

## Hellcat, Long Tom and Priest

COMPLETE CHECK LIST OF ALL U.S. WORLD WAR II  
SELF-PROPELLED WEAPONS

by Colonel Robert J. Icks



# AFV/Weapons Profiles

Edited by **DUNCAN CROW**

Check list of published titles:

- 1 Churchill—British Infantry Tank Mk. IV  
*by B. T. White*
- 2 PanzerKampfwagen III  
*by Walter Spielberger*
- 3 Tanks Marks I to V  
*by Chris Ellis and Peter Chamberlain*
- 4 Light Tanks M1—M5 (Stuart/Honey)  
*by Chris Ellis and Peter Chamberlain*
- 5 Light Tanks Marks I—VI  
*by Major-General N. W. Duncan*
- 6 Valentine—Infantry Tank Mark III  
*by B. T. White*
- 7 Medium Tanks Mk A to D  
*by Chris Ellis and Peter Chamberlain*
- 8 Crusader—Cruiser Mark VI (includes Cruisers Marks I—VI)  
*by Major J. K. W. Bingham, Royal Tank Regt.*
- 9 Early (British) Armoured Cars  
*by Major-General N. W. Duncan*
- 10 PanzerKampfwagen V Panther  
*by Peter Chamberlain and Chris Ellis*
- 11 M3 Medium (Lee/Grant)  
*by Peter Chamberlain and Chris Ellis*
- 12 Mediums Marks I—III  
*by Major-General N. W. Duncan*
- 13 Ram and Sexton  
*by Peter Chamberlain and Chris Ellis*
- 14 Carriers  
*by Peter Chamberlain and Duncan Crow*
- 15 PanzerKampfwagen I and II  
*by Major-General N. W. Duncan*
- 16 Landing Vehicles Tracked  
*by Colonel Robert J. Icks, USAR Retd.*
- 17 Russian KV and IS  
*by Major Michael Norman, Royal Tank Regt.*
- 18 Chieftain and Leopard (Development)  
*by Major Michael Norman*
- 19 Chieftain and Leopard (Description)  
*by Major Michael Norman*
- 20 Churchill and Sherman Specials  
*by Peter Chamberlain and Chris Ellis*
- 21 Armoured Cars—Guy, Daimler, Humber, A.E.C.  
*by B. T. White*
- 22 PanzerKampfwagen 38(t) and 35(t)  
*by John Milsom*
- 23 Soviet Mediums T44, T54, T55 and T62  
*by Major Michael Norman*
- 24 The M48/M60 Series of Main Battle Tanks  
*by Colonel Robert J. Icks*
- 25 Cromwell and Comet  
*by Major James Bingham*
- 26 Hellcat, Long Tom, and Priest. PLUS Complete Check List of All U.S. World War II SPs  
*by Colonel Robert J. Icks*
- 27 Saladin Armoured Car  
*by Major Michael Norman*
- 28 S-Tank  
*by R. M. Ogorkiewicz*
- 29 M4 Medium (Sherman)  
*by Peter Chamberlain and Chris Ellis*
- 30 Armoured Cars—Marmon-Herrington, Alvis-Straussler, Light Reconnaissance  
*by B. T. White*
- 31 Australian Cruiser-Sentinel; and Australian Matildas  
*by Major James Bingham*
- 32 M6 Heavy and M26 (Pershing)  
*by Colonel Robert J. Icks*
- 33 German Armoured Cars  
*by Major-General N. W. Duncan*
- 34 Scorpion Reconnaissance Tank  
*by R. M. Ogorkiewicz*
- 35 British Armoured Recovery Vehicles + Wheels, Tracks and Transporters  
*by Peter Chamberlain and Major-General N. W. Duncan*
- 36 Chars Hotchkiss H35, H39, and Somua S35  
*by Major James Bingham*
- 37 Russian BT Series  
*by John F. Milsom*
- 38 Conqueror Heavy Gun Tank  
*by Major Michael Norman*
- 39 Panhard Armoured Cars  
*by R. M. Ogorkiewicz*
- 40 U.S. Armored Cars  
*by Colonel Robert J. Icks*
- 41 M103 Heavy Tank + M41 Light Tank (Walker Bulldog)  
*by Colonel Robert J. Icks*
- 42 Modern Swedish Light Armoured Vehicles  
*by R. M. Ogorkiewicz*
- 43 PanzerKampfwagen IV  
*by Walter Spielberger*
- 44 Ferrets and Fox  
*by R. M. Ogorkiewicz*
- 46 Light Tanks M22 (Locust) and M24 (Chaffee)  
*by Colonel Robert J. Icks*
- 47 T-34  
*by J. M. Brereton and Major Michael Norman*

AFV/Weapons Series 1—42 inclusive 35p each; 43 onwards 40p each.

If you have any difficulty in obtaining Profiles from your local book or model shop please write direct to:

Mail Order/Subscription Department,

PROFILE PUBLICATIONS Ltd, Coburg House, Sheet Street, Windsor, Berks. SL4 1EB



An M18 in fire support of the 2nd Battalion, 397th Infantry Regiment attacking Wiesloch, Germany 1 April 1945.

Photo—U.S. Army

## Hellcat, Long Tom and Priest

by Robert J. Icks, *Colonel A.U.S. Retd.*

### THE HELLCAT (M18 GUN MOTOR CARRIAGE)

THE Tank Destroyer Force of the United States Army had difficulty in deciding on the best form of vehicle for their use. Ordnance converted many varieties of wheeled and half-tracked vehicles into self-propelled experimental gun motor carriages. Some of the tracked chassis available also were so converted. Some of the two former classes of vehicles were issued to troops but none was completely satisfactory. The matter was not finally resolved until December 2, 1941. On that date a memorandum from G-3 to G-4 of the General Staff recommended that a 37-mm. gun motor carriage be developed using a Christie type suspension. At that time a tank destroyer was defined as differing from a tank in having thinner armour, with greater speed, and having an open rather than a closed turret. Such a vehicle therefore was lighter, had better crew vision but gave less protection than a tank from enemy fire.

A few months later, on April 1, 1942, Ordnance convinced G-3 that the 57-mm. M1 gun should be used in place of the 37-mm. gun M6 and agreement was reached on April 18 to manufacture two pilots to be identified as the T49 Gun Motor Carriage. They were to be highly mobile, to weigh about 12 tons, have a crew of

five and be able to attain a speed of 50 m.p.h. Armour was to be  $\frac{7}{8}$  inch on the turret, hull front and sides, and the top and bottom were to be  $\frac{3}{8}$  inch.

After test of the first pilot, the Tank Destroyer Command and the Ordnance Department agreed to develop the second pilot with the same 75-mm. M3 gun as used in the early Shermans, the gun to be in an open turret. This was to be the T67. Armour thickness was increased to one inch in front. The thickness of the top and bottom armour was slightly increased while that of the sides and rear was reduced slightly. These vehicles had helical coil spring suspension. They were driven by two Buick 320 cu.in. gasoline engines with a combined horsepower of 330 and having a torque converter and a manual three-speed transmission.

After test of one pilot by the Special Armored Vehicle Board which convened at the Aberdeen Proving Ground late in 1942, it was recommended that the T67 be developed further using a standard engine, a 76-mm. gun, and torsion bar suspension. The Secretary of War approved. Thereupon, six pilots were ordered carrying the 76-mm. gun M1 in an open top turret without basket and with a Continental R975-C1 engine. The gun was to be the same as that in the later Shermans. The designation given these models was the T70 Gun Motor Carriage.

Army Service Forces without further test ordered



The T49 high speed gun motor carriage with 57-mm. gun and bow machine-gun had coil spring suspension.

Photo—U.S. Ordnance Dept.

1,000 vehicles with the M1A2 gun on January 7, 1943. The first six pilots were delivered in July 1943. Production rose rapidly as indicated by the following:

Month	T70	T41
July 1943	6	
August	83	
September	112	
October	150	
November	267	
December	194	
January 1944	250	
February	218	
March	170	
April	150	
May	150	
June	150	
July	150	
August	150	
September	150	
October	157	10
November		60
December		163
January 1945		180
February		180
March		107

The T70 was standardized as the 76-mm. Gun Motor Carriage M18 and nicknamed "Hellcat" in February 1944. A total of 2,507 was produced at a unit cost of

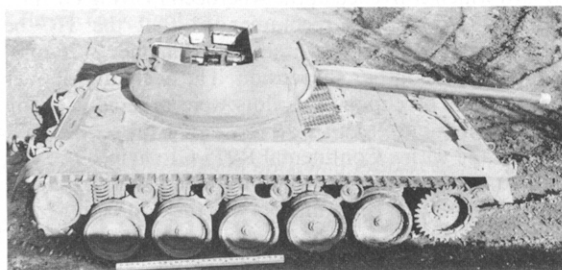
\$57,500. Vehicles 1-1,349 had the Continental R975-C1 engine while vehicle Nos. 1,350 and up used the C4 engine. The main weapon was the 76-mm. M1A1, M1A1C or M1A2 L/55 gun. The vehicle weighed more than the 12 short tons originally planned, reaching as it did fully stowed over 19 tons, but the important element of speed had not been sacrificed in spite of the increase in weight. The fuel tanks were on either side of the engine, the left tank holding 75 U.S. gallons and the right tank holding 90 gallons.

The T49 and the T67 had identical dimensions. Both were 17ft. 10½ in. long, 8ft 9¾ in. wide and 7ft. ¼ in. high. They weighed 16 short tons empty. The suspensions used helical springs and there were five track wheels and two support rollers per side. The tracks were 12 inches wide with 5¾ in. pitch. Their twin Buick engines produced a speed of 51 m.p.h. The T49 had a bow machine-gun but this was eliminated in the T67 which also had a re-designed turret.

The T70 hull was redesigned as also was the turret which now had a bustle or overhang. Several minor changes took place in this turret in production. The 76-mm. gun appeared in M1A1, M1A1C and M1A2 L/55 versions, both with and without muzzle brake. Torsion bar suspension replaced the original helical springs and there now were four support rollers. The track also was changed and now was 14-38 in. wide. Originally both idler and sprocket were compensated for track tension adjustment but later only the front sprocket was so adjustable.

As shown in the above production schedule, a utility vehicle on the same chassis was put into production as production ceased on the M18. This was the T41 Armoured Utility Vehicle. This project began in June 1944 as a command and reconnaissance version. The turret was removed and the stowage was rearranged and the vehicle became the prime mover for the 3in. towed

The T67 gun motor carriage had a 76-mm. gun and the bow machine-gun was eliminated. Photo—U.S. Ordnance Dept.



mount. The T41E1 became the reconnaissance version. A total of 640 was produced in the two types. The T41E1 became the M39 in 1945. In modified form the M39 became the M44 Armoured Personnel Carrier in which the top hatches were side-hinged. With the hull raised 10 inches it became the M44E1, later to be called the T17 Command Post Vehicle on which the hatches were front-hinged on the top of the vehicle. The U.S. Air Force used these during the Korean War, calling them the TACP or Tactical Air Control Party vehicle. One M39 was modified to become the T65 Flame Tank, mounting the Canadian Iroquois flame gun.

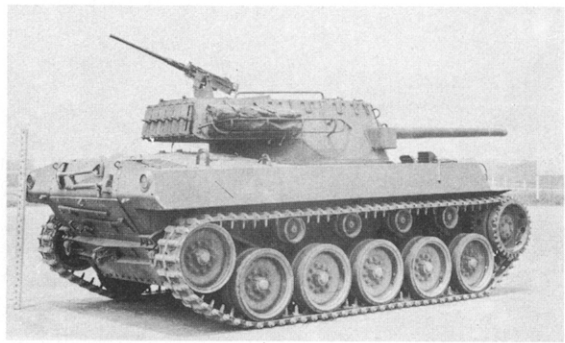
Parts from the M18 together with parts from the M22 Airborne Tank were used to create an experimental Armoured Utility Vehicle T9 which had one less bogie wheel per side and only two support rollers. It weighed  $9\frac{1}{2}$  short tons.

Because of the need for amphibious vehicles in the Pacific Theatre, a number of experiments was carried out under what was called the Ritchie Project. Among these were the following:

- M18 BB Device** (Ritchie T7) which comprised two welded flotation boxes, one front, one rear;
- Borg Device**, which was similar;
- FMC Modification**, also comprising a false bow and stern;
- M18 Wading Kit**.

As a result of meetings held on the Ritchie Project in December 1943 and January 1944, the National Defense Research Council undertook to develop an amphibious gun motor carriage created from the M18. This involved removal of the M18 hull plate down to the sponson line and substituting a larger amphibious hull of lighter construction. The reduction gear final drive gear ratio was lowered and suspension changes were made to accommodate an M24 Light Tank type 21 inch track. This vehicle was called the T86 Amphibious Gun Motor Carriage.

The original T86 continued the 14 inch track of the M18 because the new tracks were not ready in time. Marmon-Herrington was given the contract in January 1944 to build three pilots. The T86 was track propelled; the T86E1 had twin 26 inch screws driven from a rear



*Three-quarter rear view of the early model of the T70 gun motor carriage with the first turret type.*  
Photo—U.S. Ordnance Dept.

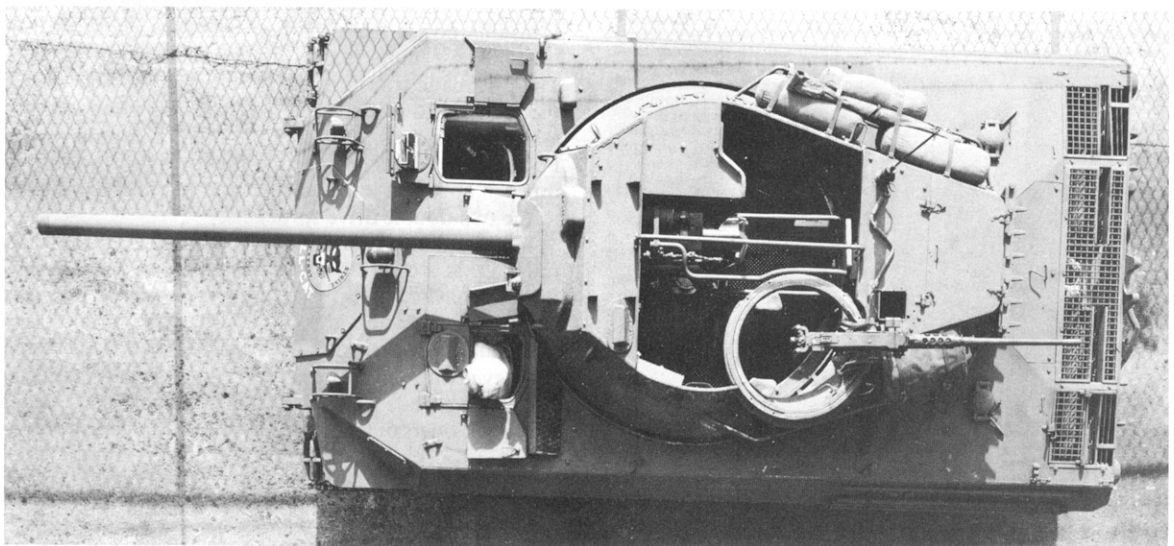
transfer case. The screws were in tunnels with twin cable-controlled rudders behind them. The third pilot was to incorporate the best features of both but the armament was to be a 105-mm. howitzer. This was the T87.

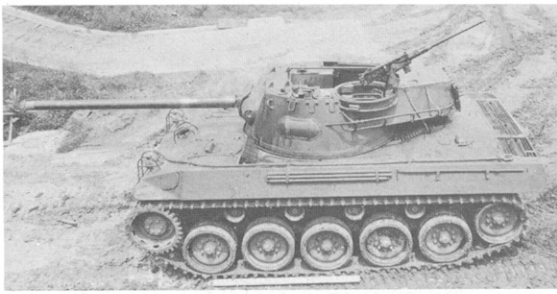
The T86 (sometimes called the Esch Device) was designed to provide a vehicle with high firepower and good performance on both land and water. Land performance turned out to be practically the same as that of the M18. It floated with about 15 inches freeboard and it had a speed of 4-6 m.p.h. in water using the standard M18 track. The vehicle later was modified to add a third steering position just forward of the turret and cutting off the forward corners of the deck, adding vision blocks in both corners and additional periscopes for the driver. The T86E1 began undergoing tests late in April 1944. It weighed 23 tons and developed a speed in water of 6.2 m.p.h. with no appreciable reduction in land speed. The T86E1 later was modified by removing one screw.

The T87 with the 105-mm. howitzer weighed 1,000 pounds less than the T86E1 and was 2ft. 3in. shorter. It was track propelled. Marmon-Herrington also modified for the Navy Bureau of Ships an M18 into what was called the LVT 76-mm. Amphibious Gun Carrier. Curiously, electrolytic action between dissimilar metals

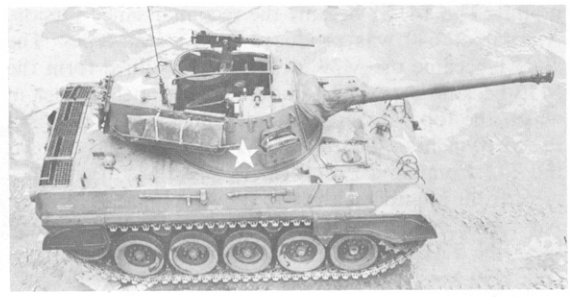
*Top view of the T70 gun motor carriage fully stowed showing open top turret and original hatch hinging.*

Photo—Buick Motor Division, General Motors Corporation





The T70 gun motor carriage with the final form of turret and with hatches closed. Photo—U.S. Ordnance Dept.



The M18 production model equipped with final form of hatch hinging and mud skirts. Photo—U.S. Ordnance Dept.

caused a fabrication problem so this vehicle was only some 30 per cent completed. It was to have had a Ford 500 h.p. V-8 engine and a Jered No. 900 transmission but these were never installed.

A 105-mm. howitzer also was installed in an M18 with few other modifications. This was the T88 Howitzer Motor Carriage. Other experimental modifications included an M18 with the turret and gun from an M36 Gun Motor Carriage and also a modification to a standard M18 which provided it with a folding armoured roof.

After World War II the M18 was declared limited standard when the Tank Destroyer Force was merged into the Armored Force. It was decided that there was little fundamental difference between the rôles of the two forces. Previously, official doctrine had held that tanks were not to fight other tanks but the war proved that it was a common practice and this fact finally was accepted. During the war the Tank Destroyer units seldom were used in the theoretical rôle envisaged for them by Tank Destroyer enthusiasts. Instead they were used as assault guns and even more often as conventional motorized artillery.

During and after the war, M18s were furnished to Argentina, Austria, Nationalist China, West Germany, Greece, Iran, Turkey, Venezuela, U.S.S.R. and Yugoslavia. West Germany and the Netherlands also received M39 Utility Vehicles.

M18 gun motor carriage showing armor bevels and model equipped with gun with muzzle brake and T85E1 tracks. Photo—U.S. Ordnance Dept.



## DESCRIPTION OF HELLCAT

The M18 hull is made up of the driver's compartment, the fighting compartment and the engine compartment. The crew comprises a driver who sits at the left front and the assistant driver at his right with the transmission between them. The shift lever for manually changing gear ranges is located on top of the transmission so that either crew member can use it. An accelerator pedal is provided for each with a lockout feature on the co-driver's side. Steering levers for each hang down and both sets of levers can be disconnected and swung out of the way. An instrument panel is located at the left side of the driver. Seats are adjustable. Doors in the roof are double section, hinged to the roof and equipped with periscopes.

The seats in the turret basket for the remainder of the crew also are adjustable but are of the folding type. The commander is on the left side of the turret, the gunner is to the left of the 76-mm. gun and the loader is to the right of the gun. The gunner is provided with hydraulic or hand traverse control and an azimuth indicator on the left side and the gun has both periscopic and telescopic sights. A foot trigger is provided for the gunner's right foot.

The engine is located in the rear of the hull. Power from the engine is transmitted through a universal joint to a rear transfer case which is mounted on the transverse bulkhead which separates the engine from the crew compartment. A propeller shaft provided with a universal joint at each end and located under a sub-floor transmits power from the rear transfer case to a front transfer case mounted on the torqmatic transmission. The torqmatic transmission is bolted to the rear end of the controlled differential to form a compact unit assembly which is located in the driver's compartment. Power from the controlled differential is transmitted through universal joints to right and left final drive units to the two double drive sprockets.

The torqmatic transmission is mounted on extension rails so that it can be slid out for repairs or replacement. It is a constant mesh planetary type which provides neutral, reverse and three forward speed ratios. Any position may be selected by the driver by means of the shift lever without the need for a clutch. It automatically varies the torque applied to the drive sprockets under changing operating conditions while the engine continues to operate at a fairly constant speed. Fuel consumption for this reason is fairly high. Torque, it might be mentioned, is that quality which is represented by the persistence of twist in a shaft.



The T65 flame tank was a modified M18 with commander's cupola replacing turret and the hull modified to mount an Iroquois flame gun.

Photo—U.S. Chemical Warfare Service

The suspension system utilizes torsion bars. There are five road wheels per side (each having a shock absorber) and four track support rollers. An adjustable dual compensating wheel supports each track at the rear and provides a means of adjusting track tension. The tracks are steel open type with 83 links per track.

An auxiliary generator is provided for recharging batteries. It is located in the hull sub-floor at the right front of the turret. There is a fire extinguisher in the engine compartment with both inside and outside actuating pulls. An additional portable fire extinguisher is stowed beside the assistant driver.

In vehicles 1–1,699 there was no provision for winterization equipment which had to be installed later at tank depots. Vehicles 1,700 and up were provided with blowers by means of which hot air could be blown through the engine oil cooler, the battery, the rear of the engine and the interior of the vehicle for the crew.

There is an opening in the front hull plate for removal of the final drive and in the rear for removing the engine. An escape door is provided under the sub-floor in the right centre of the vehicle. The radio is carried in the turret bulge. The turret base has a deflector to deflect projectiles in order to prevent jamming of the race. The 76-mm. gun is of three types. The M1A1 has no muzzle brake. The M1A1C is threaded for a muzzle brake and has right hand rifling twist with one turn in 40 calibers. The M1A2 also is threaded for a muzzle brake but has one turn of rifling in 32 calibers. In either case, when a muzzle brake is not installed, a ring is installed, screwed to the end of the tube to protect the threads. The gun has an elevation of  $-10$  to  $+20$  degrees, controlled by an elevating wheel.

Vehicles 1–1,857 had a single travel lock inside the turret, a swinging lever with a pin on a chain to be inserted in holes at the gun cradle end or at the keeper end when not in use. In vehicles 1,858 and up, a sophisticated lock with spring-loaded ball stud was provided. This could be swung out of the way when not in use.

Various types of ammunition were provided, including armour piercing, armour piercing capped with tracer, HE, illuminating and smoke. Normally the ratio of AP to HE was 75/25. Ammunition was carried in snap-out racks in the sponsons.

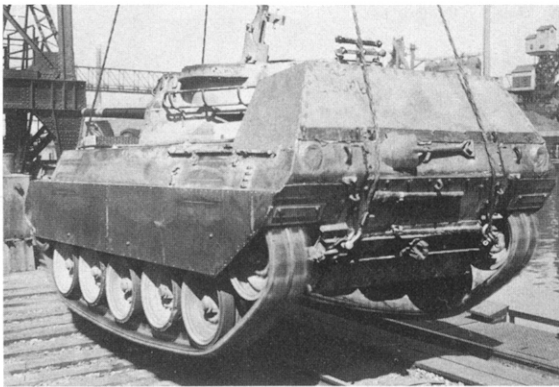
### SPECIFICATION OF HELLCAT WITH T69 TRACK

**Crew:** 5  
**Length** (gun rear): 254 in.  
 (gun front): 262 in.  
 (vehicle): 214 in.  
**Width:** 113 in.  
**Height** (overall):  $101 \frac{7}{8}$  in.  
 (vehicle):  $93 \frac{1}{4}$  in.  
**Clearance:**  $14 \frac{1}{2}$  in.  
**Weight** (loaded): 37,557 pounds  
 (empty): 35,526 pounds  
**Ground Pressure:** 11.9 p.s.i.  
**Armour:** Turret front  $1 \frac{1}{2}$  in.; sides and rear  $\frac{1}{2}$  in.; welded and cast.  
 Hull front, sides, rear  $\frac{1}{2}$  in.; top  $\frac{1}{8}$  in.; floor  $\frac{1}{4}$  in.; welded.  
**Armament:** 76-mm. gun, .50 calibre Browning A/A  
**Ammunition:** 45/840  
**Speed:** 55 mph maximum  
**Trench:** 74 in.  
**Ford:** 48 in.  
**Climb:** 36 in.  
**Grade:** 60 per cent  
**Radius:** 105 miles  
**Turning radius:** 33 feet  
**Track:** T69 steel 14.38 in. wide,  $5 \frac{3}{32}$  in. pitch or T85E1 21 in. wide requiring different sprockets  
**Number of shoes:** 83 per side  
**Suspension:** Torsion bar, road wheels 26 in. x  $4 \frac{1}{2}$  in.  
**Engine:** Continental R 975 C1 340 hp or C4 400 hp 9 cylinder aircooled  
**Transmission:** Torqmatic 3FIR  
**Fuel:** 170 U.S. gallons  
 Hydraulic turret traverse, radios, interphones, etc.

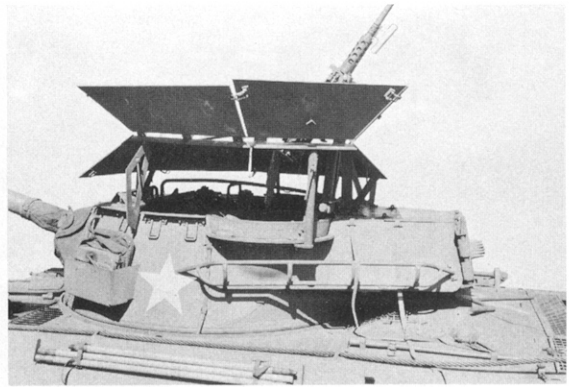
M18 gun motor carriage swimming while equipped with BB device.

Photo—Courtesy C. J. Nuttall





Rear view of special wading kit fitted to M18 gun motor carriage.  
Photo—Courtesy C. J. Nuttall



Special folding armor roof experimentally fitted to an M18 tank destroyer.  
Photo—U.S. Ordnance Dept.

## SELF-PROPELLED WEAPONS

The M18 was not the only self-propelled mount to be issued to U.S. troops. Among the others were the:

- T19**, a 105-mm. howitzer on the **M3 Halftrack**, used in the Tunisian campaign.
- M3**, a halftrack mounted 75-mm. gun first used in the Philippines, later in North Africa and also used by U.S. Marines in the Pacific.
- M6**, a Dodge Weapons Carrier mounting a 37-mm. gun and used for training in the Tank Destroyer Force.
- M8**, 75-mm. howitzer on the M5 Light Tank chassis, used on many fronts.
- M10 and M10A1**, 3-inch gun on M4 Medium Tank chassis, widely used in combat.
- M13 through M17** Multiple Gun Motor Carriages on halftracks, used as anti-aircraft artillery.
- M36 and M36B1**, 90-mm. guns on M10 and M4 chassis respectively, mainly in the European Theatre.

Most of these have been separately described in other Profiles. [See Light Tanks M1–M5, M3 Medium (Lee/Grant), M4 Medium (Sherman), M3 Halftrack]. Additionally, there were the M12, a 155-mm. gun on the M3 Medium Tank chassis, the M40 (known as “Long Tom”), and the M7, the familiar Priest, first used by the British at El Alamein in October 1942 and later by U.S. forces on many fronts.

### M12 AND M40 (LONG TOM)

The using arms, up to early 1941, before the United States entered World War II, had contemplated the use of tractor-drawn large caliber guns, but the Ordnance Department informed the Adjutant General in June of that year that studies had been made of a 155-mm. M1918M1 gun on the chassis of the M3 Medium Tank and recommended that a pilot be built. Authorization was granted on the same day and work began at the Rock Island Arsenal within a few weeks. Designated T6, the pilot was completed and sent to the Aberdeen Proving

Ground for test in February 1942. Following some modifications it was shipped to Fort Bragg for testing by the Field Artillery Board.

During tactical tests the T6 was fired and moved forward six miles to a new position to fire again, all within 35 minutes. A parallel movement by a tractor-towed 155-mm. gun required three hours. After this, 50 vehicles were authorized plus 50 companion vehicles (Cargo Carrier T14, later standardized as M30) as ammunition carriers. A month later another 50 were authorized. Six men of the 12-man crew were carried on the T6 and the others on the M30. The contract was completed by Pressed Steel Car Company in March 1943.

In October 1943 Army Ground Forces decided there was no longer any requirement for the T6, now standardized as the M12, so a few only were continued for training purposes while the rest were stored. Three months later, with the Normandy landings in prospect, there was an urgent demand for them and the majority (74) were remanufactured (re-built) by Baldwin Locomotive Works. They were completed in May 1944 and sent to the theatre of operations the following month. They took part in various actions including the capture of Cologne.

Parallel with the re-manufacturing of the M12s, work was carried out in the development of an improved self-propelled 155-mm. mount. Designated T83 Gun Motor Carriage, it mounted the M2 155-mm. gun, “Long Tom”, on the rear of a slightly widened M4A3E8 chassis, which had the engine moved forward and a recoil spade and working platform added at the rear. The design allowed an 8-in. M1 howitzer to be mounted instead of the Long Tom. A Cargo Carrier, T30, which was simply the

The T86E1 amphibious gun motor carriage created from the M18 by the National Defense Research Council. Photo—Courtesy C. J. Nuttall



The T87 amphibious howitzer motor carriage carried the heavier 105-mm. howitzer but was lighter than the T86. Photo—Courtesy G. B. Jarrett







The T88 gun motor carriage was an experimental M18 carrying a 105-mm. Howitzer. Photo—U.S. Ordnance Dept.



No "T" number was assigned to the informal experimental mounting of the M36 turret and gun on an M18 chassis. Photo—U.S. Ordnance Dept.

chassis without the weapon, was also designed in order to carry crew and ammunition. Only a few of these were built. T83 was standardized as M40 Gun Motor Carriage, the HMC as M43 Howitzer Motor Carriage. The M40, produced by Pressed Steel, was a highly successful weapon that fought in North-west Europe (it was first in action in the bombardment of Cologne) and in Korea. A few were in British service after World War II.

### PRIEST

The T19 used in the Tunisian campaign was an expedient weapon. After 324 had been produced by the Diamond T Motor Company in 1942 the project was terminated in favour of the T32, which also mounted the 105-mm. howitzer, with the weapon offset to the right of centre. Design studies for the T32, based on the M3 Medium chassis but with an open-topped superstructure, had been initiated in June 1941 at the time the T6 pilot had been authorized. The Armored Force Board recommended in October 1941 that two pilots of the T32 be built and authorization was granted a month later. Baldwin Locomotive produced them in a little over a month. Originally without the pulpit, which was added by Aberdeen Proving Ground after test, the 600 production vehicles authorized in February 1942 were so fitted. It was because of the pulpit that the vehicle got its familiar name of "Priest."

The T32 became the M7 in April 1942. Production started and stopped several times because of fluctuating requirements. In 1944 the chassis of the M4A3 with Ford engine began to be used for the Priest instead of the M3 Medium chassis. These vehicles were designated M7B1. There was also a modified M7B1 designated M7B2.

Several companies eventually became involved in M7 production:

Year	American Locomotive (M7)	Pressed Steel Car (M7 and M7B1)	Federal Machine and Welder (M7B2)
1942	2028	—	—
1943	786	—	—
1944	500	664*	—
1945	—	162	127

\* 70 per cent were M7B1 based on M4A3 Medium Tank with Ford engine.

In British service the M7 was designated "105-mm. SP, Priest." The British Tank Mission in the United States in March 1942 requested 5,500 M7s for delivery before the end of 1943. This demand was never met in full, but the first 90 Priests arrived in Egypt in September 1942 and were handed over to the British in time to take part in the Second Battle of Alamein. Hundreds more

were later delivered and were in service with Eighth Army throughout the Italian campaign.

Priests also took part in the Normandy landings but in 21 Army Group were soon withdrawn in favour of Sextons. They were then "unfrocked" and turned into Kangaroo APCs, an idea that was copied by Eighth Army in Italy.

The M7 and M7B1 (and M7B2) were standard equipment of artillery units in U.S. armored divisions until gradually replaced by the M37.

### SPECIFICATION M7

#### 105-mm. Howitzer Motor Carriage M7 or M7B1

**Crew:** 7 (commander, driver, gun crew (5))  
**Battle Weight:** 50,634 pounds (M7B1: 50,000 pounds)

**Dimensions:** Length: 19 ft. 9 in. (M7B1: 20 ft. 3 1/2 in.)  
 Track width 16 1/2 in.  
 Height: 8 ft. 4 in.  
 Track centres/tread 6 ft. 11 in.  
 Width: 9 ft. 5 1/2 in.

**Armament:** Main: 1 x 105-mm. howitzer M1A2, M2, or M2A1  
 Secondary: 1 x .50 cal. MG (A.A.)

**Armour Thickness:** Maximum: 62 mm.  
 Minimum: 12 mm.

**Traverse:** 15° left, 30° right. Elevation limits: +35° to -5°

**Engine:** Continental R-975 radial air-cooled (M7), Ford GAA V8 (M7B1)

**Maximum Speed:** 26 m.p.h.

**Maximum Cross-Country Speed:** 15 m.p.h.

**Suspension:** Vertical Volute

**Road Radius:** 85-125 miles

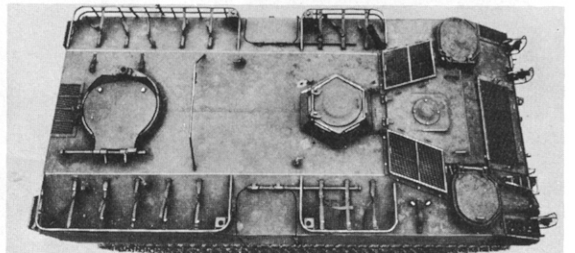
**Fording Depth:** 4 ft. (M7), 3 ft. (M7B1)

**Vertical Obstacle:** 2 ft.

**Trench Crossing:** 2 ft. 6 in.

**Ammunition Storage:** 69 rounds 105-mm. 300 rounds .50 cal. MG

The T16 (M44) armored utility vehicle was based on the M18 gun motor carriage. Photo—U.S. Ordnance Dept.





The M39 armoured utility vehicle was used for reconnaissance and carrier purposes. Photo—U.S. Army

## SPECIFICATIONS M12, M40

### 155-mm. Gun Motor Carriage M12, Cargo Carrier M30

**Crew:** 6 (commander, driver, gun crew (4) in M12 (other crewmen carried in M30)

**Battle Weight:** 58,000 pounds (M12) 47,000 pounds (M30)

**Dimensions:** Length: 22 ft. 1 in. (M30: 19 ft. 10 in.)

Track width 16½ in.

Height: 8 ft. 10 in. (M30: 10 ft.)

Track centres/tread 6 ft. 11 in.

Width: 8 ft. 9 in.

**Armament:** Main 1 × 155-mm gun M1918M1

Secondary: 1 × 50 cal. Browning MG (AA) (M30 only)

**Traverse:** 14° each side: +30° to -5°

**Engine:** Continental R-975 radial gasoline (petrol) 353 h.p.

**Maximum Speed:** 24 m.p.h.

**Maximum Cross-Country Speed:** 12 m.p.h.

**Suspension:** Vertical Volute

**Road Radius:** 140 miles

**Fording Depth:** 3 ft.

**Vertical Obstacle:** 2 ft.

**Trench Crossing:** 7 ft. 6 in.

**Ammunition Storage:** 10 rounds 155-mm. (M12)

40 rounds 155-mm. (M30)

1,000 rounds 50 cal. MG (M30 only)



The M39 armoured utility vehicle was used as an armoured personnel carrier and as a command vehicle. Photo—U.S. Ordnance Dept.

### 155-mm. Gun Motor Carriage M40

**Crew:** 8 (commander, driver, gun crew (6))

**Battle Weight:** 80,020 pounds

**Dimensions:** Length: 20 ft. 7 in. (29 ft. 9 in. over gun)

Track Width 23 in.

Height: 8 ft. 9½ in.

Track centres/tread 8 ft. 4½ in.

Width: 10 ft. 4 in.

**Armament:** 1 × 155-mm. gun M2

**Armour Thickness:** Maximum: 12 mm.

Minimum: 12 mm.

**Traverse:** 18° each side: +45° to -5°

**Engine:** Continental R-975 radial

**Maximum Speed:** 24 m.p.h.

**Maximum Cross-Country Speed:** 20 m.p.h.

**Suspension:** horizontal volute spring suspension (HVSS)

**Road Radius:** 107 miles

**Fording Depth:** 3 ft.

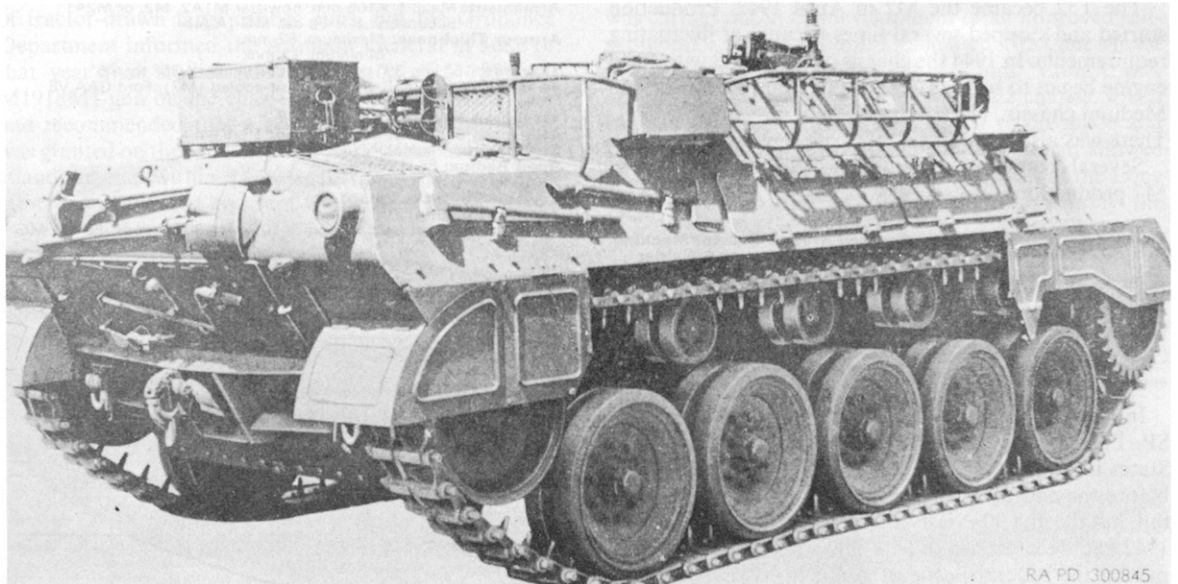
**Vertical Obstacle:** 2 ft. 10 in.

**Trench Crossing:** 7 ft. 8½ in.

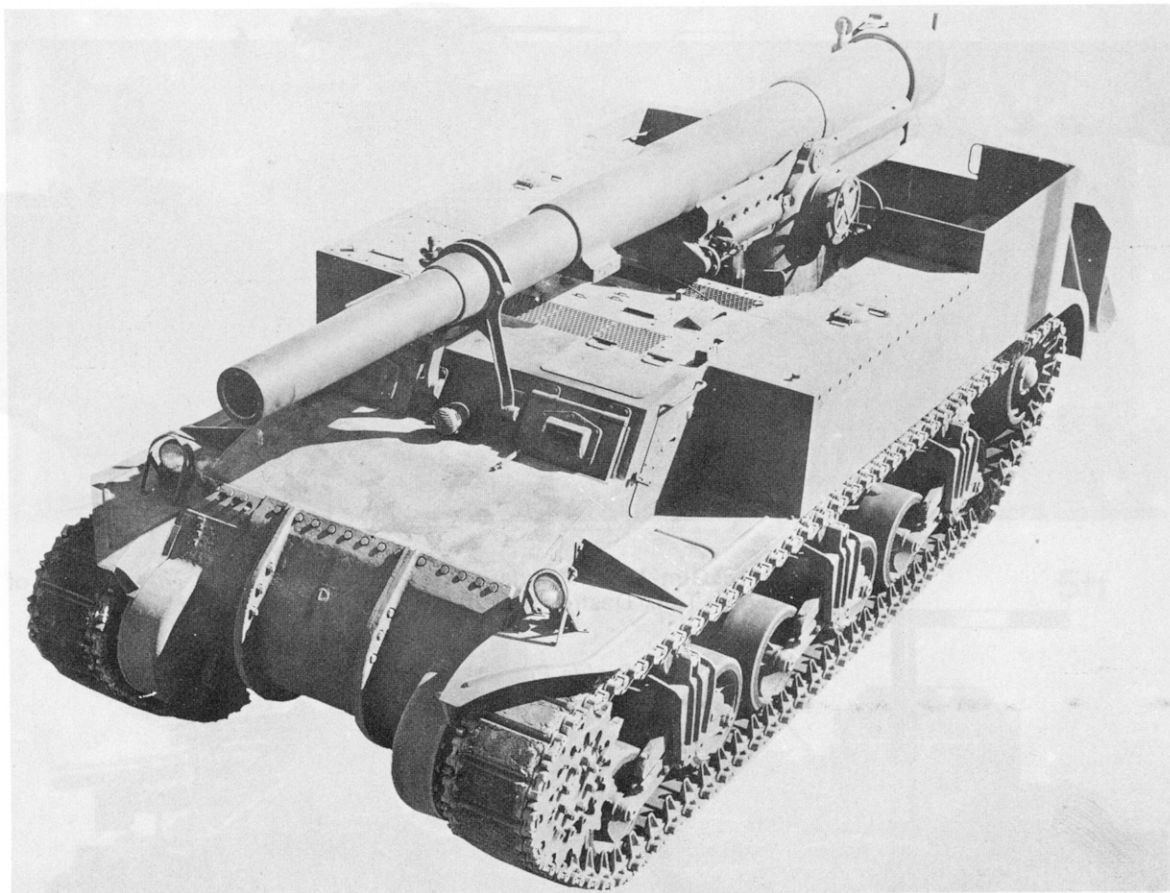
**Ammunition Storage:** 20 rounds 155-mm.

Three-quarter rear view of the M39 armoured utility vehicle showing stowage racks and stowage boxes.

Photo—U.S. Ordnance Dept.



RA PD 300845



This top three quarter left front view of the T6 gun motor carriage shows the essential details of its design.

Photo—U.S. Ordnance Dept.

## Complete Checklist of All U.S. World War II Self-Propelled Weapons

by Robert J. Icks, *Colonel A.U.S. Retd.*

Although the vehicles already mentioned comprise a fairly imposing list, they number far less than the vast array of self-propelled guns and howitzers designed and built in the United States during World War II. Many of these existed only as one of a kind but others were built in quantities of up to 100 or more for extended service test but failed of acceptance.

A complete list of such self-propelled weapons includes not only (1) those vehicles assigned official "T" or "M" numbers but (2) those with other designations, (3) those which resulted from official and unofficial requests from other services and (4) those which had no official authorization but which nevertheless were designed and tested with tacit official approval. It should be kept in mind, therefore, that, in addition to the official "T" and "M" numbers, there were unofficial Ordnance, Armored Force, Tank Destroyer Force, Corps of Engineers and Chemical Warfare Service as well as Navy and Marine Corps designs.

### "T" NUMBERED VEHICLES (GUN MOTOR CARRIAGES AND HOWITZER MOTOR CARRIAGES)

In referring to the following list, note that, although given in sequence, it is the sequence as authorized. But fabricating rates varied so greatly that higher numbered vehicles often appeared for test earlier than those with lower numbers.

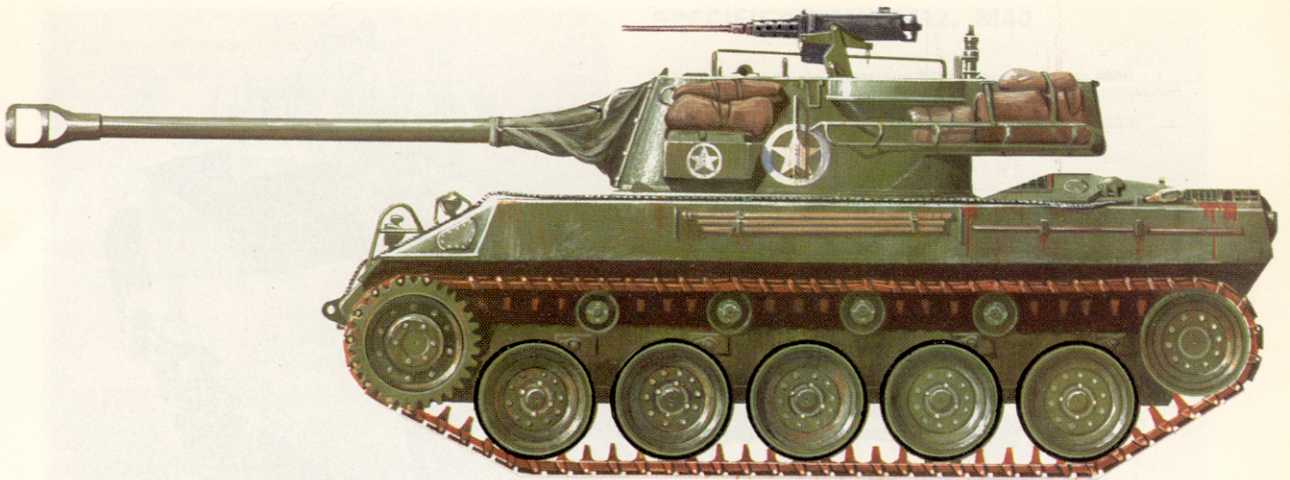
**T1** Multiple Gun Motor Carriage, Bendix dual 30 cal. MG mount on Dodge  $\frac{1}{2}$ T 4 × 4.

**T1** Gun Motor Carriage, Bofors 40-mm. gun with Kerrison director on Mack T3 Halftrack.

**T1** Gun Motor Carriage, 3-in. AA gun on Cletrac MG-2 Tractor, later standardized as M5.

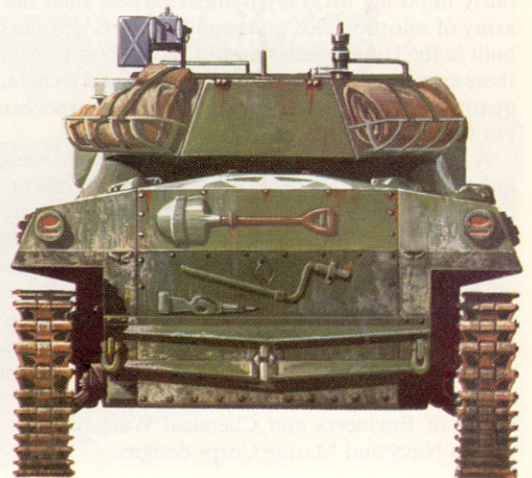
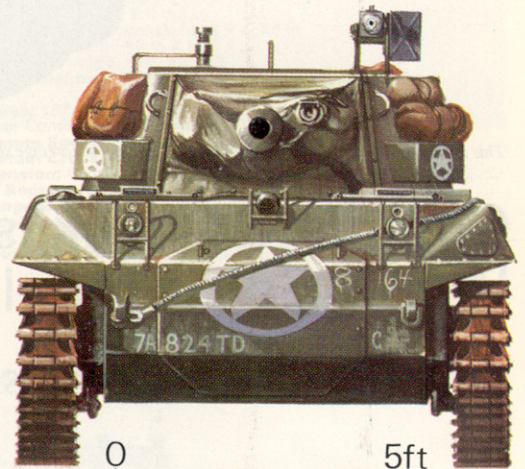
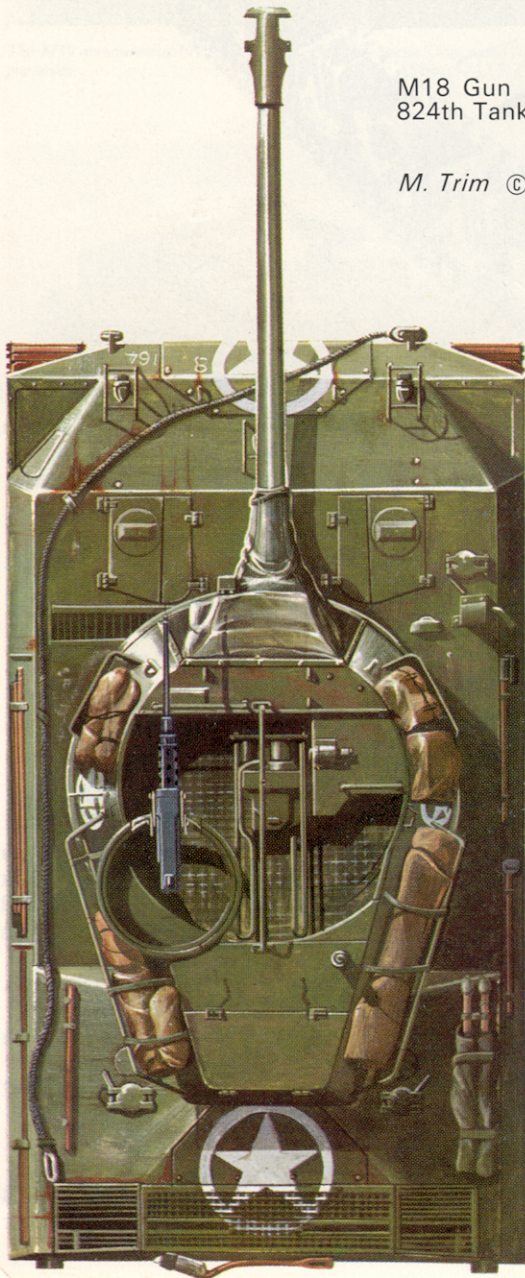
**T1E1** Multiple Gun Motor Carriage, Bendix dual 50 cal. turret on M2 Halftrack.

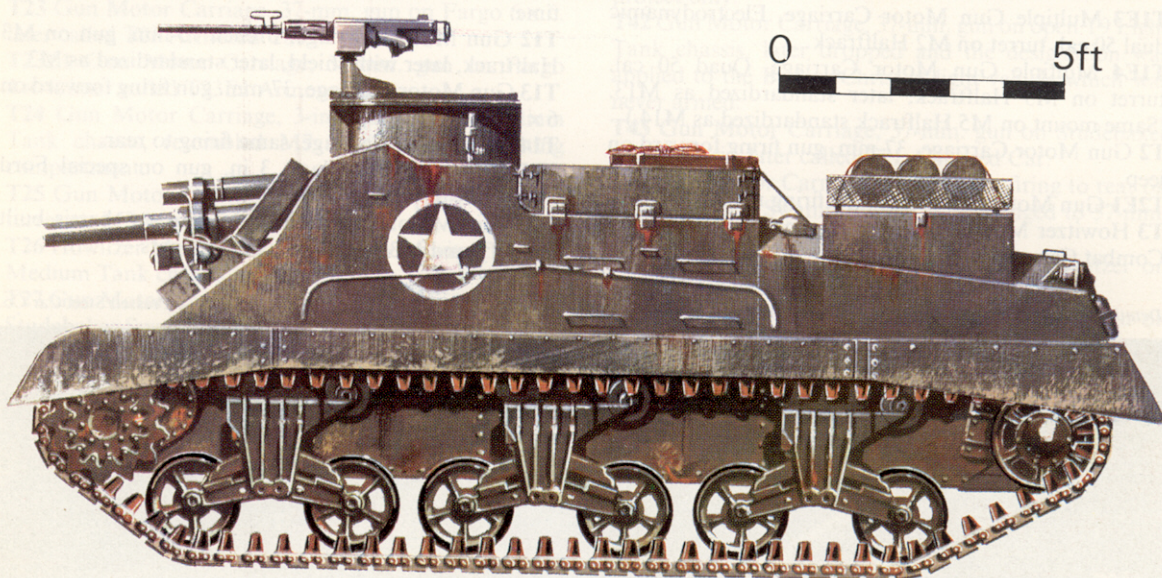
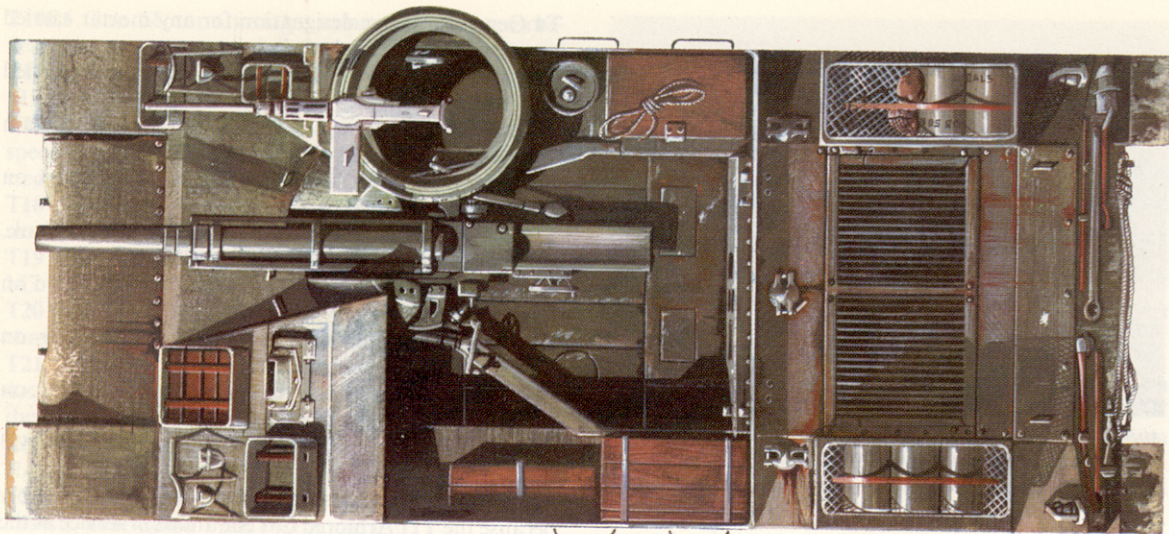
**T1E2** Multiple Gun Motor Carriage, Maxson dual 50 cal. turret on M2 Halftrack, later modified to four 50 cal. MGs.



M18 Gun Motor Carriage, Hellcat, with M1A1C 76-mm gun, of 824th Tank Destroyer Battalion, Seventh U.S. Army

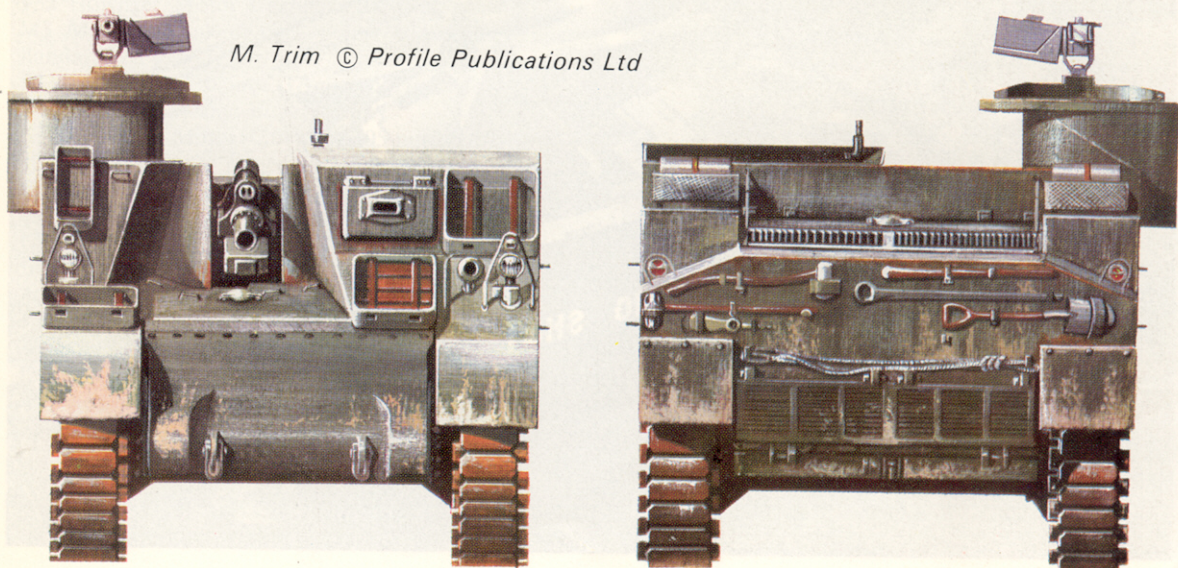
*M. Trim © Profile Publications Ltd*





M7B1 105-mm Howitzer Motor Carriage of artillery unit  
in U.S. armoured division

*M. Trim © Profile Publications Ltd*





After initial rejection of the M12 gun motor carriage the need for such a weapon led to its eventual use in combat. Photo—Associated Press

**T1E3** Multiple Gun Motor Carriage, Electrodynamic dual 50 cal. turret on M2 Halftrack.

**T1E4** Multiple Gun Motor Carriage, Quad 50 cal. turret on M3 Halftrack, later standardized as M13. (Same mount on M5 Halftrack standardized as M14.)

**T2** Gun Motor Carriage, 37-mm. gun firing forward on jeep.

**T2E1** Gun Motor Carriage, same firing rearward.

**T3** Howitzer Motor Carriage, 75-mm. howitzer on M1 Combat Car, prototype for T17.

**T4** Generic pre-war designation for any mortar carried on a tracklaying vehicle.

**T5** Generic pre-war designation for any mortar carried on a wheeled vehicle.

**T6** Gun Motor Carriage, 155-mm. gun on M3 Medium Tank chassis, later standardized as M12.

**T6E1** Multiple Gun Motor Carriage, Dual Bofors on M24 Light Tank chassis.

**T7** Gun Motor Carriage, 3-in. gun on Trackless Tank, project only.

**T8** Gun Motor Carriage, 37-mm. gun firing forward on Ford Swamp Buggy.

**T9** Howitzer Motor Carriage, 105-mm. howitzer on Cletrac MG-5 Tractor, project only.

**T10** Multiple Gun Motor Carriage, Dual Oerlikon on M2 Halftrack.

**T10E1** Multiple Gun Motor Carriage, same on M3 Halftrack.

**T11** Designation seems not to have been used, possibly because the T11 Armored Car continued in service at the time.

**T12** Gun Motor Carriage, French 75-mm. gun on M3 Halftrack, later with shield, later standardized as M3.

**T13** Gun Motor Carriage, 37-mm. gun firing forward on 6 × 6 jeep.

**T14** Gun Motor Carriage, same firing to rear.

**T15** Gun Motor Carriage, 3 in. gun on special Ford 6 × 6 chassis, project only.

**T16** Gun Motor Carriage, 4-5-in. gun on chassis built from T7 and M3 Light Tank components.

Details of the M40 gun motor carriage are clearly visible in this three quarter top view.

Photo—Pressed Steel Car Co.



**T16E1** Gun Motor Carriage, same with minor modifications.

**T17** Howitzer Motor Carriage, 75-mm. howitzer on M5A1 Light Tank chassis, project only.

**T17E1** Howitzer Motor Carriage, 75-mm. howitzer in special cast and welded turret on M5A1, later standardized as M8.

**T18** Howitzer Motor Carriage, 75-mm. howitzer in massive cast hull on M3 Light Tank chassis.

**T19** Howitzer Motor Carriage, 105-mm. howitzer on M3 Halftrack, later with shields of various types.

**T20** Gun Motor Carriage, 3-in. gun on M3 Light Tank chassis, project only.

**T21** Gun Motor Carriage, 37-mm. gun on Dodge 3/4 T 4 × 4, several types of shields, later standardized as M4, then changed to M6, some also fitted with 50 cal. MG.

**T22** Gun Motor Carriage, 37-mm. gun on Ford 6 × 6 chassis, later called T22 Armored Car.

**T22E1** Gun Motor Carriage, 37-mm. gun on Ford 6 × 6 chassis, later called T22E1 Armored Car.

**T23** Gun Motor Carriage, 37-mm. gun on Fargo 6 × 6, later called T23 Armored Car.

**T23E1** Gun Motor Carriage, 37-mm. gun on Fargo 4 × 4, later called T23E1 Armored Car.

**T24** Gun Motor Carriage, 3-in. gun on M3 Medium Tank chassis, resembled M7 but octagonal fighting compartment.

**T25** Gun Motor Carriage, 105-mm. AA gun in special turret on M3 Medium Tank chassis.

**T26** Howitzer Motor Carriage, 75-mm. howitzer on M3 Medium Tank chassis, not completed.

**T27** Gun Motor Carriage, 75-mm. gun firing forward on Studebaker Swamp Buggy.

**T28** Multiple Gun Motor Carriage, 37-mm. gun and two 50 cal. MGs on M2 Halftrack, later with shield, later standardized as M15.

**T28E1** Multiple Gun Motor Carriage, same with three-sided shield on M3 Halftrack, later standardized as M15A1.

**T29** Howitzer Motor Carriage, 75-mm. howitzer on M3 Light Tank chassis, project only.

**T30** Howitzer Motor Carriage, 75-mm. howitzer on M3 Halftrack, later with shield.

**T31** Multiple Gun Motor Carriage, Maxson quad 50 cal. MG turret on M3 Halftrack, project only.

**T32** Howitzer Motor Carriage, 105-mm. howitzer on M3 Medium Tank chassis, pulpit added later, later standardized as M7.

**T33** Gun Motor Carriage, 37-mm. gun firing forward on modified Ford Swamp Buggy.

**T34** Howitzer Motor Carriage, 105-mm. howitzer on Mack T3 Halftrack, project cancelled.

**T35** Gun Motor Carriage, 3-in. gun on streamlined M4 Medium Tank chassis.

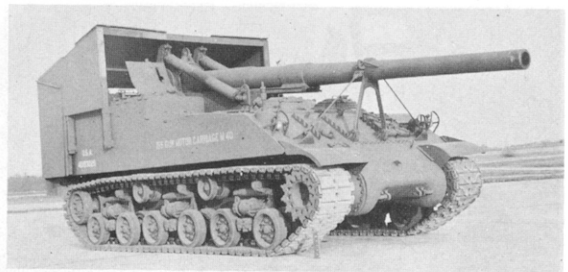
**T35E1** Gun Motor Carriage, 3-in. gun on somewhat different streamlined M4A2 Medium Tank chassis, standardized as M10.

**T36** Gun Motor Carriage, Bofors AA gun in huge cast turret on M3 Medium Tank.

**T37** Multiple Gun Motor Carriage, Quad 50 cal. MG in cylindrical shield mounted in square form on M3 Halftrack.

**T37E1** Multiple Gun Motor Carriage, similar but guns arranged in parallel form.

**T38** Howitzer Motor Carriage, Short tube 105-mm. howitzer on M3 Halftrack.



*The M40 gun motor carriage after addition of the box cab with folding hatches and doors.*  
Photo—Ordnance Dept.

**T39** Howitzer Motor Carriage, 105-mm. howitzer on T13 Armored Car, project dropped.

**T40** Gun Motor Carriage, 3-in. AA gun on M3 Medium Tank chassis, similar to T32, later standardized as M9.

**T41** Howitzer Motor Carriage, 75-mm. howitzer on M3 Light Tank chassis, similar to T18 but welded armour, project only.

**T42** Gun Motor Carriage, 37-mm. gun on open T9 Light Tank chassis, later dropped and the designation was applied to the Bigley (Christie) light vehicle which was never armed.

**T43** Gun Motor Carriage, 37-mm. gun on Studebaker 6 × 4 chassis, later called T21 Armored Car.

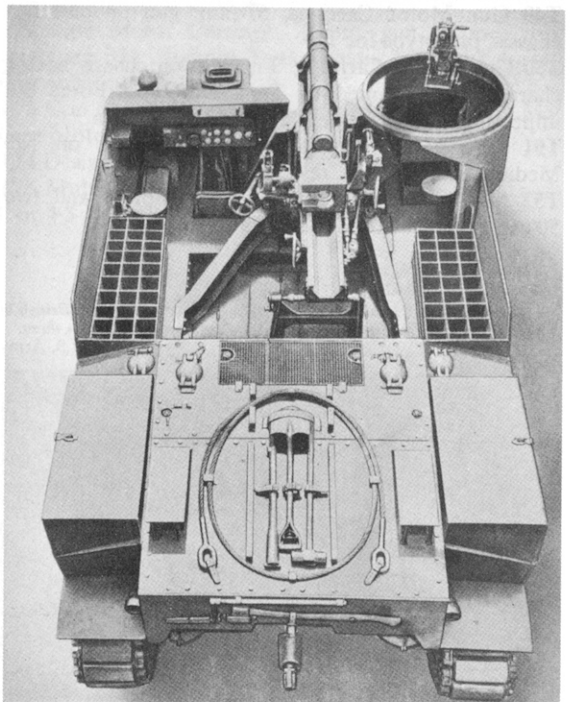
**T44** Gun Motor Carriage, 37-mm. gun firing to rear on modified Ford Swamp Buggy, later changed to 57-mm. gun, finally equipped with shield.

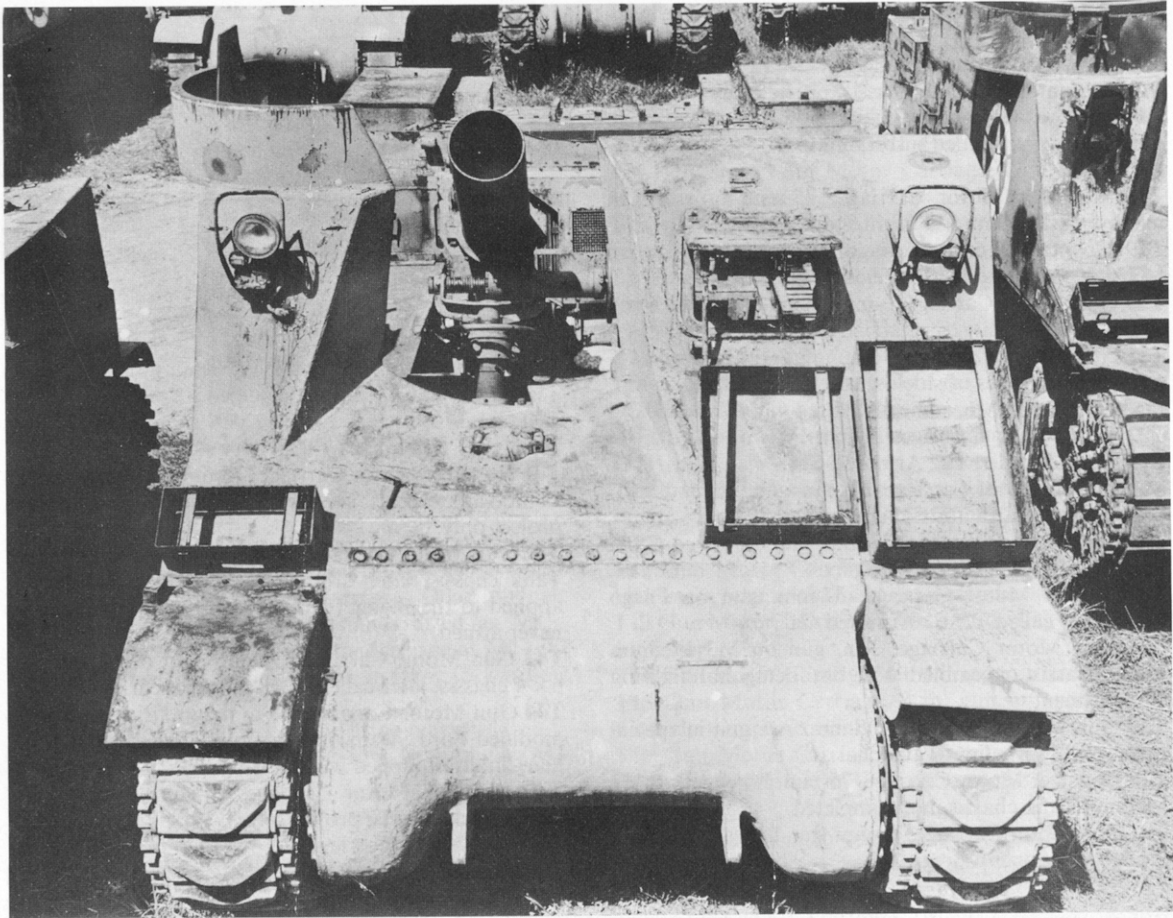
**T45** Howitzer Motor Carriage, 105-mm. howitzer on Mack track chassis, project only.

**T46** Gun Motor Carriage, 75-mm. gun firing to rear on Studebaker Swamp Buggy.

**T47** Howitzer Motor Carriage, Short 105-mm. howitzer on M5A1 Light Tank chassis, a miniature T32.

*Top rear view of M7 howitzer motor carriage showing details of the modified field carriage on which the howitzer was mounted.*  
Photo—U.S. Ordnance Dept.





M7B1 howitzer motor carriage modified in England to mount a British 10-in. mortar.

Photo—Courtesy G. B. Jarrett

**T48** Gun Motor Carriage, 57-mm. gun with shield on M3 Halftrack, built for British.

**T49** Gun Motor Carriage, 57-mm. gun on new fast chassis, prototype for T67.

**T50** Gun Motor Carriage, 3-in. gun on chassis having characteristics wanted by Tank Destroyer Force but impossible of achievement and no action taken.

**T51** Gun Motor Carriage, British 25-pdr. on M3 Medium Tank chassis, resembled Sexton.

**T52** Multiple Gun Motor Carriage, Bofors and two 50 cal. MGs on M4 Medium Tank chassis.

**T53** Gun Motor Carriage, Rear-mounted 90-mm. AA gun on M4 Medium Tank chassis, various shield types.

**T53E1** Gun Motor Carriage, similar but gun centre-mounted.

**T54** Gun Motor Carriage, Bofors gun on M3 Halftrack.

**T54E1** Multiple Gun Motor Carriage, Two 50 cal. MGs added, circular shield, outriggers added.

**T55** Gun Motor Carriage, 3-in. AA gun front-mounted on Allied Machinery Company 8 × 8 truck.

**T55E1** Gun Motor Carriage, same redesigned.

**T56** Gun Motor Carriage, 3-in. AA gun with shield on

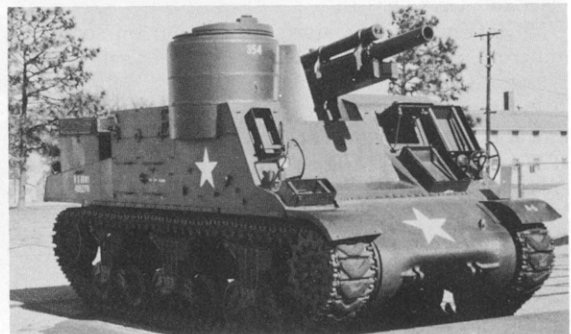
*One of the first M7 howitzer motor carriages received for the British in Egypt undergoing tests in the desert before being turned over to them.*

Photo—U.S. Army

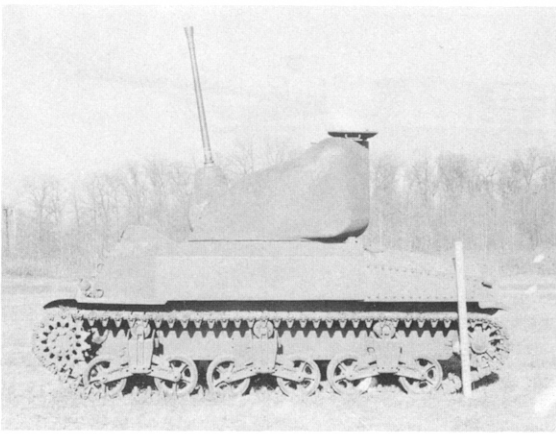


*The M7B2 howitzer motor carriage was distinguished from its predecessors by the deeper cylindrical pulpit. M7B1 and M7B2 had a cast one-piece nose instead of the three-piece bolted nose of the M7.*

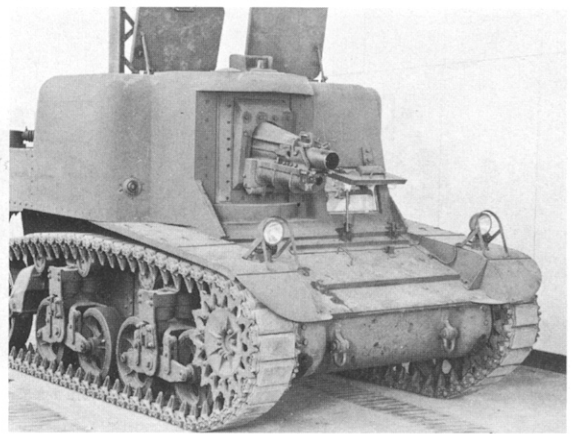
Photo—Courtesy J. W. Loop







*T36 gun motor carriage based on M3 medium tank.*  
Photo—U.S. Ordnance Dept.



*T18 howitzer motor carriage based on M3 light tank chassis.*  
Photo—U.S. Ordnance Dept.

M3A3 Light Tank with larger engine.

**T57** Gun Motor Carriage, similar to T56 but without shield.

**T58** Multiple Gun Motor Carriage, Quad 50 cal. MG on M3 Halftrack, later became M16. (Same mount on M5 Halftrack became M17.)

**T59** Multiple Gun Motor Carriage, Dual Bofors on M3 Halftrack.

**T59E1** Gun Motor Carriage, Single Bofors on M3 Halftrack.

**T59E1** Gun Motor Carriage Modified, same with outriggers added.

**T60** Multiple Gun Motor Carriage, Bofors and two 50 cal. MGs, redesigned T54E1.

**T60E1** Multiple Gun Motor Carriage, similar with modified shields.

**T61** Multiple Gun Motor Carriage, Quad 50 cal. MG on M2 Halftrack.

**T62** Rocket Motor Carriage, 4-5-in. rocket projector with shield on semi-armoured Dodge 3/4 T 4 × 4.

**T63** Multiple Rocket Projector Carriage, Design study, replaced by T75.

**T64** Howitzer Motor Carriage, 155-mm. howitzer on lengthened M5 Light Tank chassis.

**T64E1** Howitzer Motor Carriage, 155-mm. howitzer on M24 Light Tank chassis, later standardized as M41.

**T65** Multiple Gun Motor Carriage, Twin Bofors on lengthened M5A1 Light Tank chassis.

**T65E1** Multiple Gun Motor Carriage, Twin Bofors on M24 Light Tank chassis, later standardized as M19.

**T65E2** Multiple Gun Motor Carriage, similar, standardized as M19A1.

**T66** Gun Motor Carriage, 75-mm. gun on T19E1 Armored Car.

**T67** Gun Motor Carriage, 75-mm. gun on special high speed chassis.

**T68** Multiple Gun Motor Carriage, Twin Bofors, one above the other, on M3 Halftrack.

**T69** Multiple Gun Motor Carriage, Quad 50 cal. MG on M8 Armored Car chassis.

**T69** Multiple Gun Motor Carriage Modified, Improved fire control.

**T70** Gun Motor Carriage, 76-mm. gun on modified T67 chassis, later standardized as M18.

**T71** Gun Motor Carriage, 90-mm. gun in large turret on M10 chassis.

**T71E1** Gun Motor Carriage, same on M10A1 chassis, later standardized as M36.

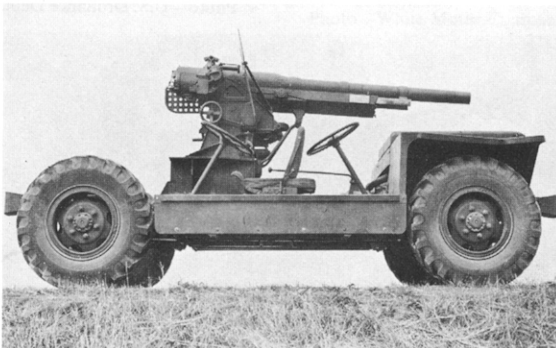
**T72** Gun Motor Carriage, 76-mm. gun in open top turret on M4 Medium Tank chassis M4 Tank turret later substituted.

**T73** Gun Motor Carriage, 75-mm. M3 tank gun on M3 Gun Motor Carriage chassis.

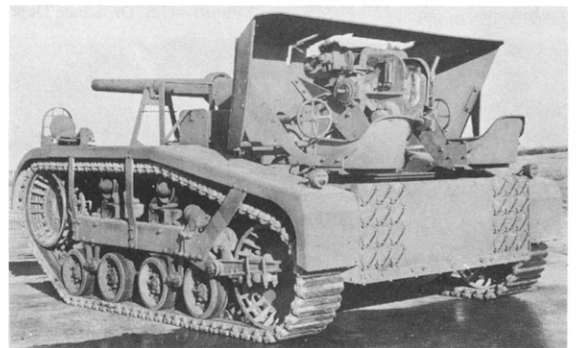
**T74** Designation seems not to have been used.

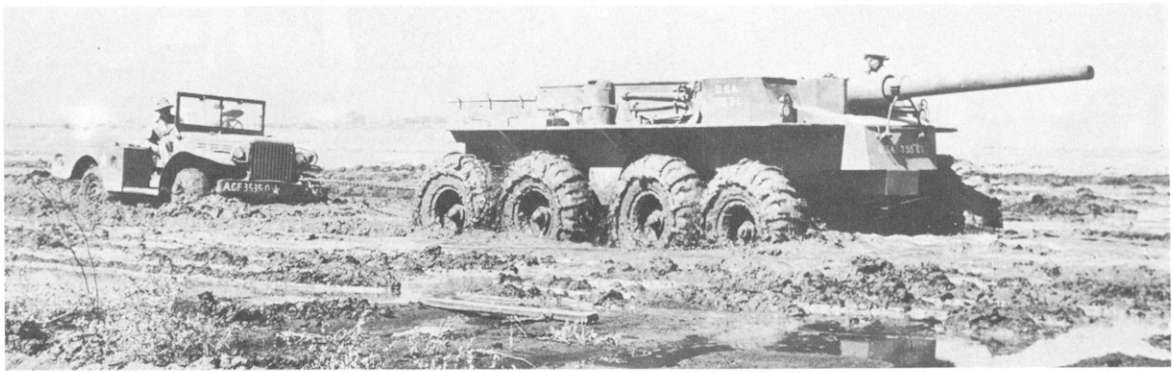
**T75** Multiple Rocket Motor Carriage, Two 10-in. and four 4-5-in. rocket projectors on 1½T 6 × 6.

*T27 gun motor carriage based on Studebaker Swamp Buggy.*  
Photo—U.S. Ordnance Dept.



*T1 gun motor carriage based on Cletrac MG-2 tractor.*  
Photo—U.S. Ordnance Dept.





T55E1 gun motor carriage based on Allied Machinery Company 8 x 8.

Photo—U.S. Ordnance Dept.

**T76** Howitzer Motor Carriage, 105-mm. howitzer on special M24 Light Tank chassis, later standardized as M37.

**T77** Multiple Gun Motor Carriage, Quad 50 cal. MG in shaped welded turret on M24 Light Tank chassis.

**T77E1** Multiple Gun Motor Carriage, same with clear plastic dome on turret.

**T78** Gun Motor Carriage, 90-mm. gun on M24 Light Tank chassis, project only.

**T79** Gun Motor Carriage, 155-mm. gun on light weight chassis using T23 Medium Tank power train, project only.

**T80** Howitzer Motor Carriage, 8-in. howitzer on same chassis as T79, project only.

**T81** Multiple Gun Motor Carriage, Bofors and two 50 cal. MGs on T65E1 chassis.

**T82** Howitzer Motor Carriage, Short 105-mm. howitzer on M5A1 Light Tank chassis, a miniature M7.

**T83** Gun Motor Carriage, Rear-mounted 155-mm. gun ("Long Tom") on M4A3E8 Medium Tank chassis, later standardized as M40.

**T83** Howitzer Motor Carriage, same with 8-in. howitzer, later standardized as M43.

**T84** Howitzer Motor Carriage, 8-in. howitzer on T26E1 Medium Tank chassis.

**T85** Multiple Gun Motor Carriage, 20-mm. Oerlikon quad gun mount at rear of modified M5 Light Tank chassis.

**T85E1** Multiple Gun Motor Carriage, similar but new gun mount.

**T86** Amphibious Gun Motor Carriage, 76-mm. gun on rebuilt M18, track propulsion.

**T86E1** Amphibious Gun Motor Carriage, similar with twin screws.

**T86E1** Amphibious Gun Motor Carriage Modified, Converted to one screw.

**T87** Amphibious Howitzer Motor Carriage, smaller T86 with 105-mm. howitzer, M18 basis.

**T88** Howitzer Motor Carriage, 105-mm. howitzer on M18.

**T89** Howitzer Motor Carriage, 8-in. howitzer on M26 Medium Tank chassis.

**T90** Mortar Motor Carriage, 155-mm. breechloading mortar on M4 Medium Tank chassis.

**T91** Secret classification continues after 25 years!

**T92** Howitzer Motor Carriage, Rear-mounted 240-mm. howitzer on M26 Medium Tank chassis.

**T93** Gun Motor Carriage, Rear-mounted 8-in. gun on M26 Medium Tank chassis.

**T94** Mortar Motor Carriage, 250-mm. (10-in.) mortar on M40 chassis, mockup only.

**T95** Gun Motor Carriage, Huge 105-mm. assault gun, earlier called T28 Heavy Tank.

**T96** Mortar Motor Carriage, 155-mm. mortar on M37 chassis.

#### MISCELLANEOUS "T" NUMBERED ITEMS (INCLUDING MORTAR CARRIERS AND ROCKET PROJECTORS)

**T8E1** Reconnaissance Vehicle, Dual 30 cal. mount on turretless M3 Light Tank.

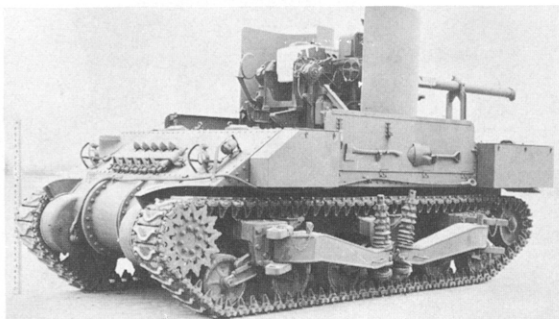
**T9E2** Mortar Carriage, 81-mm. breechloading mortar on T9 Light Tank chassis, cancelled.

**T9E3** Mortar Carriage, same with wider tracks, cancelled.

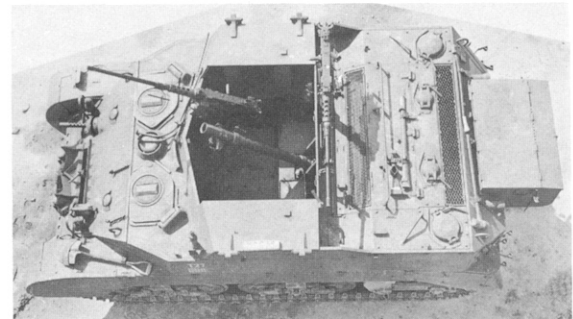
**T16** Halftrack With Roof, Spaced armour roof with 50 cal. MG front and 30 cal. MG rear.

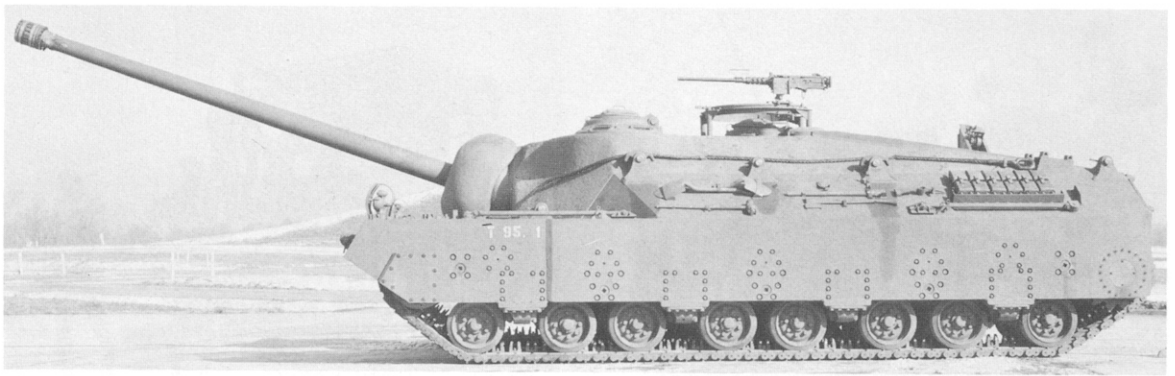
**T17E2** Armored Car, **T17E1** Armored Car with Fraser Nash AA turret, shaped and flat sided turret variations.

T53E1 gun motor carriage with original shield based on M4 medium tank chassis. Photo—U.S. Ordnance Dept.



81-mm. T27 mortar carriage with mortar firing forward. Photo—U.S. Ordnance Dept.





T95 gun motor carriage which had a removable extra set of tracks.

Photo—U.S. Ordnance Dept.

**T19** Mortar Carrier, 81-mm. mortar on M2 Halftrack, later standardized as M4 Mortar Carrier.

**T21** Mortar Carrier, 4-2-in. mortar on M3 Halftrack, fired to rear.

**T21E1** Mortar Carrier, same, fired forward.

**T27** Mortar Carrier, 81-mm. mortar on turretless M5A1 Light tank, fired forward.

**T27E1** Mortar Carrier, similar but mortar mounted at top level of hull, project only.

**T29** Mortar Carrier, 81-mm. mortar on turretless M5A1 Light Tank, not quite identical to T27.

**T30** Chemical Car, 7-2-in. multiple rocket launcher on turretless M8 Armored Car.

**T31** Demolition Tank, 7-2-in. rocket launcher and two flamethrowers in massive cast turret on M4 Medium Tank, also called T94 Armored Engineer Vehicle.

**T34** Rocket Projector on M4 Medium Tank, 4-6-in. 60-tube launcher mounted above turret on Tank. ("Calliope").

**T34E1** Rocket Projector on M4A1 Medium Tank, similar.

**T34E2** Rocket Projector on M4 Medium Tank, similar but square launching tubes.

**T35** Mortar Carrier, 4-2-in. mortar on T16 Armored Utility Car.

**T36** Mortar Carrier, 155-mm. mortar on T16 Gun Motor Carriage chassis.

**T38** Mortar Carrier, 4-2-in. mortar on M37 Motor Carriage.

**T39** Rocket Projector on M4 Tank, 7-2-in. 2-tube launcher above turret.

**T40** Rocket Projector, 7-2-in. 20-tube box type launcher close to turret, later standardized as M17.

**T40** Rocket Projector (Short Type), Shorter box

variation of above.

**T45** Rocket Projector on M24 Light Tank. Multiple rocket launcher.

**T64** Mortar Carrier, 4-2-in. mortar on M24 Light Tank chassis.

**T64E1** Mortar Carrier, same but modified, later standardized as M41 Mortar Carrier.

**T72** Rocket Projector on M4 Tank, 4-6-in. 60-tube launcher.

**T73** Rocket Projector on M4 Tank, similar to T39 but 10 square tubes.

**T76** Rocket Projector on M4 Tank, Single 7-5-in. rocket launcher in place of 75-mm. gun in M4A1 Medium Tank.

**T76E1** Rocket Projector on M4 Tank, same on M4A3E8 Medium Tank.

**T81** Mortar Carrier, 4-2-in. mortar on M5A1 Light Tank chassis.

**T99** Rocket Projector on M26 Tank, Two 11-tube launchers on turret sides.

**T105** Rocket Projector on M4A1 Medium Tank, Long 7-2-in. launcher in place of 75-mm. gun on M4A1 Medium Tank.

## LVT AND "M" NUMBERED VEHICLES

**LVT(A)1**, **LVT(A)2** with M3 Light Tank turret.

**LVT(A)4**, **LVT(A)2** with M8 Howitzer Motor Carriage turret.

**LVT(A)5**, same with stabilizer added.

**LVT** 76-mm. Amphibious Gun Carrier, Rebuilt M18, not completed.

**M3** Gun Motor Carriage, See T12.

**M3** Gun Motor Carriage Modified, Two quad 50 cal.

M16 multiple gun motor carriage based on M2 halftrack.

Photo—White Motor Company



M1A1 flame tank used in Pacific Theatre of Operations.

Photo—U.S. Army





*M8 howitzer motor carriage based on M5A1 light tank chassis.*  
Photo—Cadillac Motor Car Division, General Motors Corporation



*M17 rocket projector tank.*

Photo—U.S. Army

MG mounts added in some Marine Corps units.

**M4** Gun Motor Carriage, Original title of M6.

**M4** Mortar Carriage, See T19 Mortar Carriage.

**M4A1** Mortar Carriage, Minor modifications.

**M5** Gun Motor Carriage, See T1.

**M6** Gun Motor Carriage, See T21.

**M7** Howitzer Motor Carriage, See T32 "Priest."

**M7** Howitzer Motor Carriage Modified, Hinged side armour on M7, prototype for M7B1.

**M7B1** Howitzer Motor Carriage, same on M4 Medium Tank chassis instead of M3.

**M7B2** Howitzer Motor Carriage, similar to M7B1 but higher pulpit and other changes.

**M8** Howitzer Motor Carriage, See T17E1.

**M8** Howitzer Motor Carriage Modified, 75-mm. M3

tank gun substituted, sometimes erroneously referred to as M8A1.

**M9** Gun Motor Carriage, See T40.

**M10** Gun Motor Carriage, See T35E1.

**M10A1** Gun Motor Carriage, M10 with Ford engine.

**M10** Gun Motor Carriage Modified, M10 with covered turret and auxiliary cupola.

**M10** Gun Motor Carriage Modified, 90-mm. gun substituted experimentally.

**M12** Gun Motor Carriage, See T6.

**M13** Multiple Gun Motor Carriage, See T1E4.

**M14** Multiple Gun Motor Carriage, See T1E4.

**M15** Multiple Gun Motor Carriage, See T28.

**M15A1** Multiple Gun Motor Carriage, See T28E1.

**M16** Multiple Gun Motor Carriage, See T58.

*M36B2 gun motor carriage on M10 chassis.*

Photo—Fisher Body Division, General Motors Corporation





*POA-CWS 75H-1 flamethrower tank, one of several varieties built in Hawaii for island operations.*

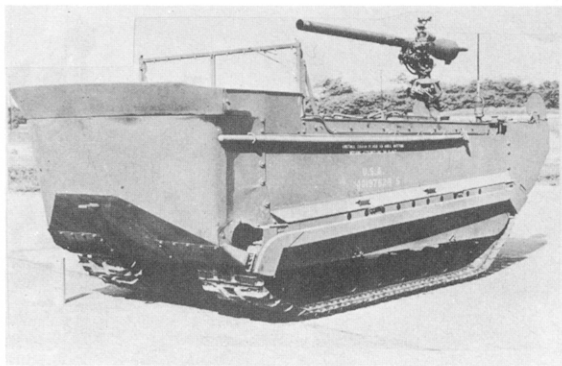
Photo—U.S. Army

**M16A1** Multiple Gun Motor Carriage, Shields added.  
**M16A2** Multiple Gun Motor Carriage, Modified fire control.  
**M17** Rocket Projector Tank, See T40 Rocket Projector.  
**M18** Gun Motor Carriage, See T70 "Hellcat".  
**M18** Gun Motor Carriage With 75-mm. M3 Tank Gun.  
**M18** Gun Motor Carriage With Floats, False bow and stern added.  
**M18** Gun Motor Carriage Modified, Six flat fold up sides added to form turret cover and cupola.  
**M18** Gun Motor Carriage with M36 90-mm. Turret.  
**M19** Multiple Gun Motor Carriage, See T65E1.  
**M19A1** Multiple Gun Motor Carriage, See T65E2.  
**M19** Motor Carriage Modified, Re-armed with four 75-mm. recoilless rifles.  
**M21** Mortar Carriage, 81-mm. mortar on M3 Halftrack.  
**M29C** Type A, 75-mm. recoilless rifle on centre-mounted pedestal on Weasel.  
**M29C** Type B, 75-mm. recoilless rifle rear-mounted on Weasel.  
**M29C** Type C, 37-mm. gun on tripod centre-mounted on Weasel.  
**M36** Gun Motor Carriage, See T71E1.  
**M36B1** Gun Motor Carriage, M36 turret and gun on M4A3 Medium Tank.  
**M36B2** Gun Motor Carriage, same with sloped-in turret cover.  
**M37** Howitzer Motor Carriage, See T76.  
**M37** Motor Carriage Modified, See T96.  
**M38** Armored Car Modified, M24 Light Tank turret substituted.  
**M40** Gun Motor Carriage, See T83 ("Long Tom").  
**M40** Gun Motor Carriage Modified, same with square box cab added.  
**M41** Howitzer Motor Carriage, See T64E1 Howitzer Motor Carriage. Unofficially named "Gorilla".  
**M41** Mortar Carriage, See T64E1 Mortar Carrier.  
**M43** Howitzer Motor Carriage, 8-in. howitzer on M4A3 Medium Tank chassis.

**M45** Medium Tank, 105-mm. howitzer on T26E2 Medium Tank.

## FLAMETHROWERS ON VARIOUS CHASSIS

**E3 (M3)**, F/T replaced 37-mm. gun on M3 Medium Tank, 75-mm. sponson closed.  
**E4-5 (M3-4-3) (E4R2-5RI)**, F/T in place of bow gun on M4A2 Medium Tank.  
**E4-R4-5-6 RC**, Periscope F/T in place of bow gun on M4 Medium Tank.  
**E5-R2**, Periscope type on M3A1 Light Tank.  
**E5-R2**, Periscope type on M3A5 Medium Tank.  
**E6-RI (E6-R3) (M3-4)**, Periscope type above assistant driver hatch on M4 Medium Tank.  
**E7**, Navy type Mark I on M3 Medium Tank.  
**E7-RI (M3-4)**, F/T replaced 75-mm. gun on M4 Medium Tank.  
**E7-7**, F/T on M3A1 Light Tank in place of bow MG.  
**E7-7**, F/T on M5A1 Light Tank in place of 37-mm. gun.  
**Satan**, Canadian Ronson on M3A1 Light Tank in place of 37-mm. gun.  
**Q Tank**, F/T replacing 37-mm. gun in M5A1 Light Tank.  
**E8**, F/T in smaller turret on M5A1 Light Tank.  
**E9-9**, Glacis F/T on M5A1 Light Tank towing fuel trailer.  
**POA**, Navy type F/T inside old 105-mm. gun tubes as main armament on M4 Medium Tanks in several variations resulting in poor combat experience causing similar installations to be made in tube parallel with 75-mm. gun which also identified themselves as F/T, but were capable of gun fire as well.  
**M1A1 Flame Tank**, F/T in place of 37-mm. gun in M3 Light Tank.  
**E12-R2**, Periscope type on M4A1 Medium Tank.  
**E12-7RI, (M5-4)**, F/T replacing 75-mm. gun in M4A1 Medium Tank.



M29C Type B vehicle, an experimental design.

Photo—U.S. Ordnance Dept.

**M3-4-3**, F/T replacing bow MG in Medium Tanks M4A1, M4A2 and M4A3.  
**E12-13**, similar to E12-7RI.  
**E13RI-13R2**, similar.  
**E19-19**, F/T in blister on left side of mantlet of M4A1 Medium Tank, prototype only.  
**E20-20**, F/T tube on right of mantlet on M4A3E2, paralleling 75-mm. gun from M24 Light Tank.  
**Crocodile**, British F/T mounted on M4.  
**Skink (Scorpion)**, M4A3 Medium Tank with all around anti-personnel F/T.  
**Wasp** on M3 Halftrack.

#### MISCELLANEOUS WEAPONS UTILIZING $\frac{1}{4}$ T 4 × 4 (JEEP)

**Cavalry Board 37-mm. Gun.**  
**Cavalry Board AA Gun**, 50 cal. MG mounted for high angle fire.  
**Navy Mark 21** 30 cal. Mount.  
**Navy Mark 27** 30 cal. Mount.  
**M48** 30 cal. Mount.  
**D76272** 30 cal. Mount.  
**Peep**, Armored Force designation for 30 cal. MG-equipped reconnaissance jeep; at least five variations.  
**12-Tube Rocket Projector.**  
**T45 Rocket Projector.**  
**Dual 75-mm. Recoilless Rifles.**  
**Single 75-mm. Recoilless Rifles.**  
**4-2-in. Mortar**

#### MISCELLANEOUS WEAPONS UTILIZING $\frac{3}{4}$ T 4 × 4 (DODGE)

**T45 Rocket Projector.**  
**T59 Dual 50 cal. Mount.**  
**E92 Chemical Rocket Projector.**  
**M7 Rocket Projector.**  
**M24A1 50 cal. Mount.**  
**M24A2 50 cal. Mount.**  
**Navy Mark 17 Dual 50 cal. Mount.**  
**M33 Dual 50 cal. Maxson Turret.**

#### MISCELLANEOUS WEAPONS UTILIZING OTHER WHEELED CHASSIS TYPES

**M24A1 50 cal. Mount** on Fargo  $1\frac{1}{2}$ T 6 × 6.  
**M33 Dual 50 cal. Mount** on Fargo  $1\frac{1}{2}$ T 6 × 6.  
**T74 Twin 50 cal. Mount** on Fargo  $1\frac{1}{2}$ T 6 × 6.  
**Dual T27 Rocket Launchers** on GMC  $2\frac{1}{2}$ T 6 × 6.  
**Single T27 Rocket Launcher** on Studebaker  $2\frac{1}{2}$ T 6 × 4.  
**M33 Dual 50 cal. Maxson turret** on Studebaker  $2\frac{1}{2}$ T 6 × 4.  
**Twin 30 cal. Mount** on M20 Utility Car.  
**105-mm. Howitzer** on DUKW.  
**Expendable Rocket Launcher** on DUKW.  
**Scorpion**, NDRC designed rocket launcher on DUKW.  
**T44 4-5-in. Rocket Launcher** on DUKW.

#### MISCELLANEOUS WEAPONS UTILIZING TRACKED AND HALFTRACKED CHASSIS

**Esch Device**, Pilot NDRC designed T86.  
**Mobile Maxson**, Four 50 cal. MGs on turretless M3 Light Tank.  
**Mobile Maxson**, similar on turretless M3A3 Light Tank.  
**Experimental Twin 50 cal. Mount** on Turretless M5 Light Tank.  
**155-mm. Howitzer** on Lengthened M5 Light Tank Chassis.  
**Navy Mark 17 30 cal. Mount** on Turretless M5A1 Light Tank.  
**90-mm. Gun** on Open T23 Tank Chassis, Without shield, project only.  
**90-mm. Gun** on Turreted T23, Skirted project only.  
**40-mm. Bofors Gun** on M15 Chassis, Modified in Pacific Theatre.  
**Navy Mark 2 Quad Oerlikon and Dual 50. cal Mount** on M3 Half track.  
**DHT-5**, Marmon-Herrington armoured halftrack with T9 Light Tank turret.

AFV Series Editor: DUNCAN CROW

#### References

Author's Files.  
 Bellona Series Three.  
 Combat Vehicle History and Work Papers, DANIEL CHASE, *U.S. Ordnance Department Historical Division, 1947.*  
 Correspondence with C. J. Nuttall, *Formerly with NDRC.*  
 Handbook of Ordnance Material, *Ordnance School, APG, 1962.*  
 Military Vehicles TM 9-2800-1, *U.S. Army, Washington, 1953.*  
 Office Chief of Ordnance Production Records, LOREN JENKS, *OCOD, 1945.*  
 Research, Investigation and Experimentation in the Field of Amphibious Vehicles, U.S. Marine Corps Contract No. M 6625, Ingersoll-Kalamazoo Division, *Borg-Warner Corporation, Kalamazoo, 1957.*  
 Weapon Mounts for Secondary Armament. Prepared for Detroit Arsenal by G. O. NOVILLE & Associates Inc., Report No. 206, 1957.  
 The Ordnance Department: On Beachhead and Battlefield, THOMSON AND MAYO, *Washington, 1968.*  
 The Ordnance Department: Procurement and Supply, GREEN, THOMSON AND ROOTS, *Washington, 1965.*  
 76-mm. Gun Motor Carriage M18 and Armored Utility Vehicle M39, TM 9-755, *War Department, Washington, April 1945.*

# AFV/Weapons Profiles

Edited by **DUNCAN CROW**

FORTHCOMING TITLES:

## 45 Vickers Main Battle Tank

(publication delayed).

## 48 PanzerKampfwagen VI - Tiger I and II

"Slow and heavy, large and cumbersome" the Tiger may have been, but it was a formidable tank to encounter and could stand tremendous punishment on its thick frontal armour. This Profile tells the story of the legendary Tiger – both the Tiger I (SdKfz 181) and the Tiger II or King Tiger (SdKfz 182). They had their drawbacks from the logistic and tactical points of view – faults that were rarely apparent to those who had to face them. Also included is the "tank hunter" version of the King Tiger – the Jagdtiger. (Tiger I is a revised Armour in Profile, the rest is new).

## 49 Japanese Medium Tanks

Japanese tank development started from 1925. One of the officers of the Imperial Japanese Army concerned with this development from the very outset was Captain (now LIEUTENANT-GENERAL) TOMIO HARA. From his own unrivalled personal experience General Hara in this Profile describes the designing, building, and performance of Japanese medium tanks from Prototype No. 1 (1925-27) through Type 89 (1929), Type 97 (CHIHA) (1937), Type 1 (CHIHE) (1940), Type 3 (CHINU) (1943), Type 4 (CHITO) (1943), to Type 5 (CHIRI) (1944). Also included is a detailed explanation of the year/model designation given to Japanese tanks and the abbreviations used in nomenclatures.

## 50 Swiss Battle Tanks

Prototypes of the Pz 61, the Swiss Army's Main Battle Tank, were built in 1958 and 1959 and pre-production vehicles with a 90mm gun appeared in 1961: they were designated Pz 58. The Pz 58 was then equipped with a 105mm gun and went into production as the Pz 61. The Pz 68 is a further development. The Profile also includes an account of Swiss tanks since World War I.

BY R. M. OGORKIEWICZ.

## 51 The Abbot

The Abbot (FV 433 105mm Field Artillery Self-Propelled) is the first British gun designed specifically for the self-propelled role. It was produced to replace the 25pdr field gun and went into troop service in 1965 when the first regiment to be equipped with it was the 3rd Royal Horse Artillery. This Profile by CHRISTOPHER F. FOSS also includes the Value Engineered Abbot and the Falcon Anti-Aircraft System.

## 52 M47 Patton

by Colonel Robert J. Icks

The tank that missed Korea. M26 } M47 M48  
T42 }

## 53 FV 432

by Christopher F. Foss

The British Army's APC developed from the earlier FV420 series, originally called Trojan.

The publishers reserve the right to alter sequence of list without notice.

FUTURE TITLES WILL INCLUDE:

## Japanese Light Tanks

by Lieut.-General Tomio Hara

Including combat cars and tankettes (to 1945).

## Missile Armed Vehicles

by R. M. Ogorkiewicz

From the earliest installation of the pioneer French SS-10 through various French, British, German and Soviet applications to the American vehicles armed with gun-missile launchers, i.e. M551 Sheridan, M60A1E1, and MBT-70/XM803.

## German Self-Propelled Weapons

by Peter Chamberlain

An illustrated guide to all the SP weapons used by the Germans in World War II.

## French Infantry Tanks, Part I

by Major James Bingham

## French Infantry Tanks, Part II

by Major James Bingham

Having described the tanks used by the French cavalry in AFV/Weapons 36 Major Bingham, in these two Profiles, now examines in equal detail the tanks used by the French infantry from 1919 to 1940.

## SdKfz 250 and 251

by Walter Spielberger and P. Chamberlain

German half-track vehicles of World War II.

## Armoured Personnel Carriers

by Major-General N. W. Duncan

Their development and use in different armies.

## The Twenty-Five Pounder

by Colonel Farrerly, R.A.

The history of the British Army's famous field gun.

## Commando and Twister Armored Cars

by Christopher F. Foss

The multi-mission Commando and the revolutionary Lockheed Twister XM-808.

## AMX-30

by R. M. Ogorkiewicz

France's Main Battle Tank.

## French Armoured Cars

by Major James Bingham

The story of French armoured cars from before World War I until the end of World War II.

## PT-76

by Christopher F. Foss

The Russian amphibious light tank and its many variants.

AFV/Weapons Series 1-42 inclusive 35p each; 43 onwards 40p each.

If you have any difficulty in obtaining Profiles from your local book or model shop please write direct to:

Mail Order/Subscription Department,

PROFILE PUBLICATIONS Ltd, Coburg House, Sheet Street, Windsor, Berks. SL4 1EB

# Profile Books are new, authoritative, well priced

PROFILE BOOK 1  
**Modern US Armored Support Vehicles**  
AFV WEAPONS SERIES  
BY ROBERT J. ICKS, COLONEL, USA RETIRED



## PROFILE BOOK 1

Modern US Armored Support Vehicles  
by Robert J. Icks,  
Colonel US Army Retired.

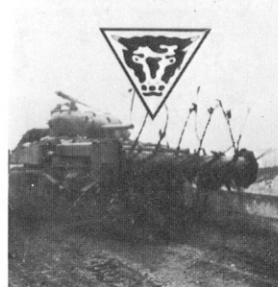
PROFILE BOOK 2  
**British and Commonwealth Armoured Formations (1919-46)**  
AFV WEAPONS SERIES  
BY DUNCAN CROW



## PROFILE BOOK 2

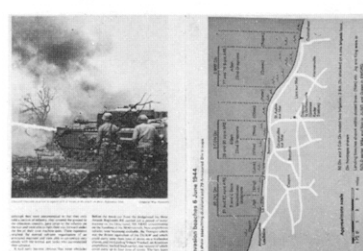
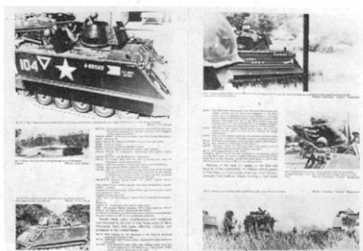
British and Commonwealth Armoured Formations (1919-46)  
by Duncan Crow  
(Editor AFV/Weapons series).

PROFILE BOOK 3  
**79th Armoured Division**  
AFV WEAPONS SERIES  
HOBO'S FUNNIES  
BY NIGEL DUNCAN



## PROFILE BOOK 3

79th Armoured Division. Hobos Funnies  
by Major-General N. W. Duncan,  
CB, CBE, DSO.



Contents include, Armored Personnel Carriers: the T18 (M75) Series; the T59 (M59) and related vehicles; the T113 and subsequent vehicles; the T114 and T117; M107-M110 Series of Self-Propelled Mounts; LVTs since World War II.

Authoritatively written by one of the US leading experts. Profusely illustrated with over 120 pictures, 4 pages of colour drawings. 52 pages. Hard-back binding, with tough laminated coloured covers. 10" x 7½".

SBN 85383 080 0 £1.50.

For the first time in one volume a complete and specific account of the development, organisation, and service history of all the armoured formations in the British and Commonwealth armies from 1919 until the end of World War II, including a short "biography" of each armoured division, armoured brigade, and tank brigade up till 1946. Includes eight pages of colour, showing 75 regimental badges; 31 Brigade signs; 23 Armoured Divisions signs; 27 Corps signs; 10 Army signs and 16 Higher Formations. Plus 96 pages of text including 220 black and white illustrations.

Hard-back binding, with tough laminated coloured covers. 10" x 7½".  
SBN: 85383 081 9 £2.25.

Formed as a normal British armoured Division in 1942, the 79th's role was changed in spring 1943. It became a unique all-armoured formation responsible for the operation of the special purpose armoured equipment that cracked open Festung Europa on the beaches of Normandy in June 1944, and then smashed into the Channel ports, assaulted Walcheren, fought in Operation "Veritable" to clear the Reichswald, and took part in the crossing of the Rhine, the liberation of the Netherlands, and conquest of northern Germany. Excitingly told in this book by Nigel Duncan, who commanded the division's 30th Armoured Brigade.

74 pages, which includes eight pages of coloured maps and diagrams, and 100 black and white illustrations.

Hard-back binding, with tough laminated coloured covers. 10" x 7½".  
SBN 85383 082 7 £1.95.

Note. The contents of Profile Books 1, 2 and 3 are also included in volumes of AFVs of the World series.

All Profile Books are available from your regular Profile stockist. If you have any difficulty in obtaining these books, write direct to the Publishers. Add 20p to your order to cover postage and packing.

**PROFILE PUBLICATIONS LIMITED + HYLTON LACY PUBLISHERS**  
Coburg House, Sheet Street, Windsor, Berks. SL4 1EB.

Publishers of the world-renowned Aircraft, Car, Warship, AFV/Weapons and Small Arms series.