

= M21 Mortar Motor Carriage =

The M21 Mortar Motor Carriage (MMC) was a self @-@ propelled artillery mount on a half @-@ track chassis used by the United States Army during World War II . It was equipped with an 81 mm M1 mortar and an air @-@ cooled M2 Browning machine gun . It was produced by the White Motor Company in 1944 . Only 110 examples were produced .

It mainly served on the Western Front in Normandy , and Southern France , and then later in the Ardennes during the Battle of the Bulge . It was deemed to have been outclassed in 1945 when the 81 mm M1 mortar was found to have insufficient power to provide effective artillery support .

= = Specifications = =

The specifications for the M21 are similar to the specifications for the M3 Half @-@ track . The vehicle was 20 ft 9 in (6 @.@ 32 m) long , 6 ft 5 in (1 @.@ 96 m) wide , and 7 ft 5 in (2 @.@ 26 m) high with a wheelbase of 135 @.@ 5 in (3 @.@ 44 m) . The suspension for the front wheels were leaf springs and track 's suspension used a vertical volute spring . Powered by a White 160AX , 128 hp (95 kW) , 386 in3 (6 @,@ 330 cc) , 6 @-@ cylinder petrol engine with a compression ratio of 6 @.@ 3 : 1 , the M21 could reach up to 45 mph (72 km / h) on a road . The fuel capacity was 60 US gal (230 l) and the vehicle had a range of 150 mi (240 km) . It had a power @-@ to @-@ weight ratio of 15 @.@ 8 hp / ton with the vehicle weighing nine tons .

= = Design = =

The M21 had a different layout from the early M4 and M4A1 MMC , as it was the replacement of the M4 . The major difference , was that the M21 and the M4 were based on different half @-@ tracks (the M4 was based on the M2 Half @-@ track while the M21 was based on the M3 Half @-@ track) . The major difference was the location and direction of the mortar (the M4 's mortar was rear @-@ facing and was near the back , while the M21 's mortar was front @-@ facing and was closer to the front) .

The mortar was able to traverse 30 ° either side and elevate from 40 to 80 ° . If required , it could be de @-@ mounted from the vehicle and fired from the ground . In addition , there was a pedestal mount at the rear for a .50 cal (12 @.@ 7 mm) M2 heavy machine gun .

= = Development = =

The M4 was developed to meet the need for a specialized mortar carrier based on the M2 Half Track Car , which the M21 soon replaced . The initial M4 was designed to carry a mortar . In emergencies , the mortar could be fired from the vehicle . The improved M4A1 had a reinforced floor so that the mortar could be fired from the vehicle , but the mounting faced to the rear and lacked traverse . This caused problems when the troops who operated the mortar mounted the vehicle , so the US 2nd Armored Division relocated the mortars so that they could fire from the front .

The Ordnance Department followed suit and a new 81 mm MMC , the T19 MMC , was created , which was based on the M3 Half @-@ track . The T19 went through its developmental trials , which were completed in July 1943 , and the vehicle was later standardized as the M21 MMC . Unlike the M4 mortar carriage , which was based on the M2 Half Track Car , the M21 was based on the M3 Half @-@ track with a longer and roomier rear .

= = Service history = =

The M21 served on the Western Front , seeing action in Normandy and in southern France , before later being used during the Battle of the Bulge , the Battle of Belgium , Operation Market Garden , and the invasion of Germany from the west . The M21 served with the US 3rd , 1st , and 7th Armies during the campaign in France , and the 2nd Armored Division , which developed it . In addition , 57

examples were leased to Free French forces . By 1945 , it was declared obsolete , due to the insufficient power of the 81 mm mortar as an artillery piece .

= = = Usage = = =

Standard US tank and armored infantry battalions had a mortar platoon equipped with either M21s or the older M4 MMCs . The M21 was used mainly to illuminate targets at night or provide indirect fire support to the infantry . The usage was uncommon because the White Motor Company was only able to produce 110 M21s in 1944 .