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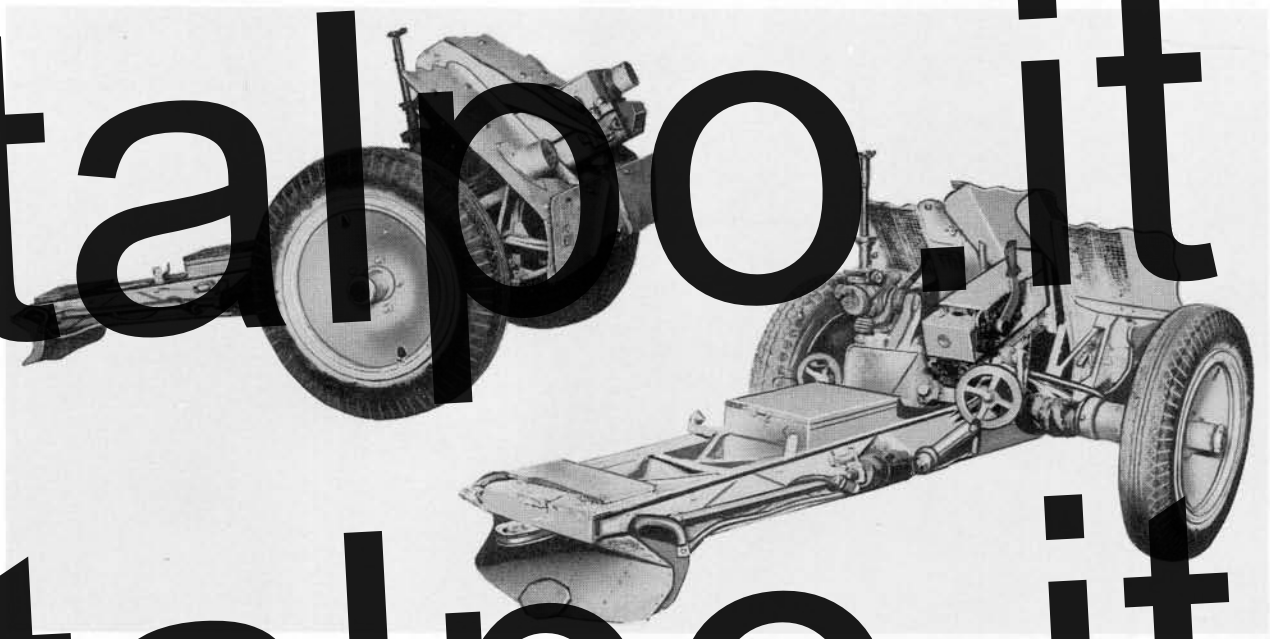
FOREIGN MILITARY WEAPONS AND EQUIPMENT (U)

VOL I. ARTILLERY (U)

SECTION IV. OTHER COUNTRIES

75-mm Light Infantry Gun M18

(7.5 cm Leichtes Infantry Geschütz 18 (7.5 cm Le. I. G. 18))



This weapon was developed by Rheinmetall-Borsig in 1927 and was the first of a series of new infantry support pieces. It is of a rather novel design, the tube being totally enclosed in a square housing having a fixed breech block. To load the weapon, the tube is tilted up clear of the breech block by the operation of a lever.

The gun is mounted on a light box trail carriage and is equipped with either wooden spoked wheels in the horse-drawn version, or with disc wheels and pneumatic tires in the motorized version.

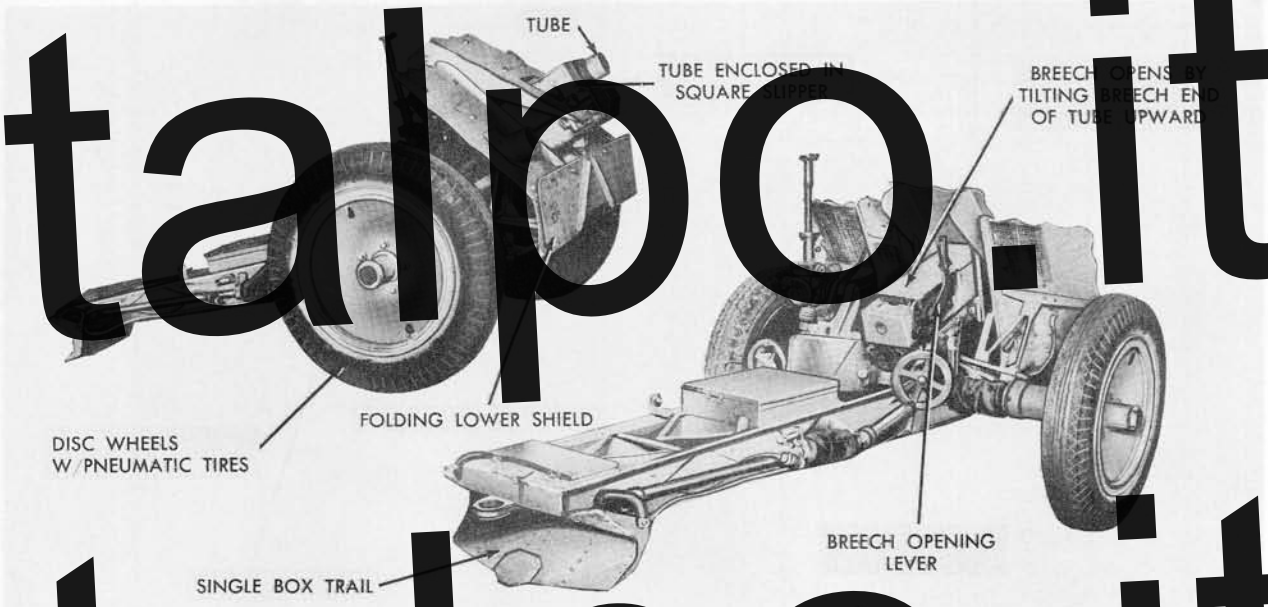
A variant, also designed by Reinmetall-Borsig, was introduced into the German service for mountain troops in 1937 as the "7.5 cm Le Geb. I. G. 18." The gun is the same as for the standard model, but a split trail carriage is used, the trail legs being jointed to allow either "short" or "long" trail legs to be used. The trails have detachable spades. This equipment breaks down into 6 pack or 10 man-loads.

HE, HEAT, and Smoke rounds are fired from both equipments; charges I to V are used with the HE and smoke, and Charge V and a special charge with the HEAT shell.

It is believed to be held in reserve stocks in Bulgaria and East Germany.

75-mm Light Infantry Gun M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75 mm (2.95 in.)
Weight (Motor-drawn version):	
In firing position	510 kg (1,124 lbs)
In traveling position	515 kg (1,235 lbs)
Length of tube (calibers):	
Without muzzle brake	11.8
Elevation limits	−10° to +73.5°

II. AMMUNITION (main types and projectile weight):

HE	5.45 kg (12.02 lbs)
HEAT (Model 38 B)	3.5 kg (7.72 lbs)

III. PERFORMANCE:

Maximum horizontal range:	
With supercharge	4,600 m (5,032 yds)
With normal charge	3,550 m (3,884 yds)

III. PERFORMANCE—Continued

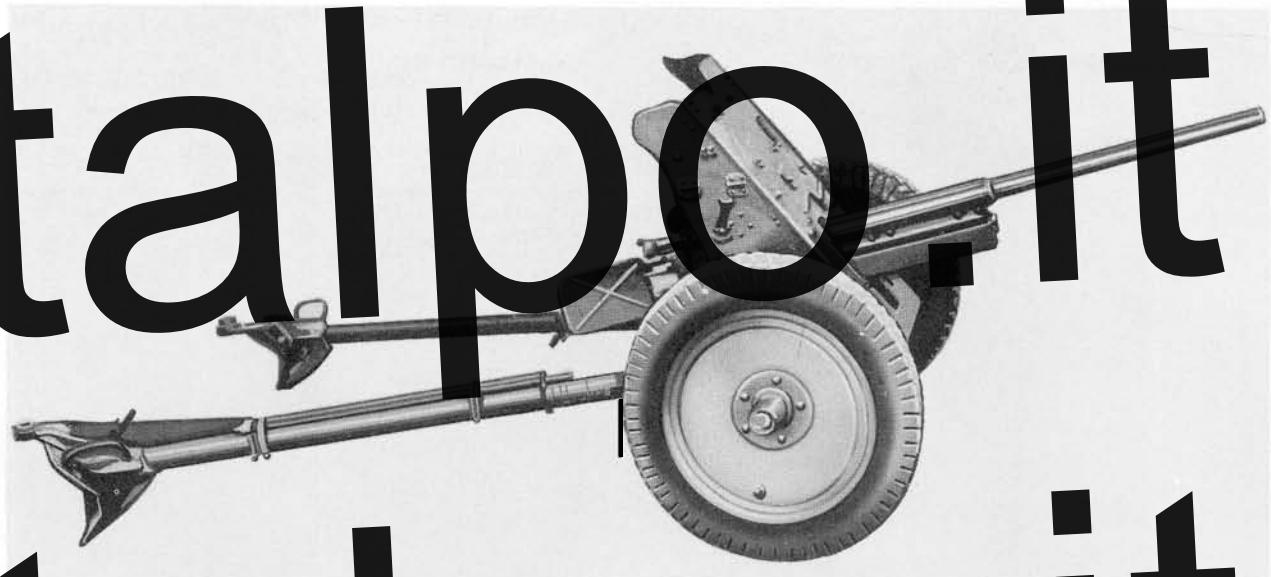
Muzzle velocities:	
HE (Supercharge)	260 m/s (853 fps)
HE (normal)	221 m/s (725 fps)
Rate of fire	8–12 rpm

Armor penetration:

Round	Angle of attack	Range	Penetration
HEAT M38 A	30°	Any	75-mm (2.95 in.)
HEAT M38 B	30°	Any	90-mm (3.54 in.)

37-mm Antitank Gun

(3.7 cm Panzerabwehr Kanone (3.7 cm Pak))



This was Germany's standard infantry antitank gun at the outbreak of World War II. In 1939 it was undoubtedly as good as any antitank gun in use by the armies of the major powers; however, it was not an outstanding weapon and the penetration performance at angles of attack other than normal was, even then, considered disappointing. it is a highly mobile weapon, normally towed on two-wheeled carriage but also capable of being carried in a light motor vehicle. Because of its light weight it was well suited for airborne use. It was introduced into the German service in 1936.

The Soviet 37-mm and later 45-mm antitank guns, as well as the United States 37-mm early World War II antitank gun, were all close copies of this gun. Beginning in the latter part of 1940 it was gradually replaced as standard by the 50-mm Pak 38, although the introduction of a HEAT grenade launched from the muzzle kept it in service throughout the war in areas of lesser importance.

It is believed to be held in reserve in Bulgaria and Czechoslovakia.

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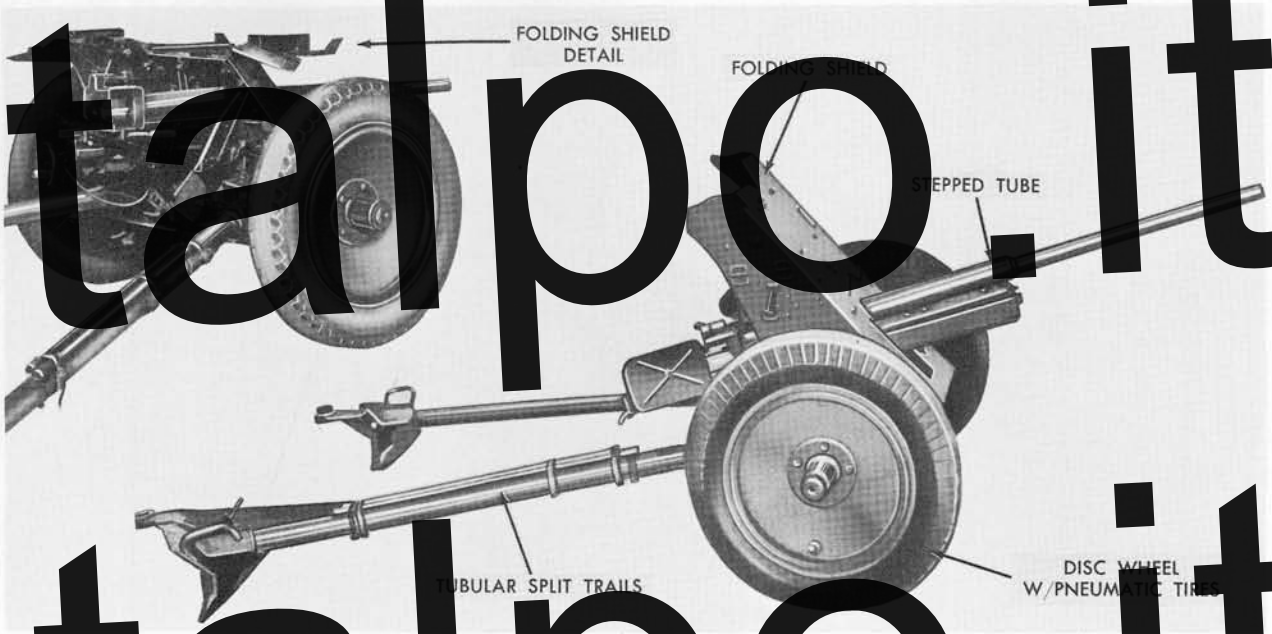
37-mm Antitank Gun

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber ..... 37-mm (1.46 in.)
Weight:
- In firing position ..... 440 kg (970 lbs)
- In traveling position ..... 450 kg (992 lbs)

Length of tube (calibers):
- Without muzzle brake 45

Elevation limits ..... −142 to +445 (−8° to +25°) mils
Total traverse ..... 1,066 mils (60°)

II. AMMUNITION (main types and projectile weight):

AP ..... 0.685 kg (1.5 lbs)
HVAP ..... 0.368 kg (0.8 lbs)
HEAT Stick Grenade ..... 8.5 kg (18.74 lbs)

III. PERFORMANCE:

Maximum horizontal range (w/HE) ..... 6,800 m (7,439 yds)
Muzzle velocity:
- HE ..... 745 m/s (2,444 fps)
- HVAP ..... 1,020 m/s (3,347 fps)
- HEAT Stick Grenade ..... 110 m/s (361 fps)

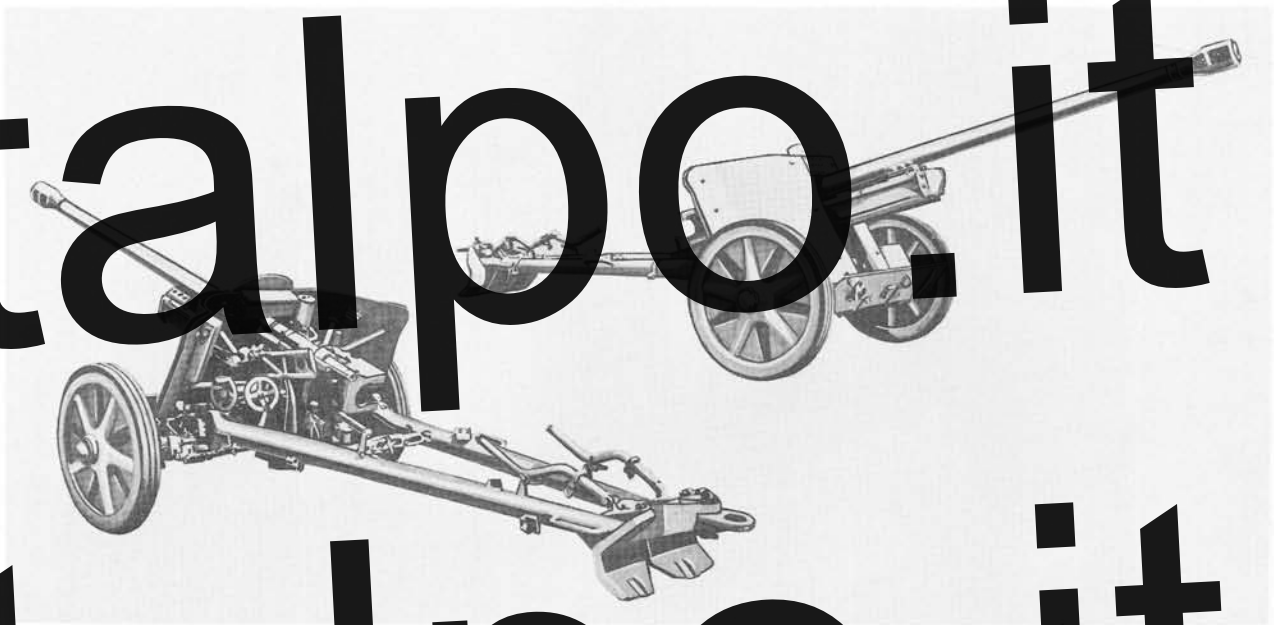
III. PERFORMANCE—Continued

Rate of fire ..... 12–15 rpm
Armor penetration:

Round	Angle of attack	Range		
		100 m (109 yds)	600 m (656 yds)	Any range
AP	30°	34-mm (1.34 in.)	27-mm (1.06 in.)	
HVAP	30°	64-mm (2.52 in.)	22.5 (0.89 in.)	
HEAT Stick Grenade.	30°			180-mm (7.09 in.) (150 yds is effective range against moving targets)

50-mm Antitank Gun M38

(5 cm Panzerabwehr Kanone 30 (5 cm Pak 38))



Design of the 5 cm Pak 38 commenced in 1938 and late in 1940 it began to replace the 3.7 cm Pak in the German Army.

Its design incorporated a muzzle brake and torsion bar suspension. These two features were employed in the design of all subsequent German single axle field and antitank weapons. They contribute materially in keeping down the overall weight of equipment since they permit the use of a lighter recoil system and carriage.

By 1941 standards the 5 cm Pak 38 was a good antitank gun. The German air force mounted the gun in some ground attack aircraft such as the JU–88.

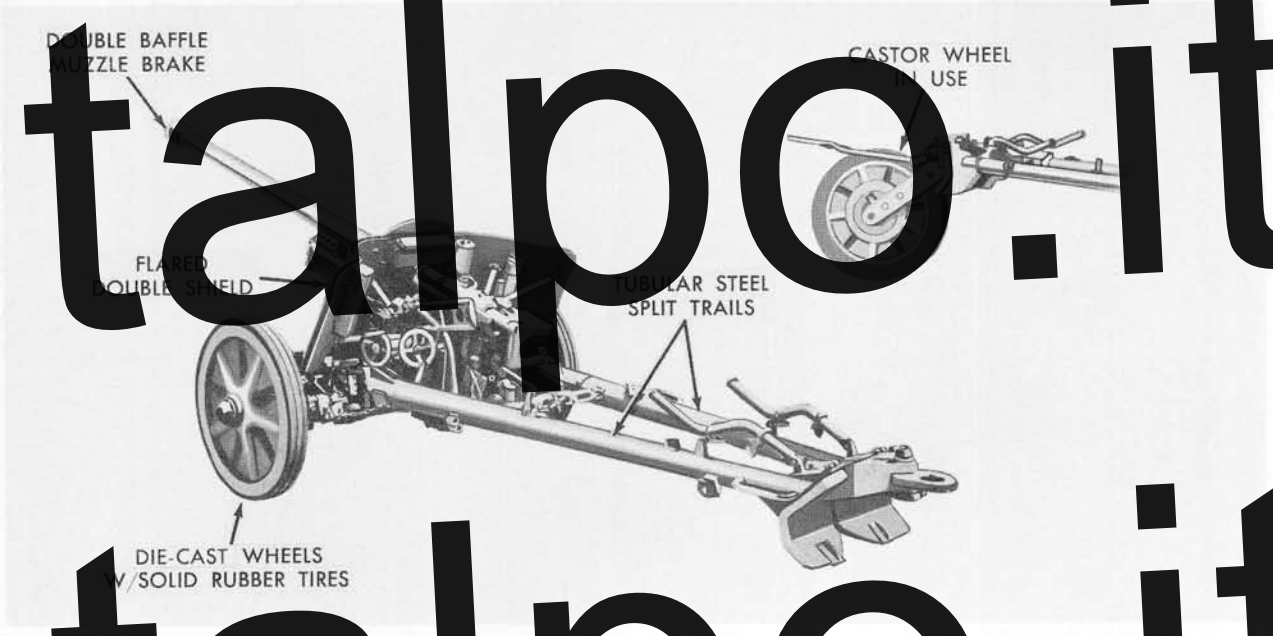
The 5 cm Pak 38 was supplanted but never completely replaced by the 7.5 cm Pak 40. In mid-World War II it was provided with a HEAT stick grenade which was effective only at quite close range, but had a considerable (7-inch) penetration.

The only easily perceptible differences, except for the caliber, between this gun and its successor the 75-mm Pak 40, are in the overall dimensions.

Gun	50-mm Pak 38	75-mm Pak 40
Overall length	15 ft. 7 in.	20 ft. 4 in.
Overall height	3 ft. 8 in.	4 ft. 1 in.
Overall width	6 ft.	6 ft. 10 in.

50-mm Antitank Gun M38

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA

Caliber	50-mm (1.97 in.)
Weight:	
In firing position	1,000 kg (2,205 lbs)
In traveling position	1,062 kg (2,341 lbs)
Length of tube (calibers):	
Without muzzle brake	60
Elevation limits	−142 to +480 mils (−8° to +27°)
Total traverse	1,155 mils (65°)

II. AMMUNITION (main types and projectile weight:

HE	1.82 kg (4.01 lbs)
AP	2.06 kg (4.54 lbs)
HVAP	0.925 kg (2.04 lbs)

III. PERFORMANCE:

Maximum horizontal range:	
AP	1,500 m (1,640 yds)
HE	2,400 m (2,626 yds)

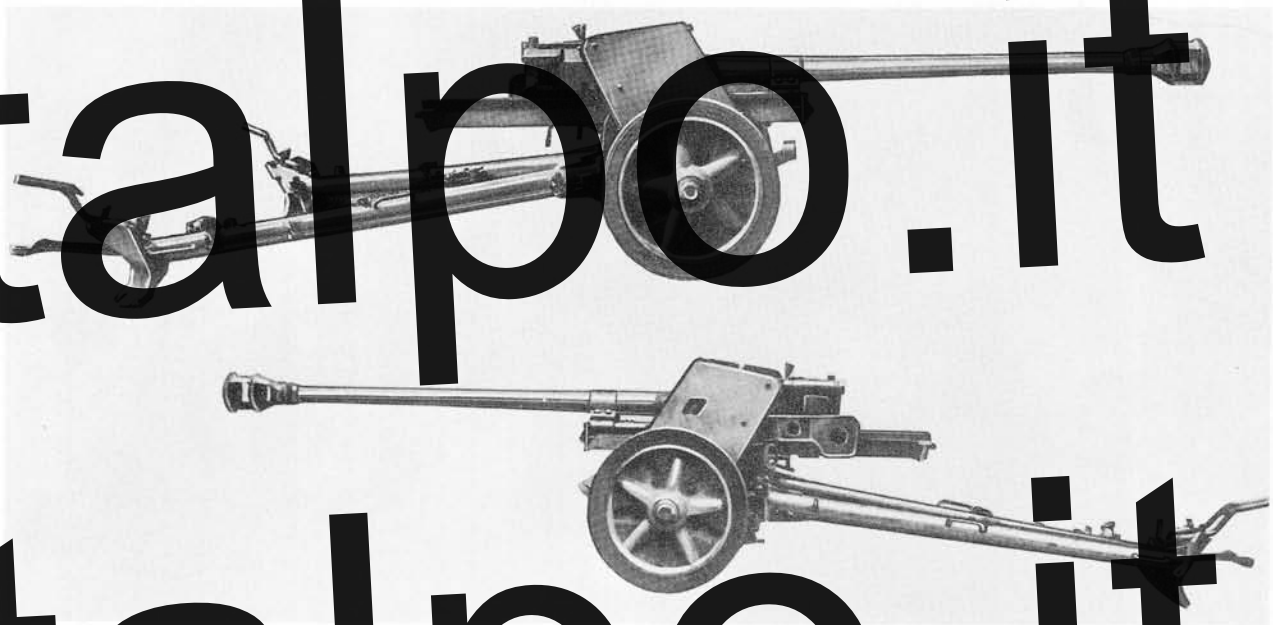
III. PERFORMANCE—Continued

Muzzle velocity:	
HE	549 m/s (1,801 fps)
AP	835 m/s (2,739 fps)
HVAP	1,180 m/s (3,870 fps)
Rate of fire	12–15 rpm
Armor penetration:	

Round	Angle of attack	Range		
		100 m (109 yds)	1,000 m (1,094 yds)	[redacted] Any
AP	30°	69-mm (2.72 in.)	48-mm (1.89 in.)	
HVAP	30°	130-mm (5.12 in.)	38-mm (1.5 in.)	
HEAT Stick Grenade	30°			180 mm (7.09 in.) Effective range 150 yds)

75-mm Antitank Gun M40

(7.5 cm Panzerabwehr Kanone 40 (7.5 cm Pak 40))



This weapon was introduced into service in the German Army in 1941 and was adopted as the standard infantry antitank gun. The design is identical to that of its predecessor, the 5 cm Pak 38, employing a muzzle brake, tubular steel trails, and solid rubber tires. Although its penetration performance was considered very satisfactory, the weight was judged to be excessive. However, it was the best towed antitank gun, of a weight that could be manhandled, available to the Germans during World War II.

The principal recognition features are the combination of double baffle muzzle brake, the hinged lower shield below the main shield, and between the wheels, the die-cast wheels with solid rubber tires, and the castor wheel (for manhandling).

The only easily perceptible differences except for the caliber between this gun and its predecessor, the 50-mm Pak 38, are in the overall dimensions.

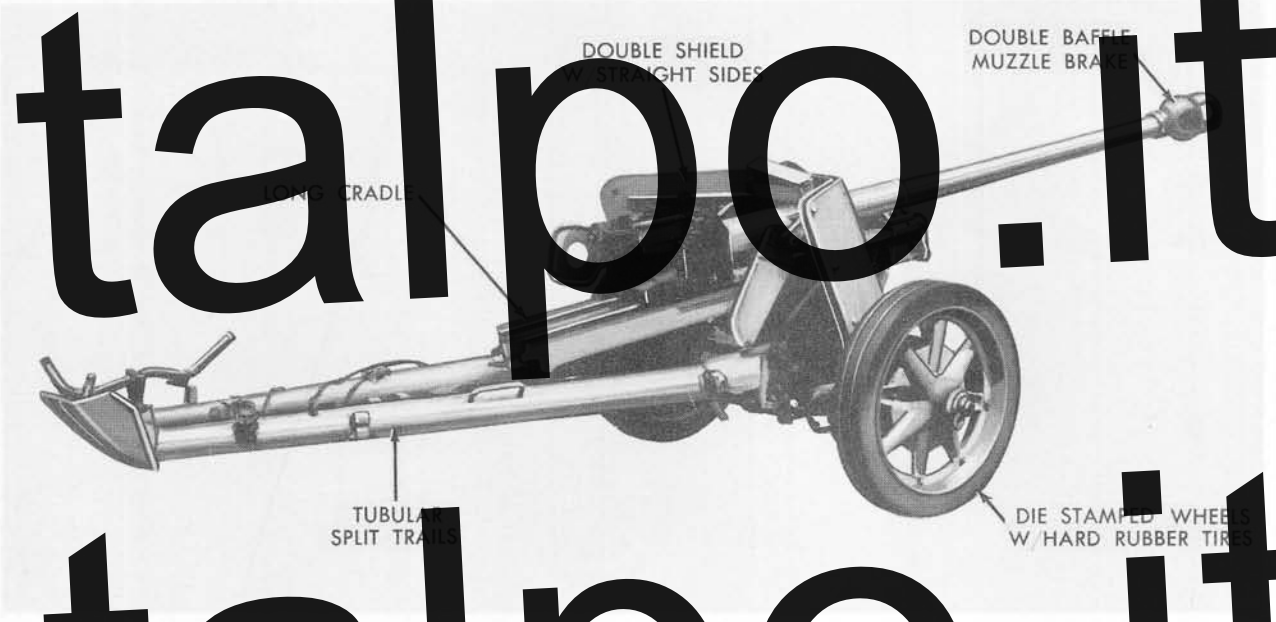
Gun	75-mm Pak 40	50-mm Pak 38
Overall length	20 ft. 4 in.	15 ft. 7 in.
Overall height	4 ft. 1 in.	3 ft. 8 in.
Overall width	6 ft. 10 in.	6 ft.

This piece is still in service or held in reserve in Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, and Rumania.

[redacted]

75-mm Antitank Gun M40

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	1,425 kg (3,031 lbs)
In traveling position	1,500 kg (3,307 lbs)
Length of tube (calibers):	
With muzzle brake	49.3
Elevation limits	−107 to +392 mils (−6° to +22°)
Total traverse	1,157 mils (65°)

II. AMMUNITION (main types and projectile weight):

HE	5.74 kg (12.65 lbs)
AP	6.8 kg (15 lbs)
HVAP	4.1 kg (9.04 lbs)

III. PERFORMANCE:

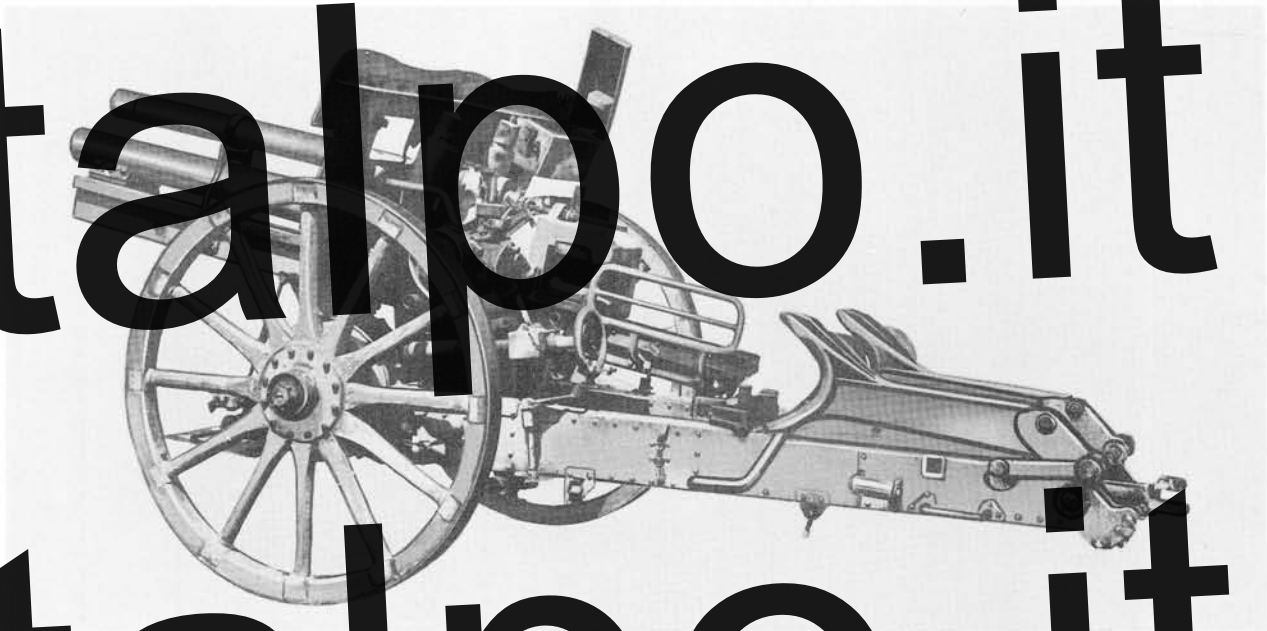
Maximum horizontal range (w/HE)	8,100 m (8,861 yds)
Muzzle velocity:	
HE	550 m/s (1,804 fps)
AP	750 m/s (2,461 fps)
HVAP	930 m/s (3,051 fps)
Rate of fire	12–15 rpm

Armor penetration:

Round	Angle of attack	Range	
		100 m (109 yds)	1,000 m (1,094 yds)
AP	30°	98-mm (3.86 in.)	82-mm (3.23 in.)
HVAP	[illegible]	126-mm (4.96 in.)	87-mm (3.43 in.)

75-mm Light Field Gun M18

(7.5 cm Leichtes Feld Kanone 18 (7.5 cm Le. F. K. 18))



This gun was developed during the period 1930-31 before the light howitzer had replaced the light field gun in the armies of most major powers. Both Krupp and Rheinmetall produced prototype models with that of the former company being adopted for production in 1938. This was a light cavalry weapon which was replaced by the 7.5 cm Le. F. K. 38, which in turn gave way to the 105-mm Le. F. H. 18 howitzer as the standard German Divisional field artillery piece.

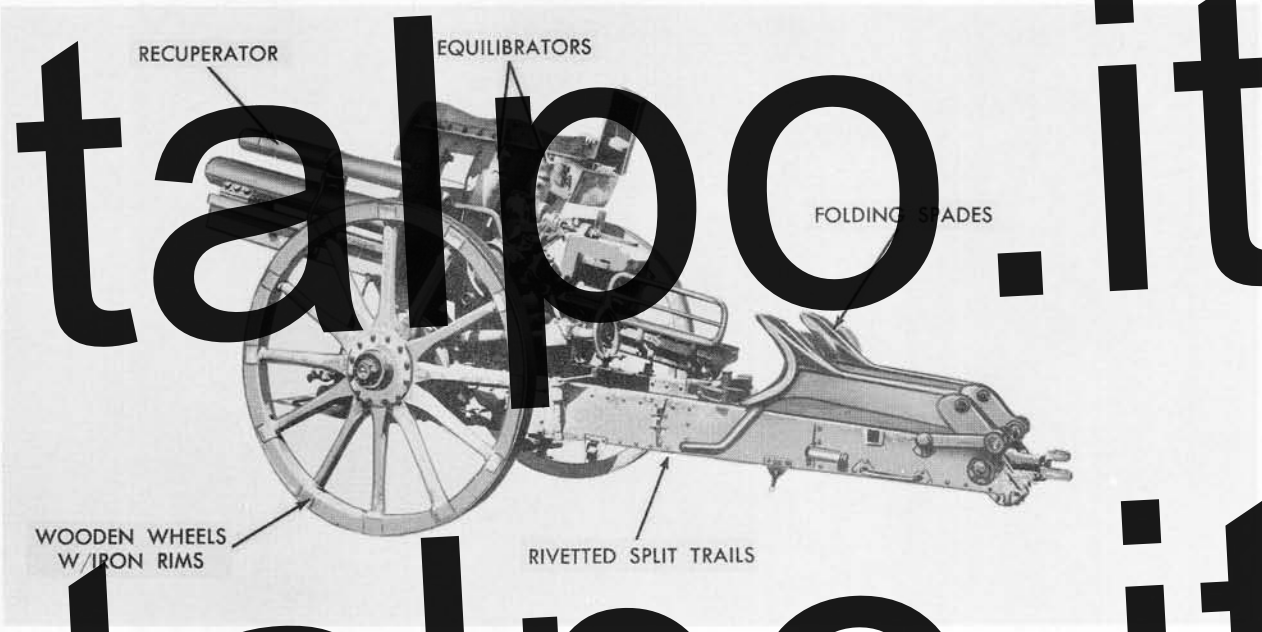
The carriage is of the split trail type with folding spades. The spring carriage suspension is automatically locked when the trail legs are opened out to the firing position. Wooden artillery wheels are fitted.

The gun employes a hydraulic recoil system and a hydropneumatic type recuperator. The former is housed within the cradle below the gun tube, while the latter is supported above the tube. Spring equilibrators are used.

There are believed to be some held in reserve stocks in Bulgaria and Czechoslovakia.

75-mm Light Field Gun M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	1,120 kg (2,469 lbs)
In traveling position	2,010 kg (4,430 lbs)
Length of tube (calibers):	
Without muzzle brake	26
With muzzle brake	Not applicable
Elevation limits	−89 to +801 mils (−5° to +45°)
Total traverse	1,068 mils (60°)

II. AMMUNITION (main types and projectile weight):

HE	5 kg (11.02 lbs)
AP	6.8 kg (14.99 lbs)
HEAT	5.83 kg (12.9 lbs)

III. PERFORMANCE:

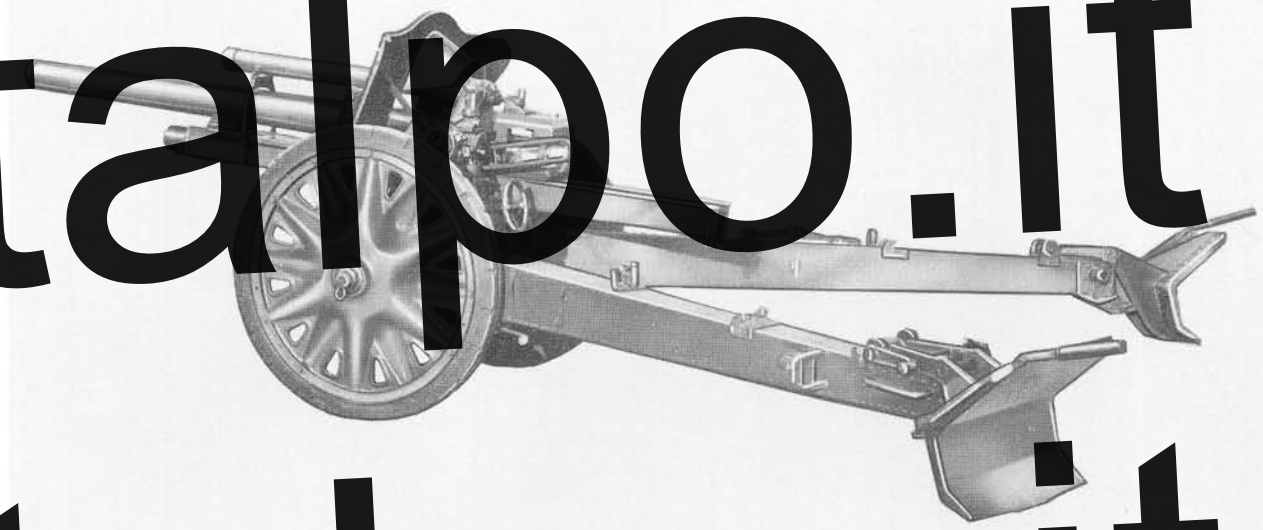
Maximum horizontal range	9,425 m (10,311 yds)
Muzzle velocity:	
HE	485 m/s (1,591 fps)
AP-T	444 m/s (1,457 fps)
HEAT	440 m/s (1,444 fps)
Rate of fire	8–10 rpm

Armor penetration:

Round	Angle of attack	Range		
		100-mm (109 yds)	1000-mm (1,094 yds)	Any
AP-T	30°	45-mm (1.85 in.)	38-mm (1.5 in.)	
HEAT	30°			90-mm (3.54 in.)

105-mm Light Field Howitzer M18

(10.5 cm Leichte Feldhaubitze 18 (10.5 cm Le. F. H. 18))



This weapon was designed by Rheinmetall Borsig and introduced into service in the German Army in 1936. It became the standard field howitzer of the German divisional artillery and remained so, being supplemented by the later, models 18 (M) and 18/40. It is easy to maneuver, both in firing and traveling, and has a very stable carriage. It operates smoothly and can be easily laid on tanks or other moving targets.

The gun is mounted on a split train carriage with box section riveted trail legs and folding spades. Wooden-spoked, steel-tired artillery wheels for the horse-drawn version or die-cast alloy wheels with solid rubber tires for the motorized version are used and the axle is equipped with transverse springs. A single hydropneumatic equilibrator is fitted between the saddle and cradle.

Three other models of this weapon were manufactured: the Le. F. H. 18 (M) which has a muzzle brake and an adjusted recoil system for increased range, and the 18/39 and the 18/40, both having muzzle brakes and being ballistically identical with the 18 (M). The model 18/40 uses the carriage of the 75-mm Pak 40 AT gun, and has both elevating and traversing handwheels on the left side of the carriage.

It is still in service or held in reserve in Albania, Bulgaria, Czechoslovakia, East Germany, and Hungary. In addition, it is present in limited quantities in France, Spain, Yugoslavia, Turkey, and Norway.

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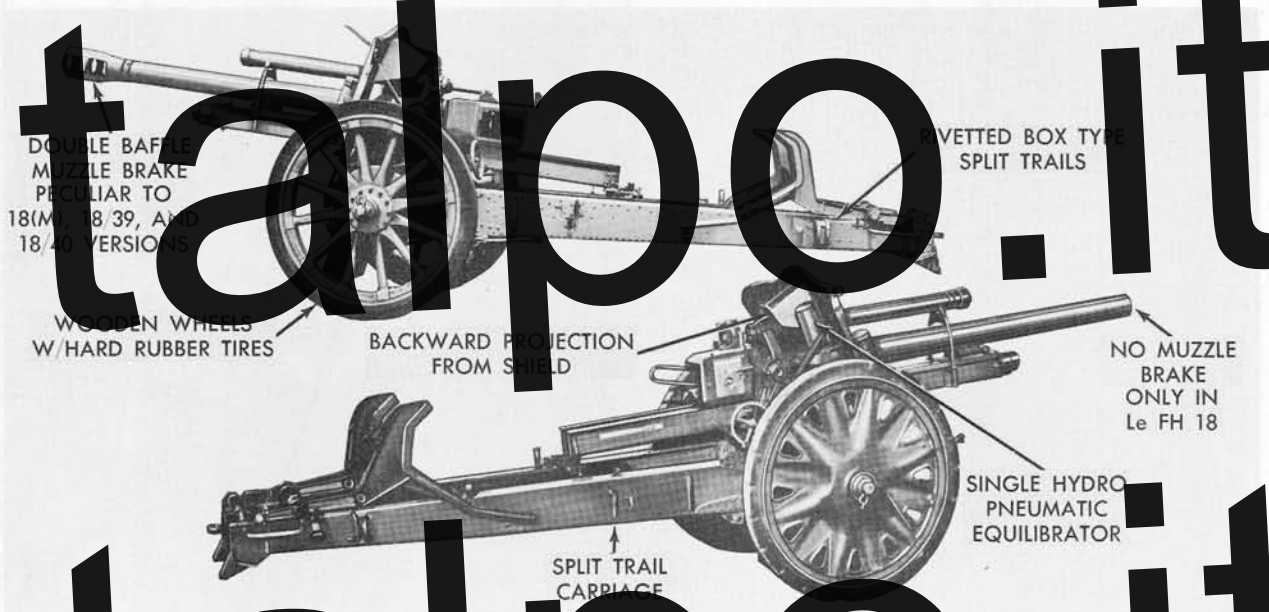
105-mm Light Field Howitzer M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	105-mm (4.13 in.)
Weight:	
In firing position	2,065 kg (4,552 lbs)
In traveling position	2,065 kg (4,552 lbs)
Length of tube (calibers):	
Without muzzle brake	26
Elevation limits	−90 to +750 mils (−5° to +42°)
Total traverse	996 mils (56°)

II. AMMUNITION (main types and projectile weight):

HE	14.81 kg (32.65 lbs)
HEAT	11.6 kg (25.57 lbs)
AP	15.7 kg (34.61 lbs)

III. PERFORMANCE:

Maximum horizontal range	10,675 m (11,674 yds)*
Muzzle velocity (max.) HE	470 m/s (1,542 fps)*
Rate of fire	4–6 rpm

III. PERFORMANCE—Continued

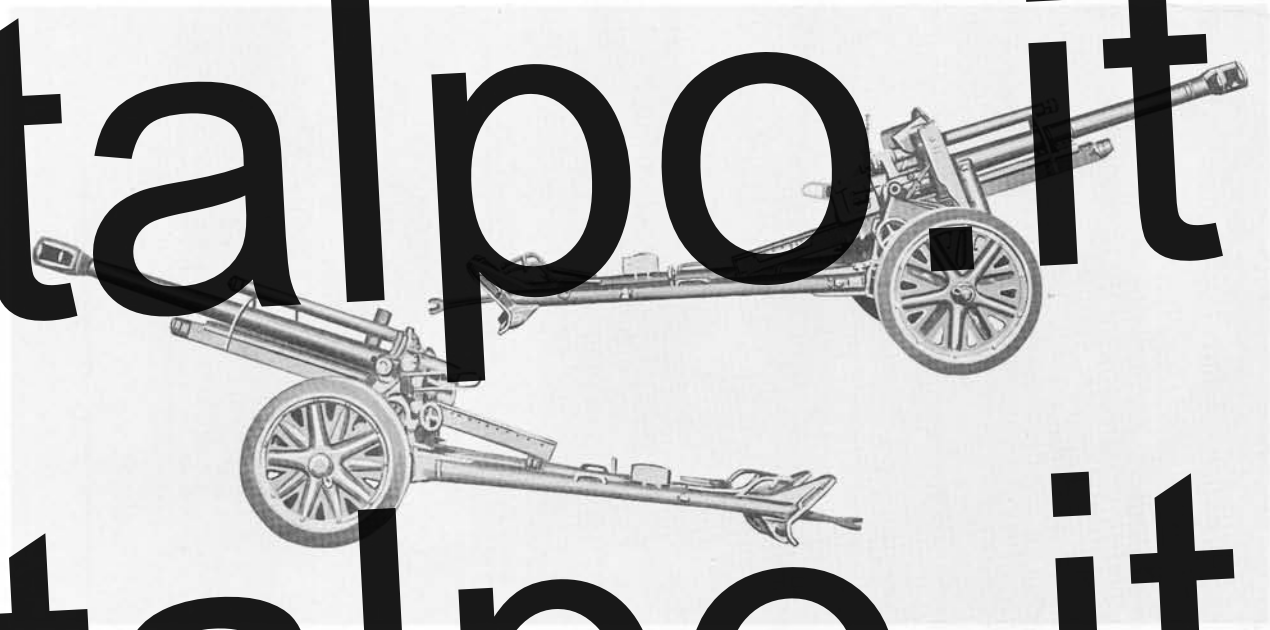
Armor penetration:

Round	Angle of attack	Range: 100 m (109 yds)	Range: 1,500 m (1,640 yds)	Any
AP	30°	6.4-mm (2.52 in.)	49-mm (1.93 in.)	
HEAT	30°			100-mm (3.94 in.)

*The Le.F.H. 18 (M), 18/39, and 18/40 versions all have a maximum range of 12,325 m (13,484 yds) and a maximum muzzle velocity of 540 m/s (1,772 fps).

105-mm Light Field Howitzer M18/40

(10.5 cm Leichte Feldhaubitze 18/40 (10.5 cm Le. F. H. 18/40))



The 105-mm Model 18/40 is an extensively modified version of the Models 18 and 18 (M) howitzers. It was produced to meet the demand for an equipment lighter in weight than its two predecessors, but of equal ballistic performance to the Model 18 (M). The gun was mounted on the carriage of the 7.5 cm Pak 40 antitank gun because that carriage was then in mass production and required a minimum amount of modification to adapt it for use with the howitzer.

Three important features were incorporated in this model:

a. The carriage incorporated torsion bar suspension with the two torsion bars extending for the full width of the carriage body. The torsion bars are locked when the equipment is in action, the movement of the opening of the trail legs effecting the locking.

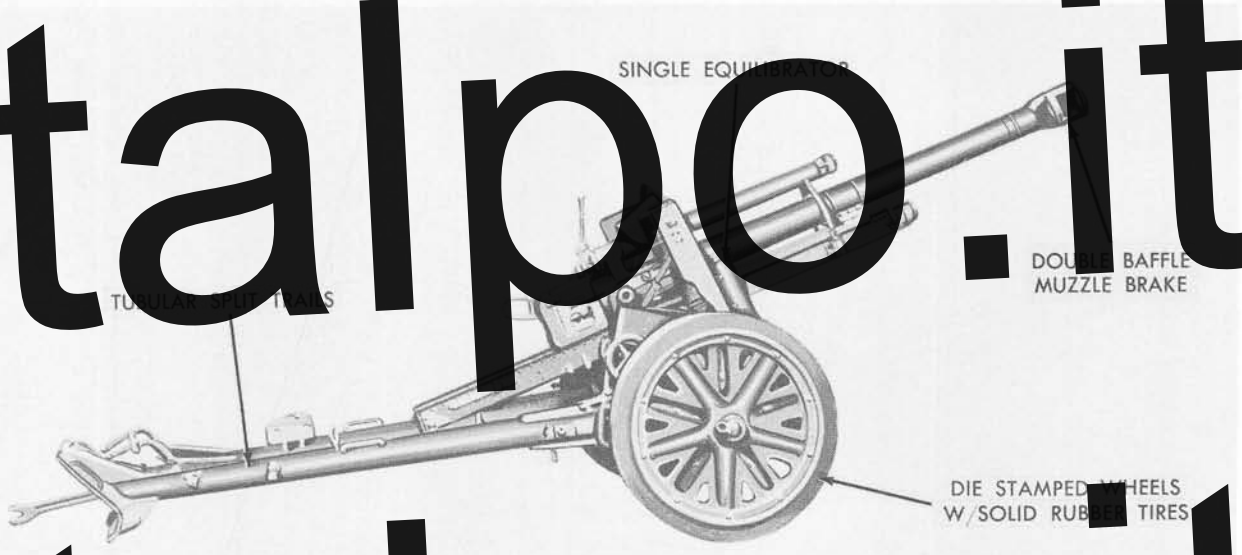
b. Both elevating and traversing handwheels are on the left side of the carriage, so that the layer can both elevate and traverse the gun and fire it.

c. A more efficient muzzle brake was fitted. This was effected by welding projecting wings on the muzzle brake of the Le. F. H. 18 (M).

This howitzer is still in service in several European countries including Czechoslovakia and Yugoslavia.

105-mm Light Field Howitzer M18/40

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	105 mm (4.13 in.)
Weight:	
In firing position	1,900 kg (4,189 lbs)
In traveling position	2,901 kg (6,396 lbs)
Length of tube (calibers):	
Without muzzle brake	28
With muzzle brake	Not applicable
Elevation limits	−89 to +748 mils (−5° to +42°)
Total traverse	1,068 mils (60°)

II. AMMUNITION (main types and projectile weight):

HE	14.8 kg (32.7 lbs)
HEAT	11.6 kg (25.57 lbs)

III. PERFORMANCE:

Maximum horizontal range	12,330 m (13,484 yds)
Muzzle velocity, HE	539 m/s (1,772 fps)
Rate of fire	6–8 rpm

Armor penetration:

Round	Angle of attack	Range	Penetration
HEAT	30°	(Independent of range)	100 mm (3.94 in.)