Installation & Maintenance Manual

NEMA FRAME AIR ENGAGED FRICTION CLUTCHES

Catalog Products:

C3C2R-14H, C3C2R-14HCA, C3C2R-14HSS
C3C2R-56H, C3C2R-56HCA, C3C2R-56HSS
C5C2R-18H, C5C2R-18HCA, C5C2R-18HSS
C5C2R-21H, C5C2R-21HCA, C5C2R-21HSS

And non-catalog variations of this clutch design.

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

Mach III Technical Support
Toll Free: 866-291-0849
International: 001-859-291-0849
Email: engineering@machiii.com
www.machiii.com

Detail sheets and 3D models are available on the Mach III website:
http://www.machiii.com/Products/Clutches/NEMA-Frame-Clutches-C-Face.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.

I. New Clutch Torque

New clutch 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. Clutch 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.

B. MOUNTING

The clutch mounts between a motor and gear reducer. These units are not suitable for belt drive (pulley output) applications. Consult factory for options.

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 an air line to the fitting. Air supply should be both filtered and regulated. Contamination in the air supply may damage the clutch.

D. FINAL INSPECTION & TESTING

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

III. Clutch Operation

The maximum operating pressure should not exceed 80 PSI. Operation at pressures greater than that required for proper function will decrease the life of the bearings.

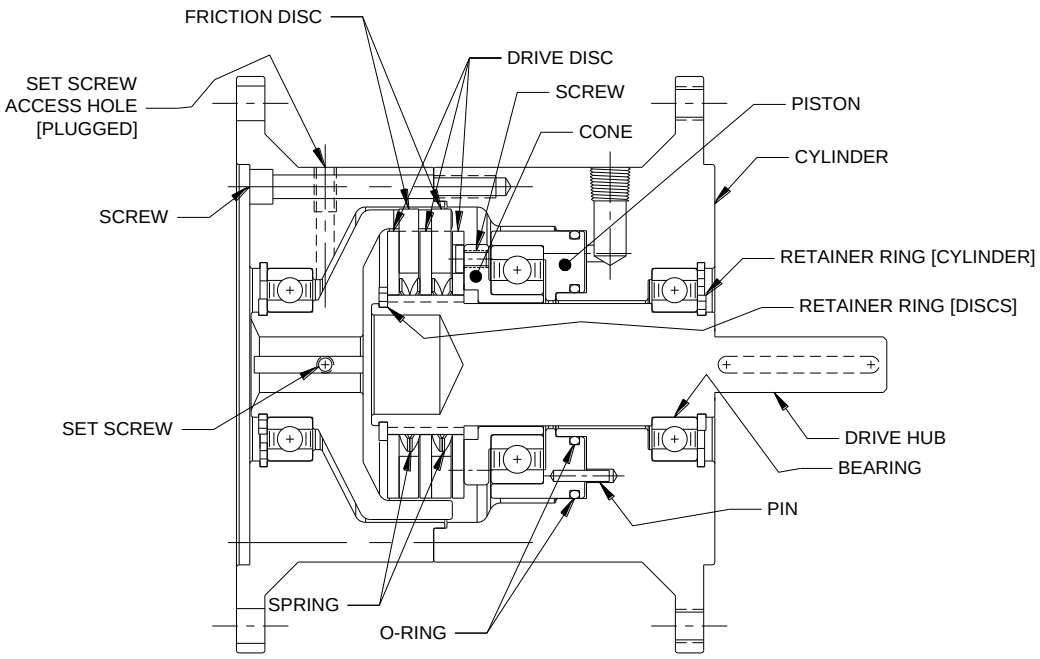
Special Note Regarding Friction Disc Contamination:

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 = Clutch Product Number + "-RPRK" (e.g. C3C2R-56H-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 set screw plug and loosen set screw.
(2) Remove clutch from shaft and place in horizontal position.
(3) Remove three cap screws to separate case.
(4) Remove "retainer ring [discs]" from drive hub and remove disc package with springs. Note that the first drive disc contains a milled hole. **It is important that this disc is placed over screw in cone during reassembly.**
(5) Remove "retainer ring [cylinder]".

COMPLETE DISASSEMBLY (CONTINUED)

(6) 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, while pulling the cylinder upwards to break the Loctite® seal.
(7) Remove piston/cone sub-assembly to access o-rings.

B. FRICTION DISC & SPRING REPLACEMENT

(1) Follow steps 1 – 4 from COMPLETE DISASSEMBLY instructions above.
(2) Drive discs should be clean, dry and free of burrs or nicks.
(3) Reassemble drive & friction disc section according to reference drawing using new friction discs, springs and steel drive discs as necessary.
(4) Assure that drive discs move freely on the drive hub and that the lugs of the friction discs move freely in the drive slots of the sleeve.

C. O-RING REPLACEMENT

(1) Follow COMPLETE DISASSEMBLY instructions above.
(2) 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.
(3) 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/cone sub-assembly in the cylinder making sure the pins in the piston are aligned with corresponding holes in the cylinder.
(2) 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.
(3) Make sure that all components are well seated and replace the “retainer ring [cylinder]”.
(4) Reassemble drive, friction disc, and springs using new friction discs, springs and steel drive discs as necessary.
(5) See “Clutch Installation” portion of these instructions for the proper procedure for reinstalling the clutch.

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

Mach III Product Warranty
http://www.machiii.com/Resources/Warranty-Info.asp

Mach III Clutch, Inc.
101 Cummings Drive ● Walton, KY 41094
Toll free 866.291.0849 ● International 859.291.0849 ● Fax 859.655.8362
info@machiii.com ● engineering@machiii.com ● www.machiii.com