S E C T I O N 1 1

" O N E S H O T " (E N O T S) L U B R I C A T I O N

S Y S T E M

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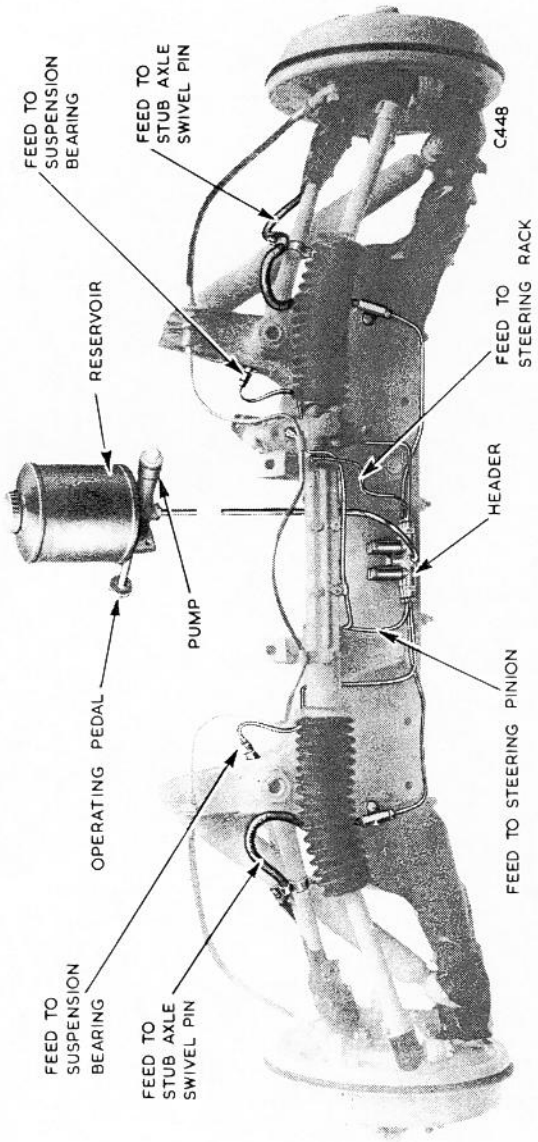

Fig.1 "One shot" lubrication system.

"ONE SHOT" (ENOTS) LUBRICATION SYSTEM

DESCRIPTION

The Enots "One shot" lubrication system ensures adequate lubrication of the stub axle swivel pins and bushes, the steering box assembly and the ball joints at each end of the steering tie tubes and the bearings of the front suspension brackets by the pressure of a pedal conveniently situated above the accelerator pedal.

The system comprises an oil tank, connected via a non-return valve to a piston-type pump, the spring-loaded pump shaft forming the operating pedal. The pump is bolted to the bulkhead and is connected by a pipe line to the central union of a header situated on the forward face of the front suspension assembly.

The header consists of a bronze body containing six spring-loaded double-acting valves, each leading to an outlet and to one of six cylindrical air chambers screwed to the top of the body. The delivery pipes from the header are shown in Fig.1.

When the pump is inoperative, oil from the tank flows past the non-return valve into the pump cylinder. On depressing the pedal, the oil in the cylinder is subjected to pressure which closes the tank non-return valve, and is transmitted, via the main supply pipe, to the header. The valves in the header move outwards, allowing oil to pass to the air chambers, closing the outlets from the chambers at the same time. When the pedal is released, the spring returns the

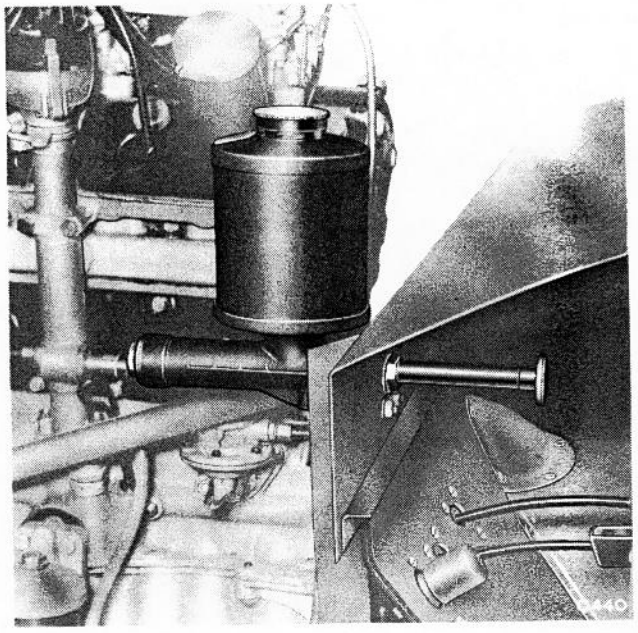

Fig.2 Pump Unit.

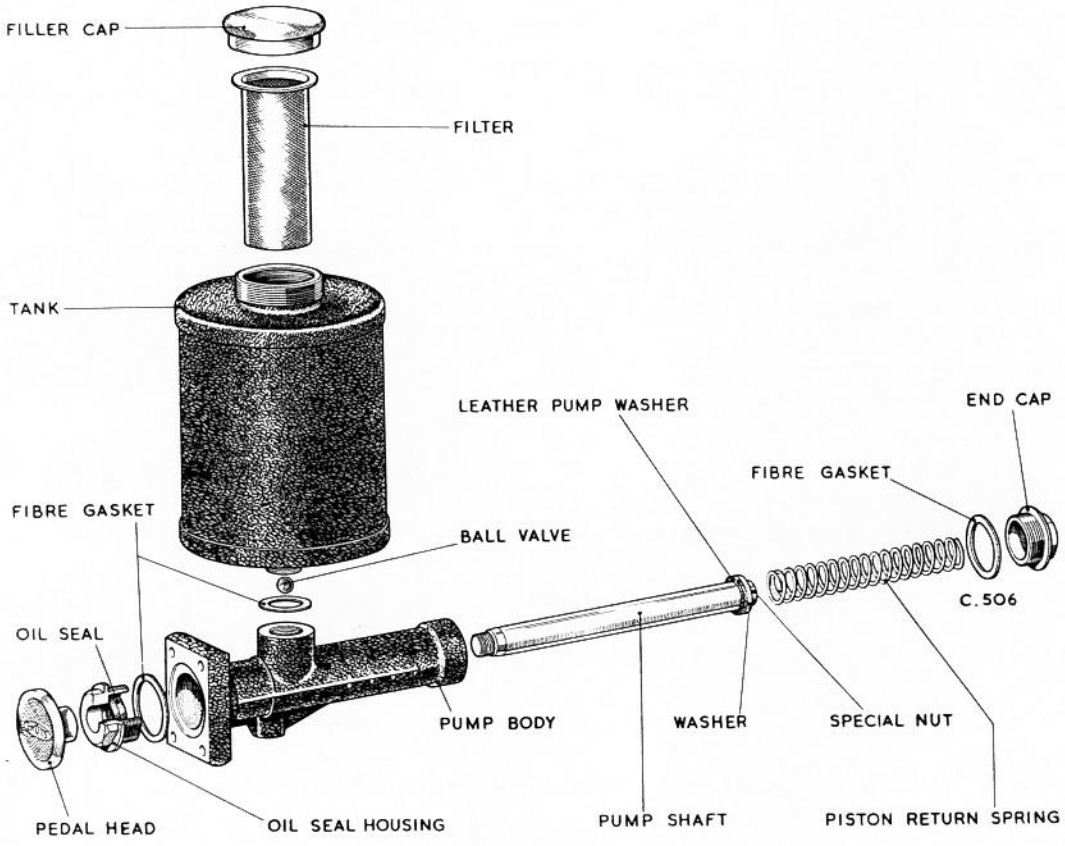

Fig.3 Pump components.

piston to the end of its stroke; the pressure in the pump cylinder and header supply pipe then falls and the valves in the header move inwards, thereby transmitting the pressure in the air chambers to the component supply pipes and ducts. The tank valve drops from its seat, allowing the oil in the tank to pass and refill the pump cylinder. The components lubricated by the system will therefore continue to be lubricated until the pressure on the downstream side of the header valves falls to zero, when the action of pressing the pedal of the pump will replenish the supply; the pedal need only be pressed until resistance is felt. It will be seen that the amourt of oil passed to each component is governed by the capacity of the air chamber of that particular line. Sufficient lubrication of the affected parts is ensured if this operation is carried out every 70 miles (110 Km .).

MAINTENANCE

Every 1,500 miles (3,400 Km.)

Top up the supply tank with engine oil. If the tank is allowed to become empty, air may enter the pipe lines; this will necessitate bleeding the system.

BLEEDING THE SYSTEM

Referring to Fig.1, disconnect the pipe from the steering box pinion housing, the front of the steering box, the top pin of each stub axle swivel pin, and the suspension bracket bearings. Operate the pedal until free-air oil emerges at these points then, while the pedal is being slowly depressed, connect up the pipes.

REMOVING AND REFITTING PUMP

Drain the tank by removing the union nut of the pipe connection on the underside of the pump body, catching the oil in a clean container. Unscrew and remove the four $\frac{1}{4}$ B.S.F. bolts and nuts securing the pump assembly to the bulkhead and withdraw the assembly. To refit the assembly, reverse the above procedure, then loosen the supply pipe connection at the header on the front cross member, see Fig. 1, and operate the system until air-free oil emerges from the pipe connection; tighten the pipe connection.

DISMANTLING AND RE-ASSEMBLING PUMP

Referring to Fig. 3 proceed as follows :-

1. Using a suitable spanner on the integral nut on the underside of the tank, unscrew and remove the tank complete with fibre gasket, followed by the ball valve.
2. Remove the end cap, fibre gasket and piston return spring.
3. Grip the pump shaft in a soft-jawed vice and remove the pedal head.
4. Push the pump shaft assembly forward until it can be withdrawn from the cylinder bore.
5. Remove and oil seal housing and fibre gasket.

To re-assemble, reverse the above procedure then finally bleed the supply pipe at the connection to the header on the front cross member.

REPLACING OIL SEAL

Referring to Fig.3 proceed as follows, but with the pump "in situ."

1. Drain the tank as described previously.

2. Using a suitable tool, grip the pump shaft and remove the pedal head.

3. Remove the oil seal housing and fibre gasket then hook out and discard the oil seal.

4. Fit a replacement oil seal (cup towards the pump) to the oil seal housing then, using a serviceable fibre gasket, refit the oil seal housing.

5. Refit the pedal head and bleed the system at the supply pipe to the header on the front cross member, see Fig. 1.

REPLACING PUMP WASHER

To remove the piston assembly proceed as follows:-

1. Remove the end cap, fibre gasket and piston return spring; catch the oil in a suitable clean container.

2. Remove the pedal head and withdraw the pump shaft as described previously.

3. Remove the special nut and washer from the end of the shaft and remove the leather pump washer.

Fit the replacement leather pump washer and re-assemble, reversing the above procedure; bleed the system at the supply pipe connection to the header, see Fig. 1.

DISMANTLING AND RE-ASSEMBLING HEADER

Unscrew the one inlet and six outlet pipe gland nuts and pull the ends of the pipes clear of the header. Retain the olives on the ends of the pipes unless they are to be renewed. Remove the header attachment set-bolt and detach

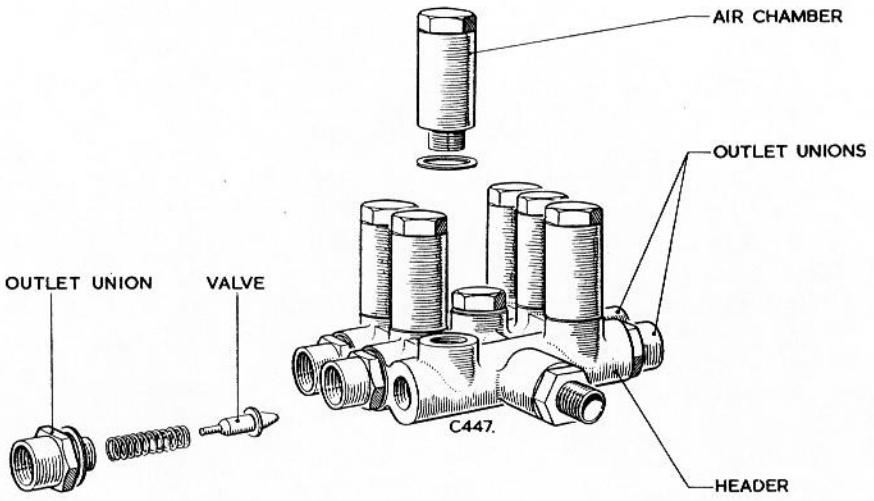

Fig.4 Header.

the header from the front suspension cross member. Unscrew the outlet unions and remove the unions and their shim washers, together with the springs and valves. Segregate these components and mark in order that they may be replaced in their original locations. Mark the air chambers and their locations in the header then remove them from the header.

When re-assembling the unit, ensure that all components are replaced in their original locations. After the unit has been refitted and all the pipes connected, refill the tank and bleed the system in the manner previously described.

FAULTS AND REMEDIES

No resistance felt at pedal

Tank empty.	Refill tank and bleed the system.

Broken pipe or loose or defective connection, indicated by oil leak.	Locate and rectify. Refill tank and bleed system.
Defective pump piston washer.	Remove cap, fibre gasket and piston return spring from forward end of pump. Unscrew the pedal head from the pump shaft and remove the shaft with piston and washer. Renew the washer and re-assemble. Bleed the supply pipe to the header.
Tank valve not seating correctly, indicated by disturbance of oil in tank when pedal is operated.	Drain the tank, unscrew tank from pump, clean and examine the valve and seating. Rectify as necessary. Refill tank and bleed the supply pipe to the header.

Lubrication of one or more points defective

Double-acting valve of defective line not seating correctly or valve spring broken.	Remove respective valve and spring from header, clean and rectify as necessary. Re-assemble, fill tank and bleed the system.
Oil pipe or oilway in component blocked.	Remove the applicable pipe from header and component, blow out with an air blast and re-assemble. Bleed the system. If the defect persists, the blockage is in the oilway of the component and may be cleared by partially dismantling the component as described in the relevant section of this manual. An air blast may be applied with effective results during the early stages of dismantling. This will render further dismantling unnecessary. After the cause of the trouble has been found and rectified, bleed the system.

Lubrication of all points defective

Tank outlet, pump outlet or header supply pipe blocked.	Remove pipe connection from header and operate the pump. If little or no oil appears, disconnect pipe from pump and apply an air blast. If pipe is clear, the obstruction is in the pump outlet or tank outlet. These components should therefore be removed and cleared. On curing defect, fill the tank and bleed the system.