

How to Use This Manual

This manual applies to standard Falk Types HF41 & 42 couplings.

Sizes 185 thru 370 utilize a QD type sheave (by purchaser). The sheave adapter is furnished and assembled at the Factory. The collet, sheave fasteners, draw bolt and washers are furnished unassembled.

Sizes 420 and 1420 utilize an integral sheave that is manufactured and assembled at the Factory.

Table of Contents

General Information	Pages 1
Fluids	Pages 1-2
Installation	Pages 2-4
Orifice Plugs (1420HFD only)	Page 5
Fusible Plugs	Page 5
Removal	Page 5
Startup and Trouble Shooting	Page 6
Fluid Coupling Data Record	Page 6

CAREFULLY FOLLOW THE INSTRUCTIONS IN THIS MANUAL FOR OPTIMUM PERFORMANCE AND TROUBLE FREE SERVICE.

Introduction

Type HF fluid couplings are designed for horizontal and level operation. Refer to the Factory for coupling operation other than horizontal. The Type HF41 coupling is designed for mounting on the driving shaft and the Type HF42 coupling is designed for mounting on the driven shaft. Internal construction of these couplings are different and their mounting positions are NOT interchangeable.

Each fluid coupling is shipped from the Factory with an angle finder (P/N 1224653). Simply place the angle finder on the filler plug boss and rotate the coupling to the required fill angle as instructed in the "Fill Fluid Coupling" section of these instructions.

Maximize Performance & Life

The performance and life of couplings depend largely upon how you install and maintain them. Before installing couplings, make certain that foundations of equipment to be connected meet manufacturers' requirements. Check for soft foot. The use of stainless steel shims is recommended.

WARNING: Lock out power source and remove external loads from drive before servicing drive or accessories.

WARNING: When opening the drain plug, filler plug, or metering orifice access plug of a warm or hot fluid coupling, place a rag over the drain or filler plug hole and loosen the plug slowly to relieve any internal pressure.

WARNING: Consult applicable local and national safety codes for proper guarding of rotating members. Guard must not restrict free flow of air, but the portion of the guard in line with fusible plugs must be solid construction.

CAUTION: DO NOT PAINT fluid coupling. Painting will reduce fluid coupling thermal heat dissipation characteristics.

CAUTION: DO NOT spray water on a hot fluid coupling, as this may result in cracking of aluminum components.

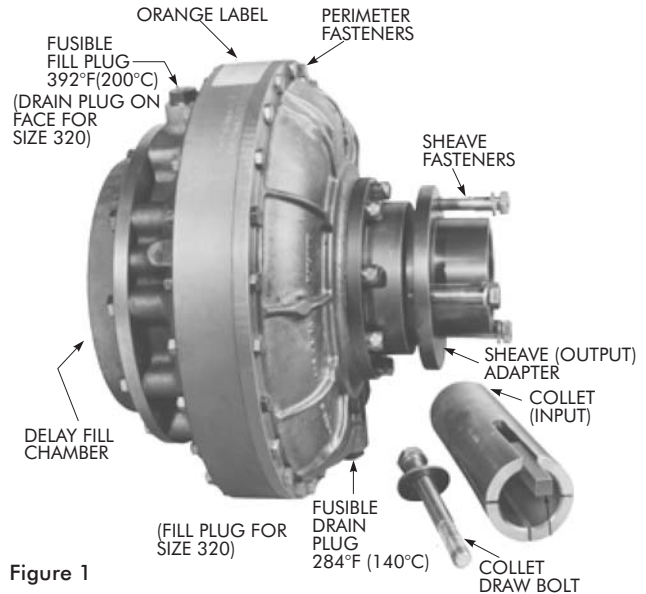


Figure 1

Identification:

Coupling size and M.O. Number (Mfg Order Number) are stamped on the perimeter of the coupling. Where Rexnord has been provided application data (HP, speed, start factor, driven equipment), the coupling will also include an orange label on the perimeter, indicating the approximate fill quantity in fluid ounces, and the correct fill angle. Provide coupling size and M.O. number when ordering spare parts.

Keep Records for Future Reference

Future maintenance of the fluid coupling can be greatly simplified by keeping good records. It is strongly suggested that the Fluid Coupling Data Record, Table 6, be completed and stored in the maintenance files.

Fluids

The following specifications and fluids listed in Table 1 apply to Falk fluid couplings. Refer to the Factory for use of fire resistant fluids. **NOTE:** Fluids listed are typical products ONLY and should not be construed as exclusive recommendations.

ISO Viscosity Grade, Petroleum Oils (R & O) 46

ISO Viscosity Grade, Synthetic Oils 32

Viscosity at 104°F(40°C) — 46 cSt (215 SSU)

Viscosity Index — Equal to or greater than 95.

Pour Point — Must be 5°F(3°C) lower than minimum starting temperature.

Flash Point — 400°F(204°C) when using 140°C and/or 180°C fusible plugs.

Flash Point — 425°F (218°C) when using 200°C fusible plugs at both fill and drain holes.

Specific Gravity — 0.87

Antioxidant and Anti-foaming Additives

TABLE 1 — Fluids & Operating Temperatures

Petroleum Oils (R & O) For Ambient Temperatures 20°F to 125°F (-6°C to 52°C)	
Manufacturer	Fluid
Amoco Oil Company	American Industrial Oil 46
BP Oil Company	Turbinol T-46
Chevron Products Company	Hydraulic Oil AW 46
Exxon Company, USA	Teresstic 46
Mobil Oil Corporation	Mobil Fluid 424
Petro-Canada Products	Harmony 46
Shell Oil Company	Turbo T 46
Texaco Lubricants Company	Rando Oil HD 46
76 Lubricants Company	76 Unax AW 46
Petroleum Oils (R & O) For Ambient Temperatures -20°F to 125°F (-28°C to 52°C)	
Manufacturer	Fluid
Amoco Oil Company	American Industrial Oil 46
Mobil Oil Corporation	Mobilfluid 424
Synthetic Oils and Synthetic Transmission Fluids For Ambient Temperatures -40°F to 125°F (-40°C to 52°C)	
Manufacturer	Fluid
Conoco Incorporated	Syncon R&O 32
Exxon Company, USA	Teresstic SHP 32
Mobil Oil Corporation	SHC 624
Texaco Lubricants Company	Pinnacle 32
Mobil Oil Corp.	Synthetic ATF
Chevron	Synthetic All Weather THF
Citgo	Transgard Fluid 250
Automatic Transmission Fluids (Dexron or Mercon Oils, etc.) For Ambient Temperatures Greater Than -40°F to 125°F (-40°C to 52°C)	
NOTICE: Can only be used with two 140°C fusible plugs	
Mobil	Multi-purpose ATF
Texaco (Havoline)	Mercon/Dexron-III or ATF
Citgo	Transgard ATF, Type F

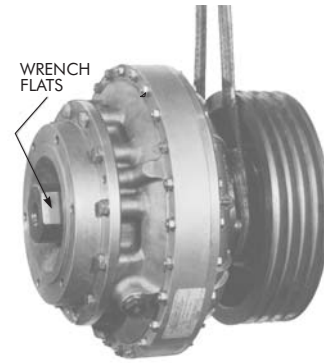


Figure 2

Installation

Only standard mechanics tools, torque wrenches, feeler gauges, straight edges and a bevel protractor with spirit level or Angle Finder (P/N 1224653) are required to install Falk fluid couplings.

1. Install Sheave

- A. Check taper bore in sheave and taper fit on sheave adapter for nicks or burrs.
- B. Clean surfaces with a non-flammable solvent.
- C. Assemble sheave with furnished fasteners and lock washers, Figure 3. Tighten fasteners evenly to torque specified in Table 2.

2. Check Collet & Cut Off Key

- A. Lock out starting switch of prime mover.
- B. Check shaft, collet bore and taper fits for nicks and burrs.
- C. Clean surfaces with a non-flammable solvent.
- D. For maximum collet shaft engagement, cut off key per the following instructions:

Type HF41 — Cut motor shaft key to length specified in Table 2. *NOTE: Maximum bore collets require customer furnished rectangular keys. Dimensions for rectangular keys are listed in Table 2.*

Type HF42 — Assemble collet on driven shaft for maximum engagement without key. Measure length of straight part of collet shaft keyway that is available and cut key to that length.

Annual Maintenance

An annual check of the coupling and fluid is recommended. For extreme or unusual operating conditions, or when the coupling is subjected to overheating, check the coupling and fluid more frequently. Overheated fluid which becomes dark in color and gives off a burnt odor must be changed. Fluid suppliers can test coupling fluid samples periodically and recommend economical change intervals based on the rate of degradation. Continuous operating temperature must not exceed 212°F (100°C).

Lifting

Install sheave as instructed in Step 1 and sling between coupling and sheave using a complete wrap as shown in Figure 2.

CAUTION: Depending upon sheave size the balance will change. Ensure proper balance before lifting.

Key Installation Tips

- Do not exceed specified tightening torques for fusible plugs at fill and drain holes (Step 6D). Excessive tightening may strip aluminum threads.
- Avoid excessive tensioning of V-Belts.
- Carefully follow the instructions in this manual.



Figure 3

TABLE 2 — Collet/Sheave/Removal Bolt/ Collet Key Information (Dimensions – Inches)

Cplg. Size	Torque (lb-ft)		Removal Bolt UNC Dia x Lght	SE (Min.)	Collet Key – Type HF41			
	Collet Draw Bolt	Sheave Fasteners			Motor Shaft Size	Key Size		
						Width	Height	Length
185	5-6	9	1/2-13 x 4.00	2.00	.875	.187	.187	.875
					1.125 ★	.250	.187	1.125
235	18-20	15	3/4-10 x 5.00	2.50	1.125	.250	.250	1.125
					1.375 ★	.312	.250	1.250
270	32-35	30	7/8-9 x 3.75	2.50	1.125	.250	.250	1.125
					1.375	.312	.312	1.375
					1.625	.375	.375	1.625
					1.875 ★	.500	.375	2.000
320	65-80	60	7/8-9 x 6.00	3.12	1.375	.312	.312	1.375
					1.625	.375	.375	1.625
					1.875	.500	.500	2.000
					2.125 ★	.500	.375	2.000
370	130-145	60	1-8 x 6.50	3.75	1.625	.375	.375	1.625
					1.875	.500	.500	2.000
					2.125	.500	.500	2.000
					2.375 ★	.625	.437	2.500
420 & 1420	200-220	28	1 1/8-7 x 9.50	4.38	1.875	.500	.500	2.000
					2.125	.500	.500	2.000
					2.375	.625	.625	2.500
					2.875	.750	.750	3.000
					3.375 ★	.875	.625	4.500

★ Customer furnished rectangular key required with maximum bore collet.

3. Install Collet & Fluid Coupling

NOTE: Make certain belts will pass over coupling. If not, place them on sheave before assembling.

- Install cut off key in shaft keyway and slide collet on shaft for maximum engagement. Minimum shaft engagement (Dimension SE) is listed in Table 2.
- Support fluid coupling weight and slide coupling onto collet taper, being sure proper alignment and engagement is obtained (Figure 4). Be sure collet and key have not moved axially as this could cause the key to ride up the shaft keyway end ramp and cause runout and vibration. Continue to support fluid coupling through steps C & D.

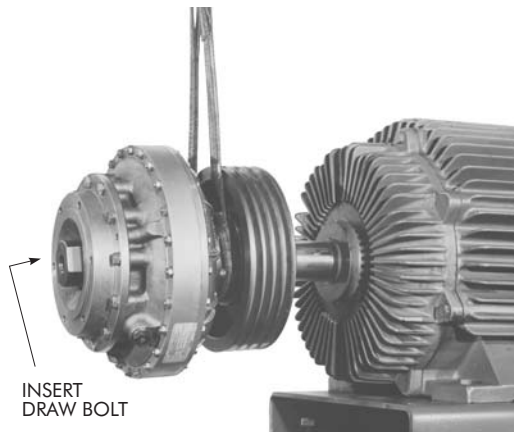


Figure 4

- Insert collet draw bolt with locking and flat washers through hole in input shaft and thread into tapped hole in collet (Figure 4).
- Hold input shaft using wrench flats illustrated in Figure 5, and tighten fastener to torque specified in Table 2.

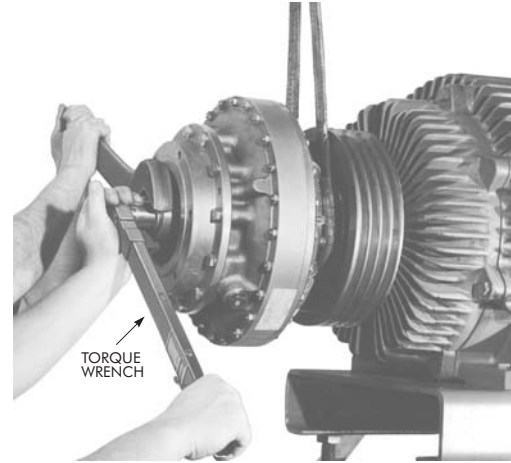


Figure 5

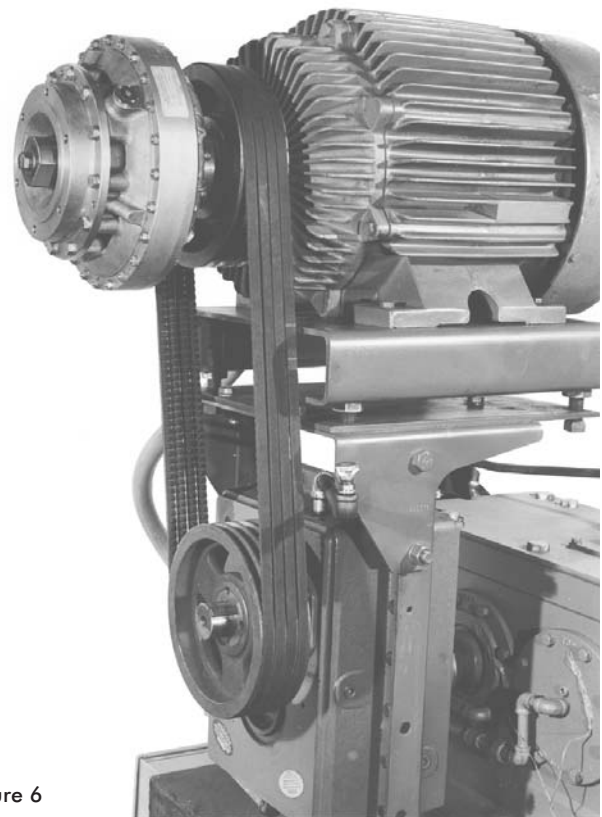


Figure 6

4. Sheave Connection

- Mount couplings and sheaves as close to drive or motor housing as possible to avoid undue bearing load or shaft deflection.

CAUTION: Rotate sheave by hand to assure there is enough clearance between sheave fasteners and driving or driven equipment, Figure 6.

- B. Align sheaves square and parallel by placing a straight edge across the face of the sheaves, Figure 7.

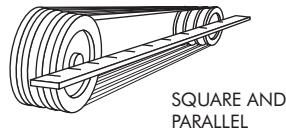


Figure 7

- C. Use matched belt sets to prevent belt whip and to provide uniform tension. Adjust belt tension. The ideal tension is the lowest tension at which the belt will not slip under peak load conditions. Check the belt tension frequently during the first 24 to 48 hours of run-in operation. Over tightening belts will shorten belt and bearing life. Avoid excessive tightening of the belts. Keep belts free from foreign material which may cause slippage. Inspect the V-belt drive periodically; re-tension the belts if they are slipping.

5. Fill Fluid Coupling

- A. Rotate fluid coupling until fill plug is on top and remove the fill plug. Both fill and drain plugs have metric threads. Either plug may be used to fill coupling except for Size 320 which must use plug nearest sheave.
- B. Fill with the required amount of fluid. Fill information is found on the orange label that is affixed to the coupling perimeter. Where no orange label is present, refer to fluid coupling Selection Guide 521-110 for fill data. Fluid must meet the specifications listed in Table 1.

Do not remove orange fluid fill label that is affixed to the coupling perimeter. In cases where no orange label is affixed, a blank label is furnished. Fill out the blank orange label once proper fill data has been determined, then affix that label to the coupling.

- C. Before reinstalling fill plug, check fill angle as described in the following step. Also, heed fill plug tightening instructions, Step 6D.

6. Check Fill Angle

- A. Refer to orange label described in the previous step for required fill angle.
- B. Use either an angle finder or a bevel protractor with spirit level set for the required fill angle, and place it on flat boss of filler hole as shown in Figure 8.

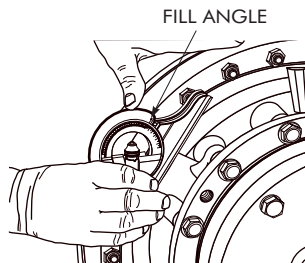


Figure 8

- C. Slowly rotate fluid coupling until the required fill angle is achieved, Figure 9. Fluid must appear at the lip of the hole. Add or drain fluid until level is correct. Figure 10 shows fill angle example.
- D. Reinstall fill plug with seal ring and tighten to required torque: Sizes 185-270, 22 lb-ft; Sizes 320-420 and 1420, 33 lb-ft. **DO NOT EXCEED SPECIFIED TIGHTENING TORQUE**, as aluminum threads may strip.

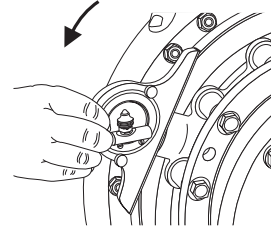


Figure 9

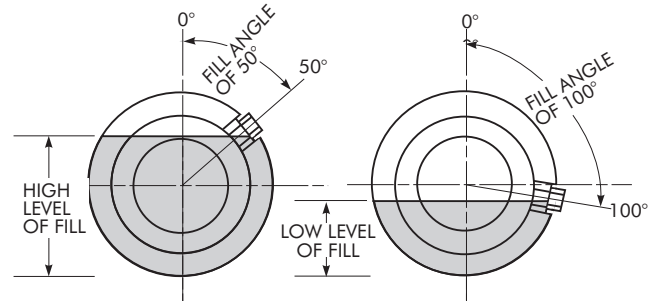


Figure 10

7. Size 1420HFD (orifice plugs)

The Size 1420HFD fluid couplings contain three orifice plugs (metric threaded) located near the outer part of the casing. They are located behind three metric hex socket seal plugs (see Figure 11). The function of these orifice plugs is to meter the fluid exiting from the delay fill chamber into the working circuit of the fluid coupling. These plugs are initially drilled with a 2.5mm hole (Size 1420) which results in acceptable starting times for most applications. Should your application require increased or reduced starting times, refer to Table 3 below for other orifice hole sizes and their estimated effect on starting time. These estimates are based on the change in flow rate for the fluid to exit the delay fill chamber.

CAUTION: Increasing the starting time can result in overheating the fluid coupling and discharging fluid via the fusible plugs.

Refer to Table 4 for orifice and seal plug sizes, tightening torques, and required hex "Allen" wrench sizes. DO NOT EXCEED SPECIFIED TIGHTENING TORQUES, as aluminum threads may strip. Use an anti-seize compound such as Loctite™ AntiSeize Thread Compound #767 or equivalent on orifice plugs to assist in future removal.

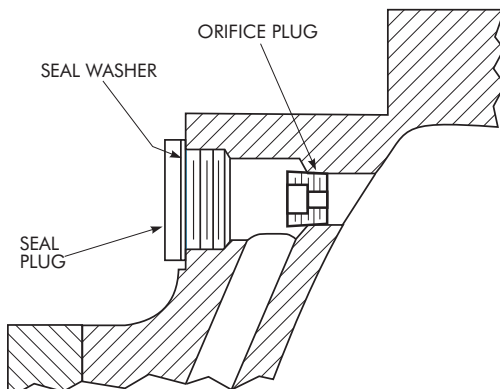


Figure 11

TABLE 3 — Fluid Coupling Starting Times

Orifice Hole Diameter	Estimated Starting Time - % of Original	
	1420HFD	
3/64" (0.0469)	440	
1/16" (0.0625)	250	
5/64" (0.0781)	160	
3/32" (0.0937)	110	
2.5 mm (0.0984)	100	
7/64" (0.1094)	80	
1/8" (0.1250)	60	
3.5 mm (0.1380)	50	
5/32" (0.1562)	40	
3/16" (0.1875)	30	

**TABLE 4 — Orifice Plug/Seal Plug/
Seal Washer Sizes**

CPLG SIZE	Orifice Plug DIN906			Seal Plug DIN908			Seal Washer DIN 7603 Type "A" Copper
	Thread Size	Hex Key Size	Tightening Torque Ft-lb	Thread Size	Hex Key Size	Tightening Torque Ft-lb	
1420	1/8R BSPT	5 mm	7	18 x 1.5 mm	10 mm	33	18 x 22 x 1.5 mm

8. Fusible Plugs

- Fusible plugs in the fill or drain holes have solder cores that melt at the temperatures shown in Figure 1, Page 1. One extra 284°F (140°C) plug is furnished with each coupling.
- If solder in fusible plug melts due to overheating from stalling or overloading, refer to Table 5, Page 6 and correct the cause of overheating.

CAUTION: DO NOT replace fusible plugs with solid plugs. Use of solid plugs can result in coupling failure from overheating unless used in conjunction with a proximity sensor cutout switch. Refer to Factory for recommendation.

- Replace fusible plugs as instructed in Step 6D. DO NOT EXCEED SPECIFIED TIGHTENING TORQUES, as aluminum threads may strip.
- Refill coupling with clean fluid as instructed in Steps 5 & 6.

9. Coupling Removal

- Lock out starting switch of prime mover.
- Remove belts and support coupling with a sling as shown in Figure 2.
- Loosen collet draw bolt until washers are free and complete one more turn. Sharply strike the bolt head to break loose taper fit. If reasonable number of strikes are unsuccessful, go to Step C. Notice: Use of Step C is commonly required to remove size 420 & 1420 fluid couplings. Excessive striking may damage shaft bearings.
- If Step B does not work; remove collet draw bolt and refer to Table 2 for "Removal Bolt" dimensions. Insert removal bolt and tighten. Strike bolt sharply with hammer to break loose taper fit, Figure 12.

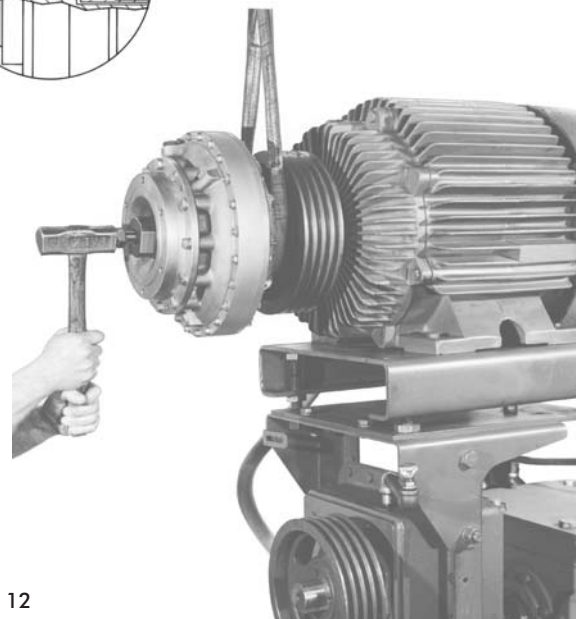
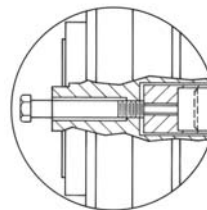


Figure 12



TABLE 5 — Startup & Trouble Shooting

Problem	Possible Cause	Solution
Driven shaft fails to reach specified speed.	Drive motor defective or incorrectly connected.	Check motor connection, speed, amperage draw and power draw.
	Driven machine jammed.	Check driven machine and remove jam.
	Power consumption exceeds coupling capacity at specified fill angle.	★
	Coupling over or under filled.	Re-check fill angle per Step 6.
	Coupling leaking.	Correct source of leakage and re-check fill angle per Step 6.
	1420HFD Only — Orifice plug hole plugged	Clean orifice plug hole or use larger hole.
Fusible plugs melt.	Coupling under filled.	Re-check fill angle per Step 6.
	1420HFD Only — Orifice plug hole too small or plugged.	Enlarge orifice hole size (See Table 3 for estimated start time reduction) or clean plugged hole.
	Coupling leaking.	Correct source of leakage and re-check fill angle per Step 6.
	Driven machine jammed.	Check driven machine and remove jam.
	Power consumption exceeds coupling capacity at specified fill angle.	★
Coupling vibration exceeds acceptable limits.	Fluid coupling runout due to improper assembly of collet and fluid coupling.	Re-install fluid coupling and collet per Step 3. Check fluid coupling shaft for runout near wrench flats.
	Incorrect coupling or belt alignment.	Re-align per instructions in service manual.
	Bent motor shaft.	Replace motor.
	Loose foundation, coupling or adapter fasteners.	Check and tighten fasteners accordingly.
	Damaged fluid coupling bearing.	Return fluid coupling to Falk for bearing replacement.

★ Increase fluid fill by decreasing fill angle in 5° increments to a minimum of 50°. If drive shaft still does not reach specified speed, refer to the Factory.

TABLE 6 — Fluid Coupling Data Record (Installer – Fill out data below. Keep in coupling maintenance file)

Equipment Identification

Motor/Brake Hp. @ Input RPM

Fluid Coupling Size

Fill Angle Degrees. Fill Volume Fl. Oz.

Fluid Used (Mfg & Fluid Designation)

Falk Master Order Number Date Installed
