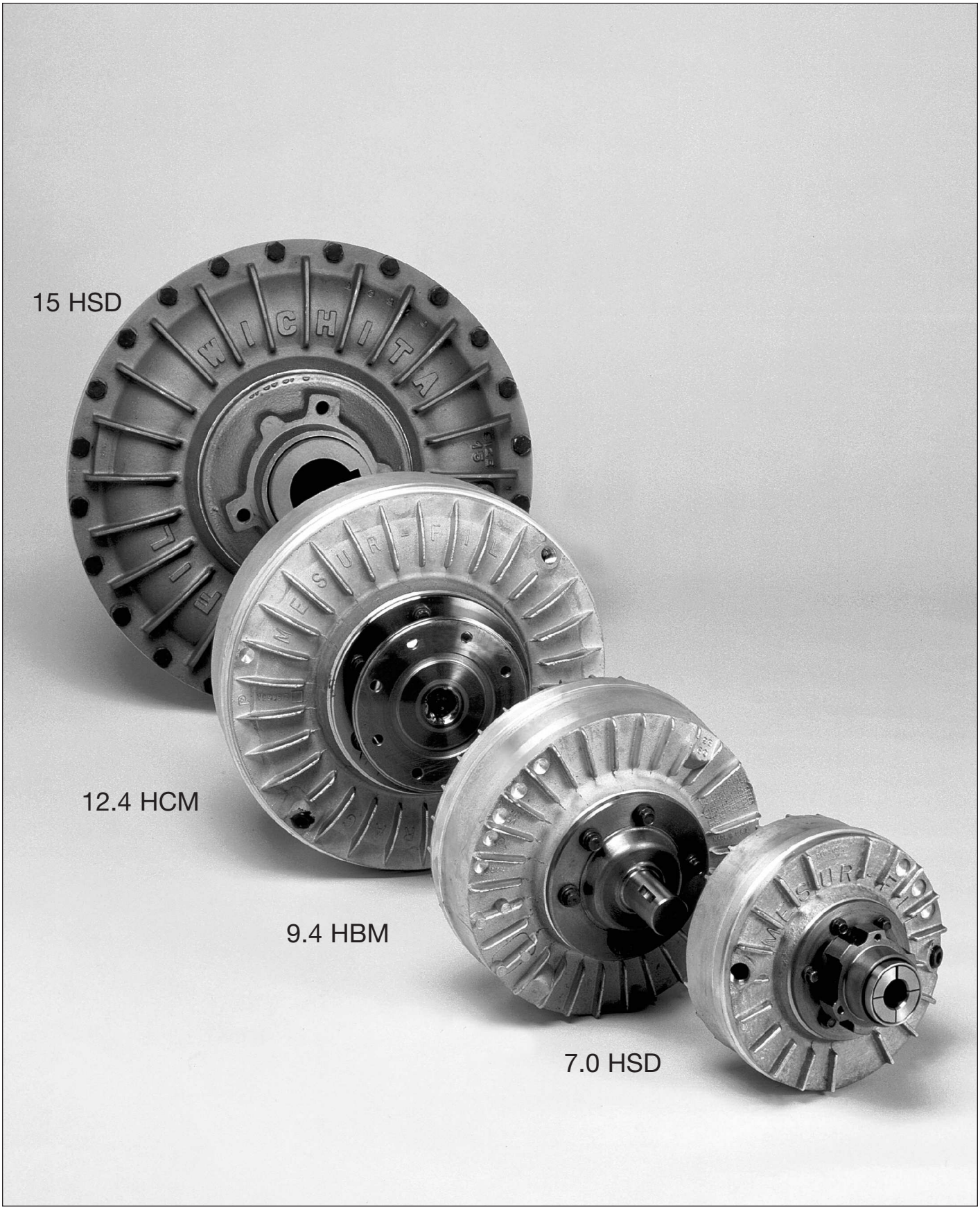
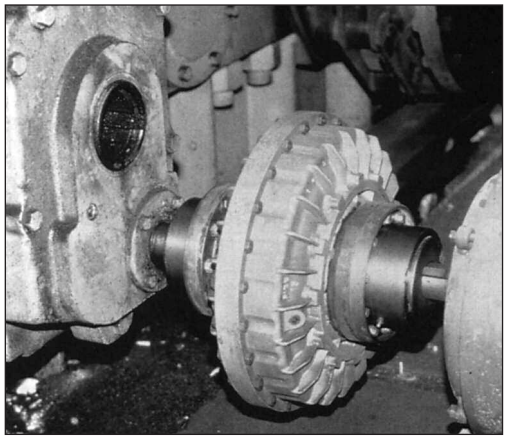
Mesur-Fil Fluid Couplings



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:

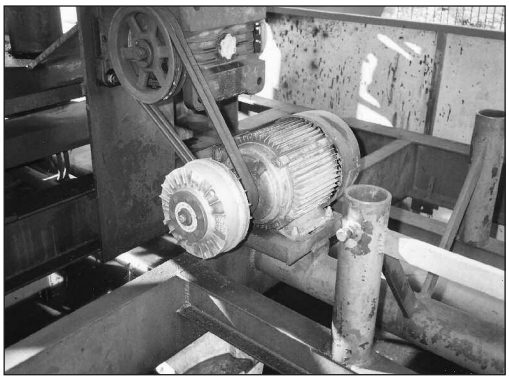
- Conveyors of all types
- Crushers
- Excavators
- Fans
- Mills
- Mixers
- Pumps
- Screening Plants

Petrochem and Chemical Processing:

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

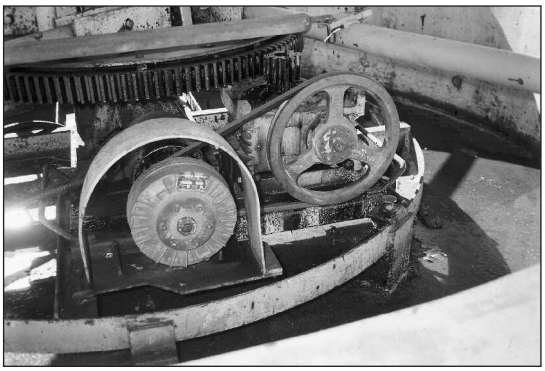
Other Applications include:

- 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.

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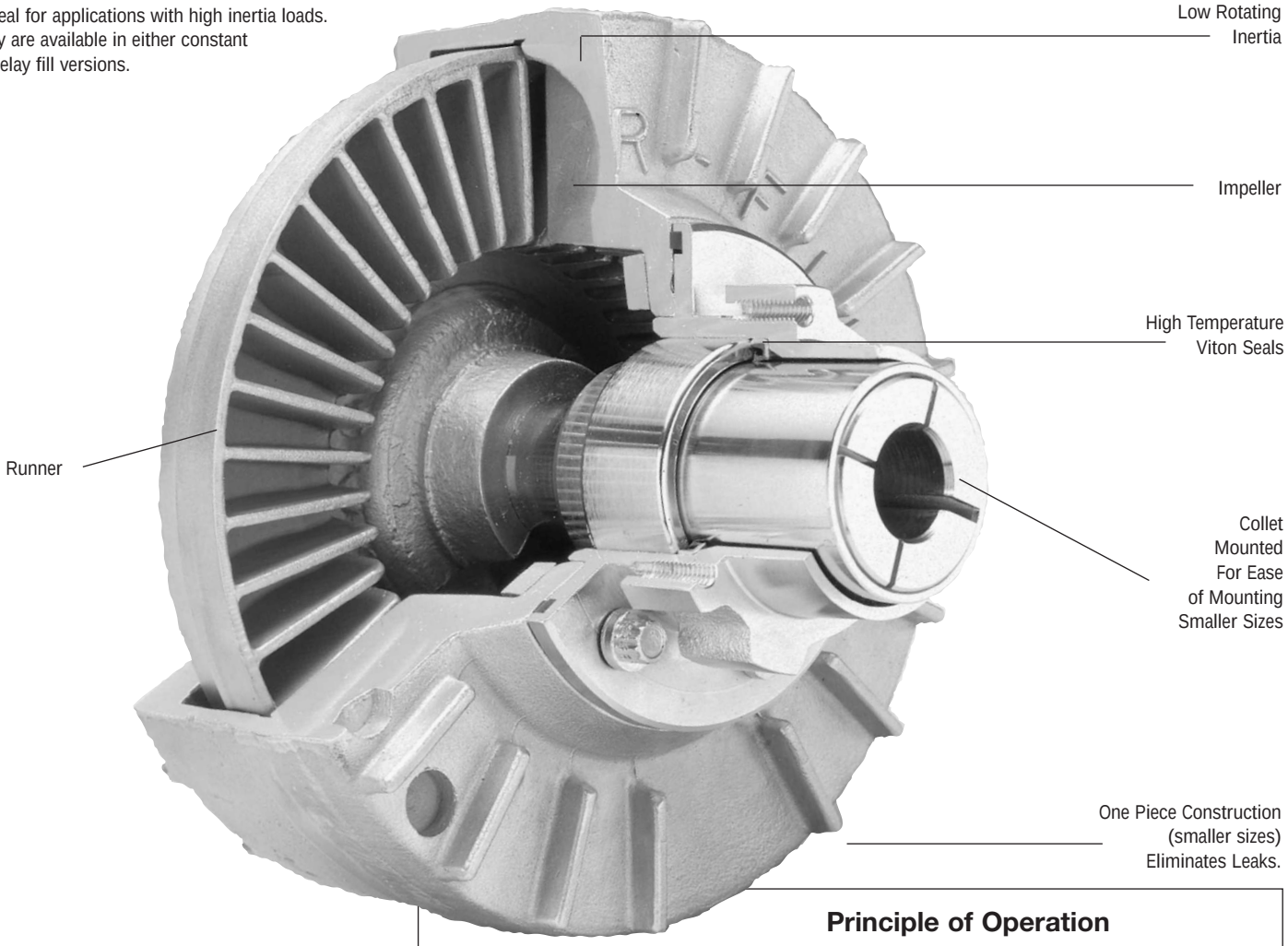
Mesur-Fil Fluid Couplings

Design Avantages

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.

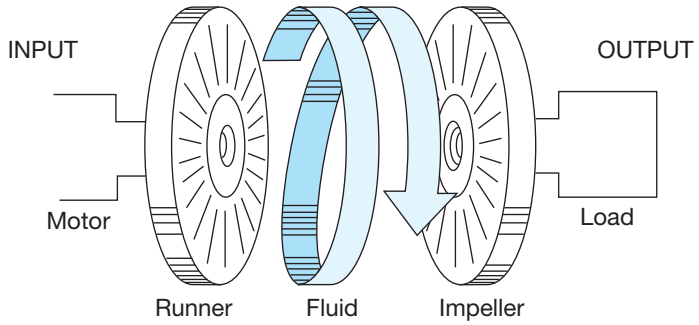


Benefits

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 Figure 2).

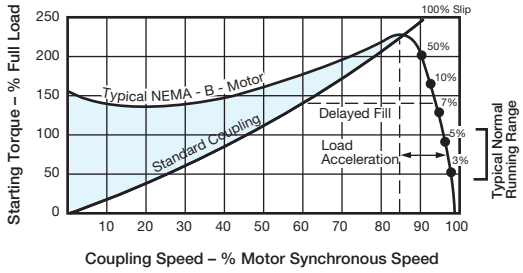


Figure 2 - Starting Torque

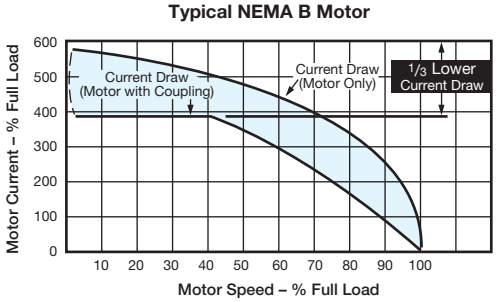


Figure 3 - Start-up Burnout Protection

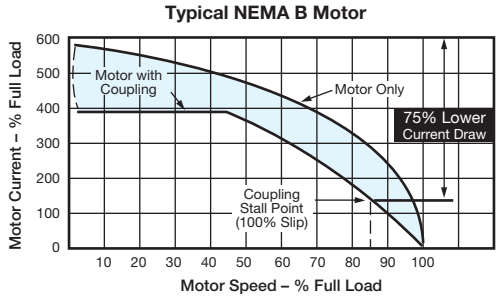


Figure 4 - Jam Load Burnout Protection

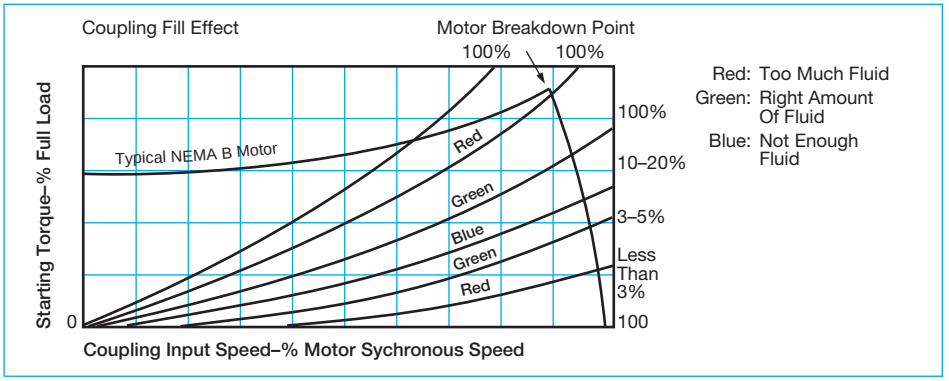


Figure 1 - Motor Breakdown Points

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 Figure 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 (see Figure 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 (see Figure 5) the purpose of the delayed fill chamber is to isolate a portion of the fluid from the main coupling. As the runner accelerates (see Figure 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 (see Figure 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.

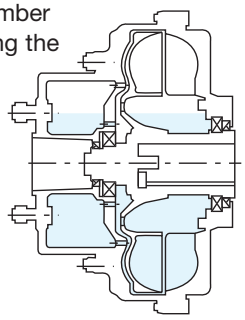


Figure 5
Standstill

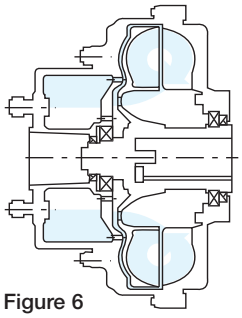


Figure 6
Accelerating

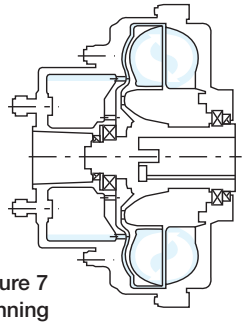


Figure 7
Running

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Mounting Types per Size

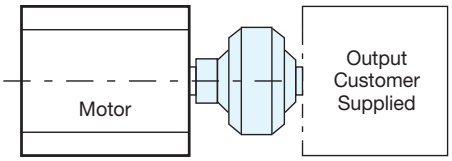
Mounting Type	Size 7.0*	9.4*	12.4*	15	17	19	21	24	27	29	34	Mounting Application
HC (pages 162-164)	•	•	•	•	•	•	•	•	•	•	•	Basic coupling for custom input & output
HCM (pages 166-167)	•	•	•	•	•	•	•	•	•	•	•	For use with flexible gear couplings
HCF (page 168)				•	•	•	•	•	•	•	•	Shaft to shaft with flexible output group
HCR (page 169)				•	•	•	•	•	•	•	•	Shaft to shaft with flexible output group
HBM (page 165)	•	•	•	•	•	•	•	•	•	•		Shaft to shaft applications For stub shaft input/output sizes 7-12.4
HSD (pages 170-171)	•	•	•	•	•	•	•	•				Parallel, QD sheave application

* Modular design (See page 161)

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

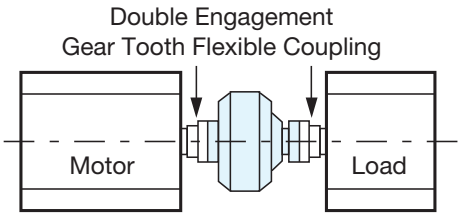
(pages 162-164)

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

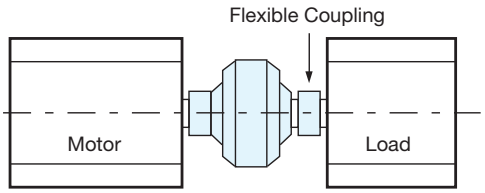
(pages 166-167)



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**

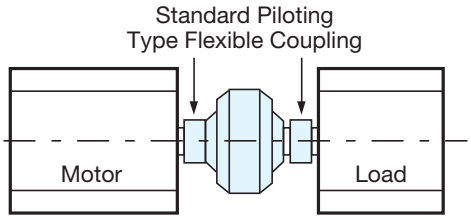
(pages 168-169)



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**

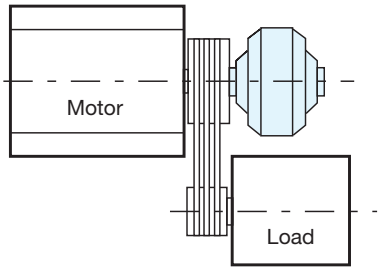
(page 165)



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.

HSD

(pages 170-171)



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 (see Figure 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	12.4	7	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	12.4	7	3	15	11.3
20	15	2	3-1/2	12.4	8	2-1/2	20	15.0
25	15	2	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	15*	3	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						
1,000	34	1						
1,250	34	0						
1,500	34	0						
1,650	D34	0						
1,750	D34	0						
2,000	D34	0						
2,500	D34	0						

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

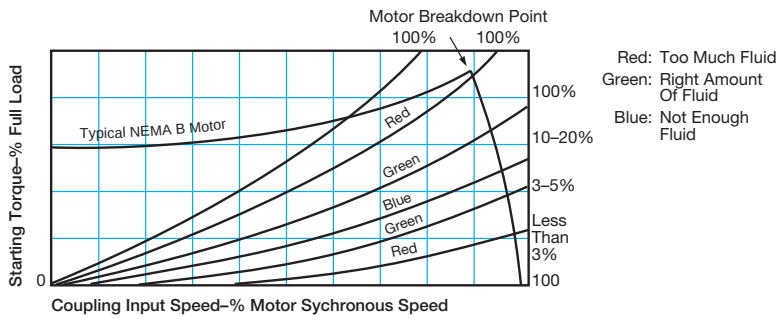
+ In these applications, frequent starts or overloads may overheat coupling. Use only for loads at or below rated torque of motor with infrequent starts.

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

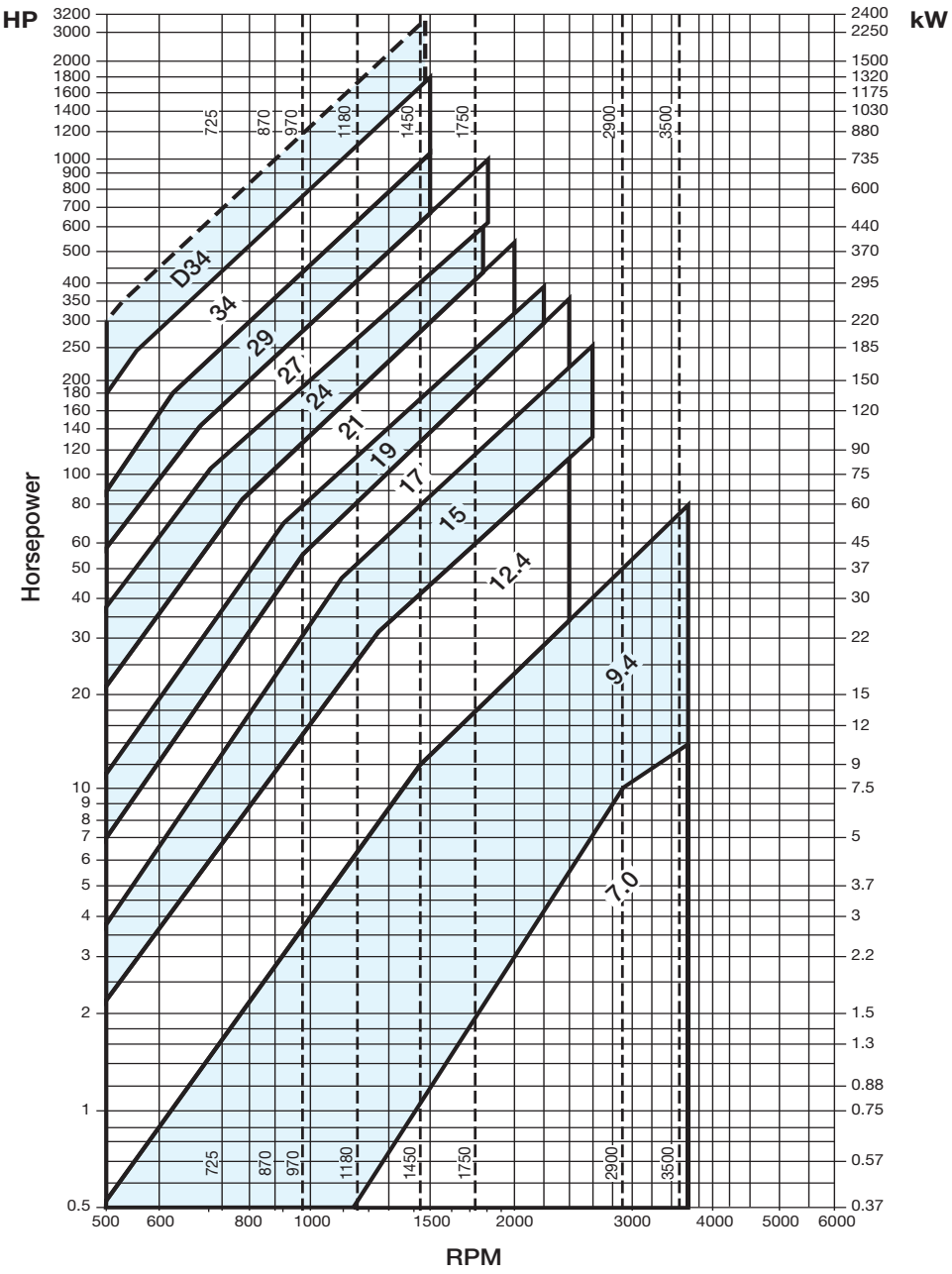
For minimum operating temperature below -10° F, consult the factory.

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

Figure 9 Coupling Fill Effect



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

Delayed Fill			
Size	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.

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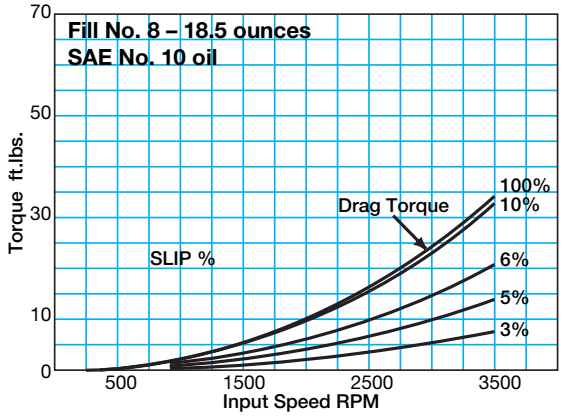
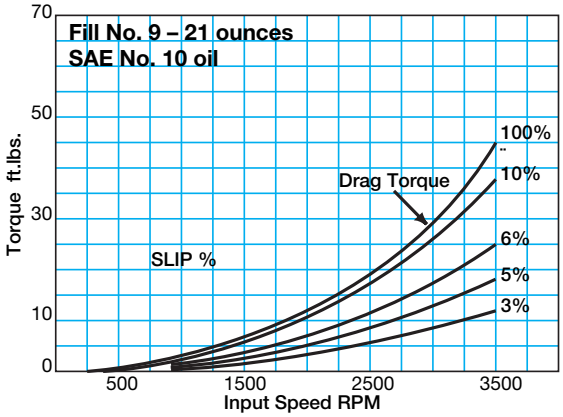
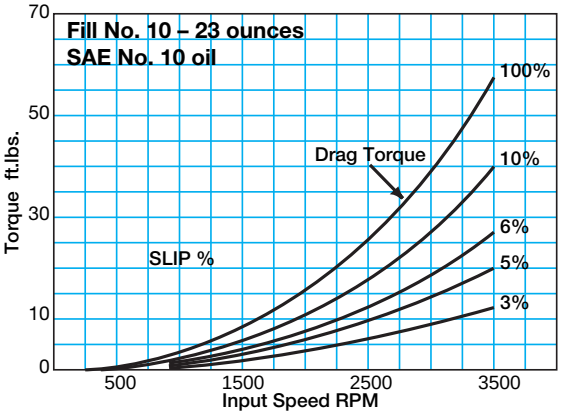
Slip Curves

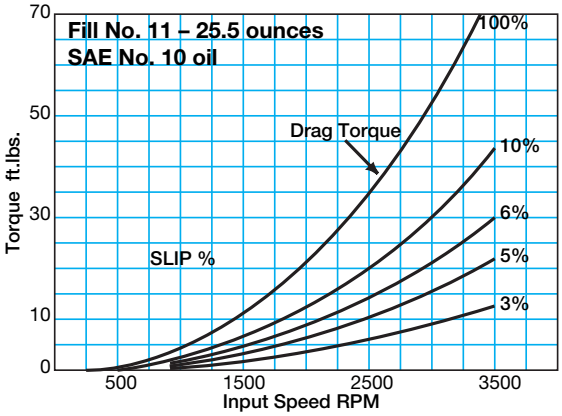
Size 7.0

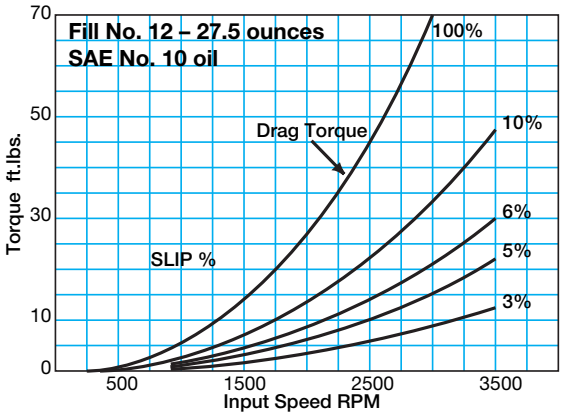
Maximum speed 3,600 RPM (All configurations)







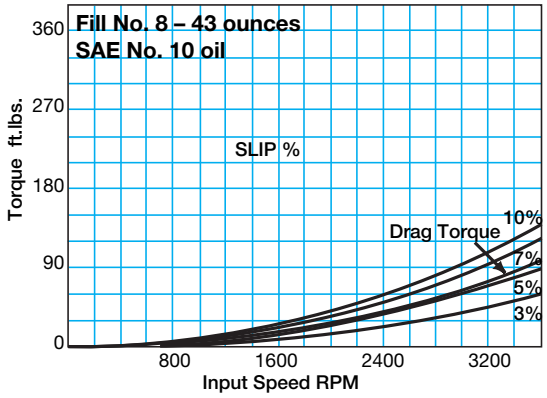


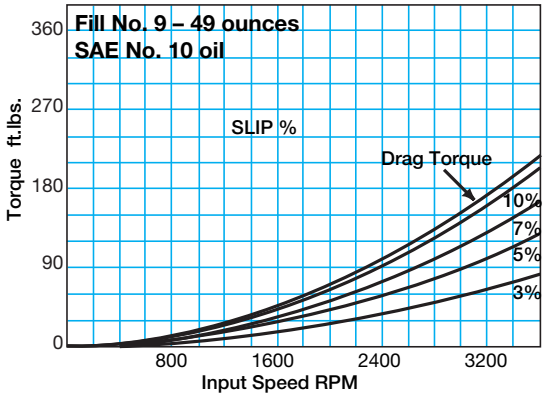


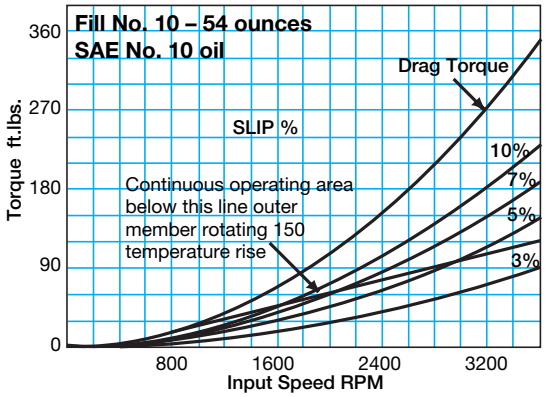
Slip Curves

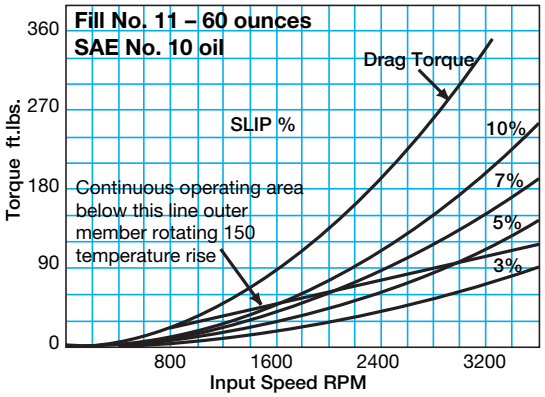
Size 9.4

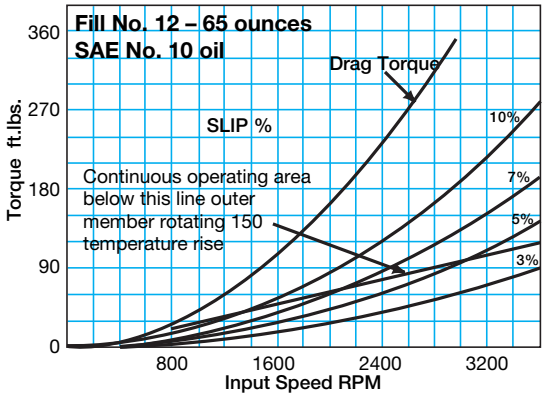
Maximum speed 3,600 RPM Except HSD-Max. 2,600 RPM











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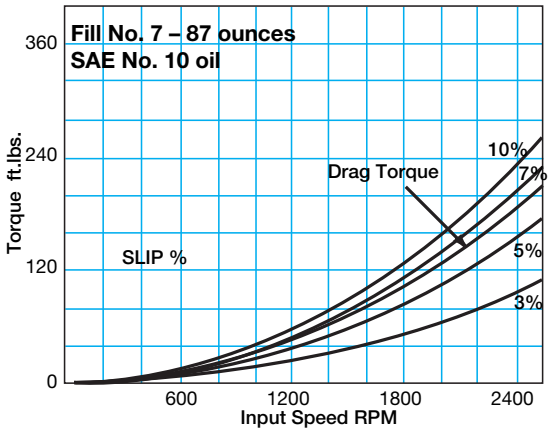
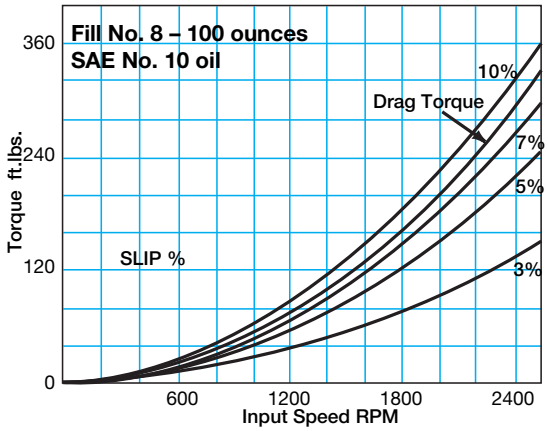
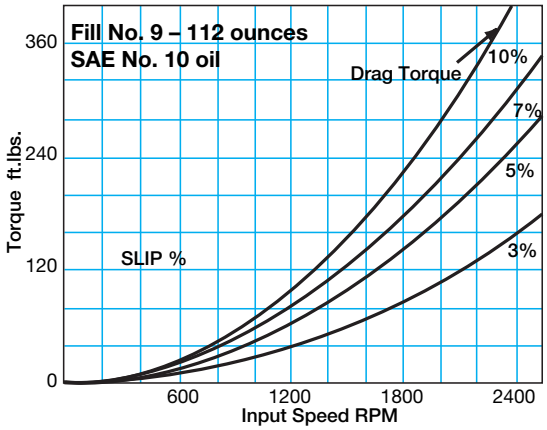
Slip Curves

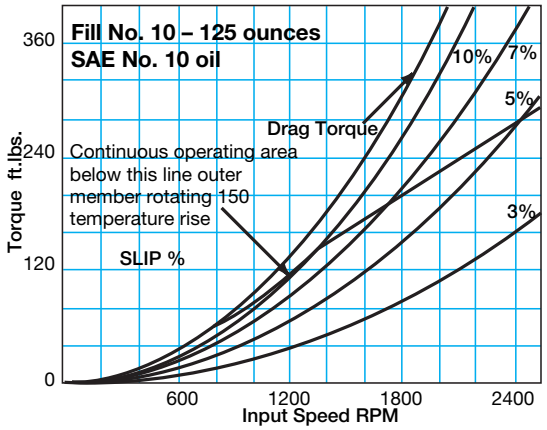
Size 12.4

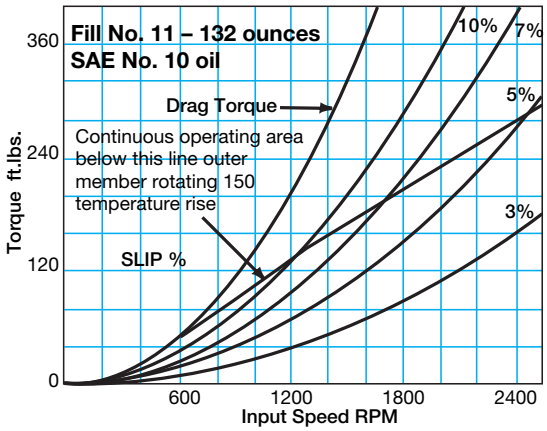
Maximum speed 2,400 RPM Except HSD-Max. 1,800 RPM

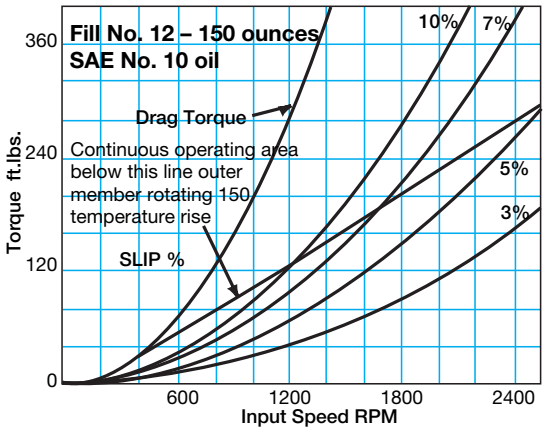








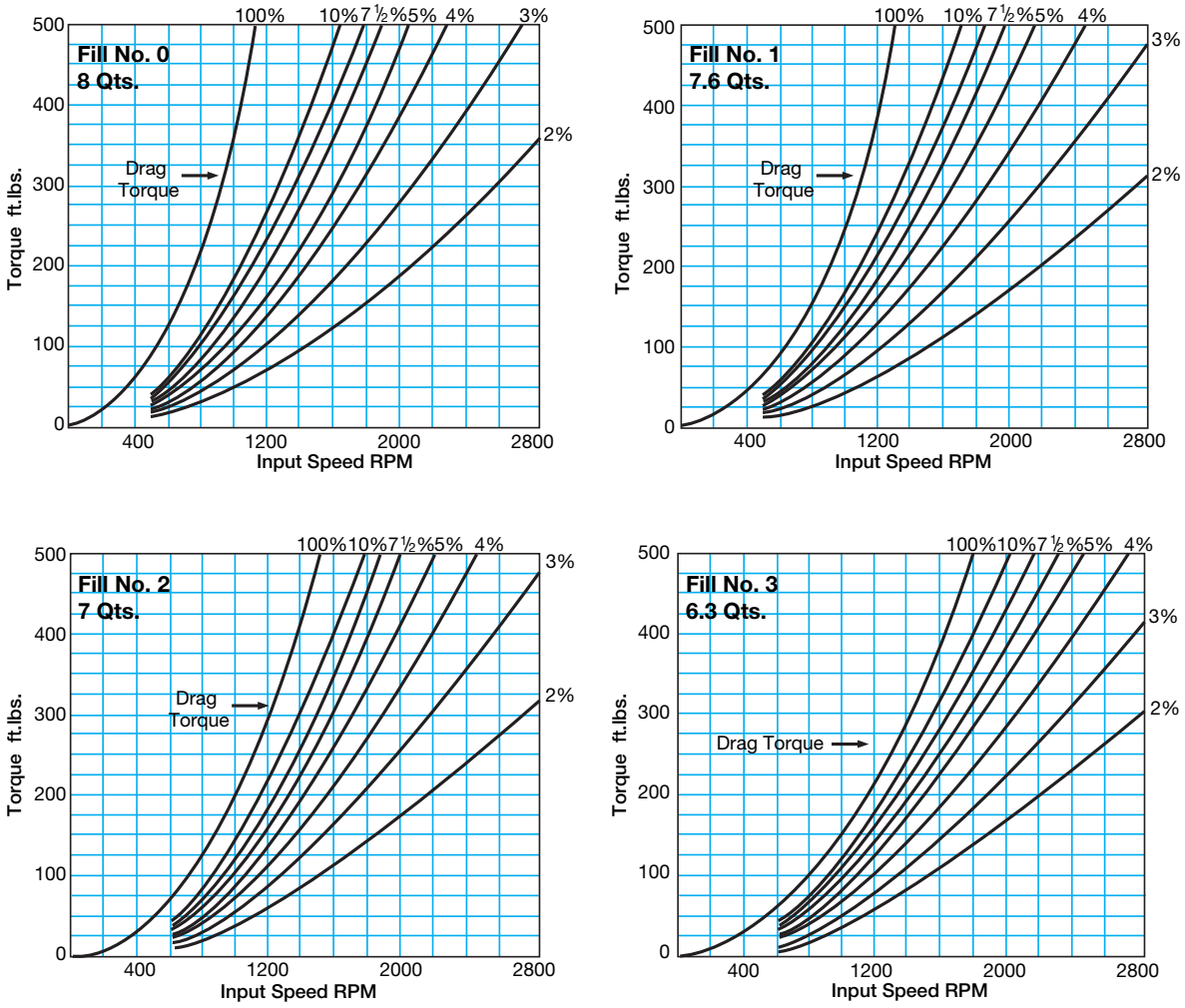




Slip Curves

Size 15

Maximum speed 2,600 RPM (All configurations)



Selection Example:

7.5 HP at 1,750 RPM

Normal running torque =

$$\frac{7.5 \text{ HP} * 5{,}250}{1{,}750} = 22.5 \text{ lb.ft.}$$

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 occuring at a speed of 1,540 RPM, with full motor speed of 1,750 RPM.

Pullout torque = 2 * 22.5 lb.ft. = 45 lb.ft.

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

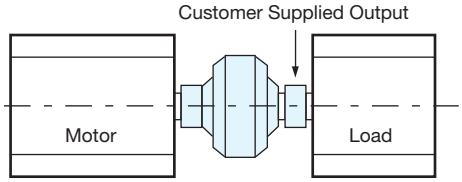
Locate the normal torque against RPM curve to insure the point is below the 7% slip line. Ideally, plot the point between 3% and 5% slip line.

Modular Design Concept

Sizes 7.0, 9.4, 12.4

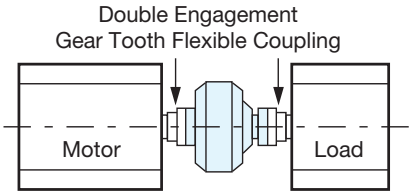
Configuration

HCF



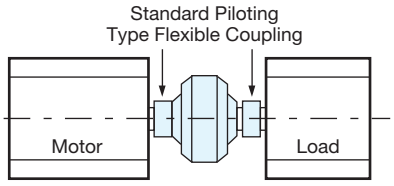
Consists of Model HC and input group. The input group is finish bored to fit standard NEMA B motor shafts. The optional output groups available (HCM, HBM) are shown on this page or the HCF output group must be supplied by the customer. Consult engineering for details.

HCM



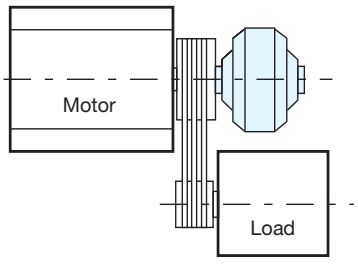
The Model HCM Fluid Coupling is a complete unit with both input and output flanges. It is intended for installation between two halves of a double engagement gear tooth flexible coupling which is customer supplied.

HBM



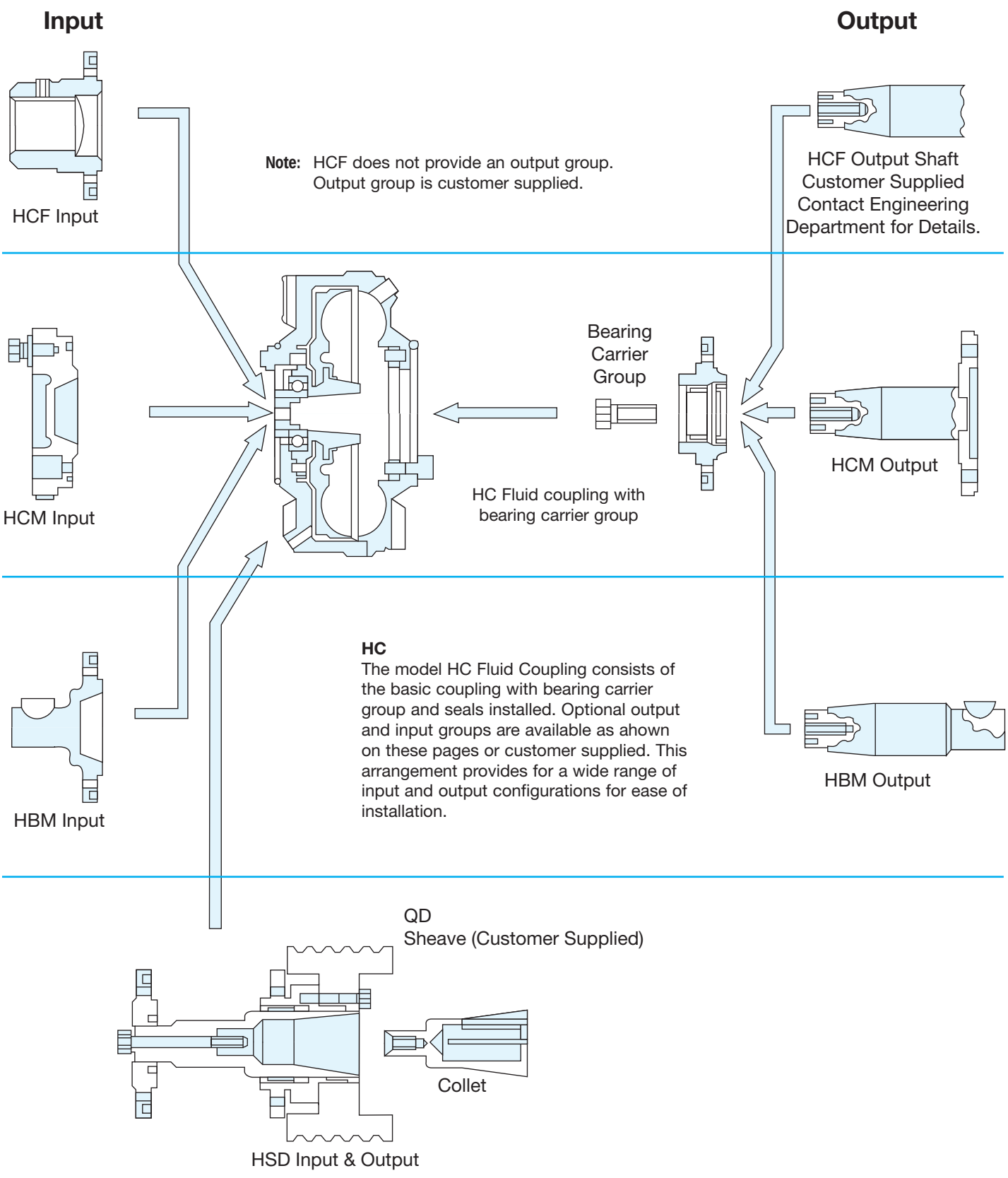
This coupling is a complete unit with a straight input and output shaft. It is installed between two piloting type flexible couplings supplied by the customer.

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.

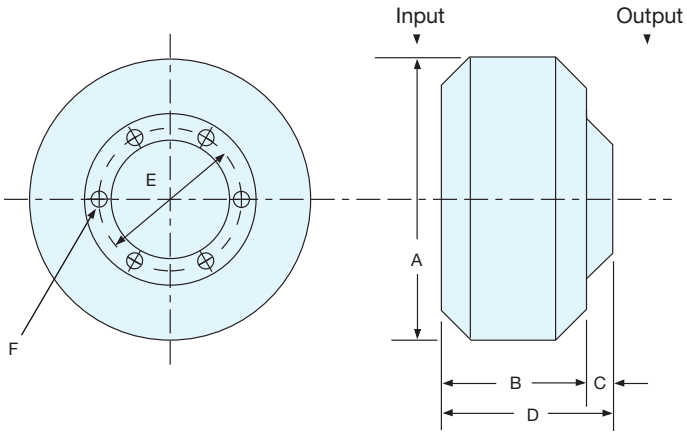
Mesur-Fil Couplings can be installed very quickly and easily utilizing a slotted collet for mounting on the motor shaft instead of the center bolt that is most commonly used with other sheave drives. Unlike the center bolt, the slotted collet requires no drilling and tapping of the end of the motor shaft.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


Input
Output
HCF Input
Note: HCF does not provide an output group.
Output group is customer supplied.
HCF Output Shaft
Customer Supplied
Contact Engineering
Department for Details.
Bearing
Carrier
Group
HCM Input
HCM Output
HC Fluid coupling with
bearing carrier group
HC
The model HC Fluid Coupling consists of the basic coupling with bearing carrier group and seals installed. Optional output and input groups are available as ahown on these pages or customer supplied. This arrangement provides for a wide range of input and output configurations for ease of installation.
HBM Input
HBM Output
QD
Sheave (Customer Supplied)
Collet
HSD Input & Output

Model HC

For Custom Applications

Sizes 7.0 – 12.4

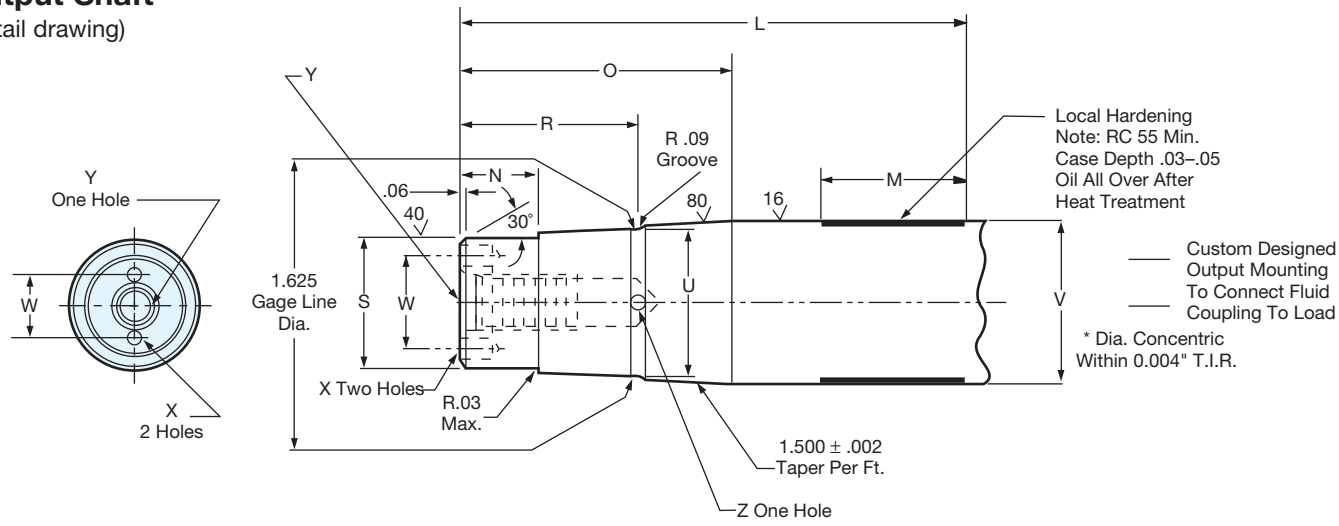


Dimensions: inches

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)



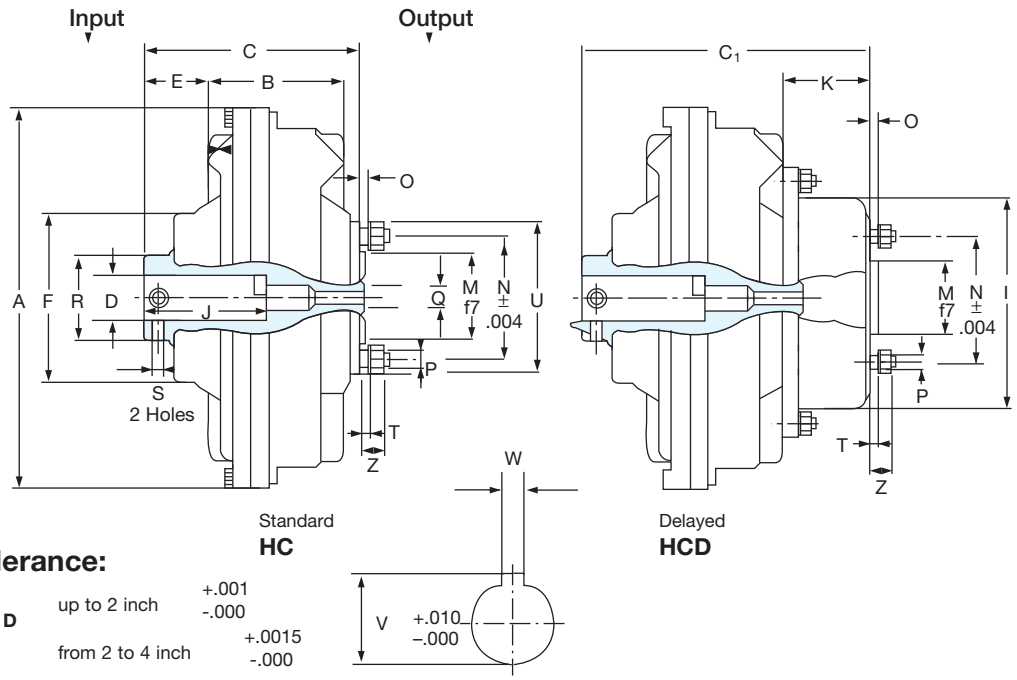
Dimensions: inches

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 .9839	1.124 1.116	1.250 1.249	.750	9/64 x .26	1.10	.60
9.4	5.42	1.50	1.905	2.90	.83	1.3782 1.3776	1.577 1.589	1.850 1.749	1.062	13/64 x .50	.96	.80
12.4	6.75	1.80	2.05	3.156	.90	1.5746 1.5750	1.785 1.777	2.000 1.994	1.125	13/64 x .50	.96	.90

Model HC

For sizes 34, see next page)

Sizes 15 – 29



Standard **HC**

Delayed **HCD**

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

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

Dimensions: inches

Size	D	J	W	V	A	B	C	C_1	E	F	I	K	M	N	O	P Nr.	P Dia.	Q	R	S	T	U	Z
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	5.3543	.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	5.3543	.197	8	M10		3.976		.315	6.142	.748
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	5.3543	.197	8	M10		3.976		.315	6.142	.748
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		4.961		.315	7.087	.748
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		4.961		.315	7.087	.748
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		5.354		.551	10.039	1.181
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		5.354		.551	10.039	1.181
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		8.070		.551	12.125	1.299
34	For Size 34 see page 164.																						

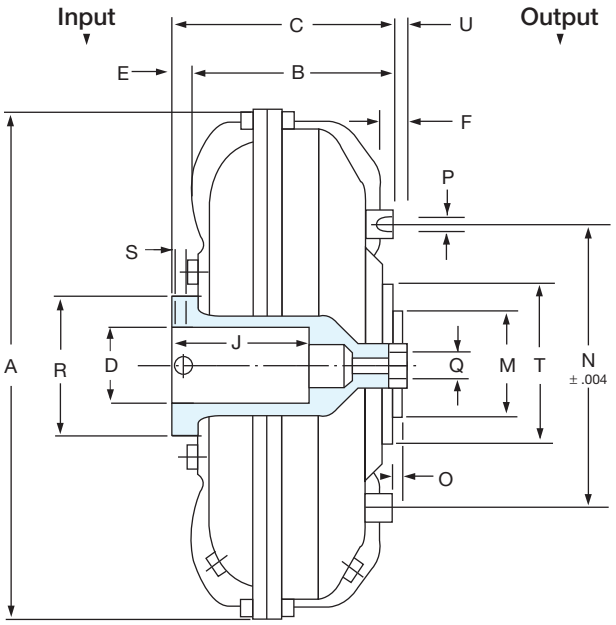
▲ HCD
● Max. Bore
■ With Reduced Depth Keyway

G

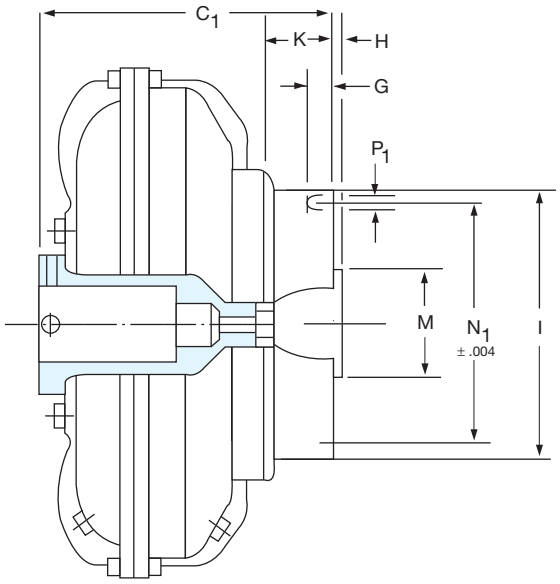
Model HC

For Custom Applications

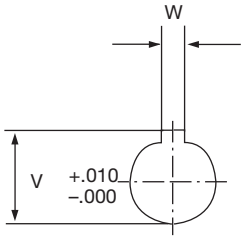
Sizes 34



Standard
HC



Delayed
HCD



Dimensions: inches

Size	D	J	W	V	A	B	C	P Nr.	P Dia.	N	O	E	F	G	H
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

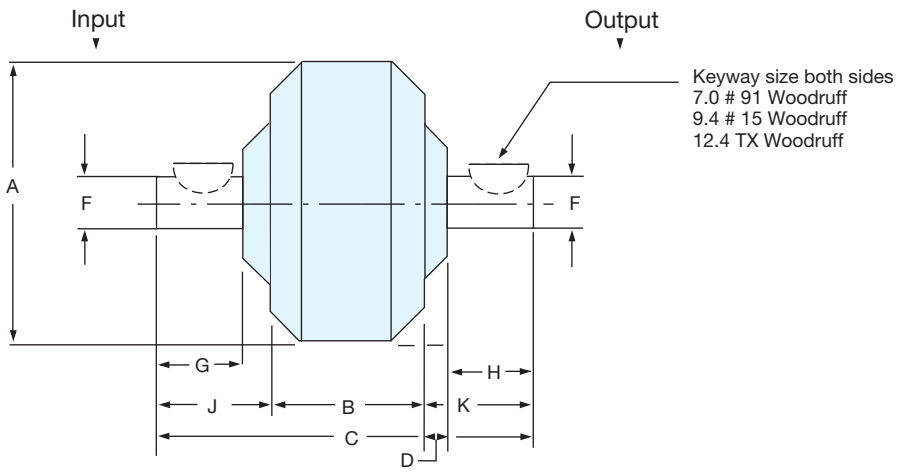
K	I	M	Q	R	S Nr.	S Dia.	T	C_1	P_1 Nr.	P_1 Dia.	N_1	U	Wt. lb. Less Oil	Oil US Gal. Max.
5.157	20.866	7.874	1-3/4 5 UNC	9.84	2	1 8 UNC	12.125	20.39	10	M16	18.897	.748	743 ▲ 776	21.8 ▲ 24.5

▲ HCD
● Max. Bore
■ With Reduced Depth Keyway

Model HBM

For Shaft-to-Shaft Applications

Sizes 7.0 – 12.4



Dimensions: inches

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 .999	1.000	1.62	1.62	2.34	2.24	12.65	27.6
9.4	10.25	4.70	10.89	.77 1.249	1.250	2.06	2.12	3.10	3.09	27.70	65
12.4	13.50	5.98	13.67	.82 1.624	1.625	2.12	2.75	3.88	3.88	51.07	150

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

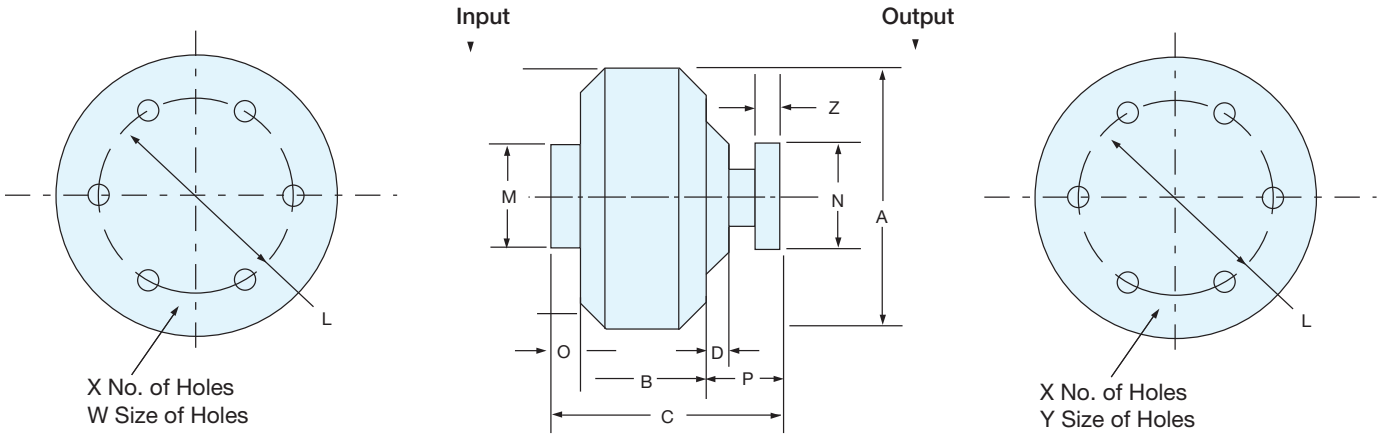
* Refers to TB Woods Form-Flex couplings

G

Model HCM

For Flexible Gear Couplings with Shrouded Bolts

Sizes 7.0–12.4

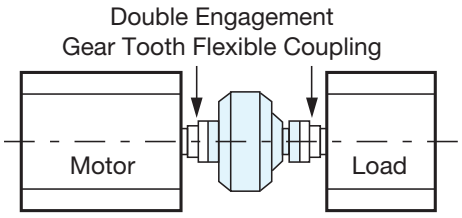


Fusible Plug: 4-619-068-000-0 3/8" NPT

Dimensions: inches

Size	A	B	C	D	L	M	N	O	P	W	X	Y	Z	Wt. lb. Less Oil	Oil Max. oz.	WR² lb.ft.² Outer	WR² lb.ft.² Inner	Gear Coupling Size
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.

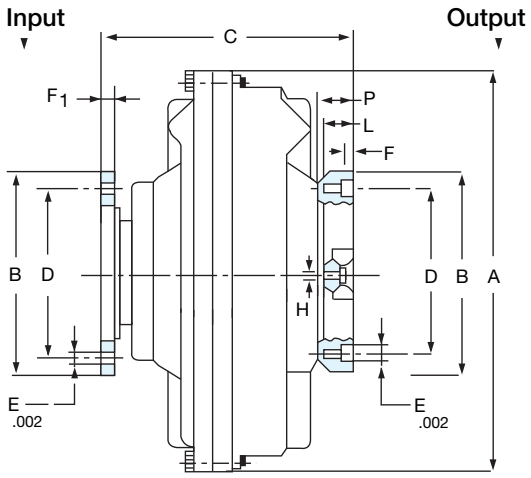
Size	Manufacturer	Model	Maximum Bore	Diameter of Shrouded Bolt Circle
7.0	TB Woods	1F	1.75	3.75
	Waldron	1W	1.63	3.750
	Poole	MXB 1	1.63	3.750
9.4 and 12.4	TB Woods	1.5F	2.25	4.812
	Amerigear	201.5	2.38	4.812
	Waldron	1.5 W	2.19	4.812
	Poole	MXB 1.5	2.19	4.812

Note: Gear couplings must be with Shrouded Bolts!

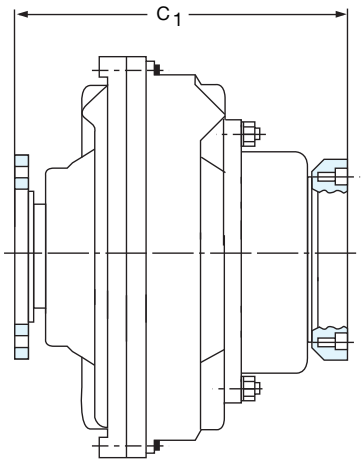
Model HCM

For Flexible Gear Couplings with Shrouded Bolts

Sizes 15-34



Standard
HCM



Delayed
HCMD

Size	A	B	D	E Nr.	E Dia.	F	F_1	H	L	C	C_1	Wt. lb. Less Oil	Oil U.S. gal. Max.	WR^2 lb.ft.² Outer	WR^2 lb.ft.² Inner	WR^2 lb.ft.² Outer for HCMD	Gea Coupling Coupling
15	18.11	8.385	7.000	10	0.502	0.354	0.394	1/2-20	0.945	9.85	12.56	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	9.84	13.079	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	9.84	13.079	165 ▲ 178	3.75 ▲ 4.22	33	14.5	▲ 35.1	2-1/2
21	24.41	8.385	7.000	10	0.502	0.374	0.394	1/2-20	1.22	12.44	16.38	240 ▲ 262	5.02 ▲ 6.07	51	23	▲ 57.2	2-1/2
24	27.95	8.385	7.000	10	0.502	0.374	0.394	3/4-10	1.22	12.44	16.38	285 ▲ 307	7.50 ▲ 8.24	96	46	▲ 102.2	2-1/2
27	30.71	11.020	9.500	8	0.750	0.866	1.220	3/4-10	2.008	16.06	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	0.866	1.220	3/4-10	2.008	17.20	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	0.866	1.102	3/4-10	2.283	24.96	28.90	960 ▲ 978	21.80 ▲ 24.5	650	28.5	▲ 668.5	4*

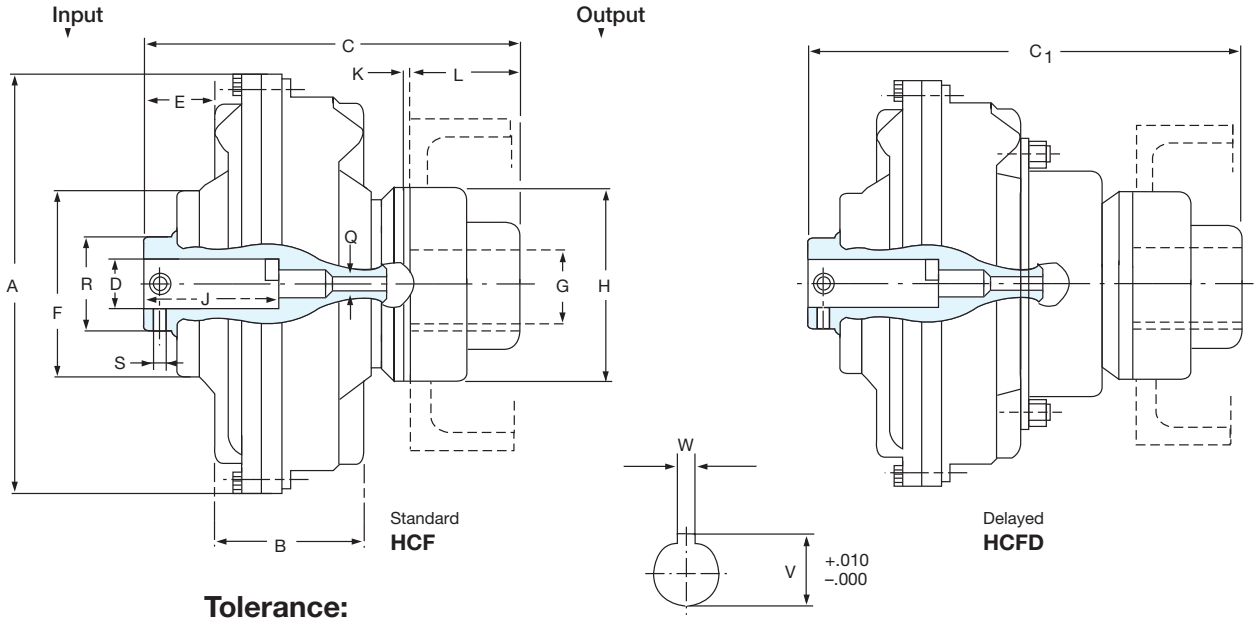
▲ HCMD *Exposed Bolts

G

Model HCF

For Shaft-to-Shaft Applications

Sizes 15-34



Standard **HCF**

Delayed **HCFD**

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

Dimensions: inches

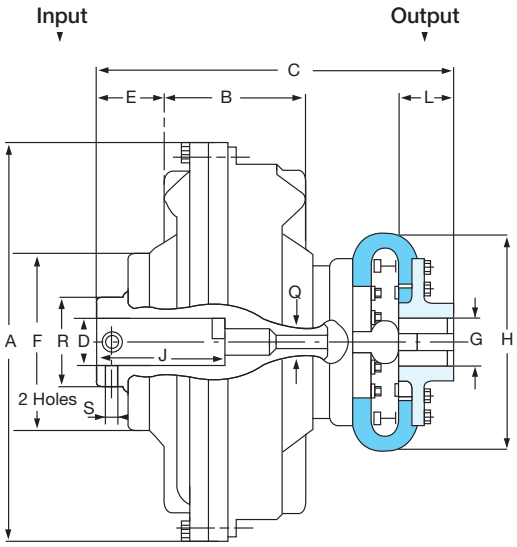
Size		D	J	W	V	A	B	C	C_1	E	F	G Max.	H	K	L	Q	R	S	Wt. lb. Less Oil	Oil U.S. Gal. Max.
15	●	2.875	7.000	.750	2.992	18.110	5.945	14.331	17.008	2.205	7.992	3.150	6.693	.118	4.331	7/8 9 UNC	3.976	5/8 11 UNC	110.7	2.020
	■	2.375	5.625	.625	2.651	18.110	5.945	14.331	17.008	2.205	7.992	3.150	6.693	.118	4.331		3.976		▲ 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		4.961		▲ 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 ▲ 200.4	3.750 ▲ 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		5.354		▲ 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 ▲ 348.0	7.500 ▲ 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 ▲ 549.0	11.09 ▲ 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 ▲ 666.7	14.531 ▲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 ▲ 1059	21.8 ▲ 24.5

▲ HCFD
● Max. Bore
■ With Reduced Depth Keyway

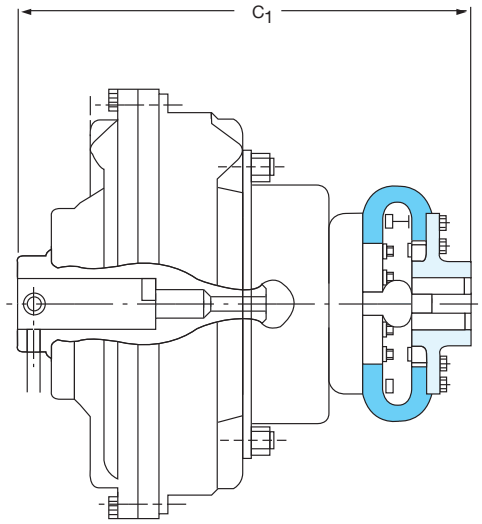
Model HCR

For Shaft-to-Shaft Applications

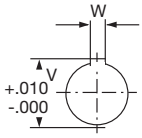
Sizes 15-34



Standard
HCR



Delayed
HCRD



Tolerance:

Dim D	up to 2 inch	+.001 -.000
	from 2 to 4 inch	+.0015 -.000
Dim W	up to .500 inch	+.002 -.000
	from .625 to 1 inch	+.003 -.000

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

Dimensions: inches

Size		D	J	W	V	A	B	C	C_1	E	F	G Max.	H	L	Q	R	S
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	
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	
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	1-3/4 5 UNC	7.283	7/8 9 UNC
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

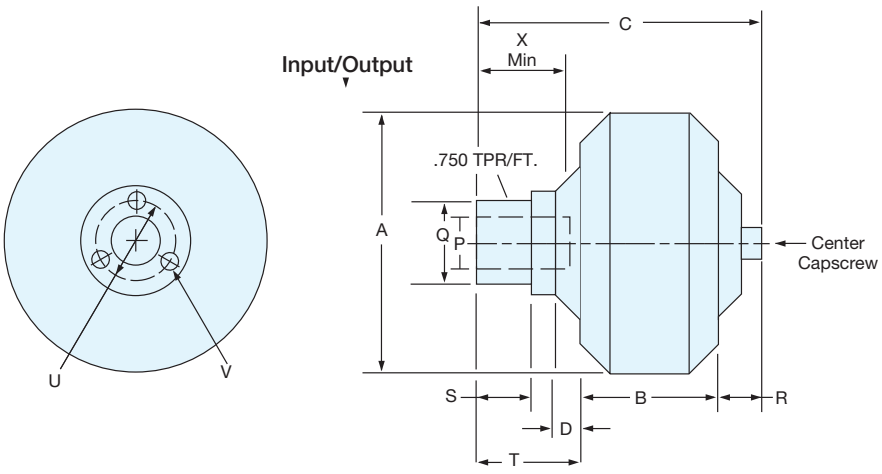
● Max. Bore
■ With Reduced Depth Keyway

G

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

Fusible Plug: 4-619-068-000-0 3/8" NPT

Dimensions: inches

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.

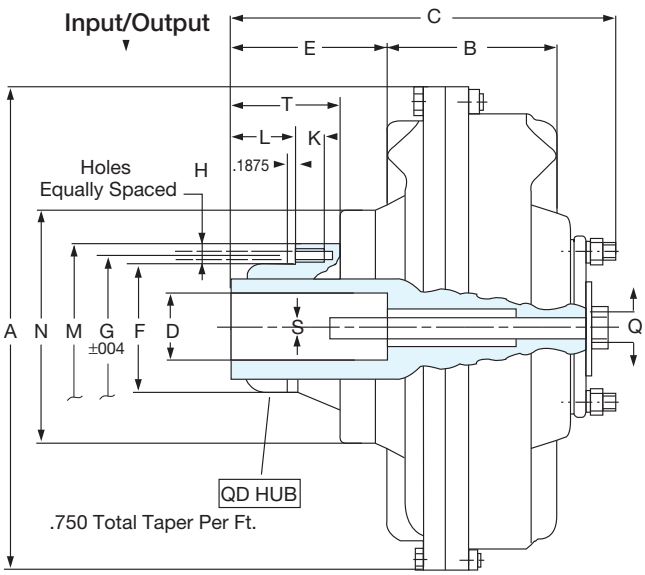
HSD	Maximum Speed
7.0	3,600 RPM
9.4	2,600 RPM
12.4	1,800 RPM

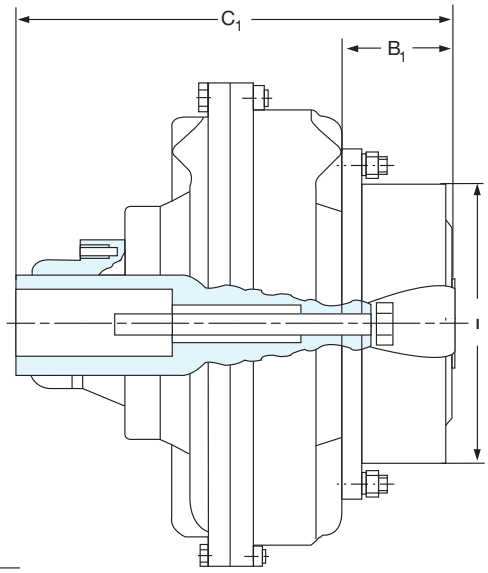
Model Size	Casting on Housing
7.0	216262 A
	216405 A
9.4	216438 A
	216439 A
12.4	219463 A
	219464 A

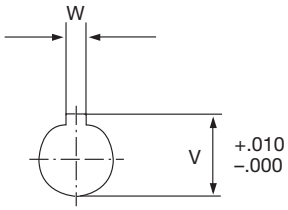
Important note:

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

Sizes 15-24







Standard
HSD

Delayed
HSDD

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

Dimensions: inches

Size	D	J	W	V	A	B	B_1	C Max.	C_1	E	F	G	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 12 UNC	10.039	1.181	3.397	6.663	8.032	7/8 9 UNC	6.362	3/4 10 UNC	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		10.039	1.181	3.397	6.663	8.032		6.362			▲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		12.992	1.378	4.331	7.25	8.976		8.449		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	5/8 11 UNC	12.992	1.378	4.331	7.25	8.976		8.449			▲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		12.992	1.378	4.331	7.25	8.976	1-1/4 7 UNC	8.449	7/8 9 UNC	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		12.992	1.378	4.331	7.25	8.976		8.449			▲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		15.748	1.575	7.085	9.00	9.842		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	3/4 10 UNC	15.748	1.575	5.511	9.00	9.842		8.661			▲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		15.748	1.575	7.085	9.00	9.842		10.236		M	307	7.50
																								▲329	▲8.24

▲ HSDD
● Max. Bore
■ With Reduced Depth Keyway

G