



# TRUBLESHOOTING GUIDE

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General Brake Air Valves

## SYMPTOMS:

Leaks

Sensitive Brakes

Brakes Won't Apply  
Completely

Brakes Won't Release  
Completely

## SYMPTOM: Leaks

Tip: Determine when leakage occurs.

### Static Leakage

- ▶ Check for air system contamination.
- ▶ Check for backfeed from spring brake valves, tractor protection valves and trailer (if connected).
- ▶ Inspect double check valve located between trailer control (hand valve) and brake valve. If this is the cause, leakage will occur when hand brake is applied and foot valve released.

### Dynamic Leakage

- ▶ Check for air system contamination.
- ▶ Inspect double check valve located between trailer control (hand valve) and brake valve. If this is the cause, leakage will occur when hand brake is applied and foot valve released.

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General Brake Air Valves  
**SYMPTOMS:**

Leaks  
 Sensitive Brakes  
 Brakes Won't Apply Completely  
 Brakes Won't Release Completely

## SYMPTOM: Sensitive Brakes

**Tip: Inspect foundation brakes**

### Possible Causes

- ▶ Incorrect slack adjuster arm length or chamber yoke connected to wrong hole in slack.
- ▶ Chamber/slack alignment binding momentarily.
- ▶ Inspect friction material.
- ▶ Inspect condition of foundation brake components.
- ▶ Cam rotation counter to wheel rotation.

**Tip: Air system freeze-ups (freezes then breaks free)**

### Possible Causes

- ▶ Inspect relay valve, quick release valve, brake valve and air lines for proper operation.
- ▶ Inspect tire tread condition and determine type (standard or low profile).

**Tip: Brake valve maintenance items**

### Possible Causes

- ▶ Plunger/treadle or pedal sticking:
  - Treadle or pedal hinge pin not lubricated.
  - Plunger and roller not lubricated.
  - Ensure proper treadle with roller.
  - Plunger cocked in mounting plate.
  - Boot torn, dirt accumulated around plunger.
- ▶ Lubrication:
  - Too much (damages rubber spring and/or boot).
  - Too little - see plunger sticking.
  - Installation - body or mounting plate distortion due to uneven floor board or firewall mounting surface.

**Tip: Inspect other air system components such as the LQ-4 or BP-1 for malfunction.**

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# GENERAL BRAKE AIR VALVES TROUBLESHOOTING GUIDE

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General Brake Air Valves  
SYMPTOMS:

## SYMPTOM: Brakes Won't Apply Completely

Leaks

Sensitive Brakes

Brakes Won't Apply Completely

Brakes Won't Release Completely

### Tips

- ▶ Brakes not adjusted.
- ▶ Automatic slack adjuster malfunction (under adjusting).
- ▶ Air line or component freeze-up.
- ▶ Relay valve malfunction.
- ▶ Faulty foundation brake components.
- ▶ Pedal or treadle movement restricted floor board obstruction (tools, cans, gravel, debris).
- ▶ Improper chamber/slack adjuster alignment.
- ▶ Pushrod binding on chamber non-pressure plate.
- ▶ Pushrod too long/short.
- ▶ No air pressure in one brake circuit.
- ▶ Air lines misconnected to brake valve, relay valve, quick release valve or spring brake valve.
- ▶ Plunger/treadle or pedal sticking.

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# GENERAL BRAKE AIR VALVES TROUBLESHOOTING GUIDE

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General Brake Air Valves  
SYMPTOMS:

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## SYMPTOM: Brakes Won't Release Completely

### Tips

- ▶ Parking brakes on, won't release.
- ▶ Condition of foundation brake components - springs, shoes, bushings (squeezed) or bent spider.
- ▶ Air lines pinched, improperly assembled into fittings or misconnected.
- ▶ Check brake valve stop button adjustment.
- ▶ System contamination - oil swelling.
- ▶ Relay valve - contamination - piston sticking.
- ▶ Quick release or ratio valve.
- ▶ Chamber/slack adjuster binding.
- ▶ Automatic slack adjuster malfunction - over-adjusting.

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# CONTROL AIR VALVES TROUBLESHOOTING GUIDE

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## Control Air Valves SYMPTOMS:

Leaks  
Valve "Pops"

## SYMPTOM: Leaks

### Possible Causes

▶SR-1 spring brake valve system is contaminated (corrosion, oil, carbon), causing feedback when the PP-1 is in the exhaust or out position.

### Corrective Action

▶Check brake system for corrosion, oil or carbon and take corrective action. Other possible causes of leakage include improper valve installation. Always carefully inspect (and clean if necessary) valves and fittings to prevent the entry of metal fitting chips. When installing fittings take care not to allow any excess Teflon tape or pipe dope to enter into the valve.

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# CONTROL AIR VALVES TROUBLESHOOTING GUIDE

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Control Air Valves

SYMPTOMS:

Leaks

Valve "Pops"

## SYMPTOM: Valve "Pops"

### Possible Causes

- ▶ Pressure is too high.
- ▶ Pressure is too low.

### Corrective Action

- ▶ Wrong PP-1 part number in use: Incorrect plunger spring B. (The rate of downstream pressure loss affects "pop" pressure - the greater the rate of loss the higher the pressure required to activate valve.)
- ▶ Wrong PP-1 part number in use: Incorrect plunger spring.

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# CHAMBERS TROUBLESHOOTING GUIDE

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Air Compressor

**SYMPTOMS:**

Bent Pushrod or Loose Push Plate

Clamp Ring Won't Fit

Leaks Around Clamp Ring

Weak Return Spring

**SYMPTOM: Bent Pushrod or Loose Push Plate**

A bent pushrod or loose push plate indicates that the Chamber was not installed correctly causing improper alignment with the slack adjuster.

**Indications**

- ▶ The pushrod is too long or short.
- ▶ 90 degree angle between push rod and slack at 1 total chamber stroke.
- ▶ Keyholing non-pressure plate.

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## Air Compressor

### SYMPTOMS:

Bent Pushrod or Loose Push Plate

Clamp Ring Won't Fit

Leaks Around Clamp Ring

Weak Return Spring

## SYMPTOM: Clamp Ring Won't Fit

### Possible Causes

- ▶ Too loose and will not seal.
- ▶ Too tight and cannot install.

### Corrective Action

- ▶ Vee configuration is distorted (by abusive use of mallet) or diaphragm incorrectly positioned between pressure and non-pressure plate.
- ▶ Diaphragm incorrectly positioned between pressure and non-pressure plate. You may be able to use the Vee configuration to seal - use mallet and tap evenly around clamp ring.

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Air Compressor

## SYMPTOMS:

Bent Pushrod or Loose Push Plate  
Clamp Ring Won't Fit  
Leaks Around Clamp Ring  
Weak Return Spring

## SYMPTOM: Leaks Around Clamp Ring

### Possible Causes

- ▶ Clamp ring incorrectly installed.
- ▶ Clamp ring distorted.
- ▶ Clamp ring bolts over or undertorqued (tap evenly around clamp ring).

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Air Compressor

## SYMPTOMS:

Bent Pushrod or Loose Push Plate

Clamp Ring Won't Fit

Leaks Around Clamp Ring

Weak Return Spring

## SYMPTOM: Weak Return Spring

The following applies to the return spring for cam and slack adjuster only. Note that the standard return spring force, in pounds, is roughly equal to 1.5 times chamber size number (i.e. Type 30 chamber has approximately 45 pound return spring force at 0. stroke).

## Possible Causes

- ▶ Broken return spring.
- ▶ Air slow to release.
- ▶ Weak foundation brake springs.
- ▶ Binding parts: Push rod, cam, cam bushings, rollers, anchor pins, rusty guides

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# TRUCK AUTOMATIC SLACK ADJUSTERS TROUBLESHOOTING GUIDE

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Automatic Slack Adjusters  
**SYMPTOMS:**

Broken Linkage  
 Over-adjusts  
 Under-adjusts  
 Flusted to Cam

**SYMPTOM: Broken Linkage**

## Possible Causes

- ▶ Physical damage.
- ▶ Improper installation.

## Corrective Action

- ▶ Repair or replace.
- ▶ Adjust so that there is a 90 degree angle between actuator push rod and the slack adjuster at 1/2 maximum actuator stroke.

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Automatic Slack Adjusters

## SYMPTOMS:

- Broken Linkage
- Over-adjusts
- Under-adjusts
- Rusted to Cam

## SYMPTOM: Over-adjusts

### Possible Causes

- ▶Condition of foundation brake components.
- ▶Improper installation.

### Corrective Action

- ▶Inspect the foundation brake components and repair or replace.
- ▶Adjust so that there is a 90 degree angle between actuator push rod and the slack adjuster at 1/2 maximum actuator stroke.

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Automatic Slack Adjusters  
**SYMPTOMS:**

**SYMPTOM: Under-adjusts**

- Broken Linkage
- Over-adjusts
- Under-adjusts
- Rusted to Cam

**Possible Causes**

**Corrective Action**

- ▶ Physical damage - broken linkage. ▶ Repair or replace.
- ▶ Improper installation. ▶ Adjust so that there is a 90 degree angle between actuator push rod and the slack adjuster at 1/2 maximum actuator stroke.

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Automatic Slack Adjusters

**SYMPTOMS:**

- Broken Linkage
- Over-adjusts
- Under-adjusts
- Rusted to Cam

**SYMPTOM: Rusted To Cam**

**Corrective Action**

- ▶ Make sure to lubricate regularly. Regular lubrication helps to prevent slack from rusting to the camshaft.

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