

SECTION M

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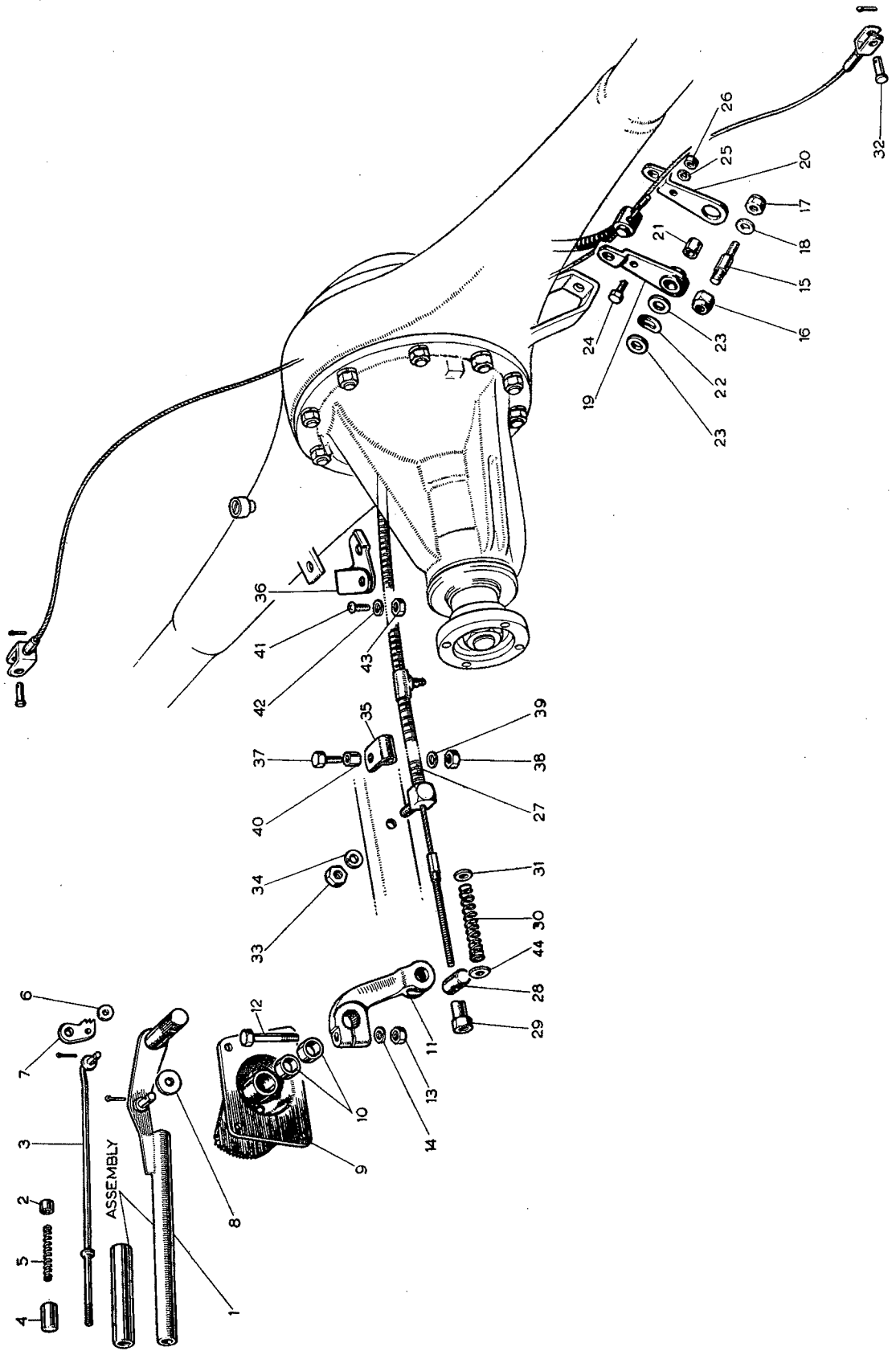
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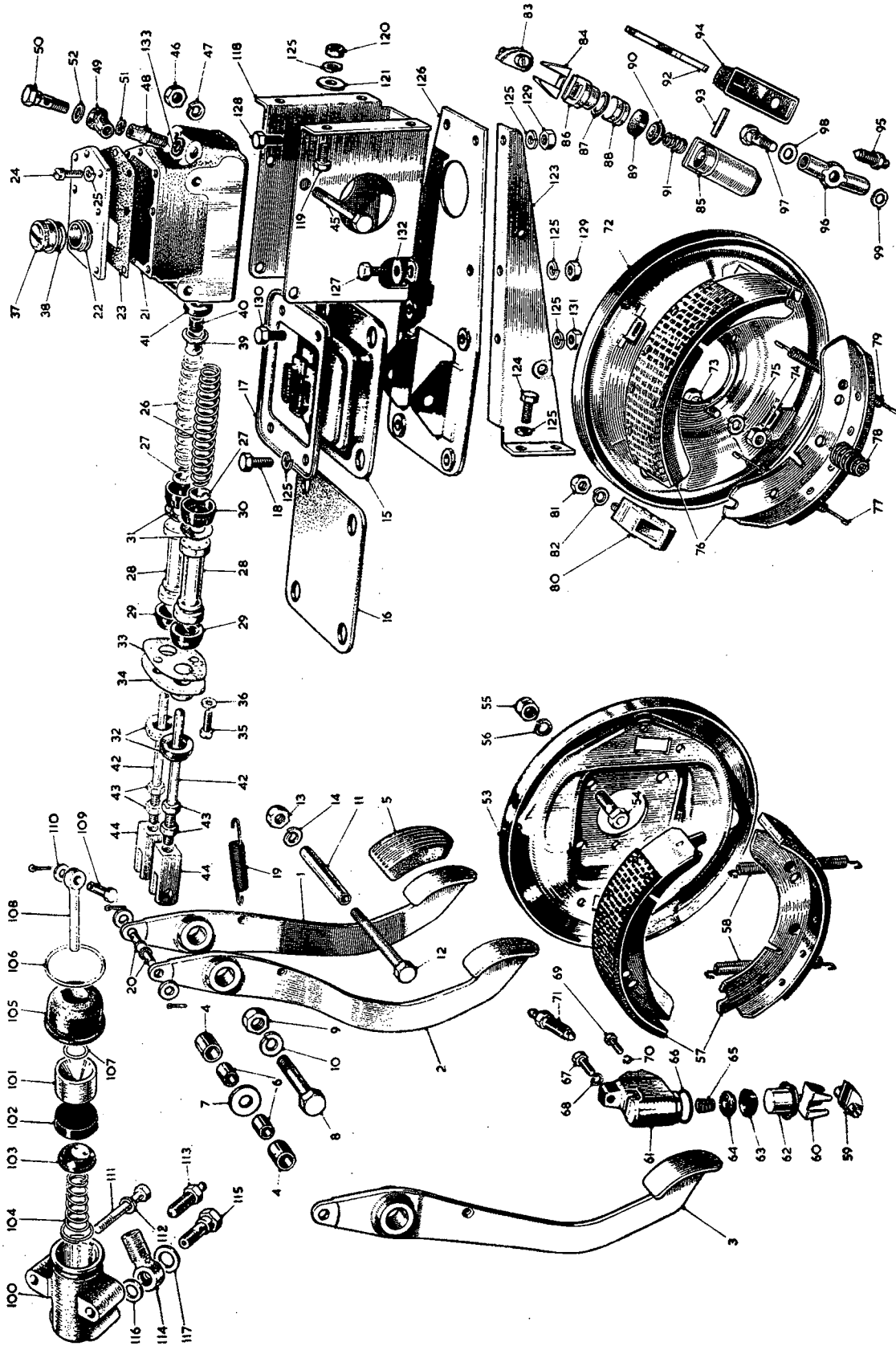
THE HAND BRAKE



KEY TO THE HAND BRAKE

<i>No.</i>	<i>Description</i>	<i>No.</i>	<i>Description</i>	<i>No.</i>	<i>Description</i>
1.	Handle plate and shaft assembly.	16.	Nut—fulcrum to axle.	31.	Washer—plain—cable spring.
2.	Bush—handle plate and shaft.	17.	Nut—compensator to fulcrum.	32.	Clevis pin.
3.	Pawl rod assembly.	18.	Washer—compensator to fulcrum.	33.	Abutment nut.
4.	Knob—pawl rod.	19.	Lever—inner compensating.	34.	Washer—spring.
5.	Spring—pawl rod.	20.	Lever—outer compensating.	35.	Clip—cable to battery carrier.
6.	Washer—plain.	21.	Bush—compensating lever.	36.	Clip—cable to 3-way piece—axle brackets.
7.	Pawl.	22.	Washer—anti-rattle—compensating.	37.	Screw—clip.
8.	Washer.	23.	Washer—plain—compensating lever.	38.	Nut—clip screw.
9.	Fulcrum and ratchet assembly.	24.	Screw—compensating lever.	39.	Washer—spring—battery carrier clip.
10.	Bush.	25.	Washer—spring—compensating lever.	40.	Distance tube—battery carrier clip.
11.	Operating lever—hand brake.	26.	Nut—compensating lever.	41.	Screw—clip—3-way piece.
12.	Bolt—operating lever.	27.	Cable—hand brake.	42.	Washer—spring—3-way piece clip screw.
13.	Nut—operating lever.	28.	Trunnion—cable.	43.	Nut—3-way piece clip screw.
14.	Washer—spring.	29.	Adjuster nut.	44.	Washer—plain—cable spring front.
15.	Fulcrum—hand brake compensator.	30.	Spring—cable.		

THE HYDRAULIC SYSTEM



KEY TO THE HYDRAULIC SYSTEM

No.	Description	No.	Description
1.	Brake pedal.	89.	Cup—piston.
2.	Clutch pedal—right-hand drive.	90.	Filler cup.
3.	Clutch pedal—left-hand drive.	91.	Spring—filler.
4.	Bush.	92.	Lever—hand brake.
5.	Rubber pad—pedal.	93.	Pin—lever.
6.	Distance-piece—pedal.	94.	Boot—hydraulic cylinder.
7.	Distance washer—pedal.	95.	Screw—bleeder.
8.	Bolt—pedal bracket.	96.	Banjo connection—wheel cylinder.
9.	Nut—pedal bracket bolt.	97.	Bolt—banjo connection.
10.	Washer—spring.	98.	Gasket—banjo connection—large.
11.	Distance tube—pedal stop.	99.	Gasket—banjo connection—small.
12.	Distance tube—bolt.	100.	Body.
13.	Nut—distance tube bolt.	101.	Piston.
14.	Spring washer.	102.	Cup—piston.
15.	Fume excluder—brake and clutch pedal.	103.	Filler—piston cup.
16.	Rubber—blanking piece.	104.	Spring—cup filler.
17.	Cover—blanking piece.	105.	Boot.
18.	Cover screw.	106.	Clip—large—boot.
19.	Spring—pedal pull-off.	107.	Clip—small—boot.
20.	Clevis pin.	108.	Push-rod.
21.	Body.	109.	Clevis pin—slave cylinder to clutch fork.
22.	Cover—body.	110.	Washer—plain.
23.	Gasket—cover.	111.	Bolt—slave cylinder to gearbox.
24.	Screw—cover to body.	112.	Washer—spring.
25.	Washer—shakeproof.	113.	Bleeder screw.
26.	Spring—piston return.	114.	Banjo—slave cylinder.
27.	Retainer—spring.	115.	Bolt—banjo—slave cylinder.
28.	Piston.	116.	Gasket—banjo.
29.	Cup—primary—piston.	117.	Gasket—banjo.
30.	Cup—secondary—piston.	118.	Master cylinder box.
31.	Washer—primary clip to piston.	119.	Screw box—master cylinder.
32.	Boot—push-rod.	120.	Nut.
33.	Gasket—boot fixing plate.	121.	Washer—plain.
34.	Plate—boot fixing.	123.	Support bracket—L/H master cylinder box.
35.	Screw—plate.	124.	Screw—bracket to topping plate.
36.	Washer—shakeproof.	125.	Washer—spring.
37.	Cap—filler.	126.	Base plate assembly.
38.	Seal.	127.	Screw.
39.	Body—valve.	128.	Screw—box to bracket rear.
40.	Cup.	129.	Nut.
41.	Washer.	130.	Screw—bracket to base plate.
42.	Push-rod.	131.	Nut—bracket to base screw.
43.	Nut—locking.	132.	Plain washer.
44.	Yoke—push-rod—to pedal.	133.	Gasket—adaptor.
45.	Bolt—master cylinder to box.		
46.	Nut—master cylinder to box bolt.		
47.	Washer—spring.		
48.	Adaptor—master cylinder.		
49.	Banjo—master cylinder.		
50.	Bolt—banjo.		
51.	Gasket—banjo connection.		
52.	Gasket—banjo connection.		
53.	Plate—L/H front brake.		
54.	Bolt—brake back-plate.		
55.	Nut—brake back-plate.		
56.	Washer—spring—brake back-plate.		
57.	Shoe—lined—brake.		
58.	Spring—shoe pull-off.		
59.	Adjuster.		
60.	Mask—adjuster.		
61.	Body—L/H.		
62.	Piston and dust cover.		
63.	Cup—piston.		
64.	Filler—piston cap.		
65.	Spring—filler.		
66.	Sealing ring.		
67.	Bolt—cylinder to brake plate (1/8").		
68.	Spring washer—cylinder bolt.		
69.	Bolt—cylinder to brake plate (1/4").		
70.	Spring washer—cylinder bolt.		
71.	Screw—bleeder.		
72.	Plate—L/H rear brake.		
73.	Bolt—brake back-plate.		
74.	Nut—brake back-plate.		
75.	Washer—spring—brake back-plate.		
76.	Shoe—lined—brake.		
77.	Spring—shoe pull-off.		
78.	Spring—shoe steady.		
79.	Spring—shoe tension.		
80.	Abutment strip—brake-shoe.		
81.	Nut—abutment strip.		
82.	Washer—spring.		
83.	Adjuster.		
84.	Mask—adjuster.		
85.	Body—with abutment strip.		
86.	Piston—with dust cover.		
87.	Seal.		
88.	Piston—hydraulic.		

GENERAL DESCRIPTION

The Lockheed hydraulic equipment includes a master cylinder and supply tank assembly in which two separate cylinders are supplied with fluid from a common supply tank. Hydraulic pressure generated in one of the cylinders operates the brakes through the wheel cylinders, while pressure in the other operates the clutch withdrawal mechanism through a slave cylinder, piston, and push-rod connected to the clutch lever.

The master cylinder and supply tank assembly is mounted on the engine side of the bulkhead just above the level of the pedal pads.

Steel pipe lines, unions and flexible hoses convey the hydraulic pressure from one of the master cylinders to each wheel cylinder and from the other to the clutch slave cylinder.

Each brake-shoe in the front drums has a separate wheel cylinder, thus providing two leading shoes. In the rear drums a single wheel cylinder, operated both hydraulically and mechanically, floats on the brake plate and operates the two shoes, giving one leading and one trailing shoe in either direction of rotation to provide adequate braking in reverse.

MAINTENANCE

Periodically examine the quantity of brake fluid in the master cylinder. It should never be less than half-full or closer than $\frac{1}{2}$ in. (13 mm.) to the bottom of the filler neck. The necessity of frequent topping up is an indication of over-filling or a leak in the system, which should at once be traced and rectified.

Adjust the brake-shoes to compensate for wear of the linings. The need for this is shown by the pedal going down almost to the floorboards before solid resistance is felt. For brake-shoe adjustments see Section M.2.

Adjustment of the brake-shoes in the manner indicated also adjusts the hand brake automatically, and no separate adjustment is required or permitted.

THE MASTER CYLINDER AND SUPPLY TANK ASSEMBLY

The brake master cylinder

Within the cylinder is a piston, backed by a rubber cup, normally held in the "off" position by a piston return spring. Immediately in front of the cup, when it is in the "off" position, is a compensating orifice connecting the cylinder with the fluid supply. This port allows free compensation for any expansion or contraction of the fluid, thus ensuring that the system is constantly filled; it also serves as a release for additional fluid drawn into the cylinder during brake applications. Pressure is applied to the piston by means of the push-rod attached to the brake pedal. The push-rod length is adjustable and should give a slight clearance when the

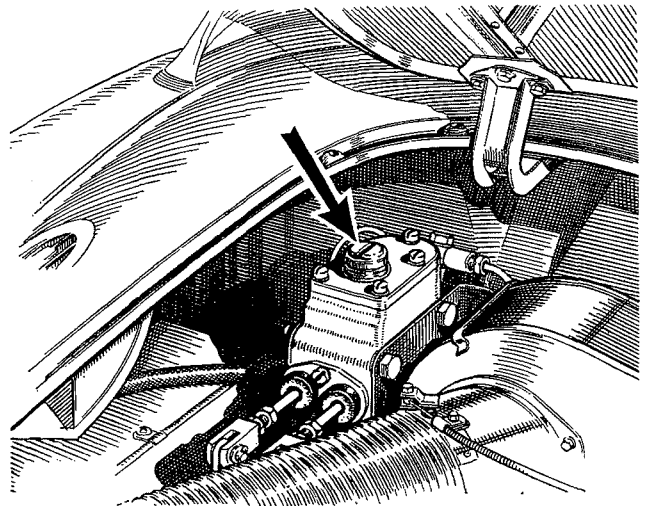


Fig. M.1.

The master cylinder filler cap.

system is at rest to allow the piston to return fully against its stop. Without this clearance the main cup will cover the by-pass port, causing pressure to build up within the system, and produce binding of the brakes on all wheels. The reduced skirt of the piston forms an annular space which is filled with fluid from the supply tank via the feed hole. Leakage of fluid from the open end of the cylinder is prevented by the secondary cup fitted to the flange end of the piston. On releasing the brake pedal, after application, the piston is returned quickly to its stop by the return spring, thus creating a vacuum in the cylinder; this vacuum causes the main cup to collapse and pass fluid through the small holes in the piston head from the annular space formed by the piston skirt. This additional fluid finds its way back to the reserve supply under the action of the brake return springs, when the system finally comes to rest, through the outlet valve and compensating orifice. If the compensating orifice is covered by the piston cup when the system is at rest, pressure will build up as a result of the brake application. The combination inlet and outlet check valve in the head of the cylinder is provided to allow the passage of fluid under pressure from the master piston into the pipe lines and control its return into the cylinder, so that a small pressure of approximately 8 lb. per square inch (.56 kg./cm.²) is maintained in the pipe lines to ensure that the cups of the wheel cylinders are kept expanded; it also prevents fluid pumped out from the cylinder when "bleeding" from returning to the cylinder, thus ensuring a fresh charge being delivered at each stroke of the pedal.

The clutch master cylinder

The components and operation of the clutch master cylinder are, in the main, similar to those of the brake

master cylinder, but with one important difference: the combination inlet and outlet check valve used in the brake cylinder is not incorporated in the clutch cylinder, and therefore no pressure is maintained in the clutch line when the clutch pedal is released.

Section M.1

ADJUSTING THE BRAKE PEDAL

The correct amount of free movement between the master cylinder push-rod and piston is set during erection of the vehicle, and should never need alteration.

In the event of the adjustment having been disturbed, reset the effective length of the rod connecting the cylinder to the pedal until the pedal pad can be depressed approximately $\frac{1}{2}$ in. (13 mm.) before the piston begins to move. The clearance can be felt if the pedal is depressed by hand.

Adjusting the clutch pedal
See Section E.

Section M.2

BRAKE-SHOE ADJUSTMENTS

As the linings wear, the pedal will travel farther before the brakes come into action. When the travel becomes excessive the brake-shoes should be adjusted.

A hole sealed with a rubber plug is provided in the wheel and in the drum to allow adjustment without removal of the wheel. The hole in the drum is sealed by a neoprene tubular seal between the wheel and drum. When the wheel is replaced after removal for any purpose, take care to refit it with the holes in the wheel and drum in line and with both seals in position.

Front shoe adjustment

Jack up the front of the car and remove the wheel disc and rubber plug from the hole in the wheel.

Turn the wheel until one of the two adjustment screws is visible through the hole in the wheel and drum.

Insert a screwdriver and turn the adjustment screw in a clockwise direction until the drum is locked and then turn it anti-clockwise one notch. Rotate the drum until the other screw is visible and repeat the adjustment.

The drum should then be free to rotate without the shoes rubbing and the adjustment on that wheel is complete.

Rear shoe adjustment

The procedure is similar to that detailed for the front wheels except that there is only one adjuster controlling both shoes and hand brake.

Section M.3

BLEEDING THE SYSTEM (Expelling Air)

Bleeding the system is not a routine maintenance job, and should only be necessary when some portion of the hydraulic equipment has been disconnected or the fluid drained off.

Fill the master cylinder with Lockheed Genuine Brake Fluid (if this fluid is not available an alternative fluid conforming to S.A.E. Specification No. 70.R1 should be used) and keep it at least half-full throughout the operation, otherwise air will be drawn into the system, necessitating a fresh start.

Attach the bleeder tube to the wheel cylinder bleeder screw and allow the free end of the tube to be submerged in a small quantity of fluid in a clean glass jar.

Open the bleeder screw one full turn.

Depress the brake pedal quickly, and allow it to return

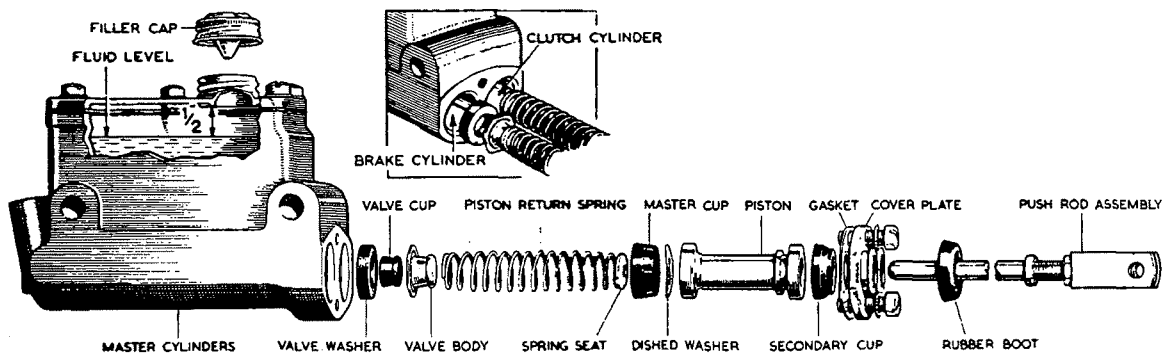


Fig. M.2

Illustrating the master cylinders for brake and clutch operation, and their components. Note that no valve is used in the clutch master cylinder

