



Installation & Maintenance Manual

SPRING ENGAGED FRICTION BRAKES



Catalog Products:

[D3F3R-STH](#) & [D3F3R-STL](#)

[D4F3R-STH](#) & [D4F3R-STL](#)

[D5F3R-STH](#) & [D5F3R-STL](#)

[D6F3G-STH](#) & [D6F3G-STL](#)

[D8F3K-STH](#) & [D8F3K-STL](#)

[DAF3K-STH](#) & [DAF3K-STL](#)

*And non-catalog variations
of this brake design.*

CLICK on product numbers above
to obtain the product detail sheet
which includes dimensional data
helpful during installation.

Mach III Technical Support

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www.machiii.com

Detail sheets and 3D models are available on the Mach III website:

<http://www.machiii.com/Products/Brakes/Spring-Set-Brakes/Spring-Set-Brakes.asp>

Please contact Mach III to obtain assembly and parts list drawings.



These products include rotating equipment and should be guarded according to OSHA requirements and other Federal, State and local regulations. It is the responsibility of the user to provide the necessary guarding.

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I. New Brake Torque

New brake torque is approximately 40% less than rated design torque until the friction and drive discs are worn in (lapped, burnished). The length of time for wear-in to occur depends upon the application.

II. Brake Installation

A. SHAFT PREPARATION

Mach III Clutch products are bored to fit a precision plug gauge for the specified bore size and should slide fit the mating shaft. Make certain that the shaft is free of burrs or nicks. It may be necessary to file or sand the shaft to assure a slide fit. **Never hammer the brake onto the shaft.** Hammering on the brake may cause evident damage or subtle injury that will shorten the wear life of the unit, and will void the warranty.

- (1) Apply the anti-seize (E-Z Break[®]) lubricant from the packet provided, or equivalent, to the shaft.
- (2) Insert key (customer supplied) onto the shaft.
- (3) Slide brake over key on the shaft.
- (4) Tighten set screws to secure the brake to the shaft.

B. MOUNTING

If the surface on which the brake will be mounted to *is absolutely perpendicular* to the shaft, drill and tap holes for the number and type of clearance holes on corresponding bolt circle. Tighten all bolts uniformly to the torque recommended for the bolt size using proper Loctite[®] (or equivalent) compound to assure a permanent mount. If the mounting plate *is not perpendicular* to the shaft, it is recommended that the brake be mounted using shoulder bolts in holes, or pins in slots on corresponding bolt circle to allow the brake housing to float.

C. AIR LINE CONNECTION

Refer to the dimensional spec sheet for NPT size to obtain correct fitting. Install fitting using a thread sealing compound to prevent air leakage. Connect a flexible air line to the fitting. **Do not use rigid piping.** Air supply should be both filtered and regulated. Contamination in the air supply may damage the brake.

D. FINAL INSPECTION & TESTING

Cycle the brake with the machine off to check for air leaks and to ensure proper engagement and release. After a short run, check set screws and mounting screws.

III. Brake Operation

This brake is spring engaged (air released). The air pressure required to release the brake is between 60 and 70 PSI. For maximum life of the brake, air pressure should not exceed 80 PSI.

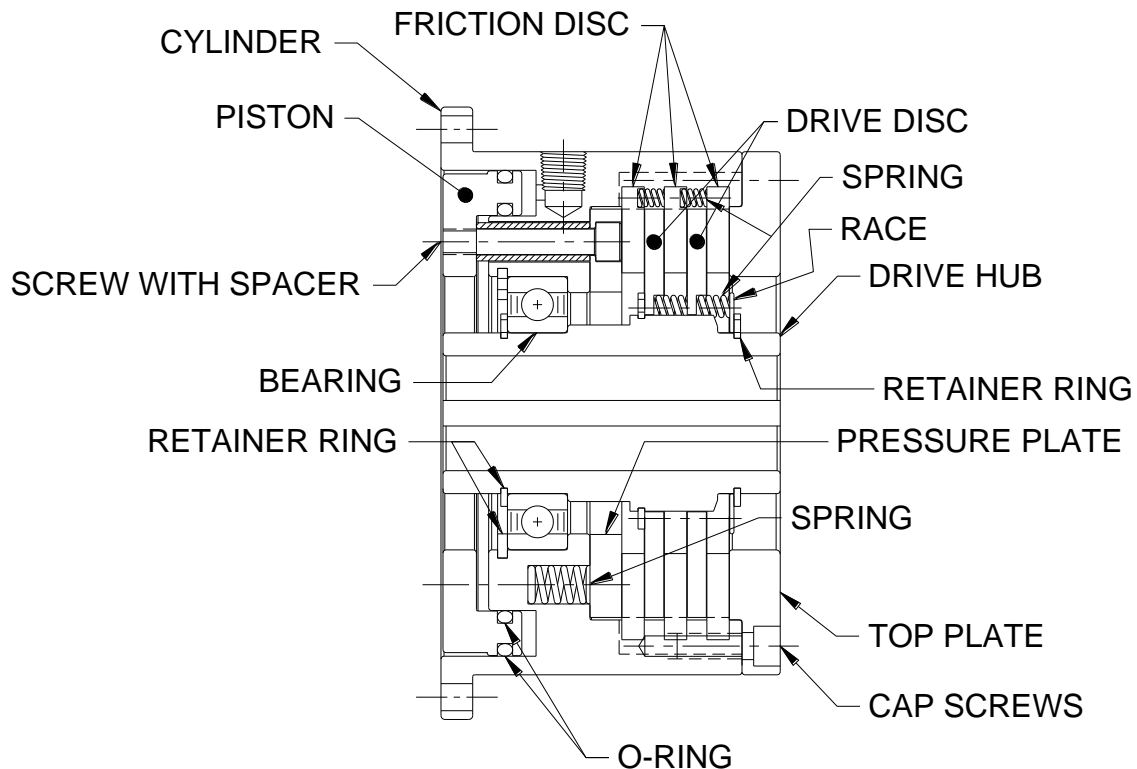
Special Note Regarding Friction Disc Contamination:

The friction material used in this product will absorb oil, water, chemicals and other contaminants. Depending on the type of contamination, brake may either seize up entirely or lose torque capacity. If friction discs become contaminated, they should be replaced. See repair kit ordering information below. If application requires exposure to contamination consult factory for optional covers.

IV. Routine Maintenance

When installed and operated according to the preceding guidelines, Mach III Clutch products should require little or no routine maintenance. A repair kit is available which contains all parts subject to typical wear: friction discs, springs and O-rings.

V. Parts diagram



Repair Kit:	Part number = Brake Product Number + "-RPRK" (e.g. D3F3R-STH-RPRK)
Additional Parts:	Contact Mach III to obtain a complete listing of additional parts kits available for your specific brake. Please reference product number when calling or e-mailing.
Repair services:	Factory repair is available. A return materials authorization (RMA) number must be obtained prior to sending any unit in for repair

VI. Repair Kit Installation Procedure

Tools Required	Compounds Required
Hex Wrench Set	Grease
Rubber Mallet or similar soft face hammer	O-ring Lubricant
Retainer (snap) Ring Pliers	Loctite® #609 Retaining Compound
Scraper	Anti-Seize Lubricant (for re-installation)

A. COMPLETE DISASSEMBLY

- (1) Remove brake from shaft and place in vertical position with top plate end facing upward.
- (2) Apply air to brake to relieve spring pressure from top plate.
- (3) Remove cap screws and top plate.
- (4) Remove retainer ring, race and springs.
- (5) Remove drive discs, friction discs and remaining springs.
- (6) Remove air supply from brake.
- (7) Invert brake and remove retainer ring from drive hub.
- (8) Remove air cylinder with bearing from drive hub. The air cylinder bearing is a slide fit on the drive hub and is affixed to the drive hub with a thin coating of Loctite®. You may need to strike the hub, or an object inserted in the hub with a rubber mallet or similar soft face hammer to break the Loctite® seal.
- (9) Next, remove the screws from pressure plate.
- (10) Remove spacers and springs.
- (11) Separate piston from cylinder.

B. FRICTION DISC REPLACEMENT ONLY

- (1) Remove brake from shaft and place in vertical position with top plate end facing upward.
- (2) Apply air to brake to relieve spring pressure from top plate.
- (3) Remove cap screws and top plate.
- (4) Remove retainer ring, race and springs.
- (5) Remove drive discs, friction discs and remaining springs.
- (6) Drive discs should be clean, dry and free of burrs or nicks.
- (7) Reassemble drive disc, friction disc, springs and race section according to reference drawing using new friction discs, steel drive discs and springs as necessary.
- (8) Assure that drive discs move freely on the drive hub and that the friction discs move freely in the cylinder or ring gear.

C. O-RING REPLACEMENT

- (1) Follow COMPLETE DISASSEMBLY instructions above.
- (2) Separate cylinder and piston.
- (3) Inspect O-ring seals. If worn, replace using new O-rings that have been lubricated with an O-ring lubricant such as Dow Corning® #4 Compound or equivalent.
- (4) A very *thin* coat of O-ring lubricant should also be applied to the inner walls of the cylinder.



D. REASSEMBLY

- (1) Replace the piston in the cylinder.
- (2) Make sure the tapped holes in the piston are aligned with corresponding holes in the cylinder.
- (3) Replace the spacers and springs.
- (4) Replace the pressure plate and screws making sure screws are tightened to uniform torque based on bolt size and use proper Loctite[®] (or equivalent) compound to assure a permanent mount.
- (5) Inspect the inside diameter of the bearing in the air cylinder. If Loctite[®] residue is present, gently scrape and assure that the surface is clean.
- (6) Apply a thin coat of Loctite[®] #609 retainer compound to the inside diameter of the air cylinder bearing, then slide the air cylinder/bearing sub-assembly over the drive hub. Applying excessive Loctite[®] will make future disassembly more difficult.
- (7) Make sure that all components are well seated and replace the outer retainer ring.
- (8) Reassemble drive disc, friction disc, springs and race section according to reference drawing using new friction discs, springs and steel drive discs as necessary.
- (9) Apply air to the brake.
- (10) Replace retainer ring on drive hub and bolt on top plate.
- (11) See "Brake Installation" portion of these instructions for the proper procedure for reinstalling the brake.

Technical assistance is available by contacting Mach III Clutch, Inc.

Mach III Product Warranty

<http://www.machiii.com/Resources/Warranty-Info.asp>

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