

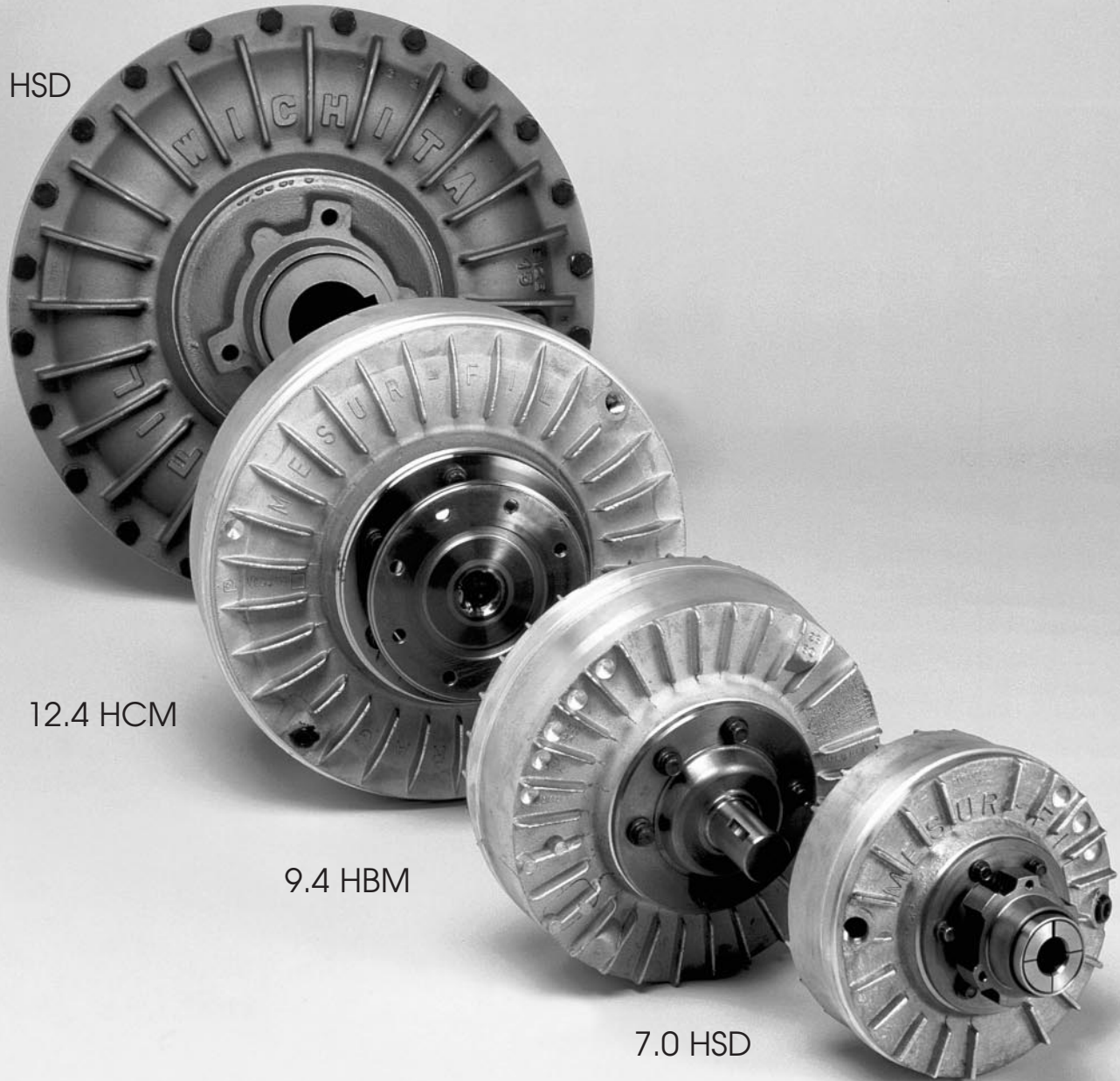
# Mesur-Fil Fluid Couplings

15 HSD

12.4 HCM

9.4 HBM

7.0 HSD

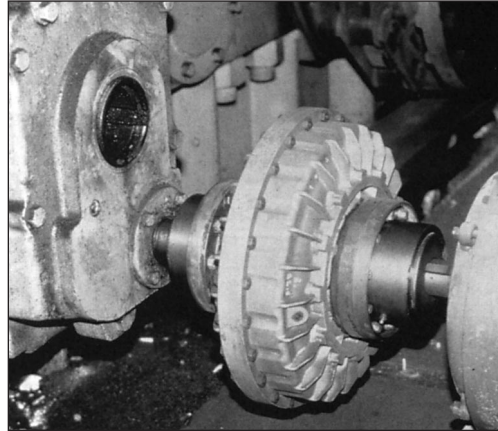


**Formsprag Mesur-Fil® Fluid Couplings**

deliver reliable smooth power transmission. To consistently deliver, we select only from the highest quality materials. Our manufacturing and product assembly are completed under the most exacting guidelines and established procedures. The result is unquestioned consistent product dependability.

Mesur-Fil Fluid Couplings are rated for motors up to 2,500 hp. They have earned a reputation for providing smooth, soft starts while reducing current draw on the motor by 33%.

**Mesur-Fil Fluid Couplings** are ideally suited for direct drive applications between electric motors and gear boxes.



**Typical Applications**

**Bulk Material Handling Equipment and Mining Related Industries:**

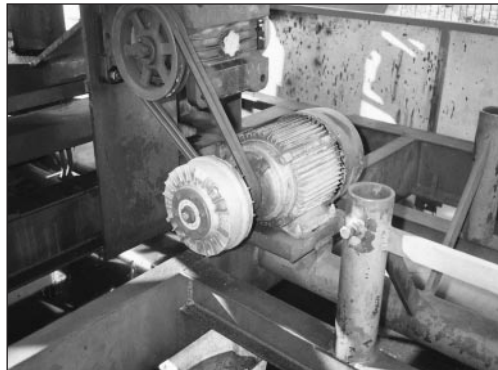
- Conveyors of all types
- Crushers
- Excavators
- Fans
- Mills
- Mixers
- Pumps
- Screening Plants

**Petrochem and Chemical Processing:**

- Agitators
- Blowers/Fans
- Centrifuges
- Compressors
- Mixers
- Pumps

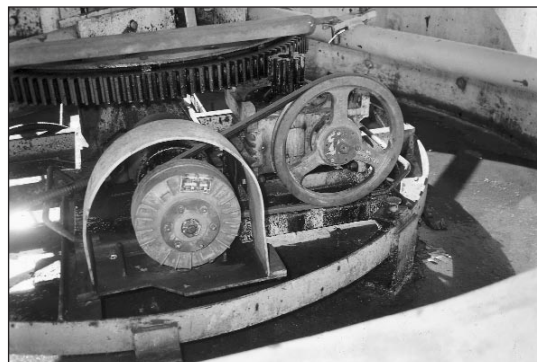
**Other Applications include:**

- Amusement park rides
- Construction
- Machine tools
- Oil Field
- Power Generation
- Ski resort chair lifts



**Mesur-Fil 7.0 HSD** allows shock-free acceleration on large inertia loads.

Picture Courtesy of Torpey Denver, Inc.



**Mesur-Fil 7.0 HSD** on amusement park ride, "Speed Boats," giving cushioned, smooth starts.

Picture Courtesy of Torpey Denver, Inc.

## Design Advantages

Mesur-Fil Fluid Couplings allow motors to start unloaded and to reach operating speed with smooth, controlled acceleration. This makes it ideal for applications with high inertia loads. They are available in either constant or delay fill versions.

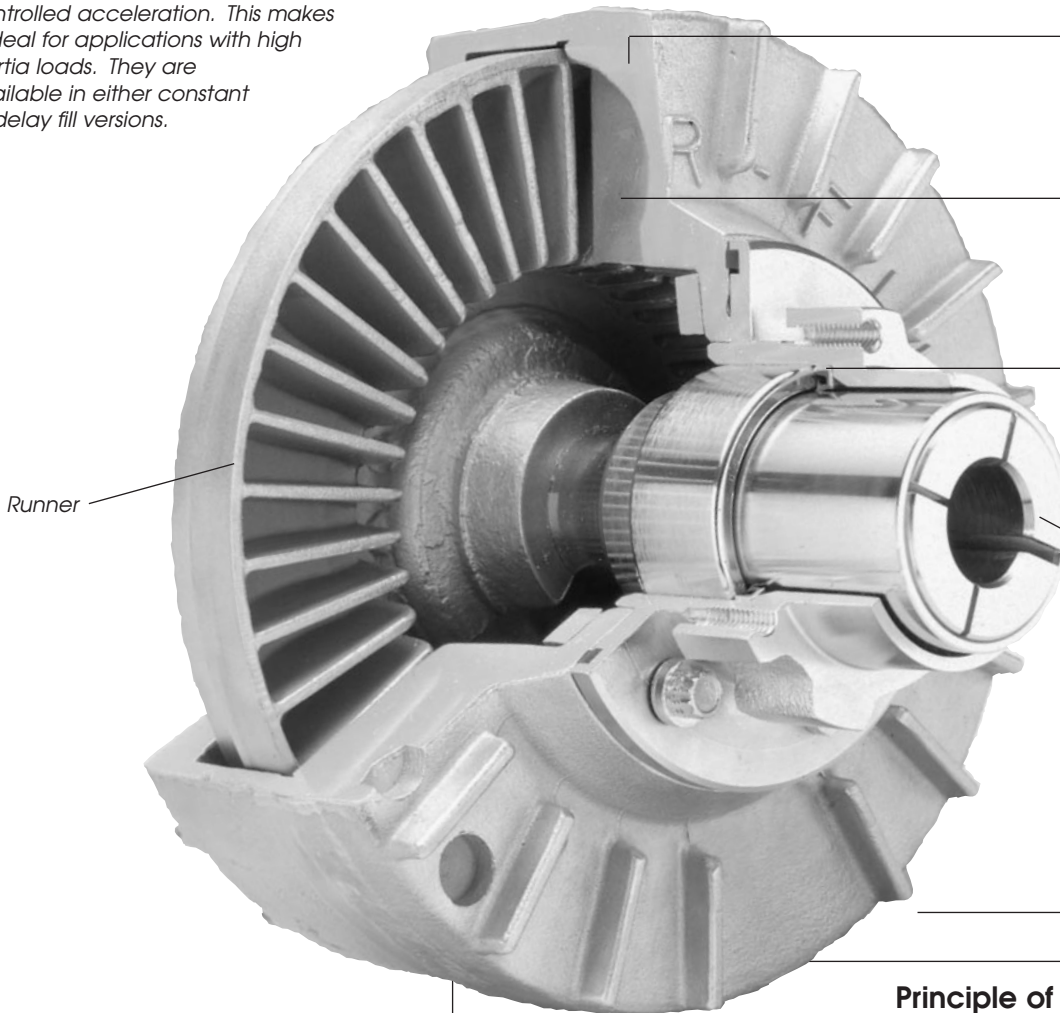
All Aluminum Housing for Low Rotating Inertia

Impeller

High Temperature Viton Seals

Collet Mounted For Ease of Mounting Smaller Sizes

One Piece Construction (smaller sizes) Eliminates Leaks.

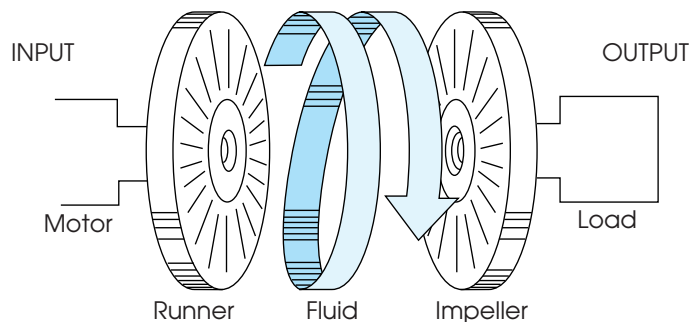


### Benefits

Mesur-Fil Fluid Couplings offer several advantages:

- Reduced energy consumption
- Jam/overload protection
- Shock load cushioning
- No metal-to-metal contact
- Wide range of available mounting options
- High temperature Viton seals
- Available from over 700 Formsprag Authorized Distributors.

### Principle of Operation



There are three primary components to Mesur-Fil Fluid Couplings:

1. Vaned runner
2. Vaned impeller
3. Fluid fill

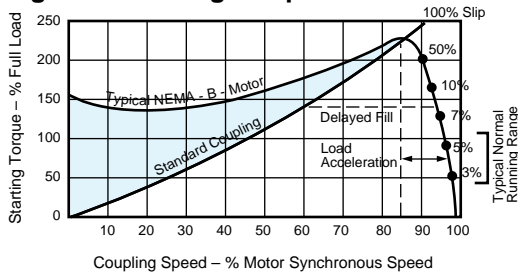
Torque, produced by the prime mover (motor) acting on a vaned runner, is transmitted through the flow of fluid into the chambers formed by the two

coupling halves. The oil (fluid) is subsequently thrown into the vaned impeller connected to the load causing it to turn. It is important to note, that as this transmission of power takes place, there is virtually no wear on the transmitting parts because there is no mechanical contact between them.

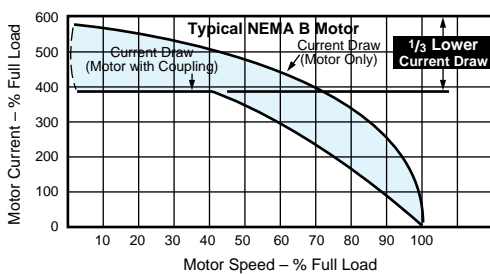
## Fluid Requirements

Figure 2 reveals a typical NEMA B electric motor torque curve together with the particular operating characteristics of a specific coupling with a designated fill level. With no power supplied, all of the fluid is settled at the bottom of the coupling. Slip rate in this condition is 100% with the input free to turn. With the motor starting and increasing in speed to the breakdown point, torque builds in the coupling. As torque increases, the coupling begins to deliver the load to the motor, eventually bringing the load up to speed (refer to the load acceleration area in fig. 2.).

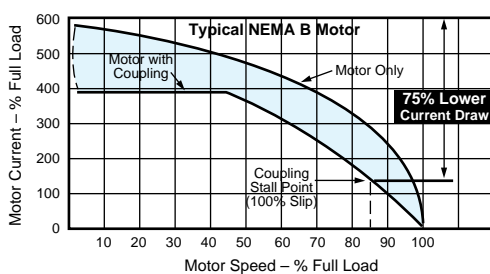
**Figure 2. Starting Torque**



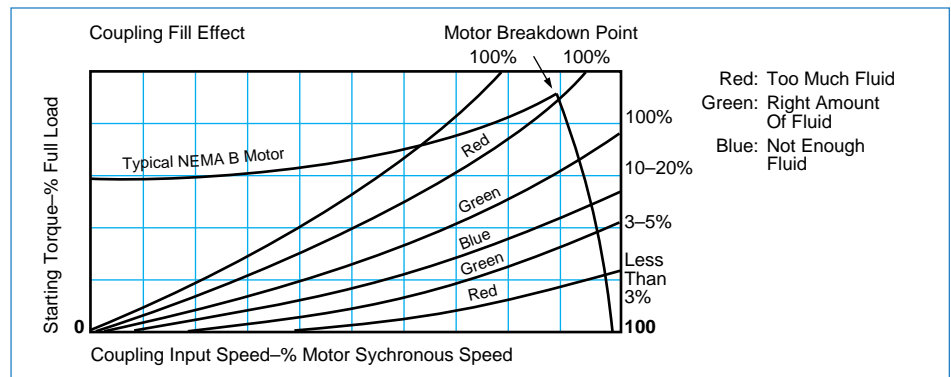
**Figure 3. Start-up Burnout Protection**



**Figure 4. Jam Load Burnout Protection**



**Figure 1. Motor Breakdown Points**



The area on the chart between the motor torque curve and the 100% slip curve represents the excess torque available to the motor to start itself without also having to start the load. It is this operating characteristic which permits a soft start with a one-third lower current draw on the motor. (See fig.3.) (It should be noted that because the coupling torque can only be developed if the runner is turning at a slower speed than the impeller, an ideal small amount of slip of 3% to 5% is necessary).

The Mesur-Fil Fluid Coupling provides for jam load protection to the motor and other vital power system components. It is designed to allow the motor to decelerate only to its breakdown point (fig. 4). The results without the fluid coupling could be a locked rotor condition, resulting in excessive current draw and potential motor damage. Additionally, the coupling distributes the shock of an overload over a longer time span, thus reducing the possibility of damage.

## Delayed Fill

Mesur-Fil Fluid Couplings, sizes 15 through 34 (30 to 1500 hp.), have an available delayed fill option restricting starting torque to 140% of full load while still ensuring low slip at full speed. The result is a softer, more gradual start which can be advantageous for applications such as belt conveyors and mixers.

The operating principles are simple. With the idle coupling (fig. 5) the purpose of the delayed fill chamber is to isolate a portion of the fluid from the main coupling. As the runner accelerates (fig. 6), the chamber attached to the runner gradually releases fluid into the main coupling through specially calibrated orifices. The fill increases proportionally with the output speed. With acceleration complete (fig. 7) at the high speed running position, almost all of the fluid has been released from the chamber into the coupling, giving the coupling high fill/low slip characteristics.

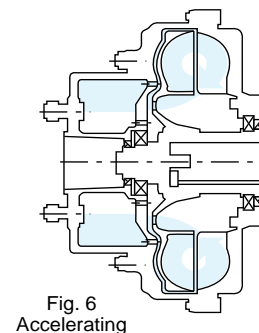


Fig. 6  
Accelerating

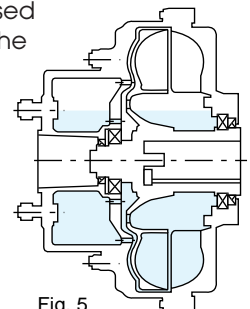


Fig. 5  
Standstill

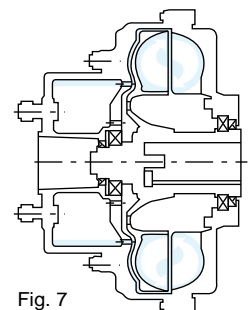


Fig. 7  
Running

# Mounting Types per Size

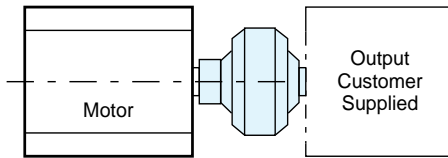
Mounting Type	Size											Mounting Application	
	7.0*	9.4*	12.4*	15	17	19	21	24	27	29	34		
HC (pages 146-148)	•	•	•	•	•	•	•	•	•	•	•	•	Basic coupling for custom input & output
HCM (pages 150-151)	•	•	•	•	•	•	•	•	•	•	•	•	For use with flexible gear couplings
HCF (page 152)				•	•	•	•	•	•	•	•	•	Shaft to shaft with flexible output group
HCR (page 153)				•	•	•	•	•	•	•	•	•	Shaft to shaft with flexible output group
HBM (page 149)	•	•	•	•	•	•	•	•	•	•	•	•	Shaft to shaft applications For stub shaft input/output size 7-12.4
KBM (page 157)												•	Shaft to shaft application with bearing supported input/output shafts
HSD (pages 154-155)	•	•	•	•	•	•	•	•					Parallel, QD sheave application
KRDA (page 156)				•	•	•	•	•	•	•	•	•	Diesel & Gas engine flywheel application

\*Modular design (See page 145)

**HC Sizes 7.0-12.4 Input and output customer supplied.**  
**Sizes 15-34 Output customer supplied.**

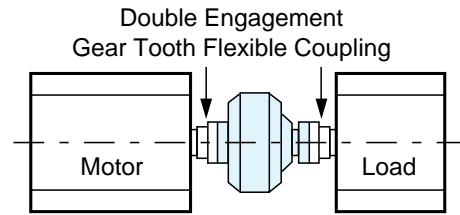
(pages 146-148)

This is a basic coupling with an input bore for direct mounting on the motor shaft end and a convenient bolt circle for customer-designed output configurations.



**HCM**

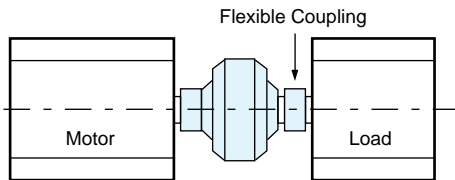
(pages 150-151)



The Model HCM Fluid Coupling is a complete unit with both input and output flanges. It is intended for installation between two halves of a double engagement gear tooth flexible coupling which is customer supplied. This arrangement provides for a wide range of input and output configurations for ease of installation.

**HCF & HCR Sizes 15-34**

(pages 152-153)

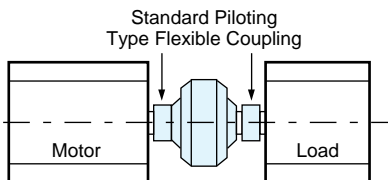


These couplings are designed to mount directly on the motor shaft when mounting space is limited. The output is connected to the load by a flexible coupling provided with the fluid coupling. The HCF flexible coupling consists of a set of rubber block elements enclosed within a bored and keyed output member. The HCR flexible coupling consists of a reinforced rubber element bolted to a bored and keyed output member. This arrangement allows for easy accessibility, removal and quick replacement of the flexible element without disturbing either the input or output mounting position.

**HBM Sizes 7-12.4**

(page 149)

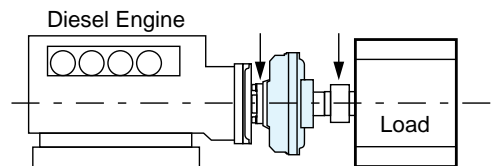
This coupling is a complete unit with straight input and output shaft. It is installed between two piloting type flexible couplings supplied by the customer.



**KRDA Sizes 15-34**

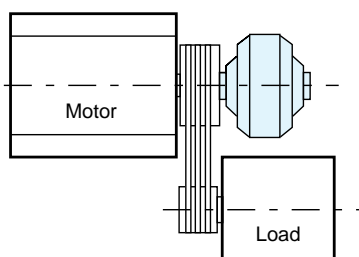
(page 156)

This coupling is designed to mount to the flywheel of an engine by means of a SAE elastomeric flange on the input side and is also designed to accept a straight shaft on the output.



**HSD**

(pages 154-155)



Hydro-sheave couplings are mounted to the motor shaft end and provide minimal overhung loads for parallel (belt-driven) shaft applications. The smaller sizes (7-12.4) are installed very quickly and easily utilizing a slotted collet in which no drilling or tapping is required. The slotted collet is finished bored to fit standard NEMA B motor shaft dimensions. The larger sizes (15-24) are installed with a center locating bolt that does require drilling and tapping to ensure proper mounting. The Model HSD Fluid Coupling consists of a basic fluid coupling, input and output group, and a standard customer supplied QD type sheave. The sheave is mounted on a coupling that has been installed on the end of a driveshaft.

# Selection and Sizing

## Fill Levels (NEMA B Motors)

The Quick Selection Chart (fig. 8) provides the correct size coupling and fill level for any standard NEMA B motor within the Mesur-Fil range. It also provides the slip rate that can be anticipated at normal operating speed. Having the correct amount of oil in the coupling is extremely critical to ensure safe and proper operation. Figure 9 shows the effects of either too much or too little fluid. With an optimum amount of fluid, the breakdown point of the motor with the 100% slip line of the coupling provide the best combination of soft start with slip rate at normal speed. With too much fluid (red area), the slip rate is lower and the start is harder. With too little fluid (blue area), the start will be softer but the slip rate will be much higher. This can cause heat dissipation problems, and, in extreme situations, the coupling may completely fail to move the load.

A choice of fluids is also available. In a normal environment, petroleum oil is the best fluid to use. For hazardous conditions such as those encountering dust, paint spray, etc., a special fire-resistant fluid may be required.

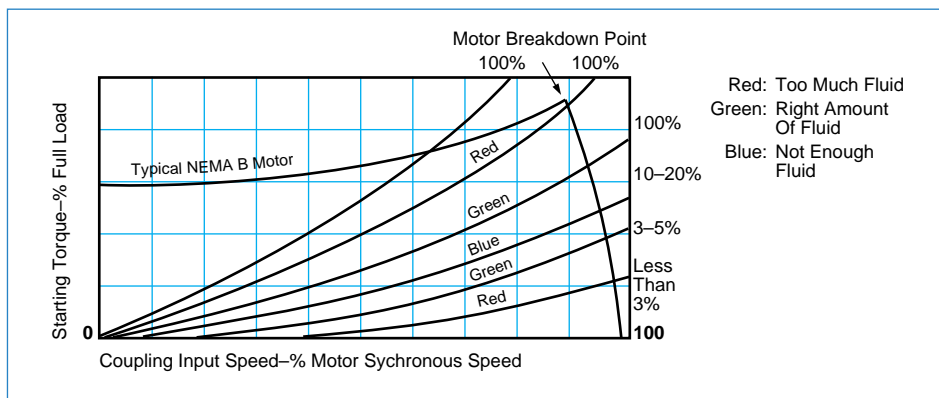
### Delay chamber is recommended for the following applications:

- Overland conveyors
- Blowers/Fans
- Mixers
- Crushers
- Excavators
- Mills
- Large inertia drives
- Centrifuges

**Figure 8 Quick Selection Chart**

HP	1200 RPM			1800 RPM			HP	KW
	Cplg. Size	Fill No.	% Slip	Cplg. Size	Fill No.	% Slip		
1/2	7.0	12	6	7.0	8	3	1/2	0.38
3/4	9.4	8	3	7.0	8	4	3/4	0.56
1	9.4	8	3	7.0	9	4	1	0.75
1 1/2	9.4	8 1/2	3	7.0	11	5	1 1/2	1.1
2	9.4	9	4	7.0	12	6	2	1.5
3	9.4	10	5	9.4	8	2	3	2.2
5	9.4*• or 12.4	12 or 7	7 or 3	9.4	8 1/2	3	5	3.8
7 1/2	12.4	8	2 1/2	9.4	9	3	7 1/2	5.6
10	12.4	9	4	9.4	10	4 1/2	10	7.5
15	12.4	11	5	9.4+ or 12.4	12 or 7	6 1/2 or 3	15	11.3
20	12.4*• or 15	11 1/2 or 2	7 or 3 1/2	12.4	8	2 1/2	20	15.0
25	12.4*• or 15	12 or 2	7 or 5	12.4	8 1/2	3	25	18.8
30	15	1	4 1/2	12.4	9	3 1/2	30	22.5
40	15	0	5 1/2	12.4	10	4	40	30.0
50	17	1 1/2	4	12.4	11	5	50	37.5
60	17	1	4	12.4 or 15*	11/3 or 6/3	11/3 or 6/3	60	45.0
75	19	2	4 1/2	15	2	3 1/2	75	56.3
100	21	1/2	3 1/2	15	0	3 3/4	100	75
125	21	1 1/2	4 1/2	17	2	3	125	94
150	24	2	2 1/2	17+	2	4	150	113
200	24	2	3 1/2	19+*	2	3 1/2	200	135
250	24	1	4	19+* or 21*	0 or 2	3 1/2 or 2	250	188
300	27	1		21+*	2	3	300	225
350	27	0		21+*	1	3	350	263
400	29	1		24	3		400	300
450	29	1		24	2		450	338
500	29	1		24	2		500	375
600	29	0		27	2		600	450
700	29	0		27	1		700	525
800	29	0		27	0		800	600
900	34	1						
1000	34	1						
1250	34	0						
1500	34	0						
1650	D34	0						
1750	D34	0						
2000	D34	0						
2500	D34	0						

**Figure 9 Coupling Fill Effect**



\* In these applications, coupling will develop stall torque somewhat higher than motor breakdown torque.

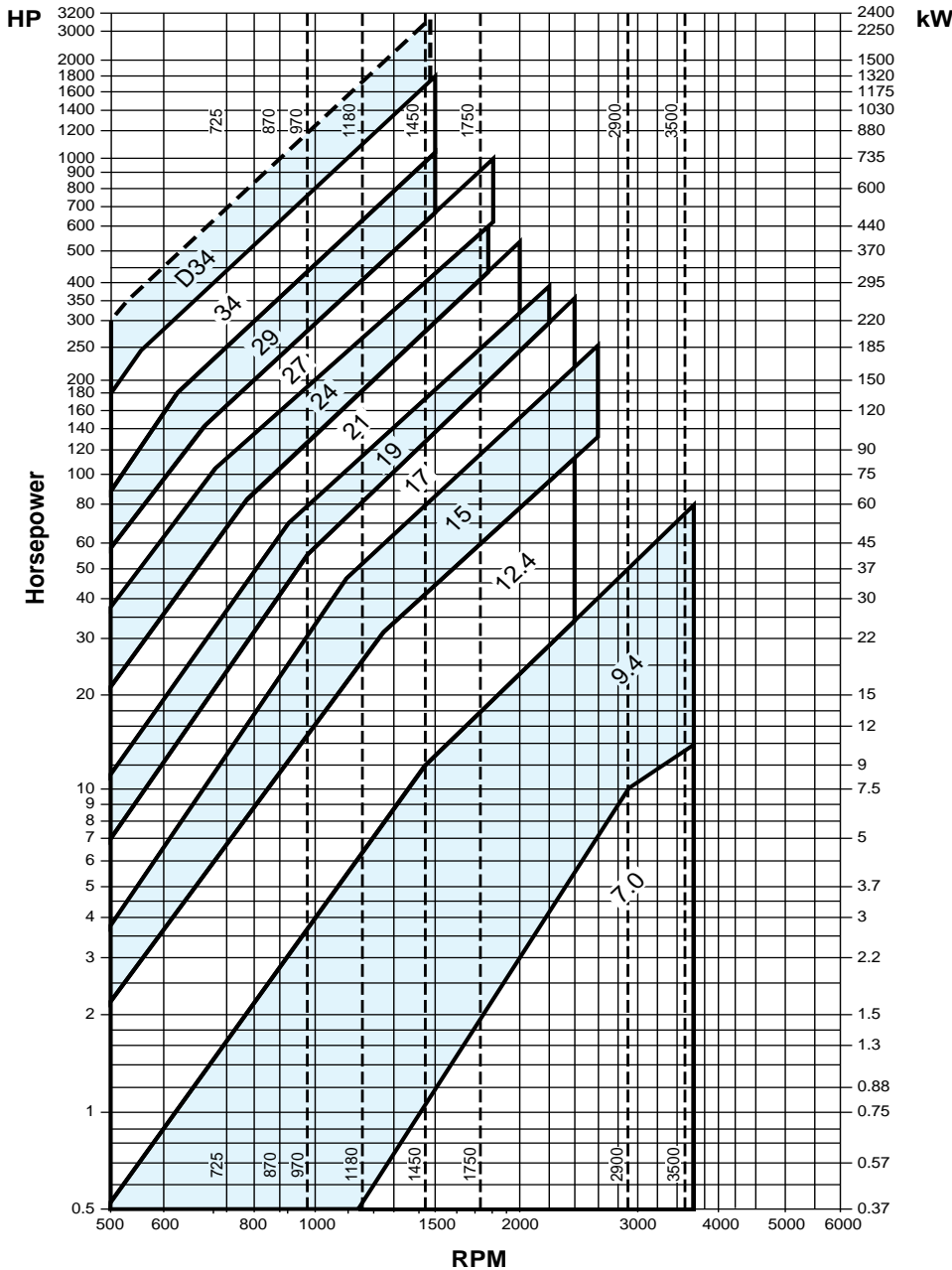
+ In these applications, frequent starts or overloads may overheat coupling. Use only for loads at or below rated torque of motor with infrequent starts.

• Caution! 7% or higher slips may cause overheating if coupling is cycled too rapidly.

For minimum operating temperature below -10°F, consult Warner Electric.

Note: For vertical mounting order unit with both the standard and optional fill plugs on both sides of the unit.

### Input speed vs. Horsepower Graph



### Fluid quantities (fluid ozs.)

Fluid Quantities (U.S. Fluid Ounces)						
Fill Number						
Size	7	8	9	10	11	12
7.0		18.5	21	23	25.5	27.6
9.4		43	49	54	60	65
12.4	87	100	112	125	138	150

Fluid Quantities (U.S. Quarts)					
Fill Number					
Size	0	1	2	3	4
15	8	7.6	7.0	6.3	5.7
17	12.4	11.5	10.6	9.6	8.7
19	15	14	13	11.8	10.6
21	20	18.8	17.3	15.8	14.3
24	30	28	26	23.9	21.7
27	47	43.3	40.2	36.5	32.8
29	52	48.4	44.7	40.7	36.5
34	87.2	81	74.6	70	66

Size	Delayed Fill		
	2	3	4
15	9.1	8.1	6.8
17	14.4	13.5	12.4
19	17.2	16.1	14.8
21	24.3	22.5	20.4
24	33	30.2	27.5
27	52.8	49.1	45.4
29	66.6	62.3	57
34	91.1	84.5	78.6

### Fluid Recommendation

**OIL: SAE 10W (Spec. MIL-L-2104 B)**  
 Chevron: Hydraulic Oil EP 32 Shell: Tellus 32  
 Esso: Nuto H 32 Texaco: Rando HD 32  
 Mobil: DTE 24 Total: Azolla ZS 32

### FIRE RESISTANT FLUID

Fyrquel: 220

## Overload Protection

### Fusible plug

In overload conditions, as the slip increases and the oil temperature rises, seals become damaged and begin to leak. In order to avoid this damage, in critical applications, it is advisable to install a fusible plug instead of a solid plug.

Overload protection. For sizes 7.0 to 12.4 a 250°F fusible plug is available only as an option. For sizes 15 to 34 a 290°F fusible plug is standard. (A 250°F or 350°F fusible plug is available as an option.)

### Fusible pin For sizes 15–34

It's possible to avoid loss of oil from the unit by fitting a fusible pin. When temperature increases, reaching melting point of fusible element, a pin is released and touches a cam mounted on a relay which gives an alarm or switches off the electric motor. Like the fusible plug there are three different fusible elements. This solution needs only the replacing of the fusible element or fusible pin.

### Electronic overload controller (Torque limiter) For sizes 15–34

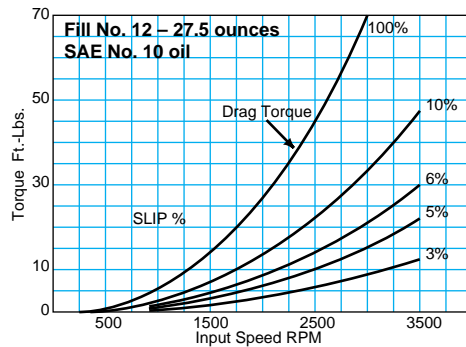
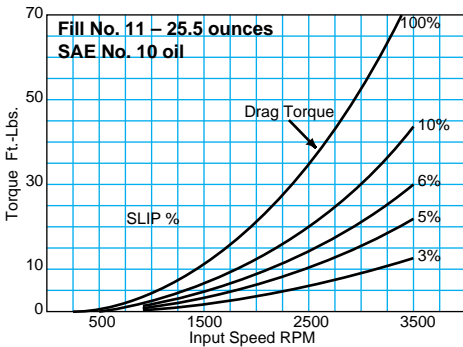
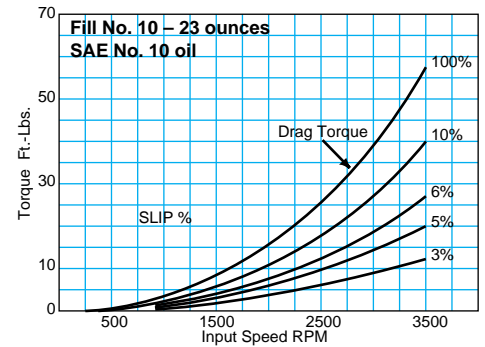
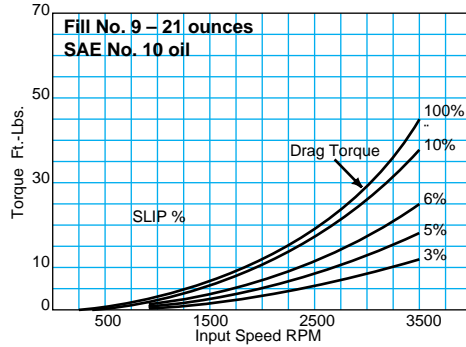
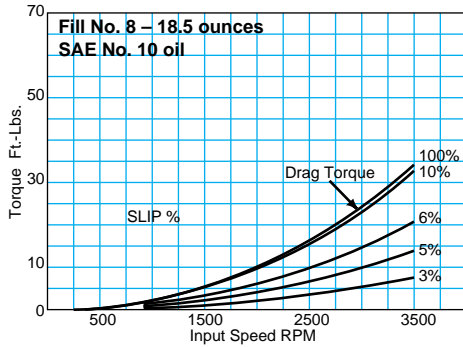
This device measures the speed of the coupling, stopping the motor or giving a signal when the preselected limit is exceeded. With this device nothing has to be replaced, and after having eliminated the cause of the overload, the transmission can run normally.



# Slip Curves

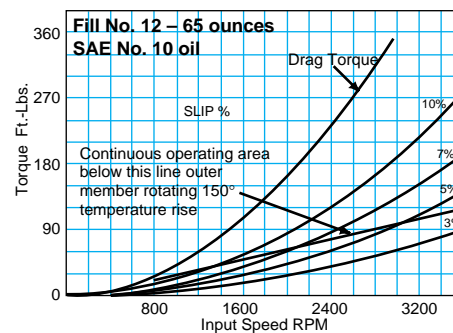
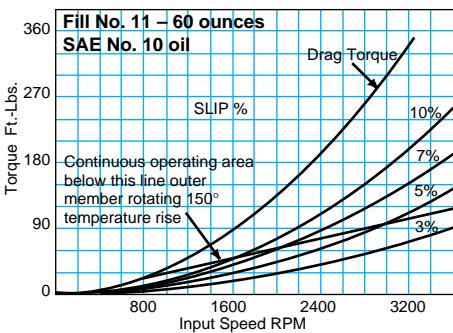
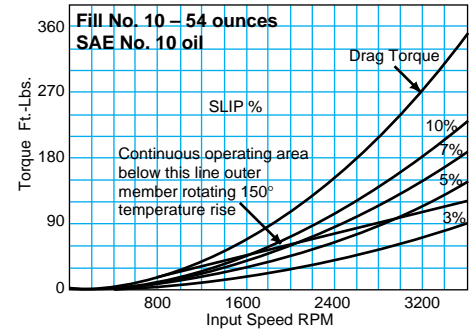
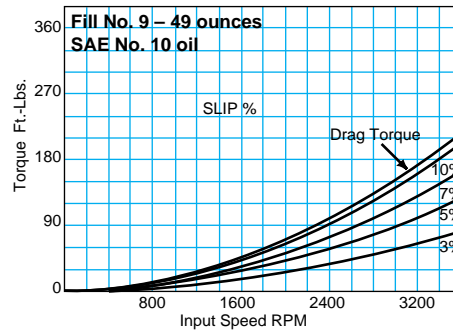
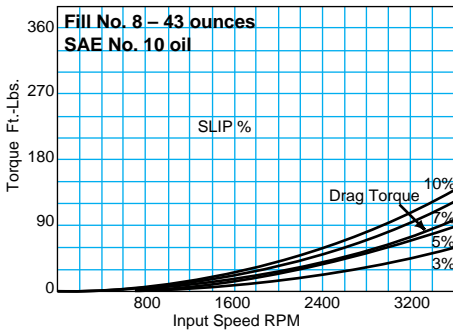
## Size 7.0

Maximum speed 3600 RPM (All configurations)



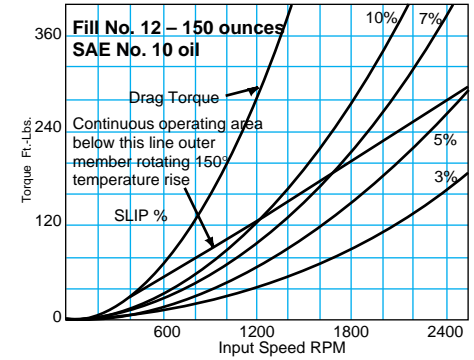
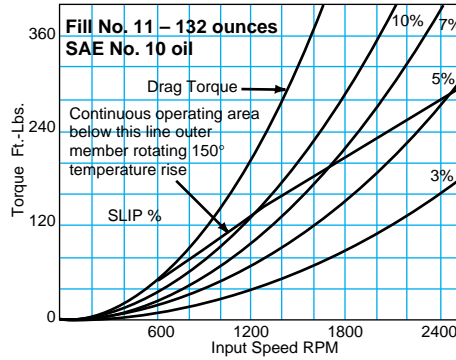
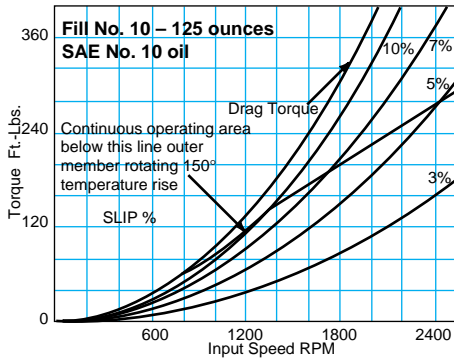
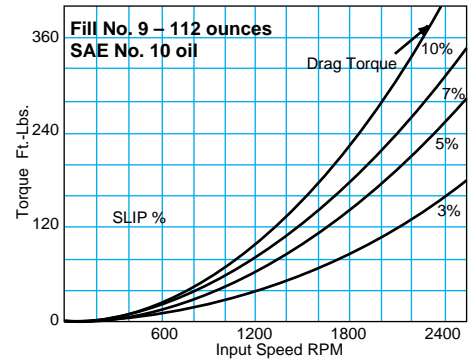
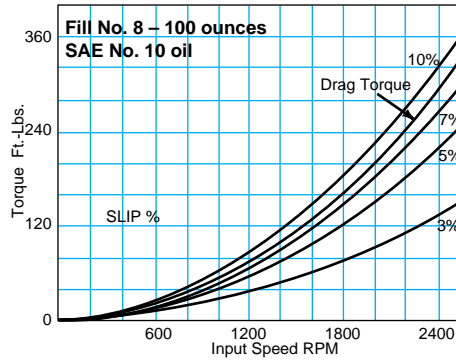
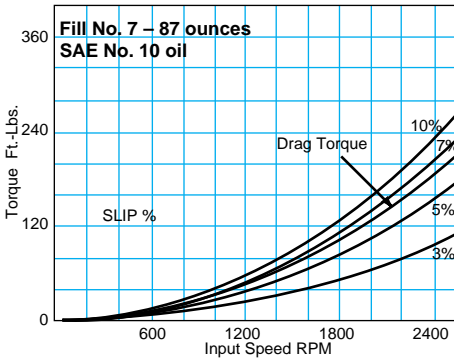
## Size 9.4

Maximum speed 3600 RPM Except HSD—Max 2600 RPM



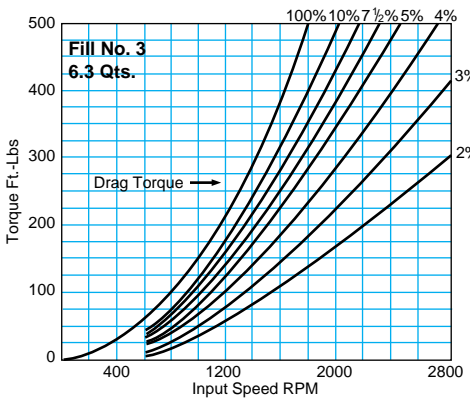
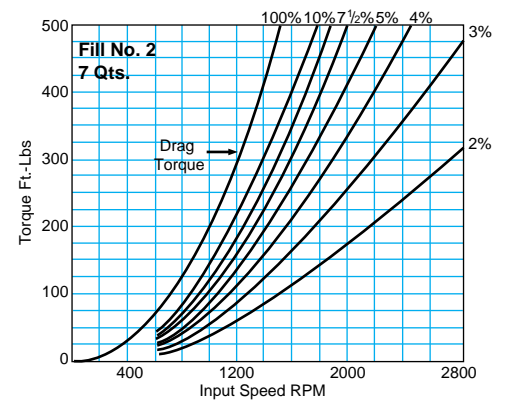
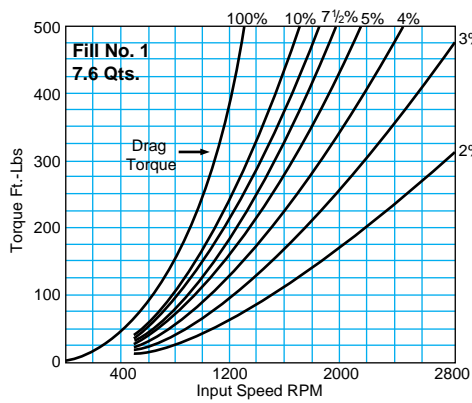
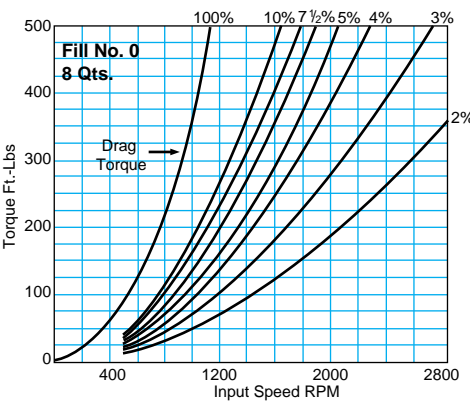
## Size 12.4

Maximum speed 2400 RPM except HSD Max 1800 RPM



## Size 15

Maximum speed 2600 RPM (All configurations)



### Selection Example:

7.5 HP at 1750 RPM

Normal running torque =  
 $\frac{7.5 \text{ HP} \times 5250}{1750} = 22.5 \text{ lb.ft.}$

Pullout torque is obtained at approximately 85% full motor speed and for NEMA B motors, this is approximately 200% normal rated torque.

If the pullout torque is unknown, then assume 200% of normal rating occurring at a speed of 1540 RPM, with full motor speed of 1750 RPM.

Pullout torque =  $2 \times 22.5 \text{ lb.ft.} = 45 \text{ lb.ft.}$

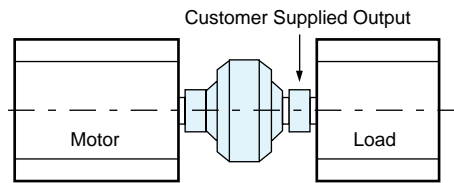
Locate the pullout torque against RPM curve to insure the point is slightly above the drag torque line.

Locate the normal torque against RPM curve to insure the point is below the 7% slip line. Ideally, plot the point between 3% and 5% slip line.

**Sizes 7.0, 9.4, 12.4**

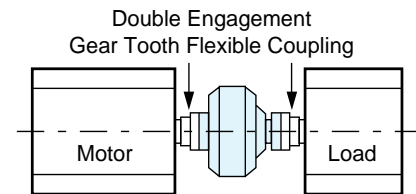
**Configuration**

**HCF**



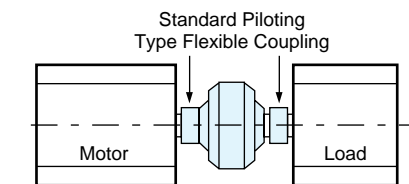
Consists of Model HC and input group. The input group is finish bored to fit standard NEMA B motor shafts. The optional output groups available (HCM, HBM) are shown on this page or the HCF output group must be supplied by the customer. Consult engineering for details.

**HCM**



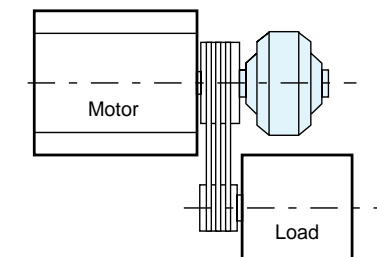
The Model HCM Fluid Coupling is a complete unit with both input and output flanges. It is intended for installation between two halves of a double engagement gear tooth flexible coupling which is customer supplied.

**HBM**



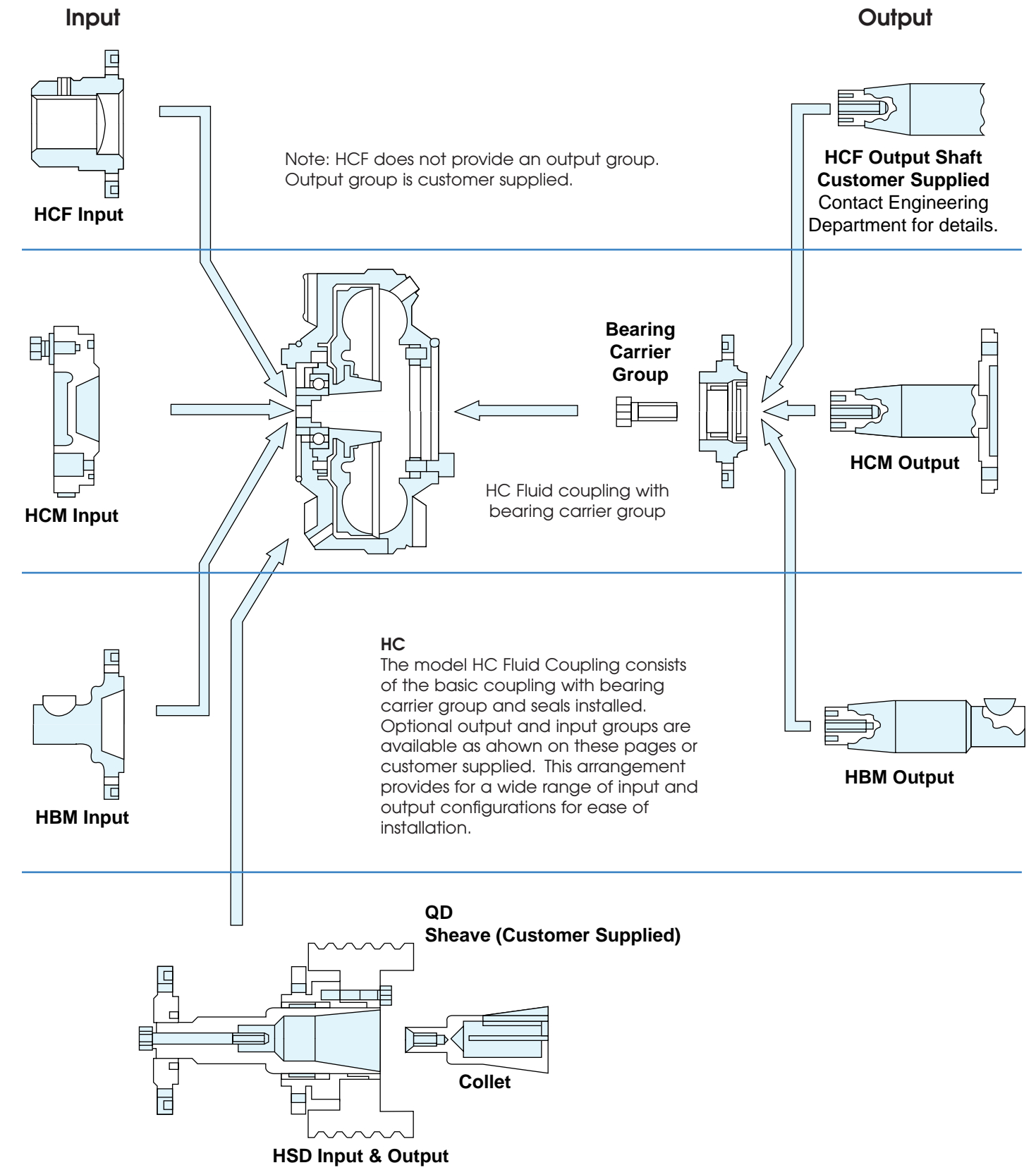
This coupling is a complete unit with a straight input and output shaft. It is installed between two piloting type flexible couplings supplied by the customer.

**HSD**



The Model HSD Fluid Coupling consists of a basic fluid coupling, input and output group, and a standard customer supplied QD type sheave. Hydro-sheave couplings provide minimal overhung loads for parallel (belt-driven) applications. The sheave is mounted on a coupling installed on the end of a driveshaft.

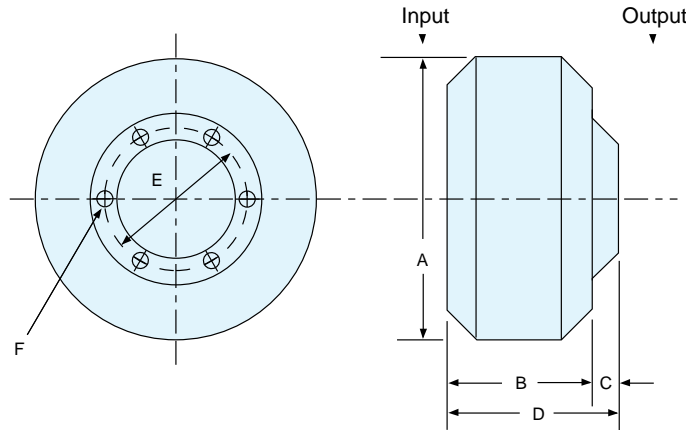
Mesur-Fil Couplings can be installed very quickly and easily utilizing a slotted collet for mounting on the motor shaft instead of the center bolt that is most commonly used with other sheave drives. Unlike the center bolt, the slotted collet requires no drilling and tapping of the end of the motor shaft. The slotted collet is finished bored to fit standard NEMA B motor shaft dimensions. Available bore sizes are found elsewhere in this brochure.



# Model HC

For Custom Applications

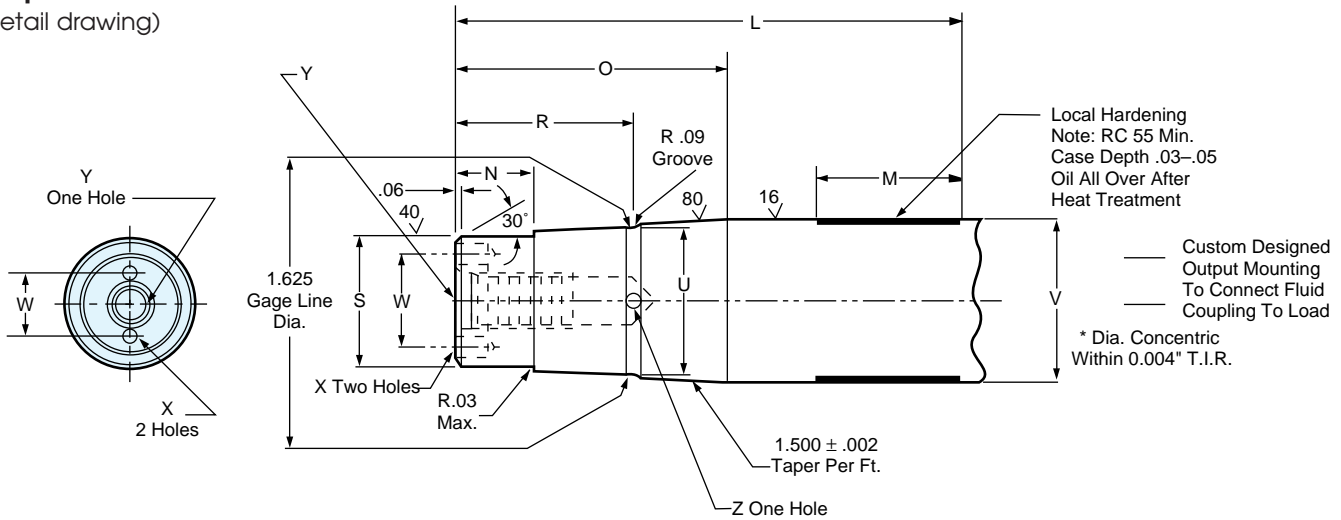
**Sizes 7.0 - 12.4**



Size	A	B	C	D	E	F	Wt. Lb. Less Oil	Oil US Oz. Max
7.0	7.81	3.67	.56	4.23	3.188	17/64	10.1	27.6
9.4	10.25	4.70	.77	5.47	4.250	25/64	20.5	65
12.4	13.50	5.98	.82	6.80	5.650	25/64	38.0	150

## Output Shaft

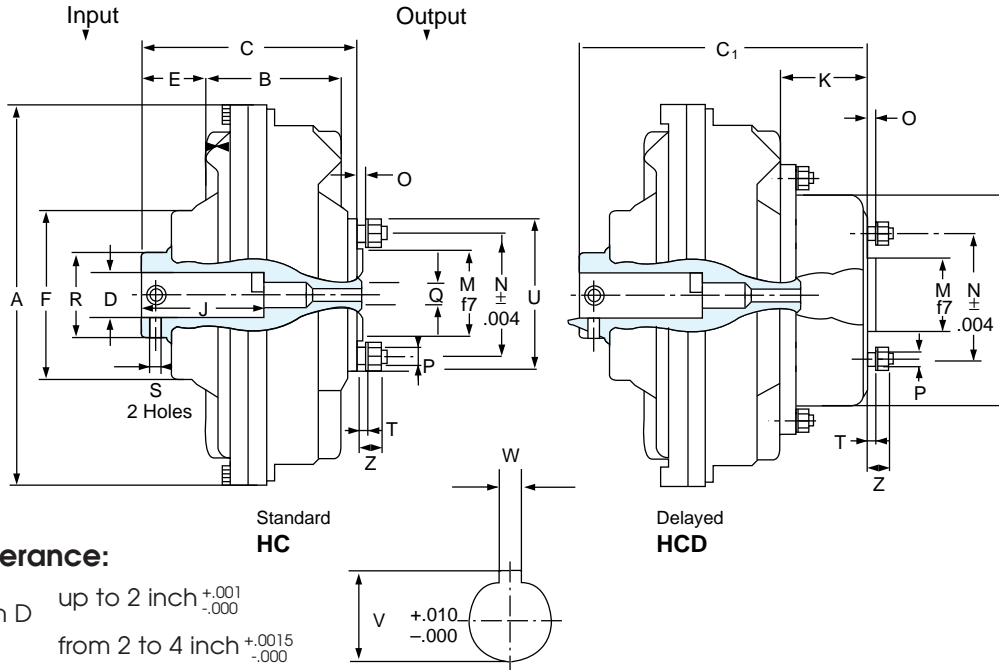
(Detail drawing)



Size	L	M	N	O	R	S	U	V	W	X	Y	Z
7.0	4.17	1.50	1.270	1.91	.60	.9845	1.124	1.250	.750	9/64	1.10	.60
						.9839	1.116	1.249		x .26		
9.4	5.42	1.50	1.905	2.90	.83	1.3782	1.577	1.850	1.062	13/64	.96	.80
						1.3776	1.589	1.749		x .50		
12.4	6.75	1.80	2.05	3.156	.90	1.5746	1.785	2.000	1.125	13/64	.96	.90
						1.5750	1.777	1.994		x .50		

## Sizes 15 - 29

(For size 34, see next page)



### Tolerance:

Dim D up to 2 inch  $^{+.001}_{-.000}$   
 from 2 to 4 inch  $^{+.0015}_{-.000}$

Dim W up to .500 inch  $^{+.002}_{-.000}$   
 from .625 to 1 inch  $^{+.003}_{-.000}$

Size	Wt. Less Oil	Oil US gal Max
15	81.5	2.020
15	▲ 90.3	▲ 2.272
17	112.4	3.090
17	▲ 125.6	▲ 3.487
19	127.8	3.750
19	▲ 141	▲ 4.227
21	191.8	5.020
21	▲ 214	▲ 6.076
24	231.5	7.500
24	▲ 253.5	▲ 8.243
27	355	11.09
27	▲ 394.6	▲ 13.21
29	472	14.531
29	▲ 512	▲ 16.645

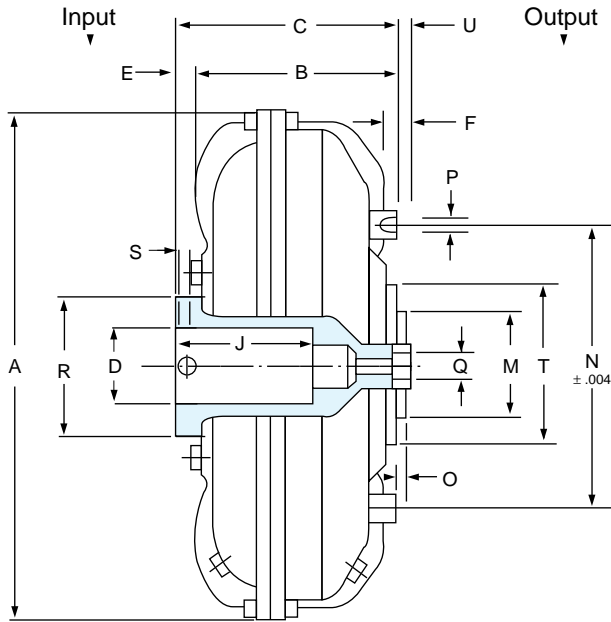
Size	D	J	W	V	A	B	C	C <sub>1</sub>	E	F	I	K	M	N	O	P		Q	R	S	T	U	Z
																Nr.	Dia.						
15	2.875	7.000	.750	2.992	18.110	5.945	8.898	11.575	2.205	7.992	10.039	3.425	3.5433	3.3543	.197	8	M10	7/8 9 UNC	3.976	5/8 11 UNC	.315	6.142	.748
15	2.375	5.625	.625	2.651	18.110	5.945	8.898	11.575	2.205	7.992	10.039	3.425	3.5433	3.3543	.197	8	M10						
15	2.125	5.000	.500	2.350	18.110	5.945	8.898	11.575	2.205	7.992	10.039	3.425	3.5433	3.3543	.197	8	M10						
17	3.375	8.250	.875	3.635	20.472	6.693	9.764	12.913	2.441	8.858	12.992	3.779	4.9212	6.2992	.197	12	M10	4.961			.315	7.087	.748
17	2.875	7.000	.750	3.205	20.472	6.693	9.764	12.913	2.441	8.858	12.992	3.779	4.9212	6.2992	.197	12	M10						
19	3.375	8.250	.875	3.635	22.244	7.480	9.764	12.913	1.653	8.858	12.992	3.779	4.9212	6.2992	.197	12	M10	1-1/4 7 UNC	4.961	3/4 10 UNC	.315	7.087	.748
19	2.875	7.000	.750	3.205	22.244	7.480	9.764	12.913	1.653	8.858	12.992	3.779	4.9212	6.2992	.197	12	M10						
21	3.875	8.500	1.000	4.106	24.409	8.071	11.260	15.195	2.795	9.842	15.748	4.330	6.2992	8.9764	.197	8	M14	5.354			.551	10.039	1.181
21	3.375	8.250	.875	3.706	24.409	8.071	11.260	15.195	2.795	9.842	15.748	4.330	6.2992	8.9764	.197	8	M14						
24	3.875	8.500	1.000	4.106	27.953	9.015	11.260	15.195	1.850	9.842	15.748	4.330	6.2992	8.9764	.197	8	M14						
27	4.750	8.500	1.250	5.109	30.708	10.944	12.677	17.321	1.220	12.401	20.866	5.157	7.874	10.826	.236	8	M16	1-3/4 5 UNC	7.283	7/8 9 UNC	.551	12.125	1.299
29	5.250	9.500	1.250	5.617	33.858	12.007	13.740	18.386	1.220	13.780	20.866	5.157	7.874	10.826	.236	8	M16						
34	For Size 34 see page 148.																						

- ▲ HCD
- Max Bore
- With Reduced Depth Keyway

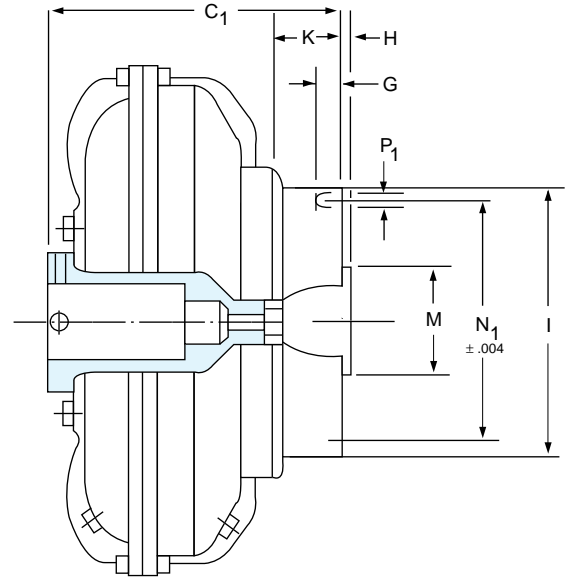
# Model HC

For Custom Applications

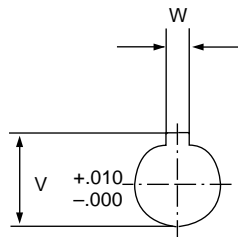
## Size 34



Standard  
**HC**



Delayed  
**HCD**



Size	D	J	W	V	A	B	C	P		N	O	E	F	G	H
								Nr.	Dia.						
34	5.938	10.438	1.500	6.346	39.370	14.881	15.24	12	M14	22.440	.236	1.732	.944	.866	.28

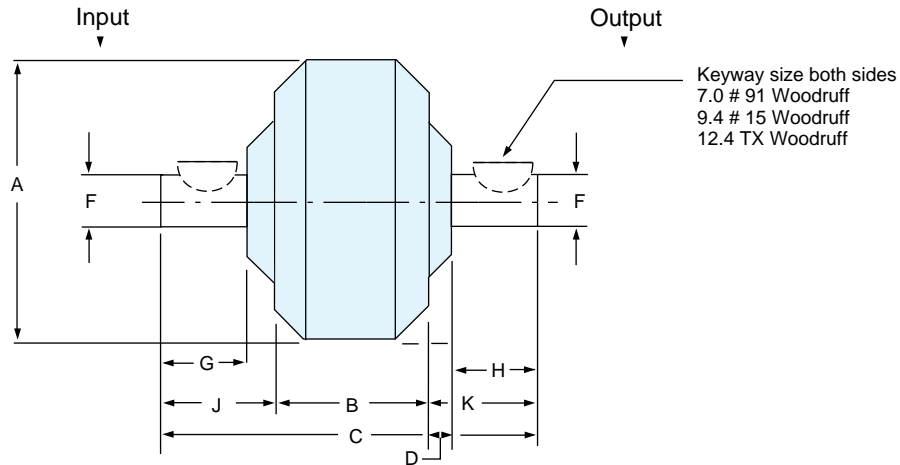
K	I	M	Q	R	S		T	C1	P <sub>1</sub>		N <sub>1</sub>	U	Wt. Lb Less Oil	Oil US Gal. Max.
					Nr.	Dia.			Nr.	Dia.				
5.157	20.866	7.874	1-3/4 5 UNC	9.84	2	1 8 UNC	12.125	20.39	10	M16	18.897	.748	743 ▲ 776	21.8 ▲ 24.5

- ▲ HCD
- Max Bore
- With Reduced Depth Keyway

# Model HBM

For Shaft-to-Shaft Applications

## Sizes 7.0-12.4



Size	A	B	C	D	F	G	H	J	K	Wt. Lb. Less Oil	Max. Oz.
7.0	7.81	3.67	8.25	.56	1.000 .999	1.62	1.62	2.34	2.24	12.65	27.6
9.4	10.25	4.70	10.89	.77	1.250 1.249	2.06	2.12	3.10	3.09	27.70	65
12.4	13.50	5.98	13.67	.82	1.625 1.624	2.12	2.75	3.88	3.88	51.07	150

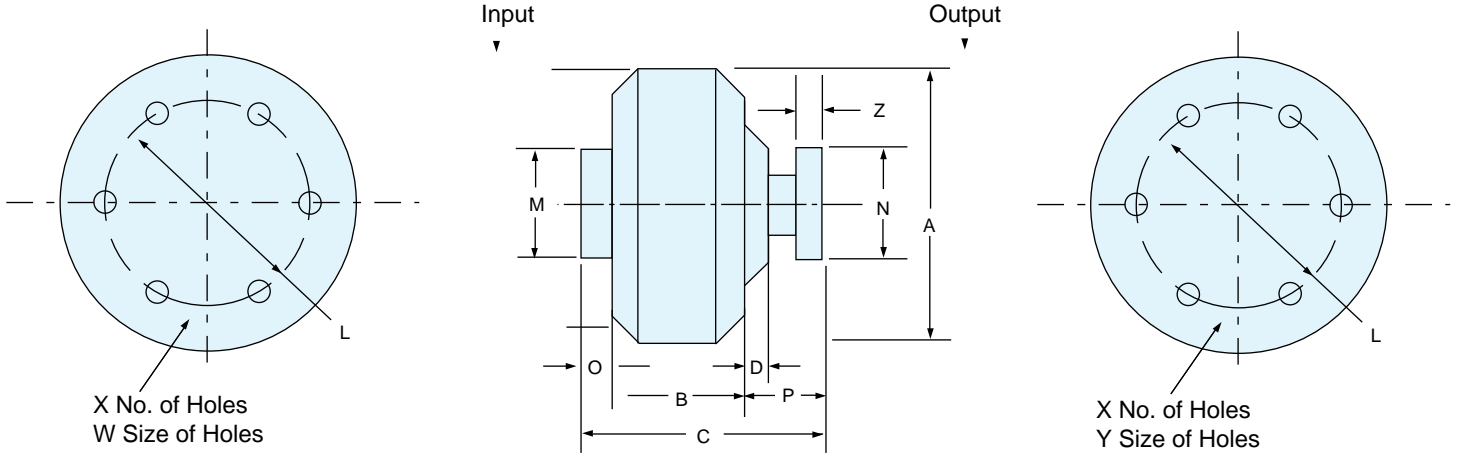
Single Flexing Coupling	
7.0	AJ15*
9.4	AJ30*
12.4	AJ30*

\* Refers to TB Woods Form-Flex couplings

# Model HCM

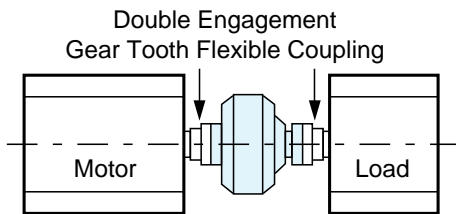
For Flexible Gear Couplings with Shrouded Bolts

## Sizes 7.0-12.4



Size	A	B	C	D	L	M	N	O	P	W	X	Y	Z	Wt. Lb. Less Oil	Oil Max Oz.	WR <sup>2</sup> Lb. Ft. <sup>2</sup>		Gear Coupling Size
																Outer	Inner	
7.0	7.81	3.67	5.98	.56	3.75	4.70	4.56	1.10	1.21	1/4-20 .56 Deep	6	.254 .256	3/16	16.10	27.6	.42	.10	1
9.4	10.25	4.70	7.49	.77	4.812	5.90	6.00	1.14	1.65	3/8-16 .65 Deep	8	.380 .382	1/4	32.25	65	1.27	.51	1-1/2
12.4	13.50	5.98	8.67	.82	4.812	6.85	6.00	1.14	1.55	3/8-16 .74 Deep	8	.380 .382	1/4	53.25	150	4.12	1.33	1-1/2

## HCM



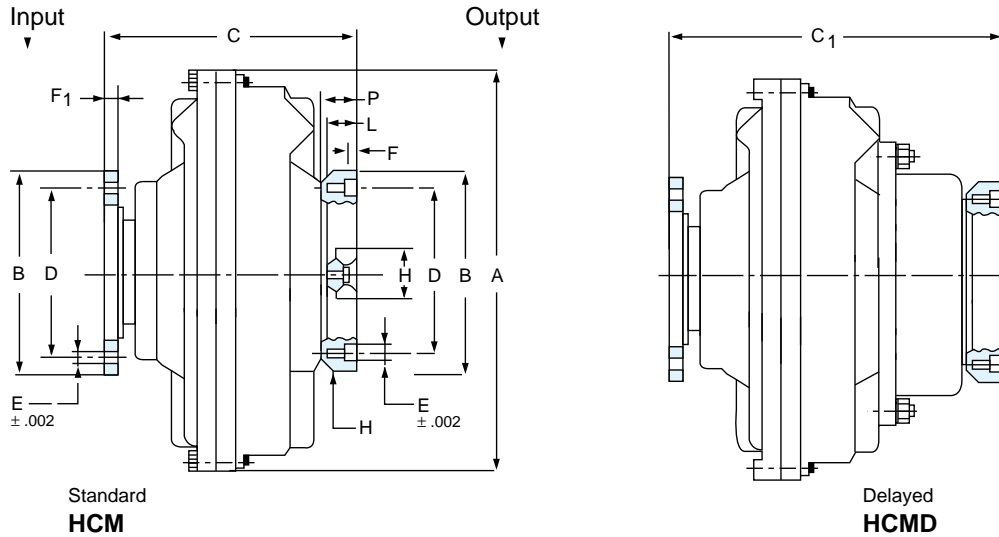
The Model HCM Fluid Coupling is a complete unit with both input and output flanges. It is intended for installation between two halves of a double engagement gear tooth flexible coupling which is customer supplied.

Size	Manufacturer	Model	Maximum Bore	Diameter of Shrouded Bolt Circle
7.0	Waldron	1W	1.63	3.750
	Poole	MXB 1	1.63	3.750
9.4 and 12.4	Amerigear	201.5	2.38	4.812
	Waldron	1.5 W	2.19	4.812
	Poole	MXB 1.5	2.19	4.812

Note: Gear couplings must be with Shrouded Bolts!



For Flexible Gear Couplings with Shrouded Bolts  
**Sizes 15-34**



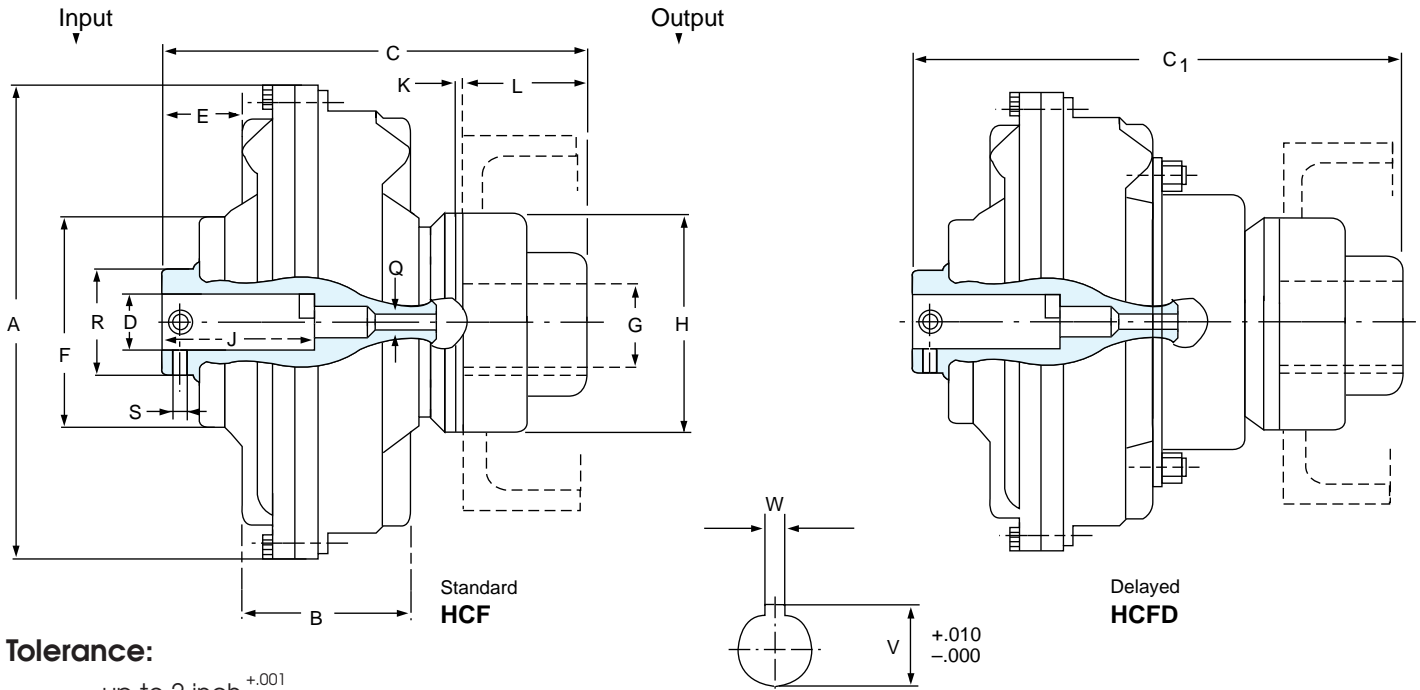
Size	A	B	D	E		F	F <sub>1</sub>	H	L	C	C <sub>1</sub>	Wt. Lb. Less Oil	Oil U.S. gal. Max	WR <sup>2</sup> lb.ft. <sup>2</sup>			Gear Coupling Size
				Nr.	Dia.									Outer	Inner	Outer for HCMD	
15	18.11	8.385	7.000	10	0.502	0.374	0.394	1/2-20	0.964	9.76	12.87	104 ▲ 112	2.02 ▲ 2.27	13.5	4.5	▲ 14.6	2-1/2
17	20.47	8.385	7.000	10	0.502	0.374	0.394	1/2-20	1.000	10.83	14.05	146 ▲ 158	3.09 ▲ 3.48	22.5	8.6	▲ 25.0	2-1/2
19	22.24	8.385	7.000	10	0.502	0.374	0.394	1/2-20	1.000	10.83	14.05	165 ▲ 178	3.75 ▲ 4.22	33	14.5	▲ 35.1	2 1/2
21	24.41	9.448	8.000	12	0.502	0.374	0.394	1/2-20	1.000	12.40	16.41	240 ▲ 262	5.02 ▲ 6.07	51	23	▲ 57.2	3
24	27.95	9.448	8.000	12	0.502	0.374	0.394	1/2-20	1.000	12.40	16.41	285 ▲ 307	7.50 ▲ 8.24	96	46	▲ 102.2	3
27	30.71	11.020	9.500	8	0.750	1.220	1.220	3/4-16	2.244	14.45	20.71	454 ▲ 505	11.09 ▲ 13.21	145	48	▲ 160.0	*3 1/2
29	33.86	11.020	9.500	8	0.750	1.220	1.220	3/4-16	2.244	15.59	21.85	562 ▲ 613	14.53 ▲ 16.64	220.5	66.4	▲ 235.4	*3 1/2
34	39.37	12.159	11.00	8	0.750	1.220	1.102	3/4-16	2.244	19.80	24.96	960 ▲ 978	21.80 ▲ 24.5	650	28.5	▲ 668.5	*4

▲ HCMD \*Exposed Bolts

# Model HCF

For Shaft-to-Shaft Applications

## Sizes 15-34



**Tolerance:**

Dim D up to 2 inch  $\begin{matrix} +.001 \\ -.000 \end{matrix}$   
 from 2 to 4 inch  $\begin{matrix} +.0015 \\ -.000 \end{matrix}$

Dim W up to .500 inch  $\begin{matrix} +.002 \\ -.000 \end{matrix}$   
 from .625 to 1 inch  $\begin{matrix} +.003 \\ -.000 \end{matrix}$

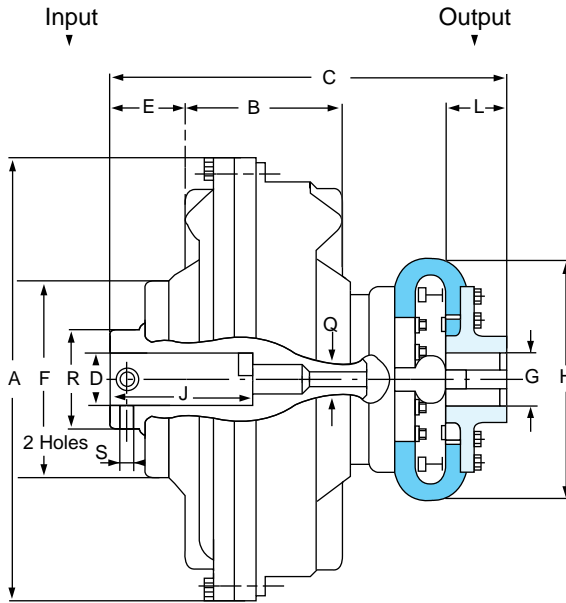
Size	D	J	W	V	A	B	C	C <sub>1</sub>	E	F	G Max	H	K	L	Q	R	S	Wt. Lb. Less Oil	Oil U.S. Gal. Max.
15	● 2.875	7.000	.750	2.992	18.110	5.945	14.331	17.008	2.205	7.992	3.150	6.693	.118	4.331	7/8 9 UNC	3.976	5/8 11 UNC	110.7	2.020
	■ 2.375	5.625	.625	2.651	18.110	5.945	14.331	17.008	2.205	7.992	3.150	6.693	.118	4.331	UNC	3.976	UNC	▲ 121.7	▲ 2.272
17	● 3.375	8.250	.875	3.635	20.472	6.693	15.236	18.386	2.441	8.858	3.543	9.843	.118	4.331	1-1/4 7 UNC	4.961	3/4 10 UNC	169.7	3.090
	■ 2.875	7.000	.750	3.205	20.472	6.693	15.236	18.386	2.441	8.858	3.543	9.843	.118	4.331	UNC	4.961	UNC	▲ 185.2	▲ 3.487
19	● 3.375	8.250	.875	3.365	22.244	7.480	15.236	18.386	1.653	8.858	3.543	9.843	.118	4.331	1-1/4 7 UNC	4.961	3/4 10 UNC	185.0	3.750
	■														UNC		UNC	▲ 200.4	▲ 4.227
21	● 3.875	8.500	1.000	4.106	24.409	8.071	18.071	22.008	2.795	9.842	4.331	11.417	.118	5.512	1-1/4 7 UNC	5.354	3/4 10 UNC	284.4	5.020
	■ 3.375	8.250	.875	3.760	24.409	8.071	18.071	22.008	2.795	9.842	4.331	11.417	.118	5.512	UNC	5.354	UNC	▲ 308.7	▲ 6.076
24	● 3.875	8.500	1.000	4.106	27.953	9.015	18.071	22.008	1.850	9.842	4.331	11.417	.118	5.512	1-1/4 7 UNC	5.354	3/4 10 UNC	324.0	7.500
	■														UNC		UNC	▲ 348.0	▲ 8.243
27	● 4.750	8.500	1.250	5.109	30.708	10.944	20.00	24.685	1.220	12.401	4.750	13.780	.157	5.905	1-3/4 5 UNC	7.283	7/8 9 UNC	509.2	11.09
	■														UNC		UNC	▲ 549.0	▲ 13.21
29	● 5.250	9.500	1.250	5.617	33.858	12.007	21.102	25.748	1.220	13.780	4.750	13.780	.157	5.905	1-3/4 5 UNC	8.070	7/8 9 UNC	627.0	14.531
	■														UNC		UNC	▲ 666.7	▲ 16.645
34	● 5.938	10.438	1.500	6.346	39.370	14.881	23.622	28.780	1.732	15.748	6.250	16.732	.197	5.905	1-3/4 5 UNC	7.874	1 8 UNC	1019	21.8
	■														UNC		UNC	▲ 1059	▲ 24.5

- ▲ HCFD
- Max Bore
- With Reduced Depth Keyway

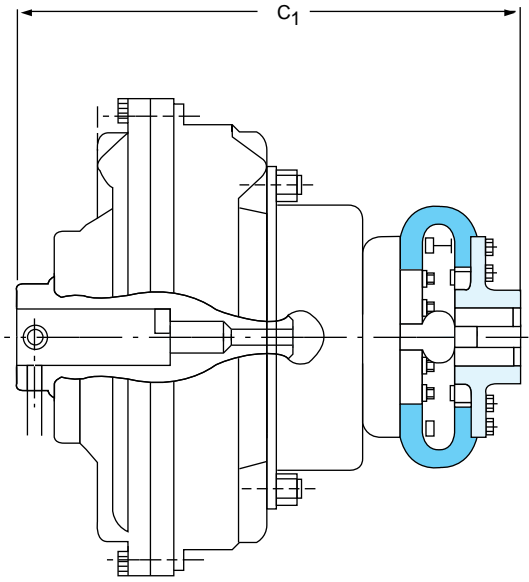
# Model HCR

For Shaft-to-Shaft Applications

## Sizes 15-34



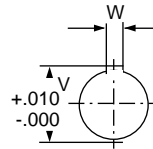
**Standard HCR**



**Delayed HCRD**

**Tolerance:**

- Dim D up to 2 inch  $\begin{matrix} +.001 \\ -.000 \end{matrix}$
- from 2 to 4 inch  $\begin{matrix} +.0015 \\ -.000 \end{matrix}$
- Dim W up to .500 inch  $\begin{matrix} +.002 \\ -.000 \end{matrix}$
- from .625 to 1 inch  $\begin{matrix} +.003 \\ -.000 \end{matrix}$



When ordering units please specify Dim.-D Diameter (G upon request)

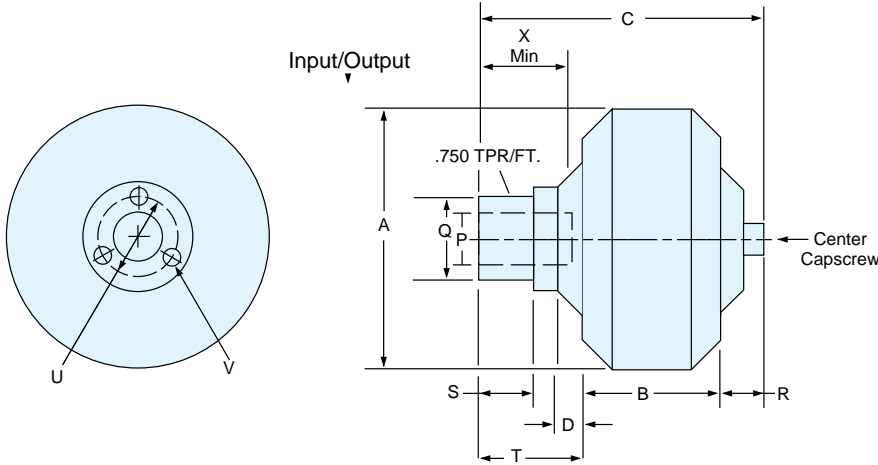
Size	D	J	W	V	A	B	C	C <sub>1</sub>	E	F	G	H	L	Q	R	S
Max.																
15	● 2.875	7.000	.750	2.992	18.110	5.945	15.275	17.952	2.205	7.992	2.756	9.252	3.149	7/8 9 UNC	3.976	5/8 11 UNC
15	■ 2.375	5.625	.625	2.651	18.110	5.945	15.275	17.952	2.205	7.992	2.756	9.252	3.149		3.976	
15	■ 2.125	5.000	.500	2.350	18.110	5.945	15.275	17.952	2.205	7.992	2.756	9.252	3.149		3.976	
17	● 3.375	8.250	.875	3.635	20.472	6.693	15.945	19.094	2.441	8.858	2.952	11.338	3.543	1-1/4 7 UNC	4.961	3/4 10 UNC
17	■ 2.875	7.000	.750	3.205	20.472	6.693	15.945	19.094	2.441	8.858	2.952	11.338	3.543		4.961	
19	● 3.375	8.250	.875	3.635	22.244	7.480	15.945	19.094	1.653	8.858	2.952	11.338	3.543		4.961	
19	■ 2.875	7.000	.750	3.205	22.244	7.480	15.945	19.094	1.653	8.858	2.952	11.338	3.543	4.961	5.354	7/8 9 UNC
21	● 3.875	8.500	1.000	4.106	24.409	8.071	20.551	24.488	2.795	9.842	3.543	14.882	4.331	5.354		
21	■ 3.375	8.250	.875	3.760	24.409	8.071	20.551	24.488	2.795	9.842	3.543	14.882	4.331	5.354		
24	● 3.875	8.500	1.000	4.106	27.953	9.015	20.551	24.488	1.850	9.842	3.543	14.882	4.331	5.354	7.283	1-3/4 5 UNC
27	● 4.750	8.500	1.250	5.109	30.708	10.944	21.653	26.299	1.220	12.401	3.937	18.189	4.803	7.283		
29	● 5.250	9.500	1.250	5.617	33.858	12.007	23.622	28.267	1.220	13.780	4.724	20.866	5.708	8.070		
34	● 5.938	10.438	1.500	6.346	39.370	14.881	26.889	32.046	1.732	12.13	5.500	24.803	6.496	9.84	1 8 UNC	

- Max Bore
- With Reduced Depth Keyway

# Model HSD

For Parallel Shaft Applications

## Sizes 7.0-12.4



### P = Standard Input Sizes

Size	Bore	Key
7.0	7/8	3/16
	1	1/4
	1 1/8	1/4
	1 3/8	5/16
Size	Bore	Key
9.4	1 1/8	1/4
	1 3/8	5/16
	1 5/8	3/8
Size	Bore	Key
12.4	1 5/8	3/8
	1 7/8	1/2
	2 1/8	1/2
	2 3/8	5/8

Size	A	B	C	D	Q	R	S	T	U	V	X	Q.D. Hub Size	Dry Wt.
7	7.81	3.67	7.05	.56	2.149	.84	1.15	2.54	2.687	1/2-20	2.00	SD	12.75
9.4	10.25	4.70	9.35	.77	2.736	1.12	1.45	3.53	3.313	5/16-18	2.50	SK	37.75
12.4	13.50	5.98	12.12	.82	3.736	1.24	1.87	4.90	5.000	1/2-13	3.00	E	68.00

Do not use Eaton QD sheaves.  
 Bolt pattern is not the same.

## Vertical Mounting For HSD

When mounting the 7.0, 9.4 or 12.4 HSD on a vertical shaft, the motor and collet should be mounted above the sheave and fluid coupling. This position insures even the smallest oil fill will react with the motor.

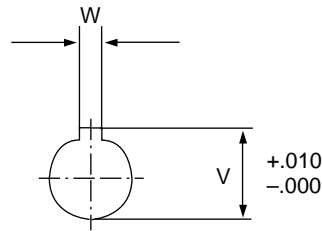
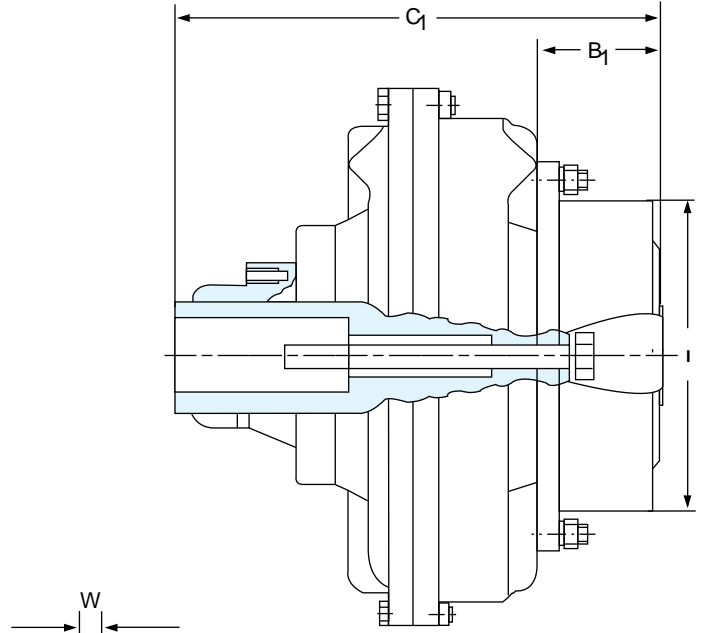
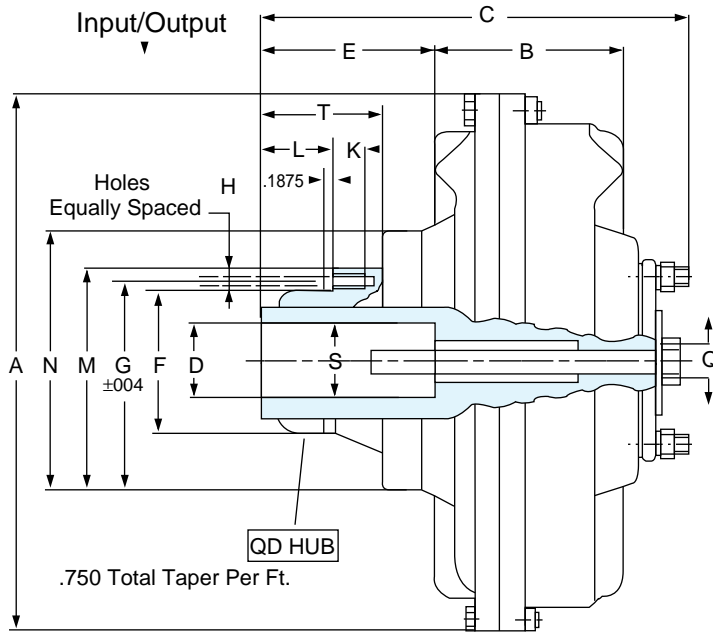
Furthermore, order the unit with the standard and optional fill plugs on both sides of the unit. This allows for the addition and maintenance of the oil level within the fluid coupling.

HSD	Maximum Speed
7.0	3600 RPM
9.4	2600 RPM
12.4	1800 RPM

### Important note:

Size	Center Capscrew Torque
7.0	38-42 ft-lbs
9.4 and 12.4	177- 195 ft-lbs

### Sizes 15-24



**Tolerance:**

- Standard HSD
- Dim D up to 2 inch  $\begin{matrix} +.001 \\ -.000 \end{matrix}$   
 from 2 to 4 inch  $\begin{matrix} +.0015 \\ -.000 \end{matrix}$
- Dim W up to .500 inch  $\begin{matrix} +.002 \\ -.000 \end{matrix}$   
 from .625 to 1 inch  $\begin{matrix} +.003 \\ -.000 \end{matrix}$

Delayed HSDD

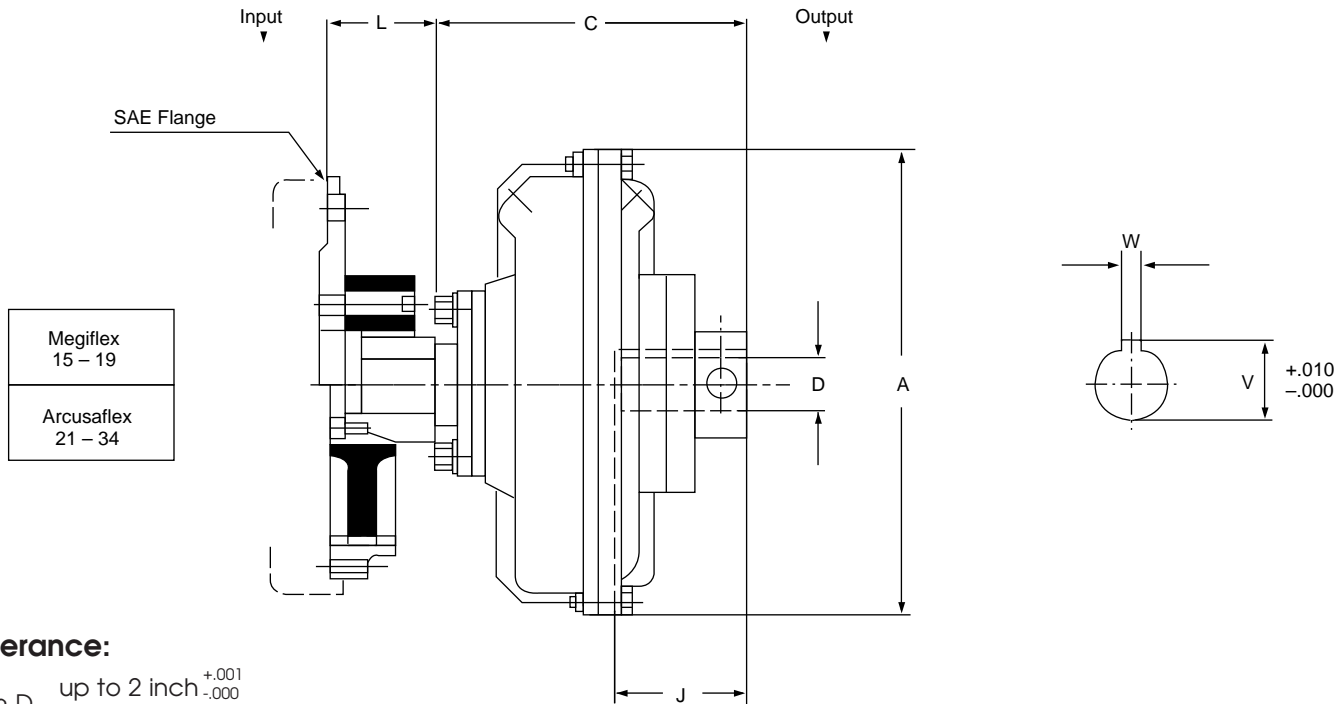
Size	D	J	W	V	A	B	B <sub>1</sub>	C Max	C <sub>1</sub>	E	F	G	H Nr.	H Dia.	I	K	L	M	N	Q	T	S	QD Hub Size	Wt. Less Oil	Oil US Gal Max
15	2.875	7.000	.750	2.992	18.110	5.945	3.425	15.118	17.244	7.677	4.4375	5.625	3	9/16	10.039	1.181	3.397	6.663	8.032	7/8	6.362	3/4	F	107	2.02
15	2.375	5.625	.625	2.651	18.110	5.945	3.425	15.118	17.244	7.677	4.4375	5.625	3	12	10.039	1.181	3.397	6.663	8.032	9	6.362	10	▲	115.8	▲ 2.27
17	3.375	8.250	.875	3.635	20.472	6.693	3.779	17.913	20.315	9.654	5.1484	6.250	3	5/8	12.992	1.378	4.331	7.25	8.976	7	8.449	9	J	156	3.09
17	2.875	7.000	.750	3.205	20.472	6.693	3.779	17.913	20.315	9.654	5.1484	6.250	3	11	12.992	1.378	4.331	7.25	8.976	8	8.449	10	▲	169.2	▲ 3.48
19	3.375	8.250	.875	3.635	22.244	7.480	3.779	17.913	20.315	8.858	5.1484	6.250	3	5/8	12.992	1.378	4.331	7.25	8.976	7	8.449	7/8	J	174	3.75
19	2.875	7.000	.750	3.205	22.244	7.480	3.779	17.913	20.315	8.858	5.1484	6.250	3	11	12.992	1.378	4.331	7.25	8.976	7	8.449	9	▲	187.2	▲ 4.22
21	3.875	8.500	1.000	4.314	24.409	8.071	4.330	21.456	24.408	11.811	6.500	7.875	4	3/4	15.748	1.575	7.085	9.00	9.842	10	10.236	M	270	5.02	
21	3.375	8.250	.875	3.760	24.409	8.071	4.330	19.882	22.833	10.236	6.500	7.875	4	10	15.748	1.575	5.511	9.00	9.842	9	8.661	10	▲	292	▲ 6.08
24	3.875	8.500	1.000	4.314	27.953	9.015	4.330	21.456	24.408	10.866	6.500	7.875	4	10	15.748	1.575	7.085	9.00	9.842	10	10.236	M	307	7.50	
																							▲	329	▲ 8.24

- ▲ HSDD
- Max Bore
- With Reduced Depth Keyway

# Model KRDA

For Diesel and Gas Engine Flywheel Application

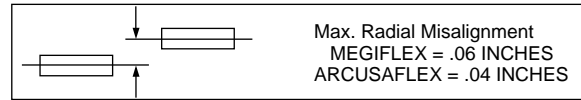
## Sizes 15-34



**Tolerance:**

Dim D up to 2 inch  $\begin{matrix} +.001 \\ -.000 \end{matrix}$   
 from 2 to 4 inch  $\begin{matrix} +.0015 \\ -.000 \end{matrix}$

Dim W up to .500 inch  $\begin{matrix} +.002 \\ -.000 \end{matrix}$   
 from .625 to 1 inch  $\begin{matrix} +.003 \\ -.000 \end{matrix}$



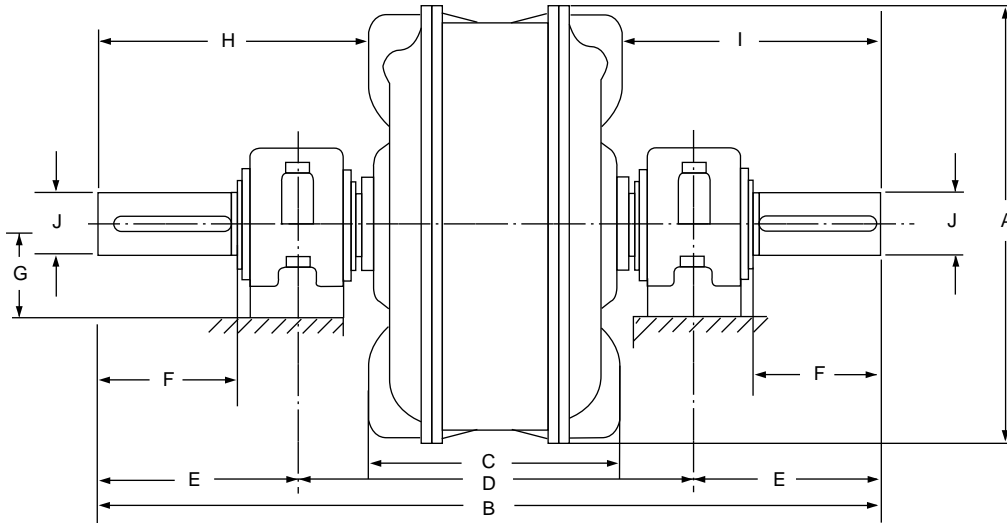
Size	Flywheel	Flexible Element	RPM	D	J	W	V	A	C	L
15	● 11" 1/2	2132	2500	■ 2.875	7.000	.750	2.992	18.110	9.882	3.858
15	14"	2132	2500	■ 2.875	7.000	.750	2.992	18.110	9.882	3.858
17	11" 1/2	2142	2500	■ 3.375	8.250	.875	3.635	20.472	11.338	3.858
17	● 14"	2142	2500	■ 3.375	8.250	.875	3.635	20.472	11.338	3.858
19	11" 1/2	2142	2200	■ 3.375	8.250	.875	3.635	22.244	11.338	3.858
19	● 14"	2142	2200	■ 3.375	8.250	.875	3.635	22.244	11.338	3.858
21	● 14"	AC-5	2000	■ 3.875	8.500	1.000	4.106	24.409	11.260	4.291 ± .20
21	16"	AC-5	2000	■ 3.875	8.500	1.000	4.106	24.409	11.260	4.291 ± .20
24	● 14"	AC-6	1800	■ 3.875	8.500	1.000	4.106	27.953	11.260	4.921 ± .24
24	16"	AC-6	1800	■ 3.875	8.500	1.000	4.106	27.953	11.260	4.921 ± .24
27	14"	AC-7	1800	■ 4.750	8.500	1.250	5.109	30.708	12.677	5.039 ± .24
27	● 16"	AC-7	1800	■ 4.750	8.500	1.250	5.109	30.708	12.677	5.039 ± .24
27	18"	AC-7	1800	■ 4.750	8.500	1.250	5.109	30.708	12.677	5.039 ± .24
29	14"	AC-7	1500	■ 5.250	9.500	1.250	5.617	33.858	13.740	5.039 ± .24
29	● 16"	AC-7	1500	■ 5.250	9.500	1.250	5.617	33.858	13.740	5.039 ± .24
29	● 18"	AC-7	1500	■ 5.250	9.500	1.250	5.617	33.858	13.740	5.039 ± .24
34	● 21"	AC-9	1500	■ 5.938	10.438	1.500	6.346	39.370	17.598	4.055 ± .24

- Standard Flywheel
- With Reduced Depth (Rectangular) Keyway

# Model KBM

For Shaft-to-Shaft Applications

## Size D34



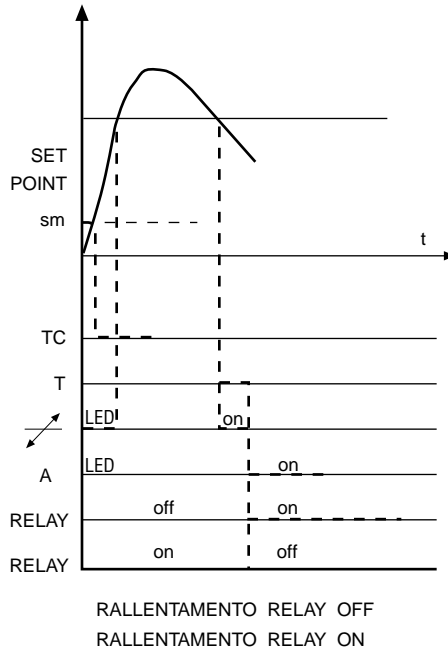
Double chamber size 34

Size	A	B	C	D	E	F	G	H	I	J	Wt. Lb. Less Oil	Oil U.S. Gal Oil
D 34	39.37	55.118	25.197	34.842	10.138	5.512	6.693	15.079	14.842	5.51	1785	42.8

# Mesur-Fil Fluid Couplings

## Electronic Overload Controller

### Operation



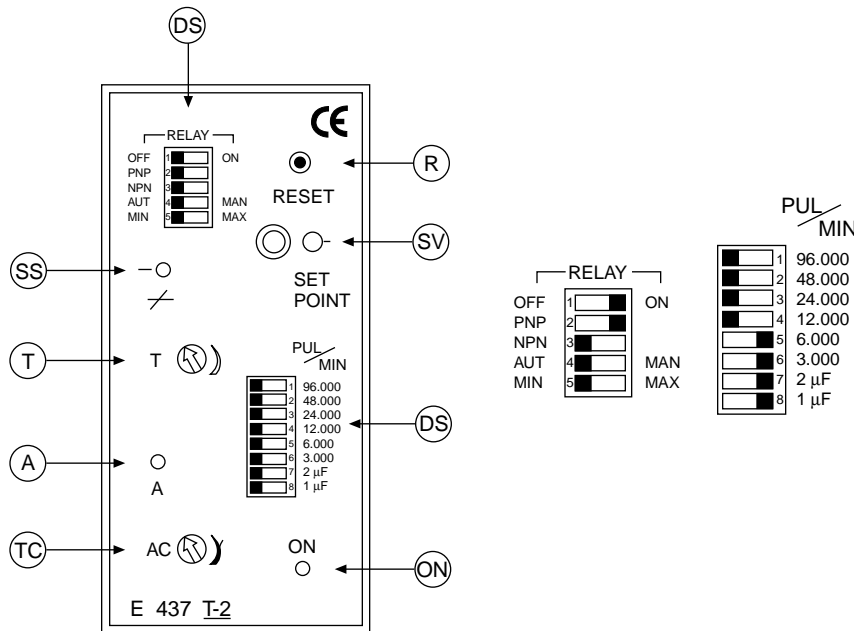
As the load torque increases, the fluid coupling slip increases, therefore an output speed decrease will occur. This can be detected by a speed sensor (PROXIMITY) that sends an impulse train to speed controller.

If speed reduces down to the set threshold, this is signaled by the intervention of internal relay.

Device has a blind time "TC" (1 to 120 sec.) that avoids alarm intervention during start up and a delay time (1 to 30 sec.) that prevents from undesired relay intervention during sudden changes of torque.

Device also provides a speed proportional voltage output signal (0-10 Volt) to be forwarded to display or to signal transducer (4-20 mA).

### Control Panel



TC BLIND TIME FOR STARTING

Set screw regulation up to 120 sec.

DS DIP-SWITCH (5 positions)

Relay condition, proximity type, reset system, acceleration or deceleration.

Programming speed DIP-SWITCH (PUL/MIN), 8 positions permit to choose the requested range.

SV SPEED LEVEL (set point)

Set screw regulation with numbers from 1 to 10. Value of 10 corresponds to full range set with dip-switch.

R RESET

Local manual reset is possible through button R or remote reset connecting contact N.O. at pins 2-10.

SS SPEED LEVEL OVERTAKEN

It lights whenever level speed is overtaken.

A ALARM LED

It lights when internal relay is closed.

T DELAY TIME

Set screw regulation up to 30 sec.

ON GREEN LED

It means that device is electrically supplied.



## Display

As the load torque increases, the fluid coupling slip increases, therefore an output speed decrease will occur. This can be detected by a speed sensor (PROXIMITY) that sends an impulse train to speed controller.

If speed reduces down to the set threshold, this is signaled by the intervention of internal relay.

Device has a blind time "TC" (1 to 120 sec.) that avoids alarm intervention during start up and a delay time (1 to 30 sec.) that prevents from undesired relay intervention during sudden changes of torque. Device also provides a speed proportional voltage output signal (0-10 Volt) to be forwarded to display or to signal transducer (4-20 mA).

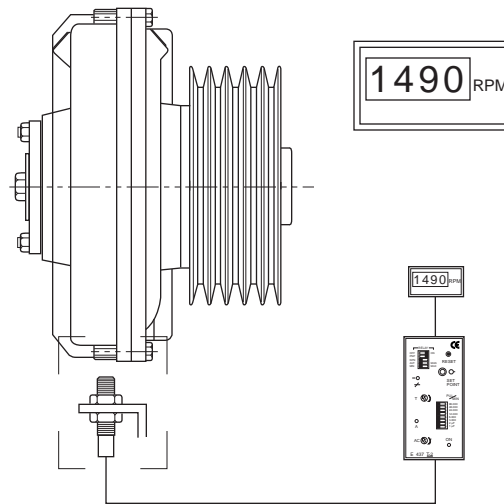


Fig. 1

## Control Panel

### TC BLIND TIME FOR STARTING

Set screw regulation up to 120 sec.

### DS DIP-SWITCH (5 positions)

Relay condition, proximity type, reset system, acceleration or deceleration.

Programming speed DIP-SWITCH (PUL/MIN), 8 positions permit to choose the requested range.

### SV SPEED LEVEL (set point)

Set screw regulation with numbers from 1 to 10. Value of 10 corresponds to full range set with dip-switch.

### R RESET

Local manual reset is possible through button R or remote reset connecting contact N.O. at pins 2-10.

### SS SPEED LEVEL OVERTAKEN

It lights whenever level speed is overtaken.

### A ALARM LED

It lights when internal relay is closed.

### T DELAY TIME

Set screw regulation up to 30 sec.

### ON GREEN LED

It means that device is electrically supplied.

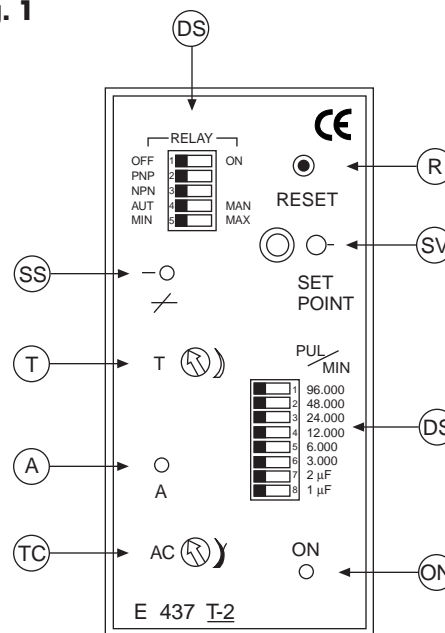


Fig. 2

