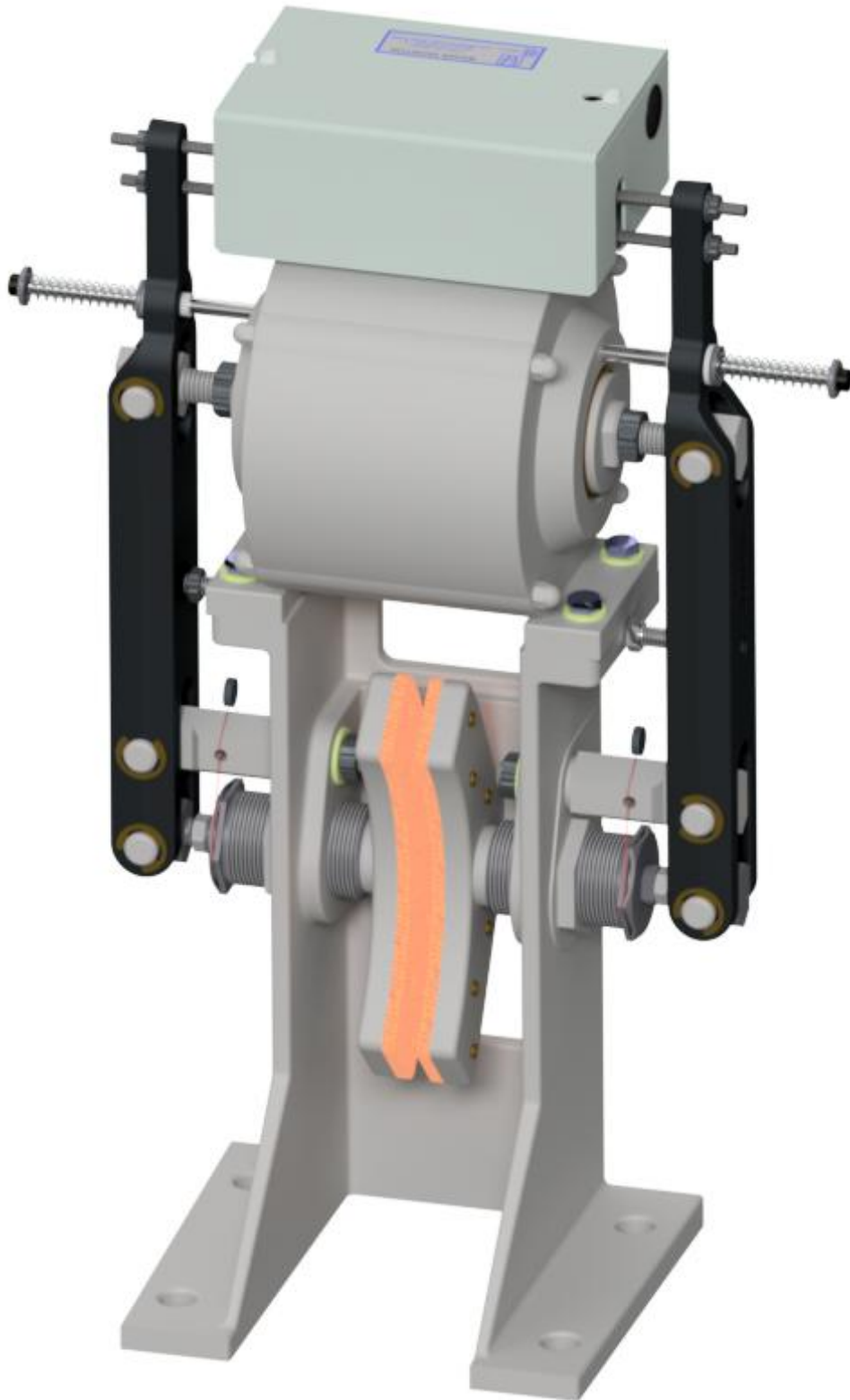


# **#102 & #112 DISC BRAKE ADJUSTMENTS With BRAKE MONITOR**

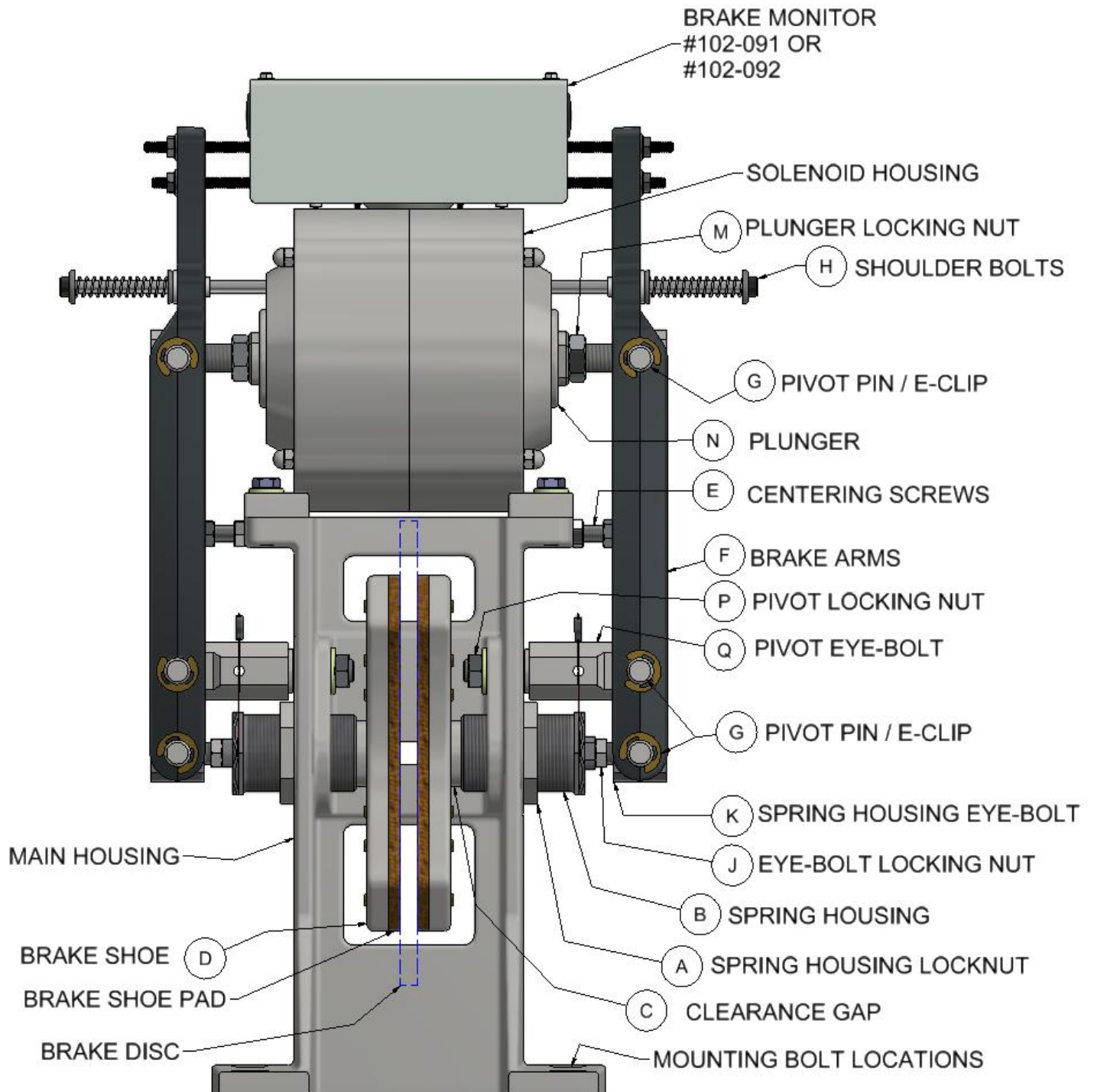


**#102 Disc Brake w/#102-091 Brake Monitor (#102-092 Brake Monitor Similar)**

## **Contents**

Hollister-Whitney Disc Brake with Brake Monitor Adjustment Procedure.....	3
Brake Monitor (#102-091) Schematic & Working Procedure .....	7
Option: Brake Monitor (#102-092) Schematic & Working Procedure .....	10
#102 & #112 Disc Brake Parts List.....	12
Optional Equipment – Manual Brake Release .....	15
Supplemental Information – Previous Generation Brake Model - Adjustment & Parts.....	16

# HOLLISTER-WHITNEY DISC BRAKE WITH BRAKE MONITOR ADJUSTMENT PROCEDURE



**Brake Adjustment Procedure - Parts Callout**

# **HOLLISTER-WHITNEY**

## **DISC BRAKE WITH MONITOR SWITCH**

### **ADJUSTMENTS**

**Read and understand ALL of the following Brake Instructions before starting the adjustment procedure!!**

The installation crew, mechanic, adjuster, and maintenance personnel should be thoroughly familiar with the proper installation, adjustment, operation, and maintenance of the HOLLISTER-WHITNEY Disc Brake.

**SAFE ELEVATOR OPERATION DEPENDS ON PROPER BRAKE OPERATION DURING INSTALLATION, AS WELL AS THROUGHOUT THE LIFE OF THE ELEVATOR.**

The Brake MUST be adjusted to meet all local, city, state and national codes.

The A17 and B44 Codes require the Brake to stop and hold a downward moving car loaded at 125% of capacity. It follows that when properly counterbalanced, the Brake will also stop an empty car moving upward.

Initial Brake Tension (Spring Pressure) is factory set. During installation, run elevator to assure proper Brake operation, arm alignment, and shoe clearance. Brake tension will eventually be set to stop and hold 125% load on a downward traveling car. This same tension should also stop a fully loaded downward moving car in approximately the same distance as the slow-down. This setting will help prevent the car sliding into the overhead or the pit during an emergency stop.

For Safety when setting the Brake, be sure the car is out of service. When adjusting for final brake tension, adjust spring pressure with loaded car at the bottom floor. When checking the stopping power of the Brake, keep car near bottom floor.

Object of brake adjustments:

- 1.) Spring pressure strong enough to stop car under all loading conditions.
- 2.) Spring pressure equal so both shoes pick up and drop at the same time.
- 3.) Brake arms parallel and straight up.
- 4.) Shoes parallel to disc with proper and equal air gap on both sides, before and after setting of centering screws.
- 5.) Proper setting of centering screws for quiet operation with minimal air gap in plungers.
- 6.) Proper coil voltage to always energize the Brake, even when the coil heats up. Coil may lose 30% of power when hot.
- 7.) Proper adjustment of monitor switch to indicate proper Brake Operation.

NOTE: ALL INITIAL ADJUSTMENTS SHOULD BE DONE WITH EMPTY CAR IN OVERHEAD  
AND THE COUNTERWEIGHT LANDED

ADJUSTMENTS:

1.) SPRING ADJUSTMENT:

With Brake applied (Coil de-energized), adjust spring pressure by loosening Lock Nut (A) and screwing Spring Housing (B) into Brake Housing. Note clearance (C), between Brake Shoe (D) and Spring Housing must be equal on both sides and enough for Brake Shoe to pick up when coil is energized. Initially, adjust clearance (C) to 7/32" and tighten Lock Nut (A).

*(Note: This may not be the final setting for 125% load. When finally set at 125% load, the spring pressure may be less than above. Check to see that Brake stops 100% load at approximately the slow-down rate.)*

2.) CENTERING SCREW INITIAL ADJUSTMENT:

With Brake applied, adjust Centering Screws (E) until they are 1/4" away from the Brake Housing.

3.) BRAKE ARM ADJUSTMENT:

With Brake applied, check that Brake Arms (F) are vertically parallel or angled slightly in toward the Solenoid Housing. If adjustment is necessary remove Snap Rings and Pins (G) [3 per side] and Shoulder Screws (H). Arms (F) can now be lifted out of the way. Loosen Lock Nut (J) and Shoe Eye-bolt (K) for proper alignment. When aligned, grease Pins, re-assemble Pins, and re-tighten Lock Nut (J).

4.) BRAKE COIL VOLTAGE ADJUSTMENT:

To set the Brake Coil voltage, momentarily energize the Brake. Set the Brake Coil voltage per the following:

	<u>230V Coil</u>	<u>115V Coil</u>
If voltage is constant:	230V	115V
If dual voltage:	250V Pick Up 150V Hold	125V Pick Up 75V Hold

PICK UP voltage should be applied long enough to ensure Solenoid Plungers are touching before dropping to the HOLD voltage. On controls that require a voltage calibration, be sure to adjust calibration.

***Please note: Coil may lose 30% of power when hot!***

5.) BRAKE SHOE GAP ADJUSTMENT:

With Brake energized, set an initial gap between the Shoes (D) and the Disc (L) of 0.015". With Brake applied (Coil de-energized), loosen Lock Nut (M) and adjust Solenoid Plungers (N) so that an equal amount of each Plunger shows on each side of the Solenoid Housing. Energize Brake, check the 0.015" gap, re-adjust as necessary.

NOTES:

- Moving the Plungers out produces a larger gap between the Shoes and Disc when the Brake Coil is energized.
- If a Shoe is not parallel to the Disc when the Coil is energized, de-energize the Coil, loosen Lock Nut (P) on Pivot Bolt (Q) and re-tighten. Energize Coil to check again. If still not parallel, it may be necessary to loosen the Lock Nut and tap Pivot Bolt up or down to affect the parallel gap.
- If one shoe picks up slower than the other, loosen the Spring on that side while tightening the Spring on the other side an equal amount.

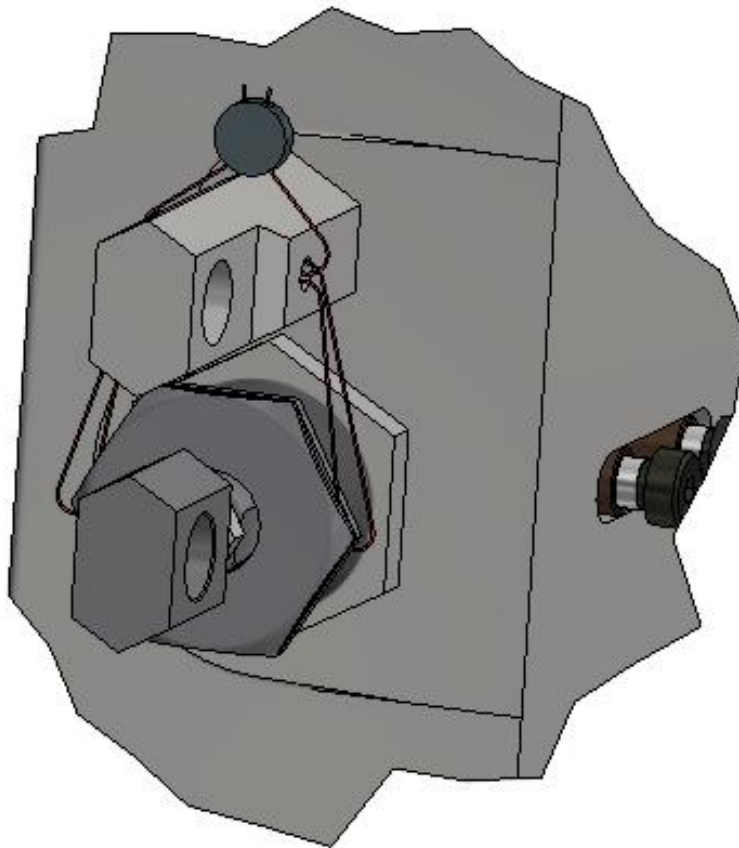
- d.) When installing a NEW Brake on an EXISTING MACHINE, it may be necessary to shim the Brake Housing to achieve Shoe-to-Disc parallelism if Shoes are parallel with each other but not with the Disc.

6.) CENTERING SCREW FINAL ADJUSTMENT:

With Coil energized, adjust each Centering Screw (E) to just touch Brake Housing. With Coil de-energized, adjust each Centering Screw in slightly, adjusting them for a Shoe-to-Disc gap of 0.012", and tighten Lock Nut. This will produce a quieter Brake.

*NOTE: Plungers will now have a slight air gap, but this will not affect Brake Pick Up.*

- 7.) SEE BRAKE MONITOR SWITCH ADJUSTMENTS.
- 8.) Run elevator as much as possible to assure proper operation.
- 9.) **CAUTION:** Before releasing car to the public, re-check that Brake is operating properly and will stop 125% load. If Brake Tension is ever changed, re-adjust Items 5.), 6.), and 7.) above.
- 10.) With all above is confirmed, seal brake as necessary to meet all local, city, state and national codes.



**Suggested Wire Routing - Brake Adjustment Seal**

## BRAKE MONITOR SCHEMATIC AND WORKING PROCEDURE:

**WARNING:** IN ORDER TO DETECT A BRAKE FAILURE, THIS BRAKE MONITOR SWITCH MUST BE PROPERLY ADJUSTED & FULLY OPERATIONAL PRIOR TO BEING PLACED INTO SERVICE.

**IMPORTANT: READ ENTIRE INSTRUCTIONS BEFORE ATTEMPTING ADJUSTMENT!!!**

**▲WARNING**

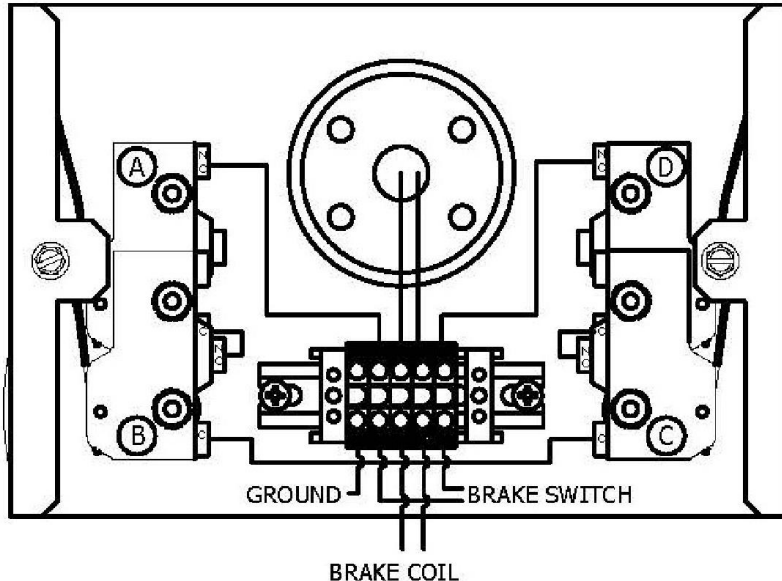
**SHOCK WARNING: ACTIVE ELECTRIC CIRCUITS!!**



HOLLISTER-WHITNEY ELEVATOR CORP.

BRAKE MONITOR STANDARD WIRING SCHEMATIC

LABEL-0132N



### **BRAKE MONITOR ASSEMBLY 102-091**

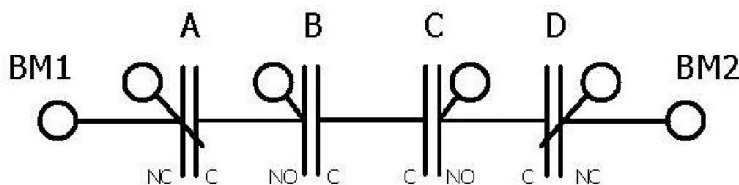
NORMAL BRAKE DE-ENERGIZED  
ALL CONTACTS ARE MADE  
CIRCUIT CLOSED BETWEEN BM1 & BM2

NORMAL BRAKE ENERGIZED  
CONTACTS A & D OPEN  
OPEN CIRCUIT BETWEEN BM1 & BM2

BRAKE FAILS TO APPLY PROPERLY (FAILS  
TO DROP)  
CONTACTS A OR D OR BOTH FAIL TO CLOSE

EXCESSIVE BRAKE PAD WEAR OR EXCESSIVE  
THRUST BEARING END PLAY  
CONTACTS B OR C OR BOTH OPEN

BRAKE FAILS TO LIFT  
CONTACTS A OR D OR BOTH FAIL TO OPEN



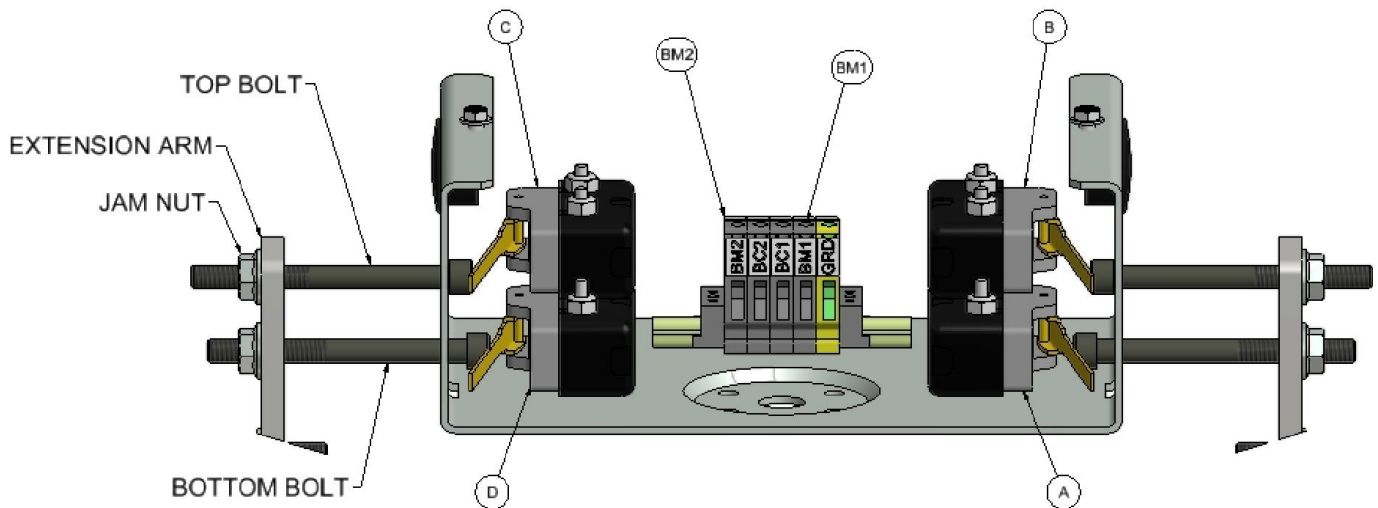
### **BRAKE MONITOR ADJUSTMENT:**

1. Adjust top bolt "in" until you hear micro switch "click".
2. Rotate top bolt "in" 1 full revolution then tighten jamb nut against extension arm.
3. Adjust bottom bolt "in" until you hear micro switch "click".
4. Rotate bottom bolt "out" until you hear micro switch "click"
5. Rotate bottom bolt "out" 1 full revolution then tighten jamb nut against extension arm.
6. Repeat steps 1 thru 5 on opposite side of monitor.
7. Cycle Brake – check for micro switch activation and circuits are performing as designed.
8. Run machine and check adjustment when machine is at operating temperature.
9. Fine tuning may be needed per bolt until proper adjustment is obtained.



## BOLT ADJUSTMENT DIRECTIONS

→→→→→→→→ IN ←←←←←←←←  
 ←←←←←←←← OUT →→→→→→→→  
 MONITOR SHOWN WITH COVER REMOVED



### **BRAKE FAILURE:** DO NOT RE-ADJUST THE BRAKE MONITOR SWITCH UNTIL THE BRAKE PROBLEM HAS BEEN CORRECTED AND THE BRAKE RE-ADJUSTED.

- a.) If both contacts A and D fail to open with Brake energized, failure indicates improper pick up which can cause lining wear. Re-check Brake voltages, air gaps, alignment and freedom of arm and plunger movement, etc. To test this failure, place a jumper across terminals BM1 and BM2. The controls should remove the elevator from service in some fashion (See Suggested Operation on Page #8).
- b.) If contact A or D stays opened when Brake drops, failure indicates improper drop out caused by a bind (find bind and correct) or by excessive worm shaft movement (check thrust bearings etc.). To test, hold open contacts A or D, when elevator stops it should not be able to start (See Suggested Operation on Page #8).
- c.) If contacts B or C open when Brake drops, this indicates either worm shaft movement (check thrust bearings, etc.) or brake lining wear. If cause is normal lining wear, re-adjust Brake including spring tension, air gap, and centering screws, then re-adjust Brake Monitor Switch. To test open contacts B or C. Elevator should not be able to start (See Suggested Operation on Page #8).

NOTE: BRAKES MUST BE INSPECTED DURING NORMAL ELEVATOR MAINTENANCE. IF LININGS INDICATE WEAR, THEN SPRINGS, GAPS AND MONITOR SWITCH MUST BE RE-ADJUSTED ACCORDINGLY.

FOR EXAMPLE: IF LININGS WEAR 1/32", TURNING THE SPRING HOUSING EYEBOLT OUT ONE-HALF (1/2) TURN AND TIGHTENING THE SPRING HOUSING IN ONE-THIRD (1/3) TURN WILL COMPENSATE. PLUNGERS AND THE BRAKE MONITOR WILL NEED TO BE SLIGHTLY RE-ADJUSTED.

ANY ADJUSTMENT MADE TO THE BRAKE MIGHT AFFECT BRAKE MONITOR ADJUSTMENT.



## **SUGGESTED OPERATION OF ELEVATOR CONTROLS USED WITH THE HOLLISTER-WHITNEY MACHINE BRAKE MONITOR 102-091**

NOTE: These are only suggested modes of operation. HOLLISTER-WHITNEY recognizes that each controls manufacturer may have their own circuits and problems designed to deal with potential Brake failures. It is important that Brake failures be dealt with in some fashion.

### **NORMAL OPERATION**

- 1.) With the Machine brake de-energized, contacts A thru D are made. Continuity is read from terminals BM1 and BM2.

ACTION: Control circuits and program allow elevator to run.

- 2.) When the elevator runs, the Machine Brake energizes and contacts A & D open. An open circuit is read from terminals BM1 and BM2.

ACTION: Control circuits and programs allow the elevator to continue normal operation.

### **ABNORMAL OPERATION**

- 1.) After energizing the Brake, check for continuity between BM1 and BM2. If continuity is still read from terminals BM1 to BM2 (all of the contacts A thru D are made), this indicates that the Machine Brake has failed to pick up.

ACTION: Allow the car to run to the next floor. Control circuits and programs should remove the car from service. Apply the "ROPE GRIPPER".

- 2.) After de-energizing the Brake, check for continuity between BM1 and BM2. If continuity is not read from BM1 to BM2 it indicates improper drop-out of the Machine Brake, Brake Lining wear, or excessive Worm Shaft movement.

ACTION: Apply the "ROPE GRIPPER". If a "ROPE GRIPPER" is not available, prevent the car from running. If re-leveling occurs - see below.

- 3.) A constant re-leveling may indicate a Brake failure.

ACTION: Apply "ROPE GRIPPER". If a "ROPE GRIPPER" is not available, allow re-leveling at the floor, run the car to the uppermost floor, open the door during re-leveling, close the doors, and remove the car from service.

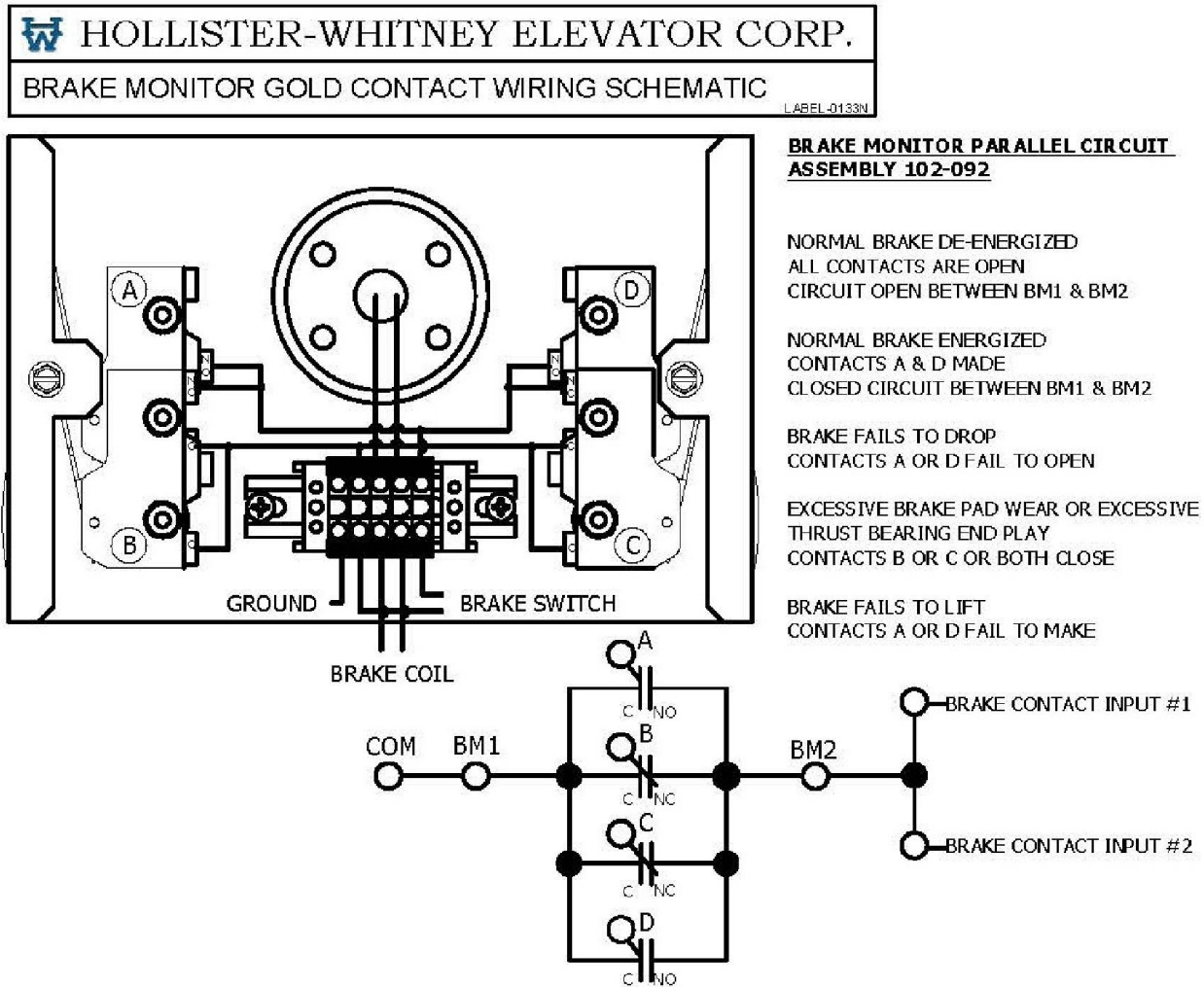
## OPTION: BRAKE MONITOR (#102-092) SCHEMATIC AND WORKING PROCEDURE

**WARNING:** IN ORDER TO DETECT A BRAKE FAILURE, THIS BRAKE MONITOR SWITCH MUST BE PROPERLY ADJUSTED & FULLY OPERATIONAL PRIOR TO BEING PLACED INTO SERVICE.

**IMPORTANT: READ ENTIRE INSTRUCTIONS BEFORE ATTEMPTING ADJUSTMENT!!!**

**⚠ WARNING**

**SHOCK WARNING: ACTIVE ELECTRIC CIRCUITS!!**

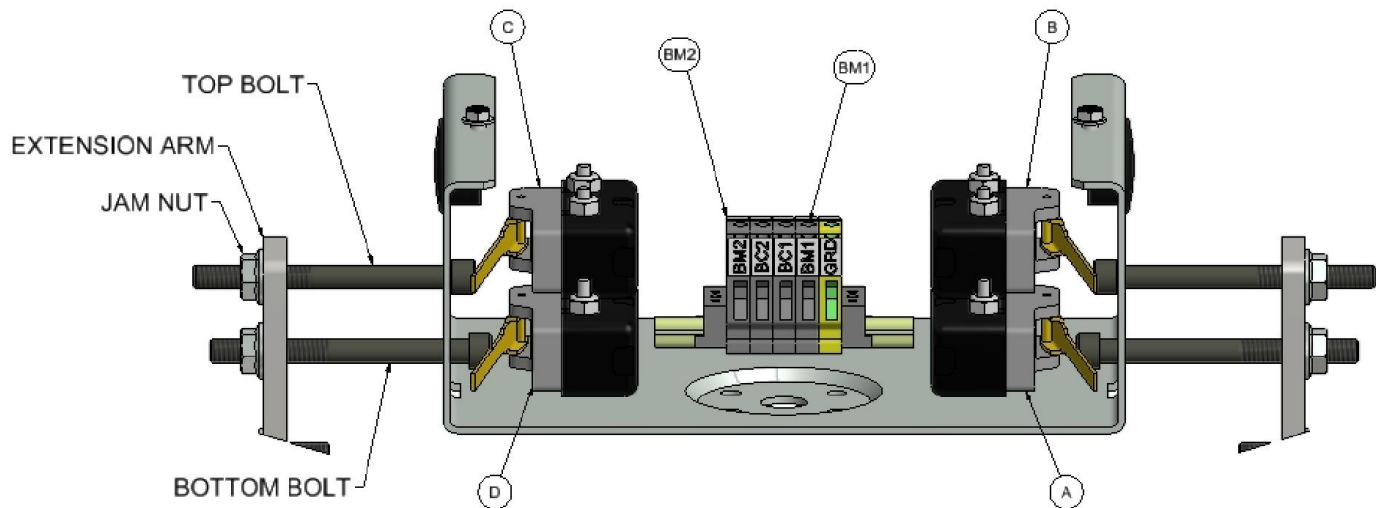


### BRAKE MONITOR ADJUSTMENT:

1. Adjust top bolt "in" until you hear micro switch "click".
2. Rotate top bolt "in" 1 full revolution then tighten jamb nut against brake arm.
3. Adjust bottom bolt "in" until you hear micro switch "click".
4. Rotate bottom bolt "out" until you hear micro switch "click"
5. Rotate bottom bolt "out" 1 full revolution then tighten jamb nut against extension arm.
6. Repeat steps 1 thru 5 on opposite side of monitor.
7. Cycle Brake – check for micro switch activation and circuits are performing as designed.
8. Run machine and check adjustment when machine is at operating temperature.
9. Fine tuning may be needed per bolt until proper adjustment is obtained.

## BOLT ADJUSTMENT DIRECTIONS

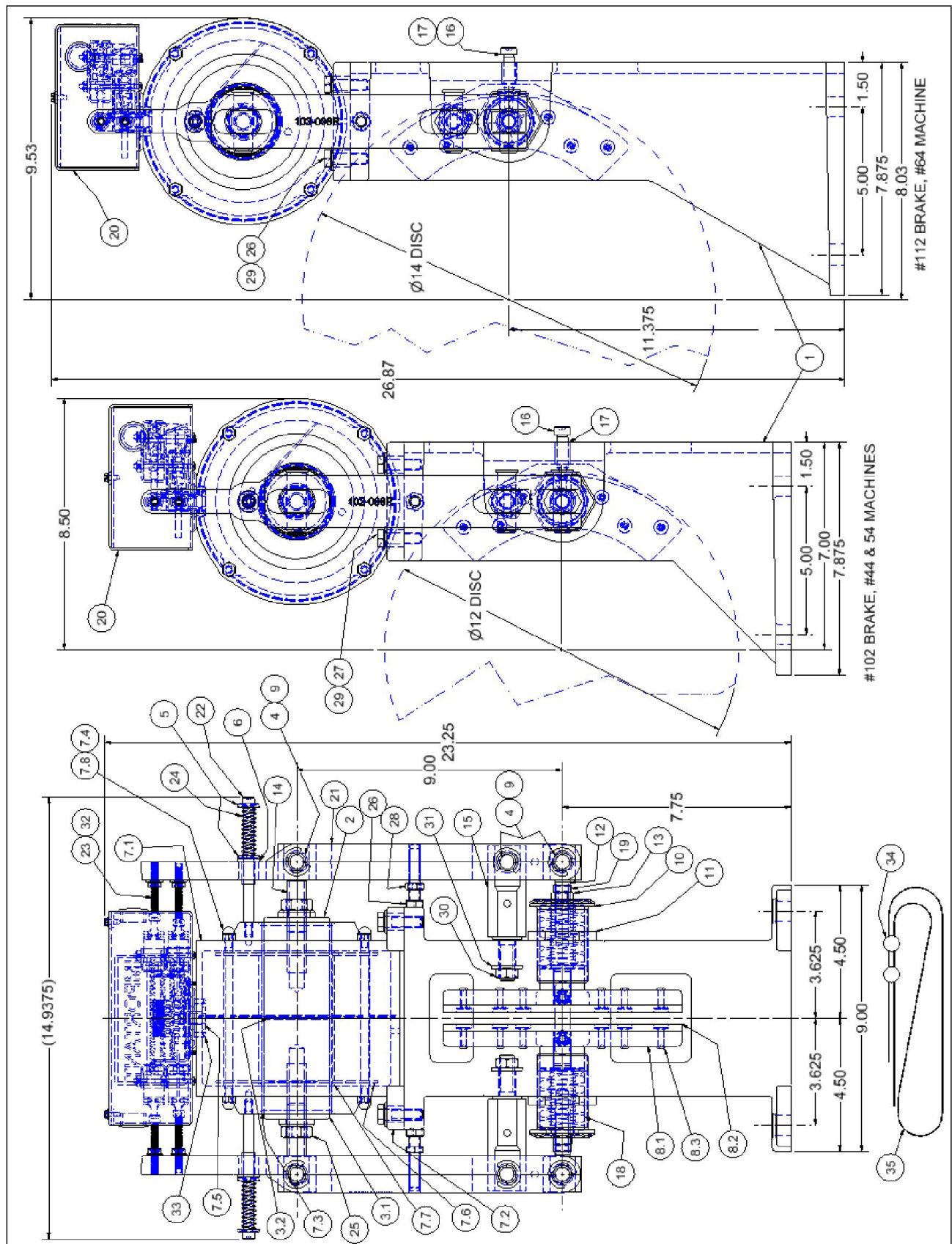
→→→→→→→→ IN ←←←←←←←←  
←←←←←←←← OUT →→→→→→→→  
MONITOR SHOWN WITH COVER REMOVED



NOTE: BRAKES MUST BE INSPECTED DURING NORMAL ELEVATOR MAINTENANCE. IF LININGS INDICATE WEAR, THEN SPRINGS, GAPS AND MONITOR SWITCH MUST BE RE-ADJUSTED ACCORDINGLY.

FOR EXAMPLE: IF LININGS WEAR  $\frac{1}{32}$ ", TURNING THE SPRING HOUSING EYEBOLT OUT ONE-HALF ( $\frac{1}{2}$ ) TURN AND TIGHTENING THE SPRING HOUSING IN ONE-THIRD ( $\frac{1}{3}$ ) TURN WILL COMPENSATE. PLUNGERS AND THE BRAKE MONITOR WILL NEED TO BE SLIGHTLY RE-ADJUSTED.

ANY ADJUSTMENT MADE TO THE BRAKE MIGHT AFFECT BRAKE MONITOR ADJUSTMENT.



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	102-001	DISK BRAKE HOUSING - #44 & #54 MACHINES
		112-001	DISK BRAKE HOUSING - #64 MACHINE
2	1	102-006	DISK BRAKE PLUNGER
3	1	102-007	PLUNGER WITH PLUNGER RING
3.1	1	102-006	DISK BRAKE PLUNGER
		102-078	PLUNGER CUSHION
4	6	90-013	PIN - 0.625" DIA.
5	4	205-020	WASHER - SPRING RETAINING (CUP)
6	2	90-025	INSULATING BUSHING
7	1	102-028	BRAKE HOUSING ASSEMBLY - 230 VOLT
		102-028-1	BRAKE HOUSING ASSEMBLY - 115 VOLT
7.1	1	102-004 F	SOLENOID HOUSING - FEMALE
7.2	1	102-004 M	SOLENOID HOUSING - MALE
7.3	1	102-009	PLUNGER TUBE
7.4	4	102-010	SOLENOID HOUSING ROD
7.5	1	90-025	INSULATING BUSHING
7.6	1	102-073	COIL - 230 Vdc, 1.24 A, 190 Ohm
		102-074	COIL - 115 Vdc, 2.44 A, 46.45 Ohm
7.7	2	102-079	O-RING AS568A-142, COIL HOUSING
7.8	8	1/4 - 20 UNC	ACORN NUT
8	2	102-029	BRAKE SHOE ASS'Y
8.1	1	102-002	SHOE - DISC BRAKE
		102-017	LINING - SHOE
		102-086	RIVET - 8/12
9	6	90-032	E-CLIP, #5133-62
10	2	102-049	SPRING HOUSING
11	2	102-050	NUT - SPRING HOUSING
12	2	102-059	EYEBOLT - DISC BRAKE SHOE
13	2	102-060	ROD - DISK BRAKE CONNECTING
14	2	102-064	PLUNGER EYEBOLT - SLOTTED
15	2	102-065	PIVOT EYE BOLT
16	2	102-066	3/8 x 1.0" SHOULDER BOLT
17	2	102-067	BRONZE BUSHING (REF. #AA-502-1)
18	2	102-070	SPRING - LAMINA #MHC-50 (15 HP & BELOW)
		102-071	SPRING - LAMINA #H-50 (20 HP & ABOVE)
19	2	102-072	JAM NUT - SPECIAL
20	1	102-091	BRAKE MONITOR ASSEMBLY
21	2	102-098	LEVER - #102 & #112 DISC BRAKE
22	2	92-099	5/16 X 4" SHOULDER BOLT
23	4	92-100	MONITOR ACTIVATION SHCS (1/4-20UNC x 1.75)
24	2	400-085	TENSIONING SPRING

ITEM	QTY	PART NUMBER	DESCRIPTION
25	2	5/8-11 UNC	JAM NUT
26	2	3/8 - 16 UNC x 1.75"	HEX HEAD CAP SCREW, FULL THREAD, GRADE 5
27	4	3/8-16 UNC x 1.25"	HEX HEAD BOLT
28	2	3/8 - 16 UNC	HEX JAM NUT
29	4	3/8" WASHER	STANDARD WASHER
30	2	1/2- 13 UNC	NUT - HEX JAM
31	2	1/2" WASHER	STANDARD WASHER
32	4	1/4 - 20 UNC	WHIZ NUT
33	2	#10-24 UNC x 0.375	PAN HEAD MACHINE SCREW
34	2	27913	LEAD SEAL
35	1	26 ga wire - 36	2-PLY #26 GALVANIZED WIRE - 36"

### **Coils for #102 & #112 Disc Brake**

1) Standard Coil - #102-073:

- a. Constant 230 VDC, 1.24 A, 190 OHM or
- b. Step Down 250 V Pick, 150 V Hold

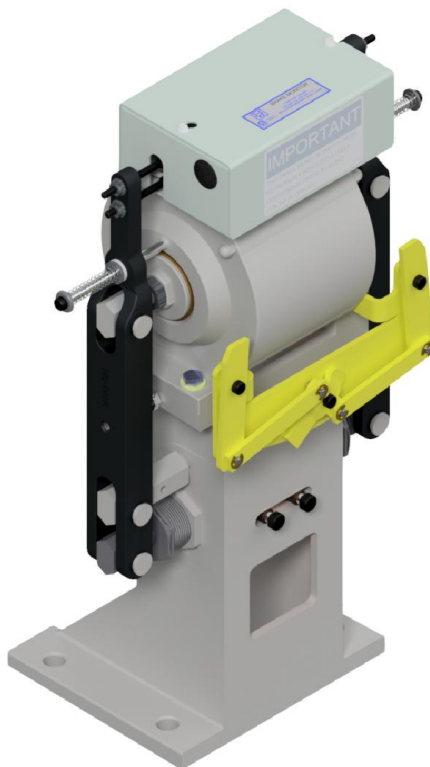
2) Optional Coil - #102-074:

- a. Constant 115 VDC, 2.24 A, 46.45 OHM or
- b. Step Down 125 V Pick, 75 V Hold

## OPTIONAL EQUIPMENT – MANUAL BRAKE RELEASE



**#102-047 Manual Brake Release**



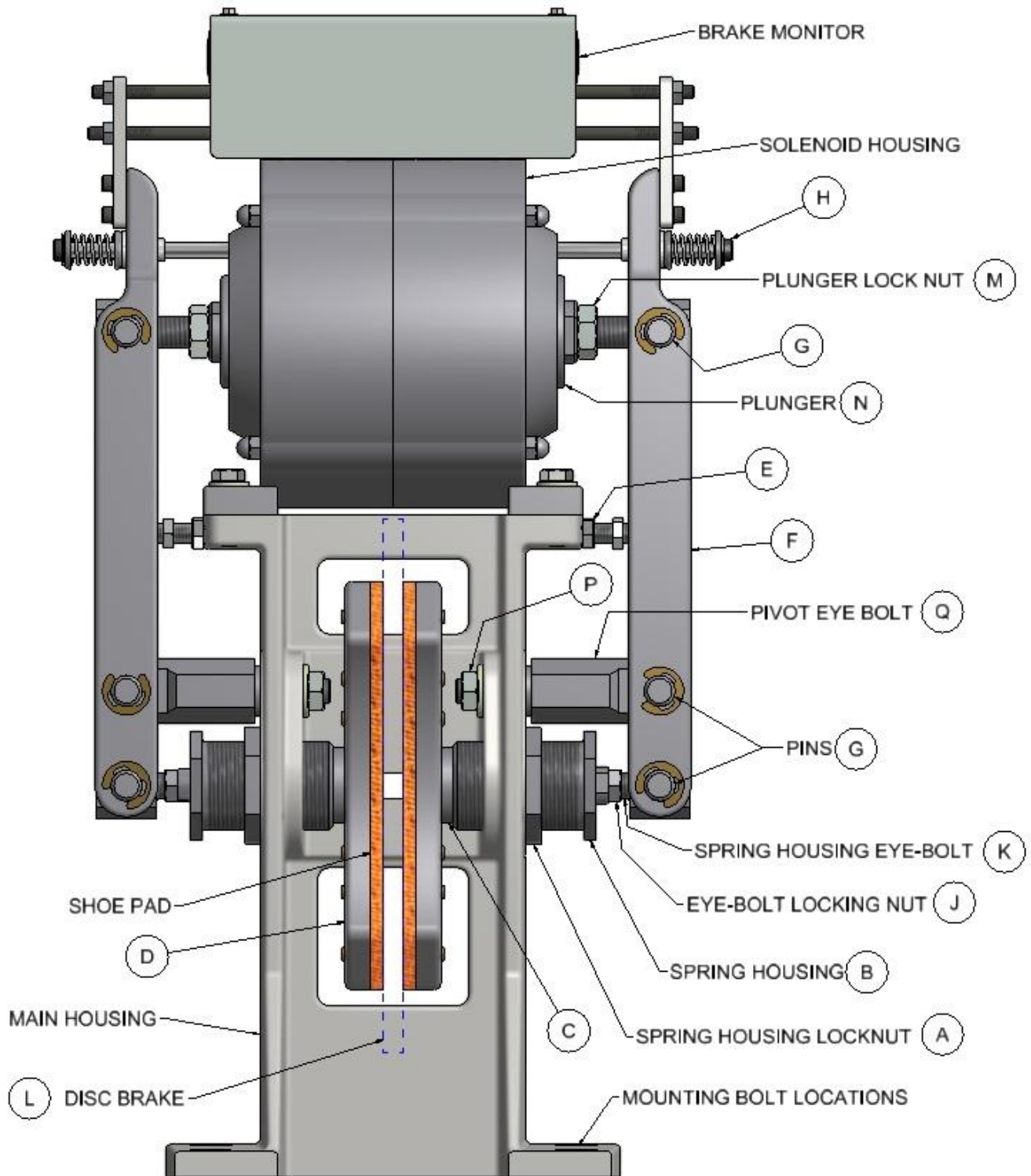
**Disengaged**



**Engaged**



**SUPPLEMENTAL INFORMATION – PREVIOUS GENERATION  
#102 (#112 Similar) BRAKE MODEL - ADJUSTMENT AND PARTS**



**Brake Adjustment Procedure – Previous Generation Brake - Parts Callout**



PARTS LIST - DISC BRAKE				
NO.	DESCRIPTION	QTY.	102 BRAKE (12" DISC)	112 BRAKE (14" DISC)
			44 & 54 MACHINE	64 MACHINE
1	DISC BRAKE HOUSING	1	102-001	112-001
2	LEVER	2	102-076	102-076
3	PLUNGER	1	102-006	102-006
4	PLUNGER w/RING	1	102-007	102-007
5	PLUNGER EYEBOLT	2	102-064	102-064
6	SOLENOID HOUSING ASSEMBLY - 230V	1	102-028	102-028
	SOLENOID HOUSING ASSEMBLY - 115V		102-025-1	102-025-1
6A	230 VOLT COIL	1	102-073	102-073
6B	115 VOLT COIL		102-074	102-074
7	DISC BRAKE SHOE ASSEMBLY	2	102-029	102-029
8	SPRING HOUSING	2	102-049	102-049
9	SPRING HOUSING NUT	2	102-050	102-050
10	HOUSING PIVOT EYEBOLT	2	102-065	102-065
11	SPRING HOUSING EYEBOLT	2	102-059	102-059
13	SPRING - (15 HP & BELOW)	2	102-070	102-070
	SPRING - (20 HP & ABOVE)		102-071	102-071
14	PIN - 0.625" DIA.	6	90-013	90-013
15	E-CLIP, 5133-62	6	90-032	90-032
16	SQUARE HEAD SET SCREW	2	3/8-16 X 1.75	3/8-16 X 1.75
17	HEX HEAD CAP SCREW	4	3/8-16 X 1.25	3/8-16 X 1.25
18	JAM NUT	2	3/8-16 UNC	3/8-16 UNC
19	JAM NUT	2	1/2-13 UNC	1/2-13 UNC
20	JAM NUT	2	5/8-11 UNC	5/8-11 UNC
21	WASHER - HARDENED	4	3/8" WASHER	3/8" WASHER
22	WASHER - HARDENED	2	1/2" WASHER	1/2" WASHER
23	SHOULDER BOLT	2	102-066	102-066
24	BRONZE BUSHING (REF. #AA-502-1)	2	102-067	102-067
25	JAM NUT - SPECIAL	2	102-072	102-072
27	STANDARD WASHER	4	#10	#10
28	SHOULDER BOLT	2	102-077	102-077
29	CUP WASHER	4	205-020	205-020
30	INSULATING BUSHING	2	90-025	90-025
31	TENSION SPEING	2	400-078	400-078
32	EXTENSION - BRAKE ARM 102 &112	2	102-093	102-093
33	BRAKE MONITOR ASSEMBLY	1	102-091	102-091
34	SOCKET HEAD CAP SCREW	4	1/4-20 X 2.75	1/4-20 X 2.75
35	NUT - LOCKING "WHIZ NUT"	4	1/4-20	1/4-20
36	SOCKET HEAD CAP SCREW	4	#10-24 X 0.75	#10-24 X 0.75



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*Hollister-Whitney*  
ELEVATOR CO. LLC