

How to Use this Manual

The following instructions and recommendations apply to standard Falk 1055, 1065, & 1085 NRTH Style B backstops. Their performance and life depend largely upon how they are installed and serviced. Drawings are representative of this series of backstops.

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

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

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

Introduction

Rexnord True Hold backstops are precision built safety devices designed to protect inclined conveyors or vertical elevators from the dangers of gravity accelerated reverse runaway. To be assured of reliable protection and the longest possible service life, it is important that the following recommendations be observed for the installation, lubrication, and maintenance of Rexnord backstops.

As soon as the backstop has been received, examine it carefully for damage that may have occurred in transit and report any breakage to the transit company and Rexnord immediately. All tags and bulletins attached to the backstop should be carefully read before placing the backstop in operation and then filed for future reference.

The various component parts referred to may be readily identified from Figure 1 on Page 2.

ALL BACKSTOPS ARE SHIPPED WITH OIL — Although all backstops are shipped from the factory with oil, it is important to check lubrication levels prior to operation.

If the backstop is to be stored for an extended period of time (over 3 months) before installation, see the Long Term Storage section on Page 3 for instructions.

Warranty — Rexnord Industries, LLC (the "Company") warrants that Drive One gear drives (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 Figure 1, Page 2. 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 support, and between the torque arm and stirrup.)

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 and overrunning speed, listed on the nameplate. Follow installation and lubrication instructions in this manual.

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

Damage may occur to the backstop if it remains inoperative under full load for extended periods of time.

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.

Falk NRTH Style B backstops use a sprag design that does not allow motion in one direction and runs freely in the other direction.

Application Requirements

BACKSTOP APPLICATION — The 1055, 1065, & 1085 NRTH Style B backstops are 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 or 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 exceed 90°F (50°C) above ambient. 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 backstop temperature from exceeding the allowable maximum of 200°F (93°C).

INDEXING — NRTH 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 conversion of reciprocating or oscillating motion into intermittent linear motion.

JOGGING — Defined as start/stop movement with jerking or jolting motion is not permissible.

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.

AXIAL RETENTION — Refer to Page 3, Installation section, Paragraph B for Axial Retention.

TABLE 1 — List of Components

Item	Description	Quantity
1	Inner Race	1
2	Outer Race	1
3	Sprag Cage	1
4	Cover Plate	2
5	Gasket	2
6	Bearing	2
7	Oil Seal	2
8	Retainer Ring	2
9	Grease Fitting	4
10	Fastener	24
11	Shaft Key	1
12	Setscrew	4
13	Oil Plug	4
14	Breather Plug	1
15	Torque Arm	1

TABLE 2 — Torque Arm Reaction Force

NRTH Size	Force (lb)
1055	5556
1065	7222
1085	7059

$$\text{Force} = \frac{1.5 \times \text{Catalog Torque Rating (lb - ft)} \times 12}{.9 (F) \text{ in}}$$

See Figure 2 for (F) Dimension

Figure 1

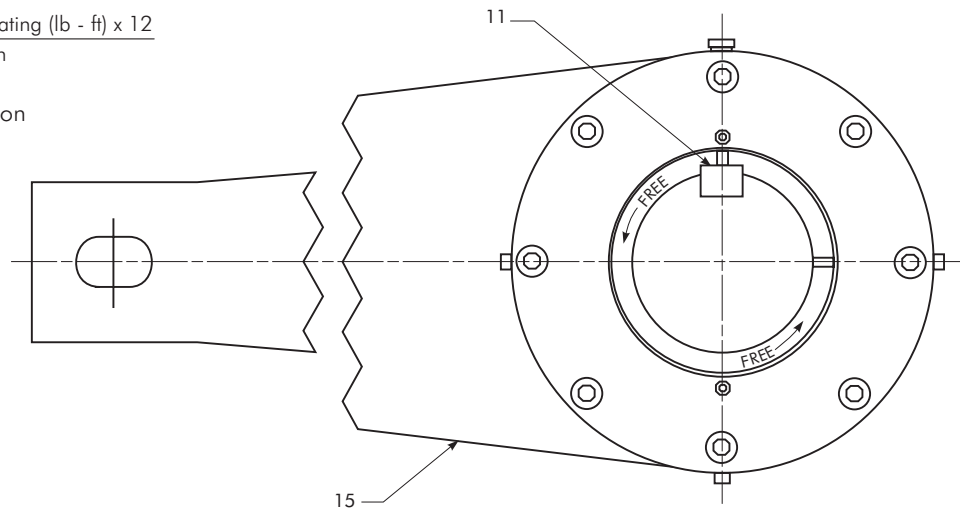
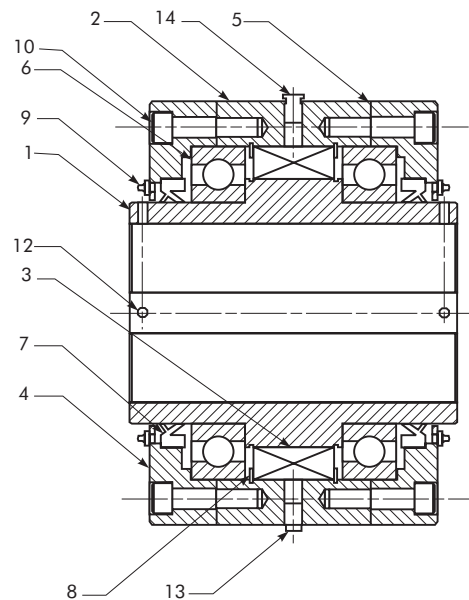


TABLE 3 — Backstop Shaft Fits

Nominal Diameter	Nominal Shaft Tolerance	Nominal Bore Dia Tolerance	Bore - Shaft Min-Max Clearances
Inch			
1.7500-2.9375 3.0000-5.4375	+ .0000, - .0010	+ .0005, + .0015	.0005 - .0025
	+ .0000, - .0010	+ .0010, + .0025	.0010 - .0035
Metric			
45 to 50 k6	.002/.018 k6	.025/.050 F7	.007/.048
50 to 80 m6	.011/.030 m6	.060/.090 E7	.030/.079
80 to 120 m6	.013/.035 m6	.072/.107 E7	.037/.094
120 to 140 m6	.015/.040 m6	.085/.125 E7	.045/.110

General Instructions

BACKSTOP-SHAFT FITS — The shaft must have a 125 micro inch (3,2 micro meters) or finer finish and clearance fits specified in Table 3 above.

KEYS & KEYWAYS — Keys to be used with 1055, 1065, & 1085 NRTH backstops are furnished by Rexnord. They are mild steel. The keys are side-fitted, full length, and must not be excessively tight in order to avoid distortion of the inner race.

BACKSTOP MOUNTING POSITIONS — The backstop rotational axis must be horizontal within 5° for all applications. The NRTH backstop torque arm is capable of being mounted at any desired angle, however a horizontal mounting at 0° or 180° is preferred.

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 as illustrated in Figure 2 below. Use torque arm stops capable of withstanding the torque arm reaction force. (See Table 2)

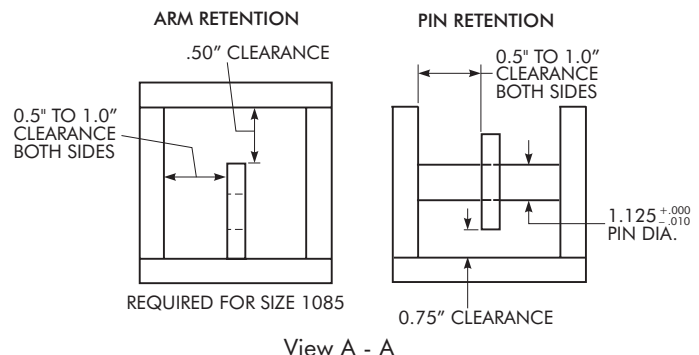
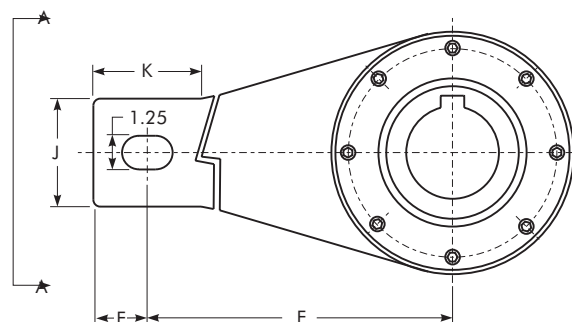
The torque arm must be free to move within the stirrup or on pin. Provide clearance on three sides per Figure 2 below.

DO NOT restrict torque arm movement by welding or securing the torque arm to any supporting structure.

Locate the torque arm support surface parallel ($\pm 1/2^\circ$) 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.

SIZE	E	F	J	K
1055	2	36	4	4
1065	2	36	4	4
1085	5	51	6	10

Figure 2


Long Term Storage

Backstop should be completely filled with Dexron III automatic transmission fluid. Backstops should be stored inside, if possible, in a clean and dry area. Once every two months the inner race should be rotated by hand to lubricate the rotating elements.

Exposed, unpainted surfaces should be “brush painted” with a rust preventative.

Before placing the backstop in operation, completely drain and properly refill per lubrication section on Page 4.

Installation

A. Check for proper free shaft rotation - The backstop is symmetrical, which allows it to be mounted for the desired direction of free shaft rotation by rotating it end for end.

The arrow inscribed on the face of the inner race (Part # 1) indicates the direction of free shaft rotation. Before mounting the backstop on the shaft, be sure to check direction of free rotation.

B. Axial Retention - Since backstops are not a tight fit on shafts, it is important to utilize the inner race setscrews (Part # 12) to prevent the backstop from “walking” on the shaft, as this may cause end of the torque arm to contact the stirrup and cause premature bearing failure.

After the backstop is mounted on the shaft, tighten all (4) setscrews in the inner race. In the event that the backstop is to overhang the shaft, it is permissible to only tighten the two inboard setscrews. Setscrews should be tightened to 5-7 Lb-Ft.

C. Mount Backstop on Shaft - Backstop bores are finished to size for an *easy push fit* on a shaft that is straight and not tapered.

Coat the shaft with an anti-seizing agent or light oil for easy mounting and future removal of the backstop.

Check again to *make certain* that the arrow on the backstop inner race face is in the same direction as the desired free shaft rotation.

If the torque arm (Part # 15) is to be mounted on the *inboard* face of the backstop, then slip torque arm onto the shaft *prior* to mounting the backstop.

Push the backstop onto the shaft, taking care to push only on the face of the inner race, thus eliminating undue abuse on the bearings within the backstop.

Do Not Force Backstop Onto Shaft — Evidence of damage during assembly caused by disregard of the above instructions is readily traceable and Rexnord will not be held responsible for failure of such affected part(s).

Do Not Use Tapered Keys. Keys Must Be Straight — Install the key provided (Part #11) into the keyway. If necessary, the key may be “field-dressed” to accommodate proper fit. The key should be “side-fitted”. To provide for adequate top of key clearance, the straight keyway in the bore of the backstop has been made slightly deeper than standard.

For backstops installed at the end of the shaft, an end cover can be provided to enclose the rotating components. Consult local and national safety codes for proper guarding of rotating components.

Attach Torque Arm to Backstop (After Rotation Check)

Before attaching the torque arm, rotate the outer race (Part #2) of the backstop so that one of the oil plugs (Part #13) is near the 12 o'clock position. Attach torque arm to the backstop with the fasteners provided (Part #10). Torque arm fasteners for Sizes 1055 & 1065 should be tightened to 110-130 lb-ft and to 220-260 lb-ft for Size 1085.

Do not fasten torque arm end rigidly to steel framework in angular or axial position.

Torque arm end should have a minimum of 0.50” top clearance in its stirrup to make certain that it does not rust in or pack tight with foreign matter. Approximately 0.5 to 1.0” clearance should be provided at each side of the torque arm for axial positioning.

Refer to Table 2 on Page 2 for required torque arm stirrup load capacities.

The backstop must be centered on the shaft to prevent possible bearing damage from misalignment that might occur if the torque arm is held rigid. Also, if the end of the torque arm is twisted crosswise, a pinching action may be imposed on the bearings and cause damage.

If the shaft alignment position changes in time, the previous precautions will allow the backstop to remain centered on the shaft without danger of pinching or skewing caused by a rigidly fastened torque arm end.

Safe backstop mounting is possible at any desired angle of the torque arm. However, straight vertical mounting is not recommended. A minimum angle of approximately 5 degrees from vertical should be maintained.

If mounted downward through a floor slot, a suitable boot or hood should be placed around the torque arm at or above the floor level to keep foreign matter from restricting possible torque arm movement at the floor opening.

Install Breather Plug

After the torque arm has been attached, remove the pipe plug near the 12 o'clock position and replace it with the breather plug provided (Part #14).

When the operating temperature increases and the air in the backstop expands, the expanding air will easily pass through the breather plug and not force oil through lip seals.

Lubrication

These backstops are filled at the factory with *DEXRON III Automatic Transmission Fluid*. Contact the Factory if alternative lubrication is to be used.

CAUTION: *Oils containing high lubricity or EP additives must not be used in backstops. Never use carbon tetrachloride, which is detrimental to neoprene seals.*

WARNING: *The use of improper lubricants could cause a malfunction resulting in equipment damage.*

To Fill With Oil

- Remove breather plug and one of the oil plugs in either the 3 o'clock or 9 o'clock position.
- Slowly add clean oil through the breather plug hole.
- Continue adding oil until it starts to drain from the side hole.
- Reinstall the oil and breather plugs.

Maintenance

Lubrication maintenance should not be performed while equipment is in operation.

In order to provide proper lubrication maintenance, the following procedures are recommended:

At least every 3 months, purge the grease seals from all (4) grease fittings (Part #9) with a non-E.P. NLGI grade 1 or 2 grease such as Lubriplate “Aero” or “Mobilith 2”. Continue to add clean grease until all “dirty” grease is purged from the grease seal.

At least every 3 to 6 months: (Also After First Week of Operation)

- Thoroughly clean around breather plug. Remove the breather plug and clean if dirty.
- Drain oil from the backstop using the oil plug at the 6 o'clock position.
- Reinstall oil plug.
- Remove one of the oil plugs at either the 3 o'clock or 9 o'clock position.
- Slowly add clean oil through the breather plug hole.
- Continue adding oil until it starts to drain from the side hole.
- Reinstall oil and breather plugs.
- Retighten coverplate bolts after first week of operation.

If coverplate bolts and oil plugs are kept tight, then the frequency with which the backstop's lubrication should be inspected is an important consideration and can only be determined by individual experience. However, it is considered desirable to inspect the oil level of the backstop once a week for the first month of service. The results of these inspections will dictate the frequency of future inspections, but in any event should not exceed three to six month intervals. Under severe working conditions, it may be necessary to perform lubrication maintenance on the backstop more frequently.

Additional lubrication in the sprag assembly can cause the backstop to fail.