

Relief valves are fitted in the water inlet and outlets to the engine to avoid air locks when external hot water circuit is in use. The capacity of the water system is approximately 16 gallons.

Water Pump

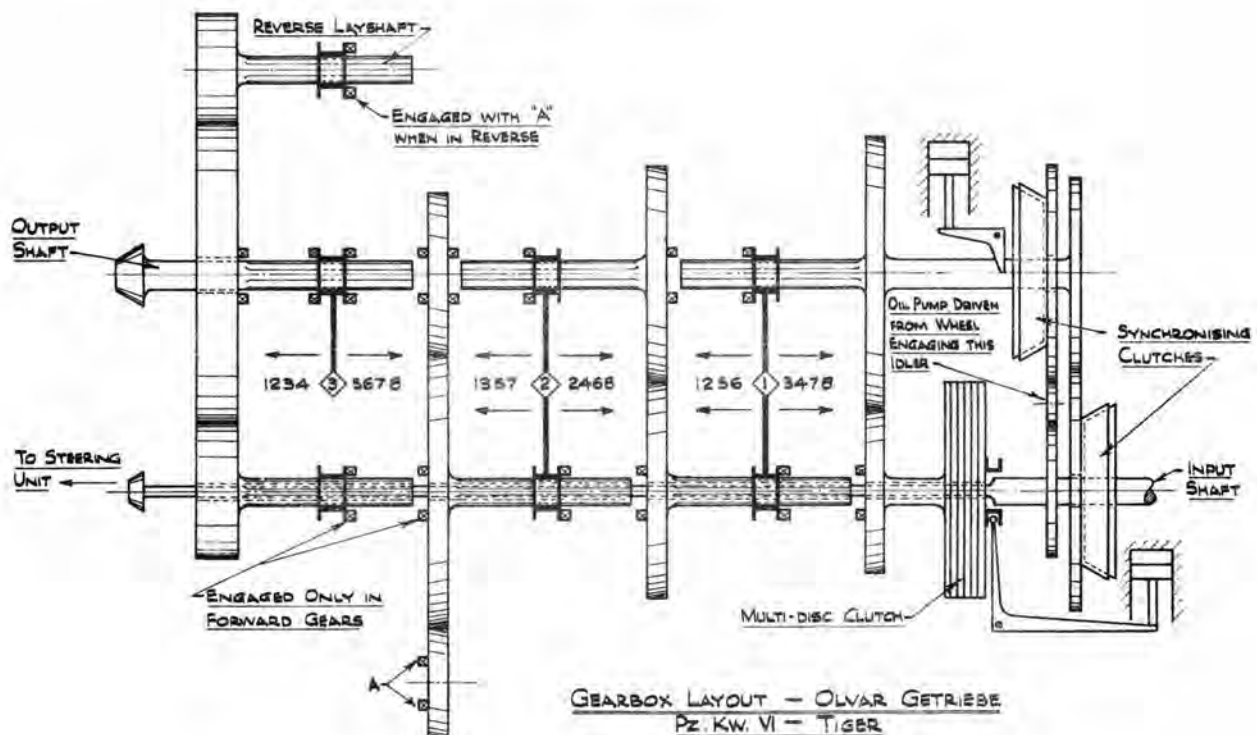
Water returning from the nearside radiator enters the engine cooling system at an oil/water heat exchanger, mounted at the rear nearside of the engine from which a pipe leads to the water pump. The output from the pump is directed into the cylinder block water jacket from whence it is circulated through the cylinder heads. The outlets from the cylinder heads are coupled and from them the water enters the top of the offside radiator, from the bottom of which it is directed to the top of the nearside radiator.

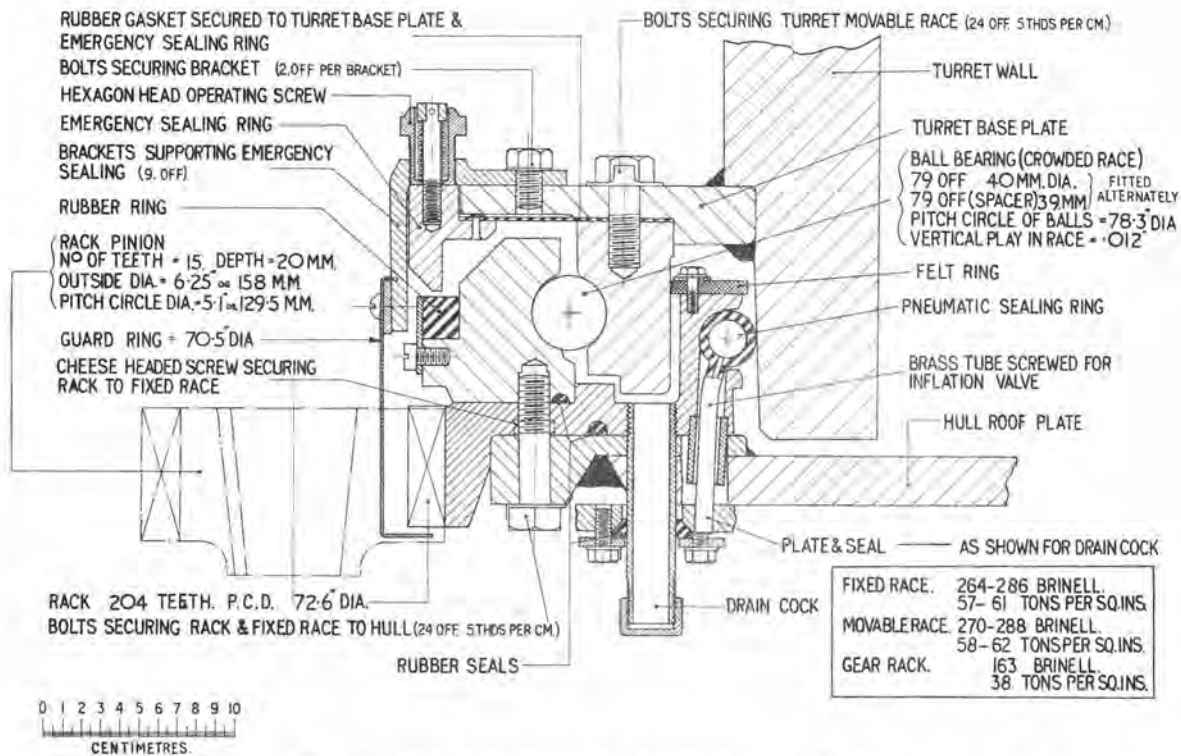
Fans

A twin fan assembly is mounted transversely at each side of the rear of the engine compartment. The fans are of radial flow type and are mounted in aluminium housings bolted to the radiators. A two speed drive is taken off the timing gears and a short universally jointed shaft carries this drive to the fan drive housing which is mounted on the rear plate of the engine compartment. In this housing the drive is split and taken on each side transversely to each fan assembly through universally jointed shafts. An oil pump is mounted on the housing and supplies oil from the fan drive casing to each fan assembly. The level of the oil in the housing is checked by means of a dipstick accessible when the engine hatch is open and is replenished through a filling orifice in the fixed portion of the engine compartment cover.

Lubrication

The engine sump is dry and a pressure fed lubrication system is used. The pressure pump draws oil from a cannister mounted on the offside of the engine and directs it into a gallery in the crankcase casting, from which it is led off to the cylinder heads and timing gears. The crankshaft receives oil under pressure through a muff which is piped to the pressure gallery. The connection from the oil container to the pressure pump is via oil-ways in the crankcase casting. The scavenge pumps, which are set at opposite ends of the engine, have a common output into the heat exchanger from whence it is returned to the oil cannister. The oil capacity is 28 litres (6.1 gals.)





Composite section of turret suspension

Ratio - approximately 10/turn

Maximum workable elevation - 11° (approx)

Maximum workable depression - 4° "

Total Arc 15°

Clearance between sector and sector pinion .004 ins. At maximum depression, the breech ring fouls the elevation lock, and at maximum elevation the deflector guard fouls the water cans on the floor. When firing, therefore, the maximum workable elevation and depression is considerably smaller than the maximum possible.

The elevation lock consists of two hooks, pivoted from the turret roof which engage studs on either side of the breech ring, and a screw clamp which presses on the top of the breech ring and forces the studs into the hooks. In the locked position, the gun is horizontal. This rather complicated arrangement prevents chatter when travelling.

Turret Suspension

The turret is carried on a vertical bearing, of the crowded ball race type. There are 79 load carrying balls of 40 mm. diameter and 262 grammes weight, and 79 spacer balls of 39 mm. diameter and 241 grammes weight. The stationary race is on the inside and the moving race on the outside.

The turret rack is in one piece and has the following dimensions:-

Root circle diameter	186.4 cm. (73.4 ins)
Pitch circle diameter	184.4 cm. (72.6 ins)
Addendum circle diameter	182.4 cm. (71.8 ins)
No. of teeth	204
Diameter to centre of balls	198.8 cm. (78.3 ins)
Vertical play in turret race	.012 of an inch.

PART II

ADDENDA TO SECTIONS I, II AND III.

AND REPORT ON GUNNERY TRIALS.

INTRODUCTION

The Tiger tank was sent for brief Gunnery Trials by Experimental Wing, A.F.V. School. This section contains the substance of their reports: E.O. No. 37/1/157 dated 17th March 1944 and 37/1/171 dated 14th April 1944, together with a few additional points which have come to light since Sections I, II and III of Part II were published.

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