REAR BRAKE

LOCKHEED 13 x 5½ duo-servo

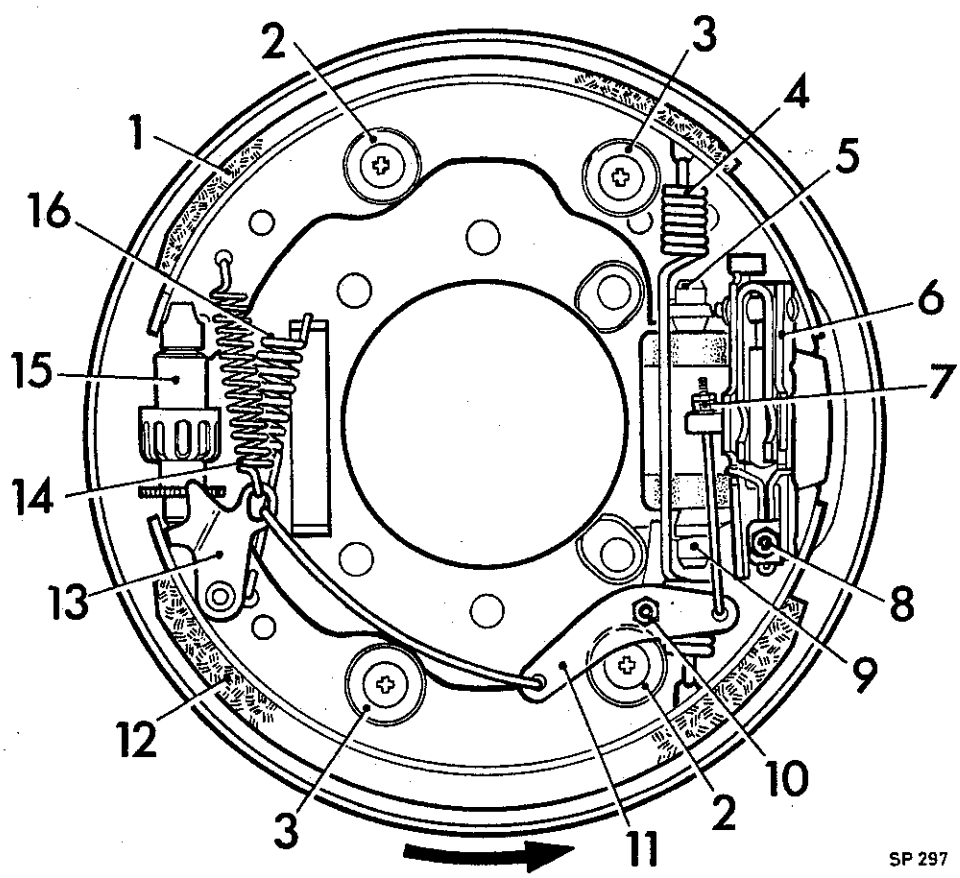
Description

A double acting wheel cylinder operates the two brake shoes which adjust automatically when the brake operates in the reverse direction.

The brake is duo servo in operation in the service and parking modes in both the forward and reverse directions of drum rotation. Adjustment for lining wear is provided by an automatic adjuster comprising a floating extendable strut between one pair of brake shoe ends thus achieving duo servo operation in all modes.

Prior to drum removal the auto mechanism can be adjusted through a hole in the backplate after removal of a rubber dust plug. The toothed wheel of the adjuster should be turned away from the axle to adjust the linings away from the drum.

Provision is made for handbrake operation by a mechanical expander fitted between the brake shoes and actuated by a cable.



1 PRIMARY SHOE
2 STEADY SPRING (RED)
3 STEADY SPRING (BLACK)
4 PULL-OFF SPRING
5 TOP PUSH ROD
6 HANDBRAKE EXPANDER ASSEMBLY
7 ADJUSTING NUT AND LOCKNUT
8 LOCKNUT, WASHER AND RETAINER PLATE
9 LOWER PUSH ROD
10 LOCKNUT
11 LONG ADJUSTER LEVER
12 SECONDARY SHOE
13 SHORT ADJUSTER LEVER
14 SPRING. ADJUSTER LEVER TO WEB
15 ADJUSTER
16 BIAS SPRING (P.S.V. ONLY)

Fig. 1 *Rear brake assembly*

TO FIT NEW SHOES

To ensure balanced performance, it is necessary to renew the shoes on both brake assemblies of an axle.

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.

Open the pivoted cover in the back plate and adjust the linings away from the drum.

Remove the road wheels, brake drums and hubs. Retain the six split collars from the wheel studs.

Note the relative position of brake shoes, springs and steady spring colours.

Remove the spring retainer securing the cable trunnion in the handbrake expander assembly, and ease cable trunnion from expander cut-outs.

Remove nut, washer and retainer plate securing handbrake expander assembly to backplate, remove assembly.

Remove the locknut and nut from the connecting link adjacent to the wheel cylinder.

Disengage and remove the adjuster from between the shoe webs

Disconnect the spring from the primary shoe web and the short adjusting lever.

Remove the bias spring. This is fitted to public service vehicles only between the secondary shoe and the back plate.

Remove the circlip, the short adjusting lever and the connecting link.

Remove the nut, washer, long adjusting lever and the adjustable connecting link.

Disconnect the spring from the shoe web and adjusting lever.

Carefully note the positions of the red and black coloured steady springs, for future refitting. Depress and turn the shoe steady spring washers and release the pins and springs.

Remove the steady pins from the inboard side of backplate.

Using the shoe horn disengage the primary shoe from the brake cylinder push rod, disengage the pull-off spring and remove both shoes. Collect wheel cylinder push rods.

Retain the pistons in the wheel cylinder using wire or a strong rubber band. Care should be taken not to damage the rubber boots.

Remove all dust and dirt from the backplate. Do not blow out with an air line - it could be harmful to inhale the dust - but remove with a vacuum cleaner or wipe clean with a damp rag. Do not use petrol or paraffin - if a solvent is necessary methylated spirit should be used.

Look for signs of leakage from the wheel cylinder. Inspect flexible hoses and metal brake pipes for wear, damage and corrosion.

Examine the pull-off springs for damage or over stretching and renew as necessary.

The brake shoes should be renewed if the linings are contaminated with lubricants or hydraulic fluid irrespective of the state of wear.

Using high melting point grease lightly grease the tips of the brake shoes and the areas where the shoes contact the back plate.

Check that the teeth on the adjuster wheel are undamaged. Lightly grease the abutment faces and threads and screw the adjuster right in.

Remove the rubber band or wire retaining the pistons.

Insert the lower cylinder push rod and position the secondary shoe on the back plate. Holding the shoe in position refit the steady springs (red adjacent to the wheel cylinder).

Hook the large pull-off spring into both shoe webs, fit the top cylinder push rod and with a lever action ease the primary shoe into place. Refit the steady

springs (black adjacent to the wheel cylinder).

Pull the shoe ends apart and fit the adjuster assembly between them with the toothed wheel nearest the secondary shoe.

On P.S.V. models fit the bias spring into the correct hole in the secondary shoe and the bracket on the back plate.

Lightly grease the pivot nearest the adjuster and fit the short adjuster lever. Secure the lever by crimping the clip into the groove.

Fit the spring between the short adjusting lever and the primary shoe.

Refit the handbrake expander between the shoes, place the spring, retainer plate and washer in position then the nut and tighten to the correct torque.

Locate the handbrake cable trunnion in the expander cut-outs and secure with the spring retainer.

Lightly grease the other pivot on the secondary shoe and fit the long adjuster lever. Secure with a new nut and washer and tighten to the correct torque.

Fit the connecting link between the two levers and the adjusting link from the long lever to the boss on the wheel cylinder. Fit the nut and locknut but do not adjust at this stage.

Ensure that both levers move freely.

Adjust the shoes so that the drum will just go on.

Using the adjustable link, set the gap between the spur on the short lever and the secondary shoe platform to between 2,0/2,5mm (0.08/0.10ins). Tighten the nut and locknut securely.

Refit the hub.

1. Ensure that bearings etc. are kept free from any dirt or grit during the complete operation.

2. Replace hub oil seals with new seals after each reline.

3. Ensure correct adjustment of rear hub bearings to provide 0.004/0.007ins end float.

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:-

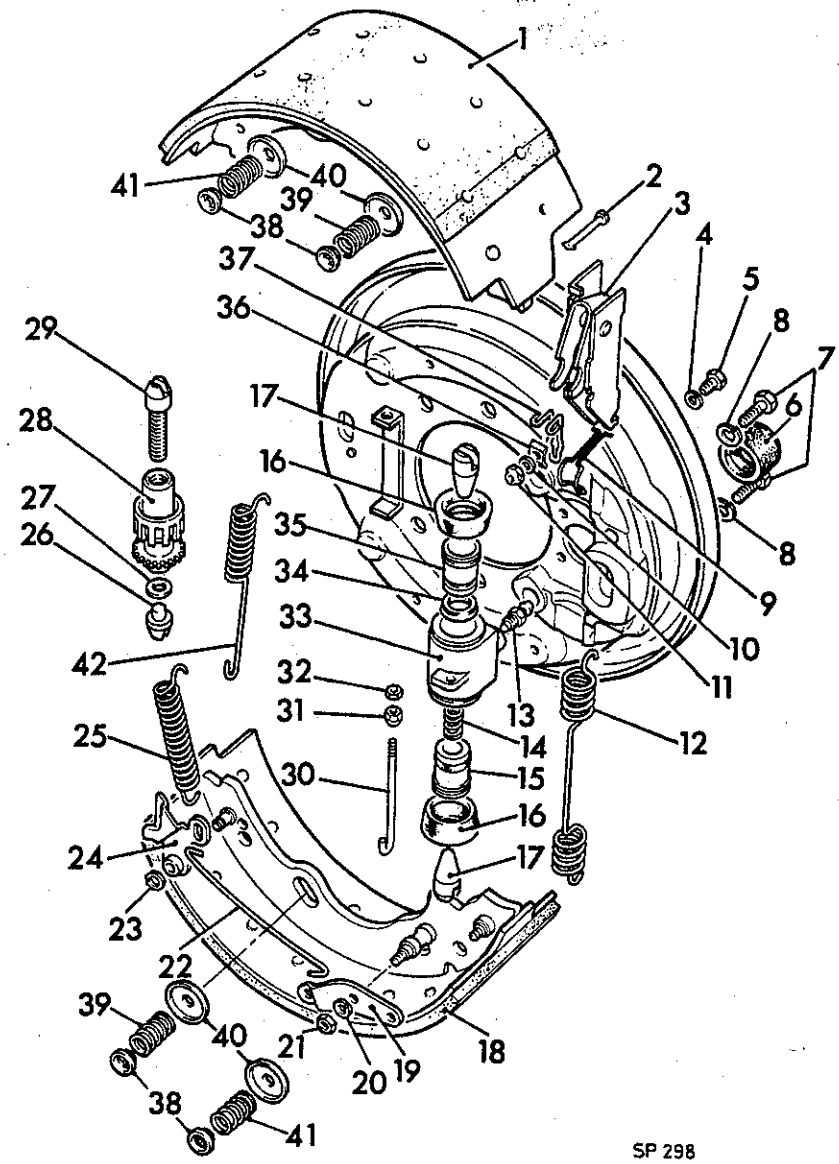
IMPORTANT The wrapping action of the secondary shoe which is essential for automatic adjustment can only occur when the brakes are applied and the rear wheels are running in reverse.

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.

Apply the footbrake hard several times to allow the auto adjuster to set the brake shoe running clearance.

Remove the axle stands and jack.



1 PRIMARY SHOE
2 STEADY PIN
3 HANDBRAKE EXPANDER ASSEMBLY
4 SPRING WASHER
5 SETSCREW
6 RUBBER BOOT
7 SETSCREW
8 SPRING WASHER
9 SPRING CLIP - H'BRAKE CABLE RETAINER
10 WASHER
11 LOCKNUT
12 PULL-OFF SPRING
13 BLEED SCREW
14 SPRING
15 PISTON AND SEAL
16 RUBBER BOOT
17 CYLINDER PUSH ROD
18 SECONDARY SHOE
19 LONG ADJUSTER LEVER
20 SPRING WASHER
21 LOCKNUT
22 CONNECTING LINK
23 CIRCLIP
24 SHORT ADJUSTING LEVER
25 SPRING
26 ADJUSTER TAPPET
27 WASHER
28 ADJUSTER
29 ADJUSTER SCREW
30 ADJUSTABLE CONNECTING LINK
31 NUT
32 LOCKNUT
33 BRAKE CYLINDER
34 SEAL
35 PISTON
36 RETAINER PLATE
37 SPRING
38 STEADY WASHER
39 STEADY SPRING (BLACK)
40 SPRING CUP
41 STEADY SPRING (RED)
42 BIAS SPRING (P.V.S. ONLY)

Fig. 2 *Rear brake details*

WHEEL CYLINDERS

To Remove

Remove the brake shoes as detailed previously.

Fit a suitable hose clamp and disconnect all hydraulic connections, carefully noting all pipe positions.

Remove the bleed screw and plug the ports and pipe ends to prevent fluid loss.

Remove the two setscrews and washers securing the cylinder to the backplate. Remove cylinder.

To Dismantle

Thoroughly clean the cylinder.

Disengage the rubber boots from the cylinder body and pistons.

Carefully pull the pistons from the bore and collect the spring.

Remove the seal from each piston and wash all parts in clean brake fluid.

Examine the piston bore and pistons for signs of corrosion or score marks. If surfaces are clean and free from ridges new seals may be fitted. If in doubt fit new cylinder assembly.

To Re-assemble

Coat each piston seal with clean brake fluid and using the fingers only, fit the seal into the groove, the larger diameter facing away from the concave head of the pistons.

Coat the cylinder bore with clean brake fluid, and push one of the piston assemblies into the bore taking care not to bend back the lip of the seal, insert the spring followed by the second piston assembly.

Refit the boots, ensuring that each is seated correctly in both the piston and cylinder body grooves.

To Refit

Refit the cylinder to the backplate and tighten the setscrews to the correct torque.

Fit the bleed screw and reconnect the hydraulic pipes. Release the hose clamp.

Refit the brake shoes as described previously.

Bleed the system and ensure the reservoir has the correct level of fluid.

BACKPLATE

To Remove

Remove the wheel, hub and drum as described previously.

If required, remove the brake shoes as described in this section.

Remove the spring retainer securing the cable trunnion in the handbrake expander assembly, and ease cable trunnion from expander cut-outs. Remove rubber boot from backplate. Withdraw cable through backplate.

Fit a suitable hose clamp and disconnect the feed pipe at the wheel cylinder.

Remove the nuts from the bolts securing the backplate to the rear axle flange. Withdraw the backplate.

If required remove the wheel cylinder from the backplate.

To Refit

Clean the mating faces of the backplate and axle flange.

Fit backplate assembly to the axle flange passing bolts through the flange from the flange side.

Refit the wheel cylinder and brake shoes (if removed) as previously described in this section.

Refit the cable trunnion in the handbrake assembly and secure with the spring retainer. Ensure the rubber boot is fitted to the backplate.

Reconnect the hydraulic pipe to the wheel cylinder and remove hose clamp.

Refit the hub, drum and wheel as described previously.

Bleed the system and ensure the reservoir has the correct level of fluid.