

Hungarian anti-aircraft artillery

Introduction

The following anti-aircraft leaflets were included in the Hungarian army:

Hungarian type designation	Country of origin	Caliber	Remarks
2 cm 33.M	Denmark	20mm L/60	<i>Madsen M1933</i>
4 cm 36.M	Sweden	40mm L/70	<i>Bofors, license manufactured in Hungary</i>
8 cm 29.M	Sweden	80mm L/50	<i>Bofors license manufactured in Hungary</i>
8.8 cm 37.M	Germany	88mm L/56	<i>German "eighty-eight"</i>
10.5 cm 38.M	Germany	105 mm L/63	<i>Only 8 pcs. was delivered</i>

In addition, the Germans supplied a number of older Russian anti-aircraft guns of an unknown type, which were recalibrated for 8.8 cm ammunition.

The Germans recalibrated Russian 76 mm (Model 1931 and 1938) and 85 mm (Model 1939) anti-aircraft guns so that they could fire German 8.8 cm caliber ammunition. (Source 8.) When talking here about Russian anti-aircraft guns of an older type, it is most likely that they are recalibrated 76 mm pamphlets, either 7.62/8.8 cm Flak M 31 (r) or 7, 62/8.8 cm Flak M 38 (r), as they were designated in German service.

Anti-aircraft pamphlet



Anti-aircraft gun 2 cm 33.M.

The anti-aircraft cannon is produced by the Danish Industry Syndicate (DISA). A similar model was used in the Danish army.

The image is from Source 2, which is again taken from DISA's advertising material at the time.

The "soldier" operating the anti-aircraft gun is wearing the Danish Model 1923 steel helmet. Soldier is in quotation marks, as DISA's advertising material from the period often shows men wearing uniform items.



Anti-aircraft gun 4 cm 36.M.

The image comes from Source 5 and shows the anti-aircraft gun with Hungarian crew.

Note the distance meter on the right side of the picture.

The MÁVAG factories (Mágyar Allami Vaggon és Gépgvár) (= the Hungarian State Railcar and Locomotive Factory) in Diosgyor licensed the well-known light anti-aircraft gun from 1936.

From 1942, the gun was equipped with an armor shield, after which the type designation became 36/40.M.



Anti-aircraft gun 8 cm 29.M.

The image comes from Source 1 and shows the anti-aircraft gun with Hungarian crew.

This Swedish anti-aircraft gun was also manufactured under license in Hungary. A total of 233 were produced in the years 1929-1944.

Minor modifications (which are not known) were introduced in 1938, after which the type designation became 29/38.M.

Due to its high muzzle velocity, the pamphlet was also intended to be used as an anti-tank gun, but it was concluded that it was too tall and too mobile for this task.



Machine guns in anti-aircraft firing

Although it is not artillery, it is still anti-aircraft ... a medium heavy machine gun of the Schwarzlose type, deployed as an anti-aircraft machine gun.

The text of the picture states that it is Hungarian soldiers relaxing in the sun on board a troop transport train, Eastern Front 1942.

Equipment for fire management



The instrument at the front of the picture is probably a corrector into which target data was encoded.

The distance to targets and their height were observed through the range finder, which is seen in the center of the image. Shot data was then used to set the gun.

Similar methods were also used in the heavy anti-aircraft artillery. On the German 8.8 cm anti-aircraft guns, the shells were also tempered so that they exploded at the right height.

The Hungarians also developed a corrector, of the type 34/38.M Jhuasz-Gamma Loelemkepzo. This corrector was mounted on the anti-aircraft leaflet itself (40 mm anti-aircraft gun).

The picture is from Source 5.



Corrector and rangefinder are located on the right of the picture. Also note that a "small range finder" (1-meter base) is used with the cannon.

The image comes from Source 8.

In dark and invisible weather, listening devices were used to obtain data about the targets. The noise from aircraft engines could be heard from a long distance, by which target data could be calculated.



The Hungarians were among the first to use radar-guided anti-aircraft guns of Hungarian/German manufacture. This eliminated the need for listening devices.

Source 1 mentions that there is not much information about Hungarian radar equipment, but indicates, as an example of its use, a situation from 1943, when the anti-aircraft artillery of the 27th Infantry Division was deployed in the defense of a bridge over the river Tisza. The bridge was attacked by 25 Russian Petlyakov Pe-2 light bombers, all of which were shot down!

The picture is from Source 5.

Cannon tractors

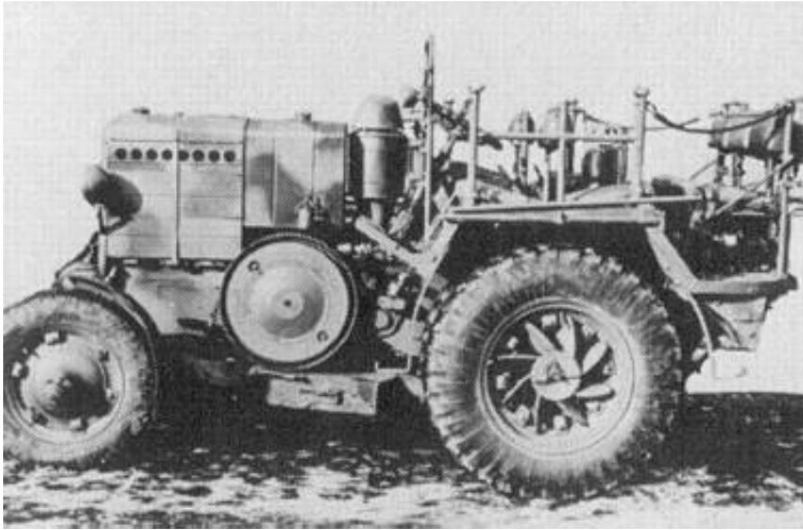


Among other things, Ford-Marmon V-8 type trucks were used as cannon tractors for the 40 mm pamphlets.

The 820 trucks of this type were purchased from Ford (Cologne) in 1938/39. In 1940/41 they were converted to four-wheel drive (type Marmon-Herrington) by the Manfred Weiss factories.

Furthermore, gun tractors of the type SdKfz 11 (Hungarian designation 37.M Hansa-Lloyd) were purchased (in 1938/39) to pull the pamphlets in four anti-aircraft batteries.

The image comes from Source 6.



In the domestic air defense, among other things, tractors of the type HSCS KV50L were used to move anti-aircraft guns (29.M).

About 700 tractors of this type, which had its origins in an agricultural tractor, were manufactured by Magyar Gépgyári Művek RT in Kispeszt.

HSCS stood for Hofherr és Schranc/Clayton & Shuttleworth.

The image comes from Source 6.



Additional image material

Another picture of the 40mm anti-aircraft gun in Hungarian service.

Note the loader, ready to push another loading frame into place when the shells in the first one are fired.

The image comes from Source 8.



40 mm anti-aircraft gun 36.M and anti-aircraft artillerymen, set up for photography.

The image comes from Source 1.

Note the soldier with the rangefinder, at the front of the picture. The distance meter is very similar to the German **Entfernungsmesser 34**.



Entfernungsmesser 34 photographed at the Panzermuseum Munster in the summer of 2000.

At the bottom of the picture you can see the tripod, which is carried over the shoulders to support the rangefinder.

(Unfortunately, the lighting conditions at the showcase were such that the somewhat crooked shooting angle was necessary.)



A Hungarian machine gun air-secures a railway march; perhaps these are soldiers from one of the anti-aircraft batteries that were part of the supply train -

The anti-aircraft machine gun may be the Hungarian license-made light machine gun 31.M (Solothurn).

The picture is "scissored" from the Internet, but I have no recollection of the source.



Maybe this picture depicts a Hungarian **40mm anti-aircraft gun 36.M** - I'm not 100% sure, but the soldiers look like Hungarians.

The picture was "scissored" on the Internet at some point, but I have no recollection of the source.

The image appears to be scanned from a book - the dark shadow on the left side of the image suggests this.

I am interested in further information if anyone knows the source, and even better - the motif!

The anti-aircraft artillery in Hungary

The Treaty of Versailles (referred to in Hungarian history as the Treaty of Trianon), signed on 4 June 1920, also stipulated how much anti-aircraft artillery Hungary could possess.

Although the surrounding countries that were considered enemy nations—Romania, Yugoslavia, and Czechoslovakia—all possessed aircraft, Hungarian anti-aircraft artillery was limited to a total of four batteries. Of these, the two batteries were equipped with pamphlets of an older model (80 mm anti-aircraft gun 5/8.M).

The other two batteries belonging to the River Flotilla had pamphlets that had previously been mounted on ships. A total of 16 pamphlets - four in each battery - as well as a platoon equipped with searchlights. These modest units formed the backbone of the Hungarian anti-aircraft artillery.

In 1935, parliament passed the Air Defense Act, which was the starting point for a modernization and expansion of the air defense. In Budapest, the former air defense command was elevated to a national command and was given responsibility for the overall air defense in Hungary as well as regulations and service regulations.

In 1938, the anti-aircraft artillery consisted of eight anti-aircraft divisions (I. - VIII. Luftvärnsafdeling) with two batteries. One battery had two pcs. 80 mm anti-aircraft gun 29.M (Bofors), while the second battery was a training unit. The Air Defense Artillery now became a separate branch of service under the Inspector General of Artillery. Tactically, the divisions were under the command of the National Air Defense Command, while logistical responsibility lay with the corps of which the air defense division was a part.

Alongside this - and in parallel with developments in other European countries - civil preparedness was expanded. The Army Act of 1938 introduced military and civilian conscription. All citizens - including women - between the ages of 14 and 70 could be called up for civil defense service. At the same time, a nationwide observation and warning service is established, based on voluntary efforts ¹⁾.

In the autumn of 1938, the 101st - 104th Air Defense Division was established, especially for the domestic air defense. Each division gets two heavy batteries (four 80 mm anti-aircraft guns 29.M) and in 1939 an additional light battery (four 40 mm anti-aircraft guns 36.M). 105th Air Defense Division is created and gets three heavy batteries and one light battery.

In 1939, I. - V. and VII were supplemented. Anti-aircraft division with a light battery, while VI. Air defense department gets two light batteries.

In 1940, each of the army's brigades gets an independent anti-aircraft battery and the organization of all anti-aircraft divisions is standardized so that each division consists of two heavy and one light battery. The batteries, which have tasks as part of the national air defense, are supplemented by a fifth pamphlet.

In March 1941, the Hungarian army had a total of 43 anti-aircraft batteries, of which 24 were equipped with 80 mm guns.

In the spring of 1941, the five air defense divisions (101st - 105th) are transferred from the Inspector General of Artillery to a newly created Air Defense Corps, which comes under the command of the Air Force. A further five new air defense divisions (201. - 205.) are created, so that the national air defense has a total of 30 batteries.

Furthermore, the 206th (heavy) Air Defense Division is established with four batteries; however, there is only material for two light batteries (40 mm anti-aircraft gun 36.M), as the two heavy batteries had to be equipped with German 105 mm anti-aircraft guns 38.M. However, the heavy anti-aircraft guns will not be delivered until March 1944.

The rapid expansion of the Hungarian anti-aircraft artillery was only possible because of the agreements with the Swedish Bofors Fabrikker for license production of the light and heavy anti-aircraft guns. Nevertheless, the army was not satisfied with the amount of anti-aircraft artillery - neither in the national air defense nor in the field army.

Air defense units in the Field Army

When the field army is mobilized in 1941, the status (according to the organizational charts) is as follows:

At corps level

An air defense department consisting of:

- Staff battery
- Medium-heavy anti-aircraft battery with four pcs. 80 mm anti-aircraft gun 29.M (motorized)
- Light anti-aircraft battery with six pcs. 40 mm anti-aircraft gun 36.M (motorized)

The corps' supply train has:

- Light anti-aircraft battery with six anti-aircraft machine guns (horse-drawn/wagon-mounted)

At brigade level

- A light anti-aircraft battery with six 40 mm anti-aircraft gun 36.M (motorized)

The brigade's supply train has:

- Light anti-aircraft battery with ten anti-aircraft machine guns (horse-drawn/wagon-mounted)
(In motorized brigades and cavalry brigades, the anti-aircraft machine guns are motorized.)

In the Army Regulations of 1943 (with later changes in 1944), where the former brigades are now changed to divisions, the distribution (cf. the organizational charts) is as follows:

Armored Division

An air defense department consisting of:

- Staff battery
- Two medium-heavy anti-aircraft batteries with four pcs. 80 mm anti-aircraft gun 29.M (motorized)
- Two light anti-aircraft batteries with six 40 mm anti-aircraft gun 36.M (motorized)

The division's supply train has:

- Light anti-aircraft battery with six anti-aircraft machine guns (motorized)
- A light anti-aircraft battery with four 40 mm anti-aircraft gun 36.M (motorized)

Cavalry Division

An air defense department consisting of:

- Staff battery
- Medium-heavy anti-aircraft battery with four pcs. 80 mm anti-aircraft gun 29.M (motorized)
- Two light anti-aircraft batteries with six 40 mm anti-aircraft gun 36.M (motorized)

The division's supply train has:

- Two light anti-aircraft batteries with six anti-aircraft machine guns (motorized)

Infantry Division

- A light anti-aircraft battery with 12 pcs. 40 mm anti-aircraft gun 36.M (motorized)

The division's supply train has:

- Light anti-aircraft battery with 12 anti-aircraft machine guns (horse-drawn/wagon-mounted)

Mountain Brigade

- Medium anti-aircraft battery with six units. 80 mm anti-aircraft gun 29.M (motorized)
- A light anti-aircraft battery with six 40 mm anti-aircraft gun 36.M (motorized)

The brigade's supply train has:

- Light anti-aircraft battery with 12 anti-aircraft machine guns (horse-drawn/wagon-mounted)

The armored divisions also included self-propelled anti-aircraft guns of the type Nimrod 40.M. Similar to the other air defense brochures, there is also the use of Swedish license agreements here, however not with Bofors, but with AB Landsverk in Landskrona. (The anti-aircraft tank is described in a separate paper: Nimrod 40.M.)

According to the organizational charts for **the armored divisions** in 1943 (1st and 2nd Armored Division), the units must be equipped as follows:

At the divisional level

A self-propelled anti-aircraft unit consisting of:

- Staff company, with, among other things, a main battle tank of the Toldi I type.
- Four anti-aircraft companies with six Nimrod 40 mm anti-aircraft guns (self-propelled) and a Toldi I main battle tank.

The army thus had two self-propelled air defense divisions, which were named 51st and 52nd Self-propelled Air Defense Division [2](#)).

The division's combat units consisted of an armored regiment of three battalions and a motorized infantry regiment of three battalions.

At battalion level

Each armored battalion and each motorized infantry battalion included:

- Anti-aircraft division with four units. Nimrod 40 mm anti-aircraft guns (self-propelled) and a Toldi I main battle tank.

In connection with the introduction of new organizational charts in March 1944, the battalions' anti-aircraft divisions were brought together at regimental level (an armored regiment and a motorized infantry regiment) as follows:

At the regimental level

Each regiment included:

- Air defense company with 12 units. Nimrod 40 mm anti-aircraft guns (self-propelled) and three main battle tanks of the Toldi I type.

Sources

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3. *The Royal Hungarian Army, 1920 – 1945* by Leo WG Niehorster, Axis Europa Books, New York 1998, ISBN 1-891227-19-X.

4. *Axis Allies on the Eastern Front* by Bob Mackenzie, Tac Publications, Oxford 2001.
5. *Hungarian Air Force* by George Punka, Squadron/Signal Publications, No. 6069, Carrollton, Texas 1994, ISBN 0-89747-349-3.
6. *History Military Vehicles Directory* by Bart Vanderveen, After the Battle, Battle of Britain Prints International Limited, London 1989, ISBN 0-900913-57-6.
7. *The Royal Hungarian Army 1920-1945, Volume II, Hungarian Mobile Forces* by Peter Mujzer, Axis Europa Books, New York 2000, ISBN 1-891227-35-1. (Kindly lent by Peter Gjørtler)
8. *Beuteflak bei der Wehrmacht 1939-1945* by Werner Müller, Waffen-Arsenal, Sonderband S-39, Podzun-Pallas Verlag, Wölfersheim-Berstadt 1995, ISBN 3-7909-0542-9. *Beuteflak bei der Wehrmacht 1939-1945*, by Werner Müller, Waffen-Arsenal, Sonderband S-39, Podzun-Pallas Verlag, Wölfersheim-Berstadt 1995, ISBN 3-7909-0542-9.
9. *The Hungarian Army and Its Military Leadership in World War II* by Andris J. Kursietis, Axis Europa Books, New York 1999 (third revised and expanded edition), ISBN 1-891227-28-9. (<http://www.axiseuropa.com>)

Anti-aircraft artillery in war games

So that my Hungarian wargame units are not completely left to the whims of enemy aircraft, I have built the models shown here of Hungarian anti-aircraft pieces. So far, however, they have mostly been used to combat ground targets, but perhaps anti-aircraft combat will come one day.

My models



This model depicts a **2 cm anti-aircraft gun 33.M** and is made with inspiration from photographs and drawings [3](#)) as well as the pamphlet [4](#) which is on display at Tøjhusmuseet.

The model is not completely faithful to the original, but is made to look similar.

The machine gun is from the Airfix *Buffalo* set and represents a Polsten machine gun. However, the resemblance is good enough for it to resemble the Danish machine gun. I have added an air target sight derived from a wooden eye for an Airfix English 57mm anti-tank gun (6 pounder).

The stock comes from an English medium heavy machine gun (Airfix *8th Army*), while the wheels come from the spare parts box.

The crew are also Airfix figures - originally Germans, but now painted in Hungarian uniforms.



4 cm anti-aircraft gun 36.M.

This is an Airfix model, which is basically built as the manufacturer imagined. My contribution has only been to give the two seated figures new heads, so that they no longer represent English anti-aircraft artillerymen, but Hungarian ones.

The rest of the crew is partly from Airfix and partly from Hasegawa.

The Hungarian version of the anti-aircraft gun was of the L/70 type, while the Airfix model is of the L/60 type - thus the barrel on the model had to be a bit longer, when it now has to represent a Hungarian anti-aircraft piece. I have overlooked this detail!



8.8 cm anti-aircraft gun 37.M.

As with the previous models, this is also an Airfix building kit - here, however, of the German 8.8 cm anti-aircraft gun.

I have added a few details on the model, but otherwise it is as the manufacturer intended it to be had to gather. The inspiration for the details came during a visit to the Tøjhusmuseet.

The two figures that do it next to the gun crew are from Hasegawa, while the figure with the range finder is from Esci.

The two baskets with grenade cartridges are from a Hasegawa construction kit of a corresponding pamphlet.

At www.lexnet.dk you can see Peter Gjørtler's pictures from the war game Operation TRANSYLVANIEN. Among other things, my 4 cm and 8.8 cm anti-aircraft cannon appear here. The pictures are somewhat sharper than the ones shown here, so a visit to Peter's website is recommended.

This page also contains a report on Operation TRANSYLVANIEN. In this, my Hungarian artillery division was secured by an anti-aircraft machine gun platoon (light machine gun in anti-aircraft outfit), which Søren Juul has made from figures from SHQ. The platoon provided good support to the artillery division when it was attacked by Romanian fighters.



Inspiration from a visit to the Tøjhusmuseet

Of course, you can just collect and paint the models you now buy and/or build, but in my opinion, seeing things in reality is a good supplement to different visual material.

During the preparatory studies for my Hungarian anti-aircraft guns, I therefore - in the summer of 2002 - paid a visit to the Tøjhusmuseet in Copenhagen, where, among other things, pamphlets reminiscent of those used in Hungarian service are exhibited.

The Danish 20 mm machine gun manufactured by the Danish Industrial Syndicate.

A neat little brass sign on the cannon bears the text "Compagnie Madsen, Kjøbenhavn" and thus shows the name under which the company marketed itself.



Tøjhusmuseet's example of a 40 mm anti-aircraft gun is of a slightly different design than the one that was produced in Hungary.

The museum pamphlet has served in the Danish army under the type designation 40 mm L/60 anti-aircraft gun M.45E.

Basically, it differs from the Hungarian one in its manufacture. The English adapted the original Swedish design to their own production methods, whereby the forged legs became tubular.



Tøjhusmuseet's copy of the famous German "Acht-Acht" anti-aircraft gun.

Even though the pamphlet is marked by the ravages of time and certain details are no longer what they once were, you are left with quite a good impression of the cannon after you have walked around it a few times.

Per Finsted

1) *This arrangement is very similar to "The Voluntary Air Reporting Service", which was established in Denmark in 1934. The association was the predecessor of the later Luftmeldekorps under the Home Guard. (Det danske Hjemmevern, Nordens Bookforlag, 1959.)*

2) *Whether these anti-aircraft gunners belonged to the artillery or the panzer troops is not known, and unfortunately the available image material does not allow interpretation of the soldiers' affiliation.*

3) *It was also here that the drawings of the machine gun on the clipping sheets of the Danish army from the 1940s came into the picture - as part of the inspiration.*