WAR DEPARTMENT FM 30-40

RECOGNITION PICTORIAL MANUAL ON ARMORED VEHICLES

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FM 30-40

RECOGNITION PICTORIAL MANUAL ON ARMORED VEHICLES

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BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL, Chief of Staff.

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CHAPTER 1 INTRODUCTION

1. PURPOSE AND SCOPE

This manual is designed as an aid for the uniform training of personnel in recognition of armored vehicles. It covers the methods to be used in training and the vehicles that at present are considered operational.

2. OBJECTIVE

The objective of training in the recognition of armored vehicles is to make each individual capable of recognizing *instantly* armored vehicles now in operation, and to be able to learn quickly to recognize any new vehicles that may be developed. The individual must be able to recognize such vehicles under varying conditions of terrain, weather, and light; when the vehicle, or observer, or both, are moving or stationary; and when the vehicle is viewed from the front, side, rear, top, or at varying angles.

3. RESPONSIBILITY OF UNIT COMMANDERS

It is the responsibility of unit commanders that each individual of his command be thoroughly trained in armored vehicle recognition. The subject cannot be delegated to a few short hours on the basic training program, but must be continuous throughout training and combat.

4. NECESSITY FOR RECOGNITION TRAINING

a. The first requirement in warfare is the ability to distinguish friend from foe. Before the outbreak of this war few realized the grave problems of recognition: Since then, mistakes in recognition, on the sea, on land, and in the air, have been too numerous to mention. Usually these mistakes are attended by the most serious consequences. It must be fully realized that the only way to obviate these occurrences is by demanding the highest general level of proficiency in recognition. This can only be attained by continual, concentrated study. It is not suggested that practice will make one absolutely perfect, but it will certainly go most of the way to reducing the chances of a man being a danger not only to himself, but to his comrades-in-arms.

b. Recognition does not begin and end with appearance. It is essential to distinguish between the appearance of friend and foe, but this is seldom sufficient. It is also essential to recognize the exact type. In the case of armored vehicles, this recognition gives knowledge of the vulnerable portions, approximate speed, probable armament, and if hostile, a reasonable deduction as to future actions.

, **c.** What enables a person accurately and speedily to recognize a ship, a plane, or a tank? The process is no different from that of recognizing an automobile, a horse, a bird, or a friend. Ask yourself the question, "When I see a friend walking down the street, do I look at every feature of him and, having gone through a process of analysis,

decide that it is Bill?" Obviously not. You know immediately that it is "Bill" because you are *familiar* with his whole appearance, his various characteristics, and the way he stands or walks. Recognition is instinctive. It is not difficult to translate these various points into terms of a tank, an airplane, or a ship. So the combination of these, and many other features, make up what is known scientifically as "total form perception." Now ask one more question, "Why did you get to know the various features of a friend, or automobile, or horse?" The answer is, Because you were interested in him or it. Therefore, the requirement for proficiency in armored vehicle recognition is familiarity based on a knowledge of armored vehicles in general, a knowledge which will be gained only by an aroused interest and enthusiasm for armored vehicles. If this is borne in mind, there will finally be an end to those famous last words, "I think they're ours."

5. USE OF RECOGNITION TRAINING AIDS

a. This manual. (1) This manual is designed primarily for self-instruction and general use, but will also serve as a text in recognition courses. It includes four types of material: silhouettes, pictorial operational data, photographs, and editorial matter. The material is the most exact currently available. The manual will be constantly enlarged and amended.

(2) The silhouettes contained in this manual are drawn to a constant scale, so that when viewed from 5 yards they represent the vehicle at 400 yards.

b. Silhouette posters and photographs. (1) Silhouettes are the foundation stones or ABC on which all recognition training is based. They may seem dull and uninspiring, but the fact remains that the "three view" silhouette, giving the head-on, plan, and side view, shows very salient recognition features of a tank just as an architect's drawing of plan, section, and elevations gives the essentials of a building. Silhouettes should be studied for their over-all effect and not just for details. Photographs pick up where silhouettes leave off, by showing the vehicle in various positions. Have students sketch silhouettes of various armored vehicles.

(2) Sources of silhouettes and photographs are:

(a) This manual.

(b) Posters.

(c) Locally prepared silhouettes from photographs.

(d) Photographs from all available sources, such as magazines and newspapers.

c. Film slides and film strips. (1) Film slides and film strips are another means of presenting silhouettes and still photographs of armored vehicles. These can be used to good advantage throughout recognition training. In the more advanced stages of training, these can be flashed on the screen for progressively shorter time intervals. Time intervals as short as $\frac{1}{5}$ to $\frac{1}{50}$ second can be obtained with improvised shutters. Time intervals as short as $\frac{1}{500}$ second can be obtained if the necessary shutter equipment is available. At such speeds, the student is forced to recognize the vehicle as a whole because there is not time for the eye to scan its parts.

(2) Availability. (a) See FM 21-7 for film strips.

(b) Film slides are now in production and will be distributed automatically when available.

d. Models. (1) Models must be accurate and carefully constructed to scale. Using the models in various attitudes is all very well as far as it goes, but it is even more important that they should be available to students for examination. They may then satisfy themselves, the models being accurate, that certain features do exist which may well have been missed when seeing representations of the vehicle on former occasions. The scale model is eminently suitable, as it can be made to adopt *any* position, whereas the views presented by slides, phntographs, and silhouettes are necessarily limited. (2) Availability. If commercial models are not available, build your own. A program of model building is an excellent adjunct to a recognition training program.

6. TEACHING RECOGNITION

The above training aids can best be utilized for teaching recognition if training progresses as indicated below.

a. First, the student must be taught the important items of armored vehicle nomenclature and recognition features. (See ch. 2.)

b. Individual vehicles are next presented, with emphasis on their silhouette, engineering form photographic appearance, and interest appeal. In addition to Field Manuals, large posters or silhouettes may be used in this stage of training. Silhouettes or photographs can also be projected on screens using delineoscopes or film slides or strips.

c. As soon as the student knows the component parts of the vehicle being studied, *bis attention must thereafter be directed to recognizing the "total form" of the vehicle*. Models can be utilized to good advantage at this period in the training program. Film slides and film strips on individual vehicles projected for progressively decreasing periods of time are excellent means of presenting "total form" recognition and should be utilized to the maximum extent the availability of these aids permits.

d. For more advanced training, film slides, strips, or photographs projected for very short time intervals can be utilized. These same training aids can be used for test purposes. Where the necessary projection equipment is not available, the ingenious recognition instructor will improvise his own equipment, such as an opaque projector (reflectoscope) made of box, bulbs, old lenses, cardboard tube, etc.

e. In conclusion, practical results are the final test: A RECOG-NITION STUDENT MUST TRY HIS SKILL ON EVERY ACTUAL VEHICLE HE SEES AND ON EVERY PICTURE OF ONE IN A MAGAZINE OR NEWSPAPER.

7. PHASES OF TRAINING

The training phases outlined below are intended as guides only. Make it interesting. Do not keep men at one thing too long as they will grow tired and become disinterested. Recognition training will be tiring on the eyes unless varied. Class periods should not be longer than 50 minutes, and no more than one period per day. Utilize all the training aids available.

a. First phase. (1) Explain-purpose of course; necessity for instant recognition, and method of teaching (par. 6).

(2) Explain general nomenclature and recognition features of vehicles (ch. 2).

b. Second phase. (1) Review nomenclature and recognition features.

(2) Explain and study two vehicles.

(3) Flash various views of the vehicles on the screen for 1 to 5 seconds and require class to write down name of vehicle and nationality.

c. Third phase. (1) Review vehicles explained in previous phase.

(2) Explain and study two more vehicles.

(3) Practice recognition of the vehicles.

(4) Explain and study two more vehicles.

(5) Practice recognition of vehicles. Flash recently explained ones on screen for 1 second, other for ½ second.

d. Succeeding phases. Explain and study two or three new

vehicles per phase and practice recognition of all previously explained vehicles. Gradually decrease recognition time to $\frac{1}{10}$ second or less.

e. Hints to instructors. (1) There are no short cuts to learning armored vehicle recognition.

(2) Instructors must be thoroughly trained and enthusiastic for their work.

(3) Students must give some of their spare time to the subject if they are to become proficient.

(4) Make classroom instruction so interesting that the students will make recognition a *hobby*.

(5) Make recognition training aids available to the men in their spare time.

(6) Display posters and photographs in barracks, recreation rooms, and other places. Do not leave such posters permanently in one place. Have a program for shifting them periodically, every few days or once a week.

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(7) Use "interest appeal" information on armored vehicles. For example, the success of the 105-mm howitzer motor carriage M7 (British "Priest") in British Eighth Army attack from El Alemein westward.

(8) Introduce the competitive spirit whenever possible.

(9) Mixing in vehicles which have not been taught with those that have been taught makes the class alert, encourages close observation, and teaches extra vehicles.

(10) Try to equip one room with models, posters, photographs, and a library of publications and periodicals. Time and labor spent in making this a "display room" in the true sense of the word will be well rewarded. A room that is bright, clean, well lighted, and equipped in a manner that takes full advantage of advertising tricks becomes a center of interest and encourages instead of discourages the students to learn.

CHAPTER 2 NOMENCLATURE ÄND RECOGNITION FEATURES

8. TURRET

The turret is a dome-shaped or box-shaped structute on the top of the vehicle. It usually carries the main atmament---machine guns, 37-mm gun, 75-mm gun, 105-mm gun, and various other calibers as explained in paragraph 10. Distinguishing features of the turtet (figs. 1 and 2) are:

a. Position on hull. (1) Well forward as on the Russian medium tank T34.

(2) Just forward of center as on most U. S. tanks.

(3) Near the center as on the German PzKw III.

(4) Near the rear as on the German 6-wheeled ar mored car.

(5) One one side of the hull as on the U. S. medium tank M3.

b. Single or multiple turrets. Most tanks have single turrets. However, there are some with multiple turrets. These may be—

(1) Side by side.

(2) One above the other.

(3) In line.

c. Cupola. This is a small, turretlike projection on top of the turret. It may have a machine gun projecting from it. See U. S. medium tank M3.

d. Shape. The shape of the turret may be—

(1) Cylindrical. See Japanese light armored car 2597.

(2) Cone-shaped. With top of cone cut off. See Japanese medium

tank 2597.

(3) Pyramidal. With top cut off. See Italian M14 tank.

(4) A prism. A figure having vertical sides. See British Cromwell tank.

(5) Dome-shaped or globular. See U. S. medium tank M4.

e. Overhanging turrets and turret bulges. Some turrets, as in the U. S. light tank M5A1, overhang at the back or sides forming a bulge, this bulge being used normally for the radio. There are various combinations of shapes. The flat-sided turrets ordinarily slope so as to present a poor angle of impact for projectiles. Some turrets have a very streamlined appearance as in the U. S. medium tank M4. Some turrets are egg-shaped, the larger axis being parallel to the principal weapon. Note the U. S. light tank M5.

f. Radio antenna. Note position of radio antenna on the U. S. light tank M5. Some other vehicles have the antenna on the turret, but do not depend entirely on this means of recognition.

9. HULL

The characteristics to look for in the hull are:

a. Box shaped, with sides either vertical as on the U. S. half-tracks, or sloping.

b. Streamlined, as in the U.S. medium tank M4A1.

c. Overhanging, as in the U.S. light tank M5A1.

d. Low or high silhouette.







FIGURE 2. Turret types.

10. ARMAMENT

The armament varies from machine guns to large cannon. In turreted vehicles the heaviest armament is normally in the turret. Look for the following:

a. Short barrel, as on the U. S. 75-mm howirzer motor carriage M8.

b. Medium barrel, as on the U. S. medium tank M4.

c. Long barrel, as on the German Pz Kw VI. Note that some of the German tanks also have a muzzle brake, a large ringlike device on the end of the barrel.

d. A cannon in a turret usually has a coaxial machine gun mounted with it.

e. A machine gun may be mounted in the hull. See U. S. light tank M5A1 and medium tank M4.

f. An antiaircraft machine gun may be mounted on the turret, or it may be on a pedestal or other mount in turretless vehicles.

g. Size of gun, that is, length and diameter of barrel.

11. TRACTION (fig. 3)

Many vehicles may be definitely recognized by the traction. However, do not make traction a standard means of recognition as wheels or tracks will often be obscured by grass or defilade. The following are recognition features:

a. Wheeled vehicles. (1) Two, three, four, or more wheels on a side; that is, four-wheeled, six-wheeled, eight-wheeled, or even more.

(2) Are wheels evenly or unevenly spaced? Most six-wheeled vehicles will have four wheels close together near the rear.

(3) Are wheels large or small? Most will be large.

b. Part-track vehicles. These may be half-track, three-quarter track, or track may be even larger. On some German vehicles the front wheels can be lifted and the vehicle run as a full-track vehicle. Note the following:

(1) Front wheels.

(2) Length of track as compared to length of vehicle.

(3) Number and size of bogie wheels.

c. Full-track vehicles. Note the following:

(1) Number of bogie wheels.

(2) Spacing of bogies and bogie wheels.

(3) Are wheels mounted singly or in pairs?

(4) Are wheels large or small?

(5) Is part of traction covered by an armored skirt?

12. OTHER DISTINCTIVE FEATURES

The above paragraphs cover description of the various parts of the vehicle. Other features to note are—

a. Size of vehicle.

b. Height of silhouette.

c. Position of radio antenna.

d. National markings. Do not depend on national markings. Captured tanks may be used against you or the enemy may use your own or Allred national markings.

e. When viewing a vehicle from above, note

(1) Position of turret.

(2) Length of gun.

(3) Shadows, which will often show more than direct view of the vehicles.



FIGURE 3. Nomenclature of traction.

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CHAPTER 3 TRAINING

13. GENERAL

a. Lists of Allied and Axis armored vehicles considered important enough to be included in recognition training programs are published in the "U. S. Army-Navy Journal of Recognition." That publication should be consulted.

b. Such lists are not meant to include all armored vehicles which might be seen in combat. Vehicles which will be seen only infrequently or which are used primarily for training have been omitted from such lists.

14. WHAT TO TEACH

a. In selecting armored vehicles to be included in training programs, consideration must be given to the type of unit concerned, its state of training, and its probable destination or actual theater of operations. For example, there is no necessity for teaching German vehicles to a unit in or destined for the Southwest Pacific.

b. Recognition training on U. S. armored vehicles will be included in individual, unit, and combined training periods. Particul emphasis will be placed on the most important U. S. armored vehicles. Emphasis on recognition of Allied and Axis vehicles (except for AAF units) will normally begin upon arrival at staging areas. The most important Allied and Axis vehicles in the theater of destination should be stressed.



U. S.

RUSSIAN

JAPANESE

NATIONAL INSIGNIA

British and Italian vehicles usually have no national markings. Insignia shown for the other nations are usual but do not always appear.





GERMAN

UNITED STATES ARMORED VEHICLES



SCOUT CAR, M3A1





back; open top. Upper edges of hull sides slope down to rear from top of windshield. Removable glass windshield replaced in combat by armor plate which pivots about top of windshield frame. Radiator covered by armor plate shurters. Vehicle equipped with front roller, often mounts fishpole radio antenna.

- Armament: One caliber .50 machine gun and one or two caliber .30 machine guns, mounted on skate mounts which may be traversed 360° on a rail affixed to top inside edge of body.
- Traction: Four large wheels, with fourwheel drive.

INTEREST DATA: Developed by the mechanized cavalry for use as a scout vehicle and also as a command vehicle. It was used extensively by U. S. Armored unit: during their early period of organization and training. The vehicle does not have the cross-country mobility of the halftrack, and has been largely replaced by the latter vehicle, particularly in divisions and smaller units. It is now used principally in corps headquarters as a command vehicle.

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SCOUT CAR, M3A1





U. S. 5



LIGHT ARMORED CAR, M8



 U. S. 🏠 BRITISH



by armor plate attached. .Equipped in front with roller or winch. Often carries

Traction: Two large powered wheels in front; half-tracks in rear, each side composed of endless track, one bogie with forward driving sprocket, rear idler, and small track support roller in center.

INTEREST DATA: There are several halftracks, all having the same general appear-'ance. Silhouettes and data given are for the M3. Pictures of other models are shown. The M2 is principally a command vehicle. Its normal armament is one caliber ,50 machine gun and one caliber .30 machine gun, mounted on skate mounts. The M3 is primarily a personnel carrier, but may be used as a prime mover of weapons up to 105-mm. In armored infantry units, it carries rifle squads, 60-mm mortar squads, and machine gun squads. The M4 is an 81-mm mortar carrier. A later model, the M21, gives a better mortar mount. The M5 personnel carrier is very similar to the M3. The M9A1 is similar to the M3, except that it has a ring mount above the hull over the right front seat.

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HALF-TRACK CAR, M3



HALF TRACK CARS





MЗ



NOVEMBER 1943 FROM DATA CURRENTLY AVAILABLE







HALF TRACK CARS





chine guns mounted coaxially with 37-mm gun.

360° traverse.

front; half-tracks in rear, each side composed of endless track, one bogie with four small equally spaced wheels, large forward driving sprocket, rear idler, and small track support roller in

INTEREST DATA: This is an AAA vehicle. with the 37-mm AA gun and two coaxially mounted caliber .50 machine guns mounted on an M3 half-track chassis. Developed particularly to accompany armored troops, the guns can be fired instantly, no time being required for emplacement. This vehicle gave a good account of itself in the North African campaigns, bringing down many Axis planes. The Germans hesitated to attack any column or bivouac protected by this weapon.

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MULTIPLE GUN MOTOR CARRIAGE, M15











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U. S. 🏠



MULTIPLE GUN MOTOR CARRIAGE, M16



U. S. 5 BRITISH RUSSIAN ★

LIGHT TANK, M5A1



Armament.

One 37-mm gun in turret.

One coaxial caliber .30 machine gun. One caliber .30 machine gun in right front of hull.

One caliber .30 AA machine gun on turret.

Traction: Full track; four equally spaced bogie wheels in two bogie assemblies, large trailing idler in rear, driving sprocket in front; three track support rollers.

INTEREST DATA: This is the standard U. S. light tank, having succeeded the M3 series of light tanks. The British 'call both the M3 and the M5A1 the "Honey" The M5 differs only slightly from the M5A1, the latter having a bulge in the rear of the turrer for mounting of the radio. The tank was in action in Sicily, where it was able to cope with the German PzKw IV tank. During the Stellian campaign, a group of light tanks in combat with 16 German PzKw IV's knocked out 14 of the German tanks with a loss of only 3 M5's.

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LIGHT TANK, M5A1







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CHARACTERISTICS:

- Turret: Small, dome-shaped, cut away in front; flat top; high cupola set to left; mounted on left and just rear of center of hull.
- Hull: High, with vertical sides; large sponson gun mount at right front; slopes down gently in rear, abruptly in front.



Armament

- One 75-mm gun in sponsor mount, right front of hull.
- One 37-mm gun in tuttet.
- One coaxial caliber .30 machine gun.
- One caliber .30 machine gun in cupola Traction: Full track; six bogie wheels in three bogies; driving sprocket in front, three track support rollers.

INTEREST DATA: M3 tanks were the first American tanks to be armed with the 75-mm gun. Although it has a high silhouette and the 75-mm gun has a fimited traverse, the tank gave a good account of itself in the African desert campaigns Called the "Lee" by the British. A model the British equip with a wider, lower turret, is known as the "Grant." The M3 has held its own with the PzKw IV German tank. It is now being replaced by the M4 One model in the M3 series differs in appearance in that it has a cast, rounded hull which gives it a streamlined appearance. A Canadian-built vehicle called the "Ram II" is built on the M3 chassis, has a low, cast hull, and mounts a 6-pounder in the turrer.



U. S. 🏠

BRITISH

MEDIUM TANK, M3







M3A1







30



CHARACTERISTICS:

Turret: Large, dome-shaped; flat top; radio bulge in rear; set at center of hull. Hull: Angular, but has streamlined appearance; welded construction; vertical sides; slopes down gently in rear, abruptly in front.

Armament:

One 75-mm gun in turret. One coaxial caliber .30 machine gun.

8.6'



Traction: Full track; six equally spaced bogic wheels suspended in pairs; three track support rollers; driving sprocket in front.

INTEREST DATA: The first of several models, including the M4A2, M4A3, and M4A4, which are almost identical in appearance and performance. Known as the 'Sherman' by the British, it is the successor to the medium rank M3. Its high velocity 75-mm gun is mounted in the 360° traverse turret, making it much more flexible than the M3 tank. The M4 performed remarkably well in the British advance from El Alemein to Tunisia. It has been able to hold its own against the famed German 88-mm gun. It is the standard medium tank in the American Army, and was used extensively in North Africa and Sicily. The Canadian "Grizzly" is based on the M4, and very similar in appearance

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MEDIUM TANK, M4
















MEDIUM TANK, M4A1











GRADIENT - 31°

sides; undercut projection at rear ter-minates in flat, vertical plate; large, protruding gun mantlet in front; open top; ring mount for AA machine gun in rear. Hull: High, with flat top and upward bulge behind turret; vertical sides, which angle in at front to join abruptly sloping

Armament:

- One 75-mm howitzer in turtet. One caliber .50 AA machine gun on
- ring mount on turret. Traction: Full track; four equally spaced bogic wheels in two bogic assemblies; large trailing idler in rear; driving sprocket in front; three track support rollers.

INTEREST DATA: This motor carriage succeeded the 75-mm howitzer mounted on the M3 half-track. The vehicle is similar in appearance to the M5 light tank, differ-ing from it only in the turret. It is used primarily as a close support weapon for infantry.

BRIDGE - 18 TONS

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TRENCH -5.4'

75-MM HOWITZER MOTOR CARRIAGE, M8



U. S. 🏠

105-MM HOWITZER MOTOR CARRIAGE, M7



CHARACTERISTICS.

Turret: None. Hull: Vertical sides, open top; sides high in front, slope down irregularly to rear; front slopes down sharply, has large gap to right of center to afford traverse for main armament; ring mount for machine gun at right front.

8.9

Armament:

One 105-mm howitzer in hull.

One caliber .50 AA machine gun on ring mount at right front of hull. Traction: Full track, six equally spaced bogic wheels suspended in pairs; driving sprocket in front; three track support rollers.

INTEREST DATA: This vehicle is the successor to the 105-mm howitzer mounted on the M3 half-track. The chassis is that of the M3 tank, with the 105-mm howitzer mounted in a lightly armored hull. The ring mount for the caliber .50 AA machine gun, mounted high on the right side of the hull, resembles a pulpit. This resemblance led the British ro name the vehicle the "Priest." The weapon coarributed greatly to the British success at El Alemein.

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105-MM HOWITZER MOTOR CARRIAGE, M7



U. S. ☆

3-INCH GUN MOTOR CARRIAGE, M10



Turret: Undercut front and rear; narrow front mounting large gun mantlet; wide rear; front composed of V of two flat, inclined sides and rear join lower, undercutting faces.

- One 3-inch gun in turret. One caliber .50 machine gun on rear of turret.
- Traction: Full track; six equally spaced bogic wheels suspended in pairs; driving sprocket in front; three track support rollers.

INTEREST DATA: This vehicle mounts a 3-inch gun in a turret on a modified M3 medium tank chassis. It has been the standard tank destroyer weapon, but is being replaced by the T70. It performed well in North Africa, where it was of great assistance in stopping German tank attacks.

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3-INCH GUN MOTOR CARRIAGE, M10



***;**-

76-MM GUN MOTOR CARRIAGE, M18



- Turret: Low, conical, with large undercut projection in rear: set at center of hull; open top; has ring mount for AA machine gun at left
- Hull: Flat top, with slight upward bulge in rear of turret; extends beyond tracks in rear; sides flat, inclined slightly at top; front flat, slopes down gently; front corners

Armament:

- One 76-mm gun. One caliber .50 AA machine gun on ring mount on turret. 76-mm gun, extending well beyond front of carriage.
- Traction: Full track; five equally spaced, medium-sized bogie wheels, independently sprung; four track support rollers: driving sprocket in front.

INTEREST DATA:

Formerly designated as the T70, this vehicle is the successor to the 3-inch gun motor carriage M10, as the standard tank destroyer weapon. It is much faster than the M10, but is lightly armored. It has been a star performer on the battlefield with its 76-mm weapon and top speed of 55 mph. It was the first U. S. armored vehicle with the torsion bar suspension system to go into action.

C 4, FEBRUARY 1945 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40



76MM GUN MOTOR CARRIAGE, M18



U. S. 🏠



Armament: One 155-mm gun. In carrying position, gun mounted horizontally above hull, extends almost full length of vehicle.

Traction: Full track; six equally spaced bogic wheels in three bogies; driving sprocket in front; three track support rollers.

INTEREST DATA: This is a standard 155mm gun mounted on an M3 medium tank chassis. This weapon was used in the latter part of the North African campaign and was instrumental in making the Germans vacate certain vital passes and, particularly, the city of Mateur. The gun was used in the Sicilian campaign, and contributed greatly to the success of American troops there.

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155-MM GUN MOTOR CARRIAGE, M12













Turret: Low, conical, with large undercut projection in rear; set at center of hull; open top.

Hull: Long, flat top, from which flat plates slope down abruptly all around; inclined sides and rear join lower, undercutting faces.



One 90-mm gun in turret. One caliber .50 machine gun on rear of turret.

Traction: Full track; six equally spaced bogie wheels suspended in pairs; driving sprocket in front; three track support rollers.

INTEREST DATA:

This is the tank destroyer weapon that is stopping the newest German 67-ton "Royal Tiger" tank. It is a modified 90-mm AA gun mounted on a chassis similar to that of the M10. Its main distinctive features are the extreme length of the 90-mm barrel, the large undercut projection in rear of the turret, and the modified M3 medium tank running gear.

C 4, FEBRUARY 1945 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40



90-MM GUN MOTOR CARRIAGE, M36



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ARMORED UTILITY CAR, M20



ARMORED UTILITY CAR, M20



LIGHT TANK, T9E1 (AIR-BORNE)



LIGHT TANK, T9E1 (AIR-BORNE)



U.S. 🏠

MEDIUM TANK, M4A3 (75-MM GUN)



CHARACTERISTICS:

- Turret: Large, dome-shaped. Flat top, with cupola on the right, second hatch on the left. Radio bulge in rear. Set at center of hull.
- Hull: Angular, but has streamlined appearance from the side. Slopes down gradually in rear, abruptly in front. High and square-cut as seen from the front

 because of steep forward plate and vertical sides.

- Armament: One 75-mm gun in turret. One coaxial caliber .30 machine gun. One caliber .30 machine gun in bow. One caliber .50 AA machine gun on turret. Traction: Full track. Six equally
- raction: Full track. Six equally spaced bogie wheels suspended in pairs in prominent brackets. Three support rollers. Driving sprocket in front.

INTEREST DATA: This latest production model of the dependable M4 tank has several improvements over previous models. A vision cupola gives better visibility from the tank commander's position. An extra turret hatch and larger hatches in the hull speed mounting and dismounting of the crew. The steep front plate of the hull is new. A flame thrower may be fitted in the bow of the tank for special operations.



MEDIUM TANK, M4A3 (75-MM GUN)



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seen from the front because of steep forward plate and vertical sides.

- Armament: One 76-mm gun in turret. One coaxial caliber .30 machine gun. One caliber .30 machine gun in bow. One caliber .50 AA machine gun on turret.
- Traction: Full track. Six equally spaced bogie wheels suspended in pairs in prominent brackets. Three support rollers. Driving sprocket in front.

INTEREST DATA: This tank differs considerably in appearance from other M4 tanks because of the long gun and the large, irregularly shaped turret. This turret is designed to accommodate the highvelocity 76-mm gun, and to give a larger fighting compartment. The tank has the vision cupola, extra turret hatch, large hull hatches, and steep hull front common to all late M4 tanks. A flame thrower can be fitted in the bow.



MEDIUM TANK, M4A3 (76-MM GUN)





U. S. 🏹

MEDIUM TANK, M4A3 105-MM HOWITZER



because of steep forward plate and vertical sides.

- Armament: One 105-mm howitzer in turret. One coaxial caliber .30 machine gun. One caliber .30 machine gun in bow. One caliber .50 AA machine gun on turret.
- Traction: Full track, Six equally spaced bogie wheels suspended in pairs in prominent brackets, Three support rollers. Driving sprocket in front.

INTEREST DATA: This vehicle gives armored units a powerful assault gun in a dependable, heavily armored vehicle. The howitzer is very similar to the main armament of the M7 howitzer motor carriage, the "Priest." The tank has the new cupola, hatches, and steep front hull plate which are among the improvements on all late models of the M4 tank.



MEDIUM TANK, M4A3 105-MM HOWITZER



LIGHT TANK, M24



CHARACTERISTICS:

Turret: Irregular and angular, with inclined sides undercut sharply. Top slopes down front and rear from a flat center section. Prominent cupola set left of center. Large gun mantlet. Storage box in rear forms overhanging extension of tapered rear of turret.

Hull: Low, compact; slopes down gently at front and rear. Front formed by two flat, inclined plates

which meet in sharp V and form prominent horizontal line at for-. ward end of tank.

- Armament: One 75-mm gun (aircraft type) in turret. One coaxial caliber .30 machine gun. One caliber .30 machine gun in bow. One caliber .50 AA machine gun on turret.
- Traction: Full track. Five large, closely set bogie wheels sprung independently. Driving sprocket in front, high-set idler in rear.

INTEREST DATA: This light tank differs greatly from any other American design. Its 75-mm gun makes it the most heavily armed light tank known. Performance is excellent, partly because of the torsion bar suspension which is similar to that of the M18 tank destroyer. The M24 is equipped with a vision cupola, an important piece of equipment now standard on all new American tanks.



LIGHT TANK, M24









HEAVY TANK, M26



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Turret: Massive, irregular. Very large, undercut bulge in rear. Sharply curved, very prominent mantlet in front. Vision cupola on the right, and second hatch on the left. Set well forward of center of hull. In travelling position gun is turned to rear.

Hull: Long, low, set deep between tracks. Inclined front plate is sharply

undercut. Long rear deck slopes down gradually to rear and sides. Armament: One 90-mm gun in turret. One coaxial caliber .30 machine gun. One caliber .30 machine gun in bow. One caliber .50 AA machine gun on turret. Traction: Full track. Six large, in-

dependently sprung bogies. Five very large return rollers. Driving sprocket set low in rear. Large highset idler in front. Very wide tracks.

INTEREST DATA: This is the first important heavy tank of American manufacture. It is a formidable tank embodying many battle-tested characteristics. The 90-mm gun is a tremendous weapon. The turret is very large to afford ease of movement for the crew; observation from the turret is aided by the vision cupola. The very wide tracks and torsion bar suspension give the tank excellent performance. This is the first American tank with a drive sprocket in the rear.



HEAVY TANK, M26















CHARACTERISTICS:

Turret: Lightly armored, opentopped. Roughly cylindrical, with very low sides and rear and high, notched shield in front. Set at rear of hull.

Hull: Low and compact. Long forward deck. Front formed by two flat, inclined plates which meet

-9.3'------

in sharp V and form prominent horizontal line at forward end of carriage.

Armament: Twin 40-mm AA guns. Traction: Five large, evenly spaced bogie wheels sprung independently. Driving sprocket in front, high-set idler in rear. Four return rollers.

INTEREST DATA: This chassis is similar to that of the M24 light tank. The traction is almost identical with the M24's; chief differences are a fourth return roller and greater spacing between bogies on the M19. This is a powerful vehicle, and the most mobile U. S. self-propelled AA weapon to become standard equipment.



TWIN 40-MM GUN MOTOR CARRIAGE, M19

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LANDING VEHICLE TRACKED, ARMORED: LVT (A) (1)



vertical sides covered by pontons; front and rear curve, "rocker" fashion, abruptly down to bogie assemblies.

Armament:

- One 37-mm gun in turret.
- One coaxial caliber .30 machine gun.
- Two caliber .30 machine guns in scarf mounts behind turret.
- Traction: Full track; eleven bogie assemblies; high driving sprocket in front; high rear idler; two track support rollers. Grousers provide traction on land and propulsion on water.

INTEREST DATA:

The LVT (A) (1) is an armored amphibian tank designed primarily as a combat vehicle. Its hull and cab design and construction are identical to the LVT (A) (2). Below the armor-covered deck 16 men can be transported.

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LANDING VEHICLE TRACKED, ARMORED: LVT (A) (1)





Hull: High, long, and straightsided: overhangs track in front and rear; forward overhanging portion drops gently to the front; low, slantsided cab on forward slope; flat deckline; high, vertical sides covered by pontons; front and rear curve, "rocker" fashion, abruptly



- One caliber .50 machine gun, skate mounted across back of cah.
- One caliber .30 machine gun. skate mounted inside cargo compartment.
- Traction: Full track; eleven bogie assemblies; high driving sprocket in front; high rear idler; two track support rollers, Grousers provide traction on land and propulsion on water.

INTEREST DATA:

The LVT (2) is an unarmored amphibian tractor of all-steel construction designed primarily as a troop and cargo transport. The main compartment is an open cargo space capable of transporting 24 men. A closed cah at the front houses the driver and assistant driver. Glass windows are incorporated in the front of the cab. "Pin-up" armor may be bolted to the vehicle.

C 4, FEBRUARY 1945 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40



LANDING VEHICLE TRACKED: LVT (2)















U. S. 🏠

LANDING VEHICLE TRACKED, ARMORED: LVT (A) (2)



Armament:

- One caliber .50 machine gun, skate mounted across back of cab.
- One caliber .30 machine gun, skate mounted inside cargo compartment.
- Traction: Full track; eleven bogie assemblies; high driving sprocket in front; high rear idler; two track support rollers. Grousers provide traction on land and propulsion on water.

INTEREST DATA:

The LVT (A) (2) is an armored amphibian tractor of all-steel construction designed primarily as a combat vehicle. The main compartment is an open cargo space capable of transporting 24 men. A closed cab at the front houses the driver and assistant driver.

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LANDING VEHICLE TRACKED, ARMORED: LVT (A) (2)












U. S. 숫국

CHARACTERISTICS: Turret: None. Hull: High, long, and straightsided; 0 26.0' 8.2'

overhangs track in front and rear; forward overhanging portion drops gently to the front; flat deckline: high, vertical sides covered by pontons; front curves abruptly down to bogie assemblies; rear is square and broken down for ramp.



Armament:

Two caliber .50 machine guns, pedestal mounted across back of engine compartment.

Two caliber .30 machine guns, pedestal mounted on sides of cargo compartment.

Traction: Full track; eleven bogie assemblies, high driving sprocket in front; high rear idler; two track support rollers. Grousers provide traction on land and propulsion on water.

INTEREST DATA:

The LVT (4) is an unarmored amphibian tractor of all-steel construction designed primarily as a troop and cargo transport. The main compartment is an open cargo space capable of transporting 30 men. A rear ramp permits rapid loading and unloading. A closed cab at the front houses the driver and assistant driver. "Pin-up" armor is shown bolted to the vehicle.

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LANDING VEHICLE TRACKED: LVT (4)





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LANDING VEHICLE TRACKED, ARMORED: LVT (A) (4)



"rocker" fashion, abruptly down to bogie assemblies.

Armament:

One 75-mm howitzer in turret. One caliber .30 machine gun in right front of cab. One caliber .50 AA machine gun on ring mount on turret.

Traction: Full track; eleven bogie assemblies; high driving sprocket in front; high rear idler; two track support rollers. Grousers provide traction on land and propulsion on water.

INTEREST DATA:

The LVT (A) (4) is an armored amphibian tank designed primarily as a combat vehicle. It has a land speed of 10-15 mph and a water speed of $5\frac{1}{2}$ -7 mph. Cruising ranges are 50 miles on sea and 150 miles on land.

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LANDING VEHICLE TRACKED, ARMORED: LVT (A) (4)













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BRITISH ARMORED VEHICLES







DAIMLER ARMORED CAR





A.E.C. ARMORED CAR





ARMORED CAR, T17E1





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UNIVERSAL CARRIER









CROMWELL TANK



CROMWELL TANK





Turret: Shallow, but large and boxlike; flat top, cutaway slightly at front; rear and front are vertical plates; each side composed of two plates which join in flat V to form widest part of turret just behind center. Rectangular stowage hin affixed to rear.

which gives table-top effect; nose of

tank extends well beyond muzzle of main gun; driver and gunner cahs hidden hy tracks from side view. Armament:

One 6-pounder (latest model).

One coaxial machine gun.

One machine gun in left front of hull.

Traction: Full track; 11 small, independently sprung wheels, center 9 evenly spaced; half skirting, with prominent air louvres on rear; broad tracks with top level with top of hull; very high rear driving sprocket and front idler.

INTEREST DATA: This very large tank is the only known vehicle of any importance which has over-all tracks. There are several models. Some types mount a 2-pounder as the main arma-ment. One 6-pounder model has a cast turret with all edges rounded. A closesupport version mounts a 3-inch hownzer in place of the machine gun in the front of the hull.

> NOVEMBER 1943 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40



CHURCHILL INFANTRY TANK

















LYNX ARMORED CAR





OTTER ARMORED CAR







SP 25 POUNDER



ARMORED CAR T17E2



BRITISH



ARMORED CAR T17E2















CHARACTERISTICS:

- Turret: High in front, slopes down to rear bulge which houses radio; sloping sides and front; protruding gun mantlet.
- Hull: Short, angular, pot-shaped body centrally underslung between large wheels; narrow nose; low ground clearance; wide, curved fenders.
- Armament: One 2-pounder in turret. One coaxial 7.92-mm machine gun.
- Traction: Four very large wheels.

INTEREST DATA: This is probably the most useful type of British armored car. Its appearance is so unique that it cannot easily be confused with vehicles of other countries. The car is equipped with smoke dischargers. It is very stable, and has good speed on roads. The vehicle can be steered from the rear for ease in rapidly reversing direction.



·8.0'

DAIMLER ARMORED CAR





Armament: One 40-mm AA gun. Traction: Full track; five large evenly spaced bogie wheels; rear driving sprocket; high front idler.

INTEREST DATA:

This is designed primarily as a self-propelled antiaircraft weapon. It is mounted on the old "Crusader" tank chassis from which it derives its name. There is no gun mantlet. The 40-mm gun protrudes from a deep U-shaped cut in the turret front. Forward turret vision is provided by rectangular cuts on either side of the gun. The weapon may be employed for antitank and other purposes.

C 4. FEBRUARY 1945 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40



CRUSADER AA MK I

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RUSSIAN ARMORED VEHICLES



ARMORED CARRIER (STZ)



ARMORED CARRIER (STZ)











LIGHT TANKS

BRIDGE - 12 TONS

TRENCH - 8.0'



RUSSIAN 🛨

Turret: Low, pyramidal, with protruding gun mantlet and undercut rear; set to left of center of hull,

Hull: Flat-topped superstructure with straight sides, abruptly sloping front; irregularly shaped auxiliary equipment on sides and rear deck.

Traction: Full track; five medium-sized bogie wheels; driving sprocket in front, idler in rear; three return rollers.

INTEREST DATA: The tank for which silhouettes are shown is the T70 (?), the latest Russian light tank. Other light tanks include the T40, (?), the latest Russian light tank. Other light tanks include the T40, T50, and T60. The T40 is an amphibious tank weighing about 5.5 tons. This vehicle has only four bogic wheels. A later vehicle, the T60, also has four bogies but weighs about 6 tons, is not amphibious, and mounts a 45-mm gun and a coaxial machine gun. The T50 weighs about 13 tons, has six bogies, and mounts a 45-mm gun with coaxial methics can and one additional methics gun. machine gun and one additional machine gun.

LIGHT TANKS

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VALENTINE TANK



RUSSIAN 🛨

BRITISH

VALENTINE TANK



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MEDIUM TANK, T34















HEAVY TANK, KV I









HEAVY TANK, KV II



RUSSIAN ★

HEAVY TANK, KV II









GERMAN ARMORED VEHICLES









· SDKFZ 221





SDKFZ 222





72

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GERMAN

8-WHEELED ARMORED CAR



made of inclined flat plates, with lower plates undercutting upper faces; high, flat-topped fenders over each pair of wheels.

Armament:

One 20-mm heavy machine gun in turret.

One coaxial 7.92-mm machine gun. Traction: Four evenly spaced wheels on each side; all wheels powered.

INTEREST DATA: The most important German armored car and may be seen in large numbers. Armament and radio antennas vary. Crew may be four or five men. Has good performance, and a very quiet engine. All wheels are suspended semi-independently, and all steer. May be driven at full speed in either direction; complete controls provided in each end: Two versions are designated Sd Kfz 231 and 263 (same as 6-wheeled car). Another model is equipped as an assault gun; the turret is removed and a shortbarreled 75-mm gun mounted in the forward face of the hull.

NOVEMBER 1943 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40





ASSAULT GUN















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Hull: Low, with open top. Constructed of flat, inclined plates; upper plates slope in at top, lower Traction: Two wheels in front, not faces incline in at bottom. Hood slopes down gradually, rapers almost to point. Long fender extends full

Armament: One light machine gun in V-shaped shield at front. 90° traverse.

powered; large semitrack in rear, with six large, overlapping bogie wheels; large driving sprocket at front of track, idler at rear.

INTEREST DATA: The two basic German armored half-track vehicles are the Sd Kfz 250 and 251. The two chassis are almost identical with the two smallest unarmored half-tracks. The 251 is a 3-ton (towing capacity) vehicle and is the one for which sil-houettes and data are given. The 250 (1-ton towing capacity) is smaller and has only four bogic wheels. These cars, with slight changes in the hull, have many uses as command and radio vehicles, carriers for machine-gun and mortar sections, light AT and AA vehicles, observation cars, and ammunition carriers. They are reliable, provide protection against small-arms fire, and have good cross-country mobility. NOVEMBER 1943

FROM DATA CURRENTLY AVAILABLE

WAR DEPARTMENT FM 30-40



ARMORED HALF-TRACK VEHICLES



I TON

I TON





I TON







HALF-TRACK VEHICLES





HALF TRACK VEHICLES







NOVEMBER 1943 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40

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HALF TRACK VEHICLES



PZKW III TANK



GRADIENT - ?

GERMAN

TRENCH -- 7.0'

STEP - 2.0' EST.

PZKW III TANK



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84

PZKW IV TANK



GERMAN

PZKW IV TANK















PZKW VI TANK "TIGER"

CHARACTERISTICS:

Turret: Very large; roughly cylindrical, with elongation to front which ends in wide, flat face; slopes down gradually in front; cupola, offset to left and rear; stowage bin affixed to rear. Hull: Massive, boxlike, with long, flat top; very wide; sides and back vertical, front slightly inclined.

Armament:

One 88-mm in turret.



One coaxial light machine gun. One light machine gun in right front of hull.

Traction: Full track; eight (visible) large, overlapping bogie wheels; large driving sprocket in front, trailing idler in rear.

INTEREST DATA: It is powerfully armed and armored, but its weight makes it slow and unwieldy despite its elaborate traction. The track, with overlapping bogie wheels, resembles the German half-track running gear. Each side is equipped with 24 bogie wheels on 8 axles. Either of 2 tracks can be mounted. a wide one for battle and a narrow one for administrative marches on roads; 8 outer bogie wheels can be removed in the latter case. It has been knocked out by U. S. 75-mm and British 57-mm guns. The "Tiger" first appeared against the Americans at Faid and Kasserine Pass. It has also been used in Russia, the Russians claiming to have knocked it out in large numbers.

NOVEMBER 1943 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40



PZKW VI TANK "TIGER"











75-MM SP GUN (ON PZKW III TANK CHASSIS)



75-MM SP GUN (ON PZKW III TANK CHASSIS)













76-MM SP GUN (ON PZKW 38 TANK CHASSIS)





150-MM SP GUN (ON PZKW II TANK CHASSIS)



150-MM SP GUN (ON PZKW II TANK CHASSIS)





PZKW V TANK "PANTHER"



PZKW V TANK "PANTHER"







THE "FERDINAND"


THE "FERDINAND"





75-MM SP GUN (ON PZKW III TANK CHASSIS)



Traction: Full track. Six evenly spaced bogie wheels sprung independently. Large driving sprocket in front, large idler in rear.

INTEREST DATA: This is one of the carliest German self-propelled guns. Succeeding models have changed considerably in appearance because of changes in armament and armor. Short, medium, and longbarreled 75-mm weapons have been fitted, the last with a prominent muzzle brake. Late models are usually equipped with auxiliary armor which covers the hull sides and part of the suspension system. The vehicle has a very low silhouette and is heavily armored, particularly in front.

TRENCH ---- 7.0'

75-MM SP GUN (ON PZKW III TANK CHASSIS)













GERMAN



Traction: Full track, Six evenly spaced bogie wheels sprung independently. Large driving sprocket in front, large idler in rear. Three large track support rollers.

INTEREST DATA: This is one of many effective German SP weapons mounted on tank chassis. This is a PzKw III chassis, now becoming obsolescent for use as a tank but in increasing use as a self-propelled gun mount. The vehicle has a low silhouette and is well armored. Vertical plates of auxiliary armor may be fitted along the sides of the hull.



105-MM SP HOWITZER (ON PZKW III TANK CHASSIS)











ITALIAN ARMORED VEHICLES





4-WHEELED ARMORED CAR



L3 TANK

TRENCH – 4.8'



GRADIENT -?

CHARACTERISTICS:

Turret: None, but boxlike superstructure resembles turret Hull: Very low. Fully inclosed superstructure mounted at center; has flat faces, sides nearly vertical, top sloping down slightly to front. Rear deck level, Front below superstructure composed of two plates; upper one included and mounting gun mantlet on left; lower plate nearly horizontal, extends forward to front axle.

Two 8-mm machine guns in twin mount or One 20-mm heavy machine gun.

Traction: Full track; seven small bogie wheels unevenly spaced; two bogies, of three wheels each, connected by girder; one independently sprung bogie wheel at rear; large driving sprocket set high in front.

INTEREST DATA: This tank has fair performance but is very lightly armed and armored. Travetse of the machine guns is quite limited. This tank can be used as a bridge carrier and as a flame thrower. In the latter case it tows a trailer of supplementary equipment.

DESTRICTER

FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40

L3 TANK







FLAME THROWER







ITALIAN



L6 TANK







ITALIAN



M14 TANK







ITALIAN

75-MM SP GUN (ON M14 TANK CHASSIS)



75-MM SP GUN (ON M14 TANK CHASSIS)



JAPANESE ARMORED VEHICLES



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LIGHT ARMORED CAR, 2597



LIGHT ARMORED CAR, 2597







CHARACTERISTICS:

- Turret: Roughly conical, with flat front face and V-shaped rear; cupola at center; set to left and forward of center of hull.
- Hull: Short and high; flat top, gradually sloping rear deck; rounded bulge at right front for driver; angular, protruding cab at left front for machine gunner; short sloping front deck.

Armament:

One 37-mm gun in turret.

One machine gun in right rear of turret.

- One machine gun in left front of hull.
- Traction: Full track; four medium-sized bogic wheels suspended in pairs on inverted V arms; high-set driving sprocket in front; large idler in rear; two track support rollers; center portion of track visible from above.

INTEREST DATA: This vehicle has been in action in Malaya, Burma, and the Philippines. It is the basic Japanese light tank. The vehicle is of good design generally, but has light armor and a very cramped fighting compartment. A later model is reported to mount a 47-mm gun. Other Jap light tanks, the Keni and Chino, are known to be amphibians.

NOVEMBER 1943 FROM DATA CURRENTLY AVAILABLE WAR DEPARTMENT FM 30-40



LIGHT TANK, 2595









MEDIUM TANK, 2597





