcm ²	Nm
	Nm	Nm	Nm							

PH9 (continued next page)

61.00	2500	4250	9000	≤3	PHV933_0610MT	2500	4500	38	12.1	850.2		
					PHV933_0610MTC	3200			20.6	845.4		
					PHV933_0610MTL	2500			48	30.0	850.2	
					PHV933_0610MTLC	3200				22.7	847.6	
				≤1	PHVA933_0610MF	2500		38	17.6	845.4		
					PHVA933_0610MFC	3200			20.6			
					PHVA933_0610MFL	2500		48	36.4	847.6		
					PHVA933_0610MFLC	3200						
72.00	3800	6000	12000	≤3	PHQ933_0720MT	2200	4500	38	13.0	1205.3		
					PHQ933_0720MTC	3300			5000	21.5	1198.3	
					PHQ933_0720MTL	2200			4500	48	30.9	1205.3
					PHQ933_0720MTLC	3300			5000		23.6	1201.5
			12000	≤1	PHQA933_0720MF	2200		4500	38	18.5	1198.3	
					PHQA933_0720MFC	3300		5000				
					PHQA933_0720MFL	2200		4500	48	37.3	1201.5	
					PHQA933_0720MFLC	3300		5000				
91.00	2500	4250	9000	≤3	PHV933_0910MT	2500	4500	38	8.9	838.4		
					PHV933_0910MTC	3200			17.0	835.8		
					PHV933_0910MTL	2500			48	27.2	838.4	
					PHV933_0910MTLC	3200				17.3	837.1	
				≤1	PHVA933_0910MF	2500		38	14.0	835.8		
					PHVA933_0910MFC	3200			17.0			
					PHVA933_0910MFL	2500		48	33.1	837.1		
					PHVA933_0910MFLC	3200						
96.00	3800	6000	12000	≤3	PHQ933_0960MT	2500	4500	38	11.2	1207.1		
					PHQ933_0960MTC	3400			6000	19.7	1203.2	
					PHQ933_0960MTL	2500			4500	48	29.1	1207.1
					PHQ933_0960MTLC	3400			6000		21.8	1205.0
				≤1	PHQA933_0960MF	2500		4500	38	16.7	1203.2	
					PHQA933_0960MFC	3400		6000				
					PHQA933_0960MFL	2500		4500	48	35.5	1205.0	
					PHQA933_0960MFLC	3400		6000				

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

120.0	3800	6000	12000	≤3	PHQ933_1200MT	2500	4500	38	10.8	1202.6
					PHQ933_1200MTC	3600	6000		19.3	1200.1
					PHQ933_1200MTL	2500	4500	48	28.7	1202.6
					PHQ933_1200MTLC	3600	6000		21.4	1201.2
				≤1	PHQA933_1200MF	2500	4500	38	16.3	1200.1
					PHQA933_1200MFC	3600	6000		35.1	1201.2
					PHQA933_1200MFL	2500	4500	48	35.1	1201.2
					PHQA933_1200MFLC	3600	6000		35.1	1201.2
121.0	2500	4250	9000	≤3	PHV933_1210MT	2500	4500	38	7.8	805.0
					PHV933_1210MTC	3200			16.0	803.6
					PHV933_1210MTL	2500		48	26.1	805.0
					PHV933_1210MTLC	3200			16.3	804.3
				≤1	PHVA933_1210MF	2500		38	13.0	803.6
					PHVA933_1210MFC	3200			16.0	
					PHVA933_1210MFL	2500		48	32.1	804.3
					PHVA933_1210MFLC	3200			32.1	
150.0	3800	6000	12000	≤3	PHQ933_1500MT	3000	5500	38	9.1	1201.9
					PHQ933_1500MTC	4000	6000		17.6	1200.3
					PHQ933_1500MTL	3000	5500	48	27.0	1201.9
					PHQ933_1500MTLC	4000	6000		19.7	1201.0
				≤1	PHQA933_1500MF	3000	5500	38	14.6	1200.3
					PHQA933_1500MFC	4000	6000		33.4	1201.0
					PHQA933_1500MFL	3000	5500	48	33.4	1201.0
					PHQA933_1500MFLC	4000	6000		33.4	
168.0	3800	6000	12000	≤3	PHQ933_1680MT	3300	6000	38	8.0	1203.5
					PHQ933_1680MTC	4500			16.1	1201.9
					PHQ933_1680MTL	3300		48	26.3	1203.5
					PHQ933_1680MTLC	4500			16.4	1202.7
				≤1	PHQA933_1680MF	3300		38	13.1	1201.9
					PHQA933_1680MFC	4500			32.2	1202.7
					PHQA933_1680MFL	3300		48	32.2	1202.7
					PHQA933_1680MFLC	4500			32.2	

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE — Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Cont.	Cyclic			
	Nm	Nm	Nm							

PH9 (continued next page)

210.0	3800	6000	12000	≤3	PHQ933_2100MT	3300	6000	38	7.8	1200.3	
					PHQ933_2100MTC	4500			15.9	1199.3	
					PHQ933_2100MTL	3300			48	26.1	1200.3
					PHQ933_2100MTLC	4500				16.3	1199.8
				≤1	PHQA933_2100MF	3300		38	12.9	1199.3	
					PHQA933_2100MFC	4500			48	32.1	1199.8
					PHQA933_2100MFL	3300					
					PHQA933_2100MFLC	4500					
240.0	3800	6000	12000	≤3	PHQ933_2400MT	3300	6000	38	7.2	1197.5	
					PHQ933_2400MTC	5000			15.3	1196.8	
					PHQ933_2400MTL	3300			48	25.5	1197.5
					PHQ933_2400MTLC	5000				15.7	1197.1
				≤1	PHQA933_2400MF	3300		38	12.3	1196.8	
					PHQA933_2400MFC	5000			48	31.5	1197.1
					PHQA933_2400MFL	3300					
					PHQA933_2400MFLC	5000					
300.0	3800	6000	12000	≤3	PHQ933_3000MT	3300	6000	38	7.2	1196.5	
					PHQ933_3000MTC	5000			15.3	1196.0	
					PHQ933_3000MTL	3300			48	25.5	1196.5
					PHQ933_3000MTLC	5000				15.6	1196.2
				≤1	PHQA933_3000MF	3300		38	12.3	1196.0	
					PHQA933_3000MFC	5000			48	31.4	1196.2
					PHQA933_3000MFL	3300					
					PHQA933_3000MFLC	5000					

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N Nm	Acceleration M2B Nm	Peak ²⁾ M2PEAK Nm			Cont.	Cyclic			

PH9 (continued from previous page)

420.0	3800	6000	12000	≤3	PHQ933_4200MT	3300	6000	38	7.1	1184.0	
					PHQ933_4200MTC	5000			15.2	1183.8	
					PHQ933_4200MTL	3300			48	25.4	1184.0
					PHQ933_4200MTLC	5000				15.6	1183.9
				≤1	PHQA933_4200MF	3300		38	12.2	1183.8	
					PHQA933_4200MFC	5000			48	31.4	1183.9
					PHQA933_4200MFL	3300					
					PHQA933_4200MFLC	5000					
600.0	3800	6000	12000	≤3	PHQ933_6000MT	3300	6000	38	7.1	1144.6	
					PHQ933_6000MTC	5000			15.2	1144.4	
					PHQ933_6000MTL	3300			48	25.4	1144.6
					PHQ933_6000MTLC	5000				15.5	1144.5
				≤1	PHQA933_6000MF	3300		38	12.2	1144.4	
					PHQA933_6000MFC	5000			48	31.4	1144.5
					PHQA933_6000MFL	3300					
					PHQA933_6000MFLC	5000					

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



PH Series (A, Q, QA): INLINE – Flange Output

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock – Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Cont.	Cyclic			
	Nm	Nm	Nm							

PH10 (continued next page)

18.00	4608	6912	10115	≤3	PH1032_0180MT	1800	3000	48	72.0	1778.3	
					PH1032_0180MTC	2500			77.2	1655.5	
					PH1032_0180MTL	1800			60	99.6	1778.3
					PH1032_0180MTC	2500					1742.9
24.00	4608	7500	13434	≤3	PH1032_0240MT	2200	3500	48	43.2	1752.8	
					PH1032_0240MTC	2700			48.4	1683.5	
					PH1032_0240MTL	2200			60	70.8	1752.8
					PH1032_0240MTC	2700					1733.2
	6500	10000	20000			PHQ1032_0240MT	2000	3000	48	100.4	2090.1
						PHQ1032_0240MTC	3000			4500	95.8
30.00	5000	7500	15000	≤3	PH1032_0300MT	2500	4000	48	35.7	1730.1	
					PH1032_0300MTC	3200			41.3	1686.3	
					PH1032_0300MTL	2500			60	63.8	1730.1
					PH1032_0300MTC	3200					1717.9
	6500	10000	20000			PHQ1032_0300MT	2200	3500	48	81.8	2075.9
						PHQ1032_0300MTC	3500			5000	77.2
42.00	5000	7500	15000	≤3	PH1032_0420MT	2800	4500	48	30.2	1690.9	
					PH1032_0420MTC	4000			35.8	1665.6	
					PH1032_0420MTL	2800			60	58.2	1690.9
	6500	10000	20000			PHQ1032_0420MT	2500	4000	48	67.1	2048.8
						PHQ1032_0420MTC	4000			5000	62.5
48.00	4608	6912	13824	≤3	PH1032_0480MT	2800	4500	48	29.0	1656.8	
					PH1032_0480MTC	4000			34.6	1638.1	
					PH1032_0480MTL	2800			60	57.0	1656.8
60.00	4032	6912	13824	≤3	PH1032_0600MT	2800	4500	48	27.0	1601.8	
					PH1032_0600MTC	4000			32.6	1590.6	
					PH1032_0600MTL	2800			60	55.0	1601.8
	6500	10000	20000			PHQ1032_0600MT	2500	4000	48	59.8	1974.5
						PHQ1032_0600MTC	4000			5000	55.2
61.00	4000	7500	15000	≤3	PHV1033_0610MT	2500	4500	48	31.7	1370.3	
					PHV1033_0610MTC	3000			36.9	1363.6	

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	All PH & PHQ Series and PHA** Units In-stock — Ship in 1 Day Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft ³⁾ Max Ø D ⁶ mm	Input Inertia ⁴⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Cont.	Cyclic			
	Nm	Nm	Nm							

PH10 (continued from previous page)

91.00	4000	7500	15000	≤3	PHV1033_0910MT	2500	4500	60	28.3	1342.1
					PHV1033_0910MTC	3000			34.0	1338.7
96.00	6500	10000	20000	≤3	PHQ1033_0960MT	2200	3500	48	43.7	2068.2
					PHQ1033_0960MTC	3200			5000	48.9
					PHQ1033_0960MTL	2200	3500	60	71.3	2068.2
					PHQ1033_0960MTLC	3200				5000
120.0	6500	10000	20000	≤3	PHQ1033_1200MT	2200	3500	48	42.6	2062.0
					PHQ1033_1200MTC	3200			5000	47.7
					PHQ1033_1200MTL	2200	3500	60	70.1	2062.0
					PHQ1033_1200MTLC	3200				5000
150.0	6500	10000	20000	≤3	PHQ1033_1500MT	2500	4000	48	35.2	2060.8
					PHQ1033_1500MTC	3750			6000	40.8
					PHQ1033_1500MTL	2500	4000	60	63.2	2060.8
					PHQ1033_1500MTLC	3750				6000
168.0	6500	10000	20000	≤3	PHQ1033_1680MT	2800	4500	48	30.2	2064.0
					PHQ1033_1680MTC	4000			5000	35.8
					PHQ1033_1680MTL	2800	4500	55	58.2	2064.0
210.0	6500	10000	20000	≤3	PHQ1033_2100MT	2800	4500	48	29.8	2059.3
					PHQ1033_2100MTC	4000			6000	35.4
					PHQ1033_2100MTL	2800	4500	55	57.8	2059.3
240.0	6500	10000	20000	≤3	PHQ1033_2400MT	2800	4500	48	27.3	2055.3
					PHQ1033_2400MTC	4500			6000	32.9
					PHQ1033_2400MTL	2800	4500	55	55.3	2055.3
300.0	6500	10000	20000	≤3	PHQ1033_3000MT	2800	4500	48	27.1	2054.2
					PHQ1033_3000MTC	4500			6000	32.7
					PHQ1033_3000MTL	2800	4500	55	55.1	2054.2
420.0	6500	10000	20000	≤3	PHQ1033_4200MT	2800	4500	48	26.9	2036.4
					PHQ1033_4200MTC	4500			6000	32.6
					PHQ1033_4200MTL	2800	4500	55	54.9	2036.4
600.0	6500	10000	20000	≤3	PHQ1033_6000MT	2800	4500	48	26.9	1968.8
					PHQ1033_6000MTC	4500			6000	32.5
					PHQ1033_6000MTL	2800	4500	55	54.9	1968.8

PH Series (A, Q, QA): INLINE — Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 54 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ For additional motor shaft sizes, please visit configurator.stober.com

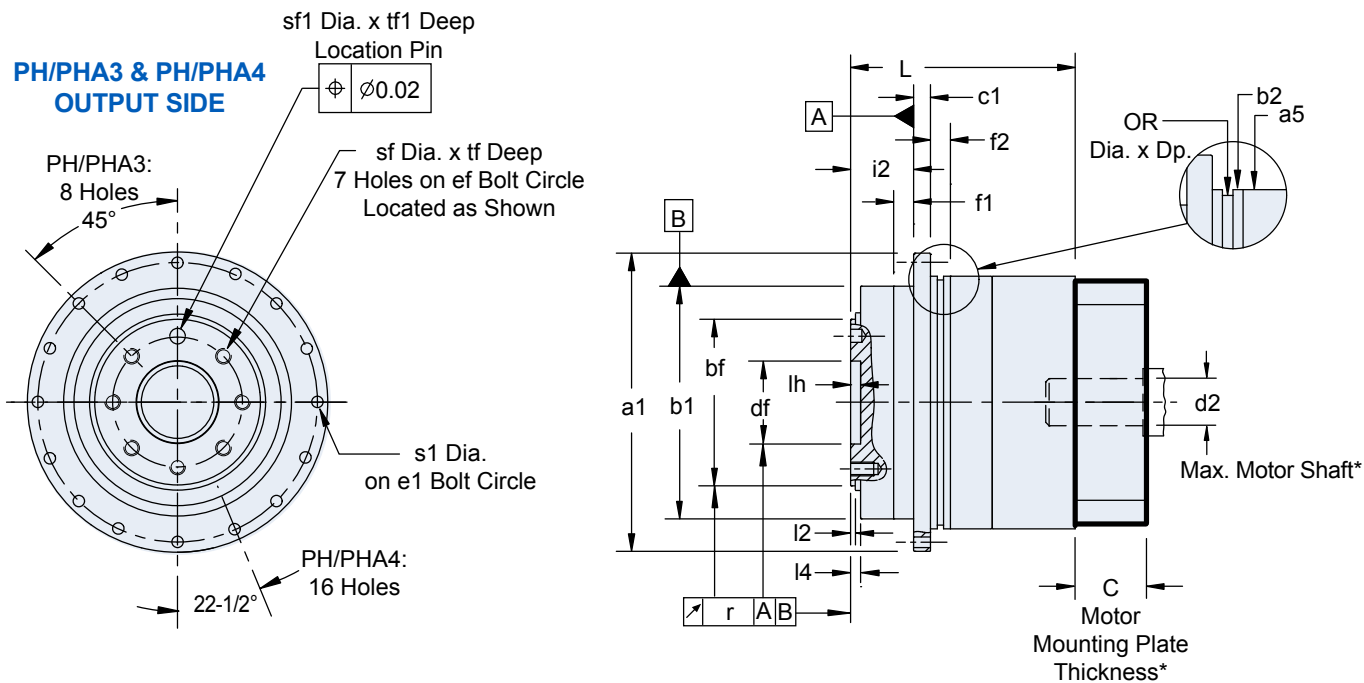
⁴⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = PH & PHQ Motor Adapter MF = PHA & PHQA Motor Adapter ME = PHQA Motor Adapter (Size 10 only) L = Large Input Option C = ServoCool Option

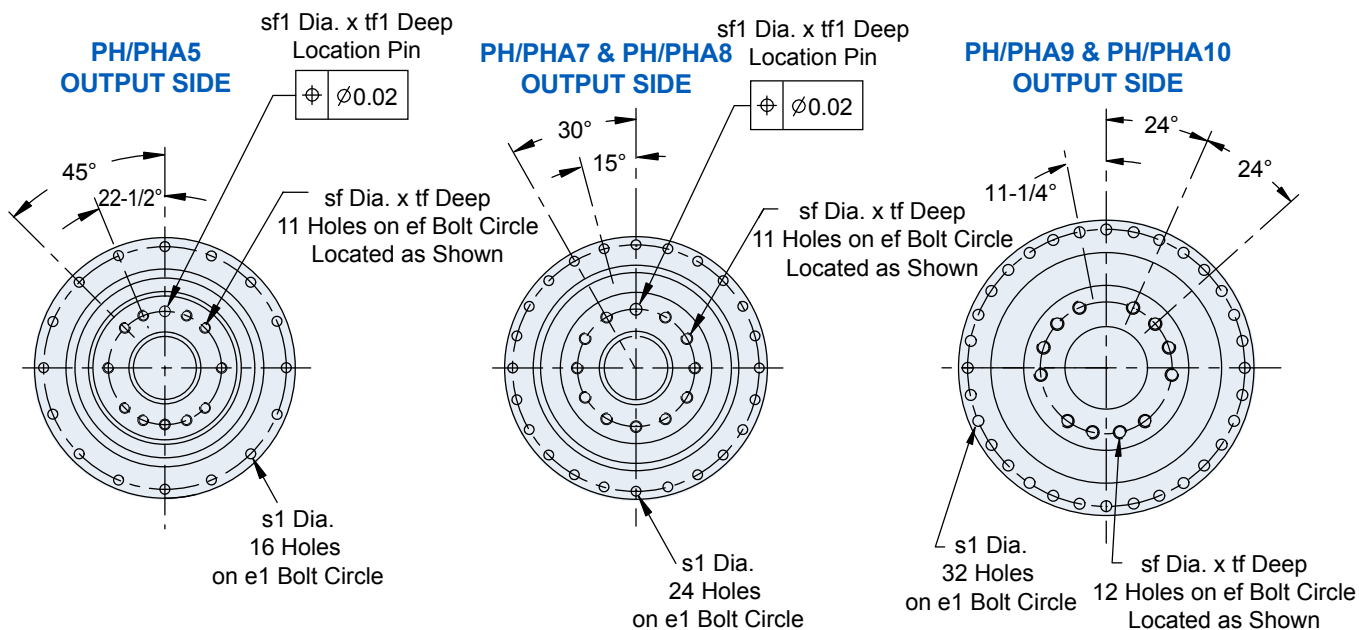
** Designates select PHA units available in stock for next day shipping (all PH & PHQ units are in stock for next day shipping)

PH Series (A, Q, QA): INLINE — Flange Output

PH/PHA Standard Input PH/PHA ServoCool Input Option



* See Motor Mounting Plate Option, page 52 for details.





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	h7*	b1	h7*	b2	h7*	bf	h7*	c1	df	H6*	e1	ef
PH/PHA3	86	+0.000/-0.035	64	+0.000/-0.030	70 ⁽¹⁾	+0.000/-0.030	40	+0.000/-0.025	4	20	+0.013/-0.000	79	31.5
PH/PHA4	118	+0.000/-0.035	90	+0.000/-0.035	95	+0.000/-0.035	63	+0.000/-0.030	7	31.5	+0.016/-0.000	109	50
PH/PHA5	145	+0.000/-0.040	110	+0.000/-0.035	120 ⁽¹⁾	+0.000/-0.035	80	+0.000/-0.030	8	40	+0.016/-0.000	135	63
PH/PHA7	179	+0.000/-0.040	140	+0.000/-0.040	152	+0.000/-0.040	100	+0.000/-0.035	10	50	+0.016/-0.000	168	80
PH/PHA8	247	+0.000/-0.046	200	+0.000/-0.046	212	+0.000/-0.046	160	+0.000/-0.040	12	80	+0.019/-0.000	233	125
PH/PHA9	300	-	255	+0.000/-0.052	255	+0.000/-0.052	180	+0.000/-0.040	18	90	+0.022/-0.000	280	140
PH/PHV10	330	-	285	+0.000/-0.057	285	+0.000/-0.052	200	+0.000/-0.046	20	95	+0.022/-0.000	310	160

⁽¹⁾ Not applicable for PH322 and PH522.

Table 2 Dimensions (mm)

Unit	f1	f2	i2	l2	l4	lh	OR	r	s1	sf	sf1	H7*	tf	tf1
PH/PHA3	7	8	19.5	3	3.5	4	65x2	0.020	4.5	M5x0.80	M5x0.80	+0.012/-0.000	7	3
PH/PHA4	10	10	30	6	6.5	6	90x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA5	10	12	29	6	6.5	6	110x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA7	12	12	38	6	6.5	6	145x3	0.025	6.6	M8x1.25	M8x1.25	+0.015/-0.000	14	7
PH/PHA8	15	15	50	8	8.5	8	200x5	0.030	9	M10x1.50	M10x1.50	+0.015/-0.000	18	10
PH/PHA9	20	33	66	11	12	12	238x5	0.030	13.5	M16x2.00	-	-	24	-
PH/PHV10	20	20	75	15	15	10	270x6	0.040	13.5	M20x 2.25	-	-	30	-

* h7 = existing values; H7 = permissible values

Table 3 Dimensions (mm)

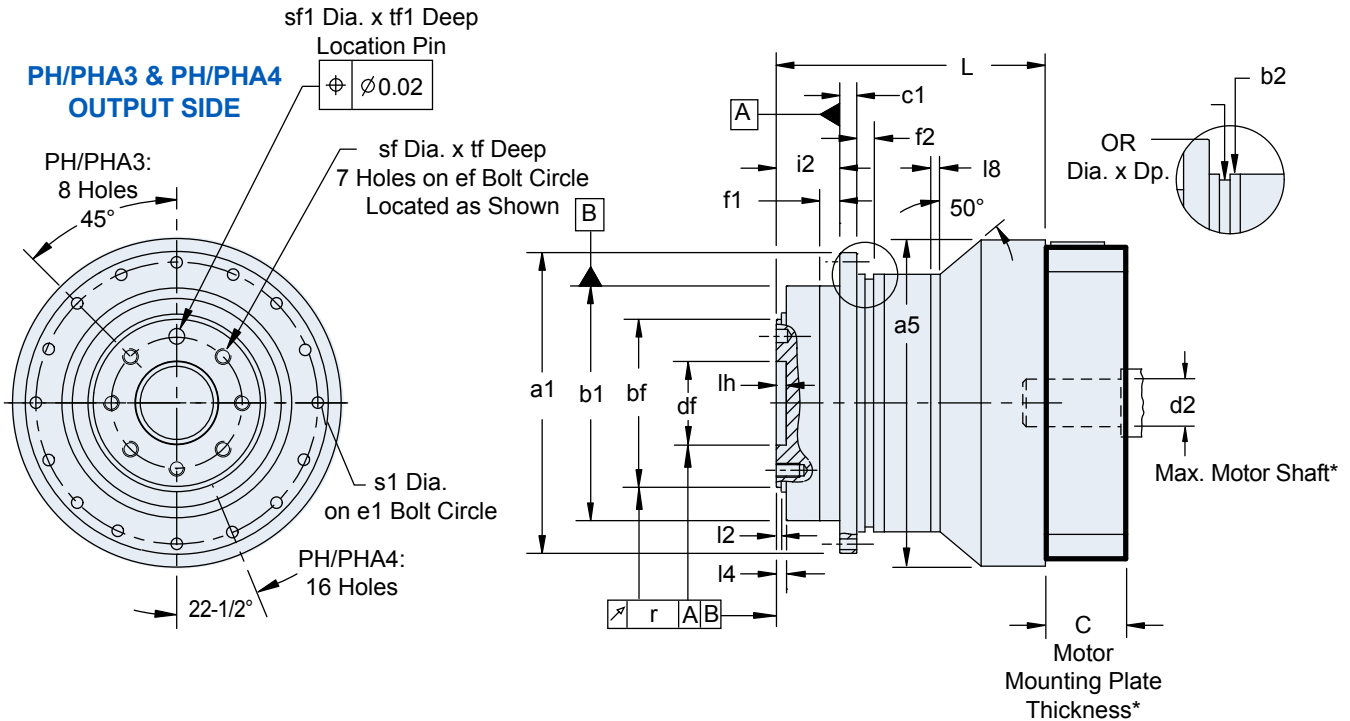
Unit	Standard Input			ServoCool Input Option*							
	a5	L	Unit	a5	L	Unit	a5	L	Unit	a5	L
PH321	70	80.5	PHA321	70	80.5	-	-	-	-	-	-
PH322	55	104	PHA322	55	108	-	-	-	-	-	-
PH421	95	99	PHA421	95	99	PH421_C	95	122.5	PHA421_C	95	99
PH422	72	146.5	PHA422	72	146.5	-	-	-	-	-	-
PH521	120	110	PHA521	120	110	PH521_C	120	138	PHA21_C	120	110
PH522	98	159.5	PHA522	98	159.5	PH522_C	98	183	PHA22_C	98	183
PH721	152	138	PHA721	152	140	PH721_C	152	168	PHA721_C	152	138
PH722	115	190	PHA722	115	190	PH722_C	115	218	PHA722_C	115	218
PH821	212	183	PHA821	212	184.5	PH821_C	212	231	PHA821_C	212	183
PH822	145	251	PHA822	145	253	PH822_C	145	281	PHA822_C	145	251
PH932	190	349.5	PHA932	190	350.5	PH932_C	190	397.5	PHA932_C	190	349.5
PHV933	152	269.5	PHAV933	152	271.5	PHV933_C	152	299.5	PHAV933_C	152	269.5
PH1032	190	366	-	-	-	PH1032_C	190	414	-	-	-
PHV1033	212	307	-	-	-	PHV1033_C	212	355	-	-	-

* See "PH/PHA Large Input Option" on page 90 for ServoCool Input Option combined with Large Input Option

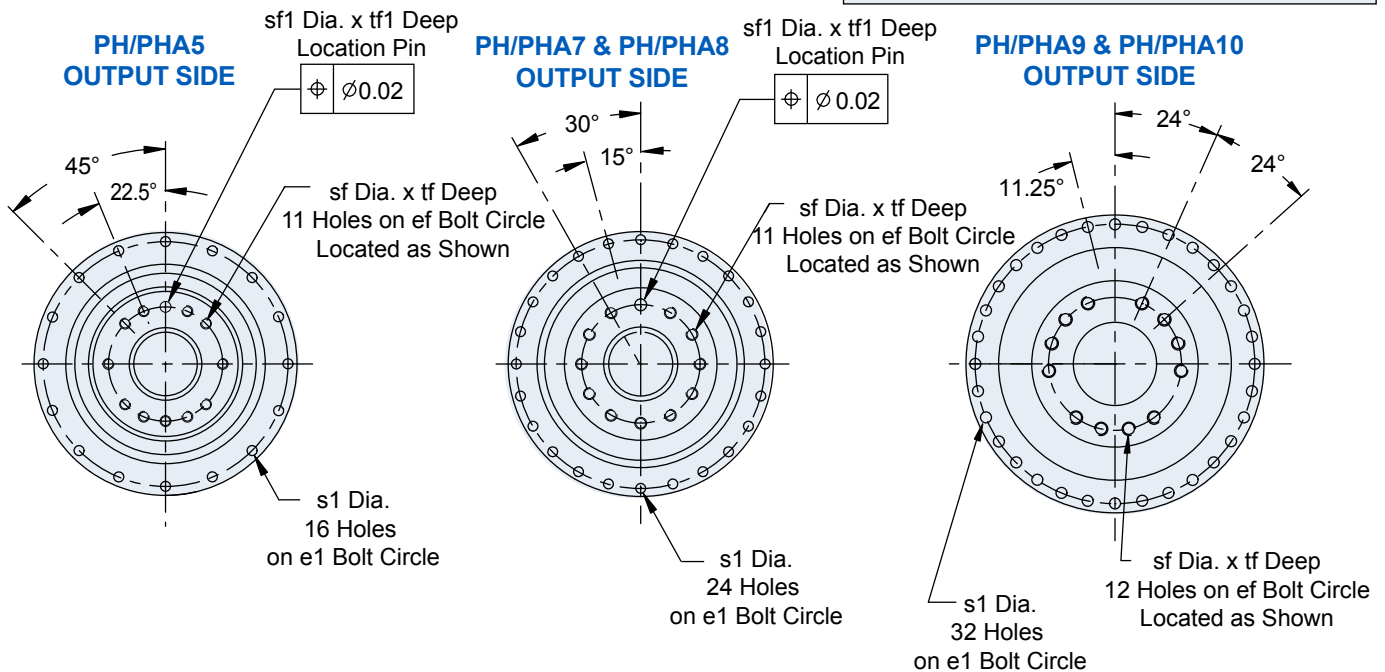
PH Series (A, Q, QA): INLINE — Flange Output

PH Series (A, Q, QA): INLINE — Flange Output

PH/PHA Large Input Option



* See Motor Mounting Plate Option, page 52 for details.





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	h7*	b1	h7*	b2	h7*	bf	h7*	c1	df	H7*	e1	ef
PH/PHA3	86	+0.000/-0.035	64	+0.000/-0.030	70 ⁽¹⁾	+0.000/-0.030	40	+0.000/-0.025	4	20	+0.021/-0.0	79	31.5
PH/PHA4	118	+0.000/-0.035	90	+0.000/-0.035	95	+0.000/-0.035	63	+0.000/-0.030	7	31.5	+0.025/-0.0	109	50
PH/PHA5	145	+0.000/-0.040	110	+0.000/-0.035	120 ⁽¹⁾	+0.000/-0.035	80	+0.000/-0.030	8	40	+0.025/-0.0	135	63
PH/PHA7	179	+0.000/-0.040	140	+0.000/-0.040	152	+0.000/-0.040	100	+0.000/-0.035	10	50	+0.025/-0.0	168	80
PH/PHA8	247	+0.000/-0.046	200	+0.000/-0.046	212	+0.000/-0.046	160	+0.000/-0.040	12	80	+0.030/-0.0	233	125
PH/PHA9	300	–	255	+0.000/-0.052	255	+0.000/-0.052	180	+0.000/-0.040	18	90	+0.035/-0.0	280	140
PH10	330	–	285	+0.000/-0.057	285	+0.000/-0.052	200	+0.000/-0.046	20	95	+0.035/-0.0	310	160

⁽¹⁾ Not applicable for PH322 and PH522.

Table 2 Dimensions (mm)

Unit	f1	f2	i2	l2	l4	l8	lh	OR	r	s1	sf	sf1	H7*	tf	tf1
PH/PHA3	7	8	19.5	3	3.5	5	4	65x2	0.020	4.5	M5x0.80	M5x0.80	+0.012/-0.000	7	3
PH/PHA4	10	10	30	6	6.5	5	6	90x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA5	10	12	29	6	6.5	5	6	110x3	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7
PH/PHA7	12	12	38	6	6.5	5	6	145x3	0.025	6.6	M8x1.25	M8x1.25	+0.015/-0.000	14	7
PH/PHA8	15	15	50	8	8.5	5	8	200x5	0.030	9	M10x1.50	M10x1.50	+0.015/-0.000	18	11
PH/PHA9	20	33	66	11	12	5	12	238x5	0.030	13.5	M16x2.00	–	–	24	–
PH10	20	20	75	15	15	3	10	270x6	0.040	13.5	M20x 2.25	–	–	30	–

* h7 = existing values; H7 = permissible values

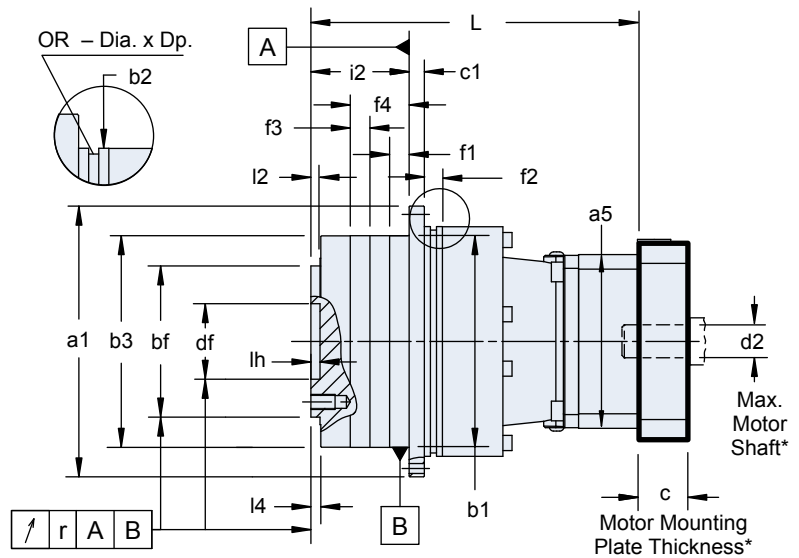
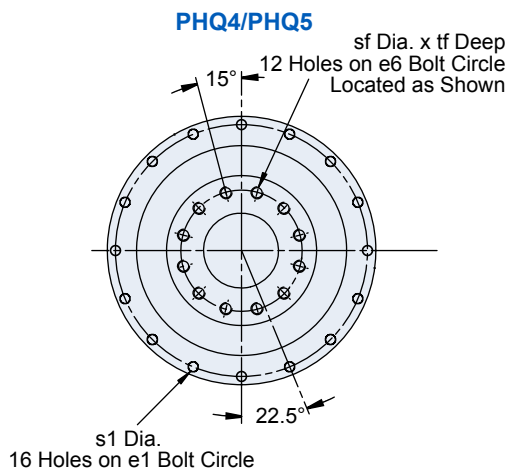
Table 3 Dimensions (mm)

Large Input Option						Large Input with ServoCool Option					
Unit	a5	L	Unit	a5	L	Unit	a5	L	Unit	a5	L
PH321_L	88	87.8	PHA321_L	88	85.5	PH321_LC	88	111.3	PHA321_LC	88	87.8
PH322_L	75	120.5	–	–	–	–	–	–	–	–	–
PH421_L	114	107.5	PHA421_L	114	107.5	PH421_LC	114	135.5	PHA421_LC	114	107.5
PH422_L	100	149.8	PHA422_L	100	147.5	PH422_LC	100	173.3	PHA422_LC	100	149.8
PH521_L	124	124	PHAS21_L	124	126	PH521_LC	124	154	PHAS21_LC	124	124
PH522_L	168	168	PHAS22_L	168	168	PH522_LC	168	196	PHAS22_LC	168	168
PH721_L	208	154.5	PHA721_L	208	156	PH721_LC	208	202.5	PHA721_LC	208	154.5
PH722_L	204	204	PHA722_L	204	206	PH722_LC	204	234	PHA722_LC	204	204
PH821_L	225	191	–	–	–	–	–	–	–	–	–
PH822_L	268	268	PHA822_L	268	269	PH822_LC	268	316	PHA822_LC	268	268
PH932_L	358	357.5	–	–	–	PH932_LC	358	357.5	–	–	–
PHV933_L	208	286	PHAV933_L	208	287.5	PHV933_LC	208	334	PHAV933_LC	208	286
PH1032_L	374	374	–	–	–	PH1032_LC	374	374	–	–	–
PHV1033_L	225	315	–	–	–	–	–	–	–	–	–

PH Series (A, Q, QA): INLINE — Flange Output

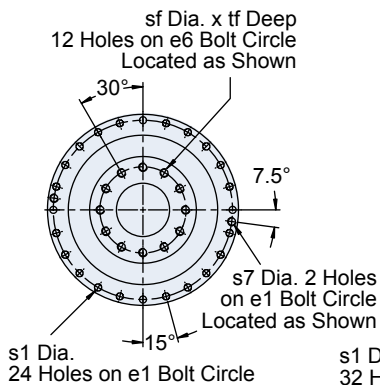
PH Series (A, Q, QA): INLINE — Flange Output

PHQ/PHQA Standard Input

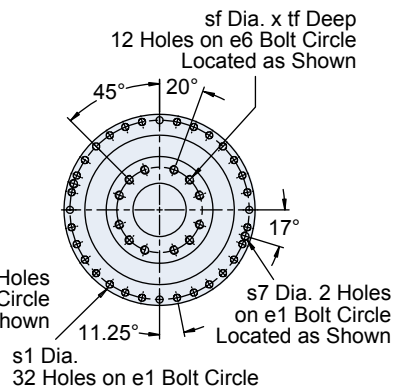


OUTPUT SIDE

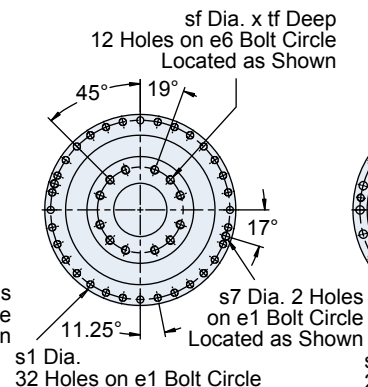
PHQ7/PHQ8



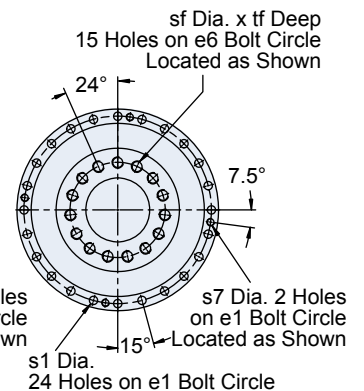
PHQ9



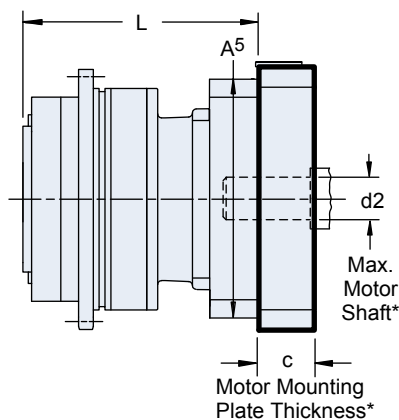
PHQ10



PHQ11



PHQ/PHQA Large Input Option



* See Motor Mounting Plate Option, see page 52 for details.



Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	b1	b2 _{h7}	b3 _{g6}	bf _{h7}	c1	df	e1	e6	f1	f2	f3	f4
PHQ/PHQA4	118 _{h7}	90 _{h7}	95	–	63	7	31.5	109	50	10	10	–	–
PHQ/PHQA5	145 _{h7}	110 _{h7}	120	–	80	8	40	135	63	10	12	–	–
PHQ/PHQA7	179 _{h7}	140 _{h7}	152	–	100	10	50	168	80	12	12	–	–
PHQ/PHQA8	247 _{h7}	200 _{h7}	212	–	160	12	80	233	125	15	15	–	–
PHQ/PHQA9	300 _{h7}	255 _{h7}	255	–	180	18	90	280	145	20	33	–	–
PHQ10	330 _{h7}	285 _{h7}	285	–	200	20	95	310	166	20	20	–	–
PHQ11	425	365 _{h6}	–	365	260	32	120	395	200	30	30	30	120

Table 2 Dimensions (mm)

Unit	i2	l2	l4	lh	OR	r	s1	s7	sf	tf
PHQ/PHQA4	30	6	6.5	6	90x3	0.020	5.5	–	M6x1.00	11
PHQ/PHQA5	29	6	6.5	6	110x5	0.020	5.5	–	M8x1.25	12
PHQ/PHQA7	38	6	6.5	6	145x3	0.025	6.6	–	M10x1.50	16
PHQ/PHQA8	50	8	8.5	8	200x5	0.030	9.0	M10x1.50	M12x1.75	17
PHQ/PHQA9	66	11	12	12	238x5	0.030	13.5	M8x1.25	M20x 2.25	28
PHQ10	75	15	15	10	270x6	0.040	13.5	M10x1.50	M24x2.50	35
PHQ11	190	10	10	10	–	0.040	17.5	M16x2.00	M24x2.50	36

* h6, h7, g6 = existing values

Table 3 Dimensions (mm)

Standard Input						Large Input Option					
Unit	a5	L	Unit	a5	L	Unit	a5	L	Unit	a5	L
PHQ421	95	99	PHQA421	95	99	PHQ421_L	95	107.5	PHQA421_L	95	107.5
PHQ422	100	146.5	PHQA422	100	146.5	PHQ422_L	100	149.8	PHQA422_L	100	147.5
PHQ521	145	110	PHQA521	145	110	PHQ521_L	145	124	PHQA521_L	145	126
PHQ522	115	159.5	PHQA522	115	159.5	PHQ522_L	115	168	PHQA522_L	115	168
PHQ721	152	138	PHQA721	152	140	PHQ721_L	152	154.5	PHQA721_L	152	156
PHQ722	115	190	PHQA722	115	190	PHQ722_L	115	204	PHQA722_L	115	206
PHQ723	100	239.5	PHQA723	100	239.5	PHQ723_L	100	248	PHQA723_L	100	248
PHQ822	145	251	PHQA822	145	253	PHQ822_L	145	268	PHQA822_L	145	269
PHQ823	115	303	PHQA823	115	303	PHQ823_L	115	317	PHQA823_L	115	319
PHQ932	190	349.5	PHQA932	190	350.5	PHQ932_L	190	357.5	–	–	–
PHQ933	145	417	PHQA933	145	419	PHQ933_L	145	434	PHQA933_L	145	435
PHQ1032	225	415	–	–	–	–	–	–	–	–	–
PHQ1033	190	503	–	–	–	PHQ1033_L	190	511	–	–	–
PHQ1132	310	430	–	–	–	–	–	–	–	–	–
PHQ1133	190	553.5	–	–	–	PHQ1133_L	190	561.5	–	–	–

PH Series (A, Q, QA): INLINE — Flange Output



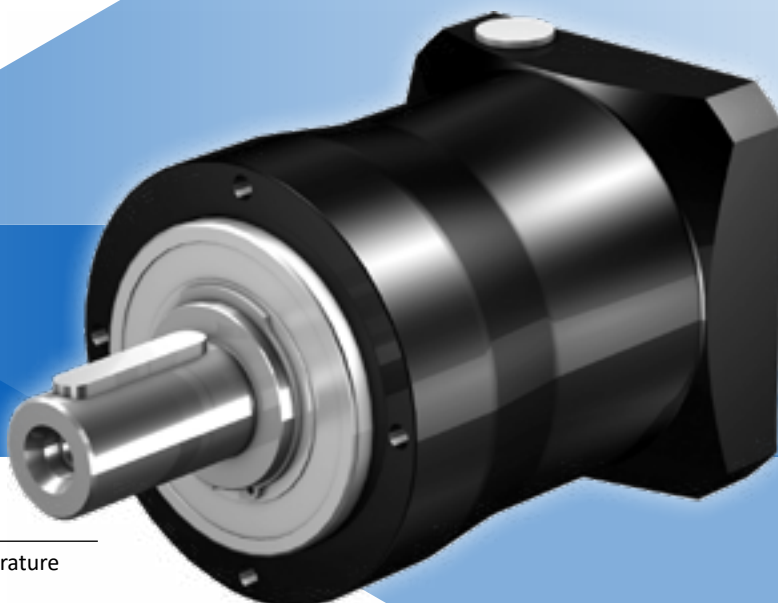
PE Series: INLINE — Shaft Output

Features

- 3:1 to 100:1 ratios
- Helical gearing produces more torque while running quieter compared to spur tooth gearing
- Input coupling design transfers more torque with lower inertia for vibration free operation
- Large motor input option to accept bigger diameter motor shafts so you don't use an oversized gearbox
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Low no load running torque, giving you more torque for your application
- Optional food grade grease (Contact STÖBER.)
- Build and ship in one day
- Assembled in the USA

STÖBER PE Series ServoFit® Precision Planetary Gearheads are available for applications where very low backlash is not important. They are an economical helical tooth planetary, comparable in quality to other STÖBER units. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more

**SHIPS in
1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE



General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <90°C Max]
Backlash	≤8 arcmins, see performance overview chart page
Coating	Black (RAL 790-4)
Degree of Protection	IP64
Direction of Rotation	Input and output rotate the SAME direction
Efficiency	1 stage 97%; 2 stage 95%
Input RPM	Up to 8,000 RPM
Installation	Requires 10.9 fasteners. See page 328 for more information
Grease	Synthetic grease (NLGI 2)/ Food grease - lubricated for life
Mounting Position	Unrestricted
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

Comparative Advantages

	MA	MAL
Length	Standard	Long
Cost	\$\$	\$\$\$
Input Adaptability	Unlimited	Unlimited

Options

Large Input (MAL)

- Accommodates a larger diameter motor shaft without going to a larger size gearbox

Coating Option

Available with a multi-layer, industrial 316 stainless steel epoxy coating (contact factory)





Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the PE Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples: ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
PE 3 1 1 S P R 0030 MA

Design Option	Part Number Code	Description
① Series	PE	Economical planetary
② Size	2 3 4 5	4 sizes of gearhead
③ Generation	1	Version of gearhead
④ # of Stages	1 2	One stage for ratios of ≤ 10:1 Two stage for ratios >10:1
⑤ Housing	S	Standard mounting style
⑥ Output	P	Shaft with key
⑦ Bearings	R	Normal
⑧ Ratio	0030	Ratios range from 3:1 to 100:1 (0030=3:1; 0200=20:1; 1000=100:1, etc.)
⑨ Motor Adapter	MA MAL	Motor adapter w/standard input* Motor adapter w/large Input* *See Motor Mounting Plate Option, page 96

PE Series: INLINE — Shaft Output

PE Series Performance Overview

PE Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

	Size/Generation	PE21		PE31		PE41		PE51	
		# of Stages	1	2	1	2	1	2	1
Permissible Acceleration Torque M_{2BMAX}	Nm	15	15	42	55	100	120	250	310
Output Torque Nom. ¹⁾ M_{2NMAX}	Nm	8	8	23	30	50	65	130	160
Torsional Stiffness C_2	Nm/arcmin	1.4	1.4	4.1	4.2	13	14	33	35
Torsional Backlash ²⁾ $\Delta\phi$	arcmin	≤10	≤13	≤8	≤10	≤8	≤10	≤8	≤10
Input Speed Max. n_{1MAX}	Continuous Cyclic	4000 8000		4000 6000		3600 6000		3000 5000	
Efficiency (@nom torque)	%	1 Stage = 97; 2 Stage = 95							
Weight	kg lbs	1.3 2.87	1.2 2.65	3.0 6.61	3.0 6.61	5.2 11.46	5.7 12.57	9.9 21.83	10.6 23.37
Noise ³⁾	dB(A)	≤60	≤60	≤62	≤61	≤64	≤63	≤65	≤64

¹⁾ Ratings based on input speed (n_1) of 1500 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula:
where n_1 = Actual Input Speed.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{1500}}}$$

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

PE Series: INLINE — Shaft Output

PE Series Motor Mounting Plate Option (Motor information required with Motor Adapter option)

STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate

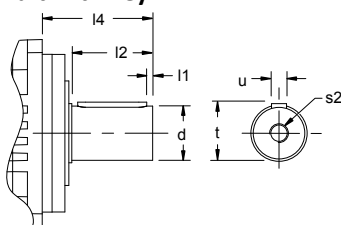
d2	Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)
b6	Pilot Diameter
e6	Bolt Circle Diameter
s6	Bolt Diameter
l5	Motor Shaft Length
f6	Pilot Length
a6	Square Flange (Optional – motor plate will typically be made to match this dimension.)

Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)	PE211 PE212	PE211...L PE311 PE312	PE311...L PE411 PE412	PE411...L PE511 PE512	PE511...L
Maximum Allowed Motor Shaft Dia. d2	14	19	24	32	38
Minimum Allowed Motor Plate Thickness c*	15	18	21	24	26

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

PE Series Output Shaft Options (“P” designated in part number, for example: PE211S P 0040 MAL)

P Shaft with Key



Unit	d k6 mm	l1 mm	l2 mm	l4 mm	s2 ⁽¹⁾	t mm	u ⁽²⁾ W x H x L	
								PE2
PE3	16	+0.012/+0.001	2	28	36	M5	18.0	A5x5x22
PE4	22	+0.015/+0.002	2	36	46	M8	24.5	A6x6x32
PE5	32	+0.018/+0.002	4	58	70	M12	35.0	A10x8x50

⁽¹⁾ The center hole in shafts with keys (Option “P”) are machined to DIN 332 T2 shape DR.

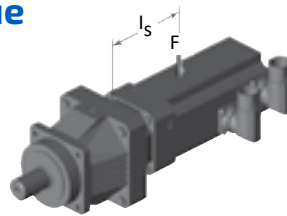
⁽²⁾ Feather keys are toleranced according to standard DIN 6885.



Overview

Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load “F” from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity “ l_s ” of the motor.



$$M_{1k} = F \times l_s \leq M_{1K}$$

M_{1K}	PE211 PE212	PE311 PE312	PE411 PE412	PE511 PE512
Nm	10	20	40	80

PE Permissible Output Shaft Load and Tilting Moments*

Unit	Z_2 mm	F_{2A} N	F_{2R} N	M_{2K} Nm
PE211, PE212	8	400	800	13
PE311, PE312	11	800	1600	40
PE411, PE412	13	1900	2400	73
PE511, PE512	16	4000	4600	206

* Refer to illustration and definitions below. During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A} , F_{2R} and M_{2K} can be multiplied by a factor of 2. Rating based on output speed (n_2) of 100 RPM. For values at other speeds see below.

PE Series Load/Life/Speed Calculations

All formulas shown are based on METRIC values

Upper case letters are permissible values. Lower case letters are for existing values.

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

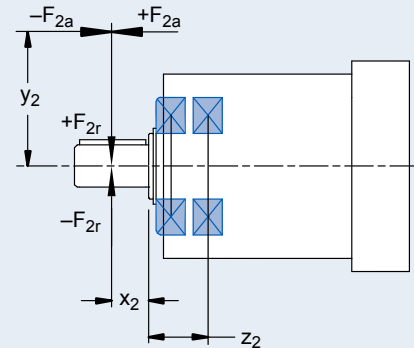
$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}}, \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}}, \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2r} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

Where:

F_{2a}	Axial Load at Output Shaft	F_{2RB}	Acceleration Permissible Radial Load
F_{2A}	Permissible Axial Load	M_{2K}	Rated Tilting Torque
F_{2r}	Radial Load at Output Shaft	M_{2k}	Equivalent Tilting Load
F_{2R}	Permissible Radial Load	z_2	Distance Factor



The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle $\leq 40\%$

$$L_h > 10,000 \text{ hours if } M_{2K}/M_{2A} < 1.25 \text{ and } > 1$$

$$L_h > 20,000 \text{ hours if } M_{2K}/M_{2A} > 1.25 \text{ and } > 1.5$$

bearing life for duty cycle $\geq 40\%$

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$



PE Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft Max Ø D ⁶	Input Inertia ³⁾ j ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Cont.	Cyclic			
	Nm	Nm	Nm				mm	kgcm ²	Nm

PE2

4.000	7	14	26	PE211_0040MA	4000	8000	>11≤14	0.1	1.4
				PE211_0040MAL			>14≤19	0.4	
5.000	8	15	26	PE211_0050MA	4000	8000	>11≤14	0.1	1.3
				PE211_0050MAL			>14≤19	0.4	1.4
7.000	8	15	26	PE211_0070MA	4000	8000	>11≤14	0.1	1.3
				PE211_0070MAL			>14≤19	0.4	
10.00	7	13	22	PE211_0100MA	4000	8000	>11≤14	0.1	1.1
				PE211_0100MAL			>14≤19	0.4	
16.00	7	14	26	PE212_0160MA	4000	8000	>11≤14	0.1	1.4
20.00	8	15	26	PE212_0200MA	4000	8000	>11≤14	0.1	1.3
25.00	8	15	26	PE212_0250MA	4000	8000	>11≤14	0.1	1.3
28.00	7	14	26	PE212_0280MA	4000	8000	>11≤14	0.1	1.3
35.00	8	15	26	PE212_0350MA	4000	8000	>11≤14	0.1	1.3
40.00	7	14	26	PE212_0400MA	4000	8000	>11≤14	0.1	1.3
50.00	8	15	26	PE212_0500MA	4000	8000	>11≤14	0.1	1.3
70.00	8	15	26	PE212_0700MA	4000	8000	>11≤14	0.1	1.3
100.0	7	13	22	PE212_1000MA	4000	8000	>11≤14	0.1	1.1

¹⁾ Based on input speed of 1500 RPM. See page 97 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MA = Motor Accurate L = Large Input Option



Selection Data

Exact Ratio (i)	Output Torque			Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft Max Ø D ⁶	Input Inertia ³⁾ j ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Cont.	Cyclic			
	Nm	Nm	Nm				mm	kgcm ²	Nm

PE3

3.000	21	40	65	PE311_0030MA	3500	6000	>14≤19	0.5	3.3
				PE311_0030MAL			>19≤24	1.0	3.5
4.000	22	42	75	PE311_0040MA	3700	6000	>14≤19	0.4	4.0
				PE311_0040MAL			>19≤24	0.9	4.1
5.000	23	40	75	PE311_0050MA	3700	6000	>14≤19	0.4	3.9
				PE311_0050MAL			>19≤24	0.9	4.0
7.000	23	40	75	PE311_0070MA	4000	6000	>14≤19	0.4	3.8
				PE311_0070MAL			>19≤24	0.9	
10.00	19	37	75	PE311_0100MA	4000	6000	>14≤19	0.4	3.4
				PE311_0100MAL			>19≤24	0.9	
12.00	30	55	75	PE312_0120MA	3700	6000	>14≤19	0.5	4.1
15.00	23	40	75	PE312_0150MA	3700	6000	>14≤19	0.5	4.0
16.00	30	55	75	PE312_0160MA	3700	6000	>14≤19	0.4	4.2
20.00	30	55	75	PE312_0200MA	3700	6000	>14≤19	0.4	4.2
25.00	23	40	75	PE312_0250MA	3700	6000	>14≤19	0.4	4.0
28.00	30	55	75	PE312_0280MA	4000	6000	>14≤19	0.4	4.2
35.00	23	40	75	PE312_0350MA	4000	6000	>14≤19	0.4	4.0
40.00	30	55	75	PE312_0400MA	4000	6000	>14≤19	0.4	4.1
50.00	23	40	75	PE312_0500MA	4000	6000	>14≤19	0.4	4.0
70.00	23	40	75	PE312_0700MA	4000	6000	>14≤19	0.4	3.8
100.0	20	37	75	PE312_1000MA	4000	6000	>14≤19	0.4	3.4

PE Series: INLINE — Shaft Output

¹⁾ Based on input speed of 1500 RPM. See page 97 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MA = Motor Accurate L = Large Input Option



PE Series: INLINE – Shaft Output

Exact Ratio (i)	Output Torque			Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ j ₁ kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Cont.	Cyclic			
	Nm	Nm	Nm						

PE4

3.000	45	90	180	PE411_0030MA	3000	5500	>19≤24	1.4	11.7
				PE411_0030MAL			>24≤32	3.0	12.1
4.000	50	100	190	PE411_0040MA	3400	6000	>19≤24	1.2	12.8
				PE411_0040MAL			>24≤32	2.8	13.0
5.000	50	100	190	PE411_0050MA	3400	6000	>19≤24	1.2	12.2
				PE411_0050MAL			>24≤32	2.8	12.4
7.000	50	100	190	PE411_0070MA	3600	6000	>19≤24	0.9	11.5
				PE411_0070MAL			>24≤32	2.6	11.6
10.00	45	90	190	PE411_0100MA	3600	6000	>19≤24	0.9	10.1
				PE411_0100MAL			>24≤32	2.5	
12.00	65	120	190	PE412_0120MA	3400	5500	>19≤24	1.3	13.4
15.00	50	100	190	PE412_0150MA	3400	6000	>19≤24	1.3	12.4
16.00	65	120	190	PE412_0160MA	3400	6000	>19≤24	1.1	13.5
20.00	65	120	190	PE412_0200MA	3400	6000	>19≤24	1.1	13.5
25.00	50	100	190	PE412_0250MA	3400	6000	>19≤24	1.1	12.5
28.00	65	120	190	PE412_0280MA	3600	6000	>19≤24	0.9	13.4
35.00	50	100	190	PE412_0350MA	3600	6000	>19≤24	0.9	12.4
40.00	65	120	190	PE412_0400MA	3600	6000	>19≤24	0.9	13.3
50.00	50	100	190	PE412_0500MA	3600	6000	>19≤24	0.9	12.4
70.00	50	100	190	PE412_0700MA	3600	6000	>19≤24	0.9	11.6
100.0	45	90	190	PE412_1000MA	3600	6000	>19≤24	0.9	10.1

¹⁾ Based on input speed of 1500 RPM. See page 97 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MA = Motor Accurate L = Large Input Option



Selection Data

Exact Ratio (i)	Output Torque			Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n ₁)		Motor Shaft Max Ø D ⁶	Input Inertia ³⁾ j ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Cont.	Cyclic			
	Nm	Nm	Nm				mm	kgcm ²	Nm

PE5

3.000	90	180	392	PE511_0030MA	2500	4500	>24≤32	2.7	29.5
				PE511_0030MAL			>32≤38	6.5	31.6
4.000	130	250	400	PE511_0040MA	2600	5000	>24≤32	3.1	31.6
				PE511_0040MAL			>32≤38	6.9	32.9
5.000	130	250	400	PE511_0050MA	2600	5000	>24≤32	2.9	31.6
				PE511_0050MAL			>32≤38	6.7	32.5
7.000	130	250	400	PE511_0070MA	2800	5000	>24≤32	2.6	29.9
				PE511_0070MAL			>32≤38	6.4	30.4
15.00	130	250	480	PE512_0150MA	2500	4500	>24≤32	3.8	32.8
16.00	160	310	480	PE512_0160MA	2600	5000	>24≤32	3.2	34.6
20.00	160	310	480	PE512_0200MA	2600	5000	>24≤32	3.0	34.6
25.00	130	250	480	PE512_0250MA	2600	5000	>24≤32	3.0	32.9
28.00	160	310	480	PE512_0280MA	2800	5000	>24≤32	2.7	34.5
35.00	130	250	480	PE512_0350MA	2800	5000	>24≤32	2.7	32.8
40.00	160	310	480	PE512_0400MA	3000	5000	>24≤32	2.6	34.2
50.00	130	250	480	PE512_0500MA	3000	5000	>24≤32	2.6	32.6
70.00	130	250	480	PE512_0700MA	3000	5000	>24≤32	2.6	30.6
100.0	110	220	480	PE512_1000MA	3000	5000	>24≤32	2.6	26.9

PE Series: INLINE — Shaft Output

¹⁾ Based on input speed of 1500 RPM. See page 97 for details on torque calculations.

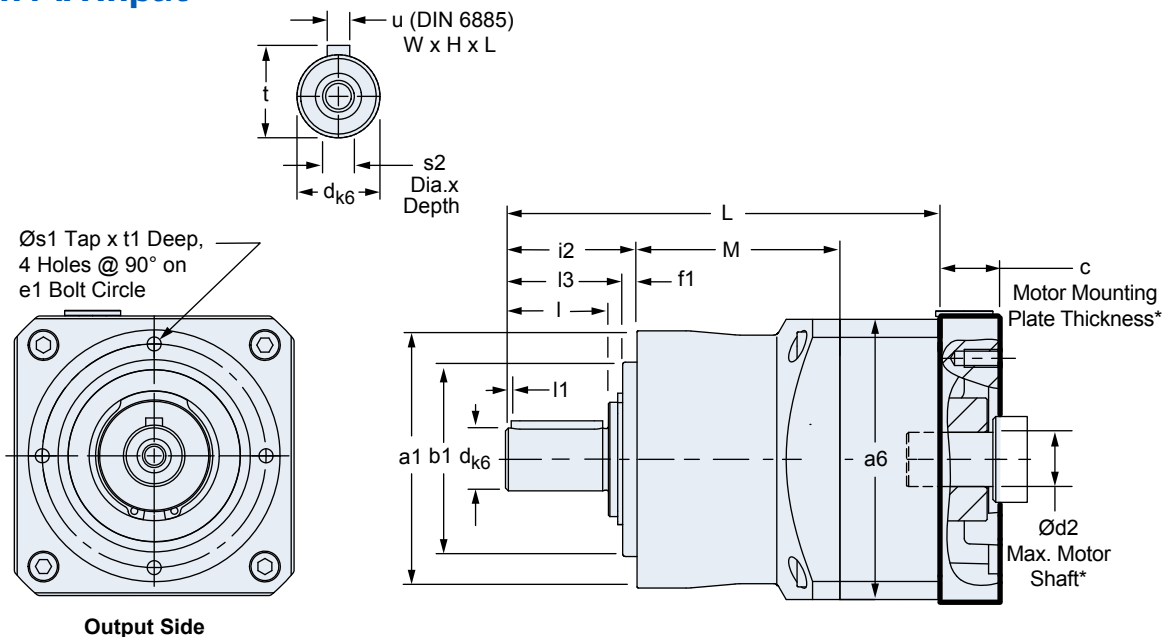
²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MA = Motor Accurate L = Large Input Option

PE Series: INLINE – Shaft Output

PE with MA Input



* See Motor Mounting Plate Option, page 96 for details.

Table 1 PE Unit Dimensions (mm)

Unit	a1	a6	b1	h6	d	k6	e1	f1	i2	l	l1	l3	s1	s2	t	t1	u
PE211/PE212	50	55	35	+0.000/-0.016	12	+0.012/+0.001	44	4	24.5	18	2	20.5	M4x0.70	M4x0.70	13.5	8	A4x4x14
PE311/PE312	70	72	52	+0.000/-0.019	16	+0.012/+0.001	62	5	36	28	2	31	M5x0.80	M5x0.80	18	10	A5x5x22
PE411/PE412	90	98	68	+0.000/-0.019	22	+0.015/+0.002	80	5	46	36	2	41	M6x1.00	M8x1.25	24.5	13	A6x6x32
PE511/PE512	120	115	90	+0.000/-0.022	32	+0.018/+0.002	108	6	70	58	4	64	M8x1.25	M12x1.75	35	16	A10x8x50

Table 2 PE Unit Dimensions (mm)

Unit	L	M
PE211	94	52.5
PE212	121.5	80
PE311	135.5	66
PE312	168	98.5
PE411	152	71
PE412	190	109
PE511	199.5	89.5
PE512	245	135

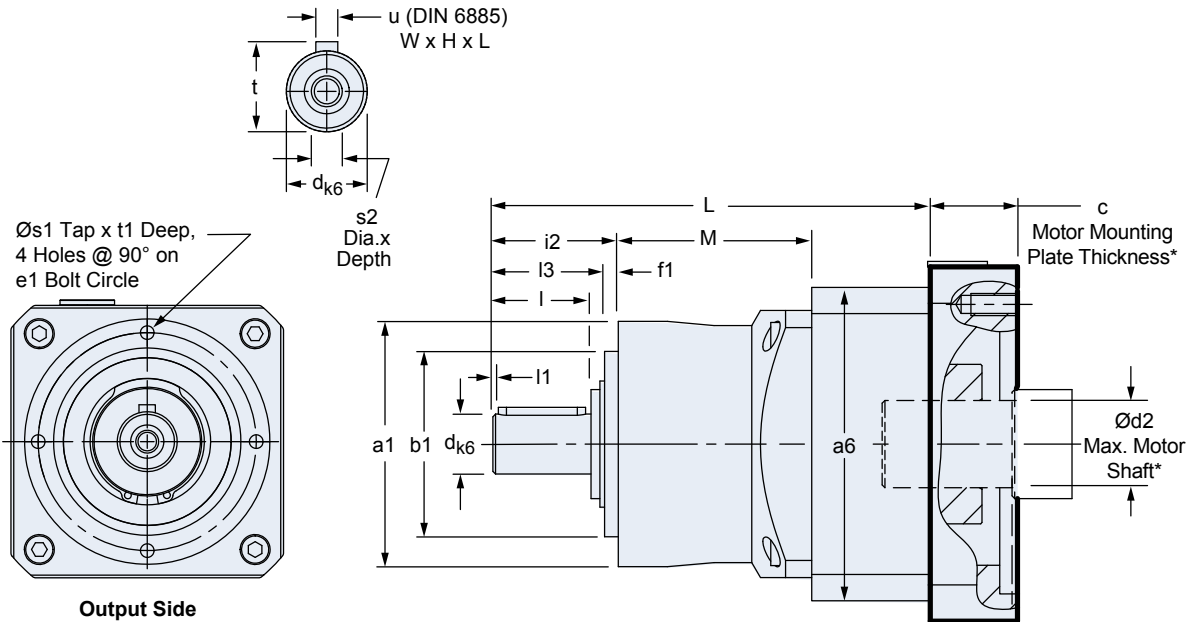
Table 3 MA Dimensions (mm)

Unit	c	$\varnothing d2$
PE211/PE212	15	14
PE311/PE312	18	19
PE411/PE412	21	24
PE511/PE512	24	32



Dimensional Data

PE with MAL Input



* See Motor Mounting Plate Option, page 96 for details.

Table 1 PE Unit Dimensions (mm)

Unit	a1	a6	b1	h6	d	k6	e1	f1	i2	l	l1	l3	s1	s2	t	t1	u
PE211	50	55	35	+0.000/-0.016	12	+0.012/+0.001	44	4	24.5	18	2	20.5	M4x0.70	M4x0.70	13.5	8	A4x4x14
PE311	70	72	52	+0.000/-0.019	16	+0.012/+0.001	62	5	36	28	2	31	M5x0.80	M5x0.80	18	10	A5x5x22
PE411	90	98	68	+0.000/-0.019	22	+0.015/+0.002	80	5	46	36	2	41	M6x1.00	M8x1.25	24.5	13	A6x6x32
PE511	120	115	90	+0.000/-0.022	32	+0.018/+0.002	108	6	70	58	4	64	M8x1.25	M12x1.75	35	16	A10x8x50

Table 2 PE Unit Dimensions (mm)

Unit	L	M
PE211	110.5	52.5
PE311	138.8	66
PE411	160.5	71
PE511	213.5	89.5

Table 3 MAL Dimensions (mm)

Unit	c	Ød2
PE211	18	19
PE311	21	24
PE411	24	32
PE511	26	38

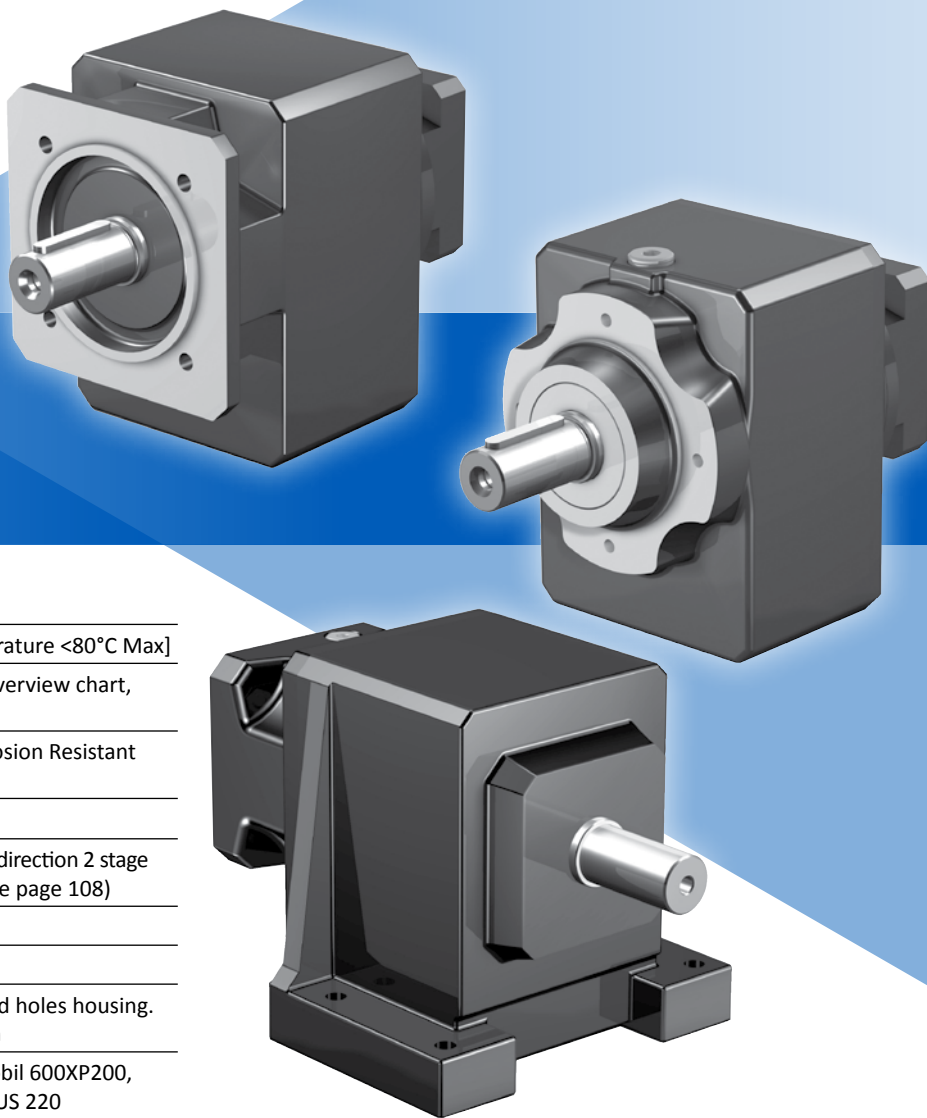
PE Series: INLINE — Shaft Output

C Series: INLINE — Shaft Output

Features

- 2:1 to 276:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (As low as 53dB(A))
- Mounting flexibility to fit the application
- Adaptability: shafts available in metric or imperial, carbon or stainless steel to meet your requirements
- Optional food and corrosion resistant package
- Dual seals for extreme duty applications
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

The STÖBER C Series offer performance, durability, and economy for a wide range of applications. High efficiency helical gearing keeps motor size to a minimum while running almost silently. Easily install the C series with a variety of mounting configurations, including the foot mounted option. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.

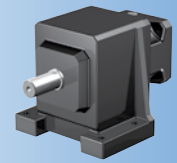


**SHIPS in
1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE

General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <80°C Max]
Backlash	≤10 arcmins, (see performance overview chart, (page 108))
Coating	Standard Black (RAL 790-4), Corrosion Resistant option, Food option
Degree of Protection	IP65
Direction of Rotation	Input and output rotate the SAME direction 2 stage units, opposite for 3 stage units (see page 108)
Efficiency	2 stage 97%; 3 stage 96%
Input RPM	Up to 6,000 RPM
Installation	Requires 10.9 fasteners for tapped holes housing. See page 328 for more information
Lubrication	Lubricated for life* - standard Mobil 600XP200, option food grade Mobil SHC CIBUS 220
Mounting Position	Must be specified, see page 108
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

* Scheduled lubrication is required for some larger frame C Series units (excluding F Food Duty and B Corrosion Resistant option). See page 111 for lubrication details.

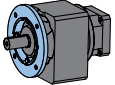
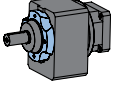
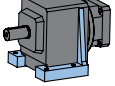
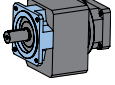


Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the C Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples: ① C ② 0 ③ 0 ④ 2 ⑤ F ⑥ 0020 ⑦ MT10 ⑧ B EL1 *

Design Option	Part Number Code	Description
① Series	C	Concentric inline helical
② Size	0 1 2 3 4 5 6 7 8 9	10 sizes of gearhead
③ Generation	0 1	Version of gearhead
④ # of Stages	2 3	Two stage for ratios <70:1 Three stage >40:1
⑤ Housing	 F	Round output flange
	 G	Pitch Circle Diameter (PCD) tapped holes
	 N	Foot mounting
	 Q	Square output flange (not bolt-on type)
⑥ Ratio	0020	Ratios range from 2:1 to 276:1 (0020=2:1; 0063=6.3:1; 2700=270:1)
⑦ Motor Adapter	MT10 – MT50	5 input sizes (see also motor mounting plate option)
⑧ Options	B F	Corrosion Resistant Duty (size C0 thru C8 only) Food Duty (size C0 thru C8 only)
* Mounting Position	EL1 EL2 EL3 EL4 EL5 EL6	Required special instruction for all units, see page 108

C Series: INLINE — Shaft Output

Options

Lubrication Options

Food grade or synthetic optionally available (contact factory)

ATEX

- ATmosphere EXplosible — Please allow up to 8 weeks for delivery

Coating Options

- Corrosion Resistant Duty (**B** special option)
- Food Duty (**F** special option)

Food and Corrosion Resistant units are lubricated for life with double output seals (where possible), stainless output shaft, and heat cured paint.

C Series: INLINE — Shaft Output

C Series Performance Overview

C Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

Size/Generation			C00		C10		C20		C30	
# of Stages			2	2	3	2	3	2	3	
Permissible Acceleration Torque M_{2BMAX}	Nm		72	138		230		400		
Output Torque Nom. M_{2N}	Nm		60	120		200		350		
Torsional Stiffness C_2	Nm/arcmin		≤1.6	≤3.9	≤3.9	≤8.3	≤8.3	≤8.7	≤8.7	
Torsional Backlash ¹⁾ $\Delta\phi$	arcmin		≤20	≤18	≤15	≤17	≤16	≤16	≤13	
Input Speed Max. n_{1MAX}	Continuous	EL1, 2, 3, 4 (N1DBH)	4000	4000	4000	4000	4000	3500	3800	
		EL5, 6 (N1DBV)	4000	3900	3900	3900	3900	3500	3500	
	Cyclic		6000	6000	6000	6000	6000	5000	5500	
Efficiency (@nom torque)	%		97	97	96	97	96	97	96	
Weight	kg		8.2	13.1	15.4	17.2	20.4	22.2	25.4	
	lbs		18	29	34	38	45	49	56	
Noise ²⁾	dB(A)		≤55	≤55		≤53		≤53		
Axial Load Max. F_{2AMAX}	N		500	850		1050		1400		
Radial Load Max. ³⁾ F_{2RMAX}	N		1900	3400		4200		5650		
Tilting Moment Max. ³⁾ M_{2KMAX}	Nm		80	190		260		350		

¹⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

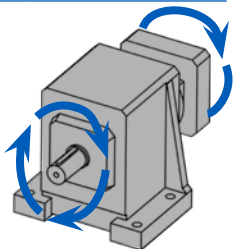
²⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

³⁾ Rating based on output speed (n_2) of 20 RPM. For values at other speeds see page 111.

C Series Direction of Rotation

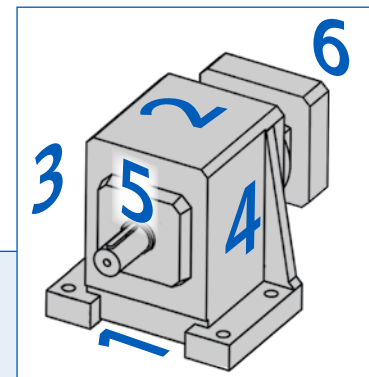
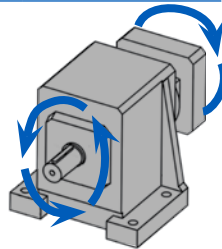
All 2 Stage Units

C002 C612
 C102 C712
 C202 C812
 C302 C912
 C402
 C502



All 3 Stage Units

C103 C613
 C203 C713
 C303 C813
 C403 C913
 C503

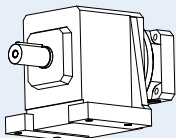


C Series Mounting Position Options

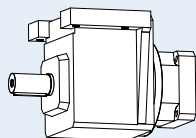
When ordering, the Mounting Position **MUST BE SPECIFIED** using one of the Mounting Position order codes below.

Note: the code relates to the unit's orientation side that faces down.

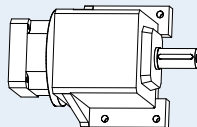
For example, EL1 has side 1 facing down, EL2 has side 2 facing down, etc.



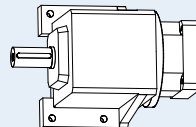
EL1



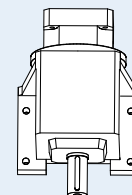
EL2



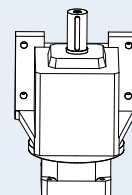
EL3



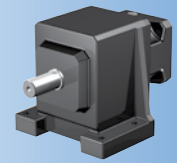
EL4



EL5



EL6



Overview

C40		C50		C61		C71		C81		C91	
2	3	2	3	2	3	2	3	2	3	2	3
600		920		1650		2760		4800		7211	6500
550		800		1450		2400		4200		6300	6000
≤21.7	≤21.8	≤22.6	≤22.7	≤73.6	≤74.1	≤121.5	≤122	≤202.3	≤203.2	≤387.9	≤391.1
≤15	≤12	≤14	≤12	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10
3500	3500	3400	3400	3200	3200	3100	3100	2900	2900	2500	2800
3200	3200	3000	3000	2900	2900	2900	2900	2700	2700	2500	2600
5000	5000	4500	4500	4000	4000	3600	3600	3400	3400	3000	3200
97	96	97	96	97	96	97	96	97	96	97	96
32.2 71	35.3 78	43.0 95	50.3 111	52.1 115	72.0 159	90.1 199	100.1 221	145.9 322	154.9 342	270.0 596	307.1 678
≤61		≤61		≤61		≤67		≤67		≤73	
2400		3000		4000		5500		7500		9500	
9700		11,000		16,000		22,000		30,000		37,000	
750		900		1500		2400		3700		5200	

C Series: INLINE — Shaft Output

C Series Solid Output Shaft Options

Diameters in **BOLD BLUE** are readily available from inventory. Contact STÖBER Drives for delivery on other output sizes.

		C0	C1	C2	C3	C4	C5	C6	C7	C8	C9
Carbon Steel	Inches	3/4	1	1-1/4	1-1/4	1-5/8	1-5/8	2-1/8	2-3/8	2-7/8	3-5/8
	Metric	20	25	30	30	40	40	50	60	70	90
Stainless Steel*	Inches	3/4	1	1-1/4	1-1/4	1-5/8	1-5/8	2-1/8	2-3/8	2-7/8	—
	Metric	—	—	—	25	—	—	—	—	—	—

* Stainless steel options are ideal for food and corrosion resistant, harsh washdown environments.

C Series Standard & Optional Output Flange Sizes

BOLD BLUE are the standard flange size shipped with the unit unless otherwise specified. Optional flanges are not available for all sizes.

C0	C1	C2	C3	C4	C5	C6	C7	C8	C9
120	140	160	160	200	250	300	350	350	450
140	160	200	200	250	300			400	
160	200	250	250	300				450	

C Series: INLINE — Shaft Output

C Series Motor Mounting Plate Option (Motor information required with Motor Adapter MT option)

STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate

d2	Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)
b6	Pilot Diameter
e6	Bolt Circle Diameter
s6	Bolt Diameter
I5	Motor Shaft Length
f6	Pilot Length
a6	Square Flange (Optional – motor plate will typically be made to match this dimension.)

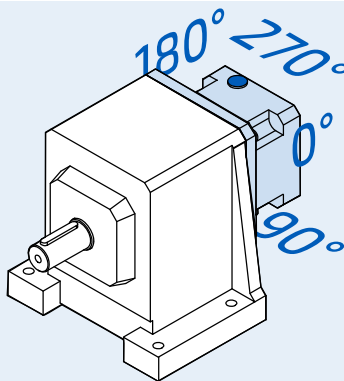
Motor Mounting Plate Dimensions — mm(Gearhead Part Number Specific)

	MT10	MT20	MT30	MT40	MT50
Maximum Allowed Motor Shaft Dia. d2	19	24	38	48	60
Minimum Allowed Motor Plate Thickness c*	21	24	25	33	43

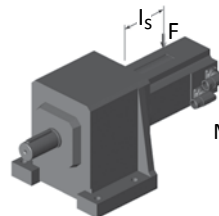
* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

C Series Motor Mounting Plate Access Hole

Access to the clamping screw for the motor coupling is located on the 270° side of the motor mounting plate at the location shown. If necessary, the motor mounting plate can be rotated in the field, if a 0°, 90° or 180° orientation for the access hole is desirable.



Permissible Motor Tilting Torque



$$M_{1k} = F \times I_s \leq M_{1K}$$

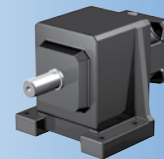
The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load "F" from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity "I_s" of the motor.

Permissible Output Shaft Load and Tilting Moments*

Unit	Z ₂ mm	F _{2A} N	F _{2R} N	M _{2K} Nm
C0	20	500	1900	80
C1	30	850	3400	190
C2	30	1050	4200	260
C3	30	1400	5650	350
C4	35	2400	9700	750
C5	42	3000	11,000	900
C6	40	4000	16,000	1500
C7	45	5500	22,000	2400
C8	50	7500	30,000	3700
C9	55	9500	37,000	5200

* Refer to illustration and definitions on page 111. During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A}, F_{2R}, and M_{2K} can be multiplied by a factor of 2. The permissible load values given are valid with the load applied to the center of the output shaft (x₂).

M _{1K}	MT10	MT20	MT30	MT40	MT50
Nm	25	60	125	250	600

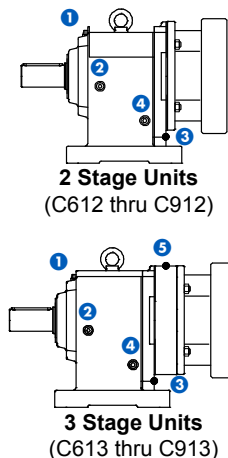


Overview

C Series Lubrication Maintenance

With STÖBER reducers very little maintenance is required under normal operating conditions. Units C002 thru C502/ C503 are supplied without breathers and are lubricated for life and maintenance free. Breathers are provided on standard units C612/C613 thru C912/C913, located as shown to the right*. STÖBER recommends changing the lubrication in breather supplied units after 10,000 hours for normal operating conditions or every 5000 hours for wet operating conditions.

*C612/C613 and larger units with the Food & Corrosion Resistant option exclude a breather. Contact STÖBER for details.



Drain Plug and Vent Location

Mounting Position	1	2 *	2a *	3	4	5
EL1	Vent			Drain		
EL2	Drain			Vent		
EL3		Vent	Drain			
EL4		Drain	Vent			
EL5	C612-C912	Drain		Vent		
	C613-C913	Drain				Vent
EL6	Vent			Drain		

* Position 2a is on the opposite side of 2.

Overhung Load Calculations

Pulling forces or overhung load of pulleys, sheaves, sprockets, etc. on the reducer output shaft must not exceed the allowable limits shown in the load/life/speed calculations below.

Note: Overhung load is measured at the center of the shaft extension. No overhung load is encountered when a reducer is flange mounted and/or coupling connected to another unit. However, the shafts of all components must be accurately aligned and secured to prevent pre-loading of the bearings and premature bearing failure.

Use the following formula to determine actual overhung load for a given drive..

$$\text{Imperial OHL (lbs)} = \frac{126,000 \times \text{HP} \times K}{D \times n}$$

$$\text{Metric OHL (N)} = \frac{19,100 \times \text{kW} \times K}{D \times n}$$

Where:

- OHL** Overhung load
- HP** Horsepower
- kW** Transmitted Kilowatt
- D** Pitch Diameter (inches or meters) of Sprocket, Gear, Sheave, Pulley, etc.
- n** Maximum Shaft RPM
- K** 1.00 Single Chain Drive; 1.25 Timing Belt Drive;
1.25 Spur or Helical Gear Drive; 1.50 V-Belt Drive; 2.50 Flat Belt Drive

C Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 20 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{20}}}, \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{20}}}, \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{20}}}$$

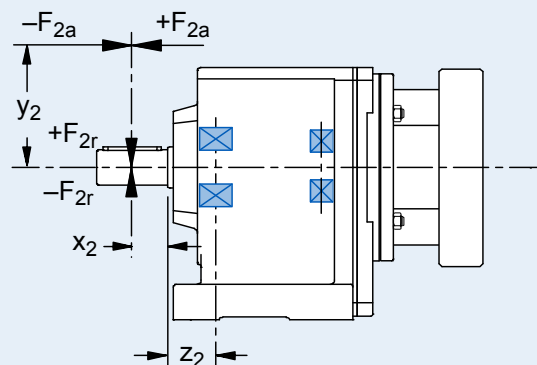
The application output tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

Where:

- F_{2a}** Axial Load at Output Shaft
- F_{2A}** Permissible Axial Load
- F_{2r}** Radial Load at Output Shaft
- F_{2R}** Permissible Radial Load
- F_{2RB}** Acceleration Permissible Radial Load
- M_{2K}** Rated Tilting Torque
- M_{2k}** Equivalent Tilting Load
- z₂** Distance Factor

All formulas shown are based on METRIC values
Upper case letters are permissible values. Lower case letters are for existing values.





C Series: INLINE – Shaft Output

Nom.	Reducer Ratio (i) Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

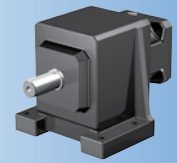
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1.997	1480/741	21	21	26	20	C002_0020 MT10	3500	3000	6000	1.3	0.8
		31	39	49		C002_0020 MT20			5000	1.9	
2.769	36/13	27	27	34	20	C002_0028 MT10	3500	3000	6000	1.0	1.0
		34	51	64		C002_0028 MT20			5000	1.6	
3.067	46/15	30	30	37	20	C002_0031 MT10	3700	3600	6000	1.0	1.0
		35	56	70		C002_0031 MT20	3500	3500	5000	1.6	
3.318	1702/513	32	32	40	20	C002_0033 MT10	3700	3600	6000	1.0	1.0
		36	60	76		C002_0033 MT20	3500	3500	5000	1.6	
3.835	441/115	36	36	45	20	C002_0038 MT10	3700	3600	6000	0.9	1.1
		38	65	84		C002_0038 MT20	3500	3500	5000	1.5	
4.149	1813/437	39	39	48	20	C002_0041 MT10	3700	3600	6000	0.9	1.1
			65	91		C002_0041 MT20	3500	3500	5000	1.5	
4.680	117/25	41	42	53	20	C002_0047 MT10	4000	4000	6000	0.8	1.1
			65	99		C002_0047 MT20	3500	3500	5000	1.4	
5.063	481/95	42	45	57	20	C002_0051 MT10	4000	4000	6000	0.8	1.1
			65	107		C002_0051 MT20	3500	3500	5000	1.4	
5.824	99/17	44	50	63	20	C002_0058 MT10	4000	4000	6000	0.7	1.2
			65	110		C002_0058 MT20	3500	3500	5000	1.3	
6.300	2035/323	45	54	68	20	C002_0063 MT10	4000	4000	6000	0.7	1.2
			65	110		C002_0063 MT20	3500	3500	5000	1.3	
7.714	54/7	48	63	79	20	C002_0077 MT10	4000	4000	6000	0.7	1.2
						C002_0077 MT20	3500	3500	5000	1.3	
8.235	667/81	58	72	100	16	C002_0082 MT10	3700	3600	6000	0.9	1.5
				120		C002_0082 MT20	3500	3500	5000	1.5	
9.228	1495/162	60	65	112	16	C002_0092 MT10	3700	3600	6000	0.9	1.5
				120		C002_0092 MT20	3500	3500	5000	1.5	
10.30	1421/138	60	72	120	16	C002_0105 MT10	3700	3600	6000	0.8	1.6
						C002_0105 MT20	3500	3500	5000	1.4	
11.54	3185/276	60	65	120	16	C002_0115 MT10	3700	3600	6000	0.8	1.6
						C002_0115 MT20	3500	3500	5000	1.4	
12.57	377/30	60	72	120	16	C002_0125 MT10	4000	4000	6000	0.8	1.6
						C002_0125 MT20	3500	3500	5000	1.4	
14.08	169/12	60	65	120	16	C002_0140 MT10	4000	4000	6000	0.8	1.6
						C002_0140 MT20	3500	3500	5000	1.4	
15.64	1595/102	60	72	120	16	C002_0155 MT10	4000	4000	6000	0.7	1.6
						C002_0155 MT20	3500	3500	5000	1.3	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin)
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

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Noise Level < 55 dB(A) ³⁾

17.53	3575/204	60	65	120	16	C002_0175 MT10	4000	4000	6000	0.7	1.6
						C002_0175 MT20	3500	3500	5000	1.3	
20.71	145/7	60	72	120	16	C002_0210 MT10	4000	4000	6000	0.7	1.6
						C002_0210 MT20	3500	3500	5000	1.3	
23.21	325/14	60	65	120	16	C002_0230 MT10	4000	4000	6000	0.7	1.6
						C002_0230 MT20	3500	3500	5000	1.3	
24.97	899/36	60	72	120	16	C002_0250 MT10	4000	4000	6000	0.7	1.6
						C002_0250 MT20	3500	3500	5000	1.3	
27.99	2015/72	60	65	120	16	C002_0280 MT10	4000	4000	6000	0.7	1.6
						C002_0280 MT20	3500	3500	5000	1.3	
31.26	2813/90	60	72	120	16	C002_0310 MT10	4000	4000	6000	0.6	1.6
						C002_0310 MT20	3500	3500	5000	1.2	
35.03	1261/36	60	65	120	16	C002_0350 MT10	4000	4000	6000	0.6	1.6
						C002_0350 MT20	3500	3500	5000	1.2	
41.77	3509/84	60	72	120	16	C002_0420 MT10	4000	4000	6000	0.6	1.6
46.82	7865/168	60	65	120	16	C002_0470 MT10	4000	4000	6000	0.6	1.6
49.94	899/18	60	72	118	16	C002_0500 MT10	4000	4000	6000	0.6	1.6
55.97	2015/36	60	65	120	16	C002_0560 MT10	4000	4000	6000	0.6	1.6
62.35	1247/20	60	72	120	16	C002_0620 MT10	4000	4000	6000	0.6	1.6
69.88	559/8	60	65	120	16	C002_0700 MT10	4000	4000	6000	0.6	1.6

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

C Series: INLINE — Shaft Output



C Series: INLINE – Shaft Output

Nom.	Reducer Ratio (i) Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

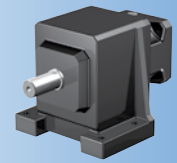
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2.018	1128/559	22	22	27	18	C102_0020 MT10	3100	2600	5000	2.5	1.3
		62	86	121		C102_0020 MT20			4000	3.1	1.4
			97			C102_0020 MT30			4000	7.9	1.8
2.177	468/215	24	24	30	18	C102_0022 MT10	3100	2600	5000	2.4	1.4
		63	93	131		C102_0022 MT20			4000	3.0	1.5
			105			C102_0022 MT30			4000	7.8	1.9
2.394	2303/962	65	102	142	18	C102_0024 MT20	3100	2600	5000	2.7	1.7
			110			C102_0024 MT30			4000	7.5	2.0
2.582	1911/740	67	110	153	18	C102_0026 MT20	3100	2600	5000	2.7	1.8
			113			C102_0026 MT30			4000	7.5	2.1
3.091	2491/806	32	32	40	18	C102_0031 MT10	3600	3100	6000	1.6	2.0
		71	120	176		C102_0031 MT20	3500		5000	2.2	
						C102_0031 MT30			4000	7.0	2.4
3.334	2067/620	34	34	43	18	C102_0033 MT10	3600	3100	6000	1.6	2.1
		73	123	189		C102_0033 MT20	3500		5000	2.2	
						C102_0033 MT30			4000	7.0	2.4
3.883	1363/351	39	39	48	18	C102_0039 MT10	3600	3100	6000	1.3	2.3
		77	130	213		C102_0039 MT20	3500		5000	1.9	
						C102_0039 MT30			4000	6.7	2.6
4.189	377/90	42	42	52	18	C102_0042 MT10	3600	3100	6000	1.3	2.4
		79	130	220		C102_0042 MT20	3500		5000	1.9	
						C102_0042 MT30			4000	6.7	2.7
4.658	3149/676	45	45	56	18	C102_0047 MT10	3800	3500	6000	1.1	2.5
		82	130	220		C102_0047 MT20	3500		5000	1.7	
						C102_0047 MT30			4000	6.5	2.7
5.025	201/40	48	48	60	18	C102_0050 MT10	3800	3500	6000	1.1	2.6
		84	130	220		C102_0050 MT20	3500		5000	1.7	
						C102_0050 MT30			4000	6.5	2.8
5.875	47/8	54	54	68	18	C102_0059 MT10	3800	3500	6000	1.0	2.7
		88	130	220		C102_0059 MT20	3500		5000	1.6	
						C102_0059 MT30			4000	6.4	2.9
6.338	507/80	58	58	73	18	C102_0063 MT10	3800	3500	6000	1.0	2.7
		90	130	220		C102_0063 MT20	3500		5000	1.6	
						C102_0063 MT30			4000	6.4	2.9
7.796	3243/416	68	68	85	18	C102_0078 MT10	4000	3900	6000	0.8	2.9
		97	130	220		C102_0078 MT20	3500		5000	1.4	
						C102_0078 MT30			4000	6.2	3.0

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

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8.263	1537/186	85	85	106	15	C102_0083 MT10	3600	3100	6000	1.3	3.6			
		117	138	240		C102_0083 MT20	3500		5000	1.9				
						C102_0083 MT30			4000	6.7		3.7		
9.326	3180/341	96	96	120	15	C102_0093 MT10	3600	3100	6000	1.3	3.6			
		120	138	240		C102_0093 MT20	3500		5000	1.9		3.7		
						C102_0093 MT30			4000	6.7		3.8		
10.38	841/81	103	103	129	15	C102_0105 MT10	3600	3100	6000	1.1	3.7			
		120	138	240		C102_0105 MT20	3500		5000	1.7		3.7		
						C102_0105 MT30			4000	6.5		3.8		
11.72	1160/99	116	116	146	15	C102_0115 MT10	3600	3100	6000	1.1	3.7			
		120	138	240		C102_0115 MT20	3500		5000	1.7		3.8		
						C102_0115 MT30			4000	6.5				
12.46	1943/156	119	119	149	15	C102_0125 MT10	3800	3500	6000	1.0	3.8			
		120	138	240		C102_0125 MT20	3500		5000	1.6		3.8		
						C102_0125 MT30			4000	6.4				
14.06	2010/143	120	135	168	15	C102_0140 MT10	3800	3500	6000	1.0	3.8			
			138	240		C102_0140 MT20	3500		5000	1.6		3.9		
						C102_0140 MT30			4000	6.4				
15.71	377/24	120	138	181	15	C102_0155 MT10	3800	3500	6000	0.9	3.8			
				240		C102_0155 MT20	3500		5000	1.5		3.8		
						C102_0155 MT30			4000	6.3		3.9		
17.73	195/11	120	138	204	15	C102_0175 MT10	3800	3500	6000	0.9	3.8			
				240		C102_0175 MT20	3500		5000	1.5		3.9		
						C102_0175 MT30			4000	6.3				
20.84	667/32	120	138	227	15	C102_0210 MT10	4000	3500	3900	6000	0.8	3.9		
				240		C102_0210 MT20	3500		3500	5000	1.4		3.9	
						C102_0210 MT30			3500	4000	6.2			
23.52	1035/44	120	138	240	15	C102_0240 MT10	4000	3500	3900	6000	0.8	3.9		
							C102_0240 MT20		3500	3500	5000		1.4	3.9
							C102_0240 MT30				4000		6.2	
25.13	377/15	120	138	240	15	C102_0250 MT10	4000	3500	3900	6000	0.8	3.9		
							C102_0250 MT20		3500	3500	5000		1.4	3.9
							C102_0250 MT30				4000		6.2	
28.36	312/11	120	138	240	15	C102_0280 MT10	4000	3500	3900	6000	0.8	3.9		
							C102_0280 MT20		3500	3500	5000		1.4	3.9
							C102_0280 MT30				4000		6.2	

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



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		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

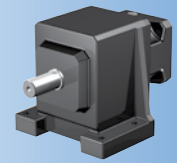
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31.07	435/14	120	138	240	15	C102_0310 MT10	4000	3900	6000	0.7	3.9
						C102_0310 MT20	3500	3500	5000	1.3	
						C102_0310 MT30			4000	6.1	
35.07	2700/77	120	138	240	15	C102_0350 MT10	4000	3900	6000	0.7	3.9
						C102_0350 MT20	3500	3500	5000	1.3	
						C102_0350 MT30			4000	6.1	
41.57	1247/30	120	138	240	15	C102_0420 MT10	4000	3900	6000	0.7	3.9
						C102_0420 MT20	3500	3500	5000	1.3	
46.91	516/11	120	138	240	15	C102_0470 MT10	4000	3900	6000	0.7	3.9
						C102_0470 MT20	3500	3500	5000	1.3	
49.94	899/18	120	138	236	15	C102_0500 MT10	4000	3900	6000	0.6	3.9
56.36	620/11	120	138	240	15	C102_0560 MT10	4000	3900	6000	0.6	3.9
62.43	4495/72	119	138	238	15	C102_0620 MT10	4000	3900	6000	0.6	3.9
70.46	775/11	120	138	240	15	C102_0700 MT10	4000	3900	6000	0.6	3.9
81.64	31,349/384	120	138	240	15	C103_0820 MT10	4000	3900	6000	0.7	3.9
92.13	16,215/176	120	138	240	15	C103_0920 MT10	4000	3900	6000	0.7	3.9
111.1	1222/11	120	138	240	15	C103_1110 MT10	4000	3900	6000	0.7	3.9
137.3	10575/77	120	138	240	15	C103_1370 MT10	4000	3900	6000	0.7	3.9
183.7	2021/11	120	138	240	15	C103_1840 MT10	4000	3900	6000	0.6	3.9
220.8	7285/33	120	138	240	15	C103_2210 MT10	4000	3900	6000	0.6	3.9
275.9	36,425/132	120	138	240	15	C103_2760 MT10	4000	3900	6000	0.6	3.9

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* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness Cz (per arcmin) Nm
		Nominal ¹⁾ M2N ≤2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

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2.009	432/215	78	86	126	17	C202_0020 MT20	3000	2600	4500	5.1	1.7			
		94	159	324						9.9	2.4			
2.184	2160/989	85	93	137	17	C202_0022 MT20	3000	2600	4500	4.9	2.0			
		97	163	350						9.7	2.6			
2.475	99/40	96	106	150	17	C202_0025 MT20	3000	2600	4500	4.1	2.3			
		101	120						4000	8.9	3.0			
2.690	495/184	104	115	163	17	C202_0027 MT20	3000	2600	4500	4.0	2.5			
			130						4000	8.8	3.3			
3.103	90/29	109	132	183	17	C202_0031 MT20	3500	3100	5000	3.3	3.0			
			146						4000	8.1	3.7			
3.373	2250/667	112	144	199	17	C202_0034 MT20	3500	3100	5000	3.2	3.2			
			159						4000	8.0	3.9			
3.888	486/125	117	166	221	17	C202_0039 MT20	3500	3100	5000	2.7	3.6			
			176						4000	7.5	4.3			
4.226	486/115	121	180	240	17	C202_0042 MT20	3500	3100	5000	2.6	3.9			
									C202_0042 MT30	4000	7.4	4.5		
4.667	14/3	125	199	255	17	C202_0047 MT20	3500	3500		5000	2.3	4.1		
									C202_0047 MT30	4000	7.1	4.7		
5.072	350/69	128	200	277	17	C202_0051 MT20	3500	3500		5000	2.3	4.4		
									C202_0051 MT30	4000	7.1	4.9		
5.791	666/115	55	55	69	17	C202_0058 MT10	3700	3500		5500	1.4	4.5		
		134	200	304					C202_0058 MT20	3500	5000	2.0	4.7	
											C202_0058 MT30	4000	6.8	5.1
6.295	3330/529	60	60	75	17	C202_0063 MT10	3700	3500	5500	1.4		4.7		
		138	200	331					C202_0063 MT20	3500	5000	2.0	4.8	
											C202_0063 MT30	3500	4000	6.8
7.800	39/5	70	70	87	17	C202_0078 MT10	4000	3900	6000	1.1		5.1		
		148	200	350					C202_0078 MT20	3500	3500	5000	1.7	5.2
												C202_0078 MT30	4000	6.5
8.190	475/58	191	230	400	14	C202_0082 MT20	3500	3100	5000	2.7	6.9			
									C202_0082 MT30	4000	7.5	7.4		
9.387	2450/261	200	230	400	14	C202_0094 MT20	3500	3100		5000	2.7	7.2		
									C202_0094 MT30	4000	7.5	7.6		
10.26	513/50	200	230	400	14	C202_0105 MT20	3500	3100		5000	2.3	7.3		
									C202_0105 MT30	4000	7.1	7.7		
11.76	294/25	200	230	400	14	C202_0120 MT20	3500	3100		5000	2.3	7.5		
									C202_0120 MT30	4000	7.1	7.8		
12.32	665/54	200	230	400	14	C202_0125 MT20	3500	3500		5000	2.1	7.6		
									C202_0125 MT30	4000	6.9	7.9		
14.12	3430/243	200	230	400	14	C202_0140 MT20	3500	3500		5000	2.1	7.8		
									C202_0140 MT30	4000	6.9	8.0		
15.28	703/46	145	145	182	14	C202_0155 MT10	3700	3500		5500	1.2	7.8		
		200	230	400					C202_0155 MT20	3500	5000		1.8	
C202_0155 MT30	4000				6.6	8.0								
	17.52	3626/207	167	167	208	14	C202_0175 MT10	3700	3500	5500	1.2	7.9		
200			230	400	C202_0175 MT20					3500	5000		1.8	
											C202_0175 MT30	4000	6.6	8.1

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



C Series: INLINE – Shaft Output

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

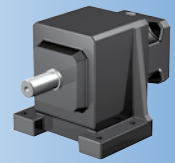
C2 (continued from previous page)

20.58	247/12	184	184	230	14	C202_0210 MT10	4000	3900	6000	1.0	8.0	
		200	230	400		C202_0210 MT20	3500	3500	5000	1.6		
						C202_0210 MT30			4000	6.4		8.1
23.59	637/27	200	211	264	14	C202_0240 MT10	4000	3900	6000	1.0	8.1	
			230	400		C202_0240 MT20	3500	3500	5000	1.6		
						C202_0240 MT30			4000	6.4		8.2
24.64	1577/64	200	213	267	14	C202_0250 MT10	4000	3900	6000	0.9	8.1	
			230	400		C202_0250 MT20	3500	3500	5000	1.5		
						C202_0250 MT30			4000	6.3		8.2
28.24	4067/144	200	230	306	14	C202_0280 MT10	4000	3900	6000	0.9	8.1	
				400		C202_0280 MT20	3500	3500	5000	1.5		
						C202_0280 MT30			4000	6.3		8.2
30.69	399/13	200	230	315	14	C202_0310 MT10	4000	3900	6000	0.8	8.2	
				400		C202_0310 MT20	3500	3500	5000	1.4		
						C202_0310 MT30			4000	6.2		
35.18	1372/39	200	230	361	14	C202_0350 MT10	4000	3900	6000	0.8	8.2	
				400		C202_0350 MT20	3500	3500	5000	1.4		
						C202_0350 MT30			4000	6.2		
40.85	817/20	200	230	394	14	C202_0410 MT10	4000	3900	6000	0.7	8.2	
				400		C202_0410 MT20	3500	3500	5000	1.3		
						C202_0410 MT30			4000	6.1		
46.82	2107/45	200	230	400	14	C202_0470 MT10	4000	3900	6000	0.7	8.2	
							C202_0470 MT20	3500	3500	5000		1.3
							C202_0470 MT30			4000		6.1
49.23	1083/22	200	230	400	14	C202_0490 MT10	4000	3900	6000	0.7	8.2	
							C202_0490 MT20	3500	3500	5000		1.3
56.42	1862/33	200	230	400	14	C202_0560 MT10	4000	3900	6000	0.7	8.3	
							C202_0560 MT20	3500	3500	5000		1.3
61.35	2945/48	187	225	284	14	C202_0610 MT10	4000	3900	6000	0.7	8.3	
70.32	7595/108	200	230	326	14	C202_0700 MT10	4000	3900	6000	0.7	8.3	
79.59	7163/90	200	230	400	14	C203_0800 MT20	3500	3500	5000	1.4	8.3	
80.62	11,609/144	200	230	400	14	C203_0810 MT10	4000	3900	6000	0.7	8.3	
91.23	36,946/405	200	230	400	14	C203_0910 MT20	3500	3500	5000	1.4	8.3	
92.40	29,939/324	200	230	400	14	C203_0920 MT10	4000	3900	6000	0.7	8.3	
109.2	117,943/1080	200	230	400	14	C203_1090 MT20	3500	3500	5000	1.4	8.3	
110.6	191,149/1728	200	230	400	14	C203_1110 MT10	4000	3900	6000	0.7	8.3	
136.0	79576/585	200	230	400	14	C203_1360 MT20	3500	3500	5000	1.4	8.3	
137.8	16121/117	200	230	400	14	C203_1380 MT10	4000	3900	6000	0.7	8.3	
181.0	122,206/675	200	230	400	14	C203_1810 MT20	3500	3500	5000	1.4	8.3	
183.4	99,029/540	200	230	400	14	C203_1830 MT10	4000	3900	6000	0.7	8.3	
221.0	43,757/198	200	230	400	14	C203_2210 MT10	4000	3900	6000	0.7	8.3	
275.4	356,965/1296	200	230	326	14	C203_2750 MT10	4000	3900	6000	0.6	8.3	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{ZN} ≤2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

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2.020	608/301	78	86	131	16	C302_0020 MT20	2700	2300	4000	8.2	1.8
		154	205	337		C302_0020 MT30				13.0	2.6
			261			C302_0020 MT40				17.0	3.9
2.177	468/215	84	93	141	16	C302_0022 MT20	2700	2300	4000	7.8	2.1
		158	221	364		C302_0022 MT30				12.6	2.8
			267			C302_0022 MT40				16.6	4.1
2.510	1634/651	97	107	158	16	C302_0025 MT20	2700	2300	4000	6.3	2.5
		166	254	407		C302_0025 MT30				11.1	3.3
			280			C302_0025 MT40				15.1	4.6
2.705	1677/620	105	115	170	16	C302_0027 MT20	2700	2300	4000	6.1	2.7
		170	274	439		C302_0027 MT30				10.9	3.6
			287			C302_0027 MT40				14.9	4.8
3.110	1045/336	121	133	188	16	C302_0031 MT20	3200	2800	4500	4.8	3.2
		178	301	486		C302_0031 MT30			4000	9.6	4.1
						C302_0031 MT40	3000	3500	13.6	5.2	
3.352	429/128	130	143	203	16	C302_0034 MT20	3200	2800	4500	4.7	3.5
		183	309	524		C302_0034 MT30			4000	9.5	4.3
						C302_0034 MT40	3000	3500	13.5	5.4	
3.878	190/49	150	166	227	16	C302_0039 MT20	3200	2800	4500	3.8	4.0
		192	324	550		C302_0039 MT30			4000	8.6	4.8
						C302_0039 MT40	3000	3500	12.6	5.8	
4.179	117/28	162	178	245	16	C302_0042 MT20	3200	2800	4500	3.7	4.3
		197	330	550		C302_0042 MT30			4000	8.5	5.0
						C302_0042 MT40	3000	3500	12.5	5.9	
4.675	589/126	175	200	264	16	C302_0047 MT20	3500	3100	5000	3.2	4.6
		204	330	550		C302_0047 MT30			4000	8.0	5.3
						C302_0047 MT40	3000	3000	3500	12.0	6.1
5.038	403/80	189	215	284	16	C302_0050 MT20	3500	3100	5000	3.1	4.9
		209	330	550		C302_0050 MT30			4000	7.9	5.5
						C302_0050 MT40	3000	3000	3500	11.9	6.2
5.859	2584/441	192	250	319	16	C302_0059 MT20	3500	3100	5000	2.6	5.3
		220	330	550		C302_0059 MT30			4000	7.4	5.9
						C302_0059 MT40	3000	3000	3500	11.4	6.4
6.314	221/35	207	269	344	16	C302_0063 MT20	3500	3100	5000	2.6	5.5
		226	330	550		C302_0063 MT30			4000	7.4	6.0
						C302_0063 MT40	3000	3000	3500	11.4	6.5

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



C Series: INLINE – Shaft Output

Nom.	Reducer Ratio (i) Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

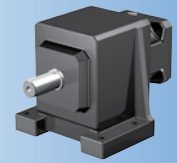
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7.841	494/63	200	321	401	16	C302_0078 MT20	3500	3500	5000	2.1	5.9	
		243	330	550		C302_0078 MT30			4000	6.9	6.3	
						C302_0078 MT40			3000	3000	3500	10.9
8.250	33/4	298	352	500	13	C302_0083 MT20	3200	2800	4500	3.8	7.2	
			400	700		C302_0083 MT30			4000	8.6	7.7	
						C302_0083 MT40			3000	3000	3500	12.6
9.310	3575/384	310	350	564	13	C302_0093 MT20	3200	2800	4500	3.7	7.5	
				700		C302_0093 MT30			4000	8.5	7.9	
						C302_0093 MT40			3000	3000	3500	12.5
10.29	72/7	321	400	603	13	C302_0105 MT20	3200	2800	4500	3.1	7.7	
				700		C302_0105 MT30			4000	7.9	8.1	
						C302_0105 MT40			3000	3000	3500	11.9
11.61	325/28	334	350	680	13	C302_0115 MT20	3200	2800	4500	3.1	7.9	
				700		C302_0115 MT30			4000	7.9	8.2	
						C302_0115 MT40			3000	3000	3500	11.9
12.40	62/5	341	400	699	13	C302_0125 MT20	3500	3100	5000	2.7	8.0	
				700		C302_0125 MT30			4000	7.5	8.3	
						C302_0125 MT40			3000	3000	3500	11.5
13.99	2015/144	350	350	700	13	C302_0140 MT20	3500	3100	5000	2.7	8.1	
									C302_0140 MT30	4000	7.5	8.4
									C302_0140 MT40	3000	3000	3500
15.54	544/35	350	400	700	13	C302_0155 MT20	3500	3100	5000	2.3	8.2	
									C302_0155 MT30	4000	7.1	8.4
									C302_0155 MT40	3000	3000	3500
17.54	1105/63	350	350	700	13	C302_0175 MT20	3500	3100	5000	2.3	8.3	
									C302_0175 MT30	4000	7.1	8.5
									C302_0175 MT40	3000	3000	3500
20.80	104/5	350	400	700	13	C302_0210 MT20	3500	3500	5000	1.9	8.5	
									C302_0210 MT30	4000	6.7	8.6
									C302_0210 MT40	3000	3000	
23.47	845/36	350	350	700	13	C302_0230 MT20	3500	3500	5000	1.9	8.5	
									C302_0230 MT30	4000	6.7	8.6
									C302_0230 MT40	3000	3000	3500
24.80	124/5	350	400	700	13	C302_0250 MT20	3500	3500	5000	1.7	8.5	
									C302_0250 MT30	4000	6.5	8.6
									C302_0250 MT40	3000	3000	3500

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{ZN} ≤2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}			Continuous		Cyclic		Nm
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

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27.99	2015/72	350	350	700	13	C302_0280 MT20	3500	3500	5000	1.7	8.6
						C302_0280 MT30			4000	6.5	
						C302_0280 MT40	3000	3000	3500	10.5	8.7
31.04	776/25	350	400	700	13	C302_0310 MT20	3500	3500	5000	1.6	8.6
						C302_0310 MT30			4000	6.4	
						C302_0310 MT40	3000	3000	3500	10.4	8.7
35.03	1261/36	350	350	700	13	C302_0350 MT20	3500	3500	5000	1.6	8.6
						C302_0350 MT30			4000	6.4	
						C302_0350 MT40	3000	3000	3500	10.4	8.7
41.35	2688/65	350	400	700	13	C302_0410 MT20	3500	3500	5000	1.4	8.7
						C302_0410 MT30			4000	6.2	
46.67	140/3	350	350	700	13	C302_0470 MT20	3500	3500	5000	1.4	8.7
						C302_0470 MT30			4000	6.2	
49.75	2736/55	350	400	700	13	C302_0500 MT20	3500	3500	5000	1.4	8.7
						C302_0500 MT30			4000	6.2	
56.14	1235/22	350	350	700	13	C302_0560 MT20	3500	3500	5000	1.4	8.7
						C302_0560 MT30			4000	6.2	
61.92	1548/25	331	397	563	13	C302_0620 MT20	3500	3500	5000	1.3	8.7
69.88	559/8	350	350	636	13	C302_0700 MT20	3500	3500	5000	1.3	8.7
80.43	6032/75	350	400	700	13	C303_0800 MT20	3500	3500	5000	1.4	8.7
81.47	1222/15	334	334	417	13	C303_0810 MT10	3800	3500	5500	0.7	8.7
90.76	4901/54	350	350	700	13	C303_0910 MT20	3500	3500	5000	1.4	8.7
91.93	39,715/432	350	350	470	13	C303_0920 MT10	3800	3500	5500	0.7	8.7
108.2	11,687/108	350	350	700	13	C303_1080 MT20	3500	3500	5000	1.4	8.7
109.6	94,705/864	350	350	561	13	C303_1100 MT10	3800	3500	5500	0.7	8.7
135.4	36,569/270	350	350	700	13	C303_1350 MT20	3500	3500	5000	1.4	8.7
137.2	59,267/432	350	350	700	13	C303_1370 MT10	3800	3500	5500	0.7	8.7
180.4	1624/9	350	350	700	13	C303_1800 MT20	3500	3500	5000	1.4	8.7
182.8	1645/9	350	350	700	13	C303_1830 MT10	3800	3500	5500	0.7	8.7
217.1	7163/33	350	350	700	13	C303_2170 MT20	3500	3500	5000	1.4	8.7
219.9	58,045/264	350	350	700	13	C303_2200 MT10	3800	3500	5500	0.7	8.7
273.7	26273/96	350	350	636	13	C303_2740 MT10	3800	3500	5500	0.7	8.7

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



C Series: INLINE – Shaft Output

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

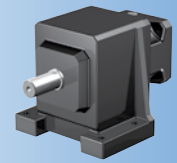
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1.968	551/280	181	199	342	15	C402_0020 MT30	2500	2100	3500	23.1	3.1	
		223	274			C402_0020 MT40				27.1	5.5	
2.221	171/77	205	225	386	15	C402_0022 MT30	2500	2100	3500	21.2	3.8	
		232	309			C402_0022 MT40				25.2	6.4	
2.456	609/248	226	249	414	15	C402_0025 MT30	2500	2100	3500	18.2	4.4	
		240	331			C402_0025 MT40				22.2	7.2	
2.771	945/341	249	281	467	15	C402_0028 MT30	2500	2100	3500	17.0	5.3	
			374			C402_0028 MT40				21.0	8.3	
3.099	1537/496	259	314	503	15	C402_0031 MT30	2900	2500	4000	14.5	6.1	
			402			503				C402_0031 MT40	3500	18.5
3.497	2385/682	270	354	567	15	C402_0035 MT30	2900	2500	4000	13.7	7.1	
			454			C402_0035 MT40				3500	17.7	10.2
3.894	841/216	151	166	236	15	C402_0039 MT20	2900	2500	4000	7.2	6.0	
		279	395			608				C402_0039 MT30	12.0	8.0
			472							C402_0039 MT40	3500	16.0
4.394	145/33	170	188	266	15	C402_0044 MT20	2900	2500	4000	6.7	7.0	
		291	445			686				C402_0044 MT30	11.5	9.0
			491							C402_0044 MT40	3500	15.5
4.682	899/192	182	200	275	15	C402_0047 MT20	3300	2800	4500	5.8	7.5	
		297	475			710				C402_0047 MT30	4000	10.6
			502				C402_0047 MT40	3000	3500	14.6	12.4	
5.284	465/88	205	226	311	15	C402_0053 MT20	3300	2800	4500	5.4	8.5	
		309	523			801				C402_0053 MT30	4000	10.2
			C402_0053 MT40				3000	3500	14.2	13.2		
5.891	377/64	218	251	331	15	C402_0059 MT20	3300	2800	4500	4.4	9.4	
		321	542			850				C402_0059 MT30	4000	9.2
			C402_0059 MT40				3000	3500	13.2	13.8		
6.648	585/88	245	284	373	15	C402_0066 MT20	3300	2800	4500	4.2	10.4	
		334	550			850				C402_0066 MT30	4000	9.0
			C402_0066 MT40				3000	3500	13.0	14.4		
7.816	2001/256	231	332	415	15	C402_0078 MT20	3500	3200	5000	3.3	11.7	
		352	550			850				C402_0078 MT30	4000	8.1
			C402_0078 MT40				3000	3000	3500	12.1	15.0	
8.285	3339/403	500	600	1100	12	C402_0083 MT30	2900	2500	4000	11.9	16.5	
						C402_0083 MT40				3500	15.9	18.9
9.261	3445/372	519	550	1100	12	C402_0093 MT30	2900	2500	4000	11.8	17.4	
						C402_0093 MT40				3500	15.8	19.5

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness Cz (per arcmin) Nm
		Nominal ¹⁾ M2N ≤2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

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10.41	406/39	404	444	630	12	C402_0105 MT20	2900	2500	4000	5.6	16.4
		540	600	1100		C402_0105 MT30			3500	10.4	18.1
						C402_0105 MT40				14.4	19.9
11.64	1885/162	451	497	704	12	C402_0115 MT20	2900	2500	4000	5.5	17.3
		550	550	1100		C402_0115 MT30			3500	10.3	18.8
						C402_0115 MT40				14.3	20.3
12.52	651/52	486	534	736	12	C402_0125 MT20	3300	2800	4500	4.6	17.8
		550	600	1100		C402_0125 MT30			4000	9.4	19.1
						C402_0125 MT40	3000	3500	13.4	20.5	
13.99	2015/144	543	550	822	12	C402_0140 MT20	3300	2800	4500	4.6	18.5
		550	550	1100		C402_0140 MT30			4000	9.4	19.6
						C402_0140 MT40	3000	3500	13.4	20.7	
15.75	63/4	550	600	884	12	C402_0160 MT20	3300	2800	4500	3.7	19.1
				1100		C402_0160 MT30			4000	8.5	20.0
								C402_0160 MT40	3000	3500	12.5
17.60	845/48	550	550	989	12	C402_0175 MT20	3300	2800	4500	3.7	19.6
				1100		C402_0175 MT30			4000	8.5	20.4
								C402_0175 MT40	3000	3500	12.5
20.90	4347/208	550	600	1100	12	C402_0210 MT20	3500	3200	5000	2.9	20.2
									C402_0210 MT30	4000	7.7
									C402_0210 MT40	3000	3000
23.36	1495/64	550	550	1100	12	C402_0230 MT20	3500	3200	5000	2.9	20.5
									C402_0230 MT30	4000	7.7
									C402_0230 MT40	3000	3000
24.92	324/13	550	600	1100	12	C402_0250 MT20	3500	3200	5000	2.5	20.6
									C402_0250 MT30	4000	7.3
									C402_0250 MT40	3000	3000
27.86	195/7	550	550	1100	12	C402_0280 MT20	3500	3200	5000	2.5	20.9
									C402_0280 MT30	4000	7.3
									C402_0280 MT40	3000	3000
31.15	405/13	550	600	1100	12	C402_0310 MT20	3500	3200	5000	2.1	21.0
									C402_0310 MT30	4000	6.9
									C402_0310 MT40	3000	3000
34.82	975/28	550	550	1100	12	C402_0350 MT20	3500	3200	5000	2.1	21.2
									C402_0350 MT30	4000	6.9
									C402_0350 MT40	3000	3000

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



C Series: INLINE – Shaft Output

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

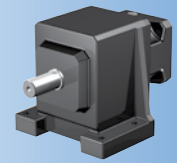
C4 (continued from previous page)

41.75	7056/169	550	600	1100	12	C402_0420 MT20	3500	3200	5000	1.8	21.4
						C402_0420 MT30			4000	6.6	21.5
						C402_0420 MT40			3000	3000	3500
46.67	140/3	550	550	1100	12	C402_0470 MT20	3500	3200	5000	1.8	21.5
						C402_0470 MT30			4000	6.8	21.6
						C402_0470 MT40			3000	3000	3500
50.19	1305/26	550	600	938	12	C402_0500 MT20	3500	3200	5000	1.6	21.5
						C402_0500 MT30			4000	6.4	21.6
56.10	9425/168	550	550	1049	12	C402_0560 MT20	3500	3200	5000	1.6	21.6
						C402_0560 MT30			4000	6.4	21.7
62.52	8127/130	501	600	1002	12	C402_0630 MT20	3500	3200	5000	1.5	21.6
						C402_0630 MT30			4000	6.3	21.7
69.88	559/8	550	550	1100	12	C402_0700 MT20	3500	3200	5000	1.5	21.7
						C402_0700 MT30			4000	6.3	21.7
80.81	42,021/520	550	600	1100	12	C403_0810 MT20	3500	3200	5000	1.5	21.7
90.32	8671/96	550	550	1100	12	C403_0900 MT20	3500	3200	5000	1.5	21.7
107.7	754/7	550	550	1100	12	C403_1080 MT20	3500	3200	5000	1.5	21.8
134.6	1885/14	550	550	1100	12	C403_1350 MT20	3500	3200	5000	1.4	21.8
180.4	1624/9	550	550	1100	12	C403_1800 MT20	3500	3200	5000	1.4	21.8
216.9	54,665/252	550	550	1049	12	C403_2170 MT20	3500	3200	5000	1.4	21.8
270.2	16,211/60	550	550	1100	12	C403_2700 MT20	3500	3200	5000	1.4	21.8

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
		Nominal ¹⁾ M2N ≤2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

C5 (continued next page)

1.976	81/41	182	200	355	14	C502_0020 MT30	2400	2000	3000	36.0	3.3		
		284	284			C502_0020 MT40						40.0	5.9
		345	542			678							
2.247	645/287	207	228	403	14	C502_0022 MT30	2400	2000	3000	33.8	4.0		
		323	323			C502_0022 MT40						37.8	7.0
		361	609			771							
2.450	49/20	226	248	427	14	C502_0025 MT30	2400	2000	3000	27.6	4.6		
		342	342			C502_0025 MT40						31.6	7.9
		371	627			816							
2.787	301/108	257	283	486	14	C502_0028 MT30	2400	2000	3000	26.1	5.6		
		387	389			C502_0028 MT40						30.1	9.2
			654			929							
3.077	477/155	284	312	519	14	C502_0031 MT30	2800	2400	3500	21.4	6.5		
		400	415			C502_0031 MT40						25.3	10.2
							C502_0031 MT50	2500	3000	35.3	15.8		
3.501	2279/651	323	355	590	14	C502_0035 MT30	2800	2400	3500	20.4	7.7		
		418	472			C502_0035 MT40						24.4	11.6
							C502_0035 MT50	2500	3000	34.4	16.8		
3.867	58/15	356	392	630	14	C502_0039 MT30	2800	2400	3500	17.0	8.7		
		432	504			C502_0039 MT40						21.0	12.6
							C502_0039 MT50	2500	3000	31.0	17.4		
4.399	2494/567	405	446	716	14	C502_0044 MT30	2800	2400	3500	16.4	10.1		
		451	573			C502_0044 MT40						20.4	13.9
							C502_0044 MT50	2500	3000	30.4	18.2		
4.629	162/35	180	198	282	14	C502_0046 MT20	3100	2700	4000	9.4	8.1		
		396	469			C502_0046 MT30						14.2	10.6
		459	582			727	C502_0046 MT40	3000	3500	18.2	14.4		
						C502_0046 MT50	2500	2500	3000	28.2	18.4		
5.265	258/49	204	225	321	14	C502_0053 MT20	3100	2700	4000	9.0	9.4		
		451	534			C502_0053 MT30						13.8	12.0
		479	661			827	C502_0053 MT40	3000	3500	17.8	15.5		
						C502_0053 MT50	2500	2500	3000	27.8	19.0		
5.850	117/20	227	250	343	14	C502_0059 MT20	3100	2700	4000	7.1	10.5		
		429	593			C502_0059 MT30						11.9	13.1
		496	707			884	C502_0059 MT40	3000	3500	15.9	16.4		
						C502_0059 MT50	2500	2500	3000	25.9	19.4		
6.655	559/84	258	284	390	14	C502_0067 MT20	3100	2700	4000	6.8	11.9		
		489	675			C502_0067 MT30						11.6	14.3
		518	800			1006	C502_0067 MT40	3000	3500	15.6	17.3		
						C502_0067 MT50	2500	2500	3000	25.6	19.8		

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



C Series: INLINE – Shaft Output

Nom.	Reducer Ratio (i) Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

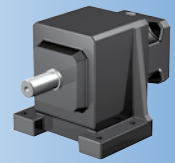
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7.763	621/80	272	331	430	14	C502_0078 MT20	3400	3000	4500	5.0	13.5
		456	787	1109		C502_0078 MT30			4000	9.8	15.7
		545	800			C502_0078 MT40	3000	3500	13.8	18.2	
				C502_0078 MT50		2500	2500	3000	23.8	20.1	
8.263	1537/186	750	838	1393	12	C502_0083 MT30	2800	2400	3500	16.9	17.0
			920			C502_0083 MT40			3500	20.9	19.6
			C502_0083 MT50			2500	3000	30.9	21.6		
9.261	3445/372	779	850	1561	12	C502_0093 MT30	2800	2400	3500	16.6	17.9
						C502_0093 MT40			3500	20.6	20.1
						C502_0093 MT50	2500	3000	30.6	21.8	
10.38	841/81	800	920	1600	12	C502_0105 MT30	2800	2400	3500	14.1	18.7
						C502_0105 MT40			3500	18.1	20.6
						C502_0105 MT50	2500	3000	28.1	22.0	
11.64	1885/162	800	850	1600	12	C502_0115 MT30	2800	2400	3500	13.9	19.4
						C502_0115 MT40			3500	17.9	21.0
						C502_0115 MT50	2500	3000	27.9	22.1	
12.43	87/7	482	530	757	12	C502_0125 MT20	3100	2700	4000	7.4	18.3
		800	920	1600		C502_0125 MT30			3500	12.2	19.8
						C502_0125 MT40	3000	3500	16.2	21.2	
						C502_0125 MT50	2500	2500	3000	26.2	22.2
13.93	195/14	540	594	848	12	C502_0140 MT20	3100	2700	4000	7.3	19.0
		800	850	1600		C502_0140 MT30			3500	12.1	20.3
						C502_0140 MT40	3000	3500	16.1	21.5	
						C502_0140 MT50	2500	2500	3000	26.1	22.3
15.71	377/24	609	670	920	12	C502_0155 MT20	3100	2700	4000	5.8	19.7
		800	920	1600		C502_0155 MT30			3500	10.6	20.8
						C502_0155 MT40	3000	3500	14.6	21.7	
						C502_0155 MT50	2500	2500	3000	24.6	22.4
17.60	845/48	683	751	1031	12	C502_0175 MT20	3100	2700	4000	5.8	20.3
		800	850	1600		C502_0175 MT30			3500	10.6	21.1
						C502_0175 MT40	3000	3500	14.6	21.9	
						C502_0175 MT50	2500	2500	3000	24.6	22.4
20.84	667/32	729	890	1155	12	C502_0210 MT20	3400	3000	4500	4.3	20.9
		800	920	1600		C502_0210 MT30			4000	9.1	21.6
						C502_0210 MT40	3000	3500	13.1	22.1	
						C502_0210 MT50	2500	2500	3000	23.1	22.5
23.36	1495/64	800	850	1294	12	C502_0230 MT20	3400	3000	4500	4.2	21.2
				1600		C502_0230 MT30			4000	9.0	21.8
						C502_0230 MT40	3000	3500	13.0	22.2	
						C502_0230 MT50	2500	2500	3000	23.0	22.5

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{ZN} ≤2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

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25.07	2407/96	741	920	1332	12	C502_0250 MT20	3400	3000	4500	3.5	21.4
		800		1600		C502_0250 MT30			4000	8.3	21.9
						C502_0250 MT40	3000	3500	12.3	22.3	
						C502_0250 MT50	2500	2500	3000	22.3	22.6
28.10	5395/192	800	850	1492	12	C502_0280 MT20	3400	3000	4500	3.5	21.7
				1600		C502_0280 MT30			4000	8.3	22.1
						C502_0280 MT40	3000	3500	12.3	22.4	
						C502_0280 MT50	2500	2500	3000	22.3	22.6
31.23	406/13	761	920	1581	12	C502_0310 MT20	3400	3000	4500	2.8	21.9
		C502_0310 MT30				4000			7.6	22.2	
		800				C502_0310 MT40	3000	3500	11.6	22.4	
35.00	35/1	800	850	1600	12	C502_0350 MT20	3400	3000	4500	2.8	22.0
						C502_0350 MT30			4000	7.6	22.3
						C502_0350 MT40	3000	3500	11.6	22.5	
41.69	667/16	792	920	1600	12	C502_0420 MT20	3400	3000	4500	2.2	22.2
		800				C502_0420 MT30			4000	7.0	22.4
						C502_0420 MT40	3000	3500	11.0	22.5	
46.72	1495/32	800	850	1600	12	C502_0470 MT20	3400	3000	4500	2.2	22.3
						C502_0470 MT30			4000	7.0	22.5
						C502_0470 MT40	3000	3500	11.0	22.6	
49.82	1943/39	800	920	1600	12	C502_0500 MT20	3400	3000	4500	1.9	22.4
						C502_0500 MT30			4000	6.7	22.5
						C502_0500 MT40	3000	3500	10.7	22.6	
55.83	335/6	800	850	1600	12	C502_0560 MT20	3400	3000	4500	1.9	22.4
						C502_0560 MT30			4000	6.7	22.5
						C502_0560 MT40	3000	3500	10.7	22.6	
62.43	4495/72	714	857	1153	12	C502_0620 MT20	3400	3000	4500	1.7	22.5
						C502_0620 MT30			4000	6.5	22.6
69.97	10075/144	800	850	1292	12	C502_0700 MT20	3400	3000	4500	1.7	22.5
						C502_0700 MT30			4000	6.5	22.6
80.60	19,343/240	800	920	1155	12	C503_0810 MT20	3400	3000	4500	1.6	22.6
90.32	8671/96	800	850	1294	12	C503_0900 MT20	3400	3000	4500	1.6	22.6
108.6	31,291/288	800	850	1492	12	C503_1090 MT20	3400	3000	4500	1.5	22.6
135.3	406/3	800	850	1600	12	C503_1350 MT20	3400	3000	4500	1.5	22.6
180.6	8671/48	800	850	1600	12	C503_1810 MT20	3400	3000	4500	1.4	22.7
215.9	1943/9	800	850	1600	12	C503_2160 MT20	3400	3000	4500	1.4	22.7
270.5	58,435/216	800	850	1292	12	C503_2710 MT20	3400	3000	4500	1.4	22.7

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



C Series: INLINE – Shaft Output

Nom.	Reducer Ratio (i) Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

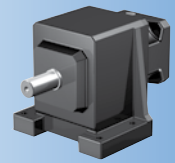
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4.184	2745/656	386	424	771	10	C612_0042 MT30	2300	1900	2800	52.9	14.0
		623	623	779		C612_0042 MT40				56.9	24.5
		823	1191	1489		C612_0042 MT50				66.9	45.0
5.083	61/12	468	515	920	10	C612_0051 MT30	2300	1900	2800	42.1	19.0
		736	736			C612_0051 MT40				46.1	31.3
		878	1406			1758				C612_0051 MT50	56.1
6.518	3233/496	601	661	1136	10	C612_0065 MT30	2700	2300	3300	31.7	26.8
		909	909			C612_0065 MT40				35.7	40.4
		954	1612			2171	C612_0065 MT50	2500	3000	45.7	58.5
7.111	64/9	655	721	1287	10	C612_0071 MT30	2300	1900	2800	38.4	29.9
		983	1029			C612_0071 MT40				42.4	43.6
			1380			2459				C612_0071 MT50	52.4
8.190	1769/216	755	830	1379	10	C612_0082 MT30	2700	2300	3300	25.0	35.0
		1030	1103			C612_0082 MT40				29.0	48.5
						1650	2635	C612_0082 MT50	2500	3000	39.0
9.118	848/93	840	924	1589	10	C612_0091 MT30	2700	2300	3300	29.4	39.0
		1067	1272			C612_0091 MT40				33.4	52.0
						1380	2600	C612_0091 MT50	2500	3000	43.4
10.11	3721/368	932	1025	1636	10	C612_0100 MT30	3000	2600	3500	20.7	42.8
		1105	1309			C612_0100 MT40				24.7	55.1
						1650	2900	C612_0100 MT50	2500	3000	34.7
11.46	928/81	1056	1161	1929	10	C612_0115 MT30	2700	2300	3300	23.6	47.2
		1152	1380			C612_0115 MT40				27.6	58.4
						2600	2600	C612_0115 MT50	2500	3000	37.6
12.58	2013/160	1026	1275	1952	10	C612_0125 MT30	3000	2600	3500	16.7	50.3
		1188	1561			C612_0125 MT40				20.7	60.6
						1650	2900	C612_0125 MT50	2500	3000	30.7
14.15	976/69	1236	1380	2288	10	C612_0140 MT30	3000	2600	3500	19.7	54.0
				2600		C612_0140 MT40				23.7	63.0
							2600	2600	C612_0140 MT50	2500	3000
16.20	1037/64	1088	1642	2394	10	C612_0160 MT30	3200	2900	4000	13.3	57.7
		1293	1650			C612_0160 MT40				3000	3500
							2900	2900	C612_0160 MT50	2500	3000
17.60	88/5	1300	1380	2600	10	C612_0175 MT30	3000	2600	3500	16.1	59.7
						C612_0175 MT40				20.1	66.6
						C612_0175 MT50	2500	3000	30.1	71.6	
19.61	549/28	1120	1650	2782	10	C612_0195 MT30	3200	2900	4000	11.4	62.1
		1378				C612_0195 MT40				3000	3500
							2500	2500	C612_0195 MT50	2500	3000
22.67	68/3	1300	1380	2600	10	C612_0230 MT30	3200	2900	4000	12.9	64.7
						C612_0230 MT40				3000	3500
						C612_0230 MT50	2500	3000	26.9	72.6	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm	Part Number* (Gearhead + Input)	EL 1,2,3,4	EL 5,6	All		

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24.93	5185/208	1157	1650	2900	10	C612_0250 MT30	3200	2900	4000	9.7	66.2	
		1450				C612_0250 MT40	3000		3500	13.7	70.2	
						C612_0250 MT50	2500		2500	3000	23.7	72.8
27.43	192/7	1300	1380	2600	10	C612_0270 MT30	3200	2900	4000	11.2	67.5	
							C612_0270 MT40		3000	3500	15.2	70.8
							C612_0270 MT50		2500	2500	3000	25.2
32.41	1037/32	1206	1650	2900	10	C612_0320 MT30	3200	2900	4000	8.4	69.2	
		1450				C612_0320 MT40	3000		3500	12.4	71.8	
						C612_0320 MT50	2500		2500	3000	22.4	73.4
34.87	1360/39	1300	1380	2600	10	C612_0350 MT30	3200	2900	4000	9.5	69.9	
							C612_0350 MT40		3000	3500	13.5	72.1
							C612_0350 MT50		2500	2500	3000	23.5
39.40	1891/48	1221	1465	1860	10	C612_0390 MT30	3200	2900	4000	7.7	70.8	
							C612_0390 MT40		3000	3500	11.7	72.5
							C612_0450 MT30		3200	2900	4000	8.3
45.33	136/3	1300	1380	2600	10	C612_0450 MT40	3000	3500	12.3		72.9	
							C612_0450 MT50	2500	2500		3000	22.3
55.11	496/9	1300	1380	2600	10	C612_0550 MT30	3200	2900	4000	7.6	72.4	
							C612_0550 MT40		3000	3500	11.6	73.3
68.89	620/9	1300	1380	2600	10	C612_0690 MT30	3200	2900	4000	7.1	73.0	
							C612_0690 MT40		3000	3500	11.1	73.6
49.28	31,537/640	1432	1561	1952	10	C613_0490 MT30	3200	2900	4000	7.2	72.0	
63.46	48,739/768	1450	1650	2394	10	C613_0630 MT30	3200	2900	4000	6.9	72.8	
75.81	5307/70	863	863	1079	10	C613_0760 MT20	3200	2900	4000	1.7	72.6	
76.80	8601/112	1450	1650	2782	10	C613_0770 MT30	3200	2900	4000	6.8	73.2	
87.64	3944/45	1039	1039	1298	10	C613_0880 MT20	3200	2900	4000	1.8	73.0	
88.78	799/9	1300	1380	2600	10	C613_0890 MT30	3200	2900	4000	6.9	73.5	
97.63	243,695/2496	1450	1650	2900	10	C613_0980 MT30	3200	2900	4000	6.7	73.6	
106.1	3712/35	1207	1207	1509	10	C613_1060 MT20	3200	2900	4000	1.7	73.4	
107.4	752/7	1300	1380	2600	10	C613_1070 MT30	3200	2900	4000	6.8	73.7	
126.9	48,739/384	1450	1650	2900	10	C613_1270 MT30	3200	2900	4000	6.6	73.8	
134.8	15,776/117	1300	1380	1821	10	C613_1350 MT20	3200	2900	4000	1.6	73.7	
136.6	15,980/117	1300	1380	2600	10	C613_1370 MT30	3200	2900	4000	6.7	73.9	
175.3	7888/45	1300	1380	2240	10	C613_1750 MT20	3200	2900	4000	1.5	73.9	
177.6	1598/9	1300	1380	2600	10	C613_1780 MT30	3200	2900	4000	6.6	74.0	
213.1	28,768/135	1300	1380	2600	10	C613_2130 MT20	3200	2900	4000	1.5	74.0	
266.4	7192/27	1300	1380	2600	10	C613_2660 MT20	3200	2900	4000	1.4	74.1	

C Series: INLINE — Shaft Output

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



C Series: INLINE – Shaft Output

Nom.	Reducer Ratio (i) Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

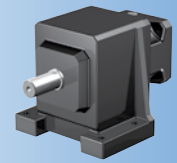
C7 (continued next page)

4.259	477/112	392	432	785	10	C712_0043 MT30	2200	1900	2600	101.8	15.7
		666	666	832		C712_0043 MT40				105.8	28.9
		1273	1273	1591		C712_0043 MT50				115.8	60.1
5.311	1827/344	489	538	979	10	C712_0053 MT30	2200	1900	2600	77.3	22.7
		804	804	1005		C712_0053 MT40				81.3	39.8
		1475	1536	1920		C712_0053 MT50				91.3	73.4
6.811	252/37	628	690	1241	10	C712_0068 MT30	2600	2300	3100	57.4	33.4
		993	993			C712_0068 MT40				61.4	54.1
		1603	1897	2371		C712_0068 MT50	2500	3000	71.4	87.0	
7.357	3480/473	678	746	1356	10	C712_0074 MT30	2200	1900	2600	70.9	37.2
		1113	1113	1392		C712_0074 MT40				74.9	58.7
		1645	2128	2659		C712_0074 MT50				84.9	90.8
8.490	4347/512	782	861	1492	10	C712_0085 MT30	2600	2300	3100	44.2	45.0
		1193	1193			C712_0085 MT40				48.2	67.5
		1725	2280	2850		C712_0085 MT50	2500	3000	58.2	97.0	
9.435	3840/407	869	956	1719	10	C712_0094 MT30	2600	2300	3100	53.4	51.2
		1375	1375			C712_0094 MT40				57.4	73.7
		1787	2300	3285		C712_0094 MT50	2500	3000	67.4	100.9	
9.912	4599/464	913	1005	1699	10	C712_0099 MT30	2900	2600	3400	37.5	54.2
		1359	1359			C712_0099 MT40				41.5	76.6
		1817	2598	3247		C712_0099 MT50	2500	3000	51.5	102.6	
11.76	1035/88	1084	1192	2066	10	C712_0120 MT30	2600	2300	3100	41.7	64.6
		1653	1653			C712_0120 MT40				45.7	85.9
		1923	2300	3949		C712_0120 MT50	2500	3000	55.7	107.6	
13.18	4851/368	1215	1336	2133	10	C712_0130 MT30	2900	2600	3400	27.6	71.4
		1706	1706			C712_0130 MT40				31.6	91.4
		1998	2760	4075		C712_0130 MT50	2500	3000	41.6	110.3	
13.73	4380/319	1265	1392	2354	10	C712_0135 MT30	2900	2600	3400	35.6	73.8
		1883	1883			C712_0135 MT40				39.6	93.3
		2000	2300	4000		C712_0135 MT50	2500	3000	49.6	111.1	
16.73	1071/64	1365	1696	2596	10	C712_0165 MT30	3100	2900	3600	21.1	84.8
		2077	2077			C712_0165 MT40				3000	3500
		2163	2760	4800		C712_0165 MT50	2500	3000	35.1	114.5	
18.26	420/23	1683	1851	2954	10	C712_0185 MT30	2900	2600	3400	26.5	89.2
		2000	2300			C712_0185 MT40				30.5	103.9
				4000		C712_0185 MT50	2500	3000	40.5	115.7	
20.67	1323/64	1388	2095	3054	10	C712_0210 MT30	3100	2900	3600	16.9	94.8
		2321	2443			C712_0210 MT40				3000	3500
			2760	4800		C712_0210 MT50	2500	3000	30.9	117.0	
23.18	255/11	1891	2300	3596	10	C712_0230 MT30	3100	2900	3600	20.4	99.4
		2000				C712_0230 MT40				3000	3500
				4000		C712_0230 MT50	2500	3000	34.4	118.1	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin)
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm	Part Number* (Gearhead + Input)	EL 1,2,3,4	EL 5,6	All	Nm	

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25.31	405/16	1445	2566	3592	10	C712_0250 MT30	3100	2900	3600	13.8	102.4
		2400	2760			C712_0250 MT40	3000		3500	17.8	112.0
						C712_0250 MT50	2500	2500	3000	27.8	118.7
28.64	315/11	1922	2300	4000	10	C712_0290 MT30	3100	2900	3600	16.5	106.2
		2000				C712_0290 MT40	3000		3500	20.5	114.0
						C712_0290 MT50	2500	2500	3000	30.5	119.4
33.80	2163/64	1489	2760	4494	10	C712_0340 MT30	3100	2900	3600	10.9	110.3
		2400				C712_0340 MT40	3000		3500	14.9	116.2
						C712_0340 MT50	2500	2500	3000	24.9	120.2
35.07	2700/77	2000	2300	4000	10	C712_0350 MT30	3100	2900	3600	13.6	111.0
						C712_0350 MT40	3000		3500	17.6	116.6
						C712_0350 MT50	2500	2500	3000	27.6	120.3
41.02	2625/64	1526	2514	4189	10	C712_0410 MT30	3100	2900	3600	9.5	113.8
		2095				C712_0410 MT40	3000		3500	13.5	118.1
						C712_0410 MT50	2500	2500	3000	23.5	120.8
46.82	515/11	2000	2300	4000	10	C712_0470 MT30	3100	2900	3600	10.7	115.7
						C712_0470 MT40	3000		3500	14.7	119.0
						C712_0470 MT50	2500	2500	3000	24.7	121.1
56.82	625/11	2000	2300	4000	10	C712_0570 MT30	3100	2900	3600	9.4	117.7
						C712_0570 MT40	3000		3500	13.4	120.0
						C712_0570 MT50	2500	2500	3000	23.4	121.5
69.55	765/11	2000	2300	3284	10	C712_0700 MT30	3100	2900	3600	8.3	119.1
						C712_0700 MT40	3000		3500	12.3	120.7
50.85	18711/368	2400	2760	4075	10	C713_0510 MT40	3000	2900	3500	13.1	119.5
64.55	4131/64	2400	2760	4800	10	C713_0650 MT40	3000	2900	3500	12.6	120.5
79.73	5103/64	2400	2760	4800	10	C713_0800 MT40	3000	2900	3500	12.4	121.1
80.97	20,727/256	1975	2443	3054	10	C713_0810 MT30	3100	2900	3600	7.2	119.9
89.42	6885/77	2000	2300	4000	10	C713_0890 MT40	3000	2900	3500	12.6	121.3
97.63	10,935/112	2400	2760	3592	10	C713_0980 MT40	3000	2900	3500	12.2	121.4
99.14	6345/64	2090	2760	3591	10	C713_0990 MT30	3100	2900	3600	7.0	120.7
110.5	1215/11	2000	2300	4000	10	C713_1100 MT40	3000	2900	3500	12.3	121.6
130.4	8343/64	2400	2760	4494	10	C713_1300 MT40	3000	2900	3500	12.0	121.8
132.4	33,887/256	2210	2760	4494	10	C713_1320 MT30	3100	2900	3600	6.8	121.3
135.3	72,900/539	2000	2300	4000	10	C713_1350 MT40	3000	2900	3500	12.1	121.8
137.3	10575/77	2000	2300	4000	10	C713_1370 MT30	3100	2900	3600	7.0	121.4
180.6	13,905/77	2000	2300	4000	10	C713_1810 MT40	3000	2900	3500	11.9	122.0
183.4	24,205/132	2000	2300	4000	10	C713_1830 MT30	3100	2900	3600	6.8	121.7
219.2	16875/77	2000	2300	4000	10	C713_2190 MT40	3000	2900	3500	11.9	122.0
222.5	29,375/132	2000	2300	4000	10	C713_2230 MT30	3100	2900	3600	6.7	121.9

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

C Series: INLINE — Shaft Output



C Series: INLINE – Shaft Output

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

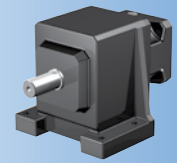
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4.225	1711/405	1327	1327	1659	10	C812_0042 MT50	2100	1800	2500	264.3	64.7
5.387	1239/230	1632	1632	2040	10	C812_0054 MT50	2100	1800	2500	195.5	82.2
6.670	767/115	1962	1962	2452	10	C812_0067 MT50	2500	2200	2800	151.9	96.9
7.304	168/23	2212	2212	2765	10	C812_0073 MT50	2100	1800	2500	179.1	128.4
8.472	1652/195	2391	2391	2989	10	C812_0085 MT50	2500	2200	2800	113.4	111.0
9.043	208/23	2660	2660	3325	10	C812_0090 MT50	2500	2200	2800	141.2	147.3
10.15	944/93	2776	2776	3469	10	C812_0100 MT50	2500	2400	3000	93.9	119.6
11.49	448/39	3100	3242	4052	10	C812_0115 MT50	2500	2200	2800	106.8	164.7
12.75	5546/435	1748	1748	2186	10	C812_0125 MT40	2700	2400	3200	63.5	101.8
		3209	3341	4176		C812_0125 MT50	2500		3000	73.5	127.9
13.76	1280/93	3292	3763	4704	10	C812_0140 MT50	2500	2400	3000	89.2	174.8
17.10	1180/69	2213	2213	2767	10	C812_0170 MT40	2900	2700	3400	45.2	117.5
		3540	4229	5287		C812_0170 MT50	2500	2500	3000	55.2	135.1
17.29	1504/87	2371	2371	2964	10	C812_0175 MT40	2700	2400	3200	60.6	153.6
		3552	4140	5663		C812_0175 MT50	2500		3000	70.6	184.4
20.26	6077/300	2532	2532	3165	10	C812_0200 MT40	2900	2700	3400	37.1	124.4
		3745	4800	6047		C812_0200 MT50	2500	2500	3000	47.1	137.9
23.19	1600/69	3001	3001	3751	10	C812_0230 MT40	2900	2700	3400	43.6	172.4
		3600	4140	7168		C812_0230 MT50	2500	2500	3000	53.6	192.4
26.06	3127/120	3066	3080	3850	10	C812_0260 MT40	2900	2700	3400	28.3	131.9
		4073	4800	7357		C812_0260 MT50	2500	2500	3000	38.3	140.8
27.47	412/15	3433	3433	4291	10	C812_0270 MT40	2900	2700	3400	35.9	180.3
		3600	4140	7200		C812_0270 MT50	2500	2500	3000	45.9	195.5
33.59	2183/65	3163	3755	4694	10	C812_0340 MT40	2900	2700	3400	22.1	137.0
		4200	4800	8400		C812_0340 MT50	2500	2500	3000	32.1	142.6
35.33	106/3	3600	4140	5220	10	C812_0350 MT40	2900	2700	3400	27.6	188.9
				7200		C812_0350 MT50	2500	2500	3000	37.6	198.7
39.94	2596/65	3248	4304	5380	10	C812_0400 MT40	2900	2700	3400	18.9	139.4
		3785				C812_0400 MT50	2500	2500	3000	28.9	143.4
45.54	592/13	3600	4140	6364	10	C812_0460 MT40	2900	2700	3400	21.7	194.5
				7200		C812_0460 MT50	2500	2500	3000	31.7	200.6
54.15	704/13	3600	4140	7200	10	C812_0540 MT40	2900	2700	3400	18.6	197.1
						C812_0540 MT50	2500	2500	3000	28.6	201.5
68.89	620/9	3600	4140	7200	10	C812_0690 MT40	2900	2700	3400	15.7	199.5
						C812_0690 MT50	2500	2500	3000	25.7	202.3

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

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49.18	49,914/1015	3341	3341	4177	10	C813_0490 MT40	2900	2700	3400	15.2	195.7
65.96	10,620/161	3718	4230	5287	10	C813_0660 MT40	2900	2700	3400	14.0	199.2
78.13	54,693/700	3884	4800	6047	10	C813_0780 MT40	2900	2700	3400	13.5	200.4
79.34	285,619/3600	2365	2531	3164	10	C813_0790 MT30	2900	2700	3400	8.3	197.2
89.44	14,400/161	3600	4140	7169	10	C813_0890 MT40	2900	2700	3400	13.9	201.2
90.82	18,800/207	2812	3001	3751	10	C813_0910 MT30	2900	2700	3400	8.7	198.7
100.5	28,143/280	4087	4800	7357	10	C813_1010 MT40	2900	2700	3400	12.9	201.7
105.9	3708/35	3600	4140	7200	10	C813_1060 MT40	2900	2700	3400	13.4	201.9
107.6	4841/45	3207	3432	4291	10	C813_1080 MT30	2900	2700	3400	8.2	200.1
129.5	58,941/455	4200	4800	8400	10	C813_1300 MT40	2900	2700	3400	12.4	202.4
136.3	954/7	3600	4140	7200	10	C813_1360 MT40	2900	2700	3400	12.8	202.6
138.4	2491/18	3375	4140	5220	10	C813_1380 MT30	2900	2700	3400	7.6	201.5
175.6	15,984/91	3600	4140	7200	10	C813_1760 MT40	2900	2700	3400	12.4	203.0
178.4	6956/39	3561	4140	6364	10	C813_1780 MT30	2900	2700	3400	7.3	202.3
208.9	19,008/91	3600	4140	7200	10	C813_2090 MT40	2900	2700	3400	12.2	203.2
212.1	8272/39	3600	4140	7200	10	C813_2120 MT30	2900	2700	3400	7.1	202.7
265.7	1860/7	3600	4140	7200	10	C813_2660 MT40	2900	2700	3400	12.0	203.3
269.8	7285/27	3600	4140	7200	10	C813_2700 MT30	2900	2700	3400	6.9	203.0

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

C Series: INLINE — Shaft Output



C Series: INLINE – Shaft Output

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

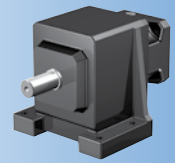
C9

16.5	5795/352	4258	4258	5322	10	C912_0165 MT50	2500	2500	3000	101.5	228.0
20.2	2257/112	4999	4999	6249	10	C912_0200 MT50	2500	2500	3000	79.6	238.2
23.4	6175/264	6000	6049	7561	10	C912_0230 MT50	2500	2500	3000	96.8	353.8
25.3	6893/272	5985	5985	7481	10	C912_0250 MT50	2500	2500	3000	61.6	246.4
28.6	2405/84	6000	6500	8878	10	C912_0290 MT50	2500	2500	3000	76.4	365.8
32.1	3599/112	6300	7203	9003	10	C912_0320 MT50	2500	2500	3000	48.0	252.0
36.0	7345/204	6000	6500	10,629	10	C912_0360 MT50	2500	2500	3000	59.6	375.3
39.3	4087/104	6009	7211	10,495	10	C912_0390 MT50	2500	2500	3000	39.9	255.2
45.7	3835/84	6000	6500	12,000	10	C912_0460 MT50	2500	2500	3000	46.8	381.7
55.8	335/6	6000	6500	12,000	10	C912_0560 MT50	2500	2500	3000	39.0	385.3
64.6	295,545/4576	7000	8000	12,780	10	C913_0650 MT50	2500	2500	3000	68.0	392.0
70.0	10,075/144	6000	6500	9304	10	C912_0700 MT50	2500	2500	3000	32.8	387.9
77.7	60,939/784	4429	4999	6249	10	C913_0780 MT40	2800	2600	3200	15.8	380.9
79.1	115,107/1456	7000	8000	14,000	10	C913_0790 MT50	2500	2500	3000	67.0	392.0
90.2	55,575/616	5973	6049	7561	10	C913_0900 MT40	2800	2600	3200	17.0	383.8
91.8	8075/88	6000	6500	12,000	10	C913_0920 MT50	2500	2500	3000	68.0	393.0
99.4	20,679/208	7000	8000	14,000	10	C913_0990 MT50	2500	2500	3000	66.0	393.0
110.4	21,645/196	6000	6500	8878	10	C913_1100 MT40	2800	2600	3200	15.6	386.7
112.3	3145/28	6000	6500	12,000	10	C913_1120 MT50	2500	2500	3000	67.0	393.0
126.1	183,549/1456	6000	6500	12,000	10	C913_1260 MT50	2500	2500	3000	65.0	393.0
138.9	66,105/476	6000	6500	10,629	10	C913_1390 MT40	2800	2600	3200	14.5	388.9
141.3	565/4	6000	6500	12,000	10	C913_1410 MT50	2500	2500	3000	65.0	393.0
176.1	34,515/196	6000	6500	12,000	10	C913_1760 MT40	2800	2600	3200	13.6	390.3
179.1	5015/28	6000	6500	12,000	10	C913_1790 MT50	2500	2500	3000	65.0	393.0
215.4	3015/14	6000	6500	12,000	10	C913_2150 MT40	2800	2600	3200	13.1	391.1

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Dimensional Data

SMS Reducer Optional Output Flange For "F" Round Output Flange Units Only (Note: optional flanges are not available on all sizes)

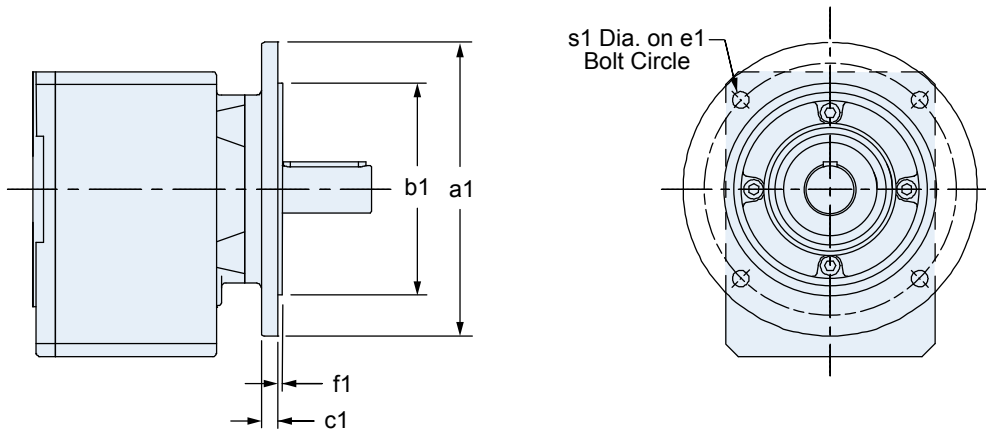


Table 1 Dimensions (mm)

Unit	Accommodate NEMA C-Frame Motors	Flange Size a1	b1 *	c1	e1	f1	s1
C0	050	120	80 _{j6}	10	100	3	7
	140	140	95 _{j6}	10	115	3	9
C1	050	140	95 _{j6}	8	115	3.5	9
	140	160	110 _{j6}	10	130	3.5	9
C2	180	160	110 _{j6}	10	130	3.5	9
		250	180 _{j6}	12	215	4	14
C3	050	160	110 _{j6}	10	130	3.5	9
	140	200	130 _{j6}	12	165	3.5	11
C4	180	200	130 _{j6}	14	165	3.5	11
	210	300	230 _{j6}	14	265	4	14
C5	180	250	180 _{j6}	14	215	4	14
	210						
C8	250	350	250 _{h6} 350 _{h6}	18	300	5	18
	280	450		20	400	5	18

* h6, j6 = existing values

C Series: INLINE — Shaft Output

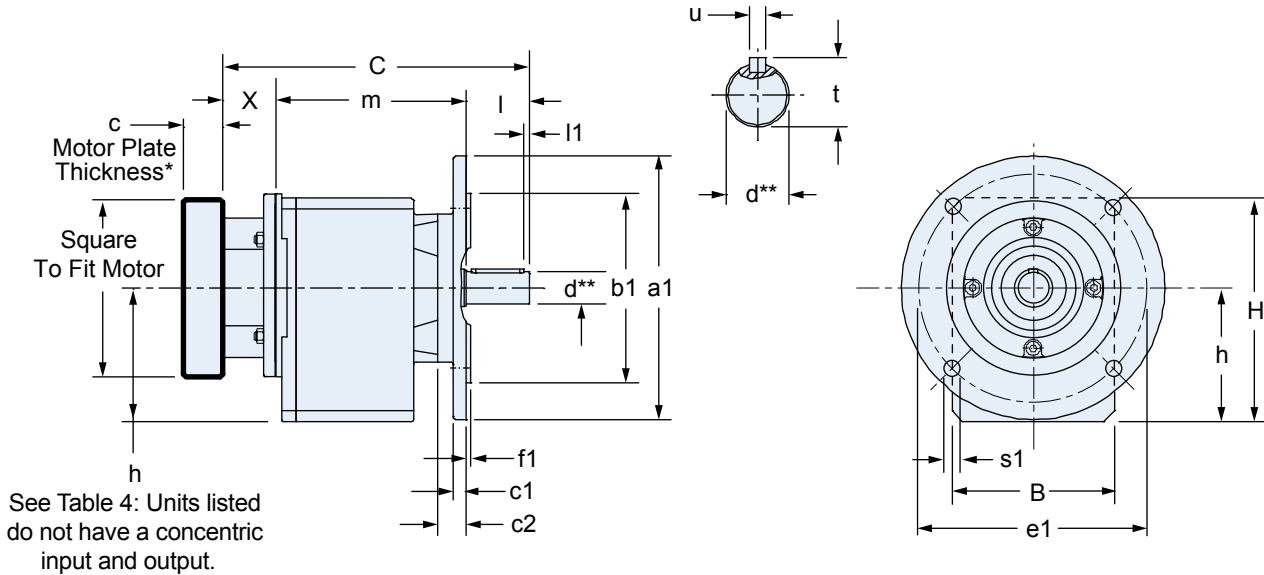
Please contact STÖBER for ordering assistance.

C Series: INLINE — Shaft Output

“F” Round Output Flange —

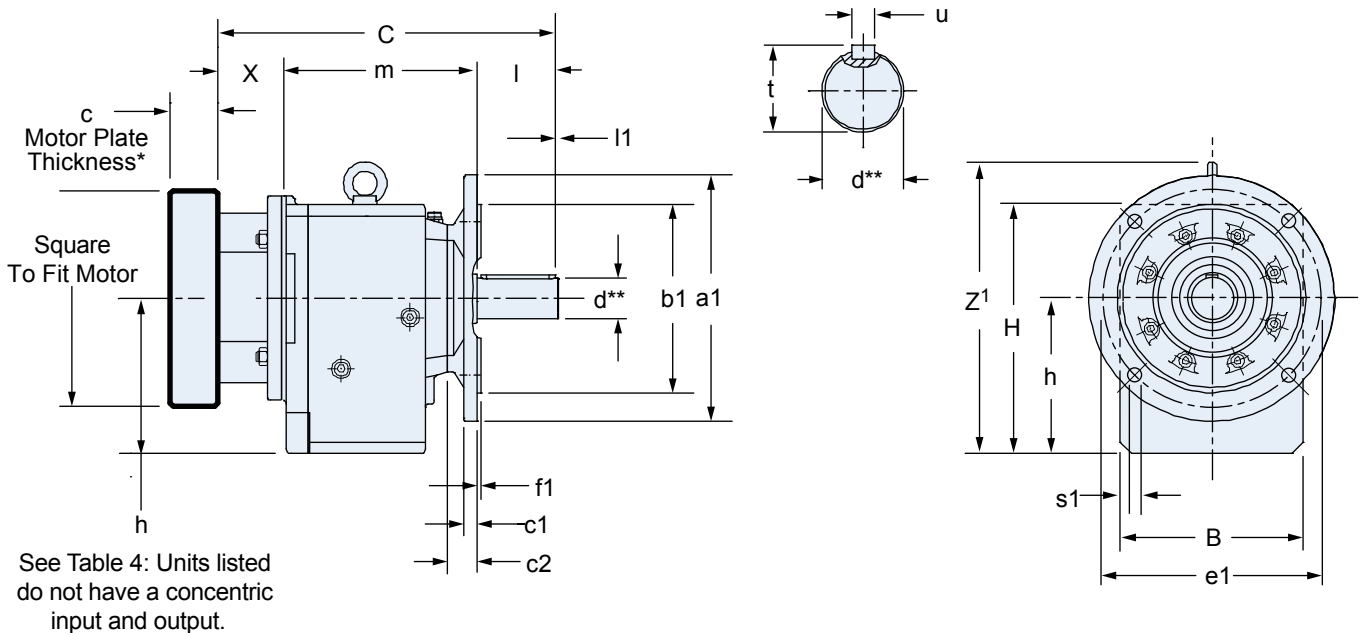
C002F thru C503F

Optional SMS Reducer Output Flange available on most models, see page 135 for details.



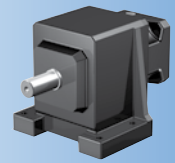
* See Motor Mounting Plate Option, page 110 for details.
** For optional output shaft options, see page 109.

C612F thru C913F



* See Motor Mounting Plate Option, page 110 for details.
** For optional output shaft options, see page 109.

NOTE: Instead of 4 holes as shown in the drawing, the C912 and C913 output flange has 8 “J” dia. mounting holes on “F” bolt circle (located 22.5° from horizontal).



Dimensional Data

Table 1 Dimensions (mm)

Table with 13 columns: Unit, a1, B, b1*, c1, c2, e1, f1, H, h, l1, s1, Z1. Rows C0 through C9.

1) Select units do not have a concentric input and output. See input dimension "h" for these units in Table 4.

Table 2 Metric output available on request.

Table with 7 columns: Unit, dh6*, t, u, d*, t, u. Rows C0 through C9.

Table 3 Motor Adapter Dimensions (mm)

Table with 5 columns: Motor Adapter, Thickness c Min. 3), Motor Shaft d2 Max. 2), X, Wt. lbs. Rows MT10 through MT50.

2) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

3) Motor plate maximum thickness "c" will vary with motor shaft length but will not be less than shown.

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

* h6, j6, k6, m6 = existing values

Table 4 Dimensions (mm)

Large table with 22 columns: Unit, C, h, l, m for MT10, MT20, MT30, MT40, MT50, and Approx. Wt.(lbs.). Rows C002 through C913.

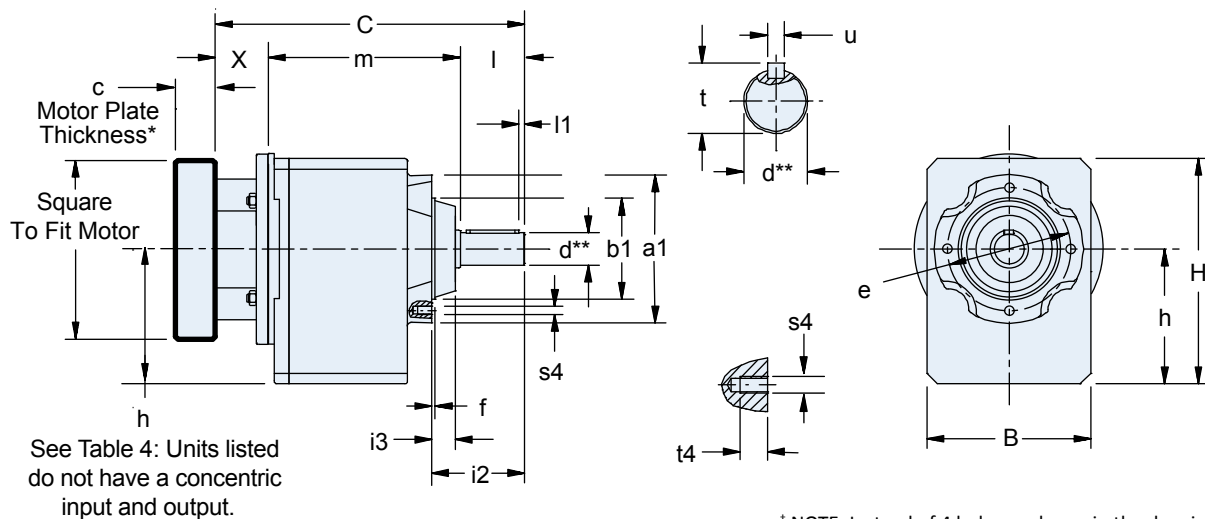
4) Select units do not have a concentric input and output dimension "h". Table 4 "h" values are for input side only on these select units. All concentric input and output units dimension "h" values are listed in Table 1 above.

C Series: INLINE — Shaft Output

C Series: INLINE — Shaft Output

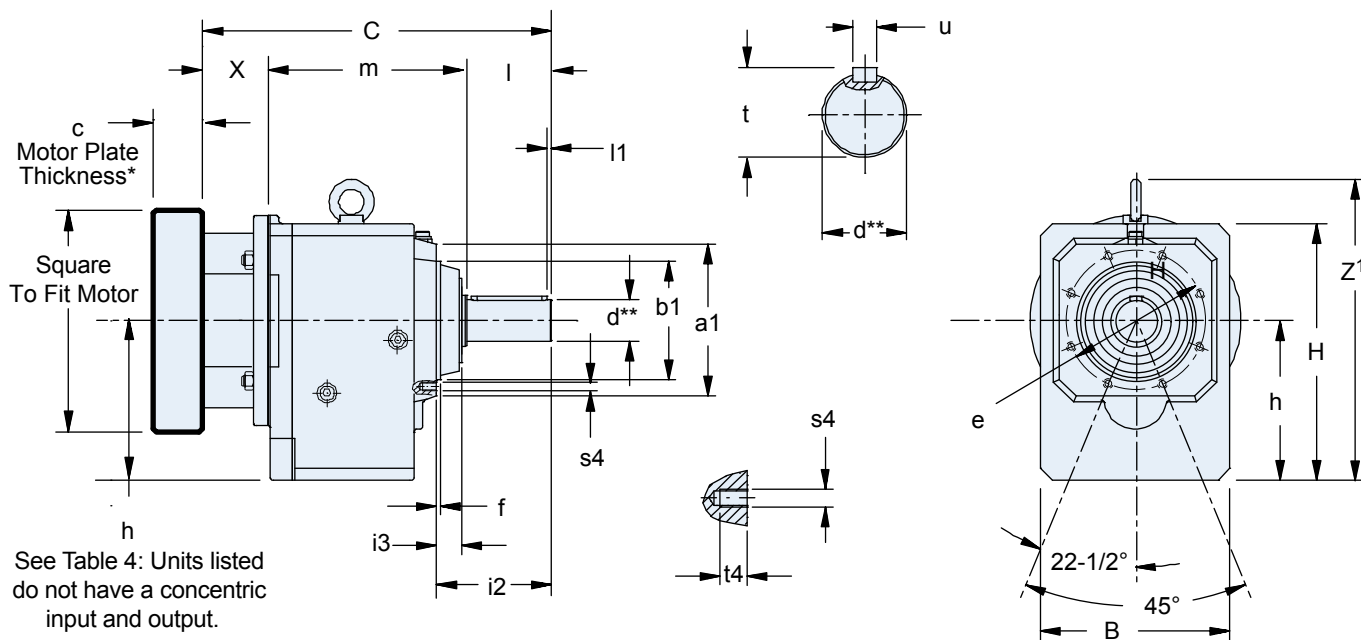
“G” Pitch Circle Diameter (PCD) Tapped Holes —

C002G thru C503G

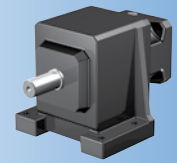


* See Motor Mounting Plate Option, page 110 for details.
** For optional output shaft options, see page 109.

C612G thru C913G



* See Motor Mounting Plate Option, page 110 for details.
** For optional output shaft options, see page 109.



Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	B	b1 _{j6}	e	f	H	h	i2	i3	l1	s4	t4	z ¹
C0	87	97	55	75	3	141	79	58	14	3	M6x1	10	-
C1	120	130	80	100	3	175	100	71	17	5	M6x1	13	-
C2	140	142	95	115	3	192	112 ¹⁾	87	22	5	M6x1	13	-
C3	140	154	95	115	3	212	127 ¹⁾	87	22	5	M8x1.25	13	-
C4	160	178	110	130	3.5	242.5	142.5	108	22	5	M8x1.25	16	-
C5	192	195	130	165	3.5	286	166	109	23	5	M10x1.5 ⁺	16	-
C6	180	225	140	165	5	310	195 ¹⁾	136	30	5	M10x1.5	16	362
C7	195	265	155	185	8	371	231 ¹⁾	164	37	5	M12x1.75	19	432
C8	226	310	185	215	5	445	285	185	37	5	M12x1.75	19	506
C9	280	365	230	265	5	524	334	220	42	5	M16x2	26	594

¹⁾ Select units do not have a concentric input and output. See input dimension "h" for these units in Table 4.

Table 2 Metric output available on request.

Unit	Standard Shaft - inches			Optional Shaft - mm		
	d _{h6} [*]	t	u	d [*]	t	u
C0	0.750	0.83	3/16 x 3/16 x 1-7/32	20 _{k6}	22.5	A6x6x32
C1	1.000	1.11	1/4 x 1/4 x 1-9/16	25 _{k6}	28	A8x7x40
C2	1.250	1.36	1/4 x 1/4 x 1-15/16	30 _{k6}	33	A8x7x50
C3	1.250	1.36	1/4 x 1/4 x 1-15/16	30 _{k6}	33	A8x7x50
C4	1.625	1.79	3/8 x 3/8 x 2-7/8	40 _{k6}	43	A12x8x70
C5	1.625	1.79	3/8 x 3/8 x 2-7/8	40 _{k6}	43	A12x8x70
C6	2.125	2.35	1/2 x 1/2 x 3-5/32	50 _{k6}	53.5	A14x9x90
C7	2.375	2.65	5/8 x 5/8 x 3-15/16	60 _{m6}	64	A18x11x100
C8	2.875	3.21	3/4 x 3/4 x 4-5/16	70 _{m6}	74.5	A20x12x125
C9	3.625	4.01	7/8 x 7/8 x 5-1/2	90 _{m6}	95	A25x14x140

* h6, j6, k6, m6 = existing values

Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness c Min. ³⁾	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	15
MT40	33	48	89	28
MT50	43	60	81.5	42

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness "c" will vary with motor shaft length but will not be less than shown.

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

Table 4 Dimensions (mm)

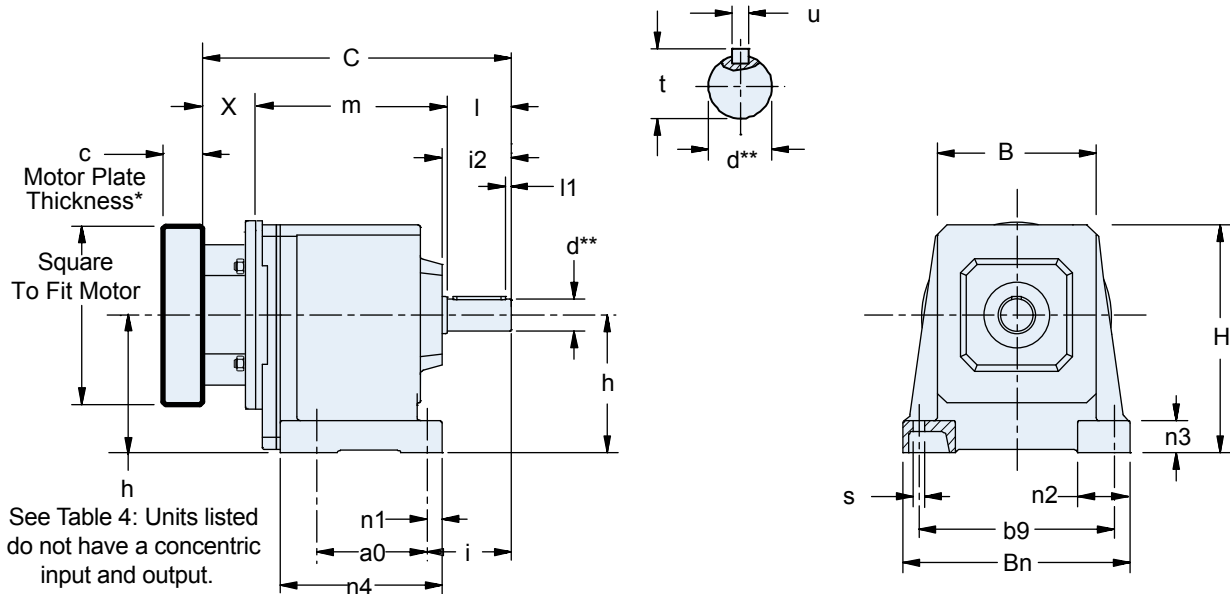
Unit	MT10				MT20				MT30				MT40				MT50				Approx. Wt.(lbs.)	
	C	h	l	m	C	h	l	m	C	h	l	m	C	h	l	m	C	h	l	m		
C002	194	-	40	114	208	-	40	118	-	-	-	-	-	-	-	-	-	-	-	-	-	18
C102	227	-	50	137	241	-	50	141	253	-	50	143	-	-	-	-	-	-	-	-	-	29
C103	264	-	50	174	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
C202	255	-	60	155	269	-	60	159	281	-	60	161	-	-	-	-	-	-	-	-	-	38
C203 ⁴⁾	292	75.5	60	192	312	75.5	60	202	-	-	-	-	-	-	-	-	-	-	-	-	-	45
C302	-	-	-	-	288	-	60	178	300	-	60	180	332	-	60	183	-	-	-	-	-	49
C303 ⁴⁾	311	90	60	211	331	90	60	221	-	-	-	-	-	-	-	-	-	-	-	-	-	56
C402	-	-	-	-	335.5	-	80	205.5	347.5	-	80	207.5	379.5	-	80	210.5	-	-	-	-	-	71
C403	-	-	-	-	378.5	-	80	248.5	-	-	-	-	-	-	-	-	-	-	-	-	-	78
C502	-	-	-	-	357	-	80	227	369	-	80	229	401	-	80	232	407.5	-	80	246	95	95
C503	-	-	-	-	400	-	80	270	-	-	-	-	-	-	-	-	-	-	-	-	-	111
C612 ⁴⁾	-	-	-	-	-	-	-	-	393	189	100	233	425	189	100	236	430.5	189	100	249	115	115
C613 ⁴⁾	-	-	-	-	425	-	100	275	455	-	100	295	-	189	-	-	-	-	-	-	-	159
C712	-	-	-	-	-	-	-	-	446	-	120	266	477	-	120	268	482.5	-	120	281	199	199
C713 ⁴⁾	-	-	-	-	-	-	-	-	507	-	120	327	548	250	120	339	-	-	-	-	-	221
C812	-	-	-	-	-	-	-	-	-	-	-	-	544	-	140	315	549.5	-	140	328	322	322
C813	-	-	-	-	-	-	-	-	574	-	140	374	615	-	140	386	-	-	-	-	-	342
C912	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	616.5	-	170	365	596	596
C913	-	-	-	-	-	-	-	-	-	-	-	-	682	-	170	423	-	-	-	-	-	678

⁴⁾ Select units do not have a concentric input and output dimension "h". Table 4 "h" values are for input side only on these select units. All concentric input and output units dimension "h" values are listed in Table 1 above.

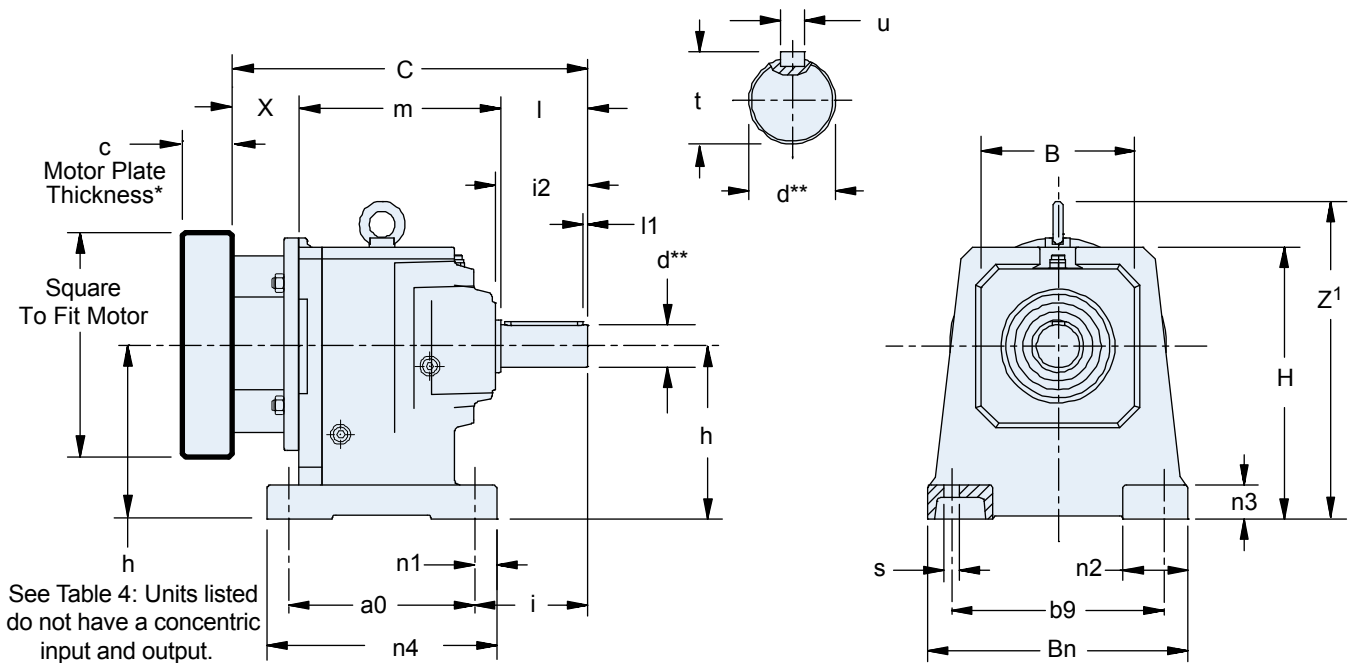
C Series: INLINE — Shaft Output

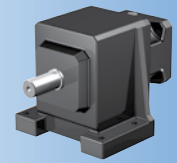
“N” Foot Mount —

C002N thru C503N



C612N thru C913N





Dimensional Data

Table 1 Dimensions (mm)

Unit	a0	B	Bn	b9	H	h	i	i2	l1	n1	n2	n3	n4	s	Z ¹
C0	62	92	132	110	144	82	55	44	3	11	35	20	95	7	—
C1	70	124	176	150	177	102	67	54	5	13	42	25	118	9	—
C2	85	138	200	170	195	115 ¹⁾	79	65	5	14	50	30	135	11	—
C3	105	150	215	185	215	130 ¹⁾	79	65	5	14	50	30	154	11	—
C4	110	175	255	220	245	145	105	86	5	19	60	35	180	14	—
C5	130	192	290	245	290	170	108	86	5	22	70	40	197	18	—
C6	215	225	300	245	315	200 ¹⁾	130	106	5	25	75	40	265	18	367
C7	235	265	365	300	375	235 ¹⁾	163	127	5	25	90	50	285	18	436
C8	300	310	435	340	450	290	190	148	5	29	95	55	360	22	511
C9	340	365	510	400	530	340	222	178	5	34	110	60	410	26	600

¹⁾ Select units do not have a concentric input and output. See input dimension "h" for these units in Table 4.

Table 2 Metric output available on request.

Unit	Standard Shaft - inches			Optional Shaft - mm		
	d _{h6} *	t	u	d *	t	u
C0	0.750	0.83	3/16 x 3/16 x 1-7/32	20 _{k6}	22.5	A6x6x32
C1	1.000	1.11	1/4 x 1/4 x 1-9/16	25 _{k6}	28	A8x7x40
C2	1.250	1.36	1/4 x 1/4 x 1-15/16	30 _{k6}	33	A8x7x50
C3	1.250	1.36	1/4 x 1/4 x 1-15/16	30 _{k6}	33	A8x7x50
C4	1.625	1.79	3/8 x 3/8 x 2-7/8	40 _{k6}	43	A12x8x70
C5	1.625	1.79	3/8 x 3/8 x 2-7/8	40 _{k6}	43	A12x8x70
C6	2.125	2.35	1/2 x 1/2 x 3-5/32	50 _{k6}	53.5	A14x9x90
C7	2.375	2.65	5/8 x 5/8 x 3-15/16	60 _{m6}	64	A18x11x100
C8	2.875	3.21	3/4 x 3/4 x 4-5/16	70 _{m6}	74.5	A20x12x125
C9	3.625	4.01	7/8 x 7/8 x 5-1/2	90 _{m6}	95	A25x14x140

* h6, j6, k6, m6 = existing values

Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness c Min. ³⁾	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	15
MT40	33	48	89	28
MT50	43	60	81.5	42

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness "c" will vary with motor shaft length but will not be less than shown.

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

Table 4 Dimensions (mm)

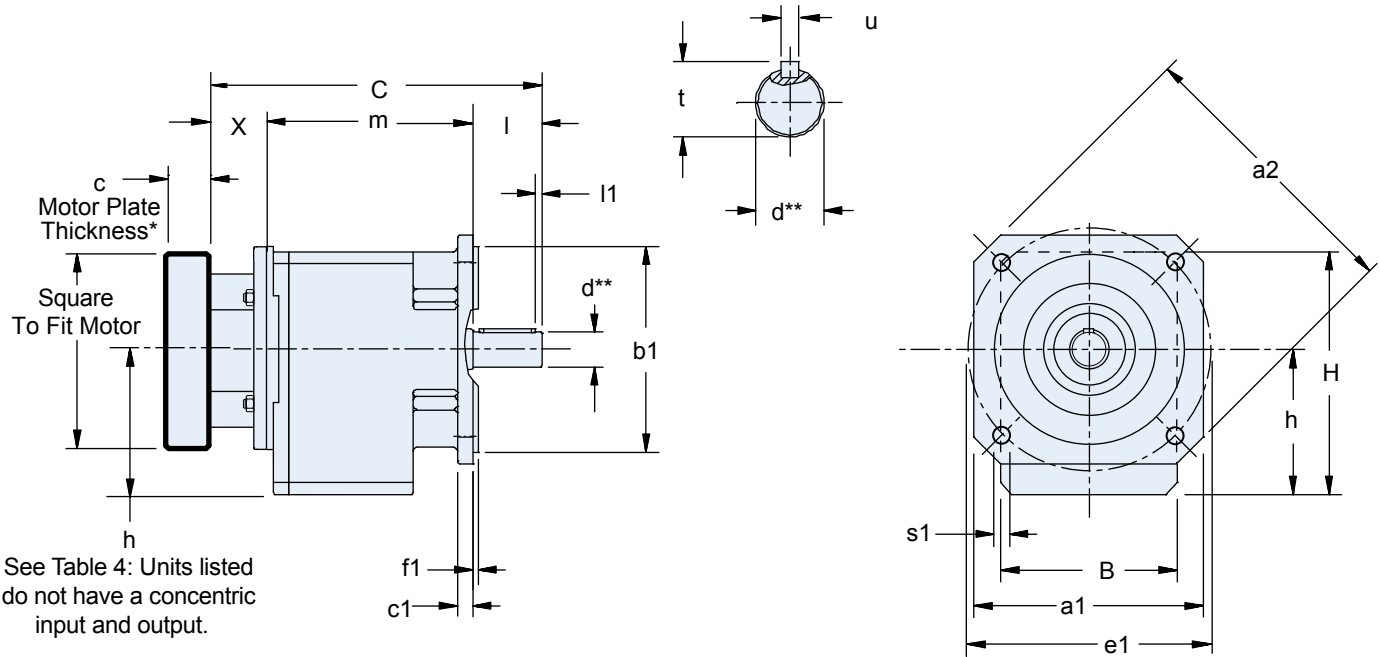
Unit	MT10				MT20				MT30				MT40				MT50				Approx. Wt.(lbs.)
	C	h	l	m	C	h	l	m	C	h	l	m	C	h	l	m	C	h	l	m	
C002	194	—	40	114	208	—	40	118	—	—	—	—	—	—	—	—	—	—	—	—	18
C102	227	—	50	137	241	—	50	141	253	—	50	143	—	—	—	—	—	—	—	—	29
C103	264	—	50	174	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	34
C202	255	—	60	155	269	—	60	159	281	—	60	161	—	—	—	—	—	—	—	—	38
C203 ⁴⁾	292	75.5	60	192	312	75.5	60	202	—	—	—	—	—	—	—	—	—	—	—	—	45
C302	—	—	—	—	288	—	60	178	300	—	60	180	332	—	60	183	—	—	—	—	49
C303 ⁴⁾	311	90	60	211	331	90	60	221	—	—	—	—	—	—	—	—	—	—	—	—	56
C402	—	—	—	—	335.5	—	80	205.5	347.5	—	80	207.5	379.5	—	80	210.5	—	—	—	—	71
C403	—	—	—	—	378.5	—	80	248.5	—	—	—	—	—	—	—	—	—	—	—	—	78
C502	—	—	—	—	357	—	80	227	369	—	80	229	401	—	80	232	407.5	—	80	246	95
C503	—	—	—	—	400	—	80	270	—	—	—	—	—	—	—	—	—	—	—	—	111
C612 ⁴⁾	—	—	—	—	—	—	—	—	393	189	100	233	425	189	100	236	430.5	189	100	249	115
C613 ⁴⁾	—	—	—	—	425	—	100	275	455	—	100	295	—	189	—	—	—	—	—	—	159
C712	—	—	—	—	—	—	—	—	446	—	120	266	477	—	120	268	482.5	—	120	281	199
C713 ⁴⁾	—	—	—	—	—	—	—	—	507	—	120	327	548	250	120	339	—	—	—	—	221
C812	—	—	—	—	—	—	—	—	—	—	—	—	544	—	140	315	549.5	—	140	328	322
C813	—	—	—	—	—	—	—	—	574	—	140	374	615	—	140	386	—	—	—	—	342
C912	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	616.5	—	170	365	596
C913	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	678

⁴⁾ Select units do not have a concentric input and output dimension "h". Table 4 "h" values are for input side only on these select units. All concentric input and output units dimension "h" values are listed in Table 1 above.

C Series: INLINE — Shaft Output

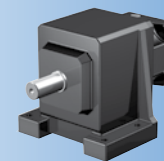
“Q” Square Output Flange —

C002Q thru C403Q Only



* See Motor Mounting Plate Option, page 110 for details.
** For optional output shaft options, see page 109.

Contact STÖBER for availability.



Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	a2	B	b _{1j6} *	c1	e1	f1	H	h	l1	s1
C0	124	160	97	110	9	130	3	141	79	3	9
C1	145	192	130	130	11	165	3.5	175	100	5	11
C2	145	192	142	130	11	165	3.5	192	112 ¹⁾	5	11
C3	200	250	154	180	14	215	4	212	127 ¹⁾	5	14
C4	200	250	178	180	14	215	4	242.5	142.5	5	14

¹⁾ Select units do not have a concentric input and output. See input dimension "h" for these units in Table 4.

Table 2 Metric output available on request.

Unit	Standard Shaft - inches			Optional Shaft - mm		
	d _{h6} *	t	u	d _{k6} *	T	u
C0	0.750	0.83	$\frac{3}{16} \times \frac{3}{16} \times 1\text{--}7/32$	20	22.5	A6x6x32
C1	1.000	1.11	1/4 x 1/4 x 1-9/16	25	28	A8x7x40
C2	1.250	1.36	1/4 x 1/4 x 1-15/16	30	33	A8x7x50
C3	1.250	1.36	1/4 x 1/4 x 1-15/16	30	33	A8x7x50
C4	1.625	1.79	3/8 x 3/8 x 2-7/8	40	43	A12x8x70

Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness c Min. ³⁾	Motor Shaft d2 Max. ²⁾	X	Wt. (lbs.)
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	15
MT40	33	48	89	28

* h6, j6, k6 = existing values

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness "c" will vary with motor shaft length but will not be less than shown.

For approximate weight, add adapter weight from Table 3 and base module weight from Table 4.

Table 4 Dimensions (mm)

Unit	MT10				MT20				MT30			MT40			Approx. Wt.(lbs.)
	C	h	l	m	C	h	l	m	C	l	m	C	l	m	
C002	194	—	40	114	208	—	40	118	—	—	—	—	—	—	18
C102	227	—	50	137	241	—	50	141	253	50	143	—	—	—	29
C103	264	—	50	174	—	—	—	—	—	—	—	—	—	—	34
C202	255	—	60	155	269	—	60	159	281	60	161	—	—	—	38
C203 ⁴⁾	292	75.5	60	192	312	75.5	60	202	—	—	—	—	—	—	45
C302	—	—	—	—	288	—	60	178	300	60	180	332	60	183	49
C303 ⁴⁾	311	90	60	211	331	90	60	221	—	—	—	—	—	—	56
C402	—	—	—	—	335.5	—	80	205.5	347.5	80	207.5	379.5	80	210.5	71
C403	—	—	—	—	378.5	—	80	248.5	—	—	—	—	—	—	78

⁴⁾ Select units do not have a concentric input and output dimension "h". Table 4 "h" values are for input side only on these select units. All concentric input and output units dimension "h" values are listed in Table 1 above.

C Series: INLINE — Shaft Output



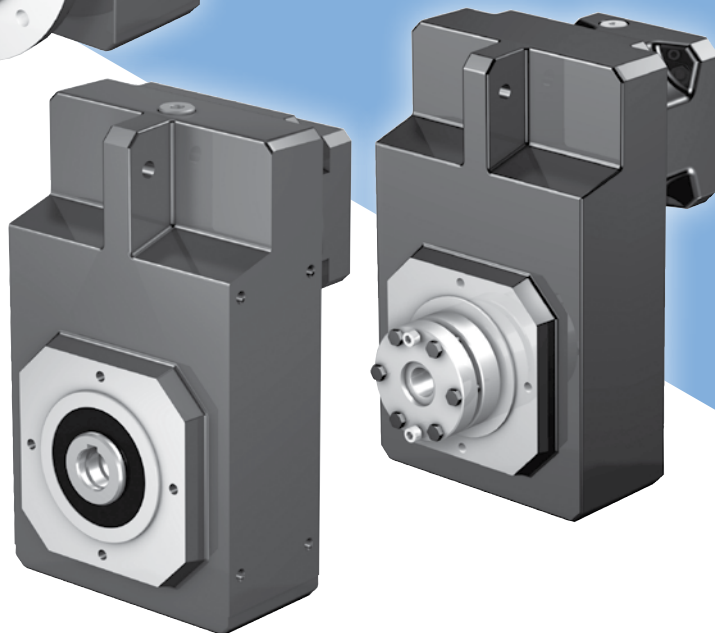
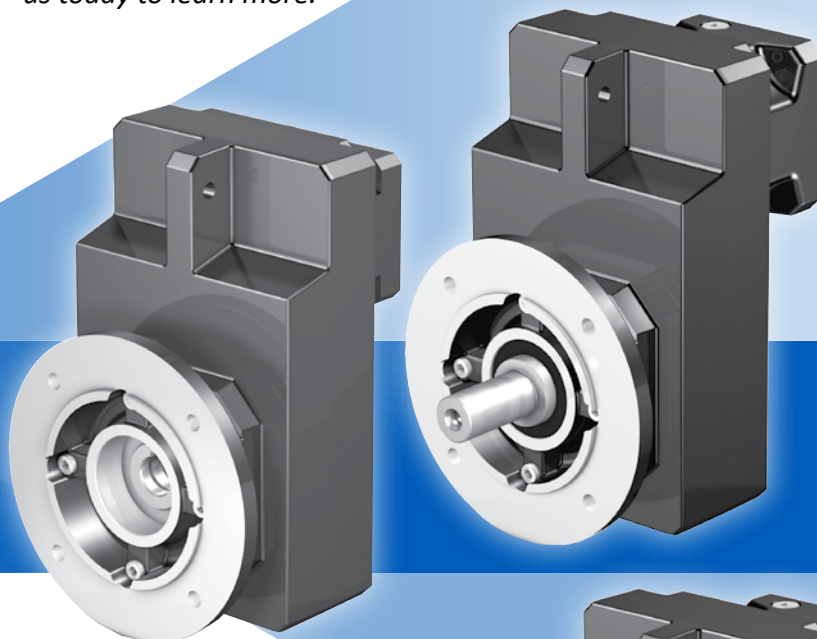
F Series: OFFSET – Versatile Outputs

Features

- 4.3:1 to 552:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (<53dB(A))
- Reduced backlash option for increased precision
- Mounting flexibility to fit the application
- Adaptability: shafts available in metric or imperial, carbon or stainless steel to meet your requirements
- Optional food and corrosion resistant package
- Dual seals for extreme duty applications
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

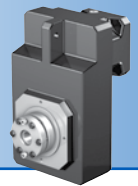
Compact size and flexibility make F Series gear drives a popular choice for applications that require high performance, efficiency, and durability. F Series gear drives are available with a wide selection of configurations to match almost any mounting requirement. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.

**SHIPS in
1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE



General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <80°C Max]
Backlash	≤10 standard arcmins, ≤6 reduced arcmins (see performance overview chart, (page 146)
Coating	Standard Black (RAL 790-4), Corrosion Resistant option, Food option
Degree of Protection	IP65
Direction of Rotation	Input and output rotate the SAME direction got 2 stage units, opposite for 3 stage units (see page 146)
Efficiency	2 stage 97%; 3 stage 96%
Input RPM	Up to 6,000 RPM
Installation	Requires 10.9 fasteners for tapped holes housing. See page 328 for more information
Lubrication	Lubricated for life - standard Mobil 600XP200, option food grade Mobil SHC CIBUS 220
Mounting Position	Must be specified, see page 146
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

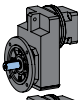








Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the F Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples: ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
F 1 0 2 V F 0043 MT10 B EL1 *

Design Option	Part Number Code	Description
① Series	F	Offset inline helical
② Size	1 2 3 4 6	5 sizes of gearhead
③ Generation	0	Version of gearhead
④ # of Stages	2 3	Two stage for ratios <150:1 Three stage >150:1
⑤ Output	 V	Shaft output (only available with housing option "F"; not available with food or corrosion resistant duty)
	 A	Hollow output (available imperial or metric, stainless steel)
	 W	Single or double wobble-free bushing (If single, specify side 5 or 6 only)
	 S	Shrink ring
⑥ Housing	 F	Round output flange
	 G	Pitch Circle Diameter (PCD) tapped holes
	 NG	Foot mounting (with tapped holes for side mounting)
⑦ Ratio	0043	Ratios range from 4.3:1 to 552:1 (0043=4.3:1; 0063=6.3:1; 5520=520:1)
⑧ Motor Adapter	MT10 MT20 MT30 MT40	4 input sizes (see also motor mounting plate option)
⑨ Options	B	Add when ordering Corrosion Resistant Duty
	F	Add when ordering Food Duty
* Mounting Position	EL1 EL2 EL3 EL4 ELS EL6	Required special instruction for all units, see page 146

F Series: OFFSET – Versatile Outputs

Options

Lubrication Options

Food grade or synthetic optionally available (contact factory)

ATEX

- ATmosphere EXplosible — Please allow up to 8 weeks for delivery

Coating Options

- Corrosion Resistant Duty (**B** special option)
- Food Duty (**F** special option)

Food and Corrosion Resistant units are lubricated for life with double output seals (where possible), stainless output shaft, bore, or bushing, and heat cured paint.

F Series: OFFSET – Versatile Outputs

F Series Performance Overview

F Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

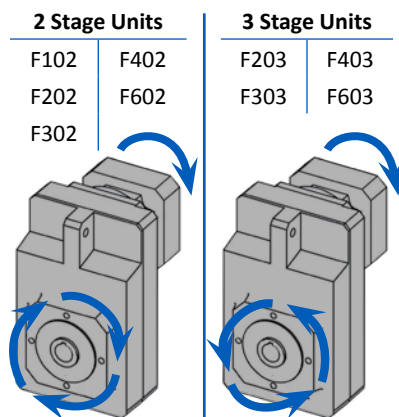
		Size/Generation	F10			F20		F30		F40		F60		
		# of Stages	2	2	3	2	3	2	3	2	3	2	3	
Acceleration Torque	M_{2BMAX}	Nm	120	270		450		700		1100				
Output Torque Nom.	M_{2N}	Nm	120	240		400		700		1100				
Torsional Stiffness	C_2	Nm/arcmin	<7.7	<17.9	<17.9	<21.8	<21.8	<38.6	<38.7	<77.1	<77.3			
Torsional Backlash ¹⁾	$\Delta\phi$	arcmin	Standard	≤11	≤11	≤11	≤11	≤10	≤10	≤10	≤10			
			Reduced	≤8	≤8	≤7	≤8	≤7	≤7	≤6	≤7	≤6		
Input Speed Max.	n_{1MAX}	Continuous	EL1,2,3,4	4000	3800	4000	4000	4000	3500	3800	3500	3500		
			EL5,6	4000	3500	3900	3900	3900	3500	3500	3200	3200		
			Cyclic	6000	6000	6000	6000	6000	5000	5500	5000	5000		
Efficiency (@nom torque)		%	97	97	96	97	96	97	96	97	96			
Weight		kg	17.2	23.1	29.0	30.4	33.1	38.1	41.2	74.7	80.2			
		lbs	38	51	64	67	73	84	91	165	177			
Noise ²⁾		dB(A)	≤55	≤53		≤53		≤53		≤61				
		Size/Generation/# of Stage	F102	F202/F203		F302/F303		F402/F403		F602/F603				
Axial Load Max. ³⁾	F_{2AMAX}	Solid Shaft	N	1100	1400		1900		2350		3100			
			lbs	247	351		427		528		697			
		Hollow Bore	N	900	1200		1350		1900		2200			
			lbs	203	270		304		428		495			
Tilting Moment Max. ³⁾	M_{2KMAX}	Solid Shaft	Nm	260	400		600		800		1200			
			in.lbs	2301	3540		5310		7080		10,620			
		Hollow Bore	Nm	175	250		375		550		800			
			in.lbs	1549	2213		3319		4858		7080			

¹⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

²⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

³⁾ Rating based on output speed (n_2) of 20 RPM. For values at other speeds see page 149

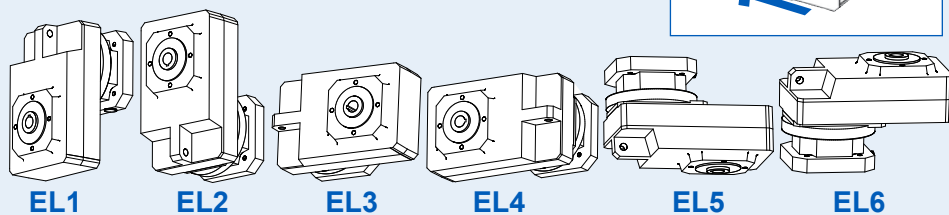
F Series Direction of Rotation

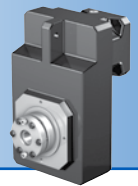


F Series Mounting Position Options

When ordering, the Mounting Position **MUST BE SPECIFIED** using one of the Mounting Position order codes below.

Note: the code relates to the unit's orientation side that faces down. For example, EL1 has side 1 facing down, EL2 has side 2 facing down, etc.





Overview

F Series Motor Mounting Plate Option (Motor information required with Motor Adapter option)

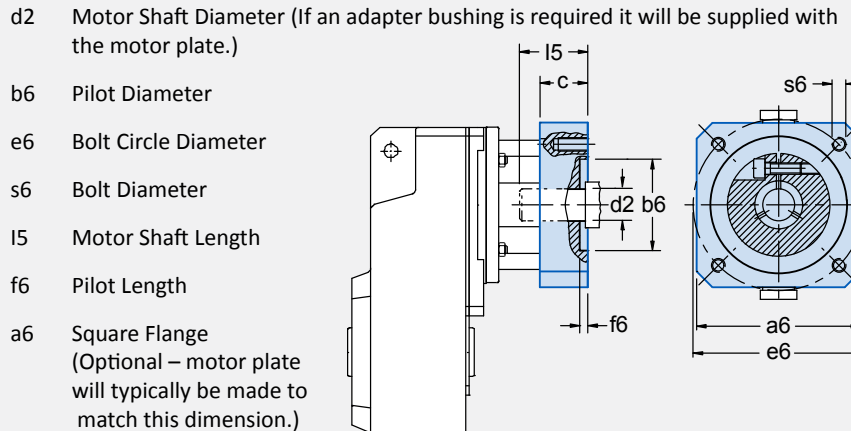
STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate



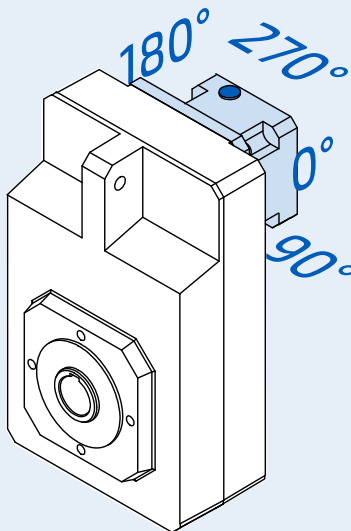
Motor Mounting Plate Dimensions — mm(Gearhead Part Number Specific)

	MT10	MT20	MT30	MT40
Maximum Allowed Motor Shaft Dia. d2	19	24	38	48
Minimum Allowed Motor Plate Thickness c*	21	24	25	33

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

F Series Motor Mounting Plate Access Hole

Access to the clamping screw for the motor coupling is located on the 270° side of the motor mounting plate at the location shown. If necessary, the motor mounting plate can be rotated in the field, if a 0°, 90° or 180° orientation for the access hole is desirable.



F Series: OFFSET – Versatile Outputs

F Series: OFFSET – Versatile Outputs

F Series Output Options

Diameters in **BOLD BLUE** are configurations readily available from inventory. Contact STÖBER for delivery on other output sizes.

			F1	F2	F3	F4	F6
Solid Shaft	Carbon Steel	Inches	1	1-1/4	1-3/8	1-5/8	2-1/8
		Metric	—	—	—	—	—
	Stainless Steel*	Inches	—	—	—	—	—
		Metric	—	—	—	—	—
Hollow Bore	Carbon Steel	Inches	3/4	1	1-1/4	1-1/2	2
		Metric	20	25	30	40	50
	Stainless Steel*	Inches	—	1	1-1/4	1-1/2	—
		Metric	—	—	—	—	—
Wobble Free Bushing (Single & Double Bushings**)	Stainless Steel*	Inches	3/4	1 1-3/16	1 1-3/16 1-1/4 1-3/8 1-7/16 1-1/2	1 1-3/16 1-1/4 1-3/8 1-7/16 1-1/2	1-7/16 1-1/2 1-5/8 1-11/16 1-3/4 1-7/8 1-15/16 2
		Metric	20	30	30 35	40***	40***
Shrink Ring	Carbon Steel	Metric	20	25	30	40	50

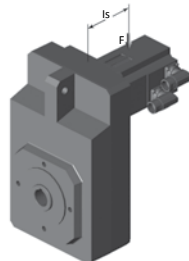
* Stainless steel options are ideal for food and corrosion resistant, harsh washdown environments.

** Double bushings only available with two stage units

*** Double bushing only

Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load “F” from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity “l_s” of the motor.



$$M_{1k} = F \times l_s \leq M_{1K}$$

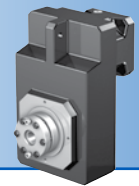
M _{1K}	MT10	MT20	MT30	MT40
Nm	25	60	125	250

Permissible Output Shaft Load and Tilting Moments*

Unit	V Solid Shaft Output				A, S, W Hollow Output ¹⁾		
	Z ₂	F _{2A}	F _{2R}	M _{2K}	Z ₂	F _{2A}	M _{2K}
	mm	N	N	Nm	mm	N	Nm
F1	35	1100	4200	260	30	900	175
F2	41	1400	5400	400	33	1200	250
F3	43	1900	7500	600	33	1350	375
F4	44	2350	9250	800	39	1900	550
F6	44	3100	12,500	1200	45	2200	800

* Refer to illustration and definitions below.

¹⁾ Values shown for “W” Style are for double bushings. For single bushings use value M_{2k} x 0.5 and F_{2A} x 0.5



Overview

Overhung Load Calculations

Pulling forces or overhung load of pulleys, sheaves, sprockets, etc. on the reducer output shaft must not exceed the allowable limits shown in the load/life/speed calculations below.

Note: Overhung load is measured at the center of the shaft extension. No overhung load is encountered when a reducer is flange mounted and/or coupling connected to another unit. However, the shafts of all components must be accurately aligned and secured to prevent pre-loading of the bearings and premature bearing failure.

Use the following formula to determine actual overhung load for a given drive:

$$\text{Imperial OHL (lbs)} = \frac{126,000 \times \text{HP} \times K}{D \times n}$$

$$\text{Metric OHL (N)} = \frac{19,100 \times \text{kW} \times K}{D \times n}$$

Where:

- OHL** Overhung load (N or lbs)
- HP** Horsepower
- kW** Transmitted Kilowatt
- D** Pitch Diameter (inches or meters) of Sprocket, Gear, Sheave, Pulley, etc.
- n** Maximum Shaft RPM
- K** 1.00 Single Chain Drive; 1.25 Timing Belt Drive;
1.25 Spur or Helical Gear Drive; 1.50 V-Belt Drive; 2.50 Flat Belt Drive

F Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 20 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{20}}}, \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{20}}}, \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{20}}}$$

The application output tilting moment should be determined by the following formula:

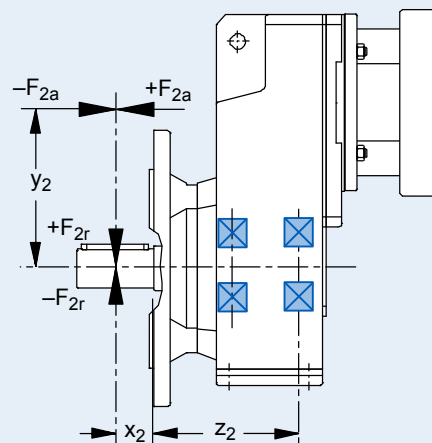
$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2K}$$

Where:

- F_{2a}** Axial Load at Output Shaft
- F_{2A}** Permissible Axial Load
- F_{2r}** Radial Load at Output Shaft
- F_{2R}** Permissible Radial Load
- F_{2RB}** Acceleration Permissible Radial Load
- M_{2K}** Rated Tilting Torque
- M_{2k}** Equivalent Tilting Load
- M_{2KB}** Acceleration Tilting Torque
- z₂** Distance Factor

All formulas shown are based on METRIC values

Upper case letters are permissible values. Lower case letters are for existing values.



F Series: OFFSET – Versatile Outputs



F Series: OFFSET – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{ZN} ≤ 2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2,3,4	EL 5,6	All			

F1

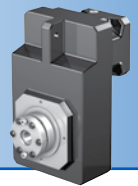
4.308	56/13	45	45	56	11/8	F102_0043 MT10	3500	3000	6000	2.1	4.0
		61	84	105		F102_0043 MT20			5000	2.7	4.1
6.462	84/13	64	64	79	11/8	F102_0065 MT10	3500	3000	6000	1.4	5.1
		70	105	150		F102_0065 MT20			5000	2.0	5.2
7.156	322/45	69	69	87	11/8	F102_0072 MT10	3700	3600	6000	1.2	5.3
		72	105	163		F102_0072 MT20	3500	3500	5000	1.8	5.4
8.948	1029/115	78	83	104	11/8	F102_0089 MT10	3700	3600	6000	1.0	5.7
			105	196		F102_0089 MT20	3500	3500	5000	1.6	5.8
10.92	273/25	83	98	123	11/8	F102_0110 MT10	4000	4000	6000	0.9	5.9
			105	200		F102_0110 MT20	3500	3500	5000	1.5	6.0
13.59	231/17	89	105	146	11/8	F102_0135 MT10	4000	4000	6000	0.8	6.1
				200		F102_0135 MT20	3500	3500	5000	1.4	6.2
18.46	1495/81	99	120	223	11/6	F102_0185 MT10	3700	3600	6000	0.9	7.4
				240		F102_0185 MT20	3500	3500	5000	1.5	7.5
23.08	3185/138	107	120	240	11/6	F102_0230 MT10	3700	3600	6000	0.8	7.5
						F102_0230 MT20	3500	3500	5000	1.4	7.6
28.17	169/6	114	120	240	11/6	F102_0280 MT10	4000	4000	6000	0.8	7.6
						F102_0280 MT20	3500	3500	5000	1.4	
35.05	3575/102	120	120	240	11/6	F102_0350 MT10	4000	4000	6000	0.7	7.7
						F102_0350 MT20	3500	3500	5000	1.3	
46.43	325/7	120	120	240	11/6	F102_0460 MT10	4000	4000	6000	0.7	7.7
						F102_0460 MT20	3500	3500	5000	1.3	
55.97	2015/36	120	120	240	11/6	F102_0560 MT10	4000	4000	6000	0.7	7.7
						F102_0560 MT20	3500	3500	5000	1.3	
70.06	1261/18	120	120	240	11/6	F102_0700 MT10	4000	4000	6000	0.6	7.7
						F102_0700 MT20	3500	3500	5000	1.2	
93.63	7865/84	120	120	240	11/6	F102_0940 MT10	4000	4000	6000	0.6	7.7
111.9	2015/18	120	120	240	11/6	F102_1120 MT10	4000	4000	6000	0.6	7.7
139.8	559/4	120	120	240	11/6	F102_1400 MT10	4000	4000	6000	0.6	7.7

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm	Part Number* (Gearhead + Input)	EL 1,2,3,4	EL 5,6	All	Nm	

F2 (continued next page)

4.680	2616/559	51	51	64	11/8	F202_0047 MT10	3100	2600	5000	4.7	6.8	
		125	210	282		F202_0047 MT20				5.3	7.2	
						F202_0047 MT30				10.1	9.1	
5.552	5341/962	132	210	330	11/8	F202_0056 MT20	3100	2600	5000	4.2	8.5	
						F202_0056 MT30			4000	9.0	10.3	
7.167	5777/806	74	74	92	11/8	F202_0072 MT10	3600	3100	6000	2.5	10.0	
		144	210	400		F202_0072 MT20	3500		5000	3.1	10.4	
						F202_0072 MT30			4000	7.9	11.9	
9.006	3161/351	89	89	112	11/8	F202_0090 MT10	3600	3100	6000	1.9	11.5	
		155	210	400		F202_0090 MT20	3500		5000	2.5	11.8	
						F202_0090 MT30			4000	7.3	13.0	
10.80	7303/676	104	104	129	11/8	F202_0110 MT10	3800	3500	6000	1.5	12.5	
		165	210	400		F202_0110 MT20	3500		5000	2.1	12.8	
						F202_0110 MT30			4000	6.9	13.7	
13.63	109/8	126	126	157	11/8	F202_0135 MT10	3800	3500	6000	1.2	13.5	
		178	210	400		F202_0135 MT20	3500		5000	1.8	13.7	
						F202_0135 MT30			4000	6.6	14.3	
18.65	6360/341	192	192	240	11/6	F202_0185 MT10	3600	3100	6000	1.5	16.4	
		197	270	480		F202_0185 MT20	3500		5000	2.1	16.5	
						F202_0185 MT30			4000	6.9	17.0	
23.43	2320/99	213	233	291	11/6	F202_0230 MT10	3600	3100	6000	1.3	16.9	
			270	480		F202_0230 MT20	3500		5000	1.9	17.0	
						F202_0230 MT30			4000	6.7	17.3	
28.11	4020/143	226	269	337	11/6	F202_0280 MT10	3800	3500	6000	1.1	17.2	
			270	480		F202_0280 MT20	3500		5000	1.7	17.3	
						F202_0280 MT30			4000	6.5	17.5	
35.46	390/11	240	270	408	11/6	F202_0350 MT10	3800	3500	6000	1.0	17.5	
				480		F202_0350 MT20	3500		5000	1.6		
						F202_0350 MT30			4000	6.4	17.7	
47.05	1035/22	240	270	480	11/6	F202_0470 MT10	4000	3500	3900	6000	0.8	17.7
						F202_0470 MT20	3500		5000	1.4		
						F202_0470 MT30			4000	6.2	17.8	

F Series: OFFSET – Versatile Outputs

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)



F Series: OFFSET – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin)
		Nominal ¹⁾ M _{ZN} ≤ 2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

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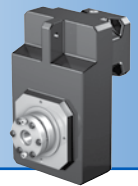
56.73	624/11	240	270	480	11/6	F202_0570 MT10	4000	3900	6000	0.8	17.7
						F202_0570 MT20	3500	3500	5000	1.4	17.8
						F202_0570 MT30			4000	6.2	
70.13	5400/77	240	270	480	11/6	F202_0700 MT10	4000	3900	6000	0.7	17.8
						F202_0700 MT20	3500	3500	5000	1.3	
						F202_0700 MT30			4000	6.1	17.9
93.82	1032/11	240	270	480	11/6	F202_0940 MT10	4000	3900	6000	0.7	17.9
						F202_0940 MT20	3500	3500	5000	1.3	
112.7	1240/11	240	270	480	11/6	F202_1130 MT10	4000	3900	6000	0.7	17.9
140.9	1550/11	240	270	480	11/6	F202_1410 MT10	4000	3900	6000	0.6	17.9
184.3	16,215/88	240	270	480	11/7	F203_1840 MT10	4000	3900	6000	0.7	17.9
222.2	2444/11	240	270	480	11/7	F203_2220 MT10	4000	3900	6000	0.7	17.9
274.7	21,150/77	240	270	480	11/7	F203_2750 MT10	4000	3900	6000	0.7	17.9
367.5	4042/11	240	270	480	11/7	F203_3670 MT10	4000	3900	6000	0.7	17.9
441.5	14,570/33	240	270	480	11/7	F203_4420 MT10	4000	3900	6000	0.6	17.9
551.9	36,425/66	240	270	480	11/7	F203_5520 MT10	4000	3900	6000	0.6	17.9

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

F3 (continued next page)

4.644	4992/1075	180	198	291	11/8	F302_0046 MT20	3000	2600	4000	9.4	8.0
		207	349	650		F302_0046 MT30				14.2	10.4
5.720	143/25	222	244	346	11/8	F302_0057 MT20	3000	2600	4500	6.9	10.1
			277			F302_0057 MT30			4000	11.7	12.5
7.172	208/29	239	306	422	11/8	F302_0072 MT20	3500	3100	5000	5.1	12.3
			338			F302_0072 MT30			4000	9.9	14.5
8.986	5616/625	258	350	510	11/8	F302_0090 MT20	3500	3100	5000	3.8	14.4
						F302_0090 MT30			4000	8.6	16.2
10.79	1456/135	274	350	590	11/8	F302_0110 MT20	3500	3500	5000	3.1	15.8
						F302_0110 MT30			4000	7.9	17.3
13.38	7696/575	127	127	159	11/8	F302_0135 MT10	3700	3500	5500	1.9	16.9
		294	350	650		F302_0135 MT20			5000	2.5	17.2
						F302_0135 MT30	4000		7.3	18.3	
18.77	4900/261	329	450	800	11/6	F302_0190 MT20	3500	3100	5000	3.1	19.8
						F302_0190 MT30			4000	7.9	20.5
23.52	588/25	355	450	800	11/6	F302_0240 MT20	3500	3100	5000	2.6	20.5
						F302_0240 MT30			4000	7.4	21.0
28.23	6860/243	377	450	800	11/6	F302_0280 MT20	3500	3500	5000	2.2	20.9
						F302_0280 MT30			4000	7.0	21.2
35.03	7252/207	333	333	416	11/6	F302_0350 MT10	3700	3500	5500	1.4	21.1
		400	450	800		F302_0350 MT20			5000	2.0	21.2
						F302_0350 MT30	4000		6.8	21.4	
47.19	1274/27	400	422	528	11/6	F302_0470 MT10	4000	3900	6000	1.1	21.4
			450	800		F302_0470 MT20			5000	1.7	21.5
						F302_0470 MT30	4000		6.5	21.6	
56.49	4067/72	400	450	611	11/6	F302_0560 MT10	4000	3900	6000	1.0	21.6
				800		F302_0560 MT20			5000	1.6	
						F302_0560 MT30	4000		6.4	21.7	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)

F Series: OFFSET – Versatile Outputs



F Series: OFFSET – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		Nm

F3 (continued from previous page)

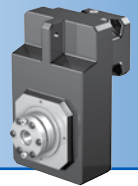
70.36	2744/39	400	450	723	11/6	F302_0700 MT10	4000	3900	6000	0.9	21.6
				800		F302_0700 MT20	3500	3500	5000	1.5	21.7
						F302_0700 MT30					
93.64	4214/45	400	450	800	11/6	F302_0940 MT10	4000	3900	6000	0.8	21.7
						F302_0940 MT20	3500	3500	5000	1.4	
						F302_0940 MT30					4000
112.8	3724/33	400	450	800	11/6	F302_1130 MT10	4000	3900	6000	0.7	21.8
						F302_1130 MT20	3500	3500	5000	1.3	
140.6	7595/54	400	450	652	11/6	F302_1410 MT10	4000	3900	6000	0.7	21.8
182.4	73,892/405	400	450	800	11/7	F303_1820 MT20	3500	3500	5000	1.4	21.8
184.8	29,939/162	400	450	800	11/7	F303_1850 MT10	4000	3900	6000	0.7	21.8
218.4	117,943/540	400	450	800	11/7	F303_2180 MT20	3500	3500	5000	1.4	21.8
221.2	191,149/864	400	450	800	11/7	F303_2210 MT10	4000	3900	6000	0.7	21.8
272.1	159,152/585	400	450	800	11/7	F303_2720 MT20	3500	3500	5000	1.4	21.8
275.6	32,242/117	400	450	800	11/7	F303_2760 MT10	4000	3900	6000	0.7	21.8
362.1	244,412/675	400	450	800	11/7	F303_3620 MT20	3500	3500	5000	1.4	21.8
366.8	99,029/270	400	450	800	11/7	F303_3670 MT10	4000	3900	6000	0.7	21.8
442.0	43,757/99	400	450	800	11/7	F303_4420 MT10	4000	3900	6000	0.7	21.8
550.9	356,965/648	400	450	651	11/7	F303_5510 MT10	4000	3900	6000	0.7	21.8

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2,3,4	EL 5,6	All			

F4 (continued next page)

4.678	1408/301	182	200	303	10/7	F402_0047 MT20	2700	2300	4000	16.0	9.9
		342	474	781		F402_0047 MT30				20.8	13.9
			550			F402_0047 MT40				24.8	21.0
5.813	3784/651	226	248	366	10/7	F402_0058 MT20	2700	2300	4000	11.4	13.4
		368	550	943		F402_0058 MT30				16.2	17.9
			F402_0058 MT40			20.2				25.0	
7.202	605/84	279	307	436	10/7	F402_0072 MT20	3200	2800	4500	8.1	17.4
		395	550	1100		F402_0072 MT30			4000	12.9	22.1
			F402_0072 MT40			3000	3500		16.9	28.5	
8.980	440/49	348	383	526	10/7	F402_0090 MT20	3200	2800	4500	5.9	21.7
		425	550	1100		F402_0090 MT30			4000	10.7	26.1
			F402_0090 MT40			3000	3500		14.7	31.5	
10.83	682/63	406	462	610	10/7	F402_0110 MT20	3500	3100	5000	4.7	25.1
		453	550	1100		F402_0110 MT30			4000	9.5	29.0
			F402_0110 MT40			3000	3000		3500	13.5	33.4
13.57	5984/441	445	550	740	10/7	F402_0135 MT20	3500	3100	5000	3.5	28.8
		488		1100		F402_0135 MT30			4000	8.3	31.9
				F402_0135 MT40		3000	3000		3500	12.3	35.2
18.62	3575/192	543	700	1128	10/5	F402_0185 MT20	3200	2800	4500	4.5	32.7
				1400		F402_0185 MT30			4000	9.3	34.8
						F402_0185 MT40	3000		3500	13.3	36.7
23.21	325/14	584	700	1360	10/5	F402_0230 MT20	3200	2800	4500	3.6	34.6
				1400		F402_0230 MT30			4000	8.4	36.1
						F402_0230 MT40	3000		3500	12.4	37.4
27.99	2015/72	622	700	1400	10/5	F402_0280 MT20	3500	3100	5000	3.0	35.8
						F402_0280 MT30			4000	7.8	36.9
						F402_0280 MT40	3000		3000	3500	11.8
35.08	2210/63	670	700	1400	10/5	F402_0350 MT20	3500	3100	5000	2.5	36.8
						F402_0350 MT30			4000	7.3	37.5
						F402_0350 MT40	3000		3000	3500	11.3

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)

F Series: OFFSET – Versatile Outputs

F Series: OFFSET – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2,3,4	EL 5,6	All			

F4 (continued from previous page)

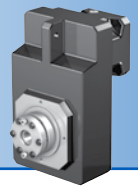
46.94	845/18	700	700	1400	10/5	F402_0470 MT20	3500	3500	5000	2.0	37.6
						F402_0470 MT30			4000	6.8	38.0
						F402_0470 MT40			3000	3000	3500
55.97	2015/36	700	700	1400	10/5	F402_0560 MT20	3500	3500	5000	1.8	37.9
						F402_0560 MT30			4000	6.6	38.2
						F402_0560 MT40			3000	3000	3500
70.06	1261/18	700	700	1400	10/5	F402_0700 MT20	3500	3500	5000	1.6	38.2
						F402_0700 MT30			4000	6.4	38.4
						F402_0700 MT40			3000	3000	3500
93.33	280/3	700	700	1400	10/5	F402_0930 MT20	3500	3500	5000	1.5	38.4
						F402_0930 MT30			4000	6.3	38.5
112.3	1235/11	700	700	1400	10/5	F402_1120 MT20	3500	3500	5000	1.4	38.5
						F402_1120 MT30			4000	6.2	38.6
139.8	559/4	700	700	1271	10/5	F402_1400 MT20	3500	3500	5000	1.3	38.6
181.5	4901/27	700	700	1400	10/6	F403_1820 MT20	3500	3500	5000	1.4	38.6
183.9	39,715/216	700	700	941	10/6	F403_1840 MT10	3800	3500	5500	0.7	38.6
216.4	11,687/54	700	700	1400	10/6	F403_2160 MT20	3500	3500	5000	1.4	38.6
219.2	94,705/432	700	700	1122	10/6	F403_2190 MT10	3800	3500	5500	0.7	38.6
270.9	36569/135	700	700	1400	10/6	F403_2710 MT20	3500	3500	5000	1.4	38.7
274.4	59,267/216	700	700	1400	10/6	F403_2740 MT10	3800	3500	5500	0.7	38.7
360.9	3248/9	700	700	1400	10/6	F403_3610 MT20	3500	3500	5000	1.4	38.7
365.6	3290/9	700	700	1400	10/6	F403_3660 MT10	3800	3500	5500	0.7	38.7
434.1	14,326/33	700	700	1400	10/6	F403_4340 MT20	3500	3500	5000	1.4	38.7
439.7	58,045/132	700	700	1400	10/6	F403_4400 MT10	3800	3500	5500	0.7	38.7
547.4	26,273/48	700	700	1271	10/6	F403_5470 MT10	3800	3500	5500	0.7	38.7

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2,3,4	EL 5,6	All			

F6 (continued next page)

4.546	1273/280	419	461	790	10/7	F602_0045 MT30	2500	2100	3500	42.2	16.0	
		567	632			F602_0045 MT40				46.2	27.1	
5.673	1407/248	523	575	956	10/7	F602_0057 MT30	2500	2100	3500	30.5	22.2	
		610	765			F602_0057 MT40				34.5	34.9	
7.159	3551/496	659	726	1161	10/7	F602_0072 MT30	2900	2500	4000	22.2	29.9	
			929			F602_0072 MT40			3500	26.2	43.3	
8.995	1943/216	349	384	545	10/7	F602_0090 MT20	2900	2500	4000	12.1	29.4	
		711	912			1404				F602_0090 MT30	16.9	38.1
			F602_0090 MT40			3500				20.9	50.9	
10.82	2077/192	420	462	636	10/7	F602_0110 MT20	3300	2800	4500	9.1	36.0	
		757	1000			1600			F602_0110 MT30	4000	13.9	44.7
			F602_0110 MT40			3000			3500	17.9	56.1	
13.61	871/64	502	581	764	10/7	F602_0135 MT20	3300	2800	4500	6.6	44.2	
		817	1000			1600			F602_0135 MT30	4000	11.4	52.1
			F602_0135 MT40			3000			3500	15.4	61.2	
18.52	3445/186	905	1100	2000	10/5	F602_0185 MT30	2900	2500	4000	13.6	63.0	
			F602_0185 MT40			3500			17.6	69.8		
23.27	1885/81	903	993	1409	10/5	F602_0230 MT20	2900	2500	4000	6.6	62.7	
		977	1100			2000			F602_0230 MT30	3500	15.4	72.4
			F602_0230 MT40									
27.99	2015/72	1039	1100	1645	10/5	F602_0280 MT20	3300	2800	4500	5.4	66.6	
			2000	2000		F602_0280 MT30			4000	10.2	70.4	
				F602_0280 MT40		3000			3500	14.2	73.9	
35.21	845/24	1100	1100	1977	10/5	F602_0350 MT20	3300	2800	4500	4.2	70.2	
			2000	2000		F602_0350 MT30			4000	9.0	72.8	
				F602_0350 MT40		3000			3500	13.0	75.1	
46.72	1495/32	1100	1100	2000	10/5	F602_0470 MT20	3500	3200	5000	3.1	73.1	
			F602_0470 MT30	4000		7.9			74.7			
			F602_0470 MT40	3000		3000	3500	12.0	76.1			
55.71	390/7	1100	1100	2000	10/5	F602_0560 MT20	3500	3200	5000	2.7	74.3	
			F602_0560 MT30	4000		7.5			75.5			
			F602_0560 MT40	3000		3000	3500	11.5	76.5			

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)

F Series: OFFSET – Versatile Outputs



F Series: OFFSET – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash ³⁾ (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{ZN} ≤ 2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2,3,4	EL 5,6	All		

F6 (continued from previous page)

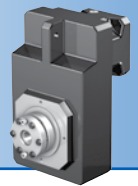
69.64	975/14	1100	1100	2000	10/5	F602_0700 MT20	3500	3200	5000	2.2	75.4	
						F602_0700 MT30			4000			7.0
						F602_0700 MT40			3000			3000
93.33	280/3	1100	1100	2000	10/5	F602_0930 MT20	3500	3200	5000	1.8	76.3	
						F602_0930 MT30			4000			6.6
						F602_0930 MT40			3000			3000
112.2	9425/84	1100	1100	2000	10/5	F602_1120 MT20	3500	3200	5000	1.6	76.6	
						F602_1120 MT30			4000			6.4
139.8	559/4	1100	1100	2000	10/5	F602_1400 MT20	3500	3200	5000	1.5	76.9	
						F602_1400 MT30			4000			6.3
180.6	8671/48	1100	1100	2000	10/6	F603_1810 MT20	3500	3200	5000	1.5	77.1	
215.4	1508/7	1100	1100	2000	10/6	F603_2150 MT20	3500	3200	5000	1.5	77.2	
269.3	1885/7	1100	1100	2000	10/6	F603_2690 MT20	3500	3200	5000	1.4	77.2	
360.9	3248/9	1100	1100	2000	10/6	F603_3610 MT20	3500	3200	5000	1.4	77.3	
433.8	54,665/126	1100	1100	2000	10/6	F603_4340 MT20	3500	3200	5000	1.4	77.3	
540.4	16,211/30	1100	1100	2000	10/6	F603_5400 MT20	3500	3200	5000	1.4	77.3	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (60)



Dimensional Data

"V" Shaft Output with "F" Output Flange – All Sizes

* See Motor Mounting Plate Option, page 147 for details.

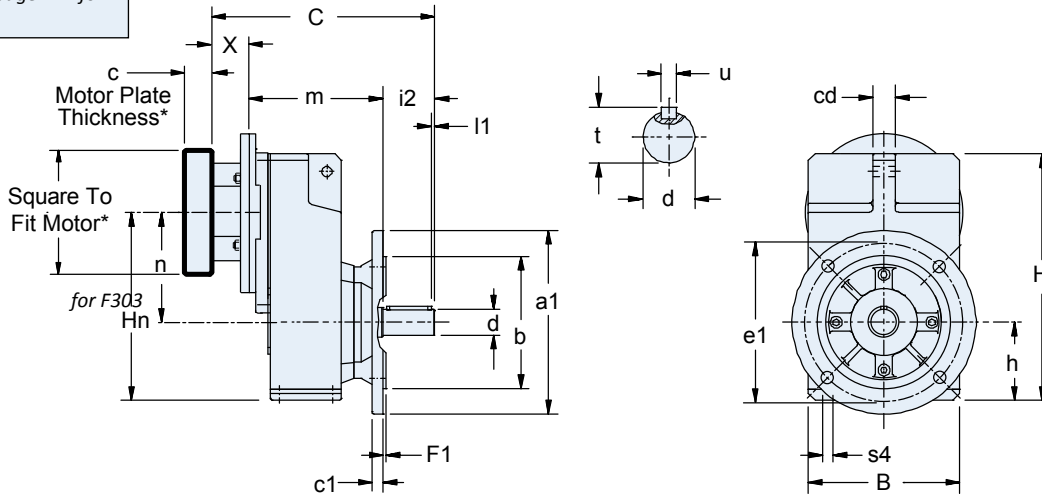


Table 1 Dimensions (mm)

Unit	a1	B	b ₆	c1	cd	e1	F1	H	h	Hn	i2	l1	n	s4
F1	160	145	110	10	20	130	3.5	238	74	176	50	5	102	9
F2	200	180	130	14	22	165	3.5	299	93	224	60	5	131	11
F3	250	206	180	15	30	215	4	335.5	106	219	70	5	149.5 ¹⁾	14
F4	250	230	180	15	30	215	4	370	116	285 ¹⁾	80	5	169 ¹⁾	14
F6	300	265	230	17	35	265	4	433	137	333	100	5	196	14

¹⁾ For F303, n is 113 with MT20; For F403, n is 132 with MT20 and Hn is 248.

Table 2 "V" Shaft Output Dimensions

Unit	Standard Shaft - in			Optional Shaft* - mm		
	d _{h6}	t	u	d _{k6}	t	u
F1	1.000	1.11	1/4 x 1/4 x 1-9/16	25	28	A8x7x40
F2	1.250	1.36	1/4 x 1/4 x 1-15/16	30	33	A8x7x50
F3	1.375	1.51	5/16 x 5/16 x 2-5/16	35	38	A10x8x60
F4	1.625	1.79	3/8 x 3/8 x 2-7/8	40	43	A12x8x70
F6	2.125	2.35	1/2 x 1/2 x 3-5/32	50	53.5	A14x9x90

*Metric output available on request

Table 3 Dimensions (mm)

Unit	MT10		MT20		MT30		MT40		Approx. Wt. lbs.
	C	m	C	m	C	m	C	m	
F102	219.5	129.5	233.5	133.5	—	—	—	—	38
F202	253	153	267	157	279	159	—	—	51
F203	290	190	—	—	—	—	—	—	64
F302	279.5	169.5	293.5	173.5	305.5	175.5	—	—	67
F303	316.5	206.5	336.5	216.5	—	—	—	—	73
F402	—	—	318.5	188.5	330.5	190.5	362.5	193.5	84
F403	341.5	221.5	361.5	231.5	—	—	—	—	91
F602	—	—	369.5	219.5	381.5	221.5	413.5	224.5	165
F603	—	—	412.5	262.5	—	—	—	—	177

Table 4 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness ³⁾ c Min.	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	12
MT40	33	48	89	18

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.

For approximate weight, add unit weight from Table 3 and adapter weight from Table 4.

F Series: OFFSET – Versatile Outputs

F Series: OFFSET – Versatile Outputs

“W” Single Bushing with “G” Pitch Circle Diameter (PCD) Tapped Holes – All Sizes

Important: For ease of installation, a 1/32" x 45° chamfer (minimum) is recommended for the output shaft end.

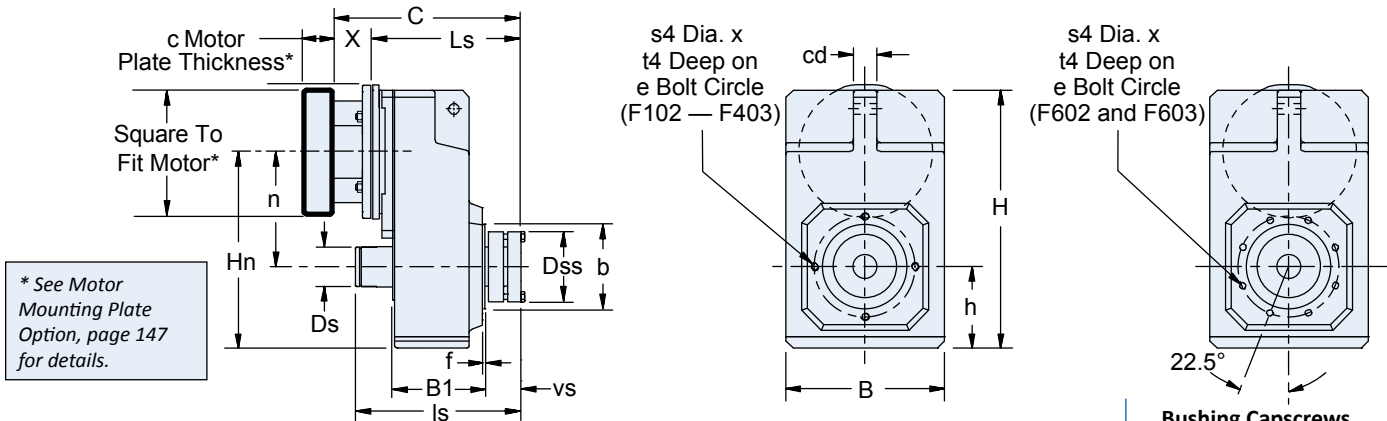


Table 1 Dimensions (mm)

Unit	B	b _g	B1	cd	Ds	Ds	Dss	e	f	H	h	Hn	ls	n	s4	t4	vs	Bushing Capscrews	
																		No. – Size Metric	Tightening Torque – Nm
F1	145	75	87	20	34.5	34.5	68	85	2.5	238	74	176	170.9	102	M8x1.25	13	30	6 – M6x25	10
F2	180	95	105	22	44.5	44.5	78	115	3	299	93	224	197.4	131	M8x1.25	13	39	8 – M6x30	10
F3	206	110	120	30	48	48	84	130	3.5	335.5	106	255.5	218.9	149.5 ¹⁾	M10x1.5	16	39	8 – M6x30	10
F4	230	110	135	30	54.5	54.5	97	130	3.5	370	116	285 ¹⁾	243.1	169 ¹⁾	M10x1.5	16	45	8 – M8x30	25
F6	265	130	166	35	64.5	64.5	105	165	3.5	433	137	333	275.3	196	M10x1.5	16	45	8 – M8x30	25

¹⁾ For F303, n is 113 with MT20; For F403, n is 132 with MT20 and Hn is 248.

Table 2 “WF” Single Side Bushings* – Stock Bores Sizes

Unit	Metric					Inches											
	20	30	35	3/4	1	1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	1-5/8	1-11/16	1-3/4	1-7/8	1-15/16	2	
F1	WF1-20	—	—	WF1-075	—	—	—	—	—	—	—	—	—	—	—	—	
F2	—	WF2-30	—	—	WF2-100	WF2-103	—	—	—	—	—	—	—	—	—	—	
F3	—	WF3-30	WF3-35	—	WF3-100	WF3-103	WF3-104	WF3-106	WF3-107	WF3-108	—	—	—	—	—	—	
F4	—	—	—	—	WF4-100	WF4-103	WF4-104	WF4-106	WF4-107	WF4-108	—	—	—	—	—	—	
F6	—	—	—	—	—	—	—	—	WF5-107	WF5-108	WF5-110	WF5-111	WF5-112	WF5-114	WF5-115	WF5-200	

*A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer. The bushing will accept a shaft with a tolerance of +0.000/-0.005.

Table 3 Dimensions (mm)

Unit	MT10		MT20		MT30		MT40		Approx. Wt. lbs.
	C	Ls	C	Ls	C	Ls	C	Ls	
F102	170	130	184	134	—	—	—	—	38
F202	197	157	211	161	223	163	—	—	51
F203	234	194	—	—	—	—	—	—	64
F302	212	172	226	176	238	178	—	—	67
F303	249	209	269	219	—	—	—	—	73
F402	—	—	247	197	259	199	291	202	84
F403	270	230	290	240	—	—	—	—	91
F602	—	—	278	228	290	230	322	233	165
F603	—	—	321	271	—	—	—	—	177

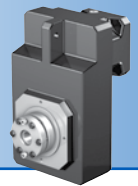
Table 4 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness ³⁾ c Min.	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	12
MT40	33	48	89	18

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.

For approximate weight, add unit weight from Table 3 and adapter weight from Table 4.



Dimensional Data

“W” Double Bushing with “G” Pitch Circle Diameter (PCD) Tapped Holes – Two Stage Units Only

Important: For ease of installation, a 1/32" x 45° chamfer (minimum) is recommended for the output shaft end. The double bushing cannot be mounted in sizes F203, F303, F403, or F603.

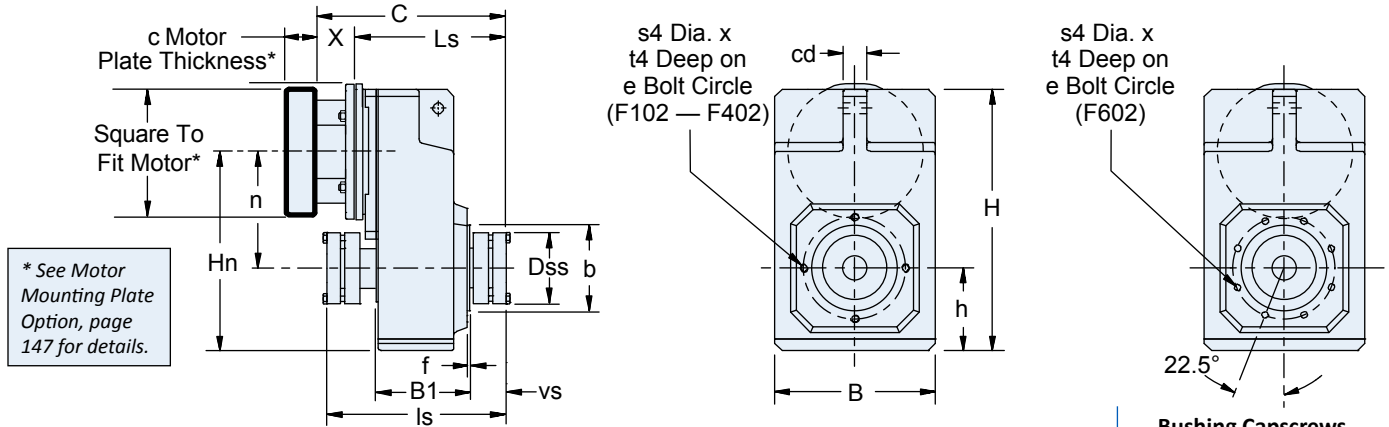


Table 1 Dimensions (mm)

Unit	B	b ₁₆	B1	cd	Dss	e	f	H	h	Hn	ls	n	s4	t4	vs	Bushing Capscrews	
																No. – Size Metric	Tightening Torque – Nm
F102	145	75	87	20	68	85	2.5	238	74	176	170.9	102	M8x1.25	13	30	6 – M6x25	10
F202	180	95	105	22	78	115	3	299	93	224	197.4	131	M8x1.25	13	39	8 – M6x30	10
F302	206	110	120	30	84	130	3.5	335.5	106	255.5	218.9	149.5	M10x1.5	16	39	8 – M6x30	10
F402	230	110	135	30	97	130	3.5	370	116	285	243.1	169	M10x1.5	16	45	8 – M8x30	25
F602	265	130	166	35	105	165	3.5	433	137	333	275.3	196	M10x1.5	16	45	8 – M8x30	25

Table 2 “WFN” Double Side Bushings* – Stock Bores Sizes

Unit	Metric				Inches													
	20	30	35	40	3/4	1	1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	1-5/8	1-11/16	1-3/4	1-7/8	1-15/16	2	
F102	WFN1-20	–	–	–	WFN1-075	–	–	–	–	–	–	–	–	–	–	–	–	–
F202	–	WFN2-30	–	–	–	WFN2-100	WFN2-103	–	–	–	–	–	–	–	–	–	–	–
F302	–	WFN3-30	WFN3-35	–	–	WFN3-100	WFN3-103	WFN3-104	WFN3-106	WFN3-107	WFN3-108	–	–	–	–	–	–	–
F402	–	–	–	WFN4-40	–	WFN4-100	WFN4-103	WFN4-104	WFN4-106	WFN4-107	WFN4-108	–	–	–	–	–	–	–
F602	–	–	–	WFN5-40	–	–	–	–	–	WFN5-107	WFN5-108	WFN5-110	WFN5-111	WFN5-112	WFN5-114	WFN5-115	WFN5-200	

*A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer. The bushing will accept a shaft with a tolerance of +0.000/-0.005.

Table 3 Dimensions (mm)

Unit	MT10		MT20		MT30		MT40		Approx. Wt. lbs.
	C	Ls	C	Ls	C	Ls	C	Ls	
F102	170	130	184	134	–	–	–	–	38
F202	197	157	211	161	223	163	–	–	51
F302	212	172	226	176	238	178	–	–	67
F402	–	–	247	197	259	199	–	–	84
F602	–	–	278	228	290	230	322	233	165

Table 4 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness ³⁾ c Min.	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	12
MT40	33	48	89	18

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

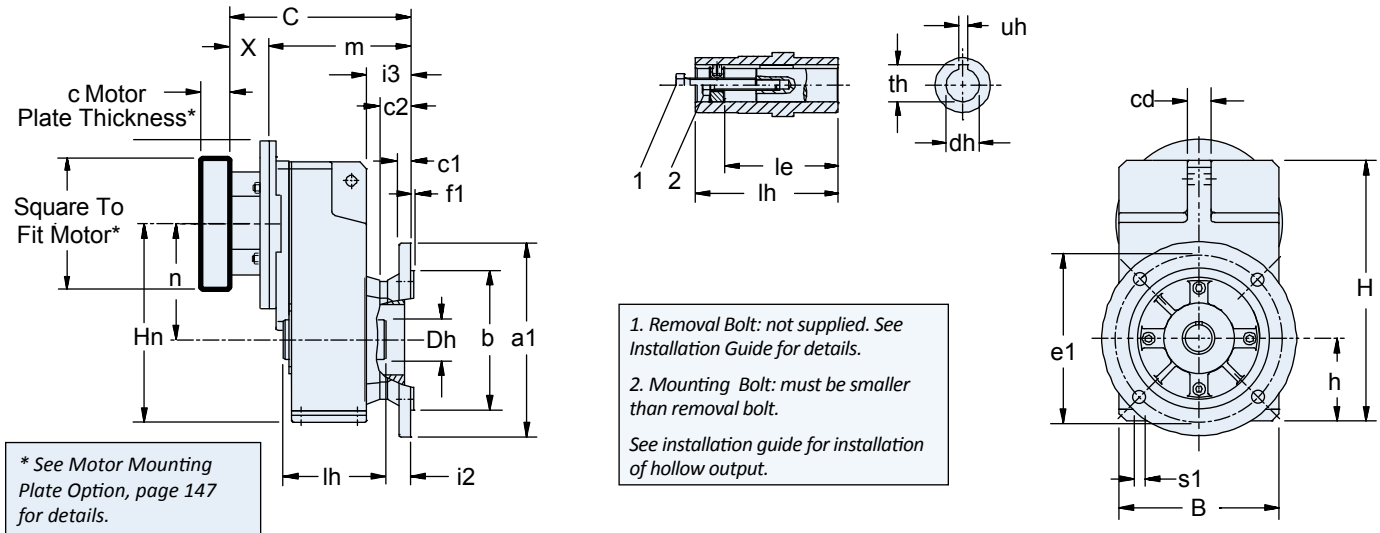
³⁾ Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.

For approximate weight, add unit weight from Table 3 and adapter weight from Table 4.

F Series: OFFSET – Versatile Outputs

F Series: OFFSET – Versatile Outputs

“A” Hollow Output with “F” Output Flange – All Sizes


Table 1 Dimensions (mm)

Unit	a1	B	b _{j6}	c1	c2	cd	Dh	e1	f1	H	h	Hn	i2	i3	le	lh	s1	n
F1	160	145	110	10	32	20	35	130	3.5	238	74	176	25.5	44.5	73	95	9	102
F2	200	180	130	14	38	22	45	165	3.5	299	936	224	30	53	92	115	11	131
F3	250	206	180	15	40	30	50	215	4	335.5	106	255.5 ¹⁾	31.5	56.5	103	130	14	149.5 ¹⁾
F4	250	230	180	15	40	30	55	215	4	370	116	285 ¹⁾	31.5	56.5	114	145	14	169 ¹⁾
F6	300	265	230	17	40	35	70	265	4	433	137	333	29.5	60.5	143	180	14	196

¹⁾ For F303, Hn is 219 and n is 113 with MT20 For F403, Hn is 248 and n is 132 with MT20

Table 2 “A” Hollow Bore Dimensions (mm)

Unit	Standard Bore - inches			Optional Bore* - mm		
	dh _{g7}	th	uh	dh _{H7}	th	uh _{J59}
F1	0.750	0.84	0.187	20	22.8	6
F2	1.000	1.12	0.250	25	28.3	8
F3	1.250	1.37	0.250	30	33.3	8
F4	1.500	1.67	0.375	40	43.3	12
F6	2.000	2.23	0.500	50	53.8	14

*Metric output available on request.

Table 3 Dimensions (mm)

Unit	MT10		MT20		MT30		MT40		Approx. Wt. lbs.
	C	m	C	m	C	m	C	m	
F102	219.5	129.5	233.5	133.5	—	—	—	—	38
F202	253	153	267	157	279	159	—	—	51
F203	290	190	—	—	—	—	—	—	64
F302	279.5	169.5	293.5	173.5	305.5	175.5	—	—	67
F303	316.5	206.5	336.5	216.5	—	—	—	—	73
F402	—	—	318.5	188.5	330.5	190.5	362.5	193.5	84
F403	341.5	221.5	361.5	231.5	—	—	—	—	91
F602	—	—	369.5	219.5	381.5	221.5	413.5	224.5	165
F603	—	—	412.5	262.5	—	—	—	—	177

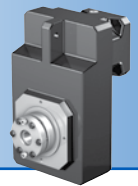
For approximate weight, add unit weight from Table 3 and adapter weight from Table 4.

Table 4 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness ³⁾ c Min.	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	12
MT40	33	48	89	18

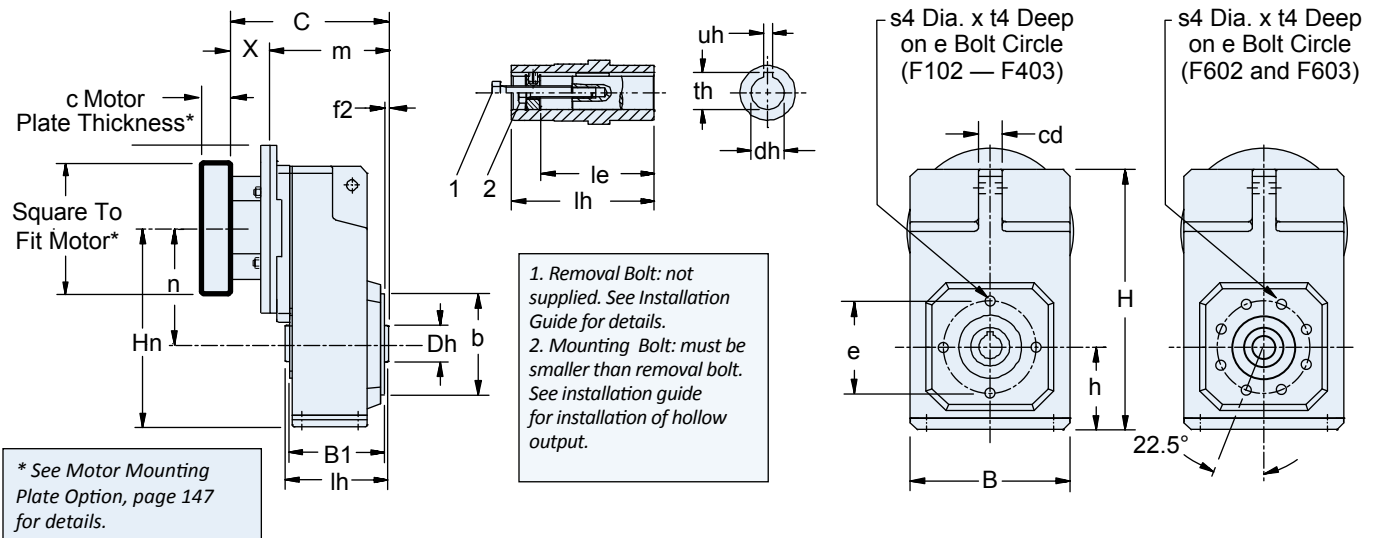
²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.



Dimensional Data

"A" Hollow Output with "G" Pitch Circle Diameter (PCD) Tapped Holes – All Sizes


Table 1 "Dimensions (mm)

Unit	B	B1	b _{j6}	cd	Dh	e	f2	H	h	Hn	le	lh	n	s4	t4
F1	145	87	70	20	35	85	2.5	238	74	176	73	95	102	M8x1.25	13
F2	180	105	95	22	45	115	3	299	93	224	92	115	131	M8x1.25	13
F3	206	120	110	30	50	130	3.5	335.5	106	255.5 ¹⁾	103	130	149.5 ¹⁾	M10x1.5	16
F4	230	135	110	30	55	130	3.5	370	116	285 ¹⁾	114	145	169 ¹⁾	M10x1.5	16
F6	265	166	130	35	70	165	3.5	433	137	333	143	180	196	M10x1.5	16

¹⁾ For F303, Hn is 219 with MT20 and n is 113; For F403, Hn is 248 with MT20 and n is 132

Table 2 "A" Hollow Bore Dimensions (mm)

Unit	Standard Bore - inches			Optional Bore* - mm		
	dh _{g7}	th	uh	dh _{H7}	th	uh _{J59}
F1	0.750	0.84	0.187	20	22.8	6
F2	1.000	1.12	0.250	25	28.3	8
F3	1.250	1.37	0.250	30	33.3	8
F4	1.500	1.67	0.375	40	43.3	12
F6	2.000	2.23	0.500	50	53.8	14

*Metric output available on request.

Table 3 Dimensions (mm)

Unit	MT10		MT20		MT30		MT40		Approx. Wt. lbs.
	C	m	C	m	C	m	C	m	
F102	144	104	158	108	—	—	—	—	38
F202	163	123	177	127	189	129	—	—	51
F203	200	160	—	—	—	—	—	—	64
F302	178	138	192	142	204	144	—	—	67
F303	215	175	235	185	—	—	—	—	73
F402	—	—	207	157	219	159	251	162	84
F403	230	190	250	200	—	—	—	—	91
F602	—	—	240	190	252	192	284	195	165
F603	—	—	283	233	—	—	—	—	177

For approximate weight, add unit weight from Table 3 and adapter weight from Table 4.

Table 4 Motor Adapter Dimensions (mm)

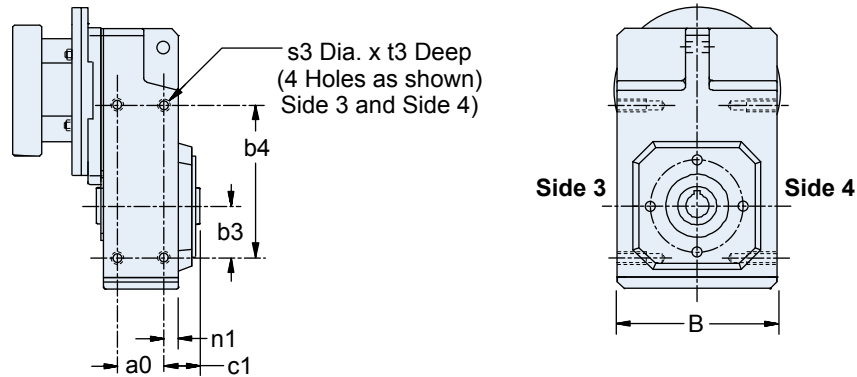
Motor Adapter	Thickness ³⁾ c Min.	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	12
MT40	33	48	89	18

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.

F Series: OFFSET – Versatile Outputs

“A” Hollow Output with “NG” Foot Mounting – All Sizes



See Rubber Buffer
Option below for
mounting torque arms.

Table 1 Dimensions (mm)

Unit	a0	B	b3	b4	c1	n1	s3	t3
F1	50	142	40	140	29	10	M6	11
F2	64	176	55	175	33.5	10.5	M8	13
F3	72	204	60	200	37.5	12.5	M10	16
F4	87	228	70	220	37.5	12.5	M10	16
F6	108	262	85	270	46.5	15.5	M12	19

Rubber Buffer Option

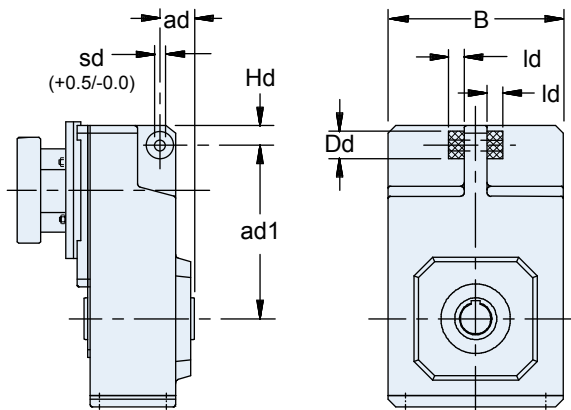
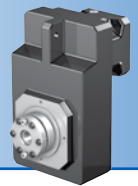


Table 2 “Rubber Buffer Dimensions (mm)

Unit	Part No.	ad	ad1	B	Dd	Hd	ld	sd
F1	25192	35	150	142	30	14	15	11
F2	25192	40	181	176	30	25	15	11
F3	25193	45	205	204	40	24.5	20	12.5
F4	25193	45	228	228	40	26	20	12.5
F6	25194	55	270	262	60	26	30	21

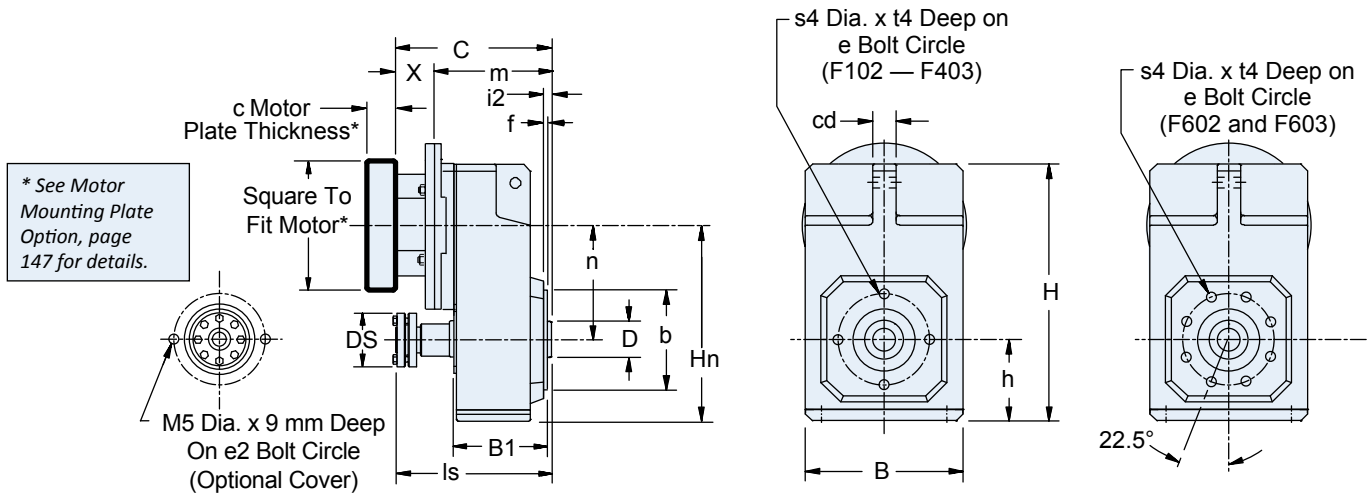
Order two (2) rubber buffers for each unit.

Torque arms are not supplied by STÖBER.

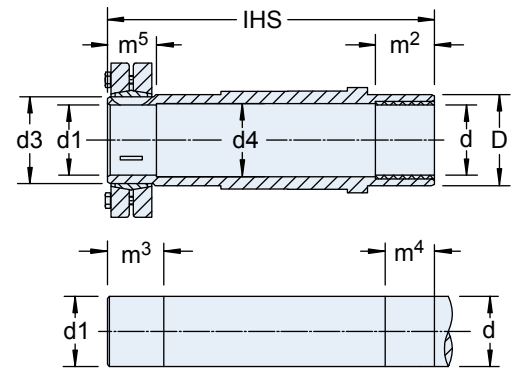


Dimensional Data

"S" Shrink Ring with "G" Pitch Circle Diameter (PCD) Tapped Holes – All Sizes


Table 1 Shaft Dimensions (mm)

Unit	B	B1	b _{j6}	cd	d _{h9}	D	Bore d ^{H7}	Shaft d _{h9} ¹	d3	d4
F1	145	87	70	20	20	35	20	20	24	20.5
F2	180	105	95	22	25	45	25	25	30	25.5
F3	206	120	110	30	30	50	30	30	36	30.5
F4	230	135	110	30	40	55	40	40	50	40.5
F6	265	166	130	35	50	70	50	50	62	50.5


Table 2 Dimensions (mm)

Unit	DS	e	e2	f	H	h	Hn	i2	IHS	m ²	m ³	m ⁴	m ⁵	n	s4	t4
F1	50	85	58	2.5	238	74	176	6.5	146	20	31	25	26	102	M8x1.25	13
F2	60	115	72	3	299	93	224	8	175	20	37	25	32	131	M8x1.25	13
F3	72	130	78	3.5	335.5	106	255.5	8.5	192	25	37	30	32	149.5	M10x1.5	16
F4	90	130	83	3.5	370	116	285 ²⁾	8.5	210	40	45	45	40	169 ³⁾	M10x1.5	16
F6	106	165	102	3.5	433	137	333	10.5	248	40	47	45	42	196	M10x1.5	16

¹⁾ For F303, Hn is 219 with MT20 and n is 113; For F403, Hn is 248 with MT20 and n is 132

Table 3 Dimensions (mm)

Unit	MT10		MT20		MT30		MT40		Approx. Wt. lbs.
	C	m	C	m	C	m	C	m	
F102	144	104	158	108	—	—	—	—	38
F202	163	123	177	127	189	129	—	—	51
F203	200	160	—	—	—	—	—	—	64
F302	178	138	192	142	204	144	—	—	67
F303	215	175	235	185	—	—	—	—	73
F402	—	—	207	157	219	159	251	162	84
F403	230	190	250	200	—	—	—	—	91
F602	—	—	240	190	252	192	284	195	165
F603	—	—	283	233	—	—	—	—	177

Table 4 Motor Adapter Dimensions (mm)

Motor Adapter	Thickness ³⁾ c Min.	Motor Shaft d2 Max. ²⁾	X	Wt. lbs.
MT10	21	19	40	5
MT20	24	24	50	8
MT30	25	38	60	12
MT40	33	48	89	18

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.

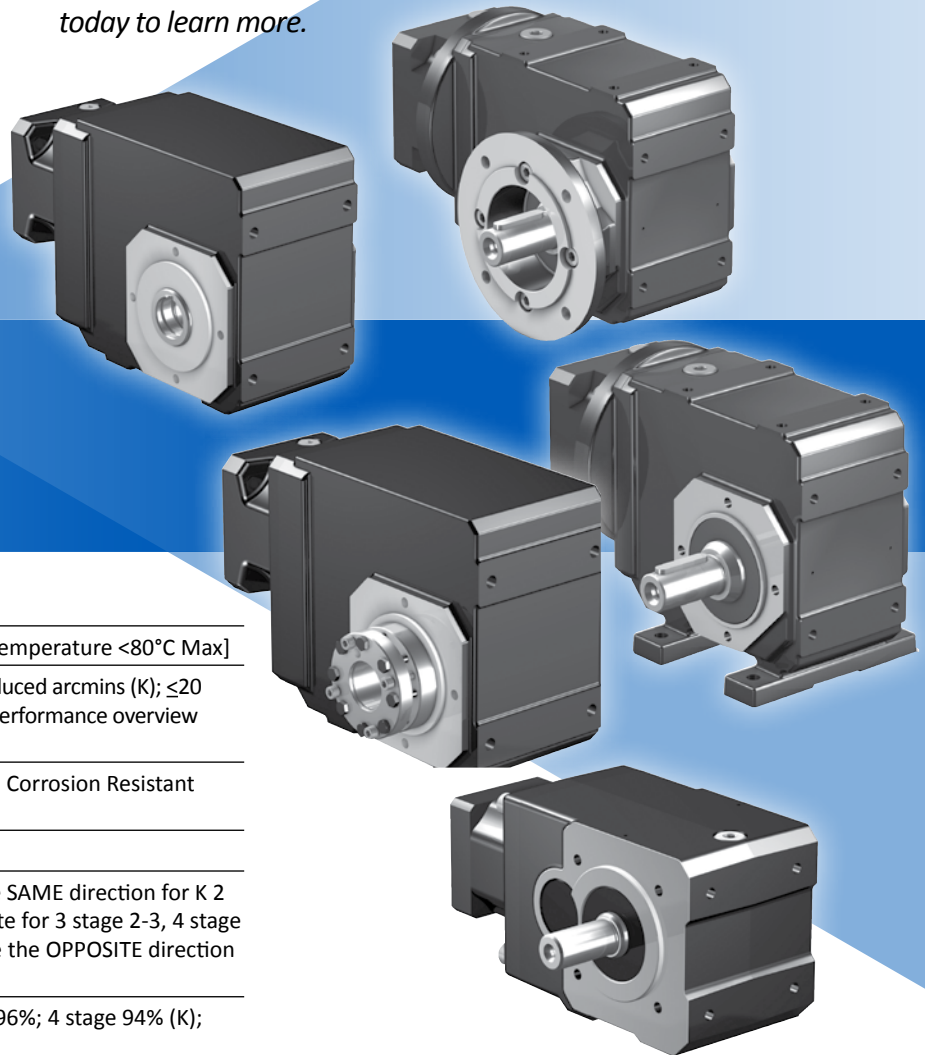
For approximate weight, add unit weight from Table 3 and adapter weight from Table 4.

K/KL Series: RIGHT ANGLE — Versatile Outputs

Features

- 4:1 to 381:1 ratios (K) or 4:1 to 32:1 ratios (KL) (higher ratios available. Contact STÖBER.)
- Quiet running (<51dB(A))
- Reduced backlash option for increased precision (K)
- Symmetrical design for universal mounting (KL)
- Mounting flexibility to fit the application
- Adaptability: shafts available in metric or imperial, carbon or stainless steel to meet your requirements
- Optional food and corrosion resistant package
- Dual seals for extreme duty applications
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

*STÖBER K Series helical/bevel gear drives are the most versatile ServoFit® right angle gearheads. With mounting flexibility and a variety of output options, they are **the** optimal drive when you need configuration choices. The K hollow bore can easily replace a belt and pulley, eliminating additional components and accessories. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.*

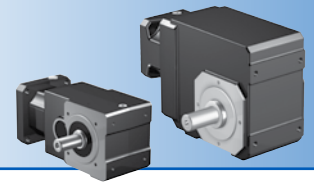


**SHIPS in
1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE

General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <80°C Max]
Backlash	≤10 standard arcmins, ≤4 reduced arcmins (K); ≤20 standard arcmins (KL); (see performance overview chart, (see page 169)
Coating	Standard Black (RAL 790-4), Corrosion Resistant option, Food option
Degree of Protection	IP65
Direction of Rotation	Input and output rotate the SAME direction for K 2 stage, 3 stage, 5-10, opposite for 3 stage 2-3, 4 stage (K); Input and output rotate the OPPOSITE direction (KL); (see page 168)
Efficiency	1 and 2 stage 97%; 3 stage 96%; 4 stage 94% (K); 97% (KL)
Input RPM	Up to 6,000 RPM
Installation	Requires 10.9 fasteners for tapped holes housing. See page 328 for more information
Lubrication	Lubricated for life* - standard Mobil 600XP200, option food grade Mobil SHC CIBUS 220
Mounting Position	Must be specified, (see page 169) (K); unrestricted (KL)
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

* Scheduled lubrication is required for some larger frame K Series units (excluding F Food Duty and B Corrosion Resistant option). See page 170 for lubrication details.



Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the K/KL Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples:

①	②	③	④	⑤	⑥	⑦	⑧	⑨	
K	1	0	2	V	NG	0040	MT10	B	EL1 *
KL	1	0	2	P	N	0040	MQ	F	

Design Option	Part Number Code	Description
① Series	K KL	Right angle helical/bevel Compact right angle helical/bevel (size 1 and 2 only)
② Size	1 2 3 4 5 6 7 8 9 10	10 sizes of gearhead (KL sizes 1 and 2 only)
③ Generation	0 1	Version of gearhead
④ # of Stages	2 3 4	Two stage (determined by ratio) Three stage (determined by ratio) Four stage (determined by ratio)
⑤ Output	A S V P G W	Hollow bore* Shrink ring* — (specify side 3 or 4) Shaft output* — K Series only (specify side 3 and/or 4) Shaft with key* — KL Series only (specify side 3 or 4) Shaft without key* — KL Series only (specify side 3 or 4) — metric only Single or double wobble-free bushing* — KL2 & K1-8 only (If single bushing, specify side 3 or 4)
⑥ Housing	F G GD NG	Round output flange (side 3 or 4 only, please specify) Pitch Circle Diameter (PCD) tapped holes Torque arm bracket mounting — K Series only (side 1 [shown] or 5 only, also side 2 on size K1 only, please specify) Foot mounting — (side 1 or 5 only; or side 2 on size K1, please specify)
⑦ Ratio	0040	Ratios range from 4:1 to 32:1 for KL Series and 4:1 to 381:1 for K Series (0040=4:1; 0063=6.3:1; 2700=270:1)
⑧ Motor Adapter	MQ MT10 – MT50	MQ input for KL series; 5 MT input sizes for K Series (see also motor mounting plate option, page 170)
⑨ Special Options	B F	Add when ordering Corrosion Resistant Duty Add when ordering Food Duty (size KL1 and 2; K1 thru K9 only)
* Mounting Position	EL1 EL2 EL3 EL4 EL5 EL6	Required special instruction for all K Series units only, see page 169

K/KL Series: RIGHT ANGLE — Versatile Outputs

Special Options

Lubrication Options

Food grade or synthetic optionally available (contact factory)

ATEX — K Series only

- ATmosphere EXplosible — Please allow up to 8 weeks for delivery

Coating Options

- Corrosion Resistant Duty (**B** special option)
- Food Duty (**F** special option)

Food and Corrosion Resistant units are lubricated for life with double output seals (where possible), stainless output shaft, bore, or bushing, and heat cured paint.

K/KL Series: RIGHT ANGLE – Versatile Outputs

K/KL Series Performance Overview

K/KL Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

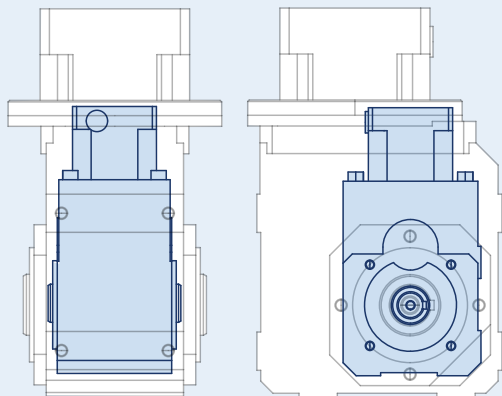
		Size/Generation	KL10	KL20	K10	K20		K30		K40		
		# of Stages	2	2	2	2	3	2	3	2	3	
Permissible Acceleration Torque	M_{2BMAX}	Nm	32	65	135	220		385		600		
Output Torque Nom.	M_{2N}	Nm	25	50	119	200		350		550		
Torsional Stiffness	C_2	Nm/arcmin	≤1.8	≤3.9	≤5.8	≤8.1	≤8.1	≤9.6	≤9.7	≤19.7	≤19.9	
Torsional Backlash ¹⁾	$\Delta\phi$	arcmin	Standard		≤25	≤20	≤12	≤10	≤10	≤10	≤10	
			Reduced		—	—	≤6	≤5	≤6	≤4	≤5	
Input Speed Max.	n_{1MAX}	Continuous	EL1, 2, 5, 6	4000	4000	4000	4000	4000	3800	3800	3500	3600
			EL3, 4	4000	4000	4000	3900	3900	3500	3500	3300	3300
			Cyclic	6000	6000	6000	5500	5500	5000	5000	5000	5000
Efficiency (@nom torque)		%	97	97	97	97	96	97	96	97	96	
Weight		kg	6.3	9.5	14.0	18.1	24.0	30.4	33.1	42.1	45.3	
		lbs	14	21	31	40	53	67	73	93	100	
Noise ²⁾		dB(A)	≤59	≤65		≤53		≤53		≤51		
Axial Load Max.	Solid Shaft	N	280	560	1900	2100		2400		3500		
	Hollow Bore	N	250	560	1900	2100		2400		3500		
Radial Load Max. ³⁾	F_{2RMAX}	N	1900	2800	5000	6000		7000		11,200		
Tilting Moment Max. ³⁾	Solid Shaft	Nm	43	118	360	430		525		1050		
	Hollow Bore	Nm	43	118	240	310		380		740		

¹⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

²⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

³⁾ Rating based on output speed (n_2) of 20 RPM for K Series, 100 RPM for KL Series. For values at other speeds see page 172.

KL Series for a Compact Fit



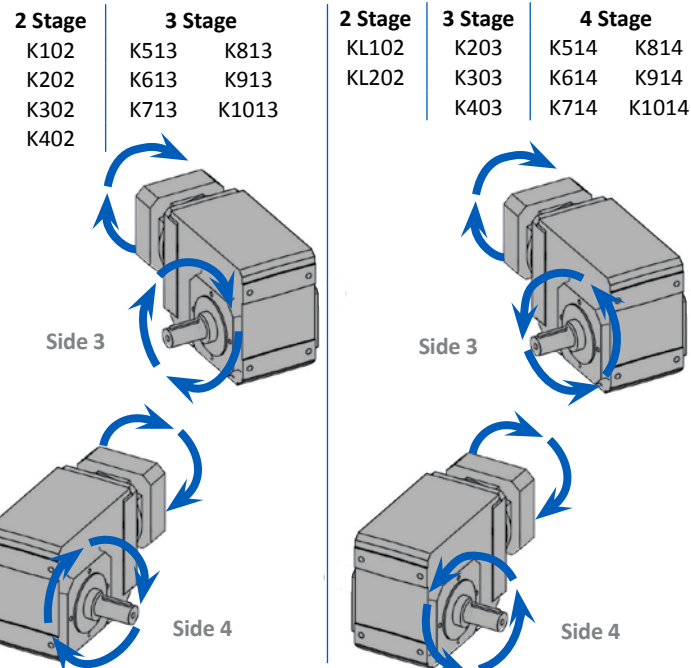
Size comparison of KL102 with K102

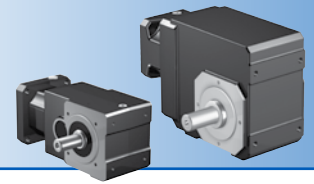
The STÖBER KL Series is a much more compact version of the K Series. Available in 4:1 to 32:1 ratios with backlash of <16 arcmins, the KL Series offers an alternative right angle helical/bevel gearhead for smaller gearhead size applications. Like the K Series, the KL is available in hollow, solid shaft, and wobble free bushing output options.

All units are lubricated for life with synthetic oil. Food grade oil available.

K/KL Series Direction of Rotation

Output available on side 3, 4 or both. Note: With a double output, the shaft rotation of Side 3 will be the OPPOSITE direction of Side 4 when viewed from Side 5.



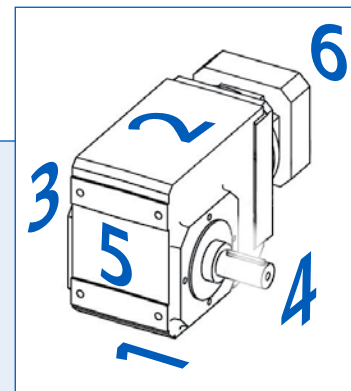


Overview

K/KL Series: RIGHT ANGLE — Versatile Outputs

K51		K61		K71		K81		K91		K101	
3	4	3	4	3	4	3	4	3	4	3	4
1000		1600		2600		4650		7700		13,200	
900		1450		2400		4200		7000		11,893	12,000
≤30.4	≤30.5	≤44.9	≤45.1	≤80.9	≤81.1	≤140.9	≤141.3	≤209.6	≤210.0	≤461.7	≤464.5
≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10	≤10
≤5	≤6	≤5	≤6	≤5	≤6	≤5	≤6	≤5	≤5	≤5	≤5
3400	3400	3100	3100	2900	2900	2800	2800	2600	2600	2500	2500
3000	3000	2800	2800	2600	2600	2500	2500	2500	2500	2300	2300
4500	4500	4000	4000	3800	3800	3600	3600	3400	3400	3000	3200
96	94	96	94	96	94	96	94	96	94	96	94
48.0	49.4	77.0	80.2	100.1	106.0	140.0	149.9	230.1	240.1	477.9	488.8
106	109	170	177	221	234	309	331	508	530	1055	1079
≤61		≤61		≤59		≤65		≤65		≤65	
3500		4000		5500		7250		16,500		25,000	
2500		3000		4100		5300		7000		9000	
13,450		16,000		22,000		29,000		65,000		80,000	
1580		1960		3200		3800		11,200		15,200	
1000		1300		2100		2600		3600		5000	

K units have the shaft on Side 3 and/or Side 4 (shown).
IMPORTANT: Shaft side must be specified when ordering.

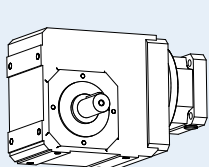


K Series Mounting Position Options

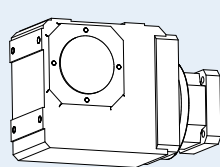
(KL units have unrestricted positioning)

When ordering, the Mounting Position **MUST BE SPECIFIED** using one of the Mounting Position order codes below.

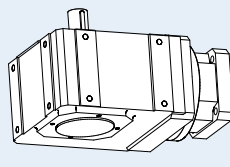
Note: the code relates to the orientation side that faces down. For example, EL1 has side 1 facing down, EL2 has side 2 facing down, etc.



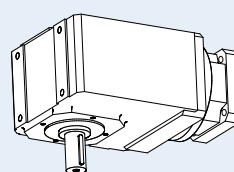
EL1



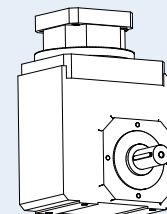
EL2



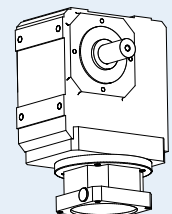
EL3



EL4



EL5



EL6

K/KL Series: RIGHT ANGLE – Versatile Outputs

K/KL Series Motor Mounting Plate Option (Motor information required with Motor Adapter option)

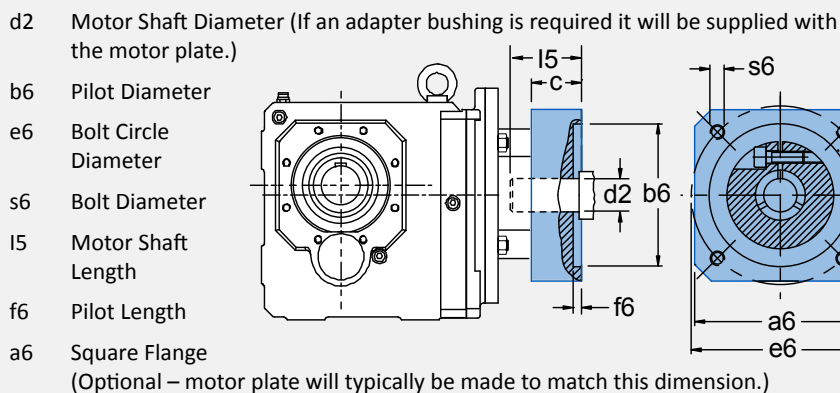
STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate



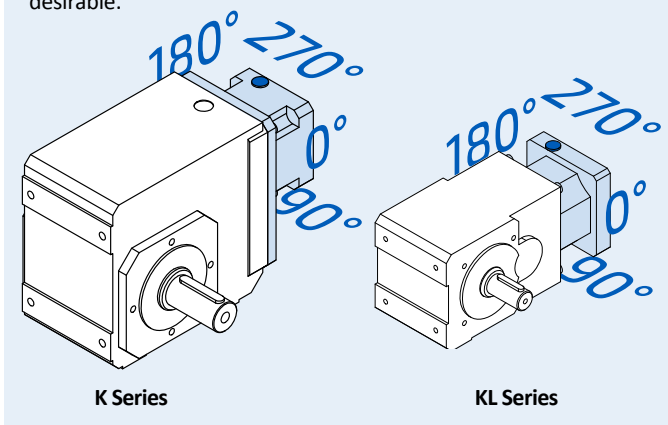
Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

	KL1_MQ	KL2_MQ MT10	MT20	MT30	MT40	MT50
Maximum Allowed Motor Shaft Dia. d2	16	19	24	38	48	60
Minimum Allowed Motor Plate Thickness c*	15	21	24	25	33	43

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

K/KL Series Motor Mounting Plate Access Hole

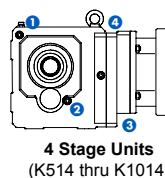
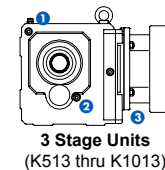
Access to the clamping screw for the motor coupling is located on the 270° side of the motor mounting plate at the location shown. If necessary, the motor mounting plate can be rotated in the field, if a 0°, 90° or 180° orientation for the access hole is desirable.



K Series Lubrication Maintenance

With STOBER reducers very little maintenance is required under normal operating conditions. Units K102 are supplied without breathers and are lubricated for life and maintenance free. Breathers are provided on standard units K513 thru K1014, located as shown to the right*. STOBER recommends changing the lubrication in breather supplied units after 10,000 hours for normal operating conditions or every 5000 hours for wet operating conditions.

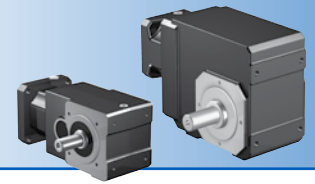
*K513/K514 and larger units with the Food & Corrosion Resistant option exclude a breather. Contact STOBER for details.



Drain Plug and Vent Location

Mounting Position	1	2*	2a*	3	4
EL1	Vent			Drain	
EL2	Drain			Vent	
EL3		Vent	Drain		
EL4		Drain	Vent		
EL5	K513-K1013 K514-K1014	Drain		Vent	
EL6	K513-K1013 K514-K1014	Vent		Drain	Drain

* Position 2a is on the opposite side of 2.



Overview

K/KL Series Output Options

Diameters in **BOLD BLUE** are configurations readily available from inventory. Contact STÖBER for delivery on other output sizes.

			KL1	KL2	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	
Solid Shaft	Carbon Steel	Inches	5/8	3/4*	1	1-1/4	1-1/4	1-3/8	1-3/4	1-3/4	2-3/8	2-7/8	3-5/8	4-3/8	
		Metric	16	20	25	30	30	40	45	50	60	70	90	110	
	Stainless Steel	Inches	5/8	3/4	1	1-1/4	1-1/4	1-3/8	1-3/4	1-3/4	2-3/8	2-7/8	3-5/8	—	
		Metric	16	20	25	30	—	—	45	—	—	—	—	—	
Hollow Bore	Carbon Steel	Inches	5/8	3/4	1	1-3/16 1-1/4	1-3/8 1-7/16	1-7/16 1-1/2	2	2	2-3/8	2-3/4	3-1/4	4	
		Metric	16	20	25	30	30 35	40	40 50	50	60	70	70	—	
	Stainless Steel	Inches	5/8	3/4	1	1-1/8 1-1/4	1 1-1/4 1-3/8 1-7/16	1-1/2	1-1/2 2	2	—	—	2-15/16 3 3-7/16	—	
		Metric	16	20	25	30	35	40	40 50	—	60	70	75	—	
Wobble Free Bushing (Stainless Steel except where noted)	Inches	Single & Double	—	3/4	1	1 1-3/16 1-1/4	1** 1-3/16** 1-1/4** 1-3/8** 1-7/16** 1-1/2**	1 1-3/16	1-1/2 1-1/4 1-3/8 1-7/16 1-1/2	1-7/16 1-1/2 1-5/8 1-11/16 1-3/4 1-7/8 1-15/16 2	1-7/16 1-1/2 1-5/8 1-11/16 1-3/4 2-3/8 2-3/16	1-15/16 2 2-3/16	2-3/16 2-3/8 2-7/16 2-3/4	—	—
			Metric	—	—	25	30	30 35	—	—	—	—	—	—	—
	Metric	Single	—	—	25	30	30 35	—	—	—	—	—	—	—	—
		Double	—	—	25	30	30 35	40	40	40	—	—	—	—	—
Shrink Ring	Carbon Steel	Metric	16	20	25	30	35	40	50	50	60	70	90	100	

* Shaft with key only (part number code P)

**Also available in carbon steel

K/KL Series: RIGHT ANGLE — Versatile Outputs

K Series Standard & Optional Output Flange Sizes

Base Module	Flange Size
K1	140, 160*
K2	160, 200*
K3	160, 200*, 250
K4	250*
K5	250*
K6	300*
K7	300, 350*
K8	350 400* 450
K9	450*
K10	550*

* This is the standard flange size shipped with the unit unless otherwise specified. Optional flanges are not available for all sizes.

Overhung Load Calculations

Pulling forces or overhung load of pulleys, sheaves, sprockets, etc. on the reducer output shaft must not exceed the allowable limits shown in the load/life/speed calculations below.

Note: Overhung load is measured at the center of the shaft extension. No overhung load is encountered when a reducer is flange mounted and/or coupling connected to another unit. However, the shafts of all components must be accurately aligned and secured to prevent pre-loading of the bearings and premature bearing failure.

Use the following formula to determine actual overhung load for a given drive:

$$\text{Imperial OHL (lbs)} = \frac{126,000 \times \text{HP} \times K}{D \times n}$$

$$\text{Metric OHL (N)} = \frac{19,100 \times \text{kW} \times K}{D \times n}$$

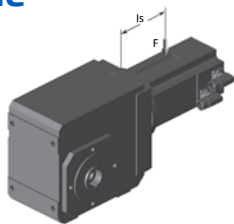
Where:

- OHL** Overhung load (N or lbs)
- HP** Horsepower
- kW** Transmitted Kilowatt
- D** Pitch Diameter (inches or meters) of Sprocket, Gear, Sheave, Pulley, etc.
- n** Maximum Shaft RPM
- K** 1.00 Single Chain Drive; 1.25 Timing Belt Drive; 1.25 Spur or Helical Gear Drive; 1.50 V-Belt Drive; 2.50 Flat Belt Drive

K/KL Series: RIGHT ANGLE – Versatile Outputs

Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load “F” from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity “ l_s ” of the motor.



$$M_{1k} = F \times l_s \leq M_{1K}$$

M_{1K}	MT10	MT20	MT30	MT40	MT50
Nm	25	60	125	250	600

Permissible Output Shaft Load and Tilting Moments*

Unit	P, G, V Solid Shaft Output ¹⁾				A, S, W Hollow Output ²⁾		
	Z_2 mm	F_{2A} N	F_{2R} N	M_{2K} Nm	Z_2 mm	F_{2A} N	M_{2K} Nm
KL1	20	380	1900	68	18.5	250	43
KL2	22	560	2800	118	22	560	118
K1	40	1900	5000	360	40	1900	240
K2	42	2100	6000	430	42	2100	310
K3	45	2400	7000	525	45	2400	380
K4	52	3500	11,200	1050	52	3500	740
K5	72	3500	13,450	1580	39	2500	1000
K6	72	4000	16,000	1960	42	3000	1300
K7	85	5500	22,000	3200	45	4100	2100
K8	60	7250	29,000	3800	50	5300	2600
K9	87	16,500	65,000	11,200	56	7000	3600
K10	84 ³⁾	25,000	80,000 ³⁾	15,200	56	9000	5000

* Refer to illustration and definitions below.

¹⁾ For DOUBLE output shaft: $F_{2R} \times 0.7$

²⁾ Values shown for “W” Style are for double bushings. For single bushings use value $M_{2K} \times 0.5$ and $F_{2A} \times 0.5$

³⁾ Solid Shaft unit with a Flange – z_2 value is 132mm/5.20”; F_{2R} value is 64,000N/14,400 lbs.

K/KL Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 20 RPM (K Series) or 100 RPM (KL Series). For higher speeds the following applies, where n_2 is the desired speed:

K Series

$$F_{2AK} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{20}}}, \quad F_{2RK} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{20}}}, \quad M_{2KK} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{20}}}$$

KL Series

$$F_{2AKL} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}}, \quad F_{2RKL} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}}, \quad M_{2KKL} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

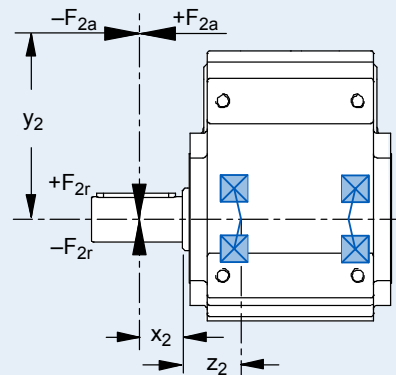
$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2K}$$

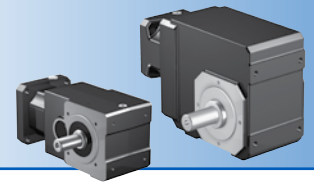
Where:

F_{2a}	Axial Load at Output Shaft	M_{2K}	Rated Tilting Torque
F_{2A}	Permissible Axial Load	M_{2k}	Equivalent Tilting Load
F_{2r}	Radial Load at Output Shaft	M_{2KB}	Acceleration Tilting Torque
F_{2R}	Permissible Radial Load	z_2	Distance Factor
F_{2RB}	Acceleration Permissible Radial Load		

All formulas shown are based on METRIC values

Upper case letters are permissible values. Lower case letters are for existing values.





Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

KL1

4.000	4/1	15	22	29	25	KL102_0040 MQ	3500	3500	5000	0.38	1.0
8.000	8/1	23	30	58	20	KL102_0080 MQ	3500	3500	5000	0.35	1.6
16.00	16/1	25	30	60	20	KL102_0160 MQ	4000	4000	6000	0.29	1.8
32.00	32/1	25	32	64	20	KL102_0320 MQ	4000	4000	6000	0.28	1.7

KL2

4.000	4/1	32	47	58	20	KL202_0040 MQ	3500	3500	5000	0.89	1.8
8.000	8/1	45	60	116	16	KL202_0080 MQ	3500	3500	5000	0.77	3.5
16.00	16/1	50	60	120	16	KL202_0160 MQ	4000	4000	6000	0.54	3.9
32.00	32/1	50	65	130	16	KL202_0320 MQ	4000	4000	6000	0.52	3.2

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Square motor adapter code (shaft diameter max - mm): For KL102 MQ (16), For KL202 MQ (19)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All		Nm	

K1

4.000	4/1	42	42	52	12/6	K102_0040 MT10	3300	2800	4500	1.4	2.8
		58	78	98		K102_0040 MT20				2.0	2.9
5.568	1520/273	58	58	72	12/6	K102_0056 MT10	3300	2800	4500	1.3	4.3
		65	109	136		K102_0056 MT20				1.9	4.5
6.000	6/1	59	59	74	12/6	K102_0060 MT10	3300	2800	4500	1.1	3.4
		66	111	139		K102_0060 MT20				1.7	
6.644	299/45	64	64	80	12/6	K102_0066 MT10	3600	3300	5000	1.0	3.5
		69	116	151		K102_0066 MT20	3500			1.6	
8.309	1911/230	74	77	97	12/6	K102_0083 MT10	3600	3300	5000	0.9	3.7
			125	182		K102_0083 MT20	3500			1.5	
9.249	1748/189	76	90	112	12/6	K102_0092 MT10	3600	3300	5000	0.9	5.2
			129	211		K102_0092 MT20	3500			1.5	
10.14	507/50	79	91	114	12/6	K102_0100 MT10	4000	3800	5500	0.8	3.8
			125	214		K102_0100 MT20	3500	3500	5000	1.4	
11.57	266/23	82	108	134	12/6	K102_0115 MT10	3600	3300	5000	0.8	5.4
			135	240		K102_0115 MT20	3500			1.4	
12.62	429/34	85	109	136	12/6	K102_0125 MT10	4000	3800	5500	0.7	3.9
			125	220		K102_0125 MT20	3500	3500	5000	1.3	
14.11	494/35	88	127	158	12/6	K102_0140 MT10	4000	3800	5500	0.8	5.5
			135	240		K102_0140 MT20	3500	3500	5000	1.4	5.6
16.71	117/7	93	125	172	12/6	K102_0165 MT10	4000	4000	6000	0.7	4.0
						K102_0165 MT20	3500	3500	5000	1.3	
17.56	2090/119	95	135	189	12/6	K102_0175 MT10	4000	3800	5500	0.7	5.6
			240	240		K102_0175 MT20	3500	3500	5000	1.3	
20.15	403/20	99	125	199	12/6	K102_0200 MT10	4000	4000	6000	0.7	4.0
						K102_0200 MT20	3500	3500	5000	1.3	
23.27	1140/49	104	135	239	12/6	K102_0230 MT10	4000	4000	6000	0.7	5.7
						K102_0230 MT20	3500	3500	5000	1.3	
25.22	1261/50	96	115	192	12/6	K102_0250 MT10	4000	4000	6000	0.7	4.0
						K102_0250 MT20	3500	3500	5000	1.3	
28.05	589/21	111	135	240	12/6	K102_0280 MT10	4000	4000	6000	0.7	5.7
						K102_0280 MT20	3500	3500	5000	1.3	5.8
33.71	4719/140	73	88	146	12/6	K102_0340 MT10	4000	4000	6000	0.6	4.0
35.11	3686/105	119	135	240	12/6	K102_0350 MT10	4000	4000	6000	0.6	5.8
						K102_0350 MT20	3500	3500	5000	1.2	
40.30	403/10	61	74	96	12/6	K102_0400 MT10	4000	4000	6000	0.6	4.1
46.92	2299/49	102	122	203	12/6	K102_0470 MT10	4000	4000	6000	0.6	5.8
50.31	5031/100	50	60	100	12/6	K102_0500 MT10	4000	4000	6000	0.6	4.1
56.10	1178/21	86	103	133	12/6	K102_0560 MT10	4000	4000	6000	0.6	5.8
70.03	2451/35	70	83	139		K102_0700 MT10	4000	4000	6000	0.6	5.8

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

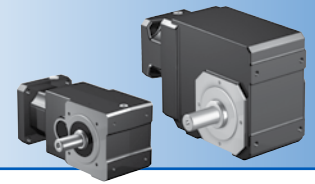
³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



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Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

K2 (continued next page)

4.000	4/1	44	44	55	10/5	K202_0040 MT10	3000	2600	4000	3.1	3.8
		103	171	245		K202_0040 MT20				3.7	3.9
						K202_0040 MT30				8.5	4.7
4.364	48/11	48	48	59	10/5	K202_0044 MT10	3000	2600	4000	2.7	4.1
		106	180	263		K202_0044 MT20				3.3	4.2
						K202_0044 MT30				8.1	4.9
5.177	2107/407	113	190	308	10/5	K202_0052 MT20	3000	2600	4000	2.9	4.7
						K202_0052 MT30				7.7	5.3
6.000	6/1	65	65	82	10/5	K202_0060 MT10	3000	2600	4000	2.3	5.8
		118	200	361		K202_0060 MT20				2.9	5.9
						K202_0060 MT30				7.7	6.6
6.683	2279/341	69	69	86	10/5	K202_0067 MT10	3500	3100	4500	1.7	5.2
		123	207	380		K202_0067 MT20			4000	2.3	5.3
						K202_0067 MT30			4000	7.1	5.8
7.118	2107/296	125	211	400	10/5	K202_0071 MT20	3000	2600	4000	2.6	6.4
						K202_0071 MT30				7.4	7.0
8.397	2494/297	83	83	104	10/5	K202_0084 MT10	3500	3100	4500	1.4	5.7
		132	220	400		4000			2.0	6.1	
									6.8	6.1	
9.190	2279/248	95	95	118	10/5	K202_0092 MT10	3500	3100	4500	1.5	6.9
		136	220	400		4000			2.1	7.0	
									6.9	7.4	
10.07	2881/286	97	97	121	10/5	K202_0100 MT10	3900	3500	5000	1.2	5.9
		141	220	400		4000			1.8	6.0	
									6.6	6.2	
11.55	1247/108	115	115	143	10/5	K202_0115 MT10	3500	3100	4500	1.3	7.3
		147	220	400		4000			1.9	7.4	
									6.7	7.7	
12.71	559/44	117	117	146	10/5	K202_0125 MT10	3900	3500	5000	1.0	6.2
		152	220	400		4000			1.6	6.4	
									6.4	6.4	
13.85	2881/208	133	133	166	10/5	K202_0140 MT10	3900	3500	5000	1.1	7.6
		156	220	400		4000			1.7	7.8	
									6.5	7.8	
16.86	2967/176	147	147	184	10/5	K202_0170 MT10	4000	3900	5500	0.9	6.4
		167	220	400		3500			1.5	6.5	
									4000	6.3	6.5
17.47	559/32	161	161	201	10/5	K202_0175 MT10	3900	3500	5000	1.0	7.8
		169	220	400		4000			1.6	7.8	
									6.4	7.9	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

K2 (continued from previous page)

20.33	1118/55	170	170	212	10/5	K202_0200 MT10	4000	3900	5500	0.8	6.4
		178	220	400		K202_0200 MT20	3500	3500	5000	1.4	6.5
						K202_0200 MT30			4000	6.2	
23.18	2967/128	186	202	253	10/5	K202_0230 MT10	4000	3900	5500	0.8	7.9
			220	400		K202_0230 MT20	3500	3500	5000	1.4	
						K202_0230 MT30			4000	6.2	8.0
25.13	1935/77	191	200	250	10/5	K202_0250 MT10	4000	3900	5500	0.7	6.5
			220	400		K202_0250 MT20	3500	3500	5000	1.3	
						K202_0250 MT30			4000	6.1	6.6
27.95	559/20	197	220	292	10/5	K202_0280 MT10	4000	3900	5500	0.8	8.0
				400		K202_0280 MT20	3500	3500	5000	1.4	
						K202_0280 MT30			4000	6.2	8.1
33.62	1849/55	154	185	308	10/5	K202_0340 MT10	4000	3900	5500	0.7	6.6
						K202_0340 MT20	3500	3500	5000	1.3	
						K202_0350 MT10	4000	3900	5500	0.7	8.0
34.55	1935/56	200	220	344	10/5	K202_0350 MT20	3500	3500	5000	1.3	
				400		K202_0350 MT30			4000	6.1	
						K202_0400 MT10	4000	3900	5500	0.7	6.6
46.23	1849/40	200	220	400	10/5	K202_0460 MT10	4000	3900	5500	0.7	8.1
K202_0460 MT20	3500	3500	5000	1.3							
50.49	6665/132	96	116	193	10/5	K202_0500 MT10	4000	3900	5500	0.6	6.6
55.54	1333/24	159	191	262	10/5	K202_0560 MT10	4000	3900	5500	0.7	8.1
69.43	6665/96	132	159	265	10/5	K202_0690 MT10	4000	3900	5500	0.6	8.1
39.45	135,407/3432	162	162	202	10/6	K203_0390 MT10	4000	3900	5500	0.7	6.6
45.22	58,609/1296	185	185	231	10/6	K203_0450 MT10	4000	3900	5500	0.7	8.1
49.76	26,273/528	200	204	255	10/6	K203_0500 MT10	4000	3900	5500	0.7	6.6
54.25	135,407/2496	200	220	278	10/6	K203_0540 MT10	4000	3900	5500	0.7	8.1
66.03	46,483/704	200	220	338	10/6	K203_0660 MT10	4000	3900	5500	0.7	6.6
68.42	26,273/384	200	220	350	10/6	K203_0680 MT10	4000	3900	5500	0.7	8.1
79.62	26,273/330	200	220	400	10/6	K203_0800 MT10	4000	3900	5500	0.7	6.6
90.79	46,483/512	200	220	400	10/6	K203_0910 MT10	4000	3900	5500	0.7	8.1
109.5	26,273/240	200	220	400	10/6	K203_1090 MT10	4000	3900	5500	0.7	8.1
135.3	30,315/224	200	220	400	10/6	K203_1350 MT10	4000	3900	5500	0.7	8.1
181.0	86,903/480	200	220	400	10/6	K203_1810 MT10	4000	3900	5500	0.7	8.1
217.5	62,651/288	159	191	262	10/6	K203_2180 MT10	4000	3900	5500	0.6	8.1
271.9	313,255/1152	132	159	265	10/6	K203_2720 MT10	4000	3900	5500	0.7	8.1

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

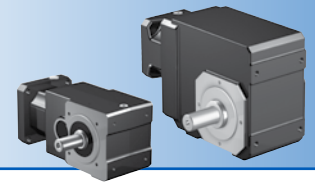
³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



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Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Continuous EL 1,2	Cyclic EL 3,4,5,6	All		
Nom.	Exact	Nm	Nm	Nm							Nm

K3 (continued next page)

4.000	4/1	155	171	253	10/4	K302_0040 MT20	2700	2300	3800	6.4	4.5
		181	306	652		K302_0040 MT30				11.2	5.5
4.364	48/11	169	186	273	10/4	K302_0044 MT20	2700	2300	3800	5.7	4.9
		186	315	700		K302_0044 MT30				10.5	5.8
5.375	43/8	200	229	326	10/4	K302_0054 MT20	2700	2300	3800	4.5	5.7
			260			K302_0054 MT30				9.3	6.5
6.000	6/1	207	256	376	10/4	K302_0060 MT20	2700	2300	3800	4.8	6.7
			350	700		K302_0060 MT30				9.6	7.6
6.740	2150/319	215	288	397	10/4	K302_0067 MT20	3200	2800	4200	3.5	6.5
			317			K302_0067 MT30				4000	8.3
7.391	473/64	222	315	448	10/4	K302_0074 MT20	2700	2300	3800	3.9	7.5
			358			K302_0074 MT30				8.7	8.2
8.444	2322/275	232	360	479	10/4	K302_0084 MT20	3200	2800	4200	2.9	7.1
			383			K302_0084 MT30				4000	7.7
9.267	1075/116	239	385	546	10/4	K302_0093 MT20	3200	2800	4200	3.2	8.2
						K302_0093 MT30				4000	8.0
10.14	3010/297	247	385	554	10/4	K302_0100 MT20	3500	3100	5000	2.4	7.4
						K302_0100 MT30				4000	7.2
11.61	1161/100	258	385	659	10/4	K302_0115 MT20	3200	2800	4200	2.6	8.6
						K302_0115 MT30				4000	7.4
12.58	3182/253	120	120	150	10/4	K302_0125 MT10	3500	3100	5000	1.5	7.7
		265	385	661		K302_0125 MT20				2.1	7.8
13.94	1505/108	274	385	700	10/4	K302_0140 MT20	3500	3100	5000	2.3	8.9
						K302_0140 MT30				4000	7.1
16.94	559/33	152	152	189	10/4	K302_0170 MT10	3800	3500	5000	1.2	8.0
		293	385	700		K302_0170 MT20				1.8	8.1
17.29	1591/92	164	164	206	10/4	K302_0175 MT10	3500	3100	5000	1.4	9.1
						295				385	700
20.28	3569/176	176	176	219	10/4	K302_0200 MT10	3800	3500	5000	1.0	8.1
						311				385	700
23.29	559/24	208	208	260	10/4	K302_0230 MT10	3800	3500	5000	1.1	9.4
						325				385	700
25.26	3612/143	208	208	259	10/4	K302_0250 MT10	3800	3500	5000	0.9	8.2
						334				385	700
27.88	3569/128	241	241	302	10/4	K302_0280 MT10	3800	3500	5000	1.0	9.4
						346				385	700
						K302_0280 MT30			4000	6.4	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		Nm

K3 (continued from previous page)

32.65	44,892/1375	350	383	479	10/5	K303_0330 MT20	3500	3500	5000	1.5	8.3
33.62	1849/55	250	260	324	10/4	K302_0340 MT10	3800	3500	5000	0.8	8.3
			300	501		K302_0340 MT20	3500			1.4	
						K302_0340 MT30				4000	
34.73	903/26	285	285	357	10/4	K302_0350 MT10	3800	3500	5000	0.9	9.5
			385	672		K302_0350 MT20	3500			1.5	
						K302_0350 MT30				4000	
35.83	215/6	350	385	546	10/5	K303_0360 MT20	3500	3500	5000	1.5	9.5
39.19	34,916/891	350	385	554	10/5	K303_0390 MT20	3500	3500	5000	1.4	8.4
40.51	4902/121	193	231	376	10/4	K302_0410 MT10	3800	3500	5000	0.7	8.4
						K302_0410 MT20	3500			1.3	
44.89	11,223/250	350	385	659	10/5	K303_0450 MT20	3500	3500	5000	1.4	9.6
46.23	1849/40	344	357	446	10/4	K302_0460 MT10	3800	3500	5000	0.8	9.6
			385	688		K302_0460 MT20	3500			1.4	
						K302_0460 MT30				4000	
48.63	184,556/3795	350	385	661	10/5	K303_0490 MT20	3500	3500	5000	1.4	8.4
49.26	74,777/1518	202	202	252	10/5	K303_0490 MT10	3800	3500	5000	0.7	8.4
50.49	6665/132	154	185	234	10/4	K302_0500 MT10	3800	3500	5000	0.7	8.4
53.88	8729/162	350	385	700	10/5	K303_0540 MT20	3500	3500	5000	1.4	9.6
54.58	70,735/1296	223	223	279	10/5	K303_0550 MT10	3800	3500	5000	0.7	9.6
55.71	2451/44	265	318	517	10/4	K302_0560 MT10	3800	3500	5000	0.7	9.6
						K302_0560 MT20	3500			1.3	
65.50	32,422/495	350	385	700	10/5	K303_0650 MT20	3500	3500	5000	1.4	8.4
66.35	26,273/396	272	272	340	10/5	K303_0660 MT10	3800	3500	5000	0.7	8.4
66.87	46,139/690	350	385	700	10/5	K303_0670 MT20	3500	3500	5000	1.4	9.6
67.73	74,777/1104	277	277	347	10/5	K303_0680 MT10	3800	3500	5000	0.7	9.6
69.43	6665/96	212	254	322	10/4	K302_0690 MT10	3800	3500	5000	0.7	9.6
78.41	103,501/1320	350	385	700	10/5	K303_0780 MT20	3500	3500	5000	1.4	8.4
79.42	167,743/2112	320	325	406	10/5	K303_0790 MT10	3800	3500	5000	0.7	8.4
90.06	16,211/180	350	385	700	10/5	K303_0900 MT20	3500	3500	5000	1.4	9.6
91.23	26,273/288	350	373	467	10/5	K303_0910 MT10	3800	3500	5000	0.7	9.6
107.8	103,501/960	350	385	700	10/5	K303_1080 MT20	3500	3500	5000	1.4	9.6
109.2	167,743/1536	350	385	559	10/5	K303_1090 MT10	3800	3500	5000	0.7	9.6
134.3	8729/65	350	385	672	10/5	K303_1340 MT20	3500	3500	5000	1.4	9.7
136.0	14,147/104	350	385	672	10/5	K303_1360 MT10	3800	3500	5000	0.7	9.7
178.7	53,621/300	344	385	688	10/5	K303_1790 MT20	3500	3500	5000	1.4	9.7
181.0	86,903/480	344	385	688	10/5	K303_1810 MT10	3800	3500	5000	0.7	9.7
218.2	38,399/176	265	318	517	10/5	K303_2180 MT10	3800	3500	5000	0.7	9.7
271.9	313,255/1152	212	254	322	10/5	K303_2720 MT10	3800	3500	5000	0.7	9.7

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

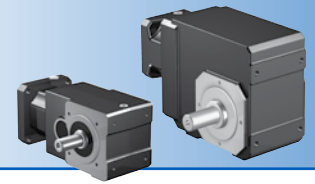
³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



DISTRIBUIDOR
AUTORIZADO

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Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 3,4,5,6	All			

K4 (continued next page)

4.000	4/1	155	171	261	10/4	K402_0040 MT20	2600	2200	3500	11.4	6.2
		271	405	673		K402_0040 MT30				16.2	8.2
			459			K402_0040 MT40				20.2	11.2
4.364	48/11	169	186	283	10/4	K402_0044 MT20	2600	2200	3500	10.1	6.9
		279	442	729		K402_0044 MT30				14.9	8.9
										K402_0044 MT40	18.9
5.422	1849/341	210	231	341	10/4	K402_0054 MT20	2600	2200	3500	7.5	8.7
		300	508	880		K402_0054 MT30				12.3	10.7
										K402_0054 MT40	16.3
6.000	6/1	233	256	389	10/4	K402_0060 MT20	2600	2200	3500	8.4	10.4
		311	525	1002		K402_0060 MT30				13.2	12.8
										K402_0060 MT40	17.2
6.719	215/32	261	287	407	10/4	K402_0067 MT20	3000	2600	4000	5.6	10.5
		323	545	1050		K402_0067 MT30			10.4	12.2	
									K402_0067 MT40	3500	14.4
7.456	1849/248	289	318	469	10/4	K402_0075 MT20	2600	2200	3500	6.4	12.5
		334	564	1100		K402_0075 MT30				11.2	14.6
										K402_0075 MT40	15.2
8.377	645/77	325	358	491	10/4	K402_0084 MT20	3000	2600	4000	4.3	12.1
		347	587	1100		K402_0084 MT30			9.1	13.6	
									K402_0084 MT40	3500	13.1
9.238	2365/256	358	394	560	10/4	K402_0092 MT20	3000	2600	4000	4.9	14.4
		359	600	1100		K402_0092 MT30			9.7	16.1	
									K402_0092 MT40	3500	13.7
10.10	1333/132	370	431	569	10/4	K402_0100 MT20	3400	3000	4500	3.5	13.3
			600	1100		K402_0100 MT30			4000	8.3	14.5
									K402_0100 MT40	3000	3500
11.52	645/56	386	492	675	10/4	K402_0115 MT20	3000	2600	4000	3.9	16.0
			600	1100		K402_0115 MT30			8.7	17.3	
									K402_0115 MT40	3500	12.7
12.66	2924/231	399	540	690	10/4	K402_0125 MT20	3400	3000	4500	2.8	14.4
			600	1100		K402_0125 MT30			4000	7.6	15.2
									K402_0125 MT40	3000	3500
13.89	1333/96	411	593	783	10/4	K402_0140 MT20	3400	3000	4500	3.2	17.0
			600	1100		K402_0140 MT30			4000	8.0	18.0
									K402_0140 MT40	3000	3500
16.94	559/33	432	600	867	10/4	K402_0170 MT20	3500	3300	5000	2.2	15.4
				1100		K402_0170 MT30			4000	7.0	15.9
									K402_0170 MT40	3000	3000

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

K4 (continued next page)

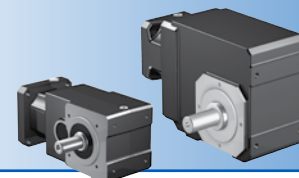
17.41	731/42	443	600	949	10/4	K402_0175 MT20	3400	3000	4500	2.6	18.0
				1100		K402_0175 MT30			4000	7.4	18.7
						K402_0175 MT40			3500	11.4	19.3
20.20	1333/66	447	600	998	10/4	K402_0200 MT20	3500	3300	5000	2.0	15.8
		466				K402_0200 MT30			4000	6.8	16.2
						K402_0200 MT40			3000	3000	3500
23.29	559/24	488	600	1100	10/4	K402_0230 MT20	3500	3300	5000	2.1	18.8
						K402_0230 MT30			4000	6.9	19.2
						K402_0230 MT40			3000	3000	3500
25.28	4171/165	460	600	1001	10/4	K402_0250 MT20	3500	3300	5000	1.7	16.2
		501				K402_0250 MT30			4000	6.5	16.4
						K402_0250 MT40			3000	3000	3500
27.77	1333/48	518	600	1100	10/4	K402_0280 MT20	3500	3300	5000	1.9	19.1
						K402_0280 MT30			4000	6.7	19.4
						K402_0280 MT40			3000	3000	3500
32.39	2494/77	393	393	491	10/5	K403_0320 MT20	3500	3300	5000	1.6	16.4
33.68	4816/143	389	467	634	10/4	K402_0340 MT20	3500	3300	5000	1.5	16.5
						K402_0340 MT30			4000	6.3	16.6
34.76	4171/120	550	600	1100	10/4	K402_0350 MT20	3500	3300	5000	1.7	19.4
						K402_0350 MT30			4000	6.5	19.6
						K402_0350 MT40			3000	3000	3500
35.72	13,717/384	448	448	560	10/5	K403_0360 MT20	3500	3300	5000	1.6	19.4
39.05	38,657/990	455	455	569	10/5	K403_0390 MT20	3500	3300	5000	1.5	16.6
40.51	4902/121	308	370	616	10/4	K402_0410 MT20	3500	3300	5000	1.4	16.6
						K402_0410 MT30			4000	6.2	16.7
44.54	1247/28	540	540	675	10/5	K403_0450 MT20	3500	3300	5000	1.5	19.6
46.31	602/13	535	600	872	10/4	K402_0460 MT20	3500	3300	5000	1.5	19.6
						K402_0460 MT30			4000	6.3	19.7
48.94	169,592/3465	550	552	690	10/5	K403_0490 MT20	3500	3300	5000	1.5	16.7
50.43	5547/110	270	323	459	10/4	K402_0500 MT20	3500	3300	5000	1.4	16.7

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL EL 1,2	EL 3,4,5,6	All		

K4 (continued from previous page)

53.69	38,657/720	550	600	783	10/5	K403_0540 MT20	3500	3300	5000	1.5	19.7
55.71	2451/44	424	508	847	10/4	K402_0560 MT20	3500	3300	5000	1.4	19.7
						K402_0560 MT30			4000	6.2	19.8
65.50	32,422/495	550	600	867	10/5	K403_0650 MT20	3500	3300	5000	1.4	16.8
66.35	26,273/396	272	272	340	10/5	K403_0660 MT10	3600	3300	5000	0.7	16.8
67.30	21,199/315	550	600	949	10/5	K403_0670 MT20	3500	3300	5000	1.4	19.8
68.17	34,357/504	279	279	349	10/5	K403_0680 MT10	3600	3300	5000	0.7	19.7
69.34	5547/80	371	445	631	10/4	K402_0690 MT20	3500	3300	5000	1.3	19.8
78.10	38,657/495	550	600	998	10/5	K403_0780 MT20	3500	3300	5000	1.4	16.8
79.11	62,651/792	324	324	405	10/5	K403_0790 MT10	3600	3300	5000	0.7	16.8
90.06	16,211/180	550	600	1100	10/5	K403_0900 MT20	3500	3300	5000	1.4	19.8
91.23	26,273/288	373	373	467	10/5	K403_0910 MT10	3600	3300	5000	0.7	19.8
107.4	38,657/360	550	600	1100	10/5	K403_1070 MT20	3500	3300	5000	1.4	19.8
108.8	62,651/576	445	445	557	10/5	K403_1090 MT10	3600	3300	5000	0.7	19.8
134.4	120,959/900	550	600	1100	10/5	K403_1340 MT20	3500	3300	5000	1.4	19.9
136.1	196,037/1440	517	557	697	10/5	K403_1360 MT10	3600	3300	5000	0.7	19.9
179.1	34,916/195	535	600	872	10/5	K403_1790 MT20	3500	3300	5000	1.4	19.9
181.4	14,147/78	535	600	872	10/5	K403_1810 MT10	3600	3300	5000	0.7	19.9
215.4	23,693/110	424	508	847	10/5	K403_2150 MT20	3500	3300	5000	1.4	19.9
218.2	38,399/176	424	508	847	10/5	K403_2180 MT10	3600	3300	5000	0.7	19.9
271.6	86,903/320	371	445	631	10/5	K403_2720 MT10	3600	3300	5000	0.7	19.9

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All		Nm	

K5 (continued next page)

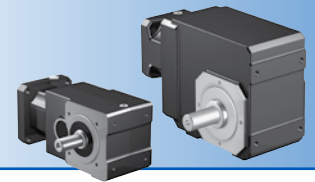
7.347	551/75	617	734	1258	10/5	K513_0073 MT30	1900	1800	3000	23.1	19.4
			1000			K513_0073 MT40				27.1	24.0
8.134	17,081/2100	638	813	1393	10/5	K513_0081 MT30	1900	1800	3000	21.2	20.8
			1000			K513_0081 MT40				25.2	25.0
9.168	1421/155	664	916	1523	10/5	K513_0092 MT30	1900	1800	3000	18.2	22.3
			1000			K513_0092 MT40				22.2	26.0
10.15	203/20	687	1000	1686	10/5	K513_0100 MT30	1900	1800	3000	17.0	23.5
						K513_0100 MT40				21.0	26.7
11.57	10,759/930	717	1000	1800	10/5	K513_0115 MT30	2300	2200	3600	14.5	24.8
						K513_0115 MT40			3500	18.5	27.5
12.81	1537/120	742	1000	1800	10/5	K513_0130 MT30	2300	2200	3600	13.7	25.7
						K513_0130 MT40			3500	17.7	28.0
14.54	5887/405	556	611	867	10/5	K513_0145 MT20	2300	2200	3600	7.2	24.7
		774	1000	1800		K513_0145 MT30			12.0	26.6	
			K513_0145 MT40	3500		16.0			28.6		
16.09	26,071/1620	615	677	960	10/5	K513_0160 MT20	2300	2200	3600	6.7	25.6
		801	1000	1800		K513_0160 MT30			11.5	27.3	
			K513_0160 MT40	3500		15.5			28.9		
17.48	6293/360	668	735	1013	10/5	K513_0175 MT20	2800	2500	4000	5.8	26.2
		823	1000	1800		K513_0175 MT30			10.6	27.7	
			K513_0175 MT40	3500		14.6			29.1		
19.35	27,869/1440	740	814	1121	10/5	K513_0195 MT20	2800	2500	4000	5.4	26.9
		851	1000	1800		K513_0195 MT30			10.2	28.2	
			K513_0195 MT40	3500		14.2			29.4		
21.99	2639/120	800	925	1217	10/5	K513_0220 MT20	2800	2500	4000	4.4	27.7
		888	1000	1800		K513_0220 MT30			9.2	28.7	
			K513_0220 MT40	3500		13.2			29.6		
24.35	11,687/480	886		1348	10/5	K513_0240 MT20	2800	2500	4000	4.2	28.2
		900	1000	1800		K513_0240 MT30			9.0	29.0	
			K513_0240 MT40	3500		13.0			29.8		
29.18	4669/160	850		1527	10/5	K513_0290 MT20	3400	3000	4500	3.3	28.8
		900	1000	1800		K513_0290 MT30			4000	8.1	29.5
			K513_0290 MT40	3000		3500	12.1	30.0			
32.31	20,677/640	900		1691	10/5	K513_0320 MT20	3400	3000	4500	3.2	29.1
			1000	1800		K513_0320 MT30			4000	8.0	29.7
			K513_0320 MT40	3000		3500	12.0	30.1			
34.80	174/5	886			10/5	K513_0350 MT20	3400	3000	4500	2.8	29.3
		900	1000	1762		K513_0350 MT30			4000	7.6	29.8
			K513_0350 MT40	3000		3500	11.6	30.2			

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

K5 (continued from previous page)

38.53	2697/70	900	1000	1800	10/5	K513_0390 MT20	3400	3000	4500	2.7	29.5
						K513_0390 MT30			4000	7.5	29.9
						K513_0390 MT40	3000		3500	11.5	30.2
43.50	87/2	900	1000	1,800	10/5	K513_0440 MT20	3400	3000	4500	2.3	29.8
						K513_0440 MT30			4000	7.1	30.1
						K513_0440 MT40	3000		3500	11.1	30.3
48.16	2697/56	900	1000	1,800	10/5	K513_0480 MT20	3400	3000	4500	2.2	29.9
						K513_0480 MT30			4000	7.0	30.1
						K513_0480 MT40	3000		3500	11.0	30.3
58.30	11,368/195	900	1000	1,800	10/5	K513_0580 MT20	3400	3000	4500	1.9	30.1
						K513_0580 MT30			4000	6.7	30.3
						K513_0580 MT40	3000		3500	10.7	30.4
64.54	12,586/195	900	1000	1,800	10/5	K513_0650 MT20	3400	3000	4500	1.8	30.2
						K513_0650 MT30			4000	6.6	30.3
						K513_0650 MT40	3000		3500	10.6	30.4
70.08	841/12	821	985	1,291	10/5	K513_0700 MT20	3400	3000	4500	1.7	30.2
						K513_0700 MT30			4000	6.5	30.3
77.59	26,071/336	900	1000	1,430	10/5	K513_0780 MT20	3400	3000	4500	1.7	30.3
						K513_0780 MT30			4000	6.5	30.4
85.03	76,531/900	900	974	1,217	10/6	K514_0850 MT20	3400	3000	4500	1.6	30.3
87.29	8729/100	689	827	1,378	10/5	K513_0870 MT20	3400	3000	4500	1.5	30.3
						K513_0870 MT30			4000	6.3	30.4
94.15	338,923/3600	900	1000	1,347	10/6	K514_0940 MT20	3400	3000	4500	1.6	30.4
96.64	38,657/400	763	916	1,527	10/5	K513_0970 MT20	3400	3000	4500	1.5	30.4
						K513_0970 MT30			4000	6.3	
112.8	135,401/1200	900	1000	1,527	10/6	K514_1130 MT20	3400	3000	4500	1.5	30.4
124.9	599,633/4800	900	1000	1,691	10/6	K514_1250 MT20	3400	3000	4500	1.5	30.4
134.6	3364/25	900	1000	1,762	10/6	K514_1350 MT20	3400	3000	4500	1.5	30.5
149.0	26,071/175	900	1000	1,800	10/6	K514_1490 MT20	3400	3000	4500	1.5	30.5
168.2	841/5	900	1000	1,800	10/6	K514_1680 MT20	3400	3000	4500	1.4	30.5
186.2	26,071/140	900	1000	1,800	10/6	K514_1860 MT20	3400	3000	4500	1.4	30.5
225.4	659,344/2925	900	1000	1,800	10/6	K514_2250 MT20	3400	3000	4500	1.4	30.5
249.6	729,988/2925	900	1000	1,800	10/6	K514_2500 MT20	3400	3000	4500	1.4	30.5
271.0	24,389/90	821	985	1,291	10/6	K514_2710 MT20	3400	3000	4500	1.4	30.5
300.0	756,059/2520	900	1000	1,430	10/6	K514_3000 MT20	3400	3000	4500	1.4	30.5
337.5	253,141/750	689	827	1,378	10/6	K514_3380 MT20	3400	3000	4500	1.4	30.5
373.7	1,121,053/3000	763	916	1,527	10/6	K514_3740 MT20	3400	3000	4500	1.4	30.5

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All		Nm	

K6 (continued next page)

7.323	19,215/2624	665	732	1,296	10/5	K613_0073 MT30	1800	1700	2900	37.9	24.4
		814	1037			K613_0073 MT40				41.9	32.2
			1375	2,476		K613_0073 MT50				51.9	39.9
8.107	85,095/10,496	736	810	1,434	10/5	K613_0081 MT30	1800	1700	2900	34.9	26.6
		842	1148			K613_0081 MT40				38.8	33.9
			1422	2,741		K613_0081 MT50				48.9	40.8
9.081	20,923/2304	825	907	1561	10/5	K613_0091 MT30	1800	1700	2900	28.8	29.0
		874	1248			K613_0091 MT40				32.8	35.7
			1477	2900		K613_0091 MT50				42.8	41.6
10.05	92,659/9216		1004	1728	10/5	K613_0100 MT30	1800	1700	2900	26.8	31.1
			1382			K613_0100 MT40				30.8	37.2
			1528	2900		K613_0100 MT50				40.8	42.2
11.41	22,631/1984		1140	1895	10/5	K613_0115 MT30	2200	2000	3200	22.1	33.4
			1516			K613_0115 MT40				26.1	38.7
						K613_0115 MT50			3000	36.1	42.8
12.63	3233/256		1262	2098	10/5	K613_0125 MT30	2200	2000	3200	20.9	35.1
			1600			K613_0125 MT40				24.9	39.7
						K613_0125 MT50			3000	34.9	43.2
14.33	12,383/864		1432	2301	10/5	K613_0145 MT30	2200	2000	3200	17.4	36.9
			1600			K613_0145 MT40				21.4	40.8
						K613_0145 MT50			3000	31.4	43.6
15.87	54,839/3456		1585	2547	10/5	K613_0160 MT30	2200	2000	3200	16.6	38.2
			1600			K613_0160 MT40				20.6	41.5
						K613_0160 MT50			3000	30.6	43.9
17.16	549/32	656	722	1029	10/5	K613_0170 MT20	2600	2300	3600	9.7	36.0
						K613_0170 MT30				14.5	39.0
		1081	1600	2655		K613_0170 MT40			3500	18.5	42.0
						K613_0170 MT50			3000	28.5	44.1
18.99	17,019/896	726	799	1140	10/5	K613_0190 MT20	2600	2300	3600	9.2	37.4
						K613_0190 MT30				14.0	40.0
		1118	1600	2900		K613_0190 MT40			3500	18.0	42.5
						K613_0190 MT50			3000	28.0	44.2
21.68	5551/256	829	912	1252	10/5	K613_0220 MT20	2600	2300	3600	7.3	39.0
						K613_0220 MT30				12.1	41.1
		1169	1600	2900		K613_0220 MT40			3500	16.1	43.1
						K613_0220 MT50			3000	26.1	44.4
24.01	24583/1024	918	1010	1386	10/5	K613_0240 MT20	2600	2300	3600	6.9	40.0
						K613_0240 MT30				11.7	41.8
		1209	1600	2900		K613_0240 MT40			3500	15.7	43.5
						K613_0240 MT50			3000	25.7	44.6

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

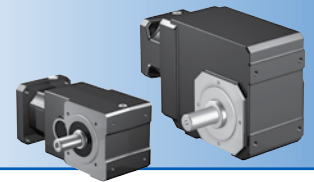
³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



DISTRIBUIDOR
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Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 3,4,5,6	All			

K6 (continued next page)

28.77	29463/1024	992	1210	1571	10/5	K613_0290 MT20	3100	2800	4000	5.1	41.4	
						K613_0290 MT30				9.9	42.7	
		1284	1600	2900		K613_0290 MT40	3000	3500	13.9	43.9		
						K613_0290 MT50	2500	2500	3000	23.9	44.7	
31.86	130,479/4096	1098	1340	1739	10/5	K613_0320 MT20	3100	2800	4000	4.9	42.0	
						K613_0320 MT30				3000	3500	13.7
		1328	1600	2900		K613_0320 MT40	2500	2500	3000	23.7	44.8	
						K613_0320 MT50						
34.61	35,441/1024	1008	1449	1812	10/5	K613_0350 MT20	3100	2800	4000	4.1	42.5	
						K613_0350 MT30				3000	3500	12.9
		1366	1600	2900		K613_0350 MT40	2500	2500	3000	22.9	44.8	
						K613_0350 MT50						
38.32	156,953/4096	1116	1600	2006	10/5	K613_0380 MT20	3100	2800	4000	3.9	42.9	
										K613_0380 MT30	3000	3500
		1413	2900			K613_0380 MT40	2500	2500	3000	22.7	44.9	
						K613_0380 MT50						
43.11	8967/208	1035	1600	2150	10/5	K613_0430 MT20	3100	2800	4000	3.2	43.4	
											K613_0430 MT30	3000
		1450						K613_0430 MT40				
47.73	39,711/832	1146	1600	2381	10/5	K613_0480 MT20	3100	2800	4000	3.1	43.7	
											K613_0480 MT30	3000
		1450						K613_0480 MT40				
57.55	29,463/512	1077	1600	2697	10/5	K613_0580 MT20	3100	2800	4000	2.4	44.1	
											K613_0580 MT30	3000
		1450						K613_0580 MT40				
63.71	130,479/2048	1193	1600	2900	10/5	K613_0640 MT20	3100	2800	4000	2.4	44.3	
											K613_0640 MT30	3000
		1450						K613_0640 MT40				
68.77	28,609/416	1101	1577	2628	10/5	K613_0690 MT20	3100	2800	4000	2.1	44.4	
											K613_0690 MT30	3000
		1314						K613_0690 MT40				
76.14	126,697/1664	1219	1600	2900	10/5	K613_0760 MT20	3100	2800	4000	2.1	44.5	
											K613_0760 MT30	3000
		1450						K613_0760 MT40				
83.84	160,979/1920	1001	1001	1252	10/6	K614_0840 MT20	3100	2800	4000	1.8	44.6	
86.18	66,185/768	971	1165	1568	10/5	K613_0860 MT20	3100	2800	4000	1.8	44.6	
												K613_0860 MT30
92.83	712,907/7680	1109	1109	1386	10/6	K614_0930 MT20	3100	2800	4000	1.7	44.7	
95.41	293,105/3072	1075	1290	1736	10/5	K613_0950 MT20	3100	2800	4000	1.8	44.7	
												K613_0950 MT30

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

K6 (continued from previous page)

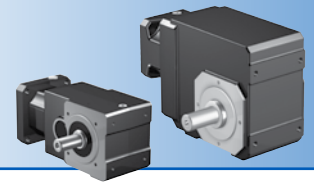
111.3	284,809/2560	1257	1257	1571	10/6	K614_1110 MT20	3100	2800	4000	1.6	44.8
123.2	1,261,297/10,240	1391	1391	1739	10/6	K614_1230 MT20	3100	2800	4000	1.6	44.9
133.8	1,027,789/7680	1449	1449	1812	10/6	K614_1340 MT20	3100	2800	4000	1.6	44.9
148.2	4,551,637/30,720	1450	1600	2006	10/6	K614_1480 MT20	3100	2800	4000	1.6	44.9
166.7	86,681/520	1450	1600	2150	10/6	K614_1670 MT20	3100	2800	4000	1.5	45.0
184.6	383,873/2080	1450	1600	2381	10/6	K614_1850 MT20	3100	2800	4000	1.5	45.0
222.5	284,809/1280	1450	1600	2697	10/6	K614_2230 MT20	3100	2800	4000	1.5	45.0
246.3	1,261,297/5120	1450	1600	2900	10/6	K614_2460 MT20	3100	2800	4000	1.4	45.0
265.9	829,661/3120	1314	1577	2628	10/6	K614_2660 MT20	3100	2800	4000	1.4	45.0
294.4	3,674,213/12,480	1450	1600	2900	10/6	K614_2940 MT20	3100	2800	4000	1.4	45.1
333.2	383,873/1152	971	1165	1568	10/6	K614_3330 MT20	3100	2800	4000	1.4	45.1
368.9	1,700,009/4608	1075	1290	1736	10/6	K614_3690 MT20	3100	2800	4000	1.4	45.1

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Continuous	Cyclic			
Nom.	Exact					EL 1,2	EL 3,4,5,6	All			

K7 (continued next page)

7.563	19,845/2624	687	756	1374	10/5	K713_0076 MT30	1700	1600	2700	71.2	33.4
		1111	1111	1388		K713_0076 MT40				75.2	48.3
		1346	2122	2653		K713_0076 MT50				85.2	66.7
8.373	87,885/10,496	760	836	1521	10/5	K713_0084 MT30	1700	1600	2700	66.4	37.4
		1230	1230	1537		K713_0084 MT40				70.4	52.2
		1393	2349	2937		K713_0084 MT50				80.4	68.9
9.188	147/16	834	918	1639	10/5	K713_0092 MT30	1700	1600	2700	54.4	41.2
		1311	1311			K713_0092 MT40				58.4	55.6
		1436	2427	3131		K713_0092 MT50				68.4	70.7
10.17	651/64	924	1016	1814	10/5	K713_0100 MT30	1700	1600	2700	51.2	45.3
		1451	1451			K713_0100 MT40				55.2	59.0
		1486	2510	3467		K713_0100 MT50				65.2	72.4
11.78	23,373/1984	1070	1177	2024	10/5	K713_0120 MT30	2000	1900	3000	39.2	51.0
		1561	1619			K713_0120 MT40				43.2	63.4
			2600	3868		K713_0120 MT50				53.2	74.5
13.04	3339/256	1185	1303	2241	10/5	K713_0130 MT30	2000	1900	3000	37.2	54.8
		1614	1793			K713_0130 MT40				41.2	66.1
			2600	4282		K713_0130 MT50				51.2	75.6
14.80	1421/96	1344	1479	2457	10/5	K713_0150 MT30	2000	1900	3000	29.8	59.1
		1684	1965			K713_0150 MT40				33.8	68.9
			2600	4694		K713_0150 MT50				43.8	76.8
16.39	6293/384	1488	1637	2720	10/5	K713_0165 MT30	2000	1900	3000	28.5	62.2
		1742	2176			K713_0165 MT40				32.5	70.9
			2600	4800		K713_0165 MT50				42.5	77.6
18.28	26,901/1472	1660	1826	2914	10/5	K713_0185 MT30	2400	2200	3400	23.8	65.2
		1806	2331			K713_0185 MT40				27.8	72.7
			2600	4800		K713_0185 MT50			3000	37.8	78.2
20.23	119,133/5888	1838	2021	3226	10/5	K713_0200 MT30	2400	2200	3400	23.0	67.6
		1869	2581			K713_0200 MT40				27.0	74.1
			2600	4800		K713_0200 MT50			3000	37.0	78.8
22.74	14,553/640	1828	2272	3476	10/5	K713_0230 MT30	2400	2200	3400	18.8	70.1
		1943	2600			K713_0230 MT40				22.8	75.5
			4800			K713_0230 MT50			3000	32.8	79.3
25.18	64,449/2560	2010	2515	3849	10/5	K713_0250 MT30	2400	2200	3400	18.2	71.9
			2600			K713_0250 MT40				22.2	76.5
			4800			K713_0250 MT50			3000	32.2	79.6
29.29	7497/256	1937		4264	10/5	K713_0290 MT30	2900	2600	3800	14.5	74.1
		2114	2600			K713_0290 MT40				3500	18.5
			4800			K713_0290 MT50			2500	2500	3000

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

K7 (continued next page)

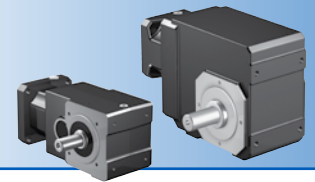
32.42	33,201/1024	2145	2600	4721	10/5	K713_0320 MT30	2900	2600	3800	14.2	75.3	
		2187		4800		K713_0320 MT40			3500		18.2	78.3
						K713_0320 MT50			3000		28.2	80.2
35.44	567/16	1994	2600	4800	10/5	K713_0350 MT30	2900	2600	3800	12.2	76.2	
		2253				K713_0350 MT40			3500		16.2	78.7
						K713_0350 MT50			3000		26.2	80.4
39.23	2511/64	2208	2600	4800	10/5	K713_0390 MT30	2900	2600	3800	12.0	77.1	
		2330				K713_0390 MT40			3500		16.0	79.2
						K713_0390 MT50			3000		26.0	80.5
45.05	37,485/832	2060	2600	4800	10/5	K713_0450 MT30	2900	2600	3800	10.2	78.0	
		2400				K713_0450 MT40			3500		14.2	79.6
						K713_0450 MT50			3000		24.2	80.7
49.88	166,005/3328	2281	2600	4800	10/5	K713_0500 MT30	2900	2600	3800	10.1	78.6	
		2400				K713_0500 MT40			3500		14.1	79.9
						K713_0500 MT50			3000		24.1	80.8
58.57	7497/128	2148	2600	4800	10/5	K713_0590 MT30	2900	2600	3800	8.7	79.3	
		2400				K713_0590 MT40			3500		12.7	80.3
						K713_0590 MT50			3000		22.7	80.9
64.85	33,201/512	2378	2600	4800	10/5	K713_0650 MT30	2900	2600	3800	8.6	79.6	
		2400				K713_0650 MT40			3500		12.6	80.4
						K713_0650 MT50			3000		22.6	80.9
71.20	4557/64	2173	2600	3314	10/5	K713_0710 MT30	2900	2600	3800	7.9	79.9	
											K713_0710 MT40	3500
78.83	20,181/256	2400	2600	3669	10/5	K713_0790 MT30	2900	2600	3800	7.8	80.1	
											K713_0790 MT40	3500
89.00	22,785/256	1671	2005	3342	10/5	K713_0890 MT30	2900	2600	3800	7.3	80.3	
											K713_0890 MT40	3500
89.06	227,997/2560	2400	2600	3476	10/6	K714_0890 MT30	2900	2600	3800	7.3	80.3	
98.54	100,905/1024	1851	2221	3701	10/5	K713_0990 MT30	2900	2600	3800	7.2	80.5	
											K713_0990 MT40	3500
98.60	1,009,701/10,240	2400	2600	3849	10/6	K714_0990 MT30	2900	2600	3800	7.2	80.5	

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

K7 (continued from previous page)

113.2	72,471/640	1323	1323	1653	10/6	K714_1130 MT20	2900	2600	3800	1.9	80.3
114.7	117,453/1024	2400	2600	4264	10/6	K714_1150 MT30	2900	2600	3800	7.0	80.7
125.4	320,943/2560	1464	1464	1830	10/6	K714_1250 MT20	2900	2600	3800	1.9	80.5
127.0	520,149/4096	2400	2600	4721	10/6	K714_1270 MT30	2900	2600	3800	7.0	80.8
137.0	5481/40	1537	1537	1921	10/6	K714_1370 MT20	2900	2600	3800	1.8	80.6
138.8	8883/64	2400	2600	4800	10/6	K714_1390 MT30	2900	2600	3800	6.9	80.8
151.7	24,273/160	1702	1702	2127	10/6	K714_1520 MT20	2900	2600	3800	1.8	80.7
153.7	39,339/256	2400	2600	4800	10/6	K714_1540 MT30	2900	2600	3800	6.8	80.9
174.2	72,471/416	1855	1855	2319	10/6	K714_1740 MT20	2900	2600	3800	1.7	80.8
176.5	587,265/3328	2400	2600	4800	10/6	K714_1760 MT30	2900	2600	3800	6.7	80.9
192.9	320,943/1664	2054	2054	2567	10/6	K714_1930 MT20	2900	2600	3800	1.6	80.9
195.4	2,600,745/13,312	2400	2600	4800	10/6	K714_1950 MT30	2900	2600	3800	6.7	81.0
226.5	72,471/320	2009	2282	2853	10/6	K714_2260 MT20	2900	2600	3800	1.5	81.0
229.4	117,453/512	2400	2600	4800	10/6	K714_2290 MT30	2900	2600	3800	6.6	81.0
250.7	320,943/1280	2225	2527	3159	10/6	K714_2510 MT20	2900	2600	3800	1.5	81.0
254.0	520,149/2048	2400	2600	4800	10/6	K714_2540 MT30	2900	2600	3800	6.6	81.1
275.3	44,051/160	2073	2600	3314	10/6	K714_2750 MT20	2900	2600	3800	1.5	81.0
304.8	195,083/640	2295	2600	3669	10/6	K714_3050 MT20	2900	2600	3800	1.5	81.0
344.1	44051/128	1671	2005	3342	10/6	K714_3440 MT20	2900	2600	3800	1.5	81.1
381.0	195,083/512	1851	2221	3701	10/6	K714_3810 MT20	2900	2600	3800	1.4	81.1

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

K8 (continued next page)

7.445	3127/420	676	744	1352	10/5	K813_0074 MT30	1600	1500	2600	161.2	39.5
		1147	1147	1434		K813_0074 MT40				165.2	63.7
		2192	2192	2740		K813_0074 MT50				175.2	101.6
8.243	96,937/11,760	749	823	1497	10/5	K813_0082 MT30	1600	1500	2600	142.9	45.6
		1270	1270	1588		K813_0082 MT40				146.9	70.8
		2398	2427	3034		K813_0082 MT50				156.9	107.2
9.284	11,977/1290	843	927	1686	10/5	K813_0093 MT30	1600	1500	2600	115.5	53.2
		1385	1385	1731		K813_0093 MT40				119.5	79.2
		2495	2646	3308		K813_0093 MT50				129.5	113.0
10.28	53,041/5160	934	1027	1867	10/5	K813_0105 MT30	1600	1500	2600	103.7	60.1
		1533	1533	1916		K813_0105 MT40				107.7	86.2
		2581	2930	3662		K813_0105 MT50				117.7	117.3
11.91	6608/555	1081	1189	2138	10/5	K813_0120 MT30	1900	1800	2900	80.6	70.4
		1710	1710			K813_0120 MT40				84.6	95.7
		2711	3268	4085		K813_0120 MT50				94.6	122.6
13.18	7316/555	1197	1317	2367	10/5	K813_0130 MT30	1900	1800	2900	73.4	77.6
		1894	1894			K813_0130 MT40				77.4	101.8
		2804	3619	4523		K813_0130 MT50				87.4	125.7
14.84	9499/640	1348	1483	2570	10/5	K813_0150 MT30	1900	1800	2900	59.2	85.8
		2056	2056			K813_0150 MT40				63.2	108.2
		2917	3929	4911		K813_0150 MT50				73.2	128.7
16.43	42,067/2560	1492	1642	2845	10/5	K813_0165 MT30	1900	1800	2900	54.6	92.5
		2276	2276			K813_0165 MT40				58.6	113.1
		3018	4350	5437		K813_0165 MT50				68.6	130.9
17.33	30,149/1740	1574	1731	2928	10/5	K813_0175 MT30	2300	2100	3300	48.4	95.8
		2342	2342			K813_0175 MT40				52.4	115.4
		3072	4475	5594		K813_0175 MT50			3000	62.4	131.8
19.18	133,517/6960	1742	1916	3241	10/5	K813_0190 MT30	2300	2100	3300	45.1	101.8
		2593	2593			K813_0190 MT40				49.1	119.4
		3178	4650	6193		K813_0190 MT50			3000	59.1	133.5
23.04	31,801/1380	2093	2302	3674	10/5	K813_0230 MT30	2300	2100	3300	33.8	111.4
		2939	2939			K813_0230 MT40				37.8	125.4
		3378	4650	7021		K813_0230 MT50			3000	47.8	135.8
25.51	140,833/5520	2317	2549	4068	10/5	K813_0260 MT30	2300	2100	3300	31.9	115.9
		3254	3254			K813_0260 MT40				35.9	128.1
		3495	4650	7773		K813_0260 MT50			3000	45.9	136.8
29.25	7021/240	2352	2923	4473	10/5	K813_0290 MT30	2800	2500	3600	24.9	121.2
		3578	3578			K813_0290 MT40				3500	28.9
		3658	4650	8400		K813_0290 MT50			3000	38.9	137.9

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

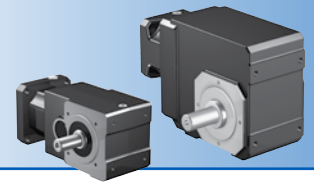
³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



DISTRIBUIDOR
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Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM Nm	Acceleration M _{2B} Nm	Peak ²⁾ M _{2PEAK} Nm			Continuous	Cyclic			
Nom.	Exact					EL 1,2	EL 3,4,5,6	All			

K8 (continued next page)

32.39	31,093/960	2604	3236	4952	10/5	K813_0320 MT30	2800	2500	3600	23.7	124.4
		3784	3961			K813_0320 MT40			3500	27.7	132.8
			4650	8400		K813_0320 MT50	2500		3000	37.7	138.5
36.14	2891/80	2391	3610	5262	10/5	K813_0360 MT30	2800	2500	3600	19.4	127.4
		3925	4210			K813_0360 MT40			3500	23.4	134.4
			4650	8400		K813_0360 MT50	2500		3000	33.4	139.1
40.01	12,803/320	2647	3997	5826	10/5	K813_0400 MT30	2800	2500	3600	18.6	129.8
		4060	4650			K813_0400 MT40			3500	22.6	135.6
			8400			K813_0400 MT50	2500		3000	32.6	139.5
44.25	177/4	2490	4421	6188	10/5	K813_0440 MT30	2800	2500	3600	15.5	131.8
		4199	4650			K813_0440 MT40			3500	19.5	136.6
						K813_0440 MT50	2500		3000	29.5	139.8
48.99	5487/112	2757	4650	6851	10/5	K813_0490 MT30	2800	2500	3600	15.0	133.4
		4200				K813_0490 MT40			3500	19.0	137.5
						K813_0490 MT50	2500		3000	29.0	140.1
59.08	42,539/720	2565	4650	7743	10/5	K813_0590 MT30	2800	2500	3600	11.8	135.8
		4200				K813_0590 MT40			3500	15.8	138.7
						K813_0590 MT50	2500		3000	25.8	140.5
65.41	188,387/2880	2840	4650	8400	10/5	K813_0650 MT30	2800	2500	3600	11.5	136.8
		4200				K813_0650 MT40			3500	15.5	139.2
						K813_0650 MT50	2500		3000	25.5	140.7
66.83	38,763/580	4200	4476	5594	10/6	K814_0670 MT40	2800	2500	3500	14.5	139.3
71.70	10,325/144	2629	4326	7210	10/5	K813_0720 MT30	2800	2500	3600	10.1	137.5
		3605				K813_0720 MT40			3500	14.1	139.5
						K813_0720 MT50	2500		3000	24.1	140.8
73.99	1,201,653/16,240	4200	4650	6194	10/6	K814_0740 MT40	2800	2500	3500	14.3	139.6
79.38	45725/576	2911	4650	7985	10/5	K813_0790 MT30	2800	2500	3600	9.9	138.2
		3992				K813_0790 MT40			3500	13.9	139.9
						K813_0790 MT50	2500		3000	23.9	140.9
87.76	7021/80	2682	3268	4085	10/5	K813_0880 MT30	2800	2500	3600	8.9	138.8
		2804				K813_0880 MT40			3500	12.9	140.1
88.89	40,887/460	4200	4650	7021	10/6	K814_0890 MT40	2800	2500	3500	13.5	140.2
97.17	31,093/320	2969	3618	4522	10/5	K813_0970 MT30	2800	2500	3600	8.7	139.3
		3105				K813_0970 MT40			3500	12.7	140.4
98.41	181,071/1840	4200	4650	7774	10/6	K814_0980 MT40	2800	2500	3500	13.4	140.4

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

K8 (continued from previous page)

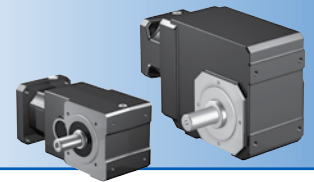
112.8	9027/80	4200	4650	8400	10/6	K814_1130 MT40	2800	2500	3500	12.9	140.6
114.6	329,987/2880	3282	3578	4472	10/6	K814_1150 MT30	2800	2500	3600	7.7	139.8
124.9	279,837/2240	4200	4650	8400	10/6	K814_1250 MT40	2800	2500	3500	12.8	140.8
126.9	1,461,371/11,520	3634	3961	4951	10/6	K814_1270 MT30	2800	2500	3600	7.7	140.1
139.4	11,151/80	4200	4650	8400	10/6	K814_1390 MT40	2800	2500	3500	12.5	140.9
141.5	135,877/960	3402	4209	5262	10/6	K814_1420 MT30	2800	2500	3600	7.4	140.4
154.3	49,383/320	4200	4650	8400	10/6	K814_1540 MT40	2800	2500	3500	12.5	141.0
156.7	601,741/3840	3767	4650	5825	10/6	K814_1570 MT30	2800	2500	3600	7.3	140.6
170.7	4779/28	4200	4650	6188	10/6	K814_1710 MT40	2800	2500	3500	12.3	141.0
173.3	2773/16	3602	4650	6188	10/6	K814_1730 MT30	2800	2500	3600	7.1	140.7
189.0	148,149/784	4200	4650	6851	10/6	K814_1890 MT40	2800	2500	3500	12.2	141.1
191.9	85,963/448	3988	4650	6851	10/6	K814_1920 MT30	2800	2500	3600	7.1	140.8
227.9	18,231/80	4200	4650	7744	10/6	K814_2280 MT40	2800	2500	3500	12.0	141.2
231.4	1,999,333/8640	3807	4650	7743	10/6	K814_2310 MT30	2800	2500	3600	6.9	141.0
252.3	565,161/2240	4200	4650	8400	10/6	K814_2520 MT40	2800	2500	3500	12.0	141.2
256.2	8,854,189/34,560	4200	4650	8400	10/6	K814_2560 MT30	2800	2500	3600	6.9	141.1
276.6	4425/16	3605	4326	7210	10/6	K814_2770 MT40	2800	2500	3500	11.9	141.2
280.8	485,275/1728	3605	4326	7210	10/6	K814_2810 MT30	2800	2500	3600	6.8	141.1
306.2	137,175/448	3992	4650	7985	10/6	K814_3060 MT40	2800	2500	3500	11.9	141.3
310.9	2,149,075/6912	3992	4650	7985	10/6	K814_3110 MT30	2800	2500	3600	6.8	141.2

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

K9 (continued next page)

7.934	54,839/6912	2456	2456	3070	10/5	K913_0079 MT50	1500	1500	2500	351.2	139.1
10.12	119,133/11,776	3020	3020	3775	10/5	K913_0100 MT50	1500	1500	2500	248.9	159.9
12.53	73,749/5888	3631	3631	4538	10/5	K913_0125 MT50	1800	1800	2800	186.8	174.4
15.91	13,237/832	4425	4425	5532	10/5	K913_0160 MT50	1800	1800	2800	135.0	186.5
19.06	305/16	5137	5137	6421	10/5	K913_0190 MT50	2200	2100	3000	108.9	193.2
23.94	88,877/3712	3236	3236	4045	10/5	K913_0240 MT40	2200	2100	3100	73.1	178.9
		6184	6184	7730		K913_0240 MT50			3000	83.1	199.1
32.12	47,275/1472	4097	4097	5121	10/5	K913_0320 MT40	2600	2500	3400	50.5	191.6
		6849	7700	9785		K913_0320 MT50			2500	3000	60.5
38.04	194,773/5120	4686	4686	5857	10/5	K913_0380 MT40	2600	2500	3400	40.9	196.6
		7000	7700	11,193		K913_0380 MT50			2500	3000	50.9
48.94	100,223/2048	5675	5701	7126	10/5	K913_0490 MT40	2600	2500	3400	30.6	201.8
		7000	7700	13,617		K913_0490 MT50			2500	3000	40.6
63.07	209,901/3328	5855	6950	8687	10/5	K913_0630 MT40	2600	2500	3400	23.5	205.1
		7000	7700	14,000		K913_0630 MT50			2500	3000	33.5
75.00	62,403/832	6011	7700	9958	10/5	K913_0750 MT40	2600	2500	3400	19.9	206.6
		7000				K913_0750 MT50			2500	3000	29.9
92.35	2,399,679/25,984	6184	6184	7730	10/5	K914_0920 MT40	2600	2500	3400	15.9	207.9
93.78	4,177,219/44,544	2862	3236	4045	10/5	K914_0940 MT30	2600	2500	3400	10.6	205.3
95.41	293,105/3072	5376	6451	10,752	10/5	K913_0950 MT40	2600	2500	3400	16.4	208.0
						K913_0950 MT50			2500	3000	26.4

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs



K/KL Series: RIGHT ANGLE – Versatile Outputs

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

K9 (continued from previous page)

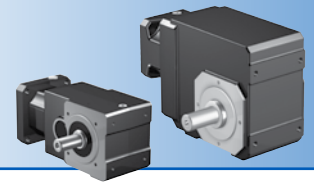
123.9	1,276,425/10,304	6882	7700	9785	10/5	K914_1240 MT40	2600	2500	3400	14.4	208.9
125.8	2,221,925/17,664	3840	4096	5120	10/5	K914_1260 MT30	2600	2500	3400	9.1	207.5
146.7	5,258,871/35,840	7000	7700	11,193	10/5	K914_1470 MT40	2600	2500	3400	13.7	209.3
149.0	9,154,331/61,440	4378	4685	5857	10/5	K914_1490 MT30	2600	2500	3400	8.5	208.3
188.8	2,706,021/14,336	7000	7700	13,617	10/5	K914_1890 MT40	2600	2500	3400	13.0	209.7
191.7	4,710,481/24,576	4607	5700	7125	10/5	K914_1920 MT30	2600	2500	3400	7.8	209.1
243.3	5,667,327/23,296	7000	7700	14,000	10/5	K914_2430 MT40	2600	2500	3400	12.5	210.0
247.0	3,288,449/13,312	4861	6949	8687	10/5	K914_2470 MT30	2600	2500	3400	7.4	209.6
293.8	977,647/3328	5064	7700	9,957	10/5	K914_2940 MT30	2600	2500	3400	7.1	209.8
373.7	13,775,935/36,864	5281	6451	10,752	10/5	K914_3740 MT30	2600	2500	3400	6.9	210.0

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins) ³⁾	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

K10

31.5	144,305/4576	8038	8038	10,047	10/5	K1013_0320 MT50	2500	2300	3000	117.3	434.2
38.6	8029/208	9437	9437	11,796	10/5	K1013_0390 MT50	2500	2300	3000	90.1	444.1
48.5	171,647/3536	11299	11,299	14,123	10/5	K1013_0490 MT50	2500	2300	3000	68.2	451.7
61.6	12803/208	11893	13,200	16,997	10/5	K1013_0620 MT50	2500	2300	3000	52.2	456.8
75.3	101,773/1352	11336	13,200	19,813	10/5	K1013_0750 MT50	2500	2300	3000	42.6	459.6
93.3	252,399/2704	10806	12,786	15,983	10/5	K1014_0930 MT50	2500	2300	3000	32.7	461.6
94.3	235,445/2496	9352	9890	12,363	10/5	K1013_0940 MT50	2500	2300	3000	35.1	461.7
121.6	556,605/4576	7937	8038	10,047	10/5	K1014_1220 MT40	2500	2300	3200	18.4	458.5
123.7	7,359,555/59,488	12000	13,200	20,036	10/5	K1014_1240 MT50	2500	2300	3000	29.3	463.3
148.9	30,969/208	8361	9437	11,797	10/5	K1014_1490 MT40	2500	2300	3200	16.5	460.8
151.4	409,479/2704	12000	13,200	23,524	10/5	K1014_1510 MT50	2500	2300	3000	27.5	464.0
187.2	662,067/3536	8811	11,299	14,124	10/5	K1014_1870 MT40	2500	2300	3200	15.1	462.5
190.4	514,941/2704	12000	13,200	24,000	10/5	K1014_1900 MT50	2500	2300	3000	26.1	464.5
237.4	49,383/208	9256	13,200	16,998	10/5	K1014_2370 MT40	2500	2300	3200	14.0	463.6
290.4	392,553/1352	9525	13,200	19,813	10/5	K1014_2900 MT40	2500	2300	3200	13.3	464.2

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Backlash shown standard/reduced

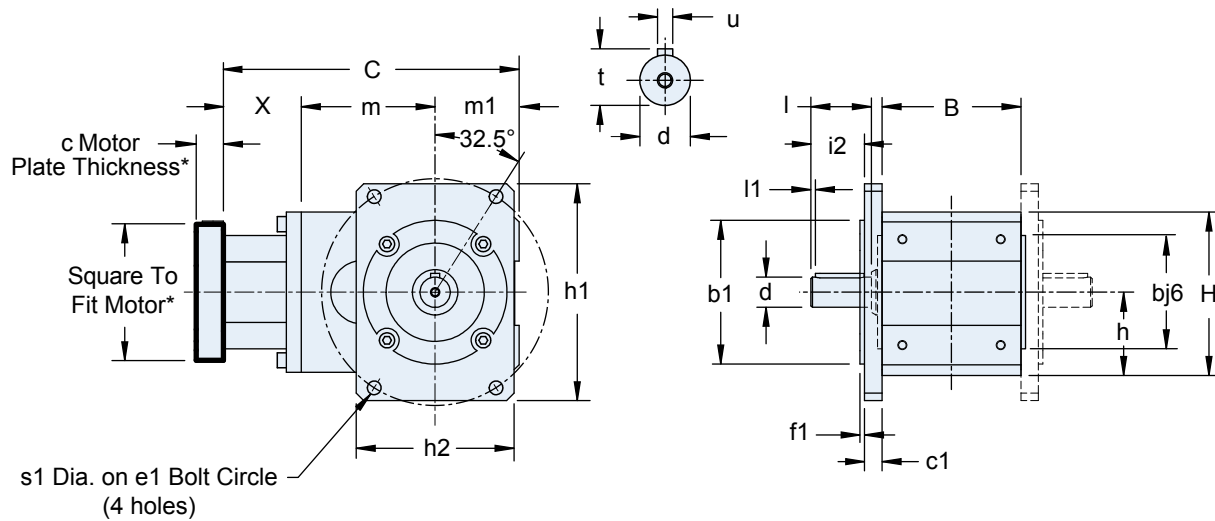
* Motor adapter order code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

K/KL Series: RIGHT ANGLE — Versatile Outputs

K/KL Series: RIGHT ANGLE — Versatile Outputs

KL Series with “P” or “G” Solid Shaft Output Option

“F” Output Flange Housing Option



* See Motor Mounting Plate Option, page 170 for details.
** See Output Shaft Options, page xx for details.

Table 1 KL Series Unit Dimensions (mm) – “F” Round Flange Housing Option

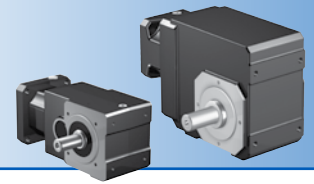
Unit	B	b1	bj6	C	c1	e1	f1	H	h	h1	h2	i2	l	l1	m	m1	s1	X
KL1	75	60	60	160	11.5	130	3	90	46	128.5	88.5	26.5	32	3	67.5	46	9	46.5
KL2	92	95	75	195	11.5	150	3	108	55	143.5	104.5	35.5	40	3	88.5	55	9	51.5

Table 2 Standard “P” Solid Shaft

Unit	Shaft – inches			Metric Shaft – mm			Stainless Shaft		Wt.* lbs.
	d _{k6}	u – Key	t	d _{k6}	u – Key	t	Inches	mm	
KL1	5/8	–	–	–	M5 x 5 x 22	18	5/8	–	14
KL2	0.750	3/16 x 3/16 x 1-1/4	0.832	20	M6 x 6 x 32	23	0.750	20	21

*Weight is approximate.

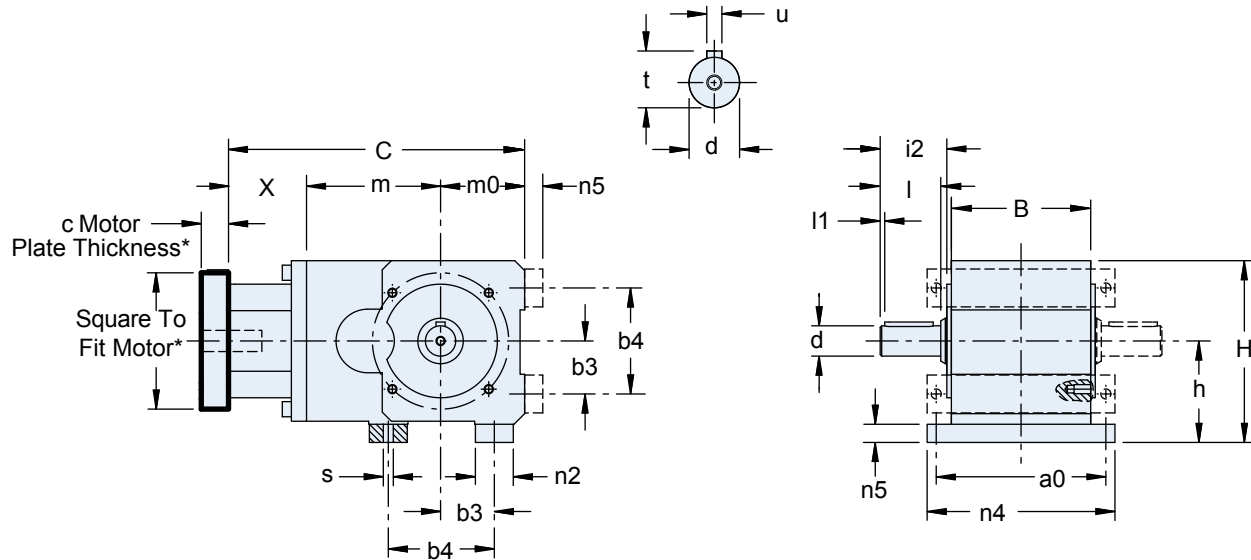
k6 = existing values



Dimensional Data

KL Series with "P" or "G" Solid Shaft Output Option

"NG" Foot Mounting Housing Option



* See Motor Mounting Plate Option, page 170 for details.
** See Output Shaft Options, page xx for details.

K/KL Series: RIGHT ANGLE — Versatile Outputs

Table 1 KL Series Unit Dimensions (mm) – "NG" Foot Mounting Housing Option

Unit	a0	B	b3	b4	C	H	h	l	l1	l2	m	m0	n2	n4	n5	s	X
KL1	95	75	27.5	55	160	102	58	32	35	3	67.5	46	20	107	12	6.6	46.5
KL2	112	92	35	70	195	120	67	40	44	3	88.5	55	25	124	12	6.6	51.5

Table 2 Standard "P" Solid Shaft

Unit	Shaft – inches			Metric Shaft – mm			Stainless Shaft		Wt.* lbs.
	d _{k6}	u – Key	t	d _{k6}	u – Key	t	Inches	mm	
KL1	5/8	–	–	–	M5 x 5 x 22	18	5/8	–	14
KL2	0.750	3/16 x 3/16 x 1-1/4	0.832	20	M6 x 6 x 32	23	0.750	20	21

*Weight is approximate.

k6 = existing values

K/KL Series: RIGHT ANGLE – Versatile Outputs

KL Series with “A” Hollow Output

“F” Output Flange Housing

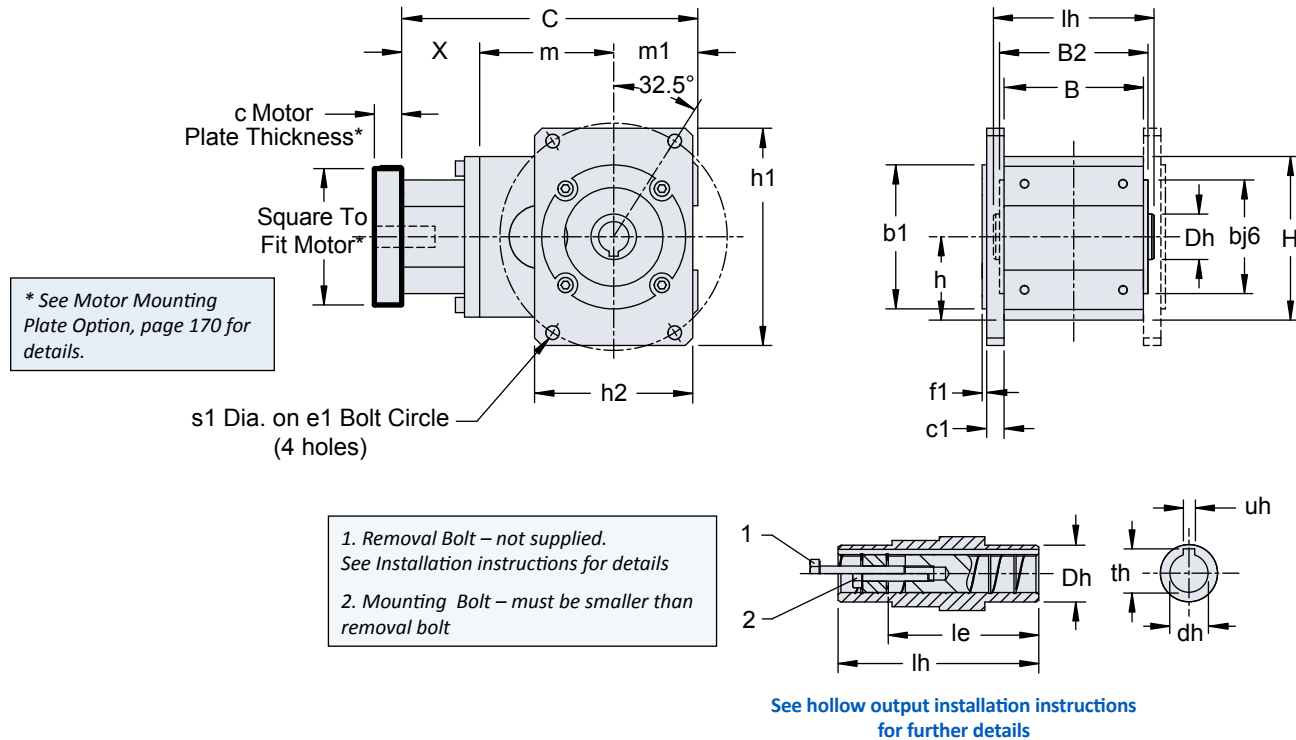


Table 1 KL Series Unit Dimensions (mm) – “F” Round Flange Housing

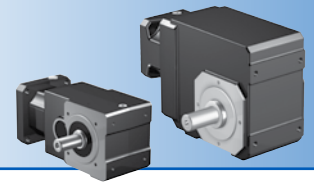
Unit	B	B2	b1	bj6	C	c1	Dh	e1	f1	H	h	h1	h2	le	lh	m	m1	s1	X
KL1	75	81	60	60	160	11.5	25	130	3	90	46	128.5	88.5	60.5	87	67.5	46	9	46.5
KL2	92	98	95	75	195	11.5	30	150	3	108	55	143.5	104.5	79.5	106	88.5	55	9	51.5

Table 2 Standard “A” Hollow Bore

Unit	Bore - inches			Metric Bore - mm			Stainless Bore		Wt.* lbs.
	dh _{G7}	uh	th	dh _{H7}	uh _{JS9}	th	Inches	mm	
KL1	0.625	0.188	0.713	16	5	18.3	0.625	16	14
KL2	0.750	0.188	0.832	20	6	22.8	0.750	20	21

*Weight is approximate.

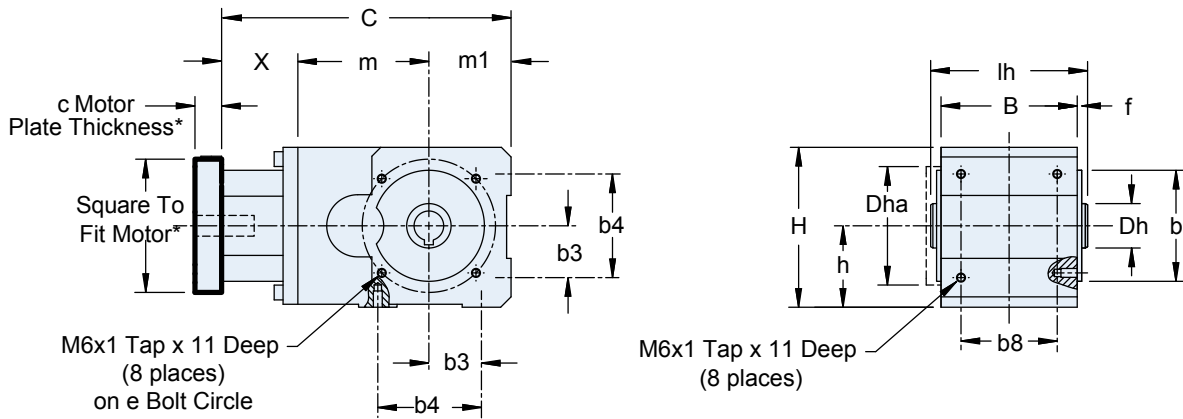
G7, H7, JS9 = actual values



Dimensional Data

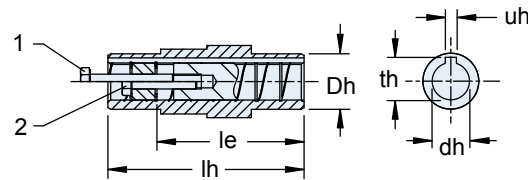
KL Series with "A" Hollow Output

"G" Pitch Circle Diameter (PCD) Tapped Holes



* See Motor Mounting Plate Option, page 170 for details.

1. Removal Bolt – not supplied. See Installation instructions for details
2. Mounting Bolt – must be smaller than removal bolt



See hollow output installation instructions for further details

K/KL Series: RIGHT ANGLE — Versatile Outputs

Table 1 KL Series Unit Dimensions (mm) – "G" Pitch Circle Diameter (PCD) Tapped Holes

Unit	B	b	b3	b4	b8	C	c6	Dh	Dha	e	f	H	h	le	lh	m	m1
KL1	75	60	27.5	55	50	160	46.5	25	70	75	3	90	46	60.5	87	67.5	46
KL2	92	75	35	70	65	195	51.5	30	80	90	3	108	55	79.5	106	88.5	55

Table 2 Standard "A" Hollow Bore

Unit	Bore - inches			Metric Bore - mm			Stainless Bore		Wt.* lbs.
	dh _{G7}	uh	th	dh _{H7}	uh _{JS9}	th	Inches	mm	
KL1	0.625	0.188	0.713	16	5	18.3	0.625	16	14
KL2	0.750	0.188	0.832	20	6	22.8	0.750	20	21

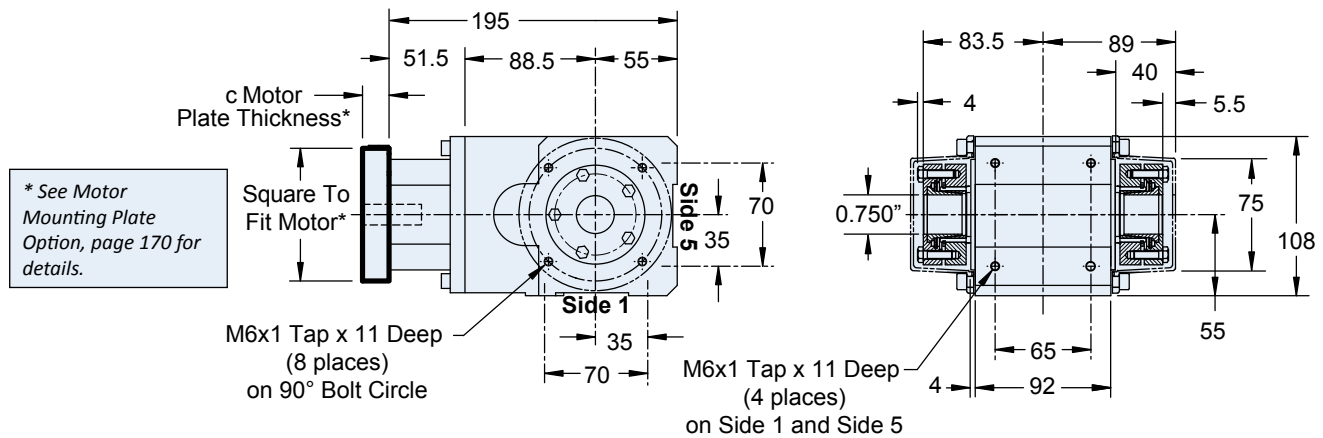
*Weight is approximate.

G7, H7, JS9 = actual values

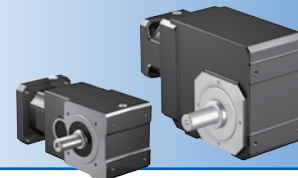
K/KL Series: RIGHT ANGLE – Versatile Outputs

KL Series (KL202 only) with “W” Wobble Free Bushing Output

“G” Pitch Circle Diameter (PCD) Tapped Holes



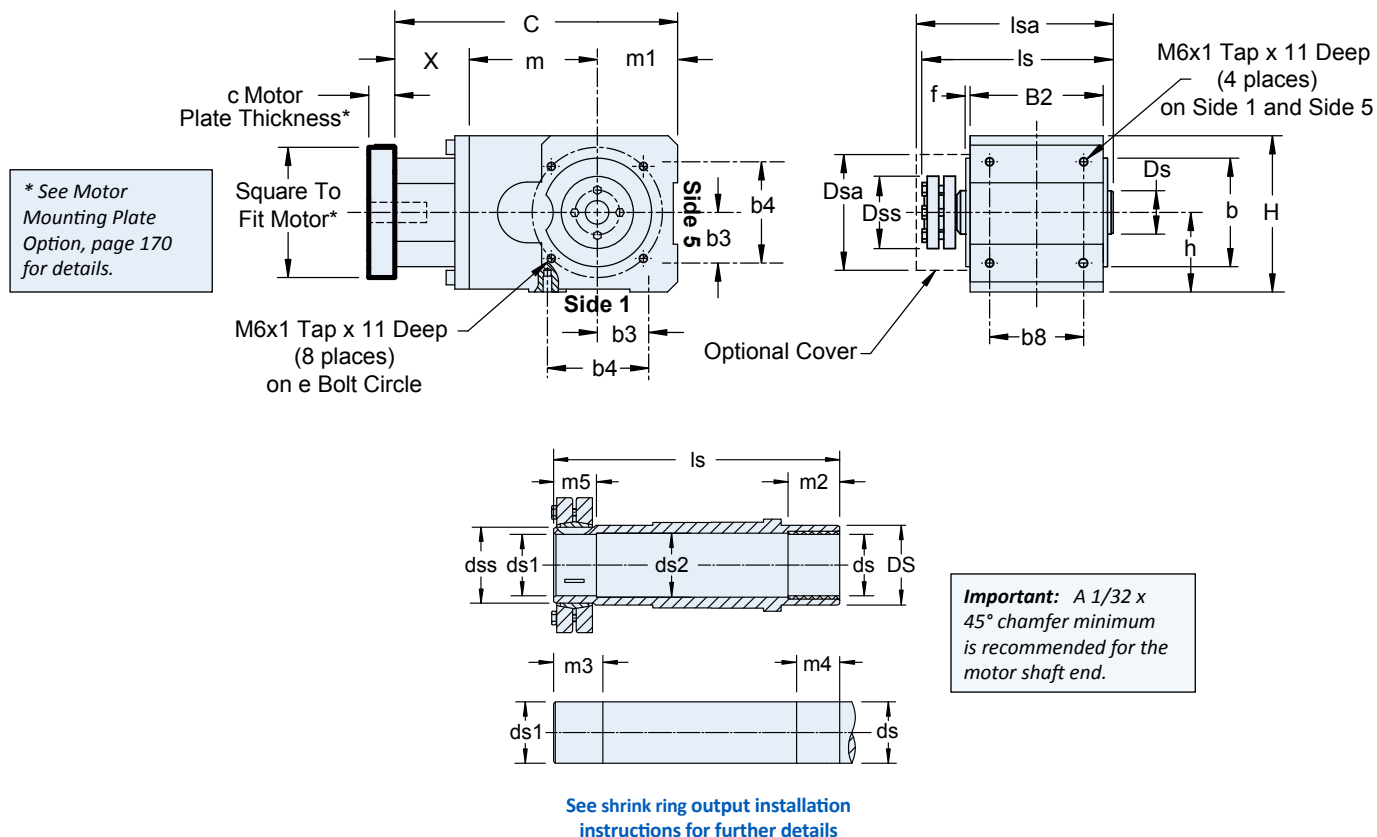
Important: A 1/32" x 45° chamfer minimum is recommended for the shaft end. The bushing will accept a shaft with a tolerance of +0.000/-0.005 inches.



Dimensional Data

KL Series with "S" Shrink Ring Output

"G" Pitch Circle Diameter (PCD) Tapped Holes



K/KL Series: RIGHT ANGLE — Versatile Outputs

Table 1 KL Series Unit Dimensions (mm) – "S" Shrink Ring Output

Unit	B2	b	b3	b4	b8	C	c6	Dsa	Dss	e	f	H	h	lsa	m1	m
KL1	75	60	27.5	55	50	160	46.5	64	46.2	75	3	90	46	114.5	46	67.5
KL2	92	75	35	70	65	195	51.5	79	50.0	90	3	108	55	139	55	88.5

Table 2 Bore/Shaft Dimensions (mm)

Unit	DS	Ds	ds _{H7}	ds1		ds2	dss	ls	m2	m3	m4	m5	Wt.* lbs.
				Bore	Shaft								
KL1	46.2	25	16	16 _{H7}	16 _{h6}	17.5	20	109	17	22	28	23	14
KL2	50	30	20	20 _{H7}	20 _{h6}	21.5	24	131	22	27	31	26	21

*Weight is approximate

h6 = existing value; H7 = actual values

K/KL Series: RIGHT ANGLE – Versatile Outputs

K Series with “V” Solid Shaft Output Option, “NG” Foot Mounting Housing & “G” Pitch Circle Diameter (PCD) Tapped Holes

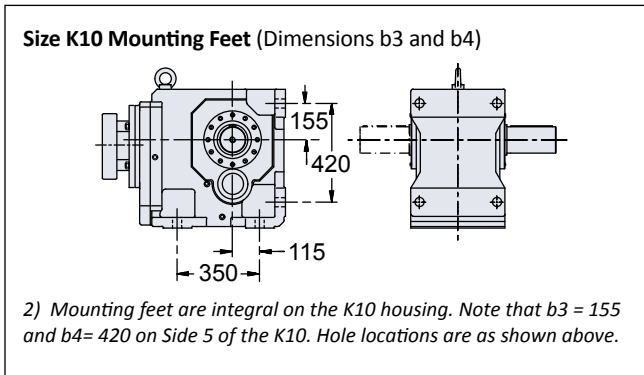
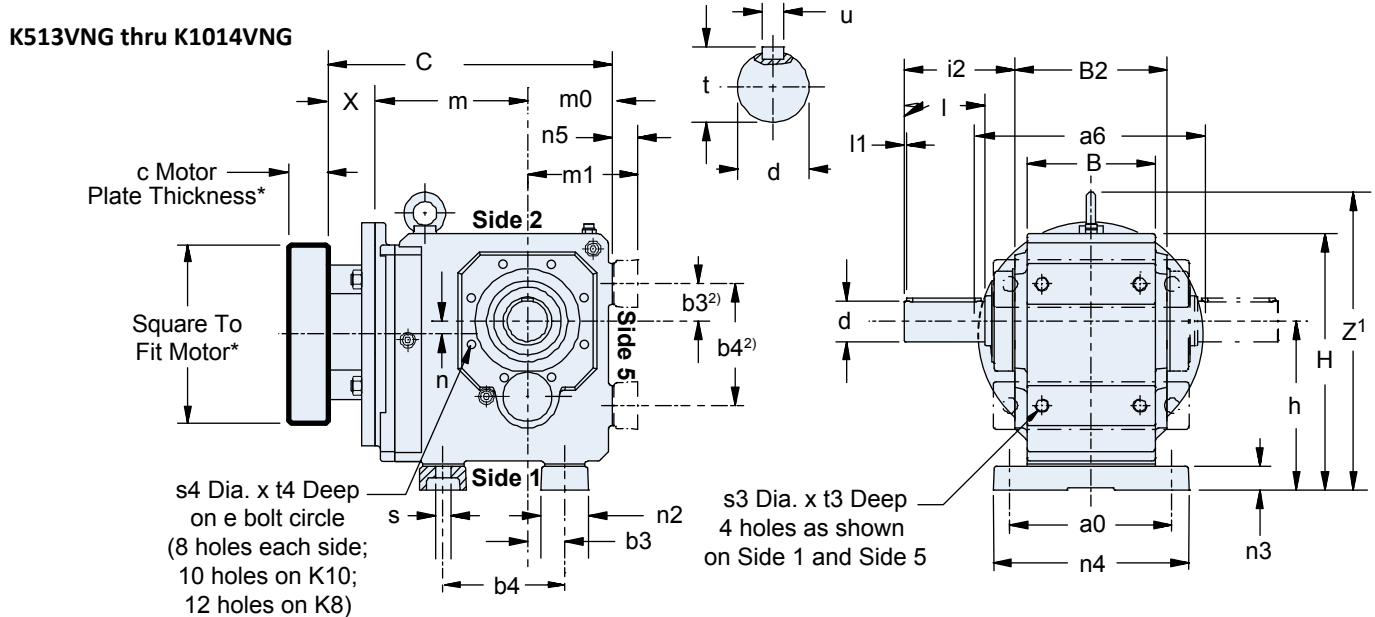
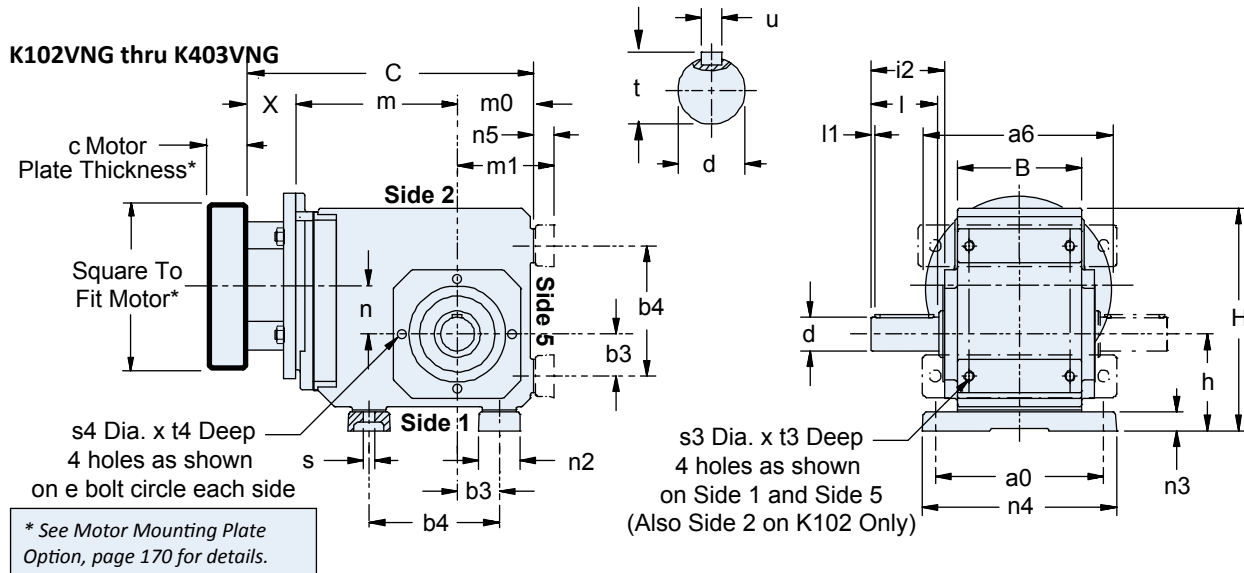
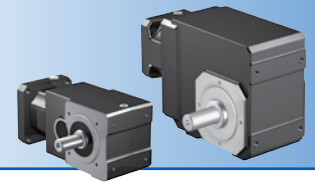


Table 4 Motor Adapter Dimensions (mm)

Motor Adapter	a6	Thickness ⁴⁾ c Min.	c6	Motor Shaft d2 Max. ³⁾	Wt. lbs.
MT10	140	21	40	19	5
MT20	160	24	50	24	8
MT30	200	25	60	38	15
MT40	250	33	89	48	28
MT50	300	43	81.5	60	42

3) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

4) Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.



Dimensional Data

Table 1 K Series Unit Dimensions (mm) — “NG” Foot Mounting Housing

Unit	a0	B	B2	b3	b4	H	h	i2	l	l1	m0	m1	n2	n3	n4	n5	s	Z ¹
K1	115	90	—	30	90 ¹⁾	175	75	62	50	4	60	75	32	13	140	15	9	—
K2	155	115	—	35	115	213	88	68	60	4	65	88	40	20	185	23	11	—
K3	170	130	—	40	130	236	98	69	60	4	75	98	45	20	200	23	11	—
K4	200	148	—	50	155	265	115	89.5	80	4	90	115	50	22	230	25	14	—
K5	200	160	185	40	140	290	190	129.5	90	4	100	130	60	27	240	30	18	342
K6	210	168	200	50	160	340	220	136	90	4	120	150	65	27	250	30	18.5	392
K7	240 ²⁾	190	226	55	180	380	250	164	120	4	125	163	70	35	290	38	23	441
K8	300	235	282	75	240	455	310	185	140	5	145	190	85	41	360	45	27	516
K9	360	285	330	95	280	545	365	220	170	8	180	230	95	46	430	50	34	615
K10	330	356	400	115 ³⁾	350 ³⁾	680	375	240	210	15	225	225	120	45	400	45	39	680

¹⁾ Mounting holes are also located on Side 1 of the K1 unit ONLY.

²⁾ For a0 with mounting on side 1 only; a0 when mounting on optional side 5 is 241 mm.

³⁾ Mounting feet are integral on the K10 housing as shown in drawing, facing page. Note b3 = 155 and b4 = 420 on Side 5 of the K10.

Table 2 K Series Unit Dimensions (mm) — “G” Pitch Circle Diameter (PCD) Tapped Holes

Unit	e	s3	s4	t3	t4
K1	90	M8x1.25	M8x1.25	13	13
K2	100	M10x1.5	M8x1.25	16	16
K3	115	M10x1.5	M8x1.25	16	16
K4	130	M12x1.75	M10x1.5	19	19
K5	130	M16x2	M10x1.5	26	26
K6	165	M16x2	M10x1.5	26	26
K7	185	M20x2.5	M12x1.75	31	31
K8	215	M24x3	M12x1.75	38	38
K9	265	M30x3.5	M16x2	48	48
K10	300	39 ¹⁾	10-M20	45	33

¹⁾ s3 on K10 are thru holes, not tapped.

Table 3 K Series Unit Dimensions (mm) — “V” Solid Shaft Output

Shaft outputs in stainless or carbon steel. See page 171 for available shaft output options.

Unit	d _{h6} * ¹⁾	t	Inches		Metric (mm)			Stainless	
			u – Key	d*	t	u – Key	Inches	mm	
K1	1.000	1.11	1/4 x 1/4 x 1-9/16	25 _{k6}	28	M8x7x40	1.000	25	
K2	1.250	1.36	1/4 x 1/4 x 1-15/16	30 _{k6}	33	M8x7x50	1.250	30	
K3	1.250	1.36	1/4 x 1/4 x 1-15/16	30 _{k6}	33	M8x7x50	1.250	40	
K4	1.375	1.51	5/16 x 5/16 x 2-5/16	40 _{k6}	43	M12x8x70	1.375	—	
K5	1.750	1.92	3/8 x 3/8 x 3-5/32	45 _{k6}	48.5	M14x9x80	1.750	45	
K6	1.750	1.92	3/8 x 3/8 x 3-5/32	50 _{k6}	53.5	M14x9x90	1.750	—	
K7	2.375	2.65	5/8 x 5/8 x 3-15/16	60 _{k6}	64	M18x11x110	2.375	—	
K8	2.875	3.21	3/4 x 3/4 x 4-5/16	70 _{m6}	74.5	M20x12x125	2.875	70	
K9	3.625	4.01	7/8 x 7/8 x 5-1/2	90 _{m6}	95	M25x14x140	—	90	
K10	4.375	4.82	1 x 1 x 7-1/8	110 _{m6}	116	M28x16x180	—	—	

¹⁾ h6, k6, m6 = existing value

Table 5 K Series Unit Dimensions (mm) — “MT” Motor Adapter

Unit	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n	
K102	224	124	36	238	128	36	—	—	—	—	—	—	—	—	—	31
K202	248	143	46	262	147	46	274	149	46	—	—	—	—	—	—	40
K203	285	180	46	—	—	—	—	—	—	—	—	—	—	—	—	53
K302	278	163	52.5	292	167	52.5	304	169	52.5	—	—	—	—	—	—	67
K303	315	200	52.5	335	210	16	—	—	—	—	—	—	—	—	—	73
K402	—	—	—	327	187	60	339	189	60	371	192	60	—	—	—	93
K403	350	220	60	370	230	23	—	—	—	—	—	—	—	—	—	100
K513	—	—	—	322	172	15	334	174	15	366	177	15	—	—	—	106
K514	—	—	—	365	215	15	—	—	—	—	—	—	—	—	—	109
K613	—	—	—	361	191	18	373	193	18	405	196	18	411.5	210	18	170
K614	—	—	—	404	234	18	—	—	—	—	—	—	—	—	—	177
K713	—	—	—	—	—	—	406	221	20	438	224	20	443.5	237	20	221
K714	—	—	—	438	263	20	468	283	20	—	—	—	—	—	—	234
K813	—	—	—	—	—	—	452	247	24	483	249	24	488.5	262	24	309
K814	—	—	—	—	—	—	513	308	24	554	320	5	—	—	—	331
K913	—	—	—	—	—	—	—	—	—	563	294	25	568.5	307	25	508
K914	—	—	—	—	—	—	593	353	25	634	365	25	—	—	—	530
K1013	—	—	—	—	—	—	—	—	—	—	—	—	698.5	392	28	1055
K1014	—	—	—	—	—	—	—	—	—	764	450	28	781.5	475	28	1079

For approximate weight, add adapter weight from Table 3 and unit weight from Table 4.

K/KL Series: RIGHT ANGLE — Versatile Outputs

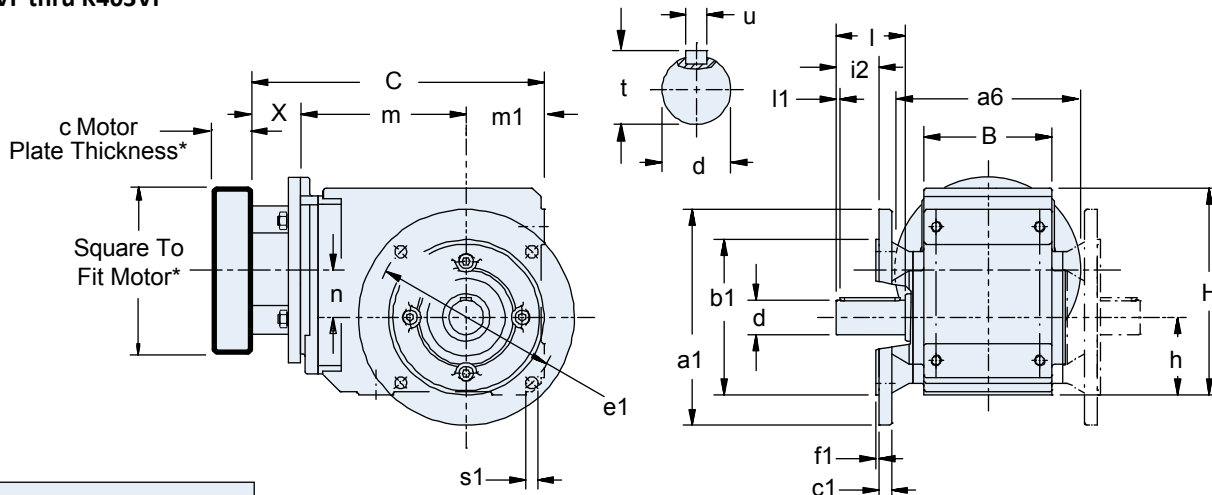
K/KL Series: RIGHT ANGLE — Versatile Outputs

K Series with "V" Solid Shaft Output

"F" Round Flange Housing

Other flange sizes available: for details see "Optional "F" Round Flange Housing Options for K Series" on page 217.

K102VF thru K403VF



* See Motor Mounting Plate Option, page 170 for details.

K513VF thru K1014VF

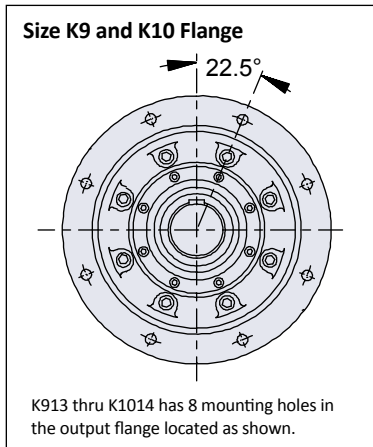
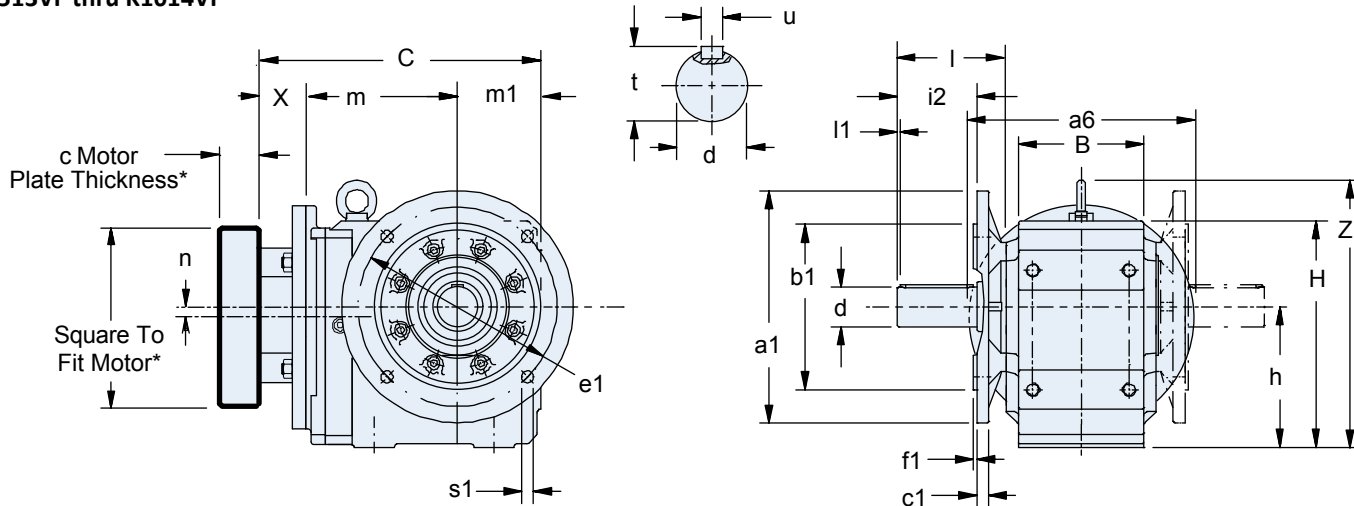
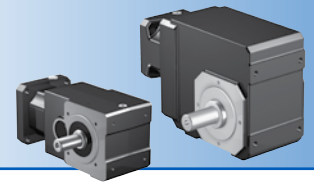


Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	a6	Thickness ²⁾ c Min.	c6	Motor Shaft d2 Max. ¹⁾	Wt. lbs.
MT10	140	21	40	19	5
MT20	160	24	50	24	8
MT30	200	25	60	38	15
MT40	250	33	89	48	28
MT50	300	43	81.5	60	42

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.



Dimensional Data

Table 1 K Series Unit Dimensions (mm) – “F” Round Flange Housing

Unit	a1	B	b1	c1	e1	f1	H	h	i2	l	l1	m1	s1	z ¹
K1	160	90	110 _{j6}	10	130	3.5	160	60	30.0	50	4	60	9	—
K2	200	115	130 _{j6}	12	165	3.5	190	65	36.0	60	4	65	11	—
K3	200	130	130 _{j6}	14	165	3.5	213	75	31.0	60	4	75	11	—
K4	250	148	180 _{j6}	15	215	4	240	90	49.5	80	4	90	14	—
K5	250	160	180 _{j6}	15	215	4	260	160	89.9	90	4	100	14	312
K6	300	168	230 _{j6}	17	265	4	310	190	100.0	90	4	120	14	362
K7	350	190	250 _{h6}	18	300	5	342	212	119.9	120	4	125	18	403
K8	400	235	300 _{h6}	20	350	5	410	265	140.0	140	5	145	18	471
K9	450	285	350 _{h6}	23	400	5	495	315	169.9	170	8	180	18	565
K10	550	356	450 _{h6}	25	500	5	591	375	210.0	210	15	225	18	680

Table 2 K Series Unit Dimensions (mm) – “V” Solid Shaft Output

Shaft outputs in stainless or carbon steel. See page 171 for available shaft output options.

Unit	d _{h6} *	t	Inches		Metric (mm)			Stainless	
			u – Key		d*	t	u – Key	Inches	mm
K1	1.000	1.11	1/4 x 1/4 x 1-9/16		25 _{k6}	28	M8 x 7 x 40	1.000	25
K2	1.250	1.36	1/4 x 1/4 x 1-15/16		30 _{k6}	33	M8 x 7 x 50	1.250	30
K3	1.250	1.36	1/4 x 1/4 x 1-15/16		30 _{k6}	33	M8 x 7 x 50	1.250	40
K4	1.375	1.51	5/16 x 5/16 x 2-5/16		40 _{k6}	43	M12 x 8 x 70	1.375	—
K5	1.750	1.92	3/8 x 3/8 x 3-5/32		45 _{k6}	48.5	M14 x 9 x 80	1.750	45
K6	1.750	1.92	3/8 x 3/8 x 3-5/32		50 _{k6}	53.5	M14 x 9 x 90	1.750	—
K7	2.375	2.65	5/8 x 5/8 x 3-15/16		60 _{k6}	64	M18 x 11 x 110	2.375	—
K8	2.875	3.21	3/4 x 3/4 x 4-5/16		70 _{m6}	74.5	M20 x 12 x 125	2.875	70
K9	3.625	4.01	7/8 x 7/8 x 5-1/2		90 _{m6}	95	M25 x 14 x 140	—	90
K10	4.375	4.82	1 x 1 x 7-1/8		110 _{m6}	116	M28 x 16 x 180	—	—

*h6, j6, k6, m6 = existing value

Table 4 K Series Unit Dimensions (mm) – “MT” Motor Adapter

Unit	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n	
K102	224	124	36	238	128	36	—	—	—	—	—	—	—	—	—	31
K202	248	143	46	262	147	46	274	149	46	—	—	—	—	—	—	40
K203	285	180	46	—	—	—	—	—	—	—	—	—	—	—	—	53
K302	278	163	52.5	292	167	52.5	304	169	52.5	—	—	—	—	—	—	67
K303	315	200	52.5	335	210	16	—	—	—	—	—	—	—	—	—	73
K402	—	—	—	327	187	60	339	189	60	371	192	60	—	—	—	93
K403	350	220	60	370	230	23	—	—	—	—	—	—	—	—	—	100
K513	—	—	—	322	172	15	334	174	15	366	177	15	—	—	—	106
K514	—	—	—	365	215	15	—	—	—	—	—	—	—	—	—	109
K613	—	—	—	361	191	18	373	193	18	405	196	18	411.5	210	18	170
K614	—	—	—	404	234	18	—	—	—	—	—	—	—	—	—	177
K713	—	—	—	—	—	—	406	221	20	438	224	20	443.5	237	20	221
K714	—	—	—	438	263	20	468	283	20	—	—	—	—	—	—	234
K813	—	—	—	—	—	—	452	247	24	483	249	24	488.5	262	24	309
K814	—	—	—	—	—	—	513	308	24	554	320	5	—	—	—	331
K913	—	—	—	—	—	—	—	—	—	563	294	25	568.5	307	25	508
K914	—	—	—	—	—	—	593	353	25	634	365	25	—	—	—	530
K1013	—	—	—	—	—	—	—	—	—	—	—	—	698.5	392	28	1055
K1014	—	—	—	—	—	—	—	—	—	764	450	28	781.5	475	28	1079

For approximate weight, add adapter weight from Table 3 and unit weight from Table 4.

K/KL Series: RIGHT ANGLE — Versatile Outputs

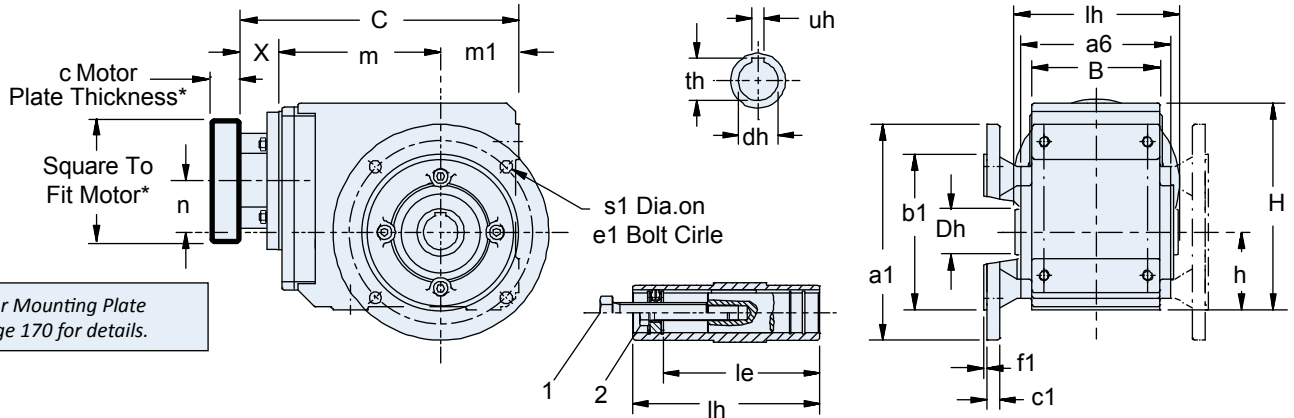
K/KL Series: RIGHT ANGLE – Versatile Outputs

K Series with "A" Hollow Output

"F" Round Flange Housing

Other flange sizes available: for details see "Optional "F" Round Flange Housing Options for K Series" on page 217.

K102AF thru K403AF

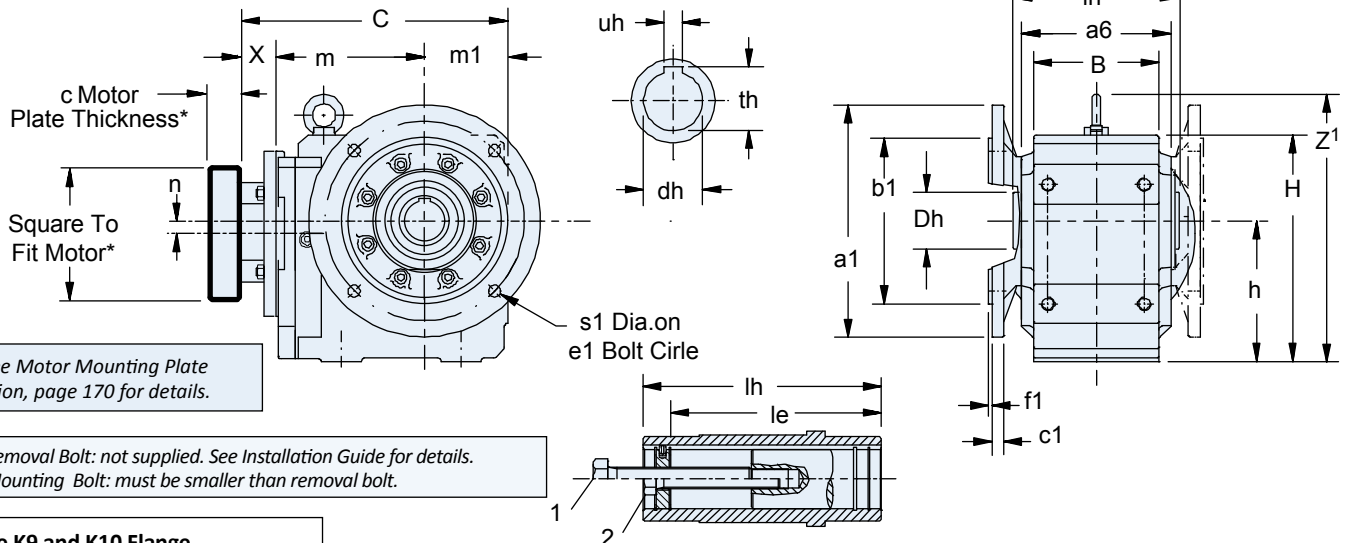


* See Motor Mounting Plate Option, page 170 for details.

1. Removal Bolt: not supplied. See Installation Guide for details.
2. Mounting Bolt: must be smaller than removal bolt.

See hollow output installation instructions for further details

K513AF thru K1014AF



* See Motor Mounting Plate Option, page 170 for details.

1. Removal Bolt: not supplied. See Installation Guide for details.
2. Mounting Bolt: must be smaller than removal bolt.

See hollow output installation instructions for further details

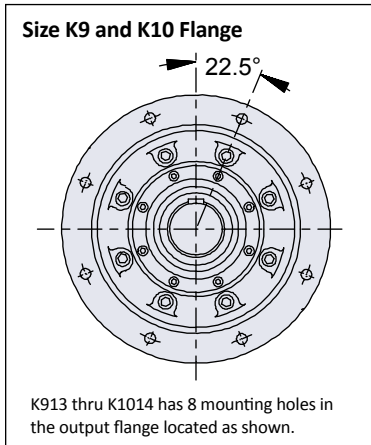
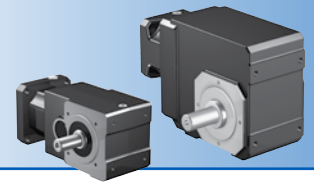


Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	a6	Thickness ²⁾ c Min.	c6	Motor Shaft d2 Max. ¹⁾	Wt. lbs.
MT10	140	21	40	19	5
MT20	160	24	50	24	8
MT30	200	25	60	38	15
MT40	250	33	89	48	28
MT50	300	43	81.5	60	42

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.



Dimensional Data

Table 1 K Series Unit Dimensions (mm) – “F” Round Flange Housing

Unit	a1	B	b1*	c1	Dh	e1	f1	H	h	le	lh	m1	s1	Z ₁
K1	160	90	110 _{j6}	10	40	130	3.5	160	60	98	120	60	9	—
K2	200	115	130 _{j6}	12	45	165	3.5	190	65	121.5	148	65	11	—
K3	200	130	130 _{j6}	14	50	165	3.5	213	75	125	160	75	11	—
K4	250	148	180 _{j6}	15	55	215	4	240	90	157	188	90	14	—
K5	250	160	180 _{j6}	15	65	215	4	260	160	164	200	100	14	312
K6	300	168	230 _{j6}	17	70	265	4	310	190	179	215	120	14	362
K7	350	190	250 _{h6}	18	85	300	5	342	212	214	242	125	18	403
K8	400	235	300 _{h6}	20	100	350	5	410	265	263	300	145	18	471
K9	450	285	350 _{h6}	23	120	400	5	495	315	302	350	180	18	565
K10	550	356	450 _{h6}	25	130	500	5	591	375	361	410	225	18	680

Table 2 K Series Unit Dimensions (mm) – “A” Hollow Bore Output

Dimensions in **BOLD BLUE** (standard). Contact STÖBER for delivery on other sizes listed.

Unit	Carbon Steel						Stainless	
	dh _{G7} *	Inches th	uh	Metric (mm) dh _{H7} *	th	uh _{JS9} *	Inches	mm
K1	1.000	1.11	0.250	25	28.3	8	1.000	25
K2	1.1875	1.31	0.250	30	33.3	8	1.125, 1.1875, 1.250	30
K3	1.375	1.52	0.312	35	38.3	10	1.25, 1.375	35
K4	1.500	1.67	0.375	40	43.3	12	1.375, 1.500	40
K5	2.000	2.13	0.500	50	53.8	14	1.4375, 1.9375, 2.000	40, 50
K6	2.000	2.23	0.500	50	53.8	14	1.4375, 1.9375, 2.000 , 2.1875	40, 50, 60
K7	2.375	2.66	0.625	60	64.4	18	1.9375, 2.00, 2.1875, 2.375	60
K8	2.750	3.03	0.625	70	74.9	20	2.1875, 2.375, 2.5, 2.6875, 2.750	60, 70
K9	3.250	3.59	0.750	90	95.4	25	2.6875, 2.9375 , 3.000 , 3.25, 3.4375	90
K10	4.000	4.25	1.000	100	108	28	3.4375, 4.00	—

* h6, j6 = existing values; G7, H7, JS9 = actual values

Table 4 K Series Unit Dimensions (mm) – “MT” Motor Adapter

Unit	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n	
K102	224	124	36	238	128	36	—	—	—	—	—	—	—	—	—	31
K202	248	143	46	262	147	46	274	149	46	—	—	—	—	—	—	40
K203	285	180	46	—	—	—	—	—	—	—	—	—	—	—	—	53
K302	278	163	52.5	292	167	52.5	304	169	52.5	—	—	—	—	—	—	67
K303	315	200	52.5	335	210	16	—	—	—	—	—	—	—	—	—	73
K402	—	—	—	327	187	60	339	189	60	371	192	60	—	—	—	93
K403	350	220	60	370	230	23	—	—	—	—	—	—	—	—	—	100
K513	—	—	—	322	172	15	334	174	15	366	177	15	—	—	—	106
K514	—	—	—	365	215	15	—	—	—	—	—	—	—	—	—	109
K613	—	—	—	361	191	18	373	193	18	405	196	18	411.5	210	18	170
K614	—	—	—	404	234	18	—	—	—	—	—	—	—	—	—	177
K713	—	—	—	—	—	—	406	221	20	438	224	20	443.5	237	20	221
K714	—	—	—	438	263	20	468	283	20	—	—	—	—	—	—	234
K813	—	—	—	—	—	—	452	247	24	483	249	24	488.5	262	24	309
K814	—	—	—	—	—	—	513	308	24	554	320	5	—	—	—	331
K913	—	—	—	—	—	—	—	—	—	563	294	25	568.5	307	25	508
K914	—	—	—	—	—	—	593	353	25	634	365	25	—	—	—	530
K1013	—	—	—	—	—	—	—	—	—	—	—	—	698.5	392	28	1055
K1014	—	—	—	—	—	—	—	—	—	764	450	28	781.5	475	28	1079

For approximate weight, add adapter weight from Table 3 and unit weight from Table 4.

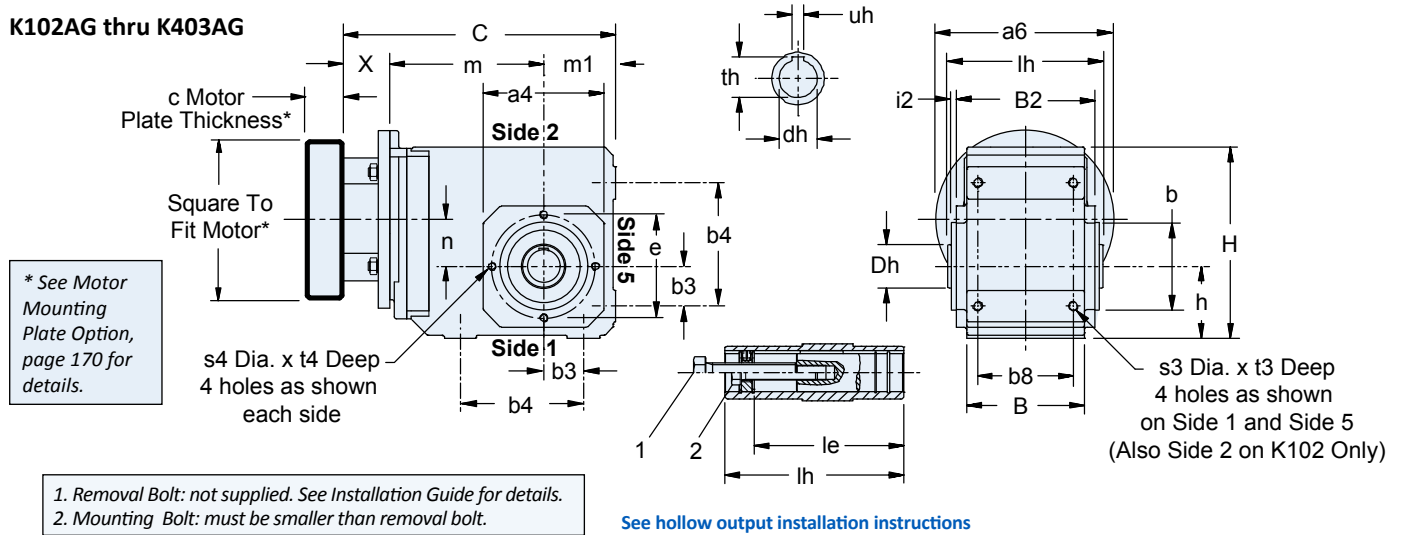
K/KL Series: RIGHT ANGLE — Versatile Outputs

K/KL Series: RIGHT ANGLE – Versatile Outputs

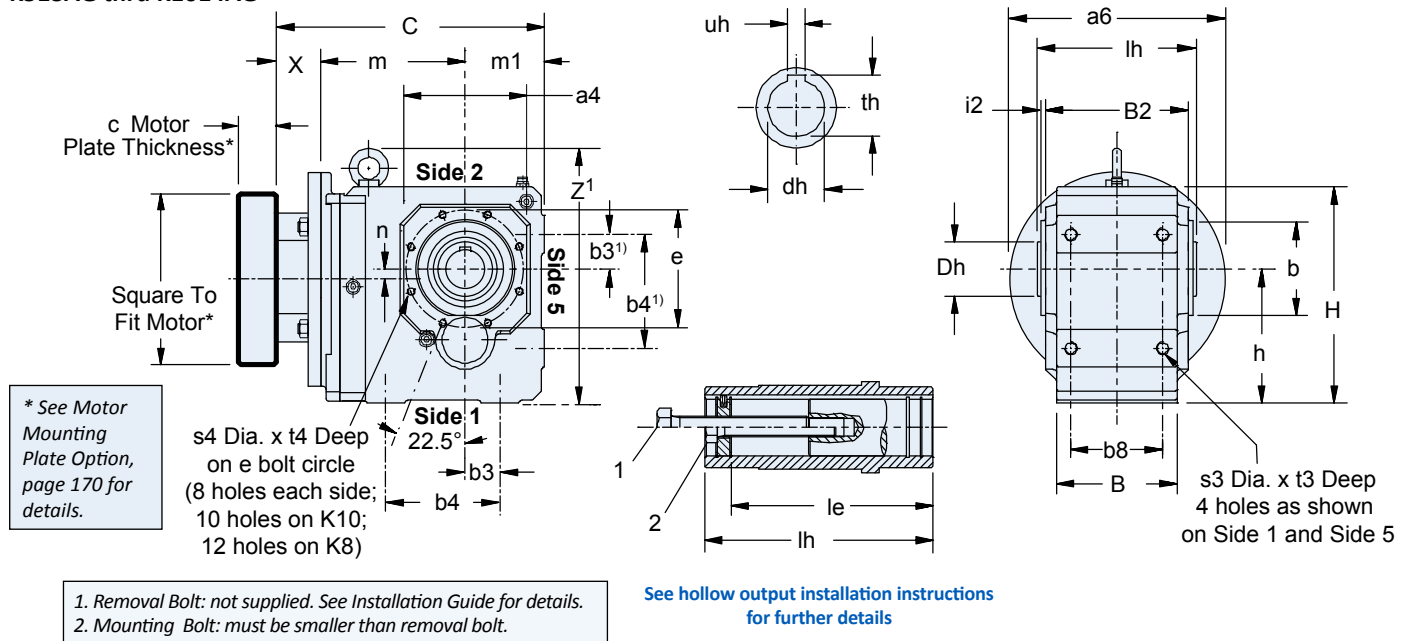
K Series with “A” Hollow Output

“G” Pitch Circle Diameter (PCD) Tapped Holes

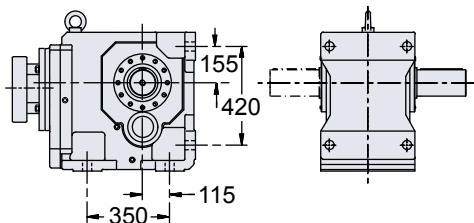
K102AG thru K403AG



K513AG thru K1014AG



Size K10 Mounting Feet (Dimensions b3 and b4)



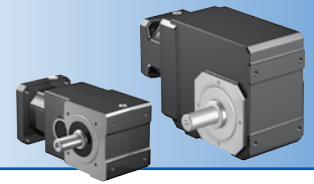
1) Mounting feet are integral on the K10 housing. Note that *b3* = 155 and *b4* = 420 on Side 5 of the K10. Hole locations are as shown above.

Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	a6	Thickness ³⁾ c Min.	c6	Motor Shaft d2 Max. ²⁾	Wt. lbs.
MT10	140	21	40	19	5
MT20	160	24	50	24	8
MT30	200	25	60	38	15
MT40	250	33	89	48	28
MT50	300	43	81.5	60	42

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

³⁾ Motor plate maximum thickness (*c*) will vary with motor shaft length but will not be less than shown.



Dimensional Data

Table 1 K Series Unit Dimensions (mm) – “G” Pitch Circle Diameter (PCD) Tapped Holes

Unit	a4	B	B2	b*	b3	b4	b8	Dh	e	H	h	i2	le	lh	m1	s3	s4	t3	t4	Z ¹
K1	105	90	106	75 _{j6}	30	90	70	40	90	160	60	3	98	120	60	M8x1.25	M8x1.25	13	13	—
K2	116	115	134	82 _{j6}	35	115	90	45	100	190	65	3	121.5	148	65	M10x1.5	M8x1.25	16	16	—
K3	132	130	146	95 _{j6}	40	130	105	50	115	213	75	3	125	160	75	M10x1.5	M8x1.25	16	16	—
K4	152	148	173	110 _{j6}	50	155	120	55	130	240	90	3.5	157	188	90	M12x1.75	M10x1.5	19	19	—
K5	145	160	185	110 _{j6}	40	140	125	65	130	260	160	3.5	164	200	100	M16x2	M10x1.5	26	26	312
K6	180	168	200	140 _{j6}	50	160	130	70	165	310	190	3.5	179	215	120	M16x2	M10x1.5	26	26	362
K7	195	190	226	155 _{j6}	55	180	145	85	185	342	212	3.5	214	242	125	M20x2.5	M12x1.75	31	31	403
K8	226	235	282	185 _{j6}	75	240	185	100	215	410	265	4	263	300	145	M24x3	M12x1.75	38	38	471
K9	280	285	330	230 _{j6}	95	280	225	120	265	495	315	5	302	350	180	M30x3.5	M16x2	48	48	565
K10	340	356	400	250 _{h6}	115 ¹⁾	350 ¹⁾	330	130	300	591	375	5	361	410	225	39 ²⁾	10-M20	45	33	680

¹⁾ Mounting feet are integral on the K10 housing as shown in drawing, facing page. Note b3 = 155 and b4 = 420 on Side 5 of the K10.

²⁾ s3 on K10 are thru holes, not tapped.

Table 2 K Series Unit Dimensions (mm) — “A” Hollow Bore Output

Dimensions in **BOLD BLUE** (standard). Contact STOBER for delivery on other sizes listed.

Unit	Carbon Steel						Stainless	
	dh _{G7} *	Inches		Metric (mm)			Inches	mm
		th	uh	dh _{H7} *	th	uh _{JS9} *		
K1	1.000	1.11	0.250	25	28.3	8	1.000	25
K2	1.1875	1.31	0.250	30	33.3	8	1.125, 1.1875, 1.250	30
K3	1.375	1.52	0.312	35	38.3	10	1.25, 1.375	35
K4	1.500	1.67	0.375	40	43.3	12	1.375, 1.500	40
K5	2.000	2.13	0.500	50	53.8	14	1.4375, 1.9375, 2.000	40, 50
K6	2.000	2.23	0.500	50	53.8	14	1.4375, 1.9375, 2.000 , 2.1875	40, 50, 60
K7	2.375	2.66	0.625	60	64.4	18	1.9375, 2.00, 2.1875, 2.375	60
K8	2.750	3.03	0.625	70	74.9	20	2.1875, 2.375, 2.5, 2.6875, 2.750	60, 70
K9	3.250	3.59	0.750	90	95.4	25	2.6875, 2.9375 , 3.000 , 3.25, 3.4375	90
K10	4.000	4.25	1.000	100	108	28	3.4375, 4.00	—

* h6, j6 = existing values; G7, H7, JS9 = actual values

Table 4 K Series Unit Dimensions (mm) — “MT” Motor Adapter

Unit	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	n	C	m	n	C	m	n	C	m	n	C	m	n	C	m	
K102	36	224	124	36	238	128	—	—	—	—	—	—	—	—	—	31
K202	46	248	143	46	262	147	46	274	149	—	—	—	—	—	—	40
K203	46	285	180	—	—	—	—	—	—	—	—	—	—	—	—	53
K302	52.5	278	163	52.5	292	167	52.5	304	169	—	—	—	—	—	—	67
K303	52.5	315	200	16	335	210	—	—	—	—	—	—	—	—	—	73
K402	—	—	—	60	327	187	60	339	189	60	371	192	—	—	—	93
K403	60	350	220	23	370	230	—	—	—	—	—	—	—	—	—	100
K513	—	—	—	15	322	172	15	334	174	15	366	177	—	—	—	106
K514	—	—	—	15	365	215	—	—	—	—	—	—	—	—	—	109
K613	—	—	—	18	361	191	18	373	193	18	405	196	18	411.5	210	170
K614	—	—	—	18	404	234	—	—	—	—	—	—	—	—	—	177
K713	—	—	—	—	—	—	20	406	221	20	438	224	20	443.5	237	221
K714	—	—	—	20	438	263	20	468	283	—	—	—	—	—	—	234
K813	—	—	—	—	—	—	24	452	247	24	483	249	24	488.5	262	309
K814	—	—	—	—	—	—	24	513	308	5	554	320	—	—	—	331
K913	—	—	—	—	—	—	—	—	—	25	563	294	25	568.5	307	508
K914	—	—	—	—	—	—	25	593	353	25	634	365	—	—	—	530
K1013	—	—	—	—	—	—	—	—	—	—	—	—	28	698.5	392	1055
K1014	—	—	—	—	—	—	—	—	—	28	764	450	28	781.5	475	1079

For approximate weight, add adapter weight from Table 3 and unit weight from Table 4.

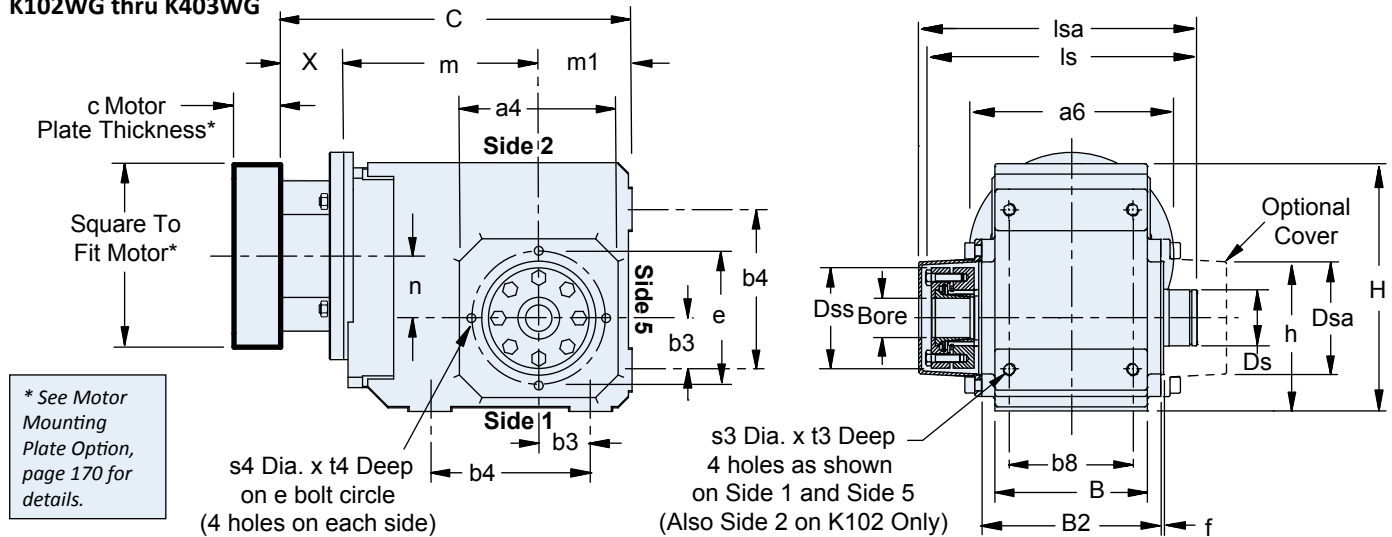
K/KL Series: RIGHT ANGLE — Versatile Outputs

K/KL Series: RIGHT ANGLE – Versatile Outputs

K Series with SINGLE “W” Wobble Free Bushing Output

“G” Pitch Circle Diameter (PCD) Tapped Holes

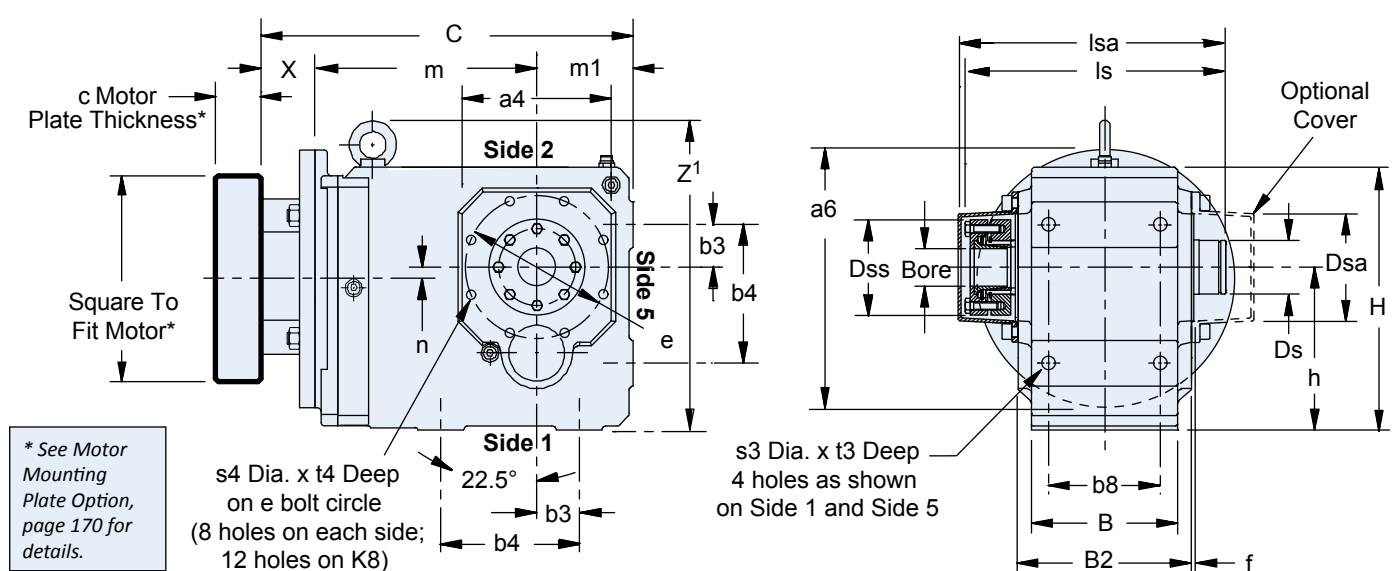
K102WG thru K403WG



* See Motor Mounting Plate Option, page 170 for details.

Important: A 1/32" x 45° chamfer minimum is recommended for the shaft end. The bushing will accept a shaft with a tolerance of +0.000/-0.005 inches.

K513WG thru K814WG



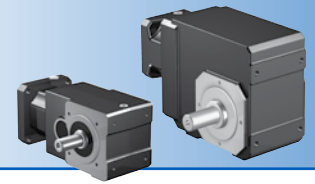
* See Motor Mounting Plate Option, page 170 for details.

Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	a6	Thickness ²⁾ c Min.	c6	Motor Shaft d2 Max. ¹⁾	Wt. lbs.
MT10	140	21	40	19	5
MT20	160	24	50	24	8
MT30	200	25	60	38	15
MT40	250	33	89	48	28
MT50	300	43	81.5	60	42

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.



Dimensional Data

Table 1 K Series Unit Dimensions (mm) – “G” Pitch Circle Diameter (PCD) Tapped Holes

Unit	a4	B	B2	b3	b4	b8	Ds	Dsa	Dss	e	H	h	ls	lsa	m1	s3	s4	t3	t4	Z ₁
K1	105	90	106	30	90	70	39	78	70	90	160	60	149	163	60	M8x1.25	M8x1.25	13	13	—
K2	116	115	134	35	115	90	44	88	78	100	190	65	178	193	65	M10x1.5	M8x1.25	16	16	—
K3	132	130	146	40	130	105	44	88	84	115	213	75	190	206	75	M10x1.5	M8x1.25	16	16	—
K4	152	148	173	50	155	120	54	110	97	130	240	90	220	243	90	M12x1.75	M10x1.5	19	19	—
K5	145	160	185	40	140	125	65	115	105	130	260	160	237	254	100	M16x2	M10x1.5	26	26	312
K6	180	168	200	50	160	130	74	127	118	165	310	190	254	276	120	M16x2	M10x1.5	26	26	362
K7	195	190	226	55	180	145	85	146	138	185	342	212	278	288	125	M20x2.5	M12x1.75	31	31	403
K8	226	235	282	75	240	185	100	176.5	158	215	410	265	352	363	145	M24x3	M12x1.75	38	38	471

Table 2 “WF” Single Side Bushing – Stock Bore Sizes

Unit	Metric (mm)			Inches																
	25	30	35	1	1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	1-5/8	1-11/16	1-3/4	1-7/8	1-15/16	2	2-3/16	2-3/8	2-7/16	2-3/4	
K1	WF1-25	—	—	WF1-100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
K2	—	WF2-30	—	WF2-100	WF2-103	WF2-104	—	—	—	—	—	—	—	—	—	—	—	—	—	—
K3	—	WF3-30	WF3-35	WF3-100	WF3-103	WF3-104	WF3-106	WF3-107	WF3-108	—	—	—	—	—	—	—	—	—	—	—
K4	—	—	—	WF4-100	WF4-103	WF4-104	WF4-106	WF4-107	WF4-108	—	—	—	—	—	—	—	—	—	—	—
K5	—	—	—	—	—	—	—	WF5-107	WF5-108	WF5-110	WF5-111	WF5-112	WF5-114	WF5-115	WF5-200	—	—	—	—	—
K6	—	—	—	—	—	—	—	WF6-107	WF6-108	WF6-110	WF6-111	WF6-112	—	WF6-115	WF6-200	WF6-203	—	—	—	—
K7	—	—	—	—	—	—	—	—	—	—	—	—	—	WF7-115	WF7-200	WF7-203	WF7-206	—	—	—
K8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	WF8-203	WF8-206	WB7-207	WF8-212	—

NOTE: A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer. The WF1-100 bushing does not have a tapered cone. The optional cover caps can be ordered separately

Table 4 K Series Unit Dimensions (mm) — “MT” Motor Adapter

Unit	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n	
K102	224	124	36	238	128	36	—	—	—	—	—	—	—	—	—	31
K202	248	143	46	262	147	46	274	149	46	—	—	—	—	—	—	40
K203	285	180	46	—	—	—	—	—	—	—	—	—	—	—	—	53
K302	278	163	52.5	292	167	52.5	304	169	52.5	—	—	—	—	—	—	67
K303	315	200	52.5	335	210	16	—	—	—	—	—	—	—	—	—	73
K402	—	—	—	327	187	60	339	189	60	371	192	60	—	—	—	93
K403	350	220	60	370	230	23	—	—	—	—	—	—	—	—	—	100
K513	—	—	—	322	172	15	334	174	15	366	177	15	—	—	—	106
K514	—	—	—	365	215	15	—	—	—	—	—	—	—	—	—	109
K613	—	—	—	361	191	18	373	193	18	405	196	18	411.5	210	18	170
K614	—	—	—	404	234	18	—	—	—	—	—	—	—	—	—	177
K713	—	—	—	—	—	—	406	221	20	438	224	20	443.5	237	20	221
K714	—	—	—	438	263	20	468	283	20	—	—	—	—	—	—	234
K813	—	—	—	—	—	—	452	247	24	483	249	24	488.5	262	24	309
K814	—	—	—	—	—	—	513	308	24	554	320	5	—	—	—	331

For approximate weight, add adapter weight from Table 3 and unit weight from Table 4.

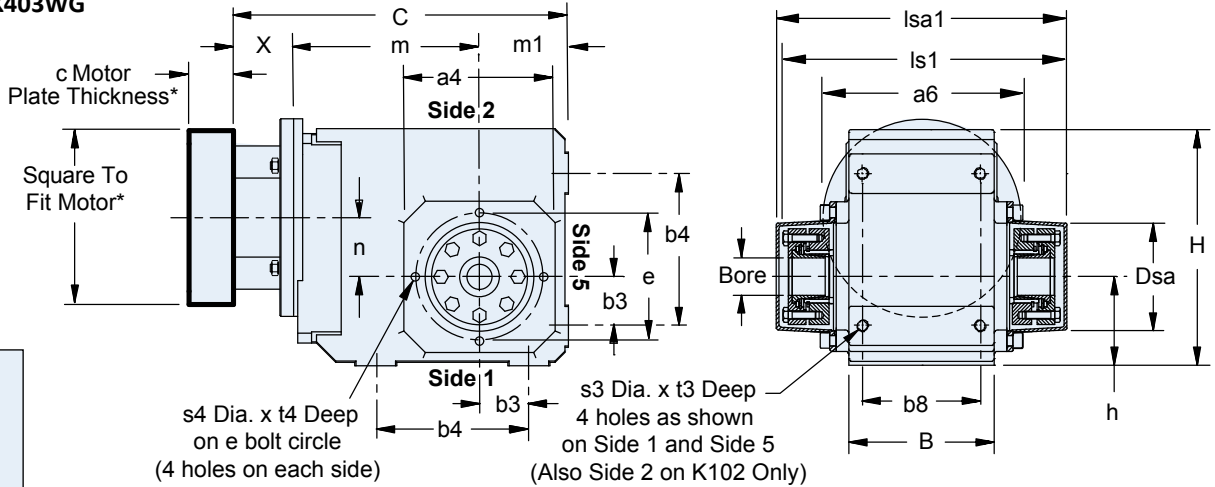
K/KL Series: RIGHT ANGLE — Versatile Outputs

K/KL Series: RIGHT ANGLE – Versatile Outputs

K Series with DOUBLE “W” Wobble Free Bushing Output

“G” Pitch Circle Diameter (PCD) Tapped Holes

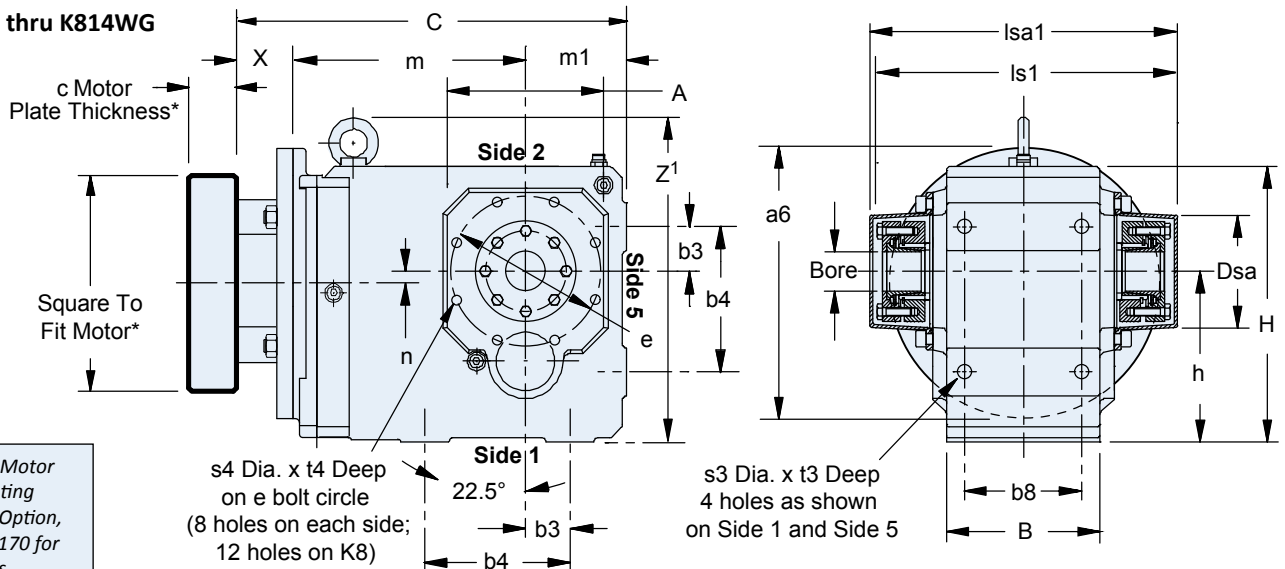
K102WG thru K403WG



* See Motor Mounting Plate Option, page 170 for details.

Important: A 1/32" x 45° chamfer minimum is recommended for the shaft end.
The bushing will accept a shaft with a tolerance of +0.000/-0.005 inches.

K513WG thru K814WG



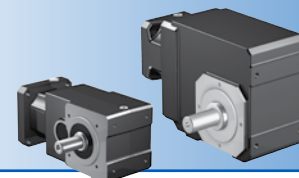
* See Motor Mounting Plate Option, page 170 for details.

Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	a6	Thickness ²⁾ c Min.	c6	Motor Shaft d2 Max. ¹⁾	Wt. lbs.
MT10	140	21	40	19	5
MT20	160	24	50	24	8
MT30	200	25	60	38	15
MT40	250	33	89	48	28
MT50	300	43	81.5	60	42

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.



Dimensional Data

Table 1 K Series Unit Dimensions (mm) – “G” Pitch Circle Diameter (PCD) Tapped Holes

Unit	a4	B	b3	b4	b8	Dsa	e	H	h	ls1	lsa1	m1	s3	s4	t3	t4	Z ¹
K1	105	90	30	90	70	78	90	160	60	194	198	60	M8x1.25	M8x1.25	13	13	—
K2	116	115	35	115	90	88	100	190	65	226	238	65	M10x1.5	M8x1.25	16	16	—
K3	132	130	40	130	105	88	115	213	75	239	253	75	M10x1.5	M8x1.25	16	16	—
K4	152	148	50	155	120	110	130	240	90	281	295	90	M12x1.75	M10x1.5	19	19	—
K5	145	160	40	140	125	115	130	260	160	295	307	100	M16x2	M10x1.5	26	26	312
K6	180	168	50	160	130	127	165	310	190	322	336	120	M16x2	M10x1.5	26	26	362
K7	195	190	55	180	145	146	185	342	212	383	390	125	M20x2.5	M12x1.75	31	31	403
K8	226	235	75	240	185	176.5	215	410	265	458	474	145	M24x3	M12x1.75	38	38	471

Table 2 “WFB” Double Side Bushing – Stock Bore Sizes

Unit	Metric (mm)				Inches																
	25	30	35	40	1	1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	1-5/8	1-11/16	1-3/4	1-7/8	1-15/16	2	2-3/16	2-3/8	2-7/16	2-3/4	
K1	WFB1-25	—	—	—	WFB1-100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
K2	—	WFB2-30	—	—	WFB2-100	WFB2-103	WFB2-104	—	—	—	—	—	—	—	—	—	—	—	—	—	—
K3	—	WFB3-30	WFB3-35	—	WFB3-100	WFB3-103	WFB3-104	WFB3-106	WFB3-107	WFB3-108	—	—	—	—	—	—	—	—	—	—	—
K4	—	—	—	WFB4-40	WFB4-100	WFB4-103	WFB4-104	WFB4-106	WFB4-107	WFB4-108	—	—	—	—	—	—	—	—	—	—	—
K5	—	—	—	WFB5-40	—	—	—	—	WFB5-107	WFB5-108	WFB5-110	WFB5-111	WFB5-112	WFB5-114	WFB5-115	WFB5-200	—	—	—	—	—
K6	—	—	—	WFB6-40	—	—	—	—	WFB6-107	WFB6-108	WFB6-110	WFB6-111	WFB6-112	—	WFB6-115	WFB6-200	WFB6-203	—	—	—	—
K7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	WFB7-115	WFB7-200	WFB7-203	WFB7-206	—	—	—
K8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	WFB8-203	WFB8-206	WB7-207	WFB8-212	—

NOTE: A complete bushing kit includes the locking ring assembly, tapered cone, support ring, and all hardware to mount the kit into the reducer. The WFB1-100 bushing does not have a tapered cone.

Table 4 K Series Unit Dimensions (mm) — “MT” Motor Adapter

Unit	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n	
K102	224	124	36	238	128	36	—	—	—	—	—	—	—	—	—	31
K202	248	143	46	262	147	46	274	149	46	—	—	—	—	—	—	40
K203	285	180	46	—	—	—	—	—	—	—	—	—	—	—	—	53
K302	278	163	52.5	292	167	52.5	304	169	52.5	—	—	—	—	—	—	67
K303	315	200	52.5	335	210	16	—	—	—	—	—	—	—	—	—	73
K402	—	—	—	327	187	60	339	189	60	371	192	60	—	—	—	93
K403	350	220	60	370	230	23	—	—	—	—	—	—	—	—	—	100
K513	—	—	—	322	172	15	334	174	15	366	177	15	—	—	—	106
K514	—	—	—	365	215	15	—	—	—	—	—	—	—	—	—	109
K613	—	—	—	361	191	18	373	193	18	405	196	18	411.5	210	18	170
K614	—	—	—	404	234	18	—	—	—	—	—	—	—	—	—	177
K713	—	—	—	—	—	—	406	221	20	438	224	20	443.5	237	20	221
K714	—	—	—	438	263	20	468	283	20	—	—	—	—	—	—	234
K813	—	—	—	—	—	—	452	247	24	483	249	24	488.5	262	24	309
K814	—	—	—	—	—	—	513	308	24	554	320	5	—	—	—	331

For approximate weight, add adapter weight from Table 3 and unit weight from Table 4.

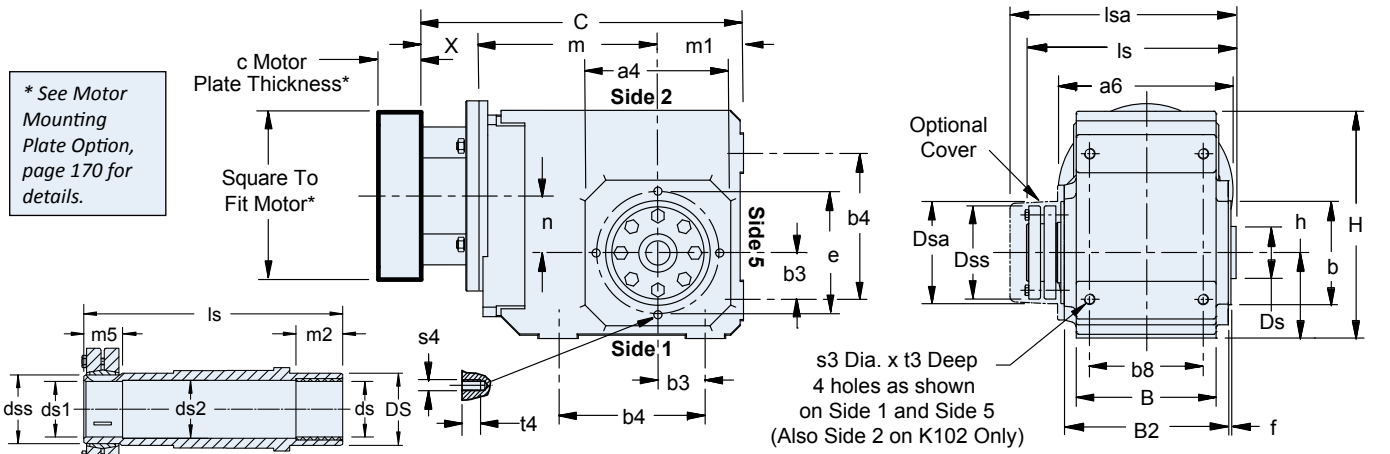
K/KL Series: RIGHT ANGLE — Versatile Outputs

K/KL Series: RIGHT ANGLE – Versatile Outputs

K Series with "S" Shrink Ring Output

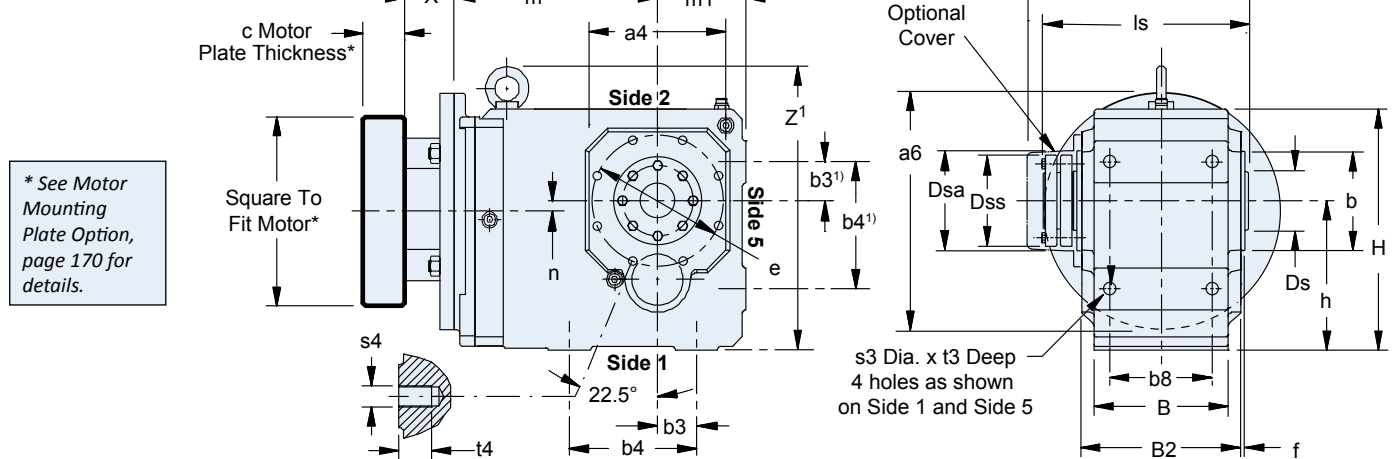
"G" Pitch Circle Diameter (PCD) Tapped Holes

K102SG thru K403SG



See shrink ring output installation instructions for further details

K513SG thru K1014SG



Size K10 Mounting Feet (Dimensions b3 and b4)

2) Mounting feet are integral on the K10 housing. Note that b3 = 155 and b4 = 420 on Side 5 of the K10. Hole locations are as shown above.

Table 3 Motor Adapter Dimensions (mm)

Motor Adapter	a6	Thickness ³⁾ c Min.	c6	Motor Shaft d2 Max. ²⁾	Wt. lbs.
MT10	140	21	40	19	5
MT20	160	24	50	24	8
MT30	200	25	60	38	15
MT40	250	33	89	48	28
MT50	300	43	81.5	60	42

²⁾ If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

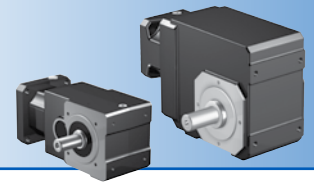
³⁾ Motor plate maximum thickness (c) will vary with motor shaft length but will not be less than shown.



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Dimensional Data

Table 1 K Series Unit Dimensions (mm) – "S" Shrink Ring Output

Unit	a4	B	B2	b	b4	b8	e	f	H	h	ls	lsa	m1	s3	s4	t3	t4	Z1
K1	105	90	106	75 _{js}	90	70	90	3	160	60	149	163	60	M8x1.25	M8x1.25	13	13	—
K2	116	115	134	82 _{js}	115	90	100	3	190	65	178	193	65	M10x1.5	M8x1.25	16	16	—
K3	132	130	146	95 _{js}	130	105	115	3	213	75	190	206	75	M10x1.5	M8x1.25	16	16	—
K4	152	148	173	110 _{js}	155	120	130	3.5	240	90	220	242	90	M12x1.75	M10x1.5	19	19	—
K5	145	160	185	110 _{js}	140	125	130	3.5	260	160	237	254	100	M16x2	M10x1.5	26	26	312
K6	180	168	200	140 _{js}	160	130	165	3.5	310	190	254	276	120	M16x2	M10x1.5	26	26	362
K7	195	190	226	155 _{js}	180	145	185	3.5	342	212	278	288	125	M20x2.5	M12x1.75	31	31	403
K8	226	235	282	185 _{js}	240	185	215	4	410	265	352	362	145	M24x3	M12x1.75	38	38	471
K9	280	285	330	230 _{js}	280	225	265	5	495	315	418	425	180	M30x3.5	M16x2	48	48	565
K10	340	356	400	250 _{hs}	350 ¹⁾	330	300	5	591	375	483	497	225	39 ²⁾	10-M20	45	33	680

¹⁾ Mounting feet are integral on the K10 housing as shown in drawing, facing page. Note b3 = 155 and b4 = 420 on Side 5 of the K10.

²⁾ s3 on K10 are thru holes, not tapped.

Table 2 K Series Unit Dimensions (mm) – "S" Shrink Ring Output

Unit	b3	DS	ds	ds1		ds2	Dsa	Dss	dss	m2	m3	m4	m5
				Bore ^{H7}	Shaft								
K1	30	40	25 _{hg}	25	25 _{hg}	25.5	80	60	30	20	34	25	29
K2	35	45	30 _{hg}	30	30 _{hg}	30.5	88	72	36	25	39	30	34
K3	40	50	35 _{hg}	35	35 _{hg}	35.5	101	80	44	30	39	35	34
K4	50	55	40 _{hg}	40	40 _{hg}	40.5	114	90	50	40	39	45	34
K5	40	65	50 _{hg}	50	50 _{hg}	50.5	116	106	62	40	44	45	39
K6	50	70	50 _{hg}	50	50 _{hg}	50.5	128	106	62	40	45	45	40
K7	55	85	60 _{hg}	60	60 _{hg}	62	164	138	75	40	45	45	40
K8	75	100	70 _{hg}	70	70 _{hg}	72	203	155	90	50	60	60	50
K9	95	120	90 _{hg}	90	90 _{hg}	92	244	200	120	60	70	70	60
K10	115 ¹⁾	130	100 _{hg}	100	100 _{hg}	102	274	230	130	60	80	70	70

¹⁾ Mounting feet are integral on the K10 housing as shown in drawing, facing page. Note F = 420 and FA = 155 on Side 5 of the K10.

Table 4 K Series Unit Dimensions (mm) – "MT" Motor Adapter

Unit	MT10			MT20			MT30			MT40			MT50			Wt. lbs.
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n	
K102	224	124	36	238	128	36	—	—	—	—	—	—	—	—	—	31
K202	248	143	46	262	147	46	274	149	46	—	—	—	—	—	—	40
K203	285	180	46	—	—	—	—	—	—	—	—	—	—	—	—	53
K302	278	163	52.5	292	167	52.5	304	169	52.5	—	—	—	—	—	—	67
K303	315	200	52.5	335	210	16	—	—	—	—	—	—	—	—	—	73
K402	—	—	—	327	187	60	339	189	60	371	192	60	—	—	—	93
K403	350	220	60	370	230	23	—	—	—	—	—	—	—	—	—	100
K513	—	—	—	322	172	15	334	174	15	366	177	15	—	—	—	106
K514	—	—	—	365	215	15	—	—	—	—	—	—	—	—	—	109
K613	—	—	—	361	191	18	373	193	18	405	196	18	411.5	210	18	170
K614	—	—	—	404	234	18	—	—	—	—	—	—	—	—	—	177
K713	—	—	—	—	—	—	406	221	20	438	224	20	443.5	237	20	221
K714	—	—	—	438	263	20	468	283	20	—	—	—	—	—	—	234
K813	—	—	—	—	—	—	452	247	24	483	249	24	488.5	262	24	309
K814	—	—	—	—	—	—	513	308	24	554	320	5	—	—	—	331
K913	—	—	—	—	—	—	—	—	—	563	294	25	568.5	307	25	508
K914	—	—	—	—	—	—	593	353	25	634	365	25	—	—	—	530
K1013	—	—	—	—	—	—	—	—	—	—	—	—	698.5	392	28	1055
K1014	—	—	—	—	—	—	—	—	—	764	450	28	781.5	475	28	1079

For approximate weight, add adapter weight from Table 3 and unit weight from Table 4.

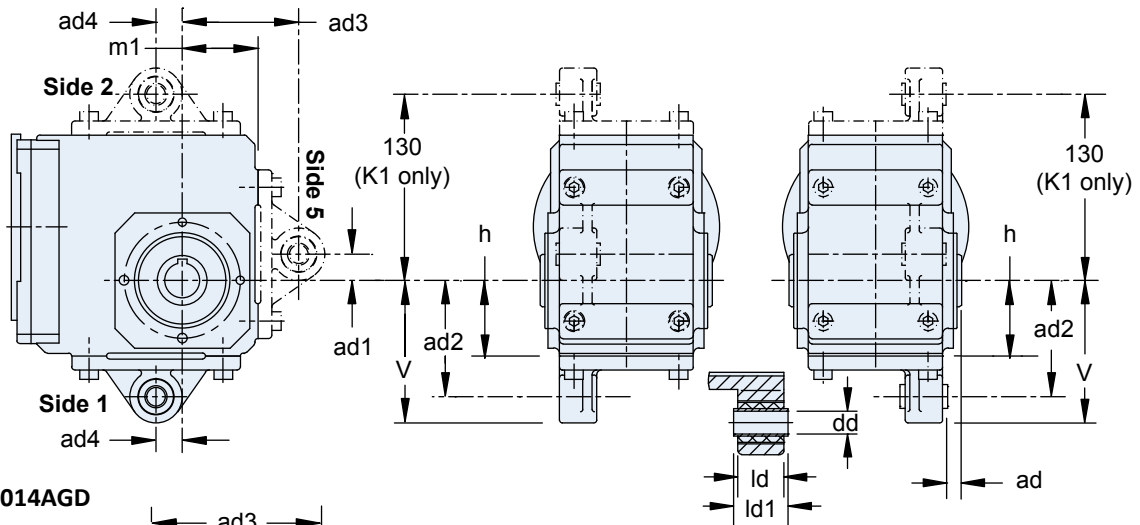
K/KL Series: RIGHT ANGLE — Versatile Outputs

K/KL Series: RIGHT ANGLE — Versatile Outputs

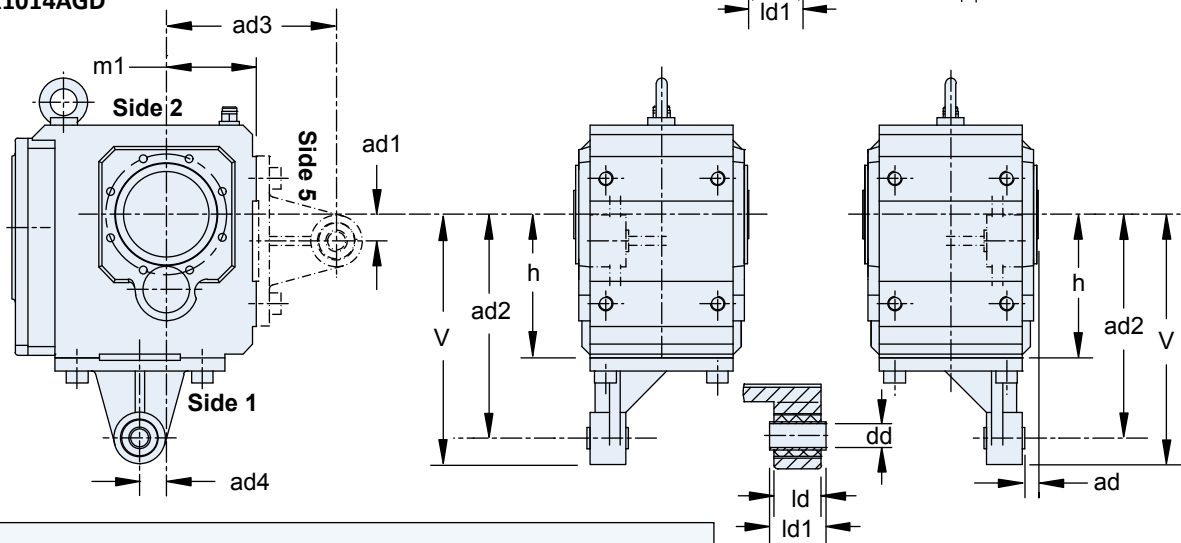
K Series with “A” Hollow Output

“GD” Torque Arm Bracket Housing (Torque arm supplied by others)

K102AGD thru K403AGD



K513AGD thru K1014AGD

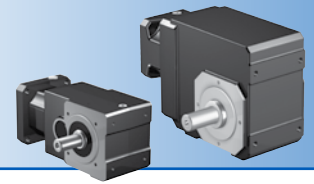


Important:

On K102 thru K1014, brackets can be mounted on Side 1 (shown) or Side 5 (opposite input side). On K102 ONLY, the bracket can also be mounted on Side 2 (top).

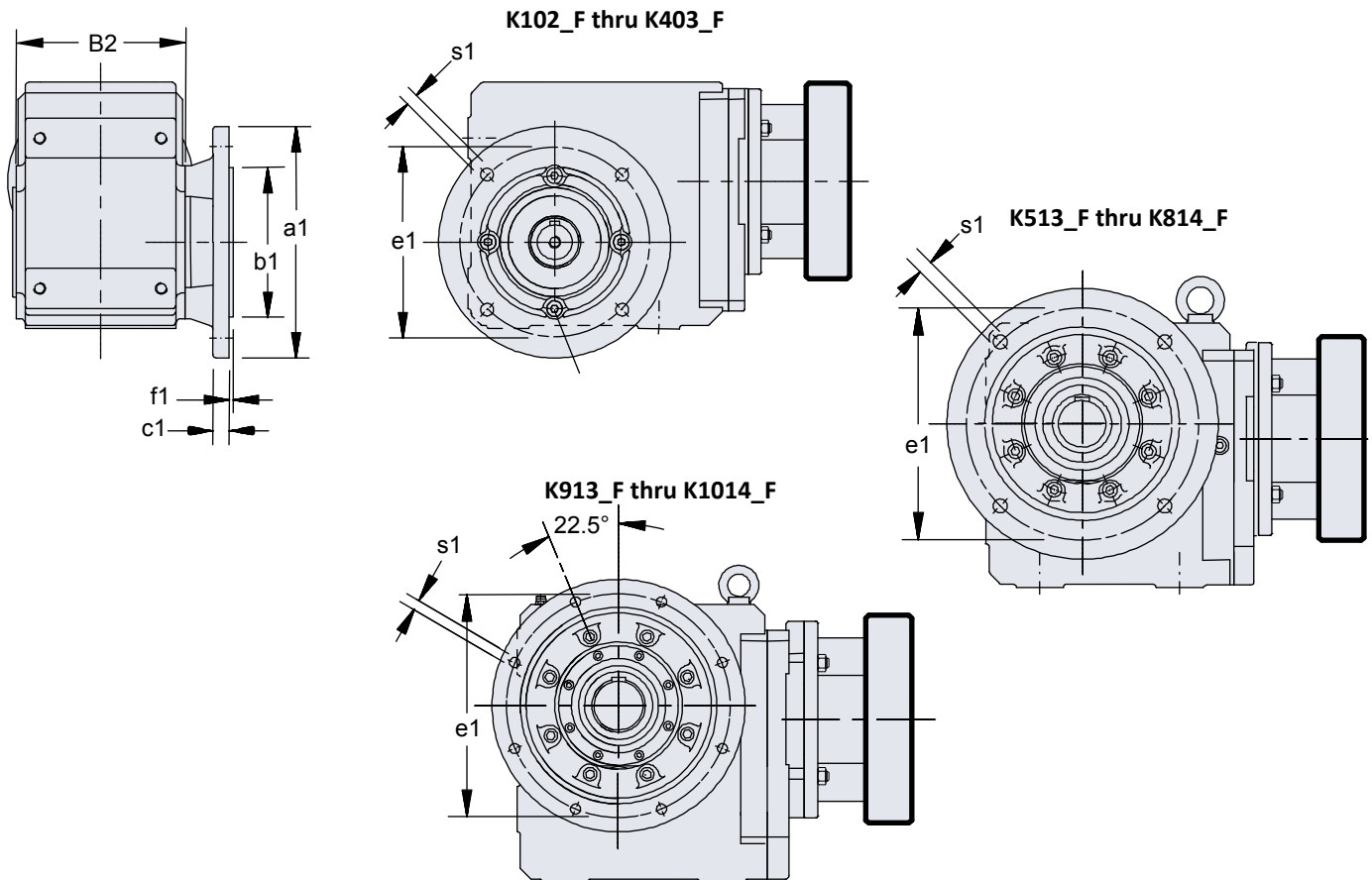
Table 1 K Series Unit Dimensions (mm) — “GD” Torque Arm Bracket Housing Option

Unit	ad	ad1	ad2	ad3	ad4	dd	h	ld	ld1	m1	V
K1	13	15	90	90	15	12 _{H9}	60	24	28	60	111.5
K2	13.5	22.5	100	100	22.5	16 _{H9}	65	32	38	65	122.5
K3	12	25	120	120	25	16 _{H9}	75	32	38	75	142.5
K4	17	27.5	150	150	27.5	20 _{H9}	90	40	46	90	177.5
K5	17	30	250	190	30	20 _{H9}	160	40	46	100	279
K6	20.5	30	250	180	30	20 _{H9}	190	40	46	120	279
K7	23	35	300	213	35	20 _{H9}	212	64	70	125	334
K8	26	45	350	230	45	24 _{H9}	265	102	115	145	386
K9	26	45	450	315	45	24 _{H9}	315	102	115	180	487.5
K10	6	55	550	400	60	40 _{H9}	375	118	124	225	610



Dimensional Data

Optional "F" Round Flange Housing Options for K Series



K/KL Series: RIGHT ANGLE — Versatile Outputs

Table 1 K Series – Optional Flange Dimensions (mm)

Unit	Flange Size a1	b1	B2	c1	e1	f1	s1
K1	140	95 _{j6}	106	10	115	3	9
	160 *	110 _{j6}	106	10	130	3.5	9
K2	160	110 _{j6}	134	12	130	3.5	9
	200 *	130 _{j6}	134	12	165	3.5	11
K3	160	110 _{j6}	146	14	130	3.5	9
	200 *	130 _{j6}	146	14	165	3.5	11
	250	180 _{j6}	146	14	215	4	14
K4	250 *	180 _{j6}	173	15	215	4	14
K5	250 *	180 _{j6}	185	15	215	4	14
K6	300 *	230 _{j6}	200	17	265	4	14
K7	350 *	250 _{h6}	226	18	300	5	18
K8	350	250 _{h6}	282	18	300	5	18
	400 *	300 _{h6}	282	20	350	5	18
	450	350 _{h6}	282	20	400	5	18
K9	450 *	350 _{h6}	330	23	400	5	18
K10	550	450 _{h6}	400	25	500	5	18

* Asterisk indicates standard flange diameter. For other diameters, specify at the time of ordering.

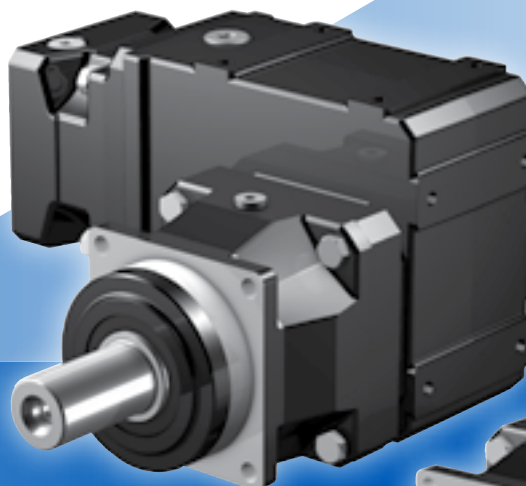


PKX/PK Series: RIGHT ANGLE – Shaft Output

Features

- 4:1 to 561:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (<63dB(A))
- Bearing options to suit your application needs, extending gearbox life and avoiding oversizing, (see page 225).
- Large motor input option to accept bigger diameter motor shafts so you don't use an oversized gearbox
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Low no load running torque, giving you more torque for your application
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

STÖBER PKX provides a right angle option with planetary gearing while the PK Series provides both planetary and helical gearing. The PK provides a more compact, precise solution and can handle higher input speeds. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.



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HOUR SERVICE

General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <90°C Max]
Backlash	PKX ≤4 arcmins, PK ≤3.5 (see performance overview chart, page 220)
Coating	Standard Black (RAL 790-4), Corrosion Resistant option, Food option
Degree of Protection	IP65
Direction of Rotation	PK: Input and output rotate the SAME direction; PKX 1 stage size 7-8, 2 stage size 8-9; opposite: PKX 1 stage size 2-5; 2 stage size 2-5, 7) (see page 222)
Efficiency	PKX 1 stage 96%, 2 stage 94%; PK 94%
Input RPM	Up to 6,000 RPM
Installation	Requires 10.9 fasteners. See page 328, for more information
Lubrication	Lubricated for life – standard Mobil SHC629; option food grade Mobil SHC CIBUS 150
Mounting Position	Must be specified, see page 222
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

Comparative Advantages

	PKX	PK
Precision	Best	Better
Stiffness	Best	Better
Compact design	Best	Better
Quiet running	Better	Best
Higher ratios	Better	Best
Higher input speeds	Better	Best






Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the PKX/PK Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples:	PKX	① P	② 2	③ 2	④ 1	⑤ S	⑥ P	⑦ D	⑧ 0040	⑨ KX301VF	⑩ 0010	⑪ MF	⑫ F	EL1 *
	PK	P	5	2	1	S	P	D	0030	K102VF	0040	MT10	F	EL1 *

Design Option	Part Number Code	Description
① Series	P	Planetary
② Size	2 3 4 5 7 8 9	7 sizes of gearhead (size 2 - 4 available for PKX Series only)
③ Generation	2	Version of gearhead
④ # of Stages	1 2	One stage for ratios of ≤ 10:1 Two stage for ratios >10:1
⑤ Housing	S	Standard mounting style
⑥ Output Shaft	P G	Shaft with key Plain shaft (no key)
⑦ Bearing Options	 R	Ball bearing
	 D	Double row angular contact bearing (except size P2)
	 Z	Cylindrical roller bearing (except size P2)
⑧ Ratio	0030	Ratios range from 4:1 to 100:1 for PKX and from 3:1 to 100:1 for PK Series (0030=3:1; 0160=16:1; 1000=100:1, etc.)
⑨ Secondary Unit	KX301VF K102VF	KX Series right angle unit: 5 sizes, 1 stage, with output shaft (V) & flange (F); K Series helical/bevel unit: 4 sizes, 2 stages, with output shaft (V) & flange (F) — please specify side 3 or side 4 (see page 222 for more information)
⑩ Secondary Unit Ratio	0010	KX Series: Ratios from 1:1 to 3:1; K Series: Ratios from 4:1 to 69:1 (0010=1:1; 0020=2:1; 0030=3:1)
⑪ Motor Adapter	MF MT10-MT40	MF for PKX Series only; 4 MT input sizes for PK Series (See also motor mounting plate option, page 223)
⑫ Special Options	F	Food Duty (PKX size P3 thru P5; PK size P5 only)
* Mounting Position	EL1 EL2 EL3 EL4 EL5 EL6	Required special instruction for all units, see page 222

PKX/PK Series: RIGHT ANGLE – Shaft Output

Special Options

ATEX — PKX Series only

- Atmosphere EXplorable — Please contact factory for this option and allow additional time for delivery

Coating Options

- **Standard:** For dry areas and normal conditions. All units standard coating, unless ordered with Food Duty
- **Food Duty:** Able to withstand severe wet areas and washdown application (PKX size P3 thru P5; PK size P5 only)
- PKX/PK Series are also available with a multi-layer, industrial 316 stainless steel epoxy coating (contact factory)



PKX/PK Series: RIGHT ANGLE – Shaft Output

PKX Series Performance Overview

PKX Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

Size/Generation/# of Stages		P221	P222	P321	P322	P421	P422	P521	P522	P721	P722	P821	P822	P922
Secondary Unit		KX3	KX3	KX3	KX3	KX4	KX3	KX5	KX4	KX7	KX5	KX8	KX7	KX8
Acceleration Torque M_{2BMAX}	Nm	22		65		120		300		700		1600		3000
Output Torque Nom. $^1) M_{2N}$	Nm	16		45		85		210		440		1000		2000
Torsional Stiffness C_2	Nm/arcmin	1.9		5		11		33		55		176		340
Torsional Backlash ²⁾ $\Delta\phi$	arcmin	$\leq 7 - 8.5$		$\leq 5 - 7.5$		$\leq 5 - 7.5$		$\leq 4 - 6.5$		$\leq 4 - 6.5$		$\leq 4 - 6.5$		$\leq 4 - 4.5$
Input Speed Max. n_{1MAX}	Continuous	3500	3500	3500	3500	3000	3500	3000	3000	2100	3000	1300	2100	1300
	Cyclic	6000	6000	6000	6000	4500	6000	4000	4500	3500	4000	3000	3500	3000
Efficiency (@nom torque)	%	96	94	96	94	96	94	96	94	96	94	96	94	94
Weight	kg	3.3	3.9	4.0	4.6	6.8	7.0	12.8	11.3	23.2	21.3	47.4	43.2	82
	lbs	7.3	8.6	8.8	10.1	15	16	28.5	25	51	47	105	95	181
Noise ³⁾	dB(A)	≤ 70	≤ 70	≤ 70	≤ 70	≤ 70	≤ 70	≤ 70	≤ 72	≤ 72	≤ 72	≤ 74	≤ 72	≤ 74

Performance by Bearing Design Option⁴⁾ (R = Ball bearing D = Double row angular contact bearing Z = Cylindrical roller bearing)

Size/Generation		P22KX	P32KX	P42KX	P52KX	P72KX	P82KX	P92KX
Axial Load Max. F_{2AMAX}	R N	500	1000	1500	2300	2900	4700	6000
	D N	—	1400	2250	3500	4500	7500	10,000
	Z N	—	600	1000	1600	2000	3600	5000
Radial Load Max. F_{2RMAX}	R N	1200	2500	4000	6500	8000	13,000	18,000
	D N	—	2750	4500	7000	9000	15,000	20,000
	Z N	—	3000	5000	8000	10,000	18,000	27,000
Tilting Moment Max. M_{2KMAX}	R Nm	34	88	160	338	536	897	1665
	D Nm	—	105	194	406	648	1140	2070
	Z Nm	—	105	200	416	670	1242	2500

¹⁾ Ratings based on input speed (n_i) of 2000 RPM.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_i}{2000}}}$$

For torque at higher input speeds (M_{2NX}) solve the formula:
where n_i = Actual Input Speed.

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_i) of 2000 RPM.

⁴⁾ See page 225 for output bearing options. Rating based on output speed (n_o) of 100 RPM. For values at other speeds see page 224.



Overview

PK Performance Overview

PK Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

Size/Generation/# of Stages			P521	P721		P821		P921
Secondary Unit			K1	K1	K2	K2	K3	K4
Acceleration Torque	M_{2BMAX}	Nm	300	650	700	1400	1600	2700
Output Torque Nom. ¹⁾	M_{2N}	Nm	210	440	440	1000	1000	2000
Torsional Stiffness	C_2	Nm/arcmin	26	46	45	64	108	247
Torsional Backlash ²⁾	$\Delta\phi$	arcmin	≤5	≤4	≤4.5	≤3.5	≤4.5	≤3.5
Input Speed Max.	n_{1MAX}	Continuous	4000	4000	4000	4000	3500	3500
		Cyclic	6000	6000	5500	5500	5000	5000
Efficiency (@nom torque)		%	94	94	94	94	94	94
Weight		kg	22.4	26.5	37	50	55	96.4
		lbs	49	59	82	110	121	213
Noise ³⁾		dB(A)	≤63	≤63	≤64	≤64	≤65	≤66

Performance by Bearing Design Option ⁴⁾ (R = Ball bearing D = Double row angular contact bearing Z = Cylindrical roller bearing)

Size/Secondary Unit			P5_K1	P7_K1	P7_K2	P8_K2	P8_K3	P9_K4
Axial Load Max.	R	N	2300	2900	2900	4700	4700	6000
	D	N	3500	4500	4500	7500	7500	10,000
	Z	N	1600	2000	2000	3600	3600	5000
Radial Load Max.	R	N	6500	8000	8000	13,000	13,000	18,000
	D	N	7000	9000	9000	15,000	15,000	20,000
	Z	N	8000	10,000	10,000	18,000	18,000	27,000
Tilting Moment Max.	R	Nm	338	536	536	897	897	1665
	D	Nm	406	648	648	1140	1140	2070
	Z	Nm	416	670	670	1242	1242	2500

¹⁾ Ratings based on input speed (n_1) of 2000 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula:
where n_1 = Actual Input Speed.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

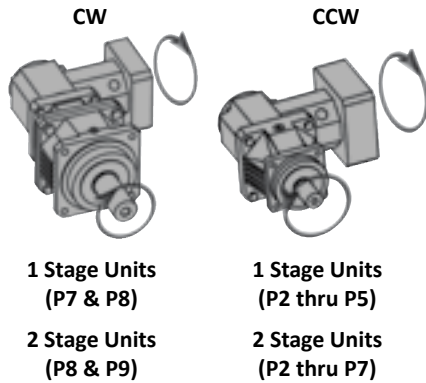
⁴⁾ See page 225 for output bearing options. Rating based on output speed (n_2) of 100 RPM. For values at other speeds see page 224.

PKX/PK Series: RIGHT ANGLE – Shaft Output

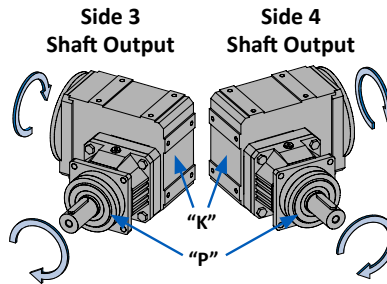
PKX/PK Series: RIGHT ANGLE – Shaft Output

PKX/PK Series Direction of Rotation

PKX Series



PK Series



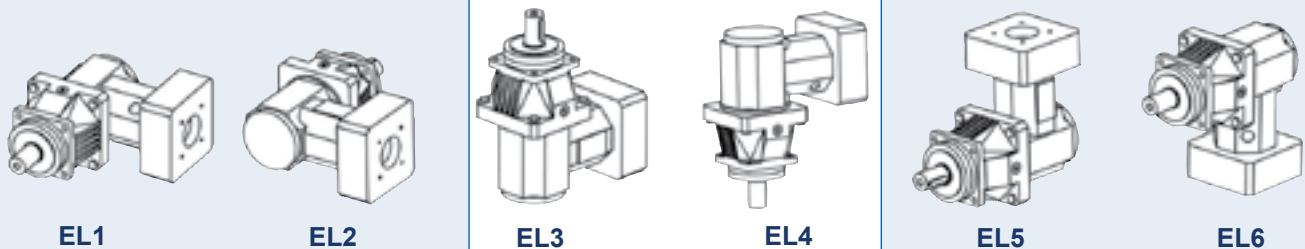
For PK units, the “P” Series planetary output unit can be mounted on either the right (Side 3) or the left (Side 4) of the “K” Series right angle secondary unit. Note CCW input direction of rotation and CW output shaft direction with both mounting configurations.

IMPORTANT: When ordering, Mounting Side 3 or Side 4 **MUST BE SPECIFIED**.

PKX Mounting Position Options

Horizontal Positions (EL1, EL2, EL5, EL6) are interchangeable;

Vertical Positions (EL3 and EL4) **MUST BE SPECIFIED**

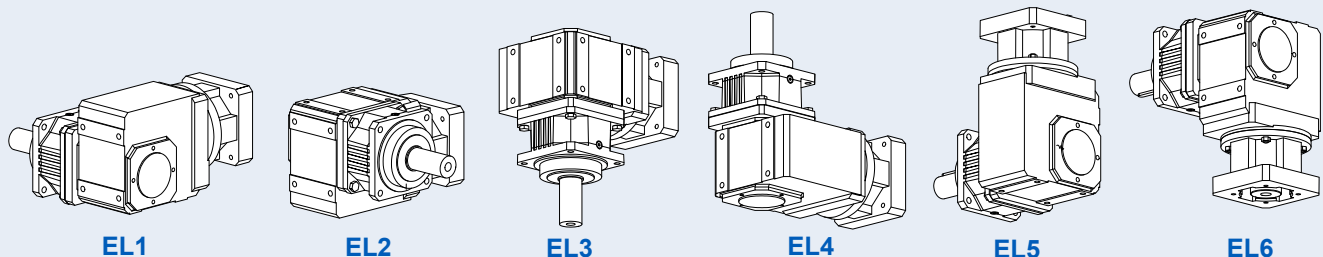
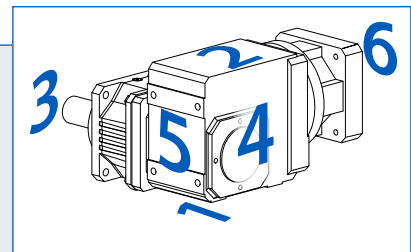


IMPORTANT: Mounting PKX in either vertical mounting position (EL3 or EL4) must be specified when ordering.

PK Mounting Position Options

When ordering any PK unit, the Mounting Position **MUST BE SPECIFIED** using one of the Mounting Position order codes below.

Note: the code relates to the orientation side that faces down. For example, EL1 has side 1 facing down, EL2 has side 2 facing down, etc.





Overview

PKX/PK Series Motor Mounting Plate Option

STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

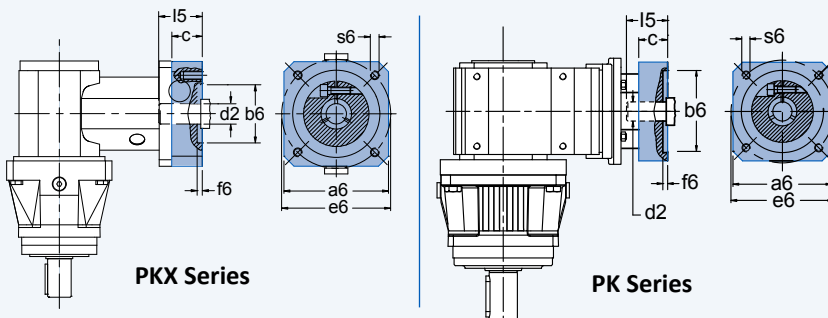
NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate

Motor information required with Motor Adapter (MF option for PKX; MT option for PK)



- d2 Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)
- b6 Pilot Diameter
- e6 Bolt Circle Diameter
- s6 Bolt Diameter
- l5 Motor Shaft Length
- f6 Pilot Length
- a6 Square Flange (Optional – motor plate will typically be made to match this dimension.)

PKX Series Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

	P221KX3 P222KX3	P321KX3 P322KX3 P422KX3	P421KX4 P522KX4	P521KX5 P722KX5	P721KX7 P822KX7	P821KX8 P922KX8
Maximum Allowed Motor Shaft Dia. d2	14	19	24	32	38	48
Minimum Allowed Motor Plate Thickness c*	15	18	21	24	25	33

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

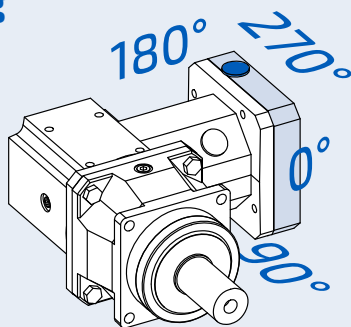
PK Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

	MT10	MT20	MT30	MT40	MT50
Maximum Allowed Motor Shaft Dia. d2	19	24	38	48	60
Minimum Allowed Motor Plate Thickness c*	21	24	25	33	43

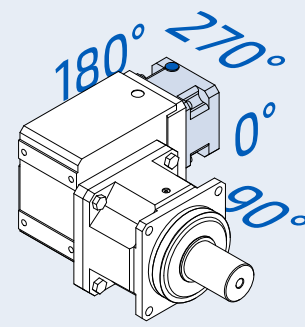
* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

PKX/PK Series Motor Mounting Plate Access Hole

Access to the clamping screw for the motor coupling is located on the 270° side of the motor mounting plate at the location shown. If necessary, the motor mounting plate can be rotated in the field, if a 0°, 90° or 180° orientation for the access hole is desirable.



PKX Series



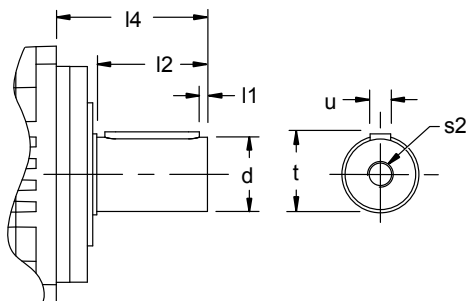
PK Series

PKX/PK Series: RIGHT ANGLE – Shaft Output

PKX/PK Series: RIGHT ANGLE – Shaft Output

PKX/PK Series Output Shaft Options (“P” or “G” designated in part number, for example: P4215 P ...)

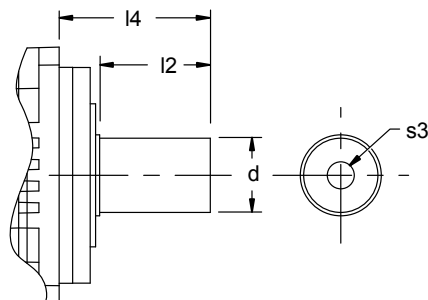
P Shaft with Key



Unit	D k6 mm	l1	l2	l4	S ² (1)	T	U (2)	
		mm	mm	mm		mm	W x H x L	
P2*	12	+0.012/+0.001	2	22	36	M4	13.5	A4x4x18
P3*	16	+0.012/+0.001	2	28	48	M5	18.0	A5x5x22
P4*	22	+0.015/+0.002	3	36	56	M8	24.5	A6x6x28
P5	32	+0.018/+0.002	3	58	88	M12	35.0	A10x8x50
P7	40	+0.018/+0.002	4	82	112	M16	43.0	A12x8x70
P8	55	+0.021/+0.002	6	82	112	M20	59.0	A16x10x70
P9	75	+0.021/+0.002	7	105	143	M20	79.5	A20x12x90

*PKX only

G Shaft without Key



Unit	d k6 mm	l2	l4	S ³ (1)	
		mm	mm		
P2*	12	+0.012/+0.001	22	36	M4
P3*	16	+0.012/+0.001	28	48	M5
P4*	22	+0.015/+0.002	36	56	M8
P5	32	+0.018/+0.002	58	88	M12
P7	40	+0.018/+0.002	82	112	M16
P8	55	+0.021/+0.002	82	112	M20
P9	75	+0.021/+0.002	105	143	M20

*PKX only

(1) The center hole in shafts with keys (Option “P”) are machined to DIN 332 T2 shape DR.

(2) Feather keys are tolerated according to standard DIN 6885.

PKX/PK Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}}, \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}}, \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot M_{2kb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot M_{2kbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq M_{2K}$$

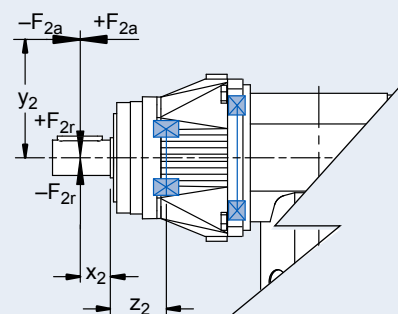
$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot F_{2rb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot F_{2rbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq F_{2RB}$$

Where:

F_{2a}	Axial Load at Output Shaft	M_{2K}	Rated Tilting Torque
F_{2A}	Permissible Axial Load	M_{2k}	Equivalent Tilting Load
F_{2r}	Radial Load at Output Shaft	M_{2KB}	Acceleration Tilting Torque
F_{2R}	Permissible Radial Load	z₂	Distance Factor
F_{2RB}	Acceleration Permissible Radial Load		

All formulas shown are based on METRIC values

Upper case letters are permissible values. Lower case letters are for existing values.



The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle ≤ 40%

$$L_h > 10,000 \text{ hours if } M_{2K}/M_{2A} < 1.25 \text{ and } > 1$$

$$L_h > 20,000 \text{ hours if } M_{2K}/M_{2A} > 1.25 \text{ and } > 1.5$$

$$L_h > 30,000 \text{ hours if } M_{2K}/M_{2A} < 1.5$$

bearing life for duty cycle ≥ 40%

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$



Overview

PKX/PK Output Bearing Options

	R Ball Bearing	D Double Row Angular Contact Bearing	Z Cylindrical Roller Bearing
PKX Series			
PK Series			
Characteristics:	<ul style="list-style-type: none"> Minimal frictional torque Good radial load capacity Axial load approx. 35% of radial load 	<ul style="list-style-type: none"> Low frictional torque Good radial bearing capacity Axial load approx. 50% of radial load 	<ul style="list-style-type: none"> Very good radial load capacity Axial load approx. 20% of radial load
Applications:	<ul style="list-style-type: none"> Spur geared rack/pinion Couplings Belt with or without light tension 	<ul style="list-style-type: none"> Helical geared rack/pinion Couplings with high axial load Belt with or without light tension 	<ul style="list-style-type: none"> Prestressed belt drive Prestressed spur rack drive Applications with high radial loads and/or high service requirements

Permissible Output Shaft Load and Tilting Moments*

	Z ₂ (mm)	F _{2A} (N)	F _{2R} (N)	F _{2RB} (N)	M _{2K} (Nm)	M _{2KB} (Nm)
R Ball Bearing						
P2*	17	500	1200	1300	34	36
P3*	21	1000	2500	2500	88	88
P4*	22	1500	4000	4500	160	180
P5	23	2300	6500	7000	338	364
P7	26	2900	8000	9000	536	603
P8	28	4700	13,000	18,000	897	1242
P9	40	6000	18,000	27,000	1665	2498
D Double Row Angular Contact Bearing						
P3*	24	1400	2750	2750	105	105
P4*	25	2250	4500	5000	194	215
P5	29	3500	7000	8000	406	464
P7	31	4500	9000	10000	648	720
P8	35	7500	15,000	18,000	1140	1368
P9	51	10,000	20,000	30,000	2070	3105
Z Cylindrical Roller Bearing						
P3*	21	600	3000	3000	105	105
P4*	22	1000	5000	5000	200	200
P5	23	1600	8000	8000	416	416
P7	26	2000	10,000	10,000	670	670
P8	28	3600	18,000	18,000	1242	1242
P9	40	5000	27,000	35,000	2500	3238

* Refer to illustration and definitions on page 224. Sizes P2-P4 available on PKX only.

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A'}, F_{2R'} and M_{2K} can be multiplied by a factor of 2.

The permissible load values given are valid with the load applied to the center of the output shaft (x_y).

PKX/PK Series: RIGHT ANGLE – Shaft Output



PKX/PK Series: RIGHT ANGLE – Shaft Output



Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P2KX

4.000	16	22	44	8,5	P221_0040KX301VF0010MF	3000	2500	4500	19	1.1	1.5
5.000	16	22	44	8	P221_0050KX301VF0010MF	3000	2500	4500	19	1.0	1.6
7.000	16	22	44	7,5	P221_0070KX301VF0010MF	3000	2500	4500	19	1.0	1.7
8.000	16	22	44	8,5	P221_0040KX301VF0020MF	3500	3000	5500	19	0.8	1.5
10.000	16	22	44	8	P221_0050KX301VF0020MF	3500	3000	5500	19	0.8	1.6
12.000	16	22	44	8,5	P221_0040KX301VF0030MF	3500	3500	6000	19	0.8	1.5
14.000	16	22	44	7,5	P221_0070KX301VF0020MF	3500	3000	5500	19	0.8	1.7
15.000	16	22	44	8	P221_0050KX301VF0030MF	3500	3500	6000	19	0.7	1.6
16.000	14	18	36	7,5	P221_0080KX301VF0020MF	3500	3000	5500	19	0.8	1.6
20.000	12	18	36	7	P221_0100KX301VF0020MF	3500	3000	5500	19	0.8	1.6
21.000	16	22	44	7,5	P221_0070KX301VF0030MF	3500	3500	6000	19	0.7	1.7
24.000	14	18	36	7,5	P221_0080KX301VF0030MF	3500	3500	6000	19	0.7	1.6
30.000	12	18	36	7	P221_0100KX301VF0030MF	3500	3500	6000	19	0.7	1.6
32.000	16	22	44	8,5	P222_0160KX301VF0020MF	3500	3000	5500	19	0.8	1.8
35.000	16	22	44	8,5	P222_0350KX301VF0010MF	3000	2500	4500	19	1.0	1.8
40.000	16	22	44	8,5	P222_0200KX301VF0020MF	3500	3000	5500	19	0.8	1.8
50.000	16	22	44	8,5	P222_0250KX301VF0020MF	3500	3000	5500	19	0.8	1.8
56.000	16	22	44	8,5	P222_0280KX301VF0020MF	3500	3000	5500	19	0.8	1.8
60.000	16	22	44	8,5	P222_0200KX301VF0030MF	3500	3500	6000	19	0.8	1.8
64.000	14	18	36	8,5	P222_0320KX301VF0020MF	3500	3000	5500	19	0.8	1.7
70.000	16	22	44	8,5	P222_0350KX301VF0020MF	3500	3000	5500	19	0.8	1.8
75.000	16	22	44	8,5	P222_0250KX301VF0030MF	3500	3500	6000	19	0.7	1.8
80.000	16	22	44	8,5	P222_0400KX301VF0020MF	3500	3000	5500	19	0.8	1.8
84.000	16	22	44	8,5	P222_0280KX301VF0030MF	3500	3500	6000	19	0.7	1.8
100.000	16	22	44	8	P222_0500KX301VF0020MF	3500	3000	5500	19	0.8	1.8
105.000	16	22	44	8,5	P222_0350KX301VF0030MF	3500	3500	6000	19	0.7	1.8
120.000	16	22	44	8,5	P222_0400KX301VF0030MF	3500	3500	6000	19	0.7	1.8
140.000	16	22	44	8	P222_0700KX301VF0020MF	3500	3000	5500	19	0.8	1.8
150.000	16	22	44	8	P222_0500KX301VF0030MF	3500	3500	6000	19	0.7	1.8
200.000	12	18	36	8	P222_1000KX301VF0020MF	3500	3000	5500	19	0.8	1.6
210.000	16	22	44	8	P222_0700KX301VF0030MF	3500	3500	6000	19	0.7	1.8
300.000	12	18	36	8	P222_1000KX301VF0030MF	3500	3500	6000	19	0.7	1.6

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D° mm	Input Inertia ³⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P3KX

3/1	29	38	68	7,5	P321_0030KX301VF0010MF	3000	2500	4500	19	1.2	2.5
4/1	39	50	91	6,5	P321_0040KX301VF0010MF	3000	2500	4500	19	1.1	3.2
5/1	45	63	113	6	P321_0050KX301VF0010MF	3000	2500	4500	19	1.1	3.6
6/1	29	38	77	7,5	P321_0030KX301VF0020MF	3500	3000	5500	19	0.9	2.5
7/1	45	60	130	5,5	P321_0070KX301VF0010MF	3000	2500	4500	19	1.0	3.7
8/1	39	50	103	6,5	P321_0040KX301VF0020MF	3500	3000	5500	19	0.8	3.2
10/1	45	63	129	6	P321_0050KX301VF0020MF	3500	3000	5500	19	0.8	3.6
12/1	39	50	103	6,5	P321_0040KX301VF0030MF	3500	3500	6000	19	0.8	3.2
14/1	45	60	130	5,5	P321_0070KX301VF0020MF	3500	3000	5500	19	0.8	3.7
15/1	45	63	129	6	P321_0050KX301VF0030MF	3500	3500	6000	19	0.8	3.6
16/1	40	50	100	5,5	P321_0080KX301VF0020MF	3500	3000	5500	19	0.8	3.7
20/1	30	50	100	5	P321_0100KX301VF0020MF	3500	3000	5500	19	0.8	3.7
21/1	45	60	130	5,5	P321_0070KX301VF0030MF	3500	3500	6000	19	0.7	3.7
24/1	40	50	100	5,5	P321_0080KX301VF0030MF	3500	3500	6000	19	0.7	3.7
30/1	30	50	100	5	P321_0100KX301VF0030MF	3500	3500	6000	19	0.7	3.7
32/1	45	65	130	5,5	P322_0160KX301VF0020MF	3500	3000	5500	19	0.8	4.4
35/1	45	65	130	5,5	P322_0350KX301VF0010MF	3000	2500	4500	19	1.0	4.5
40/1	45	65	130	5,5	P322_0200KX301VF0020MF	3500	3000	5500	19	0.8	4.5
50/1	45	65	130	5,5	P322_0250KX301VF0020MF	3500	3000	5500	19	0.8	4.5
56/1	45	65	130	5,5	P322_0280KX301VF0020MF	3500	3000	5500	19	0.8	4.4
60/1	45	65	130	5,5	P322_0200KX301VF0030MF	3500	3500	6000	19	0.8	4.5
64/1	40	50	100	5,5	P322_0320KX301VF0020MF	3500	3000	5500	19	0.8	4.0
70/1	45	65	130	5,5	P322_0350KX301VF0020MF	3500	3000	5500	19	0.8	4.5
75/1	45	65	130	5,5	P322_0250KX301VF0030MF	3500	3500	6000	19	0.7	4.5
80/1	45	65	130	5,5	P322_0400KX301VF0020MF	3500	3000	5500	19	0.8	4.4
84/1	45	65	130	5,5	P322_0280KX301VF0030MF	3500	3500	6000	19	0.7	4.4
100/1	45	65	130	5	P322_0500KX301VF0020MF	3500	3000	5500	19	0.8	4.5
105/1	45	65	130	5,5	P322_0350KX301VF0030MF	3500	3500	6000	19	0.7	4.5
120/1	45	65	130	5,5	P322_0400KX301VF0030MF	3500	3500	6000	19	0.7	4.4
140/1	45	60	130	5	P322_0700KX301VF0020MF	3500	3000	5500	19	0.8	4.2
150/1	45	65	130	5	P322_0500KX301VF0030MF	3500	3500	6000	19	0.7	4.5
200/1	30	50	100	5	P322_1000KX301VF0020MF	3500	3000	5500	19	0.8	3.9
210/1	45	60	130	5	P322_0700KX301VF0030MF	3500	3500	6000	19	0.7	4.2
300/1	30	50	100	5	P322_1000KX301VF0030MF	3500	3500	6000	19	0.7	3.9

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

PKX/PK Series: RIGHT ANGLE – Shaft Output



PKX/PK Series: RIGHT ANGLE – Shaft Output



Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P4KX

3.000	50	73	155	7,5	P421_0030KX401VF0010MF	2500	2000	4000	24	3.0	5.2
4.000	78	97	206	6,5	P421_0040KX401VF0010MF	2500	2000	4000	24	2.7	6.9
5.000	85	120	240	6	P421_0050KX401VF0010MF	2500	2000	4000	24	2.5	8.0
6.000	50	73	155	7,5	P421_0030KX401VF0020MF	2500	2500	5000	24	1.8	5.2
7.000	85	110	240	5,5	P421_0070KX401VF0010MF	2500	2000	4000	24	2.4	8.4
8.000	78	97	206	6,5	P421_0040KX401VF0020MF	2500	2500	5000	24	1.7	6.9
10.000	85	120	240	6	P421_0050KX401VF0020MF	2500	2500	5000	24	1.7	8.0
12.000	78	97	206	6,5	P421_0040KX401VF0030MF	3000	3000	5500	24	1.5	6.9
14.000	85	110	240	5,5	P421_0070KX401VF0020MF	2500	2500	5000	24	1.6	8.4
15.000	85	120	240	6	P421_0050KX401VF0030MF	3000	3000	5500	24	1.5	8.0
16.000	80	100	200	5,5	P421_0080KX401VF0020MF	2500	2500	5000	24	1.6	8.3
20.000	60	100	200	5	P421_0100KX401VF0020MF	2500	2500	5000	24	1.6	8.3
21.000	85	110	240	5,5	P421_0070KX401VF0030MF	3000	3000	5500	24	1.4	8.4
24.000	80	100	200	5,5	P421_0080KX401VF0030MF	3000	3000	5500	24	1.4	8.3
30.000	60	100	200	5	P421_0100KX401VF0030MF	3000	3000	5500	24	1.4	8.3
32.000	85	120	240	5,5	P422_0160KX301VF0020MF	3500	3000	5500	19	0.8	9.7
35.000	85	120	240	5,5	P422_0350KX301VF0010MF	3000	2500	4500	19	1.0	10.4
40.000	85	120	240	5,5	P422_0200KX301VF0020MF	3500	3000	5500	19	0.8	10.2
50.000	85	120	240	5,5	P422_0250KX301VF0020MF	3500	3000	5500	19	0.8	10.4
56.000	85	120	240	5,5	P422_0280KX301VF0020MF	3500	3000	5500	19	0.8	10.0
60.000	85	120	240	5,5	P422_0200KX301VF0030MF	3500	3500	6000	19	0.8	10.2
64.000	80	100	200	5,5	P422_0320KX301VF0020MF	3500	3000	5500	19	0.8	9.1
70.000	85	120	240	5,5	P422_0350KX301VF0020MF	3500	3000	5500	19	0.8	10.4
75.000	85	120	240	5,5	P422_0250KX301VF0030MF	3500	3500	6000	19	0.8	10.4
80.000	85	120	240	5,5	P422_0400KX301VF0020MF	3500	3000	5500	19	0.8	10.0
84.000	85	120	240	5,5	P422_0280KX301VF0030MF	3500	3500	6000	19	0.8	10.0
100.000	85	120	240	5	P422_0500KX301VF0020MF	3500	3000	5500	19	0.8	10.4
105.000	85	120	240	5,5	P422_0350KX301VF0030MF	3500	3500	6000	19	0.8	10.4
120.000	85	120	240	5,5	P422_0400KX301VF0030MF	3500	3500	6000	19	0.7	10.0
140.000	85	110	240	5	P422_0700KX301VF0020MF	3500	3000	5500	19	0.8	9.6
150.000	85	120	240	5	P422_0500KX301VF0030MF	3500	3500	6000	19	0.7	10.4
200.000	60	100	200	5	P422_1000KX301VF0020MF	3500	3000	5500	19	0.8	8.8
210.000	85	110	240	5	P422_0700KX301VF0030MF	3500	3500	6000	19	0.7	9.6
300.000	60	100	200	5	P422_1000KX301VF0030MF	3500	3500	6000	19	0.7	8.8

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P5KX (continued next page)

3.000	120	183	387	6,5	P521_0030KX501VF0010MF	2500	2000	3500	32	10.3	13.5
4.000	194	244	515	5,5	P521_0040KX501VF0010MF	2500	2000	3500	32	8.5	17.5
5.000	210	300	600	5	P521_0050KX501VF0010MF	2500	2000	3500	32	8.1	20.5
6.000	120	183	387	6,5	P521_0030KX501VF0020MF	2500	2500	4500	32	6.0	13.5
7.000	210	270	600	4,5	P521_0070KX501VF0010MF	2500	2000	3500	32	7.7	22.6
8.000	194	244	515	5,5	P521_0040KX501VF0020MF	2500	2500	4500	32	5.5	17.5
10.000	210	300	600	5	P521_0050KX501VF0020MF	2500	2500	4500	32	5.4	20.5
12.000	194	244	515	5,5	P521_0040KX501VF0030MF	3000	3000	5000	32	4.9	17.5
14.000	210	270	600	4,5	P521_0070KX501VF0020MF	2500	2500	4500	32	5.3	22.6
15.000	210	300	600	5	P521_0050KX501VF0030MF	3000	3000	5000	32	4.8	20.5
16.000	200	250	500	4,5	P521_0080KX501VF0020MF	2500	2500	4500	32	5.3	22.2
20.000	140	250	500	4	P521_0100KX501VF0020MF	2500	2500	4500	32	5.3	22.6

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P5K (continued next page)

12.00	12/1	120	121	161	≤5	P521_0030 K102VF0040 MT10	3300	2800	4500	1.51	22.8
			200	303		P521_0030 K102VF0040 MT20				2.11	
16.00	16/1	161	161	214	≤4.5	P521_0040 K102VF0040 MT10	3300	2800	4500	1.49	24.8
			210	300		403				P521_0040 K102VF0040 MT20	
20.00	20/1	202	202	268	≤4	P521_0050 K102VF0040 MT10	3300	2800	4500	1.47	26.3
			210	300		504				P521_0050 K102VF0040 MT20	
27.84	7600/273	210	281	373	≤4	P521_0050 K102VF0056 MT10	3300	2800	4500	1.31	26.3
			300	600		P521_0050 K102VF0056 MT20				1.91	
30.00	30/1	210	286	380	≤4	P521_0050 K102VF0060 MT10	3300	2800	4500	1.07	26.3
			300	600		P521_0050 K102VF0060 MT20				1.67	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

 Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P5KX (continued next page)

21.000	210	270	600	4,5	P521_0070KX501VF0030MF	3000	3000	5000	32	4.8	22.6
24.000	200	250	500	4,5	P521_0080KX501VF0030MF	3000	3000	5000	32	4.8	22.2
30.000	140	250	500	4	P521_0100KX501VF0030MF	3000	3000	5000	32	4.8	22.6
32.000	210	300	600	4,5	P522_0160KX401VF0020MF	2500	2500	5000	24	1.7	24.8
35.000	210	300	600	4,5	P522_0350KX401VF0010MF	2500	2000	4000	24	2.5	27.1
40.000	210	300	600	4,5	P522_0200KX401VF0020MF	2500	2500	5000	24	1.7	26.3
50.000	210	300	600	4,5	P522_0250KX401VF0020MF	2500	2500	5000	24	1.7	26.9
56.000	210	300	600	4,5	P522_0280KX401VF0020MF	2500	2500	5000	24	1.6	25.9
60.000	210	300	600	4,5	P522_0200KX401VF0030MF	3000	3000	5500	24	1.5	26.3
64.000	200	250	500	4,5	P522_0320KX401VF0020MF	2500	2500	5000	24	1.7	24.5
70.000	210	300	600	4,5	P522_0350KX401VF0020MF	2500	2500	5000	24	1.6	27.1

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

 Reducer Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P5K (continued next page)

33.22	299/9	210	300	414	≤4	P521_0050 K102VF0066 MT10	3600	3300	5000	1.00	26.3
				600		P521_0050 K102VF0066 MT20	3500			1.60	
41.55	1911/46	210	300	498	≤4	P521_0050 K102VF0083 MT10	3600	3300	5000	0.89	26.3
				600		P521_0050 K102VF0083 MT20	3500			1.49	
46.25	8740/189	210	300	577	≤4	P521_0050 K102VF0092 MT10	3600	3300	5000	0.94	26.3
				600		P521_0050 K102VF0092 MT20	3500			1.54	
57.83	1330/23	210	300	600	≤4	P521_0050 K102VF0115 MT10	3600	3300	5000	0.85	26.3
						P521_0050 K102VF0115 MT20	3500			1.45	
70.57	494/7	210	300	600	≤4	P521_0050 K102VF0140 MT10	4000	3800	5500	0.79	26.3
							P521_0050 K102VF0140 MT20	3500	3500	5000	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P5KX (continued from previous page)

75.000	210	300	600	4,5	P522_0250KX401VF0030MF	3000	3000	5500	24	1.5	26.9
80.000	210	300	600	4,5	P522_0400KX401VF0020MF	2500	2500	5000	24	1.6	25.8
84.000	210	300	600	4,5	P522_0280KX401VF0030MF	3000	3000	5500	24	1.4	25.9
100.000	210	300	600	4	P522_0500KX401VF0020MF	2500	2500	5000	24	1.6	27.0
105.000	210	300	600	4,5	P522_0350KX401VF0030MF	3000	3000	5500	24	1.4	27.1
120.000	210	300	600	4,5	P522_0400KX401VF0030MF	3000	3000	5500	24	1.4	25.8
140.000	210	270	600	4	P522_0700KX401VF0020MF	2500	2500	5000	24	1.6	26.2
150.000	210	300	600	4	P522_0500KX401VF0030MF	3000	3000	5500	24	1.4	27.0
200.000	140	250	500	4	P522_1000KX401VF0020MF	2500	2500	5000	24	1.6	24.3
210.000	210	270	600	4	P522_0700KX401VF0030MF	3000	3000	5500	24	1.4	26.2
300.000	140	250	500	4	P522_1000KX401VF0030MF	3000	3000	5500	24	1.4	24.3

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N} <2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P5K (continued from previous page)

87.82	10,450/119	210	300	600	≤4	P521_0050 K102VF0175 MT10	4000	3800	5500	0.74	26.3
						P521_0050 K102VF0175 MT20	3500	3500	5000	1.34	
116.3	5700/49	210	300	600	≤4	P521_0050 K102VF0230 MT10	4000	4000	6000	0.69	26.3
						P521_0050 K102VF0230 MT20	3500	3500	5000	1.29	
140.2	2945/21	210	300	600	≤4	P521_0050 K102VF0280 MT10	4000	4000	6000	0.67	26.3
						P521_0050 K102VF0280 MT20	3500	3500	5000	1.27	
175.5	3686/21	210	300	600	≤4	P521_0050 K102VF0350 MT10	4000	4000	6000	0.64	26.3
						P521_0050 K102VF0350 MT20	3500	3500	5000	1.24	
234.6	11,495/49	210	300	600	≤4	P521_0050 K102VF0470 MT10	4000	4000	6000	0.63	26.3
280.5	5890/21	210	300	600	≤4	P521_0050 K102VF0560 MT10	4000	4000	6000	0.62	26.3

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P7KX (continued next page)

3.000	280	364	680	6,5	P721_0030KX701VF0010MF	1800	1600	3000	38	33.2	36.8
4.000	388	485	907	5,5	P721_0040KX701VF0010MF	1800	1600	3000	38	28.4	43.0
5.000	440	606	1134	5	P721_0050KX701VF0010MF	1800	1600	3000	38	26.9	46.3
6.000	280	364	773	6,5	P721_0030KX701VF0020MF	1800	1800	3500	38	16.8	36.8
7.000	440	650	1254	4,5	P721_0070KX701VF0010MF	1800	1600	3000	38	25.9	49.2
8.000	388	485	1031	5,5	P721_0040KX701VF0020MF	1800	1800	3500	38	15.6	43.0
10.000	440	606	1289	5	P721_0050KX701VF0020MF	1800	1800	3500	38	15.2	46.3

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M _{2N <2000 RPM}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P7K (continued next page)

12.00	12/1	129	129	171	≤4.5	P721_0030 K202VF0040 MT10	3000	2600	4000	3.59	38.5
		280	497	758		P721_0030 K202VF0040 MT20				4.19	
			500			P721_0030 K202VF0040 MT30				8.99	
16.00	16/1	172	172	229	≤4.5	P721_0040 K202VF0040 MT10	3000	2600	4000	3.29	44.4
		401	677	1010		P721_0040 K202VF0040 MT20				3.89	
			P721_0040 K202VF0040 MT30			8.69					
20.00	20/1	215	215	286	≤4	P721_0050 K202VF0040 MT10	3000	2600	4000	3.20	47.3
		440	700	1263		P721_0050 K202VF0040 MT20				3.80	
			P721_0050 K202VF0040 MT30			8.60					
25.89	10,535/407	440	700	1400	≤4	P721_0050 K202VF0052 MT20	3000	2600	4000	2.94	47.3
						P721_0050 K202VF0052 MT30				7.74	
28.00	28/1	282	282	375	≤4	P721_0070 K102VF0040 MT10	3300	2800	4500	1.49	47.2
		393	531	706		P721_0070 K102VF0040 MT20				2.09	
30.00	30/1	317	317	421	≤4	P721_0050 K202VF0060 MT10	3000	2600	4000	2.38	47.3
		440	700	1400		P721_0050 K202VF0060 MT20				2.98	
			P721_0050 K202VF0060 MT30			7.78					
33.42	11,395/341	333	333	443	≤4	P721_0050 K202VF0067 MT10	3500	3100	4500	1.76	47.3
		440	700	1400		P721_0050 K202VF0067 MT20				2.36	
			P721_0050 K202VF0067 MT30			4000			7.16		
38.98	1520/39	393	393	522	≤4	P721_0070 K102VF0056 MT10	3300	2800	4500	1.32	47.2
		439	650	983		P721_0070 K102VF0056 MT20				1.92	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P7KX (continued next page)

12.000	388	485	1031	5,5	P721_0040KX701VF0030MF	2100	2100	4000	38	12.8	43.0
14.000	440	650	1254	4,5	P721_0070KX701VF0020MF	1800	1800	3500	38	15.0	49.2
15.000	440	606	1289	5	P721_0050KX701VF0030MF	2100	2100	4000	38	12.6	46.3
16.000	400	500	1000	4,5	P721_0080KX701VF0020MF	1800	1800	3500	38	14.9	48.8
20.000	300	500	1000	4	P721_0100KX701VF0020MF	1800	1800	3500	38	14.8	47.0
21.000	440	650	1254	4,5	P721_0070KX701VF0030MF	2100	2100	4000	38	12.5	49.2

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt[®] coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P7K (continued next page)

40.00	40/1	300	403	536	≤3.5	P721_0100 K102VF0040 MT10	3300	2800	4500	1.46	46.1
			500	1000		P721_0100 K102VF0040 MT20				2.06	
41.99	12,470/297	405	405	538	≤4	P721_0050 K202VF0084 MT10	3500	3100	4500	1.41	47.3
			700	1400		P721_0050 K202VF0084 MT20				2.01	
						P721_0050 K202VF0084 MT30				6.81	
42.00	42/1	401	401	533	≤4	P721_0070 K102VF0060 MT10	3300	2800	4500	1.08	47.2
			440	1003		P721_0070 K102VF0060 MT20				1.68	
45.95	11,395/248	440	458	609	≤4	P721_0050 K202VF0092 MT10	3500	3100	4500	1.56	47.3
			700	1400		P721_0050 K202VF0092 MT20				2.16	
						P721_0050 K202VF0092 MT30				6.96	
46.51	2093/45	437	437	580	≤4	P721_0070 K102VF0066 MT10	3600	3300	5000	1.01	47.2
			440	1092		P721_0070 K102VF0066 MT20	3500			1.61	
55.68	15,200/273	300	745		≤3.5	P721_0100 K102VF0056 MT10	3300	2800	4500	1.30	46.1
			1000			P721_0100 K102VF0056 MT20				1.90	
57.73	6235/108	440	556	739	≤4	P721_0050 K202VF0115 MT10	3500	3100	4500	1.29	47.3
			700	1400		P721_0050 K202VF0115 MT20			4000	1.89	
						P721_0050 K202VF0115 MT30			4000	6.69	
58.16	13,377/230	440	524	697	≤4	P721_0070 K102VF0083 MT10	3600	3300	5000	0.89	47.2
			650	1256		P721_0070 K102VF0083 MT20	3500			1.49	
60.00	60/1	300	761		≤3.5	P721_0100 K102VF0060 MT10	3300	2800	4500	1.07	46.1
			1000			P721_0100 K102VF0060 MT20				1.67	
64.74	1748/27	440	608	807	≤4	P721_0070 K102VF0092 MT10	3600	3300	5000	0.95	47.2
			650	1256		P721_0070 K102VF0092 MT20	3500			1.55	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P7KX (continued next page)

24.000	400	500	1000	4,5	P721_0080KX701VF0030MF	2100	2100	4000	38	12.5	48.8
30.000	300	500	1000	4	P721_0100KX701VF0030MF	2100	2100	4000	38	12.5	47.0
32.000	440	700	1381	4,5	P722_0160KX501VF0020MF	2500	2500	4500	32	5.6	49.4
35.000	440	700	1400	4,5	P722_0350KX501VF0010MF	2500	2000	3500	32	7.8	52.2
40.000	440	700	1400	4,5	P722_0200KX501VF0020MF	2500	2500	4500	32	5.5	50.8
50.000	440	700	1400	4,5	P722_0250KX501VF0020MF	2500	2500	4500	32	5.4	51.7
56.000	440	700	1381	4,5	P722_0280KX501VF0020MF	2500	2500	4500	32	5.4	51.5

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P7K (continued next page)

66.44	598/9	300	500	829	≤3.5	P721_0100 K102VF0066 MT10	3600	3300	5000	1.00	46.1
				1000		P721_0100 K102VF0066 MT20	3500			1.60	
69.26	14,405/208	440	644	856	≤4	P721_0050 K202VF0140 MT10	3900	3500	5000	1.12	47.3
			700	1400		P721_0050 K202VF0140 MT20	3500			1.72	
						P721_0050 K202VF0140 MT30				4000	
70.98	3549/50	440	618	821	≤4	P721_0070 K102VF0100 MT10	4000	3800	5500	0.82	47.2
			650	1256		P721_0070 K102VF0100 MT20	3500	3500	5000	1.42	
80.96	1862/23	440	650	970	≤4	P721_0070 K102VF0115 MT10	3600	3300	5000	0.85	47.2
				1256		P721_0070 K102VF0115 MT20	3500			1.45	
83.09	1911/23	300	500	995	≤3.5	P721_0100 K102VF0083 MT10	3600	3300	5000	0.89	46.1
				1000		P721_0100 K102VF0083 MT20	3500			1.49	
87.35	2795/32	440	700	1037	≤4	P721_0050 K202VF0175 MT10	3900	3500	5000	0.97	47.3
				1400		P721_0050 K202VF0175 MT20	3500			1.57	
						P721_0050 K202VF0175 MT30				4000	
88.33	3003/34	440	650	981	≤4	P721_0070 K102VF0125 MT10	4000	3800	5500	0.75	47.2
			1256	P721_0070 K102VF0125 MT20		3500	3500	5000	1.35		
92.49	17,480/189	300	500	1000	≤3.5	P721_0100 K102VF0092 MT10	3600	3300	5000	0.94	46.1
				P721_0100 K102VF0092 MT20		3500	1.54				
98.80	494/5	440	650	1143	≤4	P721_0070 K102VF0140 MT10	4000	3800	5500	0.79	47.2
			1256	P721_0070 K102VF0140 MT20		3500	3500	5000	1.39		

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D° mm	Input Inertia ³⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P7KX (continued next page)

60.000	440	700	1400	4,5	P722_0200KX501VF0030MF	3000	3000	5000	32	4.9	50.8
64.000	400	500	1000	4,5	P722_0320KX501VF0020MF	2500	2500	4500	32	5.5	50.6
70.000	440	700	1400	4,5	P722_0350KX501VF0020MF	2500	2500	4500	32	5.4	52.2
75.000	440	700	1400	4,5	P722_0250KX501VF0030MF	3000	3000	5000	32	4.8	51.7
80.000	440	700	1381	4,5	P722_0400KX501VF0020MF	2500	2500	4500	32	5.3	51.5
84.000	440	700	1381	4,5	P722_0280KX501VF0030MF	3000	3000	5000	32	4.8	51.5
100.000	440	700	1400	4	P722_0500KX501VF0020MF	2500	2500	4500	32	5.3	52.2

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness Cz (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M2N <2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P7K (continued next page)

115.7	2660/23	300	500	1000	≤3.5	P721_0100 K102VF0115 MT10	3600	3300	5000	0.85	46.1
						P721_0100 K102VF0115 MT20	3500			1.45	
115.9	14,835/128	440	700	1302	≤4	P721_0050 K202VF0230 MT10	4000	3900	5500	0.84	47.3
				1400		P721_0050 K202VF0230 MT20	3500	3500	5000	1.44	
						P721_0050 K202VF0230 MT30			4000	6.24	
117.0	117/1	440	650	1238	≤4	P721_0070 K102VF0165 MT10	4000	4000	6000	0.70	47.2
						P721_0070 K102VF0165 MT20	3500	3500	5000	1.30	
122.9	2090/17	440	650	1256	≤4	P721_0070 K102VF0175 MT10	4000	3800	5500	0.74	47.2
						P721_0070 K102VF0175 MT20	3500	3500	5000	1.34	
139.8	559/4	440	700	1400	≤4	P721_0050 K202VF0280 MT10	4000	3900	5500	0.78	47.3
						P721_0050 K202VF0280 MT20	3500	3500	5000	1.38	
						P721_0050 K202VF0280 MT30			4000	6.18	
141.1	2821/20	440	650	1256	≤4	P721_0070 K102VF0200 MT10	4000	4000	6000	0.67	47.2
						P721_0070 K102VF0200 MT20	3500	3500	5000	1.27	
162.9	1140/7	440	650	1256	≤4	P721_0070 K102VF0230 MT10	4000	4000	6000	0.69	47.2
						P721_0070 K102VF0230 MT20	3500	3500	5000	1.29	
172.8	9675/56	440	700	1400	≤4	P721_0050 K202VF0350 MT10	4000	3900	5500	0.73	47.3
						P721_0050 K202VF0350 MT20	3500	3500	5000	1.33	
						P721_0050 K202VF0350 MT30			4000	6.13	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations..

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P7KX (continued from previous page)

105.000	440	700	1400	4,5	P722_0350KX501VF0030MF	3000	3000	5000	32	4.8	52.2
120.000	440	700	1381	4,5	P722_0400KX501VF0030MF	3000	3000	5000	32	4.8	51.5
140.000	440	650	1254	4	P722_0700KX501VF0020MF	2500	2500	4500	32	5.3	52.4
150.000	440	700	1400	4	P722_0500KX501VF0030MF	3000	3000	5000	32	4.8	52.2
200.000	300	500	1000	4	P722_1000KX501VF0020MF	2500	2500	4500	32	5.3	48.4
210.000	440	650	1254	4	P722_0700KX501VF0030MF	3000	3000	5000	32	4.8	52.4
300.000	300	500	1000	4	P722_1000KX501VF0030MF	3000	3000	5000	32	4.8	48.4

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} <2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P7K (continued from previous page)

176.5	8827/50	440	650	1256	≤4	P721_0070 K102VF0250 MT10	4000	4000	6000	0.65	47.2
						P721_0070 K102VF0250 MT20	3500	3500	5000	1.25	
196.3	589/3	440	650	1256	≤4	P721_0070 K102VF0280 MT10	4000	4000	6000	0.67	47.2
						P721_0070 K102VF0280 MT20	3500	3500	5000	1.27	
231.1	1849/8	440	700	1400	≤4	P721_0050 K202VF0460 MT10	4000	3900	5500	0.68	47.3
						P721_0050 K202VF0460 MT20	3500	3500		1.28	
232.7	11,400/49	300	500	1000	≤3.5	P721_0100 K102VF0230 MT10	4000	4000	6000	0.69	46.1
						P721_0100 K102VF0230 MT20	3500	3500	5000	1.29	
235.9	4719/20	440	595	1053	≤4	P721_0070 K102VF0340 MT10	4000	4000	6000	0.63	47.2
245.7	3686/15	440	650	1256	≤4	P721_0070 K102VF0350 MT10	4000	4000	6000	0.64	47.2
						P721_0070 K102VF0350 MT20	3500	3500	5000	1.24	
277.7	6665/24	440	700	1352	≤4	P721_0050 K202VF0560 MT10	4000	3900	5500	0.65	47.3
						P721_0100 K102VF0280 MT10	4000	4000	6000	0.67	
280.5	5890/21	300	500	1000	≤3.5	P721_0100 K102VF0280 MT20	3500	3500	5000	1.27	46.1
						P721_0070 K102VF0400 MT10	4000	4000	6000	0.62	
328.4	2299/7	440	650	1256	≤4	P721_0070 K102VF0470 MT10	4000	4000	6000	0.63	47.2
351.1	7372/21	300	500	1000	≤3.5	P721_0100 K102VF0350 MT10	4000	4000	6000	0.64	46.1
						P721_0100 K102VF0350 MT20	3500	3500	5000	1.24	
352.2	35,217/100	339	407	721	≤4	P721_0070 K102VF0500 MT10	4000	4000	6000	0.62	47.2
392.7	1178/3	440	650	959	≤4	P721_0070 K102VF0560 MT10	4000	4000	6000	0.62	47.2
469.2	22,990/49	300	500	1000	≤3.5	P721_0100 K102VF0470 MT10	4000	4000	6000	0.63	46.1
490.2	2451/5	440	566	1003	≤4	P721_0070 K102VF0700 MT10	4000	4000	6000	0.61	47.2
561.0	11,780/21	300	500	1000	≤3.5	P721_0100 K102VF0560 MT10	4000	4000	6000	0.62	46.1

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations..

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D° mm	Input Inertia J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P8KX (continued next page)

3.000	582	800	1299	6,5	P821_0030KX801VF0010MF	1000	750	2000	48	117.6	83.7
4.000	776	1067	1732	5,5	P821_0040KX801VF0010MF	1000	750	2000	48	93.7	110.6
5.000	970	1334	2165	5	P821_0050KX801VF0010MF	1000	750	2000	48	86.9	127.9
6.000	582	800	1546	6,5	P821_0030KX801VF0020MF	1100	1100	2500	48	59.0	83.7
7.000	1000	1400	2801	4,5	P821_0070KX801VF0010MF	1000	750	2000	48	82.2	142.3
8.000	776	1067	2062	5,5	P821_0040KX801VF0020MF	1100	1100	2500	48	53.0	110.6

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
		Nominal ¹⁾ M2N <2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P8K (continued next page)

12.00	12/1	452	497	781	≤4.5	P821_0030 K302VF0040 MT20	2700	2300	3800	8.88	88.6
		526	889	1926		P821_0030 K302VF0040 MT30				13.68	
16.00	16/1	602	662	1042	≤4	P821_0040 K302VF0040 MT20	2700	2300	3800	7.39	115.4
		702	1186	2569		P821_0040 K302VF0040 MT30				12.19	
20.00	20/1	753	828	1302	≤4	P821_0050 K302VF0040 MT20	2700	2300	3800	6.96	131.9
		877	1482	3200		P821_0050 K302VF0040 MT30				11.76	
26.88	215/8	968	1113	1678	≤4	P821_0050 K302VF0054 MT20	2700	2300	3800	4.83	131.9
			1263			P821_0050 K302VF0054 MT30				9.63	
28.00	28/1	301	301	400	≤3.5	P821_0070 K202VF0040 MT10	3000	2600	4000	3.37	131.9
			1159			P821_0070 K202VF0040 MT20				3.97	
			701			P821_0070 K202VF0040 MT30				8.77	
30.00	30/1	1000	1242	1937	≤4	P821_0050 K302VF0060 MT20	2700	2300	3800	5.09	131.9
			1600			P821_0050 K302VF0060 MT30				9.89	
30.55	336/11	323	323	429	≤3.5	P821_0070 K202VF0044 MT10	3000	2600	4000	2.99	131.9
			722			P821_0070 K202VF0044 MT20				3.59	
			1896			P821_0070 K202VF0044 MT30				8.39	
36.24	14,749/407	764	1291	2219	≤3.5	P821_0070 K202VF0052 MT20	3000	2600	4000	3.04	131.9
						P821_0070 K202VF0052 MT30				7.84	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P8KX (continued next page)

10.000	970	1334	2577	5	P821_0050KX801VF0020MF	1100	1100	2500	48	51.3	127.9
12.000	776	1067	2062	5,5	P821_0040KX801VF0030MF	1300	1300	3000	48	45.1	110.6
14.000	1000	1400	2801	4,5	P821_0070KX801VF0020MF	1100	1100	2500	48	50.1	142.3
15.000	970	1334	2577	5	P821_0050KX801VF0030MF	1300	1300	3000	48	44.3	127.9
16.000	800	1200	2400	4,5	P821_0080KX801VF0020MF	1100	1100	2500	48	49.8	141.7
20.000	700	1200	2400	4	P821_0100KX801VF0020MF	1100	1100	2500	48	49.5	138.8

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P8K (continued next page)

36.96	2365/64	1000	1530	2308	≤4	P821_0050 K302VF0074 MT20	2700	2300	3800	4.10	131.9		
			1600			P821_0050 K302VF0074 MT30				8.90			
40.00	40/1	430	430	571	≤3.5	P821_0100 K202VF0040 MT10	3000	2600	4000	3.22	133.8		
			700			1200				2400		P821_0100 K202VF0040 MT20	3.82
												P821_0100 K202VF0040 MT30	8.62
42.00	42/1	444	444	590	≤3.5	P821_0070 K202VF0060 MT10	3000	2600	4000	2.46	131.9		
			803			1356				2606		P821_0070 K202VF0060 MT20	3.06
												P821_0070 K202VF0060 MT30	7.86
46.34	5375/116	1000	1600	2813	≤4	P821_0050 K302VF0093 MT20	3200	2800	4200	3.27	131.9		
												P821_0050 K302VF0093 MT30	8.07
46.78	15,953/341	467	467	620	≤3.5	P821_0070 K202VF0067 MT10	3500	3100	4500	1.82	131.9		
			832			1400				2741		P821_0070 K202VF0067 MT20	2.42
												P821_0070 K202VF0067 MT30	7.22
49.83	14,749/296	850	1400	2811	≤3.5	P821_0070 K202VF0071 MT20	3000	2600	4000	2.66	131.9		
												P821_0070 K202VF0071 MT30	7.46
51.77	21,070/407	700	1200	2400	≤3.5	P821_0100 K202VF0052 MT20	3000	2600	4000	2.95	133.8		
												P821_0100 K202VF0052 MT30	7.75

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D° mm	Input Inertia ³⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P8KX (continued next page)

21.000	1000	1400	2801	4,5	P821_0070KX801VF0030MF	1300	1300	3000	48	43.8	142.3
24.000	800	1200	2400	4,5	P821_0080KX801VF0030MF	1300	1300	3000	48	43.6	141.7
30.000	700	1200	2400	4	P821_0100KX801VF0030MF	1300	1300	3000	48	43.5	138.8
32.000	800	1600	3178	4,5	P822_0160KX701VF0020MF	1800	1800	3500	38	15.7	158.0
35.000	1000	1600	3200	4,5	P822_0350KX701VF0010MF	1800	1600	3000	38	26.0	167.6
40.000	1000	1600	3200	4,5	P822_0200KX701VF0020MF	1800	1800	3500	38	15.6	164.4

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness Cz (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M2N <2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P8K (continued next page)

58.05	1161/20	1000	1600	3200	≤4	P821_0050 K302VF0115 MT20	3200	2800	4200	2.69	131.9
						P821_0050 K302VF0115 MT30			4000	7.49	
58.78	17,458/297	566	566	753	≤3.5	P821_0070 K202VF0084 MT10	3500	3100	4500	1.45	131.9
						P821_0070 K202VF0084 MT20				2.05	
						P821_0070 K202VF0084 MT30				6.85	
60.00	60/1	634	634	842	≤3.5	P821_0100 K202VF0060 MT10	3000	2600	4000	2.39	133.8
						P821_0100 K202VF0060 MT20				2.99	
						P821_0100 K202VF0060 MT30				7.79	
64.33	15,953/248	642	642	853	≤3.5	P821_0070 K202VF0092 MT10	3500	3100	4500	1.59	131.9
						P821_0070 K202VF0092 MT20				2.19	
						P821_0070 K202VF0092 MT30				6.99	
66.83	22,790/341	667	667	886	≤3.5	P821_0100 K202VF0067 MT10	3500	3100	4500	1.77	133.8
						P821_0100 K202VF0067 MT20				2.37	
						P821_0100 K202VF0067 MT30				7.17	
69.68	7525/108	1000	1600	3200	≤4	P821_0050 K302VF0140 MT20	3500	3100	5000	2.30	131.9
						P821_0050 K302VF0140 MT30			4000	7.10	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P8KX (continued next page)

50.000	1000	1600	3200	4,5	P822_0250KX701VF0020MF	1800	1800	3500	38	15.3	166.1
56.000	800	1600	3178	4,5	P822_0280KX701VF0020MF	1800	1800	3500	38	15.0	162.6
60.000	1000	1600	3200	4,5	P822_0200KX701VF0030MF	2100	2100	4000	38	12.8	164.4
64.000	800	1200	2400	4,5	P822_0320KX701VF0020MF	1800	1800	3500	38	15.6	156.7
70.000	1000	1600	3200	4,5	P822_0350KX701VF0020MF	1800	1800	3500	38	15.0	167.6
75.000	1000	1600	3200	4,5	P822_0250KX701VF0030MF	2100	2100	4000	38	12.7	166.1

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P8K (continued next page)

70.51	20,167/286	656	656	871	≤3.5	P821_0070 K202VF0100 MT10	3900	3500	5000	1.23	131.9	
		954	1400	2811		P821_0070 K202VF0100 MT20	3500			1.83		
						P821_0070 K202VF0100 MT30	4000			6.63		
80.82	8729/108	779	779	1035	≤3.5	P821_0070 K202VF0115 MT10	3500	3100	4500	1.31	131.9	
		999	1400	2811		P821_0070 K202VF0115 MT20				4000		1.91
						P821_0070 K202VF0115 MT30				4000		6.71
83.97	24,940/297	700	809	1075	≤3.5	P821_0100 K202VF0084 MT10	3500	3100	4500	1.42	133.8	
			1200	2400		P821_0100 K202VF0084 MT20				4000		2.02
						P821_0100 K202VF0084 MT30				4000		6.82
86.47	7955/92	798	798	1060	≤4	P821_0050 K302VF0175 MT10	3500	3100	5000	1.40	131.9	
			1600	3200		P821_0050 K302VF0175 MT20				4000		2.00
						P821_0050 K302VF0175 MT30				4000		6.80
88.94	3913/44	795	795	1056	≤3.5	P821_0070 K202VF0125 MT10	3900	3500	5000	1.04	131.9	
		1000	1400	2811		P821_0070 K202VF0125 MT20				3500		1.64
						P821_0070 K202VF0125 MT30				4000		6.44
91.90	11,395/124	700	917	1218	≤3.5	P821_0100 K202VF0092 MT10	3500	3100	4500	1.56	133.8	
			1200	2400		P821_0100 K202VF0092 MT20				4000		2.16
						P821_0100 K202VF0092 MT30				4000		6.96

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations..

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D° mm	Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P8KX (continued next page)

80.000	800	1600	3178	4,5	P822_0400KX701VF0020MF	1800	1800	3500	38	14.9	161.1
84.000	800	1600	3178	4,5	P822_0280KX701VF0030MF	2100	2100	4000	38	12.6	162.6
100.000	1000	1600	3200	4	P822_0500KX701VF0020MF	1800	1800	3500	38	14.9	166.5
105.000	1000	1600	3200	4,5	P822_0350KX701VF0030MF	2100	2100	4000	38	12.6	167.6
120.000	800	1600	3178	4,5	P822_0400KX701VF0030MF	2100	2100	4000	38	12.5	161.1

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M2N <2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P8K (continued next page)

96.96	20,167/208	902	902	1198	≤3.5	P821_0070 K202VF0140 MT10	3900	3500	5000	1.13	131.9	
		1000	1400	2811		P821_0070 K202VF0140 MT20	3500			1.73		
						P821_0070 K202VF0140 MT30				4000		6.53
115.5	6235/54	700	1113	1478	≤3.5	P821_0100 K202VF0115 MT10	3500	3100	4500	1.29	133.8	
			1200	2400		P821_0100 K202VF0115 MT20				3500		1.89
						P821_0100 K202VF0115 MT30						4000
116.5	2795/24	1000	1010	1342	≤4	P821_0050 K302VF0230 MT10	3800	3500	5000	1.11	131.9	
			1600	3200		P821_0050 K302VF0230 MT20				3500		1.71
						P821_0050 K302VF0230 MT30						4000
118.0	20,769/176	998	998	1326	≤3.5	P821_0070 K202VF0170 MT10	4000	3900	5000	0.88	131.9	
		1000	1400	2811		P821_0070 K202VF0170 MT20	3500			1.48		
						P821_0070 K202VF0170 MT30				4000		6.28
122.3	3913/32	1000	1093	1452	≤3.5	P821_0070 K202VF0175 MT10	3900	3500	5000	0.98	131.9	
			1400	2811		P821_0070 K202VF0175 MT20				3500		1.58
						P821_0070 K202VF0175 MT30						4000
138.5	14,405/104	700	1711	2400	≤3.5	P821_0100 K202VF0140 MT10	3900	3500	5000	1.12	133.8	
			2400			P821_0100 K202VF0140 MT20				3500		1.72
						P821_0100 K202VF0140 MT30						4000


¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations..

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



PKX/PK Series: RIGHT ANGLE – Shaft Output

 Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			


P8KX (continued from previous page)

140.000	1000	1400	2801	4	P822_0700KX701VF0020MF	1800	1800	3500	38	14.9	163.9
150.000	1000	1600	3200	4	P822_0500KX701VF0030MF	2100	2100	4000	38	12.5	166.5
200.000	700	1200	2400	4	P822_1000KX701VF0020MF	1800	1800	3500	38	14.8	148.2
210.000	1000	1400	2801	4	P822_0700KX701VF0030MF	2100	2100	4000	38	12.5	163.9
300.000	700	1200	2400	4	P822_1000KX701VF0030MF	2100	2100	4000	38	12.5	148.2

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt[®] coupling

 Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} <2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		
Nom.	Exact										

P8K (continued next page)

139.4	17,845/128	1000	1171	1555	≤4	P821_0050 K302VF0280 MT10	3800	3500	5000	0.98	131.9		
						P821_0050 K302VF0280 MT20	3500					1.58	
						P821_0050 K302VF0280 MT30							4000
142.3	7826/55	1000	1153	1532	≤3.5	P821_0070 K202VF0200 MT10	4000	3900	5500	0.81	131.9		
			1400	2811		P821_0070 K202VF0200 MT20	3500	3500				4000	6.21
						P821_0070 K202VF0200 MT30							
162.3	20,769/128	1000	1372	1823	≤3.5	P821_0070 K202VF0230 MT10	4000	3900	5500	0.85	131.9		
			1400	2811		P821_0070 K202VF0230 MT20	3500	3500				5000	1.45
						P821_0070 K202VF0230 MT30							
173.7	4515/26	1000	1384	1839	≤4	P821_0050 K302VF0350 MT10	3800	3500	5000	0.87	131.9		
			1600	3200		P821_0050 K302VF0350 MT20	3500					4000	6.27
						P821_0050 K302VF0350 MT30							
174.7	2795/16	700	2075	1200	≤3.5	P821_0100 K202VF0175 MT10	3900	3500	5000	0.97	133.8		
			2400			P821_0100 K202VF0175 MT20	3500					5000	1.57
						P821_0100 K202VF0175 MT30							
175.9	1935/11	1000	1360	1807	≤3.5	P821_0070 K202VF0250 MT10	4000	3900	5500	0.74	131.9		
			1400	2811		P821_0070 K202VF0250 MT20	3500	3500				5000	1.34
						P821_0070 K202VF0250 MT30							
195.7	3913/20	1000	2106	1400	≤3.5	P821_0070 K202VF0280 MT10	4000	3900	5500	0.78	131.9		
			2811			P821_0070 K202VF0280 MT20	3500	3500				5000	1.38
						P821_0070 K202VF0280 MT30							

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
		Nominal ¹⁾ M _{2N} ≤2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P8K (continued from previous page)

231.1	1849/8	1000	1600	2300	≤4	P821_0050 K302VF0460 MT10	3800	3500	5000	0.76	131.9
				3200		P821_0050 K302VF0460 MT20	3500		4000	1.36	
						P821_0050 K302VF0460 MT30				6.16	
231.8	14,835/64	700	1200	2400	≤3.5	P821_0100 K202VF0230 MT10	4000	3900	5500	0.84	133.8
						P821_0100 K202VF0230 MT20	3500	3500	5000	1.44	
						P821_0100 K202VF0230 MT30			4000	6.24	
235.3	12,943/55	1000	1255	2223	≤3.5	P821_0070 K202VF0340 MT10	4000	3900	5500	0.69	131.9
						P821_0070 K202VF0340 MT20	3500	3500	5000	1.29	
241.9	1935/8	1000	1400	2485	≤3.5	P821_0070 K202VF0350 MT10	4000	3900	5500	0.73	131.9
				2811		P821_0070 K202VF0350 MT20	3500	3500	5000	1.33	
						P821_0070 K202VF0350 MT30			4000	6.13	
278.5	12,255/44	1000	1541	2667	≤4	P821_0050 K302VF0560 MT10	3800	3500	5000	0.72	131.9
						P821_0050 K302VF0560 MT20	3500				
279.5	559/2	700	1200	2400	≤3.5	P821_0100 K202VF0280 MT10	4000	3900	5500	0.78	133.8
						P821_0100 K202VF0280 MT20	3500	3500	5000	1.38	
						P821_0100 K202VF0280 MT30			4000	6.18	
282.8	9331/33	784	941	1377	≤3.5	P821_0070 K202VF0400 MT10	4000	3900	5500	0.66	131.9
323.6	12,943/40	1000	1400	2811	≤3.5	P821_0070 K202VF0460 MT10	4000	3900	5500	0.68	131.9
						P821_0070 K202VF0460 MT20	3500	3500	5000	1.28	
345.5	9675/28	700	1200	2400	≤3.5	P821_0100 K202VF0350 MT10	4000	3900	5500	0.73	133.8
						P821_0100 K202VF0350 MT20	3500	3500	5000	1.33	
						P821_0100 K202VF0350 MT30			4000	6.13	
353.4	46,655/132	654	784	1389	≤3.5	P821_0070 K202VF0500 MT10	4000	3900	5500	0.64	131.9
388.8	9331/24	1000	1294	1893	≤3.5	P821_0070 K202VF0560 MT10	4000	3900	5500	0.66	131.9
462.3	1849/4	700	1200	2400	≤3.5	P821_0100 K202VF0460 MT10	4000	3900	5500	0.68	133.8
						P821_0100 K202VF0460 MT20	3500	3500	5000	1.28	
486.0	46,655/96	899	1078	1910	≤3.5	P821_0070 K202VF0690 MT10	4000	3900	5500	0.64	131.9
555.4	6665/12	700	1200	2400	≤3.5	P821_0100 K202VF0560 MT10	4000	3900	5500	0.65	133.8

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations..

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38)

PKX/PK Series: RIGHT ANGLE – Shaft Output

PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P9KX (continued next page)

32/1	2000	3000	5526	4,5	P922_0160KX801VF0020MF	1100	1100	2500	48	53.3	312.8
35/1	2000	3000	6000	4,5	P922_0350KX801VF0010MF	1000	750	2000	48	82.4	326.9
40/1	2000	3000	6000	4,5	P922_0200KX801VF0020MF	1100	1100	2500	48	53.0	318.5
50/1	2000	3000	6000	4,5	P922_0250KX801VF0020MF	1100	1100	2500	48	51.4	323.6
56/1	2000	3000	5526	4,5	P922_0280KX801VF0020MF	1100	1100	2500	48	50.3	325.7

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Nom.	Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
		Nominal ¹⁾ M2N <2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P9K (continued next page)

28.00	28/1	1054	1159	1844	≤3.5	P921_0070 K402VF0040 MT20	2600	2200	3500	12.34	270.9
		1843	2700	4855		P921_0070 K402VF0040 MT30				17.14	
						P921_0070 K402VF0040 MT40				21.14	
30.55	336/11	1150	1265	2012	≤3.5	P921_0070 K402VF0044 MT20	2600	2200	3500	10.83	270.9
		1897	2700	5260		P921_0070 K402VF0044 MT30				15.63	
						P921_0070 K402VF0044 MT40				19.63	
37.95	12,943/341	1428	1571	2461	≤3.5	P921_0070 K402VF0054 MT20	2600	2200	3500	8.03	270.9
		2000	2700	5400		P921_0070 K402VF0054 MT30				12.83	
						P921_0070 K402VF0054 MT40				16.83	
42.00	42/1	1581	1739	2766	≤3.5	P921_0070 K402VF0060 MT20	2600	2200	3500	8.78	270.9
		2000	2700	5400		P921_0070 K402VF0060 MT30				13.58	
						P921_0070 K402VF0060 MT40				17.58	
47.03	1505/32	1770	1947	2937	≤3.5	P921_0070 K402VF0067 MT20	3000	2600	4000	5.95	270.9
		2000	2700	5400		P921_0070 K402VF0067 MT30				10.75	
						P921_0070 K402VF0067 MT40				14.75	
52.19	12,943/248	1964	2161	3384	≤3.5	P921_0070 K402VF0075 MT20	2600	2200	3500	6.71	270.9
		2000	2700	5400		P921_0070 K402VF0075 MT30				11.51	
						P921_0070 K402VF0075 MT40				15.51	
58.64	645/11	2000	2428	3541	≤3.5	P921_0070 K402VF0084 MT20	3000	2600	4000	4.53	270.9
			2700	5400		P921_0070 K402VF0084 MT30			9.33		
						P921_0070 K402VF0084 MT40			3500	13.33	

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48)



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D° mm	Input Inertia ³⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P9KX (continued next page)

60/1	2000	3000	6000	4,5	P922_0200KX801VF0030MF	1300	1300	3000	48	45.0	318.5
70/1	2000	3000	6000	4,5	P922_0350KX801VF0020MF	1100	1100	2500	48	50.2	326.9
75/1	2000	3000	6000	4,5	P922_0250KX801VF0030MF	1300	1300	3000	48	44.4	323.6
80/1	2000	3000	5526	4,5	P922_0400KX801VF0020MF	1100	1100	2500	48	49.5	324.5
84/1	2000	3000	5526	4,5	P922_0280KX801VF0030MF	1300	1300	3000	48	43.8	325.7

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J1 kgcm ²	Torsional Stiffness C2 (per arcmin) Nm
	Nominal ¹⁾ M2N <2000 RPM	Acceleration M2B	Peak ²⁾ M2PEAK			Continuous		Cyclic		
	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P9K (continued next page)

64.67	16,555/256	2000	2677	4038	≤3.5	P921_0070 K402VF0092 MT20	3000	2600	4000	5.09	270.9		
			2700	5400		P921_0070 K402VF0092 MT30			3500	9.89			
						P921_0070 K402VF0092 MT40				13.89			
70.69	9331/132	2000	2700	4108	≤3.5	P921_0070 K402VF0100 MT20	3400	3000	4500	3.68	270.9		
				5400		P921_0070 K402VF0100 MT30			3000	4000		8.48	
						P921_0070 K402VF0100 MT40			3000	3500		12.48	
80.63	645/8	2000	2700	4869	≤3.5	P921_0070 K402VF0115 MT20	3000	2600	4000	3.98	270.9		
				5400		P921_0070 K402VF0115 MT30			3000	8.78			
						P921_0070 K402VF0115 MT40				3500		12.78	
88.61	2924/33	2000	2700	4980	≤3.5	P921_0070 K402VF0125 MT20	3400	3000	4500	2.92	270.9		
				5400		P921_0070 K402VF0125 MT30			3000	4000		7.72	
						P921_0070 K402VF0125 MT40			3000	3500		11.72	
97.20	9331/96	2000	2700	5400	≤3.5	P921_0070 K402VF0140 MT20	3400	3000	4500	3.29	270.9		
									P921_0070 K402VF0140 MT30	3000		4000	8.09
									P921_0070 K402VF0140 MT40	3000		3500	12.09

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48)

PKX/PK Series: RIGHT ANGLE – Shaft Output

PKX/PK Series: RIGHT ANGLE – Shaft Output

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P9KX (continued next page)

100/1	2000	3000	6000	4	P922_0500KX801VF0020MF	1100	1100	2500	48	49.5	326.2
105/1	2000	3000	6000	4,5	P922_0350KX801VF0030MF	1300	1300	3000	48	43.8	326.9
120/1	2000	3000	5526	4,5	P922_0400KX801VF0030MF	1300	1300	3000	48	43.5	324.5
140/1	2000	2700	5399	4	P922_0700KX801VF0020MF	1100	1100	2500	48	49.4	314.7

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M _{2N} <2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

P9K (continued next page)

118.6	3913/33	2000	2700	5400	≤3.5	P921_0070 K402VF0170 MT20	3500	3300	5000	2.25	270.9	
						P921_0070 K402VF0170 MT30			4000	7.05		
						P921_0070 K402VF0170 MT40			3000	3000		3500
121.8	731/6	2000	2700	5400	≤3.5	P921_0070 K402VF0175 MT20	3400	3000	4500	2.68	270.9	
						P921_0070 K402VF0175 MT30			3000	4000		7.48
						P921_0070 K402VF0175 MT40				3000		3500
141.4	9331/66	2000	2700	5400	≤3.5	P921_0070 K402VF0200 MT20	3500	3300	5000	1.98	270.9	
						P921_0070 K402VF0200 MT30			3000	4000		6.78
						P921_0070 K402VF0200 MT40				3000		3000
163.0	3913/24	2000	2700	5400	≤3.5	P921_0070 K402VF0230 MT20	3500	3300	5000	2.12	270.9	
						P921_0070 K402VF0230 MT30			3000	4000		6.92
						P921_0070 K402VF0230 MT40				3000		3000
177.0	29,197/165	2000	2700	5400	≤3.5	P921_0070 K402VF0250 MT20	3500	3300	5000	1.74	270.9	
						P921_0070 K402VF0250 MT30			3000	4000		6.54
						P921_0070 K402VF0250 MT40				3000		3000
194.4	9331/48	2000	2700	5400	≤3.5	P921_0070 K402VF0280 MT20	3500	3300	5000	1.89	270.9	
						P921_0070 K402VF0280 MT30			3000	4000		6.69
						P921_0070 K402VF0280 MT40				3000		3000



Selection Data

Exact Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unity + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

P9KX (continued from previous page)

150/1	2000	3000	6000	4	P922_0500KX801VF0030MF	1300	1300	3000	48	43.5	326.2
200/1	1400	2000	4000	4	P922_1000KX801VF0020MF	1100	1100	2500	48	49.4	255.2
210/1	2000	2700	5399	4	P922_0700KX801VF0030MF	1300	1300	3000	48	43.5	314.7
300/1	1400	2000	4000	4	P922_1000KX801VF0030MF	1300	1300	3000	48	43.5	255.2

¹⁾ Based on input speed of 2000 RPM. See page 220 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* MF = Motor adapter with FlexiAdapt[®] coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N} <2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT20 (24), MT30 (38), MT40 (48)

P9K (continued from previous page)

235.7	33,712/143	2000	2700	4579	≤3.5	P921_0070 K402VF0340 MT20	3500	3300	5000	1.53	270.9
						P921_0070 K402VF0340 MT30			4000	6.33	
243.3	29,197/120	2000	2700	5400	≤3.5	P921_0070 K402VF0350 MT20	3500	3300	5000	1.68	270.9
						P921_0070 K402VF0350 MT30			4000	6.48	
						P921_0070 K402VF0350 MT40	3000	3000	3500	10.48	
283.6	34,314/121	2000	2510	4446	≤3.5	P921_0070 K402VF0410 MT20	3500	3300	5000	1.44	270.9
						P921_0070 K402VF0410 MT30			4000	6.24	
324.2	4214/13	2000	2700	5400	≤3.5	P921_0070 K402VF0460 MT20	3500	3300	5000	1.49	270.9
						P921_0070 K402VF0460 MT30			4000	6.29	
353.0	38,829/110	1830	2196	3311	≤3.5	P921_0070 K402VF0500 MT20	3500	3300	5000	1.36	270.9
389.9	17,157/44	2000	2700	5400	≤3.5	P921_0070 K402VF0560 MT20	3500	3300	5000	1.41	270.9
						P921_0070 K402VF0560 MT30			4000	6.21	
485.4	38,829/80	2000	2700	4552	≤3.5	P921_0070 K402VF0690 MT20	3500	3300	5000	1.34	270.9

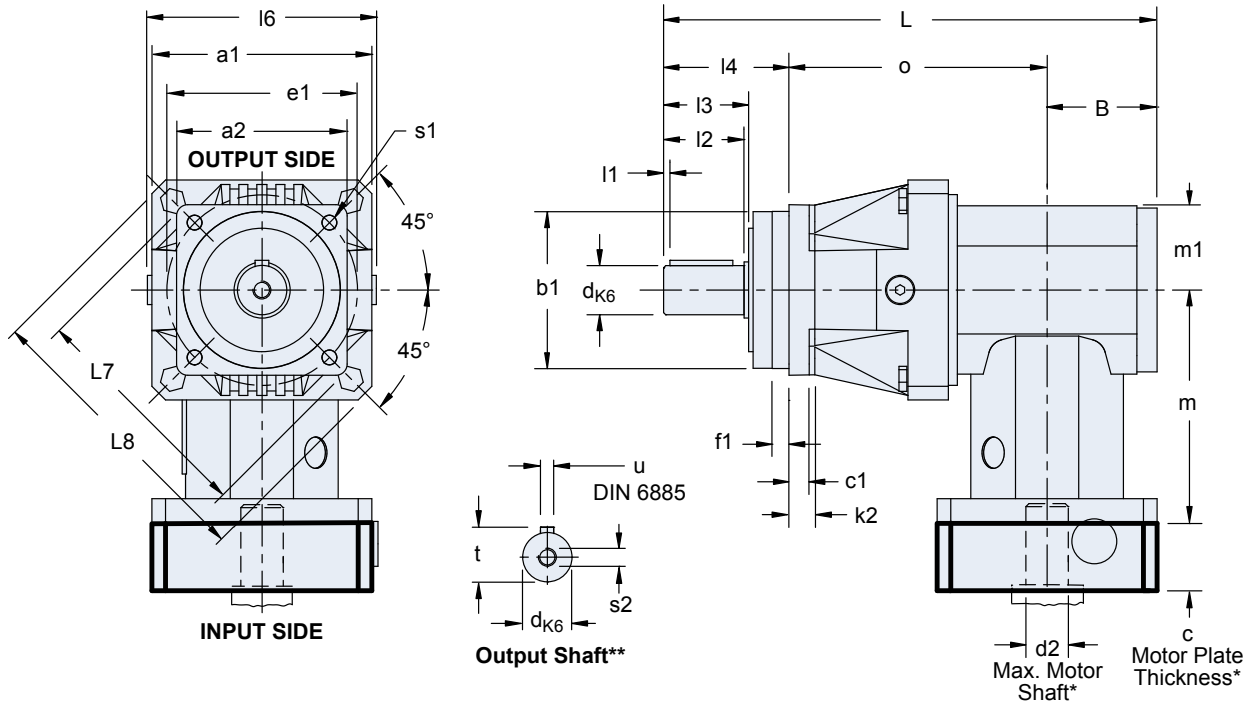
¹⁾ Based on input speed of 2000 RPM. See page 221 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT20 (24), MT30 (38), MT40 (48)

PKX/PK Series: RIGHT ANGLE – Shaft Output

PKX Series – One Stage Units



* See Motor Mounting Plate Option, page 223 for details.
 ** See Output Shaft Options, page 224 for details.

Table 1 Dimensions (mm)

Unit	a1	a2	B	b1	h6	c1	d	k6	e1	f1	k2	L	L7	L8
P2_KX	55	55	40	50	+0.000/-0.016	6	12	+0.012/+0.001	63	7.0	–	160	74	80
P3_KX	72	72	40	60	+0.000/-0.019	7	16	+0.012/+0.001	75	7.5	–	184	–	92
P4_KX	98	76	49	70	+0.000/-0.019	9	22	+0.015/+0.002	85	7.5	12	220	103.3	130
P5_KX	115	101	60	90	+0.000/-0.022	10	32	+0.018/+0.002	120	15	14	277	139	149
P7_KX	145	145	74	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	–	343	–	190
P8_KX	190	190	92	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	–	417	–	250

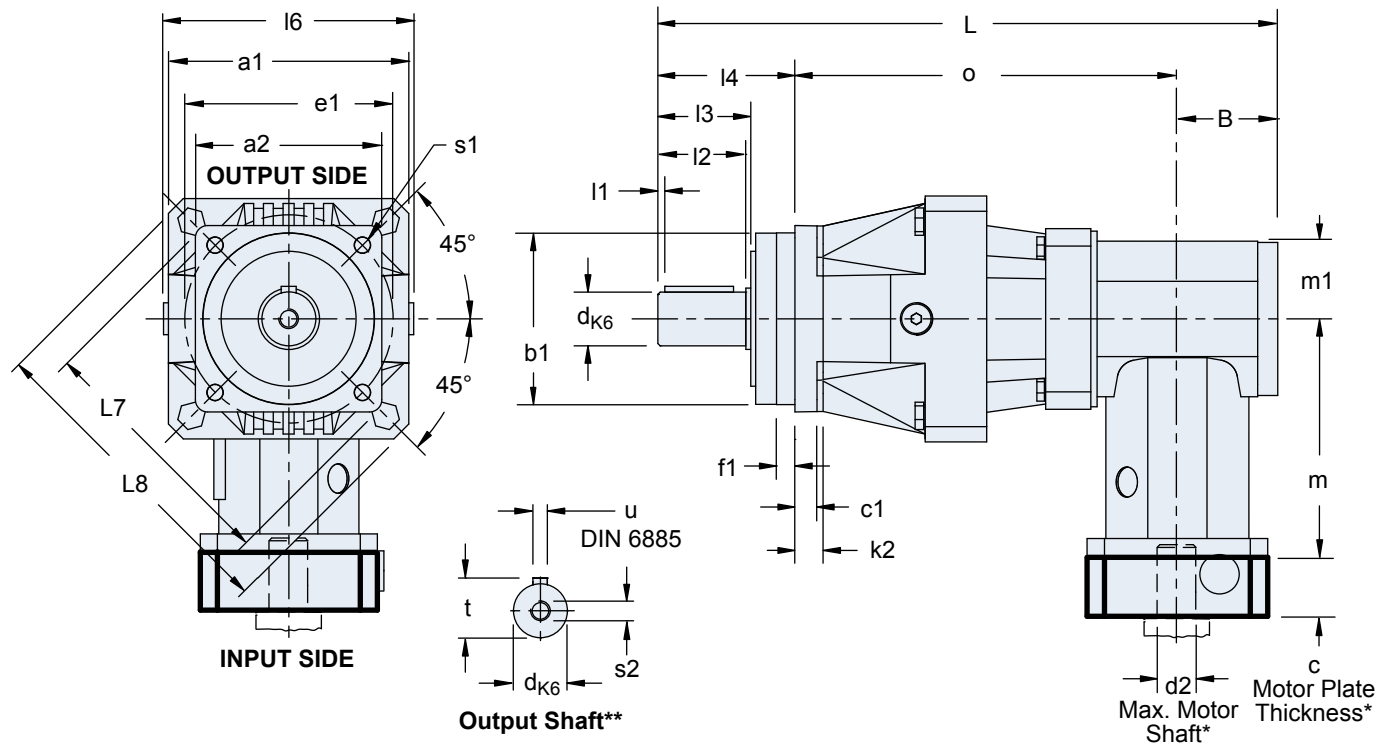
Table 2 Dimensions (mm)

Unit	l	l1	l3	l4	l6	m	m1	o	s1	s2	t	u
P2_KX	22	2	24	36	62	95.5	31	84	5.5	M4x13.5	13.5	A4x4x18
P3_KX	28	2	30	48	79	95.5	31	96	5.5	M5x12.5	18	A5x5x22
P4_KX	36	3	38	56	98	104	37.5	115	6.6	M8x19	24.5	A6x6x28
P5_KX	58	3	60	88	121	132	45	129	9	M12x28	35	A10x8x50
P7_KX	82	4	85	112	145	172.5	60	157	11	M16x36	43	A12x8x70
P8_KX	82	6	85	112	190	210	75	213	13.5	M20x42	59	A12x8x70



Dimensional Data

PKX Series – Two Stage Units



PKX/PK Series: RIGHT ANGLE – Shaft Output

Table 1 Dimensions (mm)

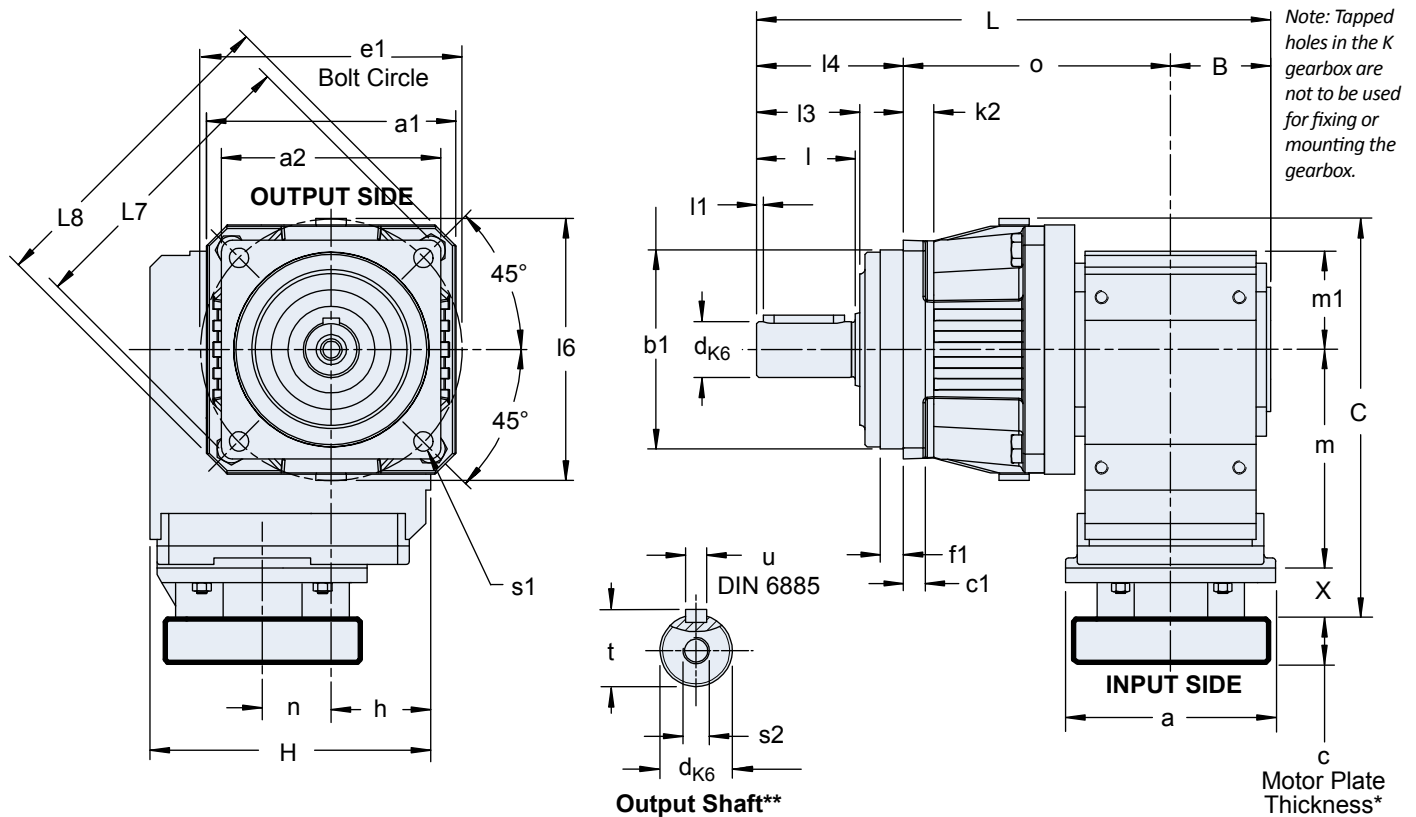
Unit	a1	a2	B	b1	h6	c1	d	k6	e1	f1	k2	L	L7	L8
P2_KX	55	55	40	50	+0.000/-0.016	6	12	+0.012/+0.001	63	7.0	–	192	74	80
P3_KX	72	72	40	60	+0.000/-0.019	7	16	+0.012/+0.001	75	7.5	–	224	92	92
P4_KX	98	76	40	70	+0.000/-0.019	9	22	+0.015/+0.002	85	7.5	12	249.5	103.3	130
P5_KX	115	101	49	90	+0.000/-0.022	10	32	+0.018/+0.002	120	15	14	309.5	139	149
P7_KX	145	145	60	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	–	378	–	190
P8_KX	190	190	74	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	–	451.5	–	250
P9_KX	225	212	92	180	+0.000/-0.025	17	75	+0.021/+0.002	250	10	22	575	285	300

Table 2 Dimensions (mm)

Unit	l	l1	l3	l4	l6	m	m1	o	s1	s2	t	u
P2_KX	22	2	24	36	62	95.5	31	116	5.5	M4x13.5	13.5	A4x4x18
P3_KX	28	2	30	48	79	95.5	31	136	5.5	M5x18	18	A5x5x22
P4_KX	36	3	38	56	98	95.5	31	153.5	6.6	M8x19	24.5	A6x6x28
P5_KX	58	3	60	88	121	104	37.5	172.5	9	M12x28	35	A10x8x50
P7_KX	82	4	85	112	145	132	45	206	11	M16x36	43	A12x8x70
P8_KX	82	6	85	112	190	172.5	60	265.5	13.5	M20x42	59	A16x10x70
P9_KX	105	7	109	143	225	210	75	340	17.5	M20x42	79.5	A20x12x90

PKX/PK Series: RIGHT ANGLE – Shaft Output

PK Series – All Units



* See Motor Mounting Plate Option, page 223 for details.
** See Output Shaft Options, page 224 for details.

Table 1 Dimensions (mm)

Unit	a1	a2	B	b1	h6	c1	d	k6	e1	f1	H	h	k2
P5_K1	115	101	56	90	+0.000/-0.022	10	32	+0.018/+0.002	120	15	160	60	14
P7_K1	145	145	56	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	160	60	–
P7_K2	145	145	70	130	+0.000/-0.025	15	40	+0.018/+0.002	165	3.5	190	65	–
P8_K2	190	190	70	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	190	65	–
P8_K3	190	190	76	160	+0.000/-0.025	15	55	+0.021/+0.002	215	10	213	75	–
P9_K4	225	212	90	180	+0.000/-0.025	17	75	+0.021/+0.002	250	10	240	90	22

Table 2 Dimensions (mm)

Unit	L	L7	L8	l	l1	l3	l4	l6	m1	o	s1	s2	t	u
P5_K1	283	139	149	58	3	60	88	121	60	139	9	M12x28	35	A10x8x50
P7_K1	318	–	190	82	4	85	112	145	60	150	11	M16x36	43	A12x8x70
P7_K2	346	–	190	82	4	85	112	145	65	164	11	M16x36	43	A12x8x70
P8_K2	384.5	–	250	82	6	85	112	190	65	202.5	13.5	M20x42	59	A16x10x70
P8_K3	398	–	250	82	6	85	112	190	75	210	13.5	M20x42	59	A16x10x70
P9_K4	490.5	285	300	105	6	109	143	225	90	257.5	17.5	M20x42	80	A20x12x90



Dimensional Data

Motor Mounting Plate

Table 3 Dimensions (mm)

Base Right Angle Module	Motor Adapter Code												Wt. lbs.
	MT10			MT20			MT30			MT40			
	C	m	n	C	m	n	C	m	n	C	m	n	
P5_K1	224.5	124	36	238.5	128	36	—	—	—	—	—	—	31
P7_K1	236.5	124	36	250.5	128	36	—	—	—	—	—	—	31
P7_K2	255.5	143	46	269.5	147	46	281.5	149	46	—	—	—	40
P8_K2	278	143	46	292	147	46	307	149	46	—	—	—	40
P8_K3	298	163	52.5	312	167	52.5	324	169	52.5	—	—	—	67
P9_K4	—	—	—	349.5	187	60	361.5	189	60	393.5	192	60	93

Table 4 Dimensions (mm)

Motor Adapter Code	a	Thickness ²⁾ c Min.	Motor Shaft d2 Max. ¹⁾	X	Wt. lbs.
MT10	140	21	19	40	5
MT20	160	24	24	50	8
MT30	200	25	38	60	12
MT40	250	33	48	89	18

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.

PKX/PK Series: RIGHT ANGLE – Shaft Output

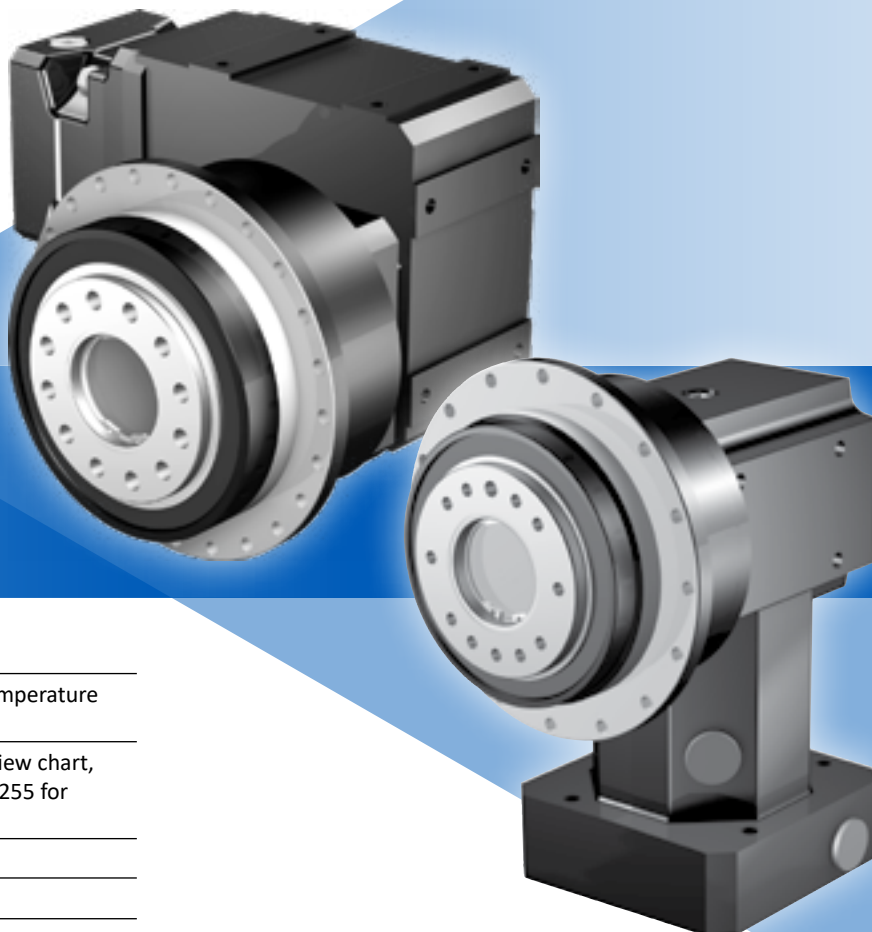


PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Features

- 5:1 to 591:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (<63dB(A))
- High load capacity and tilting rigidity through symmetrical bearing arrangement
- FKM seals for extended gearbox life
- Large motor input option to accept bigger diameter motor shafts so you don't use an oversized gearbox
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Low no load running torque, giving you more torque for your application
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

STÖBER PHKX provides a right angle option with planetary gearing while the PHK/PHQK Series combine planetary and helical gearing. The PHK and PHQK provide a more compact, precise solution, and can handle higher input speeds. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.



**SHIPS in
1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE

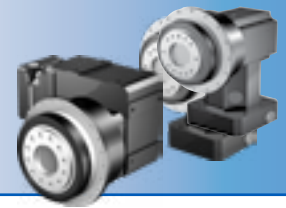
General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <90°C Max]
Backlash	≤3.5 (see performance overview chart, page 254 for PHKX and page 255 for PHK & PHQK)
Coating	Standard Black (RAL 790-4)
Degree of Protection	IP65
Direction of Rotation	See page 256
Efficiency	PHKX: 1 stage 96%, 2 stage 94%; PHK/PHQK: 94%
Input RPM	Up to 6,000 RPM
Installation	Requires 12.9 fasteners. See page 328, for more information
Lubrication	Lubricated for life – standard Mobil SHC629; option food grade Mobil SHC CIBUS 150
Mounting Position	Must be specified, see page 256
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)

Comparative Advantages

	PHKX	PHK	PHQK
Precision	Best	Better	Better
Stiffness	Better	Better	Best
Compact design	Best	Better	Better
Quiet running	Better	Best	Best
Higher ratios	Better	Best	Best
Higher input speeds	Better	Best	Best
Torque density	Better	Better	Best





Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the PHKX/PHK Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples:

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	
PHKX	PH	3	2	1	F	0040	KX301VF	0010	MF	EL1 *
PHK	PH	5	2	1	F	0040	K102VF	0040	MT10	EL1 *
PHQK	PHQ	5	2	1	F	0055	K102VF	0040	MT10	EL1 *

Design Option	Part Number Code	Description
① Series	PH PHQ	Rotating flange output planetary Rotating flange output with Quattro power planetary
② Size	3 4 5 7 8 9 10 11	8 sizes of gearhead (size 3 - 4 available for PHKX Series only; size 11 available for PHQK Series only)
③ Generation	2	Version of gearhead
④ # of Stages	1 2	One stage for ratios of ≤ 10:1 Two stage for ratios >30:1 (PHKX Series only)
⑤ Housing	F	Flange output
⑧ Ratio	0030	Ratios range from 4:1 to 100:1 for PHKX; from 3:1 to 100:1 for PHK; from 5.5:1 to 6:1 for PHQK Series (0040=4:1; 0055=5.5:1; 1000=100:1, etc.)
⑨ Secondary Unit	KX301VF K102VF K523VF	KX Series right angle unit: 5 sizes, 1 stage, with output shaft (V) & flange (F) for PHKX Series K Series helical/bevel unit: 5 sizes, 2 or 3 stages, with output shaft (V) & flange (F) for PHK Series (specify side 3 or 4) K Series helical/bevel unit: 6 sizes, 1,2 or 3 stages, with output shaft (V) & flange (F) for PHQK Series
⑩ Secondary Unit Ratio	0010	PHKX Series: Ratios from 1:1 to 3:1; PHK Series: Ratios from 4:1 to 78:1; PHQK Series: Ratios from 4:1 to 99:1 (0010=1:1; 0020=2:1; 0030=3:1)
⑪ Motor Adapter	MF MT10-MT50	MF for PHKX Series only; 5 MT input sizes for PHK and PHQK Series (See also motor mounting plate option, page 257)
* Mounting Position	EL1 EL2 EL3 EL4 EL5 EL6	Required special instruction for all units, see page 256

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Special Options

ATEX

- ATmosphere EXplosible — Please contact factory for this option and allow additional time for delivery

Coating Options

- PHKX/PHK/PHQK Series are also available with a five year warranty multi-layer, industrial 316 stainless steel epoxy coating (contact factory)



PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration,

among others.

Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

PHKX Performance Overview

Size/Generation/# of Stages		PH321	PH322	PH421	PH422	PH521	PH522	PH721	PH722	PH821	PH822	PH932	PH1032
Secondary Unit		KX3	KX3	KX4	KX3	KX5	KX4	KX7	KX5	KX8	KX7	KX8	KX8
Acceleration Torque M_{2BMAX}	Nm	63	65	121	130	306	320	650	700	1600	2000	4608	7500
Output Torque Nom. ¹⁾ M_{2N}	Nm	45		90		220		440		1000	1250	3000	5000
Torsional Stiffness C_2	Nm/arcmin	7.8	10	19	26	47	65	119	140	283	385	1051	1589
Torsional Backlash ²⁾ $\Delta\phi$	arcmin	≤6	≤4.5	≤5.5	≤3.5	≤5.5	≤3.5	≤5.5	≤3.5	≤5.5	≤3.5	≤4	≤3.5
Input Speed Max. n_{1MAX}	Continuous Cyclic	3500 6000		3000 4500	3500 6000	3000 4500		2100 3500	3000 4000	1300 3000	2100 3500	1300 3000	1300 3000
Efficiency (@nom torque)	%	95	92	95	92	95	92	95	92	95	92	92	92
Weight	kg lbs	3.5 8	4.0 9	5.5 12	6.3 14	12.9 28	10.9 24	23.5 52	20.9 46	56 124	51 112	92.0 203	107.4 237
Noise ³⁾	dB(A)	≤70	≤70	≤70	≤70	≤72	≤70	≤72	≤72	≤74	≤72	≤74	≤74
Axial Load Max. ⁴⁾ F_{2AMAX}	N	1650		2150		4150		6150		10,050		33,000	50,000
Tilting Moment Max. ⁴⁾ M_{2KMAX}	Nm	100		260		440		1500		3500		6500	7500

¹⁾ Ratings based on input speed (n_1) of 2000 RPM.

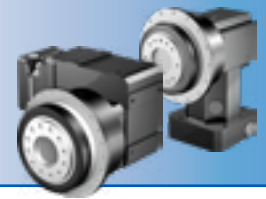
For torque at higher input speeds (M_{2NX}) solve the formula:
where n_1 = Actual Input Speed.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

⁴⁾ Rating based on output speed (n_2) of 100 RPM. For values at other speeds see page 258.



Overview

PHK Performance Overview

Size/Generation/# of Stages			PH521	PH721		PH821		PH931	PH1031
Secondary Unit			K102	K102	K202	K202	K302	K513	K613
Acceleration Torque	M_{2BMAX}	Nm	320	650	700	1480	1850	4500	7500
Output Torque Nom.	¹⁾ M_{2N}	Nm	220	440	440	990	1250	3000	5000
Torsional Stiffness	C_2	Nm/arcmin	57	102	97	227	168	728	1206
Torsional Backlash	²⁾ $\Delta\phi$	arcmin	≤4.5	≤4	≤4.5	≤3.5	≤4	≤4.5	≤4
Input Speed Max.	n_{1MAX}	Continuous	4000	4000	4000	4000	3800	3400	3100
		Cyclic	6000	6000	5500	5500	5000	4500	4000
Efficiency (@nom torque)		%	93	93	93	93	93	92	92
Weight		kg	22.5	26.8	37.3	58.6	63.6	102.4	164.8
		lbs	50	59	82	129	140	226	363
Noise ³⁾		dB(A)	≤63	≤63	≤64	≤64	≤65	≤65	≤65
Axial Load Max.	⁴⁾ F_{2AMAX}	N	4150	6150	6150	10,050	10,050	33,000	50,000
Tilting Moment Max.	⁴⁾ M_{2KMAX}	Nm	440	1500	1500	3500	3500	7500	8800

PHQK Performance Overview

Size			PHQ5	PHQ7	PHQ8	PHQ9	PHQ10	PHQ11
Secondary Unit			K102	K202	K402	K513	K713	K813
Acceleration Torque	M_{2BMAX}	Nm	430	950	2600	5760	10,000	22,000
Output Torque Nom.	¹⁾ M_{2N}	Nm	280	650	1700	3800	6500	13,000
Torsional Stiffness	C_2	Nm/arcmin	70	135	397	769	1558	2618
Torsional Backlash	²⁾ $\Delta\phi$	arcmin	≤4	≤4	≤3.5	≤4	≤4	≤4
Input Speed Max.	n_{1MAX}	Continuous	4000	4000	3500	3400	2900	2800
		Cyclic	6000	5500	5500	4500	3800	3600
Efficiency (@nom torque)		%	93	93	93	92	92	92
Weight		kg	16.5	30.4	71.1	96.7	156.6	304.6
		lbs	36	67	157	213	345	672
Noise ³⁾		dB(A)	≤63	≤63	≤63	≤64	≤64	≤65
Axial Load Max.	⁴⁾ F_{2AMAX}	N	4150	6150	10,050	33,000	50,000	60,000
Tilting Moment Max.	⁴⁾ M_{2KMAX}	Nm	440	1500	3500	7500	8800	11,000

¹⁾ Ratings based on input speed (n_1) of 2000 RPM.

For torque at higher input speeds (M_{2NX}) solve the formula:
where n_1 = Actual Input Speed.

$$M_{2NX} = \frac{M_{2N}}{\sqrt[3]{\frac{n_1}{2000}}}$$

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

⁴⁾ Rating based on output speed (n_2) of 100 RPM. For values at other speeds see page 258.

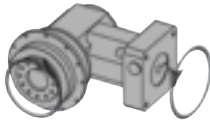
PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

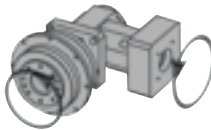
PHKX/PHK/PHQK Series Direction of Rotation

PHKX Series

CW



CCW



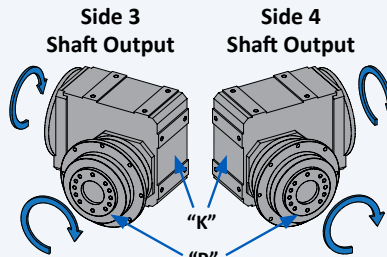
1 Stage Units
(PH7 & PH8)

1 Stage Units
(PH3 thru PH5)

2 Stage Units
(PH7 thru PH10)

2 Stage Units
(PH3 thru PH5)

PHK/PHQK Series



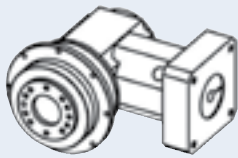
For PK units, the “P” Series planetary output unit can be mounted on either the right (Side 3) or the left (Side 4) of the “K” Series right angle secondary unit. Note CCW input direction of rotation and CW output shaft direction with both mounting configurations.

IMPORTANT: When ordering, Mounting Side 3 or Side 4 **MUST BE SPECIFIED**.

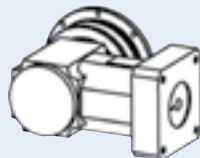
PHKX Mounting Position Options

Horizontal Positions (EL1, EL2, EL5, EL6) are interchangeable;

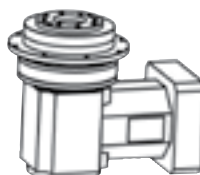
Vertical Positions (EL3 and EL4) **MUST BE SPECIFIED**



EL1



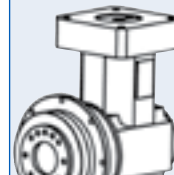
EL2



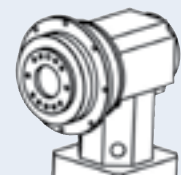
EL3



EL4



EL5



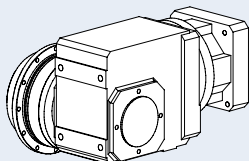
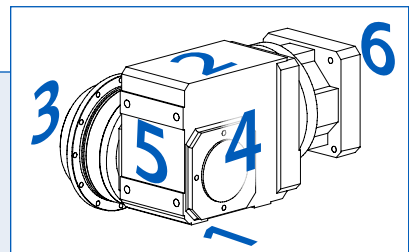
EL6

IMPORTANT: Mounting PKX in either vertical mounting position (EL3 or EL4) must be specified when ordering.

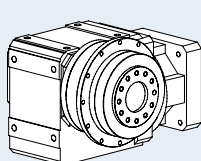
PHK/PHQK Mounting Position Options

When ordering, the Mounting Position **MUST BE SPECIFIED** using one of the Mounting Position order codes below.

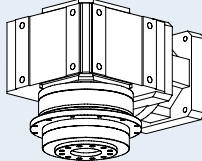
Note: the code relates to the orientation side that faces down. For example, EL1 has side 1 facing down, EL2 has side 2 facing down, etc.



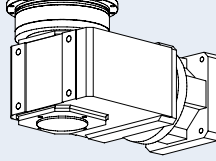
EL1



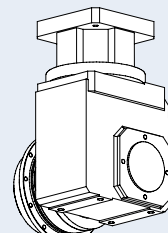
EL2



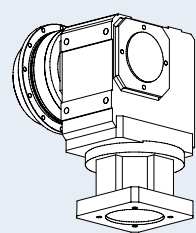
EL3



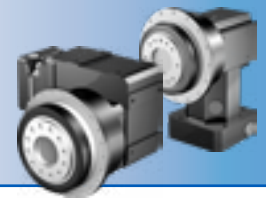
EL4



EL5



EL6



Overview

PHKX/PHK/PHQK Series Motor Mounting Plate Option

STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

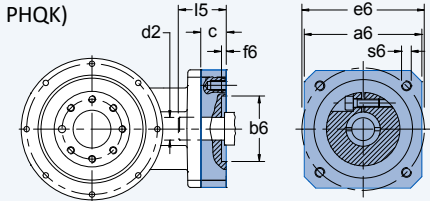
- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

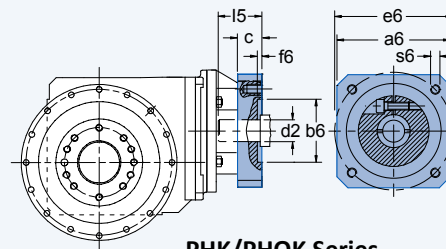
Customer Required Dimensions for Properly Sized Motor Mounting Plate

Motor information required with Motor Adapter (MF option for PHKX; MT option for PHK and PHQK)

- d2 Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)
- b6 Pilot Diameter
- e6 Bolt Circle Diameter
- s6 Bolt Diameter
- l5 Motor Shaft Length
- f6 Pilot Length
- a6 Square Flange (Optional – motor plate will typically be made to match this dimension.)



PHKX Series



PHK/PHQK Series

PHKX Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

	PH321KX3 PH322KX3 PH422KX3	PH421KX4 PH522KX4	PH521KX5 PH722KX5	PH721KX7 PH822KX7	PH821KX8 PH922KX8 PH1032KX8
Maximum Allowed Motor Shaft Dia. d2	19	24	32	38	48
Minimum Allowed Motor Plate Thickness c*	18	21	24	25	33

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

PHK/PHQK Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

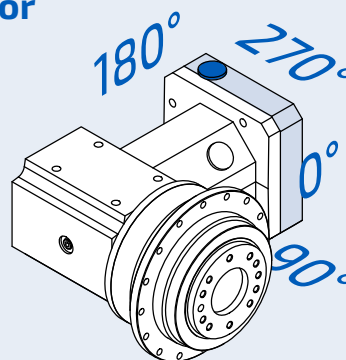
	MT10	MT20	MT30	MT40	MT50
Maximum Allowed Motor Shaft Dia. d2	19	24	38	48	60
Minimum Allowed Motor Plate Thickness c*	21	24	25	33	43

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

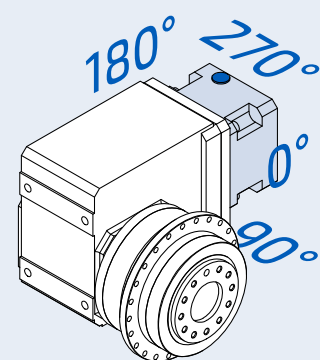
PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX/PHK/PHQK Series Motor Mounting Plate Access Hole

Access to the clamping screw for the motor coupling is located on the 270° side of the motor mounting plate at the location shown. If necessary, the motor mounting plate can be rotated in the field, if a 0°, 90° or 180° orientation for the access hole is desirable.



PHKX Series



PHK/PHQK Series

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX Permissible Output Shaft Load and Tilting Moments*

Unit Size	Z ₂ mm	F _{2AMAX} N	F _{2R} N	F _{2RB} N	M _{2K} Nm	M _{2KB} Nm	C _{2K} Nm/arcmin
PH3	62	1650	1613	1613	100	100	53
PH4	84	2150	3095	3571	260	300	160
PH5	97	4150	4536	4897	440	475	380
PH7	88	6150	17,045	17,045	1500	1500	500
PH8	126	10,050	27,778	27,778	3500	3500	1550
PH9	155	33,000	48,387	70,968	7500	11,000	7500
PH10	171	50,000	51,462	73,099	8800	12,500	9500

PHK/PHQK Permissible Output Shaft Load and Tilting Moments*

Unit Size	Z ₂ mm	F _{2AMAX} N	F _{2R} N	F _{2RB} N	M _{2K} Nm	M _{2KB} Nm	C _{2K} Nm/arcmin
PH5	97	4150	4536	4897	440	475	380
PH7	88	6150	17,045	17,045	1500	1500	500
PH8	126	10,050	27,778	27,778	3500	3500	1550
PH9	155	33,000	48,387	70,968	7500	11,000	7500
PH10	171	50,000	51,462	73,099	8800	12,500	9500
PH11	231	60,000	47,619	60,606	11,000	14,000	9500

* Refer to illustration and definitions below.

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A'}, F_{2R'} and M_{2K} can be multiplied by a factor of 2.

PHKX/PHK/PHQK Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n₂ is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}} \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2Ka} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot M_{2kb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot M_{2kbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq M_{2K}$$

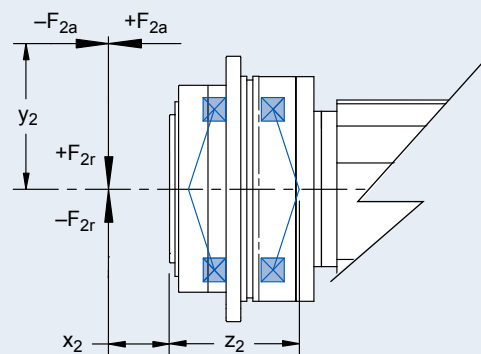
$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot F_{2rb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot F_{2rbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq F_{2R}$$

Where:

F _{2a}	Axial Load at Output Shaft	M _{2K}	Rated Tilting Torque
F _{2A}	Permissible Axial Load	M _{2K}	Equivalent Tilting Load
F _{2r}	Radial Load at Output Shaft	M _{2KB}	Acceleration Tilting Torque
F _{2R}	Permissible Radial Load	Z ₂	Distance Factor
F _{2RB}	Acceleration Permissible Radial Load		

All formulas shown are based on METRIC values

Upper case letters are permissible values. Lower case letters are for existing values.



The hours of life (L_h) of the unit can be determined by the following formula:

bearing life for duty cycle ≤ 40%

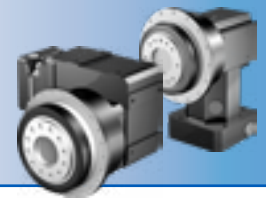
$$L_h > 10,000 \text{ hours if } M_{2K}/M_{2A} < 1.25 \text{ and } > 1$$

$$L_h > 20,000 \text{ hours if } M_{2K}/M_{2A} > 1.25 \text{ and } > 1.5$$

$$L_h > 30,000 \text{ hours if } M_{2K}/M_{2A} < 1.5$$

bearing life for duty cycle ≥ 40%

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH3KX

5.000	45	62	115	≤6	PH321F0050KX301VF0010MF	3000	2500	4500	19	1.1	7.0
7.000	45	60	130	≤5.5	PH321F0070KX301VF0010MF	3000	2500	4500	19	1.0	8.9
10.00	45	62	130	≤6	PH321F0050KX301VF0020MF	3500	3000	5500	19	0.8	7.0
14.00	45	60	130	≤5.5	PH321F0070KX301VF0020MF	3500	3000	5500	19	0.8	8.9
15.00	45	62	130	≤6	PH321F0050KX301VF0030MF	3500	3500	6000	19	0.8	7.0
20.00	30	50	100	≤5	PH321F0100KX301VF0020MF	3500	3000	5500	19	0.8	9.0
21.00	45	60	130	≤5.5	PH321F0070KX301VF0030MF	3500	3500	6000	19	0.7	8.9
30.00	30	50	100	≤5	PH321F0100KX301VF0030MF	3500	3500	6000	19	0.7	9.0
35.00	45	65	130	≤4.5	PH322F0350KX301VF0010MF	3000	2500	4500	19	1.0	14.4
40.00	45	65	130	≤4.5	PH322F0200KX301VF0020MF	3500	3000	5500	19	0.8	13.9
50.00	45	65	130	≤4.5	PH322F0250KX301VF0020MF	3500	3000	5500	19	0.8	14.2
56.00	45	60	130	≤4.5	PH322F0280KX301VF0020MF	3500	3000	5500	19	0.8	14.4
60.00	45	65	130	≤4.5	PH322F0200KX301VF0030MF	3500	3500	6000	19	0.8	13.9
70.00	45	65	130	≤4.5	PH322F0350KX301VF0020MF	3500	3000	5500	19	0.8	14.4
75.00	45	65	130	≤4.5	PH322F0250KX301VF0030MF	3500	3500	6000	19	0.7	14.2
80.00	30	50	100	≤4.5	PH322F0400KX301VF0020MF	3500	3000	5500	19	0.8	12.3
84.00	45	60	130	≤4.5	PH322F0280KX301VF0030MF	3500	3500	6000	19	0.8	14.4
100.0	45	65	130	≤4	PH322F0500KX301VF0020MF	3500	3000	5500	19	0.8	14.1
105.0	45	65	130	≤4.5	PH322F0350KX301VF0030MF	3500	3500	6000	19	0.7	14.4
120.0	30	50	100	≤4.5	PH322F0400KX301VF0030MF	3500	3500	6000	19	0.8	12.3
140.0	45	60	130	≤4	PH322F0700KX301VF0020MF	3500	3000	5500	19	0.8	14.5
150.0	45	65	130	≤4	PH322F0500KX301VF0030MF	3500	3500	6000	19	0.7	14.1
200.0	30	50	100	≤4	PH322F1000KX301VF0020MF	3500	3000	5500	19	0.8	12.4
210.0	45	60	130	≤4	PH322F0700KX301VF0030MF	3500	3500	6000	19	0.7	14.5
300.0	30	50	100	≤4	PH322F1000KX301VF0030MF	3500	3500	6000	19	0.7	12.4

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH4KX

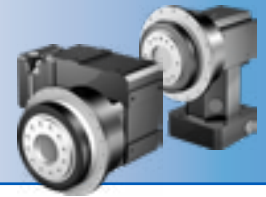
4.000	77	96	208	≤5.5	PH421F0040KX401VF0010MF	2500	2000	4000	24	2.8	11.3
5.000	90	120	240	≤5	PH421F0050KX401VF0010MF	2500	2000	4000	24	2.7	14.9
7.000	90	110	240	≤4.5	PH421F0070KX401VF0010MF	2500	2000	4000	24	2.5	19.0
8.000	77	96	208	≤5.5	PH421F0040KX401VF0020MF	2500	2500	5000	24	1.7	11.3
10.00	90	120	240	≤5	PH421F0050KX401VF0020MF	2500	2500	5000	24	1.7	14.9
12.00	77	96	208	≤5.5	PH421F0040KX401VF0030MF	3000	3000	5500	24	1.5	11.3
14.00	90	110	240	≤4.5	PH421F0070KX401VF0020MF	2500	2500	5000	24	1.7	19.0
15.00	90	120	240	≤5	PH421F0050KX401VF0030MF	3000	3000	5500	24	1.5	14.9
20.00	60	100	200	≤4	PH421F0100KX401VF0020MF	2500	2500	5000	24	1.6	17.4
21.00	90	110	240	≤4.5	PH421F0070KX401VF0030MF	3000	3000	5500	24	1.4	19.0
30.00	60	100	200	≤4	PH421F0100KX401VF0030MF	3000	3000	5500	24	1.4	17.4
32.00	90	130	240	≤3.5	PH422F0160KX301VF0020MF	3500	3000	5500	19	0.8	22.1
35.00	90	130	240	≤3.5	PH422F0350KX301VF0010MF	3000	2500	4500	19	1.0	26.5
40.00	90	130	240	≤3.5	PH422F0200KX301VF0020MF	3500	3000	5500	19	0.8	25.3
48.00	90	130	240	≤3.5	PH422F0160KX301VF0030MF	3500	3500	6000	19	0.8	22.1
50.00	90	130	240	≤3.5	PH422F0250KX301VF0020MF	3500	3000	5500	19	0.8	26.3
56.00	90	130	240	≤3.5	PH422F0280KX301VF0020MF	3500	3000	5500	19	0.8	23.6
60.00	90	130	240	≤3.5	PH422F0200KX301VF0030MF	3500	3500	6000	19	0.8	25.3
70.00	90	130	240	≤3.5	PH422F0350KX301VF0020MF	3500	3000	5500	19	0.8	26.5
75.00	90	130	240	≤3.5	PH422F0250KX301VF0030MF	3500	3500	6000	19	0.8	26.3
80.00	90	130	240	≤3.5	PH422F0400KX301VF0020MF	3500	3000	5500	19	0.8	23.5
84.00	90	130	240	≤3.5	PH422F0280KX301VF0030MF	3500	3500	6000	19	0.8	23.6
100.0	90	130	240	≤3	PH422F0500KX301VF0020MF	3500	3000	5500	19	0.8	26.4
105.0	90	130	240	≤3.5	PH422F0350KX301VF0030MF	3500	3500	6000	19	0.8	26.5
120.0	90	130	240	≤3.5	PH422F0400KX301VF0030MF	3500	3500	6000	19	0.7	23.5
140.0	90	110	240	≤3	PH422F0700KX301VF0020MF	3500	3000	5500	19	0.8	26.5
150.0	90	130	240	≤3	PH422F0500KX301VF0030MF	3500	3500	6000	19	0.7	26.4
200.0	60	100	200	≤3	PH422F1000KX301VF0020MF	3500	3000	5500	19	0.8	19.9
210.0	90	110	240	≤3	PH422F0700KX301VF0030MF	3500	3500	6000	19	0.7	26.5
300.0	60	100	200	≤3	PH422F1000KX301VF0030MF	3500	3500	6000	19	0.7	19.9

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH5KX (continued next page)

4.000	192	242	521	≤5.5	PH521F0040KX501VF0010MF	2500	2000	3500	32	9.0	27.6
5.000	220	302	600	≤5	PH521F0050KX501VF0010MF	2500	2000	3500	32	8.4	36.5
7.000	210	270	598	≤4.5	PH521F0070KX501VF0010MF	2500	2000	3500	32	8.0	46.5
8.000	192	242	521	≤5.5	PH521F0040KX501VF0020MF	2500	2500	4500	32	5.7	27.6
10.00	220	302	600	≤5	PH521F0050KX501VF0020MF	2500	2500	4500	32	5.5	36.5
12.00	192	242	521	≤5.5	PH521F0040KX501VF0030MF	3000	3000	5000	32	4.9	27.6
14.00	210	270	598	≤4.5	PH521F0070KX501VF0020MF	2500	2500	4500	32	5.4	46.5
15.00	220	302	600	≤5	PH521F0050KX501VF0030MF	3000	3000	5000	32	4.9	36.5
20.00	140	250	500	≤4	PH521F0100KX501VF0020MF	2500	2500	4500	32	5.3	44.7
21.00	210	270	598	≤4.5	PH521F0070KX501VF0030MF	3000	3000	5000	32	4.8	46.5
30.00	140	250	500	≤4	PH521F0100KX501VF0030MF	3000	3000	5000	32	4.8	44.7

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

PH5K/PHQ5K (continued next page)

16.00	16/1	179	179	243	≤4.5	PH521F0040K102VF0040MT10	3300	2800	4500	1.56	38.0
		210	320	485		PH521F0040K102VF0040MT20				2.16	
20.00	20/1	210	223	303	≤4.0	PH521F0050K102VF0040MT10	3300	2800	4500	1.53	47.0
			320	600		PH521F0050K102VF0040MT20				2.13	
22.00	22/1	280	430	600	≤4.0	PHQ521F0055 K102VF0040 MT10	3300	2800	4500	1.60	69.0
						PHQ521F0055 K102VF0040 MT20				2.80	
27.84	7600/273	210	311	422	≤4.0	PH521F0050K102VF0056MT10	3300	2800	4500	1.29	53.0
			320	600		PH521F0050K102VF0056MT20				1.89	
30.00	30/1	210	320	455	≤4.0	PH521F0050K102VF0060MT10	3300	2800	4500	1.10	54.0
				600		PH521F0050K102VF0060MT20				1.70	

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia ³⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

PH5KX (continued next page)

32.00	210	320	600	≤3.5	PH522F0160KX401VF0020MF	2500	2500	5000	24	1.7	51.8
35.00	220	320	600	≤3.5	PH522F0350KX401VF0010MF	2500	2000	4000	24	2.5	64.4
40.00	220	320	600	≤3.5	PH522F0200KX401VF0020MF	2500	2500	5000	24	1.7	60.3
48.00	210	320	600	≤3.5	PH522F0160KX401VF0030MF	3000	3000	5500	24	1.5	51.8
50.00	220	320	600	≤3.5	PH522F0250KX401VF0020MF	2500	2500	5000	24	1.7	63.4
56.00	210	320	600	≤3.5	PH522F0280KX401VF0020MF	2500	2500	5000	24	1.6	56.6

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt[®] coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		

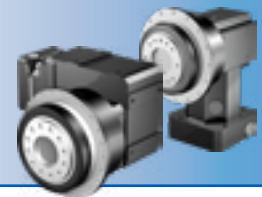
PH5K/PHQ5K (continued next page)

30.62	8360/273	280	430	600	≤4.0	PHQ521F0055 K102VF0056 MT10	3300	2800	4500	1.30	70.0
						PHQ521F0055 K102VF0056 MT20				2.60	
33.00	33/1	280	430	600	≤4.0	PHQ521F0055 K102VF0060 MT10	3300	2800	4500	1.10	70.0
						PHQ521F0055 K102VF0060 MT20				2.40	
33.22	299/9	210	320	503	≤4.0	PH521F0050K102VF0066MT10	3600	3300	5000	1.02	55.0
				600		PH521F0050K102VF0066MT20	3500			1.62	
36.54	3289/90	280	430	600	≤4.0	PHQ521F0055 K102VF0066 MT10	3600	3300	5000	1.10	70.0
						PHQ521F0055 K102VF0066 MT20	3500			2.30	
41.55	1911/46	210	320	600	≤4.0	PH521F0050K102VF0083MT10	3600	3300	5000	0.90	57.0
						PH521F0050K102VF0083MT20	3500			1.50	
45.70	21,021/460	280	430	600	≤4.0	PHQ521F0055 K102VF0083 MT10	3600	3300	5000	0.95	70.0
						PHQ521F0055 K102VF0083 MT20	3500			2.20	
46.25	8740/189	210	320	600	≤4.0	PH521F0050K102VF0092MT10	3600	3300	5000	0.94	57.0
						PH521F0050K102VF0092MT20	3500			1.54	
50.87	9614/189	280	430	600	≤4.0	PHQ521F0055 K102VF0092 MT10	3600	3300	5000	0.98	70.0
						PHQ521F0055 K102VF0092 MT20	3500			2.20	
55.77	5577/100	280	430	600	≤4.0	PHQ521F0055 K102VF0100 MT10	4000	3800	5500	0.87	70.0
						PHQ521F0055 K102VF0100 MT20	3500			3500	
57.83	1330/23	210	320	600	≤4.0	PH521F0050K102VF0115MT10	3600	3300	5000	0.84	58.0
						PH521F0050K102VF0115MT20	3500			1.44	

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH5KX (continued next page)

60.00	220	320	600	≤3.5	PH522F0200KX401VF0030MF	3000	3000	5500	24	1.5	60.3
70.00	220	320	600	≤3.5	PH522F0350KX401VF0020MF	2500	2500	5000	24	1.6	64.4
75.00	220	320	600	≤3.5	PH522F0250KX401VF0030MF	3000	3000	5500	24	1.5	63.4
80.00	210	320	600	≤3.5	PH522F0400KX401VF0020MF	2500	2500	5000	24	1.6	56.3
84.00	210	320	600	≤3.5	PH522F0280KX401VF0030MF	3000	3000	5500	24	1.4	56.6
100.0	220	320	600	≤3	PH522F0500KX401VF0020MF	2500	2500	5000	24	1.6	64.1
105.0	220	320	600	≤3.5	PH522F0350KX401VF0030MF	3000	3000	5500	24	1.4	64.4
120.0	210	320	600	≤3.5	PH522F0400KX401VF0030MF	3000	3000	5500	24	1.4	56.3

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

PH5K/PHQ5K (continued next page)

63.61	1463/23	280	430	600	≤4.0	PHQ521F0055 K102VF0115 MT10	3600	3300	5000	0.89	70.0
						PHQ521F0055 K102VF0115 MT20	3500		5000	2.10	
69.40	4719/68	280	430	600	≤4.0	PHQ521F0055 K102VF0125 MT10	4000	3800	5500	0.80	70.0
						PHQ521F0055 K102VF0125 MT20	3500	3500	5000	2.10	
70.57	494/7	210	320	600	≤4.0	PH521F0050K102VF0140MT10	4000	3800	5500	0.78	59.0
						PH521F0050K102VF0140MT20	3500	3500	5000	1.38	
77.63	2717/35	280	430	600	≤4.0	PHQ521F0055 K102VF0140 MT10	4000	3800	5500	0.83	70.0
						PHQ521F0055 K102VF0140 MT20	3500	3500	5000	2.10	
87.82	10,450/119	210	320	600	≤4.0	PH521F0050K102VF0175MT10	4000	3800	5500	0.73	59.0
						PH521F0050K102VF0175MT20	3500	3500		1.33	
91.93	1287/14	280	430	600	≤4.0	PHQ521F0055 K102VF0165 MT10	4000	4000	6000	0.72	70.0
						PHQ521F0055 K102VF0165 MT20	3500	3500	5000	2.00	
96.60	11,495/119	280	430	600	≤4.0	PHQ521F0055 K102VF0175 MT10	4000	3800	5500	0.78	70.0
						PHQ521F0055 K102VF0175 MT20	3500	3500	5000	2.00	
110.80	4433/40	280	430	600	≤4.0	PHQ521F0055 K102VF0200 MT10	4000	4000	6000	0.70	70.0
						PHQ521F0055 K102VF0200 MT20	3500	3500	5000	2.00	
116.3	5700/49	210	320	600	≤4.0	PH521F0050K102VF0230MT10	4000	4000	6000	0.69	60.0
						PH521F0050K102VF0230MT20	3500	3500	5000	1.29	

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}				Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH5KX (continued from previous page)

140.0	210	270	598	≤3	PH522F0700KX401VF0020MF	2500	2500	5000	24	1.6	64.7
150.0	220	320	600	≤3	PH522F0500KX401VF0030MF	3000	3000	5500	24	1.4	64.1
200.0	140	250	500	≤3	PH522F1000KX401VF0020MF	2500	2500	5000	24	1.6	51.6
210.0	210	270	598	≤3	PH522F0700KX401VF0030MF	3000	3000	5500	24	1.4	64.7
300.0	140	250	500	≤3	PH522F1000KX401VF0030MF	3000	3000	5500	24	1.4	51.6

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6			

PH5K/PHQ5K (continued from previous page)

128.00	6270/49	280	430	600	≤4.0	PHQ521F0055 K102VF0230 MT10	4000	4000	6000	0.71	70.0
						PHQ521F0055 K102VF0230 MT20	3500	3500	5000	2.00	
138.70	13,871/100	280	430	600	≤4.0	PHQ521F0055 K102VF0250 MT10	4000	4000	6000	0.67	70.0
						PHQ521F0055 K102VF0250 MT20	3500	3500	5000	1.90	
140.2	2945/21	210	320	600	≤4.0	PH521F0050K102VF0280MT10	4000	4000	6000	0.67	60.0
						PH521F0050K102VF0280MT20	3500	3500	5000	1.27	
154.30	6479/42	280	430	600	≤4.0	PHQ521F0055 K102VF0280 MT10	4000	4000	6000	0.69	70.0
						PHQ521F0055 K102VF0280 MT20	3500	3500	5000	2.00	
175.5	3686/21	210	320	600	≤4.0	PH521F0050K102VF0350MT10	4000	4000	6000	0.64	60.0
						PH521F0050K102VF0350MT20	3500	3500	5000	1.24	
185.40	51,909/280	280	430	600	≤4.0	PHQ521F0055 K102VF0340 MT10	4000	4000	6000	0.65	70.0
193.10	20,273/105	280	430	600	≤4.0	PHQ521F0055 K102VF0350 MT10	4000	4000	6000	0.67	70.0
						PHQ521F0055 K102VF0350 MT20	3500	3500	5000	1.90	
221.70	4433/20	280	330	440	≤4.0	PHQ521F0055 K102VF0400 MT10	4000	4000	6000	0.64	70.0
234.6	11,495/49	210	320	600	≤4.0	PH521F0050K102VF0470MT10	4000	4000	6000	0.63	60.0
258.00	25,289/98	280	430	600	≤4.0	PHQ521F0055 K102VF0470 MT10	4000	4000	6000	0.64	70.0
276.70	55,341/200	260	320	480	≤4.0	PHQ521F0055 K102VF0500 MT10	4000	4000	6000	0.63	70.0
280.5	5890/21	210	320	553	≤4.0	PH521F0050K102VF0560MT10	4000	4000	6000	0.62	60.0
308.50	6479/21	280	430	600	≤4.0	PHQ521F0055 K102VF0560 MT10	4000	4000	6000	0.64	70.0
385.20	26,961/70	280	430	600	≤4.0	PHQ521F0055 K102VF0700 MT10	4000	4000	6000	0.63	70.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

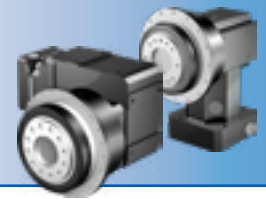
* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



DISTRIBUIDOR
AUTORIZADO

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Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

PH7KX (continued next page)

4.000	384	480	917	≤5.5	PH721F0040KX701VF0010MF	1800	1600	3000	38	29.5	83.4
5.000	440	600	1146	≤5	PH721F0050KX701VF0010MF	1800	1600	3000	38	27.7	103.7
7.000	440	650	1241	≤4.5	PH721F0070KX701VF0010MF	1800	1600	3000	38	26.3	119.1
8.000	384	480	1042	≤5.5	PH721F0040KX701VF0020MF	1800	1800	3500	38	15.9	83.4
10.00	440	600	1302	≤5	PH721F0050KX701VF0020MF	1800	1800	3500	38	15.4	103.7
12.00	384	480	1042	≤5.5	PH721F0040KX701VF0030MF	2100	2100	4000	38	12.9	83.4
14.00	440	650	1241	≤4.5	PH721F0070KX701VF0020MF	1800	1800	3500	38	15.1	119.1
15.00	440	600	1302	≤5	PH721F0050KX701VF0030MF	2100	2100	4000	38	12.7	103.7
20.00	300	500	1000	≤4	PH721F0100KX701VF0020MF	1800	1800	3500	38	14.9	104.2
21.00	440	650	1241	≤4.5	PH721F0070KX701VF0030MF	2100	2100	4000	38	12.6	119.1
30.00	300	500	1000	≤4	PH721F0100KX701VF0030MF	2100	2100	4000	38	12.5	104.2

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		

PH7K/PHQ7K (continued next page)

16.00	16/1	179	179	243	≤4.5	PH721F0040K202VF0040MT10	3000	2600	4000	3.29	54.0
		397	656	1043		PH721F0040K202VF0040MT20				3.89	57.0
			670	1213		PH721F0040K202VF0040MT30				8.69	66.0
20.00	20/1	223	223	303	≤4.0	PH721F0050K202VF0040MT10	3000	2600	4000	3.18	73.0
		440	700	1304		PH721F0050K202VF0040MT20				3.78	75.0
				1400		PH721F0050K202VF0040MT30				8.58	85.0
22.00	22/1	246	246	333	≤4.0	PHQ721F0055 K202VF0040 MT10	3000	2600	4000	3.16	89.9
		545	901	1434		PHQ721F0055 K202VF0040 MT20				3.76	93.0
			921	1667		PHQ721F0055 K202VF0040 MT30				8.56	105.8
24.00	24/1	268	268	364	≤4.0	PHQ721F0055 K202VF0044 MT10	3000	2600	4000	2.81	95.1
		561	948	1565		PHQ721F0055 K202VF0044 MT20				3.41	98.0
				1700		PHQ721F0055 K202VF0044 MT30				8.21	109.7
25.89	10,535/407	440	700	1400	≤4.0	PH721F0050K202VF0052MT20	3000	2600	4000	2.93	86.0
						PH721F0050K202VF0052MT30				7.73	93.0
28.00	28/1	313	313	424	≤4.0	PH721F0070K102VF0040MT10	3300	2800	4500	1.55	86.0
		389	626	849		PH721F0070K102VF0040MT20				2.15	88.0
28.47	2107/74	594	950	1700	≤4.0	PHQ721F0055 K202VF0052 MT20	3000	2600	4000	2.92	106.6
						PHQ721F0055 K202VF0052 MT30				7.72	116.2
30.00	30/1	335	335	455	≤4.0	PH721F0050K202VF0060MT10	3000	2600	4000	2.36	89.0
		440	700	1400		PH721F0050K202VF0060MT20				2.96	91.0
				PH721F0050K202VF0060MT30		7.76				97.0	

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Nm			Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH7KX (continued next page)

32.00	440	700	1367	≤3.5	PH722F0160KX501VF0020MF	2500	2500	4500	32	5.6	111.4
35.00	440	700	1400	≤3.5	PH722F0350KX501VF0010MF	2500	2000	3500	32	7.8	138.8
40.00	440	700	1400	≤3.5	PH722F0200KX501VF0020MF	2500	2500	4500	32	5.5	129.5

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Nom.	Exact	Reducer Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)	
			Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Nm	Continuous				Cyclic
			Nm	Nm	Nm				EL 1,2	EL 3,4,5,6			

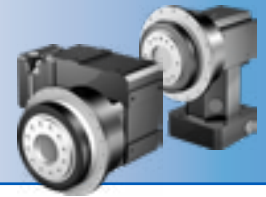
PH7K/PHQ7K (continued next page)

33.00	33/1		369	369	500	≤4.0		3000	2600	4000	2.35	110.7
			624	950	1700						2.95	112.8
											7.75	120.6
33.42	11,395/341		373	373	506	≤4.0		3500	3100	4500	1.75	92.0
			440	700	1400						2.35	94.0
											7.15	99.0
36.76	2279/62		411	411	557	≤4.0		3500	3100	4500	1.74	114.8
			647	950	1700						2.34	116.6
											7.14	123.3
38.98	1520/39		436	591	≤4.0		3300	2800	4500	1.30	96.0	
			650	1181						1.90	97.0	
39.15	23,177/592		650	950	1700	≤4.0		3000	2600	4000	2.59	118.6
											7.39	124.7
40.00	40/1		447	606	≤3.5		3300	2800	4500	1.51	90.0	
			500	1000						2.11	91.0	
41.99	12,470/297		469	636	≤4.0		3500	3100	4500	1.41	98.0	
			700	1400						2.01	99.0	
											6.81	102.0
42.00	42/1		469	637	≤4.0		3300	2800	4500	1.11	97.0	
			650	1239						1.71	98.0	
45.95	11,395/248		513	696	≤4.0		3500	3100	4500	1.55	99.0	
			700	1400						2.15	100.0	
											6.95	103.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

PH7KX (continued next page)

48.00	440	700	1367	≤3.5	PH722F0160KX501VF0030MF	3000	3000	5000	32	4.9	111.4
50.00	440	700	1400	≤3.5	PH722F0250KX501VF0020MF	2500	2500	4500	32	5.4	135.4
56.00	440	700	1367	≤3.5	PH722F0280KX501VF0020MF	2500	2500	4500	32	5.4	122.4
60.00	440	700	1400	≤3.5	PH722F0200KX501VF0030MF	3000	3000	5000	32	4.9	129.5

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		

PH7K/PHQ7K (continued next page)

46.18	1247/27	516	516	700	≤4.0	PHQ721F0055 K202VF0084 MT10	3500	3100	4500	1.40	121.7
		650	950	1700		PHQ721F0055 K202VF0084 MT20				2.00	123.0
						PHQ721F0055 K202VF0084 MT30				6.80	127.6
46.51	2093/45	440	520	705	≤4.0	PH721F0070K102VF0066MT10	3600	3300	5000	1.03	99.0
			650	1239		PH721F0070K102VF0066MT20				1.63	100.0
50.55	25,069/496	565	565	766	≤4.0	PHQ721F0055 K202VF0092 MT10	3500	3100	4500	1.55	123.9
		650	950	1700		PHQ721F0055 K202VF0092 MT20				2.15	124.9
						PHQ721F0055 K202VF0092 MT30				6.95	128.9
55.40	2881/52	619	619	840	≤4.0	PHQ721F0055 K202VF0100 MT10	3900	3500	5000	1.20	125.7
		650	950	1700		PHQ721F0055 K202VF0100 MT20				1.80	126.6
						PHQ721F0055 K202VF0100 MT30				4000	6.60
55.68	15,200/273	300	500	844	≤3.5	PH721F0100K102VF0056MT10	3300	2800	4500	1.28	94.0
			1000	PH721F0100K102VF0056MT20		1.88				95.0	
58.16	13,377/230	440	650	882	≤4.0	PH721F0070K102VF0083MT10	3600	3300	5000	0.91	102.0
			1239	PH721F0070K102VF0083MT20		1.51				103.0	
57.73	6235/108	440	645	875	≤4.0	PH721F0050K202VF0115MT10	3500	3100	4500	1.28	103.0
			700	1400		PH721F0050K202VF0115MT20				1.88	
						PH721F0050K202VF0115MT30				6.68	
60.00	60/1	300	500	909	≤3.5	PH721F0100K102VF0060MT10	3300	2800	4500	1.09	95.0
			1000	PH721F0100K102VF0060MT20		1.69					
63.50	13,717/216	650	710	962	≤4.0	PHQ721F0055 K202VF0115 MT10	3500	3100	4500	1.28	128.0
			950	1700		PHQ721F0055 K202VF0115 MT20				1.88	128.7
						PHQ721F0055 K202VF0115 MT30				4000	6.68
64.74	1748/27	440	650	981	≤4.0	PH721F0070K102VF0092MT10	3600	3300	5000	0.94	103.0
			1239	PH721F0070K102VF0092MT20		1.54				104.0	

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾	Backlash			Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH7KX (continued next page)

70.00	440	700	1400	≤3.5	PH722F0350KX501VF0020MF	2500	2500	4500	32	5.4	138.8
75.00	440	700	1400	≤3.5	PH722F0250KX501VF0030MF	3000	3000	5000	32	4.9	135.4
80.00	440	700	1367	≤3.5	PH722F0400KX501VF0020MF	2500	2500	4500	32	5.3	122.5
84.00	440	700	1367	≤3.5	PH722F0280KX501VF0030MF	3000	3000	5000	32	4.8	122.4

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6			

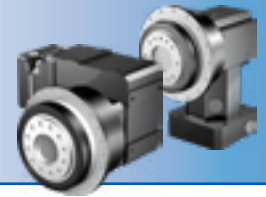
PH7K/PHQ7K (continued next page)

66.44	598/9	300	500	1000	≤3.5	PH721F0100K102VF0066MT10	3600	3300	5000	1.02	96.0
						PH721F0100K102VF0066MT20	3500			1.62	
69.26	14,405/208	440	700	1050	≤4.0	PH721F0050K202VF0140MT10	3900	3500	5000	1.12	104.0
				1400		PH721F0050K202VF0140MT20	3500			1.72	
						PH721F0050K202VF0140MT30	3500			4000	
69.88	559/8	650	781	1059	≤4.0	PHQ721F0055 K202VF0125 MT10	3900	3500	5000	1.02	129.3
			950	1700		PHQ721F0055 K202VF0125 MT20	3500			1.62	
						PHQ721F0055 K202VF0125 MT30	3500			4000	
70.98	3549/50	440	650	1076	≤4.0	PH721F0070K102VF0100MT10	4000	3800	5500	0.83	104.0
				1239		PH721F0070K102VF0100MT20	3500			3500	
76.18	31,691/416	650	851	1155	≤4.0	PHQ721F0055 K202VF0140 MT10	3900	3500	5000	1.11	130.3
			950	1700		PHQ721F0055 K202VF0140 MT20	3500			1.71	
						PHQ721F0055 K202VF0140 MT30	3500			4000	
80.96	1862/23	440	650	1227	≤4.0	PH721F0070K102VF0115MT10	3600	3300	5000	0.85	105.0
				1239		PH721F0070K102VF0115MT20	3500			1.45	
83.09	1911/23	300	500	1000	≤3.5	PH721F0100K102VF0083MT10	3600	3300	5000	0.90	97.0
						PH721F0100K102VF0083MT20	3500			1.50	
87.35	2795/32	440	700	1324	≤4.0	PH721F0050K202VF0175MT10	3900	3500	5000	0.97	106.0
				1400		PH721F0050K202VF0175MT20	3500			1.57	
						PH721F0050K202VF0175MT30	3500			4000	
88.33	3003/34	440	650	1239	≤4.0	PH721F0070K102VF0125MT10	4000	3800	5500	0.76	105.0
						PH721F0070K102VF0125MT20	3500			3500	

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

PH7KX (continued next page)

100.0	440	700	1400	≤3	PH722F0500KX501VF0020MF	2500	2500	4500	32	5.3	138.9
105.0	440	700	1400	≤3.5	PH722F0350KX501VF0030MF	3000	3000	5000	32	4.8	138.8
120.0	440	700	1367	≤3.5	PH722F0400KX501VF0030MF	3000	3000	5000	32	4.8	122.5

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Nom.	Exact	Reducer Ratio (i)	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
			Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
			Nm	Nm	Nm					EL 1,2		

PH7K/PHQ7K (continued next page)

92.49	17,480/189	300	500	1000	≤3.5	PH721F0100K102VF0092MT10	3600	3300	5000	0.93	98.0				
						PH721F0100K102VF0092MT20	3500								
92.72	2967/32	650	950	1405	≤4.0	PHQ721F0055 K202VF0170 MT10	4000	3900	5500	0.87	132.0				
						PHQ721F0055 K202VF0170 MT20	3500					3500	5000	1.47	132.4
						PHQ721F0055 K202VF0170 MT30									
						PHQ721F0055 K202VF0175 MT10	3900					3500	5000	0.97	132.3
96.08	6149/64	650	950	1700	≤4.0	PHQ721F0055 K202VF0175 MT20	3500	5000	1.57	132.6					
						PHQ721F0055 K202VF0175 MT30					4000				
98.80	494/5	440	650	1239	≤4.0	PH721F0070K102VF0140MT10	4000	3800	5500	0.79					
						PH721F0070K102VF0140MT20	3500				3500	5000	1.39		
111.8	559/5	650	950	1579	≤4.0	PHQ721F0055 K202VF0200 MT10	4000	3900	5500	0.80				133.2	
						PHQ721F0055 K202VF0200 MT20	3500				3500	5000	1.40		133.5
						PHQ721F0055 K202VF0200 MT30									
115.7	2660/23	300	500	1000	≤3.5	PH721F0100K102VF0115MT10	3600	3300	5000	0.84	98.0				
						PH721F0100K102VF0115MT20	3500								
115.9	14,835/128	440	700	1400	≤4.0	PH721F0050K202VF0230MT10	4000	3900	5500	0.84	107.0				
						PH721F0050K202VF0230MT20	3500					3500	5000	1.44	108.0
						PH721F0050K202VF0230MT30									
117.0	117/1	440	650	1239	≤4.0	PH721F0070K102VF0165MT10	4000	4000	6000	0.70	107.0				
						PH721F0070K102VF0165MT20	3500					3500	5000	1.30	
122.9	2090/17	440	650	1239	≤4.0	PH721F0070K102VF0175MT10	4000	3800	5500	0.74	107.0				
						PH721F0070K102VF0175MT20	3500					3500	5000	1.34	

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia ³⁾ J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

PH7KX (continued next page)

140.0	440	650	1241	≤3	PH722F0700KX501VF0020MF	2500	2500	4500	32	5.3	139.8
150.0	440	700	1400	≤3	PH722F0500KX501VF0030MF	3000	3000	5000	32	4.8	138.9

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		

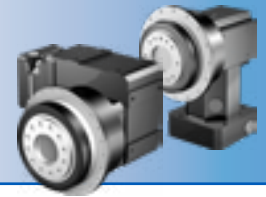
PH7K/PHQ7K (continued next page)

127.5	32,637/256	650	950	1700	≤4.0	PHQ721F0055 K202VF0230 MT10	4000	3900	5500	0.84	133.8
						PHQ721F0055 K202VF0230 MT20	3500	3500	5000	1.44	134.0
						PHQ721F0055 K202VF0230 MT30			4000	6.24	134.7
138.2	1935/14	650	950	1700	≤4.0	PHQ721F0055 K202VF0250 MT10	4000	3900	5500	0.74	134.1
						PHQ721F0055 K202VF0250 MT20	3500	3500	5000	1.34	134.3
						PHQ721F0055 K202VF0250 MT30			4000	6.14	134.9
139.8	559/4	440	700	1400	≤4.0	PH721F0050K202VF0280MT10	4000	3900	5500	0.78	108.0
						PH721F0050K202VF0280MT20	3500	3500	5000	1.38	
						PH721F0050K202VF0280MT30			4000	6.18	
141.1	2821/20	440	650	1239	≤4.0	PH721F0070K102VF0200MT10	4000	4000	6000	0.68	107.0
						PH721F0070K102VF0200MT20	3500	3500	5000	1.28	
153.7	6149/40	650	950	1700	≤4.0	PHQ721F0055 K202VF0280 MT10	4000	3900	5500	0.78	134.4
						PHQ721F0055 K202VF0280 MT20	3500	3500	5000	1.38	134.6
						PHQ721F0055 K202VF0280 MT30			4000	6.18	135.0
162.9	1140/7	440	650	1239	≤4.0	PH721F0070K102VF0230MT10	4000	4000	6000	0.69	107.0
						PH721F0070K102VF0230MT20	3500	3500	5000	1.29	
						PH721F0050K202VF0350MT10	4000	3900	5500	0.72	
172.8	9675/56	440	700	1400	≤4.0	PH721F0050K202VF0350MT20	3500	3500	5000	1.32	108.0
						PH721F0050K202VF0350MT30			4000	6.12	
						PH721F0070K102VF0250MT10	4000	4000	6000	0.65	
176.5	8827/50	440	650	1239	≤4.0	PH721F0070K102VF0250MT20	3500	3500	5000	1.25	107.0
						PHQ721F0055 K202VF0340 MT10	4000	3900	5500	0.68	
184.9	1849/10	650	950	1700	≤4.0	PHQ721F0055 K202VF0340 MT20	3500	3500	5000	1.28	134.9

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH7KX (continued next page)

200.0	300	500	1000	≤3	PH722F1000KX501VF0020MF	2500	2500	4500	32	5.3	111.3
210.0	440	650	1241	≤3	PH722F0700KX501VF0030MF	3000	3000	5000	32	4.8	139.8
300.0	300	500	1000	≤3	PH722F1000KX501VF0030MF	3000	3000	5000	32	4.8	111.3

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

PH7K/PHQ7K (continued next page)

190.0	21,285/112	650	950	1700	≤4.0	PHQ721F0055 K202VF0350 MT10	4000	3900	5500	0.72	134.9
						PHQ721F0055 K202VF0350 MT20	3500	3500	5000	1.32	135.0
						PHQ721F0055 K202VF0350 MT30			4000	6.12	135.3
196.3	589/3	440	650	1239	≤4.0	PH721F0070K102VF0280MT10	4000	4000	6000	0.67	107.0
						PH721F0070K102VF0280MT20	3500	3500	5000	1.27	108.0
222.2	1333/6	610	732	1133	≤4.0	PHQ721F0055 K202VF0400 MT10	4000	3900	5500	0.66	135.2
231.1	1849/8	440	700	1400	≤4.0	PH721F0050K202VF0460MT10	4000	3900	5500	0.67	108.0
						PH721F0050K202VF0460MT20	3500	3500	5000	1.27	
232.7	11,400/49	300	500	1000	≤3.5	PH721F0100K102VF0230MT10	4000	4000	6000	0.69	99.0
						PH721F0100K102VF0230MT20	3500	3500	5000	1.29	100.0
235.9	4719/20	440	589	1064	≤4.0	PH721F0070K102VF0340MT10	4000	4000	6000	0.63	108.0
245.7	3686/15	440	650	1239	≤4.0	PH721F0070K102VF0350MT10	4000	4000	6000	0.64	108.0
						PH721F0070K102VF0350MT20	3500	3500	5000	1.24	
254.2	20,339/80	650	950	1700	≤4.0	PHQ721F0055 K202VF0460 MT10	4000	3900	5500	0.67	135.3
						PHQ721F0055 K202VF0460 MT20	3500	3500	5000	1.27	135.4
277.7	6665/24	440	700	1400	≤4.0	PH721F0050K202VF0560MT10	4000	3900	5500	0.65	108.0
277.7	6665/24	508	610	1079	≤4.0	PHQ721F0055 K202VF0500 MT10	4000	3900	5500	0.64	135.4
280.5	5890/21	300	500	1000	≤3.5	PH721F0100K102VF0280MT10	4000	4000	6000	0.67	100.0
						PH721F0100K102VF0280MT20	3500	3500	5000	1.27	
282.1	2821/10	410	410	557	≤4.0	PH721F0070K102VF0400MT10	4000	4000	6000	0.62	108.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm

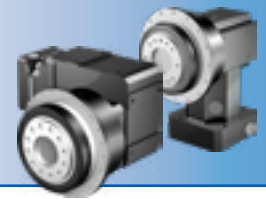
PH7K/PHQ7K (continued from previous page)

305.5	14,663/48	650	950	1558	≤4.0	PHQ721F0055 K202VF0560 MT10	4000	3900	5500	0.65	135.5
328.4	2299/7	440	650	1239	≤4.0	PH721F0070K102VF0470MT10	4000	4000	6000	0.63	108.0
351.1	7372/21	300	500	1000	≤3.5	PH721F0100K102VF0350MT10	4000	4000	6000	0.64	100.0
						PH721F0100K102VF0350MT20	3500	3500	5000	1.24	
352.2	35,217/100	336	403	599	≤4.0	PH721F0070K102VF0500MT10	4000	4000	6000	0.62	108.0
381.8	73,315/192	650	839	1484	≤4.0	PHQ721F0055 K202VF0690 MT10	4000	3900	5500	0.64	135.6
392.7	1178/3	440	571	775	≤4.0	PH721F0070K102VF0560MT10	4000	4000	6000	0.62	108.0
469.2	22,990/49	300	500	1000	≤3.5	PH721F0100K102VF0470MT10	4000	4000	6000	0.63	100.0
490.2	2451/5	440	561	833	≤4.0	PH721F0070K102VF0700MT10	4000	4000	6000	0.61	108.0
561.0	11780/21	300	500	1000	≤3.5	PH721F0100K102VF0560MT10	4000	4000	6000	0.62	100.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

PH8KX (continued next page)

4.000	768	1056	1750	≤5.5	PH821F0040KX801VF0010MF	1000	750	2000	48	101.4	174.1
5.000	960	1320	2188	≤5	PH821F0050KX801VF0010MF	1000	750	2000	48	92.4	225.6
7.000	1000	1600	2772	≤4.5	PH821F0070KX801VF0010MF	1000	750	2000	48	85.0	288.2
8.000	768	1056	2083	≤5.5	PH821F0040KX801VF0020MF	1100	1100	2500	48	54.9	174.1
10.00	960	1320	2604	≤5	PH821F0050KX801VF0020MF	1100	1100	2500	48	52.7	225.6
12.00	768	1056	2083	≤5.5	PH821F0040KX801VF0030MF	1300	1300	3000	48	45.9	174.1
14.00	1000	1600	2772	≤4.5	PH821F0070KX801VF0020MF	1100	1100	2500	48	50.8	288.2
15.00	960	1320	2604	≤5	PH821F0050KX801VF0030MF	1300	1300	3000	48	44.9	225.6
20.00	800	1200	2400	≤4	PH821F0100KX801VF0020MF	1100	1100	2500	48	49.9	261.7
21.00	1000	1600	2772	≤4.5	PH821F0070KX801VF0030MF	1300	1300	3000	48	44.1	288.2
30.00	800	1200	2400	≤4	PH821F0100KX801VF0030MF	1300	1300	3000	48	43.7	261.7

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		
Nom.	Exact	Nm	Nm	Nm							

PH8K/PHQ8K (continued next page)

16.00	16/1	596	656	1043	≤4.0	PH821F0040K302VF0040MT20	2700	2300	3800	7.67	84.0
		695	1174	2308		PH821F0040K302VF0040MT30				12.47	106.0
20.00	20/1	745	819	1304	≤4.0	PH821F0050K302VF0040MT20	2700	2300	3800	7.11	120.0
		868	1467	2870		PH821F0050K302VF0040MT30				11.91	148.0
22.00	22/1	819	901	1434	≤3.5	PHQ821F0055 K402VF0040 MT20	2600	2200	3500	11.70	169.8
		1433	2141	3892		PHQ821F0055 K402VF0040 MT30				16.50	217.9
			2421	4000		PHQ821F0055 K402VF0040 MT40				20.50	286.4
24.00	24/1	894	983	1565	≤3.5	PHQ821F0055 K402VF0044 MT20	2600	2200	3500	10.29	187.0
		1475	2336	4000		PHQ821F0055 K402VF0044 MT30				15.09	235.0
			2493			PHQ821F0055 K402VF0044 MT40				19.09	300.0
26.88	215/8	958	1101	1752	≤4.0	PH821F0050K302VF0054MT20	2700	2300	3800	4.91	154.0
			1502	2037		PH821F0050K302VF0054MT30				9.71	177.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Backlash			Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH8KX (continued next page)

32.00	1100	1860	3145	≤3.5	PH822F0160KX701VF0020MF	1800	1800	3500	38	15.9	380.9
35.00	1250	2000	3200	≤3.5	PH822F0350KX701VF0010MF	1800	1600	3000	38	26.1	431.5
40.00	1250	2000	3200	≤3.5	PH822F0200KX701VF0020MF	1800	1800	3500	38	15.7	409.9

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6			

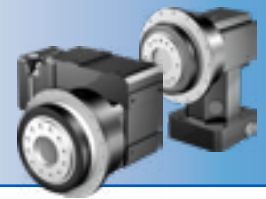
PH8K/PHQ8K (continued next page)

28.00	28/1	313	313	424	≤3.5	PH821F0070K202VF0040MT10	3000	2600	4000	3.48	156.0					
		694	1147	1825		PH821F0070K202VF0040MT20						4.08	162.0			
			1173	2122		PH821F0070K202VF0040MT30								8.88	186.0	
29.82	1849/62	1111	1222	1944	≤3.5	PHQ821F0055 K402VF0054 MT20	2600	2200	3500	7.68	230.1					
		1586	2600	4000		PHQ821F0055 K402VF0054 MT30						12.48	274.8			
						PHQ821F0055 K402VF0054 MT40								16.48	328.9	
30.00	30/1	994	1229	1956	≤4.0	PH821F0050K302VF0060MT20	2700	2300	3800	5.11	165.0					
			1679	3200		PH821F0050K302VF0060MT30						9.91	186.0			
30.55	336/11	341	341	463	≤3.5	PH821F0070K202VF0044MT10	3000	2600	4000	3.08	166.0					
						715						1207	1991	PH821F0070K202VF0044MT20	3.68	171.0
														2315		
33.00	33/1	1229	1352	2151	≤3.5	PHQ821F0055 K402VF0060 MT20	2600	2200	3500	8.37	249.5					
						1641						2600	4000	PHQ821F0055 K402VF0060 MT30	13.17	291.5
														PHQ821F0055 K402VF0060 MT40		
36.24	14,749/407	756	1278	2362	≤3.5	PH821F0070K202VF0052MT20	3000	2600	4000	3.11	187.0					
				2746		PH821F0070K202VF0052MT30						7.91	206.0			
36.95	2365/64	1376	1514	2409	≤3.5	PHQ821F0055 K402VF0067 MT20	3000	2600	4000	5.73	270.1					
						1700						2600	4000	PHQ821F0055 K402VF0067 MT30	10.53	308.4
														PHQ821F0055 K402VF0067 MT40		
36.96	2365/64	1000	1514	2409	≤4.0	PH821F0050K302VF0074MT20	2700	2300	3800	4.11	184.0					
			1800	2800		PH821F0050K302VF0074MT30						8.91	201.0			
40.00	40/1	447	447	606	≤3.5	PH821F0100K202VF0040MT10	3000	2600	4000	3.24	190.0					
						800						1200	2400	PH821F0100K202VF0040MT20	3.84	195.0
														PH821F0100K202VF0040MT30		

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic				
	Nm	Nm	Nm					EL 1,2,5,6			

PH8KX (continued next page)

48.00	1100	1860	3145	≤3.5	PH822F0160KX701VF0030MF	2100	2100	4000	38	12.9	380.9
50.00	1250	2000	3200	≤3.5	PH822F0250KX701VF0020MF	1800	1800	3500	38	15.4	447.9
56.00	1100	2000	3145	≤3.5	PH822F0280KX701VF0020MF	1800	1800	3500	38	15.1	410.8

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C _z (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		

PH8K/PHQ8K (continued next page)

41.01	20,339/496	1527	1680	2673	≤3.5	PHQ821F0055 K402VF0075 MT20	2600	2200	3500	6.44	287.6
		1700	2600	4000		PHQ821F0055 K402VF0075 MT30				11.24	322.2
						PHQ821F0055 K402VF0075 MT40				15.24	358.8
42.00	42/1	469	469	637	≤3.5	PH821F0070K202VF0060MT10	3000	2600	4000	2.49	195.0
		795	1342	2738		PH821F0070K202VF0060MT20				3.09	199.0
				2770		PH821F0070K202VF0060MT30				7.89	214.0
46.07	645/14	1700	1888	3003	≤3.5	PHQ821F0055 K402VF0084 MT20	3000	2600	4000	4.39	305.4
			2600	4000		PHQ821F0055 K402VF0084 MT30				9.19	335.8
						PHQ821F0055 K402VF0084 MT40				13.19	366.6
46.34	5375/116	1000	1848	2870	≤4.0	PH821F0050K302VF0093MT20	3200	2800	4200	3.28	200.0
			3200	PH821F0050K302VF0093MT30		8.08				212.0	
46.78	15,953/341	523	523	709	≤3.5	PH821F0070K202VF0067MT10	3500	3100	4500	1.86	203.0
		824	1391	2770		PH821F0070K202VF0067MT20				2.46	207.0
						PH821F0070K202VF0067MT30				7.26	220.0
49.83	14,749/296	841	1421	2770	≤3.5	PH821F0070K202VF0071MT20	3000	2600	4000	2.69	210.0
			2082	3312		PH821F0070K202VF0071MT30				7.49	222.0
50.81	26,015/512	1700	2082	3312	≤3.5	PHQ821F0055 K402VF0092 MT20	3000	2600	4000	4.92	318.7
			2600	4000		PHQ821F0055 K402VF0092 MT30				9.72	345.6
						PHQ821F0055 K402VF0092 MT40				13.72	372.0
51.77	21,070/407	800	1200	2400	≤3.5	PH821F0100K202VF0052MT20	3000	2600	4000	2.96	212.0
			2276	3620		PH821F0100K202VF0052MT30				7.76	223.0
55.54	1333/24	1700	2276	3620	≤3.5	PHQ821F0055 K402VF0100 MT20	3400	3000	4500	3.58	329.6
			2600	4000		PHQ821F0055 K402VF0100 MT30				8.38	353.4
						PHQ821F0055 K402VF0100 MT40				12.38	376.3

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Nm			Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH8KX (continued next page)

60.00	1250	2000	3200	≤3.5	PH822F0200KX701VF0030MF	2100	2100	4000	38	12.9	409.9
70.00	1250	2000	3200	≤3.5	PH822F0350KX701VF0020MF	1800	1800	3500	38	15.0	431.5

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6			

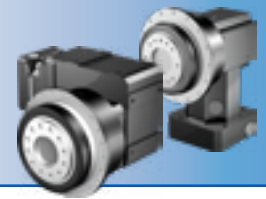
PH8K/PHQ8K (continued next page)

58.05	1161/20	1000	1848	3200	≤4.0	PH821F0050K302VF0115MT20	3200	2800	4200	2.69	211.0	
				2870		PH821F0050K302VF0115MT30					7.49	220.0
58.78	17,458/297	657	657	891	≤3.5	PH821F0070K202VF0084MT10	3500	3100	4500	1.48	217.0	
				2770		PH821F0070K202VF0084MT20			2.08		219.0	
						PH821F0070K202VF0084MT30			4000		6.88	228.0
60.00	60/1	670	670	909	≤3.5	PH821F0100K202VF0060MT10	3000	2600	4000	2.39	216.0	
				2400		PH821F0100K202VF0060MT20			2.99		219.0	
						PH821F0100K202VF0060MT30			7.79		228.0	
63.35	7095/112	1700	2596	4000	≤3.5	PHQ821F0055 K402VF0115 MT20	3000	2600	4000	3.87	343.5	
			2600			PHQ821F0055 K402VF0115 MT30			8.67		363.1	
						PHQ821F0055 K402VF0115 MT40			3500		12.67	381.4
64.33	15,953/248	719	719	975	≤3.5	PH821F0070K202VF0092MT10	3500	3100	4500	1.61	221.0	
				2770		PH821F0070K202VF0092MT20			2.21		223.0	
						PH821F0070K202VF0092MT30			4000		7.01	231.0
66.83	22,790/341	747	747	1013	≤3.5	PH821F0100K202VF0067MT10	3500	3100	4500	1.77	221.0	
				2400		PH821F0100K202VF0067MT20			2.37		223.0	
						PH821F0100K202VF0067MT30			7.17		230.0	
69.62	1462/21	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0125 MT20	3400	3000	4500	2.86	352.0	
						PHQ821F0055 K402VF0125 MT30			4000		7.66	368.9
						PHQ821F0055 K402VF0125 MT40			3000		3500	11.66
69.68	7525/108	1000	1848	2870	≤4.0	PH821F0050K302VF0140MT20	3500	3100	5000	2.31	218.0	
						PH821F0050K302VF0140MT30			7.11		225.0	
70.51	20,167/286	788	788	1069	≤3.5	PH821F0070K202VF0100MT10	3900	3500	5000	1.25	224.0	
				2770		PH821F0070K202VF0100MT20			1.85		226.0	
						PH821F0070K202VF0100MT30			3500		3500	4000

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH8KX (continued next page)

75.00	1250	2000	3200	≤3.5	PH822F0250KX701VF0030MF	2100	2100	4000	38	12.7	447.9
80.00	1100	1920	3145	≤3.5	PH822F0400KX701VF0020MF	1800	1800	3500	38	14.9	406.5
84.00	1100	2000	3145	≤3.5	PH822F0280KX701VF0030MF	2100	2100	4000	38	12.6	410.8
100.0	1250	2000	3200	≤3	PH822F0500KX701VF0020MF	1800	1800	3500	38	14.9	428.5

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

PH8K/PHQ8K (continued next page)

76.37	14,663/192	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0140 MT20	3400	3000	4500	3.22	359.2		
						PHQ821F0055 K402VF0140 MT30			4000			8.02	373.7
						PHQ821F0055 K402VF0140 MT40			3000			3500	12.02
80.82	8729/108	903	903	1225	≤3.5	PH821F0070K202VF0115MT10	3500	3100	4500	1.32	229.0		
		988	1478	2770		PH821F0070K202VF0115MT20			1.92			230.0	
						PH821F0070K202VF0115MT30			6.72			235.0	
83.97	24,940/297	800	938	1273	≤3.5	PH821F0100K202VF0084MT10	3500	3100	4500	1.42	229.0		
			1200	2400		PH821F0100K202VF0084MT20			2.02			230.0	
						PH821F0100K202VF0084MT30			6.82			235.0	
86.47	7955/92	966	966	1310	≤4.0	PH821F0050K302VF0175MT10	3500	3100	5000	1.40	223.0		
		1000	1848	3200		PH821F0050K302VF0175MT20			2.00			224.0	
						PH821F0050K302VF0175MT30			4000			6.80	228.0
88.94	3913/44	994	994	1348	≤3.5	PH821F0070K202VF0125MT10	3900	3500	5000	1.05	231.0		
		1000	1478	2770		PH821F0070K202VF0125MT20			1.65			233.0	
						PH821F0070K202VF0125MT30			4000			6.45	237.0
91.90	11,395/124	800	1027	1393	≤3.5	PH821F0100K202VF0092MT10	3500	3100	4500	1.56	231.0		
			1200	2400		PH821F0100K202VF0092MT20			2.16			232.0	
						PH821F0100K202VF0092MT30			6.96			236.0	
93.16	559/6	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0170 MT20	3500	3300	5000	2.22	371.6		
						PHQ821F0055 K402VF0170 MT30			4000			7.02	381.8
						PHQ821F0055 K402VF0170 MT40			3000			3000	3500
95.73	8041/84	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0175 MT20	3400	3000	4500	2.63	372.9		
						PHQ821F0055 K402VF0175 MT30			4000			7.43	382.7
						PHQ821F0055 K402VF0175 MT40			3000			3500	11.43
96.96	20,167/208	1000	1083	1470	≤3.5	PH821F0070K202VF0140MT10	3900	3500	5000	1.14	233.0		
			1478	2770		PH821F0070K202VF0140MT20			1.74			234.0	
						PH821F0070K202VF0140MT30			4000			6.54	238.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (30), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Nm			Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH8KX (continued next page)

105.0	1250	2000	3200	≤3.5	PH822F0350KX701VF0030MF	2100	2100	4000	38	12.6	431.5
120.0	1100	1920	3145	≤3.5	PH822F0400KX701VF0030MF	2100	2100	4000	38	12.5	406.5
140.0	1000	1600	2772	≤3	PH822F0700KX701VF0020MF	1800	1800	3500	38	14.9	417.0

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6			

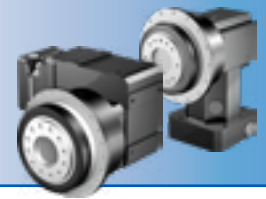
PH8K/PHQ8K (continued next page)

111.1	1333/12	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0200 MT20	3500	3300	5000	1.96	379.5		
						PHQ821F0055 K402VF0200 MT30			4000			6.76	386.9
						PHQ821F0055 K402VF0200 MT40			3000			3000	3500
115.5	6235/54	800	1200	1750	≤3.5	PH821F0100K202VF0115MT10	3500	3100	4500	1.29	235.0		
				2400		PH821F0100K202VF0115MT20			3500	3100	4500	1.89	236.0
						PH821F0100K202VF0115MT30						6.69	239.0
116.5	2795/24	1000	1301	1765	≤4.0	PH821F0050K302VF0230MT10	3800	3500	5000	1.11	228.0		
			1848	3200		PH821F0050K302VF0230MT20			3500	3500	4000	6.51	232.0
				2870		PH821F0050K302VF0230MT30							
118.0	20,769/176	1000	1319	1789	≤3.5	PH821F0070K202VF0170MT10	4000	3900	5500	0.89	237.0		
			1478	2770		PH821F0070K202VF0170MT20			3500	3500	5000	1.49	238.0
						PH821F0070K202VF0170MT30					4000	6.29	240.0
122.3	3913/32	1000	1366	1853	≤3.5	PH821F0070K202VF0175MT10	3900	3500	5000	0.98	237.0		
			1478	2770		PH821F0070K202VF0175MT20			3500	3500	4000	6.38	240.0
						PH821F0070K202VF0175MT30							
128.1	6149/48	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0230 MT20	3500	3300	5000	2.09	384.3		
						PHQ821F0055 K402VF0230 MT30			4000	6.89	390.0		
						PHQ821F0055 K402VF0230 MT40			3000	3000	3500	10.89	395.0
138.5	14,405/104	800	1200	2099	≤3.5	PH821F0100K202VF0140MT10	3900	3500	5000	1.12	238.0		
				2400		PH821F0100K202VF0140MT20			3500	3500	4000	6.52	240.0
						PH821F0100K202VF0140MT30							
139.0	4171/30	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0250 MT20	3500	3300	5000	1.72	386.5		
						PHQ821F0055 K402VF0250 MT30			4000	6.52	391.4		
						PHQ821F0055 K402VF0250 MT40			3000	3000	3500	10.52	395.7
139.4	17,845/128	1000	1558	2113	≤4.0	PH821F0050K302VF0280MT10	3800	3500	5000	0.98	231.0		
			1848	3200		PH821F0050K302VF0280MT20			3500	3500	4000	6.38	233.0
				2870		PH821F0050K302VF0280MT30							

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH8KX (continued next page)

150.0	1250	2000	3200	≤3	PH822F0500KX701VF0030MF	2100	2100	4000	38	12.5	428.5
200.0	800	1200	2400	≤3	PH822F1000KX701VF0020MF	1800	1800	3500	38	14.8	303.5

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

PH8K/PHQ8K (continued next page)

142.3	7826/55	1000	1478	2009	≤3.5	PH821F0070K202VF0200MT10	4000	3900	5500	0.81	239.0
						PH821F0070K202VF0200MT20	3500	3500	5000	1.41	240.0
						PH821F0070K202VF0200MT30			4000	6.21	241.0
152.7	14,663/96	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0280 MT20	3500	3300	5000	1.87	388.7
						PHQ821F0055 K402VF0280 MT30			4000	6.67	392.8
						PHQ821F0055 K402VF0280 MT40	3000	3000	3500	10.67	396.3
162.3	20,769/128	1000	1478	2459	≤3.5	PH821F0070K202VF0230MT10	4000	3900	5500	0.85	240.0
				2770		PH821F0070K202VF0230MT20	3500	3500	5000	1.45	241.0
						PH821F0070K202VF0230MT30			4000	6.25	242.0
173.7	4515/26	1000	1637	2220	≤4.0	PH821F0050K302VF0350MT10	3800	3500	5000	0.87	232.0
			1848	3200		PH821F0050K302VF0350MT20			3500	3500	4000
						PH821F0050K302VF0350MT30	4000	6.27			234.0
174.7	2795/16	800	1200	2400	≤3.5	PH821F0100K202VF0175MT10	3900	3500	5000	0.97	240.0
						PH821F0100K202VF0175MT20			3500	3500	4000
						PH821F0100K202VF0175MT30	4000	6.37			241.0
175.9	1935/11	1000	1478	2197	≤3.5	PH821F0070K202VF0250MT10	4000	3900	5500	0.75	241.0
				2770		PH821F0070K202VF0250MT20	3500	3500	5000	1.35	241.0
						PH821F0070K202VF0250MT30			4000	6.15	242.0
185.2	2408/13	1700	2464	4000	≤3.5	PHQ821F0055 K402VF0340 MT20	3500	3300	5000	1.52	392.1
						PHQ821F0055 K402VF0340 MT30			4000	6.32	395.0
						PHQ821F0055 K402VF0350 MT20	3500	3300	5000	1.66	392.6
PHQ821F0055 K402VF0350 MT30	4000	6.46	395.2								
191.2	45,881/240	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0350 MT40	3000	3000	3500	10.46	397.5
						PH821F0070K202VF0280MT10	4000	3900	5500	0.78	242.0
						PH821F0070K202VF0280MT20				3500	3500
PH821F0070K202VF0280MT30	4000	6.18	243.0								

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

PH8KX (continued from previous page)

210.0	1000	1600	2772	≤3	PH822F0700KX701VF0030MF	2100	2100	4000	38	12.5	417.0
300.0	800	1200	2400	≤3	PH822F1000KX701VF0030MF	2100	2100	4000	38	12.5	303.5

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		

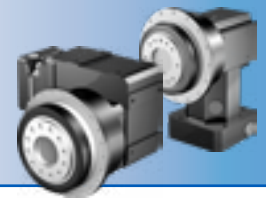
PH8K/PHQ8K (continued next page)

222.8	2451/11	1626	1952	3529	≤3.5	PHQ821F0055 K402VF0410 MT20	3500	3300	5000	1.43	394.4			
						PHQ821F0055 K402VF0410 MT30			4000			6.23	396.4	
231.1	1849/8	1000	1848	2650	≤4.0	PH821F0050K302VF0460MT10	3800	3500	5000	0.76	234.0			
						PH821F0050K302VF0460MT20			4000			1.36		
						PH821F0050K302VF0460MT30			4000			6.16	235.0	
231.8	14,835/64	800	1200	2400	≤3.5	PH821F0100K202VF0230MT10	4000	3900	5500	0.84	241.0			
						PH821F0100K202VF0230MT20			3500			3500	5000	1.44
						PH821F0100K202VF0230MT30							4000	6.24
235.3	12,943/55	1000	1242	2246	≤3.5	PH821F0070K202VF0340MT10	4000	3900	5500	0.69	242.0			
						PH821F0070K202VF0340MT20			3500			3500	5000	1.29
241.9	1935/8	1000	1478	2770	≤3.5	PH821F0070K202VF0350MT10	4000	3900	5500	0.73	243.0			
						PH821F0070K202VF0350MT20			3500			3500	5000	1.33
						PH821F0070K202VF0350MT30							4000	6.13
254.7	3311/13	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0460 MT20	3500	3300	5000	1.48	395.6			
						PHQ821F0055 K402VF0460 MT30			4000			6.28	397.1	
277.3	5547/20	1423	1708	2435	≤3.5	PHQ821F0055 K402VF0500 MT20	3500	3300	5000	1.35	396.2			
278.5	12,255/44	1000	1525	2757	≤4.0	PH821F0050K302VF0560MT10	3800	3500	5000	0.72	234.0			
						PH821F0050K302VF0560MT20			3500				1.32	
279.5	559/2	800	1200	2400	≤3.5	PH821F0100K202VF0280MT10	4000	3900	5500	0.78	242.0			
						PH821F0100K202VF0280MT20			3500			3500	5000	1.38
						PH821F0100K202VF0280MT30							4000	6.18
282.8	9331/33	776	931	1442	≤3.5	PH821F0070K202VF0400MT10	4000	3900	5500	0.66	243.0			

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm

PH8K/PHQ8K (continued from previous page)

306.4	2451/8	1700	2600	4000	≤3.5	PHQ821F0055 K402VF0560 MT20	3500	3300	5000	1.41	396.8			
						PHQ821F0055 K402VF0560 MT30			4000			6.21	397.9	
323.6	12,943/40	1000	1478	2770	≤3.5	PH821F0070K202VF0460MT10	4000	3900	5500	0.68	243.0			
						PH821F0070K202VF0460MT20			3500			3500	5000	1.28
345.5	9675/28	800	1200	2400	≤3.5	PH821F0100K202VF0350MT10	4000	3900	5500	0.73	242.0			
						PH821F0100K202VF0350MT20			3500			3500	5000	1.33
						PH821F0100K202VF0350MT30							4000	6.13
353.4	46,655/132	647	776	1374	≤3.5	PH821F0070K202VF0500MT10	4000	3900	5500	0.64	244.0			
381.4	61,017/160	1700	2348	3349	≤3.5	PHQ821F0055 K402VF0690 MT20	3500	3300	5000	1.34	397.8			
388.8	9331/24	1000	1281	1982	≤3.5	PH821F0070K202VF0560MT10	4000	3900	5500	0.66	244.0			
462.3	1849/4	800	1200	2400	≤3.5	PH821F0100K202VF0460MT10	4000	3900	5500	0.68	243.0			
						PH821F0100K202VF0460MT20			3500			3500	5000	1.28
486.0	46,655/96	889	1067	1889	≤3.5	PH821F0070K202VF0690MT10	4000	3900	5500	0.64	244.0			
555.4	6665/12	800	1200	2400	≤3.5	PH821F0100K202VF0560MT10	4000	3900	5500	0.65	243.0			

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Exact Ratio (i)	Output Torque				Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

PH9KX (continued next page)

12.00	2232	3069	5419	≤4	PH932F0120KX801VF0010MF	1000	750	2000	48	127.5	787.6
16.00	2976	4092	7226	≤3.5	PH932F0160KX801VF0010MF	1000	750	2000	48	97.4	921.1
18.00	3000	4500	8129	≤3.5	PH932F0180KX801VF0010MF	1000	750	2000	48	121.4	920.1
20.00	3000	5000	9032	≤3.5	PH932F0200KX801VF0010MF	1000	750	2000	48	89.8	991.4
24.00	2232	3069	6452	≤4	PH932F0120KX801VF0020MF	1100	1100	2500	48	61.5	787.6
30.00	3000	4500	9000	≤3.5	PH932F0300KX801VF0010MF	1000	750	2000	48	87.6	1030.1
32.00	2976	4092	8602	≤3.5	PH932F0160KX801VF0020MF	1100	1100	2500	48	53.9	921.1
36.00	3000	4500	9000	≤3.5	PH932F0180KX801VF0020MF	1100	1100	2500	48	59.9	920.1
40.00	3000	5000	10,000	≤3.5	PH932F0200KX801VF0020MF	1100	1100	2500	48	52.0	991.4
42.00	3000	4500	9000	≤3	PH932F0420KX801VF0010MF	1000	750	2000	48	82.6	1054.9
48.00	3000	4500	9000	≤3.5	PH932F0240KX801VF0020MF	1100	1100	2500	48	53.1	995.0
54.00	3000	4500	9000	≤3.5	PH932F0180KX801VF0030MF	1300	1300	3000	48	48.1	920.1

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm		EL 1,2	EL 3,4,5,6	All			

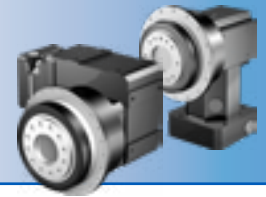
PH9K/PHQ9K (continued next page)

32.54	17,081/525	2449	3120	5673	≤4.5	PH931F0040K513VF0081MT30	1900	1800	3000	21.39	350.0
			3840	6480		PH931F0040K513VF0081MT40				25.39	424.0
40.60	203/5	2621	3840	7080	≤4.5	PH931F0040K513VF0100MT30	1900	1800	3000	17.12	397.0
				7500		PH931F0040K513VF0100MT40				21.12	455.0
44.08	1102/25	3551	4228	7687	≤4.0	PHQ931F0060 K513VF0073 MT30	1900	1800	3000	22.69	550.5
			5760	8780		PHQ931F0060 K513VF0073 MT40				26.69	648.1
48.80	17,081/350	3000	4500	8510	≤4.0	PH931F0060K513VF0081MT30	1900	1800	3000	20.72	557.0
				9000		PH931F0060K513VF0081MT40				24.72	637.0
48.80	17,081/350	3674	4681	8510	≤4.0	PHQ931F0060 K513VF0081 MT30	1900	1800	3000	20.81	581.1
			5760	9720		PHQ931F0060 K513VF0081 MT40				24.81	667.7
55.01	8526/155	3800	5276	9592	≤4.0	PHQ931F0060 K513VF0092 MT30	1900	1800	3000	17.94	613.3
			5760	10,956		PHQ931F0060 K513VF0092 MT40				21.94	687.3

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash arcmin	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶ mm	Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH9KX (continued next page)

60.00	3000	4500	9000	≤3.5	PH932F0300KX801VF0020MF	1100	1100	2500	48	51.5	1030.1
72.00	3000	4500	9000	≤3.5	PH932F0240KX801VF0030MF	1300	1300	3000	48	45.1	995.0
80.00	2688	4608	9216	≤3.5	PH932F0400KX801VF0020MF	1100	1100	2500	48	49.6	1012.3
84.00	3000	4500	9000	≤3	PH932F0420KX801VF0020MF	1100	1100	2500	48	50.2	1054.9
90.00	3000	4500	9000	≤3.5	PH932F0300KX801VF0030MF	1300	1300	3000	48	44.4	1030.1
96.00	3000	4500	9000	≤3	PH932F0480KX801VF0020MF	1100	1100	2500	48	50.0	1051.2

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin) Nm
Nom.	Exact	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

PH9K/PHQ9K (continued next page)

60.90	609/10	3000	4500	9000	≤4.0	PH931F0060K513VF0100MT30	1900	1800	3000	16.69	609.0		
						PH931F0060K513VF0100MT40						20.69	667.0
60.90	609/10	3800	5760	10,619 11,250	≤4.0	PHQ931F0060 K513VF0100 MT30	1900	1800	3000	16.74	637.3		
						PHQ931F0060 K513VF0100 MT40						20.74	701.4
69.41	10,759/155	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0115 MT30	2300	2200	3600	14.30	663.8		
						PHQ931F0060 K513VF0115 MT40						3500	18.30
76.85	1537/20	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0130 MT30	2300	2200	3600	13.55	681.3		
						PHQ931F0060 K513VF0130 MT40						3500	17.55
76.85	1537/20	3000	4500	9000	≤4.0	PH931F0060K513VF0130MT30	2300	2200	3600	13.51	649.0		
						PH931F0060K513VF0130MT40						17.51	689.0
87.22	11,774/135	3202	3522	5603	≤4.0	PHQ931F0060 K513VF0145 MT20	2300	2200	3600	7.10	661.2		
						PHQ931F0060 K513VF0145 MT30						11.90	699.5
						PHQ931F0060 K513VF0145 MT40						3500	15.90
96.56	26,071/270	3000	3899	6203	≤4.0	PH931F0060K513VF0160MT20	2300	2200	3600	6.60	647.0		
						PH931F0060K513VF0160MT30						11.40	676.0
						PH931F0060K513VF0160MT40						3500	15.40
96.56	26,071/270	3545	3899	6203	≤4.0	PHQ931F0060 K513VF0160 MT20	2300	2200	3600	6.62	679.1		
						PHQ931F0060 K513VF0160 MT30						11.42	711.7
						PHQ931F0060 K513VF0160 MT40						3500	15.42

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Nm			Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH9KX (continued from previous page)

120.0	3000	4500	9000	≤3	PH932F0600KX801VF0020MF	1100	1100	2500	48	49.5	1040.0
126.0	3000	4500	9000	≤3	PH932F0420KX801VF0030MF	1300	1300	3000	48	43.8	1054.9
144.0	3000	4500	9000	≤3	PH932F0480KX801VF0030MF	1300	1300	3000	48	43.7	1051.2
180.0	3000	4500	9000	≤3	PH932F0600KX801VF0030MF	1300	1300	3000	48	43.5	1040.0

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6			

PH9K/PHQ9K (continued next page)

104.9	6293/60	3800	4235	6738	≤4.0	PHQ931F0060 K513VF0175 MT20		2800	2500	4000	5.69	691.7
			5760	11,250		PHQ931F0060 K513VF0175 MT30					10.49	720.2
						PHQ931F0060 K513VF0175 MT40					14.49	746.1
116.1	27,869/240	3000	4500	7460	≤4.0	PH931F0060K513VF0195MT20		2800	2500	4000	5.34	670.0
				9000		PH931F0060K513VF0195MT30					10.14	692.0
						PH931F0060K513VF0195MT40					14.14	711.0
116.1	27,869/240	3800	4689	7460	≤4.0	PHQ931F0060 K513VF0195 MT20		2800	2500	4000	5.36	705.0
			5760	11,250		PHQ931F0060 K513VF0195 MT30					10.16	729.0
						PHQ931F0060 K513VF0195 MT40					14.16	750.6
132.0	2639/20	3800	5328	8477	≤4.0	PHQ931F0060 K513VF0220 MT20		2800	2500	4000	4.39	718.9
			5760	11,250		PHQ931F0060 K513VF0220 MT30					9.19	738.1
						PHQ931F0060 K513VF0220 MT40					13.19	755.1
146.1	11,687/80	3000	4500	9000	≤4.0	PH931F0060K513VF0240MT20		2800	2500	4000	4.17	691.0
				PH931F0060K513VF0240MT30		8.97	706.0					
				PH931F0060K513VF0240MT40		12.97	718.0					
146.1	11,687/80	3800	5760	9385	≤4.0	PHQ931F0060 K513VF0240 MT20		2800	2500	4000	4.18	728.0
				11,250		PHQ931F0060 K513VF0240 MT30					8.98	744.0
						PHQ931F0060 K513VF0240 MT40					12.98	758.0
175.1	14,007/80	3800	5760	10,351	≤4.0	PHQ931F0060 K513VF0290 MT20		3400	3000	4500	3.26	740.6
				11,250		PHQ931F0060 K513VF0290 MT30					8.06	752.0
						PHQ931F0060 K513VF0290 MT40		12.06			762.0	
193.8	62,031/320	3000	4500	9000	≤4.0	PH931F0060K513VF0320MT20		3400	3000	4500	3.14	707.0
						PH931F0060K513VF0320MT30					7.94	716.0
						PH931F0060K513VF0320MT40					11.94	723.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

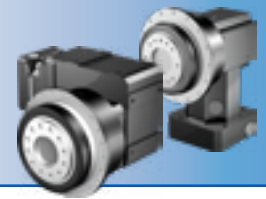
²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



DISTRIBUIDOR
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Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm

PH9K/PHQ9K (continued from previous page)

193.8	62,031/320	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0320 MT20	3400	3000	4500	3.14	746.0
						PHQ931F0060 K513VF0320 MT30			4000	7.94	755.5
						PHQ931F0060 K513VF0320 MT40	3000	3500	11.94	763.6	
208.8	1044/5	3800	5760	11,132	≤4.0	PHQ931F0060 K513VF0350 MT20	3400	3000	4500	2.76	749.4
						PHQ931F0060 K513VF0350 MT30			4000	7.56	757.6
						PHQ931F0060 K513VF0350 MT40	3000	3500	11.56	764.7	
231.2	8091/35	3000	4500	9000	≤4.0	PH931F0060K513VF0390MT20	3400	3000	4500	2.67	714.0
						PH931F0060K513VF0390MT30			4000	7.47	720.0
						PH931F0060K513VF0390MT40	3000	3500	11.47	725.0	
231.2	8091/35	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0390 MT20	3400	3000	4500	2.67	753.3
						PHQ931F0060 K513VF0390 MT30			4000	7.47	760.1
						PHQ931F0060 K513VF0390 MT40	3000	3500	11.47	765.9	
261.0	261/1	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0440 MT20	3400	3000	4500	2.27	757.1
						PHQ931F0060 K513VF0440 MT30			4000	7.07	762.4
						PHQ931F0060 K513VF0440 MT40	3000	3500	11.07	767.0	
289.0	8091/28	3000	4500	9000	≤4.0	PH931F0060K513VF0480MT20	3400	3000	4500	2.21	720.0
						PH931F0060K513VF0480MT30			4000	7.01	724.0
						PH931F0060K513VF0480MT40	3000	3500	11.01	727.0	
289.0	8091/28	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0480 MT20	3400	3000	4500	2.22	759.6
						PHQ931F0060 K513VF0480 MT30			4000	7.02	764.0
						PHQ931F0060 K513VF0480 MT40	3000	3500	11.02	767.8	
349.8	22,736/65	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0580 MT20	3400	3000	4500	1.85	763.3
						PHQ931F0060 K513VF0580 MT30			4000	6.65	766.3
						PHQ931F0060 K513VF0580 MT40	3000	3500	10.65	768.8	
387.3	25,172/65	3000	4500	9000	≤4.0	PH931F0060K513VF0650MT20	3400	3000	4500	1.82	724.0
						PH931F0060K513VF0650MT30			4000	6.62	726.0
						PH931F0060K513VF0650MT40	3000	3500	10.62	728.0	
387.3	25,172/65	3800	5760	11,250	≤4.0	PHQ931F0060 K513VF0650 MT20	3400	3000	4500	1.82	764.7
						PHQ931F0060 K513VF0650 MT30			4000	6.62	767.2
						PHQ931F0060 K513VF0650 MT40	3000	3500	10.62	769.3	
420.5	841/2	3800	5671	7899	≤4.0	PHQ931F0060 K513VF0700 MT20	3400	3000	4500	1.67	765.7
						PHQ931F0060 K513VF0700 MT30			4000	6.47	767.8
465.6	26,071/56	3000	4500	8745	≤4.0	PH931F0060K513VF0780MT20	3400	3000	4500	1.65	726.0
						PH931F0060K513VF0780MT30			4000	6.45	727.0
465.6	26,071/56	3800	5760	8745	≤4.0	PHQ931F0060 K513VF0780 MT20	3400	3000	4500	1.65	766.7
						PHQ931F0060 K513VF0780 MT30			4000	6.45	768.4
523.7	26,187/50	3800	4764	8069	≤4.0	PHQ931F0060 K513VF0870 MT20	3400	3000	4500	1.52	767.6
					≤4.0	PHQ931F0060 K513VF0870 MT30			4000	6.32	769.0
579.9	115,971/200	3800	5276	8934	≤4.0	PHQ931F0060 K513VF0970 MT20	3400	3000	4500	1.50	768.3
						PHQ931F0060 K513VF0970 MT30			4000	6.30	769.4

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Continuous			Cyclic					
	Nm	Nm	Nm					EL 1,2,5,6	EL 3,4			

PH10KX (continued next page)

18.00	3348	4604	8129	≤3.5	PH1032F0180KX801VF0010MF	1000	750	2000	48	124.6	1301.9
24.00	4464	6138	10,839	≤3.5	PH1032F0240KX801VF0010MF	1000	750	2000	48	95.8	1457.2
30.00	5000	7500	13,548	≤3.5	PH1032F0300KX801VF0010MF	1000	750	2000	48	88.7	1533.6
36.00	3348	4604	9677	≤3.5	PH1032F0180KX801VF0020MF	1100	1100	2500	48	60.7	1301.9
42.00	5000	7500	15,000	≤3	PH1032F0420KX801VF0010MF	1000	750	2000	48	83.2	1589.4
48.00	4464	6138	12,903	≤3.5	PH1032F0240KX801VF0020MF	1100	1100	2500	48	53.5	1457.2
54.00	3348	4604	9677	≤3.5	PH1032F0180KX801VF0030MF	1300	1300	3000	48	48.5	1301.9
60.00	5000	7500	15,000	≤3.5	PH1032F0300KX801VF0020MF	1100	1100	2500	48	51.8	1533.6

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Nom.	Exact	Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
		Nm	Nm	Nm					EL 1,2		

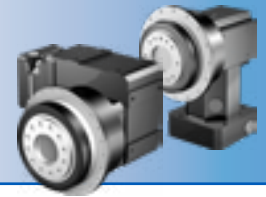
PH10K/PHQ10K (continued next page)

45.38	59,535/1312	3956	4352	7913	≤4.0	PHQ1031F0060 K713VF0076 MT30	1700	1600	2700	66.38	883.9	
		6500	6663	9038		PHQ1031F0060 K713VF0076 MT40				70.38	1145.3	
			10,000	16,946		PHQ1031F0060 K713VF0076 MT50				80.38	1398.1	
48.64	255,285/5248	4241	4665	8482	≤4.0	PH1031F0060K613VF0081MT30	1800	1700	2900	33.92	798.0	
		4849	7143	9688		PH1031F0060K613VF0081MT40				37.92	972.0	
			7500	15,000		PH1031F0060K613VF0081MT50				47.92	1122.0	
50.24	263,655/5248	4380	4818	8760	≤4.0	PHQ1031F0060 K713VF0084 MT30	1700	1600	2700	62.01	960.6	
		6500	7377	10,006		PHQ1031F0060 K713VF0084 MT40				66.01	1204.3	
			10,000	18,761		PHQ1031F0060 K713VF0084 MT50				76.01	1425.4	
55.13	441/8	4806	5287	9613	≤4.0	PHQ1031F0060 K713VF0092 MT30	1700	1600	2700	51.18	1027.6	
		6500	8095	10,980		PHQ1031F0060 K713VF0092 MT40				55.18	1252.8	
			10,000	20,000		PHQ1031F0060 K713VF0092 MT50				65.18	1446.7	
60.32	92,659/1536	5000	5785	10,519	≤4.0	PH1031F0060K613VF0100MT30	1800	1700	2900	26.22	906.0	
			7500	12,015		PH1031F0060K613VF0100MT40				30.22	1044.0	
				15,000		15,000				PH1031F0060K613VF0100MT50	40.22	1151.0
61.03	1953/32	5321	5853	10,642	≤4.0	PHQ1031F0060 K713VF0100 MT30	1700	1600	2700	48.21	1096.6	
			6500	8962		12,156				PHQ1031F0060 K713VF0100 MT40	52.21	1300.0
				10,000		20,000				PHQ1031F0060 K713VF0100 MT50	62.21	1466.4

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Exact Ratio (i)	Output Torque			Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic			
	Nm	Nm	Nm			EL 1,2,5,6	EL 3,4	All			

PH10KX (continued next page)

72.00	4464	6138	12,903	≤3.5	PH1032F0240KX801VF0030MF	1300	1300	3000	48	45.3	1457.2
84.00	5000	7500	15,000	≤3	PH1032F0420KX801VF0020MF	1100	1100	2500	48	50.4	1589.4
90.00	5000	7500	15,000	≤3.5	PH1032F0300KX801VF0030MF	1300	1300	3000	48	44.5	1533.6
96.00	4608	6912	13,824	≤3	PH1032F0480KX801VF0020MF	1100	1100	2500	48	50.1	1581.0

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All		

PH10K/PHQ10K (continued next page)

70.69	70,119/992	6163	6779	12,326	≤4.0	PHQ1031F0060 K713VF0120 MT30	2000	1900	3000	37.24	1186.3
		6500	10,000	14,078		PHQ1031F0060 K713VF0120 MT40				41.24	1357.7
				20,000		PHQ1031F0060 K713VF0120 MT50				51.24	1489.3
75.77	9699/128	5000	7267	13,213	≤4.0	PH1031F0060K613VF0125MT30	2200	2000	3200	20.48	998.0
			7500	15,000		PH1031F0060K613VF0125MT40			24.48	1099.0	
						PH1031F0060K613VF0125MT50			3000	34.48	1172.0
78.26	10,017/128	6500	7505	13,646	≤4.0	PHQ1031F0060 K713VF0130 MT30	2000	1900	3000	35.44	1241.2
			10,000	15,586		PHQ1031F0060 K713VF0130 MT40			39.44	1391.0	
				20,000		PHQ1031F0060 K713VF0130 MT50			49.44	1501.9	
88.81	1421/16	6500	8518	15,487	≤4.0	PHQ1031F0060 K713VF0150 MT30	2000	1900	3000	28.54	1300.7
			10,000	17,643		PHQ1031F0060 K713VF0150 MT40			32.54	1425.7	
				20,000		PHQ1031F0060 K713VF0150 MT50			42.54	1514.7	
95.21	54,839/576	5000	7500	15,000	≤4.0	PH1031F0060K613VF0160MT30	2200	2000	3200	16.40	1066.0
						PH1031F0060K613VF0160MT40			20.40	1137.0	
						PH1031F0060K613VF0160MT50			3000	30.40	1186.0
98.33	6293/64	6500	9430	17,146	≤4.0	PHQ1031F0060 K713VF0165 MT30	2000	1900	3000	27.40	1341.9
			10,000	19,533		PHQ1031F0060 K713VF0165 MT40			31.40	1448.7	
				20,000		PHQ1031F0060 K713VF0165 MT50			41.40	1522.9	
109.7	80,703/736	6500	10,000	19,120	≤4.0	PHQ1031F0060 K713VF0185 MT30	2400	2200	3400	22.96	1379.7
				20,000		PHQ1031F0060 K713VF0185 MT40			26.96	1469.4	
						PHQ1031F0060 K713VF0185 MT50			3000	36.96	1530.2
114.0	51,057/448	4184	4602	7321	≤4.0	PH1031F0060K613VF0190MT20	2600	2300	3600	9.01	1050.0
						PH1031F0060K613VF0190MT30			13.81	1106.0	
		5000	7500	15,000		PH1031F0060K613VF0190MT40			17.81	1158.0	
						PH1031F0060K613VF0190MT50			2500	3000	27.81

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Exact Ratio (i)	Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM (n1)			Motor Shaft Max Ø D ⁶	Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾				Continuous		Cyclic			
	Nm	Nm	Nm				EL 1,2,5,6	EL 3,4				

PH10KX (continued from previous page)

120.0	4032	6912	13,824	≤3	PH1032F0600KX801VF0020MF	1100	1100	2500	48	49.6	1555.7
126.0	5000	7500	15,000	≤3	PH1032F0420KX801VF0030MF	1300	1300	3000	48	43.9	1589.4
144.0	4608	6912	13,824	≤3	PH1032F0480KX801VF0030MF	1300	1300	3000	48	43.8	1581.0
180.0	4032	6912	13,824	≤3	PH1032F0600KX801VF0030MF	1300	1300	3000	48	43.5	1555.7

¹⁾ Based on input speed of 2000 RPM. See page 254 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MF = Motor Adapter with FlexiAdapt® coupling



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
Nom.	Exact	Nominal M _{2N} ¹⁾	Acceleration M _{2B}	Peak M _{2PEAK} ²⁾			Continuous		Cyclic		
		Nm	Nm	Nm			EL 1,2	EL 3,4,5,6			

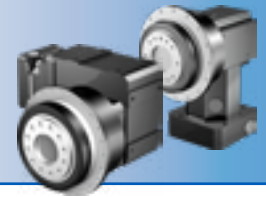
PH10K/PHQ10K (continued next page)

121.4	357,399/2944	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0200 MT30	2400	2200	3400	22.21	1409.8
						PHQ1031F0060 K713VF0200 MT40			3000	26.21	1485.4
						PHQ1031F0060 K713VF0200 MT50			3000	36.21	1535.7
136.4	43,659/320	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0230 MT30	2400	2200	3400	18.22	1438.8
						PHQ1031F0060 K713VF0230 MT40			3000	22.22	1500.4
						PHQ1031F0060 K713VF0230 MT50			3000	32.22	1540.8
144.0	73,749/512	5000	5817	9254	≤4.0	PH1031F0060K613VF0240MT20	2600	2300	3600	6.83	1104.0
			7500	PH1031F0060K613VF0240MT30		3500			11.63	1143.0	
				PH1031F0060K613VF0240MT40		3000			15.63	1177.0	
				PH1031F0060K613VF0240MT50		3000			25.63	1199.0	
151.1	193,347/1280	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0250 MT30	2400	2200	3400	17.74	1459.8
						PHQ1031F0060 K713VF0250 MT40			3000	21.74	1511.2
						PHQ1031F0060 K713VF0250 MT50			3000	31.74	1544.4
175.7	22,491/128	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0290 MT30	2900	2600	3800	14.15	1484.8
						PHQ1031F0060 K713VF0290 MT40			3500	18.15	1523.8
						PHQ1031F0060 K713VF0290 MT50			2500	2500	3000
191.1	391,437/2048	5000	7500	12,279	≤4.0	PH1031F0060K613VF0320MT20	3100	2800	4000	4.84	1148.0
				15,000		PH1031F0060K613VF0320MT30			3500	9.64	1171.0
						PH1031F0060K613VF0320MT40			3000	13.64	1191.0
						PH1031F0060K613VF0320MT50			2500	2500	3000
194.5	99,603/512	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0320 MT30	2900	2600	3800	13.86	1498.2
						PHQ1031F0060 K713VF0320 MT40			3500	17.86	1530.4
						PHQ1031F0060 K713VF0320 MT50			2500	2500	3000

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm

PH10K/PHQ10K (continued from previous page)

212.6	1701/8	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0350 MT30	2900	2600	3800	12.01	1508.1
						PHQ1031F0060 K713VF0350 MT40			3500	16.01	1535.3
						PHQ1031F0060 K713VF0350 MT50			2500	2500	3000
229.9	470,859/2048	5000	7500	13,592	≤4.0	PH1031F0060K613VF0380MT20	3100	2800	4000	3.88	1166.0
				15,000		PH1031F0060K613VF0380MT30			3500	8.68	1182.0
						PH1031F0060K613VF0380MT40	3000	3500	12.68	1197.0	
						PH1031F0060K613VF0380MT50	2500	2500	3000	22.68	1206.0
235.4	7533/32	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0390 MT30	2900	2600	3800	11.81	1517.5
						PHQ1031F0060 K713VF0390 MT40			3500	15.81	1539.9
						PHQ1031F0060 K713VF0390 MT50	2500	2500	3000	25.81	1553.9
270.3	112,455/416	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0450 MT30	2900	2600	3800	10.06	1527.7
						PHQ1031F0060 K713VF0450 MT40			3500	14.06	1544.9
						PHQ1031F0060 K713VF0450 MT50	2500	2500	3000	24.06	1555.5
286.4	119,133/416	5000	7500	14,340	≤4.0	PH1031F0060K613VF0480MT20	3100	2800	4000	3.08	1181.0
						PH1031F0060K613VF0480MT30			3500	7.88	1192.0
						PH1031F0060K613VF0480MT40	3000	3500	11.88	1201.0	
299.3	498,015/1664	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0500 MT30	2900	2600	3800	9.94	1533.6
						PHQ1031F0060 K713VF0500 MT40			3500	13.94	1547.7
						PHQ1031F0060 K713VF0500 MT50	2500	2500	3000	23.94	1556.5
351.4	22,491/64	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0590 MT30	2900	2600	3800	8.58	1541.0
						PHQ1031F0060 K713VF0590 MT40			3500	12.58	1551.3
						PHQ1031F0060 K713VF0590 MT50	2500	2500	3000	22.58	1557.6
382.3	391,437/1024	5000	7500	15,000	≤4.0	PH1031F0060K613VF0640MT20	3100	2800	4000	2.34	1194.0
						PH1031F0060K613VF0640MT30			3500	7.14	1200.0
						PH1031F0060K613VF0640MT40	3000	3500	11.14	1205.0	
389.1	99,603/256	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0650 MT30	2900	2600	3800	8.51	1544.6
						PHQ1031F0060 K713VF0650 MT40			3500	12.51	1553.0
						PHQ1031F0060 K713VF0650 MT50	2500	2500	3000	22.51	1558.2
427.2	13,671/32	6500	10,000	17,676	≤4.0	PHQ1031F0060 K713VF0710 MT30	2900	2600	3800	7.83	1547.3
						PHQ1031F0060 K713VF0710 MT40			3500	11.83	1554.3
456.8	380,091/832	5000	7500	15,000	≤4.0	PH1031F0060K613VF0760MT20	3100	2800	4000	2.04	1198.0
						PH1031F0060K613VF0760MT30			3500	6.84	1203.0
						PH1031F0060K613VF0760MT40	3000	3500	10.84	1206.0	
473.0	60,543/128	6500	10,000	19,570	≤4.0	PHQ1031F0060 K713VF0790 MT30	2900	2600	3800	7.78	1549.7
						PHQ1031F0060 K713VF0790 MT40			3500	11.78	1555.4
534.0	68,355/128	6500	10,000	18,454	≤4.0	PHQ1031F0060 K713VF0890 MT30	2900	2600	3800	7.23	1552.1
						PHQ1031F0060 K713VF0890 MT40			3500	11.23	1556.6
591.2	302,715/512	6500	10,000	20,000	≤4.0	PHQ1031F0060 K713VF0990 MT30	2900	2600	3800	7.20	1553.6
						PHQ1031F0060 K713VF0990 MT40			3500	11.20	1557.3

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQ Series: RIGHT ANGLE – Flange Output



PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm

PHQ11K (continued next page)

44.67	3127/70	3895	4284	7789	≤4.0	PHQ1131F0060 K813VF0074 MT30	1600	1500	2600	151.97	1126.9	
		6559	6559	8897						PHQ1131F0060 K813VF0074 MT40	155.97	1610.3
		12,299	12,299	16,681						PHQ1131F0060 K813VF0074 MT50	165.97	2183.1
49.46	96,937/1960	4312	4743	8624	≤4.0	PHQ1131F0060 K813VF0082 MT30	1600	1500	2600	137.89	1259.2	
		7262	7262	9850						PHQ1131F0060 K813VF0082 MT40	141.89	1733.7
		13,000	13,617	18,469						PHQ1131F0060 K813VF0082 MT50	151.89	2252.8
55.70	11,977/215	4857	5342	9713	≤4.0	PHQ1131F0060 K813VF0093 MT30	1600	1500	2600	109.61	1415.0	
		8180	8180	11,094						PHQ1131F0060 K813VF0093 MT40	113.61	1867.8
		13,000	15,337	20,802						PHQ1131F0060 K813VF0093 MT50	123.61	2322.2
61.67	53,041/860	5377	5915	10,754	≤4.0	PHQ1131F0060 K813VF0105 MT30	1600	1500	2600	100.54	1546.2	
		9056	9056	12,283						PHQ1131F0060 K813VF0105 MT40	104.54	1972.4
		13,000	16,981	23,031						PHQ1131F0060 K813VF0105 MT50	114.54	2372.4
71.44	13,216/185	6228	6851	12,457	≤4.0	PHQ1131F0060 K813VF0120 MT30	1900	1800	2900	76.98	1726.7	
		10,490	10,490	14,228						PHQ1131F0060 K813VF0120 MT40	80.98	2105.4
		13,000	19,668	26,677						PHQ1131F0060 K813VF0120 MT50	90.98	2431.6
79.09	14,632/185	6896	7585	13,792	≤4.0	PHQ1131F0060 K813VF0130 MT30	1900	1800	2900	71.47	1842.7	
		11,614	11,614	15,752						PHQ1131F0060 K813VF0130 MT40	75.47	2184.9
		13,000	21,776	29,536						PHQ1131F0060 K813VF0130 MT50	85.47	2464.8
89.05	28,497/320	7764	8541	15,528	≤4.0	PHQ1131F0060 K813VF0150 MT30	1900	1800	2900	56.85	1966.3	
		13,000	13,077	17,736						PHQ1131F0060 K813VF0150 MT40	60.85	2264.8
			22,000	33,255						PHQ1131F0060 K813VF0150 MT50	70.85	2496.6
98.59	126,201/1280	8596	9456	17,192	≤4.0	PHQ1131F0060 K813VF0165 MT30	1900	1800	2900	53.30	2061.4	
		13,000	14,477	19,636						PHQ1131F0060 K813VF0165 MT40	57.30	2323.3
			22,000	36,818						PHQ1131F0060 K813VF0165 MT50	67.30	2519.0
104.0	30,149/290	9064	9971	18,128	≤4.0	PHQ1131F0060 K813VF0175 MT30	2300	2100	3300	46.74	2106.8	
		13,000	15,266	20,706					PHQ1131F0060 K813VF0175 MT40	50.74	2350.3	
			22,000	38,823					PHQ1131F0060 K813VF0175 MT50	3000	60.74	2529.1
115.1	133,517/1160	10,035	11,039	20,070	≤4.0	PHQ1131F0060 K813VF0190 MT30	2300	2100	3300	44.14	2186.0	
		13,000	16,901	22,924					PHQ1131F0060 K813VF0190 MT40	48.14	2396.3	
			22,000	40,000					PHQ1131F0060 K813VF0190 MT50	3000	58.14	2546.0
138.3	31,801/230	12,055	13,260	24,110	≤4.0	PHQ1131F0060 K813VF0230 MT30	2300	2100	3300	32.82	2303.9	
		13,000	18,054	24,487					PHQ1131F0060 K813VF0230 MT40	36.82	2461.7	
			22,000	40,000					PHQ1131F0060 K813VF0230 MT50	3000	46.82	2569.2
153.1	140,833/920		14,681	26,693	≤4.0	PHQ1131F0060 K813VF0260 MT30	2300	2100	3300	31.35	2356.8	
		13,000	19,988	27,110					PHQ1131F0060 K813VF0260 MT40	35.35	2489.9	
			22,000	40,000					PHQ1131F0060 K813VF0260 MT50	3000	45.35	2579.0

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

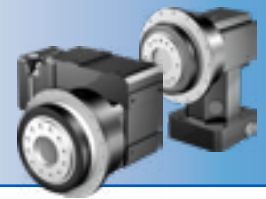
²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)



DISTRIBUIDOR
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Selection Data

Reducer Ratio (i)		Output Torque			Backlash (arcmins)	Part Number* (Gearhead + Right Angle Unit + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}			Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm			EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm

PHQ11K (continued from previous page)

175.5	7021/40	13,000	16,834	29,295	≤4.0	PHQ1131F0060 K813VF0290 MT30	2800	2500	3600	24.32	2415.5
			21,599			PHQ1131F0060 K813VF0290 MT40			3500	28.32	2520.6
			22,000			PHQ1131F0060 K813VF0290 MT50	2500	3000	38.32	2589.5	
194.3	31,093/160	13,000	18,638	32,435	≤4.0	PHQ1131F0060 K813VF0320 MT30	2800	2500	3600	23.40	2451.3
			22,000			PHQ1131F0060 K813VF0320 MT40			3500	27.40	2538.9
						PHQ1131F0060 K813VF0320 MT50	2500	3000	37.40	2595.6	
216.8	8673/40	13,000	20,795	30,365	≤4.0	PHQ1131F0060 K813VF0360 MT30	2800	2500	3600	19.03	2483.3
			22,000			PHQ1131F0060 K813VF0360 MT40			3500	23.03	2555.1
						PHQ1131F0060 K813VF0360 MT50	2500	3000	33.03	2601.0	
240.1	38,409/160	13,000	22,000	33,618	≤4.0	PHQ1131F0060 K813VF0400 MT30	2800	2500	3600	18.43	2508.0
									PHQ1131F0060 K813VF0400 MT40	3500	22.43
							PHQ1131F0060 K813VF0400 MT50	2500	3000	32.43	2605.1
265.5	531/2	13,000	22,000	34,123	≤4.0	PHQ1131F0060 K813VF0440 MT30	2800	2500	3600	15.26	2528.3
									PHQ1131F0060 K813VF0440 MT40	3500	19.26
							PHQ1131F0060 K813VF0440 MT50	2500	3000	29.26	2608.4
293.9	16,461/56	13,000	22,000	37,779	≤4.0	PHQ1131F0060 K813VF0490 MT30	2800	2500	3600	14.86	2545.2
									PHQ1131F0060 K813VF0490 MT40	3500	18.86
							PHQ1131F0060 K813VF0490 MT50	2500	3000	28.86	2611.1
354.5	42,539/120	13,000	22,000	40,000	≤4.0	PHQ1131F0060 K813VF0590 MT30	2800	2500	3600	11.69	2569.1
									PHQ1131F0060 K813VF0590 MT40	3500	15.69
							PHQ1131F0060 K813VF0590 MT50	2500	3000	25.69	2614.9
392.5	188,387/480	13,000	22,000	40,000	≤4.0	PHQ1131F0060 K813VF0650 MT30	2800	2500	3600	11.46	2578.9
									PHQ1131F0060 K813VF0650 MT40	3500	15.46
							PHQ1131F0060 K813VF0650 MT50	2500	3000	25.46	2616.5
430.2	10,325/24	13,000	22,000	40,000	≤4.0	PHQ1131F0060 K813VF0720 MT30	2800	2500	3600	10.01	2586.3
									PHQ1131F0060 K813VF0720 MT40	3500	14.01
							PHQ1131F0060 K813VF0720 MT50	2500	3000	24.01	2617.6
476.3	45,725/96	13,000	22,000	40,000	≤4.0	PHQ1131F0060 K813VF0790 MT30	2800	2500	3600	9.85	2593.0
									PHQ1131F0060 K813VF0790 MT40	3500	13.85
							PHQ1131F0060 K813VF0790 MT50	2500	3000	23.85	2618.7
526.6	21,063/40	13,000	15,099	20,480	≤4.0	PHQ1131F0060 K813VF0880 MT30	2800	2500	3600	8.78	2598.5
									PHQ1131F0060 K813VF0880 MT40	3500	12.78
583.0	93,279/160	13,000	16,717	22,674	≤4.0	PHQ1131F0060 K813VF0970 MT30	2800	2500	3600	8.68	2603.0
									PHQ1131F0060 K813VF0970 MT40	3500	12.68

¹⁾ Based on input speed of 2000 RPM. See page 255 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

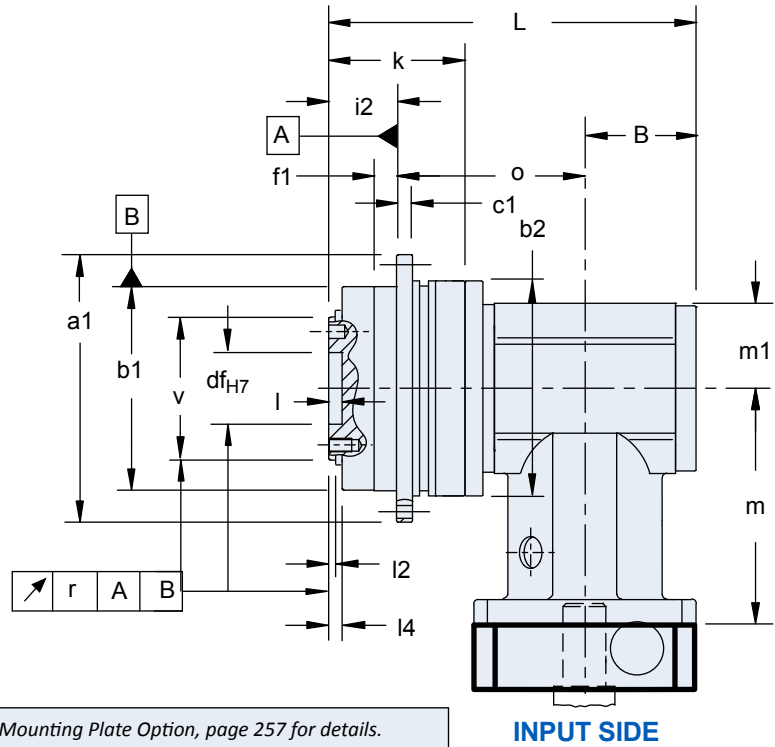
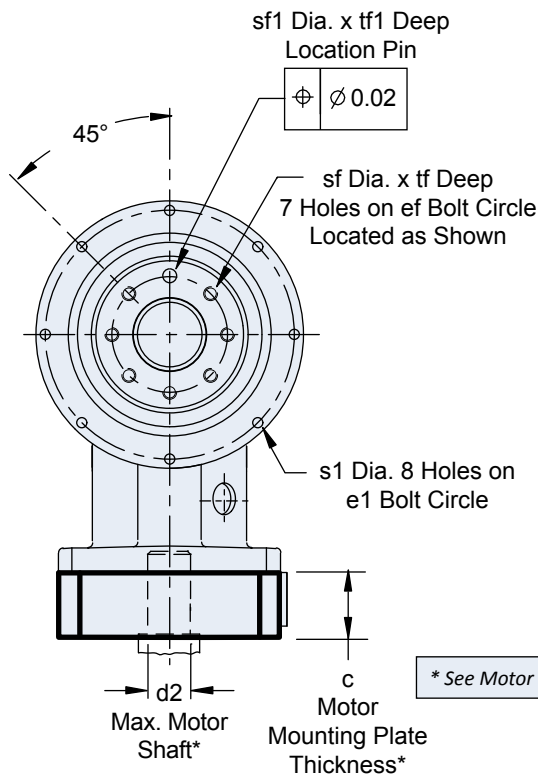
* Motor shaft adapter code (shaft diameter max - mm): MT10 (19), MT20 (24), MT30 (38), MT40 (48), MT50 (60)

PHKX/PHK/PHQK Series: RIGHT ANGLE - Flange Output

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

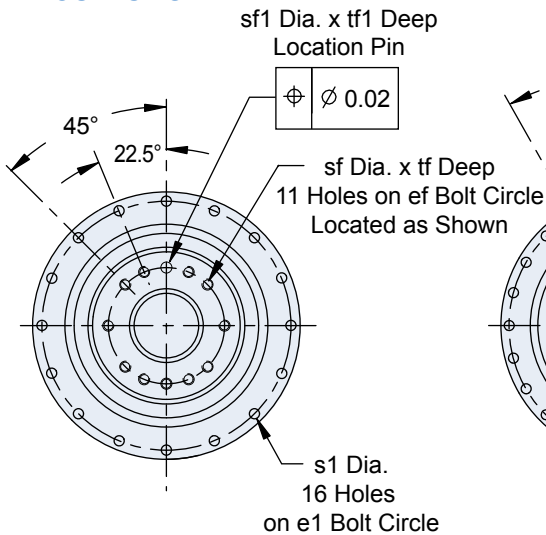
PHKX Series Dimensions – All Units

PHKX3/PHKX4 OUTPUT SIDE

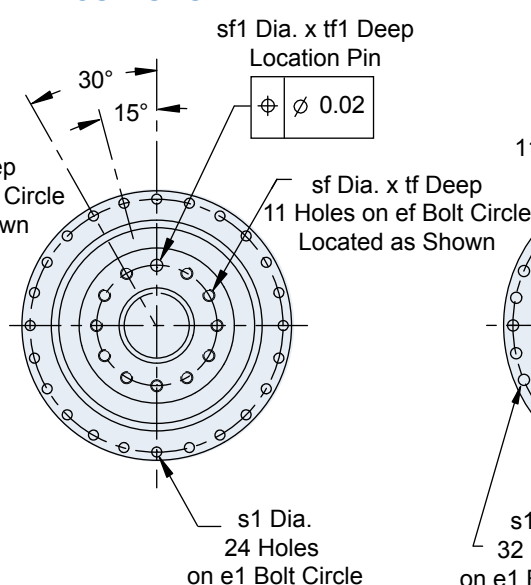


* See Motor Mounting Plate Option, page 257 for details.

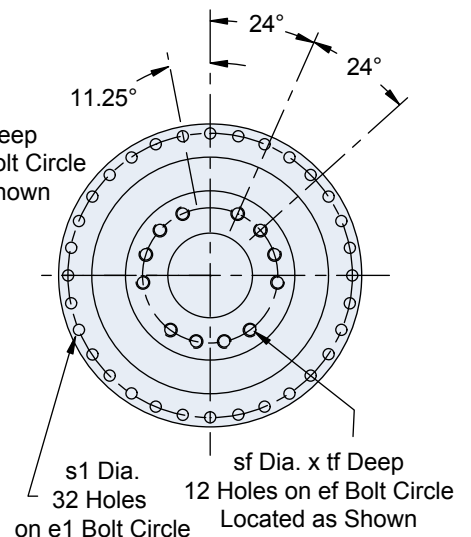
PHKX5 OUTPUT SIDE

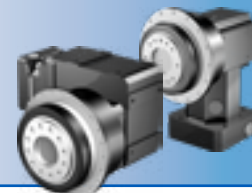


PHKX7/PHKX8 OUTPUT SIDE



PHKX9/PHKX10 OUTPUT SIDE





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	h7*	b1	h7*	b2	c1	df	H7*	e1	ef	f1	i2
PH3_KX	86	+0.000/-0.035	64	+0.000/-0.030	70	4	20	+0.021/-0.0	79	31.5	7	19.5
PH4_KX	118	+0.000/-0.035	90	+0.000/-0.035	95	7	31.5	+0.025/-0.0	109	50	10	30
PH5_KX	145	+0.000/-0.040	110	+0.000/-0.035	120	8	40	+0.025/-0.0	135	63	10	29
PH7_KX	179	+0.000/-0.040	140	+0.000/-0.040	152	10	50	+0.025/-0.0	168	80	12	38
PH8_KX	247	+0.000/-0.046	200	+0.000/-0.046	212	12	80	+0.030/-0.0	233	125	15	50
PH9_KX	300	-	255	+0.000/-0.052	255	18	90	+0.035/-0.0	280	140	20	66
PH10_KX	330	-	285	+0.000/-0.052	285	20	95	+0.035/-0.0	310	160	20	75

Table 2 Dimensions (mm)

Unit	l	l2	l4	r	s1	sf	sf1	H7*	tf	tf1	v	h7*
PH3_KX	4	3	3.5	0.020	4.5	M5x0.80	M5x0.80	+0.012/-0.000	7	3	40	+0.000/-0.025
PH4_KX	6	6	6	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7	63	+0.000/-0.030
PH5_KX	6	6	6	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7	80	+0.000/-0.030
PH7_KX	6	6	6	0.025	6.6	M8x1.25	M8x1.25	+0.015/-0.000	14	7	100	+0.000/-0.035
PH8_KX	8	8	8	0.030	9	M10x1.50	M10x1.50	+0.015/-0.000	18	10	160	+0.000/-0.040
PH9_KX	12	11	12	0.030	13.5	M16x2.00	-	-	24	-	180	+0.000/-0.046
PH10_KX	10	15	15	0.040	13.5	M20x 2.25	-	-	30	-	200	+0.000/-0.046

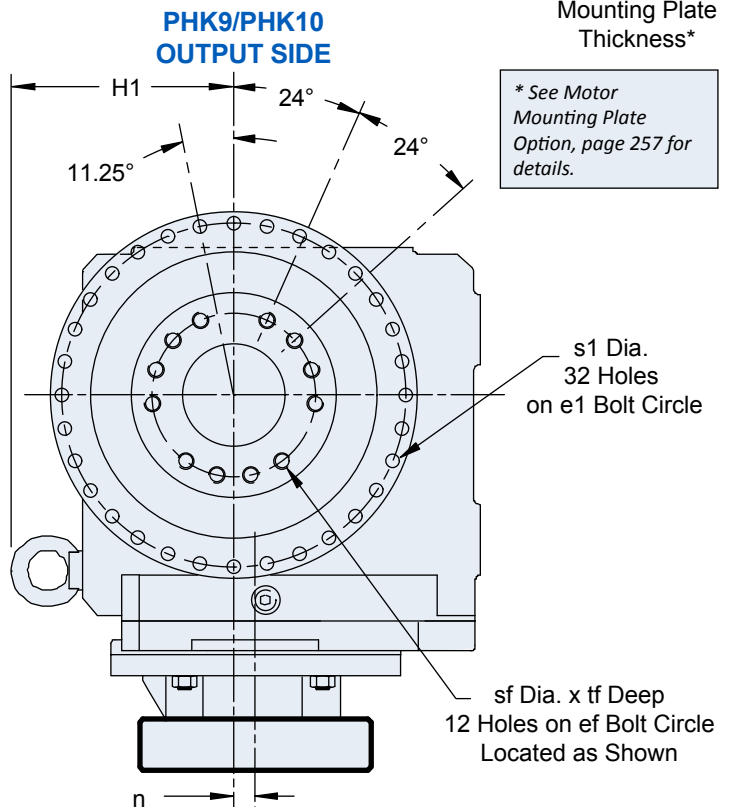
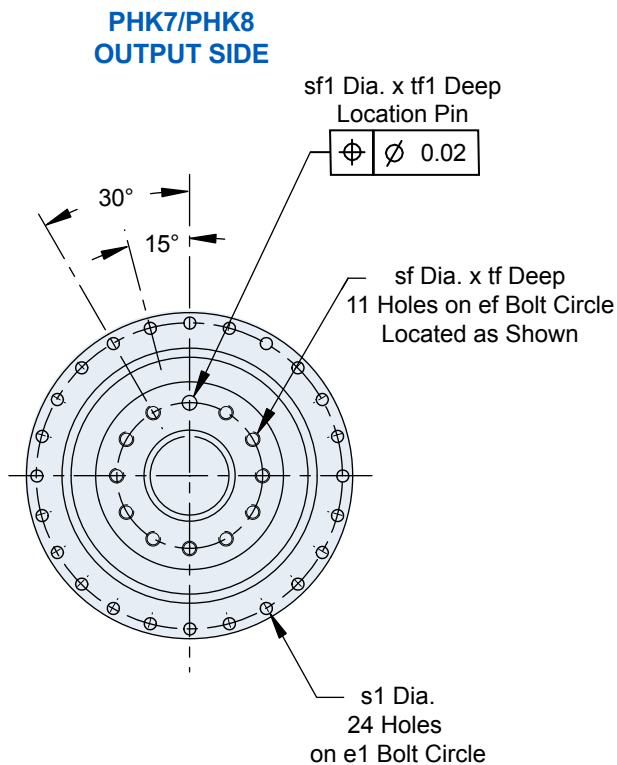
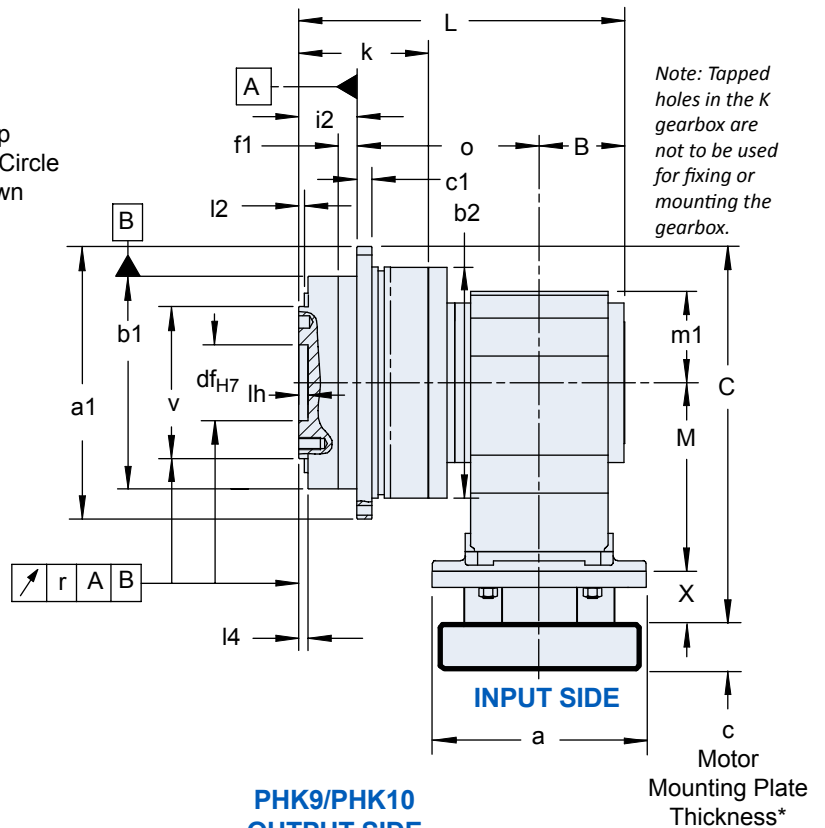
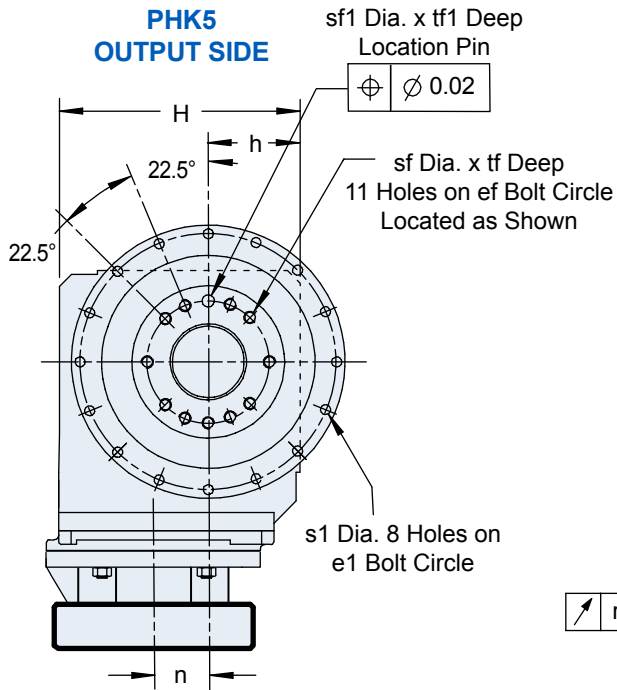
* h7 = existing values; H7 = permissible values

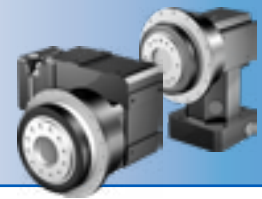
Table 3 Dimensions (mm)

Unit	B	k	L	m	m1	o
PH321_KX3	40	50	133.5	95.5	31	74
PH322_KX3	40	87	169.5	95.5	31	110
PH421_KX4	50	66	167	104	37.5	87
PH422_KX3	40	113	195.5	95.5	31	125.5
PH521_KX5	59	70	193	132	45	105
PH522_KX4	50	124.5	227.5	104	37.5	148.5
PH721_KX7	74	88	239	172.5	60	127
PH722_KX5	59	150	273	132	45	176
PH821_KX8	92	126	317.5	210	75	175.5
PH822_KX7	74	201	352	172.5	60	228
PH932_KX8	92	277.5	470.5	210	75	312.5
PH1032_KX8	92	307	500	210	75	333

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHK Series Dimensions – All Units





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	B	b1	h7*	b2	c1	df	H7*	ef	e1	f1	H	H1	h	i2
PH5_K1	145	56	110	+0.000/-0.035	120	8	40	+0.025/-0.0	63	135	10	160	–	60	29
PH7_K1	179	56	140	+0.000/-0.040	152	10	50	+0.025/-0.0	80	168	12	160	–	60	38
PH7_K2	179	70	140	+0.000/-0.040	152	10	50	+0.025/-0.0	80	168	12	190	–	65	38
PH8_K2	247	70	200	+0.000/-0.046	212	12	80	+0.030/-0.0	125	233	15	190	–	65	50
PH8_K3	247	76	200	+0.000/-0.046	212	12	80	+0.030/-0.0	125	233	15	213	–	75	50
PH9_K5	300	96	255	+0.000/-0.052	255	18	90	+0.035/-0.0	140	280	20	260	312	160	66
PH10_K6	330	103.5	285	+0.000/-0.052	285	20	95	+0.035/-0.0	160	310	20	310	362	190	75

Table 2 Dimensions (mm)

Unit	k	L	l2	l4	lh	m1	o	r	s1	sf	sf1	H7*	tf	tf1	v	h7*
PH5_K1	70	201	6	6	6	60	116	0.020	5.5	M6x1.00	M6x1.00	+0.012/-0.000	11	7	80	+0.000/-0.030
PH7_K1	88	214	6	6	6	60	120	0.025	6.6	M8x1.25	M8x1.25	+0.015/-0.000	14	7	100	+0.000/-0.035
PH7_K2	88	242	6	6	6	65	134	0.025	6.6	M8x1.25	M8x1.25	+0.015/-0.000	14	7	100	+0.000/-0.035
PH8_K2	126	284.5	8	8	8	65	164.5	0.030	9	M10x1.50	M10x1.50	+0.015/-0.000	18	10	160	+0.000/-0.040
PH8_K3	126	298	8	8	8	75	172	0.030	9	M10x1.50	M10x1.50	+0.015/-0.000	18	10	160	+0.000/-0.040
PH9_K5	145	358.5	11	12	12	100	196.5	0.030	13.5	M16x2.00	–	–	24	–	180	+0.000/-0.040
PH10_K6	126	393.5	15	15	10	120	215	0.040	13.5	M20x 2.25	–	–	30	–	200	+0.000/-0.046

Motor Mounting Plate

* h7 = existing values; H7 = permissible values

Table 3 Dimensions (mm)

Base Module	Motor Adapter Code															Wt. lbs.	
	MT10			MT20			MT30			MT40			MT50				
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n		
PH5_K1	236.5	124	36	240.5	128	36	–	–	–	–	–	–	–	–	–	–	43
PH7_K1	253.5	124	36	263.5	128	36	–	–	–	–	–	–	–	–	–	–	53
PH7_K2	278.5	143	46	286.5	147	46	296.5	149	46	–	–	–	–	–	–	–	69
PH8_K2	310.5	143	46	316.5	147	46	330.5	149	46	–	–	–	–	–	–	–	116
PH8_K3	332.5	169	52.5	342.5	169	52.5	352.5	169	52.5	–	–	–	–	–	–	–	134
PH9_K5	–	–	–	–	–	–	374	174	15	377	177	15	–	–	–	–	213
PH10_K6	–	–	–	401	191	18	403	193	18	406	196	18	420	210	18	–	310

Table 4 Dimensions (mm)

Motor Adapter Code	a	Thickness ²⁾ c Min.	Motor Shaft d2 Max. ¹⁾	X	Wt. lbs.
MT10	140	21	19	40	5
MT20	160	24	24	50	8
MT30	200	25	38	60	15
MT40	250	33	48	50	28
MT50	300	43	60	60	42

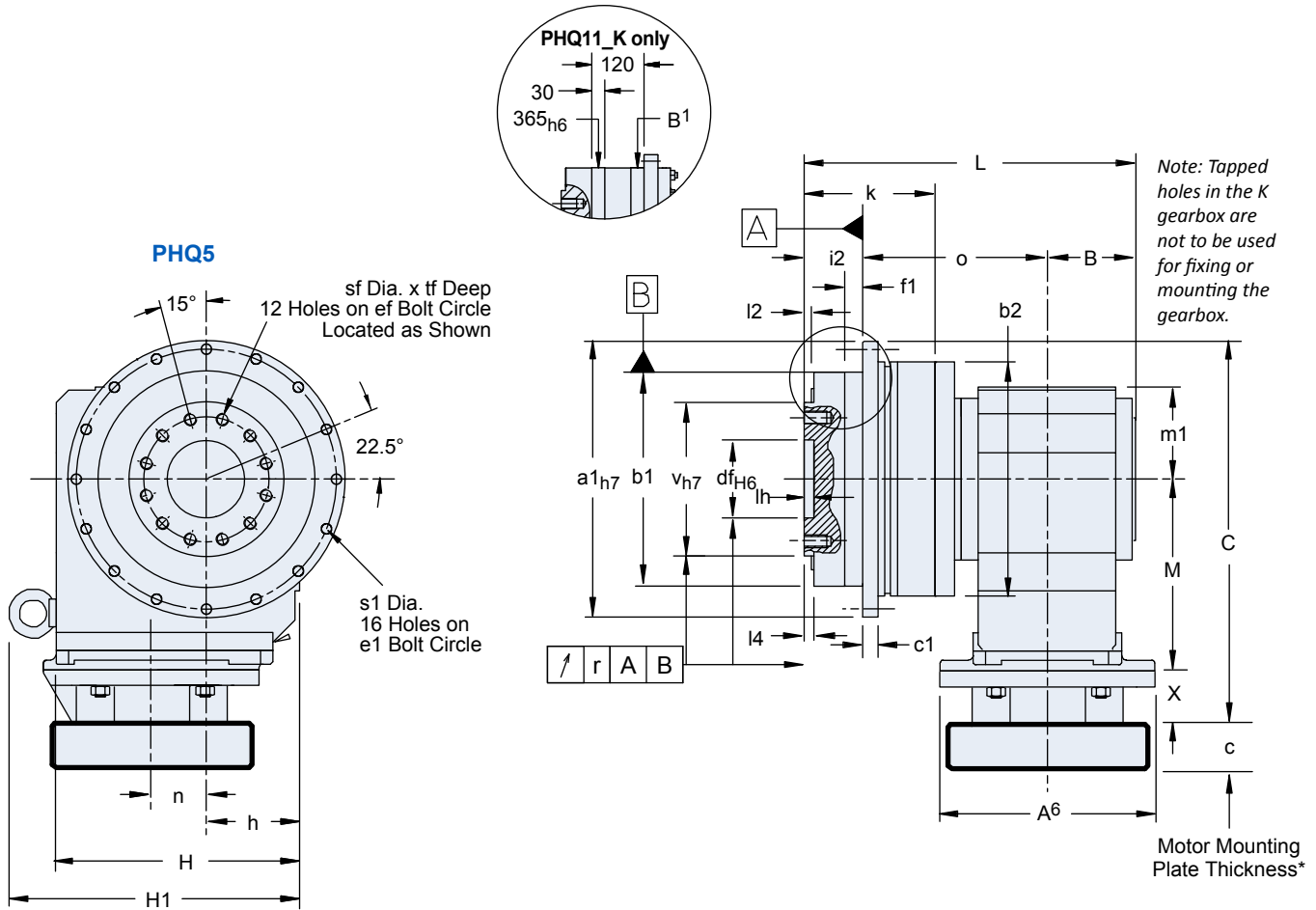
1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (L9) will vary with motor shaft length but will not be less than shown.

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output

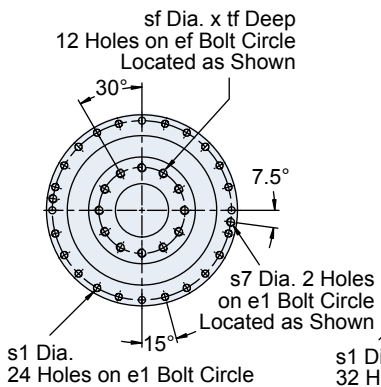
PHQK Series Dimensions – All Units



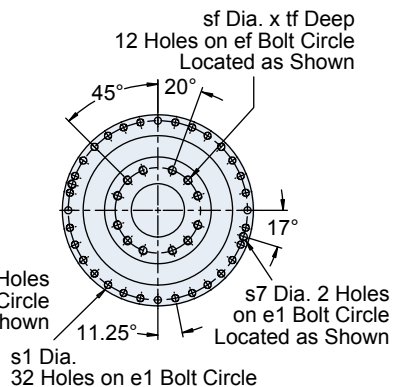
* See Motor Mounting Plate Option, page 257 for details.

OUTPUT SIDE

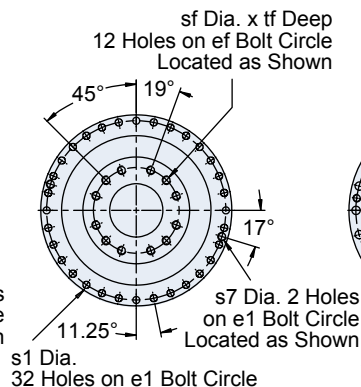
PHQ7/PHQ8



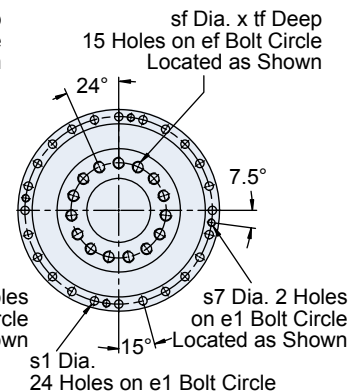
PHQ9

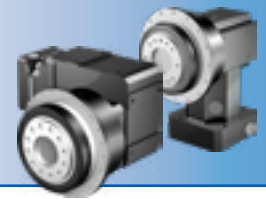


PHQ10



PHQ11





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	B	b1	b2	c1	df	ef	e1	f1	H	H1	h	i2
PHQ5_K	145	56	110 _{h7}	120	8	40	63	135	10	160	–	60	29
PHQ7_K	179	70	140 _{h7}	152	10	50	80	168	12	190	–	65	38
PHQ8_K	247	90	200 _{h7}	212	12	80	125	233	15	240	–	90	50
PHQ9_K	300	96	255 _{h7}	255	18	90	145	280	20	260	312	160	66
PHQ10_K	330	116.5	285 _{h7}	285	20	95	166	310	20	342	403	212	75
PHQ11_K	425	145	365 _{h6}	365	32	120	200	395	30	410	471	265	190

Table 2 Dimensions (mm)

Unit	k	L	l2	l4	lh	m1	o	r	s1	s7	sf	tf	v
PHQ5_K	70	201	6	6.5	6	60	116	0.020	5.5	–	M8x1.25	11	80
PHQ7_K	88	242	6	6.5	6	65	134	0.025	6.6	–	M10x1.50	16	100
PHQ8_K	126	327.5	8	8.5	8	90	187.5	0.030	9	M10x1.50	M12x1.75	17	160
PHQ9_K	145	358.5	11	12	12	100	196.5	0.030	13.5	M8x1.25	M20x 2.25	28	180
PHQ10_K	160	429.5	15	15	10	125	238	0.040	13.5	M10x1.50	M24x2.50	35	200
PHQ11_K	222	571.5	–	10	10	145	236.5	0.040	17.5	M16x2.00	M24x2.50	36	260

* h6, h7 = existing values

Motor Mounting Plate

Table 3 Dimensions (mm)

Base Module	Motor Adapter Code															Wt. lbs.
	MT10			MT20			MT30			MT40			MT50			
	C	m	n	C	m	n	C	m	n	C	m	n	C	m	n	
PHQ5_K	197	124	36	201	128	36	–	–	–	–	–	–	–	–	–	36
PHQ7_K	272.5	143	46	276.5	147	46	278.5	149	46	–	–	–	–	–	–	67
PHQ8_K	–	–	–	360.5	187	60	362.5	189	60	365.5	192	60	–	–	–	157
PHQ9_K	–	–	–	372	172	15	384	174	15	377	177	15	–	–	–	213
PHQ10_K	–	–	–	–	–	–	446	221	20	439	224	20	462	237	20	345
PHQ11_K	–	–	–	–	–	–	519.5	247	24	511.5	249	24	534.5	262	24	672

Table 4 Dimensions (mm)

Motor Adapter Code	a	Thickness ²⁾ c Min.	Motor Shaft d2 Max. ¹⁾	X	Wt. lbs.
MT10	140	21	19	40	5
MT20	160	24	24	50	8
MT30	200	25	38	60	15
MT40	250	33	48	50	28
MT50	300	43	60	60	42

1) If an adapter bushing is required it will be supplied as a component of the motor mounting plate.

2) Motor plate maximum thickness (L⁹) will vary with motor shaft length but will not be less than shown.

PHKX/PHK/PHQK Series: RIGHT ANGLE – Flange Output



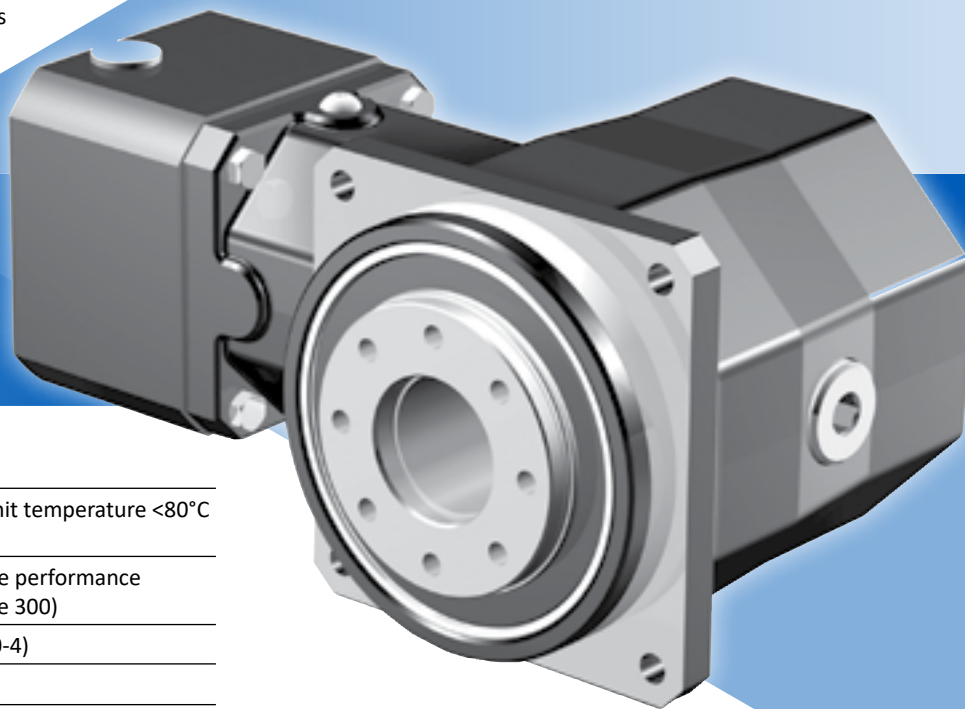
KS Series: RIGHT ANGLE – Versatile Outputs

Features

- 6:1 to 200:1 ratios (higher ratios available. Contact STÖBER.)
- Quiet running (<62dB(A))
- Flexibility for mounting
- Adaptability: shafts available in metric and imperial to meet your requirements
- Large motor input option to accept bigger diameter motor shafts so you don't use an oversized gearbox
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Low no load running torque, giving you more torque for your application
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

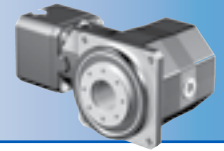
STÖBER KS Series uses helical and bevel gearing to provide a low backlash unit, that is smooth running, with high efficiency, high power density, and high input speed capacity. The KS also offers flexibly with three output options: shaft, flange, and hollow. Every gearbox is made to order. STÖBER will custom whatever you need to fit your application. Contact us today to learn more.

**SHIPS in
1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE



General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <80°C Max]
Backlash	≤4 standard arcmins (see performance overview chart, see page 300)
Coating	Standard Black (RAL 790-4)
Degree of Protection	IP65
Direction of Rotation	Input and output rotate the SAME direction (see page 300)
Efficiency	2 stage 95%; 3 stage 93%;
Input RPM	Up to 6,000 RPM
Installation	Requires 10.9 fasteners for tapped holes housing. See page 328, for more information
Lubrication	Lubricated for life – standard Mobil SHC629; option food grade Mobil SHC CIBUS 150
Mounting Position	Must be specified, see page 301
Warranty	5 Year Limited (2 Years on normal wear items: bearings, seals, etc.)



Overview

Selection Options At-a-Glance

Using the **Selection Data** table later in this section, select the KS Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples: ① KS ② 4 ③ 0 ④ 2 ⑤ P ⑥ F ⑦ 0060 ⑧ MT ⑨ L EL1 *

Design Option	Part Number Code	Description
① Series	KS	Concentric helical
② Size	4 5 7	3 sizes of gearhead
③ Generation	0	Version of gearhead
④ # of Stages	2	Two stage for ratios ≤20:1
	3	Three stage for ratios >20:1
⑤ Output	P	Shaft with key
	G	Plain shaft (no key)
	F	Flanged hollow
	S	Shrink ring
⑥ Housing	F	Standard
⑦ Ratio	0060	Ratios range from 6:1 to 200:1 (0060=6:1; 0200=20:1; 2000=200:1)
⑧ Motor Adapter	MT	MT Motor adapter (See also motor mounting plate option, page 301)
⑩ Options	L	Large Input
* Mounting Position	EL1 EL2 EL3 EL4 EL5 EL6	Required special instruction for all units, see page 301

KS Series: RIGHT ANGLE – Versatile Outputs

Options

Coating Options

- KS Series are also available with a multi-layer, industrial 316 stainless steel epoxy coating (contact factory)

Large Input

- Accommodates a larger diameter motor shaft without going to a larger size gearbox

ATEX

- ATmosphere EXplosible — Please contact factory for this option and allow additional time for delivery

Oil Reservoir

- Use with 3 stage units (for vertical EL5 orientation, see page 300)

KS Series: RIGHT ANGLE – Versatile Outputs

KS Performance Overview

KS Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

Size/Generation		KS40		KS50		KS70	
# of Stages		2	3	2	3	2	3
Acceleration Torque M_{2BMAX}	Nm	90		200		400	
Output Torque Nom. ¹⁾ M_{2N}	Nm	65		130		250	
Torsional Stiffness C_2	Nm/arcmin	≤8.5		≤17		≤42	
Torsional Backlash ²⁾ $\Delta\phi$	arcmin	≤6		≤5		≤4	
Input Speed Max. n_{1MAX}	Continuous	4000	4500	3500	4200	3200	4000
	Cyclic	6000	6000	6000	6000	6000	6000
Efficiency (@nom torque)	%	95	93	95	93	95	93
Weight	kg	8.4	8.2	13.6	14.4	26.8	28.1
	lbs	18.5	18.1	30	31.8	59.1	62
Noise ³⁾	dB(A)	≤65		≤62		≤63	

Performance by Output Option (P = Shaft with Key; G = Shaft without Key; F = Flanged Hollow Output; S = Shrink Ring) ⁴⁾

Size/Generation			KS40	KS50	KS70
Axial Load Max. F_{2AMAX}	P/G	N	3400	6000	10,000
	F	N	4000	6000	10,000
	S	N	4000	6000	10,000
Radial Load Max. F_{2RMAX}	P/G	N	5000	8000	10,000
Tilting Moment Max. M_{2KMAX}	F/S	Nm	210	460	780

¹⁾ Ratings based on input speed (n_1) of 2000 RPM.

$$M_{2NX} = \frac{M_{2N}}{\left(\frac{n_1}{2000}\right)^3}$$

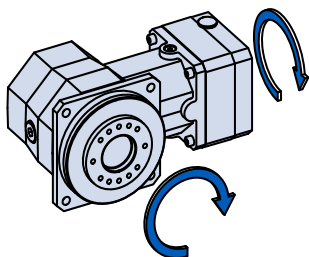
For torque at higher input speeds (M_{2NX}) solve the formula:
 where n_1 = Actual Input Speed.

²⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

³⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

⁴⁾ Rating based on output speed (n_2) of 100 RPM. For values at other speeds see page 302.

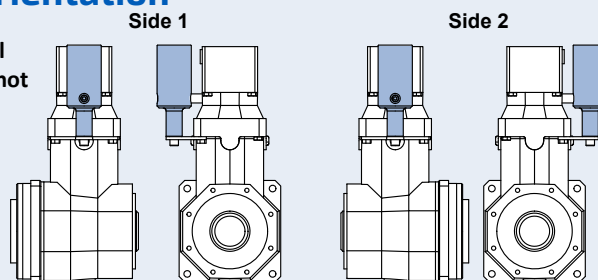
KS Direction of Rotation

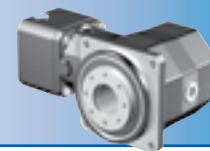


Oil Reservoir Orientation

For 3 stage units in vertical EL5 mounting position — not available with large input option

When ordering, Side 1 or Side 2 **MUST BE SPECIFIED.**





Overview

KS Series Motor Mounting Plate Option (Motor information required with Motor Adapter MT option)

STÖBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STÖBER Technical Support.

Customer Required Dimensions for Properly Sized Motor Mounting Plate

d2	Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)
b6	Pilot Diameter
e6	Bolt Circle Diameter
s6	Bolt Diameter
I5	Motor Shaft Length
f6	Pilot Length
a6	Square Flange (Optional – motor plate will typically be made to match this dimension.)

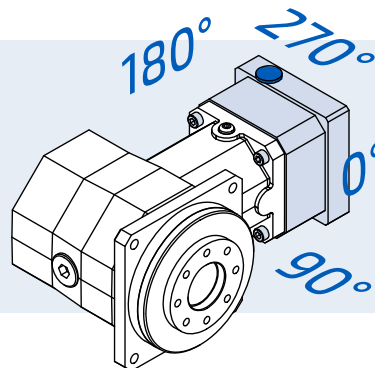
Motor Mounting Plate Dimensions — mm (Gearhead Part Number Specific)

	KS403	KS402 KS403...L KS503	KS402...L KS502 KS503...L KS703	KS502...L KS702 KS703...L	KS702...L
Maximum Allowed Motor Shaft Dia. d2	14	19	24	32	38
Minimum Allowed Motor Plate Thickness c	15	18	21	24	25

* Note that the c motor plate thickness is determined by the motor shaft length. The minimum motor plate thickness is the value listed.

KS Series Motor Mounting Plate Access Hole

Access to the clamping screw for the motor coupling is located on the 270° side of the motor mounting plate at the location shown. If necessary, the motor mounting plate can be rotated in the field, if a 0°, 90° or 180° orientation for the access hole is desirable.



KS Mounting Position Options

KS Units can be mounted in any of the positions illustrated below.

When ordering KS units mounted in a vertical position (EL3) or in a horizontal position (EL5), the mounting position **MUST BE SPECIFIED**. NOTE: EL5 3 stage units are only available with the oil reservoir option.

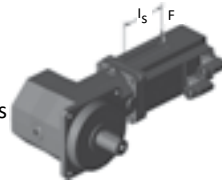
EL1 	EL2 	EL3 Must be Specified	EL4 	EL5 Must be Specified	EL6
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KS Series: RIGHT ANGLE – Versatile Outputs

KS Series: RIGHT ANGLE – Versatile Outputs

Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load “F” from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity “ l_s ” of the motor.



$$M_{1k} = F \times l_s \leq M_{1K}$$

M_{1K}	KS403	KS402 KS503	KS502 KS703	KS702
Nm	10	20	40	80

Permissible Output Shaft Load and Tilting Moments*

Unit	Z_2 mm	F_{2A} N	F_{2R} N	F_{2RB} N	M_{2K} Nm	M_{2KB} Nm
P/G Solid Shaft (with/without key)						
KS4	34	3400	5000	5000	260	260
KS5	40	6000	8000	8000	550	550
KS7	51	10,000	10,000	10,000	920	920
F Flange Hollow Output						
KS4	38	4000	6842	10,263	260	390
KS5	45	6000	12,222	18,333	550	825
KS7	55	10,000	16,727	25,091	920	1380
S Hollow Output with Shrink Ring						
KS4	36	4000	5000	5000	260	260
KS5	42	6000	8000	8000	550	550
KS7	52	10,000	10,000	10,000	920	920

* Refer to illustration and definitions below.

During EMERGENCY OFF operation (maximum stops per gearhead = 1000) the permissible values in the table for F_{2A} , F_{2R} and M_{2K} can be multiplied by a factor of 2.

KS Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 100 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{100}}}, \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{100}}}, \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{100}}}$$

The application output tilting moment should be determined by the following formula:

Output P & G
$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

Output F & S
$$M_{2A} = \frac{F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2KB}$$

$$M_{2ka} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot M_{2kb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot M_{2kbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq M_{2K}$$

$$F_{2r} = \sqrt[3]{\frac{n_{2b1} \cdot t_{b1} \cdot F_{2rb1}^3 + \dots + n_{2bn} \cdot t_{bn} \cdot F_{2rbn}^3}{n_{2b1} \cdot t_{b1} + \dots + n_{2bn} \cdot t_{bn}}} \leq F_{2R}$$

Where:

- | | |
|--|---------------------------------------|
| F_{2a} Axial Load at Output Shaft | M_{2K} Rated Tilting Torque |
| F_{2A} Permissible Axial Load | M_{2k} Equivalent Tilting Load |
| F_{2r} Radial Load at Output Shaft | M_{2KB} Acceleration Tilting Torque |
| F_{2R} Permissible Radial Load | Z_2 Distance Factor |
| F_{2RB} Acceleration Permissible Radial Load | |

The hours of life (L_h) of the unit can be determined by the following formula:

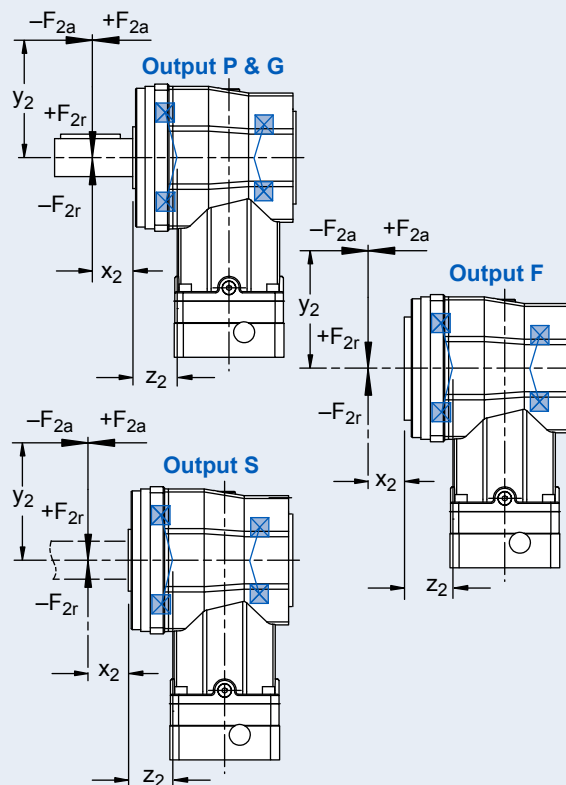
bearing life for duty cycle $\leq 40\%$

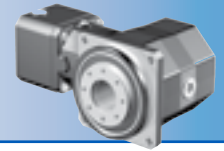
- $L_h > 10,000$ hours if $M_{2k}/M_{2A} < 1.25$ and > 1
- $L_h > 20,000$ hours if $M_{2k}/M_{2A} > 1.25$ and > 1.5
- $L_h > 30,000$ hours if $M_{2k}/M_{2A} < 1.5$

bearing life for duty cycle $\geq 40\%$

$$L_{hA} = L_h \left(\frac{40\%}{\text{Duty Cycle}} \right)$$

All formulas shown are based on METRIC values
Upper case letters are permissible values. Lower case letters are for existing values.





Selection Data

Exact Ratio (i)	Output Torque			Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin)
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK		Cont.	Cyclic			Nm
	Nm	Nm	Nm						

KS4

6.000	60	90	140	KS402_0060MT	3000	6000	19	1.2	8.5
				KS402_0060MTL			24	1.9	
8.000	65	90	140	KS402_0080MT	3500	6000	19	0.9	8.5
				KS402_0080MTL			24	1.6	
10.000	65	90	140	KS402_0100MT	3800	6000	19	0.8	8.5
				KS402_0100MTL			24	1.4	
14.000	65	90	140	KS402_0140MT	4000	6000	19	0.6	8.5
				KS402_0140MTL			24	1.3	
20.000	60	90	140	KS402_0200MT	4000	6000	19	0.6	8.5
				KS402_0200MTL			24	1.3	
24.000	60	90	140	KS403_0240MT	3500	6000	14	0.2	8.5
				KS403_0240MTL			19	0.7	
32.000	65	90	140	KS403_0320MT	3500	6000	14	0.2	8.5
				KS403_0320MTL			19	0.6	
40.000	65	90	140	KS403_0400MT	3500	6000	14	0.2	8.5
				KS403_0400MTL			19	0.6	
50.000	65	90	140	KS403_0500MT	4000	6000	14	0.1	8.5
				KS403_0500MTL			19	0.6	
70.000	65	90	140	KS403_0700MT	4500	6000	14	0.1	8.5
				KS403_0700MTL			19	0.6	
80.000	65	90	140	KS403_0800MT	4500	6000	14	0.1	8.5
				KS403_0800MTL			19	0.6	
100.000	65	90	140	KS403_1000MT	4500	6000	14	0.1	8.5
				KS403_1000MTL			19	0.6	
140.000	65	90	140	KS403_1400MT	4500	6000	14	0.1	8.5
				KS403_1400MTL			19	0.6	
200.000	60	90	140	KS403_2000MT	4500	6000	14	0.1	8.5
				KS403_2000MTL			19	0.6	

KS Series: RIGHT ANGLE – Versatile Outputs

¹⁾ Based on input speed of 2000 RPM. See page 300 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = Motor Adapter L = Large Input Option



KS Series: RIGHT ANGLE – Versatile Outputs

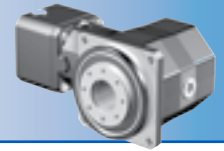
Exact Ratio (i)	Output Torque			Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J ₁ kgcm ²	Torsional Stiffness C ₂ (per arcmin)
	Nominal ¹⁾ M _{2N}	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}		Cont.	Cyclic			Nm
	Nm	Nm	Nm						
6.000	100	200	300	KS502_0060MT	2500	5500	24	2.9	17.0
				KS502_0060MTL					
8.000	125	200	300	KS502_0080MT	2800	6000	24	2.3	17.0
				KS502_0080MTL					
10.000	125	200	300	KS502_0100MT	3000	6000	24	1.9	17.0
				KS502_0100MTL					
14.000	125	200	300	KS502_0140MT	3200	6000	24	1.5	17.0
				KS502_0140MTL					
20.000	120	200	300	KS502_0200MT	3500	6000	24	1.3	17.0
				KS502_0200MTL					
24.000	100	200	300	KS503_0240MT	3100	6000	19	0.8	17.0
				KS503_0240MTL					
32.000	125	200	300	KS503_0320MT	3100	6000	19	0.8	17.0
				KS503_0320MTL					
40.000	125	200	300	KS503_0400MT	3100	6000	19	0.8	17.0
				KS503_0400MTL					
50.000	125	200	300	KS503_0500MT	3500	6000	19	0.7	17.0
				KS503_0500MTL					
70.000	125	200	300	KS503_0700MT	4200	6000	19	0.6	17.0
				KS503_0700MTL					
80.000	125	200	300	KS503_0800MT	4200	6000	19	0.6	17.0
				KS503_0800MTL					
100.000	125	200	300	KS503_1000MT	4200	6000	19	0.6	17.0
				KS503_1000MTL					
140.000	125	200	300	KS503_1400MT	4200	6000	19	0.6	17.0
				KS503_1400MTL					
200.000	120	200	300	KS503_2000MT	4200	6000	19	0.6	17.0
				KS503_2000MTL					

¹⁾ Based on input speed of 2000 RPM. See page 300 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = Motor Adapter L = Large Input Option



Selection Data

Exact Ratio (i)	Output Torque			Part Number* (Gearhead + Input)	Maximum Input Speed RMP (n1)		Motor Shaft Max Ø D ⁶ mm	Input Inertia ³⁾ J1 kgcm ²	Torsional Stiffness C2 (per arcmin)
	Nominal ¹⁾ M2N	Acceleration M2B	Peak ²⁾ M2PEAK		Cont.	Cyclic			Nm
	Nm	Nm	Nm						

KS7

6.000	240	400	600	KS702_0060MT	2100	4500	32	9.3	42.0
				KS702_0060MTL			38	12.3	
8.000	250	400	600	KS702_0080MT	2500	5000	32	6.4	42.0
				KS702_0080MTL			38	9.4	
10.000	250	400	600	KS702_0100MT	2800	6000	32	5.3	42.0
				KS702_0100MTL			38	8.3	
14.000	250	400	600	KS702_0140MT	3000	6000	32	4.3	42.0
				KS702_0140MTL			38	7.4	
20.000	250	400	600	KS702_0200MT	3200	6000	32	3.9	42.0
				KS702_0200MTL			38	6.9	
24.000	240	400	600	KS703_0240MT	3000	6000	24	2.0	42.0
				KS703_0240MTL			32	4.2	
32.000	250	400	600	KS703_0320MT	3000	6000	24	1.8	42.0
				KS703_0320MTL			32	4.0	
40.000	250	400	600	KS703_0400MT	3000	6000	24	1.8	42.0
				KS703_0400MTL			32	4.0	
50.000	250	400	600	KS703_0500MT	3200	6000	24	1.6	42.0
				KS703_0500MTL			32	3.8	
70.000	250	400	600	KS703_0700MT	3500	6000	24	1.4	42.0
				KS703_0700MTL			32	3.6	
80.000	250	400	600	KS703_0800MT	4000	6000	24	1.3	42.0
				KS703_0800MTL			32	3.6	
100.000	250	400	600	KS703_1000MT	4000	6000	24	1.3	42.0
				KS703_1000MTL			32	3.6	
140.000	250	400	600	KS703_1400MT	4000	6000	24	1.3	42.0
				KS703_1400MTL			32	3.5	
200.000	250	400	600	KS703_2000MT	4000	6000	24	1.3	42.0
				KS703_2000MTL			32	3.5	

KS Series: RIGHT ANGLE – Versatile Outputs

¹⁾ Based on input speed of 2000 RPM. See page 300 for details on torque calculations.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

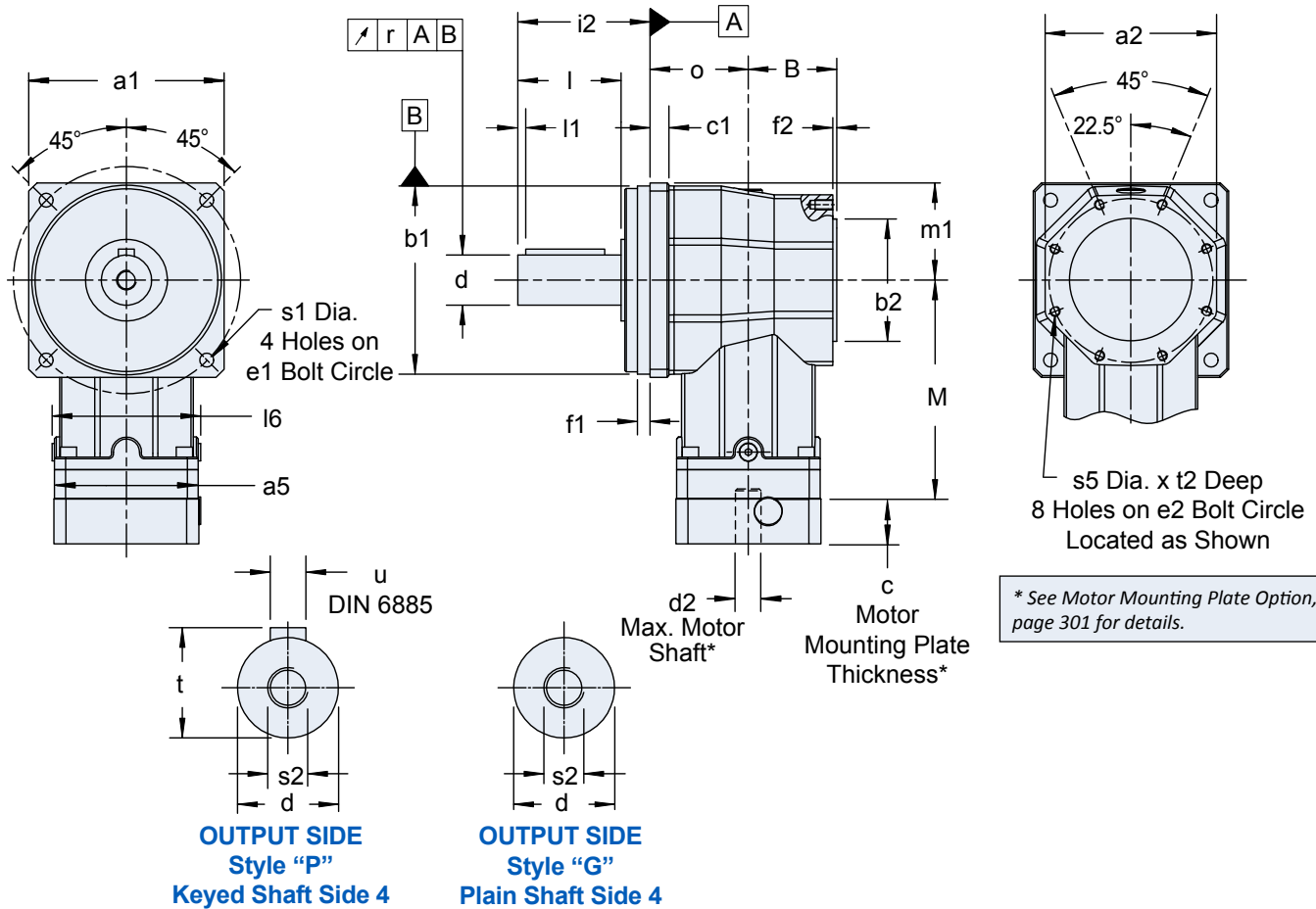
³⁾ Inertia based on maximum input. For lower inertia, using smaller diameter input, contact STÖBER.

* MT = Motor Adapter L = Large Input Option

KS Series: RIGHT ANGLE – Versatile Outputs

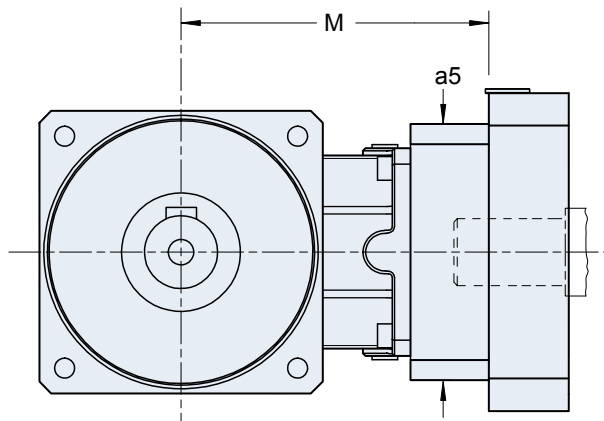
Shaft Output – “P” (with key) & “G” (without key)

With Standard Input



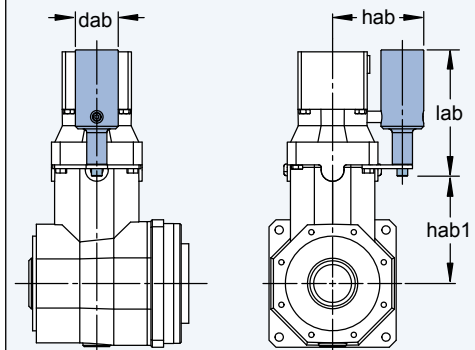
* See Motor Mounting Plate Option, page 301 for details.

With Large Input Option



Oil Reservoir

(For 3 stage units in vertical EL5 mounting position) — not available with large input option





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	a2	B	b1	h6	b2	h6	c1	d	k6	e1	e2
KS4	101	93	51	95	+0.000/-0.022	75	+0.000/-0.019	10	22	+0.015/+0.002	120	88
KS5	125	109	58	120	+0.000/-0.022	90	+0.000/-0.022	10	32	+0.018/+0.002	145	105
KS7	155	135	70	150	+0.000/-0.025	110	+0.000/-0.022	15	40	+0.018/+0.002	180	130

Table 2 Dimensions (mm)

Unit	f1	f2	i2	l	l1	l6	m1	o	r	s1	s2	s5	t	t2	u
KS4	8	3	52	36	3	77.5	50.5	53	0.020	6.6	M8	M5x0.80	24.5	9	A6x6x28
KS5	9	3	75.5	58	3	98	62.5	62	0.020	9	M12	M6x1.00	35	11	A10x8x50
KS7	10	3	105	82	4	120	77.5	78	0.025	11	M16	M8x1.25	43	14	A12x8x70

Table 3 Dimensions (mm)

Standard Input			Large Input		
Unit	a5	M	Unit	a5	M
KS402	72	137.5	KS402_L	100	141.5
KS403	55	161.0	KS403_L	75	177.5
KS502	98	158.0	KS502_L	115	166.5
KS503	72	205.5	KS503_L	100	209.5
KS702	115	191.0	KS702_L	145	205.0
KS703	98	240.5	KS703_L	115	249.0

Table 4 Oil Reservoir Dimensions (mm)

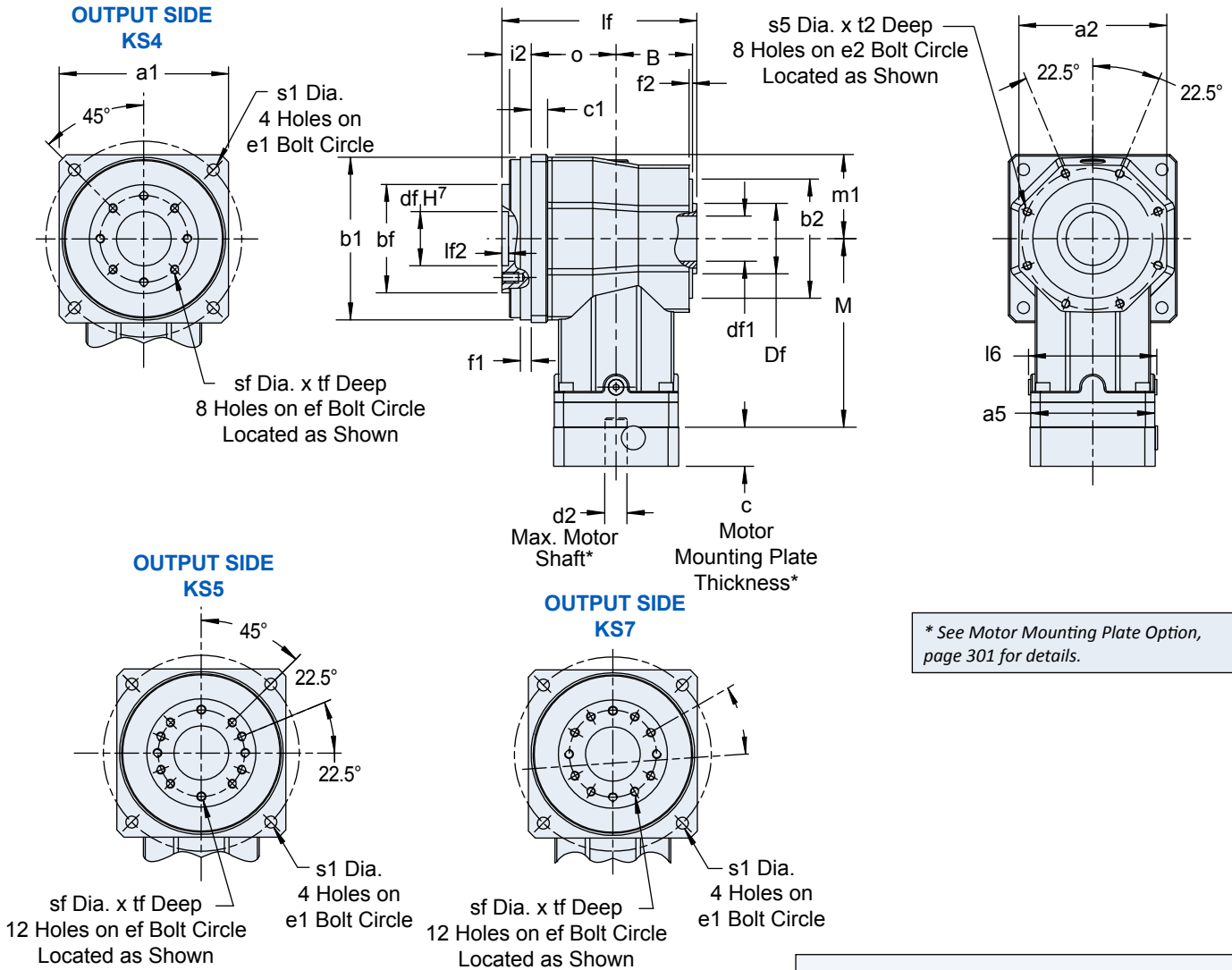
Unit Type	dab	hab	hab1	lab
KS403	34	74.5	85	100
KS503	39	92	105	122
KS703	49	109.5	132	134

KS Series: RIGHT ANGLE – Versatile Outputs

KS Series: RIGHT ANGLE – Versatile Outputs

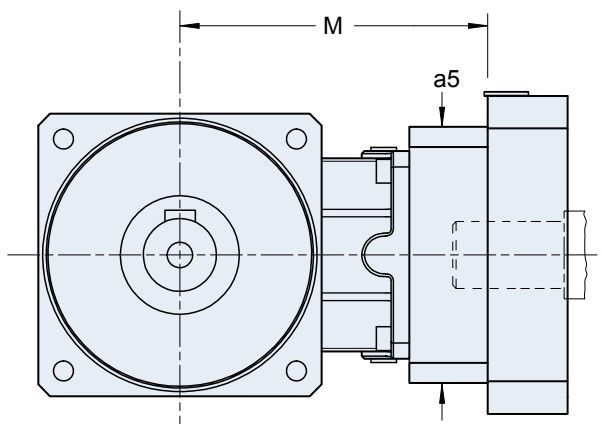
Flanged Hollow Output – “F”

With Standard Input



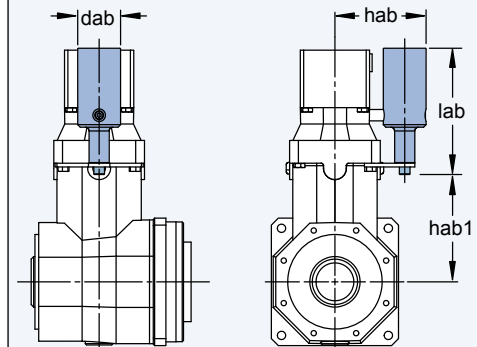
* See Motor Mounting Plate Option, page 301 for details.

With Large Input Option



Oil Reservoir

(For 3 stage units in vertical EL5 mounting position) — not available with large input option





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	a2	B	b1	h6	b2	h6	bf	h7	c1	Df	d ⁹	df	H ⁷	df1
KS4	101	93	51	95	+0.000/-0.022	75	+0.000/-0.019	63	+0.000/-0.030	10	40	-0.080/-0.180	31.5	+0.025/-0.0	30
KS5	125	109	58	120	+0.000/-0.022	90	+0.000/-0.022	80	+0.000/-0.030	10	48	-0.080/-0.180	40	+0.025/-0.0	38
KS7	155	135	70	150	+0.000/-0.025	110	+0.000/-0.022	100	+0.000/-0.035	15	60	-0.100/-0.174	50	+0.025/-0.0	49

Table 2 Dimensions (mm)

Unit	e1	e2	ef	f1	f2	i2	l6	lf	lf2	m1	o	s1	s5	sf	t2	tf
KS4	120	88	50	8	3	20	77.5	127	6	50.5	53	6.6	M5x0.80	M6x1.00	9	11
KS5	145	105	63	9	3	22	98	145	7	62.5	62	9	M6x1.00	M6x1.00	11	12
KS7	180	130	80	10	3	27	120	178	7	77.5	78	11	M8x1.25	M8x1.25	14	15

Table 3 Dimensions (mm)

Standard Input			Large Input		
Unit	a5	M	Unit	a5	M
KS402	72	137.5	KS402_L	100	141.5
KS403	55	161.0	KS403_L	75	177.5
KS502	98	158.0	KS502_L	115	166.5
KS503	72	205.5	KS503_L	100	209.5
KS702	115	191.0	KS702_L	145	205.0
KS703	98	240.5	KS703_L	115	249.0

Table 4 Oil Reservoir Dimensions (mm)

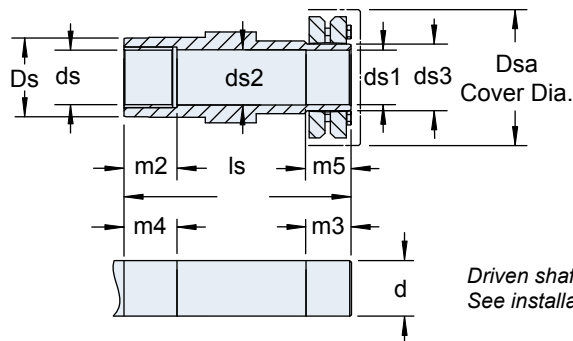
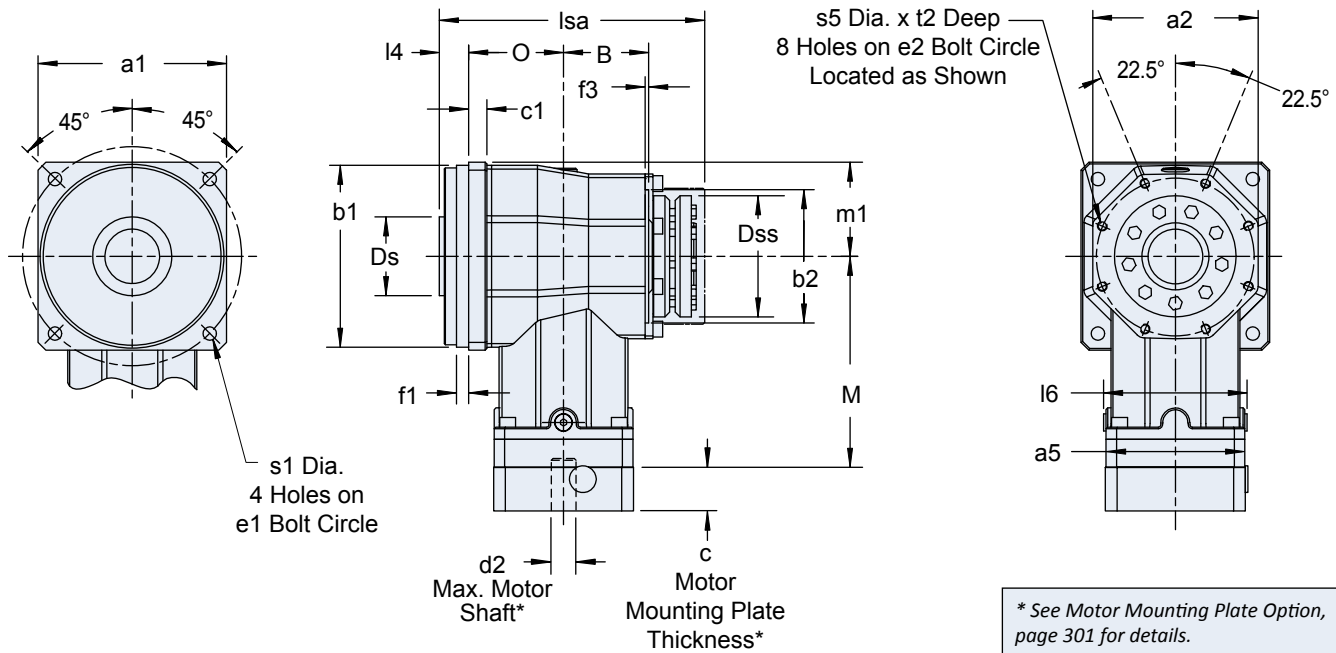
Unit Type	dab	hab	hab1	lab
KS403	34	74.5	85	100
KS503	39	92	105	122
KS703	49	109.5	132	134

KS Series: RIGHT ANGLE – Versatile Outputs

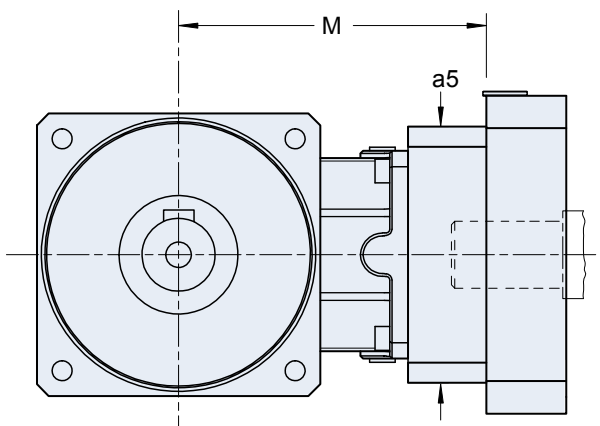
KS Series: RIGHT ANGLE – Versatile Outputs

Shrink Ring Output – “S”

With Standard Input

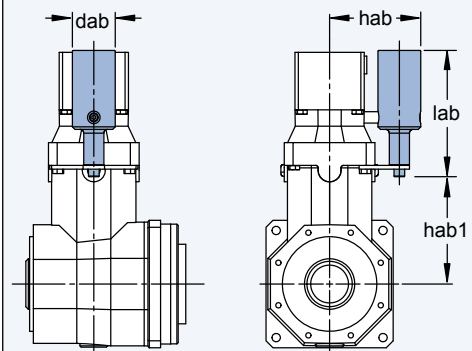


With Large Input Option



Oil Reservoir

(For 3 stage units in vertical EL5 mounting position) — not available with large input option





Dimensional Data

Table 1 Dimensions (mm)

Unit	a1	a2	B	b1	h6	b2	h6	c1	Ds	Dsa	Dss	ds	h9	ds1		ds2	ds3
														Bore ^{H9}	Shaft ^{H9}		
KS4	101	93	51	95	+0.000/-0.022	75	+0.000/-0.019	10	40	72	60	25	+0.000/-0.052	25	25	25.5	30
KS5	125	109	58	120	+0.000/-0.022	90	+0.000/-0.022	10	50	92	80	35	+0.000/-0.062	35	35	35.5	44
KS7	155	135	70	150	+0.000/-0.025	110	+0.000/-0.022	15	65	112	100	45	+0.000/-0.062	45	45	45.5	55

Table 2 Dimensions (mm)

Unit	e1	e2	f1	f2	l4	l6	ls	lsa	m1	m2	m3	m4	m5	o	s1	s5	t2
KS4	120	88	8	3	18	77.5	151	158	50.5	20	34	25	29	53	6.6	M5x0.80	9
KS5	145	105	9	3	19.5	98	171.5	179.5	62.5	30	39	35	34	62	9	M6x1.00	11
KS7	180	130	10	3	24	120	211	218	77.5	40	42	45	37	78	11	M8x1.25	14

Table 3 Dimensions (mm)

Standard Input			Large Input		
Unit	a5	M	Unit	a5	M
KS402	72	137.5	KS402_L	100	141.5
KS403	55	161.0	KS403_L	75	177.5
KS502	98	158.0	KS502_L	115	166.5
KS503	72	205.5	KS503_L	100	209.5
KS702	115	191.0	KS702_L	145	205.0
KS703	98	240.5	KS703_L	115	249.0

Table 4 Oil Reservoir Dimensions (mm)

Unit Type	dab	hab	hab1	lab
KS403	34	74.5	85	100
KS503	39	92	105	122
KS703	49	109.5	132	134

KS Series: RIGHT ANGLE – Versatile Outputs



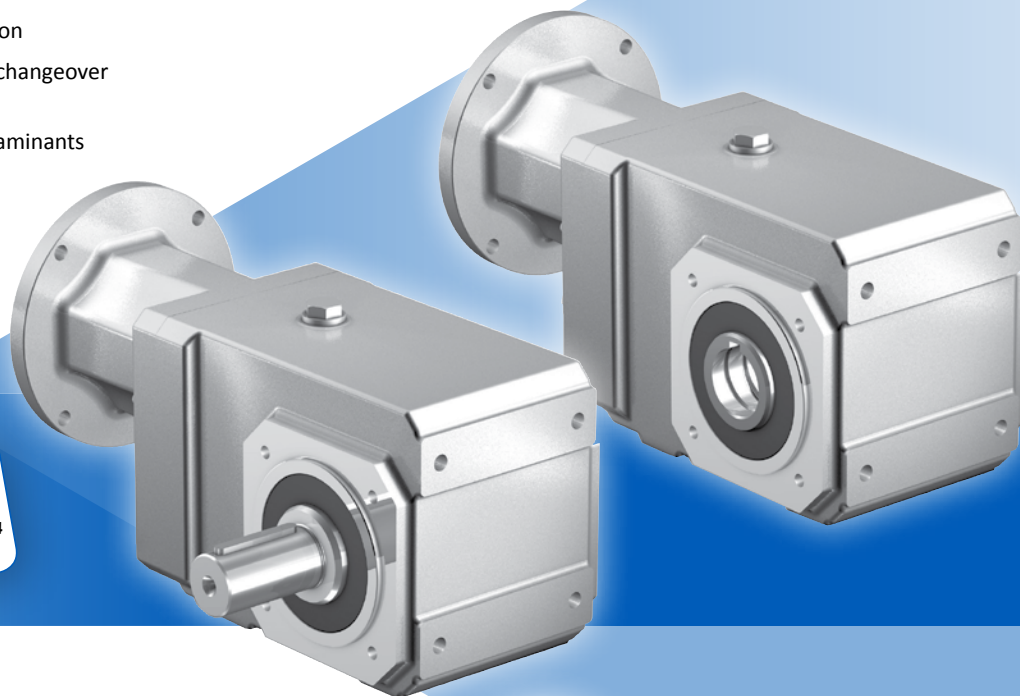
KSS Series: RIGHT ANGLE — Solid Shaft/Hollow Output

Features

- 4:1 to 55:1 ratios (higher ratios available. Contact STOBER.)
- Quiet running (<53dB(A))
- Extra seal between motor and reducer to prevent ingress
- Totally enclosed – no breather to allow contaminants in or oil out
- Mounting flexibility to fit the application
- Error free motor mounting and quick changeover with toleranced pilot on motor plate
- Magnetic oil filtration to remove contaminants to prevent breakdowns
- Build and ship in one day
- Assembled in the USA

The KSS is the stainless steel version of our K gearbox. Capable of handling the harshest washdowns and requiring zero maintenance, the KSS is ideal for your caustic environments.

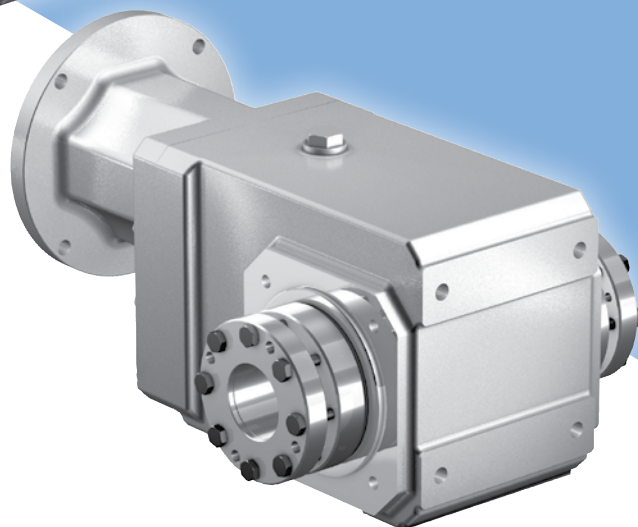
Every gearbox is made to order. STOBER will custom whatever you need to fit your application. Contact us today to learn more.



**SHIPS in
1 DAY!**
NO EXPEDITE FEE FOR 24
HOUR SERVICE

General Specifications

Ambient Temperature	0°C to +40°C (104°F) [Unit temperature <80°C Max]
Backlash	≤10 standard arcmins (see performance overview chart, (page 314))
Coating	Stainless steel housing
Degree of Protection	IP69K
Direction of Rotation	Input and output rotate the SAME direction, see page 315
Efficiency	97%
Input RPM	Up to 6,000 RPM
Installation	Requires 10.9 fasteners for tapped holes housing. See page 328, for more information
Lubrication	Lubricated for life - food grade Mobil SHC CIBUS 220 standard
Mounting Position	Must be specified, see page 315
Warranty	3 year standard warranty



Lubricated for life* - standard Mobil 600XP200, option food grade Mobil SHC CIBUS 220



Overview

IP69K/STAINLESS STEEL

KSS Series Ordering Options At-a-Glance

Using the **Selection Data** table later in this section, select the KSS Series Gearhead with the appropriate performance and design options tailored to your motor choice and exact application requirements. Use the part number guide below as a reference to build a part number for the complete gearhead assembly.

Part Number Examples: ① KSS ② 1 ③ 0 ④ 2 ⑤ V ⑥ F ⑦ 0040 ⑧ MS1R E12 *

Design Option	Part Number Code	Description
① Series	KSS	Stainless steel housing; right angle helical/bevel
② Size	1 2 3	3 sizes of gearhead
③ Generation	0	Version of gearhead
④ # of Stages	2	Two stage
⑤ Output	V	Shaft output (side 3 or 4 only, please specify)
	A	Hollow output
	W	Double wobble-free bushing
⑥ Housing	F	Round output flange (side 3 or 4 only, please specify)
	G	Pitch Circle Diameter (PCD) tapped holes
	NG	Foot mounting (side 1 or 5 only)
⑦ Ratio	0040	Ratios range from 4:1 to 272:1 (0040=4:1; 2720=272:1)
⑧ Motor Adapter	MS1R	3 input sizes (see also motor mounting plate option) (See "Motor Mounting Plate Option", page 315)
	MS2R	
	MS3R	
* Mounting Position	E12, E34 EL5, EL6	Please specify. Required special instruction for all units (See "KSS Mounting Position Options", page 315)

Options

Lubrication

- KSS Series comes standard with food grade lubrication; optional synthetic available. Contact STÖBER for details.

KSS Series: RIGHT ANGLE — Solid Shaft / Hollow Output

KSS Series: RIGHT ANGLE — Solid Shaft/Hollow Output

KSS Performance Overview

KSS Series performance is dependent on several factors including duty cycle, bearing design, gearhead size and stage configuration, among others. Use the chart below for preliminary evaluation, then use the following performance chart and selection information on the following pages for specific performance sizing and selection.

Size/Generation			KSS10	KSS20	KSS30
# of Stages			2	2	2
Acceleration Torque M_{2BMAX}	Nm		135	220	385
Output Torque Nom. M_{2N}	Nm		119	200	350
Torsional Stiffness C_2	Nm/arcmin		≤5.8	≤8.1	≤9.6
Torsional Backlash ¹⁾ $\Delta\phi$	arcmin		≤12	≤10	≤10
Input Speed Max. n_{1MAX}	Continuous	EL1, 2, 5, 6	4000	4000	3500
		EL3, 4	4000	3900	3500
	Cyclic		6000	5500	5000
Efficiency (@nom torque)	%		97	97	97
Weight	kg		13.1	18.1	30.4
	lbs		29	40	67
Noise ²⁾	dB(A)			≤53	
Axial Load Max. F_{2AMAX}	N		1900	2100	2400
Radial Load Max. ³⁾ F_{2RMAX}	N		5000	6000	7000
Tilting Moment Max. ³⁾ M_{2KMAX}	Solid Shaft	Nm	360	430	525
	Hollow Bore	Nm	240	310	380

¹⁾ Tested at 1.5% of nominal torque and recorded on the output side of the gearhead. For lower backlash, contact STÖBER technical support.

²⁾ Measurement at one (1) meter distance with input speed (n_1) of 2000 RPM.

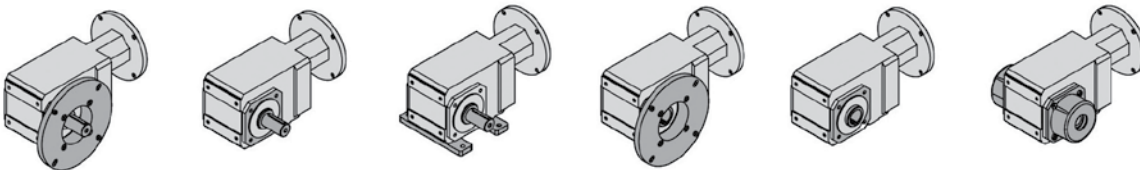
³⁾ Rating based on output speed (n_2) of 20 RPM. For values at other speeds see page 316

KSS Series Output Options

Diameters in **BOLD BLUE** are configurations readily available from inventory. Contact STÖBER for delivery on other output sizes.

	"V" Solid Shaft (Stainless Steel – Inches)			"A" Hollow Bore (Stainless Steel – Inches)			
KSS1	1.000			1.000			
KSS2	1.250			1.250	1.375		
KSS3	1.250			1.000	1.250	1.375	1.4375

* Stainless steel options are ideal for food and corrosion resistant, harsh washdown environments.



Design Option

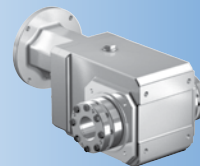
Output	V Solid Shaft	V Solid Shaft	V Solid Shaft	A Hollow	A Hollow	W Double Bushing
Housing	F Round Flange	G Tapped Holes	NG Foot Mount	F Round Flange	G Tapped Holes	G Tapped Holes



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Overview

IP69K/STAINLESS STEEL

KSS Series Motor Mounting Plate Option (Motor information required with Motor Adapter option)

STOBER ServoFit Gearheads fit the motor of your choice with the appropriate motor mounting plate assembled between the motor and the gearhead.

NOTE: When ordering a gearhead:

- Specify the motor manufacturer and part number
- Provide the motor drawing with dimensions, or specify the motor mounting dimensions (per the list shown at right)

Customer Required Dimensions for Properly Sized Motor Mounting Plate

For a precise dimension on a specific motor, or for general assistance, we recommend you contact STOBER Technical Support.

d2	Motor Shaft Diameter (If an adapter bushing is required it will be supplied with the motor plate.)	s6	Bolt Diameter
b6	Pilot Diameter	l5	Motor Shaft Length
e6	Bolt Circle Diameter	f6	Pilot Length
		a6	Square Flange (Optional – motor plate will typically be made to match this dimension.)

Overhung Load Calculations

Pulling forces or overhung load of pulleys, sheaves, sprockets, etc. on the reducer output shaft must not exceed the allowable limits shown in the load/life/speed calculations, page page 316.

Note: Overhung load is measured at the center of the shaft extension. No overhung load is encountered when a reducer is flange mounted and/or coupling connected to another unit. However, the shafts of all components must be accurately aligned and secured to prevent pre-loading of the bearings and premature bearing failure.

Use the following formula to determine actual overhung load for a given drive:

$$\text{Imperial OHL (lbs)} = \frac{126,000 \times \text{HP} \times \text{K}}{\text{D} \times \text{n}}$$

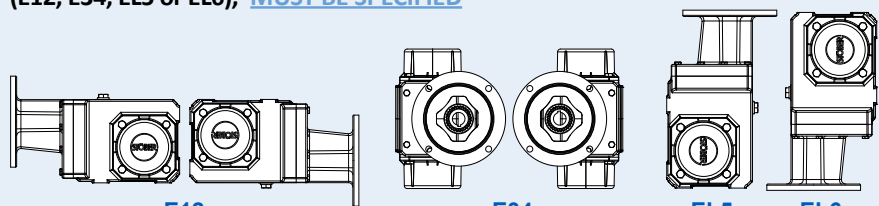
$$\text{Metric OHL (N)} = \frac{19,100 \times \text{kW} \times \text{K}}{\text{D} \times \text{n}}$$

Where:

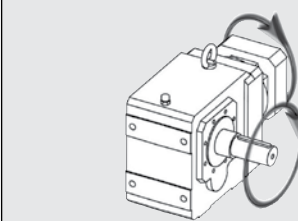
- OHL** Overhung load (N or lbs)
- HP** Horsepower
- kW** Transmitted Kilowatt
- D** Pitch Diameter (inches or meters) of Sprocket, Gear, Sheave, Pulley, etc.
- n** Maximum Shaft RPM
- K** 1.00 Single Chain Drive; 1.25 Timing Belt Drive; 1.25 Spur or Helical Gear Drive; 1.50 V-Belt Drive; 2.50 Flat Belt Drive

KSS Mounting Position Options

When ordering, the mounting position (E12, E34, EL5 or EL6), **MUST BE SPECIFIED**



KSS Direction of Rotation

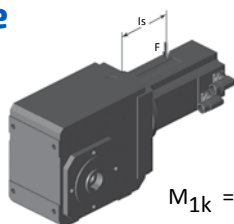


KSS Series: RIGHT ANGLE — Solid Shaft / Hollow Output

KSS Series: RIGHT ANGLE — Solid Shaft/Hollow Output

Permissible Motor Tilting Torque

The permissible tilting torque of the motor attached to the gear unit is a result of the static and dynamic load “F” from the motor weight, mass acceleration, and vibration multiplied by the distance from the center of gravity “ l_s ” of the motor.



$$M_{1k} = F \times l_s \leq M_{1K}$$

M_{1K}	MS1R	MS2R	MS3R
	Nm	25	60

Permissible Output Shaft Load and Tilting Moments*

Unit	V Solid Shaft Output ¹⁾				A, S, W Hollow Output ²⁾		
	Z_2 mm	F_{2A} N	F_{2R} N	M_{2K} Nm	Z_2 mm	F_{2A} N	M_{2K} Nm
KSS1	40	1900	5000	360	40	1900	240
KSS2	42	2100	6000	430	42	2100	310
KSS3	45	2400	7000	525	45	2400	380

* Refer to illustration and definitions below.

¹⁾ For DOUBLE output shaft: $F_{2R} \times 0.7$

²⁾ Values shown for “W” Style are for double bushings. For single bushings use value $M_{2k} \times 0.5$ and $F_{2a} \times 0.5$

³⁾ Solid Shaft unit with a Flange – z_2 value is 132mm/5.20”; F_{2R} value is 64,000N/14,400 lbs.

KSS Series Load/Life/Speed Calculations

The permissible load and tilting moment values are based on an output speed of 20 RPM. For higher speeds the following applies, where n_2 is the desired speed:

$$F_{2AX} = \frac{F_{2A}}{\sqrt[3]{\frac{n_2}{20}}}, \quad F_{2RX} = \frac{F_{2R}}{\sqrt[3]{\frac{n_2}{20}}}, \quad M_{2KX} = \frac{M_{2K}}{\sqrt[3]{\frac{n_2}{20}}}$$

The application output tilting moment should be determined by the following formula:

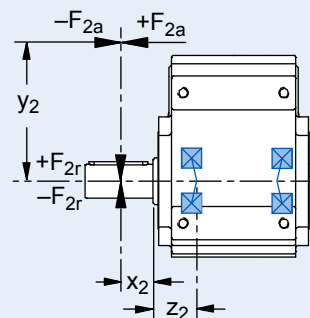
$$M_{2A} = \frac{2 \cdot F_{2a} \cdot y_2 + F_{2rb} \cdot (x_2 + z_2)}{1000} \leq M_{2K}$$

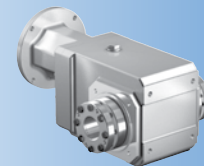
Where:

F_{2a} Axial Load at Output Shaft
 F_{2A} Permissible Axial Load
 F_{2r} Radial Load at Output Shaft
 F_{2R} Permissible Radial Load
 F_{2RB} Acceleration Permissible Radial Load

M_{2K} Rated Tilting Torque
 M_{2k} Equivalent Tilting Load
 M_{2KB} Acceleration Tilting Torque
 z_2 Distance Factor

All formulas shown are based on METRIC values
 Upper case letters are permissible values. Lower case letters are for existing values.





Selection Data

IP69K/STAINLESS STEEL

Reducer Ratio (i)		Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{ZN} ≤ 2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}				Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm	arcmins		EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm	

KSS1

4.000	4/1	42	42	52	≤12	KSS102_0040 MS1R	3300	2800	4500	1.4	2.8
5.568	1520/273	58	58	72	≤12	KSS102_0056 MS1R	3300	2800	4500	1.3	4.3
6.000	6/1	59	59	74	≤12	KSS102_0060 MS1R	3300	2800	4500	1.1	3.4
6.644	299/45	64	64	80	≤12	KSS102_0066 MS1R	3600	3300	5000	1.0	3.5
8.309	1911/230	74	77	97	≤12	KSS102_0083 MS1R	3600	3300	5000	0.9	3.7
9.249	1748/189	76	90	112	≤12	KSS102_0092 MS1R	3600	3300	5000	0.9	5.2
10.14	507/50	79	91	114	≤12	KSS102_0100 MS1R	4000	3800	5500	0.8	3.8
11.57	266/23	82	108	134	≤12	KSS102_0115 MS1R	3600	3300	5000	0.8	5.4
12.62	429/34	85	109	136	≤12	KSS102_0125 MS1R	4000	3800	5500	0.7	3.9
14.11	494/35	88	127	158	≤12	KSS102_0140 MS1R	4000	3800	5500	0.8	5.5
16.71	117/7	93	125	172	≤12	KSS102_0165 MS1R	4000	4000	6000	0.7	4.0
17.56	2090/119	95	135	189	≤12	KSS102_0175 MS1R	4000	3800	5500	0.7	5.6
20.15	403/20	99	125	199	≤12	KSS102_0200 MS1R	4000	4000	6000	0.7	4.0
23.27	1140/49	104	135	239	≤12	KSS102_0230 MS1R	4000	4000	6000	0.7	5.7
25.22	1261/50	96	115	192	≤12	KSS102_0250 MS1R	4000	4000	6000	0.6	4.0
28.05	589/21	111	135	240	≤12	KSS102_0280 MS1R	4000	4000	6000	0.7	5.7
33.71	4719/140	73	88	146	≤12	KSS102_0340 MS1R	4000	4000	6000	0.6	4.0
35.11	3686/105	119	135	240	≤12	KSS102_0350 MS1R	4000	4000	6000	0.6	5.8
40.30	403/10	61	74	96	≤12	KSS102_0400 MS1R	4000	4000	6000	0.6	4.1
46.92	2299/49	102	122	203	≤12	KSS102_0470 MS1R	4000	4000	6000	0.6	5.8
50.31	5031/100	50	60	100	≤12	KSS102_0500 MS1R	4000	4000	6000	0.6	4.1
56.10	1178/21	86	103	133	≤12	KSS102_0560 MS1R	4000	4000	6000	0.6	5.8
70.03	2451/35	70	83	139	≤12	KSS102_0700 MS1R	4000	4000	6000	0.6	5.8

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor adapter code (shaft diameter max - mm): MS1R (19), MS2R (24), MS3R (28)

KSS Series: RIGHT ANGLE — Solid Shaft / Hollow Output



KSS Series: RIGHT ANGLE – Solid Shaft/Hollow Output

Reducer Ratio (i)		Output Torque				Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{2N} ≤ 2000 RPM	Acceleration M _{2B}	Peak ²⁾ M _{2PEAK}	Backlash		Continuous		Cyclic		
Nom.	Exact	Nm	Nm	Nm	arcmins		EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm

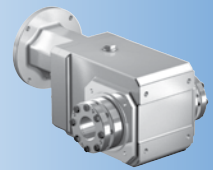
KSS2

4.000	4/1	103	171	245	≤10	KSS202_0040 MS2R	3000	2600	4000	3.7	3.9
4.364	48/11	106	180	263	≤10	KSS202_0044 MS2R	3000	2600	4000	3.3	4.2
5.177	2107/407	113	190	308	≤10	KSS202_0052 MS2R	3000	2600	4000	2.9	4.7
6.000	6/1	118	200	361	≤10	KSS202_0060 MS2R	3000	2600	4000	2.9	5.9
6.683	2279/341	123	207	380	≤10	KSS202_0067 MS2R	3500	3100	4500	2.3	5.3
7.118	2107/296	125	211	400	≤10	KSS202_0071 MS2R	3000	2600	4000	2.6	6.4
8.397	2494/297	132	220	400	≤10	KSS202_0084 MS2R	3500	3100	4500	2.0	5.7
9.190	2279/248	136	220	400	≤10	KSS202_0092 MS2R	3500	3100	4500	2.1	7.0
10.07	2881/286	141	220	400	≤10	KSS202_0100 MS2R	3500	3500	5000	1.8	6.0
11.55	1247/108	147	220	400	≤10	KSS202_0115 MS2R	3500	3100	4500	1.9	7.4
12.71	559/44	152	220	400	≤10	KSS202_0125 MS2R	3500	3500	5000	1.6	6.2
13.85	2881/208	156	220	400	≤10	KSS202_0140 MS2R	3500	3500	5000	1.7	7.6
16.86	2967/176	167	220	400	≤10	KSS202_0170 MS2R	3500	3500	5000	1.5	6.4
17.47	559/32	169	220	400	≤10	KSS202_0175 MS2R	3500	3500	5000	1.6	7.8
20.33	1118/55	178	220	400	≤10	KSS202_0200 MS2R	3500	3500	5000	1.4	6.5
23.18	2967/128	186	220	400	≤10	KSS202_0230 MS2R	3500	3500	5000	1.4	7.9
25.13	1935/77	191	220	400	≤10	KSS202_0250 MS2R	3500	3500	5000	1.3	6.5
27.95	559/20	197	220	400	≤10	KSS202_0280 MS2R	3500	3500	5000	1.4	8.0
33.62	1849/55	154	185	308	≤10	KSS202_0340 MS2R	3500	3500	5000	1.3	6.6
34.55	1935/56	200	220	400	≤10	KSS202_0350 MS2R	3500	3500	5000	1.3	8.1
46.23	1849/40	200	220	400	≤10	KSS202_0460 MS2R	3500	3500	5000	1.3	8.1

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor adapter code (shaft diameter max - mm): MS1R (19), MS2R (24), MS3R (28)



Selection Data

IP69K/STAINLESS STEEL

Reducer Ratio (i)		Output Torque				Backlash	Part Number* (Gearhead + Input)	Maximum Input Speed RPM			Input Inertia J ₁	Torsional Stiffness C ₂ (per arcmin)
		Nominal ¹⁾ M _{ZN} ≤ 2000 RPM	Acceleration M _{ZB}	Peak ²⁾ M _{ZPEAK}				Continuous	Cyclic			
Nom.	Exact	Nm	Nm	Nm	arcmins		EL 1,2	EL 3,4,5,6	All	kgcm ²	Nm	

KSS3

4.000	4/1	155	171	253	≤10	KSS302_0040 MS3R	2700	2300	3800	6.4	4.5
4.364	48/11	169	186	273	≤10	KSS302_0044 MS3R	2700	2300	3800	5.7	4.9
5.375	43/8	200	229	326	≤10	KSS302_0054 MS3R	2700	2300	3800	4.5	5.7
6.000	6/1	207	256	376	≤10	KSS302_0060 MS3R	2700	2300	3800	4.8	6.7
6.740	2150/319	215	288	397	≤10	KSS302_0067 MS3R	3200	2800	4200	3.5	6.5
7.391	473/64	222	315	448	≤10	KSS302_0074 MS3R	2700	2300	3800	3.9	7.5
8.444	2322/275	232	360	479	≤10	KSS302_0084 MS3R	3200	2800	4200	2.8	7.1
9.267	1075/116	239	385	546	≤10	KSS302_0093 MS3R	3200	2800	4200	3.2	8.2
10.14	3010/297	247	385	554	≤10	KSS302_0100 MS3R	3500	3100	5000	2.4	7.4
11.61	1161/100	258	385	659	≤10	KSS302_0115 MS3R	3200	2800	4200	2.6	8.6
12.58	3182/253	265	385	661	≤10	KSS302_0125 MS3R	3500	3100	5000	2.1	7.8
13.94	1505/108	274	385	700	≤10	KSS302_0140 MS3R	3500	3100	5000	2.3	8.9
16.94	559/33	293	385	700	≤10	KSS302_0170 MS3R	3500	3500	5000	1.7	8.1
17.29	1591/92	295	385	700	≤10	KSS302_0175 MS3R	3500	3100	5000	2.0	9.2
20.28	3569/176	311	385	700	≤10	KSS302_0200 MS3R	3500	3500	5000	1.6	8.2
23.29	559/24	325	385	700	≤10	KSS302_0230 MS3R	3500	3500	5000	1.7	9.4
25.26	3612/143	334	385	489	≤10	KSS302_0250 MS3R	3500	3500	5000	1.5	8.3
27.88	3569/128	346	385	700	≤10	KSS302_0280 MS3R	3500	3500	5000	1.6	9.5
33.62	1849/55	250	300	501	≤10	KSS302_0340 MS3R	3500	3500	5000	1.4	8.3
34.73	903/26	350	385	672	≤10	KSS302_0350 MS3R	3500	3500	5000	1.5	9.5
40.51	4902/121	193	231	376	≤10	KSS302_0410 MS3R	3500	3500	5000	1.3	8.4
46.23	1849/40	344	385	688	≤10	KSS302_0460 MS3R	3500	3500	5000	1.4	9.6
55.71	2451/44	265	318	517	≤10	KSS302_0560 MS3R	3500	3500	5000	1.3	9.6

¹⁾ Maximum torque for continuous input RPM - horizontal output position.

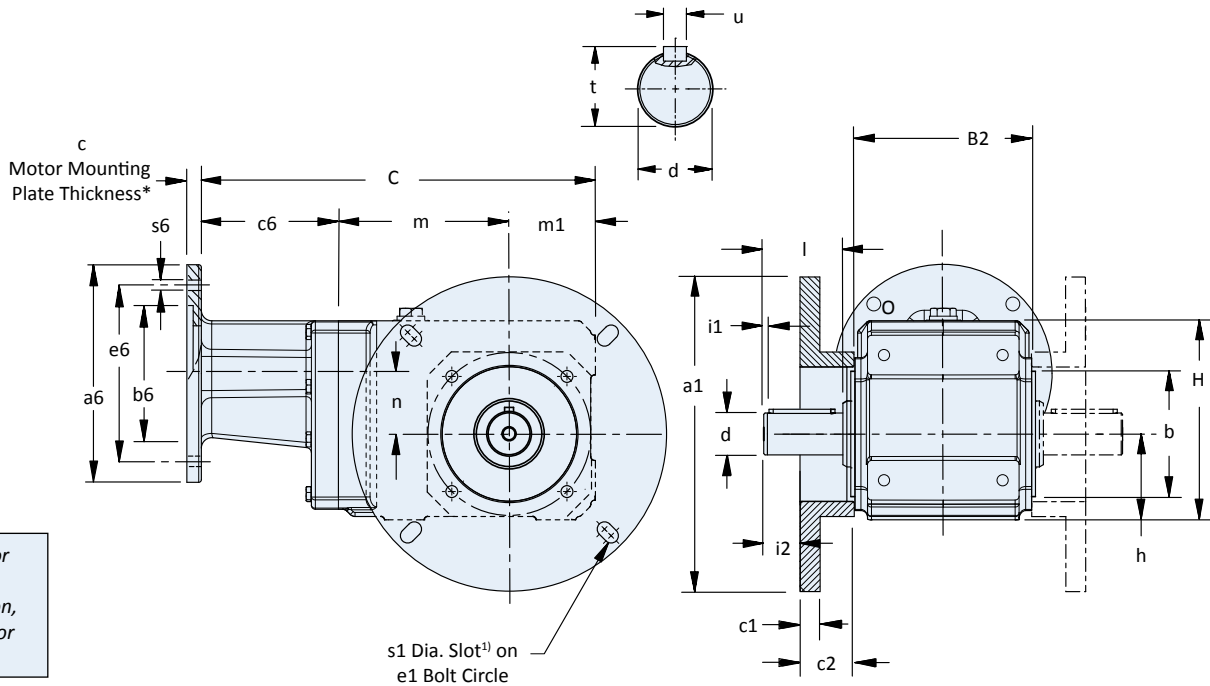
²⁾ Maximum momentary torque for emergency stops or heavy shock load. (Admissible stops per life of gearhead = 1,000 stops maximum.)

* Motor adapter code (shaft diameter max - mm): MS1R (19), MS2R (24), MS3R (28)

KSS Series: RIGHT ANGLE — Solid Shaft / Hollow Output

KSS Series: RIGHT ANGLE — Solid Shaft/Hollow Output

“V” Solid Shaft Output with “F” Round Flange Housing


Table 1 KSS Series – “V” Solid Shaft Output with “F” Round Flange Housing – Dimensions (mm)

Unit	a1	B2	b	C	c1	c2	c6	e1	
								Min.	Max. ¹⁾
KSS102VF	171.5	106	75	256.5	14	38.1	82.5	149.2	–
KSS202VF	222	134	95	299	14	38.1	104	190	203.2
KSS302VF	222	146	95	327.5	14	38.1	102.5	190	203.2

1) KSS1 mounting bolt hole is not a slot.

Table 2 KSS Series – “V” Solid Shaft Output with “F” Round Flange Housing – Dimensions (mm)

Unit	H	h	i2	l	l1	m	m1	n	s1	Wt. lbs. ¹⁾
KSS102VF	126	60	20.5	50	4	111	60	36	8.5	29
KSS202VF	151	65	28	60	4	130	65	46	10.5	40
KSS302VF	166.5	75	28	60	4	150	75	53	10.5	55

1) KSS1 mounting bolt hole is not a slot.
All weights are approximate.

Table 3 “V” Solid Shaft Output — Standard Sizes

Unit	Inches		
	d	t	u – Key
KSS1	1.000	1.11	1/4 x 1/4 x 1-9/16
KSS2	1.250	1.36	1/4 x 1/4 x 1-15/16
KSS3	1.250	1.36	1/4 x 1/4 x 1-15/16

Table 4 Servo Motor Adapter Flange (mm)

Unit	a6	b6	e6	s6
KSS1	112	80	100	6.4
KSS2	112	80	100	6.5
	143	110	130	8.4
KSS3	112	80	100	6.4
	143	110	130	8.4
	180	130	165	10.5



Dimensional Data

IP69K/STAINLESS STEEL

"V" Solid Shaft Output with "G" Pitch Circle Diameter (PCD) Tapped Holes

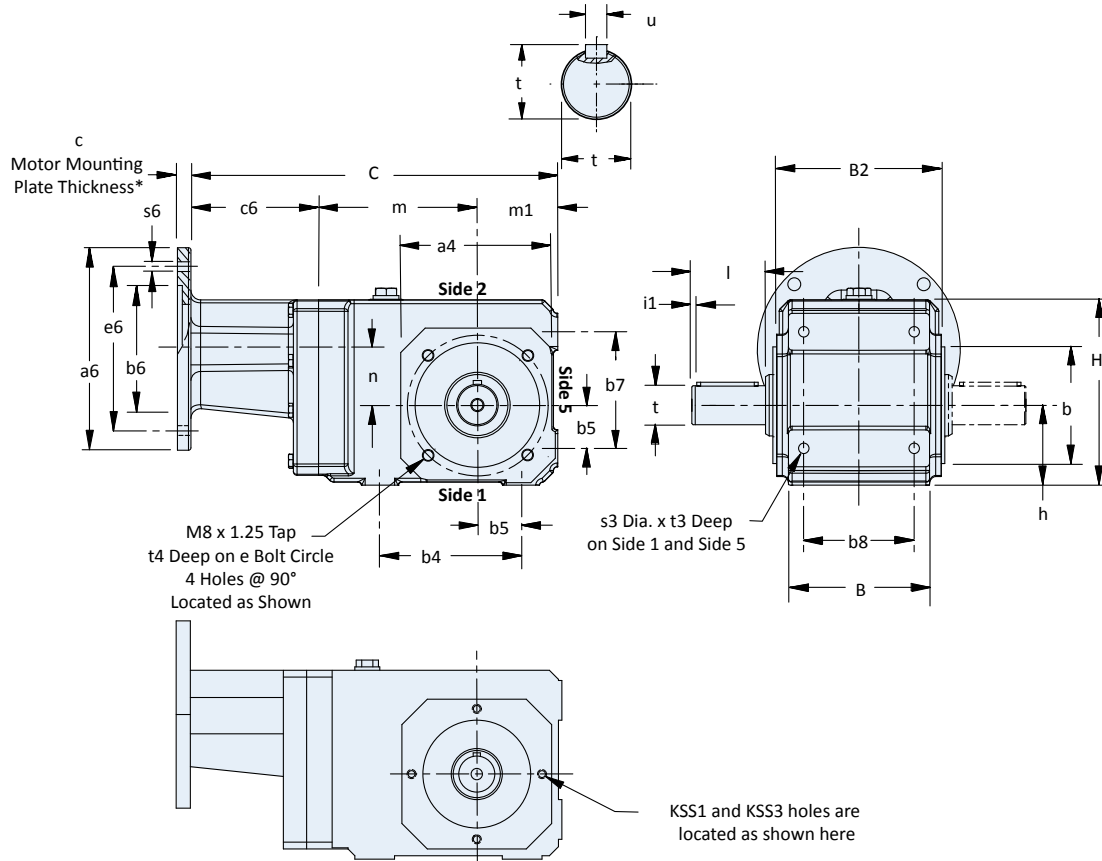


Table 1 KSS Series – "V" Solid Shaft Output with "G" Pitch Circle Diameter (PCD) Tapped Holes – Dimensions (mm)

Unit	a4	B2	b5	C	c6	D	e	F ¹	F ⁵	G	H
KSS102VG	105	106	30	256.5	85.5	126	90	90	75	70	60
KSS202VG	116	134	35	299	104	151	115	115	95	90	65
KSS302VG	116	146	35	327.5	102.5	166.5	115	130	105	105	75

Table 2 KSS Series – "V" Solid Shaft Output with "G" Pitch Circle Diameter (PCD) Tapped Holes – Dimensions (mm)

Unit	l	M	m	m1	n	Q	R	s3	t3	t4	Wt. lbs.
KSS102VG	50	75	111	60	36	4	90	M8 x 1.25	13	13	29
KSS202VG	60	95	130	65	46	4	112	M10 x 1.50	16	13	40
KSS302VG	60	95	150	75	53	4	140	M10 x 1.50	16	14	55

All weights are approximate.

Table 3 "V" Solid Shaft Output — Standard Sizes

Unit	Inches		
	d	t	u – Key
KSS1	1.000	1.11	1/4 x 1/4 x 1-9/16
KSS2	1.250	1.36	1/4 x 1/4 x 1-15/16
KSS3	1.250	1.36	1/4 x 1/4 x 1-15/16

Table 4 Servo Motor Adapter Flange (mm)

Unit	a6	b6	e6	s6
KSS1	112	80	100	6.4
KSS2	112	80	100	6.5
	143	110	130	8.4
KSS3	112	80	100	6.4
	143	110	130	8.4
	180	130	165	10.5

KSS Series: RIGHT ANGLE — Solid Shaft / Hollow Output

KSS Series: RIGHT ANGLE — Solid Shaft/Hollow Output

“V” Solid Shaft Output with “NG” Foot Mount Housing

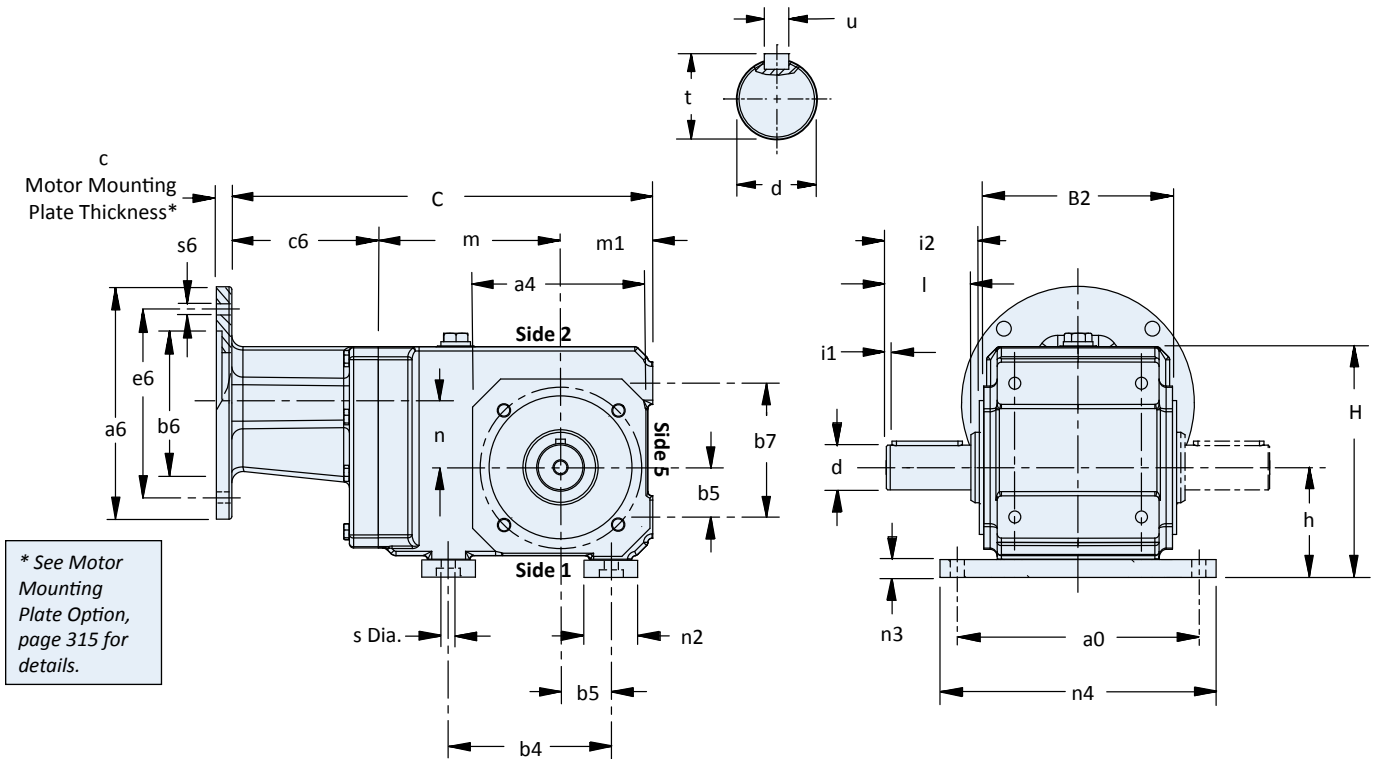


Table 1 KSS Series – “V” Solid Shaft Output with “NG” Foot Mount Housing – Dimensions (mm)

Unit	a0	a4	B2	b4	b5	b7	C	c6	H	h	n4
KSS102VNG	115	115	106	90	30	75	256.5	85.5	126	60	140
KSS202VNG	171	126	134	115	35	95	299	104	164	78	196
KSS302VNG	171	132	146	130	35	105	327.5	102.5	179.5	87.5	196

Table 2 KSS Series – “V” Solid Shaft Output with “NG” Foot Mount Housing – Dimensions (mm)

Unit	i2	l	l1	m	m1	n	n2	n3	s	Wt. lbs.
KSS102VNG	59	50	4	111	60	36	38.1	12.7	8.4	29
KSS202VNG	66	60	4	130	65	46	38.1	12.7	10	40
KSS302VNG	66	60	4	150	75	53	38.1	12.7	10	55

All weights are approximate.

Table 3 “V” Solid Shaft Output — Standard Sizes

Unit	Inches		
	d	t	u – Key
KSS1	1.000	1.11	1/4 x 1/4 x 1-9/16
KSS2	1.250	1.36	1/4 x 1/4 x 1-15/16
KSS3	1.250	1.36	1/4 x 1/4 x 1-15/16

Table 4 Servo Motor Adapter Flange (mm)

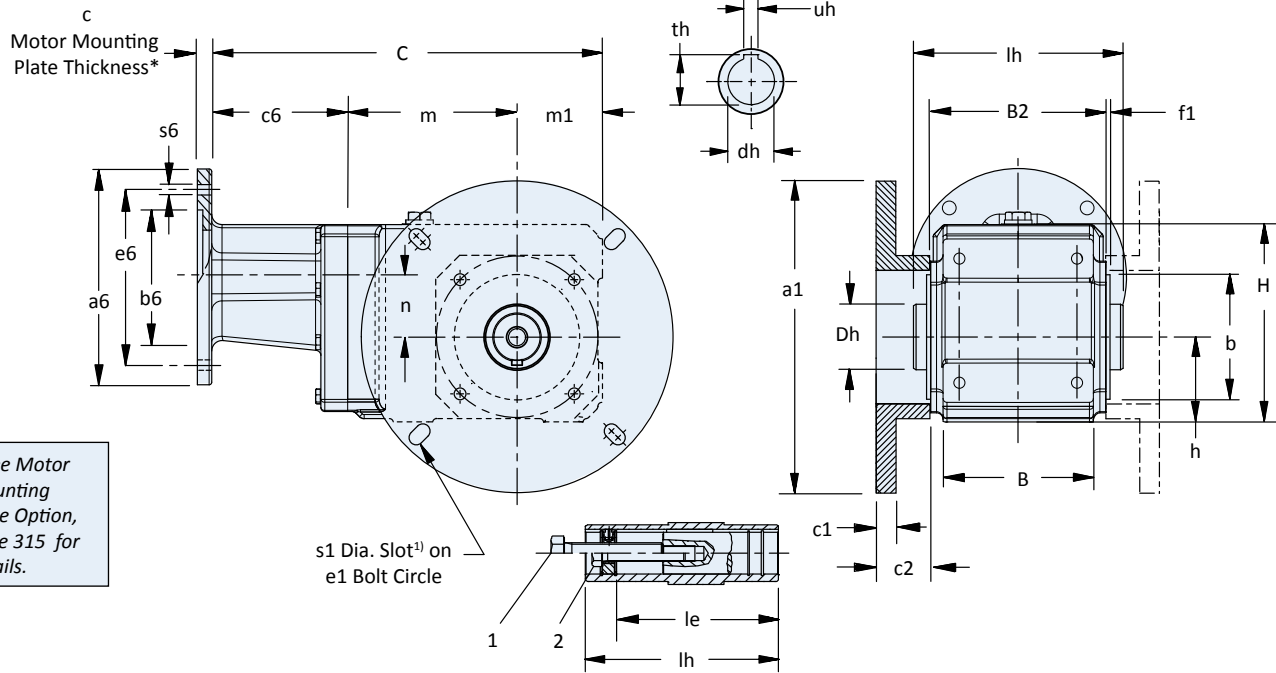
Unit	a6	b6	e6	s6
KSS1	112	80	100	6.4
KSS2	112 143	80 110	100 130	6.5 8.4
KSS3	112 143 180	80 110 130	100 130 165	6.4 8.4 10.5



Dimensional Data

IP69K/STAINLESS STEEL

"A" Hollow Bore Output with "F" Round Flange Housing



* See Motor Mounting Plate Option, page 315 for details.

1. Removal Bolt — not supplied. Must be smaller than mounting bolt. See Installation Guide for details.
2. Mounting Bolt
See installation guide for installation of hollow output.

Table 1 KSS Series – "A" Hollow Output with "F" Round Flange Housing – Dimensions (mm)

Unit	a1	lh	B	B2	b	C	c1	c2	c6	Dh
KSS102AF	171.5	120	90	106	75	256.5	14	38.1	82.5	40
KSS202AF	222	148	112	134	95	299	14	38.1	104	50
KSS302AF	222	160	140	146	95	327.5	14	38.1	102.5	50

1) KSS1 mounting bolt hole is not a slot

Table 2 KSS Series – "A" Hollow Output with "F" Round Flange Housing – Dimensions (mm)

Unit	e1		f1	h	le	m	m1	n	s1	Wt. lbs.
	Min.	Max. ¹⁾								
KSS102AF	149.2	–	3	60	98	111	60	36	8.5	29
KSS202AF	190	203.2	3	65	113	130	65	46	10.5	40
KSS302AF	190	203.2	3	75	125	150	75	53	10.5	55

1) KSS1 mounting bolt hole is not a slot.
All weights are approximate.

Table 3 "A" Hollow Bore Output — Standard Sizes

Unit	Inches			
	dh	th	UA	1
KSS1	1.000	1.11	0.250	1/2 – 13
KSS2	1.250	1.37	0.250	5/8 – 11
KSS3	1.375	1.52	0.312	5/8 – 11

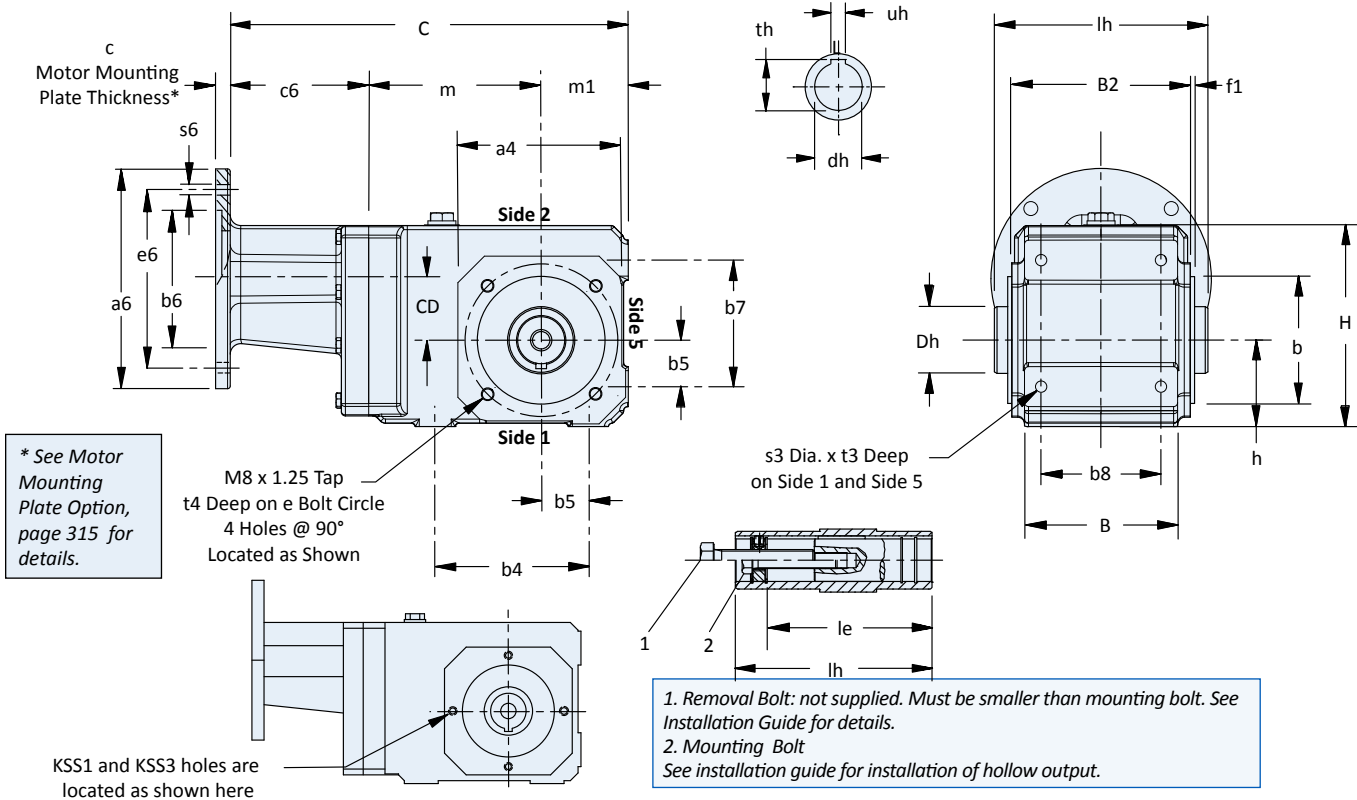
Table 4 Servo Motor Adapter Flange (mm)

Unit	a6	b6	e6	s6
KSS1	112	80	100	6.4
	143	110	130	8.4
KSS3	112	80	100	6.4
	143	110	130	8.4
	180	130	165	10.5

KSS Series: RIGHT ANGLE — Solid Shaft / Hollow Output

KSS Series: RIGHT ANGLE — Solid Shaft/Hollow Output

“A” Hollow Bore Output with “G” Pitch Circle Diameter (PCD) Tapped Holes


Table 1 KSS Series – “A” Hollow Output with “G” Pitch Circle Diameter (PCD) Tapped Holes – Dimensions (mm)

Unit	a4	B	B2	b	b4	b5	b7	b8	C	c6	Dh	e
KSS102AG	105	90	106	75	90	30	75	70	256.5	85.5	40	90
KSS202AG	116	112	134	95	115	35	95	90	299	104	50	115
KSS302AG	116	140	146	95	130	35	105	105	327.5	102.5	50	115

Table 2 KSS Series – “A” Hollow Output with “G” Pitch Circle Diameter (PCD) Tapped Holes – Dimensions (mm)

Unit	f1	H	h	le	lh	m	m1	n	s3	t3	t4	Wt. lbs.
KSS102AG	3	126	60	98	120	111	60	36	M8 x 1.25	13	13	29
KSS202AG	3	151	65	113	148	130	65	46	M10 x 1.50	16	13	40
KSS302AG	3	166.5	75	125	160	150	75	53	M10 x 1.50	16	14	55

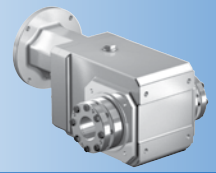
1) Removal bolt, supplied by customer, must be smaller than mounting bolt. See Page 298.
 All weights are approximate.

Table 3 “A” Hollow Bore Output — Standard Sizes

Unit	Inches			
	dh	th	UA	1
KSS1	1.000	1.11	0.250	1/2 – 13
KSS2	1.250	1.37	0.250	5/8 – 11
KSS3	1.375	1.52	0.312	5/8 – 11

Table 4 Servo Motor Adapter Flange (mm)

Unit	a6	b6	e6	s6
KSS1	112	80	100	6.4
KSS2	112 143	80 110	100 130	6.5 8.4
KSS3	112 143 180	80 110 130	100 130 165	6.4 8.4 10.5



Dimensional Data

IP69K/STAINLESS STEEL

“W” Double Bushing Output with “G” Pitch Circle Diameter (PCD) Tapped Holes

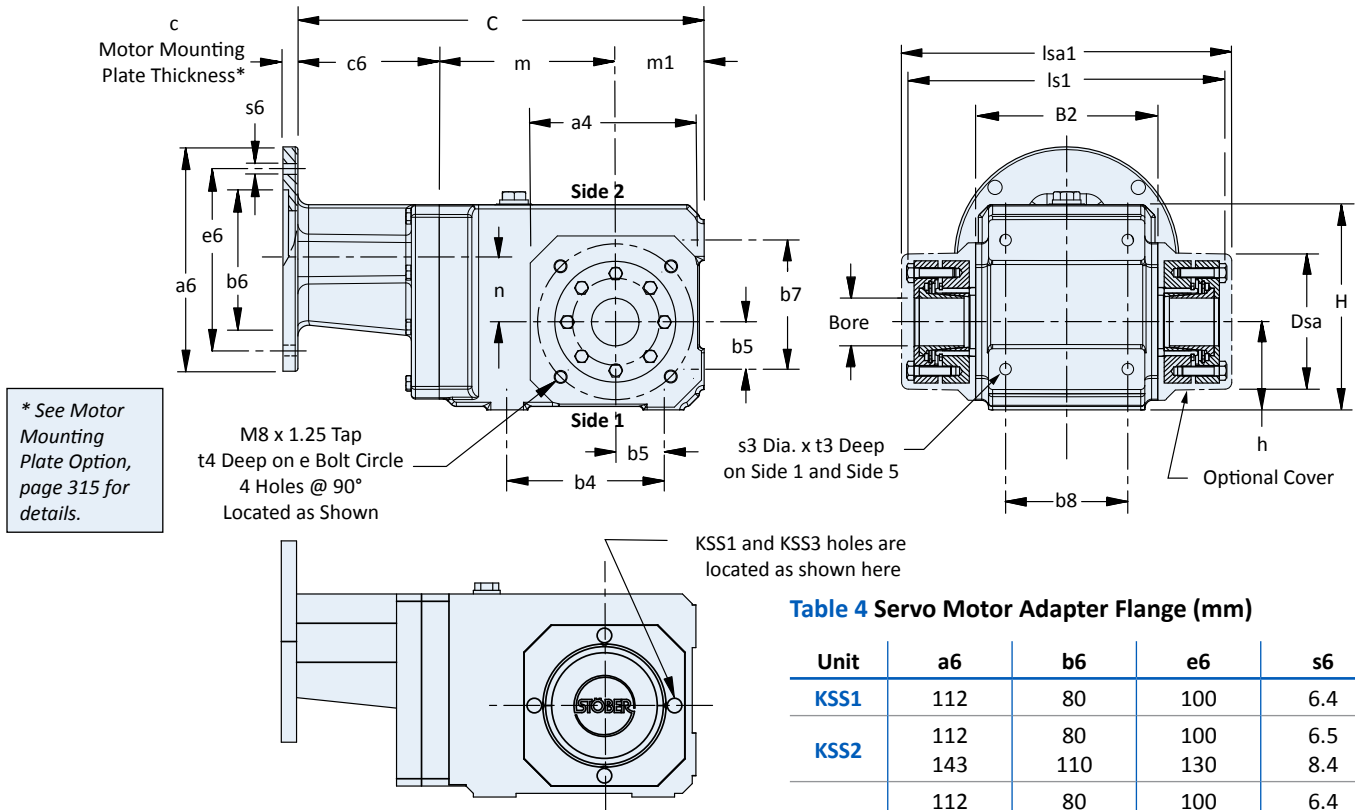


Table 4 Servo Motor Adapter Flange (mm)

Unit	a6	b6	e6	s6
KSS1	112	80	100	6.4
KSS2	112	80	100	6.5
	143	110	130	8.4
KSS3	112	80	100	6.4
	143	110	130	8.4
	180	130	165	10.5

Table 1 KSS Series – “W” Double Wobble-Free Bushing Output with “G” Pitch Circle Diameter (PCD) Tapped Holes – Dimensions (mm)

Unit	a4	B2	b4	b5	b7	b8	C	c6	Dsa	e
KSS102WG	105	105.9	90	30	75	70	256.5	85.5	78	90
KSS202WG	116	134.1	115	35	95	90	299	104	99.5	115
KSS302WG	116	146.1	130	35	105	105	327.5	102.5	96	115

Table 2 KSS Series – “W” Double Wobble-Free Bushing Output with “G” Pitch Circle Diameter (PCD) Tapped Holesg – Dimensions (mm)

Unit	H	h	lsa	ls1	m	m1	n	s3	t3	t4	Wt. lbs.
KSS102WG	126	60	198.12	194.06	111	60	36	M8 x 1.25	13	13	29
KSS202WG	151	65	237.74	226.06	130	65	46	M10 x 1.50	16	13	40
KSS302WG	166.5	75	252.73	239.014	150	75	53	M10 x 1.50	16	14	55

All weights are approximate.

Table 3 “WFBSS” Double Side Bushings Stock Bore Sizes

Unit	Metric – mm				Inches					
	25	30	35	1	1-3/16	1-1/4	1-3/8	1-7/16	1-1/2	
KSS1	WFBSS1-25	—	—	WFBSS1-100	—	—	—	—	—	
KSS2	—	WFBSS2-30	WFBSS2-35	WFBSS2-100	WFBSS2-103	WFBSS2-104	WFBSS2-106	WFBSS2-107	WFBSS2-108	
KSS3	—	WFBSS3-30	WFBSS3-35	WFBSS3-100	WFBSS3-103	WFBSS3-104	WFBSS3-106	WFBSS3-107	WFBSS3-108	



Technical Reference

Output Options

BLUE: standard output diameters in stock

BLACK: optional diameters in stock

Other options are available upon request. Please contact STÖBER to learn about other options and their deliveries.

KSS Series (Stainless Steel)

		KSS1	KSS2	KSS3
Solid Shaft	Inches	1	1-1/4	1-1/4
Hollow Bore	Inches	1	1-1/4 1-3/8	1 1-1/4 1-3/8 1-7/16
Wobble Free Bushing	Inches	1	1 1-3/16 1-1/4 1-3/8 1-7/16 1-1/2	1 1-3/16 1-1/4 1-3/8 1-7/16 1-1/2
	Metric	25	30 35	30 35

KL Series

			KL1	KL2
Solid Shaft	Carbon Steel	Inches	5/8	3/4
		Metric	16	20
	Stainless Steel	Inches	5/8	3/4
		Metric	16	20
Hollow Bore	Carbon Steel	Inches	5/8	3/4
		Metric	16	20
	Stainless Steel	Inches	5/8	3/4
		Metric	16	20
Wobble Free Double Bushing	Stainless Steel	Inches	—	3/4
Shrink Ring	Carbon Steel	Metric	16	20

KS Series (Carbon Steel — Metric)

	KS4	KS5	KS7
Solid Shaft	22	32	40
Hollow Bore	31.5	40	50
Shrink Ring	25.5	35.5	45.5

K Series

			K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	
Solid Shaft	Carbon Steel	Inches	1	1-1/4	1-1/4	1-3/8	1-3/4	1-3/4	2-3/8	2-7/8	3-5/8	4-3/8	
		Metric	25	30	30	40	45	50	60	70	90	110	
	Stainless Steel	Inches	1	1-1/4	1-1/4	1-3/8	1-3/4	1-3/4	2-3/8	2-7/8	3-5/8	—	
		Metric	25	30	—	—	45	—	—	—	—	—	
Hollow Bore	Carbon Steel	Inches	1	1-3/16 1-1/4	1-3/8 1-7/16	1-7/16 1-1/2	2	2	2-3/8	2-3/4	3-1/4	4	
		Metric	25	30	30 35	40	40 50	50	60	70	70	—	
	Stainless Steel	Inches	1	1-1/8 1-1/4	1 1-1/4 1-3/8 1-7/16	1-1/2 1-1/2	1-1/2	2	—	—	2-15/16 3 3-7/16	—	
		Metric	25	30	35	40	40 50	—	60	70	75	—	
Wobble Free Bushing (Stainless Steel except where noted)	Inches	Single & Double	1	1 1-3/16 1-1/4	1* 1-3/16* 1-1/4* 1-3/8* 1-7/16* 1-1/2*	1 1-3/16 1-1/4 1-3/8 1-7/16 1-1/2	1-7/16 1-1/2 1-5/8 1-11/16 1-3/4 1-7/8 1-15/16 2	1-7/16 1-1/2 1-5/8 1-11/16 1-3/4 1-15/16 2 2-3/16	1-15/16 2 2-3/16 2-3/8	2-3/16 2-3/8 2-7/16 2-3/4	—	—	
		Metric	Single	25	30	30 35	—	—	—	—	—	—	—
	Metric	Double	25	30	30 35	40	40	40	40	—	—	—	—
		Shrink Ring	Carbon Steel	Metric	25	30	35	40	50	50	60	70	90

*Also available in carbon steel



Technical Reference

C Series

			C0	C1	C2	C3	C4	C5	C6	C7	C8	C9
Solid Shaft	Carbon Steel	Inches	3/4	1	1-1/4	1-1/4	1-5/8	1-5/8	2-1/8	2-3/8	2-7/8	3-5/8
		Metric	20	25	30	30	40	40	50	60	70	90
	Stainless Steel	Inches	3/4	1	1-1/4	1-1/4	1-5/8	1-5/8	2-1/8	2-3/8	2-7/8	—
		Metric	—	—	—	25	—	—	—	—	—	—

F Series

			F1	F2	F3	F4	F6
Solid Shaft	Carbon Steel	Inches	1	1-1/4	1-3/8	1-5/8	2-1/8
		Metric	—	—	—	—	—
	Stainless Steel	Inches	—	—	—	—	—
		Metric	—	—	—	—	—
Hollow Bore	Carbon Steel	Inches	3/4	1	1-1/4	1-1/2	2
		Metric	20	25	30	40	50
	Stainless Steel	Inches	—	1	1-1/4	1-1/2	—
		Metric	—	—	—	—	—
		Metric	20	30	30 35	40**	40**
Shrink Ring	Carbon Steel	Metric	20	25	30	40	50

* Double bushings only available with two stage units ** Double bushing only

Standard & Optional Output Flange Sizes

C Series

Base Module	Flange Size		
C0	120	140	160*
C1	140	160	200*
C2	160	200*	250
C3	160	200	250*
C4	200	250*	300
C5	250	300*	
C6		300*	
C7		350*	
C8	350	400*	450
C9		450*	

K Series

Base Module	Flange Size		
K1	140, 160*		
K2	160, 200*		
K3	160, 200*, 250		
K4	250*		
K5	250*		
K6	300*		
K7	300, 350*		
K8	350	400*	450
K9	450*		
K10	550*		

* This is the standard flange size and will be shipped unless otherwise specified. Optional flanges are not available for all sizes.

P/PA; PE; PK/PKX Series (Carbon Steel — Metric)

	P2 PE2 PKX2	P/PA3 PE3 PKX3	P/PA4 PE4 PKX4	P/PA5 PE5 PK/PKX5	P/PA7 PK/PKX7	P/PA8 PK/PKX8	P9 PK/PKX9
Solid Shaft	12	16	22	32	40	55	75

PH/PHA; PHQ/PHQA; PHK/PHKX; PHQK Series (Carbon Steel — Metric)

	PH/PHA3 PHKX3	PH/PHA4 PHQ/PHQA4 PHKX4	PH/PHA5 PHQ/PHQA5 PHK/PHKX5 PHQK5	PH/PHA7 PHQ/PHQA7 PHK/PHKX7 PHQK7	PH/PHA8 PHQ/PHQA8 PHK/PHKX8 PHQK8	PH/PHA9 PHQ/PHQA9 PHK/PHKX9 PHQK9	PH/PHA10 PHQ/PHQA10 PHK/PHKX10 PHQK10	PHQK11
Hollow Bore	20	31.5*	40	50	80	90	95	120

*32 for PHQA4

Technical Reference

Backlash Comparison – ArcMinute vs Linear Distance

ArcMinute	Degrees	Linear Distance in Inches			
		@ 3" R	@ 12" R	@ 24" R	@ 48" R
1	0.017	0.0009	0.0035	0.0070	0.0140
2	0.033	0.0017	0.0070	0.0140	0.0279
3	0.050	0.0026	0.0105	0.0209	0.0419
4	0.067	0.0035	0.0140	0.0279	0.0558
5	0.083	0.0044	0.0175	0.0349	0.0698
6	0.100	0.0052	0.0209	0.0419	0.0838
7	0.117	0.0061	0.0244	0.0489	0.0977
8	0.133	0.0070	0.0279	0.0558	0.1117
9	0.150	0.0079	0.0314	0.0628	0.1257
10	0.167	0.0087	0.0349	0.0698	0.1396
11	0.183	0.0096	0.0384	0.0768	0.1536
12	0.200	0.0105	0.0419	0.0838	0.1675
13	0.217	0.0113	0.0454	0.0908	0.1815
14	0.233	0.0122	0.0489	0.0977	0.1955
15	0.250	0.0131	0.0524	0.1047	0.2094
16	0.267	0.0140	0.0558	0.1117	0.2234
17	0.283	0.0148	0.0593	0.1187	0.2373
18	0.300	0.0157	0.0628	0.1257	0.2513
19	0.317	0.0166	0.0663	0.1326	0.2653
20	0.333	0.0175	0.0698	0.1396	0.2792

These values can be interpolated for backlash or distances not shown in the table.

$$\text{Backlash in ArcMinutes} = \left(\frac{\text{Linear Backlash in inches} \times 57.296}{\text{Radius}} \right) 60$$

Calculation Example

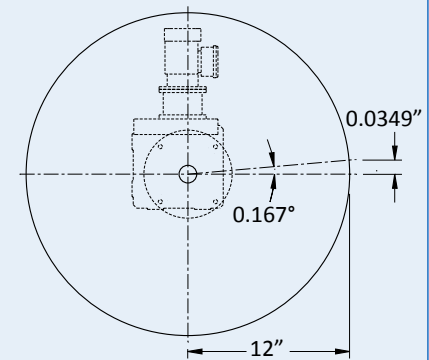
The Backlash Comparison chart can be used to determine the amount of linear movement that will be realized with a given backlash value.

Example:

A "K" Series gearhead is mounted, with the output shaft vertical, under a 24" diameter turntable. The gearhead backlash is 10 arcminutes.

Reading across the table, the angular value of 10 arcminutes is 0.167 degrees.

Further determination indicates 10 arcminutes backlash will allow a linear movement of 0.0349 inches when measured at a 12 inch radius.



Gearhead Installation Notes

ServoFit Gearheads are a high torque product. To insure that the specified torque ratings are attained, several series require high quality grade fasteners to attach the gear units to the machine:

ServoFit Series	Grade
C, F, K, KL, KS, KSS, P, PA, PE, PK, PKX	10.9
PH, PHA, PHK, PHKX, PHQ, PHQA, PHQK	12.9

For dynamic applications key connections should be avoided and the clearance of the key connection increases.



Technical Reference

Values and Symbols

Symbol	Description	Value		
		Imperial	Multiplier	Metric
F_{2a}	Axial Force @ Output Shaft			
F_{2A}	Permissible Axial Force			
F_{2r}	Radial Force @ Output Shaft	lbs.	4.45	N
F_{2R}	Permissible Radial Load			
F_{2RB}	Acceleration Permissible Radial Load			
f^B	Load Factor	—	—	—
i	Reducer Ratio	—	—	—
J_D	Motor + Reducer Inertia @ Motor RPM			
J_Z	Total Inertia @ Reducer RPM	lb-in-s ²	1.13×10 ³	kgcm ²
M	Torque			
M_2	Application Torque			
M_{2e}	Equivalent Torque (Average RMS Torque)			
M_L	Friction Torque (Losses)			
M_{2b}	Application Acceleration Torque			
M_{2B}	Reducer Acceleration Torque			
M_{2K}	Reducer Tilting Moment	in.lbs.	0.113	Nm
M_{2KB}	Reducer Acceleration Tilting Moment			
M_{2N}	Reducer Nominal Output Torque			
M_{2peak}	Application Peak Torque			
M_{2PEAK}	Reducer Peak Torque			
M_{2V}	Application Deceleration Torque			
n	Speed			
n_b	Acceleration Speed			
n_v	Deceleration Speed	RPM	—	min ⁻¹
n_1	Input Speed			
n_2	Reducer Output Speed			
t	Time			
t_b	Acceleration Time			
t_d	Duration Time			
t_v	Deceleration Time	seconds	—	seconds
t_p	Pause Time			
t_r	Running Time			

Conversions

Imperial to Metric

1 inch x 25.4 = mm

1 in² x 645.16 = mm²

1 lb x 0.453 = kg

1 US gal x 3.785 = L

1 HP x 0.746 = kW

1 lb x 4.45 = N

1 lb in x 0.113 = Nm

1 lb ft x 1.36 = Nm

1 lb ft x .1383 = kgm

1 lb in x .0115 = kgm

1 lb in² x 0.00029 = kgm²

1 PSI x 0.0689 = bar

1 PSI x 0.00689 = N/mm²

°F = 32 + 9/5 x °C

Metric to Imperial

mm x 0.03937 = inch

1 mm² x 0.0015 = in²

1 kg x 2.205 = lb

1 L x 0.264 = US gal

1 kW x 1.341 = HP

1 N x 0.225 = lb

1 Nm x 8.85 = lb in

1 Nm x 0.737 = lb ft

1 kgm x 7.233 = lb ft

1 kgm x 86.798 = lb ft

1 kgm² (J) x 3418.0 = lb in² (WR²)

1 bar x 14.5 = PSI

1 N/mm² x 145.04 = PSI

°C = 5/9 (°F-32)

Formulas

0.2618 x Dia.(in) x RPM =
Feet/Minute0.00314 x Dia.(mm) x RPM =
Meter/Minute



Terms and Conditions of Sale

1. **GENERAL.** All orders for products supplied by STOBER DRIVES INC. ("STOBER") shall be subject to these terms and conditions of sales. All transactions shall be governed by the laws of the Commonwealth of Kentucky. No modifications hereto will be binding unless agreed to in writing by STOBER.

2. **CUSTOMER.** The term "Customer," as used herein, means the distributor, resale dealer, original equipment manufacturer or first end-user customer that purchases the STOBER products.

3. **WARRANTY.** STOBER products shall be free from defects in material and workmanship for a maximum of 5-years (single shift operation or 30 months multiple shift operation) for ServoFit products (ServoFit Modular System, ServoFit Precision Planetary Gearheads, and ServoFit Geared Motors) and MGS Long Life products; 3-years (single shift operation or 18 months multiple shift operation) for other MGS products; 2-years (single shift operation or 12 months multiple shift operation) for ComTrac products, from the date of shipment to the Customer. For ServoFit products, the motor on ServoFit Geared Motors, as well as all normal wear items, including oil seals and bearings, shall be covered for a period of 2-years (single shift operation or 12 months multiple shift operation). In the event that a product proves to be defective, STOBER's sole obligation shall be, at its option, to repair or replace the product. The repaired or replacement product will be shipped F.O.B. STOBER's facilities, freight prepaid by STOBER.

No employee, agent or representative of STOBER has the authority to waive, alter, vary or add to the terms hereof without the prior written approval of an officer of STOBER. It is expressly agreed that (a) this section constitutes the final expression of the parties' understanding with respect to the warranty and (b) this section is a complete and exclusive statement of the terms of the warranty.

STOBER shall have no obligation under the warranty set forth above in the event that:

- (a) The Customer fails, within the warranty period to notify STOBER in writing and provide STOBER with evidence satisfactory to STOBER of the alleged defect within five (5) days after it becomes known to the customer;
- (b) After inspection of a product, STOBER determines, in its sole discretion, that it is not defective in material or workmanship;
- (c) Repair or replacement of a product is required through normal wear and tear;
- (d) Any part in a product or any ingredient contained in a product requires replacement or repair through routine usage or normal wear and tear;
- (e) A product is not maintained or used in accordance with STOBER's applicable operating and/or maintenance manuals, whether by the Customer or any third party;
- (f) A product has been subject to misuse, misapplication, negligence, neglect (including, but not limited to, improper maintenance or storage), accident, catastrophe, improper installation, modification, adjustment, repair or lubrication, whether by the Customer or any third party, without the prior written consent of STOBER. Misuse shall include, but not be limited to, deterioration in a product due to chemical action and wear caused by the presence of abrasive materials;
- (g) The system of connected rotating parts into which the product becomes incorporated is not compatible with the product, or it is not free from critical speed or torsional or other type of vibration within the specified operating range, no matter how induced; or
- (h) The transmitted load and imposed torsional thrust and overhung loads are not within the published capacity limits for the unit sold.

Items manufactured by other parties but installed in or affixed to STOBER's products are not warranted by STOBER and bear only those warranties, express or implied, which are given by the manufacturer of such items, if any.

THE WARRANTY SET FORTH ABOVE IS INTENDED SOLELY FOR THE BENEFIT OF THE Customer AND DOES NOT APPLY TO ANY THIRD PARTY. ALL CLAIMS MUST BE MADE BY THE Customer

AND MAY NOT BE MADE BY ANY THIRD PARTY. THIS WARRANTY MAY NOT BE TRANSFERRED OR ASSIGNED, IN WHOLE OR IN PART, BY THE Customer FOR ANY REASON WHATSOEVER. ANY SUCH ATTEMPTED TRANSFER OR ASSIGNMENT SHALL BE NULL AND VOID.

THIS WARRANTY TAKES THE PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH ARE HEREBY DISCLAIMED AND EXCLUDED BY STOBER, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF USE AND ALL OBLIGATIONS OR LIABILITIES ON THE PART OF STOBER FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE, REPAIR OR PERFORMANCE OF THE PRODUCTS.

4. **MODIFICATIONS.** STOBER reserves the right, without notice to the Customer, to (a) change the specifications of any product, (b) improve a product in any manner that STOBER deems necessary or appropriate and (c) discontinue the manufacture of any product.

5. **PURCHASE ORDERS.** The Customer will submit purchase orders for the products to STOBER in writing, whether by mail or telefax, which shall set forth, at a minimum: (a) an identification of the products ordered, (b) prices for such products, (c) quantities, (d) requested delivery dates and (e) shipping instructions and shipping addresses.

6. **ACCEPTANCE OF ORDERS.** All purchase orders received from the Customer are subject to acceptance by STOBER in writing.

7. **MODIFICATION OF ORDERS.** No accepted purchase order shall be modified or canceled except upon the written agreement of STOBER and the Customer. Mutually agreed cancellations shall be subject to reasonable charges based upon expenses already incurred by STOBER and commitments made by STOBER. Mutually agreed change orders shall be subject to all provisions of these Terms and Conditions of Sale.

8. **PRICE INCREASES.** STOBER may increase its prices for the products by providing the original purchaser of the products with at least thirty (30) days' prior written notice. Increased prices for products shall not apply to purchase orders accepted prior to the effective date of the price increase unless such orders provide for delivery more than thirty (30) days after the date of acceptance of the order.

9. **PRICING AND DELIVERY TERMS.** In accordance with KRS 355.2-319(1)(b), all products are delivered F.O.B. STOBER's warehouse facility in Maysville, Kentucky, or such other facility as STOBER may designate. Orders are then shipped per Customer's shipping instructions as set forth in Customer's purchase order. **CATALOG PRICING DOES NOT INCLUDE SHIPPING, HANDLING AND TAXES.** Once delivered to a common carrier of the Customer's choosing [or of STOBER's choosing if Customer has failed to specify a common carrier on or before five (5) days prior to the requested delivery date] STOBER shall have no further responsibility for the products and all risk of damage, loss or delay shall pass to the Customer. A handling fee is added to freight costs by STOBER to cover the cost of having to pay the carrier within seven (7) days when the terms with the Customer are net 30. The Customer has the option of shipping collect with our carrier or the carrier of choice.

10. **PAYMENT TERMS.** Net 30 days. All orders will be shipped either prepaid by the Customer or C.O.D., at STOBER's option, unless the Customer has established a previously approved credit line. If STOBER approves a credit line for the Customer, all payments shall be due within thirty (30) days of the date of the invoice. If any invoice is not paid in full within such thirty (30) day period, then finance charges shall be assessed at the rate of one and one-half percent (1½%) per month (eighteen percent (18%) per year). If such rate is deemed to be usurious at any time, it shall be reduced to the maximum rate permitted by applicable law. STOBER may stop or withhold shipment of products if the Customer does not fulfill its payment obligations. If STOBER is insecure about payment for any reason, STOBER may require full or partial payment in advance and as a condition to the continuation of its delivery of products.

11. **SECURITY INTEREST.** Unless and until the products are paid for in full, STOBER reserves a security interest in them to secure the unpaid balance of the purchase price. The Customer

hereby grants to STOBER a power of attorney, coupled with an interest, to execute and file on behalf of the Customer all necessary financing statements and other documents required or appropriate to protect the security interest granted herein.

12. **ACCEPTANCE OF PRODUCTS.** The Customer will conduct any incoming inspection tests as soon as possible upon arrival of the products, but in no event later than ten (10) days after the date of receipt. Any products not rejected by written notice to STOBER within such period shall be deemed accepted by the Customer. STOBER shall not be liable for any additional costs, expenses or damages incurred by the Customer, directly or indirectly, as a result of any shortage, damage or discrepancy in a shipment.

13. **LIMITATION OF REMEDIES.**

- (a) STOBER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE CAUSED BY DELAY IN FURNISHING THE CUSTOMER WITH PRODUCTS.
- (b) IN NO EVENT SHALL STOBER'S LIABILITY INCLUDE ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL LOSSES OR DAMAGES, EVEN IF STOBER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

14. **MADE-TO-ORDER PRODUCTS.** STOBER reserves the right to revoke and amend any price quotations offered to the Customer for made-to-order products, provided that such price quotations have not been accepted by the Customer prior to the date of revocation or amendment.

15. **DIES, TOOLS AND EQUIPMENT.** Charges incurred by the Customer for dies, tools and other equipment shall not confer ownership or the right to possession therein by the Customer. All such dies, tools and equipment shall remain the property of STOBER, and STOBER shall have the exclusive right to possession thereof. STOBER shall maintain such tools and equipment in good working order.

16. **REGULATORY LAWS AND STANDARDS.** STOBER makes no representation that its products conform to state or local laws, ordinances, regulations, codes or standards except as may be otherwise agreed to in writing by STOBER.

17. **SIZES AND WEIGHTS.** STOBER's products are made only in the sizes and to the specifications set forth in its catalogs and other literature. If any alteration is requested, such altered product will be treated as a made-to-order item. STOBER assumes no responsibility for typographical errors which may appear in its catalogs or literature, and cannot accept alteration charges caused by such errors. Since weights shown in STOBER's catalogs are approximate, they cannot be used in determining freight allowances set forth in its catalogs and other literature. Freight allowances will be determined at the time of shipment and shall be based on actual shipping weight.

18. **SYSTEM DESIGN.** Responsibility for system design to ensure proper use and application of STOBER's products within their published specifications and ratings rests solely with the Customer. This includes, but is not limited to, an analysis of loads created by torsional vibrations within the entire system, regardless of how induced.

STOBER DRIVES INC.

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ServoStop

Motor Adapter with Integrated Brake

Motor adapter integrated brake module provides redundant braking during power failures or emergency stops in hazardous situations. Available with ServoFit P, PA, PH, PHA, PK, PHK, C, F and K Series Gearheads.

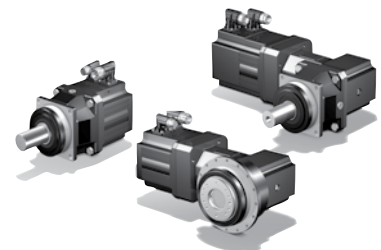
- Saves braking at EMERGENCY STOP and power cut
- Prevents accidental sliding or falling of vertical axis with gravity load absolutely reliable
- Manual hand release available
- Fits all standard servo motors
- IP54 Rated; CSA Approved
- Higher safety for vertical applications per EN ISO 13849, Category 1, 2 & 3



Rack and Pinion Systems

STOBER and Atlanta partner on ZV, ZR, ZTR, ZTRS Series high efficiency rack and pinion drives which feature an innovative pinion bearing for high linear force applications.

- Gear unit and rack optimally mated together as a system
- Ready to install drive solutions
- Easy selection and calculations done by STOBER for a total engineered solution
- Optimize inertia mismatch by changing the gear ratio or pinion tooth count
- Forces up to 122 kN or 27,400 lbs.
- Precision linear backlash as low as 7 μm
- Gearing size ranges from Mod. 2 – 10



Servo Gearmotors

ED and EZ Series are compact, highly-dynamic, electronically commutated, permanent magnet brushless servo motors coupled to STOBER gearheads.

- Mounting the motor directly to the gearbox eliminates a motor coupling and housing, adapter or additional input seals and bearings to reduce inertia up to 75%
- Smoother running for optimal performance; dynamic, minimal torque/speed ripple; UL/CE/CSA approved
- Options include: washdown, food coatings, spring and magnetic brakes, forced air cooling, water cooling, high dynamic performance with low inertia, encoder options, PTC or KTY winding protection, high inertia option, motor speeds up to 6000 RPM, and high torque density



Spindle Nut Direct Drive

- Axial angular contact ball bearing absorbs high axial forces from the ball screw
- Flange meets DIN 69051-5 requirements
- Liquid cooling channel available as an option for added performance



NEMA Compatible Speed Reducers

- Inline concentric, offset or right angle
- Helical, bevel or worm gear driven
- 1/6 to 165 HP
- Output torques to 106,296 in. lbs.
- Output speeds from 875 to 2.5 RPM
- Ratios from 2:1 to 683:1
- Food and corrosion resistant duty, stainless steel available



Hollow Bore Motors

- Flanged hollow shaft motor features a large internal hollow shaft (28 to 42 mm) that allows feeding of supply lines, including not only power cables, hydraulic pipes and pneumatic hoses, but also shafts and laser beams.
- 2 sizes – 5 and 7
- Extremely compact



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