

RINGSPANN® **CORPORATION**

Power Transmission

Installation and Operating Instruction for
Complete Low-Speed Backstops
FRH 1200 thru 1600
FRHD 1000 thru 1800

E 08.746



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RINGSPANN	Installation & Operating Instruction for Complete Low-Speed Backstops FRH 1200 thru 1600 & FRHD 1000 thru 1800			E 08.746e	
	Date: 01/18/2016	Revision : 07 – E011604	By: WASP	Checked By: DIVD	Number of Pages: 8 Page: 2

Important

- Please read these instructions carefully before installing and operating the product. Your particular attention is drawn to the notes on safety.
- These installation and operating instructions are valid on condition that the product meets the selection criteria for its proper use. Selection and design of the product is not the subject of these installation and operating instructions.
- Disregarding or misinterpreting installation and operating instructions invalidate any product liability or warranty by RINGSPANN CORPORATION. The same applies if the product is disassembled or altered.
- The installation and operating instructions should be kept in a safe place and should accompany the product if it is passed on to others – either on its own or as part of a machine – to make it accessible to the user.

Safety Notice

- Installation and operation of this product should only be carried out by skilled personnel.
- Repairs may only be carried out by the manufacturer or accredited RINGSPANN CORPORATION agents.
- If a malfunction occurs, the product, or the machine into which it is installed, should be stopped immediately and either RINGSPANN CORPORATION or an accredited RINGSPANN CORPORATION agent should be informed.
- Switch off the power supply before commencing work on electrical components.
- Rotating machine components must be protected by the purchaser to prevent accidental contact.
- Supplies abroad are subject to the safety laws prevailing in those countries.

Warranty

RINGSPANN CORPORATION “seller” agrees to repair or replace (at its sole option), defective materials or workmanship for a period of one year from the date of delivery. Seller must be notified of such a defect within a reasonable time after discovery (not to exceed thirty (30) days), and the defective product must be delivered, prepaid to the seller’s factory with evidence that, it has been properly installed, maintained and operated in accordance with the seller’s instructions. Seller’s limited warranty excludes remedy for damage or defect caused by abuse; failure to resist corrosion or erosion from any corrosive agent or fluid, due to deposits of foreign material from any fluid; modifications not executed by Seller; improper installation or operation; defects or failures arising out of, in any way related to, or as a result either direct or indirect, of the Buyer’s failure to properly advise Seller of all normal and special operating conditions, known to or suspected by Buyer, when Seller is manufacturing the Equipment for a specific operation; or normal wear and tear under usage. This remedy is exclusive and is given in lieu of any warranty of merchantability, fitness, for a particular purpose or any other warranty, whether express or implied. Seller shall not be liable for consequential damages (including but not limited to, loss of use, lost profits, business interruption and the like), incidental damages, indirect damages, whether the claim for such damage is based upon warranty, contract, tort, strict liability or any other theory of recovery.

Backstop Rebuilding Service

RINGSPANN CORPORATION backstops are precision devices manufactured under careful controls to meet manufacturing standards. When reconditioning is required, backstops should be returned to RINGSPANN CORPORATION for service.



CAUTION!

Disassembly and repair of RINGSPANN CORPORATION backstops in the field is not recommended and will void any warranty.

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Introduction

RINGSPANN CORPORATION FRH & FRHD 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 RINGSPANN CORPORATION backstops.

As soon as the unit has been received, examine it carefully and report any damage to the transit company and RINGSPANN CORPORATION immediately.

RINGSPANN CORPORATION FRH/FRHD series backstops mount on a through-shaft with the inner race driven by a key and secured from axial movement by set screws located on either end of the inner race.

All tags and bulletins attached to the unit should be carefully read before placing the unit in operation and then filed for future reference.

All units are shipped with oil.

Although all backstops are shipped from the factory with oil, lubrication levels must be checked prior to operation.

Long Term Storage



WARNING!

Backstops out of service or in storage for 2 or more years, require new seals before being put into operational service.

- Backstop units should be completely filled with RINGSPANN CORPORATION approved lubricant outlined in the lubrication section starting on page 7.
- Store backstop in a protected, clean and dry area.
- Once every two months the inner race should be rotated by hand several times to lubricate internal components.
- Exposed, unpainted surfaces should be “brush painted” with a rust preventative.
- Before placing backstop in operation, completely drain and properly fill with oil per “Lubrication” instructions.



WARNING!

Failure to follow these instructions may result in product damage, equipment damage, and serious or fatal injury to personnel.



CAUTION!

Lubricants of the EP type (extreme pressure characteristics) should be approved by RINGSPANN CORPORATION. Those containing solid additives such as graphite or molybdenum disulphide must not be used.

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Pre-installation Check

1. Shaft to Bore fit:

Machine Builders may use non-standard shaft fits to mount RINGSPANN CORPORATION backstops. In this event, direct any questions concerning shaft fit to the machine builder or RINGSPANN CORPORATION.

Backstop Mounting Fit on Shaft

- Backstop bores are finished to size for an **“easy push fit”** on a shaft that is straight and not tapered.
- Shafts should be smooth and free of burrs.
- Coat the shaft with an anti-seizing agent for easy mounting and future removal of the backstop.

Bore Diameter	Shaft Tolerance (Preferred)	Suggested Resulting Fit (Preferred)
Up to 10.00 inch	+ .000 / - .001 inches	.001 / .0035 inch clearance
10.00 to 14.00 inch	+ .000 / - .002 inches	.002 / .0055 inch clearance
14.00 & Up	See Note	

Note: The bore tolerance can be varied in cases which shaft diameter is not to the recommended guidelines. The backstop bore should always result in clearances to shaft for ease of mounting.

2. Key and Key-seat

Install the Key Provided

- Check the key fit with both the backstop and shaft. If necessary, the key may be **“field-dressed”** for proper fit.
- To provide for adequate top of key clearance, the straight keyway in the bore of the backstop has been made slightly deeper than standard.



WARNING!

DO NOT use Tapered Keys, Keys Must Be Straight.

3. Rotation

- The backstop is symmetrical, which allows it to be mounted for the desired direction of free shaft rotation.
- Check to *make certain* that the arrow, marked “FREE”, on the backstop inner race face is in the same direction as the desired free shaft rotation.



WARNING!

Rotating equipment is potentially dangerous and should be properly guarded. The user should comply with all applicable safety codes to guard rotating equipment.

4. Axial Retention

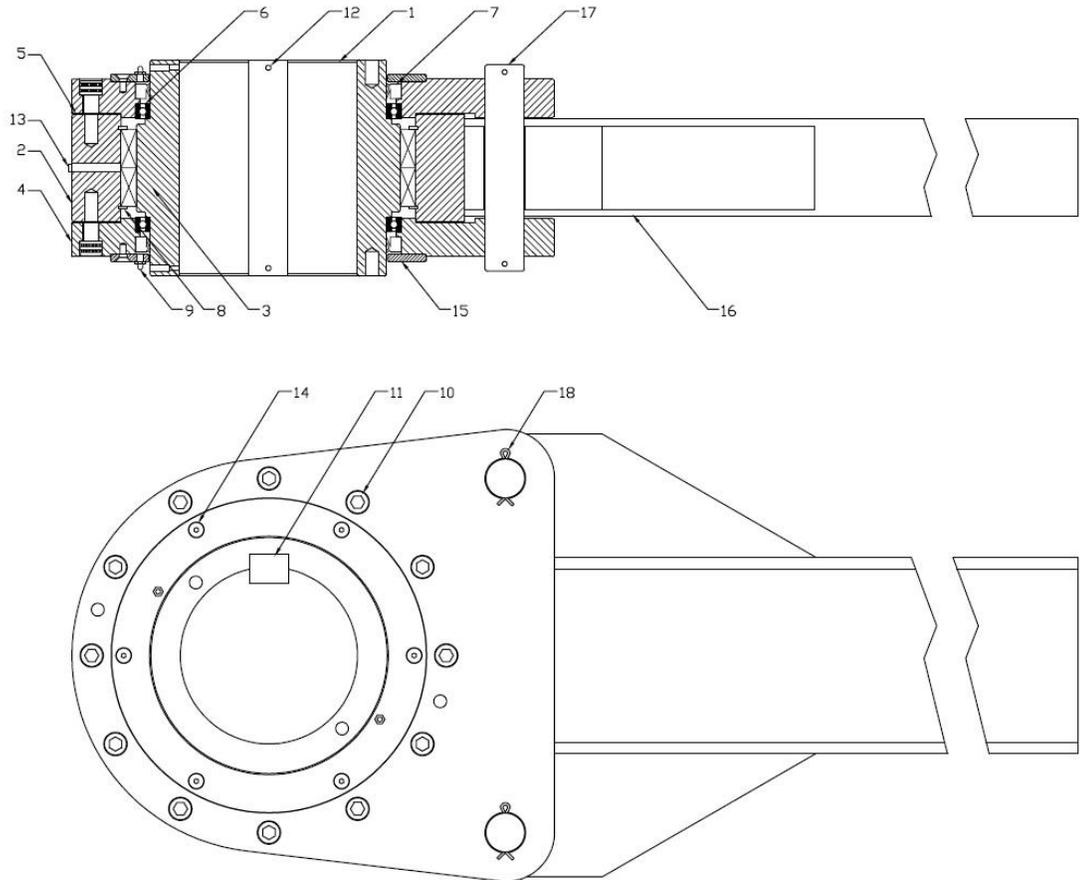
- Backstops are manufactured for clearance fit on shafts; therefore, it is important to utilize the inner race set screws to prevent the backstop from “walking” on the shaft during operation.
- Set screws are shipped in the inner race of the backstop.
- Confirm set screws are not extending into the bore area prior to mounting the backstop.
- After the backstop is mounted on the shaft, **make certain** all (4) set screws in the inner race are tightened.
- In the event that the backstop is to overhang the shaft, it is permissible to only tighten the two inboard set screws. An additional outboard restraint should be used in these instances. **(If Possible)**
- **Consult RINGSPANN CORPORATION to determine maximum allowable shaft overhang.**

Model Type	Set Screw	Recommended Torque per Set Screw
FRHD 1000, 1100, 1500, 1600	5/16-24	20 Lb. – Ft.
FRH & FRHD 1200, 1300, 1700	3/8-24	40 Lb. – Ft.
FRH & FRHD 1400, 1450	1/2-20	80 Lb. – Ft.

5. Sectional Drawing

Backstops are designed with the essential functional components:

- 1) Inner Race
- 2) Outer Race
- 3) Sprag Cage
- 4) Cover Plates
- 5) Gaskets
- 6) Bearings
- 7) Seals
- 8) Retaining Clips
- 9) Grease Fittings
- 10) Fasteners
- 11) Shaft Key
- 12) Set Screws
- 13) Oil Plugs
- 14) Fasteners
- 15) Seal Retainer
- 16) Torque Arm
- 17) Torque Arm Pins
- 18) Cotter Pin



Installation



ATTENTION!

Before securing into place, check for proper rotation. As the clutch is symmetrical, in determining the proper direction of free rotation, orientate the clutch to match the directional arrows marked "FREE" on either face of the inner race and then verify by spinning the backstop by hand.



DO NOT FORCE BACKSTOP ONTO SHAFT!

Evidence of damage during assembly caused by disregard of the above instructions is readily traceable and RINGSPANN CORPORATION will not be held responsible for failure of such affected part or parts.

Mounting the Backstop Head and Key onto the Shaft

- Backstop bores are finished to size for an **easy push fit** on a shaft that is straight and not tapered.
- Shafts should be smooth and free of burrs.
- Coat the shaft with an anti-seizing agent for easy mounting and future removal of the backstop.
- Push the backstop head onto the shaft.
 - Taking care to push only on the face of the inner race.
 - Rotate outer race by hand to verify proper rotation.
 - Secure set screws on both ends. **(Two per side)**
 - Rotate outer race by hand and mount visual oil gauge. **(See next page for instructions)**

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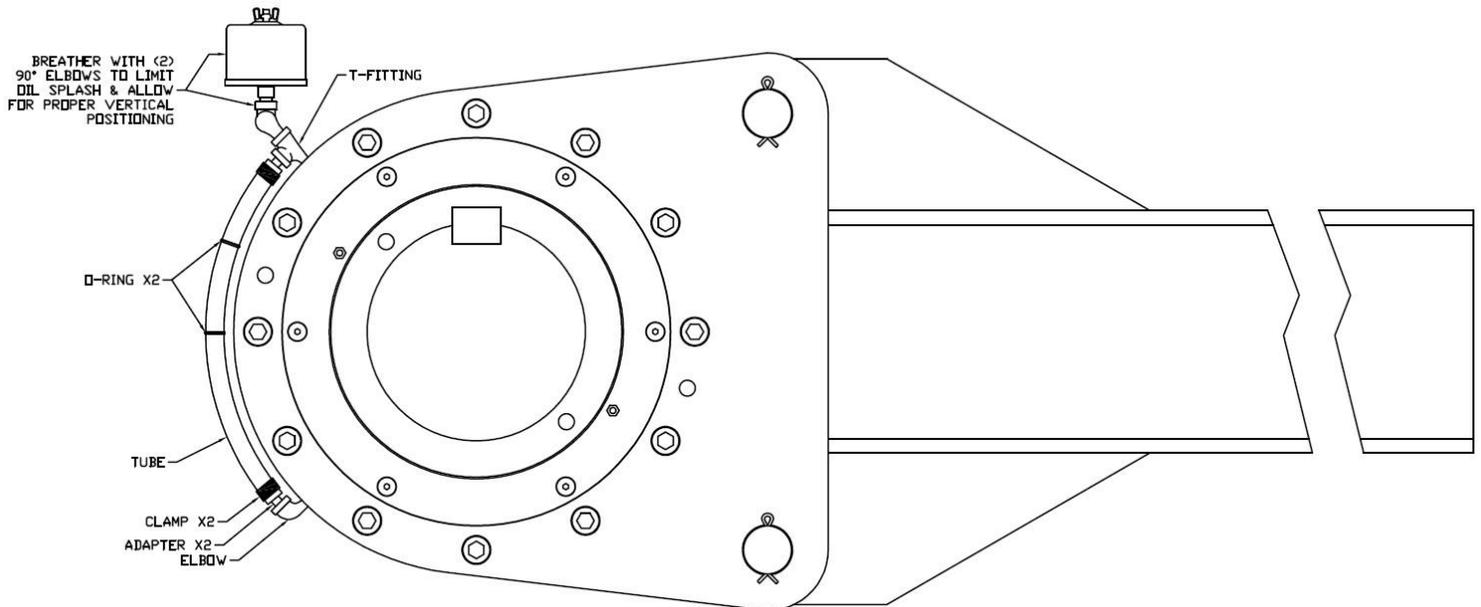
BEFORE ATTACHING TORQUE ARM

Installation Instructions for Visual Oil Gauge

(Oil Fill is Approximated to Shaft Centerline)

Assembly Sequence:

1. Rotate backstop on shaft until two of the plugs are ABOVE the centerline.
2. Remove plugs and install elbows using a Teflon thread sealer.
3. Tighten elbows and orient so that they face each other.
4. Install the adapters into the elbows using Teflon thread sealer.
5. Mount tube onto one of the adapters and secure with clamp.
6. Slide the two O-rings onto free end of tube.
7. Mount free end of tube onto other adapter and secure with clamp.
8. Rotate backstop so that one plug is near the top and the tube clearly displays the oil level.
9. Attach torque arm to backstop.
10. The tube should display an oil level at the shaft centerline.
 - If not, then add or remove oil from backstop as necessary to obtain "half-full" oil level.
11. Remove the plug near the top and install breather using Teflon thread sealer.
12. Slide upper O-ring on tube to mark static oil level at the shaft centerline.
13. While backstop is operating at normal speed, slide lower O-ring on tube to mark running oil level.
14. If at any time the oil level is below its respective marker, then add oil as this bulletin instructs.



Above: Showing piping included for the configuration of visual gauge & breather.

Attach Torque Arm to Backstop

- If installed, remove torque arm pins from backstop cover plates.
- Use a suitable lifting strap to choke the torque arm.
 - Lift it into position between the cover plates.
- Install torque arm pins and cotter pins.
- Do not fasten torque arm end rigidly to steel framework in angular or axial position.

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Backstop Torque Arm Support and Positioning

The end of the torque arm and the head of the backstop must align with the centerline of the stirrup. When the backstop, the torque arm end, and the centerline of the stirrup are properly aligned, the end of the torque arm should have a minimum of 1/4" top clearance, approximately 1-1/2" clearance at each side of the torque arm for axial positioning in its stirrup. The torque arm must be in contact with the support bracket in the direction of loading in order to prevent shock loads and maintain clearances on three remaining sides to prevent undue bearing stresses.



CAUTION!

Misaligned torque arm ends, **Twisted** crosswise torque arms, and **Rigidly** held torque arms will impose a pinching action in the bearings causing damage to the bearings and backstop.

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

When 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.

Lubrication

Proper lubrication and lubricant maintenance are the most important single maintenance factor for long, effective, trouble-free operation of backstops.



CAUTION!

Lubricants of the EP type (extreme pressure characteristics) should be approved by RINGSPANN CORPORATION. Those containing solid additives such as graphite or molybdenum disulphide should not be used.



CAUTION!

Applications where the ambient temperature falls below +20°F/-7°C or above +120°F/ + 55°C: Consult RINGSPANN CORPORATION for lubricant recommendations.

Lubrication & Maintenance

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

Grease Seal Maintenance:

Purge grease seals every 3 months as follows:

To prevent airborne particulate matter from migrating into the backstop;

Using a non-E.P. NLGI grade 1 or 2 grease such as **Mobilgrease XHP 221** and a manual or low pressure grease gun, add clean grease to all grease fittings. Continue adding clean grease until all "dirty" grease is purged from the grease seals.

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Oil Maintenance:

Change backstop oil every 3 to 6 months as follows:

Note: Always verify oil level in backstop after installation and before start up.

1. Thoroughly, clean around the breather.
2. Remove and clean breather and or replace breather element.
3. Loosen lower hose clamp of visual oil gauge.
4. Drain oil by removing tube from lower fitting or plug at lowest point in outer race.
5. Reattach tube and secure hose clamp.
6. Slowly add clean oil through the breather hole until proper static oil level is achieved.
 - a. The tube should display an oil level at the shaft centerline.
 - i. If not, then add or remove oil from backstop as necessary to obtain “half-full” oil level.
7. Reinstall breather.

Use oils selected from the following table according to the application and ambient temperature existing at the backstop.

Model Type	Model Size	Approximate Amount of Oil
FRHD	1000, 1100	Approx. 1.25 Quart Mobil Dexron-VI ATF
FRH & FRHD	1200, 1300	Approx. 2.00 Quart Mobil Dexron-VI ATF
FRH	1400	Approx. 2.50 Quart Mobil Dexron-VI ATF
FRHD	1400	Approx. 3.25 Quart Mobil Dexron-VI ATF
FRHD	1450	Approx. 3.75 Quart Mobil Dexron-VI ATF
FRHD	1500	Approx. 3.00 Quart Mobil DTE Heavy Medium**
FRHD	1600	Approx. 5.50 Quart Mobil DTE Heavy Medium**
FRHD	1700	Approx. 8.00 Quart Mobil DTE Heavy Medium**
FRHD	1800	Approx. 10.00 Quart Mobil DTE Heavy Medium**

****Note:** For temperatures below 5°F use Dexron-VI for all backstops.

The frequency in 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 six month intervals. Under severe working conditions, it may be necessary to perform more frequent lubrication maintenance on the backstop.



WARNING!

Do not mix oils. When switching from one brand or type to another, drain oil and flush backstop with mineral spirits. Do not use any solvent containing carbon tetrachloride.



WARNING!

The use of lubricants in backstop assemblies, other than shown, can compromise proper function that may cause personal injury or property damage and will automatically void any warranty.



WARNING!

RINGSPANN CORPORATION is not responsible for any lubrication changes made by others after the backstop leaves the RINGSPANN CORPORATION factory.



WARNING!

Do not attempt to convert oil lubricated backstops to grease lubrication or grease lubrication to oil lubrication. Any such conversion may result in malfunction and will void any warranty.