

McMAHON

# AVIATOR'S RECOGNITION MANUAL



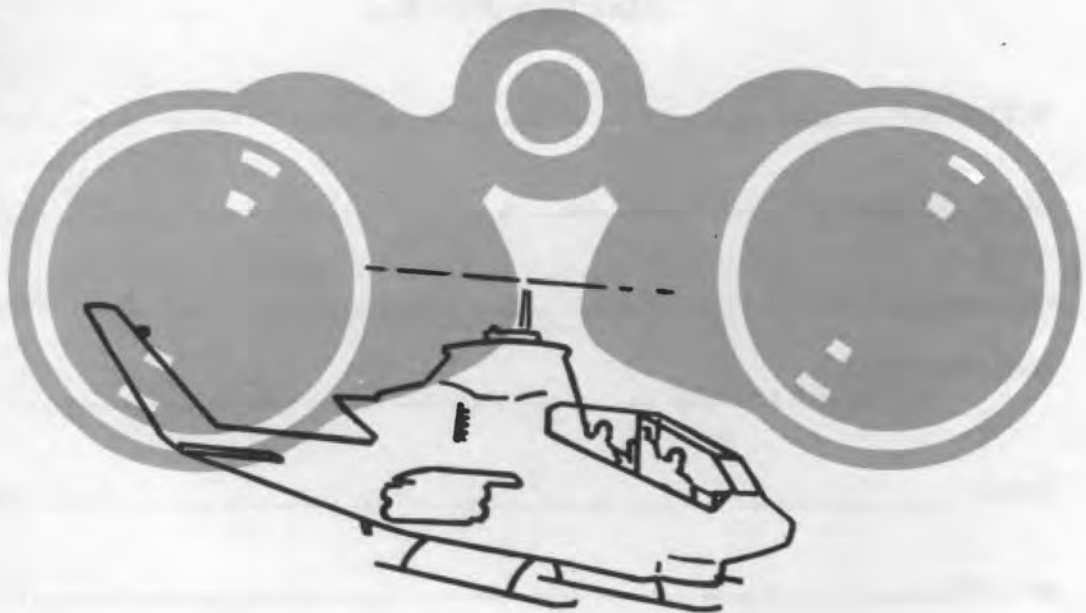
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"ABOVE THE BEST UNDER THE THREAT"

## **INTRODUCTION**

The aviator and aerial observer have a need for a ready reference of combat equipment likely to be encountered during combat operations. The primary purpose of this manual is—

- To familiarize the aviator and aerial observer with modern combat equipment.
- To serve as a pocket reference for the aviator and aerial observer for field use.
- To serve as a guide for commanders in conducting unit training in equipment recognition.

This manual provides information on current operational combat vehicles, guns, and aircraft of the United States, Allied Western Powers, and foreign countries which reasonably can be expected to be observed from the air during hostilities.

Because some equipment is classified, this manual is not all-inclusive. It should be emphasized that the depicted data is based on the best information available. Sufficient equipment is illustrated to familiarize the user with the most common weapons systems currently being fielded by the United States, Allied Western Powers, and the Warsaw Pact countries.

# THREAT

Long-range air defense weapons and missile systems dominate the air above the battlefield. They can deny forward fighting elements effective close air support and force helicopters to operate out-of-range or below line-of-sight of acquisition radar, or to use terrain flying techniques. Their capabilities are such that virtually anything that can be seen can be hit and killed. Aviation operations against an enemy equipped with sophisticated air defense and electronic weapons will be significantly affected by the following, singly or in combination, and must be considered in mission planning and execution:

- Air-to-air missiles.
- Surface-to-air missiles.
- Concentrations of small arms fire.
- Monitoring of communications.
- Helicopter attacks on helicopters.
- High performance aircraft attacks on helicopters.
- Jamming of command and control frequencies.
- Jamming of air traffic management systems.

Due to this high threat environment, every effort must be made to correctly recognize, identify, and differentiate between friendly and hostile equipment. The aviator, by aerial reconnaissance, plays a vital role in the overall plan of the combat commander by informing him of who, what, where, and the number of opposing forces confronting him.

## GENERAL TRAINING NOTES

The items of equipment portrayed in this manual are grouped together by type: rotary wing aircraft, fixed wing aircraft, antiaircraft guns and surface-to-air missiles, armor, artillery, and light armored vehicles. The groupings are tabbed on the left margin and further subdivided by user countries. Those pages containing Warsaw Pact and potential threat equipment are shaded entirely in brown for easy reference. The user country and pertinent data are given below the photographs. As you read and study the illustrations, select unique identifying features of each in order to provide instant battlefield recognition. Many items (showing user as various countries) may be employed by friendly, hostile, and uncommitted nations. Bear in mind that identifying and engaging a target will not likely be on a simple one-to-one confrontation. A tank or an AA weapon like the ZSU-23-4 will likely be used in multiple units or in conjunction with other supportive units which will be trying to acquire you as a target while you are occupied with your target acquisition. Points of greatest vulnerability are depicted on certain types of combat equipment with a dot.

The gaming device (Tactical Vehicle Identification) depicted on pages 250, 251 can be used as an invaluable instructional tool for increasing knowledge of combat equipment and for proficiency testing. This training device may be effectively used in class instruction or for self-testing.

**Metric values are given throughout this manual and a conversion scale for common measurements appears on page 249.**

## PERFORMANCE STANDARDS - LEVELS OF SKILL

Accurate visual recognition of combat equipment is essential to aircrews, aviators, and observers in making an engagement decision. It is vital that recognition be swift and accurate. The specific level of skill required by an individual is determined by the individual's duty position, his potential for exposure to the threat, and the degree to which he must distinguish enemy equipment from friendly equipment during combat operations.

**Level 1.** The individual will recognize, with at least 90 percent accuracy, all the known hostile equipment constituting the threat and the friendly equipment expected to be operating in his area. The number of pieces of combat equipment that must be recognized at level 1 may vary from area to area, but probably should not exceed 15 total. Selection of these units for recognition training should be based on intelligence estimates of the local threat and the inventory of friendly equipment expected to be providing support to a unit's combat operations. Level 1 is necessary for commanders and staffs in planning, conducting, and evaluating training and tactical exercises.

**Level 2** The individual will be expert at recognizing all friendly and potentially hostile combat equipment expected to be in a specified zone. The number of units to be learned cannot be precisely specified, but will probably range between 20 and 30, depending upon the theater of operations. The selection of combat equipment for training should be based on intelligence estimates of the potential threat and the inventory of friendly equipment in the combat area. Personnel who should achieve this level of skill are pilots, observers, and crewmen. These individuals should approach 100 percent accuracy with 90 percent accuracy being a minimum acceptable level of proficiency. Individuals charged with the conduct of recognition training should also achieve level 2.

## ROTARY WING AIRCRAFT

Note: Airspeeds are maximum. Ranges vary with mission configuration.

LYNX-----	6
GAZELLE -----	8
SEA STALLION -----	10
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COBRA-----	12
IROQUOIS -----	13
CHINOOK -----	14
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## LYNX - WG-13 Multi-Purpose



**HELICOPTER**



**RECOGNITION FEATURES:** Four-bladed rotor on hump, stepped up atop cabin; two turboshaft engines mounted on top rear of cabin; semi-elliptical air intake on either side of rotor-gear housing; twin, circular exhaust ports pointing out and up.

**ARMAMENT:** Varied

**MAIN GUN RANGE:** Varied

**SPEED:** 333 km/hr

**RANGE:** 1,087 km

**USERS:** Argentina, France, United Kingdom

**EMPLOYMENT:** Multi-purpose military

## GAZELLE - Lightweight, Multi-Purpose



**HELICOPTER**



**1**



**RECOGNITION FEATURES:** Three-bladed rotor mounted on top one-third of distance from front of cabin; turboshaft engine mounted on top rear of cabin; prominent exhaust stack protrudes from engine to rear; teardrop-shaped body to tail boom; round transparent plastic nose.

**ARMAMENT:** Varied

**MAIN GUN RANGE:** Varied

**SPEED:** 306 km/hr

**RANGE:** 667 km

**USERS:** France, United Kingdom, Yugoslavia

**EMPLOYMENT:** Multi-purpose military

## SEA STALLION (CH-53) - Assault Transport



**ARMAMENT:** Varied

**SPEED:** 314 km/hr

**RANGE:** 477 km

**USERS:** Austria, Israel, United States, West Germany

**HELICOPTER**



## KIOWA (OH-58) - Light Observation, Recon



**ARMAMENT:** Varied

**SPEED:** 222 km/hr

**RANGE:** 416 km

**USERS:** Australia, Austria, Brazil, Canada, Chile, Greece, Iran, Italy, Sweden, Turkey, United States



## COBRA (AH-1G/AH-1Q\*) - Attack



**ARMAMENT:** Multi-weapons systems

**SPEED:** 352 km/hr

**RANGE:** 410 km

**USERS:** Iran (J Model), Spain, United States

\*The AH-1Q (Cobra TOW) mounts the TOW antitank missile. Configuration of AH-1Q and AH-1G is similar varying in the nose section somewhat.

**HELICOPTER**



## IROQUOIS (UH-1D/H) - General Purpose



**ARMAMENT:** Varied

**SPEED:** 222 km/hr

**RANGE:** 340 km

**USERS:** Argentina, Australia, Brazil, Canada, Greece, Iran, Israel, Italy, Republic of China, Saudi Arabia, South Korea, Spain, Thailand, Turkey, United States, Zambia





## CHINOOK (CH-47) - Medium Transport



**ARMAMENT:** Varied

**SPEED:** 322 km/hr

**RANGE:** 531 km

**USERS:** Australia, Iran, Italy, Spain, United States



**HELICOPTER**

## CAYUSE (OH-6) - Light Observation



**ARMAMENT:** Varied

**SPEED:** 224 km/hr

**RANGE:** 377 km

**USERS:** Argentina, Bolivia, Brazil, Denmark, Italy, Japan, Republic of China, Spain, United States



## TARHE (CH-54) - Heavy Cargo-Transport



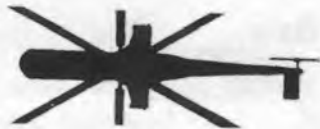
**ARMAMENT:** None

**SPEED:** 194 km/hr

**RANGE:** 305 km

**USERS:** United States, West Germany

**HELICOPTER**



## SEA KNIGHT (CH-46) - Cargo



**ARMAMENT:** None

**SPEED:** 257 km/hr

**RANGE:** 426 km

**USERS:** Burma, Canada, Japan, Sweden, Thailand, United States



**HELICOPTER**

## HARE (Mi-1) - Light Observation



**HELICOPTER**



**RECOGNITION FEATURES:** Single rotor; tricycle gear; and single radial engine.

**ARMAMENT:** 1 x 12.7mm machinegun  
1 x 16-shot 57mm rocket pod or  
2 x ATGMs

**MAIN GUN RANGE:** 12.7mm machinegun - 1,500 meters  
57mm rockets - 1,500 meters  
ATGM - 3,500 meters

**SPEED:** 170 km/hr

**RANGE:** 389 km

**USERS:** Albania, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Hungary, Iraq, North Korea, People's Republic of China, Poland, Syria, USSR

**EMPLOYMENT:** General support of military with primary applications being liaison, reconnaissance, and scouting

## HIND-A (Mi-24) - Assault Helicopter / Gunship



**HELICOPTER**



**RECOGNITION FEATURES:** Similar in shape to the Mi-6 Hook, but smaller; short, stubby weapons-carrying wings, mounted at mid-fuselage; tricycle retractable loading gear; five-bladed main rotor, small chin turret.

**ARMAMENT:** 1 x 12mm machinegun  
4 x 32-shot 57mm rocket pods  
4 x AT missiles

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 333 km/hr

**RANGE:** 491-537 km

**USERS:** USSR

**EMPLOYMENT:** Used in support of military units as a combat assault troop carrier and/or armed gunship

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## HIND D - Assault Helicopter/Gunship



The distinguishing feature of the **HIND-D** is the nose modification which incorporates two tandem bubble canopies and a chin-mounted gun turret.

The **HIND-D** maintains the same troop-carrying and external weapons stores capability as the **HIND-A**. Each pylon has two 32-shot rocket pods and two launch rails for antitank guided missiles.





The **HIND** is a multipurpose helicopter capable of carrying 12 fully equipped combat troops in addition to a complete external armament load. It is much larger than the UH-1 or the AAH. In addition to the standard pylon armament found on the **HIND-A**, the **HIND-D**, as seen in these photographs, incorporates a turret which houses a four-barrel "Vulcan" type 12.7mm gun. This turret can also accommodate a 23mm cannon.

## HOPLITE (Mi-2) - Light Utility



**HELICOPTER**



**RECOGNITION FEATURES:** Single rotor; tricycle gear; twin turbine engines.

**ARMAMENT:** 1 x 12.7mm machinegun  
2 x 16-shot 57mm rocket pods or  
4 x ATGMs

**MAIN GUN RANGE:** 12.7mm machinegun - 1,500 meters  
57mm rocket - 1,500 meters  
ATGM - 3,000 meters

**SPEED:** 209 km/hr

**RANGE:** 306-675 km

**USERS:** Indonesia, Poland, USSR

**EMPLOYMENT:** General support of military units with primary applications of armed reconnaissance, liaison, and armed support

## HOUND (Mi-4) - General Purpose



**HELICOPTER**



**RECOGNITION FEATURES:** Single rotor; quadcycle gear; one 18-cylinder radial engine; clamshell rear doors; gun gondola under the forward portion of the fuselage.

**ARMAMENT:** 1 x 12.7mm machinegun  
4 x 16-shot 57mm rocket pods or  
4 x ATGMs

**MAIN GUN RANGE:** 12.7mm machinegun - 1,500 meters  
57mm rockets - 1,500 meters  
ATGM - 3,000 meters

**SPEED:** 213 km/hr

**RANGE:** 274-463 km

**USERS:** Albania, Algeria, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Indonesia, Iran, Iraq, North Korea, People's Republic of China, Poland, Romania, Syria, USSR, Yugoslavia

## HOOK (Mi-6) - Heavy-Lift



**HELICOPTER**

**RECOGNITION FEATURES:** Single rotor; twin turbine engines; stubby wings; tricycle gear; large rear clamshell doors.

**ARMAMENT:** 1 x 12.7mm machinegun

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 300 km/hr

**RANGE:** 204-612 km

**USERS:** Bulgaria, Egypt, Indonesia, North Korea, USSR

**EMPLOYMENT:** General support of military units with primary applications of troop (65) and cargo (heavy lift) transport



## HIP (Mi-8) - Medium Utility



**HELICOPTER**



**RECOGNITION FEATURES:** Single rotor; twin turbine engines; tricycle gear; rear clamshell doors.

**ARMAMENT:** 4 or 5 x 7.62mm assault rifles  
1 x 7.62mm machinegun  
4 x 16-shot launchers for 57mm rockets  
4 x 550 lb (250 kg) bombs  
2 x 1,100 lb (500 kg) bombs

**MAIN GUN RANGE:** 7.62mm machinegun - 1,000 meters  
57mm rockets - 1,500 meters

**SPEED:** 250 km/hr

**RANGE:** 163-406 km

**USERS:** Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Iraq, Peru, Poland, Sudan, Syria, USSR

**EMPLOYMENT:** General support of military units with primary applications on troop assault, armed support, and general cargo transport

## HOG (Ka-18) - Medium Range, Utility Transport



**HELICOPTER**



**RECOGNITION FEATURES:** Twin rotors on single shaft, one above the other; single reciprocating engine in back midsection; short box-like body; blunt nose, glassed-in cockpit, tapered rear; fixed four-wheel landing gear.

**ARMAMENT:** None

**SPEED:** 242 km/hr

**RANGE:** 740 km

**USERS:** USSR

**EMPLOYMENT:** Medium range utility aircraft

## HOODLUM (Ka-26) - Light Cargo/Passenger/Ambulance



**HELICOPTER**



**RECOGNITION FEATURES:** Coaxial rotor system; twin radial engines; horizontal stabilizer with vertical fins; detachable pod.

**ARMAMENT:** None

**SPEED:** 167 km/hr

**RANGE:** 440-691 km

**USERS:** Bulgaria, East Germany, Hungary, Romania, Sweden, USSR

**EMPLOYMENT:** Detachable pod for medical evacuation or passengers; may be employed in anti-submarine warfare

## HARKE (Mi-10) - Heavy-Lift Crane



**HELICOPTER**



**RECOGNITION FEATURES:** Single-rotor, twin-turbine engines, cargo troop cabin; quadcycle landing gear (Mi-10, extended landing gear) (Mi-10K, short gear with gondola under the cockpit).

**ARMAMENT:** None

**SPEED:** 220 km/hr

**RANGE:** 135-567 km

**USERS:** USSR

**EMPLOYMENT:** Primary application of external heavy-lift, platform-mounted equipment, plus a 28-troop capacity



## HOMER (Mi-12) - Heavy-Lift, Twin-Rotor



**HELICOPTER**



**RECOGNITION FEATURES:** Laterally displaced rotor system mounted at the end of inversely tapered truss support wings; four turbine engines; tricycle gear; large rear clamshell doors; large fixed-wing type fuselage.

**ARMAMENT:** None

**SPEED:** 260 km/hr

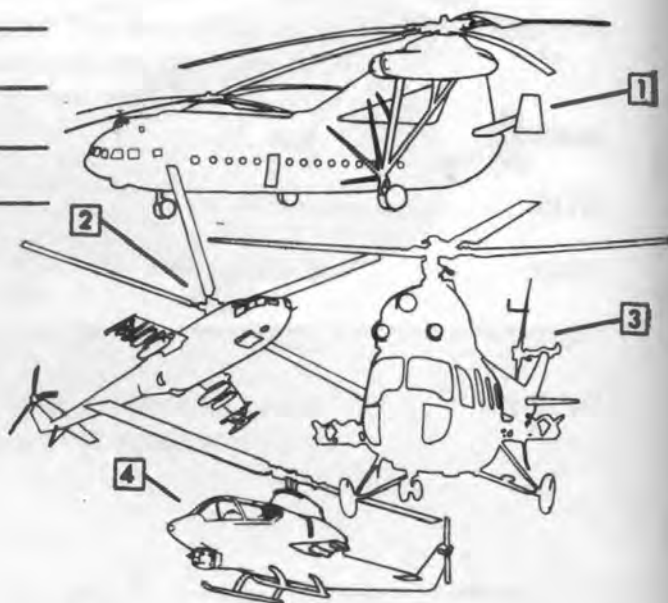
**RANGE:** 390 km

**USERS:** USSR

**EMPLOYMENT:** Military application, support of rear echelon logistical units carrying only internal loads or 200 troops

Can you identify these?

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_



## FIXED WING AIRCRAFT

Note: Airspeeds are predicated on level flight at altitude. Ranges vary with mission configuration.

MIRAGE III	40
MIRAGE F1	42
MOHAWK	44
BRONCO	45
ARCHIE	46
FREEDOM FIGHTER	47
PHANTOM II	48
STARFIGHTER	49

BREWER	50
FOXBAT	52
FLOGGER	54
FISHBED	56
FAGOT	58
BEAGLE	60
FRESCO	62
FITTER	64
FARMER	66

## Mirage III



**FIXED WING**



**RECOGNITION FEATURES:** Low-mounted, delta wings with square tips; single engine; tubular body with needle nose and angular cockpit mounted forward on nose section.

**ARMAMENT:** Air-to-air missile combinations

**MAIN GUN RANGE:** 800 meters (approximately)

**SPEED:** 2,350 km/hr

**RANGE:** 2,408 km

**USERS:** Australia, Belgium, Brazil, Egypt, France, Israel, Lebanon, Libya, Malaysia, Pakistan, Peru, South Africa, Spain, Switzerland

**EMPLOYMENT:** Attack/interceptor/reconnaissance

## Mirage F1



**FIXED WING**

**RECOGNITION FEATURES:** Shoulder-mounted, semi-delta, backward-tapered, square-tipped wings; single engine with side mounted air intakes; round body; tapered, pointed nose; backward-tapered tail fin and horizontal stabilizer.

**ARMAMENT:** 2 x 30mm cannon  
assorted missiles and bomb combinations

**MAIN GUN RANGE:** 1,500+ meters

**SPEED:** 2,334 km/hr

**RANGE:** 4,630 km

**USERS:** France

**EMPLOYMENT:** Fighter/interceptor



## OV-1 (Mohawk)



**ARMAMENT:** Varied

**SPEED:** 685 km/hr

**RANGE:** 2,368 km

**USERS:** United States

**FIXED WING**



## OV-10 (Bronco)



**ARMAMENT:** Varied

**SPEED:** 525 km/hr

**RANGE:** 2,220 km

**USERS:** United States, West Germany



**FIXED WING**

## F-105 (Thunderchief)



**ARMAMENT:** Varied

**SPEED:** 2,590 km/hr

**RANGE:** 2,775 km

**USERS:** United States

**FIXED WING**



## F-5 (Freedom Fighter)



**ARMAMENT:** Varied

**SPEED:** 1,850 + km/hr

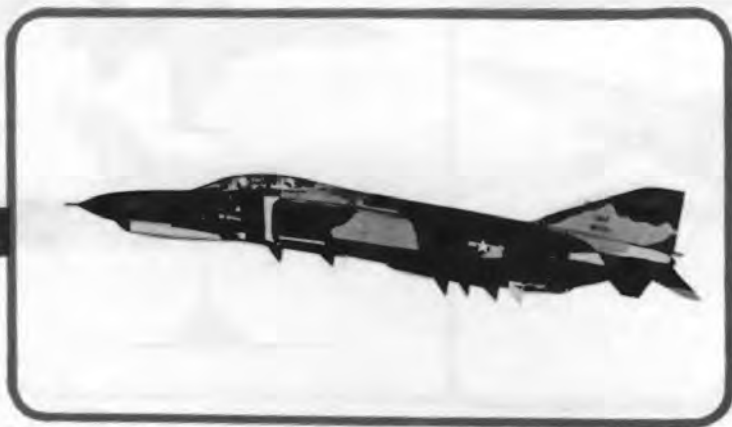
**RANGE:** 1,665 km

**USERS:** Canada, Greece, Iran, Jordan, Libya, Netherlands, Norway, Republic of China, Saudi Arabia, South Korea, Thailand, Turkey, United States, Venezuela



**FIXED WING**

## F-4 (Phantom II)



**ARMAMENT:** Varied

**SPEED:** 2,960 + km/hr

**RANGE:** 2,778 km

**USERS:** Australia, Greece, Iran, Israel, Japan, South Korea, Spain, Turkey, United Kingdom, United States, West Germany

**FIXED WING**



## F-104 (Starfighter)



**ARMAMENT:** Varied

**SPEED:** 2,590 km/hr

**RANGE:** 2,683 km

**USERS:** Belgium, Canada, Denmark, Greece, Italy, Japan, Netherlands, Norway, Republic of China, Turkey, United States, West Germany



**FIXED WING**

## Yak-28 BREWER



**FIXED WING**

**RECOGNITION FEATURES:** Wings high-mounted and backswept; two engine pods attached at the bottom of the wings extend beyond wings; long, pointed body with transparent nose and needle-like probe; narrow backswept horizontal stabilizer and tail fin; belly-mounted fin.

**ARMAMENT:** Various bomb and rocket combinations

**MAIN GUN RANGE:** Dependent upon armament

**SPEED:** 1,180 km/hr

**RANGE:** 2,130 km

**USERS:** USSR

**EMPLOYMENT:** Fighter/bomber, all-weather



## MiG-25 FOXBAT



**FIXED WING**

**RECOGNITION FEATURES:** Shoulder-mounted, semi-delta wings; two engines and exhausts; rectangular, side-mounted air intakes give box-like appearance of fuselage; twin tail fins.

**ARMAMENT:** Classified

**MAIN GUN RANGE:** Classified

**SPEED:** 3,380 + km/hr

**RANGE:** 2,092 km

**USERS:** USSR

**EMPLOYMENT:** Fighter/interceptor

## MiG-23 FLOGGER



**FIXED WING**

**RECOGNITION FEATURES:** High-mounted (variable) wings; long, tubular body except where dual air intakes give a box-like appearance; extended needle nose; single tail fin; single engine.

**ARMAMENT:** 1 x twin-barrel, 23mm gun

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 2,819 km/hr

**RANGE:** 1,706 km

**USERS:** USSR

**EMPLOYMENT:** Fighter/interceptor

## MiG-21 FISHBED



**FIXED WING**

**RECOGNITION FEATURES:** Downward slanting, mid-mounted, delta wings; single engine; long, tubular body with bubble cockpit back on nose section; sharply backswept tail fin; square tips on horizontal stabilizer.

**ARMAMENT:** 1 x 2 barreled 23mm gun

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 2,253 km/hr

**RANGE:** 1,297 km

**USERS:** Albania, Algeria, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Indonesia, Iran, Iraq, North Korea, People's Republic of China, Poland, Romania, Syria, USSR, Yugoslavia

**EMPLOYMENT:** Fighter/interceptor

## MiG-15 FAGOT



**FIXED WING**

**RECOGNITION FEATURES:** Mid-mounted, blunt backswept wings; single engine; thick, stubby, cigar-shaped fuselage with bubble cockpit; backswept and overhanging tail fin.

**ARMAMENT:** 1 x 37mm cannon  
2 x 23mm cannon

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 1,094 km/hr

**RANGE:** 1,204 km

**\*USERS:** Albania, Cuba, Czechoslovakia, North Korea, People's Republic of China, Poland, Somali Republic, Uganda

**EMPLOYMENT:** Fighter/bomber/ground attack

\*Obsolescent in Warsaw Pact nations; but exported to African and Asian nations.



# IL-28 BEAGLE



**FIXED WING**

<b>RECOGNITION FEATURES:</b>	Straight leading and forward-tapered, trailing-edged wings mounted high on body; engine pods mounted beneath the wings; rounded body has blunt, transparent nose with bubble cockpit; rear gunner's compartment.
<b>ARMAMENT:</b>	2 x 23mm cannons Various bomb configurations
<b>MAIN GUN RANGE:</b>	1,000 meters
<b>SPEED:</b>	933 km/hr
<b>RANGE:</b>	1,931 km
<b>USERS:</b>	Algeria, Bulgaria, Cuba, Czechoslovakia, Egypt, Finland, Hungary, Indonesia, Iraq, North Korea, People's Republic of China, Poland, Romania, Syria, USSR
<b>EMPLOYMENT:</b>	Light attack bomber

## MiG-17 FRESCO



**FIXED WING**

**RECOGNITION FEATURES:** Mid-mounted, backward-tapered wings with rounded tips; single engine; stubby, cigar-shaped body with bubble cockpit well forward on nose; backward-tapered tail fin; horizontal stabilizer mounted high.

**ARMAMENT:** 1 x 37mm cannon  
2 x 23mm cannon

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 1,127 km/hr

**RANGE:** 2,037 km

**USERS:** Albania, Algeria, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, Indonesia, Iran, Iraq, Libya, North Korea, People's Republic of China, Poland, Romania, Somali Republic, Sudan, Syria, Uganda, USSR

**EMPLOYMENT:** Fighter/bomber/interceptor

## Su-7 FITTER



**FIXED WING**

**RECOGNITION FEATURES:** Low-mounted, semi-delta, backswept wings; single engine; round intake and exhaust; long, tubular body with blunt nose; large bubble cockpit mounted atop the nose section forward of the wing roots; tapered, backswept horizontal stabilizer and fin.

**ARMAMENT:** 2 x 30mm cannon

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 1,931 km/hr

**RANGE:** 1,445 km

**USERS:** Czechoslovakia, East Germany, Egypt, India, Iraq, North Korea, Poland, USSR

**EMPLOYMENT:** Close air support

## MiG-19 FARMER



**FIXED WING**



**RECOGNITION FEATURES:** Single-seat; sharply backswept wings, mid-mounted with one wing fence on each wing; two engines; thick, flattened, untapered body with blunt nose; bubble cockpit well forward on nose section.

**ARMAMENT:** 2 x 23mm cannons. Air-to-air missiles

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 1,448 km/hr

**RANGE:** 2,253 km

**USERS:** Albania, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Indonesia, Iran, North Korea, People's Republic of China, Poland, Romania, USSR

**EMPLOYMENT:** Day fighter/interceptor



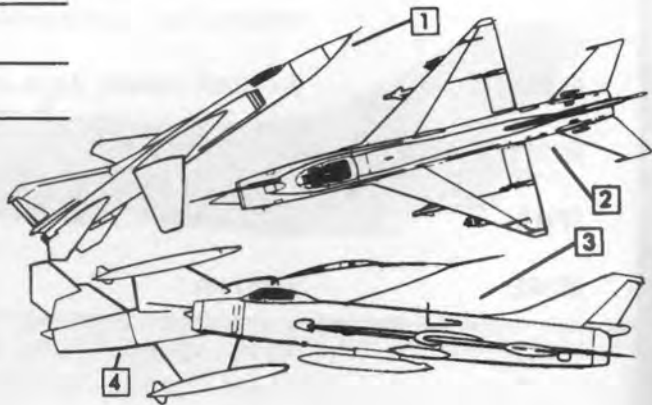
Can you identify these?

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2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

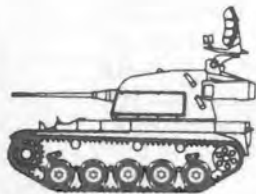


## ANTIAIRCRAFT GUNS/SURFACE-TO-AIR MISSILES

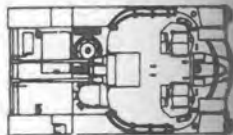
AMX DCA 13/30	70
5 PFZ-B	72
M-113A1	74
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M-55	82
S-60	84
KS-19	86
SA-2	88
SA-3	90
SA-6	92
SA-7	94
SA-4	96
ZU-23	98
ZSU-23-4	100
ZSU-57-2	102

## AMX DCA 13/30\* - Antiaircraft, Self-Propelled



**AA & SAMS**



**RECOGNITION FEATURES:** Full-tracked; five-roadwheeled; same chassis as AMX 30; high-silhouetted turret; contains twin mounted 30mm guns; radar dish-mounted top, left rear of turret.

**ARMAMENT:** 2 x 30mm Vickers AA guns

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 59 km/hr

**RANGE:** 482 km

**USERS:** France

**EMPLOYMENT:** Mechanized infantry support, battalion AA

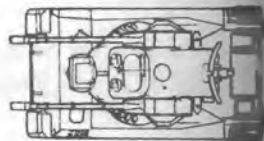
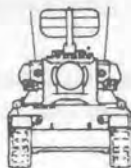
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\*The guns and turret on the AMX 13 and AMX 30 are the same. Chassis has some variation with AMX 30, having greater horsepower. General configuration of both is similar.

## 5 PFZ-B (GEPARD) - Twin, 35mm, Self-Propelled Antiaircraft Gun



**AA & SAMS**



**RECOGNITION FEATURES:** Leopard tank chassis; twin, exterior-mounted cannon; track radar antenna on top rear of turret.

**ARMAMENT:** 1 x twin 35mm cannon

**MAIN GUN RANGE:** 4,000 meters

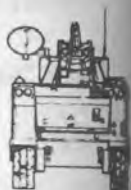
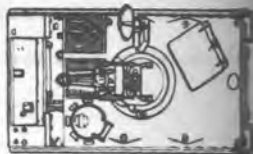
**SPEED:** 70 km/hr

**RANGE:** 500 km

**USERS:** Belgium, Netherlands, West Germany

**EMPLOYMENT:** Generally used with armor units.

## M-113A1 (Vulcan) - Antiaircraft Gun, Self-Propelled



**ARMAMENT:** 1 x 20mm cannon (6 barrels)

**MAIN GUN RANGE:** AD - 1,300 meters  
Direct - 3,000 meters

**SPEED:** 40 km/hr

**RANGE:** 490 km

**USERS:** United States

**AA & SAMS**



## Vulcan 20mm Cannon



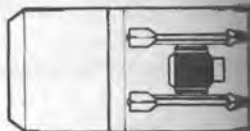
**ARMAMENT:** 1 x 20mm cannon (6 barrels)

**MAIN GUN RANGE:** AD - 1,200 meters  
Direct - 3,000 meters

**USERS:** United States



## Chaparral Surface-to-Air Weapon System



**ARMAMENT:** 4 x Chaparral surface-to-air missile

**MAIN GUN RANGE:** 5,000 + meters

**RANGE:** 480 km

**USERS:** United States



## Hawk Surface-to-Air Weapon System

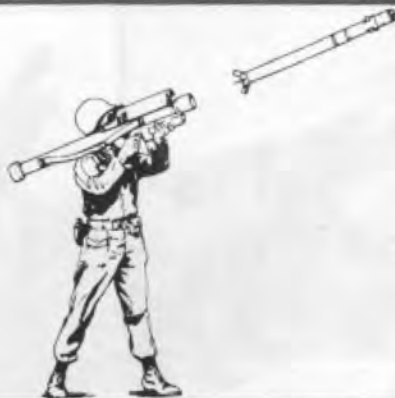



**ARMAMENT:** 3 x Hawk surface-to-air missiles

**MAIN GUN RANGE:** 40,000 meters

**USERS:** Belgium, Denmark, France, Israel, Italy, Japan,  
Netherlands, Saudi Arabia, South Korea, Spain,  
Sweden, Taiwan, United States, West Germany.

## Redeye - Portable Antiaircraft Missile\*





**ARMAMENT:** Redeye AA missile  
**MAIN GUN RANGE:** 3,000 meters  
**SPEED:** Supersonic  
**USERS:** Australia, Sweden, United States

---

\*The Stinger will be Redeye's successor, having a greater range and velocity.

## ZPU-4 (14.5mm Machinegun)



**RECOGNITION FEATURES:** Similar to our quad 50's; system contains wheeled-mount with 4 x 14.5mm heavy machineguns, their ammunition cans and sighting device; seat for operator.

**ARMAMENT:** 4 x 14.5mm machinegun

**MAIN GUN RANGE:** Maximum vertical - 5,000 meters  
Effective antiaircraft - 1,400 meters

**USERS:** Mid East, People's Republic of China, Warsaw Pact

**EMPLOYMENT:** Light antiaircraft

## M-55 20mm AA System



**RECOGNITION FEATURES:** Wheeled-mount carrying 3 x 20mm cannons, their ammunition cans and sights, with gunner seat.

**ARMAMENT:** 3 x 20mm cannon

**MAIN GUN RANGE:** Maximum vertical - 4,500 meters  
Effective antiaircraft - 1,500 meters

**USERS:** Warsaw Pact, Yugoslavia

**EMPLOYMENT:** Light antiaircraft



## S-60 (57mm AA Gun)



**RECOGNITION FEATURES:** Four-wheeled mount contains elevation and traversing devices, along with 1 x 57mm automatic cannon.

**ARMAMENT:** 1 x 57mm cannon

**MAIN GUN RANGE:** Radar - 6,000 meters  
Optical - 4,000 meters

**USERS:** People's Republic of China, Warsaw Pact

**EMPLOYMENT:** Heavy antiaircraft gun organic to the AA regiment of the motorized rifle division, deployed in battery formations to protect critical assets.

## KS-19 (100mm AA Gun) Towed



**RECOGNITION FEATURES:** Four-wheeled, framed chassis holds 1 x 100mm gun; long tube with multi-baffle muzzle brake; shields provided around crew area.

**ARMAMENT:** 1 x 100mm AA cannon

**MAIN GUN RANGE:** Maximum vertical - 15,400 meters  
Effective antiaircraft - 13,700 meters

**USERS:** People's Republic of China, Warsaw Pact

**EMPLOYMENT:** Antiaircraft fire, also antitank

## SA-2 (GUIDELINE)



**RECOGNITION FEATURES:** Two-stage, ground-mounted missile; found on single launchers; narrow pencil-like body with groups of (4) stabilization fins; found in groups of six in a star-like formation.

**ARMAMENT:** 1 x SA-2 (Guideline) missile

**MAIN GUN RANGE:** 55,000 meters  
Maximum altitude - 24,000 meters  
Minimum altitude - 1,000 meters

**USERS:** Far East, Mid East, Warsaw Pact

**EMPLOYMENT:** Grouped in batteries and organic to the Combined Arms Army

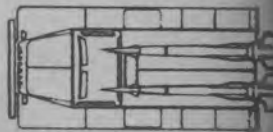
## SA-3 (GOA)



**AA & SAMS**



**90**



**RECOGNITION FEATURES:** Mounted on a six-wheeled ZIL-157 heavy utility truck are 2 x SA-3 (Goa) missiles; these are two-staged and have front, middle, and rear stabilization fins.

**ARMAMENT:** 2 x SA-3 (Goa) missiles

**MAIN GUN RANGE:** 30,000 meters

**SPEED:** 50 km/hr (carrier)

**RANGE:** 300 km

**USERS:** USSR, Warsaw Pact

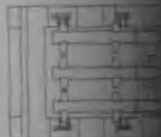
**EMPLOYMENT:** Employed in an anti-aircraft role to the Combined Arms Armies



## SA-6 (GAINFUL)



**AA & SAMS**



**RECOGNITION FEATURES:** Using same chassis as ZSU-23-4; instead of turret, mounts a missile rack containing 3 x SA-6 anti-aircraft missiles.

**ARMAMENT:** 3 x SA-6 (Gainful) missiles

**MAIN GUN RANGE:** Maximum altitude - 18,000 meters  
Minimum altitude - 100 meters  
Range: 40,000 meters

**SPEED:** 44 km/hr (carrier)

**RANGE:** 250 km

**USERS:** USSR

**EMPLOYMENT:** Low altitude, surface-to-air guided missile employed in a battery and deployed in the forward division areas.

## SA-7 (GRAIL) - Guided Missile, Shoulder-Launched, Man-Portable



**RECOGNITION FEATURES:** Small tube-like container with sighting device, similar in appearance to our Redeye.

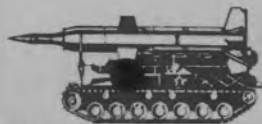
**ARMAMENT:** 1 x SA-7 missile

**MAIN GUN RANGE:** 3,500 meters  
Maximum altitude - 1,500 meters  
Minimum altitude - 50 meters

**USERS:** USSR

**EMPLOYMENT:** Company level antiaircraft

## SA-4 (GANEF)



**AA & SAMS**



**RECOGNITION FEATURES:** Full-tracked, seven-roadwheeled vehicle, carrying two huge two-stage missiles, the point of which overhangs the front of the vehicle.

**ARMAMENT:** 2 x SA-4 (Ganef) missiles

**MAIN GUN RANGE:** 85,000 meters  
Maximum altitude - 18,000 meters

**SPEED:** 36 km/hr (carrier)

**RANGE:** 250 km

**USERS:** USSR

**EMPLOYMENT:** Antiaircraft guided missiles accompanying field troops; organic to the Combined Arms Army

## ZU-23 (2 x 23mm Antiaircraft Gun)



**RECOGNITION FEATURES:** Two-wheeled mount with 2 x 23mm AA guns; also mounts AA sights and ammunition cans.

**ARMAMENT:** 2 x 23mm AA cannon

**MAIN GUN RANGE:** 2,500 meters

**USERS:** USSR | , Warsaw Pact

**EMPLOYMENT:** Light antiaircraft; found in motorized rifle division



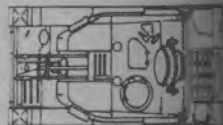
## ZSU-23-4 (Antiaircraft) Self-Propelled



**AA & SAMS**



**100**



**RECOGNITION FEATURES:** Full-tracked, six-roadwheeled vehicle; high, box-like hull with a rectangular turret centered over the third roadwheel; turret mounts 4 x 23mm automatic AA guns.

**ARMAMENT:** 4 x 23mm AA cannon

**MAIN GUN RANGE:** Radar - 3,000 meters  
Optical - 2,500 meters

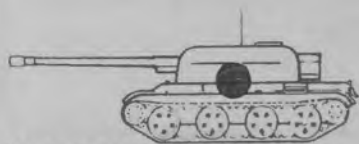
**SPEED:** 44 km/hr

**RANGE:** 250 km

**USERS:** USSR

**EMPLOYMENT:** Located in AD gun battery of motorized rifle and tank regiments; organic to AA regiment of maneuver divisions

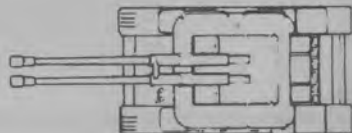
## ZSU 57-2 (Antiaircraft) Self-Propelled



**AA & SAMS**



**102**



**RECOGNITION FEATURES:** Full-tracked; four-roadwheeled; flat hull; mounting a bowl-type turret with two 57mm AA cannons.

**ARMAMENT:** 2 x 57mm cannon

**MAIN GUN RANGE:** Radar - 6,000 meters  
Optical - 4,000 meters

**SPEED:** 50 km/hr (carrier)

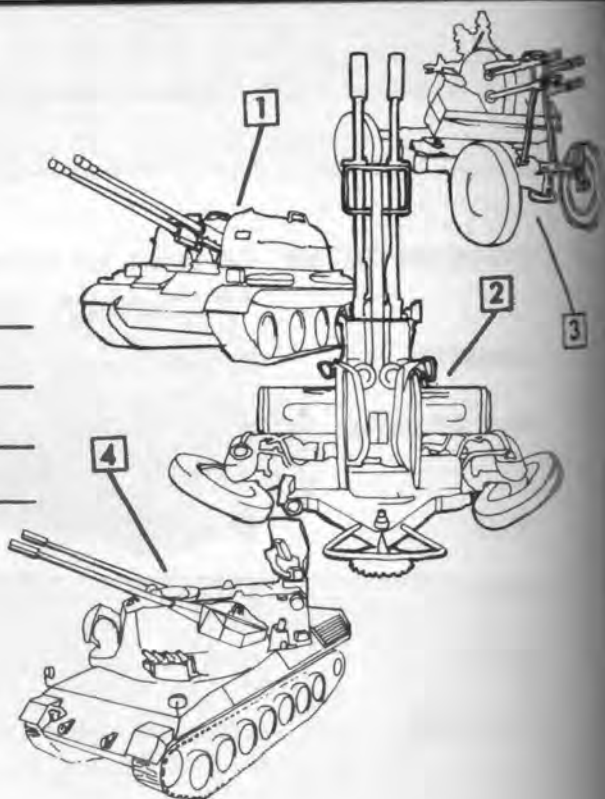
**RANGE:** 402 km

**USERS:** USSR

**EMPLOYMENT:** Follows closely behind advancing tanks and armored personnel carriers in a direct fire mode; found in AA regiments

Can you identify these?

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_



## ARMOR

CHIEFTAIN -----	106
SCORPION -----	108
CENTURION -----	110
VICKERS -----	112
STRV-1 -----	114
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T-62 -----	142
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T-72 -----	148

## Chieftain Medium Tank



**ARMOR**



**RECOGNITION FEATURES:** Fully tracked; six-roadwheeled (usually not visible due to armored track skirt); flat, low-silhouetted hull with large oval turret longitudinally centered over fourth roadwheel; huge main gun with thermal dispensing covers; bore evacuator three-fourths distance from muzzle.

**ARMAMENT:**  
1 x 120mm gun  
1 x 12.7mm machinegun  
2 x 7.62mm machinegun

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 40 km/hr

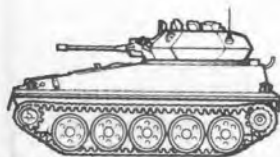
**RANGE:** 400 km

**USERS:** Iran, Kuwait, United Kingdom

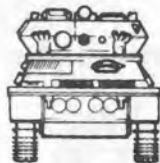
**EMPLOYMENT:** Main battle tank



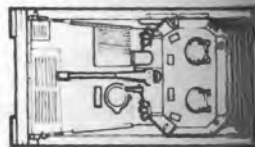
## Scorpion - Light Tank



**ARMOR**



**108**



**RECOGNITION FEATURES:** Five-wheeled; amphibious; airportable; reconnaissance; general purpose; long front slope to hull; short gun barrel; may have prominent upturned exhaust right hand side.

**ARMAMENT:**  
1 x 76mm gun  
1 x 7.62mm machinegun  
1 x 7.62mm machinegun (coaxial)

**MAIN GUN RANGE:** 1,600 meters

**SPEED:** 87 km/hr

**RANGE:** 480 km

**USERS:** Belgium, Iran, Philippines, United Arab Republic, United Kingdom

**EMPLOYMENT:** Armored reconnaissance, armored support, patrol and escort

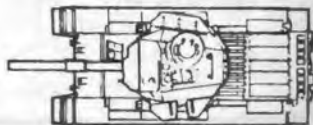
## Centurion 10 Medium Tank



**ARMOR**



**110**



**RECOGNITION FEATURES:** Fully tracked; six-roadwheeled; four support rollers covered by track skirts; low-silhouetted with turret mounted over third and fourth roadwheels; bore evacuator

**ARMAMENT:** 1 x 105mm gun  
1 x 12.7mm machinegun  
1 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,700 meters

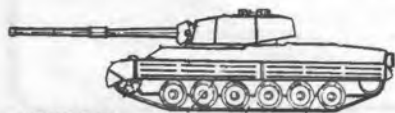
**SPEED** 35 km/hr

**RANGE:** 241 km

**USERS:** Australia, Canada, Denmark, India, Iraq, Israel, Jordan, Kuwait, Lebanon, Netherlands, South Africa, Sweden, Switzerland, United Arab Republic, United Kingdom

**EMPLOYMENT:** Employed as medium battle tank.

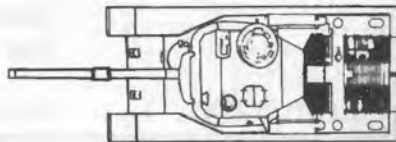
## Vickers Medium Tank, MARK 3



**ARMOR**



**112**



**RECOGNITION FEATURES:** Fully tracked; six-roadwheeled; track skirts used; higher silhouette than standard English tank; bore evacuator halfway.

**ARMAMENT:** 1 x 105mm gun  
2 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,700 meters

**SPEED:** 56 km/hr

**RANGE:** 604 km

**USERS:** India, Kuwait

**EMPLOYMENT:** Medium combat tank

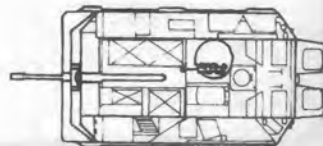
## STRV-103 Tank (S-Tank)



**ARMOR**



114



**RECOGNITION FEATURES:** Fully tracked; four-roadwheeled; long, sloping nose plate giving "wedge" appearance; no turret; gun controlled by pneumatic suspension; bore evacuator midway up barrel of main gun.

**ARMAMENT:** 1 x 105mm gun  
2 x 12.7mm machinegun  
2 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,700 meters

**SPEED:** 49 km/hr

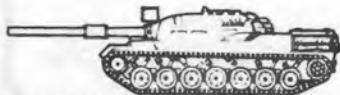
**RANGE:** 338 km

**USERS:** Sweden

**EMPLOYMENT:** Main battle tank



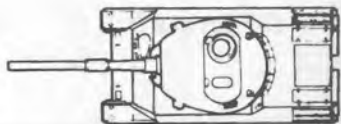
## Leopard I Medium Tank



**ARMOR**



**116**



**RECOGNITION FEATURES:** Fully tracked; seven-roadwheeled; track skirts cover return rollers, when all Leopard I's have been modified; sloped-front armor; elongated turret mounted forward of center; engine plate in rear angles up from turret; bore evacuator mid-length of main gun; no muzzle brake.

**ARMAMENT:**  
1 x 105mm gun  
1 x 7.62mm machinegun (coaxial)  
1 x 12.7mm AA machinegun

**MAIN GUN RANGE:** 1,700 meters

**SPEED:** 64 km/hr

**RANGE:** 603 km

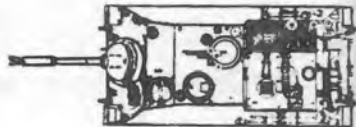
**USERS:** Australia, Belgium, Denmark, Italy, Netherlands, Norway, West Germany

**EMPLOYMENT:** Main battle tank

## Jagdpanzer Kanone JPZ 4-5 (Widder)



**ARMOR**



**RECOGNITION FEATURES:** Fully tracked; five-roadwheeled; two-staged hull with front slope, mounting main gun (no turret).

**ARMAMENT:** 1 x 90mm cannon  
2 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 70 km/hr

**RANGE:** 400 km

**USERS:** Belgium, West Germany

**EMPLOYMENT:** Main tank destroyer; used with antitank companies of Panzer-grenadier

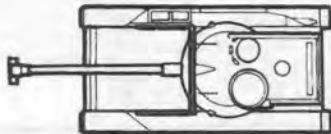
## AMX 13 - Light Tank



**ARMOR**



**120**



**RECOGNITION FEATURES:** Five-roadwheeled; fully tracked chassis; front-sloped, low-silhouetted body with flat-faced turret mounted over third and fourth roadwheels; elongated turret; no bore evacuator.

**ARMAMENT:** 1 x 75mm main gun (90mm or 105mm optional)  
1 x 7.62mm machinegun (coaxial)

**MAIN GUN RANGE:** 1,500 meters

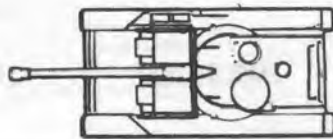
**SPEED:** 64 km/hr

**RANGE:** 350 km

**USERS:** Algeria, Argentina, Austria, Belgium, Cambodia, Dominican Republic, Ecuador, France, India, Indonesia, Ivory Coast, Lebanon, Morocco, Netherlands, Peru, Singapore, Switzerland, Tunisia, Venezuela

**EMPLOYMENT:** Medium battle tank

## AMX 13 with HOT Missiles Tank



**ARMOR**

**RECOGNITION FEATURES:** Five-roadwheeled; relatively large turret, rear of chassis; turret mounts main gun and various missile systems.

**ARMAMENT:**               \*1 x 75mm gun  
                                  \*HOT missiles

**MAIN GUN RANGE:**       Gun - 1,500 meters  
                                  Missile - 4,000 meters

**SPEED:**                   64 km/hr

**RANGE:**                  350 km

**USERS:**                  France

**EMPLOYMENT:**          Light tank

One  
\*90mm gun is replacing the 75mm gun. Missile systems may include four Harpoon, four or six HOT, or four SS-11 total per vehicle.



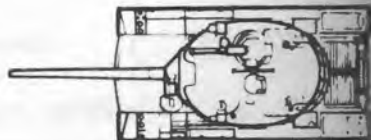
## AMX 30 Main Battle Tank



**ARMOR**



**124**



**RECOGNITION FEATURES:** Five-roadwheeled; low-silhouetted; gun tube has no muzzle brake or evacuator; has four-section aluminum heat shield; streamlined turret with smoke grenade dispenser; square infrared/white light searchlight left of main gun.

**ARMAMENT:**  
1 x 105mm gun  
1 x 12.7mm machinegun  
1 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,500 meters

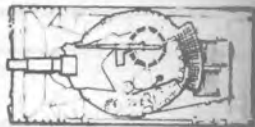
**SPEED:** 65 km/hr

**RANGE:** 600 km

**USERS:** France, Greece, Saudi Arabia, Spain, Venezuela

**EMPLOYMENT:** Main battle tank

## M551 Sheridan



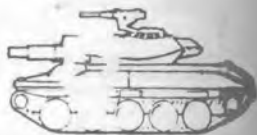
**ARMAMENT:** 1 x 152mm gun  
1 x 7.62mm machinegun (coaxial)  
1 x .50 caliber machinegun

**SPEED:** 64 km/hr

**RANGE:** 596 km

**USERS:** United States

**ARMOR**



## M-48 A3 Medium Tank



**ARMAMENT:** 1 x 90mm gun  
1 x .30 caliber machinegun (coaxial)  
1 x .50 caliber machinegun in cupola

**SPEED:** 48 km/hr

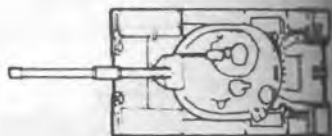
**RANGE:** 500 km

**USERS:** United States



**ARMOR**

## M-60A1 Main Battle Tank



**ARMAMENT:** 1 x 105mm gun  
1 x 7.62mm machinegun (coaxial)  
1 x .50 caliber machinegun

**SPEED:** 48 km/hr

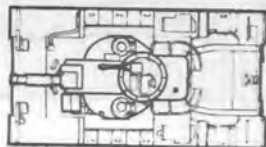
**RANGE:** 500 km

**USERS:** Israel, United States

**ARMOR**



## M-60A2 Main Battle Tank

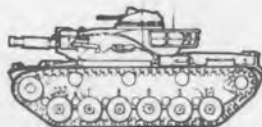


**ARMAMENT:** 1 x 152mm gun launcher  
1 x 7.62mm machinegun (coaxial)  
1 x .50 caliber machinegun

**SPEED:** 48 km/hr

**RANGE:** 450 km

**USERS:** United States



## JSU 152 Heavy Assault Gun



**ARMOR**

**RECOGNITION FEATURES:** Full tracked with six roadwheels and three return rollers; box-like gun compartment in front; low, flat engine housing in rear; muzzle brake on gun.

**ARMAMENT:** 1 x 152mm gun  
1 x 12.7mm machinegun

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 35 km/hr

**RANGE:** 150 km

**USERS:** United Arab Republic, USSR, Warsaw Pact

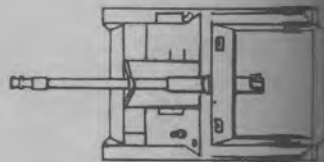
**EMPLOYMENT:** Heavy assault gun



## ASU-57 Airborne Assault Gun, Self-Propelled



**ARMOR**



**RECOGNITION FEATURES:** Fully tracked; four-roadwheeled; two-level hull, with front faces sloping; no turret mounted; gun projecting from front face of hull; guncrew area has no top cover; long gun barrel.

**ARMAMENT:** 1 x 57mm AT gun

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 45 km/hr

**RANGE:** 260 km

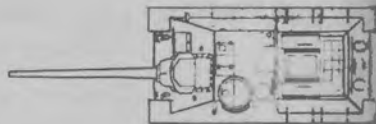
**USERS:** United Arab Republic, USSR, Warsaw Pact

**EMPLOYMENT:** Airborne assault vehicle

## SU-100 Assault Gun



**ARMOR**



**RECOGNITION FEATURES:** Fully tracked; five-roadwheeled; box-shaped (square) housing, front of vehicle, around gun; engine in rear, covered by plating lower in silhouette than front; long barrel on main gun.

**ARMAMENT:** 1 x 100mm gun

**MAIN GUN RANGE:** 1,500 meters

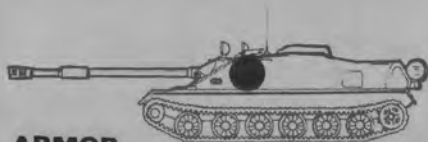
**SPEED:** 55 km/hr

**RANGE:** 300 km

**USERS:** United Arab Republic, USSR, Warsaw Pact

**EMPLOYMENT:** Assault gun used with mechanized infantry

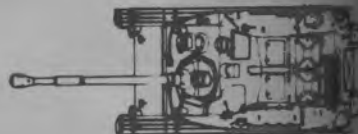
## ASU-85 Airborne Assault Gun, Self-Propelled



**ARMOR**



**136**



**RECOGNITION FEATURES:** Fully tracked; six-roadwheeled with space between first, second; box-shaped with covered crew area; main gun projecting from front slope; muzzle brake attached with bore evacuator near muzzle.

**ARMAMENT:** 1 x 85mm gun

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 45 km/hr

**RANGE:** 260 km

**USERS:** USSR

**EMPLOYMENT:** Airborne assault vehicle; antitank

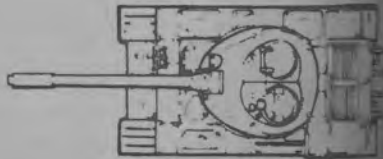
## T-54/T-55 Medium Tank



**ARMOR**



**138**



**RECOGNITION FEATURES:** Fully tracked; five-roadwheeled; space between first and second roadwheels; low-silhouetted, sloped hull; dome-shaped turret mounted over third roadwheel; bore evacuator at muzzle; infrared headlights; infrared searchlight for gun; seven variations of this model exist.\*

**ARMAMENT:** 1 x 100mm gun  
1 x 7.62mm machinegun  
1 x 12.7mm AA machinegun

**MAIN GUN RANGE:** 1,500 meters

**SPEED:** 50 km/hr

**RANGE:** 500 km

**USERS:** India, Israel (with 105mm gun), People's Republic of China, United Arab Republic, USSR, Warsaw Pact

**EMPLOYMENT:** Medium battle tank in armored formations

\*T-55 and T-55A may mount 12.7mm AA machinegun.



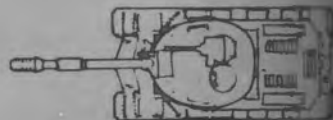
# T-10 Heavy Tank



**ARMOR**



140



**RECOGNITION FEATURES:** Fully tracked; seven-roadwheeled; low-silhouetted hull evenly sloped on all sides; center of turret forward over third roadwheel; square overhang at rear plate; bore evacuator toward the muzzle; dish-shaped turret; V-shaped frontal plate.

**ARMAMENT:** 1 x 122mm cannon  
2 x 14.7mm machinegun

**MAIN GUN RANGE:** 2,000 meters (approximately)

**SPEED:** 40 km/hr

**RANGE:** 250 km

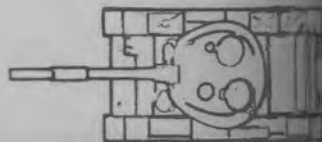
**USERS:** USSR

**EMPLOYMENT:** Heavy battle tank with heavy armored regiments of armored divisions

## T-62 Medium Tank



**ARMOR**



**RECOGNITION FEATURES:** Fully tracked; five-roadwheeled; flat, low-silhouetted hull; dish-shaped turret over third roadwheel; no muzzle brake; bore evacuator three-fourths to muzzle.

**ARMAMENT:** 1 x 115mm main gun  
1 x 7.62mm machinegun (coaxial)  
1 x 12.7mm AA machinegun

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 50 km/hr

**RANGE:** 500 km

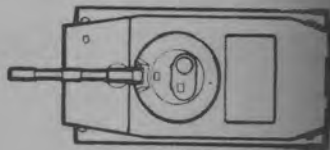
**USERS:** United Arab Republic, USSR, Warsaw Pact

**EMPLOYMENT:** Main battle tank (medium) in armored formations

## PT 76 Reconnaissance Amphibious Tank



**ARMOR**



**RECOGNITION FEATURES:** Fully tracked; six-roadwheeled; rectangular-shaped hull with a boat-like front; dish-type turret mounted over second roadwheel; chassis similar to BTR-50P; muzzle brake on main gun; bore evacuator close to muzzle.

**ARMAMENT:** 1 x 76mm main gun  
1 x 7.62mm machinegun (coaxial)  
1 x 12.7mm machinegun (AA) (on some versions)

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 45 km/hr - land  
10 km/hr - water

**RANGE:** 250 km

**USERS:** People's Republic of China, United Arab Republic, USSR, Warsaw Pact

**EMPLOYMENT:** Amphibious reconnaissance tank; personnel movement (up to six plus crew) in maneuver divisions and regiments.

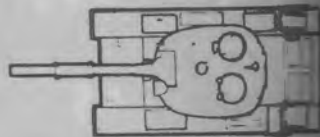
## M-1970 Medium Tank



**ARMOR**



**146**



**RECOGNITION FEATURES:** Six evenly spaced roadwheels; well-sloped glacis plate; infrared unit on left of gun; driver's hatch center-front of hull; commander's hatch right of turret; bore evacuator first third of turret near nozzle.

**ARMAMENT (Probable):** 1 x 115mm gun (smoothbore)  
1 x 7.62mm machinegun (coaxial)  
1 x 12.7mm AA machinegun

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 60 km/hr (approximately)

**RANGE:** 500 km (approximately)

**USERS:** USSR

**EMPLOYMENT:** Armored formations; possible replacement for T-62



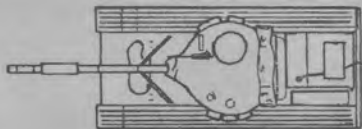
## T-72 MEDIUM TANK



**ARMOR**



**148**



**RECOGNITION FEATURES:** Live track, complete with support rollers, centerguides, end connectors, and probable torsion bar suspension. Glacis plate is gently sloping and has a "V" shaped splash guard directly in front of driver's position; external fuel cells down both sides of tank; three equal size storage boxes on left hand side of the turret, and two unequal size storage boxes on the right hand side of the turret. Main gun has bore evacuator about one-third down the gun tube from the muzzle end.

**ARMAMENT:** 1 x 115mm main gun  
1 x 12.7mm AA machinegun (turret roof-mounted)  
1 x 7.62mm machinegun (coaxial)

**MAIN GUN RANGE:** 2,000 meters (approximately)

**SPEED:** 55 km/hr

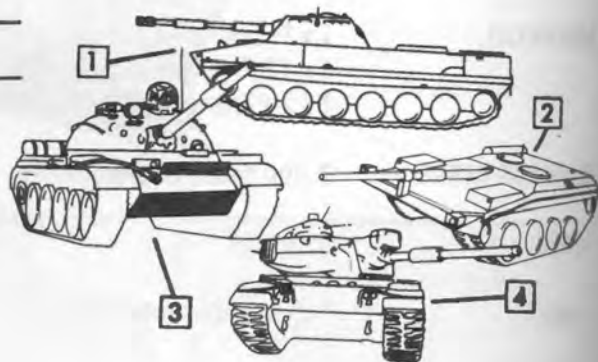
**RANGE:** 500 km (approximately)

**USERS:** USSR

**EMPLOYMENT:** Main battle tank in armored formations

Can you identify these?

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- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

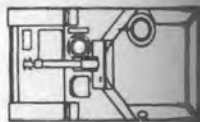


# ARTILLERY

AMX 105A	152
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## AMX 105A 105mm Howitzer, Self-Propelled



**ARTILLERY**

**RECOGNITION FEATURES:** Fully tracked; five-roadwheeled; high-silhouetted turret starts at second roadwheel and covers to rear of chassis; 105mm howitzer-mounted; nonrotating turret.

**ARMAMENT:** 1 x 105mm howitzer

**MAIN GUN RANGE:** 15,000 meters

**SPEED:** 56 km/hr

**RANGE:** 280 km

**USERS:** France

**EMPLOYMENT:** Close-support weapon; used with mechanized infantry and armor units.

## AMX 105mm Self-Propelled Howitzer (with Rotating Turret)\*



**ARTILLERY**



**RECOGNITION FEATURES:** Five-wheeled; large box-shaped turret with cupola occupies rear half of hull; short tube (muzzle brake) overhangs forward of leading edge of hull; turret rotates.

**ARMAMENT:** 1 x 105mm howitzer

**MAIN GUN RANGE:** 14,500 meters

**SPEED:** 60 km/hr

**RANGE:** 300 km

**USERS:** France

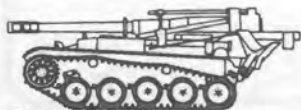
**EMPLOYMENT:** Direct support

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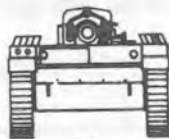
\*The AMX 105mm SP Howitzer also comes with large nonrotating turret and cupola with machinegun on top, right side of turret.



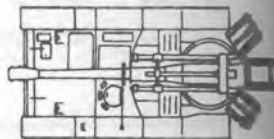
## MKF3 155mm SP Howitzer



**ARTILLERY**



**156**



**RECOGNITION FEATURES:** Five roadwheels; slight tube (muzzle brake) overhang; driver and gunner in left front, forward of turret; rearward projection of magazines; double-baffle muzzle brake.

**ARMAMENT:** 1 x 155mm howitzer

**MAIN GUN RANGE:** 20,000 meters

**SPEED:** 60 km/hr

**RANGE:** Classified

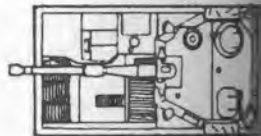
**USERS:** Argentina, France, Venezuela

**EMPLOYMENT:** General fire support for the mechanized divisions of the French Army

## Abbot 105mm Self-Propelled Howitzer



**ARTILLERY**



**RECOGNITION FEATURES:** Five roadwheels; box-like hull; rear-mounted turret, with slight tube (muzzle brake) overhang over leading edge of hull; driver in right front.

**ARMAMENT:** 1 x 105mm howitzer

**MAIN GUN RANGE:** 17,500 meters

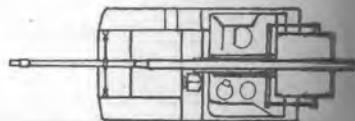
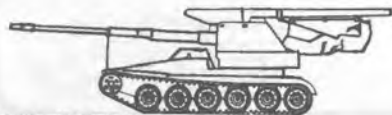
**SPEED:** 47 km/hr

**RANGE:** Classified

**USERS:** United Kingdom

**EMPLOYMENT:** Artillery battalions in direct support of brigades

## L/50 155mm Self-Propelled Automatic Gun



**ARTILLERY**

**RECOGNITION FEATURES:** Six-roadwheeled; considerable tube overhang forward of leading edge of hull; prominent "A" frame tube travel strut; large rearward projection of magazine; small turret; driver on left side forward of turret near center.

**ARMAMENT:** 1 x 155mm gun

**MAIN GUN RANGE:** 25,000 meters

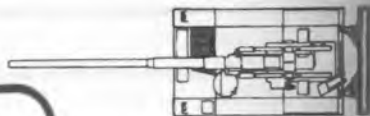
**SPEED:** 40 km/hr

**RANGE:** Classified

**USERS:** Sweden

**EMPLOYMENT:** Direct support artillery

# M107 175mm SP Gun



**ARMAMENT:** 1 x 175mm

**MAIN GUN RANGE:** 32,700 meters

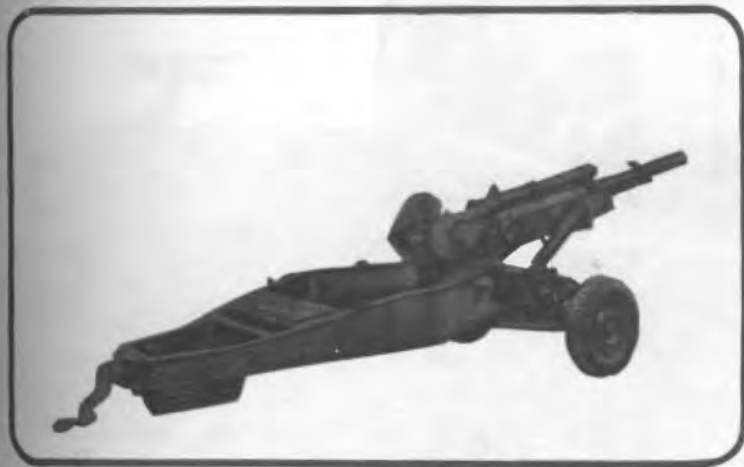
**RANGE:** 724 km

**USERS:** Greece, Iran, Israel, Netherlands, Spain, United Kingdom, United States, West Germany



**ARTILLERY**

## M102 105mm Light Howitzer



**ARMAMENT:** 1 x 105mm howitzer

**RANGE:** 11,500 meters

**USERS:** United States



## M114A1 155mm Howitzer, Towed



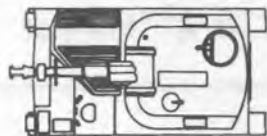
**ARMAMENT:** 1 x 155mm howitzer

**RANGE:** 14,600 meters

**USERS:** NATO, United States

**ARTILLERY**

## M109 155mm SP Howitzer

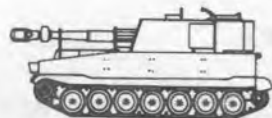


**ARMAMENT:** 1 x 155mm howitzer

**MAIN GUN RANGE:** 14,600 meters (18,000 meters M109A2)

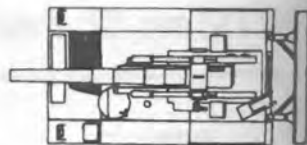
**RANGE:** 354 km

**USERS:** Israel, Libya, NATO, Spain, United States



**ARTILLERY**

# M110 8" Howitzer



**ARMAMENT:** 1 x 8" howitzer

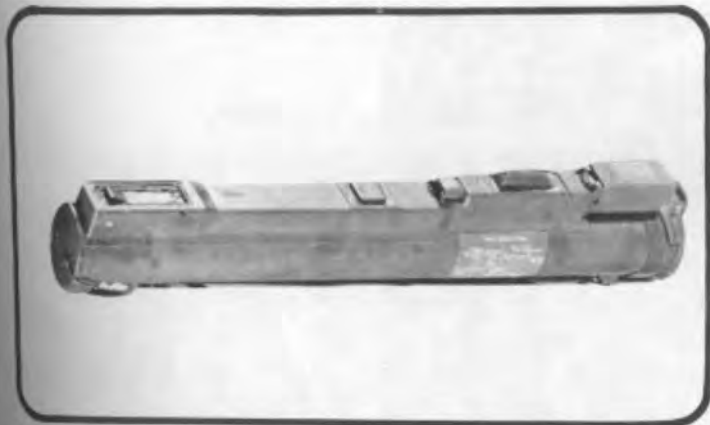
**MAIN GUN RANGE:** 16,800 meters

**RANGE:** 724 km

**USERS:** Iran, NATO South Korea, United States  
**ARTILLERY**



## M72A2 (LAW) Antitank Rocket



**ARMAMENT:** Fires 66mm heat rocket

**RANGE:** 200 meters

**USERS:** United States

## M-47 (MAW) Dragon Antitank Weapon System



**ARMAMENT:** 1 x Dragon missile

**RANGE:** 1,000 meters

**USERS:** United States

**ARTILLERY**

## TOW (HAW) Missile System



**ARMAMENT:** Fires (TOW) missile

**RANGE:** 3,000 meters

**USERS:** NATO, United States, West Germany

## M40A1 106mm Recoilless Rifle



**ARMAMENT:** 1 x 106mm recoilless rifle

**RANGE:** 1,000 meters

**USERS:** United States, various other countries

**ARTILLERY**

## Lance Surface-to-Surface Missile



**ARMAMENT:** 1 x Lance missile (nuclear or high explosive)

**RANGE:** 110,000 meters (approximately)

**USERS:** NATO, United States



## T-12/T-12A 100mm Antitank Gun



**RECOGNITION FEATURES:** Long tube with cylindrical "pepperpot" muzzle brake; single castor wheel near trail ends; winged shield angled to rear on either side, on T-12A only; added cylinder to right and above breech.

**ARMAMENT:** 1 x 100mm gun

**MAIN GUN RANGE:** 2,000 + meters

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Support of maneuver battalion. Weapon should appear approximately 0.2 to 0.5 km behind forward edge of the battle area in offense and 0.2 to 2.0 km in defense.

## D-20 152mm Gun-Howitzer



**RECOGNITION FEATURES:** Prominent base plate connected to bottom forward cradle for travel (same carriage as D-74); castor wheels and jacks at each trail end; scalloped winged shield with traveling central portion; shorter, larger diameter tube than D-74 with similar double-baffle winged, muzzle brake.

**ARMAMENT:** 1 x 152mm gun-howitzer

**MAIN GUN RANGE:** 17,000 meters

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Weapon should appear 3 to 5 km behind the forward edge of the battle area in offense or 4 to 8 km in defense organic to artillery battalions and regiments.

## D-30 122mm Howitzer



**RECOGNITION FEATURES:** Three-trailed configuration; trails fold together and attach to tube for travel; towed by muzzle.

**ARMAMENT:** 1 x 122mm howitzer

**MAIN GUN RANGE:** 15,000 meters

**SPEED:** 80 km/hr (towed)

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Direct support of maneuver company or battalion (regimental artillery battery and divisional artillery). Weapon should appear 1 to 4 km behind the forward edge of the battle area in offense or 2 to 7 km in defense, depending on unit of assignment.

## D-1 152mm Howitzer



**RECOGNITION FEATURES:** Essentially same appearance as 122mm howitzer, M-30 (M1938) except larger diameter tube and added double-baffle muzzle brake.

**ARMAMENT:** 1 x 152mm howitzer

**MAIN GUN RANGE:** 12,400 meters

**SPEED:** 40 km/hr (towed)

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Weapon should appear 2 to 3 km behind the forward edge of the battle area in offense and 3 to 6 km in defense organic to artillery units at Combined Arms Army/division level.



## D-74 122mm Field Gun



**RECOGNITION FEATURES:** Prominent base plate connected to bottom forward cradle for travel; castor wheels and jacks at each trail end; scalloped winged shield with traveling central portion; long tube and double-baffle, winged muzzle brake; semi-trailed load.

**ARMAMENT:** 1 x 122mm gun

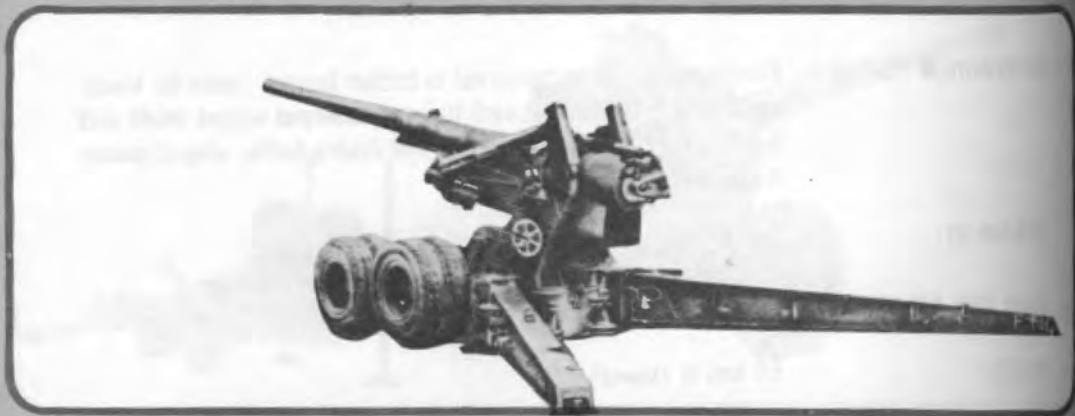
**MAIN GUN RANGE:** 24,000 meters

**SPEED:** 50 km/hr (towed)

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Equivalent to US general support. Weapon should appear 4 to 8 km behind the forward edge of the battle area in offense or 5 to 10 km in defense.

## M-2 155mm Howitzer



**RECOGNITION FEATURES:** Long tube with large side-by-side recoil cylinders; the carriage uses four large dual tires for towing configuration.

**ARMAMENT:** 1 x 155mm gun

**MAIN GUN RANGE:** 22,005 meters

**USERS:** Yugoslavia

**EMPLOYMENT:** Heavy artillery

## M-30 (M1938) 122mm Howitzer



**RECOGNITION FEATURES:** Symmetrical mildly winged shield sloped rearward at trunnion level with sliding center section at top; short tube and prominent (upper and lower) recoil system cylinders; handwheels on both sides of weapon.

**ARMAMENT:** 1 x 122mm howitzer

**MAIN GUN RANGE:** 12,000 meters

**SPEED:** 50 km/hr (towed)

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Direct support of maneuver battalion (divisional artillery). Weapon should appear 1 to 3 km behind the forward edge of the battle area in offense and 2 to 6 km in defense.

## M-46 130mm Field Gun



**RECOGNITION FEATURES:** Long, thin tube with a "pepperpot" muzzle brake; carriage has single tires, winged-shield, angled rearward; recoil system cylinder positioned over and under the tube.

**ARMAMENT:** 1 x 130mm Howitzer

**MAIN GUN RANGE:** 27,500 meters

**SPEED:** 50 km/hr (towed)

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Weapon should appear 4 to 8 km behind the forward edge of the battle area in offense and 5 to 10 km in defense. Provides general support indirect and direct fires to maneuver divisions; organic to Combined Arms Army.



## M1955 100mm Field Gun



**RECOGNITION FEATURES:** Long, thin tube; single tires on carriage; steel castor wheel at trail ends; perforated "pepperpot" muzzle brake.

**ARMAMENT:** 1 x 100mm gun

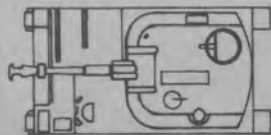
**MAIN GUN RANGE:** 20,000 meters (approximately)

**SPEED:** 50 km/hr (towed)

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Support of maneuver battalion. Weapon should appear 0.2 to 0.4 km behind the forward edge of the battle area in offense and 0.1 to 5.0 km in defense.

## M1973 152mm Self-Propelled Gun



**ARTILLERY**



**190**



**RECOGNITION FEATURES:** Six roadwheels; tube (muzzle brake) overhang; two recoil cylinders above the tube; turret roof has single rotatable hatch; large hatch on right side of turret (driver location).

**ARMAMENT:** 1 x 152mm gun

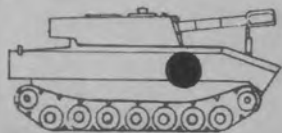
**MAIN GUN RANGE:** 18,500 meters

**SPEED:** 55 km/hr

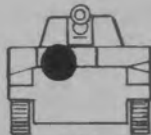
**USERS:** USSR

**EMPLOYMENT:** Equivalent to United States general support. Weapon should appear 3 to 5 km behind the forward edge of the battle area in offense and 4 to 8 km in defense.

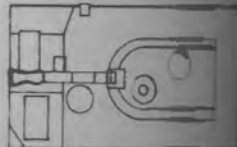
## M1974 122mm Self-Propelled Gun



**ARTILLERY**



**192**



**RECOGNITION FEATURES:** Long gun tube is flush with forward edge of vehicle; double-baffle muzzle brake; seven roadwheels; rear-mounted, low-silhouetted turret; radiator grill left side of vehicle.

**ARMAMENT:** 1 x 122mm gun

**MAIN GUN RANGE:** 15,000 meters

**SPEED:** 70 km/hr

**USERS:** USSR, selected Warsaw Pact nations

**EMPLOYMENT:** Regimental artillery

## S-23 180mm Gun



**RECOGNITION FEATURES:** Exposed polished surface; two heavy dual tires to support carriage; tube has large "pepperpot" muzzle brake; single wheels attached for towing.

**ARMAMENT:** 1 x 180mm gun

**MAIN GUN RANGE:** 30,000 meters, 43,000 meters with rocket assisted projectile

**SPEED:** 50 km/hr (towed)

**USERS:** USSR and USSR-sponsored nations

**EMPLOYMENT:** Equivalent to US general support (nondivisional weapon). Weapon should appear approximately 7 to 12 km behind the forward edge of the battle area in offense, 10 to 16 km in defense.



## FROG-7



LEFT VEHICLE ENGINE  
GUNNER'S STATION AND LAUNCHER CONTROLS



**ARTILLERY**



**RECOGNITION FEATURES:** Uses wheeled transporter-launcher based on ZIL-135 eight-wheeled truck; has on-board crane; long (30 ft) rocket.

**ARMAMENT:** HE, nuclear, and chemical warheads

**MAIN GUN RANGE:** 70,000 meters

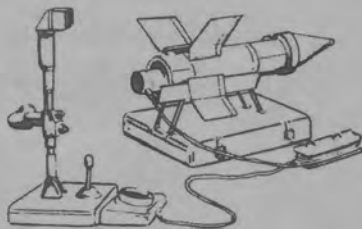
**SPEED:** 65 km/hr

**RANGE:** 500 km

**USERS:** Egypt, Iraq, Syria, USSR, Warsaw Pact

**EMPLOYMENT:** Due to its vulnerability and long range, employed from the rear.

## Sagger Missile



**RECOGNITION FEATURES:** Miniature-shaped rocket; four-finned, vehicular or ground mounted.

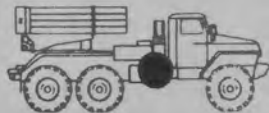
**ARMAMENT:** Shaped warhead

**MAIN GUN RANGE:** 3,000 meters

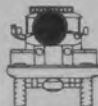
**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Standard antiarmor missile for Warsaw Pact countries

## BM-21 122mm Rocket Launcher



**ARTILLERY**



**200**



**RECOGNITION FEATURES:** Square, 40-tube cluster (4 rows of 10 tubes), often canvassed for protection; mounted to a truck chassis. Vehicle can be recognized by the distinctive fender design and spare tire to rear of cabin.

**ARMAMENT:** 40 x 122mm rocket

**MAIN GUN RANGE:** 20,500 meters

**SPEED:** 75 km/hr

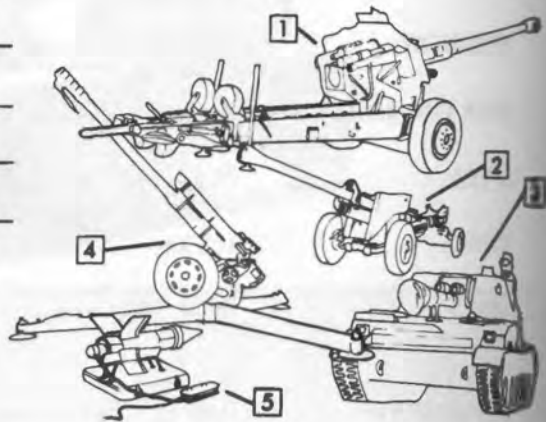
**RANGE:** 405 km

**USERS:** USSR, USSR-sponsored nations


**EMPLOYMENT:** These launchers are normally organized into battalions and assigned to division artillery; 18 are organic to each Soviet motorized rifle and tank division.

Can you identify these?

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_



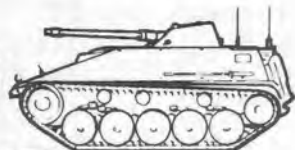
## LIGHT ARMORED VEHICLES

SPZ-11-2	204
SPZ-12-3	206
LUCHS (LYNX) 8x8	208
MARDER	210
CVR (W) FOX	212
FERRET	214
	216
EBR	218
AMX 10P	220
M 113 AI	222

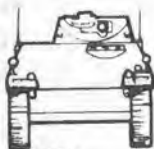
FUG OT-65	224
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BTR-50P/PK	234
BTR-60P/PA	236
BTR-60 PB	238
BTR-152	240
BMD ACV	242
BRDM	244
BMP	246



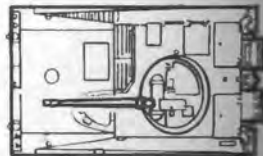
## Hotchkiss SPZ 11-2 Tracked Recon Vehicle



**APC'S**



**204**



**RECOGNITION FEATURES:** Five-roadwheeled, with three rollers; sloped front, with a basically square design; turret on upper left of vehicle mounting small caliber cannon; vehicle is nonamphibious.

**ARMAMENT:** 1 x 20mm cannon, or 1 x 7.62mm machinegun (APC version), or 81mm mortar mounted internally

**MAIN GUN RANGE:** 2,000 meters (1,500 meters - AA)

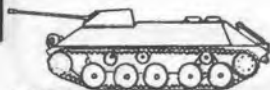
**SPEED:** 58 km/hr

**RANGE:** 400 km

**USERS:** West Germany

**EMPLOYMENT:** Division reconnaissance vehicle, being replaced by Luchs 8 x 8 vehicle. Also used as APC, mortar carrier, radar surveillance vehicle, and ambulance.

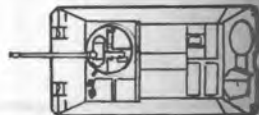
## HS 30 SPZ-12-3 Armored Personnel Carrier



**APC'S**



**206**



**RECOGNITION FEATURES:** Tracked, five-roadwheeled; long, low-silhouetted hull; turret mounted on extreme right front; sloping plates on all sides; large, round exhaust vent on rear slope.

**ARMAMENT:** 1 x 20mm cannon turret, 106mm recoilless rifle behind turret (some vehicles), or 120mm mortar.

**MAIN GUN RANGE:** 2,000 meters (1,500 meters AA)

**SPEED:** 58 km/hr

**RANGE:** 270 km

**USERS:** West Germany

**EMPLOYMENT:** Infantry battalion or armor battalion, infantry combat vehicle, antitank vehicle, mortar carrier, or artillery fire control vehicle; not amphibious

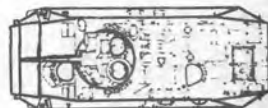
## LUCHS (Lynx), 8 x 8 Armored Reconnaissance Vehicle



**APC'S**



**208**



**RECOGNITION FEATURES:** Eight-roadwheeled, amphibious, reconnaissance vehicle; large gap between second and third roadwheel; sloping sides; long slope at front and rear; round turret at front over second roadwheel; two water propulsion propellers at rear.

**ARMAMENT:** 1 x 20mm cannon  
2 x 7.62mm machineguns (coaxial and roof-mounted)

**MAIN GUN RANGE:** 2,000 meters (1,500 meters AA)

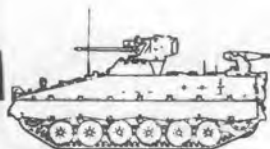
**SPEED:** 90 km/hr - land  
10 km/hr - water

**RANGE:** 800 km

**USERS:** West Germany

**EMPLOYMENT:** As divisional reconnaissance vehicle; may operate with Leopard tanks.

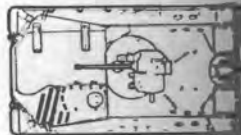
## Marder Mechanized Infantry Combat Vehicle



**APC'S**



**210**



**RECOGNITION FEATURES:** Six-roadwheeled, tracked; 20mm cannon mounted on low, oval turret; 7.62mm machinegun on remote-controlled cupola at center rear.

**ARMAMENT:** 1 x 20mm automatic cannon  
1 x 7.62mm machinegun (coaxial)  
1 x 7.62mm machinegun (rear cupola)  
1 x MILAN AT guided missile launcher right side of turret on some vehicles

**MAIN GUN RANGE:** 2,000 meters (1,500 meters AA)

**SPEED:** 75 km/hr

**RANGE:** 520 km

**USERS:** West Germany

**EMPLOYMENT:** Armored infantry battalions of armored and armored infantry brigades



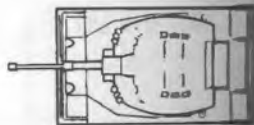
## CVR(W) Fox Reconnaissance Vehicle



**APC'S**



**212**



**RECOGNITION FEATURES:** The hull is larger than the Ferret's; four wheels; large, flat undercut turret with square bin in rear, housing a long, thin gun.

**ARMAMENT:** 1 x 30mm Rardon cannon  
1 x 7.62mm machinegun (coaxial)

**MAIN GUN RANGE:** 2,000 meters

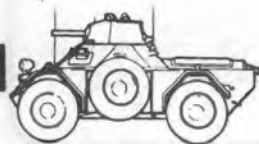
**SPEED:** 105 km/hr

**RANGE:** 435 km

**USERS:** United Kingdom

**EMPLOYMENT:** Wheeled, air-portable, reconnaissance vehicle—normally operates attached to armored and mechanized infantry battalions.

## Ferret Scout Car



**APC'S**



**214**



**RECOGNITION FEATURES:** Four-wheeled, faceted-shaped hull; spare wheel mounted on center on left side; square sides may appear with or without turret.

**ARMAMENT:** 1 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 93 km/hr

**RANGE:** 305 km

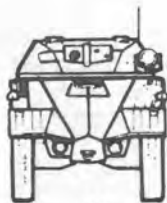
**USERS:** NATO, United Kingdom

**EMPLOYMENT:** Reconnaissance, liaison and internal security vehicle

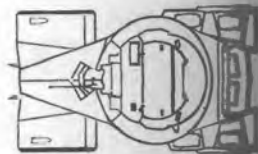
## AML Armored Car



APC'S



216



**RECOGNITION FEATURES:** Four-wheeled drive, high-speed vehicle. Two versions: H90 has a long, 90mm gun with double-baffle muzzle brake; H60 has a 60mm, breech-loaded mortar, and can be identified by rounded turret.

**ARMAMENT:** 1 x 90mm gun  
1 x 7.62mm machinegun (coaxial)  
or  
1 x 60mm mortar and 2 x 7.62mm machineguns, or  
1 x 12.7mm machinegun or 1 x 20mm cannon

**MAIN GUN RANGE:** 1,000 meters

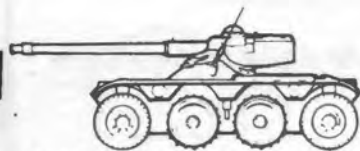
**SPEED:** 106 km/hr

**RANGE:** 612 km

**USERS:** French Armed Forces; exported to numerous countries

**EMPLOYMENT:** Used by light armored cavalry battalions for internal security and close reconnaissance.

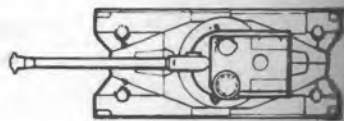
## EBR Armored Car



APC'S



218



**RECOGNITION FEATURES:** Eight-wheeled reconnaissance vehicle; (four center roadwheels are for cross-country use only); round turret mounted in middle of vehicle.

**ARMAMENT:** 1 x 75 or 90mm main gun  
3 x 7.5mm machinegun

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 100 km/hr

**RANGE:** 600 km

**USERS:** France, Morocco, Portugal

**EMPLOYMENT:** Armored cavalry division or corps



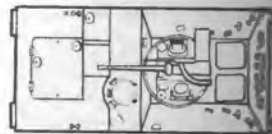
# AMX 10P Mechanized Infantry Combat Vehicle



**APC'S**



**220**



**RECOGNITION FEATURES:** Tracked vehicle with five roadwheels and five return rollers; low-silhouette; sloped front, with turret mounted over fourth roadwheel in left side of chassis.

**ARMAMENT:** 1 x 20mm cannon  
1 x 7.62mm machinegun (coaxial)

**MAIN GUN RANGE:** 2,000 meters (1,500 meters AA)

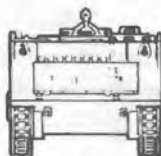
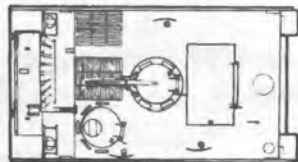
**SPEED:** 65 km/hr - land  
8 km/hr - water

**RANGE:** 600 km

**USERS:** France

**EMPLOYMENT:** As infantry combat vehicle, tow vehicle for 120mm mortar, and command vehicle; used in mechanized division.

## M113A1 Armored Personnel Carrier



**RECOGNITION FEATURES:** Light-weight, low-silhouette, amphibious carriers are full-tracked with five roadwheels, air-transportable and air-droppable.

**ARMAMENT:** 1 x .50 caliber machinegun or TOW antitank missile launcher (Australia and Switzerland have added 76mm and 20mm gun turrets on some of their vehicles)

**MAIN GUN RANGE:** 1,500 meters (horiz), 1,000 meters (AA)

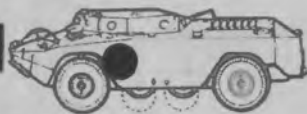
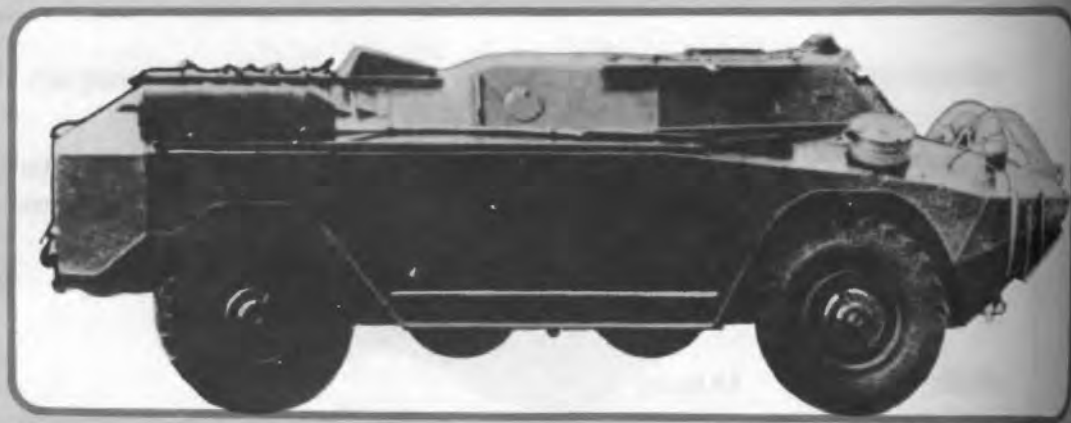
**SPEED:** 68 km/hr

**RANGE:** 500 km

**USERS:** United States Army and those of over 30 countries throughout the world

**EMPLOYMENT:** Transport troops or cargo in support of tactical operations

## FUG OT-65 Armored Reconnaissance Vehicle



**APC'S**



**224**



**RECOGNITION FEATURES:** Four-wheeled, amphibious, armored reconnaissance vehicle; has two sets of rough terrain belly wheels that may be raised or lowered; has two water jet exhausts.

**ARMAMENT:** \*1 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 80 km/hr - land  
10 km/hr - water

**RANGE:** 600 km

**USERS:** Czechoslovakia, Hungary, Poland

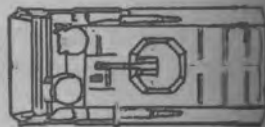
**EMPLOYMENT:** Scouts, ambulance, radiological-chemical reconnaissance vehicle

\*Two versions: model FUG OT-65 with 7.62mm machinegun; model FUG OT-65A with turret and 1 x 7.62mm machinegun and 1 x 14.5mm machinegun.

## OT-64 Armored Personnel Carrier



**APC'S**



**RECOGNITION FEATURES:** Eight-wheeled, amphibious; distinctive gap between front and rear sets of wheels; boat-shaped hull with sloped armor; exhaust system well forward on sides, extends back halfway on vehicle.

**ARMAMENT:** 1 x 14.5mm machinegun or 1 x 12.7mm or 1 x 7.62mm machinegun  
Optional - 2 x Sagger

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 95 km/hr - land  
10 km/hr - water

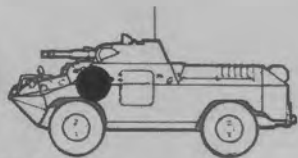
**RANGE:** 710 km

**USERS:** Czechoslovakia, Poland

**EMPLOYMENT:** Motorized rifle units



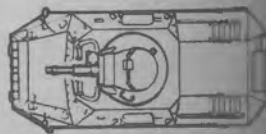
## D-944 Armored Personnel Carrier



**APC'S**



**228**



**COGNITION FEATURES:** Four-wheeled, amphibious, APC; 14.5mm machinegun armed turret; no belly wheels; added personnel hatches and firing ports on both sides of vehicle.

**ARMAMENT:** 1 x 14.5mm machinegun  
1 x 7.62mm machinegun

**MAIN GUN RANGE:** 2,000 meters

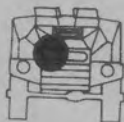
**SPEED:** 80 km/hr

**RANGE:** 700 km

**USERS:** East Germany, Hungary

**EMPLOYMENT:** Motorized rifle units

## BTR-40B Armored Personnel Carrier



**RECOGNITION FEATURES:** Four-wheeled, nonamphibious; 7.62mm machinegun can be mounted on either front sides or rear; appears like small BTR-152; has hinged window plates.

**ARMAMENT:** 1 x 7.62mm machinegun  
2 x 14.5mm AA dual machinegun (variation)

**MAIN GUN RANGE:** 1,000 meters

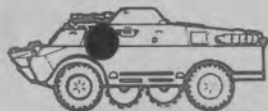
**SPEED:** 80 km/hr

**RANGE:** 285 km

**USERS:** All Warsaw Pact countries

**EMPLOYMENT:** Motorized rifle units

## BRDM 2 Scout Car



**APC'S**

**RECOGNITION FEATURES:** Four-wheeled car with (amphibious) ship-like bow; four retractable belly wheels; box-like hull with cone-shaped turret mounted over the middle retractable wheels (command version has no turret).

**ARMAMENT:** 1 x 14.5mm machinegun  
1 x 7.62mm machinegun

**MAIN GUN RANGE:** 2,000 meters

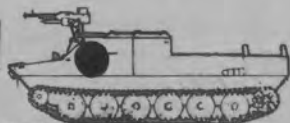
**SPEED:** 100 km/hr - land  
10 km/hr - water

**RANGE:** 750 km

**USERS:** USSR, Warsaw Pact

**EMPLOYMENT:** Found in reconnaissance battalion of motorized and tank divisions, and in reconnaissance companies of motorized rifle and tank regiments.

## BTR-50 P/PK Armored Personnel Carrier



APC'S



234



**RECOGNITION FEATURES:** Tracked, amphibious APC\*; six-roadwheeled; boat-type hull with vertical sides; tower-type cupola on left front; driver's hatch center front.

**ARMAMENT:** 1 x 7.62mm machinegun  
1 x 12.7mm machinegun

**MAIN GUN RANGE:** 1 x 12.7mm machinegun - 2,000 meters

**SPEED:** 44 km/hr - land  
10 km/hr - water

**RANGE:** 260 km

**USERS:** East Germany, Egypt, Finland, India, Iran, People's Republic of China, Somali Republic, Syria, USSR, Warsaw Pact

**EMPLOYMENT:** Motorized rifle units with tank formations.

\*Command post versions are identified by additional tower-type cupola on the right or additional antennas. P model is open. PK has armored covers on top.



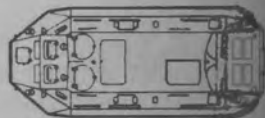
## BTR-60 P/PA\* Armored Personnel Carrier



**APC'S**



**236**



**RECOGNITION FEATURES:** Eight-wheeled (evenly spaced) APC; open-topped; amphibious; boat-shaped hull; well-sloped armor; infrared searchlights above co-driver's seat.

**ARMAMENT:** 2 x 7.62mm machinegun  
1 x 12.7mm machinegun

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 80 km/hr - land  
10 km/hr - water

**RANGE:** 500 km

**USERS:** East Germany, USSR

**EMPLOYMENT:** Motorized rifle units

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\*A command post version is the BTR-60 PA command vehicle.

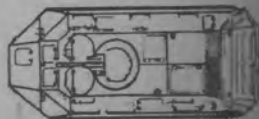
## BTR-60 PB Armored Personnel Carrier



**APC'S**



**238**



**RECOGNITION FEATURES:** Eight-wheeled; amphibious; boat-like hull; well-sloped armor, rear-mounted powerplant; all eight wheels are powered; has infrared night-driving equipment.

**ARMAMENT:** 1 x 14.5mm heavy machinegun  
1 x 7.62mm machinegun

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 80 km/hr - land  
10 km/hr - water

**RANGE:** 500 km

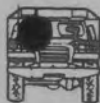
**USERS:** Cuba, East Germany, Egypt, USSR, Warsaw Pact

**EMPLOYMENT:** Troop transport, amphibious operations, standard for Soviet Marine Corps; used by infantry and motorized rifle units.

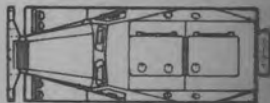
## BTR-152 Armored Personnel Carrier



**APC'S**



**240**



**RECOGNITION FEATURES:** Six-wheeled APC; nonamphibious; long hood with venetian blind type radiator cover; vertical sides and rear wall with cut-in corners.

**ARMAMENT:** 1 x 7.62mm machinegun  
1 x 12.7mm machinegun

**MAIN GUN RANGE:** 2,000 meters

**SPEED:** 65 km/hr

**RANGE:** 780 km

**USERS:** Warsaw Pact Nations, except Czechoslovakia

**EMPLOYMENT:** Motorized rifle units

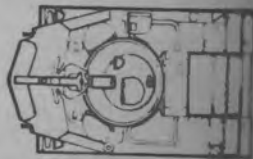
## BMD Airborne Combat Vehicle



**APC'S**



**242**



**RECOGNITION FEATURES:** Five evenly spaced roadwheels; turret mounts the same as on the BMP; rear crew compartment, amphibious.

**ARMAMENT:**  
1 x 73mm main gun  
4 x Sagger missile launcher  
1 x 7.62mm coaxial machinegun  
2 x 7.62mm bow machinegun

**MAIN GUN RANGE:** 1,300 meters

**SPEED:** 80 km/hr (approximately) - land  
Classified - water

**RANGE:** 320 km (approximately)

**USERS:** USSR

**EMPLOYMENT:** Motorized rifle units



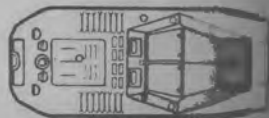
## BRDM Armored Reconnaissance Vehicle



APC'S



244



**RECOGNITION FEATURES:** Four-wheeled, amphibious, armored reconnaissance vehicle; has full armored cover; has four small, rough terrain belly wheels that may be raised or lowered when needed.

**ARMAMENT:** 1 x 7.62mm machinegun

**MAIN GUN RANGE:** 1,000 meters

**SPEED:** 80 km/hr - land  
9 km/hr - water

**RANGE:** 500 km

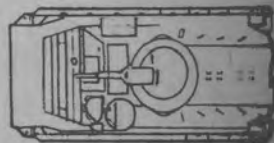
**USERS:** All Warsaw Pact countries

**EMPLOYMENT:** As scout car in different variants; can mount Snapper, Swatter, or Sagger AT missiles. Two versions: basic BRDM has a 7.62mm machinegun; BRDM-2 has a 14.5mm machinegun.

## BMP Infantry Combat Vehicle



**APC'S**



**RECOGNITION FEATURES:** Six-roadwheeled, tracked, amphibious, ICV; engine in front; two doors in rear; four hatches on top of crew compartment; low silhouette with flat revolving turret. (May have Sagger mounted above gun.)

**ARMAMENT:**  
1 x 73mm short recoilless gun  
1 x 7.62mm machinegun (coaxial)  
4 x Sagger ATGMs

**MAIN GUN RANGE:**  
73mm gun - 1,000 meters  
Sagger - 3,000 meters

**SPEED:**  
60 km/hr - land  
8 km/hr - water

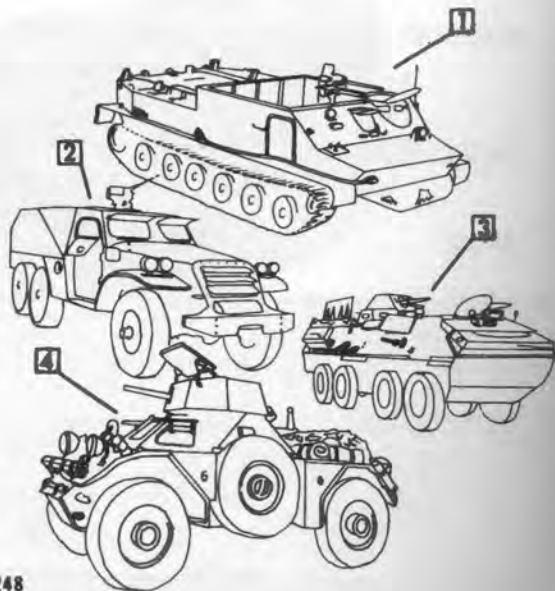
**RANGE:**  
500 km

**USERS:**  
Czechoslovakia, East Germany, Egypt, Poland, Syria, USSR

**EMPLOYMENT:**  
Motorized rifle units

Can you identify these?

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_



## CONVERSION SCALE

KILOMETERS	10									0	10	20	30	40	50	60	70	80
NAUTICAL MILES	10									0	10	20	30	40				
STATUTE MILES	10									0	10	20	30	40				

KILOMETERS	100										0	1000	2000	3000	4000	5000	6000	7000	8000
NAUTICAL MILES	100										0	1000	2000	3000	4000				
STATUTE MILES	100										0	1000	2000	3000	4000	5000			

$$1 \text{ sm} = .87 \text{ nm}$$

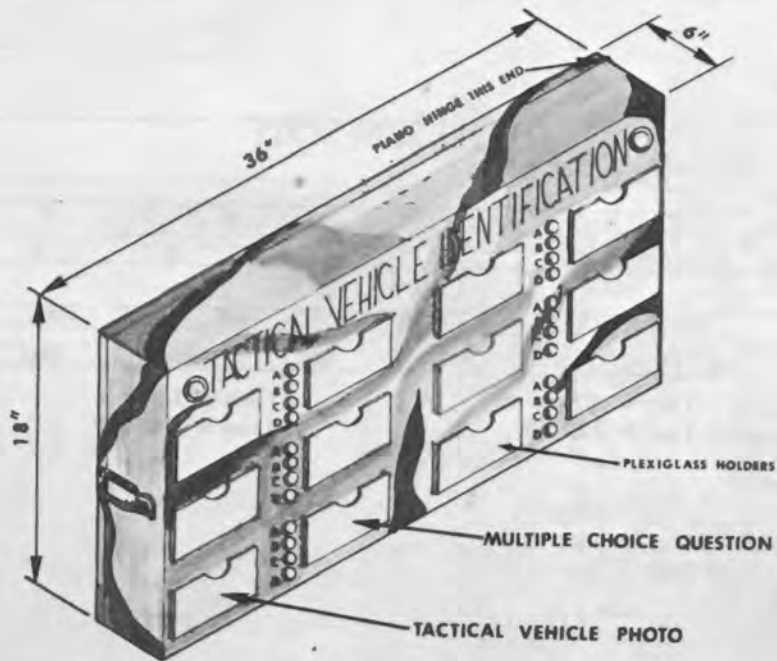
$$1 \text{ sm} = 1.61 \text{ km}$$

$$1 \text{ nm} = 1.85 \text{ km}$$

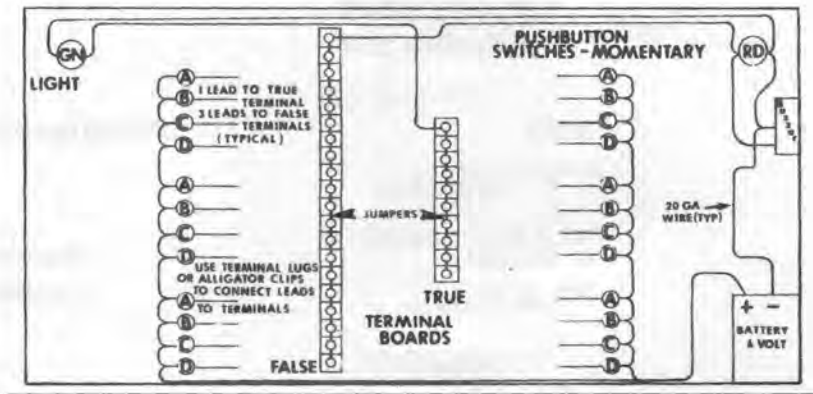
$$1 \text{ nm} = 1.15 \text{ sm}$$

# GAMING DEVICE

## TACTICAL VEHICLE IDENTIFICATION



## WIRING DIAGRAM



### BACK VIEW

The illustrated gaming device (Tactical Vehicle Identification) can serve as an instructional tool for increasing knowledge of combat equipment and for proficiency testing. The unit has twelve slots for holding unmarked pictures of tactical vehicles. Each slot has four possible answers marked A, B, C, and D with appropriate buttons. When the right answer button is selected, a green light will flash. The wrong answer button will sound a buzzer and flash a red light. This unit may be used in class instructions; however, it also may be kept in a continually accessible area so that concerned personnel may use it for self-testing.

The wiring diagram and isometric drawing are provided as a guide to aid the local training aids facility to construct the device.



## REFERENCE

### APPLICABLE ARTEPS (as of November 1976)

NUMBER	ARTEP	Estimated Completion Date
	Armor School	
17-205	Air Cav Sqdn	Completed
17-385	Attk Hel Bn	Completed
	Aviation Center	
1-66	HHC, Avn Bde	Completed
1-127	Avn Co, Corps	Completed
1-222	Avn ATC Unit	77-2
1-252	HHC, Cbt Avn Gp	Completed
	ASA	
32-93	ASA Avn Co (Rear)	78-4
32-99	ASA Avn Co (Fwd)	78-3

**NUMBER****ARTEP****Estimated Completion Date**

## Health Services Command

8-137

Med Air Amb Co

77-2

## Intelligence School

30-79

M1 Company (Aerial Survl)

Completed

## Infantry School

7-200

Avn Gp (Ambl Div)

78-1

7-255

Aslt Hel Bn (Ambl Div)

77-3

7-357

Aslt Hel Co (Sep)

77-3

37-87

Div Avn Co (Mech Div)

77-2

57-55

Cbt Avn Bn (Inf &amp; Abn Div)

Completed

## Transportation School

55-167

Aslt Spt Hel Co

77-2

55-259

Trans Avn Hv Hel Co

78-1

29 MARCH 1977

By Order of the Secretary of the Army:

**BERNARD W. ROGERS**  
*General, United States Army*  
*Chief of Staff*

Official:

**PAUL T. SMITH**  
*Major General, United States Army*  
*The Adjutant General*

**DISTRIBUTION:**

*Active Army, USAR, and ARNG:* To be distributed in accordance with DA Form 12-11A, Requirements for Avn Co; Avn Co, Bn, Gp, and Bde; Attack Helicopter Gunnery; Army Avn Techniques and Procedures; FA Bn, Aerial FA; The Inf Bn; Divisional Armored and Air Cav Units; and Air Cav Sqdn (Qty rqr block no. 1, 3, 4, 8, 65, 79, 131, 132); plus: DA Form 12-12, Section II, Requirements for training publications relating specifically to all 1-series TOE (Qty rqr block no. 3).

Additional copies can be requisitioned (DA Form 17) from the US Army Adjutant General Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220.

# TC 1-88, Aviator's Recognition Manual

Rank

Duty Position

No. of Months in that Job

We solicit your comments on how we may improve the quality of this manual. Please complete the questionnaire, including your address and AUTOVON number to enable us to follow up on your constructive suggestions.

Unit Address

AUTOVON Phone Number

Name

Commander

US Army Aviation Center

ATTN: ATZQ-TD-TL

Fort Rucker, Alabama 36362

Postage and Fees Paid

Department of the Army

DOD-314

Commander

US Army Aviation Center

ATTN: ATZQ-TD-TL

Fort Rucker, Alabama 36362

1. Yes No By studying this manual, can you become familiar enough with combat equipment to readily recognize it? If your answer is "No," what is needed?

2. Yes No Is this TC a sufficient pocket reference for the aviator and aerial observer for field use? If your answer is "No," what should be changed?

3. Yes No As a commander, can you effectively use this manual as a guide in conducting unit training in equipment recognition? If your answer is "No," what should be changed?

4. Yes No Do you feel that the performance standards indicated are realistic? If your answer is "No," how can they be improved?

5. Yes No Are there any technical changes that need to be made to this TC 1-88?