Revised June 3, 2015

IICL Chassis Technical Bulletin – CTB 022, June 3, 2015

Title: Chassis Brake Stroke

Most container chassis are equipped with standard type (not long-stroke) 30/30 brake chambers. **This Bulletin assumes 30/30 chambers** which have 30 square inches of surface area for service brakes and 30 square inches for parking (spring) brakes.

The maximum pushrod stroke must NOT be greater than 2” for 30/30 chambers, regardless of manual or automatic slack adjusters. Reference: FMCSA Part 399, Chapter III, Sub-Chapter B, Appendix G.

Note: 1-1/2” is a common brake pushrod stroke after the brakes are properly adjusted and new brake linings are installed.

WARNING:

- Always be sure the vehicle is secure from rolling.
- **Always chock wheels (on both sides of the chassis, fore and aft of at least 1 axle) before releasing the parking brakes.**
- Never go under a chassis that might roll.
- **NEVER** attempt to service or disassemble the spring chamber on any spring brake actuator. The large spring in the spring chamber has EXTREME force which could cause serious bodily injury or death if it were suddenly released due to inadvertent removal of the clamp. For a detailed procedure on disarming a brake chamber please see IICL Chassis Technical Bulletin 012.

Tractor air pressure should be 90 – 100 psi for this procedure.

This is how a roadside inspector is instructed to check brake pushrod stroke.

The inspector will need the following tools:

- Wheel chocks
- Ruler / measuring tape
- Chalk
- Personal protective gear

1. Be sure the location is safe / chock wheels (on both sides of the chassis, fore and aft of at least 1 axle).
2. Have the driver bring air pressure to 90 to 100 psi, and turn off engine.
3. Release all brakes (no brake applied).
4. Chalk mark pushrods where they enter the bracket or the brake chamber (this will be the "zero" or "baseline" position). See Figure 1.

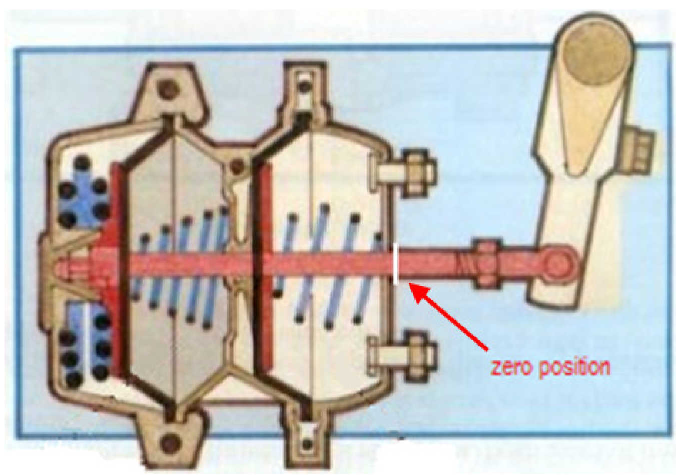

Figure 1: Air pressure above 90 psi
with service and parking (spring) brakes released

5. Have driver depress foot brake pedal fully which applies the service brakes.
6. Measure the distance that the chalk mark moved from the baseline position outward. See Figure 2.
   a. This has to be 2" or less (for 30/30 brake chambers).

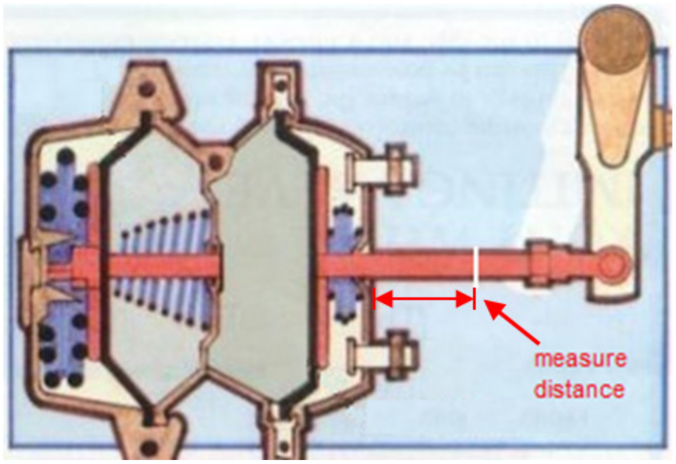

Figure 2: Air pressure between 90 and 100 psi
with the service brakes fully applied, and the parking (spring) brakes released

7. Do this for all 4 wheel positions (6 on a tri-axle chassis).

Brake chamber pushrods are generally marked by the chamber manufacturer with some type of indicator (usually orange or red color) that becomes visible when pushrod stroke exceeds the chamber adjustment limit (Figure 3). Some chassis also have brake-stroke indicators fitted to the brake linkage or slack adjuster, which include external reference points to provide a visual indication of the applied pushrod stroke. These indicators must be accurately calibrated or they will give incorrect readings.

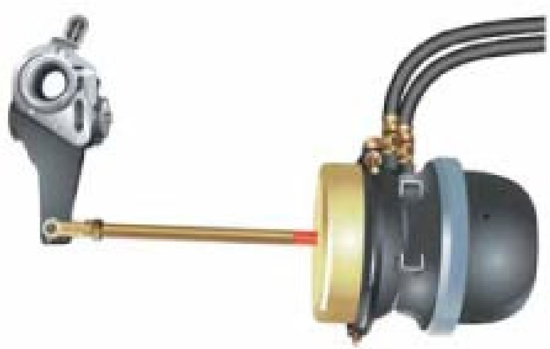

Figure 3: Brake chamber pushrod indicator

If the chassis has manual slack adjusters (Figure 4), they can be adjusted to correct more than 2” stroke.

Figure 4: Manual slack adjuster example

If the chassis has automatic slack adjusters (Figure 5), they too can be adjusted temporarily in an emergency but need to be checked as soon as possible to find out why they aren't doing the job.

Figure 5: Automatic slack adjuster example

Assuming they are properly installed, automatic slack adjusters need to be adjusted on two occasions only:

a. when they are first installed on a chassis
b. when a brake job is performed

Automatic slack adjusters might come from Meritor, Haldex, Bendix, Gunite or Stemco (Crewson), but they do not install the same way. Always read and follow the specific manufacturer instructions.

Automatic slack adjusters, if they are working properly, do not require regular re-adjustment. If periodic re-adjustments are required, it means that the automatic slack adjuster is defective or there is something wrong with the foundation brakes – linings, pins, springs, rollers, S-cam – and must be inspected and repaired by a certified brake technician.

Note:
Automatic slack adjusters and brake adjustment indicators (393.53) – Every U.S. chassis manufactured since October 20, 1994 must be equipped with both these items and must conform to FMVSS 121 that is applicable on the date the chassis was manufactured.