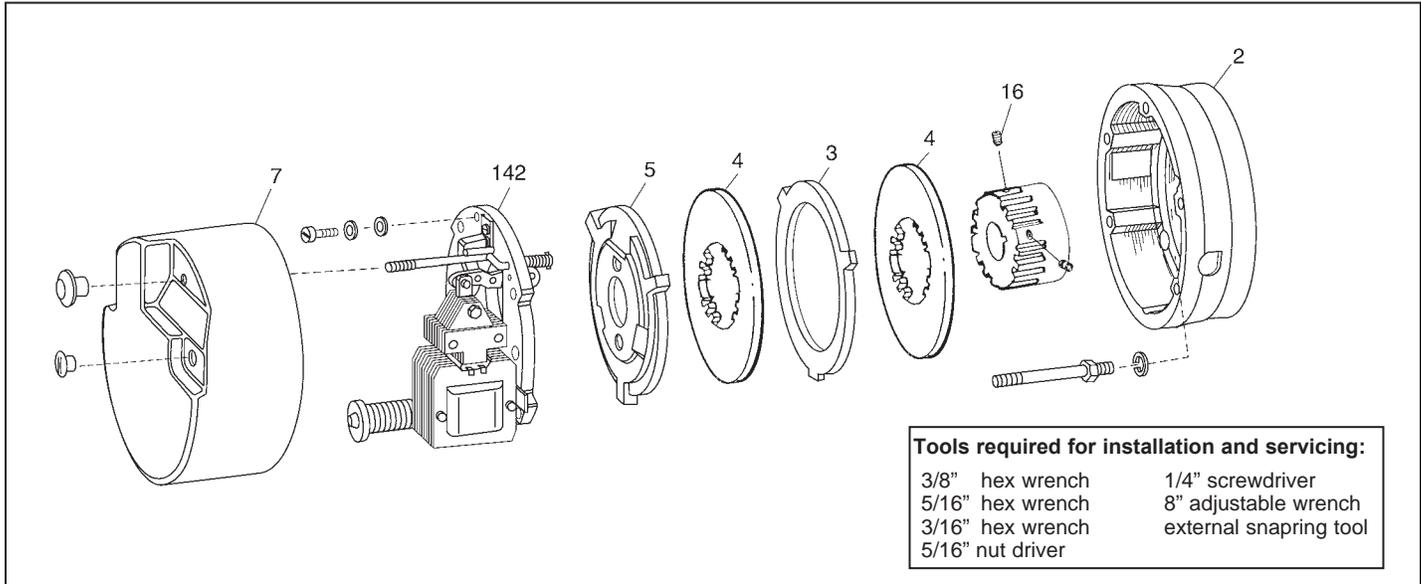


Stearns® Spring-Set Disc Brakes

Installation and Service Instructions for 87,000 & 87,100 Series Self-Adjust Brakes (rev. B)



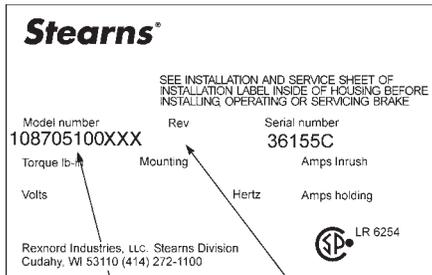
Tools required for installation and servicing:

| | |
|------------------|------------------------|
| 3/8" hex wrench | 1/4" screwdriver |
| 5/16" hex wrench | 8" adjustable wrench |
| 3/16" hex wrench | external snapping tool |
| 5/16" nut driver | |

Typical Nameplate

Important

Please read these instructions carefully before



Note:
MODEL NUMBER
 Refer to actual nameplate on brake for additional information
REVISION CONTROL
 (if applicable) and brake serial number

installing, operating, or servicing your Stearns Brake. Failure to comply with these instructions could cause injury to personnel and/or damage to property if the brake is installed or operated incorrectly. For definition of limited warranty/liability, contact Rexnord Industries, LLC, Stearns Division, 5150 S. International Dr., Cudahy, WI 53110, (414) 272-1100.

Caution

1. Installation and servicing must be made in compliance with all local safety codes including Occupational Safety and Health Act (OSHA). All wiring and electrical connections must comply with the National Electric Code (NEC) and local electric codes in effect.
2. Use of this brake in atmospheres containing explosive gases and dusts must be in accordance with NEC article 501. This brake is not suitable for use in certain atmospheres containing explosive gases and dusts. **HazLoc** inspection authorities are responsible for verifying and authorizing the use of suitably designed and installed **HazLoc** equipment. When

questions arise consult local **Authority Having Jurisdiction (AHJ)**.

3. To prevent an electrical hazard, disconnect power source before working on the brake. If power disconnect point is out of sight, lock disconnect in the *off* position and tag to prevent accidental application of power.
4. Make certain power source conforms to the requirements specified on the brake nameplate.
5. Be careful when touching the exterior of an operating brake. Allow sufficient time for brake to cool before disassembly. Surfaces may be hot enough to be painful or cause injury.
6. Do not operate brake with housing removed. All moving parts should be guarded.
7. Installation and servicing should be performed only by qualified personnel familiar with the construction and operation of the brake.
8. For proper performance and operation, only genuine Stearns parts should be used for repairs and replacements.
9. After usage, the brake interior will contain burnt and degraded friction material dust. This dust must be removed before servicing or adjusting the brake.

DO NOT BLOW OFF DUST using an air hose. It is important to avoid dispersing dust into the air or inhaling it, as this may be dangerous to your health.

- a) Wear a filtered mask or a respirator while removing dust from the inside of a brake.
- b) Use a vacuum cleaner or a soft brush to remove dust from the brake. When brushing, avoid causing the dust to become airborne. Collect the dust in a container, such as a bag, which can be sealed off.

10. **Caution!** While the brake is equipped with a manual release to allow manual shaft rotation, the motor should not be run with

the manual release engaged, to avoid overheating the friction disc(s).

General Description

These series of brakes are spring-set, electrically released. They contain one or more rotating friction discs (4) driven by a hub (16) mounted on the motor or other shaft.

Note: Fan-guard mounted brakes requiring IP54 & IP55 protection may require additional sealing measures beyond seals provided with this brake. Pressurized sprays aimed at the fan and brake hub surfaces can result in fluid migration along the motor shaft and keyway, and into the brake. The use of an appropriate sealant such as *RTV* or a *forsheda* seal is advised.

Operating Principle

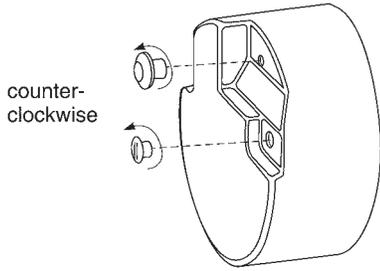
These series contain one or more friction discs (4) assembled alternately between the endplate (2) friction surface, stationary disc(s) (3) and pressure plate (5). The stationary components are restrained from rotating by being keyed into the endplate. With the brake released, all disc pack components are free to slide axially and the friction disc(s) to rotate.

Brake release occurs when the solenoid coil is electrically energized, causing the solenoid plunger to travel a specified distance and through a lever system, overcoming the pressure spring force. This action releases the clamping force on the disc pack, thereby allowing the friction disc(s) and brake hub to rotate.

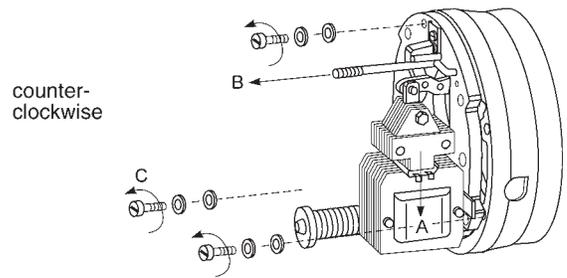
Brake sets and torque is produced when electric current to the solenoid coil is interrupted, thereby collapsing the solenoid magnetic field. The solenoid plunger returns to its original de-energized position allowing the lever arm to move forward by virtue of the compressed torque springs. This action compressed the disc pack components which applies a retarding torque to the brake hub and ultimately restores the brake to a spring-set static condition.

BRAKE MOUNTING

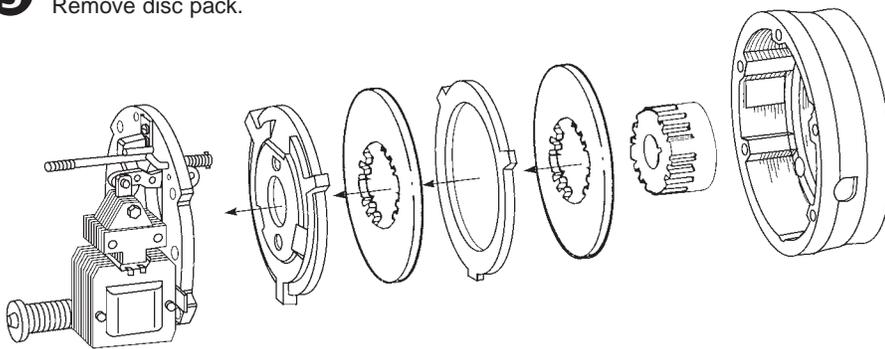
- 1** Remove manual release knob.
Remove housing screws.
Remove housing.



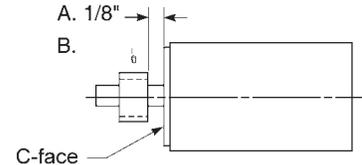
- 2** A. Push plunger down.
B. Pull manual release to hold plunger.
C. Remove support plate screws.



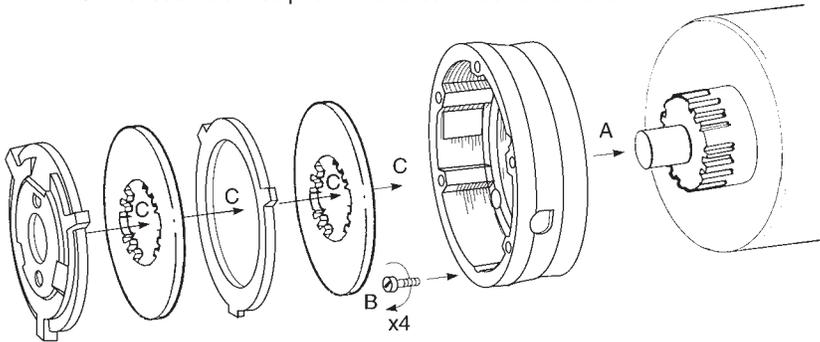
- 3** Lift off support plate.
Remove disc pack.



- 4** A. Position hub on shaft as shown.
B. Tighten set screws to motor shaft.
Torque to: 5/16" - 156 in-lb;
3/8" - 288 in-lb;
1/2" - 625 in-lb.

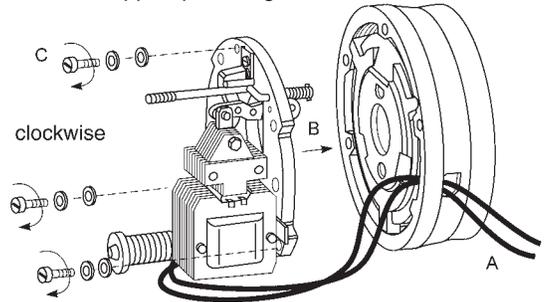


- 5** A. Position endplate on motor register.
B. Insert four mounting bolts and tighten.
C. Reassemble disc pack in reverse* order of removal.



*For vertical brakes, refer to Figure 2, page 3.

- 6** A. Route lead wires through conduit hole.
B. Position support plate on endplate.
C. Position conical washer under the screw head, with the flat washer* against the support plate. Tighten screws to 75-78 in-lb.



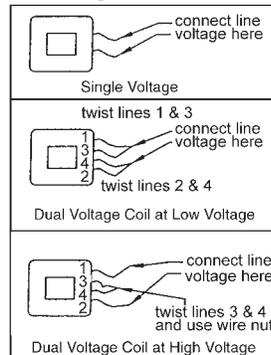
*Cast iron support plates do not require a flat washer.

- 7** AC coils are 50/60 Hz, single phase rated. Power supply to coil must not have current or frequency limiting output that is less than the coil requirement.

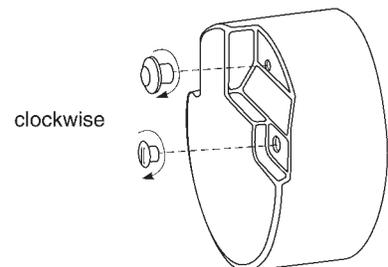
- Connect leadwires to power source. Verify voltage rating* per nametag on coil.
- Keep wiring away from pinch points and moving components.

* For DC voltages see Sheet 8-078-950-00

Coil Wiring



- 8** Replace housing.
Tighten housing screws and release knob to 50-55 in-lb.



Installation Notes:

Note 1: If motor is to be ceiling mounted after assembly, entire brake will have to be rotated 180° or “upside down” so it will be positioned with solenoid plunger (29) above frame when final assembly is mounted on ceiling. Similarly, for horizontal wall mounting, rotate 90°.

Note 2: The brake nameplate states mounting position; “horizontal, vertical above or vertical below.” The brake must be mounted in that position. Horizontal brakes rated 35 lb-ft and less do not require modification to be mounted vertical below.

Note 3: A dimple drilled into the motor shaft for the hub set screw (16S), 90° from the key is recommended for vertical mounting.

General Maintenance

Warning! Any mechanism or load held in position by the brake should be secured to prevent possible injury to personnel or damage to equipment before any disassembly of the brake is attempted or before the manual release knob or lever is operated on the brake. Observe all cautions listed at the beginning of this manual.

Note 1: To obtain correct replacement parts for the Series 87,000 Marine Duty, obtain brake serial number and consult factory.

Note 2: Replace friction disc in single disc brakes when wear surface area is one-half the original disc thickness. In multiple disc brakes, replace all friction discs when throat of lever arm (17) is within 1/16” of touching teeth of pinion (32).

Troubleshooting

A. If brake does not stop properly or overheats, check the following:

1. Is manual release engaged, and is motor energized?
2. Friction discs may be excessively worn, charred or broken.
3. Hub may have become loose and shifted on shaft.
4. Are controls which govern start of braking cycles operating properly?
5. On vertically mounted brakes, are springs in place in disc pack?
6. Is solenoid air gap adjusted correctly? See *Air Gap Adjustment*, Page 4.
7. Solenoid lever stop (22) must be in place on support plate.
8. Solenoid may not be energizing and releasing the brake. Check voltage at the coil and compare to the coil and/or nameplate voltage rating.
9. Check that heads of mounting bolts do not extend above wear surface of endplate.
10. If stopping time is more than two seconds, the brake torque rating may be insufficient. If the brake stops high inertial loads and/or brake stops more than five times per minute, check thermal requirements of application versus thermal capacity rating of brake.

11. Use Loctite® 242 to secure link screw nut (13N) to link screw (13C) if vibration causes nut to loosen.
12. Check pressure spring length to insure correct compressed height. Original spring lengths are given in the following Table so that correct setting may be verified and corrected if necessary. With worn friction discs, add amount of wear to the approximate spring length shown.

| Color | Torque (lb-ft) | Compressed Spring Length |
|--------|----------------|--------------------------|
| Black | 10 | 3-1/4” |
| White | 15 | 3-1/4” |
| Orange | 25 & 50 | 3-1/4” |
| Purple | 35, 75 & 105 | 3-1/4” |

13. If a heater is supplied and excess rusting has occurred in brake, check power source to heater to be sure it is operating and that heater is not burned out.

B. If brake hums, solenoid pulls in slowly, or coil burns out, check the following:

1. Voltage supply at coil versus coil rating.
2. Is solenoid air gap excessive? See *Air Gap Adjustment*, Page 4.
3. Solenoid frame and plunger may be excessively worn.
4. Solenoid mounting screws may have become loose, causing frame to shift and plunger to seat improperly.

Vertical Spring Assembly

Note: For vertical brakes refer to Figure 2 for proper stationary disc positioning. Discs must be inserted spring side first. Also refer to instruction sheet 8-078-937-06.

For brakes with brass stationary components, refer to instruction sheet 8-078-937-07.

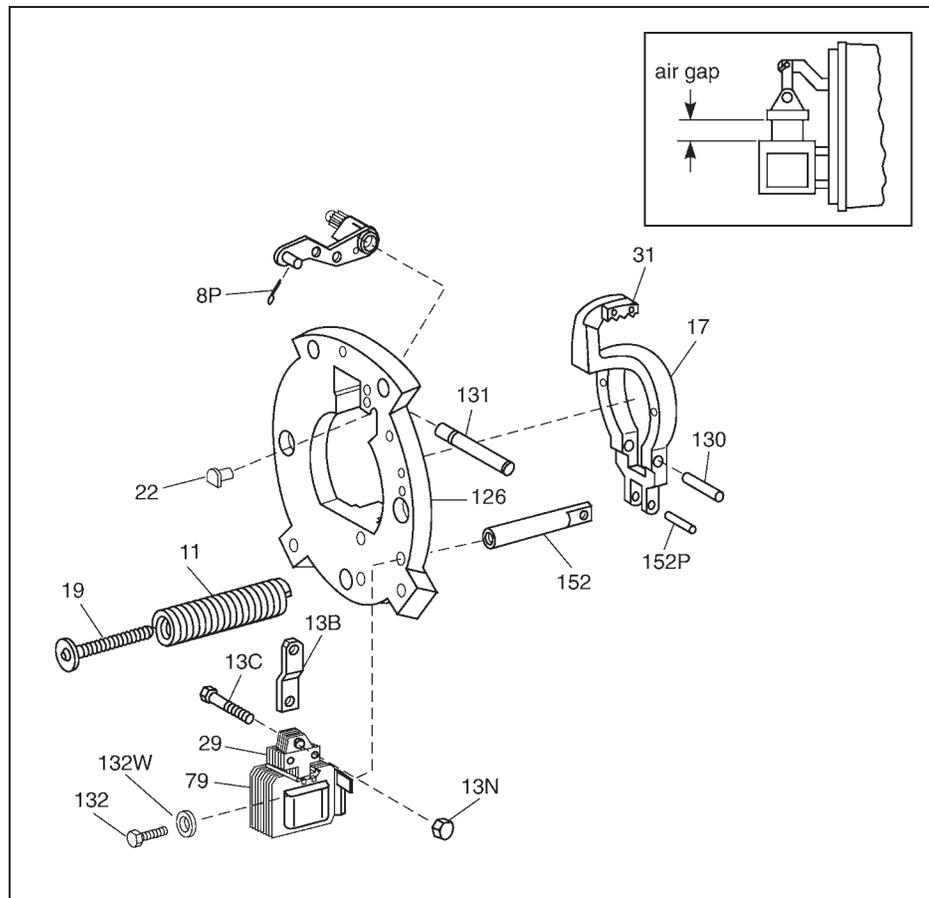


Figure 1

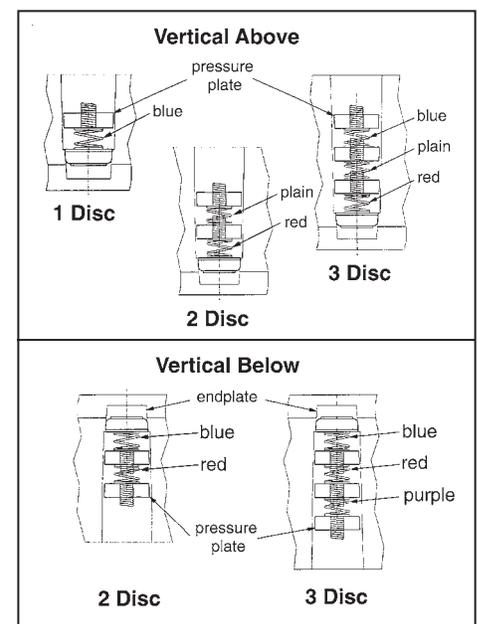


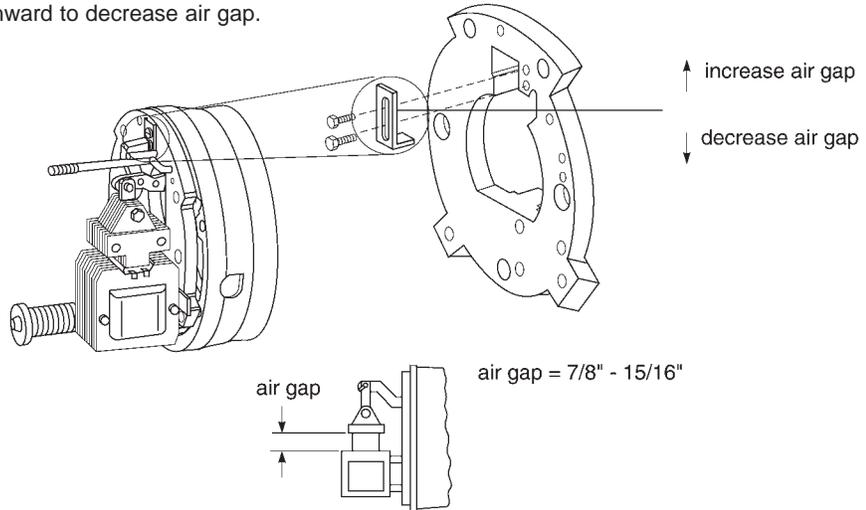
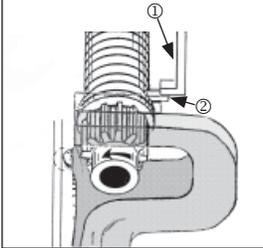
Figure 2

AIR GAP AJUSTMENT

[BACK TO PRODUCT PAGE](#)

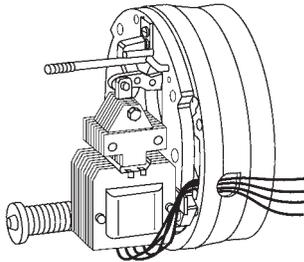
- 1** Loosen two locking screws.
Slide bracket outward to increase or inward to decrease air gap.
Tighten screws to 45-55 lb-in.

Wrap spring stop ① is positioned above the tang of the wrap spring ②

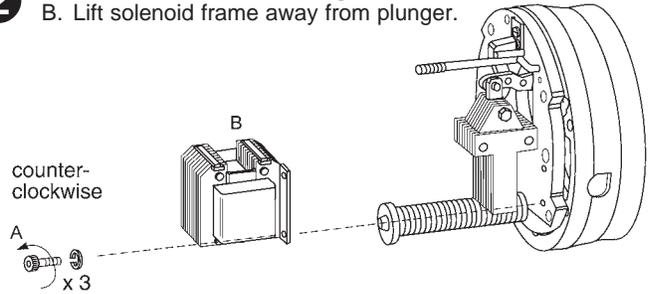


COIL REPLACEMENT

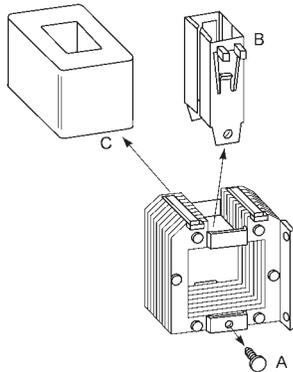
- 1** Disconnect coil lead wires from power source and pull them out of the brake.



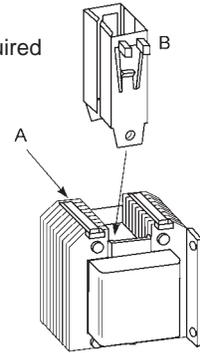
- 2** A. Remove solenoid mounting screws.
B. Lift solenoid frame away from plunger.



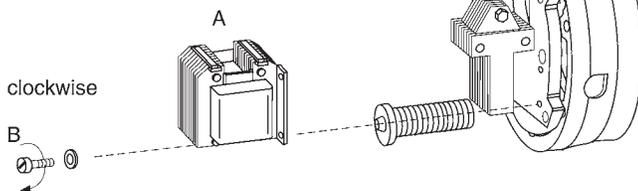
- 3** A. Remove guide screws, if used.
B. Lift guides out of coil.
C. Push coil out of frame.



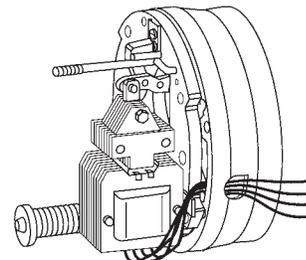
- 4** A. Insert new coil.
B. Press plunger guides into place.
C. (Guide screws are no longer required with plastic guides.)



- 5** A. Slide coil assembly onto plunger.
B. Insert mounting screws and tighten:
70-75 lb-in (10-25 & 50 torque rated brake)
120-125 lb-in (35, 75 & 105 torque rated brake)

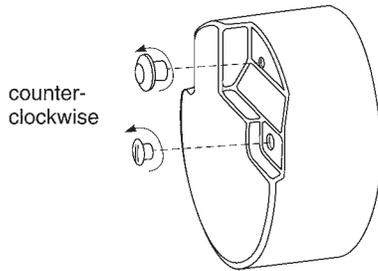


- 6** Reroute coil wires and reconnect to power supply.

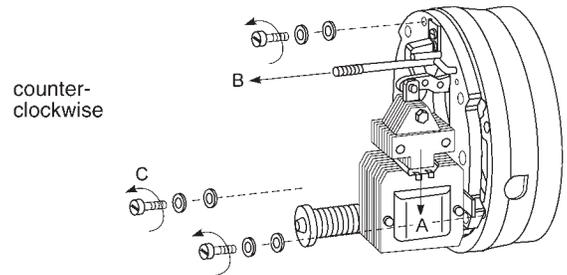


FRICION DISC REPLACEMENT

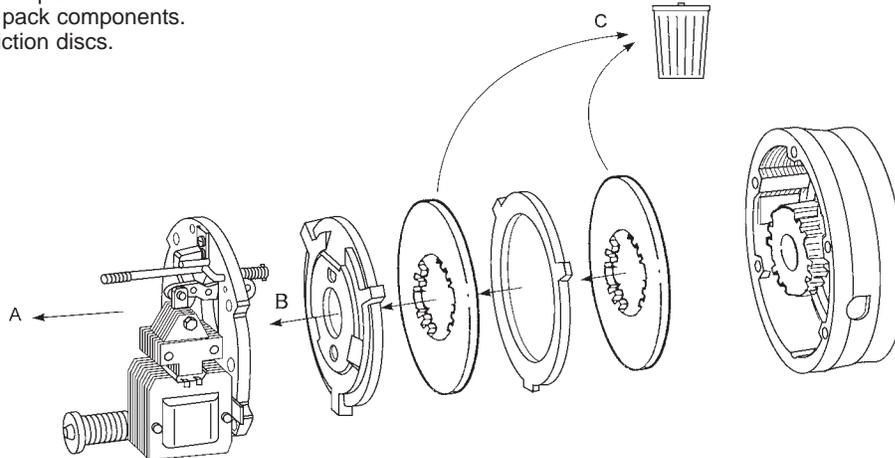
- 1** Remove manual release knob.
Remove housing screws.
Remove housing.



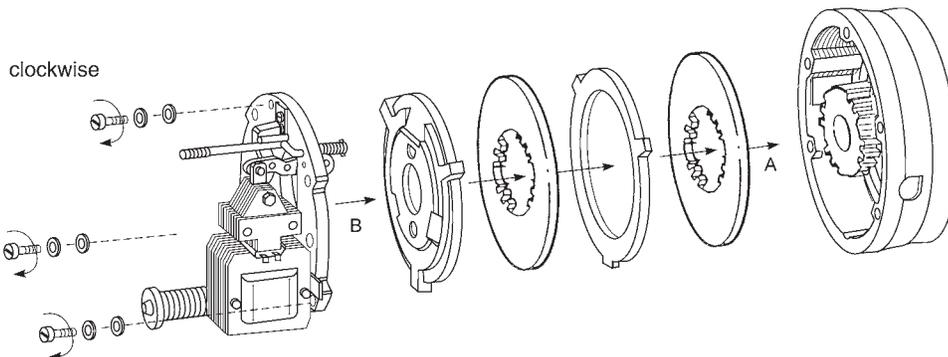
- 2** A. Push plunger down.
B. Pull manual release to hold plunger
C. Remove support plate screws.



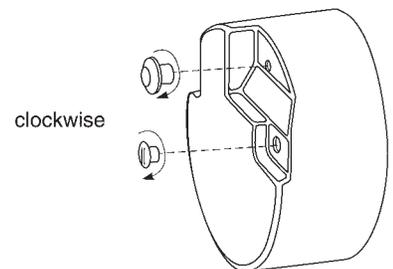
- 3** A. Remove support plate.
B. Remove disc pack components.
C. Discard old friction discs.



- 4** A. Install new friction discs and reassemble in reverse order of disassembly.*
B. Positioned conical washer under the screw head, with the flat washer against the support plate. **(Cast iron support plates do not require a flat washer)**. Tighten screws to 75-78 in-lb.



- 5** Replace housing.
Tighten housing screws to 50-55 in-lb. Hand tighten release knob.



* For vertical brake assembly refer to Figure 2, page 3.