

INSTALLATION INSTRUCTIONS and PARTS LIST for FA5 RETRO FIT DISC BRAKE KIT (FA5-DBRK)

This instruction sheet and parts list covers the installation of the Disk Brake for the FA5 Air Winch. This sheet should be used in conjunction with the Parts, Operation and Maintenance Manual Form Number MHD56037.

Operators should familiarize themselves with these instructions and other safety procedures provided in the Parts, Operation and Maintenance Manual form MHD56037.

OPERATION

Description of Operation

The **FA5** winch disc brake assembly consists of friction plates splined to a hub which in turn is connected to the drive shaft from the air motor. Brake friction plates are clamped to the drum shaft through a spring applied piston. The brake remains applied until the winch control valve is operated and winch payout or haul-in occurs.

Air introduced into brake piston chamber (formed between brake piston and brake housing) causes brake piston to retract which

compresses brake springs and releases friction plates and allows motor shaft to rotate. A power failure or sudden loss of air will immediately cause spring applied brake to engage.

Operation

Brake operation is designed to be automatic. Brake is engaged in neutral, or non operating winch mode. When winch is operated in either direction the brake is automatically disengaged. Disc brake cannot be adjusted. If winch fails to hold rated load, brake must be disassembled, inspected and repaired.

INSTALLATION

Motor Removal

NOTICE

• Prior to installing disc brake onto winch refer to FA5 and FA5T Winch Parts Operation and Installation Manual, Form Number MHD56037, "MAINTENANCE" section for motor removal procedure.

Refer to Dwg. MHP2137 on page 4.

1. Relieve pressure in air lines by operating winch control several times after air supply has been turned off.

⚠ WARNING

• Shut off, bleed down and disconnect air supply line before performing any disassembly procedures.

2. Disconnect and tag air lines.
3. Remove motor housing lower case drain plug and allow oil to drain into a suitable container. Loosen fill cap to vent motor housing.

⚠ WARNING

• The K5B air motor weighs approximately 260 lb. (118 kg). Adequately support air motor before removing motor mounting capscrews.

4. Remove capscrews (4) and lockwashers (3) securing motor assembly to motor adapter (6). Using a hoist to support motor, pull motor straight away from winch. Reference the applicable **Motor Disassembly** section if motor disassembly is required.
5. Alternately and evenly loosen eight capscrews (1) until brake spring tension has been released. Remove capscrews and motor adapter (6). During assembly these capscrews will be replaced with longer capscrews provided with kit.
6. Remove motor adapter (6) and brake housing (21) as an assembly.
7. Remove retainer ring (36) from drum shaft.
8. Remove drive shaft (35) from drum shaft.
9. Remove retainer ring (38) and bearing (37) from drive shaft.

Form MHD56225

Edition 2

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Disc Brake Installation

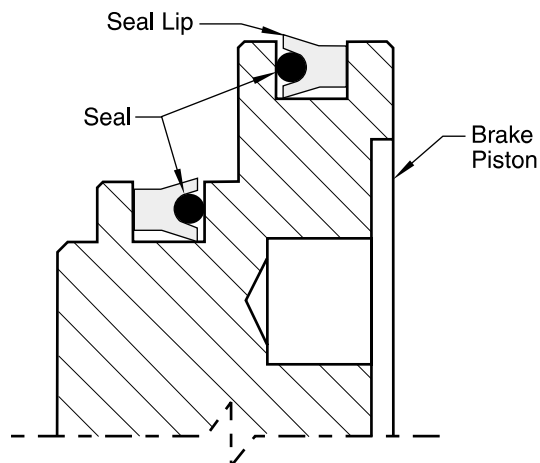
Refer to Dwg. MHP2137 on page 4.

1. Press new bearing (37) onto drive shaft (35). Lightly coat inner bearing race bore with Loctite® 609. Install retainer ring (38).
2. Install drive shaft and bearing into drum shaft (41) so smaller splined end enters first. Install retainer ring (36) in bore of drum shaft (41).
3. Install spacer (34) on drive shaft (35). Install splined hub (19) so splined side on outside diameter goes on first. Install capscrew in locking ring (18) and place on drive shaft (35). Maintain pressure on locking ring to keep it against splined hub (19) and tighten capscrew in locking ring (18).
4. Lubricate and install 'O' ring (33) on hub of drum shaft.
5. Install two pieces of 1/2-NC, 6 in. (152 mm) long all-thread (not provided in Kit) into tapped holes in drum shaft (41), to aid in alignment.
6. Install brake housing (21) on drum shaft (41) being careful not to damage 'O' ring (33).
7. Position brake housing so brake port is in the 2 o'clock position (as viewed from the motor end). Install drain plug (24) in brake housing at the 6 o'clock position.
8. Install fitting (22) and breather (23) in the top of the brake housing.
9. Lubricate friction plates (16) with a light motor oil (ISO VG 68 (SAE 20W)). Install friction plates (16) and drive plates (17) in brake housing. Begin with a friction plate then alternate with drive plates between friction plates. Ensure splined teeth mesh. Do not force plates into place during installation.
10. Lubricate and install seals (11) and (12) in brake piston (10) grooves so seal lips face each other. Do not overstretch seals during this procedure. Refer to Dwg. MHP0139 on page 2.
11. Install brake piston assembly in brake housing so stepped side enters first. Gently tap into position using a soft mallet until seated.
12. Install one brake spring (9) in each brake spring hole.
13. Lubricate and install 'O' ring (32) in groove on brake housing (21).

NOTICE

• 'O' ring, item 32 listed in step 13 refers to part number 51458 as shown on Dwg. MHP2137 on page 4. This part must be placed between brake housing (21) and motor adapter (6).

Brake Seal Installation



(Dwg. MHP0139)

14. Install brake reaction plate (8) in motor adapter.
15. Two threaded holes in motor adapter (6) stamped top are centered with notch at bottom of motor. Install motor adapter with these two holes in 6 o'clock position.
16. Install two 1/2-NC in. nuts and flat washers (not provided in Kit) onto all-thread guides and tighten until capscrews (1) will thread into drum shaft (41).
17. Secure motor adapter with six of the eight capscrews (1) using Loctite® 242. Evenly hand tighten capscrews before applying final torque. Torque to 80 ft lbs (108 Nm).
18. Remove dowel pins and replace with remaining capscrews (1). Coat capscrew threads with Loctite® 242. Torque to 80 ft lbs (108 Nm).
19. Install shaft extender (7) on end of drive shaft (35).
20. Lubricate and install 'O' ring (5) in groove on motor adapter.
21. Ensure seal adapter (15) and oil seal (2) are installed in bore of motor assembly. Seal lip must face into motor assembly.

⚠ WARNING

• The air motor weighs approximately 260 lb. (118 kg). Adequately support air motor while installing motor mounting capscrews.

22. If motor assembly is being mounted with winch in a vertical position, install one short bolt and nut to keep motor mounting flange from dropping off. Lower motor assembly carefully onto the shaft extender. Position throttle assembly at the top. Be careful not to damage oil seal (2). When correctly positioned remove bolt and nut and lower motor assembly the remaining distance.
23. Secure motor assembly to motor mounting plate using capscrews (4) and lockwashers (3). Lightly coat capscrew threads with Loctite® 242 and torque to 85 ft lbs (115 Nm).
24. Install fitting (31) in dump valve (30) and screw into brake release port. Install vented fitting (29) in dump valve (30). Install fitting (25) in valve assembly (260) with fitting (26). Install steel tube (27) between fitting on dump valve (30) and elbow (26).

LUBRICATION

Motor

Oil capacity for the K5B-546 motor is 3 quarts (2.8 litres). Add ISO VG 68 (SAE 20W) oil through filler opening until oil flows from level plug hole. Add oil slowly to prevent spilling.

Disc Brake

The friction plates and drive plates are in a self contained oil bath and have no other means lubrication. Before operating winch,

remove the breather (23) and pour a small amount [4 to 6 fl. ounces (0.2 litres)] of ISO VG 68 (SAE 20W) oil through breather hole in brake housing. Allow oil to fully settle between fillings.

NOTICE

- **If too much oil is added excess oil will be discharged through breather plug when control valve is actuated.**

TESTING

Operation and Load Test

Prior to initial use, winch shall be operationally and load tested by or under the direction of a person trained in safety and operation of this winch and a written report furnished confirming the rating of winch.

Operationally test winch disc brake with 25% rated load. Raise load and place winch in neutral. Lower load half distance raised and place winch in neutral. Verify winch holds load without slipping when in neutral. Lower load and repeat test during 100% and 125% load tests.

Test loads shall not be less than **100%** of rated line pull and should not exceed **125%** of rated line pull. To test winch at **125%** of rated load apply following load with wire rope on the first layer of the drum:

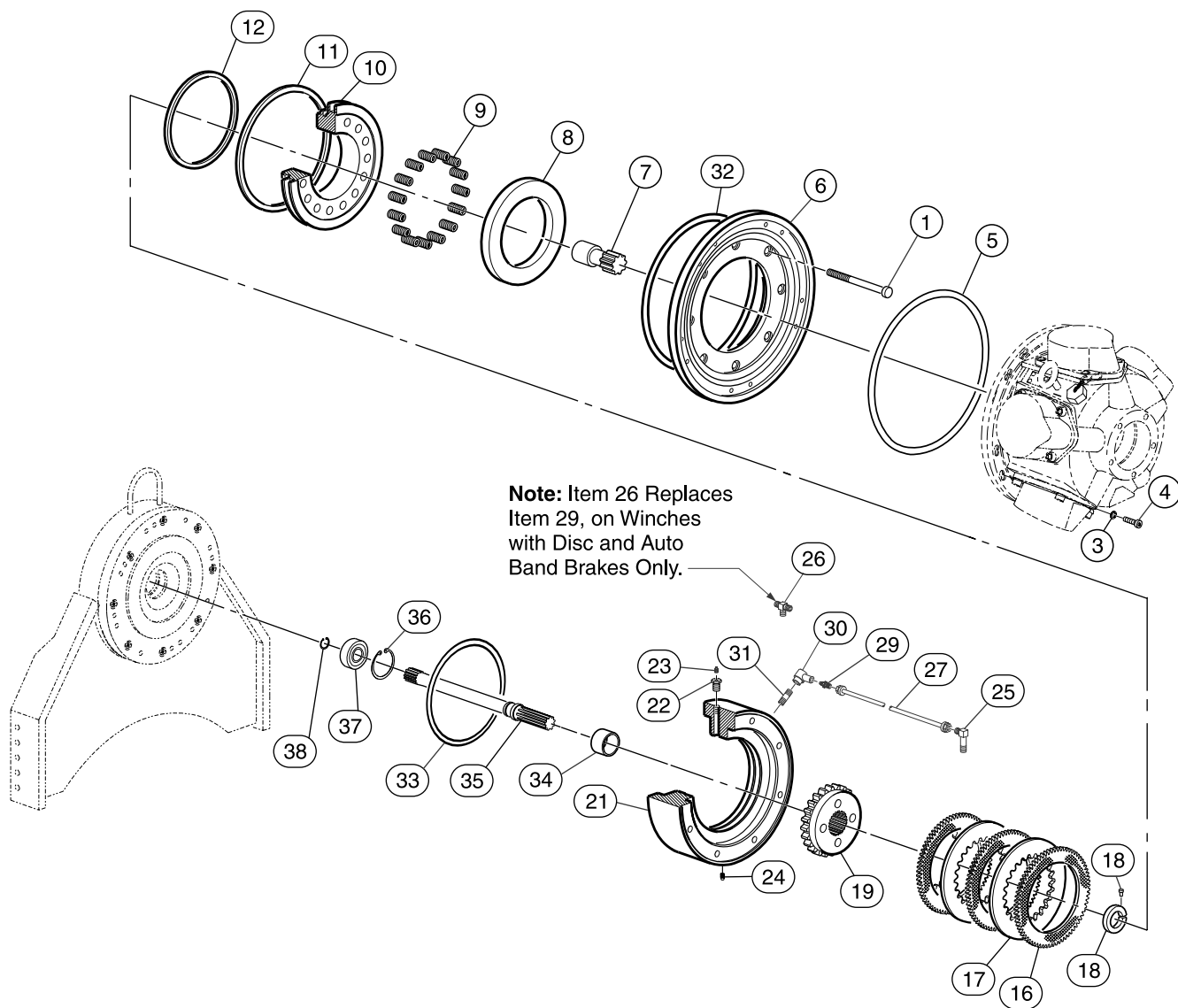
FA5 Winch

19,970 lb. (9,058 kg)

NOTICE

- **Testing to more than 125% of rated line pull may be required to test overload option and/or comply with standards and regulations set forth in areas outside of the USA.**

FA5 DISC BRAKE ASSEMBLY DRAWING



(Dwg. MHP2137)

FA5 DISC BRAKE ASSEMBLY PARTS LIST

Item No.	Description of Part	Qty Total	Part Number	Item No.	Description of Part	Qty Total	Part Number
50	Brake Kit (includes items 1, 5, 7 through 34, and 36 through 38)	1	FA5-DBRK	23	Breather	1	51857
				24	Pipe Plug	1	50801
1	Capscrew (with Disc Brake)	8	51471	25	Fitting, Reducer Bushing	1	71149975
3	Lockwasher	10	50181	26	Fitting, Tee (for units with disc and auto drum band brake)	1	52181
4	Capscrew	10	52379				
5	'O' Ring	1	51459	27	Steel Tube Assembly	1	25403-24
6	Motor Adapter	1	14227	29	Vented, Fitting	1	20770
7	Shaft Extender	1	10594		Fitting, Non-Vented, with K5C2 Control Valve		51814
8	Brake Reaction Plate	1	10597				
9	Spring	15	50751	30	Dump Valve	1	50276
10	Brake Piston	1	15437	31	Fitting, Nipple	1	50859
11	Seal	1	51461	32	'O' Ring	1	51458
12	Seal	1	51462	33	'O' Ring	1	51460
16	Friction Plate	3	50772	34	Spacer	1	18683
17	Drive Plate	2	50773	35	Drive Shaft	1	10579
18	Collar	1	71039333	36	Retainer Ring	1	52298
19	Splined Hub	1	10600	37	Bearing	1	51870
21	Brake Housing	1	11322	38	Retainer Ring	1	51872
22	Fitting, Reducer Bushing	1	51803				

PARTS ORDERING INFORMATION

Use of other than **Ingersoll-Rand** replacement parts may adversely affect the safe operation and performance of this product.

For your convenience and future reference it is recommended that the following information be recorded.

Model Number _____

Serial Number _____

Date Purchased _____

When ordering replacement parts, please specify the following:

1. Complete model number and serial number as it appears on the nameplate.
2. Part number(s) and part description as shown in this manual.
3. Quantity required.

The nameplate is located on the winch outboard upright.

NOTICE

- Continuing improvement and advancement of design may cause changes to this equipment which are not included in this manual. Manuals are periodically revised to incorporate changes. Always check the manual edition number on the front cover for the latest issue.
- Using other than genuine Ingersoll-Rand parts may void the warranty.

Return Goods Policy

Ingersoll-Rand will not accept any returned goods for warranty or service work unless prior arrangements have been made and written authorization has been provided from the location where the goods were purchased.

Winches which have been modified without **Ingersoll-Rand** approval, mishandled or overloaded will not be repaired or replaced under warranty. A printed copy of the warranty which applies to this winch is provided inside the back cover of this manual.

Disposal

When the life of the winch has expired, it is recommended that it be disassembled, degreased and parts separated as to materials so that they may be recycled.

For additional information contact:

Ingersoll-Rand
P.O. Box 24046
2724 Sixth Avenue South
Seattle, WA 98124-0046 USA
Phone: (206) 624-0466
Fax: (206) 624-6265

or

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Douai Operations
111, Avenue Roger Salengro
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Phone: (33) 3-27-93-08-08
Fax: (33) 3-27-93-08-00

WARRANTY

LIMITED WARRANTY

Ingersoll-Rand Company (I-R) warrants to the original user its Hoists and Winches (Products) to be free of defects in material and workmanship for a period of one year from the date of purchase. **I-R** will repair, without cost, any Product found to be defective, including parts and labor charges, or at its option, will replace such Products or refund the purchase price less a reasonable allowance for depreciation, in exchange for the Product. Repairs or replacements are warranted for the remainder of the original warranty period.

If any Product proves defective within its original one year warranty period, it should be returned to any Authorized Hoist and Winch Service Distributor, transportation prepaid with proof of purchase or warranty card.

This warranty does not apply to Products which **I-R** has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine **I-R** parts.

I-R makes no other warranty, and all implied warranties including any warranty of merchantability or fitness for a particular purpose are limited to the duration of the expressed warranty period as set forth above. I-R's maximum liability is limited to the purchase price of the Product and in no event shall I-R be liable for any consequential, indirect, incidental, or special damages of any nature rising from the sale or use of the Product, whether based on contract, tort, or otherwise.

Note: Some states do not allow limitations on incidental or consequential damages or how long an implied warranty lasts so that the above limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

IMPORTANT NOTICE

It is our policy to promote safe delivery of all orders.

This shipment has been thoroughly checked, packed and inspected before leaving our plant and receipt for it in good condition has been received from the carrier. Any loss or damage which occurs to this shipment while enroute is not due to any action or conduct of the manufacturer.

Visible Loss or Damage

If any of the goods called for on the bill of lading or express receipt are damaged or the quantity is short, do not accept them until the freight or express agent makes an appropriate notation on your freight bill or express receipt.

Concealed Loss or Damage

When a shipment has been delivered to you in apparent good condition, but upon opening the crate or container, loss or damage has taken place while in transit, notify the carrier's agent immediately.

Damage Claims

You must file claims for damage with the carrier. It is the transportation company's responsibility to reimburse you for repair or replacement of goods damaged in shipment. Claims for loss or damage in shipment must not be deducted from the **Ingersoll-Rand** invoice, nor should payment of **Ingersoll-Rand** invoice be withheld awaiting adjustment of such claims as the carrier guarantees safe delivery.

You may return products damaged in shipment to us for repair, which services will be for your account and form your basis for claim against the carrier.

United States Office Locations

For Order Entry, Order Status and Technical Support

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Elmhurst, IL 60126
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Rochester Hills, MI 48309
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Fax: (562) 777-0818

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900 E. 8th Ave., Suite 103
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International Office Locations

Offices and distributors in principal cities throughout the world. Contact the nearest **Ingersoll-Rand** office for the name and address of the distributor in your country or write/fax to:

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