Dings CO. DYNAMICS GROUP

60 Series End Mount Brake Instructions NEMA 2 Enclosure

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.

Figure 1. 5600 Style Brake

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 electro-mechanical 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.

WARNING: Do not install or use these brakes in an explosive atmosphere.

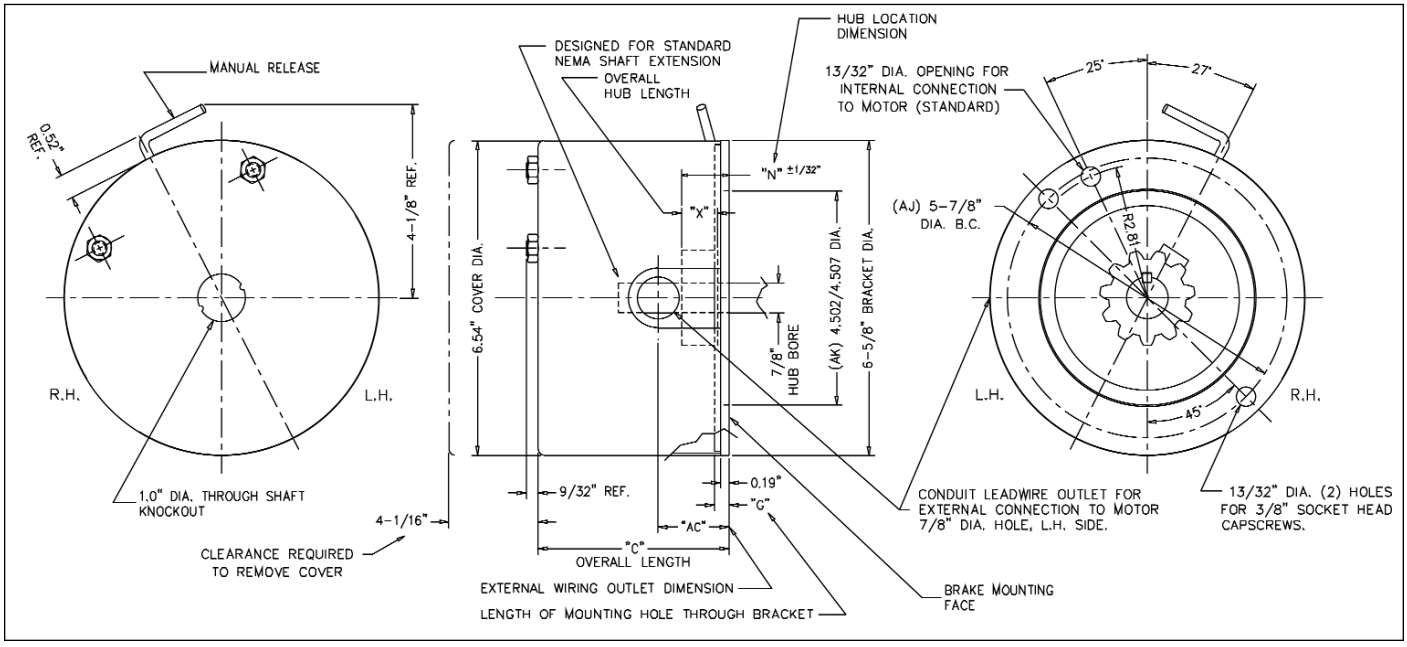


Figure 2. Outline Drawing (does not include kit components)

Model Number	Number of Rotating Discs	Torque lb-ft	Motor Frame	Housing Material	**Thermal Capacity HPS/MIN	Inertia of Rotating Parts Lb-ft²	Dimensions					
							X	G	C	N ± 1/32	Air Gap Min.	Air Gap Max.
61003-560*	1	3	56C	Steel	6	0.006	0.81	0.31	4.01	1.00	0.045/0.060	0.220
61006-560*	1	6			6	0.006	0.81	0.31	4.01	1.00	0.045/0.060	0.220
62010-560*	2	10			6	0.010	0.81	0.31	4.01	1.00	0.050/0.065	0.220

Table 1. Brake Specifications

*** Last digit of model number**

1 = With both manual release and external wire outlet
2 = With manual release and without external wire outlet
3 = Without manual release and with external wire outlet
4 = Without both manual release and external wire outlet

**Thermal capacity (HPS/MIN.) was determined under the following test conditions: a) Room temperature 72°F. b) Stopping time of one second or less. c) Brake mounted in a horizontal position. d) Equal on and off times. e) 1800 RPM f) Coil energized with 110% of rated voltage.

G061084-001

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.

GENERAL SAFETY INFORMATION

NOTE: These brakes are not intended for accurate positioning applications. They are designed for applications that require rapid stopping and holding power, such as on conveyors, door openers, etc.

1. For applications with high inertia-type loads or rapid cycling, the thermal capacity of the brake must be considered.
2. Observe all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
3. Brake motors and brake gearmotors must be securely and adequately grounded. This can be accomplished by wiring with a grounded metal-clad raceway system, by using a separate ground wire connected to the bare metal of the motor frame, or other suitable means. Refer to NEC Article 250 (Grounding) for additional information. All wiring should be done by a qualified electrician.
4. Always disconnect power before working on or near a brake motor, a brake gearmotor, or its connected load. If the power disconnect point is out of sight, lock it in the open position and tag it to prevent unexpected application of power.
5. When working on the brake, be sure the load is completely removed, secured or blocked to prevent injury or property damage.
6. Provide guarding for all moving parts.
7. Be careful when touching the exterior of an operating motor, gearmotor or brake. It may be hot enough to cause injury or to be painful. This condition is normal for modern motors, which operate at higher temperatures when running at rated load and voltage.
8. Protect all electrical lead wires and power cables against contact with sharp objects or moving parts.
9. Do not kink electrical lead wires and power cables, and never allow them to touch oil, grease, hot surfaces or chemicals.
10. Upon usage, the inside surfaces of the brake will contain friction material dust. This dust must be removed before servicing or adjusting the brake. It is important to avoid dispersing dust into the air or inhaling it, as this may be dangerous to your health. To avoid dispersing the dust into the air, DO NOT blow the dust off the brake. Remove dust with a vacuum. Avoid breathing dust. Wear a respirator if dust becomes airborne.

INSTALLATION AND OPERATION (See Figures 2, 3, 4 & 5)

1. Install 3/16" square key (31) in motor shaft keyway.
2. Install brake hub (30) onto motor shaft. Tighten two hub (30) set screws to 94 lb-in. of torque or until long arm of allen wrench flexes.
3. Remove cover nuts (19) and cover (29).
4. Install brake assembly over brake hub (30).
5. Install and tighten two mounting screws (provided by customer).
6. Connect coil (21) wire leads as indicated in Figure 3.
7. Reattach cover (29) and secure by fastening cover nuts (19).

MANUAL RELEASE (See Figure 4)

Manually release the brake by rotating the release lever (24) until it has moved approximately 90°. The brake will remain in the released position until the lever is moved back to reset by hand or until the brake is activated electrically.

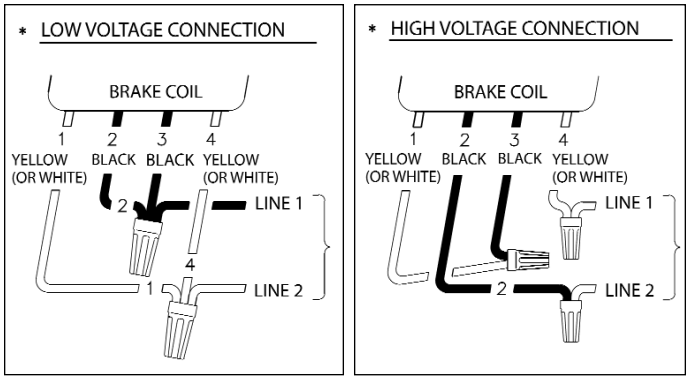


Figure 3. Wiring Diagram

MAINTENANCE AND SERVICE

FRICTION DISC REPLACEMENT (See Figure 4)

When total wear on rotating disc (11) reaches 1/16" (or total disc thickness is less than 1/8"), replace disc as follows:

1. Remove the two cover nuts (19) and cover (29).
2. While holding pivot nut (15), loosen and remove lock nut (16).
3. Remove pivot nut (16).
4. Lift and move pressure arm (14) to remove the spacer bar (13) and stationary disc (12).
5. With pressure arm (14) still moved, slide the friction disc (11) off the hub and pull it out of the side of the brake.
6. Insert new rotating disc (11) in opposite fashion of disc removal.
7. Reassemble all other parts in reverse order.
8. Readjust magnet air gap as described under WEAR ADJUSTMENT.

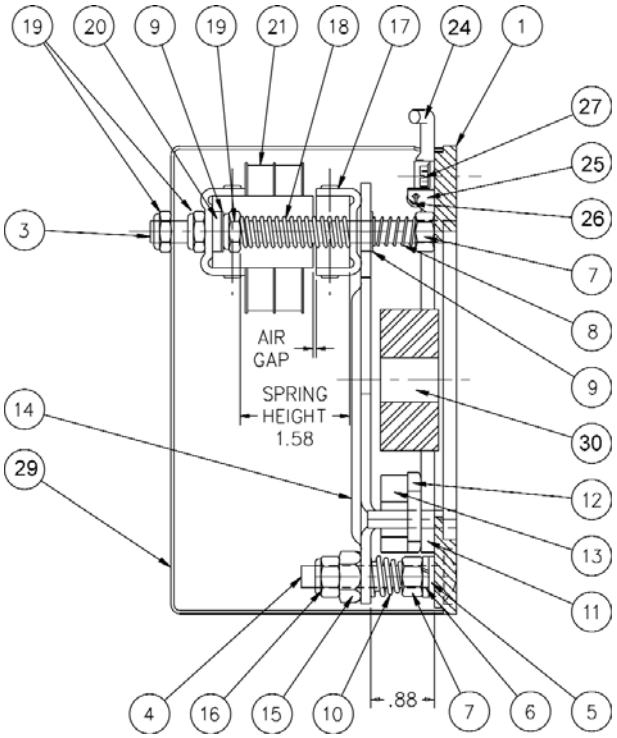


Figure 4. Brake Gap Adjustment

MAINTENANCE AND SERVICE (Continued)

WEAR ADJUSTMENT (See Figure 4 & Table 1)
As friction disc wears, the magnet air gap will increase. When "AIR GAP" reaches 0.220" maximum, adjust to 0.045"- 0.060" for 1-disc models, and 0.050"-0.065" for 2-disc models. To adjust: Hold pivot nut (15), loosen lock nut (16), turn pivot nut (15) clockwise until "AIR GAP" measures approximately 0.070" for 1-disc models, 0.075" for 2-disc models at center of magnet (NOTE: Air gap should decrease slightly to measure 0.045"- 0.060" for 1-disc models and 0.050"-0.065" for 2-disc models when lock nut (16) is tightened against the pivot nut (15)). Hold pivot nut (15) and tighten lock nut (16) against it. Operate brake several times to see if air gap is maintained. If not, re-adjust following same procedure again. Any delay in adjusting air gap will result in a loss of torque and/or coil burn out.

MAGNET ASSEMBLY REPLACEMENT (See Figure 4)
Remove cover nuts (19), cover (29), nuts (19) and magnet assembly (21). Replace magnet assembly. Be sure rubber pads (20) are under magnet bracket. Tighten nuts (19) to remove end play between nut and magnet bracket. Tighten with an additional 1/3 turn (two flats on nut). Check air gap as described under WEAR ADJUSTMENT. Electrically reconnect the coil (See Figure 3). Reassemble cover and cover nuts.

TROUBLESHOOTING

BRAKE DOES NOT RELEASE
Check for failure of power supply to brake.
Check brake visually for broken or damaged parts.
Check for correct voltage. Voltage must correspond to that listed on brake nameplate. If voltage is more than 10% below figure stamped on nameplate, magnet will not pull in, causing coil to burn out within minutes. If voltage is more than 10% above, coil will overheat and burn out.

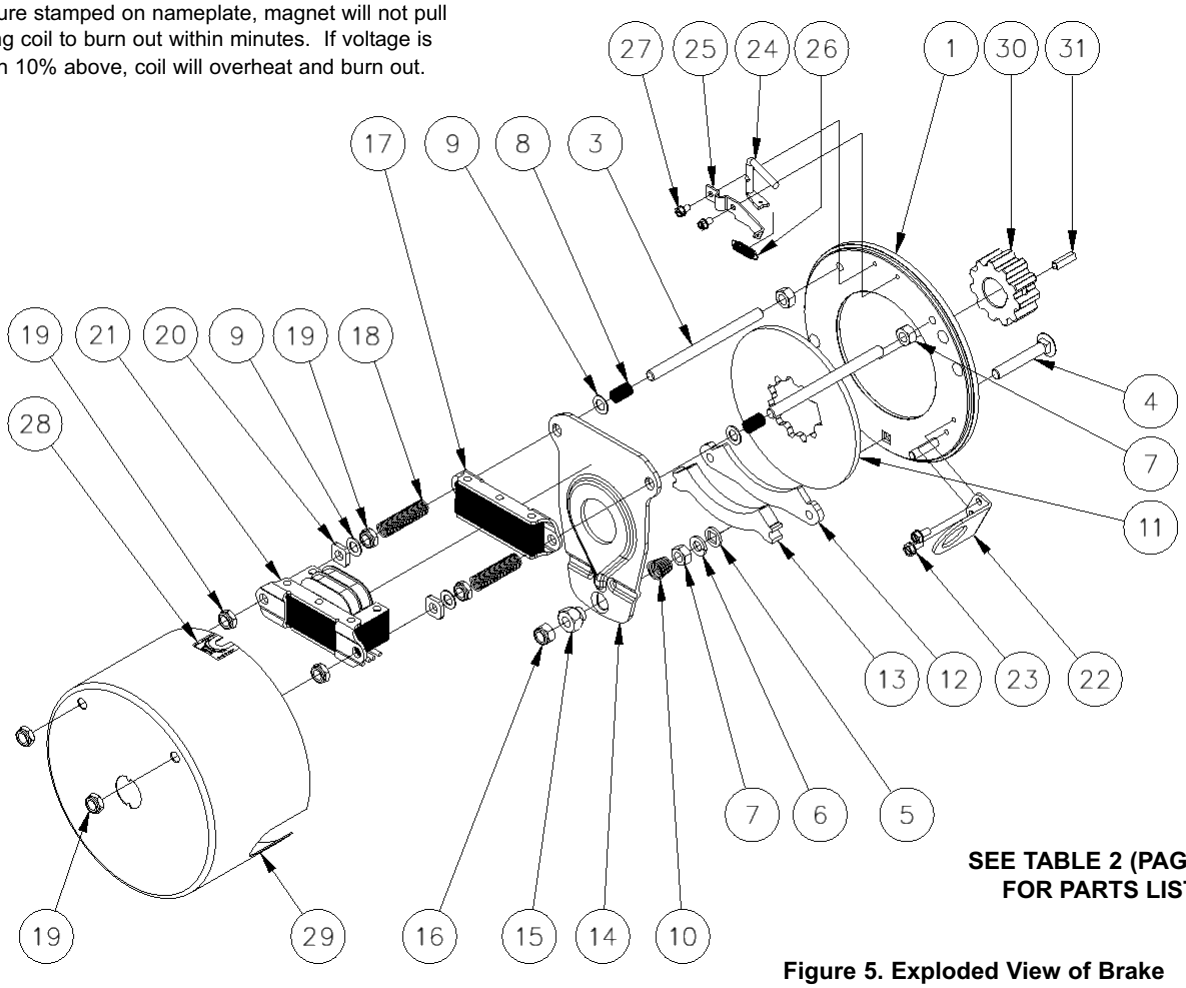
TROUBLESHOOTING (Continued)

BRAKE DOES NOT RELEASE
Check for broken leadwire(s) or bad electrical connection(s).
Check for burned out coils (coils may be charred or burned).

BRAKE DOES NOT STOP
Check brake visually for broken or damaged parts.
Check disc wear (see WEAR ADJUSTMENT).
Check for broken friction disc.
Check hub. Be certain hub has not shifted position on shaft and rotating disc is fully engaged on hub.

BRAKE CHATTERS OR HUMS
Clean magnet faces if dirty. Insert a clean sheet of paper between the magnet faces and energize brake. Move paper around between faces to dislodge dirt. Finally, remove paper.
Check if shading coil is cracked, broken or out of position (shading coil is assembled into the magnet assembly (20).
Check for low voltage. Magnet will not pull in and coil will burn out if voltage is more than 10% below figure stamped on nameplate.

MANUAL RELEASE DOES NOT WORK
Check for broken or damaged parts.
Check return springs (26). Replace if broken.
Check magnet air gap "AIR GAP" with lever in the reset position. Gap must be no less than 0.045" at its narrowest point. If gap is too small, motor shaft will not turn freely. Adjust to correct magnet gap as described under WEAR ADJUSTMENT.



SEE TABLE 2 (PAGE 4) FOR PARTS LIST

Figure 5. Exploded View of Brake

Table 2. Parts List

ITEM NO.	QUANTITY Model Number			DESCRIPTION	PART NUMBER
	61003-560*	61006-560*	62010-560*		
1	1	1	1	Assembly, Bracket Plate with Studs	K060637-004
3	2	2	2	Stud	H060667-001
4	1	1	1	Bolt, Carriage, Pivot	W001044-026
5	1	1	1	Washer, Spacer	G061046-001
6	1	1	1	Lockwasher	W004006-007
7	3	3	3	Nut, Hex	W003002-002
8	2	2	2	Spring, Pressure Arm Return	G061047-001
9	4	4	4	Washer, Flat	W004013-017
10	1	1	1	Spring, Pivot	G061048-001
11	1	1	2	Disc, Friction	H060157
12	1	1	2	Disc, Stationary	H060665-001
13	1	1	–	Bar, Spacer	H060675-001
14	1	1	1	Arm, Pressure	K060604-001
15	1	1	1	Nut, Pivot	G061041-001
16	1	1	1	Nut, Nylock, Full	W003013-003
17	1	1	1	Assembly, Armature	H060678-002
18	2	–	–	Spring, Torque (White)	G061049-001
18	–	2	–	Spring, Torque (Purple)	G061051-001
18	–	–	2	Spring, Torque (Yellow)	G050077-001
19	6	6	6	Nut, Nylock, Thin	W003001-015
20	2	2	2	Absorber, Shock	G060310-001
21	1	1	1	Assembly, Magnet	Note 1
Items 22 & 23 only available on models with external wire outlet					
22	1	1	1	Bracket, External Wire Outlet	H060676-001
23	2	2	2	Screw, External Wire Outlet Bracket	W001045-085
Items 24 through 28 only available on models with a manual release					
24	1	1	1	Lever, Manual Release	H060673-001
25	1	1	1	Bracket, Manual Release	H060674-001
26	1	–	–	Spring, Manual Release Return (Yellow)	G061078-001
26	–	1	1	Spring, Manual Release Return (Silver)	G061052-001
27	2	2	2	Screw, Manual Release Assembly	W001045-043
28	2	2	2	Label, Manual Release (not shown)	G060859-001
29	1	1	1	Cover	Note 2
30	1	1	1	Assembly, Hub, 5/8" Bore	K060611-032
30	1	1	1	Assembly, Hub, 7/8" Bore	K060611-034
31	1	1	1	Key, Machine, 3/16" Square	G061053-002
32	1	1	1	Nameplate (not shown)	per order
33	1	1	1	Operating Instructions and Parts Manual	BK4684

* = See Table 1 for complete model number explanation

Note 1. Part number is dependent on **voltage and torque** of brake - *Contact Factory* for part number.

Note 2. Part number is dependent on **model configuration** of brake - *Contact Factory* for part number.

SPECIFICATIONS

MOTOR FRAMES . . . . . .56C Frame
HOUSING . . . . . .Steel
DUTY . . . . . .Rated for continuous duty
VOLTAGES . . . . . .All standard NEMA single phase voltages and frequencies available. Other voltages and frequencies are optional.
MOUNTING . . . . . Brake is for mounting to NEMA "C" motor flanges. Brake is for horizontal mounting.
TORQUE . . . . . .3-10 lb-ft

Ding's Co.
DYNAMICS GROUP
4740 W Electric Avenue •Milwaukee, WI 53219
414-672-7830 www.dingsbrakes.com