

Troubleshooting Guide

Important

This bulletin supplements the troubleshooting section of the installation and service instructions for specific brake models. Before any service work is performed, the installation and service instructions and this bulletin should be thoroughly read. All caution and warning instructions must be observed.

I. If brake overheats, friction discs and/or stationary discs burn or fracture:

- A. Solenoid may not be energizing and releasing the brake.
1. Check voltage at the coil and compare to the coil and/or nameplate voltage rating.
 2. Whether brake is AC or DC a voltage drop may be occurring. If excessive drop in voltage is noted, check wire size of power source. Correct as needed.
- Note:** A method to check voltage at coil is to insert a block of wood of the approximate thickness of the solenoid air gap between the solenoid frame and plunger. (The block will prevent brake from releasing when coil is energized.) Connect voltmeter leads at the coil terminals or lead wires. Energize coil. Voltmeter needle will not fluctuate and reading can be taken. Reading should be taken immediately and the coil de-energized to prevent overheating of the coil. Compare voltage reading with coil rating.
3. If brake is DC solenoid style, check switch actuation and condition of coil. The switch should open with the following approximate air gap. (This is plunger travel remaining before plunger seats to frame.) Solenoid size is used for reference:

#4 solenoid	3/16"
#5 solenoid	3/16" to 7/32"
#6 solenoid	7/32" to 1/4"
#8 solenoid	3/16" to 7/32"
#9 solenoid	7/32"
#K9 solenoid	7/32"

If actuating arm is bent, replace plunger. Check switch contacts. If pitted, replace switch.

4. Check linkage for binding. The approximate pressure applied to the top of the solenoid link to move plunger is:

#4 coil	3-1/2 lbs
#K4 coil	5 lbs
#K4+ coil	5-1/2 lbs
#M4+ coil	6 lbs
#P4+ coil	7 lbs
#5 coil	3 lbs
#6 coil (15 lb-ft)	5-1/2 lbs
#6 coil (25 lb-ft)	9 lbs
#8 coil	16 lbs
#9 coil	23 lbs
#9 coil (125 lb-ft)	18 lbs
#K9 coil	28 lbs

If excessive force is required, determine cause of binding and correct. Do not overlook bent, worn or broken plunger guides as a possible cause for binding.

- B. Check slots or teeth of endplate for wear at the areas where stationary discs are located. Grooves in the slots or teeth can cause hang-up or even breakage of ears or teeth of stationary discs. If grooving is noted, replace endplate.
- C. On all 55,XXX and 56,X00 Series Brakes, two screws are used for wear adjustment. They may be misadjusted. Remove support plate assembly. Rotate both screws counterclockwise until heights are equal at approximately 1/4" for multiple disc brakes and 1/2" for a single disc brake as measured by depth micrometer on the motor side of the support plate. Reinstall support plate and adjust solenoid air gap by rotating each screw clockwise an equal amount until the air gap as specified in the appropriate installation and service instruction sheet, for that brake series, is attained.

- D. Check mounting face runout, mounting rabbet eccentricity and shaft runout. Values should be within limits of NEMA specifications or as specified on Stearns Division drawing SA-534. Correct as required.
- E. On brakes with mounting bolts of endplate under friction disc(s), check that heads of bolts do not extend above wear surface of endplate.
- F. On vertical brakes, check the vertical mounting pins having a shoulder to be sure shoulder of pin is flush with wear surface of endplate or pressure plate. Be sure pins are straight and the pressure plate and stationary disc(s) are free to slide on the pins. Be sure springs and spacers are installed in proper order.
- G. If a heater is supplied and excess rusting has occurred in brake, check power source to heater to be sure it is operating and that heater is not burned out.
- H. Check manual release to be sure it operates properly, including automatic return. Be sure spring is not broken or deteriorated.
- I. The installed position of all horizontal brakes with a solenoid is with the solenoid plunger vertically above the solenoid frame. With certain brake styles, upside down installation can result in interference with the solenoid link preventing the plunger from seating. In cases of upside down installations, remove brake and rotate to have the solenoid and plunger as close to vertical as possible. Always check manual release operation on all brakes before starting motor.
- J. Check pressure spring(s) length to insure correct and/or equal height. Original spring lengths for various brakes series are given in the following tables so that correct setting may be obtained.

Note: Lengths apply to new disc pack, will increase due to wear, approximate dimensions are:

Torque (lb-ft)	Compressed Spring Length
1.5	1-1/8"
3 through 10	1"
15	1"

55,500 and 55,700 Series

Torque (lb-ft)	Compressed Spring Length
1.5	1"
3 through 10	7/8"
15	1-27/32"

56,000 and 56,700 Series

Torque (lb-ft)	Compressed Spring Length
1.5	1-5/8
3	1-1/2
6	1-9/16
10	1-9/16
15	1-9/16
20	1-9/16
25	1-1/2

56,100; 56,200; 56,300; 56,400 and

Torque (lb-ft)	Compressed Spring Length
1.5	1-9/16
3	1-1/2
6	1-1/2
10	1-9/16
15	1-9/16
20	1-9/16
25	1-1/2

All 87,000 Series

Color	Torque (lb-ft)	Compressed Spring Length
Blue	10	3-5/16"
Yellow	15	3-9/16"
Red	25 & 50	3-3/8"
Green	35, 75 & 105	3-3/8"
Black	10	3-1/4"
White	15	3-1/4"
Orange	25 & 50	3-1/4"
Purple	35, 75 & 105	3-1/4"

All 81,000 and 82,000 Series*

Torque (lb-ft)	Compressed Spring Length
125	4-23/32"
175	4-23/32"
230	4-27/32"
330	5-3/32"
440	5-3/32"
550	5-3/32"

Torque (lb-ft)	Compressed Spring Length
500	5-5/32"
750	5-5/32"
1000	5-5/32"

*Measurement is from top surface of support plate to bottom of spring nut with new disc pack.

K. Check for *homemade* or substitute parts that were not manufactured or supplied by Stearns Division. Usually the substituted parts can be recognized because they do not have the *finished* manufacturing appearance. Check, especially, such items as pressure spring, friction discs and hubs.

L. Check nameplate to see if it has been restamped. Incorrect information on nameplate may lead to ordering or obtaining incorrect parts or incorrect installation of brake.

II. If coil has failed

A. Refer to Section I, Items A1, A2, A3 and A4.

B. Check plunger guides for breakage. A broken plunger guide may not permit plunger to seat against frame.

C. Use only Stearns replacement coils. Substitute coils may not have the same pull characteristics as original coils and can either fail or cause damage to the solenoid.

III. If brake is noisy during stopping

A. Refer to Section I, Item D.

B. Check for signs of the outside diameter of the friction disc(s) rubbing on the inside diameter of

the endplate. This would indicate brake is eccentric with respect to the motor shaft and/or the shaft is deflecting during a stop. Check alignment per Section I, Item D and/or shaft diameter. If realignment does not correct the problem, a larger diameter shaft may be required. Shaft deflection may also be caused by excessive overhang of brake from motor bearing. Additional shaft support may be required.

C. In cases where motor shaft extends through a fan casing or guard, the clearance hole may not be adequate. Rubbing of the shaft may occur causing a noise during a stop. If required, enlarge clearance hole.

D. Check for bad motor bearings. Replace if necessary. Check for excessive shaft endfloat. Correct as required.