

Restoration Sherman M4A3 (105) HVSS Howitzer tank



BAIV BV | British American Infantry Vehicles

Titaniumstraat 11 | NL 6031 TV Nederweert | The Netherlands

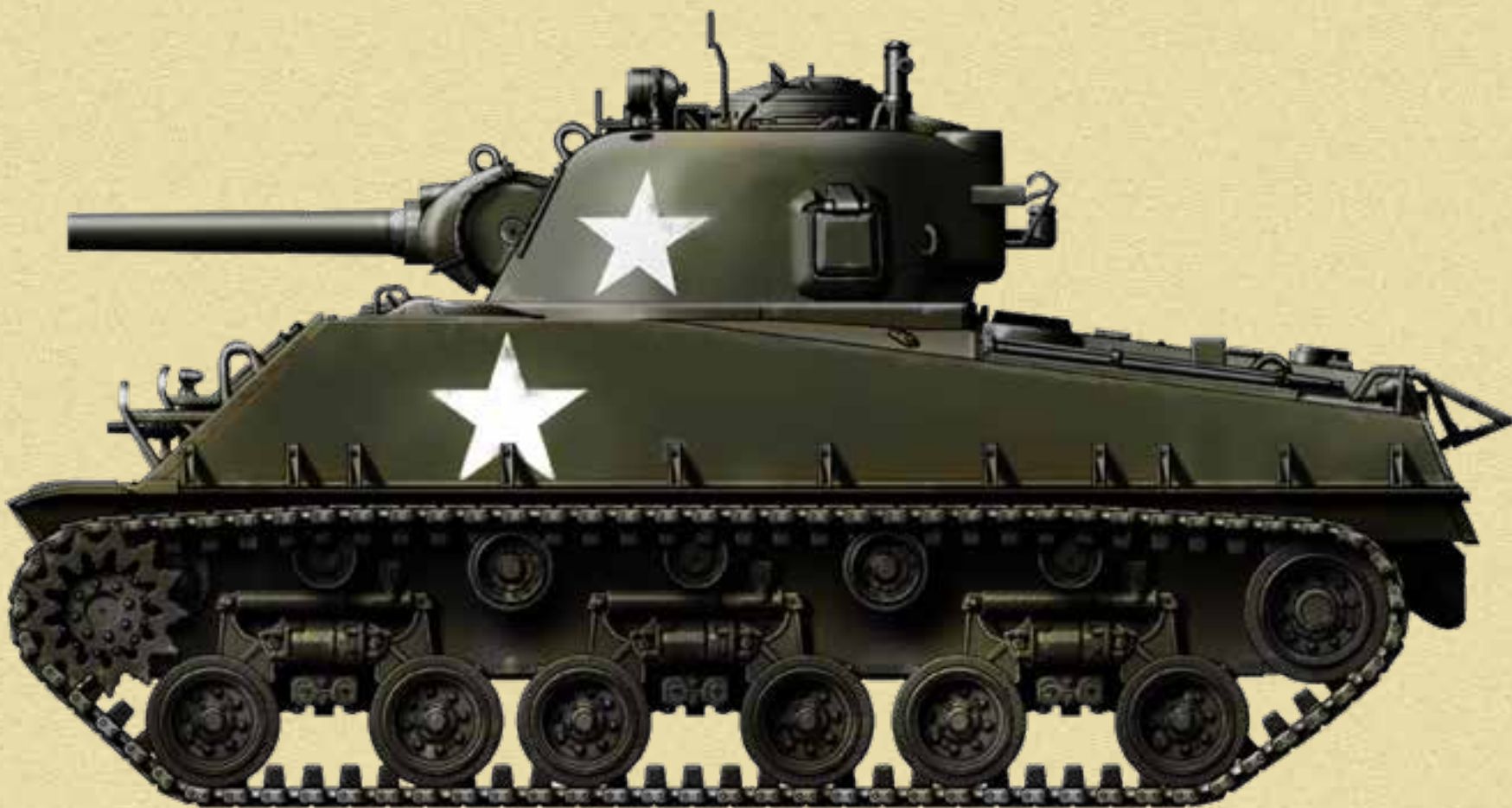
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Sherman M4A3 (105) HVSS Howitzer tank



Technical Specifications

Model:	Sherman M4A3 (105) HVSS Howitzer tank	Speed	26 mph (42 km/h) sustained
Manufacturer:	Detroit Arsenal Tank Plant (DATP), Chrysler Corporation, Warren, Michigan	Operational range:	On roads: 100 miles (161 km)
No. built:	2,539 M4A3 (105) Shermans with HVSS	Fuel capacity:	168 gallons (764 liter)
Production period:	May 1944 till June 1945	Dimensions	Length: 247" (6.27 m)
Makers ID / SN:	#73227		Width: 118" (3.00 m)
USA registration:	USA 30137059		Height: 117" (2.97 m) over turret cupola
Date of Delivery:	April 1945	Ground clearance:	17" (43 cm)
Combat Weight:	72,900 lbs. (33,100 kg)	Electrical installation:	24 Volt
Crew:	5: Commander, Gunner, Loader, Driver, Assistant Driver	Armament	Main: 105mm Howitzer M4 on M52 Mount in turret with 66 rounds
Engine:	Ford GAA; V8, 4 cycle, 60° 1,100 cu in (18 L) gasoline;		Secondary: 1x .50cal M2HB MG flexible in turret AA mount
	Displacement: 1,100 cu in (18 L)		2x .30cal M1919A4 MG
	Power (gross): 500 hp @ 2600 rpm	Armor: Howitzer shield:	3.6" (91 mm)
	Power (net): 1,000 pound-feet @ 2,200 rpm	Front:	2 – 4 ¼" (51 - 108 mm)
	Torque: 1,050 ft-lbf (1.424 Nm) @ 2,200 rpm	Hull Sides:	1 ½" (38 mm)
Transmission:	Synchromesh, 5 speeds forward, 1 reverse	Hull: rear:	1 ½" (38 mm)
Steering:	Controlled differential; steering levers	Hull top:	¾" (19 mm)
Suspension:	Horizontal volute spring	Hull floor:	½" (13 mm)

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Introduction

By the second half of 1943, US Ordnance Department tests had determined that the 500 HP Ford V8, as installed in the M4A3, was the best tank engine for the Sherman. If industrial conditions had permitted, all future Sherman production would have utilized the Ford V8. Only supplies were limited, so it was necessary to continue to produce 2nd Generation M4s and M4A1s with Continental Radial Engines, along with M4A2s with GM Twin Diesel power packs. Production of the M4A4 with its complex and unreliable 30 cylinder Chrysler Multibank was already stopped in September 1943.

One of the personal favorites of the Sherman series of father and son Ivo Rigter of BAIV BV is the impressive Sherman M4A3 105mm Howitzer Tank. Chrysler Corporation was the sole manufacturer of the 105mm armed Shermans. Production of this iconic tank started in February 1944 and ended in June 1945. In September 1944 Chrysler Corporation also completed the transition to the improved HVSS suspension.

On February 4, 1945, the First (US) Army Group allocated twenty M4A3 (105) HVSS tanks to the Ninth Army. Combat debut of this superior tank on the European Theater of Operations (ETO) was in February or March 1945.

History of this M4A3

This tank is a late model M4A3 (105) HVSS. It was delivered under SN #73227 and with registration USA 30137059 on April 5th, 1945.

At the end of WW2 -after active duty in Europe- it was shipped back to the US, where it was used to train US troops before they were sent to Korea. Via Joe DeMarco, a highly respected Tank Historian from Staunton, Virginia USA, we received a picture from this tank during an Infantry training exercise of the US 86th Infantry Regiment at Camp Funston Training Area in Fort Riley, Kansas USA on the 5th September 1952.



Nice detail on the photo above is, that at that time the 105mm howitzer was removed to give the commander (with cap) a better view of the soldiers to be trained.



Early 1954 this tank was converted by Bowen McLaughlin-York Inc. into a M74 ARV (Armored Recovery Vehicle). After its conversion it was supplied to the Greek Army, where it remained in service until the late eighties. After its release it stayed for a long time in a Greek storage yard near Thessaloniki.

The discovery by BAIV

In 2019 the team of BAIV found the from Sherman to M74 ARV converted vehicle in Greece and discovered that it was an absolute unique find, because it still had its original Ford GAA V8 engine and it came with many trivial details.

After a long period of organizing the proper permits were given and the M74 ARV was finally delivered at the new location of BAIV in Nederweert.

In 2021 BAIV discovered a correct matching WW2 D78461 / C142 turret in Hardinxveld Giessendam. In the late nineties the previous owner saved it from a shooting range in France. Though he already partly cosmetically repaired it, still lots of work had to be done to restore the turret.

At that moment the basis was complete for the restoration of the Sherman M4A3 (105) HVSS tank. The only item missing at that moment was the M52 Combination Gun Mount for the 105mm Howitzer and the 30. Caliber machinegun.

In september 2021 the basic conversion of the M74 ARV into the original M4A3 Sherman was started. In the beginning of 2022 the stripping was completed. At that moment BAIV came in contact with Frits van Eerd, who since 2019 was searching for an original Sherman tank with V8 engine. Eventually he decided to purchase the Class A restoration of the Sherman M4A3 (105) HVSS at BAIV.

The new owner: Frits van Eerd

Frits van Eerd, born in 1967, grew up in Veghel. In these days Mr. Jan Driessen had a beautiful museum (the later Wings of Liberation in Best). As Frits was interested in everything related to the Second World War, he accompanied as a young boy Mr. Driessen to expand the museum collection. Due to this he became increasingly mesmerized by all that happened in WW2, partly because Veghel was an important location along 'Hells Highway' during Operation Market-Garden in September 1944..

After studying Business Administration in Utrecht, Frits continued his studies in the US, where he met many veterans which evoked warm feelings of gratitude in him. In his later life, Frits therefore became actively involved in the Netherlands-

America Stichting, a foundation that is committed to having surviving veterans come over to The Netherlands every year. After all, those men were boys at that time, between the age of 16 and 20, who made great sacrifices in the autumn of 1944 and in the liberation of The Netherlands.

Historical collection of planes

The historical WW2 Collection of the Frits van Eerd family focuses on the equipment and material used to liberate the south-east of The Netherlands in the period 1944-1945, starting with Operation Market-Garden. In addition, the collection focuses on the air war during the occupation and the post-war period of reconstruction.



In 2018, a big dream finally came true for Frits. After years of searching, he purchased two authentic Spitfire aircrafts. One of the aircrafts, a Mk.16, the TB885, flew from March to October 1945 with the 322 Dutch squadron of the RAF, which was founded in the Second World War by the Dutch Prince Bernhard. At the end of 1944 and 1945 this aircraft was even for some time stationed at the temporary airfield near Veghel!! Dutch registration of this Spitfire became PH-FVE, a reference to the **Flying Vintage Everyday** Foundation, and ... Frits van Eerd! In addition, Frits owns also a 2-seater Spitfire training aircraft and a very unique Mk.1 (a Battle of Britain veteran!), which extensive restoration at the workshops of the Biggin Hill Heritage Hangar under supervision of Peter Monk was finished in September 2023.



Collection of rolling WW2 material

Frits van Eerd is convinced that preservation of historical military equipment, and also showing it to current generations at the appropriate times, makes more and more young people aware of what happened in those days and what it means to be free. Especially standing along a road where historic military vehicles roll by or fly over, is without doubt impressive for everyone, but above all it leaves a sense of the circumstances under which our current freedom had been fought.

That is why in 2019 Frits van Eerd started a search for a Sherman tank. In his search he often was not pleased with what was offered in the market. He had his sights set on a Sherman with a V8 engine (the famous GAA) built by Ford. In his opinion this was and still is the best that the 'American Greatest Nation' produced in terms of tanks.

In the beginning of 2022 Frits made contact with BAIV. Reason for him was mainly that BAIV is characterized by the love for preservation of historical military cultural heritage through traditional high-quality project-based restorations and passion for historical details. Their warm and personal approach, in addition to the enormous knowledge and craftsmanship, made him in April 2022 decide to purchase the Class A restoration of the Sherman M4A3 (105) HVSS.



The restoration

After stripping of the M74 ARV end of 2021 and beginning of 2022 the actual restoration of the Sherman M4A3 (105) HVSS started in April 2022.

As mentioned before, the only major item missing at that moment was the M52 Combination Gun Mount for the 105 mm Howitzer and 30. Caliber machinegun. An almost impossible task to find it!



But sometimes you're lucky! Ivo Rigter Jr. came in contact with the Kazematten Museum on the Afsluitdijk in Kornwerderzand. In the 1980's the museum acquired an authentic 105mm Sherman turret from the Dutch Defense Department, which was been exhibited as a relic of the Cold War. However, this was historically incorrect, it should actually be a Sherman Firefly turret!



Initially Ivo Jr. asked the Kazematten museum, whether BAIV could temporarily borrow the 105 mm turret to measure it for redesign with CAD in order to reproduce it. The Curator of the museum, Mr. Stienstra, said that he would rather exchange the existing 105mm turret for an authentic and historical correct Firefly turret. A wish that at the time seemed almost impossible!

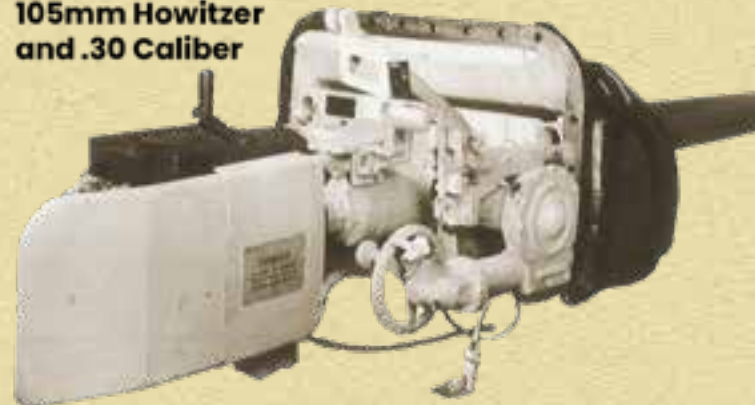


BAIV started a world wide search and managed through a friendly relationship to purchase an authentic original Firefly turret in Argentina, including the original Mantlet and Shield. In January 2023 the 105 mm turret was lifted from its concrete foundation and transported to BAIV's workshop in Nederweert. A spectacle that received national publicity, even television. The Firefly turret was restored and is ready for installation at the Kazematten Museum, probably somewhere in the autumn of 2023.



On the prestigious project of the restoration of the Sherman M4A3 (105) HVSS tank worked two teams of dedicated experts of BAIV BV. Phase 1: Leroy Broks, Luc Wevers, Maik van Boxmeer and Martijn van Kuijk. Phase 2: Eddy Huijersjans, Quinten Janssen, Joël Daniels and Jur Pleunis.

**M52 Combination Gun Mount
105mm Howitzer
and .30 Caliber**



At the workshop of BAIV the M52 gun mount of the Kazematten Museum was restored according specifications of the Technical Manual and placed in the original D78461 / C 142 turret.

During the restoration many small but essential parts and details of the M4A3 were redesigned



and reproduced. During the complex and challenging restoration, over 5,500 man-hours were invested by the BAIV workshop crew. In the end, the result is a beautiful Class A restoration, through which you are guided step by step in this photo album.



Field Acceptance Test (FAT)

On June 13th, 2023 the M4A3 tank was field tested and made its maiden roll-out on an estate of one of BAIV's clients in Meijel.

After an instructive session and a demonstration, Frits van Eerd and his son Karel climbed into the driver seats and behind the sticks. Supervised by Ivo Rigter Jr. they made their first ride.



Tribute to the 'Armoraider's'

Together with the new owner, Frits van Eerd, we decided to mark the tank as a tribute to the US Headquarters Company of the 65th Armored Infantry Battalion, 20th Armored Division, carrying the registration number USA 30137059.



An original picture of a tank crew of 20th Armored Division, taken in the Austrian Alps late May, 1945.

The 20th Armored Division had no official name, although it associated itself with the nickname 'Armoraider's' when they were in training at Camp Campbell, Kentucky USA. Until October 1944, the 20th Armored Division's mission was to train soldiers and qualify them for overseas shipment as combat replacements for armored units. To perform this mission, the Division included in its strength an unusually large number of intelligent and highly trained men (!), including students from several of US Army's advanced college training programs.

The Division arrived at Le Havre in France at the 19th of February 1945. After assembly in Buchy in Normandy, preparation, and additional training, it was moved through Belgium to Germany and finally attached to XV Corps, Seventh Army, at Würzburg, Germany. Elements of the 20th Armored Division's Combat Command operating as Task Force 20, was awarded a Distinguished Unit Citation for their collective action in the Central European (Southern Germany) Campaign. The Recommendation for Unit Citation, dated 3 October 1945, states:

"These units, which constituted Task Force 20, are cited for outstanding performance of duty in action during the period 28–30 April 1945, in the vicinity of Neuherberg, Germany. With soldierly courage and irrepressible determination members of Task Force 20 pushed an armored spearhead 45 miles beyond the Danube River to the outskirts of Munich, destroying a supply train, capturing almost 800 prisoners, and securing four bridges over the Amper River intact. Continuing the attack on 29–30 April against an enemy entrenched in elaborately prepared dugouts and behind the thick walls of the SS Training Center and an Anti-tank School which were defended by small arms, machine guns, hundreds of panzerfausts and twelve 88 mm guns, our troops killed 700 SS Troops, who fought stubbornly and fanatically. This victory destroyed the defenses of Munich, Germany, removing resistance to the entry of troops into the city."



In pursuit of retreating German troops after the capture of Munich and prevention of a feared German National Redoubt in the Austrian Alps the 20th Armored crossed the Inn River at Wasserburg on 3 May 1945, entered Traunstein on 4 May (where most probably the picture below was taken), and entered Salzburg at the moment it received word that hostilities ceased in Europe.







Transport















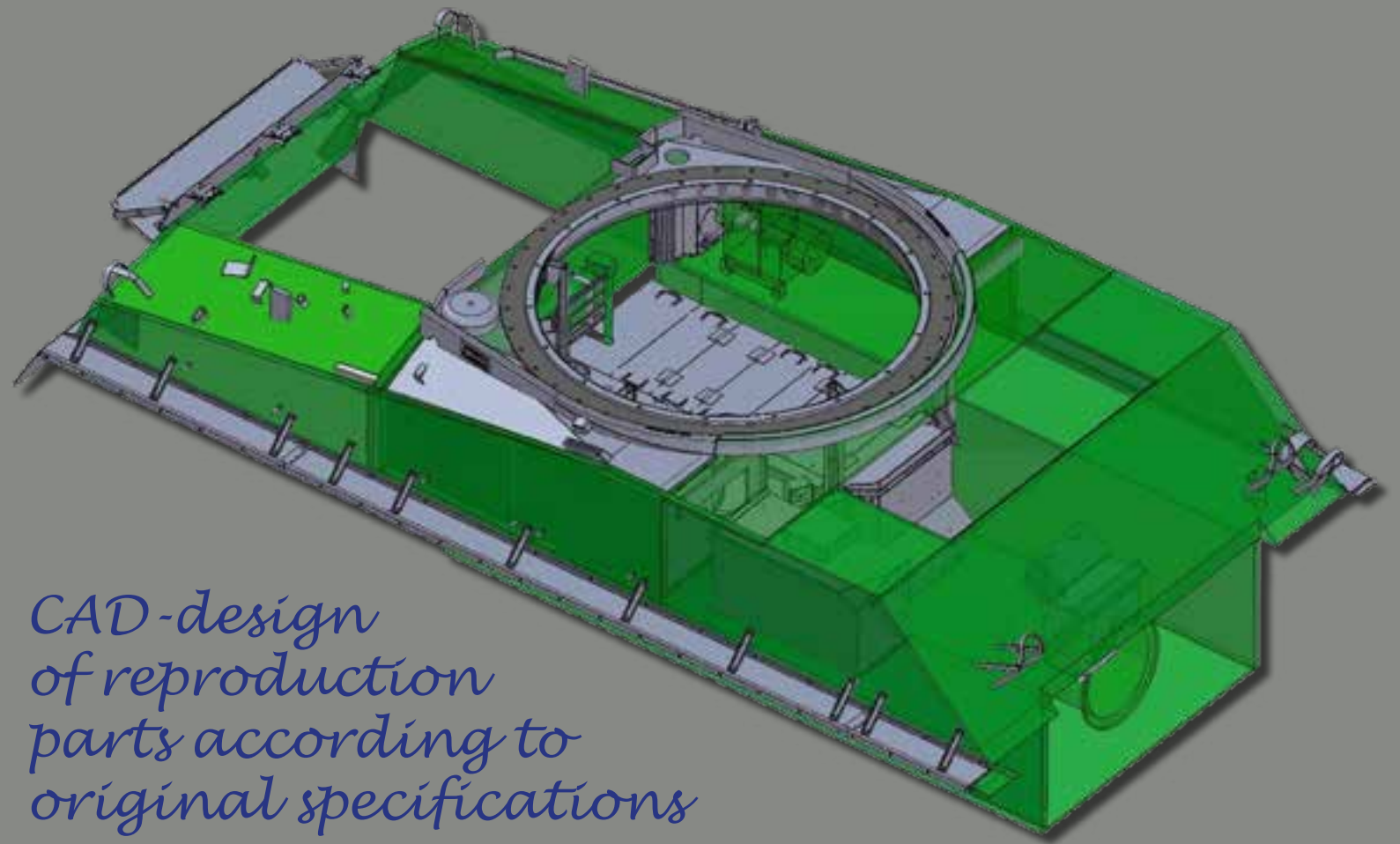












*CAD-design
of reproduction
parts according to
original specifications*

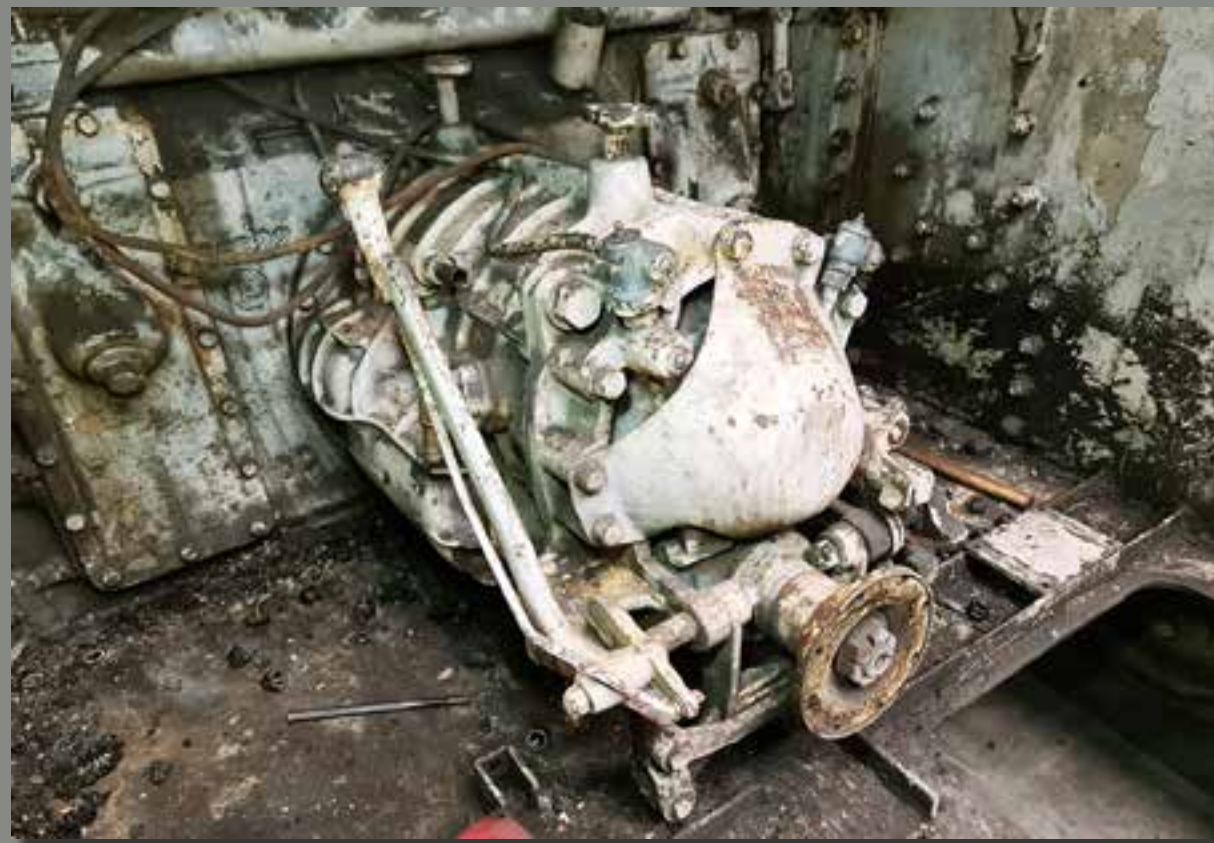




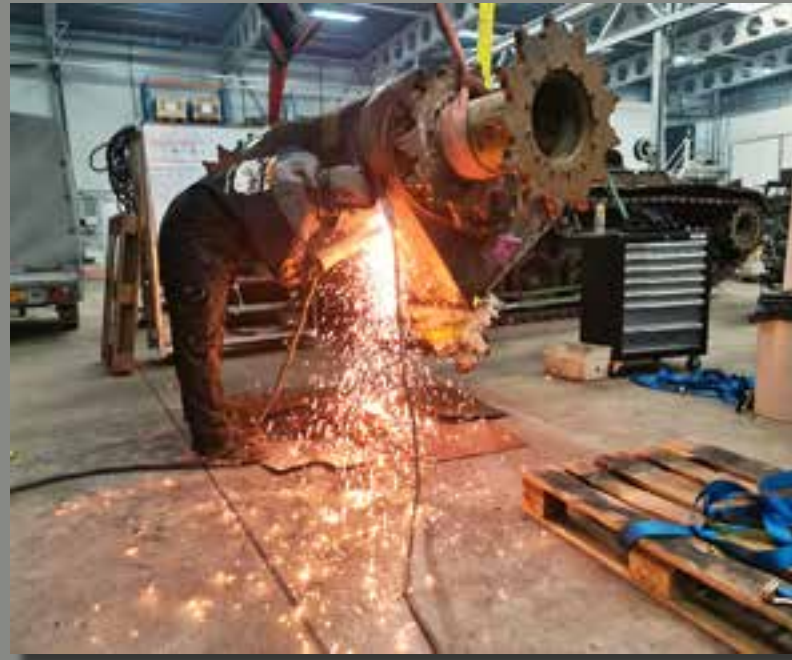








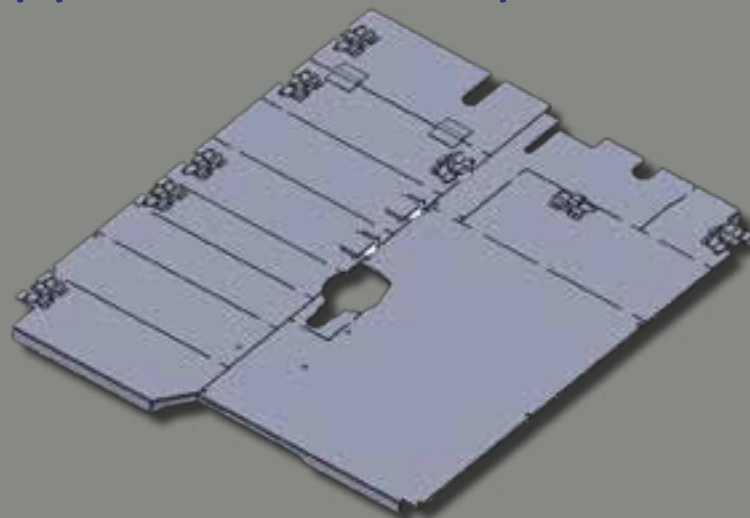






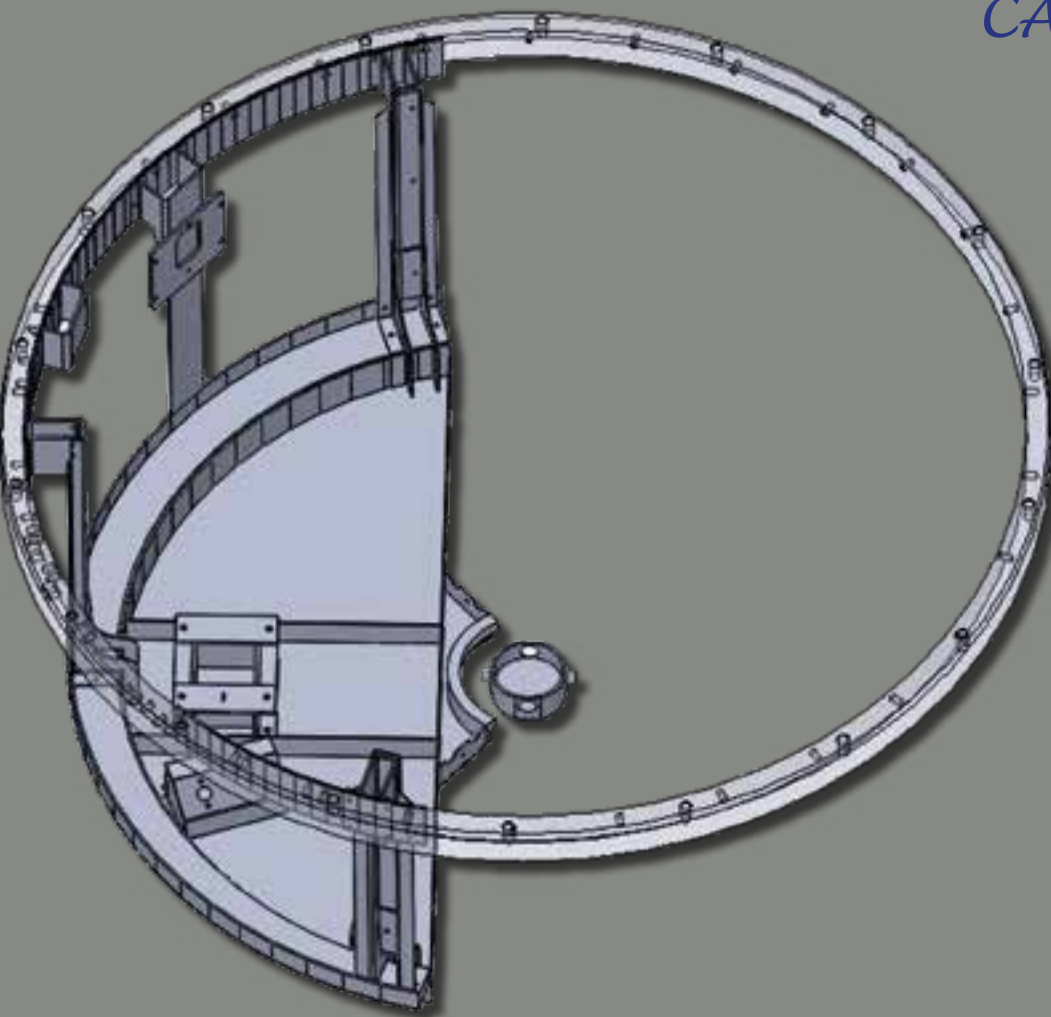


*CAD-design reproduction
of floor in hull of M46-A1*







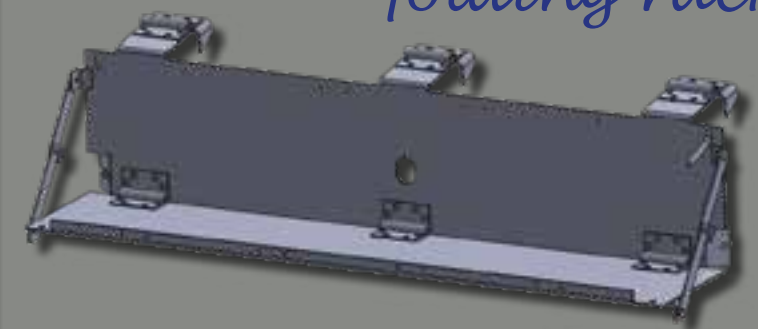


CAD-design for the reproduction of the turret basket

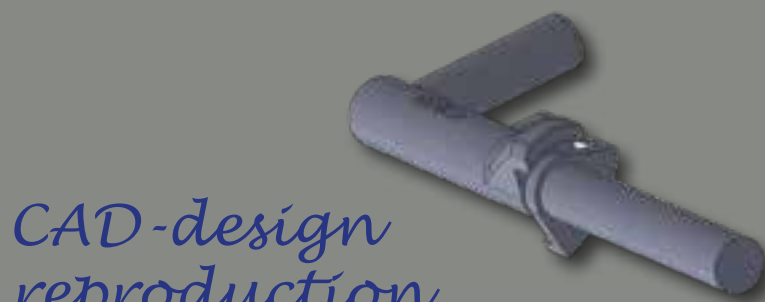




*CAD-design for
reproduction of rear
folding rack*

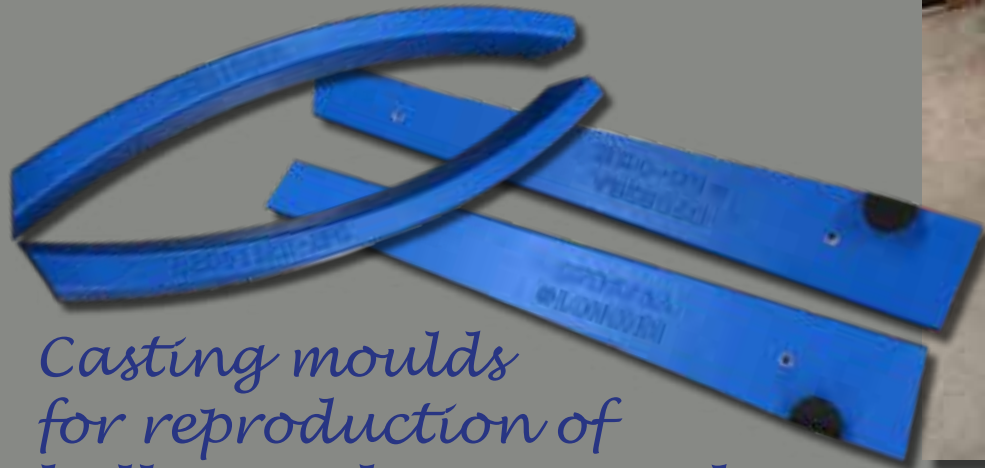






*CAD-design
reproduction
of latch of pistol port
in the turret*





*Casting moulds
for reproduction of
bullet catchers around
the base of the turret*





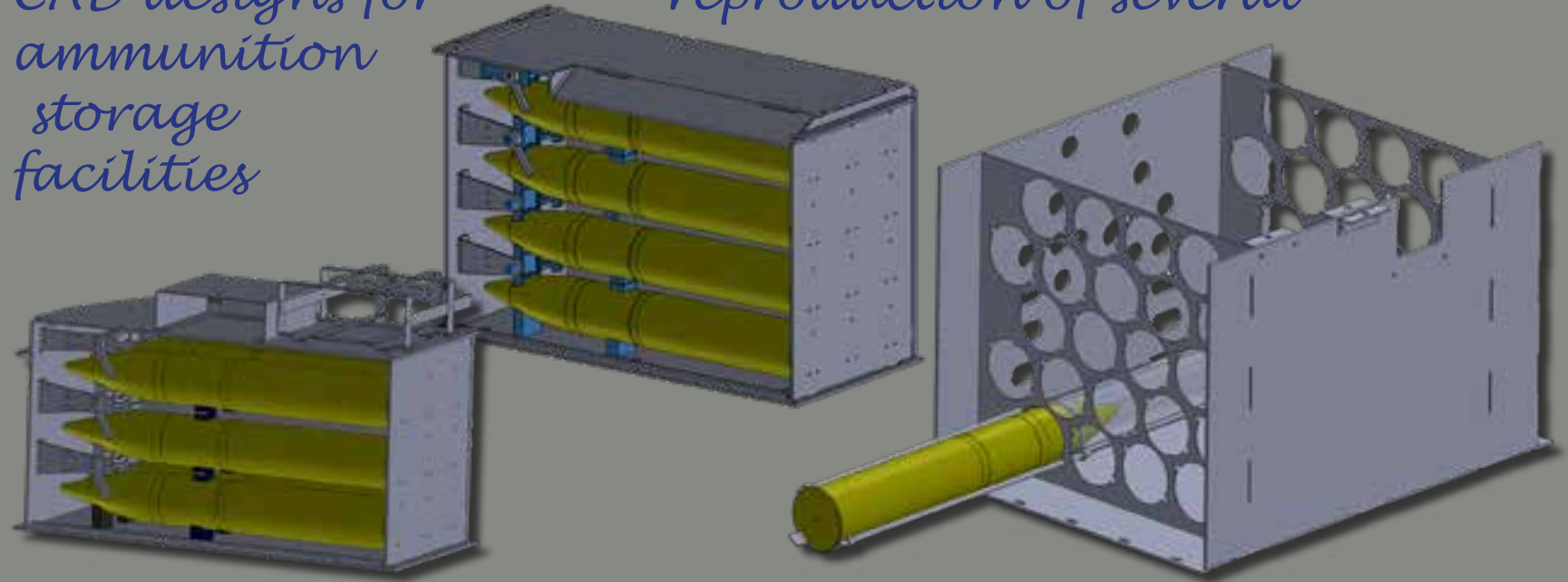






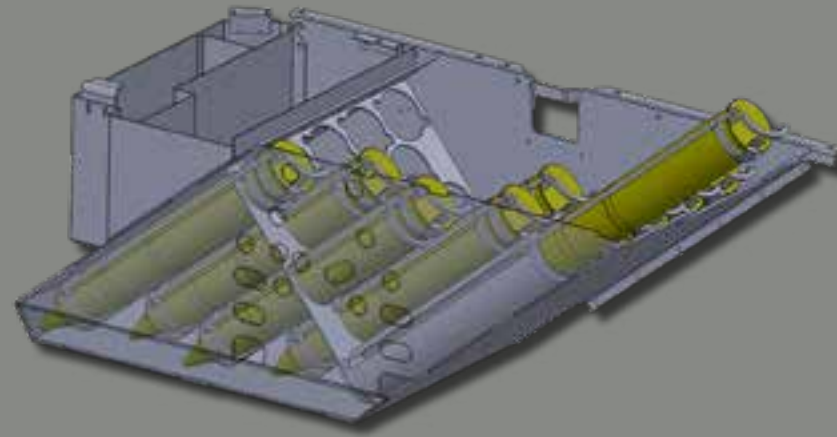
*CAD designs for
ammunition
storage
facilities*

reproduction of several



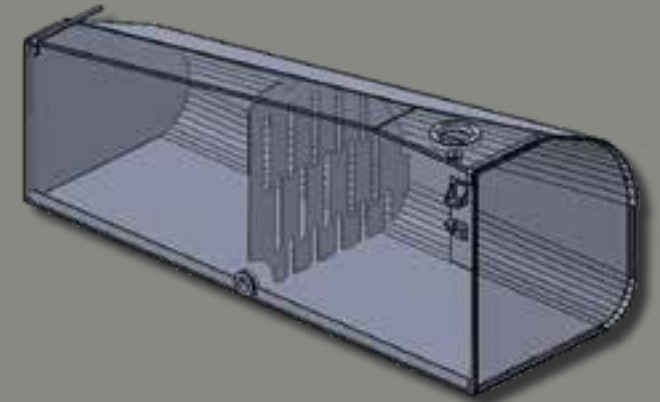


Another CAD design for the reproduction of ammunition storage





CAD design for the reproduction of the fuel tanks

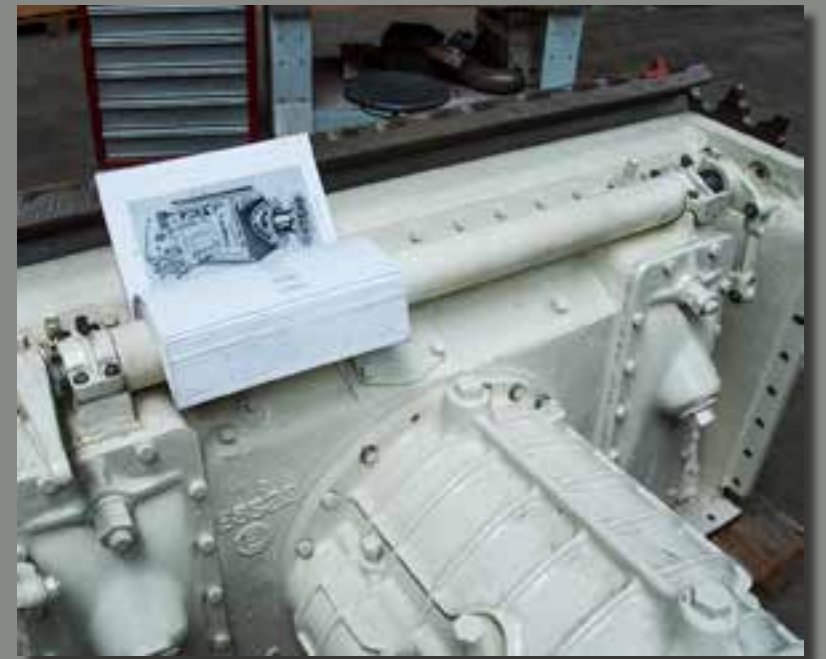














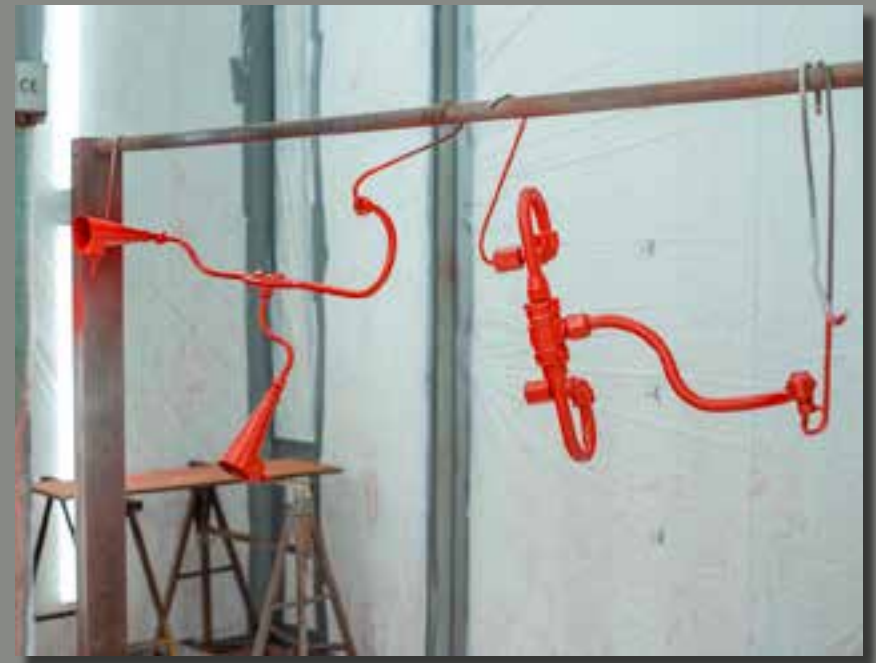


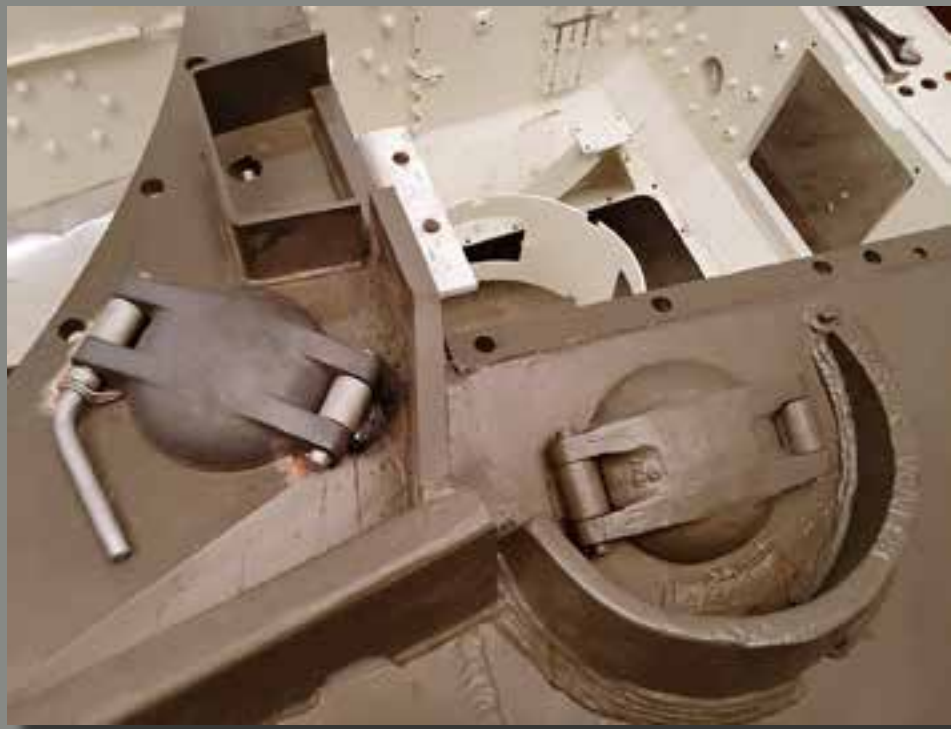




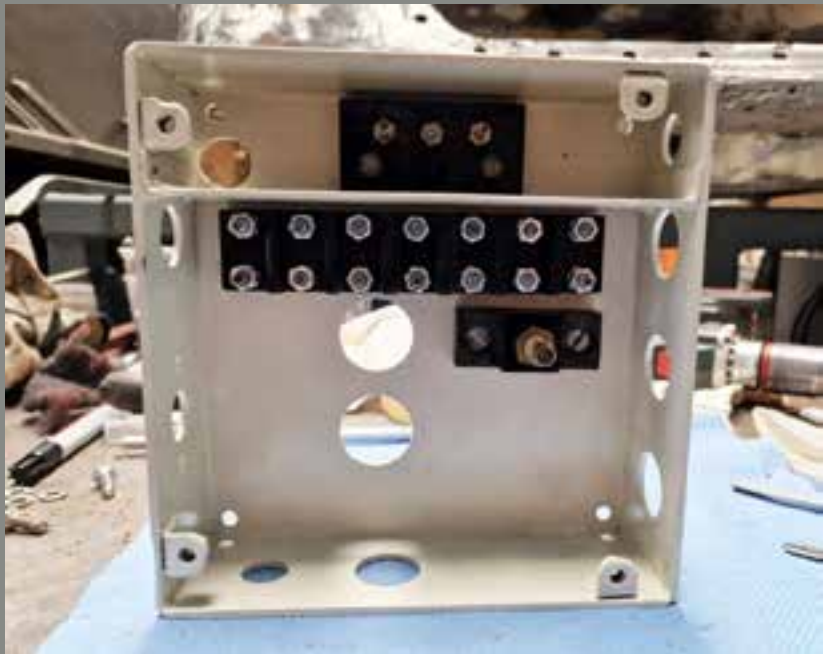
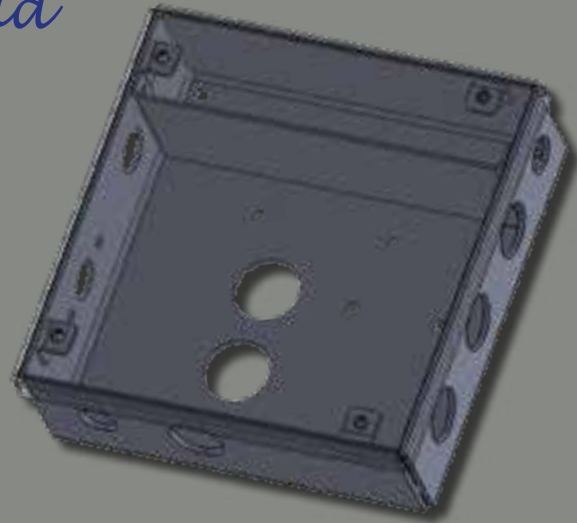








*CAD design for reproduction
of main terminal box on
bulkhead*

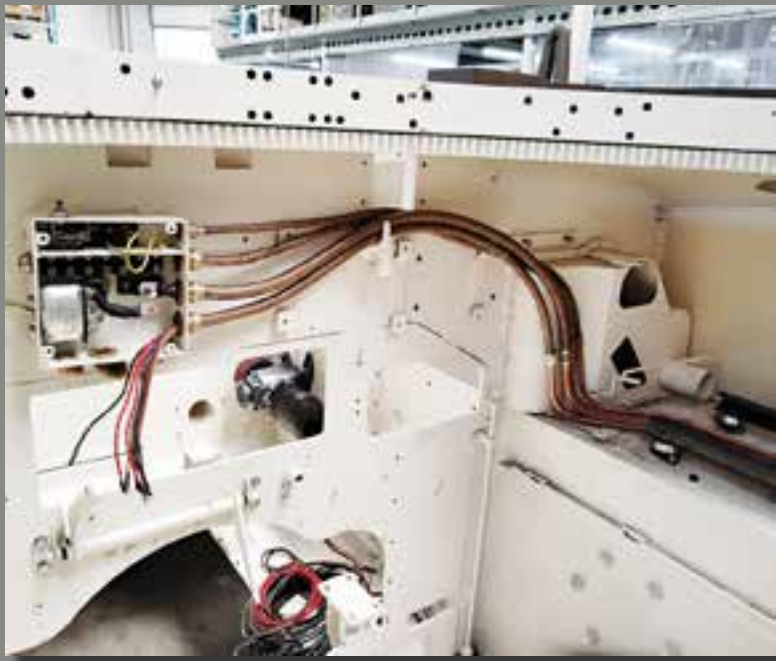








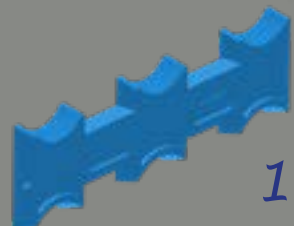
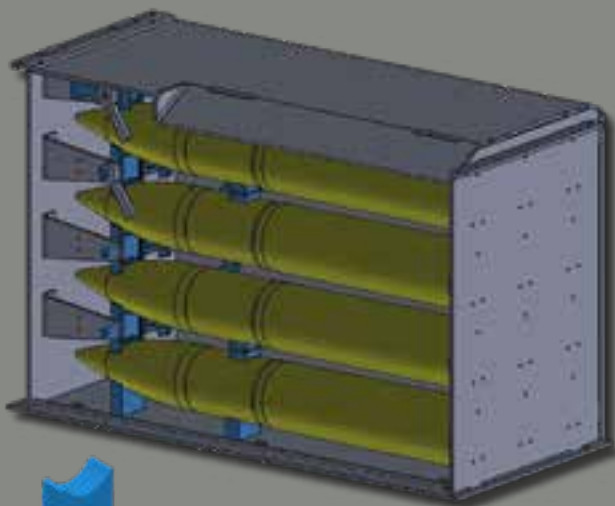






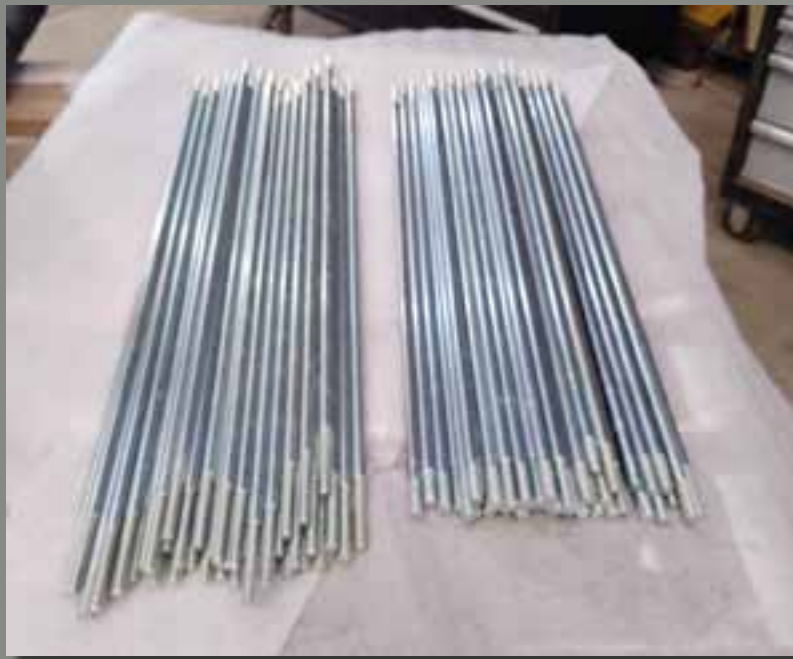


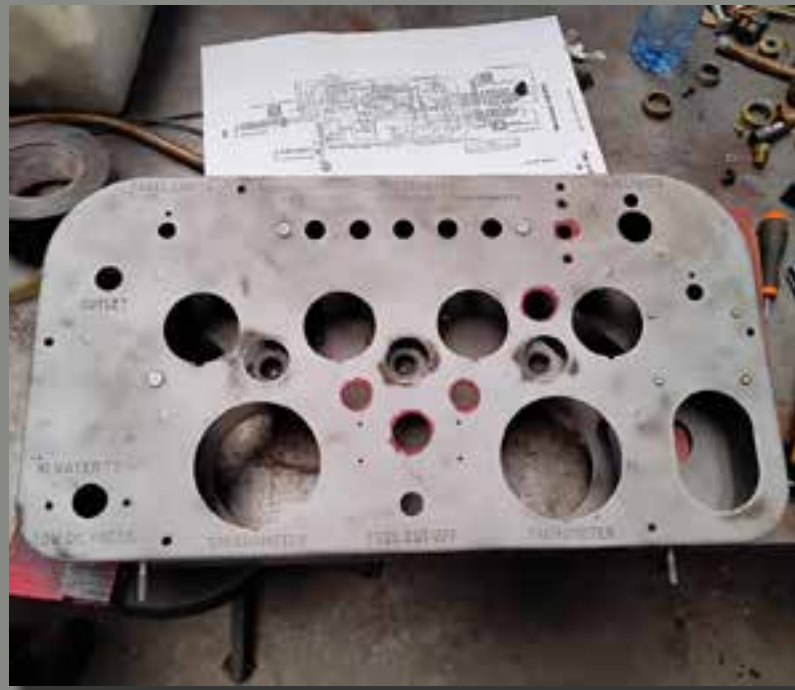




*CAD design for
150mm Howitzer
ammunition storage*







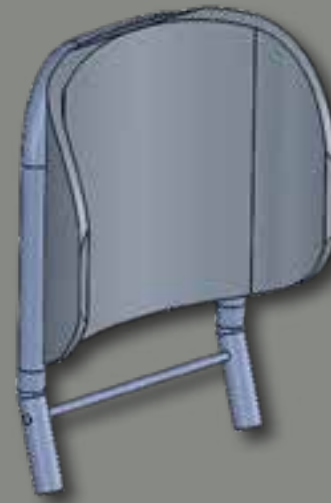








*CAD design
of back rest
of drivers
seat*















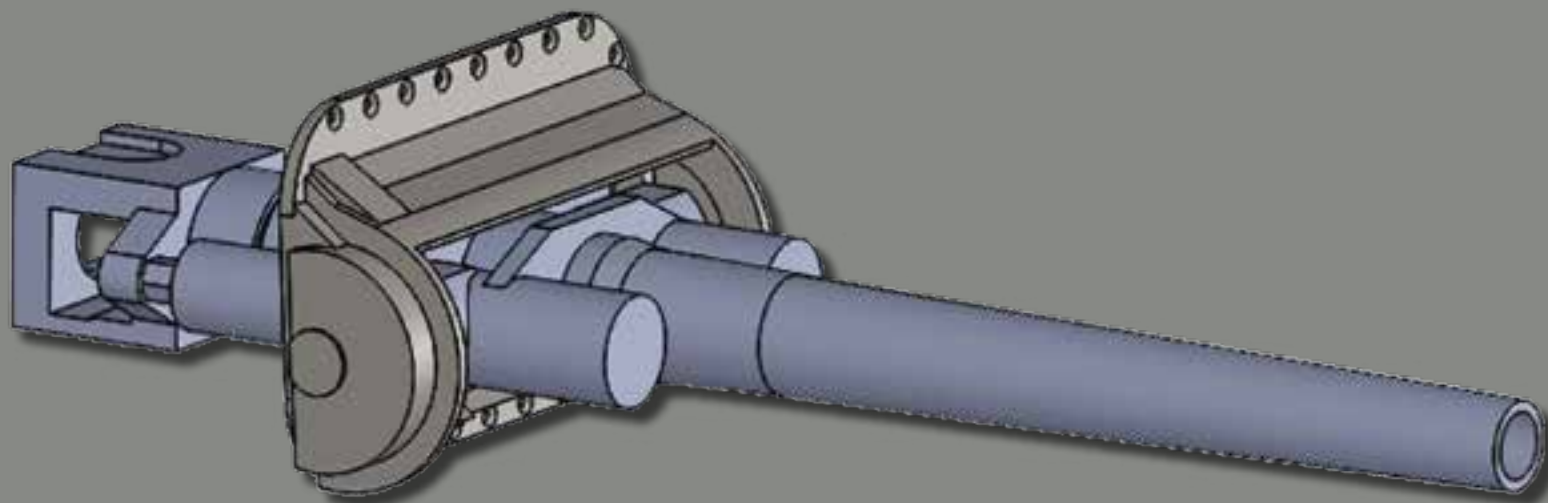








CAD design of the M4 Howitzer in 105mm turret.

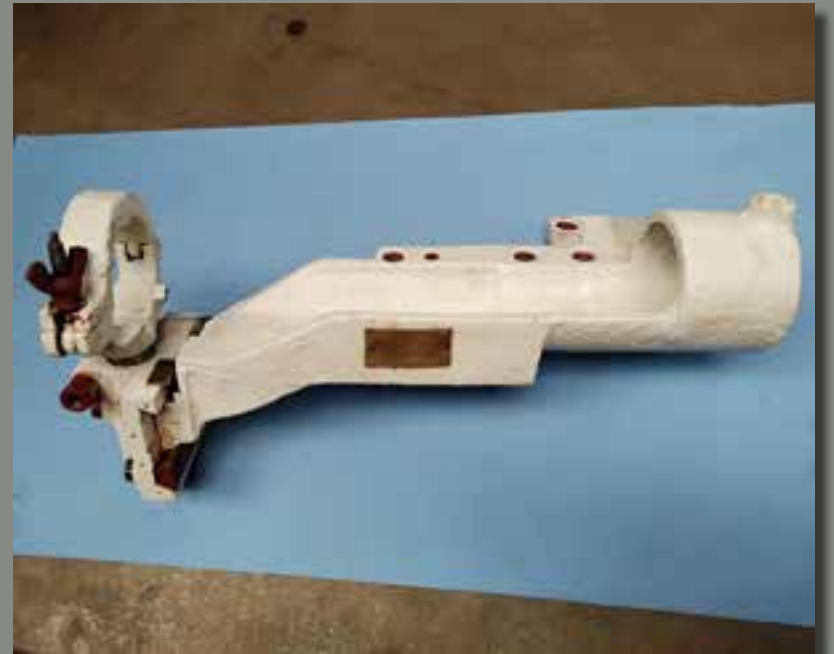








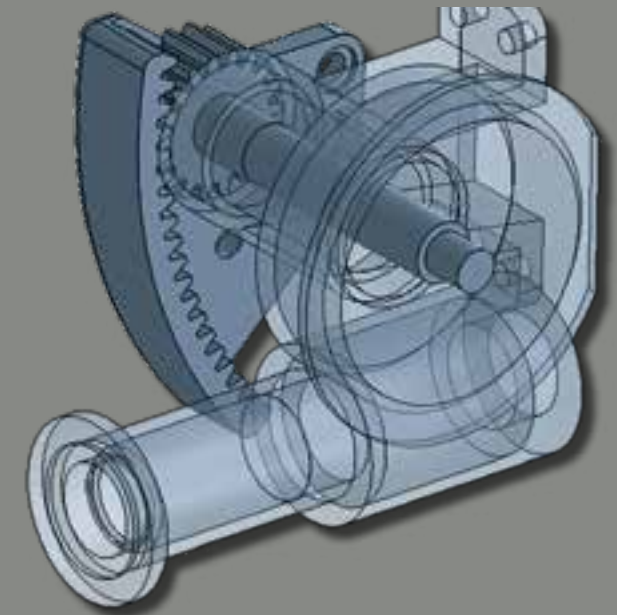








CAD design of the elevation system













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