



**magnaloy coupling  
company**

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**M**agnaloy Coupling Company manufactures the **original light weight, heavy-duty flexible drive coupling**. Magnaloy has been manufacturing their precision machined, magnesium alloy cast couplings for nearly 40 years. Today, Magnaloy offers many products in addition to **Flexible Drive Couplings** including, **Pump/Motor Mounts**, **Cylinder Rod End Alignment Couplers**, a complete line of **Fluid Power Accessories** and **Hydraulic Manifolds & Manifolding Accessories**. All Magnaloy's products offer superior quality in material and workmanship. Immediate delivery is available through a broad **North American distribution network** and **distributors located in Europe**.

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## Premium Flexible Drive Couplings



**LIGHTWEIGHT/STRONG** - Magnaloy is the original lightweight, heavy duty flexible drive coupling. Solid magnesium alloy permanent mold castings are heat treated and offer the highest strength-to-weight ratio available. Light weight magnesium construction makes the Magnaloy Coupling 76% lighter than iron and 36% lighter than aluminum units of similar design. The benefits

include reduced loads on bearings, shafts and pumps for longer component life, easier handling and installation and rust proof and corrosion resistant design.

**PRECISION MACHINED** - The Magnaloy Coupling's wide, outside diameter is machined to  $\pm .001$  inch and the bore is machined concentric to this diameter within  $.002$  inch T.I.R. These close machining tolerances assure vibration-free operation and easy, accurate alignment without need for special tools.

**SIMPLE DESIGN** - Magnaloy's Radial Lug Design is logical and efficient. The most common failure of an elastomeric insert type drive coupling is hysteresis failure of the elastomeric element. Magnaloy Coupling's drive lugs are in a true radial orientation and applied forces are evenly distributed in the compressive direction only, eliminating the heat generating radial component. True compressive loading reduces internal heat generation and improves elastomer life. Magnaloy's Load-Lock Design entails a negative tapered configuration on the drive-lugs from top to base. Under load, the insert conforms to the tapers, interlocking the two hubs. This Load Lock design protects bearings and equipment by eliminating end thrust in both directions.

**FLEXIBILITY** - Magnaloy Couplings offer four-way flexibility (parallel, angular, axial and torsional) and require no lubrication. They are easily installed and properly aligned without the use of special tools or equipment. - a straight edge and hex wrench are the only tools required. Magnaloy's insert reduces noise and vibration and permits needed flexibility for proper operation within alignment capabilities.

**EASY ALIGNMENT** - Magnaloy's wide, precision machined outside surfaces permit a simple, but accurate alignment procedure. Simply place a straight edge at the top and side of the coupling and adjust the equipment to permit no more than a  $.005$  inch feeler gauge under the straight edge. This will indicate accurate parallel and angular alignment. The maximum recommended misalignment is 1° and the maximum recommended parallel misalignment is  $.015$  inch.

## Performance Specifications

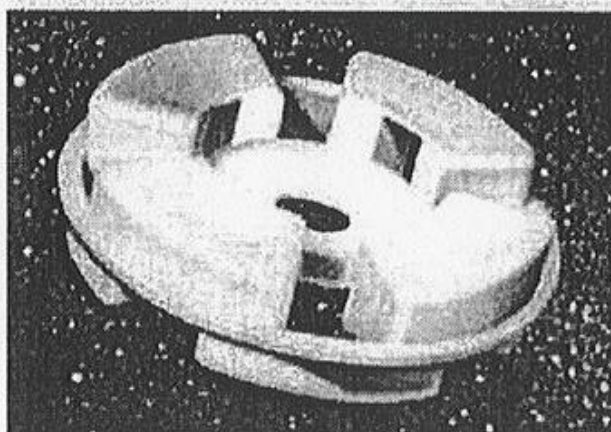
Magnaloy's design features which incorporate our exclusive Radial Drive Lug orientation and precision machined permanent Magnesium castings offer the greatest strength to weight ratio in the industry. The following Performance Specification table illustrates the capabilities of the Magnaloy Coupling Series. For proper coupling selection see the Magnaloy Coupling Selection Chart. Use the proper Service Factor for the application.

Model Size	Max Bore	Insert Number	Rated Torque (in-lb)	HP Rating @100 RPM
PM90	1 1/8	97N	224.0	.36
		97U	336.0	.54
		97H	672.0	1.08
100	1 1/8	170N	340.7	.55
		170U	511.0	.82
		170H	1,022.1	1.65
200	1 3/8	270N	398.3	.64
		270U	597.4	.96
		270H	1,194.9	1.92
300	1 5/8	370N	701.4	1.12
		370U	1,052.1	1.68
		370H	2,104.2	3.36
400	1 7/8	470N	1,056.3	1.69
		470U	1,584.5	2.5
		470H	3,168.9	5.1
500	2 3/8	570N	2,194.8	3.5
		570U	3,292.2	5.3
		570H	6,584.4	10.5
600	2 5/8	670N	4,946.7	7.9
		670U	7,420.1	11.9
		670H	14,840.1	23.7
700	2 7/8	770N	11,639.8	18.6
		770U	17,459.7	27.9
		770H	29,099.5	46.5
800	3 7/8	870N	21,889.4	35.0
		870U	32,834.1	52.5
		870H	47,062.2	75.2
900	4 3/4	970N	47,842.3	76.5
		970U	71,763.5	114.8

These ratings and service factors are intended for use as a guide only. Actual dynamic conditions of any application may require different service factors.



## Insert Selection Guide



Magnaloy Coupling's full range of inserts permit custom design performance in a wide range of applications. All inserts offer complete electrical insulation. Magnaloy's design eliminates all contact between hubs. Magnaloy will accept misalignment strain and, if excessive, will cause insert wear and

audible indication of misalignment problems. However, Magnaloy's inserts are inexpensive and easily replaced; under normal conditions the insert requires replacement.

Neoprene (Code N) - *Black material* - Standard insert with Magnaloy. Good general purpose material offering good resiliency and load capacity. Temp Range -30°F to +250°F. Optional 80A durometer (painted Gold) or 90A durometer (painted Silver) are available for slight increase in load capacity and less resiliency.

Nitrile (Buna N)(Code B) - *Painted blue* - Excellent material with petroleum products. Excellent compression set and abrasion resistance characteristics. Temp range -60°F to +250°F.

Urethane (Code U) - *Yellow Material* - Excellent mechanical and physical properties. Offers good medium duty and resiliency. Urethane tends to soften at higher temperatures and swells in humid conditions. Temp range -20°F to +150°F.

Viton™ (Fluorocarbon)(Code V) - *Red Material* - Excellent fluid compatibility and high temperature characteristics. Good compression set and resiliency. Temp range -20°F to +350°F.

Hytrel™ (Code H) - *Blue-green material* - Superior physical and mechanical properties and excellent fluid compatibility and high temperature characteristics. Hardness (50D) approaches that of plastic and offers little resiliency. Excellent performance under heavy duty conditions. Temp range -65°F to +300°F.

Hytrel is a registered trademark of DuPont

Viton is a registered trademark of DuPont Dow Elastomers

## Specifications

unique coupling design incorporates a completely enclosed insert with smooth machined surfaces for easy/accurate alignment. The outer shell is concentric to the bore within .002 inch and held dimensionally within .001 inch. Models 100 thru 400 have three equally spaced drive lugs, the models 500 thru 600 have four drive lugs and the models 600 thru 900 have six equally spaced drive lugs. The following table quantifies the dimensions of the insert load segments. The following table quantifies the dimensions of the Magnaloy coupling.

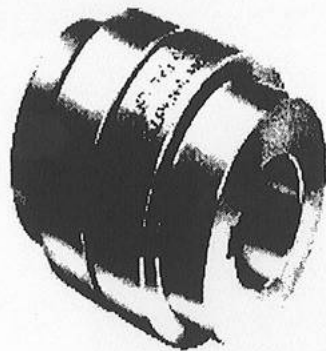
	PM90	100	200	300	400	500	600	700	800	900
A	2.78	2.54	3.10	3.58	4.24	4.67	5.98	6.99	7.99	10.15
B	2.125	2.600	2.900	3.450	3.980	4.800	5.975	6.900	8.600	11.400
C		2.00	2.25	2.90	3.05	4.00	4.50	5.19	7.00	8.30
D		.56	.68	.78	1.00	1.04	1.60	2.08	2.25	2.75
E		.68	.84	.96	1.06	1.23	1.33	1.32	1.62	2.20
F		.42	.42	.44	.54	.64	.62	.89	1.00	1.32
G		.31	.43	.56	.73	.70	1.13	1.13	1.58	
H										
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M										
N										
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V										
W	3/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
X	.75	.90	.90	.98	1.20	1.41	1.36	1.97	2.25	2.89
Y										
Z										
AA										
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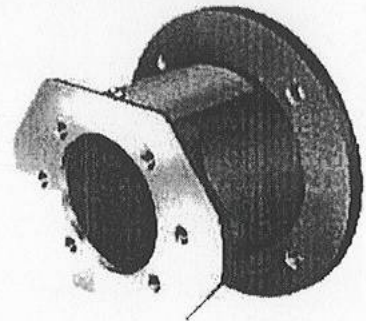
## Flexible Drive Couplings:

Magnaloy offers 9 models of magnesium drive couplings and 1 model of a powdered metal drive coupling. The PM90 model coupling (powdered metal) is available in bore sizes from 7/16 inch (12 mm) to 1 1/8 inch (28 mm) with torque ratings up to 672 in-lbs. The premium line of drive couplings (magnesium) are available in bore sizes from 3/8 inch (10 mm) up to 4 3/4 inch (120 mm) and torque ratings up to 71,763 in-lbs. Standard, metric and spline bores are available from stock and most other special & custom orders ship in 3 to 10 business days.



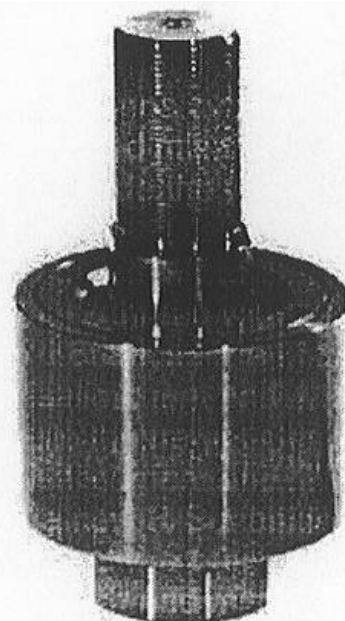
## Pump/Motor Mounts:

Magnaloy offers the most complete line of pump/motor mounts in the industry. Mounts are available in aluminum casting or welded steel construction in horizontal and vertical designs for electric motor, gasoline or diesel engine to hydraulic pump applications. All mounts are machined to precision tolerances to assure proper alignment between the motor and pump pilot. Special configurations including metric sizes are our specialty.



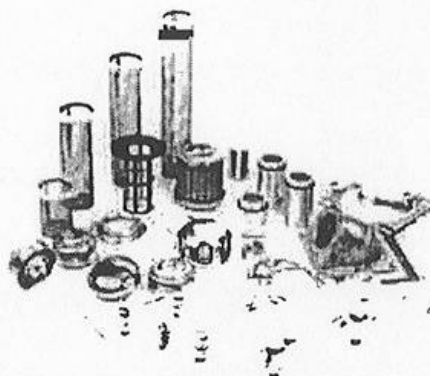
### **Cylinder Rod End Alignment Couplers:**

The Magnaloy Rod Alignment Coupler combines extended misalignment capabilities and strength to provide the most versatile alignment coupler available. The Magnaloy Rod Alignment Coupler is offered in two designs from 5/16-24 thread to 4 1/4-12 thread with a maximum rated load of 370,850 lbs. The M-Series provides 10° spherical misalignment and 1/8 inch lateral misalignment while the new R-Series provides 7 1/2° spherical misalignment and 1/8 inch lateral misalignment. The new R-Series design allows retro-fit from competitive brands while offering increased strength and misalignment capabilities. Both series are available in metric thread sizes.



### **Fluid Power Accessories**

Magnaloy's accessory line includes a complete selection of Filler Breather Caps, Screens, Flanges and Adapters to allow custom design of filler breather assemblies. Other power unit accessories include heavy duty Suction and Return Line Flanges in tube and pipe sizes, in-tank Suction Strainers and two designs of Liquid Level Gauges. Additional accessory products include a high quality line of Gauge Isolators in a single port or six port design and a hydraulic Pressure Switch with triple signal capabilities from a single switch. Watch for additional product offerings from Magnaloy's Accessory Products line-of-business.



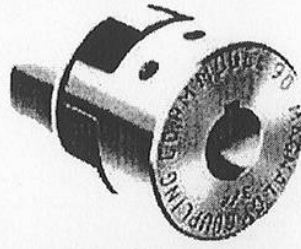
### **Hydraulic Manifolds & Manifolding Accessories**

Magnaloy offers a complete line of In-Line Bar Manifolds, Subplates, Cover Plates, Valve Adaptors, Integrated Circuit Manifolds and Accessories to make the design and fabrication of hydraulic circuitry simple and easy. These products are available with NFPA valve pattern sizes D03, D05, D05E, D05H and D08 machined in aluminum or steel with ports available in SAE, NPTF, BSPP and BSPT styles. Several options are available to add flexibility to meet any circuit design requirement. Custom designed manifolds are our speciality.



## PM90 Flexible Drive Couplings

**Quality, Strength and Economy.....** If your priorities for a coupling are Quality, Strength and Economy then specify Magnaloy's Type PM Model 90 coupling. The Magnaloy PM90 coupling is made from high-density powdered metal offering high strength and low cost construction. Double set-screws standard with all bore sizes 1/2 inch and over. The set-screws are placed over the keyway and at a 45° angle to the keyway to allow greater hoop-stress and maximum shaft gripping. Increased drive lug surface area provides low unit loads on the insert drive elements while allowing more rapid heat dissipation. The PM90 coupling utilizes Magnaloy's exclusive "radial drive lug design", providing even, compressive loading of the insert. This design eliminates the heat generating radial loading component and maximizes insert life. The insert design allows easy installation and replacement without hub removal. Inserts are available in standard, Nitrile, and optional, Urethane and Hytrel, materials.



*To receive a descriptive product brochure on the Magnaloy PM90 Couplings please complete the request form below.*

## Coupling Selection Guide

Magnaloy offers a complete line of flexible drive couplings providing shaft size and performance specifications for most applications. Magnaloy's availability makes selection of the proper coupling simple and quick. Installation should be in accordance with Magnaloy's installation instructions.

**A.** Several specifics must be considered to make the best choice of couplings:

- 1 Type of prime mover and load characteristics
- 2 Shaft Diameters and key sizes or spline configuration
- 3 Horsepower rating of equipment to be coupled
- 4 Maximum operating speed
- 5 Maximum operating misalignment
- 6 Clearance limitations



B. Calculate the effective hp/100 rpm using the appropriate service factor and select the coupling size based on this calculation.

$$\text{Effective HP/100 RPM} = \text{Rated HP} * \text{Service Factor} * 100 / \text{RPM}$$

C. Verify your selection.

1. Check for maximum bore size
2. Check Dimensions for adequate clearances
3. Indicate any special insert specification or other special considerations

#### **SERVICE FACTORS - Load Characteristics**

Load Classification	Type of Prime Mover			
	Std Motor or Turbine	High Torque Motor	I.C. Engine 6 or more cyl.	I.C. Engine less than 6 cyl.
Uniform	1.0	1.5	1.5	2.0**
Moderate	1.5	2.0	2.0*	2.5**
Heavy	2.0**	2.5**	2.5**	3.0**

\* Recommend use of Urethane or Hytrel insert.

\*\*Recommend use of Hytrel insert and steel bushing with spline bores.

Uniform Load: Steady loading, non-reversing, torque does not exceed rating.

Moderate Load: Uneven loading with moderate shock, frequent starts, infrequent reversals, peak torque may exceed average rating of prime mover by 125%.

Heavy Load: Uneven Loading with heavy shock, frequent reversals, peak torque may exceed average rating of the prime mover by 150%.

## Mis-Alignment Capabilities

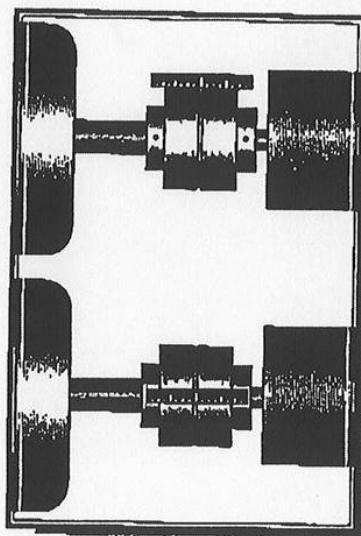
**magnaloy**

Magnaloy couplings offer four-way flexibility (parallel, angular, axial and torsional) and require no lubrication. They are easily installed and properly aligned without use of special tools or equipment - a straight edge and hex wrench are the only tools required. Magnaloy's insert reduces noise and vibration and permits needed flexibility for proper operation within alignment capabilities.

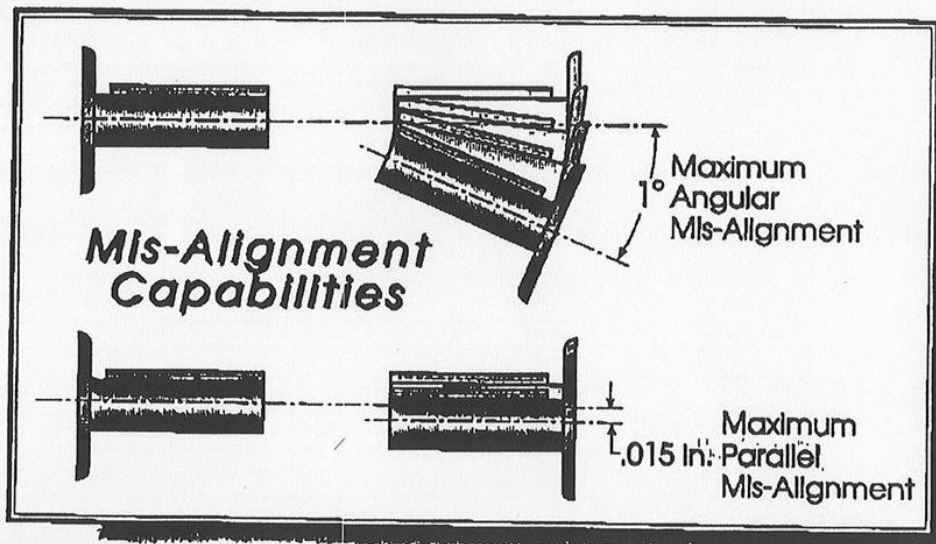
### Recommended Torques for Fasteners

Model	Set Screw	Clamp Screw
100	60-70 in. lbs.	130-140 in. lbs.
200	130-140 in. lbs.	130-140 in. lbs.
300	130-140 in. lbs.	210-220 in. lbs.
400	190-200 in. lbs.	210-220 in. lbs.
500	190-200 in. lbs.	300-310 in. lbs.
600	190-200 in. lbs.	35-36 ft. lbs.
700	300-310 in. lbs.	35-36 ft. lbs.
800	300-310 in. lbs.	49-50 ft. lbs.
900	100-110 ft. lbs.	100-110 ft. lbs.

\*Intended as a general guide for fastener torques with Magnaloy Couplings.



Perfect alignment of equipment shafts, in most cases, is impractical to obtain or maintain, and misaligned equipment produces excess stress on bearings and coupling. Magnaloy's insert design will accept misalignment strain and, when excessive, will cause insert wear as a visual and audible indication of misalignment problems. However, Magnaloy's inserts are inexpensive and easily replaced; under normal conditions the insert seldom requires replacement.



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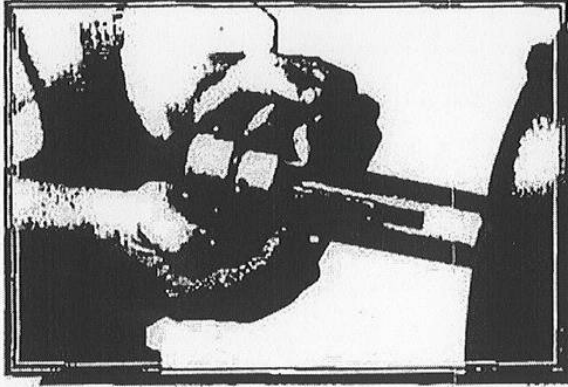
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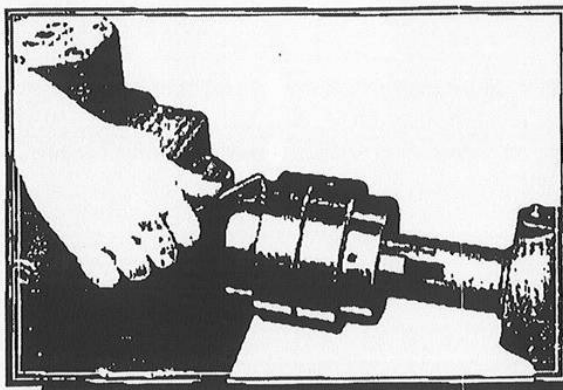
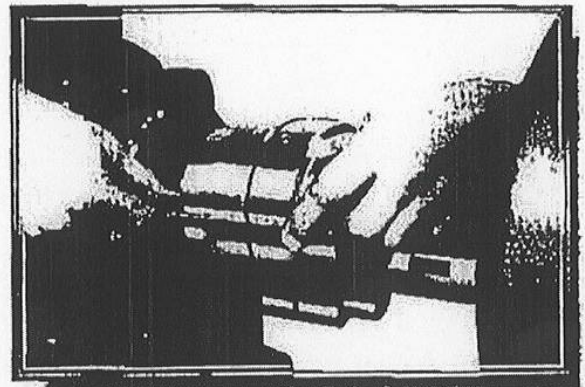
**magnaloy****Installation Instructions**

Shaft spacing should be within range given by dimensions 'W' and 'X' as shown in charts on page 4. Position each hub on proper size shaft - Magnaloy couplings are bored to standard "push fit" tolerances. If a tight fit exists check shaft for burrs.

Maximum benefits are obtained with hubs positioned to allow complete shaft engagement within bore. However, some equipment designs do not permit this condition - maximum shaft engagement should be utilized in any case.

**Alignment** - Place a straight edge (scale) at top and side of coupling. Use a .005 inch feeler gauge under scale for final inspection. This will indicate accurate parallel and angular alignment.

Magnaloy's precision tooled outside surfaces permit this simple, but accurate alignment method.



Secure equipment mounts and recheck alignment for movement.

Install the insert in the coupling positioning hubs in contact with lip around outside of insert.

Before tightening set screws, run the coupling and check for separation of hubs or "creep". Recheck alignment and tighten set screws.

With the Steel Bushed/Clamp type couplings, to facilitate installation on the shaft, it may be necessary to slightly loosen the set-screw over the keystone. When securing the coupling to the shaft, first tighten the clamp bolt, then tighten the set-screw against the keystone.



### Keystock Interference with Drive Lug

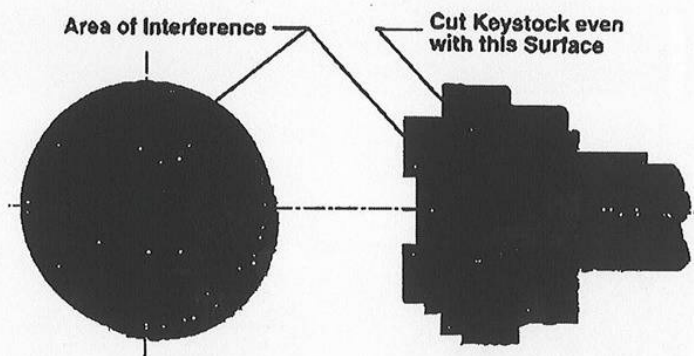
Since the Magnaloy Coupling keyway in a bored and keyed hub is broached between the drive lugs, there is a potential for interference with the keystock of the drive lugs and the driver lugs of the driven hub. Interference will result when ALL the following conditions exist:

- A) The shaft diameter is GREATER than listed below.  
B) This shaft extends into the hub insert core area.  
C) The keystone on this shaft extends with the shaft.

The interference condition can be corrected by shortening the keystack so it does not extend into the coupling hub insert core area.

Interference Potential exists when shaft diameters are greater than shown in this chart

Model Size	Shaft Diameter	Key Size
100	7/8	1/4
200	1 - 3/16	1/4
300	1 - 5/16	5/16
400	1 - 1/2	3/8
500	1 - 15/16	1/2
600	2 - 1/2	5/8
700	2 - 3/4	5/8
800	3 - 1/2	7/8
900	4 - 1/2	1 - 1/4



Failure to correct this condition will result in assembly difficulty and could cause damage to the drive or driven equipment.

# Notes