

Size 9.4 Mesur-Fil[®] Fluid Couplings

Installation Instructions

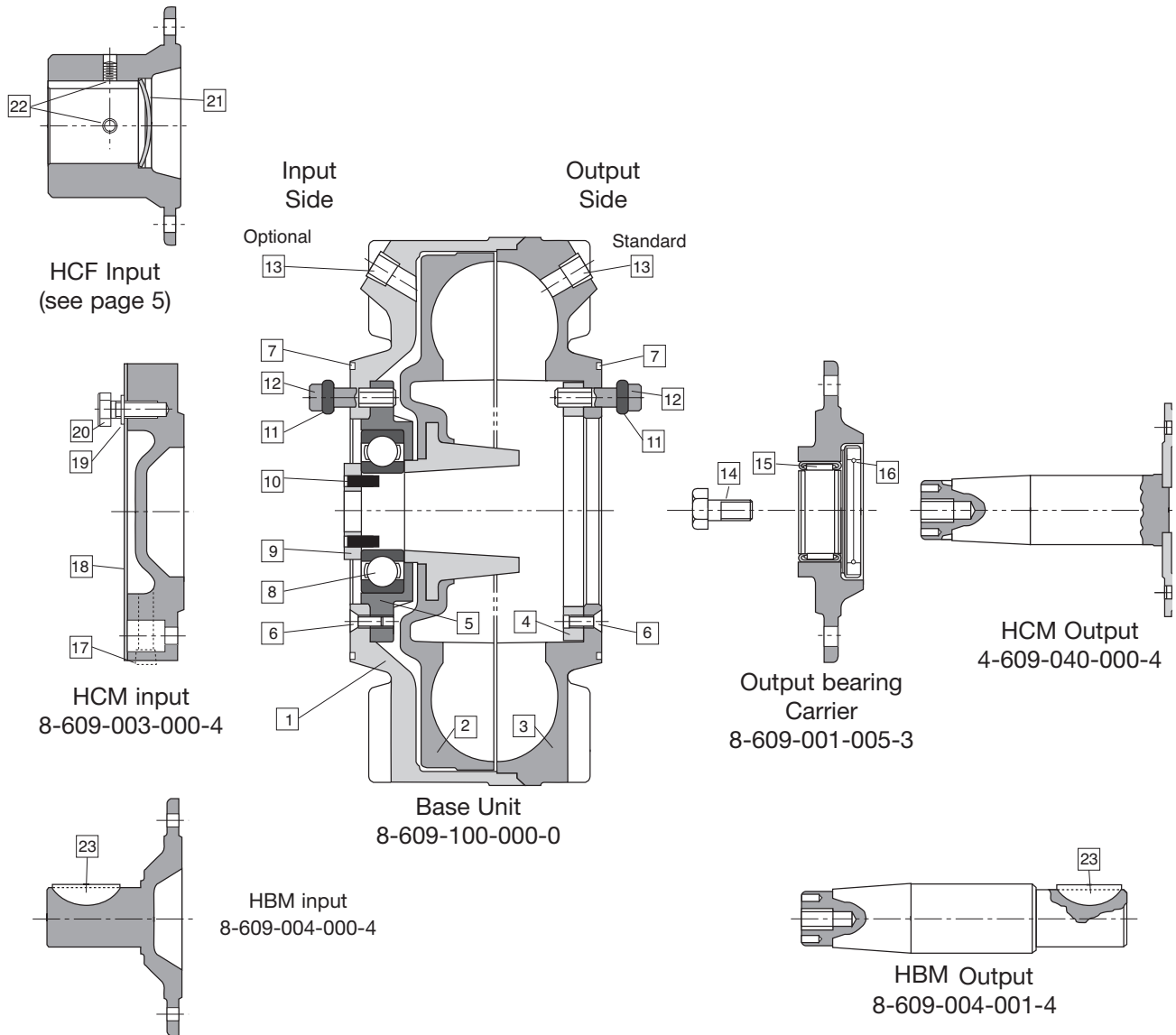
P-1033-1
WC-97



 **Wichita[®]**
Clutch

An Altra Industrial Motion Company

Size 9.4 Fluid Couplings Models HC, HCF, HCM, HBM



| Item | Description | Qty. | Part Number |
|------|-----------------------|------|-----------------|
| 1 | Front Cover | 1 | Items 1-6 are |
| 2 | Runner | 1 | components of |
| 3 | Impeller | 1 | subassembly |
| 4 | Retaining Ring | 1 | 8-609-001-000-0 |
| 5 | Input Bearing Carrier | 1 | |
| 6 | Flathead Capscrew | 4 | |
| 7 | O-Ring | 2 | 2-756-049-000-3 |
| 8 | Ball Bearing | 1 | 2-701-013-002-1 |
| 9 | Retaining Washer | 1 | 4-609-026-000-4 |
| 10 | Roll Pin | 2 | 2-105-018-075-2 |
| 11 | O-Ring | 12 | 2-740-003-000-1 |
| 12 | 12 Point Screw | 12 | 2-197-037-011-0 |

| Item | Description | Qty. | Part Number |
|------|-------------------|------|-----------------|
| 13 | Fill Plug | 2 | 2-221-003-420-1 |
| 14 | Retaining Bolt | 1 | 2-173-062-012-0 |
| 15 | Needle Bearing | 1 | 2-721-017-000-1 |
| 16 | Oil Seal | 1 | 2-730-017-001-1 |
| 17 | Grease Plug | 1 | 2-221-001-424-1 |
| 18 | Gasket | 1 | 4-609-018-000-9 |
| 19 | Lock Washer | 8 | 2-135-037-111-0 |
| 20 | Hex Head Capscrew | 8 | 2-172-037-007-0 |
| 21 | Expansion Plug | 1 | 4-609-070-025-3 |
| 22 | Set Screw | 2 | 2-129-031-002-0 |
| 23 | Woodruff Key | 1 | 2-120-008-100-0 |

Assembly Instructions

Note: Tapers to be cleaned with suitable solvent and wiped dry prior to assembly. Do not use molybdenum disulfide or equivalent friction reducing compounds on fasteners or taper.

1. If seal and needle bearing are not in place in rear bearing carrier, install them.
2. Install "O" ring in rear bearing carrier. Mount rear bearing carrier and "O" ring to coupling face using the six 12 point capscrews with "O" rings. Tighten capscrews to 27-30 lb.ft. torque.
3. Install ball bearing into front bearing carrier. Care must be taken not to damage front cover adjacent to flat head screws.
4. Install output shaft or output flange assembly through rear bearing carrier and into taper in runner hub. Support the output end of output shaft or output flange assembly and press ball bearing onto output shaft until bearing inner race overhangs shaft end .060 to .120".

▲CAUTION Do not press flush with shaft end. Press force never to exceed 24,000 lbs. Install roll pins in retainer washer. Install retainer washer with roll pins and capscrew and tighten to 177-195 lb.ft.torque. Bearing and runner are now in place.

Note: Hold shaft from turning while tightening capscrew with open end or pipe wrench on retainer washer.

5. Mount selected input group with "O" ring and six 12 point capscrews with "O" rings to input end. Tighten to 27-30 lb.ft. torque.
6. Check air tightness with 5-10 psi pressure applied thru one fill hole.

Service Disassembly Instructions

1. Remove the two pipe plugs in the front cover and impeller, and allow fluid to drain completely.
2. Remove coupling assembly from installation.
3. Remove the six 12 point capscrews and "O" rings from the input group. Remove input group and "O" ring.
4. Remove hex head capscrew which retains the output shaft or output flange assembly. Remove the retaining washer.
5. To remove models HC or HCF output shaft and model HCM output flange assembly, pack shaft center screw hole with grease. Wrap thread of removed hex head capscrew with several layers of teflon tape to seal against high grease pressure. Insert screw thru retainer washer into grease filled hole and tighten. Repack hole if necessary until release of taper joint is achieved. To remove model HBM output shaft, first remove output bearing carrier per instruction No. 6. Support runner on a tube* and press output shaft from runner. Use plug against output shaft to protect threads in shaft.
6. Remove six 12 point capscrews and "O" rings from output bearing carrier. Remove carrier assembly and "O" ring.
7. If removal of bearing and seal from output bearing carrier is necessary, press out from coupling side.
8. To remove input ball bearing, use a rod and tap out from coupling output end.

Note: If the front cover and impeller assembly is damaged, the basic unit must be replaced.

*Tools required for disassembly

1. Teflon tape
2. Tube (3.00 O.D. x 1.81 I.D. x 5.00 long)

Recommended replacement for overhaul

1. Seal
2. Bearings
3. All "O" rings

Repair Kit Number:

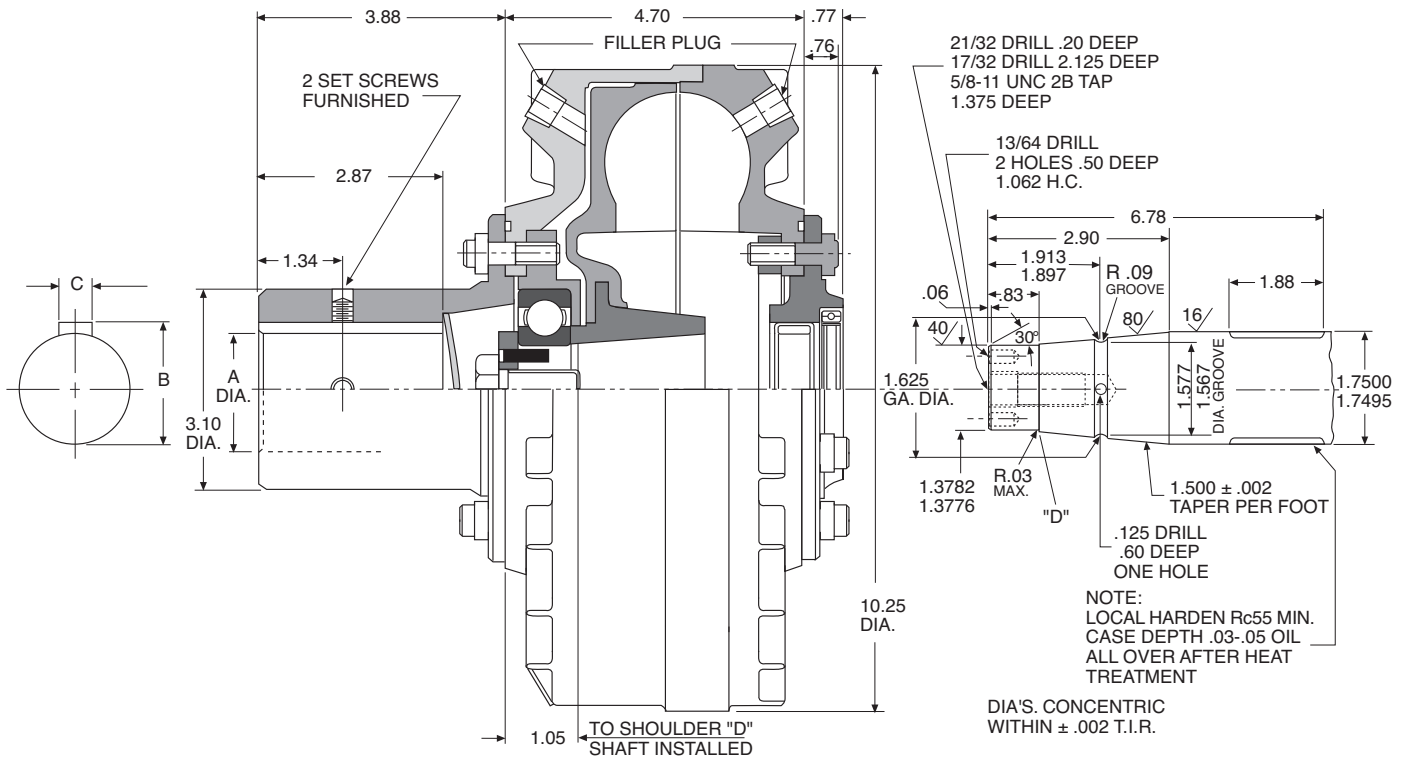
8-609-001-003-2 - Major Repair Kit
Includes 1, 2, & 3

8-609-001-002-2 - Minor Repair Kit
Includes 1 & 3 only

Model HCF

Assembly No. See chart below

Input - see chart below/Output - customer supplied



| Assembly No. | HFC Input Group | Bore A | B | KWY.C |
|--------------------|-----------------|---------------|---------------|--------------|
| 6-609-002-000-0000 | 8-609-002-001-4 | 1.125 - 1.124 | 1.235 - 1.250 | .249 - .251 |
| 6-609-002-001-0000 | 8-609-002-002-4 | 1.875 - 1.874 | 2.091 - 2.106 | ..499 - .501 |

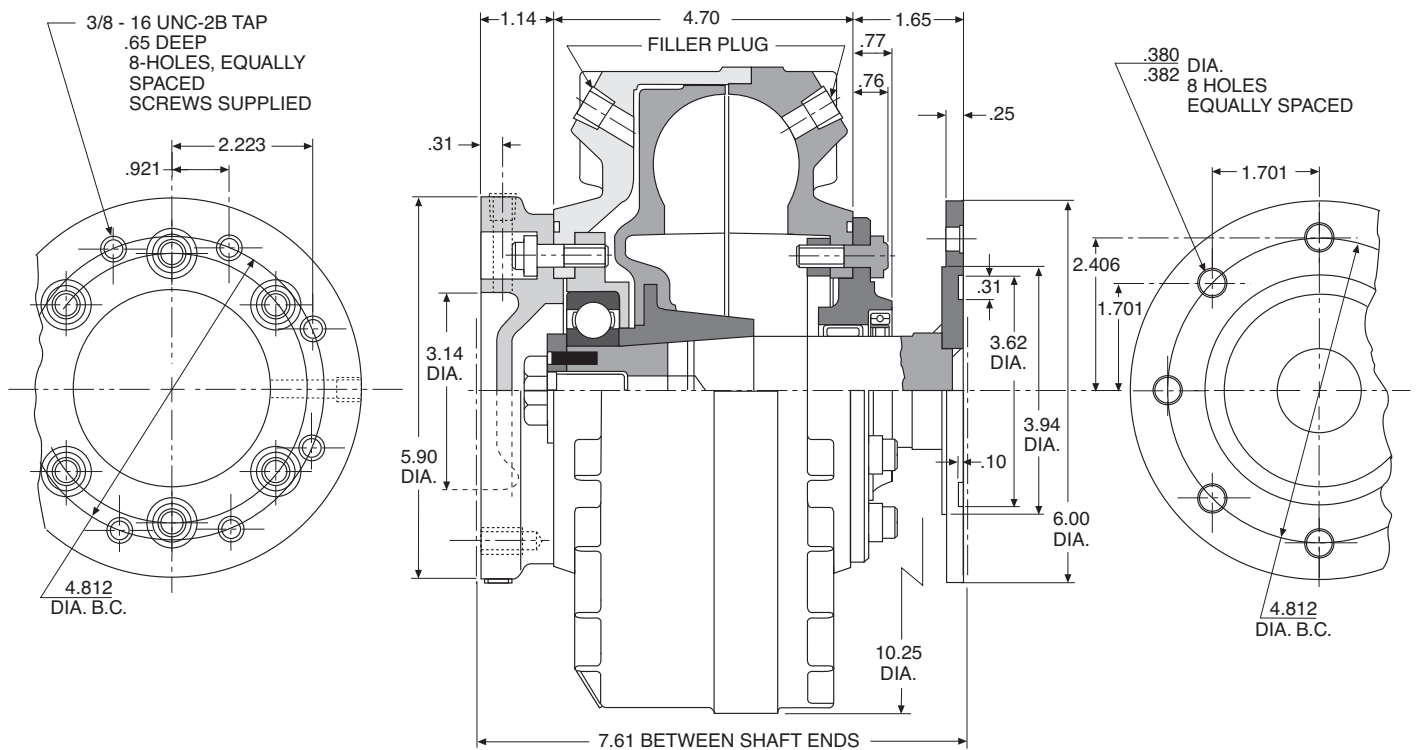
Installation Procedure

This coupling must be completed by customer.
Output shaft to be made per dimensions shown.

Model HCM

Assembly No. 6-609-003-000-0000

Input 8-609-003-000-4/Output 4-609-040-000-4



Installation Procedure

This coupling is a complete unit and is to be installed between two halves of a double engagement gear-tooth flexible coupling provided by user. Install in the following sequence:

1. Assemble flexible coupling to shafts.
2. Align shafts within .005 Total indicator reading.
3. Install fluid coupling.

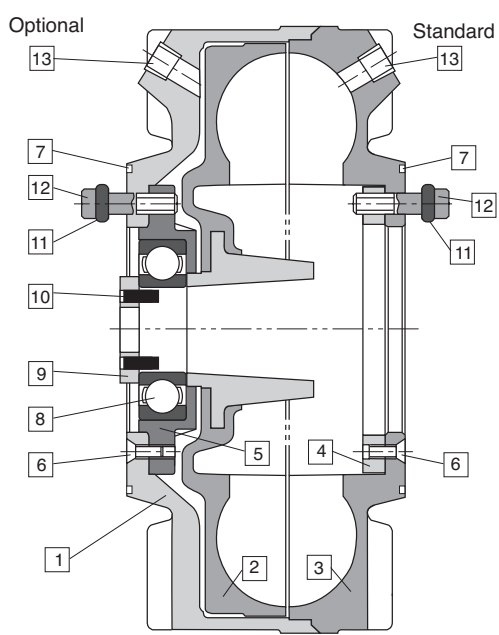
Note: Use capscrews (2-172-037-007-0). Lock washers (2-135-037-111-0) and gasket (4-609-018-000-9). Assemble flexible coupling sleeve to input flange. Bolts, nuts and gasket furnished with flexible couplings to be used at flanged shaft end of fluid coupling.

4. Lubricate flexible coupling per manufacturer's instructions.

Recommended flexible couplings:

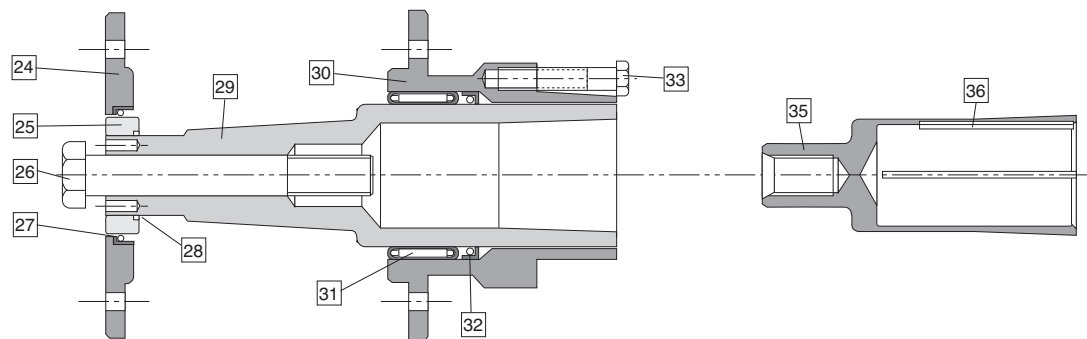
| Manufacturer | Model | Max. Shaft Size |
|--------------|-----------|-----------------|
| Poole | MXB 1-1/2 | 2-3/16 |
| Waldron | 1-1/2W | 2-3/16 |
| Seir-Bath | F1-1/2 | 2-1/8 |
| Link-Belt | XR 1-1/2 | 2-1/4 |
| Amerigear | F 101-1/2 | 2-1/8 |

Model HSD



Base Unit
P/N 8-609-100-000-0

Input and Output Side



HSD Input and Output
P/N 8-609-005-004-4

Collet

| Item | Description | Qty. | Part Number |
|------|-----------------------|------|-----------------|
| 1 | Front Cover | 1 | Items 1-6 are |
| 2 | Runner | 1 | components of |
| 3 | Impeller | 1 | subassembly |
| 4 | Retaining Ring | 1 | 8-612-001-000-0 |
| 5 | Input Bearing Carrier | 1 | 8-609-100-000-0 |
| 6 | Flathead Capscrew | 4 | |
| 7 | O-Ring | 2 | 2-756-049-000-3 |
| 8 | Ball Bearing | 1 | 2-701-013-002-1 |
| 9 | Retaining Washer | 1 | 4-609-026-000-4 |
| 10 | Roll Pin | 2 | 2-105-018-075-2 |
| 11 | O-Ring | 12 | 2-740-003-000-1 |
| 12 | 12 Point Screw | 12 | 2-197-037-011-0 |
| 13 | Fill Plug | 2 | 2-221-003-420-1 |

| Item | Description | Qty. | Part Number |
|------|--------------------|------|-----------------|
| 24 | End Cap | 1 | 4-609-046-000-4 |
| 25 | Seal Bushing | 1 | 4-609-043-000-4 |
| 26 | Draw Bolt | 1 | 2-173-062-044-0 |
| 27 | Oil Seal | 1 | 2-730-022-000-1 |
| 28 | O-Ring | 1 | 2-740-013-001-1 |
| 29 | Input Shaft | 1 | 4-609-015-000-4 |
| 30 | Sheave Hub | 1 | 4-609-001-006-2 |
| 31 | Needle Bearing | 1 | 2-721-025-000-2 |
| 32 | Oil Seal | 1 | 2-730-025-003-1 |
| 33 | 5/16 NC 1-1/4 Blt. | 3 | 2-172-031-016-0 |
| 35 | Collet | 1 | See page 10 |
| 36 | Step Key | 1 | See page 10 |
| 37 | Snap Ring | 1 | 2-745-042-001-1 |

Assembly Instructions

Note: Tapers to be cleaned with suitable solvent and wiped dry prior to assembly. Do not use molybdenum disulfide or equivalent friction reducing compounds on fasteners or taper.

1. If seal and needle bearing are not in place in sheave hub, install them.
2. Install "O" ring in sheave hub. Mount sheave hub to coupling face using the six 12 point capscrews with "O" rings. Tighten capscrews to 27-30 lb.ft. torque.
3. Install ball bearing into front bearing carrier. Care must be taken not to damage front cover adjacent to flat head screws.
4. To install input shaft, seal bushing with "O" ring, end cap assembly, and retaining ring.
 - a) Install input shaft through sheave hub and into taper in runner hub. Press shaft through ball bearing until it overhangs bearing 3/8 to 7/16 inch.
 - b) Install seal bushing with "O" ring onto overhung end of shaft.
 - c) If seal is not in place in end cap, install it.
 - d) Mount end cap assembly with "O" ring and six 12 point capscrews with "O" rings. Tighten to 27-30 lb.ft. torque.
 - e) Install roll pins in retainer washer. Place retainer washer with roll pins over shaft end making sure pins align with holes in shaft.
 - f) Insert capscrew through retainer washer. Tighten capscrew to 177-195 lb.ft. torque.
 - g) To install collet, loosen capscrew. Insert collet and engage screw hand tight for shipment purposes only.
5. Check air tightness with 5-10 psi pressure applied thru one fill hole.
3. Remove hex head capscrew which retains the collet. Remove retainer washer with roll pins.
4. Remove seal bushing and "O" ring from shaft end.
5. Insert push rod* through hole in input shaft to bottom of tapped hole in collet. Use a capscrew* in end of input shaft and tighten against push rod to break taper between input shaft and collet. Use flats on shaft end to counter wrench torque on screw. It may be necessary to tap end of capscrew to break taper contact.
6. Remove input shaft and coupling assembly with sheave from collet. Remove the 3 capscrews retaining the sheave. Remove sheave from sheave hub.
7. Remove six 12 point capscrews and "O" rings from sheave hub and coupling. Remove hub assembly and "O" ring.
8. If removal of bearing and seal from sheave hub is necessary, use a rod and tap from sheave side to remove.
9. Remove pusher rod from collet. Remove collet from motor shaft.
10. To remove input shaft, support runner on a tube* and press input shaft from runner. Use plug against input shaft to protect threads in shaft.
11. To remove ball bearing, use a rod and tap out from sheave end.

Note: If the front cover and impeller assembly is damaged, the basic unit must be replaced.

*Tools required for disassembly

1. Push rod (.50 dia. x 4.00 long steel hardened to R_C50 min.)
2. Tube (3.44 O.D. x 2.75 I.D. x 7.00 long)
3. Capscrew (3/4-10 NC x 1.00 long)

Recommended replacements for overhaul

1. Seals
2. Bearings
3. "O" rings

Repair Kit No.

8-609-005-001-2 - Major Repair Kit, includes 1, 2 & 3

8-609-005-000-2 - Minor Repair Kit, includes 1 & 3 only.

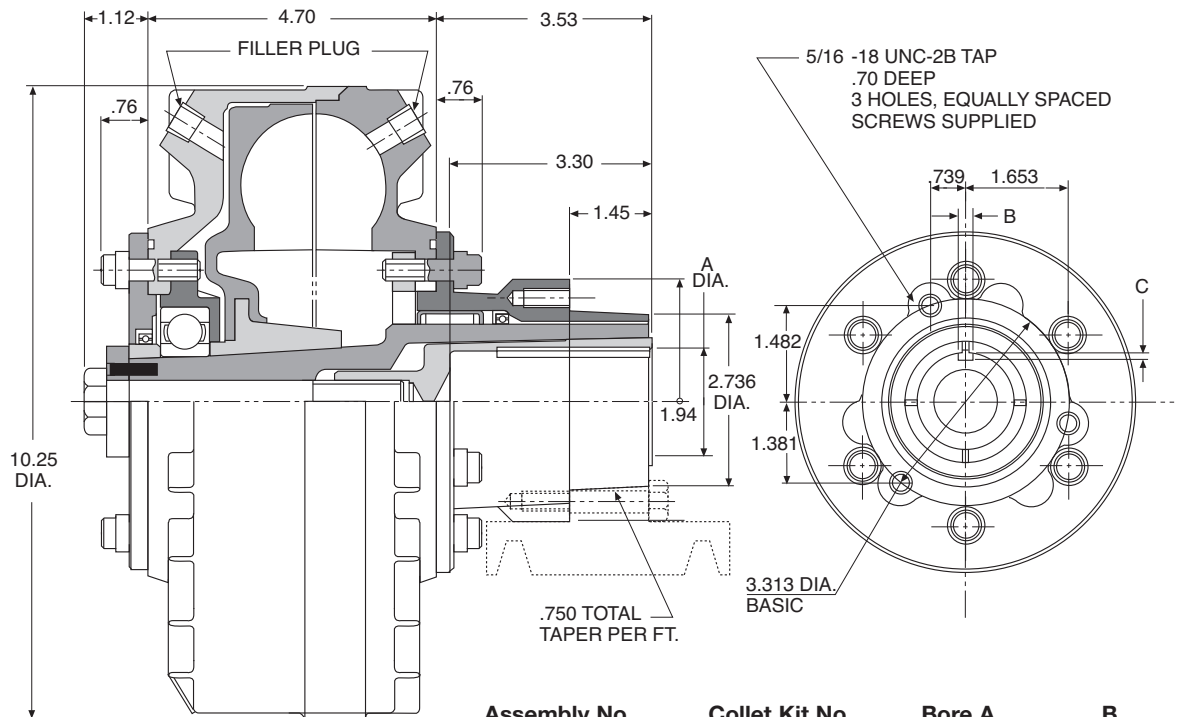
Service Disassembly Instructions

1. Remove the two pipe plugs in the front cover and impeller. Then allow fluid to drain completely.
2. Remove six 12 point capscrews and "O" rings from end cap and coupling. Remove end cap and "O" ring.

Model HSD

Assembly No. see chart below

Input and Output — See chart below



| Assembly No. | Collet Kit No. | Bore A | B | C |
|--------------------|-----------------|---------------|---------------|-------------|
| 6-609-005-001-0000 | 8-609-005-006-5 | 1.125 - 1.127 | .2500 - .2485 | .120 - .115 |
| 6-609-005-002-0000 | 8-609-005-007-5 | 1.375 - 1.377 | .3125 - .3110 | .151 - .146 |
| 6-609-005-003-0000 | 8-609-005-008-5 | 1.625 - 1.627 | .3750 - .3735 | .182 - .177 |

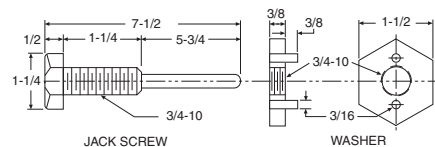
Installation Procedure

This fluid coupling (hydro sheave) is a complete unit and is to be installed on the end of a drive shaft with a sheave mounted on the fluid coupling. Install in the following sequence:

1. Install stepped key flush with end of drive shaft.
2. Install selected sheave to sheave assembly hub. Tighten capscrews to 15-17 lb.ft. torque.
3. Install coupling assembly on drive shaft. (It may be necessary to free the collet by pushing on loosened center capscrew.) Make sure collet does not ride up on any radius or shoulder on the drive shaft.

Note: Shaft must protrude into the collet 2.50 in. min. Tighten exposed center capscrew to 177-195 lb.ft. torque.

CAUTION The hydro sheave is installed on the end on a shaft and it is essential that a guard be provided.



Suitable sheaves are available from many manufacturers. QD sheaves should be made for SK hubs.

Removal Tool

8-609-071-001-0

Vertical Mounting for HSD

When mounting vertically, 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. Also, this position allows for addition of and maintenance of the oil level within the fluid coupling.

Order unit with the standard and optional fill plugs.

Fluid Recommendation

Oil: SAE 10W

Castrol: Hyspin AWS 32 Shell: Tellus 32
 Chevron: Hydraulic Oil EP 32 Texaco: Rando HD 32
 Esso: Nuto H 32 Total: Azolla ZS 32
 Mobil: DTE Oil Light

Fire Resistant Fluid

Fyrquel: 220

Filling Instructions

Fluid couplings are not filled at the factory. They must be filled after assembly or installation but before operation as follows:

1. Remove one pipe plug.
2. Fill with the proper fluid in proper quantity as required by the application

Note: 43 fl.oz. = Fill #8
 49 fl.oz. = Fill #9
 54 fl.oz. = Fill #10
 60 fl.oz. = Fill #11
 65 fl.oz. = Fill #12

3. Replace fill plug in fill hole using pipe sealant or teflon tape.
4. Change oil every 4,000 hours or once a year and fire resistant fluid every 10,000 hours or once every two years.

Petroleum Oil

| HP | Coupling Size | 1200 RPM | | 1800 RPM | | | 3600 RPM | | |
|-------|---------------|----------|--------|---------------|----------|--------|---------------|----------|--------|
| | | Fill No. | % Slip | Coupling Size | Fill No. | % Slip | Coupling Size | Fill No. | % Slip |
| 3/4 | 9.4 | 8 | 3 | | | | | | |
| 1 | 9.4 | 8 | 3 | | | | | | |
| 1-1/2 | 9.4 | 8-1/2 | 3 | | | | | | |
| 2 | 9.4 | 9 | 4 | | | | | | |
| 3 | 9.4 | 10 | 5 | 9.4 | 8 | 2 | | | |
| 5 | 9.4 | 12 | 7 | 9.4 | 8-1/2 | 3 | | | |
| 7-1/2 | | | | 9.4 | 9 | 3 | | | |
| 10 | | | | 9.4 | 10 | 4-1/2 | | | |
| 15 | | | | 9.4 | 12 | 6-1/2 | | | |
| 20 | | | | | | | | | |
| 25 | | | | | | | 9.4 | 8 | 2 |
| 30 | | | | | | | 9.4 | 8 | 2 |
| 40 | | | | | | | 9.4 | 8 | 2 |
| 50 | | | | | | | 9.4 | 8-1/2 | 3 |
| 60 | | | | | | | 9.4 | 9 | 3-1/2 |
| 75 | | | | | | | 9.4 | 10 | 4 |

Note: For vertical mounting, order unit with standard and optional fill plugs.

Note: Reduced power capability when mounted vertically – consult factory.

Application Notes

1. Max allowable operating speed: All models 3600 RPM, except HSD - 2600 RPM.
2. Select sheave verifying that:
 - a. HP and speed of sheave and belts do not exceed manufacturers recommendations.
 - b. Sheave does not interfere with motor frame when motor shaft protrudes 2.50 in. min. into collet.

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

▲CAUTION 7% or higher slips may cause overheating if coupling is cycled too rapidly.

For minimum operating temperatures below -10°F, Consult Warner Electric.

Warranty

Wichita/Warner Electric warrants that it will repair or replace (whichever it deems advisable) any product manufactured and sold by it which proves to be defective in material or workmanship within a period of one (1) year from date of original purchase for consumer, commercial or industrial use. This warranty extends only to the original purchaser and is not transferable or assignable without Wichita/Warner Electric's prior consent. This warranty covers normal use and does not cover damage or defect which results from alteration, accident, neglect, or improper installation, operation, or maintenance. Wichita/Warner Electric's obligation under this warranty is limited to the repair or replacement of the defective product and in no event shall Wichita/Warner Electric be liable for consequential, indirect or incidental damages of any kind incurred by reasons of manufacture, sale or use of any defective product. Wichita/Warner Electric neither assumes nor authorizes any other person to give any other warranty or to assume any other obligation or liability on its behalf.



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