

Fig. 2. Engine Stop Control.

An emergency device under the control of the commander is mounted on the rear bulkhead in the fighting compartment. This enables the commander to stop the vehicle should the driver be injured and temporarily lose control.

Access to the control is obtained by either traversing the turret a few degrees to the left so that the gunner can operate it, or traversing 90° to the right for control by the commander.

COLD STARTING CONTROL.

To the left hand side of the driver, mounted beneath the driver's signal satchel stowage bin, is a hand pump for priming the engine when starting cold.

Instructions are given for its use, under "Starting" on page 14.

BATTERY MASTER SWITCH.

This is mounted on the left hand side plate to the rear of the batteries beside the driver. When switch is in the "OFF" position the batteries are isolated from the remainder of the electrical wiring and therefore prevent a discharge taking place due to a short circuit.

In the "ON" position a red warning light glows on the left hand instrument panel.

When evacuating the vehicle, the master switch WILL be switched off.

HULL DRAIN VALVE. (See Fig. 3).

At the right hand forward corner of the driver's seat is a hull drain valve. This valve is spring loaded, compressing a resilient material around a large drain hole in the floor plate.

To open the valve, lift the handle against the spring pressure. It can be kept in the open position by lifting the handle the full amount and twisting the handle so that the guide peg rests on the top of the bracket.

When draining water from the hull, the vehicle should be on a slope, nose down.

DRIVER'S DOORS.

To reduce the manual effort on the part of the driver to a minimum, torsion bars are fitted through the hinge of each door, enabling the doors to be pushed open very easily.

Close the drain cock, free the engine bearings by hand (using the hand-barring tool described on page 14), then start the engine as shown in "Driver's Instructions." Immediately fill the cooling system with water, keeping the flow as continuous as possible.

Warm up the engine by running quickly, but don't race it.

(3) RUNNING THE ENGINE PERIODICALLY.

If it is impossible to secure anti-freeze, and the vehicle must be ready for immediate use, freezing of the coolant can be prevented by periodical running of the engine. To do this, run the engine at a fast speed but don't race it, for periods of five minutes at intervals dependent upon the severity of the cold.

This also applies to vehicles which are halted temporarily.

Keeping the tarpaulin sheets over the louvres whilst the engine is running will assist in bringing the water temperature up quickly.

Under conditions of severe cold, be sure to change the lubricants as instructed on the Lubrication Chart.

FIRE PRECAUTIONS.

The danger of fire occurring on this vehicle is very remote, but as the possibility cannot be entirely disregarded, fire fighting equipment is installed. This is in the form of hand operated fire extinguishers which can be taken and operated directly on the seat of the fire. Latest vehicles are fitted with one tetrachloride and two methyl bromide extinguishers, the latter being mounted on each trackguard at the rear of the vehicle.

All personnel must be conversant with the stowage positions (*Fig. 5*) and with the use of the fire fighting equipment, each should have set duties, and all orders will be known and understood.

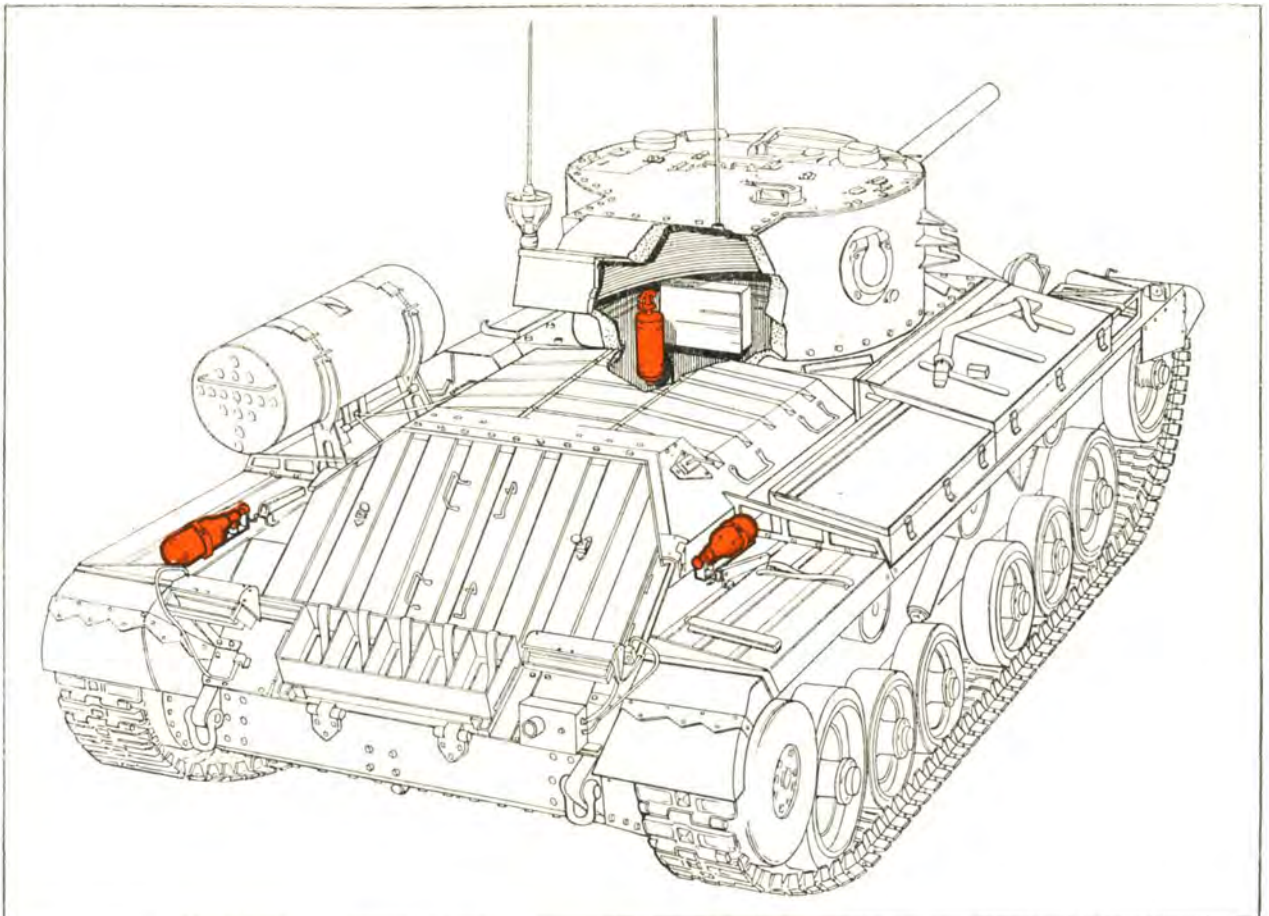


Fig. 5. Position of Fire Fighting Equipment.

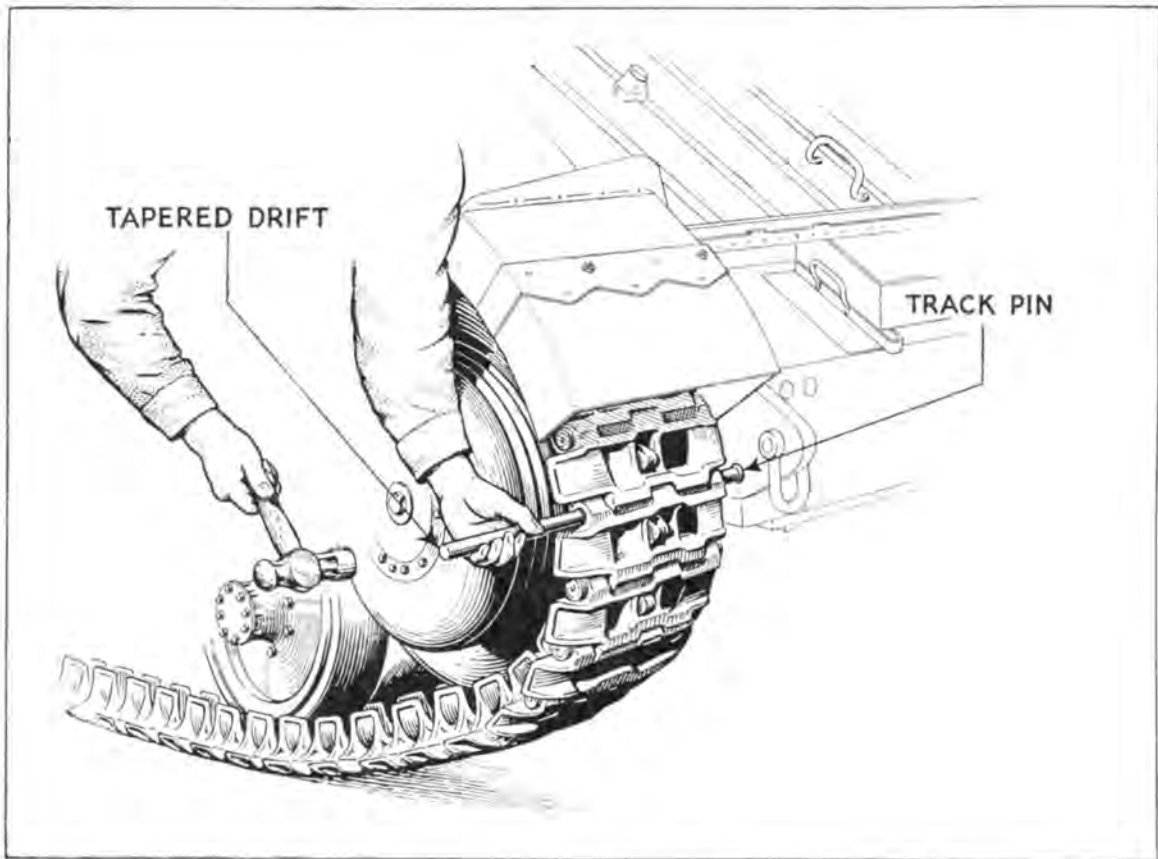


Fig. 26. Removing Track Pin.

TO SLACKEN TRACK.

Unscrew the pawl locking bolt which protrudes through the track guard.

Insert the track adjusting tool in one of the cast recesses in the track adjuster bracket, lever up and **TIGHTEN** track and whilst holding it in this position another member of the crew must lift—not hammer—the pawl out of engagement of the rack. The track adjusting tool can then be lowered and the track slackened.

BREAK TRACK.

Apply vehicle brakes and slacken off track adjuster.

Select a pin half way round the **SPROCKET** and drive it out as far as possible by using the special track pin punch and the 5-lb. hammer to break the riveting, as shown in *Fig. 25*. Place the tool in the centre of the riveted end and strike the end of the tool sharply with the hammer. Care must be taken to keep the tool in the centre of the pin, otherwise the pin will be riveted up instead of knocked out.

Having broken the riveting, drive the pin out the remainder of the way with the drift supplied in the tool kit, *Fig. 26*.

REMOVE ONE TRACK.

Having completed the above operation the track can be removed by pulling the track out to the front over the idler wheel. Assistance must be given between the top rollers to prevent the track dropping down and wedging between the main suspension brackets.

If it is necessary to remove the track from beneath the vehicle this can be done under engine power by laying the track out straight in front of the vehicle, engaging first gear and steering clutch with the minimum of engine revs. Planks or similar equipment will be necessary to prevent the wheels sinking if the ground is at all soft.

NOTE.—DO NOT ENGAGE THE STEERING CLUTCH ON THE SIDE WITH THE TRACK BROKEN. THE BRAKE SHOULD BE LEFT APPLIED TO PREVENT ROTATION OF THE SPROCKET.

DRIVING MOTOR.

The driving motor provides the mechanical power for traversing the turret. The unit is supplied with electrical energy from the battery and from the generator, and its speed of rotation and the direction of rotation are governed by the position of the control handle.

The motor is of a simple four pole construction. The armature and commutator assembly is of robust design, and its spindle is carried on two ball races, one fitted in the driving end bracket, and the other in the commutator end bracket. Two brushes are provided which are mounted at 90° to each other. The brushes are carried in rectangular holders or boxes, and are held firmly against the commutator by means of clock type springs.

The motor is secured to the casting of the gearbox by four nuts and bolts. The end of the motor shaft is provided with splines which engage with the inside of a coupling sleeve connected to the gearbox driving shaft.

TRAVERSE GEARBOX.

The function of the traverse gearbox is to provide the means whereby the power developed by the hand drive or by the motor, is utilized to rotate the turret.

The gearbox incorporates a friction clutch which comes into operation if the mechanism is subjected to an overload, such as may be obtained should the gun strike an obstacle due to its being positioned over the side of the tank while the tank is in motion.

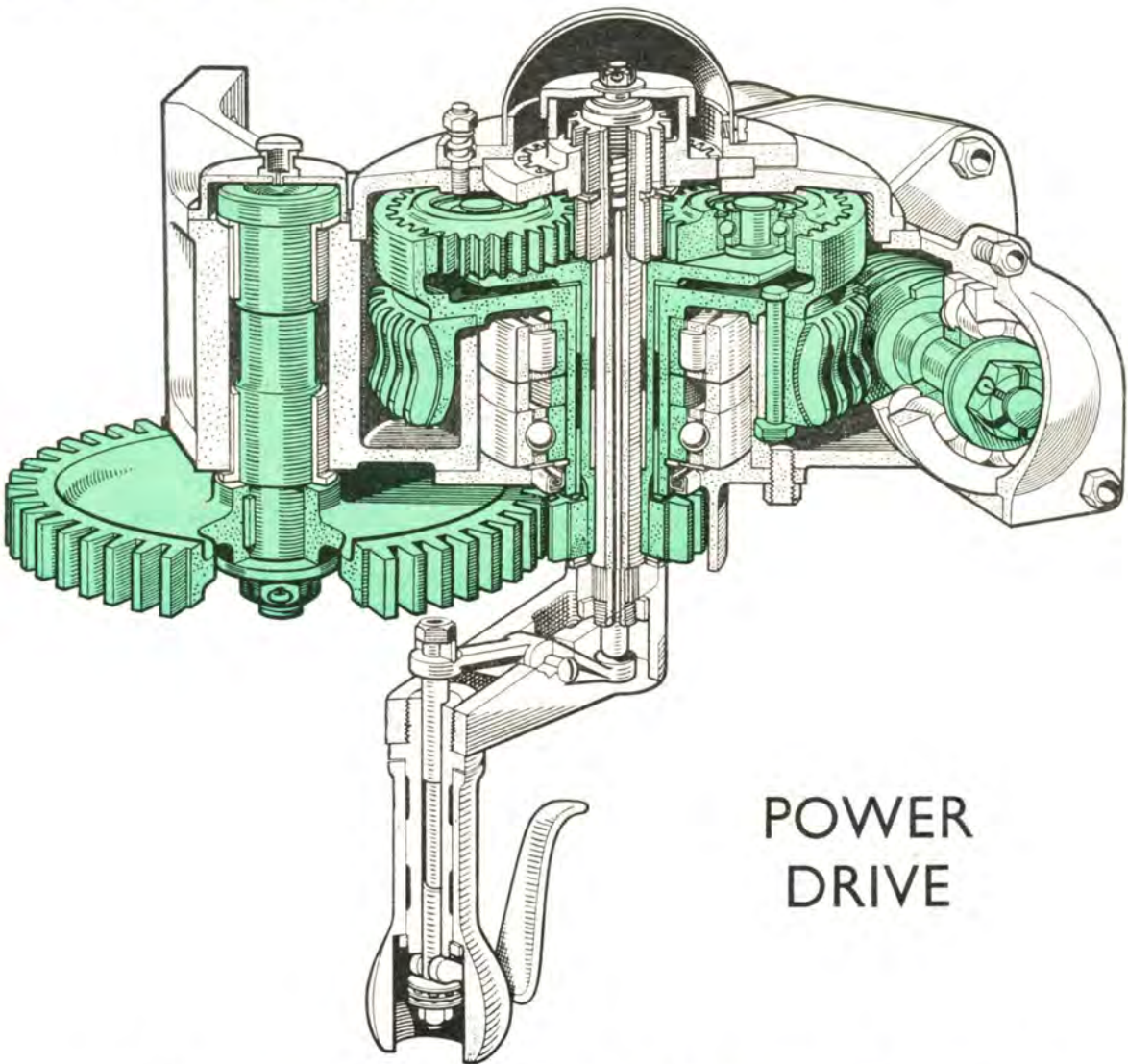


Fig. 81. Sectioned View of Gear Box. Tinted Components show path of Power Drive.

ELEVATING GEAR. (*Fig. 119*).

The elevating gear is fitted to control the elevation and depression of the gun by swinging the mounting on trunnions. The elevating screw (A) is raised or lowered by an elevating nut (B) rotated by gearing housed in a gear casing (C) supported in the bracket (D) which also supports the gun depression stop (see *Fig. 122*, page 214).

The elevating screw is connected to the underside of the cradle to pivot on the fulcrum pin (E), and is encased in a sleeve (F) telescoping over the corresponding sleeve (G) in which is secured the elevating nut (B). The pinion (H) formed on the lower end of the sleeve (G) is driven by a pinion (K), keyed to the spindle (L) which extends through the gear casing (C). The hand wheel (M) is also keyed to the spindle (L) and provided with a handle (N) in which is embodied the trigger mechanism of the firing gear.

The lower end of the elevating screw is mounted in ball or roller bearings (O) held in the gear casing (C). Trunnions (P) on the gear casing, supported in bearings in the bracket (D), permit the assembly to take an angular position to accord with that of the gun.

The elevating screw is lubricated from the casing (C) by oil passed through a lubricating hole drilled obliquely through the sleeve (G).

A dustproof fabric cover (R) is fitted over the telescoping part of the sleeves (F), (G), and held by "Jubilee" clips (S).

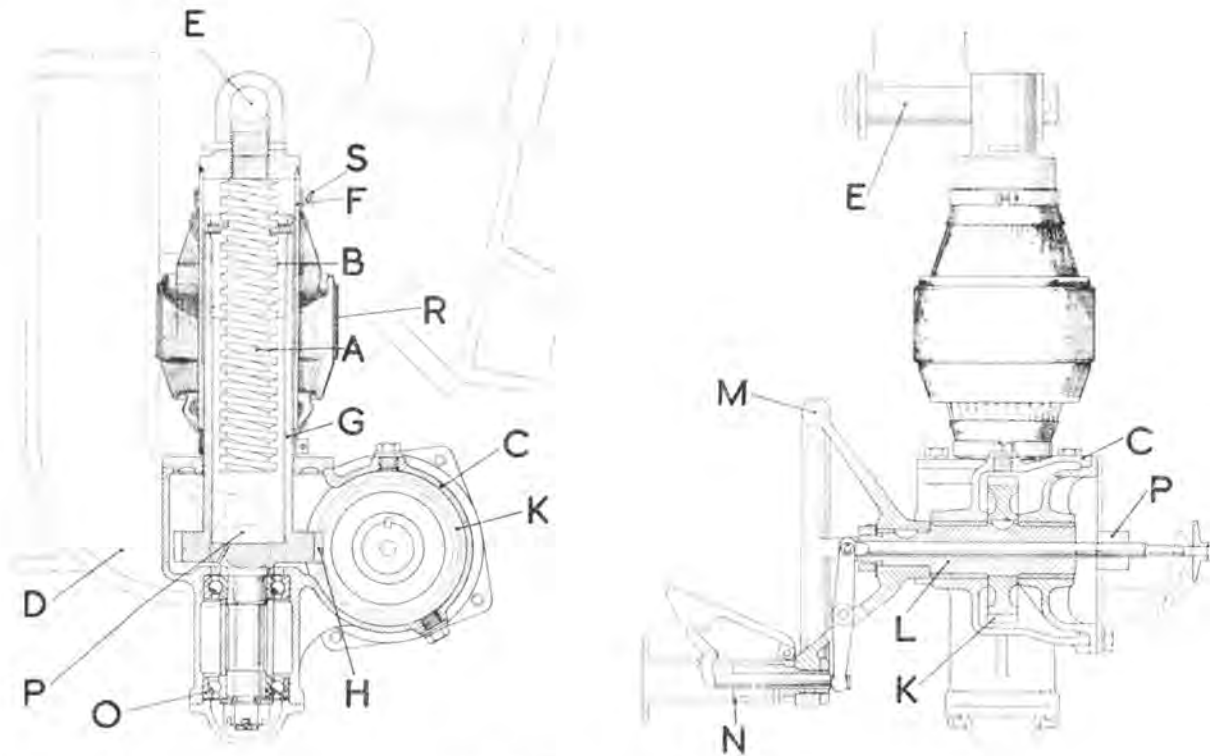


Fig. 119. Elevating Gear.

TRAVELLING LOCK. (*Fig. 120*).

The travelling lock is designed to relieve the elevating gear of shocks and jolts.

A bracket (A) is bolted by two bolts to the turret top plate. Pivoted in the bracket between two check plates, is an arm (B) retained in either a stowed or vertical position by a spring loaded ball mounted in a barrel housing (C) screwed into the bracket engaging either of two notches in the arm. The pivot pin (D) is held in position by a washer and split pin at each end. The free end of the arm (B) is slotted and countersunk to receive the boss of the handwheel (E) which screws on the bolt (F) the end of which is riveted over to retain a washer to stop the wheel being accidentally screwed off the bolt. The bolt (F) is screwed into a boss or bracket on the left side of the 6-pr. gun cradle.

Shims (G) may be fitted between the bracket (A) and the turret top plate as required.