

BENDIX DUO-SERVO SELF-ADJUSTING BRAKE (AEROBUS)

Description

These brakes are of a two shoe, self-adjusting, internal expanding, duo-servo type with a primary and secondary shoe. The adjusting screw is located at the lower end between the primary and secondary shoe. See Fig. 1.

Service Brake Adjustment

Normally self-adjusting brakes will not require a manual adjustment, but in the event of a brake reline it may be advisable to make the initial adjustment manually to speed up the adjusting time.

1. Raise vehicle so all wheels are free to turn.
2. Remove rear adjusting hole cover from the backing plate on all of the brake supports of the vehicle.
3. Be sure the parking brake lever is fully released, then back off the parking brake cable adjustment so there is slack in the cable.
4. Insert adjusting tool into the star wheel of the adjusting screw and move handle downward until a slight drag is felt when the road wheel is rotated.
5. Insert a thin screwdriver into the brake adjusting hole and push the automatic adjusting lever out of engagement with the star wheel.

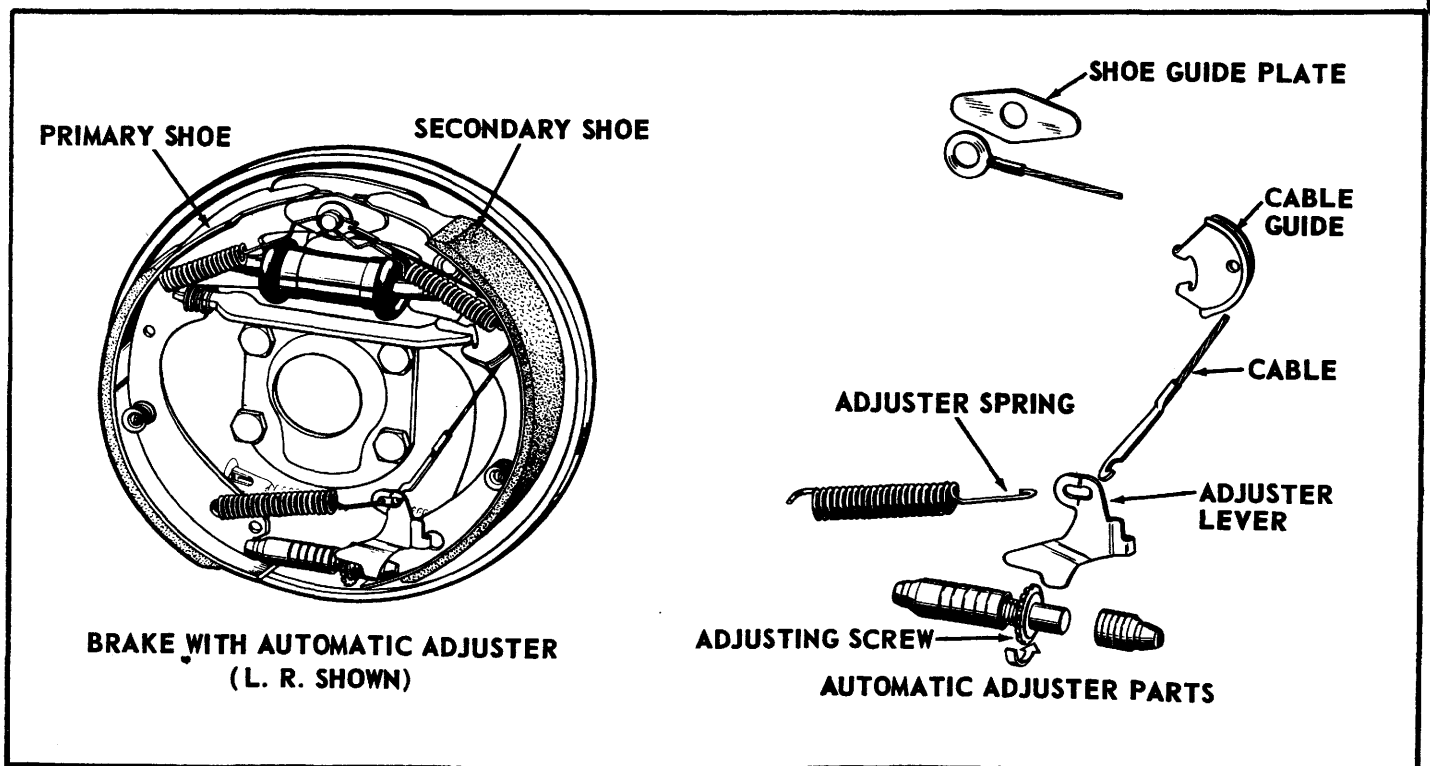


Fig. 1-Aerobus Rear Brake

While holding the adjusting lever out of engagement, back off the star wheel (move tool handle upwards) 10-12 notches to insure a free wheel with no brake shoe drag.

6. Repeat the above adjustment at each wheel. The adjustment must be equal at all wheels. Install the adjusting hole covers in the brake supports.
7. Tighten parking brake adjusting nut at equalizer until a slight drag is felt at the rear wheels. Loosen the adjusting nut until both wheels can be rotated freely, then back off adjusting nut 2 full turns.

Automatic Adjusters

No special tools are required for removing or installing the automatic brake adjuster. However, proper installation and adequate lubrication cannot be over emphasized. Keep in mind also that the Automatic Adjusters are actuated by brake shoe movement when the vehicle is traveling backward only.

Testing Automatic Adjuster Operation

1. Place the vehicle on a hoist with a helper in the drivers seat to apply the brakes. Remove the cover from the rear adjustment slot in each brake support plate to observe the adjuster star wheel. Then to exclude the possibility of maximum adjustment; that is, the adjuster refuses to operate because the closest possible adjustment has been reached; the star wheel should be backed off approximately 30 notches. It will be necessary to hold the automatic adjusting lever away from the star wheel to allow backing off the adjustment.
2. Spin the wheel and brake drum in the reverse direction and apply the brakes vigorously. This will provide the necessary inertia to cause the secondary brake shoe to leave the anchor. The wrap-up effect will move the secondary shoe and the cable will pull the adjuster lever up. Upon release of the brake pedal the lever

should snap downward, turning the star wheel. Thus, a definite rotation of the star wheel can be observed if the automatic adjuster is working properly. If by the described procedure, one or more automatic adjusters do not function properly the respective drum must be removed for adjuster servicing.

Adjuster Servicing

No special tools are required.

1. Remove wheel and brake drum.
2. Secure wheel cylinder pistons with a cylinder clamp.
3. Remove anchor-to-shoe springs, adjuster spring, adjuster lever, cable, cable guide, shoe guide plate, and the adjusting screw assembly.
4. Arrange Automatic Adjuster Parts in a group and inspect each part as follows:
 - a. For wear and/or damage
 - b. For corrosion
 - c. For burrs

Clean parts thoroughly; remove burrs; replace defective parts.

NOTE: If new brake shoes are required, remove hold down assemblies and shoes. Apply brake lubricant to backing plate ledges, and install lined brake shoes. Remove excess lubricant to avoid contaminating lining.

5. Apply a liberal amount of brake lubricant to the adjusting screw threads and socket end. Assemble adjusting screw and nut to the limit of the threads and back off 1/2 turn. Lubricate and assemble socket to opposite end of adjusting screw. Remove excess lubricant from assembled parts.
6. Fit adjusting screw assembly between the shoes with the star wheel and socket end adjacent to the secondary shoe.
7. Place the shoe guide plate over the anchor. Be positive the plate is seated against the anchor shoulder.

8. Apply a liberal amount of brake lubricant on the cable track of the cable guide.
9. Position the automatic adjuster cable eyelet over the anchor. Insert the short hook of one anchor-to-shoe spring in the web of the primary shoe. Connect opposite end of spring to anchor.
10. Position the cable guide on the secondary shoe web. The hole flange on the guide should be seated in the shoe web hole.
11. Insert the short hook of the remaining anchor-to-shoe spring through the cable guide hole and shoe web of the secondary shoe. Connect opposite end of spring to anchor.
12. Thread the automatic adjuster cable over the cable guide and hook the cable into the oblong hole in the adjuster lever. Make certain the cable is in the guide track and not between the guide and the shoe web.
13. Insert the short hook on the adjuster spring into the LARGE hole at the lower end of the primary shoe web. DO NOT use the small hole at the end of the shoe web. Hook the opposite end of the spring into the oblong hole in the adjuster lever.
14. Grip adjusting spring and cable, with thumbs on secondary shoe lining for leverage. Pull adjuster lever toward web of secondary shoe. Insert the hook on the adjuster lever into the LARGE hole at the lower end of the secondary shoe web.
15. Remove wheel cylinder clamp.
16. To check operation of the Automatic Adjuster, place the palm of the hand on the secondary shoe lining about mid-way on the shoe. Grasp the adjuster cable with the finger tips and pull the cable gradually toward the secondary shoe, until the adjuster lever engages the next tooth on the adjusting screw star wheel. This will simulate operation of the Automatic Adjuster.

CAUTION: Avoid any grease, oil or foreign matter on the brake shoe linings.

17. Replace brake drum and wheel.
18. Make preliminary adjustment as described in "Service Brake Adjustment."

Automatic Adjuster Troubles

1. Failure to adjust
 - a. Insufficient lubrication - Apply brake lubricant to cable guide track, oblong hole in adjuster lever, slots in adjuster screw socket and nut, and to ledges on backing plate.
 - b. Improper installation - Install per steps 1-18 above.

NOTE: A left hand adjusting screw assembly installed on a right hand brake and vice versa will back off rather than take up when star wheel is rotated by adjuster lever.

- c. Damaged or broken parts - Replace defective parts.
 - d. Frozen or binding threads in Adjusting Screw Assembly - clean and lubricate with brake lubricant or replace adjusting screw assembly if necessary.
 - e. Rough ledges on Backing Plate - Smooth ledges with emery paper, clean and apply brake lubricant.
2. Over adjustment
 - a. Improper installation - Install per steps 1-18 above.
 - b. Improper manual adjustment - Perform manual adjustment as outlined under "Service Brake Adjustment."
 - c. Defective drums or drum machined beyond specified limits - Replace brake drum.

Wheel Cylinders

1. Disassembly
 - a. With all the brake drums removed inspect the wheel cylinder boots for evidence of a brake fluid leak (a slight amount of fluid on the boot may not be a leak, but may be preservative oil used on the assembly).

- b. In case of a leak, remove the brake shoes (replace if soaked with grease or brake fluid), boots, piston, wheel cylinder cups and wheel cylinder cup expansion spring.
- c. Wash the cylinder with alcohol and inspect cylinder bore for pits, scratches and scores.

Wheel cylinder pistons that are badly scored or corroded should be replaced. The old piston cups should be replaced when reconditioning the hydraulic system.

Cylinder walls that have light scratches or show signs of corrosion, can usually be cleaned up with crocus cloth using a circular motion. However, cylinders that have deep scratches or scoring may be honed, providing the cylinder bore diameter is not increased more than .002 inch. A cylinder that does not clean up at .002 inch should be replaced. (Black stains on cylinder walls are caused by piston cups and will do no harm.)

2. Assembly

- a. Wash the wheel cylinder with alcohol and blow dry with air.
- b. Install the expansion spring in the cylinder. Dip the wheel cylinder cups in brake fluid and install in each end of the cylinder with the open end of the cups facing each other.
- c. Dip the wheel cylinder pistons in brake fluid and install in each end of the brake cylinder with

the recessed ends of the pistons facing the open ends of the cylinder.

- d. Install the boots over the ends of the cylinder. Keep the assembly compressed with the aid of a brake cylinder clamp until the brake shoes & return springs are assembled.

Test For Fluid Contamination

To determine if contamination exists in the brake fluid (as indicated by swollen or deteriorated rubber cups) the following tests can be made.

1. Place a small amount of the drained fluid into a small, clear glass bottle. Separation of the fluid into distinct layers will indicate mineral oil content.
2. Add water to the contents and shake. If the contents become milky, oil is present. If the contents remain clear, it is not contaminated with mineral oil.

NOTE: Be safe and discard old brake fluid that has been bled from the system. Fluid drained from the bleeding operation may contain dirt particles or other contamination and should not be reused.