



7. LEADING DIMENSIONS OF FIGHTING CHAMBER

Floor to bottom of turret ring	635	mm	(25.0 ins)
Depth of turret ring	158	mm	(6.25 ")
Turret ring to turret roof	704	mm	(27.7 ")
Headroom in turret	1498	mm	(59.0 ")
Trunnion axis to top of turret ring	342	mm	(13.5 ")
Trunnion axis to ground	2159	mm	(85.0 ")
Trunnion axis to centre of turret	736	mm	(29.0 ")
Distance apart of trunnions	688	mm	(27.5 ")
Axis of bore of 76.2mm gun above trunnion axis	89	mm	(3.5 ")
Internal diameter of turret ring	1562	mm	(61.5 ")
Internal diameter of turret roof hatch	499	mm	(19.6 ")
Turret ring to rear face of breech ring	605	mm	(23.8 ")
Turret ring to rear face of deflector guard	100	mm	(3.9 ")

There is no basket or rotating floor, and the seats for the commander, gunner and loader are suspended from the turret ring.

8. ACCESS DOORS AND ESCAPE HATCHES

HULL - the driver and wireless operator are provided with a common circular access hatch situated on the nearside of the hull top plate immediately above the wireless operator's seat. This hatch is fitted with a door hinged to the front. A compensating device is provided to assist the opening of the door and to retard its closure. The securing mechanism consists of a central cam operated by a square key from outside and a lever from inside, which extends four bolts, three of which secure the door. The fourth bolt engages the fixed member of the hinge and retains the door in an open position. It is worthy of note that this arrangement forms a positive safeguard against damage to the securing bolts when closing the door, since all bolts must be withdrawn before the "open" position lock is released.

This hatch must be closed before the turret is traversed, as in the "open" position it is fouled by the armoured encasement of the 76.2mm. gun.

A circular escape hatch hinged to the front is provided in the belly plate behind the driver's seat. It is secured by two screw clamps and a spring loaded catch.

TURRET - a circular hatch is provided in the turret roof. The hinged hatch cover is mounted on the upper face of a rotating ring which also carries the A/A mounting. Details of this mounting are given under "ARMAMENT". A coil spring compensating mechanism is fitted to counterbalance the weight of the door during opening or closing. The door is secured by a similar mechanism to that on the driver's access hatch.

9. OBSERVATION AND PISTOL PORTS

Commander/Loader - One episcopes rotatable about a horizontal axis through an arc of 27° mounted on the offside of the turret roof, facing outboard and rearward at approximately 5° to the lateral axis of the tank.

One vision slit, with glass block, at 3 o'clock in the turret wall.

One pistol port, below vision slit.

One PTK periscope in the forward offside of turret roof.

Gunner - One episcopes rotatable about a horizontal axis through an arc of 27° mounted on the nearside of the turret roof, facing outboard and rearward at approximately 5° to the lateral axis of the tank.

One vision slit, with glass block at 9 o'clock in the turret wall.

One pistol port, below vision slit.

One PT 4-7 periscopic sight in the forward nearside of turret roof.

One TMFD telescopic sight in cradle.

The pressure pump delivers oil into the free end of the crankshaft after it has passed through a clearance type filter incorporating a by-pass valve.

Oil radiator units are mounted at each side of the engine. Each assembly comprises two units, referred to in the handbook respectively as the "oil radiator" and the "additional oil radiator". The "oil radiator" units are mounted vertically at each side of the engine compartment between the hull side and the water radiator. They each consist of two dimpled light metal sheets welded together around their edges and spot welded at each dimple. The "additional oil radiators" are tubular units and are mounted longitudinally across the water radiators on each side of the engine. A control cock, situated low down on the nearside, is accessible through a door in the bulkhead. Manipulation of this cock permits the isolation of the "additional radiators". A further cock, also accessible from the fighting compartment, may be used to isolate the whole cooling system.

COOLING SYSTEM - The centrifugal water pump is situated on the engine sump. Water is drawn from the bottom of each radiator and delivered to each bank, after circulation through the jackets it is returned to the radiators via return pipes at the flywheel end. The water pump spindle is lubricated from a manually operated greaser on the engine bulkhead.

The greaser is accessible from the fighting compartment. A gilled tube radiator is mounted at each side of the engine compartment. They are inclined towards the top of the engine at an angle of 30 degrees. A shallow circular header tank is mounted centrally over the engine and is connected to each radiator. A filler incorporating a pressure relief valve is accessible on removal of a threaded plug in the engine cover plate.

The cooling fan assembly is driven by the main engine clutch and runs in a cowling in the bulkhead between the engine and transmission compartments. The fan is a composite unit comprising two drums to each of which are bolted sixteen blades. The guide vanes, eleven in number, are set at opposite angles to the fan blades and thus maintain an axial flow of air to the rear fan assembly. Air exhausted by the fan is directed through a further set of fixed radial vanes and then distributed over the gearbox and steering units. A slipping clutch is incorporated in the hub of the fan.

The fan assembly draws air from openings at each side of the engine compartment top plate. The air is directed over the water and oil radiators by a light metal deflector mounted in the mouth of each intake. These plates are constructed around an armoured segment by which they are secured to the fore and aft engine compartment bulkheads. The air is finally expelled through the tail plate.

AIR CLEANERS - Two oil bath type air cleaners are fitted, one for each bank. They are mounted at each side of the engine compartment immediately in front of the rear engine bulkhead. In order to obtain access to the cleaners, it is necessary first to remove the top plate of the rear (transmission) compartment. The cleaners are then exposed by the opening of access plates in the rear bulkhead.



