How to Use this Manual

The following instructions and recommendations apply to all standard Falk™ Type NRT backstops.

Their performance and life depend largely upon how they are installed and serviced. Drawings are representative of this series of backstops and may not agree in exact detail with all backstop sizes.

When requesting information, specify the M.O. number, backstop size, model number, maximum running rpm, torque rating, torque arm angle degrees, and date stamped on the backstop nameplate.

This manual provides detailed instructions on installation, maintenance, and parts identification. Use the following Table of Contents to locate required information.

Table of Contents

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

Introduction

IMPORTANT: Mount the backstop ONLY at the torque arm angle degrees (±5°), stated on the nameplate and as described in **Figure 4**, page 5. Lubrication lines and oil level will be incorrect for other angles; refer revised specifications to the Factory.

WARRANTY — Rexnord Industries, LLC (the "Company") warrants that NRT backstops (I) conform to Company's published specifications, and (II) are free from defects of material for three years from the date of shipment.

Company does not warrant any non-Company branded products or components (manufacturer's warranty applies) or any defects in, damage to, or failure of products caused by: (I) dynamic vibrations imposed by the drive system in which such products are installed unless the nature of such vibrations has been defined and accepted in writing by Company as a condition of operation; (II) failure to provide suitable installation environment; (III) use for purposes other than those for which designed, or other abuse or misuse; (IV) unauthorized attachments, modifications or disassembly, or (V) mishandling during shipping.

Safety Codes & General Precautions

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.*

DISMANTLING, REPAIR, & PARTS REPLACEMENT — See page 11. The backstop and normal associated equipment (shaft, pulleys, etc.), involve moving parts, therefore consult local, state, OSHA, and ANSI safety codes for proper guarding of revolving parts and possible pinch points. (A pinch point occurs at the contact point between the backstop torque arm and end covers, and between the torque arm and stirrup. See **Figures 2, 3, and 5**).

Carefully read and follow all supplementary instructions and tags attached to the backstop and then file for future reference.

Operate the backstop within the torque rating, overrunning speed, temperature range, and torque arm angle listed on the nameplate. Follow lubrication instructions in this manual.

When removing backstop from shaft, do not apply heat to the backstop. Apply axial force to the hub of the backstop only.

Damage may occur to the backstop if it remains under full load for extended periods of time. Remove the load before shutting down the equipment.

If the shaft was accidentally rotated in the wrong direction of rotation at start-up, the backstop may have been damaged. Return the backstop to the Factory for inspection.

Application Requirements

BACKSTOP APPLICATION — The Falk NRT backstop is designed to prevent reverse rotation in applications such as inclined conveyors, bucket elevators, fans, rotary pumps, and kilns. If local safety codes permit, the backstop may be used as a backup for a brake on these applications, but NOT in people conveying systems such as elevators, manlifts, ski tows or ski lifts. Also, DO NOT use the backstop as a substitute for a brake.

OPERATING TEMPERATURES — Enclosure of the backstop may cause overheating. Provide adequate ventilation. Backstop operating temperatures, at maximum overrunning speed, may reach 200°F (93°C). Determine the effect of this temperature on the driven equipment and provide cooling if necessary.

If a backstop operates in the sun at ambient temperatures over 100°F (38°C), then special measures should be taken to protect the backstop from solar energy. This protection can consist of a canopy over the backstop or reflective paint on the backstop. If neither is possible, a cooling device such as a fan may be required to prevent the sump temperature from exceeding the allowable maximum of 200°F (93°C).

INDEXING — Falk NRT backstops can be used for indexing service. Refer application data to the Factory for selection. Indexing is defined as continuous cyclic or periodic application of the backstop as encountered in the conversion of reciprocating or oscillating motion into intermittent linear motion.

JOGGING — Defined as start/stop movement with jerking or jolting motion is permissible. NOTE: There must be at least one complete overrunning revolution between backstop operations or it is considered an indexing application.

EXPLOSIVE ATMOSPHERES — The purchaser is responsible for taking adequate precautions to prevent spark generation in explosive atmospheres. Consideration should be given to spark generation that may occur when the torque arm strikes the stirrup.

CHEMICAL ATMOSPHERES — The backstop may be damaged if exposed to certain types of chemicals or vapors; for example, potash dust, chlorine gas, carbon tetrachloride, etc. These materials may cause deterioration of the seals or aluminum roller cage rings.

AXIAL RETAINING COLLARS — Axial retention of the backstop is required to prevent the backstop from moving on the shaft (either off the shaft or toward the headshaft bearing), causing increased loads on the backstop bearings. Rexnord offers axial retaining collars as an optional extra charge accessory for all applications. The collars are manufactured to fit the backstop and the shaft and can be mounted on either side of the backstop. This allows the retaining collars to be mounted on the shaft inside of the backstop if the application requirements so dictate. If two collars were furnished with the backstop, mount one collar on each side of the backstop (so backstop is sandwiched between the collars).

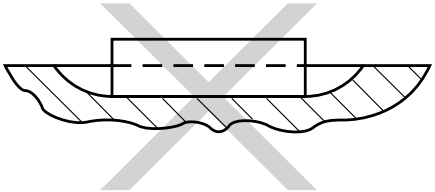
LUBRICATION LINES, SIGHT GAUGE & BREATHER — Do not assemble to backstop until backstop is mounted on the shaft.

General Instructions

BACKSTOP–SHAFT FITS — The shaft must have a 125 micro-inch (or finer) finish and clearance fits specified in **Table 2** (page 6).

KEYS & KEYWAYS — Keys to be used with Falk NRT backstops are furnished by the Factory. They are either cold drawn 1045 steel or heat-treated alloy steel (310-350 HB).

DO NOT USE SLED RUNNER TYPE KEYWAY. IT MAY INDUCE UNDUE FORCES ON BACKSTOP.



SLED RUNNER KEYWAY EXAMPLE

BACKSTOP MOUNTING POSITIONS — The backstop rotational axis must be horizontal (±5°) for all applications.

The NRT backstop is capable of being mounted at any desired angle, per **Figure 2** and **Figure 4**, page 5; however, a horizontal mounting at 0° or 180° is preferred. The mounting angle must be specified at the time of purchase. This enables Rexnord to custom fit the lubrication lines and establish and mark the proper static oil level for the specified mounting angle. The lubrication lines, sight gauge and breather are removed for shipping purposes.

Furnished lubrication lines and oil level will be incorrect for mounting angles deviated from the mounting angle stamped on the nameplate (±5°) — refer revised specifications to the Factory.

TORQUE ARM STOPS (OR STIRRUP) — The torque arm stops must be designed to resist the force developed by the actual torque applied to the backstop. The minimum recommended distance to the torque arm stop is .9N as illustrated in **Figure 1**, page 5, and **Table 3**, page 6. Use torque arm stops capable of withstanding the loads tabulated in **Table 3**, page 6.

Where shorter than recommended torque arms are required for the application, the stirrup should be designed to withstand the increased reaction forces of the shorter torque arm. Refer to **Figure 1**, page 5, and the following equation.

$$\text{Actual Retention Force} = \frac{\text{Actual Peak Backstopping Torque}}{\text{Actual Application Dimension N}}$$

The torque arm must be free to move within the stirrup. Provide clearance on three sides per **Figure 3**, page 5. DO NOT restrict torque arm movement by welding or securing the torque arm to any supporting structure.

Locate the torque arm support surface parallel (±½°) to the torque arm surface.

Prevent accumulation of any foreign material or ice around torque arm and torque arm stirrup which could restrict free movement of the torque arm.

LIFTING INSTRUCTIONS — See **Figure 5**, page 5. Cotter pins must be locked to prevent axial movement of torque arm pin. Sling torque arm as shown. Use clamps or similar device to prevent sling from slipping.

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TABLE 1 — Shaft and Keyway Dimensions – Inch

Size	Nominal Shaft Diameter (Over-Thru)	Shaft Keyway		Backstop Keyway		Key★			
		Width	Depth	Width	Depth	Width x Height	Key Length Furnished	Minimum Key Engagement	Key Material†
1075NRT	2.3125 - 2.7500	.625	.313	.625	.313	.625 x .625	7.25	6.50	2
	2.7500 - 3.2500	.750	.375	.750	.375	.750 x .750	7.00	6.00	1
	3.2500 - 3.5625	.875	.438	.875	.438	.875 x .875	5.50	4.50	1
	3.5625 - 3.7500	.875	.313	.875	.323	.875 x .625	7.25	5.50	1
	3.7500 - 3.9375	1.000	.500	1.000	.250	1.000 x .750	7.00	6.50	1
1085NRT	2.9375	.750	.375	.750	.375	.750 x .750	7.50	7.00	2
	2.9375 - 3.2500	.750	.375	.750	.375	.750 x .750	7.50	7.00	2
	3.2500 - 3.7500	.875	.438	.875	.438	.875 x .875	6.00	4.50	2
	3.7500 - 4.5000	1.000	.500	1.000	.500	1.000 x 1.000	7.00	5.50	1
	4.5000 - 4.7500	1.250	.625	1.250	.625	1.250 x 1.250	7.00	4.00	1
	4.7500 - 5.1875	1.250	.625	1.250	.250	1.250 x .8750	7.00	7.00	1
1095NRT	3.4375	.875	.438	.875	.438	.875 x .875	9.50	9.00	2
	3.4375 - 3.7500	.875	.438	.875	.438	.875 x .875	9.50	9.00	2
	3.7500 - 4.5000	1.000	.500	1.000	.500	1.000 x 1.000	9.00	8.50	1
	4.5000 - 5.0000	1.250	.625	1.250	.625	1.250 x 1.250	7.00	6.00	1
	5.0000 - 5.5000	1.250	.625	1.250	.500	1.250 x 1.125	7.00	6.50	1
1105NRT	4.9375	1.250	.625	1.250	.625	1.250 x 1.250	7.50	7.00	2
	4.9375 - 5.5000	1.250	.625	1.250	.625	1.250 x 1.250	7.50	7.00	2
	5.5000 - 6.5000	1.500	.750	1.500	.750	1.500 x .1.500	8.00	6.50	1
	6.5000 - 7.4375	1.750	.750	1.750	.750	1.750 x 1.500	9.00	5.50	1
1115NRT	5.9375	1.500	.750	1.500	.750	1.500 x 1.500	8.75	8.00	2
	5.9375 - 6.5000	1.500	.750	1.500	.750	1.500 x 1.500	8.75	8.00	2
	6.500 - 7.5000	1.750	.750	1.750	.750	1.750 x 1.500	9.00	8.50	1
	7.500 - 8.0000	2.000	.750	2.000	.750	2.000 x 1.500	9.00	8.00	1
	8.000 - 8.4375	2.000	.750	2.000	.500	2.000 x 1.250	10.50	10.50	1
1125NRT	7.2500	1.750	.750	1.750	.750	1.750 x 1.500	11.00	10.50	1
	7.250 - 7.5000	1.750	.750	1.750	.750	1.750 x 1.500	11.00	10.50	1
	7.500 - 9.0000	2.000	.750	2.000	.750	2.000 x 1.500	11.00	10.50	1
1135NRT	8.5000	2.000	.750	2.000	.750	2.000 x 1.500	11.00	10.00	2
	8.500 - 9.0000	2.000	.750	2.000	.750	2.000 x 1.500	11.00	10.00	2
	9.000 -10.5000	2.500	.875	2.500	.875	2.500 x 1.750	12.00	11.00	1
1145NRT	9.0000	2.000	.750	2.000	.750	2.000 x 1.500	13.00	12.50	2
	9.0000 -11.0000	2.500	.875	2.500	.875	2.500 x 1.750	12.00	11.50	2
	11.0000 -12.0000	3.000	1.000	3.000	1.000	3.000 x 2.000	13.00	11.00	1
1155NRT	10.5000	2.500	1.250	2.500	1.250	2.500 x 2.500	12.00	11.00	2
	10.500 -11.0000	2.500	1.250	2.500	1.250	2.500 x 2.500	12.00	11.00	2
	11.000 -13.0000	3.000	1.000	3.000	1.000	3.000 x 2.000	13.00	12.50	2
	13.000 -13.2500	3.500	1.250	3.500	1.250	3.500 x 2.500	12.00	9.00	2
1165NRT	12.5000	3.000	1.000	3.000	1.000	3.000 x 2.000	15.50	12.00	2
	12.500 -13.0000	3.000	1.000	3.000	1.000	3.000 x 2.000	15.50	12.00	2
	13.000 -15.0000	3.500	1.250	3.500	1.250	3.500 x 2.500	12.00	12.00	2
	15.000 -15.5000	4.000	1.500	4.000	1.500	4.000 x 3.000	13.00	9.00	2
1175NRT	13.5000	3.500	1.250	3.500	1.250	3.500 x 2.500	16.00	15.50	2
	13.500 -15.0000	3.500	1.250	3.500	1.250	3.500 x 2.500	16.00	15.50	2
	15.000 -17.5000	4.000	1.500	4.000	1.500	4.000 x 3.000	13.00	12.50	2
1185NRT	15.5000	4.000	1.500	4.000	1.500	4.000 x 3.000	17.00	16.50	2
	15.500 -18.0000	4.000	1.500	4.000	1.500	4.000 x 3.000	17.00	16.50	2
	18.000 -20.0000	5.000	1.750	5.000	1.750	5.000 x 3.500	14.00	13.50	2

★ Keys are furnished by Rexnord to suit shaft and backstop keyways. Keys are either cold drawn 1045 material or heat-treated alloy steel (310-350HB).
† #1 Keys are cold-drawn 1045 steel.
#2 Keys are heat-treated alloy steel (310-350HB).

TABLE 1A — Shaft and Keyway Dimensions – Metric (Millimeters)

Size	Nominal Shaft Diameter (Over-Thru)	Shaft Keyway		Backstop Keyway		Key*			
		Width	Depth	Width	Depth	Width x Height	Key Length Furnished	Minimum Key Engagement	Key Material†
1075NRT	58 - 65	18.0	7.0	18.0	4.4	18 x 11	210	210	2
	65 - 75	20.0	7.5	20.0	4.9	20 x 12	200	185	2
	75 - 85	22.0	9.0	22.0	5.4	22 x 14	180	160	2
	85 - 95	25.0	9.0	25.0	5.4	25 x 14	150	140	2
	95 - 100	28.0	10.0	28.0	4.9	28 x 14.5	180	140	2
1085NRT	75 - 85	22.0	9.0	22.0	5.4	22 x 14	210	210	2
	85 - 95	25.0	9.0	25.0	5.4	25 x 14	210	210	2
	95 - 110	28.0	10.0	28.0	6.4	28 x 16	180	170	2
	110 - 130	32.0	11.0	32.0	7.4	32 x 18	150	120	2
1095NRT	95 - 110	28.0	10.0	28.0	6.4	28 x 16	265	265	2
	110 - 130	32.0	11.0	32.0	7.4	32 x 18	230	225	2
	130 - 150	36.0	12.0	36.0	7.4	36 x 19	180	160	2
1105NRT	120 - 130	32.0	11.0	32.0	7.4	32 x 18	265	265	2
	130 - 150	36.0	12.0	36.0	8.4	36 x 20	265	265	2
	150 - 170	40.0	13.0	40.0	9.4	40 x 22	220	210	2
	170 - 200	45.0	15.0	45.0	10.4	45 x 25	170	165	2
1115NRT	150 - 170	40.0	13.0	40.0	9.4	40 x 22	290	290	2
	170 - 200	45.0	15.0	45.0	10.4	45 x 25	290	280	2
	200 - 225	50.0	17.0	50.0	11.4	50 x 28	220	220	2
1125NRT	180 - 200	45.0	15.0	45.0	10.4	45 x 25	305	305	2
	200 - 230	50.0	17.0	50.0	11.4	50 x 28	305	305	2
	230 - 240	56.0	20.0	56.0	12.4	56 x 32	280	250	2
1135NRT	210 - 230	50.0	17.0	50.0	11.4	50 x 28	350	350	2
	230 - 260	56.0	20.0	56.0	12.4	56 x 32	350	350	2
	260 - 280	63.0	20.0	63.0	12.4	63 x 32	330	315	2
1145NRT	260	56.0	20.0	56.0	12.4	56 x 32	350	350	2
	260 - 290	63.0	20.0	63.0	12.4	63 x 32	350	350	2
	290 - 300	70.0	22.0	70.0	14.4	70 x 36	350	340	2
1155NRT	290 - 330	70.0	22.0	70.0	14.4	70 x 36	360	360	2
	330 - 350	80.0	25.0	80.0	15.4	80 x 40	360	330	2
1165NRT	320 - 330	70.0	22.0	70.0	14.4	70 x 36	415	395	2
	330 - 380	80.0	25.0	80.0	15.4	80 x 40	415	395	2
	380 - 405	90.0	28.0	90.0	17.4	90 x 45	380	365	2
1175NRT	380 - 440	90.0	28.0	90.0	17.4	90 x 45	430	415	2
	440 - 465	100.0	31.0	100.0	19.5	100 x 50	430	415	2
1185NRT	440 - 500	100.0	31.0	100.0	19.5	100 x 50	450	430	2

★ Keys are furnished by Rexnord to suit shaft and backstop keyways. Keys are either cold drawn 1045 material or heat-treated alloy steel (310-350HB)

† #1 Keys are cold-drawn 1045 steel.
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Figure 1

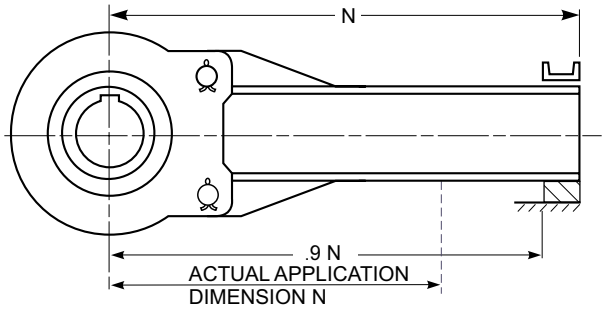


Figure 2

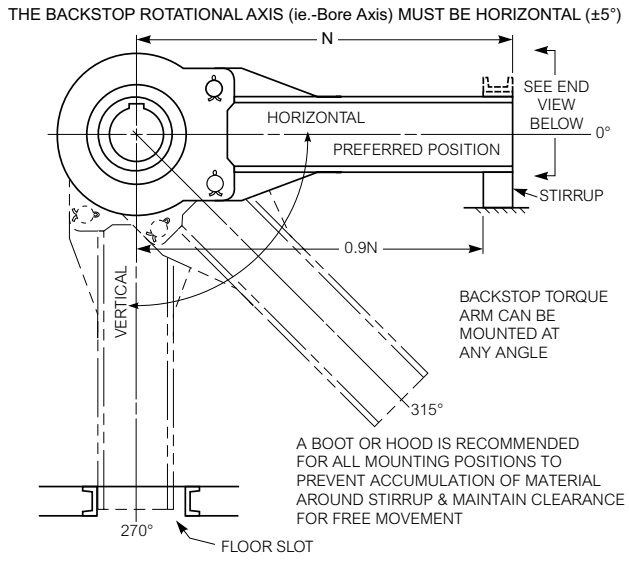
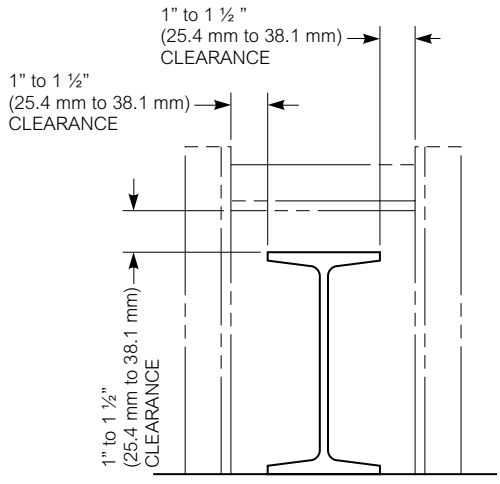
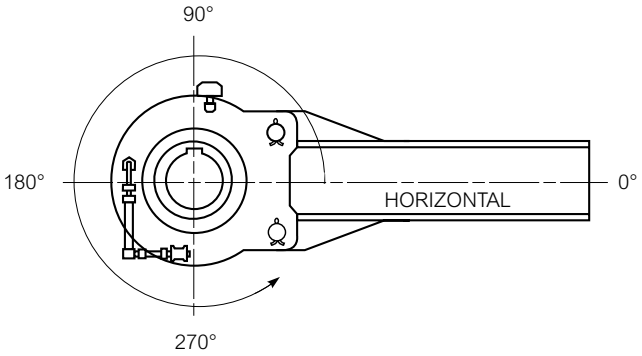


Figure 3



END VIEW

Figure 4



Use the above diagram to interpret the mounting angle specified on the backstop nameplate. View the backstop assembly from the shaft extension end as shown above.

DO NOT exceed the mounting angle position of the backstop to the angle specified on the backstop nameplate (±5°).

Figure 5

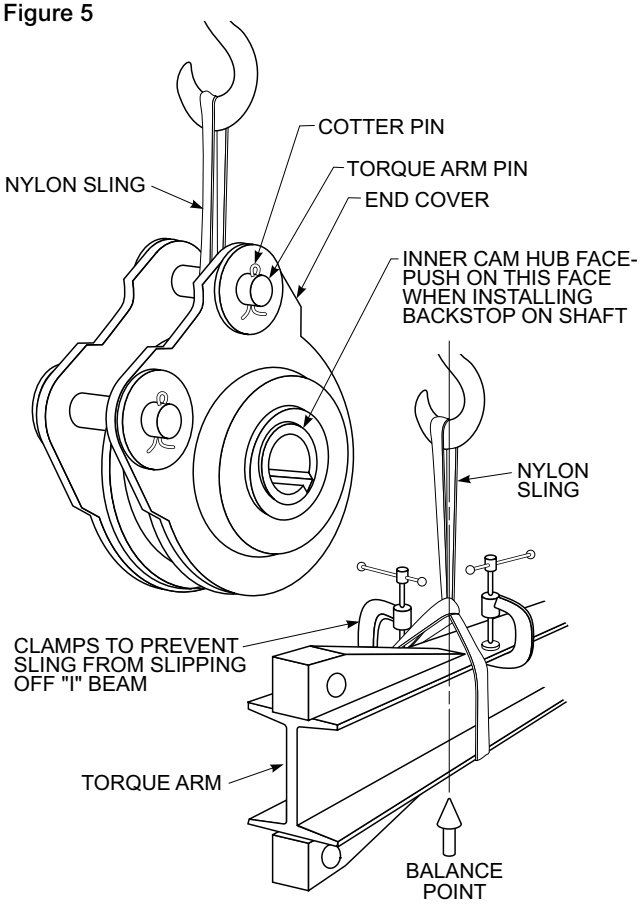


TABLE 2 — Backstop – Shaft Fits (Inch★)

Nominal Diameter (From-Includes)	Nominal Shaft Tolerance	Nominal Bore Diameter Tolerance	Bore–Shaft† Min–Max Clearance
1.9375 – 2.9375	+.0000, – .0010	+.0005, + .0015	.0005 – .0025
3.0000 – 7.9375	+.0000, – .0010	+.0010, + .0025	.0010 – .0035
8.0000 – 11.9375	+.0000, – .0010	+.0015, + .0035	.0015 – .0045
12.0000 – 14.9375	+.0000, – .0010	+.0020, + .0045	.0020 – .0055
15.0000 – 20.0000	+.0000, – .0020	+.0020, + .0045	.0020 – .0065

★ Backstops for metric shafts are supplied with E7 bore and D10 keyway tolerance assuming m6 shaft diameter and h9 keyway tolerance.

† A 125 micro-inch (or finer) shaft finish and clearance fit specified above are recommended.

Figure 6

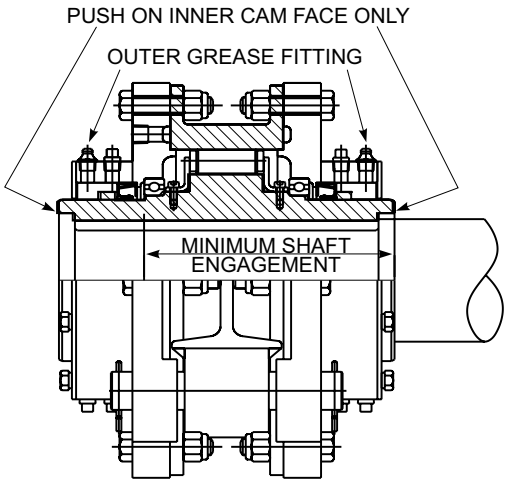


TABLE 3 — Backstop Reaction Force at Torque Arm Stirrup (Inch & Metric)

Backstop Size	Catalog Torque Rating		N Torque Arm Length (See Figure 2)		0.9 X N (rounded)		Torque Arm Reaction Force‡	
	lb-ft	Nm	Inch	mm	Inch	mm	lb	N
1075NRT	10,000	13,600	36.00	914	32.50	822	5,550	24,700
1085NRT	16,000	21,700	48.00	1219	43.00	1097	6,700	29,800
1095NRT	28,000	38,000	54.00	1372	48.50	1235	10,500	46,700
1105NRT	45,000	61,000	66.00	1676	59.50	1508	13,600	60,500
1115NRT	75,000	102,000	72.00	1829	65.00	1646	20,800	92,550
1125NRT	105,000	142,000	78.00	1981	70.00	1788	27,000	120,100
1135NRT	150,000	203,000	82.00	2083	74.00	1875	36,500	162,400
1145NRT	212,000	287,000	88.00	2235	79.00	2011	48,300	214,850
1155NRT	249,000	338,000	94.00	2386	84.50	2146	53,300	237,100
1165NRT	346,000	469,000	100.00	2540	90.00	2286	69,200	307,850
1175NRT	519,000	704,000	120.00	3048	108.00	2743	86,500	384,850
1185NRT	747,000	1,013,000	120.00	3048	108.00	2748	124,500	553,800

‡ Reaction force is based on 0.9 X N torque arm length and 1.5 catalog rating:

$$\text{Force (lb)} = \frac{1.50 \times \text{Catalog Torque Rating (lb-ft)} \times 12 \text{ (inch per foot)}}{0.9 \times \text{Length (N) (in)}}$$

$$\text{Force (N)} = \frac{1.50 \times \text{Catalog Torque Rating (Nm)} \times 1000 \text{ (mm per m)}}{0.9 \times \text{Length (N) (mm)}}$$

For special length torque arms, substitute actual N dimension in above formula.

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Installation

MOUNT BACKSTOP — CAUTION: Before installing backstop, check direction of shaft-free rotation and required rotation of motor. The backstop overrunning (or free rotation) direction is indicated by a rotation arrow on each side of the backstop.

1. Clean the shaft and remove burrs.
2. Slide the axial retaining collar onto the shaft ONLY if the bore size or application requires a collar to be on the shaft inside of (or ahead of) the backstop.
3. Coat shaft and key with oil or anti-seize compound to ease installation of key, as well as backstop. Mount the heat-treated key furnished with the backstop.
4. Refer to **Figure 5**, page 5. Lift backstop and slide it onto shaft. Apply axial force only to the inner cam face of the backstop. The backstop must be positioned to meet certain minimum engagement requirements which vary with backstop and bore size. Minimum required engagement is determined by the GREATER distance of:
   A. Minimum required backstop key engagement as shown in **Tables 1** and **1A**, pages 3 and 4, or
   B. Minimum shaft/inner cam engagement as shown in **Figure 6** and **Table 4**. If two axial retention collars are required, provide adequate shaft length to permit mounting the collars.

TABLE 4 — Minimum Shaft Engagement

Unit Size	1075	1085	1095	1105	1115	1125	1135	1145	1155	1165	1175	1185
Inches	6.2	6.2	8.1	8.1	9.0	9.6	11.4	11.4	11.5	13.8	14.3	14.7
mm	158	158	206	206	229	244	290	290	292	351	363	373

5. In all cases where a Rexnord axial retaining collar is used (other than the applications referred to in Step 2 above), mount the collar to the backstop. First tighten the fasteners to the backstop and then the fasteners to the shaft. Torque to the value given in **Table 5**. For bore sizes requiring the use of two axial retention collars, mount collars (one on each side) on the shaft and tighten fasteners to the shaft.

TABLE 5 — Axial Retaining Collar Fastener Tightening Torque★ — lb-in/Nm

(All Fasteners are UNC)

Fastener Size	Tightening Torque (lb-in)	Tightening Torque (Nm)
.375"-16	440	50
.500"-13	1,025	116
.625"-11	2,050	232
.750"-10	3,475	393
1.000"- 8	7,875	890
1.250"- 7	13,750	1 550

★ Do not oil fasteners.

MOUNT TORQUE ARM

1. Lift torque arm as shown in **Figure 5**, page 5, and attach it to the backstop with torque arm pins and cotter pins supplied with backstop. Lock cotter pins.
2. Place torque arm in torque arm support and then complete construction of the torque arm support as previously described under TORQUE ARM STOPS (OR STIRRUP) on page 2.

CAUTION: *Check to see that backstop is not axially restrained through the torque arm and that accumulation of foreign material or ice cannot restrict movement of the torque arm.*

Figure 7

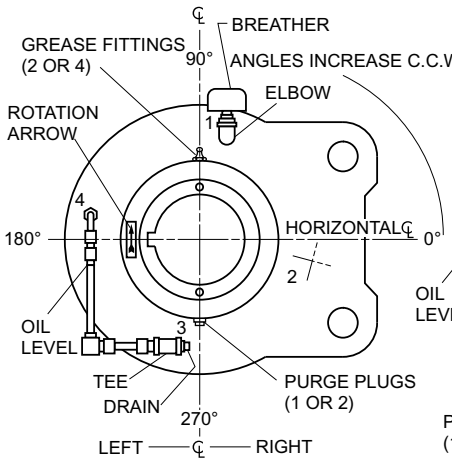


Figure 8

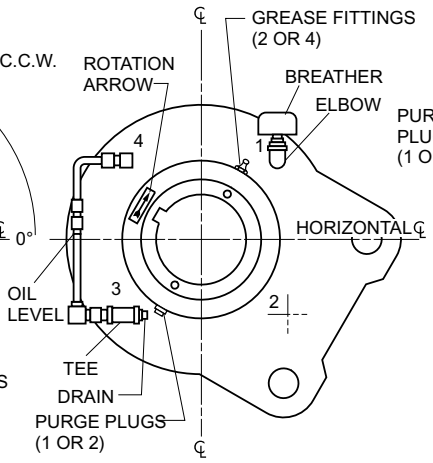
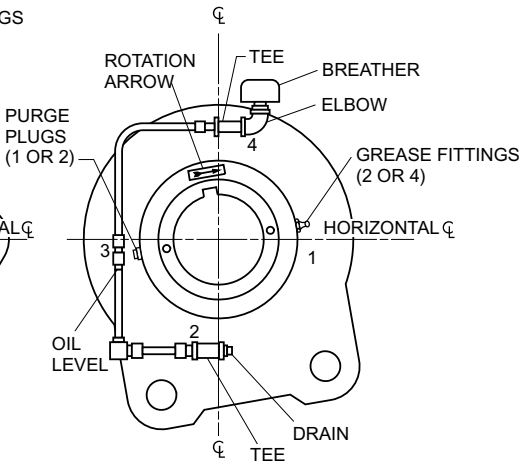


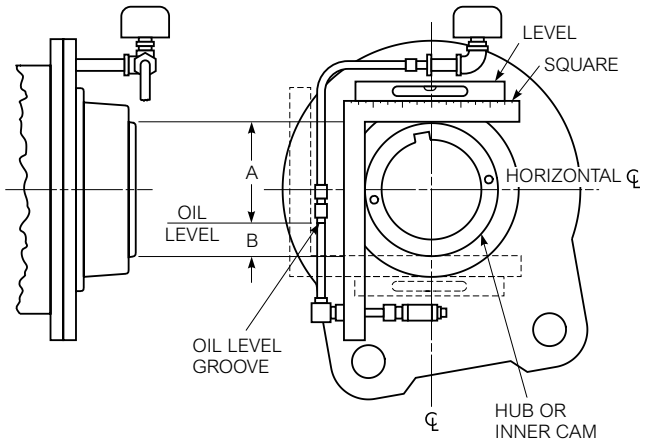
Figure 9



INSTALL LUBRICATION LINES, SIGHT GAUGE, & BREATHER

1. As previously stated, Rexnord custom fits the lubrication lines and marks the static oil level to suit the torque arm mounting angle specified at the time of purchase. The lubrication lines, sight gauge, and breather are removed for shipping purposes. The torque arm mounting angle is stamped on the backstop nameplate, and the backstop must be mounted at this angle, (±5°). See **Figure 4**, page 5, for interpretation of mounting angle. Lubrication lines and oil level will be incorrect for other angles.
2. The lubrication lines, sight gauge and breather are removed for shipping. The pipe tees and elbows (see **Figures 7, 8,** and **9**) are left in the end cover at the proper angles for simple reassembly. The tees and elbows are plugged for shipment.
3. The sight gauge/piping subassembly must be mounted in a position that allows direct viewing of oil level markings. **Figures 7, 8,** and **9** are examples of left-hand assembly configurations. Similar right-hand configurations are possible.
4. Coat all pipe threads with Permatex #3 sealant liquid or equivalent.
5. Position backstop and torque arm at angle specified on nameplate (±5°). Remove plug from the lowest pipe tee and attach sight gauge/piping subassembly. DO NOT tighten fittings.
6. With the sight gauge in the proper vertical position, locate and remove the plug nearest the unattached upper end of the sight gauge/piping subassembly. This plug may be in the backstop end cover **(Figures 7, 8,** and **9)** or it may be in the upper pipe tee **(Figure 9)**. Install fitting but DO NOT tighten.
7. Position sight gauge oil level groove to the appropriate dimension shown in **Figure 10**, to the right, and **Table 6**, page 9, and tighten all fittings.
8. Refer to the following page for recommended lubricant. Drain and flush residual shipping oil with specified lubricant. Fill with lubricant by removing the pipe plug in the elbow installed at the Factory in the uppermost hole. Also remove the uppermost pipe plug in the opposite end cover to act as a vent. Fill to marks on oil sight glass. Replace plugs after filling.
9. Install breather and associated piping parts in the same elbow referred to in Step 8 above.
10. Backstops ordered as spares must be referenced to the original Falk M.O. number from the nameplate. Confirm power, speed, rotation, and torque arm angle.

Figure 10



METHODS OF MEASURING LOCATION OF OIL

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TABLE 6 — Oil Level Dimensions★ – Inch (mm)

Unit Size	Dimension "A"	Dimension "B"
1075	4.0 (102)	0.8 (20)
1085	5.3 (135)	1.2 (30)
1095	5.8 (147)	1.2 (30)
1105	7.6 (193)	1.7 (43)
1115	8.6 (218)	2.2 (56)
1125	9.7 (246)	2.3 (58)
1135	10.8 (274)	3.0 (76)
1145	12.1 (307)	2.9 (74)
1155	14.1 (358)	3.5 (89)
1165	15.1 (384)	4.4 (112)
1175	18.6 (472)	5.4 (137)
1185	20.0 (508)	5.0 (127)

★ Adjust piping so that the oil level indicator on sight gauge is within ±1/4" (±6 mm) of Dimension "A" or "B."

Lubrication

Read and carry out all instructions on name and lubrication plates and heed all warning tags. Determine minimum and maximum expected ambient temperature in which the backstop is to operate and use the recommended lubricant for the particular size backstop and applicable temperature range.

RECOMMENDED LUBRICANTS — Refer to **Tables 8 thru 12** (pages 10 and 11) for transmission fluids, oils and greases meeting Rexnord specifications. **NOTE:** Lubricants listed are typical products ONLY and should not be construed as exclusive recommendations.

CAUTION: *DO NOT USE EXTREME PRESSURE LUBRICANTS OR GREASES. Typical extreme pressure additives are sulphur, chlorine, lead and phosphorus derivatives, which act under conditions of heat and pressure to produce a coating on the working surfaces which could allow slippage. Similarly, lubricants containing graphite and molybdenum disulfide cannot be used.*

WARNING: FOOD PROCESSING INDUSTRIES
Backstops are not approved for use in the food and drug industries if lubricants could contaminate material being processed.

OIL LEVEL — Fill the backstop with specified lubricant to the static level indicated by the scribed line on the vertical sight gauge. Check oil level in sight glass only when the unit is not operating. During operation the oil level in the sight glass will drop due to distribution of oil around the periphery of the housing. Approximate oil capacities are given in **Table 7**.

IMPORTANT: The NRT OUTER grease cavity must be manually filled with grease by the user prior to operation in the field. Refer to the following section on Grease Purged Seals for additional details.

TABLE 6A — Lubricants and Viscosity Grade Recommendations

	Extreme Cold Ambient	Cold Ambient	Normal Ambient	High Temperature Ambient
Temperature Range	-40°F to -15°F	-15°F to +40°F	+32°F to 125°F	Greater than 125°F
	-40°C to -26°C	-26°C to +4°C	0°C to 52°C	Greater than 52°C
Unit Sizes 1075 NRT 1095NRT	Mobil Aero HFA or Dexron ATF	Dexron ATF	Dexron ATF or ISO VG 68	Consult Factory
Unit Sizes 1105NRT 1145NRT	Mobil Aero HFA or Dexron ATF	SAE 10W40 with pour point of at least -20°F (-29°C)	ISO VG 150	Consult Factory
Unit Sizes 1155NRT-1185NRT	Mobil Aero HFA or Dexron ATF	SAE 10W40 with pour point of at least -20°F (-29°C)	ISO VG 220	Consult Factory

TABLE 7 — Approximate Oil and Grease Capacities

Backstop Size	Oil Capacity Aprox. Pints (Liters)‡	Grease Purge Qty-Oz (grams)†
1075	.50 (0.24)	2.25 (64)
1085	.75 (0.35)	3.00 (85)
1095	1.50 (0.71)	7.00 (198)
1105	2.00 (0.95)	9.00 (255)
1115	4.00 (1.89)	7.50 (213)
1125	5.00 (2.37)	8.25 (234)
1135	6.50 (3.08)	5.50 (156)
1145	8.00 (3.79)	10.25 (291)
1155	10.00 (4.73)	12.00 (340)
1165	16.00 (7.57)	8.00 (227)
1175	20.00 (9.46)	12.00 (340)
1185	26.00 (12.30)	16.75 (475)

† Ounce (gram) per side.

‡ Use these quantities as a guide when ordering oil. Always fill to the static level indicated on the sight gauge.

GREASE PURGED SEALS — All NRT backstops have been designed to incorporate outer grease purge cavities which, when filled with grease and regularly purged, provide maximum protection under the most unfavorable operating conditions such as environments laden with taconite, coal, or other abrasive dust particles.

The purchaser/user is responsible for adding and purging grease in the *OUTER* grease cavity using the grease fittings provided. The inner cavity is plugged at the factory and these plugs should not be removed; refer to **Figures 11** and **12.** To fill and purge the *OUTER* grease cavity, slowly pump NLGI #2 grade grease, see **Table 7** and **Table 12**, into the *OUTER* grease fittings with a *HAND GREASE GUN* until fresh grease flows out along the shaft. Wipe off purged grease.

If the backstop is equipped with a shaft guard, remove guard cover to observe when grease is expelled from around the shaft.

CAUTION: *DO NOT use pressurized grease gun. Use manual grease gun to prevent damage to seals.*

Grease application or re-lubrication should be done at temperatures above 20°F (-7°C). If grease must be applied below 20°F (-7°C), consult Factory.

PURGING GREASE

Figure 11 — MODEL E DESIGN

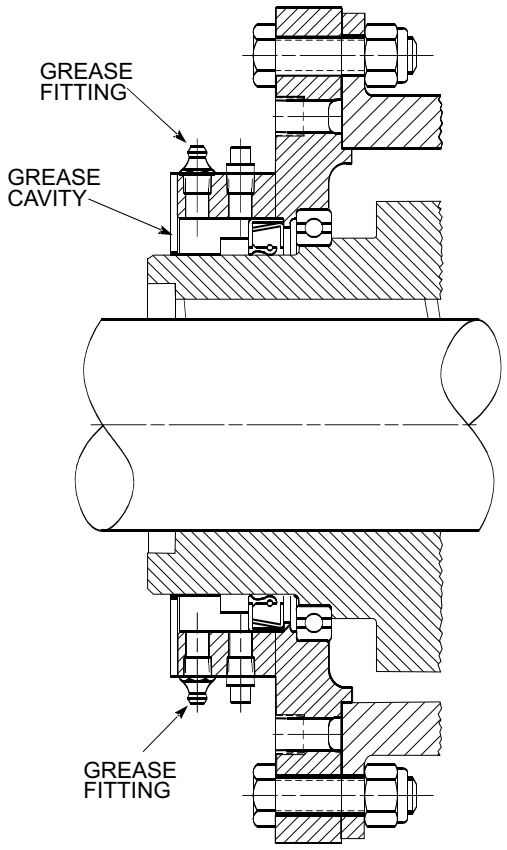

Figure 12 — MODEL D AND PREVIOUS DESIGNS

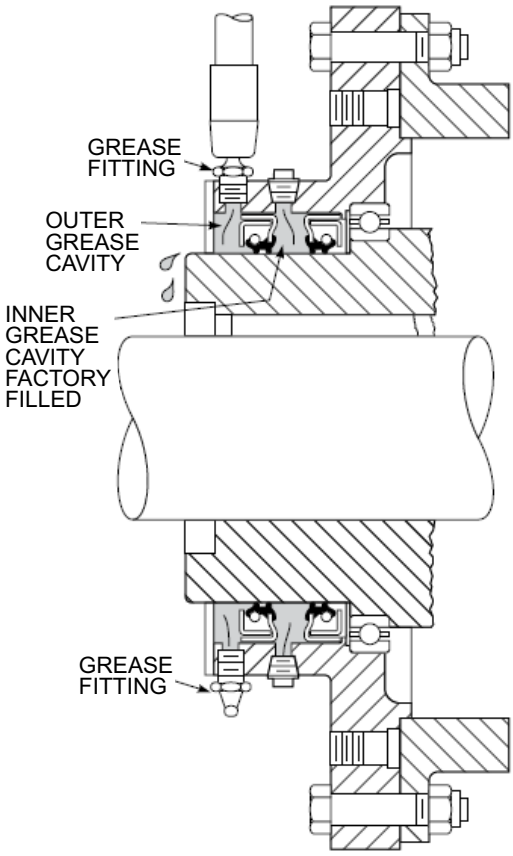

TABLE 8 — Cold Climate Lubricant

Ambient Temperature Range -40°F to -10°F (-40°C to -23°C) — Mobil Aero HFA

TABLE 9 — Petroleum Based R&O Lubricants★ Maximum operating temperature of lubricants 200°F (93°C)

ISO Viscosity Grade		68	100	150	220
AGMA Viscosity Grade		2	3	4	5
Viscosity	cSt @ 40°C†	61.2-74.8	90-110	135-165	198-242
	SSU @ 100°F	284-347	417-510	626-765	918-1122
Manufacturer		**Lubricant Name**	**Lubricant Name**	**Lubricant Name**	**Lubricant Name**
Castrol Industrial Lubricants		Hyspin AWS 68	Hyspin AWS 100	Hyspin AWS 150	Hyspin AWS 220
		Castrol Paradene R&O 68	Castrol Paradene R&O 100	Castrol Paradene R&O 150	Castrol Paradene R&O 220
Chevron / Texaco / Caltex		Rando HD 68	Rando HD 100	Rando HD 150	Rando HD 220
Citgo Petroleum Corp.		Pacemaker T 68	Pacemaker T 115	Pacemaker T 150	Pacemaker SD 220
Exxon Mobil / Esso		DTE Oil Heavy Medium	DTE Heavy Oil	DTE Oil Extra Heavy	DTE Oil BB
		. . .	Vacuoline 525	Vacuoline 528	Vacuoline 533
Petro-Canada Lubricants		TurboFlo R&O 68	TurboFlo R&O 100	TurboFlo R&O 150	TurboFlo R&O 220
Phillips 66 / Conoco / 76 Lubricants / Kendall		Multipurpose R&O 68	Multipurpose R&O 100	Multipurpose R&O 150	Multipurpose R&O 220
Shell Oil Co.		Morlina S2 B 68	Morlina S2 B 100	Morlina S2 B 150	Morlina S2 B 220
		. . .	Morlina S2 BA 100	Morlina S2 BA 150	Morlina S2 BA 220
Total Lubricants USA / Keystone Div. Penwalt Corp.		Azolla ZS 68	Azolla ZS 100	Cirkan ZS 150	Cirkan ZS 220
Whitmore Manufacturing Company		Hyperion 68	Hyperion 100	Hyperion 150	Hyperion 220

★ Minimum viscosity index of 90.
† Kinematic viscosity in units of mm^2/s is equivalent to cSt (centistokes).

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TABLE 10 — Dexron Automatic Transmission Fluids

Viscosity @ 40°C — 29 - 31 cSt
Viscosity Index — 145 - 152
Pour Point — -65°F (-54°C)
Ambient Temp Range — – 40°F to +125°F (– 40°C to 52°C)
Maximum Fluid Operating Temp — +200°F (+93°C)

Manufacturer	Fluid Name
BP Lubricants USA/Castrol	Castrol Transmax Dexron VI ATF
Chevron U.S.A., Inc.	Chevron ATF Dexron - VI
Chevron/Texaco	Havoline ATF Dexron VI
CITGO Petroleum Corporation	CITGO Transgard ATF, Dexron VI
ExxonMobil	Mobil Dexron VI ATF
Petro-Canada	Petro-Canada Dexron - VI
Shell Oil Co.	Pennzoil Dexron VI
	Quaker State Dexron VI ATF
Total Specialties USA, Inc.	Dexron VI ATF
Valvoline	Valvoline Dexron VI ATF

TABLE 11 — Multi-ViscosityOils‡

Manufacturer	Lubricant Name
BP Lubricants USA/Castrol	Castrol GTX 10W40
Chevron U.S.A., Inc.	Chevron Supreme 10W-40 Motor Oil
Chevron/Texaco	Havoline 10W-40 Motor Oil
CITGO Petroleum Corporation	CITGO SuperGard 10W-40 Motor Oil
ExxonMobil	Mobil Super 10W-40 High Mileage Motor Oil
Petro-Canada	Petro-Canada Supreme 10W-40 Motor Oil
Shell Oil Co.	FormulaShell Conventional Motor Oil 10W-40
	Pennzoil Motor Oil 10W-40
	Quaker State 10W-40 Peak Perf. Conv. Motor Oil
Valvoline	Valvoline 10W-40 Premium Conventional

‡ SAE 10W-40 motor oil with a pour point of at least –20°F (–29°C).

TABLE 12 — Greases for Grease Purged Outer Seals★ 0° to 200°F (–18° to +93°C)

Manufacturer	Lubricant Name†
ExxonMobil	Unirex N2
Kluber Lubrication	Centoplex 2
Petro-Canada Lubricants	Precision XL EMB Grease
	Precision Synthetic EMB
Shell Oil Co.	Gadus S2 V100-2
Total Lubricants	Multis 2

★ The purchaser/user is responsible for adding grease to the seal cavities.
† Seal cavities are partially filled with lithium-complex type grease at the factory. When filling cavities, be sure grease is compatible with this type of grease. For example, do not mix polyurea and lithium based greases.

Preventive Maintenance

AFTER FIRST WEEK OF OPERATION — Drain lubricant. Fill with new lubricant to proper oil level and operate for 5 to 10 minutes. Drain again and fill with new, clean lubricant to proper oil level.

LUBRICANT CHANGES — For normal operating conditions (8 to 10 hours per day) with low dust or abrasive environment and ambient temperatures less than 125°F (52°C), change lubricant every six months or 2500 hours, whichever occurs first.

For 24 hours per day operating conditions, change lubricants every three months of operation.

For operation in a dusty or abrasive environment, it may be necessary to change lubricant and flush every 300 hours. Have a lubricant supplier analyze oil samples from the backstop periodically and recommend economical change periods based on the rate of lubricant contamination and degradation.

PURGING GREASE SEALS — Periodically, (at least at every lubricant change) depending upon the frequency and degree of contamination, purge contaminated grease from outer grease purged seals. See instructions on page 9 for purging grease.

TORQUE ARM ALIGNMENT — Check alignment of the torque arm whenever the lubricant is changed. Maintain clearances between torque arm and support as specified in the TORQUE ARM STOPS (OR STIRRUP) paragraph, page 2.

Stored or Inactive Backstops

Backstops are shipped WITHOUT LUBRICANT but do contain one ounce of NOX-Rust® VCI 10‡ vapor phase rust inhibitor which will protect internal parts against rust for a period of up to six months.

If the backstop is to be stored or inactive for more than six months, add the recommended amount of lubricant from **Table 7**, page 9, and add one ounce of NOX-Rust VCI 10 vapor phase rust inhibitor every additional six month period. Replace breather with pipe plug for extended storage.

Indoor dry storage is recommended. If outdoor storage is necessary, cover the backstop with a tarpaulin or suitable covering.

‡ Product of the Daubert Chemical Co., Chicago, IL.

BEFORE PLACING BACKSTOP IN OPERATION — Drain lubricant mixture and replace breather and oil sight gauge, if removed. Flush backstop and refill with clean, fresh lubricant per instructions above.

Dismantling, Repair & Parts Replacement

WARNING: *DO NOT attempt to service or remove backstop before removing load.*

An important part of the Falk NRT backstop manufacturing process is the full load and overrunning testing with specially instrumented equipment. Consequently, return NRT backstops to Rexnord for repair and full load testing.

Except for replacement of oil seals, NRT backstops should not be dismantled or repaired in the field. If seals are to be replaced, it is important that the cam and roller assemblies not be removed from the outer race. Removal will void applicable warranties. For instructions on oil seal replacement refer to Service Manuals:

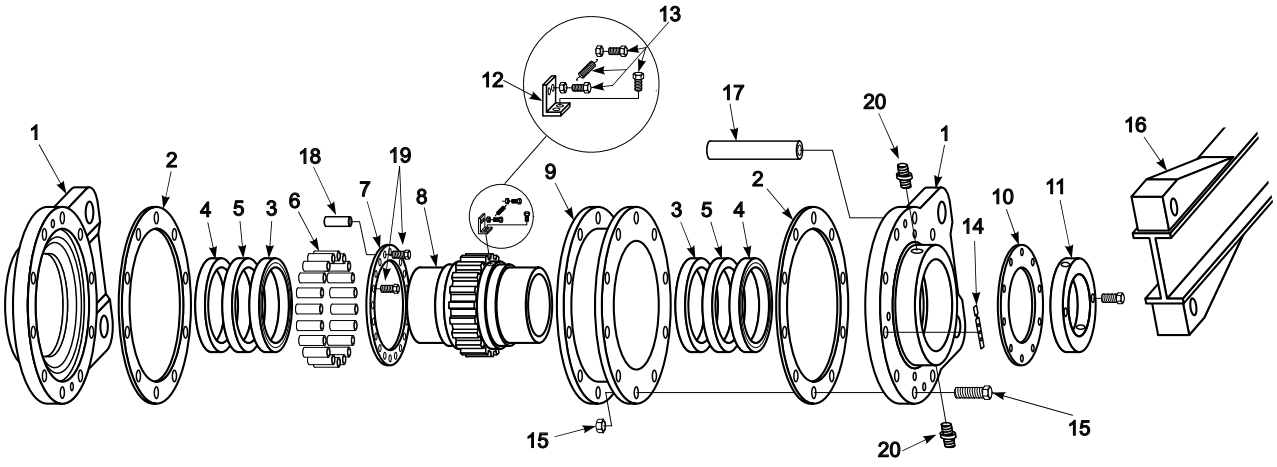
568-131 – Model E

568-130 – Model D and previous models

When contacting Rexnord concerning required service, state nature of problem and give complete data from backstop nameplate: M.O. number, size, date, etc.

PART DESCRIPTIONS

1. End Cover
2. Gasket
3. Bearing
4. Outer Seal
5. Inner Seal
6. Rollers
7. Roller Cage End Rings (2)
8. Inner Cam
9. Outer Race
10. Labyrinth Cover (2)
    (Not applicable on some older models)
11. Optional Axial Retaining Collar with fasteners
12. Stop Lug
13. Stop Lug Fasteners
14. Rotation Direction Plate
15. End Cover Fasteners
16. Torque Arm
17. Torque Arm Pin
18. Roller Cage Spacer Post
19. Roller Cage Fasteners
20. Grease Fitting



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