



# 80 Series 2 Post NEMA 4 Enclosure Brake Instructions

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.

## 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.

**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. If brake includes foot mounting bracket or adaptor, specify.)

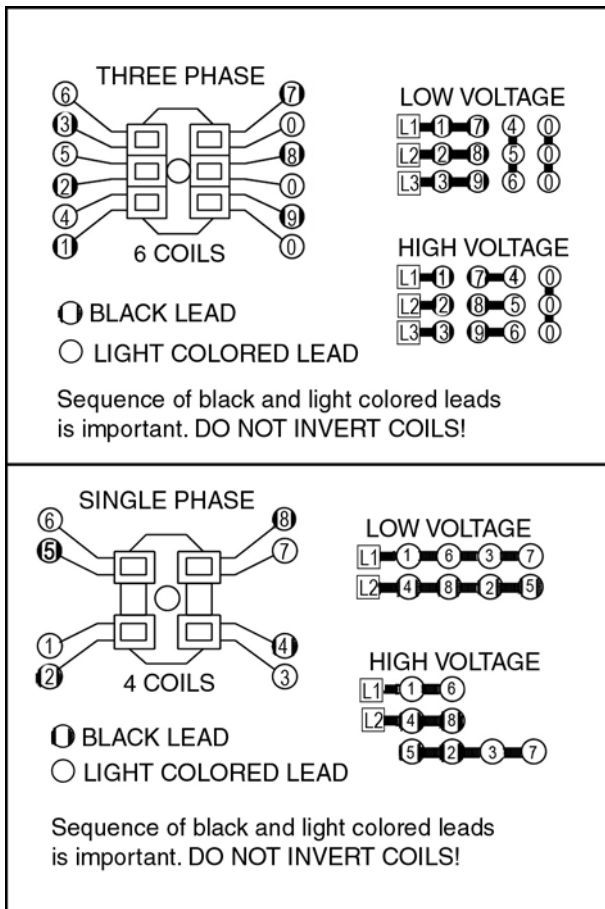


Figure 2. Wiring Diagram

G080342-001

## INSTALLATION

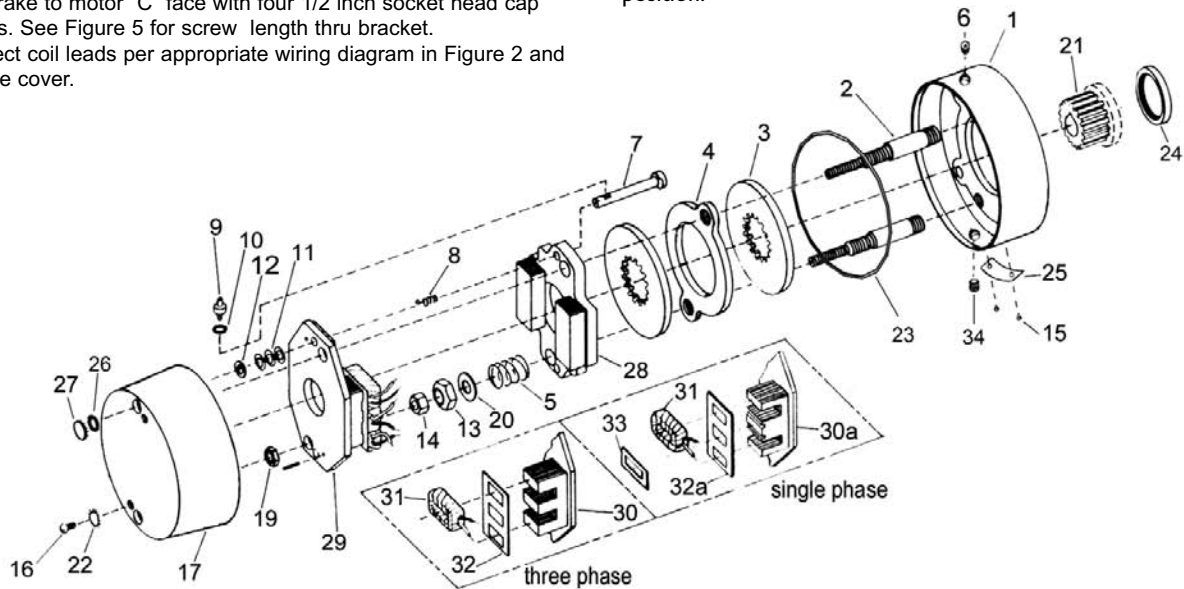
(See Figures 3 & 5, Tables 1 & 2)

1. Remove hub (21) 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 (16) and cover (17).
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.

## MANUAL RELEASE

(See Figure 3)

To operate release, rotate two rods (7) clockwise until stop screw (9) hits pin. Brake will remain in released position until rods are manually returned to original position, or until electrical power is restored which automatically returns the release rods to the set position.



MAGNET COIL ASSEMBLY

Figure 3. Exploded View of Brake

## 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 two locknuts (13) counterclockwise, increasing dimension "H". All two 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 (14 and 19). 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 (3) wears down to a thickness of 7/32", replace disc.

1. Remove cover screws (16) and cover (17).
2. Unhook loop of torsion springs (8) from pins at rear of magnet plate (29). Remove release stop screws (9), washers (12) and shims (11).
3. Remove adjusting lock nuts (19), magnet assembly (29), adjusting nuts (14), torque nuts (13), washers (20), torque spring (5) and pressure plate (28).
4. Remove friction disc (3) and stationary disc (4). Replace worn friction discs.
5. Reassemble all parts in reverse order. Set spring length "H" and magnet gap "D". Assemble manual release. See following paragraph.

## MANUAL RELEASE ASSEMBLY

(See Figure 3)

When assembling a standard manual release mechanism (Figure 3), add only enough shim washers (11) to obtain proper release action. Too many shim washers will prevent automatic reset when electrical power is applied. Too few washers will prevent the motor shaft from turning freely. Replace stop screws (9). Wind each torsion spring (8) approximately 1/4 turn and hook spring loop over pin.

## MAGNET COIL REPLACEMENT

(See Figures 3 & 4)

Remove magnet assembly as outlined under FRICTION DISC REPLACEMENT.

Coils (31) 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 (32 or 32a) 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.

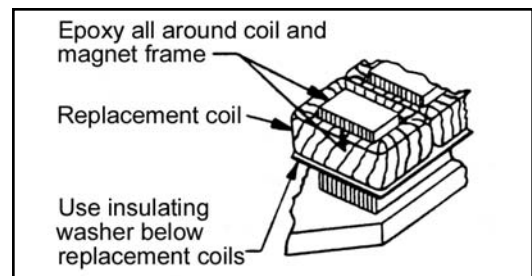


Figure 4. Fastening of Replacement Magnet Coils

**Table I. Parts List**

| ITEM NO. | PCS. REQ'D | DESCRIPTION                                | PART NO.    |
|----------|------------|--|-------------|
| 1        | 1          | Bracket – 1Disc                            | L080044-001 |
| 1        | 1          | Bracket – 2 Disc                           | L080044-002 |
| 1        | 1          | Bracket – 3 Disc                           | L080044-003 |
| 1        | 1          | Bracket – 4 Disc                           | L080044-004 |
| 1        | 1          | Bracket – 5 Disc                           | L080044-005 |
| 2        | 2          | Stud – 1 Disc                              | G070213-001 |
| 2        | 2          | Stud – 2 Disc                              | G070213-002 |
| 2        | 2          | Stud – 3 Disc                              | G070213-003 |
| 2        | 2          | Stud – 4 Disc                              | G070213-004 |
| 2        | 2          | Stud – 5 Disc                              | G070213-005 |
| 3        | (1)        | Rotating Friction Disc                     | H080002-003 |
| 4        | (2)        | Stationary Disc                            | K080001-003 |
| 5        | 2          | Torque Spring (25, 50, 75 Lb. Ft.)         | G080001-001 |
| 5        | 2          | Torque Spring (35, 70,105,125,175 Lb. Ft.) | G080002-001 |
| 6        | 1          | Plug                                       | W010002-004 |
| 7        | 2          | Manual Release Rod                         | G070001-002 |
| 8        | 2          | Manual Release Spring                      | G060010-001 |
| 9        | 2          | Manual Release Stop Screw                  | G060029-001 |
| 10       | 2          | Manual Release Lockwasher                  | W004007-007 |
| 11       | As Req'd   | Manual Release Shims                       | W004004-004 |
| 12       | 2          | Washer                                     | W004004-003 |
| 13       | 2          | ESNA Nut                                   | W003001-022 |
| 14       | 2          | Hex Nut                                    | W003003-023 |
| 15       | 2          | Drive Screw                                | W001012-048 |
| 16       | 2          | Cover Screw                                | W001002-103 |
| 17       | 1          | Cover                                      | K080048-002 |
| 18       | 1          | Instruction Label (not shown)              | H060058-002 |
| 19       | 2          | ESNA Nut                                   | W003001-020 |
| 20       | 2          | Washer                                     | W004004-001 |
| 21       | 1          | Hub  | *           |
| 22       | 2          | Ext. Tooth Lockwasher                      | W011002-005 |
| 23       | 1          | Cover o-ring                               | W006001-011 |
| 24       | 1          | Hub Seal                                   | W011001-008 |
| 25       | 1          | Nameplate                                  | N/A         |
| 26       | 1          | Cap Gasket                                 | G070381-002 |
| 27       | 2          | Plug                                       | G060170-002 |
| 28       | 1          | Pressure Plate Assembly                    | K080012-001 |
| 29       | 1          | Magnet Assembly                            | *           |
| 30       | 1          | Magnet Plate w/o Coils 3p                  | K080014-001 |
| 30a      | 1          | Magnet Plate w/o Coils 1p                  | K080015-001 |
| 31       | 1          | Magnet Coil                                | *           |
| 32       | 2          | Insulating Washer 3p                       | G080016-001 |
| 32a      | 2          | Insulating Washer 1p                       | G080148-001 |
| 33       | 2          | Shading Coil, 1p only                      | G080022-001 |
| 34       | 1          | Drain Plug                                 | W010002-001 |

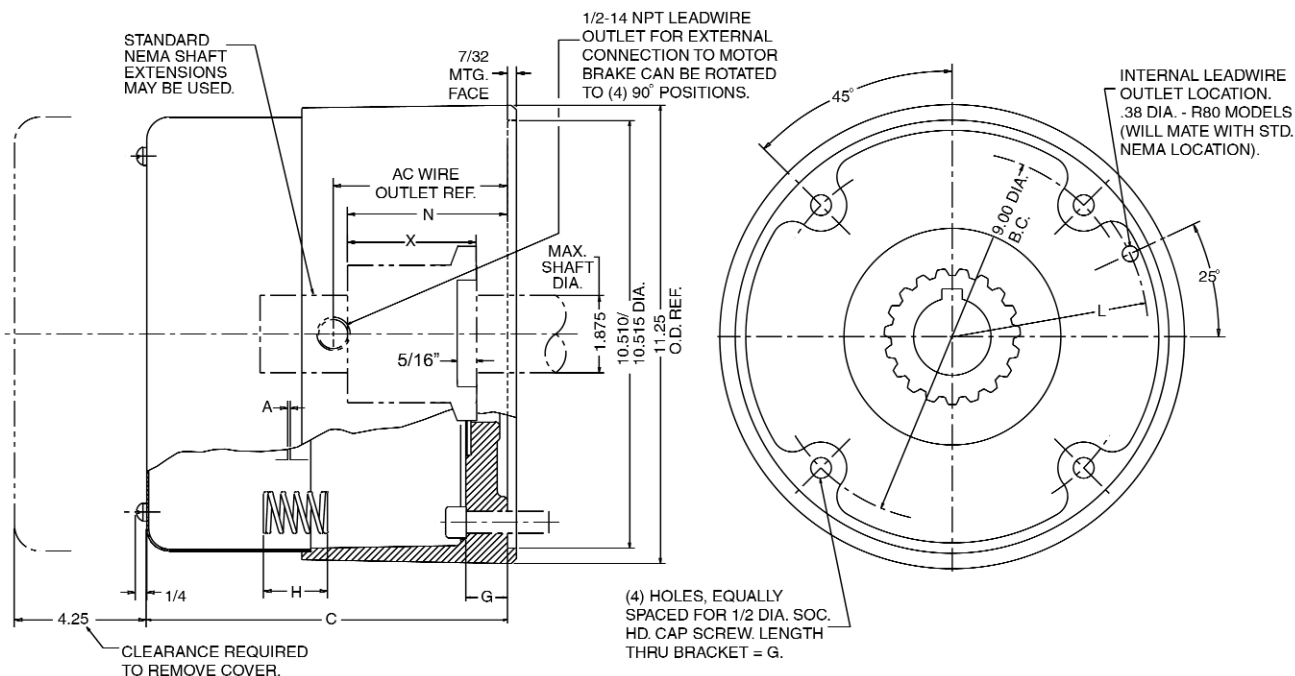
(1) Number of rotating discs is shown as second digit of Model No.  
Example: R82050-4

(2) Number of stationary discs is one less than the number of rotating discs.

\* Part number will vary with voltage, frequency, bore size etc. C all for details.

**Table 2. Standard Housing**

| MODEL NO. | TORQUE LB. FT. | WEIGHT LBS. | THERMAL CAPACITY HPS/MIN | INERTIA WK <sup>2</sup> LB. FT. <sup>2</sup> | DIMENSIONS |      |      |      |      |      |      |
|-----------|----------------|-------------|--------------------------|--|------------|------|------|------|------|------|------|
|           |                |             |                          |  | C          | D    |      | H    | N    | AC   | X    |
| R81025-4  | 25             | 75          | 15                       | .084   | 6.00       | .065 | .040 | 1.28 | 1.75 | 1.72 | 1.31 |
| R81035-4  | 35             | 75          | 15                       | .084   | 6.00       | .065 | .040 | 1.28 | 1.75 | 1.72 | 1.31 |
| R82050-4  | 50             | 83          | 17                       | .158   | 6.62       | .065 | .040 | 1.28 | 2.25 | 2.34 | 1.81 |
| R82070-4  | 70             | 83          | 17                       | .158   | 6.62       | .065 | .040 | 1.28 | 2.25 | 2.34 | 1.81 |
| R83075-4  | 75             | 88          | 19                       | .233   | 7.25       | .070 | .040 | 1.28 | 2.75 | 2.97 | 2.31 |
| R83105-4  | 105            | 88          | 19                       | .233   | 7.25       | .070 | .040 | 1.28 | 2.75 | 2.97 | 2.31 |
| R84125-4  | 125            | 93          | 21                       | .307   | 7.87       | .080 | .050 | 1.37 | 3.25 | 3.59 | 2.81 |
| R85175-4  | 175            | 99          | 21                       | .384   | 8.50       | .080 | .050 | 1.28 | 3.87 | 4.22 | 3.44 |



**Figure 5. Standard Housing**

## 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 (33) 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. Check return spring (8). Brake will not reset automatically if this spring is broken.
3. Check quantity of shim washers (11) under release stop screws. (See MANUAL RELEASE ASSEMBLY.)

