HEADQUARTERS
UNITED STATES ARMY, EUROPE
AND SEVENTH ARMY
APO New York 09403

BÉTIT

USAREUR PAM
No. 30-60-1

15 February 1973

IDENTIFICATION GUIDE

PART ONE

WEAPONS AND EQUIPMENT
EAST EUROPEAN COMMUNIST ARMIES

VOLUME III

ARMORED VEHICLES
TANKS AND SELF-PROPELLED
ARTILLERY

HEADQUARTERS
UNITED STATES ARMY, EUROPE AND SEVENTH ARMY
APO New York 09403

15 February 1973

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FOR THE COMMANDER IN CHIEF:

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Chief of Staff

OFFICIAL:

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Brigadier General, GS
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FOREWORD

The purpose of this guide is to present the essential tactical, technical and recognition data on weapons and equipment presently employed in the armies and security forces of the Communist countries of Eastern Europe.

Every effort has been made to make this guide comprehensive, within the limits of an unclassified publication. Any discrepancies noted or any information on new or modified weapons or equipment should be forwarded to this headquarters for inclusion in future change sheets.

Part One of this guide supersedes the weapons and armored vehicles sections of the Identification Guide (Ordance Equipment) Warsaw Pact Countries, USAREUR Pam 30-60-1, Seventh Revised Edition, 31 July 1968; and it also replaces the same section that appeared in the rescinded (6 Oct 69) Identification Handbook, Yugoslav Army Weapons and Equipment, USAREUR Pam 30-60-5, 31 March 1965.

Part Two of this guide (to be published at a future date) will replace the truck and tractor sections of the above mentioned publications and of the Identification Guide (Engineer Equipment) Warsaw Pact Countries, USAREUR Pam 30-60-8, Fifth Edition, 27 February 1970.

Part Three of this guide (also to be published at a future date) will cover all other equipment, thus completing the replacement of the older guides mentioned.

The date of information for Part One, Volume Three of the new guide is October 1972.

HAROLD R. AARON
Major General, GS
Deputy Chief of Staff, Intelligence

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- Czechoslovak Pistols and Machine Pistols
- Hungarian and Polish Pistols and Machine Pistols
- Yugoslav Pistols
- Soviet and Polish Submachineguns
- Czechoslovak and Romanian Submachineguns
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- Bolt Action Rifles and Carbines
- Semiautomatic Rifles and Carbines
- Sniper Rifles
- Kalashnikov Assault Rifles
- Czechoslovak and German Assault Rifles
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- Czechoslovak and Yugoslav Light Machineguns
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- 12.7mm and 14.5mm Heavy Machineguns

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- Czechoslovak, Hungarian and Yugoslav Hand Grenades
- Polish and Yugoslav Rifle Grenades
- Smoke Grenades

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- Signal Pistols, Hand Launchers, Illuminating Rockets and Related Ammunition

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- Antitank Rocket Launchers
- Soviet Recoilless Guns
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- Yugoslav Recoilless Guns and Rifles

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Antitank Guided Missile AT-3 "SAGGER"
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82mm Mortars
107mm and 120mm Mortars
160mm and 240mm Mortars

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76mm Field and Mountain Guns
85mm Field Guns
100mm Field Guns
105mm Howitzers
122mm Howitzers
122mm Field Guns
130mm Field and Coastal Guns
152mm Howitzers
152mm Gun-Howitzers
155mm Howitzers and Guns
203mm Howitzers and Gun-Howitzers
FIELD ARTILLERY ROCKET LAUNCHERS
Towed Multiround Rocket Launchers
Truck-mounted 122mm Multiround Rocket Launchers
Truck-mounted 130mm Multiround Rocket Launchers
Truck-mounted 132mm and 140mm Multiround Rocket Launchers
Truck-mounted 200mm and 250mm Multiround Rocket Launchers
Truck and Tractor-Mounted 240mm Multiround Rocket Launchers
SURFACE-TO-SURFACE FREE ROCKETS AND GUIDED MISSILES
Surface-to-Surface Free Rockets Over Ground
Surface-to-Surface Guided Ballistic Missiles
Surface-to-Surface Guided Cruise Missiles
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12.7mm Antiaircraft Machineguns
14.5mm Antiaircraft Heavy Machineguns
20mm Automatic Antiaircraft Guns
23mm and 30mm Automatic Antiaircraft Guns
37mm and 57mm Automatic Antiaircraft Guns
40mm Automatic Antiaircraft Guns
85mm and 88mm Antiaircraft Guns
90mm and 94mm Antiaircraft Guns
100mm and 130mm Antiaircraft Guns

SURFACE-TO-AIR GUIDED MISSILES
Surface-To-Air Guided Missile SA-2 "GUIDELINE"
Surface-To-Air Guided Missile SA-3 "GOA"
Surface-To-Air Guided Missile SA-4 "GANEF"
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VOLUME THREE

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VOLUME FOUR

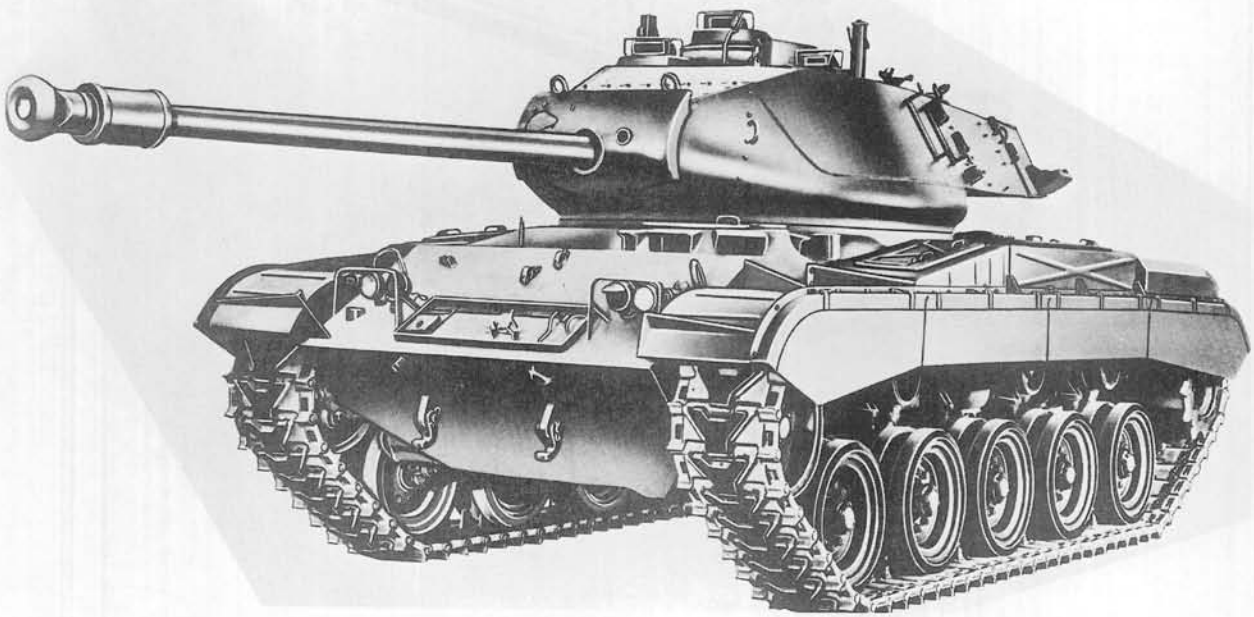
ARMORED VEHICLES: SCOUT CARS, APC'S AND TANK RECOVERY VEHICLES

ARMORED RECONNAISSANCE VEHICLES
Soviet and East German Armored Cars and Water Cannon
Yugoslav Armored Cars
Soviet Amphibious Wheeled Reconnaissance Vehicles
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Medium Tank Recovery Vehicles T-54 and T-55 Chassis
Medium Tank Recovery Vehicles M4 Chassis
Heavy Tank Recovery Vehicles JS Chassis

ARMORED

VEHICLES, GENERAL

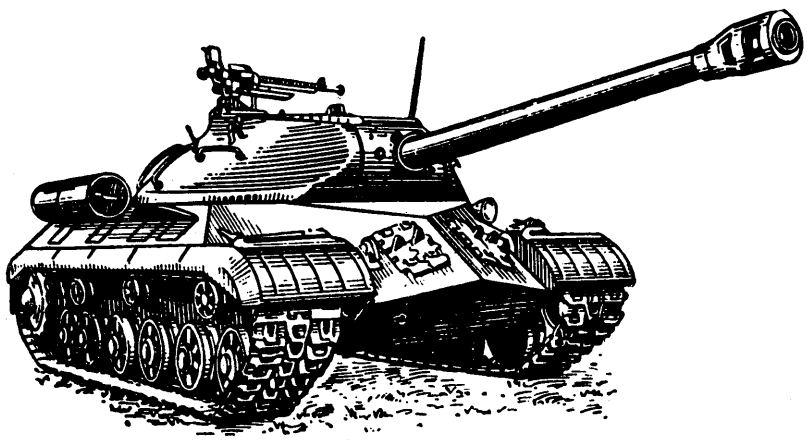
TYPICAL TANKS



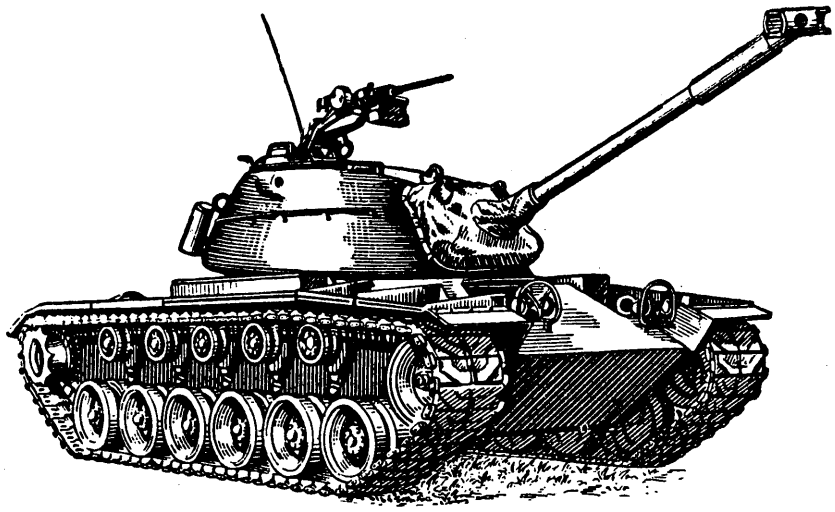
U.S. 25.4 t LIGHT TANK WITH 76mm GUN



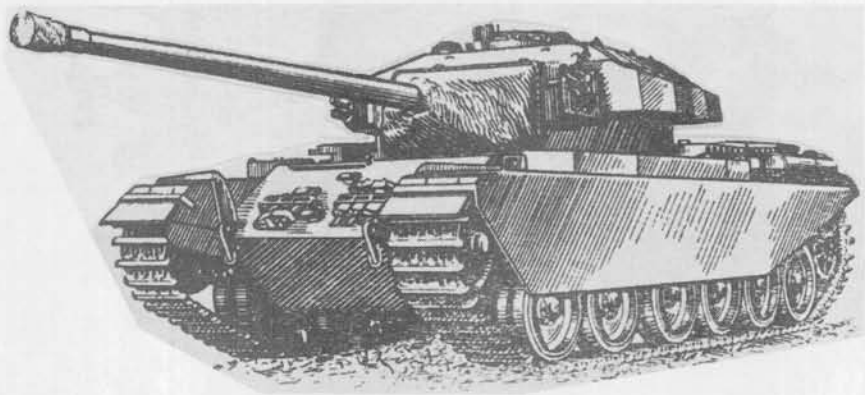
FRENCH 14.7 t LIGHT TANK WITH 75mm GUN



SOVIET 46 t HEAVY TANK WITH 122mm GUN



U.S. 45 t MEDIUM TANK WITH 90mm GUN

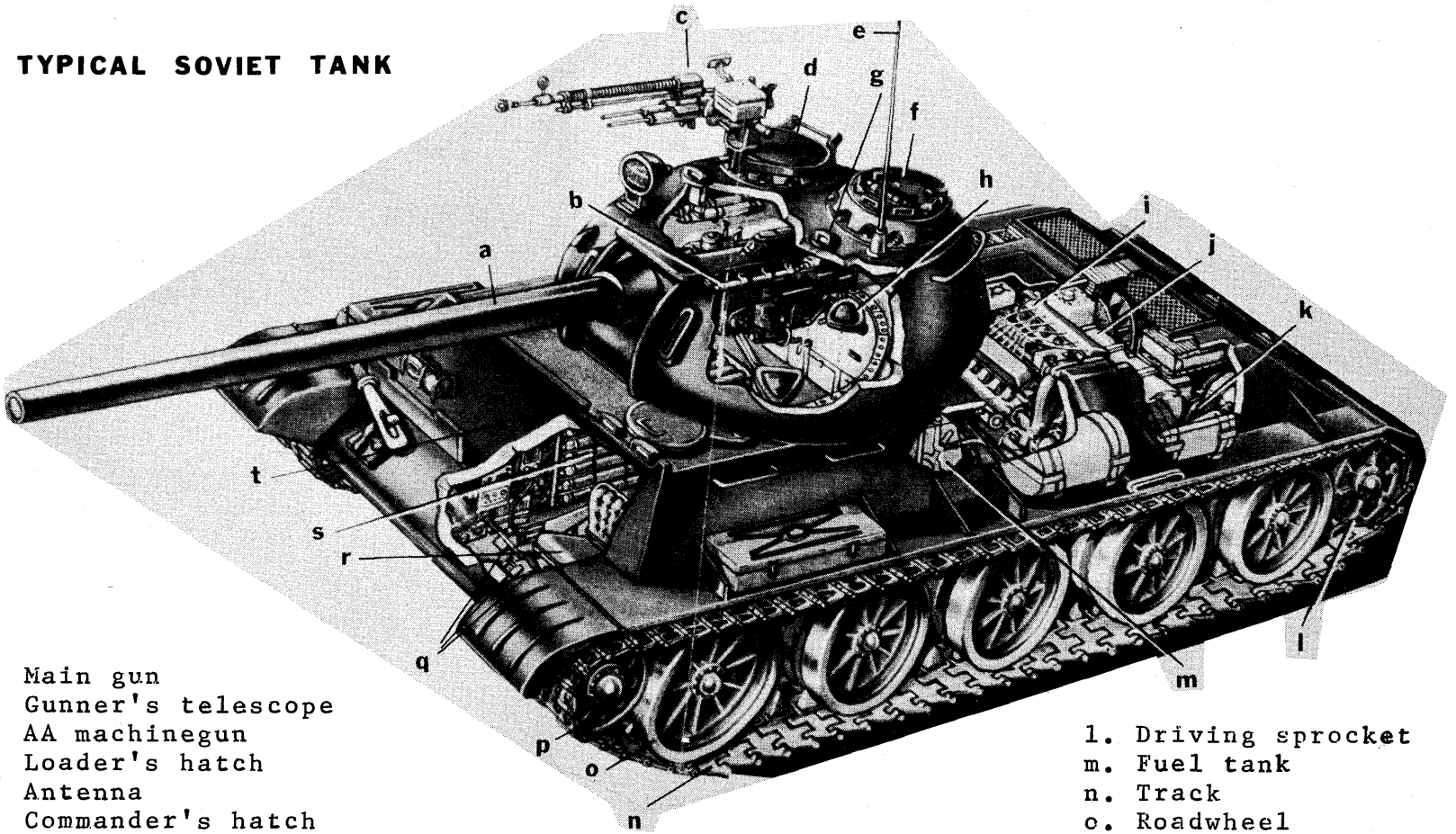


BRITISH 50 t MEDIUM TANK WITH 83.4mm GUN

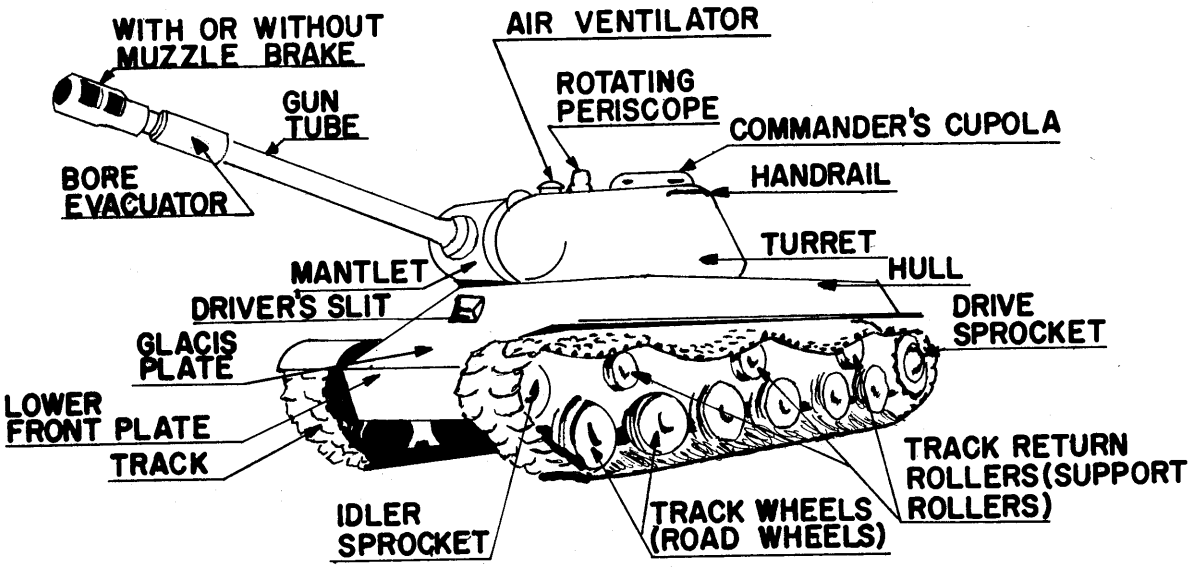


U.S. M551 "SHERIDAN" WITH 152mm GUN LAUNCHER

TYPICAL SOVIET TANK



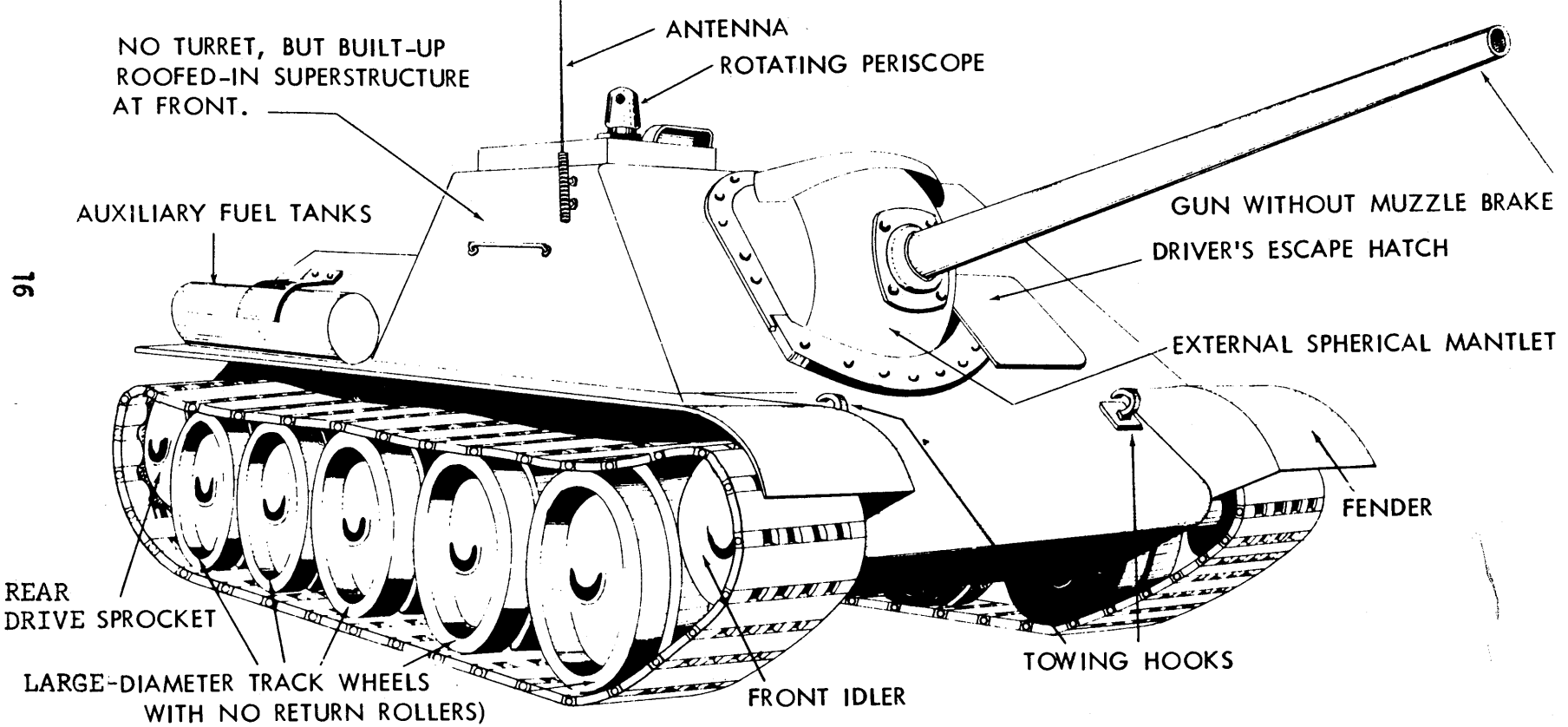
a. Main gun
b. Gunner's telescope
c. AA machinegun
d. Loader's hatch
e. Antenna
f. Commander's hatch
g. Commander's periscope
h. Commander's seat
i. Engine
j. Transmission
k. Planetary steering mechanism
l. Driving sprocket
m. Fuel tank
n. Track
o. Roadwheel
p. Idlerwheel
q. Driver's control
r. Driver's seat
s. Ammunition
t. Bow machinegun


WITH OR WITHOUT MUZZLE BRAKE
GUN TUBE
BORE EVACUATOR
AIR VENTILATOR
ROTATING PERISCOPE
COMMANDER'S CUPOLA
HANDRAIL
TURRET
HULL
MANTLET
DRIVER'S SLIT
DRIVE SPROCKET
GLACIS PLATE
LOWER FRONT PLATE
TRACK
TRACK RETURN ROLLERS(SUPPORT ROLLERS)
IDLER SPROCKET
TRACK WHEELS (ROAD WHEELS)

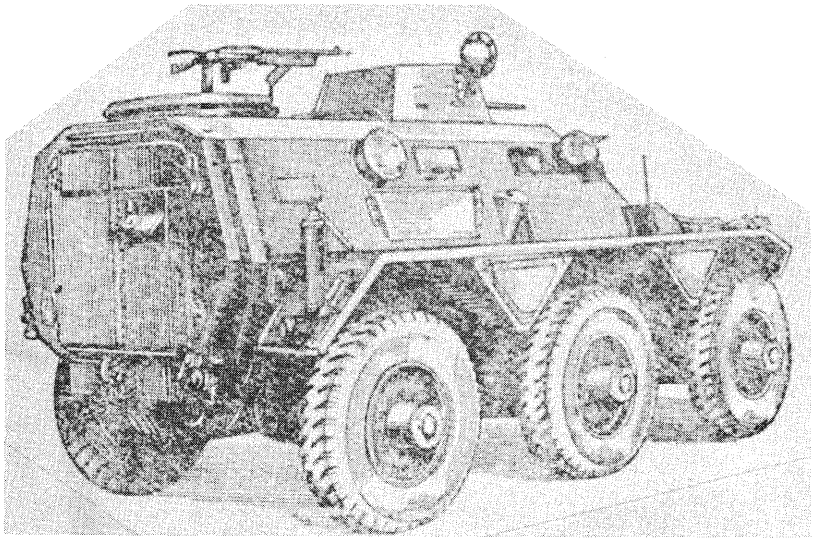
TANKS

TYPICAL ASSAULT GUNS

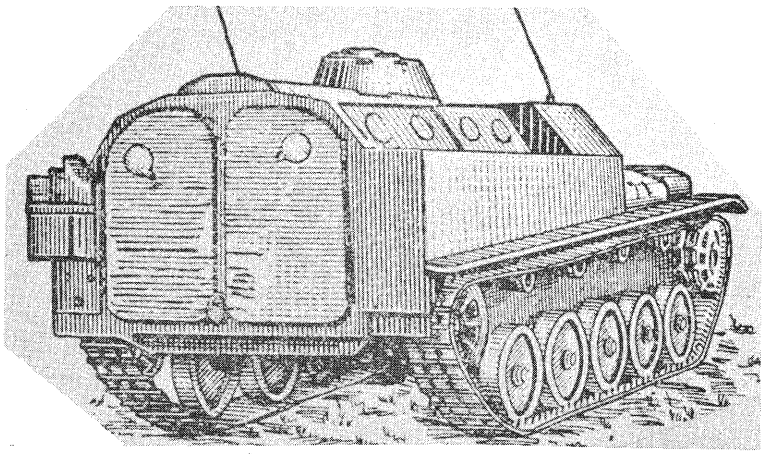
SELF-PROPELLED GUN MOUNTED IN FRONT HULL OF MODIFIED TANK



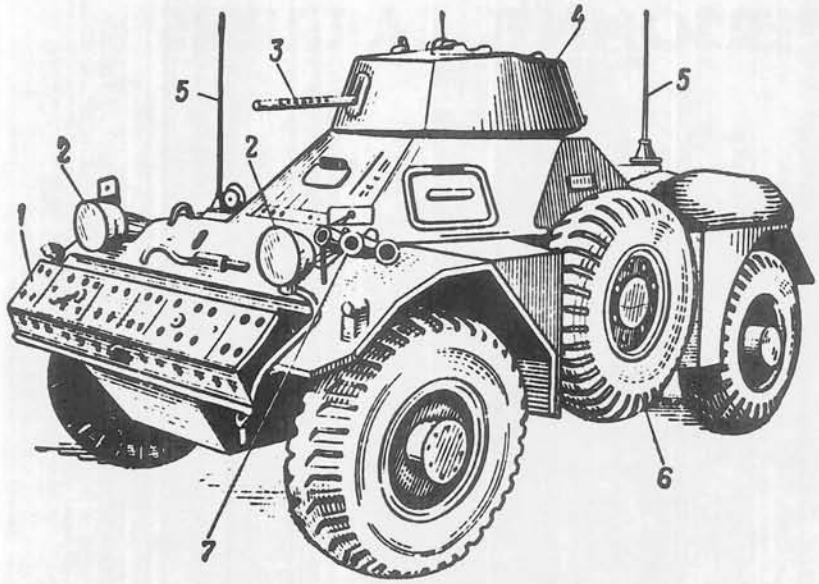
TYPICAL ARMORED CARS AND PERSONNEL CARRIERS



BRITISH 6x6 ARMORED PERSONNEL CARRIER



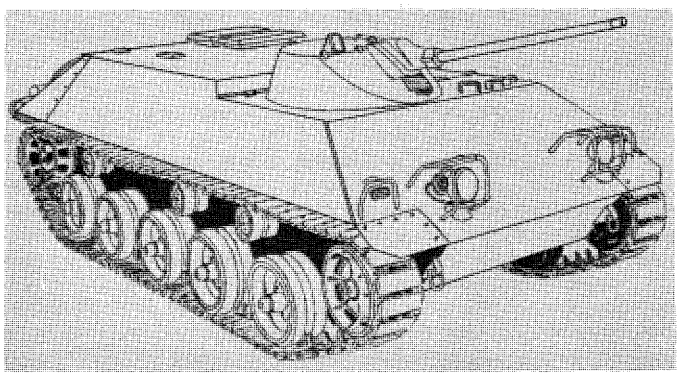
FRENCH FULL-TRACKED ARMORED PERSONNEL CARRIER



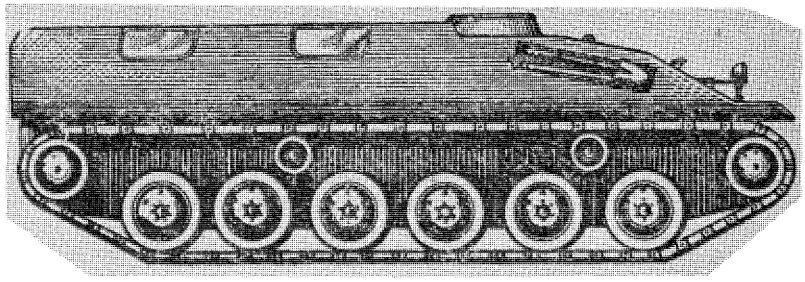
BRITISH 4x4 SCOUT CAR



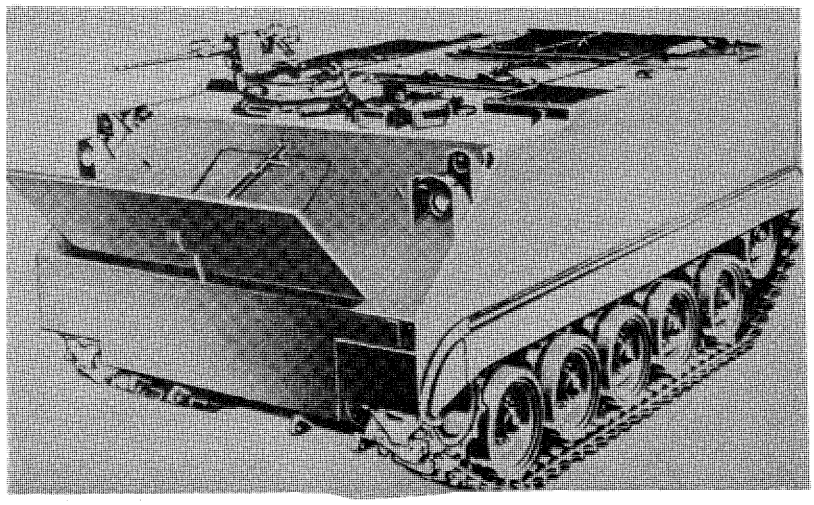
BRITISH 6x6 ARMORED CAR



GERMAN FULL-TRACKED ARMORED PERSONNEL CARRIER



SWISS-AUSTRIAN FULL-TRACKED ARMORED PERSONNEL CARRIER



U.S. FULL-TRACKED ARMORED PERSONNEL CARRIER

TANK STOWAGE



NOTE: Although the tank shown here is the T–55A, its stowage is typical of Soviet medium tanks.

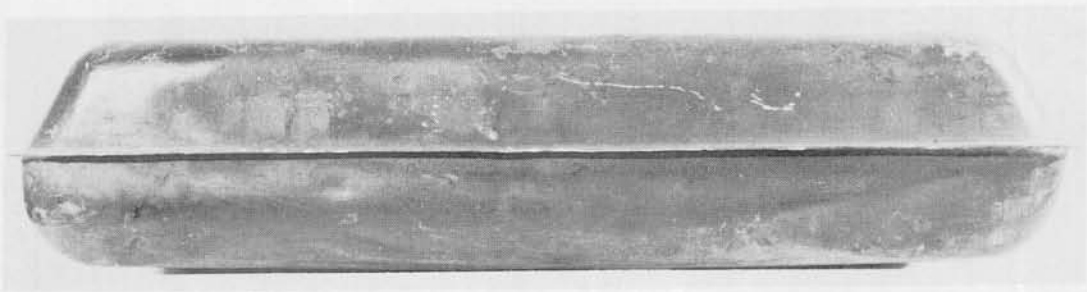
Stowage box on different models may be slightly rearranged.





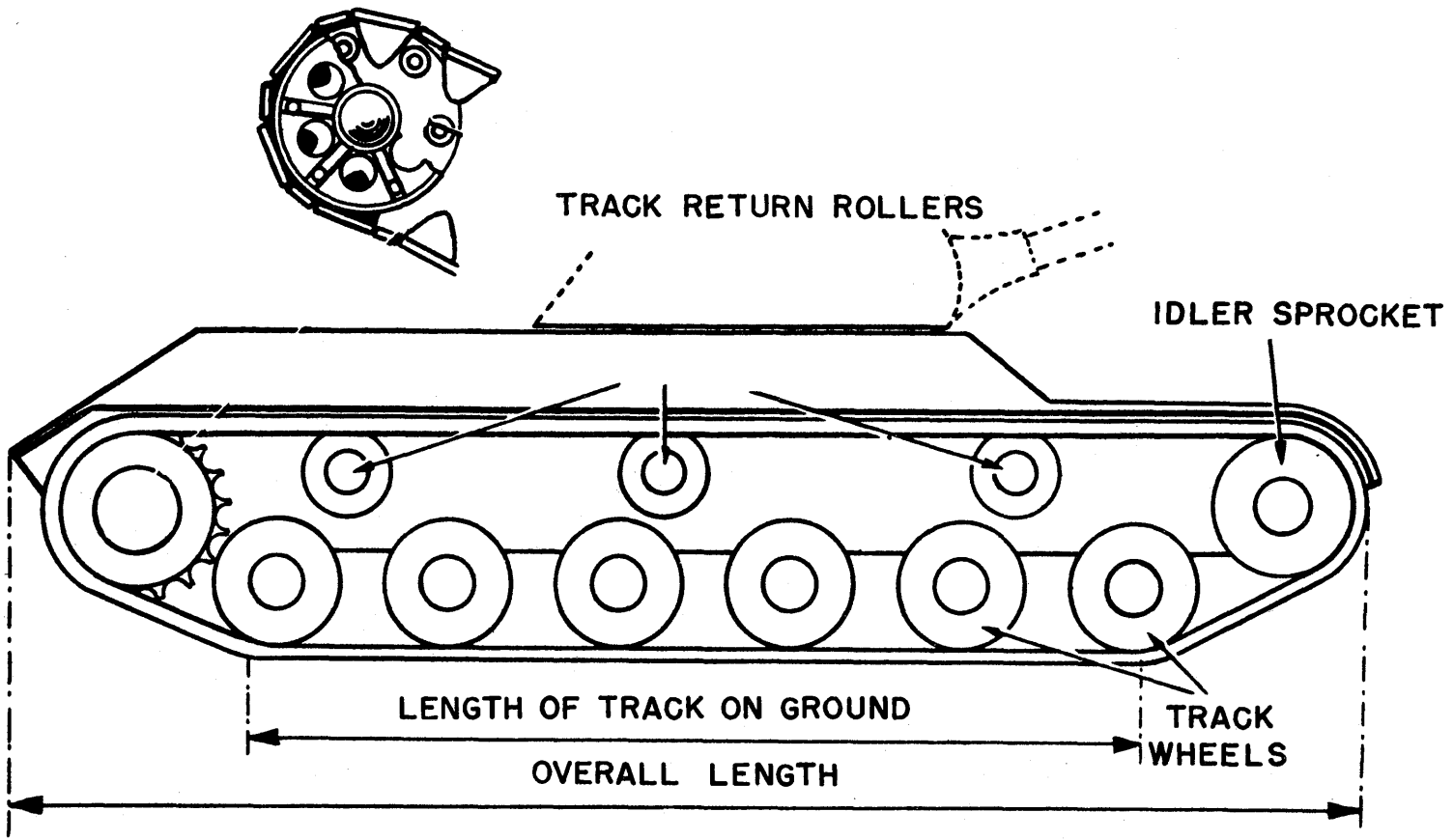
Some Polish manufactured medium tanks have stowage boxes attached to the side of the turret.

INTEGRAL EXTERNAL FUEL TANK.
93 LITER CAPACITY.

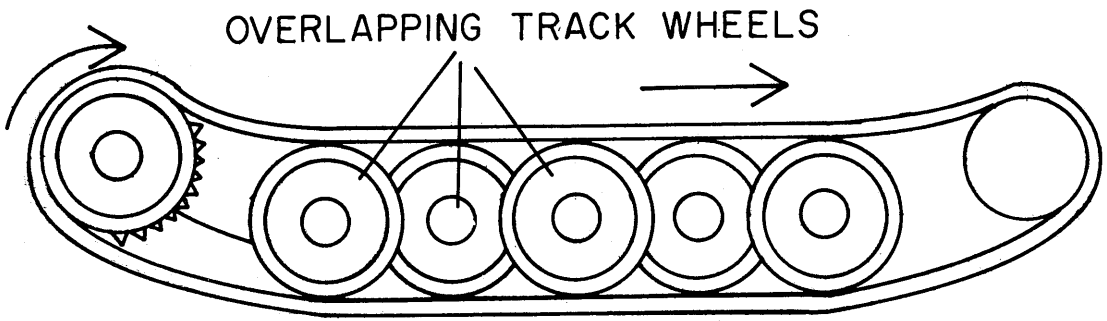


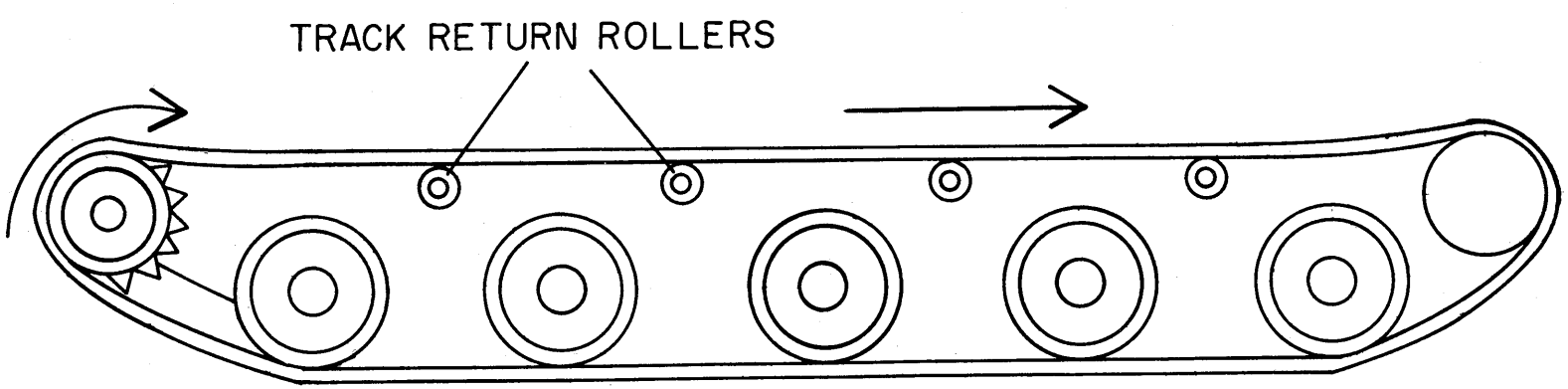


DRIVE SPROCKET TOOTHED OR ROLLER TYPE



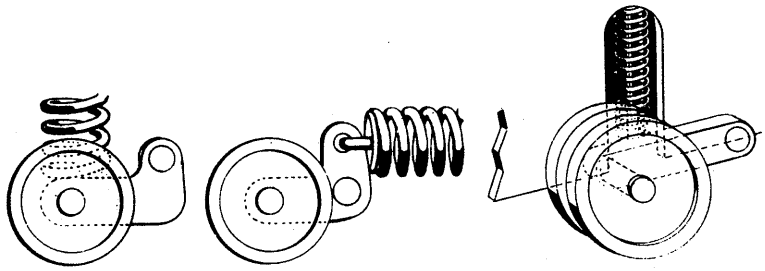
TANK SUSPENSION SYSTEM





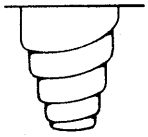
TANK RUNNING GEAR

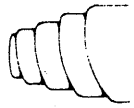
INTERNAL COIL SPRING



HELICAL VERTICAL

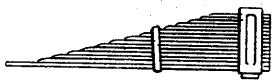
HELICAL HORIZONTAL





VERTICAL VOLUTE

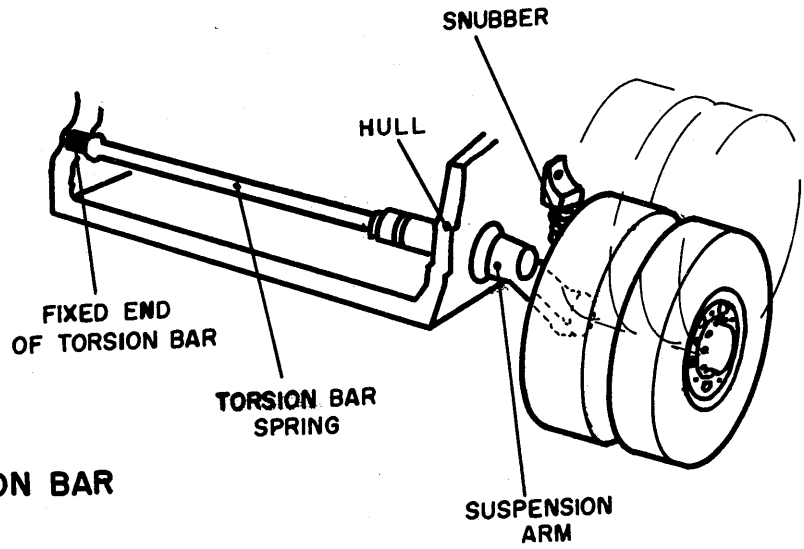
HORIZONTAL VOLUTE



QUARTER ELLIPTIC

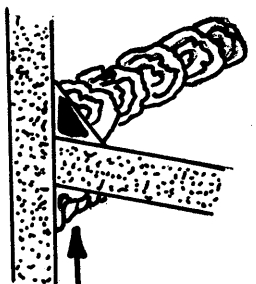


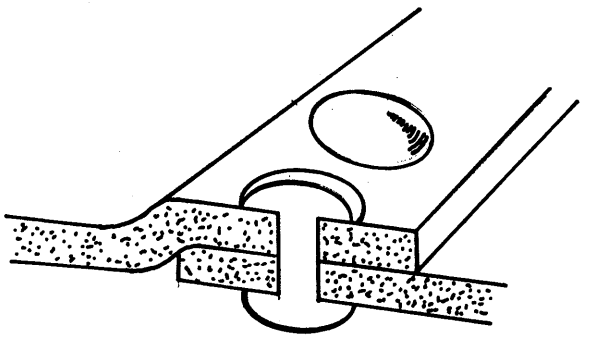
SEMI-ELLIPTIC

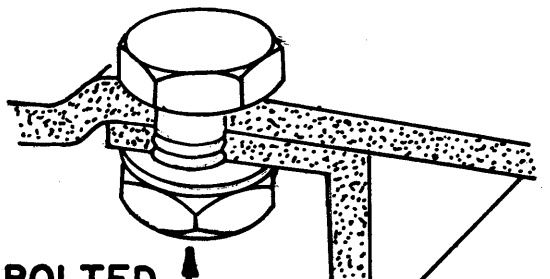


TORSION BAR

SPRINGS

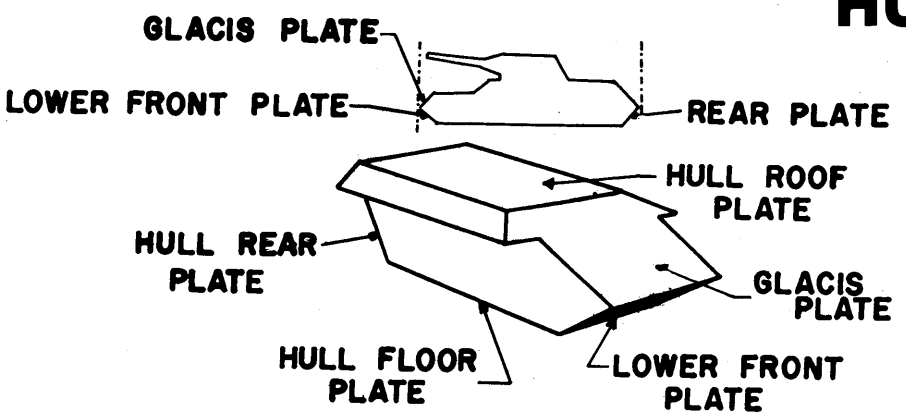


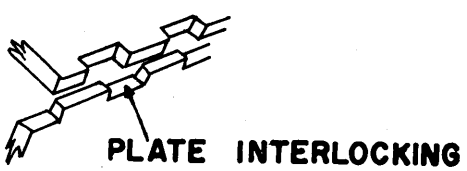




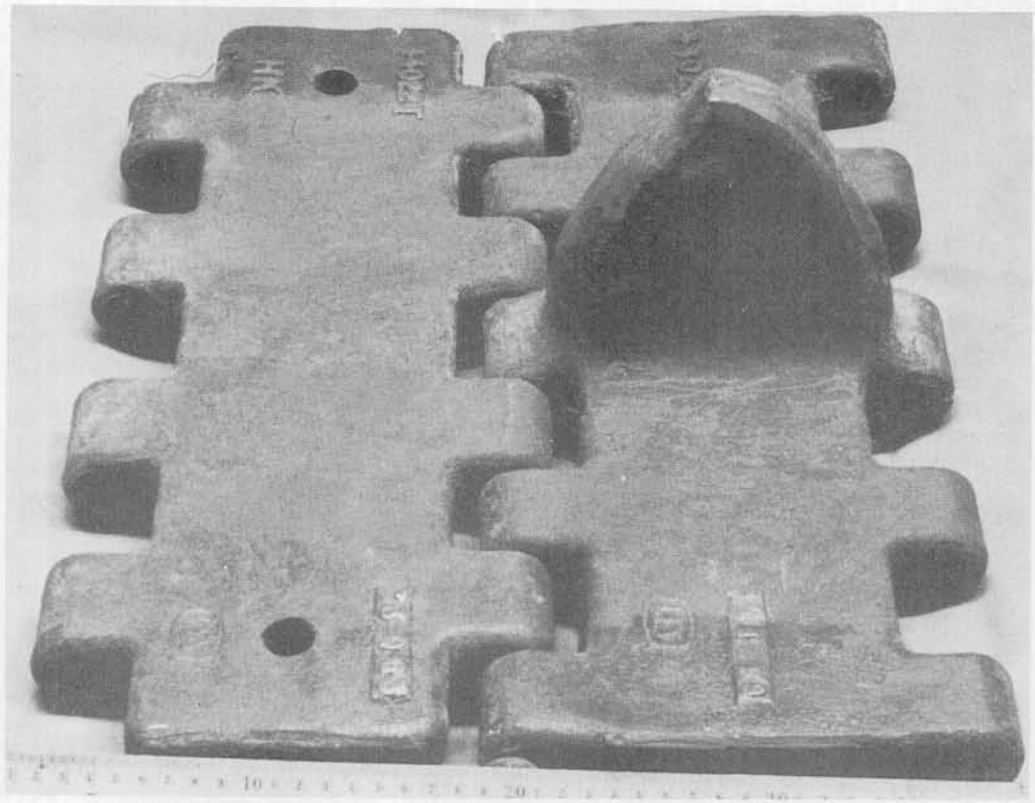
HULL CONSTRUCTION

ANGLES OF:

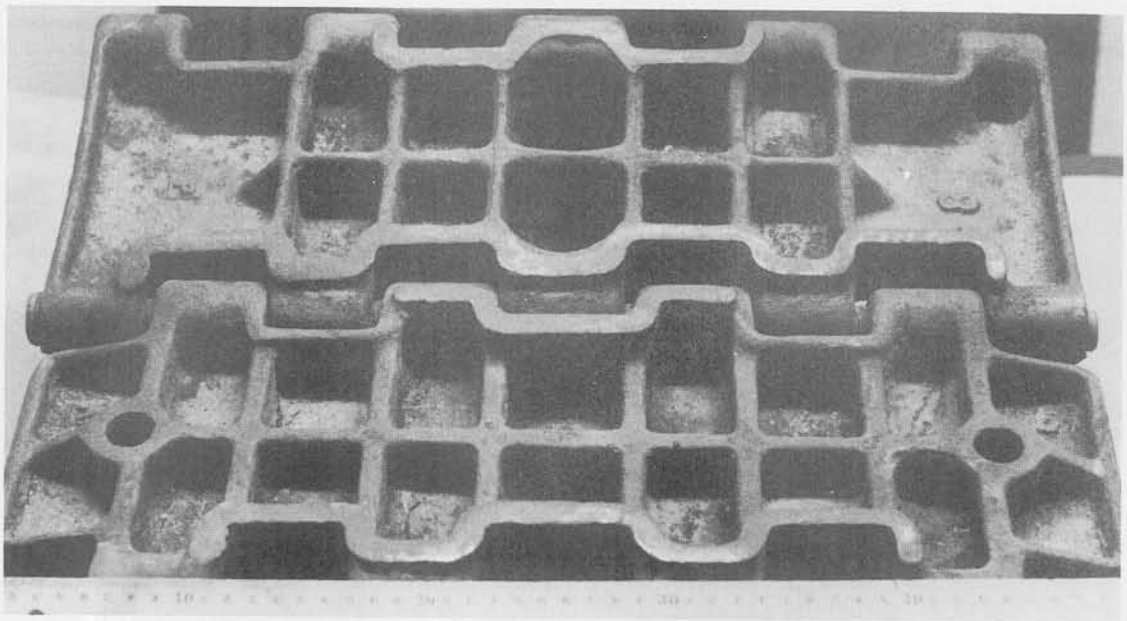




T—34 TRACK



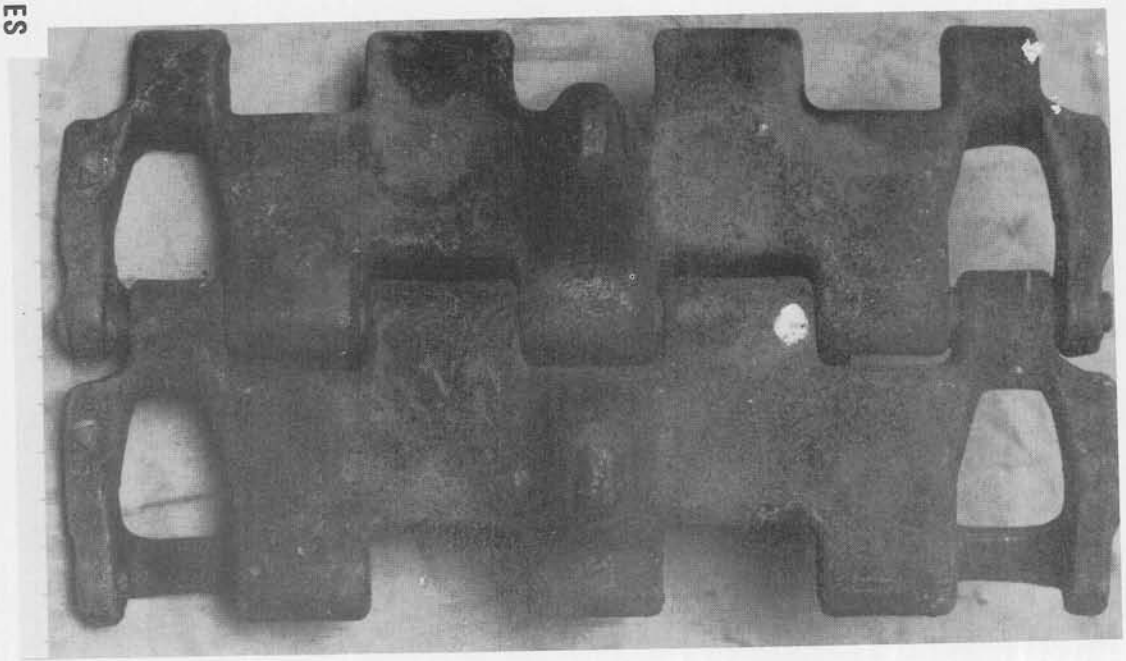
MM

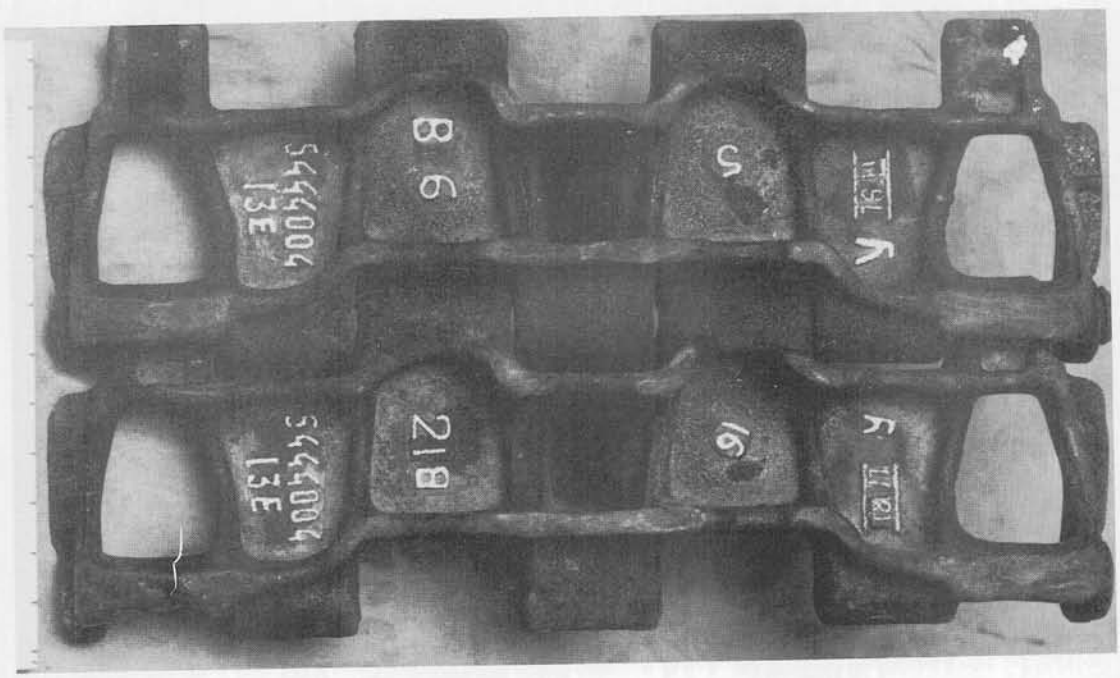


Also used on the SU–85 and SU–100.

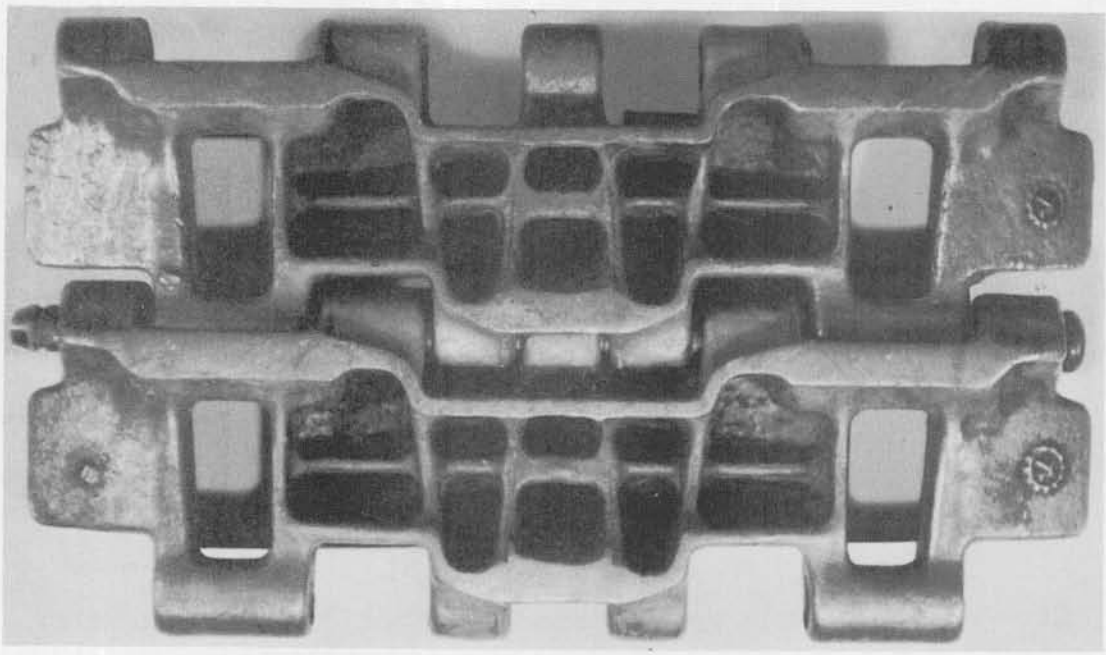
T—54/55/62 TRACK

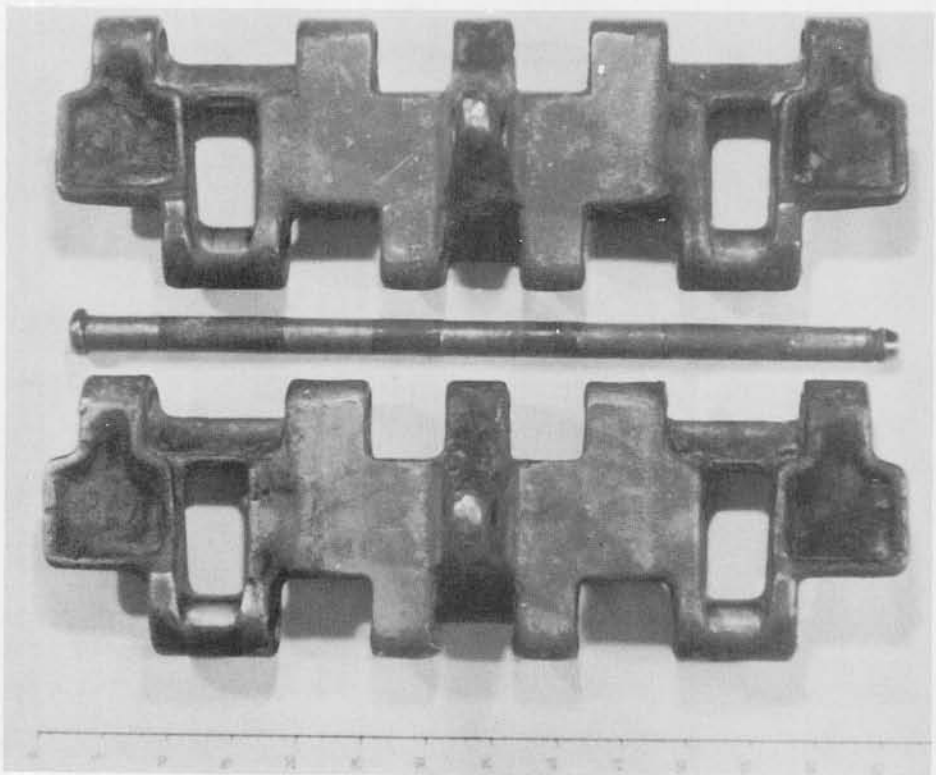
INCHES





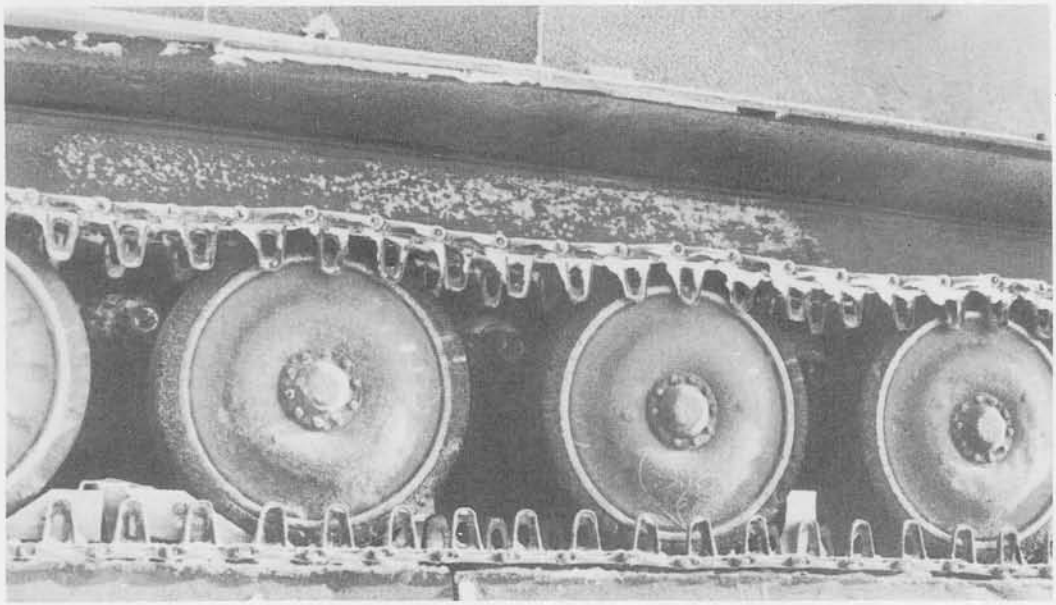
JS HEAVY TANK TRACK



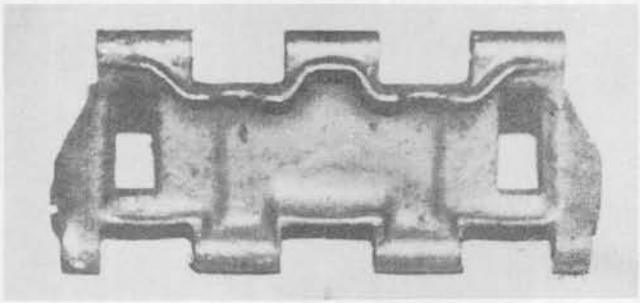


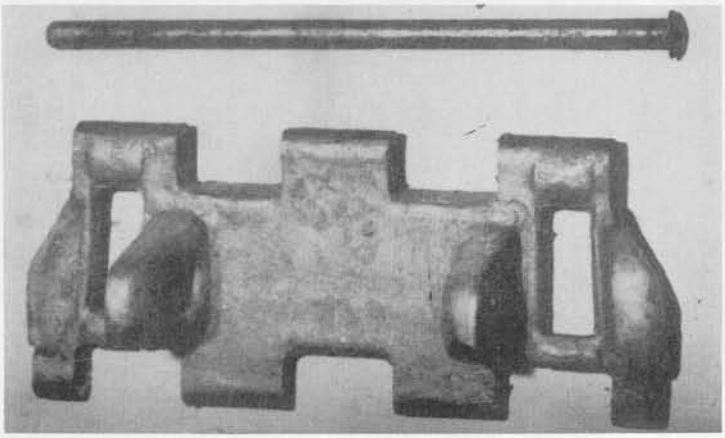
MM

PT–76 TRACK



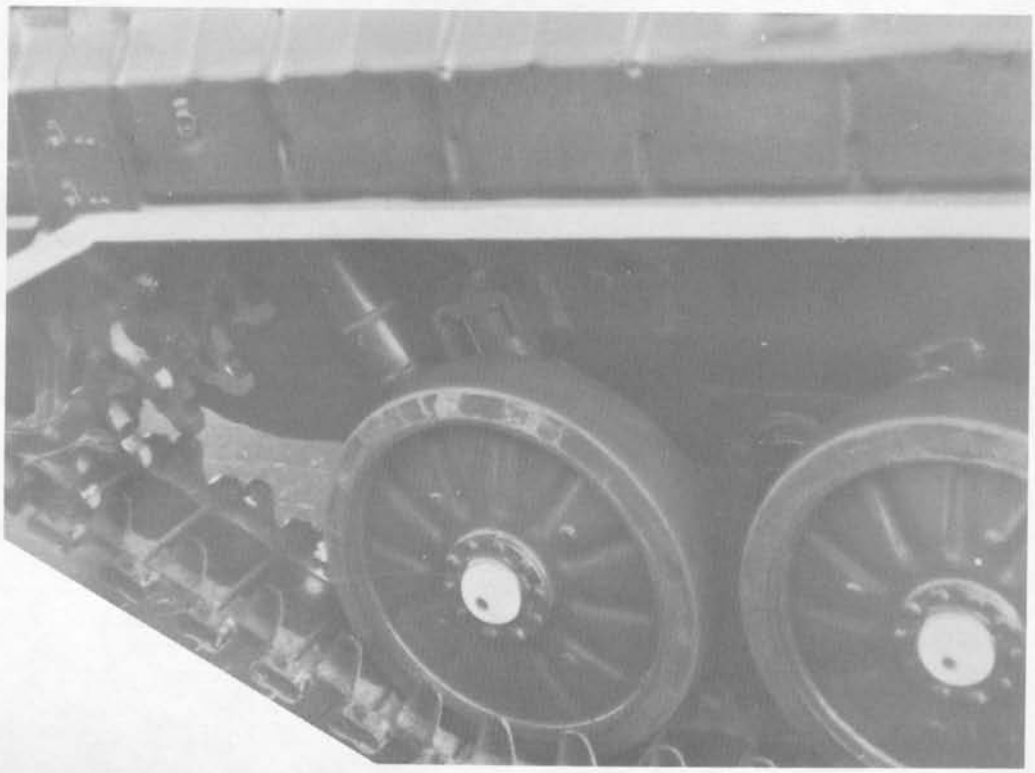
Also used on the BTR–50, ASU–85, ZSU–23–4, GSP Heavy Amphibious Ferry and various FROG launchers.





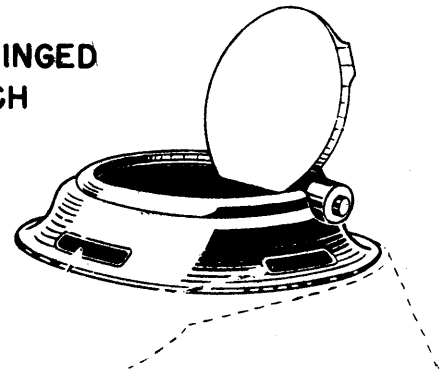
BMP TRACK



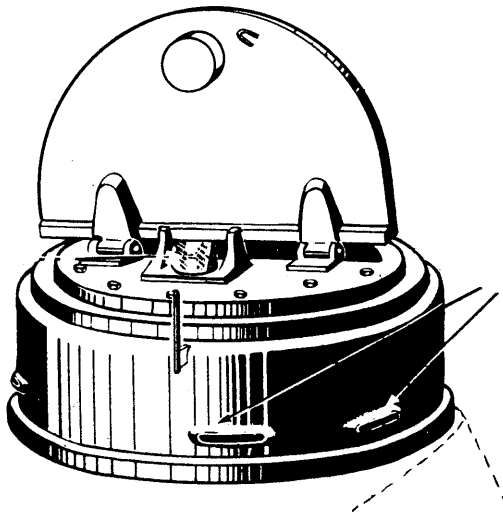


NOTE: END CONNECTORS

SINGLE HINGED HATCH



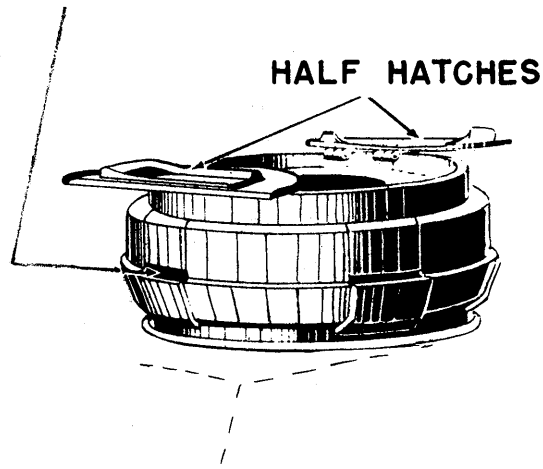
HALF HATCH



ROTATING PERISCOPE

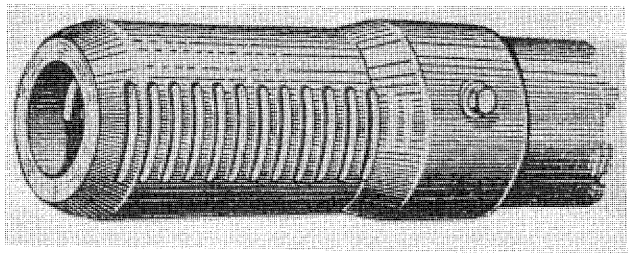
GLASS VISION BLOCKS

HALF HATCHES

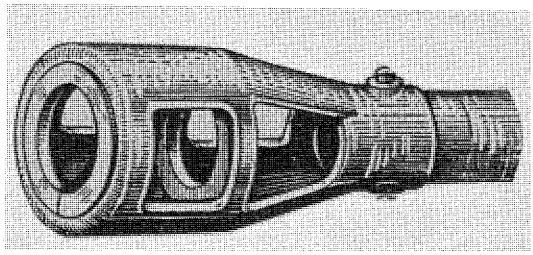


CUPOLAS

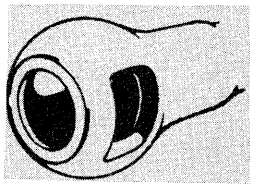
MULTI-BAFFLE



DOUBLE BAFFLE



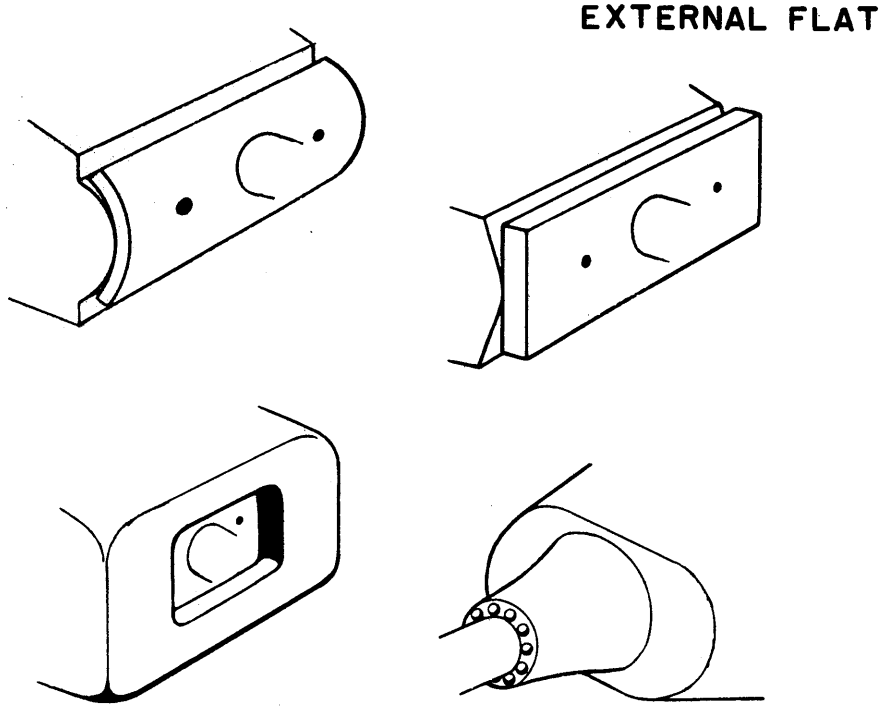
SINGLE BAFFLE



MUZZLE BRAKES

EXTERNAL CURVED

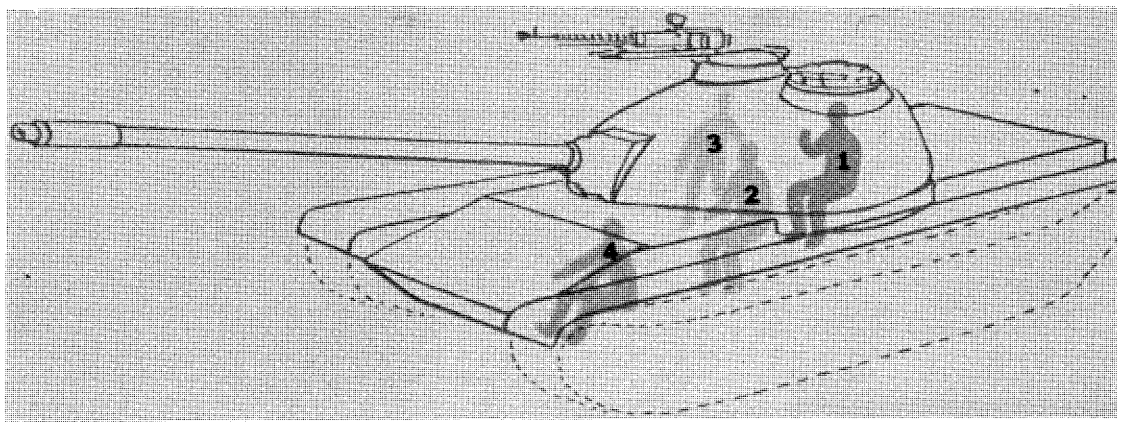
EXTERNAL FLAT



INTERNAL

CIRCULAR PROJECTING

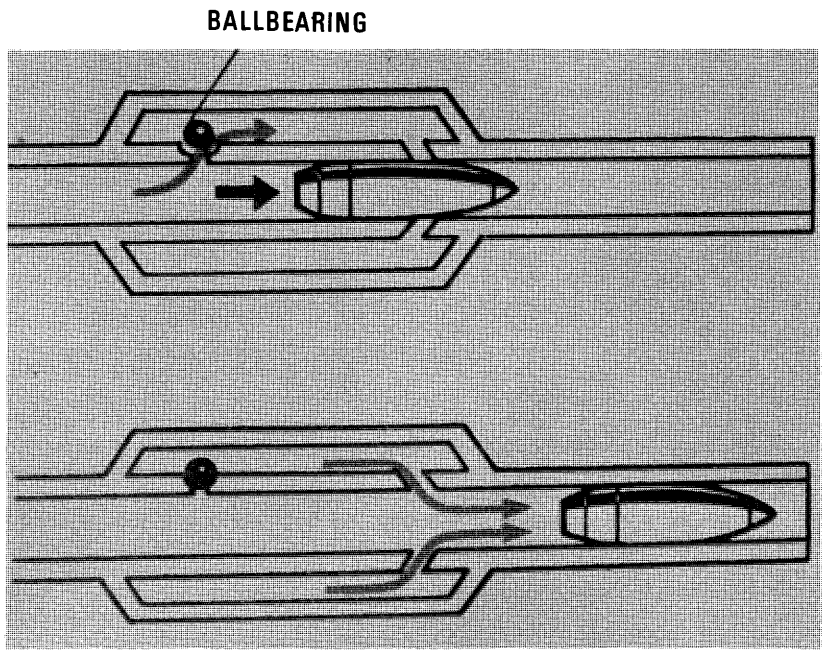
MANTLETS

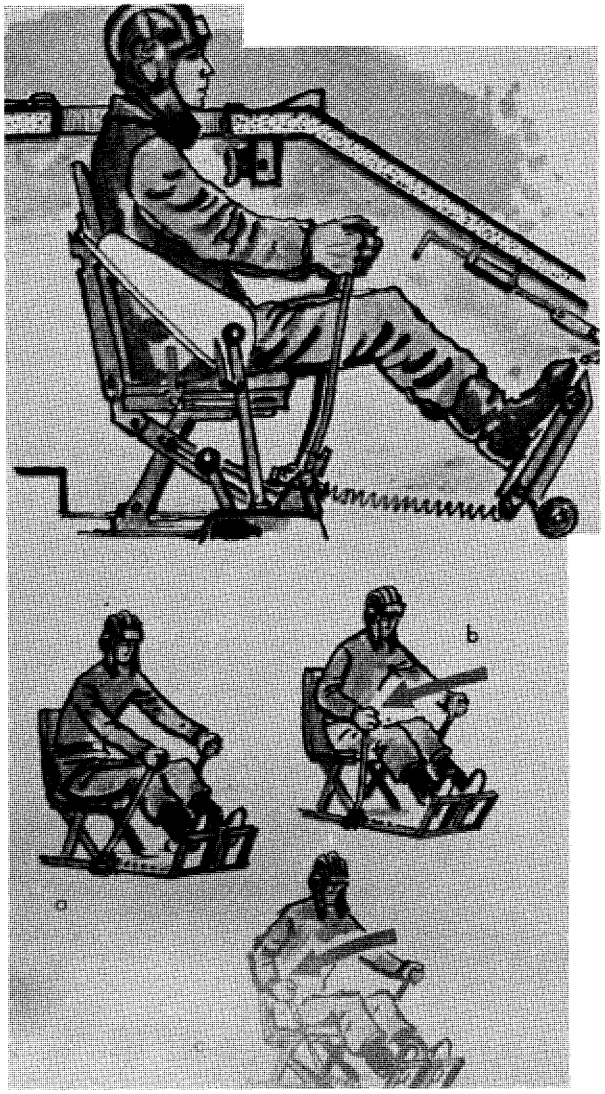


1. TANK COMMANDER
2. GUNNER
3. LOADER
4. DRIVER

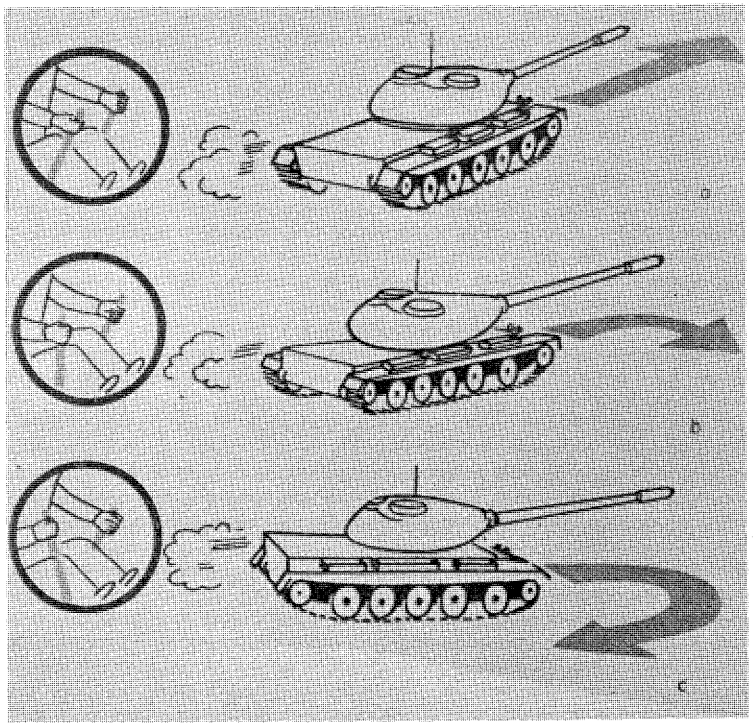
TYPICAL TANK CREW POSITIONS

BORE EVACUATOR (SOVIET TYPE)





TANK DRIVING





EAST GERMAN TANKER'S WINTER UNIFORM



EAST GERMAN TANKER'S UNIFORM.

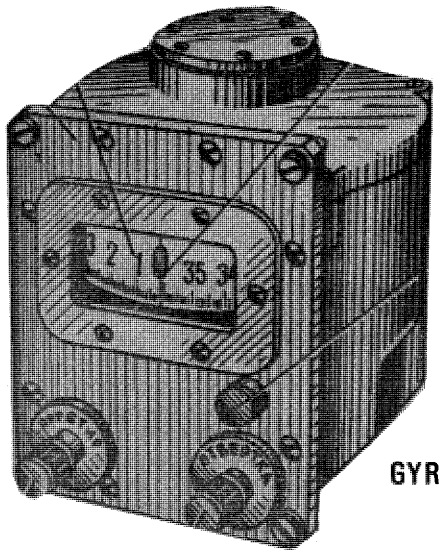


POLISH ARMORED CREWMAN'S HELMET



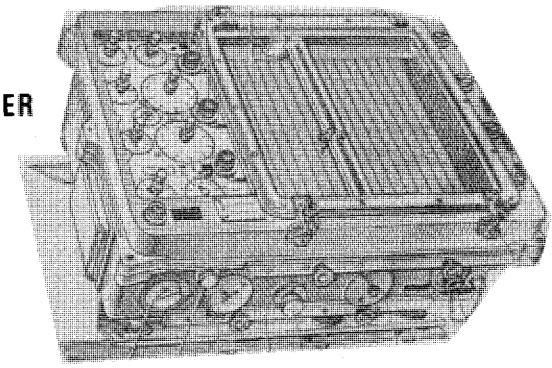
SOVIET ARMORED CREWMAN'S HELMET

NAVIGATION EQUIPMENT

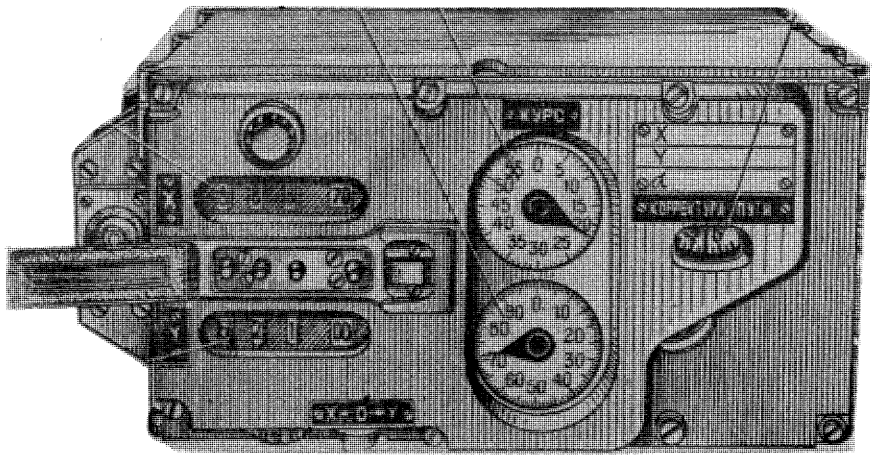


GYROSCOPIC COMPASS

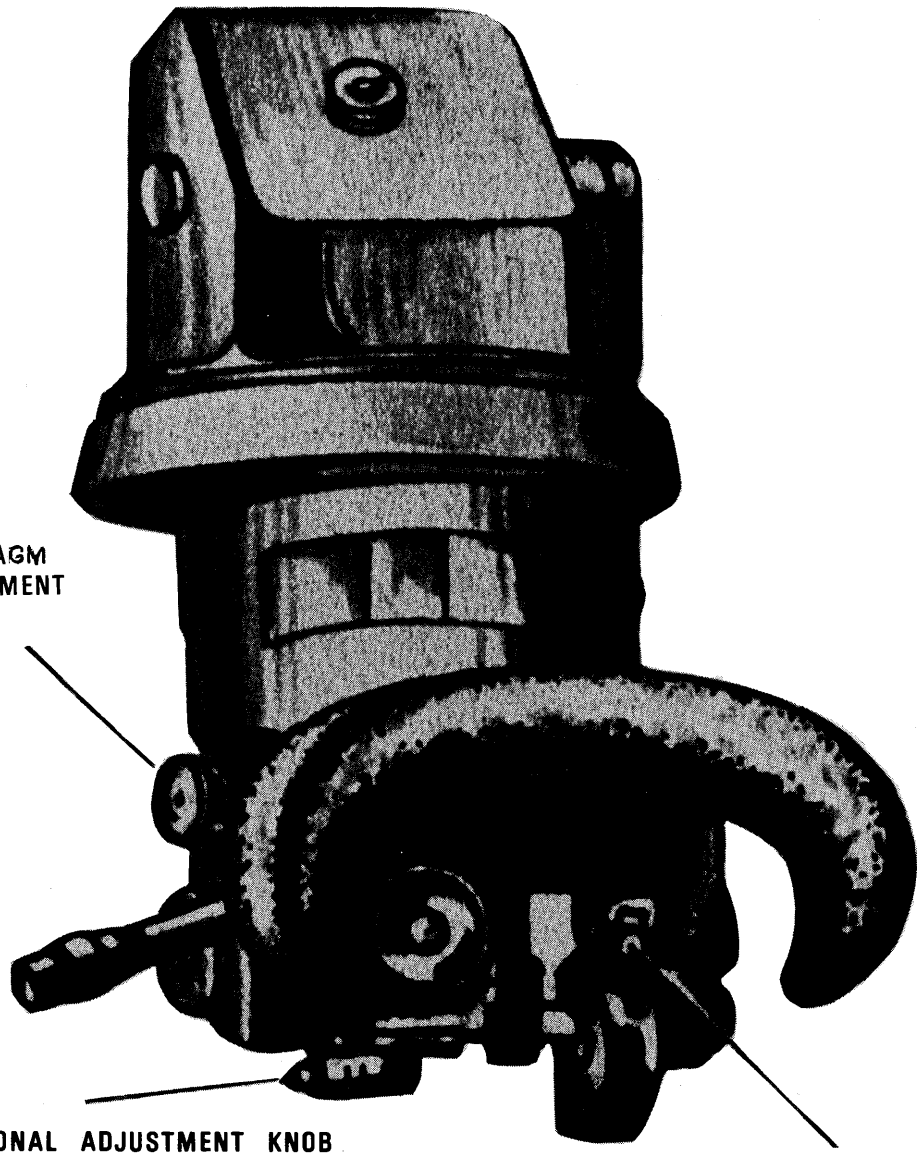
COURSE PLOTTER



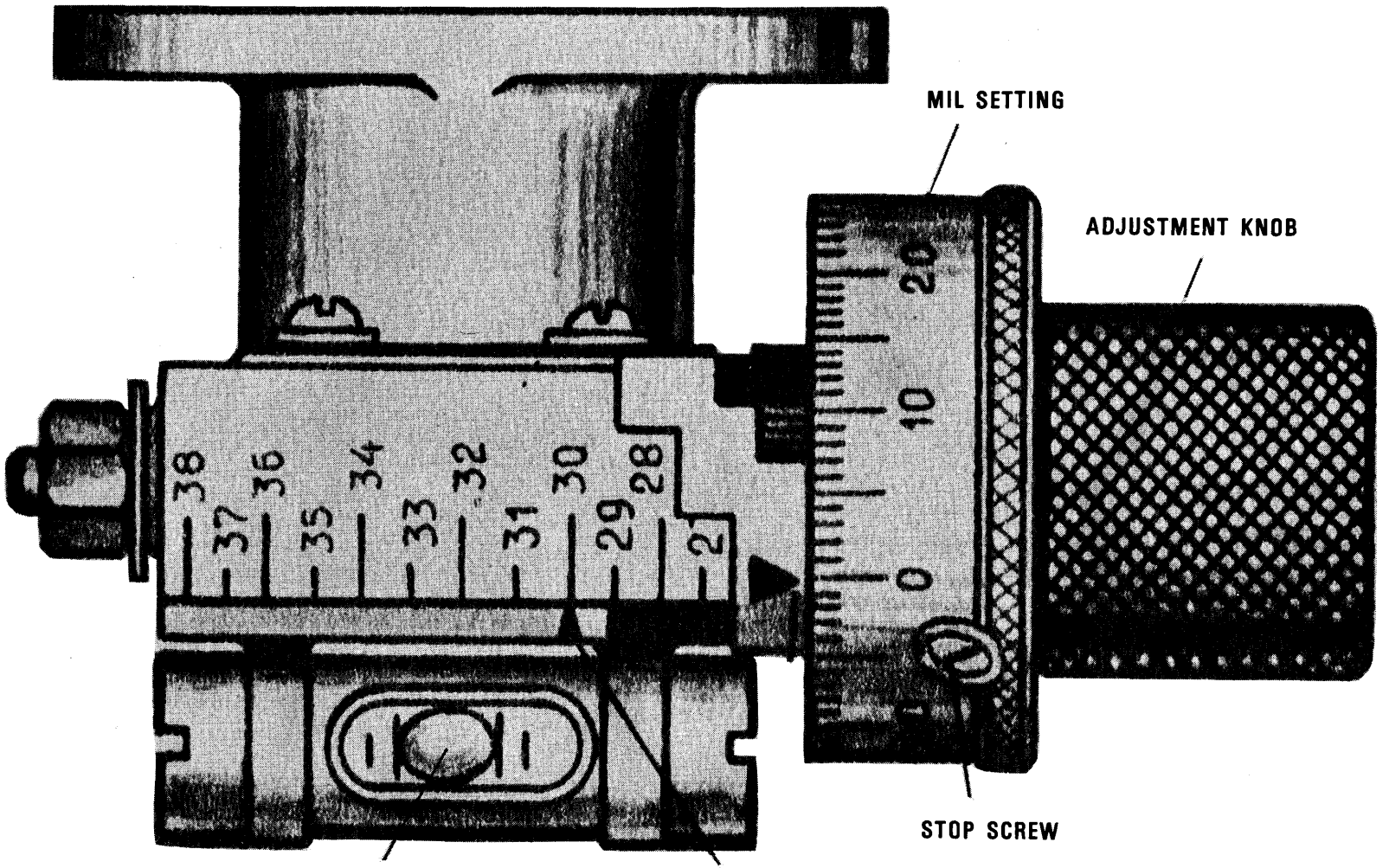
COORDINATES INDICATOR



TANK COMMANDER'S PERISCOPE



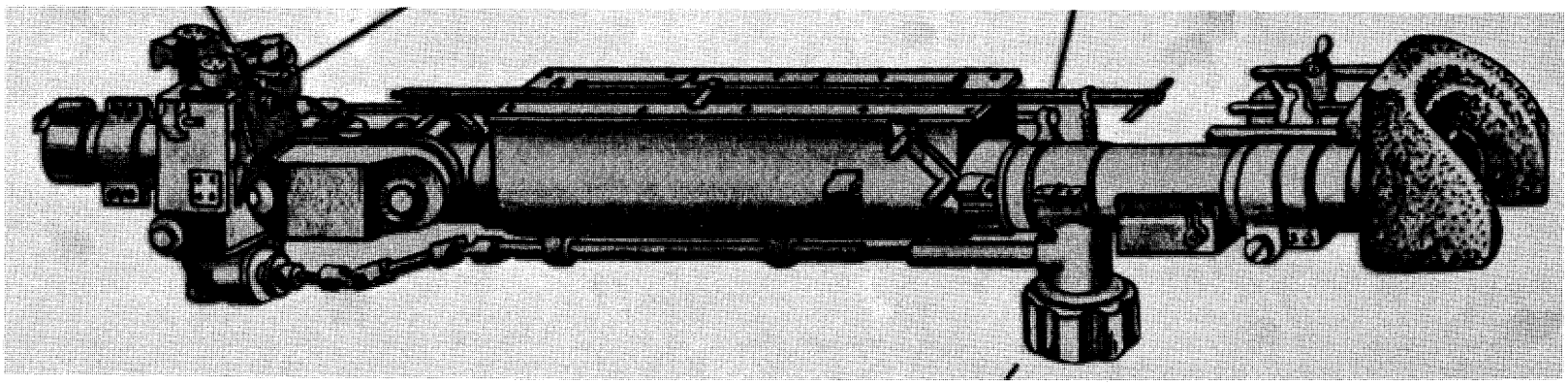
ELEVATION QUADRANT



DIRECTIONAL
ADJUSTMENT KNOB

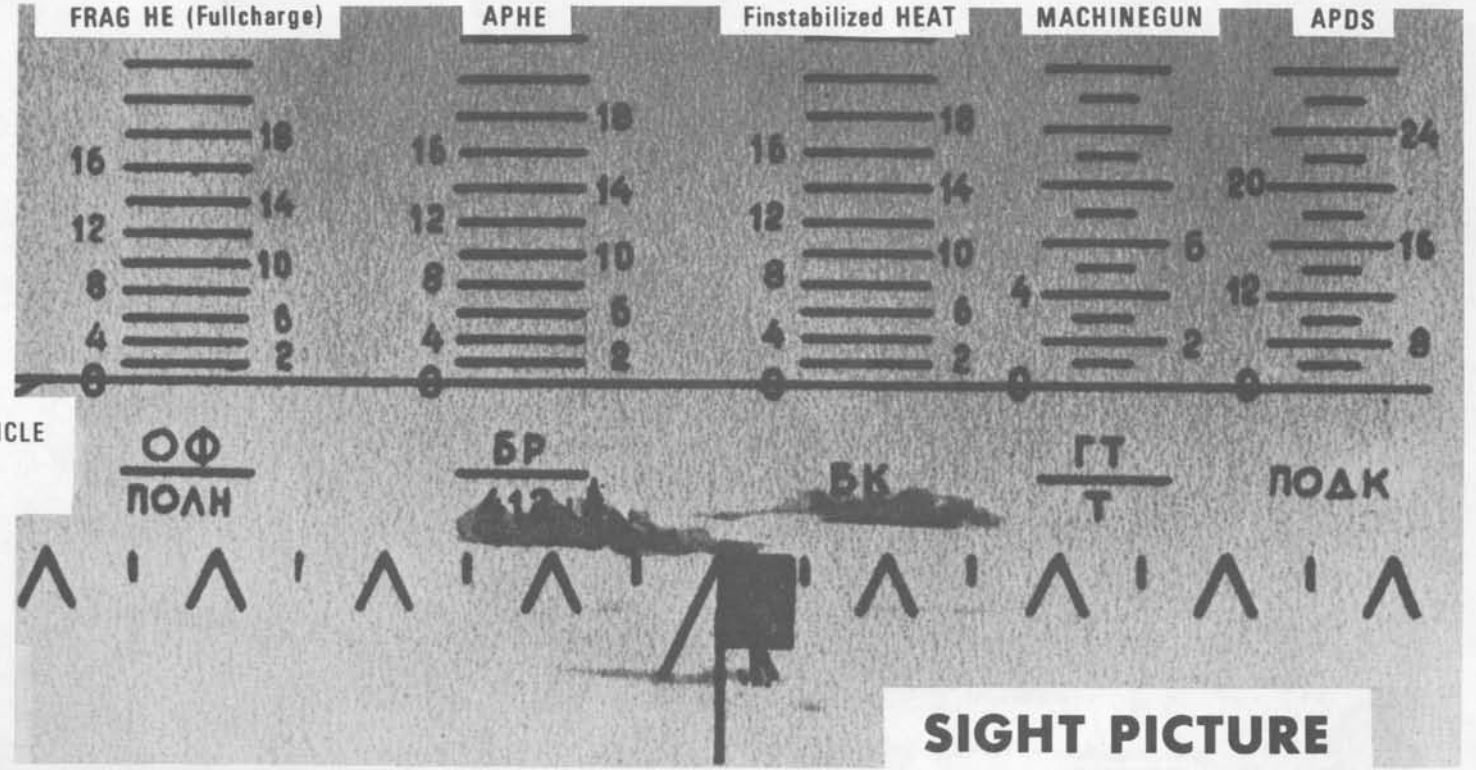
HALVING
ADJUSTMENT SCREW

ADJUSTMENT
MECHANISM



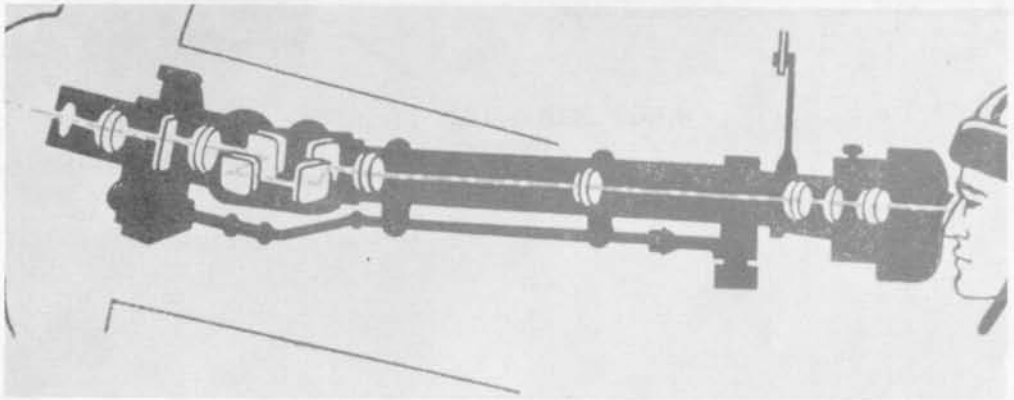
ANGLE OF ELEVATION KNOB

GUNNER'S TELESCOPE



HORIZONTAL-RETICLE INDICATOR

SIGHT PICTURE

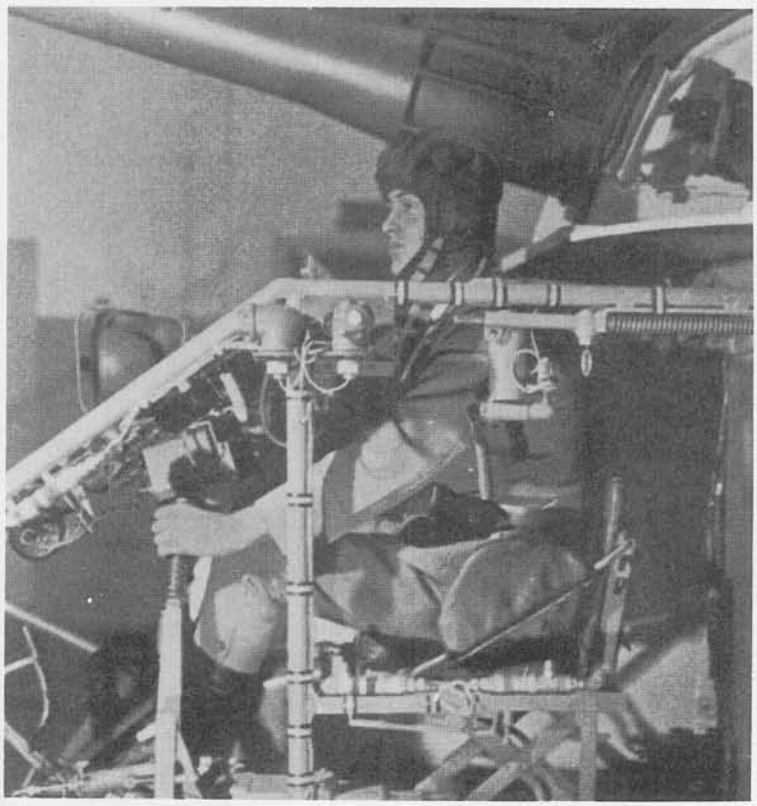


TANK GUNNER'S TELESCOPE

TRAINING

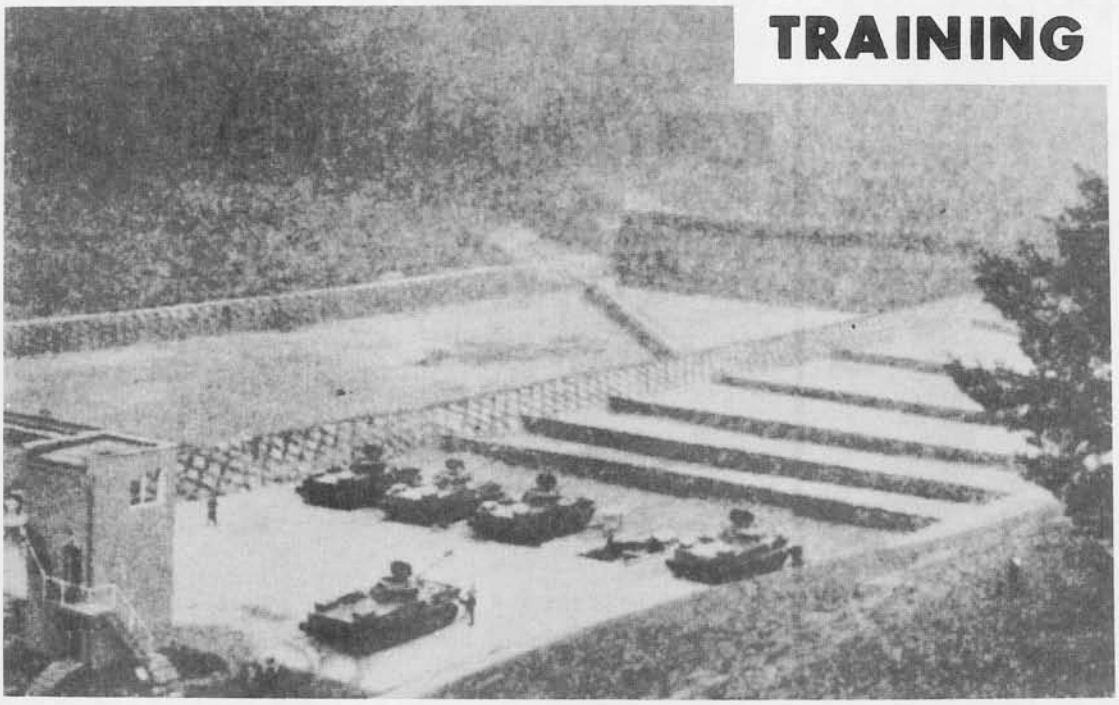


Tank evacuation training. Note that crew member is carrying an ammunition box of tank machinegun.



Tank driver training using a cutaway model of the T–54/55 medium tank.

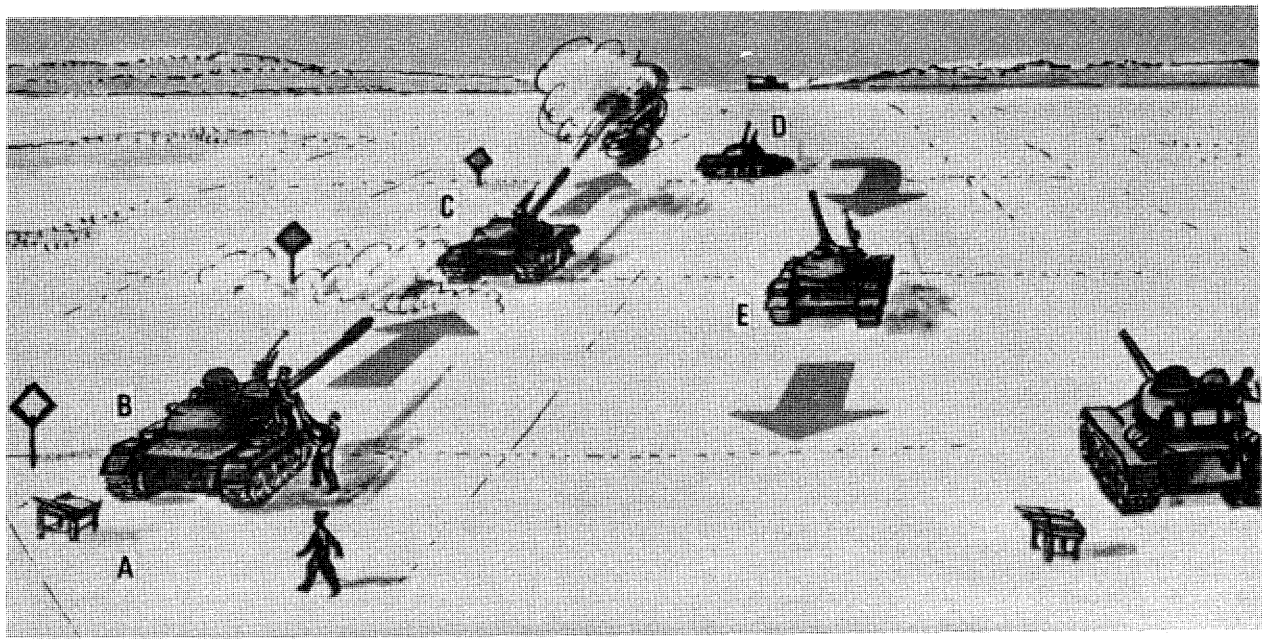
TRAINING



SUBCALIBER RANGE. Note firing tanks are mounted on a "rocking platform" which simulates tank movement.



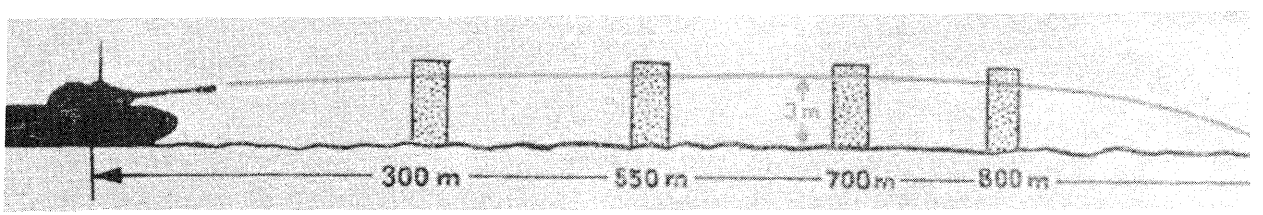
Loading ammunition for service firing.



TYPICAL MOVING TARGET RANGE

A. Ammunition point
B. Starting line
C. Open fire line
D. Cease fire line
E. Returning to starting line

TANK GUNNERY



DIRECT SHOT FOR SOVIET TANKS

TRAINING AIDS



ARMORED VEHICLE CUTAWAY



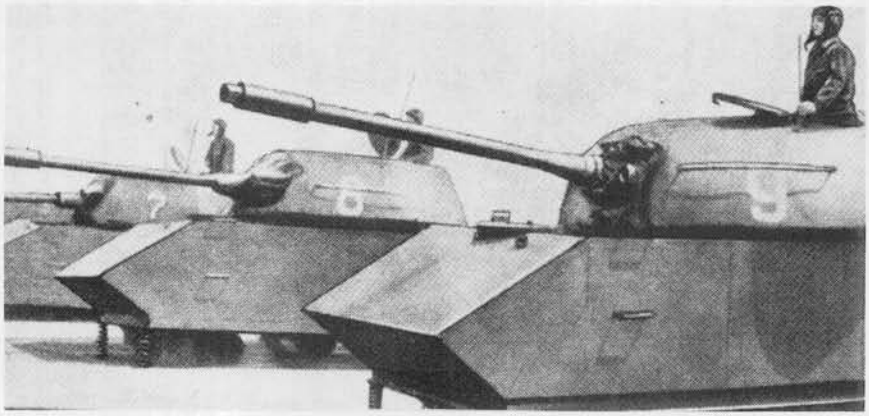
TRAINING AIDS



" PINHOLE PUNCHER" tank gunnery training aid.



TRAINING AIDS



Turret trainer mounted on "rocking platform".

Gunner's telescope training aid (manual controls)



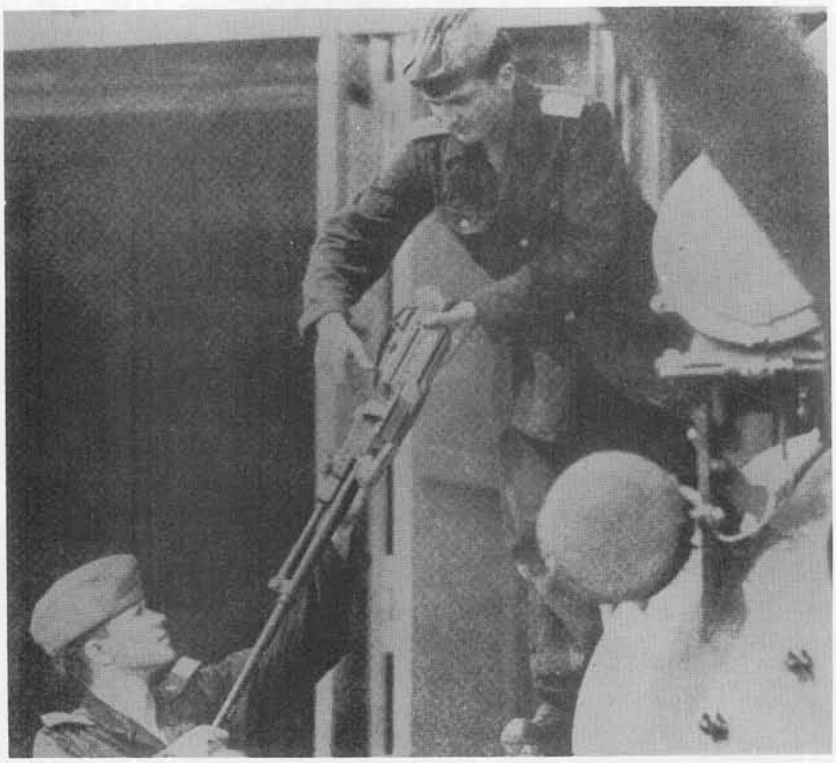
TRAINING AIDS



Gunner's telescope trainer with rifle as subcaliber device



Gunner's telescope training aid (power controls). Note that instructor can observe student's sight picture.

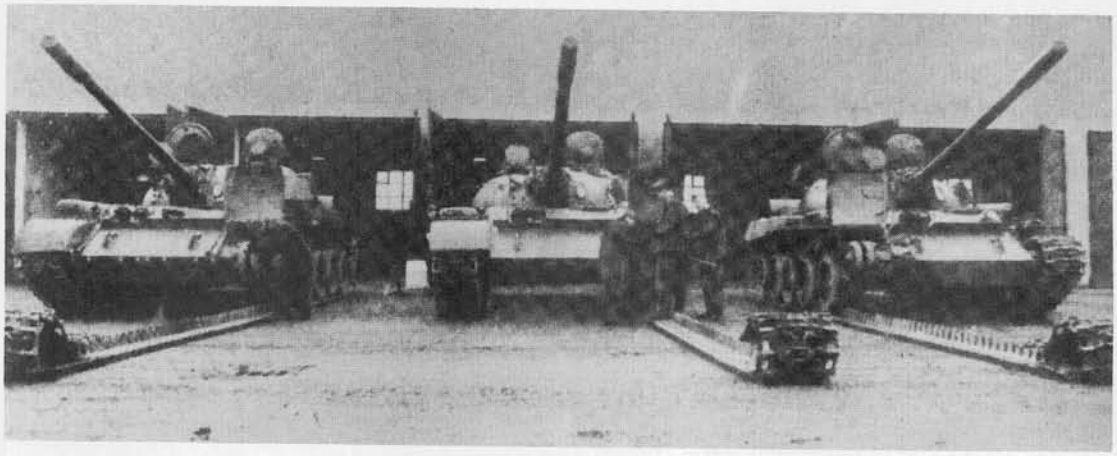


CREW DUTIES

The coaxial machinegun is loaded aboard.



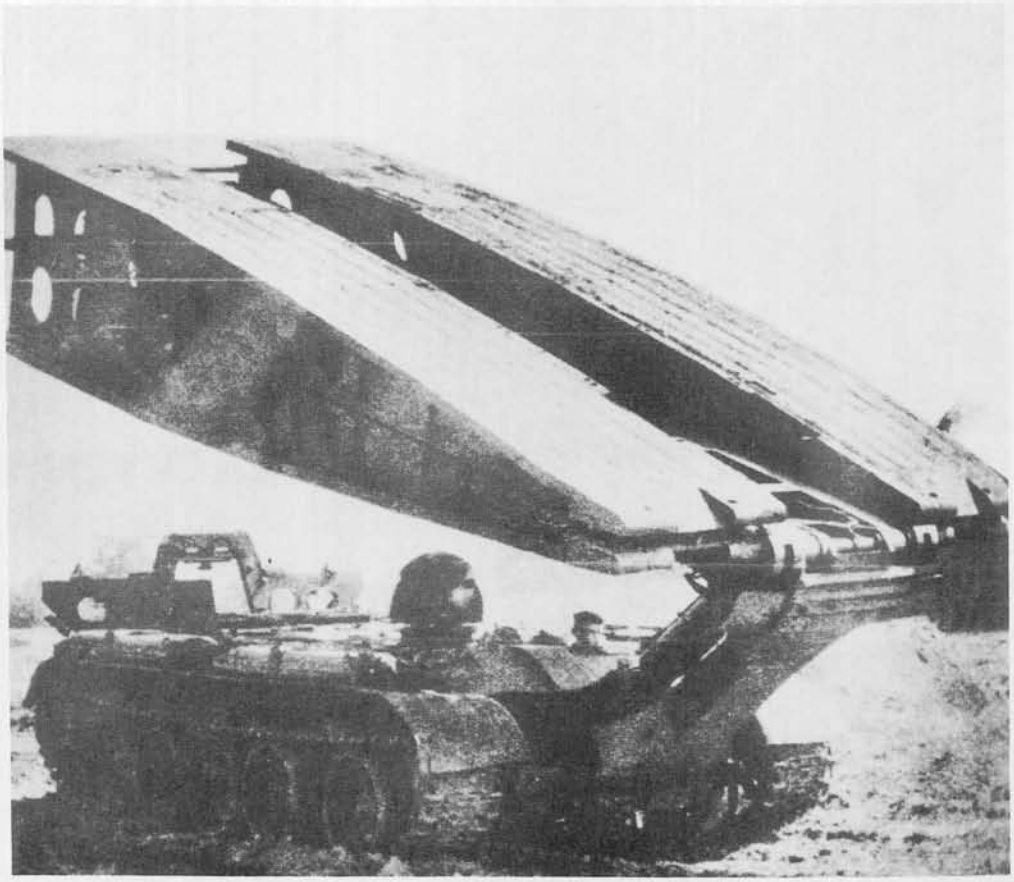
AMMUNITION MAINTENANCE





TRACK MAINTENANCE

TANK-MOUNTED ENGINEER EQUIPMENT



CZECH MT-55 BRIDGE LAYING TANK



MEDIUM TANK WITH
KMT-4 MINE PLOW



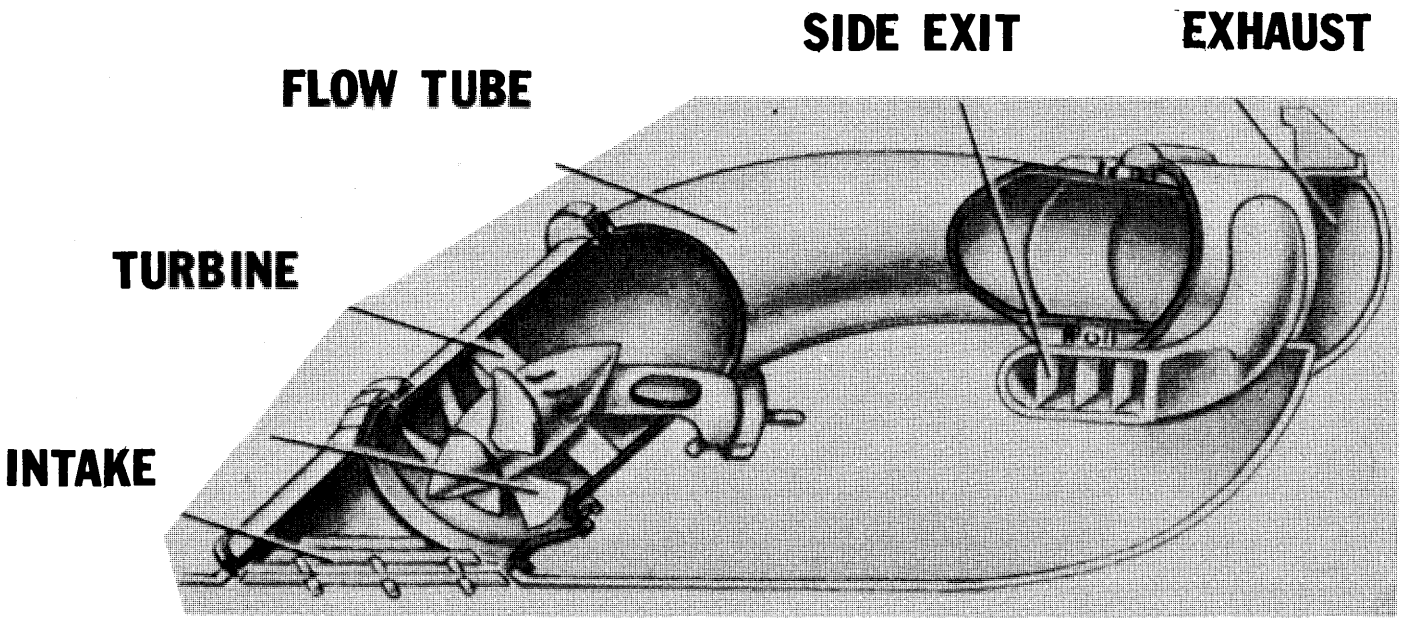
MEDIUM TANK WITH KMT-5 MINE PLOW/ROLLER



MTU BRIDGING TANK



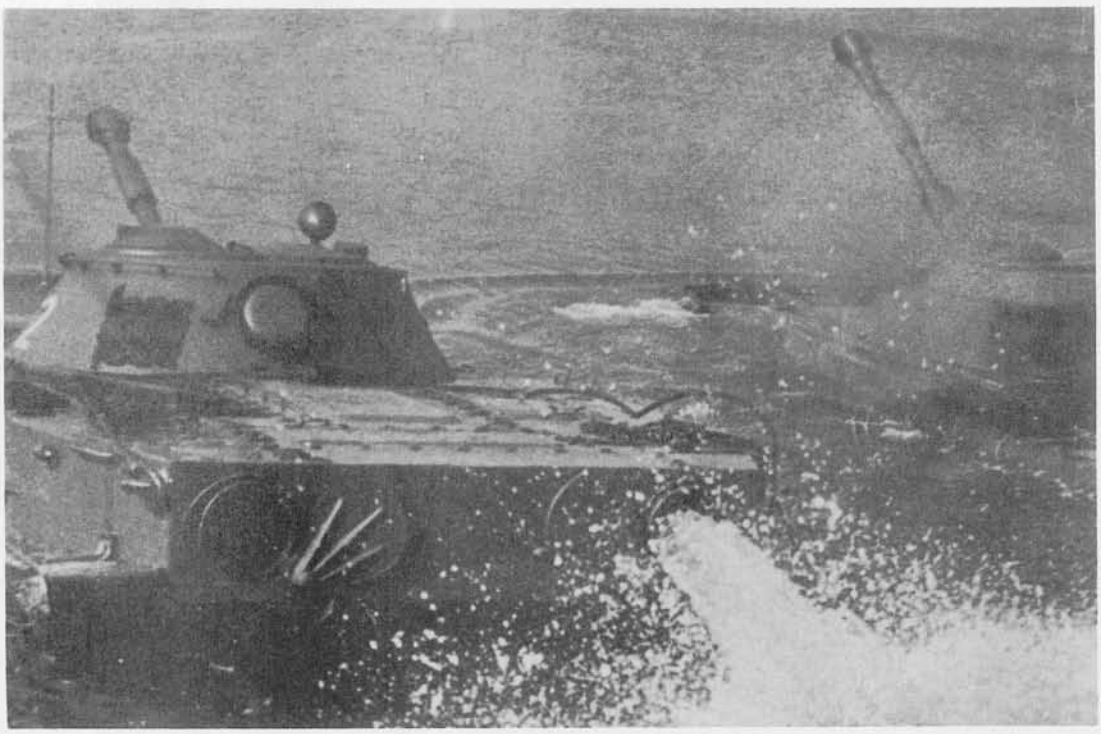
BTU TANK DOZER



WATER JET SYSTEM



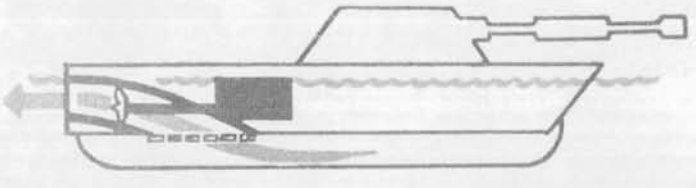
WATER EXIT EITHER SIDE, FOR LEFT OR RIGHT STEER. BOTH SIDES FOR REVERSE

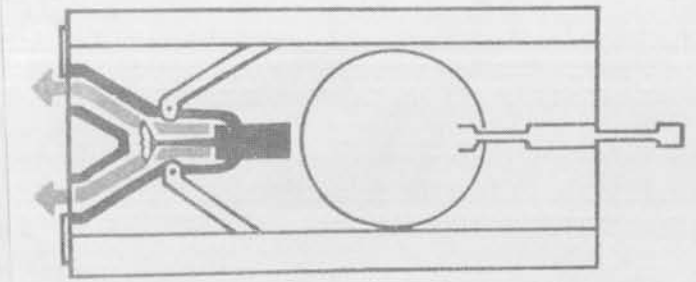


PT-76 WITH WATER JET IN OPERATION



PT-76 WATER JET SYSTEM





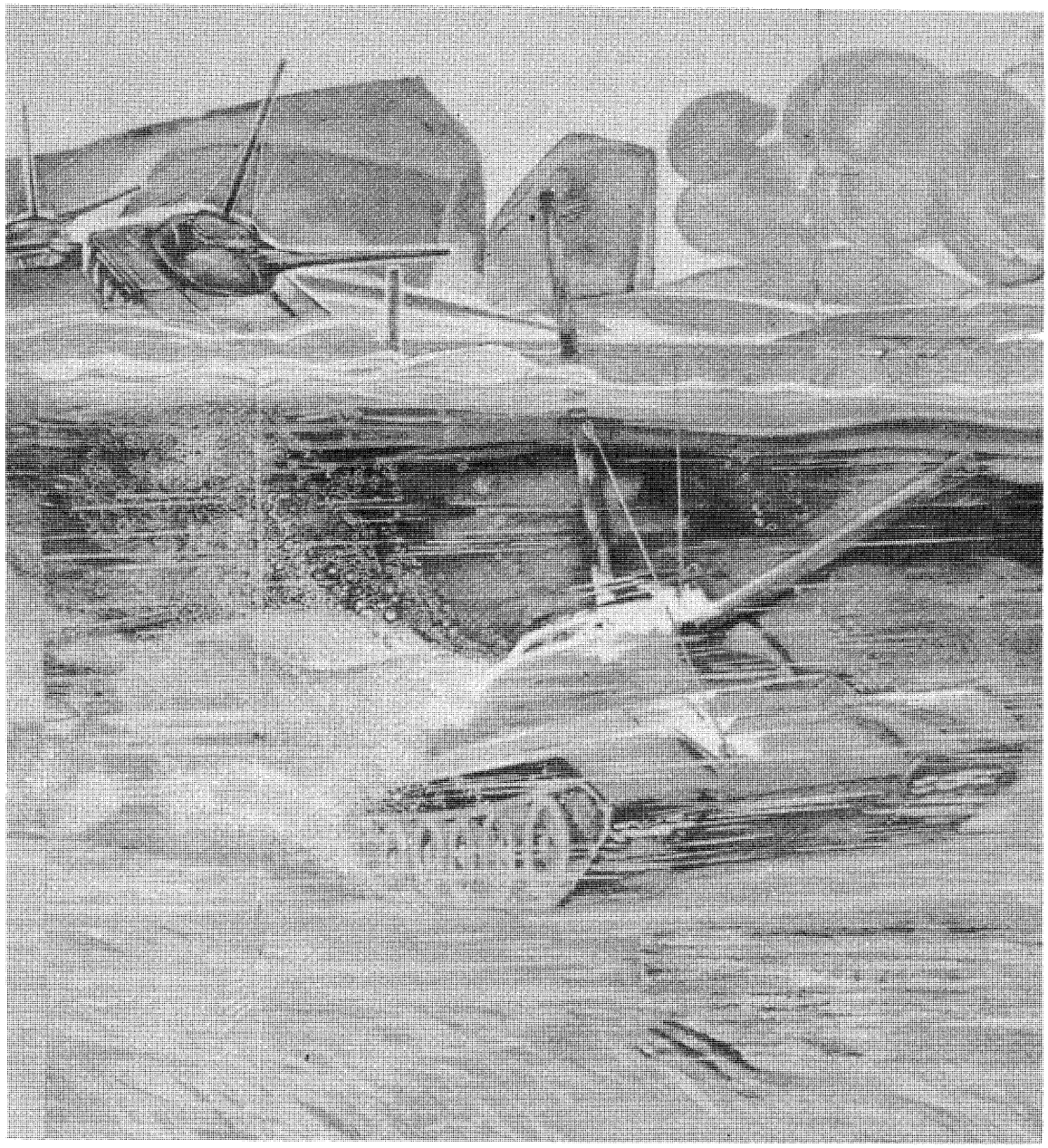




BTR-60PK WATER JET SYSTEM



BRDM-rkh WATER JET SYSTEM

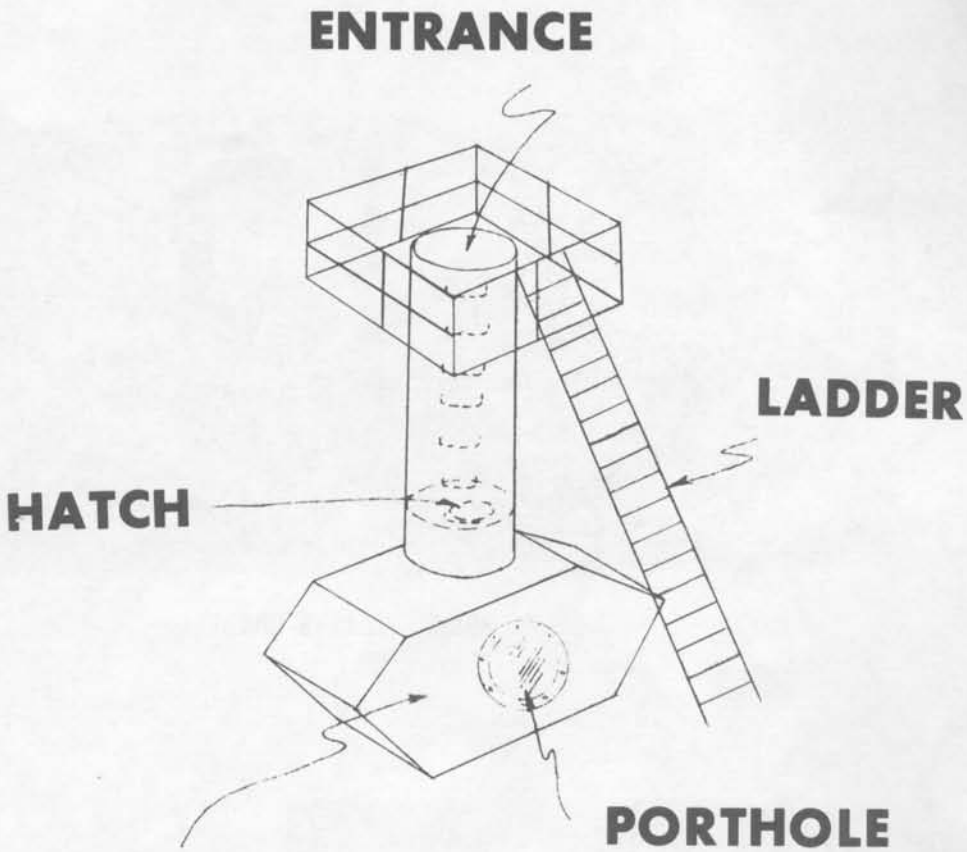


TANK SNORKELING

TANK SNORKELING

A very high percentage of Warsaw Pact medium tanks have the equipment to cross water obstacles by means of deep fording with a snorkel. Late model T-54, all T-55 and all T-62 tanks have snorkeling equipment. Some early model T-54 and T-34(85) medium tanks, as well as various models of medium and heavy tank recovery vehicles are also so equipped. In the heavy tank class only the T-10M has this capability.

The snorkel tube, which supplies air to both crew and engine, is mounted on the turret of the tank, either attached to a hatch or one of the periscope port openings. For training purposes tanks have a large-diameter "chimney" snorkel mounted on the righthand turret hatch. This type of snorkel is also found on tank recovery vehicles as standard equipment. For combat operations a small-diameter snorkel is used. It is mounted usually forward of the righthand turret hatch in place of the loader's periscope. In the march position the snorkel normally is disassembled and stored on the rear of the tank. Depending on the model of the tank and the type of snorkel, preparation for snorkeling varies in time down to 15 minutes. Water obstacles up to 5.5 m in depth can be forded with snorkels.



SNORKEL TRAINING CHAMBER

To prepare their tankers for snorkeling operations, some Warsaw Pact forces employ a Snorkel Training Chamber. Four crewmen wearing their protective masks enter the chamber from the top and descend a "snorkel" into a special turret. This turret, which is equipped with four seats, is then slowly flooded. The crewmen are observed by the instructor through a porthole in the side of the turret. The IP-46M mask serves the dual function of personnel protection against chemical agents and as a self-contained breathing apparatus. The canister contains an oxygen-generating chemical that reacts with carbon dioxide and water vapors.



IP-46M PROTECTIVE MASK



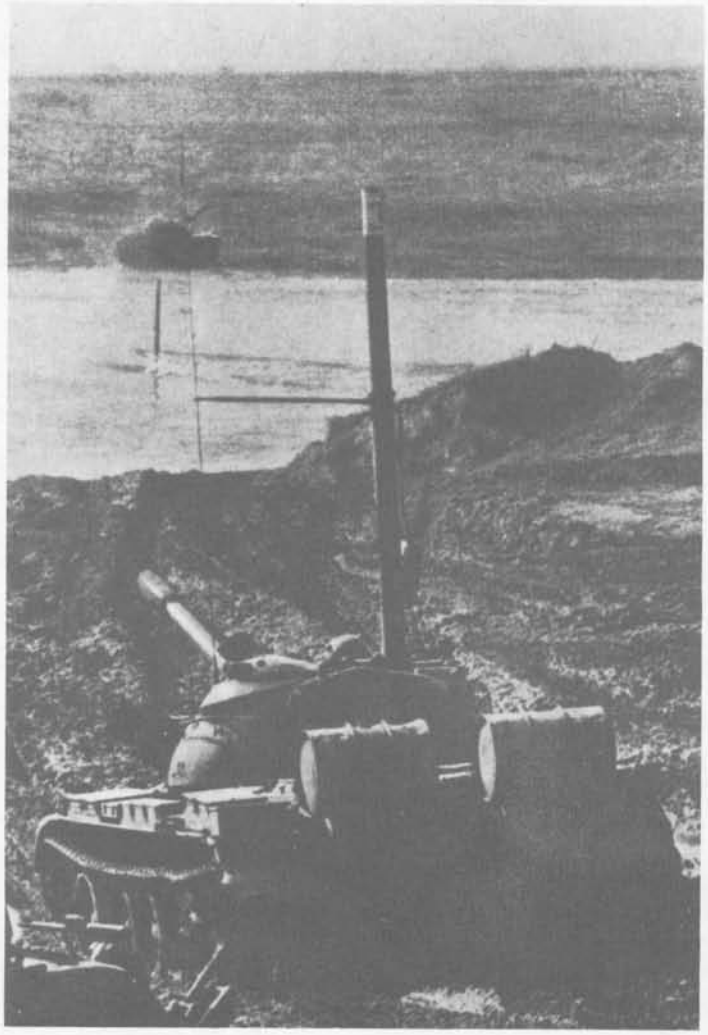
POLISH FOLDING SNORKEL



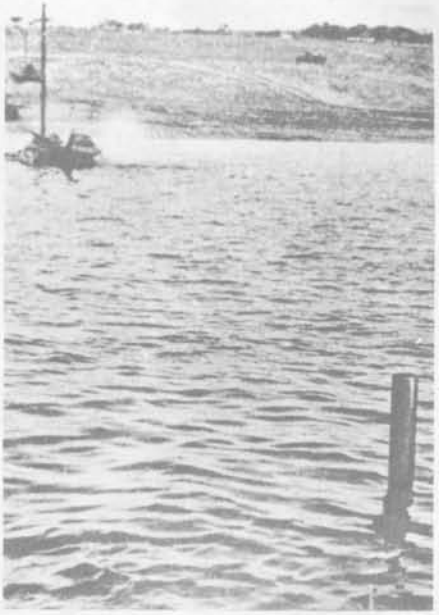
COMBAT SNORKEL ON T-62(ABOVE) AND T-55(RIGHT)



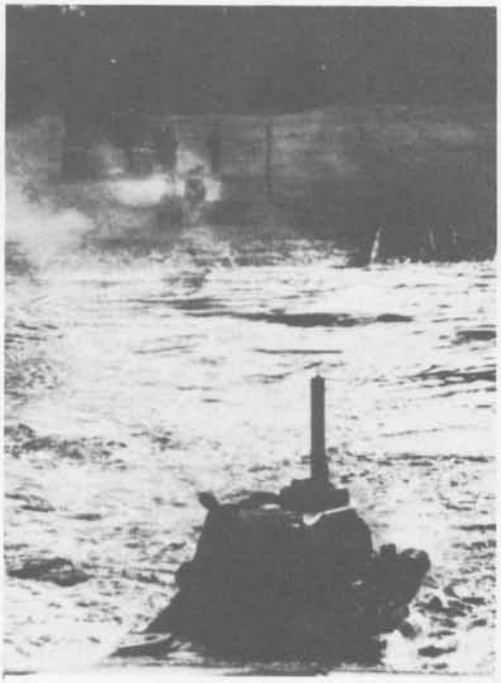
NOTE: Periscope on top of snorkel.



T-55 SNORKELING OPERATION



DEEP WATER SNORKELING



T-34 WITH SHORT SNORKEL

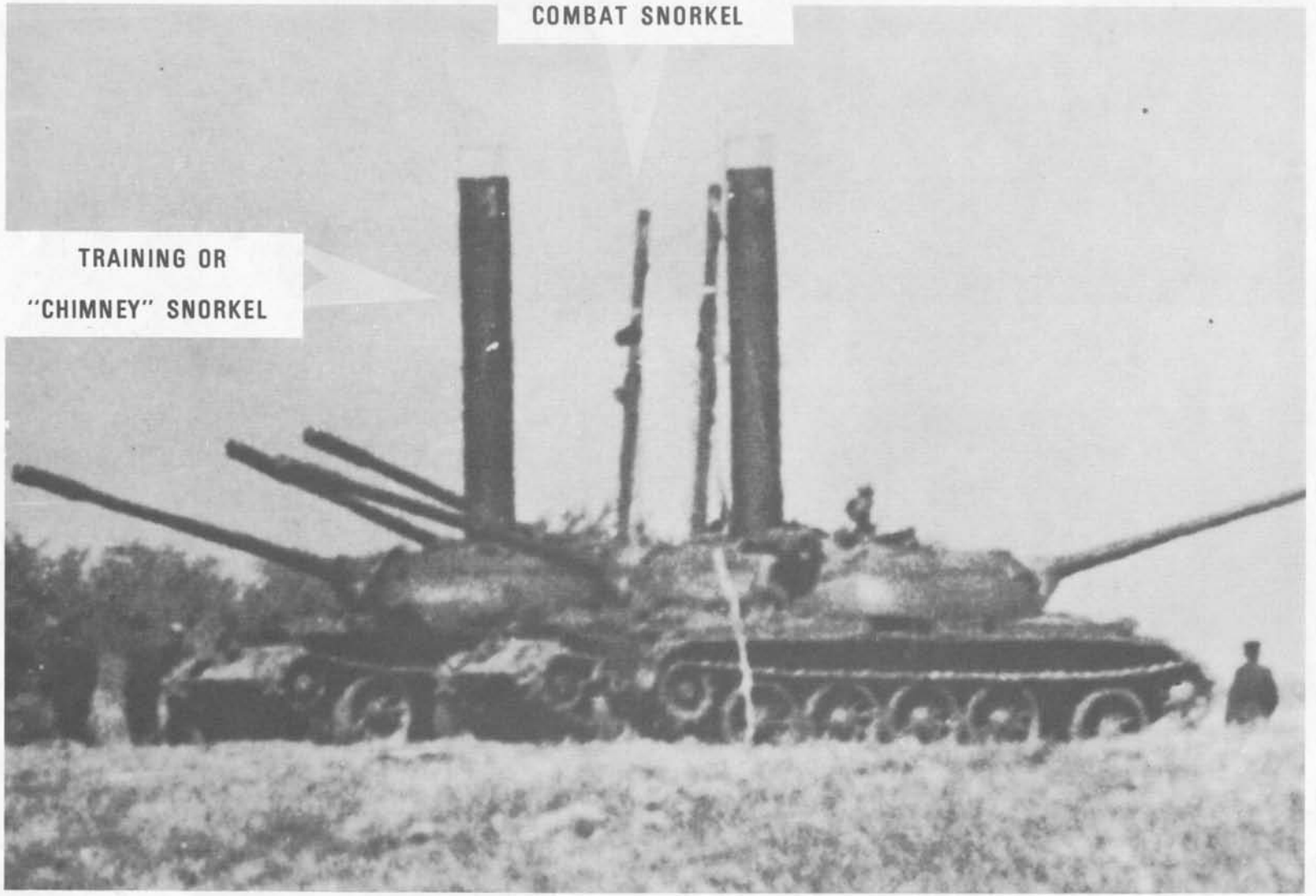


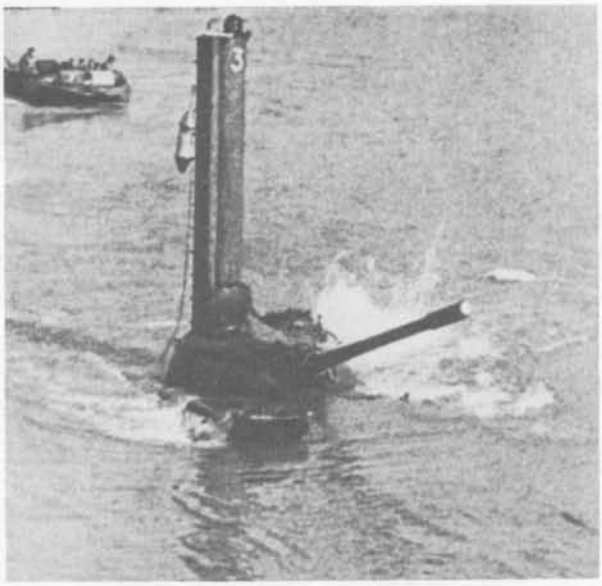
PT-76 WITH "AIR INTAKE" SNORKEL





PREPARATION FOR
SNORKELING OPERATION


COMBAT SNORKEL
TRAINING OR
"CHIMNEY" SNORKEL



TRAINING SNORKEL

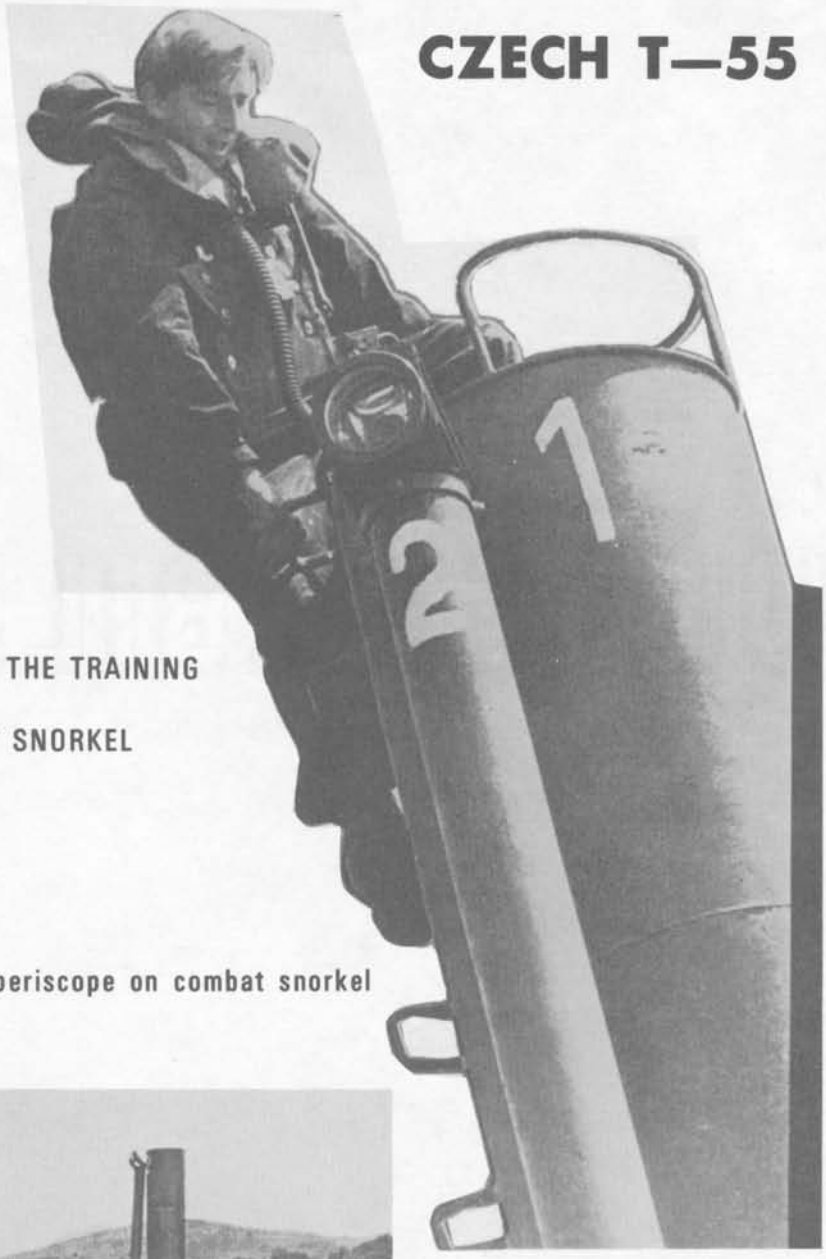


TRAINING SNORKEL



TRAINING SNORKEL

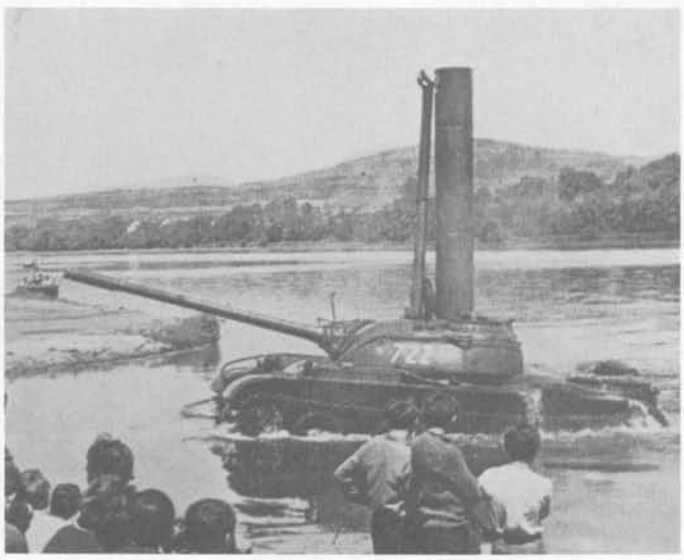
CZECH T—55



MOUNTING BOTH THE TRAINING

AND COMBAT SNORKEL

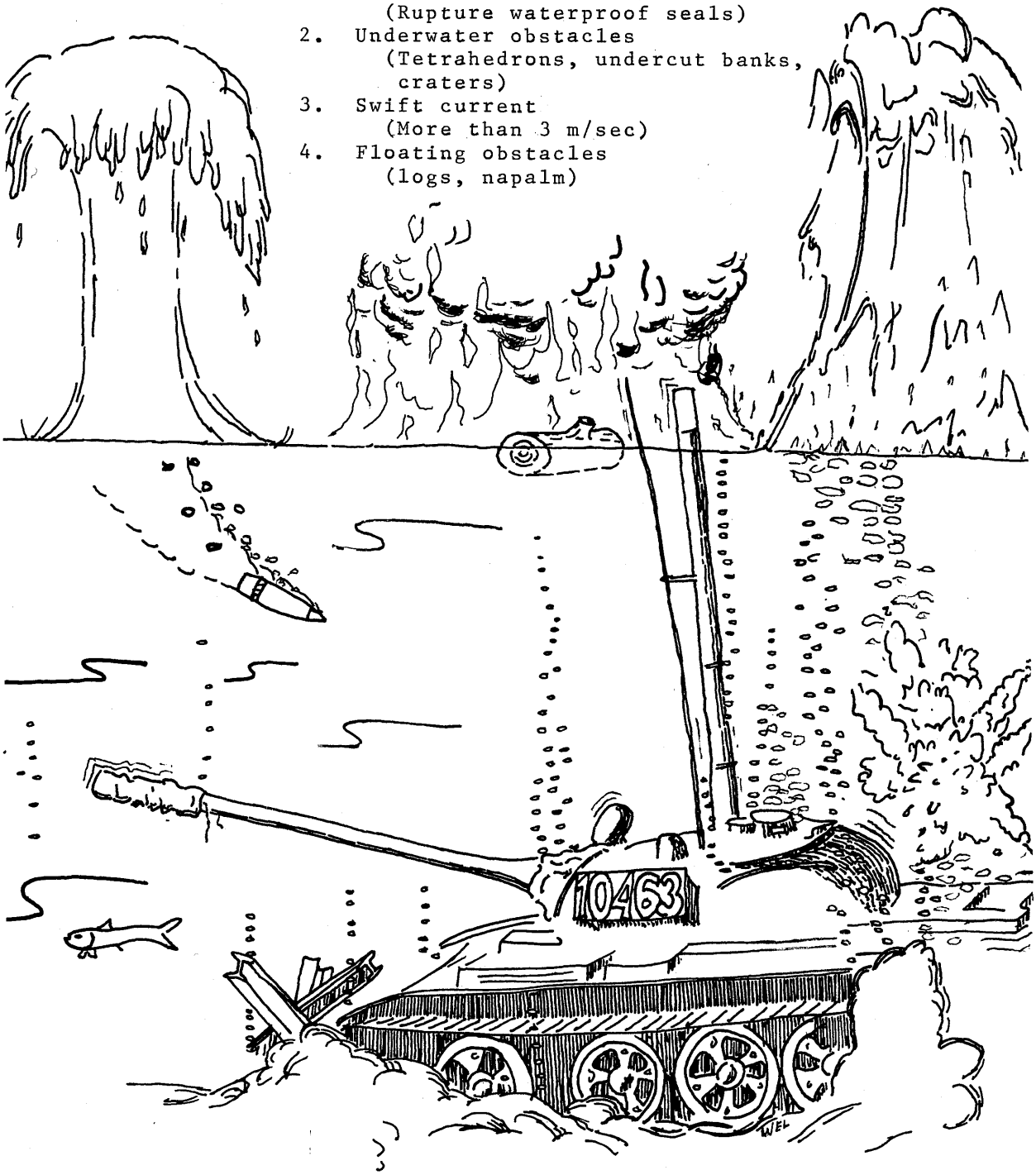
Note periscope on combat snorkel

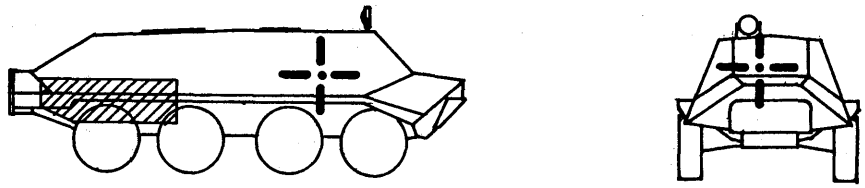


VULNERABILITIES

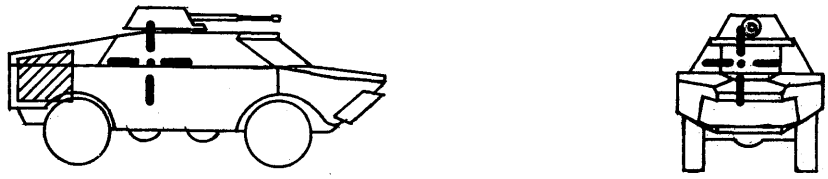
A snorkeling tank is vulnerable to:

1. Delay fused artillery fire
   (Rupture waterproof seals)
2. Underwater obstacles
   (Tetrahedrons, undercut banks, craters)
3. Swift current
   (More than 3 m/sec)
4. Floating obstacles
   (logs, napalm)





BTR-60



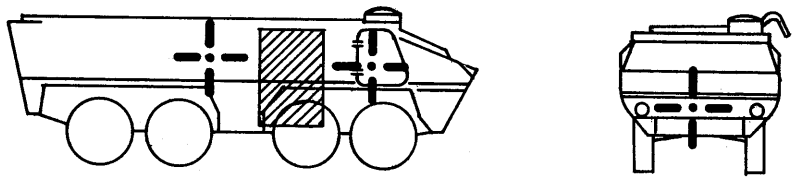
BRDM-2



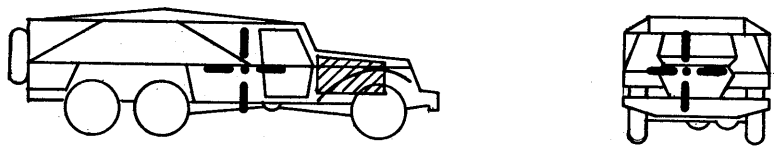
OT-65 (FUG)

ENGINE COMPARTMENT

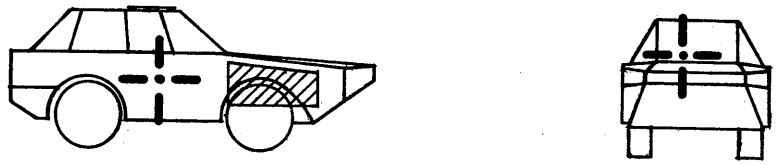
POINT OF MAXIMUM VULNERABILITY



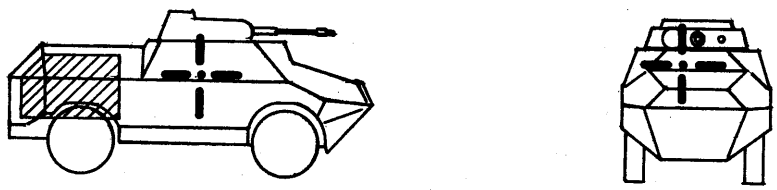
OT-64



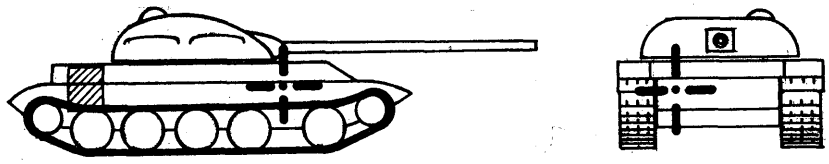
BTR-152



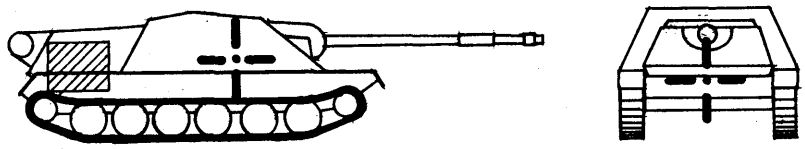
BRDM



FUG-70



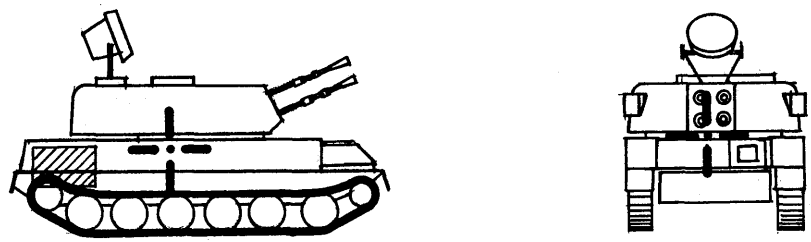
TYPICAL MEDIUM TANK



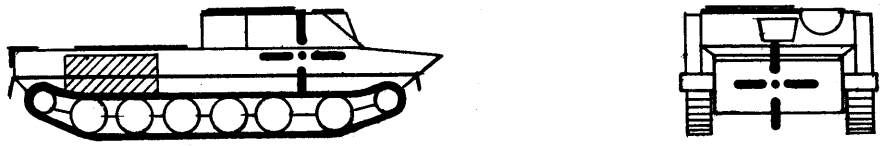
ASU-85



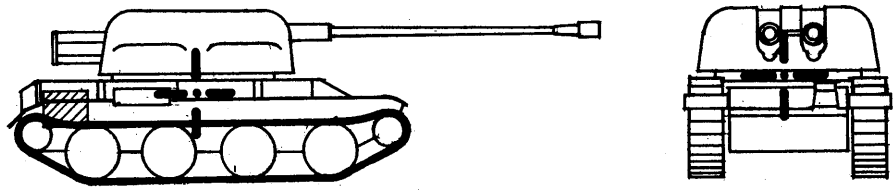
ASU-57



ZSU-23-4



BTR-50



ZSU-57-2



BMP



OT-810

TANK GUNS

76mm tank gun D-56T
76mm tank gun D-56TM
76mm tank gun M1A2
85mm tank gun M1943 (D5-T85)
85mm tank gun M1944 (ZIS-S53)
90mm tank gun M36
100mm tank gun D-10T
100mm tank gun D-10TG
100mm tank gun D-10T2S
115mm tank gun U-5TS
122mm tank gun M1943 (D-25)
122mm tank gun on T-10
122mm tank gun on T-10M

The Soviet 76mm tank guns D-56T and D-56TM used on the PT-76 amphibious light tank were developed from World War II guns used on the T-34(76) and KV-1 tanks. They are ballistically identical with the 76mm divisional gun M1942 (ZIS-3). Externally the D-56T gun can be distinguished by the absence of a bore evacuator and the presence of a multi-baffle muzzle brake. The D-56TM gun has a bore evacuator and a double-baffle muzzle brake. Both guns have semiautomatic vertical sliding wedge breechblocks, hydraulic buffers and hydropneumatic recuperators. The ammunition is fixed. The standard direct-fire sight is the TSh-66. Later model guns have been fitted with a stabilization system.

The United States 76mm tank gun M1A2 is mounted on the M4A3 medium tank of World War II vintage which is still employed by the Yugoslav Army. The same basic gun, in a different mount without coaxial machinegun, is also fitted to the M18 tank destroyer of the Yugoslav Army. Although the gun was originally fitted with a double-baffle muzzle brake, this device has been removed. No bore evacuator is fitted. The United States gun has a semiautomatic horizontal sliding wedge breechblock and a hydro-spring recoil system. The ammunition is fixed.

The Soviet 85mm tank guns are used only on the T-34(85) and T-44 medium tanks which still find limited distribution in the Warsaw Pact armies. These guns were developed originally during World War II from the 85mm antiaircraft gun M1939. The M1943 gun was first used on the KV-85 heavy tank, but soon found its way onto the JS-1 heavy tank and the T-34(85) medium tank. During the war it was replaced by the M1944(ZIS-S53) gun which was also used on the T-44 medium tank. The armament of the SU-85 assault gun also forms part of this series of 85mm guns and is ballistically identical.

None of the Soviet 85mm tank guns have either bore evacuator or muzzle brake. All have vertical sliding wedge semiautomatic breechblocks, hydraulic buffers and a hydropneumatic recuperator. All use fixed ammunition, which is interchangeable with that of the antiaircraft gun. The direct-fire sights for the 85mm tank guns are normally the TSh-16.

The United States 90mm tank gun M36 is mounted on the M47 medium tank which is employed in the Yugoslav Army. This gun has a bore evacuator and a blast deflector. The gun features a semiautomatic vertical sliding wedge breechblock and a recoil system with concentric hydro-spring operation. The fixed ammunition used in the M36 gun cannot be used in either the 90mm antiaircraft gun M1A1 or the 90mm self-propelled gun M3 of the Yugoslav forces. However, their ammunition (except antiaircraft rounds) can be used in the M36 gun.

The Soviet 100mm guns were designed during World War II on the basis of a naval weapon. During that war both a 100mm field gun and a 100mm assault gun appeared in active service. The 100mm tank gun D-10T (originally called the M1944) was used only on test vehicles until the T-54 was adopted after the war. All of these 100mm guns fire the same fixed ammunition and are ballistically identical. The original D-10T gun has no bore evacuator, but later models have one. None of the 100mm tank guns has a muzzle brake. The D-10T has no stabilization and is mounted in the earlier T-54 tanks. The D-10TG has stabilization in the vertical plane and is mounted in T-54A tanks. The still later D-10T2S gun has both vertical and horizontal stabilization and is mounted in T-54B, T-55 and T-55A tanks. It has also been retro-fitted into earlier models. All of these pieces have horizontal sliding wedge breechblocks. The recoil system consists of a hydraulic buffer and a hydropneumatic recuperator. In recent years the combat power of these guns has been increased by the introduction of improved ammunition such as fin-stabilized, non-rotating HEAT rounds and APDS rounds. The standard direct-fire sights are the TSh 2-22 for the D-10T, the TSh 2A-22 for the D-10TG, and the TSh 2B-22 and TSh 2-32 for the D-10T2S. Most of these guns have also been fitted with infrared night-sighting equipment.

The Soviet 115mm tank gun U-5TS is a smoothbore weapon firing fin-stabilized fixed ammunition. It has no muzzle brake, but a bore evacuator is fitted. Like the 100mm D-10T2S, the 115mm gun is fitted with a two-plane stabilization system and infrared night-sighting equipment. To date the gun has been identified only with the T-62 medium tank.

The oldest model 122mm tank gun is the M1943 (D-25) which was developed during World War II from the 122mm corps gun M1931/37 (A-19). It differs primarily in that it is somewhat shorter and lighter, has a semiautomatic vertical sliding wedge breechblock, and a double-baffle muzzle brake. Like the field gun, it employs a hydraulic buffer and a hydropneumatic recuperator. No bore evacuator is fitted. This tank gun, which was developed for the JS-2 heavy tank, was later fitted on the JS-3 and JS-4 heavies as well. It was also adopted as the D-25S for the JSU-122A heavy assault gun. The ammunition is of the variable-charge, case-type, separate-loading variety such as that used with the 122mm corps gun M1931/37 (A-19). The standard direct-fire sight is the TSh-17.

Improved 122mm guns were developed for mounting on the T-10 and T-10M heavy tanks. The T-10 gun has a bore evacuator and a double-baffle muzzle brake. It is closely related to the 122mm field gun D-74 and has a similar performance. The further improved T-10M gun also has a bore evacuator but is fitted with a long multi-slotted muzzle brake. Two-plane stabilization and infrared night-sighting equipment is fitted as well.

TANK GUNS OF SOVIET ORIGIN

			D-56T	ZIS-S53	D-10T
Caliber		mm	76.2	85	100
Length of tube in cals			42	54.6	56
Length of tube overall		mm	3455	4641	5608
Weight		mm	1150	1148	1948
Elevation		°	+30	+25	+17
Depression		°	-4	-5	-4
Traverse		°	360	360	360
Rate of fire		rpm	15	3-4	7
Projectile weight:	HE	kg	6.2	9.5	15.7
	APHE	kg	6.5	9.3	15.9
	HVAP	kg	3.1	5.0	---
	APDS	kg	---	---	
	HEAT	kg	4.0	---	12.2
Muzzle velocity:	HE	m/s	680	792	900
	APHE	m/s	655	792	1000
	HVAP	m/s	965	1030	---
	APDS	m/s	---	---	
	HEAT	m/s	325	---	900
Maximum range*		m	12100	13300	14600
Pointblank range:	APHE	m	820	950	1070
2m high target	HVAP	m	1000	1150	---
	APDS	m	---	---	
	HEAT	m	500	---	900
Armor penetration:	APHE	mm	61	102	185
0°/1000m	HVAP	mm	58	130	---
	APDS	mm	---	---	
0°/any range	HEAT	mm	120	---	380

*limited by elevation of mount

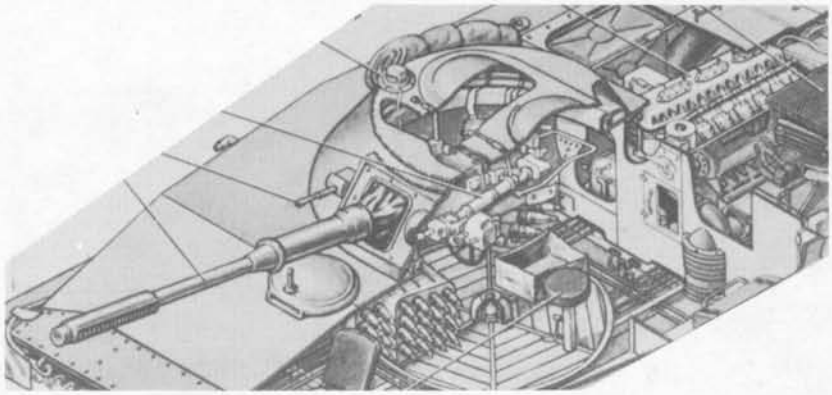
			115mm U-5TS	122mm D-25	122mm T-10 Tk
Caliber		mm	115	121.92	121.92
Length of tube in cals			55	43	47
Length of tube overall		mm	6325	5930	6450
Weight		kg		2715	2270
Elevation		°	+17	+20	+17
Depression		°	-3	-3	-3
Traverse		°	360	360	360
Rate of fire		rpm	5	3	3
Projectile weight:	HE	kg	17.7	25.5	27.3
	APHE	kg	---	25.0	25.0
	HVAP	kg	---	---	---
	APDS	kg	6.8	---	---
	HEAT	kg	11.8	---	*
Muzzle velocity:	HE	m/s		781	885
	APHE	m/s	---	781	885
	HVAP	m/s	---	---	---
	APDS	m/s	1500+	---	---
	HEAT	m/s	1000	---	---
Maximum range**		m		14600	16600
Pointblank range:	APHE	m	---	900	1070
2m high target	HVAP	m	---	---	---
	APDS	m		---	---
	HEAT	m		---	---
Armor penetration:	APHE	mm	---	160	185
0°/1000m	HVAP	mm	---	---	---
	APDS	mm	300	---	---
0°/any range	HEAT	mm	450	---	---

*the gun of the T-10M fires non-rotating fin-stabilized HEAT ammunition with a penetration of 460mm.
**limited by elevation of mount

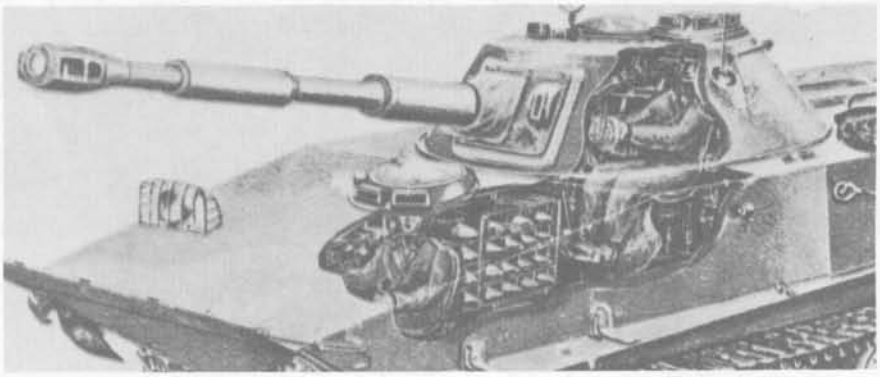
TANK GUNS OF UNITED STATES ORIGIN

			M1A2	M36
Caliber		mm	76.2	90
Length of tube in cals			52.8	52.5
Length of tube overall		mm	4159**	4718***
Weight		kg	1108**	1203
Elevation		°	+25	+19
Depression		°	-10	-5
Traverse		°	360	360
Rate of fire		rpm	20	8
Projectile weight:	HE	rg	5.84	8.45
	APC	kg	7.0	10.94
	HVAP	kg	4.25	5.53
	APDS	kg	---	---
	HEAT	kg	---	7.35
Muzzle velocity:	HE	m/s	824	820
	APC	m/s	792	854
	HVAP	m/s	1036	1167
	APDS	m/s	---	---
	HEAT	m/s	---	820
Maximum range*		m		13436
Pointblank range:	APC	m	900	1050
2m high target:	HVAP	m		1325
	APDS	m	---	---
	HEAT	m	---	950
Armor penetration:	APC	mm	109	147
0°/1000m	HVAP	mm	178	
	APDS	mm	---	---
0°/any range	HEAT	mm	---	

*limited by maximum carriage elevation
**with muzzle brake
***without muzzle brake



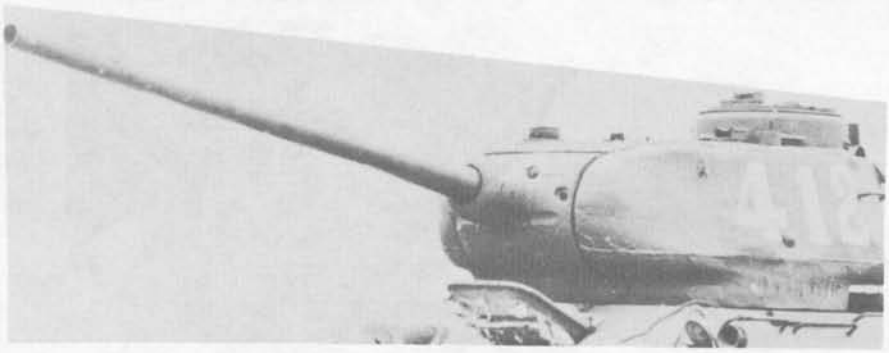
76mm tank gun D–56T



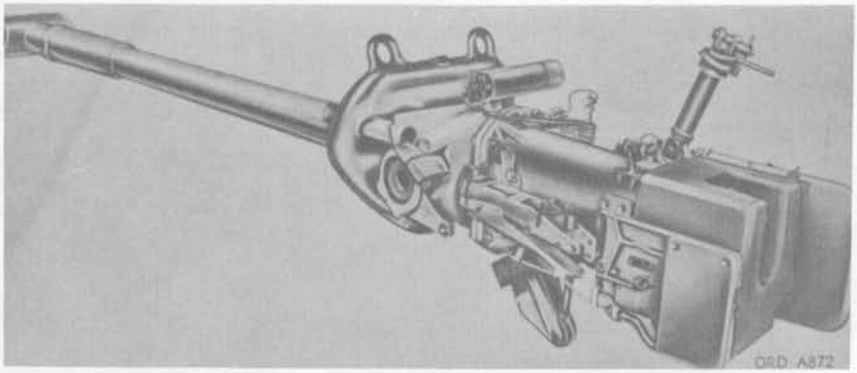
76mm tank gun D–56TM



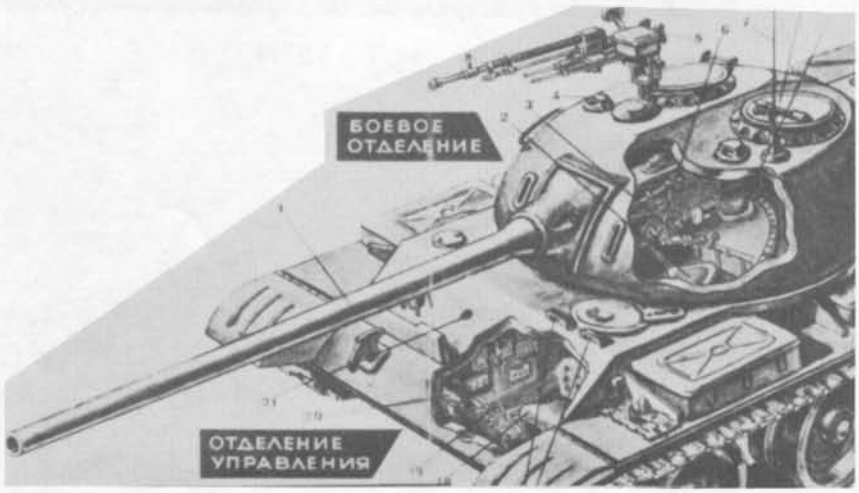
76 mm tank gun M1A2



85 mm tank gun M1944 (ZIS–S53)



90 mm tank gun M–36



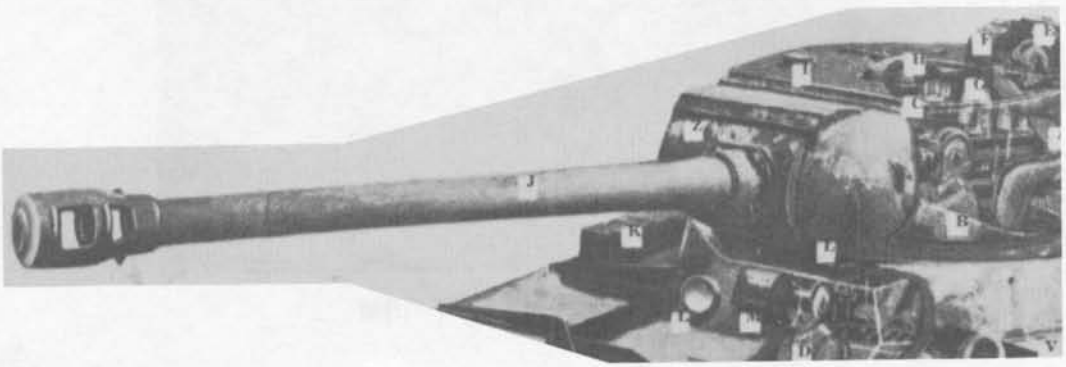
100 mm tank D–10T



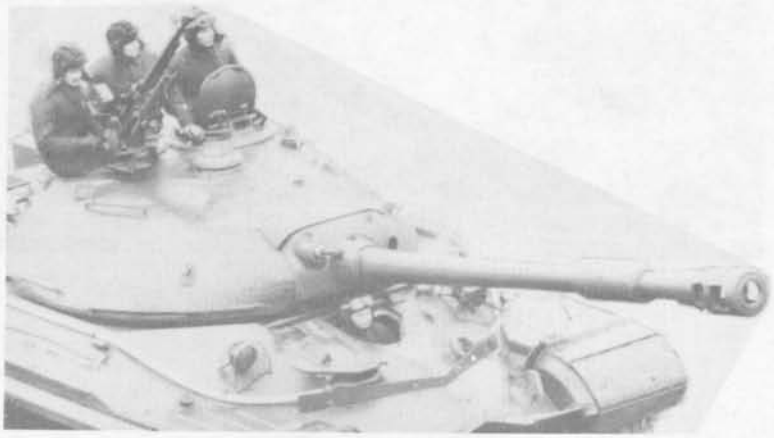
100 mm tank gun D–10T2S



115 mm tank gun U–5TS



122 mm tank gun M1943 (D–25)



122 mm tank gun on T–10



122 mm tank gun on T–10M

OTHER ARMORED VEHICLE CANNON

37mm gun M6
57mm gun Ch-51
57mm gun Ch-51M
76mm gun M1942/43
76mm gun M1A1C
76mm gun on BMP
85mm gun M1943 (D5-S85)
85mm gun M1943 (D5-S85A)
85mm gun on ASU-85
90mm gun M3
100 mm gun M1944 (D-10S)
105mm howitzer M2A1
122mm gun M1931/44 (A-19S)
122mm gun M1944 (D-25S)
152mm gun M1937/43 (ML-20S)

The United States 37mm gun M6 was developed before World War II and was used during the war on a variety of tanks and armored cars. In the Yugoslav Army it is the main armament of the United States M8 "Greyhound" light armored car. Although the gun has but a limited performance against modern tanks, it can be used with success against lightly armored vehicles such as armored personnel carriers and scout cars. The M6 has neither bore evacuator nor muzzle brake. It has a hydro-spring recoil system, fires fixed ammunition and uses a semi-automatic vertical sliding wedge breechblock.

The Soviet 57mm Ch-51 and Ch-51M guns are mounted on the light airborne assault gun ASU-57. The Ch-51 is the original gun and can be distinguished by the very long multi-slotted muzzle brake. The later Ch-51M is ballistically identical, but has a conventional double-baffle muzzle brake. Neither weapon has a bore evacuator. Both have semiautomatic vertical sliding wedge breechblocks and hydro-spring recoil systems. Both Ch-51 and Ch-51M guns are postwar developments based on the wartime 57mm antitank gun M1943 (ZIS-2) and closely resemble the Ch-26 auxiliary-propelled antitank gun. All of these weapons have essentially the same performance and fire the same fixed ammunition, which is <u>not</u> interchangeable with that of the 57mm antiaircraft guns. The direct-fire sight for the Ch-51 guns is the OP2-50.

The Soviet 76mm gun M1942/43, which is mounted on the SU-76 assault gun, is a 76mm divisional gun M1942 (ZIS-3) which has been modified as to permit its mounting on the tracked chassis. The weapon has no bore evacuator, but is fitted with a double-baffle muzzle brake. The recoil system features a hydraulic buffer and a hydropneumatic recuperator. The breechblock is of the semiautomatic vertical sliding wedge variety. The M1942/43 fires the same fixed ammunition as the 76mm tank gun D-56T. Sighting is accomplished by the M1940 quadrant sight.

The 76mm weapon mounted on the BMP infantry combat vehicle is a smoothbore, short-recoil gun firing fin-stabilized ammunition. It has neither bore evacuator nor muzzle brake.

The United States 76mm gun M1A1C is mounted on the M18 tank destroyer which is employed by the Yugoslav Army. The same basic gun is also mounted as the main armament of the M4A3 medium tank of the Yugoslav forces. The M1A1C has semiautomatic sliding wedge breechblock tipped at 45 degrees to the right, a hydro-spring recoil system, and is fitted with a double-baffle muzzle brake. No bore evacuator is present. The gun fires fixed ammunition.

The Soviet 85mm gun M1943, in both the D5-S85 and D5-S85A versions, is mounted on the SU-85 medium assault gun. Like the 85mm tank guns it was developed from the 85mm antiaircraft gun M1939. Neither version of the M1943 has bore evacuator or muzzle brake. They both have semiautomatic vertical sliding wedge breechblocks, but of different models. The recoil system has a hydraulic buffer and a hydropneumatic recuperator. The direct-fire sight is normally the TSh-15.

The 85mm gun mounted on the Soviet ASU-85 airborne assault gun is a development of the M1943 gun. It can be distinguished by the presence of both a bore evacuator and a double-baffle muzzle brake. It is also equipped with infrared night-sighting devices.

In the Yugoslav Army the 90mm gun M3 is used on the United States M36 tank destroyer. The gun was developed from the World War II 90mm antiaircraft gun and uses the same ground fire ammunition. It cannot, however, use the ammunition of the 90mm tank gun M36 on the M47 medium tank, although the reverse is true. Although originally fitted with a double-baffle muzzle brake, this device is not normally used in Yugoslavia on the piece. There is also no bore evacuator. The recoil system of the M3 is of the hydro-spring variety. As in the case of the other 90mm guns a semiautomatic vertical sliding wedge breechblock is used. The ammunition is fixed.

The Soviet 100mm gun M1944 (D-10S) was developed from a naval weapon and saw action during World War II mounted on the SU-100 medium assault gun. The same basic gun was mounted after the war on the T-54 tank. The D-10S recoil system consists of a hydraulic buffer and a hydropneumatic recuperator. The breechblock is of the semiautomatic horizontal sliding wedge type. Neither bore evacuator nor muzzle brake are fitted. The fixed ammunition is the same as that fired by the other 100mm rifled guns. Direct-fire sights are either the TSh-19 or the TSh-20.

The United States 105mm howitzer M2A1 is found in the Yugoslav Army in both a towed field carriage and on the M7 tracked self-propelled mount. It fires semi-fixed ammunition of the same types used by the Yugoslav towed 105mm howitzer M-56. The M2A1 has a hydropneumatic recoil system and uses a hand-operated horizontal sliding wedge breechblock. Neither bore evacuator nor muzzle brake are fitted.

Two different main guns have been fitted to the Soviet JSU-122 heavy assault guns. The original JSU-122 used the M1931/44 (A-19S) gun which is a slightly modified version of the M1931/37 (A-19) corps gun. It has neither bore evacuator nor muzzle brake. The breechblock is a hand-operated screw-type. The recoil system employs a hydraulic buffer and a hydropneumatic recuperator. The JSU-122 used a modified version of the D-25 tank gun designated as the M1944 (D-25S). This weapon can be distinguished by the thinner tube tipped with a large double-baffle muzzle brake. It has a semiautomatic vertical sliding wedge breechblock which permits a higher rate of fire. The ammunition for these guns is of the same variable-charge, case-type, separate-loading variety used in the 122mm corps guns. The standard direct-fire sights are the ST-18 for the A-19S and the TSh-17 for the D-25S.

The heaviest piece used on Soviet assault guns is the 152mm gun M1937/43 (ML-20S) which was first mounted on the SU-152 and later on the JSU-152, an adaptation of the 152mm gun-howitzer M1937 (ML-20). This weapon can be recognized by the large, thick tube with a large multi-baffle muzzle brake. No bore evacuator is mounted. The recoil system is the same as that of the 122mm gun M1937/44 (A-19S) on the JSU-122. The ammunition is case-type, variable-charge, separate-loading. The standard direct-fire sight is the ST-10.

Although the three guns mounted on the JSU have always retained their basic designation, post World War II changes in the year model nomenclature sometimes results in confusion. The table below should clarify this matter.

Weapon	Wartime Model	Postwar Model
122mm gun A-19S	M1944	M1931/44
122mm gun D-25S	M1943	M1944
152mm gun ML-20S	M1943	M1937/43

CANNON OF SOVIET ORIGIN

			Ch-51M	M1942/43	D5-S85
Caliber		mm	57	76.2	85
Length of tube in cals			69.5	42	51.6***
Length of tube overall		mm	4233**	3455	4386
Weight		kg	443	313	1148
Elevation		°	+12	+25	+25
Depression		°	-5	-5	-5
Traverse		°	16	30	20
Rate of fire		rpm	6-10	15	3-4
Projectile weight:	HE	kg	2.8	6.2	9.5
	APHE	kg	3.1	6.5	9.3
	HVAP	kg	1.8	3.1	5.0
	APDS	kg	---	---	---
	HEAT	kg	---	4.0	---
Muzzle velocity:	HE	m/s	695	680	792
	APHE	m/s	980	655	792
	HVAP	m/s	1255	965	1030
	APDS	m/s	---	---	---
	HEAT	m/s	---	325	---
Maximum range*		m	6100	11200	13300
Pointblank range:	APHE	m	1150	820	950
2m high target	HVAP	m	1220	1000	1150
	APDS	m	---	---	---
	HEAT	m	---	500	---
Armor penetration:	APHE	mm	85	61	102
0°/1000m	HVAP	mm	100	58	130
	APDS	mm	---	---	---
	HEAT	mm	---	120	---

*limited by maximum carriage elevation
**4584mm for Ch-51 gun
***D5-S85A is 48.8 calibers long, but has same length of rifling as other 85mm guns

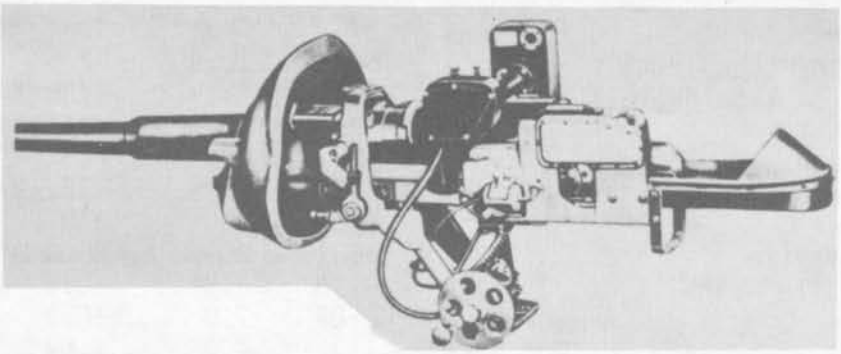
			D-10S	D-25S	ML-20S
Caliber		mm	100	121.92	152.4
Length of tube in cals			56	43	28.8
Length of tube overall		mm	5608	5930	4925
Weight		kg	1435	2715	2340
Elevation		°	+20**	+16	+20
Depression		°	-2	-3	-3
Traverse		°	16	14	10
Rate of fire		rpm	7	3	2-3
Projectile weight:	HE	kg	15.7	25.5	43.6
	APHE	kg	15.9	25.0	48.8
	HVAP	kg	---	---	---
	APDS	kg		---	---
	HEAT	kg	12.2	---	---
Muzzle velocity:	HE	m/s	900	781	655
	APHE	m/s	1000	781	600
	HVAP	m/s	---	---	---
	APDS	m/s		---	---
	HEAT	m/s	900	---	---
Maximum range*		m	15400	13400	9000
Pointblank range:	APHE	m	1070	900	800
2m high target	HVAP	m	---	---	---
	APDS	m		---	---
	HEAT	m	900	---	---
Armor penetration:	APHE	mm	185	160	124
0°/1000m	HVAP	mm	---	---	---
	APDS	mm		---	---
0°/any range	HEAT	mm	380	---	---

*limited by maximum carriage elevation
**early models limited to +17°

CANNON OF UNITED STATES ORIGIN

			M6	M1A1C	M3	M2A1
Caliber		mm	37	76.2	90	105
Length of tube in cals			53.2	52.8	52.5	24.5
Length of tube overall		mm	2096	4159	4728**	2574
Weight		kg		1108	1044***	921
Elevation		°	+20	+20	+30	+35
Depression		°	-10	-9	-10	-5
Traverse		°	360	360	360	45
Rate of fire		rpm	15-20	20	8	8
Projectile weight:	HE	kg	0.73	5.84	10.0	15.0
	APHE	kg	0.87	7.0	10.9	---
	HVAP	kg	---	4.25	7.63	---
	APDS	kg	---	---	---	---
	HEAT	kg	---	---	---	13.2
Muzzle velocity:	HE	m/s	875	824	824	473
	APHE	m/s	792	792	854	---
	HVAP	m/s	---	1036	1022	---
	APDS	m/s	---	---	---	---
	HEAT	m/s	---	---	---	381
Maximum range*		m			16187	10500
Pointblank range:	APHE	m	1000	900	1050	---
2m high target	HVAP	m			1210	---
	APDS	m	---	---	---	---
	HEAT	m	---	---	---	500
Armor penetration:	APHE	mm	50	109	147	---
0°/1000m	HVAP	mm	---	178	252	---
	APDS	mm	---	---	---	---
0°/any range	HEAT	mm	---	---	---	102

*limited by maximum carriage elevation
**without muzzle brake
***with muzzle brake



37 mm gun M6



57 mm gun Ch–51



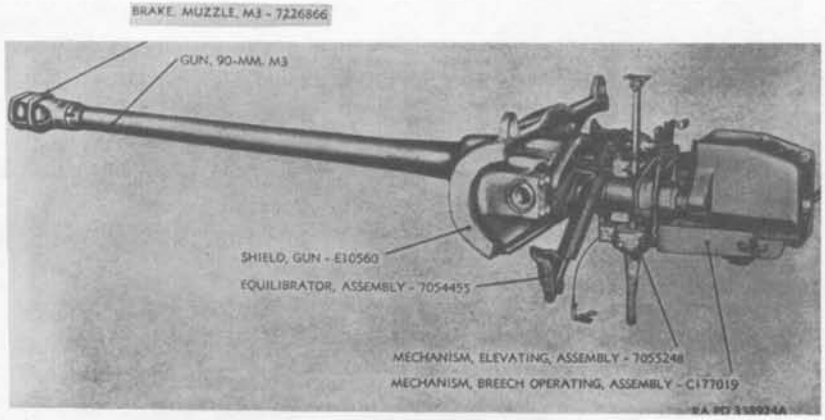
57 mm gun Ch–51M



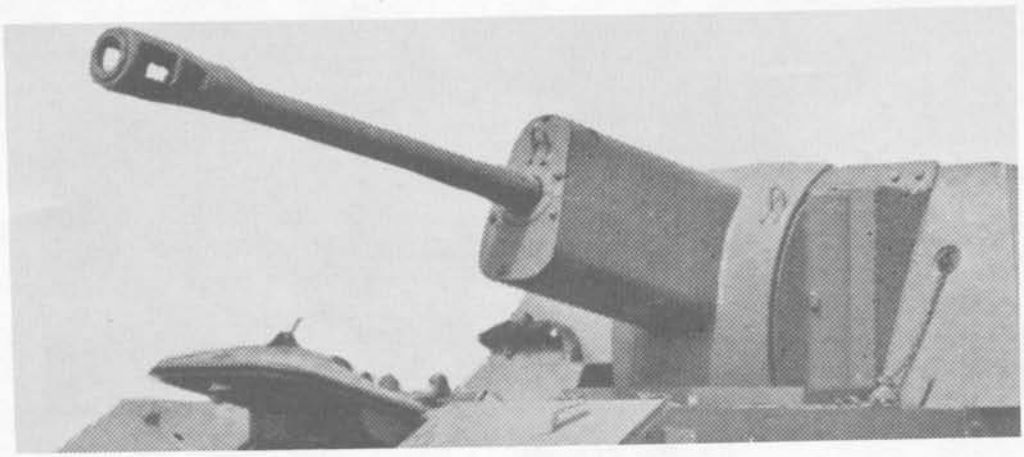
85 mm gun M1943 (D5–S85)



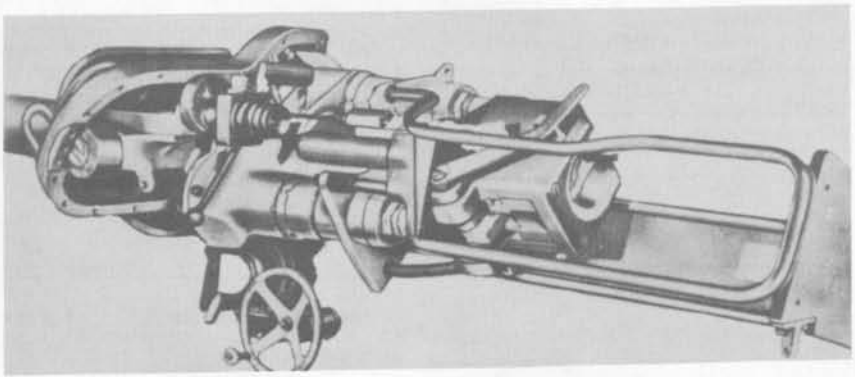
85 mm gun on ASU–85



90 mm gun M3



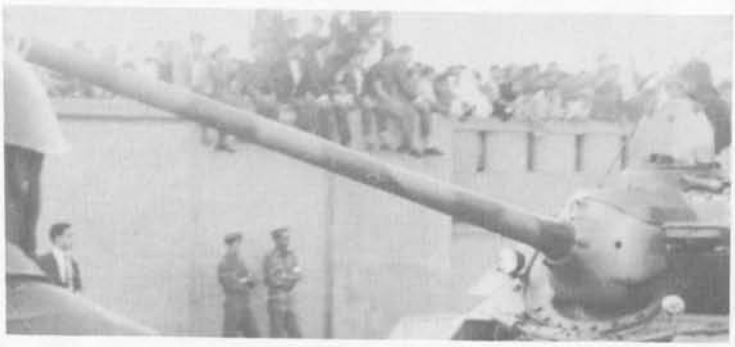
76 mm gun M1942/43



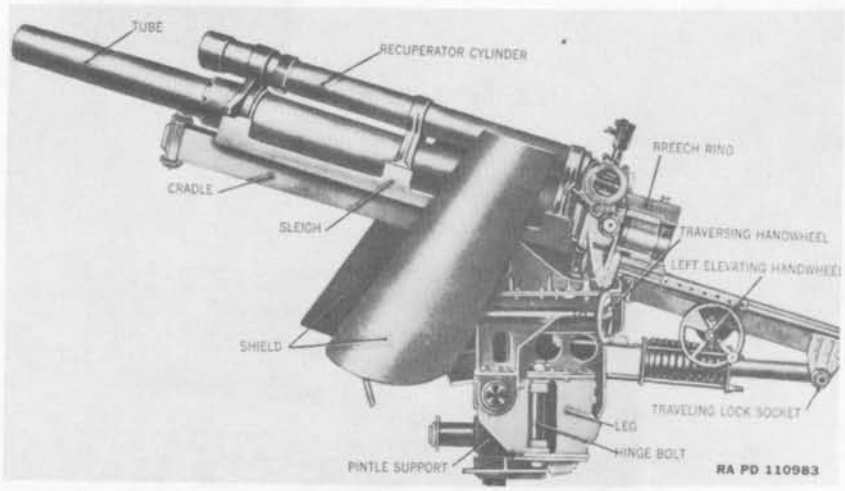
76 mm gun M1A1C



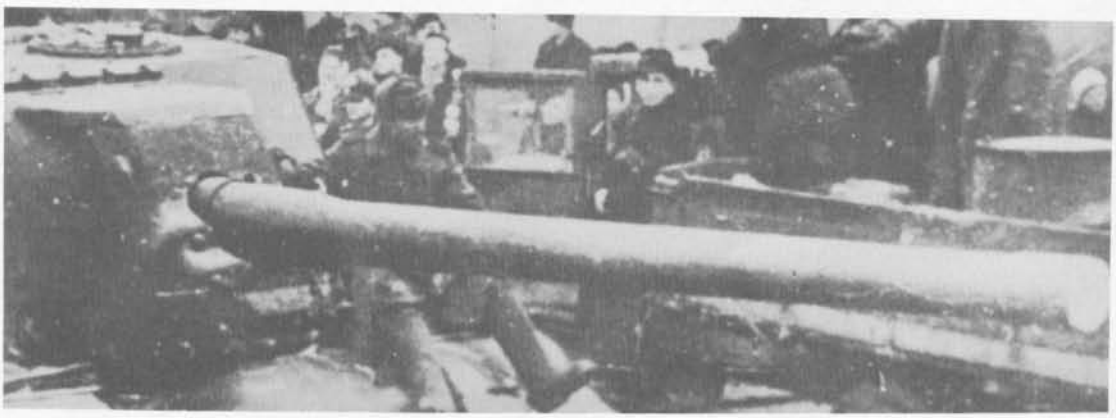
76 mm gun on BMP



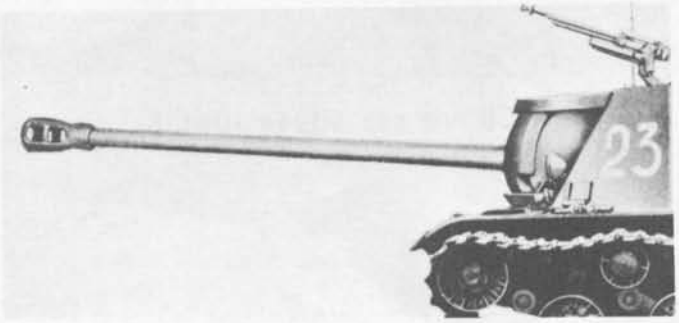
100 mm gun M1944 (D–10S)



105 mm howitzer M2A1



122 mm gun M1931/44 (A–19S)



122 mm gun M1944 (D–25S)



152 mm gun M1937/43 (ML–20S)

ANTIAIRCRAFT GUNS ON SELF-PROPELLED MOUNTS

Quad 23mm automatic AA gun
Twin 30mm automatic AA gun M53/59
37mm automatic AA gun M1A2
Twin 57mm automatic AA gun S-68

In addition to the twin 14.5mm antiaircraft heavy machineguns KPV mounted on the BTR-40A and BTR-152A wheeled armored personnel carriers, four other automatic weapons systems designed for antiaircraft fire are found on self-propelled mounts.

The smallest caliber, but the most modern weapon, is the quad 23mm automatic antiaircraft gun mounted on the ZSU-23-4 tracked chassis. This fully automatic, gas-operated weapon uses the same basic guns as the towed twin ZU-23; however, the individual tubes are liquid cooled, and different flashhiders are employed. An important improvement is the coupling of the quad gun with a radar fire control system which is mounted on the same tracked vehicle.

The Czechoslovak twin 30mm automatic antiaircraft gun M53/59 is the same basic weapon as the towed twin M53. Like it, the weapon is fully automatic and is gas-operated. The most important change is that the weapon has been converted from a horizontal ten-round clip feed to a vertical fifty-round magazine feed for each tube. Some weapons have also been fitted with conical flashhiders in place of the standard multi-baffle muzzle brakes. No off-carriage of radar fire control is provided. If required, the weapon can be removed from the wheeled self-propelled mount and fired from the ground.

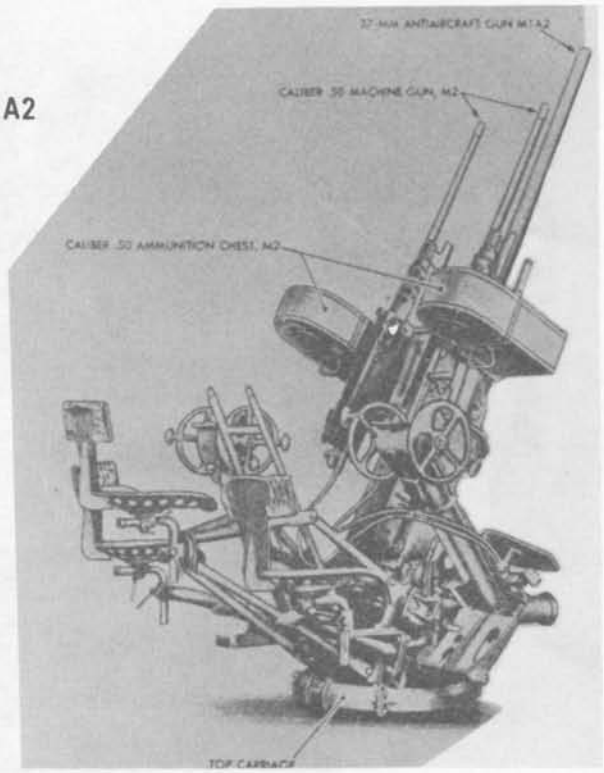
The United States 37mm recoil-operated automatic antiaircraft gun M1A2 is coupled with two caliber .50 (12.7mm) heavy machineguns M2 HB on a special mount placed on an armored half track vehicle. No off-carriage or radar fire control is provided.

The Soviet twin 57mm automatic antiaircraft gun S-68 is a modification of the single towed S-60 placed on a modified chassis of the T-54 medium tank. The guns are mounted side by side, and the right hand piece has had its feed modified so that it can be fed from the right. The performance of the self-propelled 57mm weapons system is essentially that of the towed gun without radar or other off-carriage fire control. The Soviet 57mm antiaircraft guns are fully automatic, recoil-operated weapons.

		Quad 23mm	M53/59	M1A2	S-68
Caliber	mm	23	30	37	57
Length of tube in cals		81	77	71.4	71
Length of tube overall	mm	2010	2429	2642	4390
Weight	kg		1500	165.7	
Elevation	°	+80	+90	+85	+85
Depression	°	-5	-15	-5	-5
Traverse	°	360	360	360	360
Rate of fire per tube:					
cyclic	rpm	800-1000	450-550	120	105-120
practical	rpm	200	150		70
Feed		belt	50 rd mag	10 rd clip	4 rd clip
Projectile weight: HE/HEI	kg	0.19	0.45	0.608	2.8
AP/API	kg	0.189	0.45	0.867	3.1
Muzzle velocity: HE/HEI	m/s	970	1000	793	1000
AP/API	m/s	970	1000	625	1000
Maximum range: horizontal	m	7000	10000	3693*	12000
vertical	m	5100	7000	3528*	8800
Effective AA range	m	3000	2000	1500	4000
Pointblank range: AP/API 2m high target	m	900			1100
Armor penetration: AP/API 0°/500m	mm	25	55	33	106

*limited by self-destruct

37 mm automatic AA gun M1A2





Twin 30 mm automatic AA gun M53/59



Quad 23 mm automatic AA gun



Twin 57 mm automatic AA gun S–68

TANK MACHINEGUNS

TANK MACHINEGUNS

7.62mm Degtyarev tank machinegun (DT)
7.62mm modernized Degtyarev tank machinegun (DTM)
7.62mm modernized Goryunov tank machinegun (SGMT)
7.62mm tank machinegun Kalashnikov (PKT)
7.62mm tank machinegun M59T
7.62mm tank machinegun M1919A4
12.7mm tank machinegun Degtyarev-Shpagin M1938/46 (DShKT)
14.5mm tank machinegun Vladimirov (KPVT)

Tank machineguns are used either as hull machineguns, or more commonly as coaxial machineguns on tanks, and in some cases in armored personnel carriers and scout cars. In addition antiaircraft machineguns are also mounted on a variety of armored vehicles, but these are not tank machineguns in the proper sense of the word. Tank machineguns proper are normally fired electrically, except in the case of the DT and DTM machineguns found in older Soviet tanks. Later models also have any pistol grips or stocks which are characteristic of the basic ground weapons removed. Other modifications may also be made to suit them for armored vehicle use. Coaxial machineguns usually retain their flashhiders, flash suppressors, or muzzle brakes. Bow guns do not have these.

The gas-operated DT was commonly used during World War II, but was replaced following the war by the improved DTM. Both are modifications of the DP light machinegun. They use a special 63-round drum in place of the 47-round drum of the light machinegun. Currently the DTM is found on the T-34(85), JS-2 and JS-3 tanks, as well as on the BA-64 armored car. As a bow gun the DTM is sighted up to 1000m at 200m intervals. As a coaxial gun it is sighted to 1500m at the same intervals as the bow gun. The ammunition used by these machineguns is the 7.62x54R.

Postwar designed tanks use the SGMT machinegun, a tank version of the SGM medium machinegun. This gas-operated weapon is found as a fixed bow gun on T-54 medium tanks and on some T-55 models. It is used as a coaxial machinegun on these tanks as well. As a coaxial machinegun the SGMT is sighted up to 2200m at 100m intervals. It uses the 7.62x54R ammunition. The Chinese designation for the SGMT is Type 59.

The PKT tank machinegun is based on the PK/PKS general-purpose machinegun. It is a gas-operated fully automatic weapon which is mounted as a fixed bow gun on some T-55 tanks and as a coaxial machinegun on some T-55's, all T-55A's and T-62 models. In addition it is used as the coaxial machinegun in the turret mounted on the BRDM-2 amphibious scout car, the BTR-60PB, OT-64C, OT-62C armored personnel carriers and the BMP-infantry combat vehicle. Like the other 7.62mm tank machineguns it used the 7.62x54R cartridge.

The Czechoslovak M59T tank machinegun is a gas-operated automatic weapon based on the M59 general purpose machinegun. It is found in a small turret used on the OT-62B armored personnel carrier and the OT-65A amphibious scout car.

The United States caliber .30 (7.62mm) Browning M1919A4 air-cooled, recoil-operated machinegun is used on the United States M4A3 and M47 medium tanks and the M8 armored cars of the Yugoslav Army. A light tripod is also available for use when dismounted. The 7.62x63 ammunition used is not interchangeable with that of the Soviet and Czechoslovak tank machineguns.

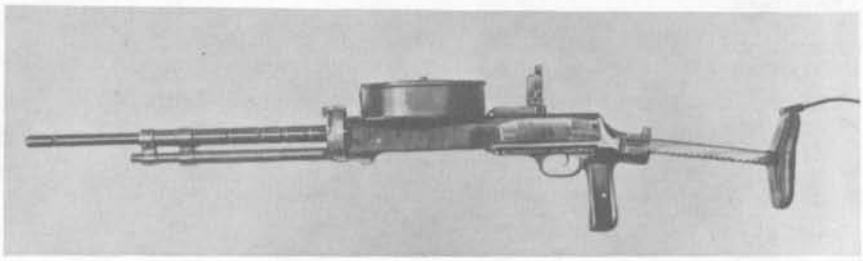
The Soviet 12.7mm DShK heavy machinegun is employed normally as an antiaircraft weapon on armored vehicles but has also appeared as the DShKT coaxial machinegun on both the JS-4 and T-10 heavy tanks. These machineguns are gas-operated, fully automatic weapons which fire the Soviet 12.7x108 cartridge. The Chinese designation for the DShK weapons is Type 54.

The KPVT heavy tank machinegun is a 14.5mm recoil-operated, fully automatic weapon derived from the basic KPV model used for antiaircraft automatic weapons systems. It is found as a coaxial and antiaircraft machinegun on the T-10M heavy tank and as the main armament on BRDM-2 and FUG-70 scout cars, BTR-60PB and OT-64C armored personnel carriers. The KPVT fires standard 14.5x114 ammunition.

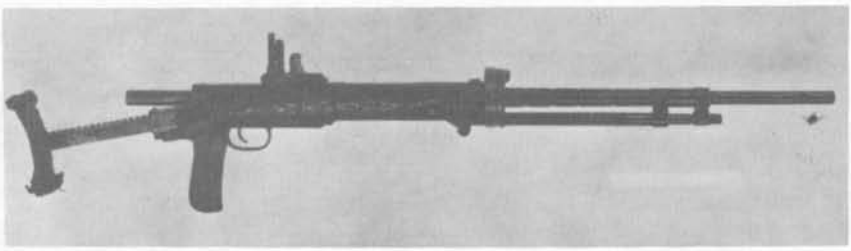
		DTM	SGMT	PKT
Caliber	mm	7.62	7.62	7.62
Overall length	mm	1068	1150	1080
Barrel length:				
w/flashhider	mm	---	825	
w/o flashhider	mm	609	720	
Weight w/o drum or belt	kg	8.75	13.8	10.7
Rate of fire: cyclic	rpm	600	600-700	650
practical	rpm	100	200-250	250
Drum capacity	rds	63	---	---
Belt capacity	rds	---	250	250
Muzzle velocity	m/s	840	865	825
Effective range	m	600	1000	1000
Armor penetration: API 0°/500m	mm	8	8	8

		M1919A4	DShKT	KPVT
Caliber	mm	7.62	12.7	14.5
Overall length	mm	1041	1588	2007
Barrel length:				
w/flashhider	mm	---	1069*	1496
w/o flashhider	mm	641	967*	1348
Weight w/o belt	kg	14.1	34.0	51.0
Rate of fire: cyclic	rpm	400-450	540-600	600
practical	rpm	150	80	150
Belt capacity	rds	varies	50	5
muzzle velocity	m/s	854	830-850	1000
Effective range	m	800	1500	2000
Armor penetration: API 0°/500m	mm	7	20	32

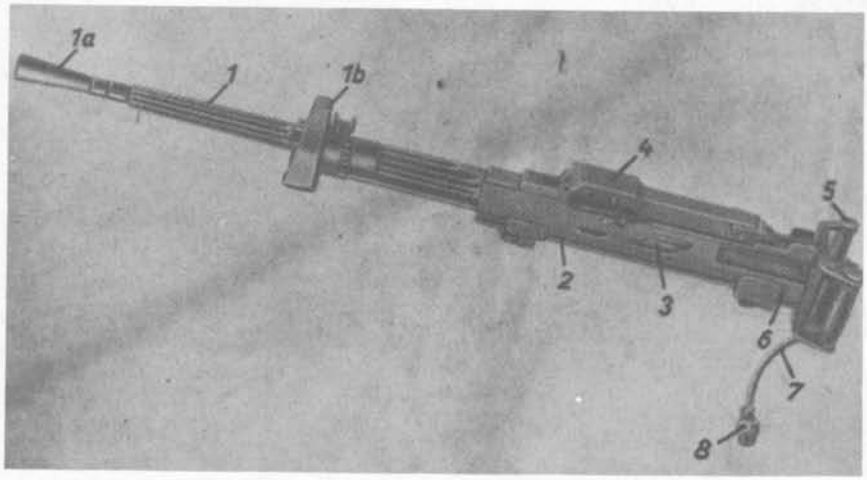
*Muzzle brake for DShKT



7.62 mm tank machinegun DT



7.62 mm tank machinegun DTM



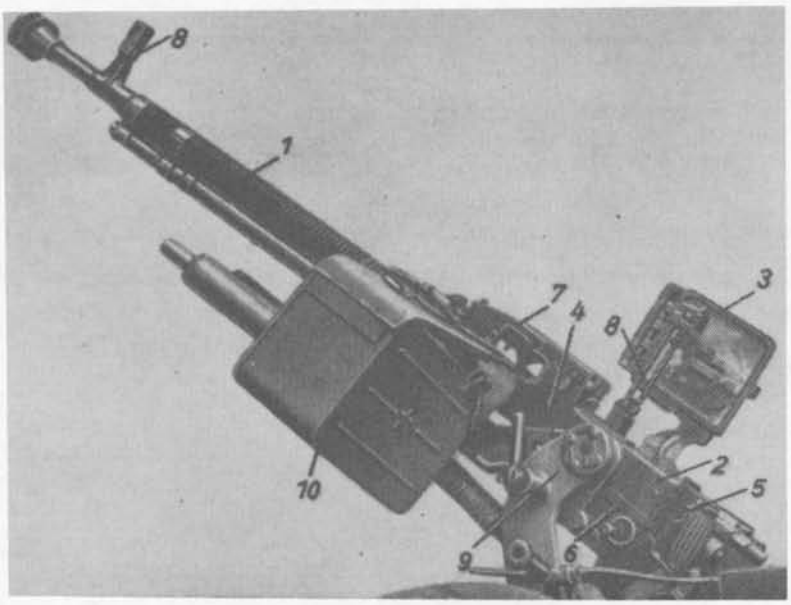
7.62 mm tank machinegun SGMT (coaxial)



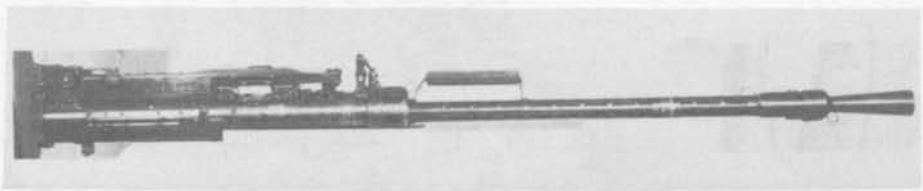
7.62 mm tank machinegun PKT



7.62 mm machinegun M1919A4



12.7 mm heavy machinegun M1938/46 (DShKM)



14.5 mm tank machinegun KPVT

TANKS

NEW SOVIET TANKS

Two new Soviet tanks have made their appearance in line units. One is a replacement for the current T-54/55 and T-62 series of medium tanks; the other is a light amphibious model bearing some resemblance to the BMP infantry combat vehicle.

The new Soviet medium tank is approximately the same size as the older T-54/55 and T-62 models. Although it appears to be the same length and width, it is approximately 30 centimeters lower in overall height. The main armament resembles the 115mm smoothbore gun of the T-62. The suspension system, which uses six evenly spaced small road-wheels and four track support rollers, is different from the other Soviet medium tanks but does resemble that of the tracked transporter-launcher for the SA-4 GANEF surface-to-air guided missile.

The turret configuration resembles that of the T-54/55 more than that of the T-62. The presence of a thickened leader's hatch indicates that the tank has a protective liner like that of the T-55A. The hull is similar in appearance to those of existing medium tanks, but the glacis plate has undergone a redesign giving it a long slope to increase the effectiveness of the frontal armor protection. The most significant change appears to be the repositioning of the infrared searchlights on the turret. The gunner's light is now located to the left of the gun and on a level with it, while the commander's light is located on the righthand turret hatch. This arrangement indicates that the crew positions have been relocated placing the gunner on the right of the gun, and the loader to the left. A further change is the location of the driver's hatch in the center of the hull, as it already is in Soviet heavy tanks.

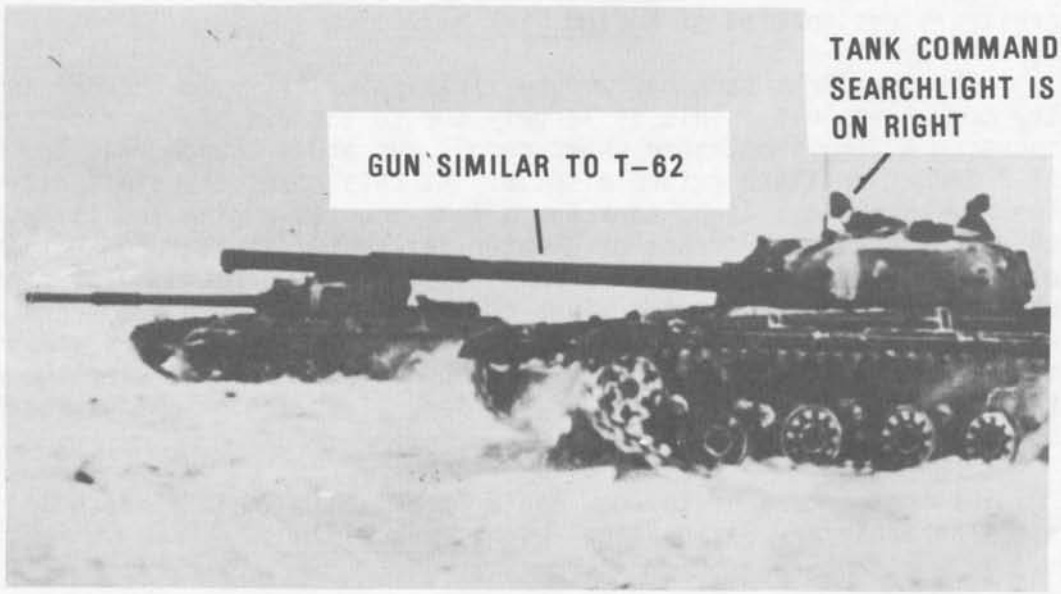
For the sake of convenience the new vehicle has received the arbitrary designation of Medium Tank M1970.

The new light tank has a superficial similarity to the BMP infantry combat vehicle. This is largely due to the use of the same turret mounting a 76mm smoothbore short-recoil gun and a launch rail for the AT-3 SAGGER antitank guided missile. At this point the similarity ends. The new amphibious light tank has a rear-mounted engine and is propelled through the water by means of a water-jet system similar to that of the older and larger PT-76 light amphibious tank. Two rectangular flotation chambers are mounted on the sides of the vehicle, above the track and extending the entire length of the vehicle. The track and suspension system has five roadwheels and four support rollers. In size the new tank appears approximately to be the same width and height as the BMP but shorter.

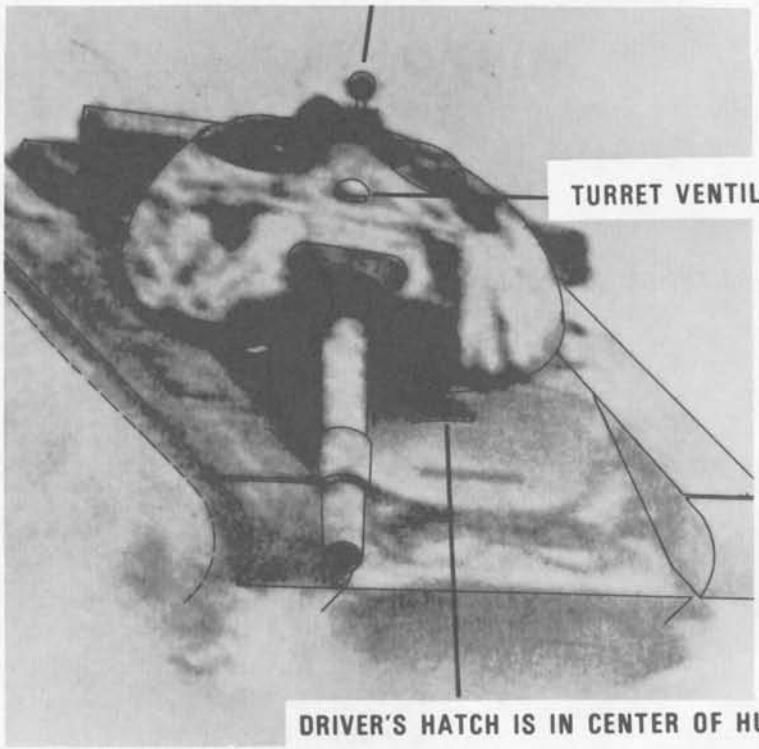
As in the case of the new medium tank, this vehicle has been given an arbitrary designation--Light Tank M1970 .

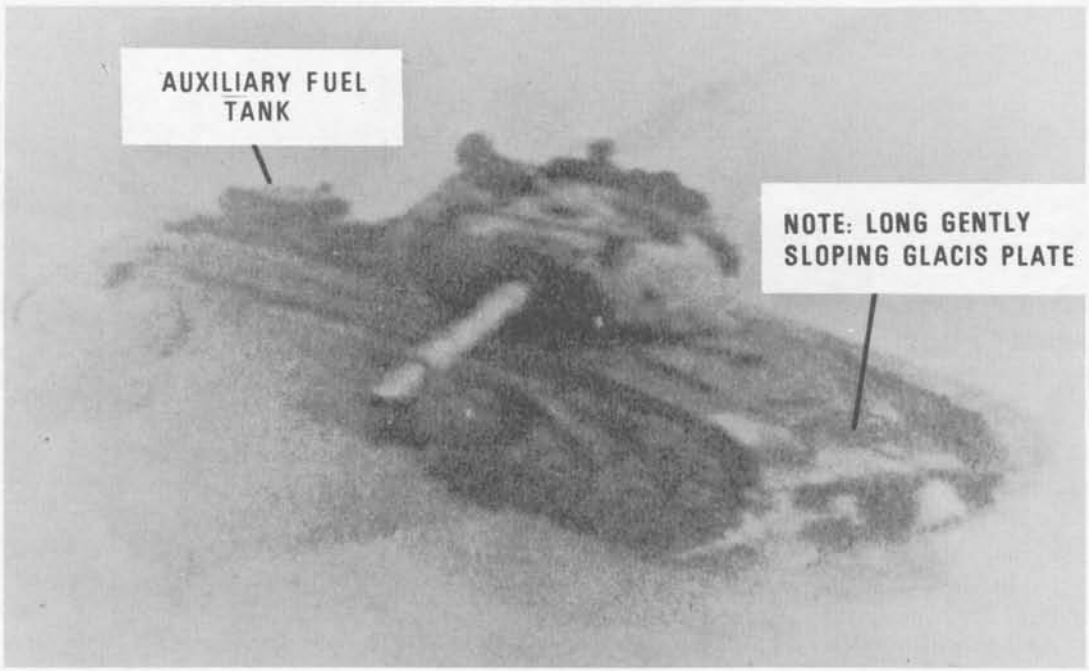


NEW SOVIET MEDIUM TANK M1970

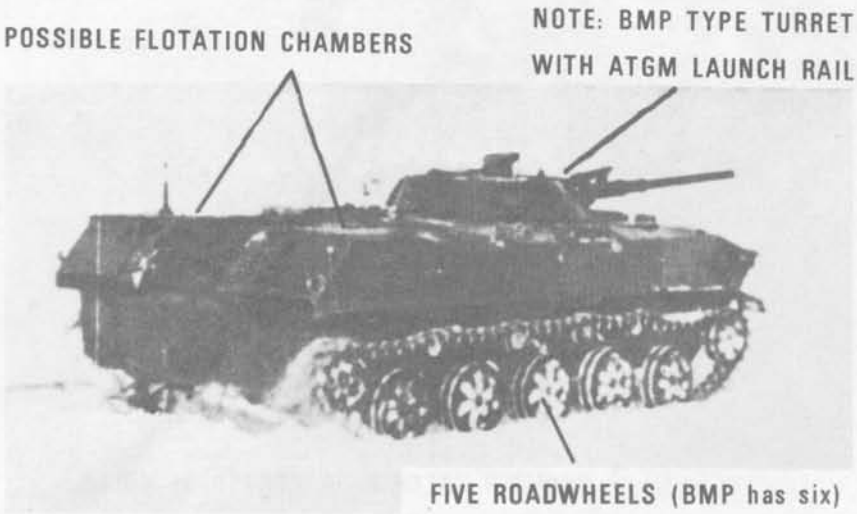


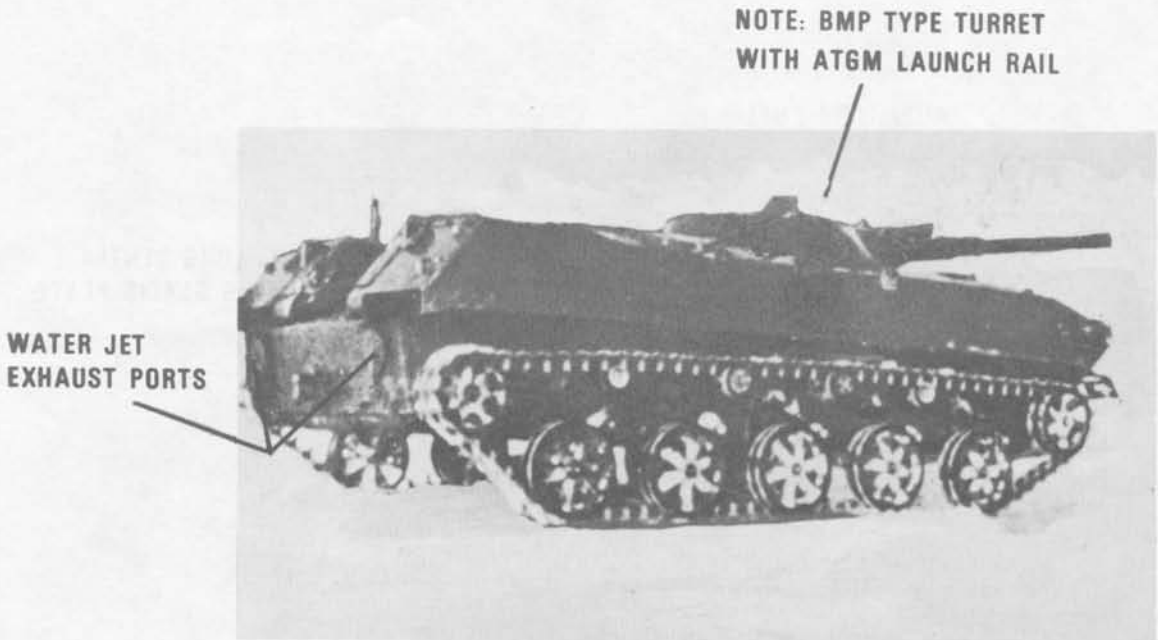
VEHICLE IDENTIFICATION NIGHT LIGHT

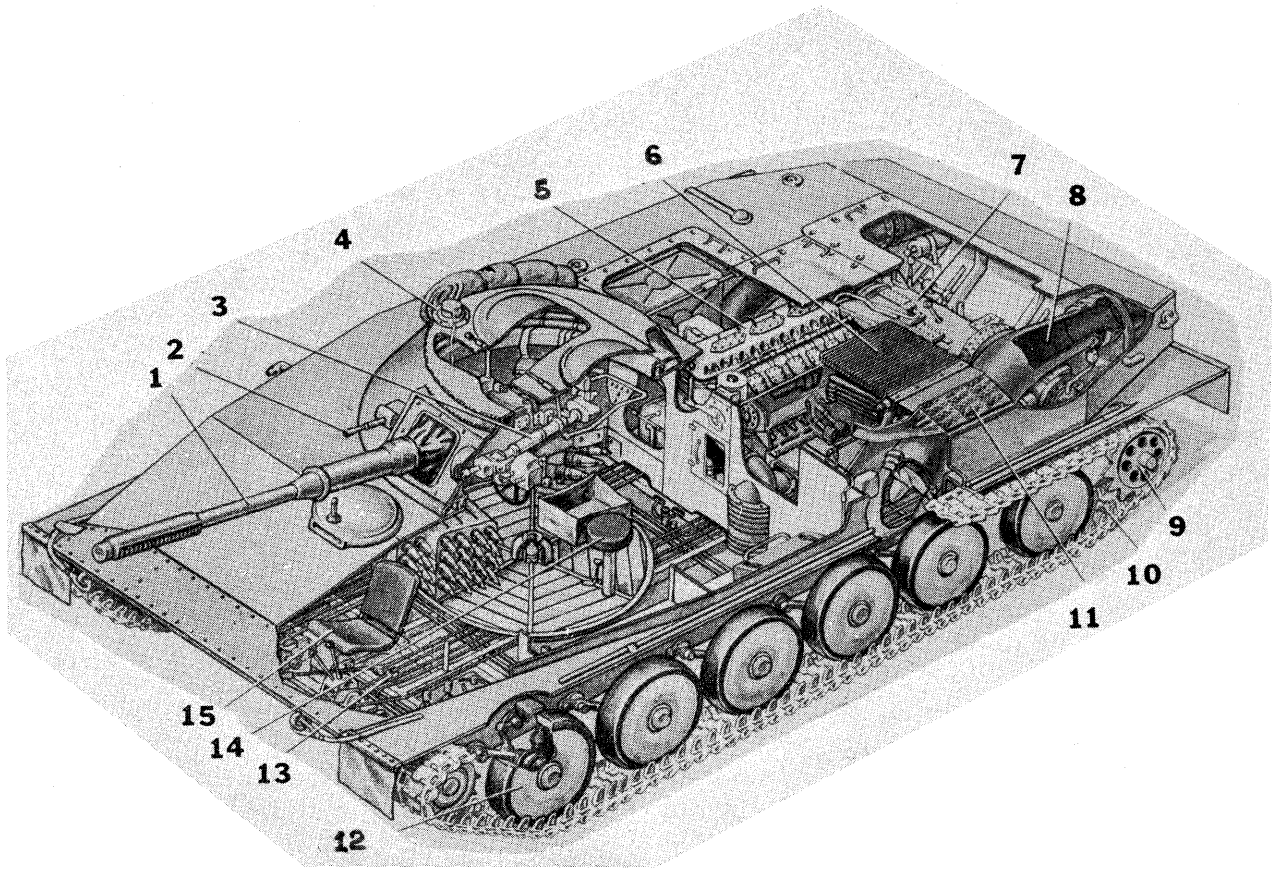




NEW SOVIET LIGHT TANK
M1970







PT-76 Model 1

1. 76mm gun.
2. Coaxial machinegun.
3. Telescopic sight.
4. Periscope.
5. Engine.
6. Radiator.
7. Transmission.
8. Left hydrojet.
9. Drive wheel.
10. Track.
11. Exhaust.
12. Roadwheel.
13. Driving controls.
14. Tank commander's seat.
15. Mechanic-driver's seat.

Amphibious tank PT-76 (model 1)
Amphibious tank PT-76 (model 2)
Amphibious tank PT-76B
Light tank Type 62

The PT-76 amphibious tank is the standard reconnaissance tank of the Warsaw Pact armies. In this role it is employed in connection with BRDM, BRDM-2, FUG (OT-65), or FUG-70 amphibious scout cars. The basic PT-76 chassis is also used for the BTR-50P and OT-62 series of armored personnel carriers, and in a modified, non-amphibious form it is the basis for the ZSU-23-4 self-propelled antiaircraft gun, the ASU-85 airborne assault gun and the FROG-2, FROG-3, FROG-4 and FROG-5 transport-launching vehicles. The PT-76 is rather large, lightly armored and mounts a relatively weak main armament for a tank. However, its amphibious characteristics are excellent, due, in part, to its twin waterjet propulsion system.

Two different models of the 76mm tank gun, visibly distinguishable, are used on the PT-76. The earlier D-56T has a multi-slotted muzzle brake and lacks a bore evacuator. In the field the muzzle brake is normally covered. The later D-56TM has a double-baffle muzzle brake and a bore evacuator. At time one encounters this gun with the muzzle brake removed. Both weapons, however, are ballistically identical and fire the same ammunition as the 76mm division gun M1942 (ZIS-3), the 76mm gun of the SU-76 light assault gun, and the main armament of the various versions of the T-34 (76) medium tank. Some tanks, designated PT-76B, with the D-56TM gun, have their main armament stabilized.

The PT-76 tank may also be encountered outside the Warsaw Pact armies since it has been exported to Yugoslavia, the Middle East, Southeast Asia and the Indian subcontinent. The Communist Chinese also manufacture an amphibious tank closely resembling the PT-76. They further produce a non-amphibious light tank called the Type 62. At first glance the Type 62 resembles the Soviet T-54A, but on closer examination one can notice that it uses PT-76 suspension elements and mounts an 85mm gun. In effect it is a lightweight T-54A with a smaller caliber gun. A 12.7mm antiaircraft machinegun is also mounted.

		PT-76
Vehicle		
Weight cbt	t	14
Length w/gun fwd	mm	7625
w/gun rear	mm	6910
w/o gun	mm	6910
Width	mm	3140
Height w/o AAMG	mm	2195*
Track	mm	2740
Clearance	mm	370
Track width	mm	360
Ground contact	mm	4080
Engine model		V-6
Horsepower		240
Cylinders		6 inline
Fuel		Diesel
Cooling		water
Speed: land/water	km/h	44/10
Cruising range	km	260
Fuel capacity	l	250
Fuel consumption	l/100km	96
Ground pressure	kg/cm^2	0.479
Trench	mm	2800
Step	mm	1100
Slope	°	38
Tilt	°	18
Ford	mm	---
Armor: glacis plate	mm/°	11/80
upper hull side	mm/°	14/0
mantlet	mm/°	11/33
Crew		3
Armament		
Main armament	mm	76 gun
Model		D-56T or D-56TM
Basic load	rds	40
Elevation	°	+30
Depression	°	-4
Traverse	°	360
Axis of bore	mm	1820
Secondary armament AA	mm	---
Bow		---
Coaxial	mm	7.62 SGMT
Basic load 12.7mm		---
7.62mm		1000

*later models have 2255mm



PT-76(model 1)



PT-76(model 2)





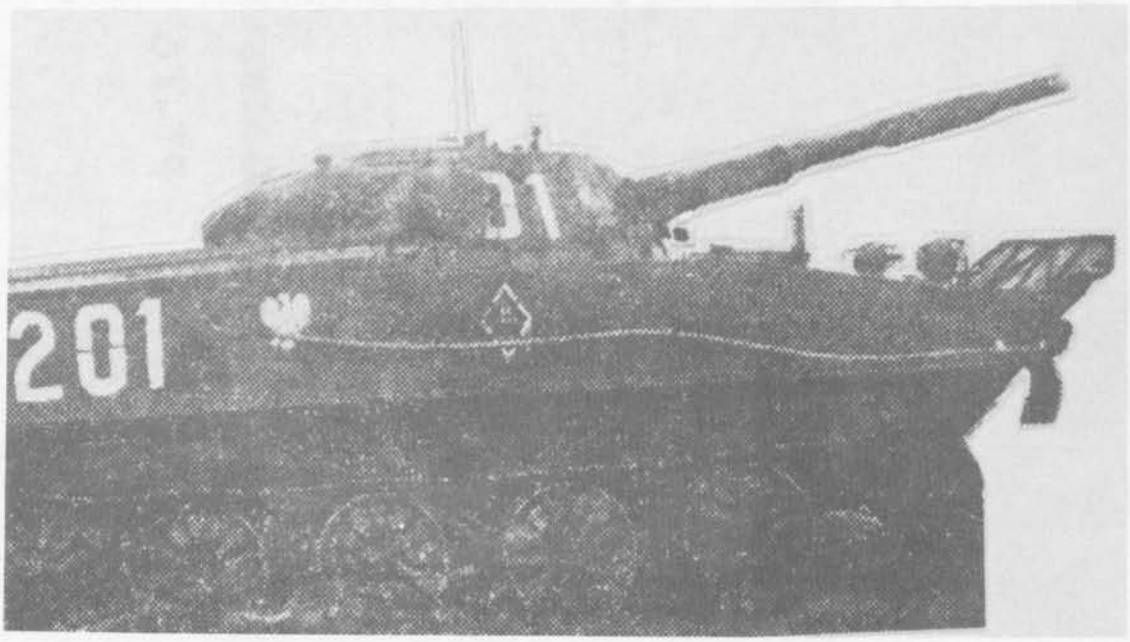
PT-76(model 2)



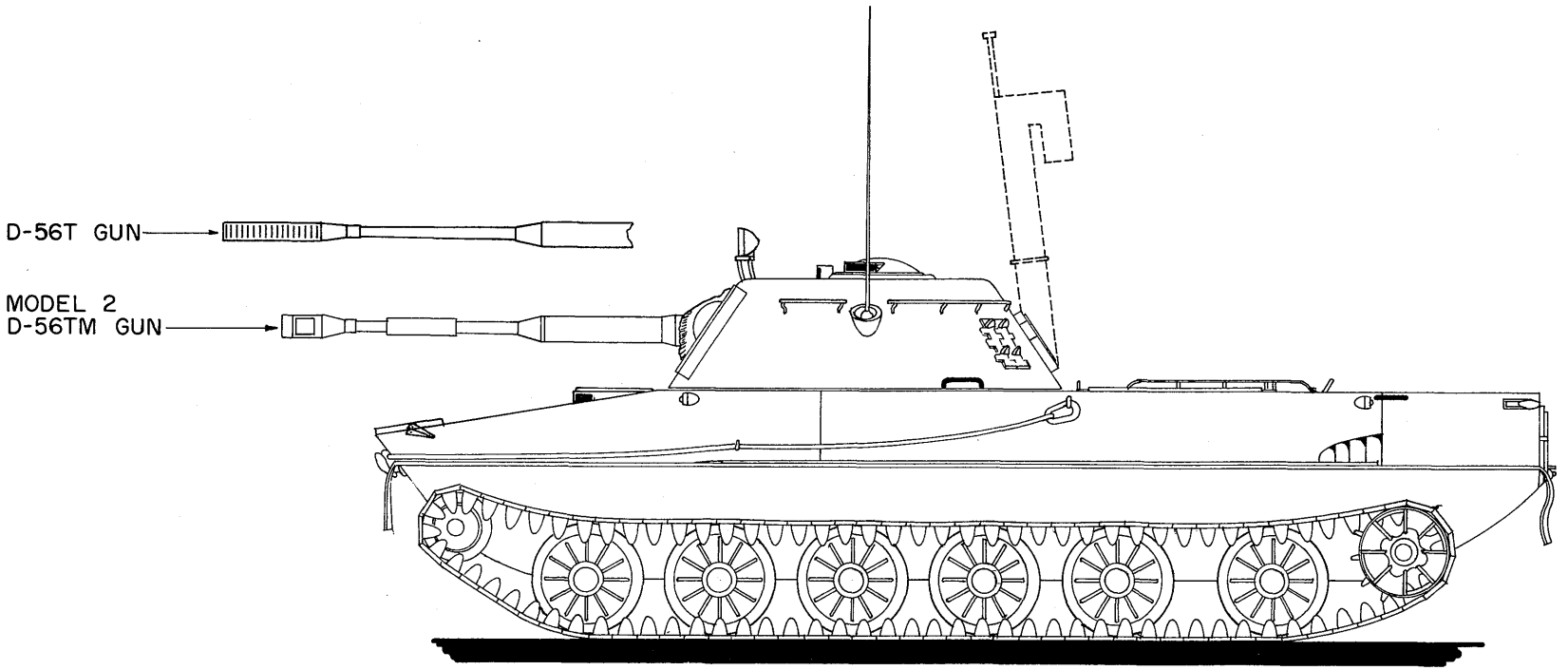
PT-76(model 2) REAR VIEW



AMPHIBIOUS TANK PT-76
(model 2)

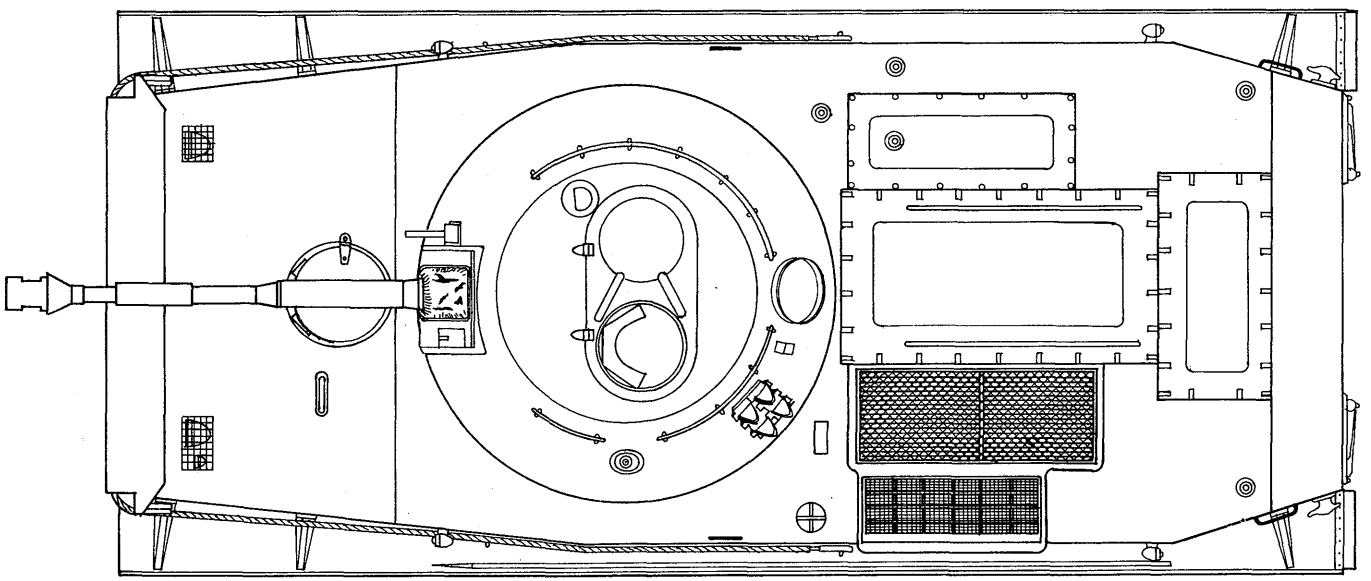


PT-76(model 2) WITHOUT MUZZLE BRAKE



PT-76 Flank

PT-76 Top





MEDIUM TANK T—34(85)



MEDIUM TANK T—44

Medium tank T-34(76)
Medium tank T-34(85)
Medium tank T-44

Following the production of the various models of the T-34(76) medium tank beginning in June 1940, an improved version mounting an 85mm gun in an enlarged turret went into production in March 1944, making its mass appearance on the battlefield in early summer of that year. The original 85mm tank gun, which had been developed for the KV-85 heavy tank, was the M1943 (D5-T85), based on the 85mm antiaircraft gun M1939. Later an improved M1944 (ZIS-S53) became standard. The increased weight of the turret and armament reduced the agility of the T-34 somewhat, but the combat power was increased through the more powerful gun and the use of a three-man turret. Although the T-34(85) has been replaced to a large extent by the T-54 and T-55 series of medium tanks, it is still held by some Communist armies and has been exported to the Middle East. The 85mm gun fires the same ammunition (except for special antiaircraft round) as the 85mm field guns, antiaircraft guns and guns on the SU-85 medium assault gun. Some T-34(85) tanks are also capable of deep fording by snorkeling, although preparation time is much longer than with more modern tanks. The T-34 chassis may also be encountered in assault gun versions (SU-85 and SU-100), in a variety of tank recovery vehicles, and for bridge-laying tanks. The T-34 also may be used to mount mine clearing rollers, snowplows (STU), or dozerblades (BTU).

The T-44 was a limited-production interim tank that bridged the gap between the T-34(85) and the T-54, and as such incorporates features of both tanks. The turret resembles that of the T-34(85), but is larger, roomier, and more heavily sloped. It mounts the standard 85mm tank gun M1944, although there have been reports of experimental mounting of the 100mm gun. The hull, suspension and automotive features, however, closely resemble those of the T-54, but one feature is noticeable--the T-44 glacis plate has a vision slit for the driver. The tank saw limited combat use during early 1945, but did not come to the general attention of the public until the autumn of 1956 when the Soviets employed it during the Hungarian uprising. Limited modifications have enabled it to be employed as a transition training vehicle for the T-54 and T-55 series.

		T-34(85)	T-44
Vehicle			
Weight cbt	t	32	31.9
Length w/gun fwd	mm	8100	7650
w/gun rear	mm	7530	
w/o gun	mm	6190	6090
Width	mm	3050	3150
Height w/o AAMG	mm	2700	2410
Track	mm	2450	2640
Clearance	mm	400	430
Track width	mm	500	580
Ground contact	mm	3850	3840
Engine model		V-2-34*	V-44
Horsepower		500	520
Cylinders		V-12	V-12
Fuel		Diesel	Diesel
Cooling		water	water
Speed	km/h	55	51
Cruising range	km	300	235
Fuel capacity	l	560	492
Fuel consumption	l/100km	190	210
Ground pressure	kg/cm^2	0.83	0.84
Trench	mm	2500	2500
Step	mm	730	1000
Slope	°	35**	32
Tilt	°	25	30
Ford	mm	1300	1300
Armor: glacis plate	mm/°	45/60	90/45
upper hull side	mm/°	45/20	75/0
mantlet	mm/°	75 curved	120 curved
Crew		4-5	4
Armament			
Main armament	mm	85 gun	85 gun
Model		M1944***	M1944
Basic load	rds	56-60	58
Elevation	°	+25	+25
Depression	°	-5	-5
Traverse	°	360	360
Axis of bore	mm	2050	
Secondary armament AA	mm	---	---
Bow	mm	7.62 DTM	7.62
Coaxial	mm	7.62 DTM	7.62
Basic load 12.7mm		---	---
7.62mm		1953	1890

*some tanks use the V-2-34M
**when fully loaded only 30°
***This is the ZIS-S53. Early T-34(85) tanks are armed with the M1943 (D5-T85) gun.



T-34(85)



T-34(85) WITH TURRET REVERSED



T-34(85)



T-34(85)



T—34



YUGOSLAV VERSION

NOTE: New turret, gun with muzzle brake and redesigned glacis plate.



T-44





T-44

MEDIUM TANKS
T-54/55 SERIES



T-54B



Medium tank T-54 early model
Medium tank T-54
Medium tank T-54(M)
Medium tank T-54A
Medium tank T-54A(M)
Medium tank T-54B
Medium tank T-54(X)
Medium tank T-55
Medium tank T-55 with AAMG
Medium tank T-55A
Medium tank T-55A with AAMG

There are at least seven identifiable versions of the Soviet T-54 medium tank, not including variants produced outside of the Soviet Union. The earliest model is most easily recognizable by its undercut turret with a bulbous appearance. This tank is rarely encountered, although it is used in some training units. The well-known basic T-54 model has the standard half-egg shaped turret and a plain gun tube. Like all T-54 tanks, except the T-54(X), it has both right and left hand cupolas, with a 12.7mm antiaircraft machinegun on the right hand cupola. The T-54A, which appeared before 1956, has an added bore evacuator toward the muzzle end of the gun, a feature which appears on all later T-54's and all T-55's. Internally the tank was improved by a vertical stabilization system for the main armament, improved air filters, an electrical oil pump, bilge pump, automatic fire extinguisher, power elevation for the main armament and extra fuel tanks.

Sometime before 1958 the T-54B appeared, which looked like a T-54A, but had infrared night sighting equipment for both gunner and commander. Internally the tank was fitted with improved snorkeling equipment and the main armament was fitted with two-plane stabilization. All of these improved features were incorporated in the later T-55 models. Finally a transition tank, the T-54(X), appeared which resembled the T-54B, but had the righthand cupola and antiaircraft machinegun removed in the manner of the T-55. The turret dome ventilator which characterizes the T-54 in contrast to the T-55, however, remained.

The T-55 medium tank was first displayed in the 7 November 1961 parade in Moscow. Today it is in wide issue in the Soviet forces and can be found in all other Warsaw Pact armies. Production also takes place outside of the Soviet Union in countries such as Poland.

The T-55 can be distinguished from the T-54 series by the absence of the turret dome ventilator. Also like the T-54(X) there is no right-hand cupola and no antiaircraft machinegun. The T-55 has the same two-plane stabilization on the T-54B, a more powerful engine, an improved transmission and a rotating turret floor. It also carries nine more rounds of 100mm ammunition. In effect it incorporates all of the refinements and improvements of the fully developed T-54 series without being radically different in appearance or concept.

A second version of the T-55, called T-55A, was displayed on 1 May 1963 in Moscow. It can be distinguished from the basic T-55 by the raised covers on the righthand (loader's) and driver's hatches, the smooth metal covering of the base of the commander's cupola and the absence of a bow machinegun. These features are the external evidence of an antiradiation lining. The T-55A also uses the PKT tank machinegun which was also used on some late production T-55 models. The T-55A has appeared in virtually all Warsaw Pact armies. It is also used along with the T-55 in Yugoslavia.

As the T-55 series became common, a retrofitting program was undertaken for the earlier model T-54 and T-54A tanks. These were fitted with infrared night-sighting equipment, with the gunner's searchlight mounted on a horizontal bracket (like the T-55), and in some cases with two-plane stabilized main armament. Some T-54B tanks also received the new horizontal searchlight bracket. Although the retrofitted T-54(M) models can be distinguished from other tanks, the T-54A(M) and modified T-54B models are indistinguishable from each other.

The T-54 and T-55 medium tanks have been widely exported to the Middle East, North Africa and the Indian subcontinent. Also the Chinese Communists produce a copy of the Soviet T-54A known as the Type 59. Care must be taken to distinguish the Chinese Type 59 from the Chinese Type 62 light tank which at first glance resembles it very closely.

Czechoslovak and Polish-produced T-54/55 series tanks sometimes can be distinguished by different stowage arrangements and rear-deck configuration. Polish-made tanks are widely used in the East German Army. Of note is the existence of both T-55 and T-55A tanks of Polish manufacture which feature a 12.7mm antiaircraft machinegun on a loader's cupola similar to that of the T-54.

T-54 and T-55 series tanks are also encountered mounting special equipment such as KMT-4 and KMT-5 mine-clearing equipment, BTU dozer blades and as chassis for bridge-laying tanks and medium tank recovery vehicles. Automotive components have been used on the ATS-59 medium tracked artillery tractor and in the PTS tracked amphibian.

		T-54	T-55
Vehicle			
Weight cbt	t	36	36
Length w/gun fwd	mm	9000	9000
w/gun rear	mm	8485	8485
w/o gun	mm	6450	6450
Width	mm	3270	3270
Height w/o AAMG	mm	2400	2400
Track	mm	2640	2640
Clearance	mm	425	425
Track width	mm	580	580
Ground contact	mm	3840	3840
Engine model		V-54	V-55
Horsepower		520	580
Cylinders		V-12	V-12
Fuel		Diesel	Diesel
Cooling		water	water
Speed	km/h	48	50
Cruising range	km	400	500
Fuel capacity	l	812	960
Fuel consumption	l/100km	190	190
Ground pressure	kg/cm^2	0.81	0.81
Trench	mm	2700	2700
Step	mm	800	800
Slope	°	30	30
Tilt	°	30	30
Ford	mm	1400	1400
Armor: glacis plate	mm/°	100/60	100/60
upper hull side	mm/°	70/0	70/0
mantlet	mm/°	170 basis	170 basis
Crew		4	4
Armament			
Main armament	mm	100 gun	100 gun
Model		D-10T*	D-10T2S
Basic load	rds	34	43
Elevation	°	+17	+17
Depression	°	-4	-4
Traverse	°	360	360
Axis of bore	mm	1750	1750
Secondary armament AA	mm	12.7 DShK	---
Bow	mm	7.62 SGMT	7.62 SGMT** or PKT
Coaxial	mm	7.62 SGMT	7.62 SGMT or PKT
Basic load 12.7mm	rds	500	---
7.62mm	rds	3000	3500**

*D-10TG for T-54A, D-10T2S for T-54B
**Some T-55 and T-55A tanks mount 12.7mm AA MG. All T-55A tanks lack the 7.62mm bow machinegun. Ammunition loads are adjusted accordingly.



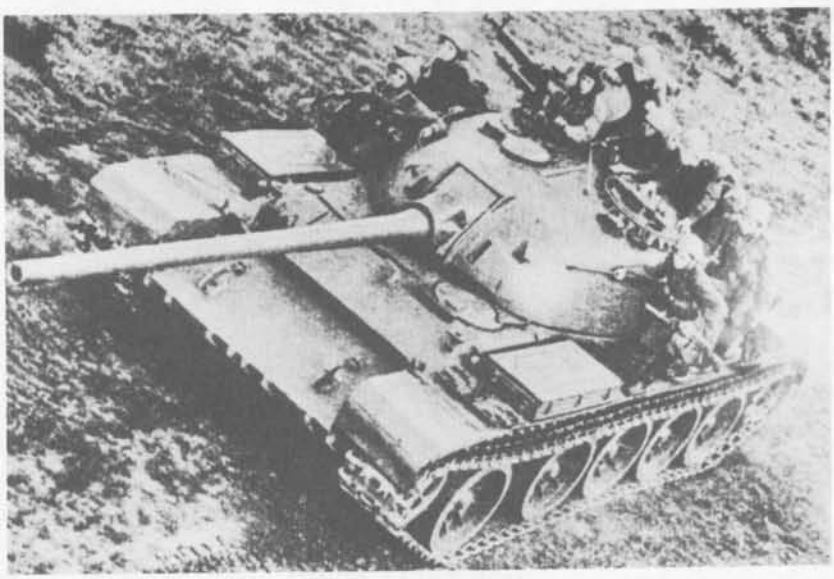
MEDIUM TANK T-54A



T-54 EARLY MODEL



T-54A (CZECH) WITH AA MACHINEGUN REMOVED



T-54



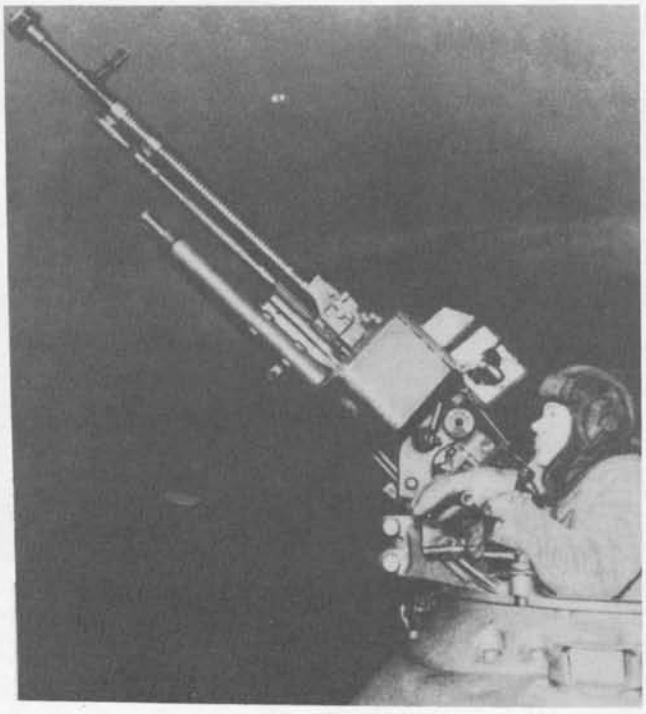
T-54A

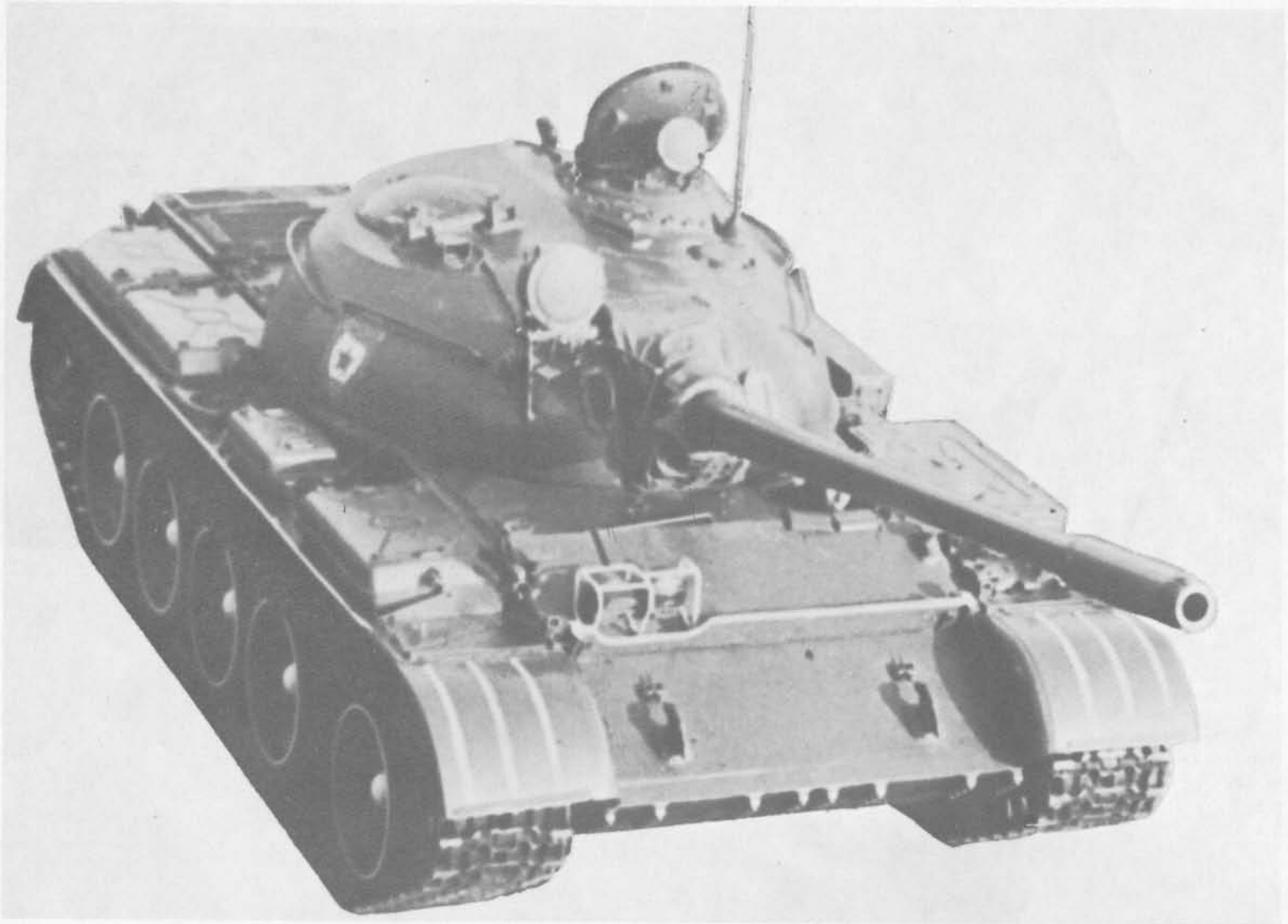


T–54A(M)

T-54

12.7mm
AA MACHINEGUN





MEDIUM TANK T—55



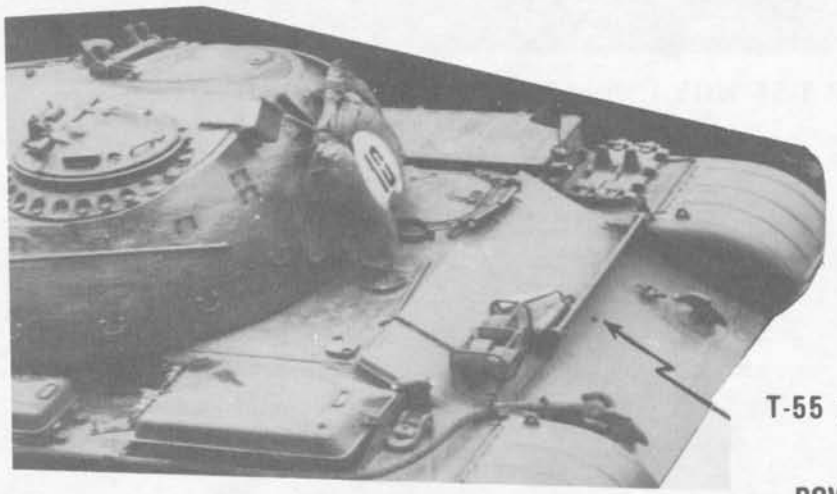
POLISH T-55 WITH 12.7mm DShk AA MACHINEGUN



T-55



T-55 NOTE STOWAGE OF COMBAT SNORKEL AND DEDITCHING LOG



T-55 NOTE POSITION OF

BOW MACHINEGUN

T-55



T-55A





T-55A COMMANDER'S HATCH

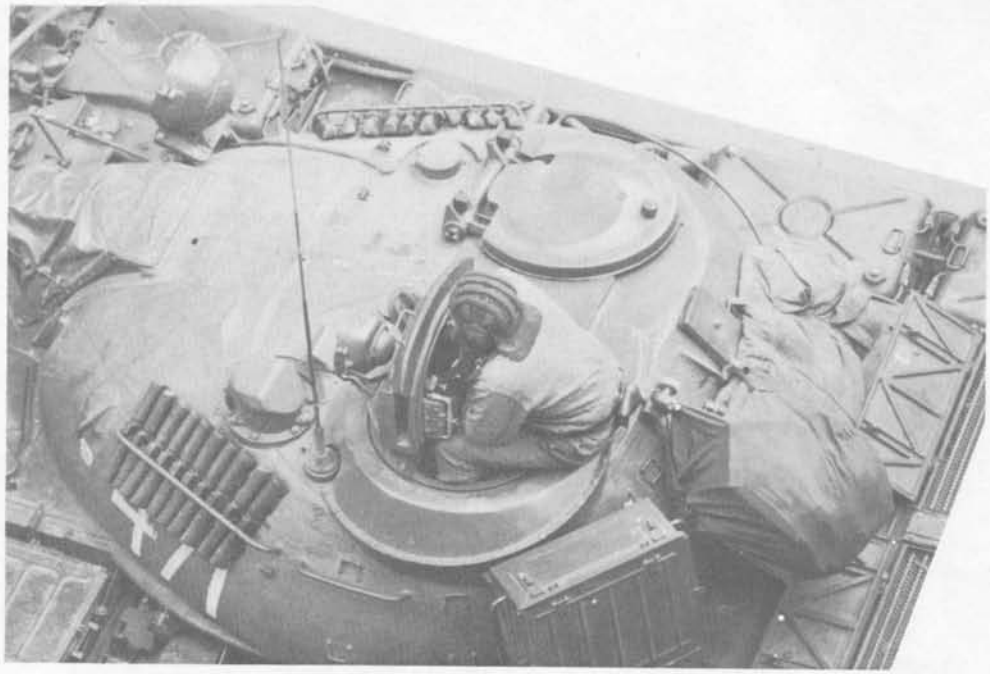


NOTE
THICKENED
HATCHES

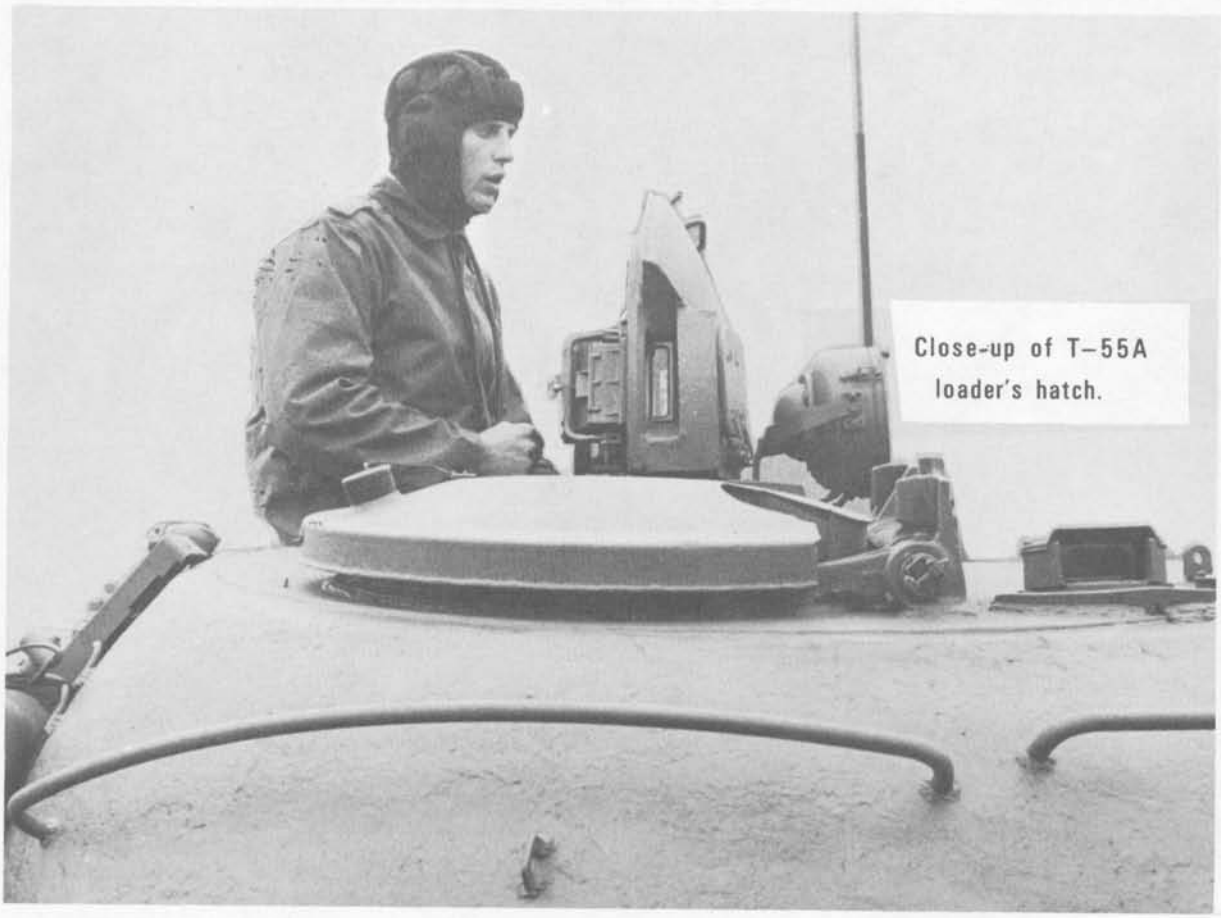
T-55A



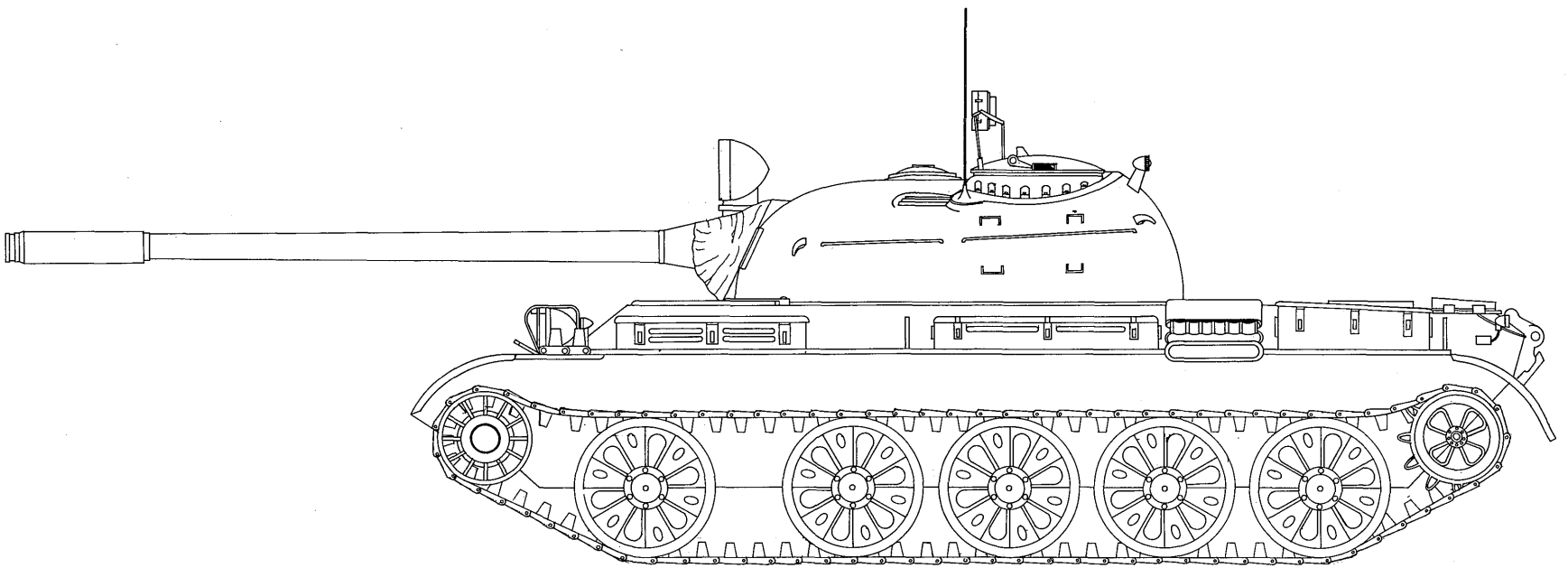
T-55A



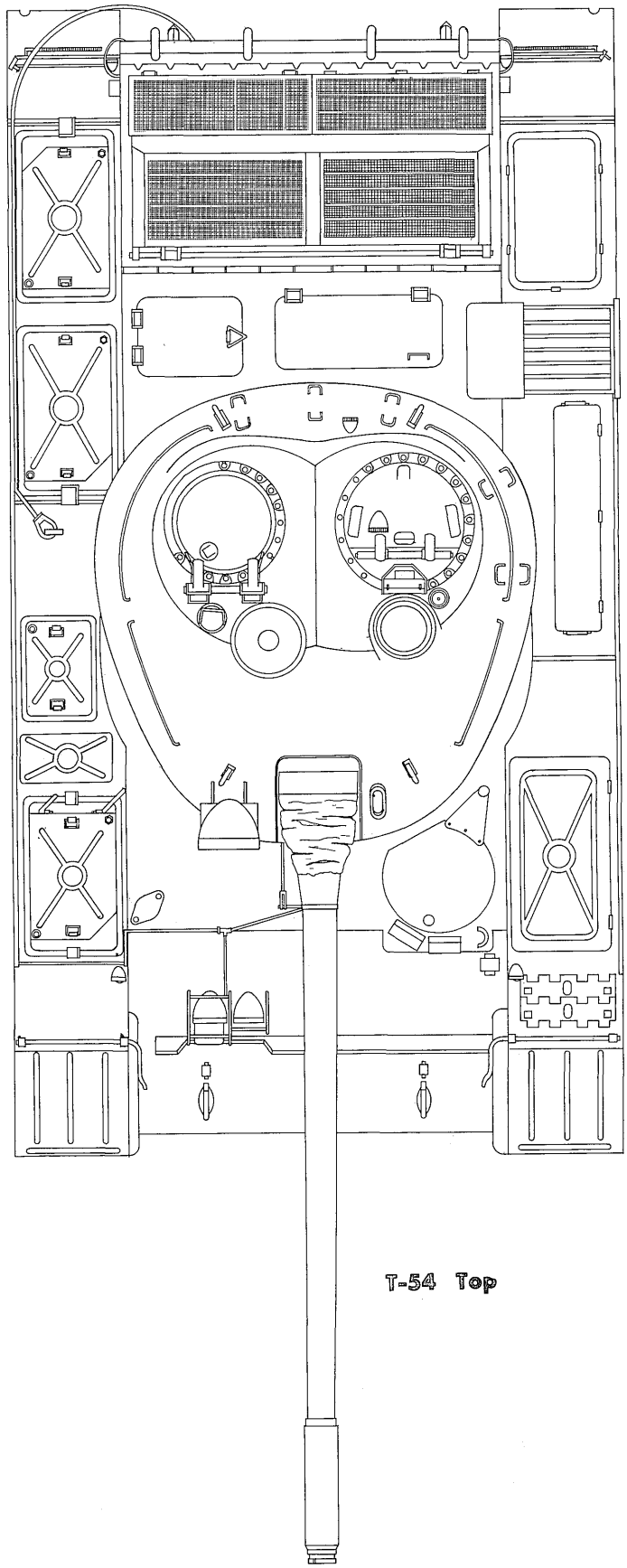
T–55A



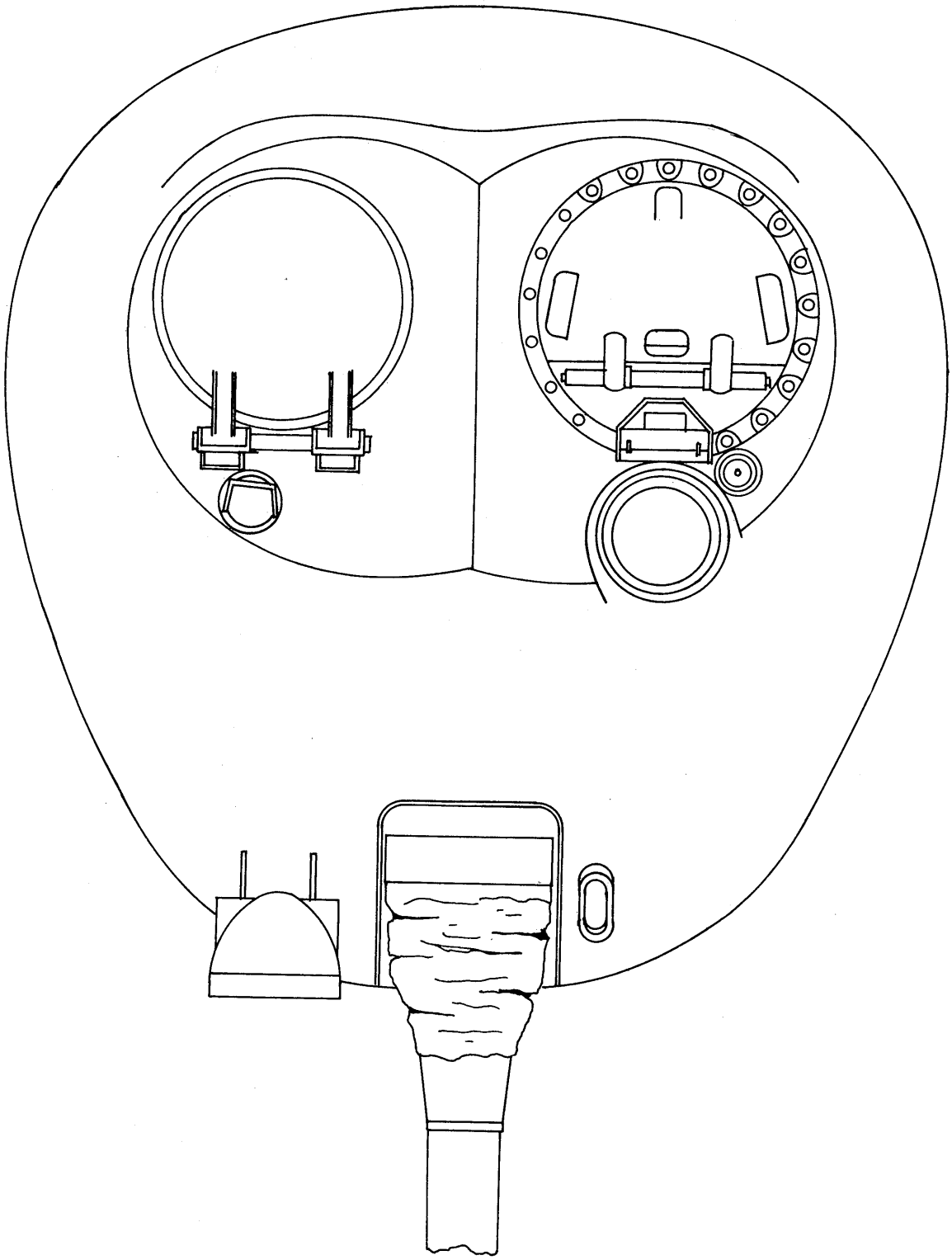
Close-up of T–55A loader's hatch.



T-54 Flank



T-54 Top



T-55 Turret Detail

Medium tank T-62
Medium tank T-62A

The T-62 medium tank was first shown to the public during the 9 May 1965 Victory Day parade in Moscow. It has been widely issued to Soviet units, including those in East Germany, and is a standard main battle tank in Soviet units along with the T-55. It can be distinguished from the T-54/55 models by the different spacing of the roadwheels, the more smoothly cast and rounded turret, the longer and thicker gun with a bore evacuator some distance to the rear of the muzzle. The commander's cupola to the left is cast with the turret and is not bolted on as in the case of the T-54 and T-55. There is no loader's cupola, merely a simple forward-hinged hatch which is placed farther forward than that of the T-55. The T-62 has the same standard infrared night driving and sighting equipment as the two earlier models, and has the same snorkeling equipment. As a whole the tank is slightly heavier, wider and longer. The most significant feature of the tank is the 155mm smoothbore gun firing fin-stabilized rounds. Neither bow nor antiaircraft machineguns are carried on this model.

A second version of the T-62 appeared around 1970. It is identical in appearance to the earlier model with the exception that the righthand side of the turret has been redesigned to allow the mounting of a 12.7mm antiaircraft machinegun on the loader's hatch position. This tank has been designated T-62A.

		T-62
Vehicle		
Weight cbt	t	36.5
Length w/gun fwd	mm	9770
w/gun rear	mm	9000
w/o gun	mm	6715
Width	mm	3350
Height w/o AAMG	mm	2400
Track	mm	2640
Clearance	mm	425
Track width	mm	580
Ground contact	mm	4150
Engine model		V?
Horsepower		580
Cylinders		V-12
Fuel		Diesel
Cooling		water
Speed	km/h	50
Cruising range	km	500
Fuel capacity	l	912
Fuel consumption	l/100km	190
Ground pressure	kg/cm^2	0.72
Trench	mm	2800
Step	mm	800
Slope	°	30
Tilt	°	30
Ford	mm	1400
Armor: glacis plate	mm/°	100/60
upper hull side	mm/°	70/0
mantlet	mm/°	170 basis
Crew		4
Armament		
Main armament	mm	115 gun
Model		U-5TS
Basic load	rds	40
Elevation	°	+17
Depression	°	-4
Traverse	°	360
Axis of bore	mm	1750
Secondary armament AA	mm	*
Bow	mm	---
Coaxial	mm	7.62 PKT
Basic load 12.7mm	rds	---
7.62mm	rds	3500

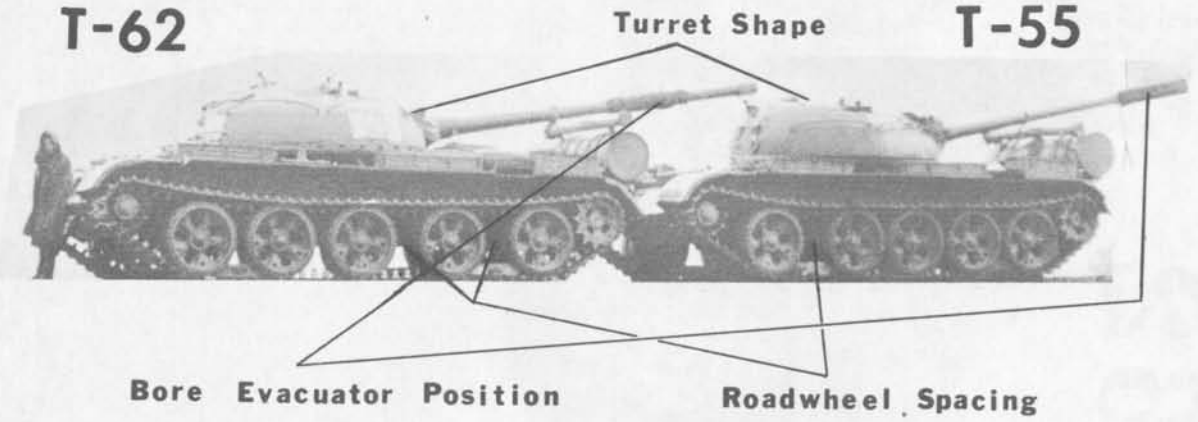
*The T-62A mounts one 127mm AA MG.

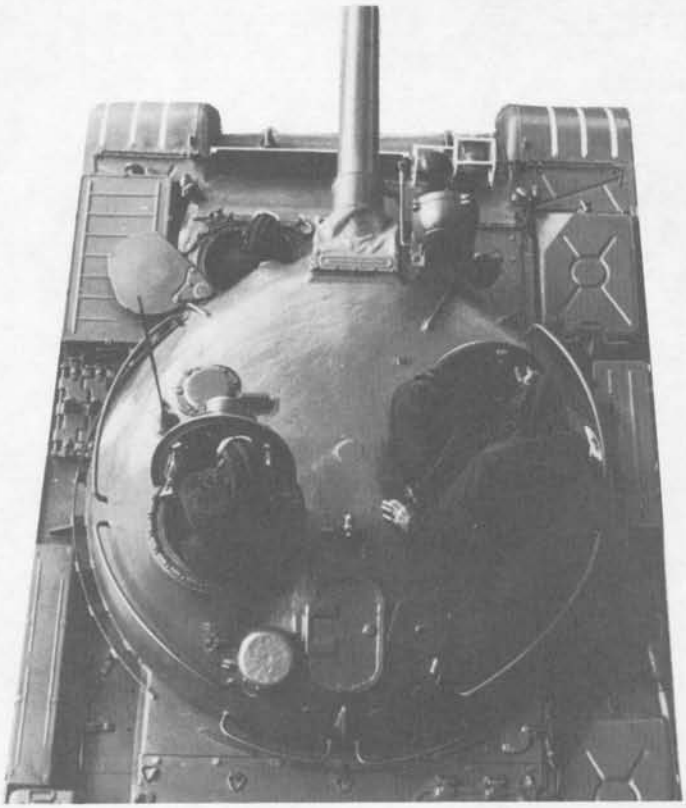
T-62





COMPARISON


T-62
Turret Shape
T-55
Bore Evacuator Position
Roadwheel Spacing





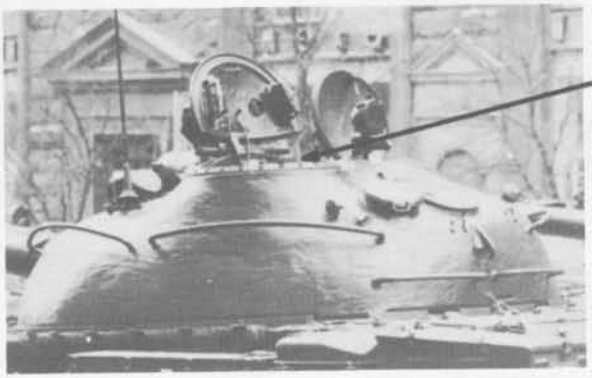
T-62





T—62



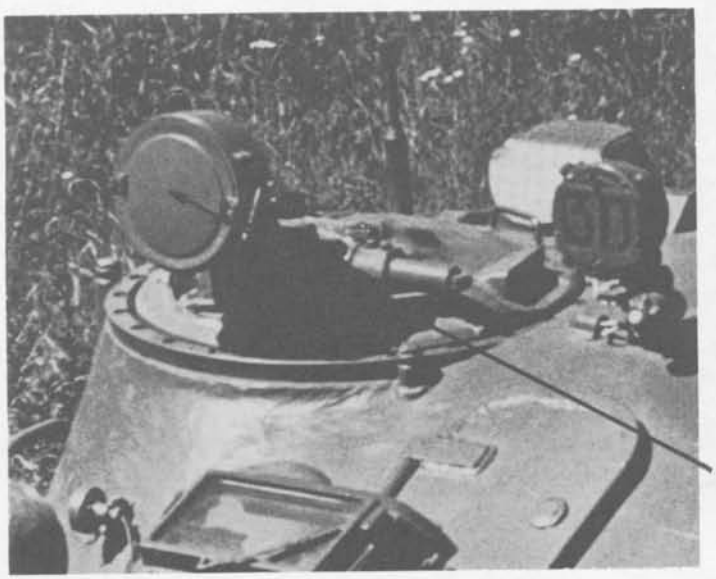


EARLY VERSION OF TANK COMMANDERS HATCH WITH EXPOSED BOLTS

NEW VERSION OF TANK COMMANDER'S HATCH WITH COVERED BOLTS



COMMANDER'S IR SEARCHLIGHT IN FORWARD POSITION



COMMANDER'S IR SEARCHLIGHT IN REVERSED POSITION

T-62 A



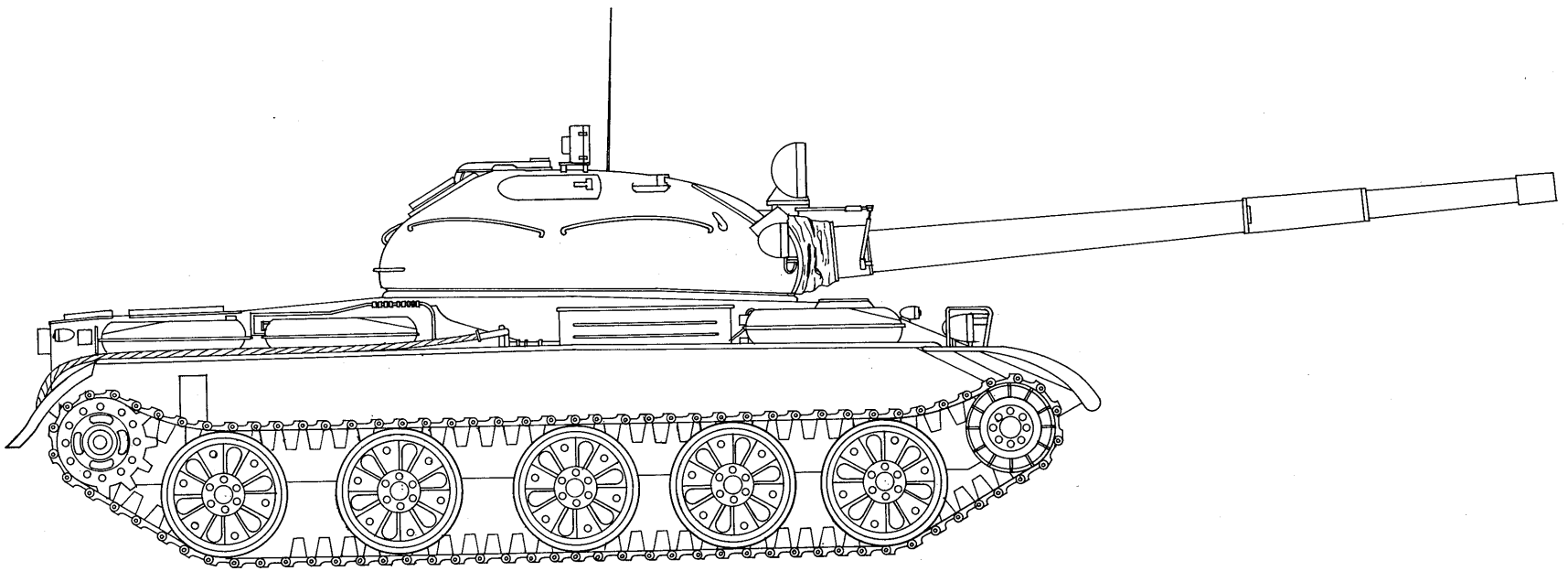
NOTE: 12.7mm AA machinegun on top of turret.



T—62A

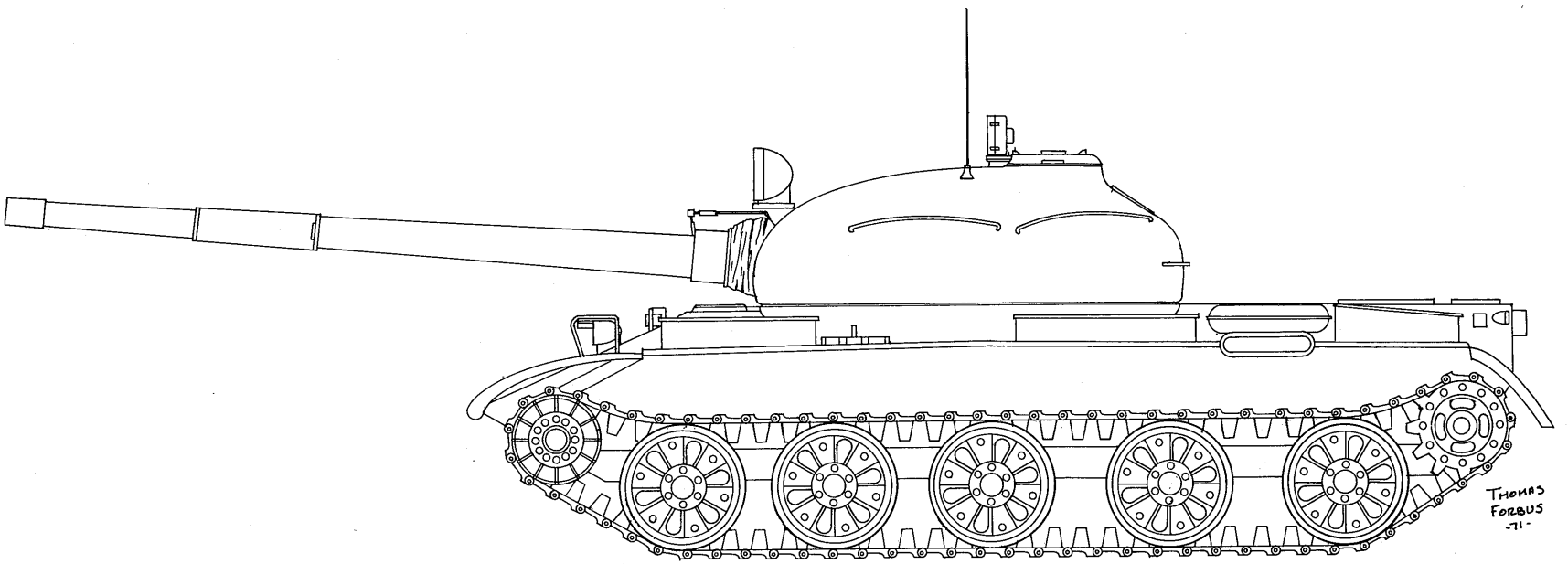






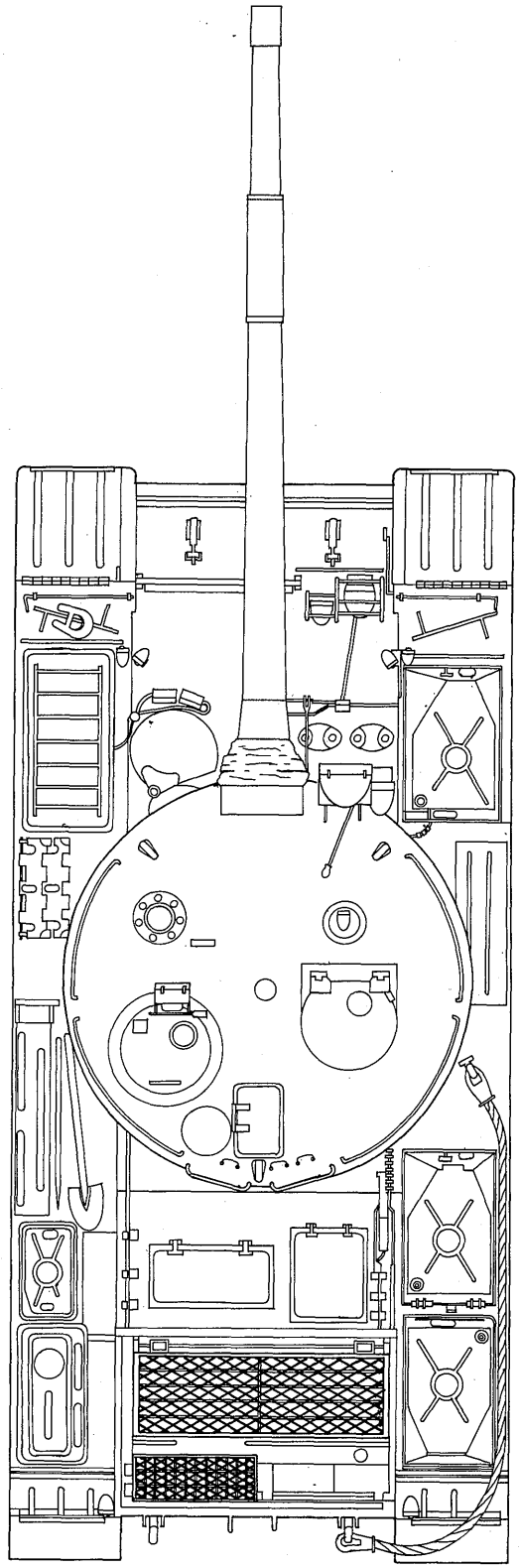
T-62

Right Flank



T-62

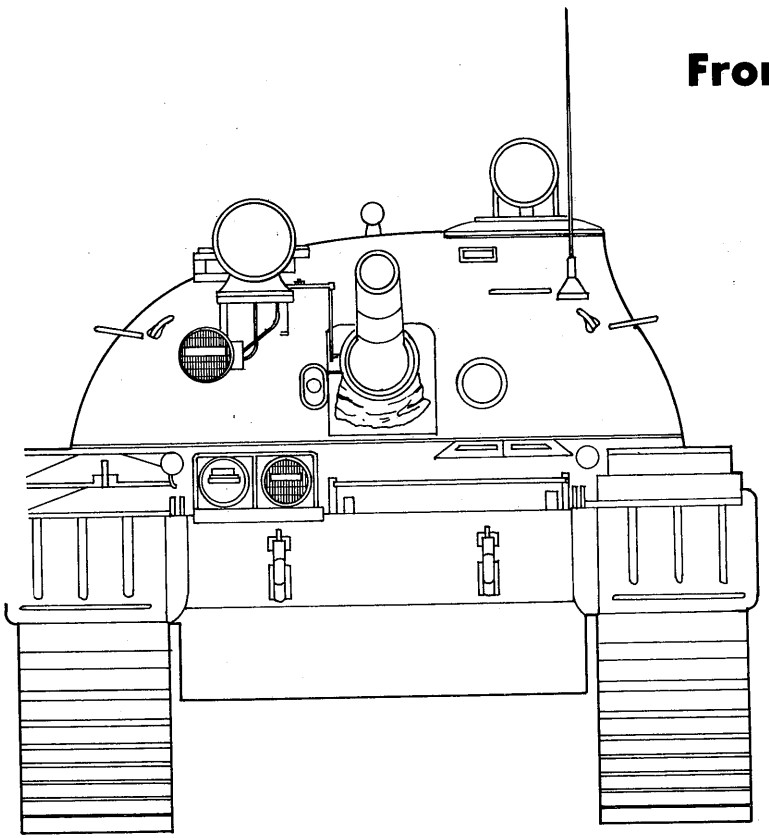
Left Flank



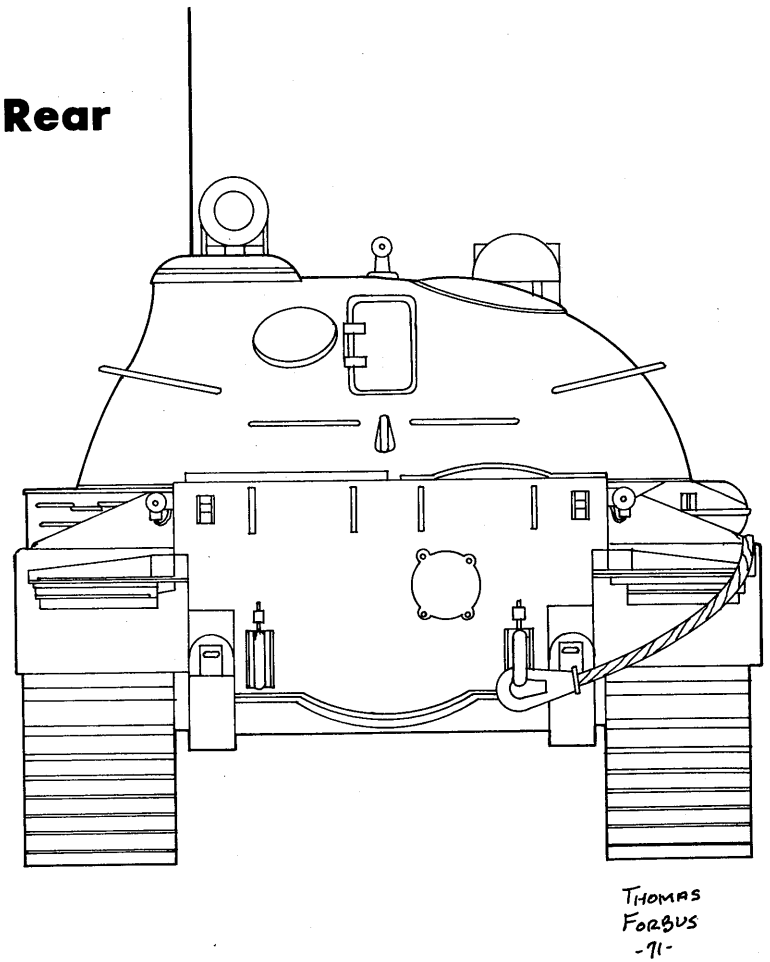
T-62

Top

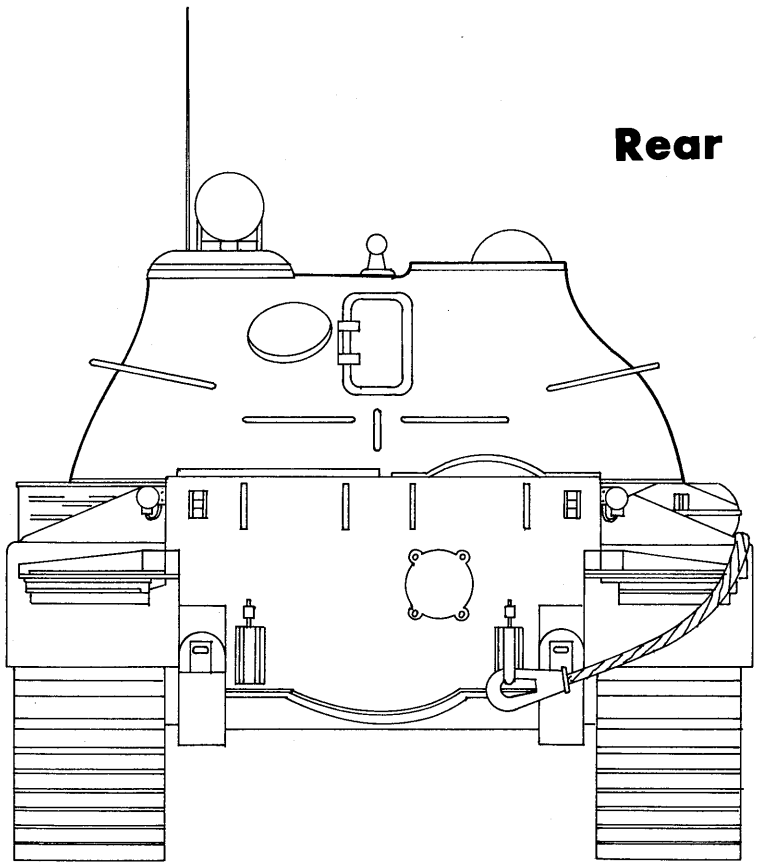
Front and Rear



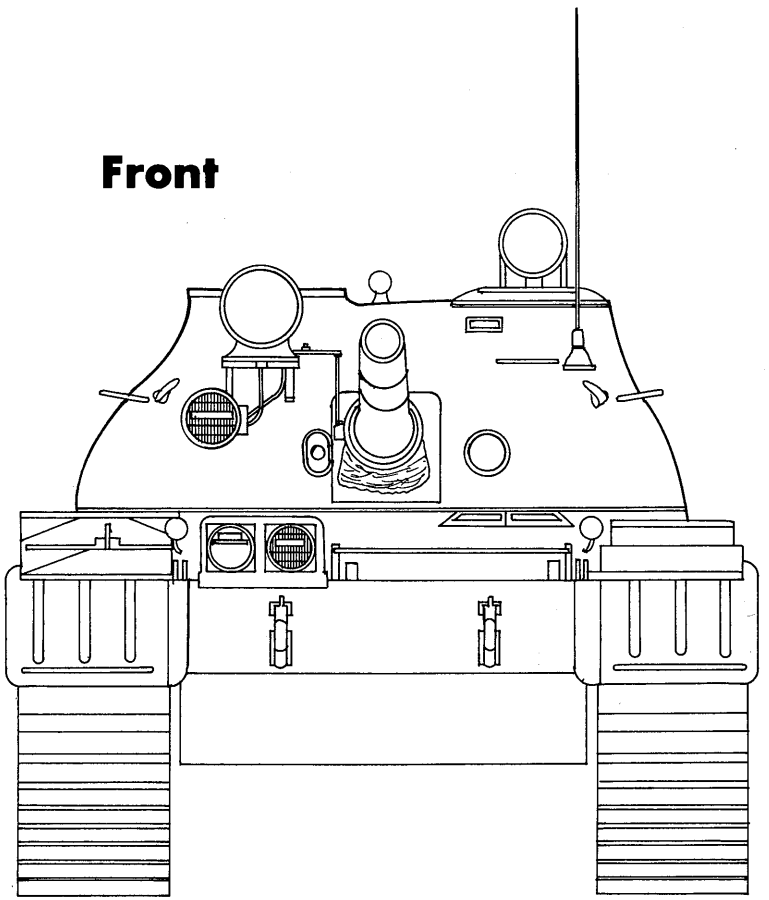
T-62



Rear



Front



T-62A



U.S. MEDIUM TANK M4A3



U.S. MEDIUM TANK M47

Medium tank M4A3
Medium tank M47

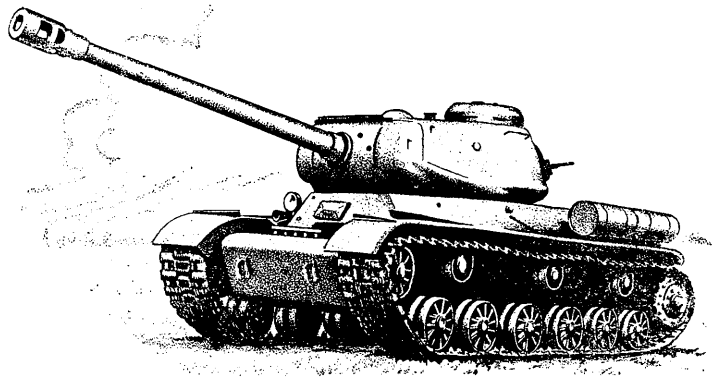
The M4A3 and M47 medium tanks used in the Yugoslav Army are of United States origin. The M4A3 is of the World War II vintage, while the M47 is a postwar tank representing a transition between the M46 and the M48 models. Both M4 series and M47 tanks have been used by a number of countries, and still may be encountered in many areas of the world.

The M4A3 used in the Yugoslav Army is actually an M4A3E4, a very rare variant of the M4 series. As a result it differs in appearance from the "Easy 8" version of the M4A3 used as late as the Korean War in the United States Army. Although the main armament is a 76mm gun, the turret is of the type formerly used to mount the shorter 75mm gun. The suspension is of the vertical volute spring type with outside track guides. As a whole the tank is easily distinguishable from other armored vehicles treated in this identification guide. The only possible confusion that could arise would be with the 90mm self-propelled gun M36B2 of the Yugoslav Army which also uses the same suspension.

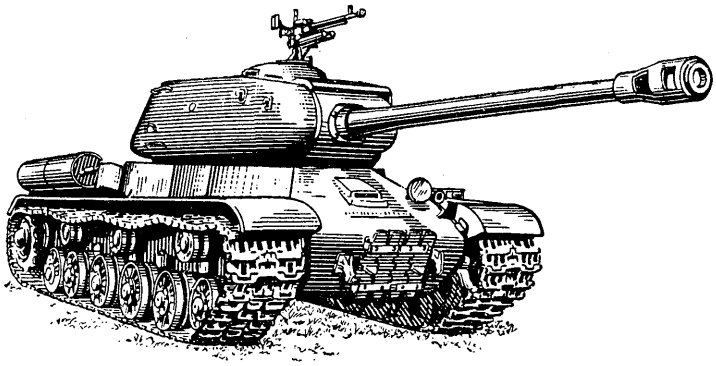
Until Soviet T-54 and T-55 tanks were delivered to the Yugoslav Army in the 1960s the United States M47 was the most modern and powerful model used. Although deficient in cruising range compared to more modern vehicles, the M47 still mounts a formidable main armament equipped with good fire control arrangements. It is easily distinguished from the other tanks used by the East European Communist armies. The high silhouette, the pointed angular turret with large overhang and the distinctive suspension system are all notable points.

		M4A3	M47
Vehicle			
Weight cbt	t	32.5	44.1
Length w/gun fwd	mm	7518	8460
w/gun rear	mm	7104	7214
w/o gun	mm	5968	6363
Width	mm	2616	3505
Height w/o AAMG	mm	2910	2958
Track	mm	2100	2800
Clearance	mm	435	490
Track width	mm	420	584
Ground contact	mm	3740	3920
Engine model		Ford GAA	Continental*
Horsepower		500	810
Cylinders		V-8	V-12
Fuel		gasoline	gasoline
Cooling		water	water
Speed	km/h	42	48
Cruising range	km	160	132
Fuel capacity	l	636	870.5
Fuel consumption	l/100km	300	660
Ground pressure	kg/cm^2	1.0	0.96
Trench	mm	2286	2590
Step	mm	610	914
Slope	°	31	31
Tilt	°		22
Ford	mm	914	1220
Armor: glacis plate	mm/°	60/47	102/60
upper hull side	mm/°	40/0	75/0
mantlet	mm/°	85	102
Crew		5	5
Armament			
Main armament	mm	76 gun	90 gun
Model		M1A2	M36
Basic load	rds	86	71
Elevation	°	+25	+19
Depression	°	-10	-5
Traverse	°	360	360
Axis of bore	mm	2280	2270
Secondary armament AA	mm	12.7 M2 HB	12.7 M2 HB
Bow	mm	7.62 M1919A4	7.62 M1919A4
Coaxial	mm	7.62 M1919A4	7.62 M1919A4
Basic load 12.7mm	rds	630	900
7.62mm	rds	6875	5950

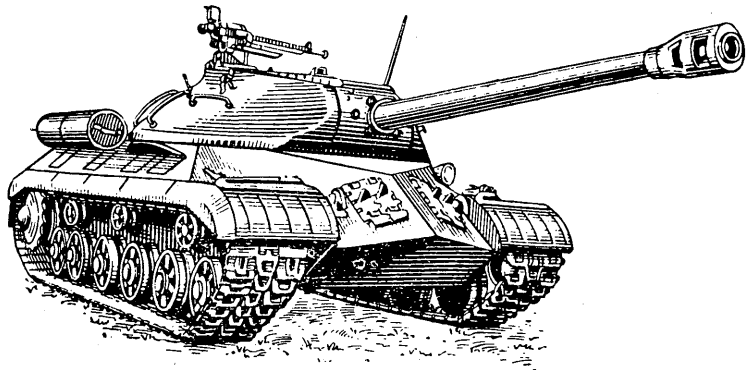
*AV-1790-5B



EARLY JS-2



JS-2



JS-3

Heavy tank JS-1
Heavy tank JS-2
Heavy tank JS-3
Heavy tank JS-4

The JS-2 heavy tank, first put into action in early 1944, was the descendant of a long series of heavy tanks, which first went into production in early 1940. By late summer 1943, the KV heavy tanks which had previously been armed with 76mm guns, were given a new turret mounting the new 85mm tank gun M1943 (D5-T85). Later in the autumn the suspension, automotive components, hull and turret were modified, resulting in the JS-1. These tanks retained the 85mm gun as the main armament. It was very soon decided to rearm the JS-1 with a 122mm gun which resulted in the redesignation as JS-2. Very few heavy tanks armed with the 85mm gun were produced in 1943, but the 122mm armed JS-2 went into mass production in early 1944, and by the end of the war was the most common Soviet heavy tank.

A notable feature of the JS-2 is the presence of a 7.62mm machinegun mounted in the rear of the turret. Early models, as well as the JS-1, also had sponson-mounted 7.62mm machineguns. However, changes in the hull design during the war eliminated these two weapons. After the war sloping sheet metal stowage boxes were also added to the hull, similar to those used by the JS-3.

Contrary to some reports the JS-3 heavy did not see action during the war in Europe in 1945 since it went into production too late. It was, however, issued in the summer and first shown to the world on 7 September 1945 in Berlin. Although armed with the same 122mm tank gun M1943 (D-25) as the JS-2 and using the same powerplant and suspension, the JS-3 has an entirely new hull armor layout and a new cast turret. These changes give a maximum of protection for the armor thickness, without increasing weight, although they result in a very cramped turret.

The JS-4 heavy tank was a further development of the JS-3, featuring a more powerful engine (later used in the T-10 series), somewhat heavier armor, and 12.7mm coaxial machinegun in place of the 7.62mm of the JS-2 and JS-3. Analogous to the T-44 medium tank, the JS-4 was an interim model, produced in small numbers.

The JS series of heavy tanks is obsolete today, but since these vehicles have a powerful armament and thick armor they must be considered as serious opponents. Although the Soviet Army has been the major user of the JS heavy tanks, some other countries such as Poland, East Germany, and Communist China have employed them in small numbers. The JS-3 was also exported to the Middle East. The JS chassis will also be encountered in the form of various JSU heavy assault guns and in a wide variety of heavy tank recovery vehicles. The suspension elements have also been used for heavy guided-missile transport-erector-launcher vehicles.

		JS-2	JS-3	JS-4
Vehicle				
Weight cbt	t	46.3	45.8	50
Length w/gun fwd	mm	9830	9725	9725
w/gun rear	mm	8230	8230	8230
w/o gun	mm	6770	6770	6770
Width	mm	3070	3070	3070
Height w/o AAMG	mm	2740	2440	2440
Track	mm	2410	2410	2410
Clearance	mm	460	460	410
Track width	mm	650	650	650
Ground contact	mm	4625	4625	4625
Engine model		V-2 IS	V-2 IS	
Horsepower		520	520	700
Cylinders		V-12	V-12	V-12
Fuel		Diesel	Diesel	Diesel
Cooling		water	water	water
Speed	km/h	37	37	43
Cruising range	km	150	150	170
Fuel capacity	l	520	520	600
Fuel consumption	l/100km	350	350	360
Ground pressure	kg/cm^2	0.84	0.83	0.9
Trench	mm	2500	2500	2700
Step	mm	1000	1000	900
Slope	°	36	36	35
Tilt	°	30	30	30
Ford	mm	1300	1300	1500
Armor: glacis plate	mm/°	105/60	120/55	120/55
upper hull side	mm/°	130/12	60/60	100/60
mantlet	mm/°	100 curve	200 curve	200 curve
Crew		4	4	4
Armament				
Main armament	mm	122 gun	122 gun	122 gun
Model		M1943*	M1943*	M1943*
Basic load	rds	28	28	30
Elevation	°	+20	+20	+19
Depression	°	-3	-3	-2
Traverse	°	360	360	360
Axis of bore	mm	2000	1950	
Secondary armament AA	mm	12.7 DShK	12.7 DShK	12.7 DShK
Bow***	mm	---	---	---
Coaxial	mm	7.62 DTM	7.62 DTM	12.7 DShK
Basic load 12.7mm	rds	250	250	1000
7.62mm	rds	2330	1500	---

*D-25

**JS-2 has one 7.62mm DTM in turret rear. Early models also has one 7.62mm sponson machinegun on right side of hull.



JS-2 WITH IMPROVED STOWAGE ARRANGEMENT

JS-2





HEAVY TANK JS—3



JS-3



JS-3



JS-3

JS-3





HEAVY TANK T—10M

Heavy tank T-10
Heavy tank T-10M

The T-10, which was first paraded on 7 November 1957 in Moscow, and the T-10M, both greatly resemble the earlier JS-3 heavy tank, but incorporate significant improvements. These include a more powerful engine (as in the JS-4), a larger turret, better gun with bore evacuator and improved armor. Like the JS-4, the T-10 also used a 12.7mm coaxial machinegun. A distinctive recognition feature is the use of seven roadwheels in place of the six of the JS series.

The T-10M, which is the standard version of this series today, differs from the original T-10 in that it has a multi-baffle muzzle brake, 14.5mm machinegun in place of the 12.7mm models, full infrared night driving and sighting equipment, two-plane stabilization and snorkeling capability. The armor configuration on the front of the turret is also slightly different. Some models also have a sheet metal container welded on the upper rear of the turret.

		T-10	T-10M
Vehicle			
Weight cbt	t	50	52
Length w/gun fwd	mm	9875	10600
w/gun rear	mm	8550	9280
w/o gun	mm	7040	7040
Width	mm	3566	3566
Height w/o AAMG	mm	2255	2430
Track	mm	2600	2600
Clearance	mm	430	430
Track width	mm	720	720
Ground contact	mm	4600	4600
Engine model		V-?	V-?
Horsepower		700	700
Cylinders		V-12	V-12
Fuel		Diesel	Diesel
Cooling		water	water
Speed	km/h	42	42
Cruising range	km	250	250
Fuel capacity	l	900	900
Fuel consumption	l/100km	360	360
Ground pressure	kg/cm^2	0.76	0.78
Trench	mm	3000	3000
Step	mm	900	900
Slope	°	32	32
Tilt	°		
Ford	mm	1200	1200
Armor: glacis plate	mm/°	120/60	120/60
upper hull side	mm/°	80/45	80/45
mantlet	mm/°	250 basis	250 basis
Crew		4	4
Armament			
Main armament	mm	122 gun	122 gun
Model			
Basic load	rds	30	30
Elevation	°	+17	+17
Depression	°	-3	-3
Traverse	°	360	360
Axis of bore	mm	1830	1830
Secondary armament AA	mm	12.7 DShK	14.5 KPV
Coaxial	mm	12.7 DShK	14.5 KPVT
Basic load 12.7mm	rds	1000	---
14.5mm	rds	---	750



T-10



T-10



HEAVY TANK T-10M



T-10M



T-10M



T-10M WITH STOWAGE COMPARTMENT ON REAR OF TURRET

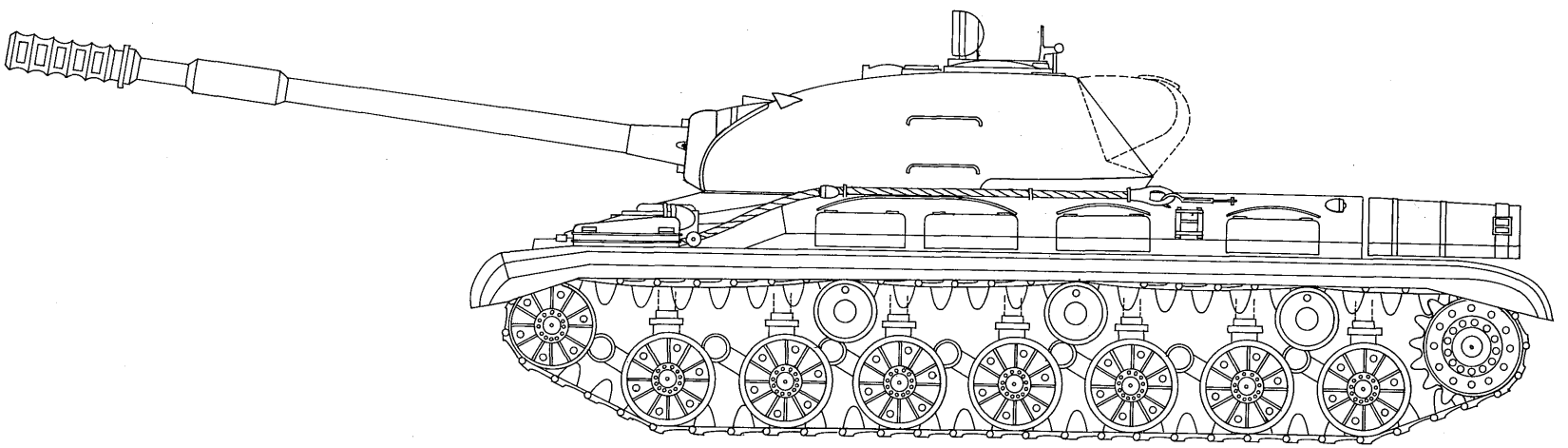


T-10M

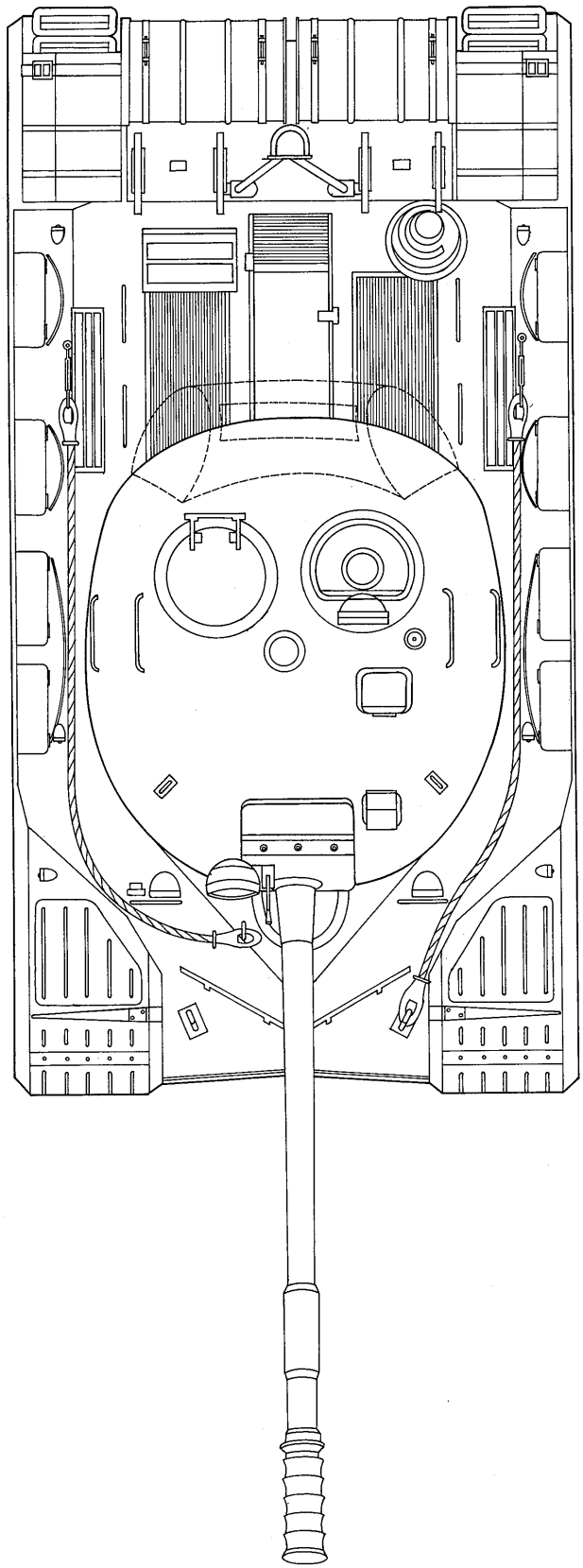




T-10M WITH 14.5mm KPV AA MACHINEGUN



T-10M Flank



T-10M Top

ASSAULT GUNS & SELF-PROPELLED CANNON



AIRBORNE ASSAULT GUN

ASU—57

AIRBORNE ASSAULT GUNS

Airborne assault gun ASU-57
Airborne assault gun ASU-85

The Soviet Army employs two specialized airborne assault guns to provide armored striking power to its airborne forces. Although lightly armored, both models are well-armed for their size and weight. In addition to the Soviet forces, the Polish airborne division also employs the ASU-85 airborne assault gun.

The light airborne assault gun ASU-57 was first shown to the public on May Day 1957 in Moscow. This very lightly armored vehicle was the only one of its type in the Soviet forces until the more powerful ASU-85 was introduced in the early 1960s. Every effort was made in the design of the ASU-57 to produce the lightest vehicle possible, thus allowing heavy dropping using multiple parachutes or the retro-rocket braking system. Although the vehicle, which is constructed in part of aluminum alloy, is very weakly armored, it is well-armed with a gun with the same performance as the 57mm antitank guns.

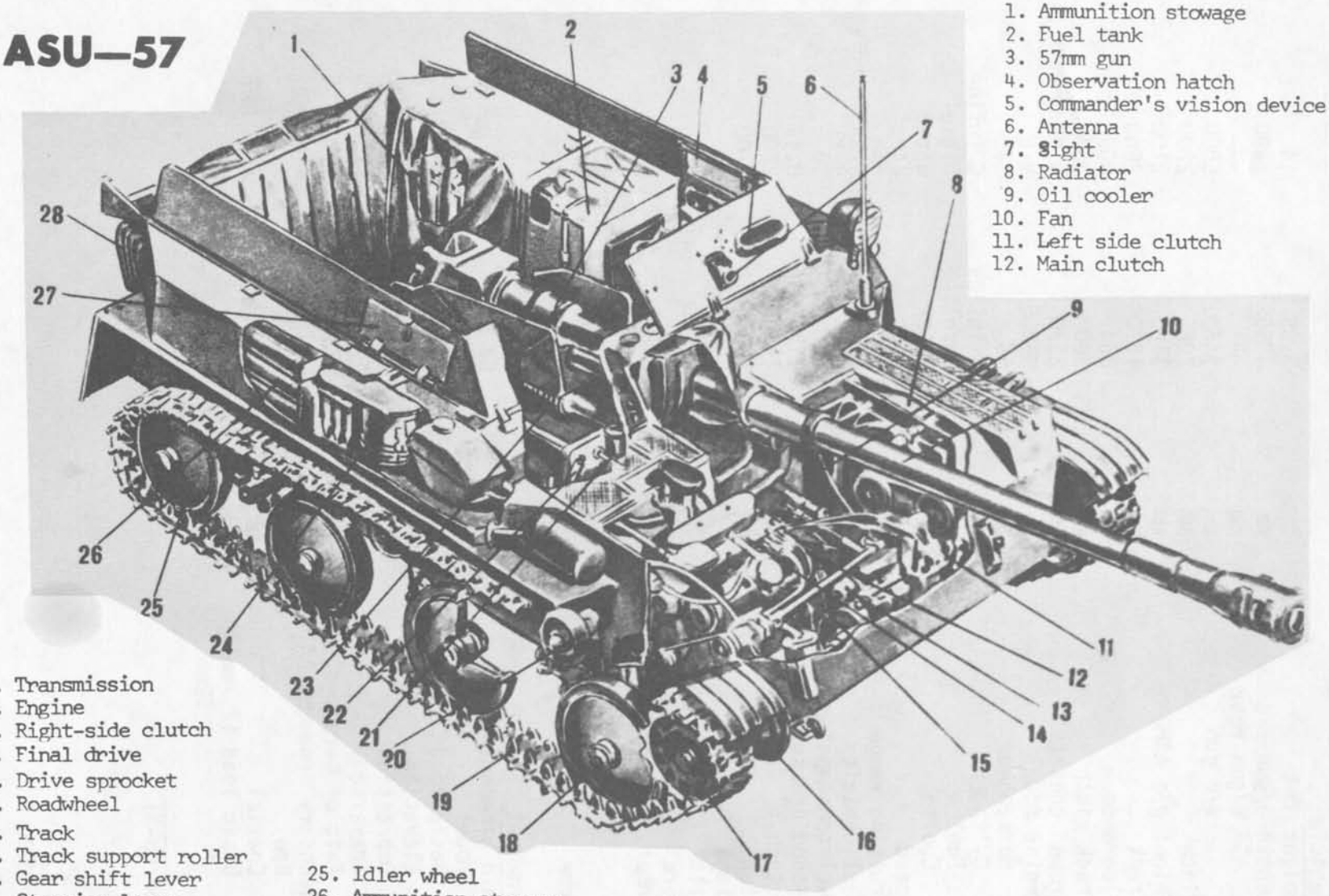
Two different muzzle brakes have been noted on the main armament. The earlier one with 34 slots, denotes the Ch-51 gun, while the later one with a conventional double-baffle muzzle brake, denotes the Ch-51M gun. Both guns are ballistically identical. The power plant of the ASU-57 is a gasoline engine adapted from the M-20 "Pobeda" passenger car.

The ASU-85, the larger of the two airborne assault guns, was first paraded in Moscow on May Day 1962. Although not amphibious, the ASU-85 chassis is based on that of the PT-76 tank. Recognition features are the PT-76 type suspension, the low silhouette, the sharply sloped glacis plate and the long, thin gun tipped with a double-baffle muzzle brake and bore evacuator. In addition the ASU-85 mounts a large gunner's infrared searchlight above the mantlet and carries also a small commander's light.

		ASU-57	ASU-85
Vehicle			
Weight cbt	t	3.35	14
Length w/gun fwd	mm	4995	8490
w/gun rear	mm	---	---
w/o gun	mm	3480	6000
Width	mm	2086	2800
Height w/o AAMG	mm	1180	2100
Track	mm	1870	2660
Clearance	mm	204	400
Track width	mm	300	360
Ground contact	mm	2375	4195
Engine model		M-20E	V-6
Horsepower		55	240
Cylinders		4 inline	6 inline
Fuel		gasoline	Diesel
Cooling		water	water
Speed	km/h	45	44
Cruising range	km	250	260
Fuel capacity	l	140	250
Fuel consumption	l/100km	56	96
Ground pressure	kg/cm^2	0.35	0.44
Trench	mm	1400	2800
Step	mm	500	1100
Slope	°	30	38
Tilt	°		
Ford	mm	700	
Armor: glacis plate	mm/°	6/60	40/60
upper hull side	mm/°	6/0	15/30
mantlet	mm/°	6/39	40/60
Crew		3	4
Armament			
Main armament	mm	57 gun	85 gun
Model		Ch-51M*	
Basic load	rds	30	40
Elevation	°	+12	+15
Depression	°	-5	-4
Traverse	°	22	12
Axis of bore	mm	975	1570
Secondary armament AA	mm	---	---
Bow	mm	---	---
Coaxial	mm	---	7.62 PKT
Basic load 12.7mm	rds	---	---
7.62mm	rds	---	

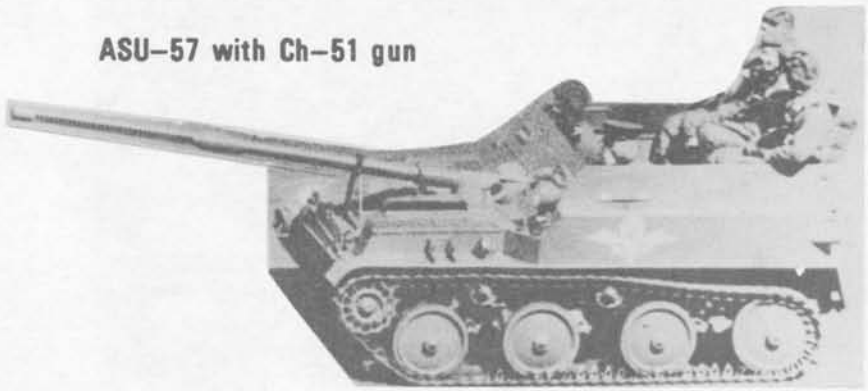
*or Ch-51

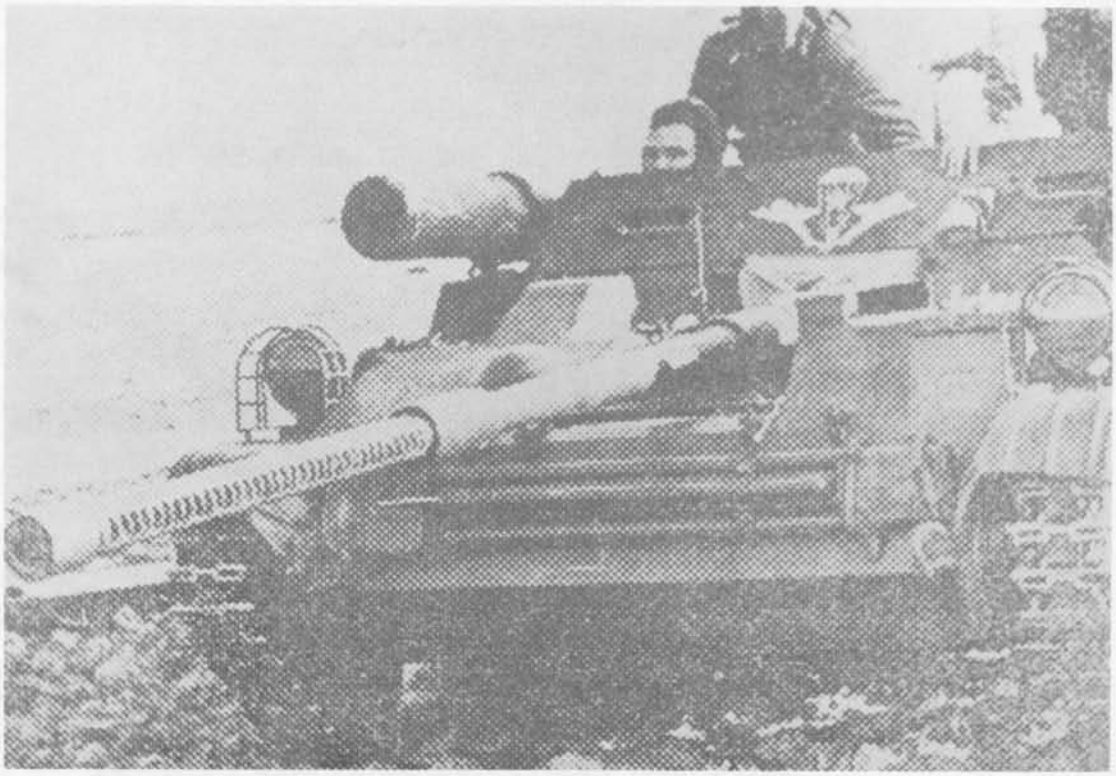
ASU—57



1. Ammunition stowage
2. Fuel tank
3. 57mm gun
4. Observation hatch
5. Commander's vision device
6. Antenna
7. Sight
8. Radiator
9. Oil cooler
10. Fan
11. Left side clutch
12. Main clutch
13. Transmission
14. Engine
15. Right-side clutch
16. Final drive
17. Drive sprocket
18. Roadwheel
19. Track
20. Track support roller
21. Gear shift lever
22. Steering lever
23. Gun elevating gear
24. Air filter
25. Idler wheel
26. Ammunition stowage
27. Armored observation hatch cover
28. Canvas top

ASU–57 with Ch–51 gun





ASU–57 with Ch–51 gun



ASU–57 with Ch–51M gun



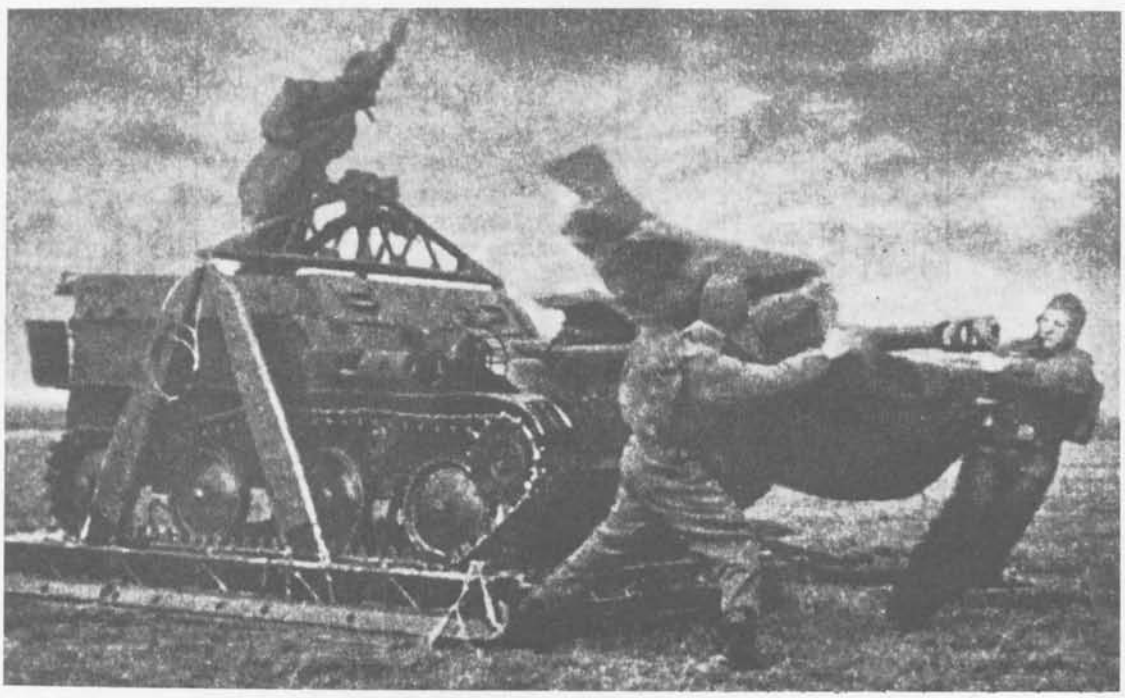
ASU–57 with Ch–51M gun



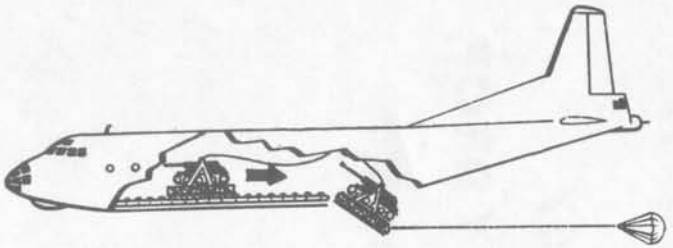


ASU—57 ON HEAVY DROP PLATFORM

ASU–57 with heavy drop platform

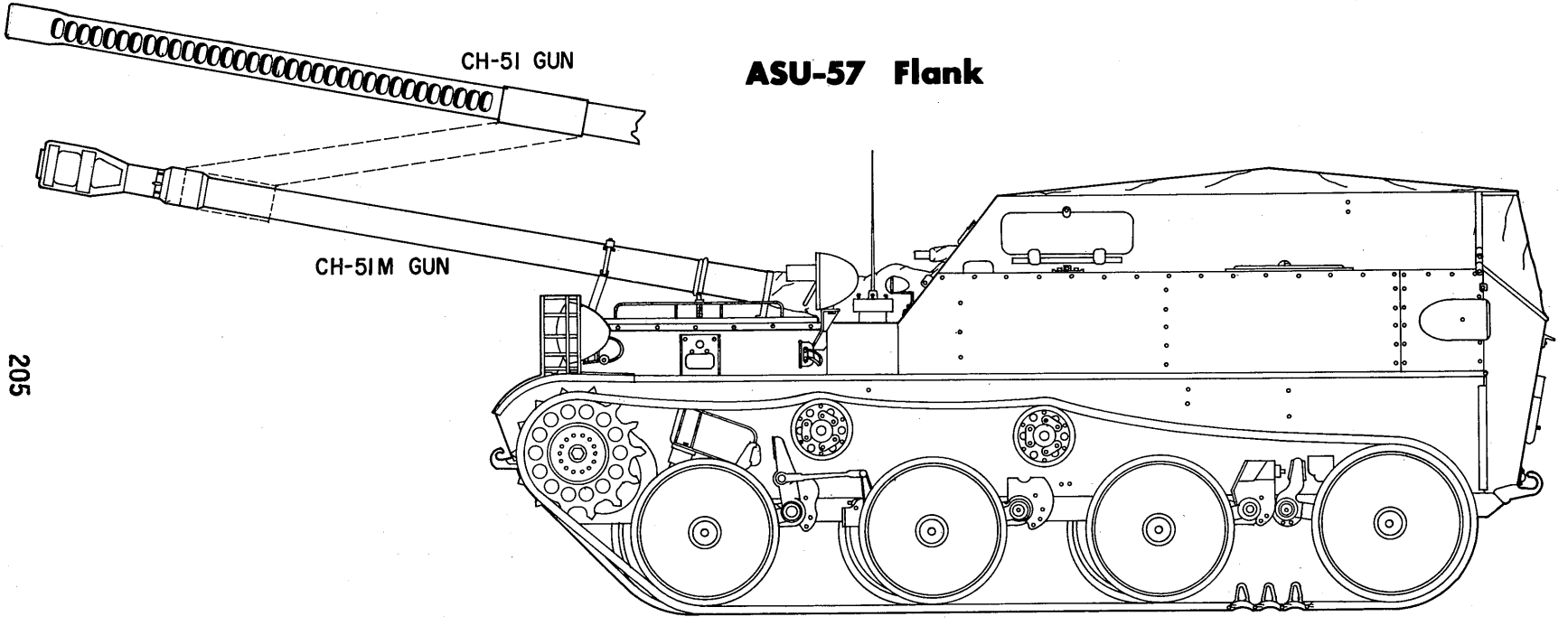


ASU-57 DROP TECHNIQUE

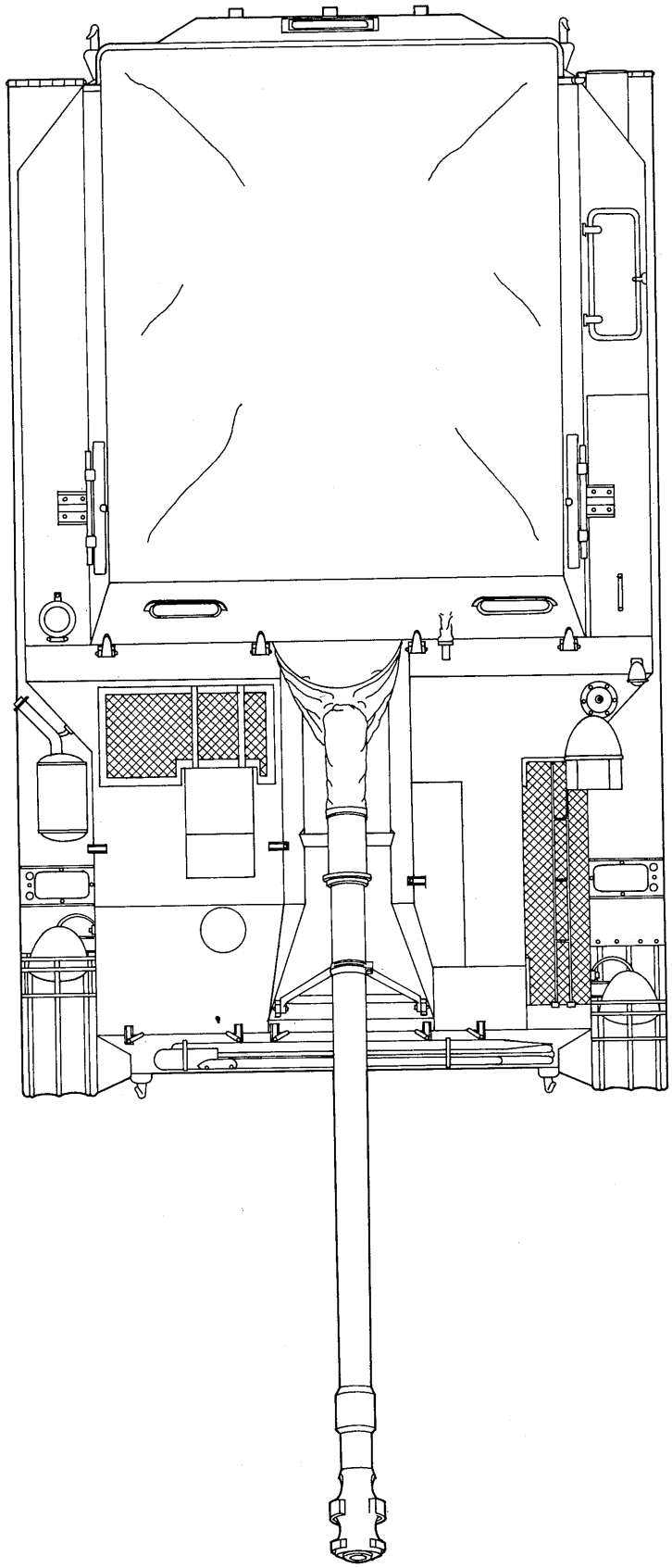




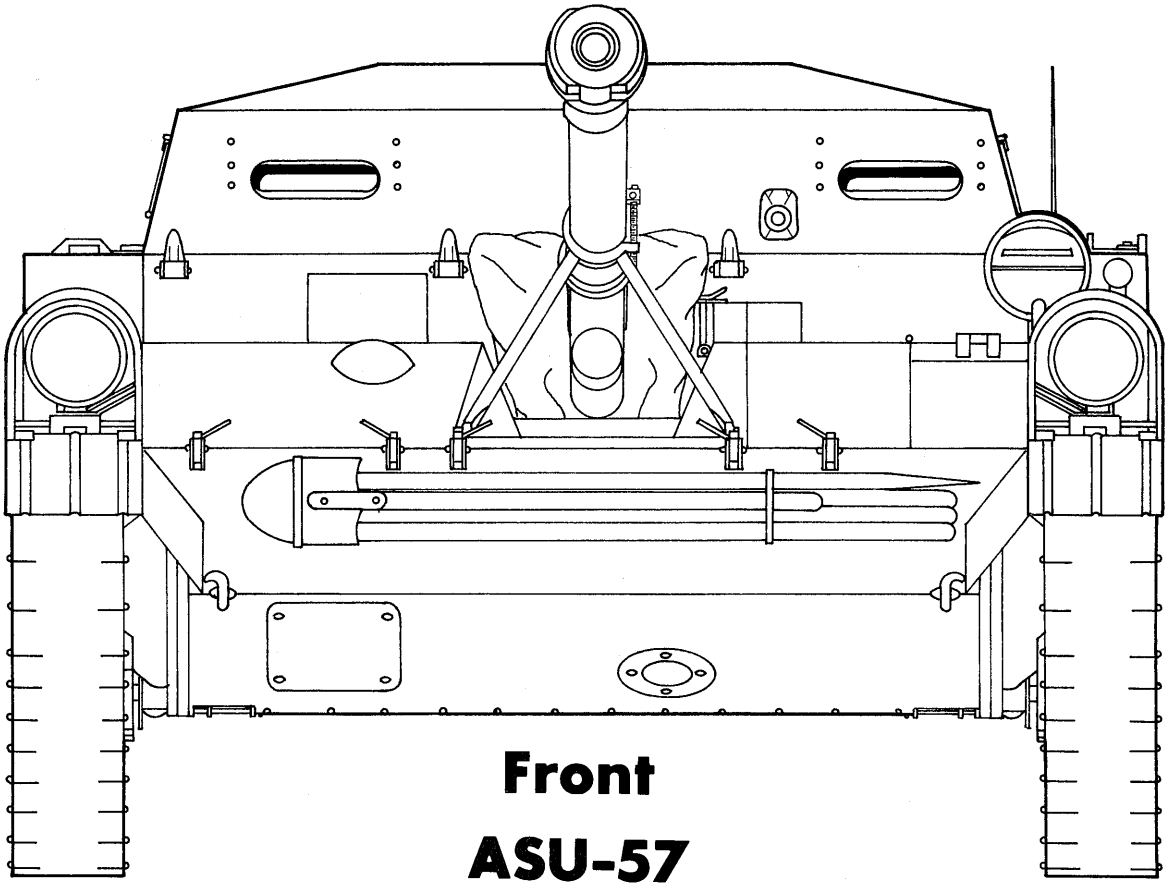




ASU-57 Flank

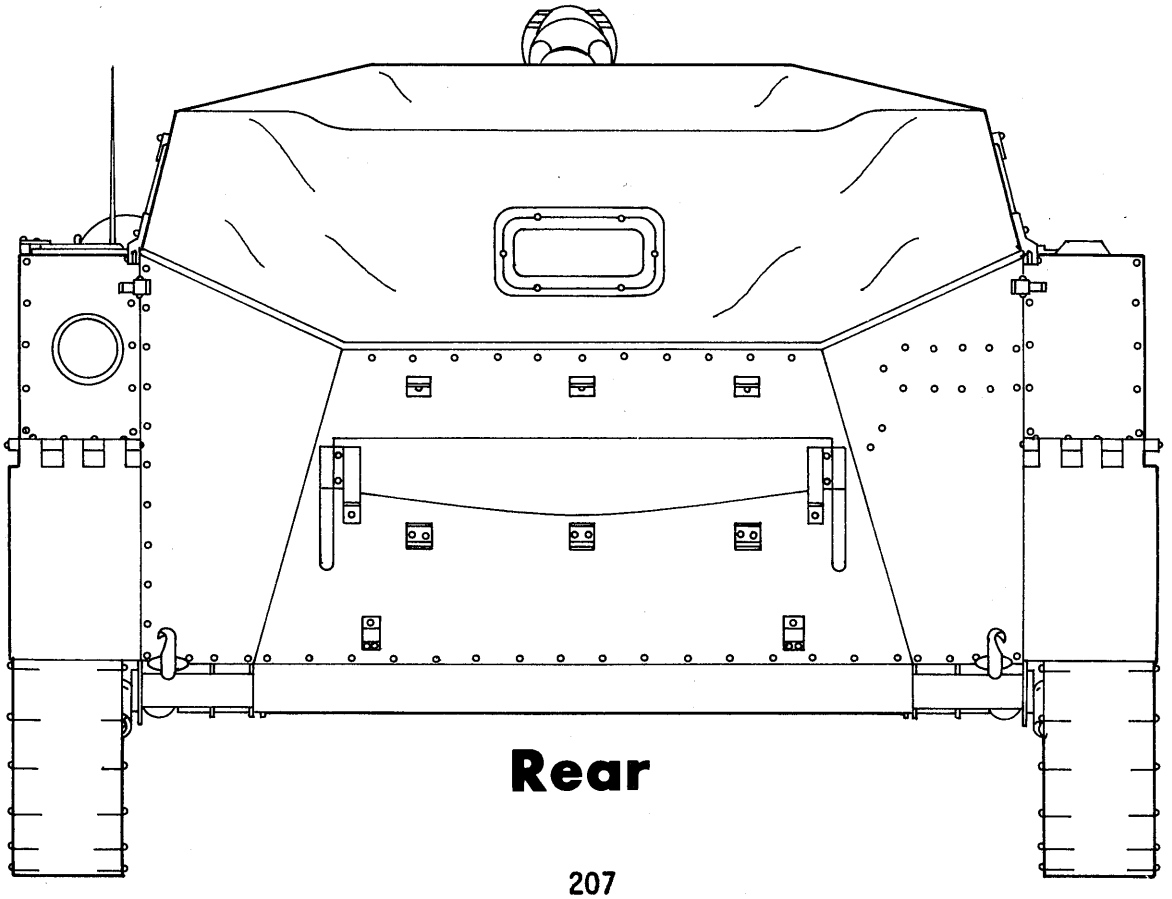


ASU-57 Top



Front

ASU-57

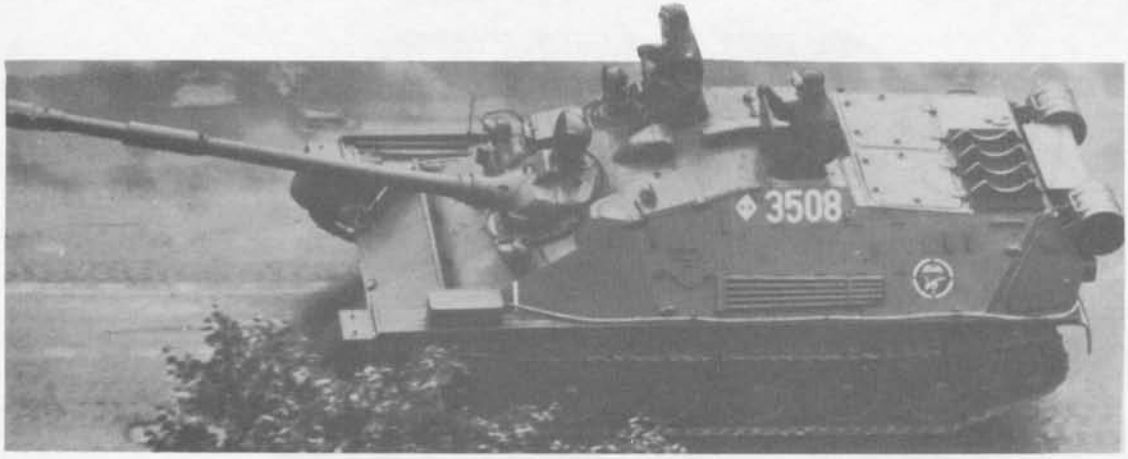


Rear



AIRBORNE ASSAULT GUN

ASU—85



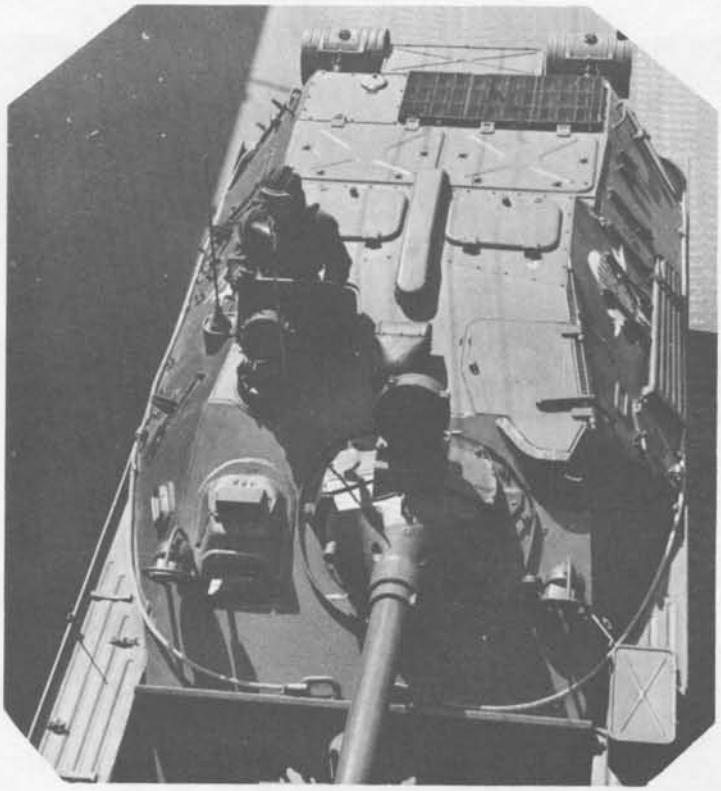
ASU–85



ASU–85



ASU–85



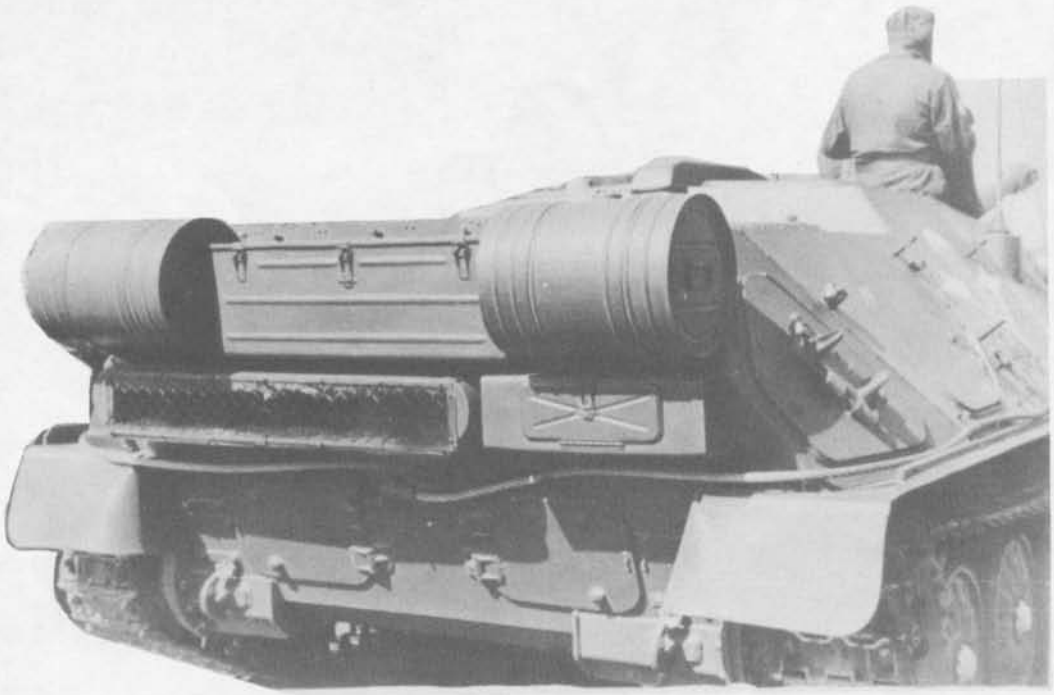
ASU–85



ASU–85



ASU–85



ASU–85



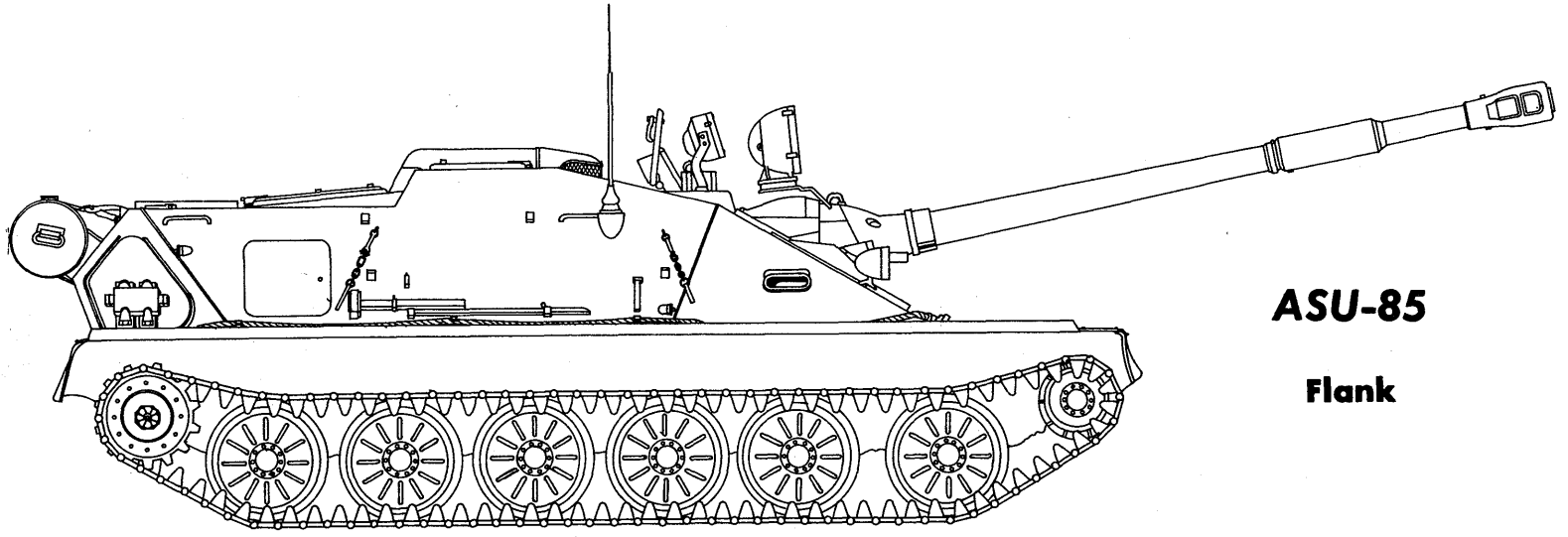
ASU–85



ASU–85

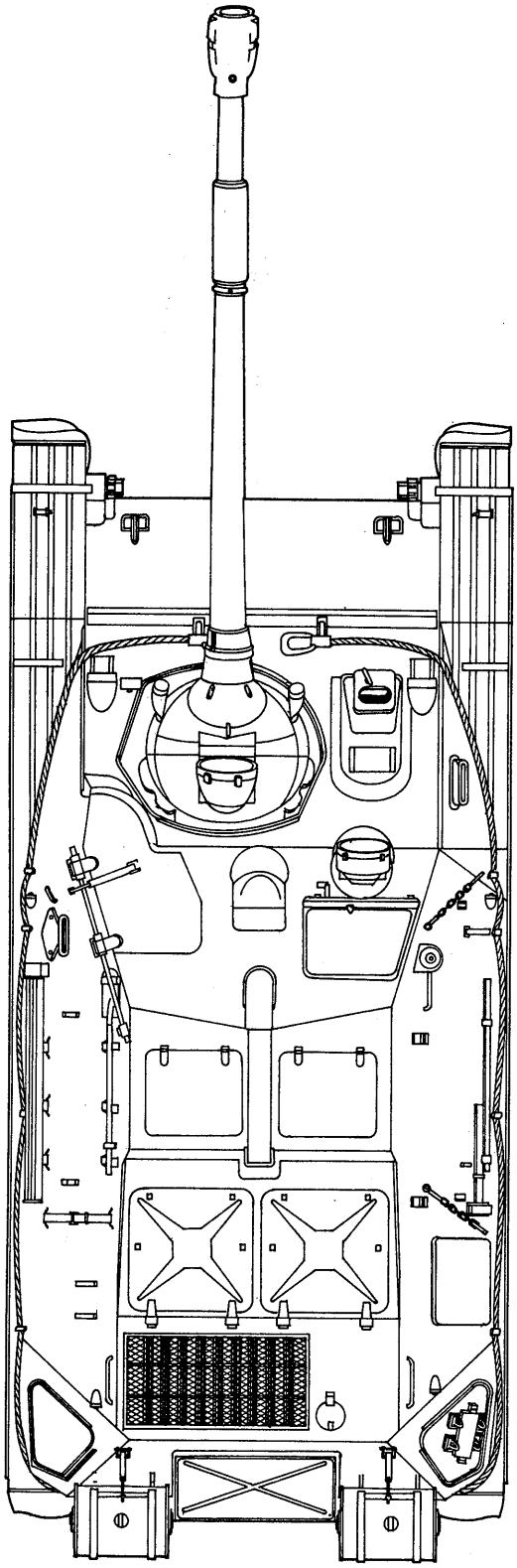


ASU–85



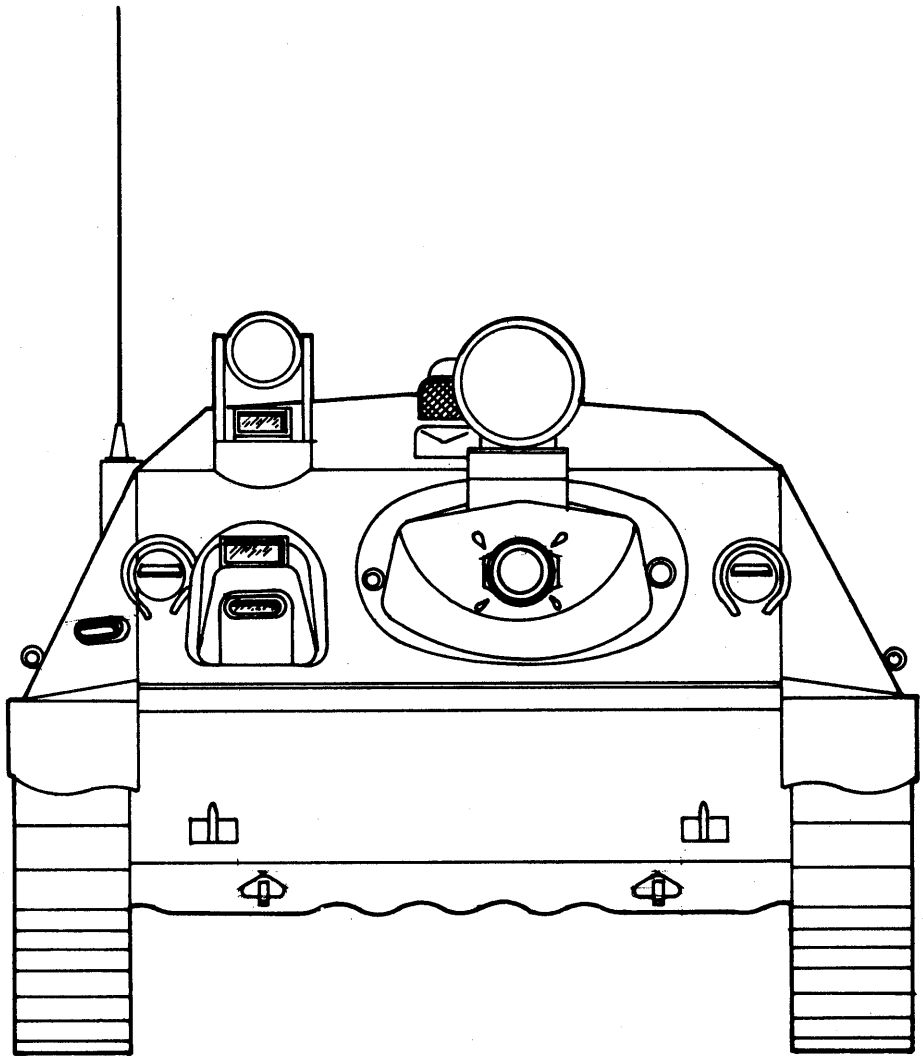
ASU-85

Flank



ASU-85

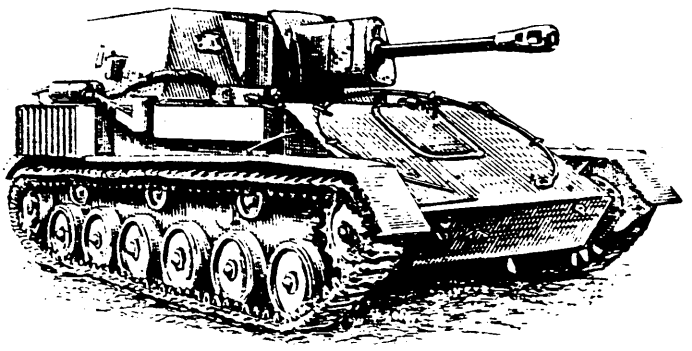
Top



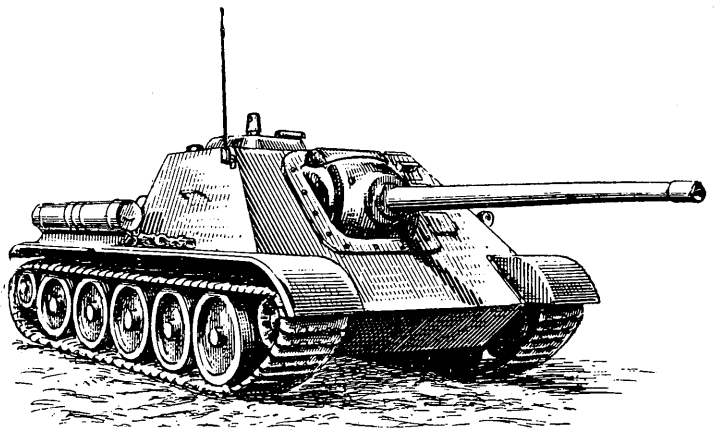
ASU-85

Front

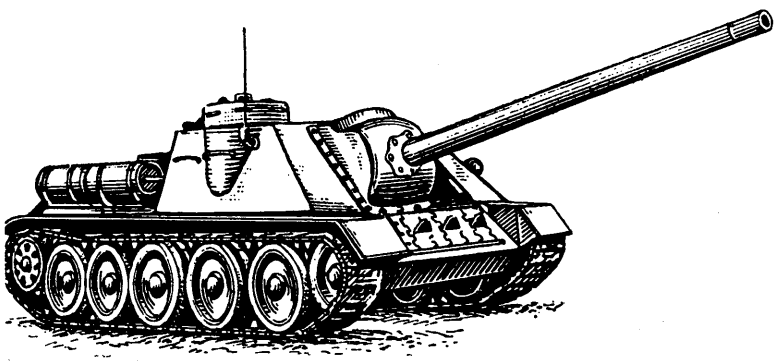
LIGHT AND MEDIUM ASSAULT GUNS



SU-76



SU-85



SU-100

LIGHT AND MEDIUM ASSAULT GUNS

Light assault gun SU-76
Light assault gun SU-76M
Medium assault gun SU-85
Medium assault gun SU-100

East European Communist forces employ three different light and medium assault guns of Soviet design originating during World War II. The production of the light SU-76 terminated at the end of the war, that of the SU-85 during the war, but the medium SU-100 continued to be produced after the war. It is also the only model which is relatively common today, and which is still a formidable opponent even by today's standards.

The light SU-76 was an adaptation of the 76mm divisional gun M1942 (ZIS-3) to a self-propelled armored mount developed from the T-70 light tank chassis. Originally produced starting in December 1942 as a tank destroyer, the SU-76 was relegated to an infantry support role due to its thin armor and limited firepower. Originally the fighting compartment was open on the top and at the rear. During the war it was finally completely closed. In addition, some late production models were powered with two GAZ-203 engines of 85 horsepower in place of the less powerful GAZ-202. Such vehicles were designated SU-76M.

For many years the SU-76 was employed by rifle units in the Soviet Army and also in armored units of the other Communist armies. Today, however, it has been relegated to employment by security troops. The East German Army has modified the chassis to produce a tank gunnery training vehicle, the PSAF 76/137A. The same army also uses an armored workshop vehicle based on a modified SU-76. Among the modifications is the substitution of a single 120 horsepower EM 6 Diesel engine from a G 5 truck for the two GAZ-202 engines of the standard SU-76.

The medium SU-85 and SU-100 assault guns are very similar in appearance and both use the T-34 chassis. The SU-85 went into production in August 1943 to replace the unsuccessful SU-122 assault howitzer. The SU-100 appeared in October 1944 as its replacement. The gun of the SU-85 is a variant of the same gun mounted on early T-34(85) tanks. The gun of the SU-100 was adapted from a naval gun, and is the same basic weapon which was mounted on the original T-54 medium tanks. After World War II both SU-85 and SU-100 assault guns were widely issued to the various Warsaw Pact armies, but by now the SU-85 has been phased

out. The SU-100, which was produced well into the middle 1950s in Czechoslovakia, has also become less common, but is still in the inventory of a number of Warsaw Pact armies and in Yugoslavia. It has been exported in large numbers to the Middle East and North Africa. The SU-100 can be distinguished from the SU-85 by the presence of a circular cupola which is flared into the right-hand side of the superstructure, and by the heavier and longer gun with a differently shaped mantlet. In the postwar years various stowage boxes have also been added to the SU-100. Both vehicles have been converted into tank recovery vehicles.

		SU-76	SU-85	SU-100
Vehicle				
Weight cbt	t	11.2	29.6	31.6
Length w/gun fwd	mm	5000	8150	9450
w/gun rear	mm	---	---	---
w/o gun	mm	5000	6190	6190
Width	mm	2740	3050	3050
Height w/o AAMG	mm	2100	2360	2245
Track	mm	2400	2450	2450
Clearance	mm	300	400	400
Track width	mm	300	500	500
Ground contact	mm	3110	3850	3850
Engine model (2x)		GAZ-202*	V-2-34	V-2-34M
Horsepower		70	500	500
Cylinders		6 inline	V-12	V-12
Fuel		gasoline	Diesel	Diesel
Cooling		water	water	water
Speed	km/h	45	55	55
Cruising range	km	360	300	300
Fuel capacity	l	400	560	560
Fuel consumption	l/100km	110	190	190
Ground pressure	kg/cm^2	0.57	0.8	0.83
Trench	mm	2000	2500	2500
Step	mm	650	730	730
Slope	°	34	35**	35**
Tilt	°	25	25	25
Ford	mm	900	1300	1300
Armor: glacis plate	mm/°	25/60	75/60	75/60
upper hull side	mm/°	15/10	45/0	45/0
mantlet	mm/°	25 curved	45 curved	75 curved
Crew		4	4	4
Armament				
Main armament	mm	76 gun	85 gun	100 gun
Model		M1942/43	M1943***	M1944****
Basic load	rds	60	48	34
Elevation	°	+25	+25	+20*****
Depression	°	-5	-5	-3
Traverse	°	30	20	16
Axis of bore	mm	1720	1650	1630
Secondary armament AA	mm	---	---	---
Bow	mm	---	---	---
Coaxial	mm	---	---	---
Basic load 12.7mm		---	---	---
7.62mm		---	---	---

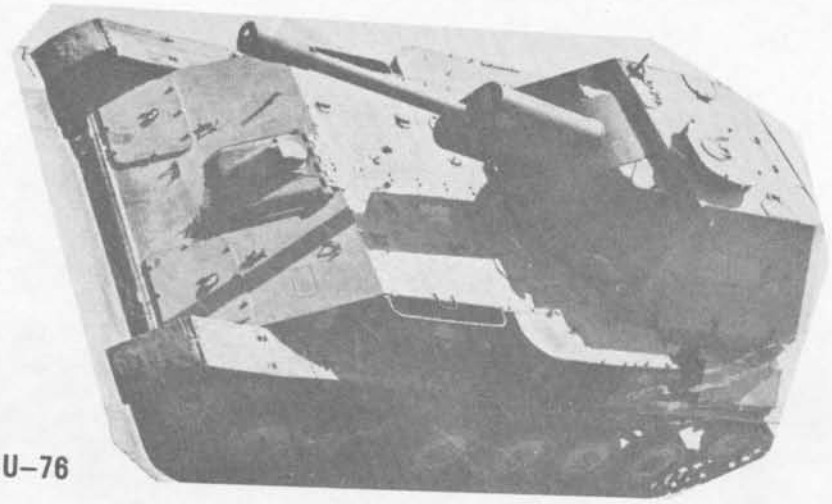
*Some SU-76 were built with two GAZ-203 engines of 80 HP each.
**when fully loaded only 30°
***either D5-S85 or D5-S85A
****D-10S
*****early models had only +17° elevation



SU-76



SU–76

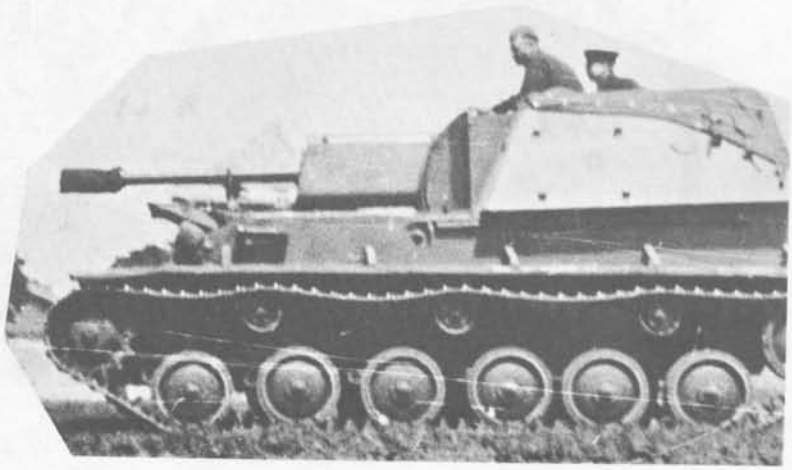


SU–76



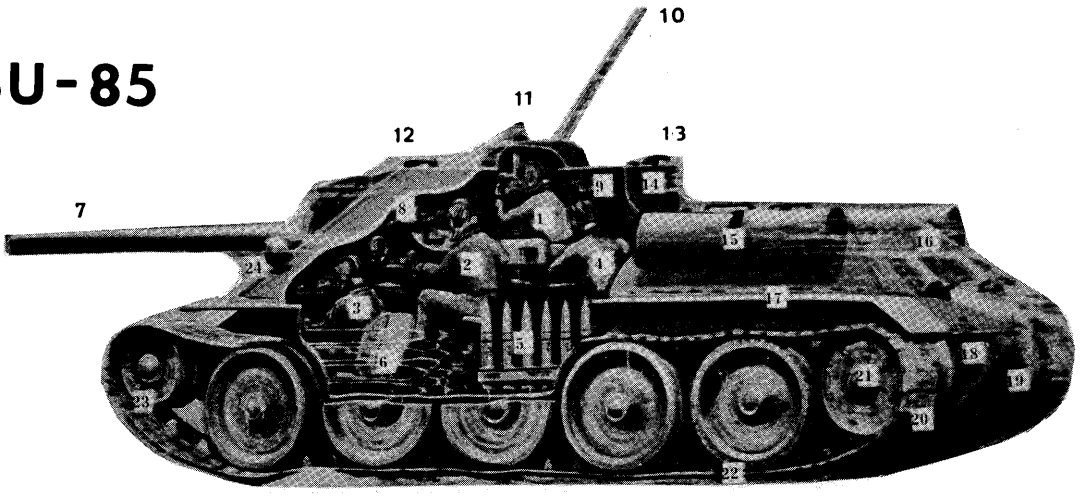
SU–76

SU-76



SU–76

SU-85



1. Commander
2. Gunner
3. Driver
4. Loader
5. Ammunition
6. Ammunition
7. 85mm gun
8. Gunner's telescope
9. Radio
10. Antenna
11. Commander's periscope
12. Gunner's periscope
13. Periscope
14. Rear access hatch for crew compartment
15. Auxiliary fuel tanks
16. Upper rear armor plate with access hatch
17. Engine compartment
18. Lower rear hull armor plate
19. Final drive housing
20. Track
21. Drive sprocket
22. Road wheel
23. Idler wheel
24. Headlight



SU-85



SU–85

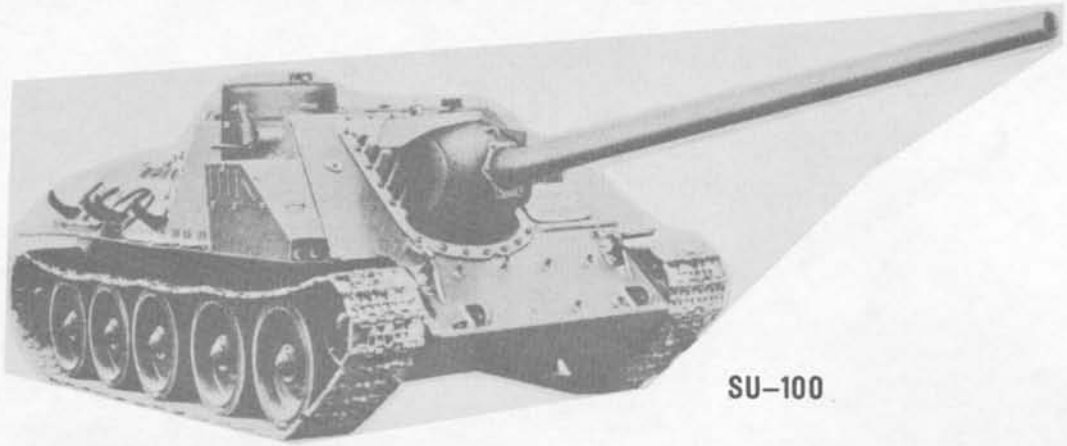


SU–100

SU-100



SU–100



SU–100

SU-100

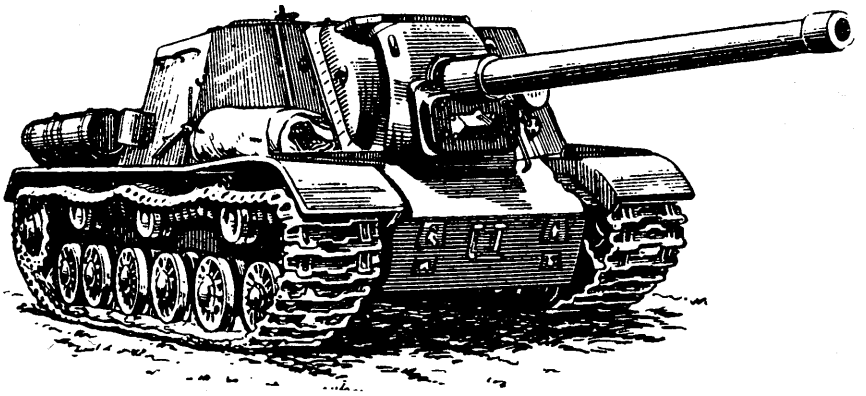


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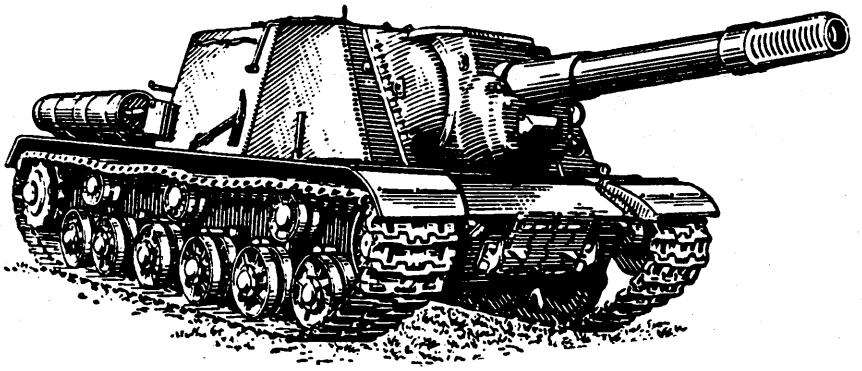


SU–100

JSU-122



JSU-152



HEAVY ASSAULT GUNS

Heavy assault gun JSU-122
Heavy assault gun JSU-122A
Heavy assault gun SU-152
Heavy assault gun JSU-152

A few heavy assault guns of Soviet World War II design are still employed in certain Warsaw Pact armies. The original heavy assault gun was the SU-152, which went into production in February 1943. This vehicle represented a combination of the KV-1S heavy tank chassis with the 152mm gun ML-20S which had been developed from the 152mm gun-howitzer M1937 (A-19). When the JS heavy tank went into production, its chassis was also used for heavy assault guns, although the superstructure was changed to make the interior more roomy. As a result the armor plates are less sharply sloped.

The first assault gun on the JS chassis was the JSU-122, which went into production at the end of 1943. Its armament was the 122mm gun A-19S, which was developed from the 122mm corps gun M1931/37 (A-19). It can be distinguished from the improved JSU-152 by the longer and thinner tube without muzzle brake. As the 122mm tank gun M1943 (D-25) became available in larger numbers during 1944, it too was mounted on the JSU-122. This gave the gun a higher rate of fire since it had a sliding wedge breechblock. This version, known for convenience as the JSU-122A, can be distinguished from the earlier JSU-122 by the thinner tube tipped with a double-baffle muzzle brake, as well as a differently shaped mantlet.

In the postwar years the original JSU-122 quickly disappeared from the active units, with the JSU-122A being standard. Today both models are very rarely seen. The JSU-152 is the only heavy assault gun normally issued, and then only to certain units on a small scale.

Although the three guns mounted on the JSU have always retained their basic designation, post World War II changes in the year model nomenclature sometimes results in confusion. The table below should clarify this matter.

Weapon	Wartime model	Postwar model
122mm gun A-19S	M1944	M1931/44
122mm gun D-25S	M1943	M1944
152mm gun ML-20S	M1943	M1937/43

		JSU-122A	JSU-152
Vehicle			
Weight cbt	t	46.5	46.5
Length w/gun fwd	mm	10060	9050
w/gun rear	mm	---	---
w/o gun	mm	6770	6770
Width	mm	3070	3070
Height w/o AAMG	mm	2470	2470
Track	mm	2410	2410
Clearance	mm	460	460
Track width	mm	650	650
Ground contact	mm	4265	4265
Engine model		V-2 IS	V-2 IS
Horsepower		520	520
Cylinders		V-12	V-12
Fuel		Diesel	Diesel
Cooling		water	water
Speed	km/h	37	37
Cruising range	km	150	150
Fuel capacity	l	520	520
Fuel consumption	l/100km	350	350
Ground pressure	kg/cm^2	0.84	0.84
Trench	mm	2500	2500
Step	mm	1000	1000
Slope	°	36	36
Tilt	°	30	30
Ford	mm	1300	1300
Armor: glacis plate	mm/°	110/70	110/70
upper hull side	mm/°	90/0	90/0
mantlet	mm/°	90 curved	90 curved
Crew		5	5
Armament			
Main armament	mm	122 gun	152 gun
Model		M1944*	M1937/43**
Basic load	rds	30	20
Elevation	°	+16	+20
Depression	°	-3	-3
Traverse	°	14	10
Axis of bore	mm	1800	1800
Secondary armament AA	mm	12.7 DShK	12.7 DShK
Bow	mm	---	---
Coaxial	mm	---	---
Basic load 12.7mm		250	250
7.62mm		---	---

*D-25S. The JSU-122 is armed with the M1931/44 (A-19S)
**ML-20S



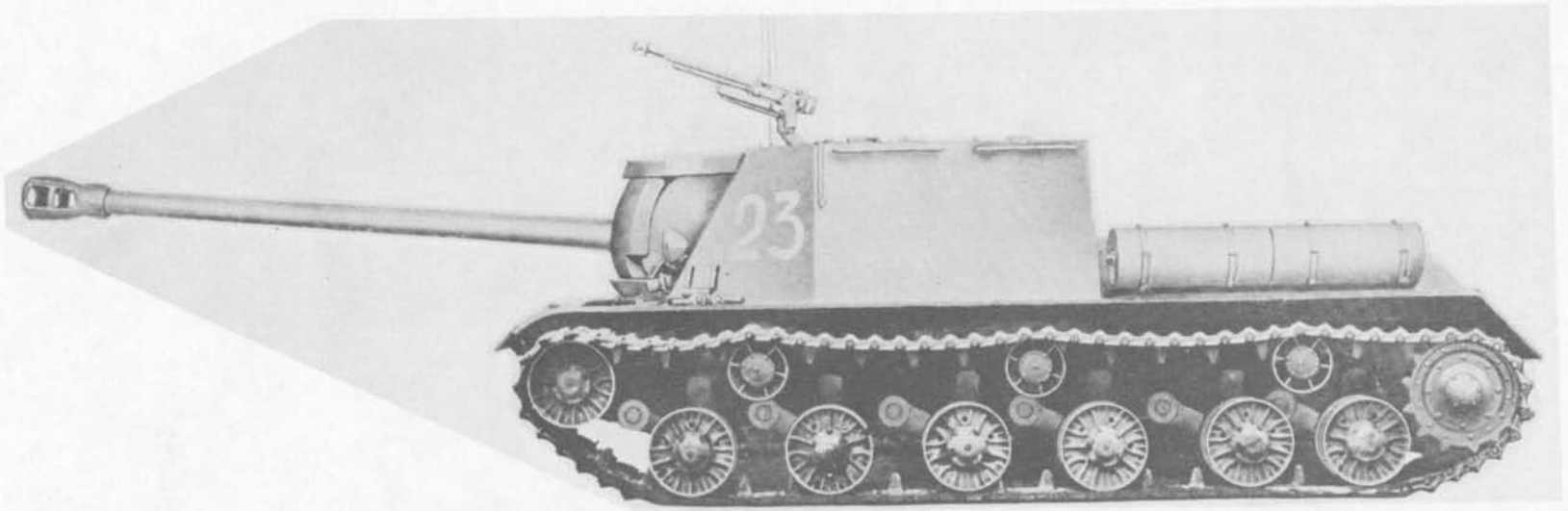
JSU–122 with A–19S gun



JSU–122 with A–19S gun



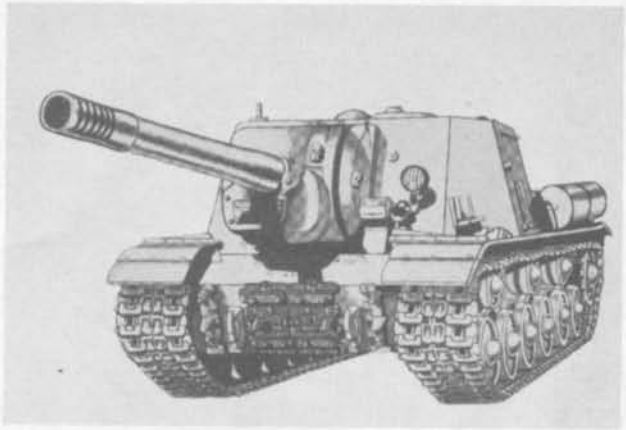
JSU–122 with A–19S gun



JSU–122 with D–25S gun

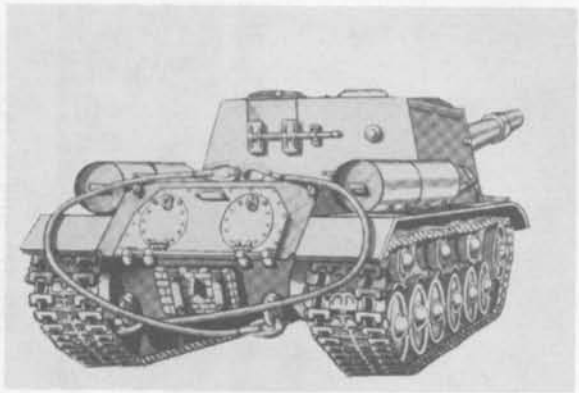


JSU–122 with D–25S gun



JSU–152

JSU-152



JSU–152



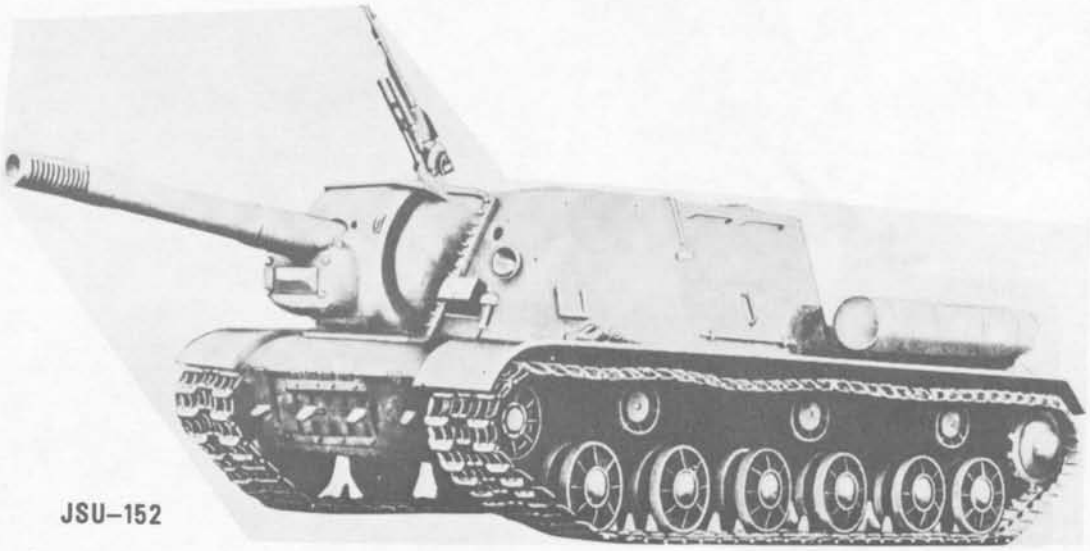
JSU–152



JSU–152



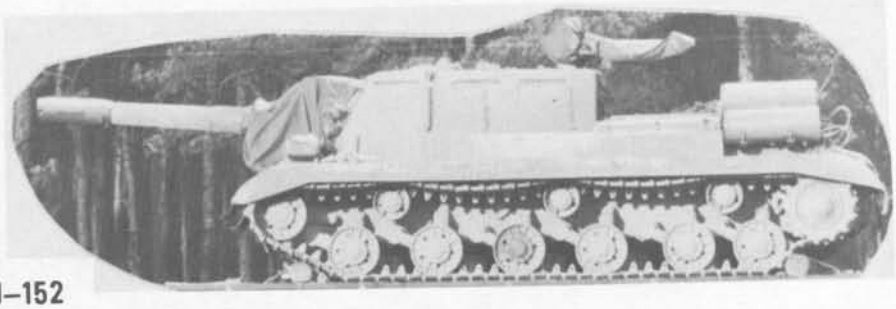
JSU–152



JSU–152



JSU–152



JSU–152



JSU–152



SELF-PROPELLED HOWITZER M-7



SELF-PROPELLED GUN M-18



SELF-PROPELLED GUN M-36B2

76mm self-propelled gun M18
90mm self-propelled gun M36B2
105mm self-propelled howitzer M7

In addition to tanks and assault guns of Soviet origin, the Yugoslav Army also employs armored fighting vehicles of United States manufacture. Among these are two self-propelled antitank guns and one self-propelled howitzer. All of these date from World War II.

The two self-propelled antitank guns, the 76mm M18 and 90MM M36B2, were known as tank destroyers in the United States Army. A tank destroyer was a self-propelled antitank gun mounted on a tracked chassis with an open top turret. The gun was larger than that mounted on equivalent weight tanks. Although 12.7mm antiaircraft machineguns were carried, no bow or coaxial machineguns were mounted. Later, after the war, some tank destroyers were fitted with improvised overhead cover for their turrets.

The 76mm M18 is a very fast vehicle powered by an air-cooled, radial aircraft engine. It uses a torsion bar suspension, the first employed in a standard United States armored fighting vehicle. The main armament is the same as that found on the M4A3 tank used in the Yugoslav Army. Although a double-baffle muzzle brake is normally mounted on the gun, it is sometimes removed.

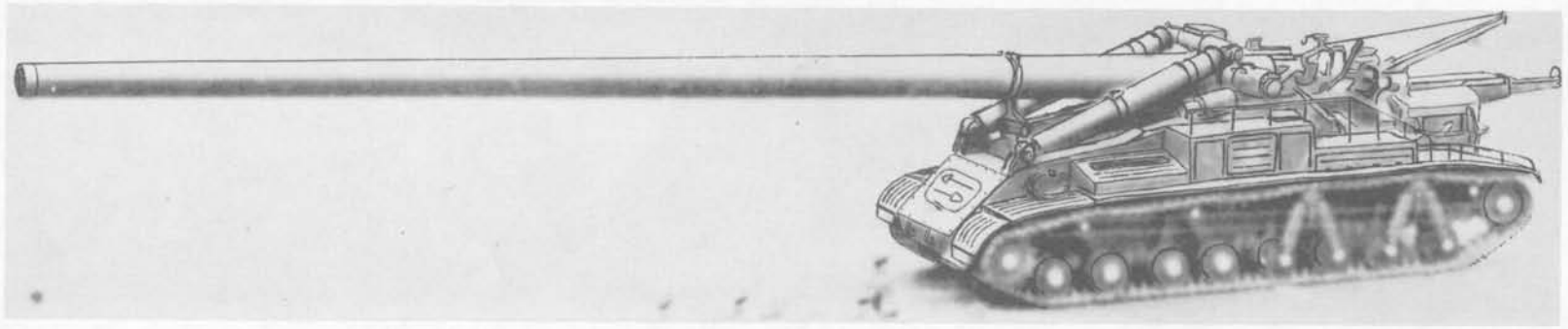
The 90mm M36B2 was the largest caliber self-propelled antitank weapon in Yugoslav hands until the Soviet SU-100 assault gun was acquired in the early 1960s. The M36B2 is a modified M10 tank destroyer which was rearmed with a new turret mounting the 90mm gun M3. The M10, in turn, used the basic M4A2 medium tank chassis. The 90mm gun M3 fires the same ground fire ammunition as does the 90mm antiaircraft gun M1A1, but not that of the 90mm gun M36 mounted on the double-baffle muzzle brake, but this is not normally used on the M36B2 in the Yugoslav Army.

The M7 consists of the United States 105mm howitzer M2A1 removed from its field carriage and placed on a greatly modified chassis of the M3 medium tank. Some vehicles using elements of the M4 tank chassis are designated M7B1. The primary role of the M7 is indirect fire support of armored units.

		M18	M36B2	M7
Vehicle				
Weight cbt	t	16.9	29.9	23.4
Length w/gun fwd	mm	6655	7468	6020
w/gun rear	mm	6452	5972	
w/o gun	mm	5436	5968	6020
Width	mm	2845	3048	2972
Height w/o AAMG	mm	2369	2794	2642
Track	mm	2403	2311	2108
Clearance	mm	362	470	439
Track width	mm	365	410	410
Ground contact	mm	2959	3734	3734
Engine model		Cont C4*	GMC**	Cont***
Horsepower		400	375	350
Cylinders		9 rad	2x6	9 rad
Fuel		gasoline	Diesel	gasoline
Cooling		air	water	air
Speed	km/h	88	40	40
Cruising range	km	168	184	136
Fuel capacity	l	642.5	625	666
Fuel consumption	l/100km	380	340	490
Ground pressure	kg/cm^2	0.837	0.678	0.75
Trench	mm	1880	2286	2286
Step	mm	914	483	610
Slope	°	31	27	31
Tilt	°			
Ford	mm	1219	1067	1067
Armor: glacis plate	mm/°	12.7/	40/55	40/55
upper hull side	mm/°	12.7/	20/40	27/0
mantlet	mm/°	25	60	41
Crew		5	5	7
Armament				
Main armament	mm	76 gun	90 gun	105 how
Model		M1A1C	M3	M2A1
Basic load	rds	45	47	73
Elevation	°	+20	+30	+35
Depression	°	-9	-10	-5
Traverse	°	360	360	45
Axis of bore	mm	1815	2235	1600
Secondary armament AA	mm	12.7 M2HB	12.7 M2HB	12.7 M2HB
Bow	mm	---	---	---
Coaxial	mm	---	---	---
Basic load 12.7mm	rds	840	1000	600
7.62mm	rds	---	---	---

*or R 975 C of 340 HP
**Model 6046 or 6046 D
***R-375-C1

SUPER HEAVY SELF-PROPELLED CANNON



420 mm self-propelled mortar M1960



310 mm self-propelled gun M1957

SUPER-HEAVY SELF-PROPELLED CANNON

310mm self-propelled gun M1957
420mm self-propelled mortar M1957
420mm self-propelled mortar M1960

Three different models of super-heavy self-propelled cannon have been displayed by the Soviets on various parades in Moscow beginning in 1957. The smaller caliber piece is a rather conventional 310mm gun. The larger was a long-barreled 420mm mortar, which appeared in an altered form in 1960. All three of these pieces are mounted on an unarmored tracked self-propelled chassis which employs suspension elements of the standard Soviet heavy tanks.

The 420mm mortar can be distinguished by the absence of a recoil cylinder and the longer tube. Both it and the 310mm gun probably fire shells with nuclear warheads. Maximum ranges are about 25000 m.

SELF-PROPELLED

ANTIAIRCRAFT

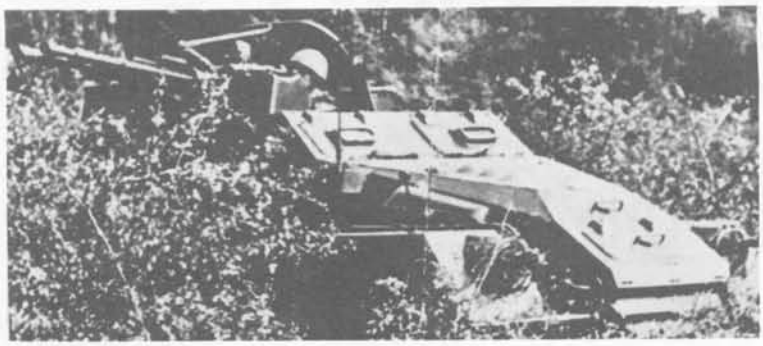
AUTOMATIC

WEAPONS

WHEELED SELF—PROPELLED AA AUTOMATIC WEAPONS

M53/59





BTR—40A

BTR—152A



Twin 14.5mm self-propelled AA heavy machinegun on BTR-40A
Twin 14.5mm self-propelled AA heavy machinegun on BTR-152A
Twin 30mm self-propelled automatic AA gun M53/59

Three wheel-mounted self-propelled antiaircraft automatic weapons carriers are employed by Warsaw Pact armies. They are the Soviet BTR-40A and BTR-152A, and the Czechoslovak M53/59.

The BTR-40A and BTR-152A consist of a twin-mounted 14.5mm KPV heavy machinegun placed on modified open top-wheeled armored personnel carriers. These vehicles are used in limited numbers in the East German and Romanian armies as well as in the Soviet forces, with the BTR-152A being the most common. The BTR-40A has also been exported to Southeast Asia.

The Czechoslovak M53/59 consists of a modified version of the towed 30mm automatic gun M53 mounted on an armored version of the standard Praga V3S (6x6) truck. If necessary the guns can be removed and fired from the ground as well. Modification to the 30mm guns consists primarily in replacing the horizontal feed with 10-round clips to a vertical feed with 50 round magazines. This results in a higher practical rate of fire. The gunner, who sits in a small partially armored cabin on the rear of the vehicle controls and fires the guns. The commander sits forward with the driver and observes through a hemispherical plexiglass cupola. In recent years the M52/59 has been observed with conical flashhiders on the muzzles of the gun in place of the previously used multi-baffle muzzle brake.

The M53/59 is used in the Yugoslav Army as well as in the Czechoslovak forces.

		BTR-40A	BTR-152A*	M53/59
Vehicle				
Weight cbt	t	5.3	9.6	9.5
Wheelbase	mm	2700	3300+1130	3580+1120
Length	mm	5000	6830	6984
Width	mm	1900	2320	2410
Height	mm	2500	2800	3060
Track: front/rear	mm	1588/1600	1742/1720	1870/1755
Clearance	mm	275	295	400
Tire size	m	9.75x18	12.00x18	8.25x20
Engine model		GAZ-40	ZIL-123	T 912-2
Horsepower		80	110	110
Cylinders		6 inline	6 inline	6 inline
Fuel		gasoline	gasoline	Diesel
Cooling		water	water	air
Speed	km/h	80	65	60
Cruising range	km	285	650	500
Fuel capacity	l	120	300	120
Fuel consumption	l/100km	42	46	27
Trench	mm	700	690	690
Step	mm	470	600	460
Slope	°	30	30	31
Tilt	°	20-25		
Ford	mm	900	800	800
Armor: maximum	mm	8	12	10
Crew		4	4	3
Armament				
Main armament	mm	Twin 14.5	Twin 14.5	Twin 30
Model		KPV	KPV	M53/59
Basic load	rds			
Elevation	°	+80	+80	+90
Depression	°	-5	-5	-10
Traverse	°	360	360	360
Axis of bore	mm	2050	2350	2410
Secondary armament	mm	---	---	---
Basic load	rds	---	---	---

*Using BTR-152V1 chassis

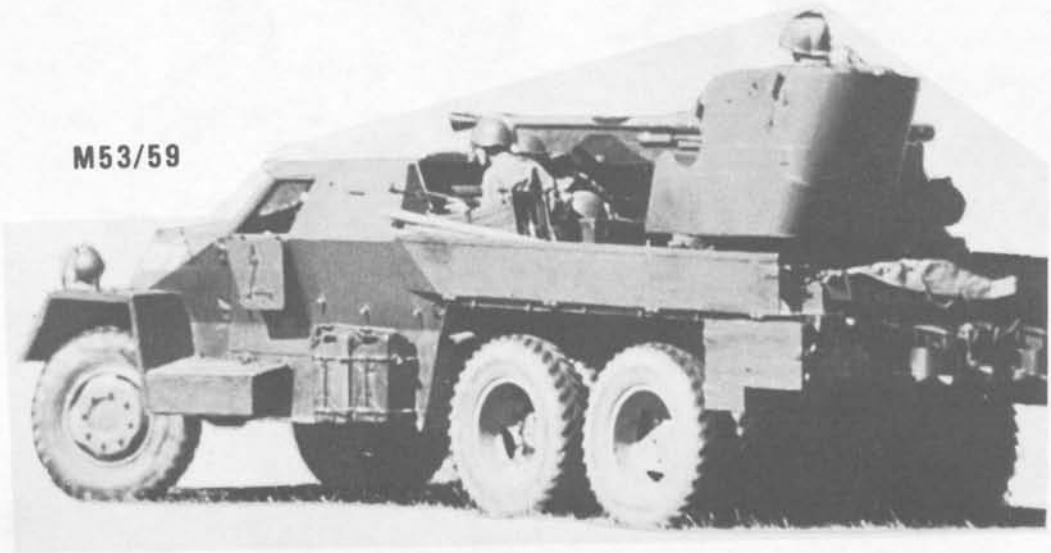
M53/59

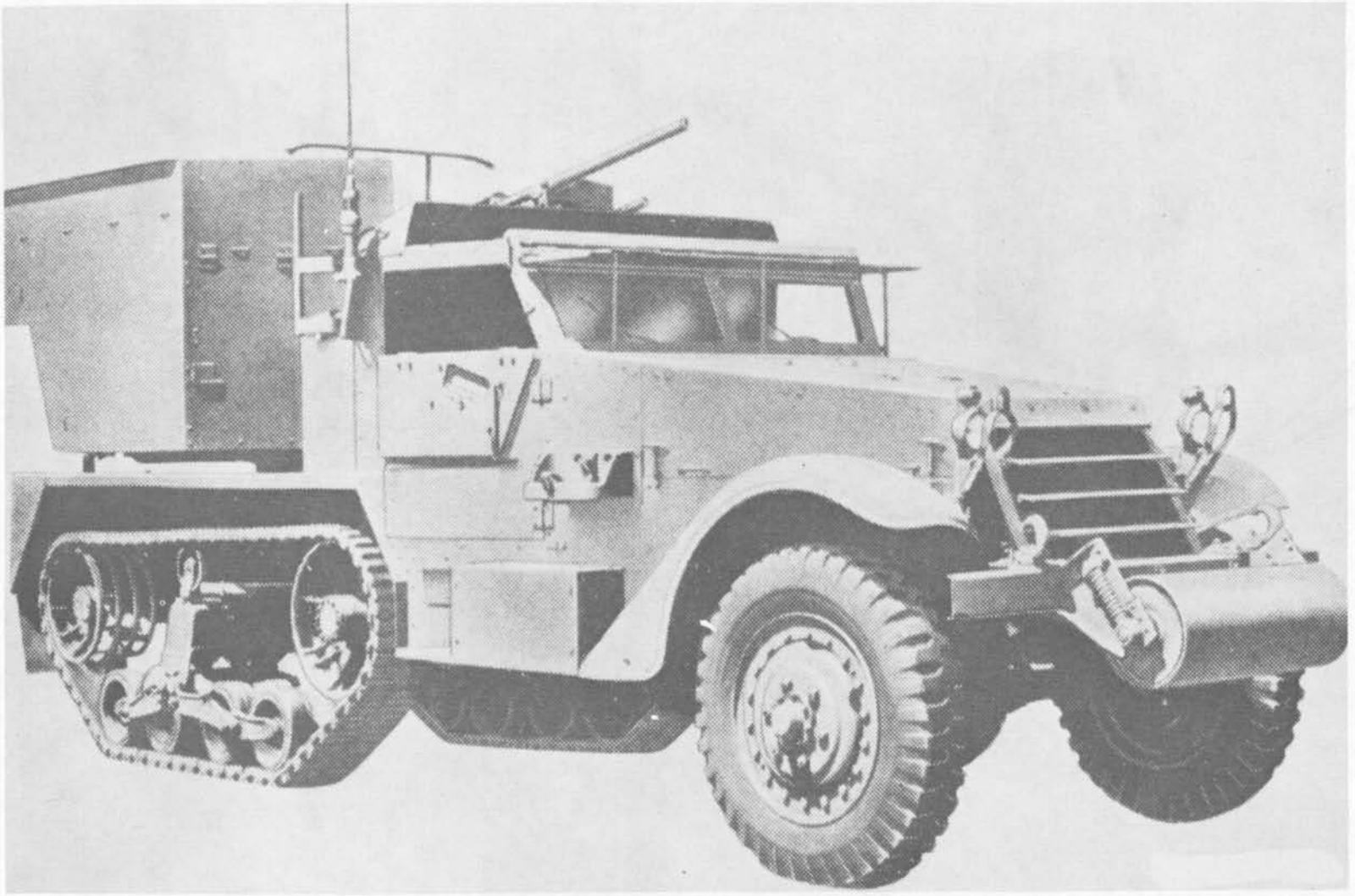




M53/59

M53/59





37mm SELF—PROPELLED AA GUN M15A1

37mm self-propelled automatic AA gun M15A1

In addition to the full-tracked Soviet ZSU-57-2 self-propelled twin 57mm automatic antiaircraft gun the Yugoslav Army also employs the half-track M15A1 self-propelled 37mm automatic antiaircraft gun of United States World War II vintage. This weapons system consists of one 37mm automatic gun M2A1 coupled with two caliber .50 (12.7mm) heavy machineguns M2 HB mounted on a modified half-track. This weapons combination was once used in the United States Army along with a very similar quad caliber.50 machinegun mount on a half-track carrier in antiaircraft automatic weapons units.

The M15A1 has a very distinctive appearance and cannot be confused with any other fighting vehicle in any of the East European Communist armies. Today it is no longer used in active units, but has found its place in factory militia units.

		M15A1
Vehicle		
Weight cbt	t	9.36
Length	mm	6020
Width	mm	2261
Height	mm	2642
Track: wheels	mm	1626
track	mm	1620
Clearance	mm	485
Tire size		8.25x20
Track width	mm	305
Ground contact	mm	1187
Engine model		White 160 AX
Horsepower		127
Cylinders		6 inline
Fuel		gasoline
Cooling		water
Speed	km/h	72
Cruising range	km	338
Fuel capacity	l	227
Fuel consumption	l/100km	67
Ground pressure	kg/cm^2	0.88
Trench	mm	550
Step	mm	305
Slope	°	31
Tilt	°	
Ford	mm	813
Armor: hull front	mm/°	12.7
hull side	mm/°	6.3
Crew		7
Armament		
Main armament	mm	37 AA gun
Model		M1A2
Basic load	rds	200
Elevation	°	+85
Depression	°	-5
Traverse	°	360
Axis of bore	mm	
Secondary armament	mm	2x12.7 M2 HB
Basic load	rds	1200



37mm SELF-PROPELLED AA GUN M15A1

TRACKED SELF—PROPELLED AA AUTOMATIC WEAPONS



ZSU—23—4



ZSU—57—2

TRACKED SELF-PROPELLED ANTIAIRCRAFT AUTOMATIC WEAPONS

Quad 23mm self-propelled automatic AA gun ZSU-23-4
Twin 57mm self-propelled automatic AA gun ZSU-57-2

After experimenting briefly with mounting the single 37mm automatic antiaircraft gun M1939 on the SU-76 chassis in 1946, the Soviet Union finally produced a well-designed twin 57mm self-propelled automatic antiaircraft gun in the middle 1950s. First displayed in public on 7 November 1957, the ZSU-57-2 soon found its way into field antiaircraft units in motorized rifle and tank divisions of most Warsaw Pact countries. In addition it was exported to Yugoslavia and the Middle East.

The ZSU-57-2 consists of a highly modified T-54 tank chassis carrying a twin 57mm gun S-68 in a large squarish open top turret. The chassis has much less armor than the T-54 tank and the running gear uses only four roadwheels. As a result the weight is only 28.1 tons instead of 36, giving the ZSU-57-2 greater agility than the medium tank. The turret is also notable for the large basket on the rear where empty cases are stored.

The S-68 gun has the same performance as the single towed 57mm S-60 when using on-carriage fire control. The self-propelled weapon; however, has no provision for off-carriage fire control.

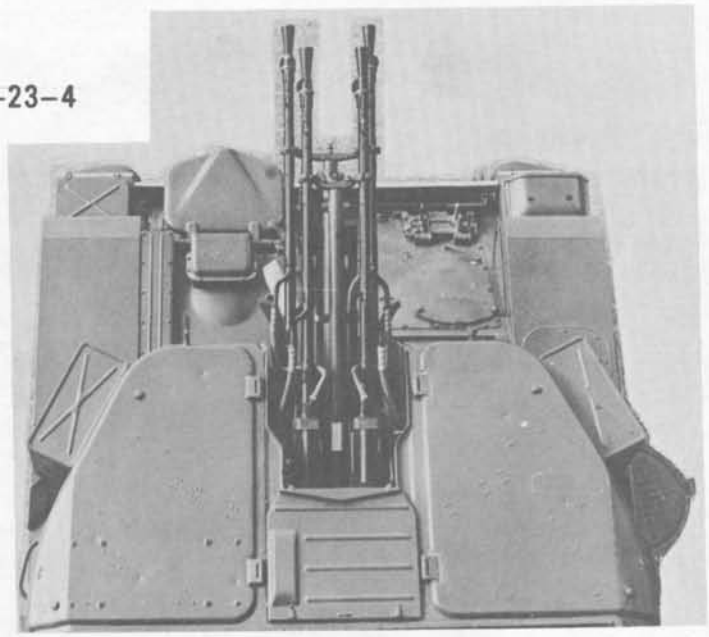
The Soviets did not rest on their laurels, and in the middle 1960s introduced a new self-propelled antiaircraft gun system featuring on-carriage radar fire control. This weapons system, the ZSU-23-4, was first displayed on 7 November 1965, and soon appeared in virtually all of the Warsaw Pact armies. It consists of a liquid-cooled quad version of the 23mm automatic antiaircraft gun ZU-23. The large lightly armored turret also mounts a large dish-type radar which has both target acquisition and fire control capabilities. In the travel position the radar is rotated to the rear, and dropped behind the turret, thus reducing the overall height of the vehicle.

Vehicle		ZSU-23-4	ZSU-57-2
Weight cbt	t	14	28.1
Length w/gun fwd	mm	6300	8480
w/gun rear	mm	6300	7430
w/o gun	mm	6300	6220
Width	mm	2950	3270
Height	mm	2250*	2750
Track	mm	2670	2640
Clearance	mm	400	425
Track width	mm	360	580
Ground contact	mm	3800	3840
Engine model		V-6	V-54
Horsepower		240	520
Cylinders		6 inline	V-12
Fuel		Diesel	Diesel
Cooling		water	water
Speed	km/h	44	48
Cruising range	km	260	400
Fuel capacity	l	250	812
Fuel consumption	l/100km	96	190
Ground pressure	kg/cm^2	0.479	0.63
Trench	mm	2800	2700
Step	mm	1100	800
Slope	°	30	30
Tilt	°		
Ford	mm	1070	1400
Armor: glacis plate	mm/°	15/55	15/60
upper hull side	mm/°	15/0	15/0
mantlet	mm/°	10/15	15 curved
Crew		4	6
Armament			
Main armament	mm	Quad 23	Twin 57
Model			S-68
Basic load	rds		316
Elevation	°	+80	+85
Depression	°	-7	-5
Traverse	°	360	360
Axis of bore	mm	1830**	2050
Secondary armament AA	mm	---	---
Bow	mm	---	---
Coaxial	mm	---	---
Basic load 12.7mm	rds	---	---
7.62mm	rds	---	---

*radar in travel position
**lower guns



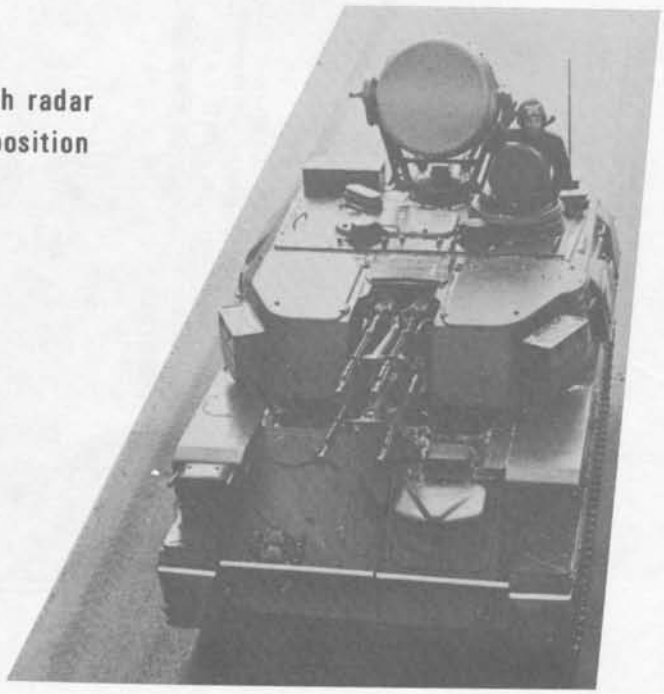
ZSU-23-4



ZSU-23-4



ZSU–23–4 with radar
in operating position







ZSU–23–4 with radar and guns in stowed position



ZSU–57–2



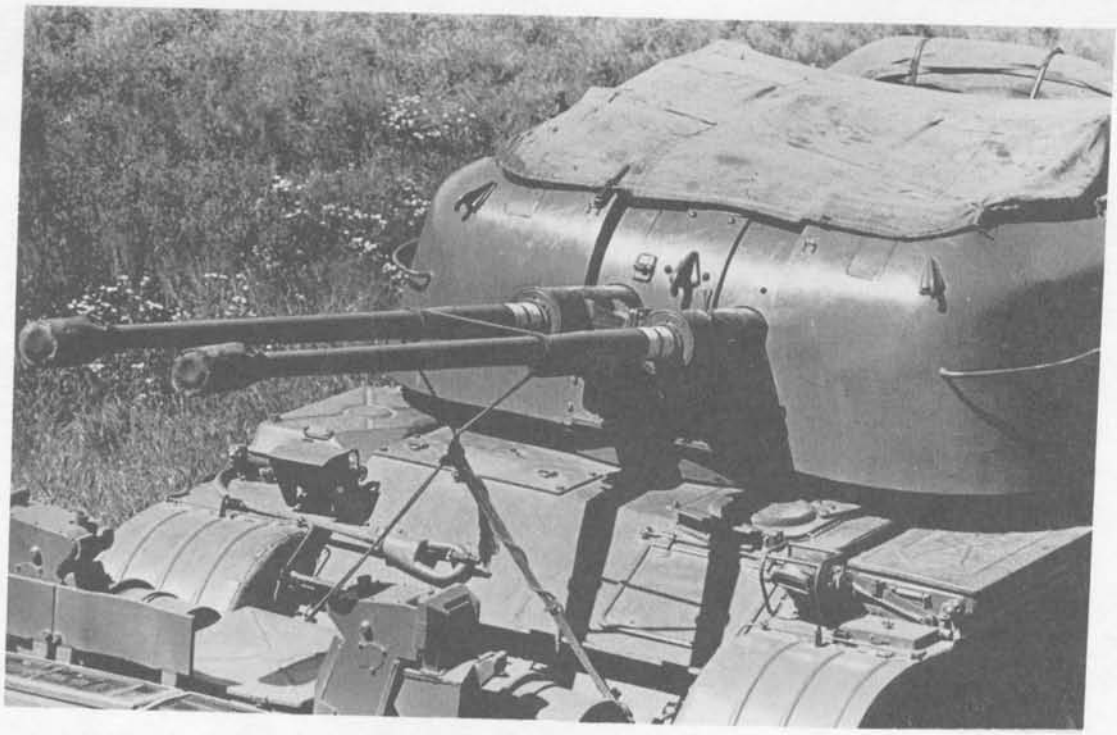
ZSU–57–2



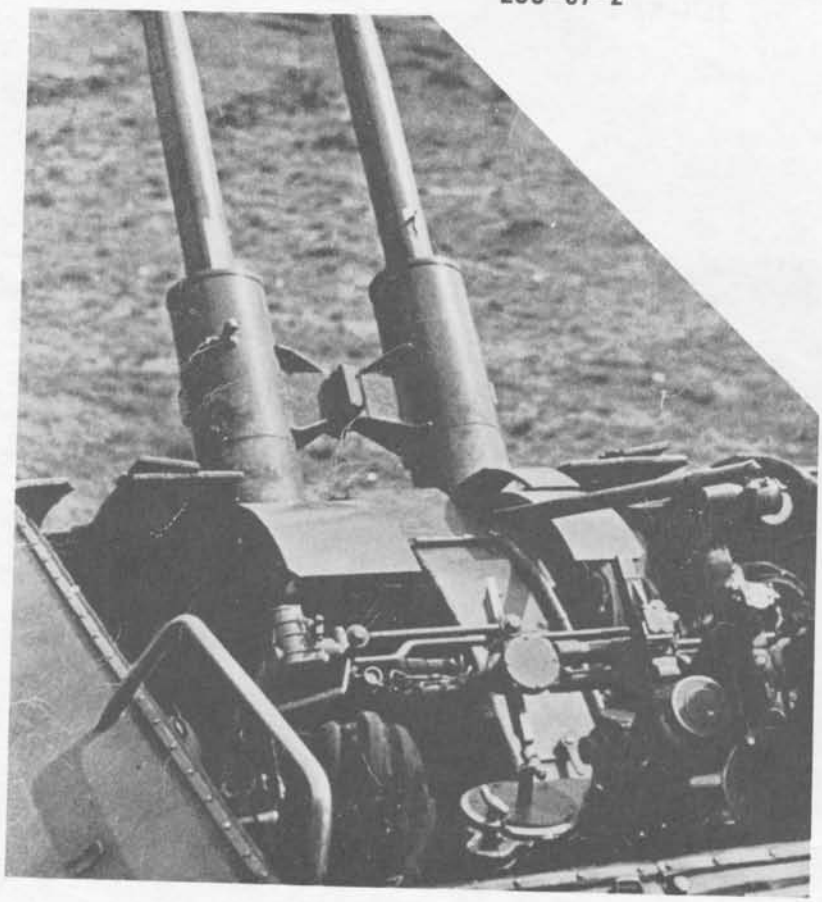
ZSU–57–2



ZSU–57–2



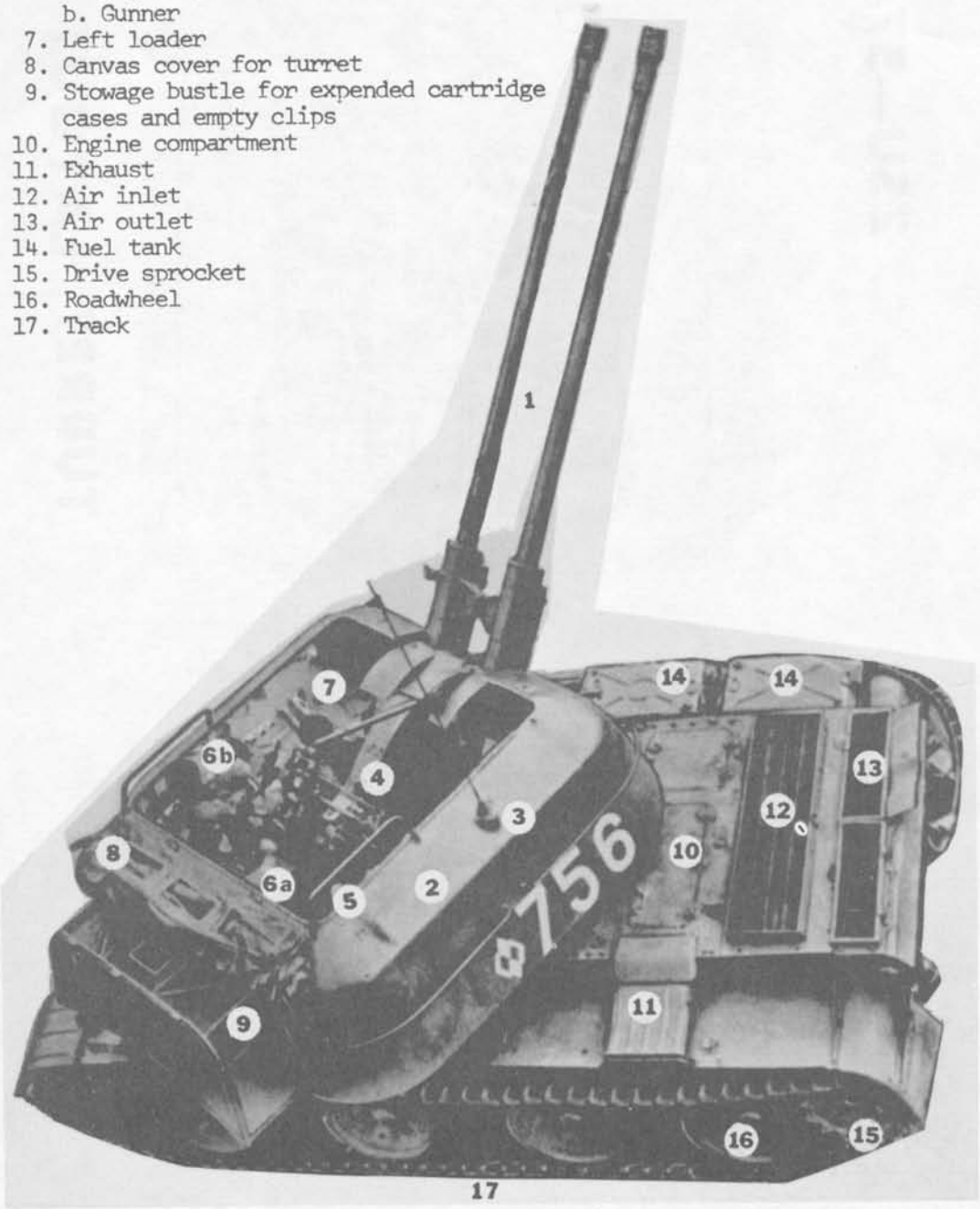
ZSU–57–2



ZSU–57–2

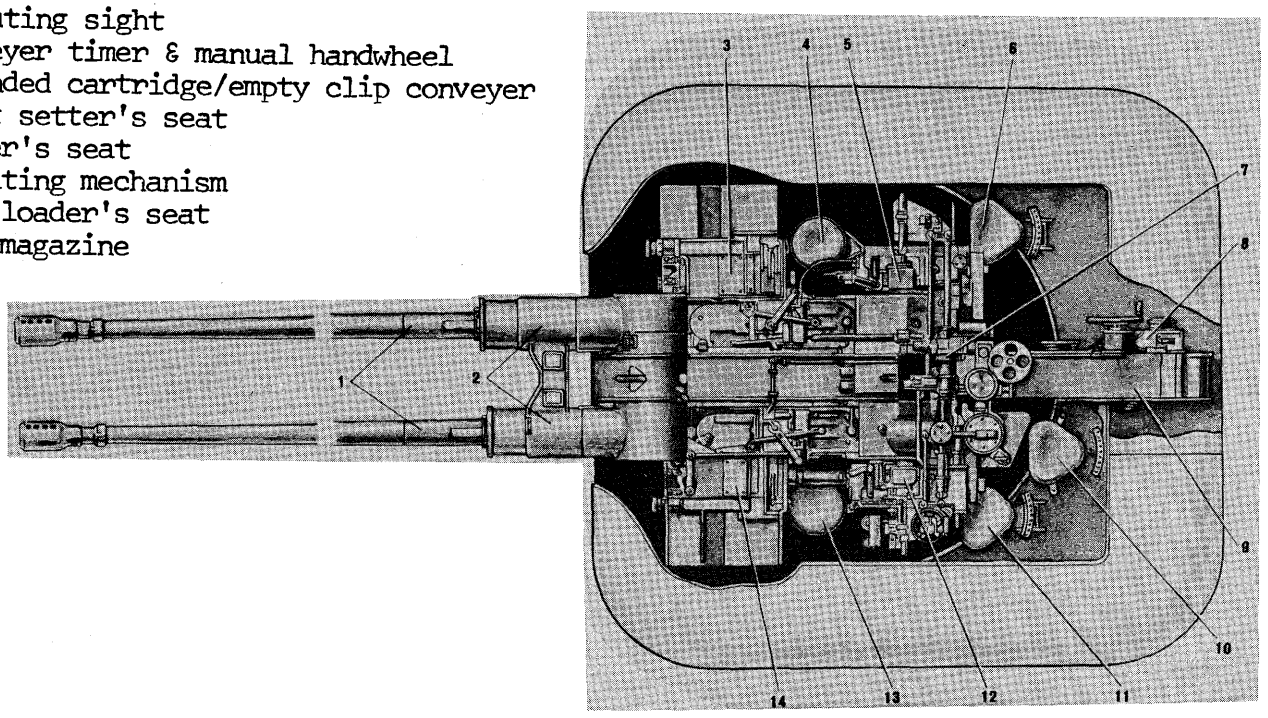
ZSU—57—2

1. Twin 57mm AA guns
2. Armored turret
3. Antenna base
4. Right loader
5. Commander
6. a. Sight setter
   b. Gunner
7. Left loader
8. Canvas cover for turret
9. Stowage bustle for expended cartridge cases and empty clips
10. Engine compartment
11. Exhaust
12. Air inlet
13. Air outlet
14. Fuel tank
15. Drive sprocket
16. Roadwheel
17. Track



ZSU—57—2

1. Twin 57mm AA guns
2. Gun cradles (left and right)
3. Right magazine
4. Right loaders seat
5. Traversing mechanism
6. Commander's seat
7. Computing sight
8. Conveyer timer & manual handwheel
9. Expended cartridge/empty clip conveyer
10. Sight setter's seat
11. Gunner's seat
12. Elevating mechanism
13. Left loader's seat
14. Left magazine



TURRET LAYOUT

DISTRIBUTION

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