



## 70 Series 4 Post NEMA 2 Enclosure Yale/Lift-Tech 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** - 182TC, 184TC, 213TC, 215TC, 254TC, 256TC.

**HOUSINGS** - Cast iron bracket, stamped steel cover.

**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.

### 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

(For electrical parts specify voltage, phase & frequency.)

#### REPLACEMENT BRAKE

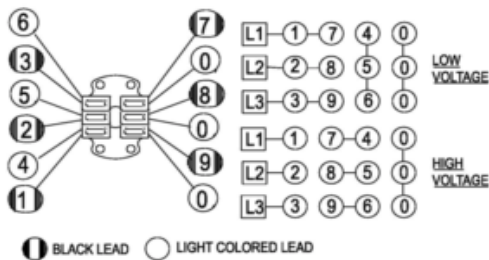
Model Number

Voltage, Phase & Frequency

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

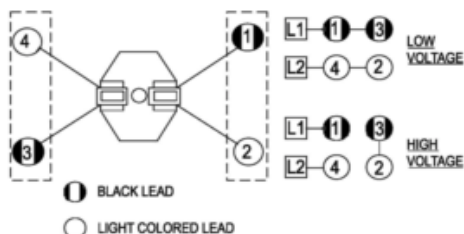
Note: Dings Company does not supply a hub with this style brake.

### THREE PHASE



Sequence of black and light colored leads is important. DO NOT INVERT COILS!

### SINGLE PHASE



Sequence of black and light colored leads is important. DO NOT INVERT COILS!

Figure 2. Wiring Diagram

## INSTALLATION

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

1. Use existing brake hub. Hub is not provided by Dings Company.
2. Remove cover screws (24) and cover (23).
3. Place brake on motor, guiding discs on hub.
4. Bolt brake to motor "C" face with four socket head cap screws. See Figure 3 to determine bolt length.
5. Connect coil leads per appropriate wiring diagram in Figure 2 and replace cover.

## MANUAL RELEASE

(See Figure 5)

To operate release, rotate two rods(10) clockwise until stop screw (14) 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.

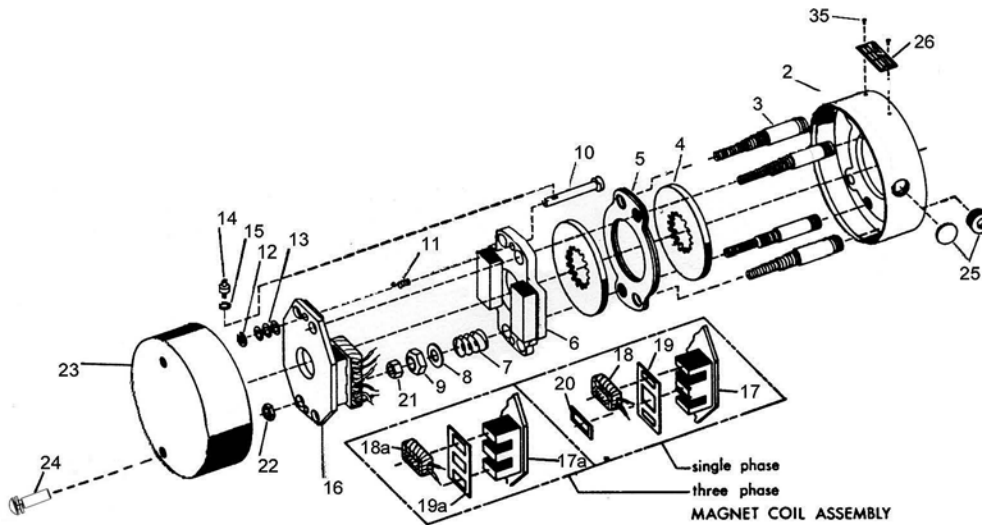


Figure 3. Exploded View of Brake

## 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 four locknuts (9) 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 (21 and 22). 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.**

## FRICITION DISC REPLACEMENT

(See Figures 3 & 5, Table 2)

\*When the rotating friction disc (4) wears down to a thickness of 7/32", replace disc.

1. Remove cover screws (24) and cover (23).
2. Unhook loop of torsion springs (11) from pins at rear of magnet plate (16). Remove release stop screws (14), washers (12) and shims (13).
3. Remove adjusting lock nuts (22), magnet assembly (16), adjusting nuts (21), torque nuts (9), washers (8), torque spring (7) and pressure plate (6).
4. Remove friction disc (4) and stationary disc (5). 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 (13) 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 (14). Wind each torsion spring (11) 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 (18) 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 (19 or 19a) 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.

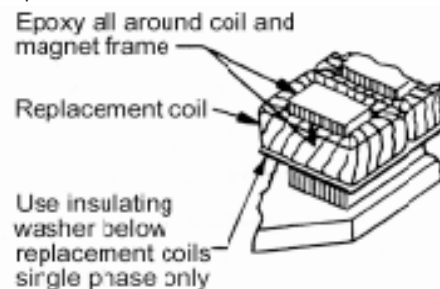


Figure 4. Fastening of Replacement Magnet Coils

**Table 1. Parts List**

ITEM Number	Qty. Required	Description	Part Number
	1	Hub (not supplied by Dings Company)	N/A
2	1	Bracket - 1 Disc	L070260-001
2	1	Bracket - 2 Disc	L070260-002
2	1	Bracket - 3 Disc	L070260-003
2	1	Bracket - 4 Disc	L070260-004
3	4	Stud - 1 Disc	G070213-001
3	4	Stud - 2 Disc	G070213-002
3	4	Stud - 3 Disc	G070213-003
3	4	Stud - 4 Disc	G070213-004
4	*	Rotating Friction Disc	H070103-008
5	**	Stationary Disc	K070474-002
6	1	Pressure Plate	K070307-001
7	4	Torque Spring (7 lb-ft)	G070068-001
7	4	Torque Spring (19 lb-ft)	G070525-001
7	4	Torque Spring (11, 27, 38, 53 lb-ft)	G080192-001
8	4	Torque Spring Washer	W004004-001
9	4	Torque Adjust Nut	W003001-022
10	2	Manual Release Rod	G070001-002
11	2	Manual Release Spring	G060010-001
12	2	Manual Release Washer	W004004-003C
13	As Req'd	Manual Release Shim	W004004-004C
14	2	Manual Release Stop Screw	G060029-001
15	2	Manual Release Lockwasher	W004007-007
16	1	Magnet Assembly, Single Phase - includes items 17-20	***
16	1	Magnet Assembly, Three Phase - includes items 17-19; 230/460V, 3 Phase, 60Hz ***	K070339-001
16	1	Magnet Assembly, Three Phase - includes items 17-19; 200/400V, 3 Phase, 60Hz ***	K070339-022
16	1	Magnet Assembly, Three Phase - includes items 17-19; 115/230V, 3 Phase, 60Hz ***	K070339-012
16	1	Magnet Assembly, Three Phase - includes items 17-19; 287/575V, 3 Phase, 60Hz ***	K070339-021
17	1	Magnet Plate w/o Coils, Single Phase	K070352-001
17a	1	Magnet Plate w/o Coils, Three Phase	K070306-001
18	4	Magnet Coil - Single Phase	***
18a	6	Magnet Coil - Three Phase 230/460V, 3 Phase, 60Hz ***	H020003-001
18a	6	Magnet Coil - Three Phase 200/400V, 3 Phase, 60Hz ***	H020003-022
18a	6	Magnet Coil - Three Phase 115/230V, 3 Phase, 60Hz ***	H020033-012
18a	6	Magnet Coil - Three Phase 287/575V, 3 Phase, 60Hz ***	H020003-021
19	2	Insulating Washer - Single Phase	G070029-001
20	2	Shading Coil, Single Phase Only	G070032-001
21	4	Gap Adjusting Nut	W003003-023
22	4	Gap Adjusting Nut	W003001-020
23	1	Cover, Standard	K070471-001
24	2	Cover Screw with Lockwasher	W001049-006
25	1	Conduit Hole Plug	W008003-001
26	1	Nameplate	Per Order
35	2	Drive Screw	W001012-048

\*Number of rotating discs is shown as second digit of model number.

Example: 72019-54 has 2 rotating discs

\*\*Number of stationary discs is one less than the number of rotating discs.

\*\*\*Contact factory for other voltage ratings. Advise brake model number, voltage rating, and frequency.

Table 2. Standard Housing

Model Number	Torque lb-ft	Weight lbs	Thermal Capacity HPS/MIN	Inertia WK <sup>2</sup> Lb-ft <sup>2</sup>	Dimensions				
					C	D		H	AC
						MAX	MIN		
71007-54	7	28	10	0.028	6.00	.060	.035	1.37	1.48
71011-54	11	28	10	0.028	6.00	.060	.035	1.50	1.48
72019-54	19	33	11	0.051	6.62	.060	.035	1.46	2.11
72027-54	27	33	11	0.051	6.62	.065	.040	1.43	2.11
73038-54	38	38	12	0.075	7.25	.065	.040	1.43	2.73
74053-54	53	43	13	0.099	7.87	.065	.040	1.43	3.36

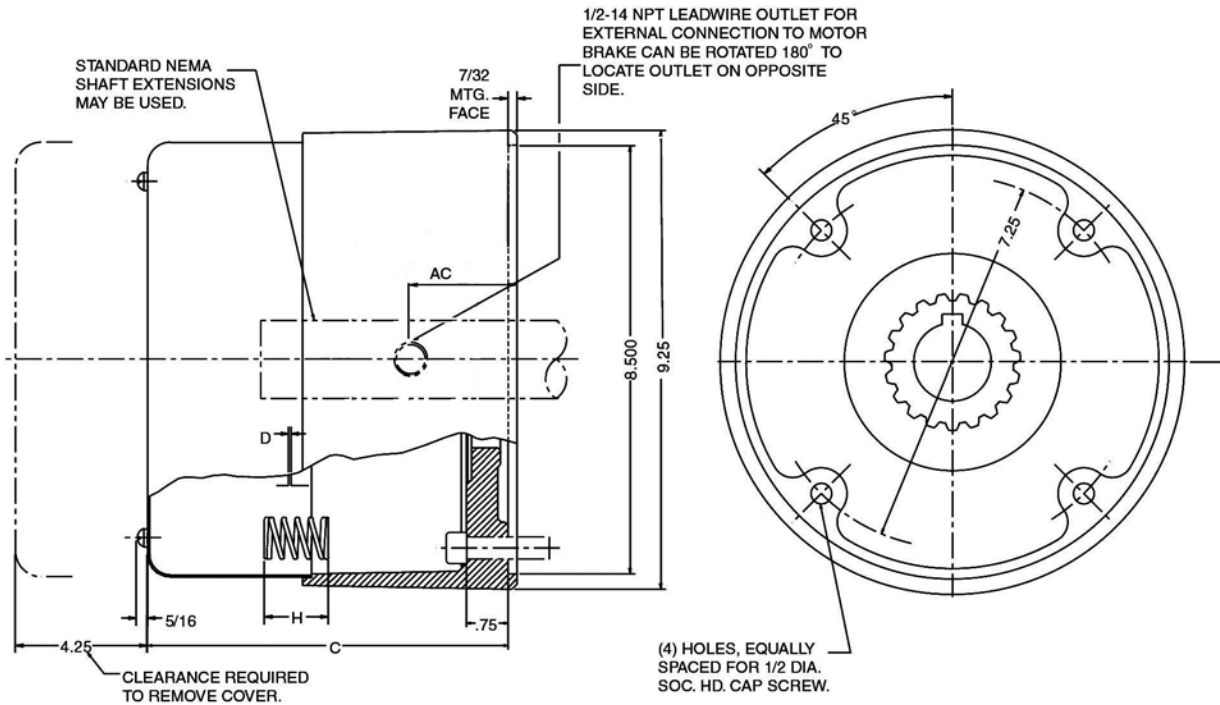


Figure 5. Standard Housing

## 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 (20) 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 (11). Brake will not reset automatically if this spring is broken.
3. Check quantity of shim washers (13) under release stop screws. (See MANUAL RELEASE ASSEMBLY.)