



## 60 Series Hazardous Brake Instructions

**READ THIS BULLETIN CAREFULLY BEFORE INSTALLING OR OPERATING THE 60 SERIES BRAKE. FAILURE TO COMPLY WITH THESE INSTRUCTIONS CANCELS ALL WARRANTIES SINCE THE SAFETY OF THE UNIT MAY BE ENDANGERED BY IMPROPER INSTALLATION OR OPERATING PROCEDURES.**



Figure 1

MOTOR MOUNTED*			FOOT MOUNTED		
	ENCLOSURE SUFFIX			ENCLOSURE SUFFIX	
MODEL NO.	CAST IRON	ALUMINUM	MODEL NO.	CAST IRON	ALUMINUM
8-61001	-66B	-67B	F8-61001	-66B	-67B
8-61003	-66B	-67B	F8-61003	-66B	-67B
8-62006	-66B	-67B	F8-62006	-66B	-67B
8-63010	-66B	-67B	F8-63010	-66B	-67B
8-63015	-66B	-67B	F8-63015	-66B	-67B

\*If a hazardous location brake is purchased by other than an authorized electric motor manufacturer, a Foot Mounted brake must be purchased to obtain the UL label.

### DESCRIPTION

The 60 Series Brake is a direct acting, electro magnetically released, spring set unit that utilizes rotating and stationary disc contact to supply positive braking action and quick release and setting capabilities at all times. Brakes which are not provided with a floor mounting bracket are intended to be mounted as an integral part of electric motors listed for corresponding hazardous locations where the acceptability of the combinations has been determined by Underwriter's Laboratories, Inc. The explosion-proof assembly is completed by assembly of the brakes to the motors.

### CAUTION

**DO NOT OPERATE MANUAL RELEASE OR ENERGIZE BRAKE COIL BEFORE INSTALLATION IN ORDER TO PRESERVE PRE-ALIGNMENT OF ROTATING DISCS FOR EASE OF INSTALLATION.**

**USE ONLY HUB FURNISHED BY DINGS SPECIFICALLY FOR USE IN HAZARDOUS LOCATION BRAKES. DO NOT OPERATE BRAKES IN EXPLOSIVE ATMOSPHERE WITH COVER OR COVER BOLTS REMOVED.**

### MANUAL RELEASE (See Figure 7)

To manually release brake, rotate release knob (41) clockwise until it strikes stop-pin (39). Brake will remain released until release knob is rotated counterclockwise, or until power is restored, automatically resetting the brake.

### THERMAL RELEASE

If the brake overheats, the thermal release mechanism will release spring pressure on the friction discs, releasing brake. To reset thermal release, allow brake to cool, then rotate release knob (41) counterclockwise until it strikes the stop-pin. Check brake operation as overheating may indicate a broken lead wire or burned out coil.

The thermal release mechanism has been calibrated at the factory and the setting of the bimetal element and control rod **MUST NOT BE DISTURBED**. If the mechanism does not function properly, the complete operator assembly (44) must be returned to the factory for adjustment and calibration.

## WARNINGS

- A. Read this bulletin carefully before installing or operating the brakes. Failure to comply with the installation or operating instructions cancels all warranties and may cause injury to personnel and damage to property.
- B. **DESCRIPTION**  
The 60 and 70 Series brake for hazardous location is a direct acting, electromagnetically released, spring set brake that utilizes rotating and stationary disc contact to supply positive braking action. Brakes can be mounted independently of any other equipment by using a U.L. listed foot mounting bracket, or mounted in a location approved by U.L. to an electric motor listed for corresponding hazardous locations. The brakes are equipped with a thermal overload mechanism that will prevent the external surfaces of the unit to reach or exceed the lowest temperature for the Classes and Groups for which the brakes are listed.
- C. **OPERATING INFORMATION**  
When the external surface of the brake approaches the specified temperature limit, the thermal overload mechanism will automatically release the brake and hold it in the released position. The thermal overload mechanism prevents the surface temperature of the brake from rising to a level that could ignite the surrounding gases or dusts by releasing the brake and therefore, stopping a further increase in temperature. Once the brake has been released by the thermal overload mechanism, control over the rotation of the motor and movement of the load is lost. This uncontrolled rotation of the motor and movement of the load could cause injury to personnel and damage to property.
- The brake is also equipped with a thermal switch. When properly wired into the motor starting circuit, the thermal switch shuts down the motor before the thermal overload mechanism releases the brake. When the thermal switch activates, it stops the motor and load, preventing the uncontrolled motion described above.

The thermal overload mechanism can be reset manually after a cooling off period. Before resetting, the cause for actuating the thermal overload mechanism should be removed.

To minimize the possibility of overheating the brake to a point where the thermal overload mechanism will be actuated, the performance of the brake has to be matched to the requirements of the application.

When selecting the brake model, consideration has to be given to brake torque, thermal capacity, electrical power supply, housing material and any unusual conditions.

#### BRAKE TORQUE

As a general rule, brake torque is matched to the full load motor torque (brake and motor shaft at the same speed). Depending on the type of application, the torque sometimes is increased by a safety factor of 1.5 to 2. If factors such as stopping time, travel distance during stopping and others, are important, the exact torque requirement has to be calculated, using the inertia and speed of all moving parts.

#### THERMAL CAPACITY

Thermal capacity describes the capacity of the brake to perform the maximum number of stops without excessive heat buildup that will actuate the thermal overload mechanism or damage internal brake parts. The maximum number of stops depends on the rating of the brake, inertia to be stopped and speed from which stops are made. To calculate the thermal capacity requirements of the application, inertia and speed of all moving parts and the number of stops of one full operating cycle must be known.

#### ELECTRICAL POWER SUPPLY

The coil of the electromagnet, which supplies the releasing force under normal operating conditions, will operate properly with a tolerance of plus or minus 10% of rated voltage. A voltage higher than 110% will shorten the life of the coil considerably due to the higher temperature generated inside the coil. A voltage of less than 90% may prevent the armature from moving towards the magnet frame. If this occurs, the coil will burn out within months.

#### HOUSING MATERIAL

The 60 Series H.L. brake is available with an aluminum or cast iron housing. The selection depends on the environment. Certain vapors or liquids prevent the use of the lighter aluminum housing.

#### UNUSUAL CONDITIONS

Please consult Dings Home Office, if ambient temperature is above 40°C (104°F), brake shaft speed is over 3600 RPM, or any other unusual conditions exist.

List of Dings Brake Models

Listed by Underwriter’s Laboratories, Inc.

For Hazardous Locations, Class I, Group C and D  
 Class II, Group E, F and G  
 Temperature Code - T3C

For Direct Mounting to  
 Motor “C” Face.  
 NEMA Motor Frame Sizes  
 56C, 66C, 143TC, 145TC

Model No.*	Torque Ft. Lbs.	Thermal Capacity HP Sec./Min.
8-61001-xx	1.5	7
8-61003-xx	3	7
8-62006-xx	6	8
8-63010-xx	10	9
8-63015-xx	15	9

For Adapter Mounting to  
 Motor “C” Face.  
 NEMA Motor Frame Sizes  
 182TC, 184TC, 213TC,  
 215TC, 245TC, 256TC

Model No.*	Torque Ft. Lbs.	Thermal Capacity HP Sec./Min.
A8-61001-xx	1.5	7
A8-61003-xx	3	7
A8-62006-xx	6	8
A8-63010-xx	10	9
A8-63015-xx	15	9

For Foot Mounting

Model No.*	Torque Ft. Lbs.	Thermal Capacity HP Sec./Min.
F8-61001-xx	1.5	7
F8-61003-xx	3	7
F8-62006-xx	6	8
F8-63010-xx	10	9
F8-63015-xx	15	9

\* Complete Model Number by Adding  
 Suffix -66B for Cast Iron Housing  
 Suffix -67B for Aluminum

## INSTALLATION OF BRAKE ON MOTOR ENDSHIELD (See Figure 7)

STANDARD MOTOR "C" FACE MOUNTING NEMA FRAME SIZES 56C, 66C, 143TC, 145TC					
MODEL NO.		WT. LB.	TORQUE LB. FT.	DIMENSIONS AH	
CAST IRON	ALUMINUM			MAX.	MIN.
8-61001-66B		40.5	1.5	2 3/8	1 3/4
	8-61001-67B	23	1.5	2 3/8	1 3/4
8-61003-66B		40.5	3	2 3/8	1 3/4
	8-61003-67B	23	3	2 3/8	1 3/4
8-62006-66B		43	6	2 3/4	2
	8-62006-67B	24	6	2 3/4	2
8-63010-66B		45.5	10	3 1/8	2 1/4
	8-63010-67B	25.5	10	3 1/8	2 1/4
8-63015-66B		45.5	15	3 1/8	2 1/4
	8-63015-67B	25.5	15	3 1/8	2 1/4

Do not operate manual release or energize brake coil before installation in order to preserve pre-alignment of rotating disc for easy installation of brake to motor.

Because of the close fit on all joints (bracket, cover, hub), care should be taken to prevent damage to all machined surfaces.

Do not operate brake in hazardous location with cover removed. All testing must be done in a non-explosive atmosphere.

1. Remove hub (6) from brake and mount hub with key (not supplied by Dings) on motor shaft per dimension shown in Figure 5. Be sure that hub used is item supplied by Dings for hazardous location applications. Tighten both set screws to 8-10 lb. ft. torque.
2. Cast Iron Enclosure: Remove four cover bolts (42A) and lockwashers (43) and remove cover (38A).  
Cast Aluminum Enclosure: Remove four cover bolts (42B), flat washer (9), locknut (8) and cover (38B).
3. Inspect motor "C" flange and remove any nicks or burrs. This will assure a precision fit of brake to motor flange. Slide brake over hub (6), engaging teeth of rotating disc (2) and hub.

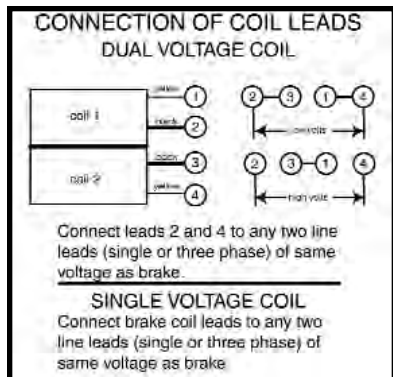


Figure 2.

4. Install four mounting bolts (10) and tighten to 40 lb. ft. torque. Install four locking set screws (11) and tighten to 40 lb. ft. torque. This seals flame path around mounting bolts. Check rotation of hub to make certain it does not rub in bracket (5). Diametrical clearance of hub outside diameter to bracket bore shall not exceed .024".
5. Connect brake coil leads to any two line leads of same voltage as brake. All wiring should be positioned to prevent pinching or chafing and all connections well taped to prevent grounding.
6. Replace cover (38A or 38B). Make certain that two pins of release shaft (35) fit over roll pin (32). A soft mallet may be used to tap cover in place. Fasten with four bolts (42A or 42B), washers (9 or 43) and locknuts (8). A loose or missing bolt will render the brake unsafe for operation in hazardous locations.

## INSTALLATION OF BRAKE WITH ADAPTER ON MOTOR ENDSHIELD (See Figure 3)

ADAPTER MOTOR "C" FACE MOUNTING NEMA FRAME SIZES 182TC, 184TC, 213TC, 215TC, 254TC, 256TC					
MODEL NO.		WT. LB.	TORQUE LB. FT.	DIMENSIONS AH	
CAST IRON	ALUMINUM			MAX.	MIN.
A8-61001-66B		47.5	1.5	2 3/16	2 3/16
	A8-61001-67B	30	1.5	2 3/16	2 3/16
A8-61003-66B		47.5	3	2 3/16	2 3/16
	A8-61003-67B	30	3	2 3/16	2 3/16
A8-62006-66B		50	6	3 3/16	2 7/16
	A8-62006-67B	31	6	3 3/16	2 7/16
A8-63010-66B		52.5	10	3 9/16	2 11/16
	A8-63010-67B	32.5	10	3 9/16	2 11/16
A8-63015-66B		52.5	15	3 9/16	2 11/16
	A8-63015-67B	32.5	15	3 9/16	2 11/16

7. Inspect motor "C" flange and remove any nicks or burrs. This will insure a precision fit of adapter to the motor flange. Mount adapter to motor flange using the four bolts and lockwashers supplied. A soft mallet may be used to tap adapter into place. All bolts should be drawn up evenly and tight.

Check alignment of adapter. Clamp dial indicator to brake hub (position A) and measure pilot eccentricity. This must not exceed .002" total indicator reading for a full revolution of hub. Reposition dial indicator (position B) and check adapter face runout which must not exceed .004" total indicator reading for a full revolution of the hub. Remove hub (6) from brake and mount hub with key (not supplied by Dings) on motor shaft per dimension shown in Figure 3. Tighten both setscrews to 8-10 lb. ft. torque. Complete mounting of brake per paragraphs 2 through 6.

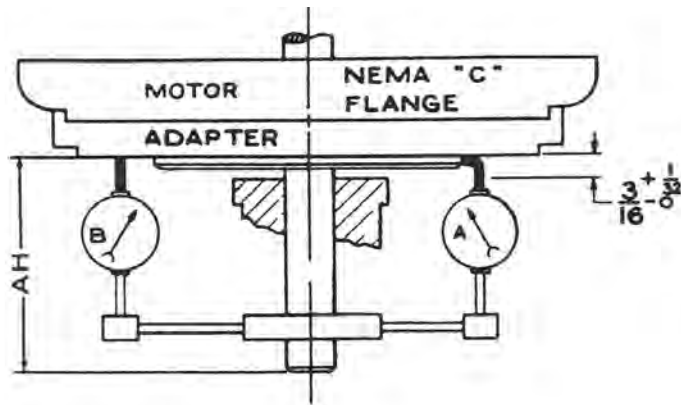


Figure 3. 60 Series Hazardous Location Brake - Adapter Installation

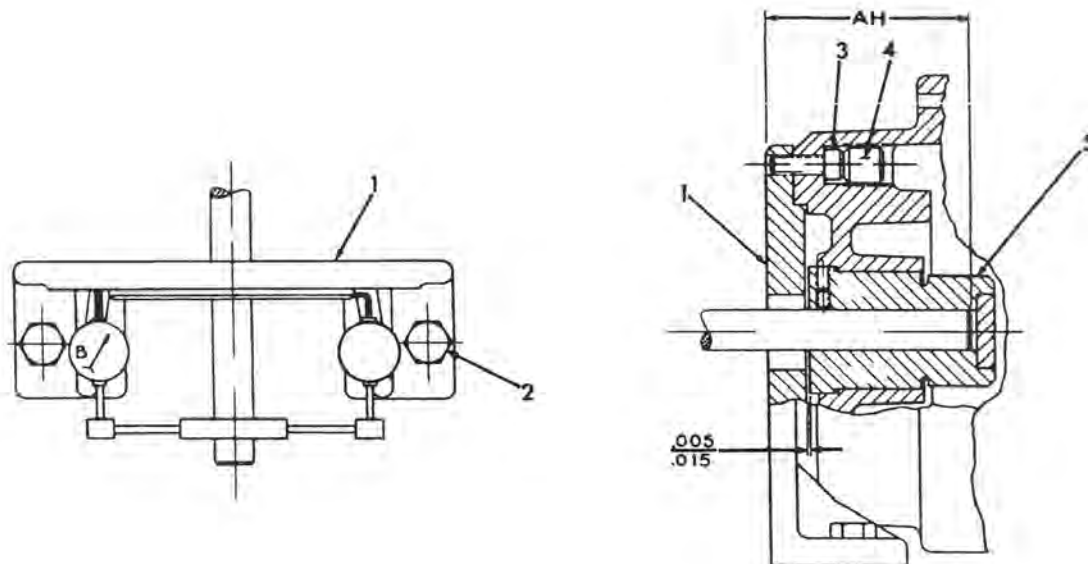


Figure 4. 60 Series Hazardous Location Brake - Foot Mount Installation

### INSTALLATION OF FOOT MOUNTING BRAKE

(See Figure 4)

8. Install bracket (1) over motor shaft extension and half-tighten cap screws (2). The distance from the mounting face of the bracket (1) to end of motor shaft must not exceed dimension "AH" max.
9. Clamp dial indicator "A" to motor shaft and position bracket (1) with shims as necessary, by tapping with a soft mallet until dial indicator does not read over .002" total change in one full revolution of the shaft. Move dial indicator to "B" and position bracket until dial indicator does not read over .004" total change in one full revolution of shaft.
10. Draw all bolts up tight. Recheck alignment with dial indicator. Readjust if necessary until tolerances are within limits with all bolts tight.
11. Remove hub (6, Figure 7) from brake and mount hub with key (not supplied by Dings) on motor shaft per dimension as shown in Figure 4. Tighten both setscrews to 8-10 lb. ft. torque. Complete mounting of brake (paragraph 2-6).

FOOT MOUNTING					
MODEL NO.		WT. LB.	TORQUE LB. FT.	DIMENSIONS AH	
CAST IRON	ALUMINUM			MAX.	MIN.
8-61001-66B		40.5	1.5	2 3/8	1 3/4
	8-61001-67B	23	1.5	2 3/8	1 3/4
8-61003-66B		40.5	3	2 3/8	1 3/4
	8-61003-67B	23	3	2 3/8	1 3/4
8-62006-66B		43	6	2 3/4	2
	8-62006-67B	24	6	2 3/4	2
8-63010-66B		45.5	10	3 1/8	2 1/4
	8-63010-67B	25.5	10	3 1/8	2 1/4
8-63015-66B		45.5	15	3 1/8	2 1/4
	8-63015-67B	25.5	15	3 1/8	2 1/4

## WEAR ADJUSTMENT (See Figures 5 & 7)

When armature plate (12) touches bracket (5), closing gap "B", adjustment for friction disc wear is required.

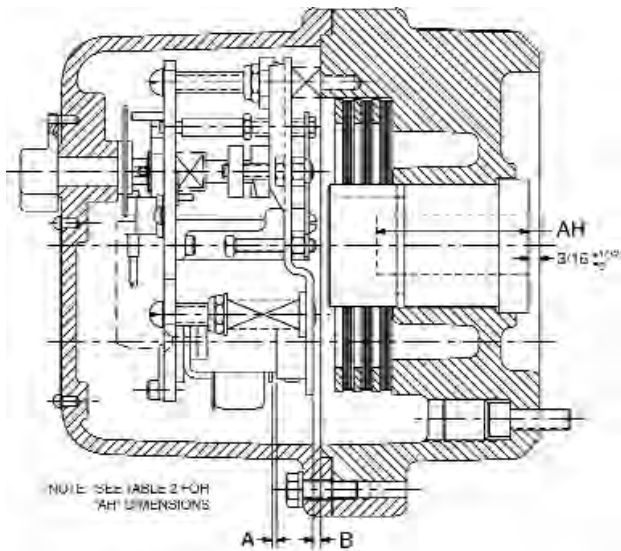


Figure 5. 60 Series H.L. Brake

12. To adjust, turn screws (16) clockwise until magnet gap "A" reads .040" to .045" at narrowest gap, for 1 and 2 disc models and reads .050" to .055" at narrowest gap for 3 disc models. Any delay in adjusting gap will result in eventual loss of torque.

## TORQUE ADJUSTMENT (See Figure 7)

13. Brake is factory set for rated torque. To increase stopping time and lower torque, turn locknuts (45) counterclockwise. Each full turn decreases torque by approximately 10%.

## FRICTION DISC REPLACEMENT (See Figure 7)

14. When total wear on rotating friction disc (2) reaches 1/16", replace disc as follows. Loosen three mounting screws (37), with release knob in release position, remove operator assembly as a unit, spring (13), and stationary disc (1).
15. Reassemble all parts in reverse order. Start all three of the mounting screws (37), then turn two adjustment screws (16) counterclockwise to allow the three operator assembly mounting posts to seat against the bracket (5), then tighten mounting screws. Readjust magnet gap, see "Adjustment for Wear", paragraph 12.

## MAGNET ASSEMBLY REPLACEMENT

(See Figures 5 & 7)

16. To replace magnet assembly, unscrew two flat head screws (31), remove magnet assembly (25) with shoulder nut (23) and rubber washer (24).
17. Replace complete magnet assembly (25) and reassemble parts in reverse order.
18. Magnet will be noisy, if magnet faces are not parallel in closed position. Turn pivot nut (15) until minimum noise is obtained.
19. If manual release does not work properly after resetting pivot nut, set magnet gap "A" to read .040" to .045" at narrowest gap, for 1 and 2 disc models and .050" to .055" at narrowest gap for 3 disc models. Turn release shaft clockwise until it strikes roll pin (39), releasing brake.
20. Adjust locknut (14) and jam nut (21B) until magnet gap "A" is .030" at center of magnet face width. Manual release must be in release position for this measurement.

## VERTICAL MOUNTING

### INSTALLATION AND ADJUSTMENT

Installation and adjustment of the vertically mounted Dings Hazardous Location Brake is the same as on the standard 60 Series Hazardous Location Brake.

### FRICITION DISC REPLACEMENT

When replacing friction discs, follow procedure outlined in paragraphs 14 and 15, with this addition: Care must be taken to insure proper insertion of the disc separating springs. Springs are color-coded for easy identification, and reference is made to spring color. See Figure 6. The installation order of the disc springs is dependent on brake mounting position, (above or below motor), so make sure to consult the correct diagram for spring location.

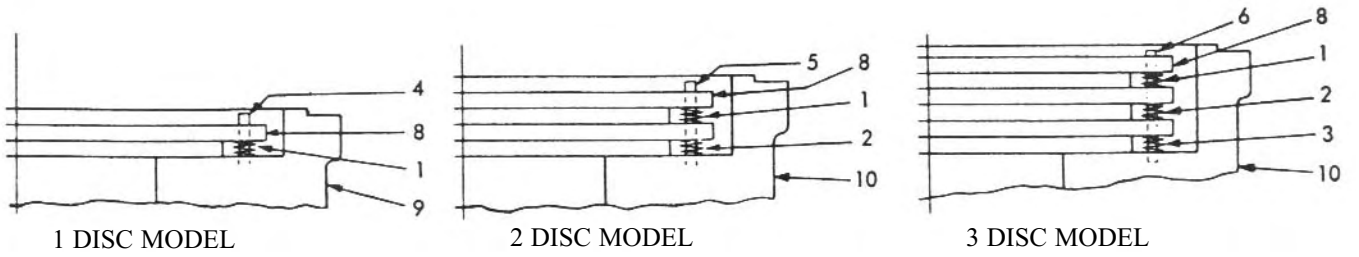
### Vertical Mounting Parts

ITEM	DESCRIPTION	PART NO.	NO. OF ROTATING DISCS					
			CAST IRON			ALUMINUM		
			1	2	3	1	2	3
1	SPRING (SILVER)	G060350-001	2	2	2	2	2	2
2	SPRING (BLACK)	G060350-002	-	2	2	-	2	2
3	SPRING (BRONZE)	G060350-003	-	-	2	-	-	2
4	ROLLPIN - 1/8" X 5/8"	W005003-071	2	-	-	2	-	-
5	ROLLPIN - 1/8" X 1"	W005003-077	-	2	-	-	2	-
6	ROLLPIN - 1/8" X 1-3/8"	W005003-080	-	-	2	-	-	2
7	STATIONARY DISC	H060203-003	-	-	-	1	1	1
8	STATIONARY DISC	H060203-004	1	2	3	1	2	3
9	BRACKET - C.I. (1 DISC)	L060032-101	1	-	-	-	-	-
10	BRACKET - C.I. (2 DISC)	L060032-102	-	1	-	-	-	-
11	BRACKET - C.I. (3 DISC)	L060032-103	-	-	1	-	-	-
12	BRACKET - C.A. (1 DISC)	L060042-001	-	-	-	1	-	-
13	BRACKET - C.A. (2 DISC)	L060042-002	-	-	-	-	1	-
14	BRACKET - C.A. (3 DISC)	L060042-003	-	-	-	-	-	1

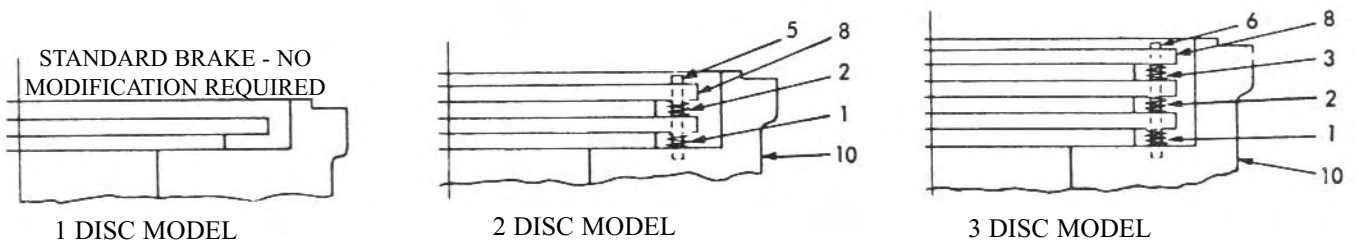


## 8-60 BRAKE WITH CAST IRON ENCLOSURE

### BRAKE MOUNTED ABOVE MOTOR

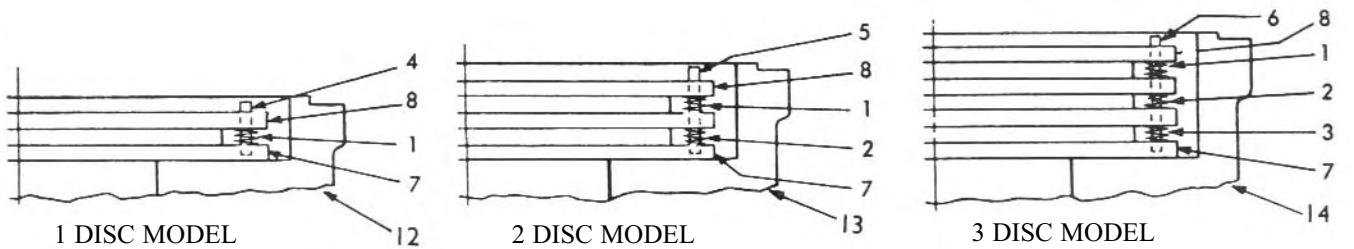


### BRAKE MOUNTED BELOW MOTOR



## 8-60 BRAKE WITH ALUMINUM ENCLOSURE

### BRAKE MOUNTED ABOVE MOTOR



### BRAKE MOUNTED BELOW MOTOR

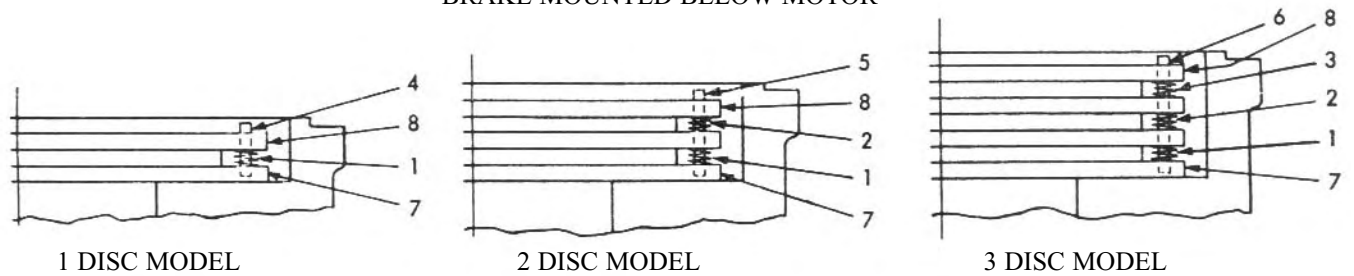


Figure 6. Vertical Mounting

ITEM	NO. REQ'D	PART NO.	DESCRIPTION
1	See note 1	H060147-001	Stationary Disc
2	See note 2	H060157-004	Rotating Disc
3	2	W001012-048	Name Plate Drive Screw, Type U
4	1	H060396-001	Name Plate
5A	1	L060032-***	Bracket (Cast Iron)
5B	1	L060042-***	Bracket (Cast Aluminum)
6	1	K060097-***	Hub
7	1	G060380-005	Condulet Assembly
8	4	W003013-003	Locknut - Esna 5/16-18 NC (Cast Aluminum Enclosure)
9	4	W004002-007	Flat Washer (Cast Aluminum Enclosure)
10	4	W001013-109A	Mounting Bolt
11	4	W002005-052	Locking Setscrew
12	1	H060162-003	Armature Plate Assembly
13	1	G060297-001	Compression Spring
14	2	W003001-013	Locknut - Esna 1/4-20
15	1	G060267-001	Pivot Nut
16	2	W002003-001	Square Head Adjustment Screw
17	1	K060105-001	Release Camshaft
18	2	G060268-001	Bushing
19	2	G060275-***	Torque Spring
20	2	G060294-001	Washer
21A	1	G060295-001	Lift Bar Assembly
21B	2	W003007-001	Jam Nut W/ Nylok Insert
22	1	G060277-001	Return Spring
23	2	G060305-001	Shoulder Nut
24	2	G060310-001	Rubber Washer
25	1	See note 3	Magnet Assembly
26	1	W005003-069	Return Spring Pin-Esna
28	2	W05003-073	Rollpin-Esna
29	1	G060265-001	Shaft Guide
30	1	W004005-001	Washer
31	2	W001017-003	Flat Head
32	1	W005003-116	Rollpin-Esna
33	1	W001012-063	Drive Screw - Type U
34	1	G060370-001	Return Spring
35	1	H060222-001	Release Shaft Assembly
36	3	Included with Item 37	Internal Tooth Lockwasher
37	3	W001003-006	Mounting Screw
38A	1	L060041-001	Cover (Cast Iron)
38B	1	L060089-001	Cover (Cast Aluminum)
39	1	W005003-069	Stop Pin - Esna
40	1	W005003-073	Rollpin - Esna
41A	1	H060170-003	Release Knob (Cast Iron)
41B	1	H060170-001	Release Knob (Cast Aluminum)
42A	4	W001007-030	Hex. Head Cap Screw (Cast Aluminum Enclosure)
42B	4	See note 4	Hex. Head Cap Screw (Cast Iron Enclosure)
43	4	W004006-007	Lockwasher (Cast Iron Enclosure)
44	1	K060115-***	Operator Assembly
45	2	W003001-018	Locknut - Esna
46	1	W003001-018	Locknut - Esna

Note 1: Stationary Disc Quantity (Item 1).  
Cast Iron Enclosure - Number of Stationary Discs equals number of rotating discs.  
Cast Aluminum Enclosure - Number of Stationary Discs is one more than the number of rotating discs.

Note 2: Rotating Disc Quantity (Item 2).  
To find number of rotating discs, read third digit of model number.  
i.e. 8-63010-66B has 3 rotating discs

Note 3: Part No. H060200 for 63015 Models  
Part No. H060199 for All Other Models

Note 4: Capscrew size (item 42B)  
1 Disc Brake W001007-034  
2 Disc Brake W001007-035  
3 Disc Brake W001007-037

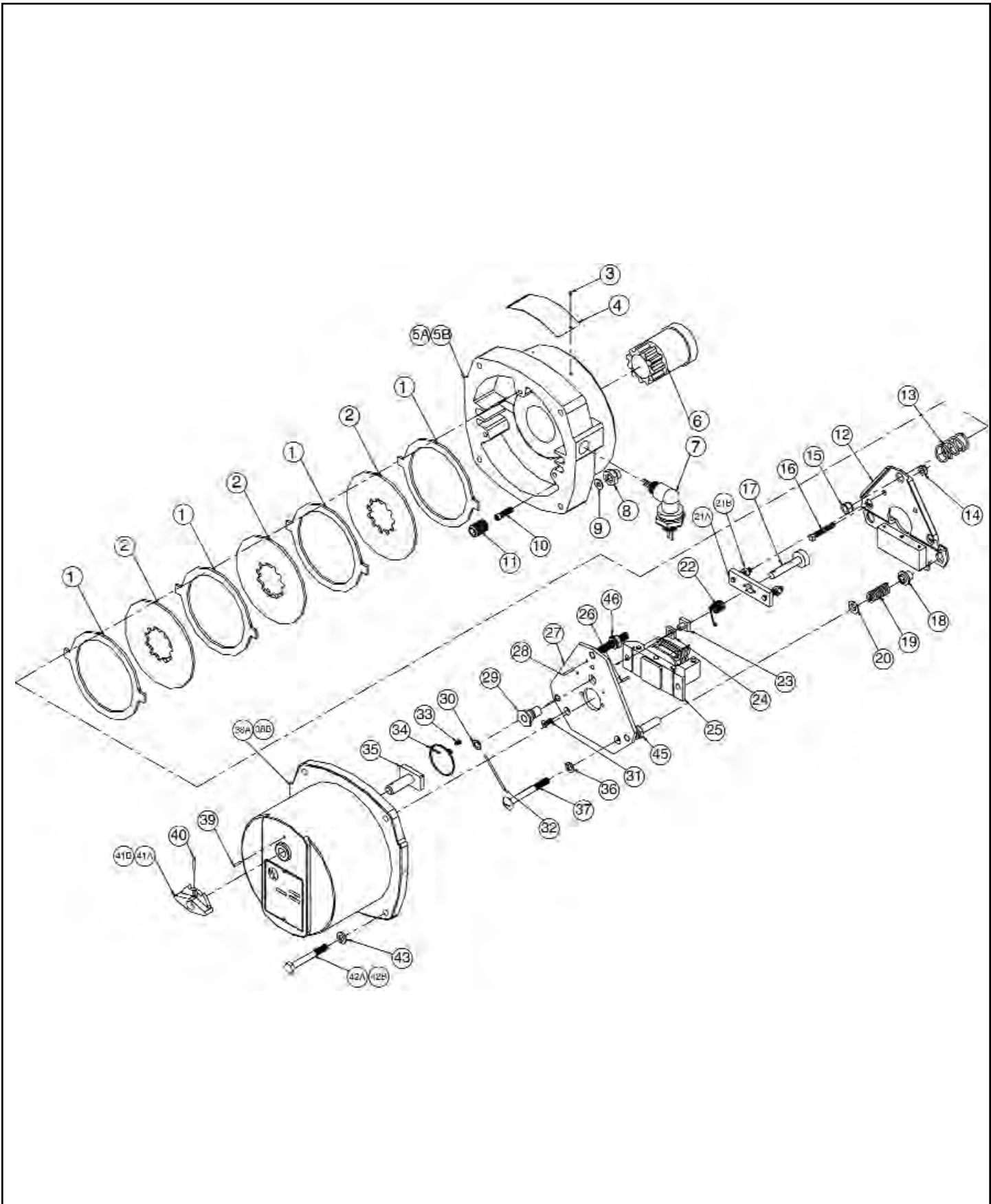


Figure 7. Exploded View

## TROUBLESHOOTING

### **BRAKE DOES NOT RELEASE**

Check for broken lead wire, low voltage, and the power supply to brake.

### **BRAKE DOES NOT STOP**

Check for worn or broken friction discs.  
Check brake hub to make certain it has not shifted on shaft.  
Check manual release. When brake coil is energized, release knob should move freely to reset position.  
Check thermal release. Release may have been activated.

### **BRAKE CHATTERS OR HUMS**

Check magnet faces. They must be clean and parallel.  
Check shading coil (not illustrated) located in slots on magnet center pole. Shading coil must be in position and not broken.

## ORDERING INFORMATION

Please provide the following information to expedite your renewal parts orders:

Model Number  
Serial Number (if available)  
Voltage, Phase and Frequency  
Hub Bore and Keyway Dimensions  
Horizontal or Vertical Mounting  
(if vertical, specify whether above or below motor)

