NUMBER 14

M 13/40

MILITARY ZONE

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ARMOUR IN PROFILE

The 3rd Company was chosen for the attack. It was commanded by Captain Vittorio Bulgarelli, a dashing and enthusiastic officer whose manners marked him out among his colleagues—his voice was accented with a French "R" and he wore a monocle—but did not belie his courage. His 19 tanks were ordered forward in single file beneath the rock of Marsa Hamra, the Red Bay, and then out of its cover across two miles of flat, dry lake bed to their objective: the slopes of Hill 33. As soon as they emerged onto that open plain they were met by a hail of fire from 6 Pounder anti-tank guns and 25 Pounders. The company advanced steadily, their tank tracks gripping the damp but firm surface of coarse black sand and salt, and zig-zagging wildly to avoid the shots which gradually came closer. Some tanks were stopped short almost a mile from the Hill. Then the company divided, a number moving southward to climb the ridge under cover of the wadis which ran down from its slopes at that point. The others moved on relentlessly across the plain. One by one they were knocked out, with flames and smoke pouring from their hulls, the rounds inside bursting and crackling. One solitary tank survived and ran on madly and alone. It reached the ridge, ran up and passed over the crest disappearing on the other side where it was destroyed with its crew beyond the objective and behind the Australian lines. Its number plate was RE3700. The names of the four crew are forgotten. *Paolo Caccia Dominioni, Alamein, Longanesi, Milano,* 1966.

Benito Mussolini addressing the Armoured Group "Leonessa" on the turret of an M 15/42 in the Piazza Castello, Milan, 17th December 1944. (Photo: Dott. N. Pignato)

M 13/40

by Dott. Nicola Pignato and Col. Cesare Simula

THUS the former Commanding Officer of the 31st Combat Sappers Battalion, Royal Italian Army, recalls the unsuccessful attack of the M 13 and M 14 tanks of the 3rd/XI Battalion at El Alamein on 10th July 1942. Of the 19 tanks which went into the action, 17 were lost. Dominioni found the M 13/40 No. RE 3700 in July 1949, still lying in a minefield where it ended its heroic charge. He made the tank into a memorial at Hill 33, where it stands to this day, its gun pointed towards Cairo.

The diesel-engined M 13/40 (Medium, 13 tons, introduced 1940) was rated a good but unpretentious tank in the year of its introduction and no more than that could be claimed in its favour as a main battle tank at Alamein in 1942. Yet, despite the progress made in the development of armour by both the German and Allied armies, it remained the backbone of the Italian armoured forces until 1943 when it was at last replaced in production by the much more effective series of Semoventi—assault guns—of which the Semovente 75/18 was the first to appear in 1941 and which were based on the M 13 chassis.

FIRST ACTION

The M 13/40 first saw active service on 9th December 1940 in the Sollum-Halfaya area on the Egyptian border where the Italian Forces had retreated after the British counter offensive. It equipped the III Battaglione Carri M 13/40 commanded by Lt.-Colonel Carlo Ghioldi. R. Graziani in his book *Africa Settentrionale* records that on 16th October 1940 the Italian Army in North Africa had on strength 70 mixed M 11/39 and M 13/40 medium tanks. The first M 13/40s had in fact just arrived in Libya. From this moment it quickly established an unfortunate reputation for mechanical failure although the gun proved an accurate and hard-hitting weapon. Its armour protection was limited but it compared in speed and firepower with the German Panzer III in the same class. It was in fact a fair basic design of its period—1938—compromised by delayed development, inadequate trials and hurried production. A further drawback was that M 13/40 was intended to equip only three companies of the tank battalion, the fourth being allocated the heavy P 40 (26 tons). But because this heavy tank was even more delayed and only went into production late in 1943, the Italian tank battalions remained restricted to only three companies of medium tanks, the M 13/40 being replaced later by the developed and more powerful M 14/41. Operational experience in North Africa soon convinced the Italian Army High Command that it would be a better policy to abandon altogether the production of their own medium tanks and to build under licence in Italy the German Panzer III Ausf. J which appeared in the Spring of 1941. But Hitler's approval was not obtained until 3rd August 1941 and, since production could not start before Spring 1942, the High Command was obliged to order the continuing supply of all medium tanks then in production. Further German offers of plans and machine tools for the Italian production of more powerful German tanks including Panzer IV (17th March 1942) and Panzer V Panther (6th December 1942) were not taken

up apparently due to opposition from Italian heavy industry.

DEVELOPMENT HISTORY

M 13/40 was originally conceived as a tank destroyer armed with the 47/32 gun. It was preceded by M 11/39, a lighter medium tank armed with a 37 mm. gun in a fixed forward hull mounting. In M 13/40 the more powerful 47 mm. gun was mounted in a fully rotating turret and twin Breda 38 cal. 8 mm. machine guns were gimbal mounted in the right hull front. Armour thickness was improved and the latest developments of that time were included in the specification: a coaxial Breda 38 machine gun, anti-aircraft machine gun and radio. The development of this generation of medium tanks was begun in 1938 with the object of arming with a more modern, quick fire weapon the "carro di rottura" (breakthrough tank) of which the first prototype was constructed by Ansaldo-Fossati in 1935. All these vehicles traced their ancestry from the light CV series developed from 1930 on the Vickers Carden Loyd Mk. VI (*Profile* 16).

Late in 1939 General M. Caracciolo di Feroleto was appointed Chief of the Superior Inspectorate of Technical Services, an organisation created to co-ordinate the production of war material. This organisation immediately launched the mass production of M 13 which had been delayed owing to continual demands for new requirements and modifications to the design from the Tank Commission. Because of these delays and the imminence of war General Caracciolo intervened personally to get the tank into production. The prototype appeared on trials early in 1940. The first 15 vehicles were ready by mid-July and 250 had been produced by the end of the year. In 1940–41 a total of 1,902 tanks were ordered of which 800 were completed by July 1941. The first M 13/40s delivered were without radio equipment but, from 1941, every tank had its own Marelli RF 1 CA radio and the command tanks—Carri-Centro-Radio—had RF 1 CA and RF 2 CA with antennae mounted on the right side of the turret.

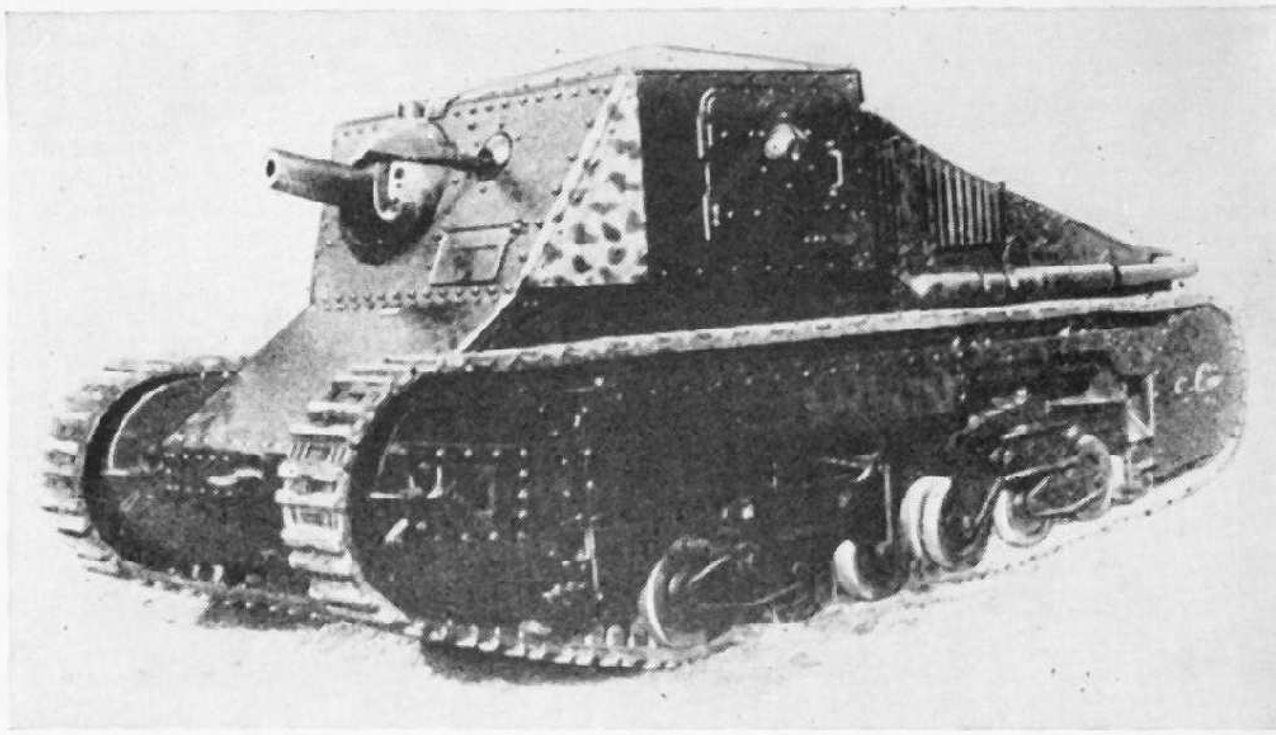
To transport the new M 13 tanks a double-axle trailer was developed by Bartoletti of Forli. This trailer was towed by heavy lorry—either a Fiat 666NM or a Lancia 3/RO. For sea transport, the Italian landing craft (MZ) were used and each vessel could carry four M 13 tanks.

PRODUCTION

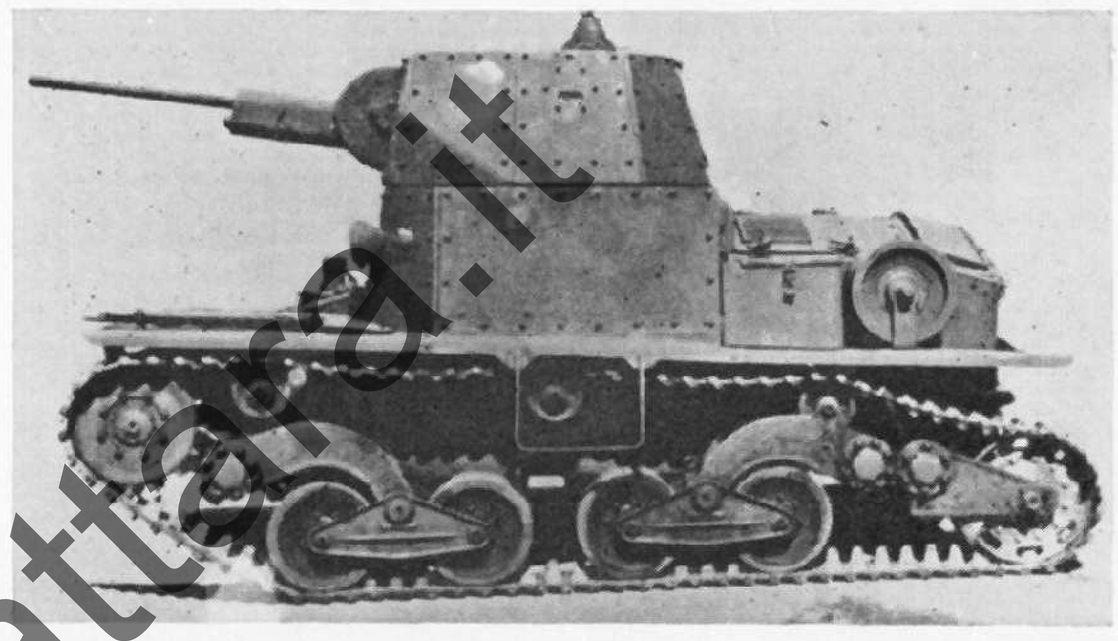
M 13/40 was built in Genova-Sestri by Ansaldo-Fossati while the diesel engine and transmission/steering gear was produced by Fiat-SPA of Turin. It was a relatively slow, underpowered vehicle with a road speed of only 20 m.p.h. and a road range limited to 125 miles. In 1941 it was replaced in production by the modified M 14/41. The original SPA 8T engine—105 b.h.p. at 1,800 r.p.m.—was replaced by the type 15T—125 b.h.p. at 1,900 r.p.m.—and this improved the road speed by 2 m.p.h. and raised the road range by a further 50 miles. One of the principal causes of breakdowns in the desert was alleviated by fitting improved air and fuel filters. They always had full-length mudguards. The vehicle normally carried one spare road wheel (left) and a jack (right) at the rear as standard external stowage.

The M 13/40 and M 14/41 production rate was 65 a month, in addition to the Semoventi also being produced on M 40/41 chassis. From 1940 to 1942 a total of about 2,000 tanks were produced.

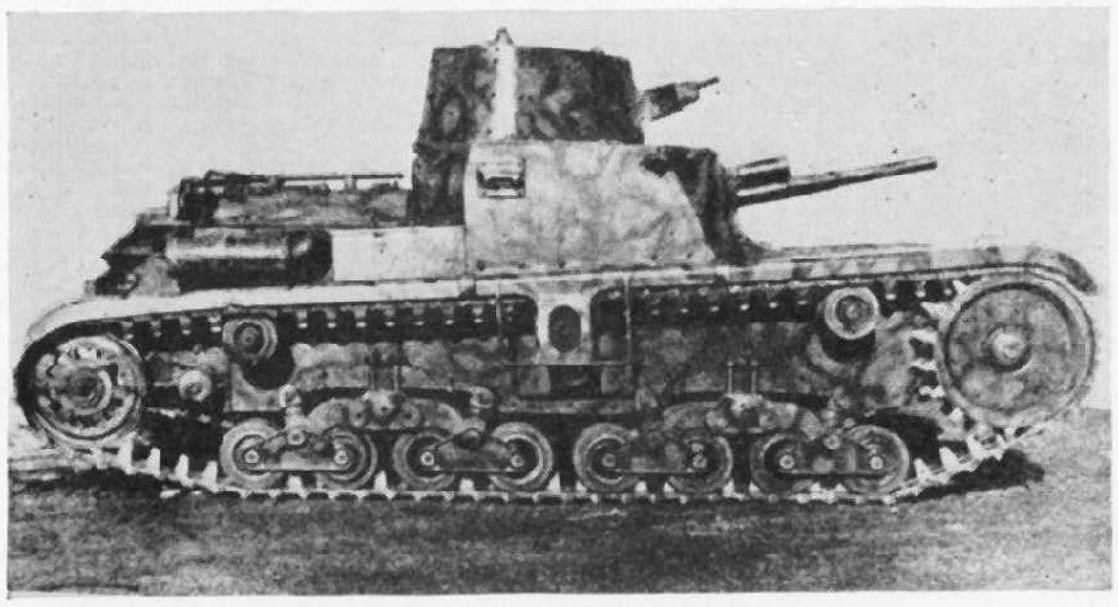
The last development of the series was the M 15/42, but only 82 vehicles of this type were produced in the first two months of 1943. This tank had a 47/40 gun with a muzzle velocity some 30 p.c. greater than the previous model and a new 15TB petrol engine which produced 192 b.h.p. at 2,400 r.p.m. The road speed was 25 m.p.h. and the range 175 miles. It had ammunition stowage for 111 rounds of 47 mm. and 2,640 rounds of 8 mm. The hull rear was slightly modified for the new engine and the vehicle carried two spare road wheels at the rear. Among the external characteristics of this model was the introduction of ventilation louvres on the engine compartment deck



The prototype "carro di rottura"—breakthrough tank—constructed by Fiat-Ansaldo in 1935. (Photo: Col. Simula)



Carro Armato L6 of 1936. (Photo: Col. Simula)



The first of the M series: M 11/39. (Photo: Col. Simula)

Three views of M 13/40 prototype.
(Photos: RAC Tank Museum)

hatches. The jack was fixed to the left-hand front mudguard. The exhaust silencers were covered with armour plate. The vehicle could carry five jerrycans externally and there was a door at the right side. The radio equipment was unchanged but the antennae were improved. The M tank series was finally wholly replaced in production by Semoventi series in March 1943.

DESCRIPTION

The Carro Armato M 13/40 was an armoured full-tracklaying combat vehicle mounting a 47 mm. Ansaldo gun. It carried a crew of four—commander (capocarro) who was also the gunner, loader (porgitore or servente), driver (pilota) and machine gunner (mitragliere). The latter operated the radio which was also accessible to the commander. The internal layout was conventional with a rear engine compartment, centre fighting compartment and driving compartment at the left front with the hull machine gunner at right front with his twin Breda 38 machine guns mounted in a cast armour housing.

The engine was a V-8 liquid cooled diesel unit. The transmission to the front drive sprockets was through a clutch, propeller shaft and main gearbox which included reduction gears in M 13 and M 14. Steering and braking was achieved through an epicyclic differential unit located in the hull front. The suspension on each side consisted of four double-wheeled articulated bogies mounted in two assemblies each carried on semi-elliptic leaf springs and the upper track run was carried on three return rollers.

The hull structure consisted of a steel frame onto which the 25 mm. standard armour plate was bolted. The engine compartment was separated from the fighting and driving compartments by a bulkhead. The front of the hull at the nose was rounded and constructed of rolled armour plate.

THE TURRET

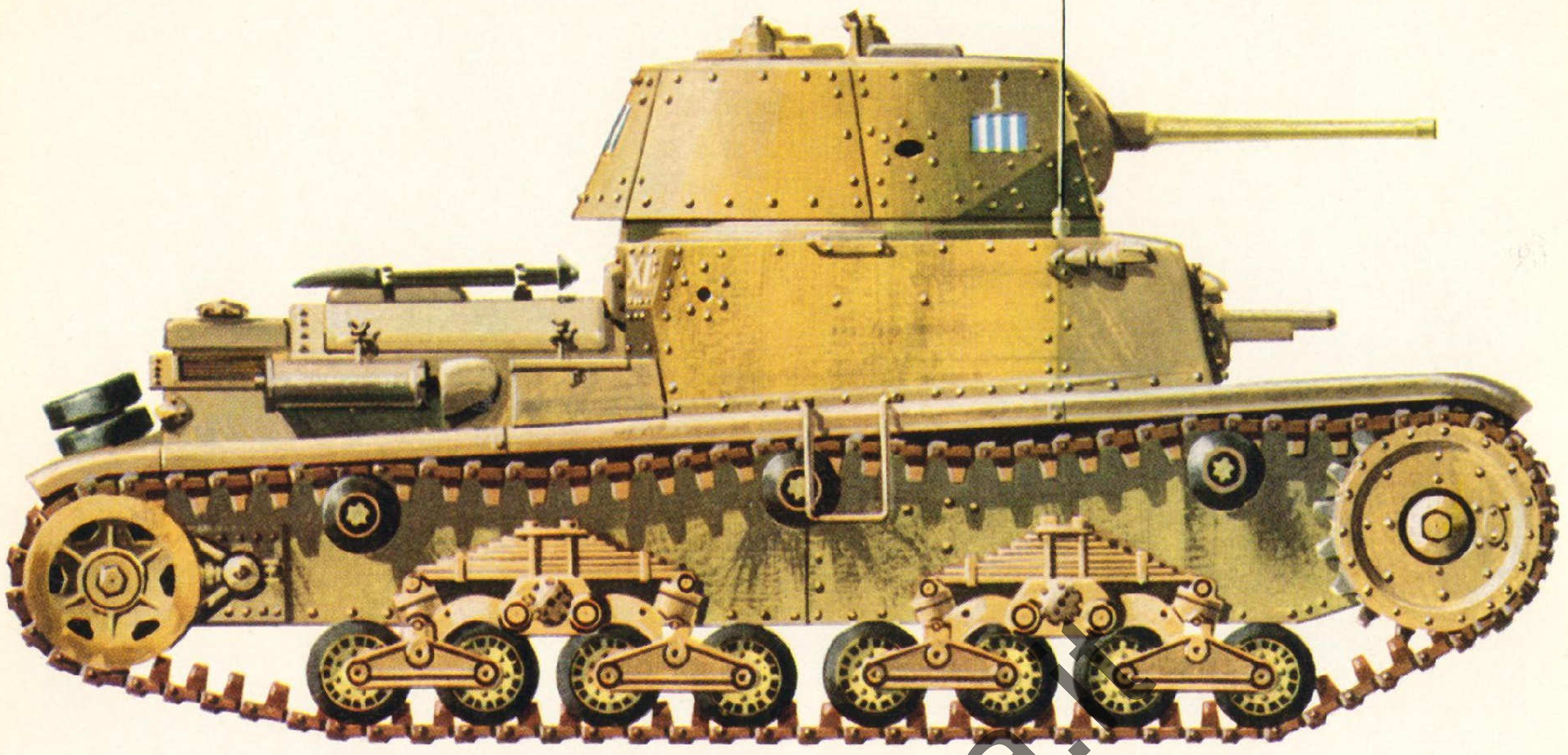
The turret was also constructed of armour plate bolted onto a steel frame. It was mounted on a continuous ball-bearing race and could be traversed through 360° by means of a hydrodynamic or hand traverse mechanism. The commander was seated on the right side and the loader on the left. It was one of the drawbacks of M 13 that it had only a two-man turret, the commander having to operate the main armament in addition to his other duties. The commander was provided with a telescope for sighting the turret weapons and there were two periscopes in the turret roof, one on either side. A Breda 38 machine gun was mounted in the mantlet coaxially with the main armament, a 47/32 Ansaldo semi-automatic gun. A Breda 38 anti-aircraft machine gun was also mounted in a bracket in the turret roof. It could only be elevated and fired if the roof hatches were open and it was operated by the loader. The gun mantlet was fixed and the 47 mm. gun and coaxial machine gun were carried on a common mounting which was elevated or depressed by a hand-operated mechanism on the right-hand, commander's side of the mounting. This type of gun mounting which required two deep, slotted apertures in the mantlet to allow for elevation of the guns left this vulnerable frontal area seriously unprotected and open to bullet splash which was, all round, a weakness of M 13.

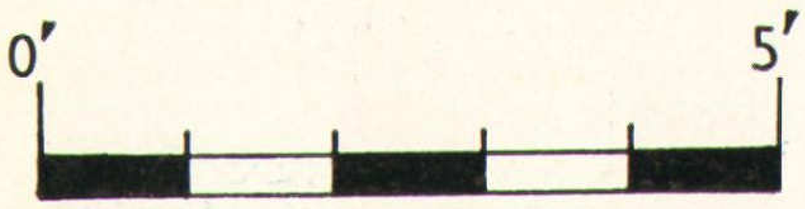
The access and escape hatches fitted to M 13 were limited and faced the crew with demoralising difficulties, particularly in an emergency. To enter the tank

M 13/40 No. RE 3704 in the Western Desert. (Photo: Imperial War Museum)

the crew had to follow a precise routine. The driver used the large door on the left side of the fighting compartment below the turret. The hull gunner entered next by climbing onto the turret and using the right-hand roof hatch. He was followed by the commander/gunner who could then occupy his seat on the right-hand side of the turret. The loader entered last through the left-hand turret roof hatch.

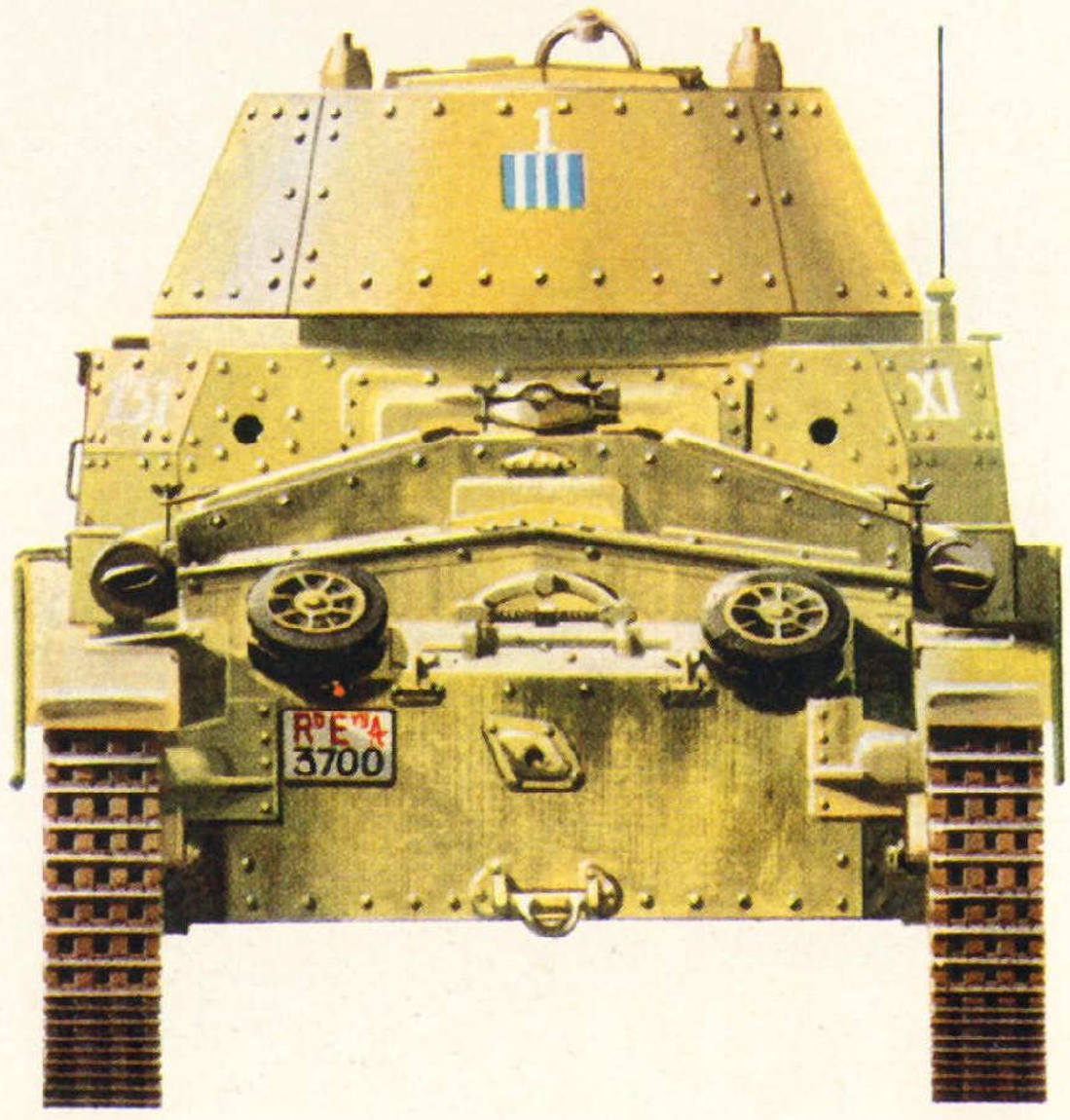
M 14/41 No. RE 4694 in the Western Desert. *(Photo: Imperial War Museum)*

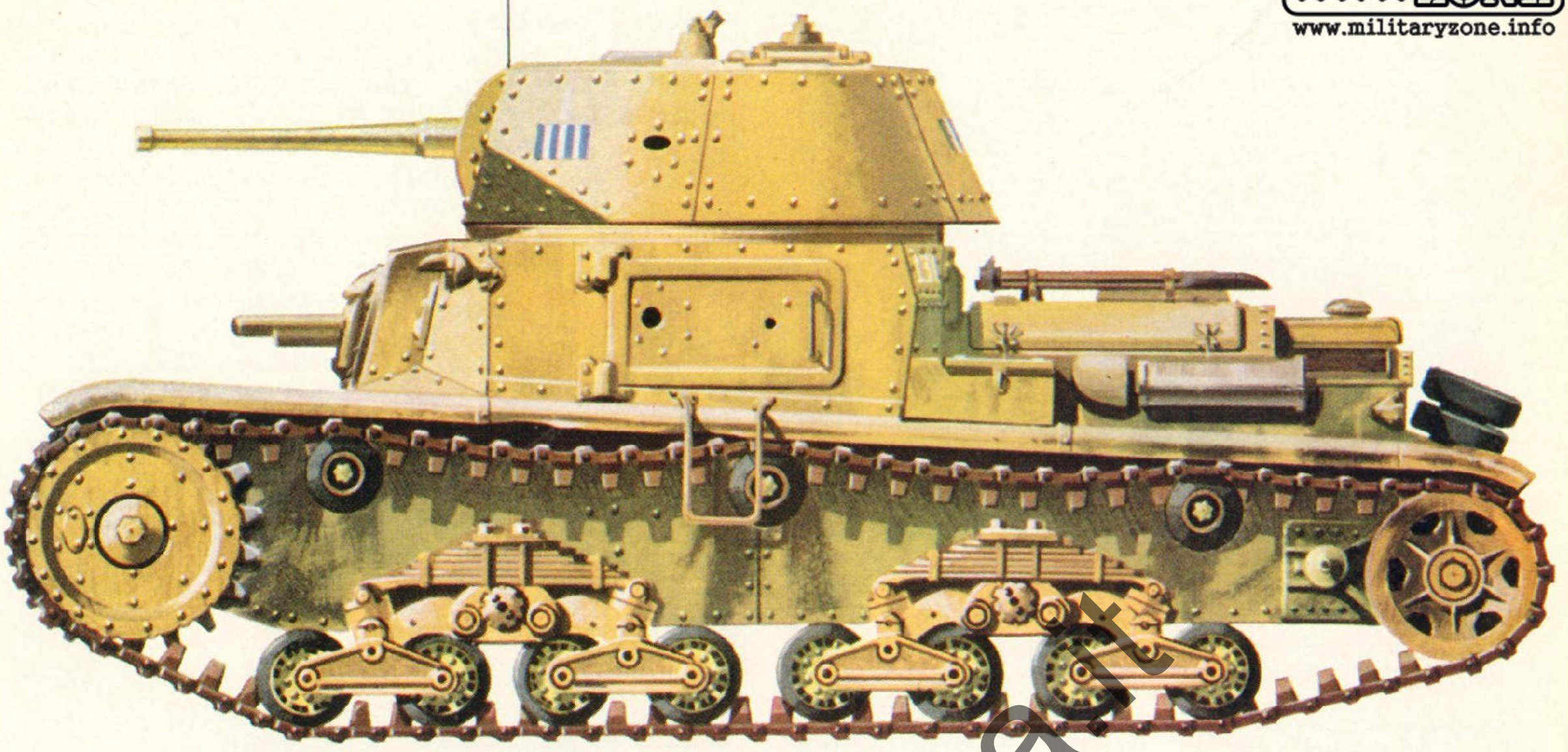


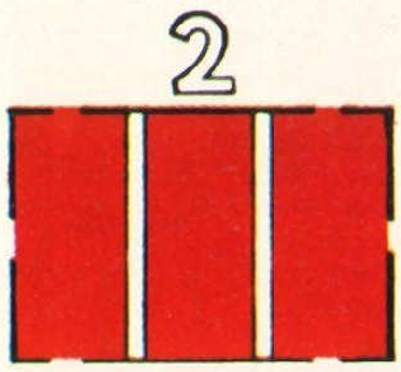


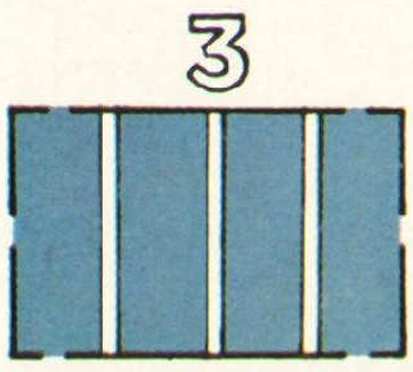
FIAT-ANSALDO M 13/40

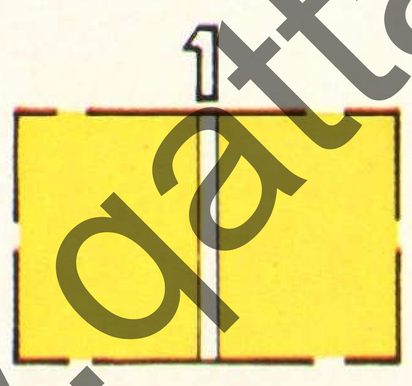
This tank stands today as a memorial in the Western Desert on Hill 33 at El Alamein. In this painting it carries the insignia of Tank No. 1, 3rd Ptn., 2nd Coy., XI Bn., which differ slightly from its position in its last action on 10th July 1942 (see page 2).







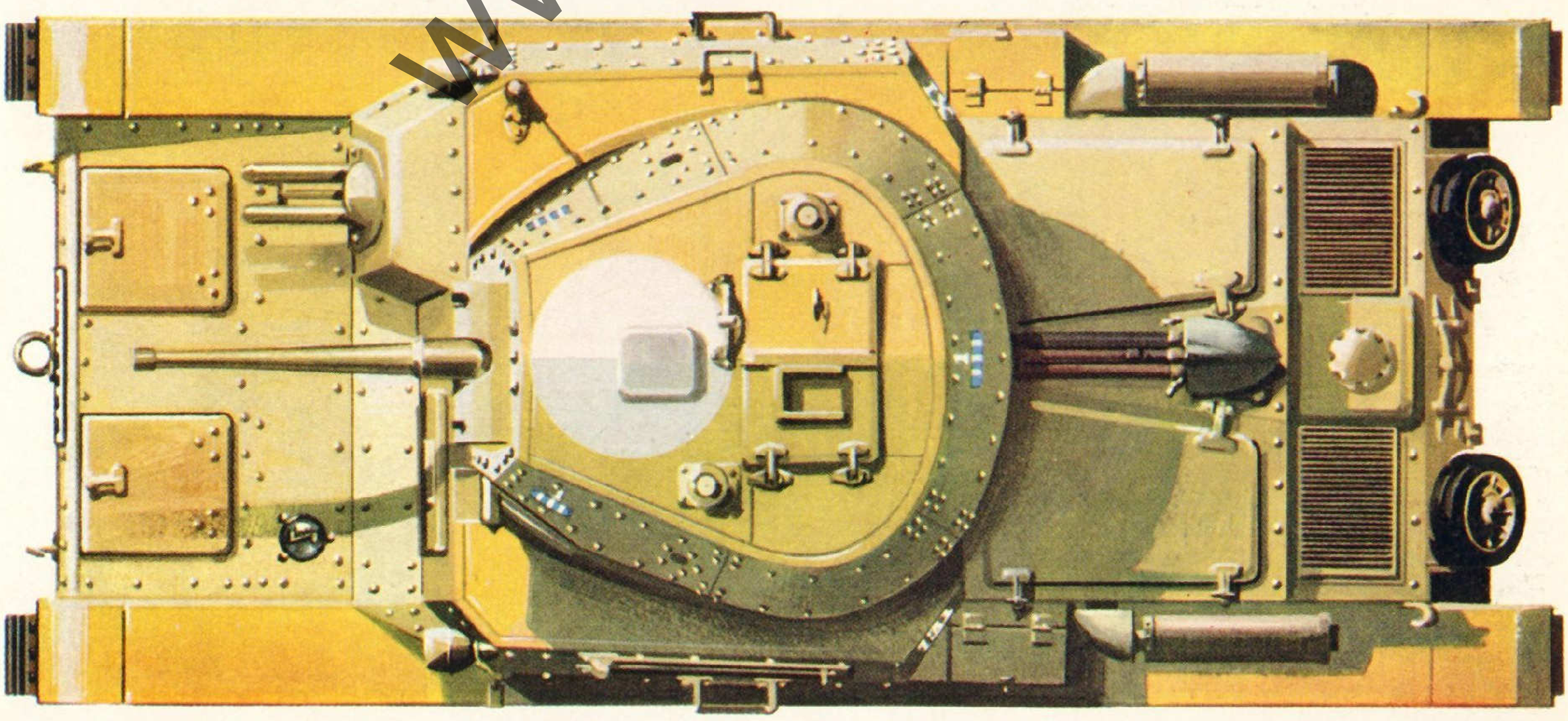


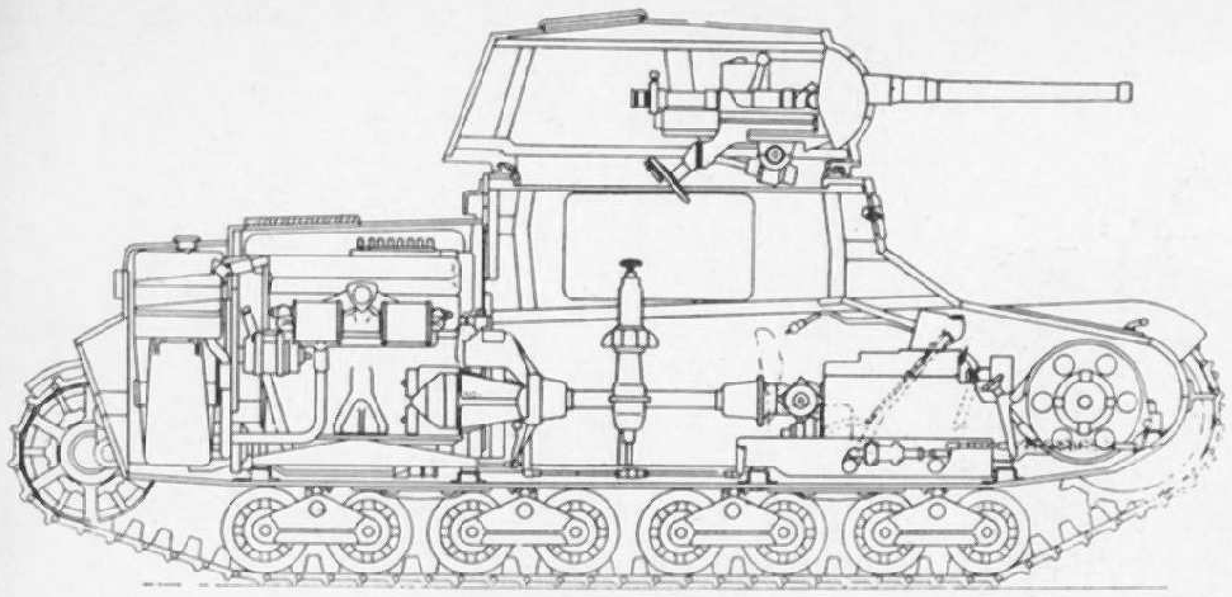


Left to right: Red = 1 Coy.; stripes = 2 Ptn.; 2 = No. 2 tank; Blue = 2 Coy.; stripes = 3 Ptn.; 3 = No. 3 tank; Yellow = 3 Coy.; stripes = 1 Ptn.; 1 = No. 1 tank.

Standard Italian Army AFV number plate.

Insignia of Ariete Division.





Sectional diagram of M 13/40.

MARKS AND HYBRIDS

The prototype M 13/40 incorporated many of the parts of the lighter, 11 ton M 11/39. Among the different external features of this was a vision slit in the rear of the turret and the forward projecting fixed housing for the twin Breda 38 hull machine guns was constructed of sharply angled, bolted armour plate. Variations and developments of the M 13/40 chassis were as follows:

Semovente Comando M 40 (turretless command vehicle)	1941
Semovente 75/18 (assault gun) based on Carro M 40	1941

Variations on M 14/41 chassis were:

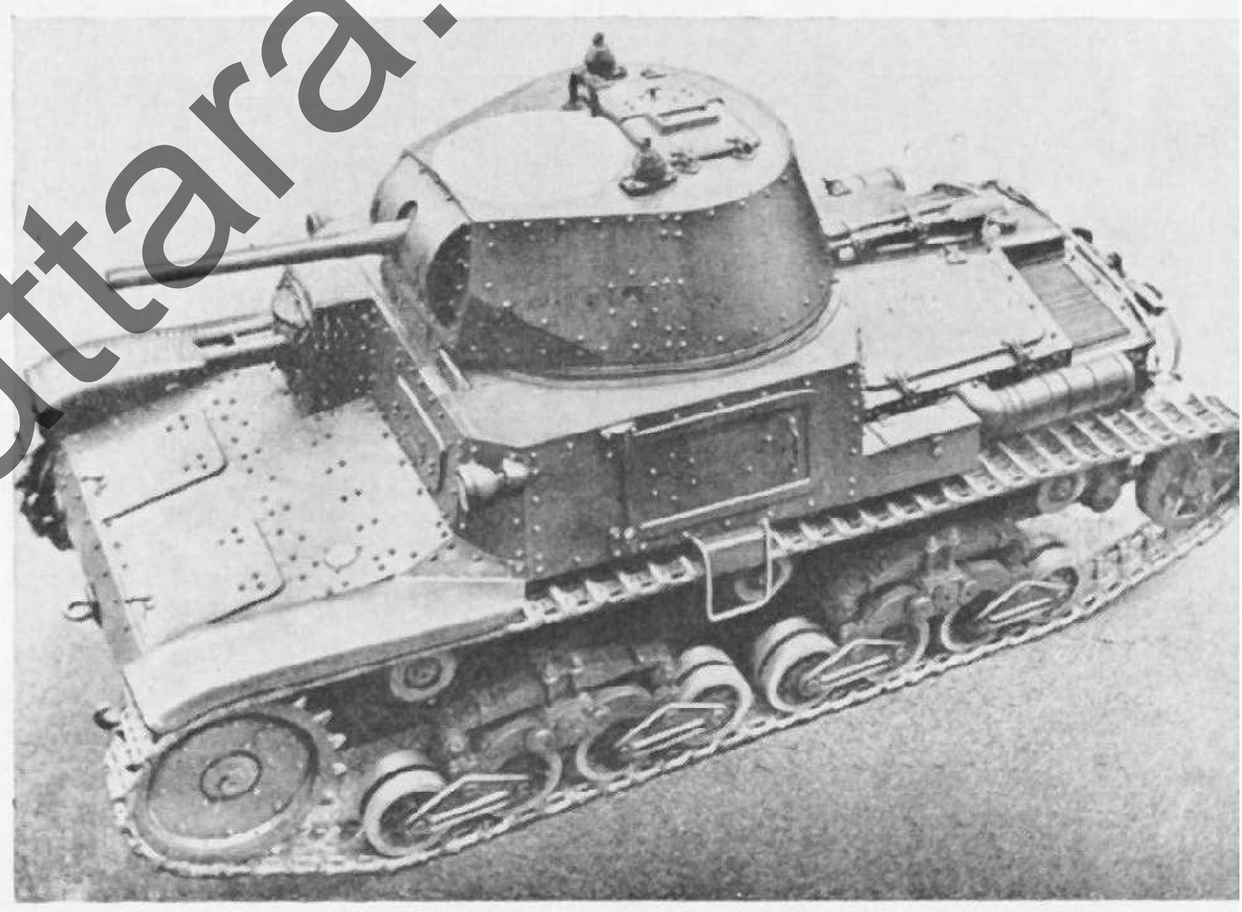
Semovente 75/18 (assault gun) based on Carro M 41	1942
Semovente Comando M 41 (command vehicle for assault gun)	1942
Semovente 90/53 (tank destroyer) based on Carro M 41	1942

Variations on M 15/42 chassis were:

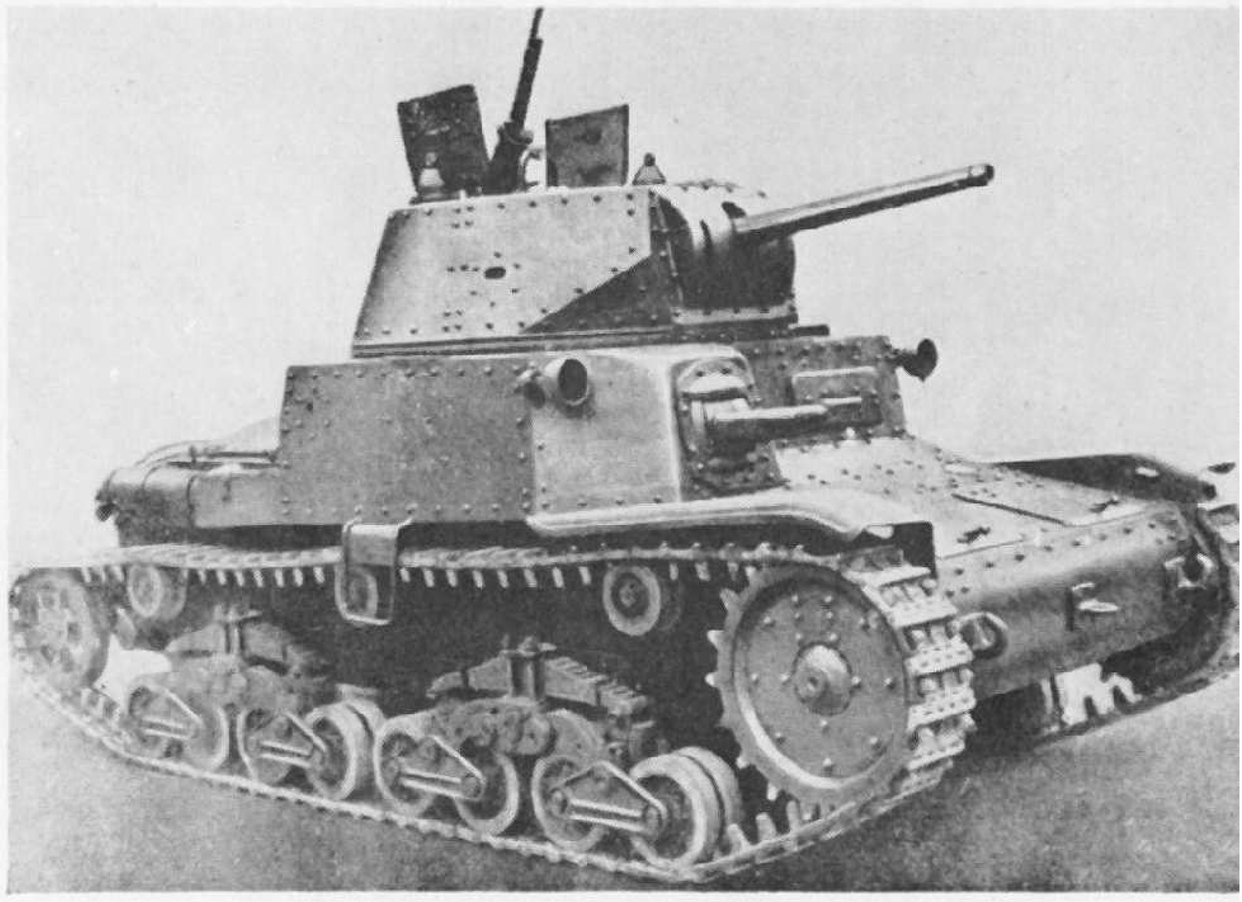
Semovente 75/18 (assault gun) based on Carro M 42	1943
Semovente 75/34 (assault gun) based on Carro M 42	1943
Semovente 75/46 (assault gun on M 42 enlarged) based on Carro M 43	1943
Semovente 105/22 (assault gun on M 42 enlarged) based on Carro M 43	1943
Semovente 149/12 and 149/13 (studies) based on Carro M 42	1942
Semovente Comando M 42 and M 42 per Aerocooperazione	1943

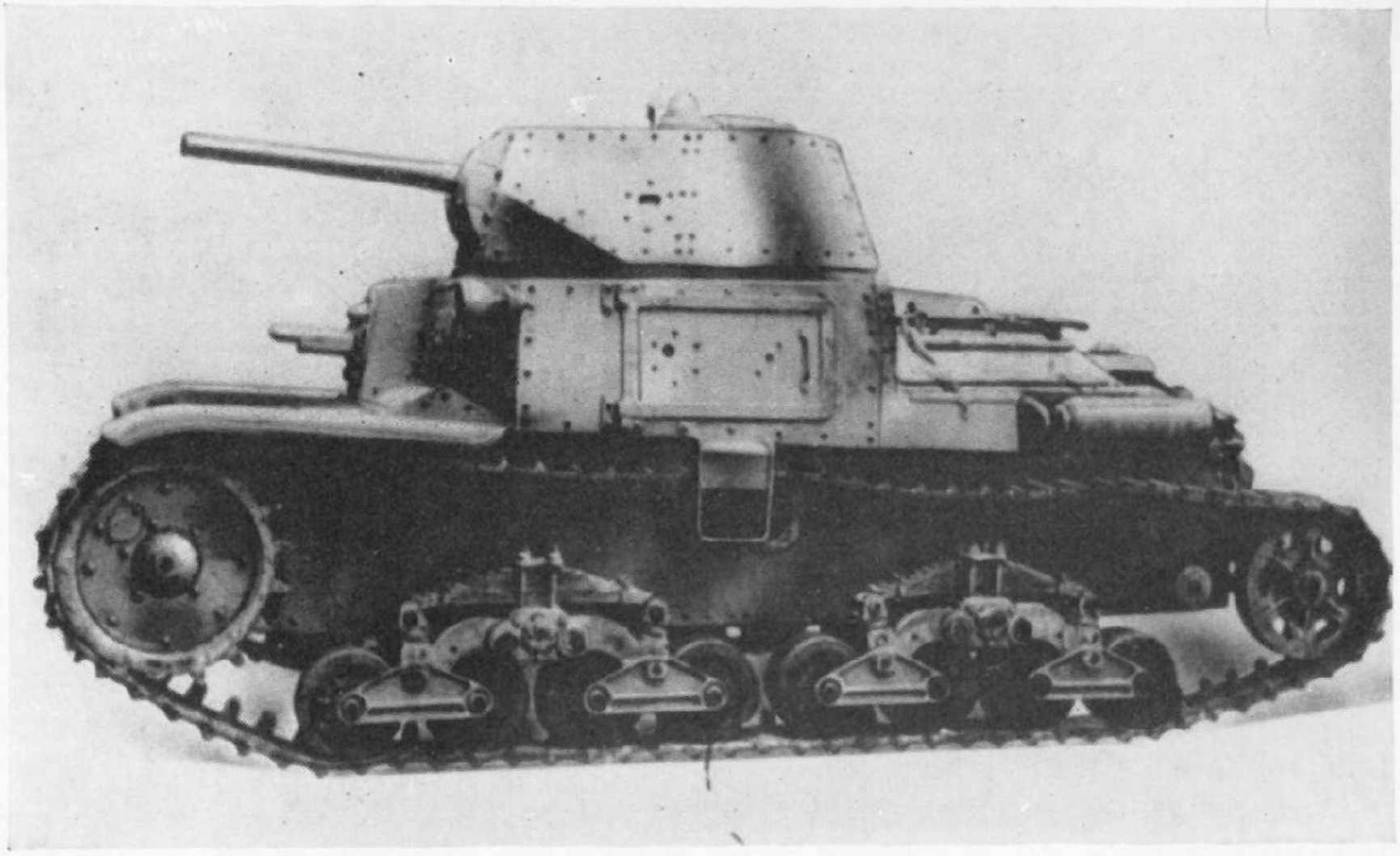
M 13/40 IN SERVICE

At the time of the introduction of M 13/40 the Italian armoured division consisted of one regiment of three medium tank battalions, an anti-aircraft company equipped with Breda 20 mm. guns and one officina or repair and recovery company. The battalion had 50 M tanks, 90 lorries and 600 men. This basic tactical unit was divided into three companies each with three platoons of five tanks and there were additional command tanks at company and battalion level. A handbook, *The Employment of Armoured Units* published by the Italian Army in 1940 stated that M tank units were to be used "offensively, in mass and by surprise." Up to that time the tank units had also been trained to operate in precise formations. These formations were based on the platoon unit but could be multiplied in these units to make company or battalion formations. They were clearly based on earlier cavalry drills. The formations were: column—tanks in line astern and used tactically for movement from one locality to another; V—this wedge formation was recommended for use when the battle situation was uncertain; line abreast and echelon—these formations were recommended for attack and assault. The actual war in the desert, however, faced the commanders with very different circumstances that those which they had been trained to expect. The minefields frequently prohibited idealised formation movements; the open desert made massed, surprise attacks almost impossible to achieve, and the tanks had to be prepared to group defensively against all-round attacks; frontal attacks, if attempted, frequently faced well fortified and defended areas. Above all the superiority of the enemy tanks—particularly in their speed and armour protection—and the unexpected requirement for defensive deployments showed up the inadequacies of the relatively slow, lightly armoured M tanks which were basically



Three outstanding detail views of M 13/40. Note the stowage, short mudguard and angled rear corners of the fighting compartment which are characteristic of this Mark.
(Photos: Col. Simula)





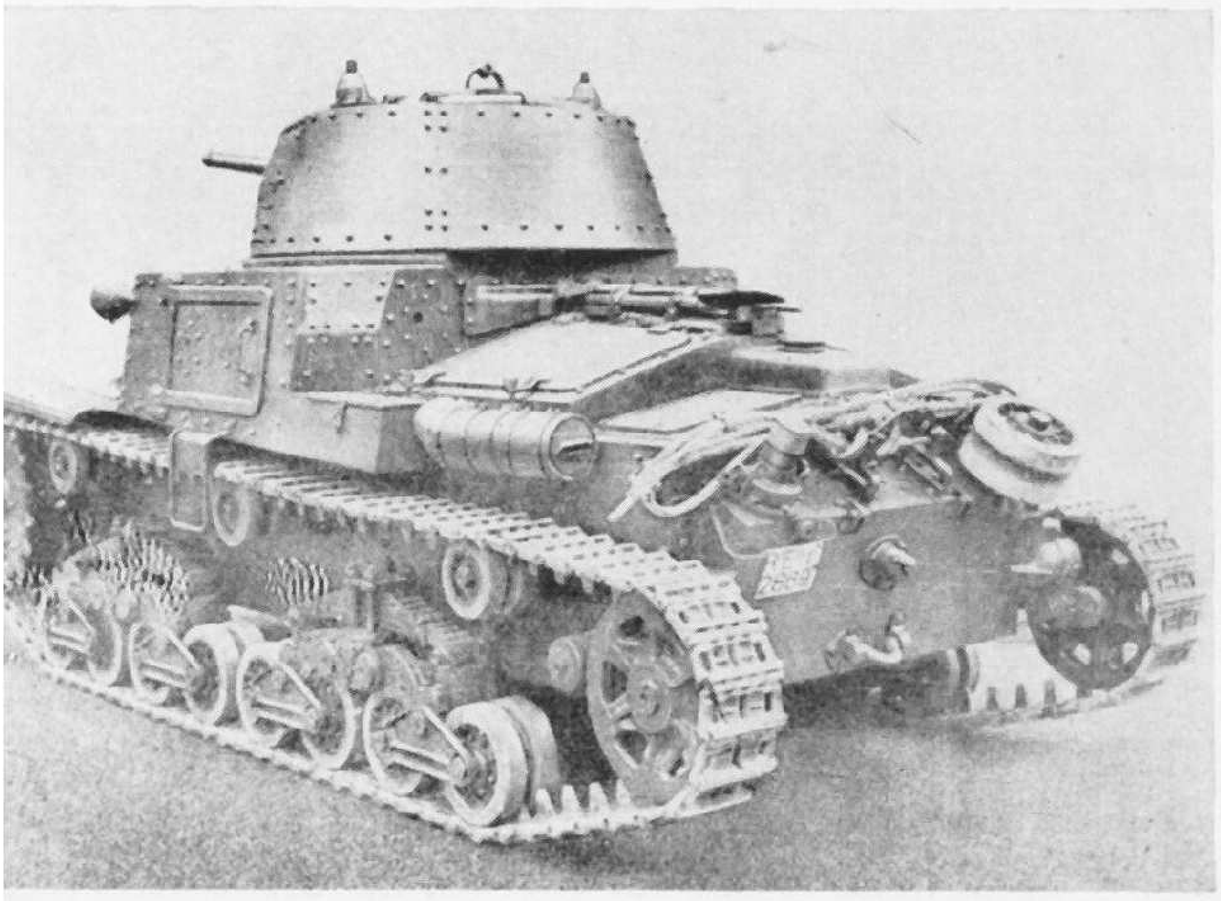
M 13/40 with modifications to M 14/41 standards.
(Photo: Fiat)

designed with other requirements in mind. In the event, the cross-country formation more frequently adopted was line abreast, but slightly semi-circular to ward off surprise on the flanks. In attack, the M tanks moved forward in waves whose size and strength was largely governed by the availability of serviceable vehicles at the time. The M tank battalion normally attacked in three company waves on a narrow 400-yard front. Where the attack was organised in two waves the front would be widened up to 1,000 yards with two companies in the first wave and one in the second.

Following its introduction in Libya in October 1940, the M 13 was also used in the Balkans from January 1941. British Commonwealth forces also acquired considerable battle experience of the M tanks in units which they formed from captured vehicles. A total of 73 light and medium tanks were captured at Sidi Barrani on 12th December 1940 and of these 16 mixed M 13/40 and M 11/39 were put in working order by the Sixth Australian Cavalry who equipped three squadrons—Dingo, Rabbit and Wombat—with these vehicles supported by Bren carriers. These vehicles were conspicuously marked for identification with white kangaroos painted on the sides, front decking and turrets backs. They were used notably during the attack on Tobruk in January 1941.

A month later General Wavell's successful, lightning offensive drive westwards overran 112 M tanks at Beda Fomm, most of which were in perfect condition having been abandoned by their crews mainly because of fuel shortages. This windfall was used to equip 6th Royal Tank Regiment. On 5th April they faced the first offensive of Rommel's Afrika Korps at Musus where the Regiment ran out of diesel fuel and lost the majority of their tanks which were destroyed. Those that escaped were abandoned and destroyed as they ran out of fuel one by one during the chaotic retreat before Rommel's vastly superior Panzer forces. The British, like the Italians, found the M 13/40 to be a slow and uncomfortable vehicle. It was already underpowered for its design weight of 14 tons and this weight was often increased to over 15 tons by the troops in battle who attempted to augment the poor armour protection with track plates and sandbags. Because their diesel fuel was also scarce the tanks often had to carry additional supplies in jerrycans. Only the gun won praise for its accuracy and armour piercing capability which was above the average of the under-gunned British tanks of that time.

Although outclassed by most contemporary German and Allied tanks the M tank was still considered effective against infantry until 1942 and, in spite of all its faults, it was both numerically and tactically the most important Italian tank of World War II. The Semoventi evolved on its chassis were most successful and are considered the best Italian armoured fighting vehicles of the period.



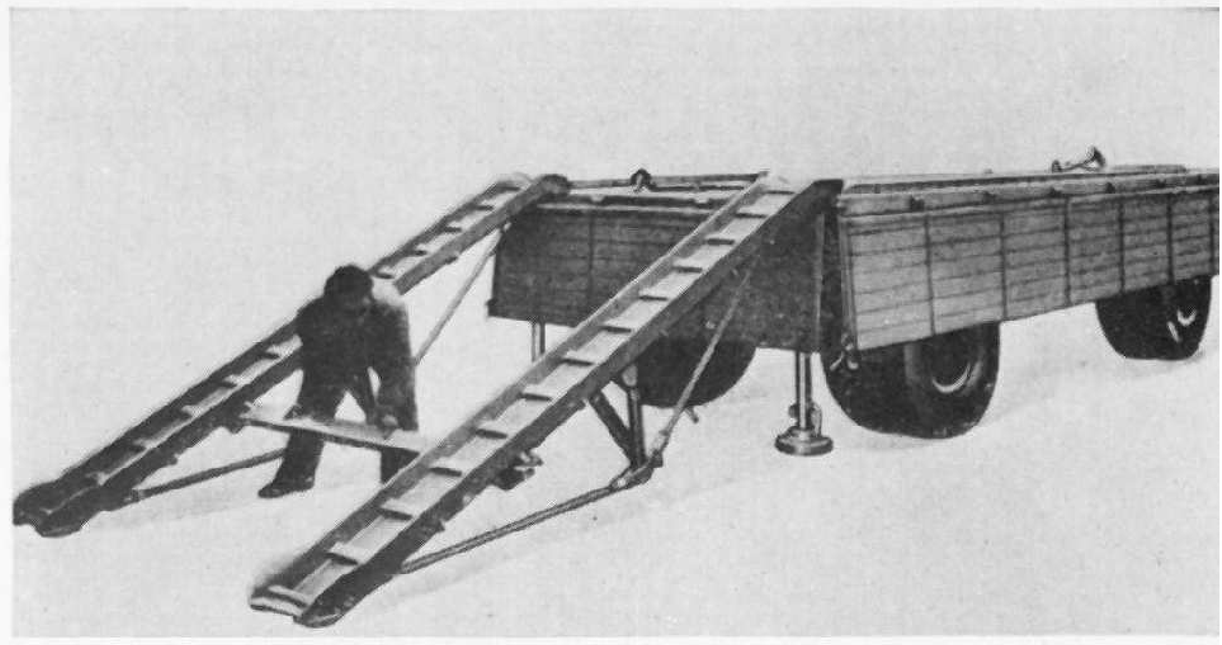
UNITS AND ACTIONS

ROYAL ITALIAN ARMY
(Regio Esercito Italiano)

M 13/40

Rgt.	*Division*	*Battalion*	*Battle*	*Place*	*Date*
31st	"Centauro"	IV	Kalibaki	Greece	Jan. 41
			Kopliku	Yugoslavia	Apr. 41
32nd	—	III		Libya	Dec. 40
					Feb. 41
			Montenegro	Yugoslavia	Jun. 41
		V		W. Desert	Feb. 41
3rd	—	VI, XXI		W. Desert	Feb. 41
132nd	"Ariete"	VII-VIII-IX	Bir el Delena	W. Desert	Nov. 41
			Bir el Gobi	W. Desert	Nov. 41
			Sidi Rezgh	W. Desert	Nov. 41
			Ain el Gazala	W. Desert	Dec. 41

			Rughet el Atash	W. Desert	May. 42
			Capuzzo-Hacheim	W. Desert	Jun. 42
			Tobruk	W. Desert	Jun. 42
			El Qattara	Egypt	Aug. 42
			El Alamein	Egypt	Nov. 42
133rd	"Littorio"	X, XI, XII XIII	El Alamein	Egypt	Nov. 42
	—	LI	Ain el Gazala	W. Desert	42
			M 13/40 and M 14/41		
133rd	—	XI	El Alamein	Egypt	Jul.–Nov. 42
			M 14/41		
31st	"Centauro"	XIV, XVII	Mareth	Tunisia	Mar. 43
31st	"Centuaro"	XV	Sardinia		May 42
133rd	"Littorio"	X	Bir el Abd	W. Desert	Nov. 42
32nd	—	XVI	Sardinia		May 42
			M 15/42		
Lancieri di V.E.II "Ariete II" (3 companies of this Cavalry Regiment)			Rome	Italy	Sep. 43



Trailer for transporting M tanks. *(Photo: Bartoletti)*

BRITISH ARMY

M 13/40 (captured)

6th Australian Cavalry, some tanks M 13—Tobruk, W. Desert, January 1941.

6th Royal Tank Regiment, 112 tanks M 13—Musus, W. Desert, April 1941.

ESERCITO DELLA R.S.I.

(Army of the R.S.I., Northern Italy, 9th September 1943–30th April 1945)

Gruppo Corazzato "Leoncello", Milano, Italy, April 1945.

Gruppo Corazzato GNR "Leonessa", Valdossola, Italy, September 1944.

Three views of M 15/42. Note the larger gun, access hatch moved to right side and modified rear hull.
(Photo, left: Fiat). (Photo, right: Dott. N. Pignato). (Photo, below: Dott. N. Pignato)

(These Armoured groups were partially equipped with M tanks.) An M tank company was also included in the Cavalry Group "S. Giusto" and another in the Cavalry Group of the Raggruppamento Reparti Anti-Partigiani.

Note: A number of M tanks is still extant: one at Bovington, U.K. (Tank Museum, M 13/40); One at Aberdeen Proving Ground, U.S.A. (Ordnance Museum, M 13/40); A few M 14 and M 15 in Italy, some in running condition.

COLOUR SCHEMES AND MARKINGS

In marked contrast with the armoured forces of other nations during World War II the Italian tanks appeared in definitive colour schemes and precise unit markings. The first series of M tanks built in 1940–41 were all painted grey-green. When shipped to Africa they were camouflaged with a base of sand yellow and from February 1941 they came off the production line in this basic desert colour. The M 13/40 prototype was painted in the M 1939 standard of red rust overall with dark green vertical stripes. When the M tanks first appeared in the desert the company/platoon identification mark *see painting pages 6 and 7*) appeared on the hull sides and on the rear right. The number of the battalion was placed over the unit sign in Roman figures and the number of the tank in the platoon underneath. The number plate was on the rear left. From February 1941 the markings were as shown in the painting with the addition of a white air identification disc which was originally painted over the engine decking and later on the turret roof. It was at this time that the number plate was added to the front nose plate.

MARKINGS OF COMMAND TANKS:

3 Companies battalion: Red—Sky-blue—Yellow.
2 Companies battalion: Red—Sky-blue.

COMPANY MARKINGS:

1st:Red; 2nd: Sky-blue; 3rd: Yellow; 4th: Green.

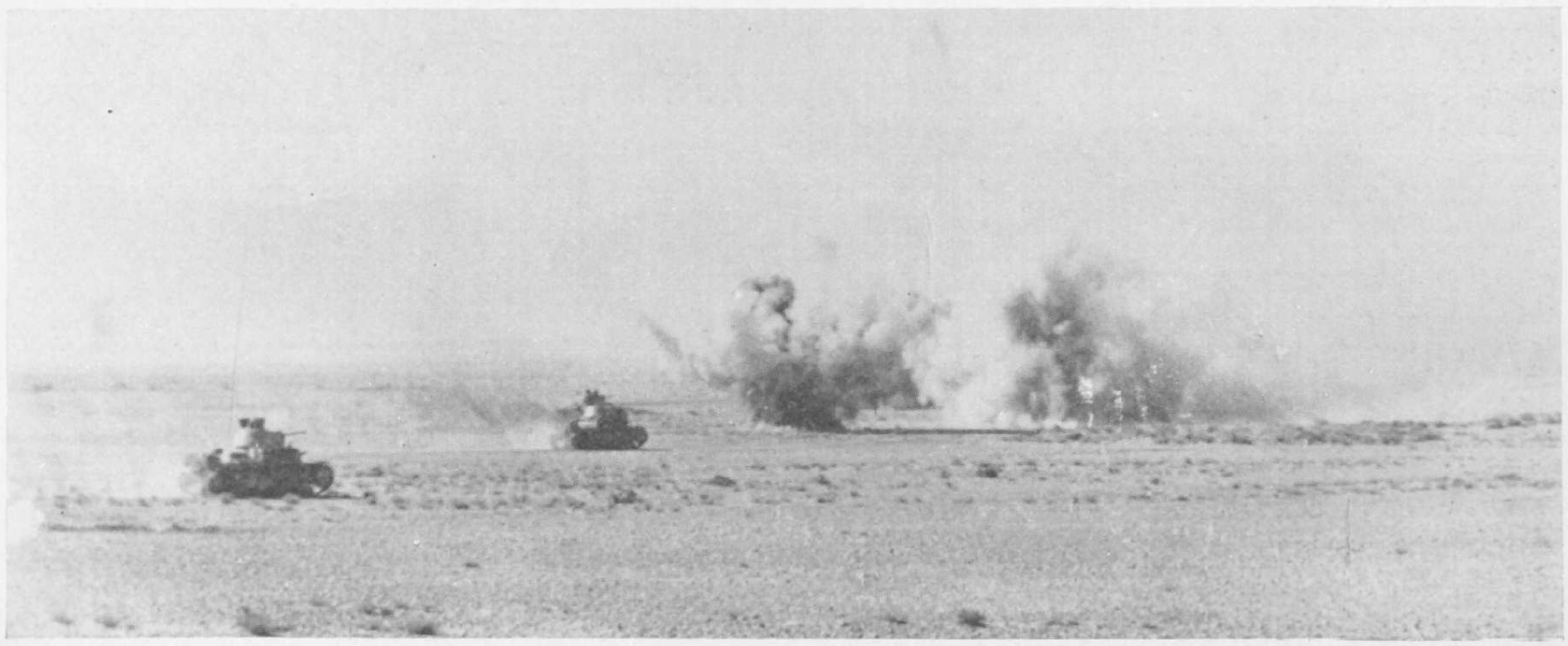
COMMAND BATTALION COMPANY TANKS:

Black.

COMMAND REGIMENT COMPANY:

White (Black platoon bars instead of white)

M 13/40s of the Ariete Division in column and in action in the W. Desert 1942.
(Photos: Col. Simula)



M 13/40 of the Ariete Division entering the recaptured port and garrison of Tobruk, June 1940. *(Photo: Col. Simula)*

Column of M 13/40 on trailers, W. Desert 1942. The tractors are Lancia 3/RO.
(Photo: Dott. N. Pignato)

SPECIFICATION M 13/40

General
Designation: Carro Armato tipo M 13/40.
Crew: Four—commander, loader, driver, hull gunner.
Battle weight: 14 tons.
Power/weight ratio: 8.92 b.h.p./ton.

Dimensions
Length overall: 16 ft. 2 in.
Height: 7 ft. 10 in.
Width: 7 ft. 4½ in.
Track centres: 6 ft. 2½ in.
Track width: 10¼ in.
Ground clearance: 1 ft. 3 in.

Armament
Main: One 47/32 Ansaldo semi-automatic gun in turret, one co-axial Breda 38 cal. 8 mm. machine gun.
Auxiliary: Two gimbal mounted Breda 38 cal. 8 mm. machine gun in the front hull; one Breda 38 cal. 8 mm. A.A. machine gun in the socket bracket on turret roof or in reserve.

Fire Control
Main: Traverse 360° oleodynamic servo mechanism or hand; hand elevation 30° (from —10° to +20°); telescopic sight.
Auxiliary in the hull: Traverse 30°, elevation 30° (from —10° to +30°); telescopic sight.

Ammunition
47 mm. AP and HE: From tank No. 0652 to 0751: 104 rounds.
From tank No. 0752 on: 87 rounds.
8 mm.: 3,048 rounds (137 magazines).

Sighting and Vision
One episcope (for the driver) and two periscopes (for the commander). Additional direct vision slits were provided on either side of the turret, in the hull access hatch and the driver's port which could be fully opened by hand.

Communications
Intercomm. (radio-operator-commander); radio set "Magneti Marelli" RF 1 CA.

Armour
Riveted and bolted plates; machine gun twin mounting cast armour.
Hull: 30 mm. rounded, front glacis 25 mm./81°, driver's plate 25 mm./11°, upper sides 25 mm./9°, lower sides 25 mm./90°, rear 25 mm./9°, deck 14 mm./0°, and floor 6 mm./0°.
Turret: front 42 mm./16°, sides 25 mm./22°, back 25 mm./22°, top 14 mm./85°.

Engine
Make: SPA 8T (M 13/40) Diesel; V-8 cyl.; 11,140 litres; 105 b.h.p. at 1,800 r.p.m.
Fuel: Main tank 33 gal., auxiliary tank 9 gal.

Transmission
Gearbox: Fiat 8 F2 R, splined shaft and sliding gears: four forward, one reverse speeds plus reduction gear unit. Hand-controlled by a ball-lever on the right hand side of the driver.
Conic gear combination (ratio 32/11—1,193); two epicyclic gear groups ratio 1.375); two external cylindrical gear combinations; two sprockets (front), with 18 teeth (double)
Transmission shaft (from rear to front).

Tracks and Suspension
Two iron tracks, mono-link model, with central fin and two rectangular side holes for the front sprocket teeth.
No. of links: 84.
Track length: 34 ft. 8 in.
Track width: 11 in.
Track on ground: 9 ft. 5 in.
Two front sprockets fixed to the tank sides by two pins, locked by rivets.
Two track compensating wheels; fixed to the rear of the tank by two pins locked by hubs. Each wheel has a turnbuckle.
Six track support, tyred rollers (three each side).
Four suspension bogies (two each side), independent and mounted on semi-elliptic leaf springs.

Electrical System
Eight batteries Marelli 3 MF, in parallel—24 volts.
Two generators, Fiat 300 watts.
Two starter motors, Fiat 24.

Performance
Max. road speed: 20 m.p.h. Cross-country: 9 m.p.h.
Max. gradient: 40°.
Vertical obstacle: 2 ft. 11 in.
Wading depth: 3 ft. 3 in.
Fuel consumption: 3 m.p.g.
Road range: 125 miles. Cross-country: 10-12 hours.

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