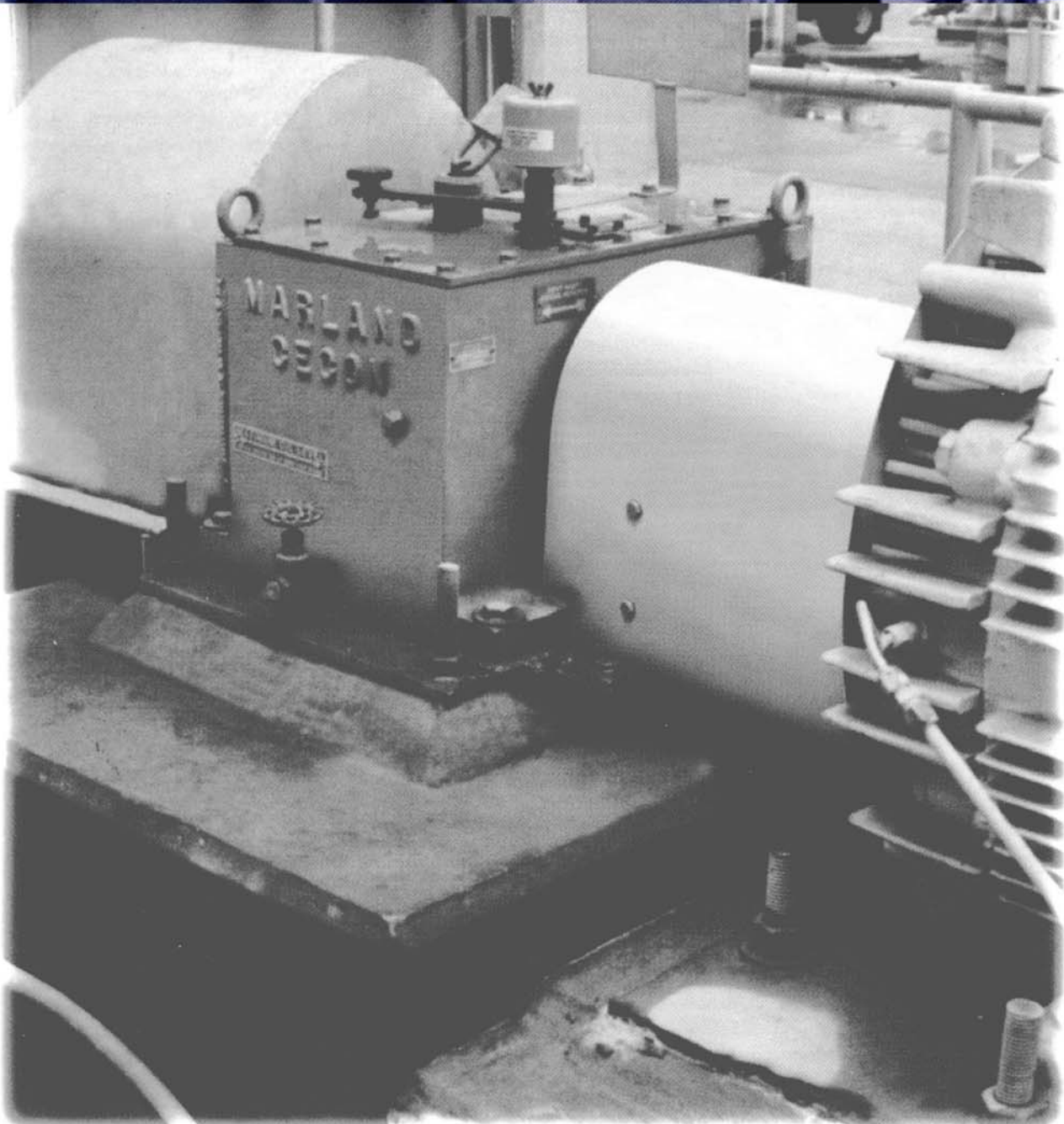


Marland **CECON** Disconnect Clutch



Designed to Physically Isolate Driver from Equipment

Marland
Clutch

Marland CECON Disconnect Clutch

The Disconnect CECON is a completely mechanical overrunning clutch. It has been designed as a "no downtime" power transmission product. The Disconnect CECON is well suited for applications that demand uninterrupted operation or in hostile environmental conditions. Like all other Marland CECON clutches, it has been engineered to provide long and reliable life with a minimum of maintenance.

Features

- Complete physical separation of the input and output shafts
- Torque ratings to 60,000 lb/ft
- Speeds to 12,000 RPM
- Manual mechanical disconnect
- Total system isolation (US PAT.)
- Visual confirmation of lock out

Benefits

- Long life
- High reliability
- Minimum maintenance
- Allows maintenance of isolated equipment
- Permits full speed testing of isolated equipment
- Re-connection without system shut down
- Direct replacement for existing CEUS & CEUHS units

The need for CECON Clutches

Marland One-Way CECON Clutches are designed for applications where one or more of the following conditions exist:

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 "downtime" basis.

CECON Clutches consist of a completely enclosed 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 the driving and driven equipment shafts through double engagement, self-aligning, gear-type flexible couplings.

During freewheeling, the outer race 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 roller 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 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.

In addition, the disconnect CECON allows maintenance to be performed on the non-energized driver without system shutdown. This is accomplished by physically separating the input and output ends of the clutch, and providing a means for locking the clutch in the disconnect mode.

The two types of CECON Disconnect Clutches are Type CEUSD and Type CEUHSD. 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 CEUSD Disconnect 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.

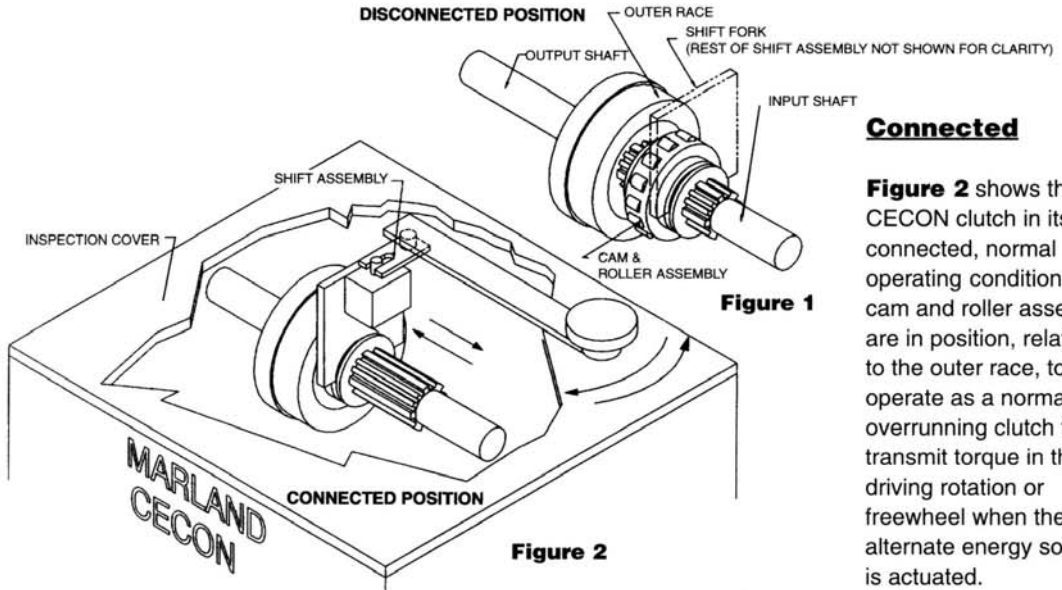
Type CEUHSD Disconnect CECONS have high speed turbine type, steel backed babitted bearings at four points which are lubricated by a customer supplied external lubrication system, through standard A.S.A. flanged oil inlet and drain furnished on the housing. This bearing and lubrication arrangement permits higher operating speeds than the CEUSD type.

The Type CEUSD Disconnect CECON is suitable for most applications. However, the type CEUHSD is readily available for speeds above the CEUSD limits or wherever a sleeve bearing supported unit is preferred.

Marland CECON Disconnect Clutch

Disconnected

Figure 1 depicts the clutch in the disconnected condition. Note that the cam and roller assembly have been physically removed from the outer race, providing a separation of the input and output end of the clutch. In this position, the input end cannot be backdriven by the output end. It is also possible to test the isolated driver at operating speed before reconnection



Connected

Figure 2 shows the CECON clutch in its connected, normal operating condition. The cam and roller assembly are in position, relative to the outer race, to operate as a normal overrunning clutch to transmit torque in the driving rotation or freewheel when the alternate energy source is actuated.

On January 2, 1990, OSHA Control of Hazardous Energy (Lockout/Tagout) in Volume 29 of the Code of Federal Regulation (29 CFR), Section 1910.147 went into effect. In general this rule requires that, "before servicing or maintenance is performed on machinery or equipment, the machinery or equipment must be turned off and disconnected from the energy source, and the energy-isolating device must be either locked or tagged out." OSHA provides these following definitions:

Energy-isolating device -

Any mechanical device that physically prevents the transmission or release of energy.

Lockout device -

Any device that uses positive means such as a lock, either key or combination type, to hold an energy-isolated device in a safe position, thereby preventing the energizing of machinery or equipment.

The Disconnect CECON meets the first condition by the physical

separation of the input and output shafts, NOT by the mere locking of the input shaft to the clutch housing. The second condition is met when the clutch is locked by an authorized employee.

The Disconnect CECON is unique to the industry. While the main drive is in operation, maintenance can be performed on isolated equipment when the clutch is in a locked out position (as detailed in our service manual). The clutch has a lock out indication system, as well as a view port which allows for visual confirmation of disconnect/connect status.

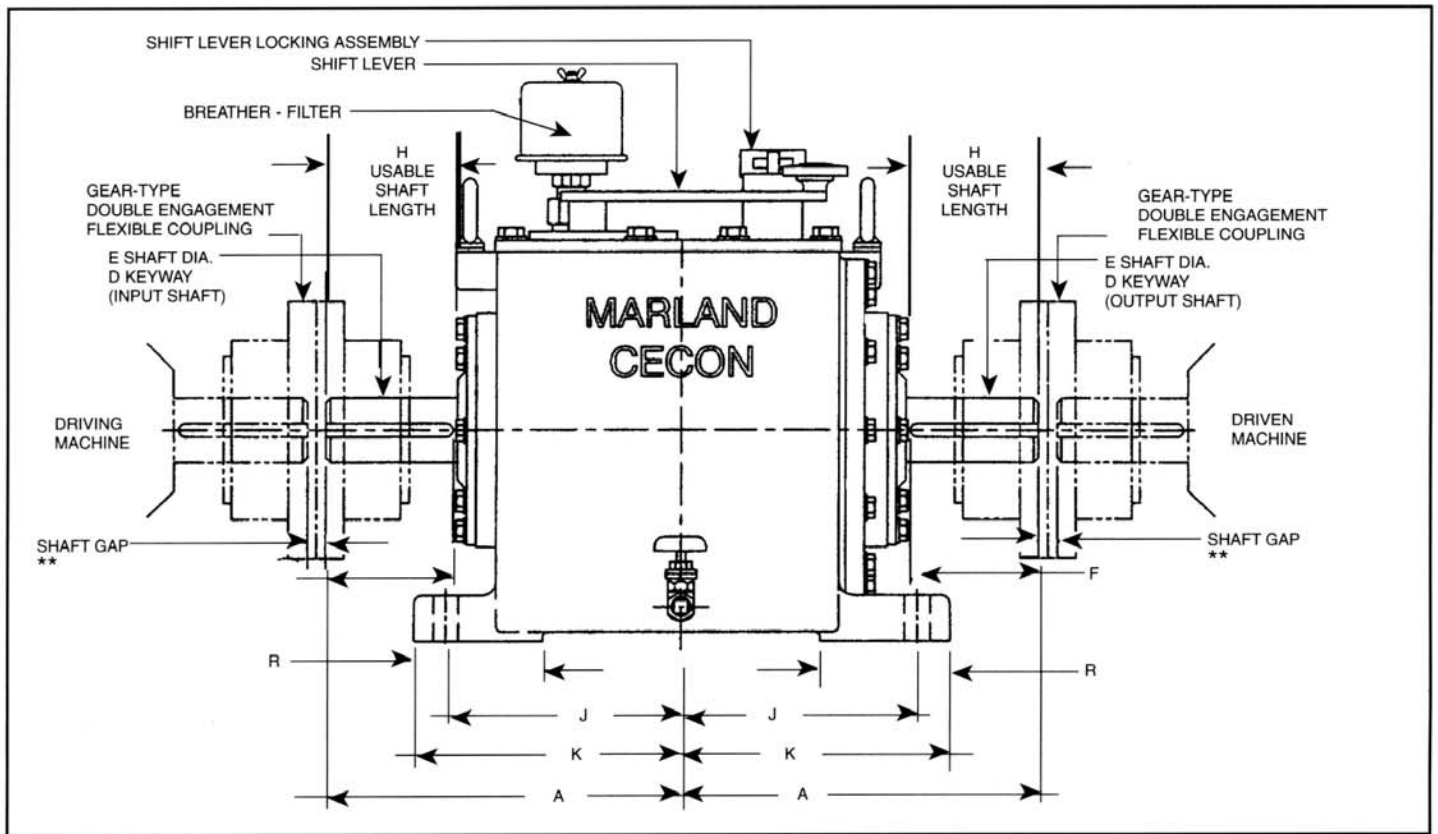
The total system isolation feature also allows for the full speed testing of isolated equipment, at typical operating speeds, prior to reconnection. With the Disconnect CECON, removal and reinstallation of couplings is not required. This benefit means less time (and therefore less money) is associated with each maintenance outage.

To return to service, all that is required is the re-connection of the

Disconnect CECON and the starting of the power train. This can be accomplished at any overrunning RPM.

The Disconnect CECONs are direct replacements for the equivalent sized CEUS and CEUHS units. This allows for the replacement of these non-lockout devices without requiring the expense of relocation of equipment. In summary, the CEUSD and CEUHS Disconnect CECON provides the best means to meet OSHA "isolation and lockout" requirements. The Disconnect CECON provides dollar savings with regard to the replacement of existing non-disconnect clutches without the related expense of equipment relocation. Additional savings are realized as the Disconnect CECON allows for both maintenance and full speed testing of isolated equipment. These benefits are coupled with MARLAND CLUTCH Division's continuing commitment to providing the most reliable and cost effective means of meeting the needs of the industry.

Marland Disconnect CEUSD CECON Clutch



** Shaft gap per coupling manufacturer or customer specification

CECON Clutch CEUSD 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.)
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

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

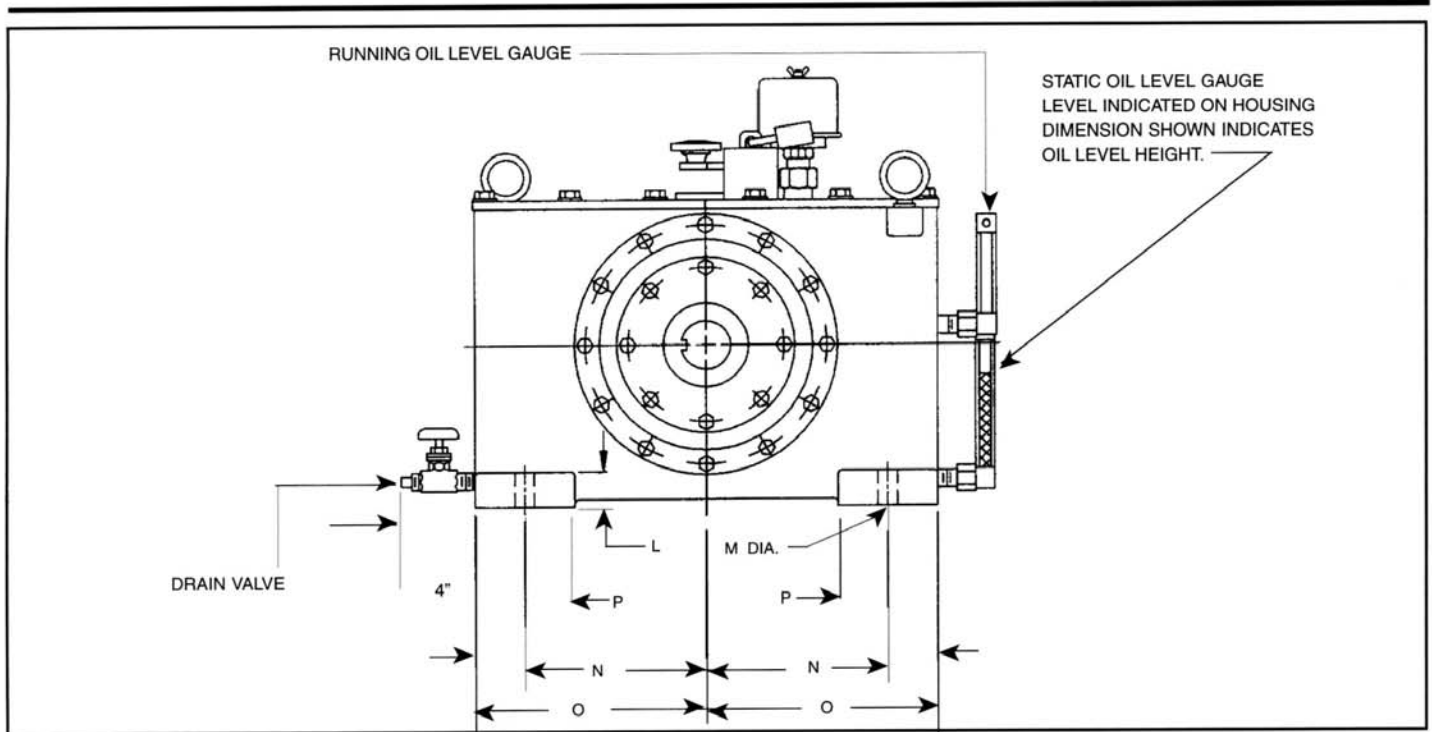
*Shaft dia. + .0000/- .0010 coupling bore - .0010/- .0015

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.

Marland Disconnect CEUSD CECON Clutch

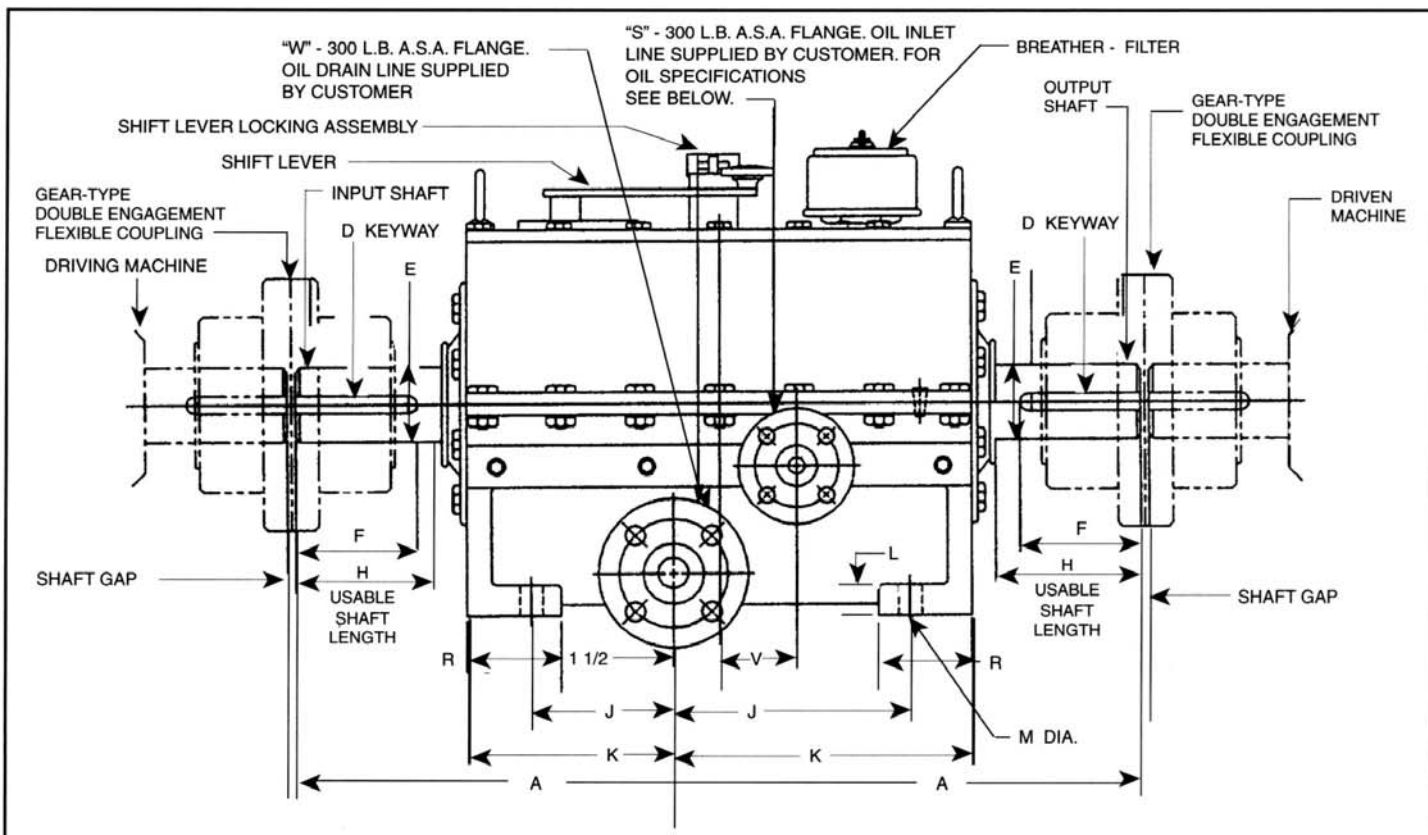


DIMENSIONS - FOR REFERENCE ONLY								
Model	A IN./MM	B IN./MM	C IN./MM	D IN./MM	E* IN./MM	F IN./MM	H IN./MM	J IN./MM
1M	9.813/249.24	15.75/146.05	15.75/400.05	.375 X 188/9.53 X 4.78	1.75/44.45	3.625/92.08	3.625/92.08	6.375/161.93
2M	11.625/295.28	6.875/174.63	18.00/457.20	.625 X .313/15.88 X 7.95	2.313/58.75	4.125/104.78	4.25/107.95	7.35/187.33
4M	12.813/325.45	7.75/196.85	20.00/508.00	.625 X .313/15.88 X 7.95	2.75/69.85	4.75/120.65	4.875/123.83	7.75/196.85
8M	14.75/374.65	8.625/219.08	21.25/539.75	.875 X .438/22.23 X 11.13	3.313/84.15	5.875/149.23	6.00/152.40	9.125/231.78
12M	17.063/433.40	9.625/244.48	23.25/590.55	1.00 X .50/25.40 X 12.70	3.875/98.43	6.375/161.93	6.50/165.10	10.75/273.05
18M	18.938/481.03	11.25/285.75	25.75/654.05	1.00 X .50/25.40 X 12.70	4.313/109.55	6.875/174.63	7.00/177.80	11.625/295.28
30M	21.00/533.40	12.75/323.85	29.50/749.30	1.25 X .625/31.75 X 15.88	5.063/128.60	7.875/200.03	8.00/203.20	13.125/333.38
42M	22.875/581.03	14.50/368.30	32.75/831.85	1.50 X .75/38.10 X 19.05	5.875/149.23	8.375/212.73	8.50/215.90	14.375/365.13
60M	24.75/628.65	16.00/406.40	35.75/908.05	1.75 X .875/44.45 X 22.23	7.00/177.80	9.875/250.83	10.00/254.00	15.25/387.35

DIMENSIONS - FOR REFERENCE ONLY								
Model	K IN./MM	L IN./MM	M IN./MM	N IN./MM	O IN./MM	P IN./MM	R IN./MM	S IN./MM
1M	7.25/184.15	1.25/31.75	.688/17.48	6.375/161.93	8.125/206.38	3.50/88.90	3.50/88.90	4.625/117.48
2M	8.25/209.55	1.25/31.75	.688/17.48	8.375/212.73	9.375/238.13	4.00/101.60	3.50/88.90	5.50/139.70
4M	8.75/222.25	1.25/31.75	.688/17.48	9.00/228.60	10.00/254.00	4.00/101.60	4.00/101.60	6.125/155.58
8M	10.25/260.35	1.50/38.10	.813/20.65	8.75/222.25	10.75/273.05	4.00/101.60	4.00/101.60	6.75/171.45
12M	11.875/301.63	1.50/38.10	1.063/27.00	9.125/231.78	11.375/288.93	4.50/114.30	4.50/114.30	7.50/190.50
18M	12.875/327.03	1.75/44.45	1.313/33.35	10.25/260.35	13.00/330.20	5.00/127.00	5.00/127.00	8.875/225.43
30M	14.75/374.65	1.75/44.45	1.313/33.35	12.75/323.85	15.50/393.70	5.50/139.70	5.50/139.70	10.00/254.00
42M	15.875/403.23	2.00/50.80	1.313/33.35	14.50/368.30	17.50/444.50	6.00/152.40	6.00/152.40	11.25/285.75
60M	16.75/425.45	2.00/50.80	1.313/33.35	16.00/406.40	19.00/482.60	6.00/152.40	6.00/152.40	12.25/311.15

Certified prints will be furnished for construction purposes after receipt of order.

Marland Disconnect CEUHSD CECON Clutch



CECON Clutch CEUHSD 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	2 ^{1/2}	250
2M	2,000	38	10,000	3 ^{1/2}	400
4M	4,000	76	8,000	4 ^{1/2}	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

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

**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

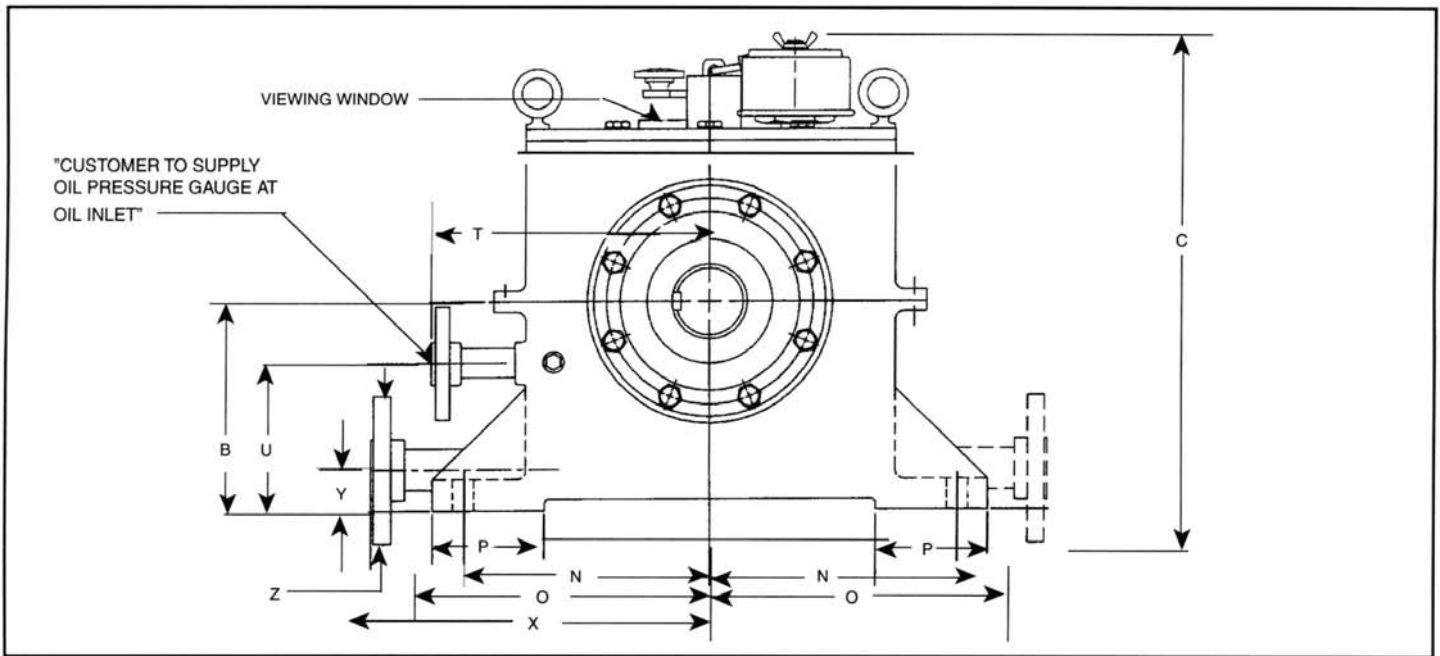
Other patents pending.



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DIMENSIONS - FOR REFERENCE ONLY

Model	A IN./MM	B IN./MM	C IN./MM	D IN./MM	E* IN./MM	F IN./MM	H IN./MM	J IN./MM
1M	12.375/314.33	5.75/146.05	14.625/371.48	.50 X .25/12.70 X 6.35	2.00/50.80	3.75/95.25	3.875/98.43	6.375/161.93
2M	14.563/369.90	6.875/174.63	16.375/415.93	.625 X .313/15.88 X 7.95	2.50/63.50	4.50/114.30	4.625/117.48	7.375/187.33
4M	17.188/436.58	7.75/196.85	18.25/463.55	.875 X .438/22.23 X 11.13	3.313/84.15	5.25/133.35	5.375/136.53	7.75/196.85
8M	21.563/547.70	8.625/219.08	20.75/527.05	1.00 X .50/25.40 X 12.70	4.313/109.55	6.75/171.45	6.938/176.23	11.50/292.10
12M	24.563/623.90	9.625/244.48	22.625/574.68	1.25 X .625/31.75 X 15.88	4.813/122.25	7.50/190.50	7.688/195.28	12.75/323.85
18M	26.813/681.05	11.25/285.75	25.75/654.05	1.50 X .75/38.10 X 19.05	5.563/141.30	8.438/214.33	8.625/219.08	14.00/355.60
30M	31.75/806.45	12.75/323.85	28.75/730.25	1.50 X .75/38.10 X 19.05	6.25/158.75	10.375/263.53	10.625/269.88	16.50/419.10
42M	34.938/887.43	14.25/361.95	30.25/768.35	1.75 X .875/44.45 X 22.23	7.25/184.15	11.563/293.70	11.813/300.05	18.25/463.55
60M	38.125/968.38	15.50/393.70	33.50/850.90	2.00x1.00/50.80 X 25.40	8.25/209.55	12.625/320.68	12.875/327.03	20.25/514.35

DIMENSIONS - FOR REFERENCE ONLY

Model	K IN./MM	L IN./MM	M IN./MM	N IN./MM	O IN./MM	P IN./MM	R IN./MM	S IN./MM
1M	7.688/195.28	1.00/25.40	.688/17.48	6.375/161.93	7.25/184.15	3.00/76.20	3.00/76.20	.50/12.70
2M	9.125/231.78	1.00/25.40	.688/17.48	8.375/212.73	9.25/234.95	4.00/101.60	3.50/88.90	.50/12.70
4M	10.938/277.83	1.25/31.75	.688/17.48	9.00/228.60	10.50/266.70	4.00/101.60	4.00/101.60	.75/19.05
8M	13.688/347.68	1.25/31.75	.813/20.65	10.75/273.05	11.75/298.45	4.50/114.30	4.50/114.30	.75/19.05
12M	15.375/390.53	1.50/38.10	.813/20.65	12.00/304.80	13.00/330.20	5.00/127.00	5.00/127.00	1.00/25.40
18M	16.688/423.88	1.50/38.10	1.063/27.00	13.75/349.25	15.00/381.00	5.50/139.70	5.50/139.70	1.00/25.40
30M	19.625/498.48	1.50/38.10	1.063/27.00	15.75/400.05	17.00/431.80	6.00/152.40	6.00/152.40	1.00/25.40
42M	21.625/549.28	1.50/38.10	1.313/33.35	17.00/431.80	18.50/469.90	6.50/165.10	6.50/165.10	1.25/31.75
60M	23.75/603.25	1.50/38.10	1.313/33.35	18.00/457.20	19.75/501.65	7.00/177.80	7.00/177.80	1.25/31.75

DIMENSIONS - FOR REFERENCE ONLY

Model	T IN./MM	U IN./MM	V IN./MM	W IN./MM	X IN./MM	Y IN./MM	Z IN./MM
1M	8.25/209.55	3.75/95.25	3.00/76.20	1.25/31.75	9.25/234.95	1.375/34.93	5.25/133.35
2M	9.25/234.95	4.875/123.83	3.375/85.73	1.50/38.10	11.25/285.75	1.50/38.10	6.125/155.58
4M	10.875/276.23	5.438/138.13	3.625/92.08	2.00/50.80	12.50/317.50	1.75/44.45	6.50/165.10
8M	12.125/307.98	5.375/136.53	4.625/117.48	2.00/50.80	13.75/349.25	1.75/44.45	6.50/165.10
12M	13.125/333.38	5.938/150.83	5.313/134.95	2.50/63.50	16.00/406.40	2.25/57.15	7.50/190.50
18M	15.125/384.18	7.063/179.40	5.75/146.05	2.50/63.50	18.00/457.20	2.25/57.15	7.50/190.50
30M	16.625/422.28	8.063/204.80	7.00/177.80	3.00/76.20	20.00/508.00	2.50/63.50	8.25/209.55
42M	17.625/447.68	8.875/225.43	7.75/196.85	3.00/76.20	21.50/546.10	2.50/63.50	8.25/209.55
60M	18.375/466.73	9.50/241.30	8.50/215.90	3.50/88.90	22.75/577.85	3.00/76.20	9.00/228.60

Certified prints will be furnished for construction purposes after receipt of order.



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