

AA1 and S-ABA Automatic Brake Adjuster Installation Guide (Rev. 2/11)



PRODUCT IDENTIFICATION

	<h3>AA1</h3> <p>The control arm of the AA1 automatic brake adjuster must be placed with the "pointer in the notch," for proper initial setup. Spring brakes must be fully released when setting up the AA1.</p>	<p>Part Number 409-10... = Reduced maintenance adjuster 429-10... = No-Lube adjuster</p> <p>Serial Number First 3 digits = Day of year built Last 2 digits = Year of build</p>	<p>After Sept. 1989 The Part No. P/N40910224 would be our adjuster part number 409-10224.</p> <p>Prior to Sept. 1989 The first three numbers stamped on the cover plate is the brake adjuster part number. For example: 224 would be our adjuster part number 409-10224.</p>			<h3>S-ABA</h3> <p>The control arm on the S-ABA can be located anywhere within the range of the mounting hardware. No installation pointer is required with the S-ABA because of the flexible positioning of the control arm. All other S-ABA installation procedures are the same as the AA1.</p>	<p>Part Number 409-20... = S-ABA Brake Adjuster</p> <p>Serial Number First 3 digits = Day of year built Last 2 digits = Year of build</p>	<p>The Part No. P/N40920002 would be our adjuster part number 409-20002.</p> <p>Part Number P/N40920002</p> <p>Serial Number S/N26802</p>
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INSTALLATION INSTRUCTIONS

	<p>STEP 1</p> <p>Block wheels to prevent vehicle from rolling. Ensure system tank pressure is above 100 PSI. Check that the push rod is fully retracted, apply air to release spring brake. If air is not available, spring brake must be manually caged back. Install anchor bracket loosely as illustrated. Some strap brackets have two mounting holes. Proper mounting location is determined by the length of adjuster arm. 5" and 5 1/2" adjuster arm lengths utilize the shorter hole location while 6" and 6 1/2" length adjusters utilize the longer hole locations. Do not tighten anchor bracket fasteners at this time. Apply "Anti-Seize" type lubricant to camshaft splines.</p>		<p>STEP 2</p> <p>Place at least one inner cam washer on shaft. Install adjuster with the 7/16" adjusting hex pointing away from the spring brake or service chamber.</p>		<p>STEP 3</p> <p>Secure adjuster to shaft with snap ring. Install enough washers (per TMC recommended practice RP609-A) to reduce end play to less than .060".</p>	
	<p>STEP 4</p> <p>Rotate the 7/16" adjusting hex nut clockwise until the clevis hole lines up with the brake adjuster arm hole. Do not pull push rod out to meet clevis.</p>		<p>STEP 5</p> <p>Apply anti-seize type lubricant to clevis pin, install and secure with cotter pin.</p>			<p>STEP 6 - FOR S-ABA ONLY</p> <p>For the S-ABA, the control arm position can be set anywhere within the slotted area of the bracket and the adjuster will function properly. Haldex recommends a "common position" for all installations—all the way towards the axle, until the control arm comes to the end of the slotted bracket.</p>
	<p>STEP 6 - FOR AA1 ONLY</p> <p>For the AA1, rotate the control arm away from adjusting hex, toward the spring brake or service chamber until it comes to a definite internal stop. The installation indicator must fall within the slotted area with the brake fully released. The view of the indicator varies from side to side. Haldex AA1 trailer adjusters are unhandled and are used on both axle sides.</p>		<p>STEP 7</p> <p>Insert the flat end of the anchor stud through the control arm bushing. Push the threaded end into the anchor plate slot and loosely install flange nut. Installation of different style anchor brackets and attachment methods follow a similar procedure.</p>		<p>STEP 8</p> <p>After positioning control arm and anchor pin to desired location, tighten the flange nut to 40-50 ft. lbs. Note: S-ABA control arm position is all the way toward the axle. AA1 control arm position is such that the installation indicator falls within the control cover slot. These common positions work well for most applications.</p>	
	<p>STEP 9</p> <p>The adjuster must be manually adjusted at this time. Adjust brakes by rotating the 7/16" adjusting hex clockwise until the lining lightly contacts the drum.</p>		<p>STEP 10</p> <p>Back-off the adjuster by rotating adjusting hex counter-clockwise 1/2 turn. A ratcheting sound will occur, which is normal. Never use an impact wrench or internal damage will occur.</p>	<p>Final Inspection</p> <p>Recheck all fasteners for proper installation. Before releasing vehicle, actuate brakes several times assuring no binding or partial release. Full pushrod travel and release is necessary for proper brake adjustment.</p>		

TYPICAL APPLICATIONS

<h3>Steer Axle</h3> <p>Steer Axle with clamp bracket and flat anchor stud</p> <p>Mack 16,000# or higher rated Steer Axle with spider mounted bracket</p> <p>Steer Axle with strap bracket</p>			<h3>Drive Axle</h3> <p>16" Drive Axle with strap bracket</p> <p>Mack Drive Axle with clamp bracket and flat anchor stud</p>			<h3>Trailer Axle</h3> <p>Trailer Axle for 16 1/2" brake assemblies</p> <p>Trailer Axle for 12 1/4" brake assemblies</p>	
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Automatic Brake Adjuster Maintenance

WARNING: Haldex strongly recommends routine visual checks be performed at EACH maintenance service interval. Foundation brake operational checks utilizing CVSA level 1 applied stroke criteria should always be utilized. Manual adjustment of automatic adjuster can disguise hidden problems within the foundation brake. Brake components such as s-cams, bushings, return springs, actuators, drums and adjuster installation MUST be within the manufacturer's specifications. Adjuster control arms, wear bushings or attaching hardware that demonstrate visual damage, or which fail the operational checks, MUST be replaced immediately. Automatic Adjusters should NEVER be operated as manual adjusters except as may be necessary to get the vehicle off the road for service. **Make sure the wheels are blocked before servicing the vehicle. Release the parking brake and check that the push rod is fully released. If the push rod is not fully released, the adjuster can not be inspected properly.**

MEASURE PUSH ROD STROKE

The applied stroke of the brake should be checked per CVSA guidelines by making a brake application at 90-100 psi reservoir pressure. The maximum applied push rod stroke, as recommended by the spring brake manufacturers, must be at or less than the following:

Standard Clamp Type Brake Chamber				Long Stroke Type Brake Chamber			
Type	Adjustment Limit	Type	Adjustment Limit	Type	Adjustment Limit	Type	Adjustment Limit
9	1-3/8"	24	1-3/4"	16L	2"	24LS	2-1/2"
12	1-3/8"	30	2"	20L	2"	30LS	2-1/2"
16	1-3/4"	36	2-1/4"	24L	2"		
20	1-3/4"						

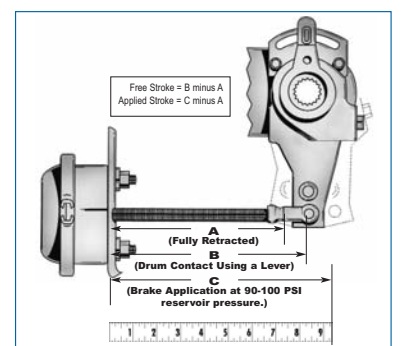
* Long stroke chambers are identified with square air port or port bosses and special trapezoid ID tags.

90-100 psi Reservoir Pressure

How To Measure

Free Stroke is the amount of movement of the adjuster arm required to move the brake shoes against the drum. With brakes released, measure from the face of the chamber to the center of the clevis pin - "A" Fully Retracted. Use a lever to move the brake adjuster until the brake shoes contact the drum - "B" Drum Contact Using a Lever. The difference between the fully retracted and drum contact measurement "B" minus "A" is the free stroke. The free stroke range should fall between 3/8" and 3/4".

Note: Stroke Measurements are taken from face of air chamber to center of clevis pin.



SERVICE & LUBRICATION INTERVALS

Adjuster Type	Manufacture Date	Lubrication Interval	Type of Lubricant	Visual Check Interval
Standard Adjuster 409-10...	Prior to 6/1/96	50,000 miles or every 3 months	Standard Chassis Grease	Each Preventative Maintenance Service Interval
Reduced Maintenance Adjuster 409-10...	After 6/1/96	Once a year	Standard Chassis Grease	Each Preventative Maintenance Service Interval
No-Lube™ Adjuster 429-10...	After 6/1/96	None	Sealed Unit	Each Preventative Maintenance Service Interval
S-ABA Adjuster 409-20...	n/a	Once a year	Standard Chassis Grease	Each Preventative Maintenance Service Interval

Notes:

No-Lube™ automatic brake adjusters are manufactured without a grease fitting and are identified by a 429 prefix. Moly-disulfide grease should not be used because it may affect the function of the internal friction clutches and reduce the reliability of the automatic adjustment. In no case should the lubrication interval exceed the published intervals shown here.

Maintenance Inspection

During normal lubrication intervals, visually inspect brake adjuster, anchor bracket and control arm for damage. Check that anchor bracket and control arm are tight and the control arm is in its correct position. (Refer to Installation Step 6 AA1 and Step 6 S-ABA)

Rotate the adjustment hex counter-clockwise approximately one full turn to create excessive lining to drum clearance. Make a brake application; on release observe the adjusting hex rotation. This rotation indicates the adjuster is making an adjustment and is working properly. Attaching a wrench to the adjusting hex will make this rotation easier to see. On each subsequent brake release, the amount of push rod stroke will be reduced until the proper lining to drum clearance is achieved.

BRAKE RELINE/CHECKING PROCEDURE

This Operational Check should also be performed when installing brake linings. If the push rod stroke is incorrect, see the information listed in the Brake Troubleshooting Section.

Operational Check

During reline, check the de-adjustment torque. Place a torque wrench on the adjusting hex. Turn the hex counter-clockwise and check that the clutch does not slip at a torque less than 13 ft. lbs. A ratcheting sound should occur. If the clutch slips at a lesser torque, the adjuster must be replaced. After test, manually adjust as shown in Installation Steps 9 and 10.

FOUNDATION BRAKE AND BRAKE ADJUSTER TROUBLESHOOTING

The adjuster is not a cure-all for foundation brake deficiencies. If the proper push rod stroke and lining to drum clearance can not be maintained, be sure to thoroughly check the other brake components. This could also help to avoid unnecessary adjuster replacement.

Troubleshooting Checklist

When checking the foundation brake look for:

- Worn cam shaft and bushings
- Broken shoe return springs
- Air chambers not releasing
- Worn or broken brake components
- Loose wheel bearings

When checking the adjuster look for:

- Proper push rod stroke
- Proper adjuster installation
- Loose, broken, bent or worn adjuster anchor brackets or control arms
- Worn clutch assembly (see Operational Check)
- Adjuster not fully releasing



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