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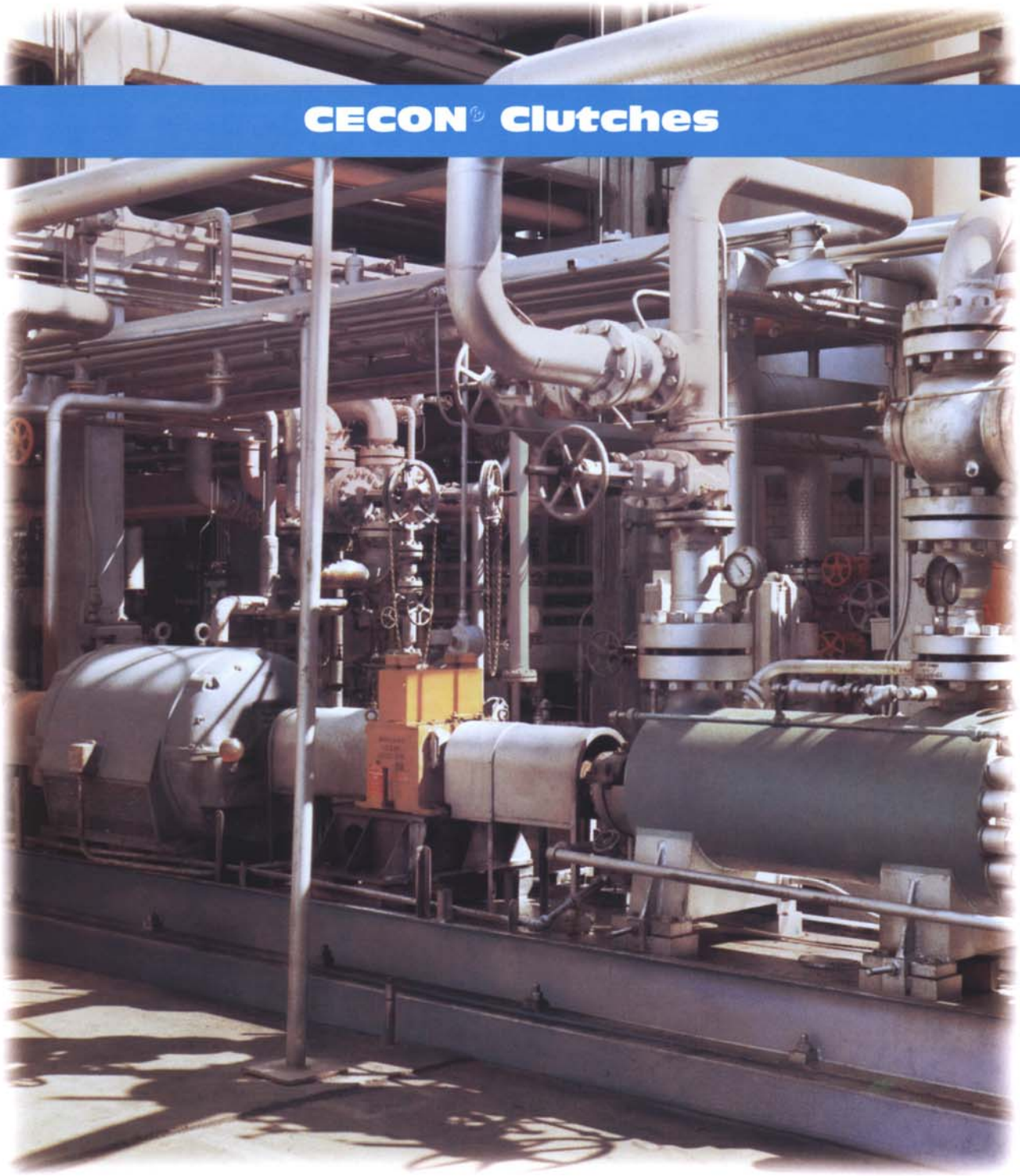
CECON® Clutches



Completely Enclosed for Continuous Operation

Marland Clutch

The Company

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Marland

Since 1931, Marland has been producing backstops, clutches and clutch couplings. Marland products are based on a one-way clutch design, utilizing the principle of cylindrical rollers on inclined cam planes.

In December of 1996, Colfax acquired Marland along with three other divisions comprising the Mechanical Power Transmission Group of Zurn Industries, making Marland a part of the Colfax family of products.

Colfax, headquartered in Erie, Pennsylvania, has specialized in the design and manufacture of mechanical power transmission products since 1928.

Colfax product lines include one-way, overrunning and overload release clutches, friction clutches and brakes, enclosed geardrives, gear and diaphragm couplings, mill spindles, and universal joints.

Marland Products

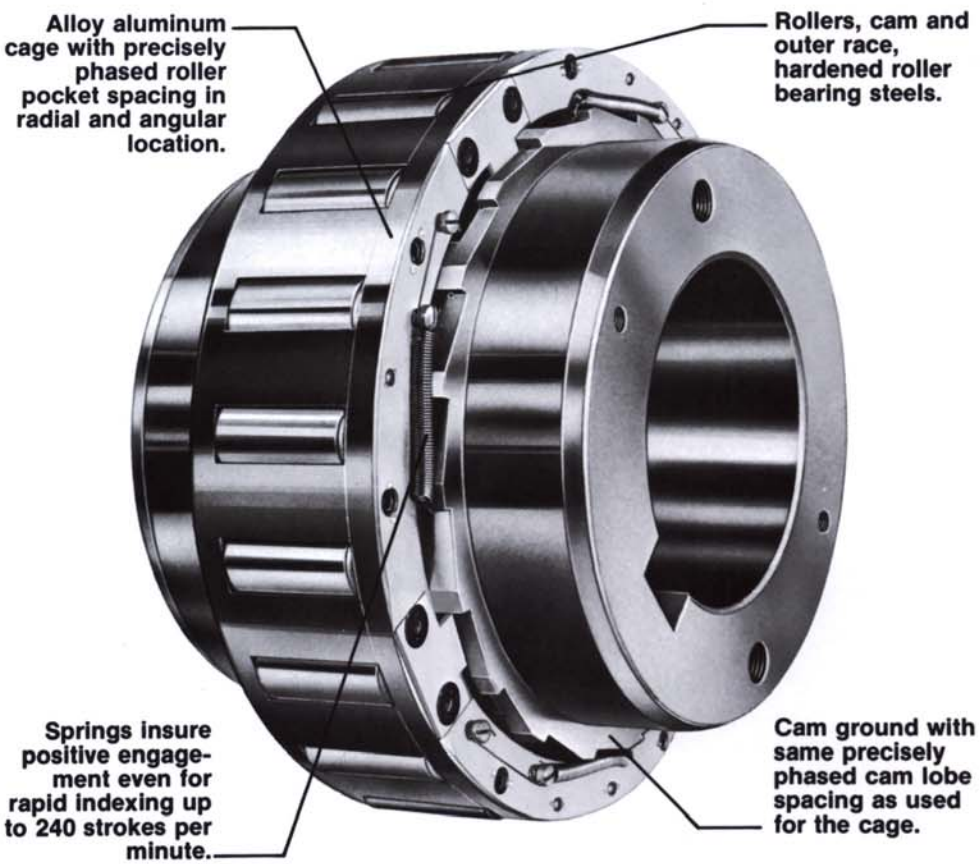
The Marland principle of rollers on inclined cam planes has proven its dependability for over 60 years in worldwide installations ranging from food processing plants to equipment used in steel mills and heavy mining industries. Proving the inherently long-life Marland design, the first two Marland clutch units installed in February, 1931, operated continuously for 31 years without repairs or replacements of any kind until the system became obsolete in 1962. Cam, rollers and outer race inspection showed them ready for additional years of service.

The need for CECON Clutches

Marland CECON Clutches are designed for applications where one or more of the following conditions exists.

1. Shaft speeds exceed the permissible maximum for standard clutches, clutch couplings, or backstops.
2. Uninterrupted, continuous operation is required.
3. Operation under extremely wet, dusty, abrasive, or other adverse atmospheric conditions; or on unprotected outdoor applications; or subject to high ambient temperatures.
4. Shaft axis is not horizontal, as on cement kiln drives.
5. Lubrication maintenance must be provided on a no "down-time" basis.

Illustration 1



Cover Photo: A hydraulic recovery turbine connected through a Marland CECON clutch assists the main motor decreasing motor current demand.

Operating Details

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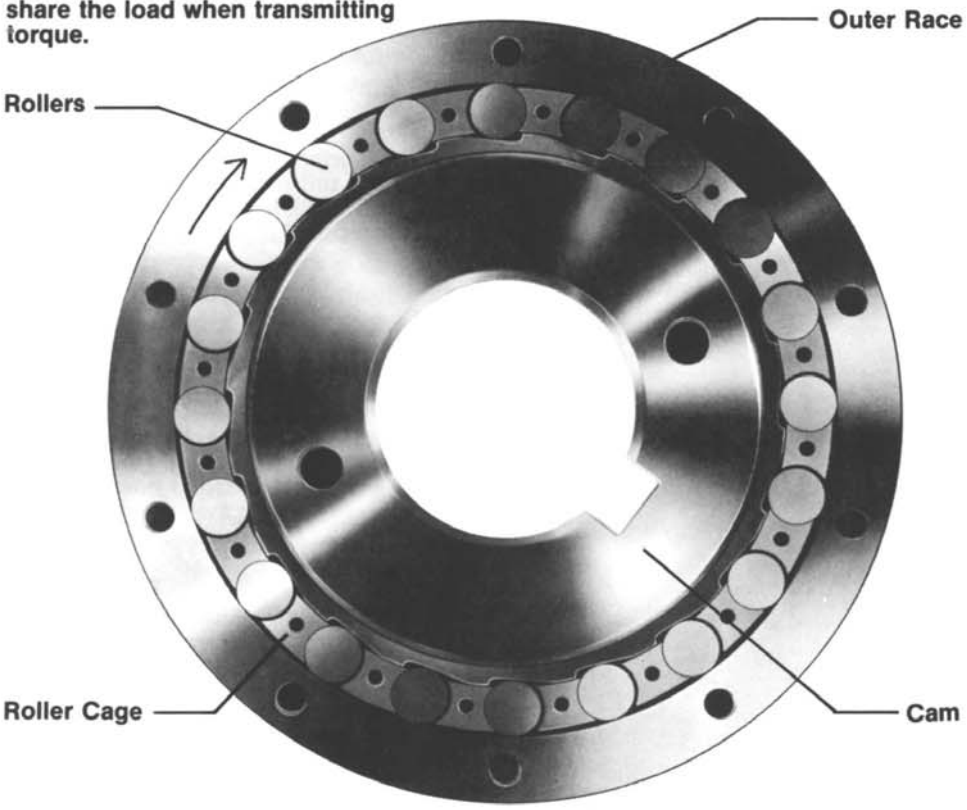
CECON Clutches consist of a completely enclosing housing with provisions for supporting a Marland freewheeling clutch between two shafts, each of which is separately supported. The input shaft is connected to the cam and the output shaft is connected to the outer race. The CECON shafts are then connected to driving and driven equipment shafts through double engagement, self-aligning, gear-type flexible couplings.

During freewheeling, the outer race, as shown by the arrows in Illustration 2, is free to rotate with the output shaft. The cam and roller assembly connected to the input shaft remain stationary, or rotate at a speed slower than the output shaft. An oil film wedges and separates the rollers from the outer race. This moves the rollers a few thousandths of an inch imparting relative angular motion between the roller cage and cam. This slight movement of the rollers into the deeper cam zones, with a clean lubricant film wedge between rollers and outer race, permits freewheeling without metal to metal contact.

At rest (or at any synchronous speed of the input and output shafts), the spring actuated roller cage, Illustration 1, has already positioned the rollers into the contact zone. All rollers have been positively guided to engage uniformly and maintain their relative positions accurately to assure uniform load distribution. The rollers then engage in compression between the precision ground and hardened, cam plane surfaces and the inside diameter of the outer race. When the clutch is in this "engaged" or "driving" condition, the cam, rollers, and outer race are locked and therefore, not subject to wear.

Illustration 2
Coverplate and roller cage end ring have been removed, exposing the rollers. Note that while at rest, all rollers are strictly in-phase ready to share the load when transmitting torque.



The two types of CECON Clutches are Type CEUS and Type CEUHS. Both contain similar standard clutch operating parts and therefore, operate in the same manner. The basic differences are the means of lubrication and method of bearing support.

Type CEUS CECONS are ball bearing supported at four points and are suitable for use on most applications. Lubrication is self-contained in the sealed housing and provides self-circulation and self-filtering through stainless steel filter strainers. See Pages 12-15.

Type CEUHS CECONS have high speed, turbine type, steel backed babbited bearings at four points which are lubricated by a customer supplied external lubrication system, through standard A.S.A. flanged oil inlet and drain furnished on the housing. This bearing and lubrication arrangement permits higher operating speeds than the CEUS type. See Pages 16-19.

Since the Type CEUS CECON is suitable for most applications, the following design and application information will be based on this type unit. However, the type CEUHS is readily available for speeds above the CEUS limits or wherever a sleeve bearing supported unit is preferred.

Disconnect Feature

Both CEUS and CEUHS CECONS are available with a disconnect feature that provides physical separation of the input and output shafts. This allows maintenance to be performed on the non-energized driver while the disconnect CECON is *locked out* in the disconnect position.

Other features include:

- View port which allows visual confirmation of disconnect/connect status.
- Full-speed testing of isolated equipment prior to reconnection.
- Direct replacement for existing CEUS and CEUHS units.

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The basic clutch elements of cam, roller cage and outer race are similar items as employed for other Marland One-Way Clutches. In addition, CECON Clutches are designed to keep freewheeling clutch parts and bearings adequately lubricated.

Housings are of rugged, cast construction with liberal cooling areas to permit dissipation of heat which may be generated during high speed freewheeling operation. The stationary housing also provides a large oil reservoir with many times the oil capacity of an ordinary freewheeling clutch.

Provision is made against unnecessary churning of the oil. This is done by ample reservoirs to hold the excess oil volume out of the rotating clutch chamber during high speed operation. The oil, caught in the reservoirs, is cooled and is then recirculated in controlled volume from the bottom of these reservoirs.

In addition to permitting high shaft speeds and continuous uninterrupted operation, the following design features are equally important in certain applications.

Operation On Other Than The Horizontal Plane

Cement and other pyro kilns have drive systems that are not horizontal. Under these conditions a standard freewheeling clutch coupling might tend to lose its lubricant while the shafts were not in a horizontal plane.

Problem Atmospheres

CECON Clutches are also intended for use on stationary, horizontal applications where extreme atmosphere pollution caused by outdoor sand, dust and wind action, rain or sleet might contaminate the lubricant in a standard freewheeling clutch coupling. Even if some such contamination should inadvertently pollute the lubricant in a CECON Clutch, means for sedimentation of such foreign matter are provided in the lubricant reservoir and fittings. Gravity separation permits withdrawal of the impurities from the lubricant without interrupting continuous operation.

Maintenance

CECON Clutches Type CEUS are continuously self-lubricated without the use of pumps or external piping. The self-circulating lubricant is also self-filtering by continuous gravity flow through 100-mesh stainless steel filter-strainers. Means are provided for easy renewal of the filtering elements. The only dependence on the human element is that of visually checking oil level, occasional sampling for oil purity and cleaning of filter strainers, none of which requires shut-down of the equipment. A breather-filter is provided to compensate for barometric and temperature changes.

Oil Sampling

A drain valve on the easiest-to-reach side of the CECON Clutch permits sampling of the lubricant to help detect the presence of any contaminant and draining if necessary.

Equipment which must operate in cement mills, chemical plants, highly humid plant areas, or in high ambient temperatures or similar problem atmospheres are well served by CECON Clutches even though uninterrupted operation is not compulsory.

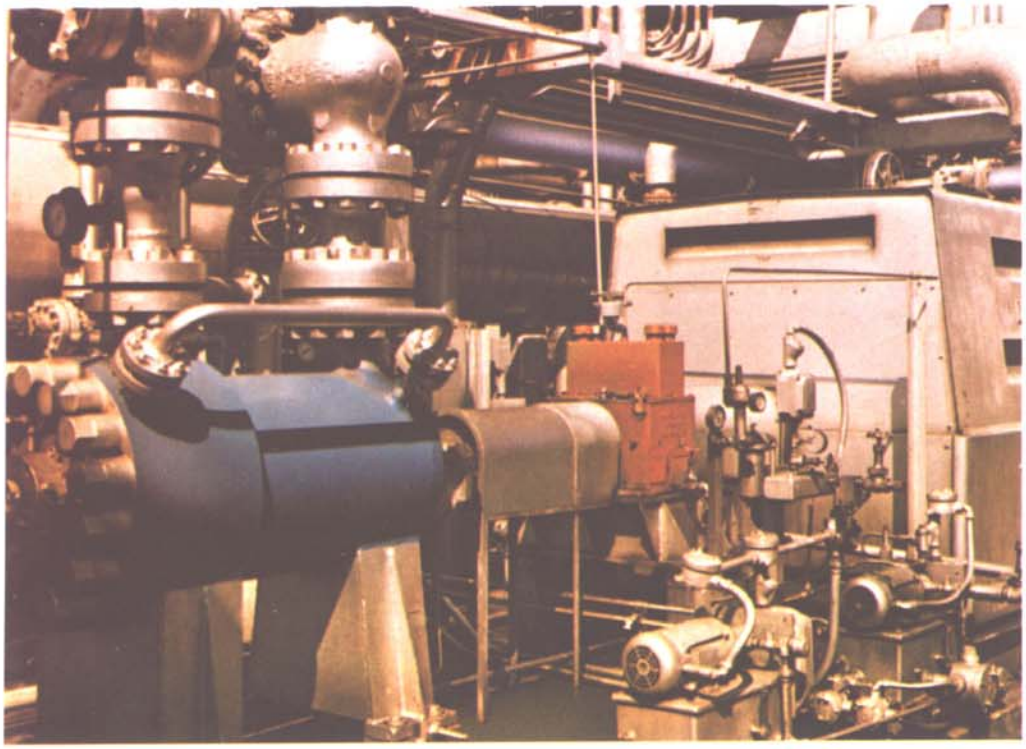

Photo: A Marland One-Way CECON clutch in an unprotected outdoor location at a West Coast hydrocarbon processing plant.

Advantages of Marland Cylindrical Rollers on Flat Inclined Cam Surfaces

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Free Rotation

The cylindrical rollers used in all Marland One-Way clutch products are free to rotate in their individual pockets during freewheeling permitting the load to be engaged and re-engaged on any part of the roller circumference and cylinder surface as indicated by the arrows in illustration 3.

Longer Service Life

Engagement of the roller under load does not always fall on the same line, zone, or spot to result in spalling or cratering, as may occur with non-cylindrical, irregularly shaped wedges or sprags which are not free to rotate. This results in longer service life for the contacting surfaces.

Accurate Dimensions

Cylindrical rollers are easy to produce and reproduce to precision dimension limits which are readily checked with micrometers, go-no-go gauges, or if necessary, with the extreme closeness of light band inspection.

Full Contact

Precision-ground, flat cam areas furnish ideal contacting surfaces for the cylindrical rollers and assure full contact with the entire cylinder length of each roller.

Lower Stress

When roller and cam are engaged under compressive loading, (illustration 3), the load is uniformly distributed over a large zone of contact with consequently lower stresses to result in more durable, efficient operation.

Illustration 3

Marland cylindrical rollers are free to rotate during free wheeling and provide broad contact over the entire length of the rollers under compressive loading.

Illustration 4

Non-cylindrical clutch wedges are not free to rotate. Any dimensional variations are accentuated by repeated contact in the same reduced areas during compressive loading.

The Limitation of Non-Cylindrical Clutch Wedges or Sprags

Non-cylindrical, irregularly shaped wedges or sprags have been resorted to by some designers whose primary aim was to lower clutch production costs. This design uses a cheaper cylindrical inner race, in place of the precision ground cam used in the Marland design.

Odd-shaped sprag elements with compound curves are difficult to produce, and reproduce, to the same high degree of accuracy consistently maintained in the production of cylindrical rollers. Many non-cylindrical sprags, produced by cold die drawing, may be subject to dimensional variations which can occur between sprags produced when the die is new and those drawn after the die becomes worn and enlarged with use.

When an assembly of such odd-shaped sprag elements is engaged in compressive loading between the inner and outer races, dimensional variations such as a slightly oversize curve radius, will subject such individual elements to higher stresses and may cause failure due to spalling or cratering of the relatively higher stressed surfaces.

Sprags with compound curves are not free-to-rotate when confined within the annular space between cylindrical inner and outer races, but must be retained in position to engage. This causes a rubbing of the sprags on the races during freewheeling and consequent wear. In addition, sprag contact surface for engaging is limited to the small zone indicated by the arrows in illustration 4. This reduced available zone of contact can result in shorter life of wedges or sprags.

Note in illustrations 3 and 4, the available load-bearing surface of a Marland roller includes the entire roller circumference and full cylinder length, compared to the relatively limited load-bearing zone of the retained sprag

Illustration 3

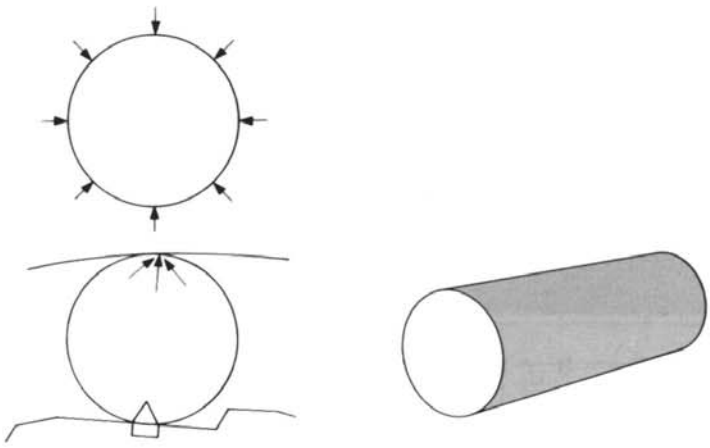
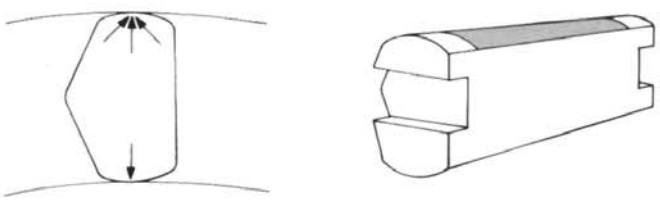


Illustration 4



Typical Applications

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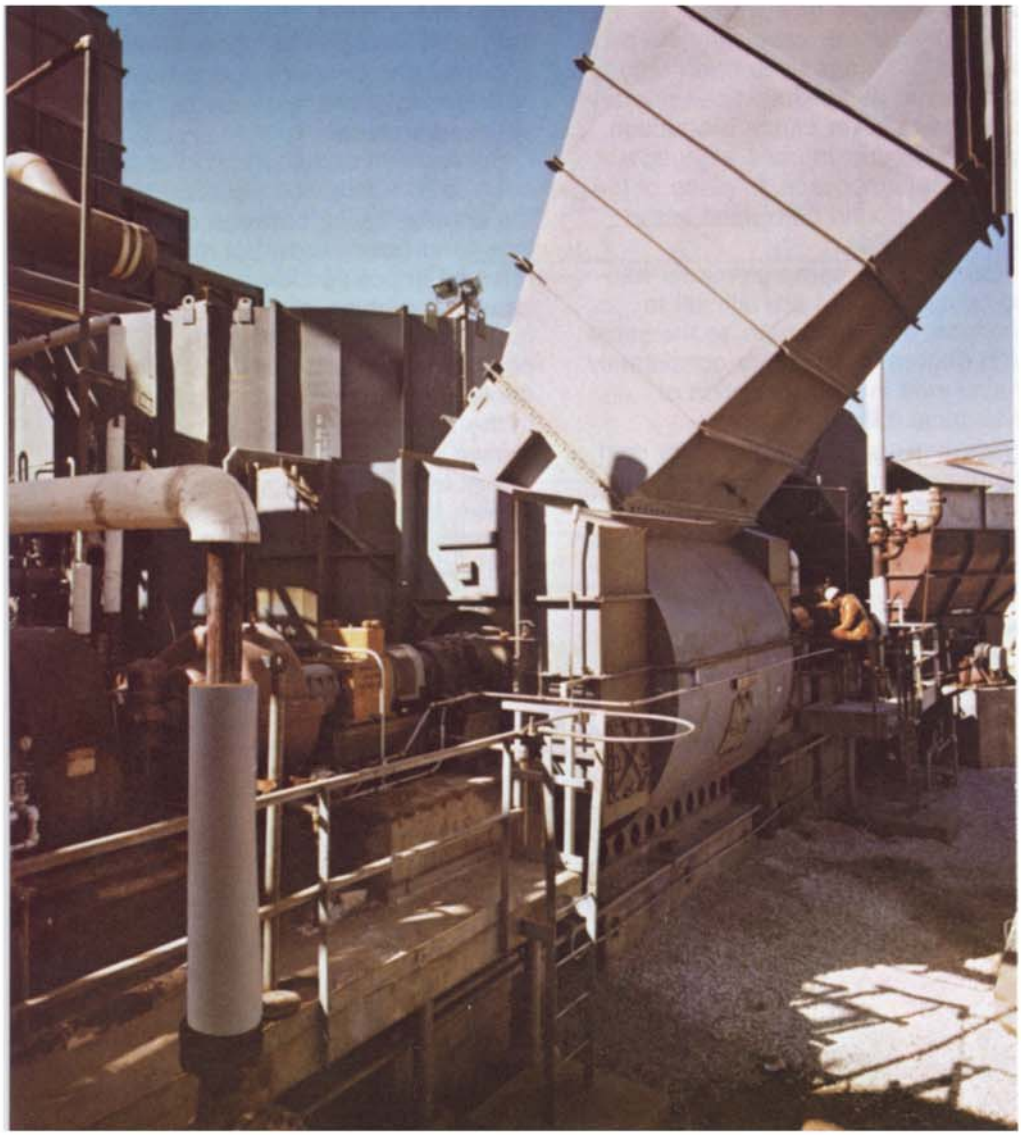

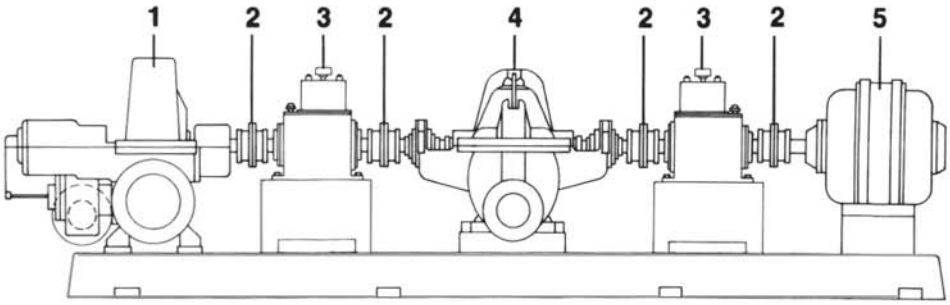

Illustration 5

1 Turbine
2 Flexible Coupling
3 **Marland One-Way CECON Clutch**
4 Compressor Pump or Blower
5 Motor

Dual Drives

For dual drive arrangements, CECON Clutches connected between the driven equipment and the power sources, provide for instantaneous changeover from one source of power to the other without delays for manually loosening, tightening or shifting standby drive connections. In illustration 5, a large electric motor and steam turbine are connected to double shaft extensions of a continuously operating high speed pump through Marland CECON Clutches. The following operating modes exist:

1. Either the motor or the steam turbine may be used to drive the pump.
2. Both motor and turbine may share the pump load, depending on torque and speed characteristics of the prime movers.
3. If the motor is driving the pump at rated speed, the load may be taken over by the turbine without slowing down the pump. If required, the turbine may be used to increase the pump speed above the rated motor speed, but within permissible clutch speed rating, after which the motor may be shut off.
4. The turbine alone may drive the pump at any permissible clutch speed to suit varying operating demands.

Photo: Dual driven induced draft fan through Marland One-Way CECONS to provide process steam at a Southern chemical plant.

Typical Applications

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Inching or Creep Drives

A Marland CECON Clutch connected between a low speed drive and the normal operating speed drive for conveyors, steel strip mills, or other equipment, will permit operation at inching or creeping speed for inspection or servicing. Such drives are necessarily limited to one direction of rotation and cannot be reversible.

CECON clutch allows automatic and instantaneous change-over from one drive to the other without complex controls. The application of a Marland One-Way CECON Clutch to provide inching speed for an inclined conveyor is shown in the illustration to the right. Such very low speed drives may be required where exposure to freezing temperatures prevents restarting, if not kept in constant slow motion.

Starter or Turning Gear Drives

Large, heavy-duty industrial fans often require turning gear drives to keep the fan impellers rotating slowly when the main drive is shut down. Without this slow rotation in high temperature applications, such as induced draft and hot gas recirculating fans, the impeller will heat or cool unevenly and distort the blades or shaft. In addition, slow rotation may be necessary to insure proper lubrication of fan bearings.

In some cases, the turning gear drive and the CECON clutch are size selected to start the fan from rest before the larger high-speed motor is turned on. See Illustration 7.

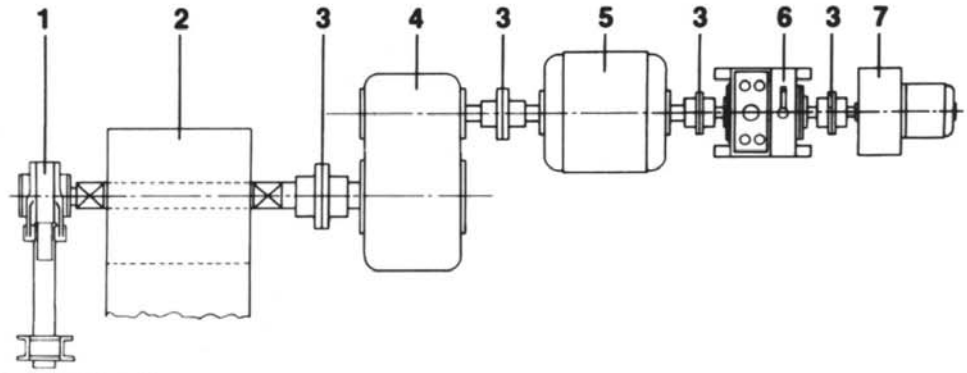

Illustration 6

1 Marland One-Way Backstop
2 Conveyor Belt Headshaft
3 Flexible Coupling
4 Main Speed Reducer
5 Main Motor
6 **Marland One-Way CECON Clutch**
7 Inching or Creep Drive Motor

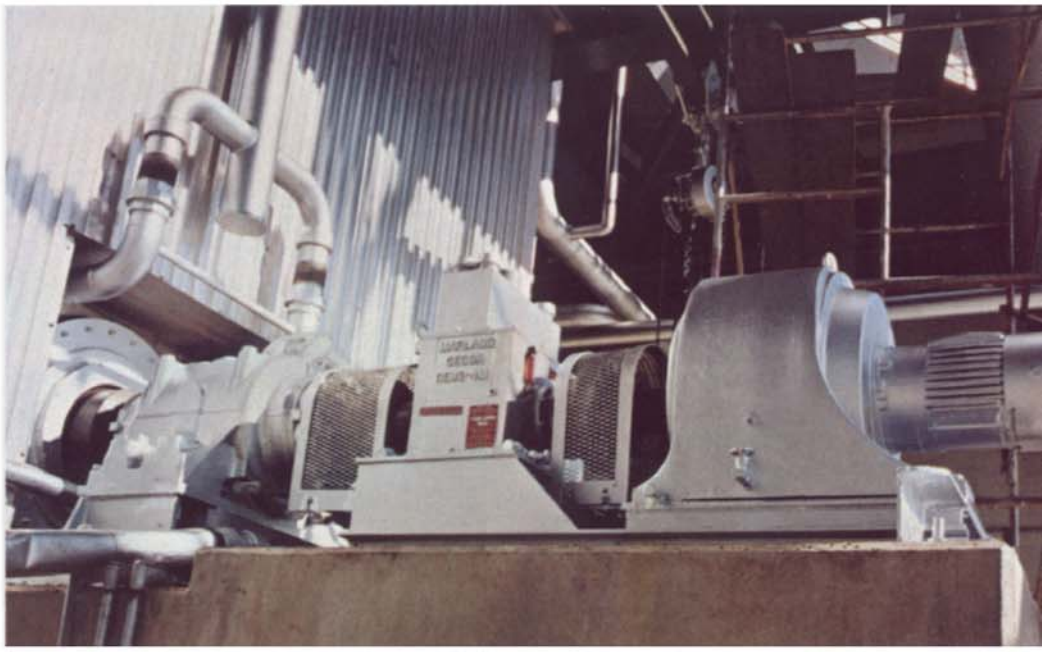

Photo: Hot gas recirculating fan turning gear drive through CECON clutch provides continuous slow rotation to prevent thermal distortion and keep fan bearings properly lubricated.

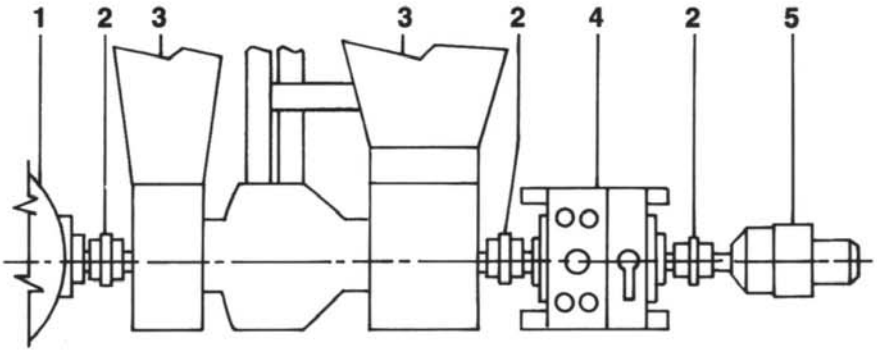

Illustration 7

1 Main Drive
2 Flexible Coupling
3 Fan or Compressor
4 **Marland One-Way CECON Clutch**
5 Turning Gear Drive

Typical Applications

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Energy Recovery Systems

Energy recovery in hydrocarbon processing plants is an important factor in the reduction of operating costs. Wherever a high pressure liquid flow is reduced to a lower pressure, hydraulic energy is wasted. By the application of a hydraulic turbine and a CECON clutch, most of this energy can be recovered.

The hydraulic turbine is connected to the CECON Clutch input shaft, and the output shaft is connected to the double extended motor shaft or pump shaft. The motor is usually sized to carry the full pump load for those times, such as start-up, when little or no fluid is available to the hydraulic turbine. During these periods the CECON Clutch is freewheeling, allowing the hydraulic turbine to remain stationary.

As process fluid flow increases, the hydraulic turbine accelerates until it reaches the speed of the motor. The CECON clutch automatically engages to transmit hydraulic turbine torque to the motor, decreasing the motor current demand. The CECON clutch will automatically engage and disengage if the hydraulic turbine speed varies with the change in the flow of the process fluid.

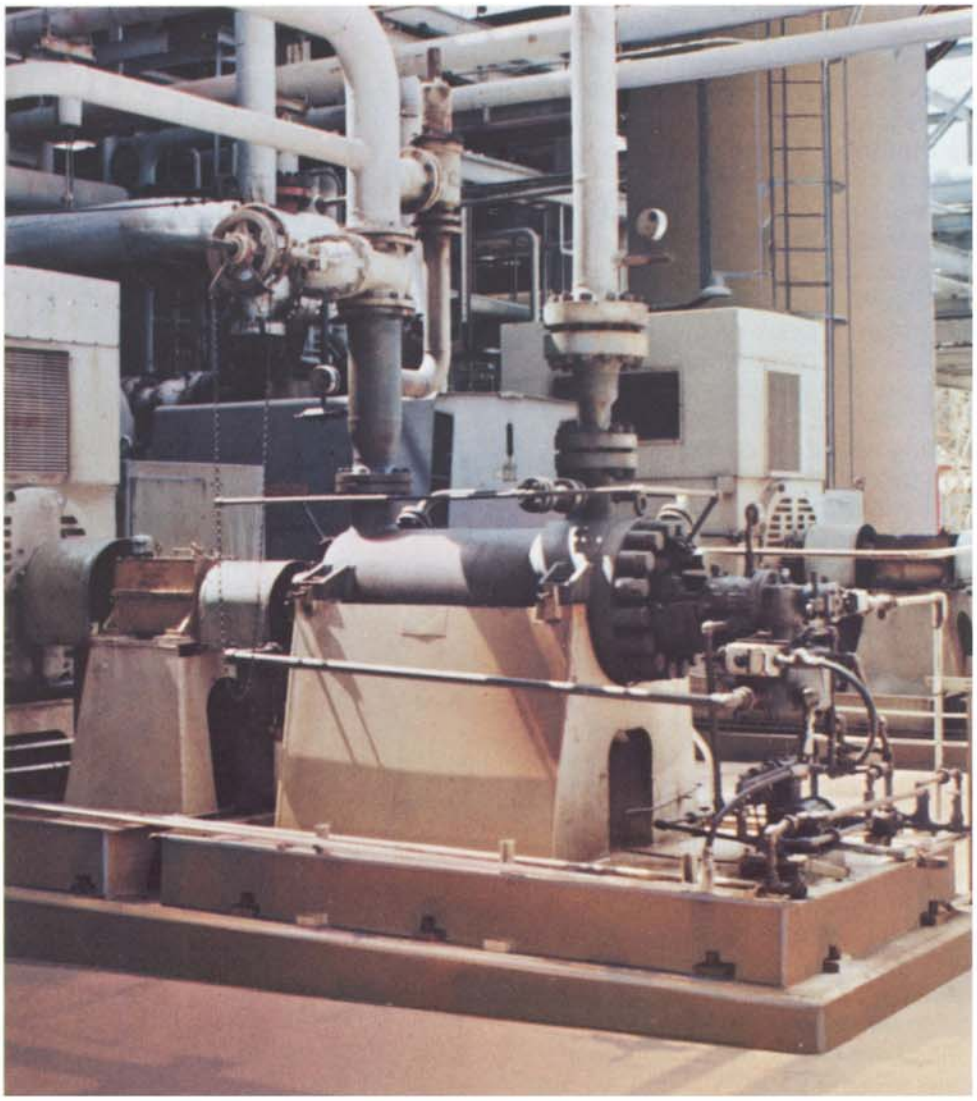

Photo: Two Type CEUHS CECON clutches at large Texas refinery used with hydraulic turbines to recover energy from process fluid.

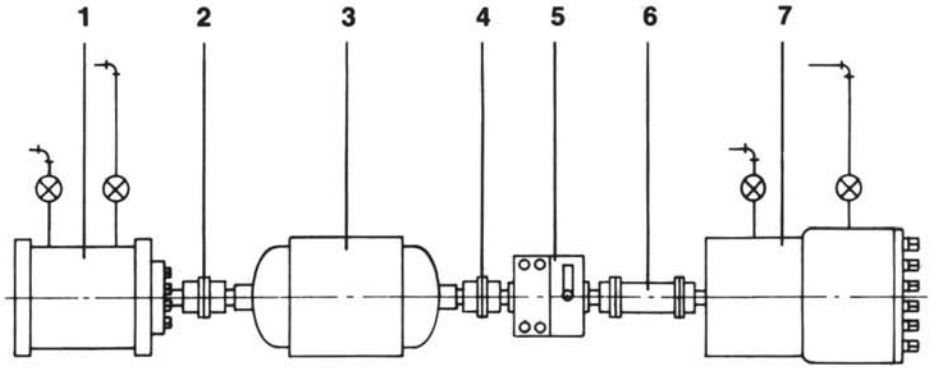

Illustration 8

1 Main Pump
2 Coupling
3 Main Motor
4 Gear-Type Coupling
5 **Marland One-Way CECON Clutch**
6 Gear-Type Spacer Coupling
7 Hydraulic Turbine

Typical Applications

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Kiln Emergency Drive

For some time the trend in the cement and other pyro-processing industries has been toward larger and more efficient kilns. Since these kilns operate 24 hours per day, month after month, it has been important to conserve power and avoid down time as much as possible.

The high degree of efficiency in the mechanical power transmission that has evolved also means that the kiln can roll back due to the large off-center mass of material in the kiln when power failure occurs or at any time the main drive is shut down. Uncontrolled rollback carries the danger of centrifugal explosion of the main drive components since they may be oversped to many times the normal forward speed.

Another consideration to be made during main drive shutdown is the prevention of kiln distortion due to the high temperatures. An emergency drive can be utilized to provide forward rotation at a reduced speed, both to prevent distortion and also to empty the contents of the kiln before it becomes impacted to the lining.

Marland CECON clutches and CEBMAG backstops provide automatic, remote emergency operation in case of main electric power failure. Their use provides for controllrd reversal of the kiln and automatic changeover to emergency drive for forward rotation at reduced speed.

The first Marland CECON clutch installed on a cement kiln went into operation over 35 years ago. Since that time many of the largest kilns in this country and throughout the world have been provided with CECON and CEBMAG units.

For more detailed information on CEBMAG backstops, refer to the CEBMAG catalog.

Photo: Marland One-Way CECON clutch and CEBMAG Backstop on modern cement kiln provide for emergency drive rotation in case of main power shutdown.

Special Applications

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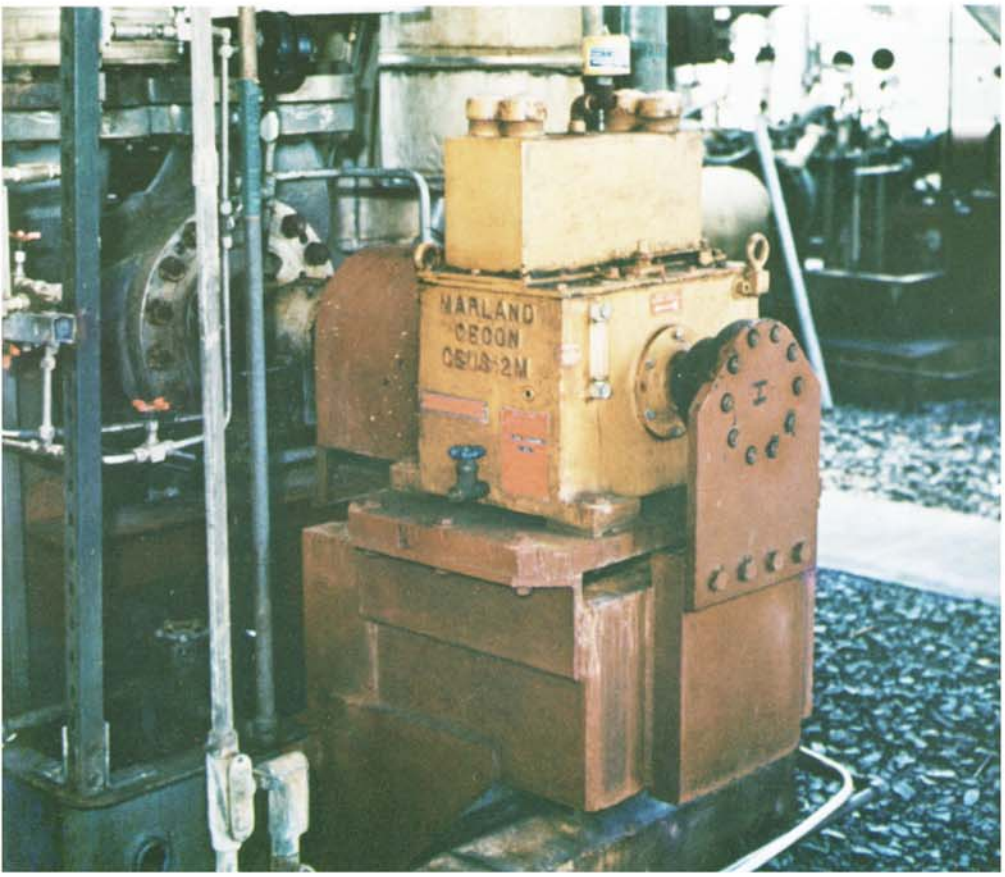

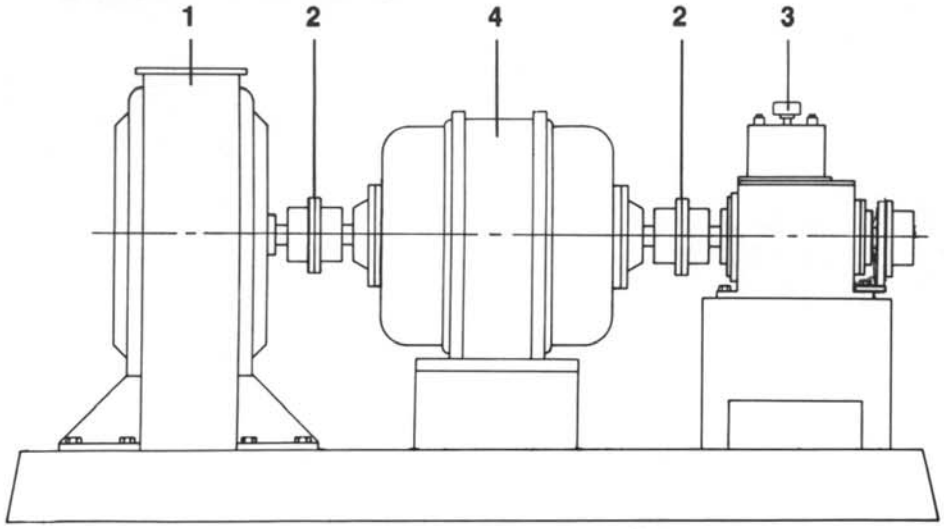

Illustration 9

1 Compressor, Pump, or Blower
2 Flexible Coupling
3 **Marland One-Way CECON Highspeed Backstop**
4 Motor

High Speed Backstops

Standard Marland One-Way backstops are recommended for use at low speeds, as on conveyor drive pulley shafts, instead of at motor speed or on other high speed shafts. However, there are many applications for backstops on equipment having only high speed shafts available. Examples of this type of application include motor or turbine driven pumps, compressors or blowers. When power failure or shutdown occurs, the common header for the air or fluid may cause reverse rotation of the equipment if check valves fail to shut off the reverse flow. During such reversals the equipment can rapidly accelerate to dangerously high speeds.

A CECON backstop will prevent reversal of the connected equipment, thereby guarding against the possibility of centrifugal explosion or other damage. CECON backstop units are provided with all the features as outlined for CECON clutches to permit continuous operation at medium to high speeds. The only modification is a torque arm attached to the CECON input shaft. The end of the torque arm is positively retained as shown in illustration.

Special Requirements

In over 60 years as the recognized leader in the design and manufacture of freewheeling clutches, the Marland engineering staff has been given many unusual and difficult requirements for clutches and back-stops. This has resulted in special designs to meet those exacting requirements. If your needs cannot be filled by a standard item, give us the engineering details. It may be that we already have the solution to your problems, and if not, we'll go to work and find one.

Photo: Marland One-Way backstop prevents reversal of pump if check valves should fail during power failure.

CECON Clutch Size Selection

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Selection of a Marland CECON Clutch requires the following information:

1. Nameplate horsepower of drive (motor, turbine, engine, etc.)
2. R.P.M. of driving shaft.
3. R.P.M. of driven shaft (freewheeling speed)
4. Kind of machines to be connected (driving and driven)
5. Direction of driving rotation when facing input end of CECON.
6. Where the CECON Clutch shafts will not be on a horizontal plane, refer to the factory indicating angular position.
7. For dual drive arrangements requiring a second CECON Clutch, similar information as outlined above applying to the alternate drive should be obtained to assure selection of a proper size CECON Clutch for the alternate driver.

NOTE:

High Speed Operation

CEUS CECON clutches overrunning or driving at speeds above those shown below may require matching or balancing of components for proper operation and long life. Consult factory for restrictions and additional costs.

CEUS-5C-8M	1800 RPM
CEUS-12M-30M	1200 RPM
CEUS-42M-60M	900 RPM

Selection Procedure

1. Calculate the normal load torque (T) in pound-feet.

$$T = \frac{\text{Nameplate Horsepower} \times 5250}{\text{R.P.M. of Clutch Input Shaft}}$$

2. Select the proper service factor (SF) from Table based on actual connected equipment or by the class of service most closely resembling the service conditions under consideration. If an exact or similar application is not shown in Table, or if special conditions exist, refer to Home Office with complete information.
3. Multiply the normal load torque (T) by service factor (SF) to obtain the required clutch torque.
4. Refer to the CECON capacity ratings as shown on Page 12 for type CEUS, or Page 16 if type CEUHS is preferred or required by speed of application, and select the required size.

The shaft sizes of the driving and driven equipment need not be considered in selecting the CECON Clutch size since the CECON input and output shafts are to be connected to the driving and driven shafts through suitable sizes of double-engagement, self-aligning, gear-type flexible couplings. If Marland is to furnish the couplings, the micrometer shaft diameters and keyseat dimensions of the driving and driven equipment must be furnished to assure proper coupling selection.

Service Factors

The following service factors are for typical applications shown in this catalog. They are not intended as a firm recommendation, but are offered only as a general guide:

Motor And Turbine Driven-	
Dual Drives:	
Forced Draft Fans	1.50
Induced Draft Fans	1.50
Centrifugal Pumps	1.50
Inching or Creep Drives	1.50
Starter or Turning Gear Drives	1.50
Energy Recovery Systems	1.50
Kiln Emergency Drives	1.25
Engine Driven - refer to Factory	
Applications not shown - refer to Factory	

Marland One-Way CECON Clutches
Type CEUS

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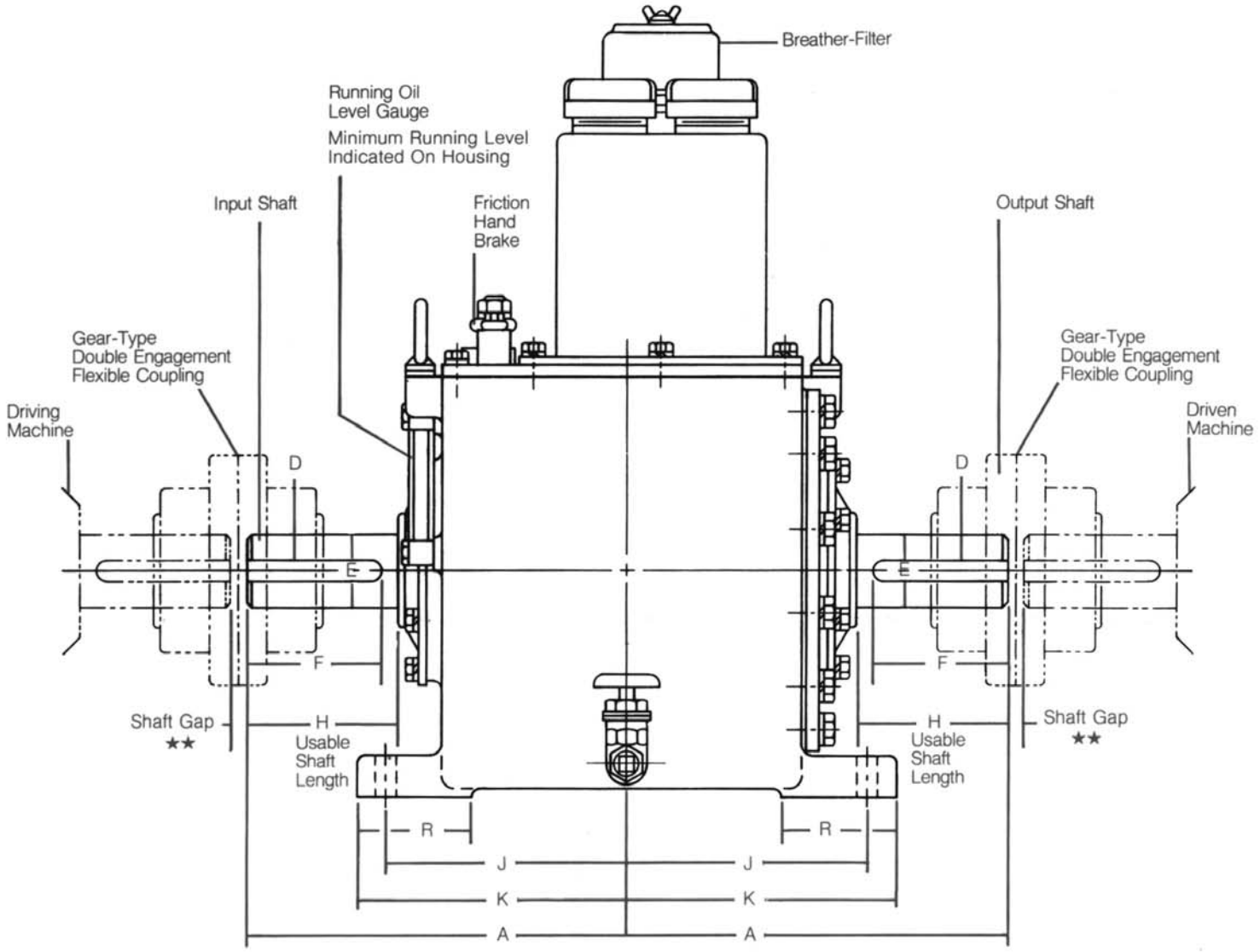


CECON Clutch CEUS Type	Rated Torque lb. ft.	Capacity H.P. Per 100 R.P.M.	# R.P.M. Maximum	Approx. Oil Capacity Qts.	Ship. Wght. lbs. (Less Cplgs.)
5C	500	9½	6,000	5	220
1M	1,000	19	5,600	7	320
2M	2,000	38	4,200	12	440
4M	4,000	76	3,600	15	560
8M	8,000	152	3,000	22	780
12M	12,000	229	2,500	30	1,200
18M	18,000	343	2,300	50	1,600
30M	30,000	571	2,000	65	2,000
42M	42,000	800	1,700	80	2,500
60M	60,000	1,143	1,400	110	3,000

★★ Shaft gap per coupling manufacturer or customer specification

★ Shaft dia. + .0000/ – .0010 coupling bore – .0010/ – .0015

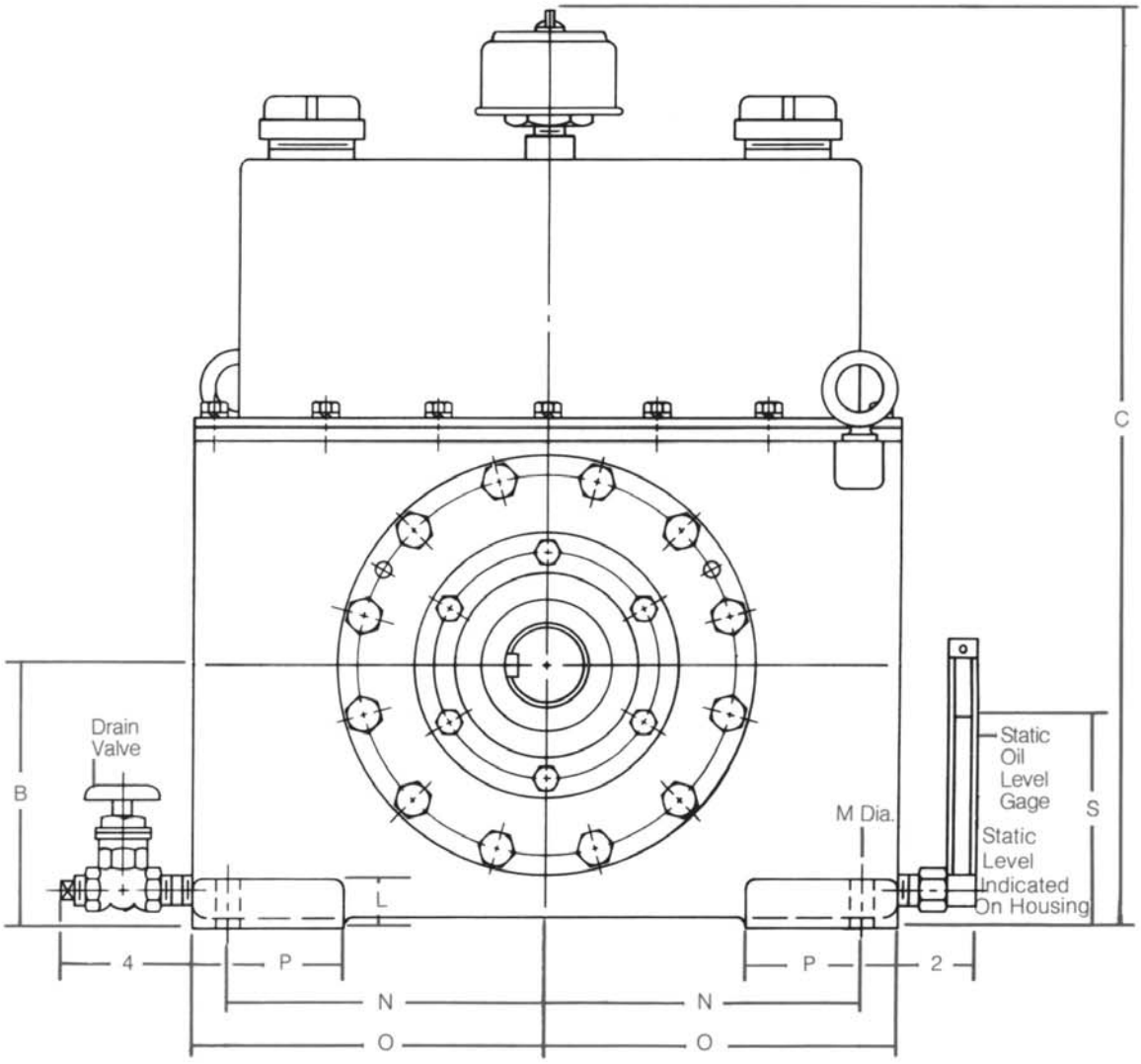
For higher speeds consult home office.

Covered by one or more of the following U.S. Patents:
3,017,002 - 3,175,667 - 3,181,674 - 3,198,305 - 3,204,738
Other patents pending.

Consult applicable local and national safety codes for proper guarding of rotating shafts and couplings.

Dimensions and Data

INDUSTRIAL MAGZA DIST. AUTORIZADO
MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
QRO (442) 1 95 72 60 ventas@industrialmagza.com



CECON Clutch CEUS Type	Dimensions in Inches															
	A	B	C	D	★E	F	H	J	K	L	M	N	O	P	R	S
5C	8 1/2	4 3/4	21 1/2	3/8 × 3/16	1 9/16	3	3 3/16	5 1/2	6 3/8	1 1/4	11/16	6 3/4	7 5/8	3 1/8	3 1/8	3 3/4
1M	9 13/16	5 3/4	23 1/2	3/8 × 3/16	1 3/4	3 3/4	3 7/8	6 3/8	7 1/4	1 1/4	11/16	6 3/8	8 1/8	3 1/2	3 1/2	4 5/8
2M	11 5/8	6 7/8	25 1/2	5/8 × 5/16	2 5/16	4 1/2	4 5/8	7 3/8	8 1/4	1 1/4	11/16	8 3/8	9 3/8	4	3 1/2	5 1/2
4M	12 13/16	7 3/4	27 1/2	5/8 × 5/16	2 3/4	5 1/4	5 3/8	7 3/4	8 3/4	1 1/4	11/16	9	10	4	4	6 1/8
8M	14 3/4	8 5/8	29 1/4	7/8 × 7/16	3 5/16	6	6 1/8	9 1/8	10 1/4	1 1/2	13/16	8 3/4	10 3/4	4	4	6 3/4
12M	17 1/16	9 5/8	31 1/4	1 × 1/2	3 7/8	6 3/4	6 15/16	10 3/4	11 7/8	1 1/2	1 1/16	9 1/8	11 3/8	4 1/2	4 1/2	7 1/2
18M	18 15/16	11 1/4	33 3/4	1 × 1/2	4 5/16	7 1/2	7 11/16	11 5/8	12 7/8	1 3/4	1 5/16	10 1/4	13	5	5	8 7/8
30M	21	12 3/4	37 1/2	1 1/4 × 5/8	5 1/16	8 1/2	8 5/8	13 1/8	14 3/4	1 3/4	1 5/16	12 3/4	15 1/2	5 1/2	5 1/2	10
42M	22 7/8	14 1/2	40 1/2	1 1/2 × 3/4	5 7/8	9	9 1/8	14 3/8	15 7/8	2	1 5/16	14 1/2	17 1/2	6	6	11 1/4
60M	24 3/4	16	43 1/2	1 3/4 × 7/8	7	10 1/2	10 5/8	15 1/4	16 3/4	2	1 5/16	16	19	6	6	12 1/4

Marland One-Way CECON Clutches
Type CEUS

INDUSTRIAL MAGZA DIST. AUTORIZADO
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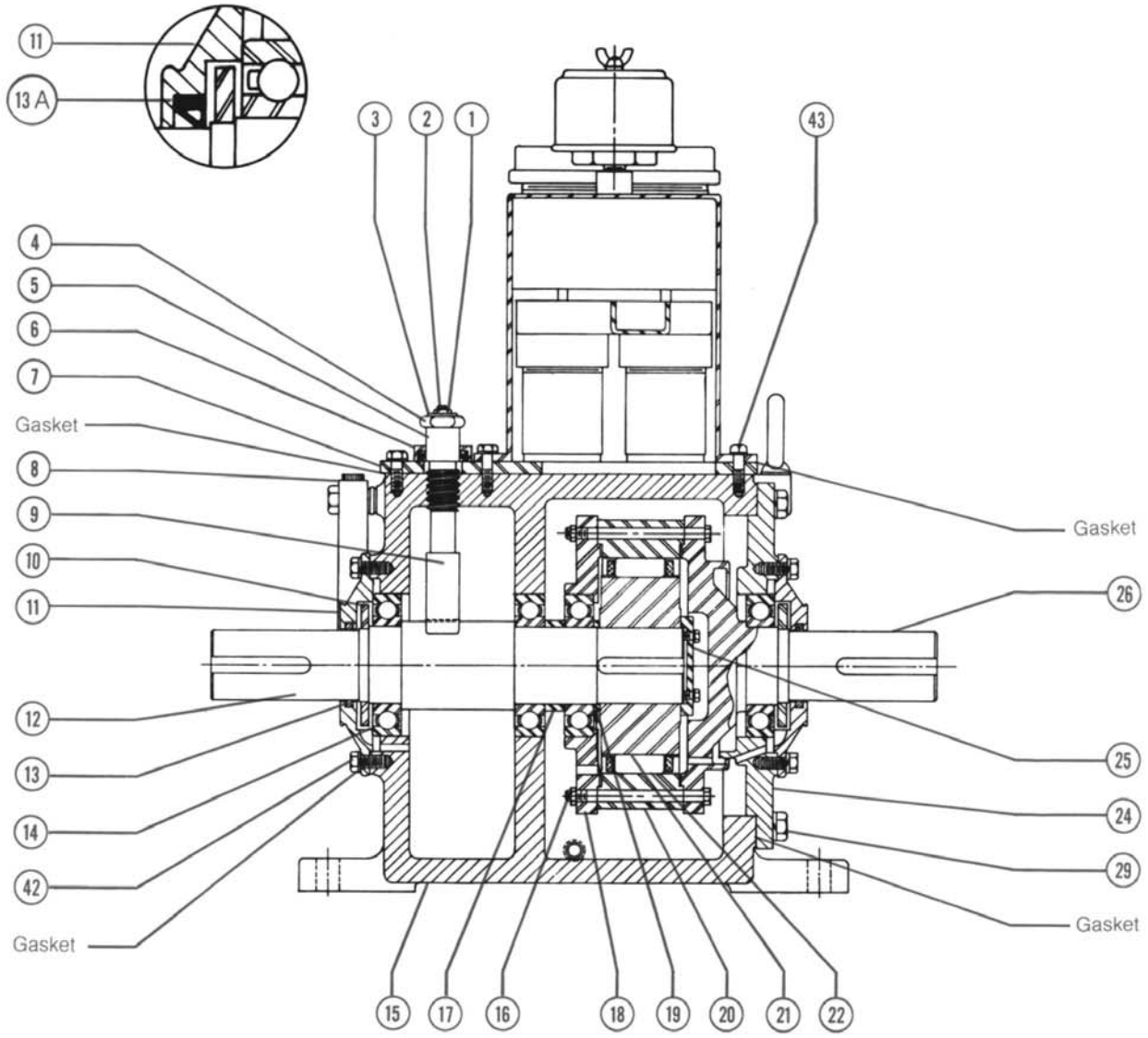

Part	Description	Part	Description
1	Brake Stud Nut	12	Input Shaft
2	Brake Stud	13	Shaft Packing | 13A | Oil Seal
3	Brake Stud Washer	14	Ball Bearing
4	Brake Handle	15	Clutch Housing
5	Brake Thrust Screw	16	Bolts & Locknuts For 20
6	Brake Seal Cover & Seal	17	Bearing Spacer
7	Housing Cover & Gasket	18	Clutch Coverplate
8	Running Oil Level Gage	19	Cam Spacer
9	Brake Shoe	20	Outer Race & Gaskets
10	Oil Slinger	21	Cam
11	Shaft Seal Cover & Gasket	22	Clutch Roller Assembly

Consult applicable local and national safety codes for proper guarding of rotating shafts and couplings.

Parts Identification

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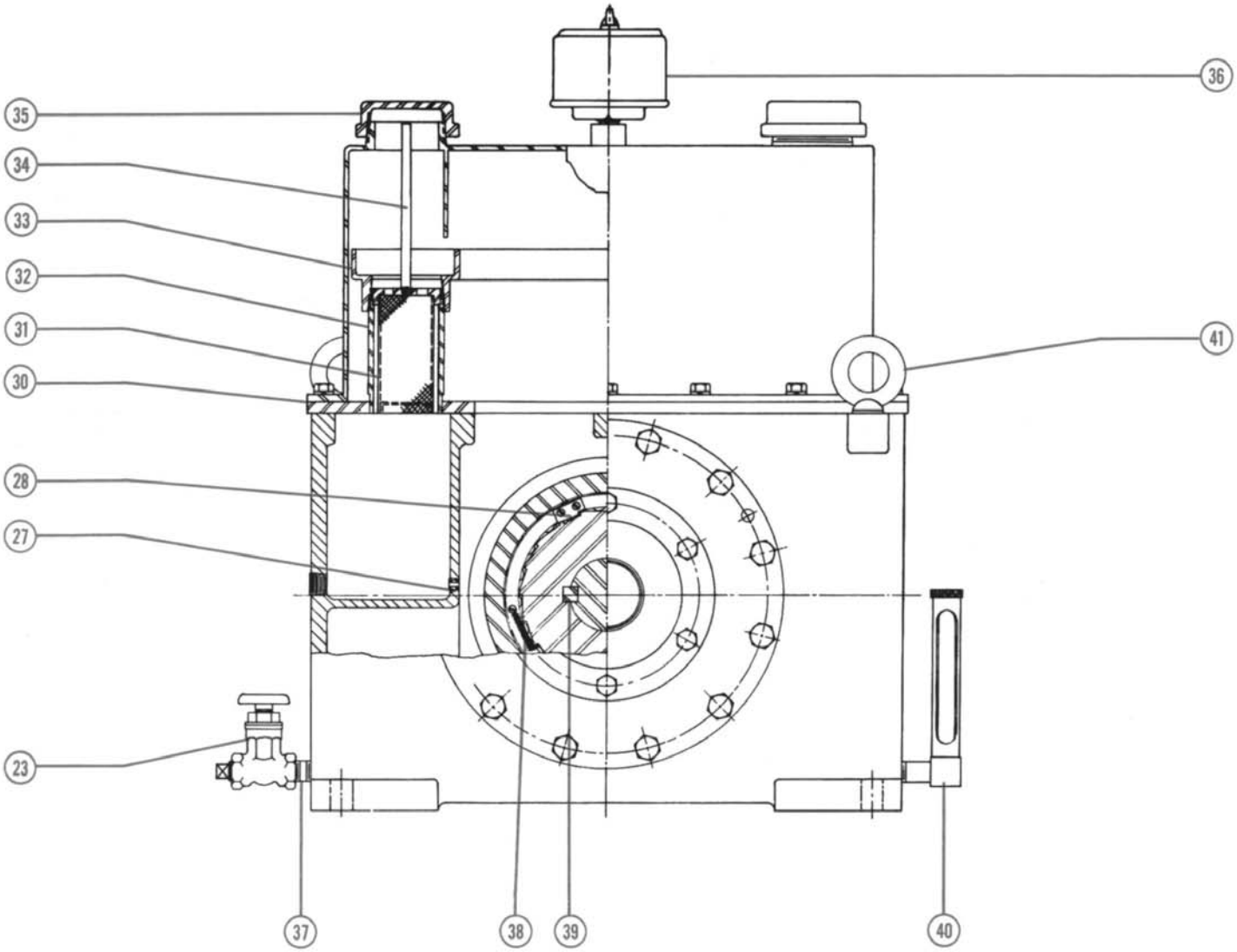

Part	Description	Part	Description
23	Drain Valve	34	Oil Strainer Stem
24	Housing End Plate & Gasket	35	Strainer Inspection Cap
25	Cam Retainer & Fasteners	36	Breather-Filter
26	Flanged Output Shaft	37	Pipe Nipple
27	Oil Flow Plug	38	Clutch Spring
28	Clutch Stop Lug	39	Clutch Cam Key
29	Screws & Lockwashers For 24	40	Static Oil Level Gage
30	Housing Hood & Gasket	41	Eye Bolt
31	Oil Strainer Basket	42	Screws & Lockwashers For 11
32	Oil Strainer Housing	43	Screws & Lockwashers For 7
33	Oil Tray		

Marland One-Way CECON Clutches
Type CEUHS

INDUSTRIAL MAGZA® DIST. AUTORIZADO
MEX (55) 53 63 23 31 MTY (81) 83 54 10 18
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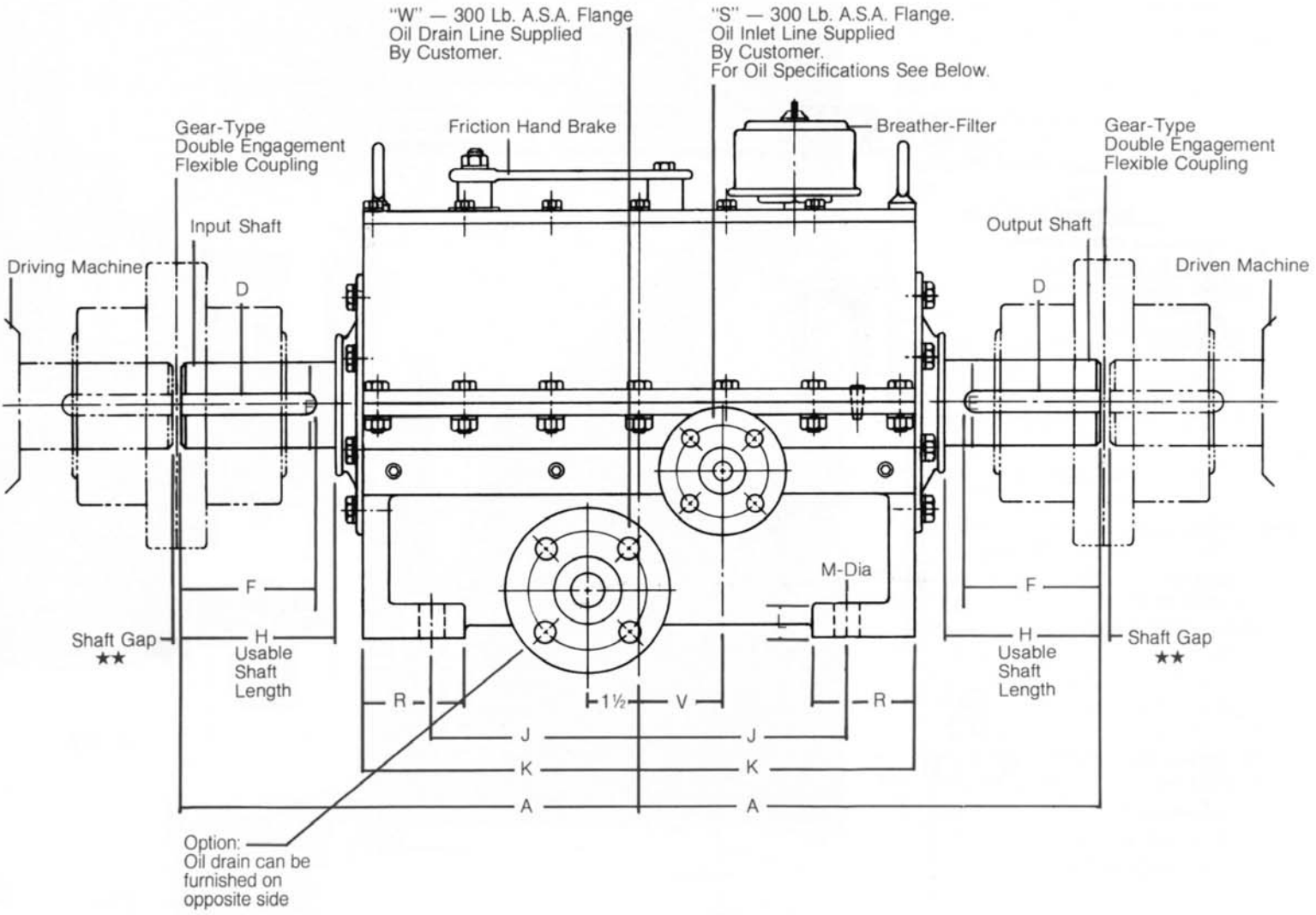

CECON Clutch CEUHS Type	Rated Torque lb. ft.	Capacity H.P. Per 100 R.P.M.	R.P.M. Maximum #	Oil Supply Gals. Per Min. †	Ship. Wght. lbs. (less cplgs.)
1M	1,000	19	12,000	2½	250
2M	2,000	38	10,000	3½	400
4M	4,000	76	8,000	4½	700
8M	8,000	152	7,000	7	1,200
12M	12,000	229	6,000	9	1,700
18M	18,000	343	5,000	11	2,500
30M	30,000	571	4,500	14	3,200
42M	42,000	800	4,000	18	4,600
60M	60,000	1,143	3,500	23	6,100

★★Shaft gap per coupling manufacturer or customer specification

★Shaft dia. + .0000/ – .0010 coupling bore – .0010/ – .0015

#For higher speeds consult home office.

† To be supplied by customer: This quantity of regular turbine oil of approx. 150-250 S.S.U. at 100°F., at 15-20 P.S.I. pressure, at a max. inlet temp. of 110°F., filtered to 10-15 microns.

Covered by one or more of the following U.S. Patents:
3,017,002 - 3,175,667 - 3,181,674-
3,198,305 - 3,204,738
Other patents pending.

Consult applicable local and national safety codes for proper guarding of rotating shafts and couplings.

Dimensions and Data

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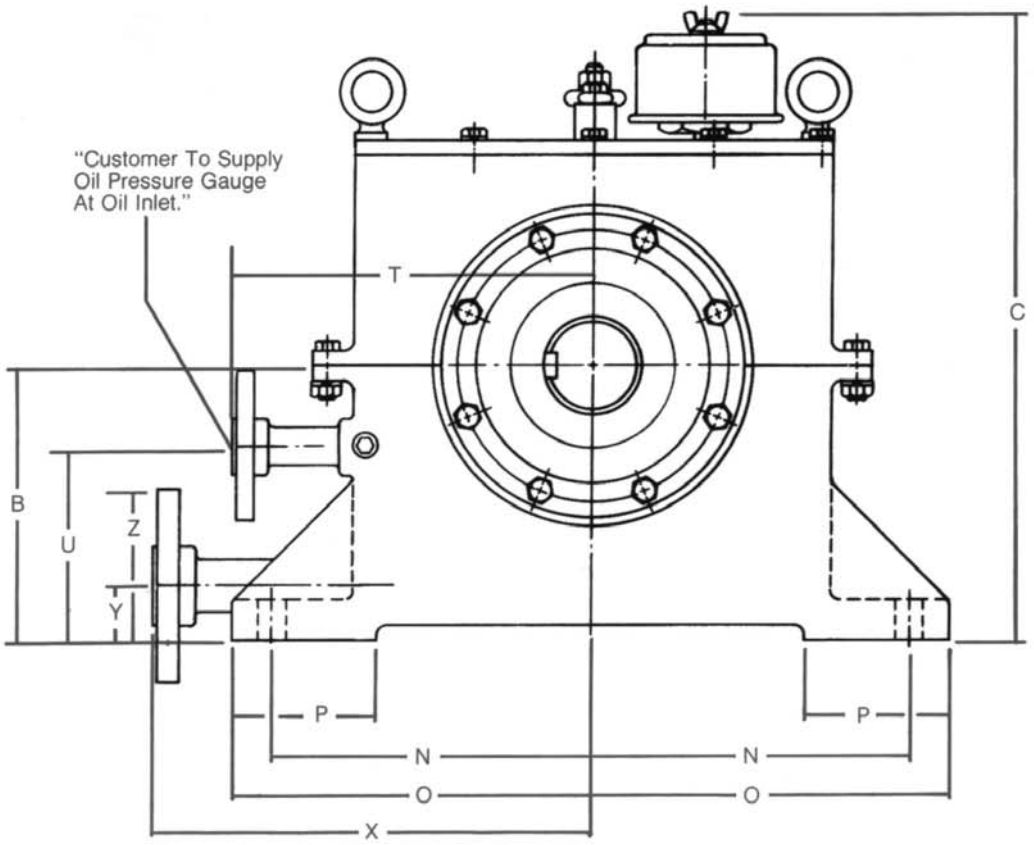
Units can be furnished with proximity probes and/or RTD's.



CECON Clutch CEUHS Type	Dimensions in Inches																						
	A	B	C	D	★E	F	H	J	K	L	M	N	O	P	R	S	T	U	V	W	X	Y	Z
1M	12 3/8	5 3/4	14 5/8	1/2 × 1/4	2	3 3/4	3 7/8	6 3/8	7 11/16	1	1 1/16	6 3/8	7 1/4	3	3	1/2	8 1/4	3 3/4	2 5/8	1 1/4	9 1/4	1 3/8	5 1/4
2M	14 9/16	6 7/8	16 3/8	5/8 × 5/16	2 1/2	4 1/2	4 5/8	7 3/8	9 1/8	1	1 1/16	8 3/8	9 1/4	4	3 1/2	1/2	9 1/4	4 7/8	3 1/8	1 1/2	11 1/4	1 1/2	6 1/8
4M	17 3/16	7 3/4	18 1/4	7/8 × 7/16	3 5/16	5 1/4	5 3/8	7 3/4	10 15/16	1 1/4	1 1/16	9	10 1/2	4	4	3/4	10 7/8	5 7/16	3 5/8	2	12 1/2	1 3/4	6 1/2
8M	21 9/16	8 5/8	20 3/4	1 × 1/2	4 5/16	6 3/4	6 15/16	11 1/2	13 11/16	1 1/4	1 3/16	10 3/4	11 3/4	4 1/2	4 1/2	3/4	12 1/8	5 3/8	4 5/8	2	13 3/4	1 3/4	6 1/2
12M	24 9/16	9 5/8	22 5/8	1 1/4 × 5/8	4 13/16	7 1/2	7 11/16	12 3/4	15 3/8	1 1/2	1 3/16	12	13	5	5	1	13 1/8	5 15/16	5 5/16	2 1/2	16	2 1/4	7 1/2
18M	26 13/16	11 1/4	25 3/4	1 1/2 × 3/4	5 9/16	8 7/16	8 5/8	14	16 11/16	1 1/2	1 1/16	13 3/4	15	5 1/2	5 1/2	1	15 1/8	7 1/16	5 3/4	2 1/2	18	2 1/4	7 1/2
30M	31 3/4	12 3/4	28 3/4	1 1/2 × 3/4	6 1/4	10 3/8	10 5/8	16 1/2	19 5/8	1 1/2	1 1/16	15 3/4	17	6	6	1	16 5/8	8 1/16	7	3	20	2 1/2	8 1/4
42M	34 15/16	14 1/4	30 1/4	1 3/4 × 7/8	7 1/4	11 9/16	11 13/16	18 1/4	21 5/8	1 1/2	1 5/16	17	18 1/2	6 1/2	6 1/2	1 1/4	17 5/8	8 7/8	7 3/4	3	21 1/2	2 1/2	8 1/4
60M	38 1/8	15 1/2	33 1/2	2 × 1	8 1/4	12 5/8	12 7/8	20 1/4	23 3/4	1 1/2	1 5/16	18	19 3/4	7	7	1 1/4	18 3/8	9 1/2	8 1/2	3 1/2	22 3/4	3	9

Marland One-Way CECON Clutches
Type CEUHS

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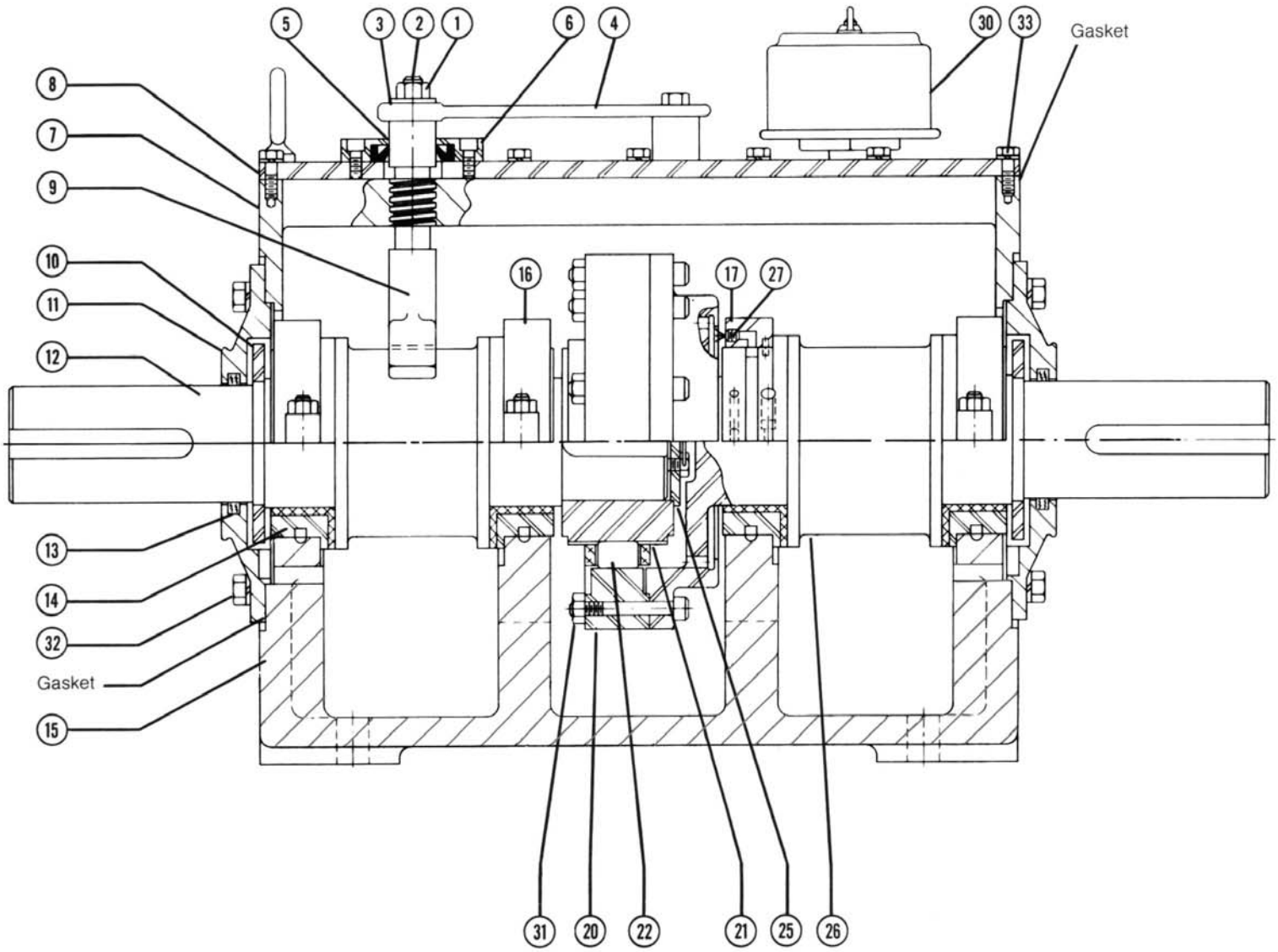

Part	Description	Part	Description
1	Brake Stud Nut	11	Packing Seal Cover & Gasket
2	Brake Stud	12	Input Shaft
3	Brake Stud Washer	13	Shaft Packing
4	Brake Handle	14	Shaft Bearing & Fasteners
5	Brake Thrust Screw	15	Clutch Housing
6	Brake Seal Cover & Seal	16	Bearing Cap
7	Clutch Housing Cover	17	Bearing Cap With Oil Flow
8	Inspection Cover	18	Oil Inlet Flange
9	Brake Shoe	19	Oil Drain Flange
10	Oil Slinger	20	Clutch Outer Race

Consult applicable local and national safety codes for proper guarding of rotating shafts and couplings.

Parts Identification

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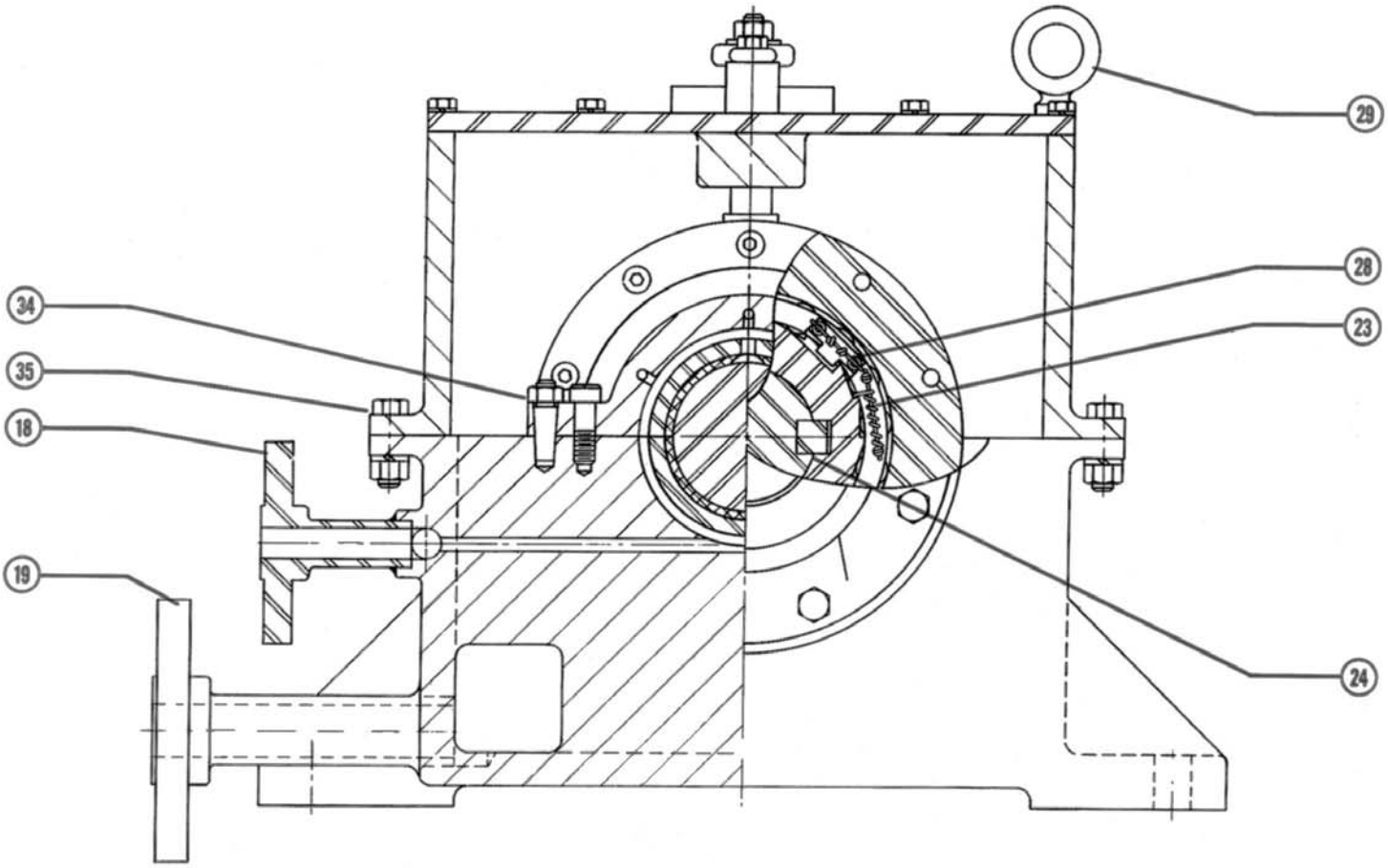

Part	Description	Part	Description
21	Clutch Cam	31	Bolts & Locknuts For 20
22	Clutch Roller Assembly	32	Screws & Lockwashers For 11
23	Clutch Spring	33	Screws & Lockwashers For 8
24	Clutch Cam Key	34	Fasteners For 16 & 17
25	Cam Retainer & Fasteners	35	Fasteners For 7
26	Flanged Output Shaft		
27	Clutch Oil Flow Plug		
28	Clutch Stop Lug		
29	Eye Bolt		
30	Breather-Filter		