



## R7HD Brake

The purpose of the R7HD brake is to bring the motor to a smooth and quick stop and combined with the load brake, to help hold the load when the motor is not energized. The R7HD brake is used exclusively on the Spacemaster I series hoist. The brake is mounted to the gearcase cover, inline with the hoist motor.

### Technical Characteristics

#### Electrical Supply

Voltage	Standard NEMA AC
Allowable voltage fluctuation	±10%
Nominal supply frequency	±5%

#### Static Torque

Torque ratings	40 ft-lb - single friction disc 85 ft-lb – two friction discs 130 ft-lb – three friction discs
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#### Brake type

Magnetic – two coils  
 Single or multiple disc  
 Spring-set, electrically released  
 Manual wear adjustment

#### Coil Resistance

Resistance for one coil	208 Vac	1.6 ohms
	230 Vac	2.2 ohms
	460 Vac	8.8 ohms
	575 Vac	14.0 ohms

### Preventative Maintenance

The maintenance and inspection intervals are based on normal duty under normal environmental conditions (free from dust, moisture, corrosive fumes, etc). If duty is heavier or environment more severe, maintenance and inspection intervals should be more frequent.

Interval	Type of check	Inspection / Maintenance
Monthly to Quarterly	In-depth	Clean/Inspect/Adjust
Semi-Annually to Annually	Maintenance	Check sliding surfaces of studs for excessive wear Check holes of pole plate and armature plate for excessive wear. Check contact surfaces of pole plate and armature plate for distortion or unusual wear. Check holes of thrust plate for excessive wear. Check surface of thrust plate for excessive wear. Check brake hub for wear in particular the mating surface for friction disc. Clean the mating surface between the brake hub and friction disc. Check that friction disc freely slides back and forth on the brake hub. Check the terminal connections for corrosion.



## Troubleshooting

Problem	Possible Cause	Action
Loud noise or bang at magnetic brake when hoisting	Magnetic brake out of adjustment	Adjust air gap on the brake. Air gap increases as the friction material wears.
Premature wear of brake friction material	Magnetic brake not releasing – motor driving through magnetic brake	Investigate possible causes of the problem and service.
	Worn brake hub	Replace hub.
	Inoperative load brake	Perform a load brake test. Service load brake as necessary.
Magnetic brake not releasing	Brake out of adjustment – air gap too wide for the coil to release the brake	Adjust air gap on the brake. Air gap increases as the friction material wears.
	Defective coil or coils	Remove wire connections and measure the coil resistance (ohms). Replace defective coil or coils.
	Binding of a magnetic brake component: <ul style="list-style-type: none"> <li>• Worn surface on studs</li> <li>• Worn stud holes in armature or pole plates</li> <li>• Worn stud holes in thrust plate</li> </ul>	Visually inspect pieces and replace worn component.
	<ul style="list-style-type: none"> <li>• Friction disc not freely sliding back and forth on brake hub</li> </ul>	Clean mating surfaces between the friction disc and brake hub
	<ul style="list-style-type: none"> <li>• Uneven compression length of springs</li> </ul>	Measure the air gap at top and bottom. Readjust air gap as necessary.
	Incorrect wiring of the coils	Wire coils according to the R7HD coil connection diagram.
Chattering or buzzing magnetic brake	Magnetic brake out of adjustment	Adjust air gap on the brake. Air gap increases as the friction material wears.
	Damaged or distorted faces on pole or armature faces	Replace pole and armature plate assembly
	Low voltage or large voltage drop of the power supply or at brake coil.	Measure voltage of the power supply and at the brake coil. Voltage must be within $\pm 10\%$ of nominal. Check for loose terminals in the circuitry. Check the wire size of power supply. Check the conductor bar supplying power to crane/hoist.
	Binding of a magnetic brake component: <ul style="list-style-type: none"> <li>• Worn surface on stud</li> <li>• Worn stud holes in armature or pole plates</li> <li>• Worn stud holes in thrust plate</li> </ul>	Visually inspect pieces and replace worn component.
	<ul style="list-style-type: none"> <li>• Friction disc not freely sliding back and forth on brake hub</li> </ul>	Clean mating surfaces between the friction disc and brake hub
	<ul style="list-style-type: none"> <li>• Uneven compression length of springs</li> </ul>	Measure the air gap at top and bottom. Readjust air gap as necessary.



Problem	Possible Cause	Action
	Pole plate and armature plate are mismatched when assembled after servicing.	Replace pole and armature plates.
	Incorrect wiring of the coils	Wire coils according to the R7HD coil connection diagram.
Excessive drift when hoist is not being operated	Magnetic brake out of adjustment	Adjust air gap on the brake.
	Binding of a magnetic brake component: <ul style="list-style-type: none"> <li>• Worn surface on studs</li> <li>• Worn stud holes in armature or pole plates</li> <li>• Worn stud holes in thrust plate</li> </ul>	Visually inspect pieces and replace worn component.
	Worn friction disc	Replace friction disc
	Inoperative load brake	Perform a load brake test. Service load brake as necessary.
Block fails to stop quickly	Magnetic brake out adjustment	Adjust air gap on the brake.
	Worn friction disc	Replace friction disc
	Friction disc not freely sliding back and forth on brake hub	Clean mating surfaces between the friction disc and brake hub

## Adjusting the air gap

To set the air gap:

1. Loosen the thin nylok jam nuts, and then loosen the large nuts.
2. Turn in the clockwise direction each nut behind the pole plate an equal number of turns until the desired air gap is achieved.
3. Measure the air gap between the pole plate and armature plate at the top and bottom of the assembly. The air gaps at both the top and the bottom of the assembly must measure the same.
4. Tighten the large nuts, followed by the nylok jam nuts.
5. Recheck the air gap.
6. Mount the cover.

## Removing the brake

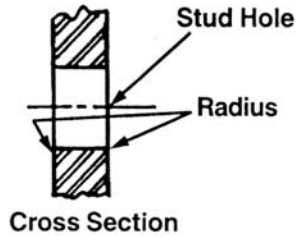
Before removing the R7HD brake, mark the pole plate and armature plate assemblies so that the same plates are matched up again and in the same orientation from top to bottom. Mismatching used pole and armature plates could cause the brake to function improperly.

### **Always disconnect power to the crane before servicing.**

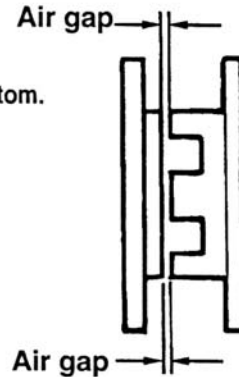
1. Mark the pole plate and armature plate assemblies.
2. Disconnect the electrical leads to the brake coils.
3. Loosen and remove the thin nylok jam nuts, and then loosen and remove the large nuts.
4. Remove the pole plates.
5. Loosen and remove the hex head nuts.
6. Remove the springs.
7. Remove the armature plates.
8. Remove the thrust plates and friction discs.

## Installing the brake

### R7H BRAKE INSTRUCTIONS



- STEP 15**  
 Set air gap. Top & bottom.  
 Set air gap  $\pm .005$
- 1 Friction disc .040"
  - 2 Friction discs .050"
  - 3 Friction discs .060"



**STEP 1**  
 Use oil seal sleeve & insertion tool to seat seal.

**STEP 2**  
 Blow out & clean stud holes.

**STEP 3**  
 Apply three drops of Red 271 Loctite on short threaded end of each stud. Wipe off excess Loctite after installation.

**STEP 4**  
 Use stud driver and handwrench to seat studs. Absolutely do not use air tools to seat stud. Torque stud to 25 ft-lbs. Do not exceed.

**STEP 5**  
 Install brake hub.

**STEP 6**  
 Snap ring must be seated in groove.

**STEP 7**  
 Before installing, check each stud hole for rounded edge on both sides of plate. See cross-section. Thrust plate must be flat & slide freely over the studs.

**STEP 8**  
 Friction disc must slip freely over hub. Do not force on.

**STEP 9**  
 Before installing, check each stud hole for rounded edge on both sides of plate. See cross-section. Armature plate assembly must slide freely over studs.

**STEP 10**  
 Install spring.

**STEP 11**  
 3/8" thick jam nut.

**STEP 12**  
 Check for loose terminals. If any terminals are loose do not use coil. Coil must be firmly fastened to armature plate assembly. Reclamp if loose.

**STEP 13**  
 Thin height nylok jam nut

**STEP 14**  
 Cable must have some slack to allow for coil movement.

**STEP 16**  
 Cable wire leads must be firmly clamped to coil terminals.

Large Nut  
 Large Nut