

# Do Your Brakes Measure Up? How to Check Adjustment of S-cam Air Brakes with Clamp-Type Chambers

▲ **WARNING:** SELF-ADJUSTING BRAKE ADJUSTERS SHOULD NOT REQUIRE IN-SERVICE READJUSTMENT. SEE BACK OF CARD FOR ADDITIONAL INFORMATION.

▲ **WARNING:** ONLY USE THIS CHECKLIST IF YOU ARE TRAINED AND AUTHORIZED TO CHECK BRAKE ADJUSTMENT!

## SET-UP PROCEDURES



1. **Park vehicle** on level ground. Put **wheel chocks** in place. Wait until brakes are cool to the touch. Determine the chamber types.



2. **Start engine** to build air reservoir pressure.



3. **Release** spring-type parking brakes and all service brakes.



4. **Turn off engine** when both air reservoir pressure gauges reach **90-100 psi (620-690 kPa)**. Place transmission in low gear.



5. **Push against the pushrod with your hand to ensure that it is fully retracted** into the brake chamber. **Repeat at each wheel end.**



6. If your brakes have **moveable stroke indicators**, set them (some slide, others need a special tool). If not, **mark the pushrod** with chalk or other marking device where it exits the brake chamber. **If the chamber is not accessible, mark the pushrod where it aligns with the chamber mounting bracket** (reference surface). **Repeat at each wheel end.**

You can check brake adjustment of S-cam brakes using the applied stroke method or free stroke method. **The applied stroke method is more reliable.**

## APPLIED STROKE METHOD



7A. **Make a full brake application** with air reservoir pressure gauges at **90-100 psi (620-690 kPa)**.

- (a) Ask an assistant to completely depress the brake pedal, or
- (b) Use a prop to hold the brake pedal fully applied, or
- (c) Activate a dash-mounted brake valve actuator.



8A. With the brake fully applied, **tap** the side of the **brake drum** with a **small hammer**. **You should hear** a dull “clunking” sound. **If you hear a “ringing” sound, the brake lining is not against the drum. Have the brake inspected immediately by a certified brake technician. Repeat at each wheel end.**



9A. **Use a ruler to measure the applied stroke**, which is the distance from the chalk mark on the pushrod to where it exits the brake chamber (or the reference surface used in Step 6). **Repeat at each wheel end.**



10A. Is the **measured pushrod stroke at or greater than the maximum adjustment limit for the chamber type** (see side 2 of card)? **OR, do you see a red or orange colored band** on the pushrod (excessive stroke indicator) when the brake is fully applied? **If yes, write it down. Have the brake inspected immediately** by a certified brake technician to determine if repairs are needed.

## FREE STROKE METHOD

*Drivers: If you must check your brakes without assistance, you can use the free stroke method with a pry bar.*



7B. **Attach a pry bar** and pull hard on the brake adjuster arm. **Repeat at each wheel end.**



8B. With the pry bar pulling on the brake adjuster, **tap** the side of the **brake drum** with a **small hammer**. **You should hear** a dull “clunking” sound. **If you hear a “ringing” sound, the brake lining is not against the drum. Have the brake inspected immediately by a certified brake technician. Repeat at each wheel end.**



9B. **Use a ruler to measure the free stroke**, which is the distance from the chalk mark on the pushrod to where it exits the brake chamber (or the reference surface used in Step 6). **Repeat at each wheel end.**



10B. Is the free stroke more than **5/8 inch\* (16mm\*) for a self-adjusting brake adjuster or more than 1/2 inch\* (13mm\*) for a manual brake adjuster**? **If yes, write it down. Have the brake inspected immediately** by a certified brake technician to determine if repairs are needed. (\*Refer to your vehicle owner's manual for specific limits.)

# MAXIMUM ADJUSTMENT LIMITS FOR S-CAM AIR BRAKES WITH CLAMP-TYPE CHAMBERS

Using the applied stroke method, 90-100 psi (620-690 kPa) reservoir pressure

## CHAMBER TYPE (Size)

You can determine the type (or size) of brake chamber 3 ways:

1. Use a special tool,
2. Look for the word "TYPE" followed by a number (e.g., 9, 12, 18, 20, 24, 30, 36) on the clamp or body of the brake chamber, or
3. Ask a certified brake technician.

NOTE: Although clamp-type is the most common brake chamber, there are others. Check with a certified brake technician if you are uncertain about the style, type and maximum applied stroke of brake chambers installed on your vehicle.



Special Tool



Numeric Markings

## STANDARD Stroke Brake Chambers

Standard stroke brake chambers generally have:

- ROUND ports,
- NO SPECIAL TAG or service instructions embossed on flange case.



TYPE	Brake Adjustment Limit @ 90-100 psi
9	1-3/8 inches (35 mm)
12	1-3/8 inches (35 mm)
16	1-3/4 inches (45 mm)
20	1-3/4 inches (45 mm)
24	1-3/4 inches (45 mm)
30	2.0 inches (51 mm)
36	2-1/4 inches (57 mm)

## LONG Stroke Brake Chambers

Look for one of the following three features. They generally distinguish a long stroke brake chamber from a standard stroke brake chamber (SAE J1817):

1. Raised SQUARE port on spring brake chamber (NOTE: used on Type 24\* and Type 30L chambers ONLY) or Raised SQUARE embossment (service brake chamber)
2. TRAPEZOID-shaped tag
3. INSTRUCTIONS EMBOSSED on flange case (Example: "Use only 3 inch long stroke diaphragm")



TYPE	Brake Adjustment Limit @ 90-100 psi
12L	1-3/4 inches (45 mm)
16L	2.0 inches (51 mm)
20L	2.0 inches (51 mm)
24L	2.0 inches (51 mm)
24*	2-1/2 inches (64 mm)
For 3" maximum stroke Type 24 chambers	
30L	2-1/2 inches (64 mm)

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▲ **WARNING:** Self-adjusting brake adjusters should only need manual readjustments when they are first installed and when brakes are relined. Only perform a "temporary" roadside manual re-adjustment to safely drive the vehicle directly to a certified shop for troubleshooting and repair.

▲ **REMEMBER:** Brake adjustment problems could be caused by the adjuster; the chamber; the foundation brake; or other parts of the brake system.

▲ **REMEMBER:** Manually re-adjusting a self-adjusting brake adjuster does not fix the problem; will not keep the brake in adjustment; can contribute to abnormal wear of the internal adjusting mechanism; and could cause the brake to fail.