



## 80 Series 4 Post NEMA 4 Enclosure Brake Instructions MARK II RELEASE

Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference. When unpacking the brake, inspect it carefully for damage that may have occurred during transit.



Figure 1.

### WARNING

Brake performance and features must be carefully matched to the requirements of the application.

Consideration must be given to torque requirements, especially where an overhauling condition exists, as well as thermal capacity, ambient temperature, atmospheric explosion hazards, type of enclosure and any other unusual conditions.

Improper selection and installation of a brake and/or lack of maintenance may cause brake failure which could result in damage to property and/or injury to personnel.

If injury to personnel could be caused by brake failure, additional means must be provided to insure safety of personnel.

Do not operate manual release or energize brake coil before installation, in order to preserve prealignment of rotating discs for ease of installation.

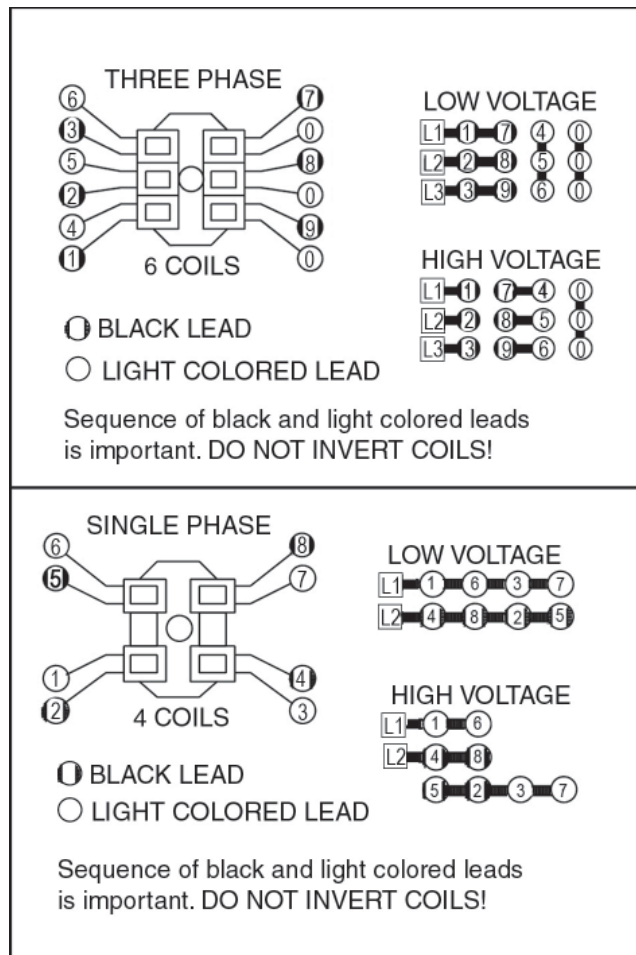


Figure 2. Wiring Diagram

### DESCRIPTION

This brake is direct acting, electromagnetically released and spring set. It uses rotating and stationary disc contact to supply positive braking action. It retains quick release and setting capabilities at all times.

Simplicity of design has reduced maintenance to an absolute minimum. As with any electromechanical equipment, however, periodic inspection and adjustment will assure optimum performance. As the friction disc wears, the magnet gap will increase. The magnet gap should be checked periodically and adjusted when necessary.

### SPECIFICATIONS

**MOTOR FRAMES** - 284TC, 286TC.

**HOUSINGS** - Cast iron and aluminum.

**DUTY** - Rated for continuous duty.

**VOLTAGES** - All standard NEMA voltages and frequencies available. Other voltages and frequencies are optional.

**MOUNTING** - Direct to NEMA "C" motor flanges. Adaptors for larger or smaller frames, foot mounting and vertical mounting are available.

**SHAFTS** - NEMA standard length motor shafts and thru shafts may be used on all models except units with Mark II Release (Cover modification required for thru shafts).

### ORDERING INFORMATION

The following data should be furnished with your order for:

#### REPLACEMENT PARTS

Brake Model Number

Part Number from Tables

Part Description from Tables

(On hub order furnish bore dia. & keyway dimensions. On electrical parts specify voltage, phase & frequency.)

#### REPLACEMENT BRAKE

Model Number

Voltage, Phase & Frequency

Hub Bore & Keyway Dimensions

Mounting - Horizontal or Vertical. (If vertical, specify whether above or below motor. Specify if brake includes foot mounting bracket or adaptor).

## INSTALLATION

(See Figures 3 & 5, Tables 1 & 2)

1. Remove hub (4) from brake and position on motor shaft with key according to dimension "N". Stamped part number on hub should face away from motor. Tighten hub set screws with 12 lb. ft. torque.
2. Remove cover screws (22 & 23) and cover (20).
3. Place brake on motor, guiding discs on hub.
4. Bolt brake to motor "C" face with four 1/2 inch socket head cap screws. See Figure 5 for screw length thru bracket.
5. Connect coil leads per appropriate wiring diagram in Figure 2 and replace cover.

## TORQUE ADJUSTMENT

(See Figures 3 & 5)

Brake is factory set for rated torque per spring length "H". To increase stopping time and lower torque, turn four locknuts (12) counterclockwise, increasing dimension "H". All four springs must be set to the same length. Do not decrease spring length "H" as this may cause coil to burn out.

## WEAR ADJUSTMENT

(See Figures 3 & 5, Table 2)

Magnet gap "D" increases as friction discs wear. When gap approaches "D" max., adjust gap to "D" min. dimension by turning nuts (13 & 15). Magnet gap can vary from nominal  $\pm .005$ " between corners. After setting gap, readjust torque spring length "H".

**CAUTION: MAGNET GAP MUST NOT EXCEED "D" MAXIMUM.**

## FRICTION DISC REPLACEMENT

(See Figures 3 & 5, Table 2)

\*When the rotating friction disc (5) wears down to a thickness of 7/32", replace disc.

1. Remove cover screws (22 & 23) and cover (20).
2. Remove adjusting lock nuts (15), magnet assembly (14), adjusting nuts (13), torque nuts (12), washers (11), torque spring (10) and pressure plate (7).
3. Remove friction disc (5) and stationary disc (6). Replace worn friction discs.
4. Reassemble all parts in reverse order. Set spring length "H" and magnet gap "D". Assemble manual release. See following paragraph.

## MANUAL RELEASE

(See Figure 3)

To operate release, push manual release lever up.

Brake will remain in released position until the brake is released electrically. Knob (17) should remain down when not released.

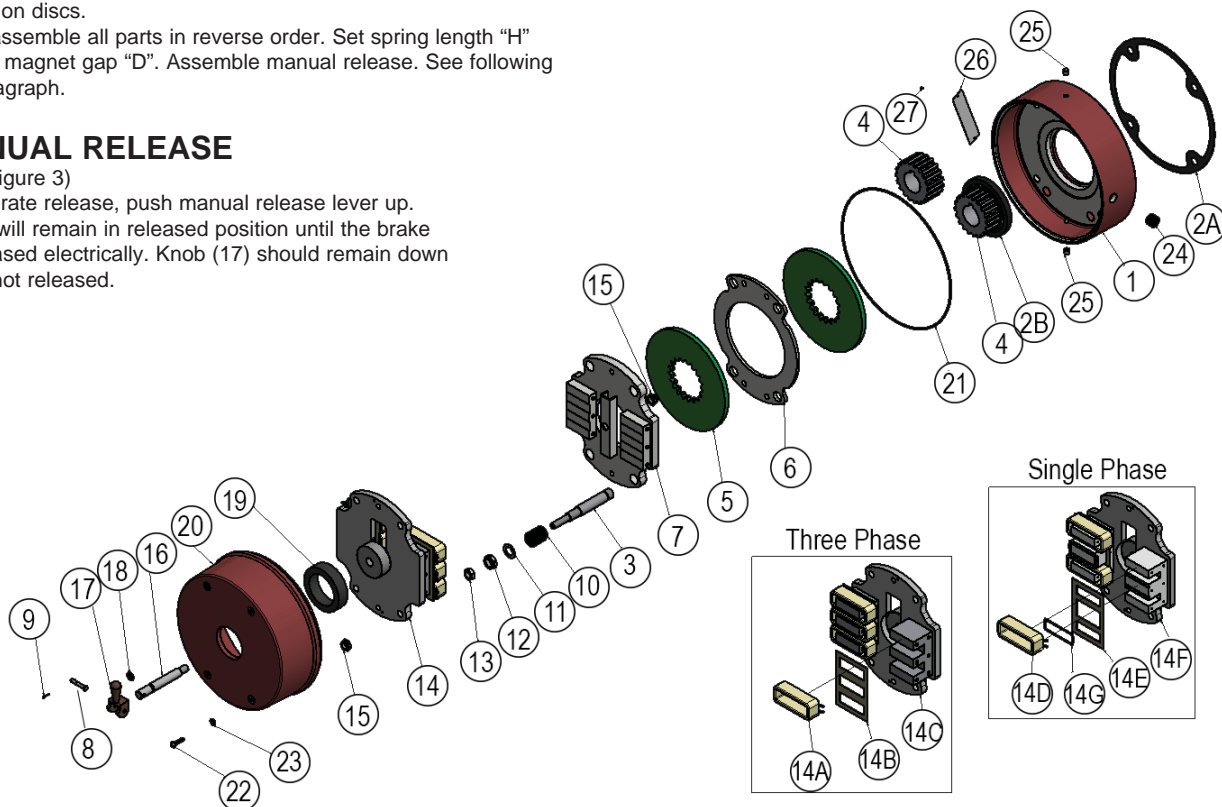


Figure 3. Exploded View of Brake

## MANUAL RELEASE ASSEMBLY

(See Figure 3)

When assembling a standard manual release mechanism (Figure 3), turn nut (15) to obtain proper release action.

## MAGNET COIL REPLACEMENT

(See Figures 3 & 4)

Remove magnet assembly as outlined under FRICTION DISC REPLACEMENT.

Coils (14A) are held in place with epoxy cement. Force coil off magnet mounting plate and remove excess epoxy from all surfaces.

Replacement coils should be held in place with new epoxy cement. The epoxy cement should be heat resistant and shock resistant.

Place an insulating washer (14B) below the coils. Order insulating washers when ordering coils. An insulating washer can be cut to suit when replacing only one coil on a multiple coil assembly.

When installing coils, it is very important to follow EXACTLY the sequence of black and light colored leads as shown in wiring diagram (Figure 2). The brake will not operate properly unless coils are all in the correct position.

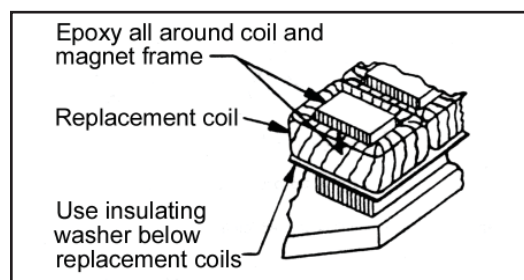


Figure 4. Fastening of Replacement Magnet Coils

Table 1. Parts List

| ITEM NO. | DESCRIPTION                                | MODEL                                |          |          |          |          |          |          |                                       |          |          |          |          |          |          | PART NUMBER |          |             |
|----------|--|--------------------------------------|----------|----------|----------|----------|----------|----------|---------------------------------------|----------|----------|----------|----------|----------|----------|-------------|----------|-------------|
|          |  | Nema 4 with hub seal Mark II release |          |          |          |          |          |          | Nema 4 w/out hub seal Mark II release |          |          |          |          |          |          |             |          |             |
|          |  | 81025-65                             | 81035-65 | 82050-65 | 82070-65 | 83075-65 | 83105-65 | 84125-65 | 85175-65                              | 81025-67 | 81035-67 | 82050-67 | 82070-67 | 83075-67 | 83105-67 |             | 84125-67 | 85175-67    |
| 1        | Bracket 1 disc                             | 1                                    | 1        |          |          |          |          |          |                                       | 1        | 1        |          |          |          |          |             |          | L080183-001 |
| 1        | Bracket 2 disc                             |                                      |          | 1        | 1        |          |          |          |                                       |          |          | 1        | 1        |          |          |             |          | L080183-002 |
| 1        | Bracket 3 disc                             |                                      |          |          |          | 1        | 1        |          |                                       |          |          |          |          | 1        | 1        |             |          | L080183-003 |
| 1        | Bracket 4 disc                             |                                      |          |          |          |          |          | 1        |                                       |          |          |          |          |          |          | 1           |          | L080183-004 |
| 1        | Bracket 5 disc                             |                                      |          |          |          |          |          |          | 1                                     |          |          |          |          |          |          |             | 1        | L080183-005 |
| 2A       | Gasket, motor mounting                     |                                      |          |          |          |          |          |          |                                       | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K080144-002 |
| 2B       | Seal, hub                                  | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     |          |          |          |          |          |          |             |          | W011001-008 |
| 3        | Stud, 1 disc                               | 1                                    | 1        |          |          |          |          |          |                                       | 1        | 1        |          |          |          |          |             |          | G070213-001 |
| 3        | Stud, 2 disc                               |                                      |          | 1        | 1        |          |          |          |                                       |          |          | 1        | 1        |          |          |             |          | G070213-002 |
| 3        | Stud, 3 disc                               |                                      |          |          |          | 1        | 1        |          |                                       |          |          |          |          | 1        | 1        |             |          | G070213-003 |
| 3        | Stud, 4 disc                               |                                      |          |          |          |          |          | 1        |                                       |          |          |          |          |          |          | 1           |          | G070213-004 |
| 3        | Stud, 5 disc                               |                                      |          |          |          |          |          |          | 1                                     |          |          |          |          |          |          |             | 1        | G070213-005 |
| 4        | Hub 1 disc                                 |                                      |          |          |          |          |          |          |                                       | 1        | 1        |          |          |          |          |             |          | H080030-XXX |
| 4        | Hub 2 disc                                 |                                      |          |          |          |          |          |          |                                       |          |          | 1        | 1        |          |          |             |          | H080031-XXX |
| 4        | Hub 3 disc                                 |                                      |          |          |          |          |          |          |                                       |          |          |          |          | 1        | 1        |             |          | H080032-XXX |
| 4        | Hub 4 disc                                 |                                      |          |          |          |          |          |          |                                       |          |          |          |          |          |          | 1           |          | H080033-XXX |
| 4        | Hub 5 disc                                 |                                      |          |          |          |          |          |          |                                       |          |          |          |          |          |          |             | 1        | H080034-XXX |
| 4        | Hub, with hub seal                         | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     |          |          |          |          |          |          |             |          | K080050-XXX |
| 5        | Friction disc                              | 1                                    | 1        | 2        | 2        | 3        | 3        | 4        | 5                                     | 1        | 1        | 2        | 2        | 3        | 3        | 4           | 5        | H080002-004 |
| 6        | Stationary disc                            |                                      |          | 1        | 1        | 2        | 2        | 3        | 4                                     |          |          | 1        | 1        | 2        | 2        | 3           | 4        | K080282-002 |
| 7        | Pressure plate                             | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K080081-003 |
| 8        | Pin, manual release                        | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | W005002-004 |
| 9        | Cotter key, manual release                 | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | W005001-001 |
| 10       | Torque spring( 25, 50, 75lb-ft)            | 4                                    |          | 4        |          | 4        |          |          |                                       | 4        |          | 4        |          | 4        |          |             |          | G070011-001 |
| 10       | Torque spring (35, 70, 105, 125, 175lb-ft) |                                      | 4        |          | 4        |          | 4        | 4        | 4                                     |          | 4        |          | 4        |          | 4        | 4           | 4        | G070019-001 |
| 11       | Washer, torque spring                      | 4                                    | 4        | 4        | 4        | 4        | 4        | 4        | 4                                     | 4        | 4        | 4        | 4        | 4        | 4        | 4           | 4        | W004004-001 |
| 12       | Locknut, torque spring                     | 4                                    | 4        | 4        | 4        | 4        | 4        | 4        | 4                                     | 4        | 4        | 4        | 4        | 4        | 4        | 4           | 4        | W003001-022 |
| 13       | Jamnut, magnet plate                       | 4                                    | 4        | 4        | 4        | 4        | 4        | 4        | 4                                     | 4        | 4        | 4        | 4        | 4        | 4        | 4           | 4        | W003003-023 |
| 14       | Magnet assembly, three phase               | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K080304-XXX |
| 14A      | Coil, three phase                          | 6                                    | 6        | 6        | 6        | 6        | 6        | 6        | 6                                     | 6        | 6        | 6        | 6        | 6        | 6        | 6           | 6        | H080062-XXX |
| 14B      | Insulating washer, three phase             | 2                                    | 2        | 2        | 2        | 2        | 2        | 2        | 2                                     | 2        | 2        | 2        | 2        | 2        | 2        | 2           | 2        | G080016-001 |
| 14C      | Magnet plate                               | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K080303-001 |
| 14       | Magnet assembly, single phase              | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K080306-XXX |
| 14D      | Coil, single phase                         | 4                                    | 4        | 4        | 4        | 4        | 4        | 4        | 4                                     | 4        | 4        | 4        | 4        | 4        | 4        | 4           | 4        | K080083-XXX |
| 14E      | Insulating washer, single phase            | 2                                    | 2        | 2        | 2        | 2        | 2        | 2        | 2                                     | 2        | 2        | 2        | 2        | 2        | 2        | 2           | 2        | G080148-001 |
| 14F      | Magnet plate                               | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K080305-001 |
| 14G      | Shading ring                               | 2                                    | 2        | 2        | 2        | 2        | 2        | 2        | 2                                     | 2        | 2        | 2        | 2        | 2        | 2        | 2           | 2        | G080022-001 |
| 15       | Locknut, magnet plate                      | 5                                    | 5        | 5        | 5        | 5        | 5        | 5        | 5                                     | 5        | 5        | 5        | 5        | 5        | 5        | 5           | 5        | W003001-020 |
| 16       | Rod, manual release                        | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | G070076-002 |
| 17       | Lever, manual release                      | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | H020005-001 |
| 18       | O-ring, release rod                        | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | W006001-003 |
| 19       | Seal, Bushing                              | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | G070301-002 |
| 20       | Cover                                      | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K080248-005 |
| 21       | O-ring, cover                              | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | W006001-011 |
| 22       | Screw, cover                               | 4                                    | 4        | 4        | 4        | 4        | 4        | 4        | 4                                     | 4        | 4        | 4        | 4        | 4        | 4        | 4           | 4        | W001050-006 |
| 23       | Washer, cover                              | 4                                    | 4        | 4        | 4        | 4        | 4        | 4        | 4                                     | 4        | 4        | 4        | 4        | 4        | 4        | 4           | 4        | W004015-001 |
| 24       | Pipe plug, wire outlet                     | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | W010002-004 |
| 25       | Pipe plug, drain                           | 2                                    | 2        | 2        | 2        | 2        | 2        | 2        | 2                                     | 2        | 2        | 2        | 2        | 2        | 2        | 2           | 2        | W010002-001 |
| 26       | Nameplate                                  | 1                                    | 1        | 1        | 1        | 1        | 1        | 1        | 1                                     | 1        | 1        | 1        | 1        | 1        | 1        | 1           | 1        | K060473-001 |
| 27       | Drivescrew                                 | 2                                    | 2        | 2        | 2        | 2        | 2        | 2        | 2                                     | 2        | 2        | 2        | 2        | 2        | 2        | 2           | 2        | W001012-048 |

XXX- Figure per model number

Table 2. Dimensions

| Torque<br>lb-ft | Model No.  |            | Thermal<br>Capacity<br>HPS/Min | Inertia WK <sup>2</sup><br>lb-ft <sup>2</sup> |       | Dimensions in inches |      |       |      |      |      |      |      |
|-----------------|------------|------------|--------------------------------|---|-------|----------------------|------|-------|------|------|------|------|------|
|                 |            |            |                                | Model   |       | C                    | N    | X     |      | AC   | D    |      | H    |
|                 |            |            |                                | -65   | -67   |                      |      | Model |      |      | MAX  | MIN  |      |
|                 |            |            |                                |   |       |                      |      | -65   | -67  |      |      |      |      |
| 25              | 6-81025-65 | 6-81025-67 | 15                             | 0.080   | 0.069 | 6.00                 | 1.75 | 1.31  | 1.00 | 1.73 | .065 | .040 | 1.31 |
| 35              | 6-81035-65 | 6-81035-67 | 15                             | 0.080   | 0.069 | 6.00                 | 1.75 | 1.31  | 1.00 | 1.73 | .065 | .040 | 1.31 |
| 50              | 6-82050-65 | 6-82050-67 | 17                             | 0.141   | 0.130 | 6.62                 | 2.25 | 1.81  | 1.50 | 2.35 | .065 | .040 | 1.31 |
| 70              | 6-82070-65 | 6-82070-67 | 17                             | 0.141   | 0.130 | 6.62                 | 2.25 | 1.81  | 1.50 | 2.35 | .065 | .040 | 1.31 |
| 75              | 6-83075-65 | 6-83075-67 | 19                             | 0.202   | 0.191 | 7.25                 | 2.75 | 2.31  | 2.00 | 2.98 | .070 | .045 | 1.31 |
| 105             | 6-83105-65 | 6-83105-67 | 19                             | 0.202   | 0.191 | 7.25                 | 2.75 | 2.31  | 2.00 | 2.98 | .070 | .045 | 1.31 |
| 125             | 6-84125-65 | 6-84125-67 | 21                             | 0.262   | 0.251 | 7.87                 | 3.25 | 2.81  | 2.50 | 3.60 | .080 | .055 | 1.43 |
| 175             | 6-85175-65 | 6-85175-67 | 21                             | 0.325   | 0.314 | 8.50                 | 3.87 | 3.44  | 3.12 | 4.23 | .080 | .055 | 1.31 |

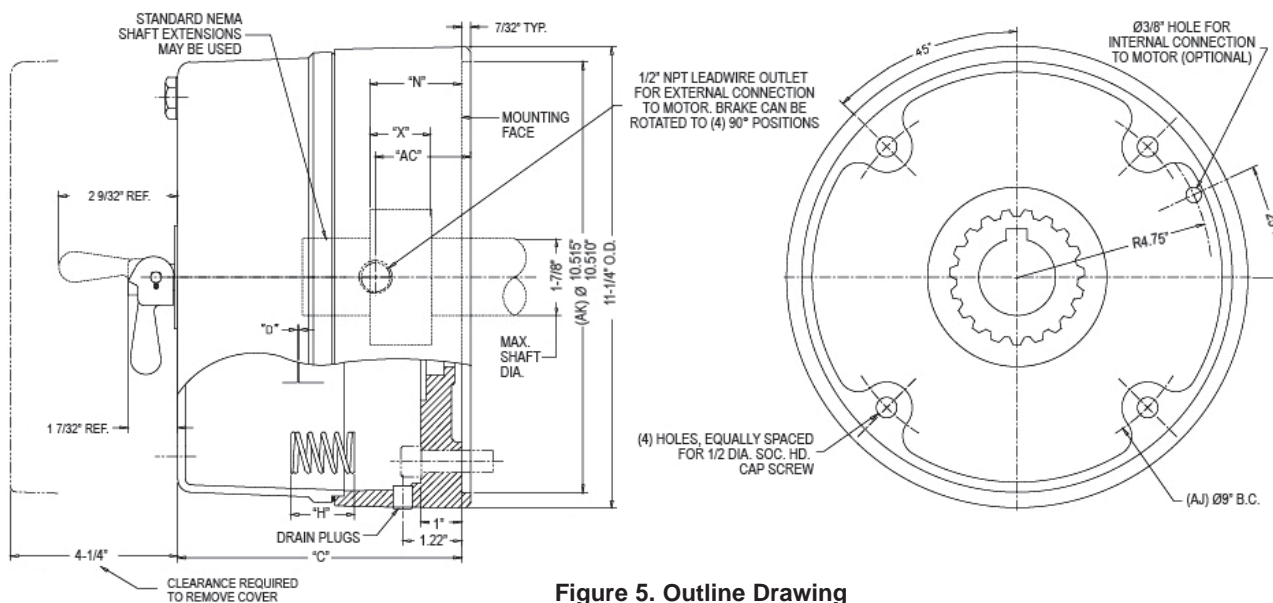


Figure 5. Outline Drawing

## TROUBLE SHOOTING

### A. IF BRAKE DOES NOT RELEASE:

1. Check brake visually for broken or damaged parts.
2. Check for broken leadwire or bad electrical connection.
3. Check for correct voltage. Line voltage must correspond to the voltage for which the brake coils are connected. If the line voltage is more than 10% below the voltage for which the brake coils are connected, the magnet will not pull in, causing the coils to burn out within minutes. If the line voltage is more than 10% above the voltage for which the brake coils are connected, the coils will overheat and burn out.
4. Check for burned-out coils (coils may be charred or burned).
5. Check for excessive magnet gap. (See WEAR ADJUSTMENT.)
6. Check for failure or power supply to brake.

### B. IF BRAKE DOES NOT STOP:

1. Check brake visually for broken or damaged parts.
2. Make certain hub has not shifted position on the motor shaft and that all rotating discs are fully engaged on the hub.
3. Check that the manual release is in the normal position.
4. Check disc wear. (See WEAR ADJUSTMENT.)

### C. IF BRAKE CHATTERS OR HUMS:

1. See that magnet faces are clean. To remove dirt, insert a clean sheet of paper between magnet faces and energize brake. Move paper around between faces to dislodge dirt, then remove paper.
2. Check for low voltage. Magnet will not pull in, and coils will burn out if line voltage is beyond 10% below the voltage the brake coils are connected for.
3. See that magnet faces are parallel within tolerance. Readjust magnet gap to "D" min. (See WEAR ADJUSTMENT.)
4. Check if shading coil (14D) is cracked, broken or out of position (single phase only).

### D. IF MANUAL RELEASE DOES NOT WORK:

1. Check for broken or damaged parts.
2. Adjust nut (15) on manual release.

