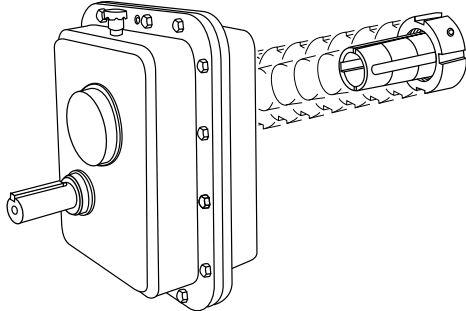


Falk Quadrive Shaft Mounted Drives Installation Manual

This document only covers basic installation.
For the complete Owner's Guide 378-200, visit
www.rexnord.com



Falk Quadrive Shaft Mounted Drive with TA Taper Bushing

Refer to the complete Owners Manual 378-200 for more information on the following:

DRIVE IDENTIFICATION

DRIVE INSTALLATION

Outfitting

Installation

Lubrication

Start-up

DRIVE SERVICE & REPAIR

Preventive Maintenance

Oil Changes

Stored & Inactive Drives

Repair & Replacement

Drive Disassembly

Identifying & Ordering Parts

Recommended Spare Parts

Parts List of Falk Part Numbers

Bearing Cross Reference Numbers

Seal Cross Reference Numbers

DRIVE REASSEMBLY

LUBRICATION RECOMMENDATIONS

BACKSTOP INSTALLATION

TA REMOVAL TOOL

MOTOR MOUNT INSTALLATION

VERTICAL STANDPIPE INSTALLATION

MODIFICATIONS FOR NON-STANDARD MOUNTING POSITIONS

RETAINING RINGS FOR BUSHING NUTS AND THRUST PLATES,

TOOTH COMBINATIONS FOR VIBRATION ANALYSIS & JSC LIP SEAL ACCESSORY

DRIVE SHAFT RECOMMENDATIONS FOR TAPERED DRIVE SHAFTS

DRIVE SHAFT RECOMMENDATIONS USING TA TAPER BUSHING

DRIVE SHAFT RECOMMENDATIONS USING (TCB) KIT

V-BELT GUARD INSTALLATION

ELECTRIC FAN INSTALLATION

WARNING: Consult applicable local and national safety codes for proper guarding of rotating members.

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

CAUTION: Do not weld the drive housing or accessories without prior approval from Rexnord Geared Products. Welding on the drive may cause distortion of the housing or damage to the bearings and gear teeth. Welding without prior approval will void the warranty.

Installation

- JR, JF, & JSC** — Refer to Figure 1 for recommended lifting method. In order to sling JR & JF as illustrated, remove a housing flange fastener and install a long fastener with nut. For vertical installation, use (3) eye bolts as illustrated. Eyebolt sizes are 5/16" for 5107 and 5115, 3/8" for 5203 and 1/2" for 5207 thru 5315. DO NOT remove sling until drive is secured to shaft. Before lifting the drive into position, rotate the high-speed shaft until the hollow shaft keyway will be in position to line-up with the driven shaft key.

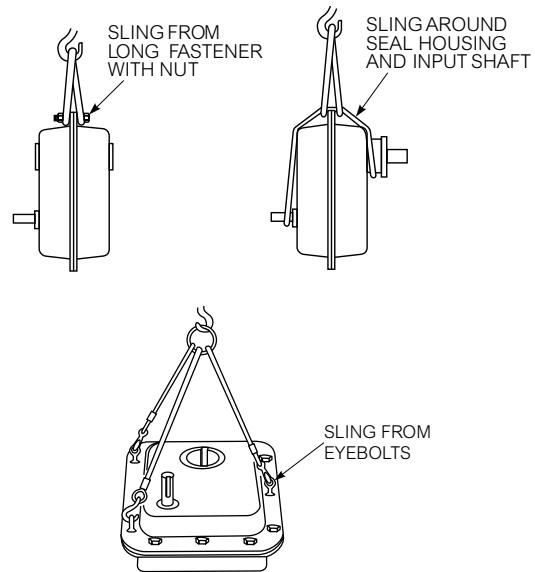


Figure 1

- JR** — The tapered bore hollow shaft is designed for use with a TA Taper bushing for mounting on a driven shaft with a straight outside diameter.
 - THIN WALL BUSHING** — (with keyway slot through the bushing wall) – With the driven shaft keyway at the 12 o'clock position, slide bushing assembly onto the driven shaft, nut end first, and position the keyway slot over the shaft keyway (the bushing may have to be pried open slightly). Insert the drive key furnished with the bushing into the shaft keyway.
 - THICK WALL BUSHING** — (with separate internal and external keyways) – Insert the driven shaft key into the driven shaft keyway. If the driven shaft has an open-ended keyway, stake the keyway to prevent axial dislocation of the shaft key under operating conditions. Slide the bushing assembly onto the driven shaft (the bushing may have to be pried open slightly). Rotate the shaft so the external keyway in the bushing is at the 12 o'clock position. Then insert the drive key, furnished with the bushing, into the keyway.
- JR** — If the drive was received with a backstop installed, the backstop must be temporarily removed to facilitate mounting.

- Lift the drive into position and slide onto the drive shaft taking care that the driven shaft key seats into the hollow shaft keyway. DO NOT hammer or use excessive force. Refer to Figure 2 for installation of the torque arm. The exact position of the tie rod may vary within the range shown. For torque arm mountings other than shown, refer to Rexnord. If it is necessary to shorten the torque arm, cut the excess from either threaded end.

Bolt the tie rod to both the clevis bracket and the drive anchor bracket and tighten the bolts until seated against the brackets. DO NOT bend the bracket as clearance between the clevis brackets and tie rod is necessary.

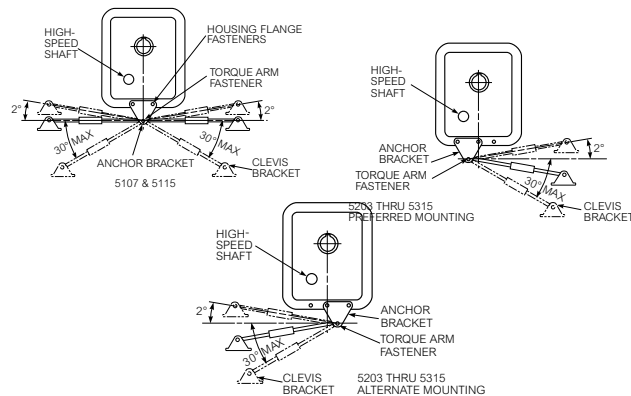


Figure 2

TABLE 1 — Spanner Wrench Type & Bushing Nut Tightening Torque

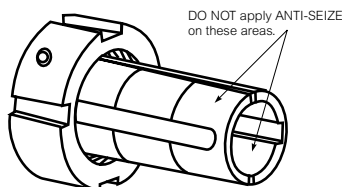
DRIVE SIZE	Adjustable Hook Spanner Wrench		Bushing Nut Tightening Torque lb-ft (Nm)
	Armstrong Tools	Williams	
5107	34-307 (2"-4 3/4")	474	83 (113)
5115	34-307 (2"-4 3/4")	474	83 (113)
5203	34-307 (2"-4 3/4")	474	167 (226)
5207	34-310 (4 1/2"-6 1/4")	474A	167 (226)
5215	34-310 (4 1/2"-6 1/4")	474A	250 (339)
5307	34-310 (4 1/2"-6 1/4")	474A	250 (339)
5315	34-313 (6 1/8"-8 3/4")	474B	250 (339)

TABLE 2 — Torque Arm Clevis Bracket Fastener Tightening Torque

DRIVE SIZE	Fastener ★ Size	Tightening Torque – lb-ft (Nm)	
		Steel Foundation	Concrete Foundation
5107	.375-16UNC	28 (38)	21 (28)
5115	.375-16UNC	28 (38)	21 (28)
5203	.500-13UNC	69 (94)	53 (72)
5207	.500-13UNC	69 (94)	53 (72)
5215	.625-11UNC	137 (186)	107 (145)
5307	.750-10UNC	245 (332)	191 (259)
5315	1.000-8UNC	567 (769)	467 (633)

★ Grade 5 fasteners required.

- Thread the bushing nut onto the hollow shaft one to two turns. **NOTE:** The bushing nut threads have been coated with an anti-seize compound at the Factory. This compound should not be removed. Before re-installing a previously used nut, re-coat the nut threads only with an anti-seize compound.



WARNING: DO NOT apply anti-seize or lubricant to bushing or shaft surfaces.

- PREFERRED METHOD** — Use a spanner wrench to tighten the bushing nut to the torque specified in Table 1. Apply Loctite 243 or equivalent to threads of setscrew and tighten it on the bushing nut.
 - ALTERNATE METHOD** — (To be used when torque cannot be measured.) Use a spanner (Table 1), chain or pipe wrench to tighten the bushing nut just until the drive can no longer be moved by hand axially on the driven shaft. Loosen nut ONLY until it can be turned by hand but do not unseat the taper. Retighten the nut hand tight. Now mark a spot on the top of the driven shaft. Next mark a spot on the bushing nut 180° from the driven shaft mark (90°CCW for sizes 5107 & 5115). Use the spanner wrench to tighten the nut CW one half turn until the two marks are aligned (one quarter turn for sizes 5107 & 5115). Apply Loctite 243 or equivalent to threads of setscrew. Tighten the setscrew on the bushing nut.
- JR** — Install backstop, motor mount, motor, sheaves (mount sheaves as close to the drive and motor housing as possible), belts and guard. Refer to complete guide for motor mount installation instructions. Proceed to Step 8.
 - JF (USING TAPERED DRIVE SHAFT)** — Put key into the driven shaft. Lift drive into position and slide onto the driven shaft taking care that the driven shaft key seats into the hollow shaft keyway. DO NOT hammer or use excessive force. Secure the drive to the shaft with the thrust plate fastener. Reinstall the hollow shaft cover. Install motor mount, motor, sheaves, belts and guard. Refer to complete guide for motor mount installation instructions. Proceed to Step 9.
 - JSC** — Assemble drive to trough and install drive shaft coupling bolts per screw conveyor manufacturer's instructions. Install motor mount, motor, sheaves, belts and guard. Refer to complete guide for motor mount installation instructions. Proceed to Step 9.
 - JR** — When the torque arm turnbuckle is used for belt tension adjustment, position the motor so that the belt pull will be about 90° to a line through the drive high-speed shaft and hollow shaft as shown in Figure 3. For drives where the motor is moved to adjust belt tension, mount the motor slide base so that the belt tension adjustment is approximately parallel to the belt centers. Refer to complete guide for instructions relative to alignment of sheaves and belts.

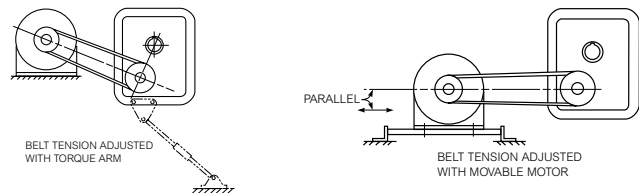


Figure 3

Lubrication

Oil Changes

SYNTHETIC LUBRICANTS- Synthetic lube change intervals can be extended to 8000-10,000 hours depending on operating temperatures and lubricant contamination. Laboratory analysis is recommended for optimum lubricant life and drive performance. Change lube with changes in ambient temperature. Refer to Page 3.

PETROLEUM LUBRICANTS- For normal operating conditions, change gear oil every six months or 2500 operating hours, whichever occurs first. If the drive is operated in an area where temperatures vary with the seasons, change the oil viscosity grade to suit the temperature. Where applicable, grease seals when changing oil. Refer to Page 3.

Lubrication

CAUTION: Drives shipped without oil.

10. **JR, JF, & JSC** — Find the desired mounting position in Figure 4 and install air vent and magnetic drain plug (packaged separately with basic drive). Locate and/or mark the oil level plug location.

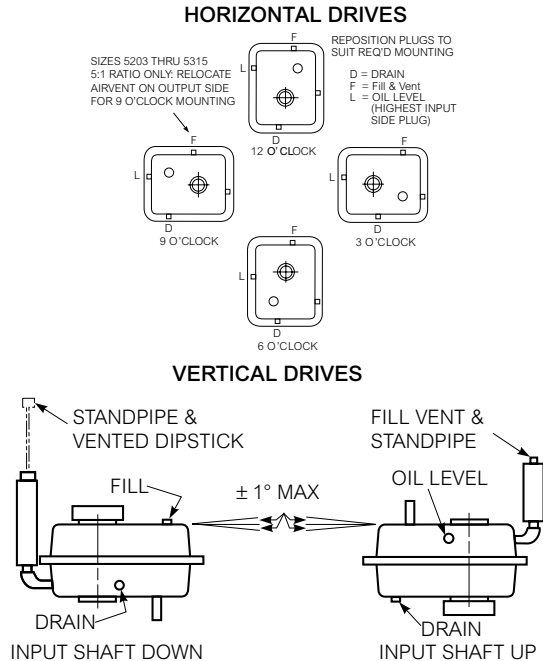


Figure 4

11. **JR, JF, & JSC** — HORIZONTAL MOUNTING

Remove air vent and oil level plug. Fill the drive until oil shows in the oil level hole. Coat the air vent and plug threads with #3 Permatex or equivalent thread sealant before replacing.

JRV, JFV, & JSCV — (VERTICAL MOUNTING) Refer to Figure 1, Step 1.

Input Shaft DOWN — Remove the fill plug and fill with oil to level marked on the dipstick.

Input Shaft UP — Remove the oil level and fill plugs and fill until oil shows in the oil level hole.

Coat the plug threads with #3 Permatex or equivalent thread sealant before replacing.

12. **JR, JF, & JSC** — Where applicable, pump grease into the high-speed shaft seal cover with a **Hand Grease Gun**, until fresh grease flows out along the shaft. Wipe off excess grease from the shaft. DO NOT use grease where it could contaminate the product, e.g. foods, drugs, etc.

Lubricants listed in this manual are typical products ONLY and should not be construed as exclusive recommendations. Industrial type petroleum-based rust and oxidation inhibited (R & O) gear lubricants or industrial type sulfur-phosphorus extreme pressure (EP) gear lubricants are the recommended lubricants for ambient temperatures of 30°F to 125°F (-1°C to 52°C).

For drives operating outside the above temperature range, refer to the "Synthetic Lubricants" paragraph. Synthetic lubricants can also be used in normal climates.

Viscosity (Important)

The proper viscosity grade for R & O and EP lubricants is found in Table 3. For synthetic lubricant viscosity grades, refer to Table 4 and the "Synthetic Lubricants" paragraphs. Petroleum-based lubricant selections must have a pour point at least 10°F (5.5°C) below the expected minimum ambient starting temperature.

Petroleum-Based Lubricants

CAUTION: PETROLEUM-BASED LUBRICANTS & INTERNAL BACKSTOPS — Do not use EP lubricants or lubricants with anti-wear additives or lubricant formulations including sulfur, phosphorus, chlorine, lead derivatives, graphite or molybdenum disulfides in drives equipped with internal cartridge type backstops. Some lubricants in Table 3 may contain anti-wear additives. EP lubricants in Table 3 do contain several of these additives.

NOTE: SYNTHETIC LUBRICANTS & INTERNAL BACKSTOPS — Synthetic lubricants of the polyalphaolefin type may be used in drives with internal backstops. Select proper lubricant grade from Table 4.

TABLE 5 — Approximate Oil Capacity – Quarts (Liters) ★

DRIVE SIZE	JR, JF & JSC	JRV & JFV
5107	2 (1.9)	3 (2.8)
5115	3 (2.8)	4.5 (4.3)
5203	3.5 (3.3)	5 (4.7)
5207	5.5 (5.2)	7.5 (7.1)
5215	9 (8.5)	13 (12.3)
5307	13 (12.3)	18 (17)
5315	15 (14.2)	21 (19.9)

★ Quantities are approximate. Always fill drive to specified level.

TABLE 3 — Petroleum-Based Gear Lubricants ‡

Ambient Temperature Range	+30° to +90°F -1° to +32°C	+70° to +125°F +21° to +52°C
AGMA Viscosity Grade	5	6
ISO Viscosity Grade	220	320
Viscosity	cSt @ 40°C	198 - 242
	SSU @ 100°F	918 - 1122
		288-352 1335-1632

‡ Minimum viscosity index of 90. Maximum operating temperature of lubricants is 200°F (93°C).

TABLE 4 — Synthetic Lubricants – Polyalphaolefin †

Ambient Temp. Range	-30° to +10°F (-34° to -12°C)	-15° to +50°F (-26° to +10°C)	0° to +80°F (-18° to +27°C)	+10° to +125°F (-12° to +52°C)	+20° to +125°F (-7° to +52°C)
AGMA Viscosity Grade	0S	2S	4S	5S	6S
ISO Viscosity Grade	32	68	150	220	320
Viscosity cSt @ 40°C	28.8-35.2	61.2-74.8	135-165	198-242	288-352
Viscosity SSU @ 100°F	134-164	284-347	626-765	918-1122	1335-1632

† Minimum viscosity index of 130. Consult lubricant supplier/manufacturer for maximum operating temperature.

Backstop Installation

Introduction

The following instructions apply to INSTALLATION ONLY of internal backstops in horizontal drives, sizes 5107 thru 5215 single and double reduction and size 5307 & 5315 double reduction.

Remove all external loads from system before servicing drive or accessories, and lock out starting switch of prime mover.

Lubricant

SEE LUBRICATION SECTION, PAGE 3.

Backstop Application Warning

DO NOT use a backstop as a substitute for a brake. Backstops are not approved for use on systems that are designed for handling of people such as elevators, manlifts, ski tows and ski lifts.

DO NOT use the backstop for indexing applications. The backstop is designed to prevent reverse rotation five times or less in eight hours, with one minute or more in overrunning direction between backstopping load applications.

Installation (Backstop Added to Existing Drive Only)

1. **DRIVE PREPARATION:** Drain oil from drive. Remove fasteners Ref. #27, end cover Ref. #23, and gasket Ref. #16, Figure 1. Keep size 5115J and 5207J end covers, size 5207J fasteners and all lock washers for reuse, all other parts may be discarded.

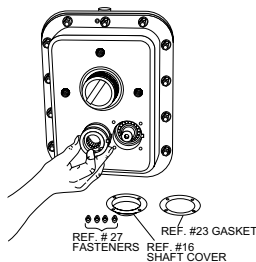


Figure 1

2. **BACKSTOP PREPARATION:** Remove backstop Ref. #5A1 from the kit and wipe off any excess lubricant. On drive sizes 5107 (all ratios) and 5115 (24.87 ratio), assemble retaining ring Ref. #5A2 onto one of the grooves on the backstop OD. On drive size 5115J25, assemble spacer Ref. #5A6 to backstop OD adjacent to retaining ring on inboard side. All other size 5115J and larger drives, insert housing spacer Ref. #5A3 (retaining ring used as housing spacer on drive size 5207J) into housing bore adjacent to bearing cup (Figure 2). Assemble key Ref.#5A4 to backstop keyway (spacer Ref. #5A6 is between retaining ring and key on 511J25 backstop).

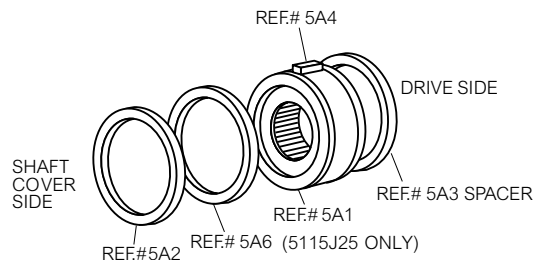


Figure 2

3. **ALL SIZES — BACKSTOP INSTALLATION:** Apply oil to the O.D. of the high-speed shaft backstop journal and the sprags inside of the backstop. Align the backstop key with the keyway in the exposed housing bore and carefully slide the backstop into the bore while slowly rotating the high-speed shaft. The shaft will only rotate in one direction. **DO NOT FORCE OR HAMMER;** this may damage the shaft or misalign the sprags.

If the shaft does not rotate in the required direction, remove backstop, reverse it, reposition the retaining ring and spacer (where used) and reinsert it into the housing bore as instructed.

4. **FINAL ASSEMBLY — EXTERNAL PARTS:** On drive sizes 5107J and 5115J, refer to figures 3A and 3B. Oil feed slots in gaskets and cover spacer must be aligned with the housing backstop oil feed hole to provide proper lubrication for the backstop. Install fasteners with lock washers and cross tighten to 3.5 lb-ft (4,7 Nm) torque.

5107J WITH BACKSTOP

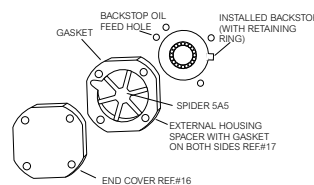


Figure 3A

5115J WITH BACKSTOP

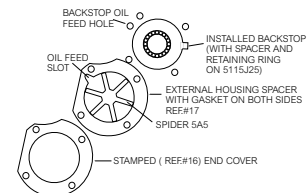


Figure 3B

On drive sizes 5203 thru 5315, install one gasket Ref. #23 and backstop end cover Ref. #27 to drive housing (one gasket Ref. #23, cover spacer Ref. #17, second gasket Ref. #23, and end cover Ref. #16 on drive size 5207J). Size 5207J uses end cover and fasteners removed in Step 1. Oil feed holes or slots in gaskets, cover spacer (5207J), and cast shaft covers must be aligned with the housing backstop oil feed hole to provide proper lubrication to the backstop. Install fasteners with lock washers and cross tighten to 8 lb-ft (11 Nm) torque.

FOR ALL SIZES: Affix the rotation indicator label next to the high-speed shaft extension to indicate the free direction of rotation (Figure 4). Fill to oil level specified in Section I with oil specified in Lubrication Section. Check motor for correct rotation before completing connection to drive.

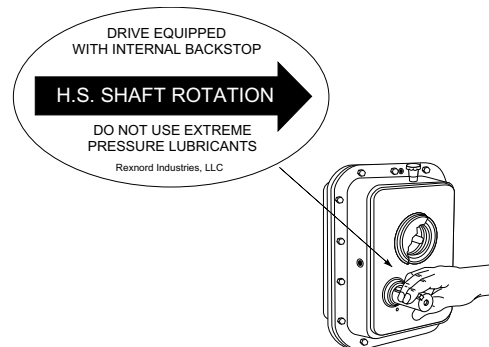


Figure 4

BACKSTOP REPLACEMENT — IN EXISTING DRIVES WITH DAMAGED BACKSTOPS

5. **BACKSTOP REMOVAL:** Drain oil and disassemble backstop end cover, fasteners, and other external backstop parts. Remove backstop from drive and discard, keep backstop key, backstop spacer (5115J25 only), and backstop retaining rings (where used) for possible reuse. Remove housing spacer from drive housing backstop bore and keep for reuse. **NOTE:** Complete drive disassembly is required to replace the high-speed shaft, refer to Sections II and III of the complete manual (available online) for disassembly, parts replacement, and reassembly of the basic drive.