REAR BRAKE

GIRLING 12⅛ x 4 duo-servo

INTRODUCTION

The duo-servo auto adjust (D.S.A.) type brake is automatically adjusted when the foot or handbrake is applied. The incorporation of a double acting wheel cylinder ensures high efficiency operation in forward and reverse directions.

The cylinder transmits thrust to the shoes via push rods located in the shoe webs. Adjacent to the cylinder is a quadrant carrying the cable which operates the handbrake lever cam. This cam, which pivots on an anchor pin; has an elongated location hole to allow compensation (even shoe travel) when the handbrake is applied.

Application of the footbrake, with the vehicle moving forward, will move the primary shoe into contact with the drum. The tendency of the shoe to move around with the drum applies a considerable load to the secondary shoe via the adjusting strut, but since the secondary shoe is against the anchor pin, it is moved against the drum. The effort exerted on the drum far exceeds that which is actually being applied by the wheel cylinder.

The automatic adjustment mechanism is carried on the secondary shoe and the actuating lever pivots on a sleeve which forms part of the shoe hold-down assembly. Automatic adjustment occurs only when foot or handbrake applications are made *with the vehicle moving in reverse.*

The secondary shoe, by its tendency to move around with the drum, lifts away from its anchor pin. Since the operating lever is constrained by the wire link, the lever pivots on the sleeve and rotates the adjuster pinion wheel.

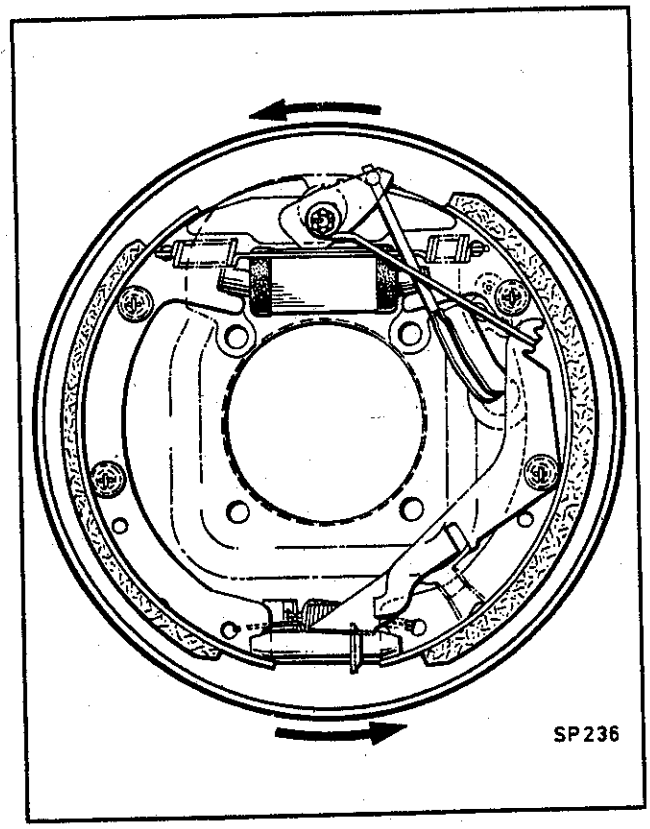


Fig. 1 *Rear brake assembly*

TO FIT NEW SHOES

Special Tools:–

Girling Shoe Horn – 64947016
Girling Steady Spring Tool – 64947090

Always fit new shoes in pairs and to both wheels. Fit new shoe return springs and bias spring to secondary shoes.

Place chocks at the front and rear of each front wheel. Charge the air system. Loosen the appropriate rear wheel nuts then release the handbrake.

Jack up the vehicle under the rear axle and support on stands.

Remove the wheel nuts. Remove both rear wheels after marking relationship of inner wheel with brake drum by chalk mark.

Retain the six split collars from the wheel studs.

Chalk mark position of the brake drum to hub and remove drum.

NOTE: It may be necessary to adjust the brake shoes away from the drum. To do this the adjuster pawl has to be disengaged from the toothed adjuster wheel using two screwdrivers or similar tools.

Remove the adjuster blanking plug from behind the adjuster.

Insert the blade of the first screwdriver to engage with the pawl. Push gently (approx. ⅛"). Engage the end of the second screwdriver in the notches of the adjuster wheel and applying a lever action, turn the adjuster wheel thus allowing the brake shoes to contract.

Using the steady spring tool remove the two hold-down springs from the secondary shoe. Noting the relationship between the wire link and the actuating lever, detach the lever, pawl, spring and wire link.

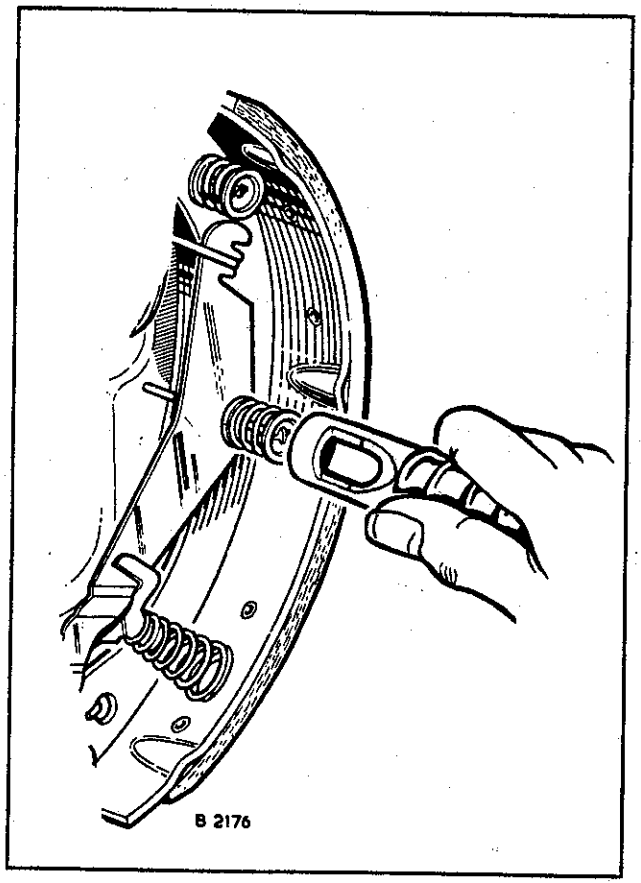


Fig. 2 *Using hold-down spring tool*

Remove the split pin and unscrew the castellated nut from the anchor pin. Lift off the spacing sleeve and handbrake lever cam disengaging the cable from the cam.

Using the shoe horn on the secondary shoe, prise the shoes apart to remove the adjuster assembly and spring.

By manipulation of the secondary shoe, release and remove the shoe with its return spring. Note the position of the spring for refitting.

Remove the two hold-down springs from the primary shoe and remove the shoe.

NOTE: No attempt should be made to remove the anchor pin. If damaged, a new back plate assembly must be fitted.

Whilst dismantled, inspect the wheel cylinder as described in this section. If satisfactory retain pistons in position by means of elastic bands.

Wash down the backplate with Girling Cleaning Fluid and allow to dry. Wire brush to remove corrosion taking care not to damage the rubber dust cover on the wheel cylinder.

Check that the adjuster assembly and quadrant pivot are free to move, cleaning and lightly lubricating moving parts with Girling Brake Grease.

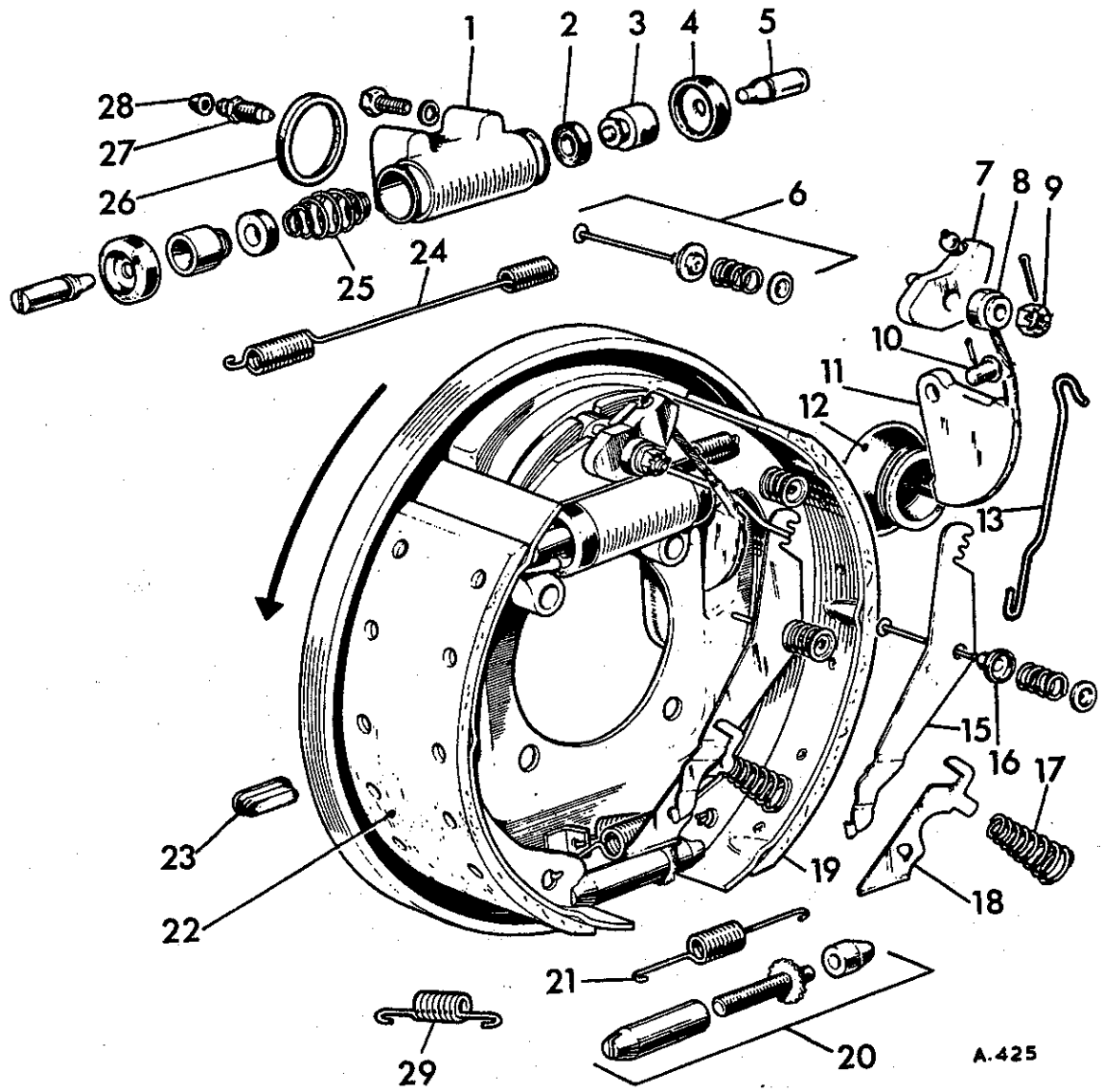
NOTE: Take care that grease does not contact any hydraulic parts.

Lubricate the shoe platforms, shoe web abutments and the anchor pin.

Fit the primary shoe to the backplate with the welded abutment facing outwards and adjacent to the anchor pin. Ensure that the shoe web locates in the wheel cylinder push rod slot. Fit hold-down spring assemblies.

Attach the end of the shoe return spring with the greater number of coils to the primary shoe web. The opposite end is attached to the secondary shoe.

NOTE: On later models the return spring is handed. The spring for the R.H. brake is coloured green and for the L.H. brake red. In both cases the end of the spring with 9 coils is attached to the primary shoe.



1 WHEEL CYLINDER
2 PISTON SEAL
3 PISTON
4 DUST COVER
5 PUSH ROD
6 HOLD-DOWN ASSEMBLY
7 LEVER CAM
8 SPACER SLEEVE
9 CASTELLATED NUT
10 PIVOT PIN
11 QUADRANT
12 DUST COVER
13 WIRE LINK
14 HOLD-DOWN SPRING
15 ACTUATING LEVER
16 SLEEVE
17 PAWL SPRING
18 PAWL
19 SECONDARY SHOE
20 ADJUSTER ASSEMBLY
21 SHOE SPRING
22 PRIMARY SHOE
23 INSPECTION GROMMET
24 SHOE RETURN SPRING
25 PISTON SPRING
26 CYLINDER GASKET
27 BLEED SCREW
28 DUST CAP
29 BIAS SPRING

Fig. 3 *Rear brake details*

Manipulate the secondary shoe so that it will abut the anchor pin at one end and the shoe web will locate in the cylinder push rod slot at the other end.

Hold the shoe in position by fitting the upper steady spring assembly.

Refit the fully retracted adjuster assembly, retaining spring between the shoes and bias spring ensuring that the adjuster wheel is adjacent to the secondary shoe and adjustment slot in the backplate.

Attach the pawl to the actuating lever and the conical spring to the pawl. Position the assembly on the secondary shoe as shown in Fig. 3 and retain by means of sleeve and hold-down spring assembly. Fit remaining hold-down spring.

Fit the brake cable to the handbrake lever cam and fit the cam to the anchor pin.

Locate the wire link around the spacing sleeve of the anchor pin and in the same slot (noted during dismantling) of the actuator lever.

Refit the spacing sleeve and castellated nut, tightening to the correct torque. Slacken off slightly if necessary to fit split pin. When refitting the split pin ensure that the ends do not protude further than the face of the nut.

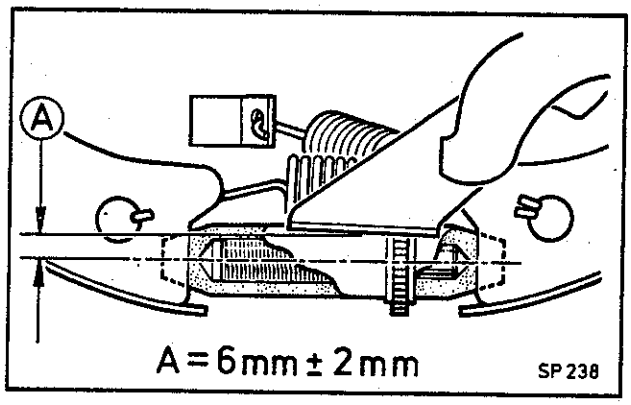


Fig. 4 *Auto adjust setting*

Check the relationship between pawl and adjuster wheel as shown in Fig. 4. The centre line of the adjuster barrel to the operating edge of the pawl where it contacts the wheel should be within the limits stated. Relocate the link wire into another slot of the actuating lever to obtain correct dimension.

NOTE The self adjusting action will be impaired if the lever and pawl assembly is not set correctly.

Align the drum by nipping it into position using two wheel nuts.

Check the drum is free to rotate.

Remove the two wheel nuts and slip a split collar over each wheel stud – chamfered side outwards

Refit road wheels and wheel nuts.

Adjust shoe to drum clearance as follows:–

IMPORTANT The wrapping action of the secondary shoe which is essential for automatic adjustment, can only occur when the brakes are applied and the rear wheels are running in reverse.

Through a slot in the back plate push the brake assembly to one side of the drum so that one shoe is touching the drum. Adjust the brake manually until there is a clearance of 0,63mm (0·025") between the other shoe and the drum.

Refit the grommets.

WHEEL CYLINDERS

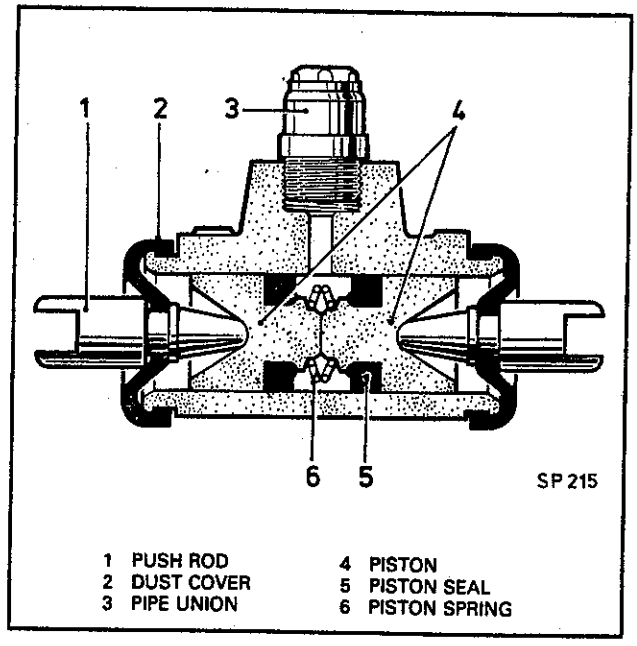


Fig. 5 *Rear Wheel cylinder*

When servicing wheel cylinders never service them singly – service cylinders on both sides of the vehicle. Keep the cylinders separate so that parts cannot be interchanged. Remove the brake shoes as described previously in this section.

Clamp the hose using a Girling Hose Clamp and remove the hydraulic pipe from the cylinder.

Remove the cylinder securing bolts and withdraw the cylinder and gasket.

Remove the dust covers, push rods, pistons and spring. Remove seals from pistons.

Clean all parts thoroughly with Girling Cleaning Fluid or clean brake fluid.

Examine the cylinder bores and pistons for signs of corrosion, ridges or score marks.

If satisfactory, parts may be re-used using new piston seals.

Fit the seals with their flat backs against the piston. Lubricate the seals and cylinder bores with clean brake fluid and reassemble the cylinders.

Take care that the lip of the seal is not damaged during reassembly.

Refit the cylinder and new gasket to the backplate and tighten fixings to the correct torque.

Continue reassembly of the brake in reverse order to the dismantling procedure.

Refit brake drums, remove hose clamps and bleed the system as described in Sub-section MA190.

Adjust the brake shoe clearances as described previously in this section. Refit backplate grommets.

Refit wheels, tightening to the correct torque.

Check operation of brakes.

BACKPLATE

To Remove
Remove the wheel(s), drum and hub.

If brake shoes and wheel cylinders are to be serviced, remove these also as described previously.

Disconnect the handbrake cable from the compensator.

Clamp the brake hose with a Girling hose clamp and disconnect the hydraulic feed pipe from the brake cylinder.

Swivelling the brake shoes as necessary for access remove the nuts from the bolts securing the backplate to the rear axle flange.

Withdraw the backplate.

To Refit
Clean the mating faces of the backplate and axle flange.

Using new gaskets as found fit backplate assembly to the flange passing bolts through the flange from the flange side.

Ensuring that the assembly is seated squarely fit nuts and tighten progressively to the correct torque.

Refit wheel cylinder and shoes if previously removed.

Reconnect the brake cable to the compensator and the hydraulic pipe to the cylinder.

Refit hub and drum. Remove hose clamp and bleed. Refit wheel(s).

Adjust brakes and check operation.