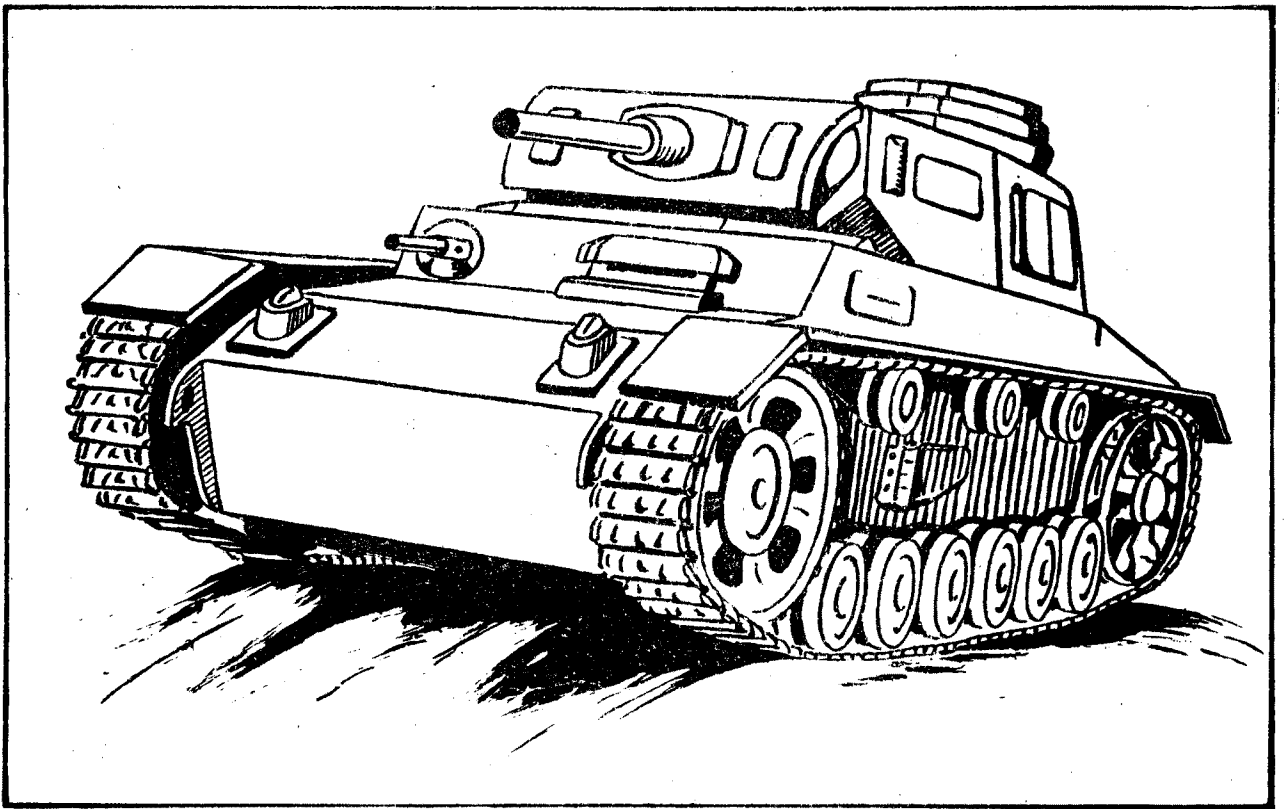


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Preliminary Report No.5

Pz Kw III



School of Tank Technology
Egham



September 1942

7/5/70

FOREWORD

This preliminary report refers to a Pz.Kw.III received from Russia.

The chassis number 68026 indicates that this tank is probably one of the latest models so far identified, i.e. Model J.

The Pz.Kw.III received from Middle East, and examined by Messrs. A.E.C. Ltd., chassis number 61080, is believed to belong to the Model F. class.

The principal differences between the two models noted in this preliminary examination are as follows:

- (i) Increased armour thickness 50 mm. against 30 mm. on certain front and rear plates. It is estimated that the heavier armour has increased the weight by 1346 lbs, and it is interesting to note that the additional weight is divided equally between the front and rear of the tank.
- (ii) Hydraulically operated steering in the earlier model has been replaced by mechanical steering. The brake air cooling fan is now driven from the gear box instead of from the engine, thus shortening the length of the air conduits.
- (iii) The complicated Maybach Variorex ten speed gear has been abandoned in favour of a manual six speed and reverse gear box.
- (iv) Wider tracks; 15" in place of 14" are now fitted and the ice/snow sprag (para.15, Fig.8) is worthy of note. The heavier track has called for a change in spacing of the return rollers. Front and rear rollers are now mounted directly over the Luvax shock absorbers and prevent the track fouling the latter.
- (v) A different mounting for the air cleaners indicates a change but as the air cleaners are deficient, no comment is possible.
- (vi) The alteration of the rear turret plate may be to simplify production.
- (vii) The modification to the tail plate gives better protection to the rear air outlet, and allows the smoke device to be mounted inside the plate, thereby giving protection to the smoke candles, and release gear.
- (viii) The draping of a length of track in front of the nose plate to give added protection appears to be a permanent feature. One or two mild steel bars, welded at each end, are fixed across the middle of the nose plate. The track shoes are placed behind the bars and are held in position by the bridge of the shoe.
- (ix) In view of the increased weight of this vehicle the suspension torsion bars were examined and it was found that the front six bars are 55 mm. diameter and the rear six bars 52 mm. diameter as against 55 mm. four front bars, 44 mm. four centre bars and 55 mm. four rear bars on the vehicle examined by Messrs. A.E.C. Ltd.



STT/8/2/3

PRELIMINARY REPORT ON GERMAN TANK Pz.Kw. III

(Received from Russia)

Examined at Farnborough (E.W.No. 2221)

30th September, 1942.

Examiners: Major J.D. Barnes, R.T.R., Captain R.E.W. Cole
and Captain J.C. Holmes, R.A.O.C.

1. TYPE Pz.Kw. III Chassis No. 68026
Turret No. 68099. Year of manufacture: Not known.

2. IDENTIFICATION MARKINGS

St. Andrews Cross on front and side superstructure.
On turret, 2 1 5

3. GENERAL CONDITION

Good. Very little work required to make vehicle a runner. Near-side track slightly damaged. One bogie wheel missing from each side. The vehicle appears to have received a direct hit (H.E.?) on the rear of off-side hull plate. The superstructure is secured by bolts to an angle plate welded to the hull. This weld has been fractured by the impact. The result of this hit has slightly damaged the off-side radiator. The normal spacing between the hull side and the radiator is approximately 3/16"

4. WEIGHT (Unladen and less armament, accumulators and two bogies)

19 tons 6 cwts

Estimated fighting weight 22 tons.

5. SPEED (Not tested).

6. CREW Five.

7. DIMENSIONS

Length	17' 9"
Width	9' 8"
Height	8' 3"
Clearance	1' 2"
Ground Contact	9' 4 1/2"
Track Centres	8' 2 1/2"

8. ARMAMENT

One 5 cm. gun and one M.G. in turret - (both deficient).
 M.G. (deficient) in ball mounting in superstructure on off-side.
 The 5 cm. gun is fired by electric control on turret traverse handwheel.
 The turret M.G. is fired by foot operated trigger.
 The hull M.G. control is shown at Fig. 1.

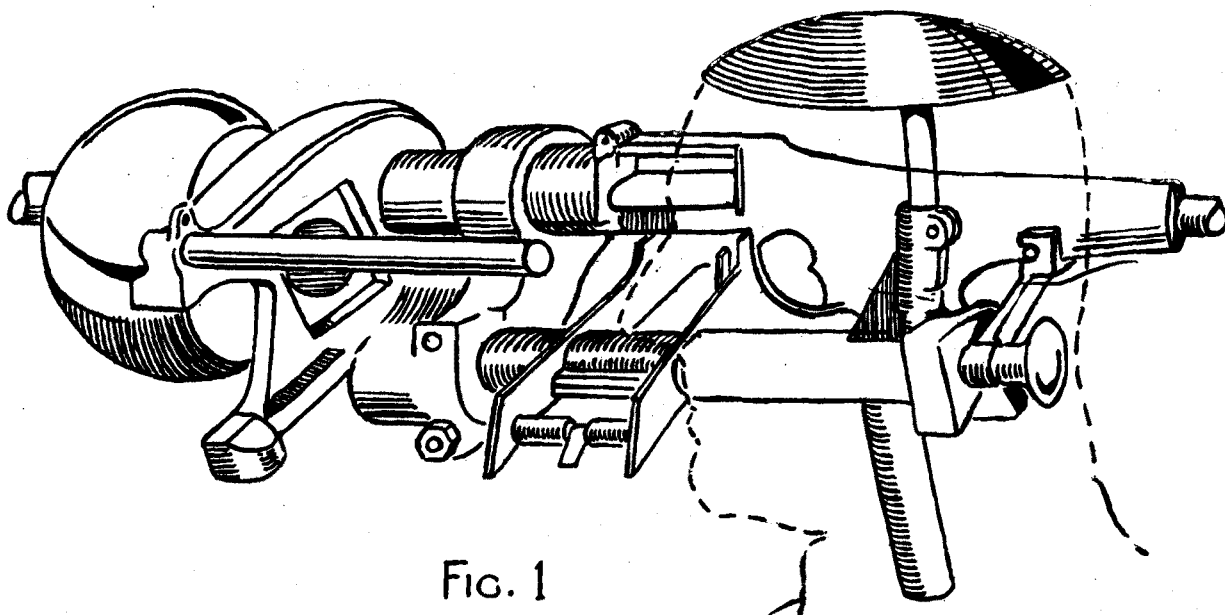


FIG. 1
 Head Control for Hull Machine Gun.

There is a mounting for telescope on left of 5 cm. gun consisting of a sliding cradle at front and a link swinging from the turret top for rear support.

Elevating Gear - Operated by handwheel left of 5 cm. gun. (Gear damaged). M.G. and 5 cm. gun co-axially mounted. Elevation assisted by spring compensator mounted on off-side of turret front.

The armament and turret of this vehicle is subject to a special report by D.T.D. (M/T).

9. OBSERVATION

- Driver's vision is provided by a single slit visor fitted with
- readily removable B.P. glass block (deficient). Above are two small circular holes behind which is mounted a rectangular cradle with adjusting screw and clamp. This fitment can be covered by a hinged flap on the inside. The device presumably accommodates a periscope visor - (deficient).
- Further vision is provided as follows:

Cupola - Six ports, fitted B.P. Glass blocks (readily removable) and sliding steel covers operated by bar on quadrant.

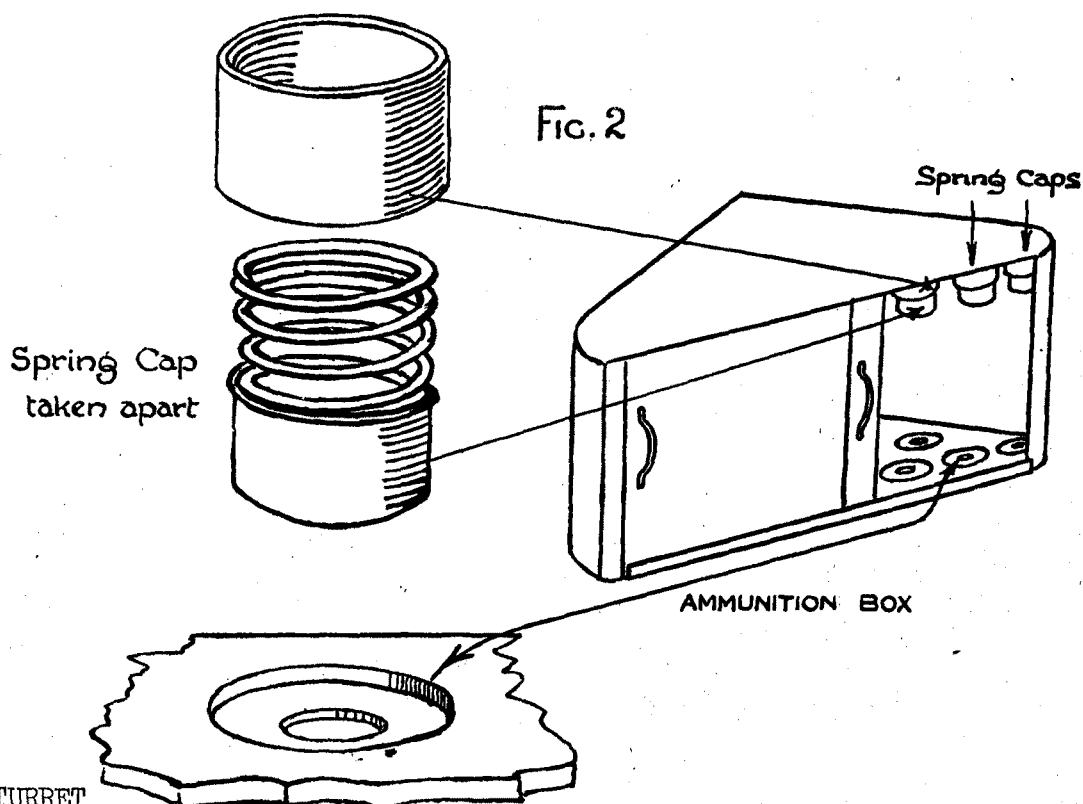
Turret - Two vision slits in mantlet with readily removable glasses and flaps, operated by push rods. Two similar vision slits in turret doors with flaps secured by hand latch.

Superstructure - Two ports in side plates - one on off-side, one on near-side. The off-side has a flap but no provision for glass whilst the near-side is slitted and has readily removable glass block. (deficient).

10. AMMUNITION CARRIED

Light metal box on right of gun holding 5 rounds 5 cm. ammunition. Three ammunition boxes with sliding doors in fighting compartment holding 24, 24 and 22 rounds respectively. Total - 75 rounds.

Spring loaded sockets for the nose of the round provide a convenient and neat method of stowage (Fig. 2). No indication of the amount of Small Arms ammunition carried.

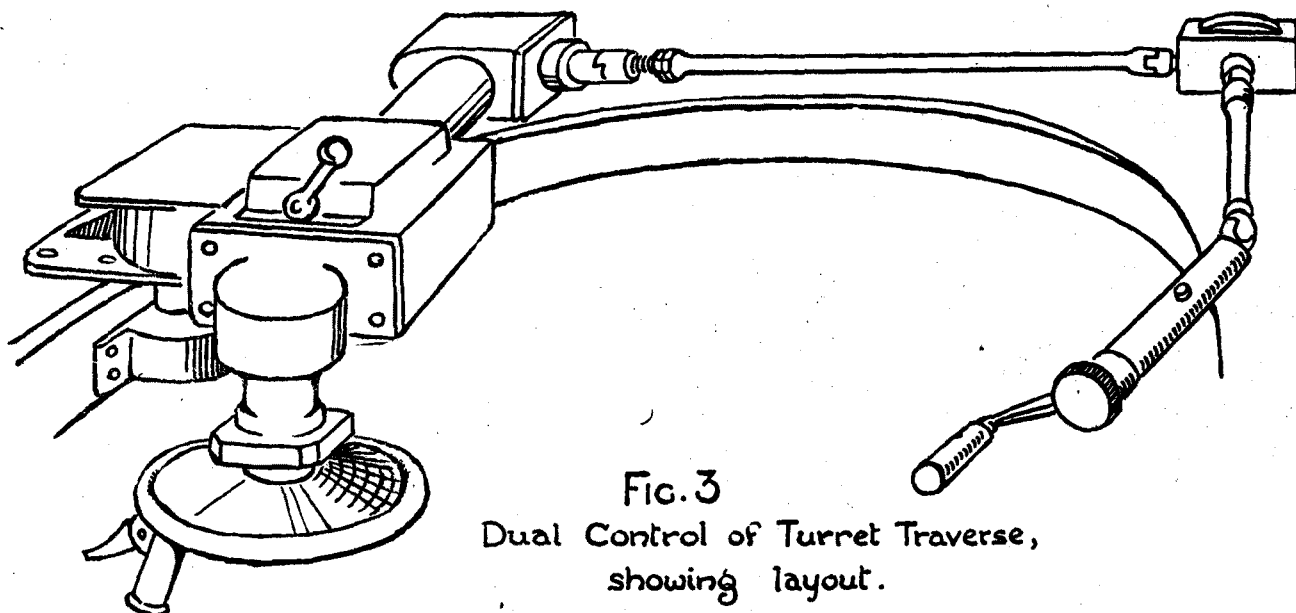
11. TURRET

Number 68099. Of welded construction. 360° traverse. Internal diameter approx. 4 ft 11 ins. Traverse gear operated by:

- (i) Handwheel on left of gun.
- (ii) By hand crank on right of turret through shaft and gear to traverse gear. (Fig. 3).

A knurled hand-nut releases dog engagement of crank when not in use.

The rear of the turret is of different design to that of the Pz.Kw.III examined by Messrs. A.E.C. Ltd. The rear plate consists of a single rolled plate of uniform radius.



A locking device mounted on turret ring allows turret to be locked in straight ahead position. Two revolver ports are provided in rear plate of turret and there are two similar ports in hatch doors one on off side and one on near side. B.F. covers of conical section are provided for these ports. (See Fig. 4).

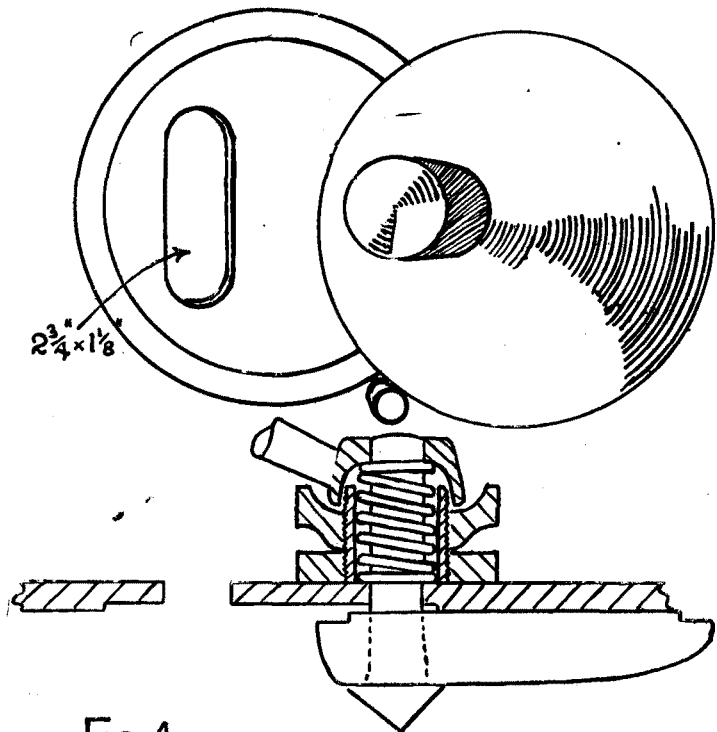
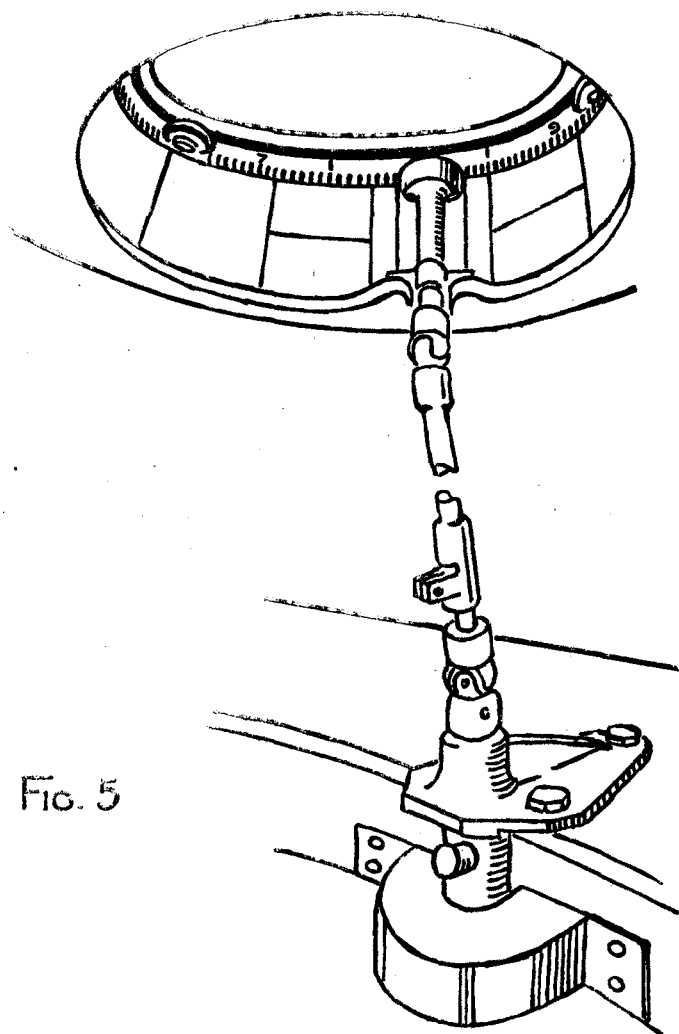


FIG.4
Revolver Ports and Covers



Cupola - Inside diameter 1' 7"
 Top consists of two semi-circular hinged flaps. A toothed ring graduated 1 - 12 driven by link from turret ring, gives an additional indication of turret position. (See Fig. 5).

FIG. 5

12. EXITS AND ESCAPE HATCHES

Two semi-circular flaps in cupola top.
 Two double access doors - one on each side of turret.
 Two escape or loading hatches are provided - one in each hull side plate.

13.	<u>ARMOUR</u>	<u>BASIC</u>	<u>ANGLE</u>
A.	Cupola top	9 mm	Horizontal
B.	" front and sides	varying 45 to 55 mm	Vertical (Round)
C.	Turret, top front	10 mm	83°
D.	" " rear	10 mm	Horizontal
E.	" sides	30 mm	25°
F.	" rear	30 mm	12°
G.	" front (covered by gun mantlet)	30 mm	15°
H.	Gun mantlet.	50 mm	Rounded
J.	Front vertical plate	50 mm	9°
K.	" glacis plate	26 mm	84°
L.	" nose plate	50 mm	52°
M.	" lower nose plate	50 mm	21°
N.	Side superstructure	30 mm	Vertical
P.	Side hull plate.	30 mm	Vertical
Q.	Top front plate	18 mm	Horizontal
R.	" rear "	18 mm	85°
S.	Top rear engine cover plate	17 mm	75°
	" " " " " (lower)	17 mm	41°
T.	Observation cover plates	50 mm	
U.	Belly plate (front)	30 mm	25°
	" " (middle)	16 mm	Horizontal
	" " (rear)	30 mm	25°
W.	Tail plate (upper)	53 mm	13°
	" " (lower)	53 mm	10°
X.	Skirting plates.	Not fitted.	

(The "Angle of Plate" given is the angle between the plate surface and the vertical, which is equal to the "Angle of Impact" for horizontal attack).

The 50 mm. armour is face hardened about 600 Brinell. This is only an approximate figure taken with the "Poldi" portable Brinell equipment. It is not possible to determine whether or not the face hardening has been achieved by carburising or flame hardening. Chemical analysis or micro examination would be necessary to determine this. The main body of this 50 mm. armour is approximately 250 Brinell (55/60 tons tensile). At no point has the welding been allowed to come in contact with the hardened face.

The use in the turret of heavy plates bent to shape, presumably by hot forming is worthy of note. This seems to offer advantages from a point of view of production without resorting to castings.

A considerable amount of hand smithing has been used in flattening and forming the M.Q. plates.

A heavy bar is welded to glacis plate to deflect projectiles from driver's visor. A hollow deflector of triangular section is welded to top of superstructure to protect turret ring joint. There are also triangular section plates welded to sides of superstructure to protect observation ports.

14. SUSPENSION

Torsion Bar - six twin bogie wheels of built-up welded construction.
 Diameter of bogies - 20"
 Overall width of twin bogie - 9"
 By reason of side by side mounting of torsion bars, near side bogies are off-set $4\frac{1}{2}$ " forward of off-side. Shock absorbers are fitted to front and rear bogies. There are three return rollers of twin type each side. Brackets incorporating a quadrant guide for suspension arms and rubber check blocks are mounted on hull alongside each bogie (Fig. 6).

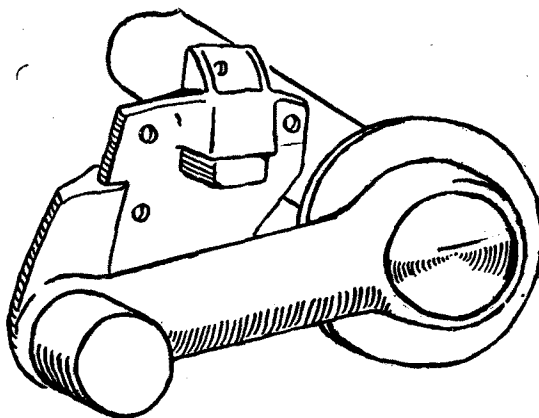


FIG. 6

SUSPENSION ARM and QUADRANT GUIDE

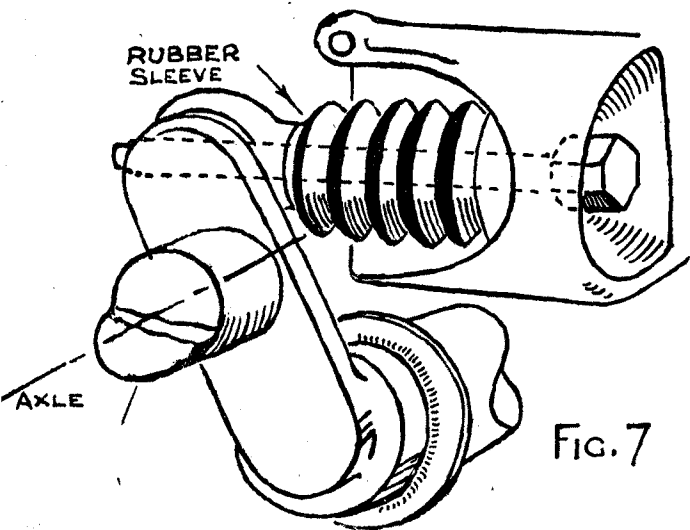


FIG. 7

15. TRACKS

Type - Single pin.
 Width of Shoe - 15"
 Shoes per track - 90
 Material - Cast (non-magnetic)
 Pitch of shoe - $4\frac{3}{4}$ "
 Weight of shoe - 14 lb 4 oz
 Weight of track pin - 2 lb 2 oz

Adjustment - By cranked mounting of rear idlers; a draw screw easily accessible from rear of tank provides adjustment. (Fig. 7.).

Note: Outside web of track shoes slotted to receive small steel (non-magnetic) sprags secured by split pins to provide extra adhesion for travelling in snow. Twelve of these sprags are fitted to this vehicle 4 on near side and 8 on off side. (Fig. 8) Photographs (limited distribution) at Appendix "A".

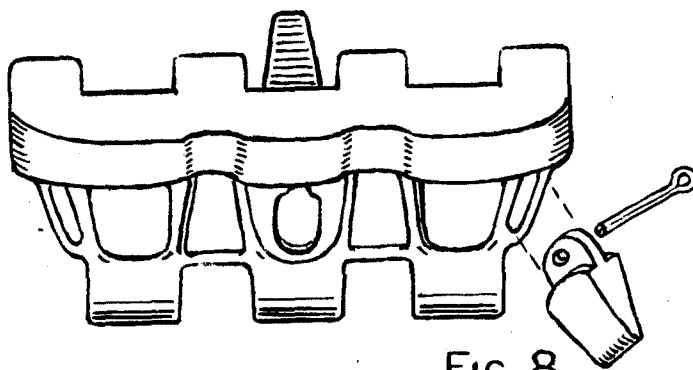


FIG. 8

16. ENGINE

Maker MAYBACH. MOTORENBAU. FRIEDRIKSCHAFEN A/B
 Motor No. 35584

Type H.L. 120 TRM. 1940. V - 12 cylinder. Water cooled.

Fuel Petrol.

Rating 300 h.p. @ 3000 r.p.m.

Capacity 11.867 Litres.

Valves Operated by two overhead camshafts. Two inclined valves per cylinder actuated through roller type rockers. Adjustment is obtained by rotation of eccentric bushes on rocker shafts. Camshafts are driven from helical timing gears.

Carburettors

Two Solex downdraught type mounted between cylinder banks. Marking: E.R.P.40.JFF.2.1.W.2696. Starter carburettor is provided, operated by lever mounted on gear box on right of driver.

Petrol Pumps

Two Solex mechanical type and one electric S.U. type.

Fuel capacity

One tank of approximately 70 gallons mounted on off-side of engine compartment.

Air Cleaners

Four oil bath type (deficient) arranged in two pairs.

Ignition

Bosch magneto. Marked - J.C. 12/L.14. Driven off timing gears at rear of engine.

H.T. leads carried in screened harness to 14 mm. Bosch single point plugs (totally enclosed).

Dynamo

Off side of engine. Belt driven through triangulated drive with water pump and fans.

Starters

Inertia type on near side. Operated through universally jointed shaft from tail plate. There is also an orthodox electric starter fitted.

Accumulators Deficient.

Cooling

Water, circulated by pump.

Radiators

Two film type - one each side of engine. Near-side marked - 17316. Comho. 42856. L'fd Nr. 90. Off-side marked - 3300.R.32. Brass header tanks - filler cap on off-side radiator. The two radiators are coupled.

Fandrive

Two fans are driven by twin V belts from quadruple pulley driven by crankshaft through slipping clutch. Adjustment of the belts is provided by eccentric movement of the master pulley by means of a mounting in rear of hull. The movement is permitted by universal joints.

Water Pump

Of impeller type, belt driven and mounted on cylinder block between heads.

Lubrication system

Dry sump. Oil cannister mounted on off-side of engine. Dipstick incorporated in filler-cap accessible through engine cover plate.

Oil Cleaner - Of Auto Klean type. Operated from clutch pedal.

17. DRIVE

As Pz.Kw.111 examined by Messrs A.E.C. Ltd.

Height of Sprocket - 2' $3\frac{3}{4}$ " (to centre)

Pitch Diameter - 2' $9\frac{3}{4}$ "

Width - 10" (to teeth centres)

18. GEAR BOX AND TRANSMISSION.

Six speeds and reverse. Manual box mounted forward on right of driver. An oil filter is provided. Date of manufacture is stamped on gearbox casing as 1940.

19. STEERING

As Pz.Kw.111 examined by Messrs A.E.C. Ltd except that hydraulic assistance has been dispensed with and the control is now purely mechanical.

Cooling for the track brakes is provided by centrifugal fan mounted on rear of gear box and circulating through ducts from brakes.

20. INSTRUMENTS AND CONTROLS.

Left - Clutch pedal, Centre - Footbrake (incorporating ratchet and pawl for parking) Right - accelerator.

General layout of driving controls as Pz.Kw.111 examined by Messrs A.E.C. Ltd.

Instrument panel

Speedometer - 0 to 100 K.p.h. Total reading - 1800 Kms.

Revolution counter - graduated 1,200 - 2,000 marked in Green.
2,600 - 3,200 " " Red

Oil Pressure Gauge - 0 to 12 Kg.Cm.²

Water temperature gauge (deficient)

Starter Button

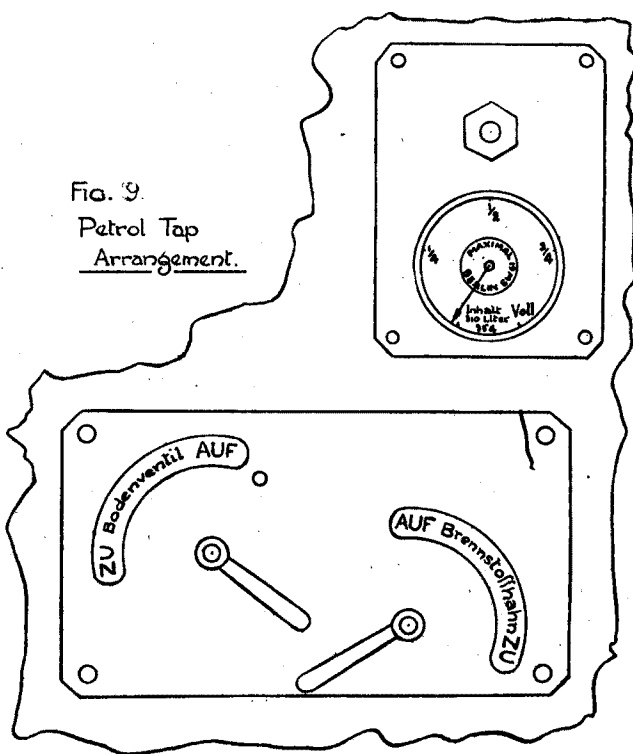
Ignition switch

Lighting switches, and distance keeping tail light switch.

Hull

Petrol gauge marked:
310L.
Master switch for
electrical circuit
(on rear bulkhead)
Two petrol taps.
(See Fig. 9)

Fig. 9.
Petrol Tap
Arrangement.



21. COMMUNICATION

Spring loaded mounting for antenna on off-side of superstructure. A lever actuated on a cam automatically lowers antenna to allow passage of gun.

22. OUTSIDE STOWAGE

Light metal box on off-side track guard. Stowage bin attached to rear of turret. Usual variety of clips for de-ditching gear etc.

23. RECOGNITION POINTS

Front sprocket drive. Six equal size bogies. No visible springing by reason of torsion bar suspension. Particularly squat turret, pear-shaped with circular cupola well set to rear. Machine gun in ball mounting on right of driver.

24. VULNERABLE POINTS

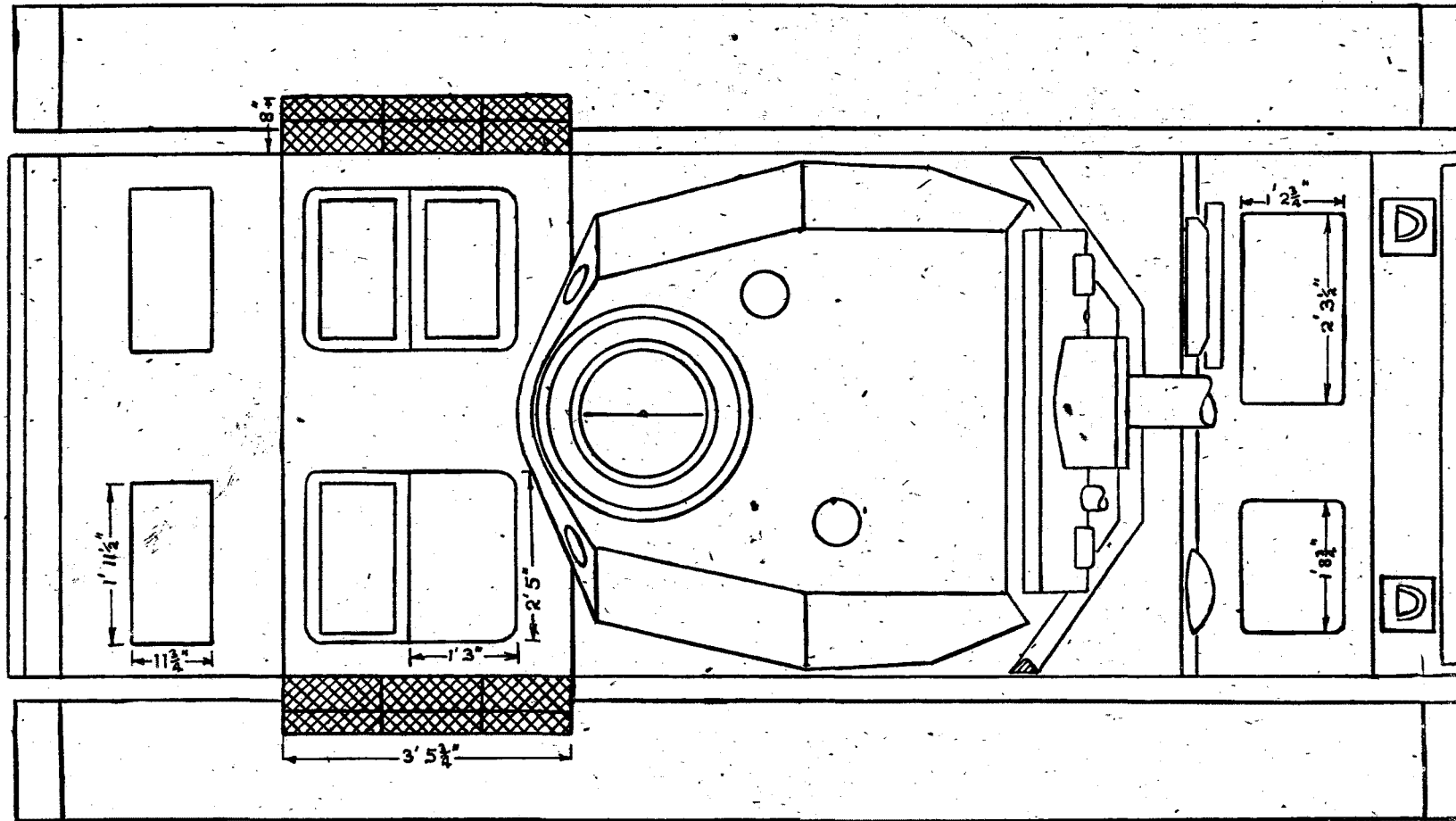
Air Intakes and Outlets

Intakes on three engine cover plates. One intake on each side of engine compartment, protected by metal grill beneath which are plates operated by manual control in fighting compartment. These intakes would probably be fairly vulnerable, particularly if plates were open. Two brake cooling intake cowls on nose plate. Air outlet is at rear of tank. All air intakes and outlets are fairly well protected.

25. SPECIAL EQUIPMENT

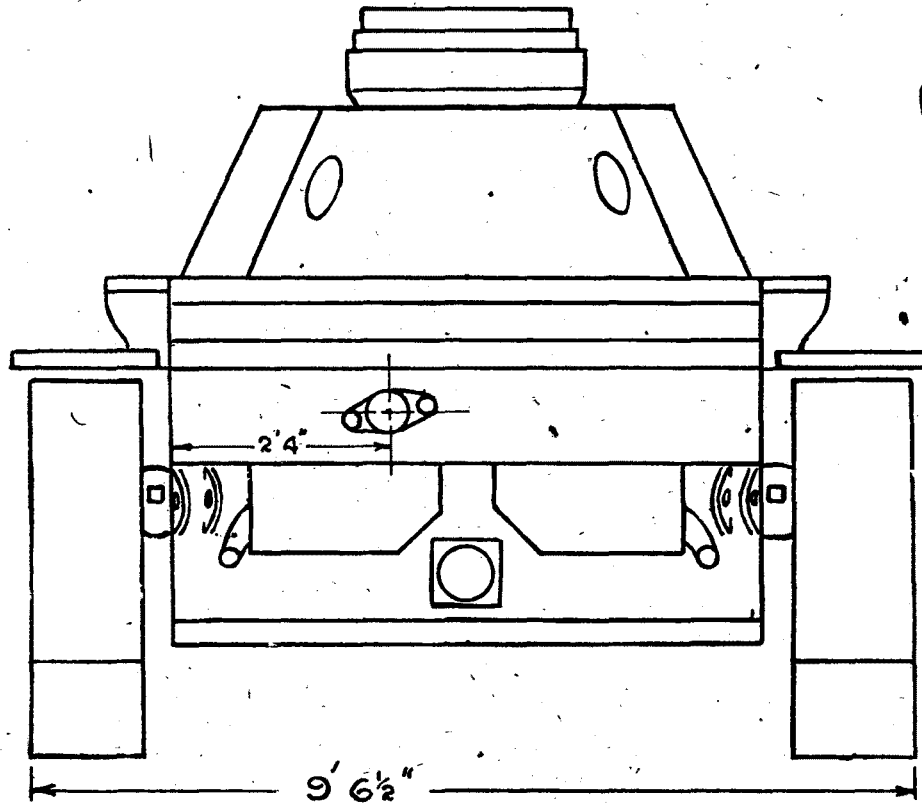
A five chambered smoke candle device is mounted at the rear under the upper tail plate. Release mechanism is operated by wire rope from remote control in rear of fighting compartment.

Pz.Kw. III

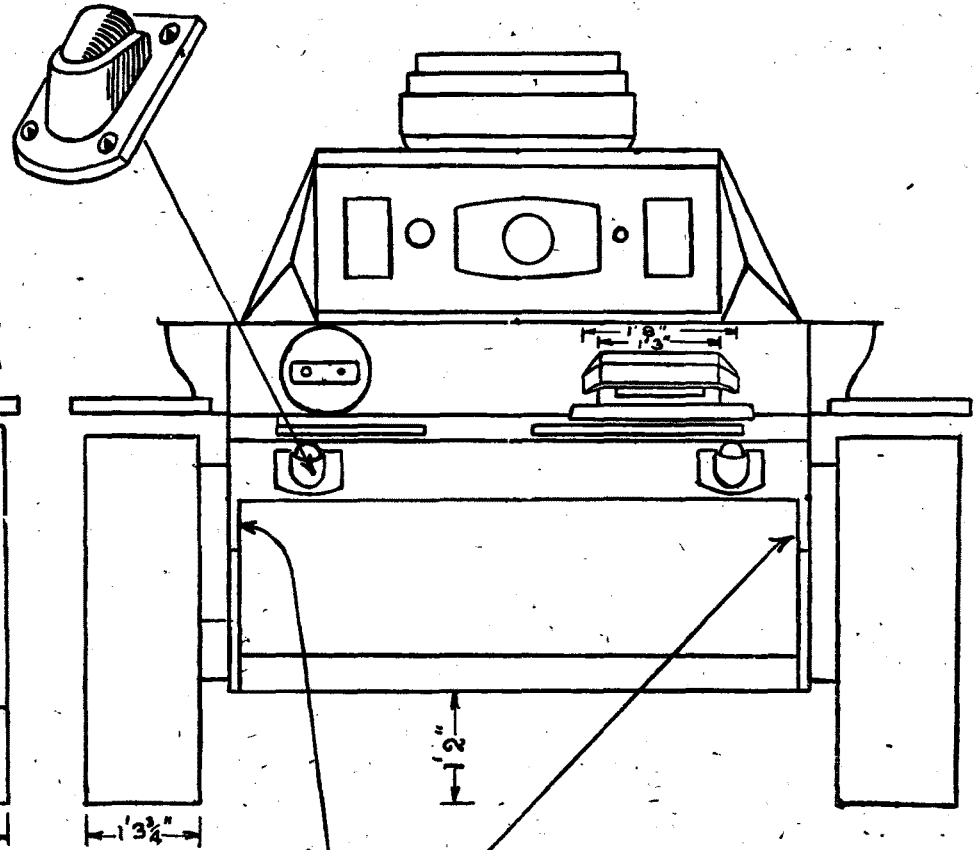


— PLAN —

Pz.Kw.III



— REAR VIEW —



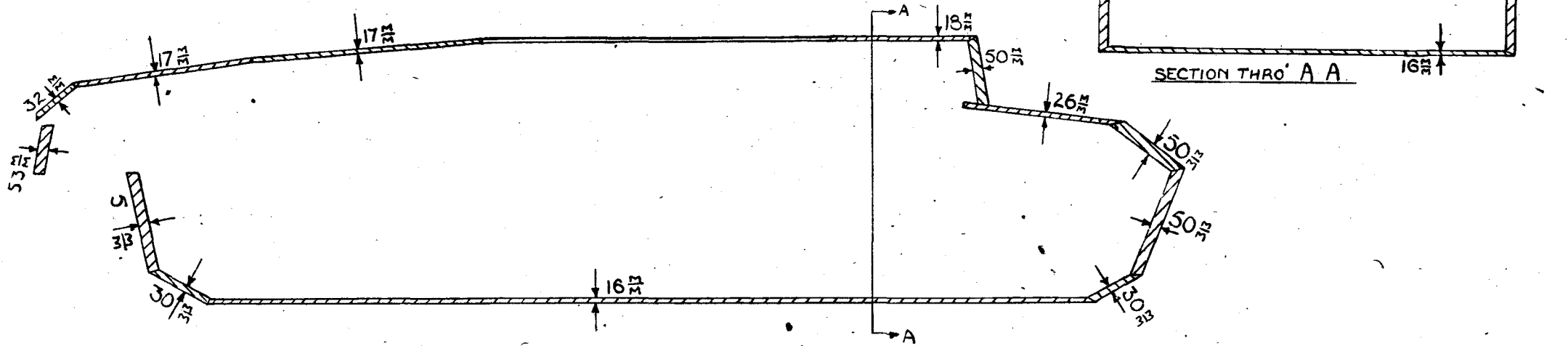
EXTENSION
OF HULL
PLATE

— FRONT VIEW —

Pz.Kw. III.

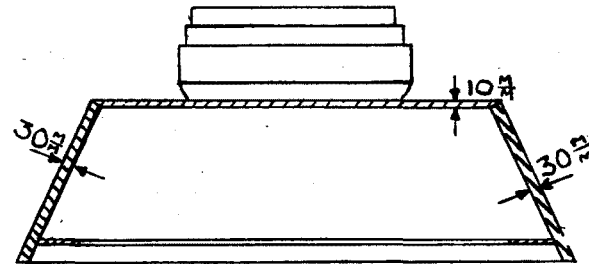
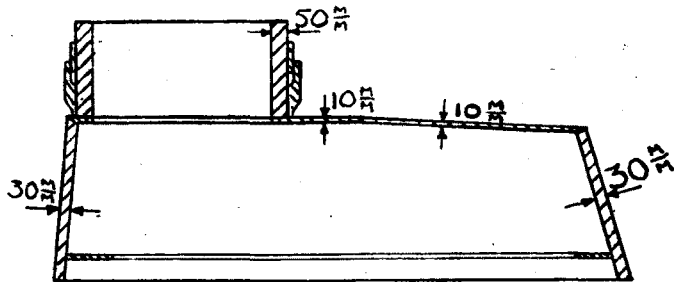
ARMOUR PLATE THICKNESSES.

HULL



ARMOUR PLATE THICKNESSES

TURRET



APPENDIX "A" TO PRELIMINARY REPORT NO. 5

Pz.Kw. III.

SCHOOL OF TANK TECHNOLOGY

NOVEMBER 1942.

A brief examination of the Pz.Kw.III ex-Middle East (recently returned from General Martell's Circus) discloses that this tank is a similar model to the vehicle which was subject of S.T.T. Preliminary Report No. 5.

The following particulars are for record:-

Examined at Farnborough. (D.T.D. Project No. V. 7010)

Date 3rd November, 1942.

Examiner:- Major J. D. Barnes, R.T.R.

Type Pz.Kw. III. Chassis No. 68431

Identification Markings

Usual Afrika Korps markings.
A 100 (This has been superimposed on a partly obliterated D)
1 1 1 (on turret and stowage box)
Yellow square with black edges.

General Condition

This vehicle has suffered damage from 2 pounder (?) shot and in addition appears to have been on fire. Several minor components and most of the instruments are deficient.
The original off-side idler had been damaged by shot but this has been replaced by a replacement wheel.
The off-side rear shock absorber has also been severed by shot. Both the near-side and off-side track guards have been partially shot away, and the stowage box on the turret has been pierced in several places.

The near-side turret door has been holed near the hinge. Another shot has holed the off-side engine air intake from the rear.

Armament

The 5 cm. gun (Kw.K) has the following marking on the breech:

1941. R. 446
ebk. Bs: sg 532OR. 184. Rh 206, Fl. 46
ebk Vr. Fl. 63 csh.

The M.G.'s and various sighting apparatus are deficient.

Armour

Thickness and arrangement as on chassis No. 68026 subject of S.T.T. Report No. 5.

Suspension

A change in design of the shock absorbers is noted. The location and mounting are the same, but the shock absorbers have a longer outer casing and the leather boot at the top has been dispensed with.

Tracks

It is noteworthy that the special webbed track shoes to take the detachable sprags mentioned in Preliminary Report No. 5., para. 15, appear again on the vehicle under review. There are six such webbed shoes incorporated in the off-side track, but sprags are not fitted. The shoes are of the wide pattern viz., 15".

Gear Box

The manual sliding mesh, six speed and reverse box is fitted. The gear box carries the following markings:

SSG. 77. 1165. 1941.

Steering

The operation is manual - no hydraulic assistance as in the early model examined by A.E.C., thus suggesting that this feature has been dispensed with.

Outside Stowage

Welded on the flange of the rear engine cover are six pins on square bases to carry three spare bogies.

APPENDIX "C" TO
PRELIMINARY REPORT NO.5

Pz.Kw. III
(EX MIDDLE EAST)

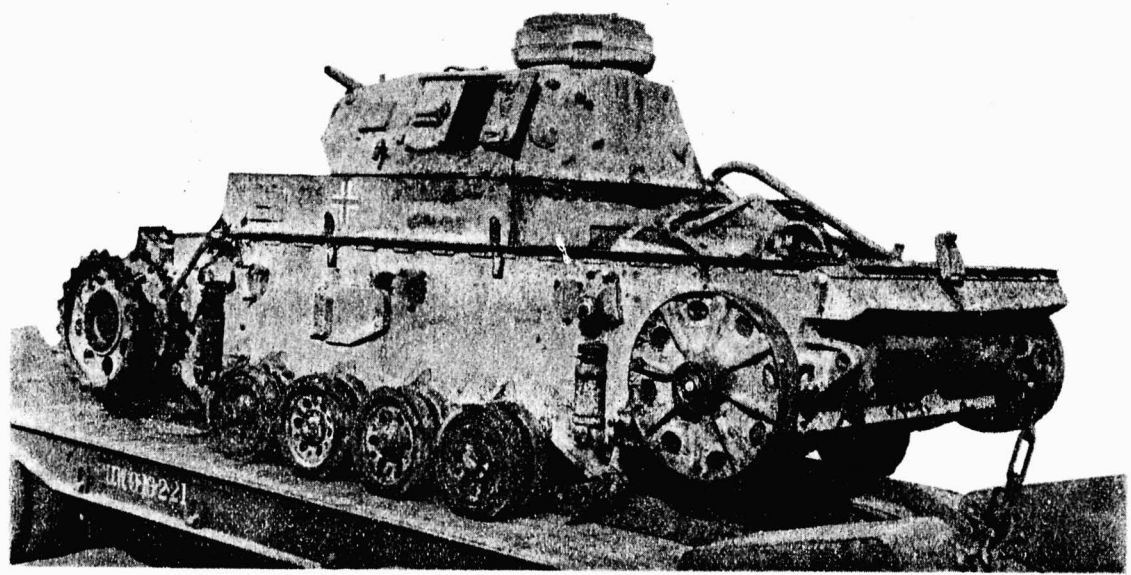
FOREWORD

From the chassis number it would appear that this tank is a Model H. The thickness of the basic armour (approx. 30 m.m.) with extra plates at front and rear, the manual six speed gear box, the hydraulic steering and the wide tracks further support this, being in agreement with the brief specification of this model given in M.I.10 Summary No.90.

The corrugated type idler wheel, however, is not in agreement with the above specification which states that this model has the open type idler wheel as is fitted to the Model J. As the two types of idler wheels are interchangeable this is considered to be of little significance.

The engine generally is in poor condition, and the pistons in particular show remarkable signs of wear. It is worth mentioning that, as the engine and auxiliaries were not in their correct positions, but were just piled up in the engine compartment, there is no proof that the engine actually belonged to this tank.

The main features of this tank have all been found on the Models F and J already reported on by S.T.T. and Messrs. A.E.C. Ltd., and it is therefore of no great interest except that it shows an intermediate stage in the development of the Pz.Kw.III.



EXAMINED AT FARNBOROUGH (D.T.D. No. 3005)

March, 1943.

EXAMINERS: MAJOR J.D. BARNES, R.T.R., and MR. D.M. PEARCE, B.A. (Cantab.)

D.T.D. PROJECT NO. V. 7024

1. TYPE Pz.Kw.III Model H. (See Foreword) Chassis No. 66032.

2. GENERAL CONDITION

The tank is a non-runner and is generally in extremely poor condition.

The rear engine superstructure, both tracks, two bogie wheels and the front plate of the gun port cover are deficient.

Numerous hits have registered on the hull, superstructure and turret. One of these has penetrated the nearside hull plate at the corner of the hull loading hatch, and has entered the fighting compartment.

The barrel of the 5 cm. gun is scarred and bent. The gun port cover has split along its welded seams.

The interior of the fighting compartment has been burnt out and numerous rounds of 5 cm. and S.A.A. have exploded. The superstructure offside plate has been forced out fracturing the weld with the superstructure top plate along its entire length. The offside cover of the engine compartment bulkhead has also been forced out and the weld fractured.

The engine is incomplete and damaged. It was not mounted on the engine bearers, but was lying on the floor of the engine compartment.

3. DIMENSIONS

Owing to the absence of tracks and track guards, the dimensions are not given. It is evident, however, that the overall dimensions of the tank in its original condition were the same as those for the Pz.Kw.III, the subject of S.T.T. Preliminary Report No.5.

4. GENERAL CONSTRUCTION

The general construction of the hull, superstructure, turret and cupola is as on the Pz.Kw.III, the subject of S.T.T. Preliminary Report No.5, with the exception that extra plates are fitted to the lower nose plate and the lower tail plate. An extra plate was fitted to the upper nose plate, but is deficient.

5. ARMOUR

	<u>BASIC</u>	<u>EXTRA</u>	<u>ANGLE</u>
A. Cupola Top	5 mm.	-	90° (Horizontal)
B. " Front and sides	45-55 mm.	-	0° (Vertical - Round)
C. Turret Top front	10 mm.	-	85°
D. " " rear	10 mm.	-	90° (Horizontal)
E. " Sides	30 mm.	-	25°
F. " Rear	30 mm.	-	15°
G. " front	30 mm.	-	13°
H. Gun mantlet	37 mm.	-	Rounded
J. Front vertical Plate	25 mm.	31 mm.	7°
K. " Glacis Plate	25 mm.	-	85°
L. " Nose Plate (upper)	31 mm.	Deficient	50°
M. " Lower " (lower)	40 mm.	30 mm.	23°
N. Side Superstructure	31 mm.	-	0° (Vertical)
P. " Hull Plate	31 mm.	-	0° (Vertical)
Q. Top front plate	17 mm.	-	90° (Horizontal)
R. " rear "			
S. Top rear engine cover plate		} Deficient	
Rear Engine cover plate lower			
T. Observation Cover Plate Varying	30 to 50 mm.		-
U. Belly plate front	30 mm.	-	25°
" " middle	15 mm.	-	90° (Horizontal)
" " rear	31 mm.	-	25°
W. Tail Plate (upper)	31 mm.	-	13°
Tail plate (lower)	31 mm.	30 mm.	8°
X. Skirting plates	Not fitted.		

(The "Angle of plate" given is the angle between the plate surface and the vertical, which is equal to the "Angle of impact" for horizontal attack.)

6. IDENTIFICATION MARKINGS

Chassis No. 66032.

Turret No. 66081.

External Afrika Korps sign, equilateral triangle with bar from apex to base, on front vertical plate.
 "BL.38" in green paint on upper nose plate.
 "225" and German Cross on nearside superstructure.
 German cross on offside superstructure.
 "2" on either side of turret.
 "2" and triangle with bar on rear of turret.

Armament On the breech of the 5 cm. gun:
 "1940 Rh.210. R.1271. Bs. Sg.1708 Rh. 195 Rh. 389.
 Fl.271. Rh.210 Vr. Fl. 315. Rh.210."

On the mounting of the 5 cm. gun:
 "L.1236 - 1940"

Engine On the rear engine bearer: Mot.Nr. 36153.
 11867 ccm. H.L.120 TRM.1941.
 - On rocker box covers: "N.B."
 On Radiators: "Hans Windoff, Schoneberg"
 Berlin.
 KUH.L. Nr. 40286

Gear box "ZF." SSG 77 No.281/1940 - 51196. 24-4-40.

Further details of the tank are not given here as they are identical to those described in S.T.T. Preliminary Report No. 5 or in the Report by Messrs. A.E.C. Ltd. References to the particular components are given below:-

For details of:-

Armament, Ammunition Carried*
Access doors and Escape Hatches,
Engine, Drive, Instruments and
Controls* and Outside Stowage*

see S.T.T. Preliminary Report No. 5 and A.E.C. Report.

For details of:-

Observation, Tracks,* Gearbox and Transmission
Communication*

see S.T.T. Preliminary Report No. 5.

For details of:-

Track Adjustment, Suspension and Steering

see A.E.C. Report.

* Owing to deficiency or damage it is not possible to give precise details.

APPENDIX "D" TO
PRELIMINARY REPORT NO.5

Pz . Kw . III
(EX MIDDLE EAST)

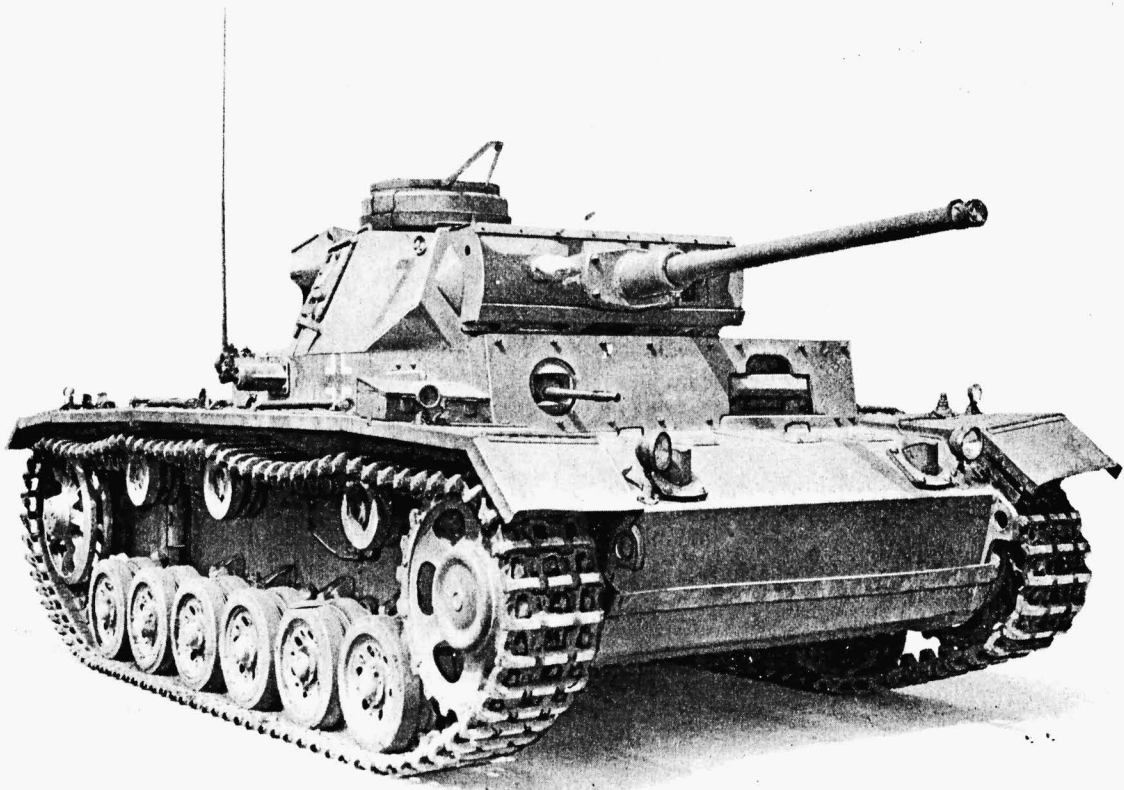
FOREWORD

The manufacturer's plate affixed to this vehicle proves it to be a Model "L". The letters "TP" after the designation, probably an abbreviation of the German "FUR TROPEN" (for Tropical use) may indicate the special adaption of the vehicle for service in the desert. Certain features noted in this report in connection with air intakes and the fitting of air deflectors at the rear, confirm the supposition.

The torsion bar compensator fitted to the long barrelled 5cm. gun is of special interest. It forms a neat and simple method of balancing the weapon, is integral with the turret and is independent of any other sub-assembly.

The general construction and dimensions of this vehicle conform to that of other models of the Pz. Kw. III previously reported upon by S.T.T. and Messrs. A.E.C. Ltd., and have consequently been omitted from this appendix.

The presence of the diaphragm for throttle operation in conjunction with the Maybach Variorex transmission is interesting since this tank is fitted with the ZF 6-speed manual gearbox. This lends support to the theory that the Variorex gearbox is still fitted to some Pz.Kw.III's.



EXAMINED AT CHOBHAM (D. T. D. No. 3009) D. T. D. PROJECT NO. V. 7029 June, 1943.

EXAMINERS: MAJOR J. D. BARNES, R. T. R. AND MR. D. M. PEARCE, B. A. (Cantab.).

1. TYPE Pz. Kw. III Model L (TP) Chassis No. 74375

2. GENERAL CONDITION

The vehicle is a runner and appears to be in excellent mechanical condition. The only apparent mechanical defects are damage to the offside radiator header tank, the offside rear track guard and the metal grill over the air inlet louvres on the offside. A section of the track guard (6ft. in length) is deficient and the grill is torn away. The valve cover on the offside bank has also been holed.

The electrical equipment in the interior of the vehicle is in good condition and is more complete than that in any similar vehicle so far examined.

The stowage is also very complete and in good shape.

The vehicle appears to have had very little use. The speedometer reading is at 1310 Km. (818 miles)

3. CREW Five.

4. WEIGHT As received (partially stowed) 21 tons.

5. ARMAMENT The vehicle is equipped with a 5cm. KwK 39 long-barrelled gun and one 7.92 mm. M. G. 34 co-axially mounted in the turret.

In addition, there is an auxiliary M. G. of similar pattern in a ball mounting on the offside of the front superstructure.

The mounting for the 5cm. gun is similar to that of the short barrelled gun with the following exception. The deflector guard is $4\frac{1}{2}$ " longer, thus reducing the clearance to the turret ring to $1' 5\frac{1}{2}$ ".

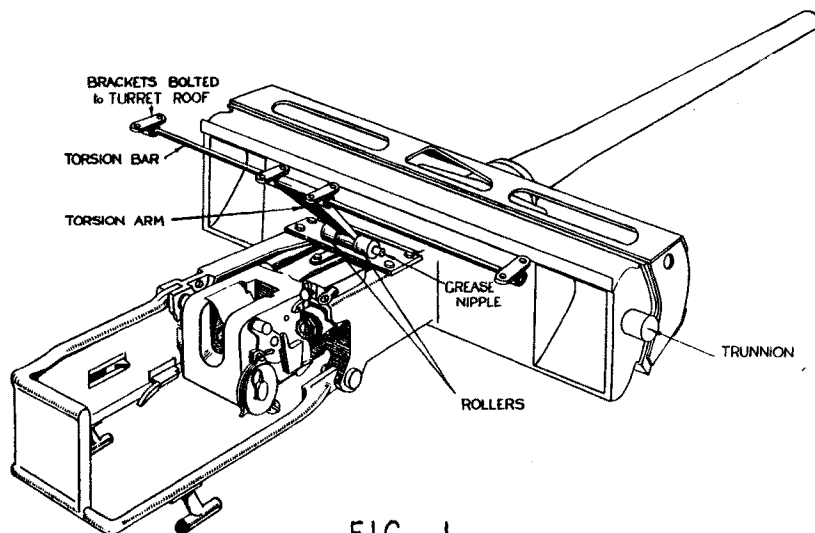


FIG. 1

A most interesting feature of the mounting is the employment of a torsion bar compensating device (Fig. 1). This is provided presumably to balance the long barrelled weapon. It will be recalled that a coil spring in compression was used for this purpose in the Model J. The torsion bar is mounted on the roof of the turret and is connected by a link to the gun mounting immediately behind the mantlet.

7. ARMOUR

A feature of the armour arrangement on this vehicle is the fitting of spaced armour of 20mm. plate to the front vertical plate (Fig.4). This plate is spaced 100mm. It is cut away to clear the driver's visor and episcopes apertures. A heavy deflector bag is welded to the glacis plate to afford protection at this point. A circular aperture of 9 1/4" diameter in the extra plate permits the free movement of the auxiliary M.G. mounting.

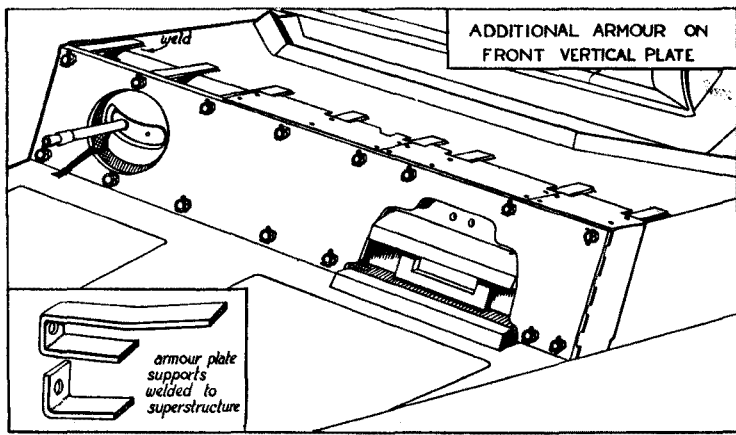


FIG. 4

A fabricated webbed structure welded to the gun mantlet provides for the fitting of an extra plate with a spacing of 130mm. (Fig.5). The extra plate is deficient and there is no indication of its having been fitted.

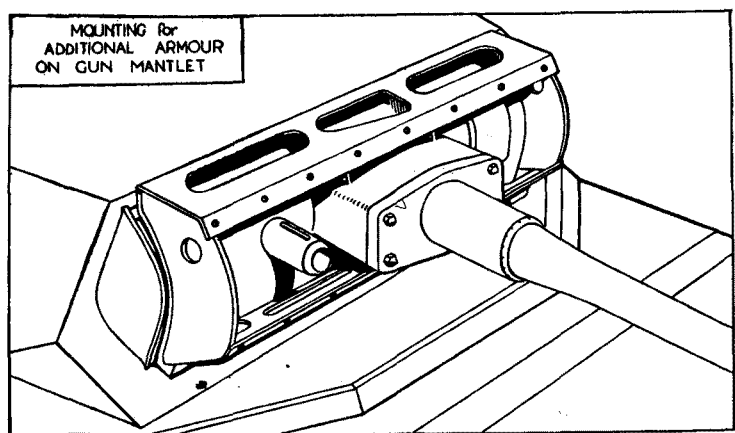


FIG. 5

	<u>BASIC</u>	<u>EXTRA</u>	<u>ANGLE</u>
A. Cupola top	9mm		Horizontal
B. " front and sides	Varying 45-55 mm.		Vert. (round)
C. Turret top front	10mm		83°
D. " " rear	10mm		Horizontal
E. " sides	30mm		25°
F. " rear	30mm		12°
G. " front	57mm		15°
H. Gun mantlet	50mm		Rounded
J. Front vertical plate	50mm	20mm (space 4")	9°
K. Front glacis plate	25mm		84°
L. Front lower nose plate	50mm		20°
M. Front upper nose plate	50mm		50°
N. Side superstructure	30mm		Vertical
P. Side hull plate	30mm		Vertical
Q. Top front plate	18mm		Horizontal
R. Top rear plate	18mm		88°
S. Top rear engine cover plate	18mm		79°
T. Observation cover plate	50mm		
U. Belly plate (front)	30mm		18°
" " (middle)	16mm		Horizontal
" " (rear)	30mm		24°
W. Tail plate (upper)	50mm		17°
" " (lower)	50mm		9°
X. Skirting plates	Not fitted		

(The "Angle of Plate" given is the angle between the plate surface and the vertical, which is equal to the "Angle of Impact" for horizontal attack).

8. OBSERVATION

In this vehicle the condition of the visor operating devices is excellent and the various flaps can be operated without difficulty. The driver's episcopes mounting is complete, and this reveals that the instrument can be readily removed for stowage. A modification has been made in the vision ports in the turret. The offside port has been dispensed with.

9. ACCESS DOORS AND ESCAPE HATCHES.

A change in the design of the engine cover hatches is noted. They are covered by single doors hinged to the front instead of the double doors previously encountered. The hatches, one on the offside and one on the nearside, are approximately of the same dimensions as on the earlier models examined, i.e. 2' 3" x 2' 4" in each case. The doors are secured by hexagon head bolts. The offside door is provided with a raised cowl of 18mm. plate to form an air inlet and the nearside with two similar cowls.

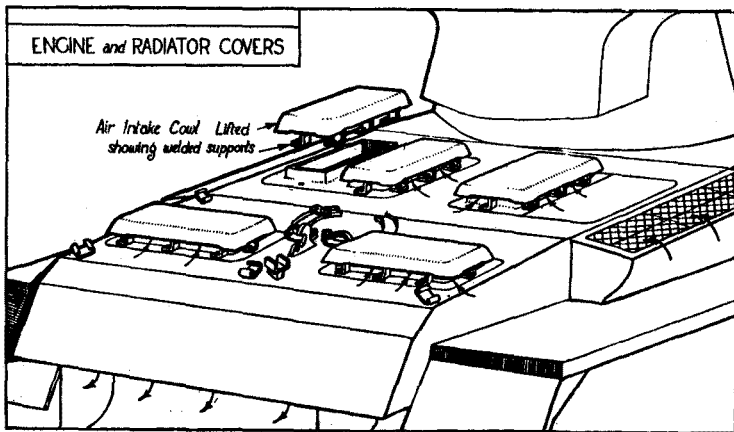


FIG. 6

The doors fitted to the rear superstructure for access to the fans are larger than on earlier models and measure 2' 1" x 1' 4". A further modification to these doors is that they are provided with similar air intake cowls to the engine cover access doors and therefore now take air from all sides instead of only from the rear as previously.

10. ENGINE

The vehicle is powered by a V-12 cylinder MAYBACH engine. The following modifications to accessories have been effected:

The air cleaners aspirate from the fighting compartment through the engine bulkhead. The intakes from each pair of filters are taken to an aperture on the offside and nearside respectively, of the bulkhead. Hinged flaps of butterfly pattern are fitted to the openings and may be secured in an open or closed

position by means of a winged nut.

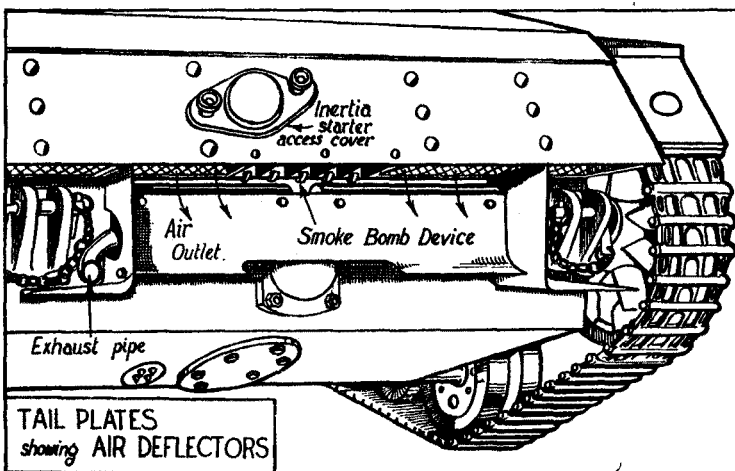


FIG. 7

in conjunction with the 10-speed Variorex gearbox. This feature is commented upon in the foreword.

A further modification to the air circulation system is the provision of a curved deflector plate below the rear outlets (Fig.7). This plate prevents disturbance of dust or sand by the vertical downdraught of the air exhausted by the fans and is also extended to deflect the exhaust gases from the ground. The Solex downdraught carburettors incorporate the diaphragm throttle control employed

11. SUSPENSION

A plate is secured to the engine bulkhead in the fighting compartment bearing the following data in respect to the torsion bars:

"Torsion Bar Suspension System"

Bogey Wheels	1	2	3	4	5	6
	55	55	55	52	52	52
	(Max. dia. of shaft of torsion bar)					

When ordering replacements give number of vehicle, diameter of bogey wheels and diameter of torsion bar."

It is of interest to note in connection with the above that the heavier bars are fitted at the front of the vehicle to take the weight of the heavier armour and armament.

Measurement of the bogey wheels shows them to be of the same diameter as those on the other models examined, but reference in the instructions for ordering replacements shafts may indicate an anticipated modification.

12. ELECTRICAL EQUIPMENT

By reason of the completeness and good condition of the electrical equipment on this vehicle it has been possible to supplement hereunder the information given in our previous reports and appendices on the subject of electrical equipment and W/T.

The accumulator which consists of two 12 volt batteries with earthed negative is carried on the floor of the fighting compartment on the nearside, in a light steel container.

The batteries are charged by a 12 volt generator which is belt driven from the crankshaft. The estimated output of the generator is approximately 900 watts.

Voltage is controlled by a vibrating type controller mounted at the rear offside of the fighting compartment. A cut-out is incorporated in the same housing.

The two batteries are normally connected in parallel but are connected in series for starting by a solenoid operated series-parallel switch, situated under the voltage controller in the fighting compartment. The accumulator is isolated from the tank circuits by a double pole Bosch isolating switch mounted in the fighting compartment on the offside of the engine bulkhead.

The main positive lead is taken to a control switch on the driver's panel, and all circuits in the tank are controlled from this point. By the insertion of a key the driver switches on the ignition and energises the circuits in the hull and turret. The key can also be turned to three positions marked "0", "1", and "2", thus operating the external light switches. The switch also incorporates the starter button which controls the solenoid circuit of the series parallel switch. The charging warning lamp is carried in the starter button body.

All circuits are fused and a fuse box on the driver's panel carries sixteen cartridge type fuses. The fuses have a porcelain body with metal end caps and a fuse wire is carried in a recess in the body. Each fuse carrier is marked with the name of the circuit which it protects.

13. LIGHTING

The normal external lighting comprises two side lights with 12 volt 6 watt bulbs and two headlights each having one 12 volt 24 watt bulb and one 12 volt 6 watt bulb. The changeover from bright to dim is carried out by a two way switch on the driver's panel. A pilot light on the panel indicates when the small bulbs are lit. A combined tail and brake light is fitted on the right hand track guard.

In addition to the foregoing, a screened system of lighting called "Nova Technik" is fitted. This consists of a screened headlamp of which the intensity can be varied by a four stage resistance switch on the driver's panel, and a distance keeping light which consists of four small apertures through which the light shines. This lamp also incorporates a tail and stop light which can be screened off by a hinged cover.

The screened headlamp and distance keeping tail lamp are mounted on the nearside track guard.

Internal illumination of the vehicle is by festoon lamps, two on the driver's panel, one for the front gunner and three on the turret roof. The lamps are individually controlled by built-in switch which also controls the intensity of the illumination by varying the apertures of the lamp.

14. ROTARY BASE JUNCTION

The feed to the turret is from the fuse on the driver's panel to the base junction thence to a distributor fuse box on the rear wall of the turret. This box houses four fuses - the firing current fuse, the turret lighting fuse, the fan fuse and the feed fuse to the firing circuit.

The exhaust fan mounted in the turret roof is controlled by a switch adjacent to it. To the left of the gunner on the turret wall is the emergency battery for the firing circuit and the change-over switch.

15. COMMUNICATION

The wireless installation consists of three sets, two receivers mounted to the left of the hull gunner and a transmitter in front of him. Change over from W/T to W/T and intercommunication is controlled by the front gunner by means of a switch to his right.

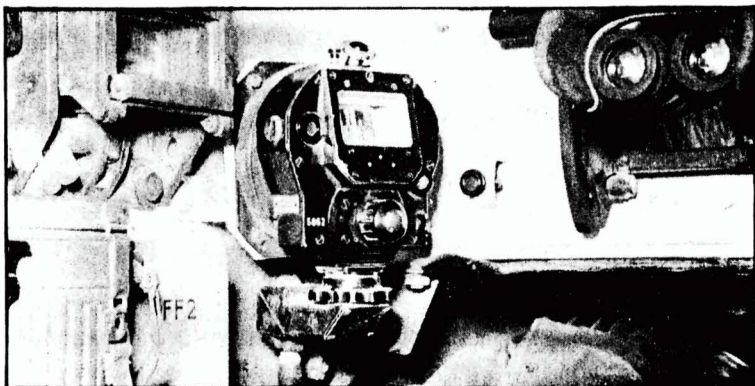
Three rotary converters to the right of the fighting compartment supply the H.T. for all sets.

The commander, driver and front gunner only are provided with head sets and throat microphones. Communication between the commander and turret gunner is by voice tube.

The speech circuits to the commander are taken through the base junction to the distribution fuse box in the turret.

16. DRIVER'S WARNING LAMPS

The position of the gun is indicated to the driver by two lamps, one each side of his vision slit. The lamps are controlled by two cam operated switches in the base junction, and when the gun is outside the track width the respective switch is closed.



17. GYRO-COMPASS(Fig.8)

The vehicle is fitted with an electrically driven gyroscope direction indicator on the left of the driver.

FIG.8

18. INSTRUMENTS & CONTROLS (Fig.9)

The instrument panel in this vehicle is complete and its layout is shown in Figs. 9 and 10.

The electrical controls on the panel are described in Para 12.

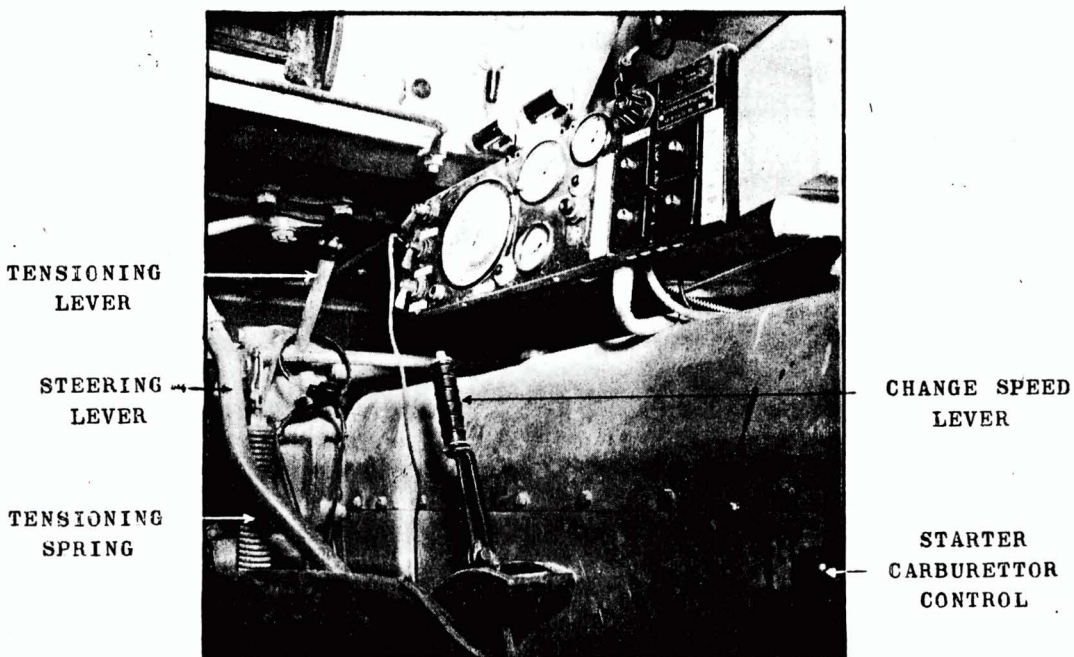


FIG.9

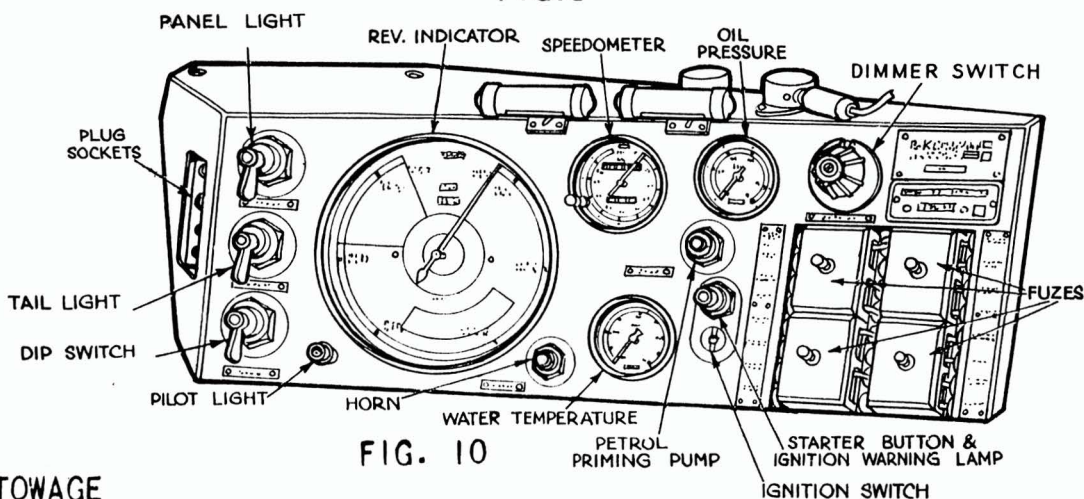


FIG. 10

19. STOWAGE

The stowage fittings on this vehicle are in an excellent state of completeness and preservation. They conform to the details previously reported.

20. SMOKE EQUIPMENT

The vehicle carries the normal German five chamber smoke device. Its position however has been changed and it is now mounted centrally behind the tail plate of the engine superstructure between the air outlets, and is not now vulnerable.

21. IDENTIFICATION MARKINGS

<u>Chassis No.</u>	74715 (Model L (TP))
<u>Turret No.</u>	74722
<u>External</u>	"K.1615" painted on the nearside and a large "7" on each side of the turret. German crosses are painted on each side of the front superstructure and the number "74715" is stamped thereon in several places. The number "74744" is stamped on the hull on each side. The cupola is stamped with the number "74290"
<u>Armament</u>	<u>On the breech of the 5 cm. gun</u> 1942 ebk Bs.1637. R.6900. Vr.Fl.2680 Fg.V.WaA387. <u>On the breech block of the 5 cm. gun</u> R.6900. Fl.1537. e.b.k.
<u>Engine</u>	<u>On plate on rocker box cover</u> m/m G.m.b.H. Friedrichshafen ab. H.L. 120 TRM Motor Nr. 101116. LEISTUNG - 300 P.S. <u>On carburettor</u> 40 DFF 2 - 2 H.7939. 40 JFF. 2. 2G. 6507 <u>On radiators</u> Offside - Kuhl Nr.704 - 2 Com.Nr.45612 Lfd 29/42 Nearside - Kuhl Nr.70221 - Com.Nr.45609 Lfd.93/42 <u>On oil cleaners</u> KNECHT S.452
<u>GEARBOX AND TRANSMISSION</u>	<u>On gearbox casting</u> - 51195 drb 15 <u>On plate on gearbox</u> - (drb) SSG. 77.Nr.4221/194 Waa. 705.

22. REFERENCES

Where details of the vehicle are identical with those already reported they have not been included in this appendix. References to the particular components are given hereunder:

For details of:

GENERAL CONSTRUCTION	} See S. T. T. Preliminary Report No.5.
OBSERVATION IN HULL & SUPERSTRUCTURE	
REVOLVER PORTS	
ACCESS DOORS AND ESCAPE HATCHES	
TRACKS	
GEARBOX & TRANSMISSION	

For details of:

TRACK ADJUSTMENT	} See Messrs. A. E. C. Ltd Report.
SUSPENSION	
STEERING	

D.T.D. PROJECT NO. V 7043
D.T.D. NO. 3018
FEBRUARY, 1944

Military College of Science
SCHOOL OF TANK TECHNOLOGY
Chobham Lane Chertsey

APPENDIX 'J'
TO
PRELIMINARY REPORT NO. 5
ON
Pz. Kw. III

The chassis number painted in the fighting compartment of this vehicle, viz., No. 74961, indicates that it is a "Special" version probably of the Model "M" series. The manufacturer's plates have been removed and it is consequently not possible to give more precise details as to its date of manufacture.

The tank is equipped with a 7.5cm. Kw K (short) tank pattern gun. It is the first Pz. Kw. III examined to date carrying this armament and therefore interest is mainly centred around this feature.

With the exception of the modifications noted below, the armour construction and mechanical layout of the vehicle is identical with the Pz. Kw. III Model "M" referred to in Appendix "D" to S.T.T. Preliminary Report No. 5.

MODIFICATIONS

1. CONSTRUCTIONAL

The fabricated structure for the mounting of spaced armour on the gun mantlet is not fitted.

Loading hatches are not provided in the hull sides.

2. ENGINE COOLING SYSTEM

A system of valves is incorporated on the engine cooling system for the purpose of introducing hot water. The components of this installation are identical with those fitted on the Pz. Kw. IV, Model "G" described in S.T.T. Preliminary Report No. 15 and are in the same relative positions in the system.

3. AIR INTAKES AND OUTLETS

Hinged light metal flaps are provided to close the air intake apertures at either side of the engine compartment. These may be opened or closed from the fighting compartment by a control mounted on the engine bulkhead. A hinged flap is also fitted to the lower cooling air outlet in the nearside fan compartment. This flap is not remotely controlled. No deflector plate is fitted below the rear outlets.

4. VENTILATION

In addition to the normal extractor fan in the turret roof, further provision has been made for the extraction of fumes from the fighting compartment but has been subsequently blanked off. The arrangement consists of a 6" diameter light metal trunk one end of which protrudes through the engine compartment bulkhead on the nearside into the fighting chamber. The trunk is carried through the engine compartment to the rear bulkhead and fumes are extracted by the nearside engine cooling fan. The intake end of the trunk in this vehicle has been sealed and a section of it is deficient.

5. SMOKE

Discharger cups for electrically fired smoke generators are mounted in one set of three at each side of the turret. These are identical to the smoke dischargers fitted to the Pz. Kw. VI Tiger tank and are described in S.T.T. Preliminary Report No. 19 of December 1943.

CONDITION

The engine has not been started up and from a superficial examination it is not possible to ascertain its condition. The auxiliaries, whilst in some cases deficient of covers, do not appear to be materially damaged.

There is no indication of damage to the transmission or steering units but the controls are in a very rusty condition.

The whole of the instruments in the driving and fighting compartments are either deficient or badly damaged. The electrical equipment has been rendered entirely unserviceable, leads having been torn away and components removed.

There are no penetrations of the armour and constructionally the vehicle is quite sound.

ARMAMENT

- One 7.5cm. Kw.K (short) tank pattern gun
- One 7.92mm. M.G. Tank pattern co-axially mounted
- One 7.92mm. M.G. 34 Tank pattern in ball mounting in offside of front vertical plate
- Six smoke generator dischargers externally mounted in two sets of three on each side of turret
- One 27mm. Signal Pistol.

No stowage for a machine carbine is provided and no grenades are carried. The 7.5cm. gun appears to be of much earlier manufacture than the tank. It may have been removed from an obsolete Pz.Kw.IV.

The Piece

Dimensions

Length of Rifling	1303mm (51.5 ins.)
Length of Chamber	260mm (10.23 ")
Length of bore	1563mm (61.53 " - 23.5 cal.)
Depth of breech opening	200mm (7.88 ")
Overall length of piece	1763mm (69.41 ")
Weight of Piece	628 lbs.

Rifling

No. of grooves	28 uniform right hand twist
Depth of grooves	0.5 mm.
Width of grooves	4.0 mm.

Cartridge Case

Capacity	950 c.c.
Design No.	6354
Diameter of neck	75.5mm.
Diameter of base	81.0mm.
Diameter of rim	91.0mm.

Construction - Monobloc, with detachable breech ring.

Breech Mechanism - the breech block is of semi-automatic falling wedge type. Firing is by electric primer. The breech block and mechanism are deficient, and the gun is generally in too poor a condition to be serviceable.

Cradle - on this vehicle, a standard 7.5cm. Kw. K cradle, as fitted on the Pz. K. IV has been mounted in a standard Pz. Kw. III turret.

Recoil System - The recoil system follows the standard German tank gun layout. The hydraulic reservoir is empty, the indicating window broken and the system generally not serviceable. The recoil indicator is graduated from 380mm. (15 ins.) to 470mm. (18.5 ins.) with the "Feuerpause" at 455mm. (17.9 ins.).

Mounting

Maximum elevation	20°
Maximum depression	8° 17'

The mounting is of normal Pz. Kw. III type. As in the later Pz. Kw. III Model "L" the loader's vision port is not fitted.

The mounting is muzzle heavy, and this is balanced by a small compression spring in a cylinder of the same type as that fitted to the Pz. Kw. III with 5cm. Kw. K₁ (short) gun on the forward offside corner of the turret ring. This seems fairly effective, as far as could be judged without the additional weight behind the trunnions of the breech block and mechanism of the 7.5cm. gun, a round in the chamber, the deflector bag, telescope, machine gun, etc.

Elevating Gear - the elevating gear is of standard Pz. Kw. III externally toothed sector and pinion type, operated by 3.5 in. radius gunner's handwheel on a horizontal axis.

No. of turns of handwheel	
to cover full arc of 28° 17'	- - 15 $\frac{1}{4}$
Ratio - 1.8°/turn (Approx.)	

Firing Gear - Usual German electric primer system is fitted and is operated by a trigger on the traversing handwheel.

Traversing Gear - Hand traverse only, through 360°, driven from 3.75 ins. radius gunner's handwheel and 4 in. radius loader's handcrank.

The layout is that of the normal Pz. Kw. III, and since there is no lock on the gunner's handwheel, the loader may traverse independently. Two speed ratios are provided, engaged by a changeover lever on the gearbox.

High gear ratio

No. of turns of gunner's handwheel for 360°	160
Ratio	2.25°/turn
No. of turns of Loader's handcrank for 360°	163
Ratio	2.25°/turn

Low Gear ratio

No. of turns of gunner's handwheel for 360°	246.5
Ratio	1.46°/turn
No. of turns of loader's handcrank for 360°	247
Ratio	1.46°/turn

A traverse lock of plunger type is fitted on top of the turret ring, forward on the nearside, which locks the turret in the 12 o'clock position. Fittings are provided in front of the driver for a "QUERABSCHALTER" or "Broadside" indicator for the gun, but the lamps are deficient. As there is no need for this instrument with so short a gun, it would appear to be a standard fitting on the Pz. Kw. III hull which is not used with this gun.

CO-AXIAL M.G.

The cradle is of similar type to that normally fitted to the Pz. Kw. III. The firing gear is of rod and lever type, operated by a foot pedal above the gunner's footrest.

AUXILIARY MACHINE GUN

This M.G. is mounted on the offside of the front vertical plate in a standard type of ball mounting (KUGELBLENDE 50).

SIGHTS

Main Armament

Two means of sighting are provided - telescope and open sight. Both are deficient, but it is assumed that the telescope is the T.Z.F.5(f) normally used with the 7.5cm. gun and M.G. 34.

Auxiliary M.G.

The telescope is deficient but is believed to be the K.Z.F.2 usually used in German M.G. ball mountings with the M.G. 34.

A clinometer (deficient) is mounted on two studs on the left deflector guard side plate. The top stud is on an adjustable rotary cam mounting similar to that on the Pz. Kw. VI described in S.T.T. Preliminary Report No. 19, giving varying adjustments between the angles of elevation of gun and clinometer.

FIRE CONTROL

A single dial target position indicator, graduated from 1 - 12 in clock hours and driven off the turret race is mounted on the turret ring to the left of the gunner.

The usual graduated target position ring is fitted in the cupola.

AMMUNITION CARRIED

Total number of rounds:

7.5cm.	56 rounds
7.92mm.	23 belt bags (each containing one 150 rnd belt) = 3450 rnds.
Signal	24 rounds
Smoke generators	6 in dischargers

The ammunition is disposed as under :

7.5cm.

<u>Where stowed</u>	<u>No. of rounds</u>
Left side wall of fighting compartment (in bin with sliding doors, vertically stowed, base down)	10
Right side wall of fighting compartment (in bin with sliding doors, vertically stowed, base down)	10
Left rear corner of fighting compartment (in bin with sliding doors, vertically stowed, base down)	13
Behind above in rear bulkhead, horizontally stowed in diaphragms	8
Rear bulkhead in lidded box, horizontally stowed	2
Right rear corner of fighting compartment (in bin with sliding doors, vertically stowed, base down)	13
	<u>56</u>

An interesting feature is the utilisation of the standard 5cm. ammunition stowage bins for 7.5cm. rounds. The vertical rounds are stowed with their bases in drillings and their noses in spring caps.

7.92mm.

<u>Where stowed</u>	<u>No. of belt bags</u>
Left wall of fighting compartment, under turret ring	8
Left wall of fighting compartment, forward, lower down	3
Right wall of fighting compartment, under turret ring	8
Rear bulkhead	2
At guns	<u>2</u>
	23 (3450 rds)

Signal Ammunition

<u>Where stowed</u>	<u>No. of rounds</u>
In box on rear wall of turret (deficient)	12
In box on right rear 7.5cm. ammunition bin	12
	<u>24</u>

SEATING AND VISION

The seating and vision arrangements are identical to those described in Appendix "E" to S.T.T. Preliminary Report No. 5.

Leading Dimensions of Fighting Chamber

Roof above top of turret ring	19 $\frac{1}{2}$ ins
Depth of turret ring	4 "
Bottom of turret ring to floor	<u>42$\frac{1}{4}$</u> "
Headroom in turret	65 $\frac{3}{4}$ "
Additional headroom in cupola	<u>12</u> "
Total headroom	77 $\frac{3}{4}$ "
Internal diameter of turret ring	59 $\frac{1}{2}$ "
Internal diameter of cupola	18 $\frac{3}{4}$ "
Trunnion diameter	60 mm.
Distance between trunnions	48 ins.
Trunnion axis to roof	8 "
Trunnion axis to centre of turret	33 "
Trunnion axis to ground	74 $\frac{1}{2}$ "
Trunnion axis to rear of breech ring	24 "
Rear of breech ring to turret ring	37 $\frac{1}{4}$ "
Rear of deflector guard to turret ring	15 $\frac{1}{4}$ "

Turret platform does not revolve, all seats being suspended from the turret ring.

IDENTIFICATION AND MANUFACTURER'S MARKINGS

Chassis No. 74961 Turret No. 72396

VEHICLE MARKINGS

On front vertical plate and tail plate :

Tiger and German Cross with letter "S" in red rhomboid.

On each side of turret and on stowage bin :

"832"

On each side of superstructure :

German Cross (approximately under centre line of turret).

On offside hull plate :

+21300 Kg (the cross probably indicates the centre of gravity of the vehicle and the figure its weight)

MANUFACTURER'S MARKINGS

On gearbox : SSG 77. WaA 705 drb
Nr. 4612/1942
drb 15 - 51196

On breech ring of gun : RH. 291 R. 240
1939
Bs. Sg. 2166 R1212 Rh M 394
F1 23 Rh 291

On Piece: Vr. F1 23 Rh 291 WaA 357

On Engine: Maybach No. 102092

On Turret 72396 WaA. 6 (?)

On Offside Idler 60249

On Top of Mantlet (edge) 74008 WaA. 6

On Tracks agw

LIST OF STOWAGE AND FITTINGS

STOWAGE

External - Right

1 Protective channel for W/T aerial		Track guard, rear
1 Shovel	Deficient	" " "
2-Section gun cleaning rod	"	" " "
1 Crowbar	"	" " centre
1 pr Wirecutters	"	" " "
1 Entrenching tool	"	" " forward
1 Toolbox		" " "

Front

2 Towing eyes		Fixed in side plate
Track links	"	Nose plate
2 Headlamps		Upper nose plate
1 Sidelamp	"	Left track guard

Left

1 Spare bogie	"	Track guard centre
1 Crowbar	"	" "
Sundry clips (purpose unknown)		" "
1 Hand C.T.C. Fire extinguisher	"	" rear
2 clips (purpose unknown)		" "

Rear

Notek distance keeping tail light	"	Left track guard
2 Towing eyes		Rear plate
1 Towing hook (this may be for ammunition trailer)		" centre
Wooden pannier		Upper rear plate
Bin		Upper rear plate on rear of turret.

Top

Track puller	"	Engine compartment
2 Tow ropes	"	" "
2 Stays (for water cans)		Turret roof

Internal - Turret

1 W/T Junction box	"	Left side plate
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2 Switch boxes for smoke generators	Deficient	Left & right on turret roof
1 Commander's headset	"	Bin on rear of turret ring
1 Signal pistol	"	Right rear wall of turret
2 M.G. spare barrels	"	In box on right of turret ring
Binoculars	"	On right wall

Fighting Compartment

1 Bin		Left side wall, rear corner
1 First aid box	Deficient	Left side wall, rear
2 Large glass blocks	"	Box on side wall
2 Small glass blocks	"	Under above
1 Inspection lamp	"	Left side wall
1 Respirator	"	" "
1 Hand fire extinguisher	"	" "
1 K.F.F. episcopes	"	In box on left side wall
2 clips (purpose unknown)		Left side wall
1 Gyro direction indicator		" "
1 Headset and microphone	"	Box under left side of glacis plate
2 Small glass blocks	"	Container behind W/T sets.
2 W/T sets	"	On top of gear box
1 Respirator	"	On W/T set carrier
1 Respirator	"	Under gunner's seat on support
1 Cooker	"	On base junction
1 "	"	On left of propeller shaft under command- er's seat
2 Waterbottles	"	Under commander's pedestal
2 Respirators	"	" " "
2 Clips (purpose unknown)		On rear of propeller shaft casing
2 Small glass blocks	"	Rear bulkhead nearside
2 Breathing tubes	"	Rear bulkhead offside
3 M.G. sparesboxes	"	In racks on rear off- side 7.5cm. ammunition bin
1 Water bottle	"	On rear offside 7.5cm. ammunition bin
1 W/T set Rotary transformer	"	On forward offside 7.5cm. ammunition bin
1 Headset	"	On forward offside wall
1 W/T set	"	Under offside of glacis plate