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# THE BATTLESHIP *BISMARCK*

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and **400 colour 3D views**

**Stefan Damiński**

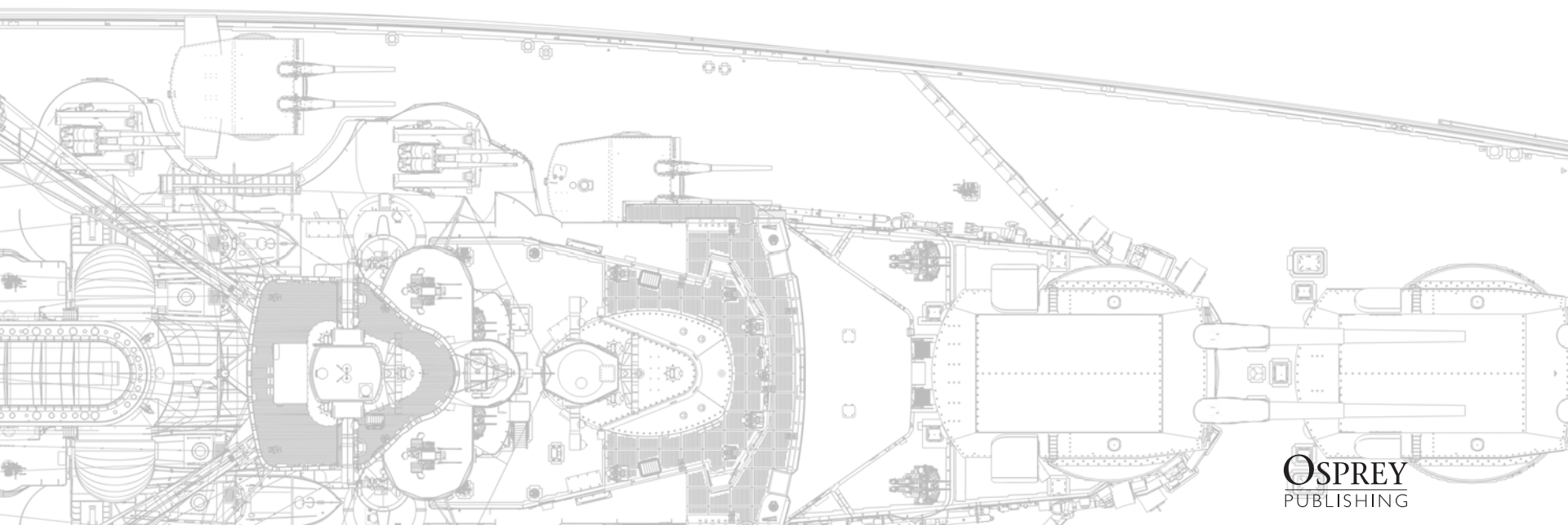




ANATOMY OF THE SHIP

# THE BATTLESHIP *BISMARCK*

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PUBLISHING







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**THE**  
**BATTLESHIP**  
***BISMARCK***

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**Stefan Dramiński**





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A detailed technical line drawing of the battleship Bismarck, showing the hull, superstructure, gun turrets, and various deck features. The drawing is oriented horizontally and serves as a background for the text.

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The author in Grimstadfjord near Bergen, Norway. This is the location where *Bismarck* was anchored on 21 May 1941, and where one of the most famous photos of her were taken (see [page 42](#)).

# INTRODUCTION

Although it has been almost eight decades since her sinking, the German battleship *Bismarck* continues to fascinate new generations of history enthusiasts. Her history was short and violent, filled with glory, horror, tragedy and reversal of fortune, experienced by both adversaries: the German Kriegsmarine and British Royal Navy. *Bismarck's* first and last combat mission, Operation *Rheinübung*, was one of the most important events in the Battle of the Atlantic and became an example of the cruelty and volatility of naval warfare in World War II. Once the largest and proudest warship in the world, *Bismarck* now lies at the bottom of the ocean, but her history is not forgotten.

It was in 1989 when I first heard about battleship *Bismarck*. A *National Geographic* documentary was on TV, telling the story of the vessel and Bob Ballard's recent discovery of the wreck. Then a 7-year-old boy, I became instantly fascinated with the subject. I watched the recorded documentary over and over on a VHS cassette, not knowing that something that seemed to be a brief interest, would eventually become a hobby for life.

There are many aspects to battleship *Bismarck* and her history and it is impossible to cover them all within one volume. The main purpose of this book is to document the ship's technical details and physical appearance over different time frames in the greatest detail possible. While I realise that no book is perfect, I do hope that this volume is an important step towards learning all the secrets of the *Bismarck*.

My serious research for this book began in 2001. Since then I have collected everything I could find about *Bismarck* and her wreck: books, articles, photographs, drawings and videos. Careful, exacting analysis of all this material led to my acquiring a detailed knowledge of the ship's structure. Sometimes it gave me a very peculiar feeling in that I knew the layout of a historical ship's decks better than my own neighbourhood.

In order to show the details of the battleship, I built a digital 3D model of it. This approach allowed me to have an exact digital copy of *Bismarck* on my computer. Once finished, the model could be handled and represented in several ways. In this way, I was able to create scale drawings and colour artworks at the same time.

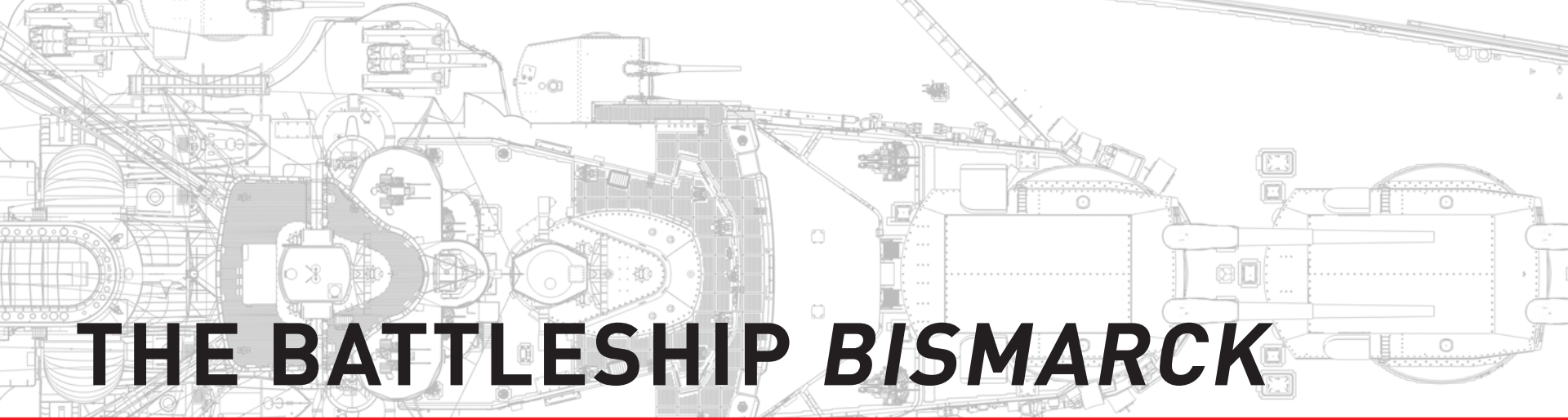
As I moved on with the project and added every possible detail, my model rapidly became more and more complex. Eventually, I ended up with a result that was by far the biggest thing I have ever made as a professional 3D modeller. Those who are familiar with 3D modelling will appreciate the huge number of polygons in the *Bismarck* model: more than 40 million.

This work would not have been completed in this form if it weren't for several people. My thanks go to Jan Dohmen in the Netherlands and Antonio Bonomi in Italy for their kind assistance. I would also like to honour the memory of my friend, Grzegorz Żukowski, with whom I discussed the making of this book many years ago. My parents and my sister kept encouraging me, and my two little children Ninka and Tymek displayed remarkable patience all along the way. The biggest thanks go to my wife Iwona. Not only did she support me and review my work at every stage, but she also produced the book cover artwork, assembled all the material created by me and prepared it for print.

While there are Nazi symbols present in several pages of this book, it should be made clear that I am by no means a supporter of this ideology. As a member of a nation so harshly treated by World War II, I am more than aware of the infinite human suffering caused by this movement. The sole purpose of presenting Nazi symbols here is for historical accuracy – documenting the exact appearance of a fascinating battleship.

Stefan Damiński  
Toruń, Poland, March 2018





# THE BATTLESHIP *BISMARCK*

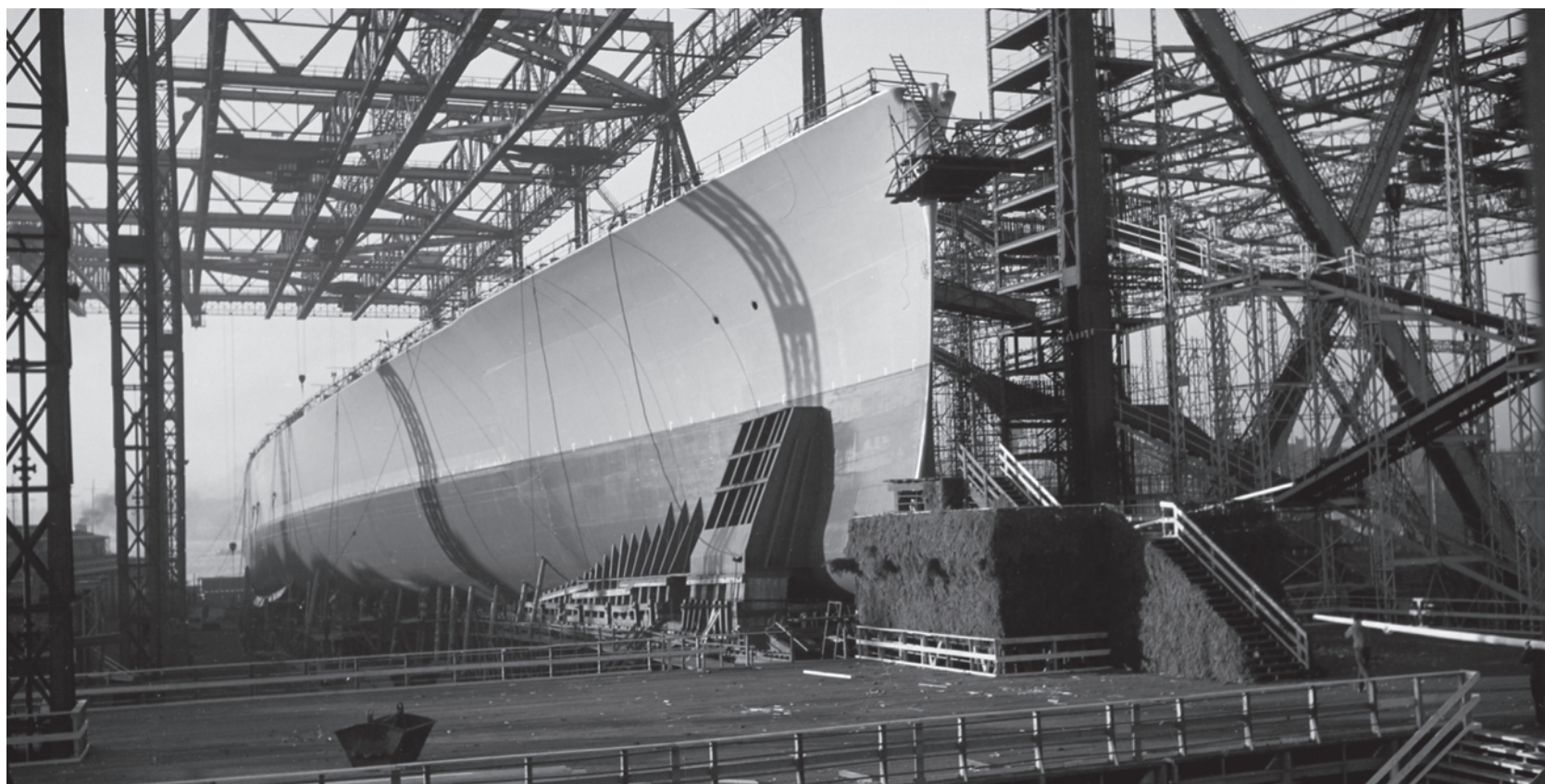
Soon after World War I the Germans started making efforts to rebuild their capital ship fleet. The first three ships were laid down between 1929 and 1932, initially designated '*Panzerschiff A*', '*B*' and '*C*'. These were non-standard vessels, with powerful armaments (6 x 280mm guns) and a relatively small displacement (over 10,000 tons standard). Nicknamed 'pocket battleships', they would receive the names '*Deutschland*', '*Admiral Scheer*' and '*Admiral Graf Spee*'. Further designs, '*Schlachtschiff D*' and '*E*', would become the first post-World War I German battleships. Displacing 32,000 tons, armed with nine 280mm guns and capable of 31 knots, '*Scharnhorst*' and '*Gneisenau*' were both laid down in 1935.

Slightly earlier, in 1932, the first studies were carried out to design a 35,000-ton battleship. Initially, all activities were kept secret as international treaties forbade Germany to build such ships. Starting in spring 1934, design work was begun on the vessel initially designated as '*Schlachtschiff F*'. In June 1935 the Naval Agreement between Great Britain and Germany was signed. From then on, the Third Reich considered continuation of its battleship programme completely legal. The Second London Naval Treaty of 1936 contained an escalator clause which could allow battleships of a 45,000-ton standard displacement armed with 16in artillery to be built. The treaty was not signed by Japan within the set deadline (1 April 1937), hence the escalator clause took effect. As a result, the designed displacement of the new German battleship rose well above the 40,000-ton mark.

Initially, 330mm guns were considered for use as the main armament of the new battleship – the same calibre as on the contemporary French Dunkerque class. It was later decided to increase the guns' size to 350mm and subsequently to 380mm. Design and engineering work on the artillery began as early as 1934. The armour scheme of the ship was planned to withstand hits from 380mm shells fired from 20,000 to 30,000m. The anti-torpedo system was supposed to protect the vessel from 250kg warhead explosions.

Much time was devoted to discussions on the ship's propulsion type. There were three different concepts: steam turbines, diesel engines and a turbo-electric drive. Diesels, though very economical on fuel, were rejected. It was argued that they were not powerful enough and, most importantly, were prone to frequent failures, and would be impossible to replace once fitted inside the battleship's armoured citadel. A turbo-electric drive was considered too heavy and German engineers were not experienced enough in building this type of propulsion. Thus, the classic steam turbine system was selected. As in the earlier designs, three propeller shafts were present with a separate turbine room serving each of them.

The battleship's dimensions were limited by the fact that she needed to be able to cross the Kiel Canal and be docked in Wilhelmshaven. The waterline length could not exceed 242m, the beam 36m, and the draught 10m. The new vessel was essentially an improved and enlarged version of the Scharnhorst class. At the time she was designed, she was 'stronger than anything faster and faster than anything stronger'.



Blohm & Voss shipyard, Hamburg, early 1939. *Bismarck*'s hull is built up to the level of the upper deck and is being prepared for launch. A decorated ceremony platform has been prepared for the officials at the stern. Braking shields have been fitted to the underwater part of the hull in the bow region. The armour plates of the side belt are not fitted yet. The stem of the battleship has its original straight shape. Towards the end of the year, it would be replaced with the so-called Atlantic stem.  
(Bundesarchiv, Bild 193-35-7-19A)

That is, in theory at least, she could be considered safe during an Atlantic sortie, as she would always be able to retire and avoid artillery engagement when facing a stronger enemy.

In November 1935, the design work came to a close. Two vessels of the new class were planned to be built, referred to as *F* and *G*, or *Ersatz Hannover* and *Ersatz Schleswig-Holstein* after the old pre-dreadnoughts they were meant to replace. True names of the battleships were revealed during their launch ceremonies. They were christened *Bismarck* and *Tirpitz*.

## HULL STRUCTURE

*Bismarck*'s hull was built from two types of construction steel: St 52 M (20mm thick) and St 42 M (17mm). The vast majority of the joints were welded. The most notable riveted areas included the joints between the main torpedo bulkheads' lower edges and the hull bottom, as well as the bow and stern side armour. Transverse bulkheads divided the hull into 22 separate watertight sections, numbered I to XXII starting from the stern. Frame number 0 marked the aftermost point of the waterline. The numbering rose towards the bow, with frame 246 at the bottom of the stem.

A double bottom covered most of the battleship's length and had a maximum height of 1.7m. It stretched between the inner torpedo bulkheads. The spaces inside were used for fuel and water tanks. The main artillery turrets were supported by transverse bulkheads: frames 41.8 and 50.5 ('Anton'), frames 60 and 68.7 ('Bruno'), frames

Principal characteristics of <i>Bismarck</i> , May 1941	
Displacement (standard)	43,980 tonnes
Displacement (full load)	51,760 tonnes
Displacement (maximum)	53,490 tonnes
Length (overall)	251m
Length (waterline)	241.5m
Beam	36m
Draught (at standard displacement)	9.33m
Draught (at maximum displacement)	10.55m
Boilers	12 Wagner-type high-pressure boilers (450°C, 55atm)
Turbines	3 Blohm & Voss turbine sets
Maximum machinery output	150,170shp
Maximum speed	30.1 knots
Fuel capacity	8294 tonnes
Electrical plant output	7,910kW
Range	9,280nm at 16 knots 8,900nm at 17 knots 8,525nm at 19 knots 6,640nm at 24 knots 4,500nm at 28 knots
Armament	8 x 38cm SK C/34 (4 x II) 12 x 15cm SK C/28 (6 x II) 16 x 10.5cm C/33 (8 x II) 16 x 3.7cm C/30 (8 x II) 8 x 2cm C/38 (2 x IV) 12 x 2cm C/30 (12 x I) 2 x WBD depth charge rack
Armour	Upper armour belt: 145mm Main armour belt: 320mm tapering to 170mm below Decks: upper deck 50-80mm; main armour deck 80–95mm, main armour deck slopes 110–120mm Torpedo bulkhead: 45mm Fore and aft transverse bulkheads: 145–220mm Main artillery turrets: front 360mm, sides 150–220mm, rear 320mm, roof 130–180mm Main artillery barbettes: 220–340mm Secondary artillery turrets: front 100mm; sides and rear 40mm, roof 20–35mm Secondary artillery turret barbettes: 80mm Conning tower: sides 350mm, roof 220mm
Radar equipment	3 x FuMO 27 radar
Aircraft	4 x Arado Ar-196 floatplanes
Complement	About 2,220 officers and men

170 and 178.7 (‘Cäsar’), and frames 188.8 and 196.9 (‘Dora’). A pair of bilge keels were fitted to the hull sides between frames 94.8 and 147.1, both having a surface area of 55m<sup>2</sup>. The upper deck was covered with a wooden teak deck. Its thickness was 55mm.

Originally, *Bismarck*’s stem was straight, the same as on preceding German capital ships. During the first months of service of *Scharnhorst* and *Gneisenau*, it turned out that the forecastle was covered with spilled water almost all the time, and so a new shape for the stem was proposed to deal with this problem. *Bismarck*’s hull had already been launched



and her bow was rebuilt as she was moored to the Blohm & Voss pier. The work on creating the new so-called Atlantic stem was begun in September 1939 and was completed before the winter.

## ARMOUR

Resisting damage from enemy shells, torpedoes and bombs was of the utmost importance, which is why *Bismarck's* protection system

Blohm & Voss shipyard, Hamburg, 1939. Elements of *Bismarck's* armament await installation in the hull. From left to right: one of the secondary turrets, the lower part of one of the 'tall' main artillery turrets (either 'Bruno' or 'Cäsar'), the upper platform of a main artillery turret. A number of smaller individual parts of the guns and turrets can be also seen around.

(Bundesarchiv, Bild 193-34-5-20)

comprised much of her weight. Totalling 19,082 tonnes, the battleship's armour was responsible for more than 40 per cent of the ship's standard displacement.

The types of armour steel used to protect the ship included:

- KC n/A (Krupp cementite, neue Art) – face hardened armour steel. Its outer layer's hardness equalled 670 on the Brinnel scale and decreased towards the opposite side. This type was used for most vertical armour plates: the armour belt, the fore and aft armoured bulkheads, the conning tower, turrets and barbettes;
- Wh (Wotan hart) – homogeneous armour steel was characterized by a tensile strength of 85–95kg/mm<sup>2</sup>, strain of 20 per cent and yield point of 50–55kg/mm<sup>2</sup>. This type was used for armoured deck plates and side armour plates fore and aft of the citadel;





- Ww (Wotan weich) – homogeneous armour steel, characterized by tensile strength of 65–75kg/mm<sup>2</sup>, strain of 25 per cent and yield point of 38–40kg/mm<sup>2</sup>. This type was used for longitudinal torpedo bulkheads.

The main part of the armour scheme was the citadel, an armoured box without a bottom. It covered the most vital parts of the ship, primarily the ammunition magazines and machinery.

Protection to the hull's sides was provided by the armour belt, divided into upper and main sections. The main armour belt, being 4.8m wide and 170.7m long, covered most of the length of the hull. It started at the foremost 'A' turret ammunition magazines and ended behind the aftmost turret 'D' magazines. The thickness was 320mm at the level of the Battery Deck (2.6 to 3m above the waterline, depending on the current draught), and then started tapering from about the waterline to reach 170mm at the very bottom. The area from the upper edge of the main armour belt to the upper deck was covered by the upper armour belt, which was 145mm thick. Towards the bow and the stern, the armour belts were inclined outwards, thus increasing their resistance (effective thickness). Between the armour belts and the hull's plating there was a shock-absorbing layer of teak wood (60mm thick). Additional light armour was present on the ship's sides along the waterline outside the citadel – that is, fore of frame 202.7 (60mm) and aft of frame 32 (80mm).

At the front and the back, the citadel was closed with transverse armoured bulkheads. The fore armoured bulkhead (frame 202.7, border between hull sections XIX and XX) was 100mm thick on the outer parts (above and below the armoured slopes). The inner thicknesses were as follows: 145mm for the upper deck to the intermediate deck, followed by 220mm to the upper platform deck and 180 to the middle platform deck. The aft armoured bulkhead (frame 32, border between sections II and III) was similar. The outer armour plates were 100mm thick, while the inboard plates were 145mm thick above the intermediate deck and 220mm thick below. An additional transverse armoured bulkhead was fitted at frame 10 to provide protection for the steering gear. Plate thicknesses were 150mm between the intermediate deck and the upper platform deck, and 45mm above and below.

The upper armoured deck covered most of the length of the battleship, excluding only section XXII and a half of section I. Its thickness was



Blohm & Voss shipyard, Hamburg, 1939. A secondary turret is lowered by a crane to its position inside the barbettes. At the very bottom (ammunition handling level), the shell loading point and propellant cartridge loading point are visible. By the height of the turret, it can be determined that this is one of the fore turrets (either Stb I or Bb I). (*Bundesarchiv, Bild 193-34-1-05A*)



Blohm & Voss shipyard, Hamburg, late June – early July 1940. *Bismarck* is sitting in the floating dry dock No.V–VI. Not all the braking shields have been removed from the ship's bottom yet. *Bismarck*'s bow is already reconstructed to the curved 'Atlantic stem', and the main armour belt is in place as well. At the very bottom of the bow section there is a circular cover visible. Behind it is the *Bugspiere*, an extensible rod to which paravanes would be attached during operation. (Bundesarchiv, Bild 193-29-2-32)

50mm, excluding areas around the main and secondary turret barbettes, as well as around the conning tower, where it increased to 80mm.

*Bismarck*'s main armour deck was located at the level of the intermediate deck, and it featured armoured slopes in its outer region. The flat part was only slightly above the waterline. During artillery engagement at short to medium distance, an enemy shell would have to penetrate the armour belt first in order to reach the main armour deck. Its fore and aft ends were marked by the transverse armoured bulkheads. The thickness of the flat part was 80mm, increasing to 95mm over the main artillery ammunition magazines. The outer slopes, inclined by an angle of 22° from the horizontal plane, were 110mm thick, with their thickness increasing to 120mm over the magazines. The additional armoured deck outside the citadel included 110mm-thick plates over the steering gear and 20mm-thick plates on the upper platform deck (sections XX–XXI).

The purpose of mounting a lighter upper armoured deck was to decap and set off the fuze of an incoming projectile before it reached the main armour deck, thus reducing the risk of the shell exploding inside one of the battleship's vital compartments. However, the wisdom of dividing the armour into two separate decks has been questioned as it would have provided less resistance than would have been achieved by concentrating the same weight in a single deck. The latter solution was successfully used in contemporary British and American designs.

The core of *Bismarck*'s anti-torpedo system was the inner longitudinal torpedo bulkhead, stretching from frame 32 to frame 202.7. It was riveted to the battleship's bottom, then ran vertically upwards and ended just above the joint between the sloped and flat portions of the main armoured deck. A thin longitudinal splinter bulkhead extended from this point to the upper deck. The space between the ship's side and the torpedo bulkhead was divided and used for trim tanks, as well as for fuel and water bunkers.

The conning tower was the best protected compartment on the ship. Its roof was covered with a 220mm-thick plate, while the walls were 350mm thick, reducing to 60mm below the level of the lower mast deck. The communications shaft's armour thickness was 220mm. The main fire control post, being very high above the waterline, could not have such strong armour. Its roof was only 20mm thick and the walls were 60mm thick. The aft fire control post was much better protected (roof: 50mm; walls: 150mm; communications shaft: 50mm). The three fire control rangefinders also received armour plates. The roofs of the fore, main and aft rangefinder were 100, 20 and 50mm thick respectively,

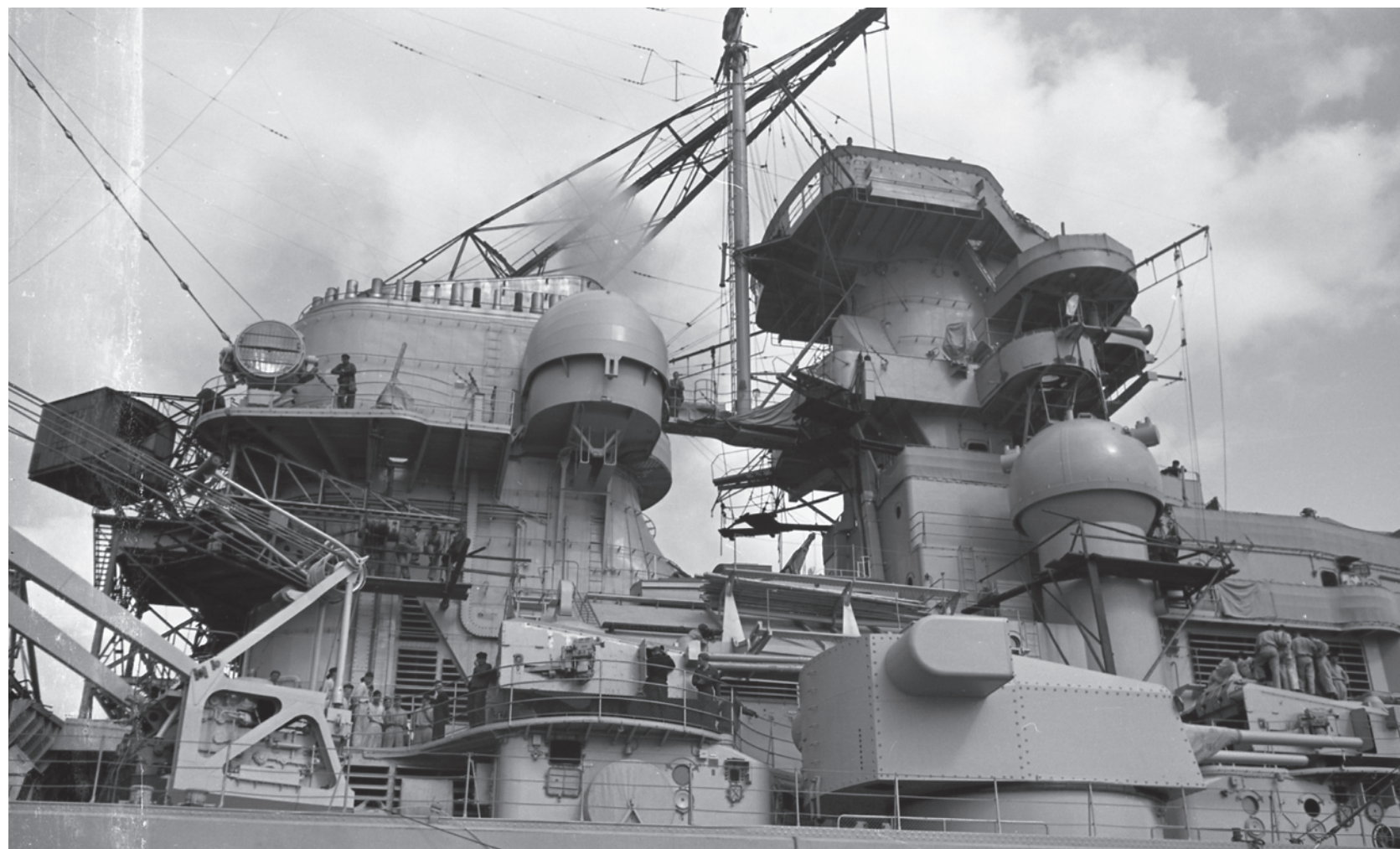


while their walls had thicknesses of 200, 30 and 100mm respectively.

The main artillery turrets received very strong protection. Their armour plates had the following thicknesses: front, 360mm; sides, 220mm; side slopes, 150mm; rear, 320mm; roof, 130mm; fore and aft slopes, 180mm. The barbettes were 340mm thick over the upper deck and 220mm thick below. The secondary turrets were also protected; their plates were as follows: front, 100mm; sides and rear, 40mm;

Blohm & Voss shipyard, Hamburg, summer 1940. View of the fore superstructure and funnel, starboard side. The fitting-out of *Bismarck* is almost finished. Most of the equipment is already in place, as well as all armament in this section of the ship. The funnel cap is painted an aluminium colour and would stay this way for the rest of *Bismarck's* career. The arm of the large shipyard crane is visible above the foretop and funnel.

(Bundesarchiv, Bild 193-04-4-15A)



roof, 20mm (aft plate) and 35mm (fore plate). The secondary artillery barbettes were 80mm thick.

## MACHINERY

The propulsion of *Bismarck* was supposed to provide high speed and good endurance, so that the battleship would be able to fulfill the following tasks: fight weaker enemy vessels; avoid engaging stronger enemy vessels; and conduct merchant shipping for a long period of time.

Steam turbines were chosen as the power source for the ship's propellers. Steam was produced in twelve Wagner-type high pressure

boilers, delivered by Blohm & Voss. They were distributed evenly in six boiler rooms: three were in section XI (Starboard no. 1, Centre no. 1 and Port No. 1) and three were in section XIII (Starboard no. 2, Centre no. 2 and Port No. 2). An auxiliary boiler was placed in a compartment in section XIV, on the centreline.

Three turbine sets produced by Blohm & Voss were fitted to *Bismarck*: one in section VIII (centre turbine room) and two in section X (starboard

Blohm & Voss shipyard, Hamburg, summer 1940. Photo taken at the same time as the previous one. In the foreground, one of the large 12-ton board cranes is visible. This equipment, delivered by Demag, was not reliable and the cranes suffered from failures several times during *Bismarck*'s testing period. The boats visible on the upper deck are a 6m yawl and an 8.5m cutter. Both were removed around April 1941. A rigged accommodation ladder can be seen in the bottom left corner. (Bundesarchiv, Bild 193-04-2-13A)

and port turbine rooms). Each turbine drove one shaft and was divided into five parts:

- High pressure, featuring a Curtis wheel with 40-stage reaction turbine;
- Intermediate pressure, featuring a double-flow 15-stage reaction turbine;
- High pressure astern, featuring a Curtis wheel;
- Low pressure, featuring a 9-stage reaction turbine with a condenser below it; and
- Low pressure astern, featuring a double-flow turbine.

Unlike her sister ship *Tirpitz*, *Bismarck* had no cruising turbines fitted.





The turbine shafts drove three propellers, each having three blades and a diameter of 4.7m. The starboard propeller was right-handed (clockwise rotating for forward motion of the ship), whereas the centre and port propellers were left-handed (anticlockwise rotating). During trials *Bismarck*'s machinery performed better than anticipated, achieving 150,170 shaft horsepower and a speed of 30.1 knots.

Steering was provided by two rudders, both inclined by 8° towards the centreline and each having a surface area of 24.21m². In some contemporary warship designs in foreign countries, a smaller auxiliary rudder was present, giving the vessel additional steering capability should the main rudders suffer damage. No such gear was planned for *Bismarck*, but as later events would show, including it would have been a wise idea.

To run electrical devices aboard the ship, in particular artillery and fire control drives, steering, lighting, communication, and ventilation fans, among others, a lot of power was needed. To provide it, *Bismarck* was equipped with a number of generators. There were five generator compartments aboard. Electrical Generator Room no. 1 (starboard side, section VIII) and Electrical Generator Room no. 2 (port side, section VIII) contained four 500kW DC diesel generators each. Electrical Generator Room no. 3 (starboard side, section XIV) housed three

Blohm & Voss shipyard, Hamburg, late June – early July 1940. During her stay in the dry dock, *Bismarck* had her propellers fitted. As is visible in this photo, the starboard propeller is right-handed (it rotates clockwise for forward motion of the ship), whereas the middle and port propellers are left-handed (they rotate anticlockwise for forward motion of the ship). The lower fragments of both rudder blades are visible above. (Bundesarchiv, Bild 193-30-5-31A)



Boilers	
Evaporation heating surface	380m²
Superheater heating surface	120m²
Air pre-heat surface	685m²
Feedwater pre-heating temperature	160°C
Saturated steam temperature	287°C
Superheated steam temperature	450°C
Operating steam pressure	55atm
Safety valves	58atm
Maximum pressure	63atm
Steam production	132 kg per m² of surface
Capacity	144 m³
Weight of boiler with water	52.8 tonnes
Weight of water inside a boiler	4.85 tonnes

Turbines		
High pressure turbine	2,880 turbine revolutions per minute (rpm)	270 shaft revolutions per minute (rpm)
Intermediate pressure turbine	2,880 turbine rpm	270 shaft rpm
Low pressure turbine	2,430 turbine rpm	190 shaft rpm
High pressure astern turbine	2,025 turbine rpm	180 shaft rpm
Low pressure astern turbine	1,715 turbine rpm	190 shaft rpm

Liquids	
Main heating fuel	8294 tonnes
Fuel for diesel generators	193 tonnes
Aviation fuel	34 tonnes
Reserve feedwater	375 tonnes
Fresh water	306 tonnes
Reserve fresh water	389 tonnes
Gear oil	160 tonnes

690kW DC turbo generators, whereas Electrical Generator Room no. 4 (port side, section XIV) housed two 690kW DC turbo generators and one 460kW DC turbo generator. The total power produced by these machines was 7,910kW. In addition, there was a diesel motor room starboard side in section VII which contained one 550kVA AC diesel generator.

## ARMAMENT

### MAIN ARTILLERY

The guns chosen for *Bismarck*'s main armament were 38cm SK C/34 (SK = *Schnelladekanone*, quick loading gun; C = *Konstruktionsjahr*, year of construction). Designed and manufactured by Krupp, they proved to be a very reliable weapon. Eight guns were placed in four Drh L C/34

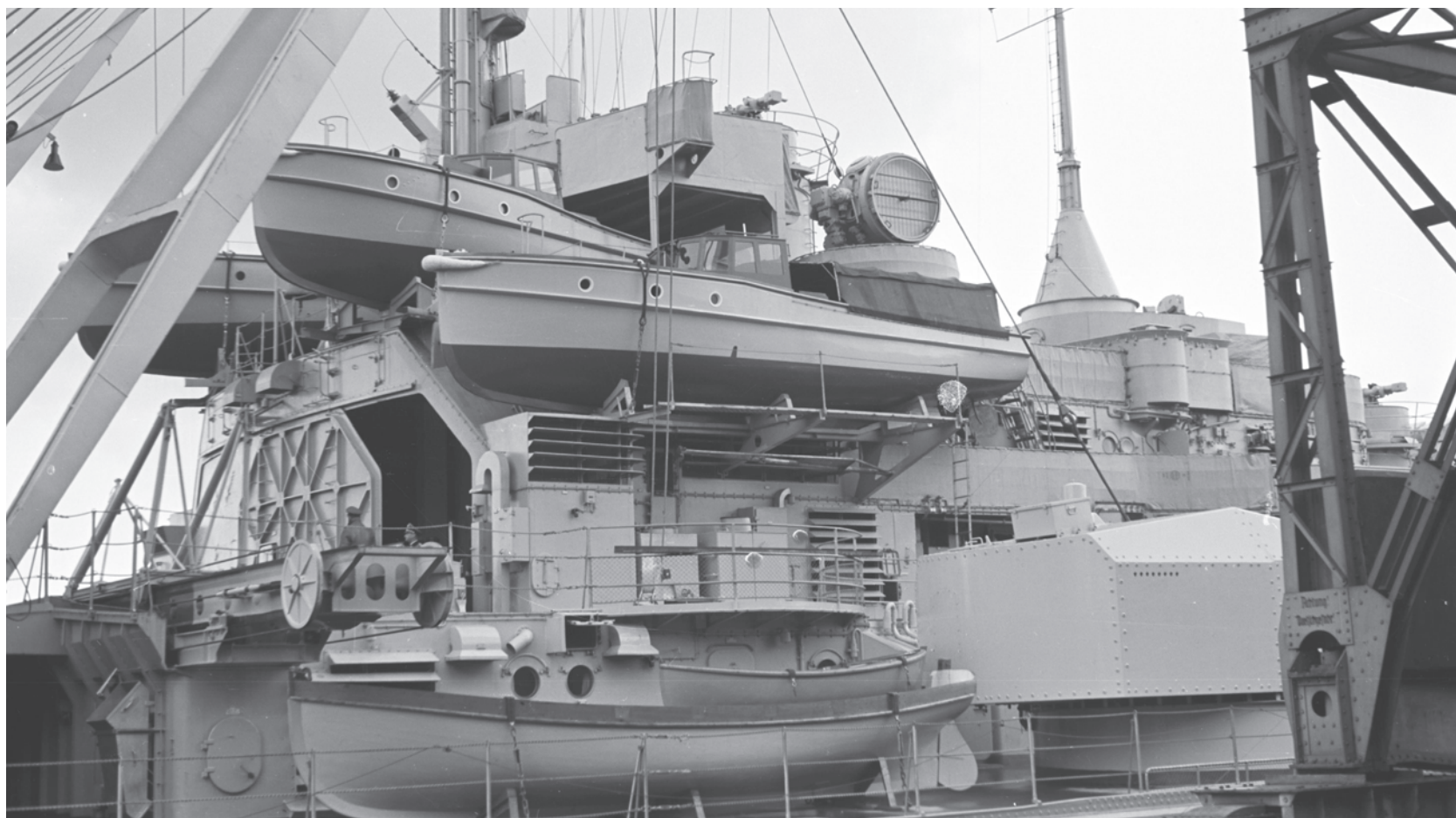
Blohm & Voss shipyard, Hamburg, summer 1940. This photo shows the port side of the aft superstructure. Both cranes are facing aft with their arms raised. The boats visible on the upper deck are a 3.84m dinghy and an 8.5m cutter. Both were removed around April 1941. Above the catapult, the double aircraft hangar can be seen, its port-side sliding door partly open. Four transportation boats are stowed on the roof. To the right side, a small mast is visible. The aft 10.5m rangefinder is not fitted at its base yet. As a temporary replacement, a conical hood has been installed.

(Bundesarchiv, Bild 193-03-1-10)

twin turrets (Drh L = *Drehscheiben Lafette*, revolving mount). Turrets were placed in a classic layout: one pair in front of the superstructure and the other pair aft. Designations of the turrets were taken from the Kriegsmarine signal code: 'Anton' (frame 192.5), 'Bruno' (frame 174.5), 'Cäsar' (frame 64.5) and 'Dora' (frame 46).

The maximum elevation of the guns was relatively low, at 30°, but this figure was considered more than enough for engagements in the stormy waters of North Atlantic. The resulting range was 36,520m.

The turrets sat inside armoured barbettes on roller paths placed on top of support cylinders. There were several working levels revolving together: gunhouse, train mechanism level, machinery level, intermediate level, propellant handling level and shell handling level. The last two were below the main armoured deck and featured rotary rings, which enabled ammunition to be transferred from the magazines to the hoists







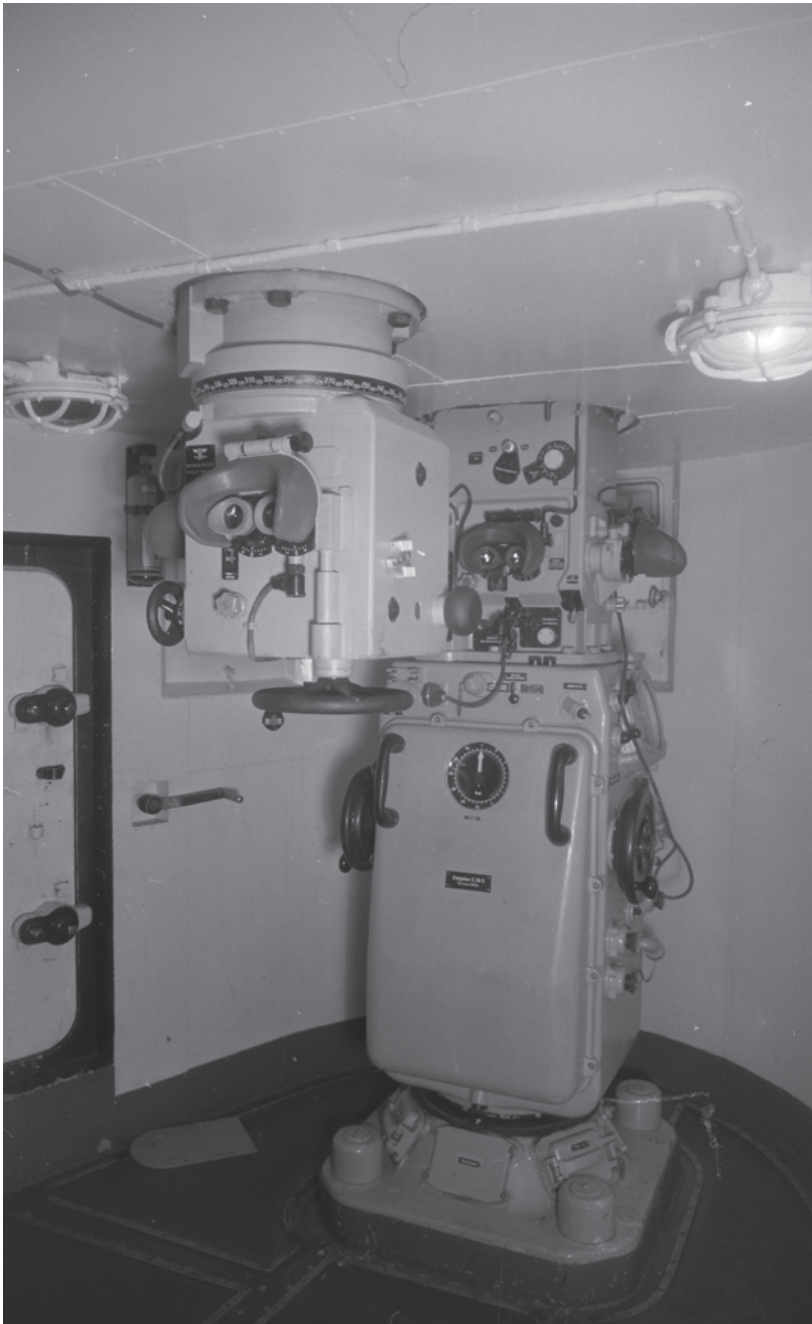
Blohm & Voss shipyard, Hamburg, summer 1940. Photo taken from the upper deck to the right side of main artillery turret 'Bruno', looking aft. The vents at the barbette in the foreground would later be modified so that they wouldn't get flooded with seawater and spray. The rear breakwater to the left has a hinged passage. A small crane arm, part of the paravane gear, is fitted against the breakwater's fore surface. (Bundesarchiv, Bild 193-05-3-39)

independently of the turret's current train. The turrets 'Bruno' and 'Cäsar' were placed in superposition relative to the other two turrets, which is why they both had an additional intermediate platform.

There were several types of projectiles for the 38cm guns; their selection depended on the target type: *Panzersprenggranate* (armour piercing); *Sprenggranate mit Bodenzünder* (high explosive base fuzed); and *Sprenggranate mit Kopfszünder* (high explosive nose fuzed).

The propellant charge, 212kg in total, was divided into *Vorkartusche* (fore charge in silk bag) and *Hülsenkartusche* (main charge in brass case). Shells and propellants were transported in horizontal position in hoists placed between the guns. Auxiliary hoists for transfer in vertical position were also provided for emergency operation. Telescopic chain rammers loaded shells and propellants into the guns. In an emergency, the rammers could be hand-operated. Empty propellant cases were ejected from the turret through openings in the gunhouse's floor at the back. Electric fans extracted gases and smoke via ducts to the exhausts in the rear plate.

The train drive of the turrets was electric, as were the auxiliary gun elevation and auxiliary hoists. Power for the main gun elevation and main ammunition hoists was provided by electric-driven hydraulic



A look inside the battleship. This photo was taken in the main fire control post on the foretop, the compartment where *Bismarck*'s first artillery officer, Lieutenant Commander Adalbert Schneider, performed his duties. Looking towards the bow, the large instrument in the background is *Zielgeber C/38 S* – the main and secondary artillery target giver. The lower part of an observation periscope is visible right behind it. The armoured entrance door can be seen to the left.  
(Bundesarchiv, Bild 193-17-2-17)

pumps. On commissioning, all the turrets were equipped with 10.5m rangefinders for local fire control. In January 1941, the rangefinder from turret 'Anton' was removed. The turrets also featured observation periscopes on their side slopes and sights with sliding shields in their front plates.

SECONDARY ARTILLERY

The idea behind *Bismarck*'s secondary guns was to provide rapid-firing weapons for defence against smaller vessels (destroyers and torpedo boats). The 15cm SK C/28 guns were ideal for this purpose, as they were successfully used aboard earlier German ships: Deutschland-class Panzerschiffe and Scharnhorst-class battleships. However, their maximum elevation was only 40°, and therefore they could not be used as an anti-aircraft weapon. This was a major drawback. The tendency in contemporary capital ship designs in the USA and Great Britain was to mount slightly lighter but dual-purpose guns. As later wartime experiences showed, this would have been a better solution.

38cm SK C/34 guns	
Gun weight	110,700kg
Gun length	19.63m
Number of grooves	90
Chamber volume	319dm³
Rate of fire per barrel	2.3 rounds per minute
Barrel life	180–210 rounds
Recoil	105cm
Weight of projectile	Armour piercing projectile: 800kg High explosive projectile, nose fuzed: 800kg High explosive projectile, base fuzed: 800kg
Weight of bursting charge	Armour piercing projectile: 18.8kg High explosive projectile, base fuzed: 32.6kg High explosive projectile, nose fuzed: 64.2kg
Length of projectile	Armour piercing projectile: 167.2cm High explosive projectile, base fuzed: 171cm High explosive projectile, nose fuzed: 174.8cm



38cm SK C/34 guns (continued)	
Weight of fore propellant charge in silk bag ( <i>Vorkartusche</i> )	99.5kg
Weight of main propellant charge	112.5kg
Weight of loaded main propellant cartridge ( <i>Hülsenkartusche</i> )	182.5kg
Ammunition stowage per gun	125 rounds
Working pressure	3,200kg/cm²
Muzzle velocity	820m/s
Range	At 2.2° elevation: 5,000m At 4.9° elevation: 10,000m At 12.1° elevation: 20,000m At 22.4° elevation: 30,000m At 30° elevation: 36,520m
Striking velocity	At 2.2° elevation: 727m/s At 4.9° elevation: 641m/s At 12.1° elevation: 511m/s At 22.4° elevation: 457m/s
Weight of turret	‘Anton’ and ‘Dora’: 1,060.7 tonnes ‘Bruno’ and ‘Cäsar’: 1,071.7 tonnes
Loading angle	+2.5°
Elevation	-5.5/+30°
Elevation rate	6°/s
Train	‘Anton’ and ‘Bruno’: 290° (215°–0°–145°) ‘Cäsar’ and ‘Dora’: 290° (35°–180°–325°)
Train rate	5.4°/s
Distance between gun axes	375cm

*Bismarck* was armed with twelve 15cm guns distributed in six Dopp L C/34 twin turrets delivered by Rheinmetall. The turrets’ designations began with either ‘Stb’ or ‘Bb’ (standing for ‘starboard’ and ‘port’ respectively), followed by ‘I’, ‘II’ or ‘III’. ‘I’ was used for the foremost pair of turrets (frame 150), ‘II’ for the middle turrets (frame 131.5) and ‘III’ for the aftmost turrets (frame 98).

Similarly to the main armament, each turret had several working levels revolving together inside the armoured barbette. Turrets Stb I and Bb I were positioned some 5m from the deck edge, and hence their barbettes were standing directly on the main armoured deck. Working levels included the gunhouse platform, the train mechanism level, the machinery level, the workshop level and the ammunition handling level, the last one positioned below the main armoured deck. The middle and

aft turrets were placed very close to the deck’s edge, with their barbettes standing on the armoured slopes, which is why these turrets were one level shorter (the workshop level was absent), and the ammunition handling level was positioned inside the barbettes. The middle turrets of the battleship were equipped with 6.5m rangefinders for local control, while the fore and aft turrets only had observation periscopes fitted on the roofs.

The train drive of the turrets was electric, while the gun elevation was hydraulic with the possibility of operating it by hand in emergencies. Ammunition for the 15cm guns included several types of projectiles: *Panzersprenggranate* (armour piercing); *Sprenggranate mit Bodenzünder* (high explosive base fuzed); *Sprenggranate mit Kopfzünder* (high explosive nose fuzed); *Leuchtgeschoss* (illumination). The propellant cartridge was separate. Shells and cartridges were transported in hoists positioned between the guns.

## HEAVY ANTI-AIRCRAFT ARTILLERY

The battleship received 16 10.5cm guns in eight twin mounts. They were placed symmetrically on the superstructure deck (frames 140.5, 123.5, 105.5 and 90.5). There were delays in these armaments’ delivery, and on commissioning *Bismarck* had only half of her mounts fitted. These were the fore 10.5cm SK C/33 gun mounts. The Dopp L C/31 mounts were originally designed to carry earlier 8.8cm guns but were easily adapted to heavier guns. The second half of the 10.5cm battery arrived in November 1940, but this new armament differed from what was already on board. The guns were of a newer type – 10.5cm SK C/33 na – as were the mounts – Dopp L C/37 twin mounts with enlarged shields, which additionally protected the breeches from above and the sides.

Both types of mount had triaxial stabilization, enabling level to be kept independently of the ship’s roll and pitch. Train, elevation and cross-levelling were electrical, but manual operation was also possible in emergencies. Lightly armoured shields were provided as protection for the mounts’ operators. Ammunition hoists were located inside the superstructures, from where the rounds were taken by hand to special openings in the superstructure walls, passed to the other side and brought to the gun mounts by crew members.

15cm SK C/28 guns	
Gun weight	9,026-9,080kg
Gun length	8.2m
Number of grooves	44
Chamber volume	21.7dm <sup>3</sup>
Rate of fire per barrel	6 rounds per minute
Barrel life	1,100 rounds
Recoil	37cm
Weight of projectile	Armour piercing projectile: 45.3kg High explosive projectile, base fuze: 45.3kg High explosive projectile, nose fuze: 45.3kg Illuminating projectile: 41kg
Weight of bursting charge	Armour piercing projectile: 0.885kg High explosive projectile, base fuze: 3.06kg High explosive projectile, nose fuze: 3.89kg
Length of projectile	Armour piercing projectile: 55.5cm High explosive projectile, base fuze: 67.89cm High explosive projectile, nose fuze: 65.5cm Illuminating projectile: 57.85cm
Weight of propellant charge	14.15kg
Weight of loaded propellant cartridge	23.5kg
Length of propellant cartridge	86.5cm
Ammunition stowage per gun	150 rounds
Working pressure	2,850kg/cm <sup>2</sup>
Muzzle velocity	875m/s
Range	At 35° elevation: 22,000m At 40° elevation: 23,000m
Weight of turret	Stb I and Bb I: 150,300kg Stb II and Bb II: 131,600kg Stb III and Bb III: 97,700kg
Loading angle	+3°
Elevation	-10/+40°
Elevation rate	8°/s
Train	Stb I: 5°-145° Bb I: 215°-355° Stb II: 5°-165° Bb II: 195°-355° Stb III: 20°-175° Bb III: 185°-340°
Train rate	9°/s
Distance between gun axes	175cm

10.5cm SK C/33 and 10.5cm SK C/33 na guns	
Gun weight	SK C/33: 4,560kg SK C/33 na: 4,237kg
Gun length	6.84m
Number of grooves	36
Chamber volume	7.31dm <sup>3</sup>
Rate of fire per barrel	15-18 rounds per minute
Barrel life	2,950 rounds
Weight of projectile	15.1kg
Weight of bursting charge	5.2kg
Length of projectile	45.9cm
Weight of complete round	26.5kg
Weight of propellant charge	5.2kg
Length of complete round	116.3cm
Ammunition stowage per gun	400 rounds
Working pressure	2,850kg/cm <sup>2</sup>
Muzzle velocity	900m/s
Range	At 0° elevation: 17,700m At 80° elevation: 12,500m
Weight of mount	Dopp L C/31 twin mount: 27,350kg Dopp L C/37 twin mount: 26,420kg
Elevation	Dopp L C/31 twin mount: -8/+80° Dopp L C/37 twin mount: -10/+80°
Elevation rate	Dopp L C/31 twin mount: 10°/s Dopp L C/37 twin mount: 12°/s
Train	360°
Train rate	Dopp L C/31 twin mount: 8°/s Dopp L C/37 twin mount: 8.5°/s
Cross levelling	-17/+17°
Cross levelling rate	Dopp L C/31 twin mount: 5°/s Dopp L C/37 twin mount: 8°/s
Distance between gun axes	Dopp L C/31 twin mount: 68cm Dopp L C/37 twin mount: 66cm

## MEDIUM ANTI-AIRCRAFT ARTILLERY

*Bismarck* was armed with 16 3.7cm SK C/30 guns in twin mounts. Their locations were as follows: two mounts on the superstructure deck (fore superstructure, frame 164.5); two mounts on the upper mast deck (fore superstructure, frame 142); two mounts on the lower aft deckhouse (aft superstructure, frame 86); and two mounts on the superstructure deck (aft superstructure, frame 74).

Produced by Rheinmetall, the twin mount featured seats for three operators: trainer, pointer and cross-leveller. Shooting was not affected by the ship's roll and pitch as the mount was triaxially stabilized. Although it was the standard medium anti-aircraft artillery on German ships at the beginning of the war, by 1941 the 3.7cm C/30 gun was

Blohm & Voss shipyard, Hamburg, summer 1940. Photo taken from the forecastle looking aft. Deck planking detail is clearly visible. In the foreground, anchoring gear can be seen: two cable holders with anchor chains and navel-pipes. An electric capstan with rope drums is in the centre. A fire hydrant is fitted next to the starboard navel-pipe. The middle part of the fore breakwater is collapsible; its supporting rods are visible. The barrels of the fore main artillery turrets 'Anton' and 'Bruno' are secured with muzzle plugs.

(Bundesarchiv, Bild 193-04-6-12A)



starting to become obsolete. The biggest drawback was the necessity to load single rounds manually, which resulted in a very low rate of fire. This caused the guns to be inefficient against modern aircraft.

## LIGHT ANTI-AIRCRAFT ARTILLERY

For the close defence against air targets, *Bismarck* was equipped with 2cm automatic guns. When commissioned, the battleship had 12 single 2cm C/30 pedestal gun mounts on board: four on the upper deck (frames 56 and 167.5), two on the lower mast deck (fore superstructure, frame 142), two on the upper searchlight deck (fore superstructure, frame

3.7cm C/30 guns	
Gun weight	243kg
Gun length	3.074m
Number of grooves	16
Chamber volume	0.5dm <sup>3</sup>
Rate of fire per barrel	80 rounds per minute theoretical 30 rounds per minute practical
Barrel life	7,500 rounds
Weight of projectile	0.742kg
Weight of bursting charge	0.365kg
Length of projectile	16.2cm
Weight of complete round	2.1kg
Weight of propellant charge	0.365kg
Length of complete round	51.65cm
Ammunition stowage per gun	2,000 rounds
Working pressure	2,950kg/cm <sup>2</sup>
Muzzle velocity	1000m/s
Range	At 35.7° elevation: 8,500m At 85° elevation: 6,800m
Weight of Dopp L C/30 twin mount	3,670kg
Elevation	-10/+85°
Train	360°
Cross levelling	-19.5/+19.5°

140), two on the funnel platform (frame 119), and two on the lower aft deckhouse (aft superstructure, frame 80). Ammunition was fed from 20-round magazines.

Before *Bismarck* left Hamburg in early March 1941, she received three additional army-type single mounts (2cm Flak 30): one on top of turret 'Anton' (this one was removed soon after), and two on the upper aft deckhouse (aft superstructure, frame 81). Further modifications were made in April 1941, when the two single mounts on the searchlight platform were replaced with *Vierlings* (quadruple mounts), featuring newer 2cm C/38 guns with a much-improved rate of fire.

## DEPTH CHARGES

Before Operation *Rheinübung*, two WBD depth charge racks were placed on *Bismarck*'s stern, each with three depth charges. Additional spare depth charges were placed in several locations on

2cm C/30 and 2cm C/38 guns	
Gun weight	C/30: 64kg C/38: 57.5kg
Gun length	2.25m
Number of grooves	8
Chamber volume	0.048dm <sup>3</sup>
Rate of fire per barrel	C/30: 280 rounds per minute theoretical C/30: 120 rounds per minute practical C/38: 480 rounds per minute theoretical C/38: 220 rounds per minute practical
Barrel life	About 22,000 rounds
Weight of projectile	0.134kg
Weight of bursting charge	0.0395kg
Length of projectile	7.85cm
Weight of complete round	0.32kg
Weight of propellant charge	0.12kg
Length of complete round	20.3cm
Ammunition stowage	About 24,000 rounds in total
Working pressure	2,800kg/cm <sup>2</sup>
Muzzle velocity	835m/s
Range	At 0° elevation: 4,900m At 85° elevation: 3,700m
Weight of mount	SL C/30 single mount: 420kg Flak 30 single mount: 770kg <i>Vierling</i> L C/38 quadruple mount: 2,150kg
Elevation	SL C/30 single mount: -11/+85° Flak 30 single mount: -12/+90° <i>Vierling</i> L C/38 quadruple mount: -10/+90°
Train	360°

the quarterdeck. Due to the battleship's size and manoeuvrability, successful use of this weapon against enemy submarines in combat conditions was highly unlikely.

## FIRE CONTROL

*Bismarck* was fitted with two separate fire control systems: one for the main and secondary artillery (C/35), and the other for the anti-aircraft artillery (C/37).



## MAIN AND SECONDARY ARTILLERY

For directing the 38cm and 15cm guns, *Bismarck* was equipped with three armoured fire control posts (in the conning tower, on the foretop, and on top of the aft superstructure). The post on the foretop, being on the highest level, was the main fire control station, while other two served as reserves. Each of these had a rotary cupola with a stereoscopic rangefinder. Due to delays in production, these cupolas were fitted after *Bismarck* entered service. The main and aft control posts were equipped with 10.5m rangefinders around September 1940, while the fore control post received its 7m rangefinder in March 1941. Each station was also equipped with optical target givers (*Zielgeber C/38 S*, two pieces in the aft post and three each in the fore and main posts).

Data from the fire control posts were sent via cables in armoured communication shafts to the plotting rooms inside the citadel. The main plotting room was located on the middle platform deck, section XV, with the artillery amplification and switchboard rooms next to it. Similarly, the reserve plotting room and its associated compartments were on the upper platform deck, section VII. Once the solutions for the guns (i.e. their elevation and bearing) had been calculated in the plotting rooms, they were sent directly to the main and secondary artillery turrets.

In the event of the turrets being unable to get solutions from outside, they could switch to local fire control. All 38cm turrets were equipped with 10.5m rangefinders for this purpose. After the battleship entered service, it turned out that the rangefinder in turret 'Anton' was very frequently flooded with seawater and spray and so was hardly of any use, which is why it was removed from the turret in January 1941. Of the six secondary artillery turrets, only the middle pair (Stb II and Bb II) were equipped with rangefinders, their bases being 6.5m long.

For night combat purposes, *Bismarck* was fitted with two 3m rangefinders 3u, installed on outboard platforms of the fore superstructure, at the admiral's bridge level.

## ANTI-AIRCRAFT ARTILLERY

There were three anti-aircraft combat stations on *Bismarck*: on the foretop gallery (the main control post); on the sides of the conning tower (at the

lower mast deck level); and on top of the shelter compartment at the base of the mainmast. Only the main anti-aircraft control post was fitted with dedicated equipment for detecting air targets. The device was commonly called ZAG (*Zielanweisergerät* [anti-aircraft artillery target giver]). Four pieces of this apparatus were planned to be installed on the foretop. Although most publications state that four was the actual number of ZAGs on the foretop, careful examination of photographs indicates that most probably only two were fitted (the fore pair). Binocular columns were placed in the positions of the aft pair.

Information about spotted air targets was passed to four anti-aircraft artillery fire control posts, designated A to D. The first two were placed symmetrically outboards on the fore superstructure, frame 138 (starboard side – *Flakleitstand A*; port side – *Flakleitstand B*). The other two were fitted on the aft superstructure on the ship's centreline: one on frame 95.5 (*Flakleitstand C*) and the second on frame 95.5 (*Flakleitstand D*).

All the AA artillery fire control posts were supposed to receive SL-8 directors. Produced by Kreiselgeräte GmbH, the SL-8 (*Stabilisierter Leitstand* [stabilized director]) was in the form of a spherical dome with a 4m rangefinder. Thanks to the triaxial stabilization mechanism, the director stayed level regardless of the ship's roll and pitch. Due to their appearance, the SL-8s were called '*Wackeltöpfe*' ('tilting pots') by the battleship's crew.

Due to delays in manufacture and delivery, *Bismarck* only received two SL-8 directors, which were fitted to fire control posts A and B. Fire control posts C and D had replacement equipment installed – unstabilized rangefinders used by the Wehrmacht AA units. Most publications state that the bases of these rangefinders were 4m long, but careful examination of available photographs indicates that their length was actually 3m. The equipment was most probably similar in appearance and operation to Wehrmacht's *Kommandogerät 40*.

Data from the AA fire control posts were sent to the plotting rooms inside the citadel. The main AA artillery plotting room was located on the upper platform deck, section XV, while the reserve plotting room was on the middle platform deck, section VII. Calculated solutions were sent directly to the 10.5cm gun mounts.

Crews of the 3.7cm and 2cm gun mounts used portable 1m rangefinders (EM 1m R36), delivered by Carls Zeiss.

## RADAR EQUIPMENT

As an addition to the main artillery rangefinders, radar sets were installed in the rotary cupolas of all three fire control posts. Designation of the device was FuMO 27 (*Funkmess Ortungsgerät* [radio range and direction finder]). It worked on the 386MHz frequency, giving a wave length of 81.5cm. The power output of an impulse was 9kW, resulting in a range of about 25,000m. FuMO 27 'mattress' antennas, each measuring roughly 4 x 2m, were attached to the fore surfaces of the fire control posts' cupolas. While providing very useful data, *Bismarck's* radars were not advanced enough to be capable of actual blind-fire control.

## SEARCHLIGHTS

*Bismarck* was equipped with seven searchlights to provide illumination of the target at night or in poor visibility conditions. They were produced by Siemens-Schuckertwerke and had a diameter of 150cm. Placement was as follows:

- searchlight no. I was on the ship's centreline, at the upper searchlight deck level of the fore superstructure;
- searchlights no. II and III were on the funnel's platform fore, equipped with hinged protective covers;
- searchlights no. IV and V were on the funnel's platform aft; and
- searchlights no. VI and VII were on platforms at the base of AA artillery director C, on the aft superstructure.

For accurate illumination, there were six searchlight directors on board: four on the fore night control post, at the lower mast deck level of the fore superstructure, and two on the aft night control post, at the upper aft deckhouse level of the aft superstructure.

Three signal lamps were also provided: one on either side of the admiral's bridge, and one on a platform at the base of the mainmast.

## AIRCRAFT, CATAPULTS AND CRANES

On-board aircraft were needed on a modern battleship for reconnaissance, searching for enemy convoys being the primary activity. Aircraft could be also used during artillery engagement for observing fall of shot and fire direction, as well as for observing attack enemy in the air or on the water surface. The Arado Ar-196 A low-wing monoplane aircraft was the type chosen for *Bismarck*.

Equipped with floats and folding wings, the Ar-196 was designed to take off with the help of a 16m-long compressed-air-driven catapult. Two such catapults were located amidships (frames 112–113). Each could be extended 5m outboards for take-off position. After its mission, the aircraft would land on water and then be raised with the help of one of the large 12-ton board cranes, delivered by Demag, which could also be used to handle *Bismarck's* boats. Once on the ship's superstructure deck, the aircraft were moved around with a pair of small electric-operated overhead cranes, constructed by Blohm & Voss and fitted below the funnel's platform. There were three aircraft hangars in the vicinity of the catapults. Hangar no. 1, also known as the *Grossflugzeughalle*, accommodated two floatplanes with their wings folded. It was placed on the superstructure deck (frames 97–106). Two smaller single hangars were placed forwards at the sides of the funnel (frames 122–134). They were referred to as hangars no. 2 and no. 3, port and starboard side respectively. Due to the limited space in the catapult area, the third pair of 10.5cm mounts and the large cranes had to be specially aligned to allow for the aircraft's free take-off.

The four aircraft carried by *Bismarck* had the following markings: T3+IH, T3+AK, T3+DL and T3+MK. A total of six Arados could theoretically be embarked, the two additional ones stored directly on the catapults, but this solution would be impractical and was never implemented.

Since Kriegsmarine possessed no naval aviation, all the aircraft and their personnel on board *Bismarck* belonged to the Luftwaffe, specifically to 1. Staffel, Bordfliegergruppe 196. During Operation *Rheinübung*, no floatplane from *Bismarck* ever took off.

BOATS

*Bismarck* carried a handful of various boats, their exact number and type changing throughout the battleship’s short career. The boats were as follows:

- one admiral’s boat (*Admiralsboot*, 11.52m long, weight 8,287kg) at the disposal of the fleet staff. First it was stowed on the external cradles of the starboard-side single aircraft hangar, and around late March 1941 it was moved to a position nearby – on the outer slope of the hangar;
- one admiral’s boat of the newer, rounded stern type (11.52m, 6,745kg). It was stowed on the external cradles of the port-side single aircraft hangar and removed before Operation *Rheinübung*, around April 1941;
- four transportation boats (*Verkehrsboote*, 11.52m, 7,600kg) for the moving of men and provisions between the ship and the mainland. They were stowed on the roof of the double aircraft hangar;
- two motor pinnaces (*Motorpinassen*, 9.2m, 5,600kg). They were stowed on both slopes of the port-side single aircraft hangar, and were embarked around April 1941;
- one motor yawl (*Motorjolle*, 7.7m, 3,515kg). It was stowed on the inner slope of the starboard-side single aircraft hangar;

Specifications of the Arado Ar-196 A two-seat floatplane	
Wingspan	12.4m
Length (overall)	11.0m
Height	4.45m
Power plant	BMW 132K (9 cylinders, 960 hp)
Maximum speed	310 km/h @ 4,000m
Ceiling	7,000m
Range	1,070km (580 miles)
Empty weight	2,335 kg
Loaded weight	3,300 kg
Armament	2 x 20mm MG FF in the wings 1 x 7.92mm MG 17 in the fuselage 1 x 7.92mm MG 15 in the rear cockpit (flexible mount) 2 x 50kg bombs in racks under the wings (either SC 50, SD 50 or LC 50F)

- six row cutters, 2nd class (*Kutter Klasse II*, 8.5m, 1,974kg), used for sports and recreation purposes, but also for emergencies. One was stowed on each slope of the port-side single aircraft hangar. A further two were placed on cradles on the upper deck, between the catapults and the aftmost pair of 15cm turrets. The last two cutters were stowed in a ready-to-use position in davits on the upper deck, between the two fore pairs of 15cm turrets. These two cutters were the only boats on board not to be operated by the large 12-ton cranes. All six cutters were removed from the battleship before Operation *Rheinübung*, around April 1941;
- three row yawls, 1st class (*Jolle Klasse I*, 6.0m, 1,002kg). These were stowed inside the row cutters on both slopes of the port-side single aircraft hangar, and on the upper deck behind the catapult, starboard side only. All three boats were removed from the battleship before Operation *Rheinübung*, around April 1941;
- one row dinghy (*Dingi*, 3.84m, 220kg). This was stowed inside the row cutter on the upper deck behind the catapult, port side. It was removed from the battleship before Operation *Rheinübung*, around April 1941;
- a number of life rafts and a number of inflatable boats in containers, stowed in various locations on the superstructure.

OTHER EQUIPMENT

*Bismarck* was fitted with two types of passive underwater acoustic detectors. The GHG (*Gruppenhorchgerät*) was an array of 60 microphones on each side of the battleship, section XIX. It was used to detect ships’ propellers and had a range of about 26,000m. The NHG (*Nahbereichshorchgerät*) was a single microphone for detecting torpedo propellers. One unit of this equipment was fitted on each side, section XXI. Both detector types were delivered by Atlas Werken.

The battleship also received an active sonar device – designated *Schallanlage* or *S-Anlage*. Its underwater oscillators were located in section XVI and at the stem. The range was up to 15,000m.

For protection against mines on anchor lines, minesweeping equipment was kept on board. It consisted of eight *Ottergeräte* (paravanes) stowed on the upper deck against the superstructure. They could be towed along



the sides of the ships, attached to the *Bugspiere* (a 9.5m-long underwater extendable rod at the stem) and four small derricks. Once a mine was encountered, its anchor line would be dragged to the paravane and cut. However, deployment of this equipment on a ship as big as the *Bismarck* was complicated and impractical.

An MES device was fitted outside the battleship's hull. MES stands for *Magnetischer Eigenschutz* [magnetic self-protection]. This was a degaussing cable attached under the ship's main armour belt and running along almost the whole length of the hull. When turned on, this equipment reduced the natural magnetic field of the ship and thus prevented magnetic mines' fuzes from working properly.

For quick deployment of a thick smoke screen, *Bismarck* was fitted a special smoke-generation compartment below the upper deck at the stern. Spare smoke-generation canisters were kept in several locations on the quarterdeck.

## COMPLEMENT

The battleship's crew comprised twelve divisions, numbered I to XII and each consisting of 180–220 men:

- Divisions I–IV: crews of the main and secondary artillery;
- Divisions V–VI: crews of the AA artillery;
- Division VII: craftsmen, cooks, administration workers, etc.;
- Division VIII: artillery technicians;
- Division IX: helmsmen, signal men and radio operators;
- Divisions X–XII: machinery engineers, technicians, etc.

Originally, *Bismarck*'s crew consisted of 103 officers and 1,962 men. Shortly before Operation *Rheinübung*, Admiral Lütjens' staff and three prize crews came on board, adding around 150 to the ship's company. In total, there were over 2,200 crew members on board when the battleship left Gdynia in May 1941, out of whom only 115 survived.

## CAMOUFLAGE

During her short service, *Bismarck* received a number of changes to her paint schemes. The colours used included:

- light grey (RAL 7001) – superstructures, armament, etc.;
- medium grey (RAL 7000) – hull above the waterline;
- anthracite grey (RAL 7016) – boot topping, steel decks;
- reddish brown (RAL 8013) – underwater part of the hull;
- natural teak – wooden decks;
- dark grey (RAL 7024) – bow and stern, horizontal surfaces other than decks (roofs of hangars, rangefinders, turrets, etc.);
- black diagonal stripes of the camouflage on the hull and superstructure, swastikas on the upper deck;
- white – diagonal stripes of the camouflage on the hull and superstructure, circles below the swastikas on the upper deck, false bow and stern waves;
- yellow (RAL 1003) – turret tops and barrels;
- carmine red (RAL 3010) – turret tops and barrels, banners below the swastikas on the upper deck.

For details on how exactly all of these colours were applied and during what time frame, see the colour visual reference on [pages 50–69](#).

## WRECK OF THE *BISMARCK*

In 1985, an expedition led by Dr Robert Ballard from the Woods Hole Oceanographic Institution managed to locate the sunken ocean liner RMS *Titanic* at the bottom of the Atlantic. Following this success, Ballard decided to search for *Bismarck*'s wreck. An expedition was mounted in June 1988 aboard the search ship *Starella*, but the wreck was not found. One year later Ballard made a second attempt, this time using the better-equipped ship *Star Hercules*. Success came on 8 June 1989. After a very extensive search, the team managed to locate one of *Bismarck*'s main artillery turrets. The hull was soon found lying in the vicinity, 4,790m below the ocean surface and some 470 miles west of Brest, France. The expedition stayed on the site for another three days to document the wreck. Its exact position was not released to the public for fear that subsequent expeditions might attempt to treat the remains without proper respect, as had been the case with *Titanic*.

*Bismarck*'s hull is in relatively good condition. Having rolled at the time of its sinking, the ship lost all the main artillery turrets that had once been kept in the barbettes only by their enormous weight. More

or less at the same time, the stern part of the hull broke off, the torpedo damage probably contributing to weakening the joints in this area. The hull was in an upright position when it hit an underwater mountain's side with great force, and then slid some 1,000m down.

Due to the tremendous amount of punishment that *Bismarck* received during her last battle, there are many elements missing from the ship. The funnel, mainmast and fore superstructure above the lower mast deck level are gone. Both 12-ton cranes have been detached, one of the arms

Blohm & Voss shipyard, Hamburg, summer 1940. Photo taken from the pier, looking aft at *Bismarck*'s port side. The main armour belt edge is clearly visible, with its end just forward of turret 'Anton's' barbette. Near the deck edge, a large boat boom is stowed. All the artillery turrets have their protective blast bags already fitted. (Bundesarchiv, Bild 193-02-6-18)

now resting on barbette 'C'. All the rangefinders of the main and AA artillery are also missing. The secondary artillery turrets and the heavy AA gun mounts are in place but damaged to varying extents. Many shell hits can be found in the surviving portions of the superstructure, as well as in the hull. It seems that the armour belt was penetrated only four times. Two holes have been found in the 320mm plates and two in the 145mm plates above. A significant part of the outer hull plating is missing from the area below the armour belt and adjacent to the trim tanks. It could have become detached on the hull's impact with the seabed. The deck planking is mostly preserved, and the swastikas painted on the bow and stern are clearly visible.





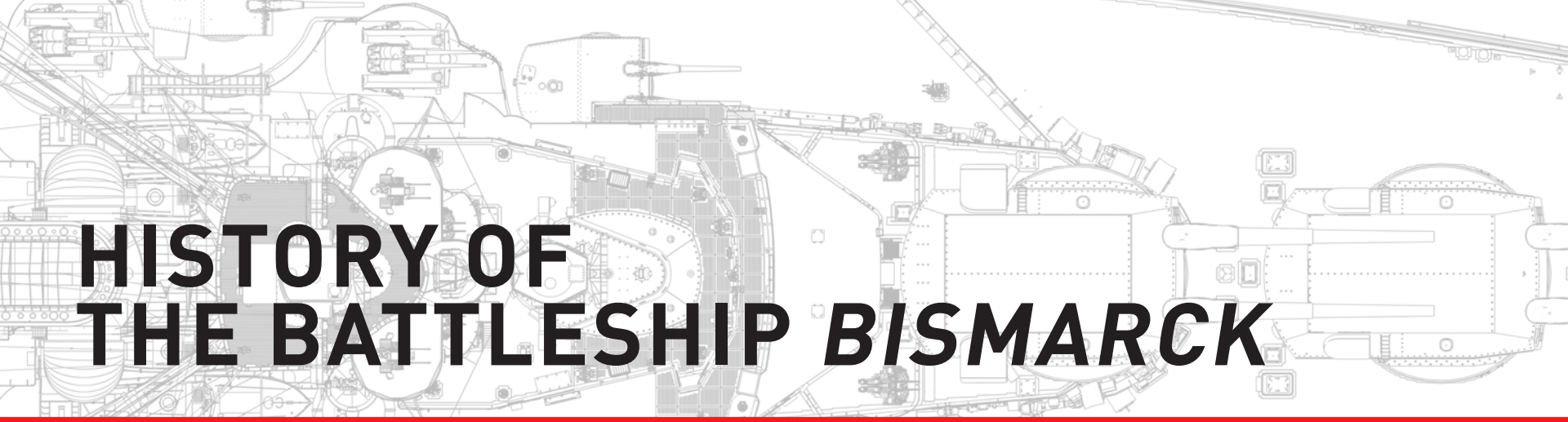
River Elbe, 15 September 1940. Port quarter view of the *Bismarck*. The battle ensign is hoisted from the ensign staff. A number of small vessels can be seen around the battleship.

(Bundesarchiv, Bild 193-13-3-14)

The wreck was again visited by a number of expeditions in the years 2001–2005. These were led by Mike McDowell, David Mearns and James Cameron and brought new information about the battleship's damage and the current state of the remains.

The wreck of *Bismarck*, sunk in international waters, is the property of the German government and is considered a war grave.





# HISTORY OF THE BATTLESHIP *BISMARCK*

**16 November 1935:** Blohm & Voss shipyard in Hamburg was awarded the contract to build *Bismarck* (then designated *Schlachtschiff F*).

**1 July 1936:** Laid down on Slipway no. 9, build number BV 509.

**September 1938:** The hull was constructed up to the upper-deck level, main and secondary artillery turret barbettes already fitted.

**January 1939:** The hull was prepared for launch.

**14 February 1939, 1300hrs:** The launch ceremony took place at Blohm & Voss shipyard. Adolf Hitler, chancellor of the Third Reich, was among 60,000 guests who attended. After a short speech by the Führer, the hull was christened by Dorothea von Löwenfeld, granddaughter of Chancellor Otto von Bismarck.

**September 1939:** Work began on replacing the battleship's original straight stem with a new so-called Atlantic stem.

**April 1940:** The first crew members came on board, among them Captain Ernst Lindemann, the ship's commander. Temporarily, officers and men were accommodated aboard barrack ships *Oceania* and *General Artigas*.

**23 June 1940:** Entered floating dry dock no. V–VI for installation of propellers and MES cable.

**14 July 1940:** Left dry dock.

**24 August 1940:** Commissioning day. After the crew had been addressed by the battleship's commander on the quarterdeck, the battle flag was hoisted from the ensign staff.

**25 August 1940:** Air raid alarm. 3.7cm and 2cm artillery fired at enemy aircraft but with no success. Similar occurrences on 31 August, 8 September and 10 September.

**14 September 1940, 1600hrs:** Left Blohm & Voss shipyard.

**15 September 1940:** Sailed down the Elbe. At 1658hrs collided with bow tug *Atlantik*. No damage sustained. Anchored at Brunsbüttel Roads. Air raid alarm during the night. 10.5cm, 3.7cm and 2cm artillery fired at enemy aircraft but with no success.

**16 September 1940:** Voyaged down the Kiel Canal (then named Kaiser Wilhelm Kanal).

**17 September 1940:** Passed Holtenau Lock and anchored at Scheerhafen in Kiel for adjustments.



Blohm & Voss shipyard, Hamburg, 24 August 1940. Photo taken from the roof of turret 'Cäsar' looking aft. The ceremony of the battleship's commissioning is being held. The crew is gathered on the quarterdeck. Captain Ernst Lindemann, *Bismarck's* commander, is delivering a speech. Two sailors are standing next to the ensign staff at the stern, ready to hoist the battle ensign.  
(Bundesarchiv, Bild 101II-MN-1363-26, photo: Rudolf Peter)

**24 September 1940:** Towed to buoy A12 in Kiel.

**28 September 1940:** Left Kiel and sailed east in the assist of *Sperrbrecher 13*. Passed Cape Arkona in the evening.

**29 September 1940:** Anchored outside Gdynia (renamed Gotenhafen during the German occupation of Poland).

**October–November 1940:** Conducted machinery trials in the Gulf of Gdańsk (then named Danzig).

**5 December 1940:** Left Gdynia and headed west towards Kiel.

**7 December 1940:** Entered Kiel Canal.

**8 December 1940:** Arrived at Brunsbüttel.

**9 December 1940:** Reached Blohm & Voss shipyard.

**December 1940 – January 1941:** Final modifications and adjustments at the shipyard. The so-called Baltic camouflage scheme was applied to the hull and superstructures, as well as large swastika air recognition markings painted on the bow and stern sections of the upper deck. Most of the crew members were on Christmas leave, the last chance to meet their families before the combat mission.

River Elbe, 15 September 1940. *Bismarck* has just left Blohm & Voss shipyard for the first time and is now proceeding at low speed down the river towards Brunsbüttel and the Kiel Canal. A number of assisting tugs are visible to the right. (Bundesarchiv, Bild 193-04-1-26)

**24 January 1941:** Final modifications and adjustments had been completed at the shipyard. However, the voyage to Gdynia was impossible due to a sunken ore ship in the Kiel Canal and severe icing of the passage. Drills were continued during the battleship's stay in Hamburg.

**29 January 1941:** The beginning of an on-board inspection of artillery and fire control systems conducted by AVKS (Artillerieversuchskommando für Schiffe [Artillery Testing Command for Ships]). A number of problems were discovered in the process.







River Elbe, 15 September 1940. Main artillery turrets 'Anton' and 'Bruno' photographed from the port side. Many crew members are on the upper deck enjoying the battleship's first cruise. A tug belonging to Blohm & Voss shipyard is in the foreground. Judging by the height of the boot topping's upper edge over the water surface, it is evident that the ship is not yet loaded with ammunition, supplies, etc.  
(Bundesarchiv, Bild 193-04-1-22)

**6 March 1941:** With passage through the Kiel Canal finally possible, *Bismarck* left the Blohm & Voss shipyard and anchored at Brunsbüttel later in the day.

**7 March 1941:** Canal transit assisted by two bow tugs.

**8 March 1941:** At 0845hrs *Bismarck* ran aground on the south side of the canal. Freed after approximately 30 minutes with the help of two tugs and under her own power. Passed Holtenau Lock and entered floating dry dock C in Kiel.

**9–14 March 1941:** At floating dry dock C, work was carried out on the underwater part of the hull, receiving ammunition and provisions. Several air raid alarms during the nights but no guns fired.

**14 March 1941:** Towed to Scheerhafen, Kiel.

**14–17 March 1941:** At Scheerhafen for calibration of artillery and loading of ammunition, fuel, water and provisions. The first two Arado Ar-196 floatplanes were also embarked.

**17 March 1941:** Departed heading east, accompanied by old battleship *Schlesien* and *Sperrbrecher 36*.

River Elbe, 15 September 1940. Port-side view of *Bismarck*'s superstructure. The most striking shortage in her equipment is the lack of rangefinders on top of the fore and main artillery fire control posts. Note also the black crossed frames visible just over the crane arm's ending. The meaning of this sign is 'make way', and it was always hoisted when the battleship navigated in narrow waters. (Bundesarchiv, Bild 193-06-7-18)



**18 March 1941:** Arrived at Gdynia.

**18 March – April 1941:** Conducted intensive training in the Baltic in preparation for the upcoming combat mission. This included main, secondary and AA artillery shootings, refuelling from and to another ship at sea, aircraft operations, operating in a task force with other ships (including training with heavy cruisers *Prinz Eugen* and *Lützow*), searchlight and acoustic detector tests, and damage control drills.

**2 April 1941:** The next two Arado Ar-196 floatplanes were embarked, for a total of four aircraft. On the same day, *Bismarck*'s commander received the outlines of combat operation prepared by SKL



(Seekriegsleitung [Naval Warfare Command]). The orders were to conduct an Atlantic sortie in late April, accompanied by heavy cruiser *Prinz Eugen* and battleship *Gneisenau* (the latter would join the two ships in the open ocean, having departed from Brest in France). A German task force was to conduct commerce raiding in the North Atlantic for a period of up to three months. To assure success of the operation, it was of top importance to keep the ships' passage secret so that they could reach the open ocean undetected. Neither *Bismarck's* sister ship *Tirpitz* (which had not achieved operational readiness yet) nor the battleship *Scharnhorst* (being repaired in Brest) were available to take part in the forthcoming operation.

**6 April 1941:** An aerial torpedo dropped by British aircraft damaged *Gneisenau* in Brest. The battleship had to enter dry dock for repairs and thus was ruled out of the combat mission with *Bismarck* and *Prinz Eugen*.

**22 April 1941:** SKL issued detailed instructions for the combat mission to be conducted by *Bismarck* and *Prinz Eugen*. The operation received the codename 'Rheinübung' ['Rhine exercise'].

**23 April 1941:** *Prinz Eugen*, while sailing to Kiel, was damaged by the detonation of a magnetic mine and required immediate repairs. Operation *Rheinübung* was thus slightly delayed.

**28 April 1941:** *Bismarck's* commander, Captain Ernst Lindemann, reported that the battleship and her crew were fully ready for action and provisioned for three months. The report was sent to OKM (Oberkommando der Marine [Naval High Command]), Gruppe Nord [Group North], Gruppe West [Group West] and Flottenkommando [Command of the Fleet].

**5 May 1941:** Adolf Hitler, accompanied by his staff, visited *Bismarck* at Gdynia, where she lay in a roadstead. Admiral Günther Lütjens, the commander of the task force conducting Operation *Rheinübung*, was the Führer's host. The visit lasted for about four hours. Hitler then boarded the fleet tender *Hela* and went to Gdynia harbour pier to inspect battleship *Tirpitz*.



Blohm & Voss shipyard, Hamburg, January 1941. This photo was taken from searchlight deck level looking forward. An antenna insulator is visible in the foreground to the left. Below it, the armoured roof of the conning tower can be seen, with its periscopes and target givers. Further down, the open navigation bridge can be seen, with all kinds of equipment fitted. The roofs of both main artillery turrets are painted dark grey. Turret 'Anton' has its rangefinder already removed. On the forecastle, a large painted swastika is visible – an air recognition sign for friendly aircraft. This was a harsh winter – note the floating ice in the upper part of the photo. (Bundesarchiv, Bild 193-07-1-13)



**13 May 1941:** Chief of Fleet Admiral Lütjens and his staff came aboard. Fuel transfer training between *Bismarck* and *Prinz Eugen* was conducted at sea.

**14 May 1941:** During the course of training with the light cruiser *Leipzig*, *Bismarck*'s port crane malfunctioned. A further delay of Operation *Rheinübung* was necessary to allow for repairs to be carried out.

**16 May 1941:** Lindemann reported that the crane was operable again and *Bismarck* was ready for action. The starting point of Operation *Rheinübung* was set to 18 May.

**17 May 1941:** Reports were received from intelligence about the ship classes and their number observed by aerial reconnaissance at the British naval base at Scapa Flow, Orkney Islands.

**18 May 1941, 1000hrs:** After an inspection aboard *Prinz Eugen*, Admiral Lütjens gathered the staff from both ships on board *Bismarck* and briefed them on Operation *Rheinübung*. Technical details regarding the sortie were discussed.

**18 May 1941, 1200hrs:** *Bismarck* moved from Gdynia harbour pier to the roadstead, where she took on fuel. In the course of this action, there was an accident and one of the fuel hoses broke. Further refuelling was aborted, leaving *Bismarck* 200 tons short of her full oil capacity. Considered insignificant at the time, this incident would influence future events.

**18 May 1941, 2100hrs:** *Prinz Eugen* left Gdynia and headed west.

**19 May 1941, 0200hrs:** *Bismarck* weighed anchor and followed *Prinz Eugen*.

**19 May 1941, 1130hrs:** Rendezvous of the two ships off Cape Arkona, when the crews of the ships were informed about the start of

the mission. *Bismarck* and *Prinz Eugen* were soon joined by escorting destroyers *Z-23*, *Z-16 Friedrich Eckoldt* and *Z-10 Hans Lody*. The task force headed west.

**20 May 1941, early morning:** Passed through the Great Belt and continued through Kattegat.

**20 May 1941, 1300hrs:** An accidental encounter with the Swedish seaplane cruiser *Gotland*. Lütjens assumed that German task force roster and course were reported to Stockholm. A British naval attaché intercepted the news and passed it to the Admiralty in London.

**20 May 1941, evening:** The German ships completed their passage through Skagerrak. A member of the Norwegian resistance spotted the Germans sailing close to the coastline and reported this to the British.

**21 May 1941, 900hrs:** The German ships entered Korsfjord, south-west of Bergen, Norway.

**21 May 1941, 1200hrs:** *Bismarck* anchored in nearby Grimstadfjord, whereas *Prinz Eugen* and the destroyers sailed further north to Kalvanes Bay. Orders were given to overpaint the ships' camouflage during the short stay. A task force was planned to continue the voyage under cover of darkness.

**21 May 1941, about 1300hrs:** *Bismarck* was sighted and photographed by a reconnaissance Spitfire from British Naval Command. The German ships' sortie was confirmed. It was decided to conduct an immediate air raid on the German ships. The commander of the British Home Fleet, Admiral Sir John Tovey, issued his orders. Rear Admiral William Wake-Walker was to patrol the Denmark Strait with heavy cruisers HMS *Norfolk* and HMS *Suffolk*. Vice Admiral Lancelot Holland left Scapa Flow with a task force consisting of battlecruiser HMS *Hood*, battleship HMS *Prince of Wales* and six destroyers, and headed towards Iceland with the hope of intercepting the Germans.

**21 May 1941, 1930hrs:** *Bismarck* left Grimstadfjord. Unlike *Prinz Eugen*, *Bismarck* had not refuelled. The German task force proceeded north, zig-zagging. Sometime after the German ships' departure, the RAF conducted an air raid on their presumed anchoring positions near Bergen.

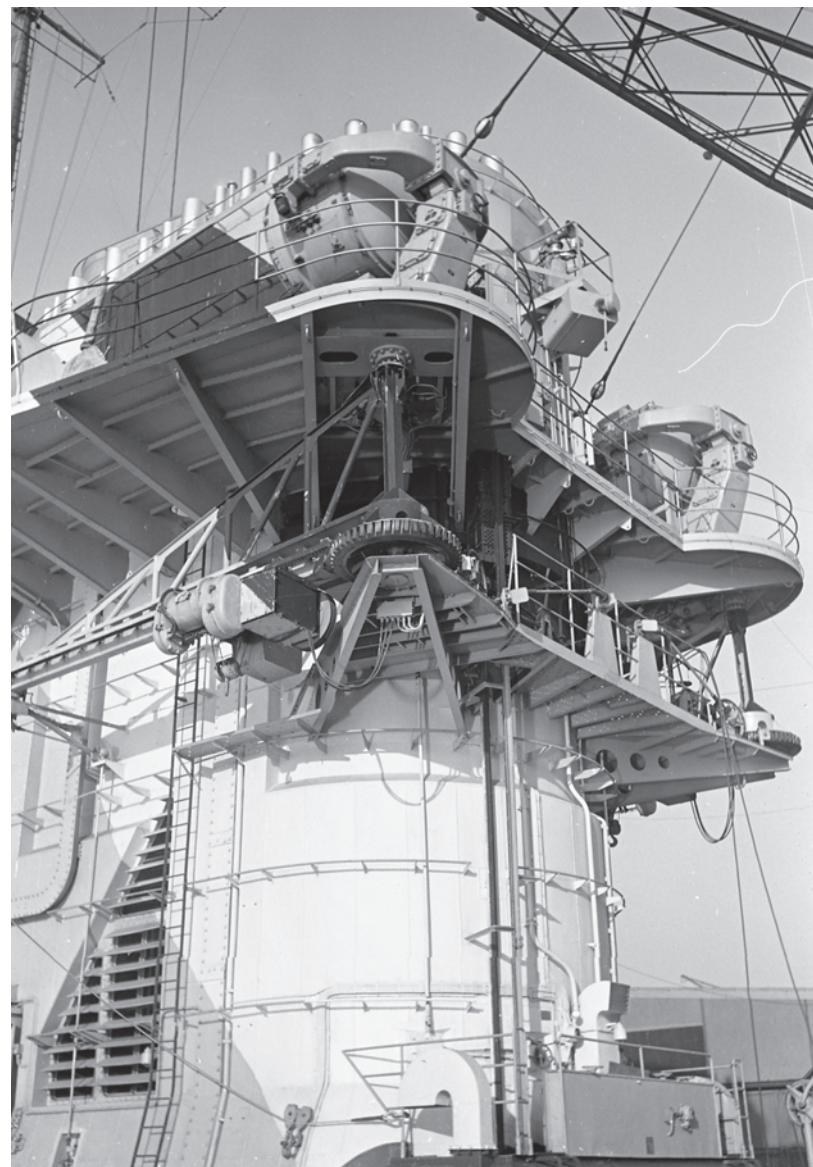
**22 May 1941, 0420hrs:** The escorting destroyers detached from the task force and sailed towards Trondheim. *Bismarck* proceeded north, steaming ahead of *Prinz Eugen*.

**22 May 1941, 1237hrs:** Submarine alarm. Both ships changed course and started zig-zagging. After some 20 minutes, the alarm was called off and the task force assumed its previous course. Air recognition markings on the turret roofs and upper deck were ordered to be painted over. Weather conditions were favourable for attempting to reach the open Atlantic through the Denmark Strait.

**22 May 1941, 2215hrs:** Having received a report from reconnaissance aircraft that the German ships were no longer present in the Norwegian fjords, Admiral Tovey left Scapa Flow with his task force, consisting of battleship HMS *King George V*, aircraft carrier HMS *Victorious*, five light cruisers and six destroyers. The British steamed towards the Faroe Islands to block the Germans if they chose to take this route. Battlecruiser HMS *Repulse* was ordered to depart from Clyde, Scotland and join Tovey the following day.

**23 May 1941:** For most of the day, weather conditions remained favourable for the Germans to break through to the Atlantic undetected. *Bismarck* and *Prinz Eugen* proceeded towards the Denmark Strait.

**23 May 1941, 1922hrs:** An alarm sounded on the battleship: an enemy warship had been sighted at a distance of seven miles. Further observation confirmed that this was a three-funnel British heavy cruiser. On board HMS *Suffolk*, *Bismarck* was also sighted, and this was reported to the other British ships.



Blohm & Voss shipyard, Hamburg, December 1940 – January 1941. *Bismarck*'s massive funnel, in a view from port side aft. The large diagonal black and white stripes of the 'Baltic' camouflage scheme have been painted. Two searchlights are fitted on the funnel's platform. Below it, a smaller platform is visible. From there, the Arado floatplanes' overhead cranes were operated. The double rail going from the bottom of the funnel all the way up (just aft of the overhead crane) is the 2cm ammunition hoist. (Bundesarchiv, Bild 193-08-4-27)

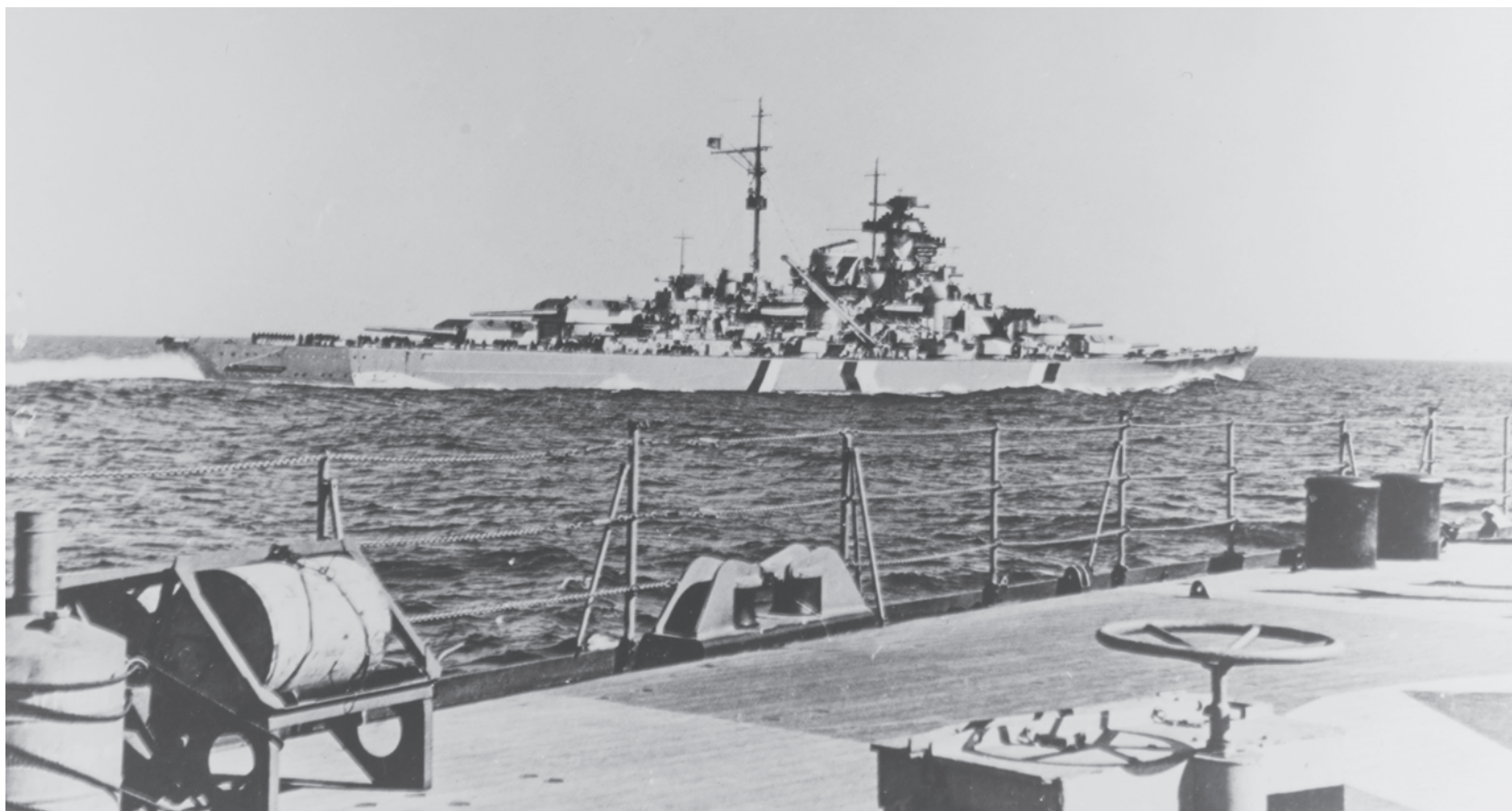
**23 May 1941, 2030hrs:** *Bismarck* encountered *Norfolk* at a very short distance of about four miles and opened fire immediately. Of *Bismarck*'s five salvos, three straddled the British cruiser. *Norfolk* retired and assumed a position on the German ship's port quarter, at a distance of about 13 miles. *Suffolk* remained on the starboard quarter. The British started shadowing *Bismarck* and *Prinz Eugen*, utilizing their radar sets.

Baltic Sea, April–May 1941. *Bismarck* is photographed from the deck of the heavy cruiser *Prinz Eugen* during joint training. The battleship has the 'Baltic stripe' camouflage applied to her hull and superstructures, and her bow and stern are now painted dark grey with white false waves. All the main artillery rangefinders and radar antennas are already in place. In the lower left corner, a smoke-generation container and a depth charge rack can be seen stowed on *Prinz Eugen*'s deck. *Bismarck* had similar equipment on her stern.

(NH 69721 courtesy of the Naval History & Heritage Command)

**23 May 1941, 2044hrs:** A main artillery blast had put *Bismarck*'s forward FuMO 27 radar out of action. *Prinz Eugen* was ordered to assume a position ahead of the battleship, which would enable *Bismarck* to open fire on any shadowing British cruisers if such a situation should arise. During the passing manoeuvre, the battleship's rudder temporarily jammed and only a sharp turn by *Prinz Eugen* prevented a collision.

**23 May 1941, 2200hrs:** Admiral Lütjens decided to proceed with the passage through the Denmark Strait and to make an attempt to shake the British off. *Bismarck* made a sharp turn in order to open fire on *Suffolk*. The cruiser, equipped with a superior Type 284 radar, noticed this manoeuvre and moved away in time. *Bismarck* then assumed her position behind *Prinz Eugen*.





**23 May 1941, evening:** In the meantime, Vice Admiral Holland decided to increase speed and intercept the German ships, forcing them to accept battle. Steaming at 27 knots, *Hood* and *Prince of Wales* were expected to encounter *Bismarck* and *Prinz Eugen* early in the morning.

**24 May 1941:** Battle of the Denmark Strait. The weather had improved and now favoured a long-range naval engagement. For the upcoming battle, Holland decided that *Hood* and *Prince of Wales* would concentrate their fire on *Bismarck*, whereas *Norfolk* and *Suffolk* were to engage *Prinz Eugen*. The British force, consisting of a battlecruiser, a battleship and two heavy cruisers, had a clear advantage over the German single battleship and single heavy cruiser. In terms of artillery, the British had eight 15in guns, ten 14in guns and 16 8in guns. Lütjens could oppose them with eight 15in guns and eight 8in guns. This would be an epic engagement, involving the two biggest warships in the world at that time.

**24 May 1941, 0547hrs:** The alarm was raised as the British capital ships were spotted by lookouts on *Bismarck*; this was preceded by hydrophones and the intelligence service aboard the German ships having reported new enemy vessels to the port side.

**24 May 1941, 0549hrs:** Steaming at 28 knots, *Hood* and *Prince of Wales* turned to starboard in an attempt to close the range as quickly as possible. Knowing the vulnerability of his battlecruiser to plunging fire, Vice Admiral Holland decided to avoid fighting at an unfavourable distance, and instead use only the fore artillery turrets of the British ships in the first stages of the battle. Meanwhile, the Germans were still uncertain as to what ships they were about to engage. The first observations indicated that the two closing ships were heavy cruisers.

**24 May 1941, 0553hrs:** From a distance of 12.5 miles, the British ships opened fire with their fore batteries. Because *Bismarck* and *Prinz Eugen* had very similar silhouettes and the cruiser was the lead ship in the formation, the British had problems correctly identifying them. While *Prince of Wales* aimed at *Bismarck* from the start, *Hood*'s fire was at first targeted at *Prinz Eugen*, a much less dangerous ship. Meanwhile, *Norfolk* and *Suffolk* stayed at a safe distance.

**24 May 1941, 0554hrs:** The first British salvos failed either to achieve hits or to straddle the German ships. However, Admiral Lütjens still hesitated with a response. *Bismarck*'s first artillery officer, Lieutenant Commander Adalbert Schneider, asked for permission to open fire several times from his main fire control post in the foretop.

**24 May 1941, 0555hrs:** The British ships made a port turn, now revealing their full silhouettes to the Germans. As it was now certain the opponents were capital ships, tension on *Bismarck*'s bridge heightened. Irritated by Lütjens' lack of decision, Lindemann finally said: 'I will not let my ship be shot away from under my ass. Permission to open fire!' From a distance of about 11 miles, *Bismarck* and *Prinz Eugen* fired their first salvos, both targeting British lead ship – *Hood*.

**24 May 1941, 0557hrs:** German fire was very accurate from the start, with shells landing close to *Hood*. *Prinz Eugen* achieved her first hit, starting a large fire on *Hood*'s boat deck near the mainmast's base. Soon afterwards, the British battlecruiser was hit again, this time in her foretop. Meanwhile, *Prince of Wales* achieved a hit on *Bismarck*'s bow.

**24 May 1941, 0559hrs:** *Prinz Eugen* was ordered to switch her target to *Prince of Wales*.

**24 May 1941, 0600hrs:** *Hood* and *Prince of Wales* were ordered to make a further turn to port in order to enable their aft turrets to open fire. The fighting distance was now about nine miles.

**24 May 1941, 0601hrs:** *Bismarck*'s fifth salvo achieved a fatal hit on *Hood*. A 38cm projectile penetrated the battlecruiser's armour and exploded in her aft magazines, causing an enormous detonation. *Hood* split in two and sank within three minutes, leaving only three survivors from her 1,400-man crew.

**24 May 1941, 0602hrs:** *Bismarck* and *Prinz Eugen* immediately switched their target to *Prince of Wales*, which had to make an evasive turn to avoid colliding with the sinking *Hood*. The British battleship was hit by a 38cm shell in the bridge that passed through without

exploding. *Prince of Wales*' commander, Captain John Leach, was a lucky survivor. Everyone else in the compartment, except for one other man, was killed.

**24 May 1941, 0603hrs:** Having received several hits from both *Bismarck* and *Prinz Eugen* and experiencing repeated failures in her main artillery turrets, *Prince of Wales* set a smoke screen and broke off the engagement. Meanwhile, German hydrophones reported torpedo sounds and evasive manoeuvres were carried out. Despite Lindemann's objections, Lütjens decided not to pursue the wounded British battleship.

**24 May 1941, 0609hrs:** *Bismarck* fired her last salvo, ending the Battle of the Denmark Strait. The German battleship, although having been hit only three times by *Prince of Wales*, suffered considerable damage. The most serious hit was in the bow (section XXI), which left both sides of the ship holed. About 2,000 tons of seawater entered the hull and the ruptured oil tanks started leaking. The 1,000 tons of fuel in the bow tanks were also not reachable any more. *Bismarck* had a visible trim, was several degrees down by the bow and had her top speed reduced to 28 knots. The second hit was in section XIV amidships, port side. The shell passed under the main armour belt and exploded against the torpedo bulkhead. This caused flooding of the generator room no. 4, and also some leaks in port boiler room no. 2, but these were quickly contained by damage-control parties. The third projectile hit a transportation boat and fell into the water without exploding. Meanwhile, on the British side, Rear Admiral William Wake-Walker aboard Norfolk became the senior officer on the battle scene. Still reeling with horror after witnessing the *Hood*'s rapid sinking, he sent a shocking, laconic report to the Admiralty: 'Hood has blown up'. It now became a top imperative to hunt *Bismarck* down and sink her at all costs. *Suffolk*, *Norfolk* and the damaged *Prince of Wales* assumed positions at a safe distance behind *Bismarck* (to starboard quarter, port quarter and port quarter respectively). The British then started shadowing the German task force.

**24 May 1941, 0801hrs:** Having gathered information on *Bismarck*'s damage, Lütjens informed Group North of his further intentions.

With the battleship's bow fuel tanks unavailable, it was impossible to continue Operation *Rheinübung* as planned. *Bismarck* had to undergo necessary repairs. The admiral decided that *Bismarck* should sail to the German-occupied harbour of Saint-Nazaire in France, one of few places that had a sufficiently large dry dock. *Prinz Eugen*, which had sustained no damage during the battle, was to separate and continue commercial shipping on her own.

**24 May 1941, 1010hrs:** *Prinz Eugen* was ordered to inspect *Bismarck*'s oil leak, and moved to a position in the battleship's wake.

**24 May 1941, 1100hrs:** The heavy cruiser assumed her previous position in front of *Bismarck*. Meanwhile, the British Admiralty ordered battleship HMS *Rodney*, currently escorting a troop ship west of Ireland, to detach with three destroyers and join the pursuit. The same orders were given to battleship HMS *Ramillies*, which soon left the escorted convoy that it had been part of to the east of Newfoundland. Battleship HMS *Revenge* in Halifax, Canada, was also to depart and head east. Admiral Somerville, commander of the powerful Force H, was also ordered to cease the escorting service his ships had been providing and alter course. These ships, currently sailing north from Gibraltar, included battlecruiser HMS *Renown*, aircraft carrier HMS *Ark Royal*, light cruiser HMS *Sheffield* and five destroyers. Admiral Tovey with his task force headed west to intercept *Bismarck*.

**24 May 1941, 1300hrs:** The German task force was sailing south, its speed reduced to 24 knots in order to make provisional repairs in *Bismarck*'s bow section.

**24 May 1941, 1540hrs:** Admiral Tovey detached aircraft carrier *Victorious* and four cruisers from his force, and ordered them to increase speed and attempt to make an air torpedo attack on *Bismarck* late in the evening.

**24 May 1941, 1540hrs:** *Bismarck* increased her speed and turned hard to starboard in an attempt to enable *Prinz Eugen* to detach unnoticed. The manoeuvre failed and the battleship assumed her previous position in formation at 1600hrs.

**24 May 1941, 1814hrs:** In favourable weather conditions, another attempt was made to complete the manoeuvre. *Bismarck* turned hard to starboard, closed on *Suffolk* to a distance of about 10 miles and opened fire. Soon the battleship also became engaged in a brief fire exchange with *Prince of Wales*. No hits were scored by either side, but *Prinz Eugen* detached successfully. Another result was that *Suffolk* moved from *Bismarck*'s starboard quarter to her port quarter, joining *Norfolk* and *Prince of Wales*.

Baltic Sea, April–May 1941. *Bismarck* is seen from *Prinz Eugen* during joint training. The false bow waves of the battleship are very distinct in this view. A fuel hose is stretched between both ships. Refuelling at sea was an operation that could prove to be necessary during combat missions. Ultimately, it would not be performed between the two ships during Operation *Rheinübung*.  
(NH 69734 courtesy of the Naval History & Heritage Command)

**24 May 1941, 2056hrs:** Admiral Lütjens informed Group West that he was unable to shake off his pursuers due to the use of advanced radar by the enemy. He also decided to proceed directly to Saint-Nazaire. In fact, the situation was not very good in terms of *Bismarck*'s fuel reserves. Having not refuelled in Norway and having lost access to 1,000 tons of oil in the bow tanks, she now had barely enough fuel to reach France at high speed.

**24 May 1941, 2210hrs:** Nine Fairey Swordfish bi-plane torpedo bombers, led by Lieutenant Commander Eugene Esmonde, took off from *Victorious*. With the intention to attack, they headed towards the reported position of *Bismarck*.





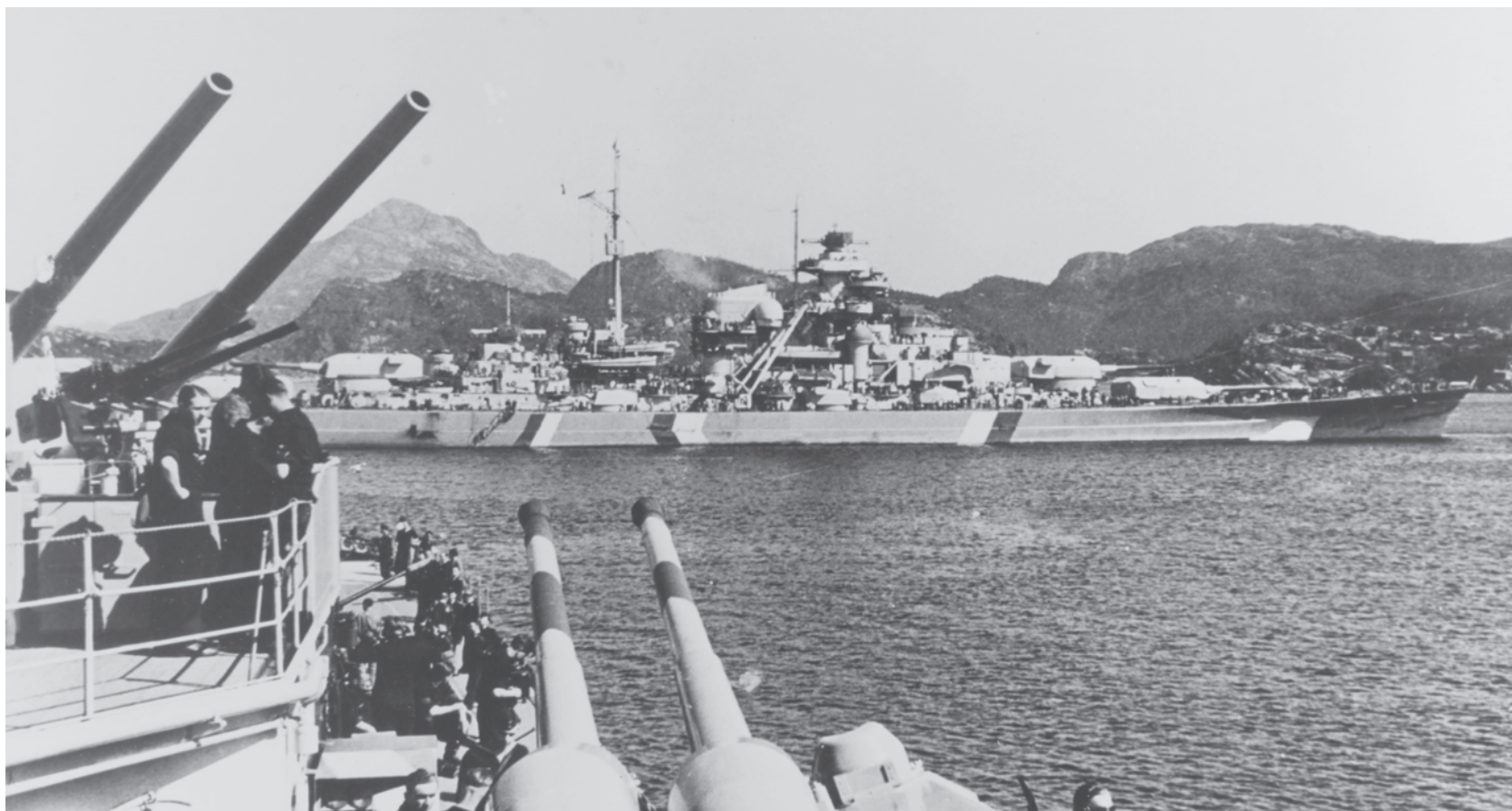
**24 May 1941, 2330hrs:** An air raid alarm sounded. *Bismarck* was located by a formation of eight Swordfish (the other one got lost in bad weather). The battleship increased speed and made a number of hard evasive turns, firing fiercely at the same time. Even the secondary and main artillery were put to action in the hope that high shell splashes would disorganize the formation of the attacking aircraft. These efforts were only partly effective, as one of the torpedoes struck *Bismarck* on her starboard side amidships, section IX. The warhead exploded against the lower part of the main armour belt and did only minor damage.

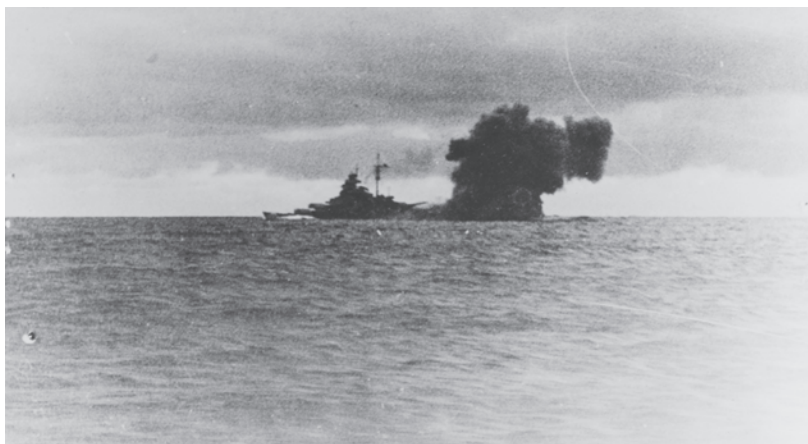
Grimstadfjord, south-west of Bergen, Norway, 21 May 1941. During the course of Operation *Rheinübung*, the German ships briefly stopped in the fjords. This photo was taken from the superstructure of *Prinz Eugen* in a northerly direction, with *Bismarck* seen against the mountainous Norwegian landscape. The camouflage scheme is still visible on *Bismarck*, but the sailors have already begun to paint over it. Note the black spots on the hull below turret 'Cäsar'. They were made by spilled oil during a refuelling accident in Gdynia, Poland on 18 May.  
(NH 69720 courtesy of the Naval History & Heritage Command)

One of the crew members, standing by a 10.5cm gun mount near the hit area, was killed by the blast. Five aircraft were claimed to have been shot down by the AA gun crews, but actually all Swordfish landed safely on *Victorious*.

**25 May 1941, after midnight:** *Bismarck*'s speed and manoeuvres during the torpedo attack had destroyed the repair patches in her damaged bow. Additionally, there was more flooding to port boiler room no. 2 and it had to be abandoned. The battleship slowed down to 16 knots to make repairs.

**25 May 1941, 0131hrs:** *Bismarck*'s reduced speed caused the British ships unwittingly to close the range. *Prince of Wales* fired two salvos from distance of about eight miles. *Bismarck* responded, but no hits were scored and the engagement ended.





The Denmark Strait, 24 May 1941. *Bismarck* has just fired a salvo targeting the battleship HMS *Prince of Wales*. Photo taken from *Prinz Eugen*. Note the big bow wave, indicating high speed.  
(NH 69727 courtesy of the Naval History & Heritage Command)

**25 May 1941, 0306hrs:** Admiral Lütjens made an attempt to shake off his pursuers. *Bismarck* increased her speed and made a starboard turn, going west. Then she kept turning to starboard until about 0400hrs. Having made almost a full circle, she found herself on an easterly course towards France. Meanwhile the British ships behind had been zig-zagging in fear of U-boat attacks. With visibility poor, they relied on *Suffolk's* radar, that periodically lost contact with each turn. After one of these turns, contact was not regained. With all three ships positioned in *Bismarck's* port quarter, the British remained completely unaware of the German manoeuvre and searched further south. Lütjens managed to lose the shadowing force and now had nothing but ocean between him and France. However, he was unaware of this success and thought there still were enemy vessels following *Bismarck*.

**25 May 1941, 0700hrs:** Lütjens sent a radio message to Group West, incorrectly stating that he was being followed by a battleship and two heavy cruisers.

**25 May 1941, 0846hrs:** From intercepted British messages, Group West concluded that *Bismarck* actually had managed to shake off her pursuers. This information was radioed to Lütjens. However, the message was not received on *Bismarck* until about 1100hrs.



The Denmark Strait, 24 May 1941. *Bismarck* as seen from *Prinz Eugen* as she fired a salvo at *Prince of Wales* from her rear main artillery turrets late in the battle. This photo has the appearance of having been taken at night, but this is just an effect caused by the very bright muzzle flash of the guns.  
(NH 69730 courtesy of the Naval History & Heritage Command)

**25 May 1941, 0900hrs:** Admiral Lütjens was still unaware that the British did not know his current position, probably because signals from enemy radars were still being picked up. He sent a very long radio message to Group West containing details of the events of the last few days and Lütjens' observations, including information about enemy radar functioning, the Battle of the Denmark Strait and *Bismarck's* battle damage. Both messages sent that morning were intercepted by British ships and land-based listening stations, which enabled them to plot the approximate position of the battleship. However, due to an error, the position plotted aboard Tovey's *King George V* was not correct and suggested that *Bismarck* was steaming towards the Faroes. This only added to the confusion and gave the Germans an advantage. It was not until afternoon that the British admiral was finally convinced by the Admiralty and their calculations that *Bismarck* was actually heading for France. Meanwhile, Lütjens had realized his mistake and sent no further radio messages.

**25 May 1941, 1152hrs:** The German Navy Commander-in-Chief, Grand Admiral Erich Raeder, sent his greetings to Lütjens on his 52nd birthday.

**25 May 1941, 1200hrs:** Lütjens addressed *Bismarck*'s crew via the loudspeaker system. He congratulated them on their good service and informed them about his intentions to reach France. But he also warned them that they were being hunted by the Royal Navy. Despite the fact that *Bismarck*'s position was rather favourable at that moment, he ended his speech with the words 'Victory or death'.

**25 May 1941, 1300hrs:** Captain Lindemann, realizing that Lütjens' address had had a bad effect on the crew's morale, decided to give his own speech to keep their spirits up. Rather than concentrating on the enemy, he spoke about *Bismarck*'s prompt arrival in France.

**25 May 1941, 1625hrs:** Adolf Hitler sent a message to Lütjens containing his birthday wishes. In the meantime, *Bismarck*'s crew started constructing a second dummy funnel to confuse the enemy's reconnaissance. However, it was never completed. Some necessary repairs were also carried out in damaged section XIV. The risk of salt water getting inside the turbines was eliminated.

**26 May 1941, morning:** *Bismarck* was sailing on a steady south-easterly course towards France. Air recognition marks for the Luftwaffe were ordered to be painted back (swastikas on the upper deck and yellow turret tops). Due to bad weather conditions, it turned out that painting of the secondary turrets was impossible. It was also suggested that the two bow anchors should be jettisoned in order to reduce the trim. As the anchors were necessary for mooring in Saint-Nazaire, the suggestion was rejected at first. However, it is most probable that eventually the operation was actually carried out. Meanwhile, several U-boats in the path of the battleship were instructed to assume position and attack any pursuers if such a possibility should arise. Preparations were also made in Saint-Nazaire for *Bismarck*'s arrival.

**26 May 1941, 1010hrs:** *Bismarck* was discovered and identified by a Consolidated PBY Catalina flying boat. At 0300hrs, the Coastal Command aircraft had been ordered to take off from Loch Erne, Northern Ireland, and conduct a search mission. The Catalina was spotted by the battleship too and soon the pilot had to increase distance in the face of fierce and accurate AA fire.

**26 May 1941, 1030hrs:** The aircraft stayed out of *Bismarck*'s AA guns' range and reported the battleship's position. As it turned out, Royal Navy main forces were too far away from *Bismarck* to catch up with her. Unless the battleship's pace could be slowed down, neither *King George V* nor *Rodney* were able to force her to engage in battle. Only Admiral Somerville's Force H was close enough to attack. However, its largest vessel, HMS *Renown*, was forbidden to engage *Bismarck*. This was because the battlecruiser had the same armour design flaws that had contributed to the loss of *Hood*. Admiral Tovey didn't want history to repeat itself.

**26 May 1941, 1114hrs:** A Swordfish from *Ark Royal*, airborne at the time of the Catalina's discovery, managed to find *Bismarck*. Another aircraft joined at 1121hrs. Preparations were made on the carrier to deliver a torpedo strike. This was clearly the only hope of slowing *Bismarck* down before she could reach waters within range of German aircraft stationed in France. In the meantime, *Bismarck*'s spotters correctly identified the Swordfish as an aircraft with fixed undercarriage. Thus, an attack from carrier-based aircraft seemed imminent, and this warning was passed to the AA guns' crews.

**26 May 1941, 1350hrs:** Light cruiser *Sheffield* was ordered to assume position behind *Bismarck* and to keep contact.

**26 May 1941, 1450hrs:** A formation of 15 Swordfish took off from *Ark Royal* under Lieutenant Commander James Stewart-Moore, who was ordered to locate *Bismarck* and attack immediately.

**26 May 1941, 1550hrs:** A torpedo attack began. However, the British pilots were unaware that the ship they had located was not *Bismarck* but *Sheffield*, which was steaming to make visual contact with *Bismarck*. The cruiser's AA guns remained silent. By the time the terrible mistake was realized, 11 torpedoes had been dropped. Luckily, it turned out they were equipped with faulty magnetic fuses and a number of them exploded prematurely. *Sheffield* managed to avoid the rest by hard manoeuvres. All Swordfish returned safely to *Ark Royal* at around 1700hrs.



**26 May 1941, 1915hrs:** Prepared for a second attack and this time armed with torpedoes with contact fuses, the 15 Swordfish took off again from *Ark Royal*, this time in bad weather conditions. No further strikes could be delivered that day and the formation leader, Lieutenant Commander T. P. Coode, was aware that this was the last chance to prevent *Bismarck* from reaching safety the next day.

**26 May 1941, 1948hrs:** U-556, commanded by Captain Lieutenant Herbert Wohlfarth, encountered *Ark Royal* and *Renown*. Positioned

The Denmark Strait, 24 May 1941. This photo was taken shortly after the battle with the British ships, at the time when *Prinz Eugen* was moving to assume position in *Bismarck*'s wake in order to examine the battleship's oil leak. Due to a shell hit from *Prince of Wales*, *Bismarck* started to take water. A trim by the bow is clearly visible. (Bundesarchiv, Bild 146-1984-055-14, photo: Lagemann)

perfectly for attack, Wohlfarth could do nothing but watch and report, as he had expended all his torpedoes a few days earlier. The irony is that the crews of *Bismarck* and U-556 were familiar with each other as both ships had often been moored near each other during the testing period. In January 1941, the crew of U-556 had issued a self-made certificate where they swore to defend their 'big brother' *Bismarck*.

**26 May 1941, 2047hrs:** Having passed *Sheffield* on the way, the Swordfish formation located *Bismarck* and began the attack from both sides. The pilots descended bravely through the hail of fire from *Bismarck*'s guns of all calibres. Weather conditions were very bad and it required a lot of skill from the pilots to make a successful torpedo drop.



The Swordfish flew low over the stormy surface of the sea and waited until the last moment before releasing their weapons. At least two hits were scored, probably three. One torpedo struck *Bismarck's* stern, starboard side, and another two hit her amidships, both starboard and port. *Bismarck's* AA artillery, although firing fiercely, yet again failed to shoot down any aircraft. The Germans claimed to have downed seven enemy planes, but actually all 15 landed safely on *Ark Royal*, four of them damaged.

**26 May 1941, about 2100hrs:** The two hits amidships were of little concern, but the damage to the stern that had been struck by a torpedo had tragic consequences. While the propellers and their shafts remained intact, the steering gear was badly damaged. The rudders were blocked in a position left 12 degrees. With a large hole in the stern, the steering gear compartment and all adjacent compartments were completely flooded. Divers were sent to make an attempt to free the rudders and restore either mechanical or manual steering. All their efforts failed. Due to the stormy weather, the water inside the flooded compartments was moving violently, and it was out of the question to make any repairs from the outside of the hull. A suggestion was made to blow the jammed rudders away, but it was not taken up as such an action would risk damaging the propellers. Unsuccessful efforts were also made to attach a static rudder-like surface amidships that would compensate for the 12-degree turn of the rudders. Steering with the battleship's propellers also turned out to be impossible. *Bismarck* was on an erratic course against the wind, heading in a more or less north-west direction, directly towards the enemy battleships.

**26 May 1941, 2140hrs:** Lütjens sent a radio message to Group West: 'Ship unmanoeuvrable. We will fight to the last shell. Long live the Führer!'

**26 May 1941, 2145hrs:** Unnoticed by *Sheffield*, *Bismarck* reduced her distance to the British cruiser by using her malfunctioning steering. The German battleship's guns fired several salvos and straddles were achieved. *Sheffield* quickly retired, but shrapnel wounded 12 of her crew members.

**26 May 1941, 2200hrs:** A new force arrived at the scene. Relieved from escorting convoy WS-8B, five destroyers of the 4th Flotilla encountered *Sheffield*. The flotilla commander, Captain Philip Vian, asked the cruiser for the approximate position of *Bismarck* and proceeded to search for the battleship in the heavy storm.

**26 May 1941, 2237hrs:** ORP *Piorun*, a Polish destroyer serving with the Royal Navy, was the first ship to make visual contact. Commander Eugeniusz Pławski reported the position and ordered a visual identity signal to be sent just to make sure. In return, *Bismarck* opened fire. The distance was about seven miles. With their home country currently under German occupation, the destroyer's crew members were eager to fight back. While Pławski was fully aware that *Piorun's* 4.7in guns could do little harm to the battleship, he decided to respond, ordering: 'Three salvos in honour of Poland.' For the next hour *Piorun* kept in contact and *Bismarck* continued firing at the hard-maneuvring destroyer, but scored no hits. In the meantime, the remaining destroyers of the 4th Flotilla located *Bismarck*.

**27 May 1941, after 0000hrs:** *Bismarck* exchanged several messages with Group West, Admiral Raeder and Adolf Hitler. The crew were assured that all of Germany stood by them and they were wished all the best in the upcoming battle. Lieutenant Commander Schneider was awarded the Knight's Cross for the sinking of *Hood*. Meanwhile, Captain Vian's destroyers proceeded to make a torpedo attack, with *Bismarck* firing at them. *Piorun*, whose crew was inexperienced in conducting joint manoeuvres with the other destroyers of the 4th Flotilla, kept steaming at the back of the formation and soon lost visual contact with the battleship. At about 0140hrs a small fire was observed on *Bismarck's* forecastle. Quickly extinguished by her crew, this was probably the result of a star shell fired by one of the British ships. During the night, torpedoes were fired by the destroyers *Cossack*, *Maori*, *Zulu* and *Sikh*. Although hits were claimed, these claims turned out to be false.



**27 May 1941, about 0500hrs:** Admiral Lütjens decided to send one of *Bismarck's* floatplanes to France in order to save the battleship's war diary and the films shot during the engagement in the Denmark Strait. Shortly before take-off, it was found that *Bismarck's* catapult had been damaged by shrapnel from *Prince of Wales's* shell and was no longer operational. The aircraft was pushed overboard.

**27 May 1941, 0710hrs:** Admiral Lütjens sent a message to Group West asking for a U-boat to be sent to take over the materials originally planned to be taken by a floatplane. This was the last message ever to be received from *Bismarck*. No U-boat arrived to comply with the request.

**27 May 1941, 0753hrs:** Heavy cruiser *Norfolk*, after a long pursuit, made visual contact with *Bismarck*. The German battleship, listing slightly to port, was making only about seven knots. Her erratic course impaired her fire direction capabilities.

**27 May 1941, 0842hrs:** *Bismarck* was sighted by battleships *King George V* and *Rodney* incoming from the north-west. Heavy cruiser *Dorsetshire*, having been detached from convoy SL-74 the previous day, also arrived at the battle scene, in the eastern sector. The British were about to start their final engagement with the damaged *Bismarck*.

**27 May 1941, 0847hrs:** *Rodney* opened fire from a distance of about 11 miles. *King George V* fired her first salvo at 0848hrs. A minute later, *Bismarck* responded with her fore gun turrets, targeting *Rodney*. Despite the steering problems, the German battleship soon managed to straddle her, but without any hits.

**27 May 1941, 0854hrs:** *Norfolk* closed the range and opened fire from her 8in guns. *Rodney's* secondary battery (6in guns) joined a few minutes later.

**27 May 1941, about 0900hrs:** *Bismarck* received the first of many hits. At 0902hrs the main artillery control post was directly hit and put out of action. At 0904hrs heavy cruiser *Dorsetshire*, having just arrived at the battle scene, joined the barrage. *Bismarck* sustained more hits.



The *Bismarck's* pursuit and sinking was widely described in the European press. Here is the front page of the *Ostdeutscher Beobachter*, a newspaper published in Posen by the Nazi Party. The date is 28 May 1941, one day after *Bismarck's* sinking. The heading in the middle of the page reads: 'Kampf bis zur letzten Granate' ['Fight to the last shell']. This is a clear reference to Admiral Lütjens' radio message. (Wielkopolska Biblioteka Cyfrowa, <http://www.wbc.poznan.pl/publication/119801>)

Her fore artillery control post was put out of action and both fore main artillery turrets disabled. Fire control was shifted to the aft fire control post. Her target shifted to *King George V*.

**27 May 1941, 0913hrs:** The aft fire control post was put out of action. Thus, quite early in the engagement, *Bismarck* received hits that disabled her ability to return accurate fire. Only the aft main artillery



turrets and secondary gun turrets still fired salvos (with the target shifted to *Rodney*), but under local control. The German battleship scored no hits during the battle. The British ships continued firing and closing the range. *Rodney* fired a salvo of torpedoes from her underwater tubes but with no success.

**27 May 1941, 0921hrs:** One of *Bismarck's* shells exploded in turret 'Dora's' barrel, splitting it open and killing many crew members inside. From this moment 'Dora' remained silent. At 0927hrs fore turrets 'Anton' and 'Bruno' both unexpectedly fired one more salvo. The last active turret – 'Cäsar' – ceased firing at 0931hrs, followed by all secondary guns minutes later.

**27 May 1941, about 0940hrs:** The British battleships closed the range to as little as two miles. Shells were now hitting *Bismarck* one after another, wrecking the superstructures and wreaking havoc among the crew members, who had abandoned their combat posts and were seeking rescue. Hundreds were killed on the upper deck, while others desperately tried to abandon the burning ship. At about 1000hrs, an order was given by Commander Hans Oels (Executive Officer) to scuttle the ship by putting demolition charges on valves at the ship's bottom. Most likely, this task was carried out successfully.

**27 May 1941, shortly after 1015hrs:** The British ships stopped firing at the wrecked *Bismarck*. During the course of the battle, the battleship had sustained tremendous punishment. While it is hard to assess, she probably received as many as several hundred shell hits. Tovey had to retire with *King George V* and *Rodney* due to shortage of fuel. *Bismarck* still remained afloat and *Dorsetshire* was ordered to finish her off with torpedoes.

**27 May 1941, shortly after 1020hrs:** *Dorsetshire* moved to within one and a half miles of *Bismarck* and fired two torpedoes, both of which hit starboard side amidships. At 1036hrs *Dorsetshire* hit the battleship with another torpedo, this time port side.

**27 May 1941, shortly after 1035hrs:** With her battle ensign still flying from her mainmast, *Bismarck* rolled over to port side and sank,

approximate position 48°10' N, 16°12' W. According to survivors' testimony, Captain Lindemann was seen standing on the bow and saluting as his ship sank.

**27 May 1941, about 1100hrs:** With around 800 *Bismarck* crew members in the water, *Dorsetshire* started picking up survivors. After approximately 45 minutes, reports were received of a possible U-boat alert. The cruiser left the scene, having picked up 86 sailors (one of whom died the next day). The destroyer *Maori* saved a further 25 men.

**27 May 1941, afternoon:** A German U-boat *U-74* found three more crew members.

**28 May 1941:** German weather ship *Sachsenwald* found a raft with two more survivors. They were the last men to be saved. In total, only 115 sailors survived the last battle. Most of *Bismarck's* crew of about 2,220 men perished at sea.

**8 June 1989:** After almost 50 years of resting on the ocean bed 4,800m below the surface, *Bismarck's* wreck was discovered by Doctor Robert Ballard.

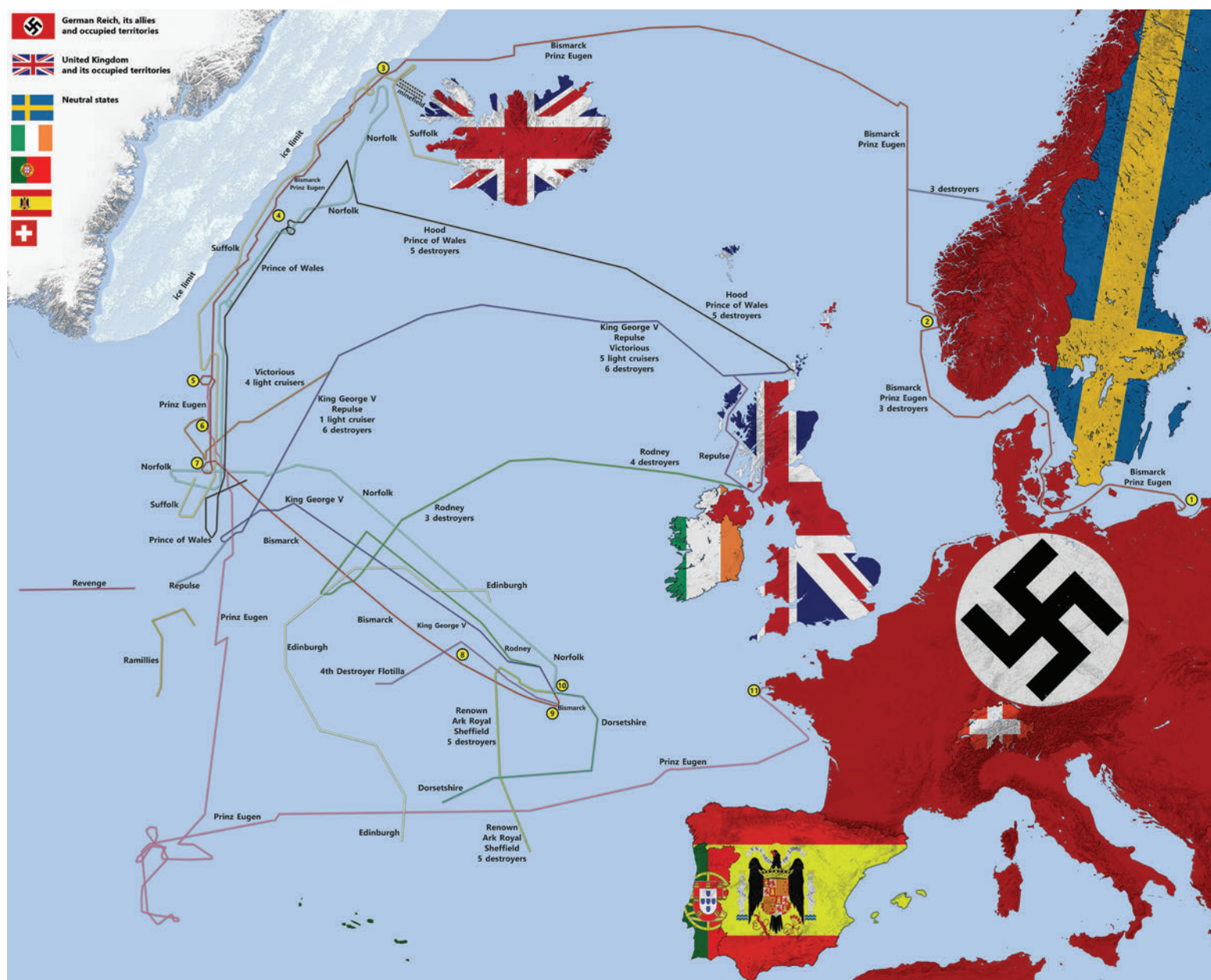
**5 June 2001:** The first manned dives to the wreck were carried out by an expedition led by Mike McDowell.

**9 July 2001:** An expedition led by David Mearns filmed *Bismarck's* wreck with the help of a remotely operated vehicle. Subsequently, on 20 July, the wreck of *Hood* was located and filmed.

**May–June 2002:** Film director James Cameron led an expedition which used both manned submersibles and remotely operated vehicles. Vast documentation of the wreck and surrounding debris field was carried out.

**July 2002:** Second expedition led by Mike McDowell.

**May 2005:** Third expedition led by Mike McDowell.

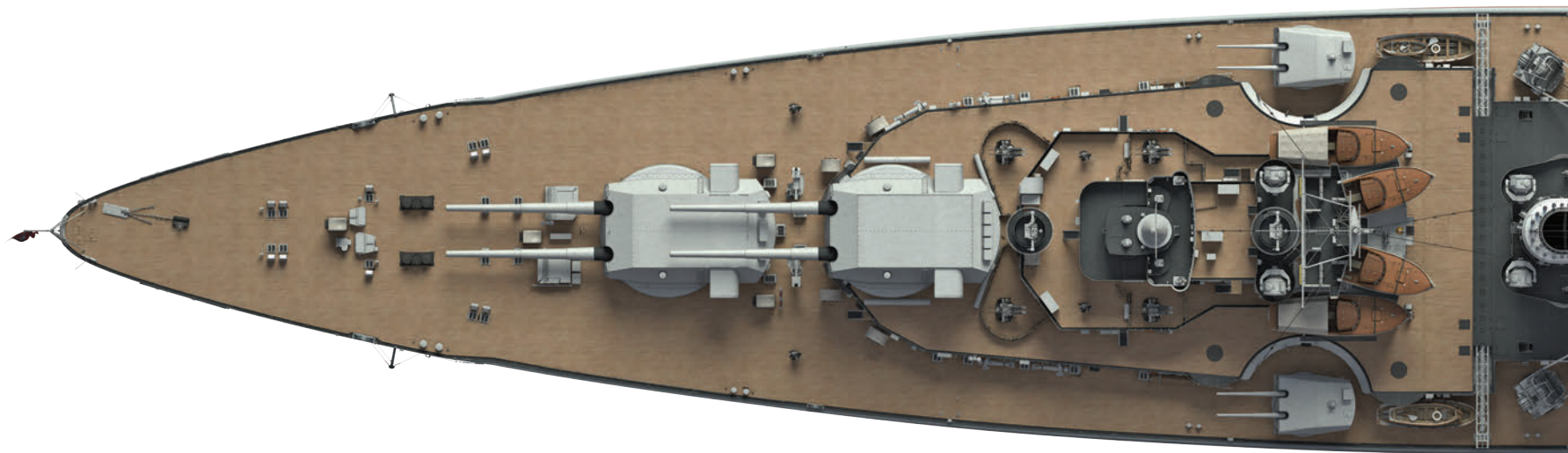
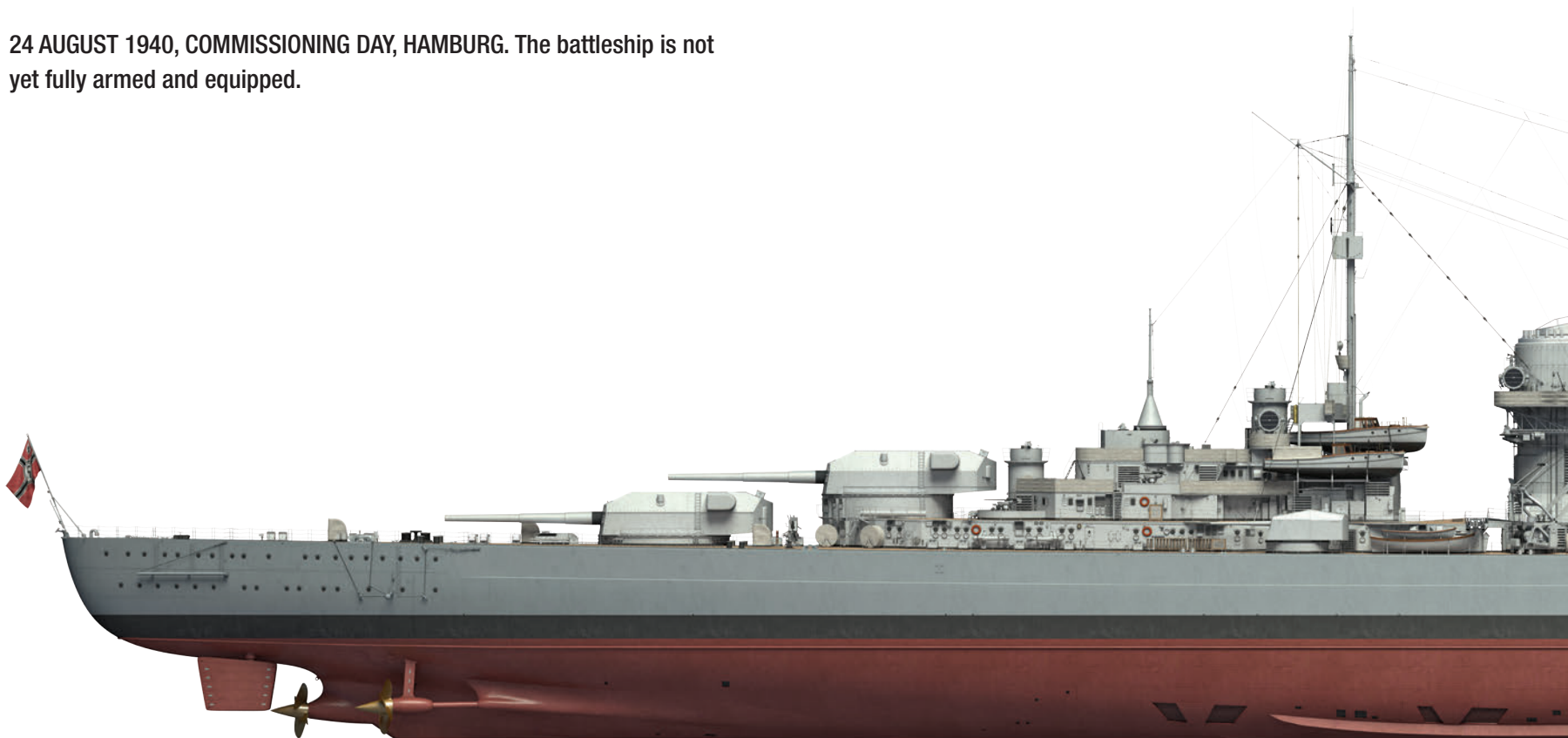


Ship movements during Operation *Rheinübung*, 18 May – 1 June 1941

1. 18 – 19 May 1941: *Bismarck* and *Prinz Eugen* leave Gdynia (then Gotenhafen) and start Operation *Rheinübung*.
2. 21 May 1941, 1300hrs: *Bismarck* is sighted and photographed by British reconnaissance aircraft in Grimstadfjord near Bergen, Norway.
3. 23 May 1941, 1930hrs: *Bismarck* is sighted by Suffolk.
4. 24 May 1941, 0547 – 0603hrs: Battle of the Denmark Strait. *Hood* sinks, *Prince of Wales* and *Bismarck* are damaged.
5. 24 May 1941, 1815hrs: *Prinz Eugen* successfully detaches from *Bismarck* and proceeds south.
6. 24 May 1941, 2330hrs: *Bismarck* is damaged by torpedo bombers from *Victorious*.
7. 25 May 1941, 0300hrs: *Bismarck* manages to shake off her pursuers and turns southeast towards France.
8. 26 May 1941, 1010hrs: *Bismarck* is sighted by British reconnaissance flying boat.
9. 26 May 1941, 2050hrs: *Bismarck*'s rudders are badly damaged by torpedo bombers from *Ark Royal*.
10. 27 May 1941, 0840 – 1035hrs: *Bismarck*'s last battle. The battleship sinks after an uneven fight against *Rodney*, *King George V* and heavy cruisers.
11. 1 June 1941: *Prinz Eugen* safely reaches Brest.

## PRIMARY VIEWS

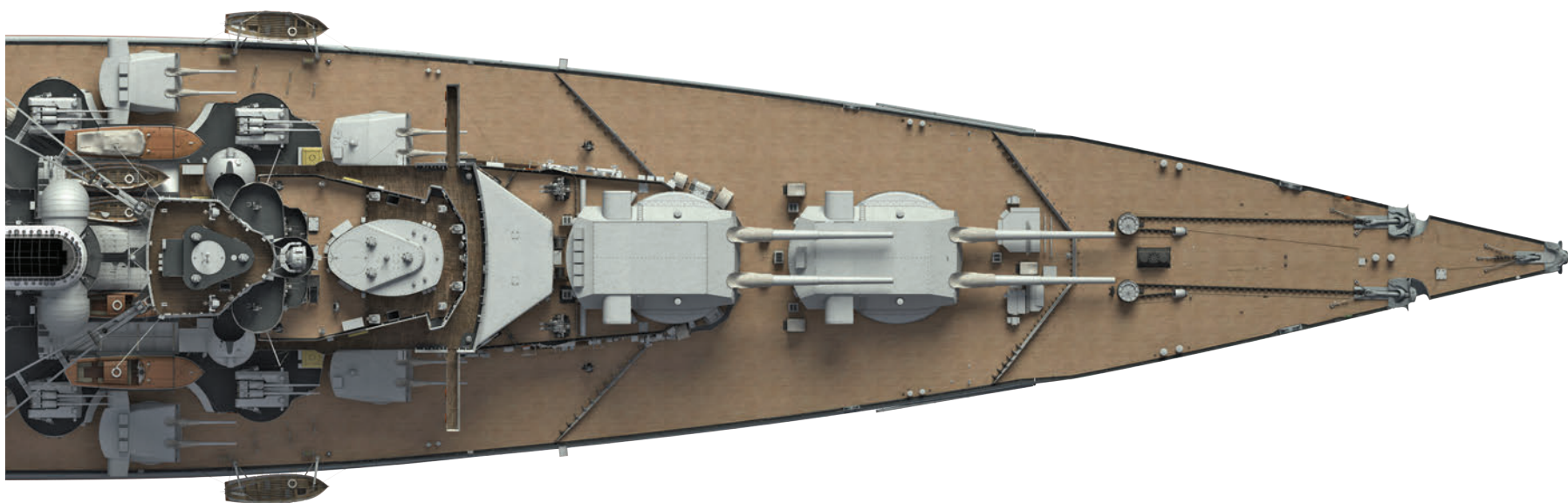
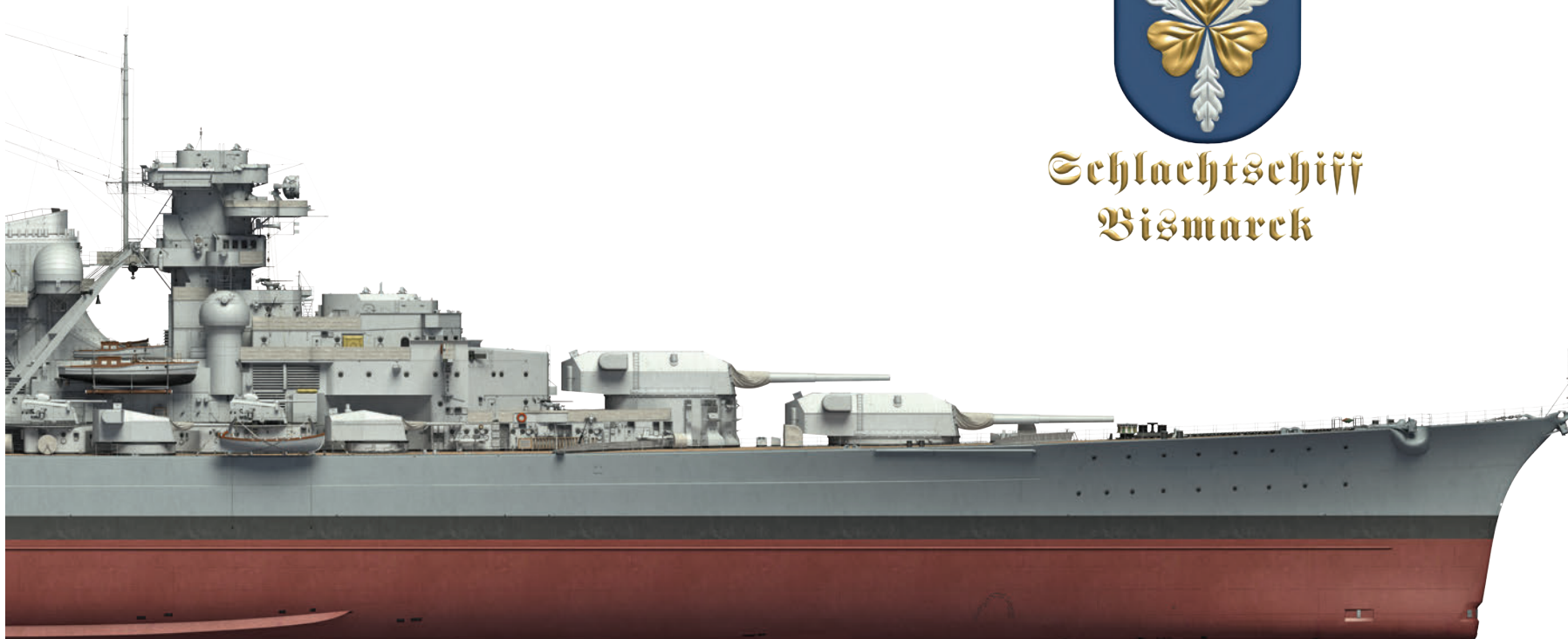
24 AUGUST 1940, COMMISSIONING DAY, HAMBURG. The battleship is not yet fully armed and equipped.





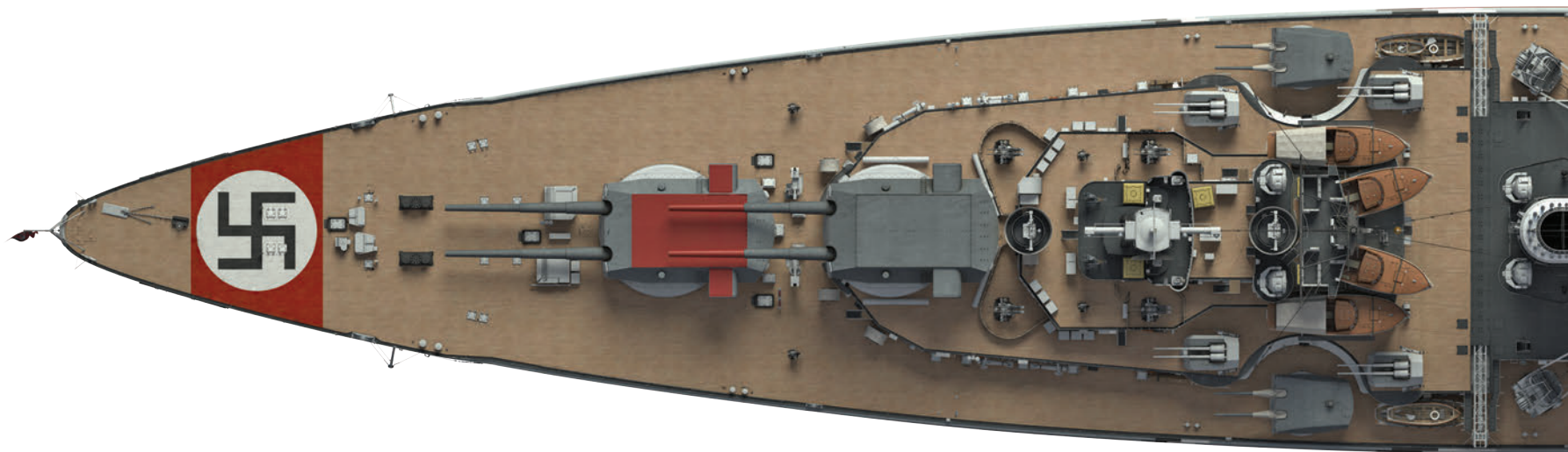
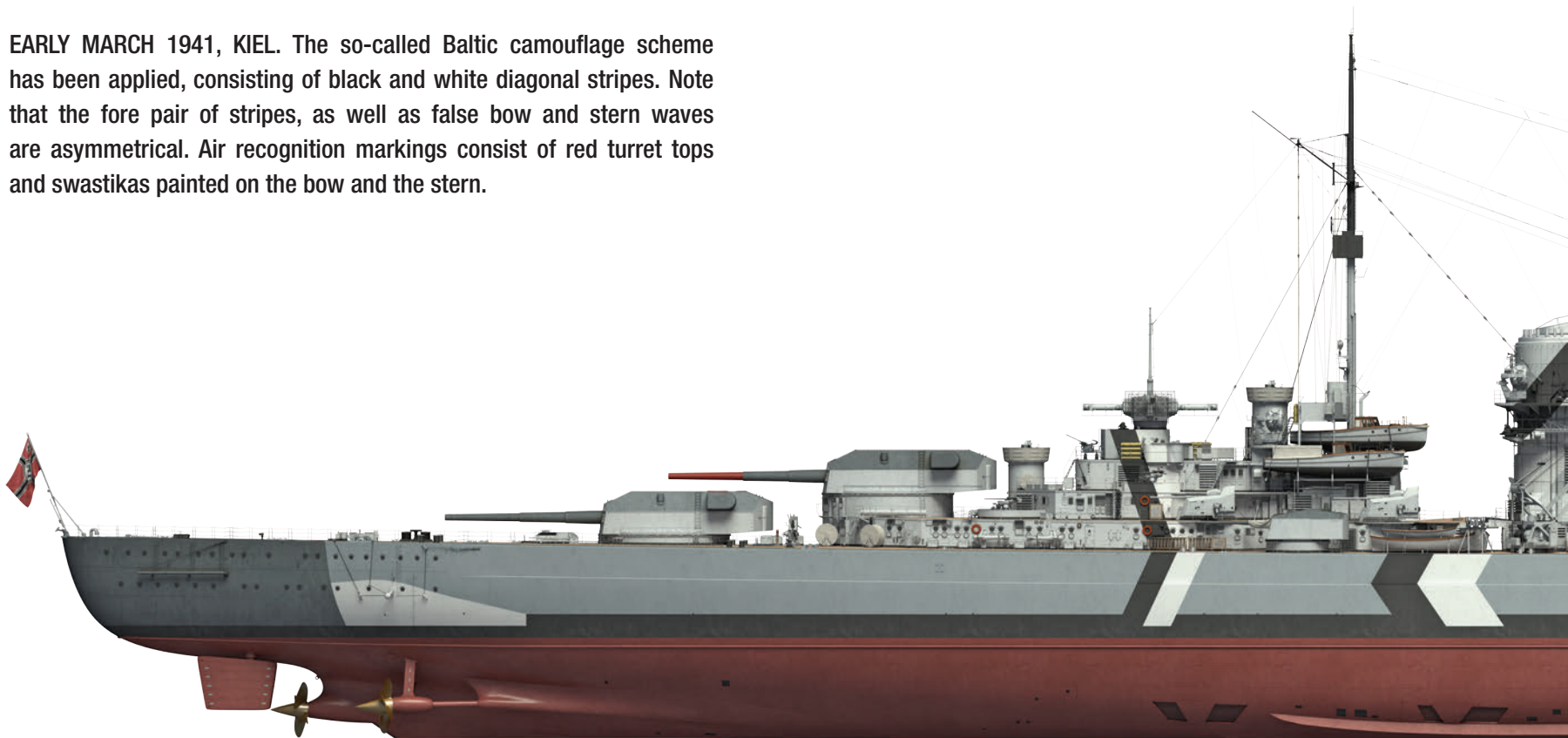


## Schlachtschiff Bismarck

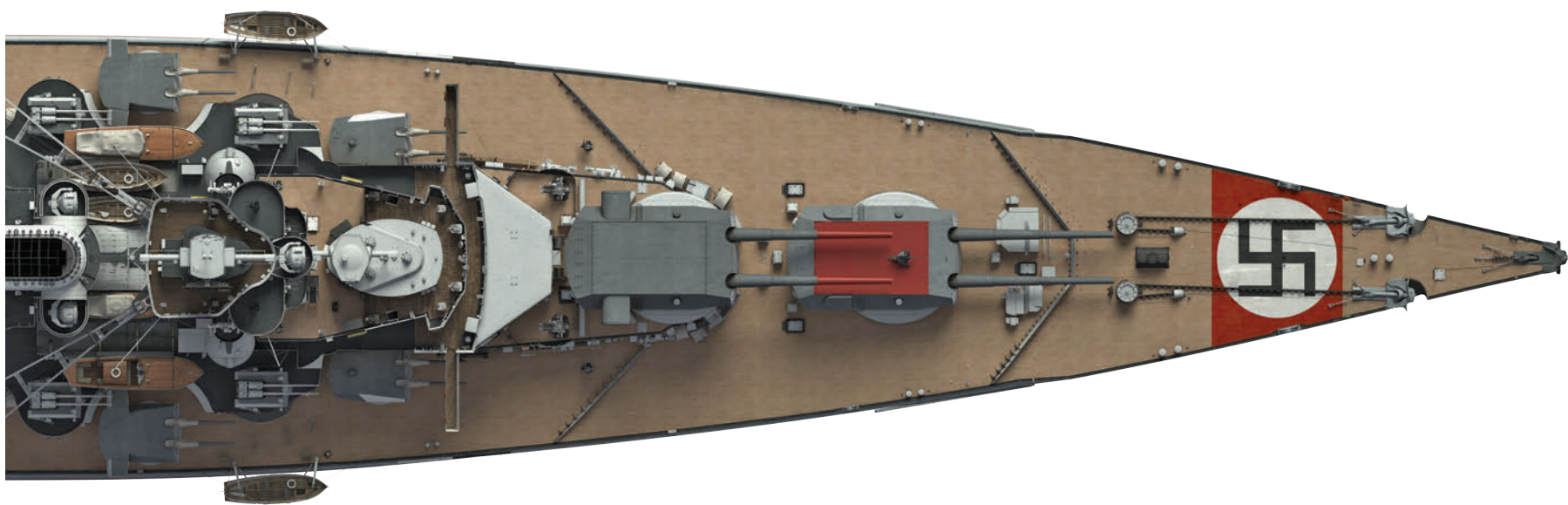
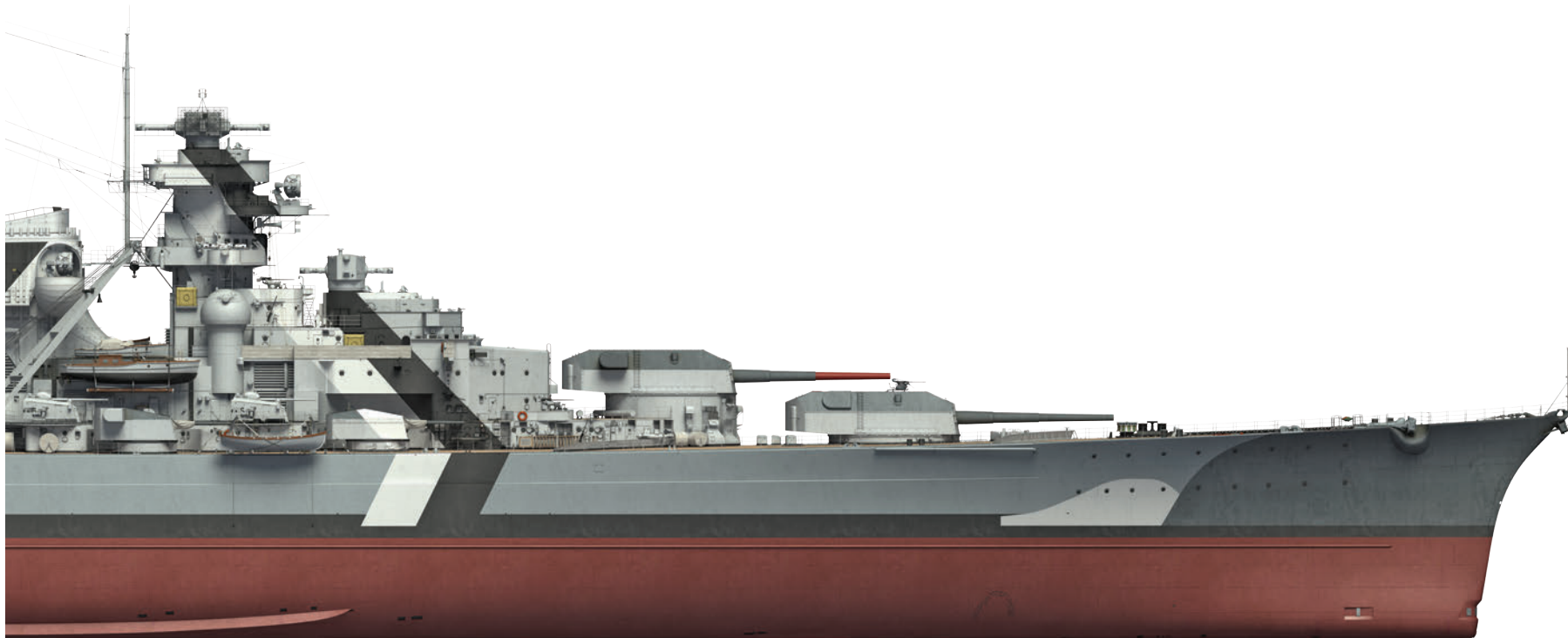


## PRIMARY VIEWS

EARLY MARCH 1941, KIEL. The so-called Baltic camouflage scheme has been applied, consisting of black and white diagonal stripes. Note that the fore pair of stripes, as well as false bow and stern waves are asymmetrical. Air recognition markings consist of red turret tops and swastikas painted on the bow and the stern.

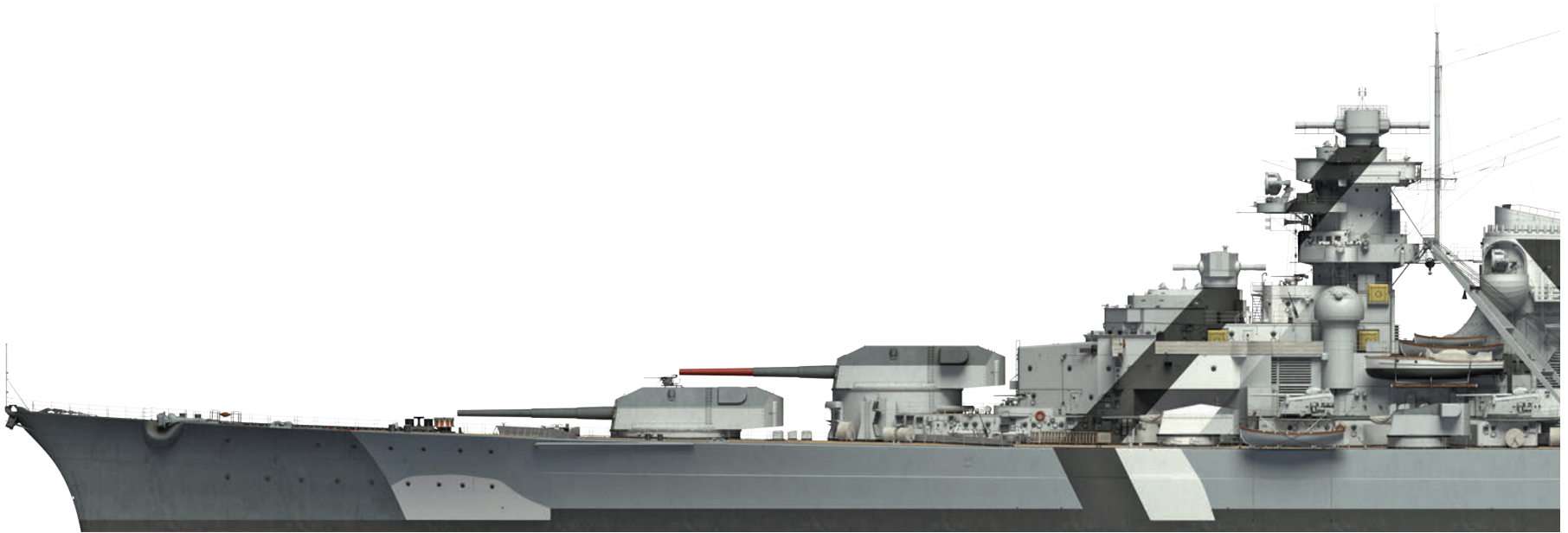


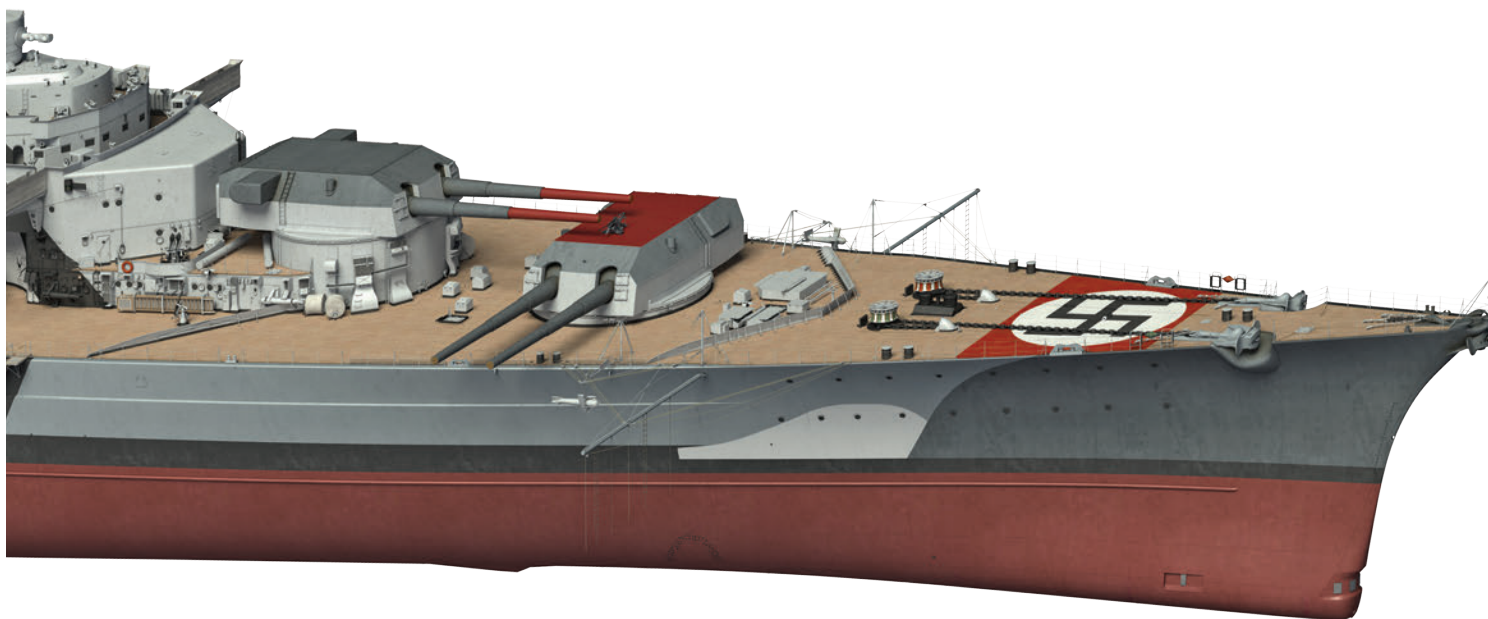
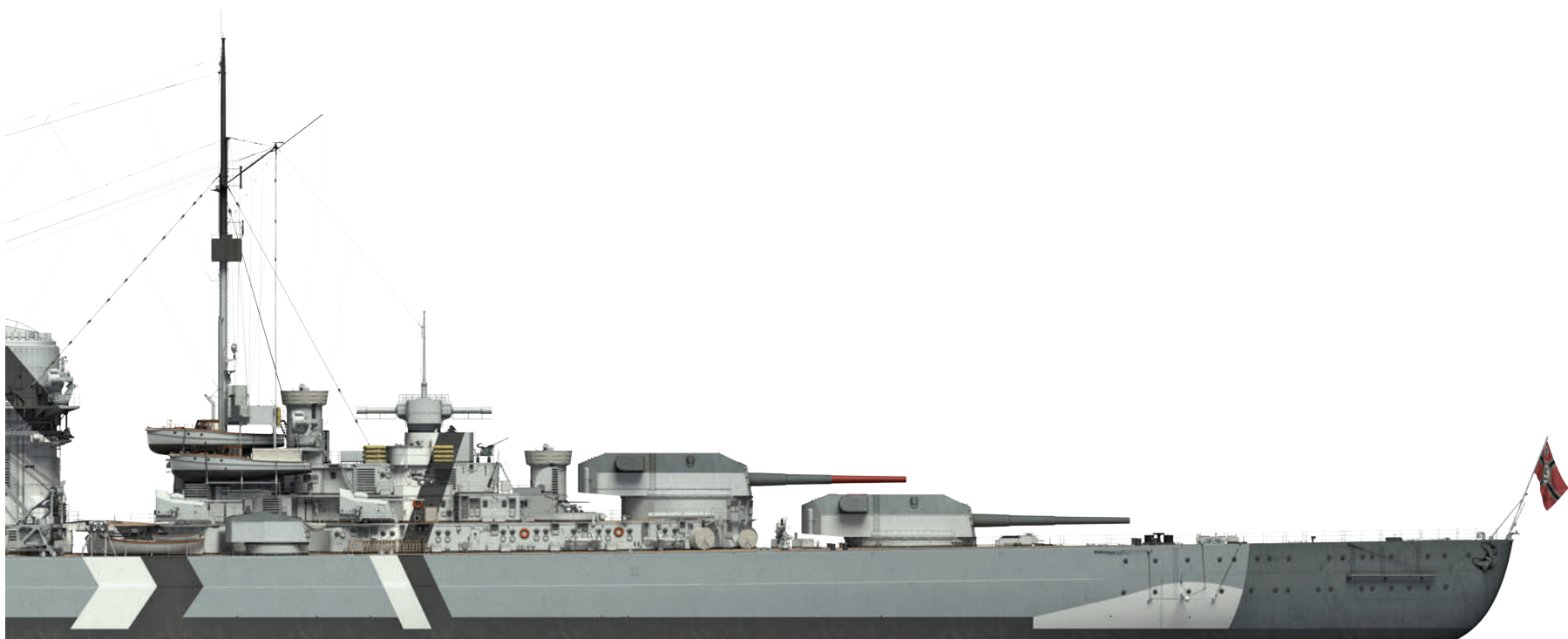






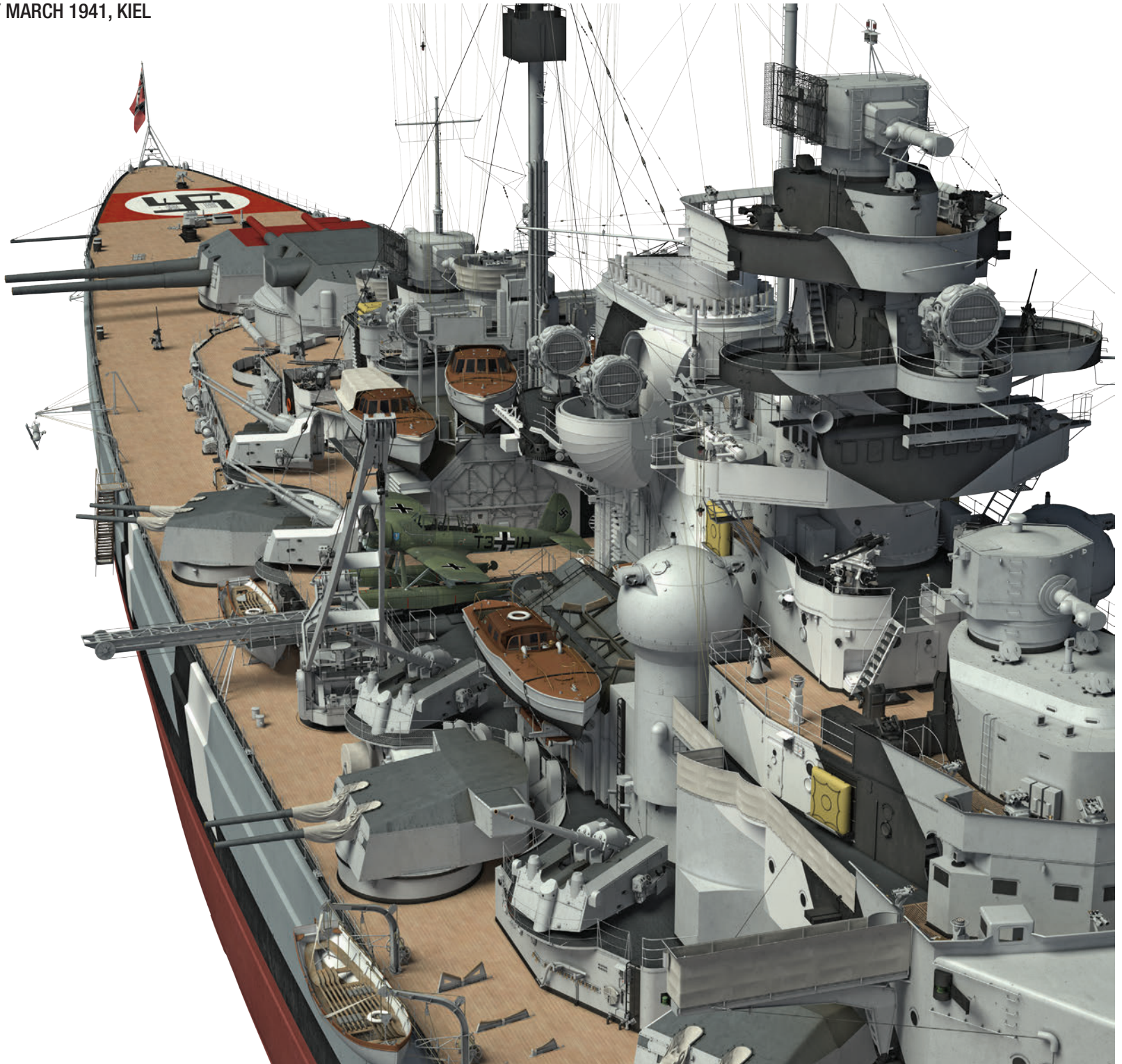
EARLY MARCH 1941, KIEL







EARLY MARCH 1941, KIEL



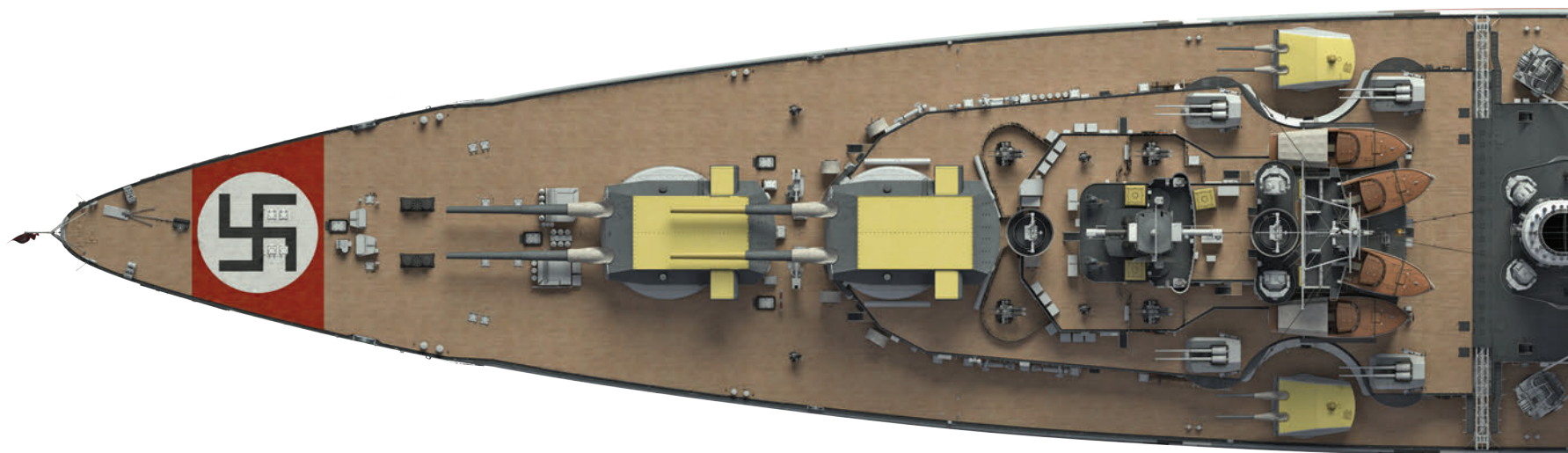
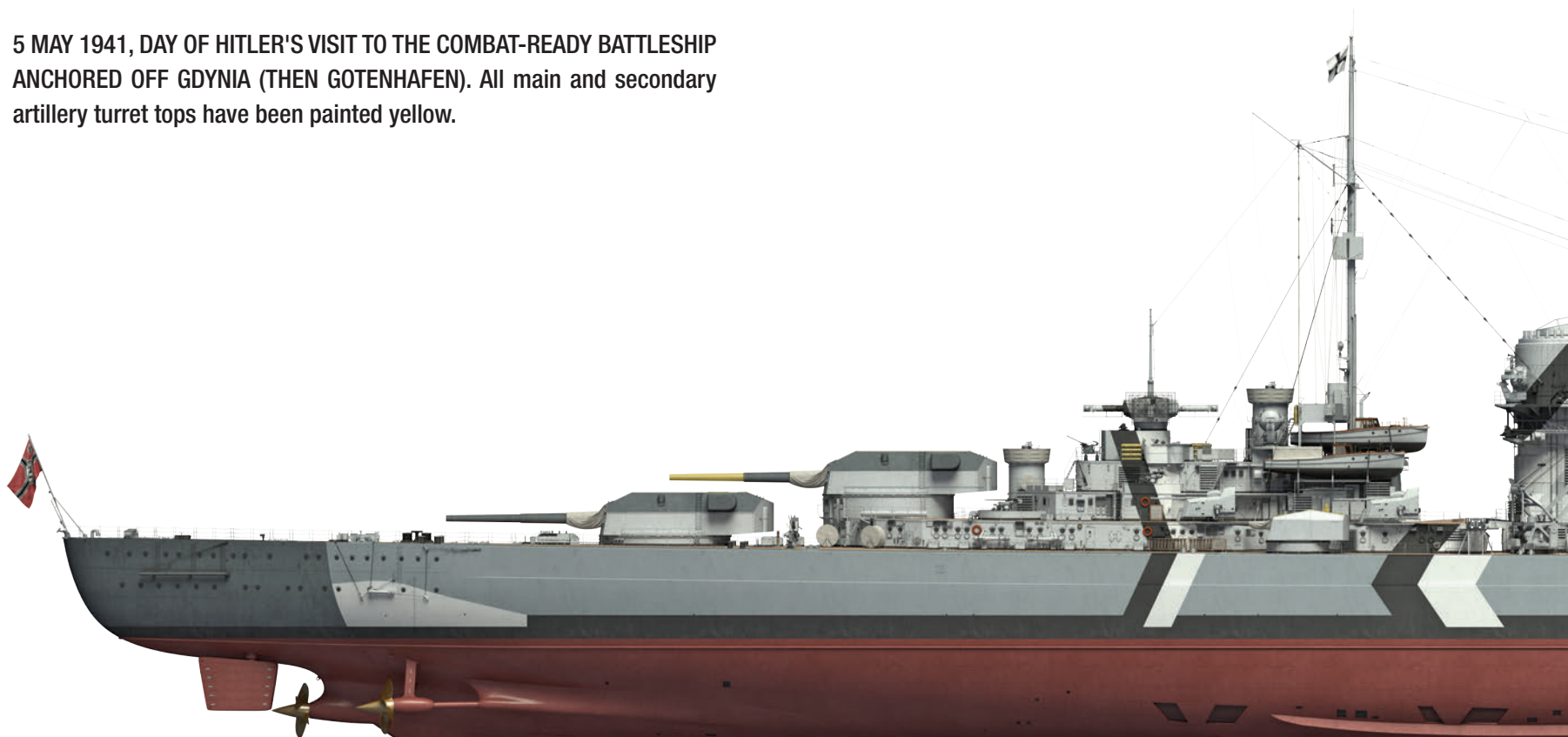


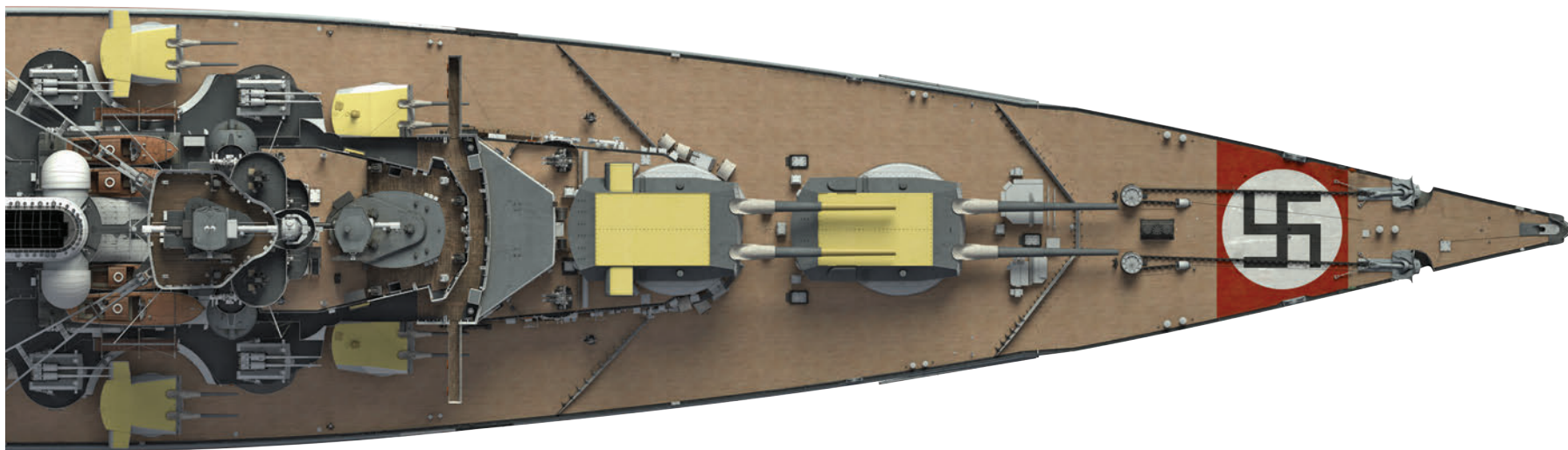
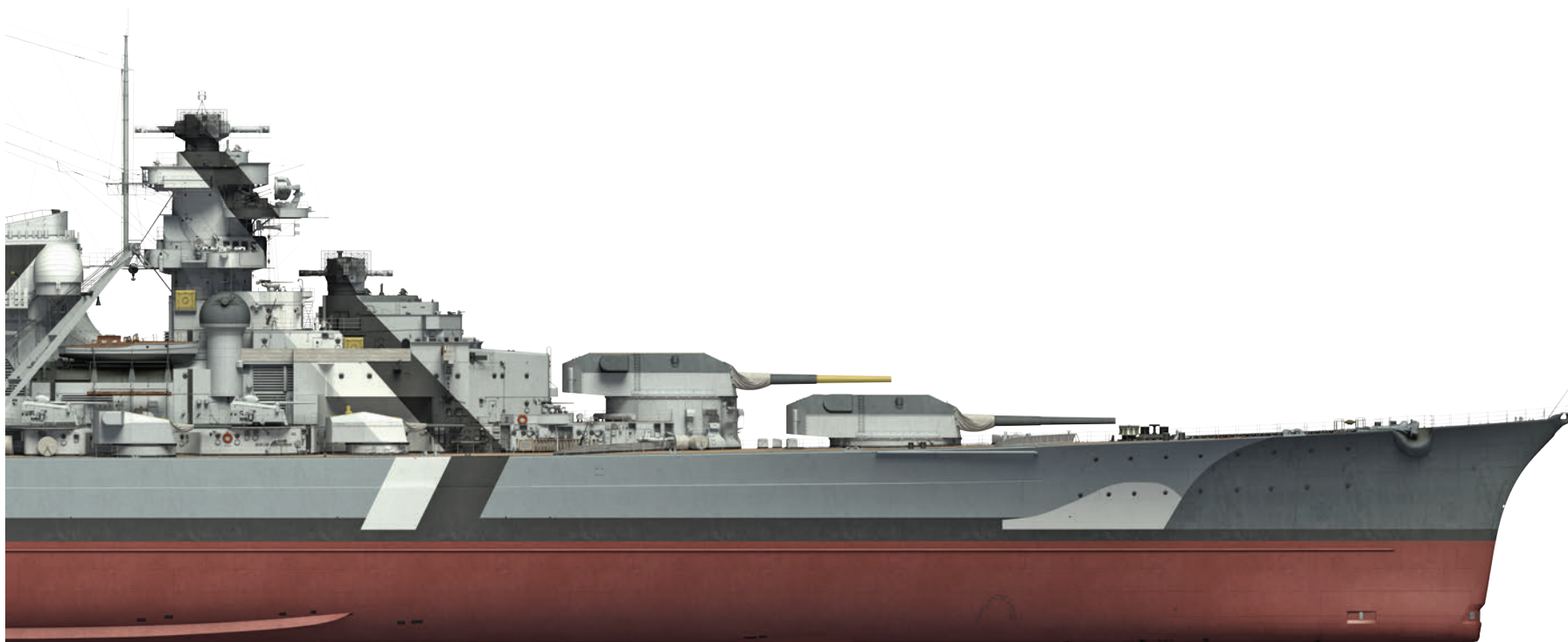




## PRIMARY VIEWS

5 MAY 1941, DAY OF HITLER'S VISIT TO THE COMBAT-READY BATTLESHIP ANCHORED OFF GDYNIA (THEN GOTENHAFEN). All main and secondary artillery turret tops have been painted yellow.

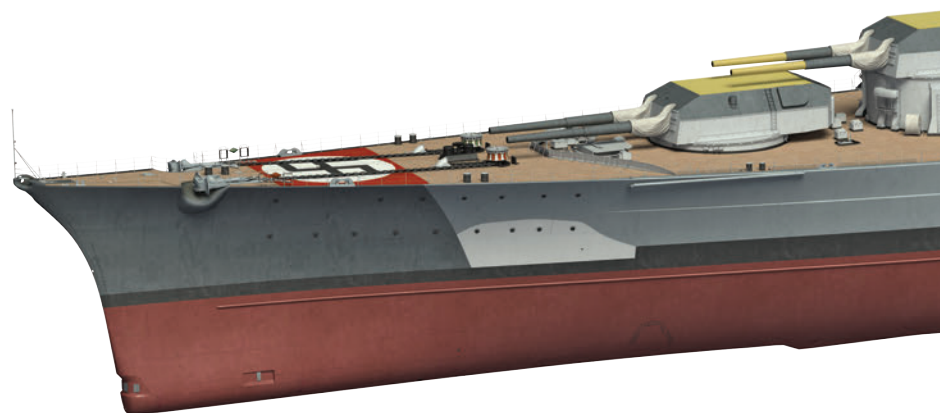
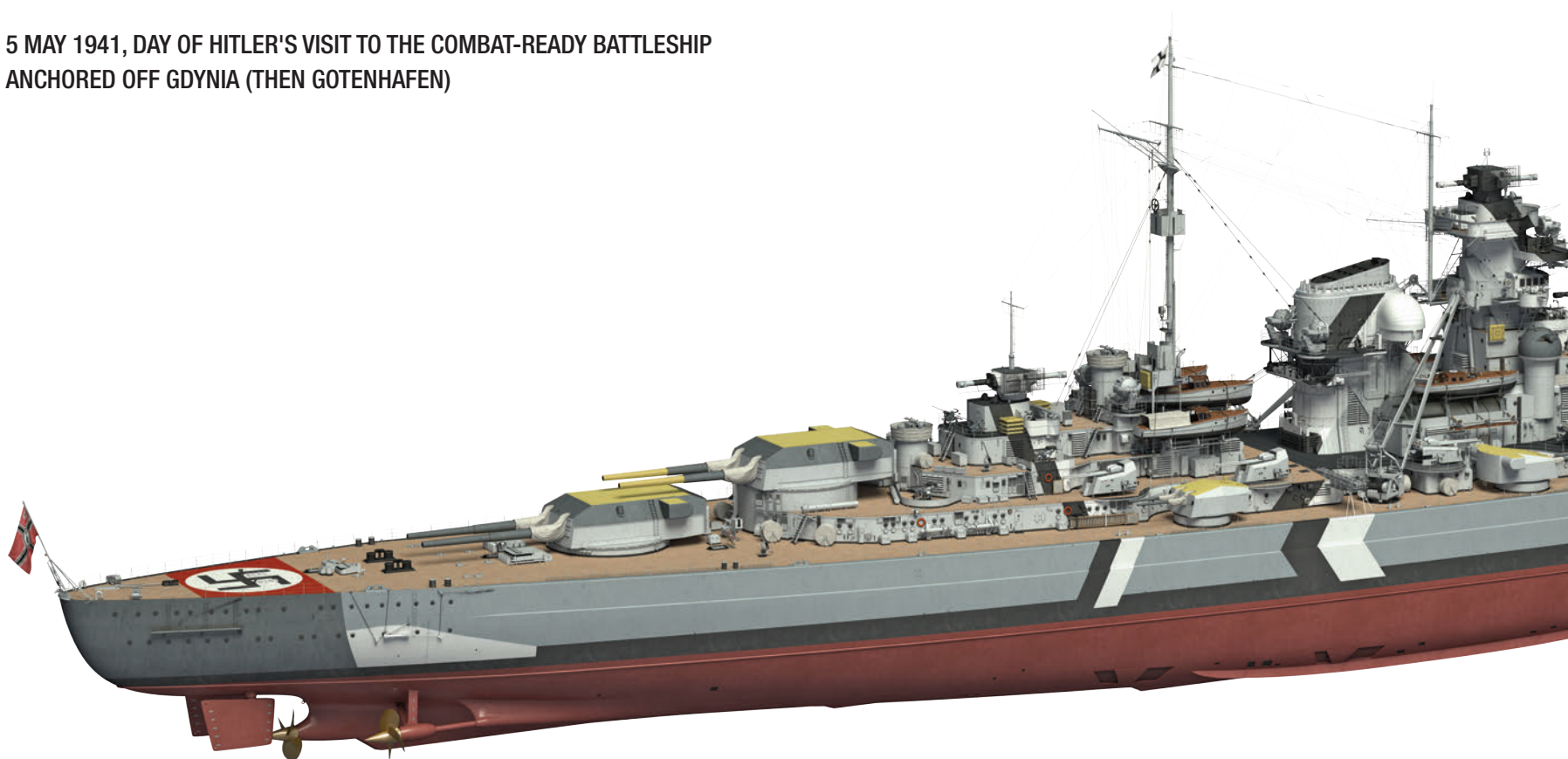


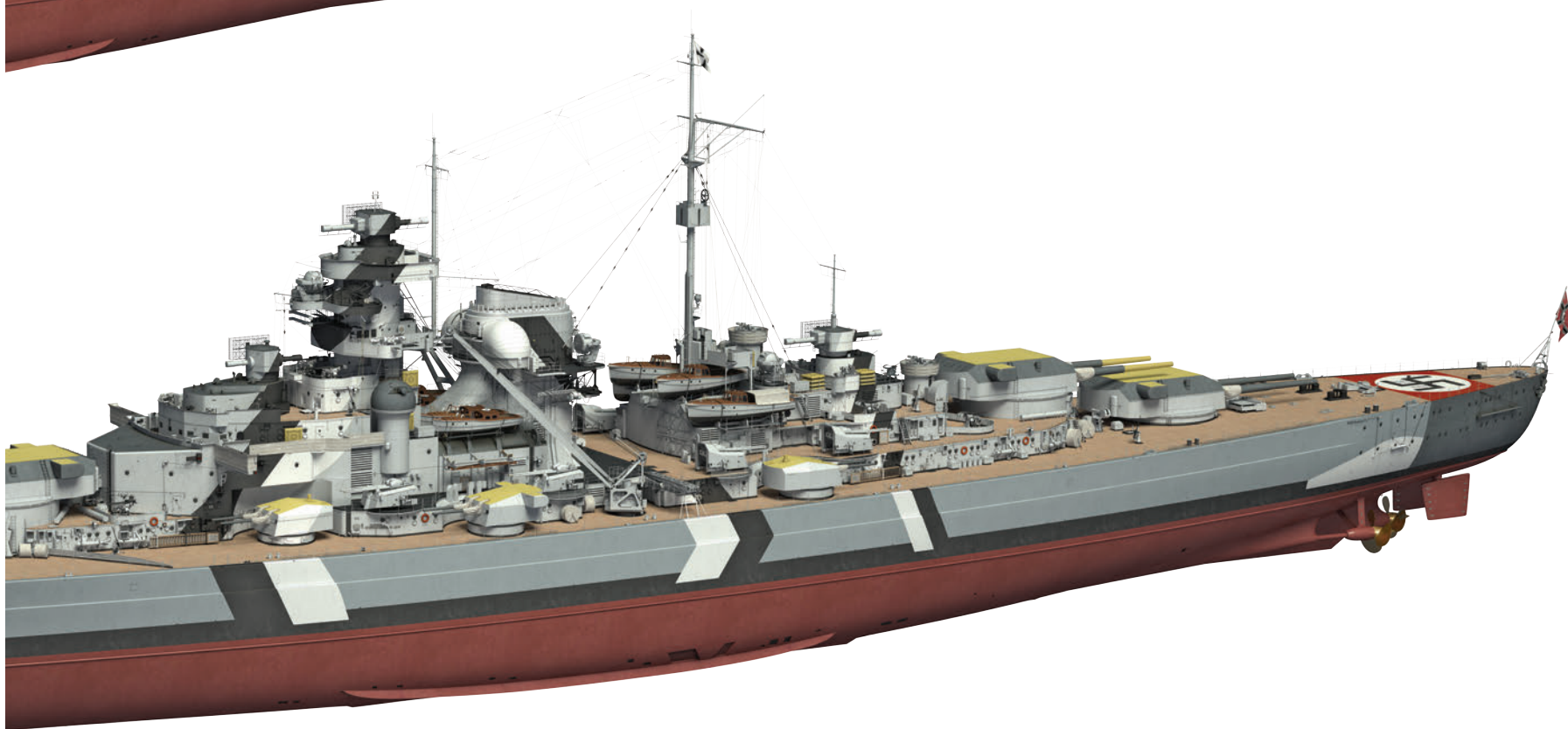
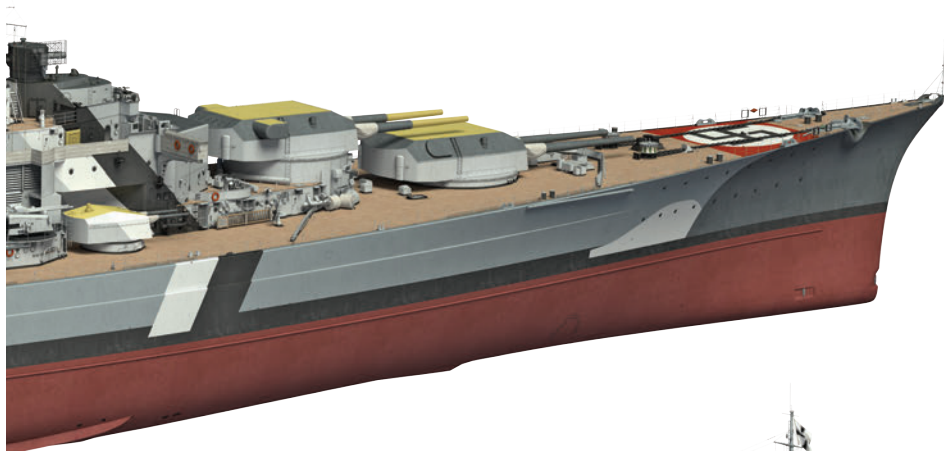




## PRIMARY VIEWS

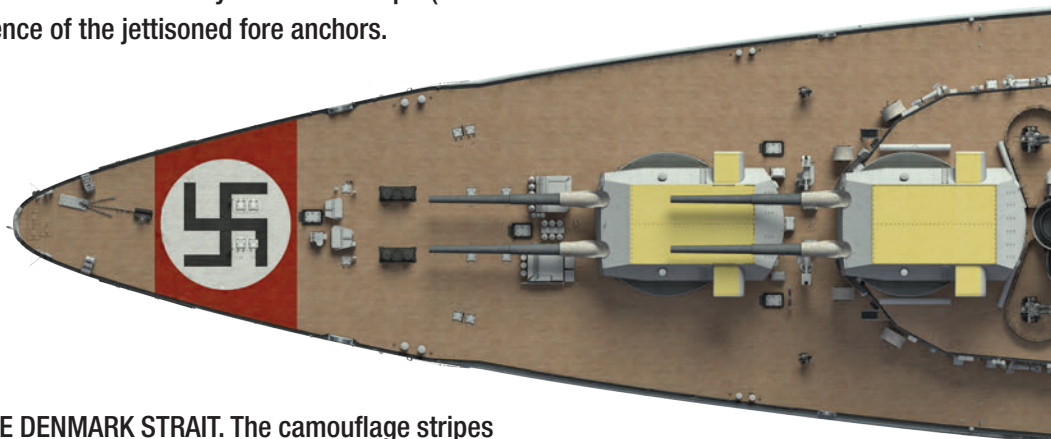
5 MAY 1941, DAY OF HITLER'S VISIT TO THE COMBAT-READY BATTLESHIP  
ANCHORED OFF GDYNIA (THEN GOTENHAFEN)



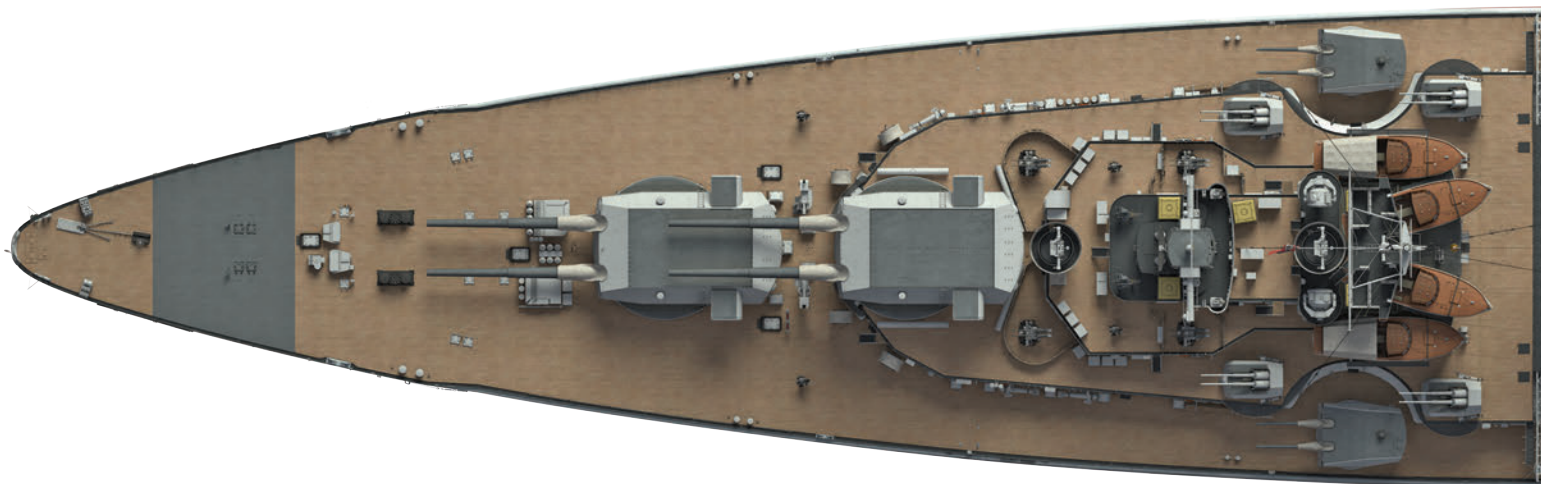
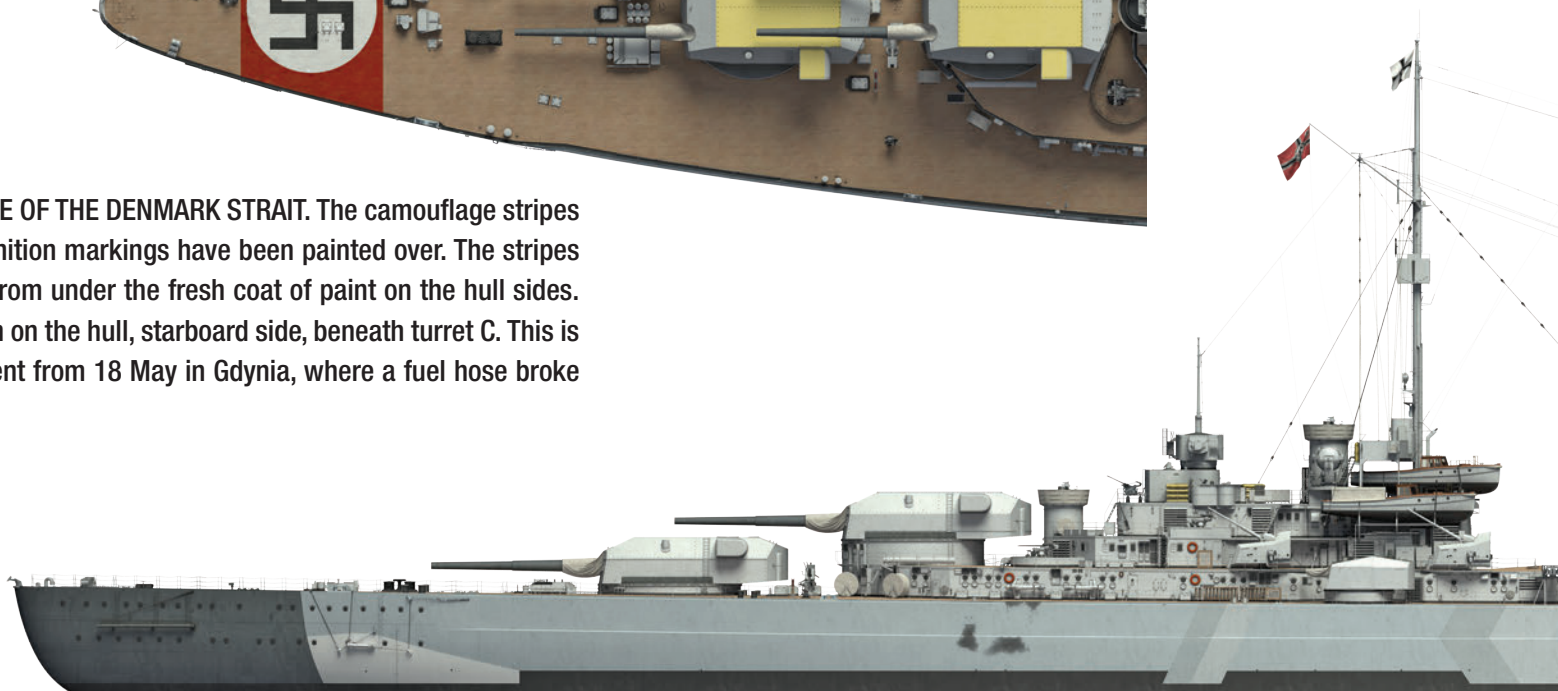


## PRIMARY VIEWS

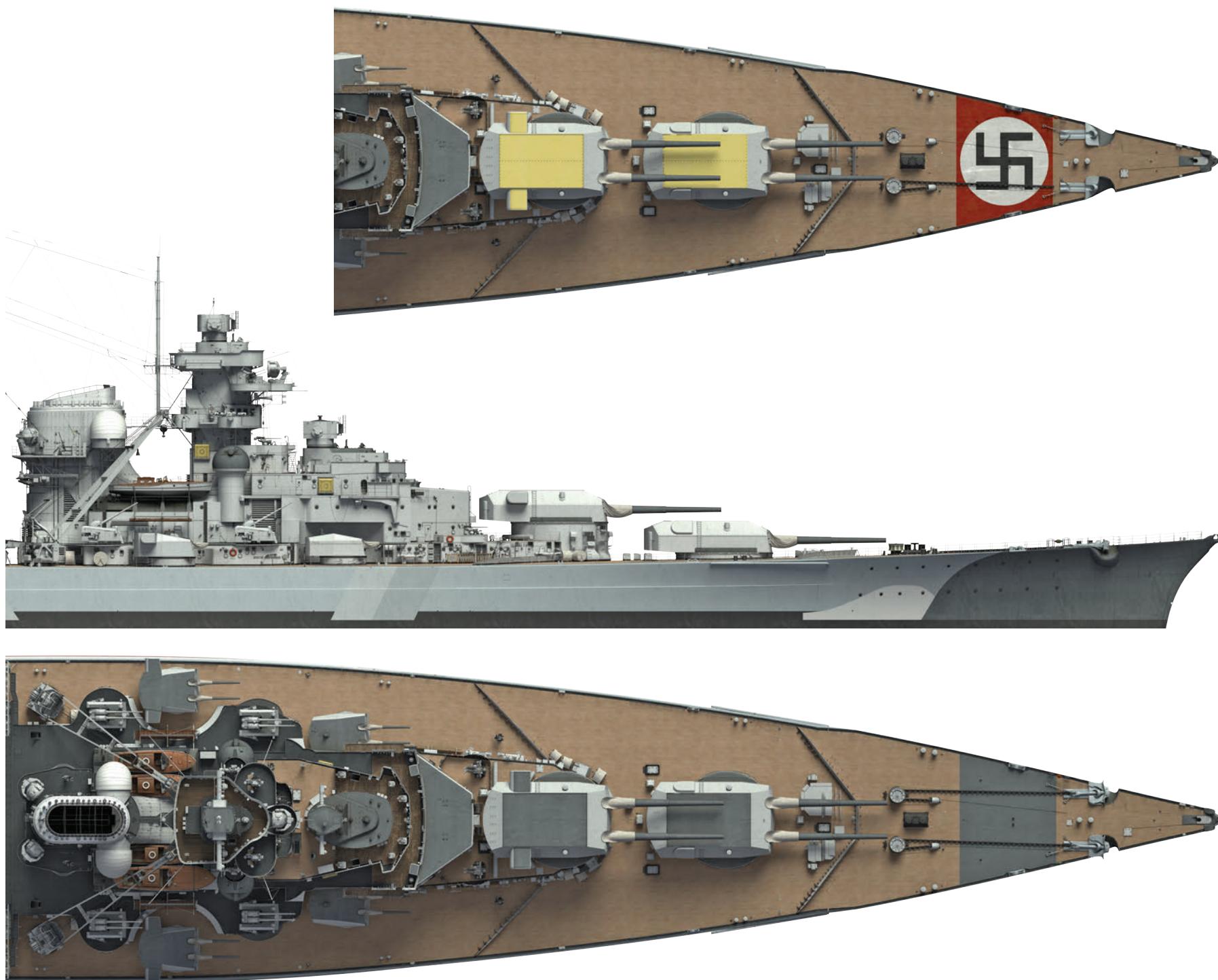
27 MAY 1941, *BISMARCK'S* LAST BATTLE. Air recognition markings are present, consisting of painted swastikas and yellow turret tops (main artillery only). Note the absence of the jettisoned fore anchors.



24 MAY 1941, BATTLE OF THE DENMARK STRAIT. The camouflage stripes as well as air recognition markings have been painted over. The stripes are partly showing from under the fresh coat of paint on the hull sides. Note also an oil stain on the hull, starboard side, beneath turret C. This is a result of an accident from 18 May in Gdynia, where a fuel hose broke while taking on oil.

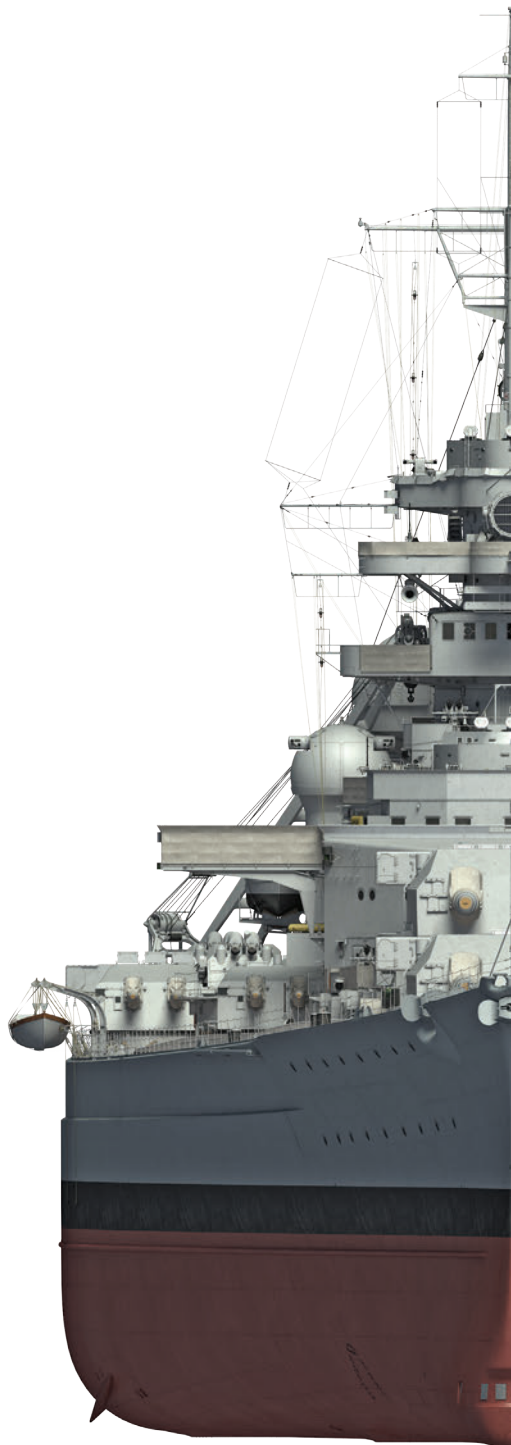






## PRIMARY VIEWS

24 AUGUST 1940, COMMISSIONING DAY,  
HAMBURG

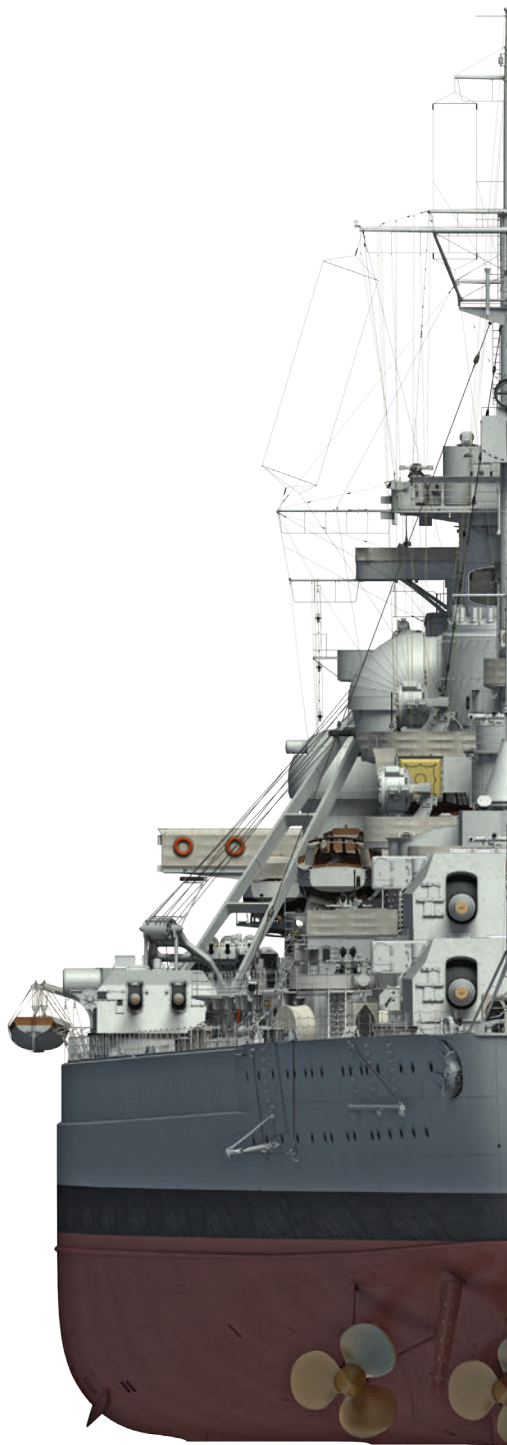


24 MAY 1941, BATTLE  
OF THE DENMARK STRAIT





24 AUGUST 1940, COMMISSIONING DAY,  
HAMBURG

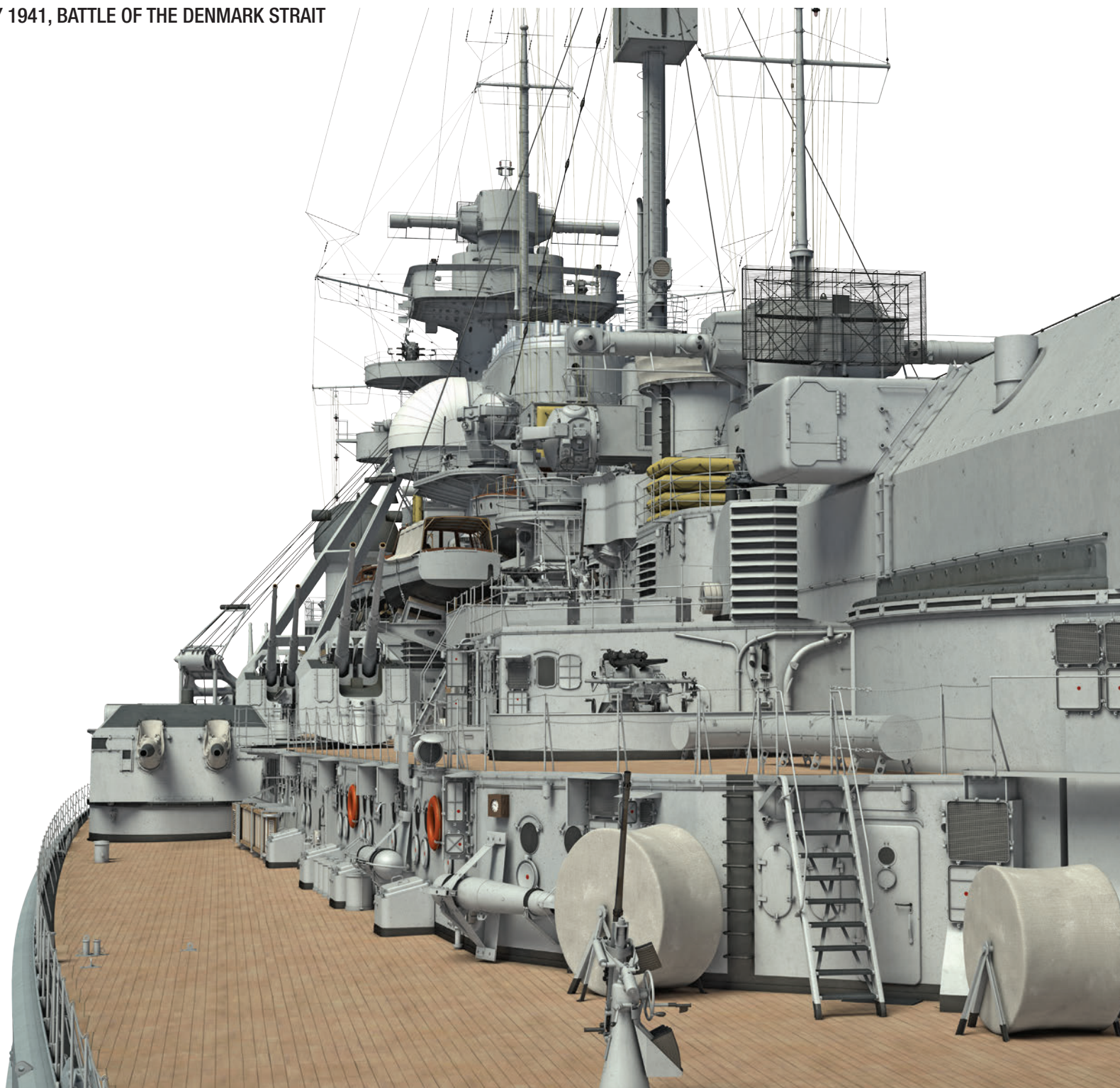


24 MAY 1941, BATTLE  
OF THE DENMARK STRAIT



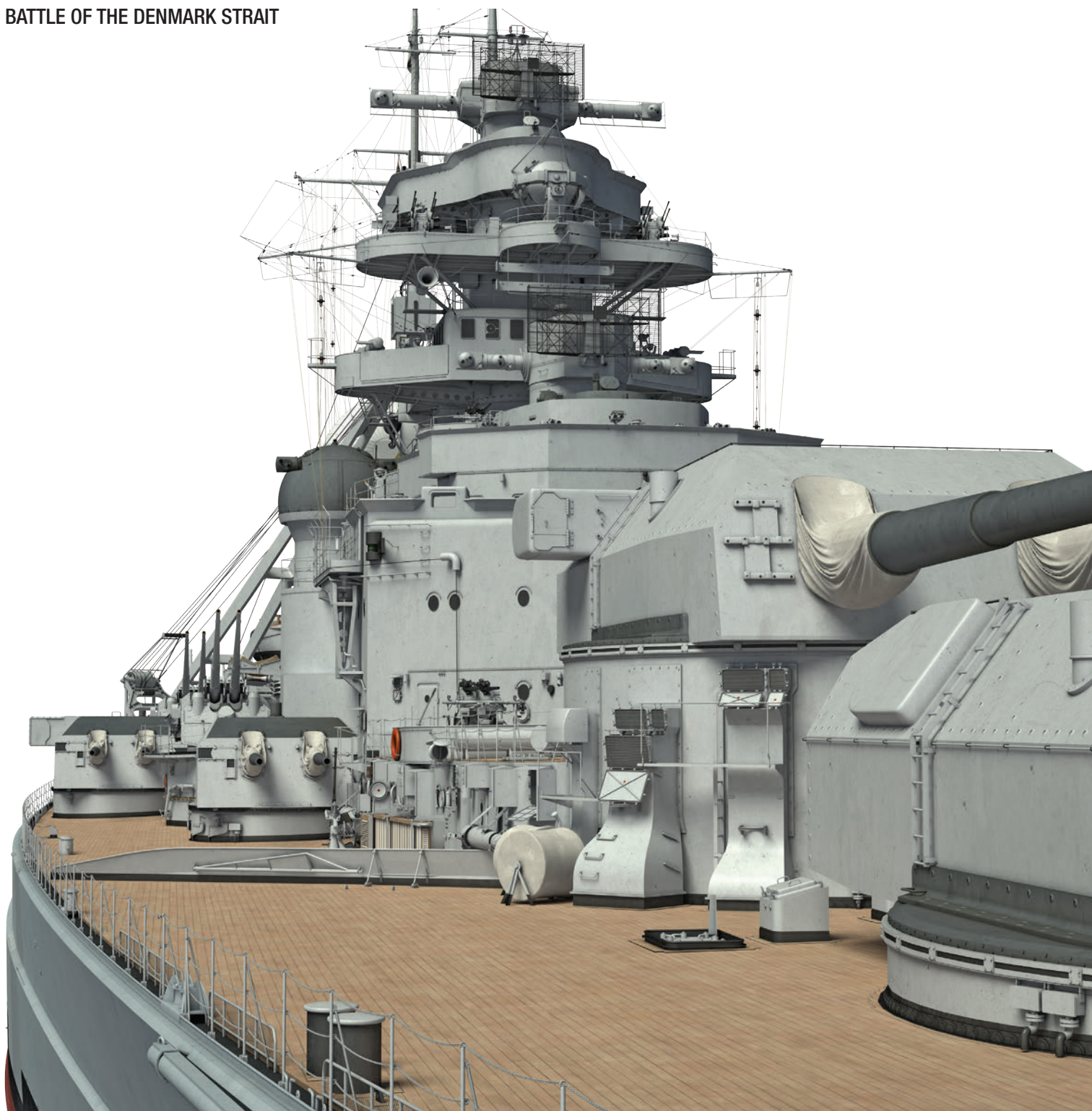


24 MAY 1941, BATTLE OF THE DENMARK STRAIT

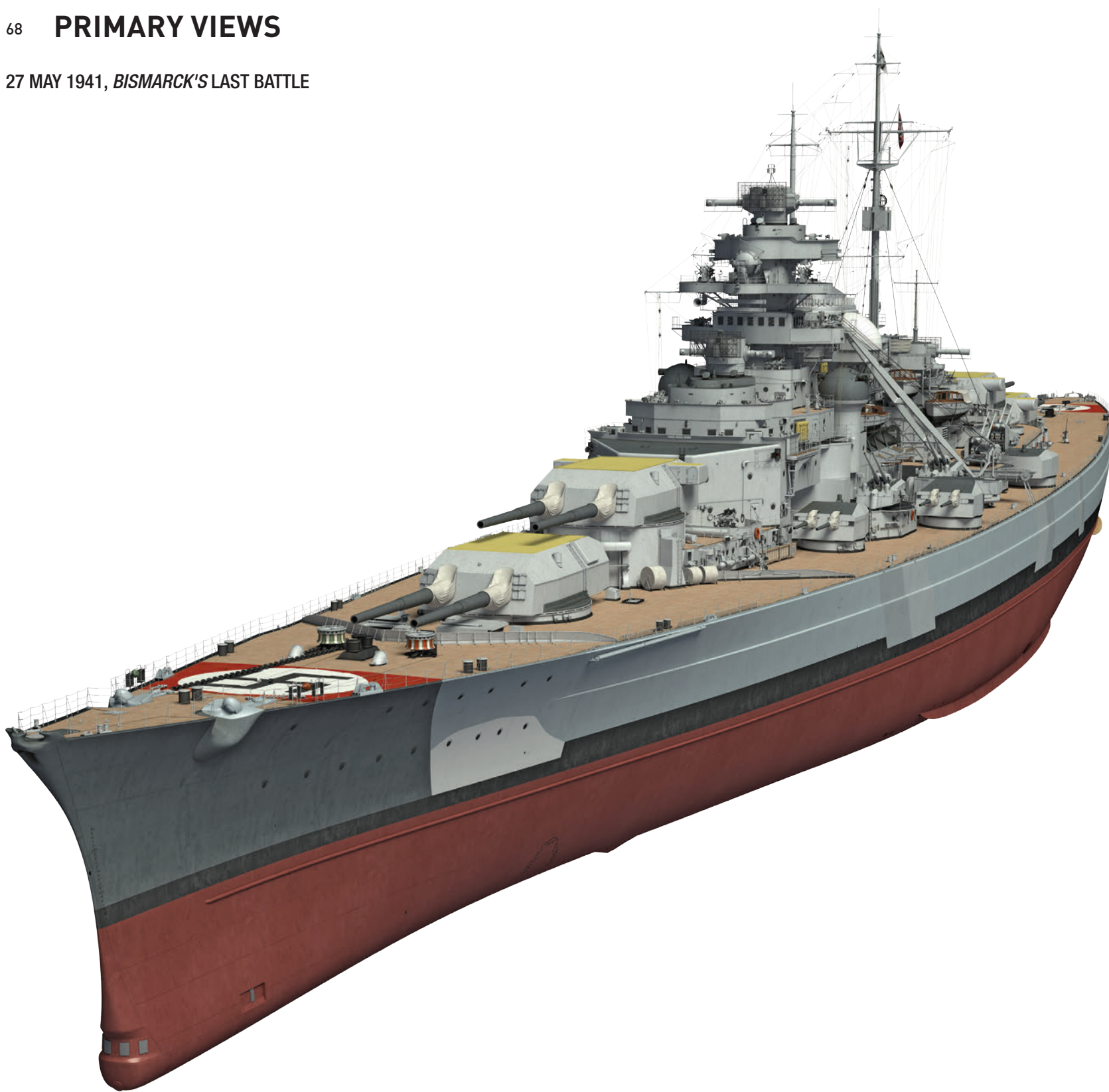




24 MAY 1941, BATTLE OF THE DENMARK STRAIT



27 MAY 1941, *BISMARCK*'S LAST BATTLE





27 MAY 1941, *BISMARCK*'S LAST BATTLE

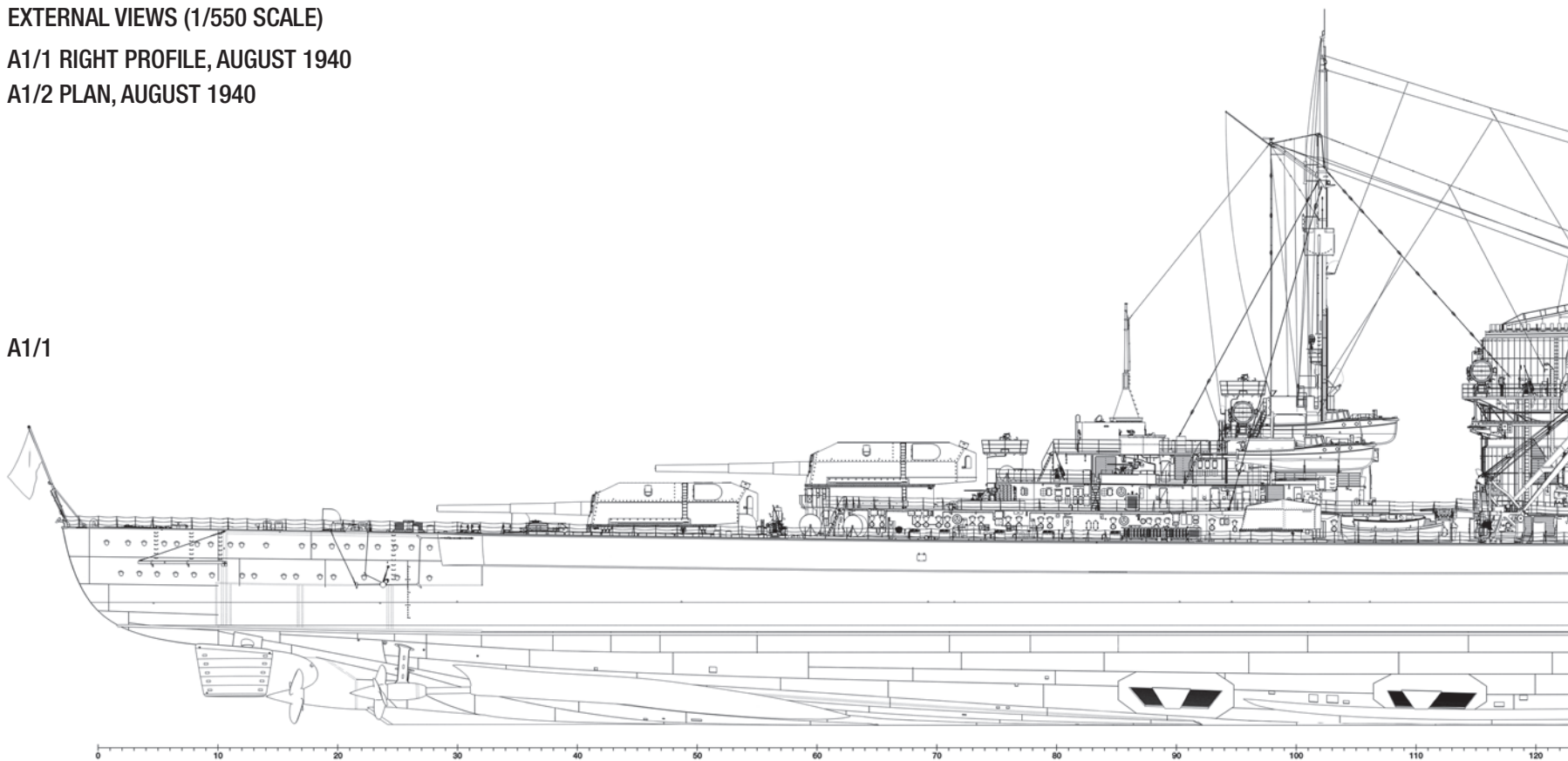


EXTERNAL VIEWS (1/550 SCALE)

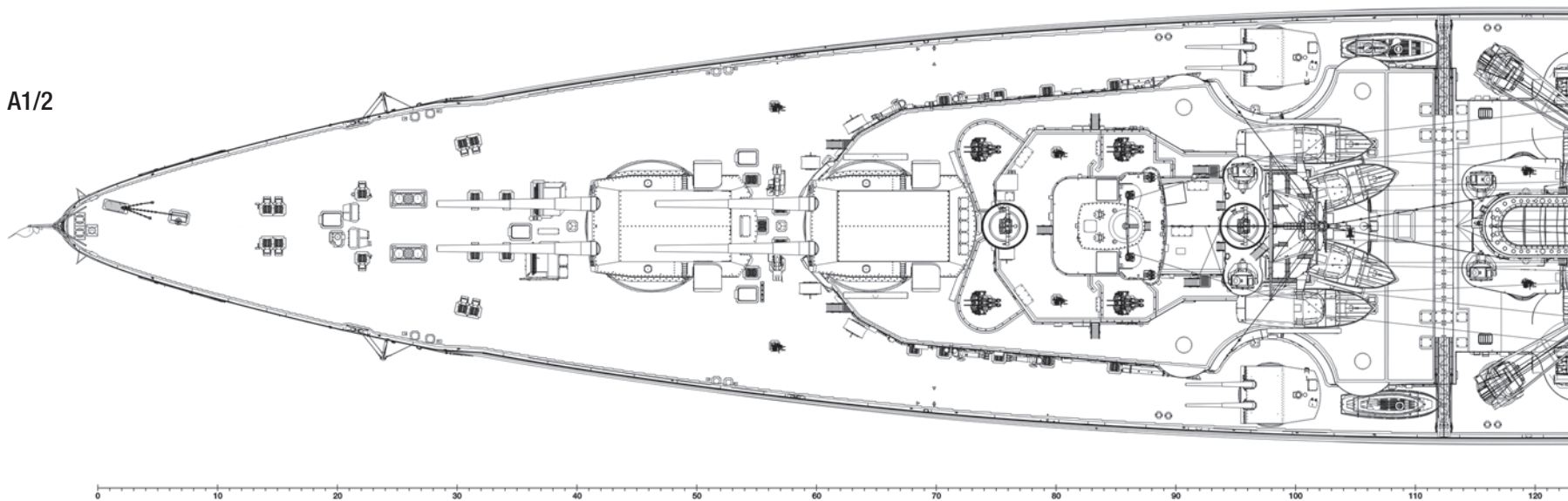
A1/1 RIGHT PROFILE, AUGUST 1940

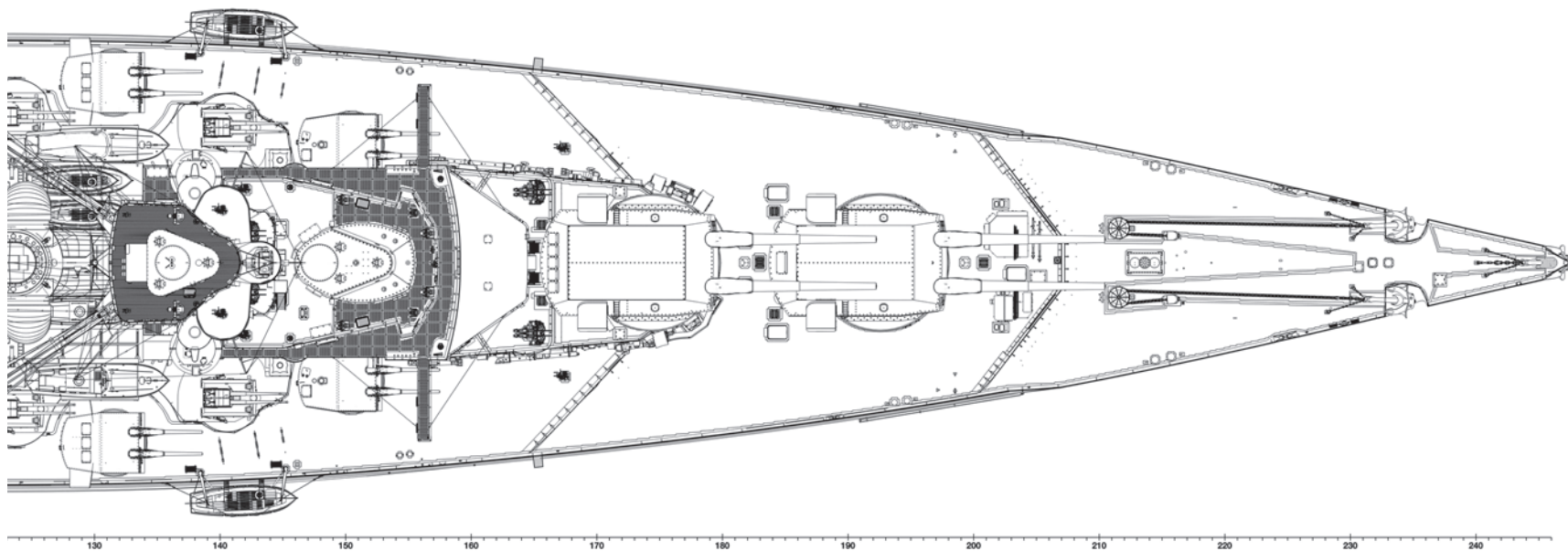
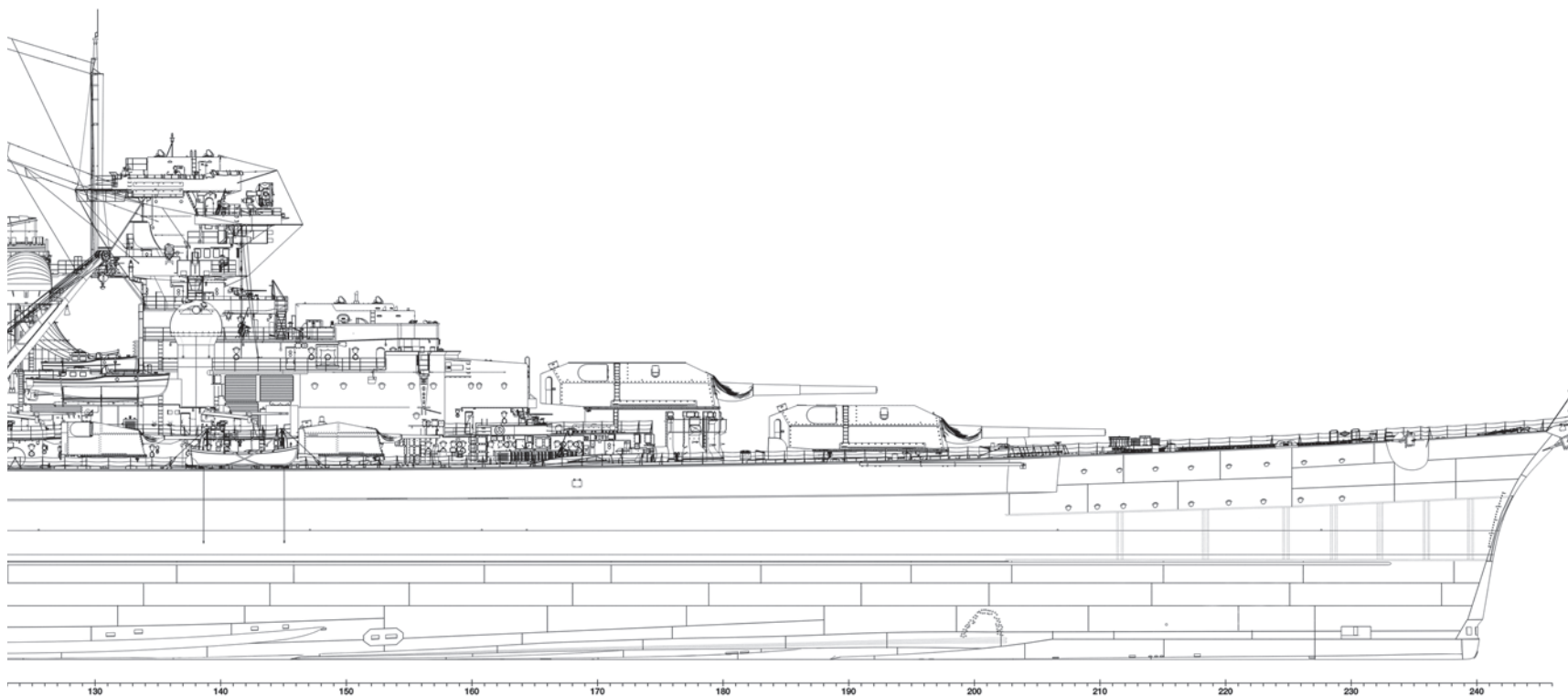
A1/2 PLAN, AUGUST 1940

A1/1



A1/2





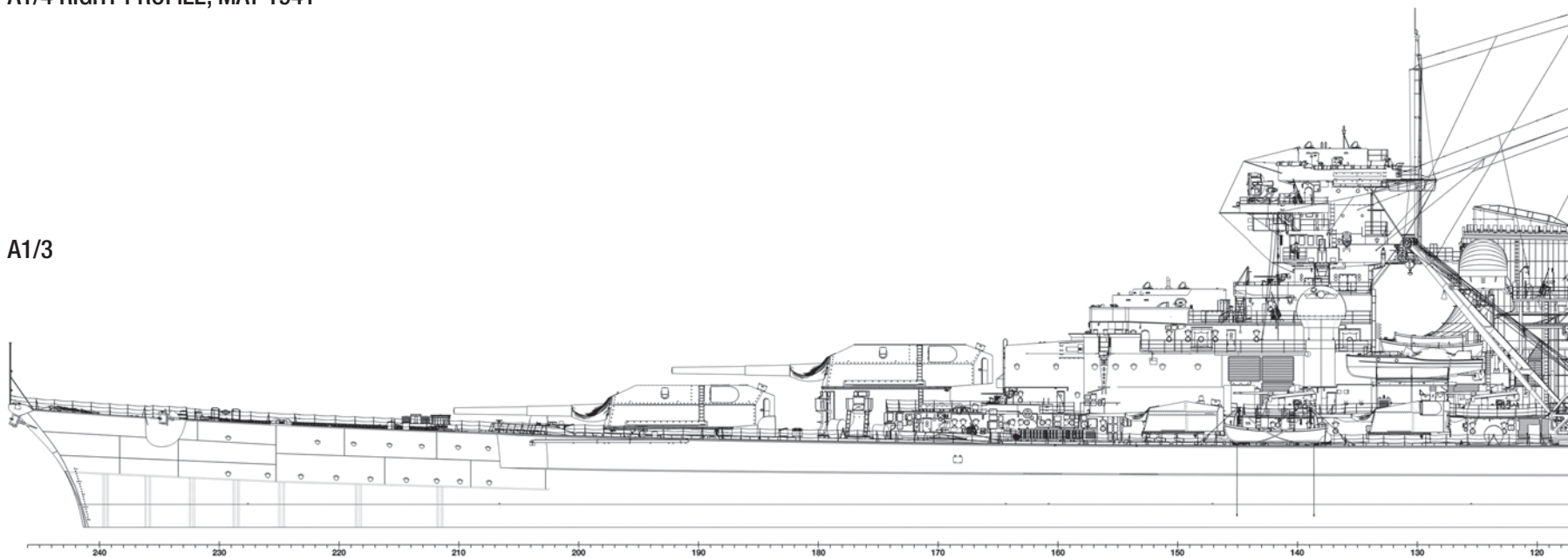


EXTERNAL VIEWS (1/550 SCALE)

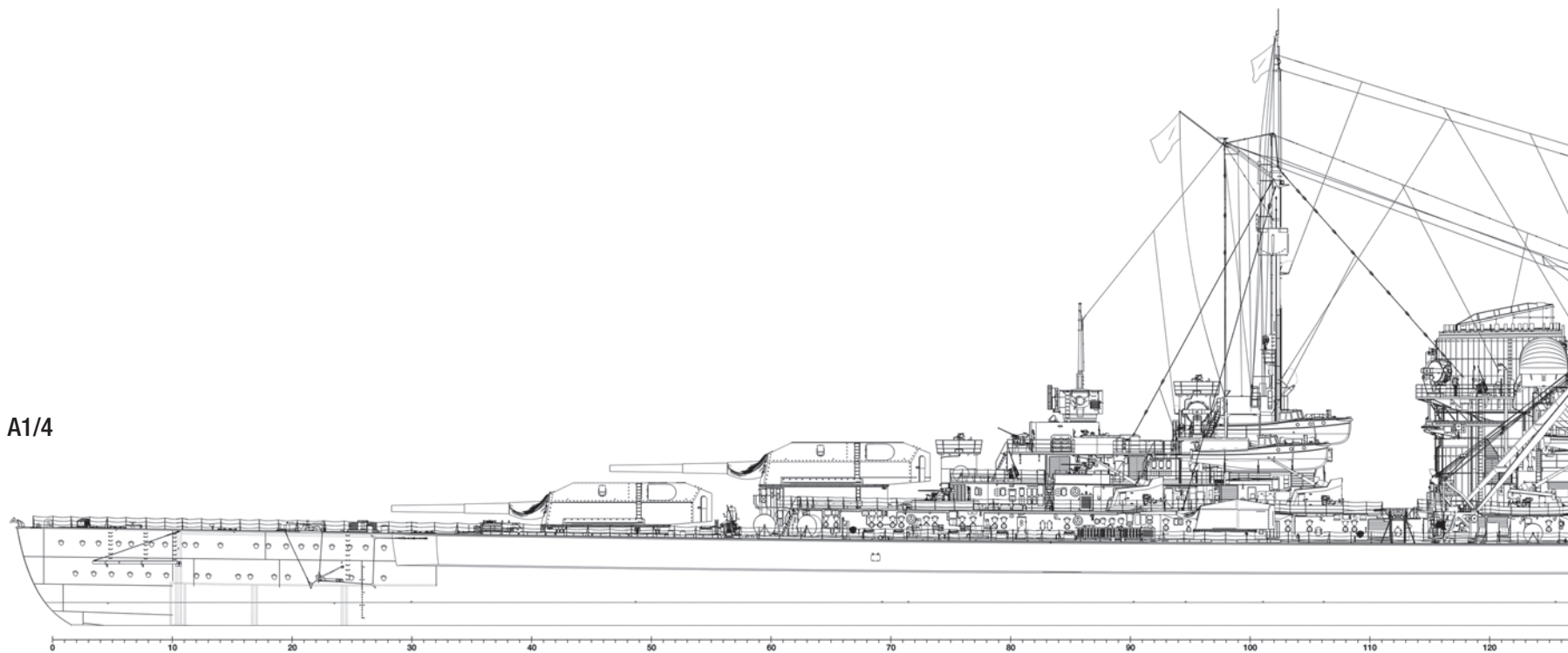
A1/3 LEFT PROFILE, AUGUST 1940

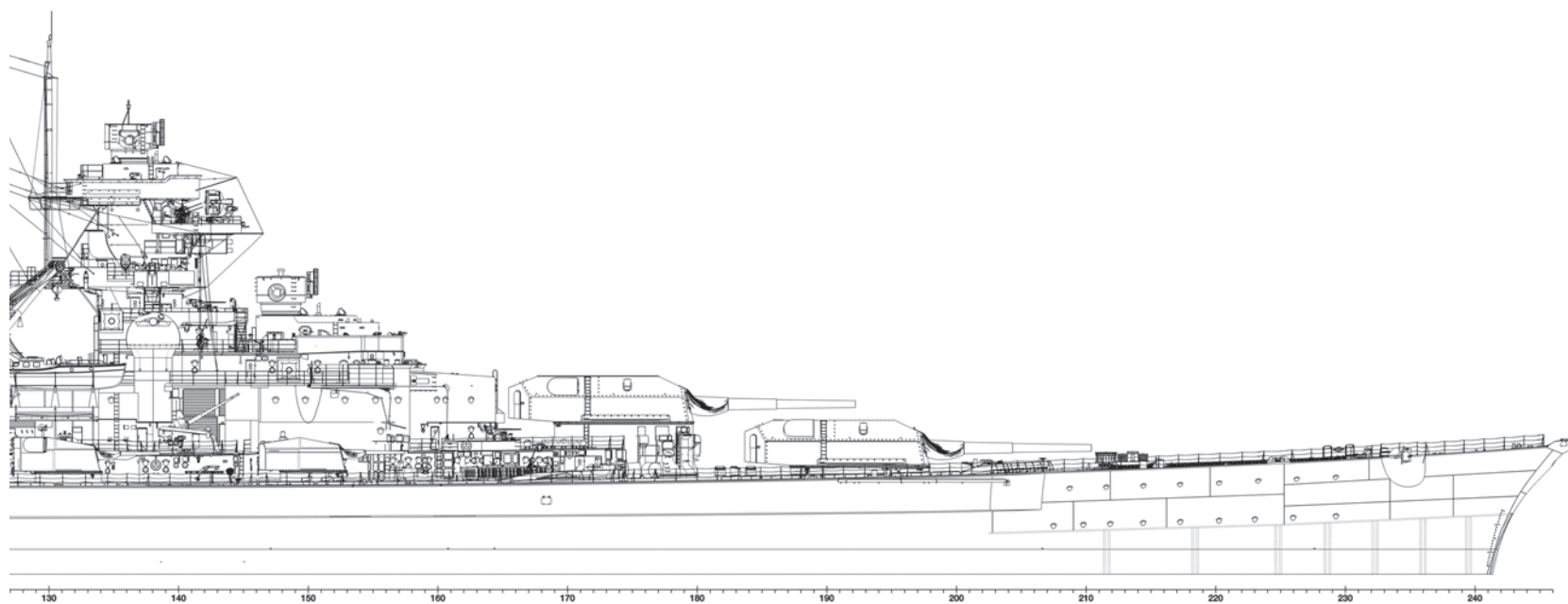
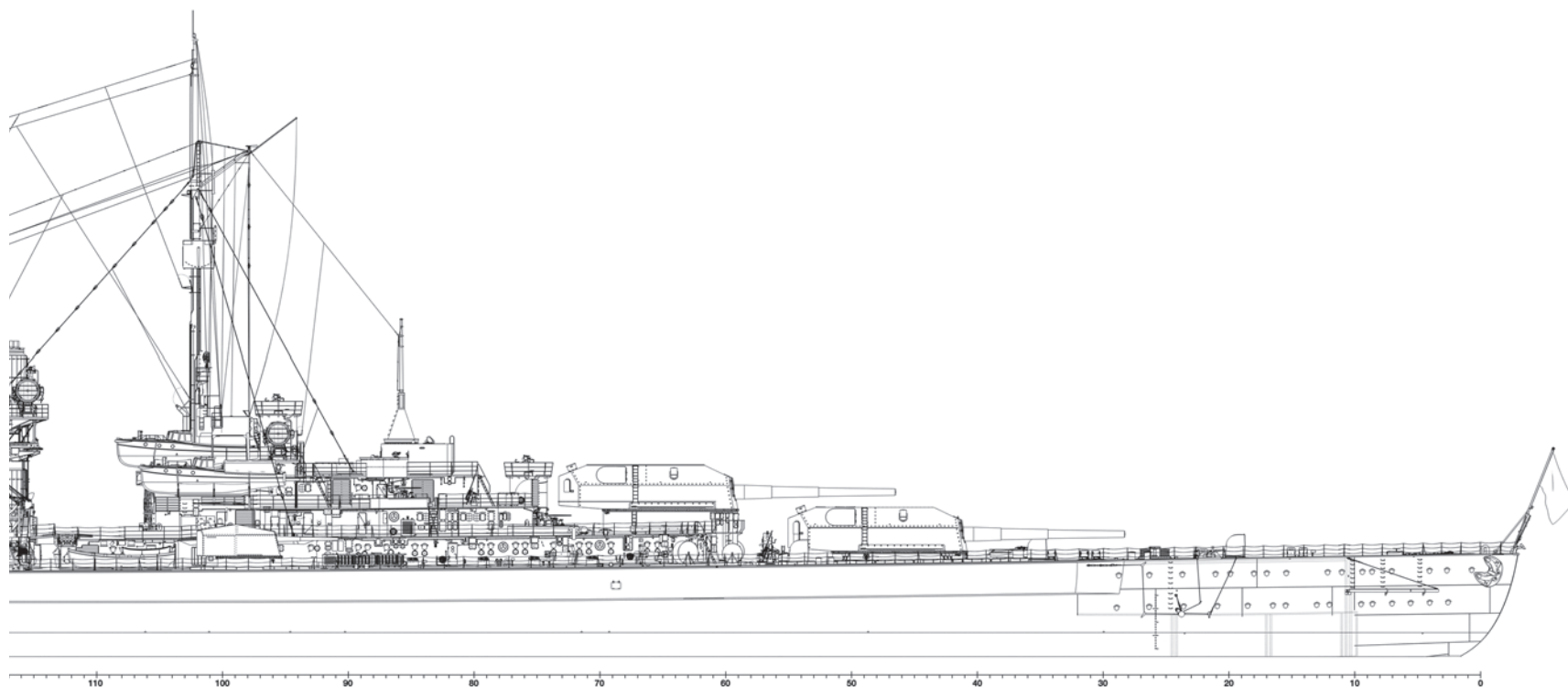
A1/4 RIGHT PROFILE, MAY 1941

A1/3



A1/4



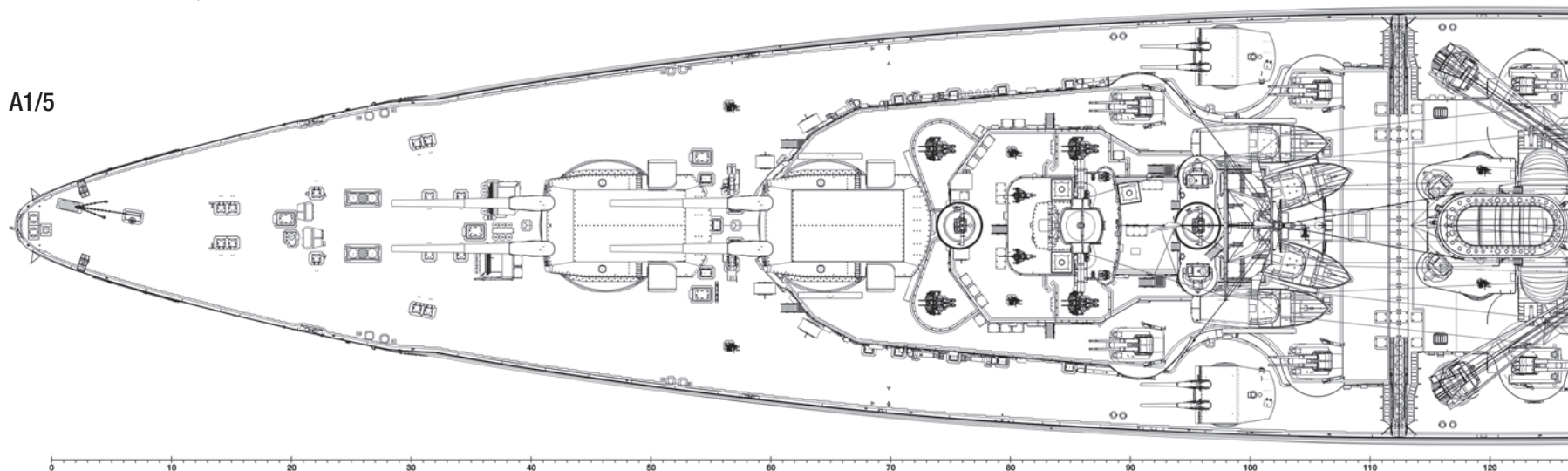


EXTERNAL VIEWS (1/550 SCALE)

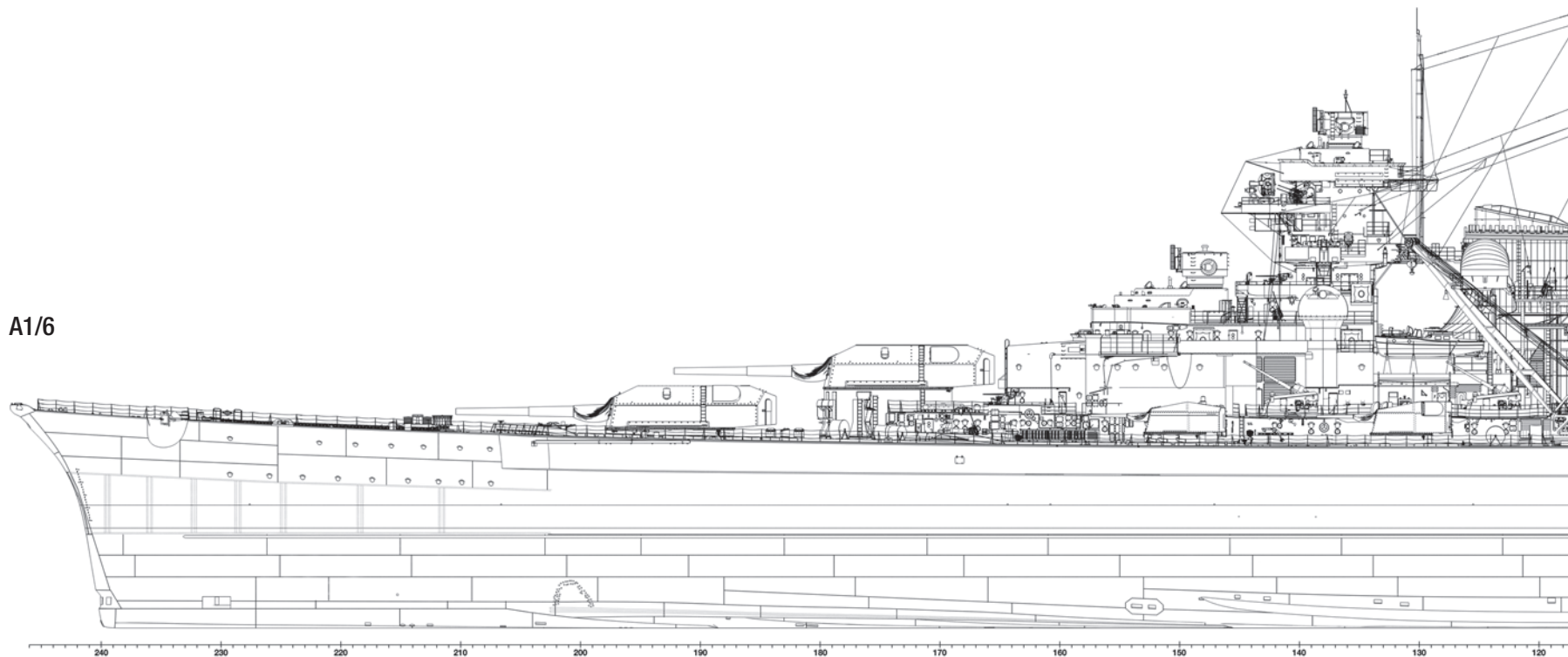
A1/5 PLAN, MAY 1941

A1/6 LEFT PROFILE, MAY 1941

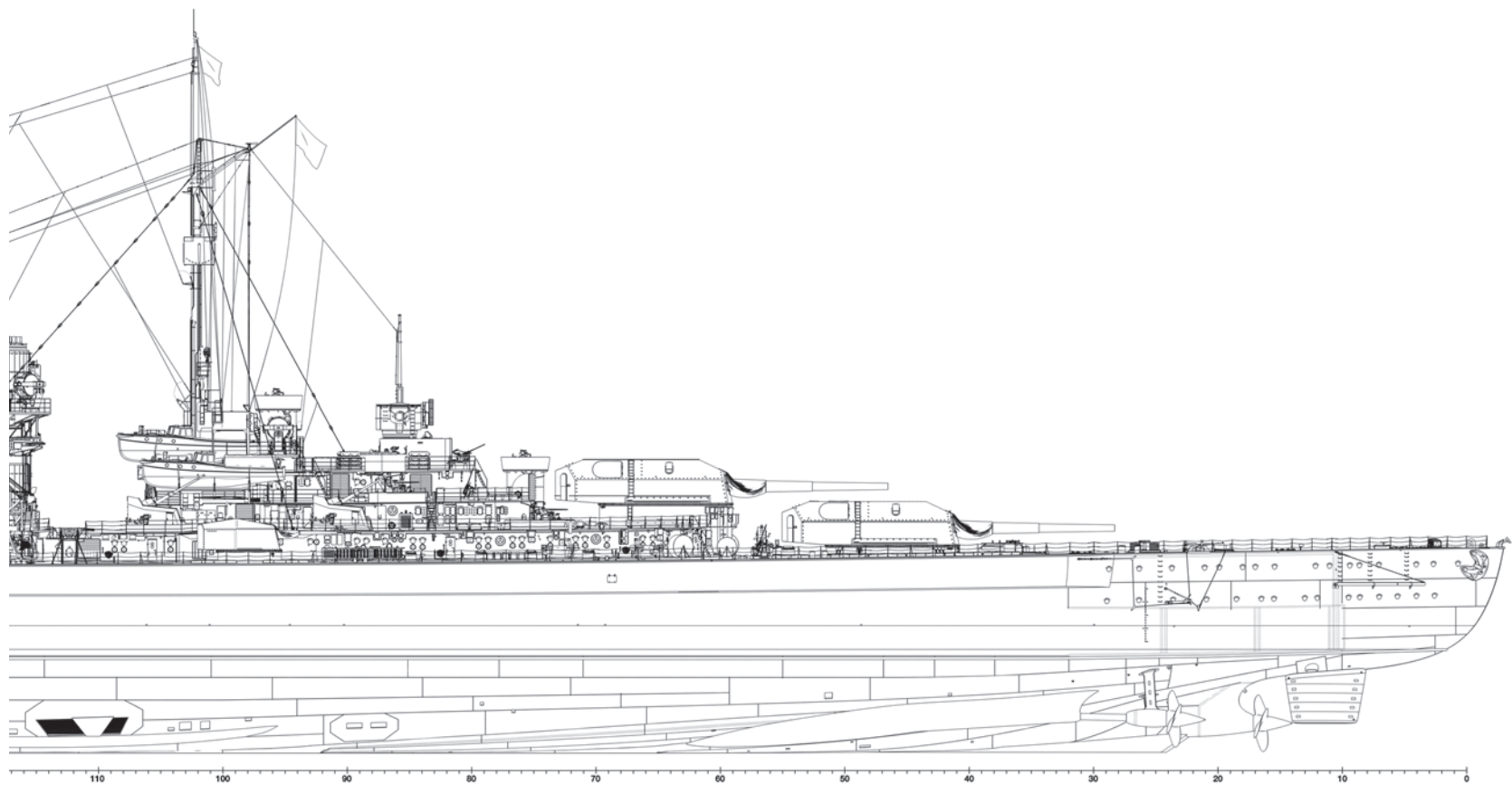
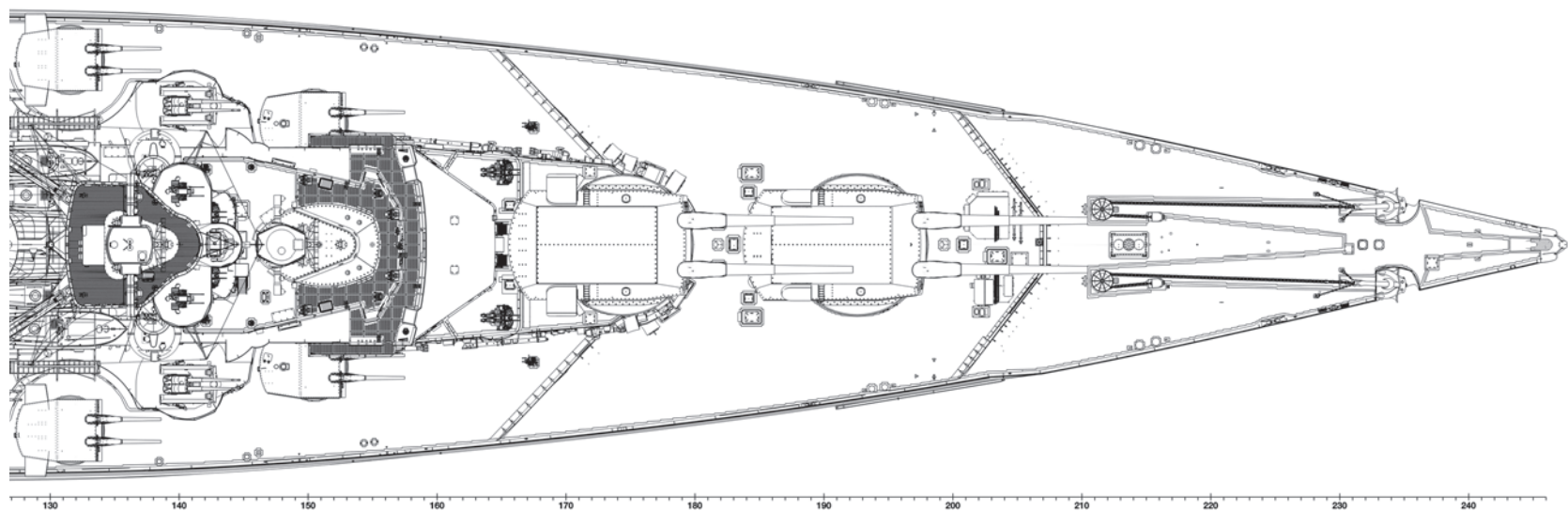
A1/5



A1/6



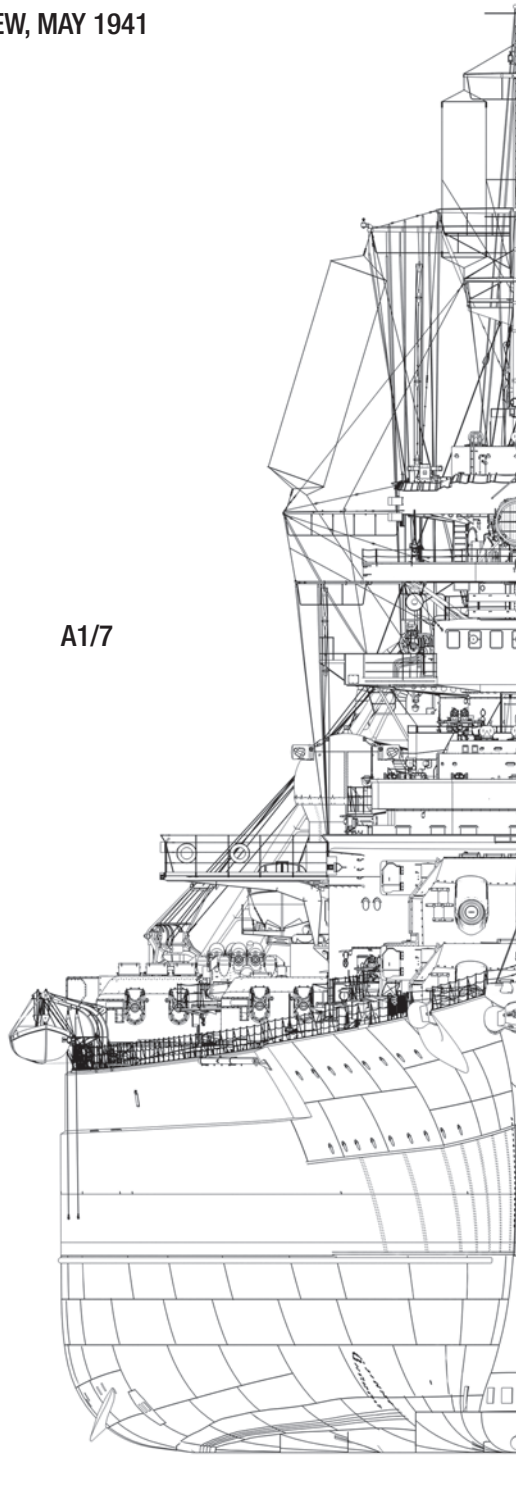




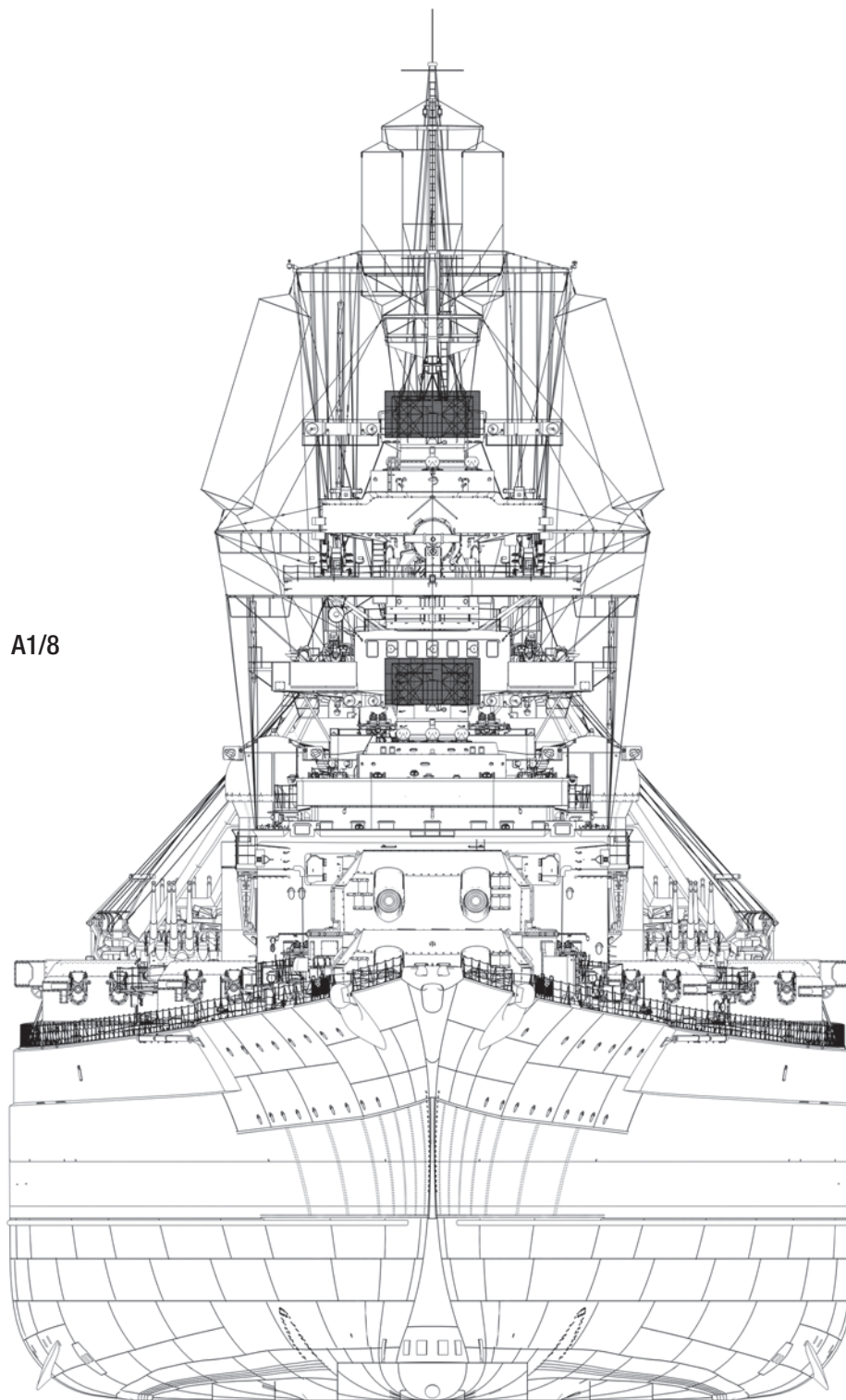
EXTERNAL VIEWS (1/300 SCALE)

A1/7 FRONT VIEW, AUGUST 1940 (FRAGMENT)

A1/8 FRONT VIEW, MAY 1941

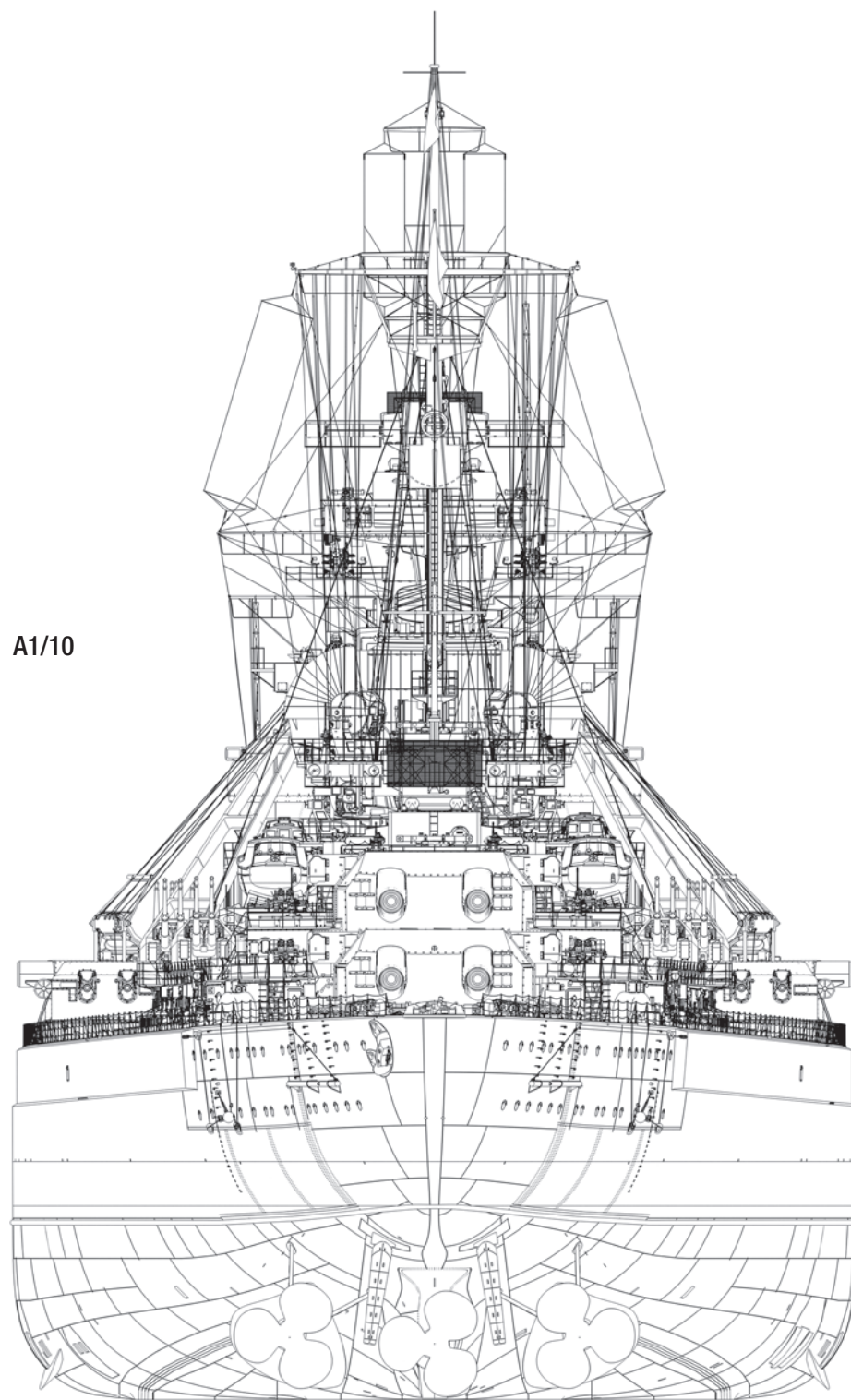
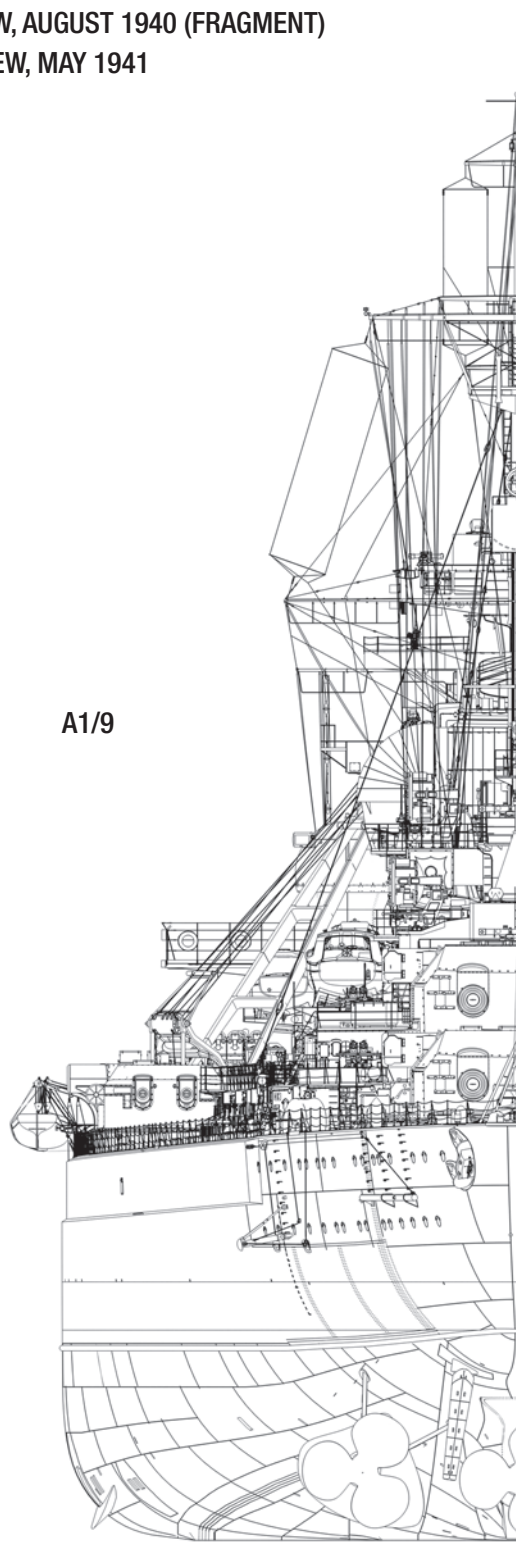


A1/7



A1/8

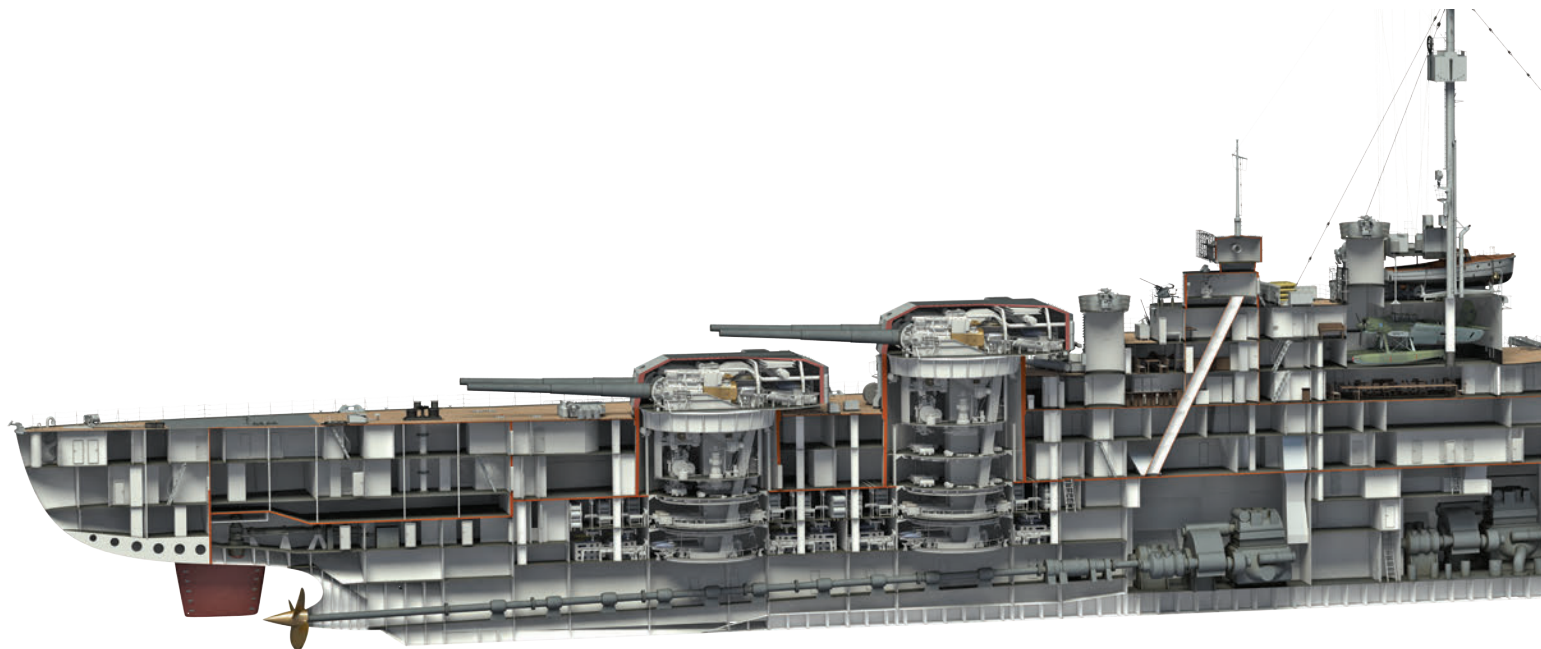
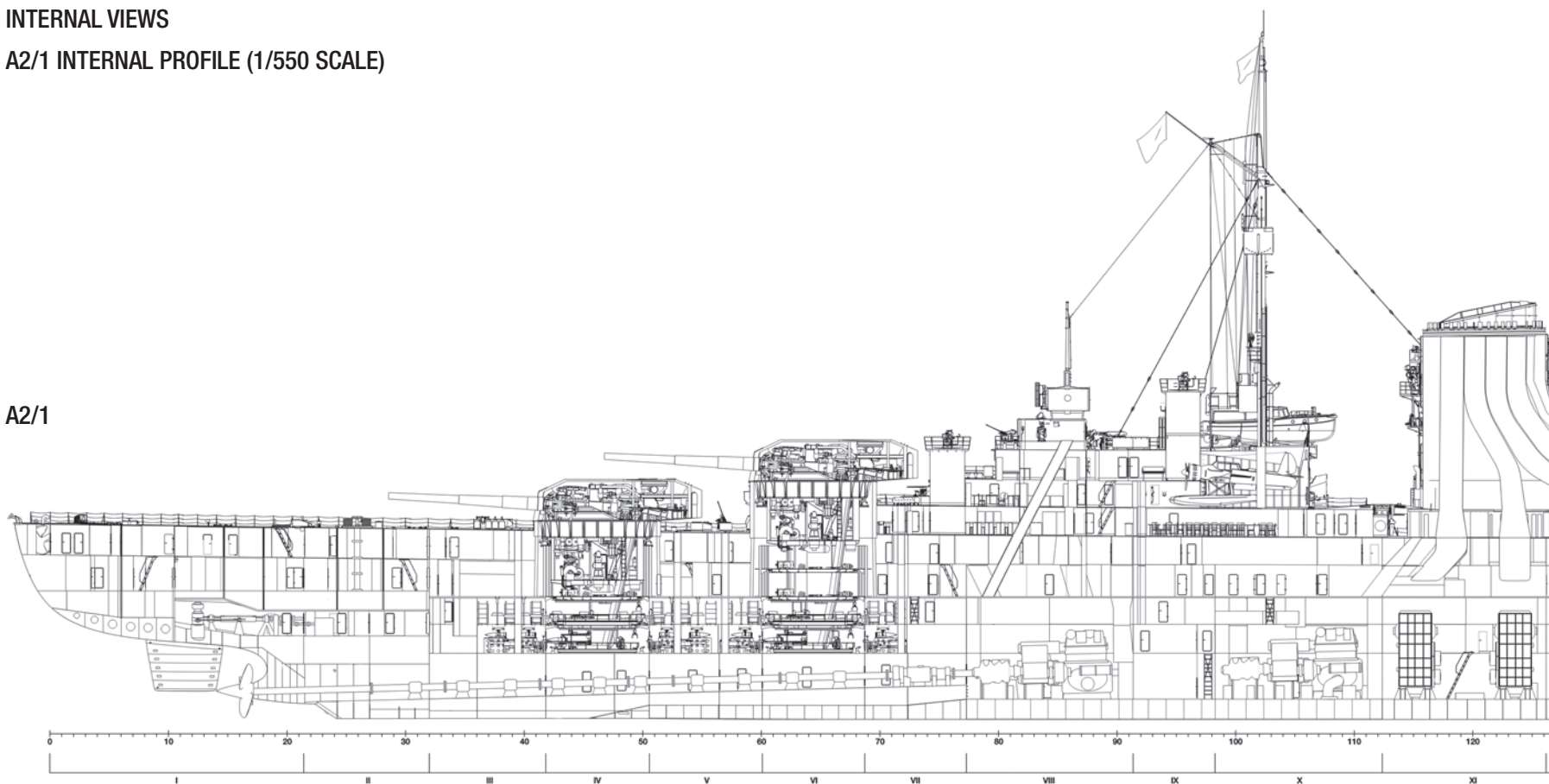
A1/9 BACK VIEW, AUGUST 1940 (FRAGMENT)  
A1/10 BACK VIEW, MAY 1941

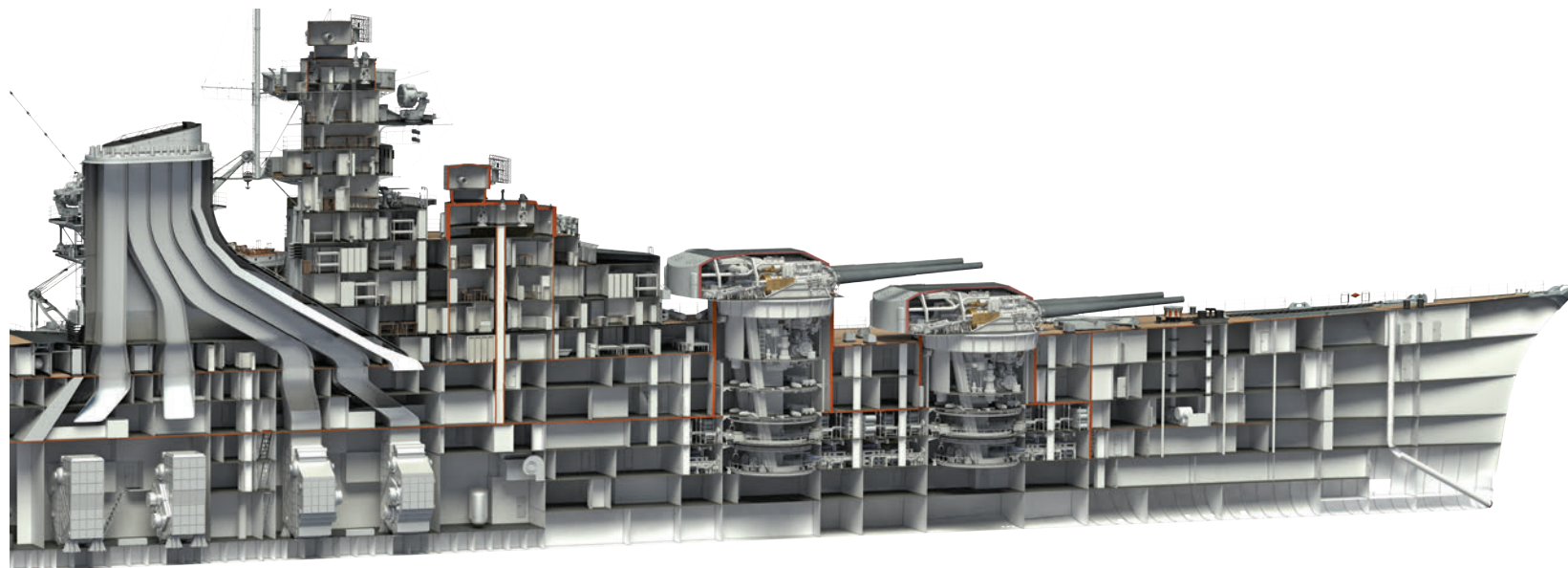




**INTERNAL VIEWS****A2/1 INTERNAL PROFILE (1/550 SCALE)**

A2/1

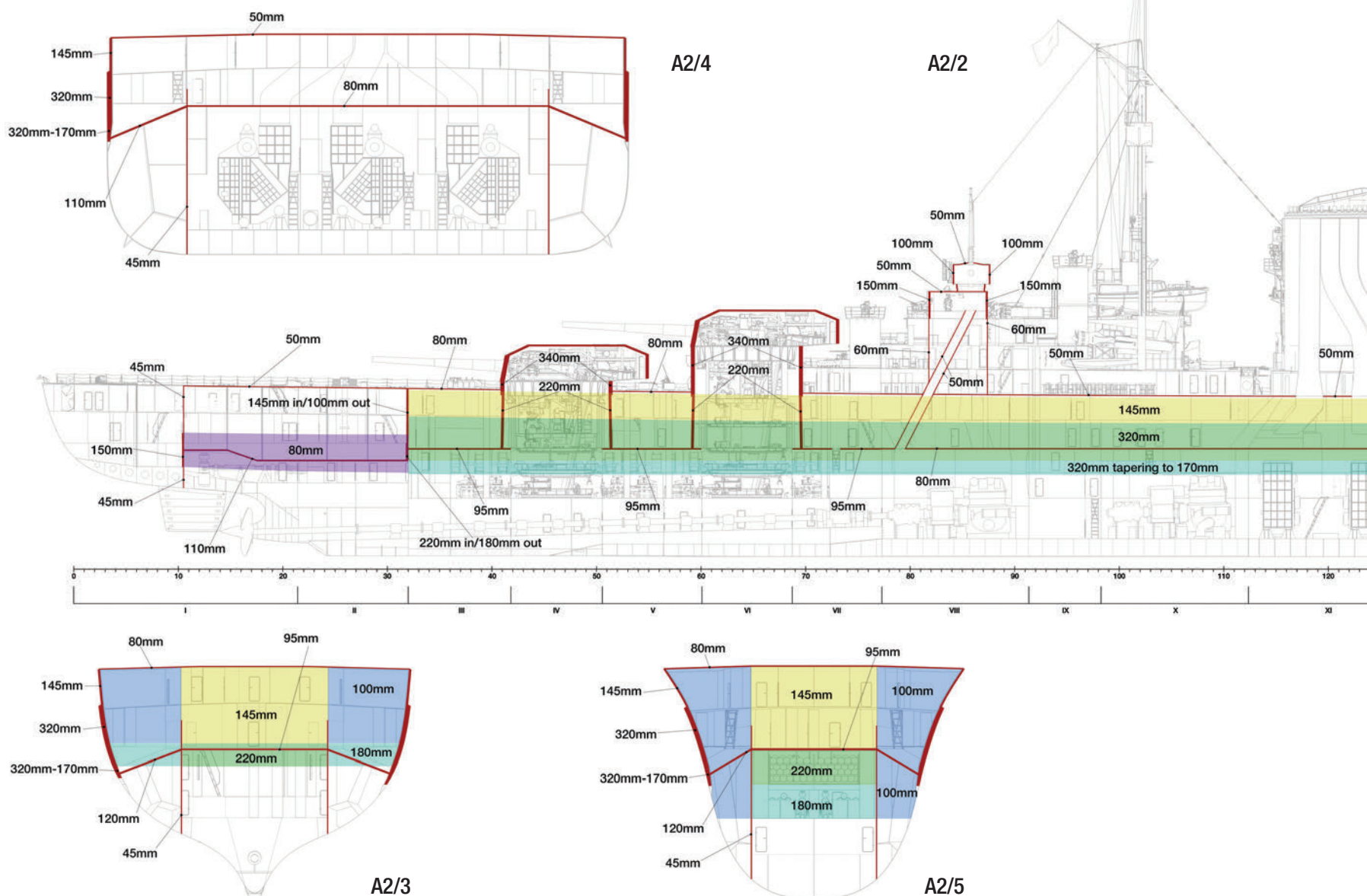




### A2/2 INTERNAL PROFILE WITH ARMOUR LAYOUT (1/550 SCALE)

**A2/4 TRANSVERSE SECTION WITH ARMOUR LAYOUT, FRAME 126  
LOOKING AFT (1/400 SCALE)**

**A2/5 TRANSVERSE SECTION WITH ARMOUR LAYOUT, FRAME 202  
LOOKING AFT (1/400 SCALE)**



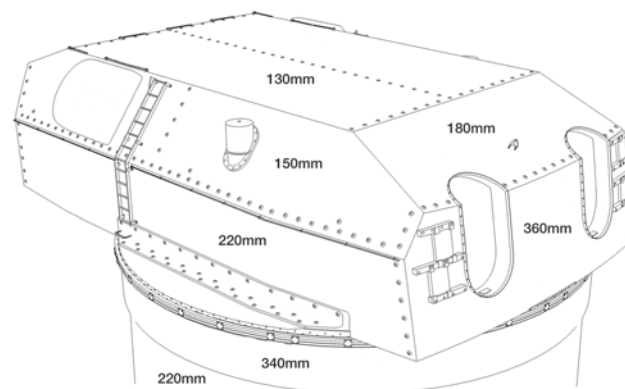


A2/6 ARMOUR PLATES OF MAIN ARTILLERY TURRETS  
AND BARBETTES, AXONOMETRIC VIEW (NO SCALE)

A2/7 ARMOUR PLATES OF MAIN ARTILLERY TURRETS  
AND BARBETTES, AXONOMETRIC VIEW (NO SCALE)

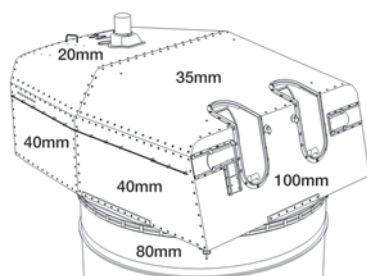
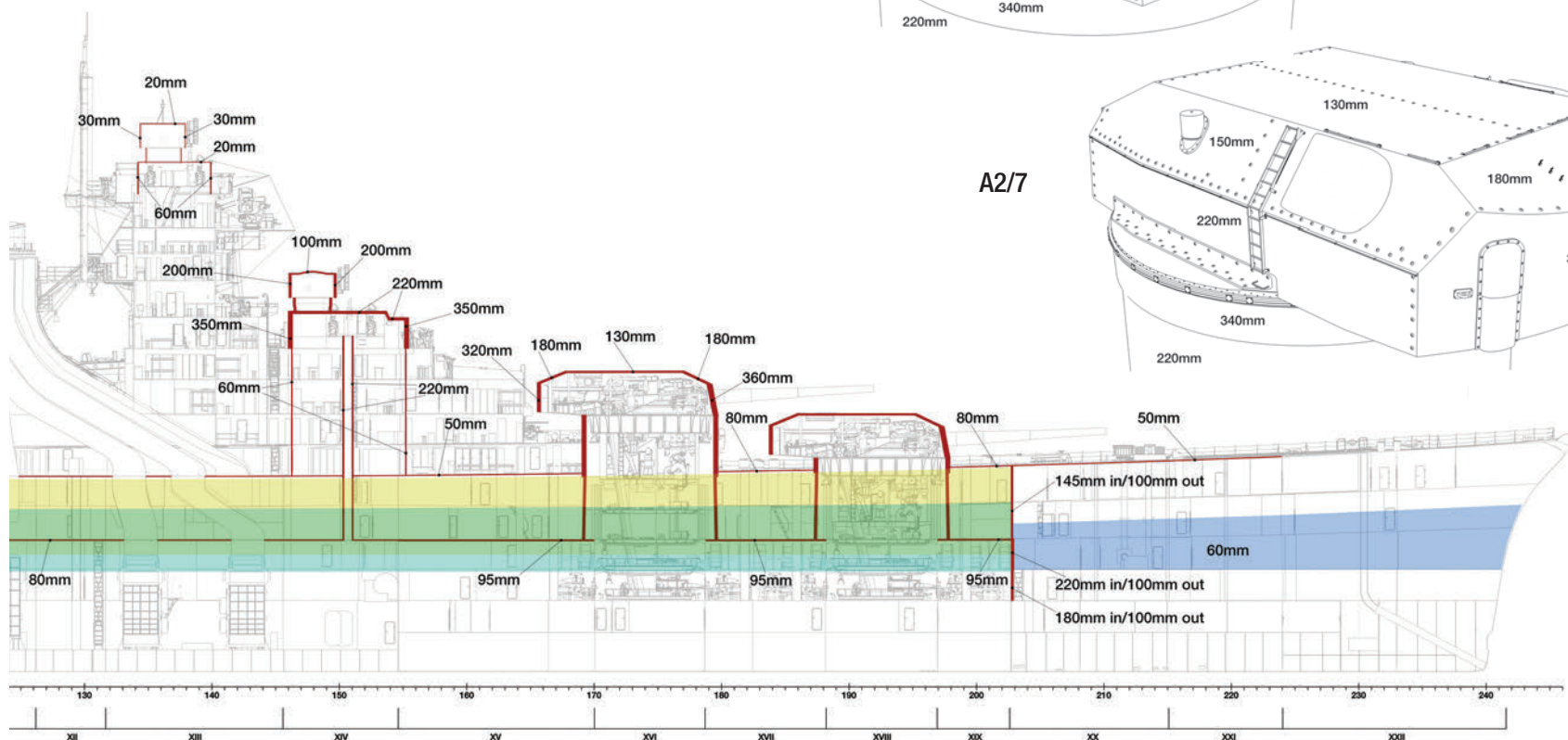
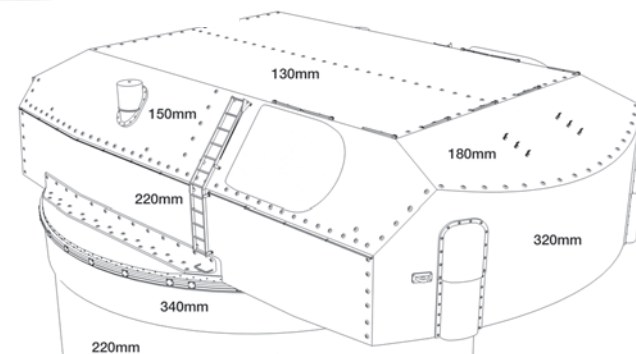
A2/8 ARMOUR PLATES OF SECONDARY ARTILLERY  
TURRETS AND BARBETTES, AXONOMETRIC VIEW (NO SCALE)

A2/9 ARMOUR PLATES OF SECONDARY ARTILLERY  
TURRETS AND BARBETTES, AXONOMETRIC VIEW (NO SCALE)

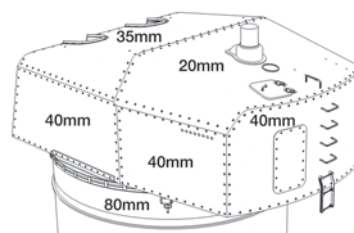


A2/6

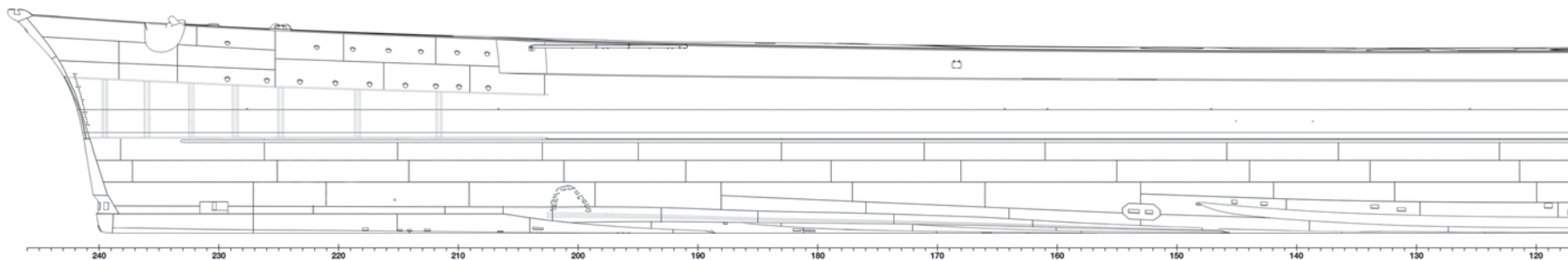
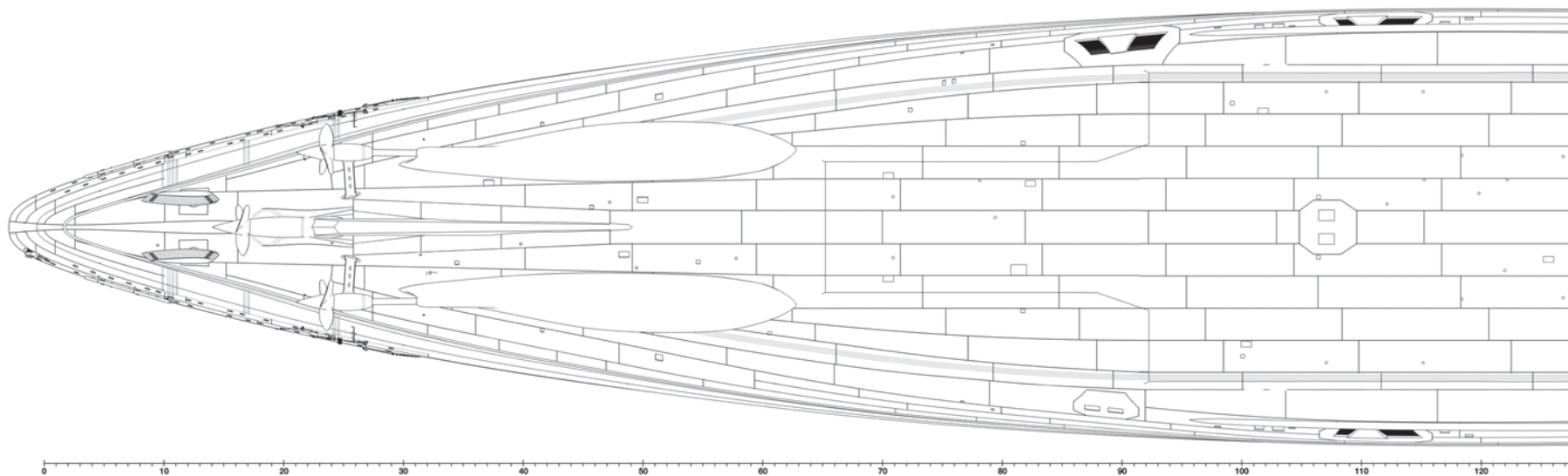
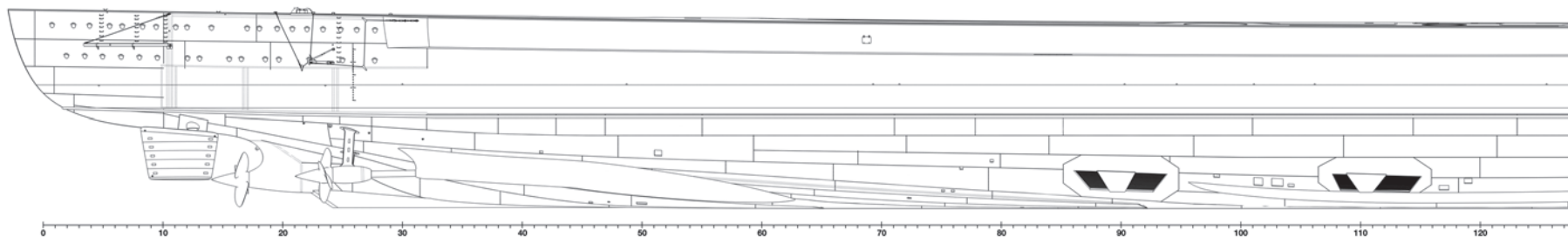
A2/7

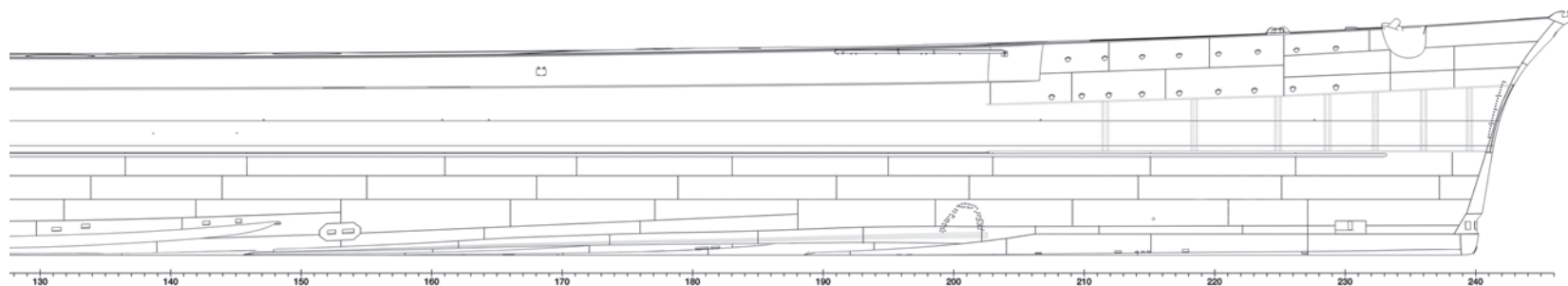


A2/8

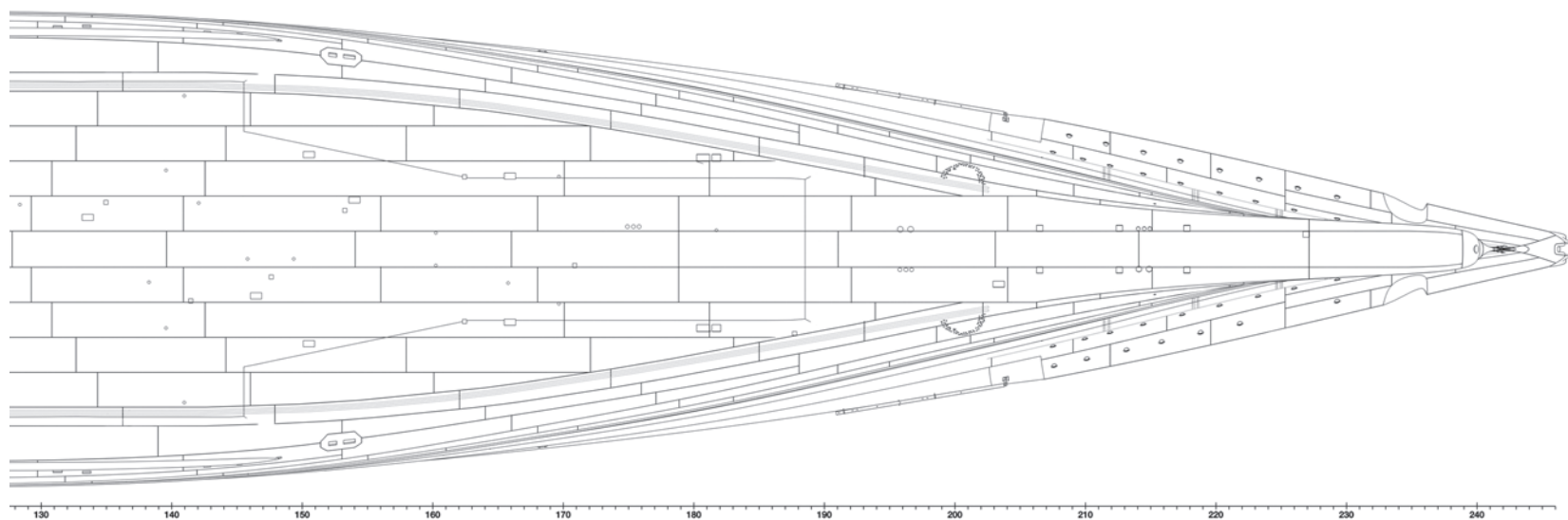


A2/9

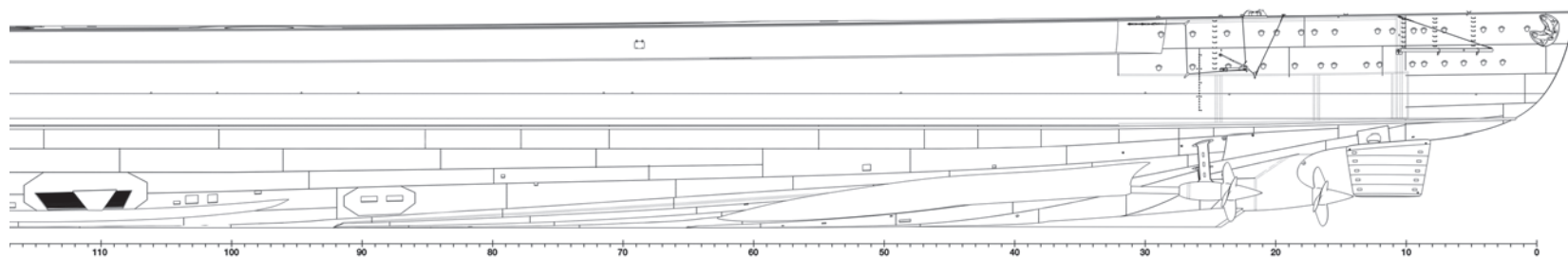
**HULL EXTERNAL VIEWS (1/550 SCALE)****B1/1 RIGHT PROFILE****B1/2 BOTTOM VIEW****B1/3 LEFT PROFILE**



B1/1



B1/2



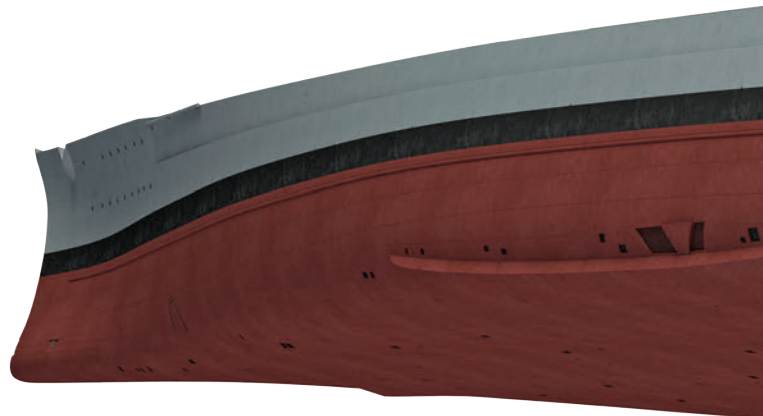
B1/3



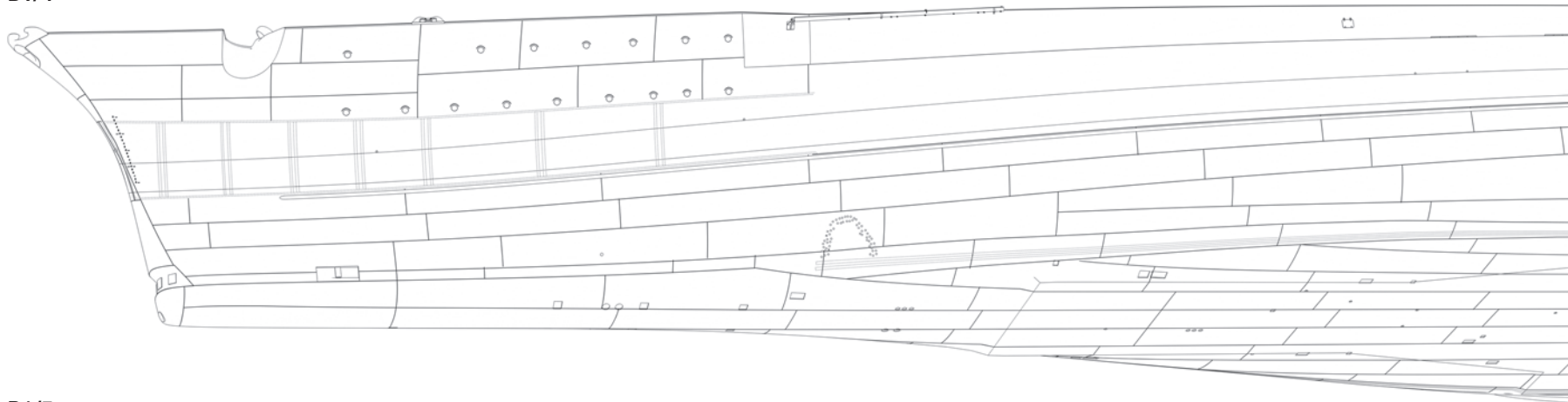
HULL EXTERNAL VIEWS (1/550 SCALE)

B1/4 AXONOMETRIC VIEW – STARBOARD SIDE (NO SCALE)

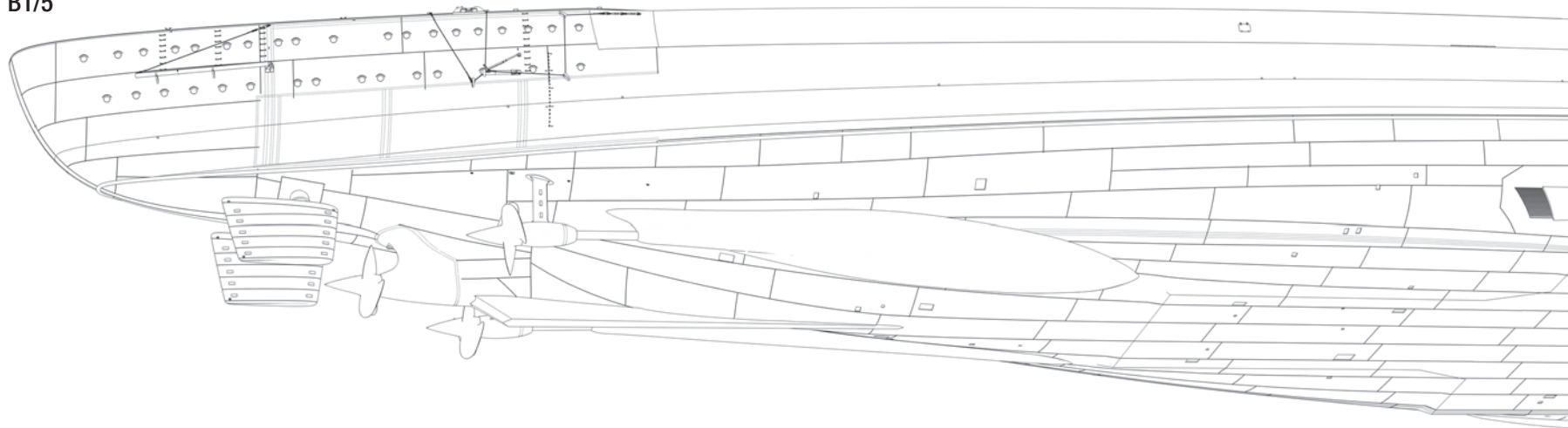
B1/5 AXONOMETRIC VIEW – PORT SIDE (NO SCALE)

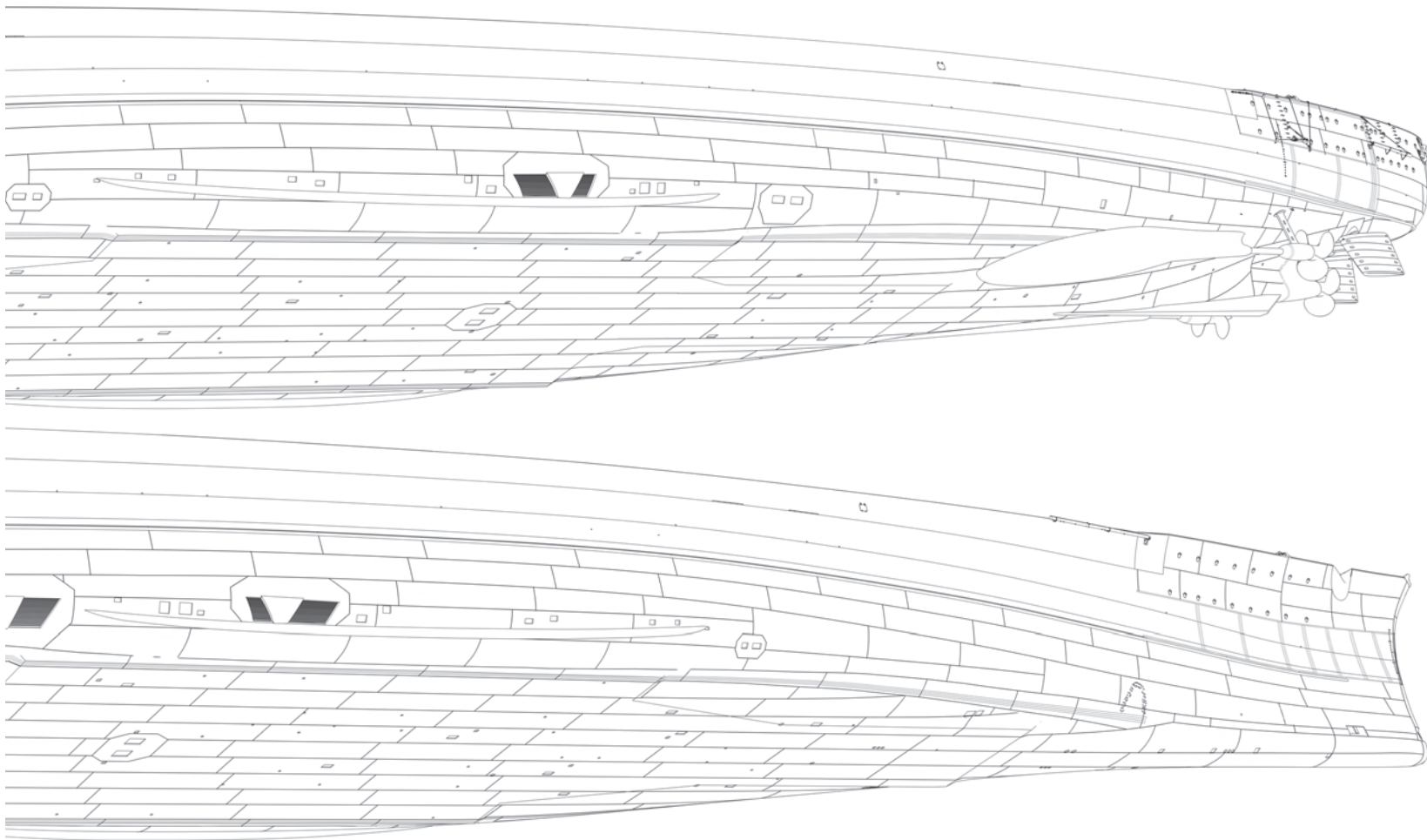
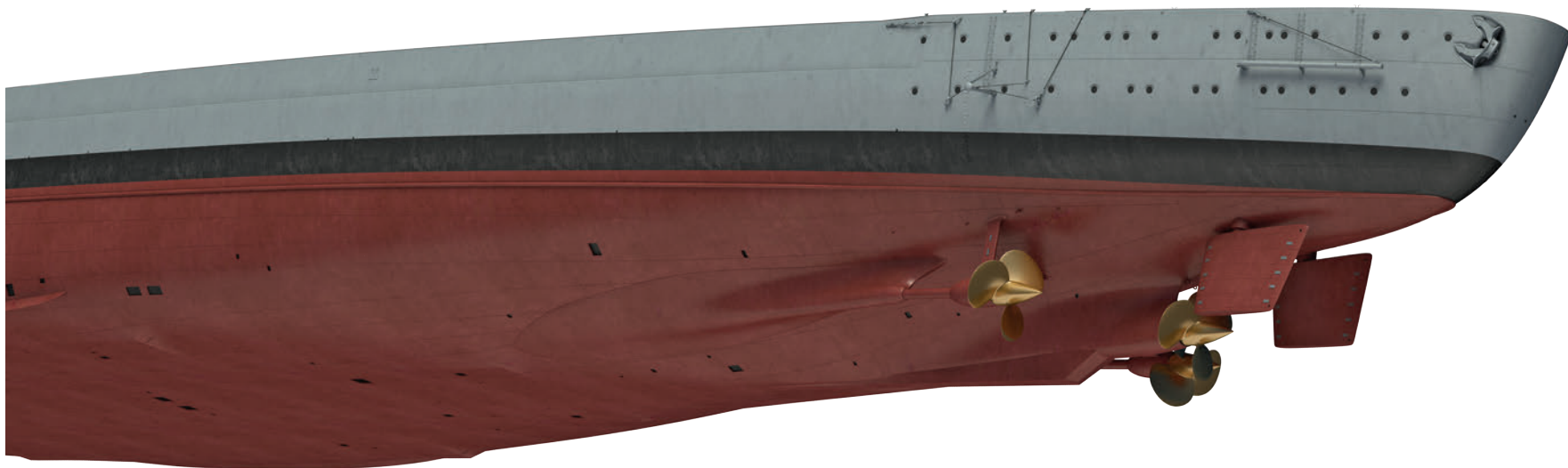


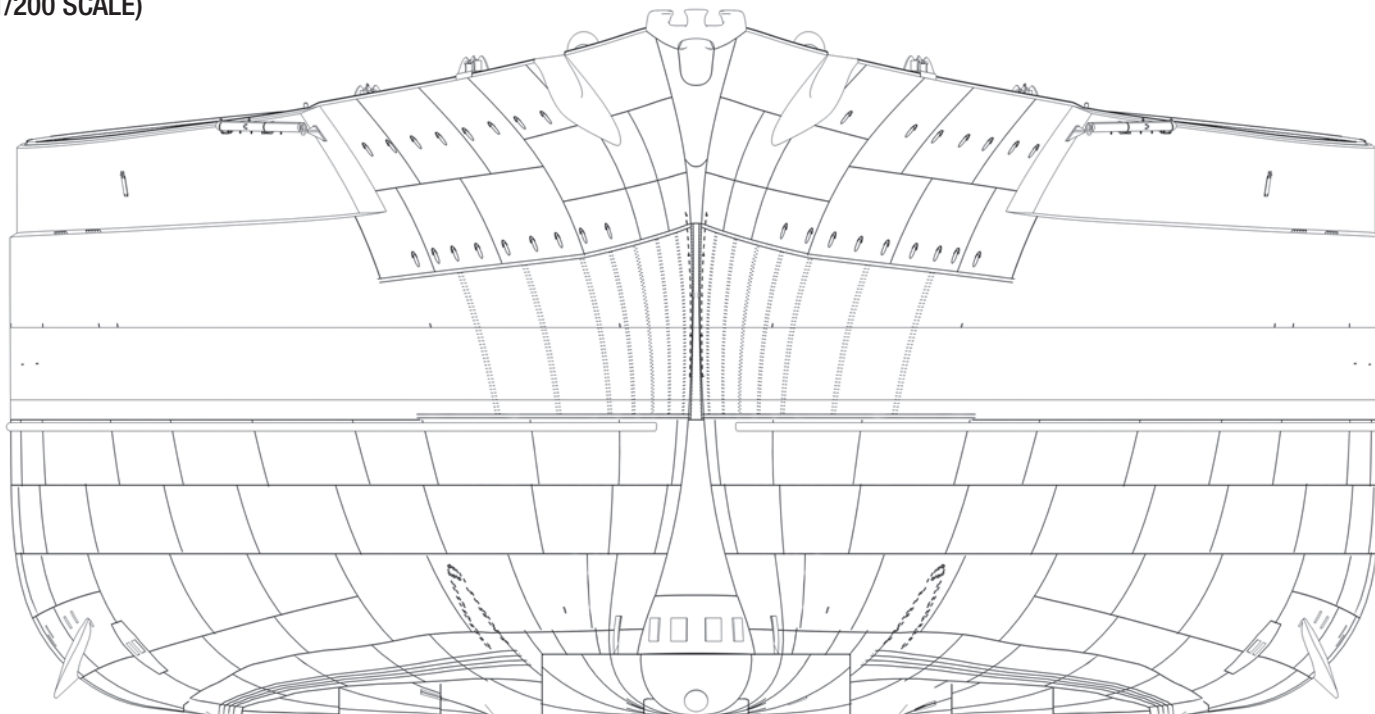
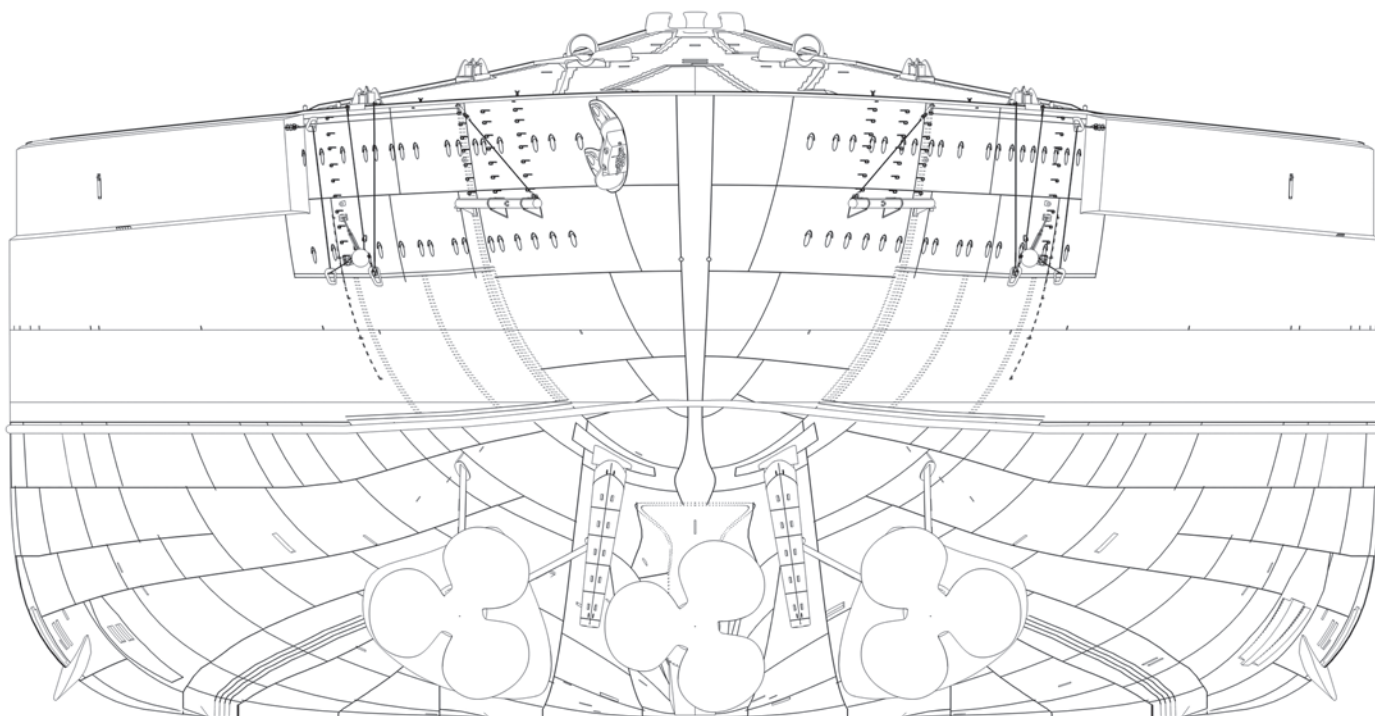
B1/4



B1/5

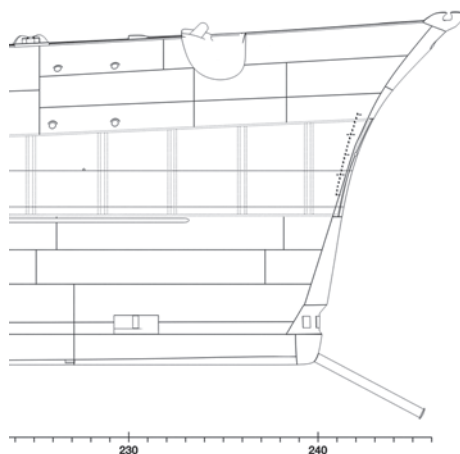




**HULL EXTERNAL VIEWS (1/200 SCALE)****B1/6 FRONT VIEW****B1/7 BACK VIEW****B1/6****B1/7**



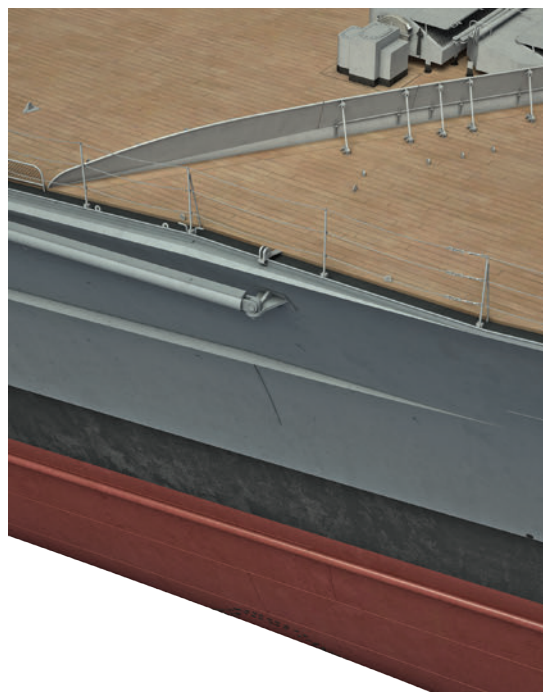
B1/8 RIGHT PROFILE FRAGMENT WITH FULLY EXTENDED *BUGSPIERE* –  
 ROD FOR ATTACHING PARAVANE TOW LINES (1/400 SCALE)  
 B1/9 RIGHT PROFILE FRAGMENT, ORIGINAL APPEARANCE OF  
 THE STEM AT THE TIME OF LAUNCH (1/400 SCALE)



B1/8



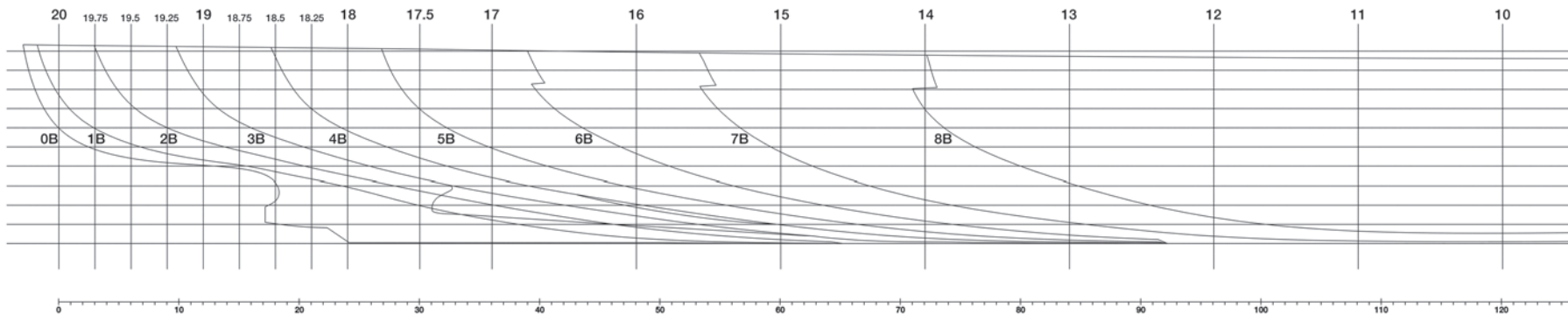
B1/9



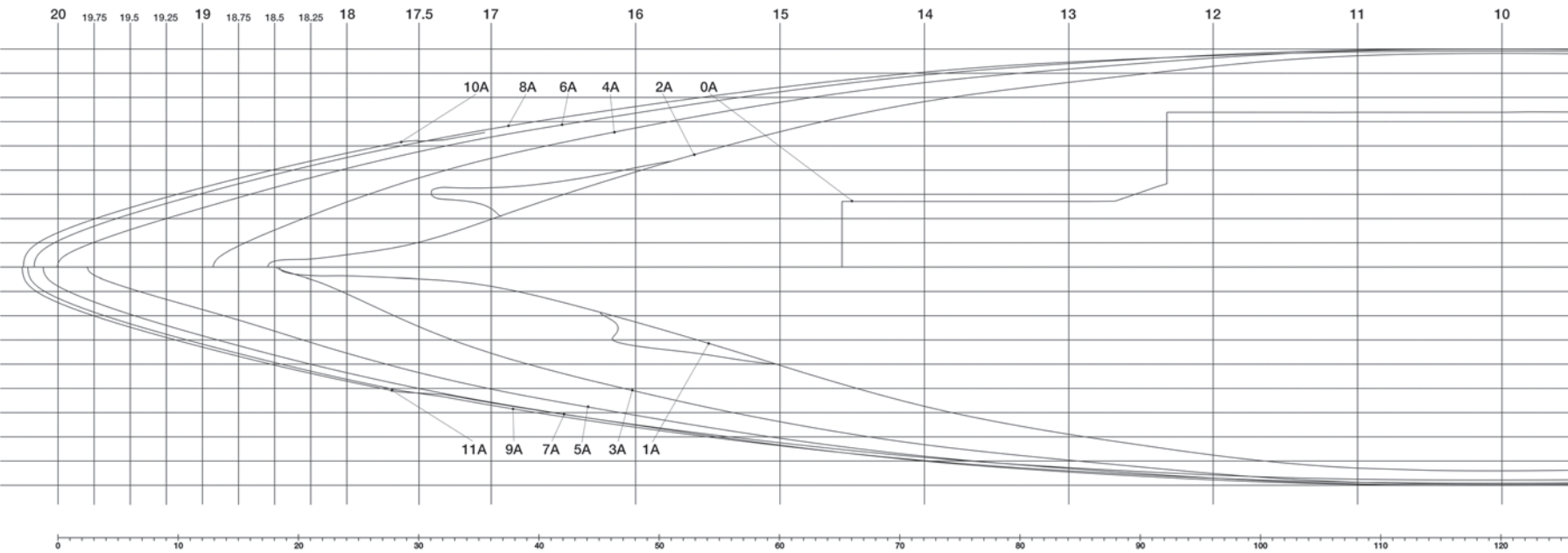
HULL LINES AND BODY PLANS

B1/10 SHEER ELEVATION (1/550 SCALE)

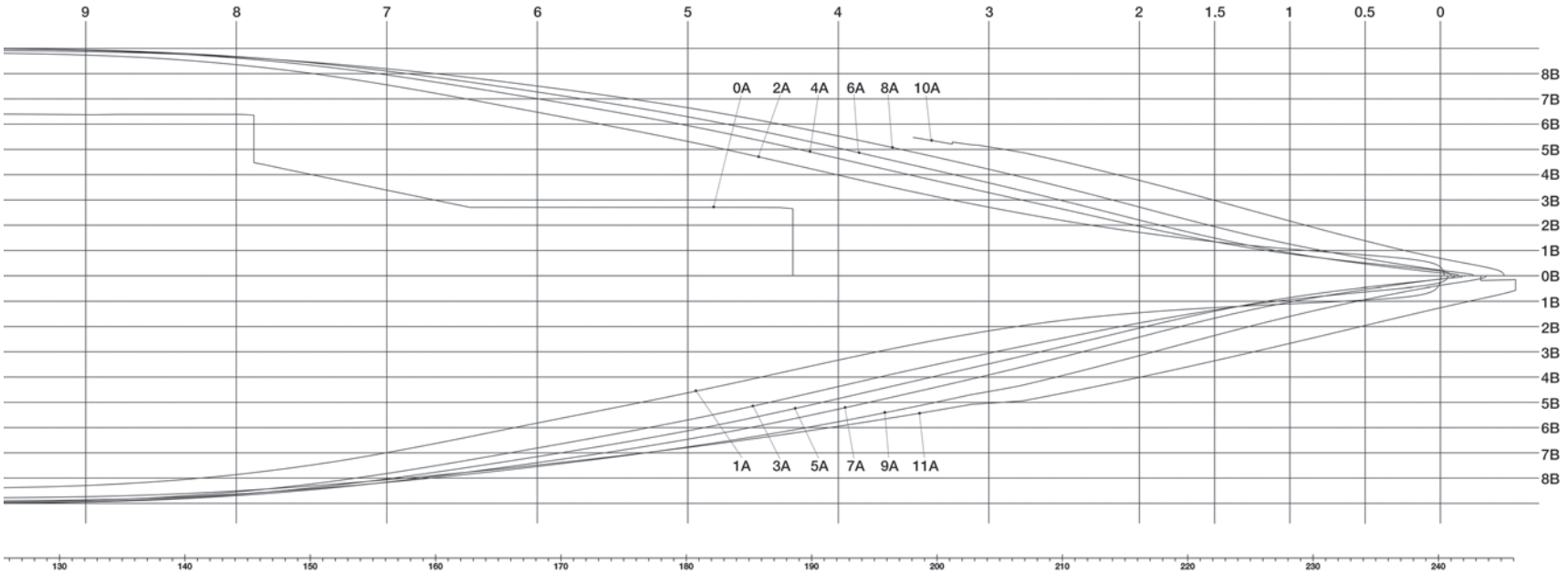
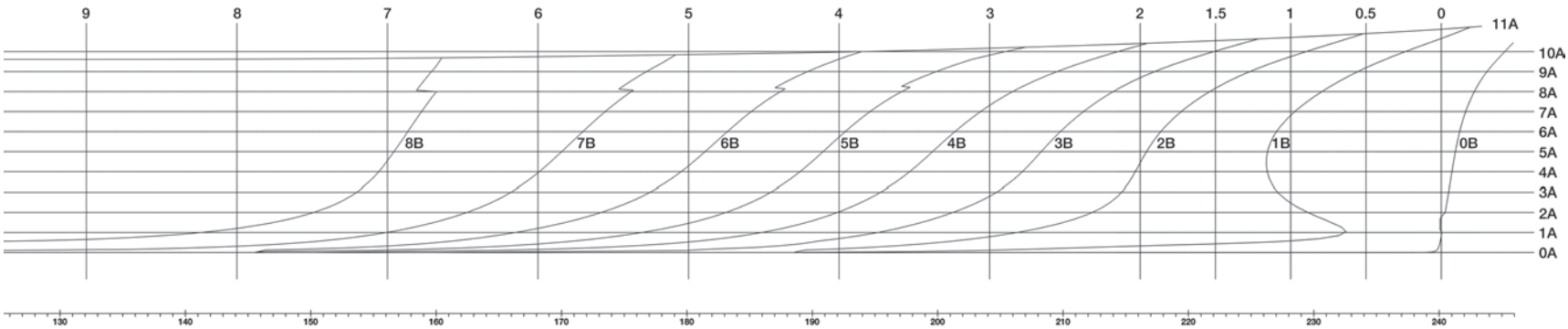
B1/11 WATERLINE PLAN (1/550 SCALE)



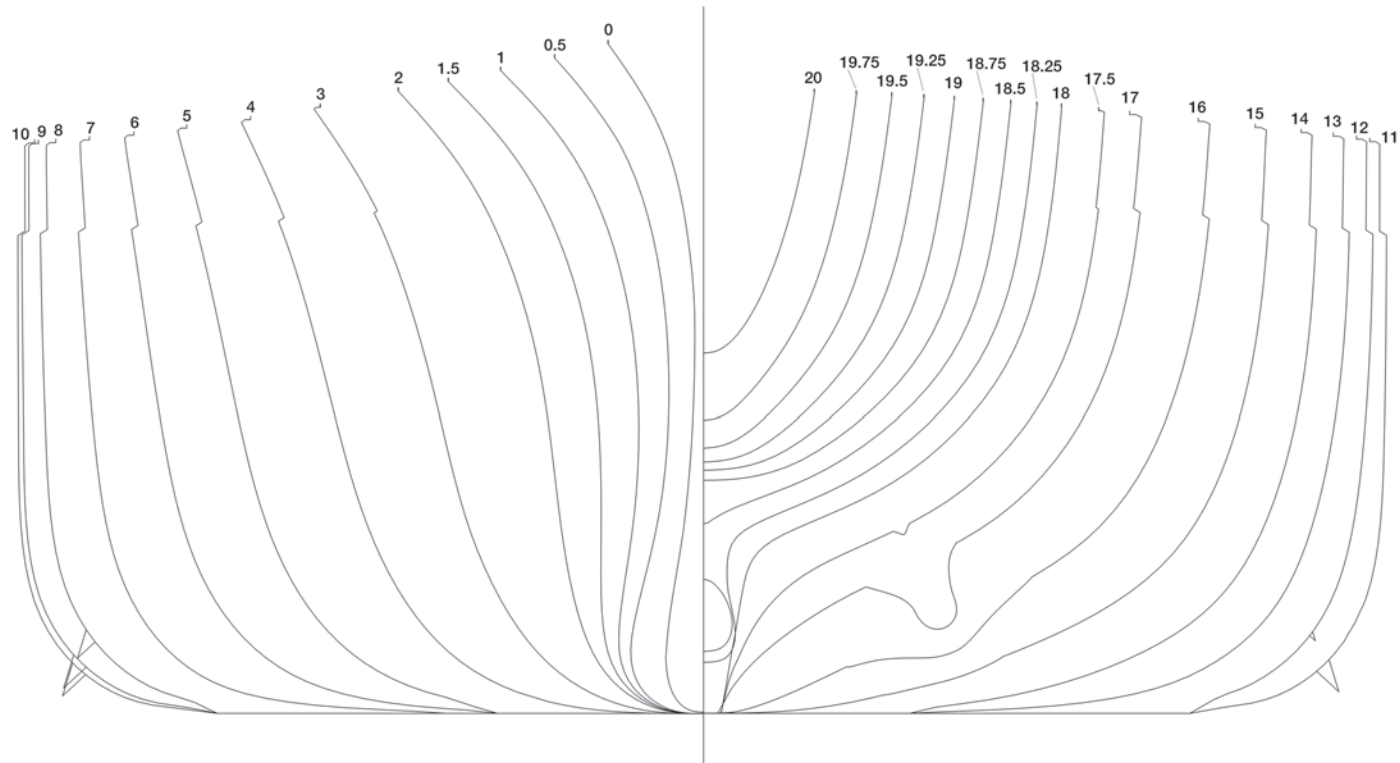
B1/10

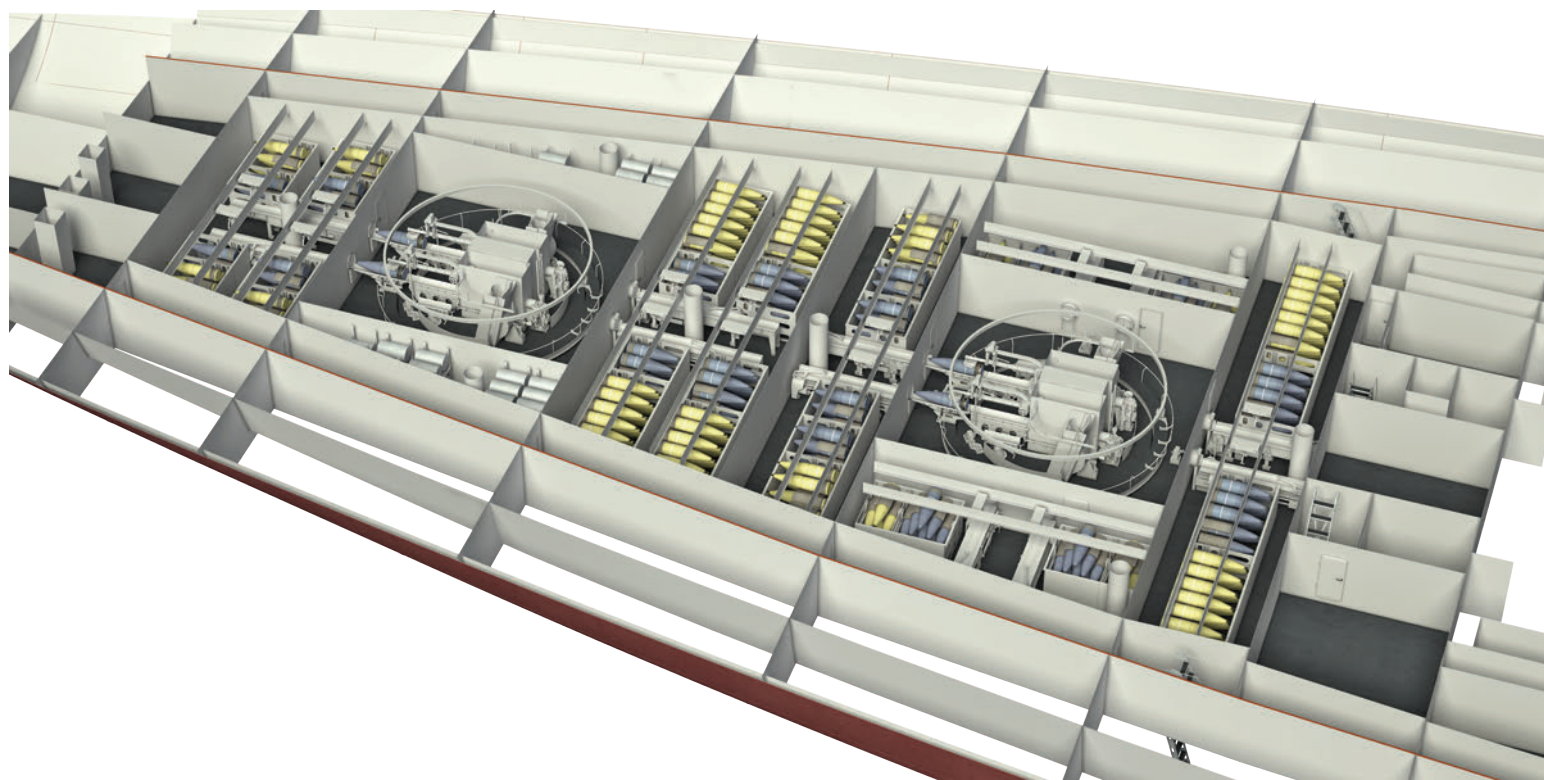
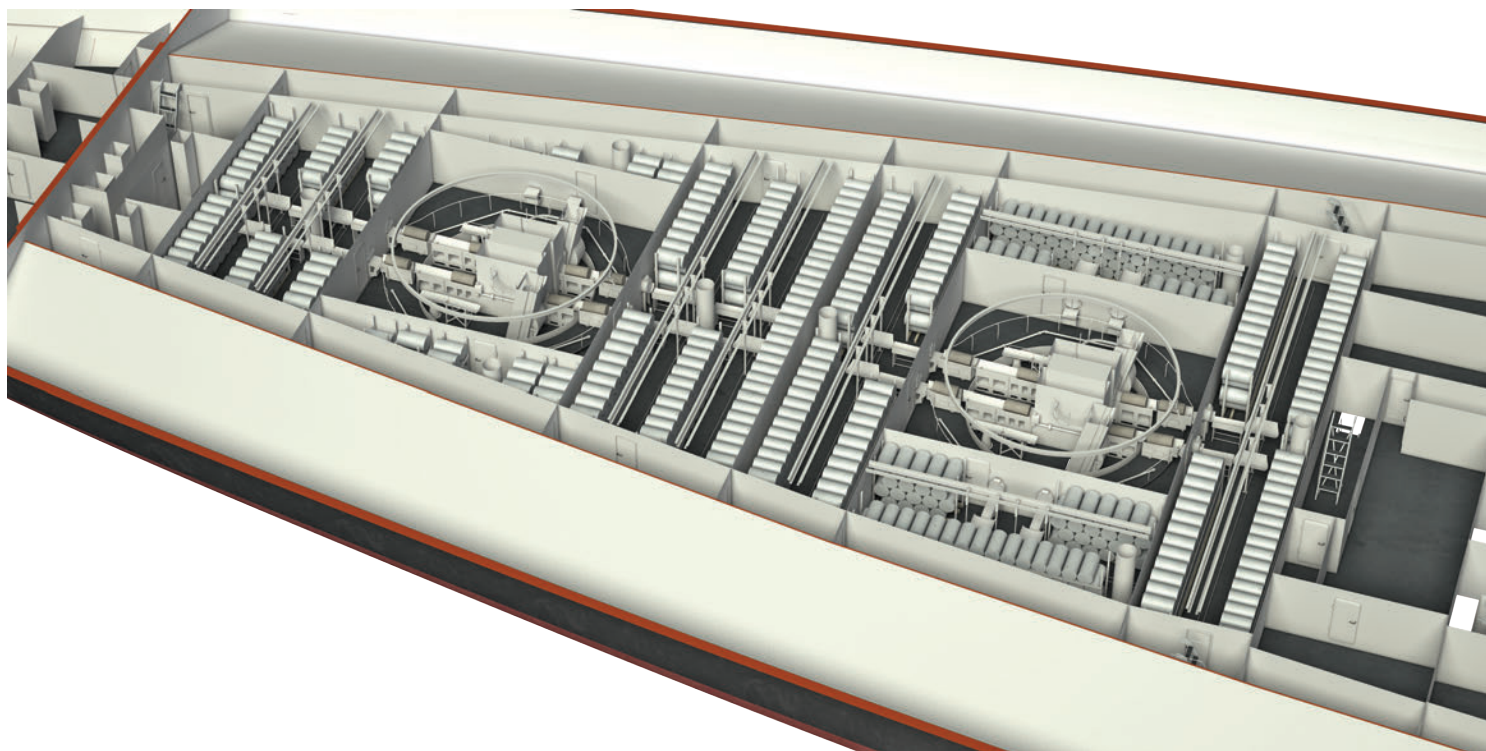


B1/11





**HULL LINES AND BODY PLANS****B1/12 BODY PLANS (1/200 SCALE)****B1/12**



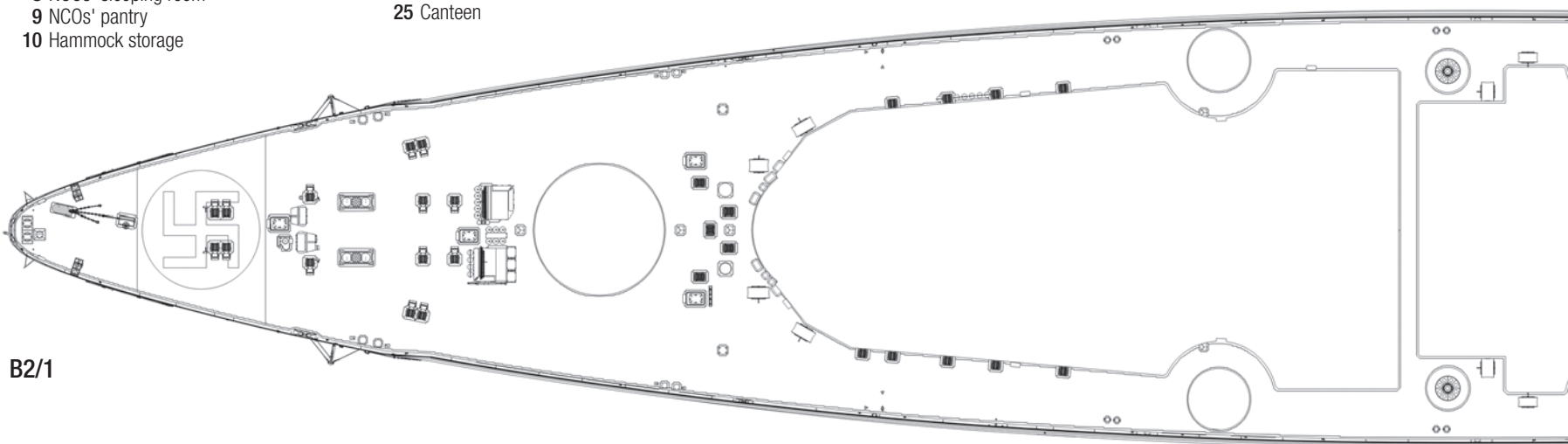
**DECK PLANS (1/550 SCALE)****B2/1 UPPER DECK (OBERDECK)****B2/2 BATTERY DECK****(BATTERIEDECK)**

- 1 Smoke generator room
- 2 Bath
- 3 Cabin for two NCOs
- 4 Cabin for one NCO
- 5 Toilet
- 6 Vent room
- 7 NCOs' living and sleeping room
- 8 NCOs' sleeping room
- 9 NCOs' pantry
- 10 Hammock storage

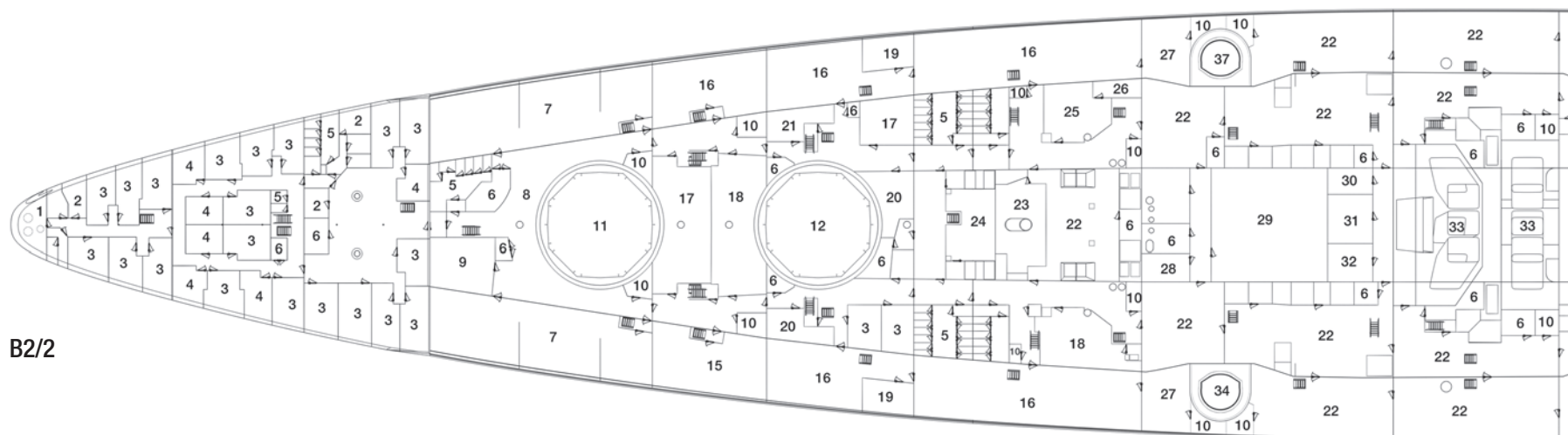
- 11 Barbette D
- 12 Barbette C
- 13 Barbette B
- 14 Barbette A
- 15 Reading room
- 16 Engineers' living space
- 17 Kitchen
- 18 Washroom
- 19 Oil control station
- 20 Office
- 21 Pantry
- 22 Living space
- 23 Tailor workroom
- 24 Shoemaker workroom
- 25 Canteen

- 26 Soda water machine
- 27 Cooks' and waiters' cabin
- 28 Ammunition transfer room
- 29 Radio room C
- 30 Potato storage room
- 31 Searchlight workroom
- 32 Potato peeler
- 33 Funnel uptakes
- 34 Barbette Stb III
- 35 Barbette Stb II
- 36 Barbette Stb I
- 37 Barbette Bb III
- 38 Barbette Bb II

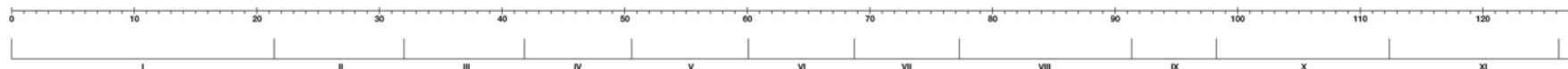
- 39 Barbette Bb I
- 40 Drying room
- 41 Bakery
- 42 Gun storage
- 43 Paravane store room
- 44 Bakery storage room
- 45 Laundry
- 46 Ironing room
- 47 Carpenter workroom
- 48 Storage room



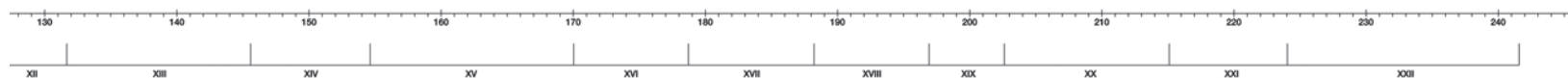
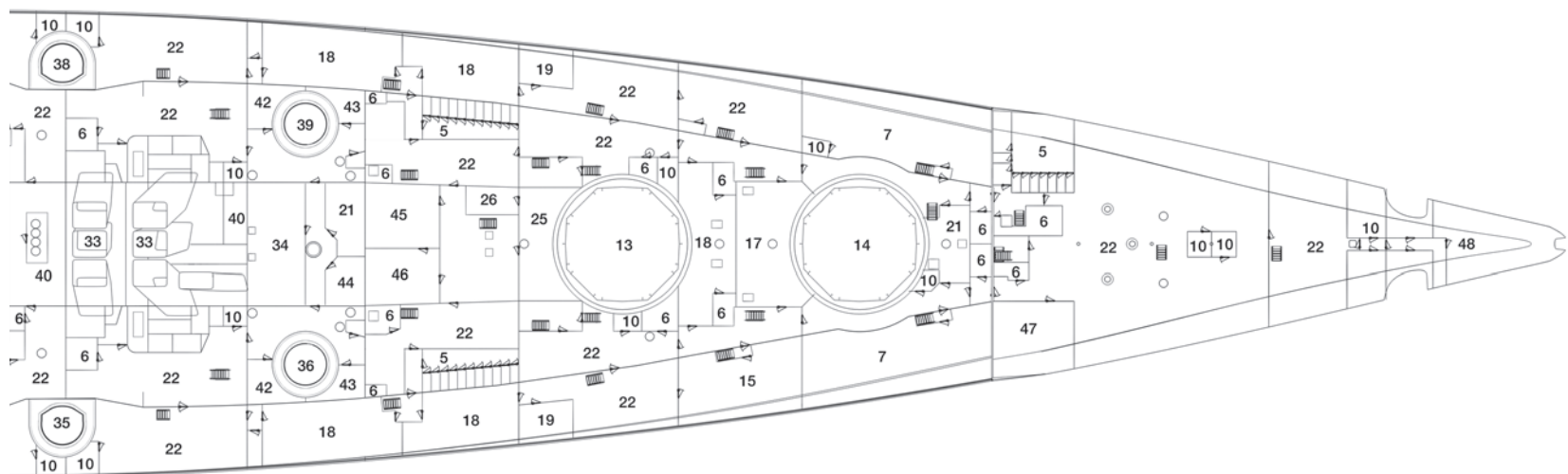
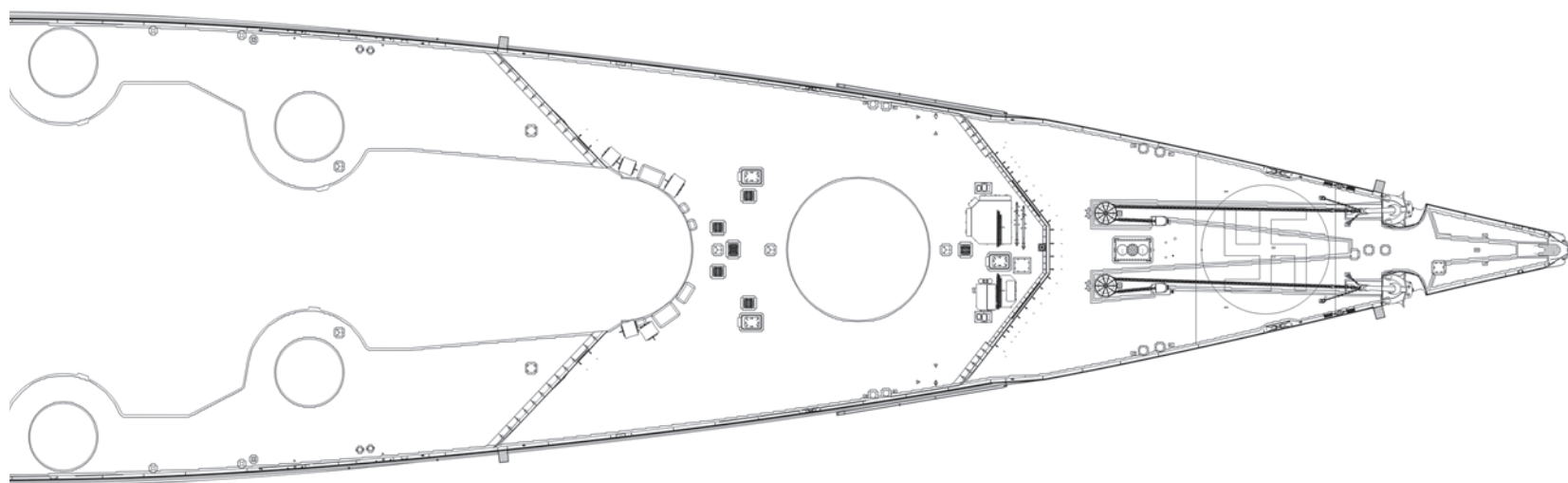
B2/1

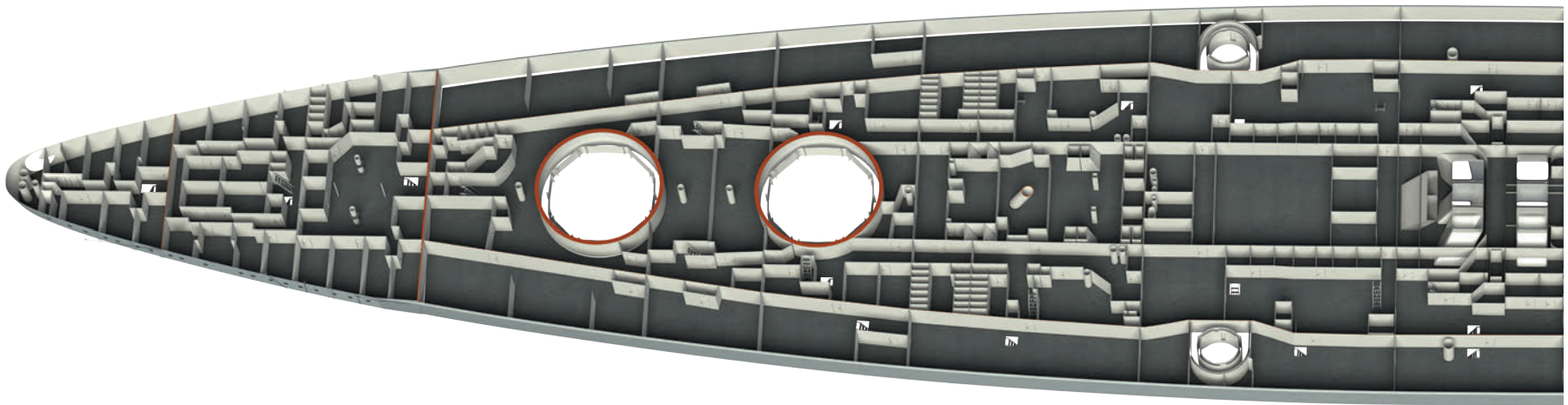
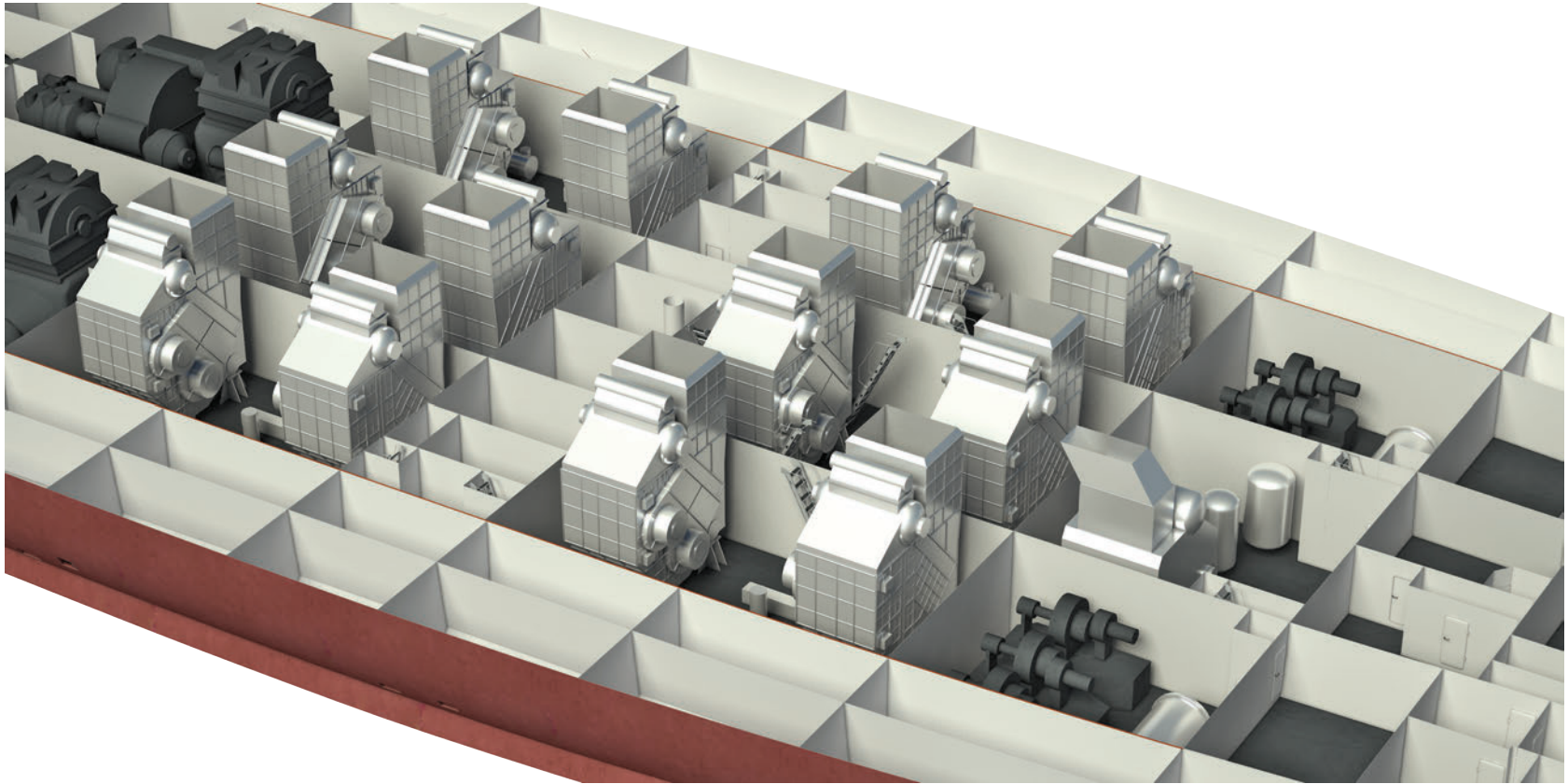


B2/2

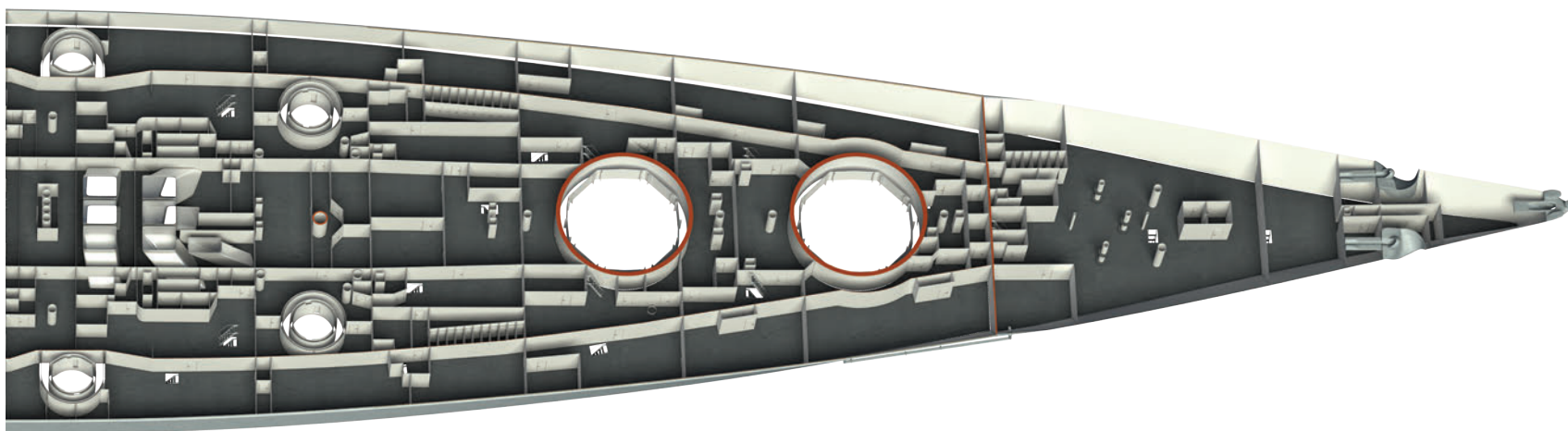
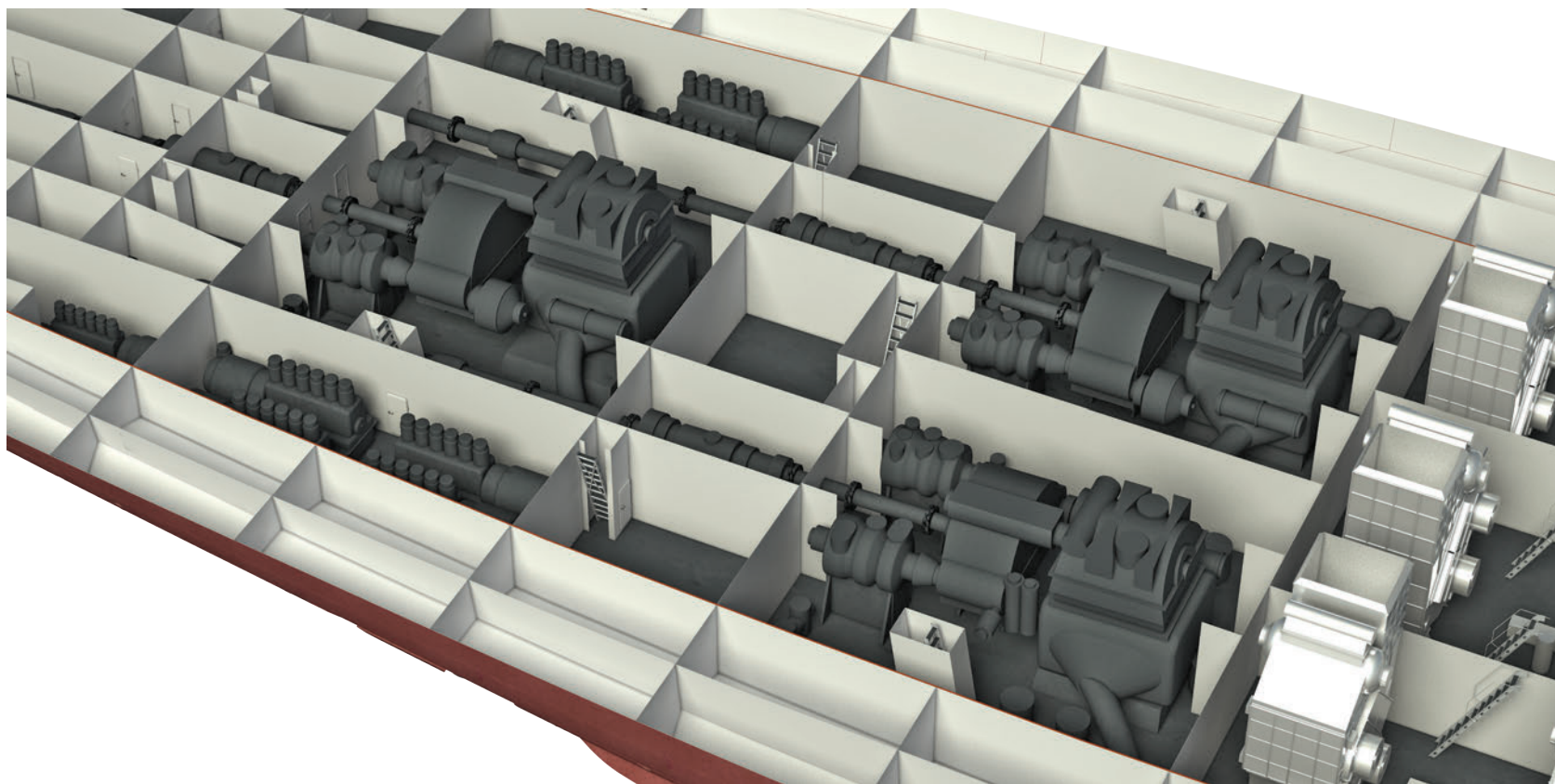














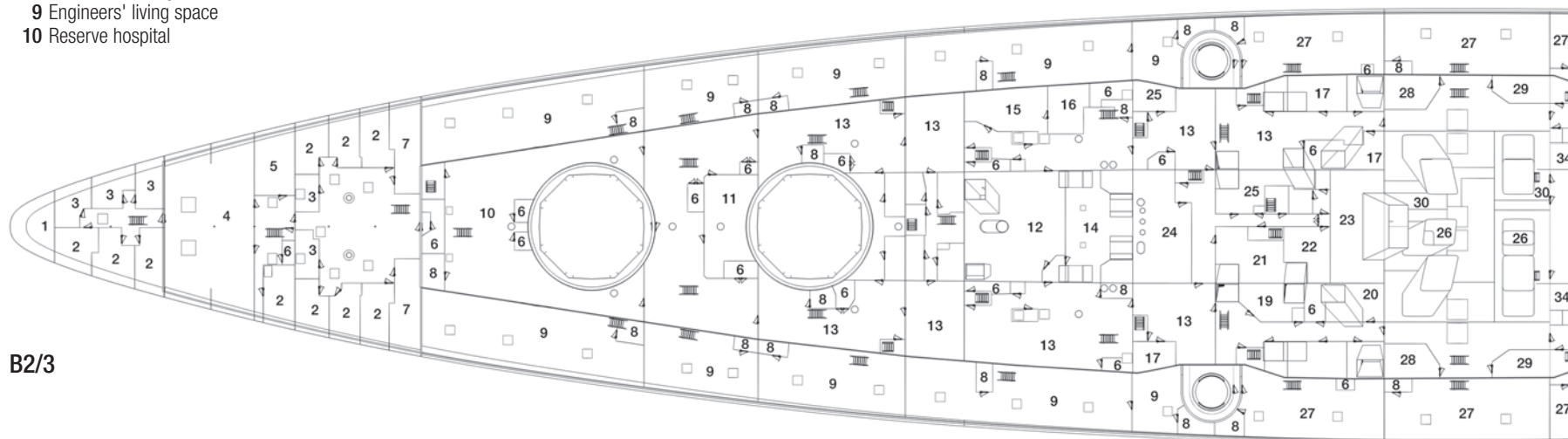
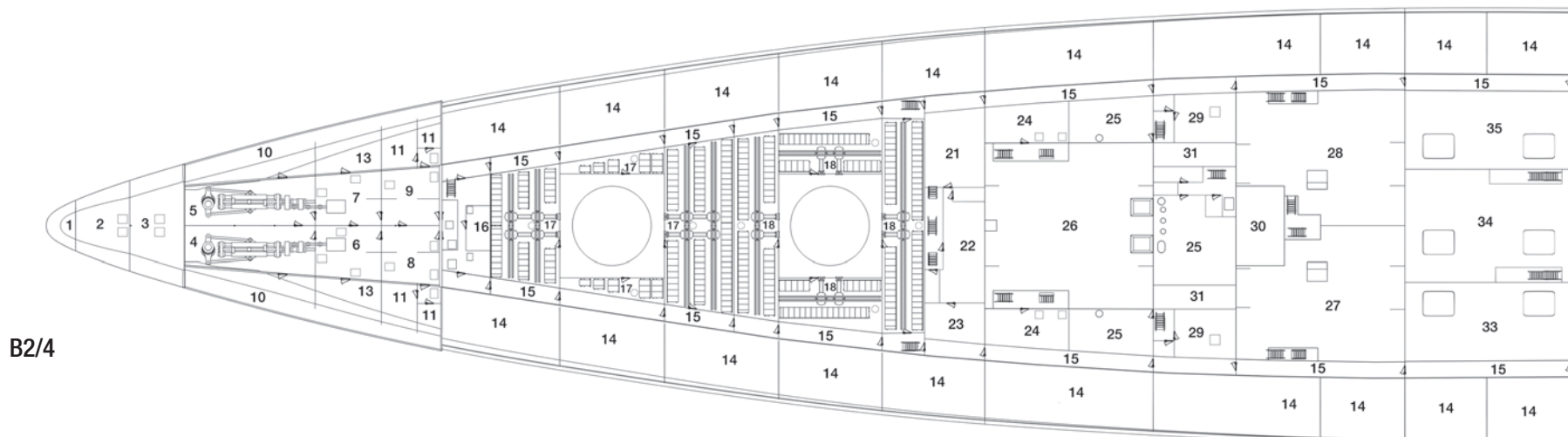
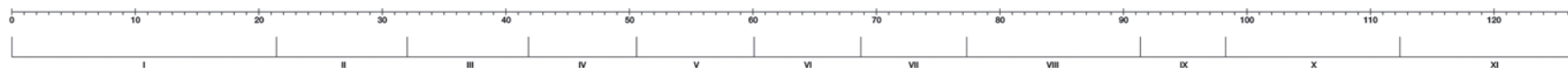
**DECK PLANS (1/550 SCALE)****B2/3 INTERMEDIATE DECK/****ARMOR DECK (ZWISCHENDECK/  
PANZERDECK)**

- 1 Smoke generator room
- 2 Cabin for two NCOs
- 3 Cabin for one NCO
- 4 NCOs' mess
- 5 Pantry
- 6 Vent room
- 7 Cabin for three NCOs
- 8 Hammock storage
- 9 Engineers' living space
- 10 Reserve hospital

- 11 Sleeping room/reserve hospital
- 12 Engineers' workshop
- 13 Seamen's living space
- 14 Engineer's store room
- 15 Artillery workshop
- 16 Artillery store room
- 17 Office
- 18 Heater room
- 19 Workshop
- 20 Film equipment storage
- 21 AA artillery workshop
- 22 Welding workshop
- 23 Forging workshop
- 24 Electrical workshop

- 25 Electrical store room
- 26 Funnel uptakes
- 27 Living space
- 28 Pump room
- 29 Air compressor room
- 30 Drying room
- 31 Vent workshop
- 32 Optical equipment store room
- 33 Sport equipment store room
- 34 Battery charging room
- 35 Printing room
- 36 Store room

- 37 SVF room
- 38 Artillery telephone switchboard
- 39 AA artillery workstation
- 40 Artillery workstation
- 41 Nautical instrument store room
- 42 Chart room
- 43 Gas protection store room
- 44 Combat dressing station
- 45 NCOs' living and sleeping room
- 46 Living space/awning workshop

**B2/3****B2/4**

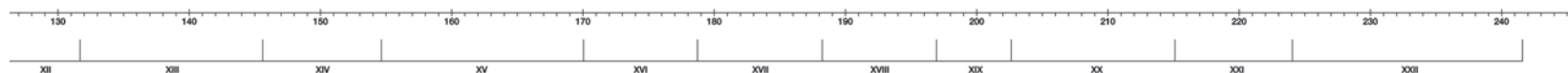
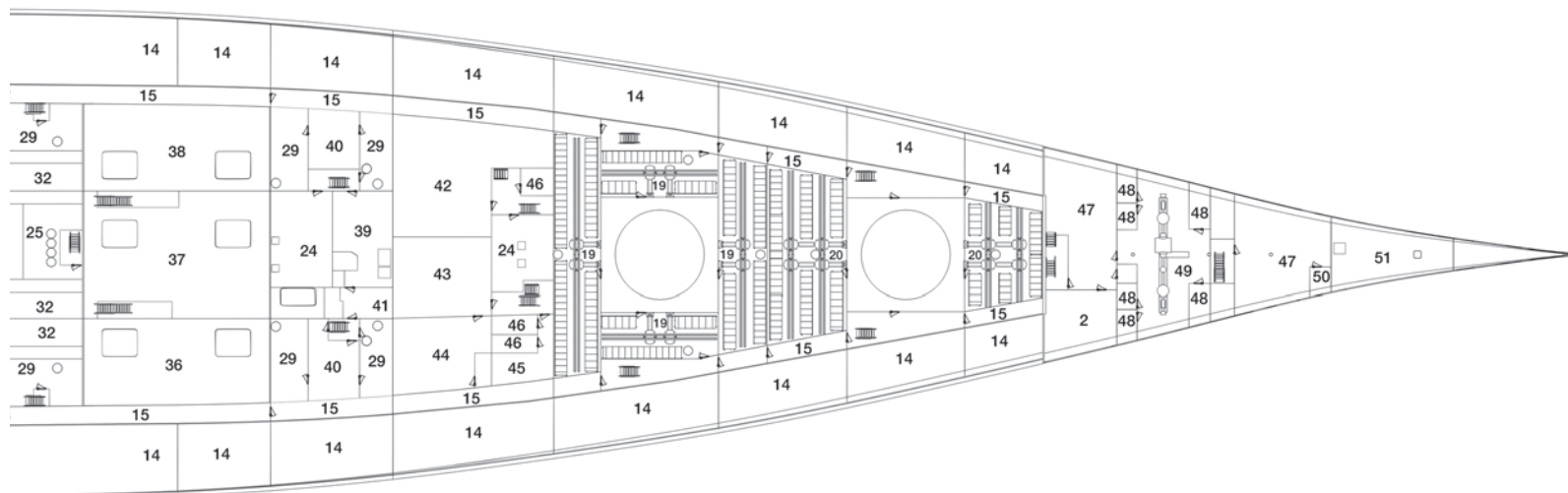
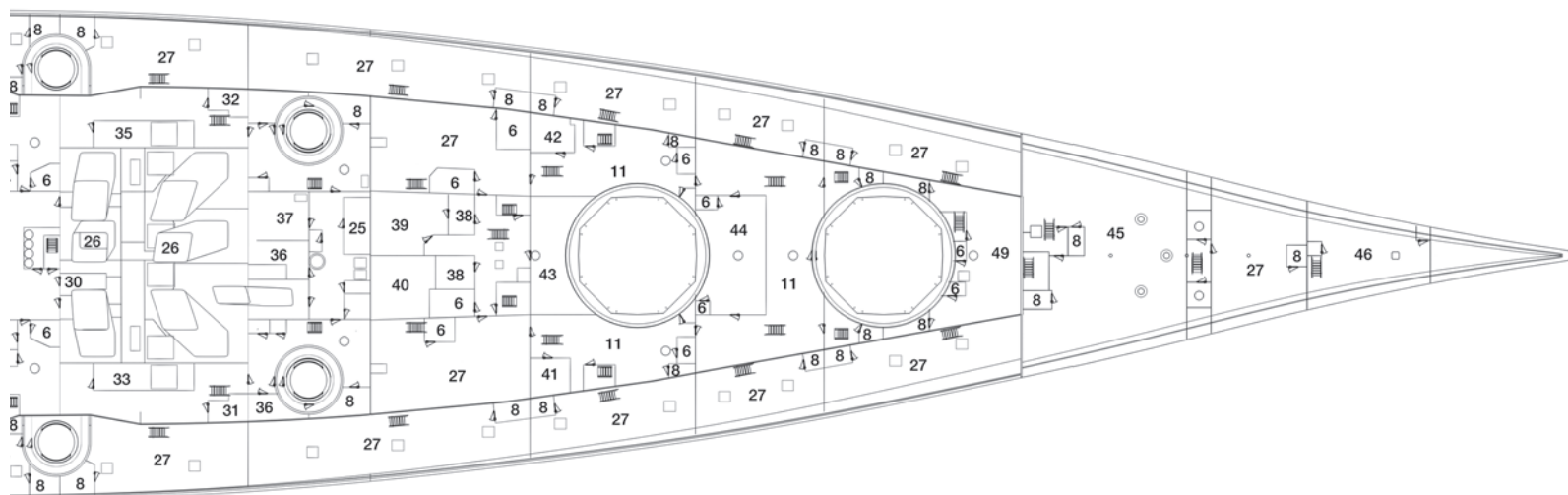
**B2/4 UPPER PLATFORM DECK****(OBERES PLATTFORMDECK)**

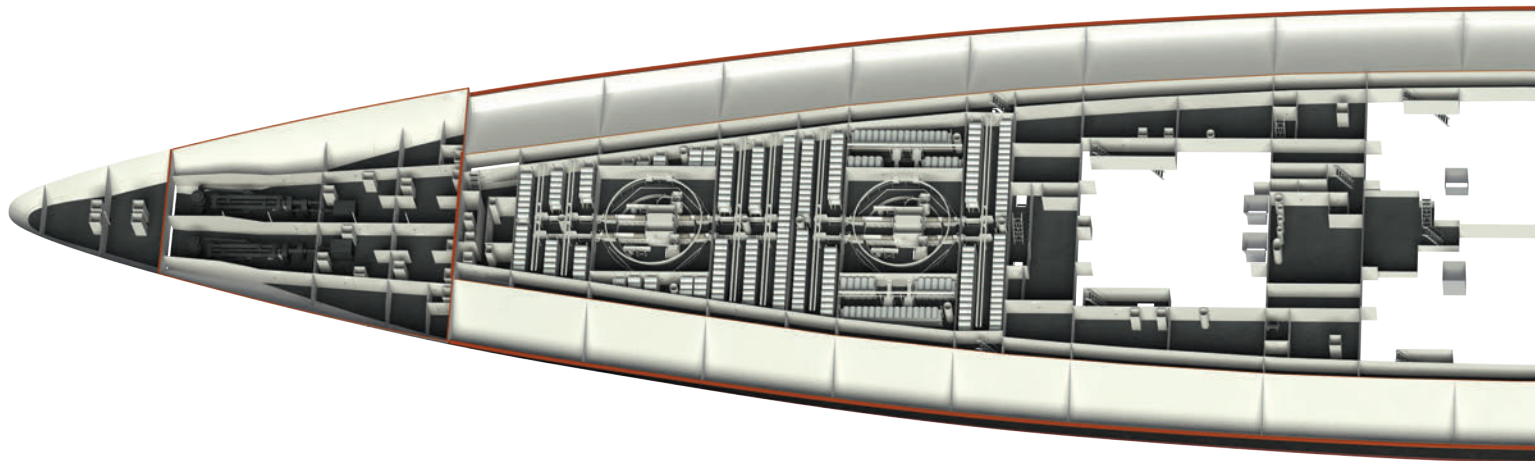
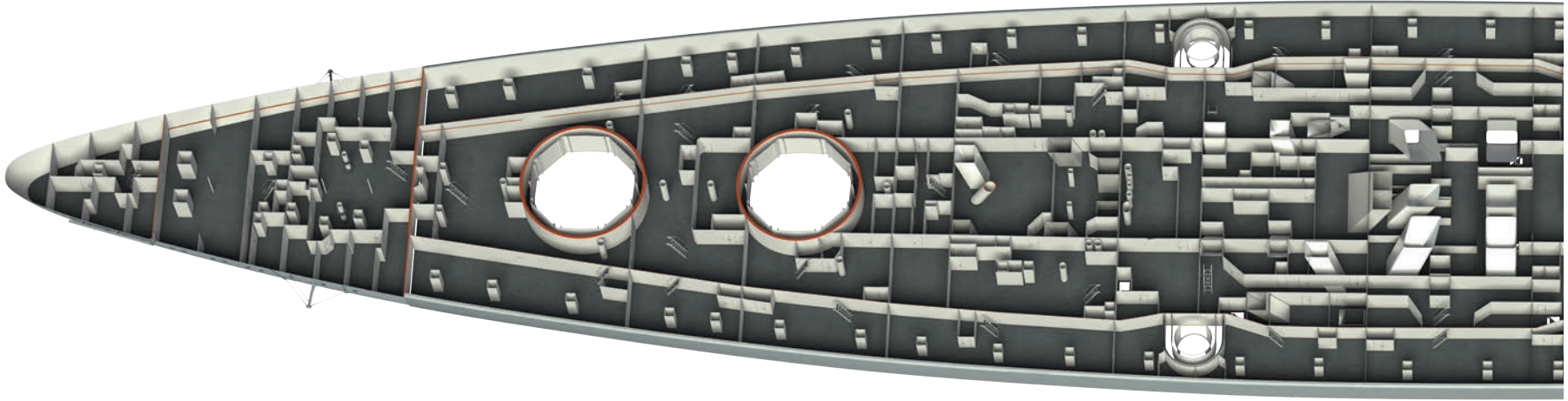
- 1 Smoke generator room
- 2 Storage room
- 3 NCO's store room
- 4 Rudder gear room 1
- 5 Rudder gear room 2
- 6 Rudder drive room 1
- 7 Rudder drive room 2
- 8 Manual steering room 1
- 9 Manual steering room 2
- 10 Empty space

- 11 Admiral's store room
- 12 Captain's store room
- 13 Storage room
- 14 Storage space above the armour slopes
- 15 Passageway
- 16 Dry store
- 17 Turret D propellant magazine
- 18 Turret C propellant magazine
- 19 Turret B propellant magazine
- 20 Turret A propellant magazine
- 21 Aft artillery plotting room
- 22 Artillery reserve switchboard room
- 23 Aft artillery amplification room
- 24 3.7cm ammunition magazine

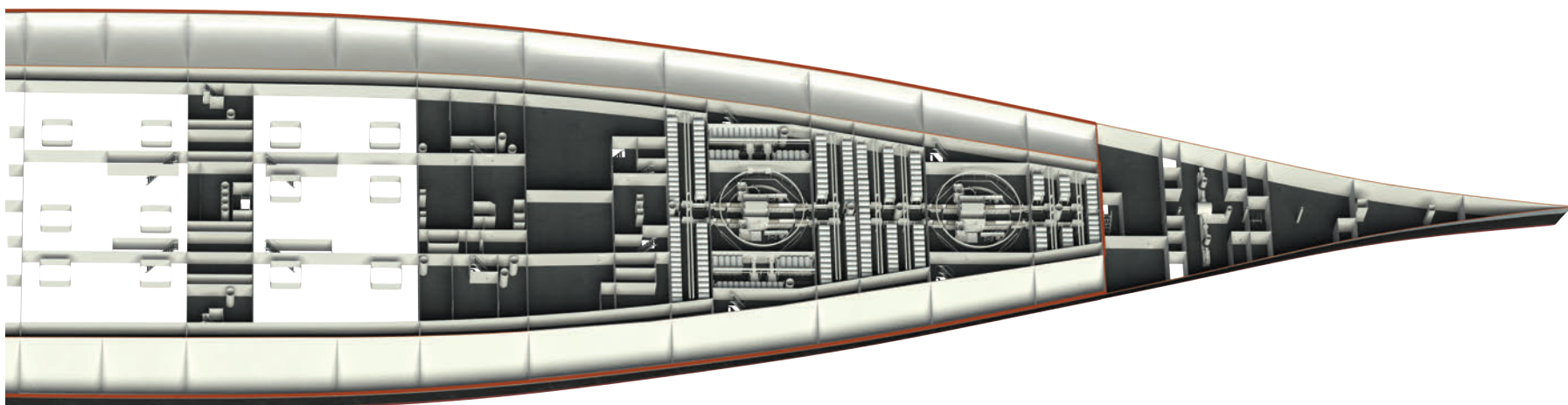
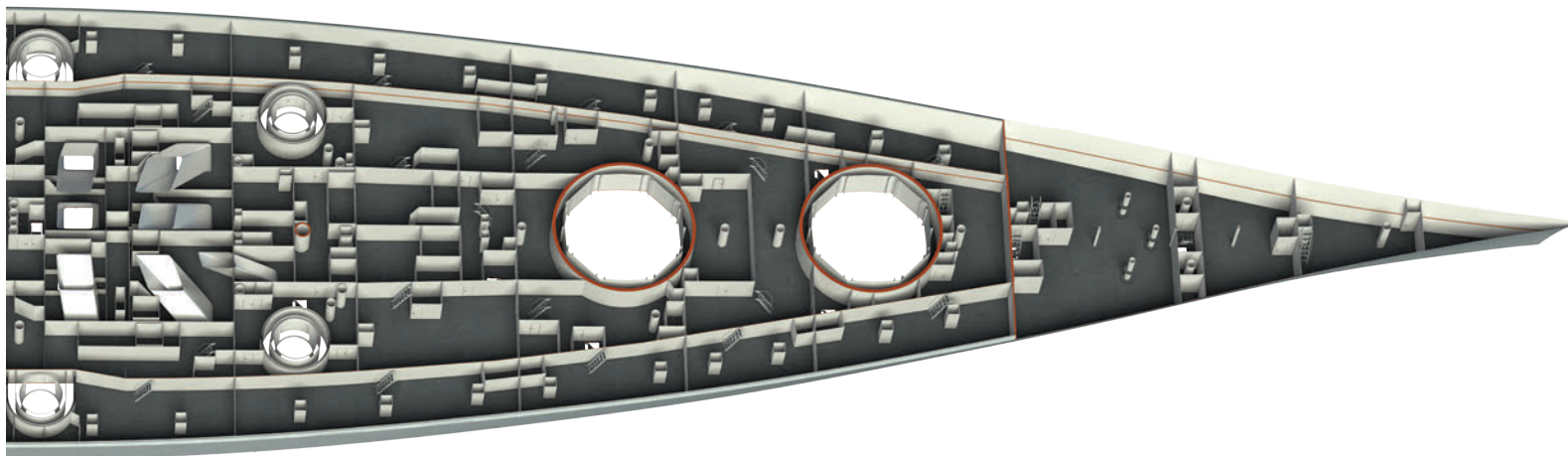
- 25 10.5cm ammunition magazine
- 26 Centre turbine room
- 27 Starboard turbine room
- 28 Port turbine room
- 29 15cm ammunition magazine
- 30 Machinery control room
- 31 Pipe duct
- 32 Water tank
- 33 Starboard boiler room 1
- 34 Centre boiler room 1
- 35 Port boiler room 1
- 36 Starboard boiler room 2
- 37 Centre boiler room 2
- 38 Port boiler room 2

- 39 Command station
- 40 15cm ammunition handling room
- 41 Compass room
- 42 Radio room B
- 43 Fore AA artillery plotting room
- 44 Fore AA artillery switchboard room
- 45 Transformer room
- 46 Air cooler room
- 47 Living space
- 48 Detention cell
- 49 Capstan drive room
- 50 Hammock storage
- 51 Awning storage









**DECK PLANS (1/550 SCALE)**
**B2/5 MIDDLE PLATFORM DECK**
**(MITTLERES PLATTFORMDECK)**

- 1 Trim tank
- 2 Officers' store room
- 3 Paint store room
- 4 Spirit store room
- 5 Canteen store room
- 6 Meat storage room
- 7 Pump room
- 8 Oil fuel tank
- 9 Passageway
- 10 Turret D projectile magazine
- 11 Turret C projectile magazine
- 12 Turret B projectile magazine

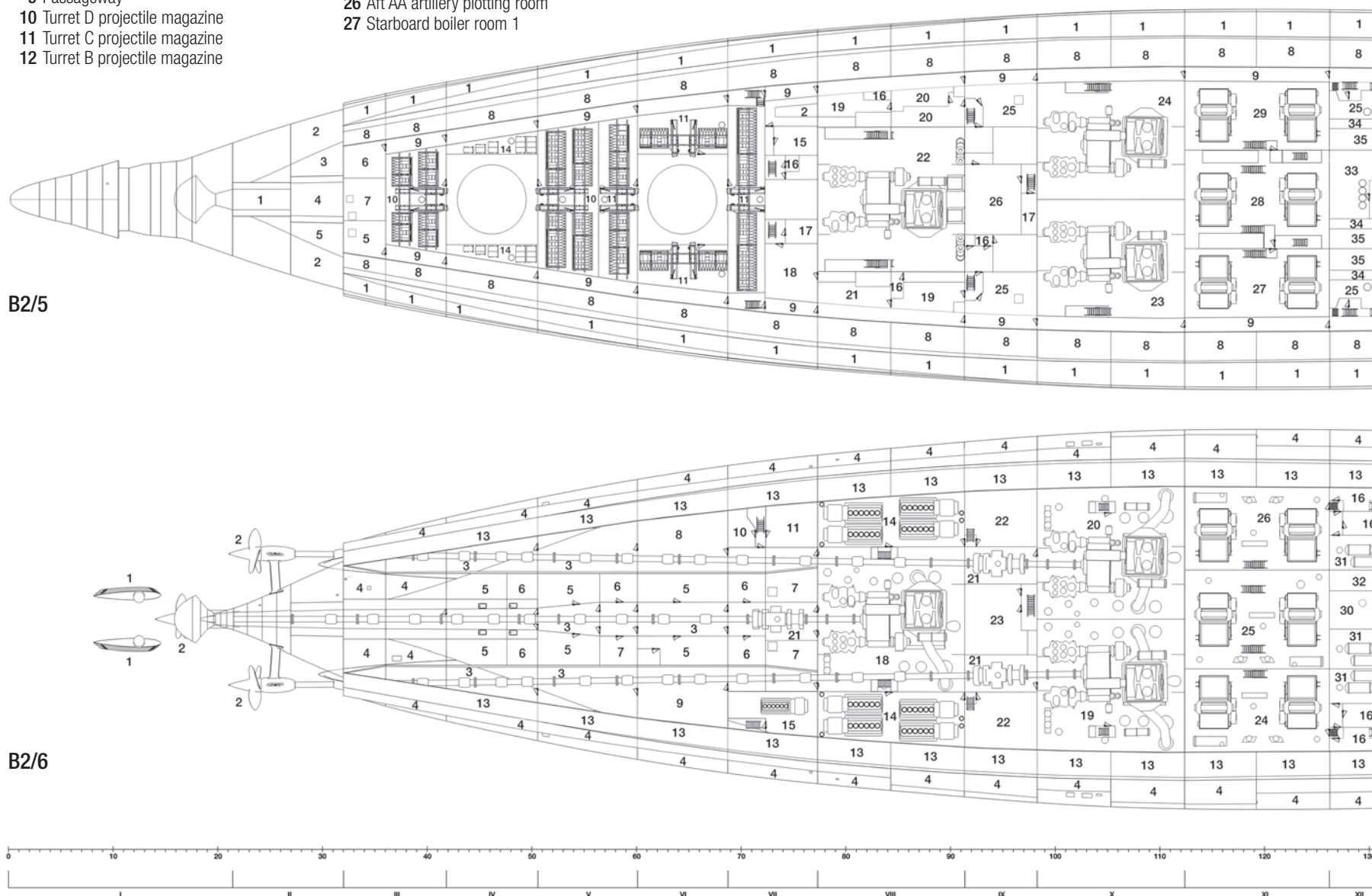
- 13 Turret A projectile magazine
- 14 Turret D propellant magazine
- 15 Aft artillery reserve switchboard room
- 16 Vent room
- 17 Storage room
- 18 Gyro compass room
- 19 Switchboard room
- 20 Aft regulator room
- 21 Turret training room
- 22 Centre turbine room
- 23 Starboard turbine room
- 24 Port turbine room
- 25 15cm ammunition magazine
- 26 Aft AA artillery plotting room
- 27 Starboard boiler room 1

- 28 Centre boiler room 1
- 29 Port boiler room 1
- 30 Starboard boiler room 2
- 31 Centre boiler room 2
- 32 Port boiler room 2
- 33 10.5cm ammunition magazine
- 34 Pipe duct
- 35 Water/air tank
- 36 Auxiliary machine room
- 37 Fore artillery reserve switchboard room
- 38 Bread storage
- 39 Forward artillery switchboard room
- 40 Forward artillery plotting room

- 41 Forward artillery amplification room
- 42 Radio room A
- 43 Paint store room
- 44 Pyrotechnic store room
- 45 Bosun's store room
- 46 Rope store room
- 47 Chain locker
- 48 Radio equipment storage room
- 49 Carpenter's storage room
- 50 Awning storage room

B2/5

B2/6



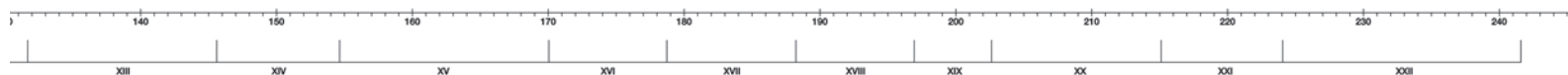
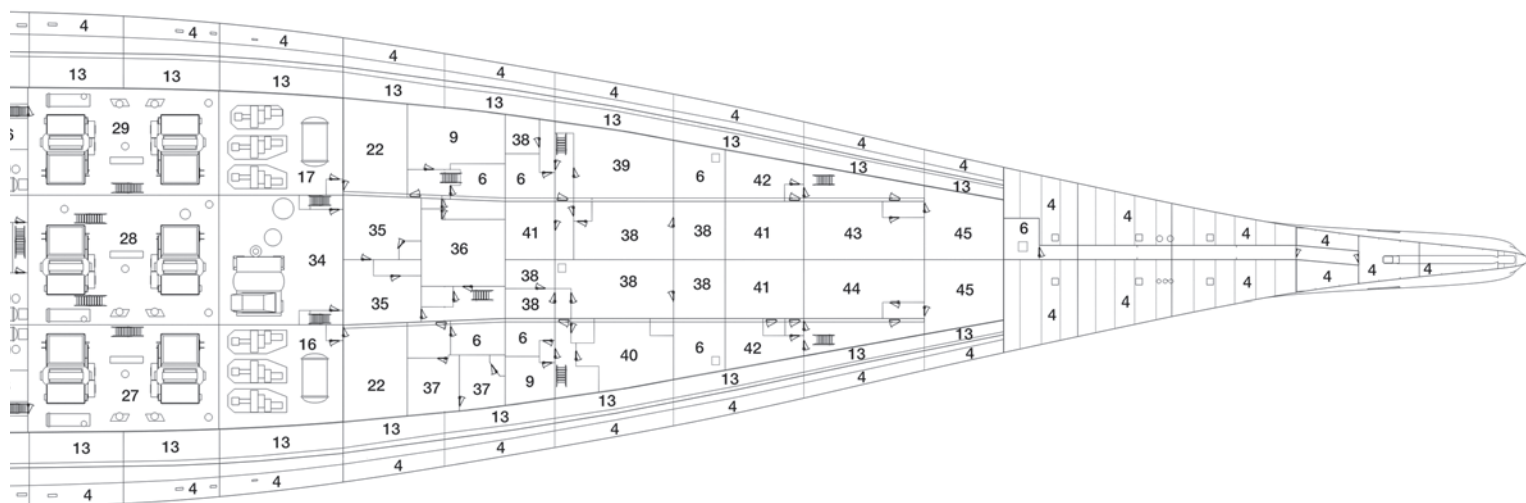
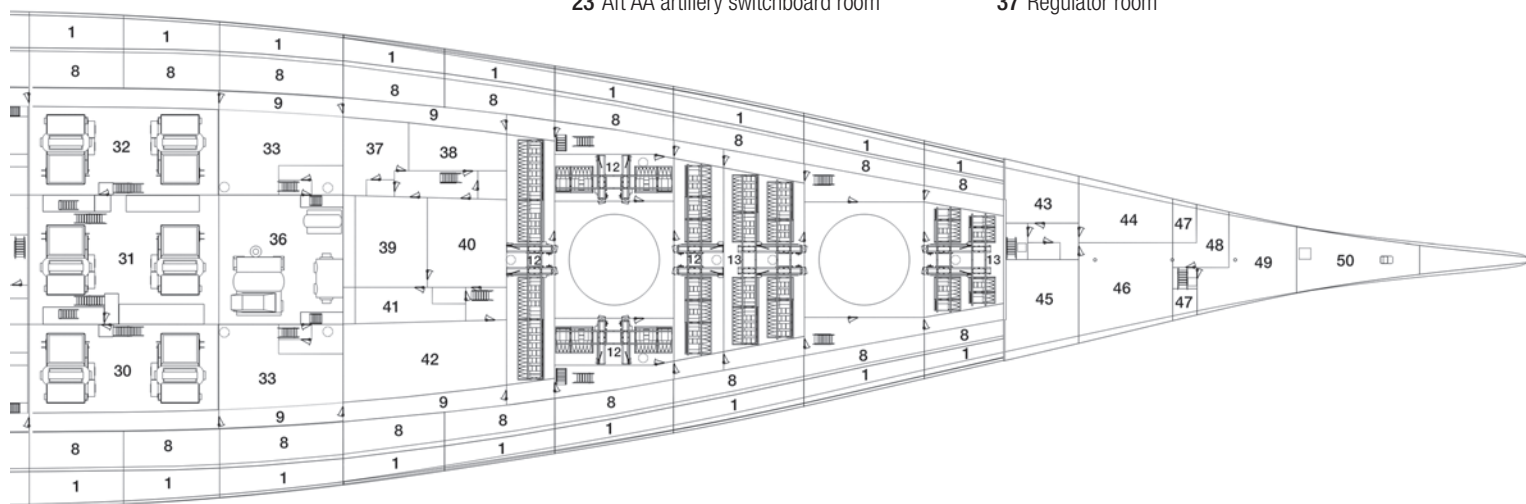
## B2/6 LOWER PLATFORM DECK (UNTERES PLATTFORMDECK)

- 1 Rudder
- 2 Propeller
- 3 Propeller shaft tunnel
- 4 Trim tank
- 5 Machinery store room
- 6 Pump room
- 7 Store room
- 8 Cooling machinery room
- 9 Fuel pump room

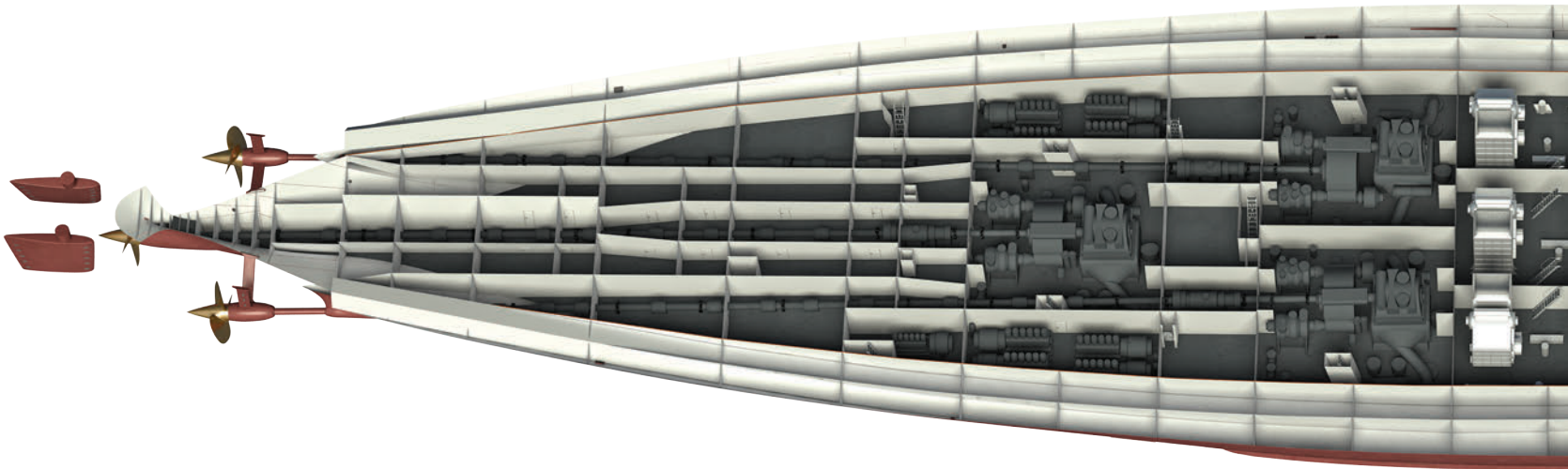
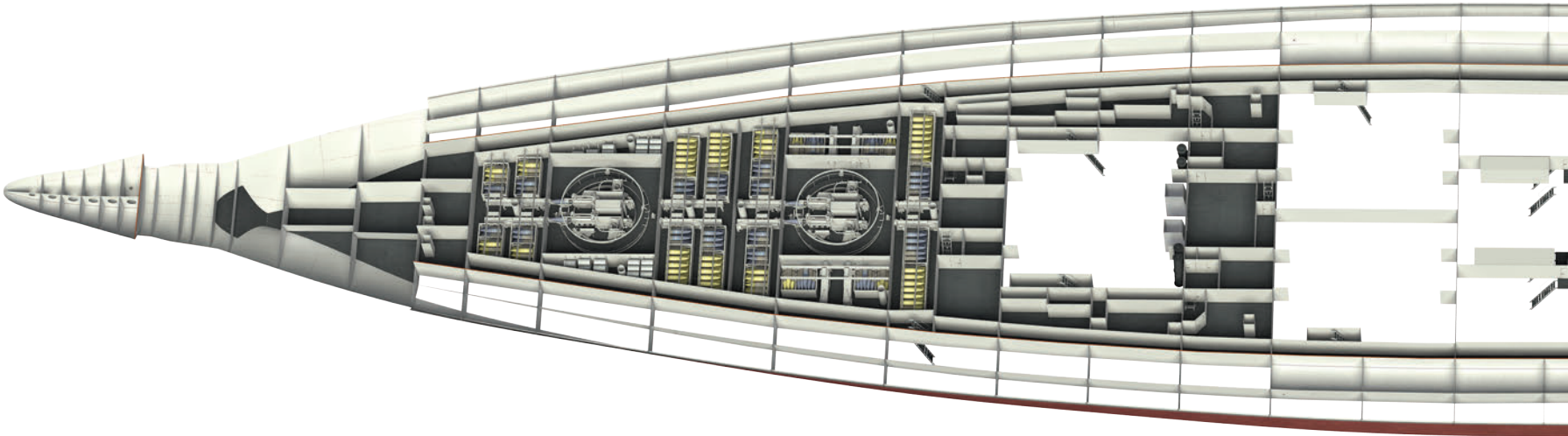
- 10 Damage control centre
- 11 Electrical store room
- 12 Diesel motor room
- 13 Oil fuel tank
- 14 Electrical generator room 1
- 15 Electrical generator room 2
- 16 Electrical generator room 3
- 17 Electrical generator room 4
- 18 Centre turbine room
- 19 Starboard turbine room
- 20 Port turbine room
- 21 Thrust bearing room
- 22 Electrical switchboard room
- 23 Aft AA artillery switchboard room

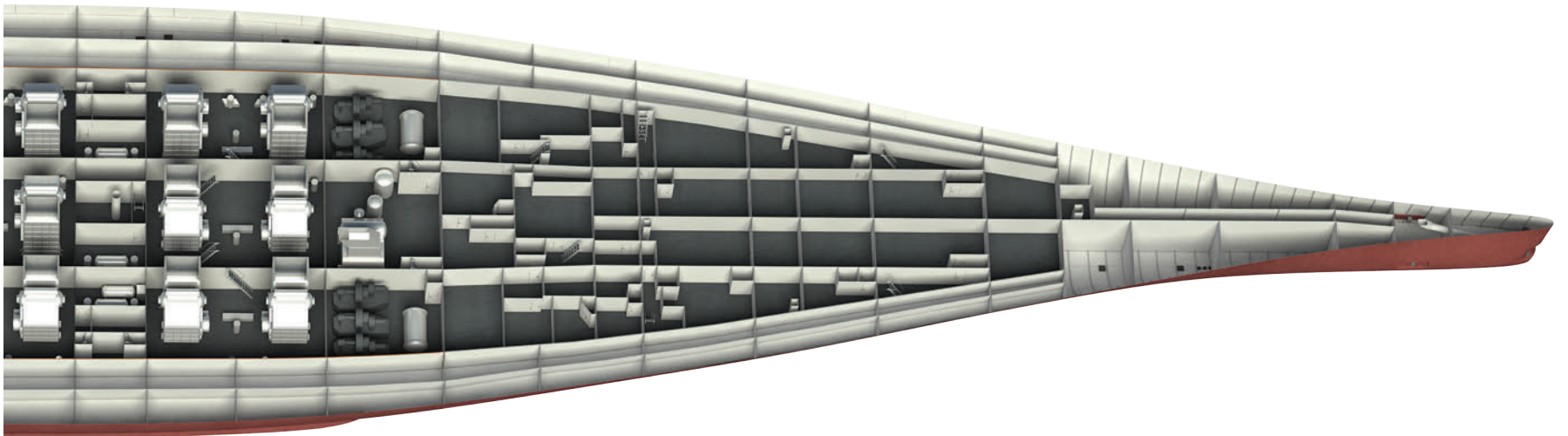
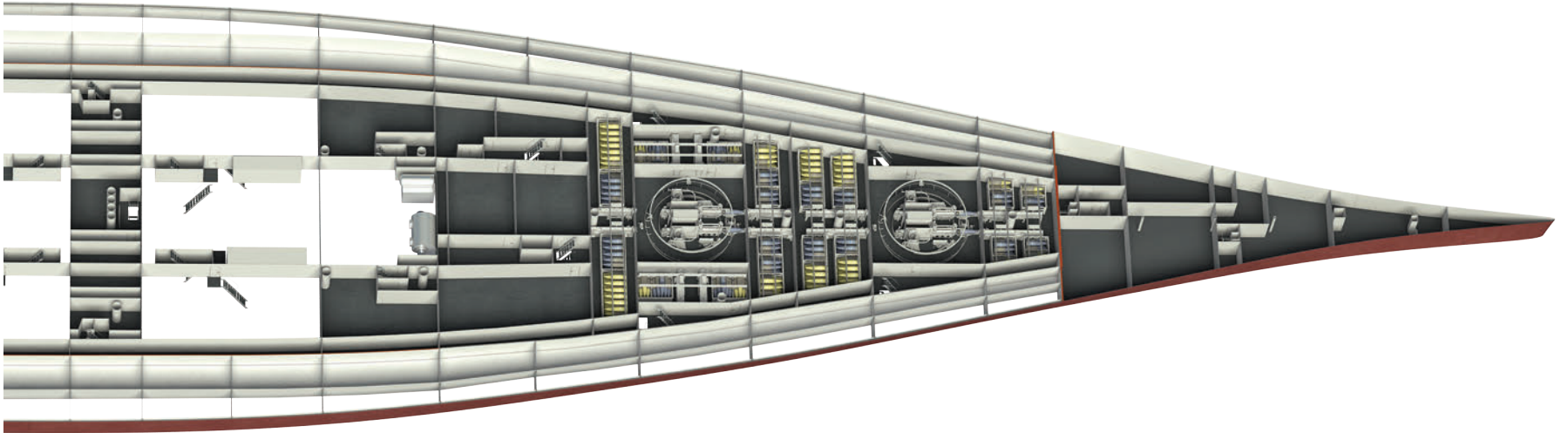
- 24 Starboard boiler room 1
- 25 Centre boiler room 1
- 26 Port boiler room 1
- 27 Starboard boiler room 2
- 28 Centre boiler room 2
- 29 Port boiler room 2
- 30 10.5cm ammunition magazine
- 31 Boiler machinery room
- 32 Boiler control room
- 33 Emergency switchboard room
- 34 Auxiliary machine room
- 35 Switchboard room
- 36 Gyro compass room
- 37 Regulator room

- 38 Cool room
- 39 Bosun's store
- 40 Bread storage
- 41 Cooling compressor room
- 42 Meat storage room
- 43 Canteen store room
- 44 Clothing store room
- 45 Administration store room









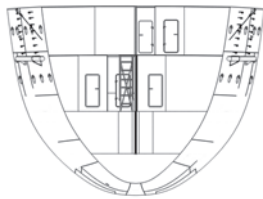
TRANSVERSE SECTIONS (1/400 SCALE)

B3/1 FRAME 6 LOOKING FORWARD

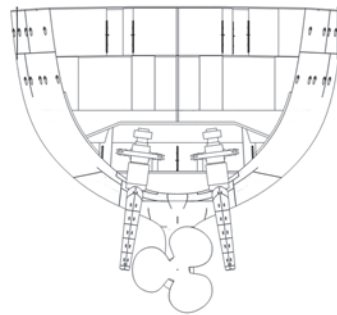
B3/2 FRAME 12.5 LOOKING FORWARD

B3/3 FRAME 21 LOOKING FORWARD

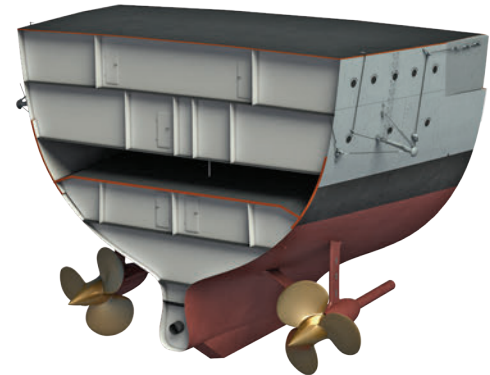
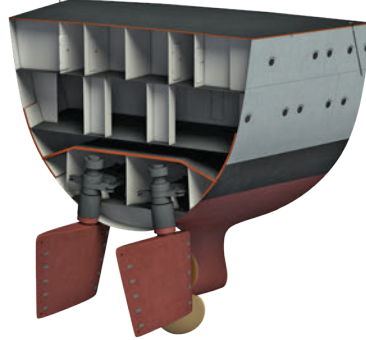
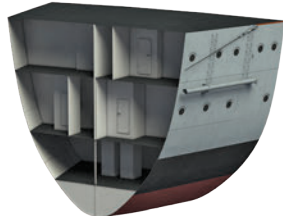
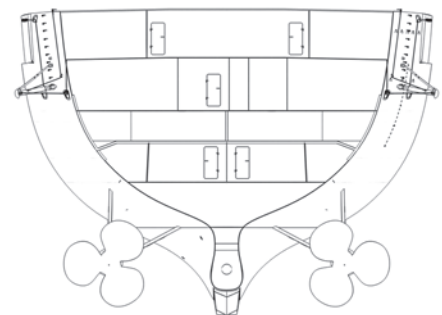
B3/1



B3/2



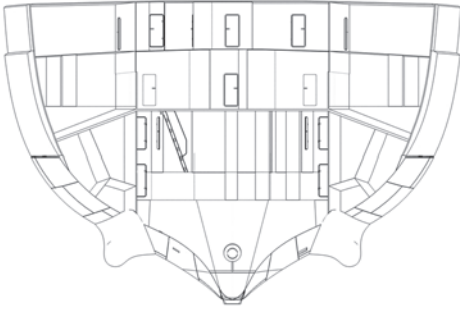
B3/3



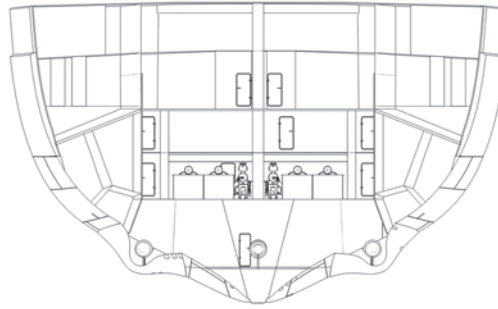


B3/4 FRAME 32 LOOKING FORWARD  
B3/5 FRAME 39 LOOKING FORWARD  
B3/6 FRAME 46 LOOKING FORWARD

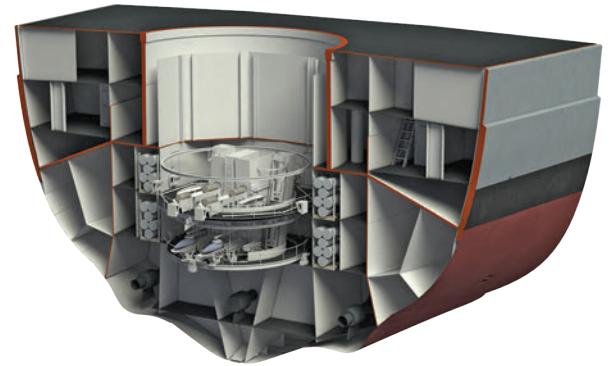
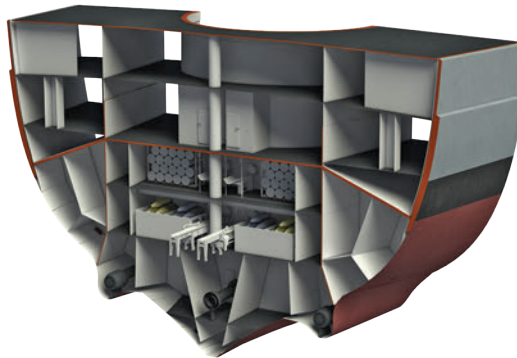
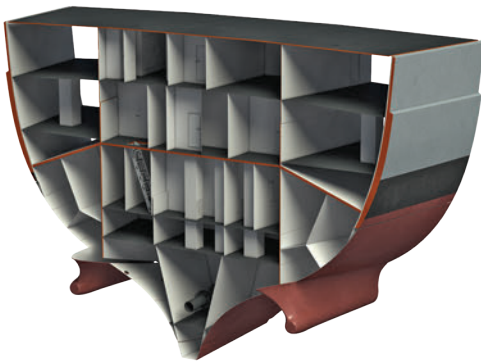
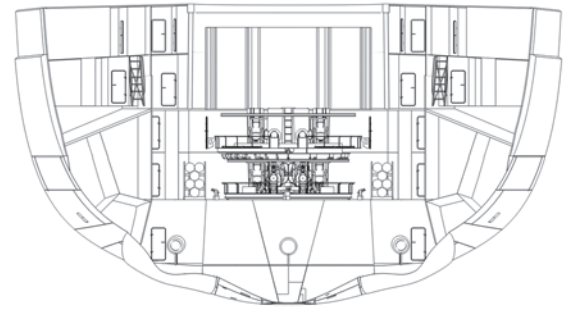
B3/4



B3/5



B3/6

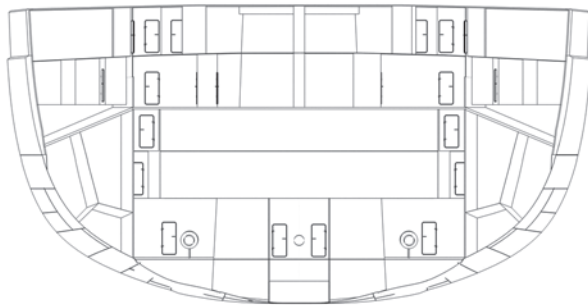


TRANSVERSE SECTIONS (1/400 SCALE)

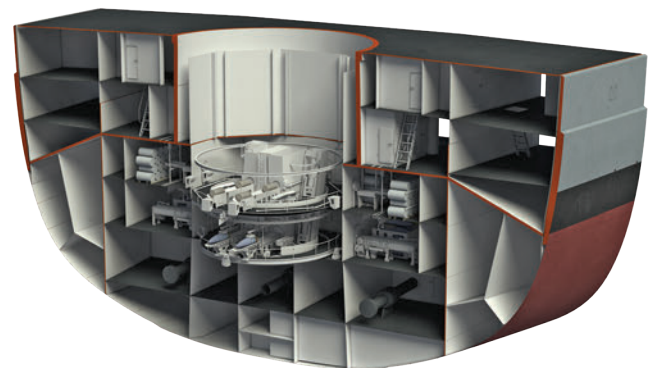
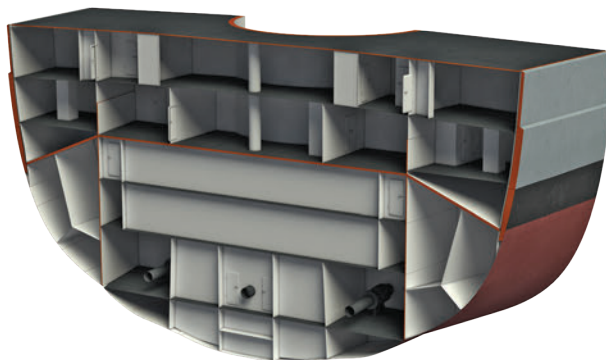
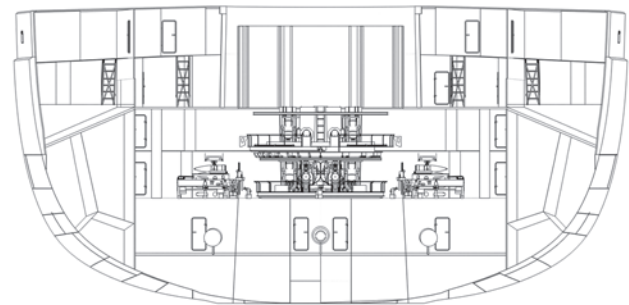
B3/7 FRAME 56 LOOKING FORWARD

B3/8 FRAME 64 LOOKING FORWARD

B3/7



B3/8

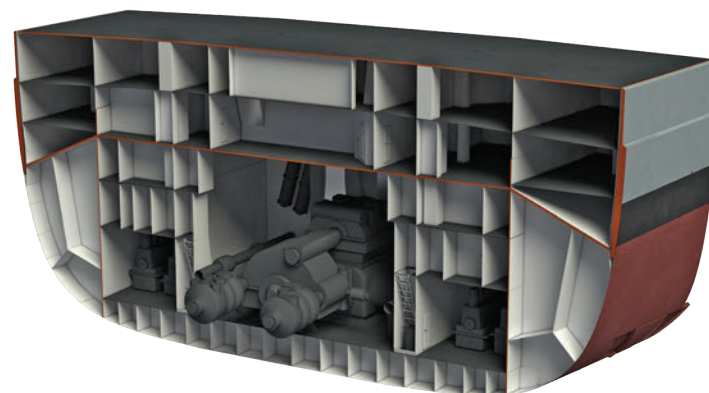
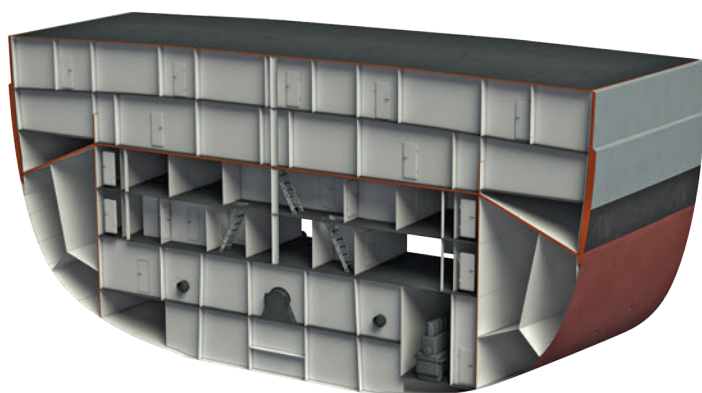
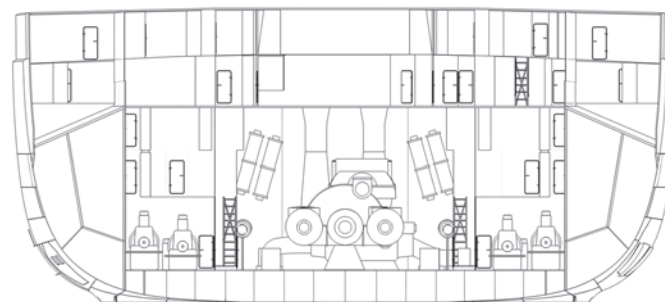


B3/9 FRAME 72 LOOKING FORWARD  
B3/10 FRAME 83 LOOKING FORWARD

B3/9



B3/10



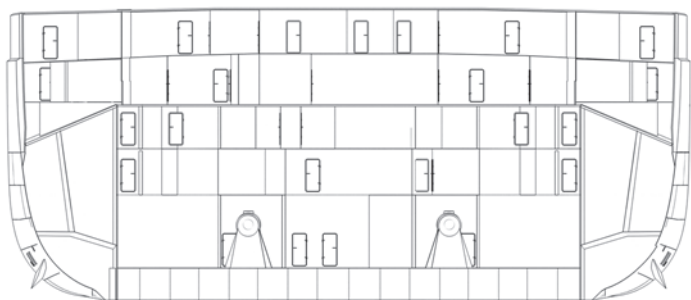


TRANSVERSE SECTIONS (1/400 SCALE)

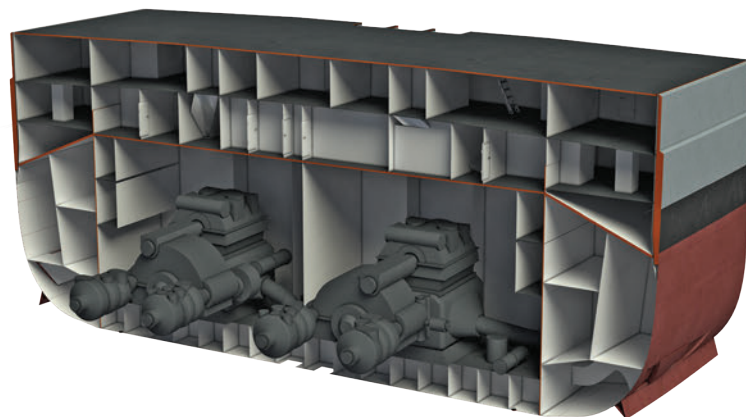
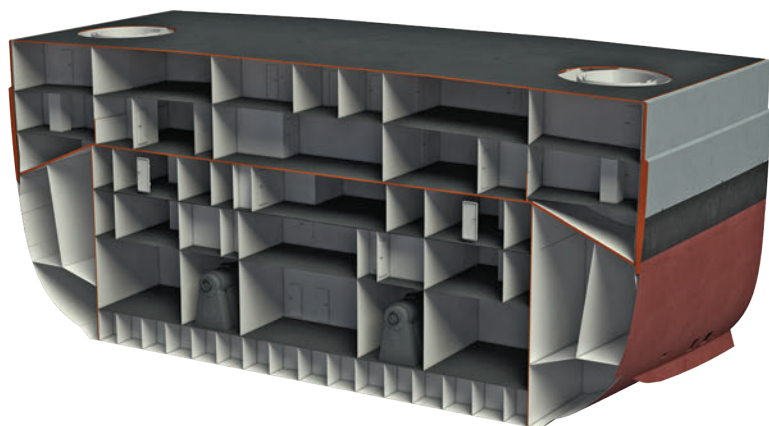
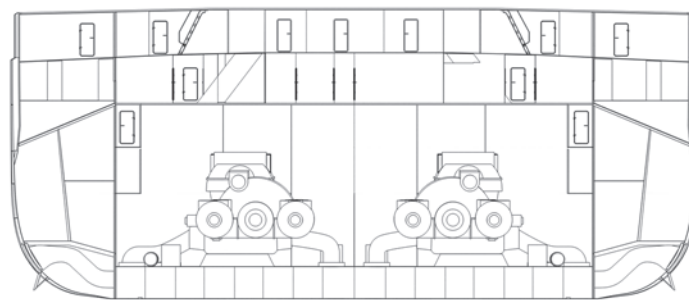
B3/11 FRAME 93 LOOKING FORWARD

B3/12 FRAME 107 LOOKING FORWARD

B3/11

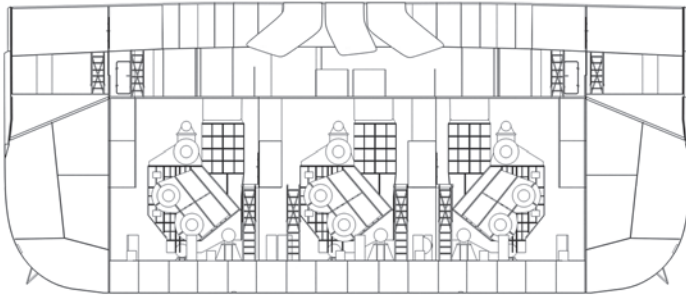


B3/12

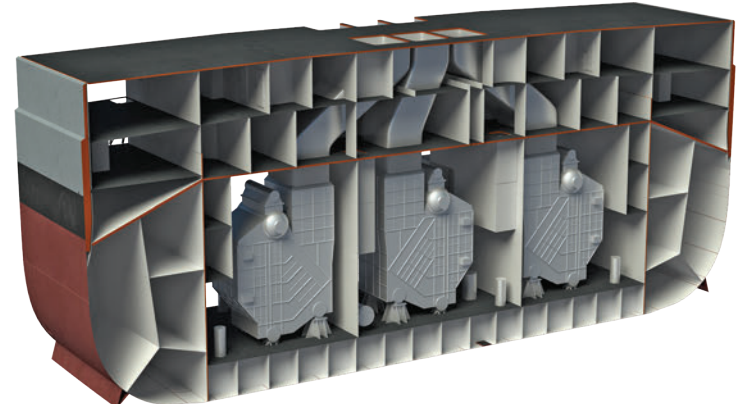
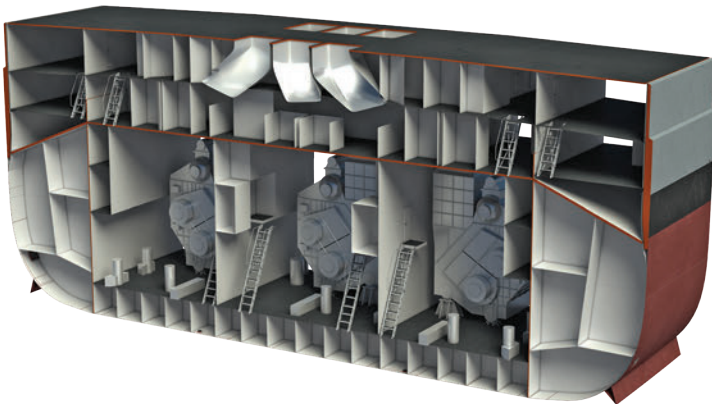
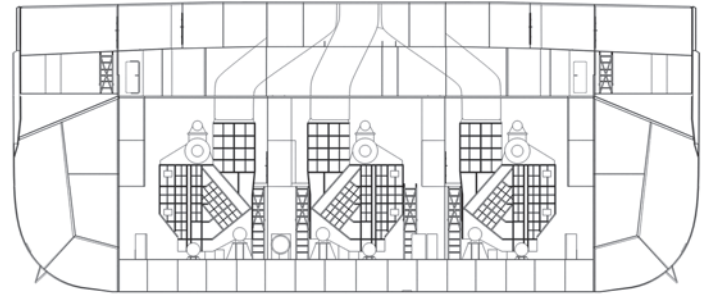


B3/13 FRAME 118 LOOKING FORWARD  
B3/14 FRAME 126 LOOKING AFT

B3/13



B3/14



TRANSVERSE SECTIONS (1/400 SCALE)

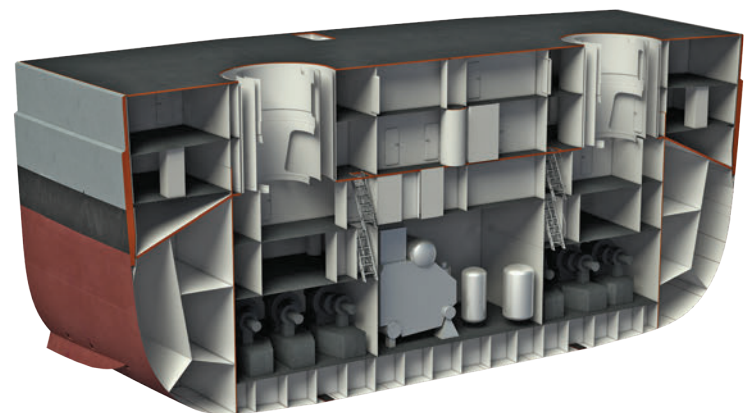
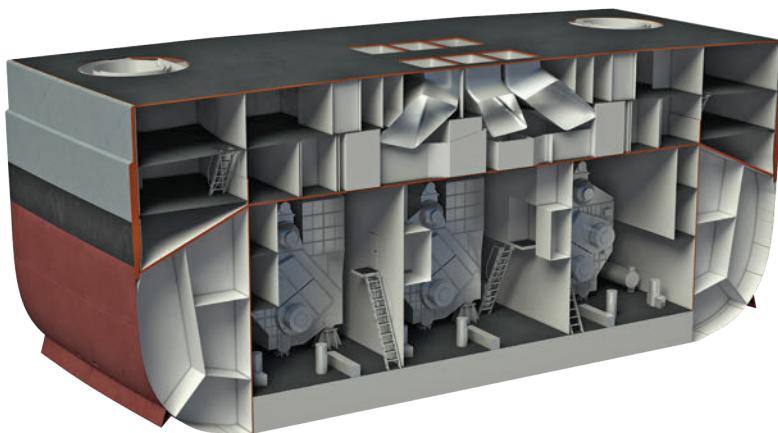
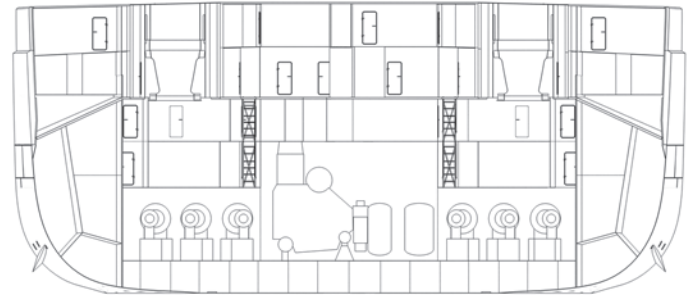
B3/15 FRAME 140 LOOKING AFT

B3/16 FRAME 151 LOOKING AFT

B3/15



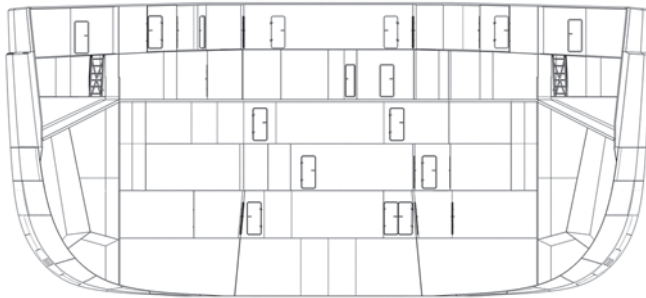
B3/16



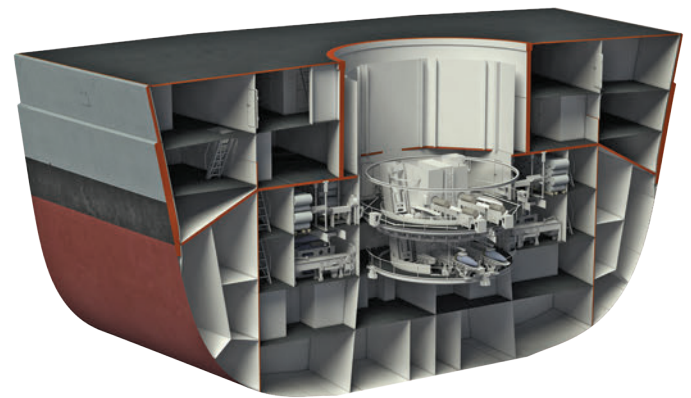
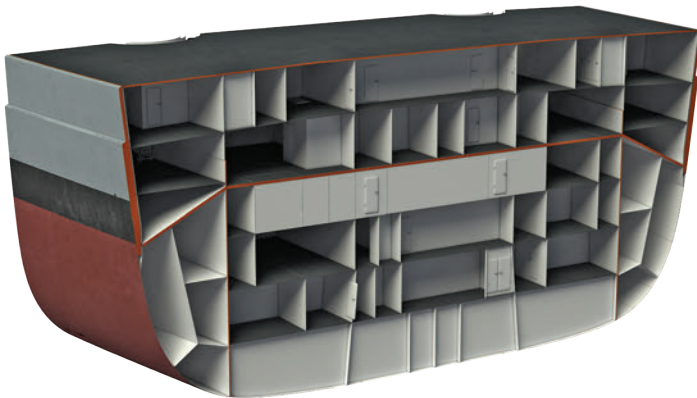
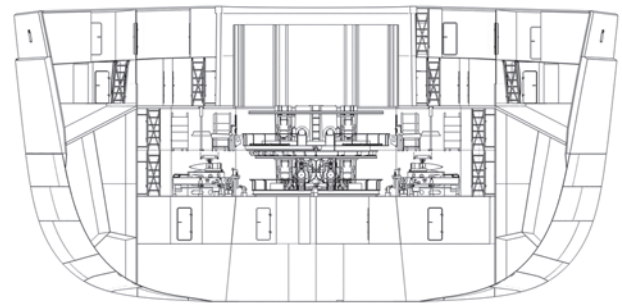


B3/17 FRAME 162 LOOKING AFT  
B3/18 FRAME 174 LOOKING AFTFT

B3/17



B3/18



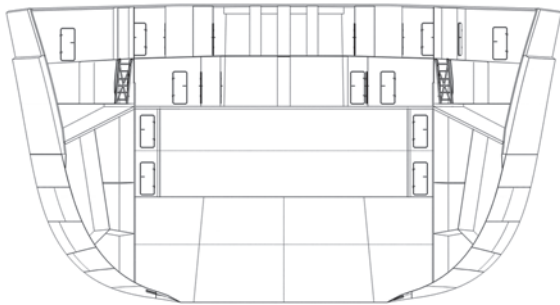
TRANSVERSE SECTIONS (1/400 SCALE)

B3/19 FRAME 183 LOOKING AFT

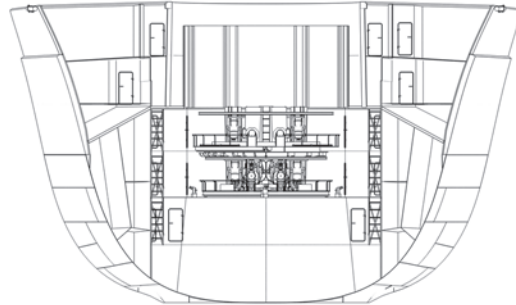
B3/20 FRAME 192 LOOKING AFT

B3/21 FRAME 202 LOOKING AFT

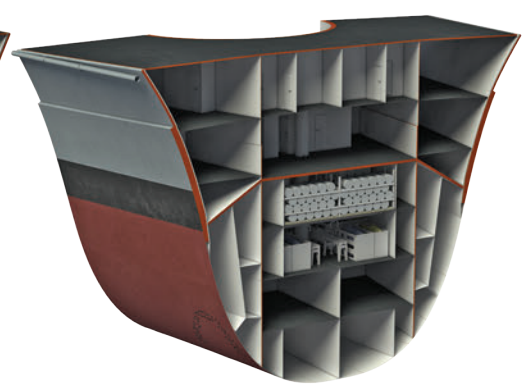
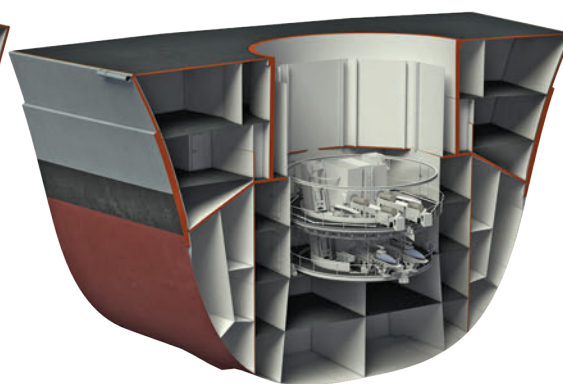
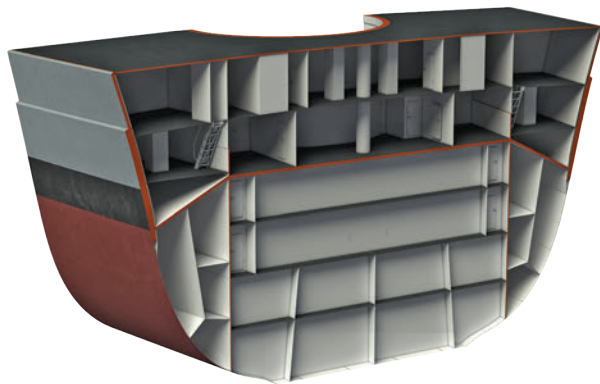
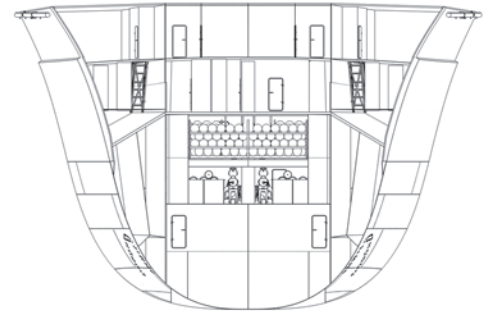
B3/19



B3/20

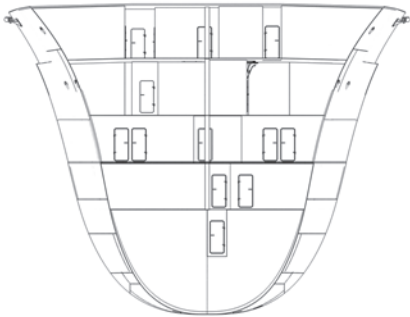


B3/21

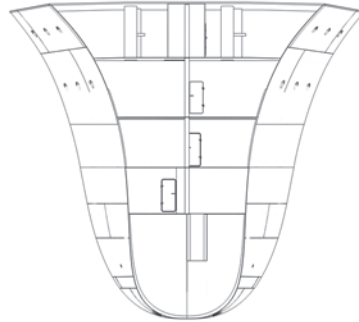


B3/22 FRAME 210 LOOKING AFT  
B3/23 FRAME 220 LOOKING AFT  
B3/24 FRAME 232 LOOKING AFT

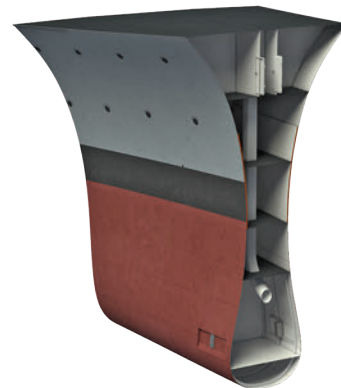
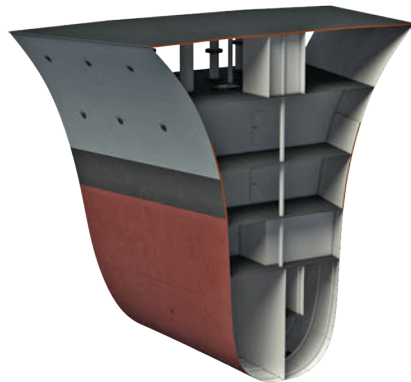
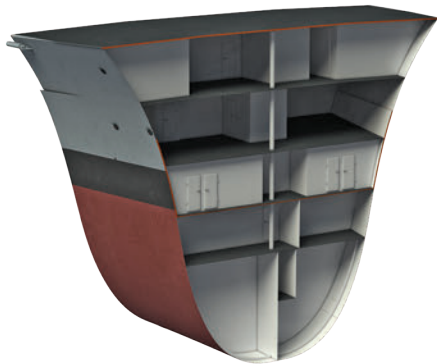
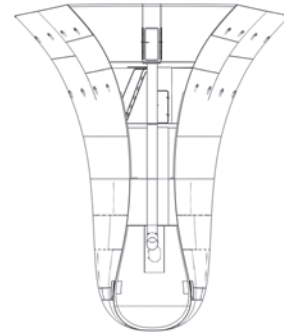
B3/22



B3/23



B3/24

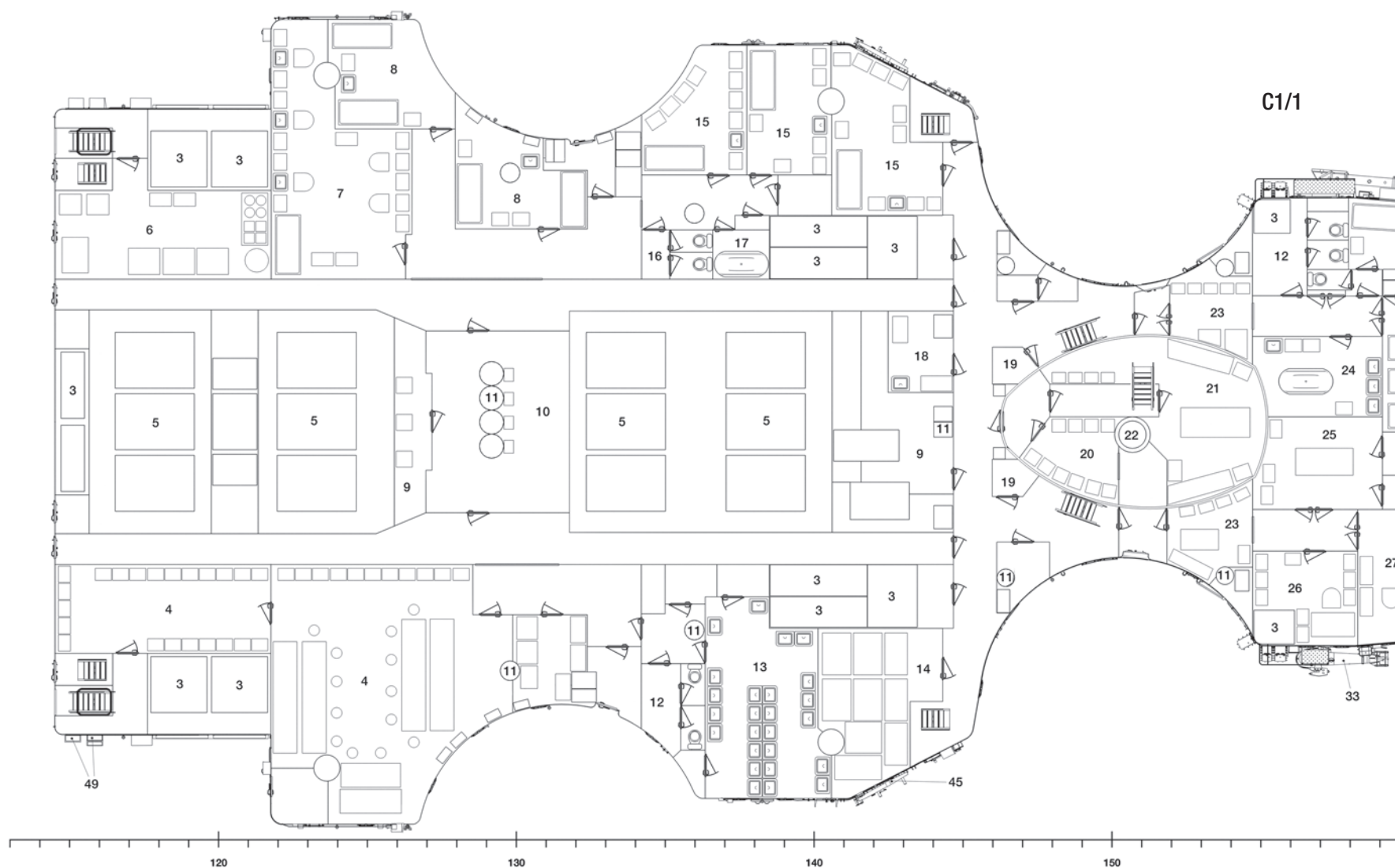




**FORE SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE DECK (1/200 SCALE)**
**C1/1 UPPER DECK LEVEL – PLAN, MAY 1941**
**C1/1–2 FORE SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE DECK**

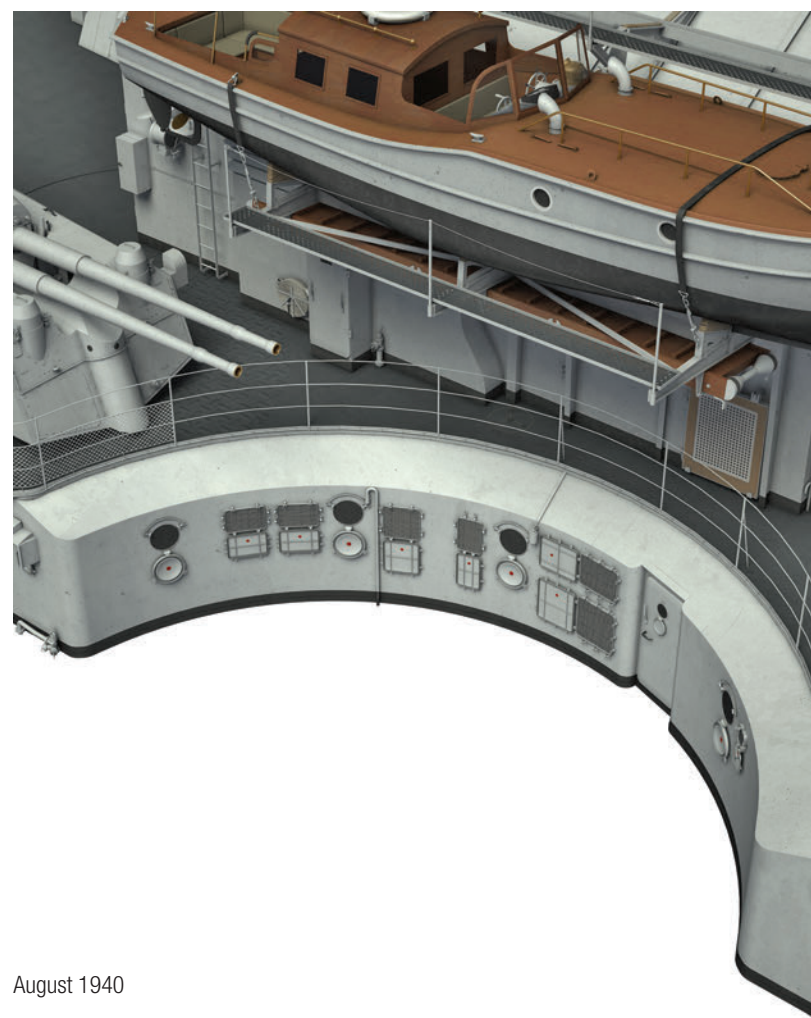
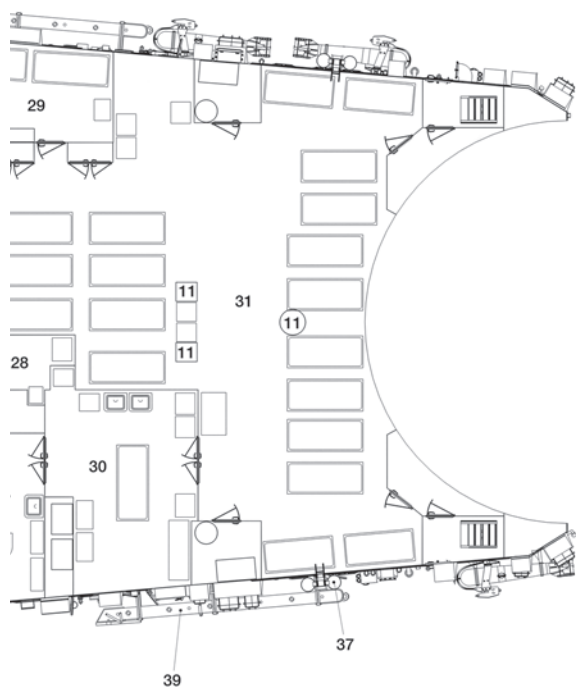
- 1 Upper deck level (*Oberdeck*)
- 2 Superstructure deck level (*Aufbaudeck*)
- 3 Air intake shafts
- 4 Midshipmen's work room
- 5 Funnel uptakes
- 6 Officer's kitchen

- 7 Barber shop
- 8 Cabin for two Midshipmen
- 9 Dry wash room
- 10 10.5cm ammunition transfer room
- 11 Ammunition shaft
- 12 Midshipmen's toilet
- 13 Midshipmen's washroom
- 14 Potato storage room
- 15 Officer's cabin
- 16 Officer's toilet
- 17 Officer's bath
- 18 Duty protection room
- 19 Storage
- 20 Pharmacy
- 21 Hospital storage room



- 22 Armoured communication shaft
- 23 Waiting room
- 24 Hospital washroom
- 25 X-ray room
- 26 Hospital administration office
- 27 Dentist
- 28 X-ray development room
- 29 Isolation room
- 30 Operating room
- 31 Sick bay
- 32 Vent
- 33 Stowed paravane
- 34 Watertight door
- 35 Side scuttle
- 36 Main artillery sub-caliber barrel container

- 37 Loudspeaker
- 38 2cm ammunition locker
- 39 Stowed accommodation ladder
- 40 Life ring
- 41 Clock
- 42 15cm ammunition crane arm
- 43 Fire hose and nozzle
- 44 Fire hydrant
- 45 Stowed accommodation ladder davit
- 46 Hot and cold water taps
- 47 Vents (added January 1941)
- 48 Vents (modified January 1941)
- 49 Stowed organic waste chutes



August 1940

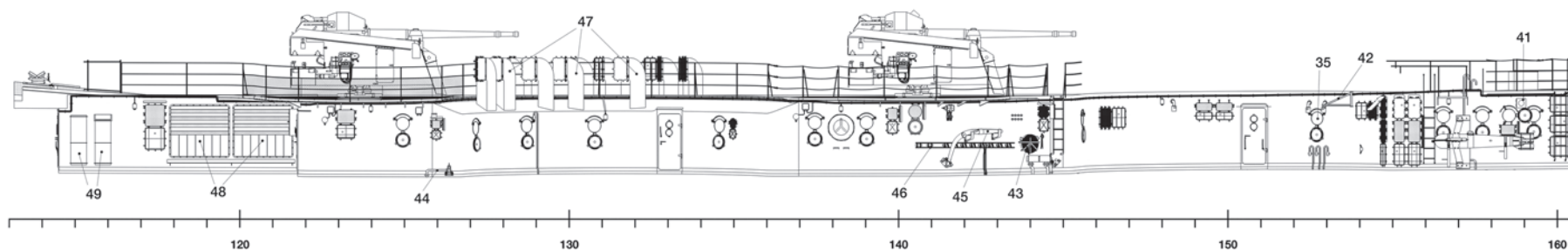
FORE SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE  
DECK (1/200 SCALE)

C1/2 RIGHT PROFILE, MAY 1941

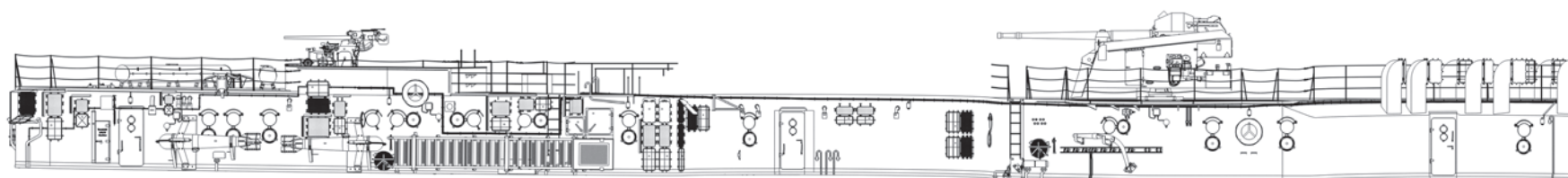
C1/3 LEFT PROFILE, MAY 1941

C1/4 FRONT VIEW, MAY 1941

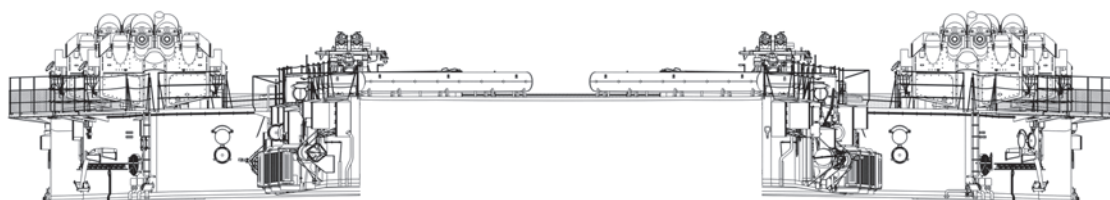
C1/5 BACK VIEW, MAY 1941



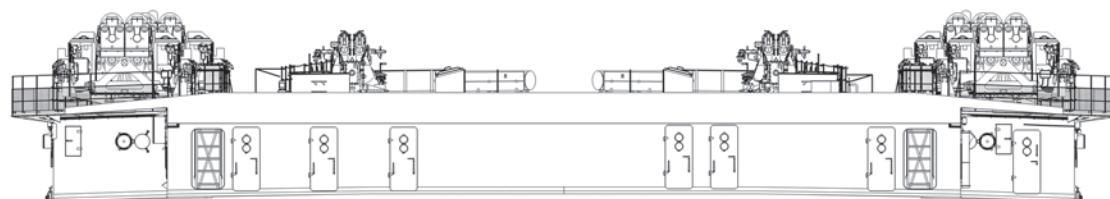
C1/2



C1/3



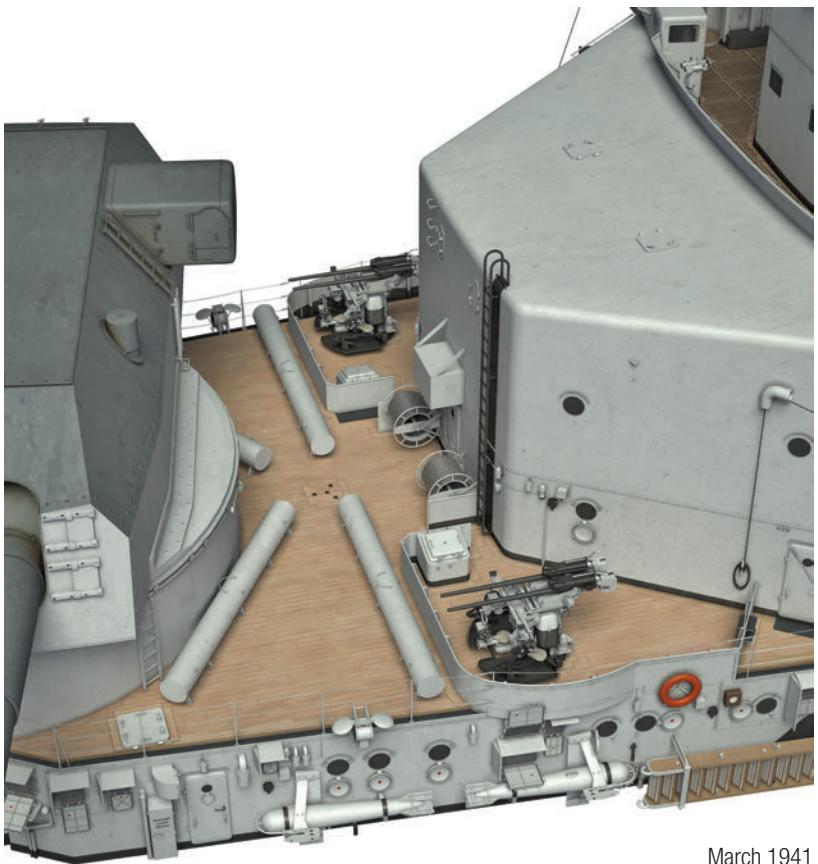
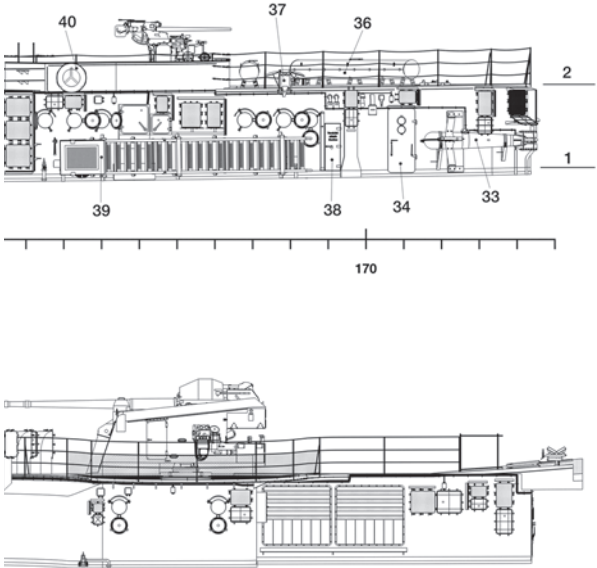
C1/4



C1/5

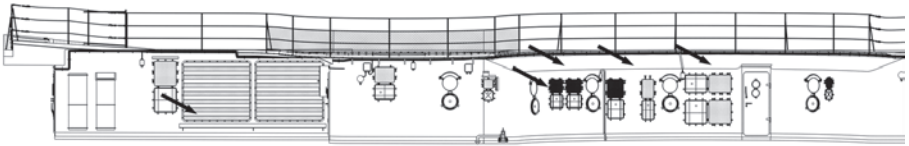


C1/6 RIGHT PROFILE, AUGUST 1940 (FRAGMENT); ARROWS INDICATE  
AREAS MODIFIED IN JANUARY 1941  
C1/7 LEFT PROFILE, AUGUST 1940 (FRAGMENTS); ARROWS INDICATE  
AREAS MODIFIED IN JANUARY 1941

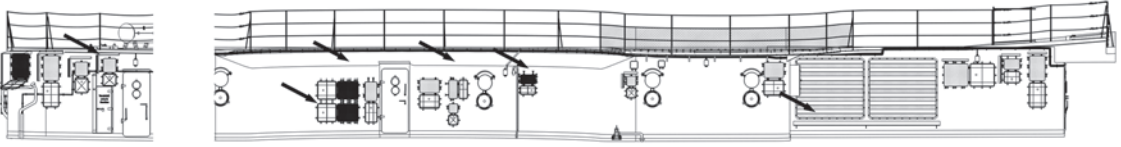


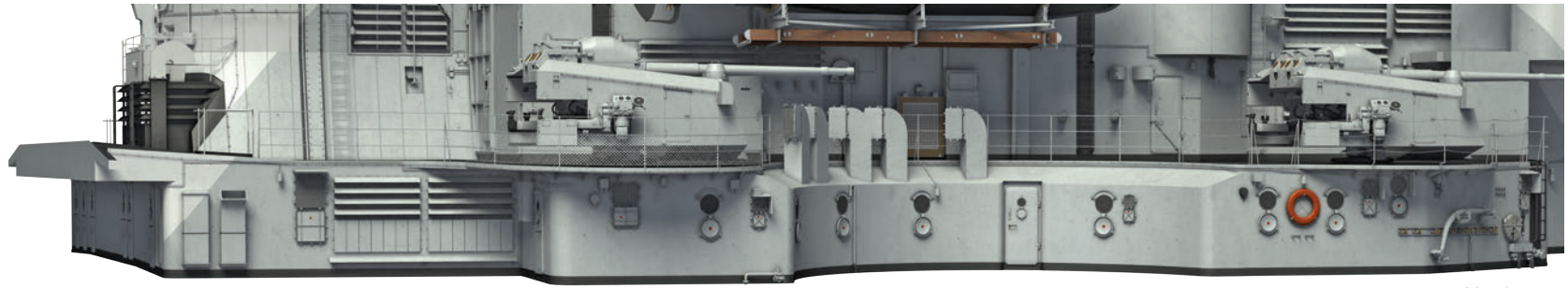
March 1941

C1/6

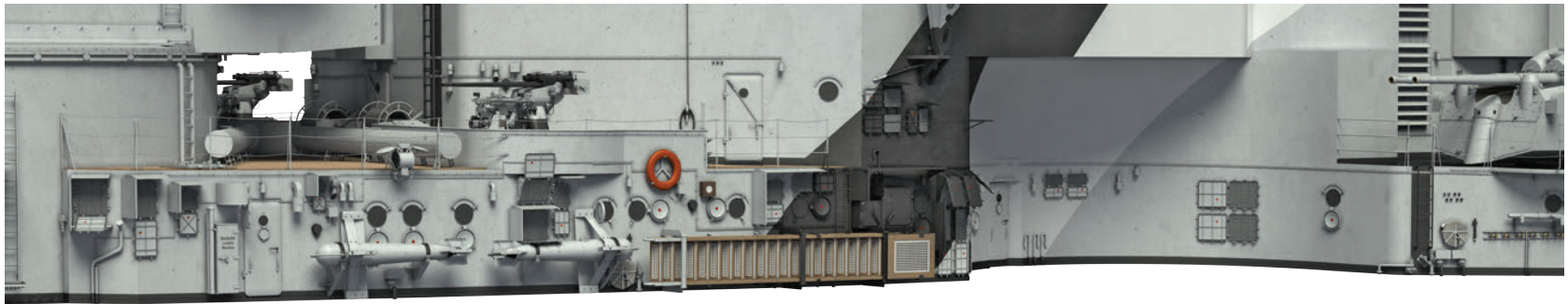


C1/7

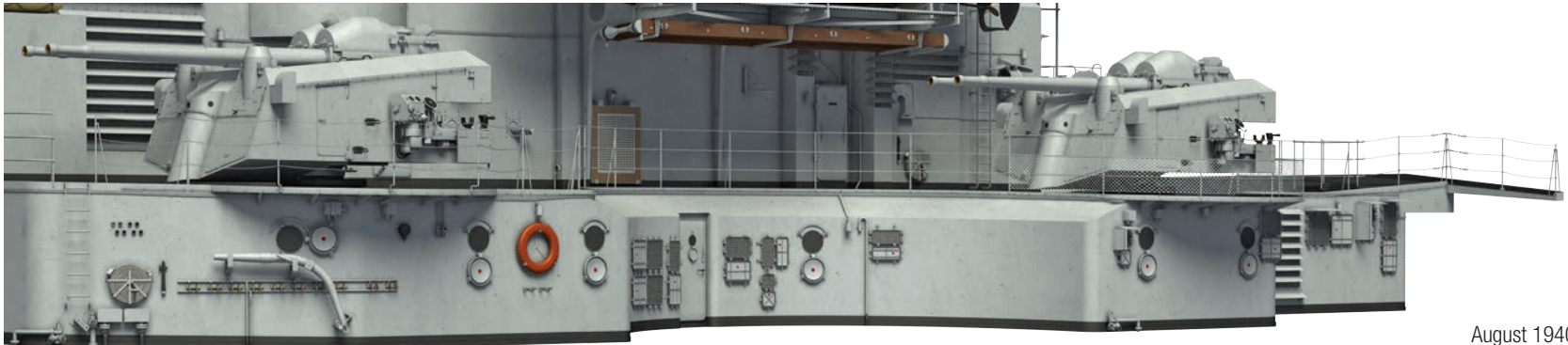




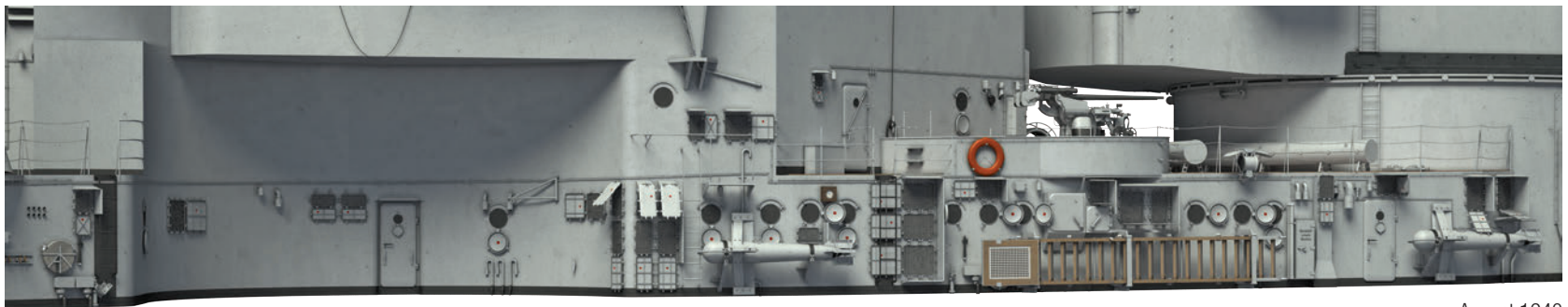
March 1941



March 1941

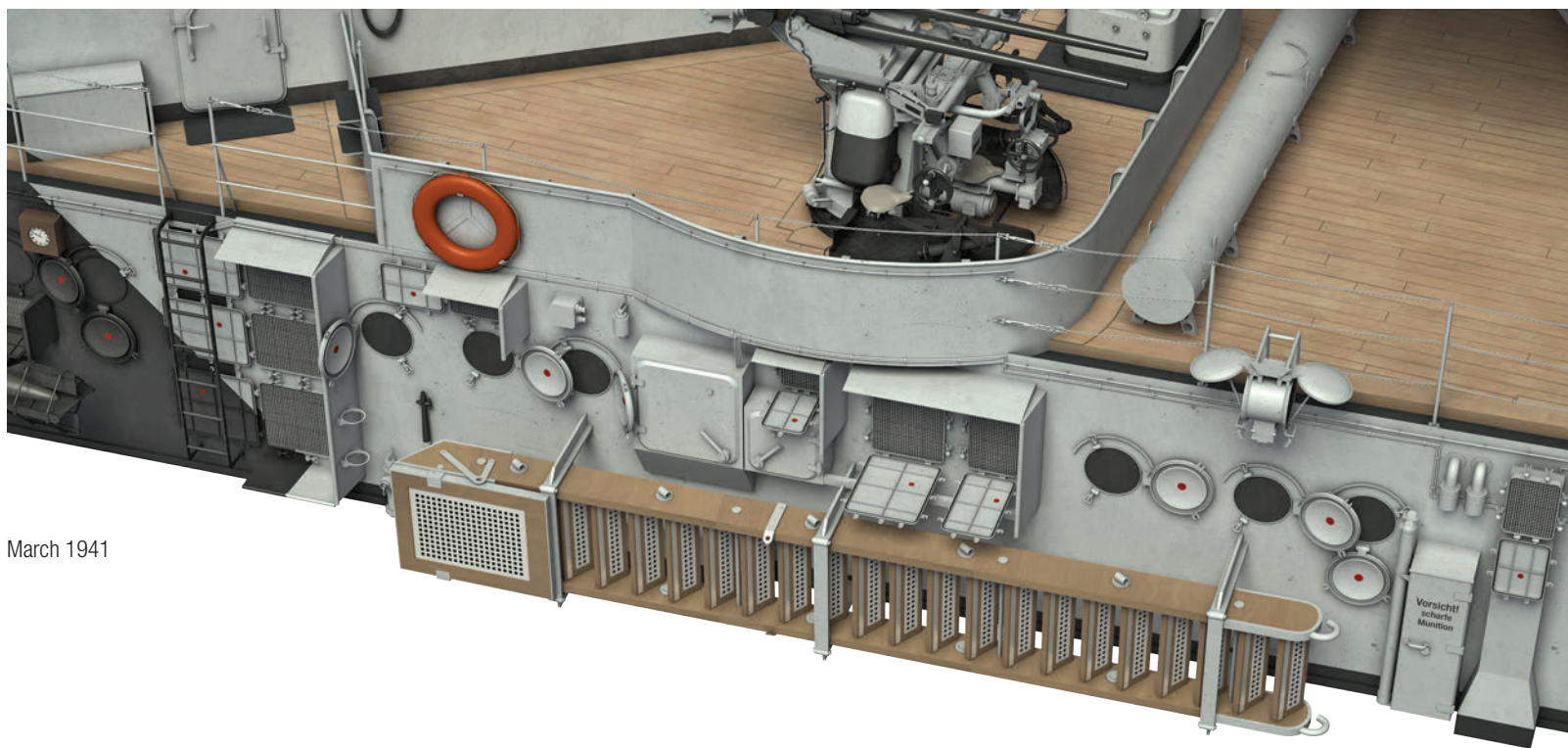


August 1940

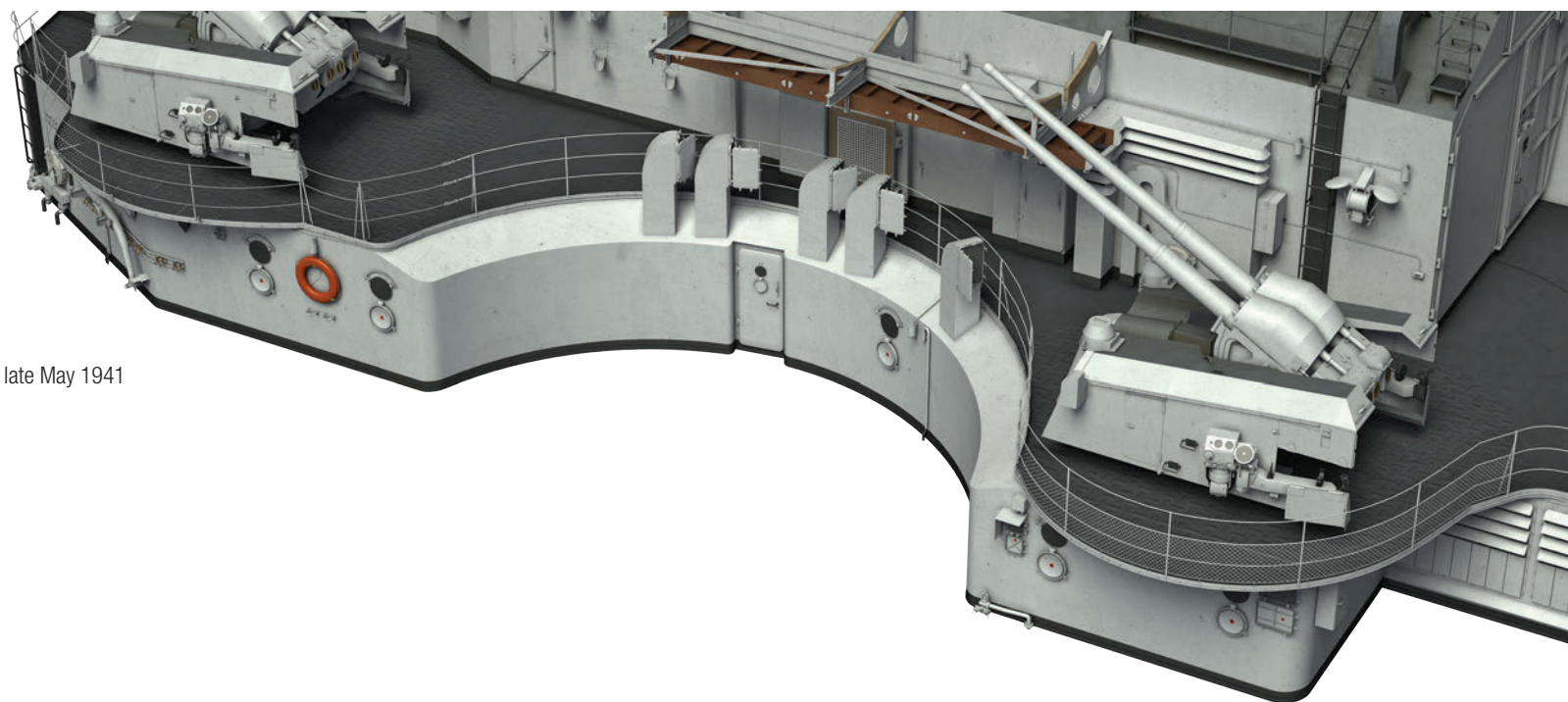


August 1940





March 1941



late May 1941



**FORE SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE DECK (1/200 SCALE)**

**C1/8 SUPERSTRUCTURE DECK LEVEL – PLAN, MAY 1941**

**C1/9 SUPERSTRUCTURE DECK LEVEL – PLAN, AUGUST 1940**

**(FRAGMENT); ARROWS INDICATE AREAS MODIFIED IN JANUARY 1941**

**C1/8–9 SUPERSTRUCTURE DECK LEVEL – PLAN**

1 Funnel uptakes

2 Aircraft hangar no. 2 with stowed Ar 196 floatplane

3 Aircraft hangar no. 3 with stowed Ar 196 floatplane

4 Storage locker

5 Ammunition locker

6 Ammunition hoist

7 10.5cm gun crew shelter

8 Switchboard room

9 Air intake shafts

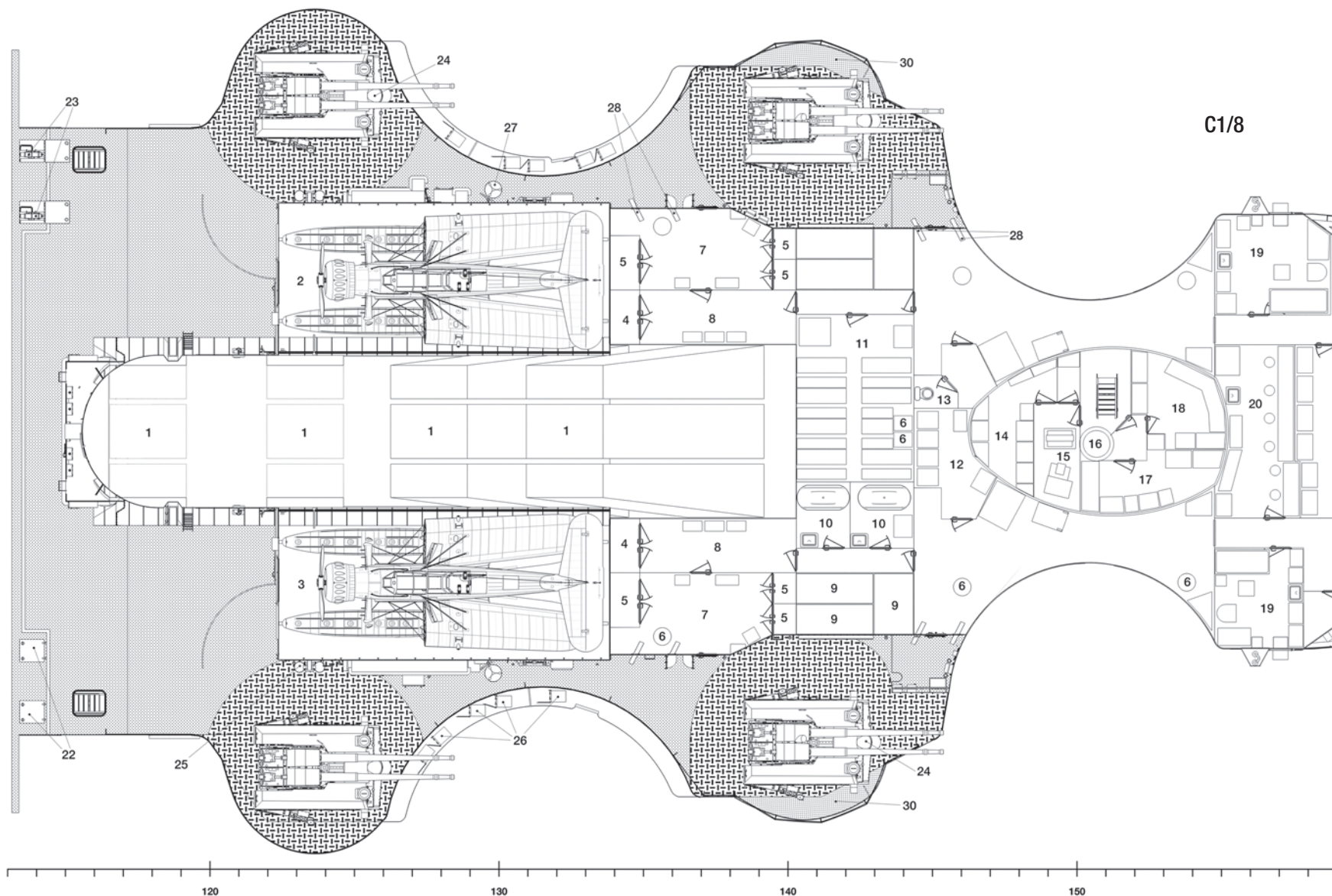
10 Officer's bath

11 Lecture room

12 Storage room

13 Officer's toilet

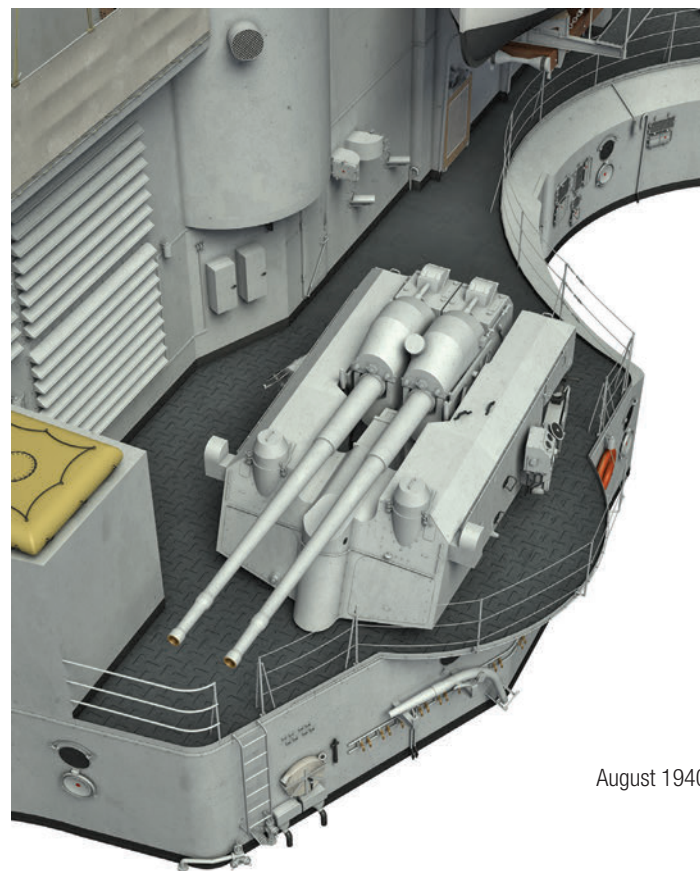
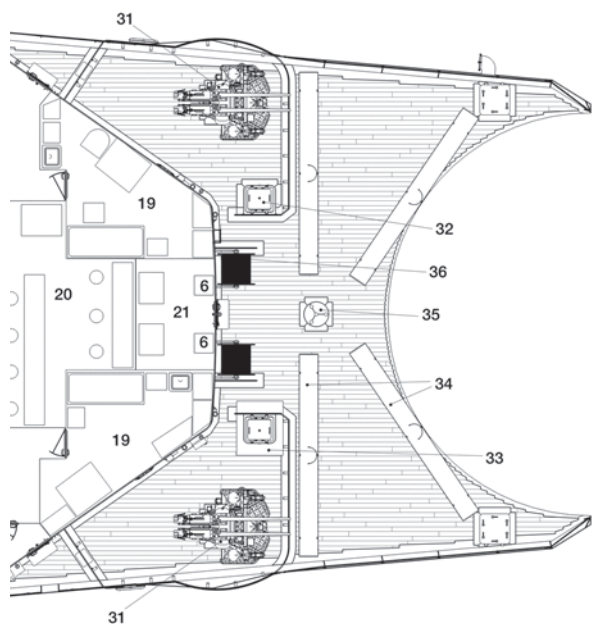
14 Signal store room



**C1/8**

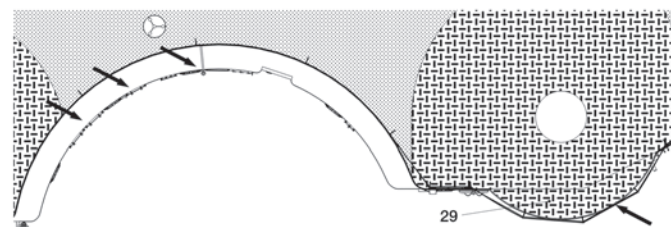
- 15 Fan room
- 16 Armoured communication shaft
- 17 Darkroom
- 18 Copy room
- 19 Officer's cabin
- 20 Administration room
- 21 AA gun crew standby room
- 22 Floatplane cradle under cover
- 23 Floatplane cradle (open)
- 24 Twin 10.5cm gun mount
- 25 Loudspeaker
- 26 Vent column (fitted January 1941)

- 27 15cm ammunition magazine loading point
- 28 10.5cm ammunition passing channel
- 29 Fore 10.5cm mount platform (original form)
- 30 Fore 10.5cm mount platform (enlarged in January 1941)
- 31 Twin 3.7cm gun mount
- 32 Skylight
- 33 Installation opening
- 34 Main artillery sub-caliber barrel container
- 35 38cm ammunition magazine loading point
- 36 Wire rope reel



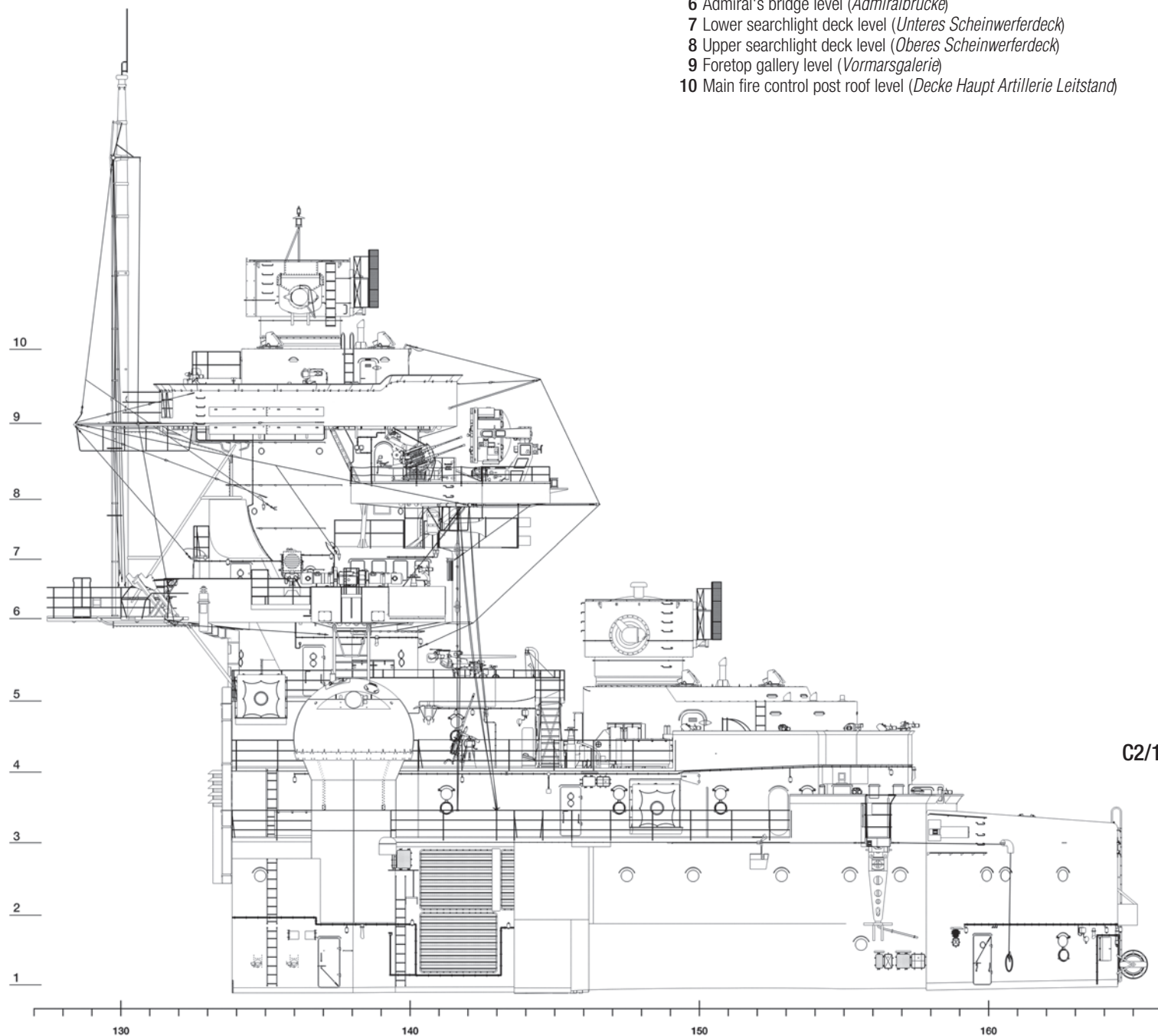
August 1940

C1/9

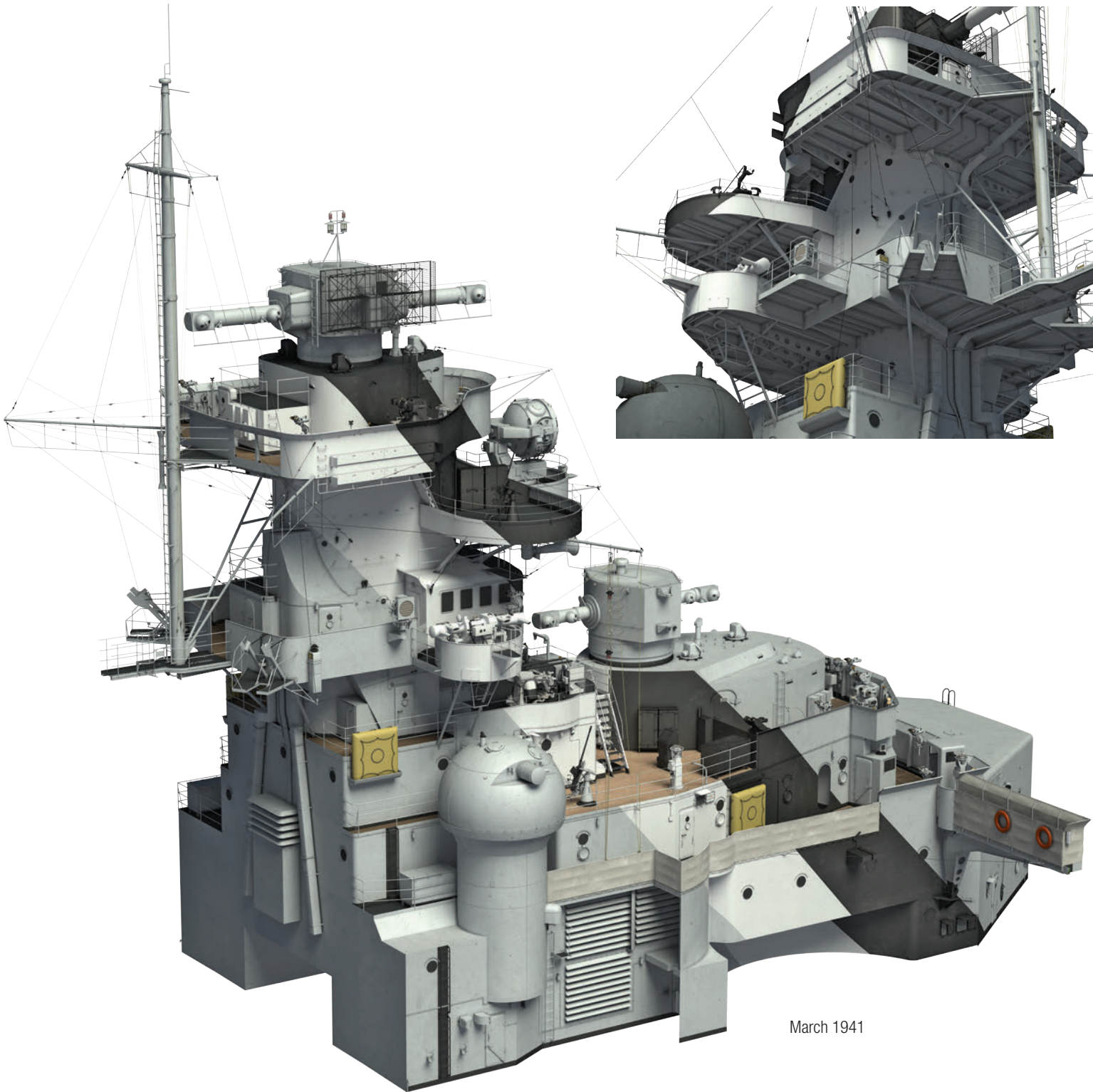


**FORE SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)**
**C2/1 RIGHT PROFILE, MAY 1941**

- 1 Superstructure deck level (*Aufbaudeck*)
- 2 Lower bridge deck level (*Unteres Brückendeck*)
- 3 Upper bridge deck level (*Oberes Brückendeck*)
- 4 Lower mast deck level (*Unteres Mastdeck*)
- 5 Upper mast deck level (*Oberes Mastdeck*)
- 6 Admiral's bridge level (*Admiralbrücke*)
- 7 Lower searchlight deck level (*Unteres Scheinwerferdeck*)
- 8 Upper searchlight deck level (*Oberes Scheinwerferdeck*)
- 9 Foretop gallery level (*Vormarsgalerie*)
- 10 Main fire control post roof level (*Decke Haupt Artillerie Leitstand*)


**C2/1**



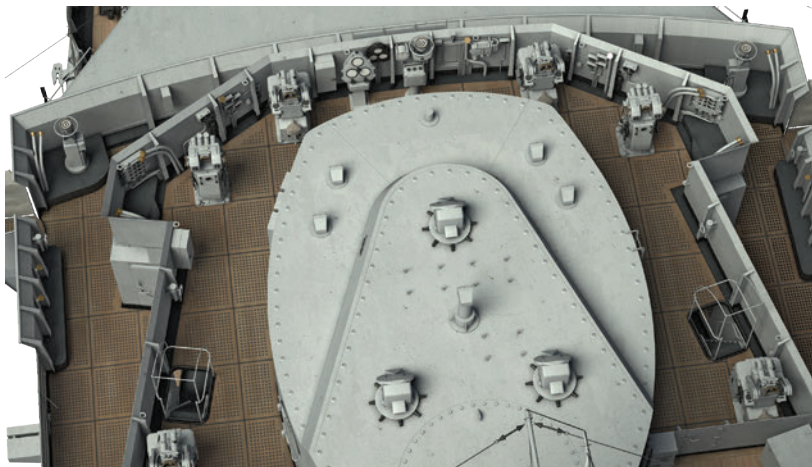


early May 1941

March 1941

FORE SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)

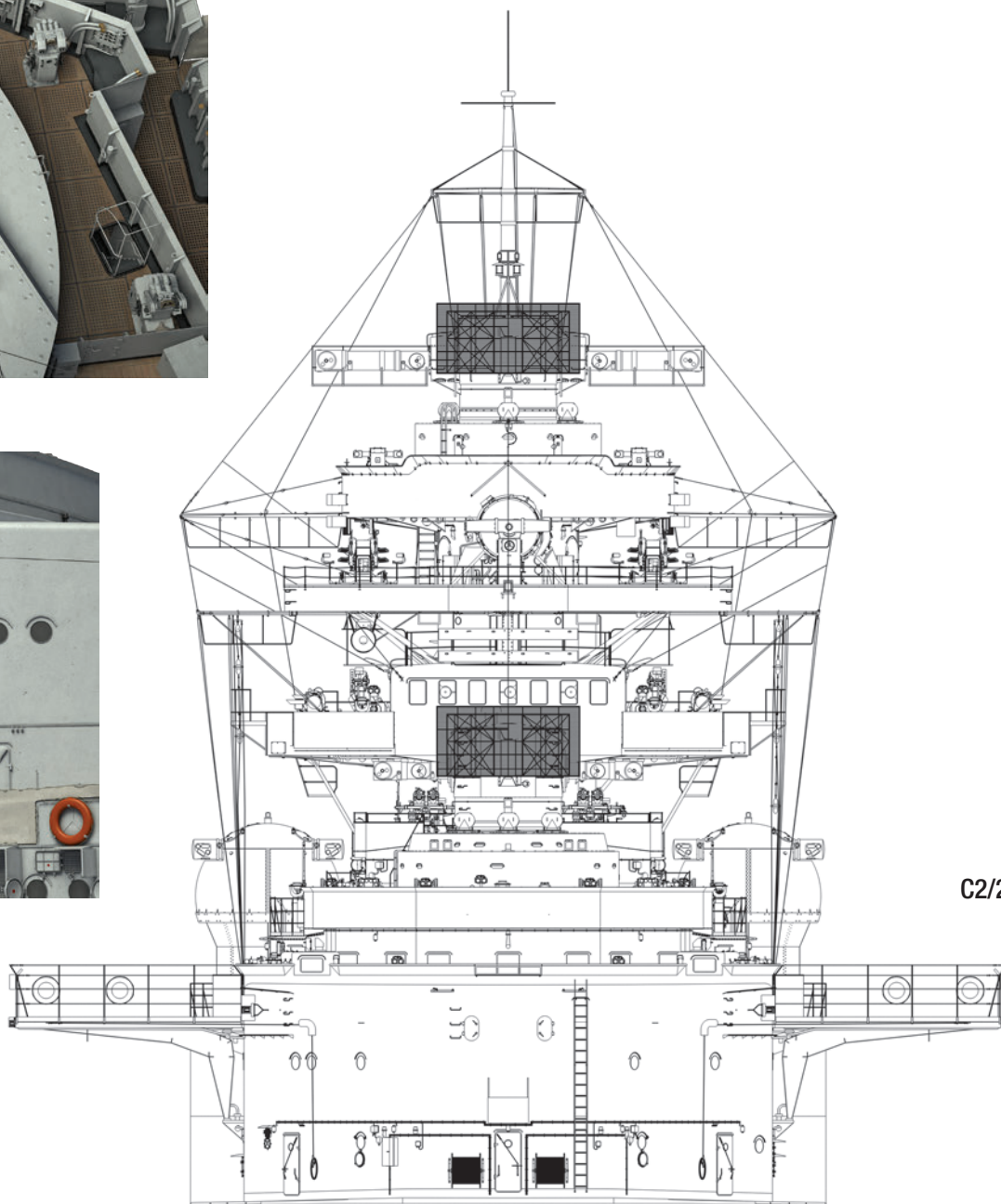
C2/2 FRONT VIEW, MAY 1941



August 1940



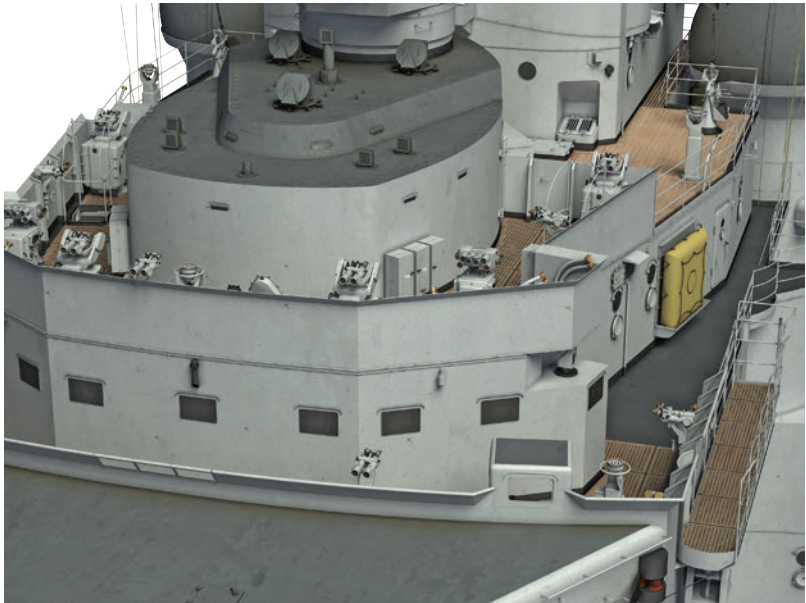
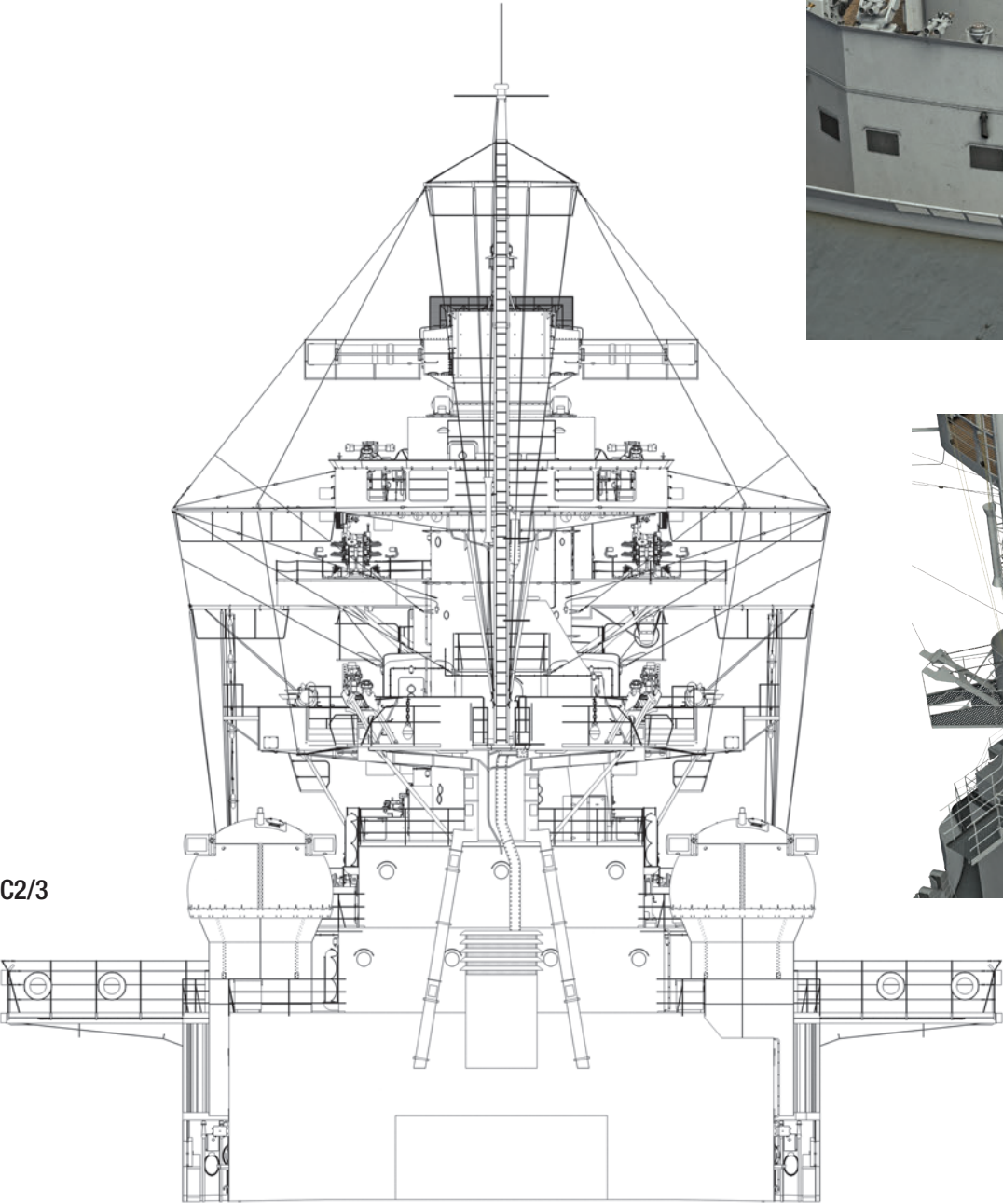
August 1940



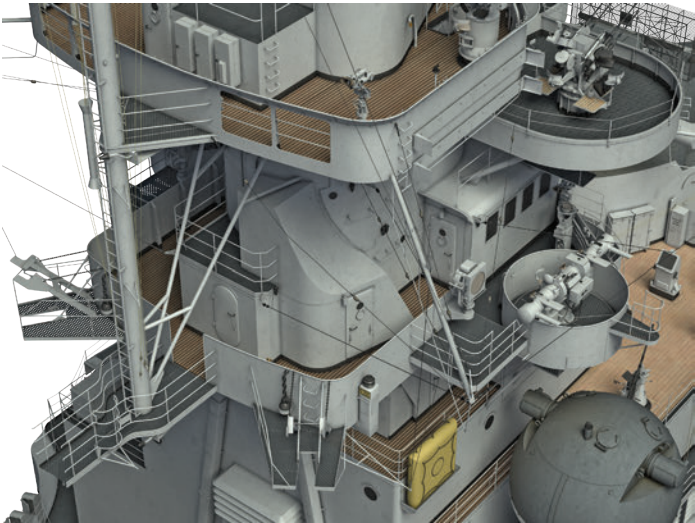
C2/2



C2/3 BACK VIEW, MAY 1941



late May 1941



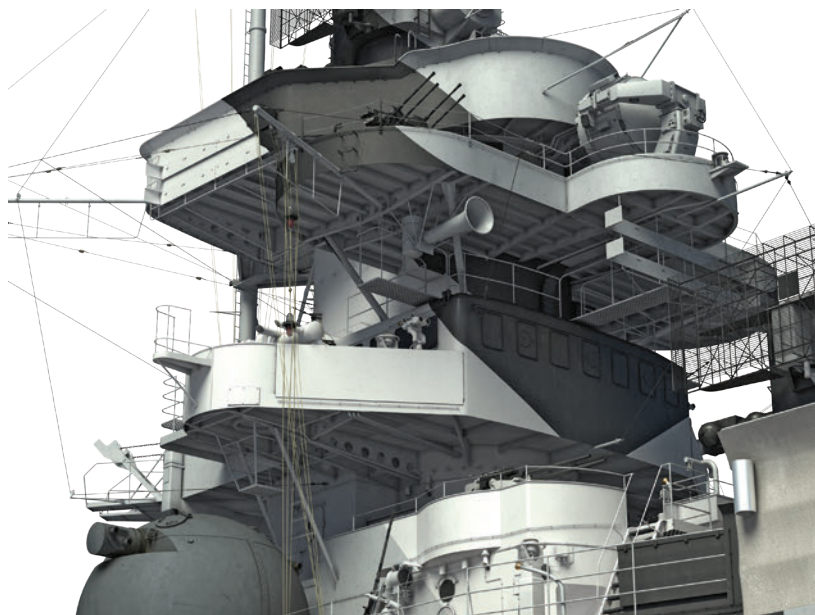
late May 1941



**FORE SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)**

**C2/4 LEFT PROFILE, AUGUST 1940**

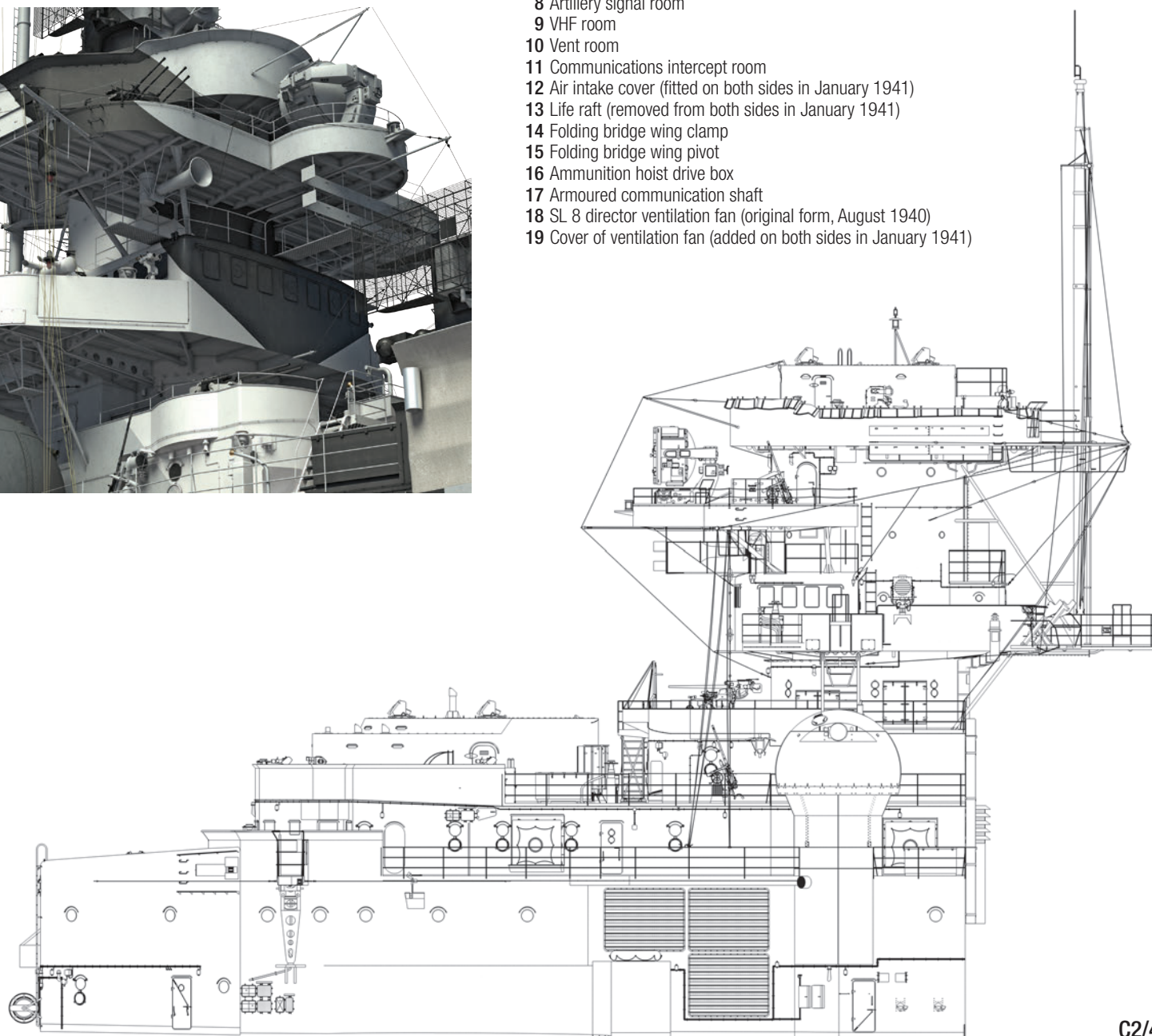
**C2/5 PLAN, MAY 1941**



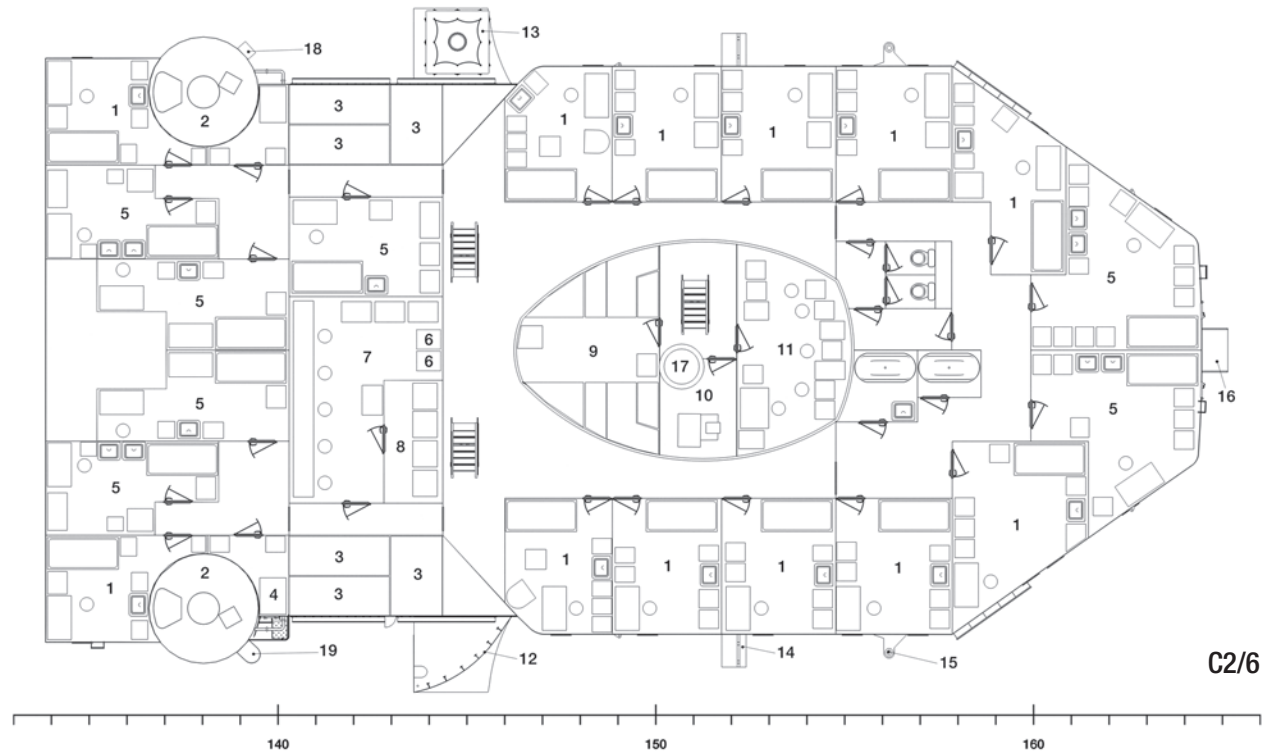
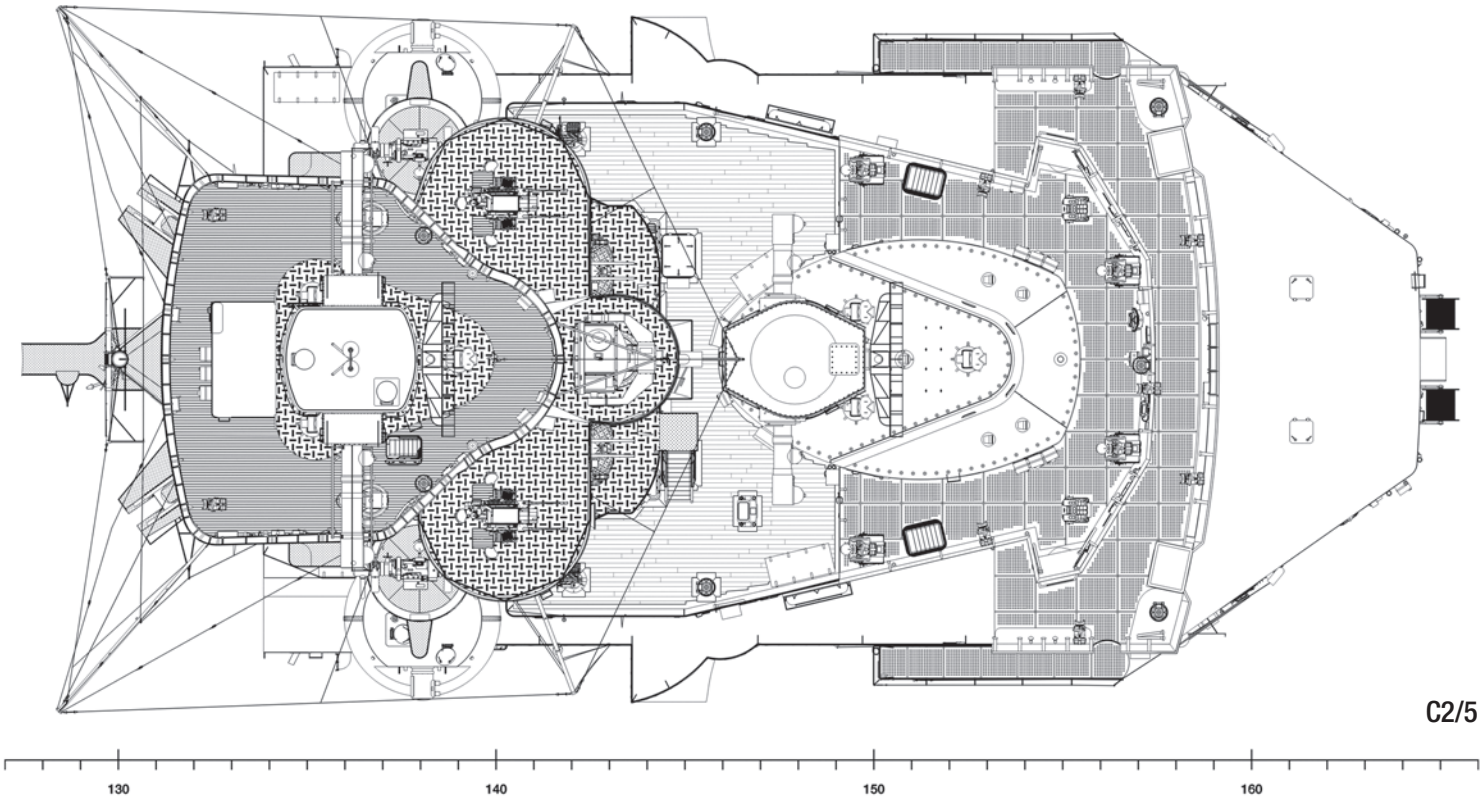
early May 1941

**C2/6 LOWER BRIDGE DECK LEVEL – PLAN**

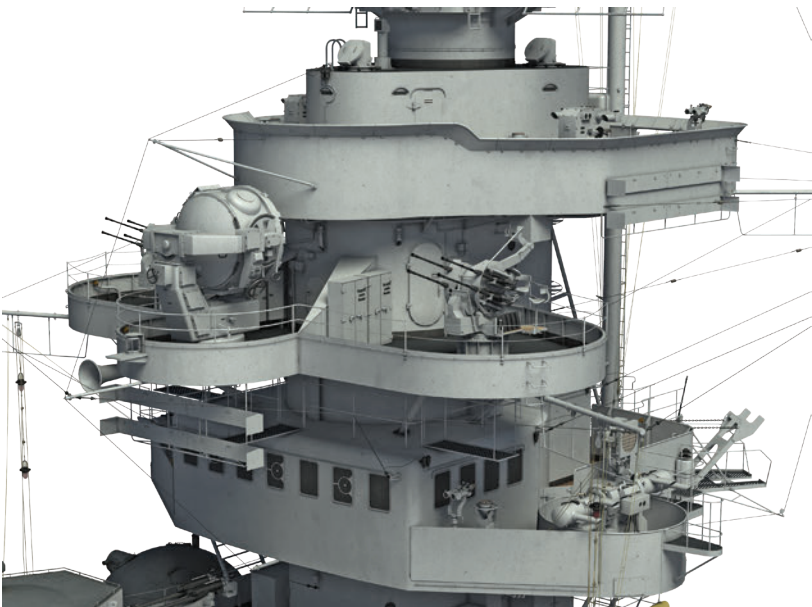
- 1 Officer's cabin
- 2 SL 8 director base
- 3 Air intake shafts
- 4 Vent duct
- 5 Cabin for two officers
- 6 Ammunition hoist
- 7 Artillery office
- 8 Artillery signal room
- 9 VHF room
- 10 Vent room
- 11 Communications intercept room
- 12 Air intake cover (fitted on both sides in January 1941)
- 13 Life raft (removed from both sides in January 1941)
- 14 Folding bridge wing clamp
- 15 Folding bridge wing pivot
- 16 Ammunition hoist drive box
- 17 Armoured communication shaft
- 18 SL 8 director ventilation fan (original form, August 1940)
- 19 Cover of ventilation fan (added on both sides in January 1941)



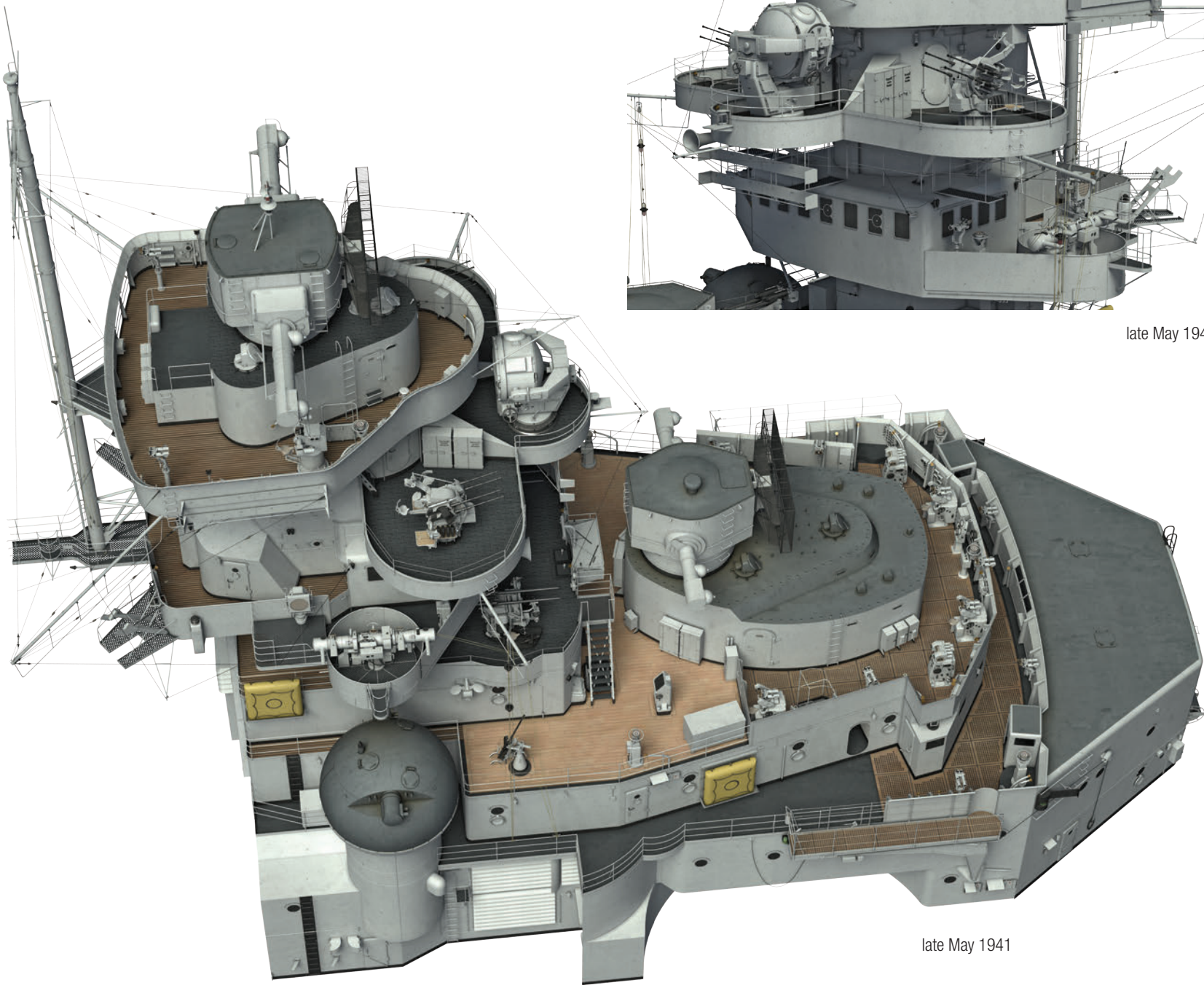
**C2/4**





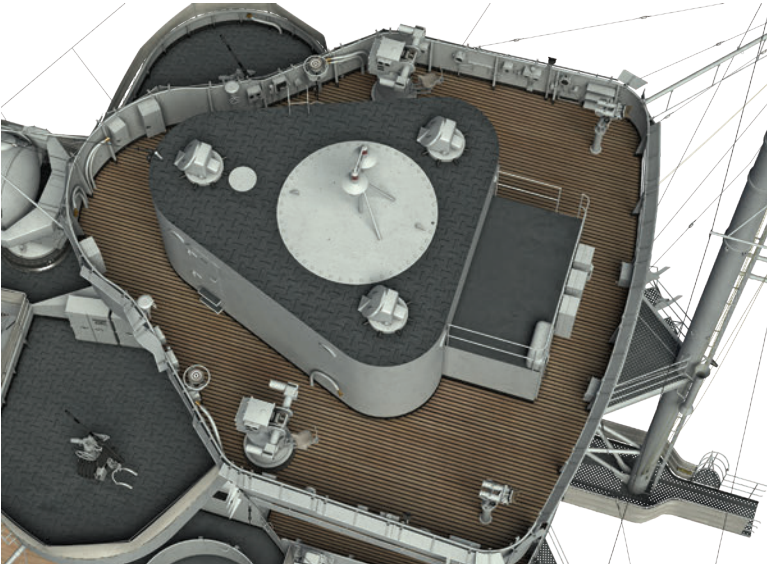


late May 1941

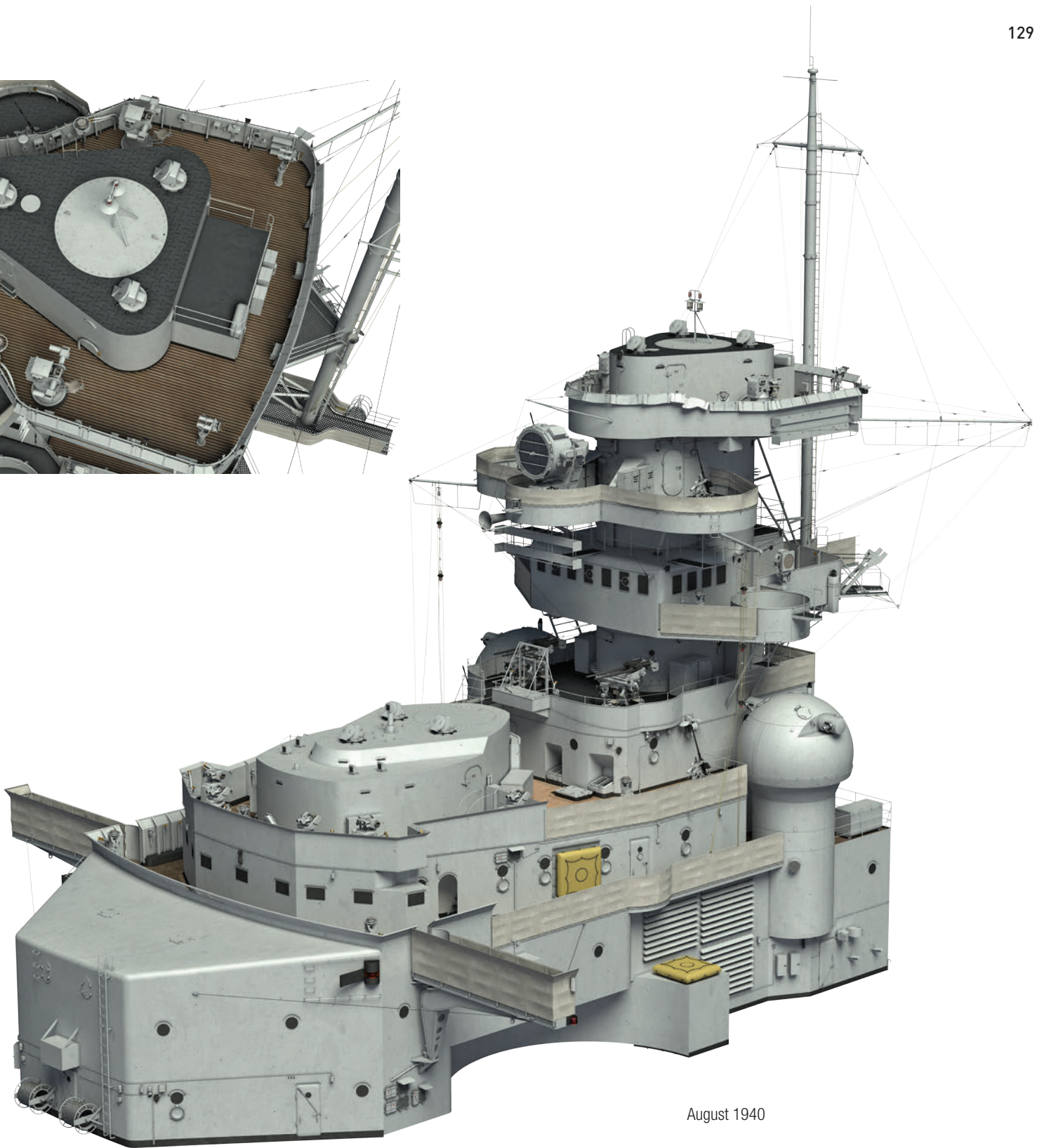


late May 1941

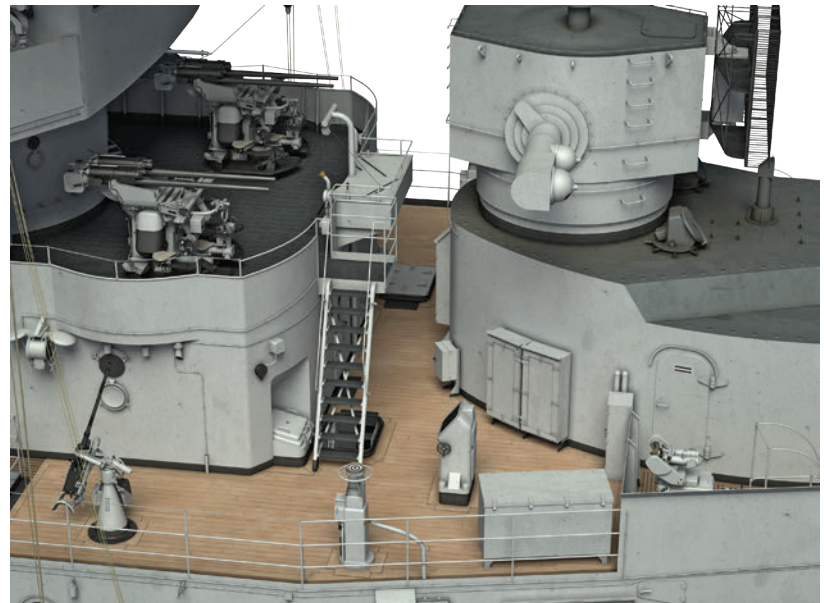




August 1940



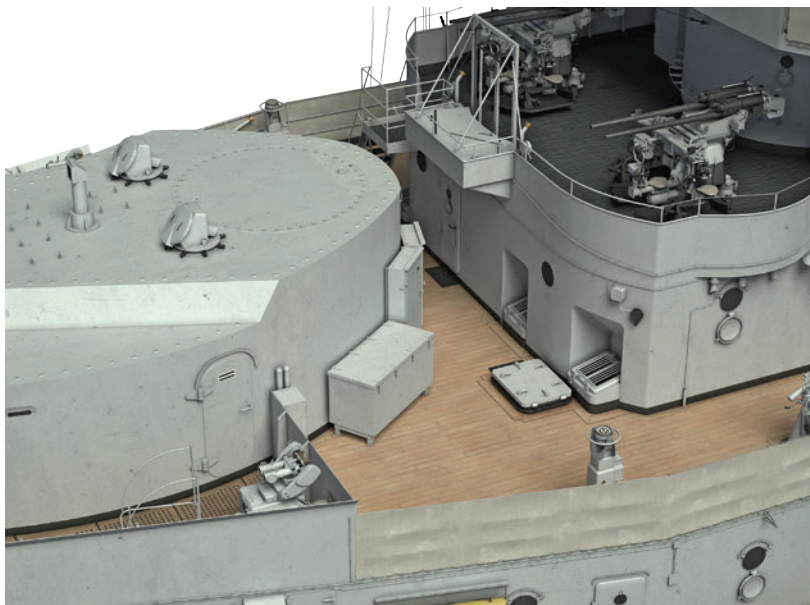
August 1940



late May 1941

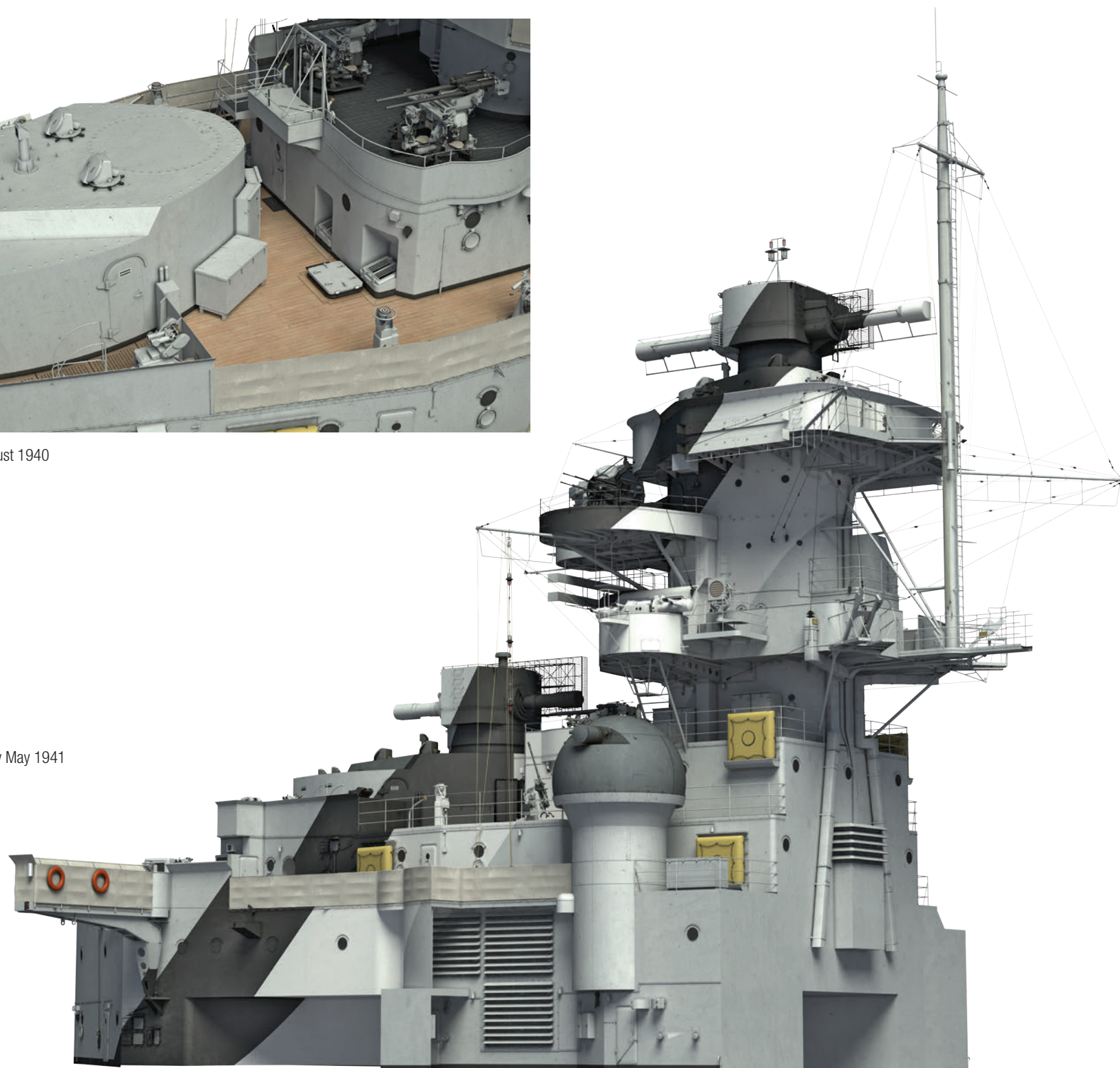
early May 1941





August 1940

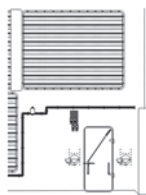
early May 1941



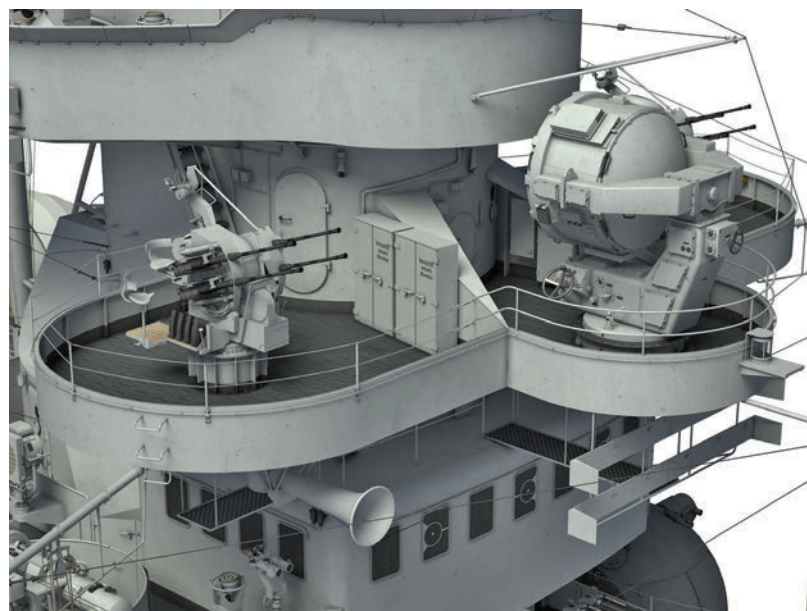


# FORE SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS (1/200 SCALE)

## C2/7 FRAGMENT BETWEEN SUPERSTRUCTURE DECK AND UPPER BRIDGE DECK AT FRAME 145 – RIGHT PROFILE WITH SHIELDS OMITTED FOR CLARITY

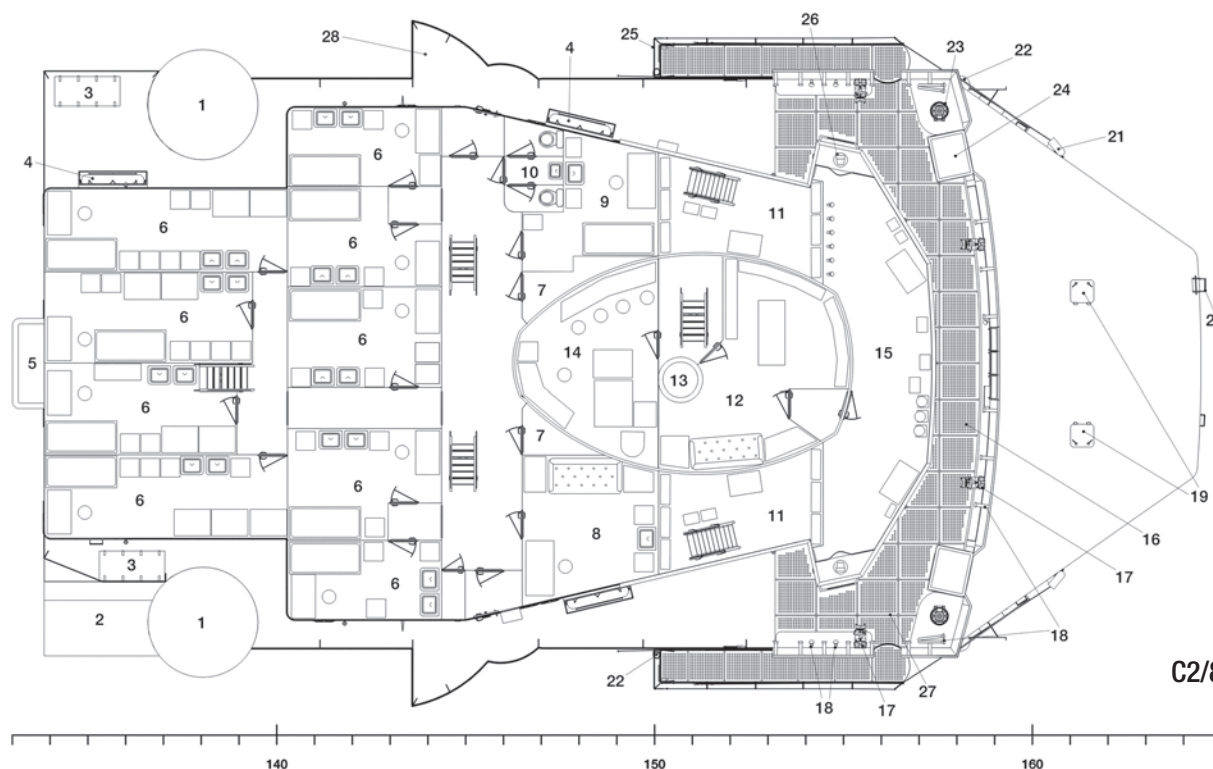


C2/7



## C2/8 UPPER BRIDGE DECK LEVEL – PLAN, MAY 1941

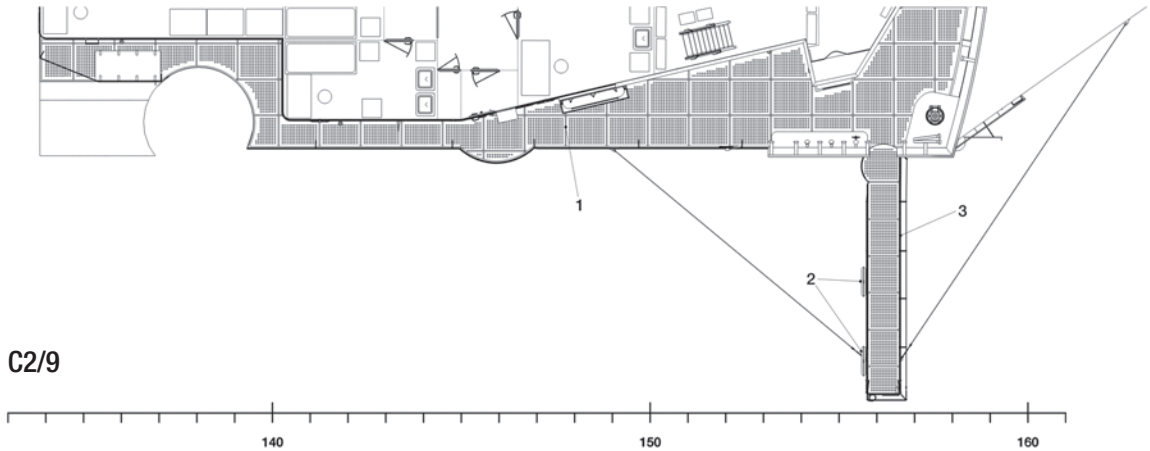
- 1 SL 8 director base
- 2 Superstructure recess to provide space for stowed admiral's boat (starboard side only)
- 3 Storage locker
- 4 Life raft
- 5 Vent
- 6 Cabin for two officers
- 7 Storage room
- 8 Captain's sea cabin
- 9 Officer's cabin
- 10 Officers' toilet
- 11 Shelter for the crew of night control post
- 12 Chart room
- 13 Armoured communication shaft
- 14 Combat message centre
- 15 Protected command bridge
- 16 Open command bridge
- 17 Removable lookout binoculars
- 18 Voice pipe
- 19 Access hatch to awning storage room
- 20 Ladder
- 21 Bent pipe fitted for easier operation of the folding bridge wing (from around January 1941)
- 22 Position light (starboard side – green, port side – red)
- 23 Compass repeater
- 24 Guardhouse (added on both sides in January 1941)
- 25 Folding bridge wing (closed)
- 26 Periscope (added on both sides in January 1941)
- 27 Wooden grating
- 28 Platform on top of additional air intake cover (fitted on both sides in January 1941)



C2/8

**C2/9 UPPER BRIDGE DECK LEVEL – PLAN (FRAGMENT), AUGUST 1940**

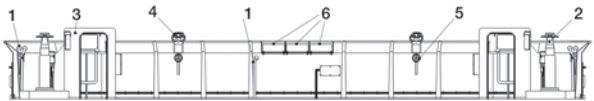
- 1 Wooden grating (removed from the deck between frames 134 and 153 around January 1941)
- 2 Life ring
- 3 Bridge wing (open)



**C2/10 UPPER BRIDGE DECK LEVEL – VIEW FROM FRAME 157 TOWARDS THE BOW, MAY 1941**

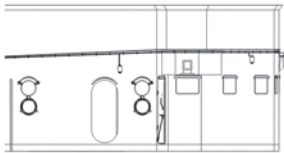
- 1 Voice pipe
- 2 Compass repeater
- 3 Guardhouse (added on both sides in January 1941)
- 4 Removable lookout binoculars
- 5 Binoculars mounting
- 6 Hinged windows

C2/10



**C2/11 UPPER BRIDGE DECK LEVEL – RIGHT PROFILE WITH SHIELDS OMITTED FOR CLARITY, MAY 1941**

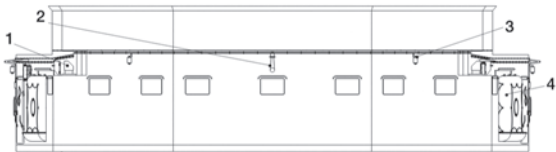
C2/11



**C2/12 UPPER BRIDGE DECK LEVEL – VIEW FROM FRAME 158 TOWARDS THE STERN, MAY 1941**

- 1 Periscope (added on both sides in January 1941)
- 2 Alarm horn
- 3 Light
- 4 Life raft

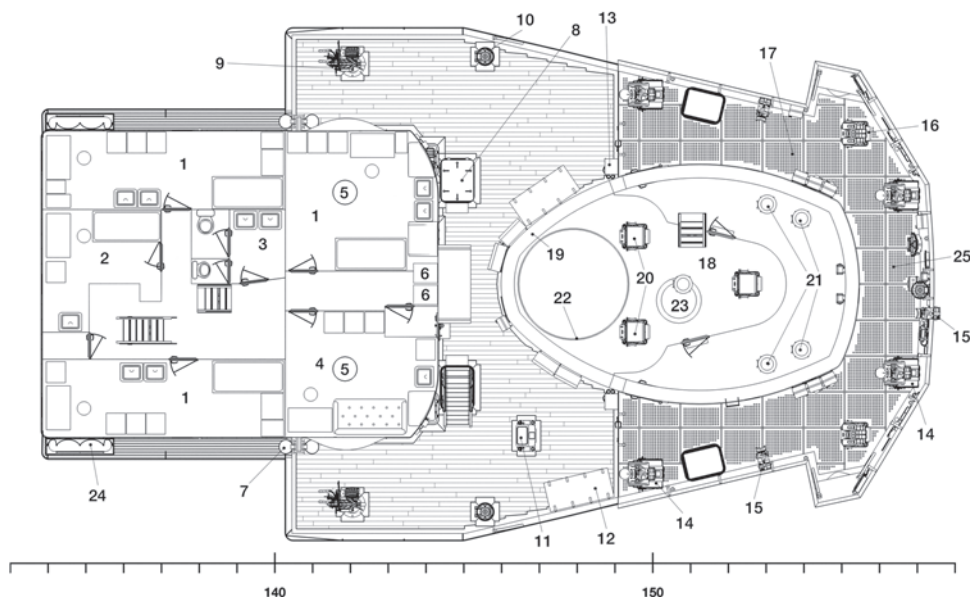
C2/12



**FORE SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS**
**(1/200 SCALE)**
**C2/13 LOWER MAST DECK LEVEL – PLAN, MAY 1941**

- 1 Cabin for two officers
- 2 Officer's cabin
- 3 Officers' toilet
- 4 Admiral's sea cabin
- 5 3.7cm mount base
- 6 Ammunition hoist
- 7 Loudspeaker
- 8 Hatch
- 9 Single 2cm mount
- 10 Compass repeater
- 11 Illuminating shell giver
- 12 Storage locker
- 13 2cm ammunition locker
- 14 Searchlight director
- 15 Removable lookout binoculars
- 16 Zielsäule C/38S

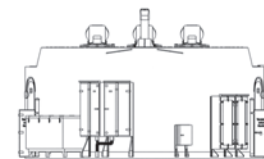
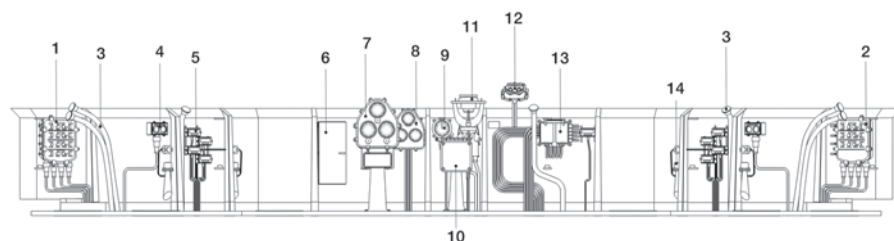
- 17 Night control post
- 18 Conning tower
- 19 350mm thick armour plate
- 20 Zielgeber C/38S
- 21 Periscope
- 22 Rangefinder ring
- 23 Armoured communication shaft
- 24 Life raft (added on both sides in January 1941)
- 25 Open steering post


**C2/14 CONNING TOWER – RIGHT PROFILE**
**C2/15 CONNING TOWER – FRONT VIEW**
**C2/16 CONNING TOWER – BACK VIEW**
**C2/17 LOWER MAST DECK LEVEL – VIEW FROM FRAME 155 TOWARDS**
**THE BOW (1/100 SCALE)**

- 1 Searchlight illumination control panel (searchlights I, III, V and VII)
- 2 Searchlight illumination control panel (searchlights II, IV and VI)
- 3 Voice pipe
- 4 Speed indicator
- 5 Gas pressure indicator
- 6 Telephone locker
- 7 Machine telegraph
- 8 Propeller shafts rpm indicator
- 9 Rudder position indicator
- 10 Steering gear
- 11 Compass repeater
- 12 Lookout binoculars
- 13 Fuse box
- 14 Alarm horn

**C2/14**

**C2/15**

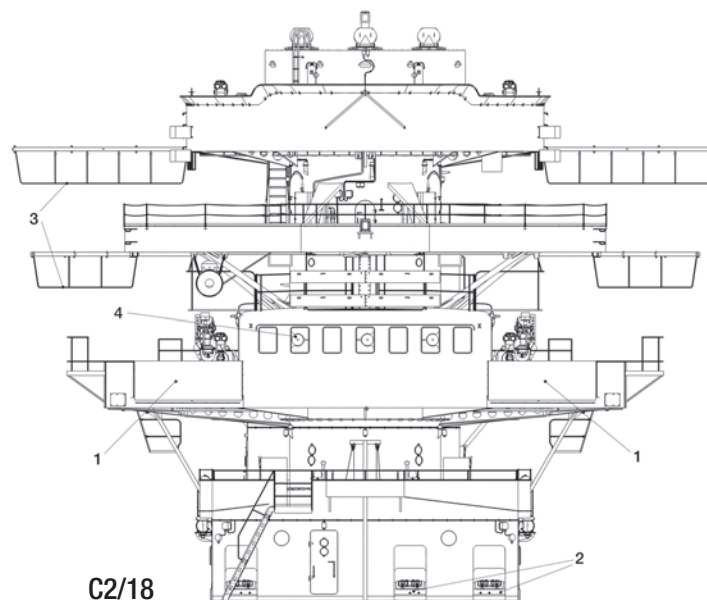
**C2/16**

**C2/17**




**C2/18 FRAGMENT OF SUPERSTRUCTURE BETWEEN LOWER MAST DECK  
LEVEL AND MAIN FIRE CONTROL POST ROOF LEVEL – FRONT VIEW,**

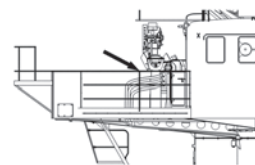
**MAY 1941**

- 1 Steel plate shield (replaced railing in January 1941)
- 2 Skylight
- 3 Foot step
- 4 Clear view screen

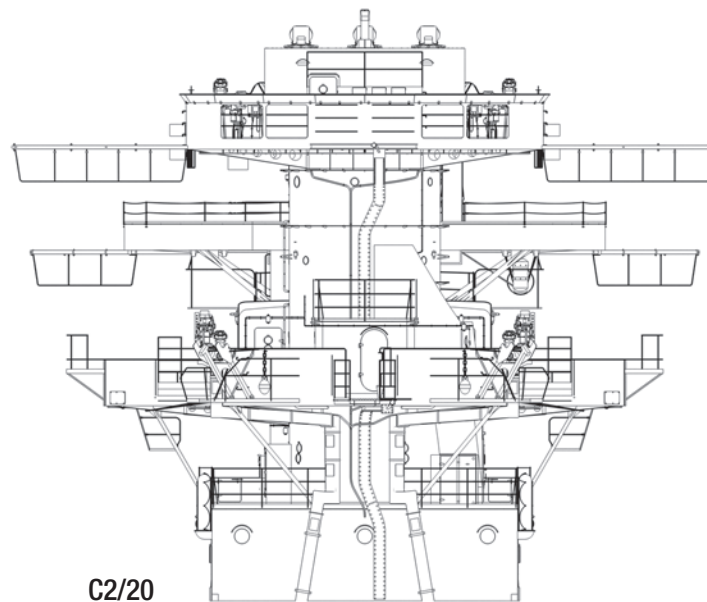


**C2/19 FRAGMENT OF SUPERSTRUCTURE BETWEEN UPPER MAST DECK  
LEVEL AND LOWER SEARCHLIGHT DECK LEVEL – FRONT VIEW,  
AUGUST 1940**

**C2/19**

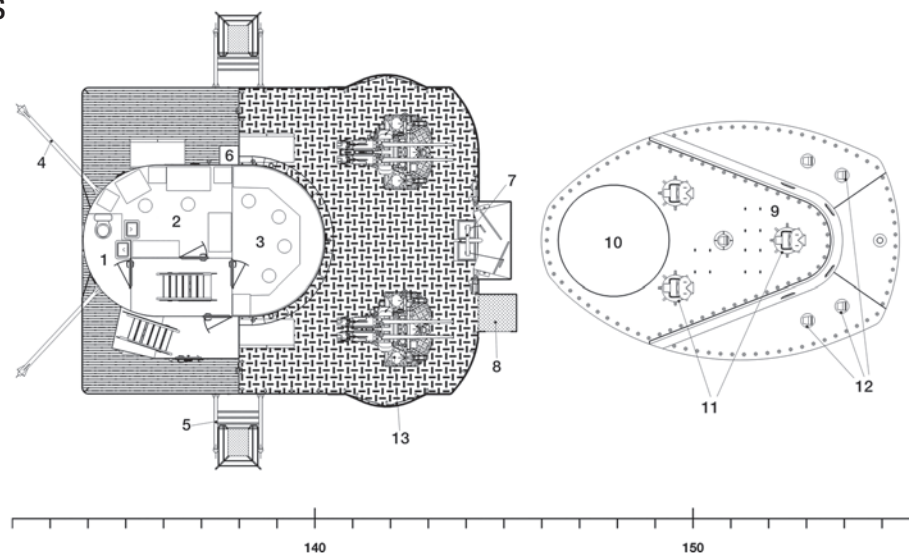


**C2/20 FRAGMENT OF SUPERSTRUCTURE BETWEEN LOWER MAST DECK  
LEVEL AND MAIN FIRE CONTROL POST ROOF LEVEL – BACK VIEW,  
MAY 1941**

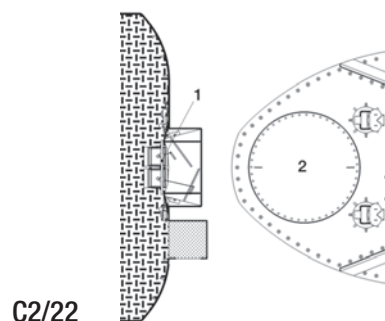
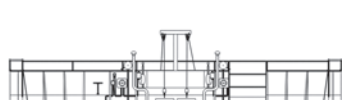


**FORE SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)**
**C2/21 UPPER MAST DECK LEVEL – PLAN, MAY 1941**

- 1 Admiral's toilet
- 2 Meteorological office
- 3 Weather radio room
- 4 Admiral's bridge support
- 5 3m rangefinder platform support
- 6 Ammunition hoist
- 7 Short ammunition hoist pulley frame (replaced earlier tall frame around January 1941)
- 8 Ladder platform
- 9 Conning tower armoured roof
- 10 7m rangefinder base (rangefinder fitted early March 1941)
- 11 Zielgeber C/38S
- 12 Periscope
- 13 3.7cm twin mount


**C2/22 UPPER MAST DECK LEVEL – PLAN (FRAGMENT), AUGUST 1940**

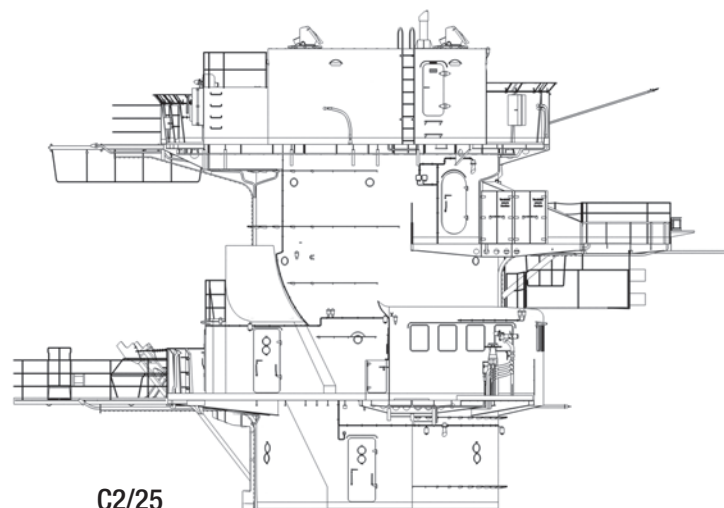
- 1 Tall ammunition hoist pulley frame (replaced around January 1941)
- 2 Cover of 7m rangefinder base (removed early March 1941, when rangefinder was fitted)


**C2/23 UPPER MAST DECK LEVEL – VIEW FROM FRAME 143 TOWARDS THE BOW, MAY 1941**
**C2/24 UPPER MAST DECK LEVEL – VIEW FROM FRAME 143 TOWARDS THE BOW, AUGUST 1941**
**C2/25 FRAGMENT OF SUPERSTRUCTURE BETWEEN UPPER MAST DECK LEVEL AND MAIN FIRE CONTROL POST ROOF LEVEL – RIGHT PROFILE WITH SHIELDS OMITTED FOR CLARITY, MAY 1941**


C2/23

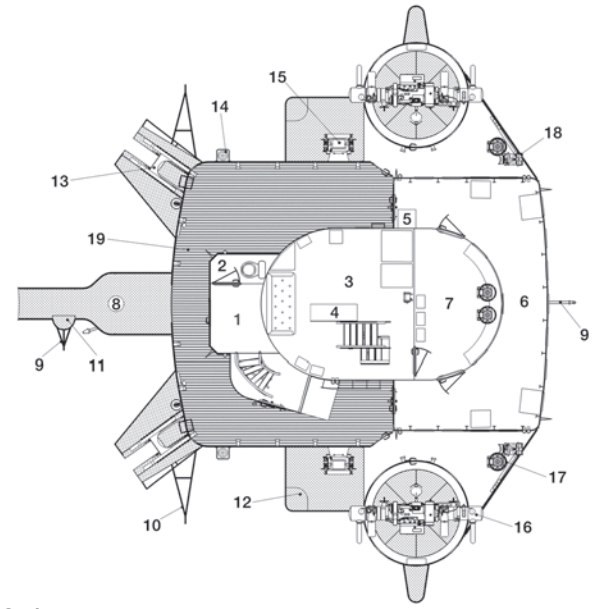


C2/24

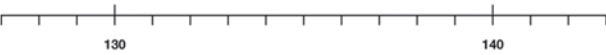


**C2/26 ADMIRAL'S BRIDGE LEVEL – PLAN, MAY 1941**

- 1 Signalman's shelter
- 2 Toilet
- 3 Chart room
- 4 Cable shaft
- 5 Ammunition hoist
- 6 Admiral's bridge
- 7 Shelter of admiral's bridge
- 8 Foremast base
- 9 Wire antenna outrigger
- 10 Wire antenna outrigger (after modification in January 1941)
- 11 Signalman's platform
- 12 Large signalman's platform (added around April 1941)
- 13 Main crane arm rest frame
- 14 Wire antenna duct
- 15 Signal lamp
- 16 3m night rangefinder (fitted around January 1941)
- 17 Compass repeater
- 18 Lookout binoculars
- 19 Wooden grating



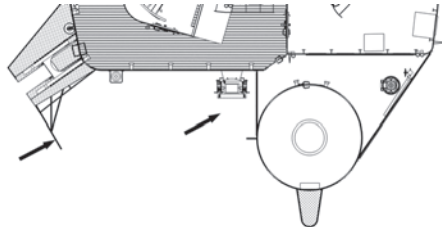
**C2/26**



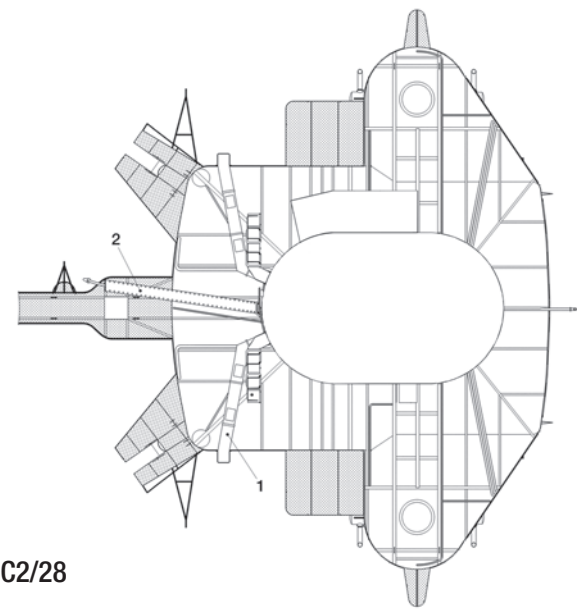
**C2/27 ADMIRAL'S BRIDGE LEVEL BEFORE MODIFICATIONS IN JANUARY 1941 – PLAN (FRAGMENT)**

**C2/28 ADMIRAL'S BRIDGE LEVEL – BOTTOM VIEW, MAY 1941**

- 1 Wire antenna duct
- 2 Shielded wire antenna tube



**C2/27**



**C2/28**





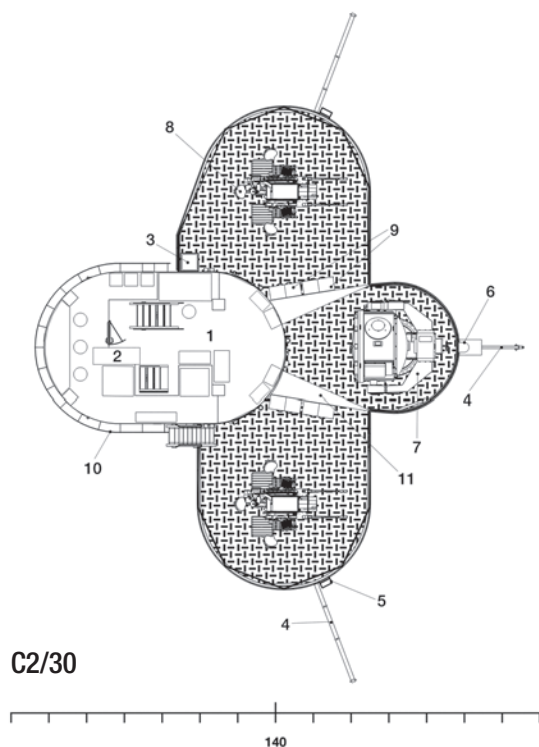
# FORE SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS (1/200 SCALE)

## C2/29 LOWER SEARCHLIGHT DECK LEVEL – PLAN

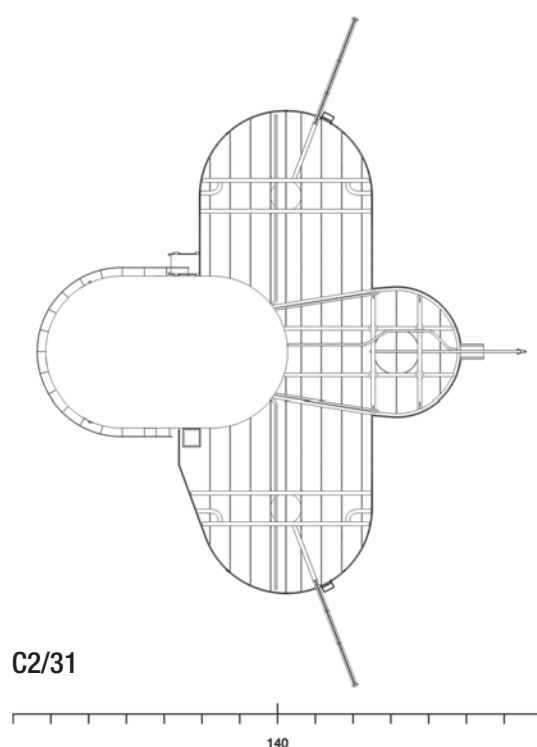
- 1 Communications centre
- 2 Foot rail
- 3 Searchlight platform support
- 4 Catwalk
- 5 Fog horn
- 6 Ammunition hoist
- 7 *Nachtsignaleinrichtung* (night signalling gear) – two horizontal steel plates with attachment points for 9 lamps (white, green and red)
- 8 Cable shaft

## C2/30 UPPER SEARCHLIGHT DECK LEVEL – PLAN, MAY 1941

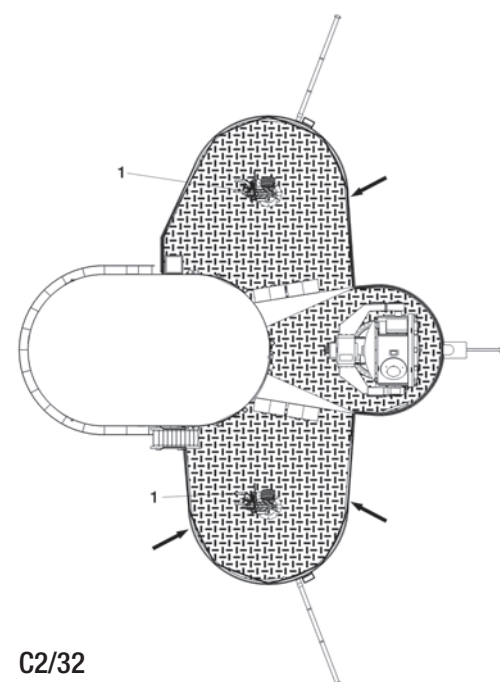
- 1 Air tracking station
- 2 Cable shaft
- 3 Ammunition hoist
- 4 Wire antenna outrigger
- 5 Foot step
- 6 Lantern (white)
- 7 150cm Searchlight
- 8 2cm quadruple mount – *Vierling* (fitted on both sides in April 1941)
- 9 Ammunition locker
- 10 Foot rail
- 11 Structure reinforcement



C2/30



C2/31

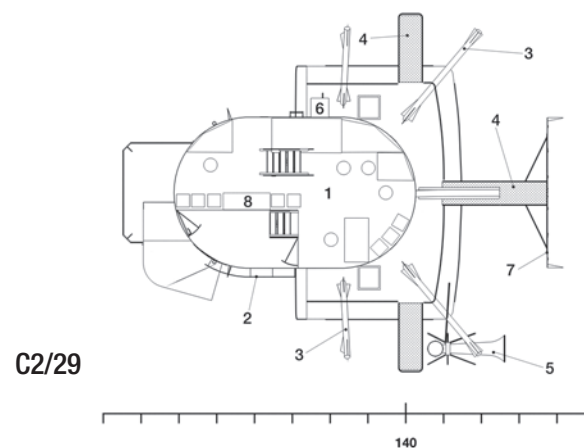


C2/32

## C2/31 UPPER SEARCHLIGHT DECK LEVEL – BOTTOM VIEW, MAY 1941

## C2/32 UPPER SEARCHLIGHT DECK LEVEL BEFORE THE WIDENING OF THE AA GUN PLATFORMS IN JANUARY 1941 – PLAN

- 1 Single 2cm mount (replaced with quadruple mount in April 1941)



C2/29

### C2/33 FORETOP GALLERY LEVEL – PLAN

- 1 Crew shelter
- 2 Main fire control post
- 3 10.5m rangefinder base
- 4 Periscope
- 5 *Zielgeber C/38S*
- 6 *Nachtsignaleinrichtung* (night signalling gear)
- 7 Phone locker
- 8 Antenna outrigger
- 9 ZAG (*Zielanweisergerät*, AA artillery target giver)
- 10 Lookout binoculars on a column, fitted in place of the planned ZAG instrument; rear ZAGs were most probably never fitted
- 11 Compass repeater
- 12 Hinged shield
- 13 Voice pipe

### C2/34 FORETOP GALLERY LEVEL – BOTTOM VIEW

- 1 Cable frame
- 2 *Nachtsignaleinrichtung* (night signalling gear)

### C2/35 FORETOP GALLERY LEVEL – VIEW FROM THE CENTRELINE TOWARDS PORT SIDE

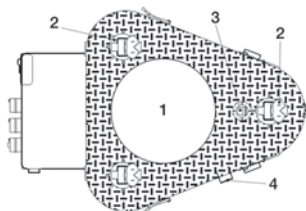
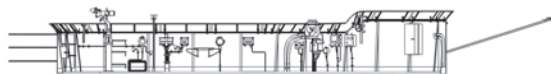
### C2/36 MAIN FIRE CONTROL POST ROOF LEVEL – PLAN, MAY 1941

- 1 10.5m rangefinder base
- 2 *Zielgeber C/38S*
- 3 Periscope (fitted around January 1941)
- 4 Ladder

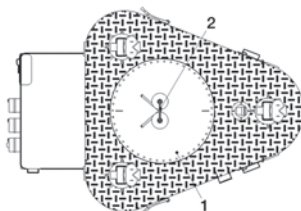
### C2/37 MAIN FIRE CONTROL POST ROOF LEVEL – PLAN, AUGUST 1940

- 1 Cover of 10.5m rangefinder base (removed around September 1940, when rangefinder was fitted)
- 2 Manoeuvre and top lights on a small mast (moved to rangefinder's roof when it was fitted)

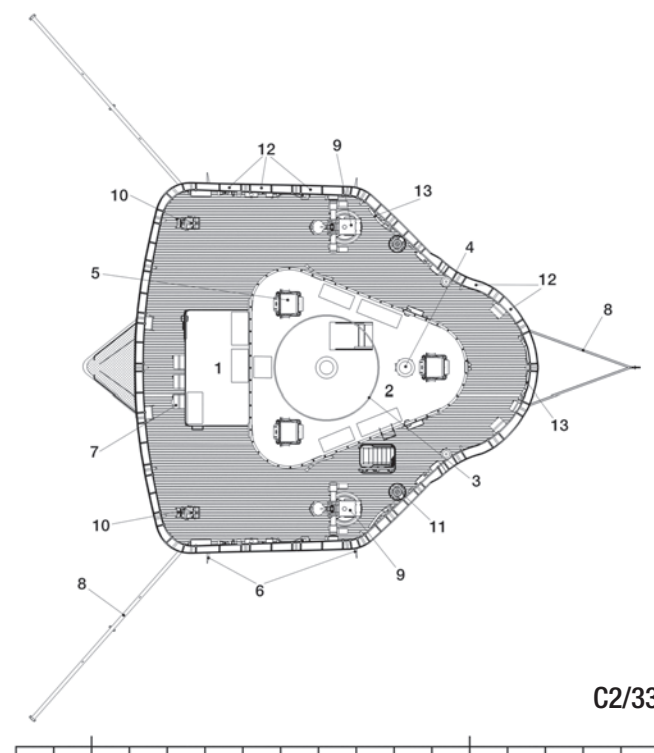
C2/35



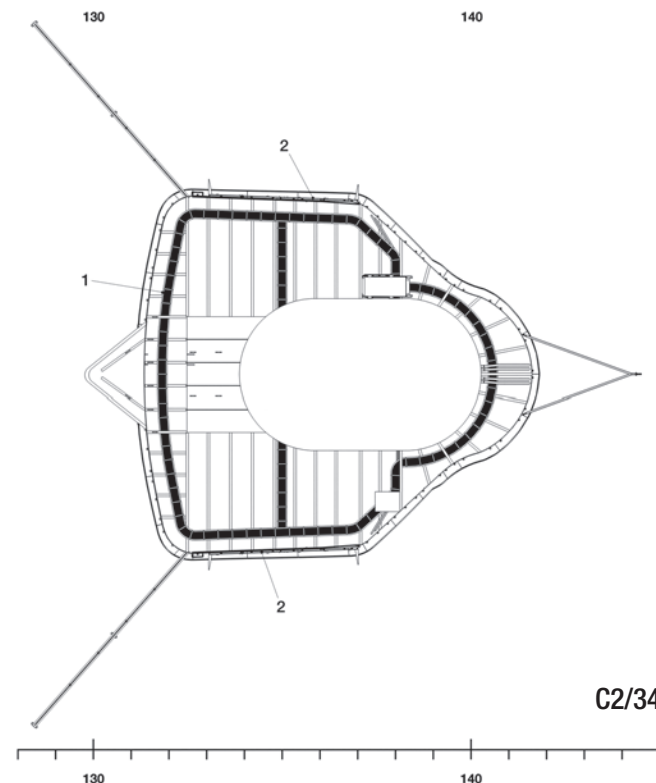
C2/36



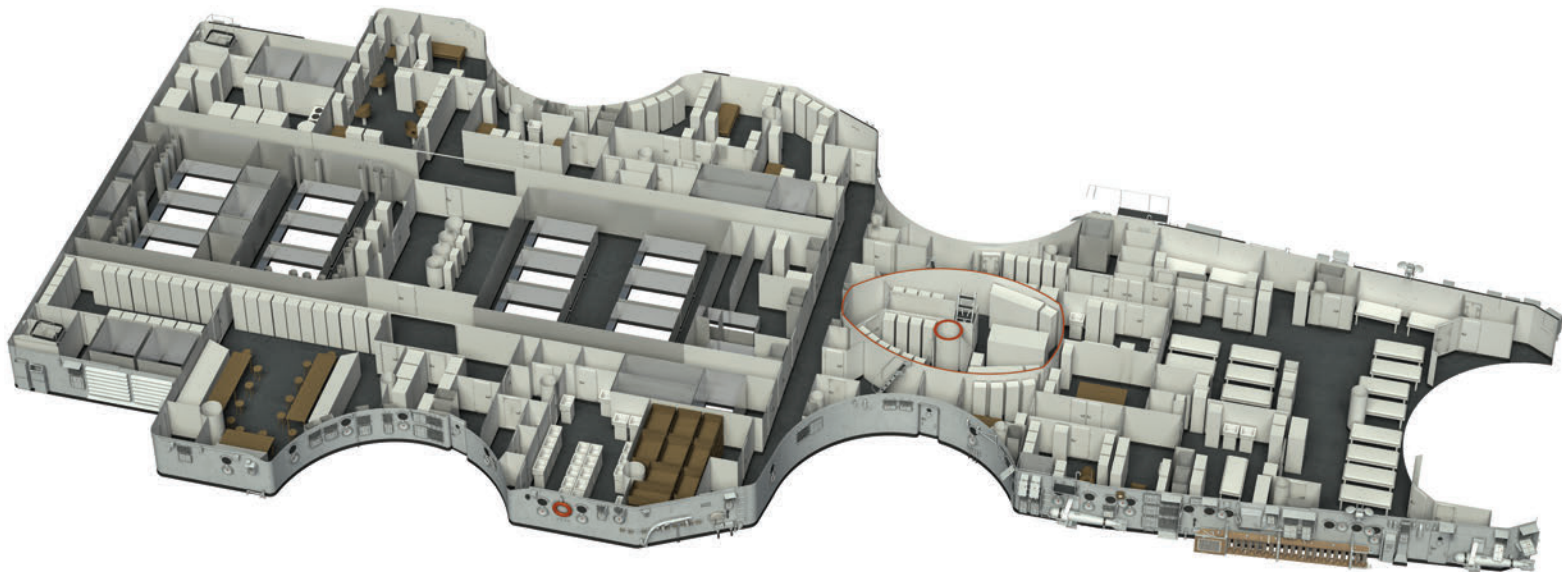
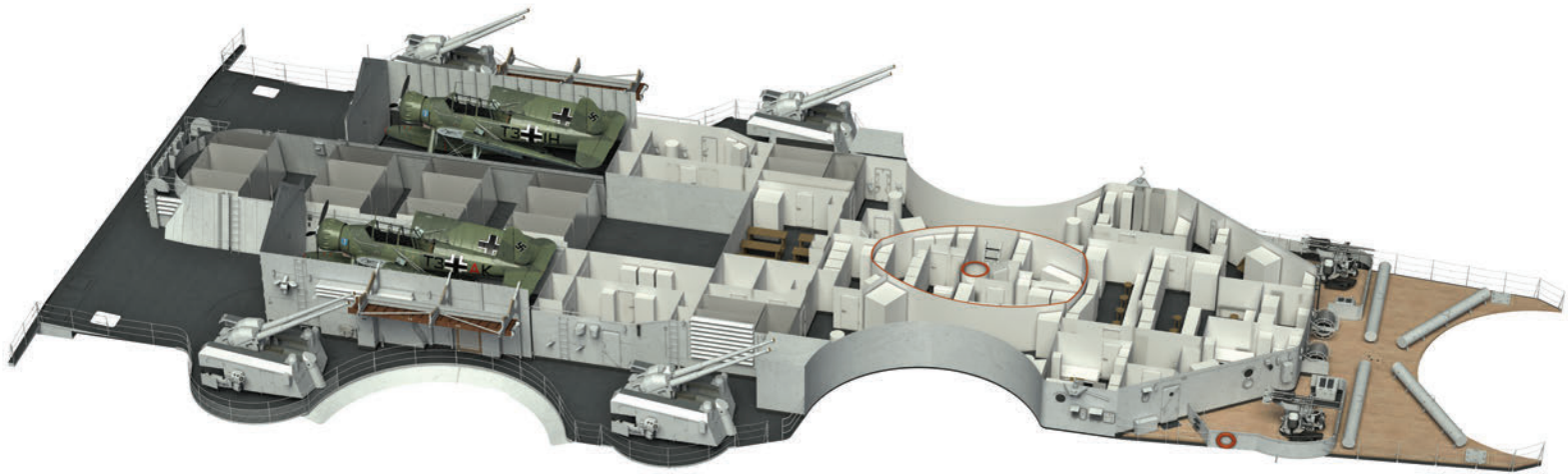
C2/37



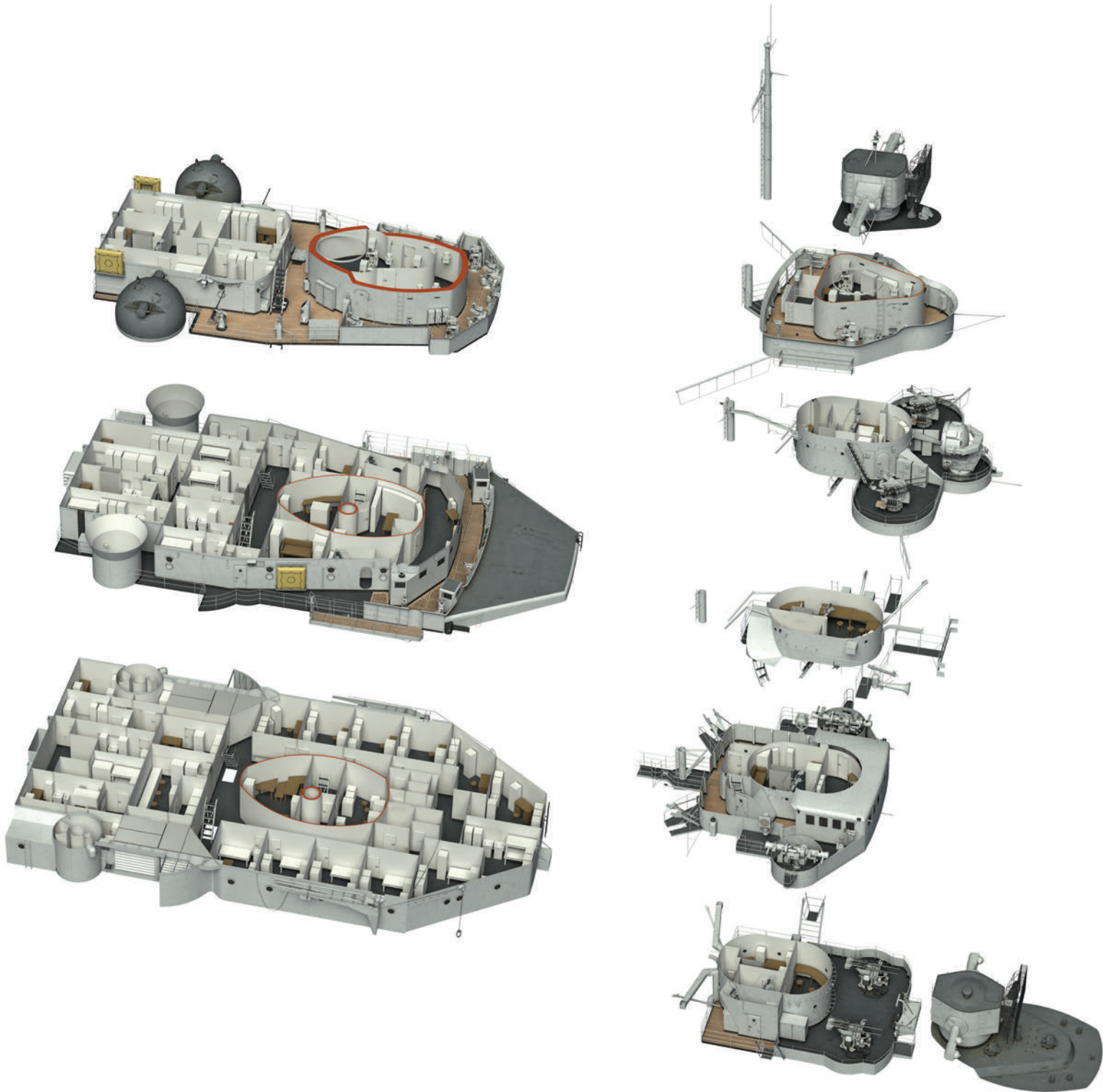
C2/33



C2/34







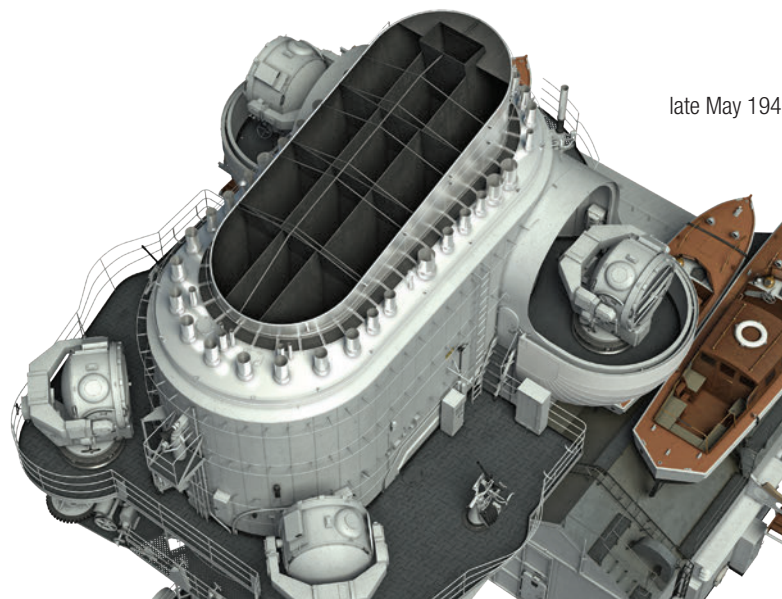
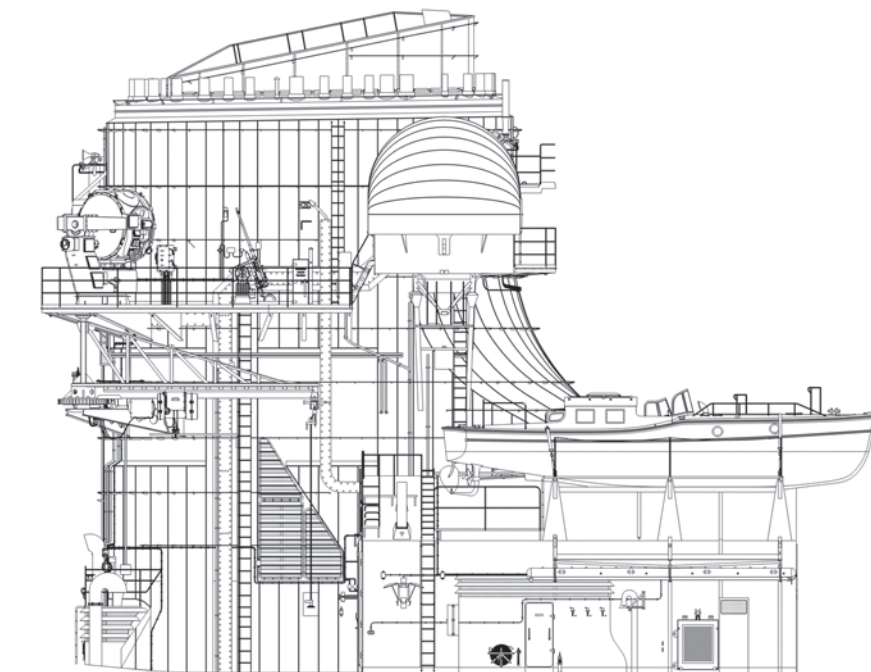
FUNNEL WITH AIRCRAFT HANGARS NO. 2 AND 3 (1/200 SCALE)

C3/1 RIGHT PROFILE, MAY 1941

C3/2 RIGHT PROFILE WITH BOATS, SEARCHLIGHTS AND AA GUNS

OMITTED FOR CLARITY, AUGUST 1940

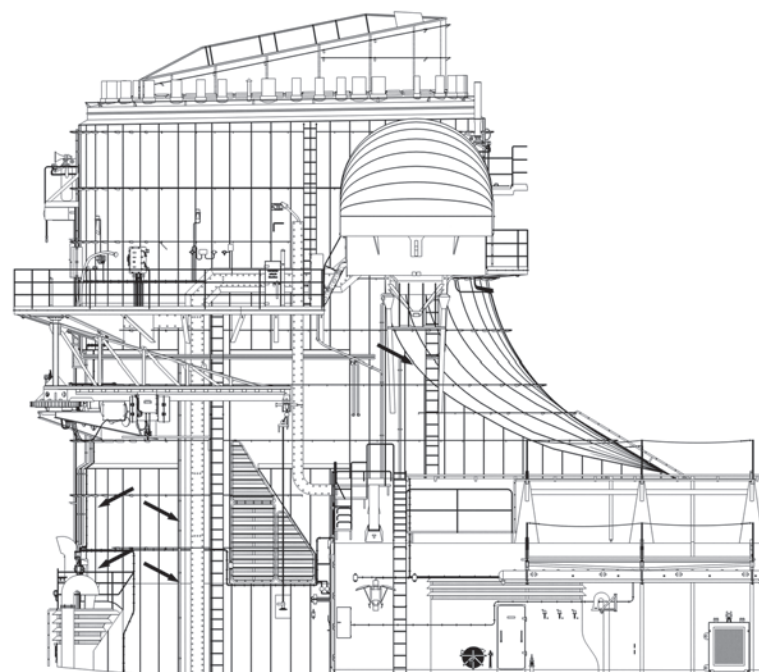
late May 1941



C3/1



August 1940

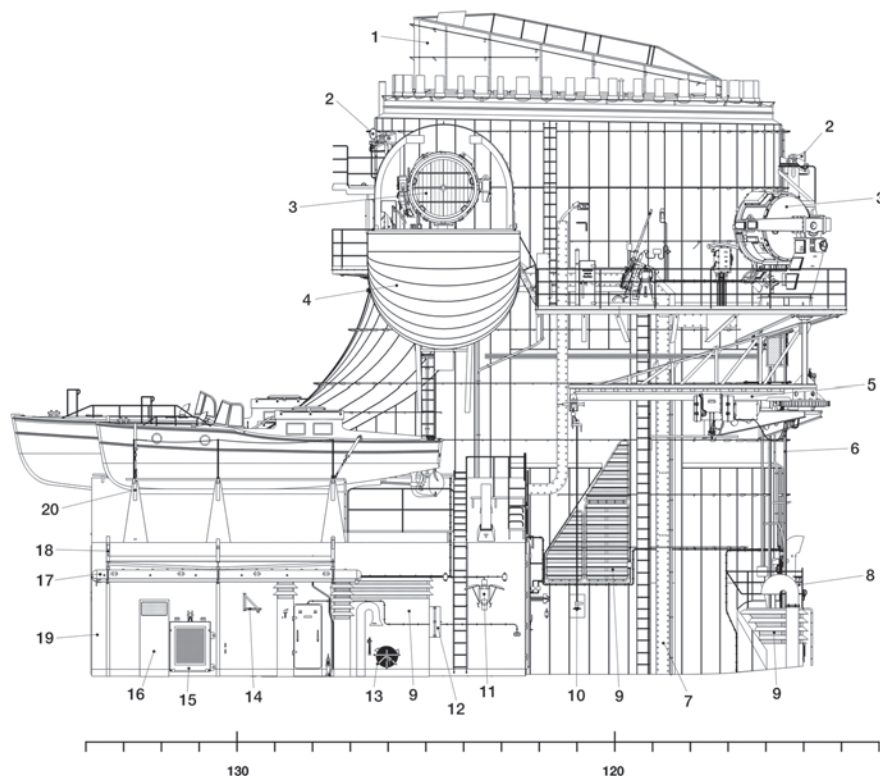


C3/2

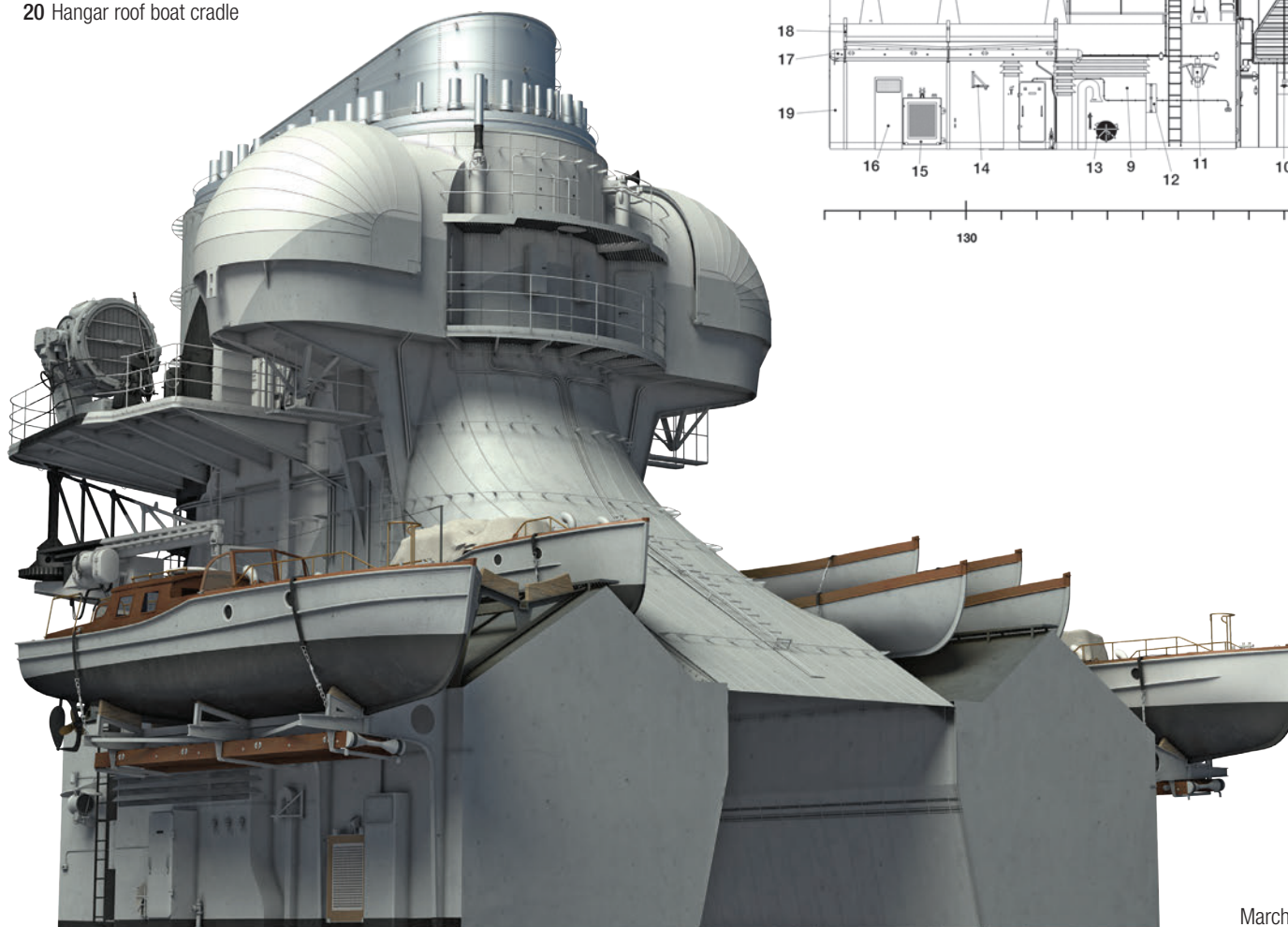


### C3/3 LEFT PROFILE, MAY 1941

- 1 Funnel cap
- 2 Steam whistle
- 3 Searchlight
- 4 Open *Kalotte* (spherical cover of the searchlight)
- 5 Aircraft overhead crane
- 6 Ammunition hoist (port side only)
- 7 Shielded wire antenna tube
- 8 Overhead crane operating platform
- 9 Vent
- 10 Overhead crane locking mechanism
- 11 Loudspeaker
- 12 Phone locker
- 13 Fire hose and nozzle
- 14 15cm ammunition crane arm
- 15 Stowed accommodation ladder platform
- 16 Vent (added on both hangars in January 1941)
- 17 Stowed gangway
- 18 Outboard boat cradle
- 19 Hangar no. 2
- 20 Hangar roof boat cradle

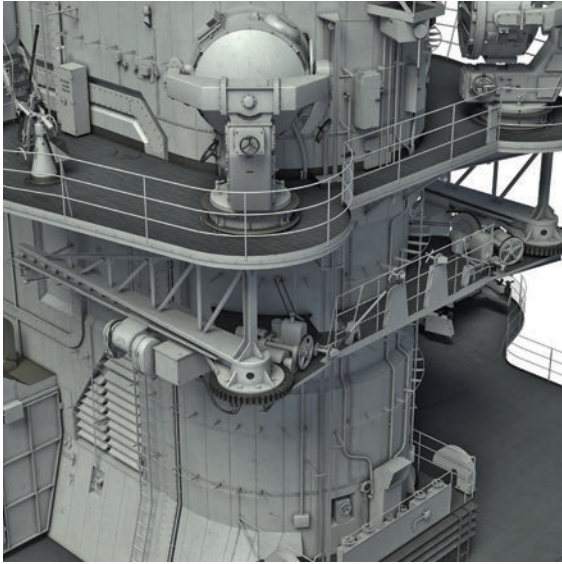


C3/3

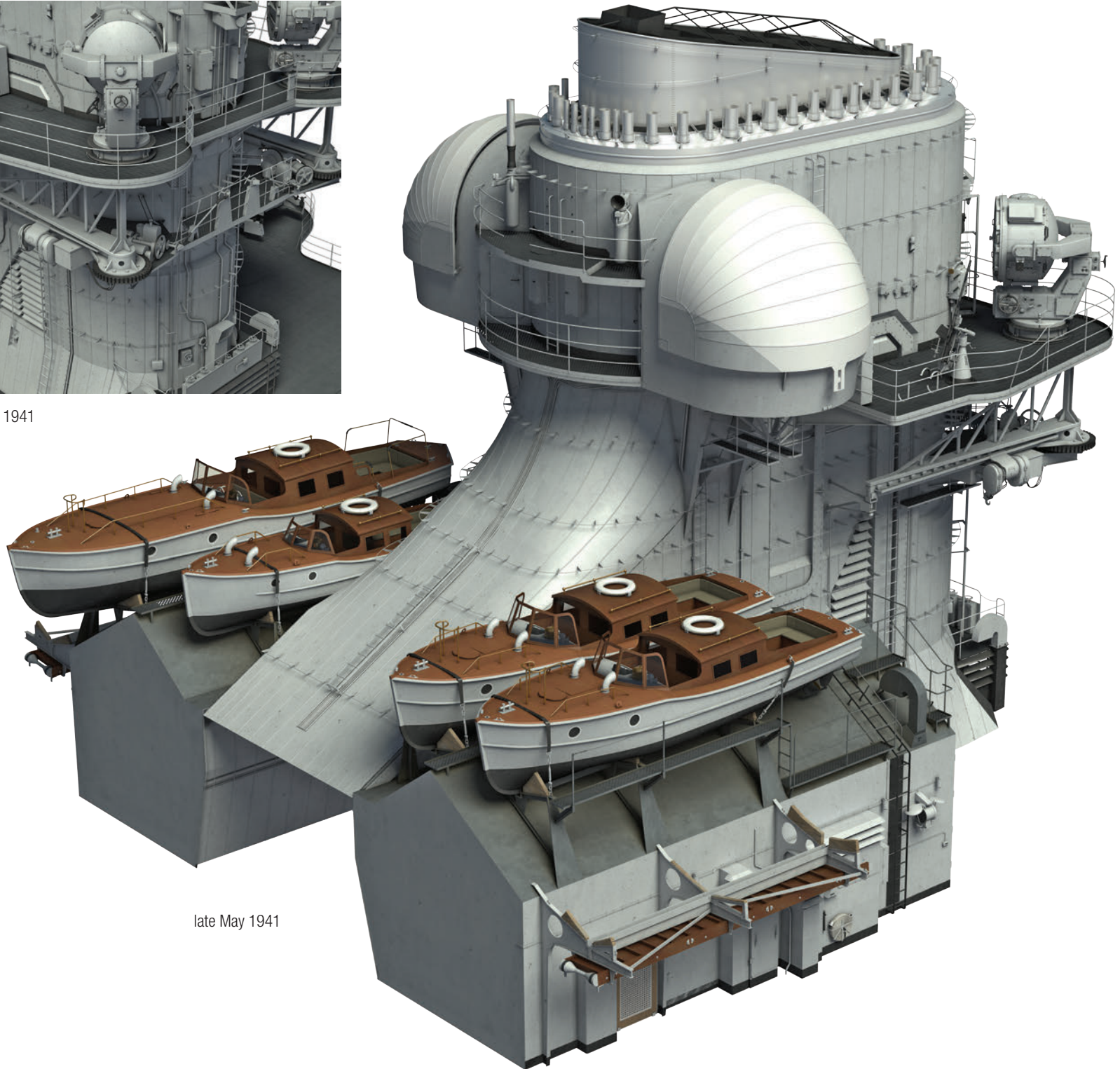


March 1941



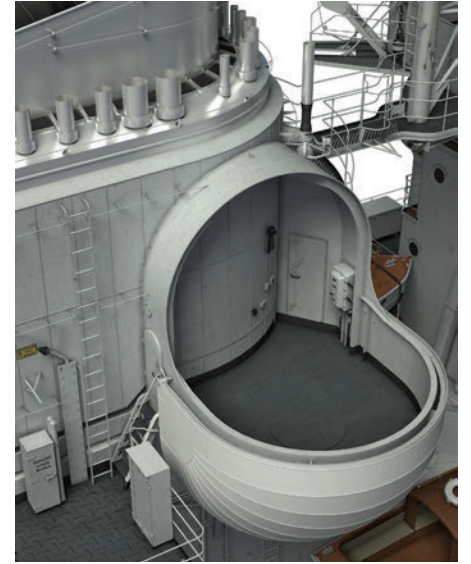
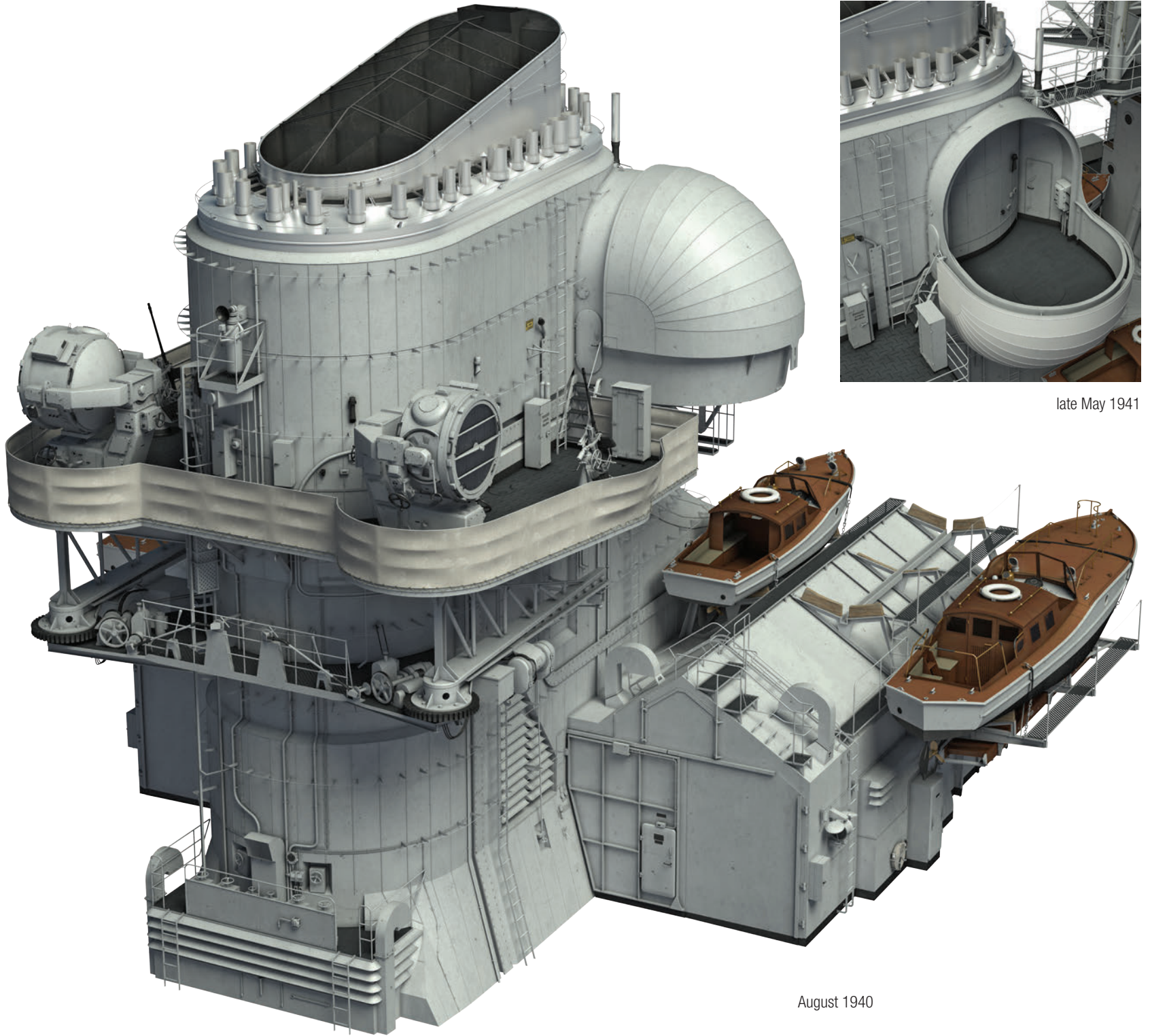


late May 1941



late May 1941





late May 1941

August 1940

FUNNEL WITH AIRCRAFT HANGARS NO. 2 AND 3 (1/200 SCALE)

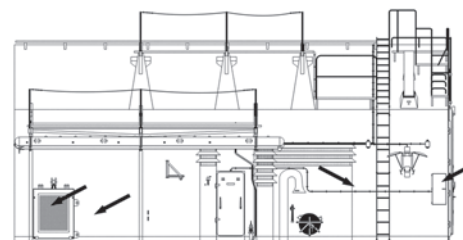
C3/4 PORT SIDE HANGAR NO. 2 – LEFT PROFILE WITH BOATS OMITTED  
FOR CLARITY, AUGUST 1940

C3/5 FRONT VIEW WITH BOATS, SEARCHLIGHTS AND AA GUNS OMITTED  
FOR CLARITY, MAY 1941

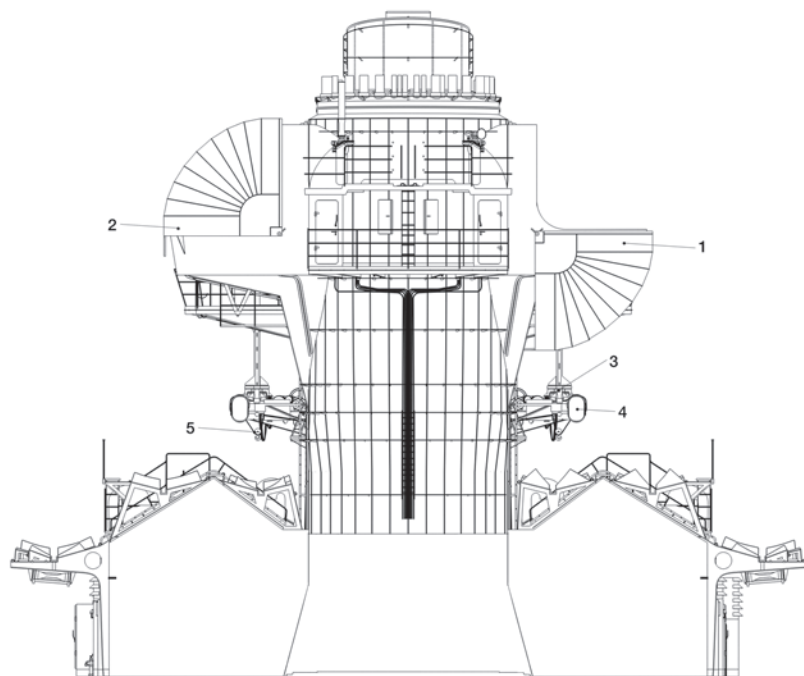
- 1 Open *Kalotte*
- 2 Closed *Kalotte*
- 3 Aircraft overhead crane
- 4 Crane trolley
- 5 Crane hook

C3/6 BACK VIEW WITH BOATS, SEARCHLIGHTS AND AA GUNS OMITTED  
FOR CLARITY, MAY 1941

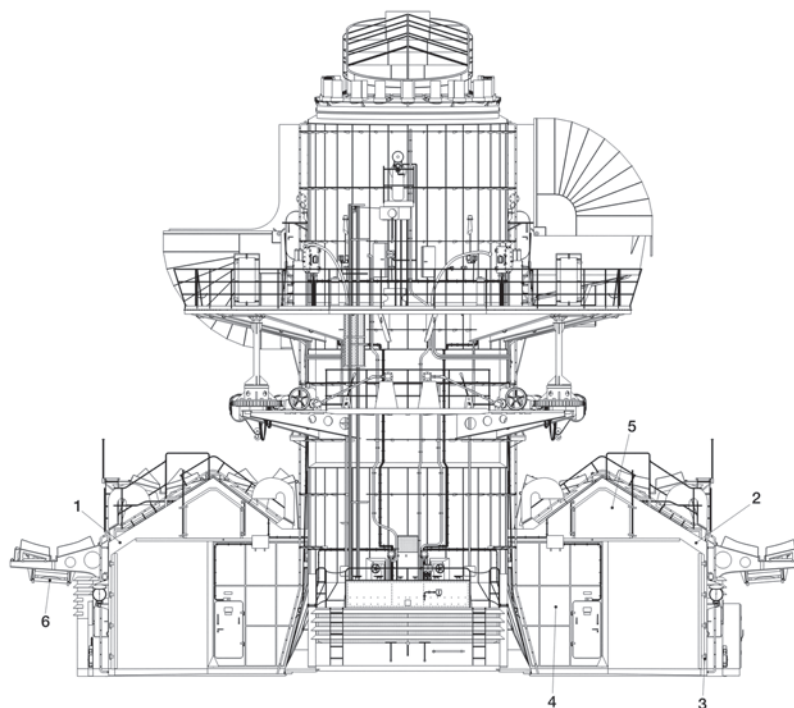
- 1 Hangar no. 2
- 2 Hangar no. 3
- 3 Hangar door hinge
- 4 Sliding part of hangar door
- 5 Small door for floatplane's vertical stabiliser
- 6 Stowed gangway



C3/4



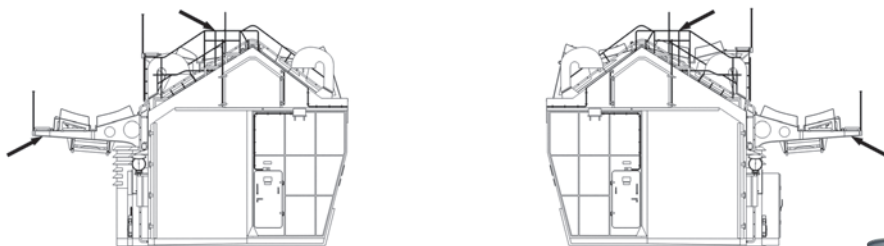
C3/5



C3/6

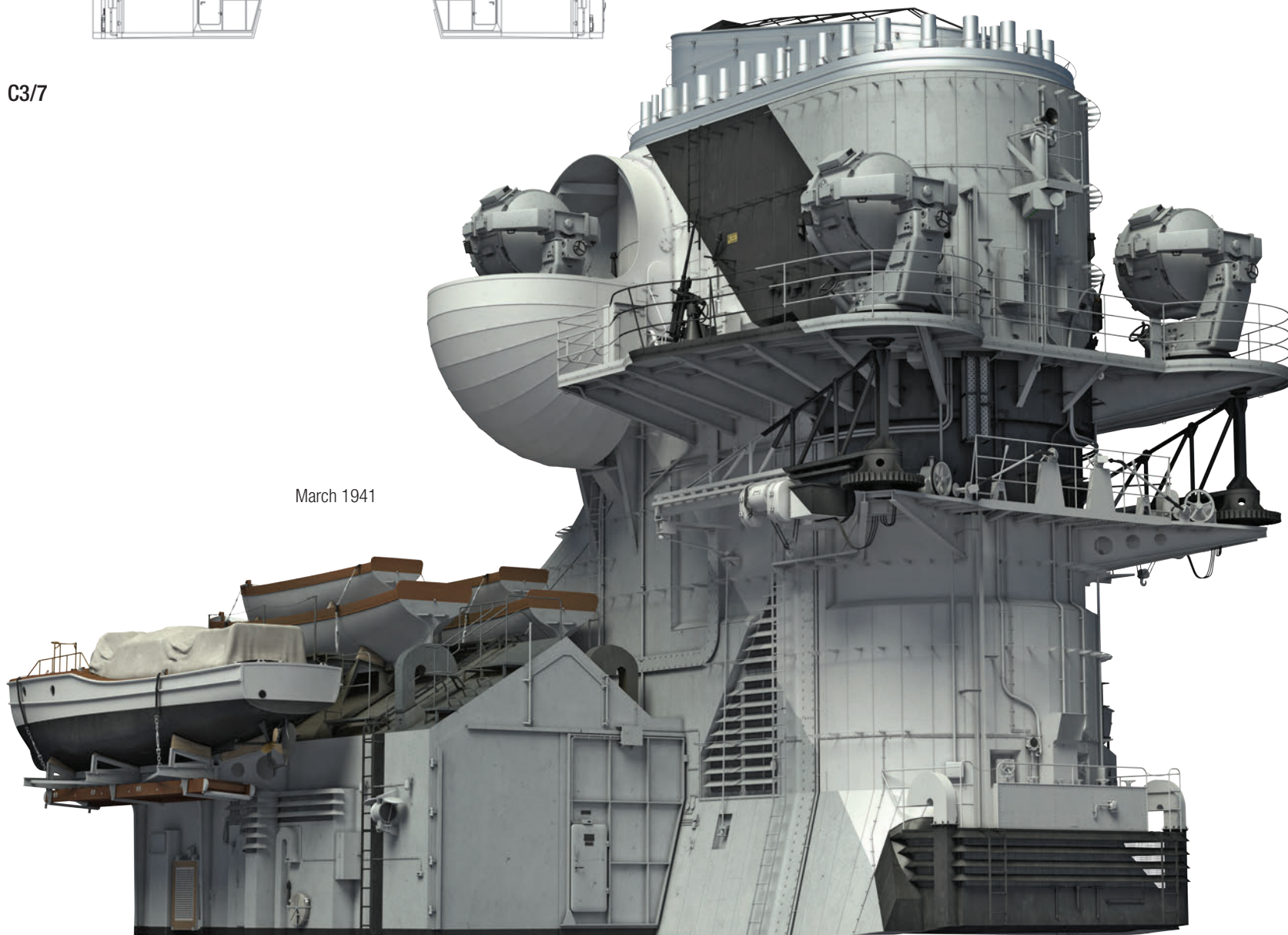


C3/7 HANGARS NO. 2 AND 3 – BACK VIEW WITH BOATS OMITTED  
FOR CLARITY, AUGUST 1940



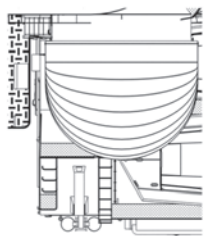
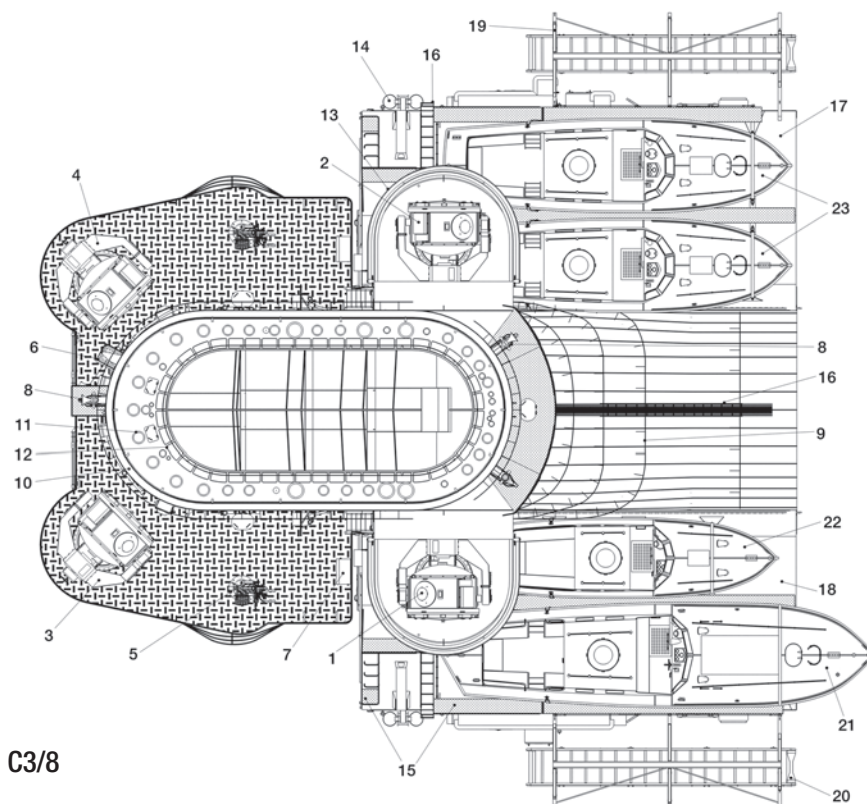
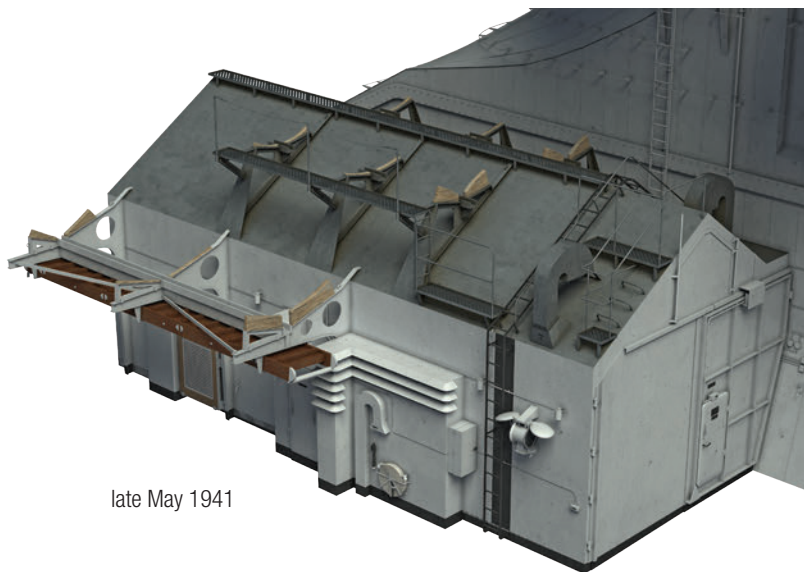
C3/7

March 1941

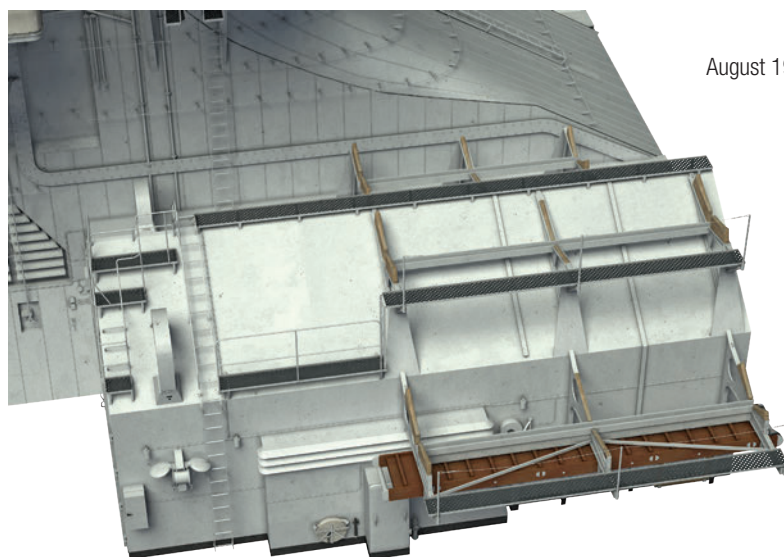


**FUNNEL WITH AIRCRAFT HANGARS NO. 2 AND 3 (1/200 SCALE)****C3/8 PLAN, MAY 1941**

- 1 Searchlight II
- 2 Searchlight III
- 3 Searchlight IV
- 4 Searchlight V
- 5 Single 2 cm mount
- 6 Ammunition hoist (port side only)
- 7 Ammunition locker
- 8 Steam whistle
- 9 Foot rail
- 10 Funnel cap
- 11 Exhaust pipe
- 12 Diesel exhaust
- 13 *Kalotte* (open)
- 14 Loudspeaker
- 15 Catwalk
- 16 Ladder
- 17 Aircraft hangar no. 2
- 18 Aircraft hangar no. 3
- 19 Outboard boat cradle
- 20 Stowed gangway
- 21 Admiral's boat
- 22 Motor yawl
- 23 Motor pinnace (embarked around April 1941)

**C3/9****C3/8****C3/9 PLAN (FRAGMENT) – STARBOARD SIDE *KALOTTE* CLOSED**

late May 1941



August 1940



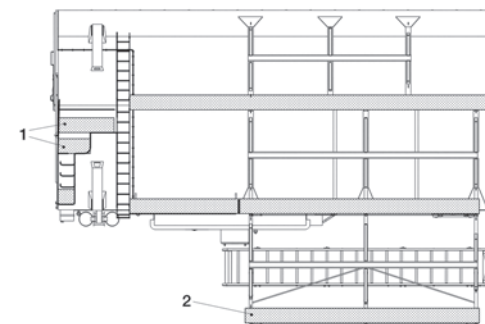
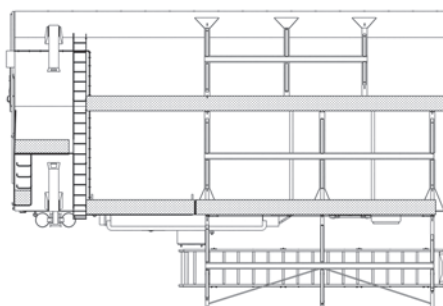
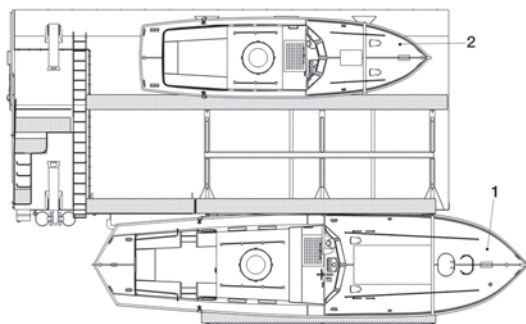
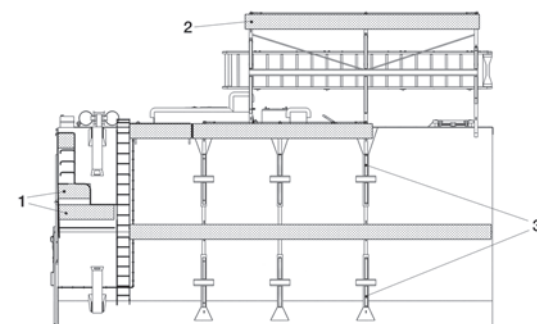
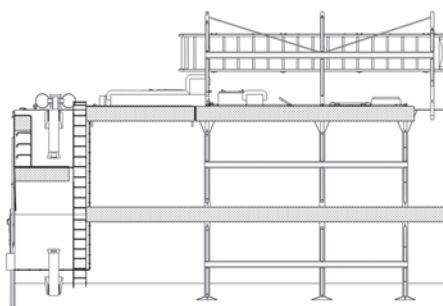
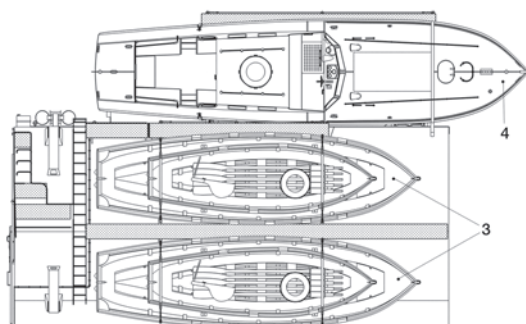
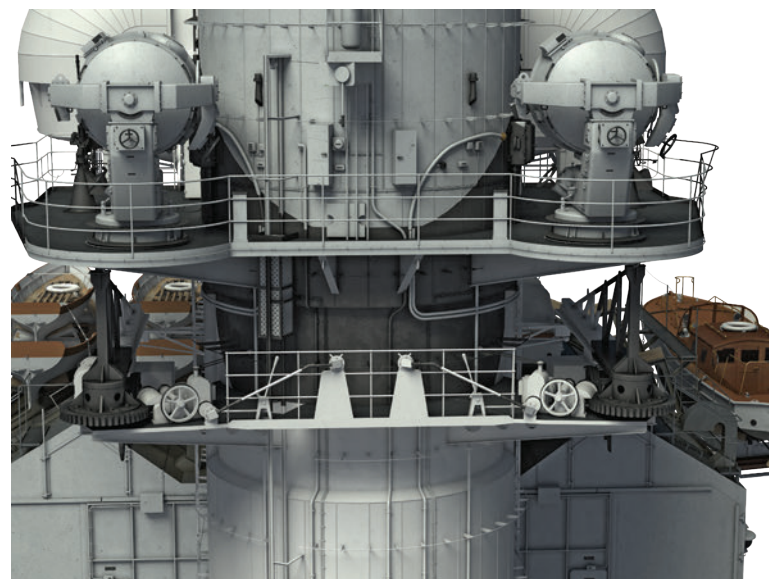
### C3/10 HANGARS NO. 2 AND 3 – PLAN, AUGUST 1940

- 1 Admiral's boat (moved to outer slope of the hangar around late March 1941)
- 2 Motor yawl
- 3 Row cutter with a row yawl stowed in it (replaced with motor pinnace around April 1941)
- 4 Admiral's boat of the newer, rounded stern type (removed around April 1941)

### C3/11 HANGARS NO. 2 AND 3 – PLAN WITH BOATS OMITTED FOR CLARITY, MAY 1941

### C3/12 HANGARS NO. 2 AND 3 – PLAN WITH BOATS OMITTED FOR CLARITY, AUGUST 1940

- 1 Catwalk (modified in January 1941)
- 2 Catwalk (removed in January 1941)
- 3 Row cutter cradle (replaced with motor pinnace cradle around April 1941)



C3/10

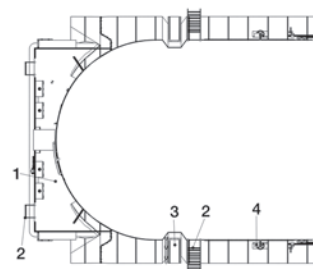
C3/11

C3/12

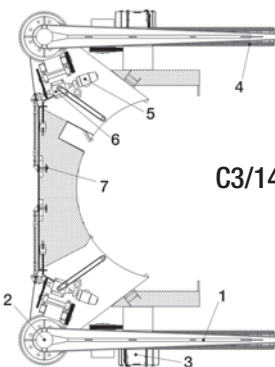
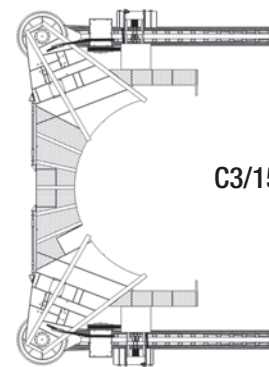


**FUNNEL WITH AIRCRAFT HANGARS NO. 2 AND 3 (1/200 SCALE)****C3/13 BOTTOM PART OF THE FUNNEL – PLAN**

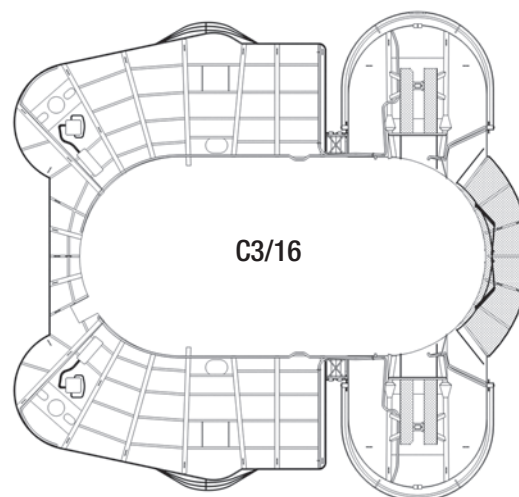
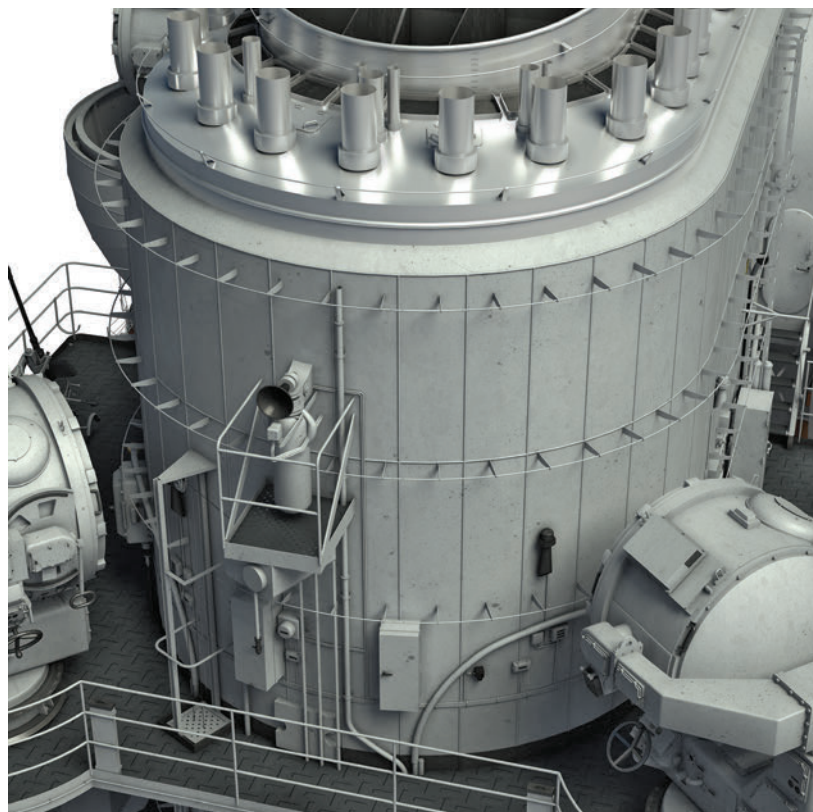
- 1 Overhead crane operating platform
- 2 Ladder
- 3 Shielded wire antenna tube
- 4 Overhead crane locking mechanism

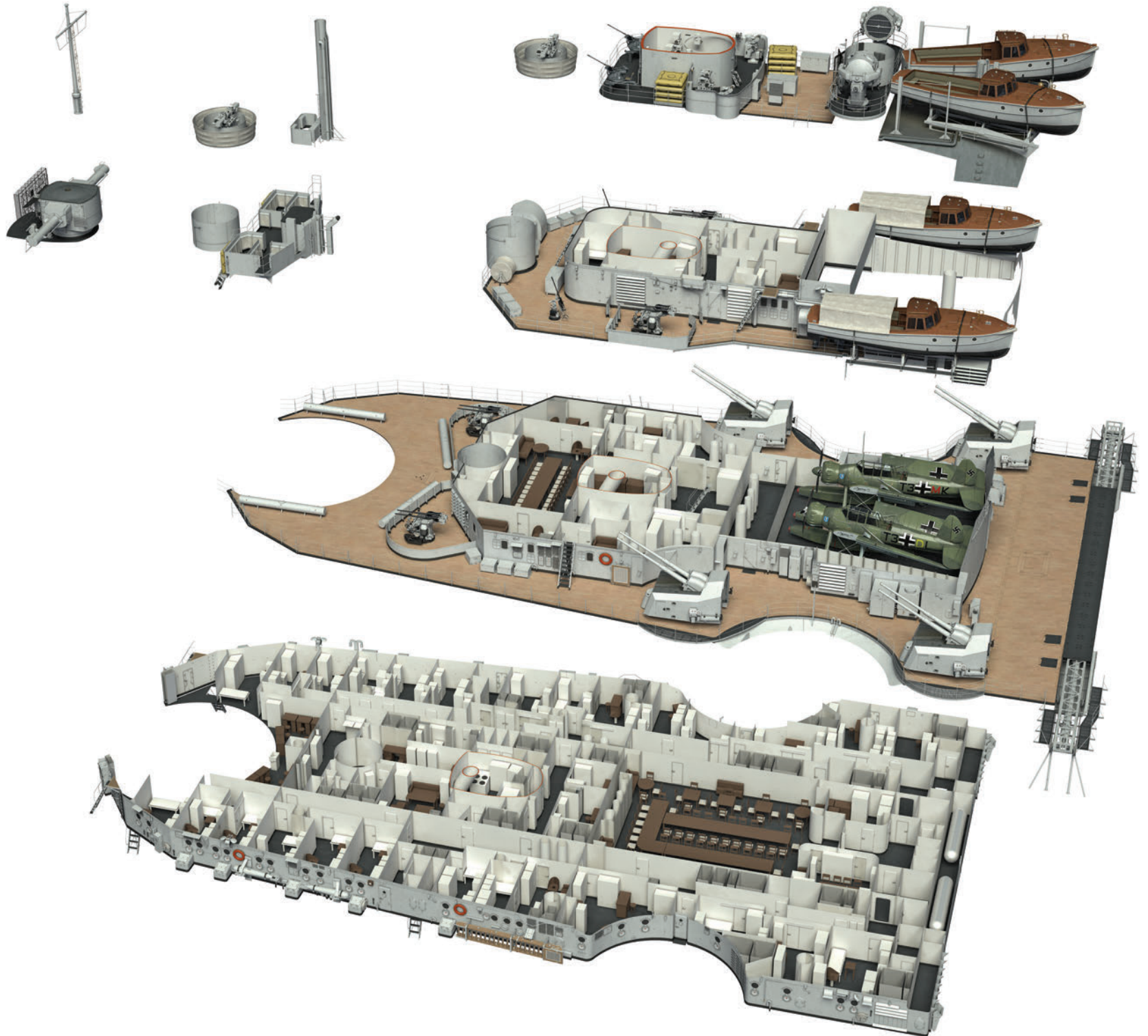
**C3/13****C3/14 FUNNEL CRANE PLATFORM – PLAN**

- 1 Aircraft overhead crane arm
- 2 Crane rotation axis
- 3 Crane trolley with hoist and hook
- 4 Trolley track
- 5 Crane train drive
- 6 Gearbox
- 7 Manual training handwheel

**C3/14****C3/15****C3/15 FUNNEL CRANE PLATFORM – BOTTOM VIEW****C3/16 FUNNEL SEARCHLIGHT PLATFORM – BOTTOM VIEW**

late May 1941

**C3/16**



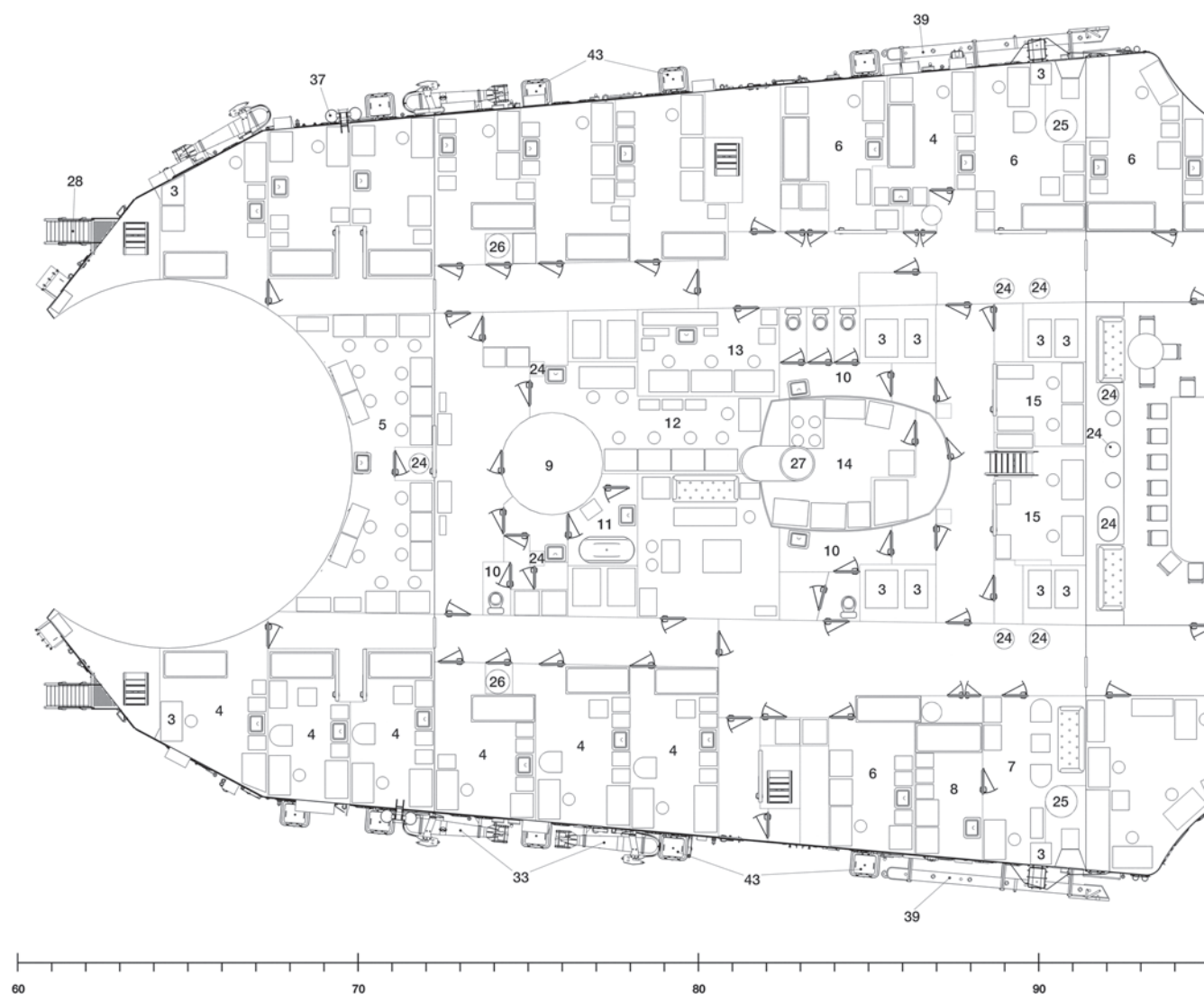
**AFT SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE DECK**

(1/200 SCALE)

**C4/1 UPPER DECK LEVEL – PLAN, MAY 1941****C4/1–2 FORE SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE DECK**

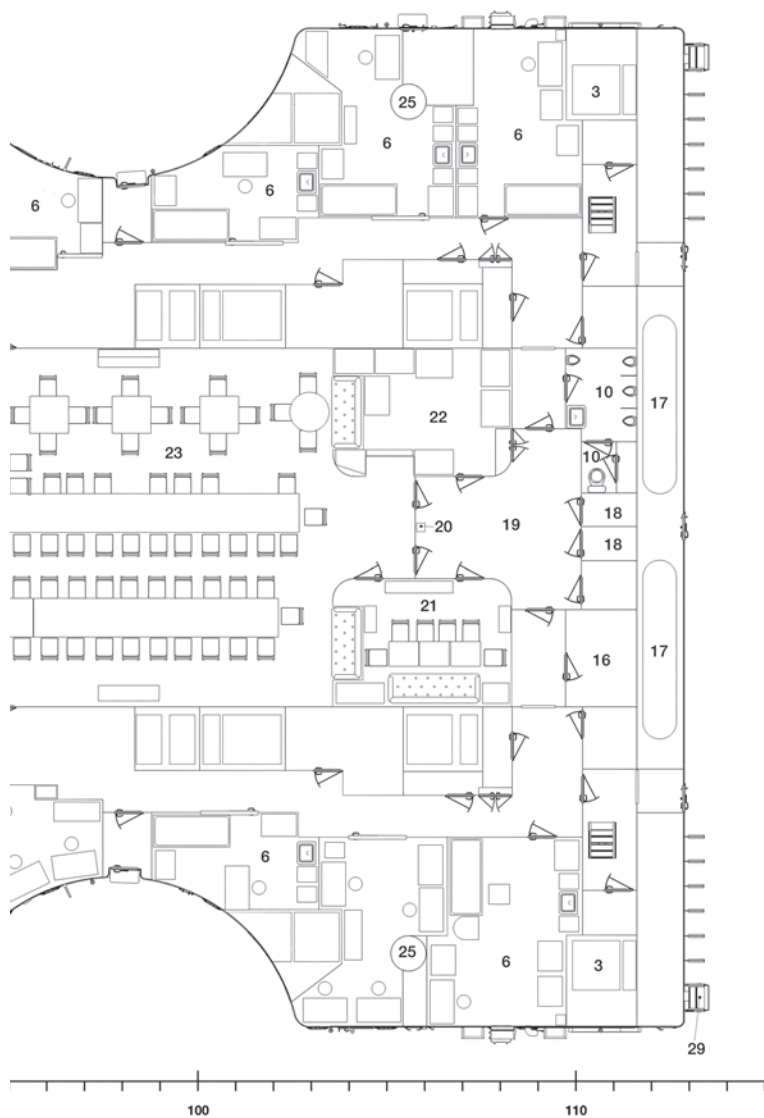
- 1 Upper deck level (*Oberdeck*)
- 2 Superstructure deck level (*Aufbaudeck*)
- 3 Vent shaft
- 4 Fleet staff officer's cabin
- 5 Fleet staff writing room

- 6 Officer's cabin
- 7 Executive officer's working room
- 8 Executive officer's cabin
- 9 Base of AA artillery director D (*Flakleitstand D*)
- 10 Toilet
- 11 Bath
- 12 Admiral staff officer's working room
- 13 Teleprinter room
- 14 Admiral's and commander's kitchen
- 15 Writing room
- 16 Vent room
- 17 Compressed air tank for the catapult
- 18 Phone booth
- 19 Lobby

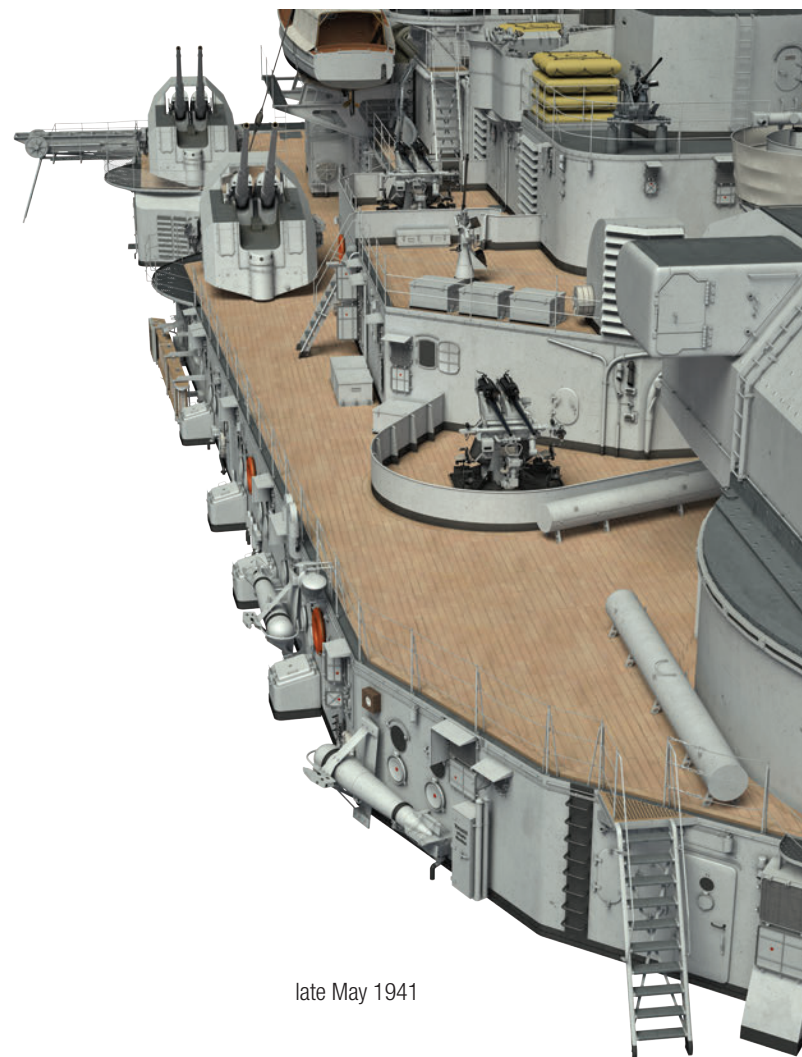
**C4/1**



- 20 Wire antenna shaft
- 21 Conference room
- 22 Officers' pantry
- 23 Officers' mess
- 24 Ammunition hoist
- 25 10.5cm gun mount base
- 26 3.7cm gun mount base
- 27 Armoured communication shaft
- 28 Ladder
- 29 Stowed organic waste chute
- 30 Hatch
- 31 Fire hose and nozzle
- 32 Fire hydrant
- 33 Stowed paravane



- 34 Watertight door
- 35 Side scuttle
- 36 Main artillery sub-caliber barrel container
- 37 Loudspeaker
- 38 2cm ammunition locker
- 39 Stowed accommodation ladder
- 40 Life ring
- 41 Clock
- 42 15cm ammunition crane arm
- 43 Skylight
- 44 Vent
- 45 Foot step
- 46 15cm muzzle plug holder



late May 1941

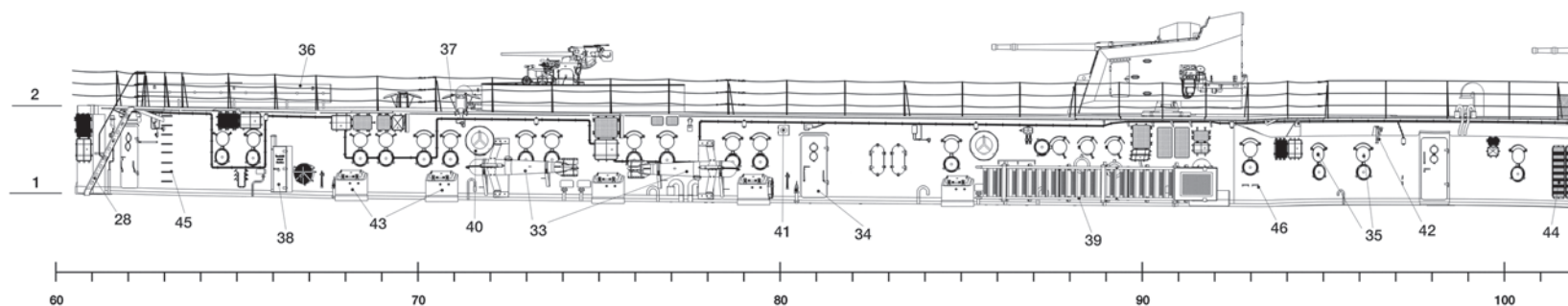
AFT SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE DECK  
(1/200 SCALE)

C4/2 RIGHT PROFILE, MAY 1941

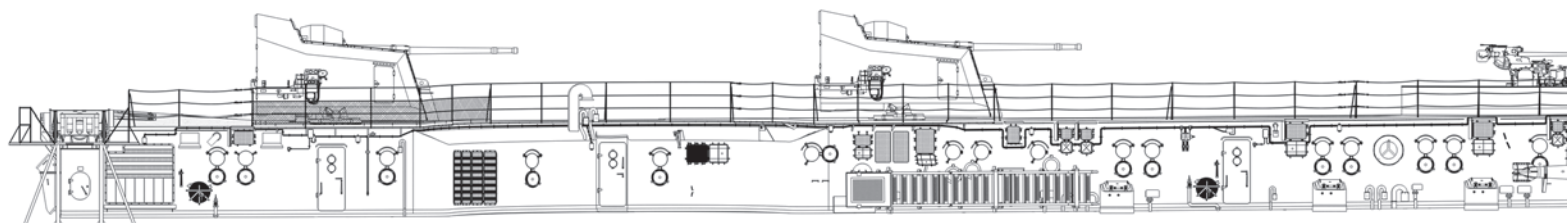
C4/3 LEFT PROFILE, MAY 1941

C4/4 FRONT VIEW, MAY 1941

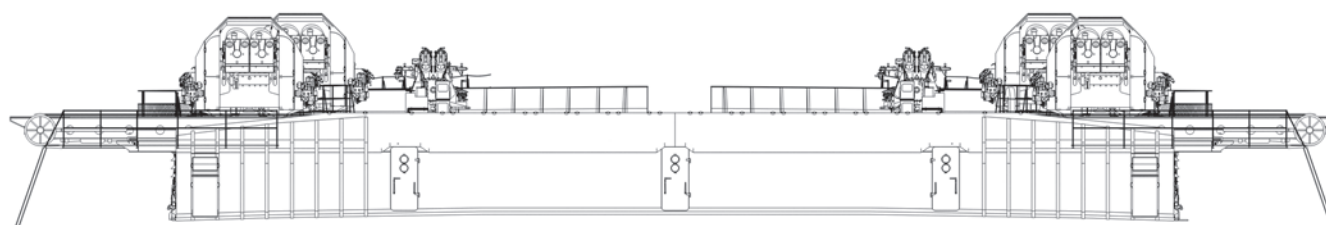
C4/5 BACK VIEW, MAY 1941



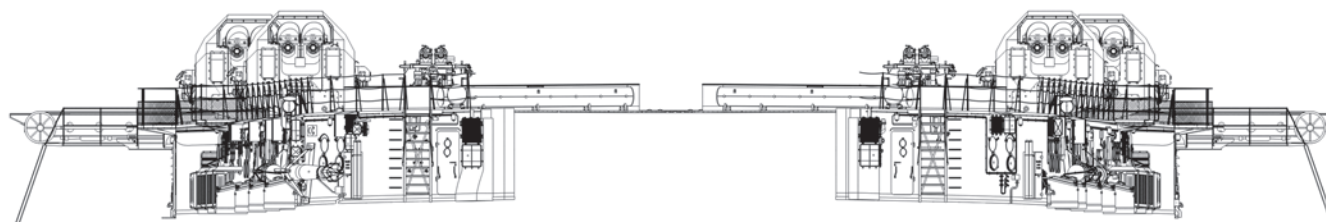
C4/2



C4/3

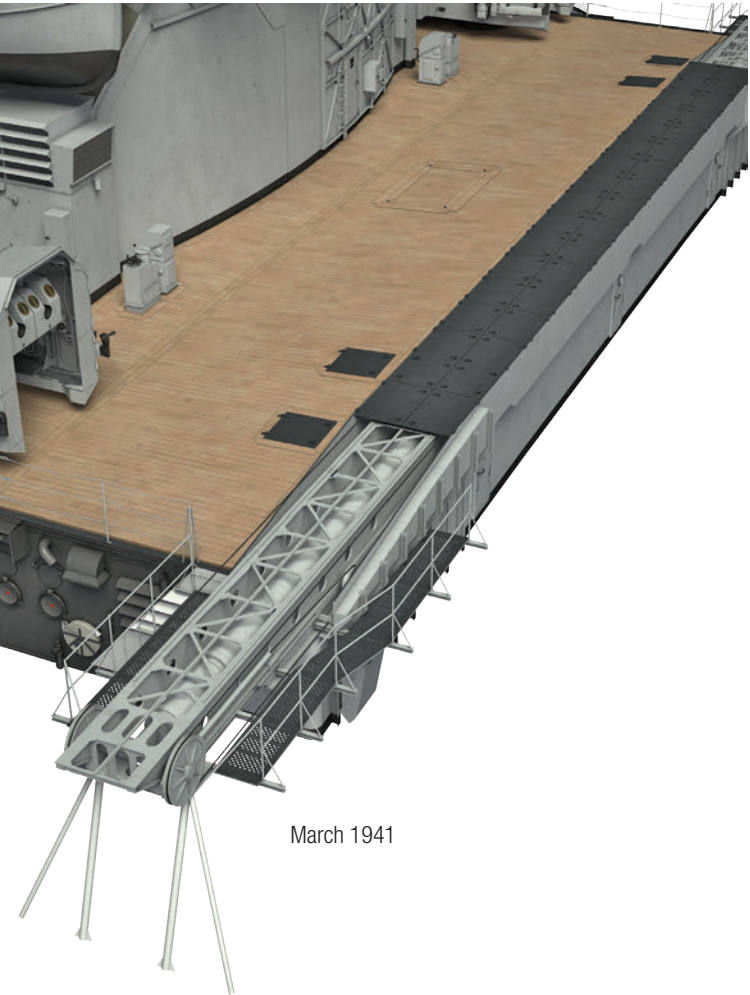
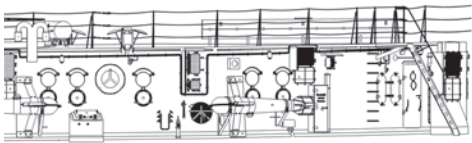
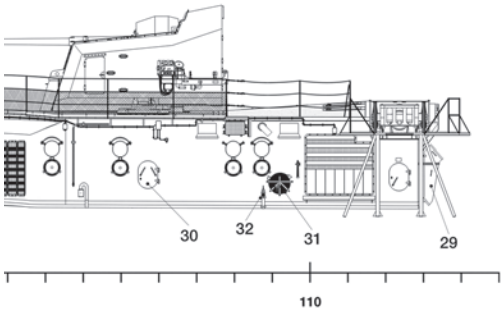


C4/4

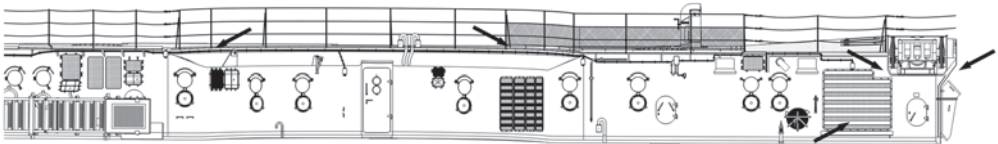


C4/5

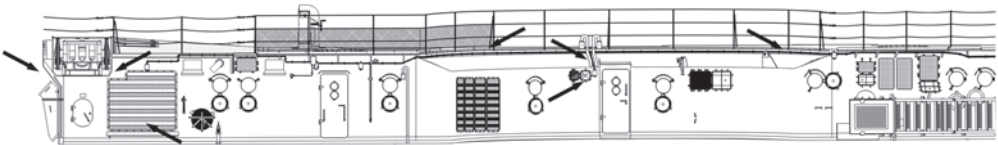
C4/6 RIGHT PROFILE, AUGUST 1940 (FRAGMENT); ARROWS INDICATE  
AREAS MODIFIED IN JANUARY 1941  
C4/7 LEFT PROFILE, AUGUST 1940 (FRAGMENTS); ARROWS INDICATE  
AREAS MODIFIED IN JANUARY 1941



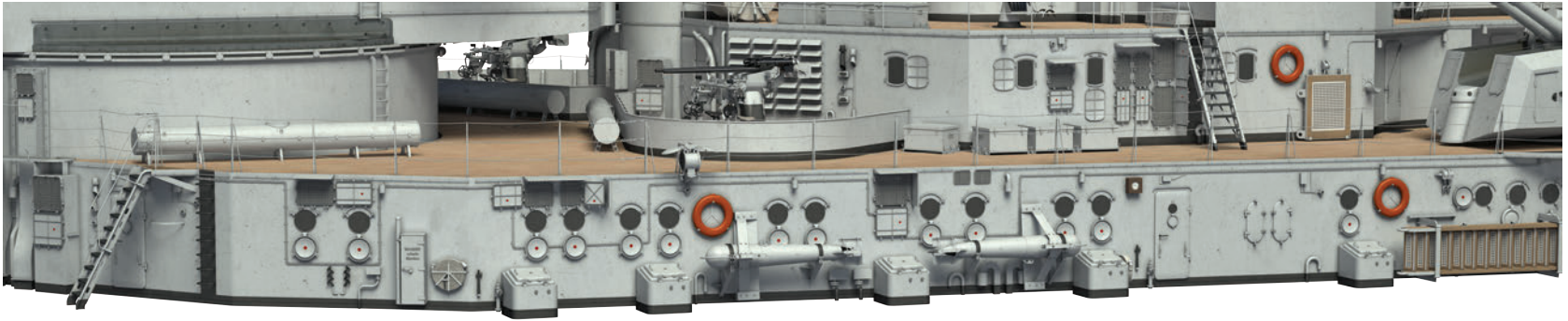
C4/6



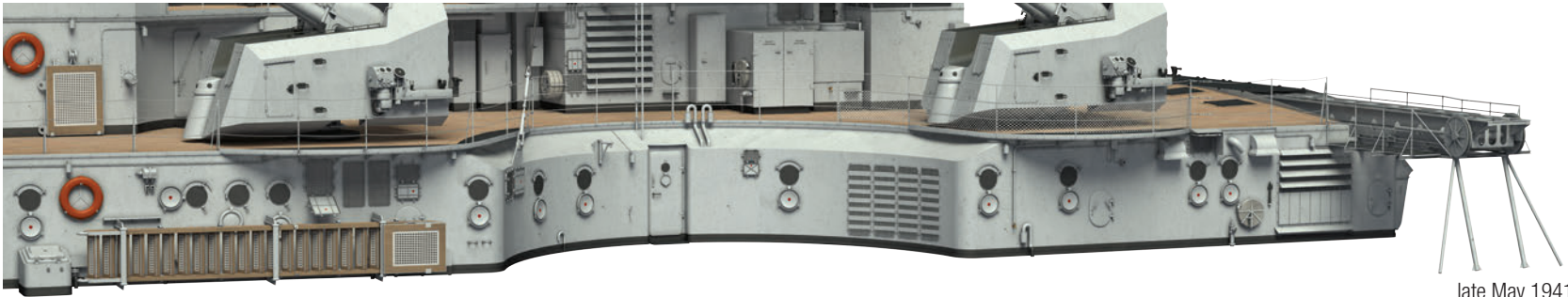
C4/7



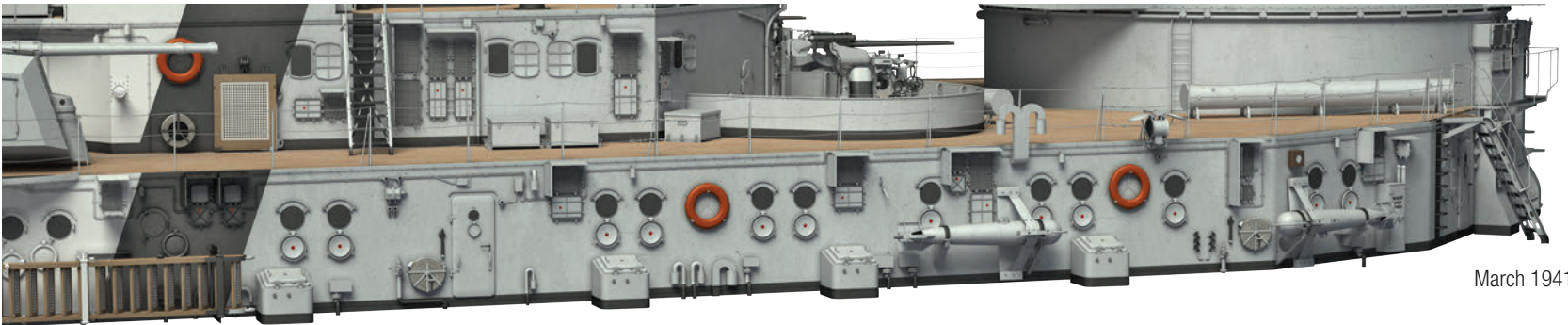




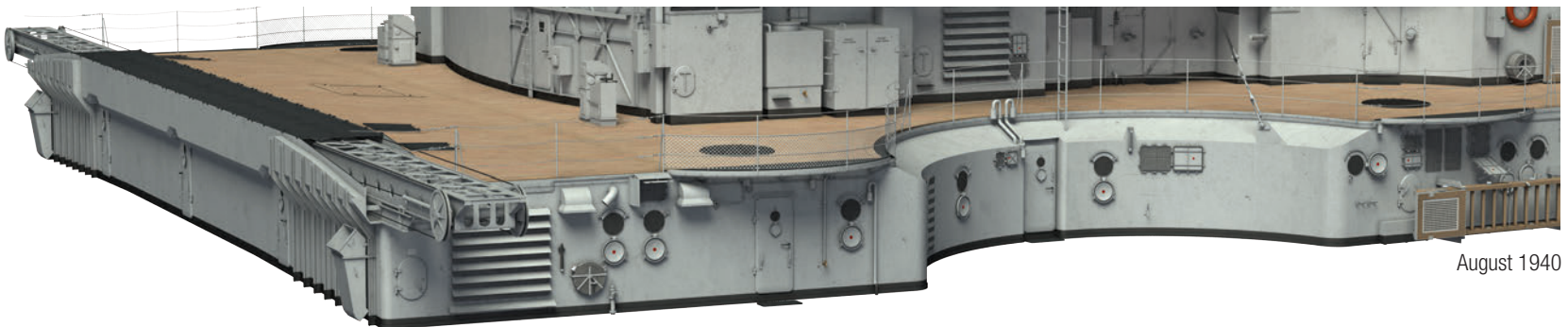
late May 1941



late May 1941

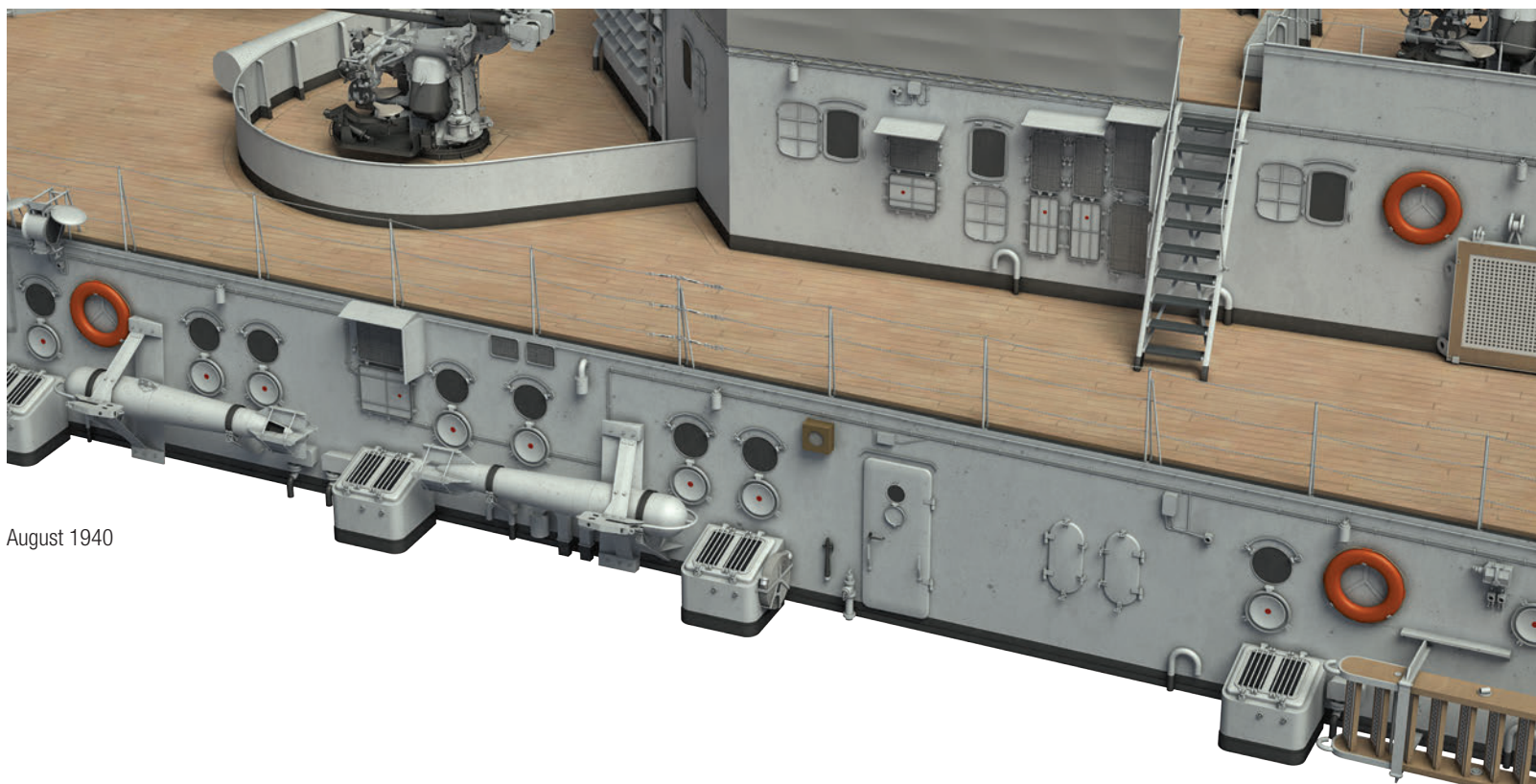


March 1941

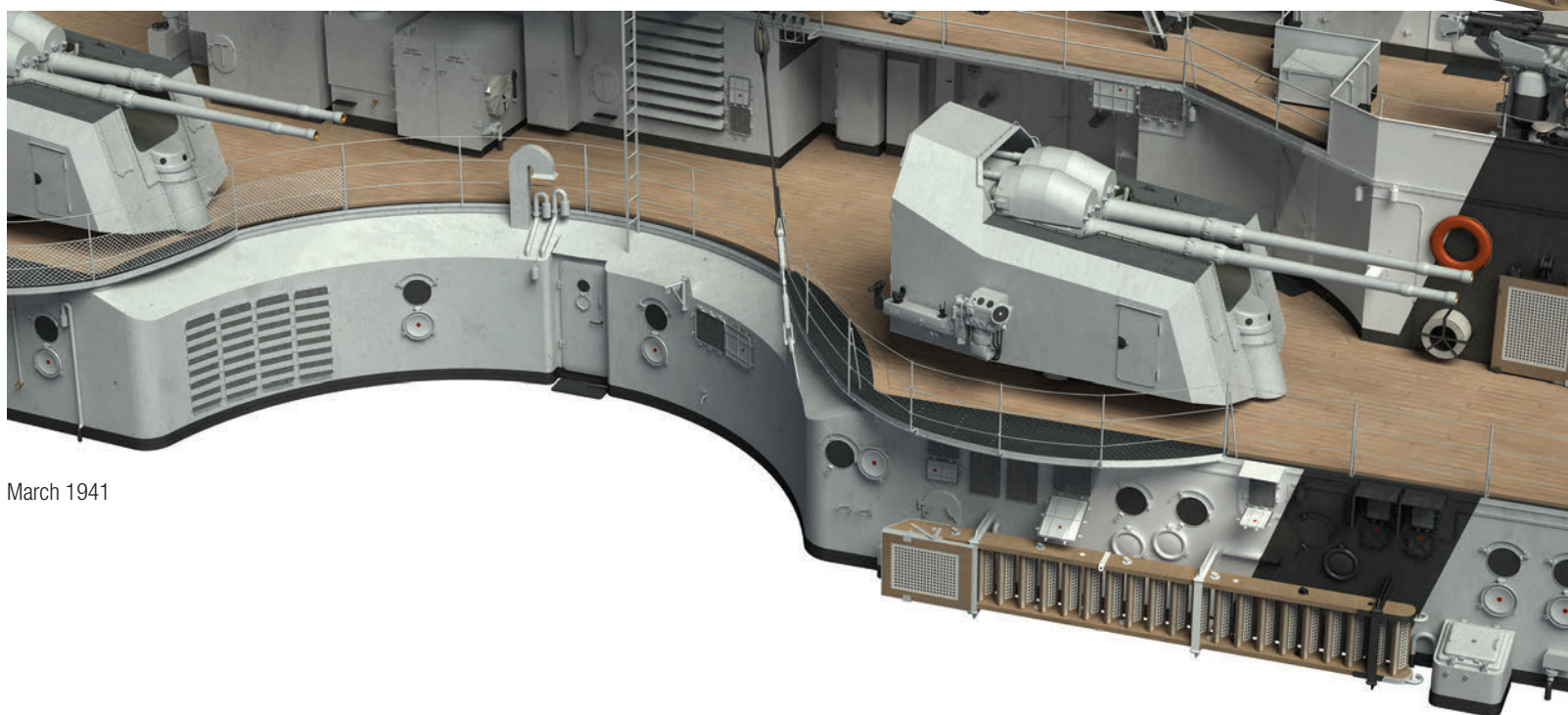


August 1940





August 1940



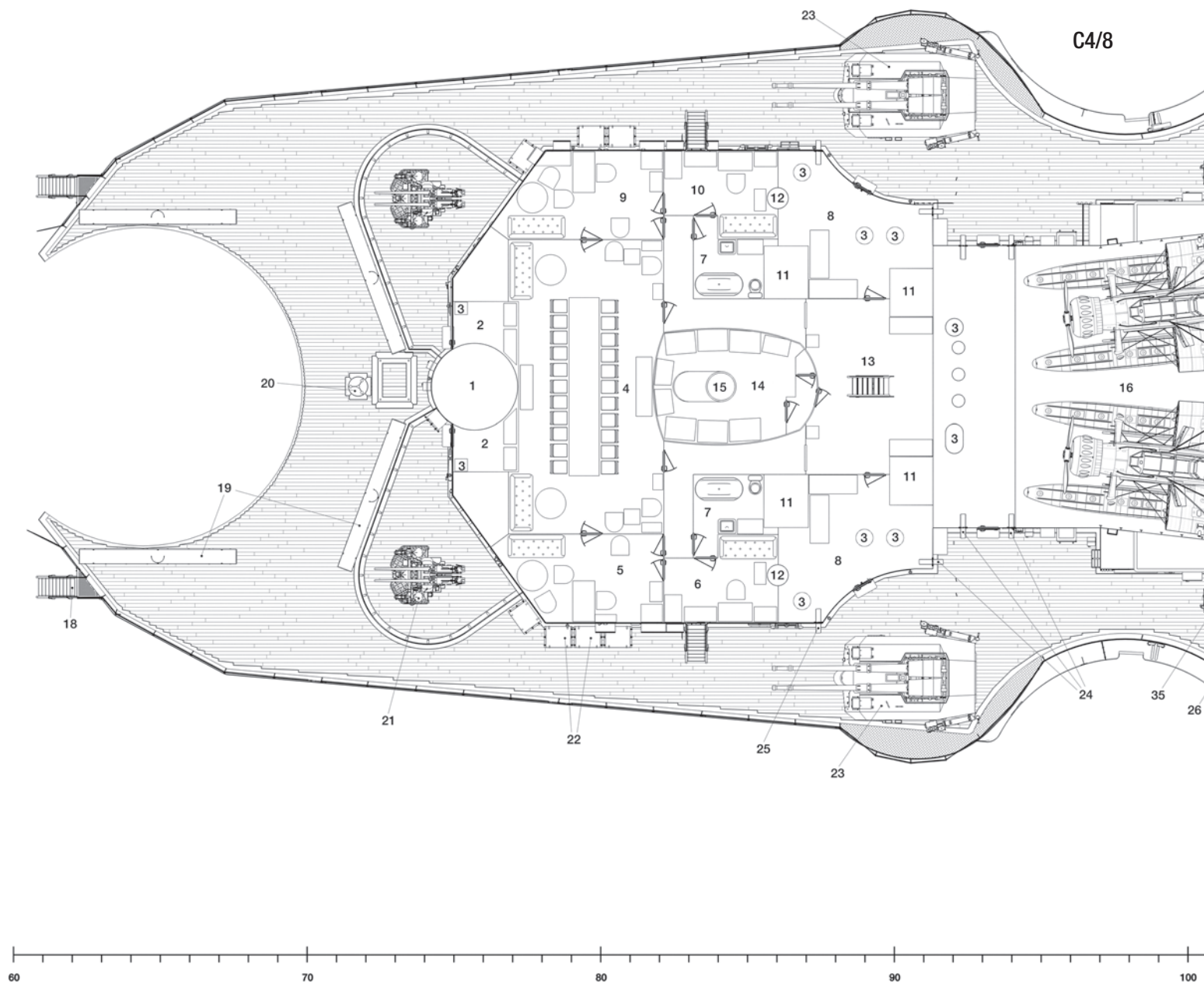
March 1941

# AFT SUPERSTRUCTURE FROM UPPER DECK TO SUPERSTRUCTURE DECK (1/200 SCALE)

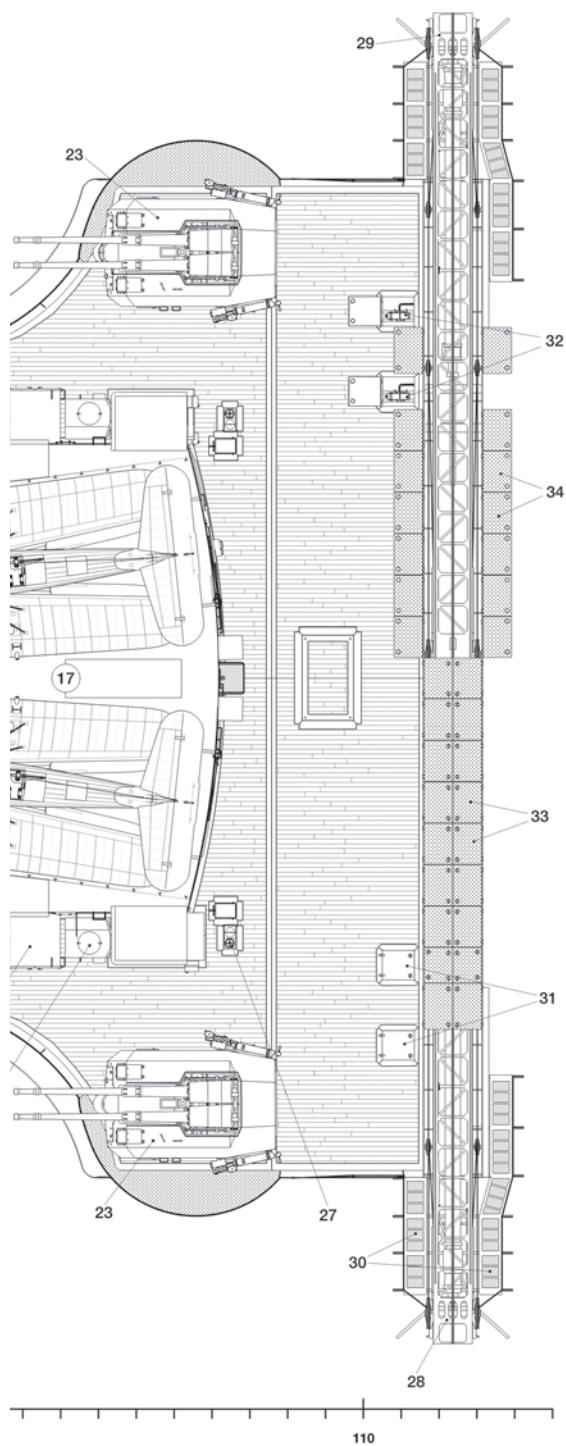
## C4/8 SUPERSTRUCTURE DECK LEVEL – PLAN, MAY 1941

- 1 Base of AA artillery director D (Flakleitstand D)
- 2 3.7cm gun crew shelter
- 3 Ammunition hoist
- 4 Admiral's conference room
- 5 Admiral's working room

- 6 Admiral's cabin
- 7 Toilet and bath
- 8 10.5cm gun crew shelter
- 9 Commander's working room
- 10 Commander's cabin
- 11 Vent shaft
- 12 3.7cm gun mount base
- 13 Lobby
- 14 Admiral's and commander's pantry

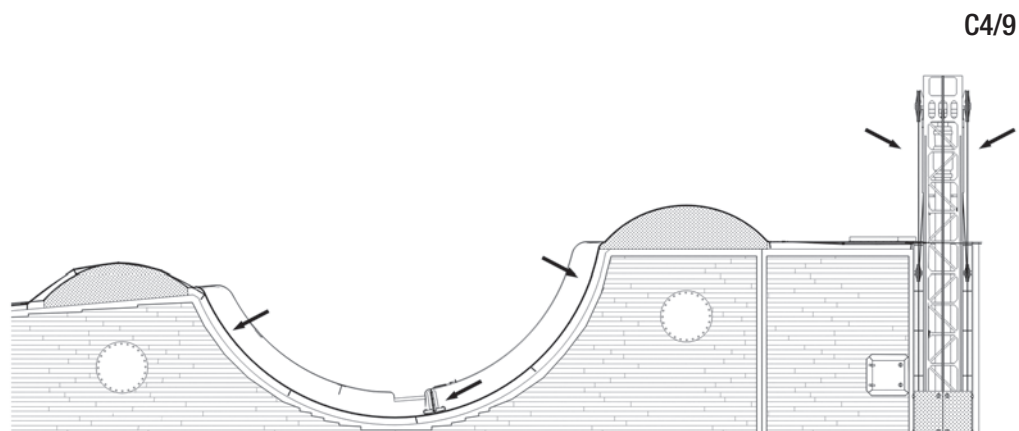






- 15 Armoured communication shaft
- 16 Aircraft hangar no. 1 with two stowed Ar 196 floatplanes
- 17 Mainmast base
- 18 Ladder
- 19 Main artillery sub-caliber barrel container
- 20 38cm ammunition magazine loading point
- 21 3.7cm gun mount
- 22 Inflatable raft container
- 23 10.5cm gun mount (fitted in November 1940)
- 24 10.5cm ammunition passing channel
- 25 10.5cm ammunition passing channel (moved from frame 88 in January 1941)
- 26 Hot water tank
- 27 Catapult control panel
- 28 Starboard side catapult
- 29 Port side catapult
- 30 Catapult catwalk (added in January 1941)
- 31 Floatplane cradle under cover
- 32 Floatplane cradle (open)
- 33 Catapult covers (closed)
- 34 Catapult covers (open)
- 35 10.5cm ammunition locker

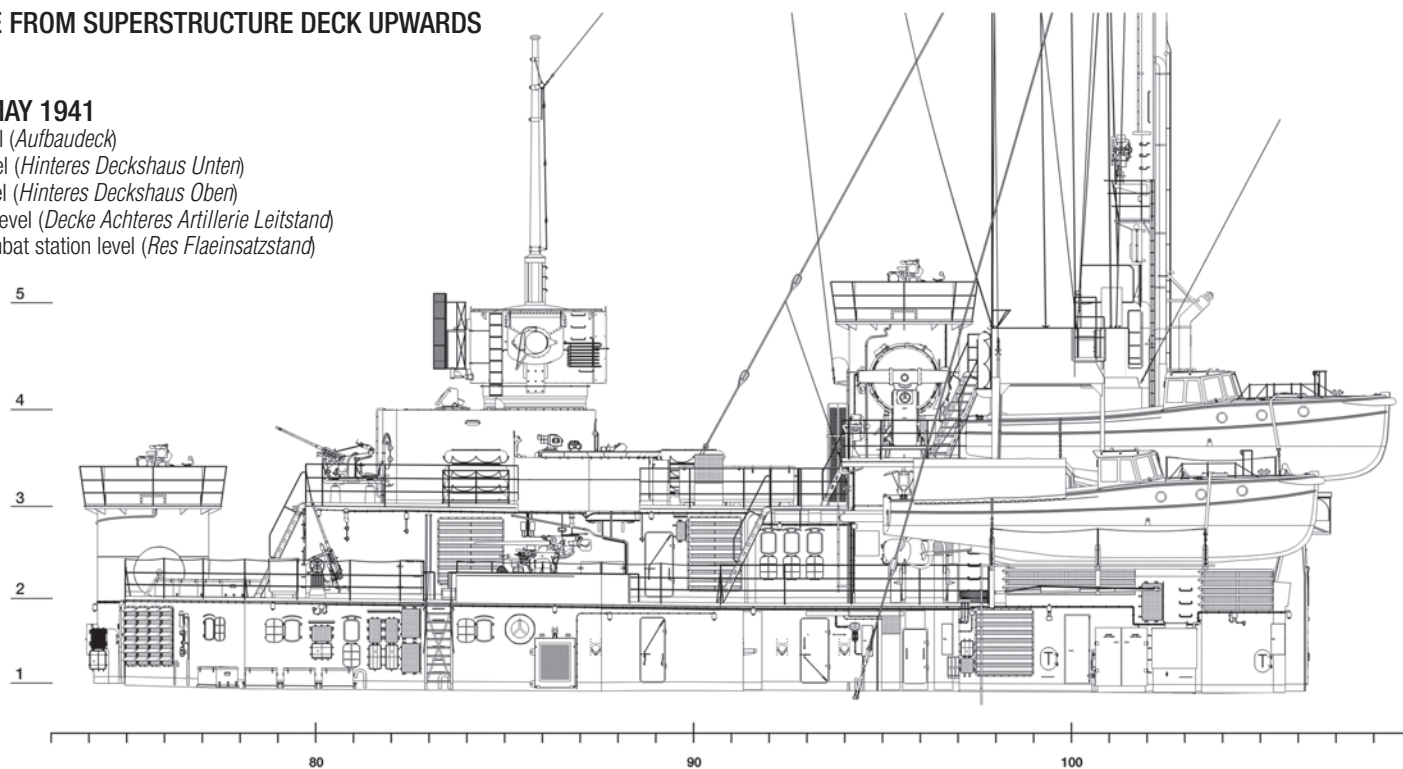
**C4/9 SUPERSTRUCTURE DECK LEVEL – PLAN, AUGUST 1940  
(FRAGMENT); ARROWS INDICATE AREAS MODIFIED IN JANUARY 1941**



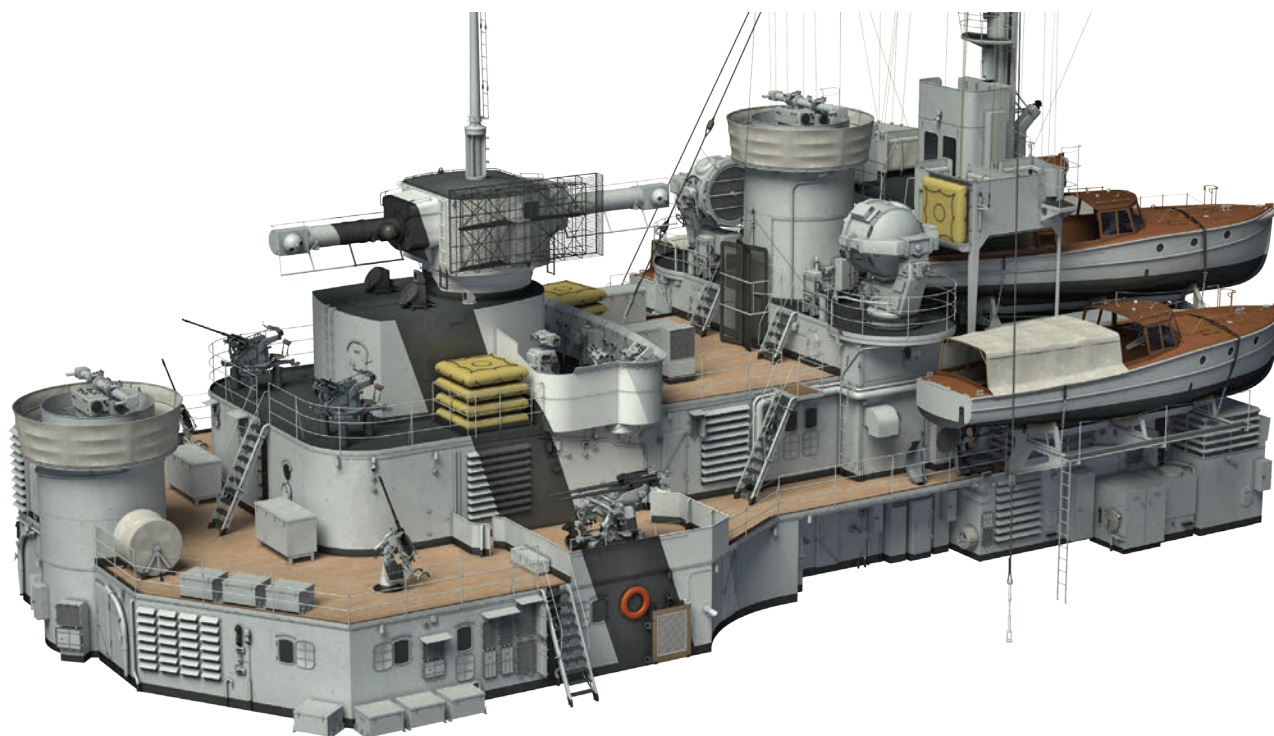
# AFT SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS (1/200 SCALE)

## C5/1 RIGHT PROFILE, MAY 1941

- 1 Superstructure deck level (*Aufbaudeck*)
- 2 Lower aft deckhouse level (*Hinteres Deckshaus Unten*)
- 3 Upper aft deckhouse level (*Hinteres Deckshaus Oben*)
- 4 Aft fire control post roof level (*Decke Achteres Artillerie Leitstand*)
- 5 Reserve anti-aircraft combat station level (*Res Flaeinsatzstand*)



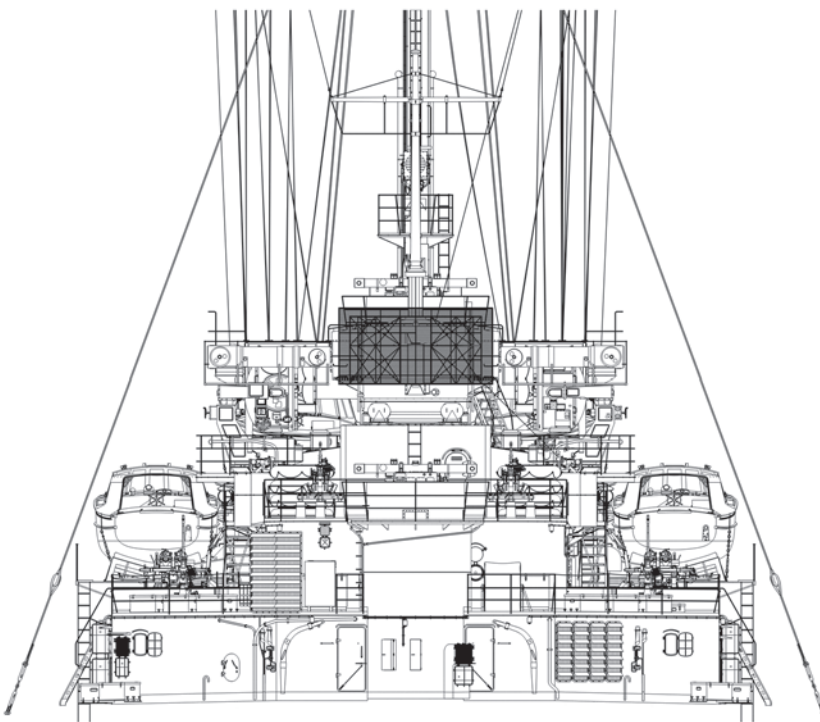
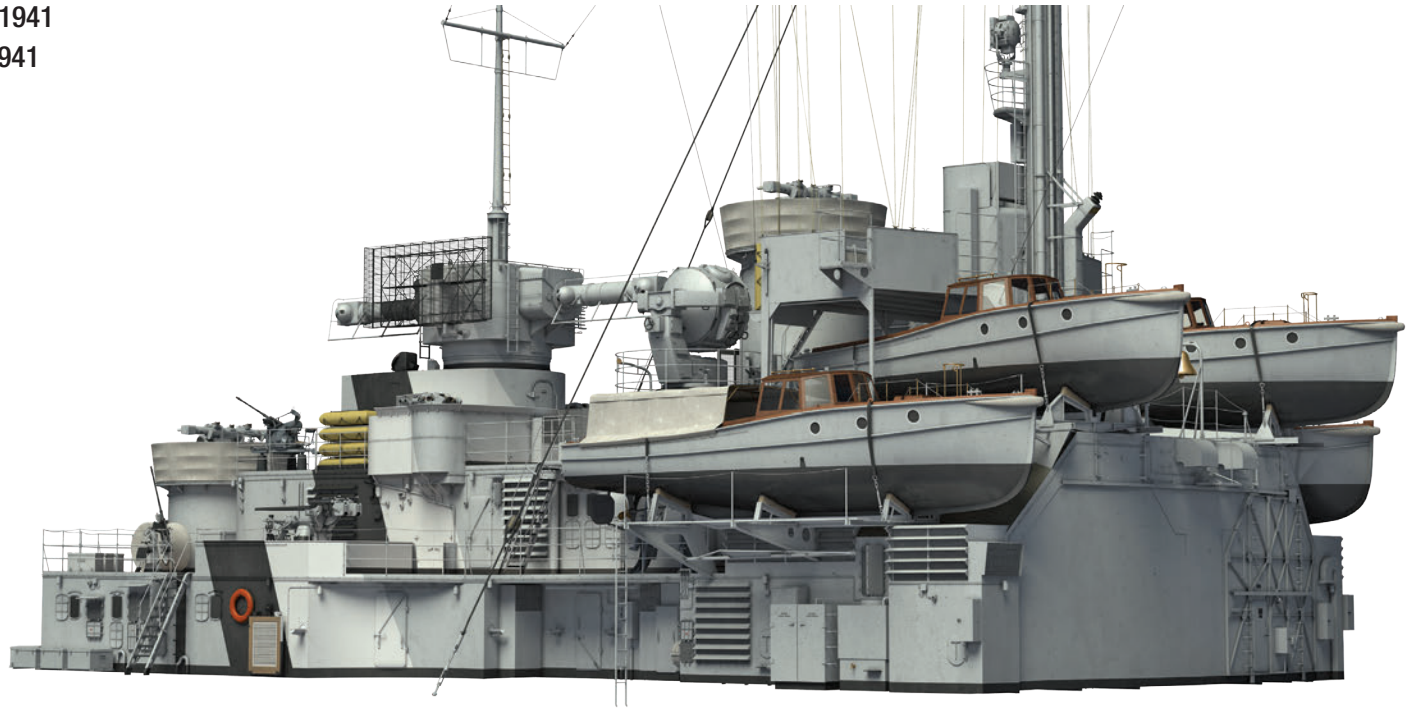
C5/1



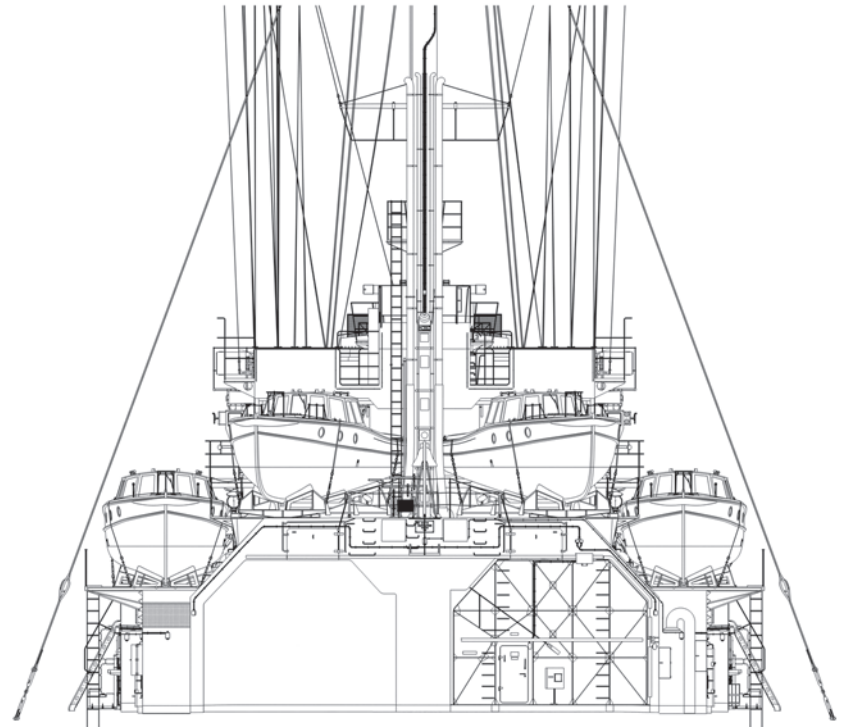
early May 1941

C5/2 FRONT VIEW, MAY 1941  
C5/3 BACK VIEW, MAY 1941

early May 1941



C5/2

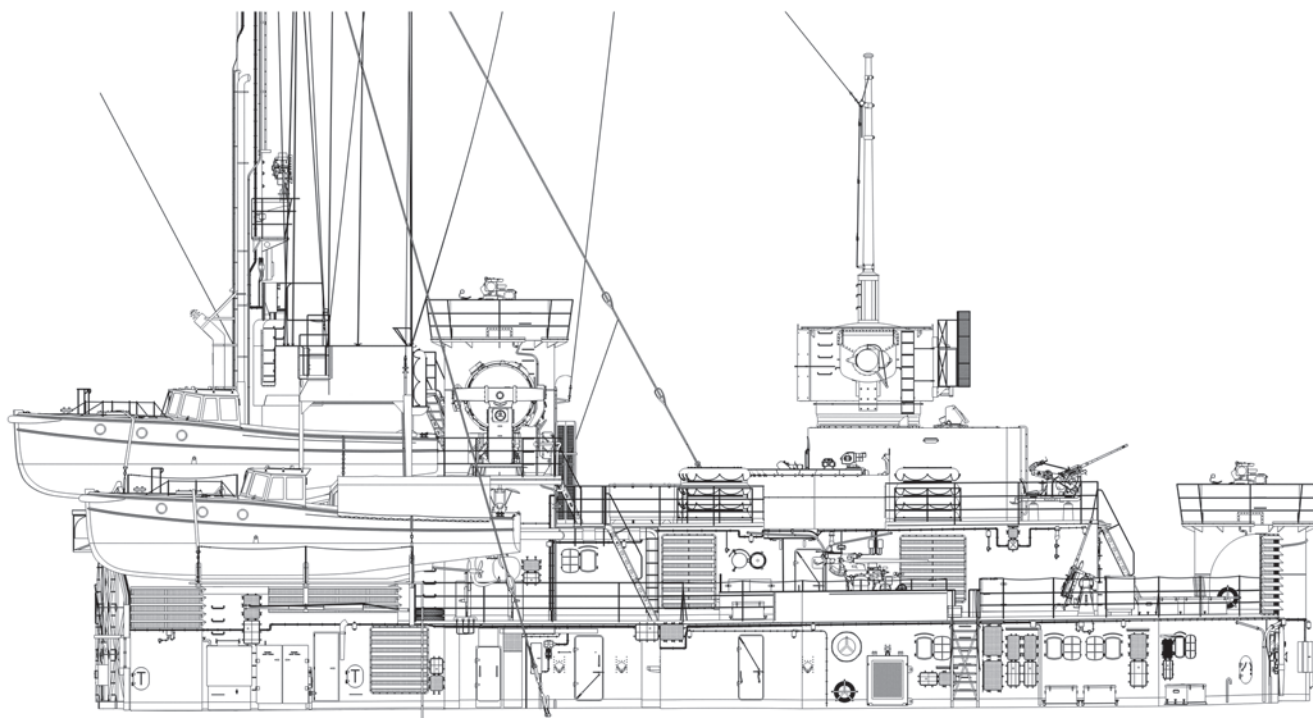


C5/3

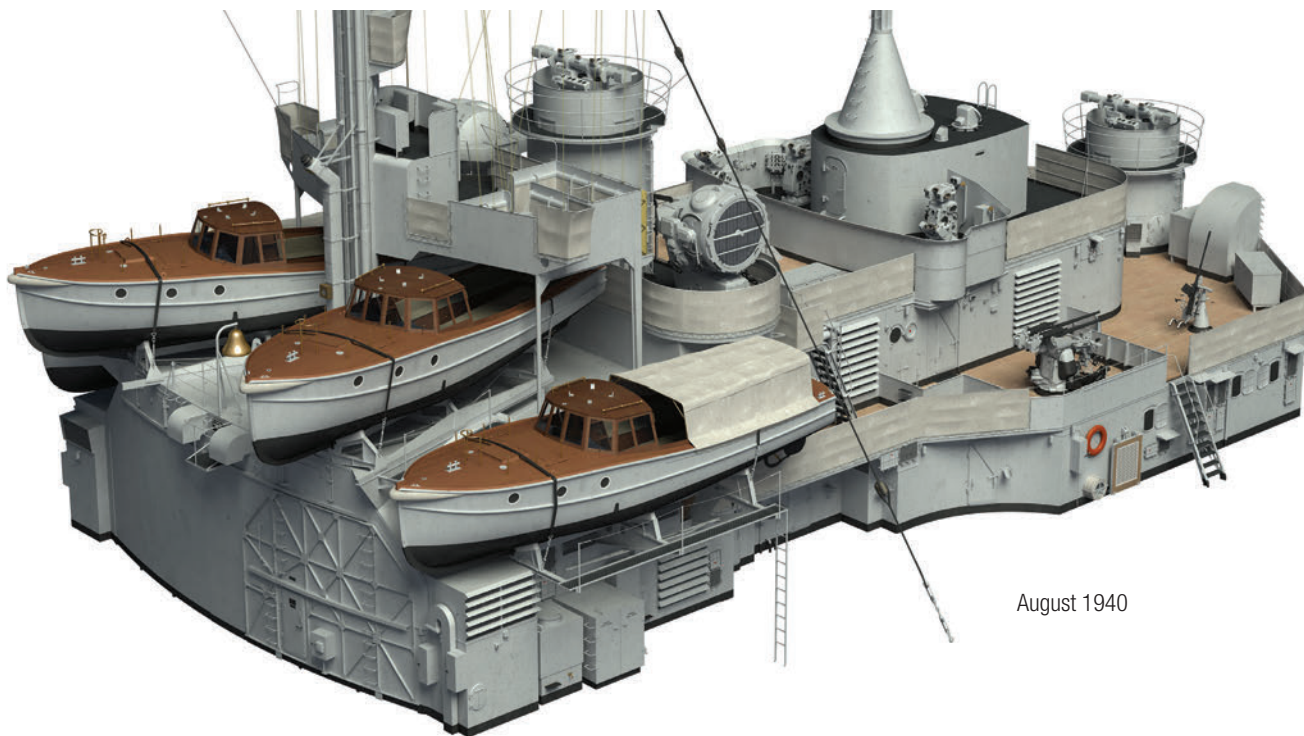


AFT SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)

C5/4 LEFT PROFILE, MAY 1941

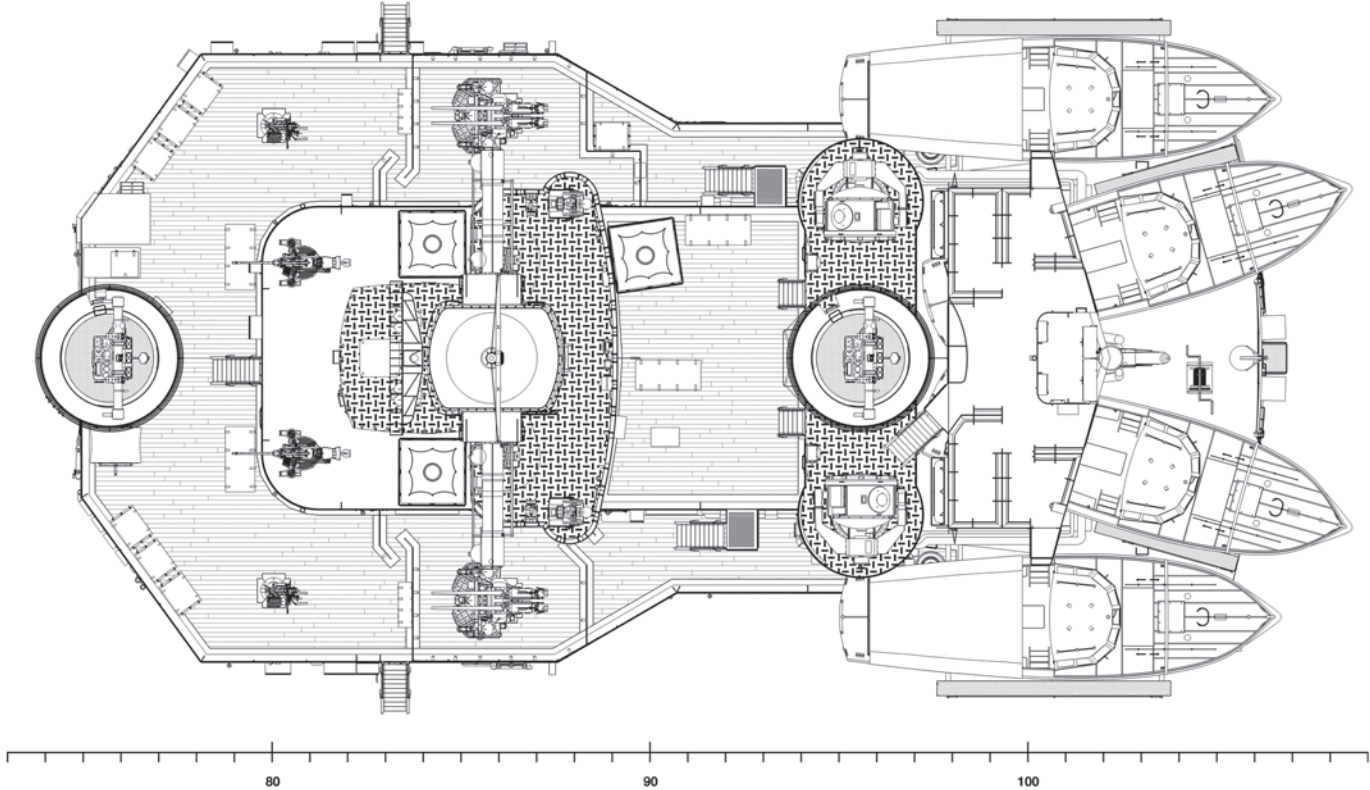


C5/4

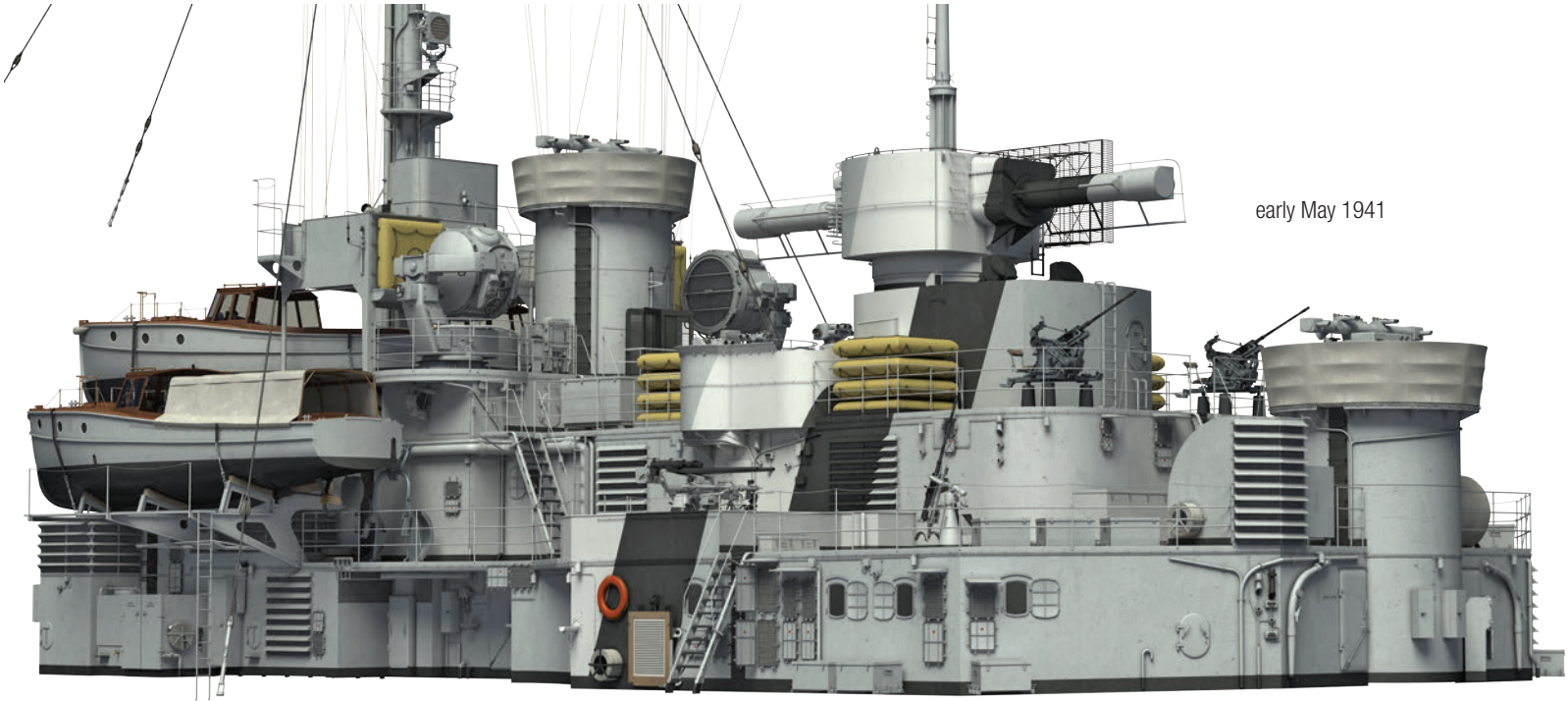


August 1940

C5/5 PLAN, MAY 1941



C5/5



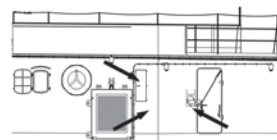
early May 1941



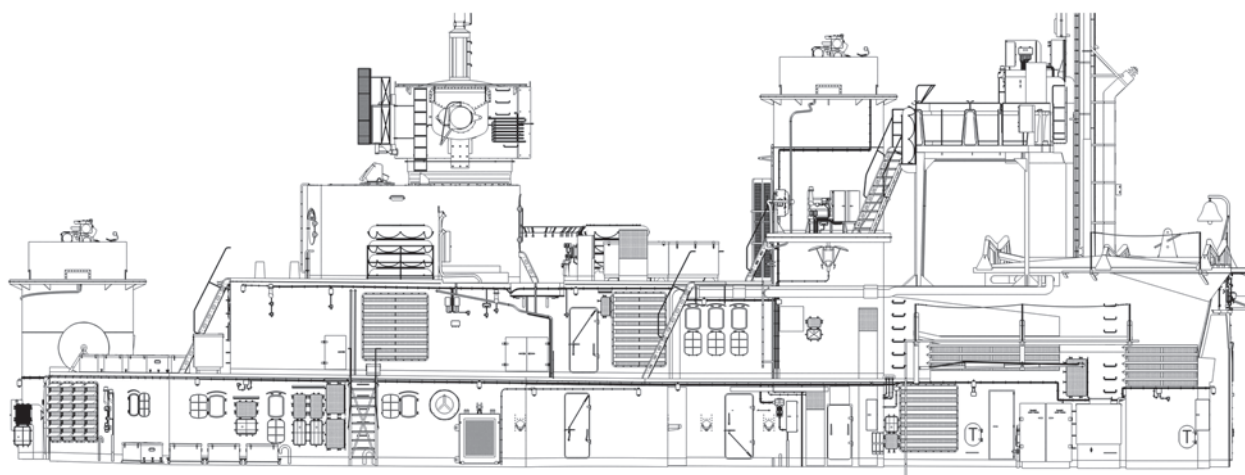
AFT SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)

C5/6 FRAGMENT OF SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK  
UPWARDS – RIGHT PROFILE WITH SHIELDS, GUN MOUNTS, BOATS,  
RIGGING AND RAILINGS OMITTED FOR CLARITY, MAY 1941

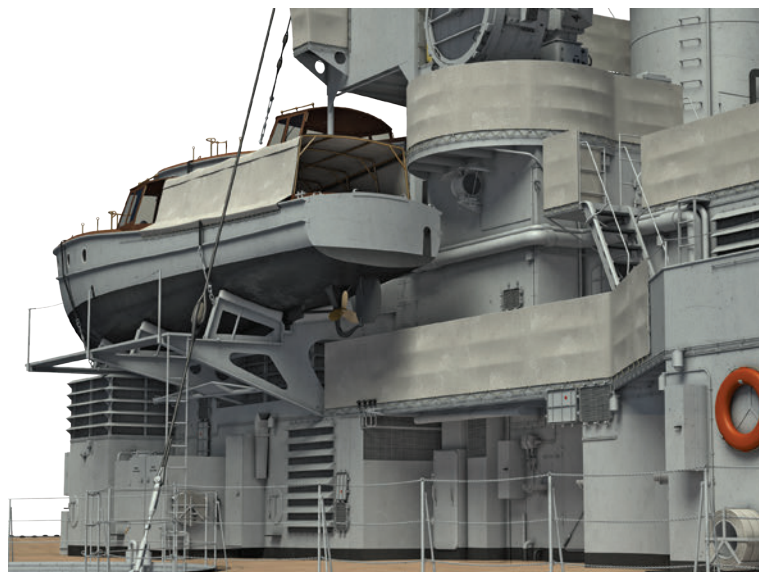
C5/7 FRAGMENT OF SUPERSTRUCTURE BETWEEN SUPERSTRUCTURE  
DECK AND LOWER AFT DECKHOUSE AT FRAME 88 – RIGHT PROFILE,  
AUGUST 1940; ARROWS INDICATE AREAS MODIFIED IN JANUARY 1941



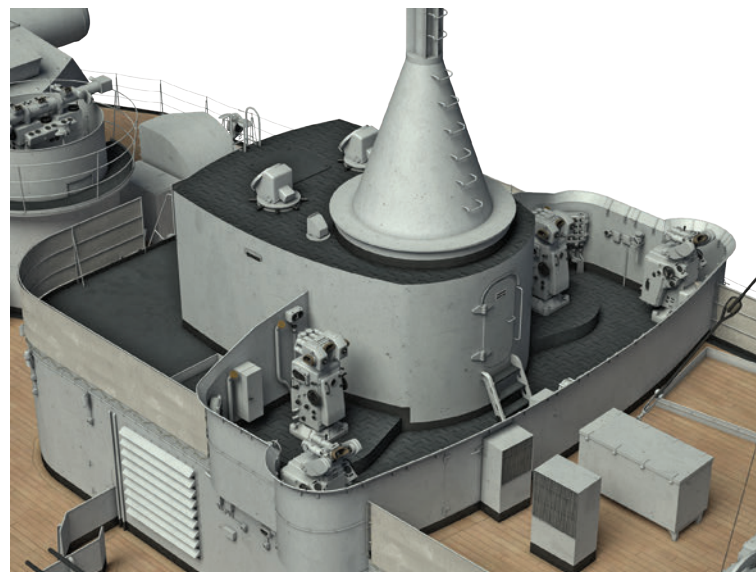
C5/7



C5/6



August 1940

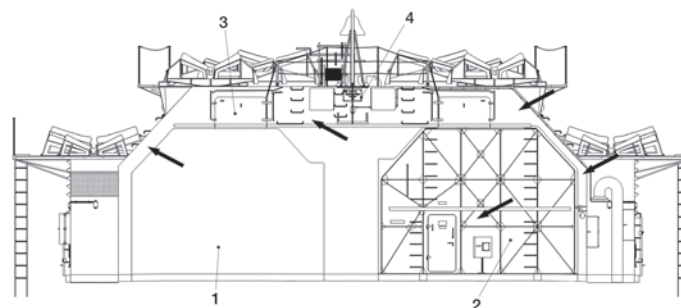


August 1940



**C5/8 SUPERSTRUCTURE DECK UPWARDS – VIEW FROM FRAME 108  
TOWARDS THE STERN, AUGUST 1940; ARROWS INDICATE AREAS  
MODIFIED IN JANUARY 1941**

- 1 Port side inside-sliding hangar door
- 2 Starboard side outside-sliding hangar door
- 3 Small door for floatplane's vertical stabiliser
- 4 Shipyard construction plate

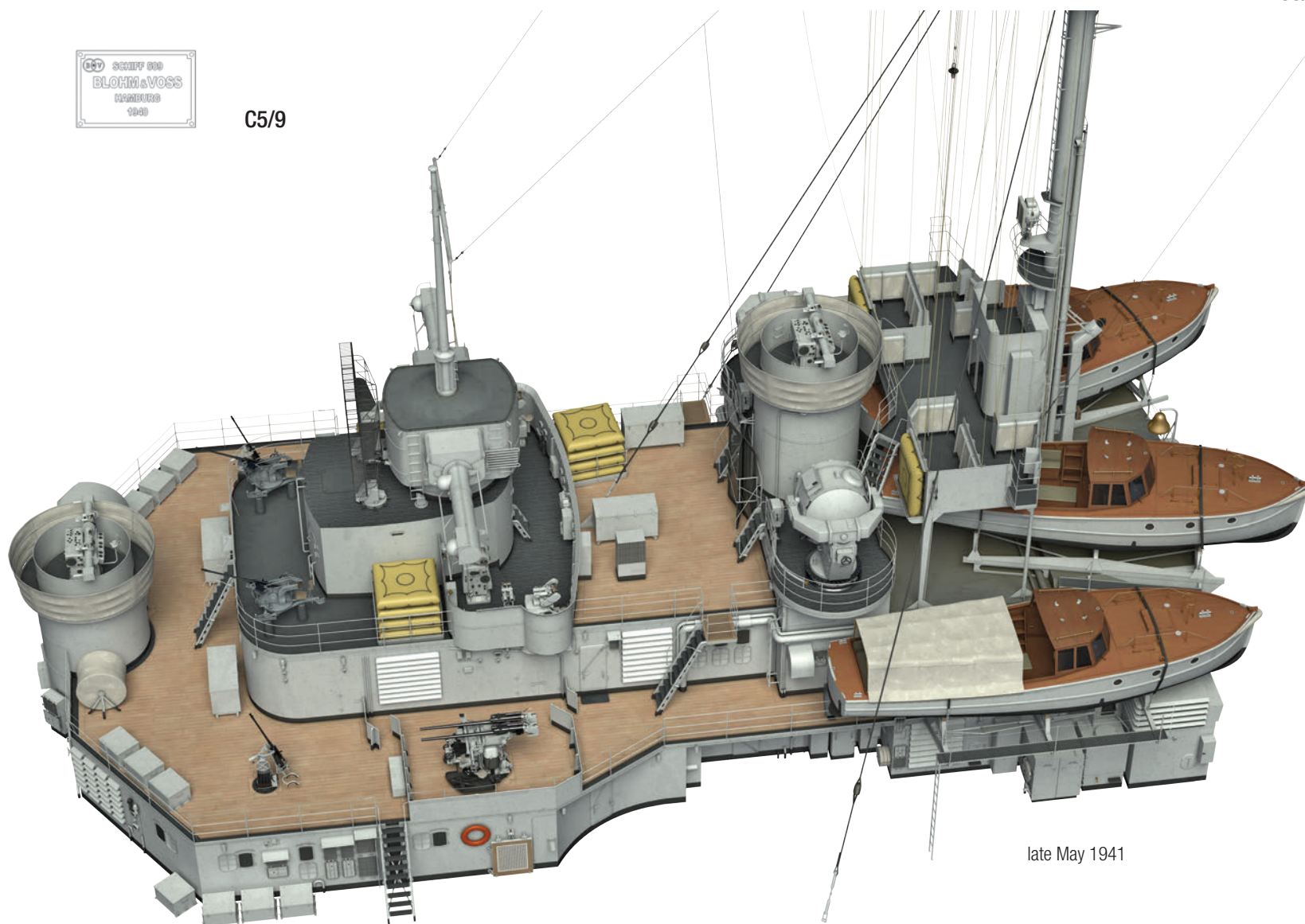


**C5/9 SHIPYARD CONSTRUCTION PLATE (1/25 SCALE)**

C5/8



C5/9



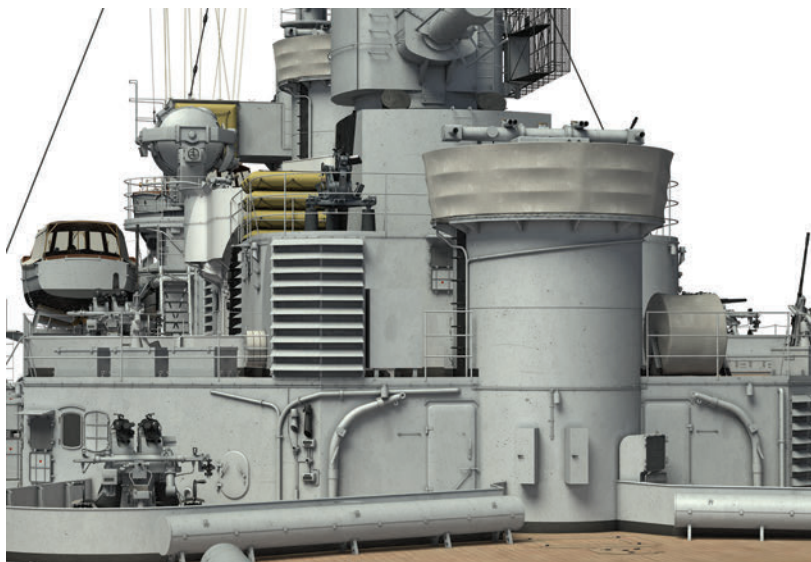
late May 1941

## 166 C SUPERSTRUCTURE – AFT PART

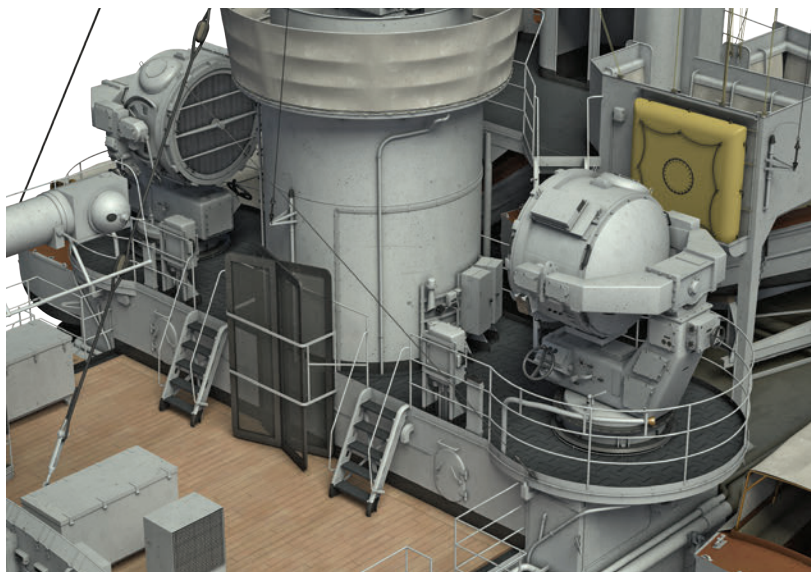
AFT SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)

C5/10 SUPERSTRUCTURE DECK UPWARDS – VIEW FROM FRAME 97  
TOWARDS THE BOW, MAY 1941

C5/11 SUPERSTRUCTURE DECK UPWARDS – VIEW FROM FRAME 100  
TOWARDS THE BOW (FRAGMENT), MAY 1941

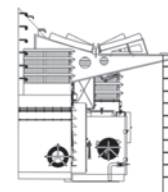
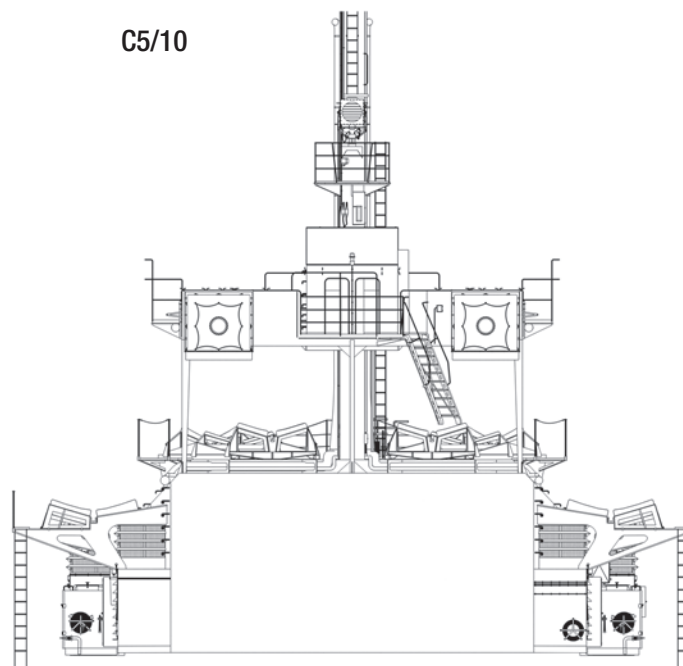


March 1941

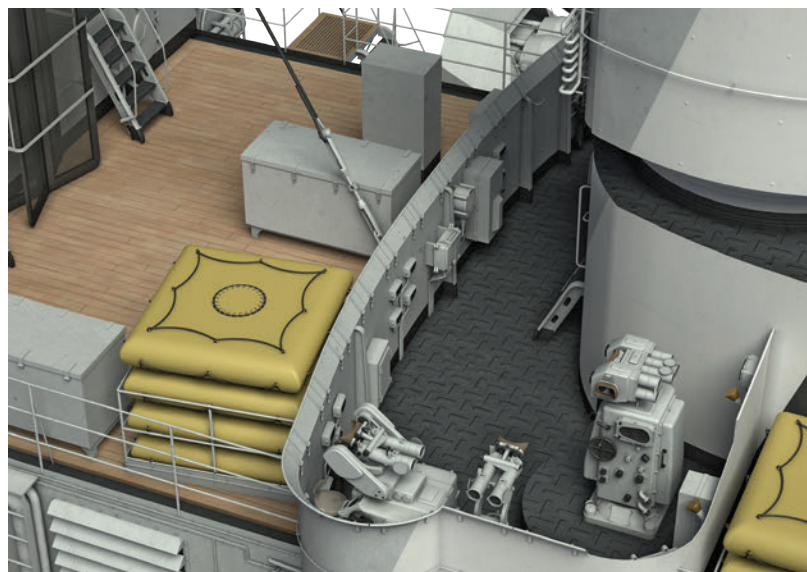


May 1941

C5/10



C5/11

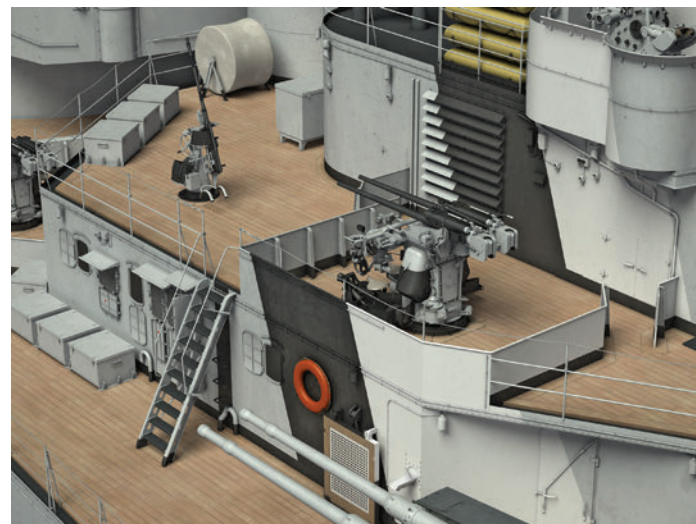


early May 1941



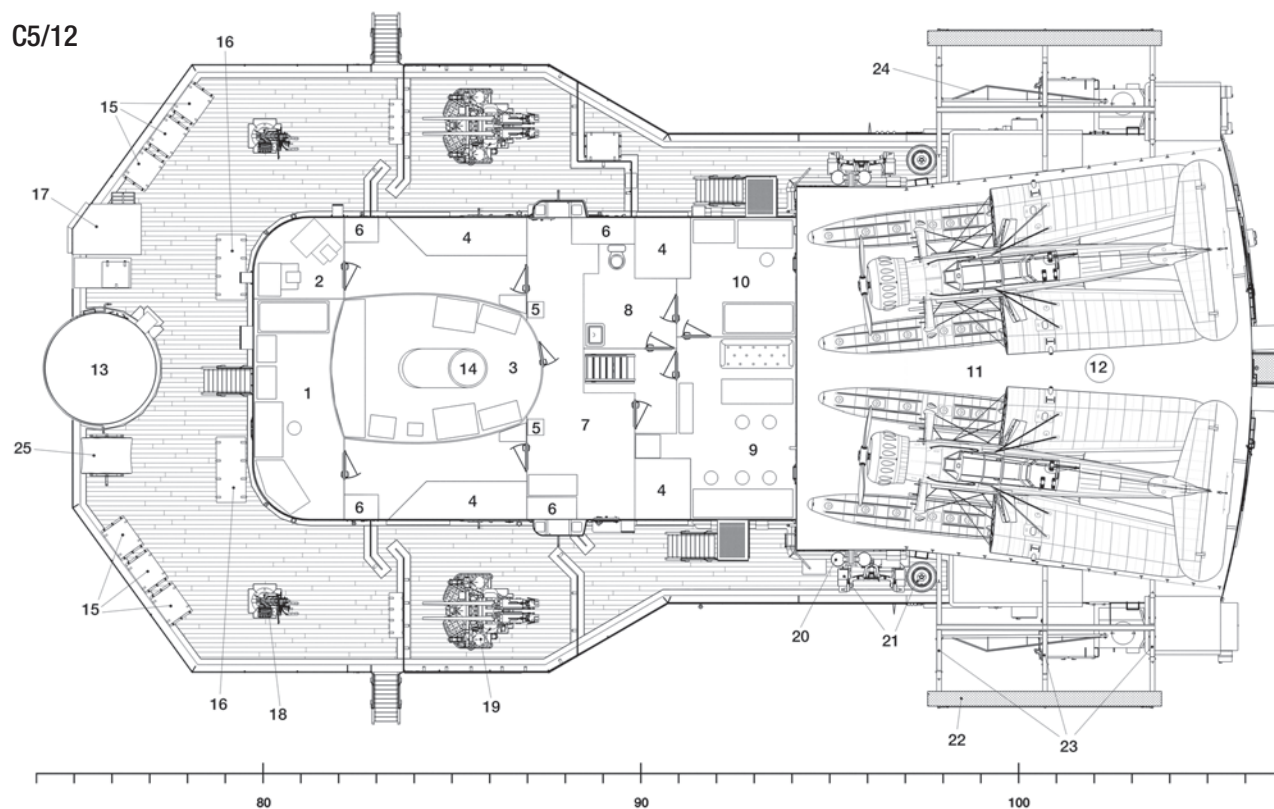
### C5/12 LOWER AFT DECKHOUSE LEVEL – PLAN, MAY 1941

- 1 Officer's cabin
- 2 Vent room
- 3 Aircraft workshop
- 4 Vent shaft
- 5 Ammunition hoist
- 6 3.7cm ammunition locker
- 7 3.7cm gun crew shelter
- 8 Bathroom
- 9 Chief of Staff's working room
- 10 Chief of Staff's cabin
- 11 Aircraft hangar no. 1 with two stowed Ar 196 floatplanes
- 12 Mainmast base
- 13 Base of AA artillery director D (*Flakleitstand D*)
- 14 Armoured communication shaft
- 15 Inflatable raft container (fitted in January 1941)
- 16 Storage locker (moved from deck edge in January 1941)
- 17 Vent
- 18 2cm mount
- 19 3.7cm mount
- 20 Loudspeaker
- 21 *Sonderanhänger 51* – 2cm Flak 30 trailer (fitted in January 1941)
- 22 Catwalk
- 23 Boat cradle
- 24 Stowed paravane crane arm
- 25 Wire rope reel

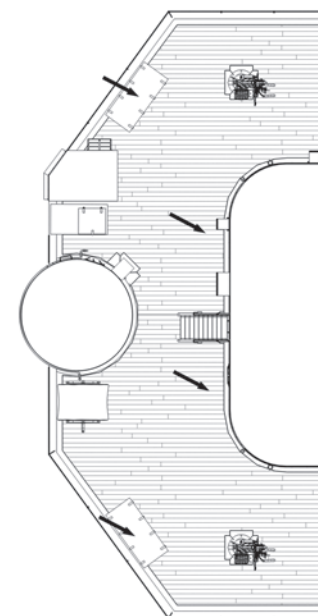


March 1941

### C5/13 LOWER AFT DECKHOUSE LEVEL – PLAN, AUGUST 1940 (FRAGMENT); ARROWS INDICATE AREAS MODIFIED IN JANUARY 1941



### C5/13

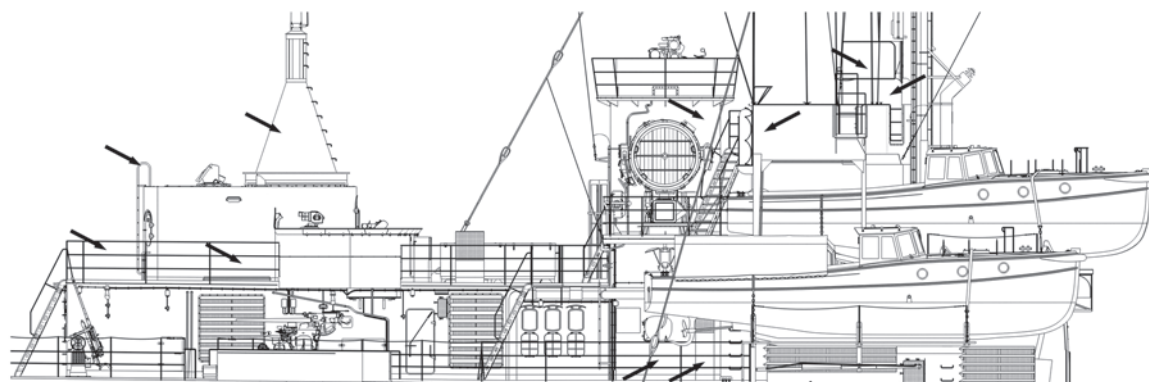




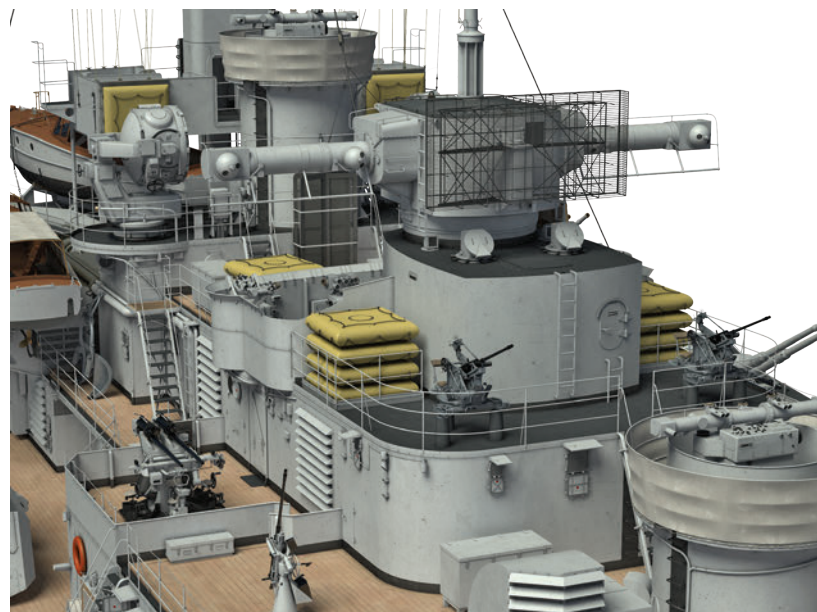
**AFT SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS  
(1/200 SCALE)**

**C5/14 LOWER AFT DECKHOUSE LEVEL UPWARDS – RIGHT PROFILE  
(FRAGMENT), AUGUST 1940; ARROWS INDICATE AREAS MODIFIED  
IN JANUARY 1941**

**C5/15 LOWER AFT DECKHOUSE LEVEL UPWARDS – VIEW FROM FRAME  
93 TOWARDS THE BOW, MAY 1941**



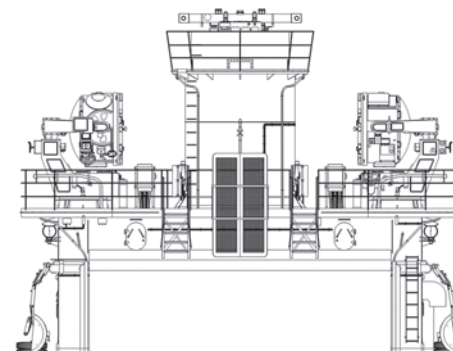
**C5/14**



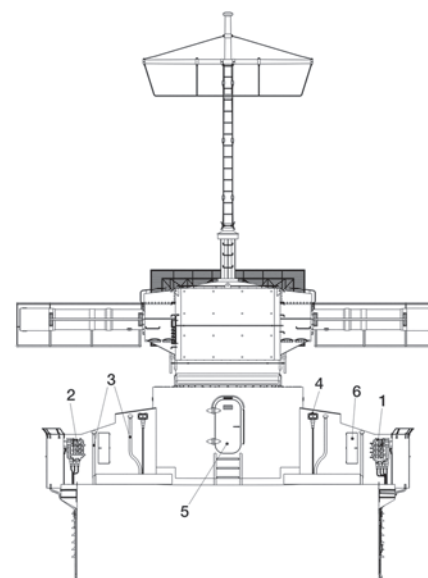
late May 1941

**C5/16 LOWER AFT DECKHOUSE LEVEL UPWARDS – VIEW FROM FRAME  
88 TOWARDS THE STERN, MAY 1941**

- 1 Searchlight illumination control post (searchlights I, III, V and VII)
- 2 Searchlight illumination control post (searchlights II, IV and VI)
- 3 Voice pipe
- 4 Speed indicator
- 5 Armoured door to aft fire control post
- 6 Telephone locker



**C5/15**



**C5/16**

# C5/17 LOWER AFT DECKHOUSE LEVEL UPWARDS – VIEW FROM FRAME

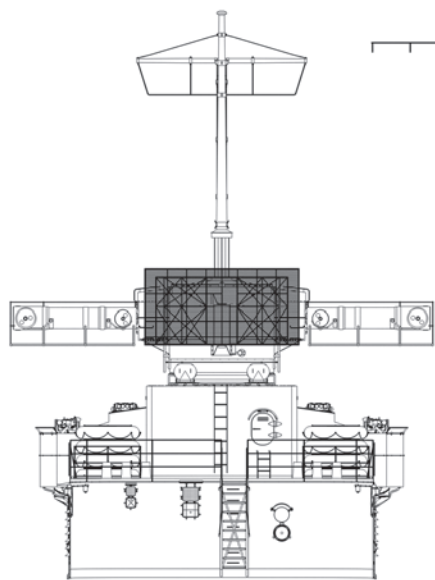
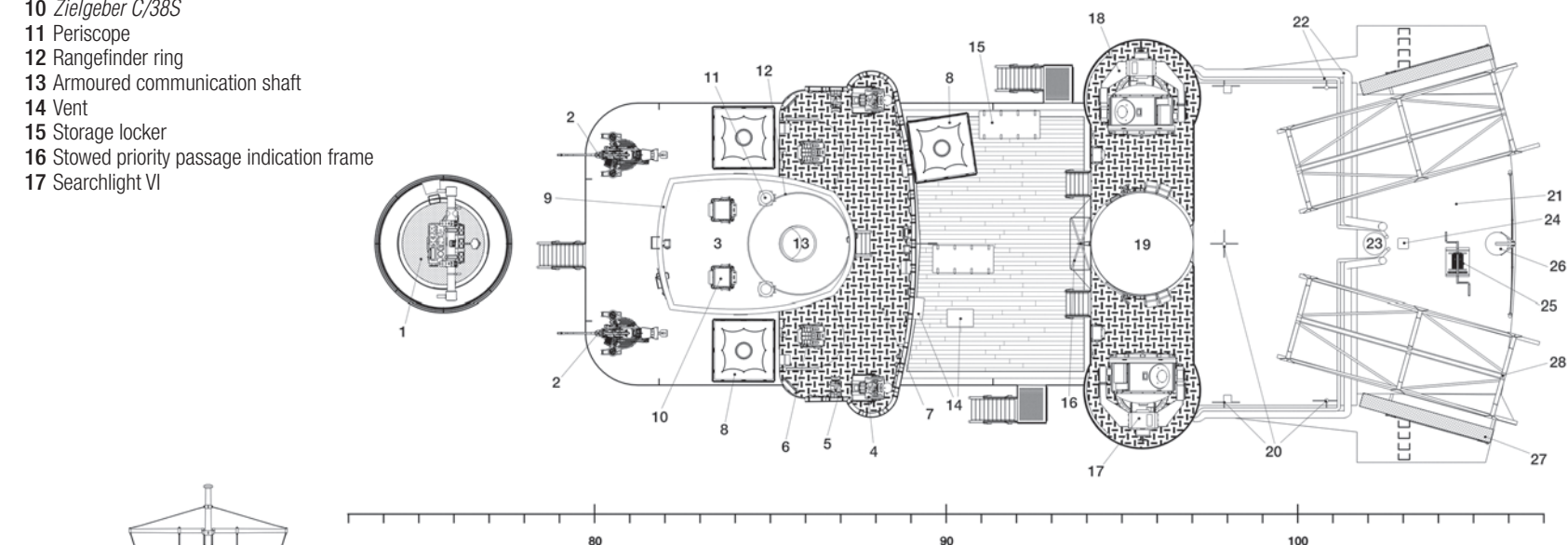
81 TOWARDS THE BOW, MAY 1941

## C5/18 UPPER AFT DECKHOUSE LEVEL – PLAN, MAY 1941

- 1 AA artillery director D (*Flakleitstand D*) with a 3m rangefinder
- 2 2cm Flak 30 gun mount (fitted in January 1941)
- 3 Aft fire control post
- 4 Searchlight director
- 5 Removable lookout binoculars
- 6 *Zielsäule C/38S*
- 7 Night control post
- 8 Stacked life rafts (added in January 1941)
- 9 150mm thick armor plate
- 10 *Zielgeber C/38S*
- 11 Periscope
- 12 Rangefinder ring
- 13 Armoured communication shaft
- 14 Vent
- 15 Storage locker
- 16 Stowed priority passage indication frame
- 17 Searchlight VI

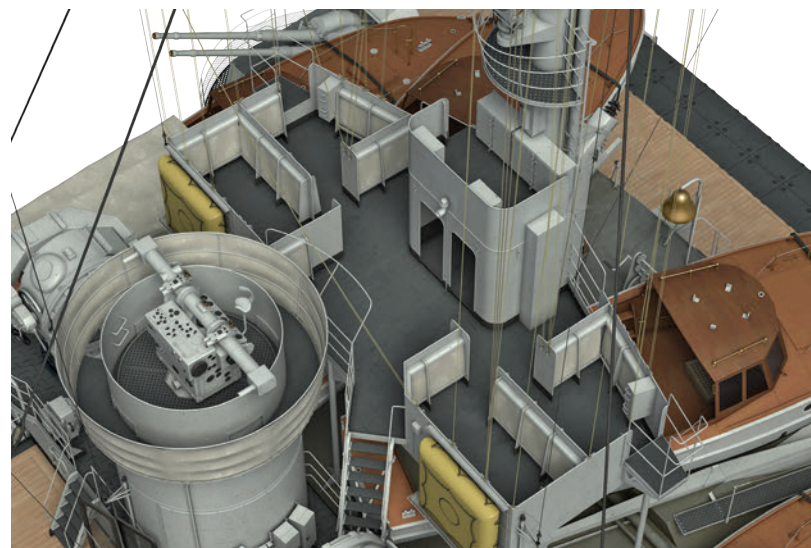
- 18 Searchlight VII
- 19 Base of AA artillery director C (*Flakleitstand C*)
- 20 Signal bridge support
- 21 Roof of aircraft hangar no. 1
- 22 Diesel exhaust pipes
- 23 Mainmast
- 24 Wire antenna duct
- 25 Drive for lowering and raising of the upper part of mainmast
- 26 Ship's bell
- 27 Catwalk
- 28 Sliding boat cradle

C5/18



C5/17

May 1941



# 170 C SUPERSTRUCTURE – AFT PART

## AFT SUPERSTRUCTURE FROM SUPERSTRUCTURE DECK UPWARDS (1/200 SCALE)

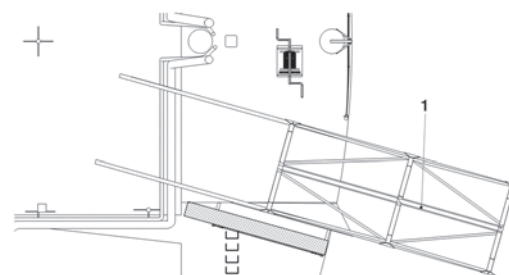
### C5/19 UPPER AFT DECKHOUSE LEVEL – PLAN (FRAGMENT)

- 1 Sliding boat cradle in forwardmost position, enabling the boat to be taken from under the signal bridge

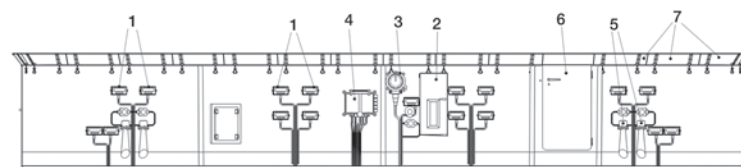
### C5/20 UPPER AFT DECKHOUSE LEVEL – VIEW FROM FRAME 88 TOWARDS THE BOW (1/100 SCALE)

- 1 Gas pressure indicator  
2 Telephone locker  
3 Rudder position indicator  
4 Fuse box  
5 Alarm horn  
6 Passage  
7 Hinged shield

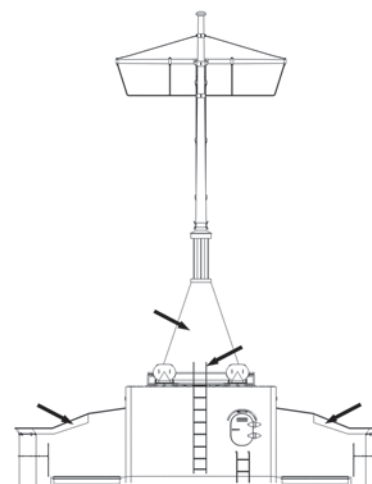
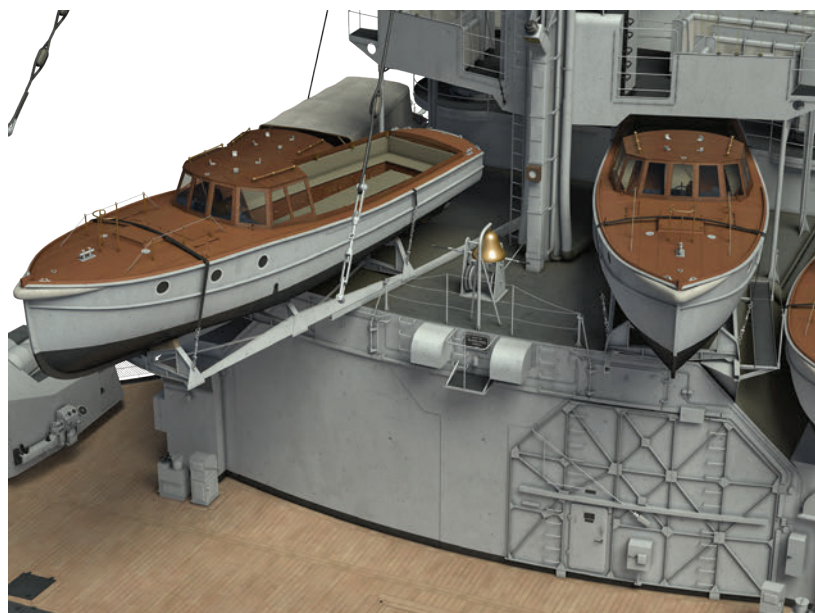
### C5/21 UPPER AFT DECKHOUSE LEVEL – VIEW FROM FRAME 81 TOWARDS THE BOW, AUGUST 1940; ARROWS INDICATE AREAS MODIFIED IN JANUARY 1941



C5/19



C5/20

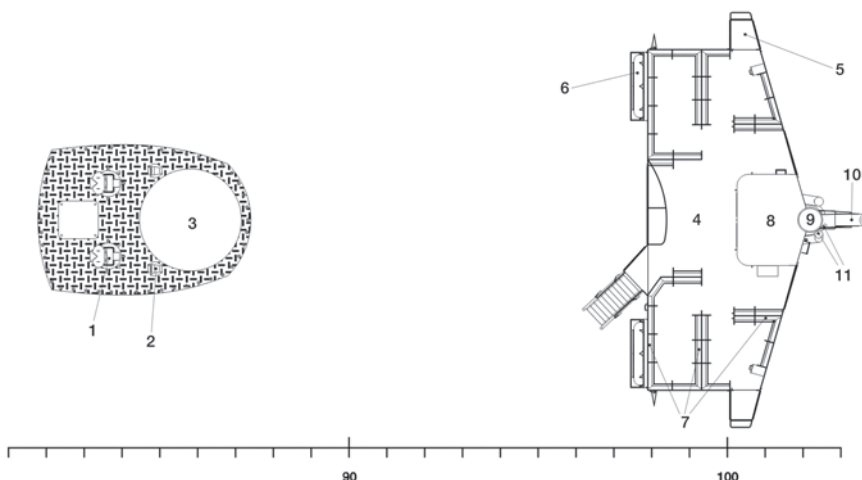


C5/21



### C5/22 AFT FIRE CONTROL POST ROOF LEVEL – PLAN, MAY 1941

- 1 Zielgeber C/38S
- 2 Periscope
- 3 10.5m rangefinder (replaced temporary conical hood in September 1940)
- 4 Signal bridge
- 5 Signalman's platform
- 6 Stowed life raft
- 7 Signal flags under canvas covers
- 8 Shelter
- 9 Mainmast
- 10 Wire antenna duct
- 11 Diesel exhaust pipes



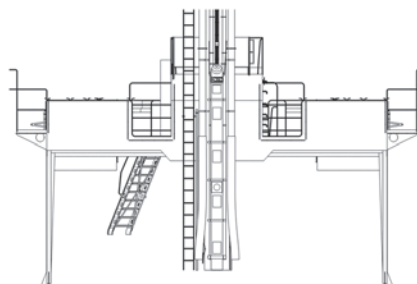
C5/22

### C5/23 SIGNAL BRIDGE LEVEL – VIEW FROM FRAME 104 TOWARDS THE STERN, MAY 1941

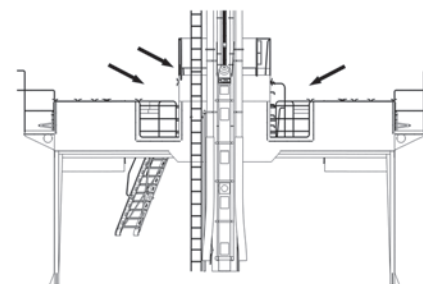
### C5/24 SIGNAL BRIDGE LEVEL – VIEW FROM FRAME 104 TOWARDS THE STERN, AUGUST 1940; ARROWS INDICATE AREAS MODIFIED IN JANUARY 1941

### C5/25 RESERVE ANTI-AIRCRAFT COMBAT STATION LEVEL – PLAN, MAY 1941

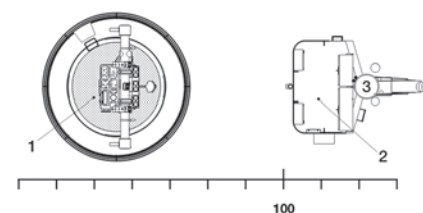
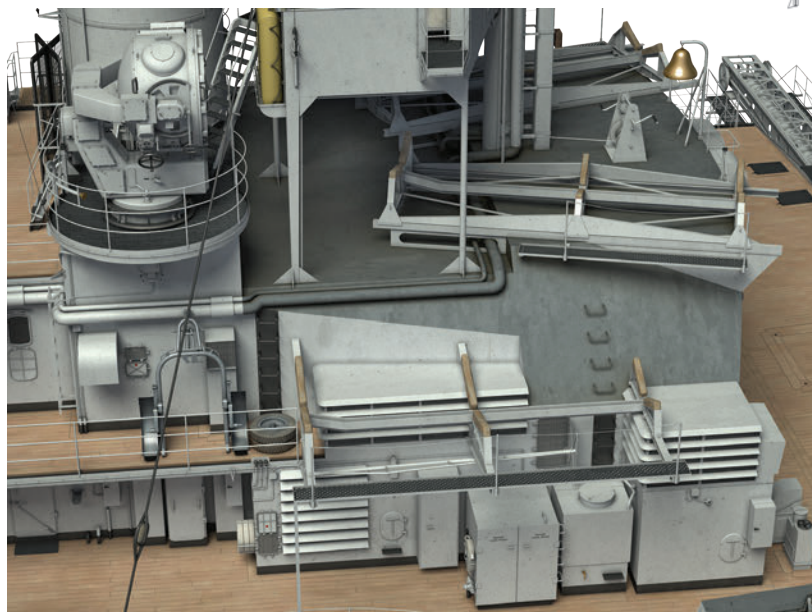
- 1 AA artillery director C (*Flakleitstand C*) with a 3m rangefinder
- 2 Reserve anti-aircraft combat station
- 3 Mainmast



C5/23



C5/24

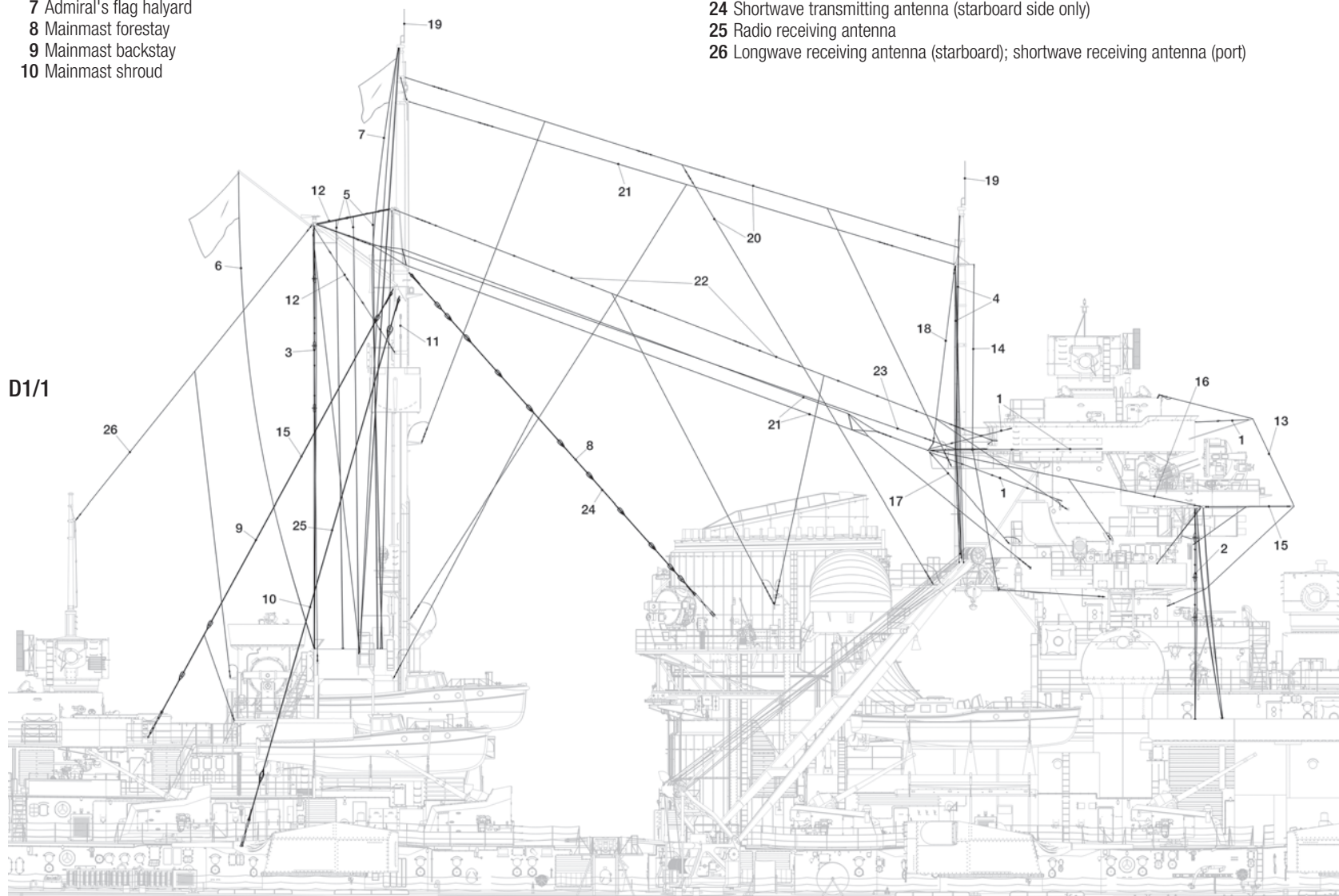


C5/25

**SHIP'S RIG (1/300 SCALE)****D1/1 RIGHT PROFILE****D1/1-4 SHIP'S RIG**

- 1 Stay of wire antenna spar
- 2 *Nachtsignalapparat* (night signalling apparatus) – vertical array of 3 white and red lamps, port side; 2 warning lights, starboard side
- 3 *Nachtsignalapparat* (starboard side only)
- 4 Foremast flag halyard
- 5 Mainmast flag halyard
- 6 Naval ensign halyard
- 7 Admiral's flag halyard
- 8 Mainmast forestay
- 9 Mainmast backstay
- 10 Mainmast shroud

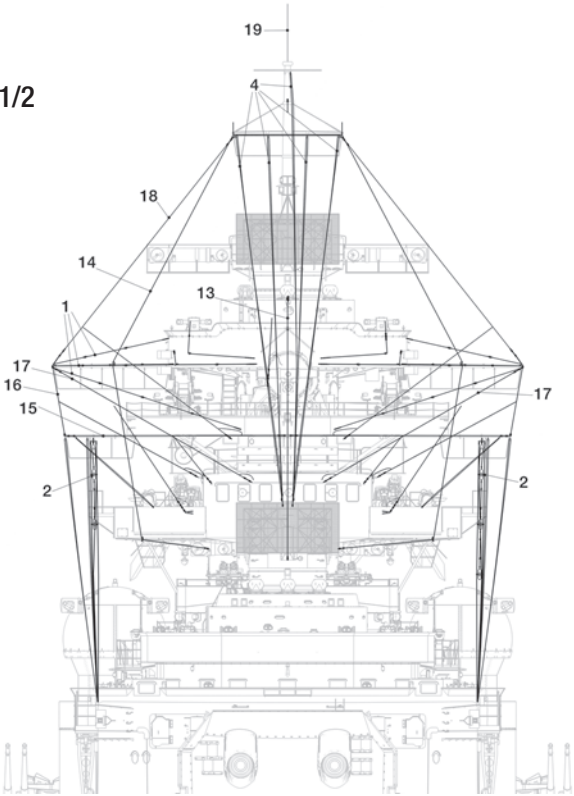
- 11 Halyard for lowering and raising of the upper part of mainmast (starboard side only)
- 12 Stay of mainmast spar
- 13 Direction finder longitudinal loop
- 14 Direction finder transverse loop
- 15 All-weather receiving antenna
- 16 Longwave receiving antenna
- 17 Shortwave receiving antenna (starboard); longwave receiving antenna (port)
- 18 Shortwave receiving antenna
- 19 VHF transmitting antenna
- 20 Long-distance shortwave transmitting antenna
- 21 Longwave transmitting antenna
- 22 Shortwave transmitting antenna
- 23 Direction finder auxiliary antenna
- 24 Shortwave transmitting antenna (starboard side only)
- 25 Radio receiving antenna
- 26 Longwave receiving antenna (starboard); shortwave receiving antenna (port)



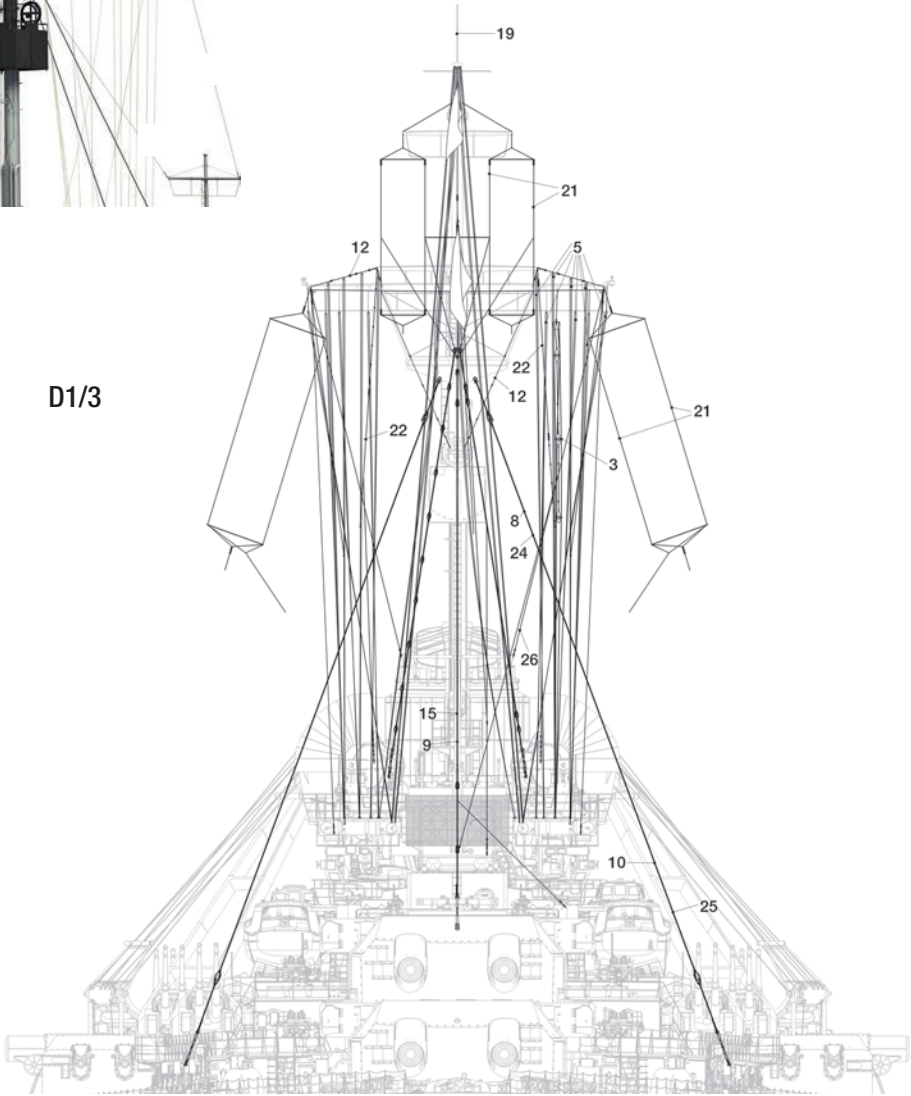
D1/2 FRONT VIEW, FOREMAST AREA  
D1/3 BACK VIEW, MAINMAST AREA



D1/2



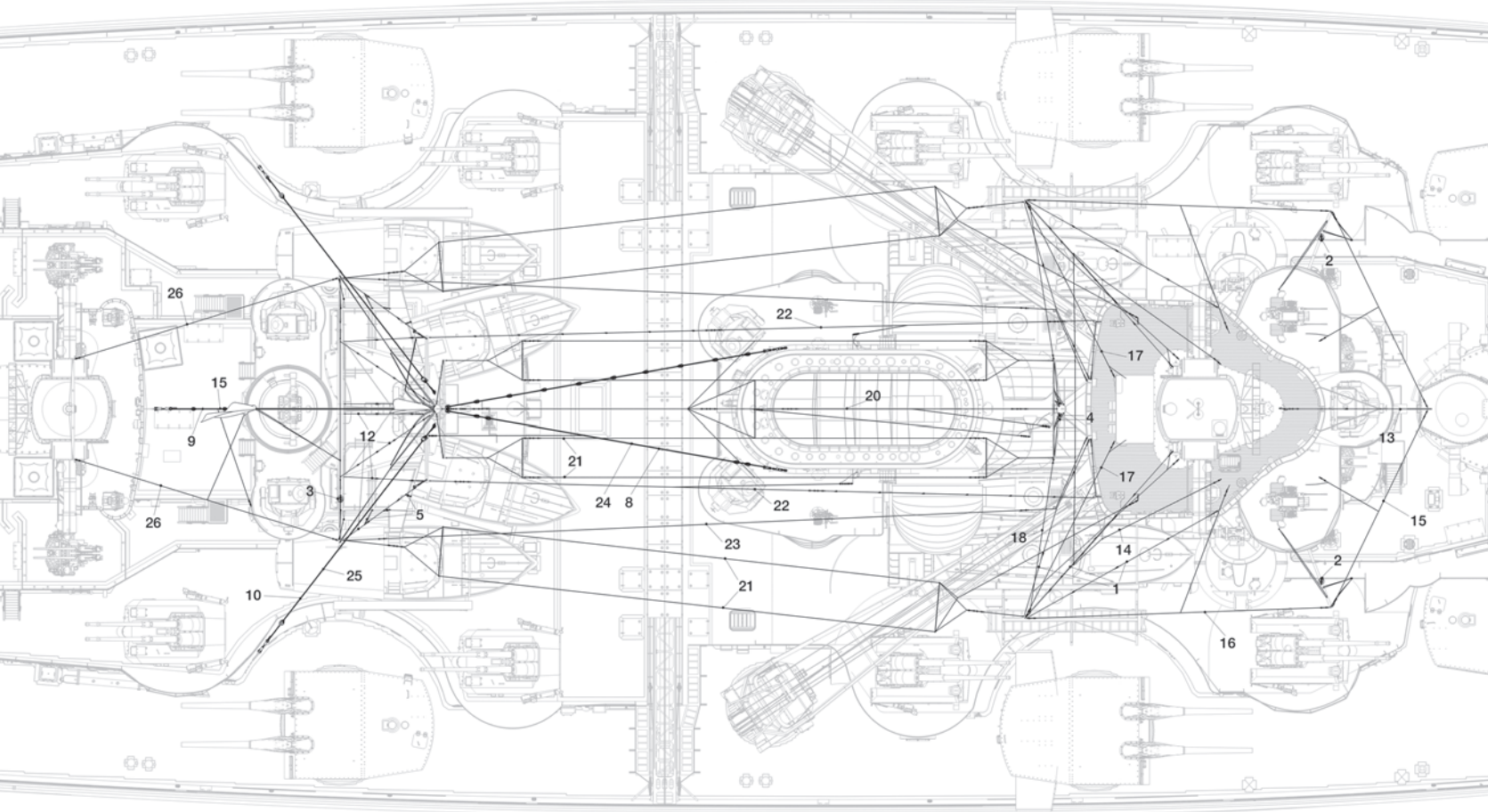
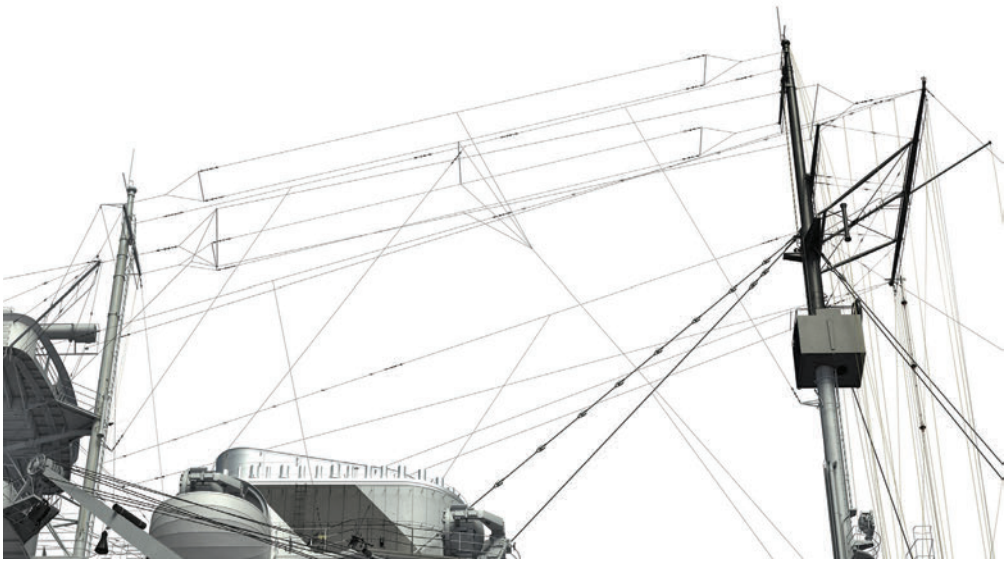
D1/3



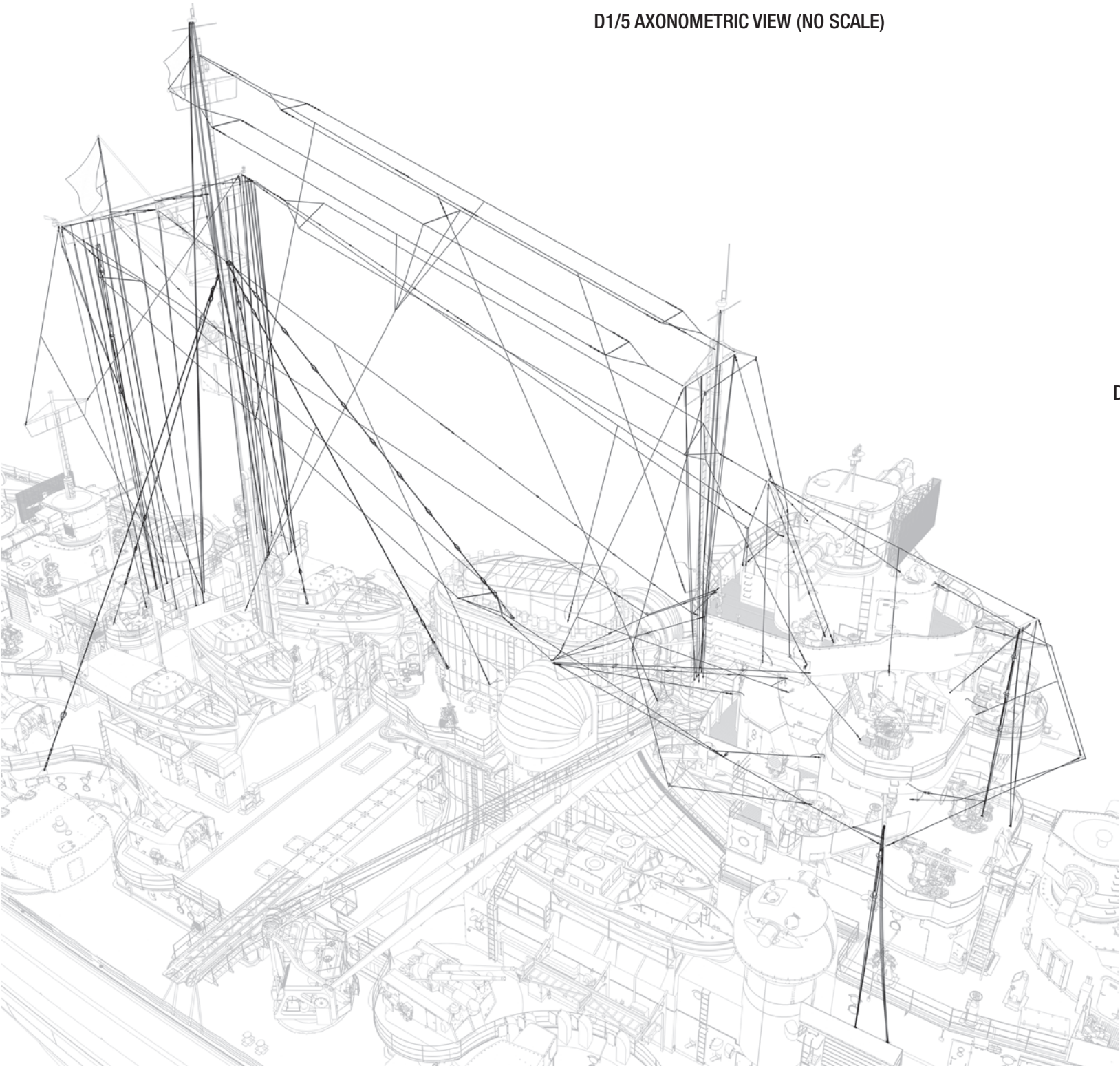


SHIP'S RIG (1/300 SCALE)  
D1/4 PLAN

D1/4



D1/5 AXONOMETRIC VIEW (NO SCALE)

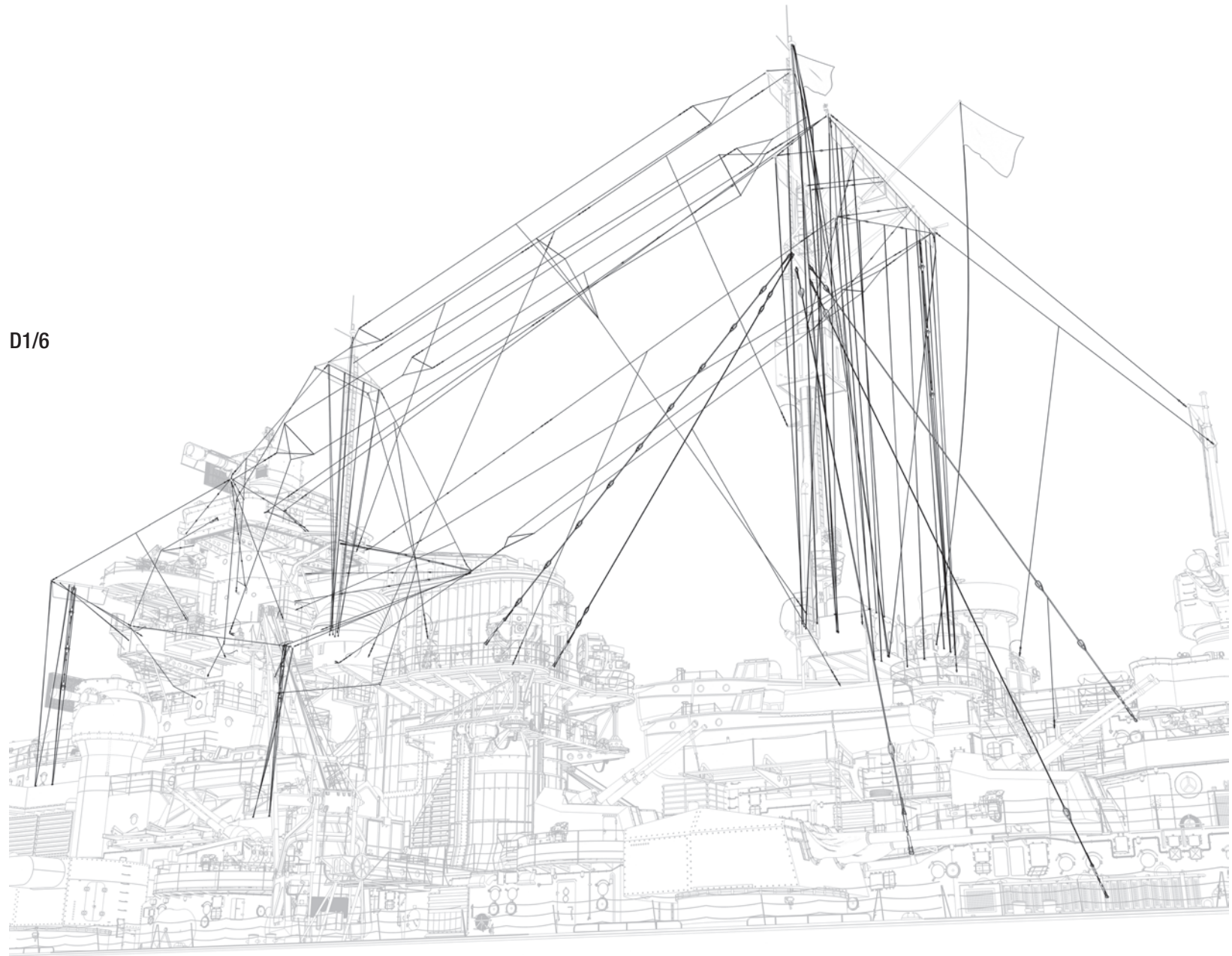


D1/5

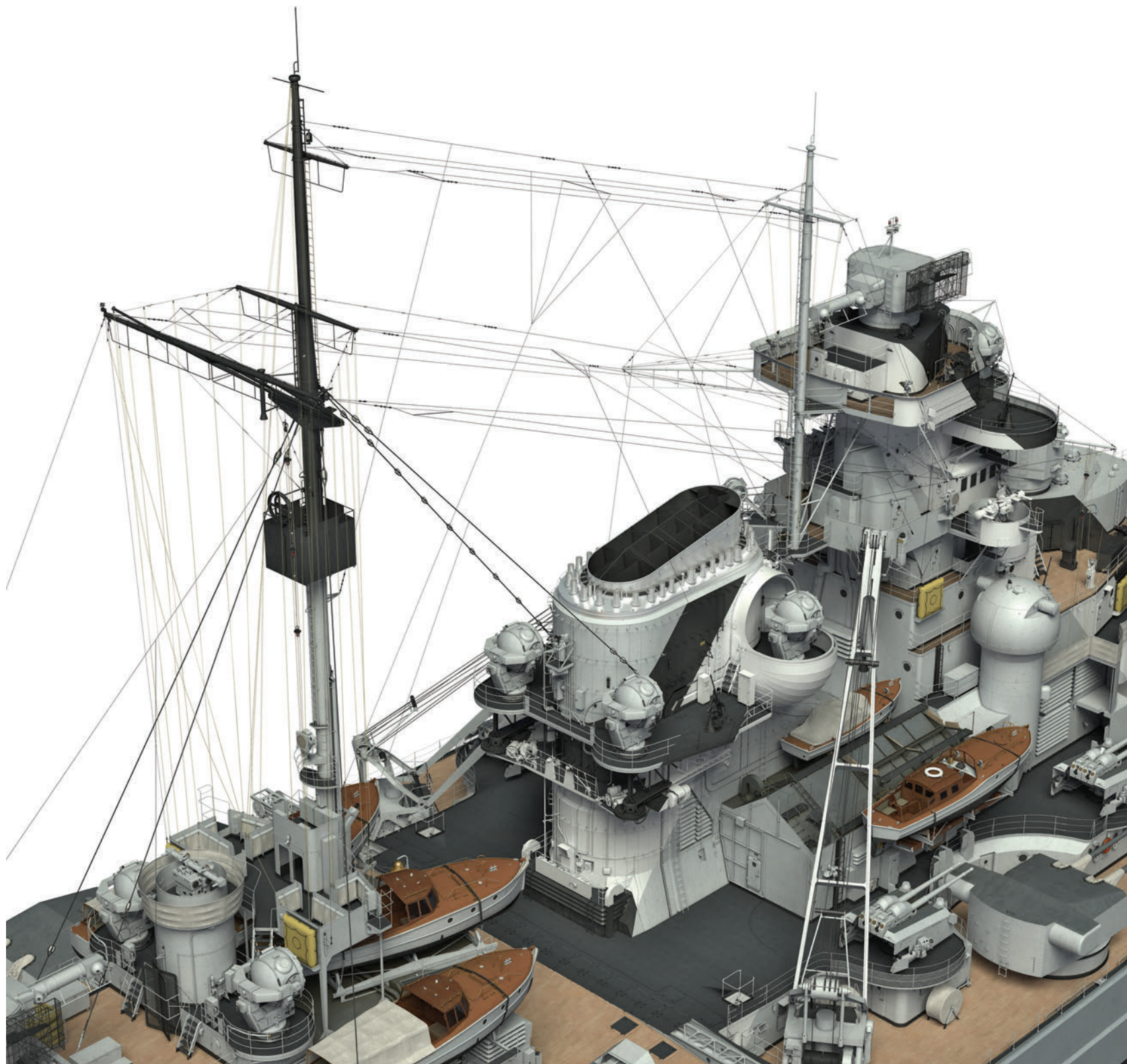


SHIP'S RIG (1/300 SCALE)

D1/6 AXONOMETRIC VIEW (NO SCALE)







FOREMAST (1/200 SCALE)

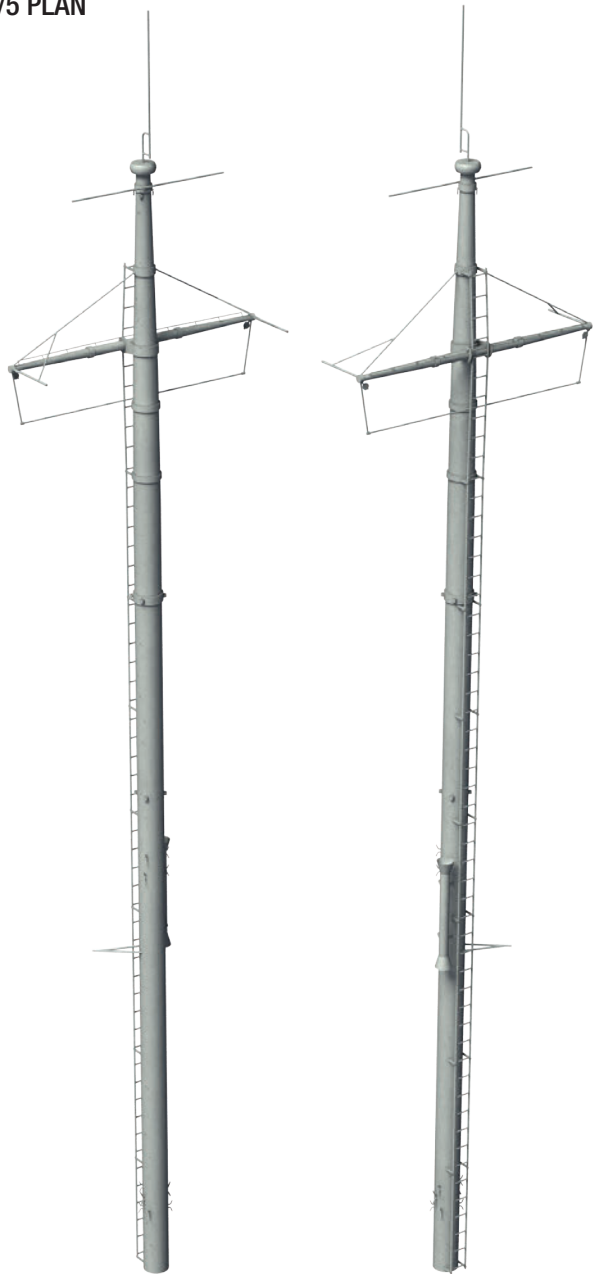
D2/1 RIGHT PROFILE

D2/2 FRONT VIEW, MAY 1941

D2/3 BACK VIEW, MAY 1941

D2/4 BACK VIEW, AUGUST 1940; ARROWS INDICATE  
AREAS MODIFIED IN JANUARY 1941

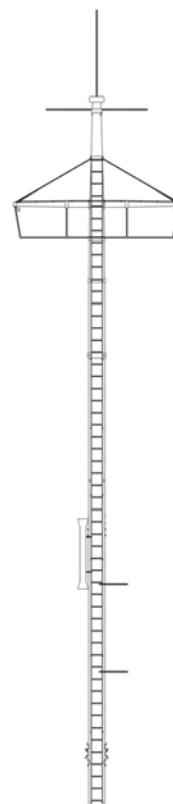
D2/5 PLAN



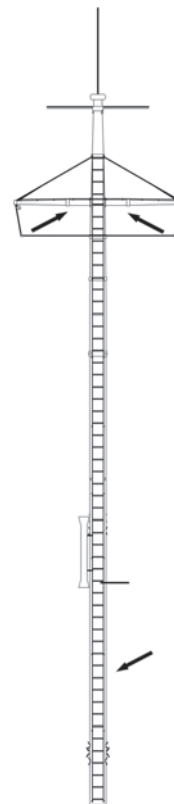
D2/1



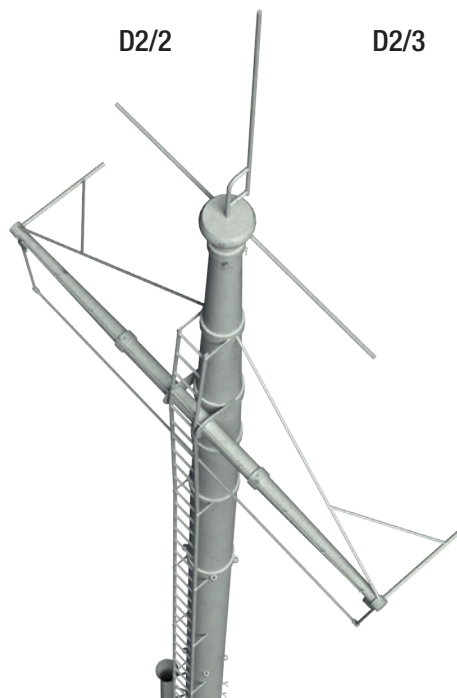
D2/2



D2/3



D2/4



D2/5

## MAINMAST (1/200 SCALE)

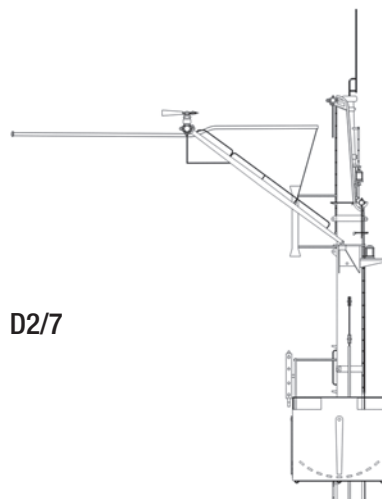
### D2/6 RIGHT PROFILE

- 1 Ladder
- 2 Wire antenna duct
- 3 Diesel exhaust pipe
- 4 Halyard for lowering and raising of the upper part of mainmast
- 5 Platform for signal lamp's operator
- 6 Signal lamp
- 7 Rudder position indicator for friendly ships
- 8 Speed indicator for friendly ships (light array)
- 9 Lantern (white)
- 10 Rotatable battle ensign rod
- 11 Wind direction transmitter (starboard side) and wind strength transmitter (port side)
- 12 Top lights (white)
- 13 Jacob's ladder

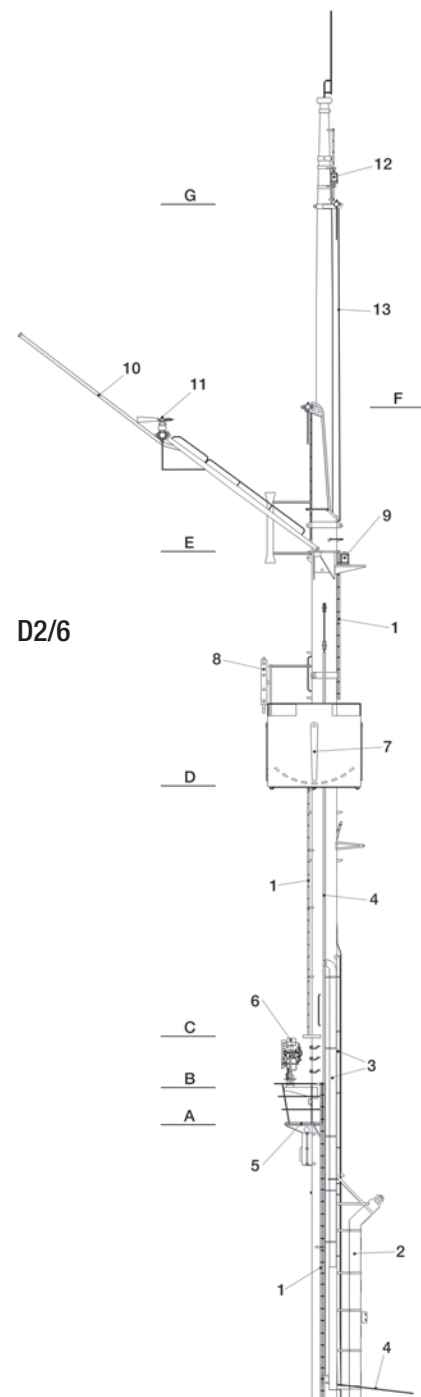
### D2/7 RIGHT PROFILE (FRAGMENT); UPPER PART OF MAINMAST AND BATTLE ENSIGN ROD IN LOWEST POSITIONS



D2/7



D2/6



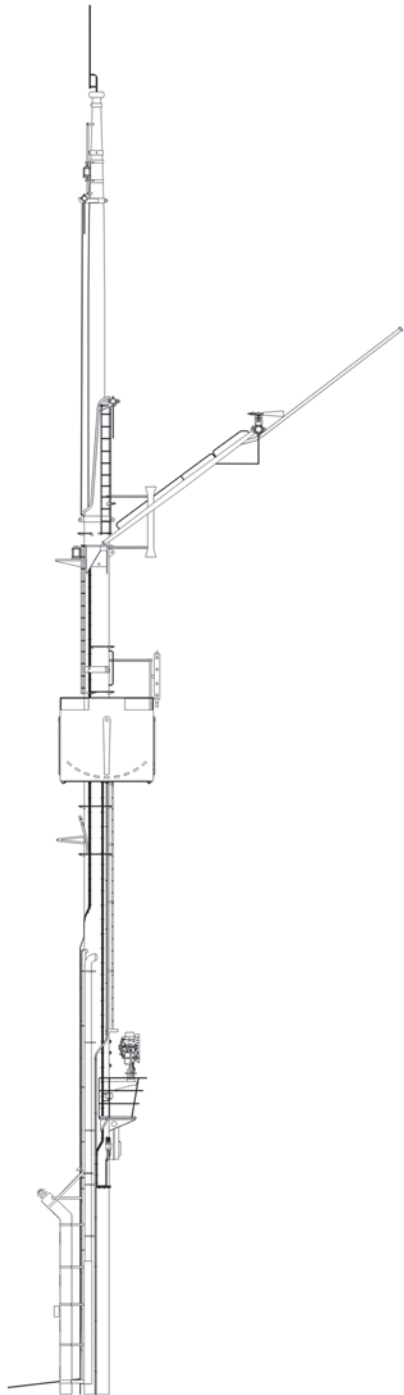


MAINMAST (1/200 SCALE)

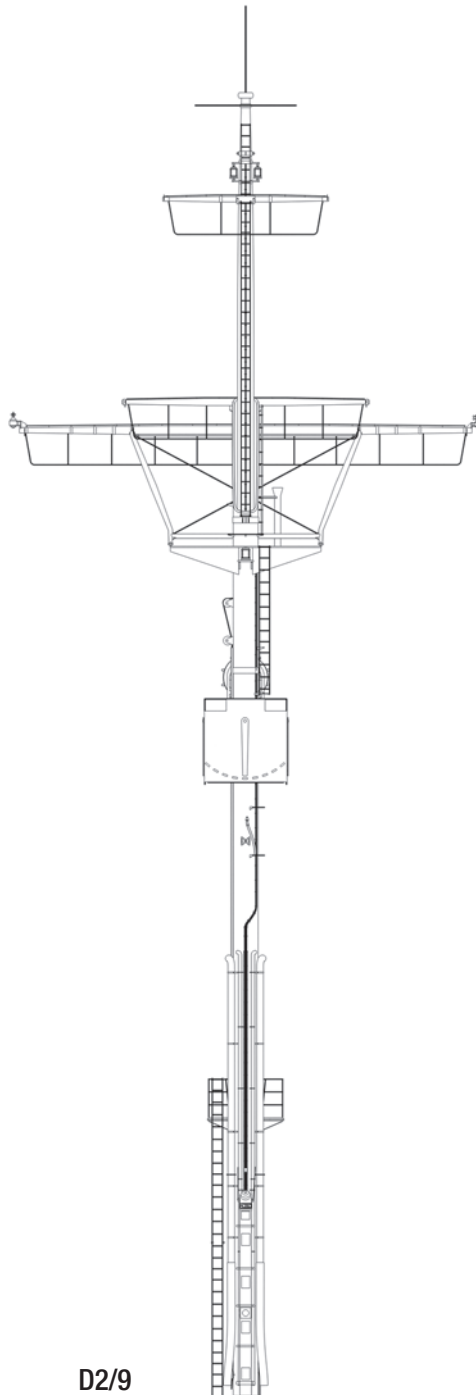
D2/8 LEFT PROFILE

D2/9 FRONT VIEW

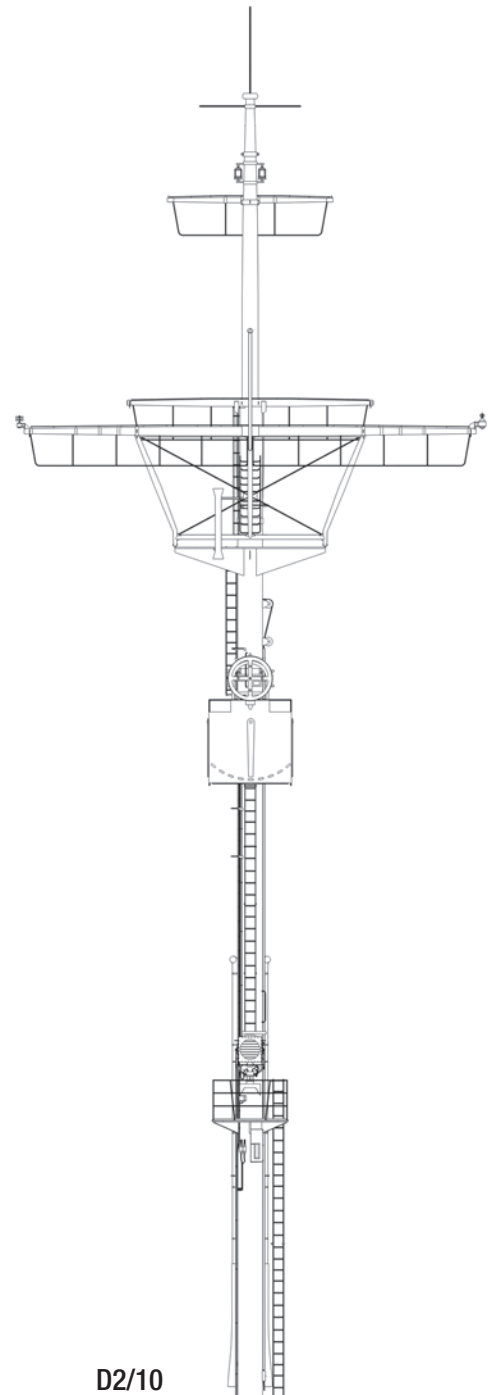
D2/10 BACK VIEW



D2/8



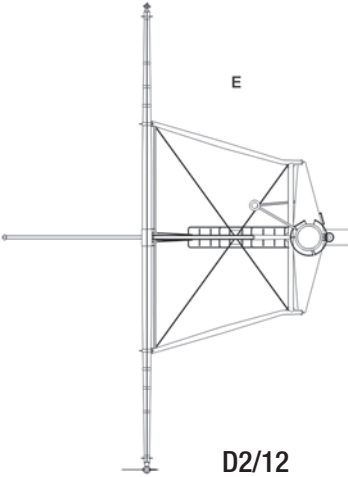
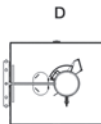
D2/9



D2/10

D2/11 PLAN

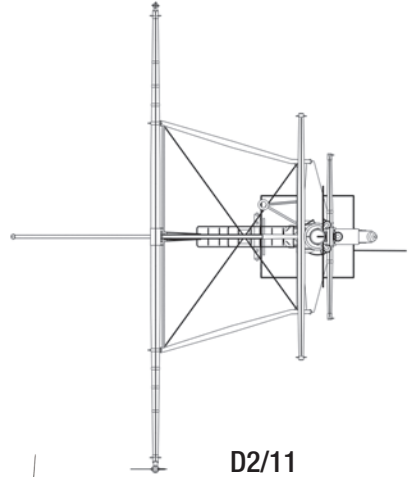
D2/12 LEVELS OF THE MAINMAST, PLAN



F



G



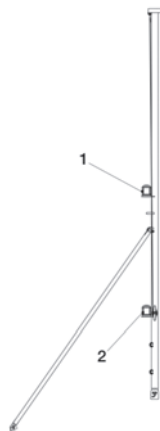
## JACK STAFF (1/100 SCALE)

### D2/13 RIGHT PROFILE

- 1 Steering light (blue)
- 2 Bow anchoring light (red)

### D2/14 BACK VIEW

### D2/15 PLAN



D2/13



D2/14



## ENSIGN STAFF (1/100 SCALE)

### D2/16 RIGHT PROFILE

- 1 Stern anchoring light (red)
- 2 Stern light (white)
- 3 Wake light (white)
- 4 Roller fairlead

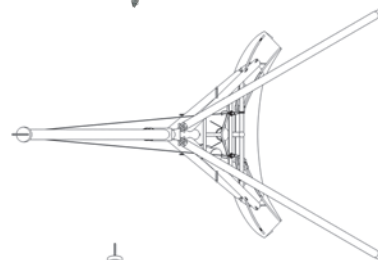
### D2/17 FRONT VIEW

### D2/18 BACK VIEW

### D2/19 PLAN

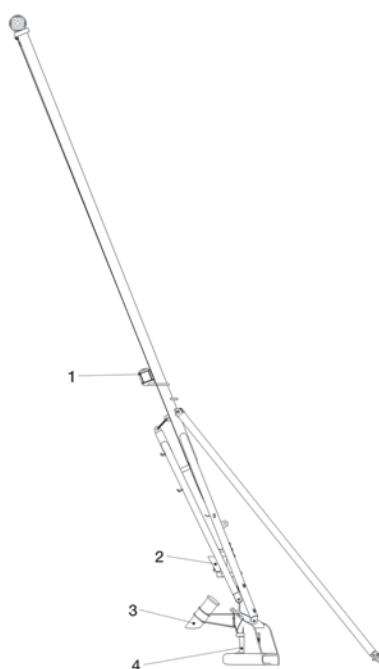


D2/15

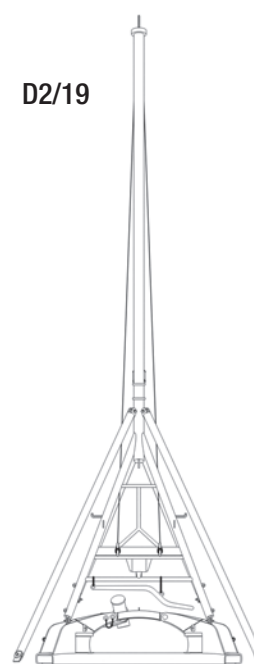


D2/19

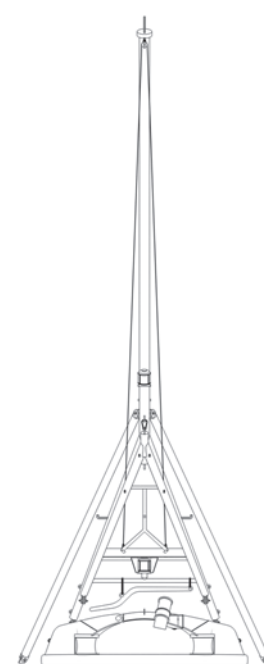
D2/19



D2/16



D2/17



D2/18



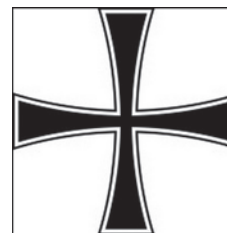
D2/20 NAVAL ENSIGN OF THE KRIEGSMARINE (*REICHSKRIEGSFLAGGE*)

D2/21 ADMIRAL'S FLAG (*ADMIRALSFLAGGE*)

D2/22 JACK (*GÖSCH*)



D2/20



D2/21



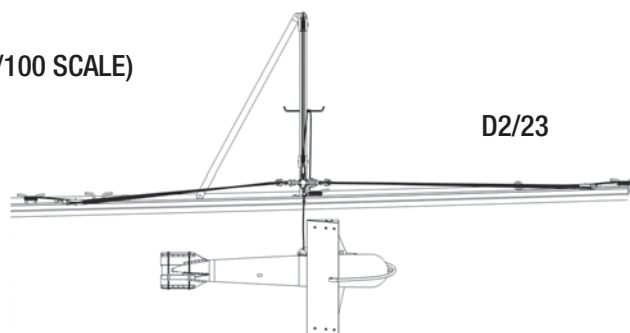
D2/22

RIGGED PARAVANE CRANE (1/100 SCALE)

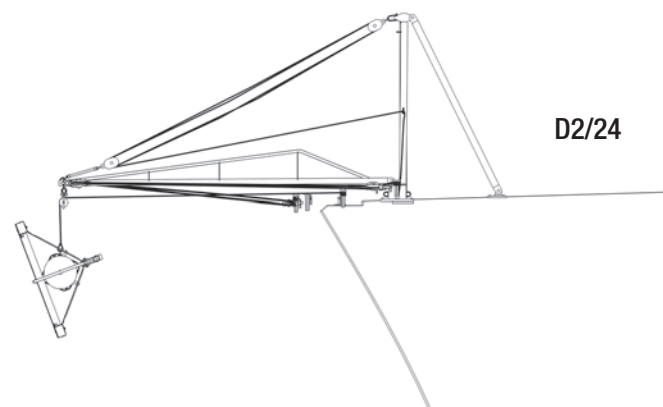
D2/23 RIGHT PROFILE

D2/24 FRONT VIEW

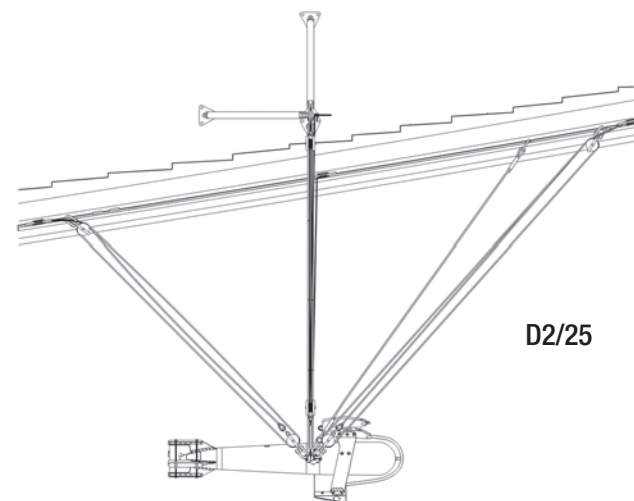
D2/25 PLAN



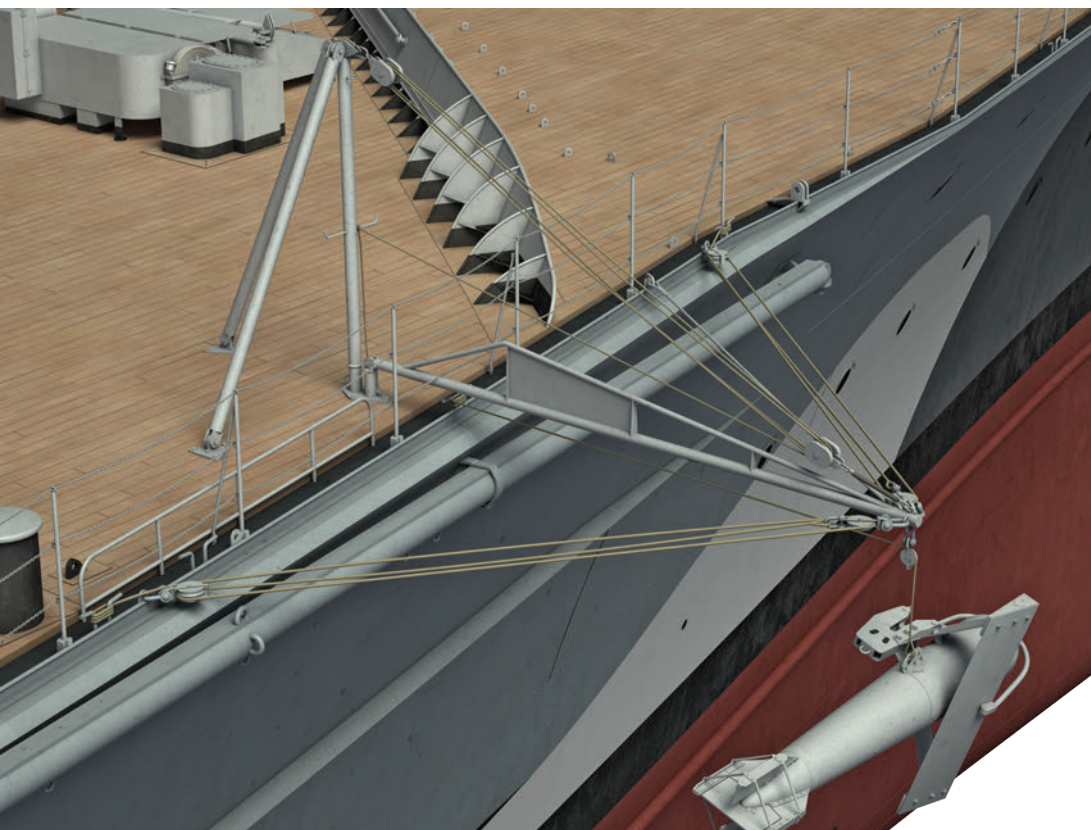
D2/23



D2/24



D2/25

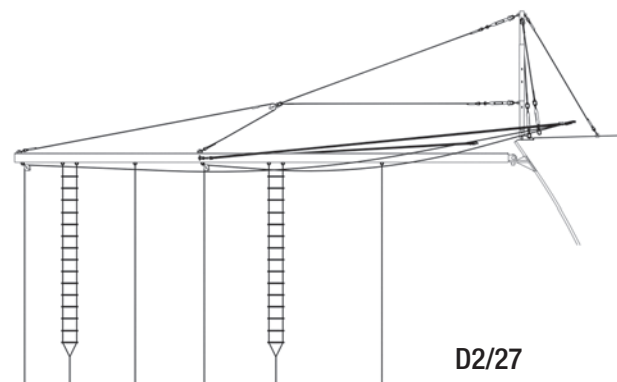
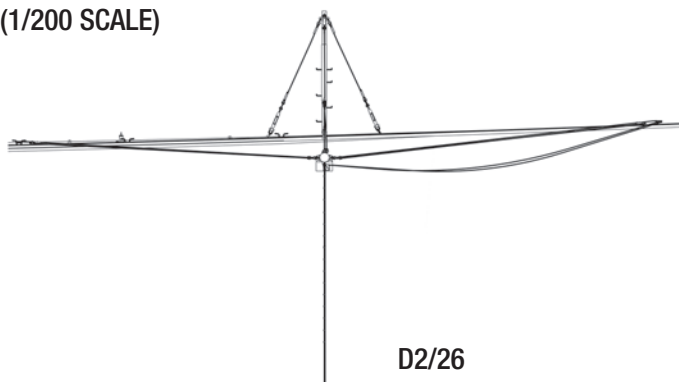


RIGGED FORE BOAT BOOM (1/200 SCALE)

D2/26 RIGHT PROFILE

D2/27 FRONT VIEW

D2/28 PLAN



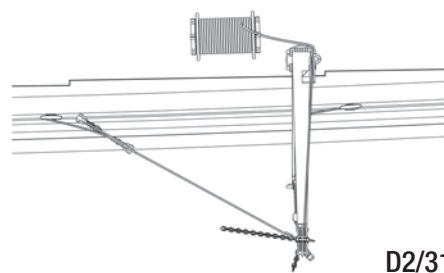
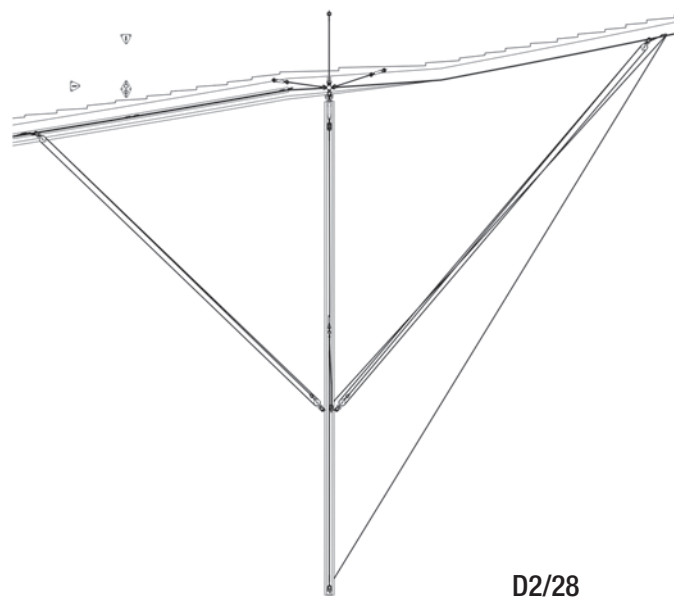
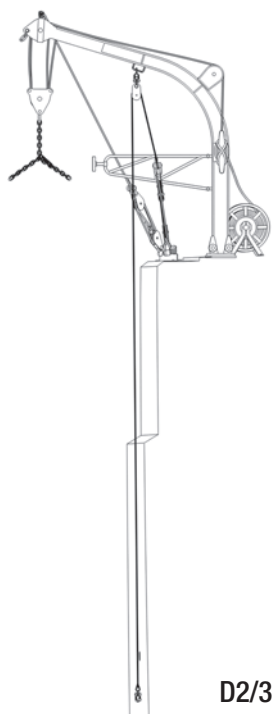
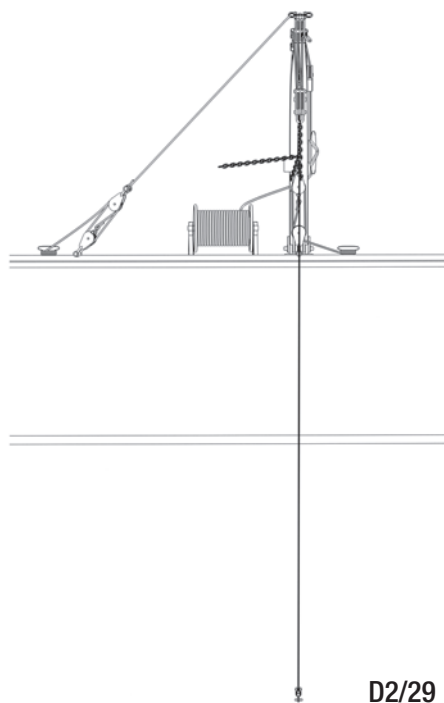
RIGGED BOAT DAVIT, SHOWN WITHOUT THE CUTTER FOR CLARITY

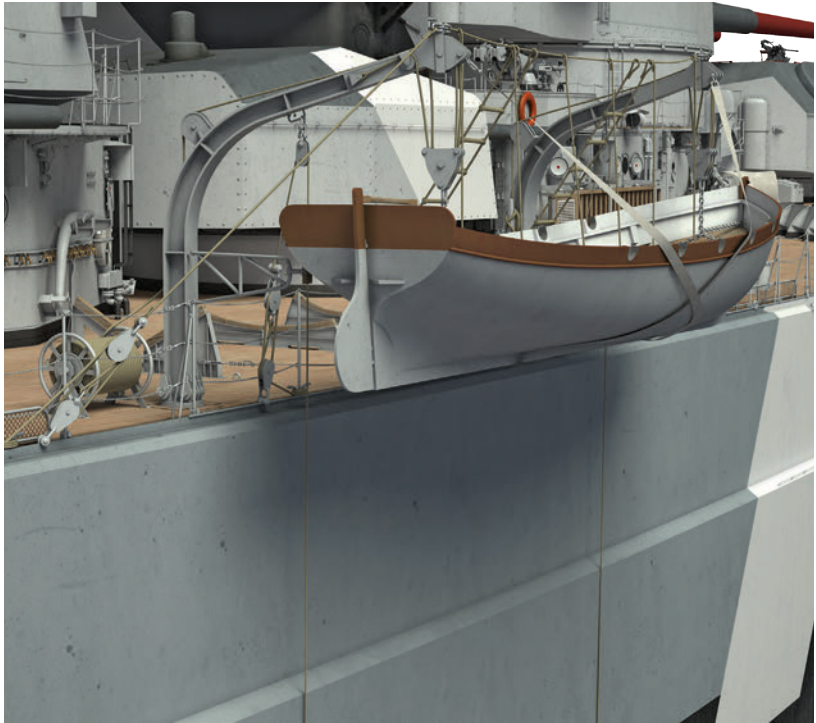
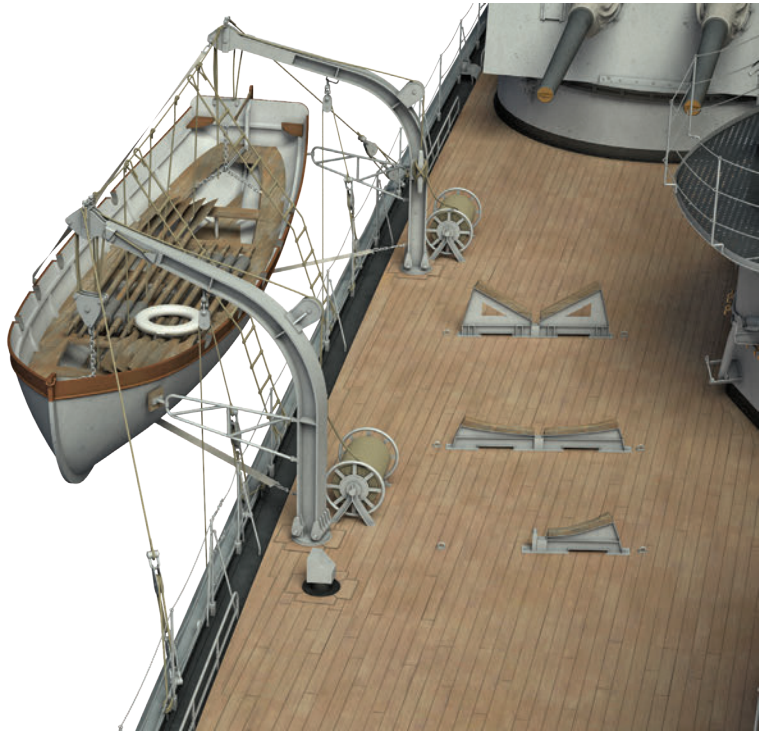
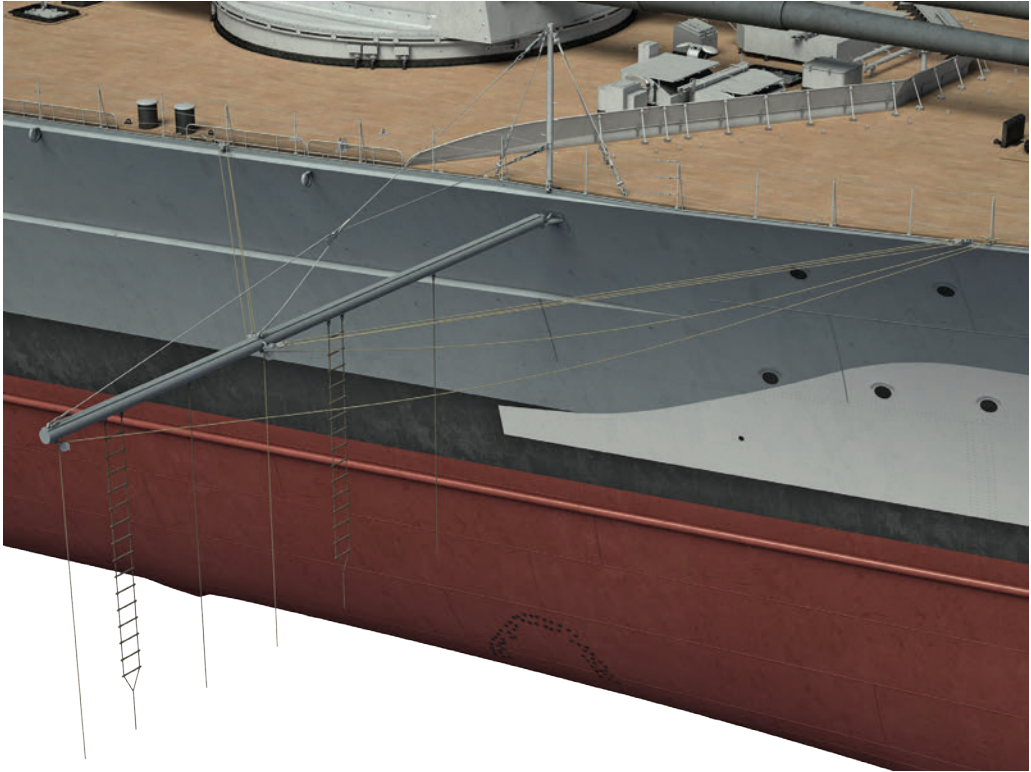
(1/100 SCALE)

D2/29 RIGHT PROFILE

D2/30 FRONT VIEW

D2/31 PLAN





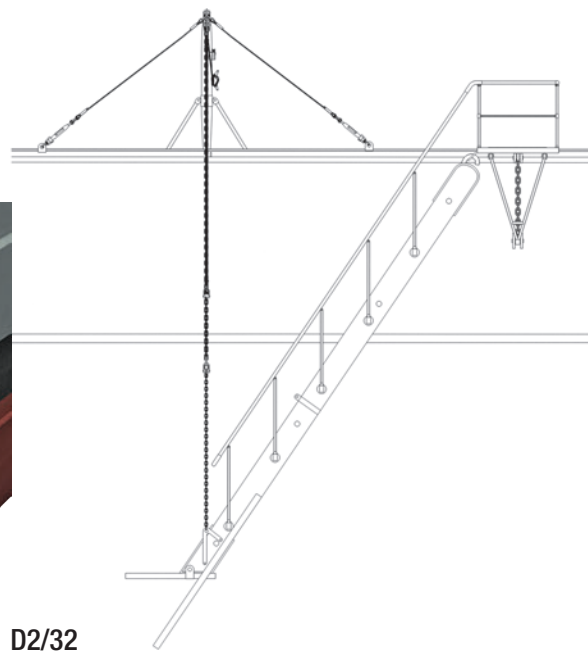


**RIGGED ACCOMMODATION LADDER (1/100 SCALE)**

**D2/32 RIGHT PROFILE**

**D2/33 BACK VIEW**

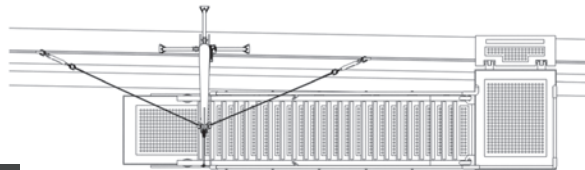
**D2/34 PLAN**



**D2/32**

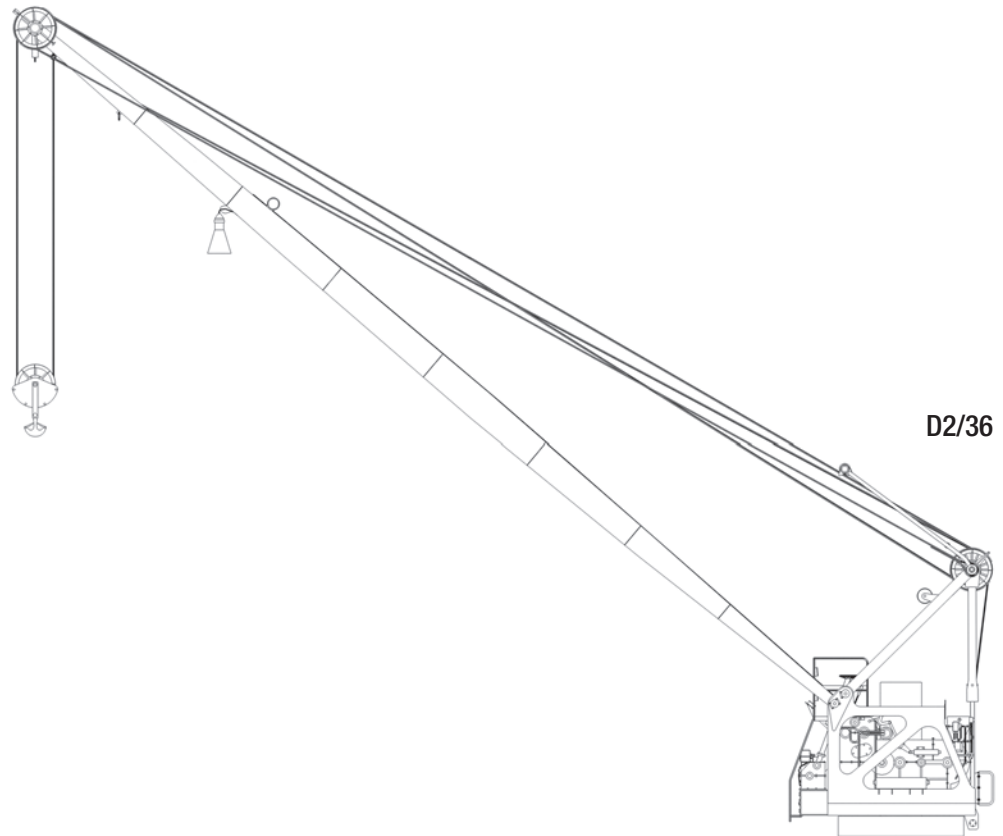
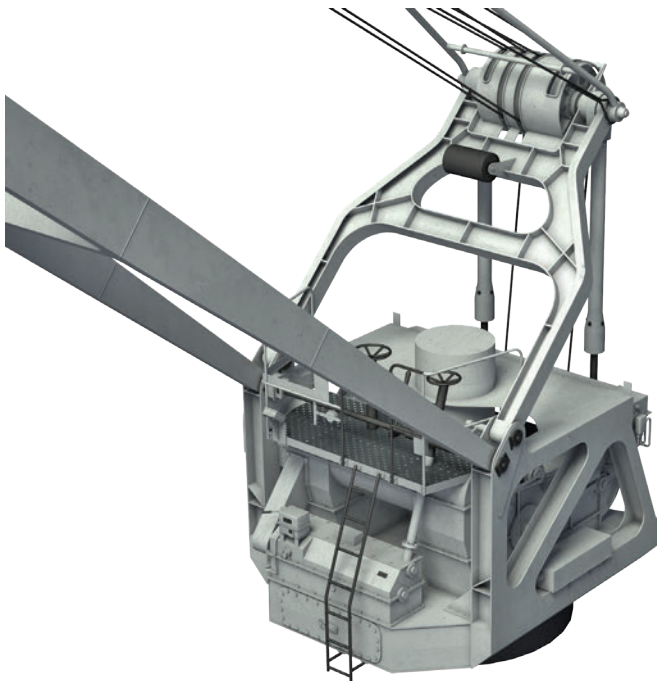
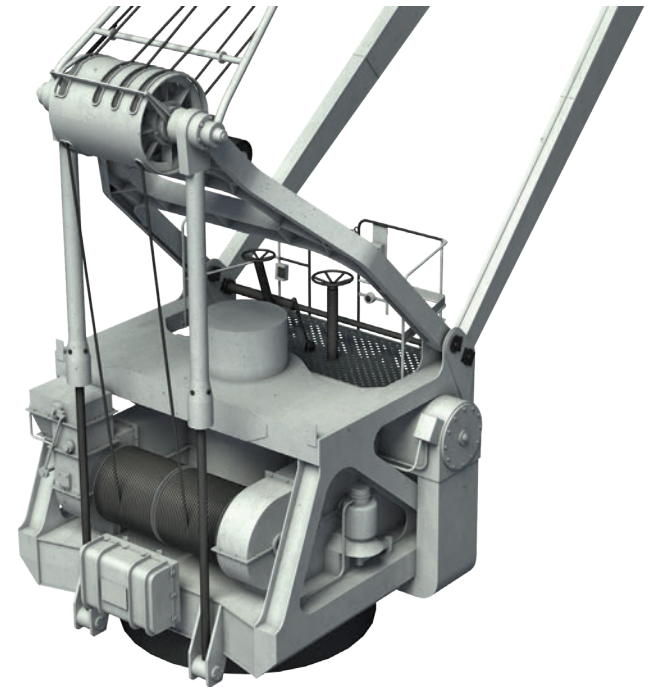
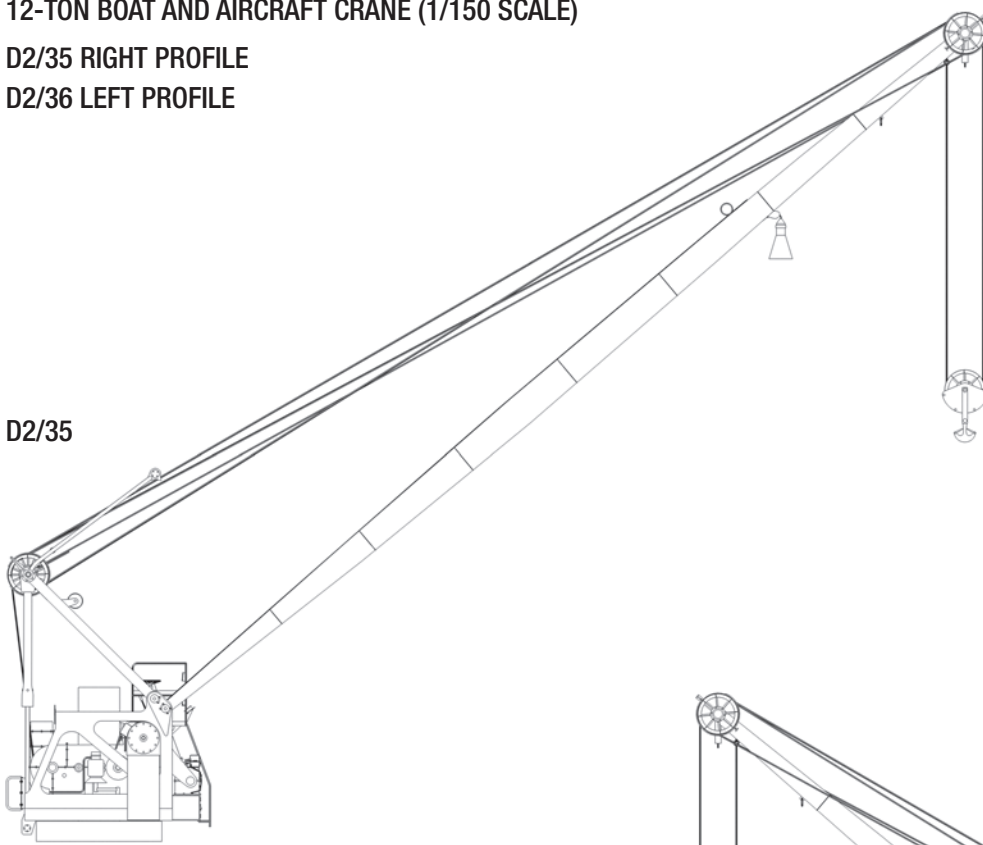


**D2/33**



**D2/34**



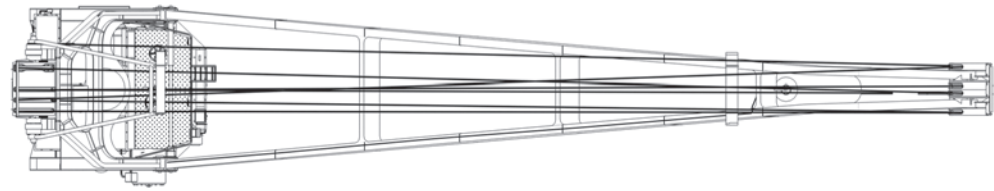
**12-TON BOAT AND AIRCRAFT CRANE (1/150 SCALE)****D2/35 RIGHT PROFILE****D2/36 LEFT PROFILE****D2/35****D2/36**

12-TON BOAT AND AIRCRAFT CRANE (1/150 SCALE)

D2/37 FRONT VIEW

D2/38 BACK VIEW

D2/39 PLAN



D2/39



D2/37



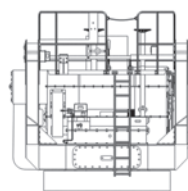
D2/38



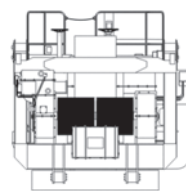
D2/40 CRANE BASE – FRONT VIEW

D2/41 CRANE BASE – BACK VIEW

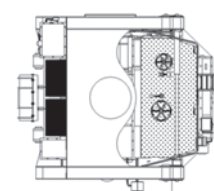
D2/42 CRANE BASE – PLAN



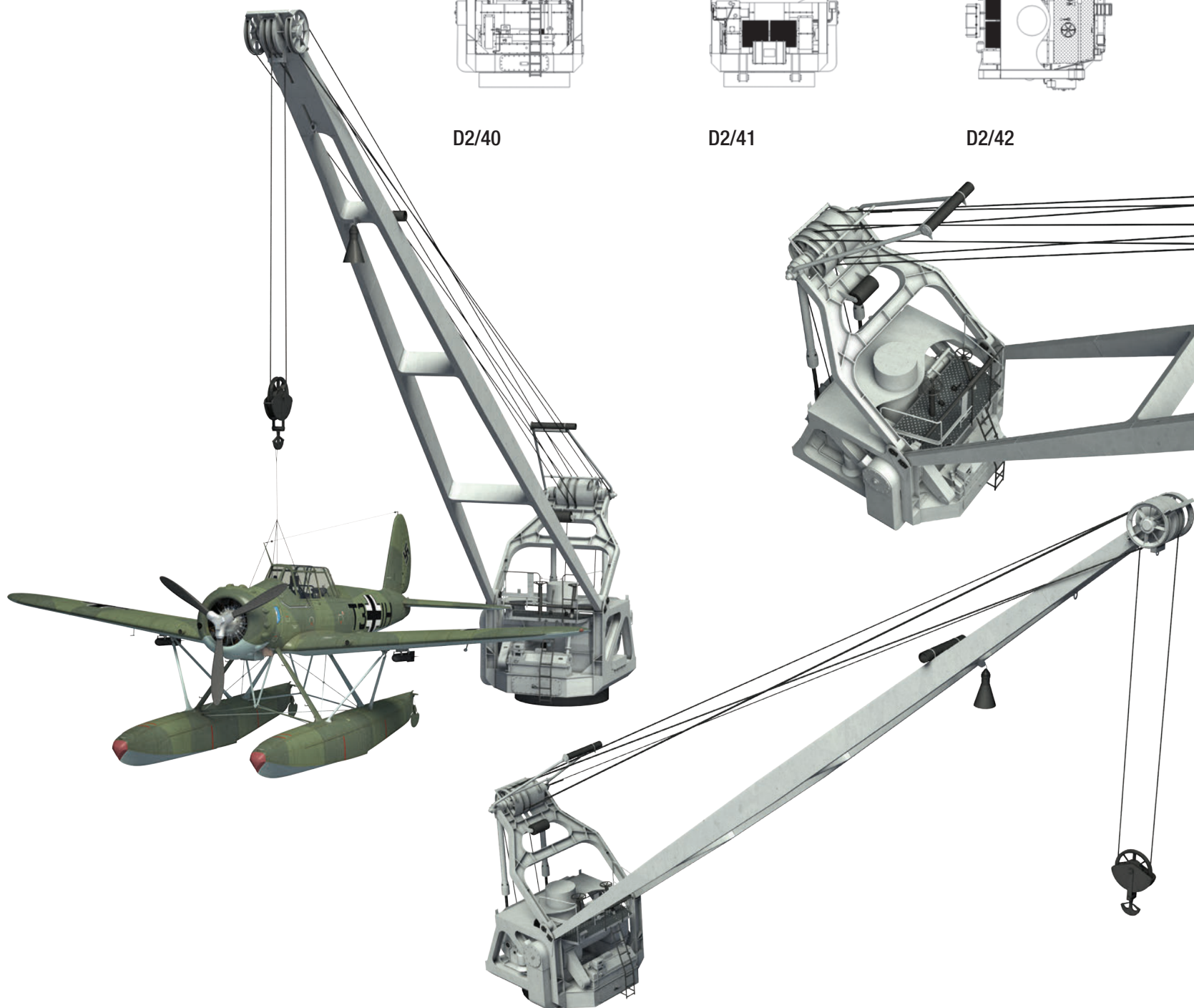
D2/40



D2/41



D2/42



**38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET (1/125 SCALE)**

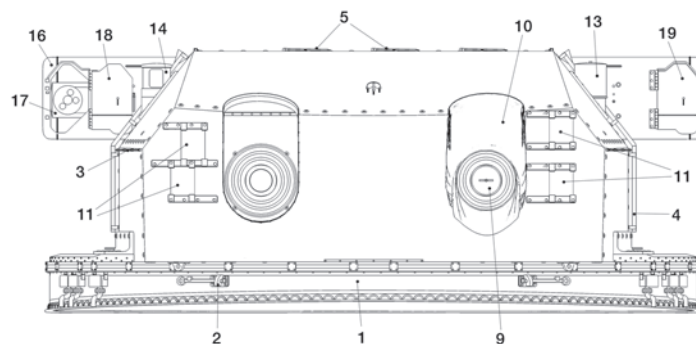
**E1/1 TURRET A – RIGHT PROFILE**

**E1/2 TURRET A – FRONT VIEW**

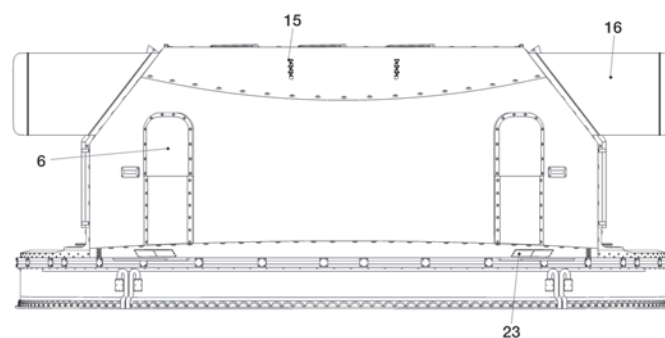
**E1/3 TURRET A – BACK VIEW**

**E1/1–30 38CM TWIN TURRET**

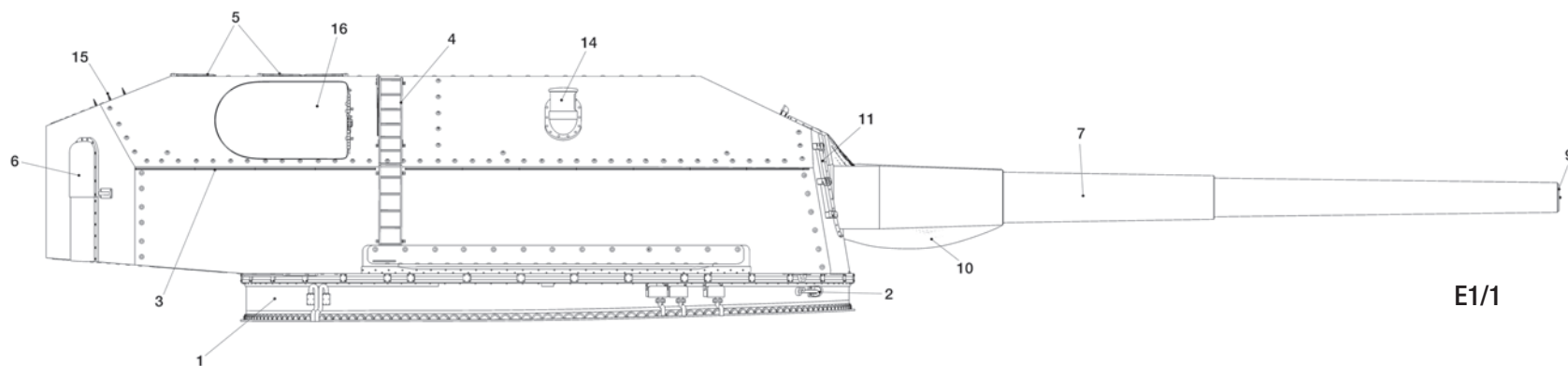
- 1 Barbette
- 2 Train locking mechanism
- 3 Awning rail
- 4 Ladder
- 5 Collapsible guard rail stanchions
- 6 Smoke outlet
- 7 Barrel
- 8 Barrel at maximum elevation of +30°
- 9 Muzzle plug
- 10 Removable blast bag
- 11 Sight under sliding shield
- 12 Inflatable raft container
- 13 C/6 Periscope under protective cover
- 14 C/6 Periscope without protective cover
- 15 Inflatable raft container fixing
- 16 Rangefinder arm hood
- 17 Rangefinder arm
- 18 Hinged rangefinder shield (open)
- 19 Hinged rangefinder shield (closed)
- 20 Sealed hole after removal of rangefinder (only turret A, from January 1941)
- 21 Single 2cm mount (present from January to March 1941)
- 22 Access hatch
- 23 Empty propellant casing ejection point
- 24 Vent
- 25 Vent maintenance platform
- 26 Muzzle plug holder



**E1/2**

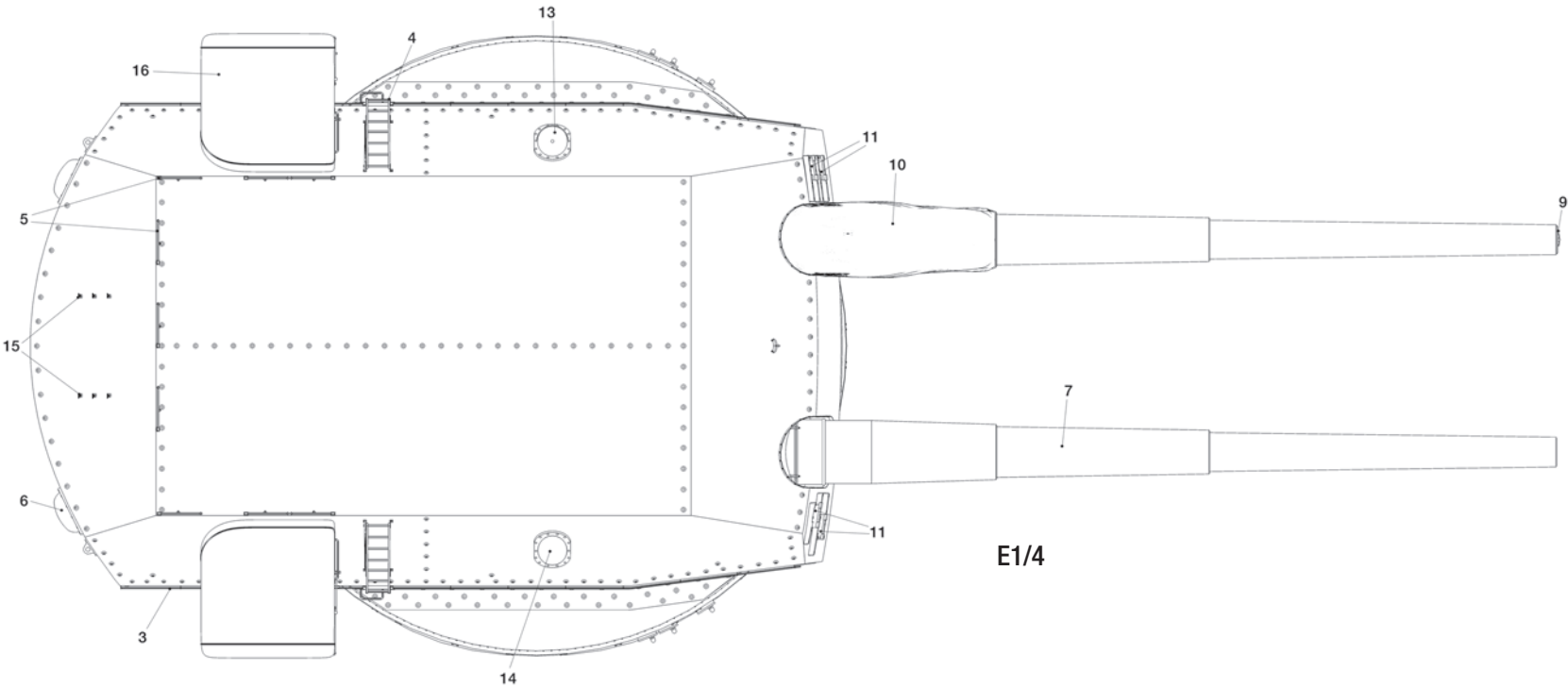


**E1/3**

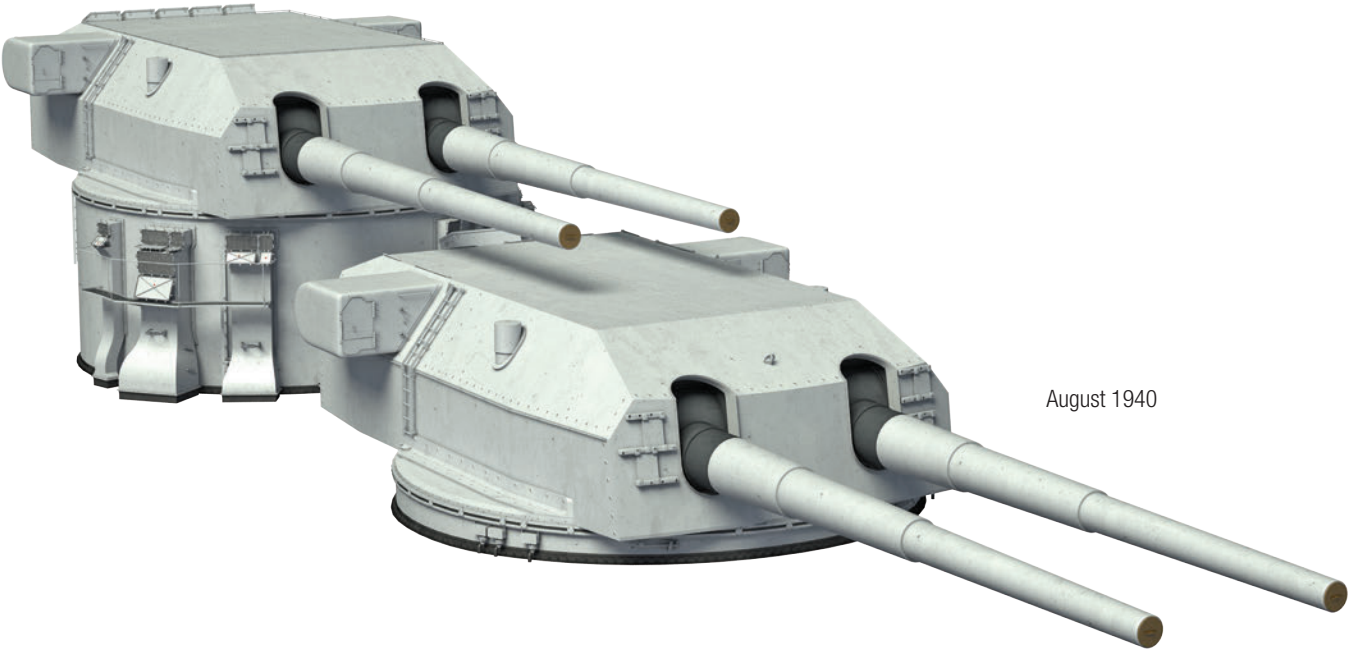


**E1/1**

E1/4 TURRET A – PLAN



E1/4



August 1940



## 192 **E** ARMAMENT – 38CM SK C/34 GUNS

38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET (1/125 SCALE)

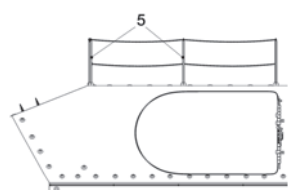
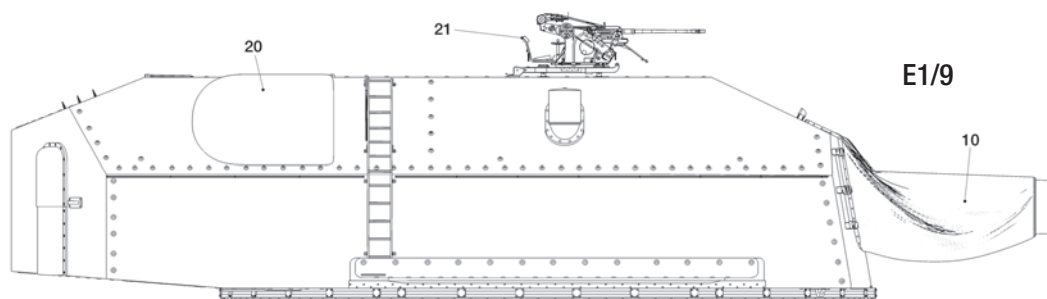
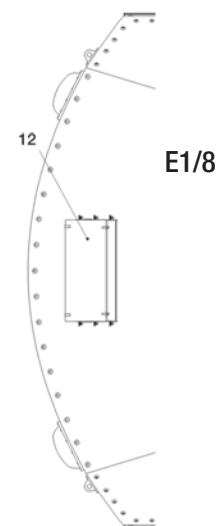
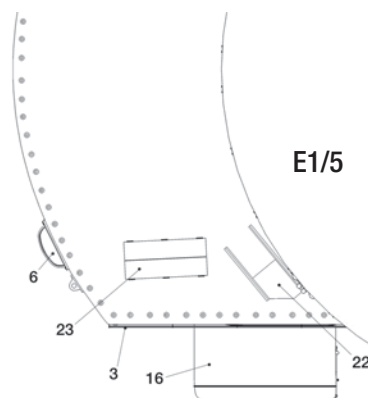
E1/5 TURRET A – BOTTOM VIEW (FRAGMENT)

E1/6 TURRET A – RIGHT PROFILE (FRAGMENT) – ROOF GUARD RAIL  
IN UPRIGHT POSITION

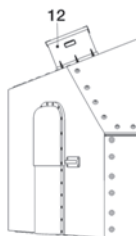
E1/7 TURRET A – RIGHT PROFILE (FRAGMENT) – INFLATABLE RAFT  
CONTAINERS, PRESENT ONLY IN SUMMER–WINTER 1940

E1/8 TURRET A – PLAN (FRAGMENT) – INFLATABLE RAFT CONTAINERS,  
PRESENT ON ALL TURRETS ONLY IN SUMMER–WINTER 1940

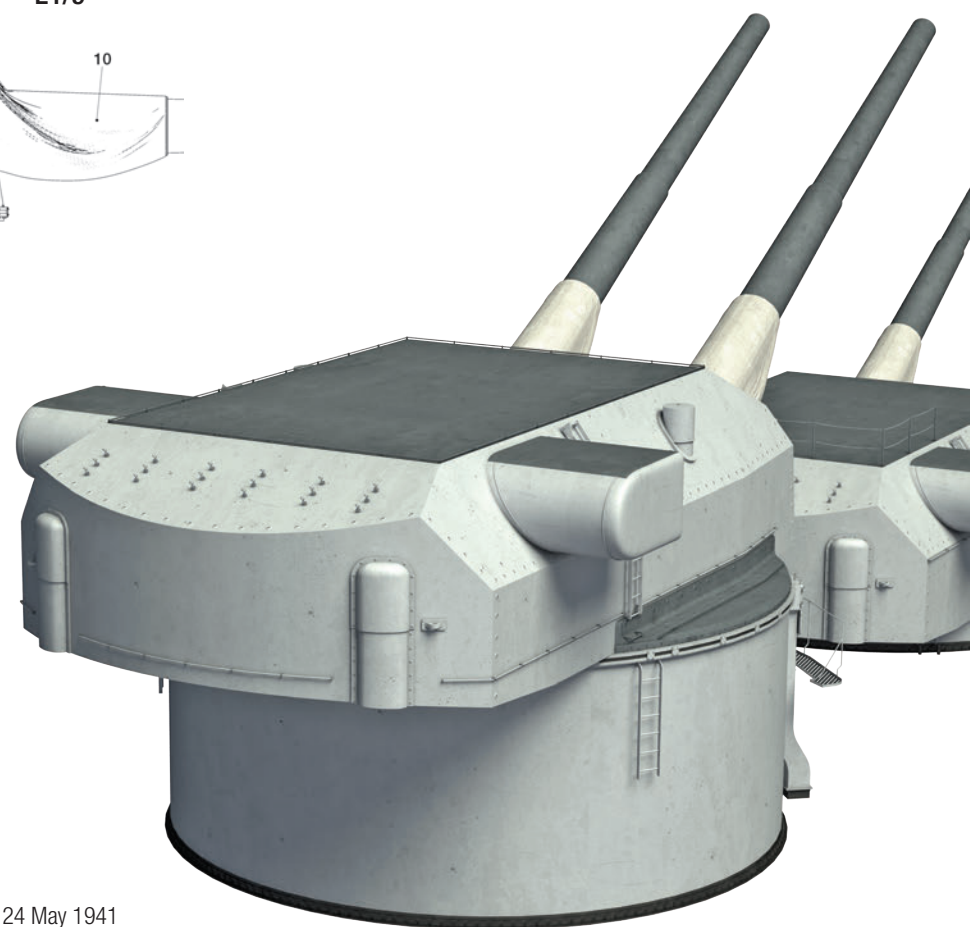
E1/9 TURRET A – RIGHT PROFILE – MODIFICATIONS IN 1941



E1/6

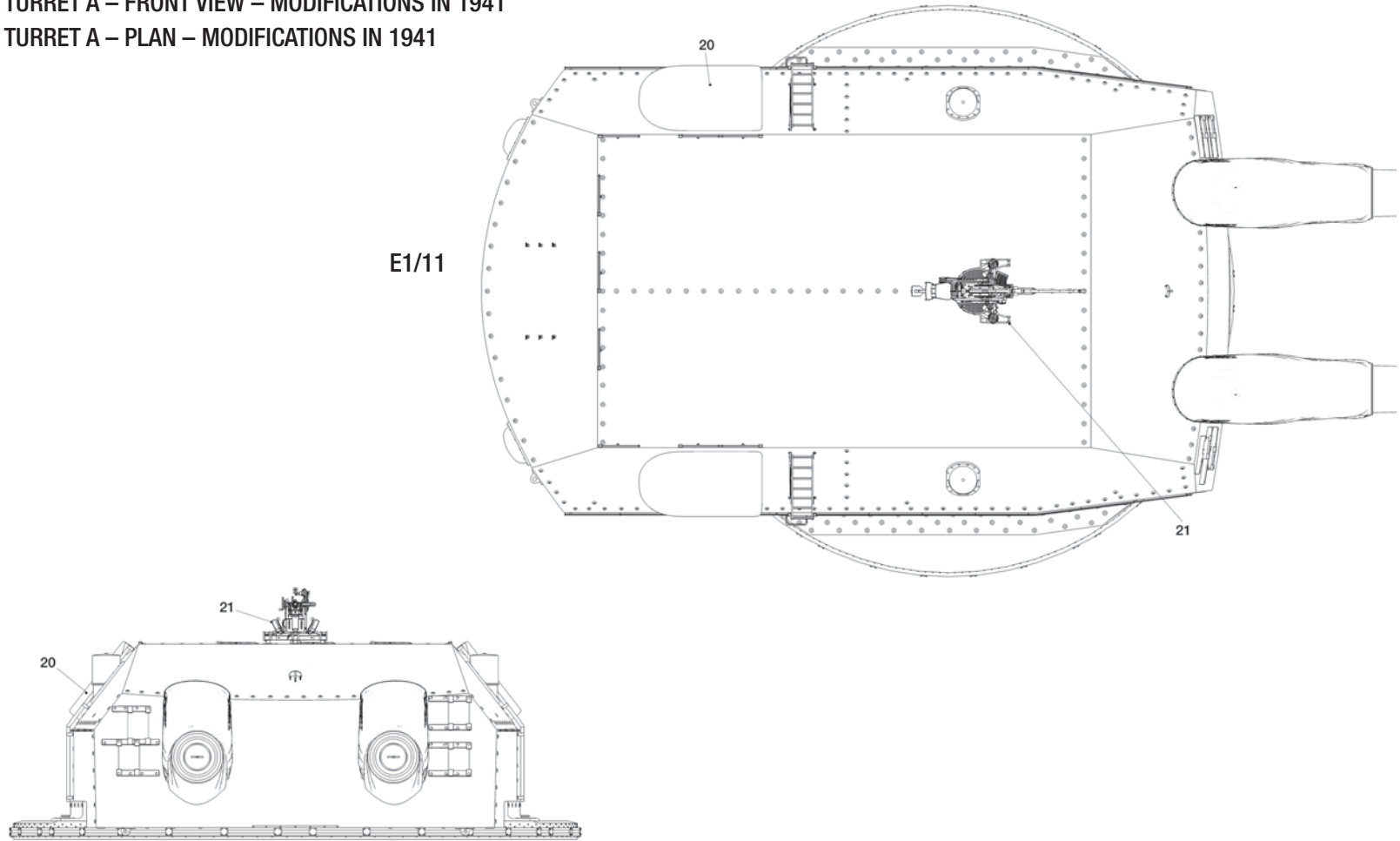


E1/7

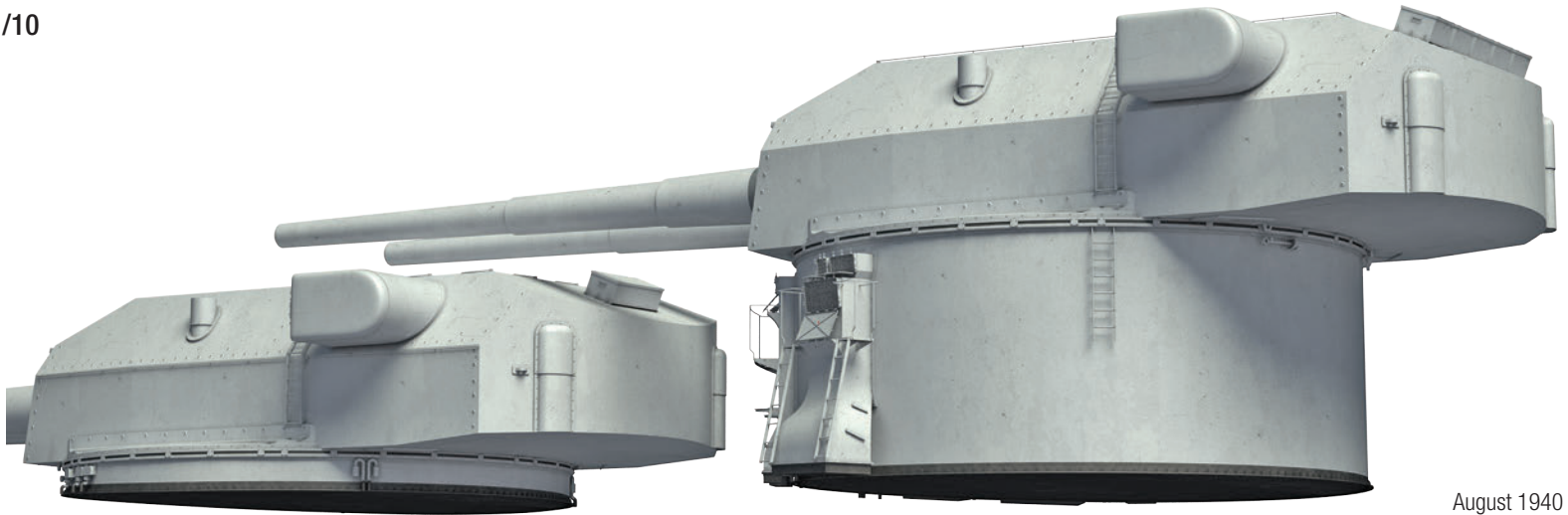


24 May 1941

E1/10 TURRET A – FRONT VIEW – MODIFICATIONS IN 1941  
E1/11 TURRET A – PLAN – MODIFICATIONS IN 1941



E1/10



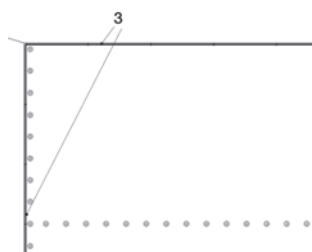
194 **E ARMAMENT – 38CM SK C/34 GUNS**

38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET (1/125 SCALE)

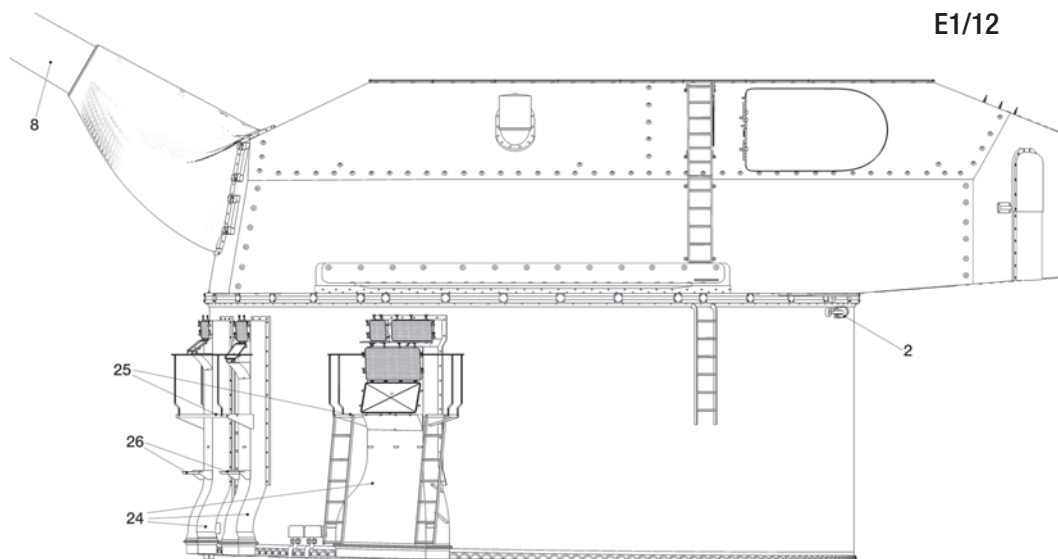
E1/12 TURRET B – LEFT PROFILE

E1/13 TURRETS B AND C – PLAN (FRAGMENT)

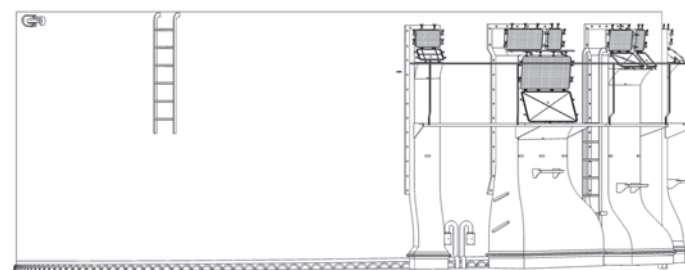
E1/14 BARBETTE OF TURRET B – RIGHT PROFILE



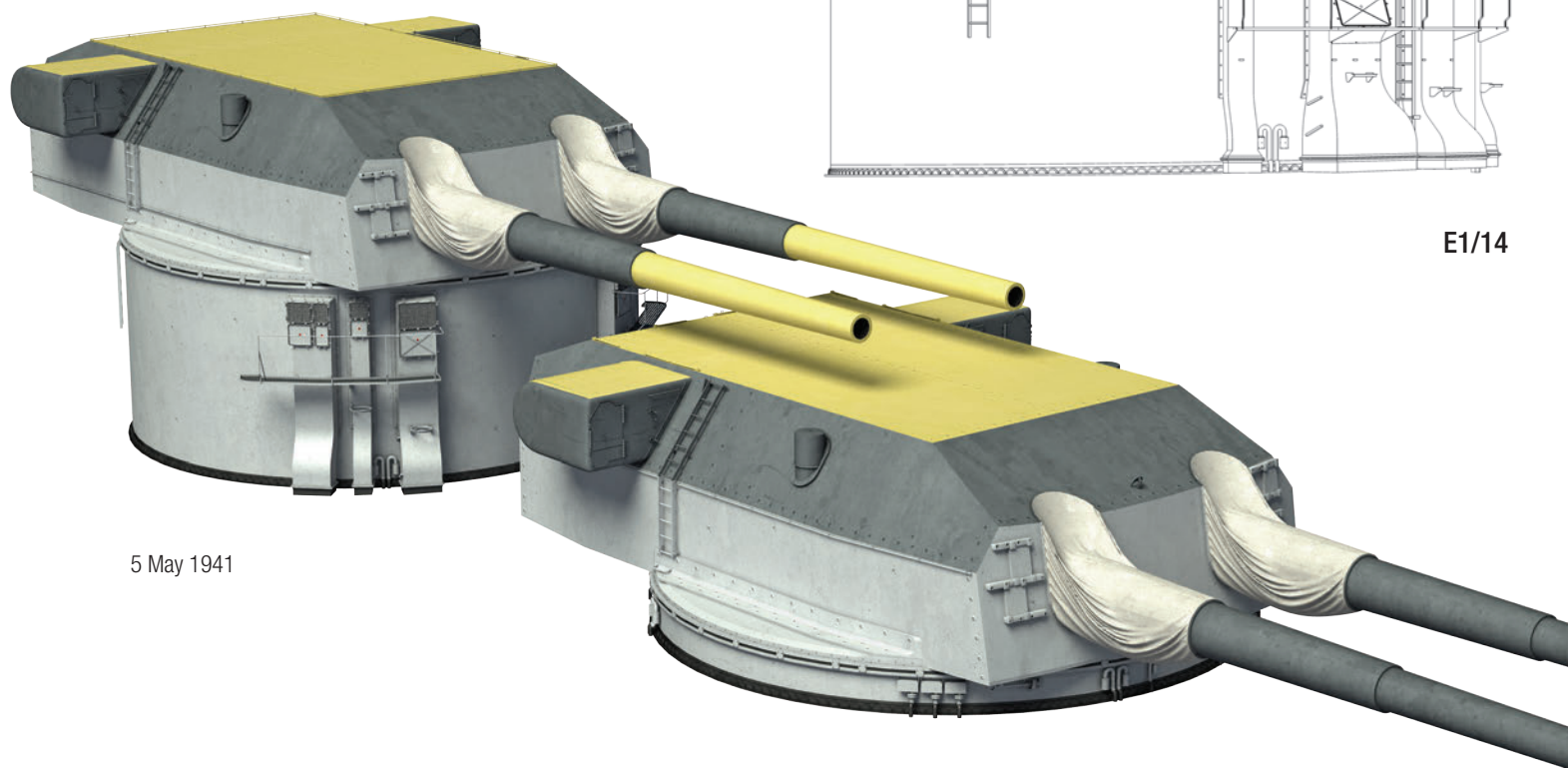
E1/13



E1/12



E1/14



5 May 1941



E1/15 BARBETTE OF TURRET B – FRONT VIEW

E1/16 BARBETTE OF TURRET B – PLAN

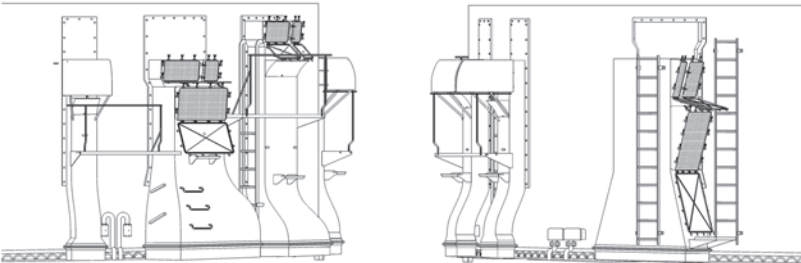
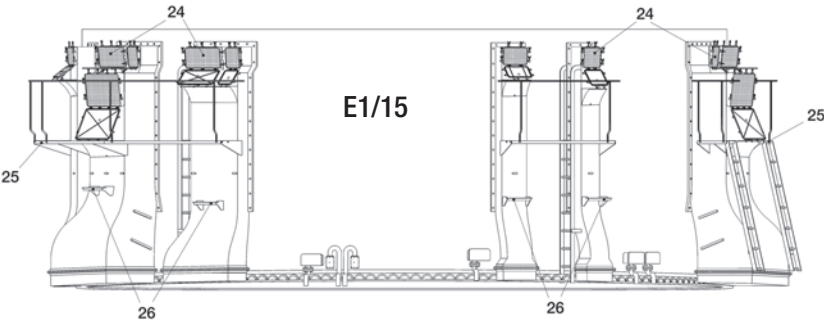
E1/17 BARBETTE OF TURRET B AFTER MODIFICATIONS IN JANUARY 1941 – RIGHT PROFILE (FRAGMENT)

E1/18 BARBETTE OF TURRET B AFTER MODIFICATIONS IN JANUARY 1941 – LEFT PROFILE (FRAGMENT)

E1/19 BARBETTE OF TURRET B AFTER MODIFICATIONS IN JANUARY 1941 – FRONT VIEW

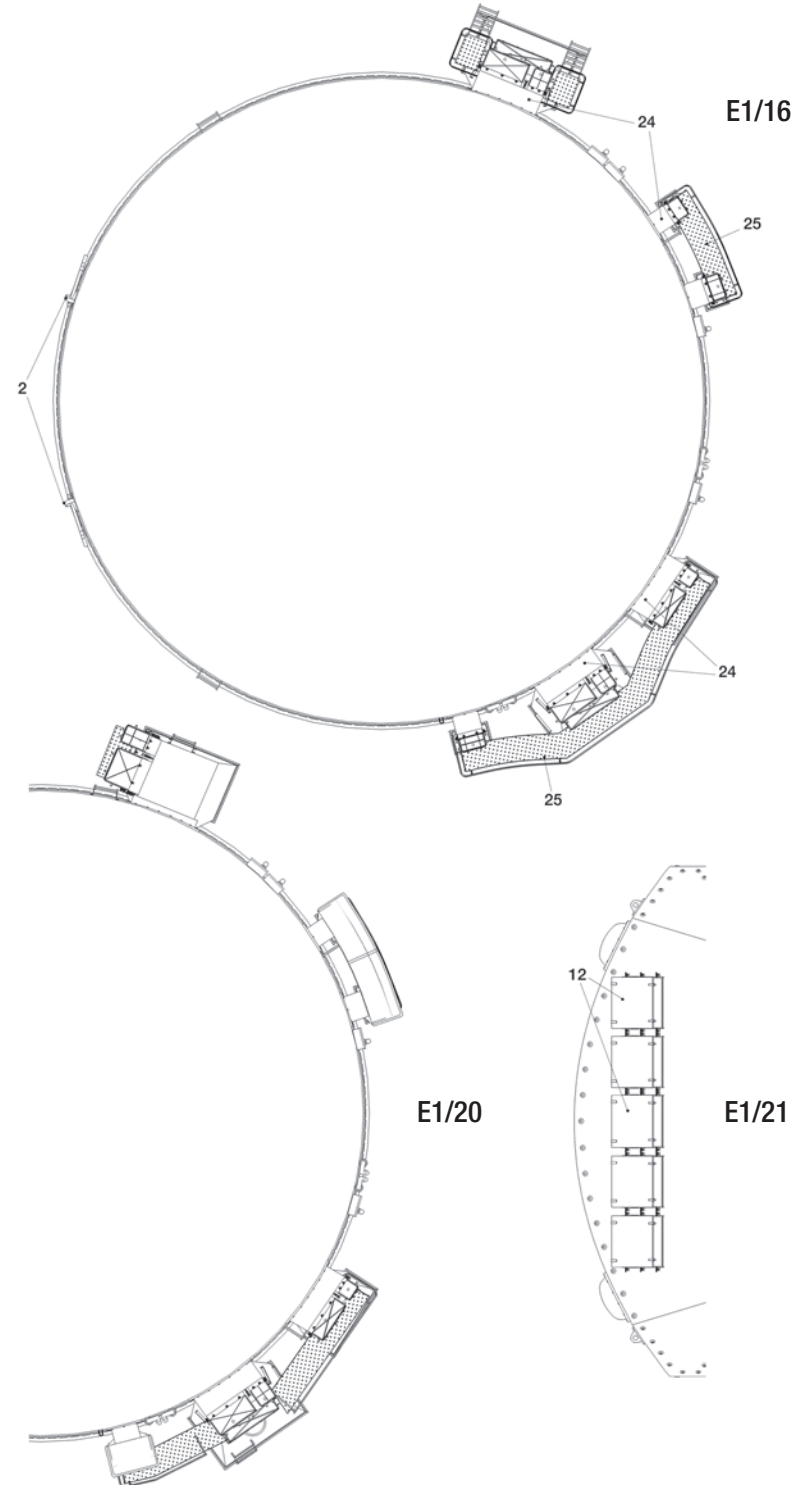
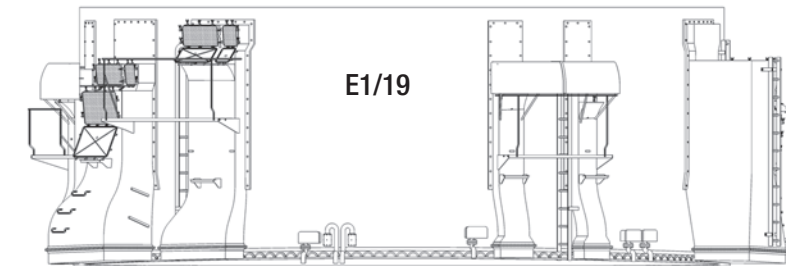
E1/20 BARBETTE OF TURRET B AFTER MODIFICATIONS IN JANUARY 1941 – PLAN (FRAGMENT)

E1/21 TURRET B – PLAN (FRAGMENT) – INFLATABLE RAFT CONTAINERS



E1/17

E1/18



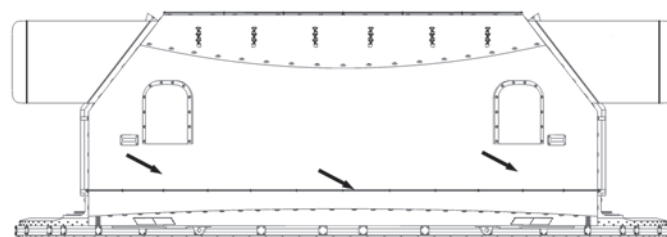
# 196 **E** ARMAMENT – 38CM SK C/34 GUNS

38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET (1/125 SCALE)

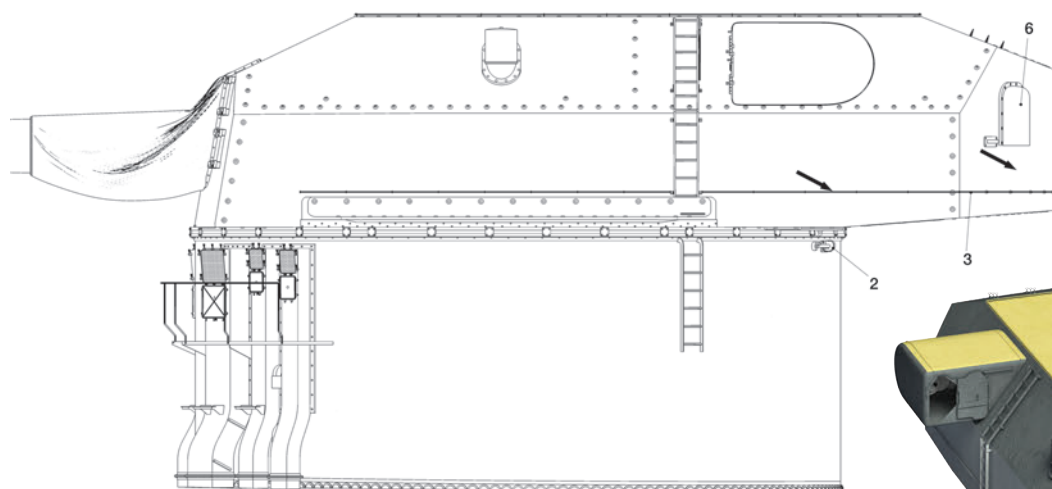
E1/22 TURRET C – RIGHT PROFILE – EXCEPT WHERE INDICATED WITH ARROWS, ALL TURRET DETAILS IDENTICAL AS ON TURRET B

E1/23 TURRET C – BACK VIEW

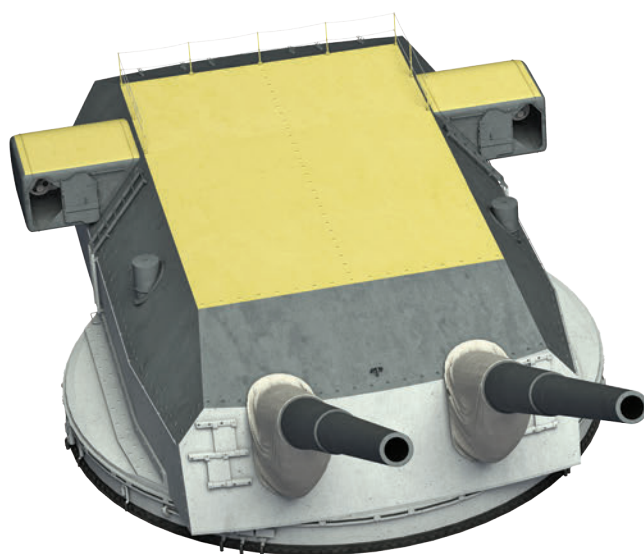
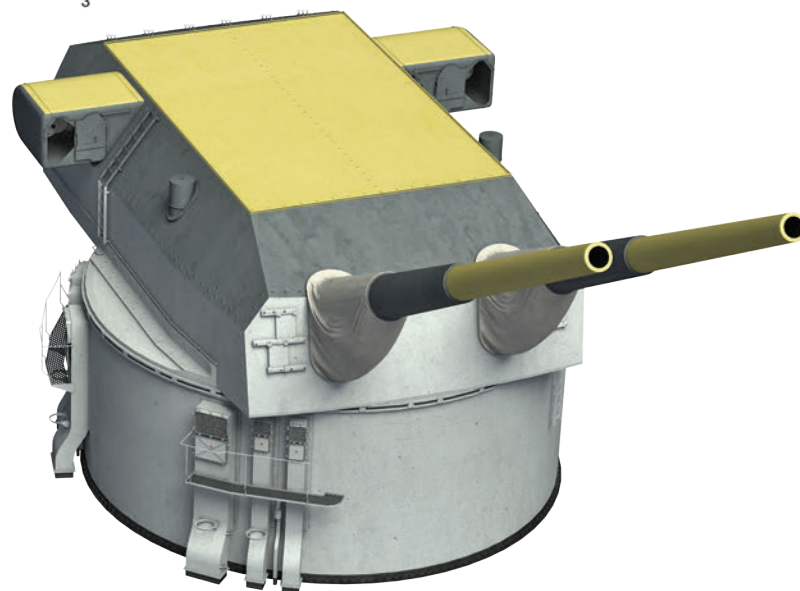
E1/24 TURRET C AFTER MODIFICATION IN AUTUMN 1940 – BACK VIEW



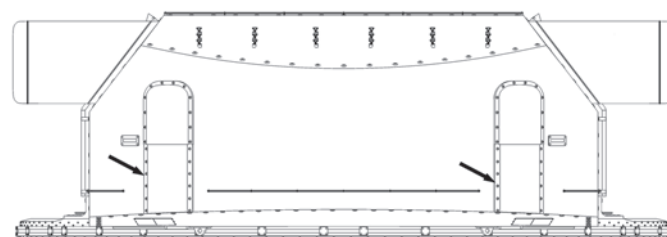
E1/23



E1/22



5 May 1941



E1/24

E1/25 BARBETTE OF TURRET C – LEFT PROFILE (FRAGMENT)

E1/26 BARBETTE OF TURRET C – BACK VIEW

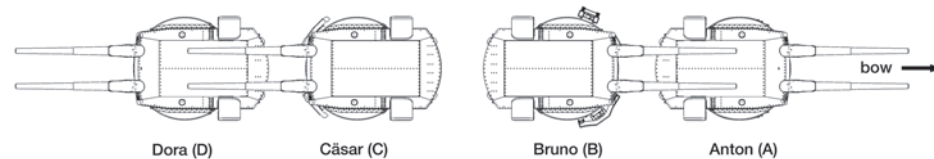
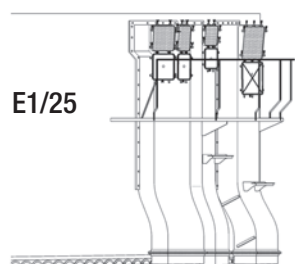
E1/27 BARBETTE OF TURRET C – PLAN (FRAGMENT)

E1/28 TURRET D – PLAN (FRAGMENT) – INFLATABLE RAFT CONTAINERS;  
EXCEPT THIS AND PRESENCE OF RANGEFINDER HOODS, ALL OTHER  
TURRET DETAILS IDENTICAL AS ON TURRET A

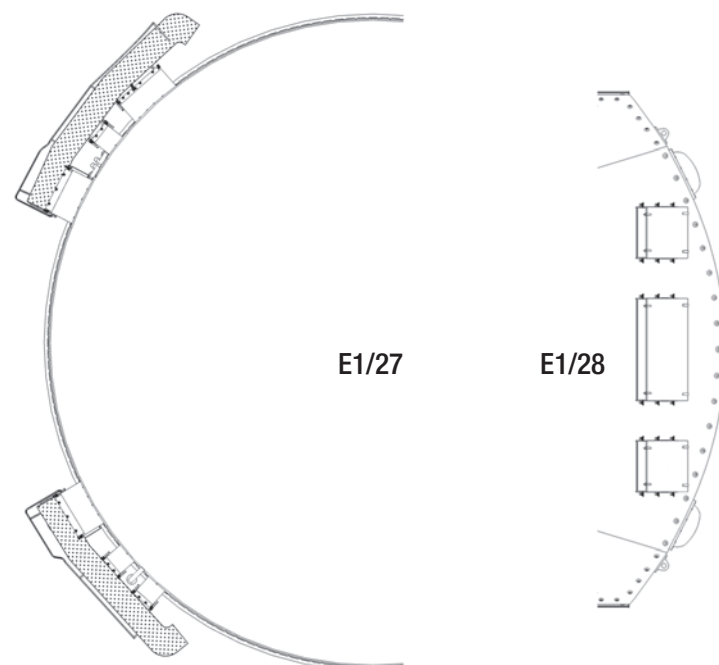
E1/29 BARBETTE OF TURRET D – RIGHT PROFILE

E1/30 BARBETTE OF TURRET D – BACK VIEW

E1/31 NAMES OF THE 38CM TURRETS ON BOARD (1/800 SCALE)

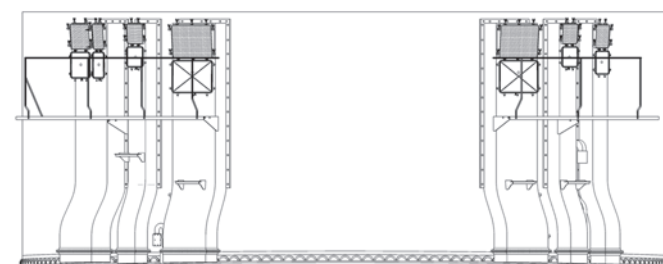


E1/31



E1/27

E1/28



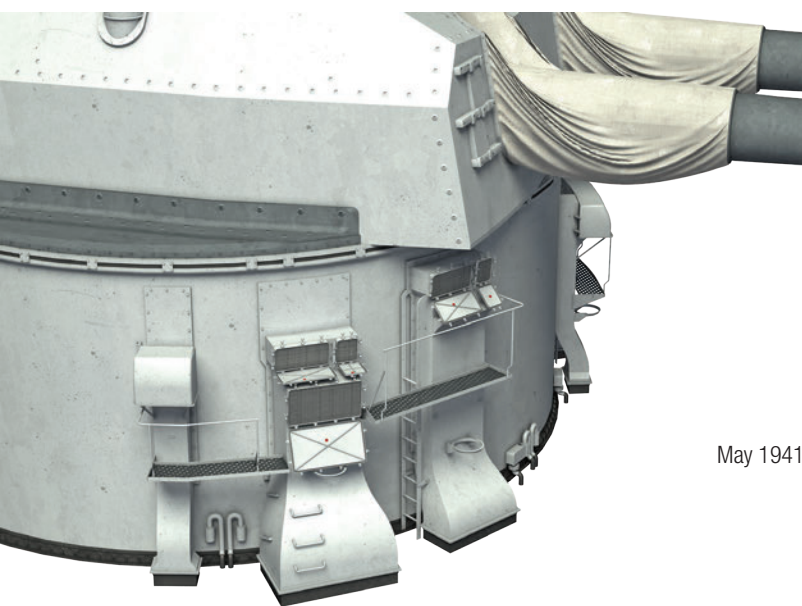
E1/26



E1/29



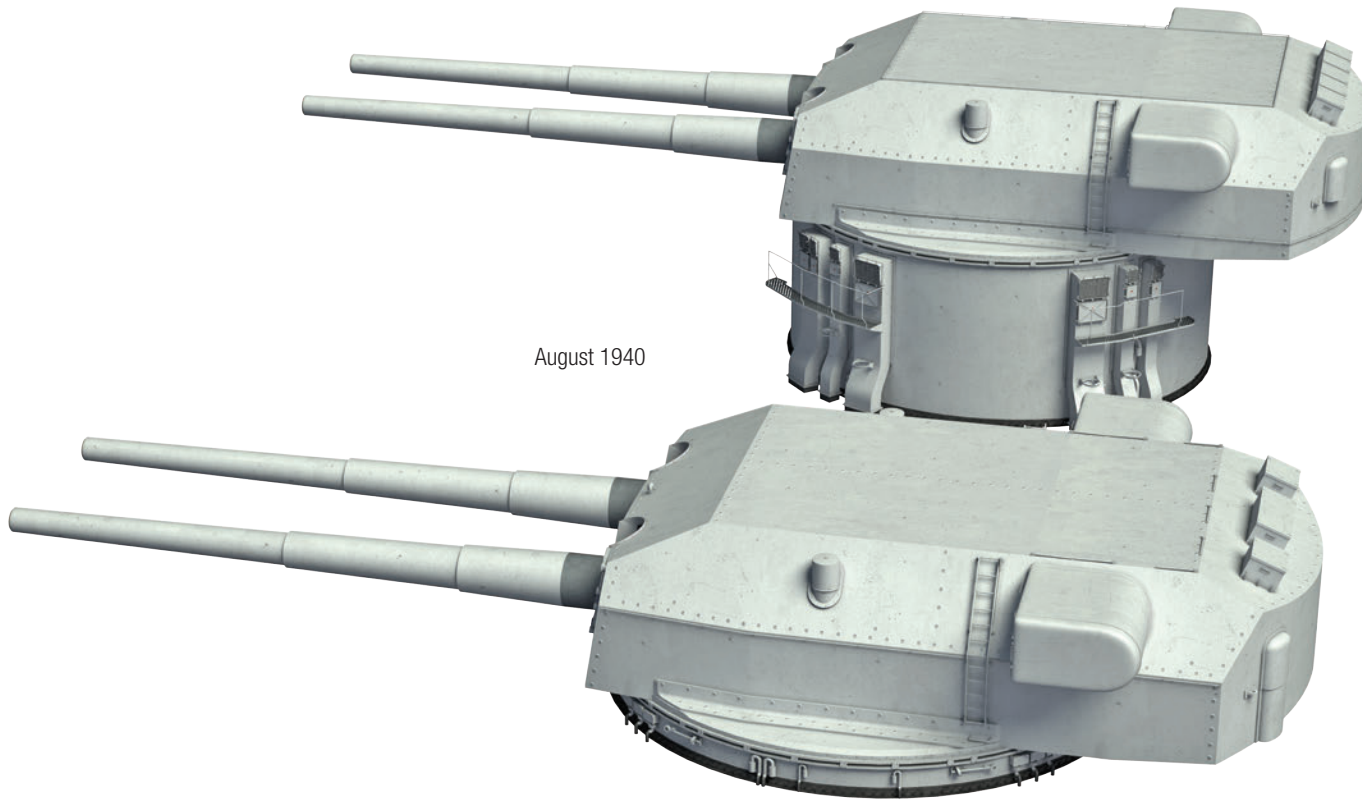
E1/30



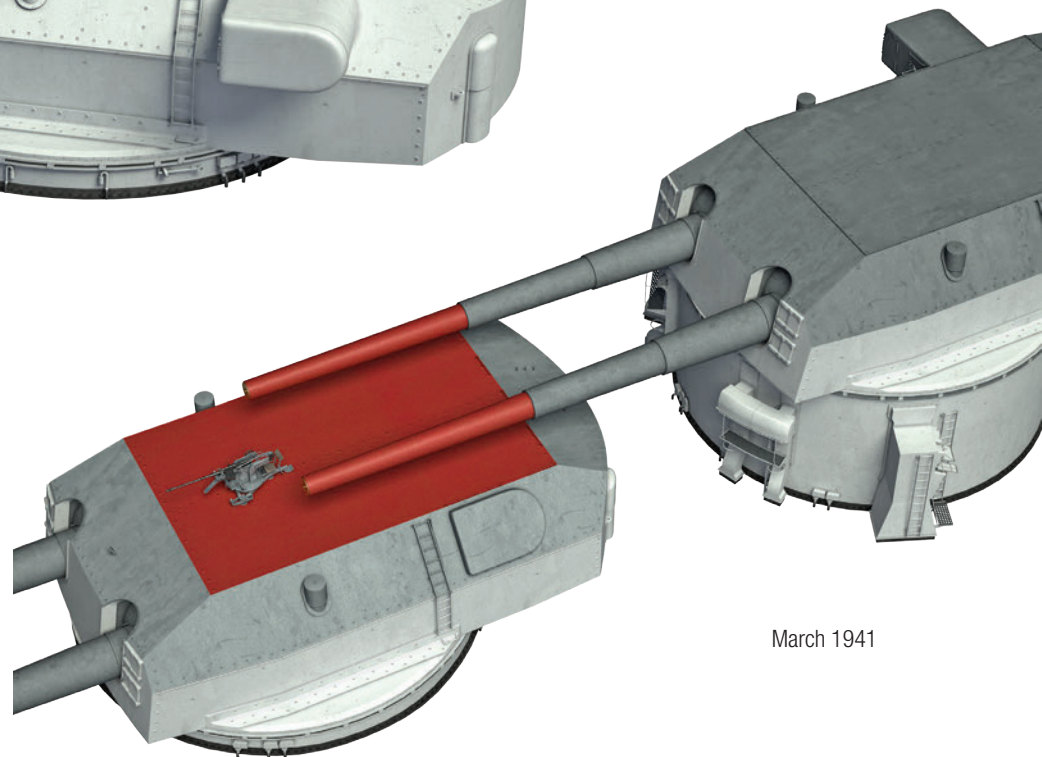
May 1941



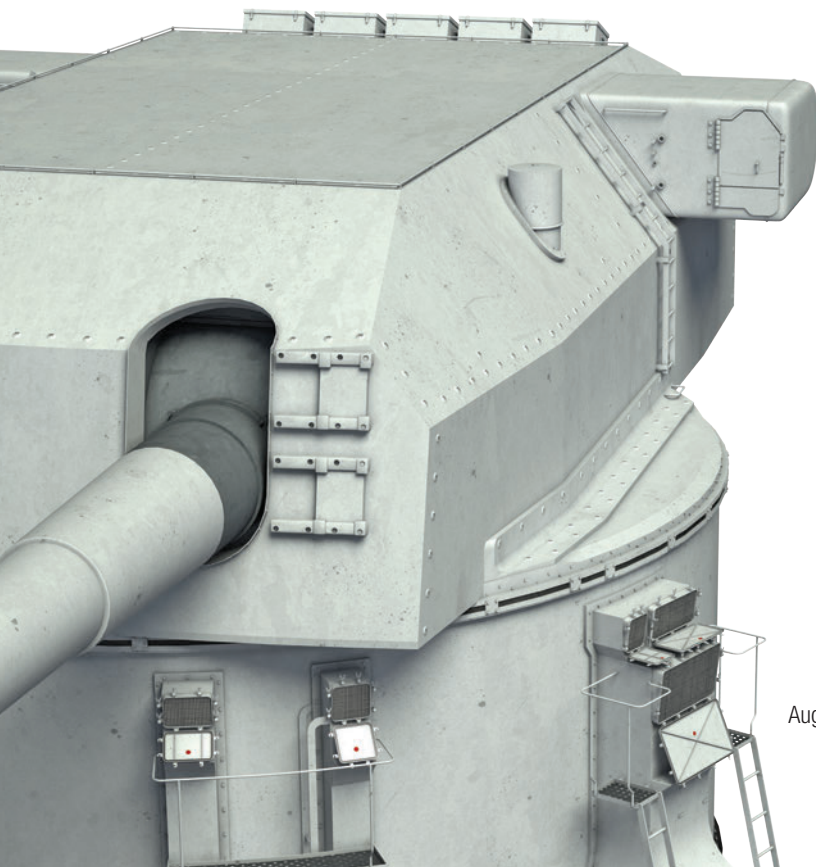
August 1940

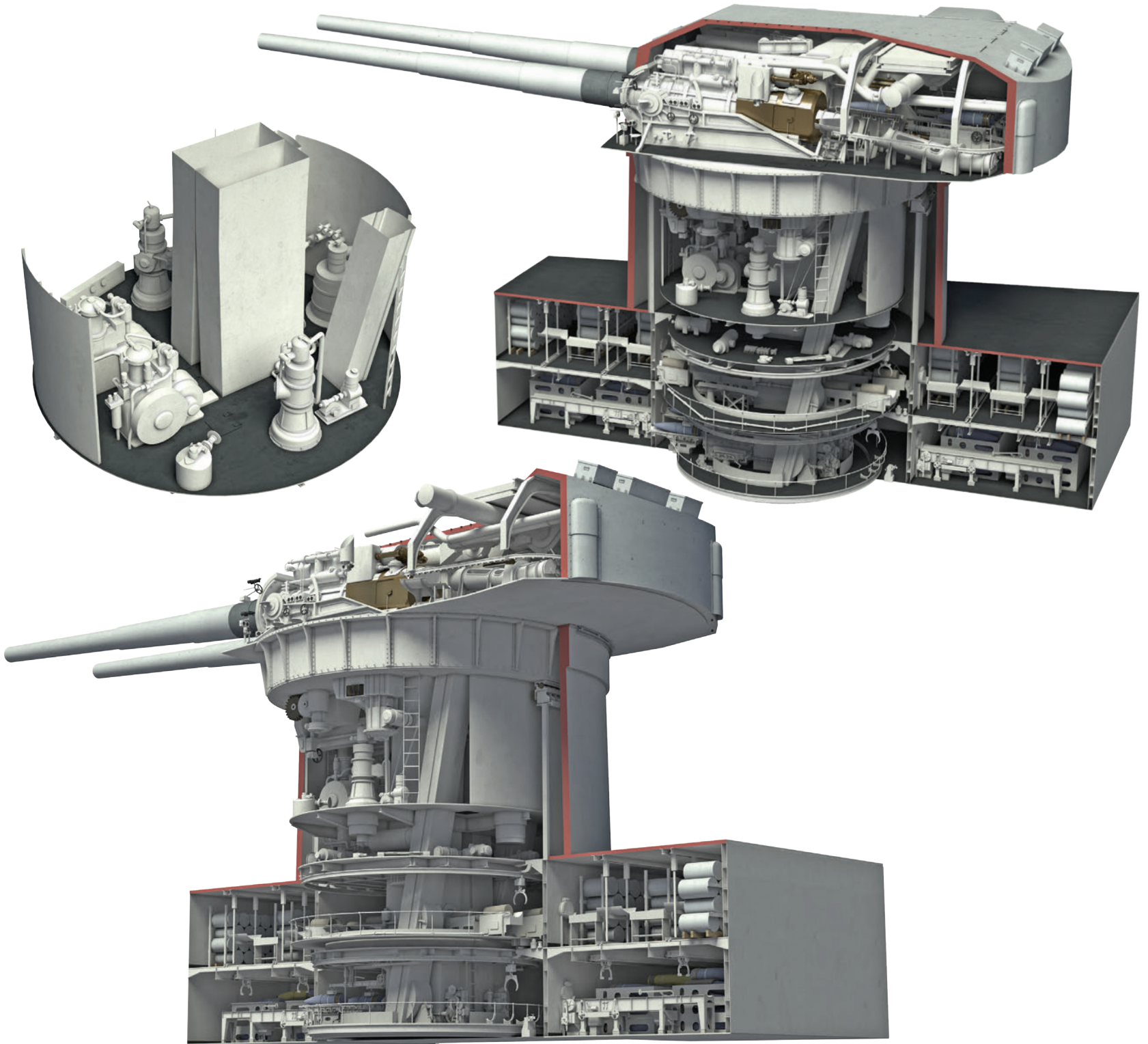


March 1941



August 1940



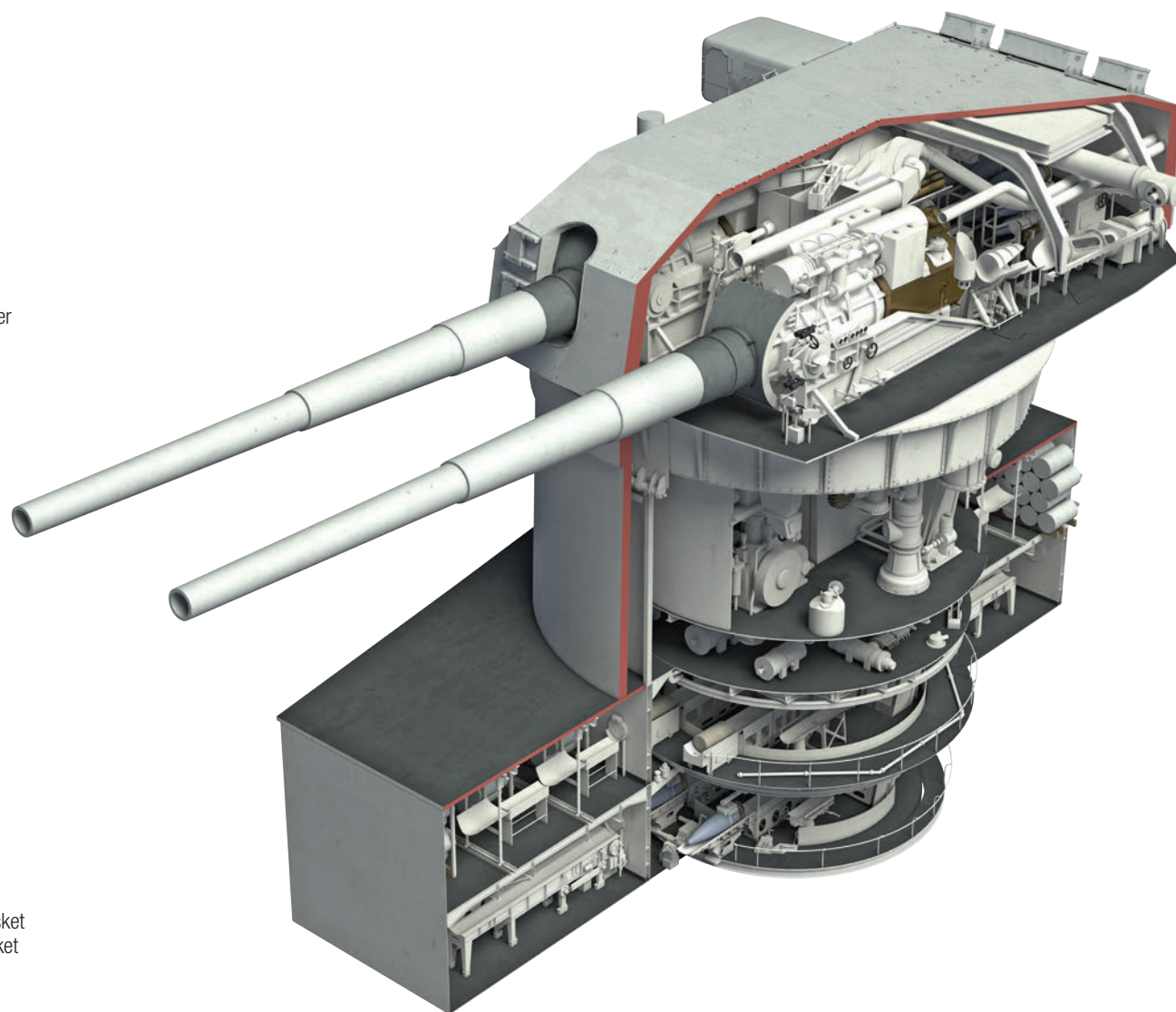




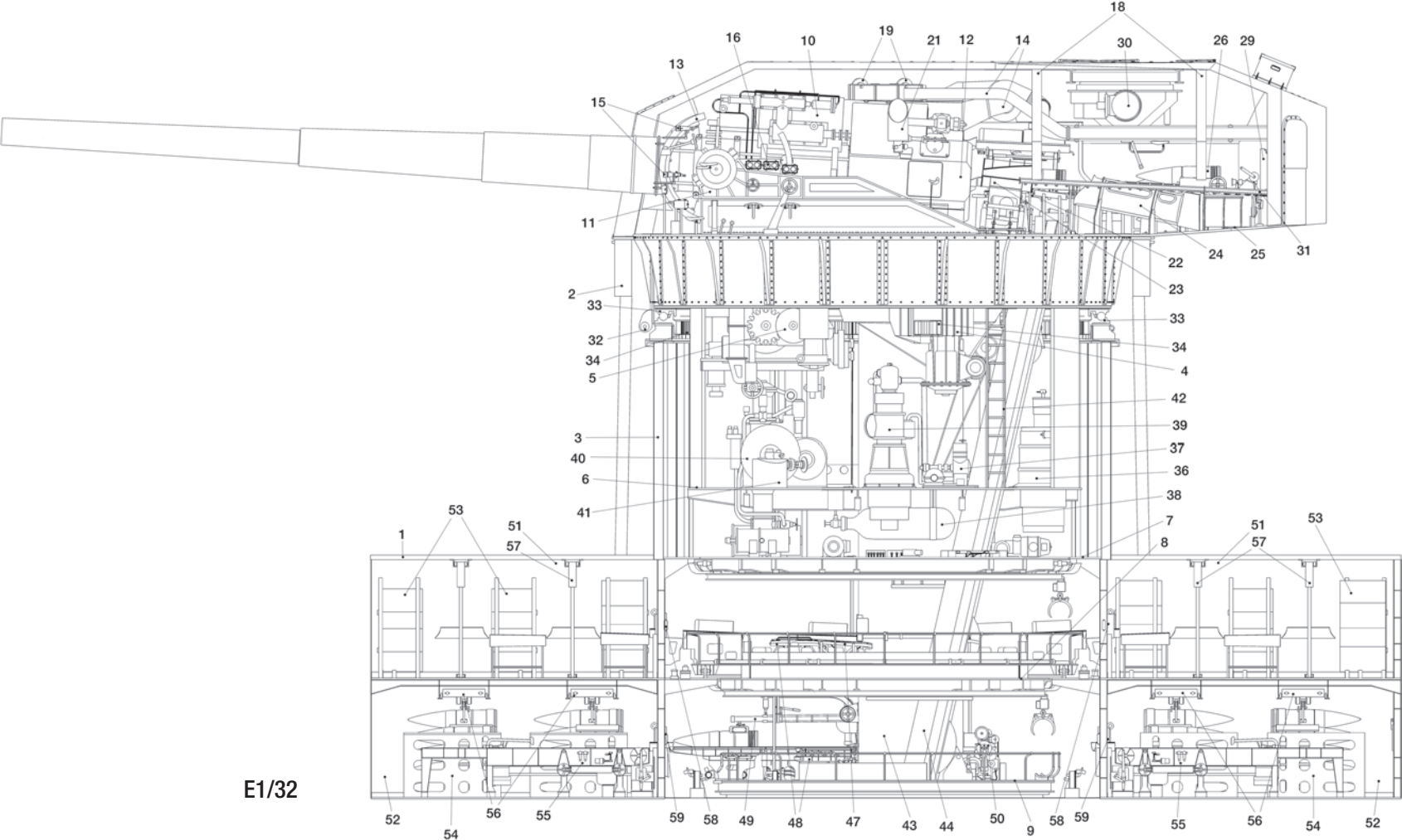
**38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET – SECTIONS****(1/125 SCALE)****E1/32 TURRET D WITH FORE AND AFT MAGAZINES – PROFILE****E1/32–41 38CM TWIN TURRET AND AMMUNITION MAGAZINES – SECTIONS**

- 1 Armoured deck (*Panzerdeck*)
- 2 Barbette
- 3 Support cylinder
- 4 Train mechanism
- 5 Elevation mechanism
- 6 Machinery level
- 7 Intermediate level
- 8 Propellant handling level
- 9 Projectile handling level
- 10 Recuperator
- 11 Gun cradle
- 12 Gun breech
- 13 Curved shield plate
- 14 Smoke exhaust duct
- 15 Sights
- 16 Aiming controls
- 17 Hatch
- 18 Turret roof support
- 19 Main ammunition hoist pulleys
- 20 Main ammunition hoist basket unloader
- 21 C/6 Periscope
- 22 Loading swingarm
- 23 Empty case swingarm
- 24 Empty case slide
- 25 Empty cases ejection point
- 26 Ready-to-use ammunition rack
- 27 Turret access hatch
- 28 Escape hatch
- 29 Gun firing panel
- 30 Rangefinder arm
- 31 Rammer
- 32 Turret stop
- 33 Roller path
- 34 Sprocket
- 35 Train mechanism drive
- 36 Train mechanism motor generator
- 37 Auxiliary train mechanism drive
- 38 Compressed air tank
- 39 Hydraulic pump
- 40 Main ammunition hoist drive
- 41 Battery
- 42 Ladder
- 43 Main ammunition hoist shaft
- 44 Auxiliary ammunition hoist shaft
- 45 Auxiliary hoist swinging propellant basket
- 46 Auxiliary hoist swinging projectile basket
- 47 Auxiliary hoist loading table
- 48 Auxiliary hoist rotary table

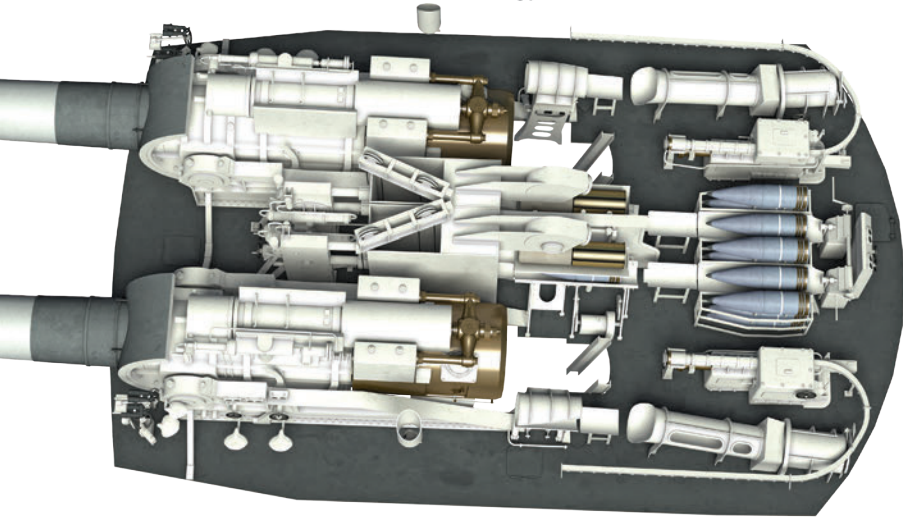
- 49 Projectile magnetic transfer mechanism
- 50 Projectile magnetic loader
- 51 Propellant magazine
- 52 Projectile magazine
- 53 Propellant in sealed containers on racks
- 54 Projectile racks
- 55 Projectile rail
- 56 Projectile overhead crane
- 57 Propellant crane and trolley
- 58 Magazine wall opening for propellant transfer
- 59 Magazine wall opening for projectile transfer







E1/32

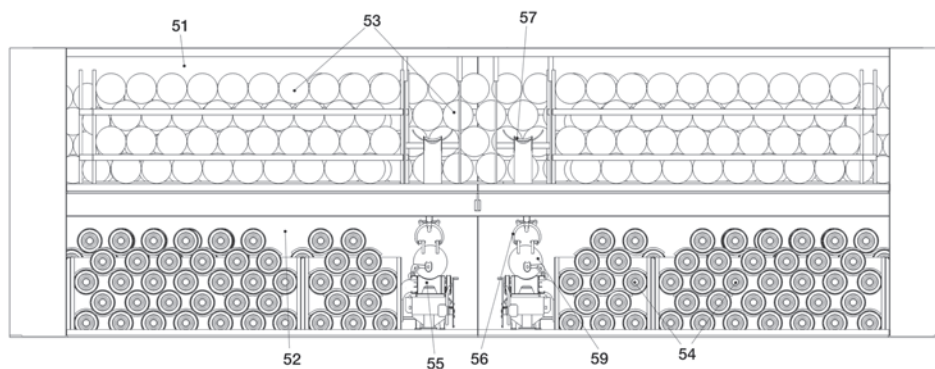


**38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET – SECTIONS**  
(1/125 SCALE)

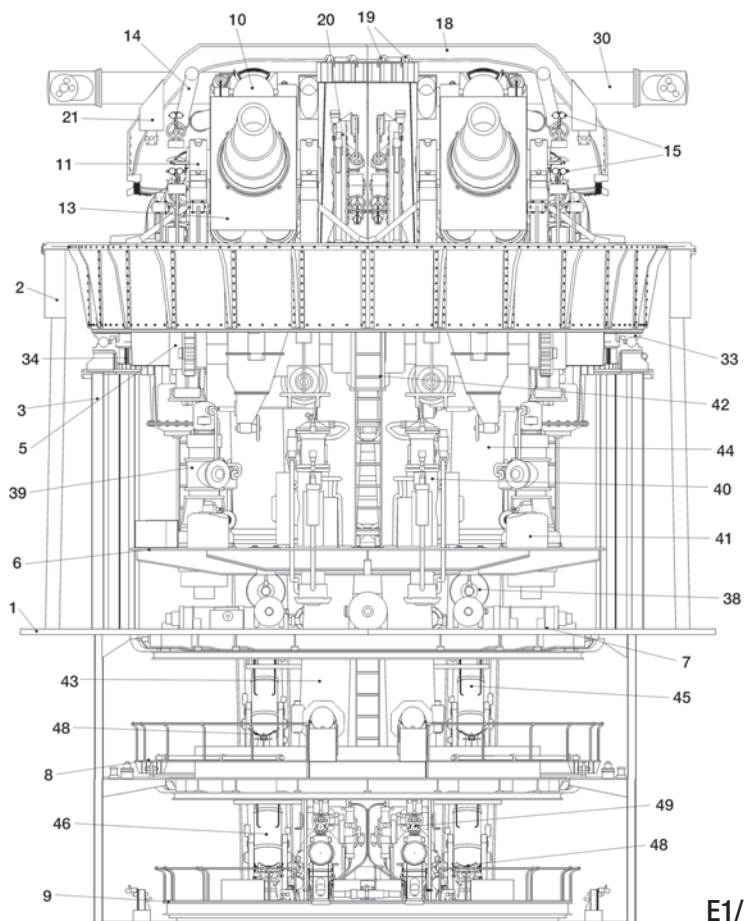
E1/33 TURRET D – FRONT VIEW

E1/34 TURRET D – BACK VIEW

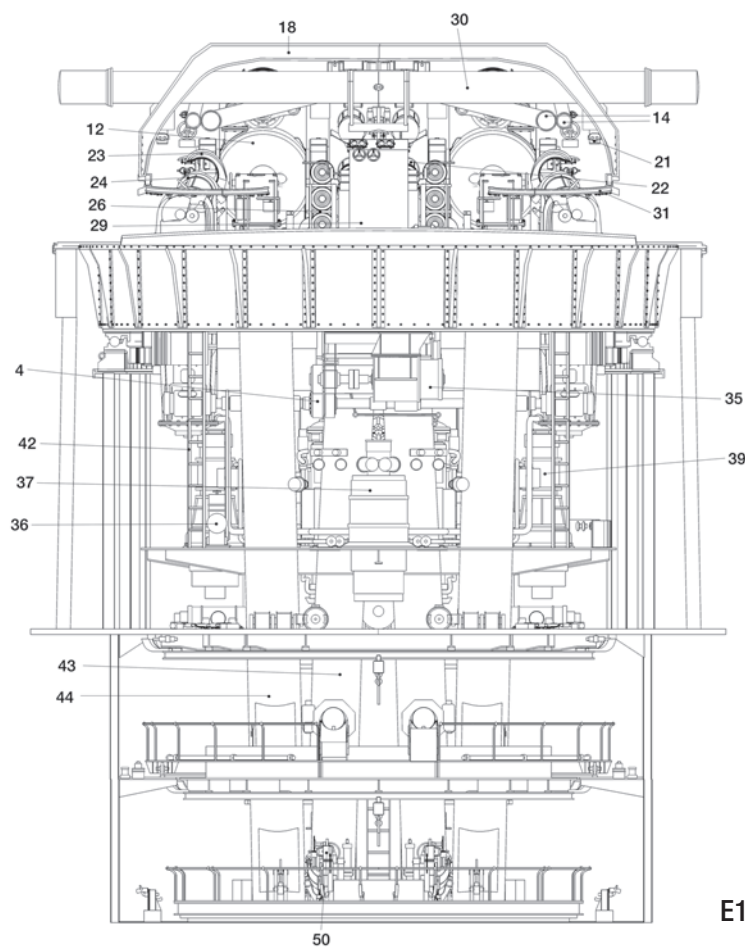
E1/35 TURRET D – FORE MAGAZINES – BACK VIEW



E1/35

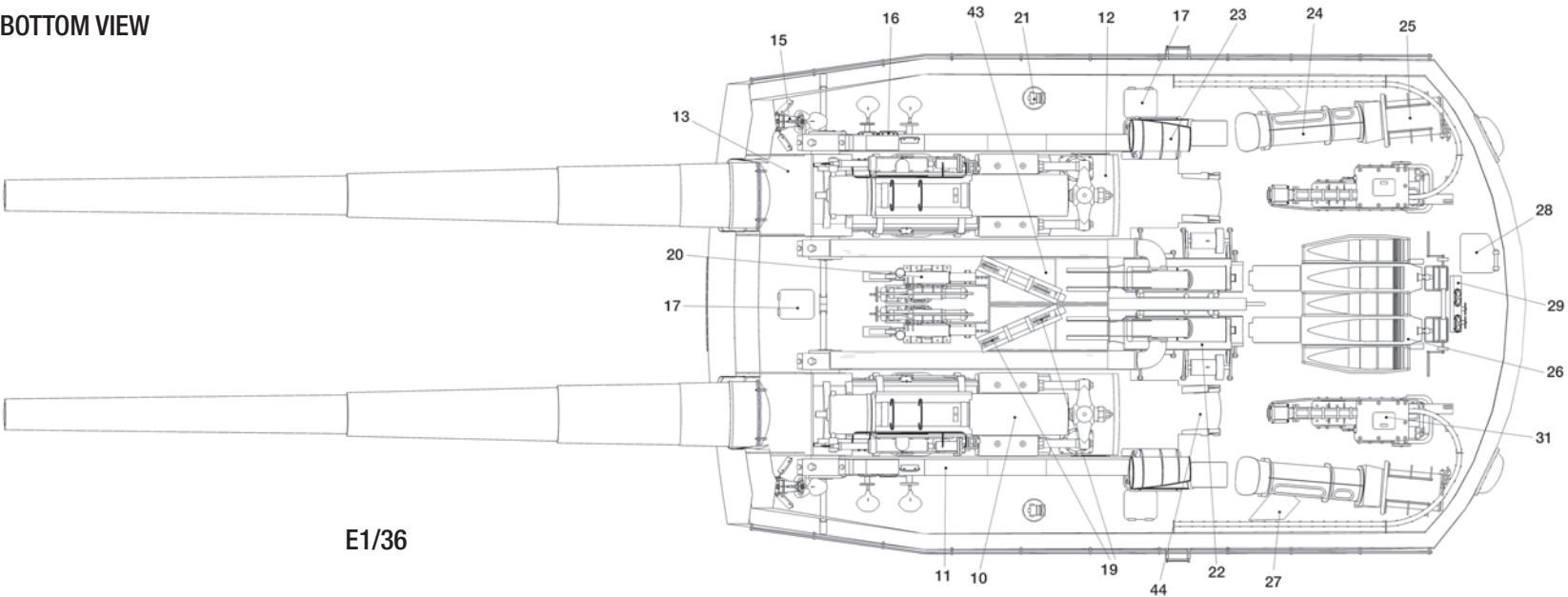


E1/33

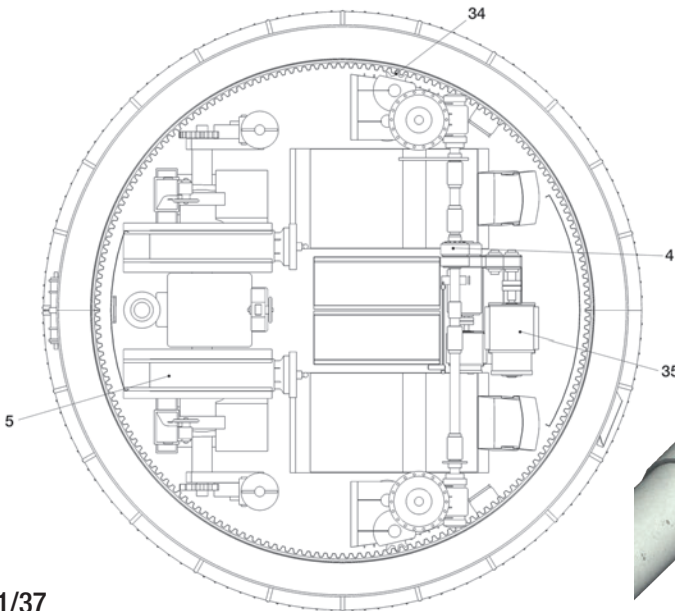


E1/34

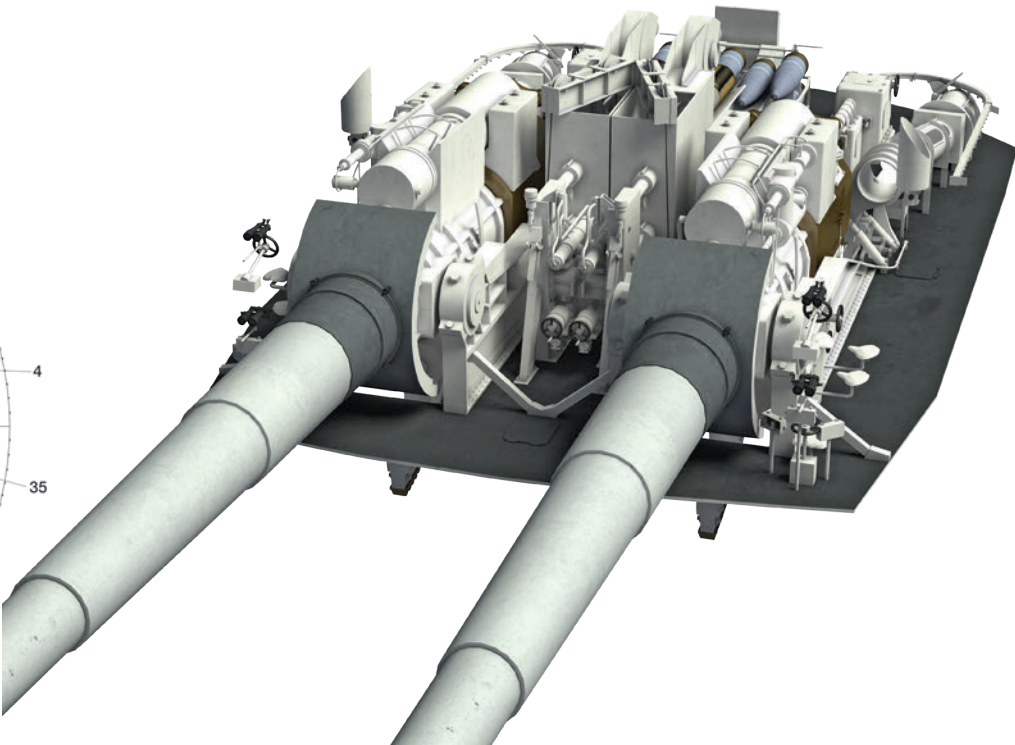
E1/36 TURRET D – PLAN  
E1/37 TURRET D – TRAIN AND ELEVATION MECHANISMS LEVEL –  
BOTTOM VIEW



E1/36



E1/37

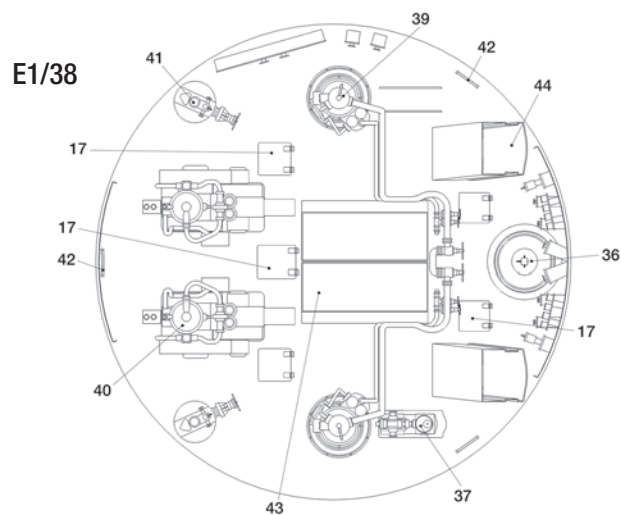




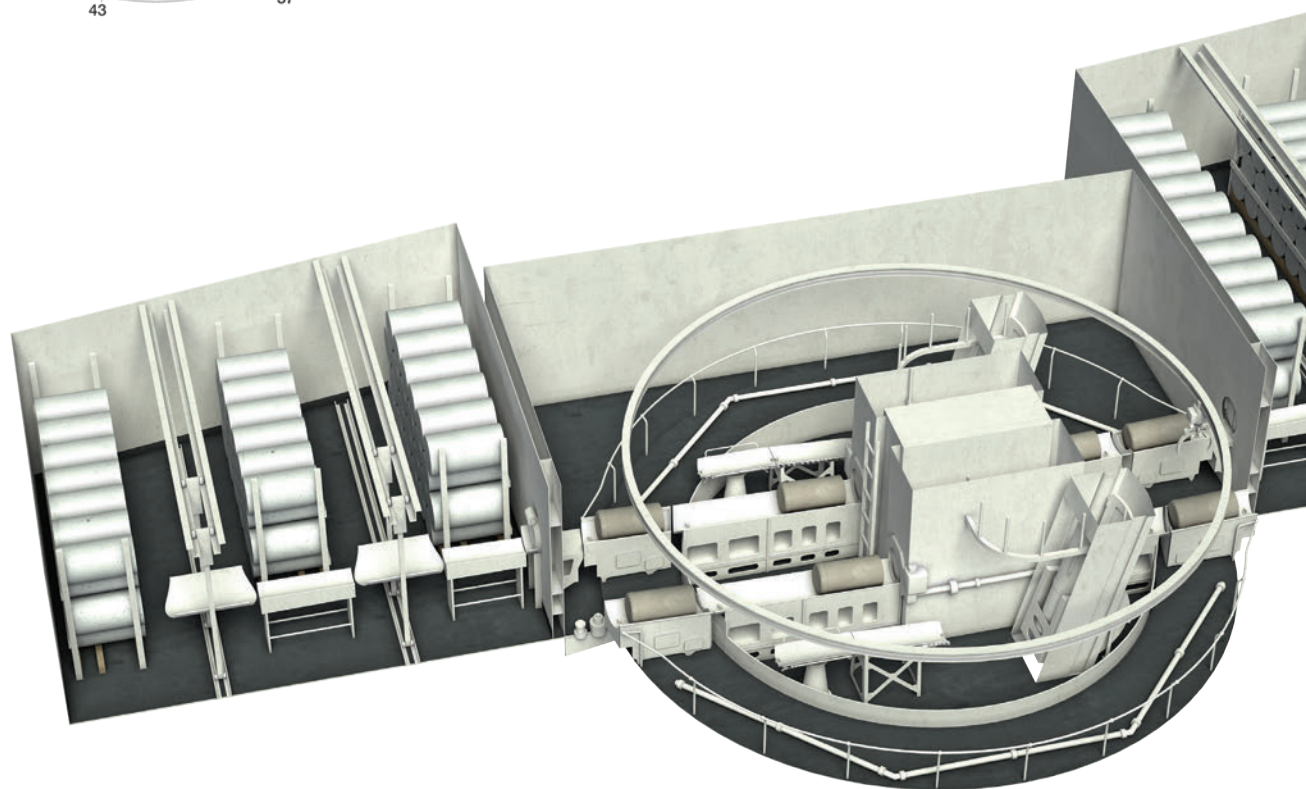
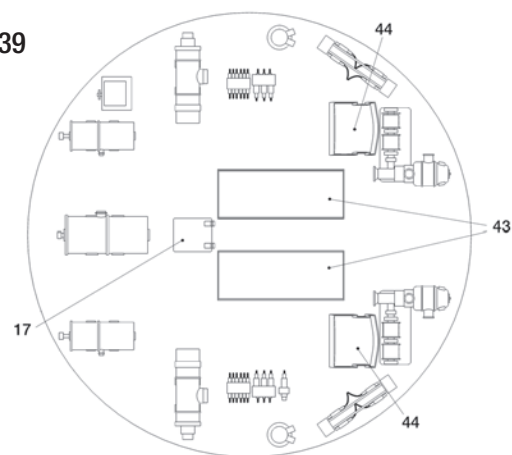
**38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET – SECTIONS**  
**(1/125 SCALE)**

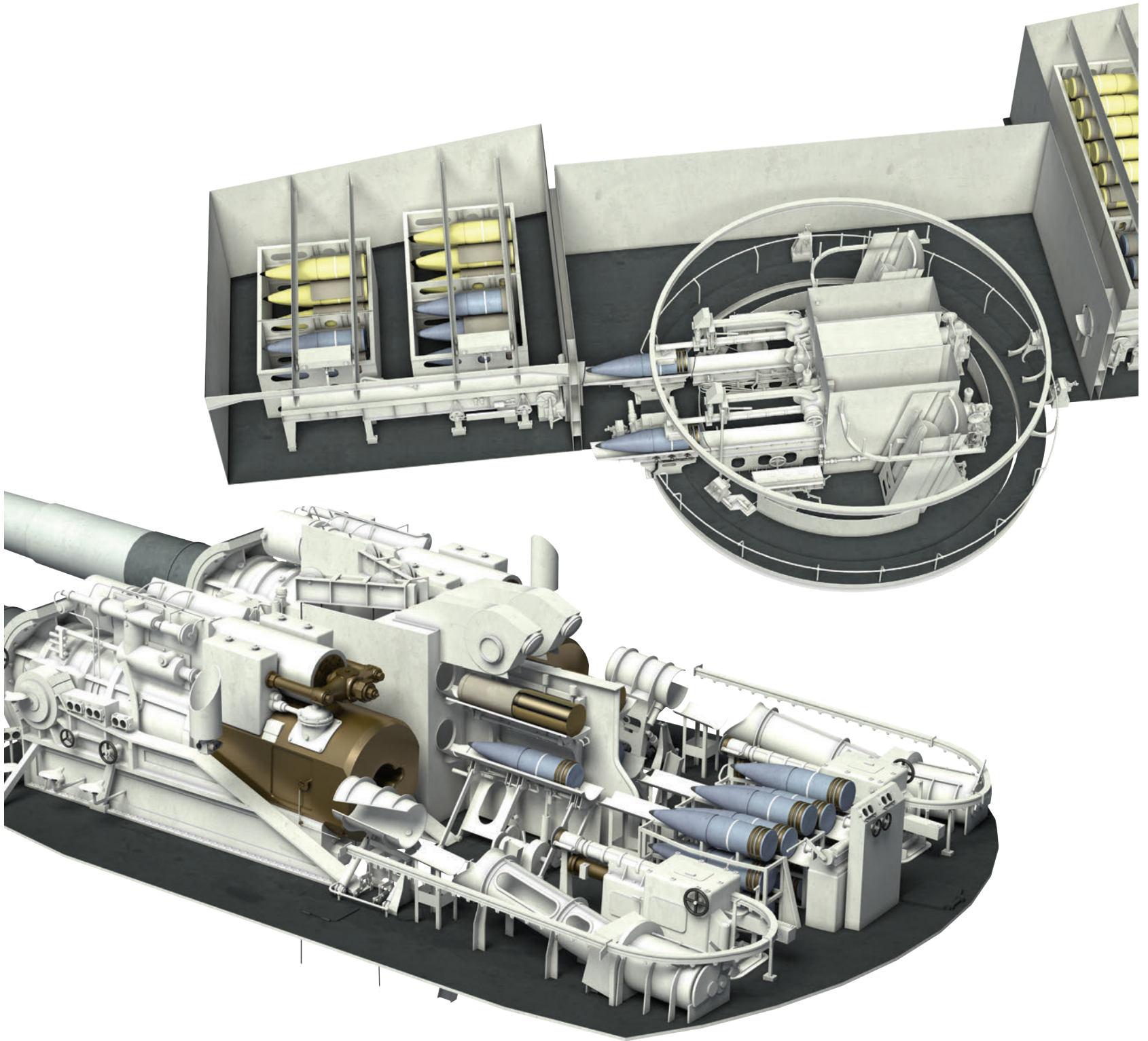
**E1/38 TURRET D – MACHINERY LEVEL – PLAN**

**E1/39 TURRET D – INTERMEDIATE LEVEL – PLAN**



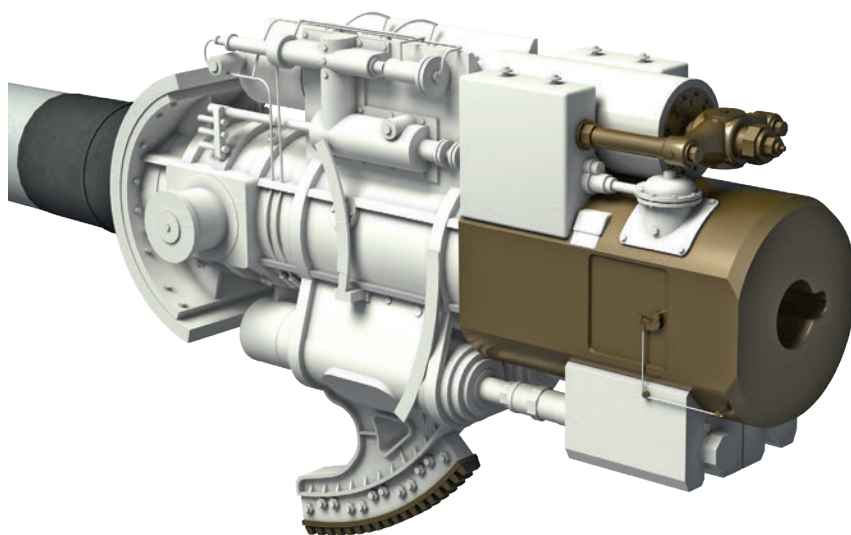
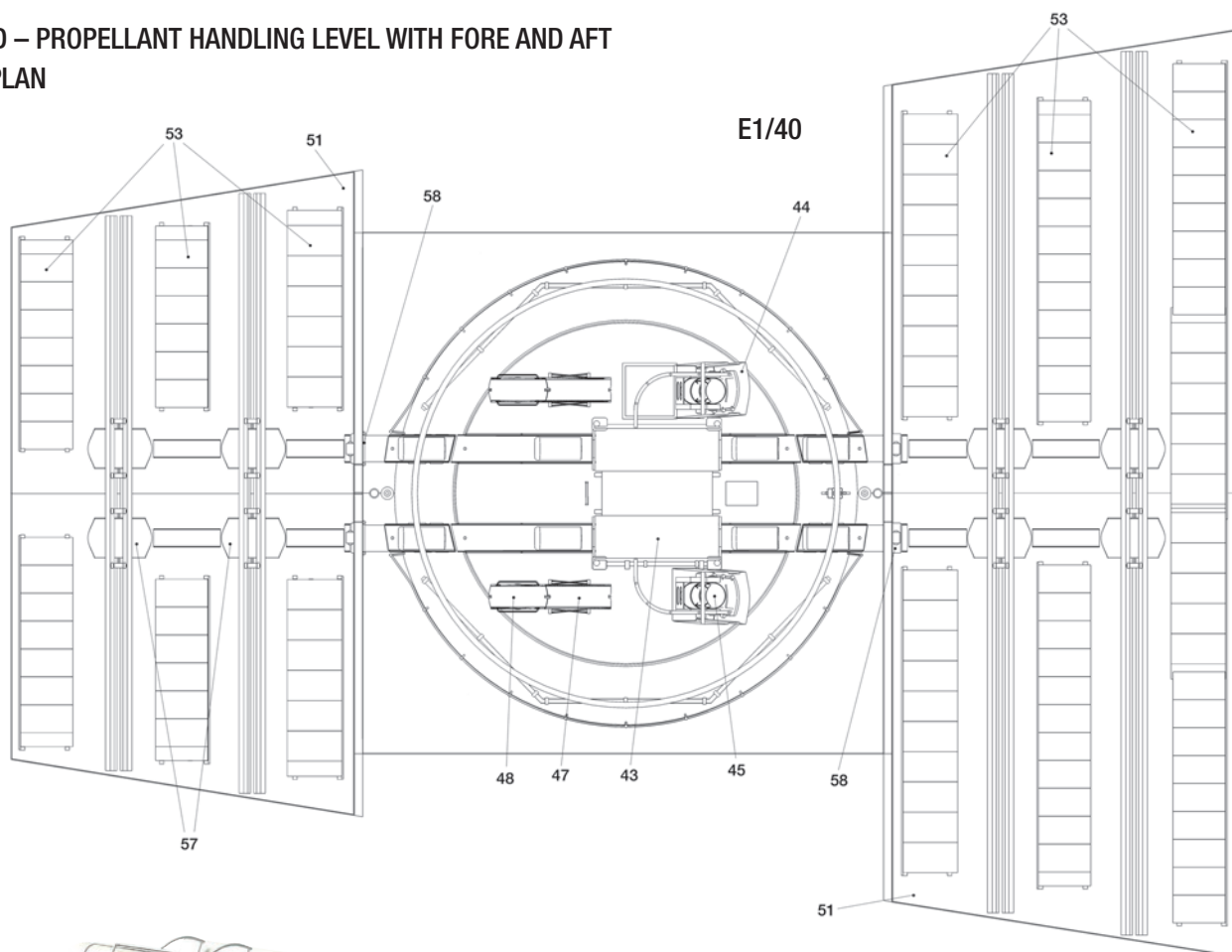
E1/39





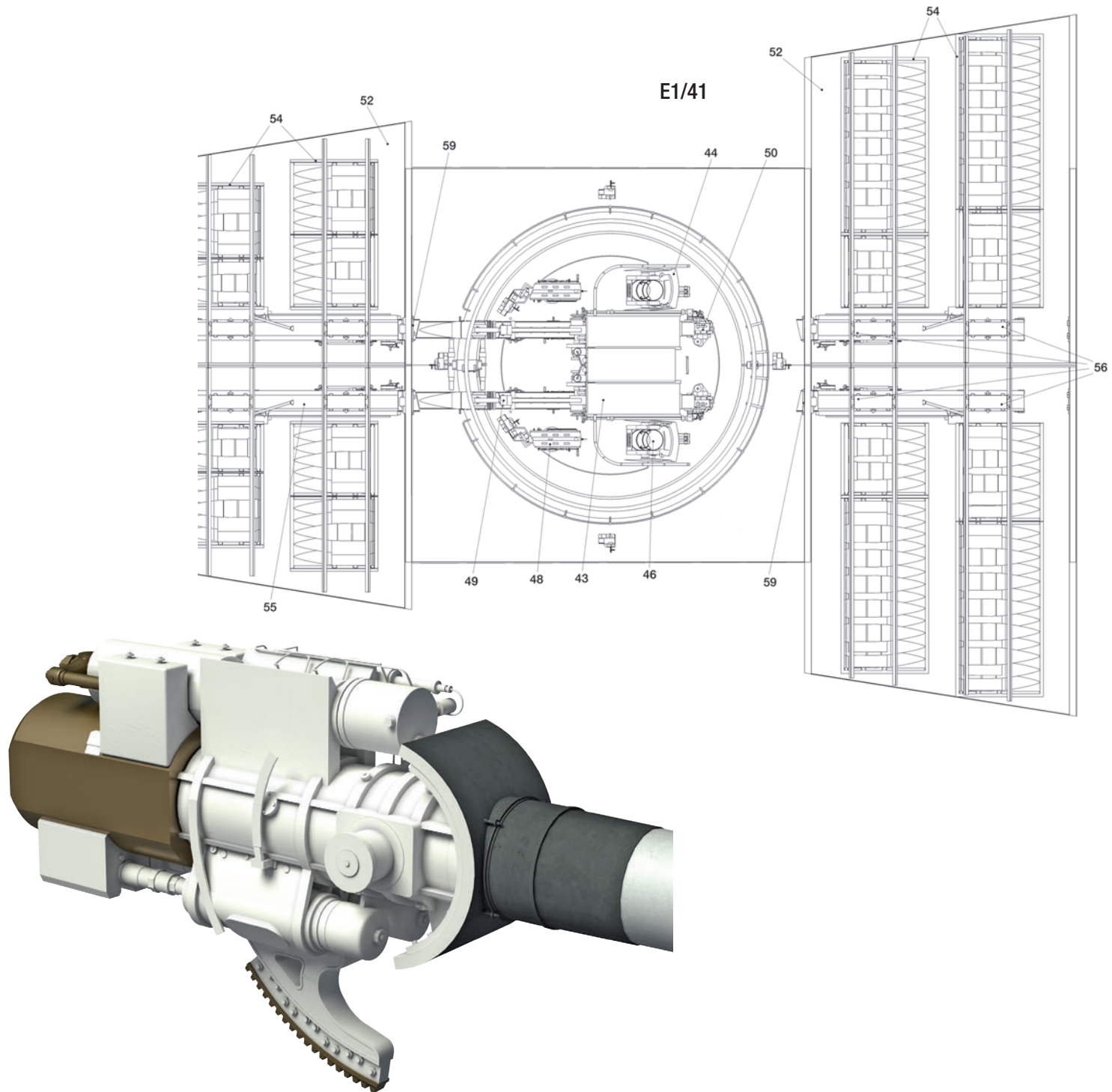
**38CM SK C/34 GUNS IN THE DRH L C/34 TWIN TURRET – SECTIONS  
(1/125 SCALE)**

**E1/40 TURRET D – PROPELLANT HANDLING LEVEL WITH FORE AND AFT  
MAGAZINES – PLAN**





**E1/41 TURRET D – PROJECTILE HANDLING LEVEL WITH FORE AND AFT  
MAGAZINES – PLAN**



**38CM SK C/34 GUN (1/125 SCALE)**

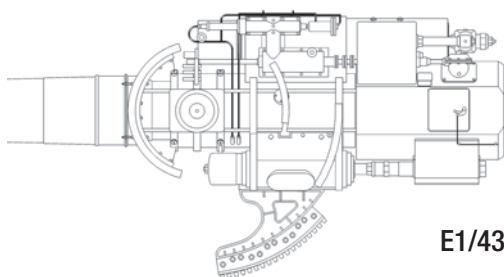
E1/42 RIGHT PROFILE

E1/43 LEFT PROFILE

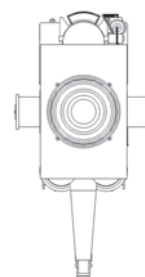
E1/44 FRONT VIEW

E1/45 BACK VIEW

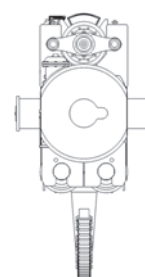
E1/46 PLAN



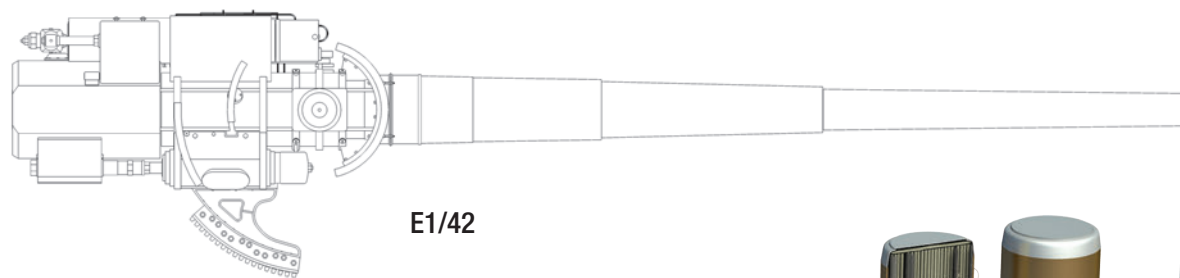
E1/43



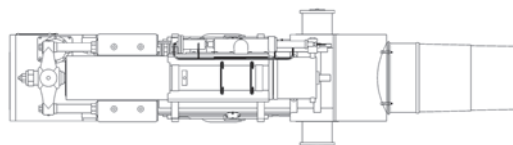
E1/44



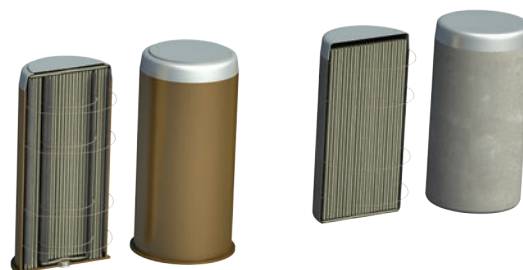
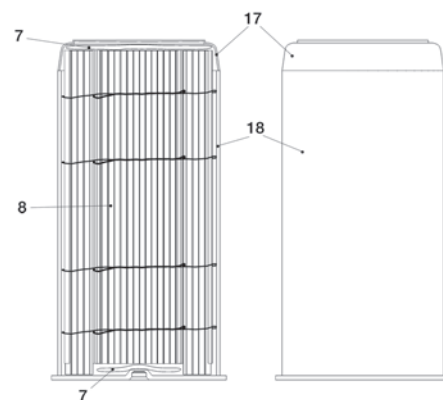
E1/45



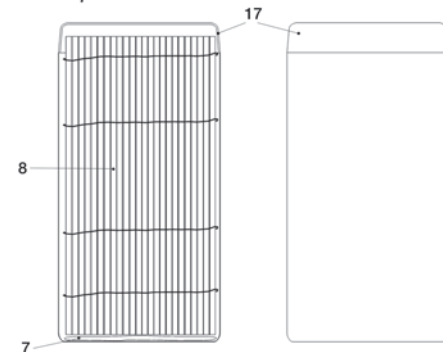
E1/42



E1/46

**38CM PROJECTILES – PROFILE VIEWS AND SECTIONS (1/20 SCALE)**E1/47 38CM PZGR. L/4,4 (M.HB); PZGR. = *PANZERSPRENGGRANATE*, ARMOUR PIERCING PROJECTILE; M.HB = *MIT HAUBE*, CAPPEDE1/48 38CM SPGR. L/4,5 BDZ (M.HB); SPGR. = *SPRENGGRANATE*, HIGH EXPLOSIVE PROJECTILE; BDZ = *BODENZÜNDER*, BASE FUZE; M.HB = *MIT HAUBE*, CAPPEDE1/49 38CM SPGR. L/4,6 KZ (M.HB); SPGR. = *SPRENGGRANATE*, HIGH EXPLOSIVE PROJECTILE; KZ = *KOPFZÜNDER*, NOSE FUZE; M.HB = *MIT HAUBE*, CAPPEDE1/50 38CM *HÜLSENKARTUSCHE C/34*; PROPELLANT CARTRIDGE (MAIN CHARGE)E1/51 38CM *VORKARTUSCHE C/34*; PROPELLANT BAG (FORE CHARGE)

E1/50



E1/51

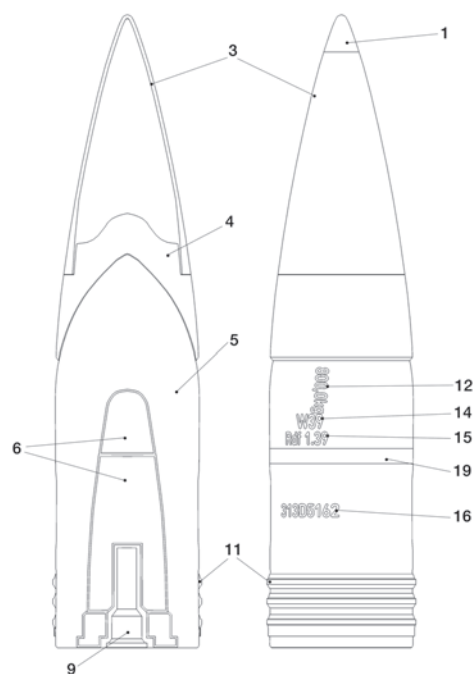
**E1/47–51 38CM PROJECTILES**

- 1 Black painted tip – indication of charged projectile
- 2 Black painted arrow indicating location of fuze
- 3 Ballistic cap

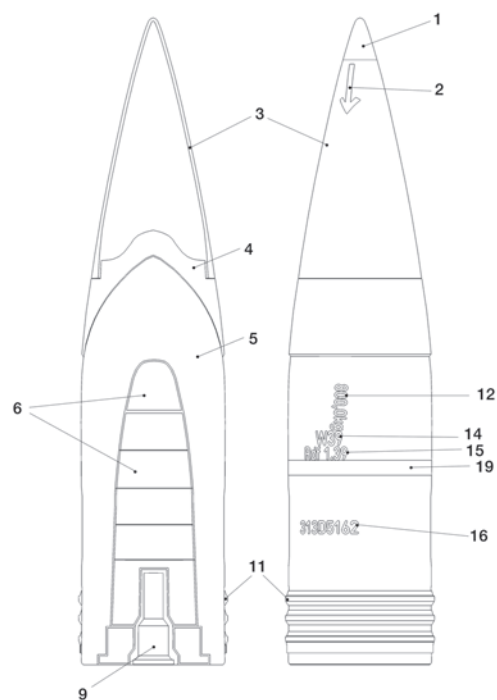
- 4 Armour piercing cap
- 5 Projectile body
- 6 Bursting charge
- 7 Priming charge
- 8 Propellant charge – powder tubes in silk bag
- 9 Base fuze
- 10 Nose fuze
- 11 Rotating bands
- 12 Projectile weight
- 13 Projectile and cap number
- 14 Projectile charging place and date (W=Wilhelmshaven)
- 15 Bursting charge supply origin and date (Rdf=Reinsdorf)
- 16 Bursting charge number
- 17 Cover
- 18 Cartridge case
- 19 White painted stripe – indication of projectile's center of gravity



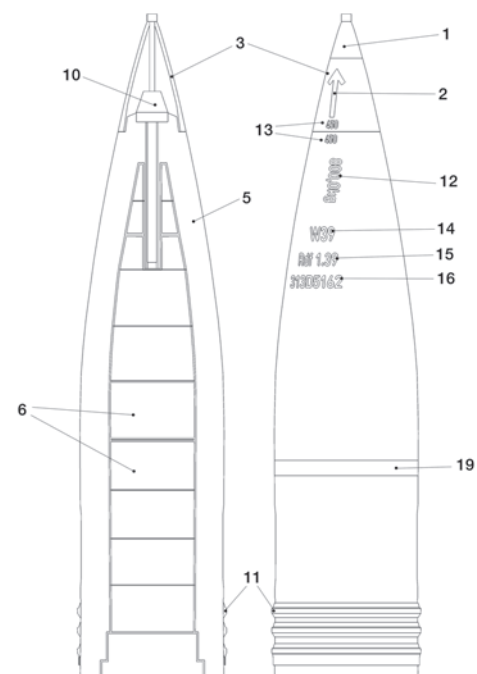
E1/47



E1/48



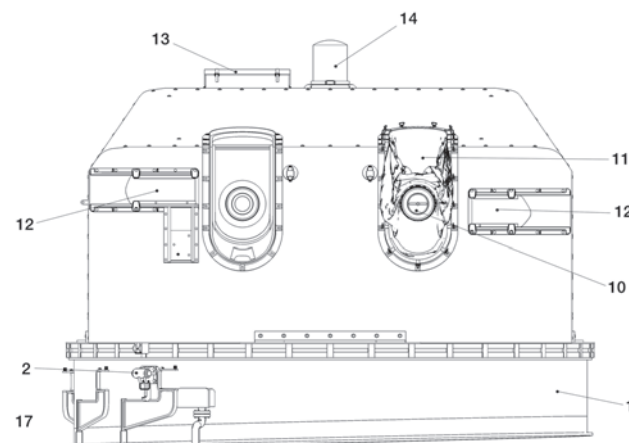
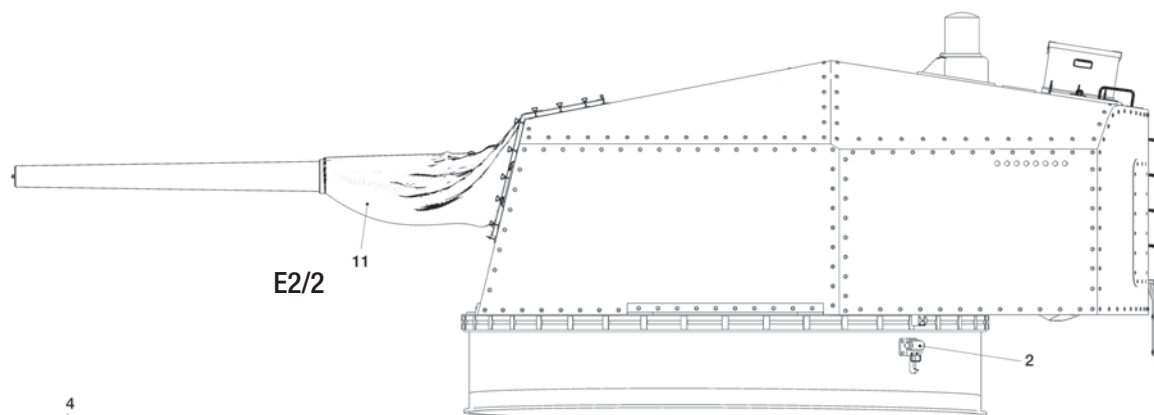
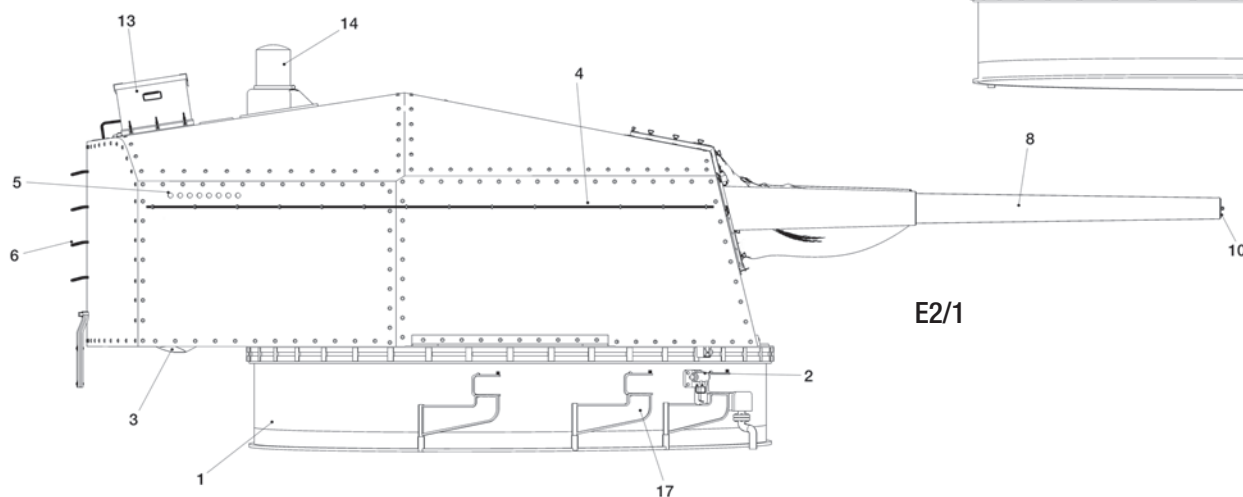
E1/49



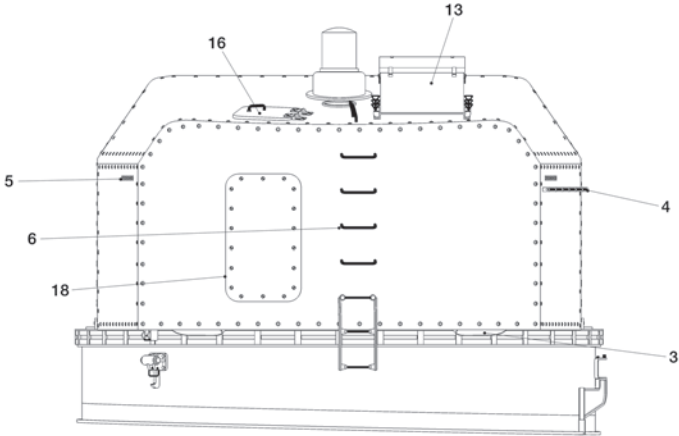


**15CM SK C/28 GUNS IN THE DOPP L C/34 TWIN TURRET (1/75 SCALE)****E2/1 TURRET STB I – RIGHT PROFILE****E2/2 TURRET STB I – LEFT PROFILE****E2/3 TURRET STB I – FRONT VIEW****E2/1–8 15CM TWIN TURRET**

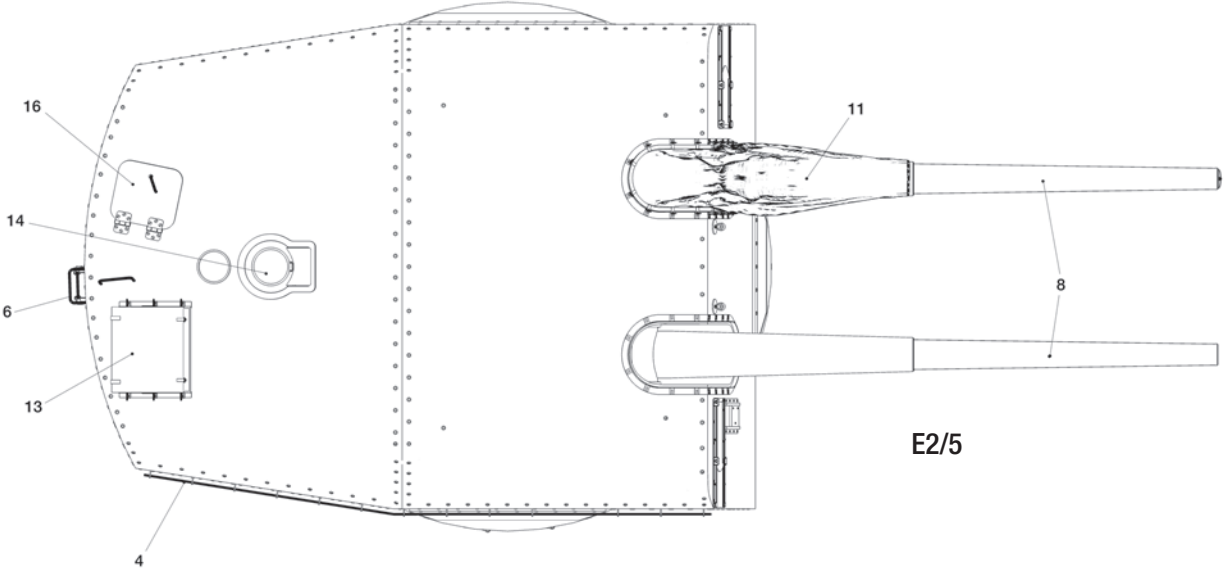
- 1 Barbette
- 2 Train locking mechanism
- 3 Empty propellant casing ejection chute
- 4 Awning rail – only right side; on turret Bb I – only left side
- 5 Smoke outlet holes
- 6 Step iron, shifted to the right side; on turret Bb I – shifted to the left side
- 7 Step iron, only right side; on turret Bb III – only left side
- 8 Barrel
- 9 Barrel at maximum elevation of +40°
- 10 Muzzle plug
- 11 Removable blast bag
- 12 Sight under sliding shield
- 13 Inflatable raft container (removed from all turrets around September 1940)
- 14 Periscope's protective cover
- 15 C/6 periscope
- 16 Access hatch
- 17 Hinged boat davit cradle
- 18 Sealed opening in rear plate

**E2/3****E2/2****E2/1**

E2/4 TURRET STB I – BACK VIEW  
E2/5 TURRET STB I – PLAN



E2/4



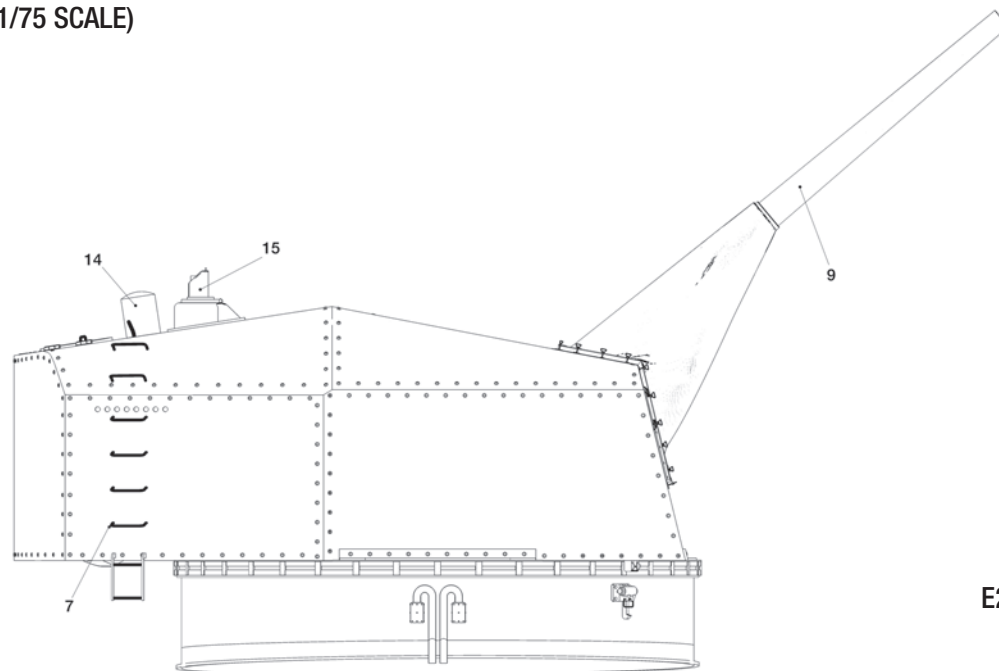
E2/5

212 **E** ARMAMENT – 15CM SK C/28 GUNS

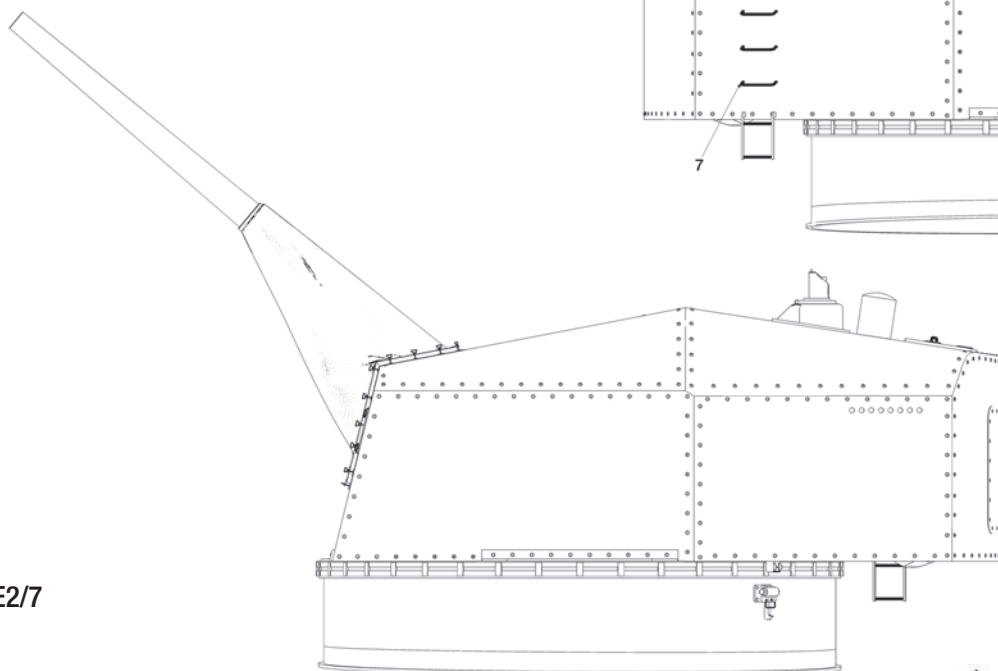
15CM SK C/28 GUNS IN THE DOPP L C/34 TWIN TURRET (1/75 SCALE)

E2/6 TURRET STB III – RIGHT PROFILE

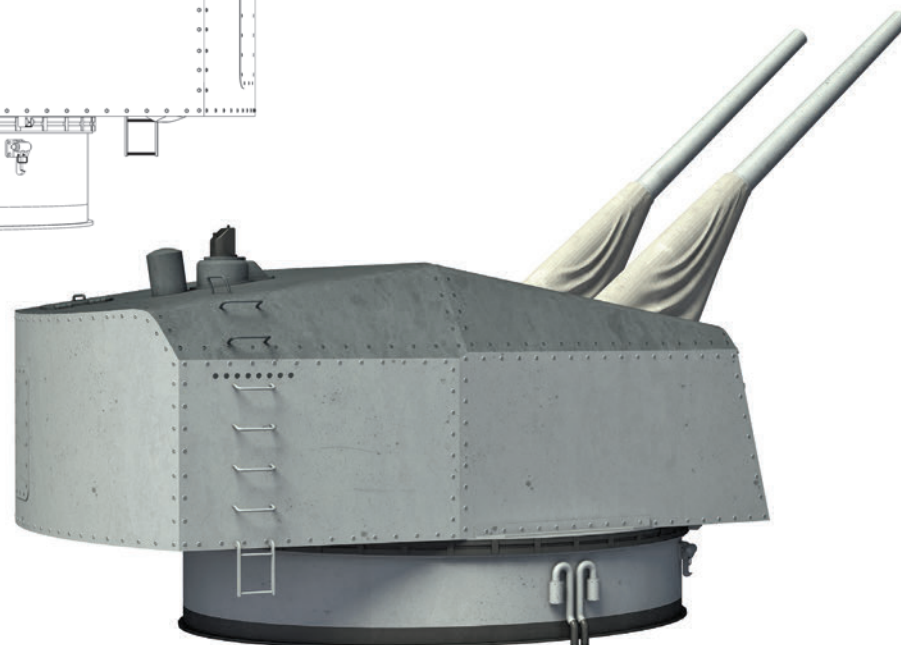
E2/7 TURRET STB III – LEFT PROFILE



E2/6

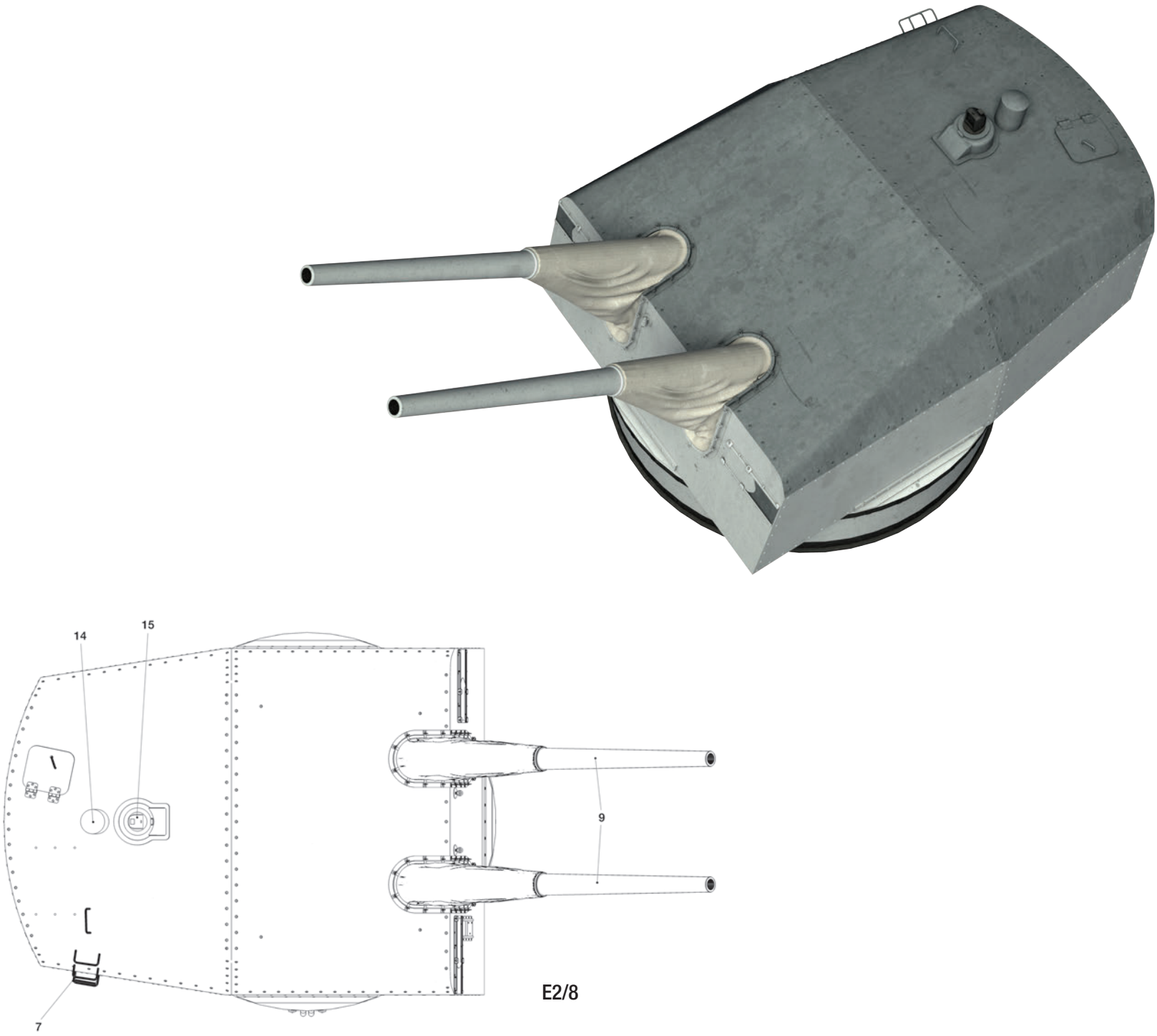


E2/7





E2/8 TURRET STB III – PLAN



E2/8

## 214 **E** ARMAMENT – 15CM SK C/28 GUNS

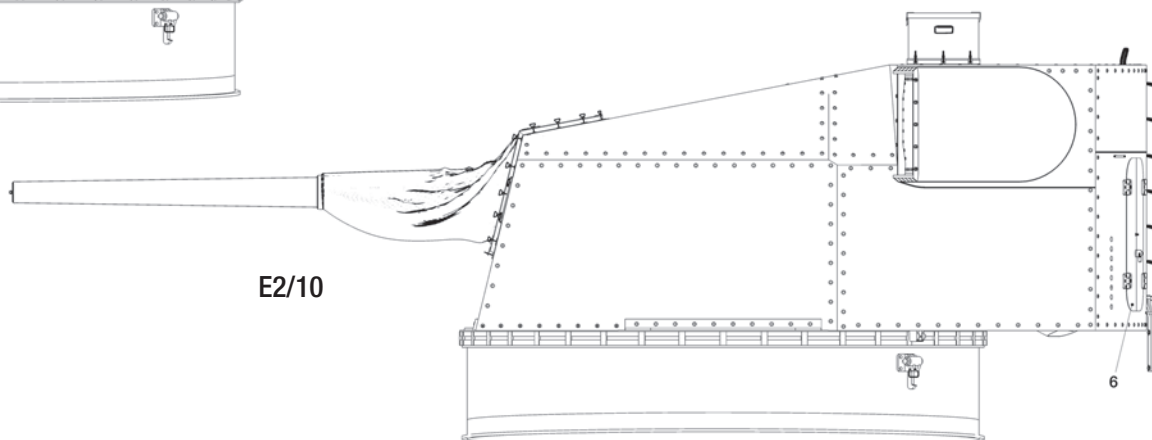
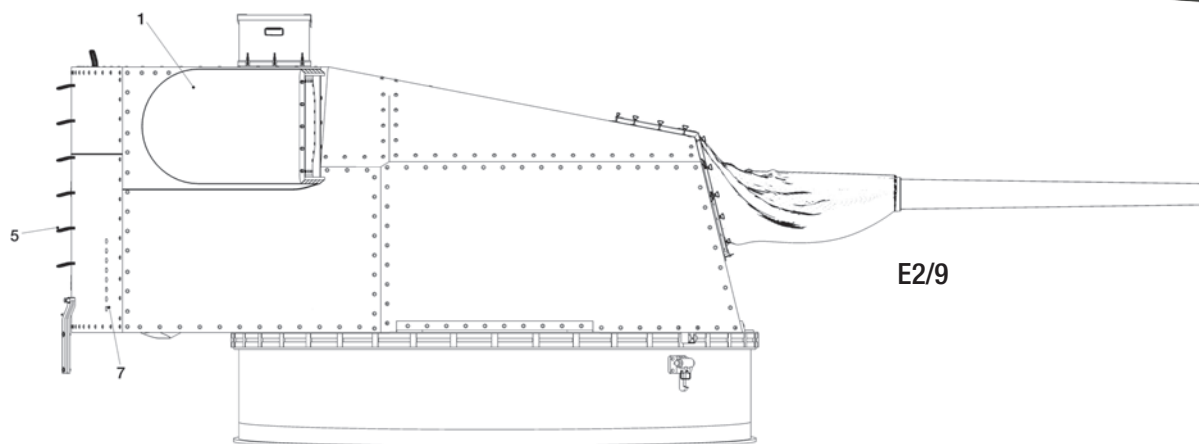
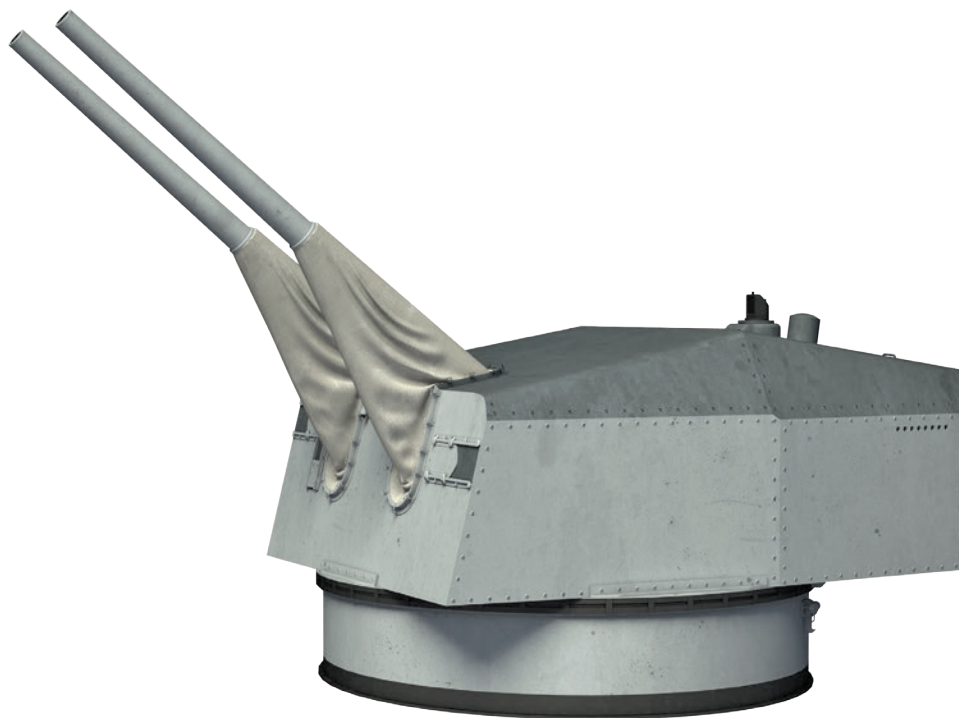
15CM SK C/28 GUNS IN THE DOPP L C/34 TWIN TURRET  
WITH 6.5M RANGEFINDER (1/75 SCALE)

E2/9 TURRET STB II – RIGHT PROFILE

E2/10 TURRET STB II – LEFT PROFILE

E2/9–13 15CM TWIN TURRET WITH 6.5M RANGEFINDER

- 1 Rangefinder arm hood
- 2 Rangefinder arm
- 3 Sliding shield (open)
- 4 Sliding shield (closed)
- 5 Step iron
- 6 Access door
- 7 Smoke outlet holes

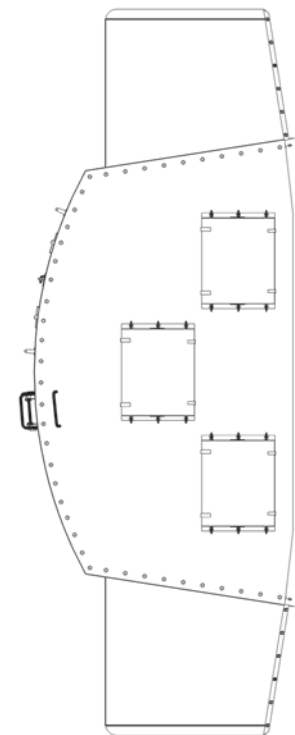
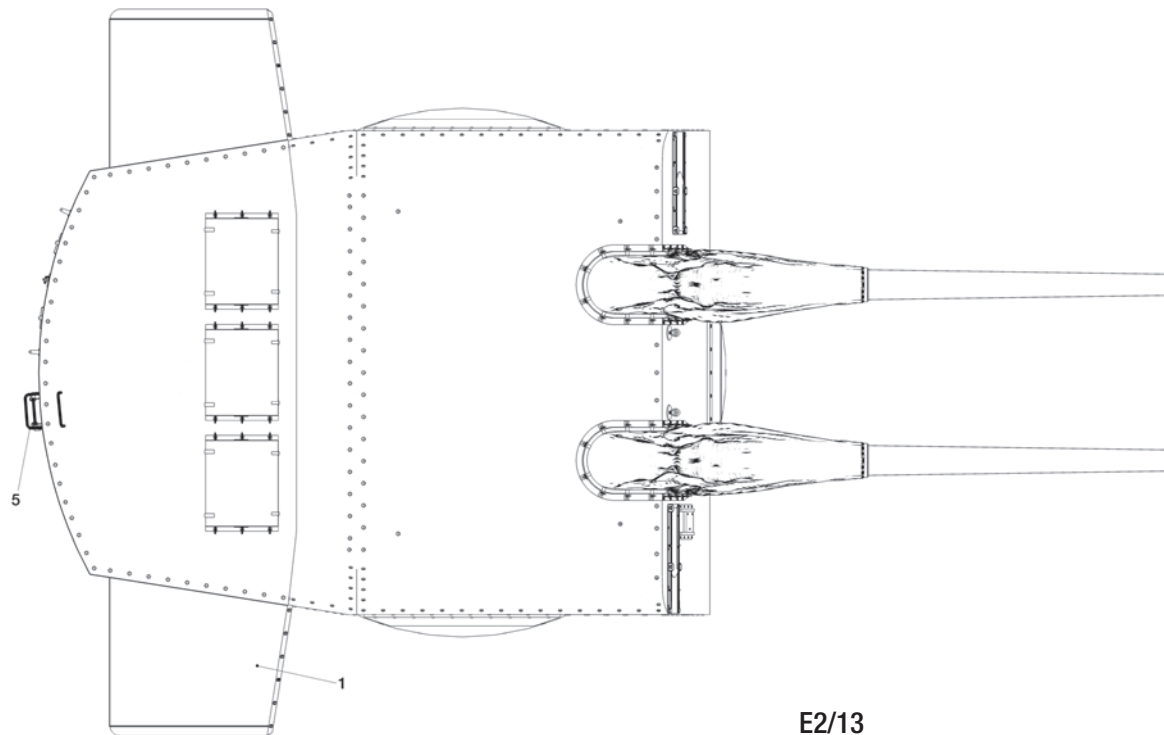
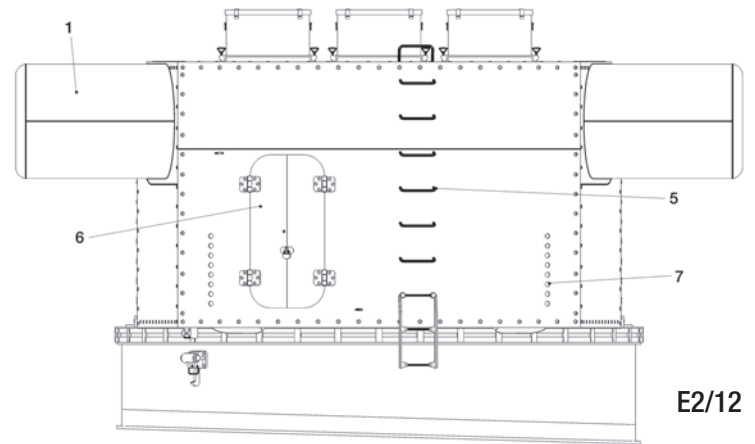
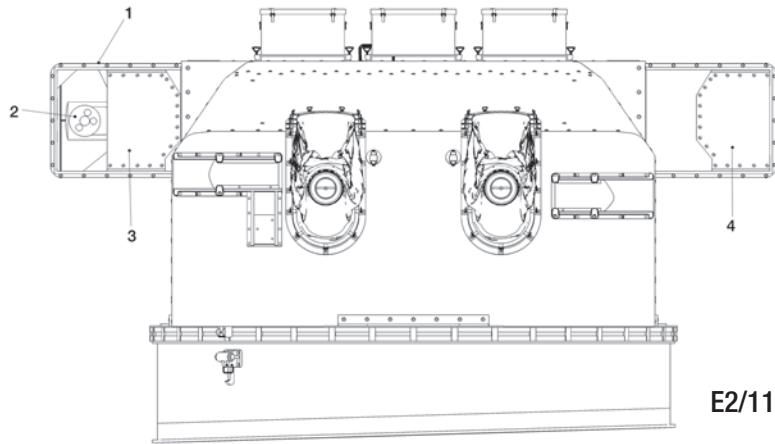


E2/11 TURRET STB II – FRONT VIEW

E2/12 TURRET STB II – BACK VIEW

E2/13 TURRET STB II – PLAN

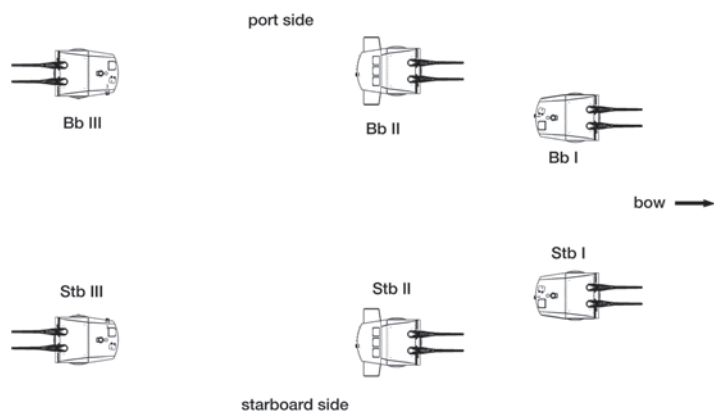
E2/14 TURRET STB II – PLAN (FRAGMENT) – ARRANGEMENT OF ROOF  
CONTAINERS PRIOR TO COMMISSIONING (STB II TURRET ONLY)



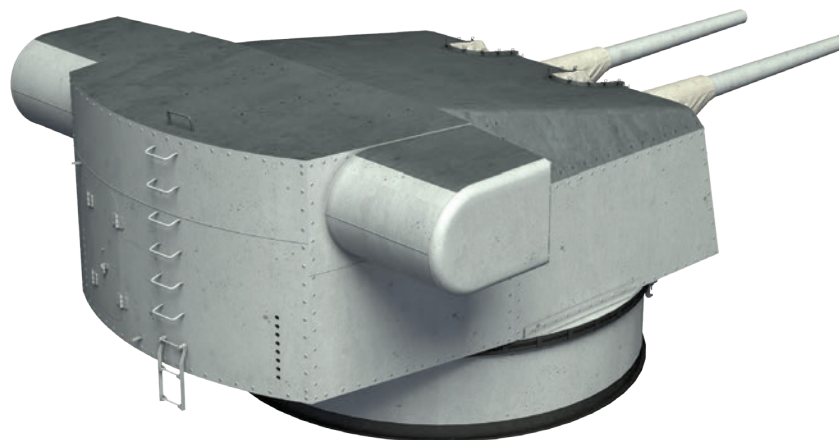
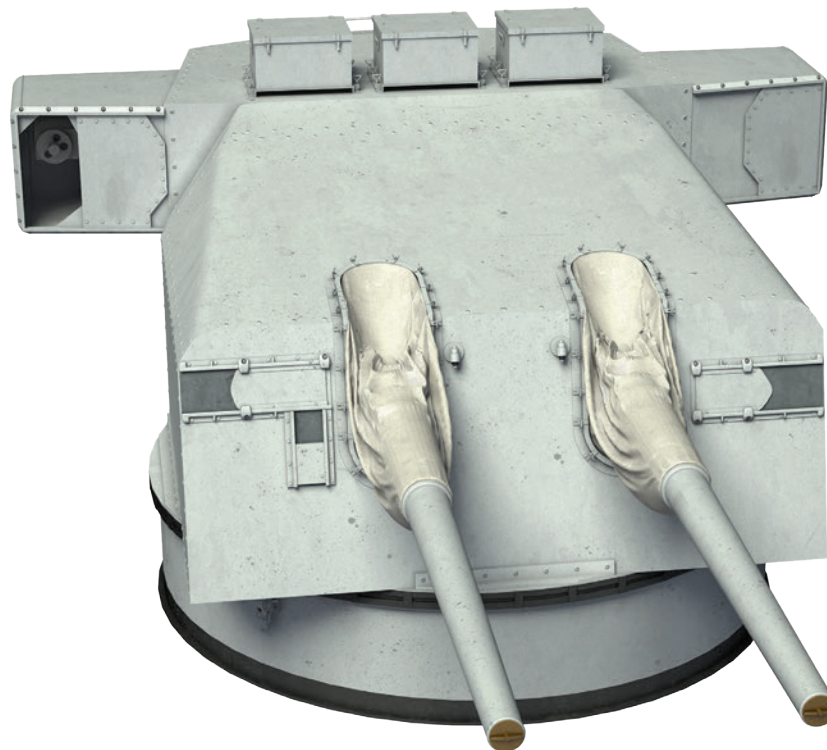


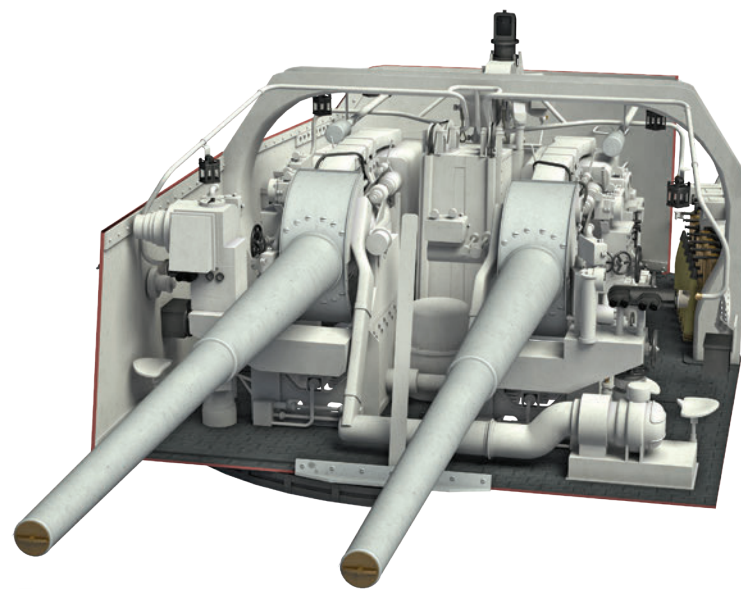
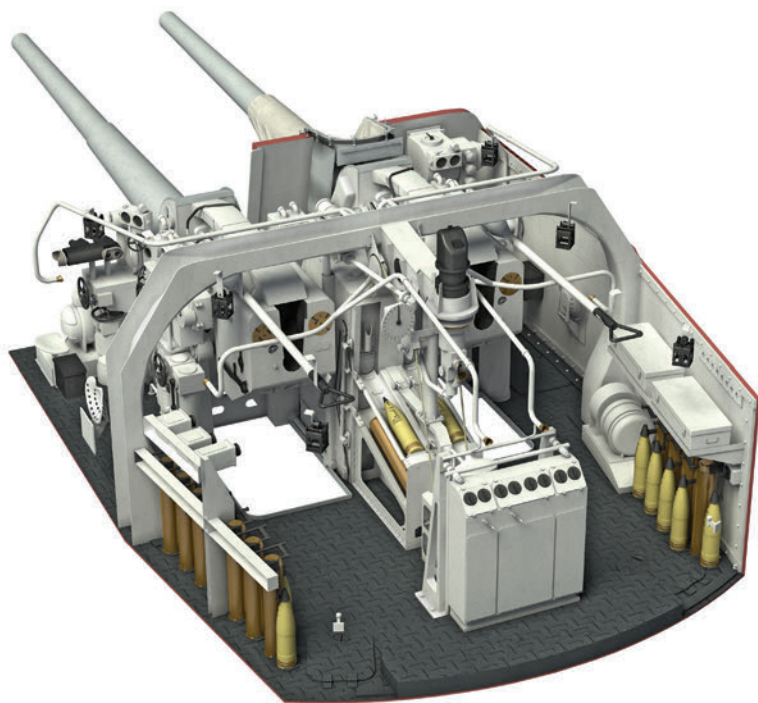
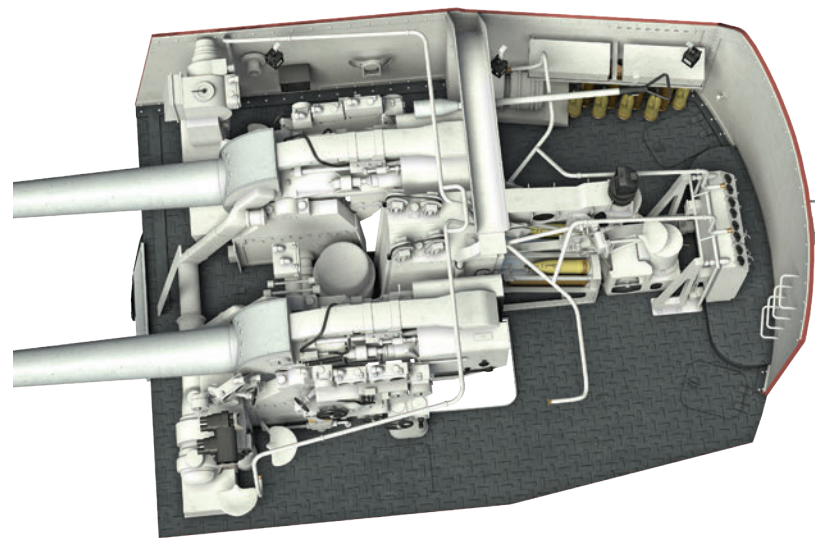
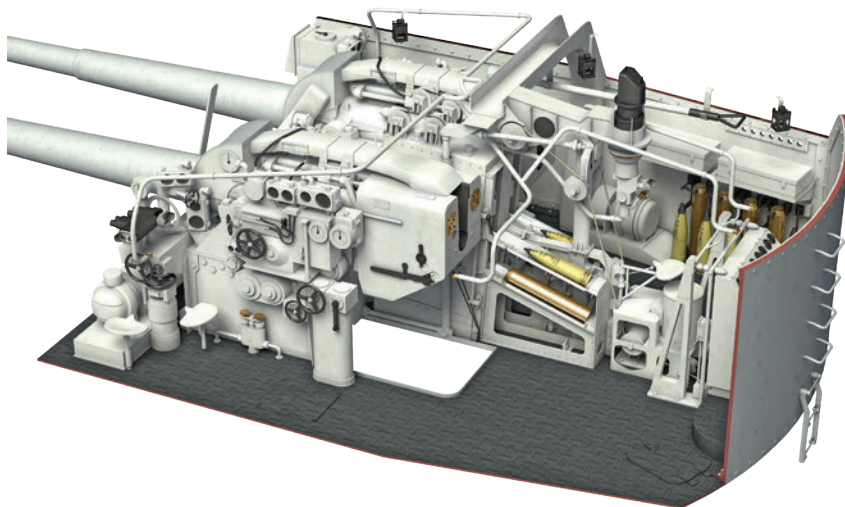
15CM SK C/28 GUNS IN THE DOPP L C/34 TWIN TURRET  
WITH 6.5M RANGEFINDER (1/75 SCALE)

E2/15 NUMERATION OF THE 15CM TURRETS ON BOARD (1/800 SCALE;  
STB=*STEUERBORD* – STARBOARD, BB=*BACKBORD* – PORT)



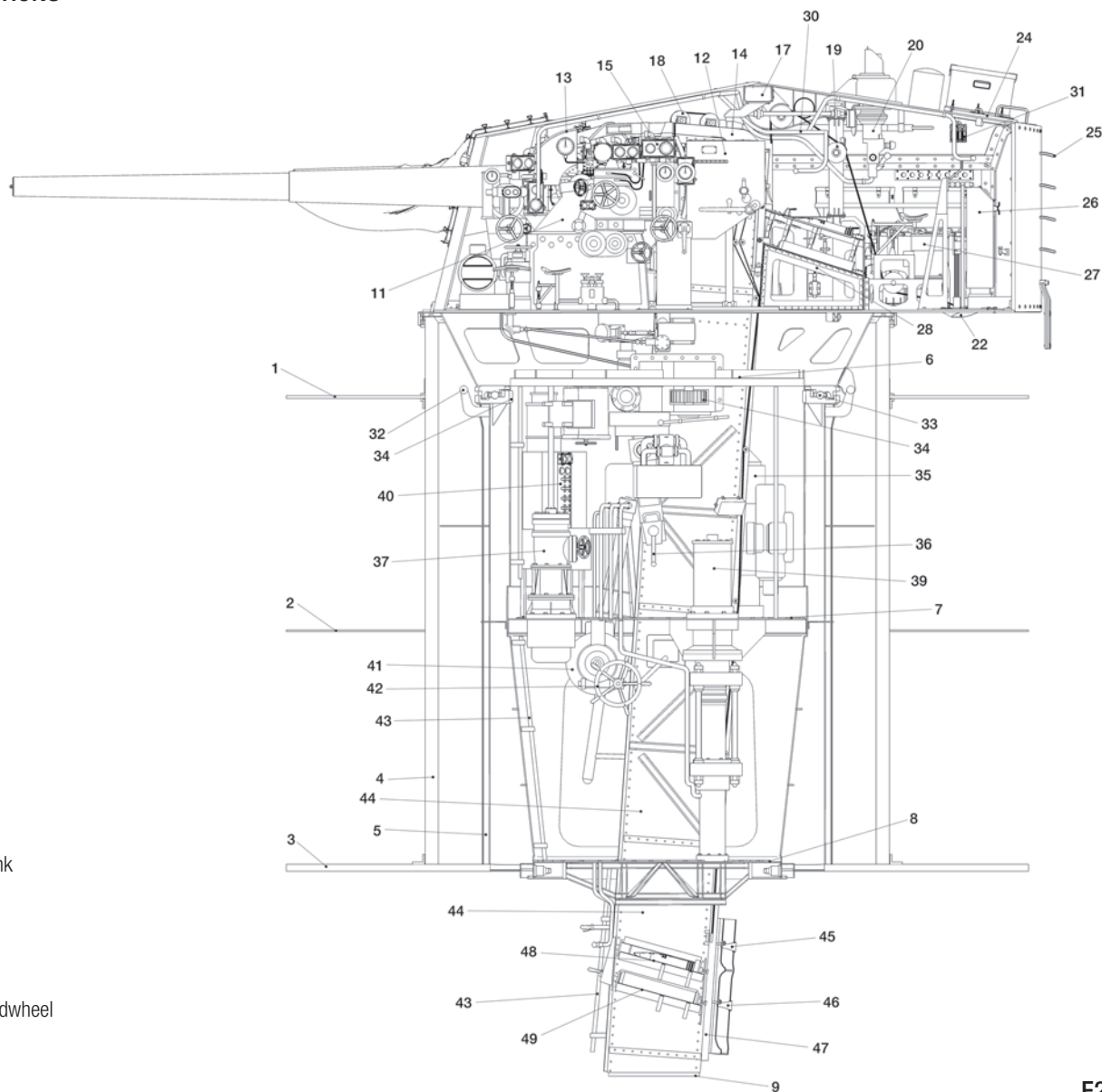
E2/15





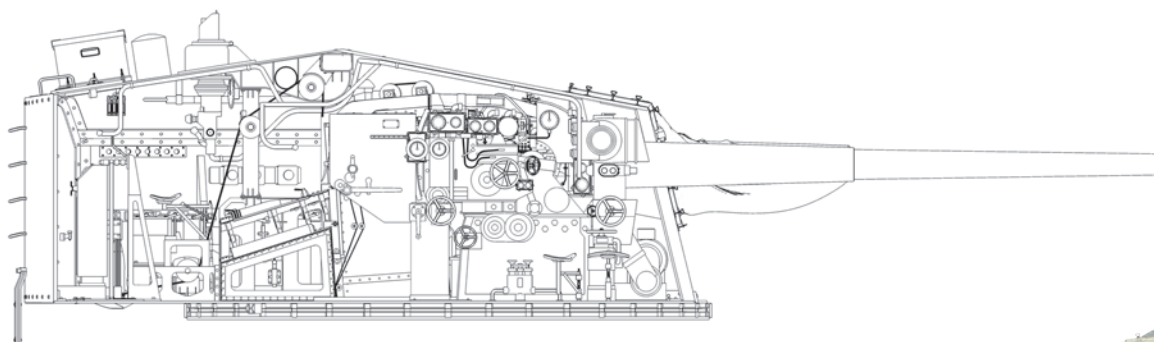
**15CM SK C/28 GUNS IN THE DOPP L C/34 TWIN TURRET – SECTIONS  
(1/75 SCALE)**
**E2/16 TURRET STB I – LEFT PROFILE**
**E2/16–24 15CM TWIN TURRET – SECTIONS**

- 1 Main deck (*Oberdeck*)
- 2 Battery deck (*Batteriedeck*)
- 3 Armoured deck (*Panzerdeck*)
- 4 Barbette
- 5 Support cylinder
- 6 Train mechanism level
- 7 Machinery level
- 8 Workshop level
- 9 Ammunition handling level
- 10 Elevation arc
- 11 Gun cradle
- 12 Gun breech
- 13 Curved shield plate
- 14 Smoke exhaust duct
- 15 Aiming controls
- 16 Hatch
- 17 Turret roof support
- 18 Main ammunition hoist pulleys
- 19 Auxiliary ammunition hoist pulleys
- 20 Periscope
- 21 Ready-to-use ammunition
- 22 Empty cases ejection point
- 23 Turret train indicator
- 24 Turret access hatch
- 25 Foot step
- 26 Gun firing panel
- 27 Auxiliary ammunition hoist drive
- 28 Ammunition unloading table
- 29 Train mechanism drive
- 30 Voice pipe
- 31 Light
- 32 Turret stop
- 33 Roller path
- 34 Sprocket
- 35 Train mechanism motor generator
- 36 Main ammunition hoist emergency use crank
- 37 Hydraulic pump
- 38 Main ammunition hoist drive
- 39 Hydraulic installation tank
- 40 Hydraulic installation distribution block
- 41 Winch
- 42 Main ammunition hoist emergency use handwheel
- 43 Ladder
- 44 Main ammunition hoist shaft
- 45 Auxiliary ammunition hoist shell basket
- 46 Auxiliary ammunition hoist propellant cartridge basket
- 47 Auxiliary ammunition hoist baskets guide rail
- 48 Shell loading point
- 49 Propellant cartridge loading point

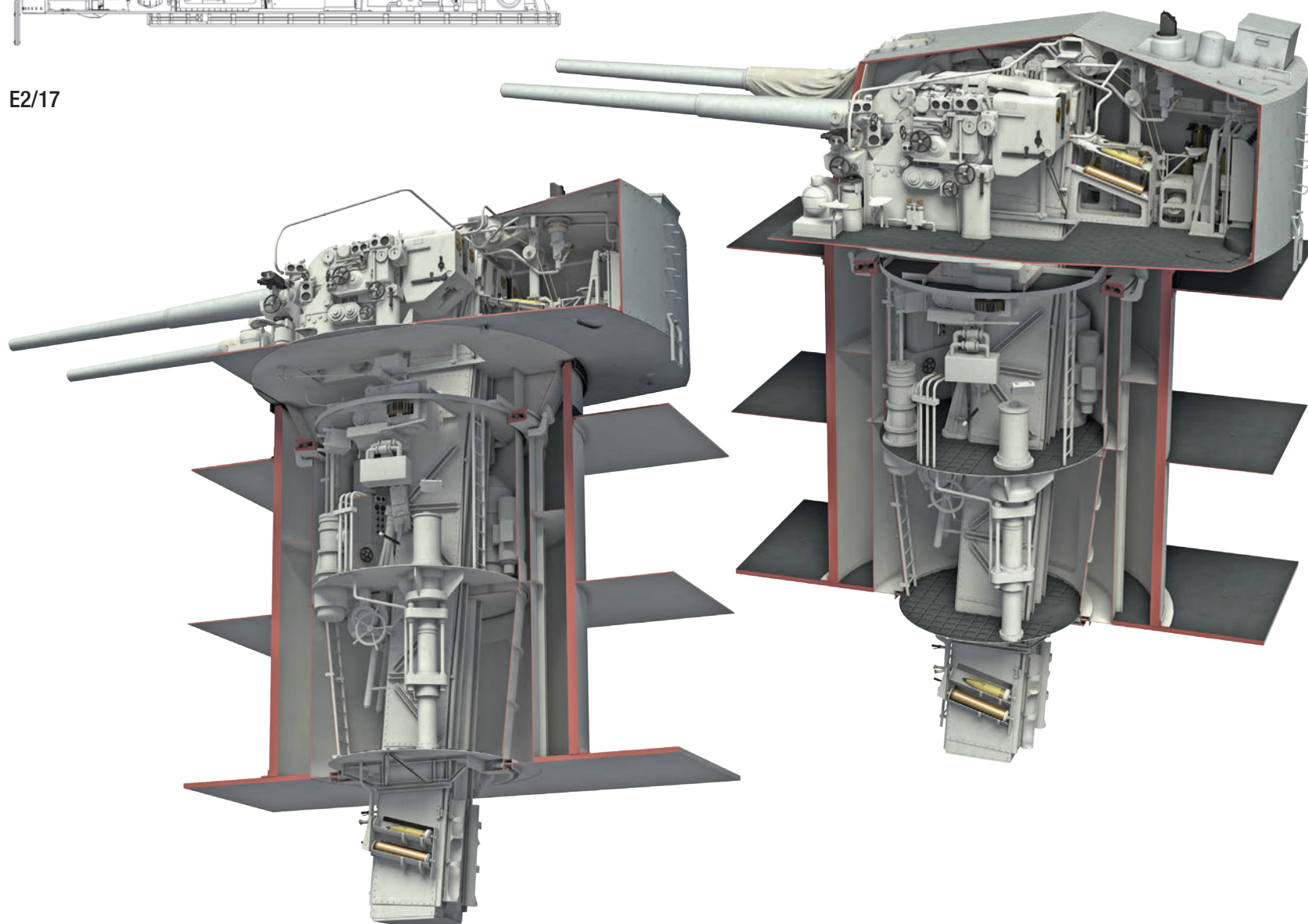

**E2/16**



## E2/17 TURRET STB I – RIGHT PROFILE



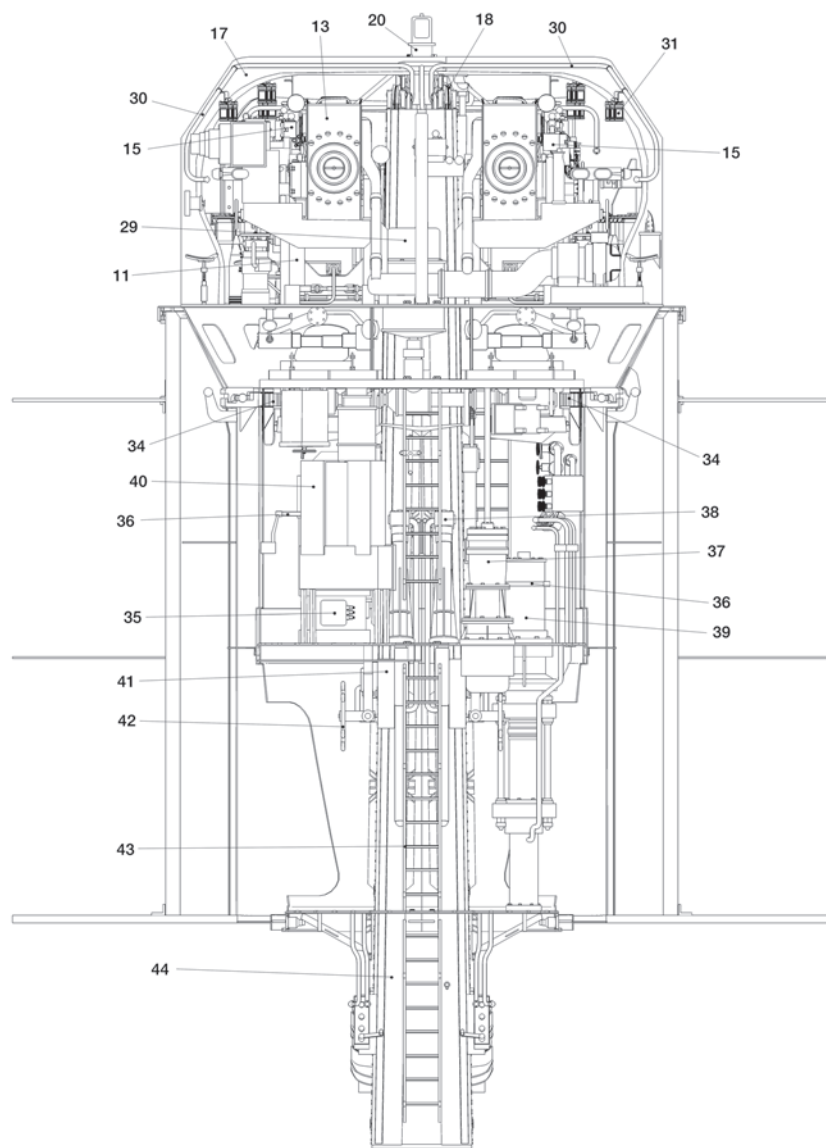
E2/17



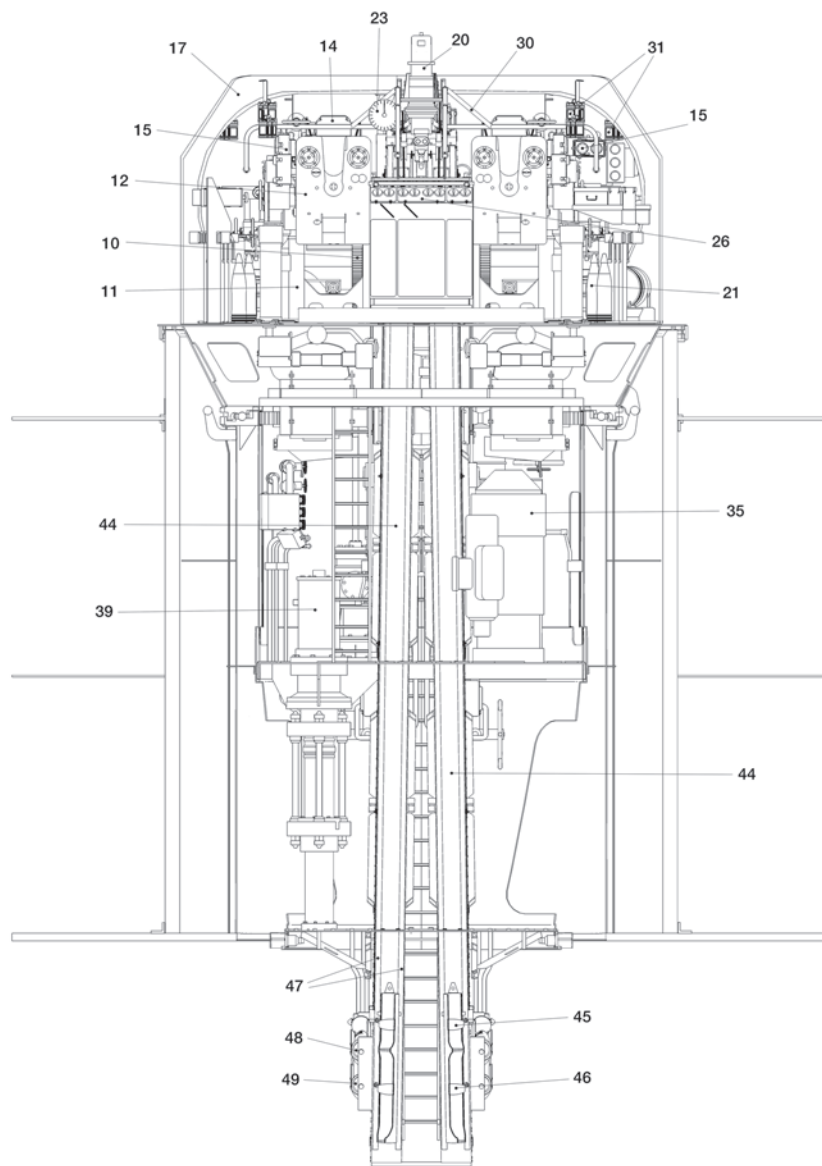
15CM SK C/28 GUNS IN THE DOPP L C/34 TWIN TURRET – SECTIONS  
(1/75 SCALE)

E2/18 TURRET STB I – FRONT VIEW

E2/19 TURRET STB I – BACK VIEW

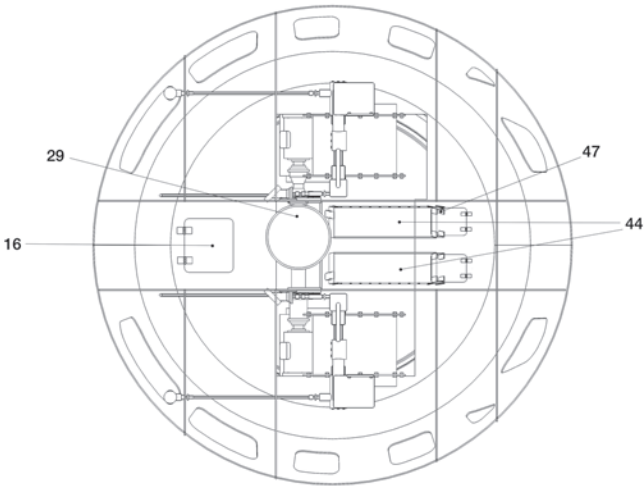


E2/18

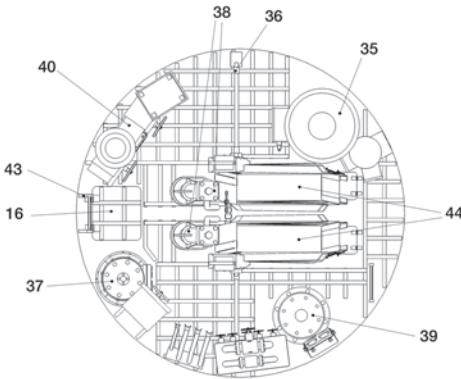


E2/19

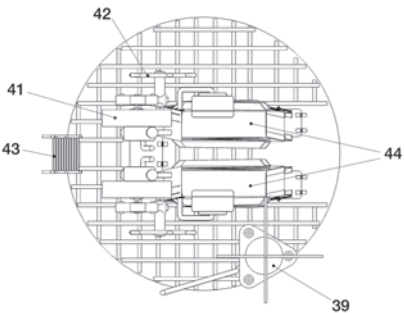
- E2/20 TURRET STB I – PLAN
- E2/21 TURRET STB I – TRAIN MECHANISM LEVEL – PLAN
- E2/22 TURRET STB I – MACHINERY LEVEL – PLAN
- E2/23 TURRET STB I – WORKSHOP LEVEL – PLAN
- E2/24 TURRET STB I – AMMUNITION HANDLING LEVEL – PLAN



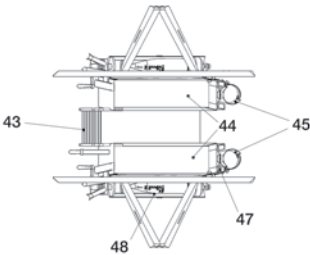
E2/21



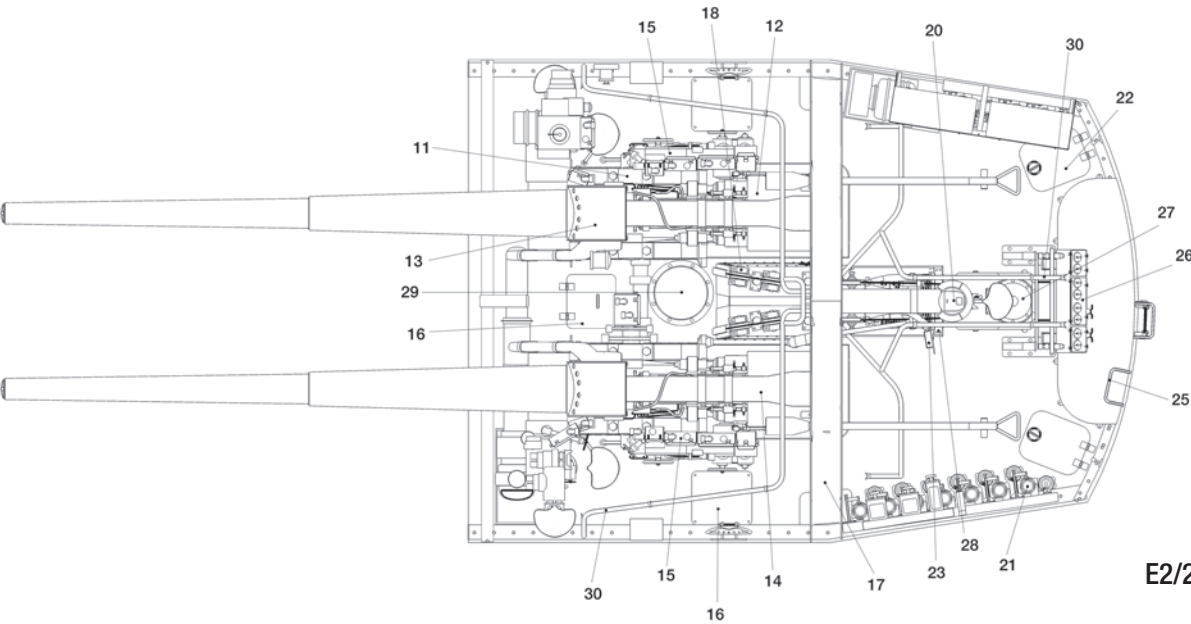
E2/22



E2/23



E2/24



E2/20



15CM SK C/28 GUN (1/50 SCALE)

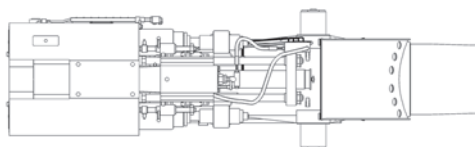
E2/25 RIGHT PROFILE

E2/26 LEFT PROFILE

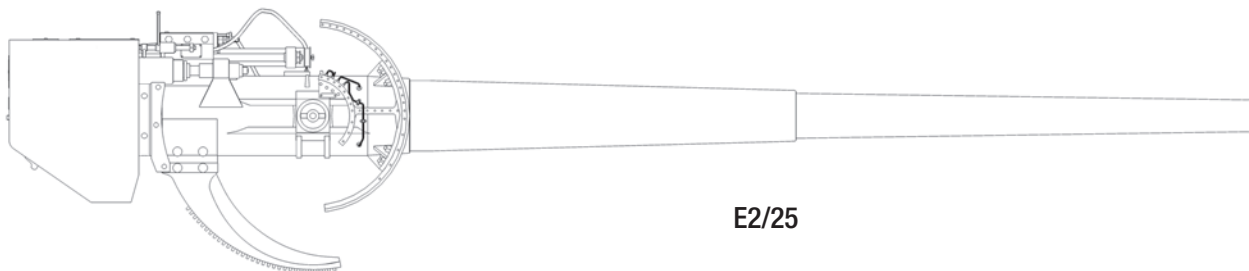
E2/27 FRONT VIEW

E2/28 BACK VIEW

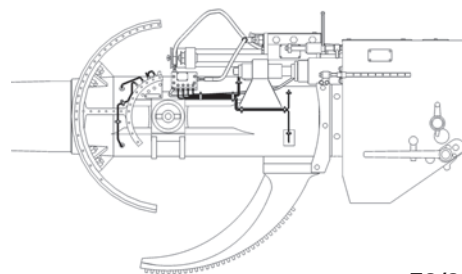
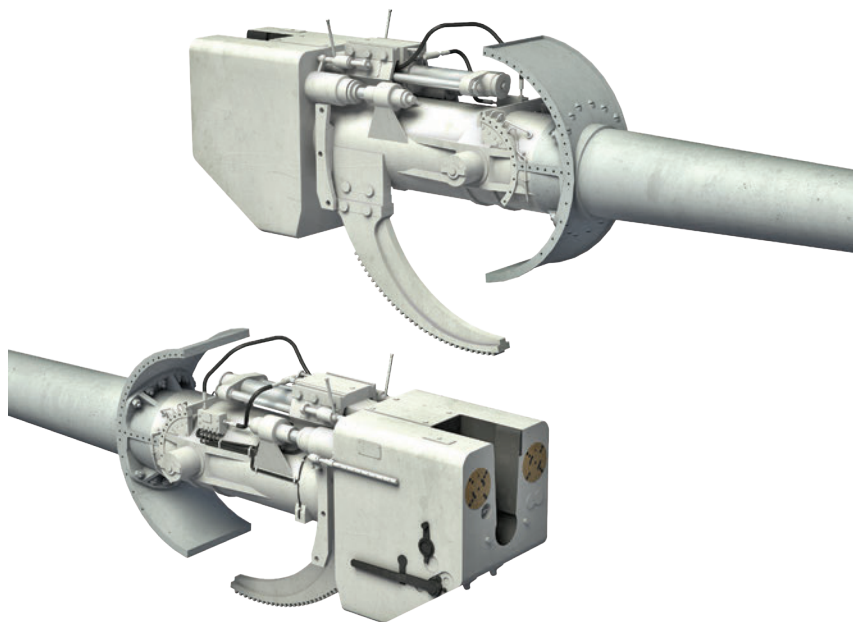
E2/29 PLAN



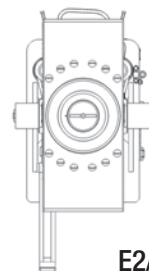
E2/29



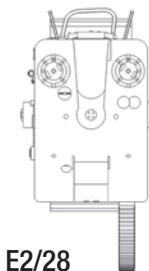
E2/25



E2/26



E2/27



E2/28

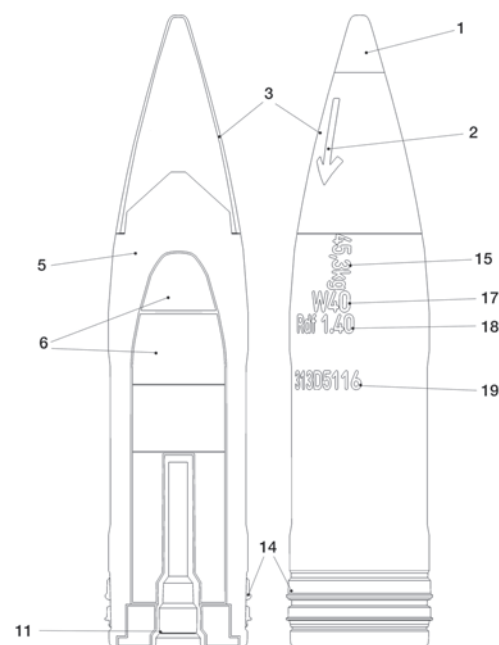
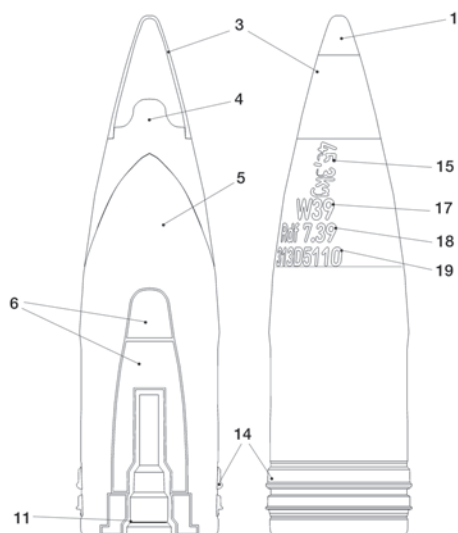
## 15CM PROJECTILES – PROFILE VIEWS AND SECTIONS (1/8 SCALE)

E2/30 15CM PZGR. L/3,8 (M.HB); PZGR. = *PANZERSPRENGGRANATE*,  
ARMOUR PIERCING PROJECTILE; M.HB = *MIT HAUBE*, CAPPED

E2/31 15CM SPGR. L/4,5 BDZ (M.HB); SPGR. = *SPRENGGRANATE*,  
HIGH EXPLOSIVE PROJECTILE; BDZ = *BODENZÜNDER*, BASE FUZE;  
M.HB = *MIT HAUBE*, CAPPED

### E2/30–34 15CM PROJECTILES

- 1 Black painted tip – indication of charged projectile
- 2 Black painted arrow indicating location of fuze
- 3 Ballistic cap
- 4 Armour piercing cap
- 5 Projectile body
- 6 Bursting charge
- 7 Expelling charge
- 8 Illuminating charge
- 9 Priming charge
- 10 Propellant charge – powder tubes in silk bag
- 11 Base fuze
- 12 Nose fuze
- 13 Time fuze
- 14 Rotating bands
- 15 Projectile weight
- 16 Projectile and cap number
- 17 Projectile charging place and date (W=Wilhelmshaven)
- 18 Bursting charge supply origin and date (Rdf=Reinsdorf)
- 19 Bursting charge number
- 20 Cover
- 21 Knob
- 22 Cartridge case

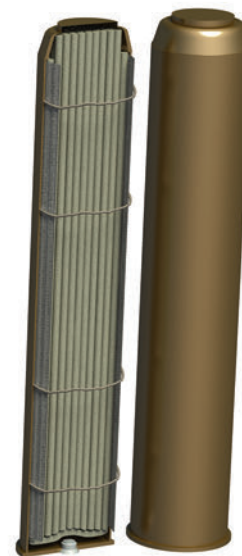
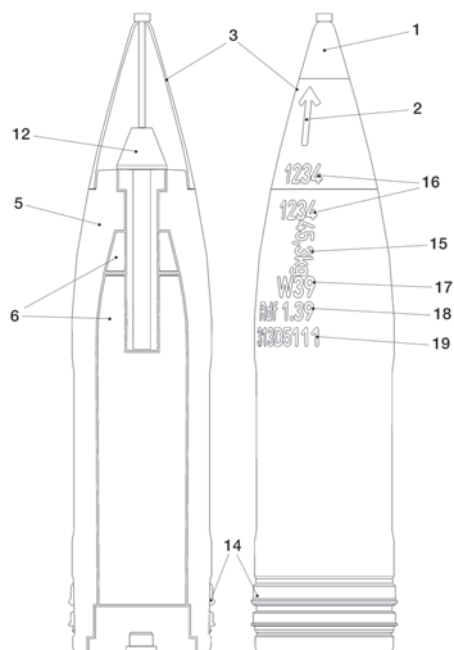
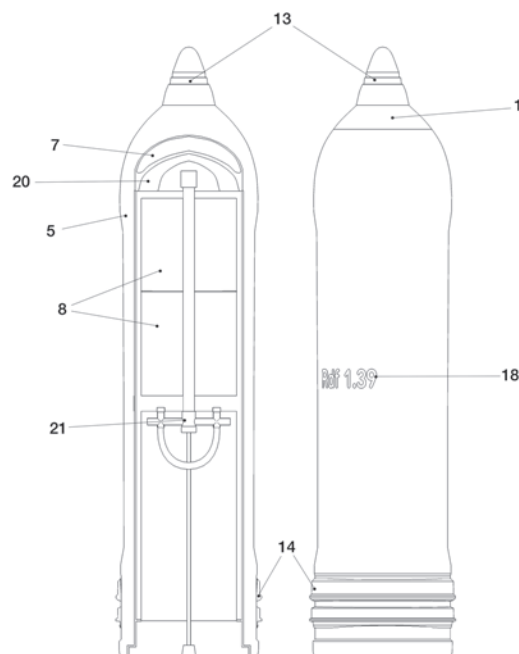
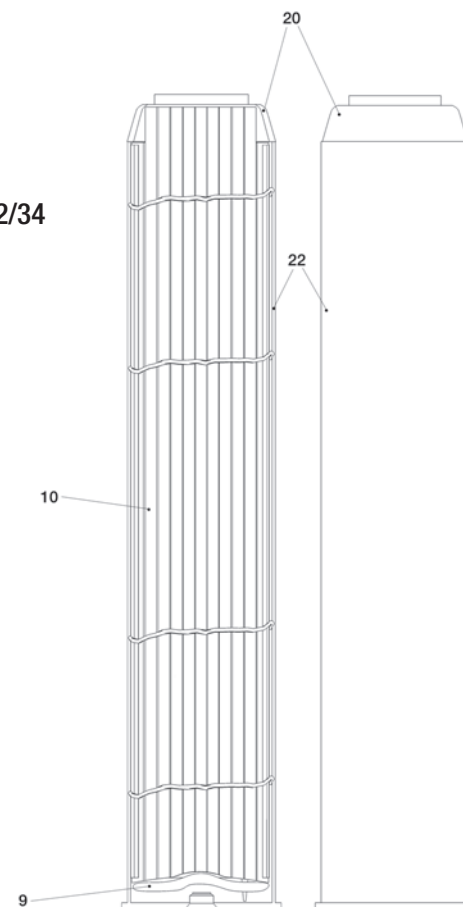


**15CM PROJECTILES – PROFILE VIEWS AND SECTIONS (1/8 SCALE)**

E2/32 15CM SPGR. L/4,6 KZ (M.HB); SPGR. = *SPRENGGRANATE*,  
HIGH EXPLOSIVE PROJECTILE; KZ = *KOPFZÜNDER*, NOSE FUZE;  
M.HB = *MIT HAUBE*, CAPPED

E2/33 15CM LG L/4,3; LG = *LEUCHTGESCHOSS*, ILLUMINATION  
PROJECTILE

E2/34 15CM *HÜLSENKARTUSCHE* C/28; PROPELLANT CARTRIDGE

**E2/32****E2/33****E2/34**



**15CM LADEÜBUNGSKANONE – PRACTICE LOADING MACHINE WITH  
AMMUNITION RACK (1/75 SCALE)**

**E2/35 RIGHT PROFILE**

**E2/36 LEFT PROFILE**

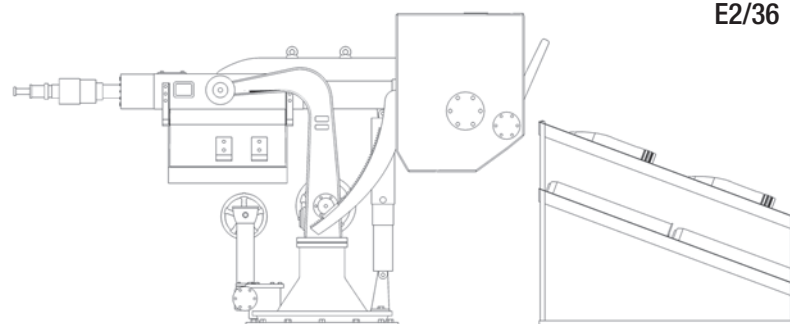
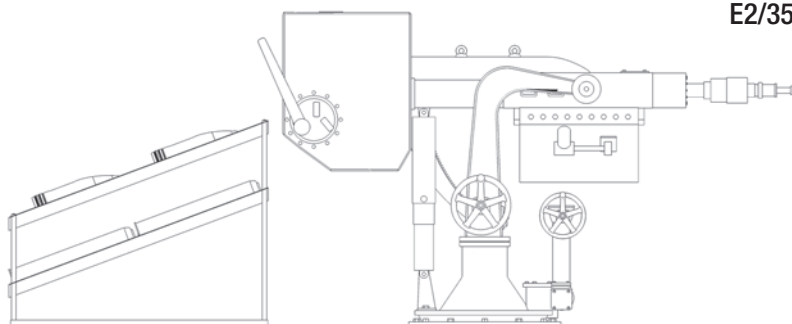
**E2/37 FRONT VIEW**

**E2/38 BACK VIEW**

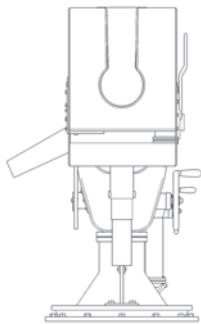
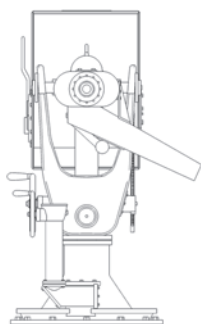
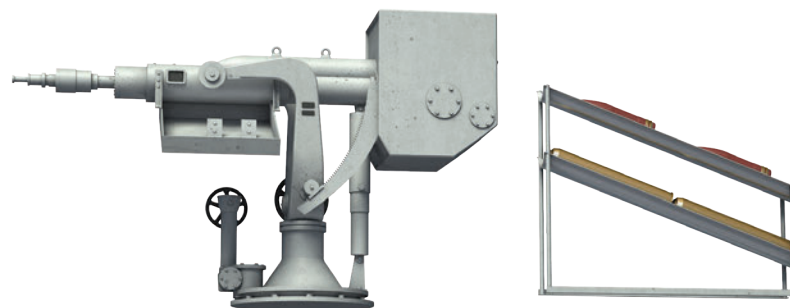
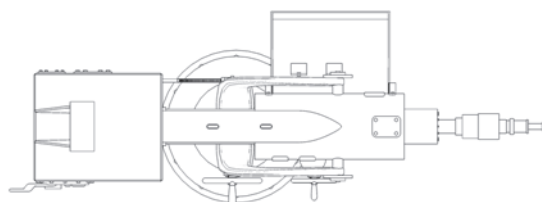
**E2/39 PLAN**

**E2/35**

**E2/36**

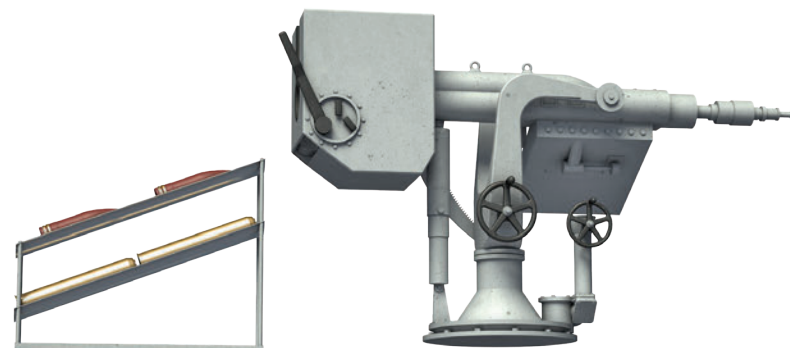


**E2/39**



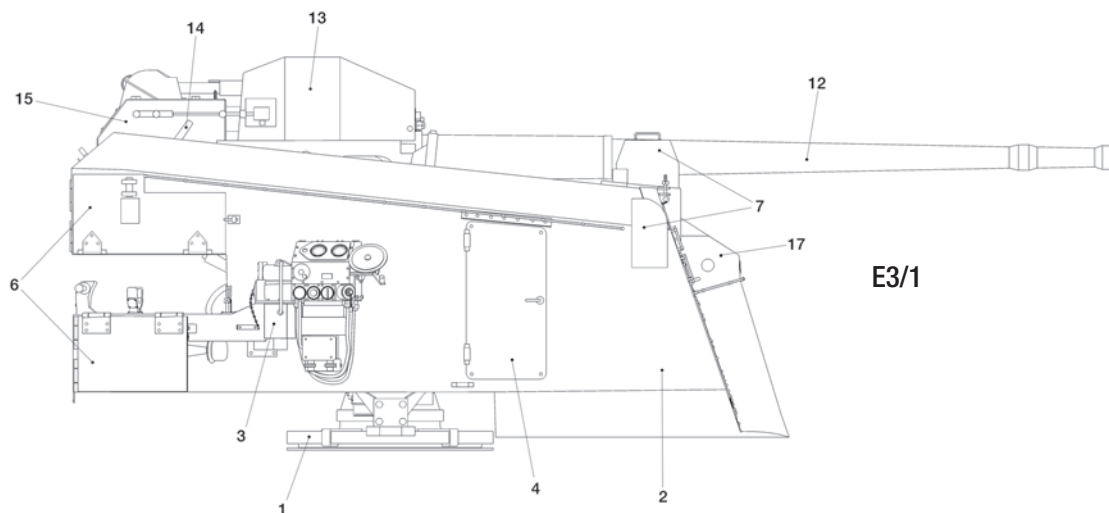
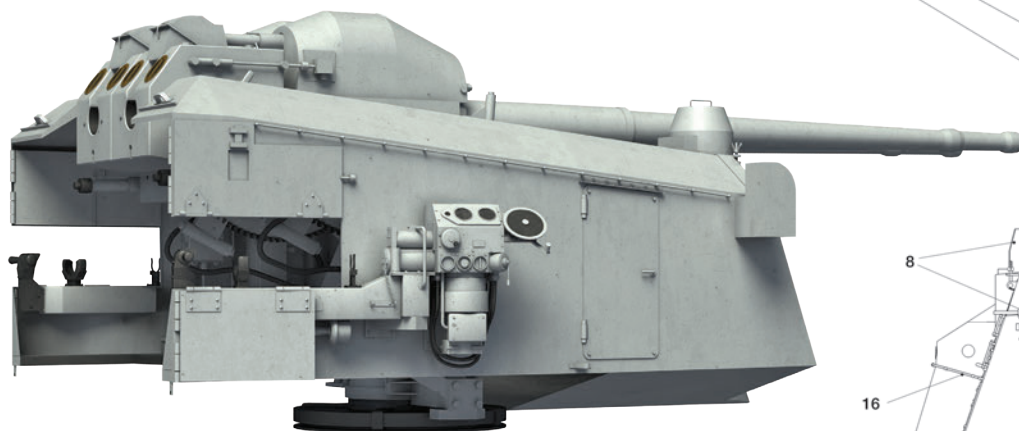
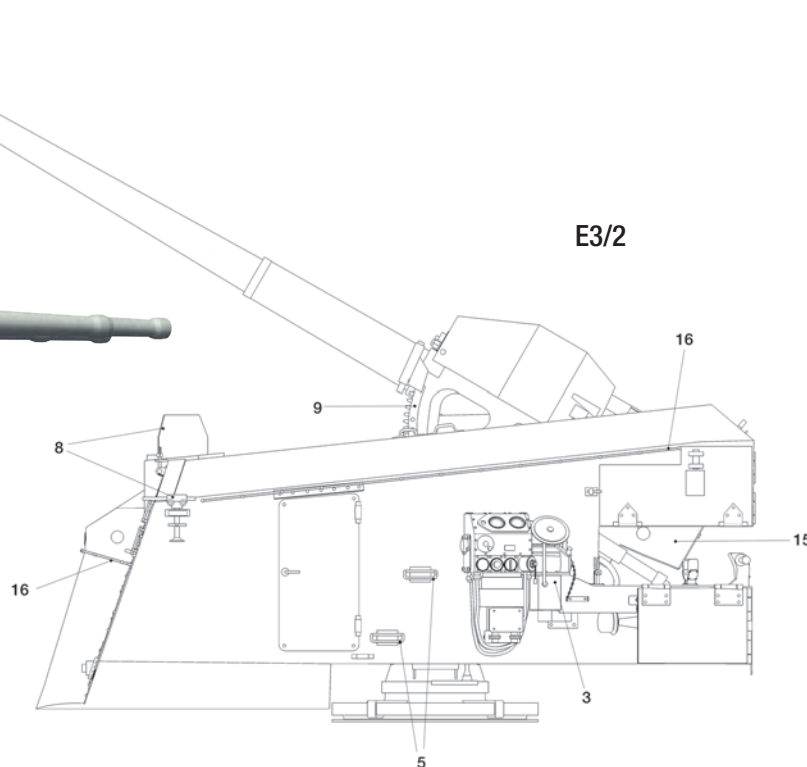
**E2/37**

**E2/38**



**10.5CM SK C/33 GUNS IN THE DOPP L C/31 TWIN MOUNT (1/50 SCALE)****E3/1 RIGHT PROFILE****E3/2 LEFT PROFILE – SIGHT SHIELDS REMOVED AND  
AND GUNS ELEVATED TO +30°****E3/1–5 10.5CM TWIN MOUNT**

- 1 Mount pedestal
- 2 Mount shield
- 3 Projectile time fuze setter
- 4 Access door
- 5 Foot step
- 6 Hinged shield
- 7 Sight shield
- 8 Sight
- 9 Elevation arc
- 10 Gun cradle
- 11 Gun cradle rotation trunnion
- 12 Gun barrel
- 13 Recoil cylinder under shield
- 14 Breech operating lever
- 15 Breech housing
- 16 Bar for attaching canvas cover
- 17 Cross-levelling sight housing

**E3/1****E3/2**

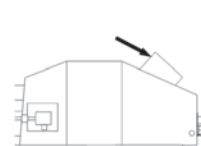
E3/3 FRONT VIEW

E3/4 BACK VIEW

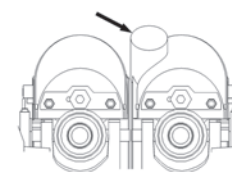
E3/5 PLAN

E3/6 RIGHT PROFILE (FRAGMENT) – STB I AND BB I MOUNTS ONLY

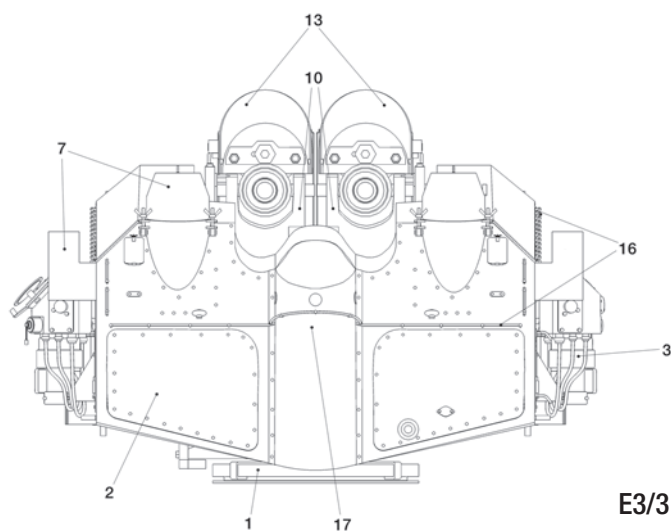
E3/7 FRONT VIEW (FRAGMENT) – STB I AND BB I MOUNTS ONLY



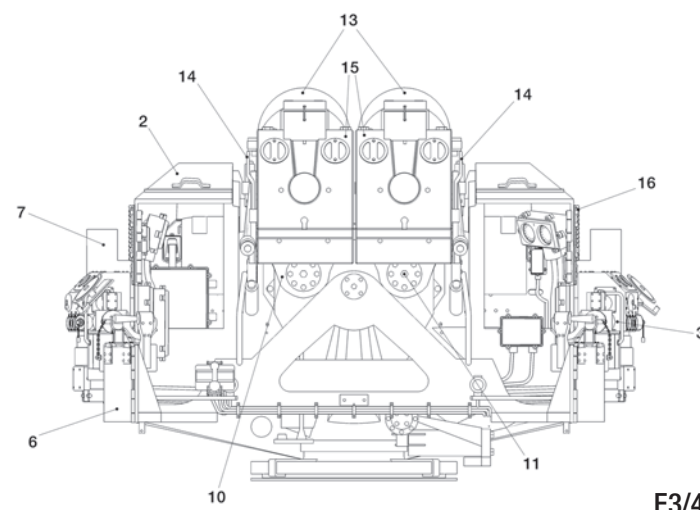
E3/6



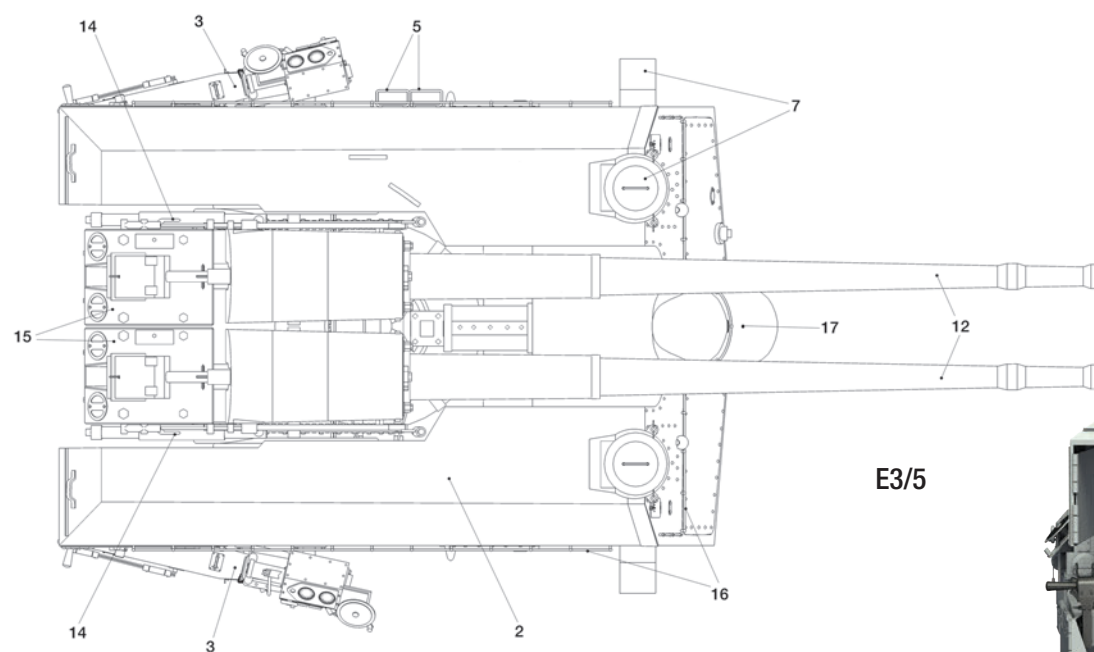
E3/7



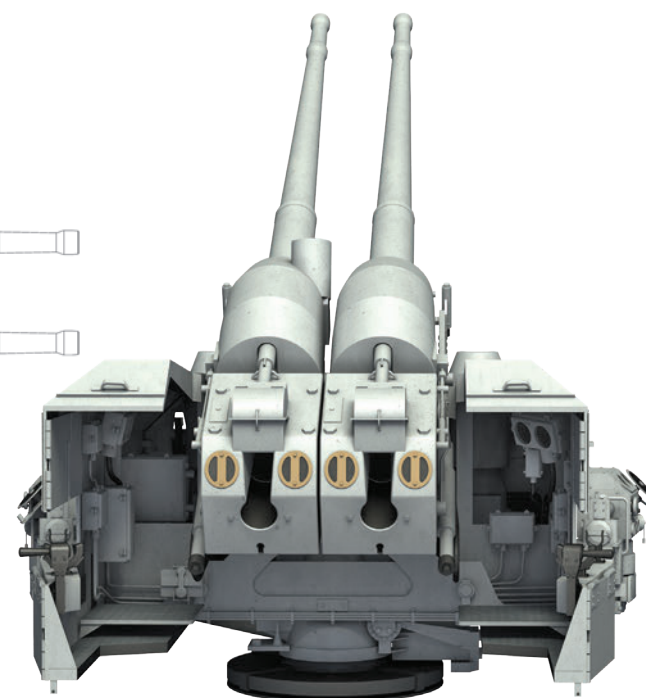
E3/3



E3/4



E3/5





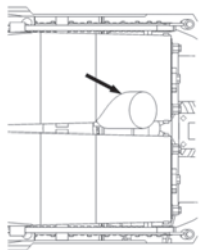
10.5CM SK C/33 GUNS IN THE DOPP L C/31 TWIN MOUNT (1/50 SCALE)

E3/8 PLAN (FRAGMENT) – STB I AND BB I MOUNTS ONLY

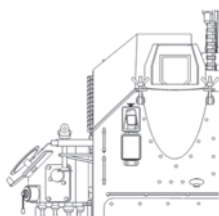
E3/9 FRONT VIEW (FRAGMENT) – SIGHT SHIELDS REMOVED

E3/10 PLAN (FRAGMENT) – SIGHT SHIELDS REMOVED

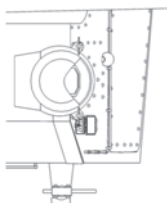
E3/11 FRONT VIEW (FRAGMENT) – BB I AND BB II MOUNTS ONLY



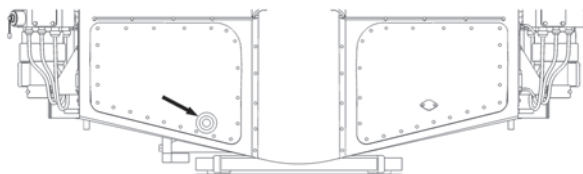
E3/8



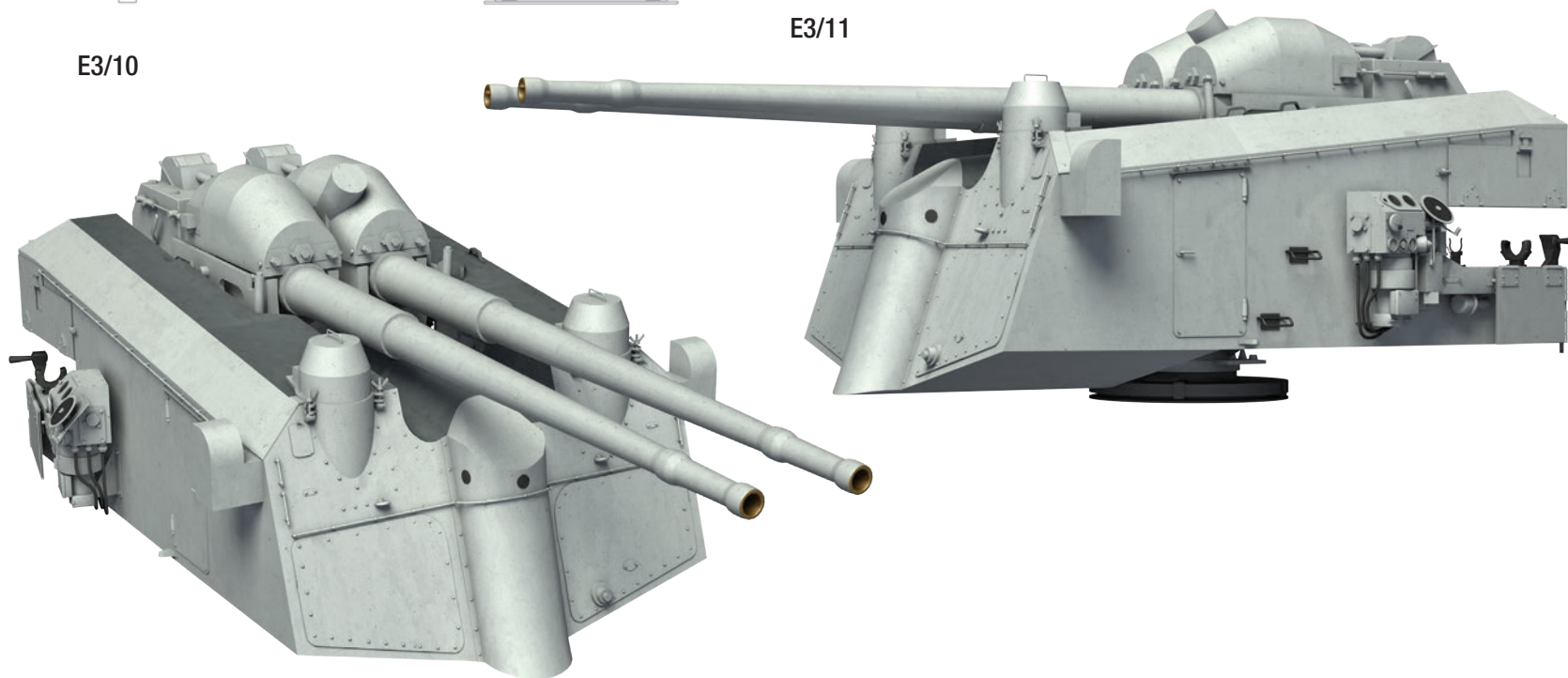
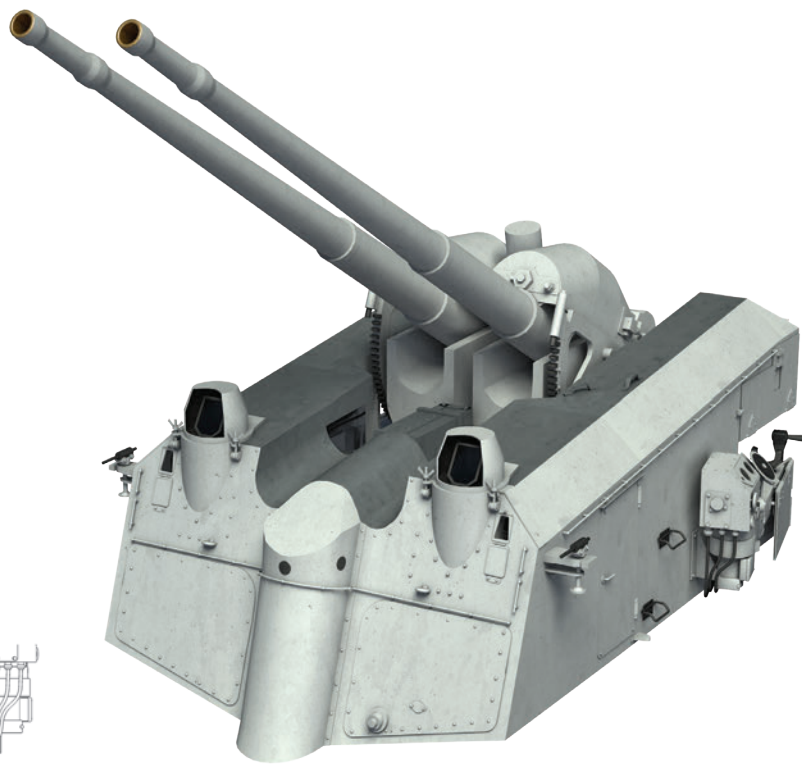
E3/9



E3/10



E3/11



# 10.5CM SK C/33 NA GUNS IN THE DOPP L C/37 TWIN MOUNT

(1/50 SCALE)

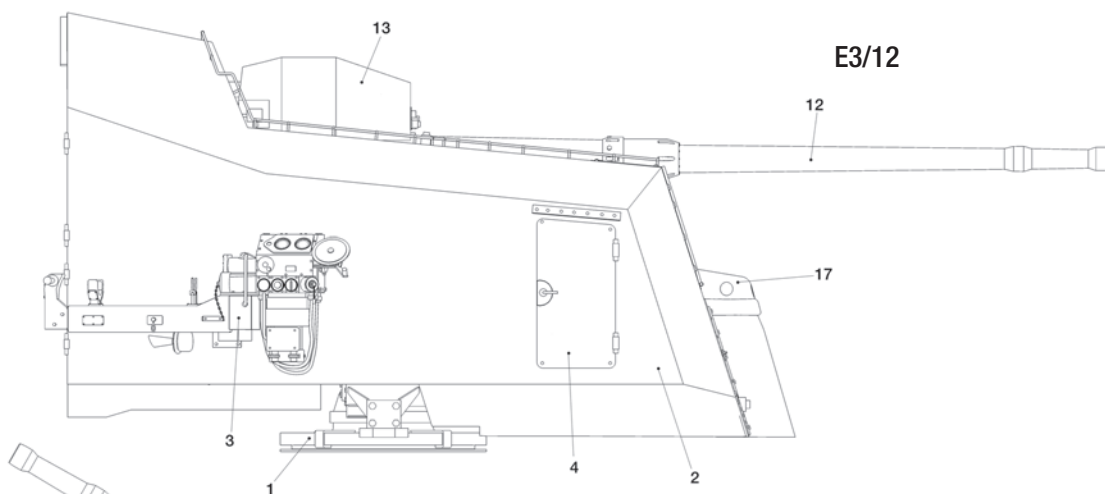
E3/12 RIGHT PROFILE

E3/13 LEFT PROFILE – REAR PLATFORMS

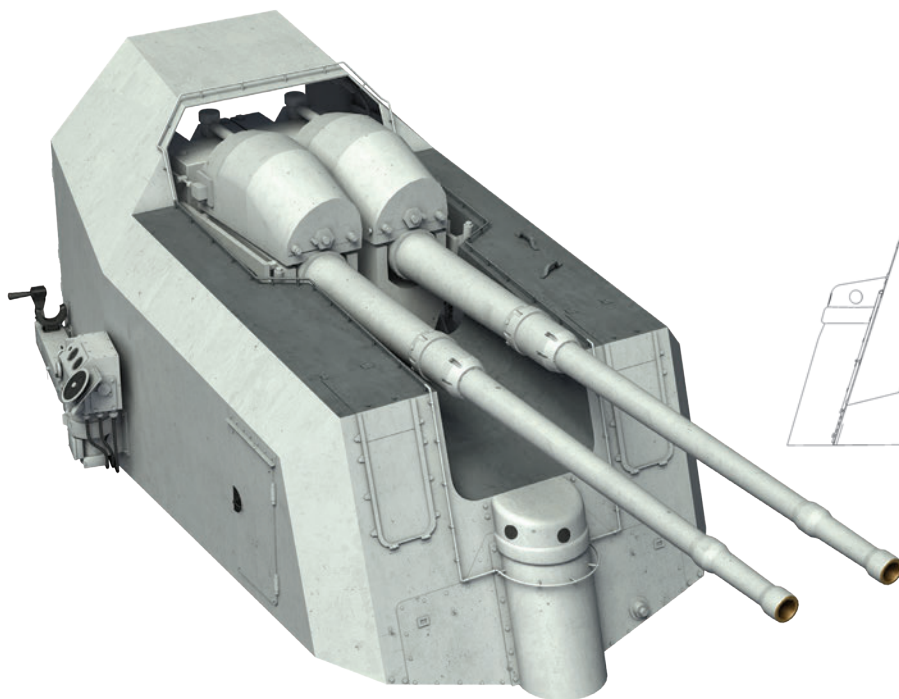
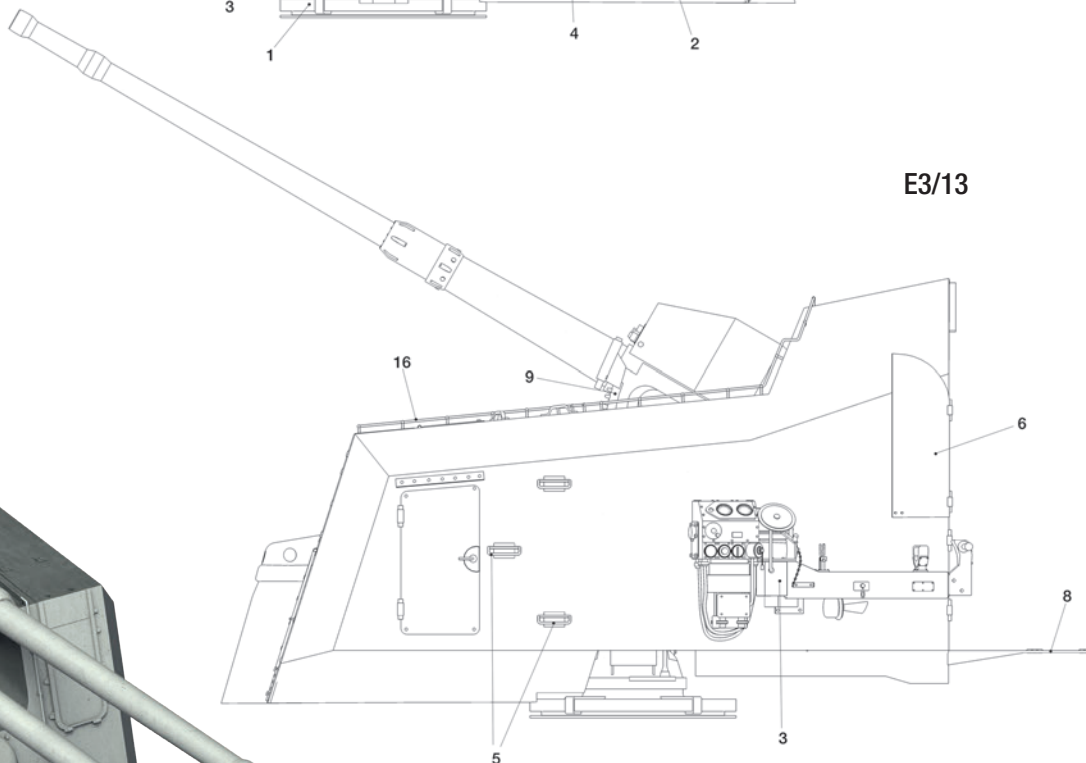
UNFOLDED AND GUNS ELEVATED TO +30°

## E3/12–16 10.5CM TWIN MOUNT

- 1 M1 Mount pedestal
- 2 Mount shield
- 3 Projectile time fuze setter
- 4 Access door
- 5 Foot step
- 6 Hinged shield
- 7 Sight shield
- 8 Hinged platform
- 9 Elevation arc
- 10 Gun cradle
- 11 Gun cradle rotation trunnion
- 12 Gun barrel
- 13 Recoil cylinder under shield
- 14 Breech operating lever
- 15 Breech housing
- 16 Bar for attaching canvas cover
- 17 Cross-levelling sight housing



E3/13

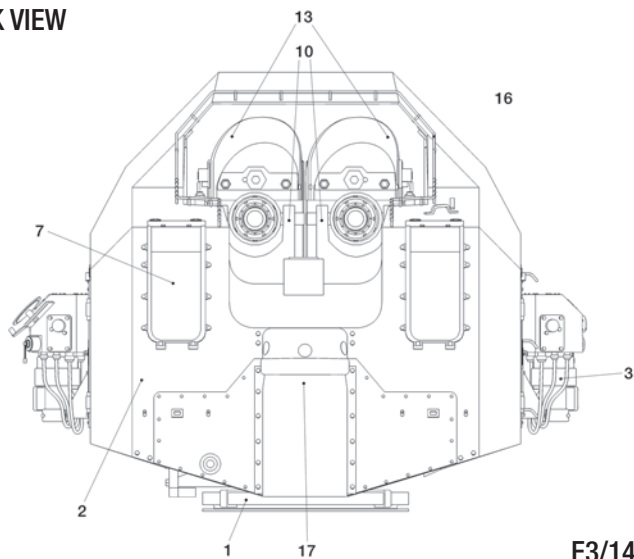


230 **E** ARMAMENT – 10.5CM SK C/33 NA GUNS

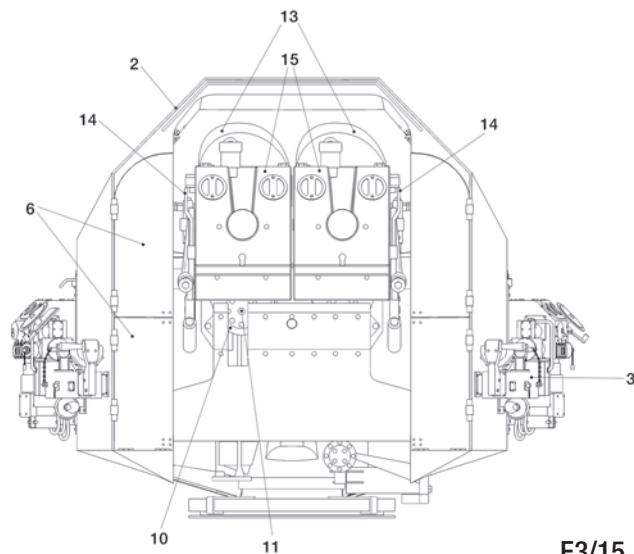
10.5CM SK C/33 NA GUNS IN THE DOPP L C/37 TWIN MOUNT  
(1/50 SCALE)

E3/14 FRONT VIEW

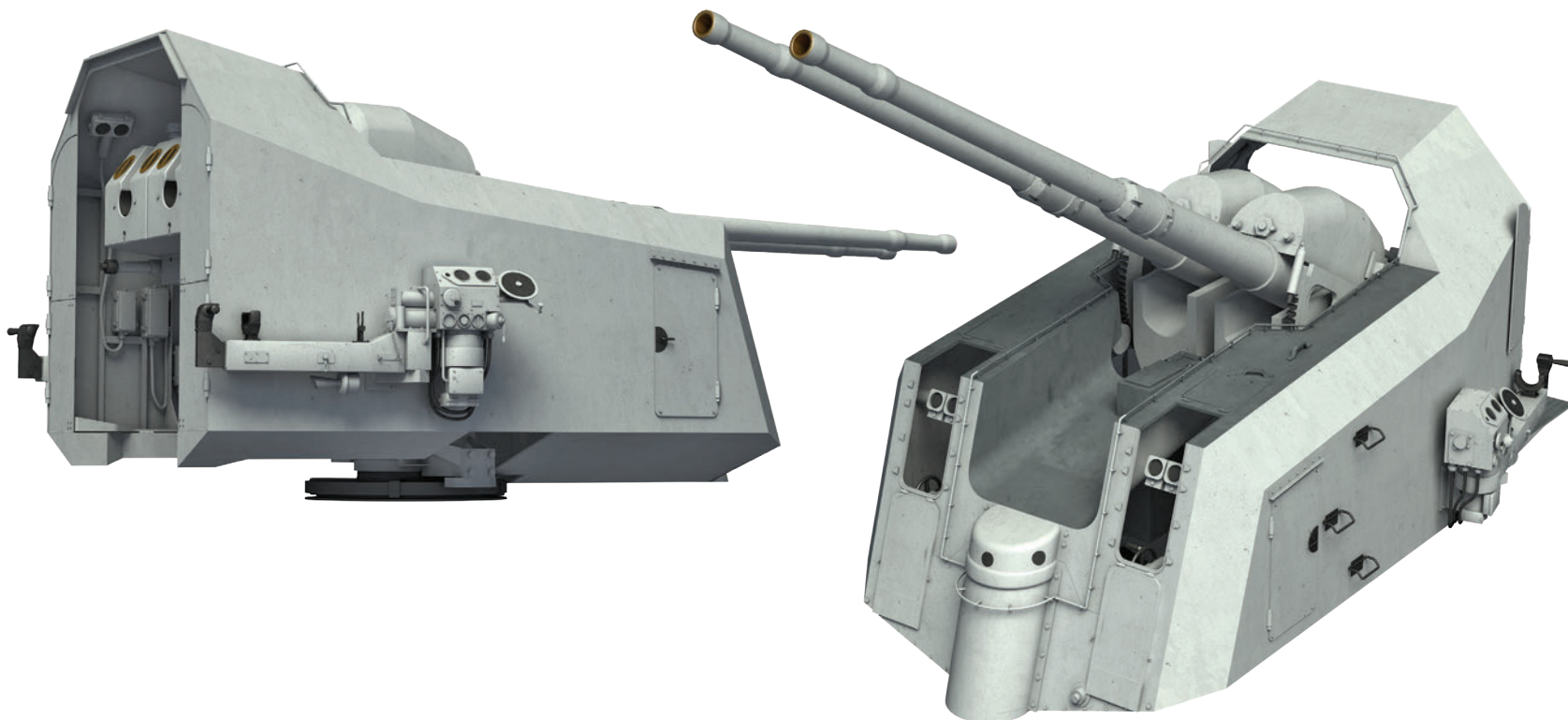
E3/15 BACK VIEW



E3/14

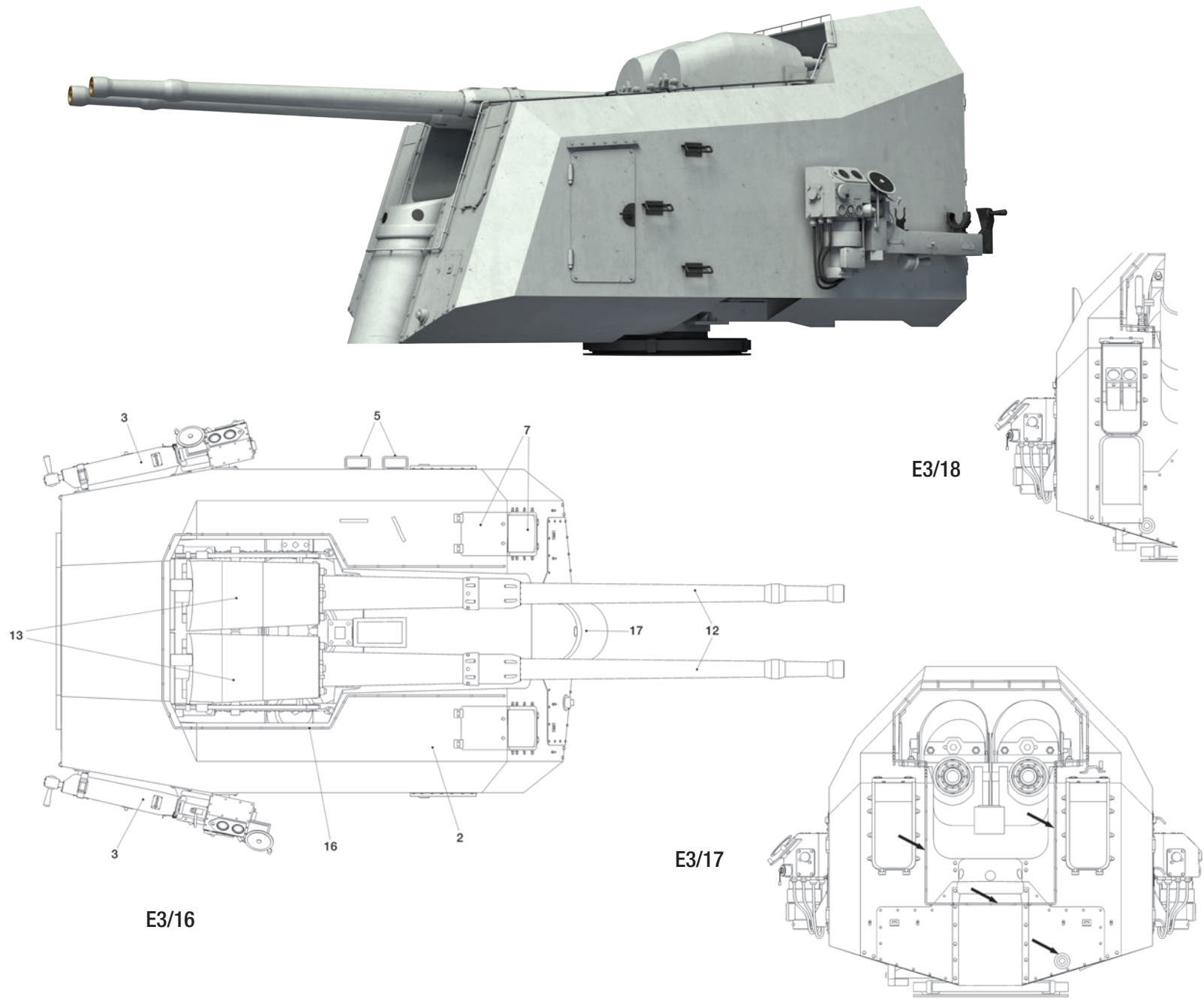


E3/15





E3/16 PLAN  
E3/17 FRONT VIEW – BB III AND BB IV MOUNTS ONLY  
E3/18 FRONT VIEW (FRAGMENT) – SIGHT SHIELDS OPENED

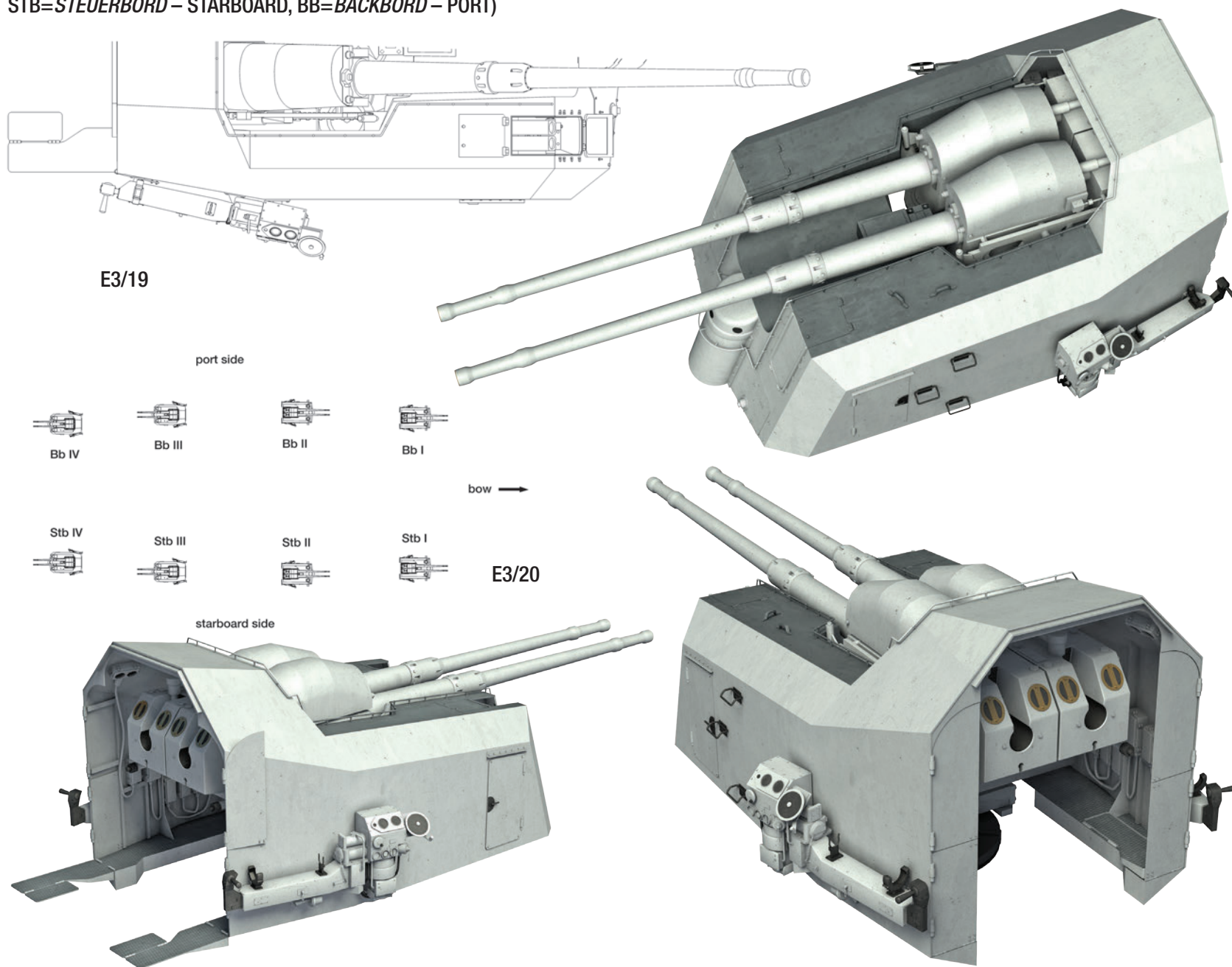


## 232 **E** ARMAMENT – 10.5CM SK C/33 NA GUNS

10.5CM SK C/33 NA GUNS IN THE DOPP L C/37 TWIN MOUNT  
(1/50 SCALE)

E3/19 PLAN (FRAGMENT) – SIGHT SHIELDS OPENED AND REAR  
PLATFORMS UNFOLDED

E3/20 NUMERATION OF THE 10.5CM MOUNTS ON BOARD (1/800 SCALE;  
STB=*STEUERBORD* – STARBOARD, BB=*BACKBORD* – PORT)



10.5CM *LADEÜBUNGSKANONE* – PRACTICE LOADING MACHINE  
(1/50 SCALE)

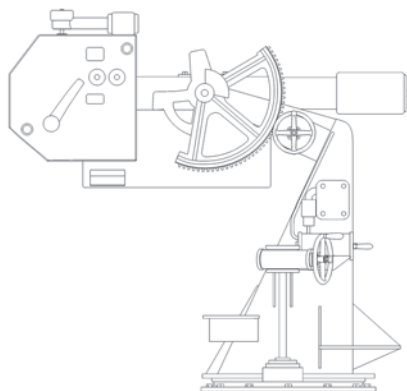
E3/21 RIGHT PROFILE

E3/22 LEFT PROFILE

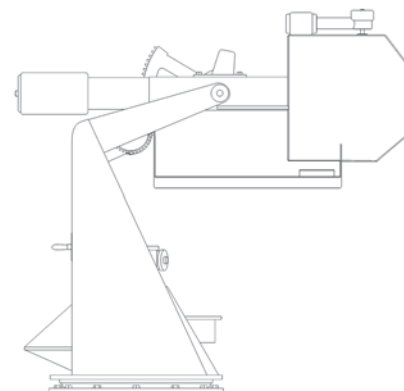
E3/23 FRONT VIEW

E3/24 BACK VIEW

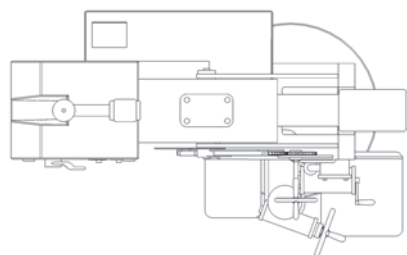
E3/25 PLAN



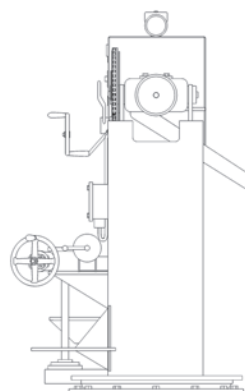
E3/21



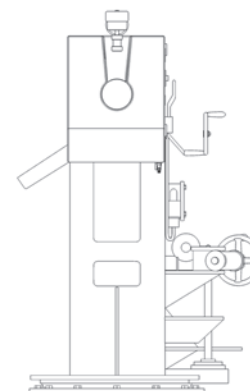
E3/22



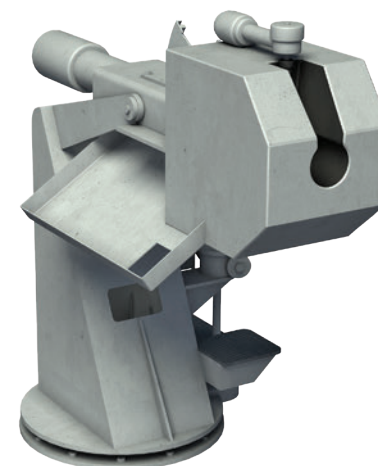
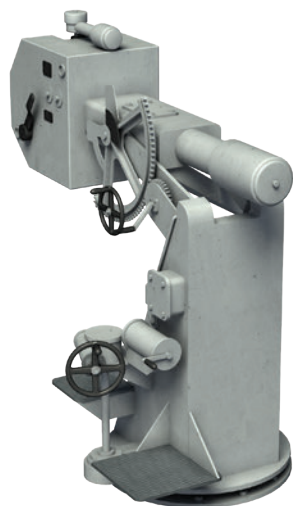
E3/25



E3/23



E3/24





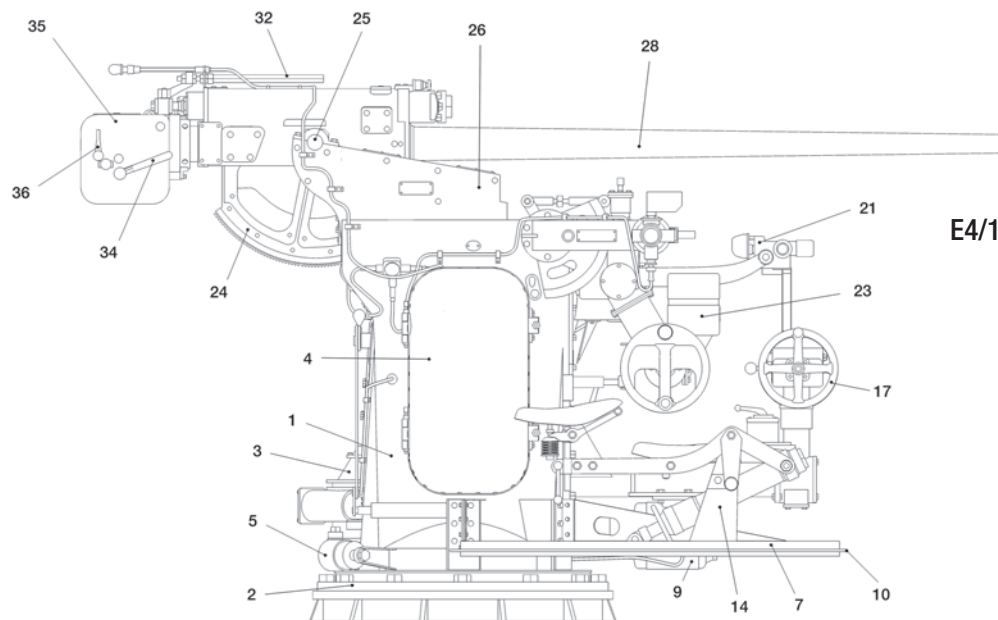
**3.7CM SK C/30 GUNS IN THE DOPP L C/30 TWIN MOUNT (1/25 SCALE)**

**E4/1 RIGHT PROFILE**

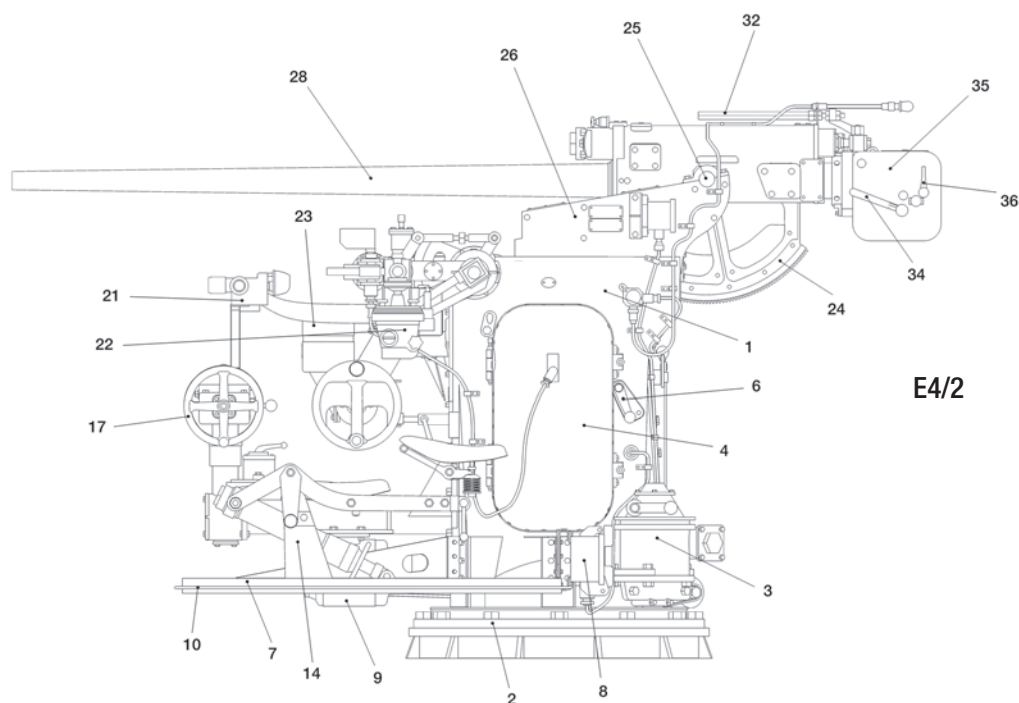
**E4/2 LEFT PROFILE**

**E3/12–16 10.5CM TWIN MOUNT**

- 1 Mount body
- 2 Mount pedestal
- 3 Training drive gearbox
- 4 Gyroscope gear cover
- 5 Train limiter
- 6 Cross-levelling mechanism setting lever
- 7 Mount platform
- 8 Electrical fuze box
- 9 Gyroscope drive
- 10 Bar for attaching canvas cover
- 11 Trainer's seat
- 12 Pointer's seat
- 13 Cross-leveller's seat
- 14 Seat suspension
- 15 Trainer's handwheel
- 16 Pointer's handwheel
- 17 Cross-leveller's handwheel
- 18 Sight carriage bar (rotatable)
- 19 Pointer's sight (Reflexvisier)
- 20 Trainer's sight (Reflexvisier)
- 21 Cross-leveller's sight
- 22 Correction box
- 23 Counterweight
- 24 Elevation arc
- 25 Trunnion
- 26 Gun cradle
- 27 Gun cradle rotation trunnion
- 28 Gun barrel
- 29 Recoil cylinder
- 30 Recuperator
- 31 Breech automatic opening linkage
- 32 Recoil meter
- 33 Vertical sliding breech block
- 34 Breech operating lever
- 35 Breech housing
- 36 Ready-to-fire indicator

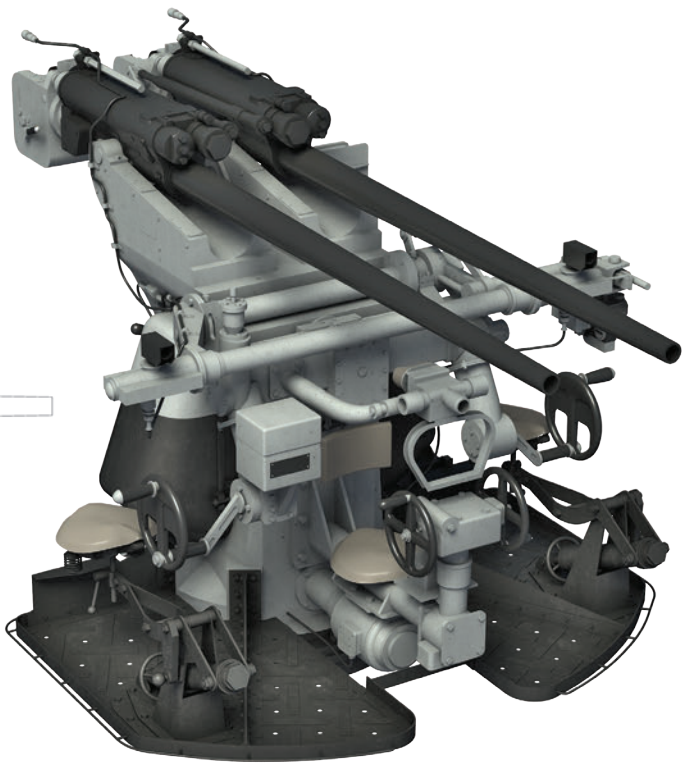
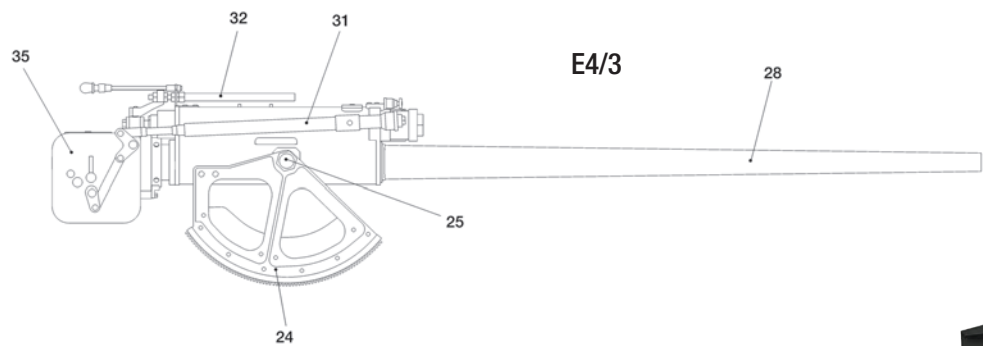
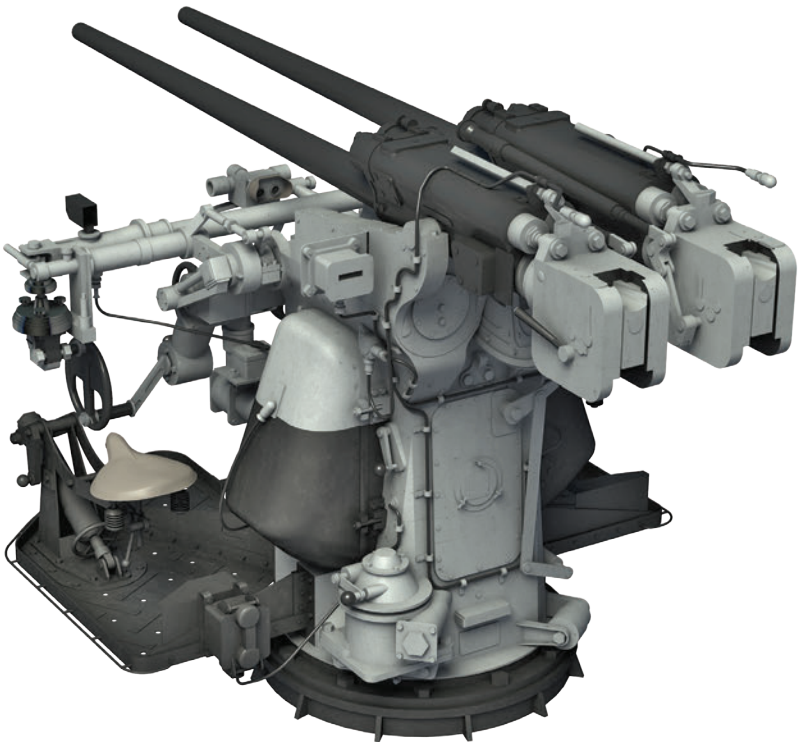
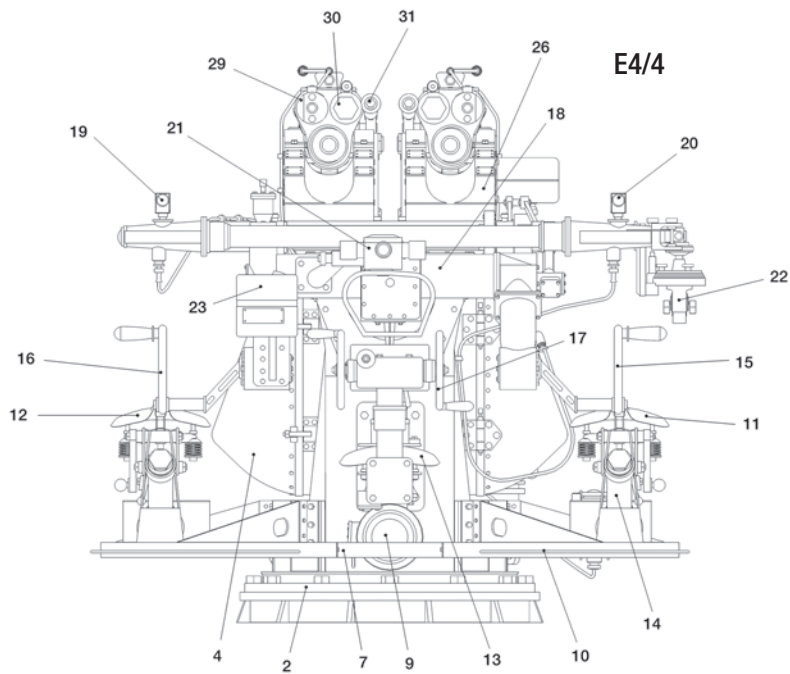


**E4/1**



**E4/2**

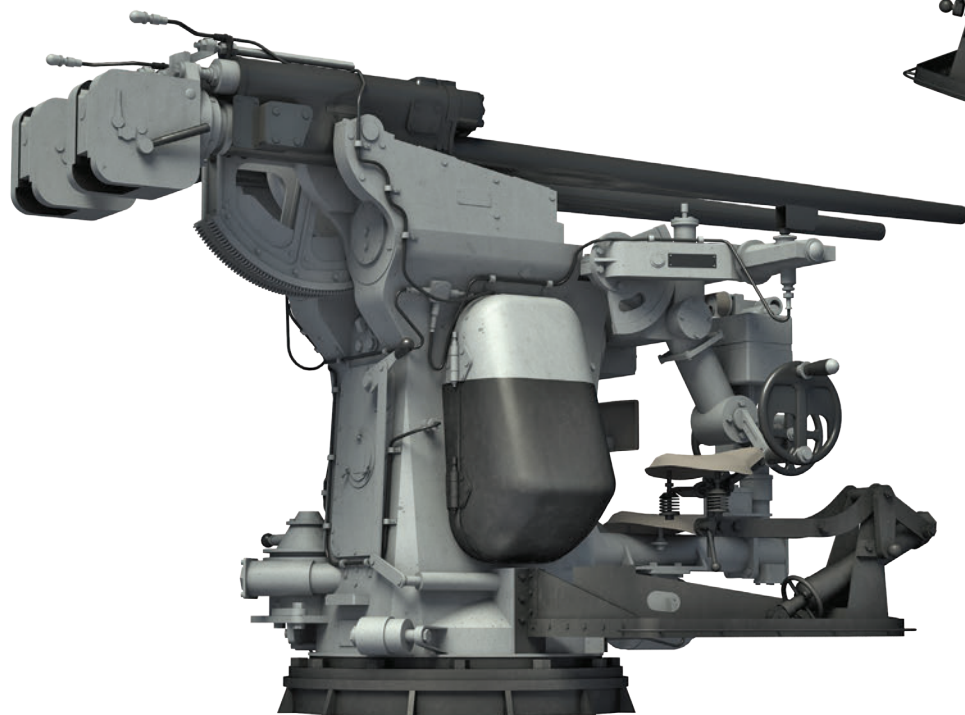
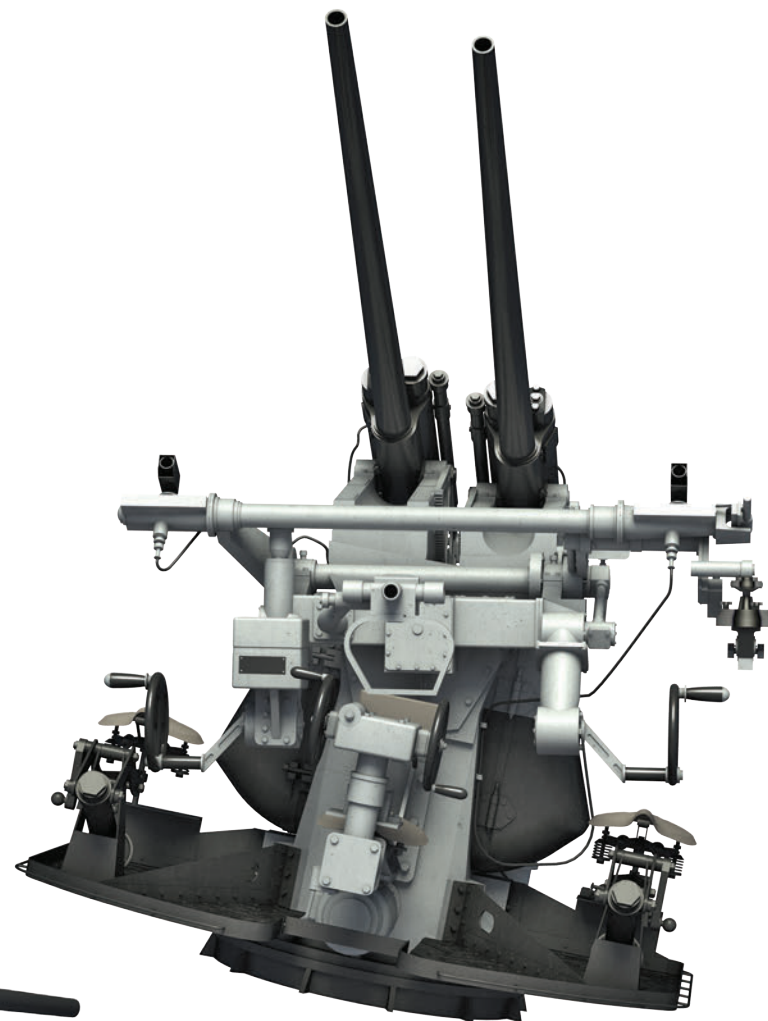
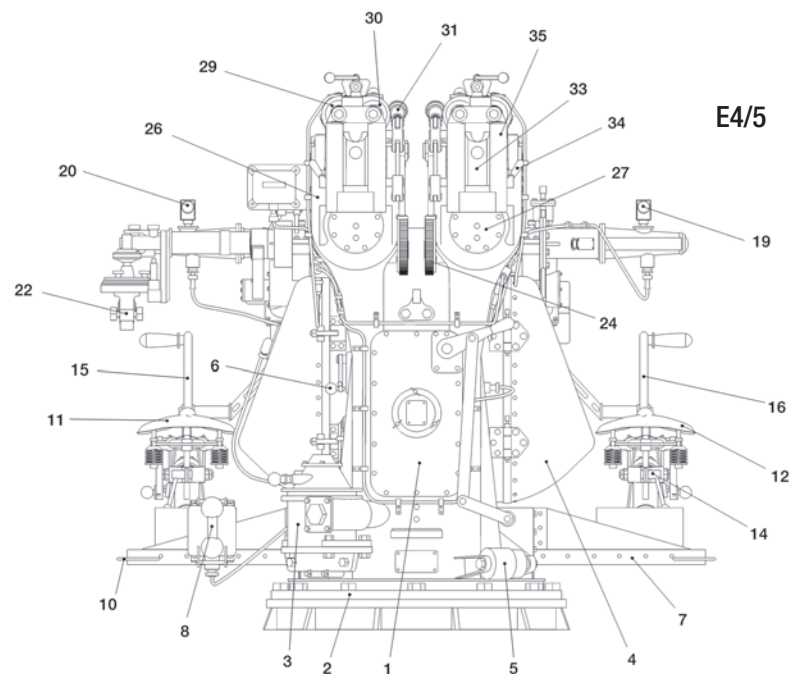
E4/3 GUN INNER SIDE  
E4/4 FRONT VIEW



236 **E** ARMAMENT – 3.7CM SK C/30 GUNS

3.7CM SK C/30 GUNS IN THE DOPP L C/30 TWIN MOUNT (1/25 SCALE)

E4/5 BACK VIEW

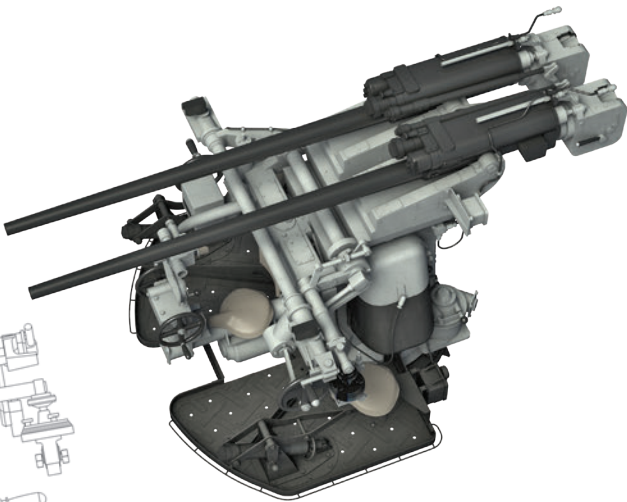




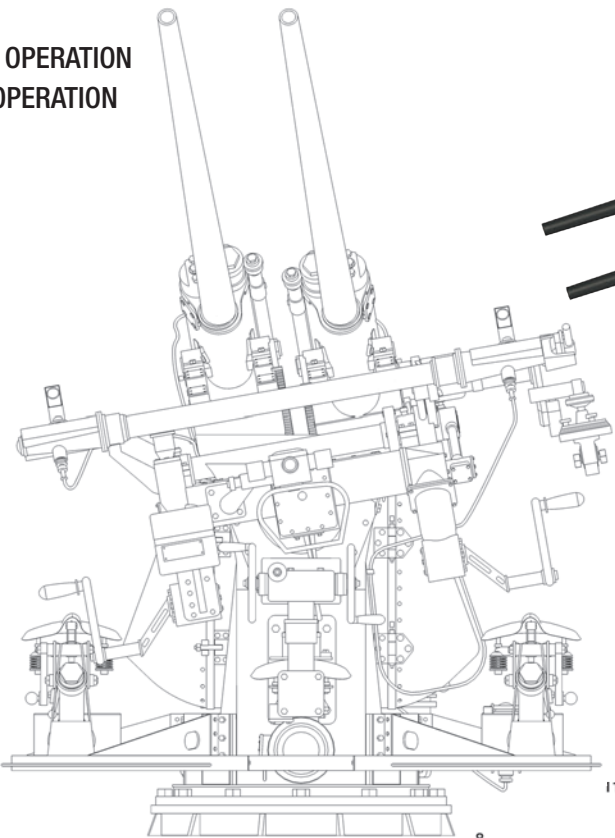
E4/6 PLAN

E4/7 FRONT VIEW DURING CROSS-LEVELLING OPERATION

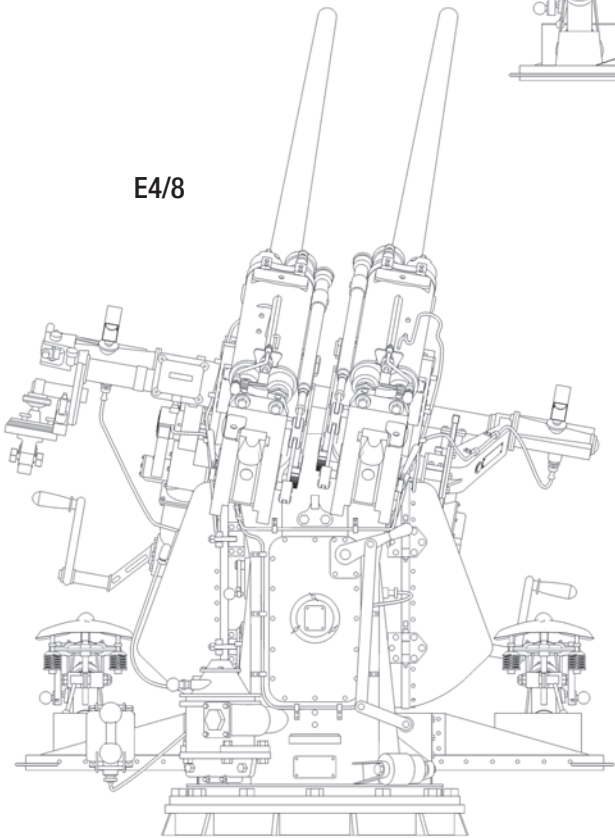
E4/8 BACK VIEW DURING CROSS-LEVELLING OPERATION



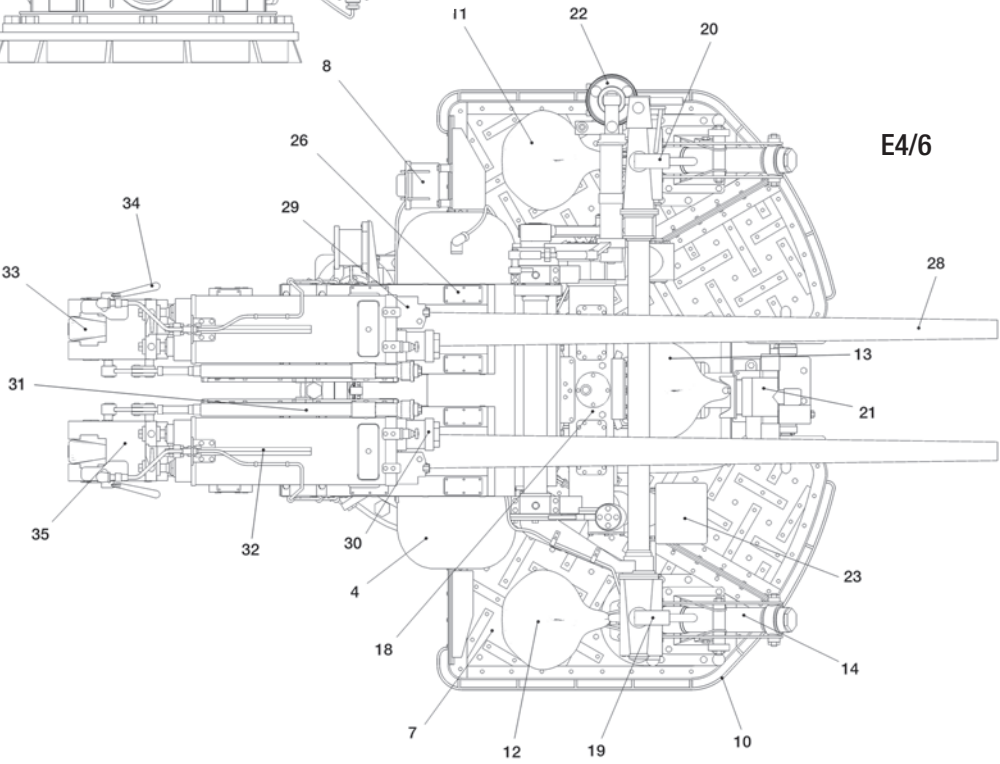
E4/7



E4/8



E4/6



**2CM C/38 GUNS IN THE *VIERLING* L C/38 QUADRUPLE MOUNT**

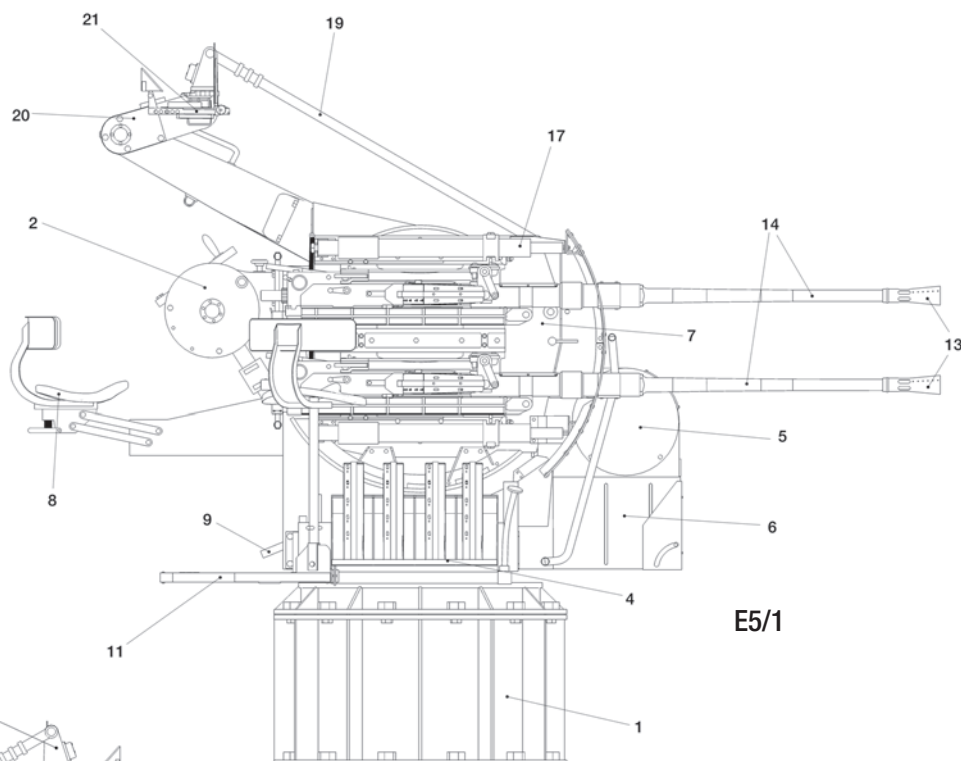
(1/25 SCALE)

**E5/1 RIGHT PROFILE**

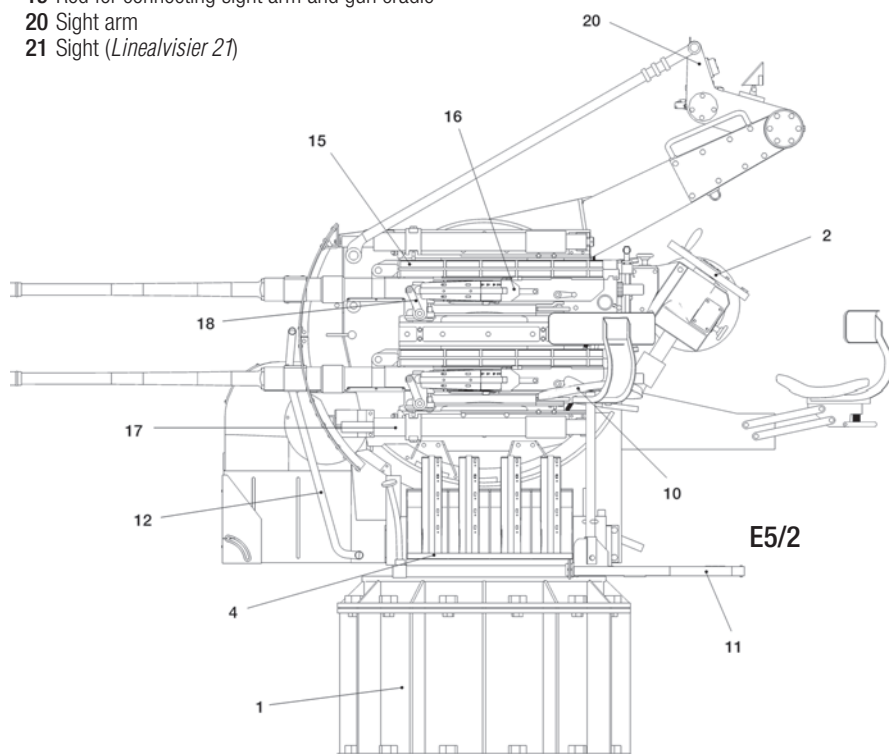
**E5/2 LEFT PROFILE**

**E5/1–5 2CM QUADRUPLE MOUNT**

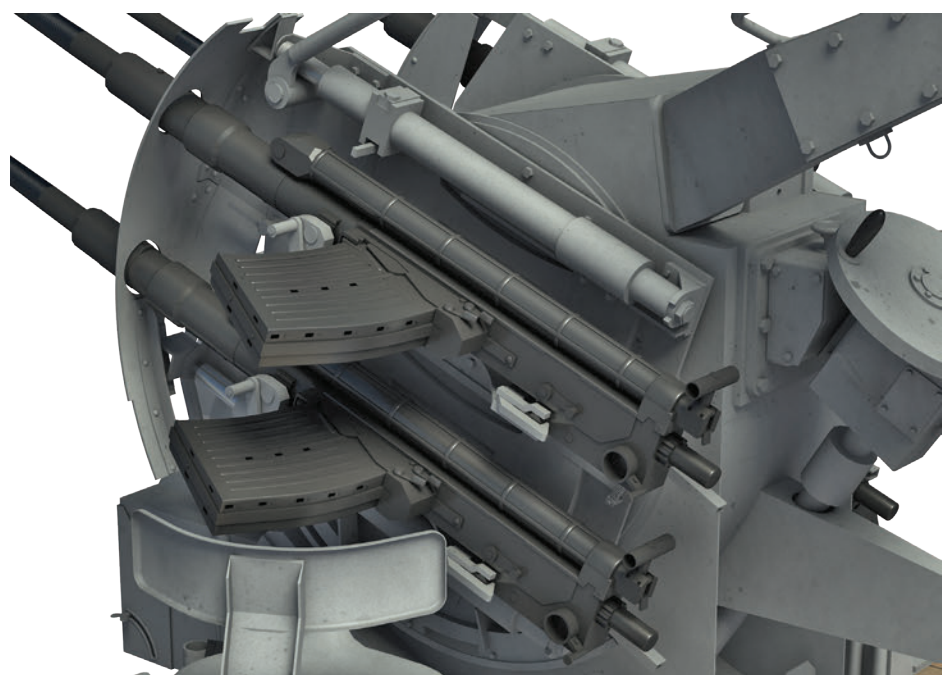
- 1 Mount pedestal
- 2 Elevation handwheel
- 3 Train handwheel
- 4 Ready-to-use ammunition rack for 4 magazines
- 5 Compensator
- 6 Empty cases bin
- 7 Gun cradle
- 8 Gunner's seat
- 9 Foot rest and firing pedal
- 10 Loader's seat
- 11 Loader's platform
- 12 Travelling lock
- 13 Flash guard
- 14 Gun barrel
- 15 Breech cover
- 16 Ammunition magazine for 20 rounds
- 17 Recoil cylinder
- 18 Gun carriage
- 19 Rod for connecting sight arm and gun cradle
- 20 Sight arm
- 21 Sight (*Linealvisier* 21)



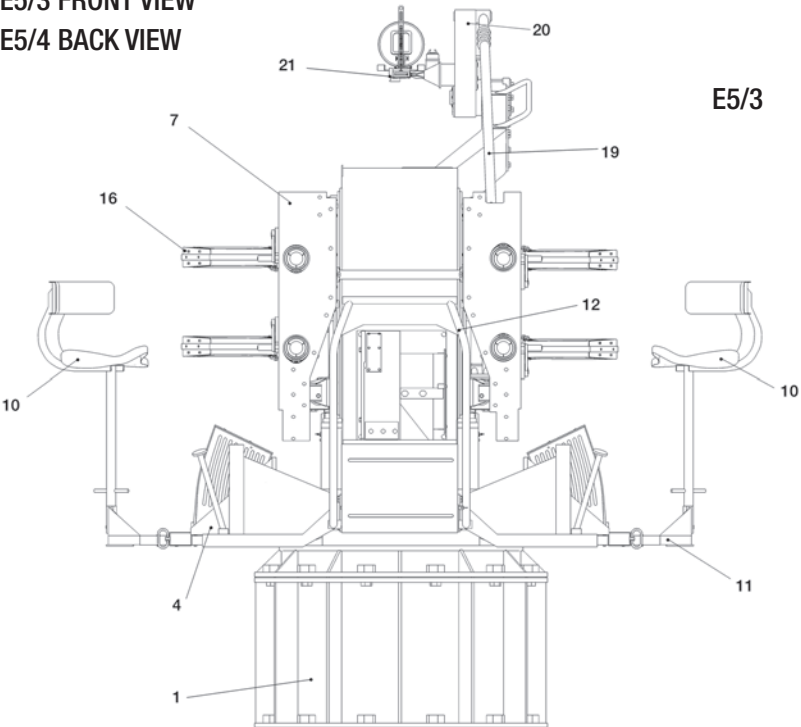
**E5/1**



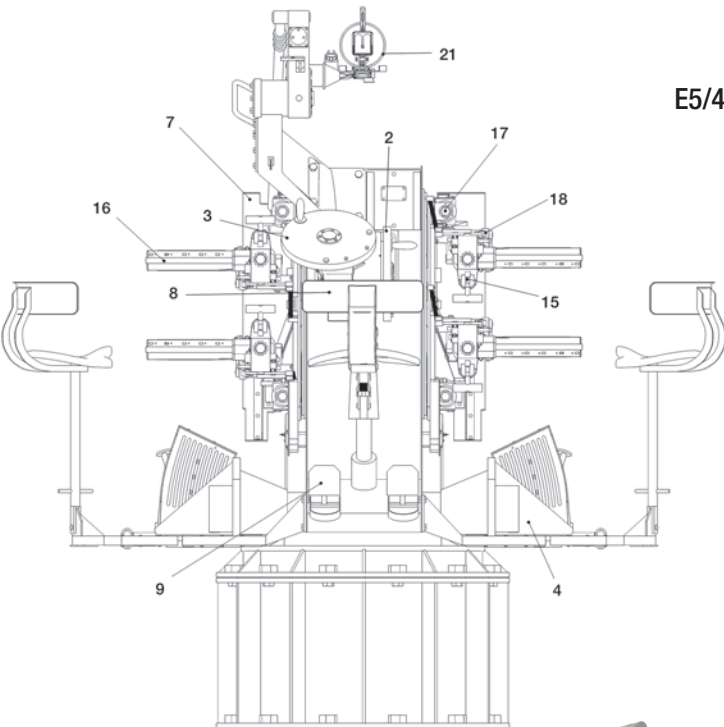
**E5/2**



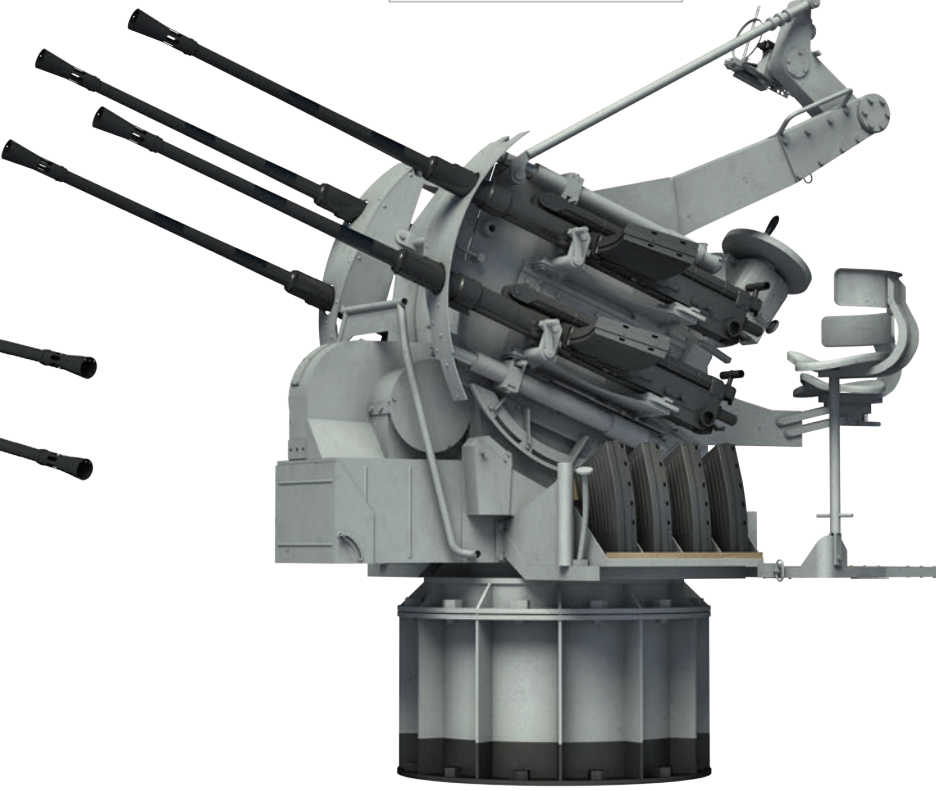
E5/3 FRONT VIEW  
E5/4 BACK VIEW



E5/3



E5/4

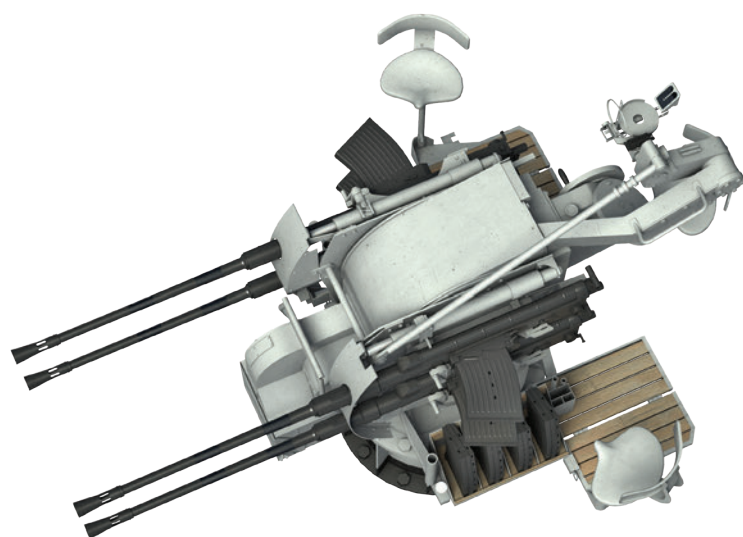
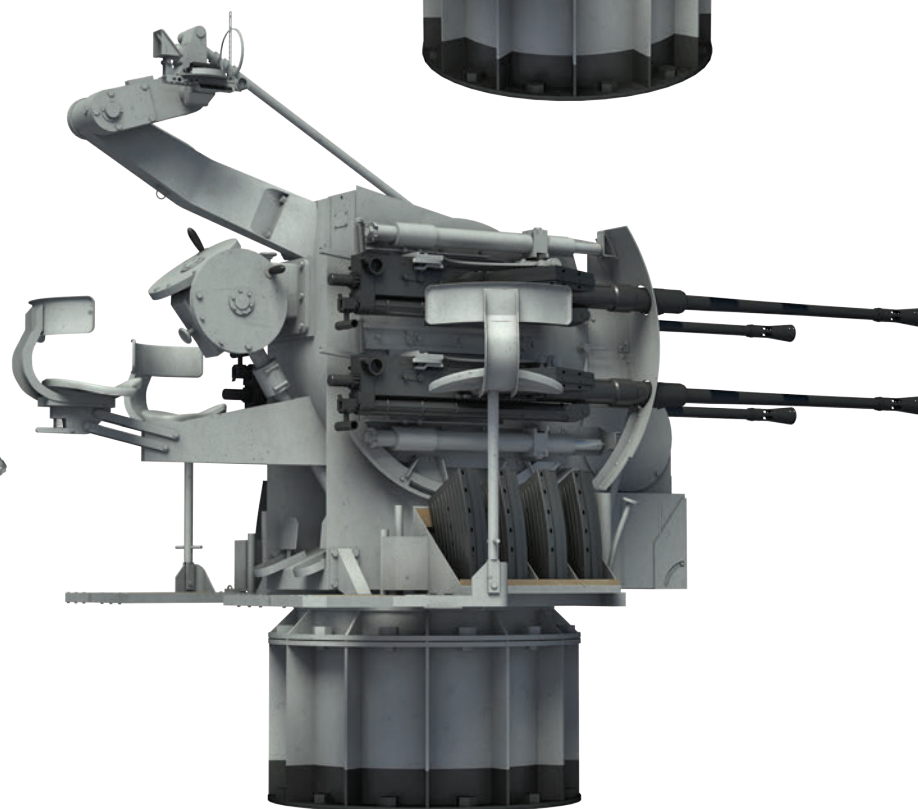
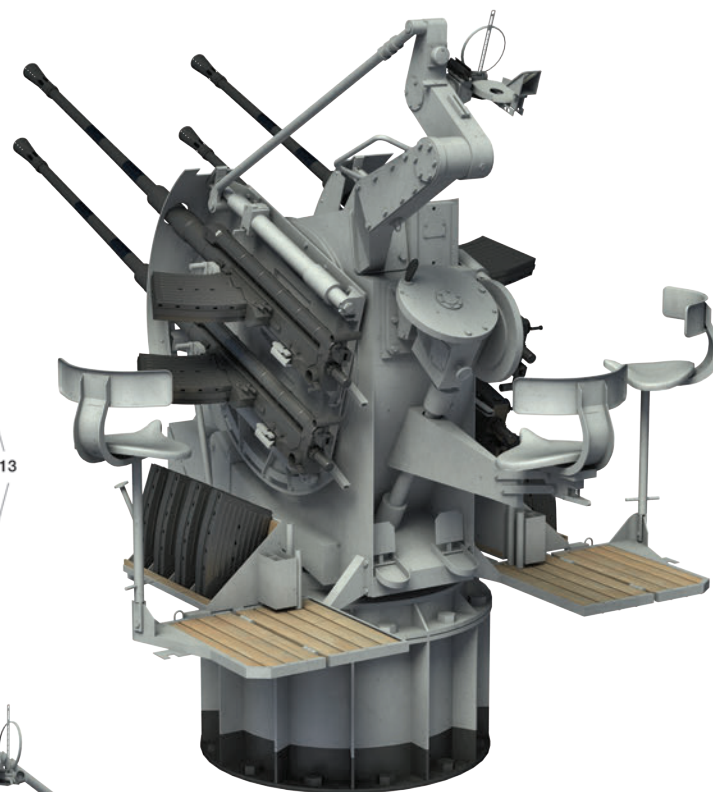
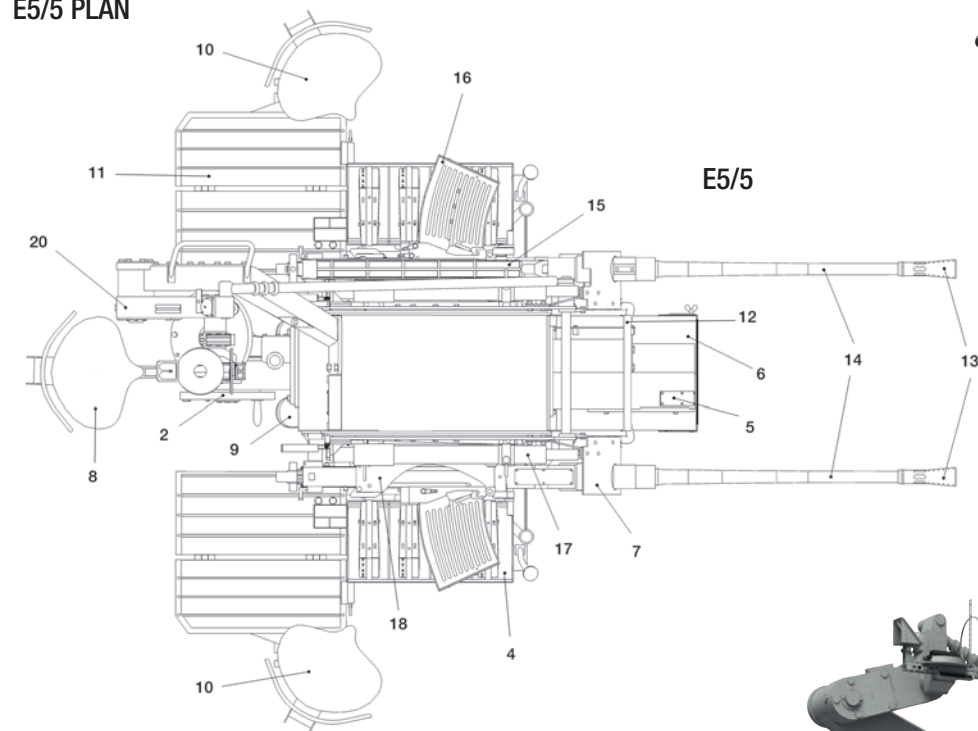


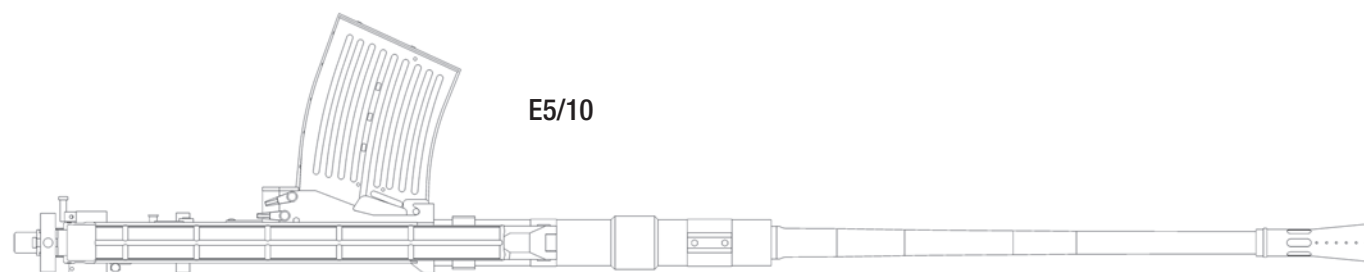
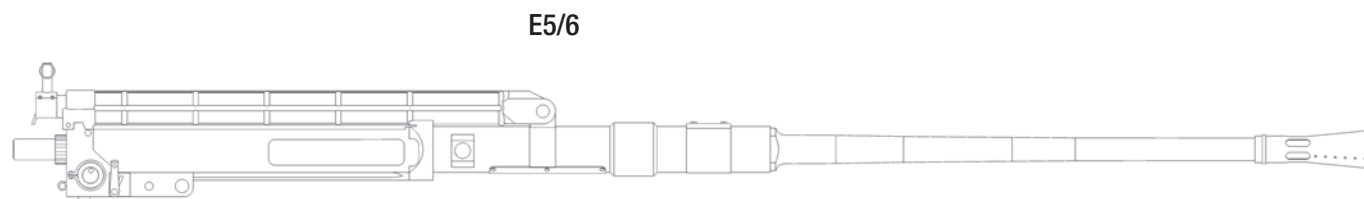
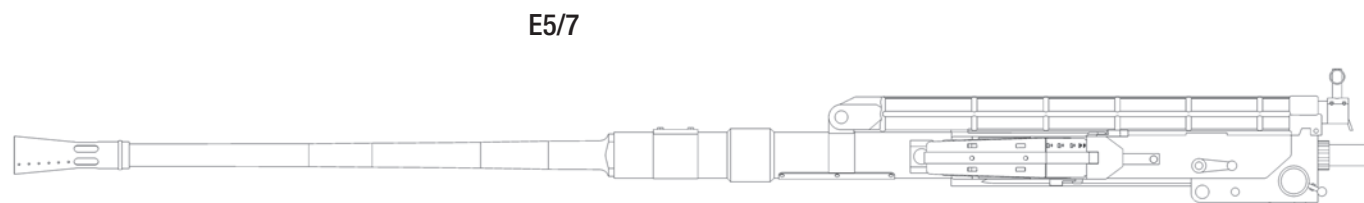
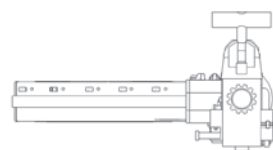
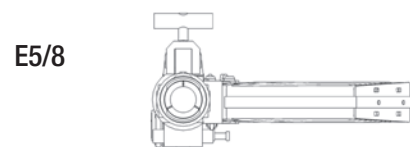


240 **E** ARMAMENT – 2CM C/38 GUNS

2CM C/38 GUNS IN THE *VIERLING* L C/38 QUADRUPL MOUNT  
(1/25 SCALE)

E5/5 PLAN



**2CM C/38 GUN (1/12.5 SCALE)****E5/6 RIGHT PROFILE****E5/7 LEFT PROFILE****E5/8 FRONT VIEW****E5/9 BACK VIEW****E5/10 PLAN****E5/10****E5/6****E5/7****E5/9****E5/8**

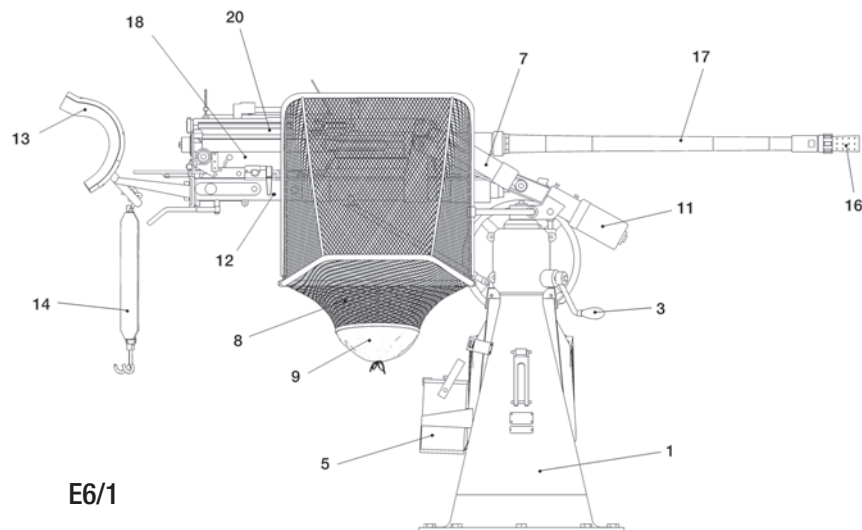
**2CM C/30 GUN IN THE SL C/30 SINGLE MOUNT (1/25 SCALE)**

**E6/1 RIGHT PROFILE (COMBAT POSITION)**

**E6/2 RIGHT PROFILE (WITH GUN CRADLE AT MAXIMUM ELEVATION)**

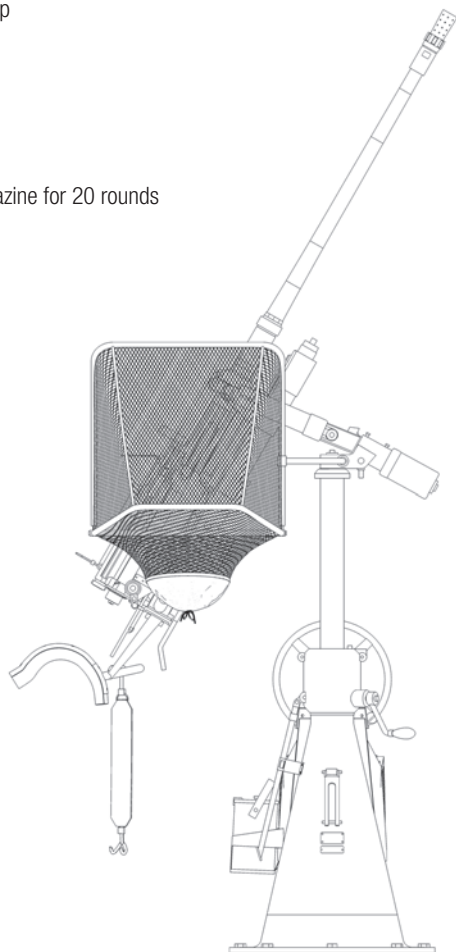
**E6/1–7 2CM SINGLE MOUNT**

- 1 Mount pedestal
- 2 Elevation handwheel
- 3 Elevation fixing lever
- 4 Ready-to-use ammunition rack for 5 magazines
- 5 Battery
- 6 Rod for fixing the cradle in horizontal position
- 7 Spring compensator
- 8 Empty cases catcher
- 9 Bag for empty cases
- 10 Trunnion
- 11 Swing axis
- 12 Gun cradle
- 13 Gunner's shoulder rest
- 14 Shoulder rest strap
- 15 Hand grip
- 16 Flash guard
- 17 Gun barrel
- 18 Gun body
- 19 Cocking handle
- 20 Breech cover
- 21 Ammunition magazine for 20 rounds
- 22 Sight



**E6/1**

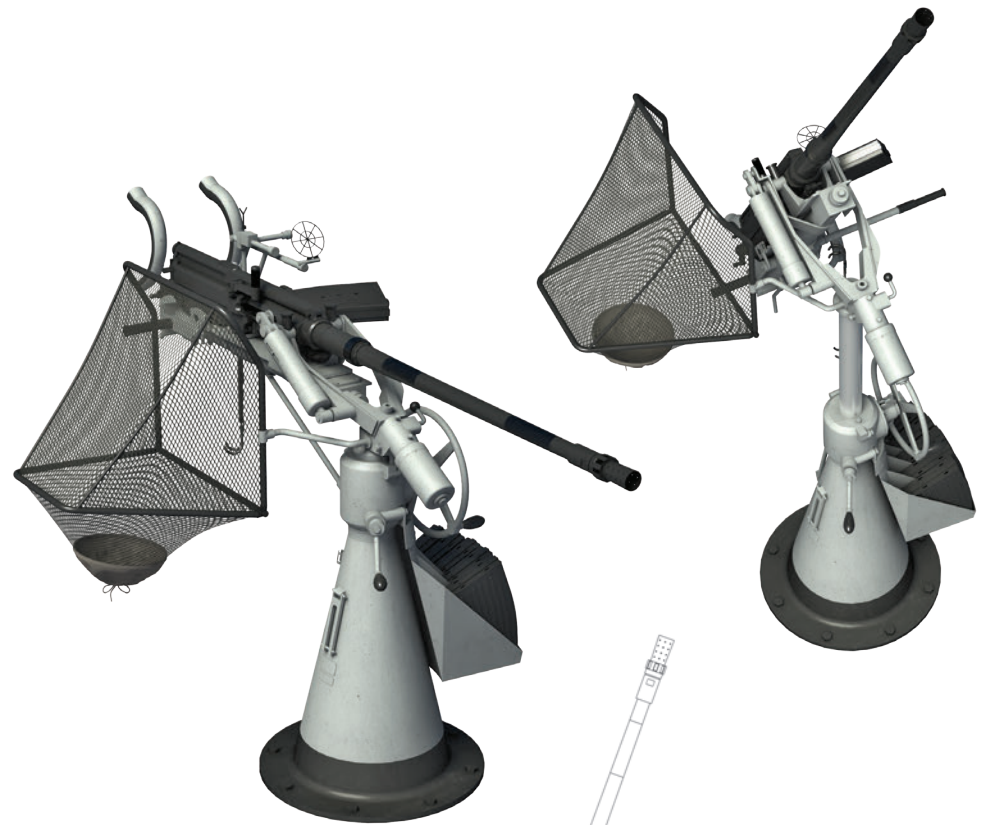
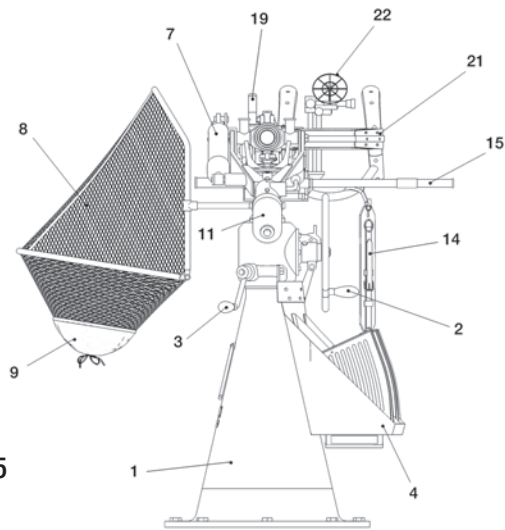
**E6/2**





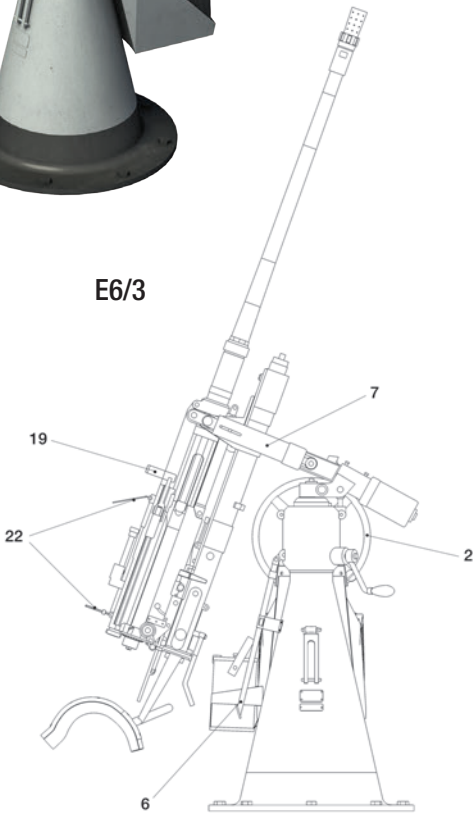
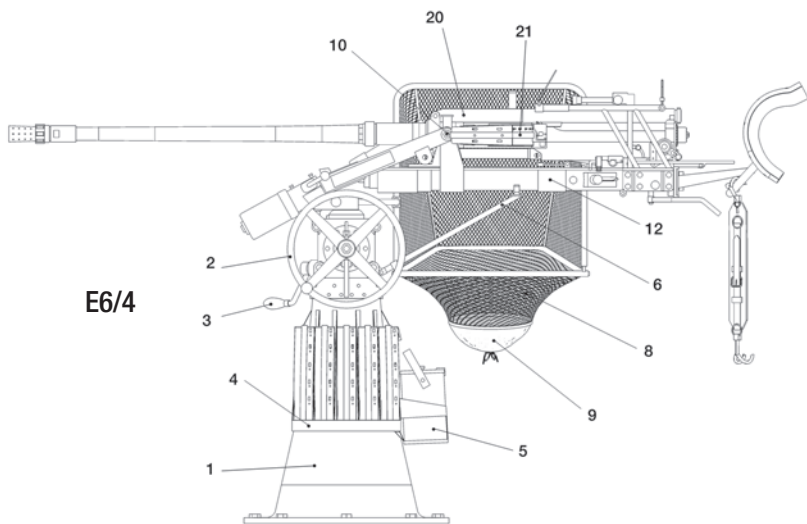
E6/3 RIGHT PROFILE (STOWED POSITION)  
E6/4 LEFT PROFILE  
E6/5 FRONT VIEW

E6/5



E6/3

E6/4



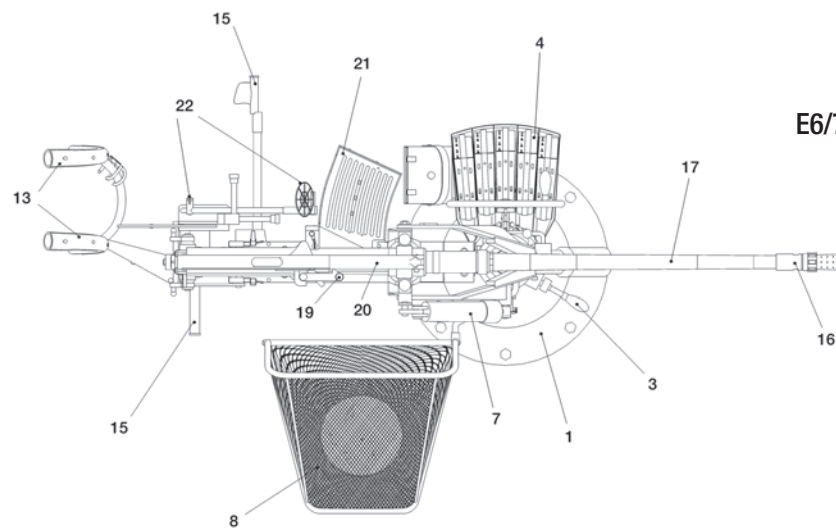
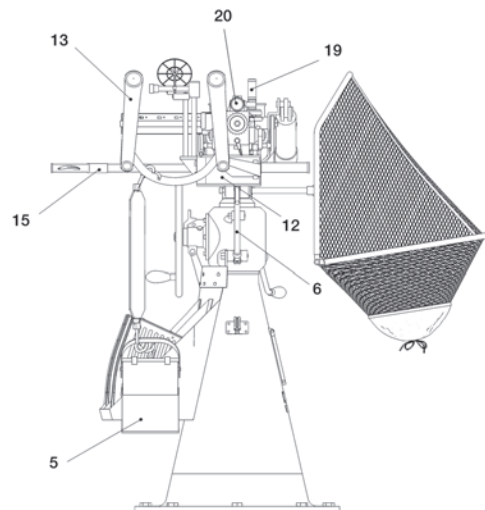
244 **E** ARMAMENT – 2CM C/30 GUNS

2CM C/30 GUN IN THE SL C/30 SINGLE MOUNT (1/25 SCALE)

E6/6 BACK VIEW

E6/7 PLAN

E6/6



E6/7

2CM C/30 GUN (1/12.5 SCALE)

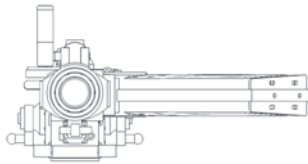
E6/8 RIGHT PROFILE

E6/9 LEFT PROFILE

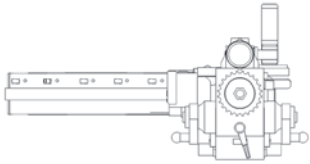
E6/10 FRONT VIEW

E6/11 BACK VIEW

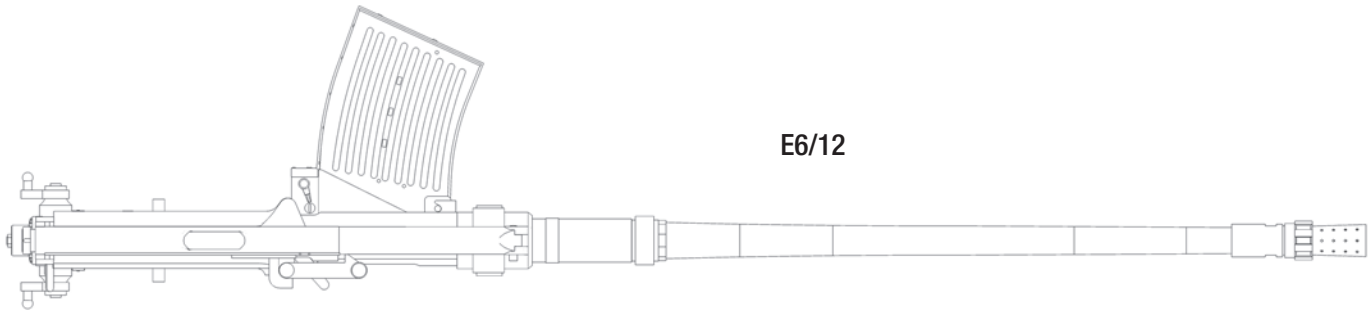
E6/12 PLAN



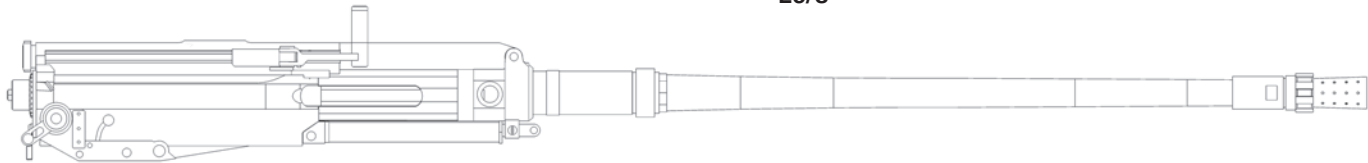
E6/10



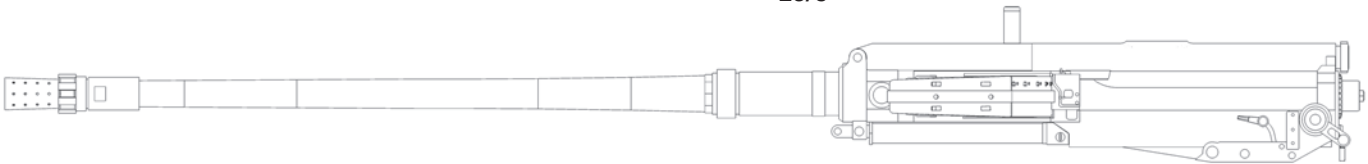
E6/11



E6/12



E6/8



E6/9



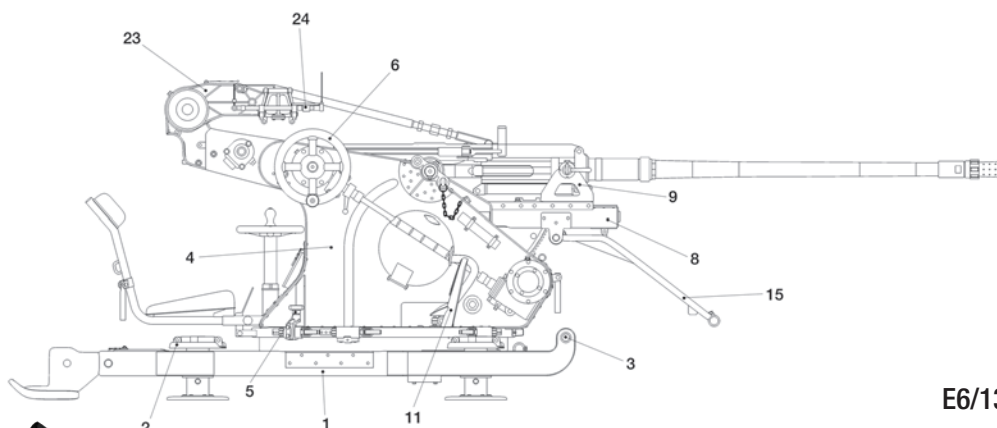
**2CM FLAK 30 – 2CM C/30 GUN IN THE *HEERESLAFETTE* –  
ARMY-TYPE SINGLE MOUNT (1/25 SCALE)**

**E6/13 RIGHT PROFILE**

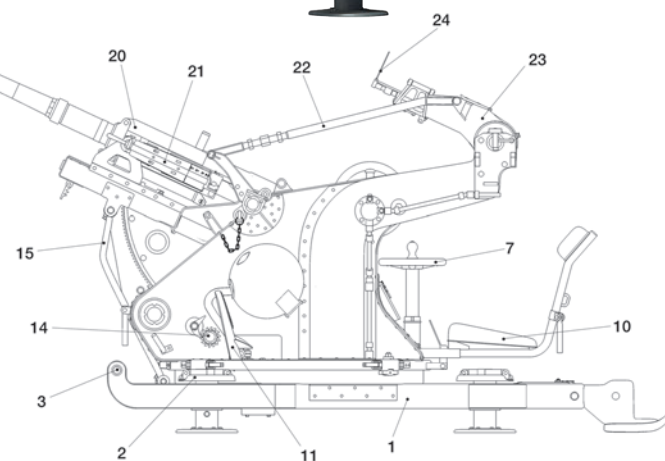
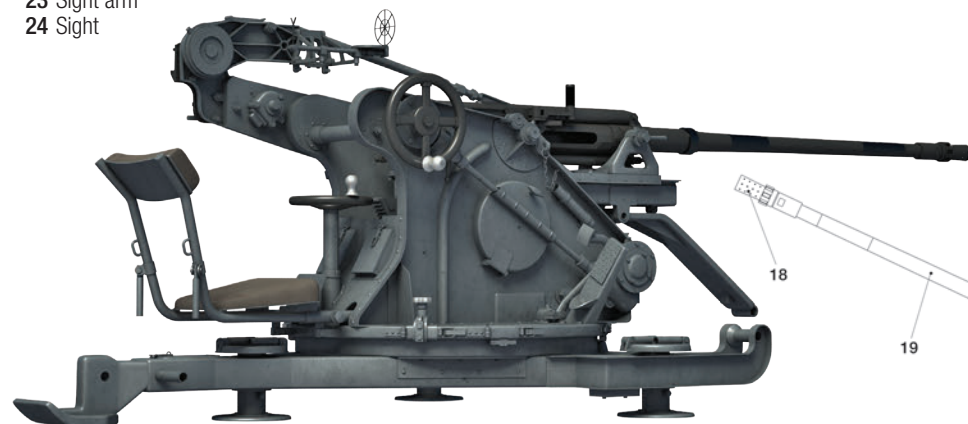
**E6/14 LEFT PROFILE**

**E6/13–17 2CM FLAK 30 MOUNT**

- 1 Mount triangular base
- 2 Levelling hand crank
- 3 Grip for attaching trailer
- 4 Mount body
- 5 Train locking clamp
- 6 Elevation handwheel
- 7 Train handwheel
- 8 Gun cradle
- 9 Gun carriage
- 10 Gunner's seat
- 11 Foot rest
- 12 Firing pedal (single shot)
- 13 Firing pedal (automatic fire)
- 14 Compensator
- 15 Traveling lock
- 16 Battery container
- 17 Oil container
- 18 Flash guard
- 19 Gun barrel
- 20 Breech cover
- 21 Ammunition magazine for 20 rounds
- 22 Rod for connecting sight arm and gun cradle
- 23 Sight arm
- 24 Sight

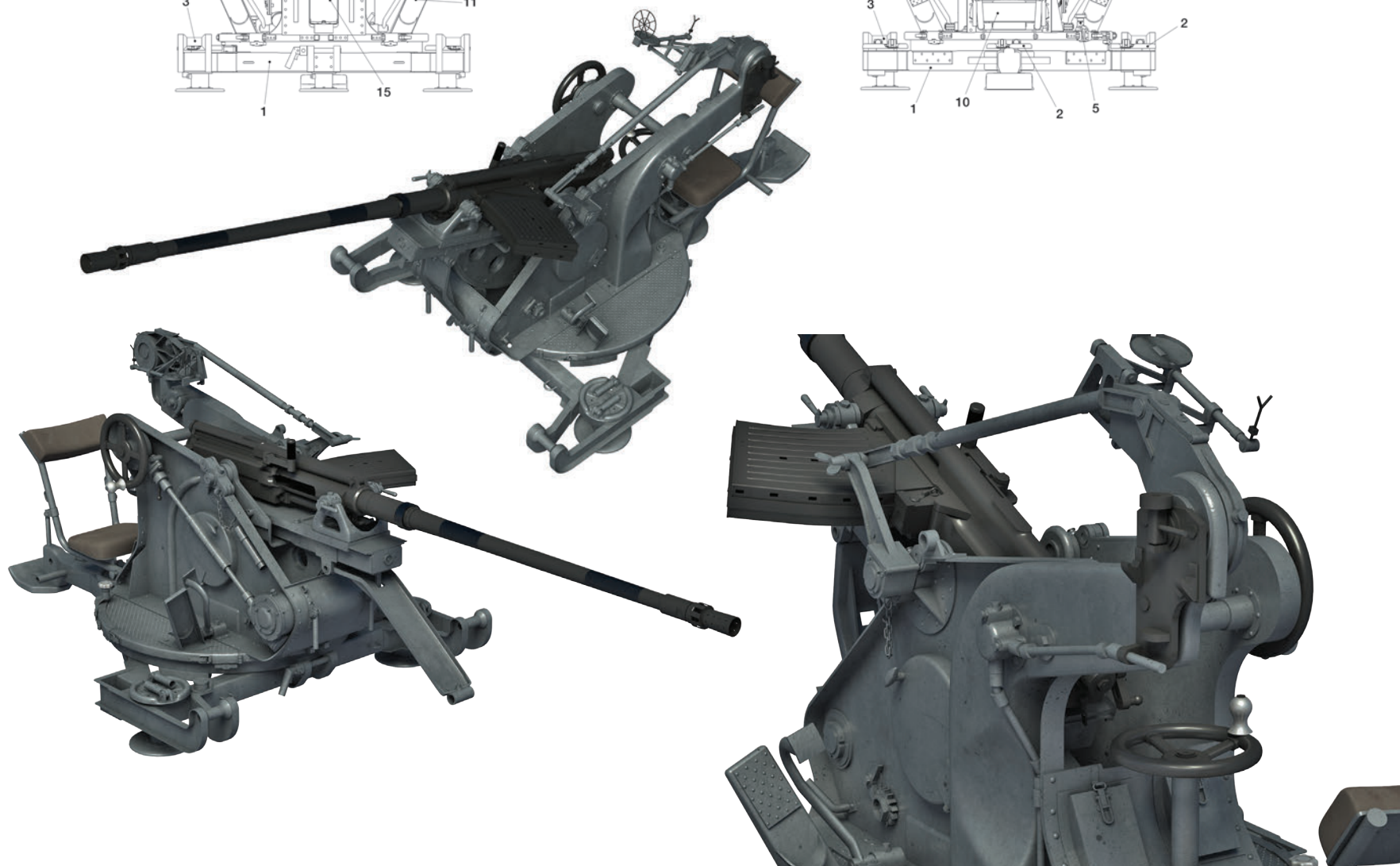
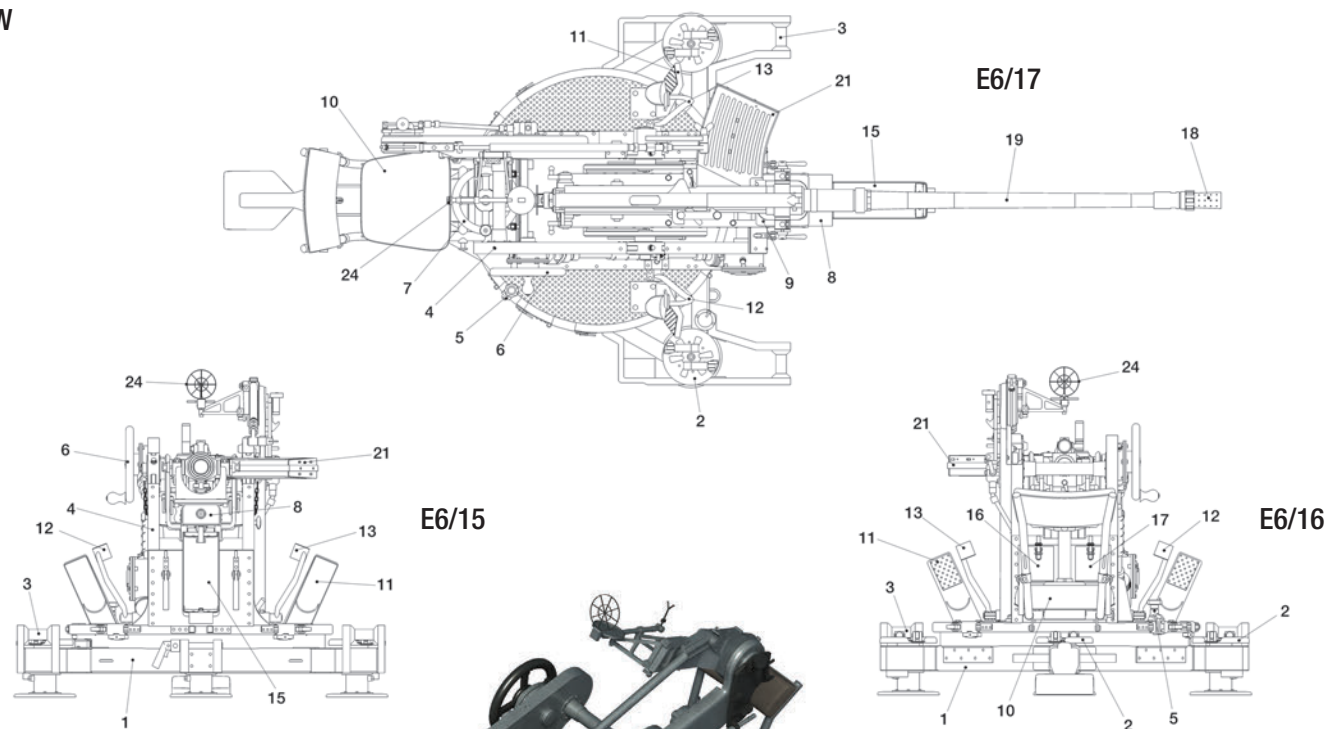


**E6/13**



**E6/14**

E6/15 FRONT VIEW  
E6/16 BACK VIEW  
E6/17 PLAN



*SONDERANHÄNGER 51 – 2CM FLAK 30 TRAILER FOR LAND TRANSPORT*  
(1/25 SCALE)

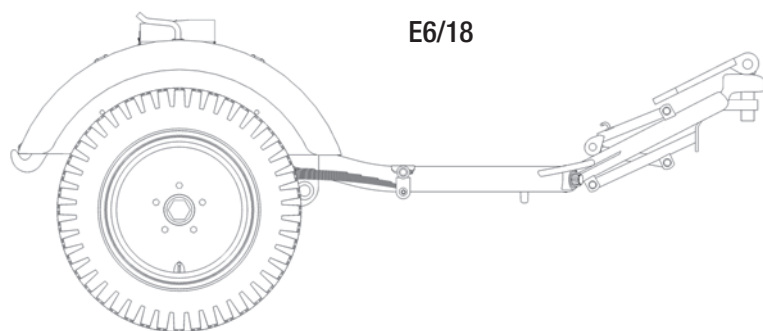
THE TRAILER, ALTHOUGH USELESS ON THE SHIP, WAS KEPT ABOARD  
TO AVOID SEPARATING THE GUN MOUNT-CARRIAGE SET

E6/18 RIGHT PROFILE

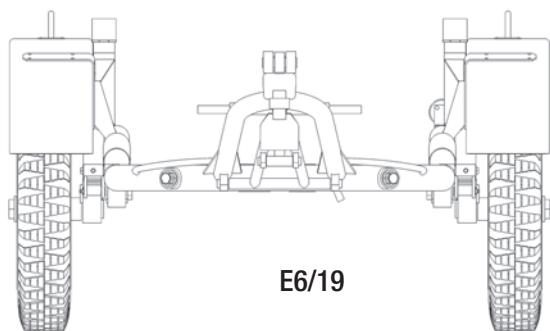
E6/19 FRONT VIEW

E6/20 BACK VIEW

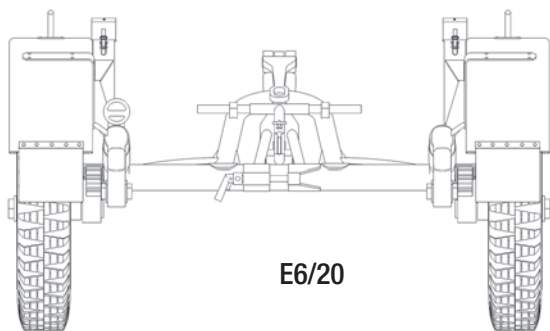
E6/21 PLAN



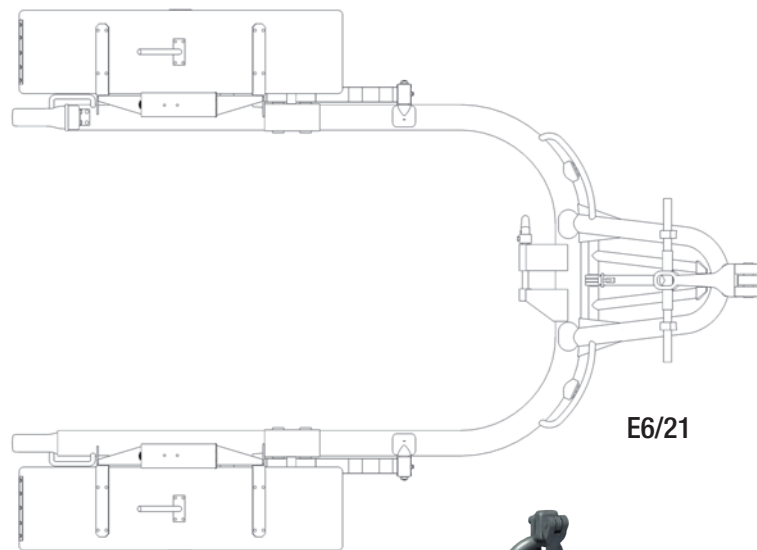
E6/18



E6/19



E6/20



E6/21





WBD DEPTH CHARGE (1/25 SCALE)

E7/1 TOP VIEW

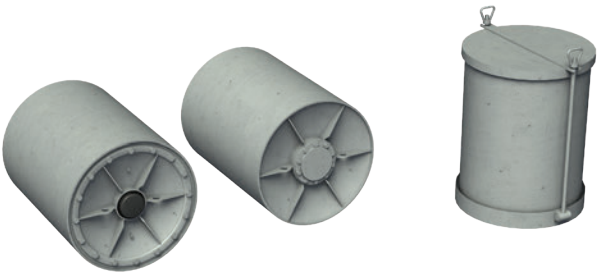
E7/2 BOTTOM VIEW



E7/1



E7/2



WBD DEPTH CHARGE STOWED ON MAIN DECK (1/25 SCALE)

E7/3 PROFILE

E7/4 FRONT VIEW



E7/3



E7/4



WBD DEPTH CHARGE RACK (1/25 SCALE)

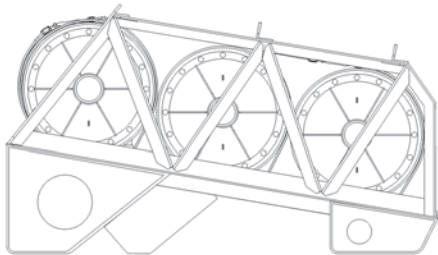
E7/5 RIGHT PROFILE

E7/6 LEFT PROFILE

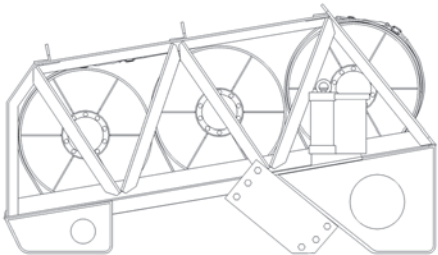
E7/7 FRONT VIEW

E7/8 BACK VIEW

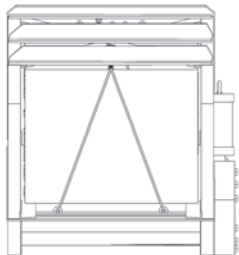
E7/9 PLAN



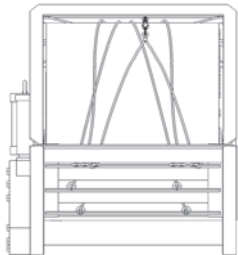
E7/5



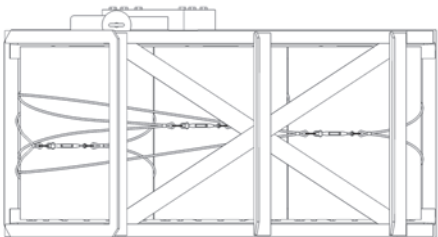
E7/6



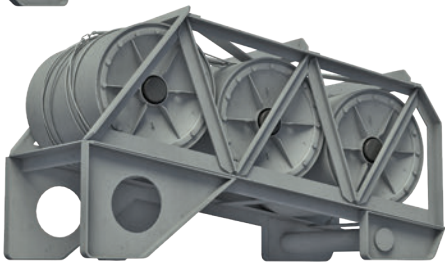
E7/7



E7/8



E7/9

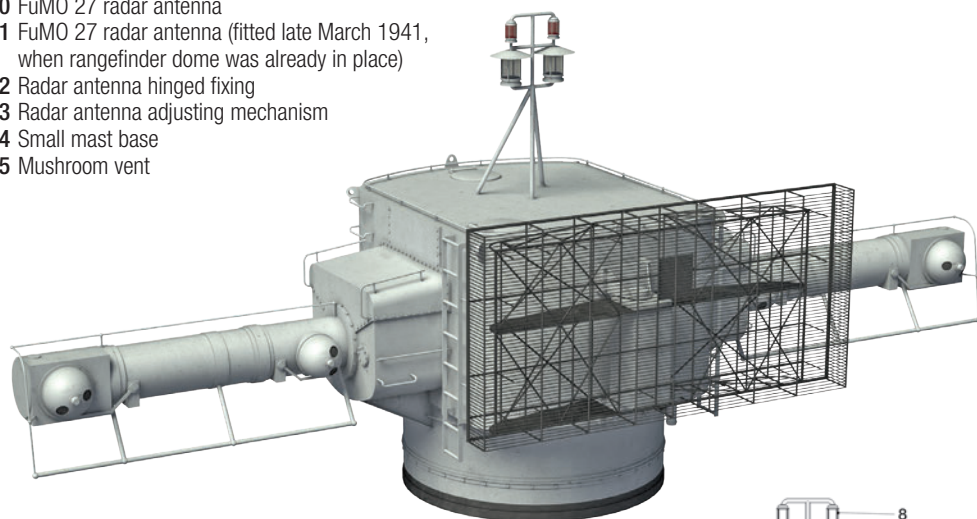
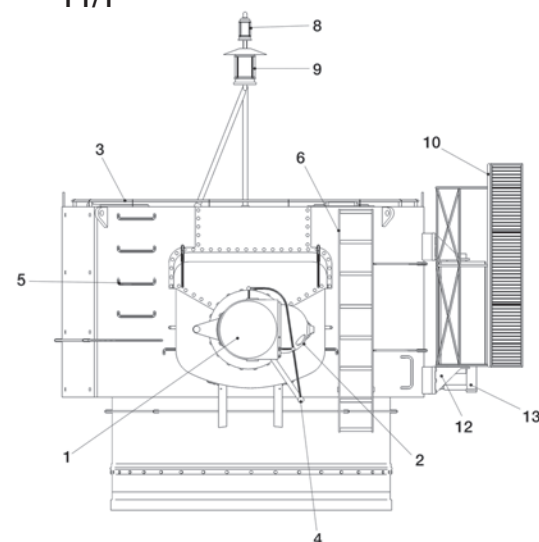
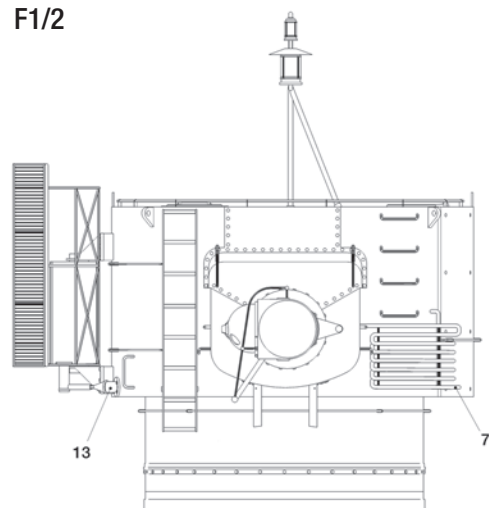
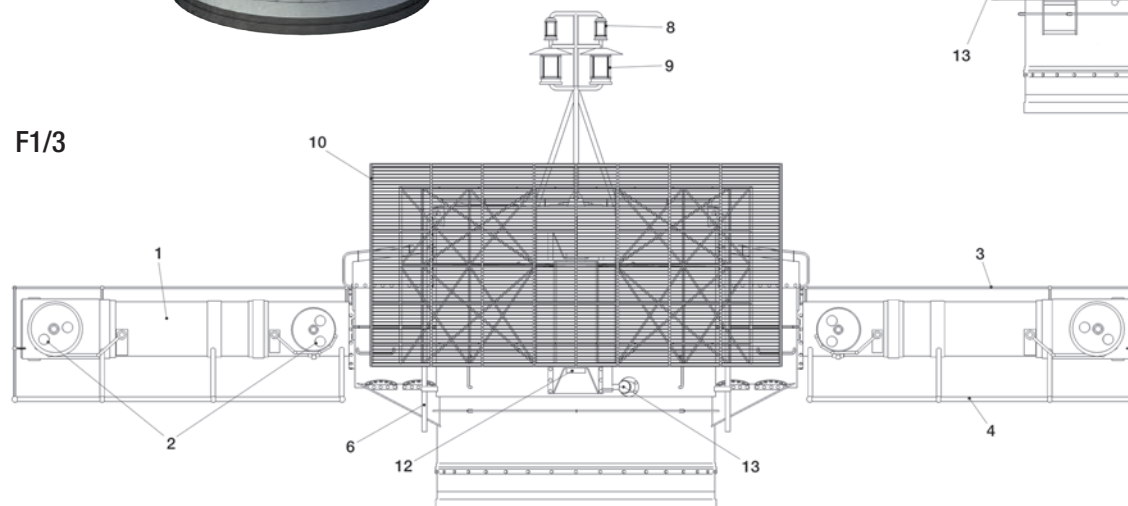


**10.5M RANGEFINDER DOME ON TOP OF MAIN FIRE CONTROL POST**

(1/75 SCALE)

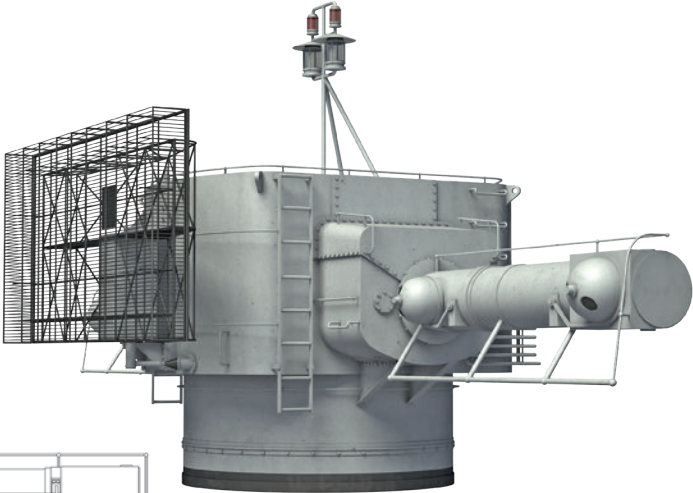
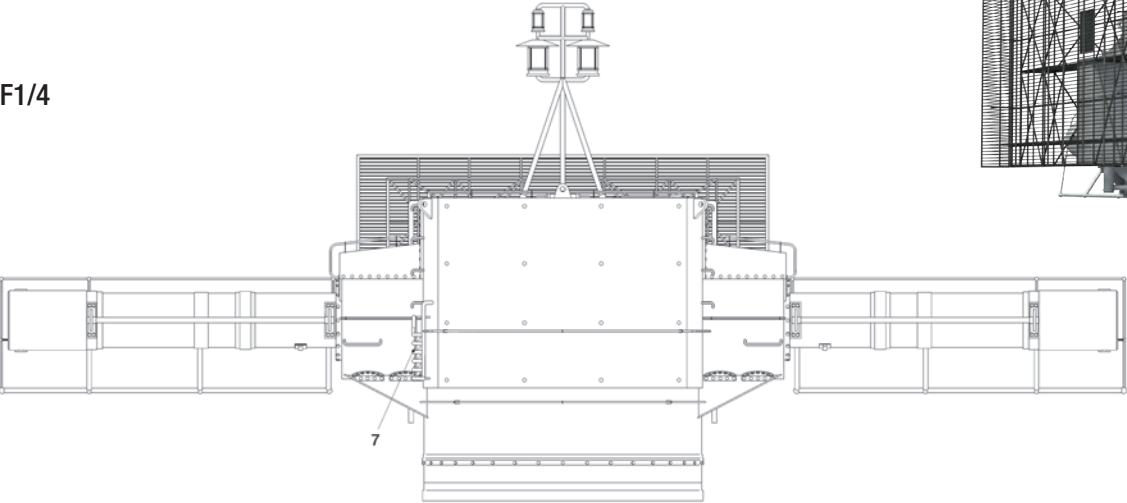
**F1/1 RIGHT PROFILE****F1/2 LEFT PROFILE****F1/3 FRONT VIEW****F1/1–17 MAIN AND SECONDARY ARTILLERY RANGEFINDERS**

- 1 Rangefinder arm
- 2 Optics
- 3 Handrail
- 4 Foot rail
- 5 Foot step
- 6 Ladder
- 7 Cooling installation
- 8 Mooring manoeuvre light (red)
- 9 Top light (white)
- 10 FuMO 27 radar antenna
- 11 FuMO 27 radar antenna (fitted late March 1941, when rangefinder dome was already in place)
- 12 Radar antenna hinged fixing
- 13 Radar antenna adjusting mechanism
- 14 Small mast base
- 15 Mushroom vent

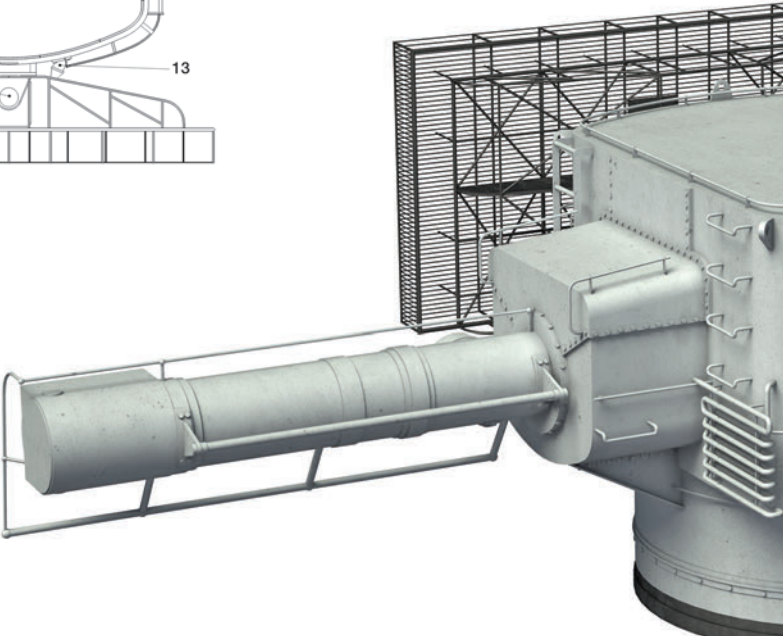
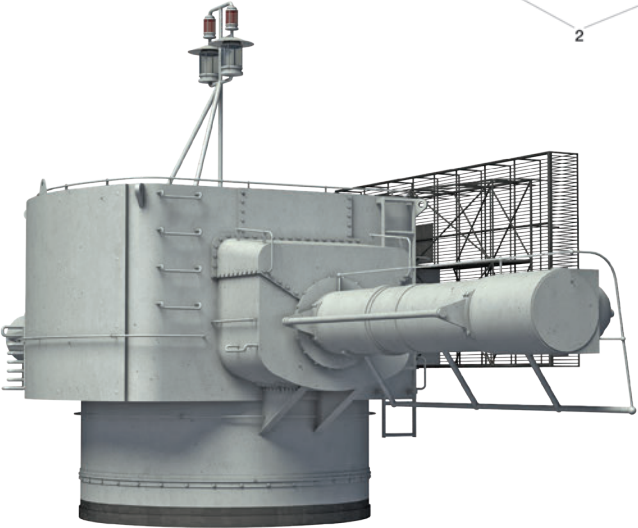
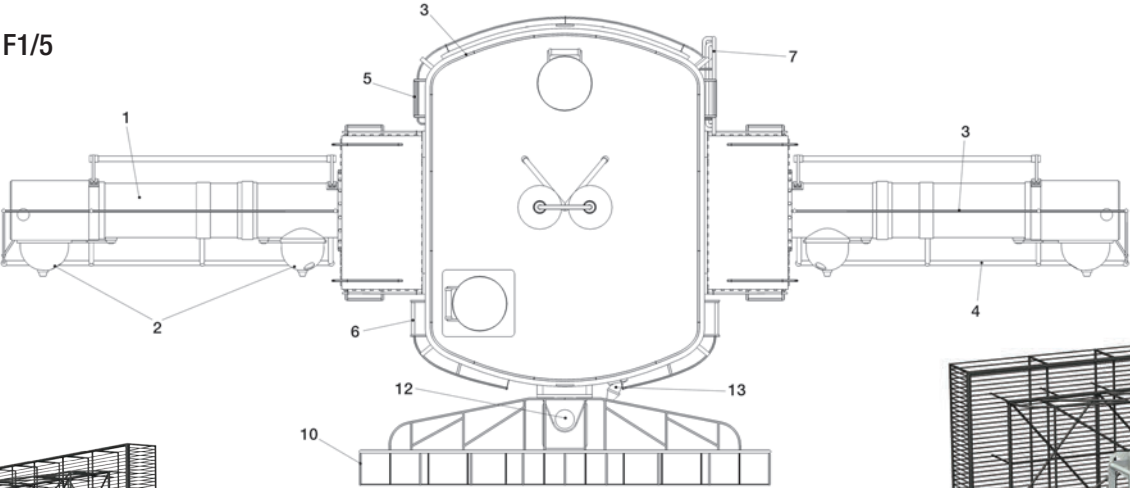
**F1/1****F1/2****F1/3**

F1/4 BACK VIEW  
F1/5 PLAN

F1/4



F1/5





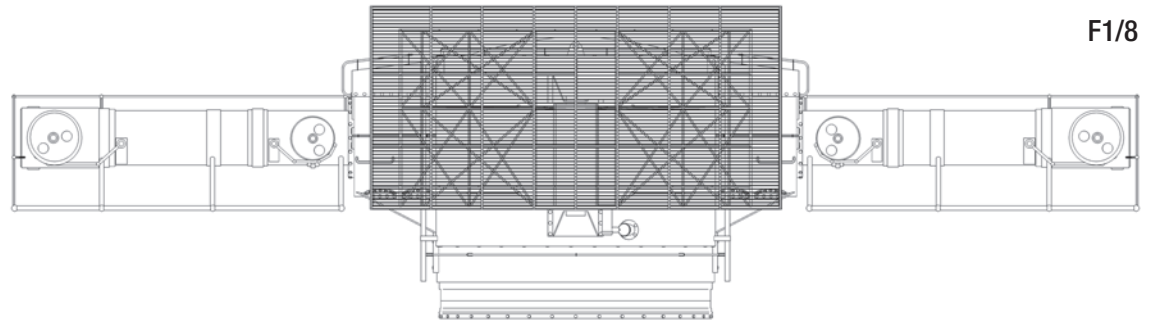
10.5M RANGEFINDER DOME ON TOP OF AFT FIRE CONTROL POST  
(1/75 SCALE)

F1/6 RIGHT PROFILE

F1/7 LEFT PROFILE

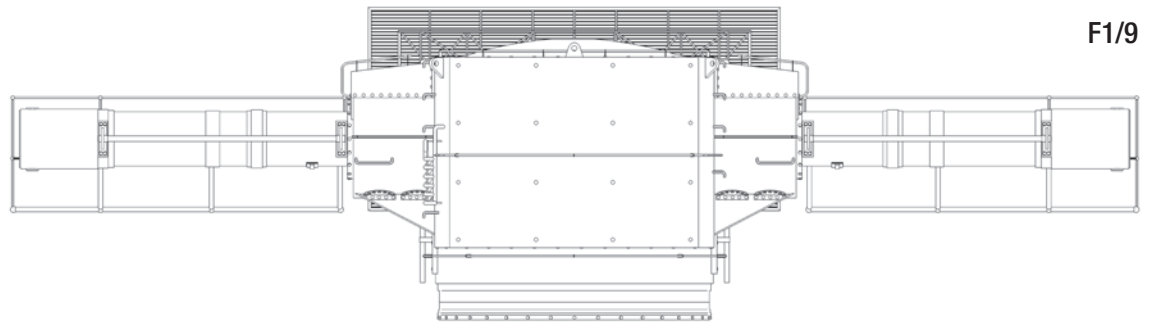
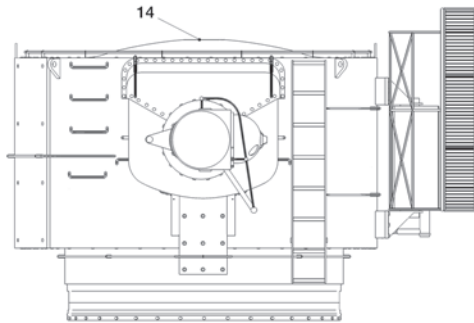
F1/8 FRONT VIEW

F1/9 BACK VIEW



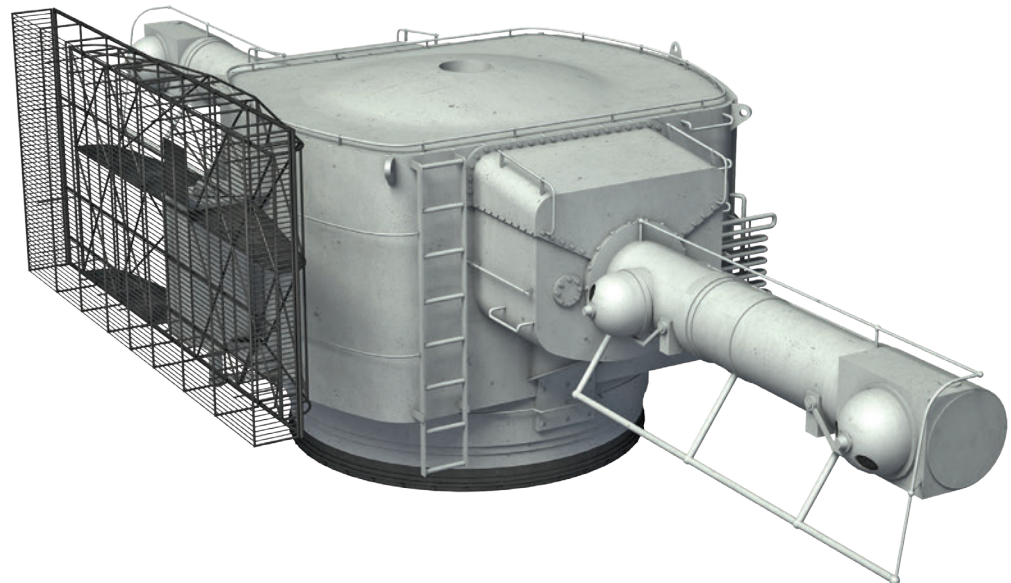
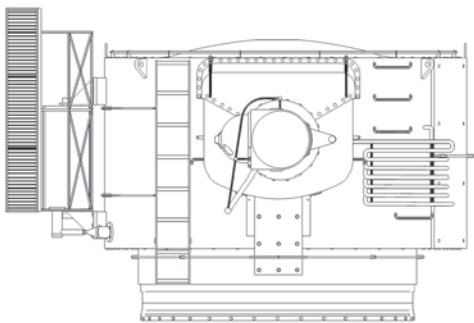
F1/8

F1/6

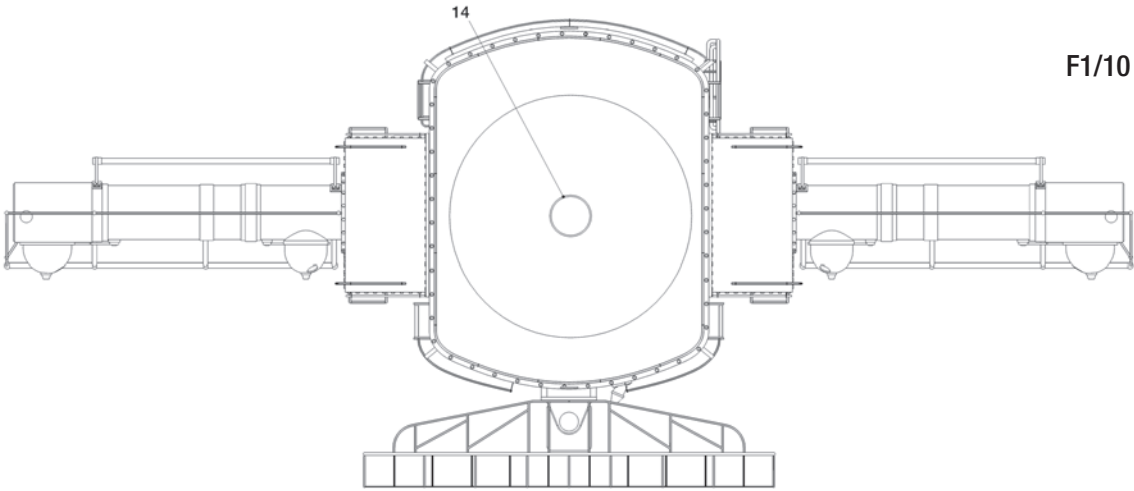


F1/9

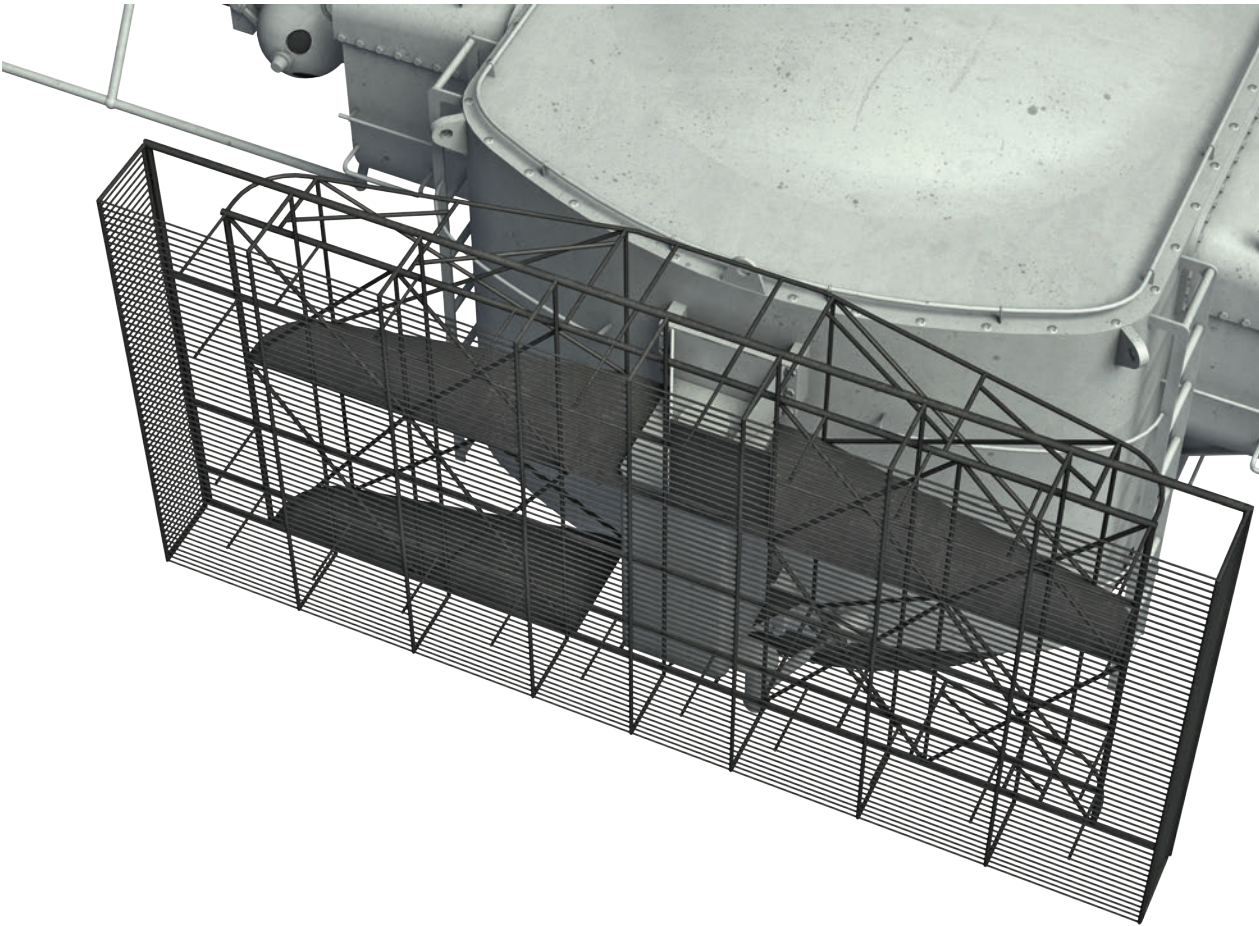
F1/7



F1/10 PLAN



F1/10



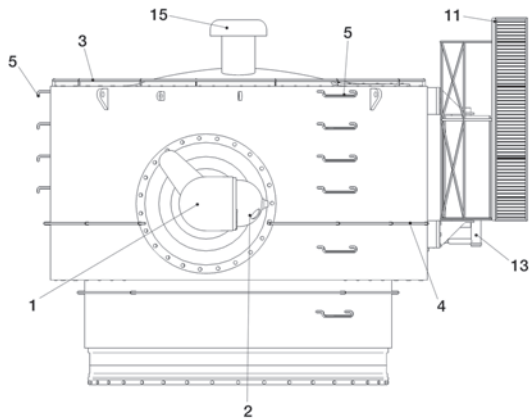
7M RANGEFINDER DOME ON TOP OF FORE FIRE CONTROL POST  
(1/75 SCALE)

F1/11 RIGHT PROFILE

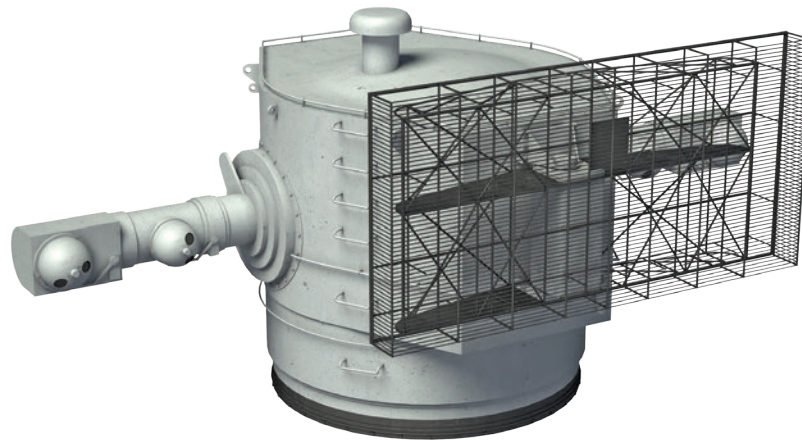
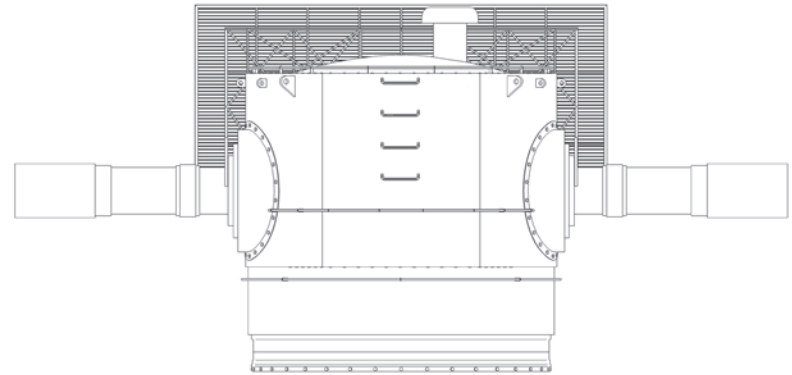
F1/12 FRONT VIEW

F1/13 BACK VIEW

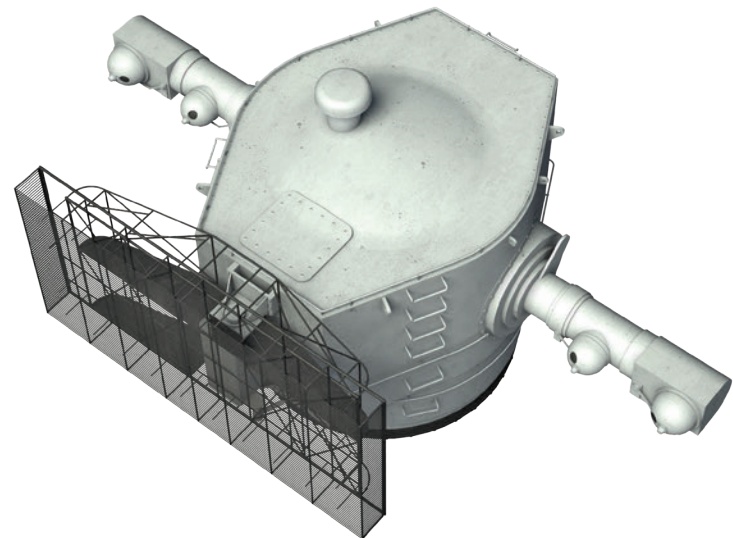
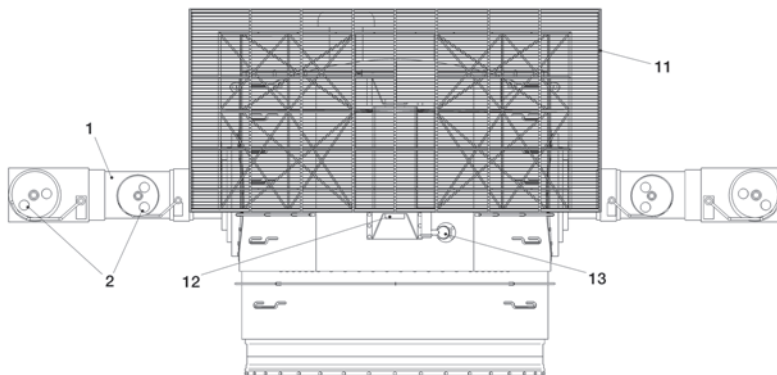
F1/11



F1/13



F1/12





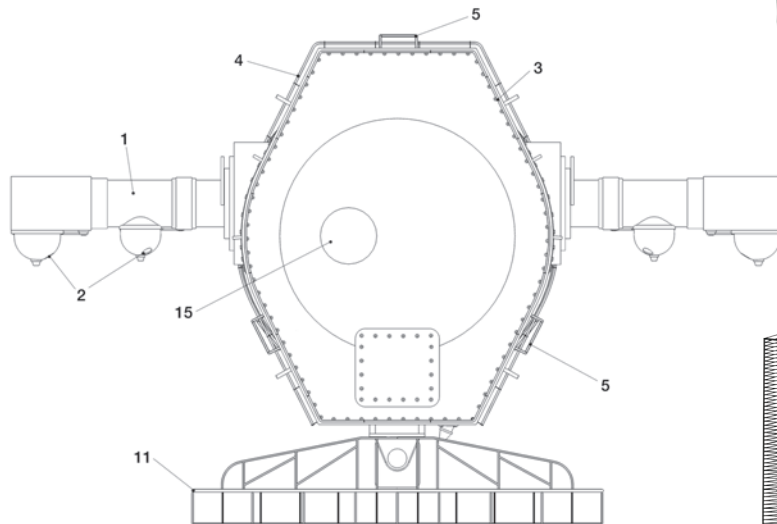
# F1/14 PLAN

F1/15 LEFT PROFILE (FRAGMENT) – EARLY MARCH 1941,  
PRIOR TO RADAR ANTENNA BEING FITTED

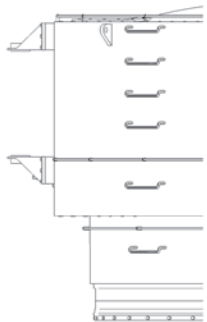
F1/16 FRONT VIEW (FRAGMENT) – EARLY MARCH 1941,  
PRIOR TO RADAR ANTENNA BEING FITTED

F1/17 PLAN (FRAGMENT) – EARLY MARCH 1941,  
PRIOR TO RADAR ANTENNA BEING FITTED

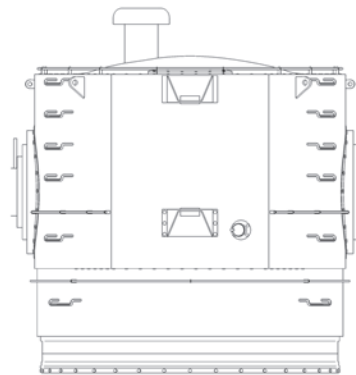
F1/14



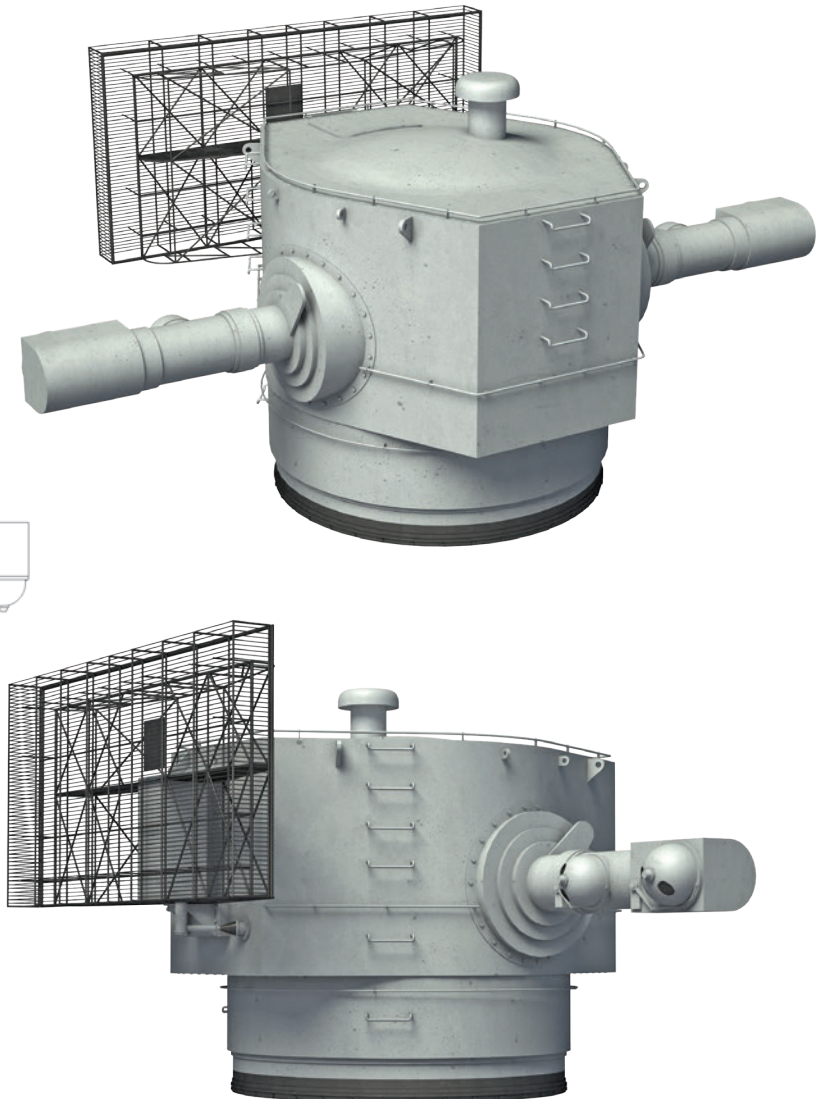
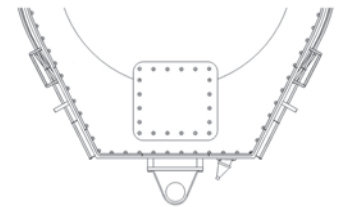
F1/15



F1/16



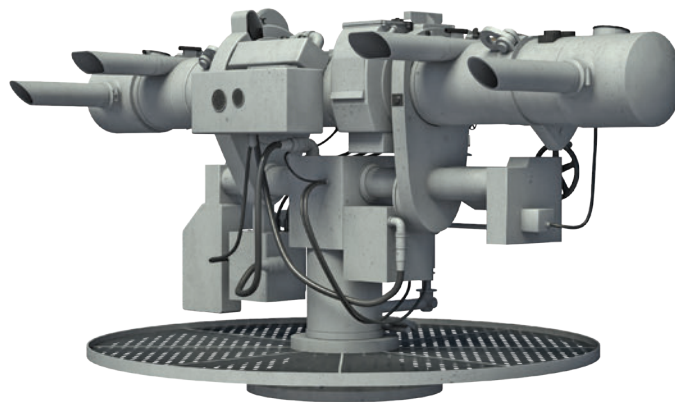
F1/17



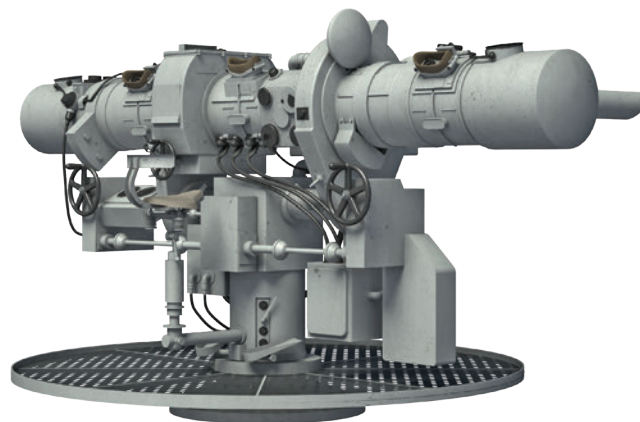
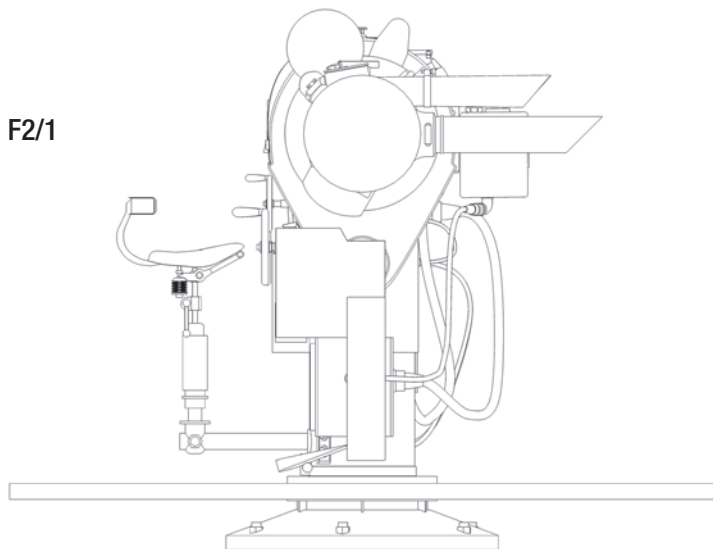
3-METER NIGHT RANGEFINDER 3U INSTALLED ON OUTBOARD  
PLATFORMS OF FORE SUPERSTRUCTURE, ADMIRAL'S BRIDGE  
LEVEL (1/25 SCALE)

F2/1 RIGHT PROFILE

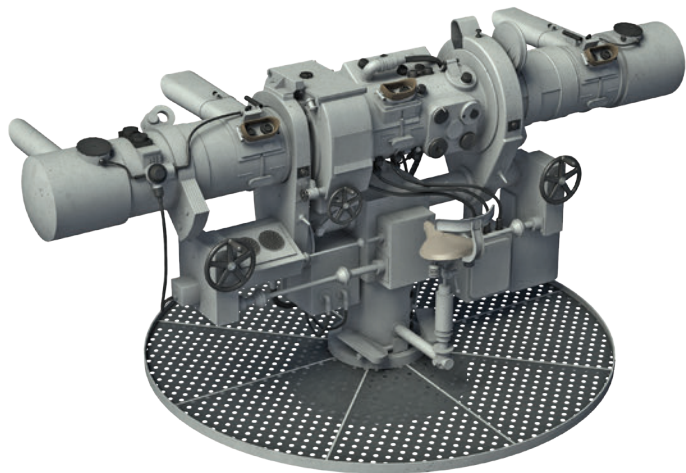
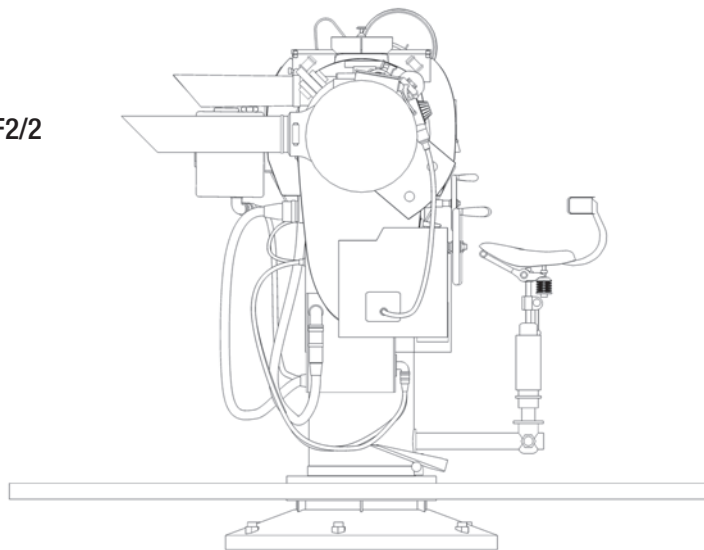
F2/2 LEFT PROFILE



F2/1

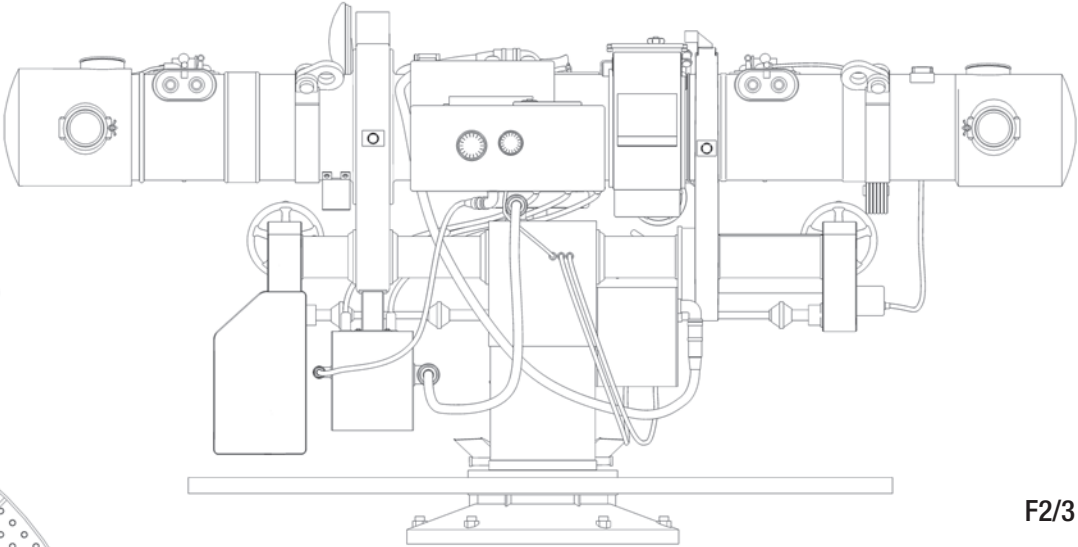
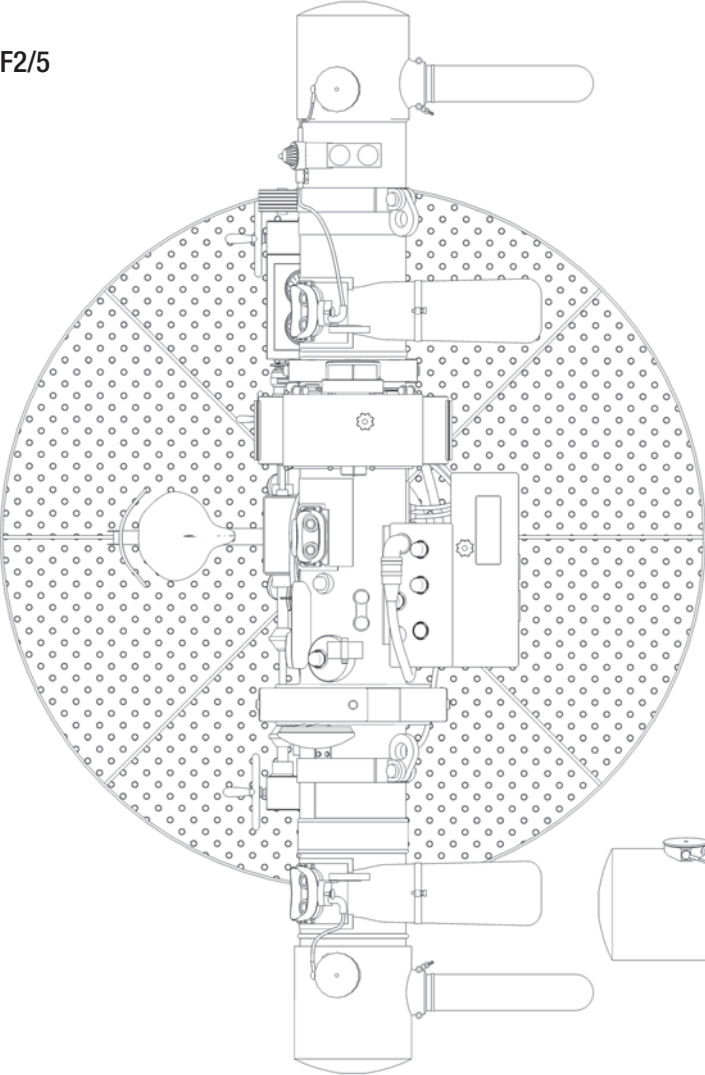


F2/2

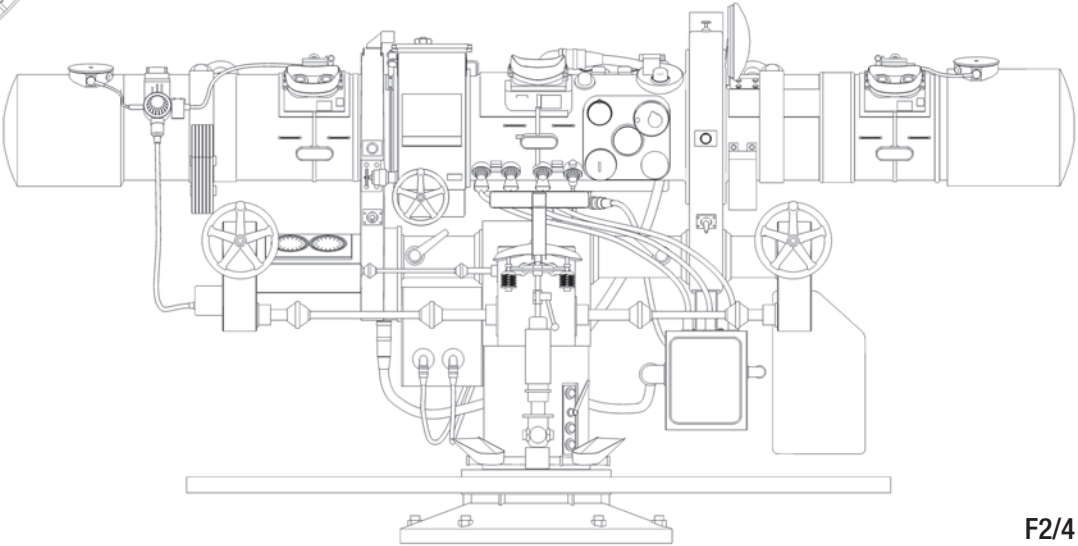
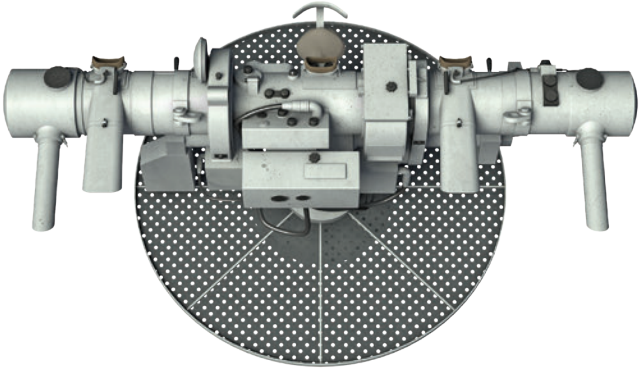


F2/3 FRONT VIEW  
F2/4 BACK VIEW  
F2/5 PLAN

F2/5



F2/3



F2/4



*ZIELSÄULE C/38 S – MAIN AND SECONDARY ARTILLERY*

TARGET GIVER (1/25 SCALE)

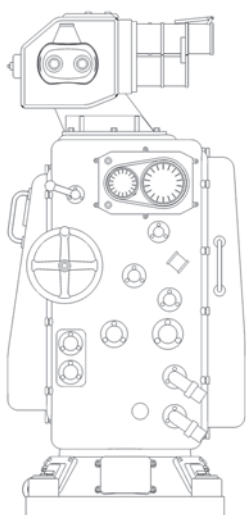
F3/1 RIGHT PROFILE

F3/2 FRONT VIEW

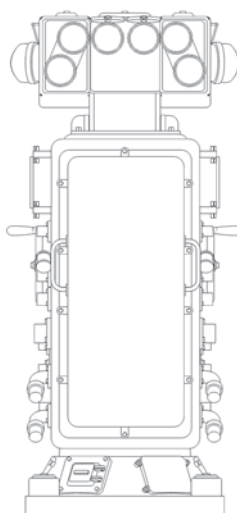
F3/3 BACK VIEW



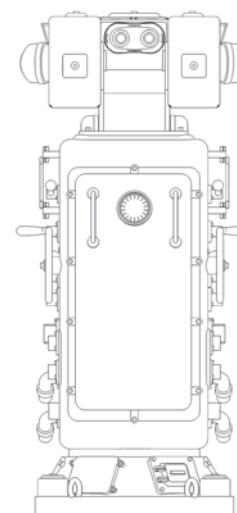
F3/1



F3/2



F3/3

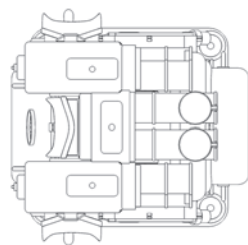


## F3/4 PLAN

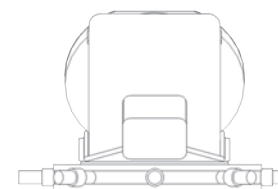
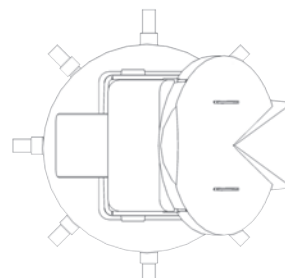
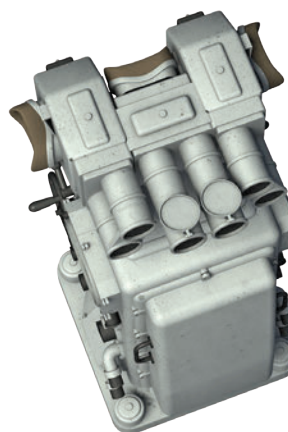
## F3/5 ZIELGEBER C/38 S – MAIN AND SECONDARY ARTILLERY

## TARGET GIVER (1/25 SCALE)

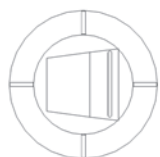
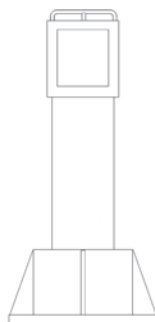
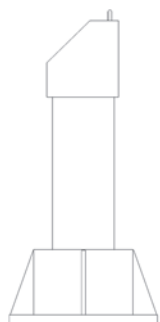
## F3/6 PERISCOPES FROM ROOFS OF ARTILLERY FIRE CONTROL POSTS (1/25 SCALE)



F3/4



F3/5



F3/6



SL 8 DOME WITH A 4-METER RANGEFINDER INSTALLED  
ON AA ARTILLERY DIRECTORS A AND B – *FLAKLEITSTAND A*,  
*FLAKLEITSTAND B* (1/75 SCALE)

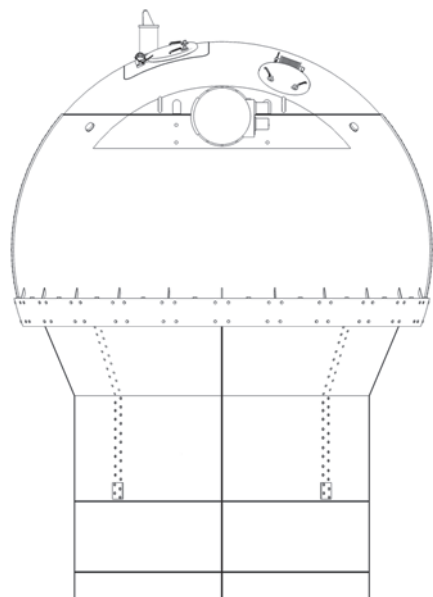
F4/1 RIGHT PROFILE

F4/2 FRONT VIEW

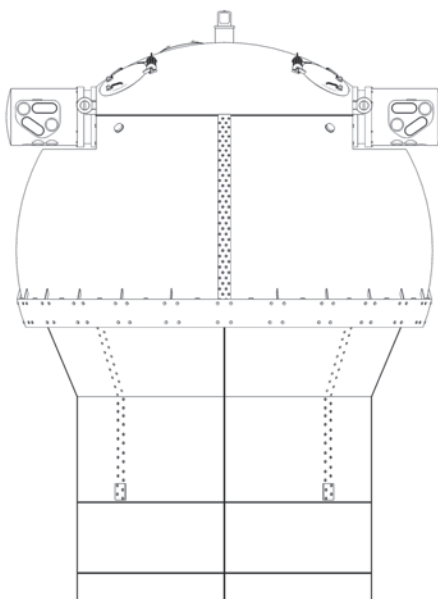
F4/3 BACK VIEW



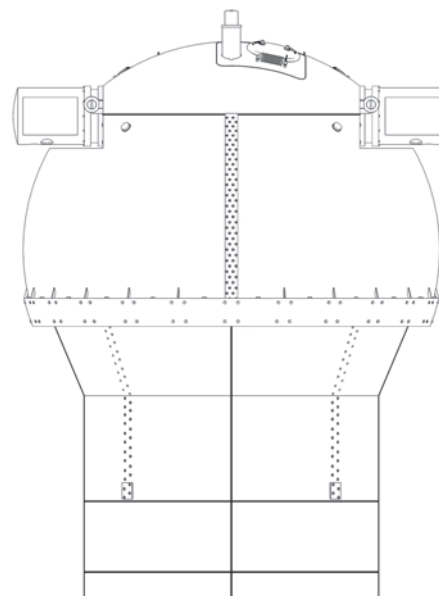
F4/1



F4/2



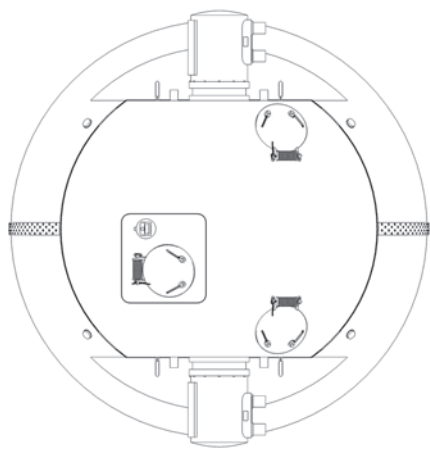
F4/3





F4/4 PLAN

F4/5 RANGEFINDER ARM – BOTTOM VIEW



F4/4

F4/5

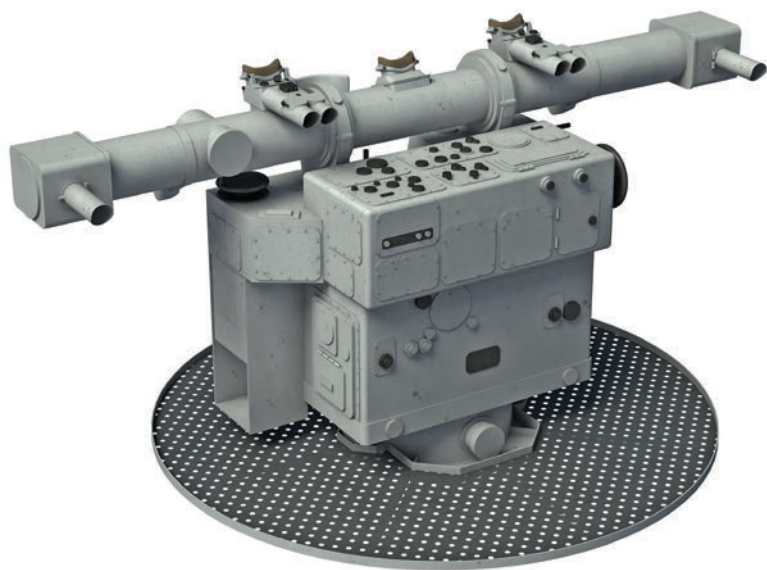


3-METER RANGEFINDER INSTALLED ON AA ARTILLERY DIRECTORS C  
AND D – *FLAKLEITSTAND C, FLAKLEITSTAND D* (1/25 SCALE)

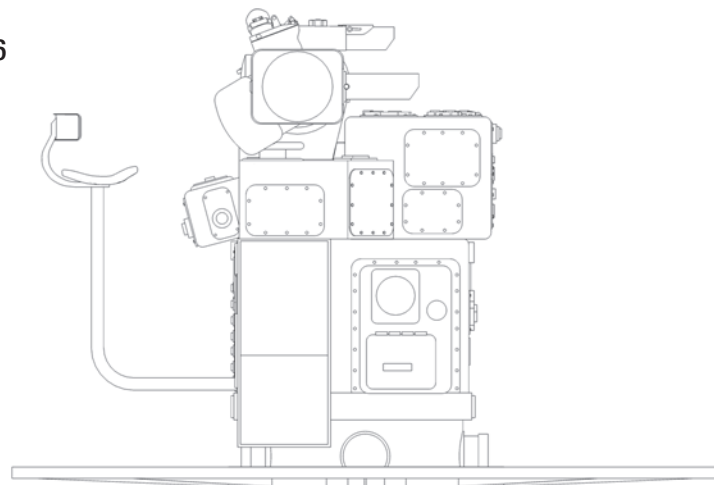
F4/6 RIGHT PROFILE

F4/7 LEFT PROFILE

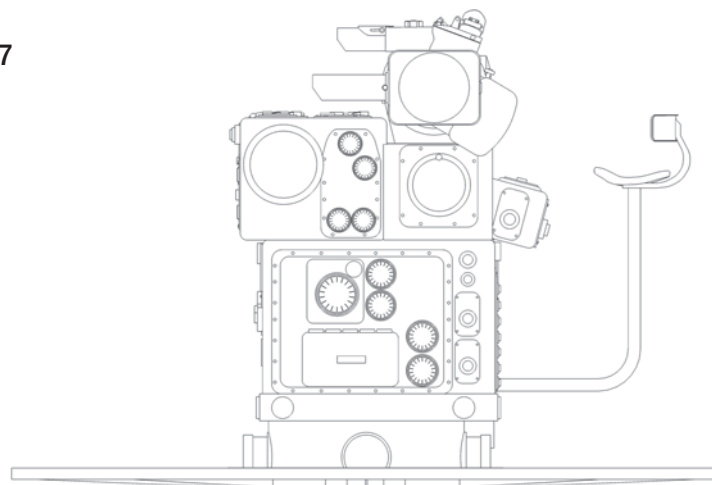
F4/8 FRONT VIEW



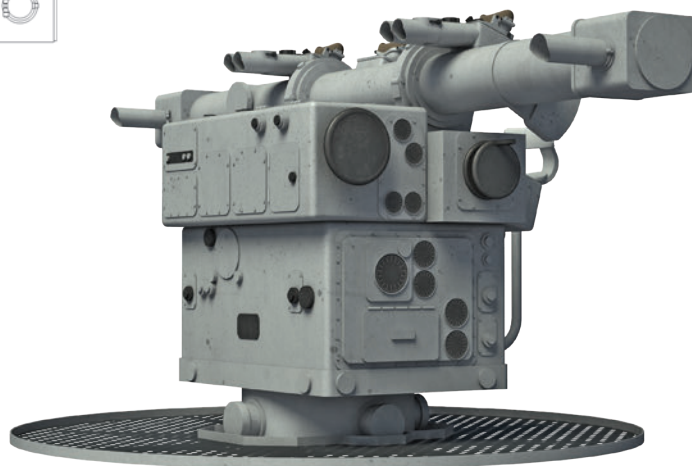
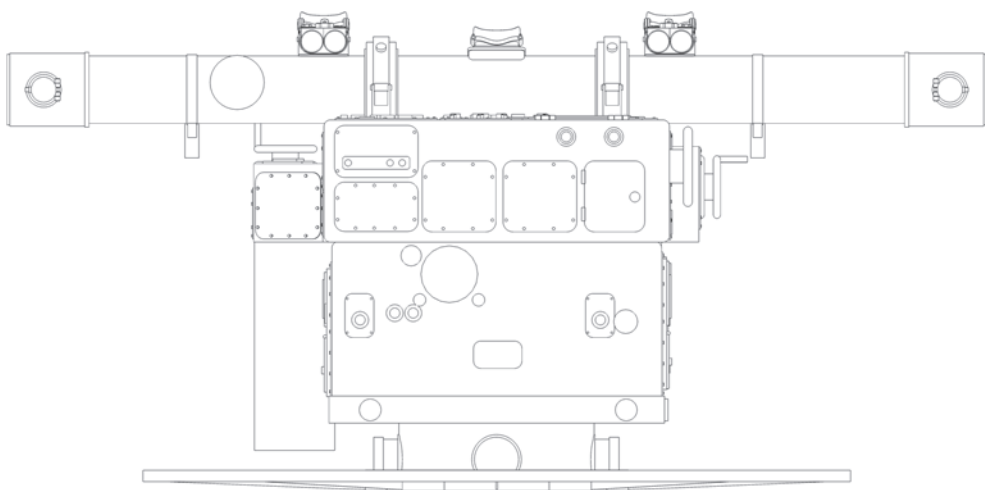
F4/6



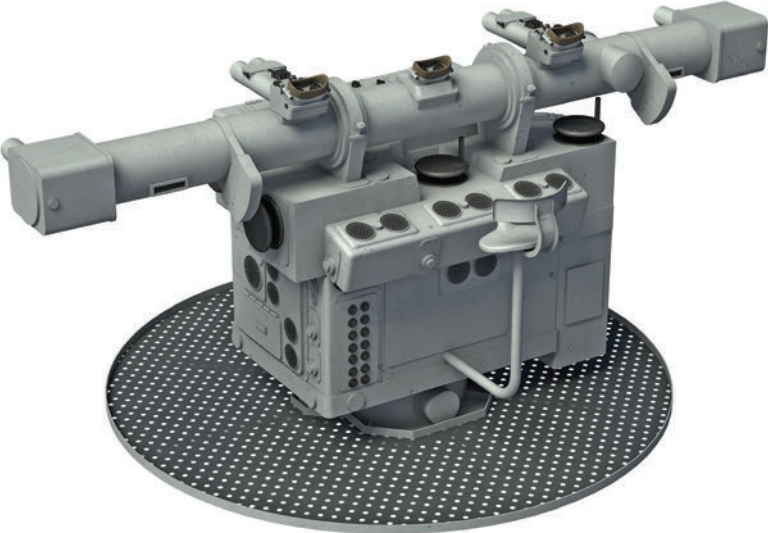
F4/7



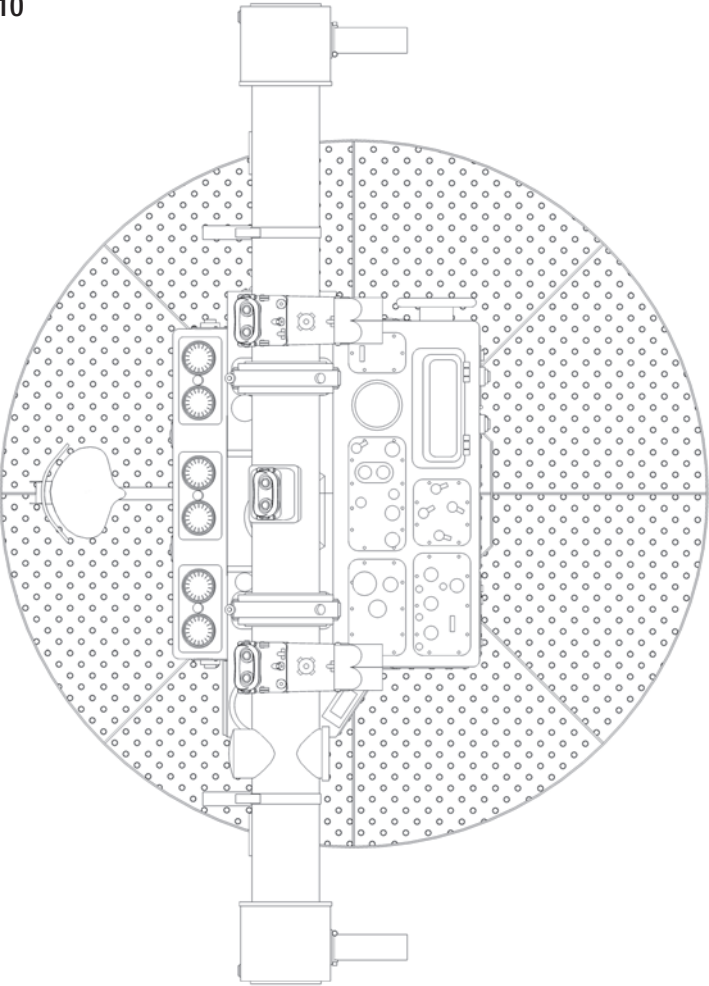
F4/8



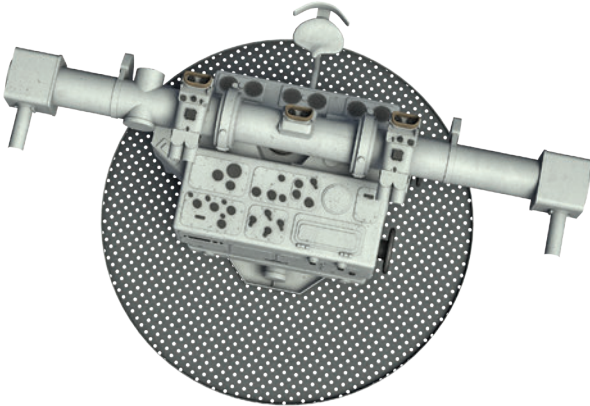
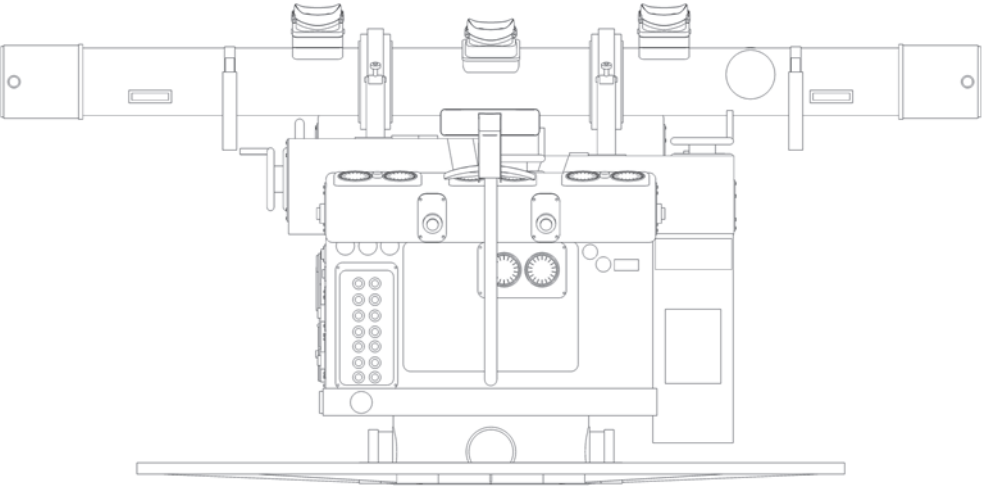
F4/9 BACK VIEW  
F4/10 PLAN



F4/10



F4/9





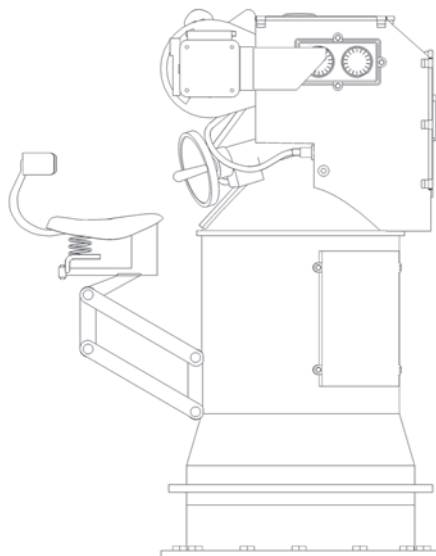
ZAG (ZIELANWEISEGERÄT – HEAVY AA ARTILLERY TARGET GIVER)  
INSTALLED ON FORE SUPERSTRUCTURE, FORETOP GALLERY  
LEVEL (1/25 SCALE)

F5/1 RIGHT PROFILE

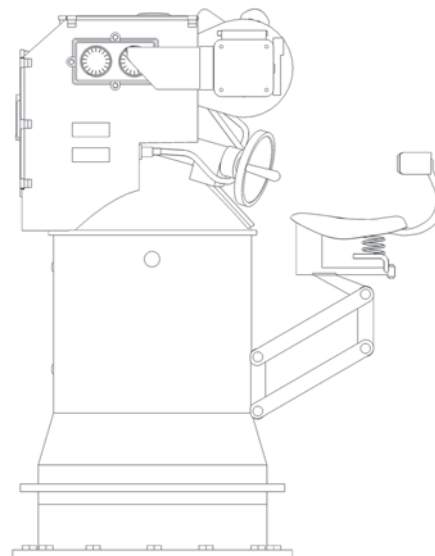
F5/2 LEFT PROFILE

F5/3 FRONT VIEW

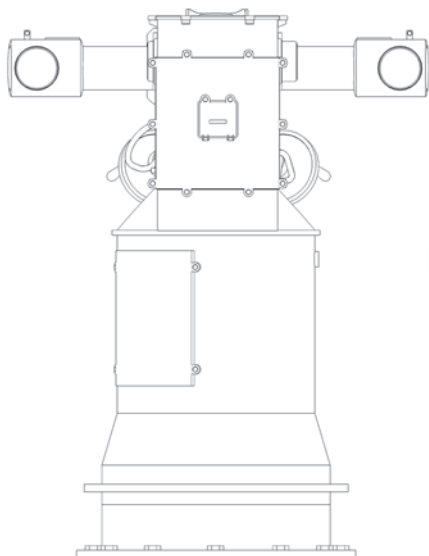
F5/1



F5/2

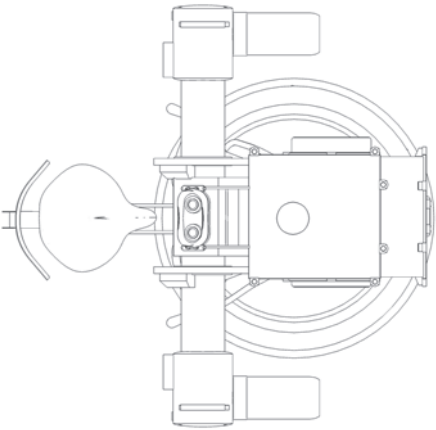


F5/3

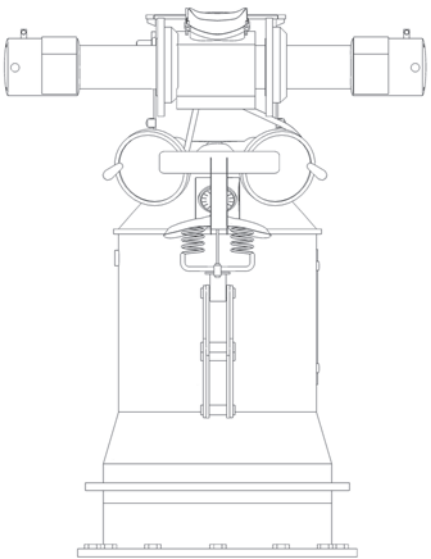


F5/4 BACK VIEW  
F5/5 PLAN

F5/5



F5/4



EM 1M R36 – 1-METER MANUAL RANGEFINDER USED BY THE CREWS  
OF LIGHT AA GUNS (1/15 SCALE)

F5/6 RIGHT PROFILE

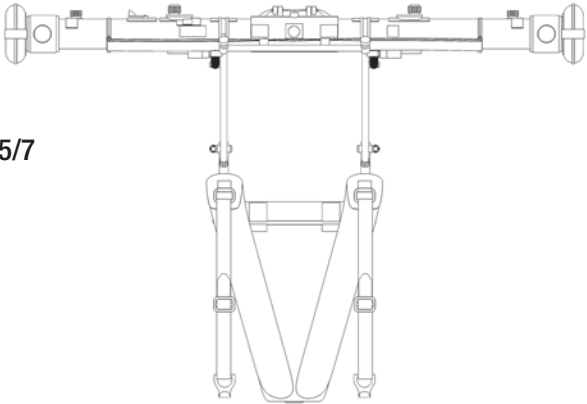
F5/7 FRONT VIEW

F5/8 BACK VIEW

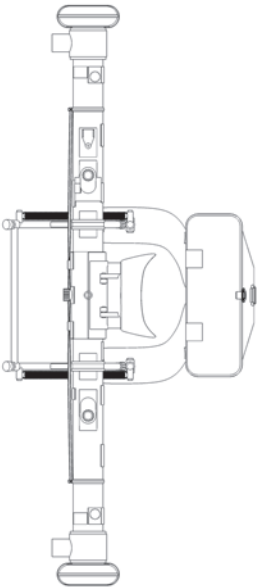
F5/9 PLAN



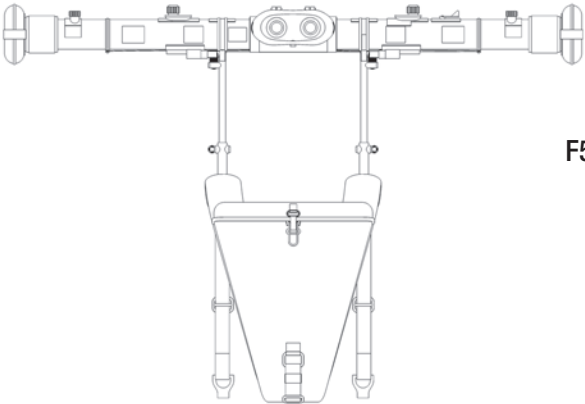
F5/7



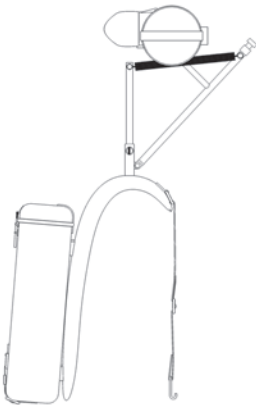
F5/9



F5/8



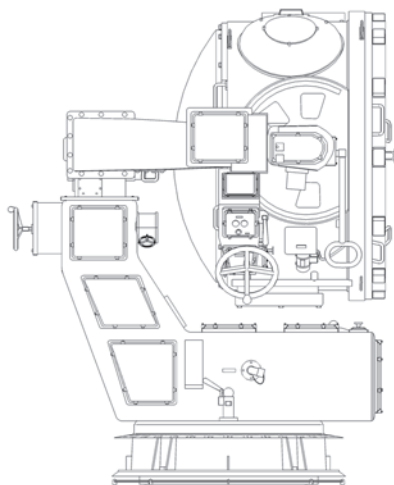
F5/6



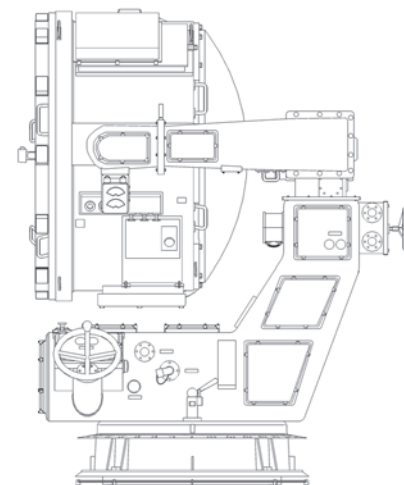
150CM SEARCHLIGHT (1/50 SCALE)

F6/1 RIGHT PROFILE

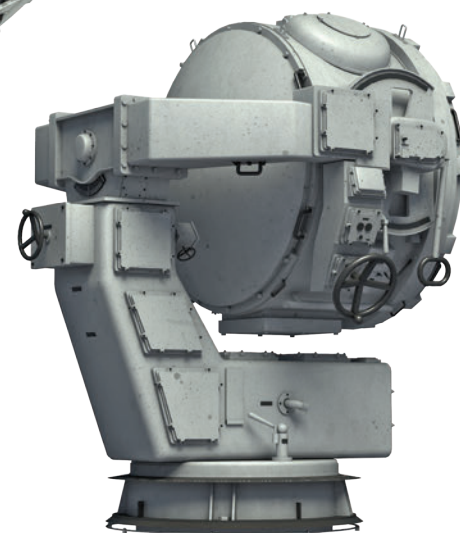
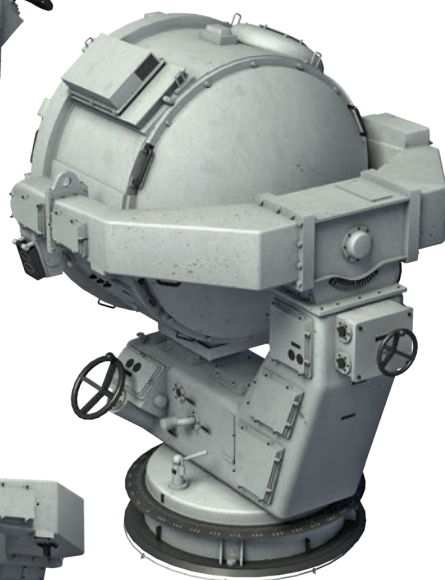
F6/2 LEFT PROFILE



F6/1

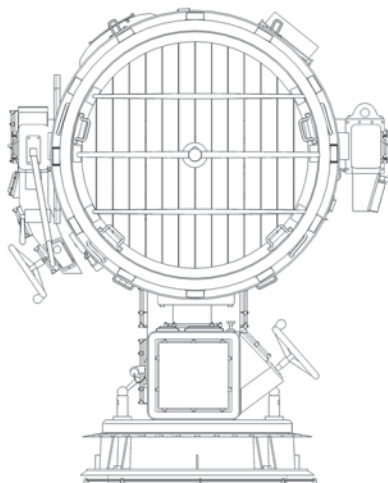


F6/2

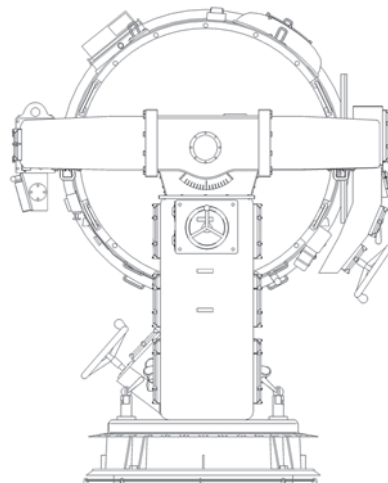




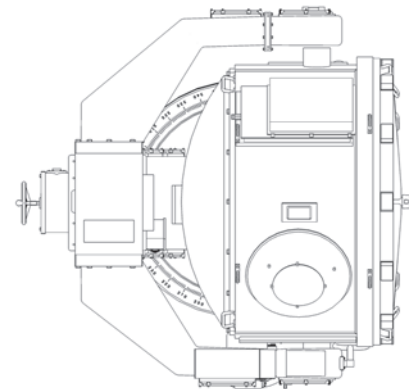
F6/3 FRONT VIEW  
F6/4 BACK VIEW  
F6/5 PLAN



F6/3

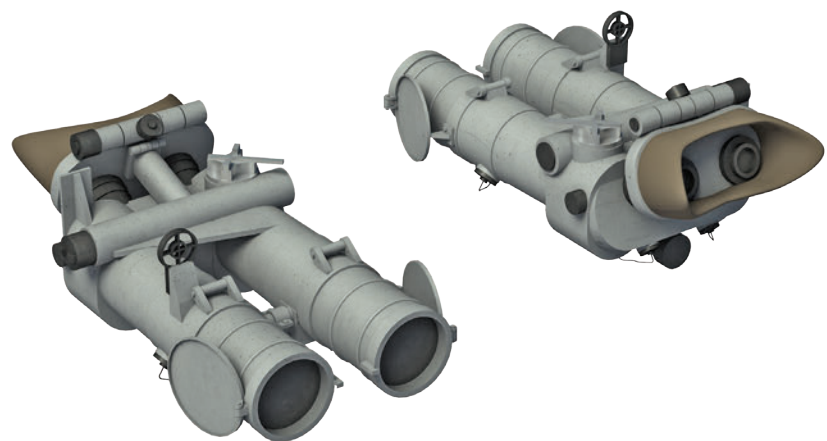
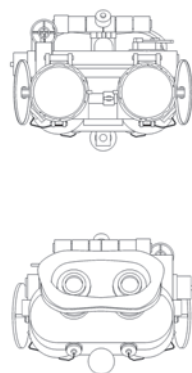
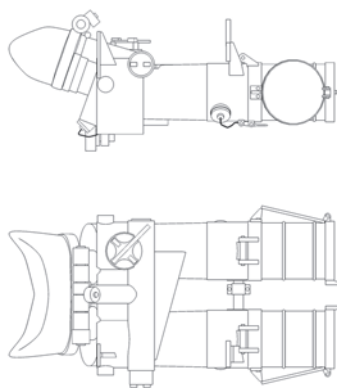


F6/4



F6/5

F6/6 CARL ZEISS 10X80 – 20° BINOCULARS (1/15 SCALE)



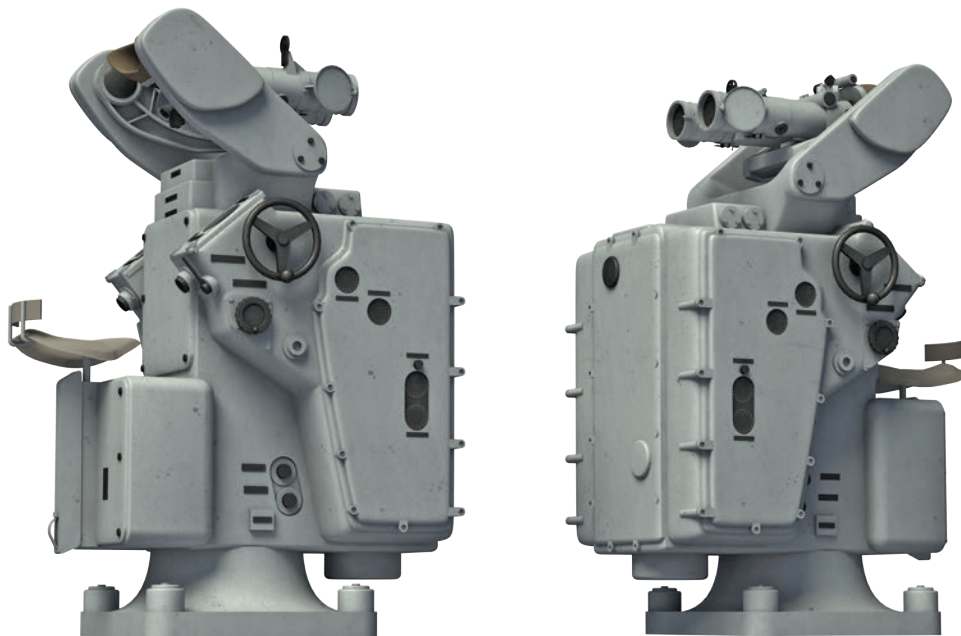
F6/6

*SCHEINWERFERRICHTGERÄT* – SEARCHLIGHT DIRECTOR (1/25 SCALE)

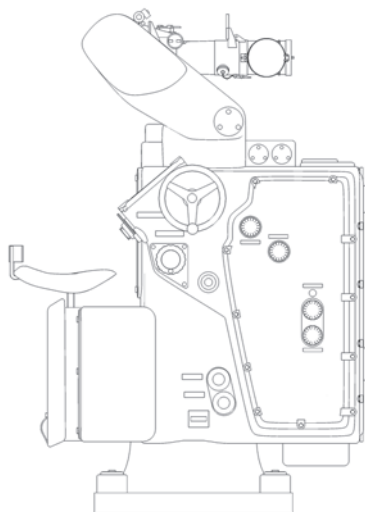
F6/7 RIGHT PROFILE

F6/8 FRONT VIEW

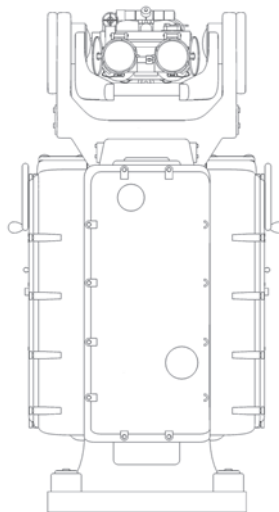
F6/9 BACK VIEW



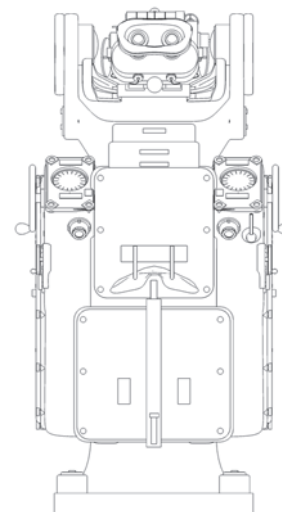
F6/7



F6/8

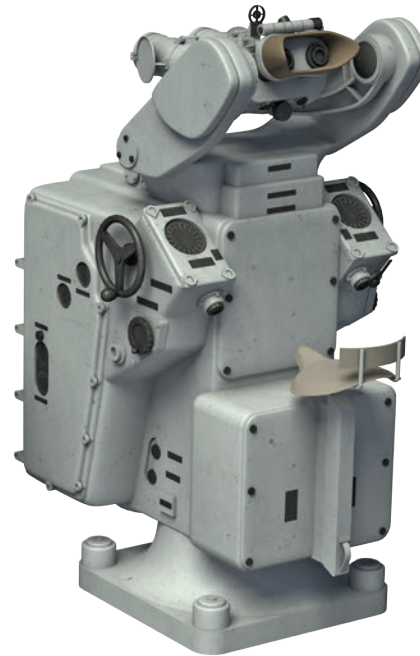
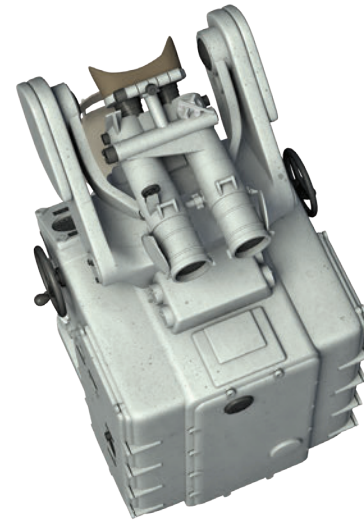
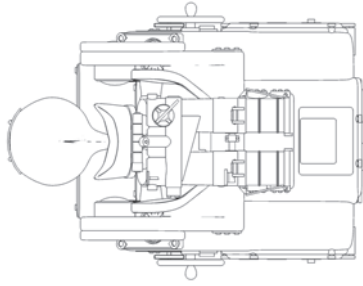


F6/9



## F6/10 PLAN

F6/10

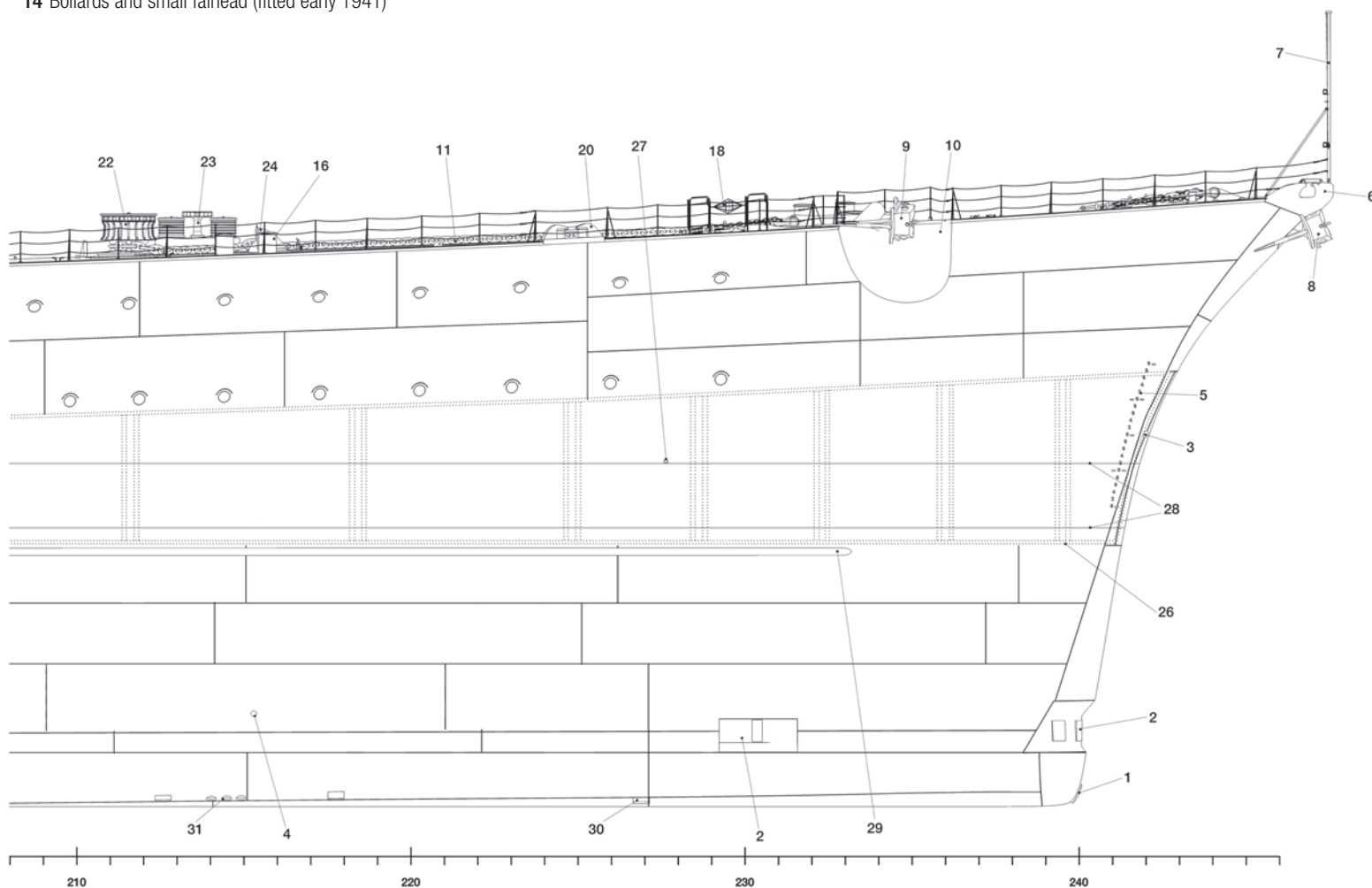




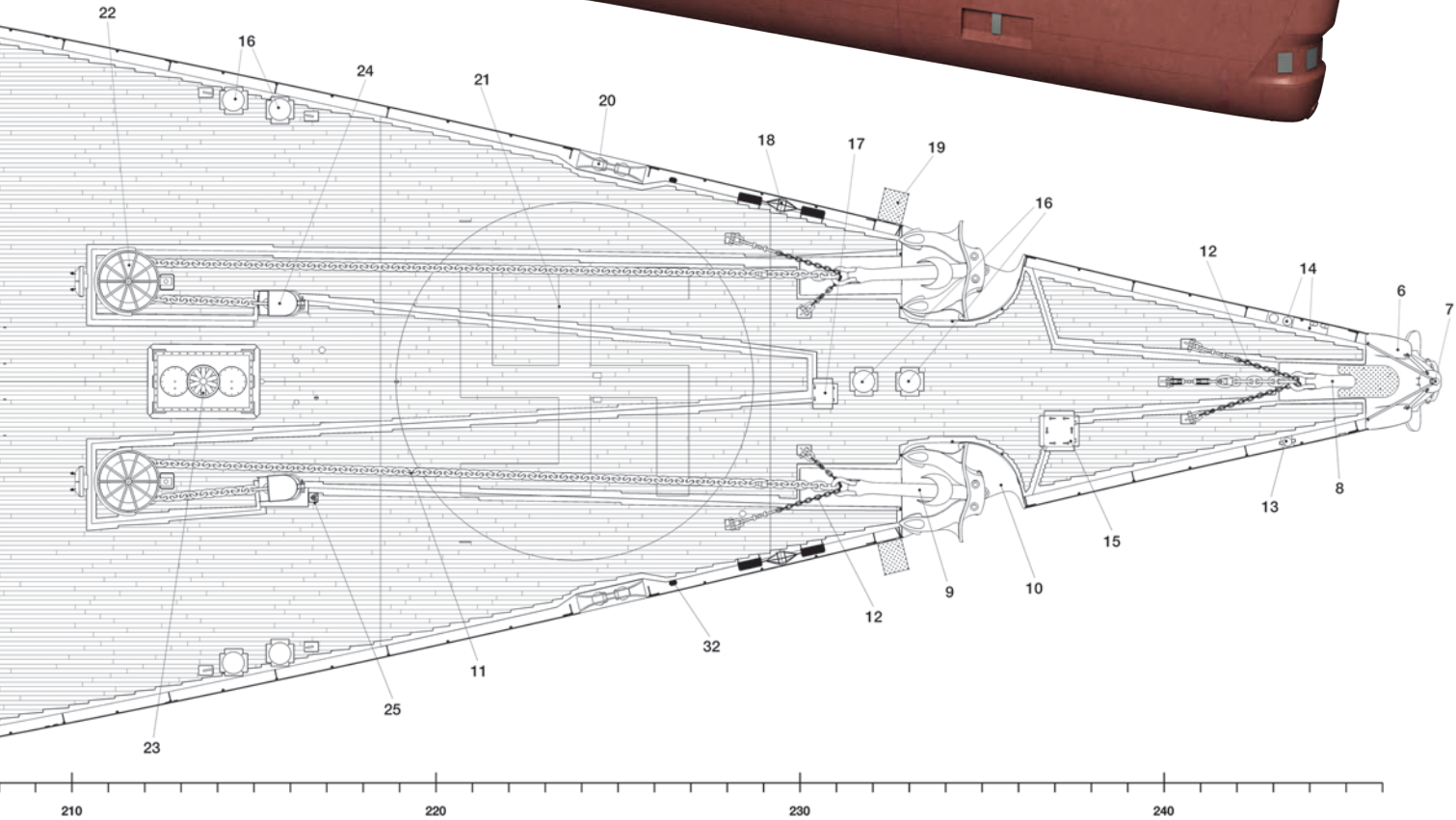
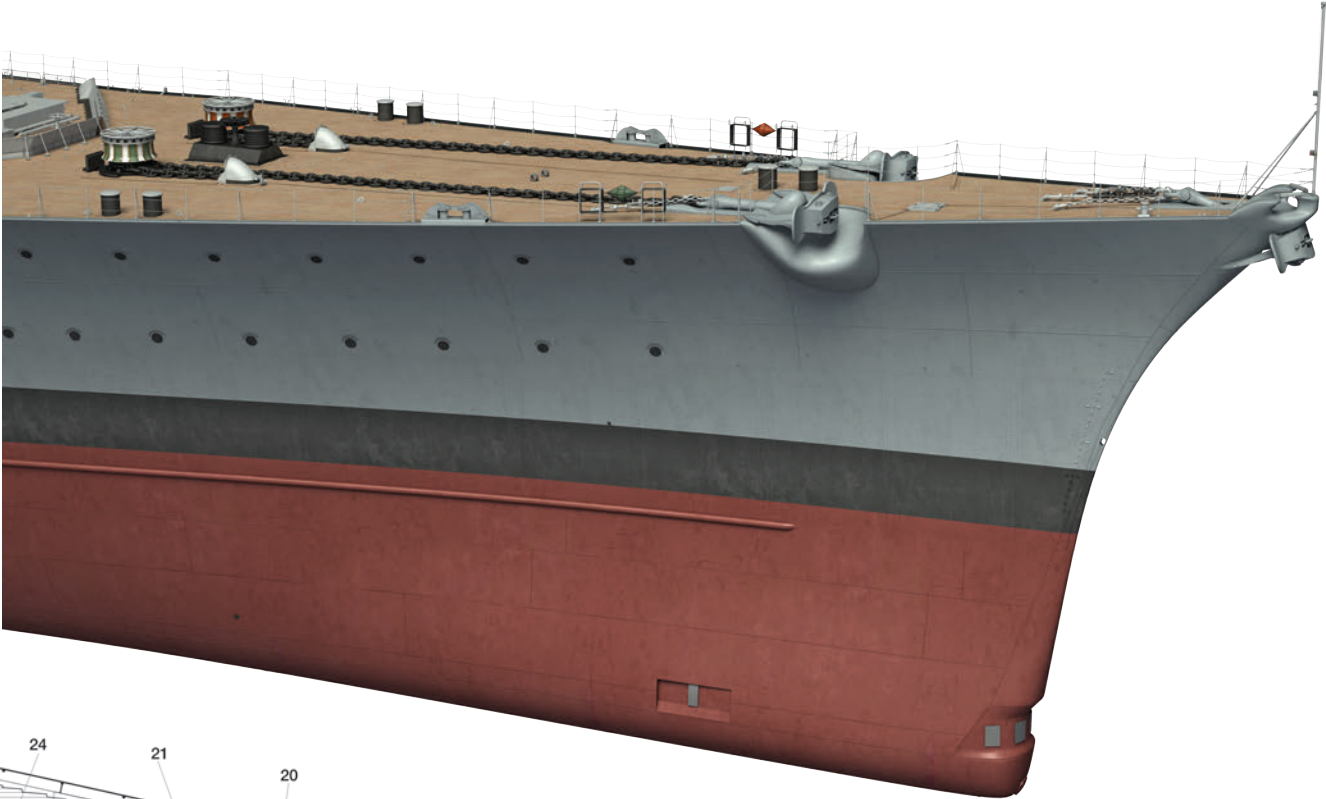
**HULL AND DECK FITTINGS, FRAMES 208–246 (1/200 SCALE)****G1/1 RIGHT PROFILE****G1/1–3 HULL AND DECK FITTINGS, FRAMES 208–246**

- 1 Cover of the *Bugspiere*
- 2 *Schallanlage* – active sonar
- 3 Mooring eye
- 4 NHG (*Nahbereichshorchgerät*) – acoustic torpedo detector microphone
- 5 White painted welded draught marks
- 6 Towing fairlead
- 7 Jack staff (removed before Operation *Rheinübung*)
- 8 Bow anchor (removed around March–April 1941)
- 9 Side anchor
- 10 Side anchor hawse pipe
- 11 Anchor cable
- 12 Cable stopper
- 13 Single bollard
- 14 Bollards and small fairlead (fitted early 1941)

- 15 Deck hatch
- 16 Bollards
- 17 *Bugspiere* shaft access hatch
- 18 Anchor buoy
- 19 Hinged removable platform
- 20 Roller fairlead
- 21 *Fliegersichtzeichen* (air recognition mark) – black swastika on white circle and red banner (painted early 1941, painted over and repainted during Operation *Rheinübung*)
- 22 Cable holder
- 23 Electric capstan with rope drums
- 24 Navel pipe
- 25 Double fire hydrant
- 26 Bow armour riveting
- 27 Scupper pipe
- 28 Boot topping borders
- 29 MES (*Magnetischer Eigenschutz*) – degaussing cable
- 30 Trim tank valve
- 31 Echo sounding receiver (transmitter on port side)
- 32 Scupper



G1/2 PLAN



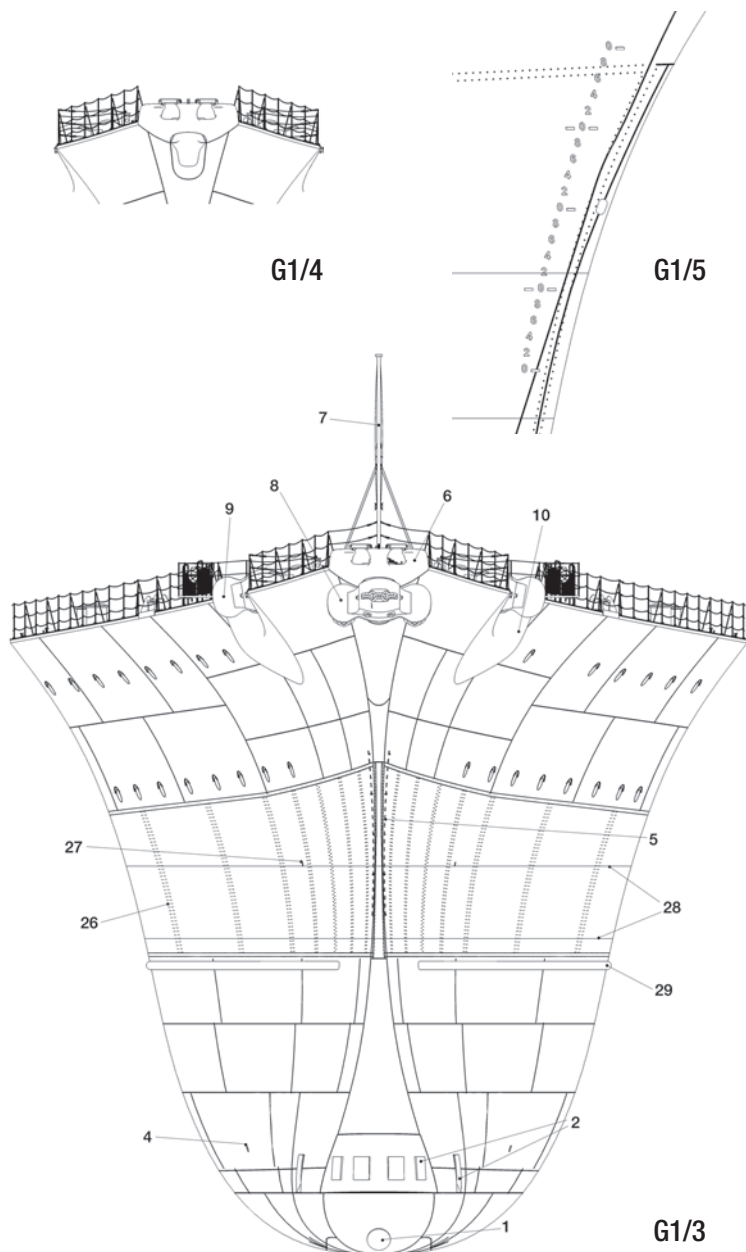
G1/2

HULL AND DECK FITTINGS, FRAMES 208–246 (1/200 SCALE)

G1/3 FRONT VIEW

G1/4 FRONT VIEW (FRAGMENT) – DETAIL OF BOW ANCHOR HAWSE PIPE

G1/5 RIGHT PROFILE (FRAGMENT) – DETAIL OF DRAUGHT MARKS  
(1/100 SCALE)





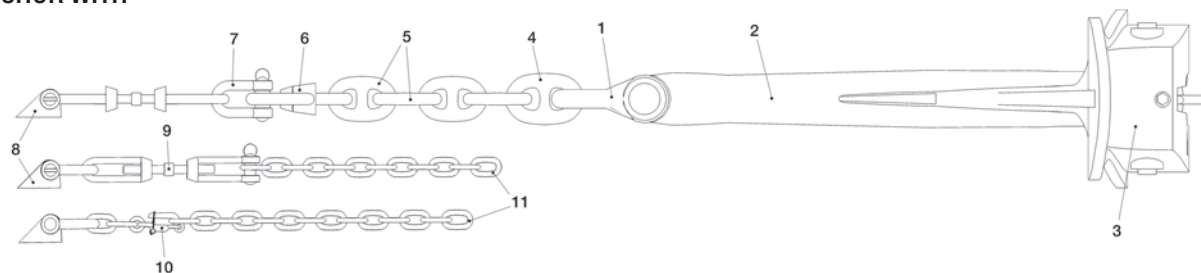
**FORE HALL-TYPE 9.5 TON STOCKLESS ANCHOR WITH  
ITS CABLE AND STOPPERS (1/50 SCALE)**

**G1/6 PROFILE**

**G1/7 PLAN**

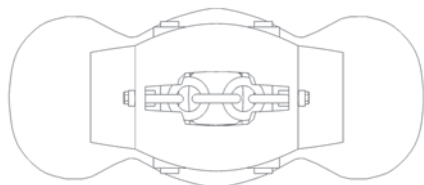
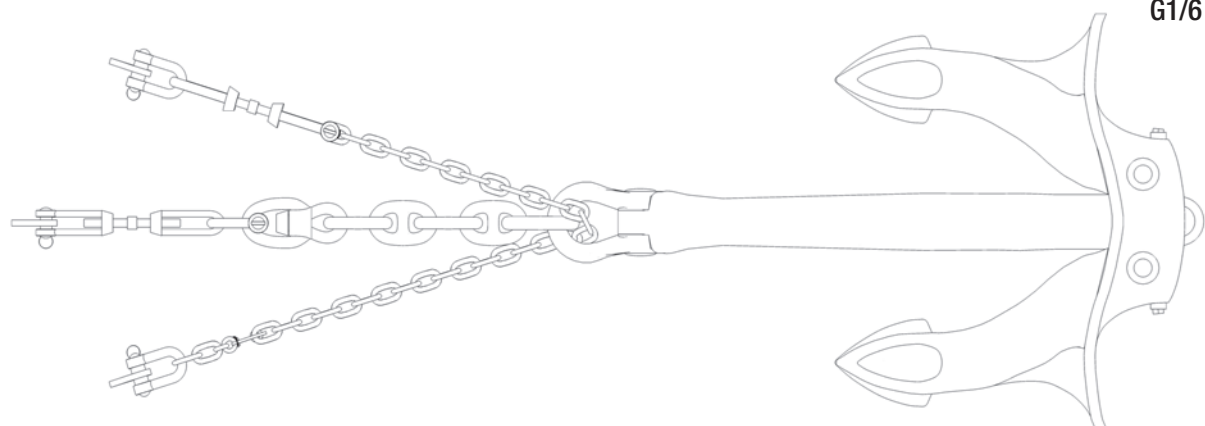
**G1/8 FRONT VIEW**

**G1/9 BACK VIEW**

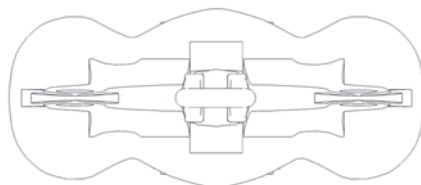


**G1/6-9 9.5 TON STOCKLESS ANCHOR  
WITH ITS CABLE AND STOPPERS**

- 1 Anchor ring
- 2 Shank
- 3 Anchor head
- 4 Enlarged stud link
- 5 Standard stud link
- 6 Swivel
- 7 Joining shackle
- 8 Stopper lug
- 9 Bottle screw
- 10 Senhouse slip
- 11 Studless stopper chain link

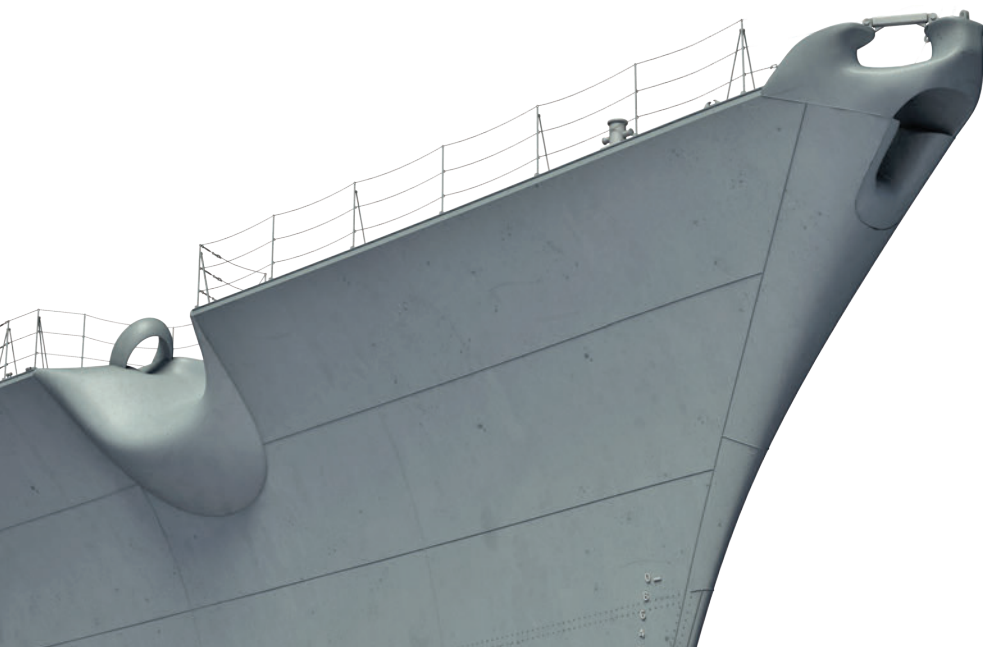


**G1/8**



**G1/9**

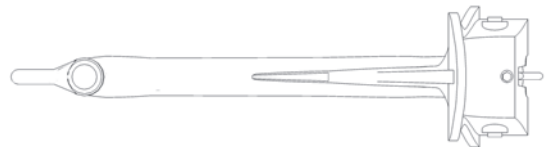
**G1/7**



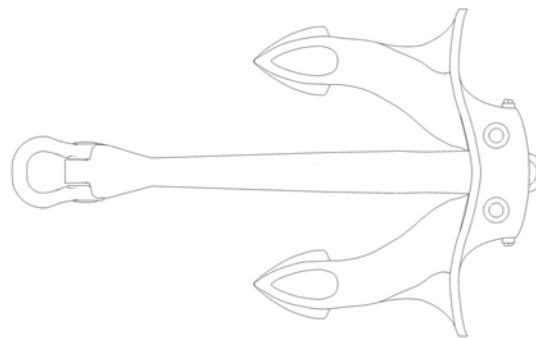
**STERN HALL-TYPE 4.75 TON STOCKLESS ANCHOR (1/50 SCALE)**

G1/10 PROFILE

G1/11 PLAN



G1/10



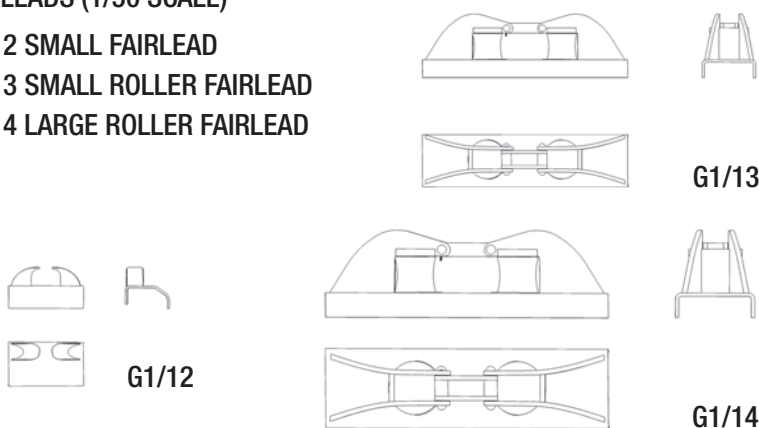
G1/11

**FAIRLEADS (1/50 SCALE)**

G1/12 SMALL FAIRLEAD

G1/13 SMALL ROLLER FAIRLEAD

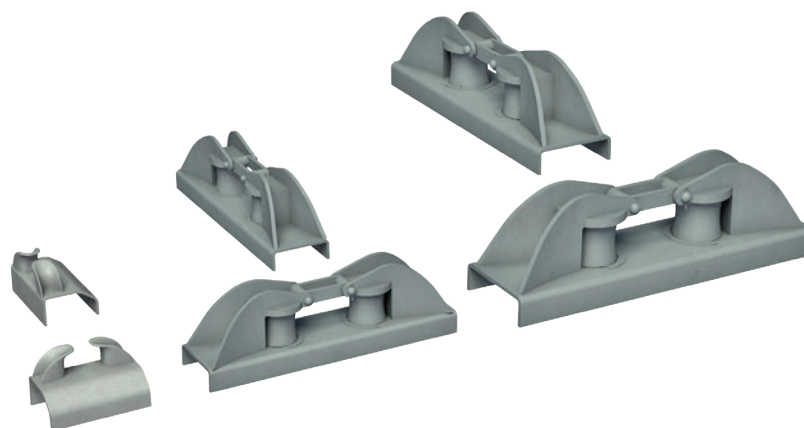
G1/14 LARGE ROLLER FAIRLEAD



G1/12

G1/13

G1/14

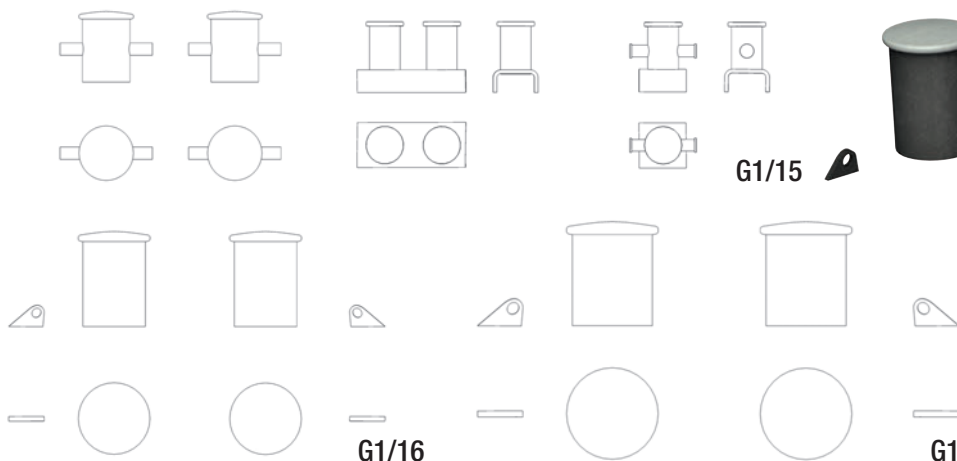


**BOLLARDS (1/50 SCALE)**

G1/15 SMALL BOLLARDS

G1/16 MEDIUM BOLLARDS

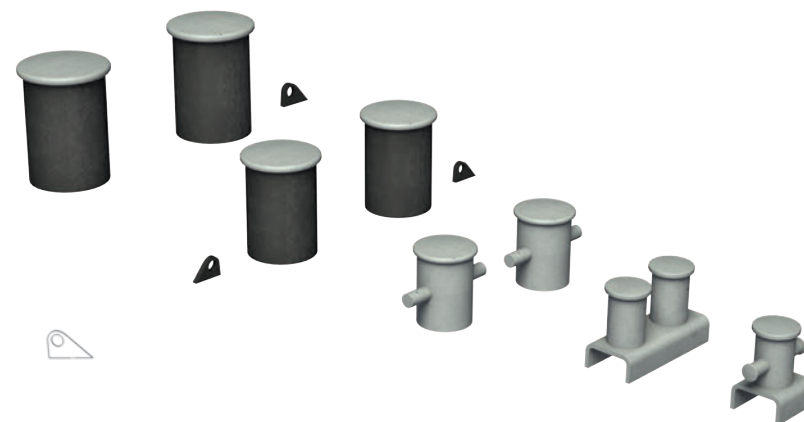
G1/17 LARGE BOLLARDS



G1/15

G1/16

G1/17

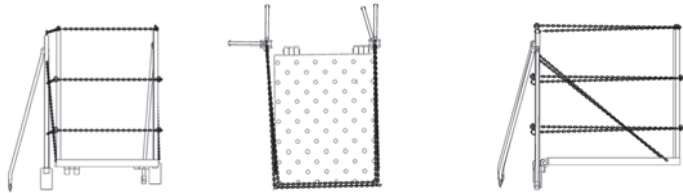


HINGED REMOVABLE PLATFORM (1/50 SCALE)

G1/18 PROFILE

G1/19 PLAN

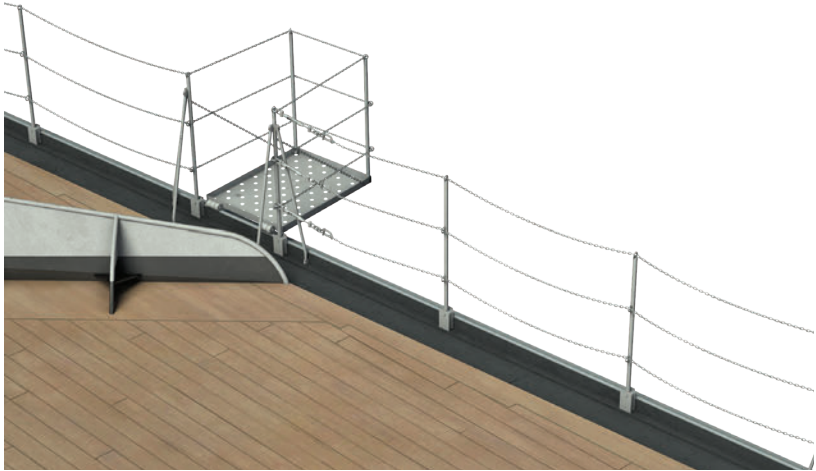
G1/20 BACK VIEW



G1/18

G1/19

G1/20

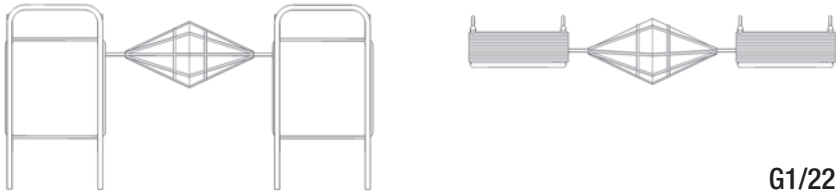


ANCHOR BUOY – STARBOARD IN GREEN COLOUR, PORT IN RED COLOUR  
(1/50 SCALE)

G1/21 PROFILE

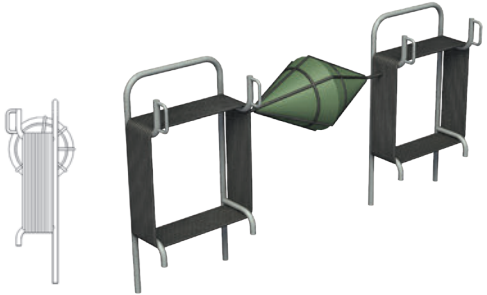
G1/22 PLAN

G1/23 BACK VIEW



G1/21

G1/22



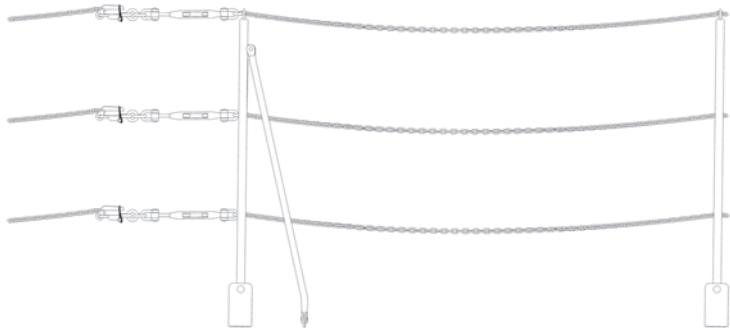
G1/23

GUARD RAILS (FOLDED WHEN MAIN ARTILLERY WAS GOING INTO  
ACTION) (1/25 SCALE)

G1/24 PROFILE

G1/25 PLAN

G1/26 BACK VIEW



G1/24

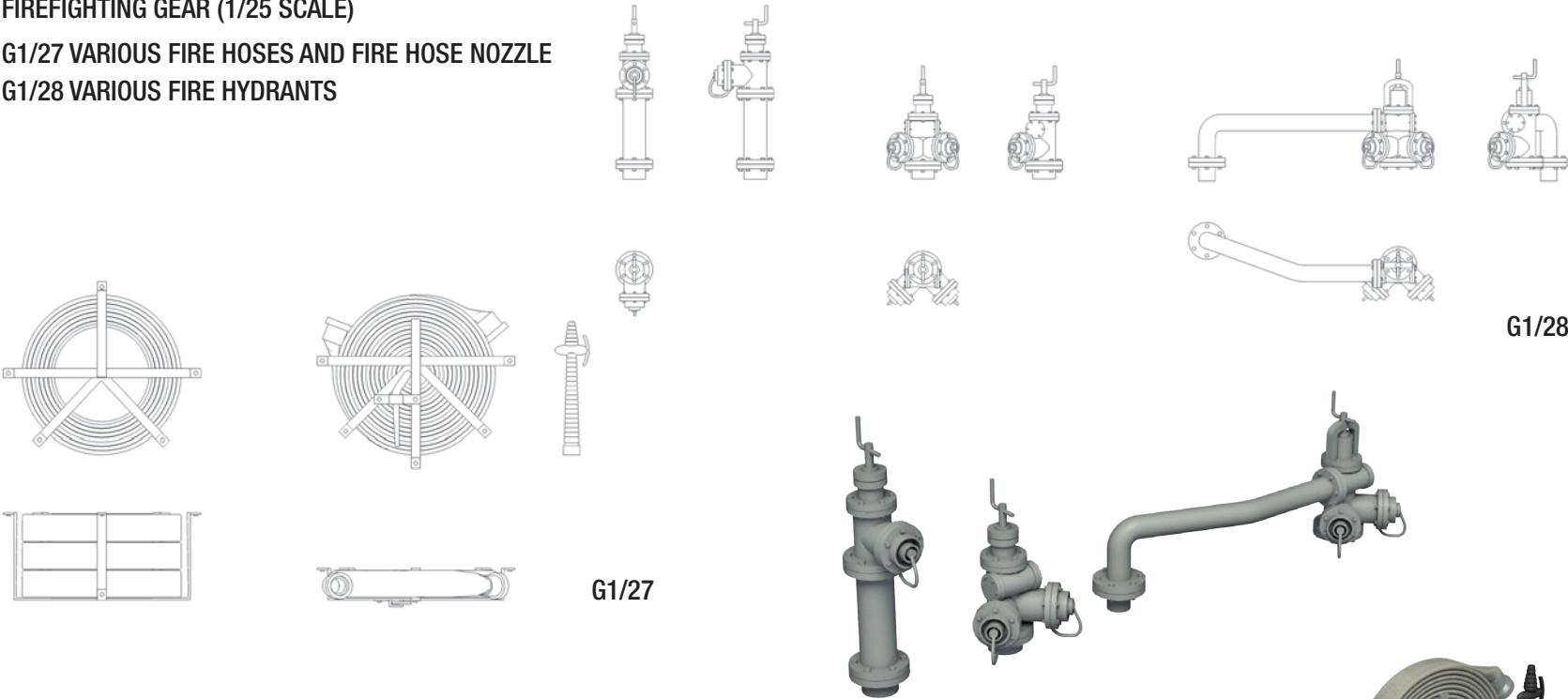
G1/25



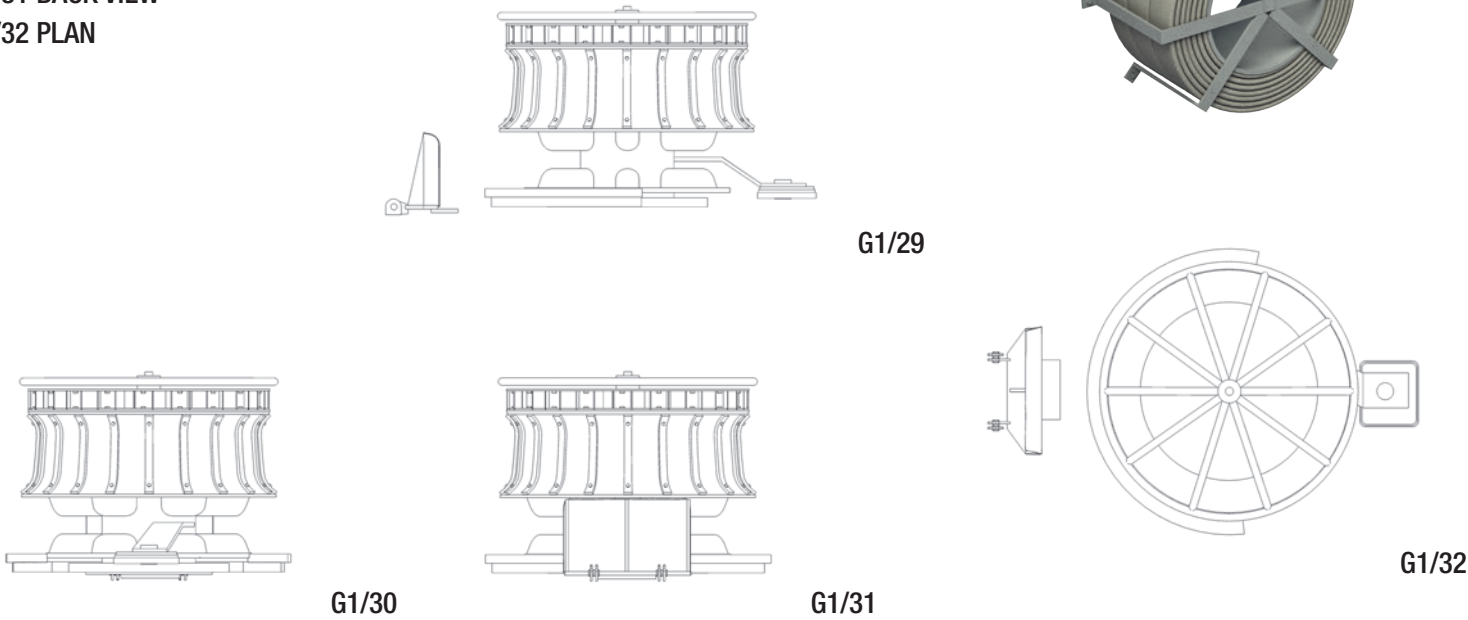
G1/26



FIREFIGHTING GEAR (1/25 SCALE)  
G1/27 VARIOUS FIRE HOSES AND FIRE HOSE NOZZLE  
G1/28 VARIOUS FIRE HYDRANTS



CABLE HOLDER (1/50 SCALE)  
G1/29 PROFILE  
G1/30 FRONT VIEW  
G1/31 BACK VIEW  
G1/32 PLAN

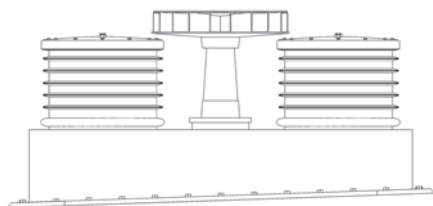


# **ELECTRIC CAPSTAN WITH ROPE DRUMS ON FORECASTLE (1/50 SCALE)**

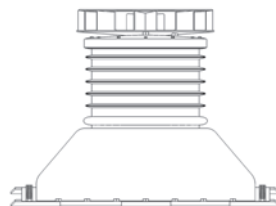
**G1/33 PROFILE**

**G1/34 FRONT VIEW**

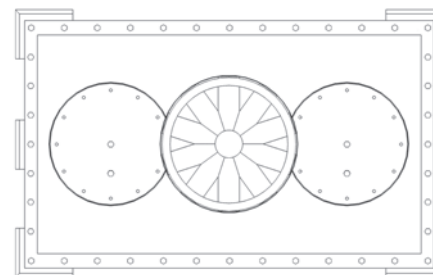
**G1/35 BACK VIEW**



**G1/33**



**G1/34**



**G1/35**

# **ELECTRIC CAPSTAN WITH ROPE DRUMS ON QUARTERDECK (1/50 SCALE)**

**G1/36 PROFILE**

**G1/37 FRONT VIEW**



**G1/36**



**G1/37**

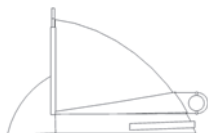


# **NAVEL PIPE (1/50 SCALE)**

**G1/38 PROFILE**

**G1/39 BACK VIEW**

**G1/40 PLAN**



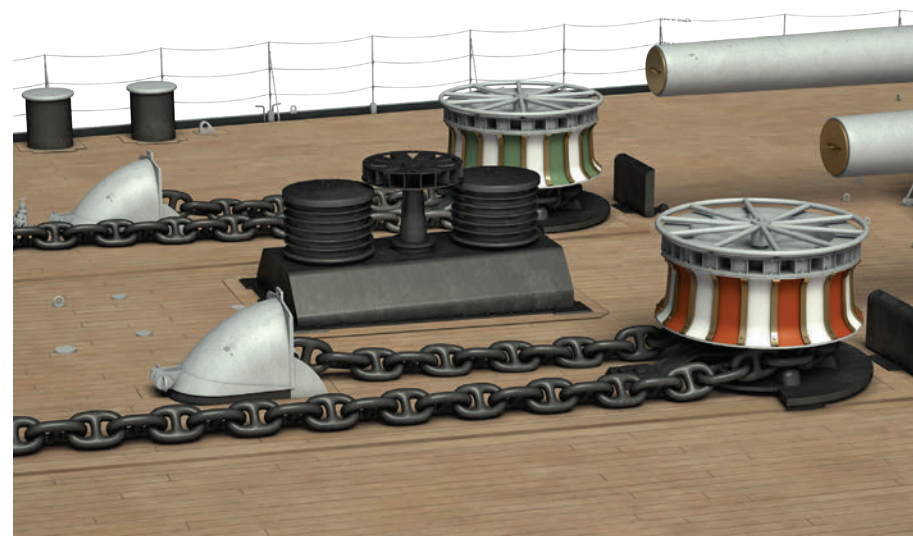
**G1/38**



**G1/39**



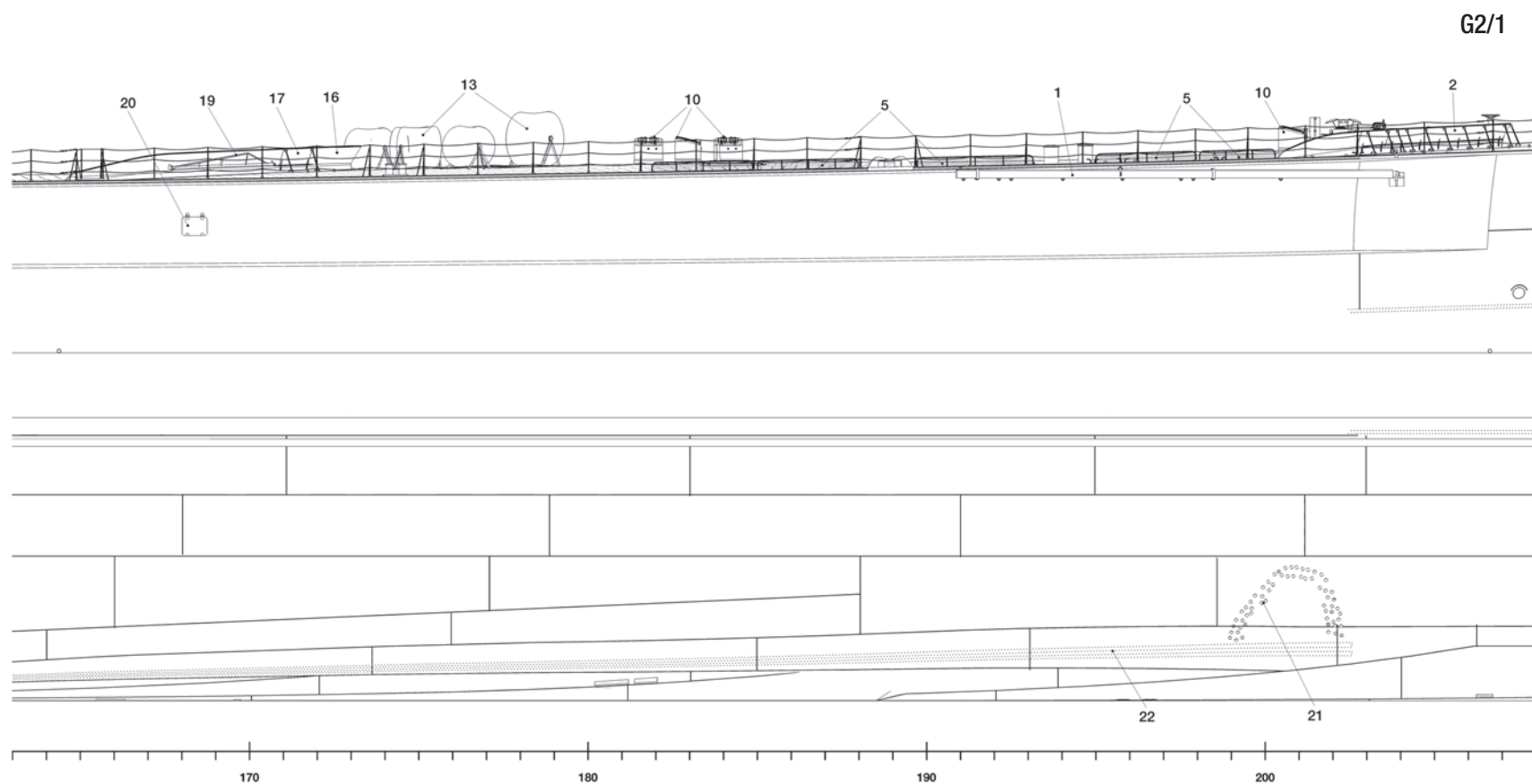
**G1/40**



**HULL AND DECK FITTINGS, FRAMES 163–208 (1/200 SCALE)****G2/1 RIGHT PROFILE****G2/1–2 HULL AND DECK FITTINGS, FRAMES 163–208**

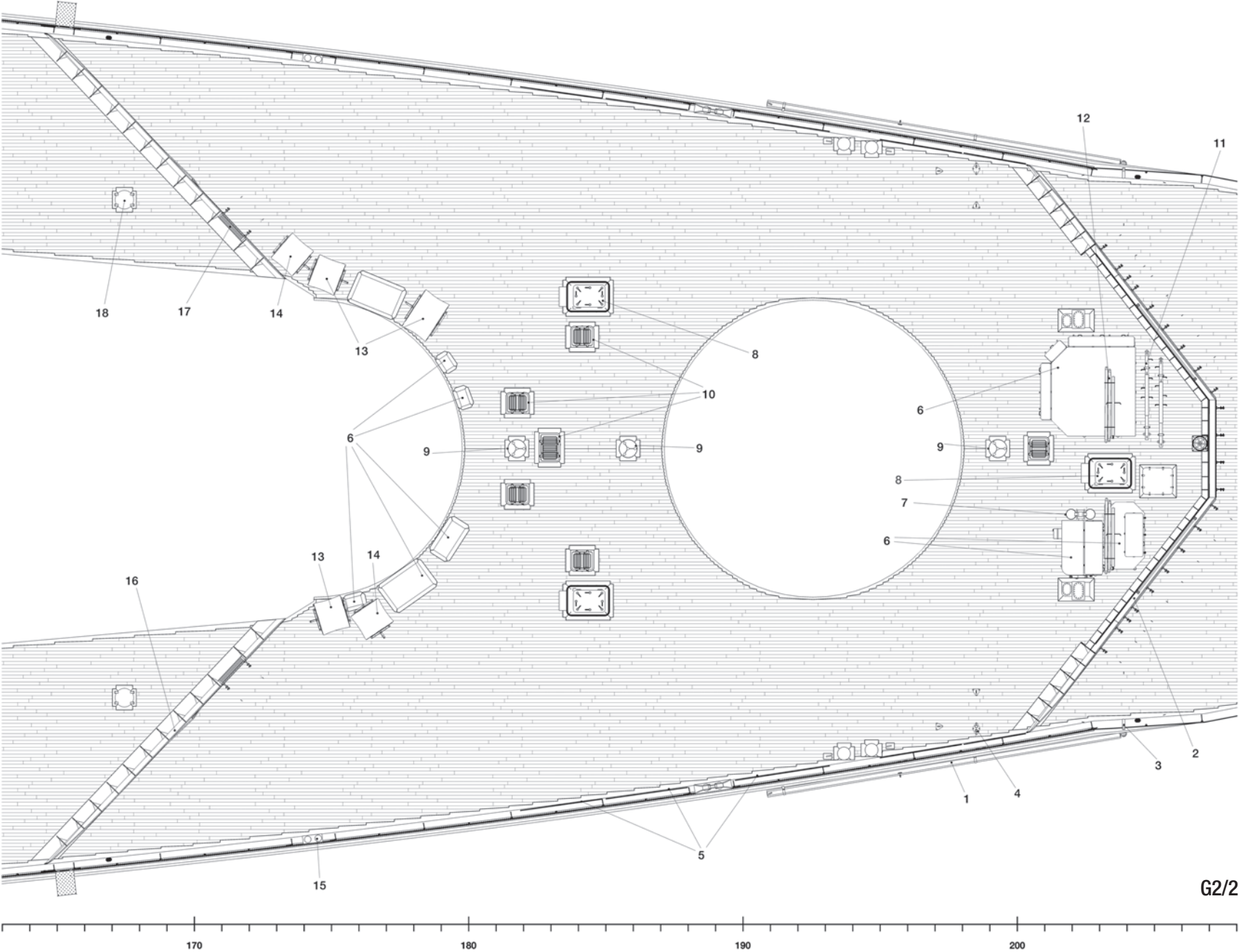
- 1 Fore boat boom (stowed)
- 2 Fore breakwater (central part collapsible)
- 3 Boat boom mast attachment point
- 4 Fore paravane crane attachment point
- 5 Barrier preventing empty 38cm shell cases from falling overboard
- 6 Vent
- 7 Loudspeaker
- 8 Deck hatch

- 9 38cm ammunition magazine loading point
- 10 Skylight
- 11 Boat boom mast (stowed)
- 12 Paravane crane struts (stowed)
- 13 Wire rope reel under canvas cover
- 14 Wire rope reel (added March 1941)
- 15 Small bollards (added March 1941)
- 16 Rear breakwater
- 17 Collapsible breakwater passage
- 18 Single 2cm mount
- 19 Stowed paravane crane arm
- 20 Dockside connection opening under armoured cover
- 21 GHG (*Gruppenhorchgerät*) – microphone array for acoustic propeller detection
- 22 Torpedo bulkhead riveting





G2/2 PLAN



SCUPPER (1/25 SCALE)

G2/3 PLAN



G2/3

FORE BREAKWATER (1/100 SCALE)

G2/4 PROFILE

G2/5 FRONT VIEW

G2/6 BACK VIEW

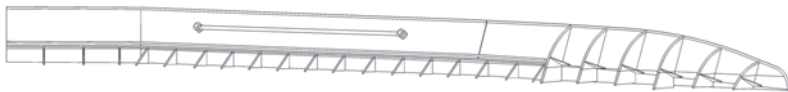
G2/7 PLAN



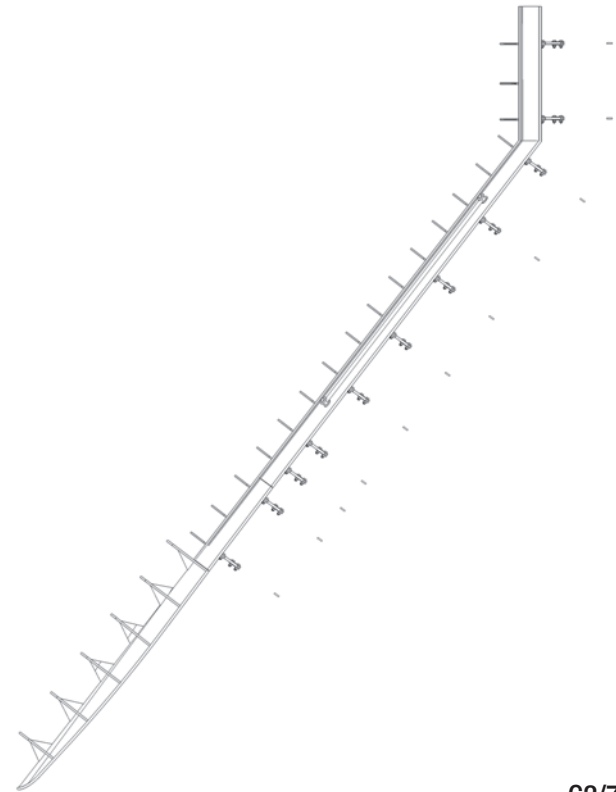
G2/4



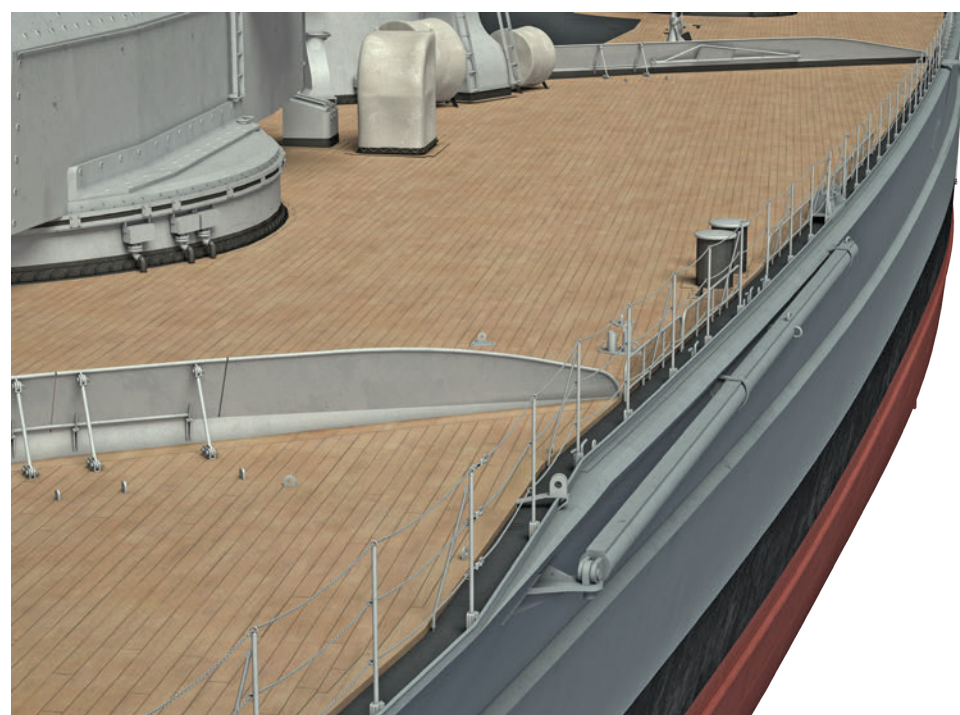
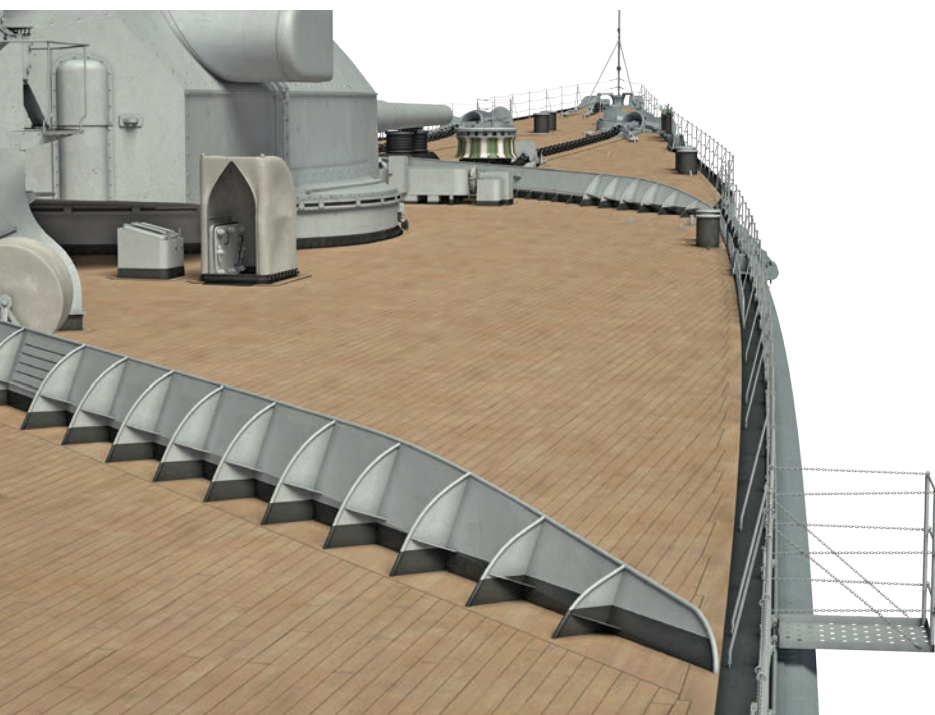
G2/5



G2/6



G2/7



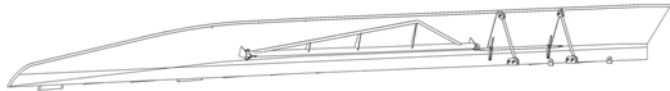
REAR BREAKWATER (1/100 SCALE)

G2/8 PROFILE

G2/9 FRONT VIEW

G2/10 BACK VIEW

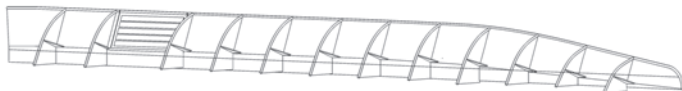
G2/11 PLAN



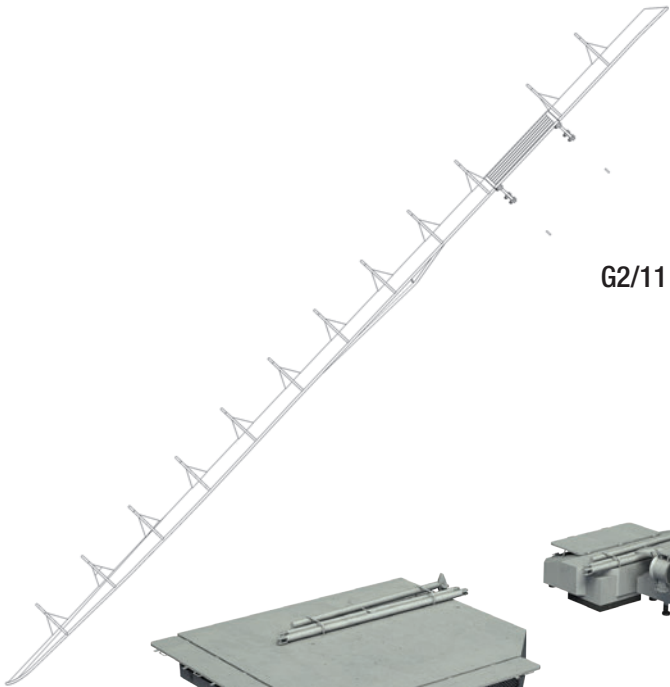
G2/8



G2/9



G2/10



G2/11

VENTS AT FRAME 203 (1/100 SCALE)

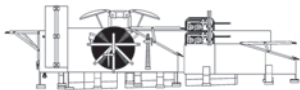
G2/12 RIGHT PROFILE

G2/13 LEFT PROFILE

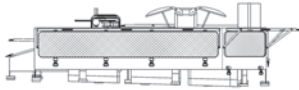
G2/14 FRONT VIEW

G2/15 BACK VIEW

G2/16 PLAN



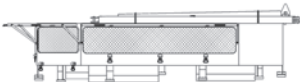
G2/12



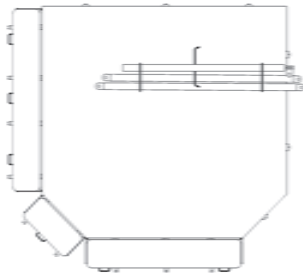
G2/13



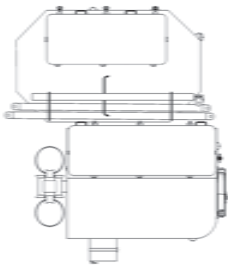
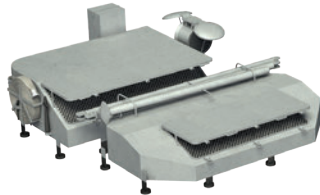
G2/14



G2/15



G2/16





LOUDSPEAKER (1/50 SCALE)

G2/17 PROFILE

G2/18 FRONT VIEW

G2/19 PLAN



G2/17



G2/18



G2/19



SKYLIGHTS (1/50 SCALE)

G2/20 SKYLIGHT TYPE 1 (OPEN)

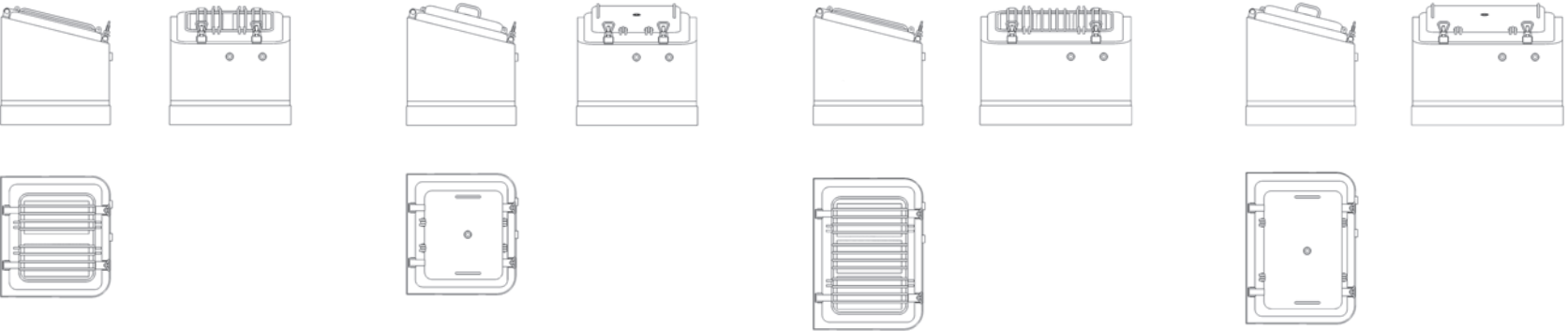
G2/21 SKYLIGHT TYPE 1 (CLOSED)

G2/22 SKYLIGHT TYPE 2 (OPEN)

G2/23 SKYLIGHT TYPE 2 (CLOSED)

G2/24 SKYLIGHT TYPE 3 (OPEN)

G2/25 SKYLIGHT TYPE 3 (CLOSED)

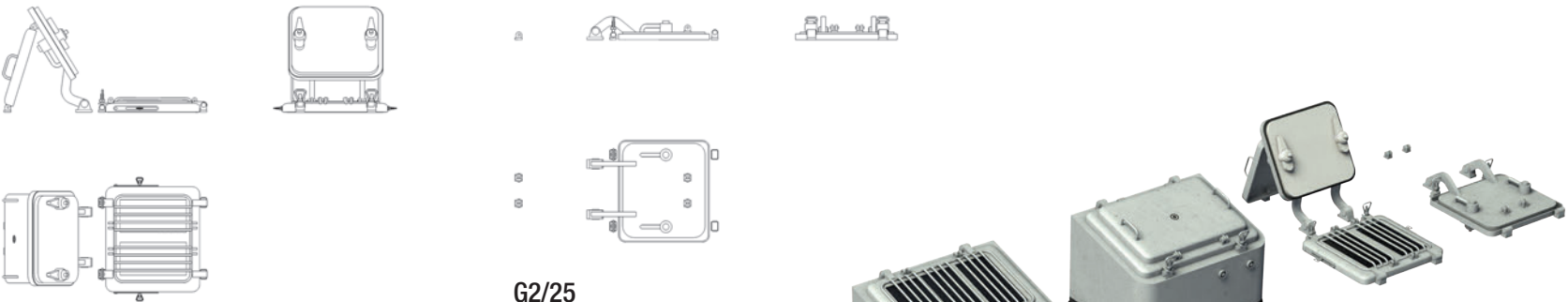


G2/20

G2/21

G2/22

G2/23



G2/24

G2/25



DECK HATCH (1/50 SCALE)

G2/26 PROFILE (HATCH CLOSED)

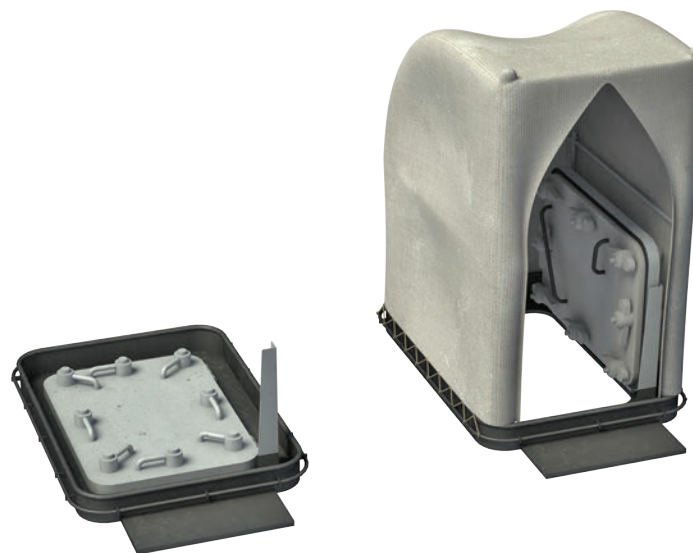
G2/27 PLAN (HATCH CLOSED)

G2/28 RIGHT PROFILE (HATCH OPEN)

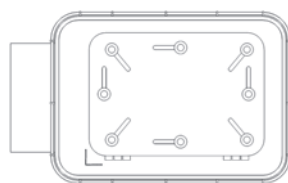
G2/29 LEFT PROFILE (HATCH OPEN)

G2/30 FRONT VIEW (HATCH OPEN)

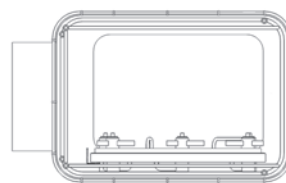
G2/31 PLAN (HATCH OPEN)



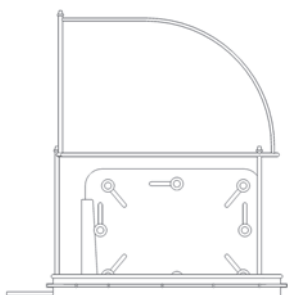
G2/26



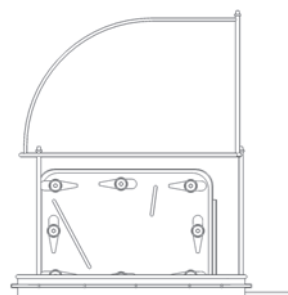
G2/27



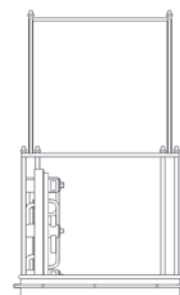
G2/31



G2/28



G2/29



G2/30



WIRE ROPE REELS (1/50 SCALE)

G2/32 REEL TYPE 1 (SHOWN ALSO WITH CANVAS COVER)

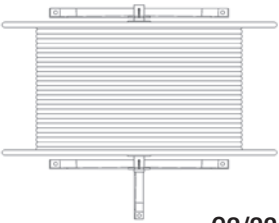
G2/33 REEL TYPE 2

G2/34 REEL TYPE 3

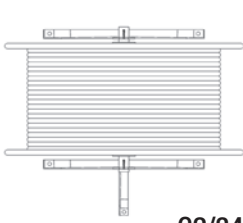
G2/35 REEL TYPE 4

G2/36 REEL TYPE 5

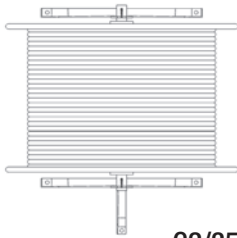
G2/37 REEL TYPE 6



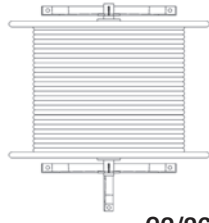
G2/33



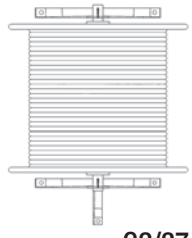
G2/34



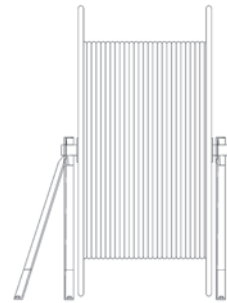
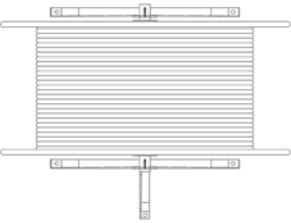
G2/35



G2/36



G2/37

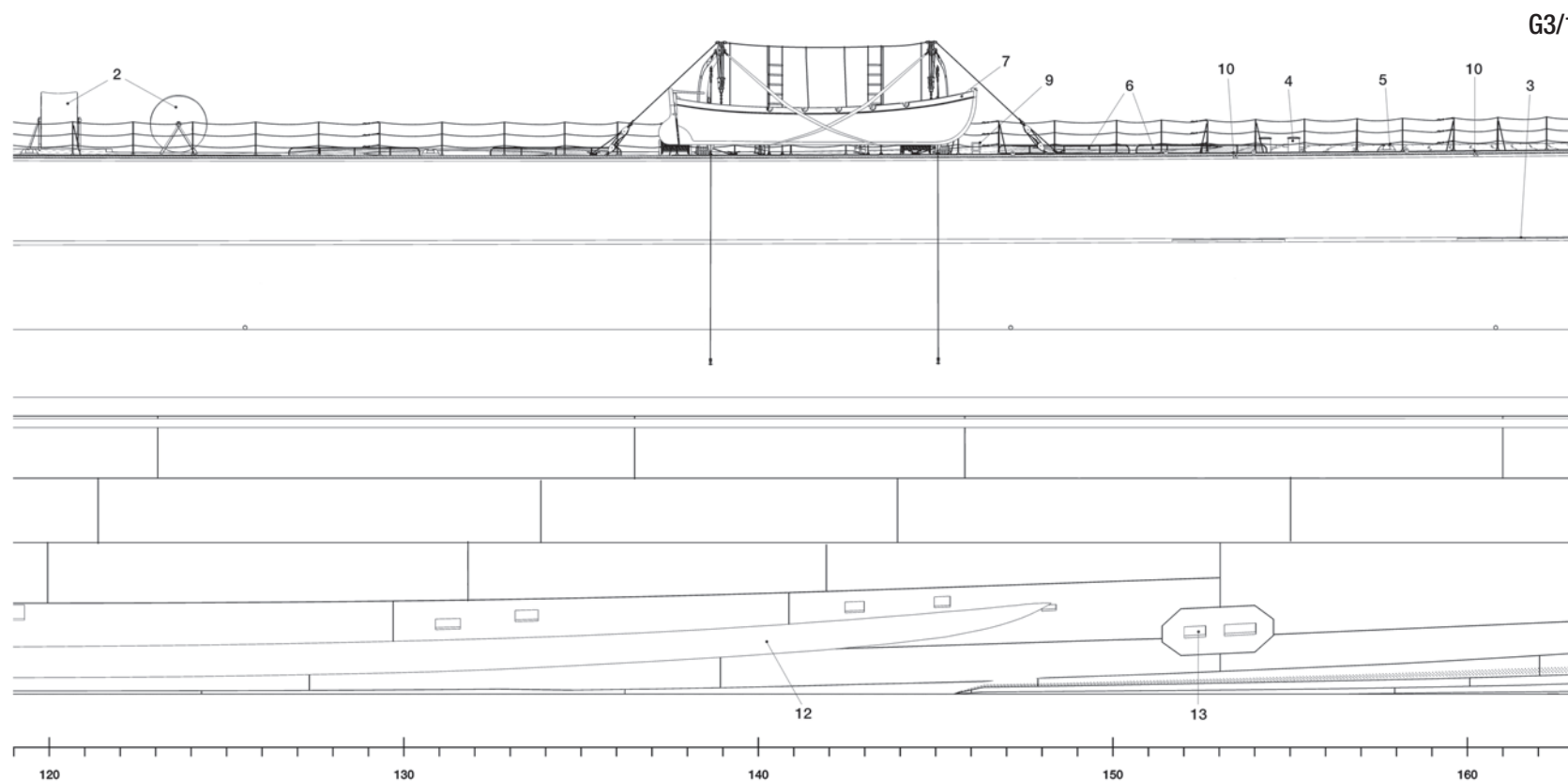
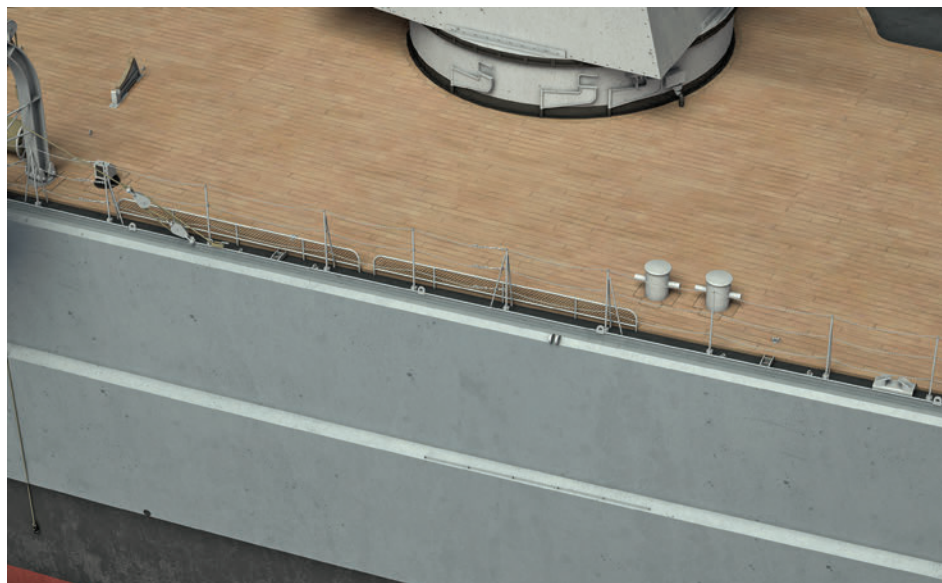


G2/32



**HULL AND DECK FITTINGS, FRAMES 119–163 (1/200 SCALE)****G3/1 RIGHT PROFILE****G3/1–2 HULL AND DECK FITTINGS, FRAMES 119–163**

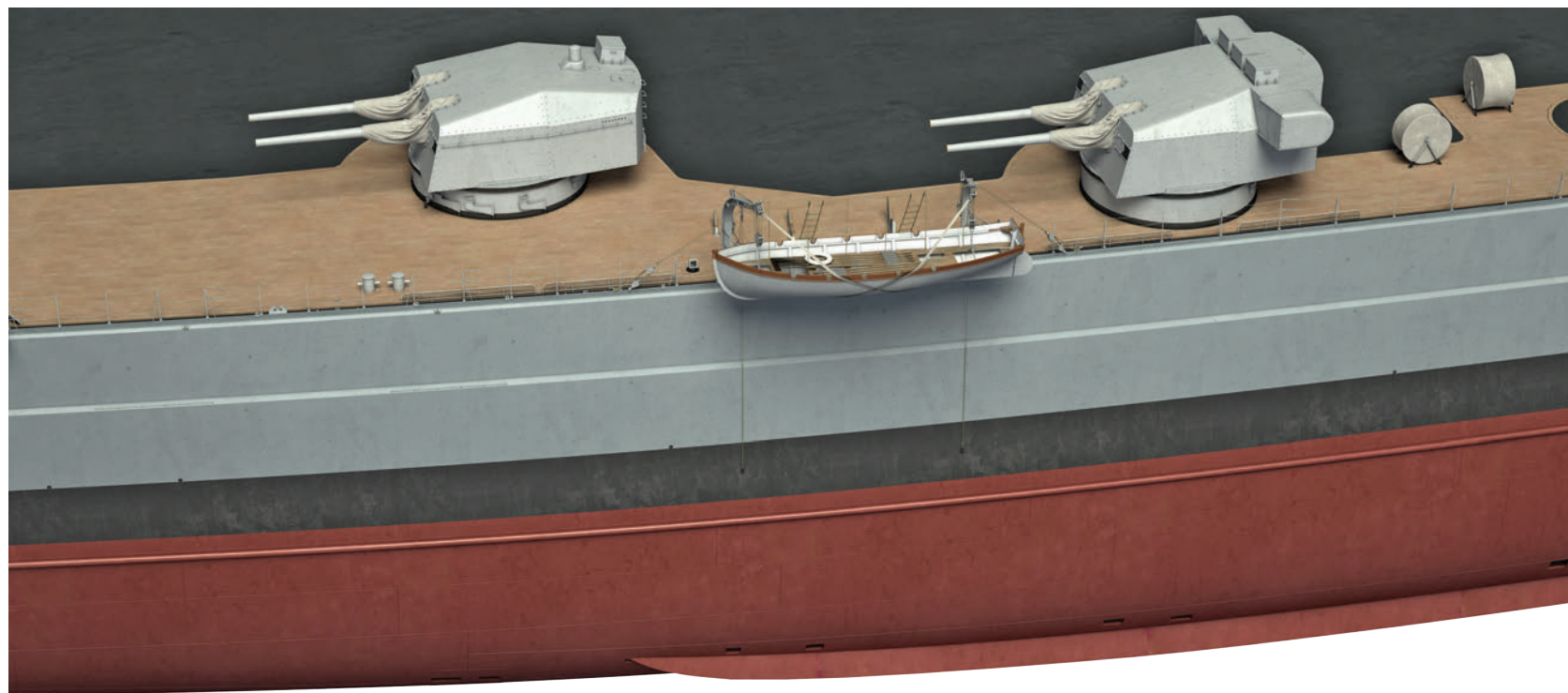
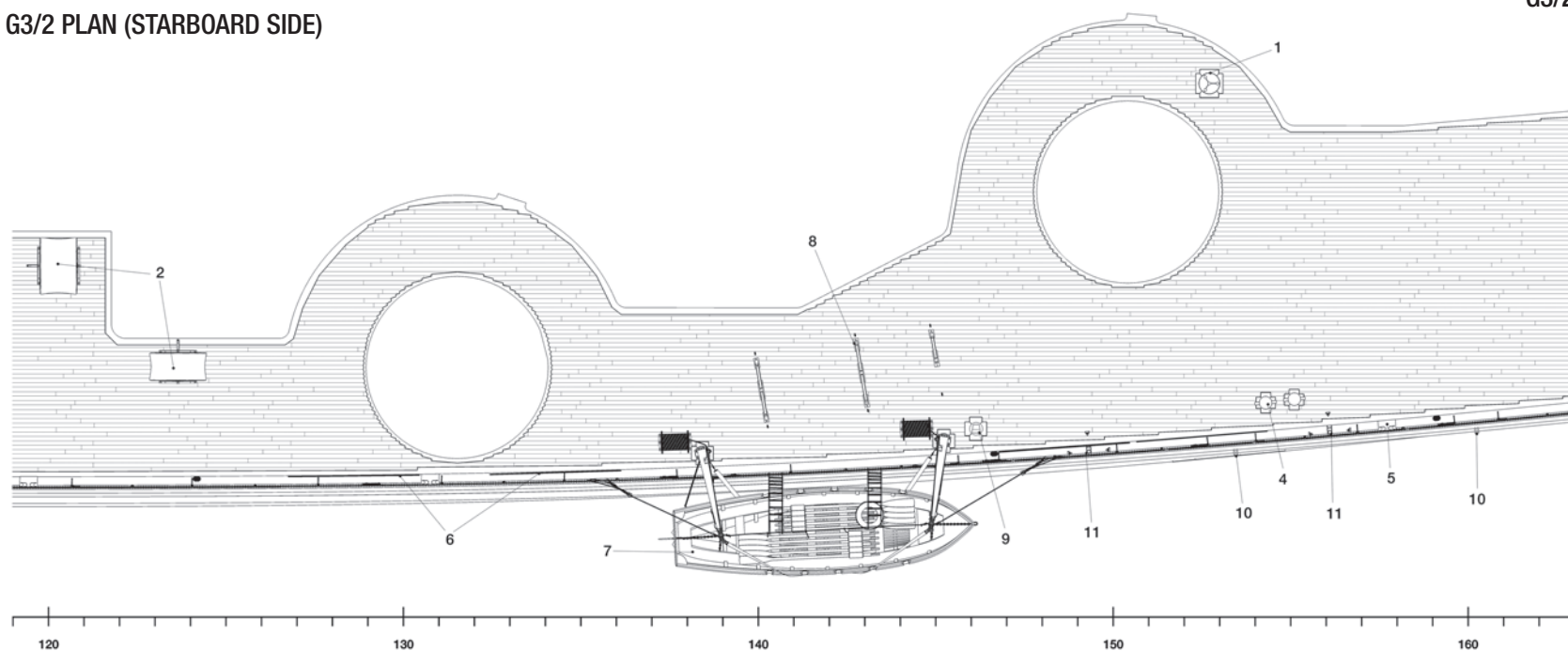
- 1 15cm ammunition magazine loading point
- 2 Reel
- 3 Handrail
- 4 Bollards
- 5 Fairlead
- 6 Barrier preventing empty 15cm shell cases from falling overboard
- 7 Ready-to-use 8.5m cutter on davits (removed April 1941)
- 8 Boat cradle (removed April 1941)
- 9 Periscope for observing enemy destroyers and torpedo boats
- 10 Accommodation ladder platform attachment point
- 11 Accommodation ladder davit attachment point
- 12 Bilge keel
- 13 Machinery cooling water inlets

**G3/1**

## HULL AND DECK FITTINGS, FRAMES 119-163 (1/200 SCALE)

G3/2 PLAN (STARBOARD SIDE)

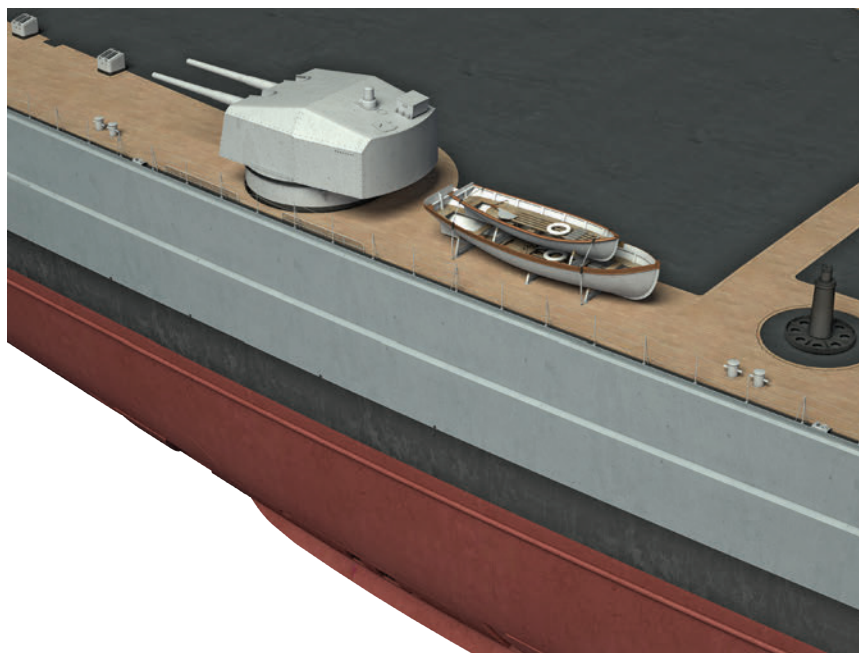
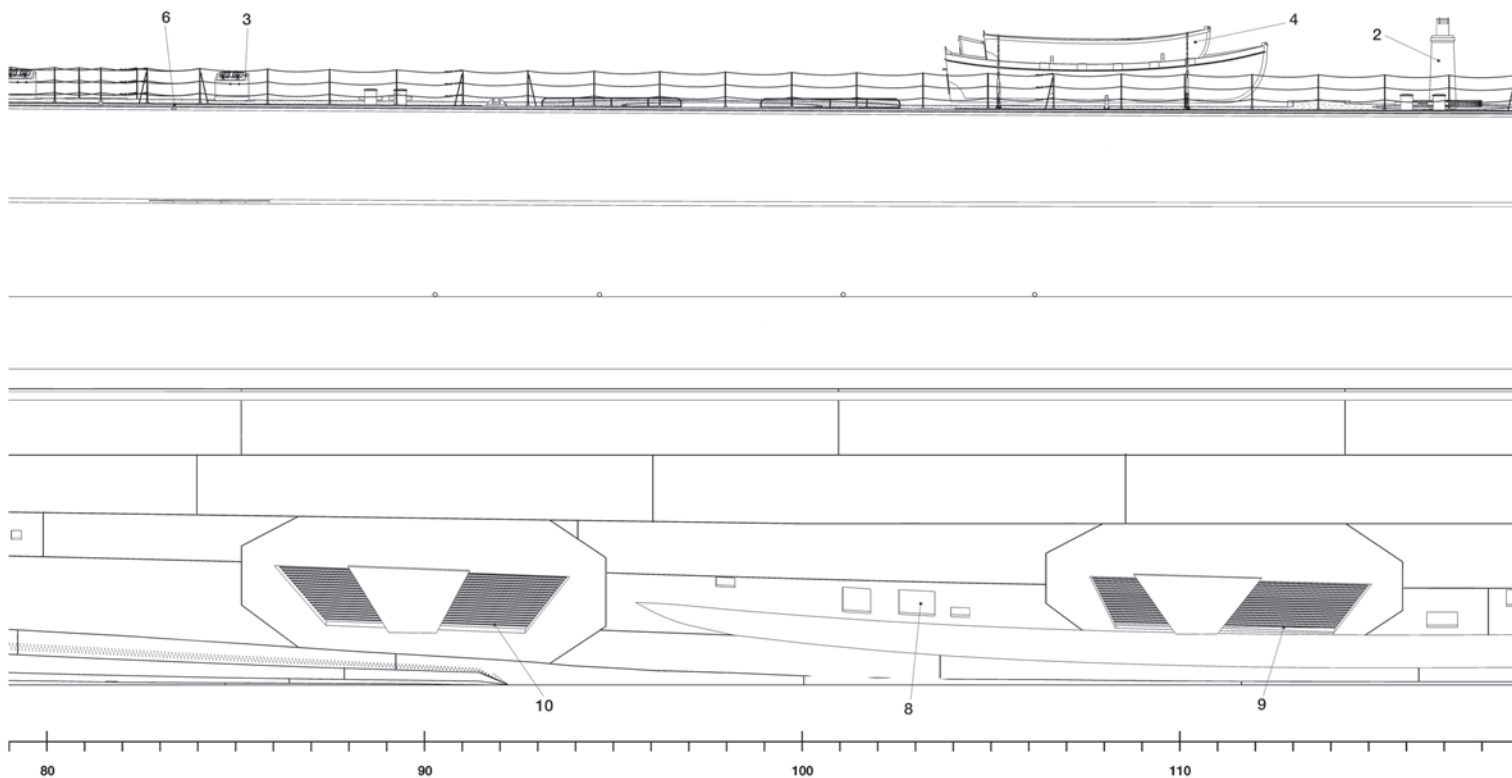
G3/2





**HULL AND DECK FITTINGS, FRAMES 79–119 (1/200 SCALE)****G4/1 RIGHT PROFILE****G4/1–2 HULL AND DECK FITTINGS, FRAMES 79–119**

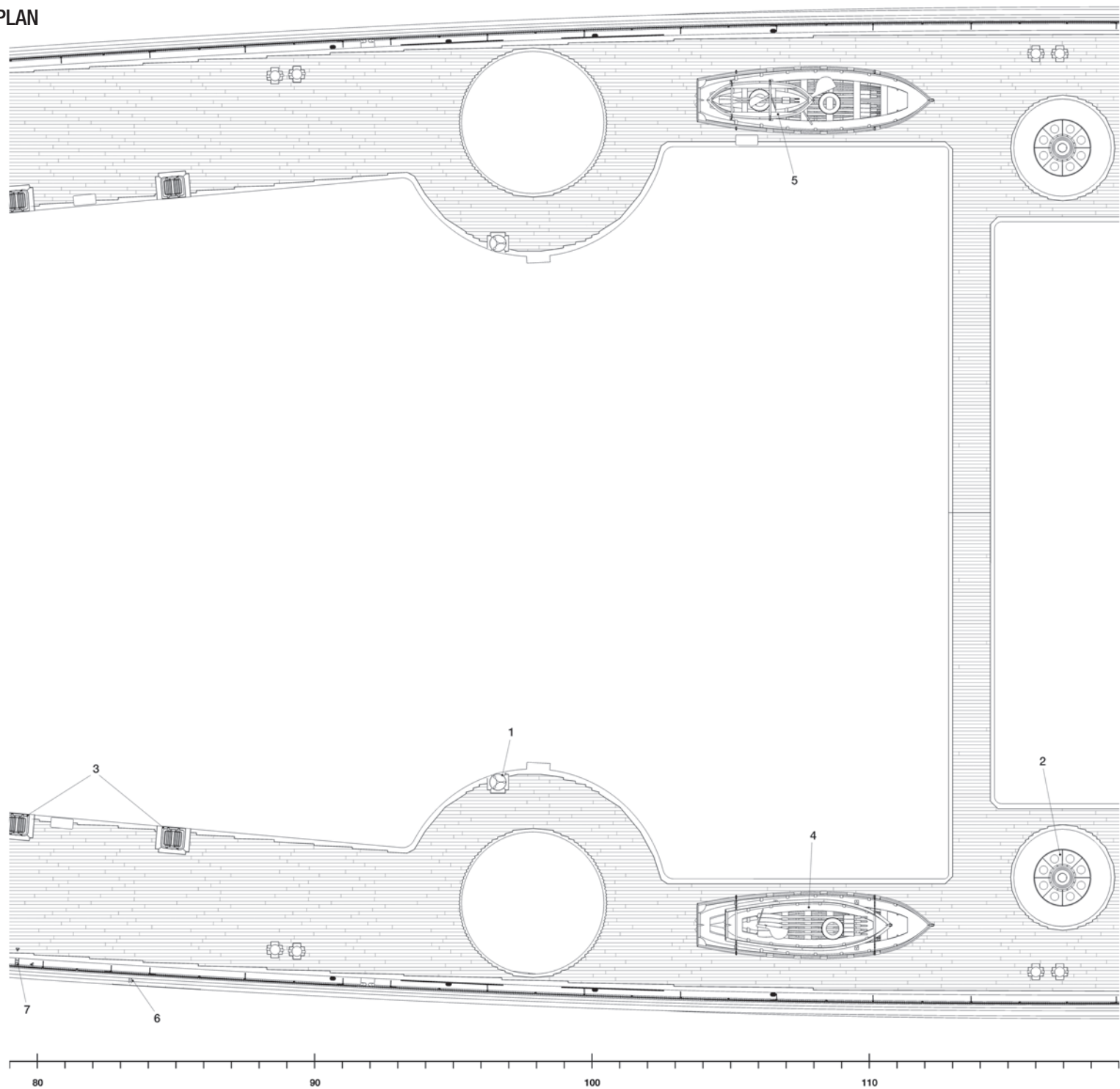
- 1 15cm ammunition magazine loading point
- 2 Main aircraft and boat crane base
- 3 Skylight
- 4 6m yawl stowed inside an 8.5m cutter (removed April 1941)
- 5 3.84m dinghy stowed inside an 8.5m cutter (removed April 1941)
- 6 Accommodation ladder platform attachment point (starboard side only)
- 7 Accommodation ladder davit attachment point (starboard side only)
- 8 Machinery cooling water inlets
- 9 Starboard turbine cooling water inlet
- 10 Middle turbine cooling water inlet (starboard side only)

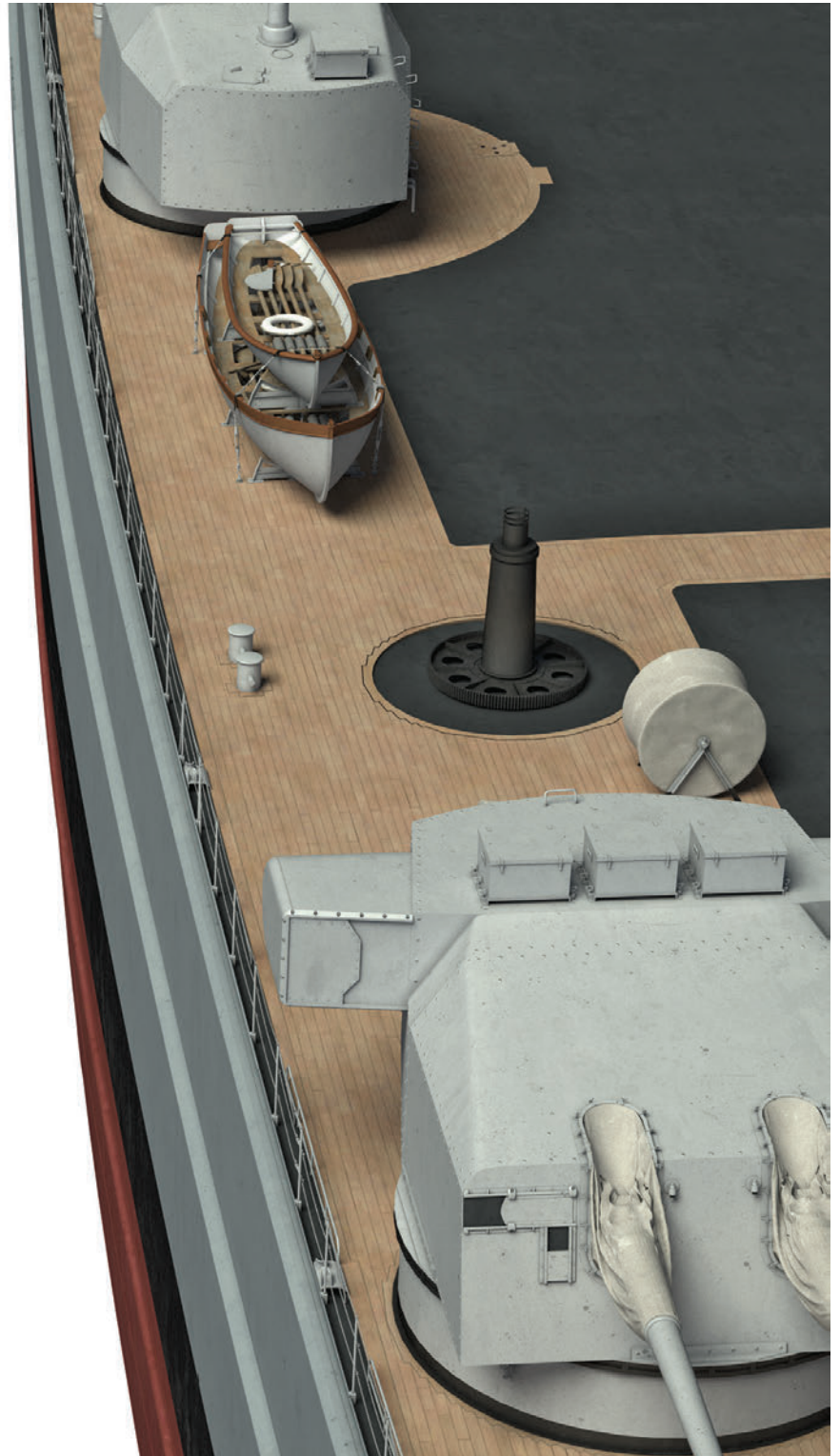
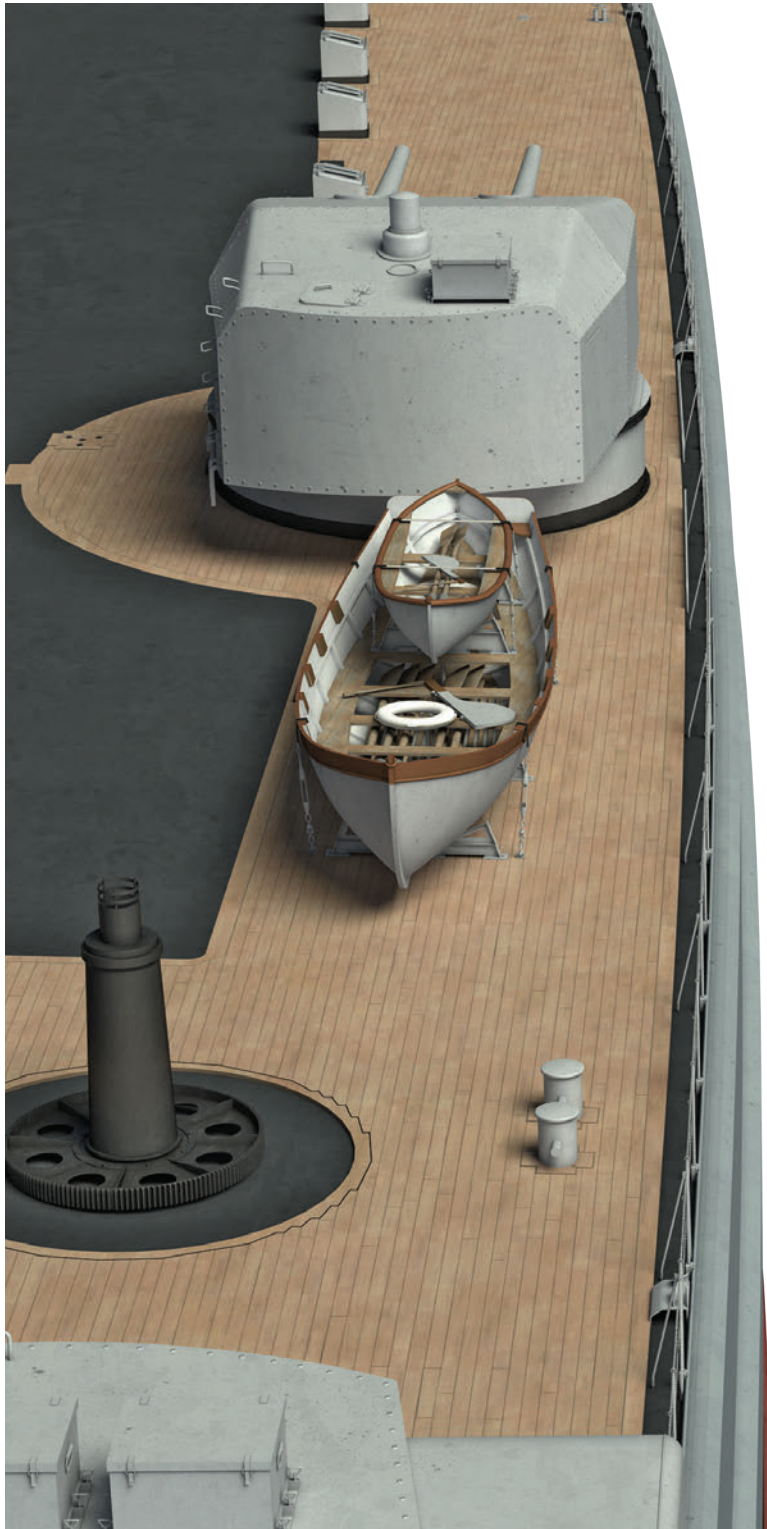
**G4/1**

HULL AND DECK FITTINGS, FRAMES 79-119 (1/200 SCALE)

G4/2 PLAN

G4/2





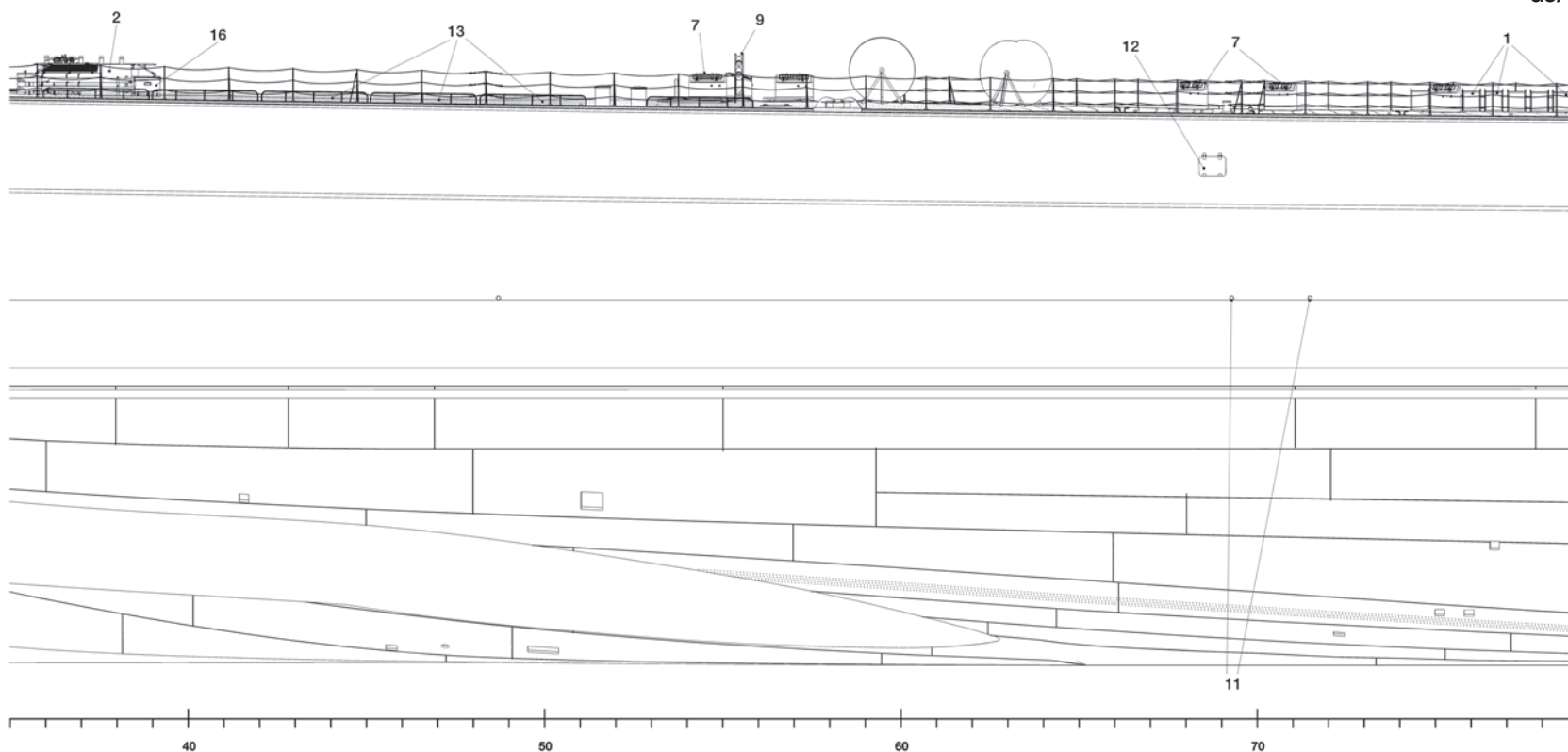
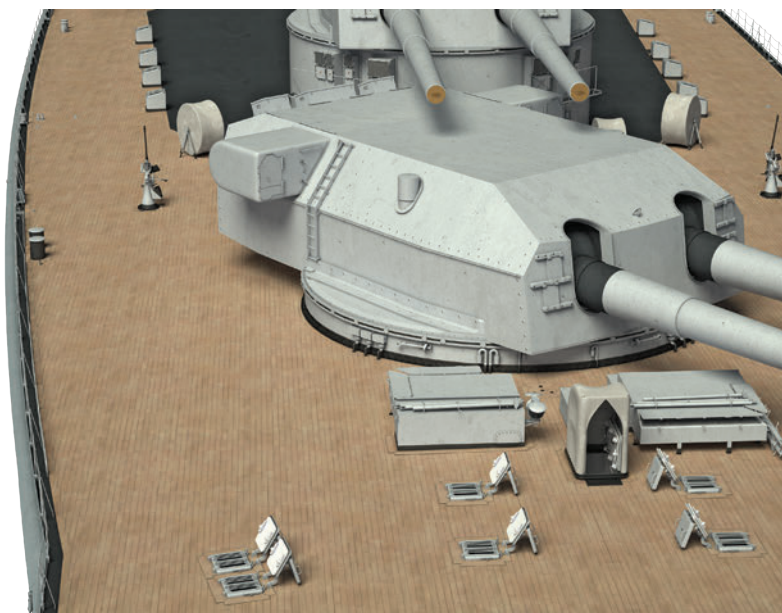


## HULL AND DECK FITTINGS, FRAMES 35–79 (1/200 SCALE)

### G5/1 RIGHT PROFILE

#### G5/1–2 HULL AND DECK FITTINGS, FRAMES 35–79

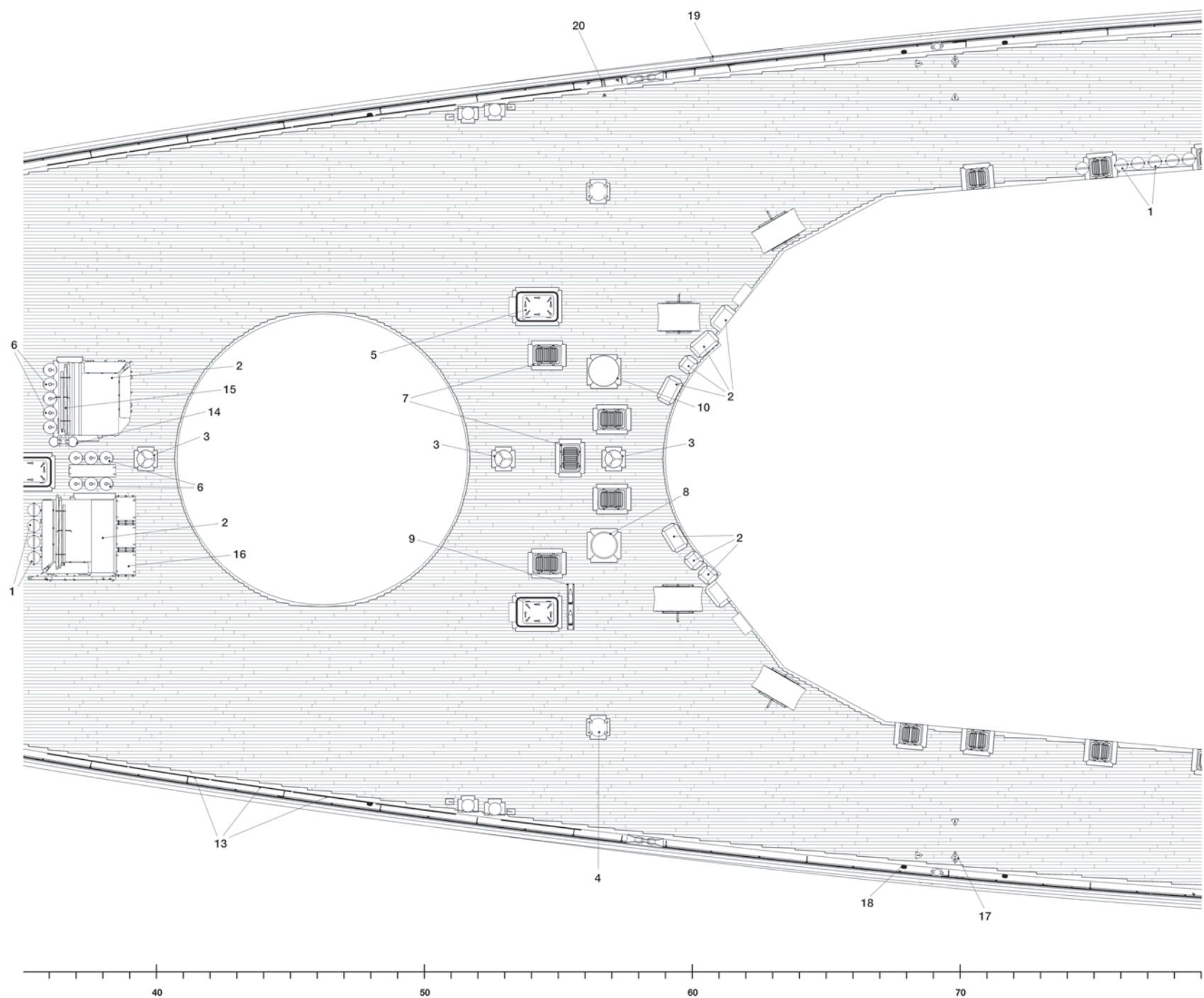
- 1 Stowed depth charges (added April 1941)
- 2 Vent
- 3 38cm ammunition magazine loading point
- 4 Single 2cm mount
- 5 Deck hatch
- 6 Stowed smoke generation containers (added April 1941)
- 7 Skylight
- 8 15cm practice loading machine
- 9 15cm practice ammunition rack
- 10 10.5cm practice loading machine
- 11 Scupper pipe
- 12 Dockside connection opening under armoured cover
- 13 Barrier preventing empty 38cm shell cases from falling overboard
- 14 Loudspeaker
- 15 Paravane crane struts (stowed)
- 16 Inflatable raft container
- 17 Aft paravane crane attachment point
- 18 Scupper
- 19 Accommodation ladder platform attachment point (port side only)
- 20 Accommodation ladder davit attachment point (port side only)



G5/1

G5/2 PLAN

G5/2



SMOKE GENERATION CONTAINER (1/50 SCALE)

G5/3 PROFILE

G5/4 FRONT VIEW

G5/5 PLAN



G5/3



G5/4



G5/5



VENTS AT FRAME 37 (1/100 SCALE)

G5/6 RIGHT PROFILE

G5/7 LEFT PROFILE

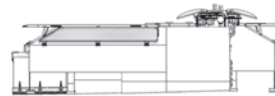
G5/8 FRONT VIEW

G5/9 BACK VIEW

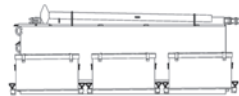
G5/10 PLAN



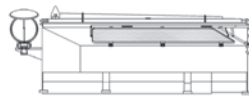
G5/6



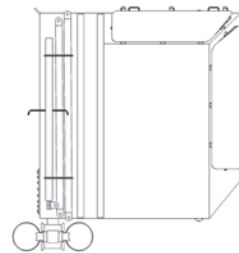
G5/7



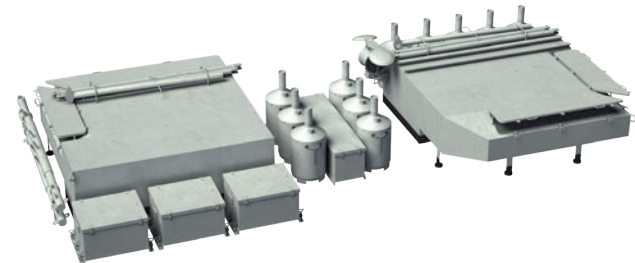
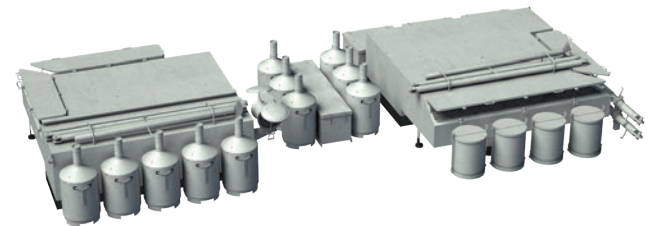
G5/8



G5/9



G5/10

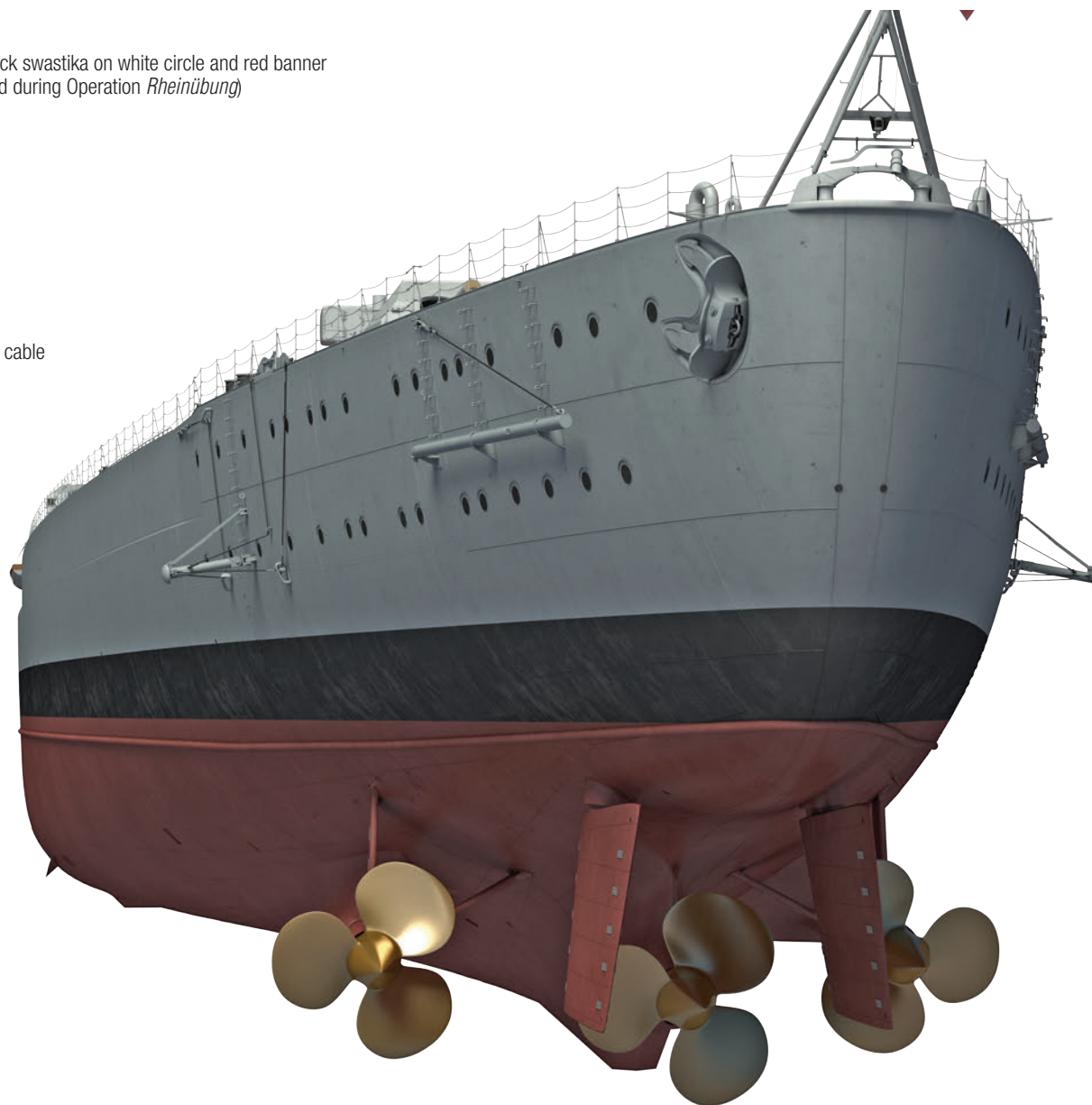




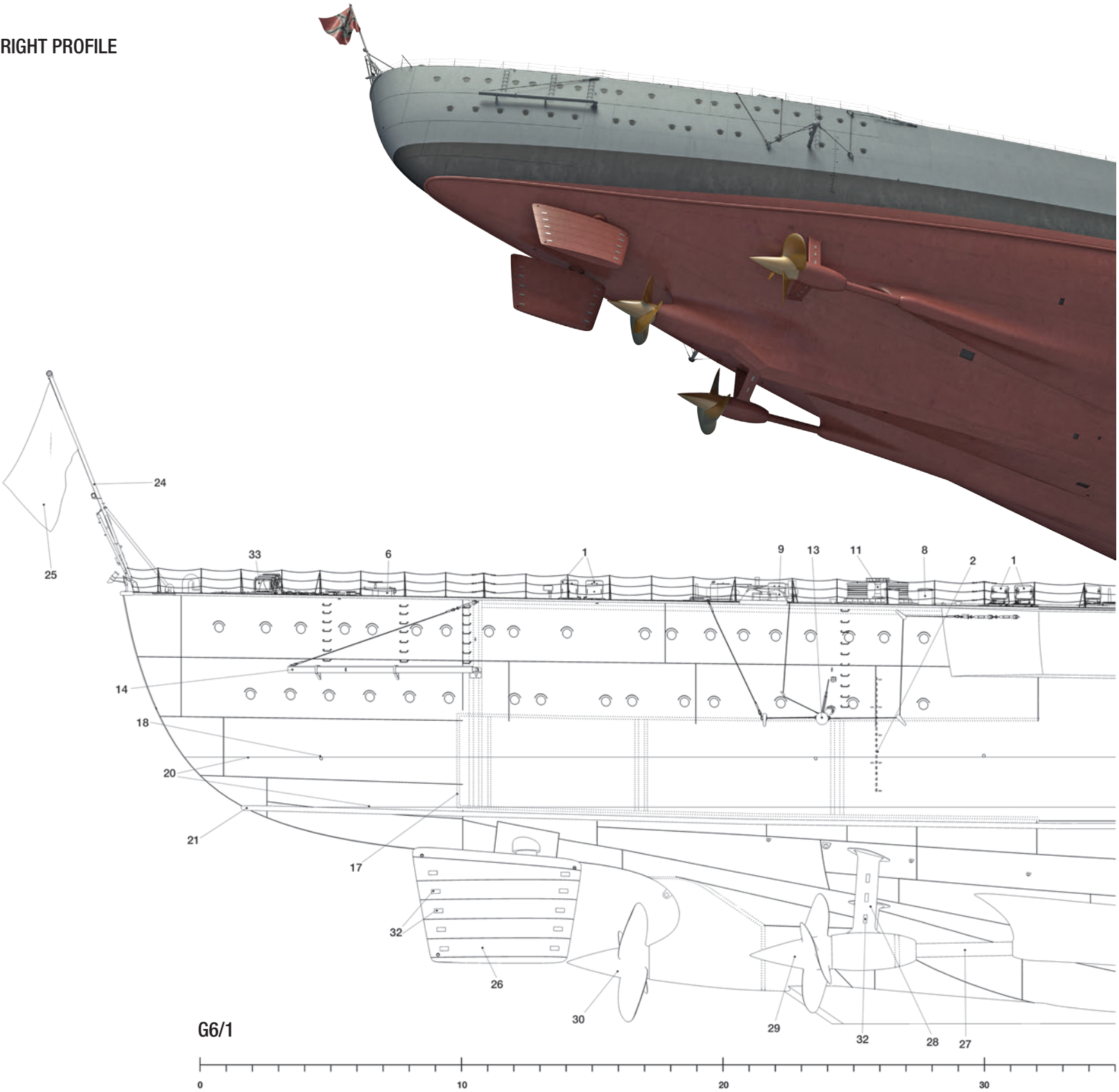
**HULL AND DECK FITTINGS, FRAMES 0–35 (1/200 SCALE)****G6/1–4 HULL AND DECK FITTINGS, FRAMES 0–35**

- 1 Skylight
- 2 White painted welded draught marks
- 3 Vent
- 4 Anchor cable
- 5 Cable stopper
- 6 Anchor wire rope holder
- 7 Deck hatch
- 8 Bollards
- 9 Roller fairlead
- 10 *Fliegersichtzeichen* (air recognition mark) – black swastika on white circle and red banner (painted early 1941, painted over and repainted during Operation *Rheinübung*)
- 11 Electric capstan with rope drums
- 12 Triple fire hydrant
- 13 Folding propeller guard
- 14 Aft boat boom (stowed)
- 15 Smoke generation compartment hatch
- 16 Smoke generation container hatch
- 17 Stern armour riveting
- 18 Scupper pipe
- 19 Scupper
- 20 Boot topping borders
- 21 MES (*Magnetischer Eigenschutz*) – degaussing cable
- 22 Stern anchor

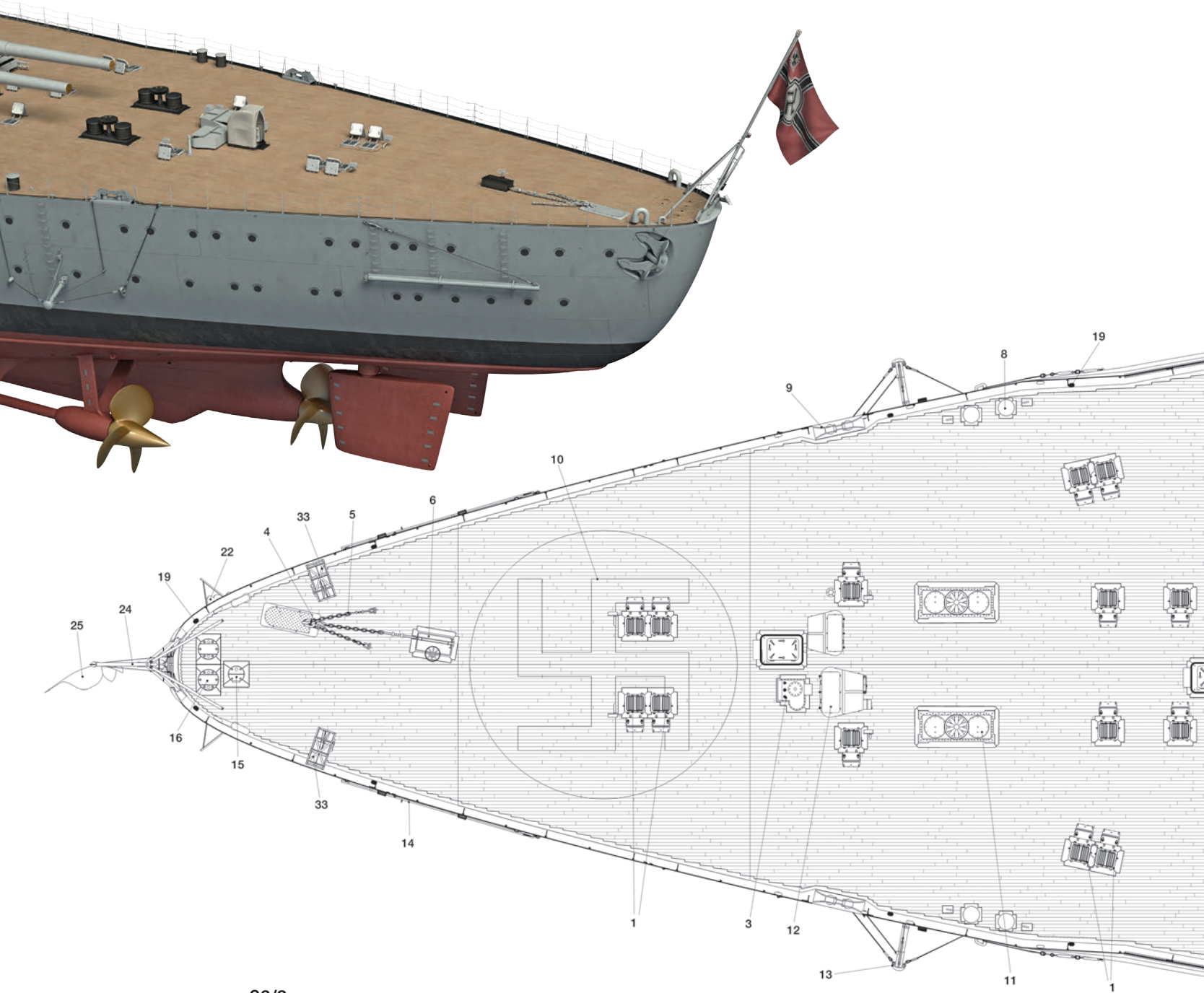
- 23 Stern anchor hawse pipe
- 24 Ensign staff (removed before Operation *Rheinübung*)
- 25 Ensign
- 26 Rudder
- 27 Starboard propeller shaft
- 28 Starboard propeller strut
- 29 Starboard propeller (right-handed – clockwise rotating)
- 30 Middle propeller (left-handed – anticlockwise rotating)
- 31 Port propeller (left-handed – anticlockwise rotating)
- 32 Zinc strips
- 33 Depth charge rack (added April 1941)



G6/1 RIGHT PROFILE



G6/2 PLAN

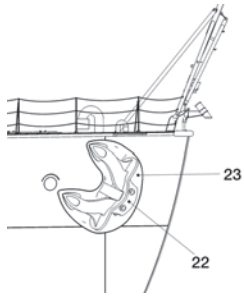
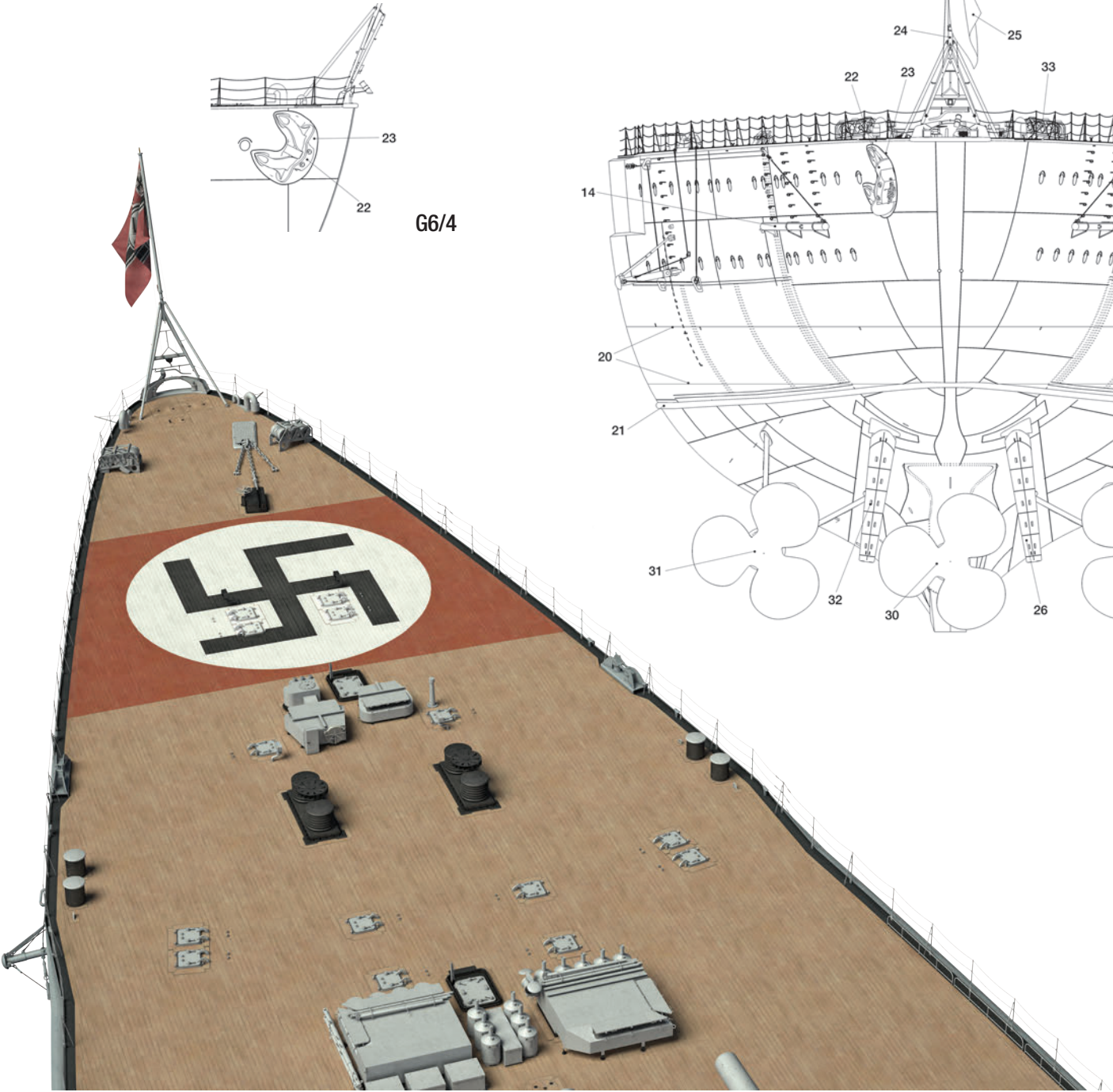


G6/2

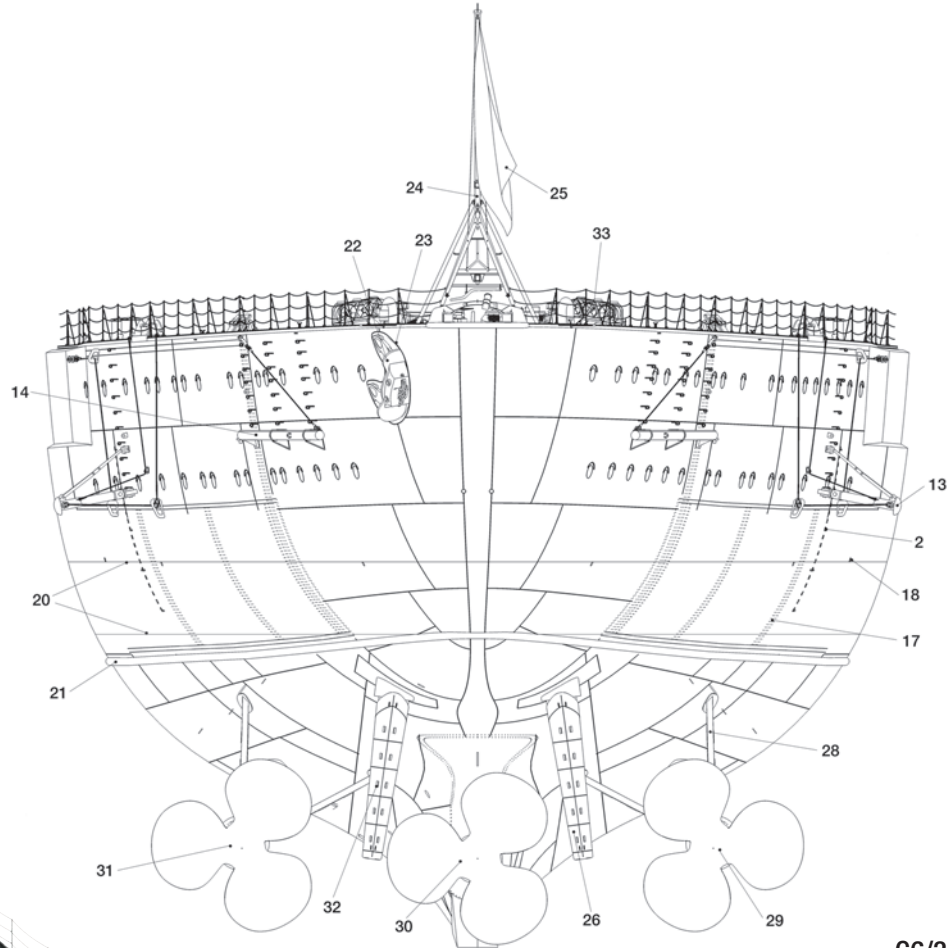




G6/3 BACK VIEW  
G6/4 LEFT PROFILE (FRAGMENT)



G6/4



G6/3

VENTS AT FRAME 21 (1/100 SCALE)

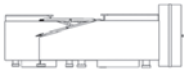
G6/5 RIGHT PROFILE

G6/6 LEFT PROFILE

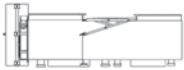
G6/7 FRONT VIEW

G6/8 BACK VIEW

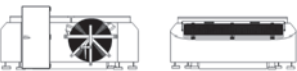
G6/9 PLAN/



G6/5



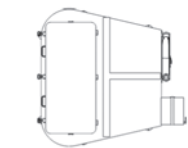
G6/6



G6/7



G6/8



G6/9



ANCHOR WIRE ROPE HOLDER (1/50 SCALE)

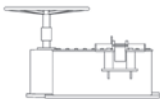
G6/10 RIGHT PROFILE

G6/11 FRONT VIEW

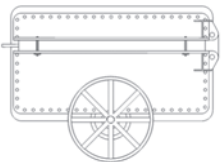
G6/12 PLAN



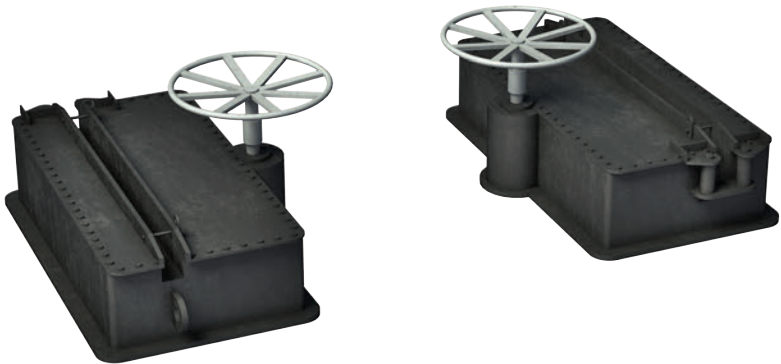
G6/10



G6/11



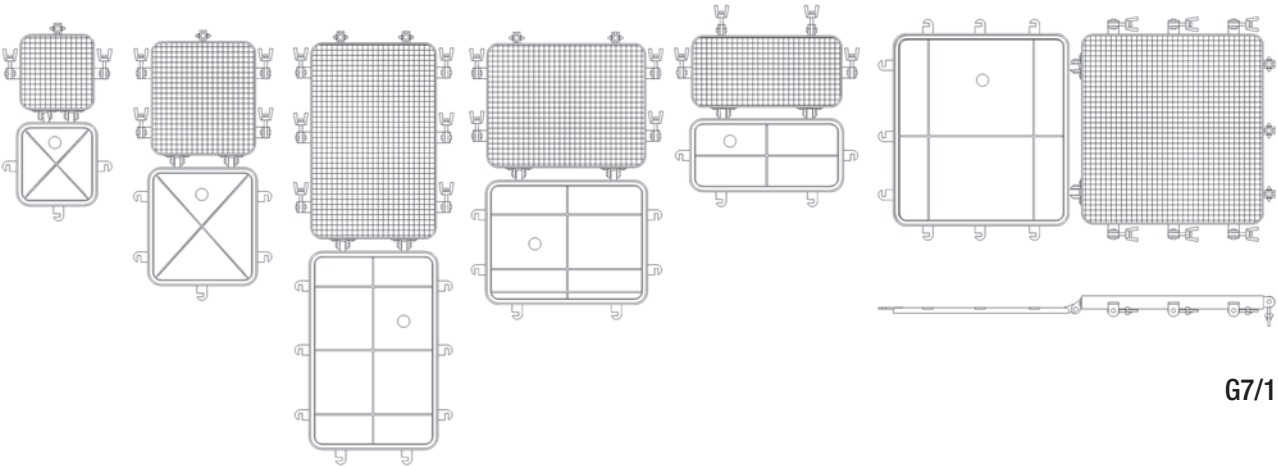
G6/12



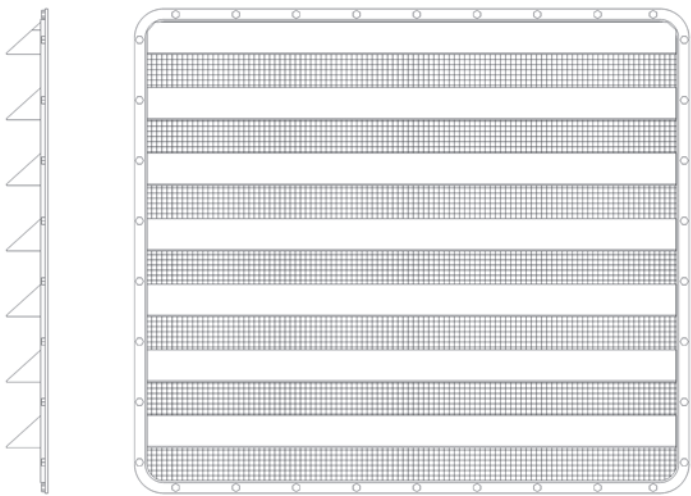
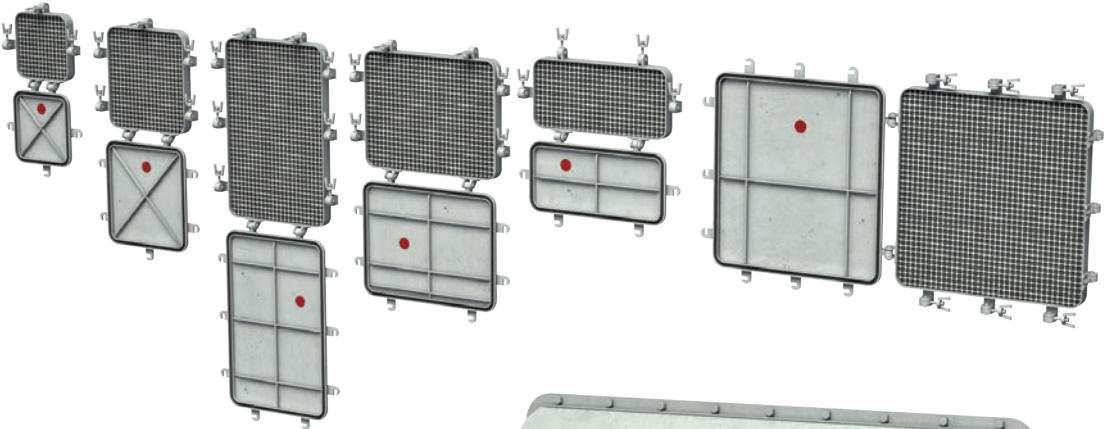
TYPICAL WALL VENTS (1/25 SCALE)

G7/1 LOCKABLE VENTS

G7/2 OPEN VENTS



G7/1



G7/2





PARAVANE (1/25 SCALE)

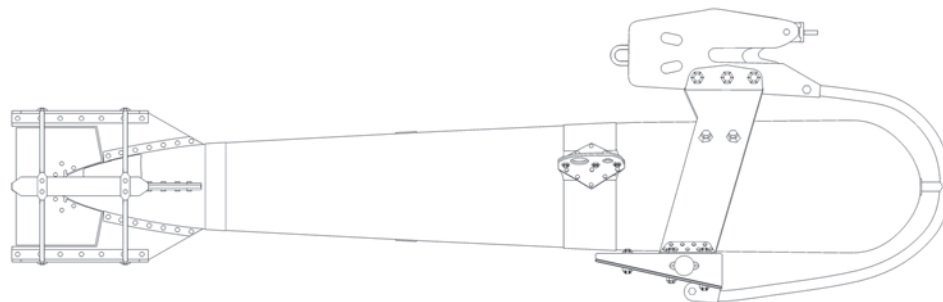
G7/3 RIGHT PROFILE

G7/4 FRONT VIEW

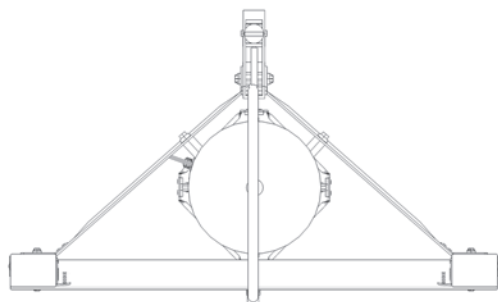
G7/5 BACK VIEW

G7/6 PLAN

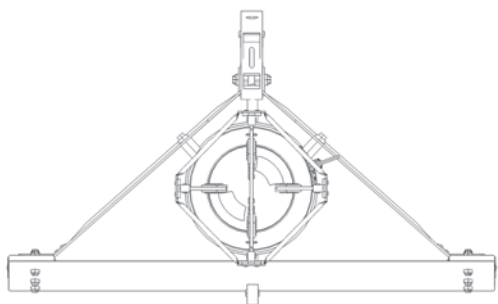
G7/7 PLAN (FRAGMENT) – PORT SIDE PARAVANES ONLY



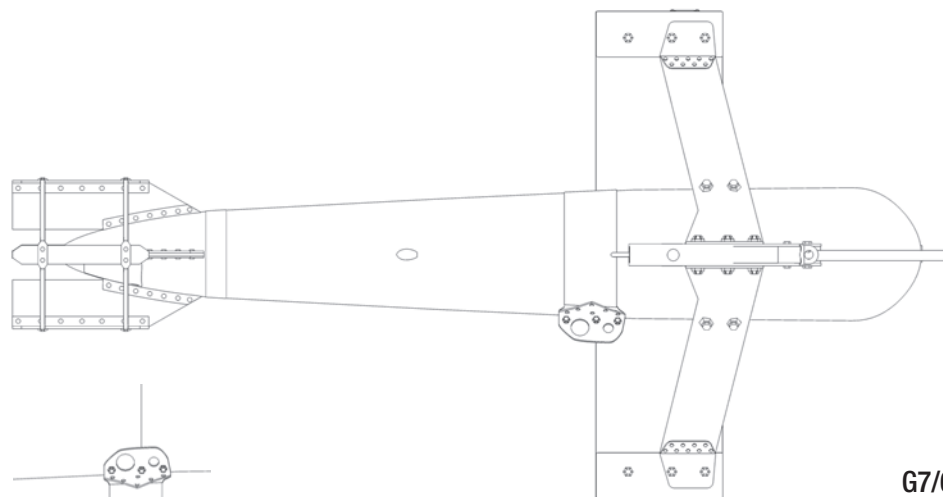
G7/3



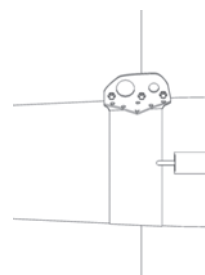
G7/4



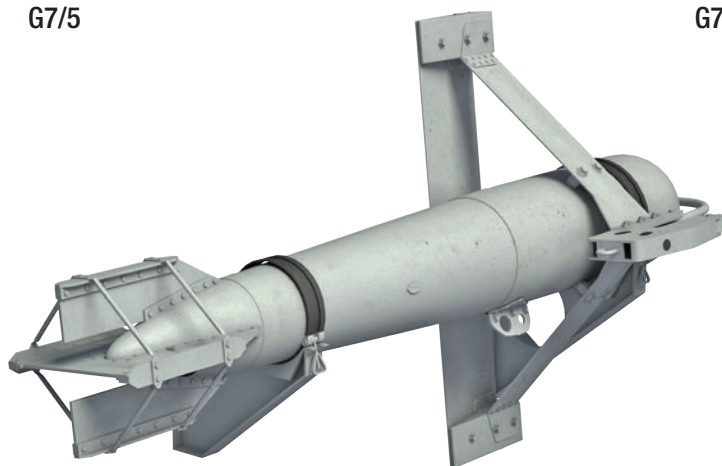
G7/5



G7/6



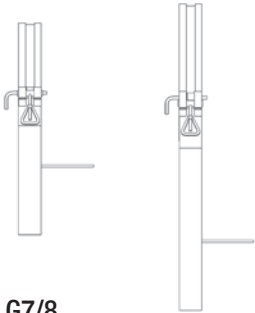
G7/7



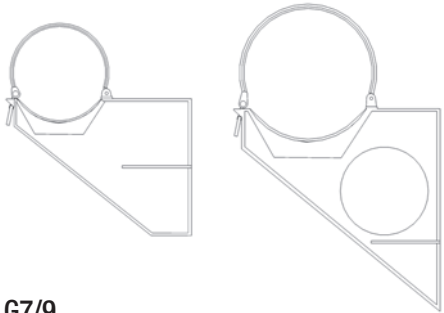
PARAVANE CRADLE (1/25 SCALE)

G7/8 RIGHT PROFILE

G7/9 FRONT VIEW



G7/8

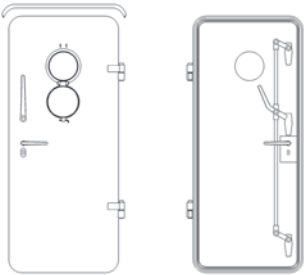


G7/9

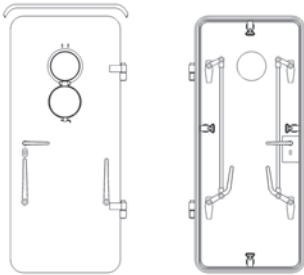
TYPICAL WATERTIGHT DOORS (1/50 SCALE)

G7/10 DOOR TYPE 1

G7/11 DOOR TYPE 2



G7/10



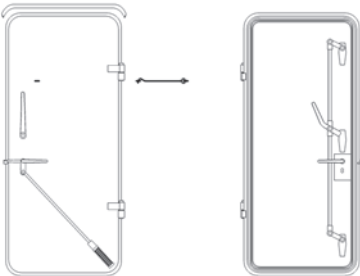
G7/11

TYPICAL WATERTIGHT DOORS (1/25 SCALE)

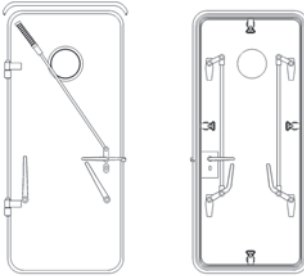
G7/12 DOOR TYPE 3

G7/13 DOOR TYPE 4

G7/14 DOOR TYPE 5



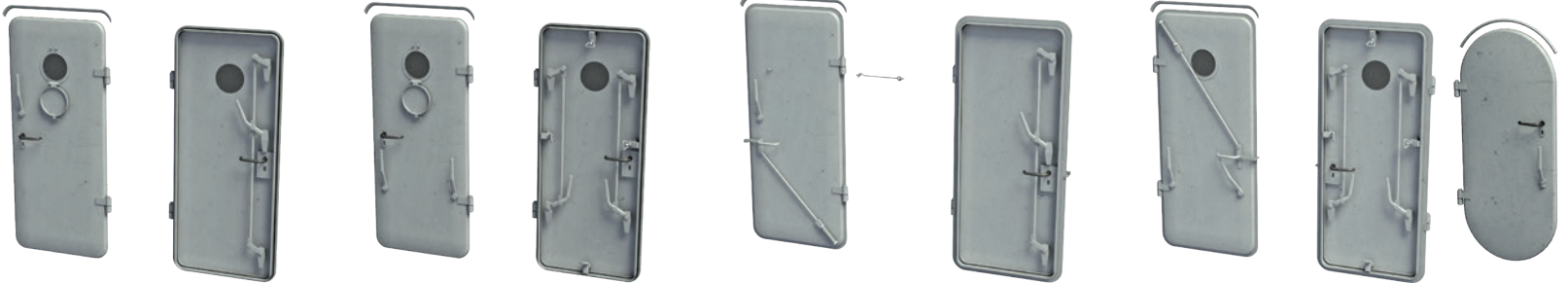
G7/12



G7/13



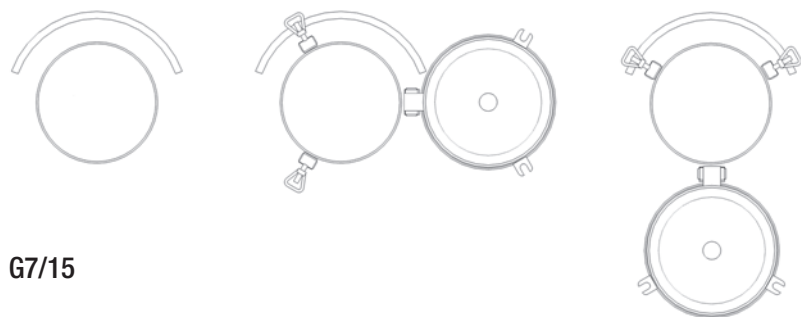
G7/14



TYPICAL SIDE SCUTTLES (1/25 SCALE)

G7/15 ROUND SCUTTLES

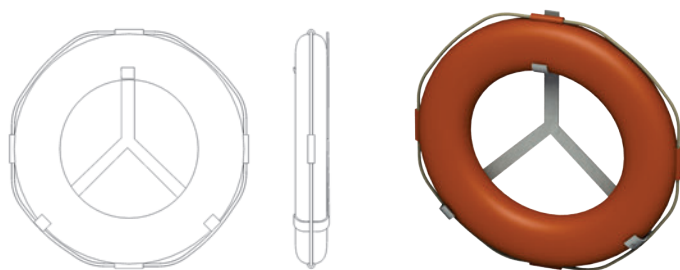
G7/16 RECTANGULAR SCUTTLES



G7/15

LIFE RING (1/25 SCALE)

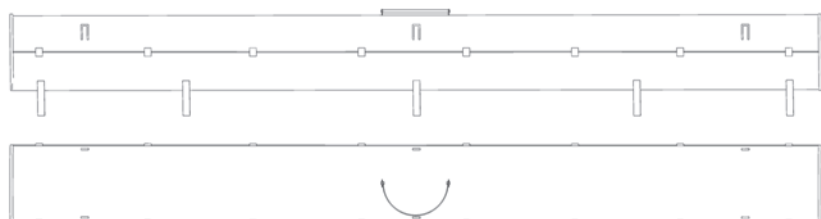
G7/17 PROFILE AND FRONT VIEW



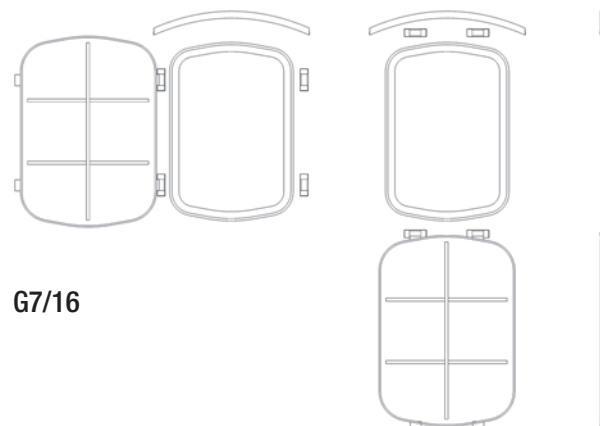
G7/17

MAIN ARTILLERY SUB-CALIBER BARREL CONTAINERS (1/50 SCALE)

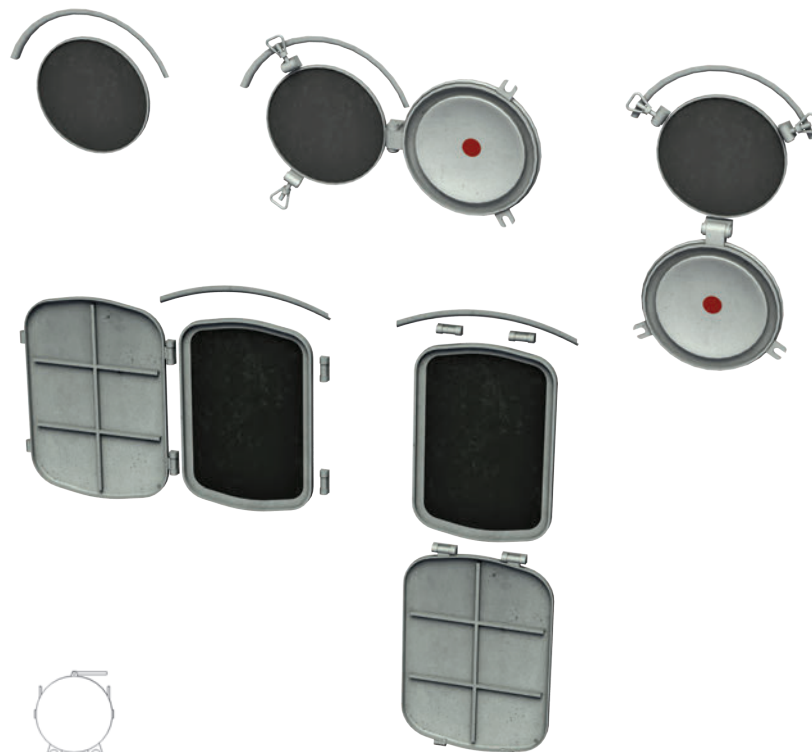
G7/18 PROFILE, FRONT VIEW AND PLAN



G7/18

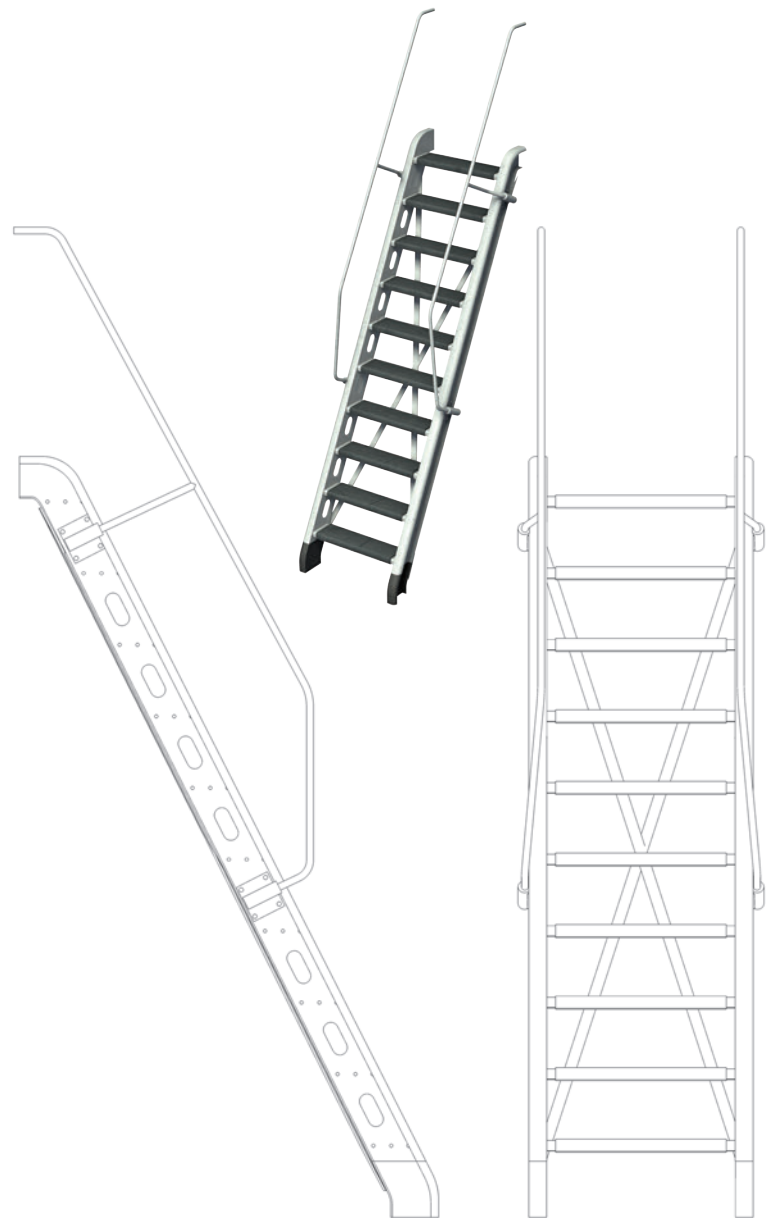
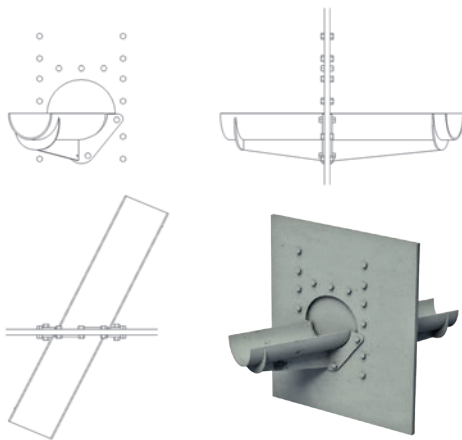


G7/16

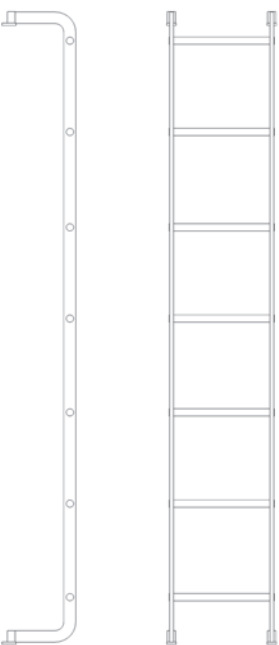




10.5CM AMMUNITION PASSING CHANNEL (1/25 SCALE)  
G7/19 PROFILE, FRONT VIEW AND PLAN



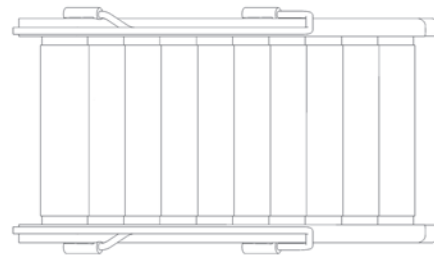
G7/19  
TYPICAL LADDERS (1/25 SCALE)  
G7/20 LADDER TYPE 1  
G7/21 LADDER TYPE 2  
G7/22 LADDER TYPE 3



G7/21



G7/22



G7/20

TYPICAL LANTERN (1/25 SCALE)

G7/23 PROFILE



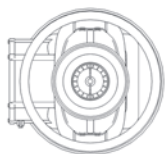
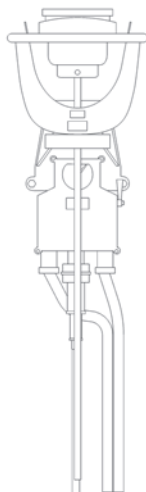
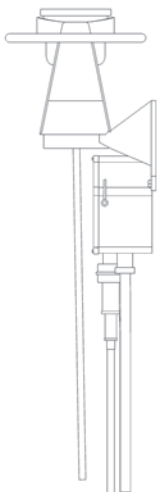
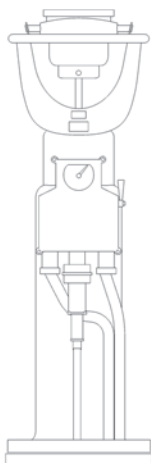
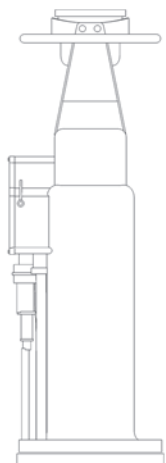
G7/23



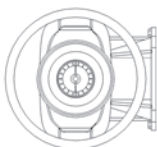
COMPASS REPEATERS (1/25 SCALE)

G7/24 COMPASS REPEATER TYPE 1

G7/25 COMPASS REPEATER TYPE 2



G7/24



G7/25

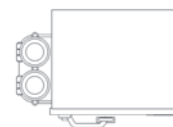
LOCKERS (1/25 SCALE)

G7/26 2CM AMMUNITION LOCKER WITH SPARE BARREL CONTAINERS

G7/27 PHONE LOCKER



G7/26



G7/27

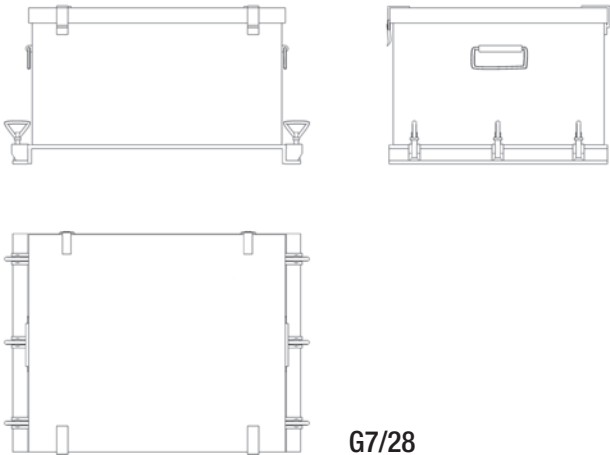
LOCKERS (1/25 SCALE)

G7/28 INFLATABLE RAFT CONTAINER

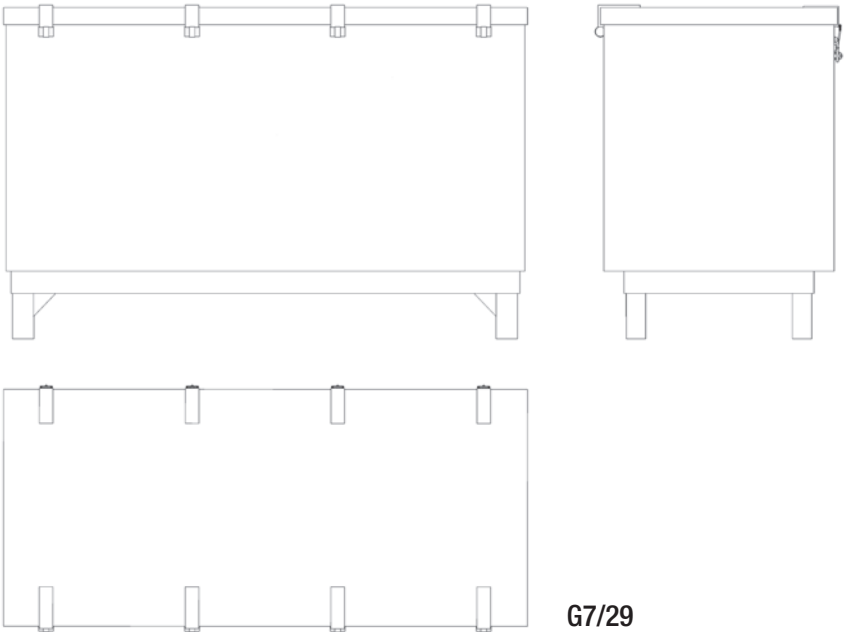
G7/29 LOCKER TYPE 1

G7/30 LOCKER TYPE 2

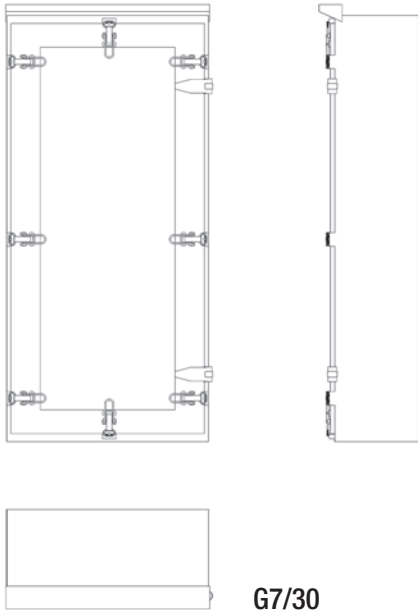
G7/31 LOCKER TYPE 3



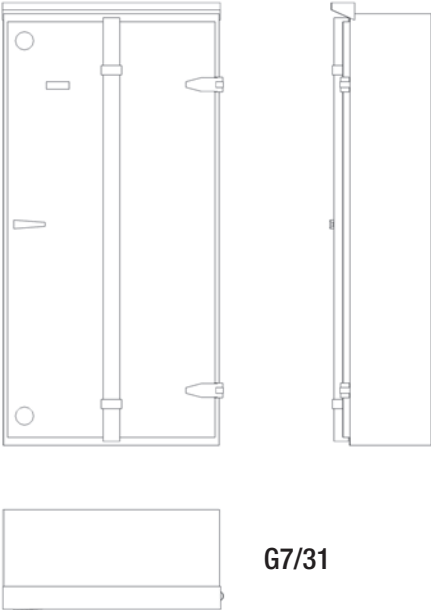
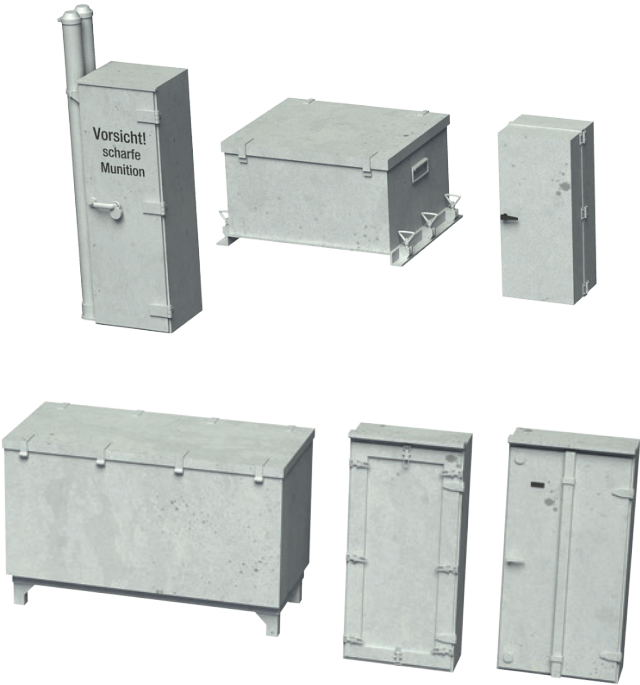
G7/28



G7/29



G7/30



G7/31



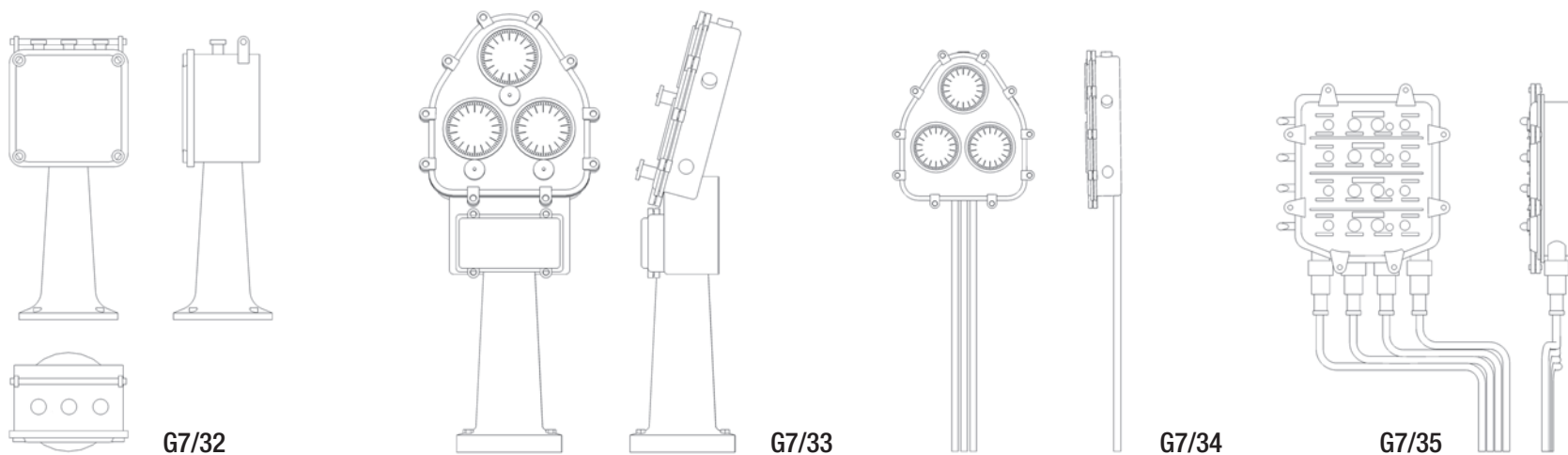
OPEN BRIDGE EQUIPMENT (1/25 SCALE)

G7/32 STEERING GEAR

G7/33 MACHINE TELEGRAPH

G7/34 PROPELLER SHAFTS RPM INDICATOR

G7/35 SEARCHLIGHT ILLUMINATION CONTROL POST



FOG HORN (1/50 SCALE)

G7/36 PROFILE AND FRONT VIEW



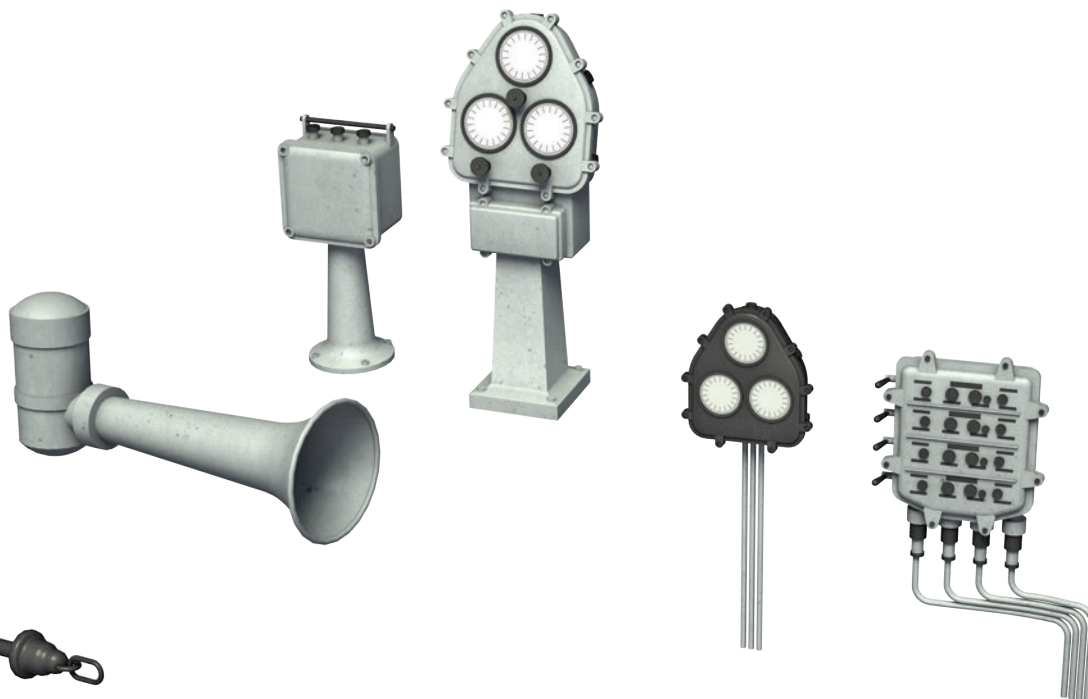
G7/36

WIRE ANTENNA INSULATOR (1/12.5 SCALE)

G7/37 PROFILE



G7/37



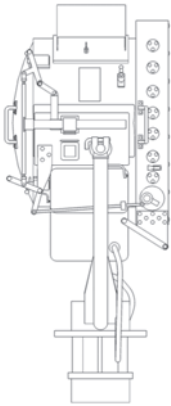
# SIGNAL LAMP (1/25 SCALE)

G7/38 RIGHT PROFILE

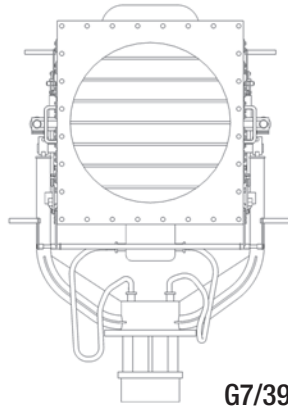
G7/39 FRONT VIEW

G7/40 BACK VIEW

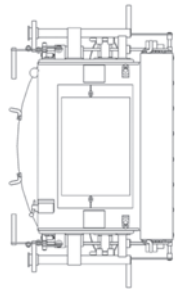
G7/41 PLAN



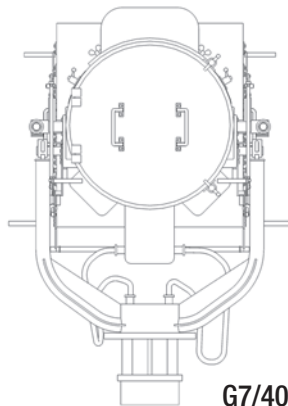
G7/38



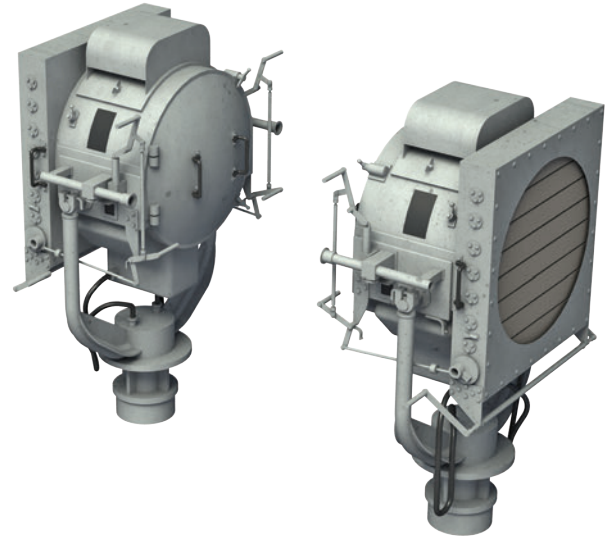
G7/39



G7/41

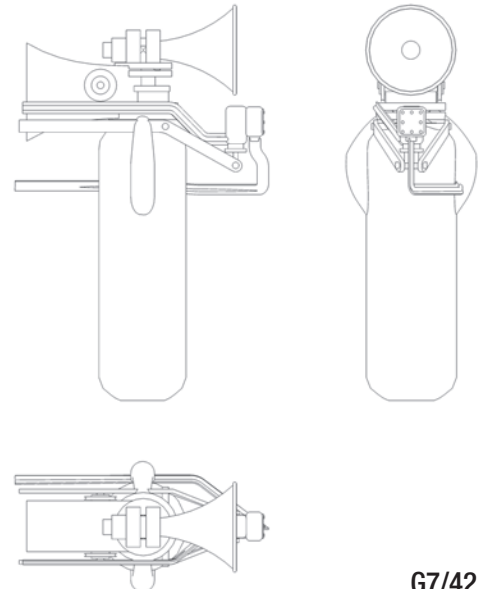


G7/40



# STEAM WHISTLE (1/25 SCALE)

G7/42 PROFILE, FRONT VIEW AND PLAN



G7/42

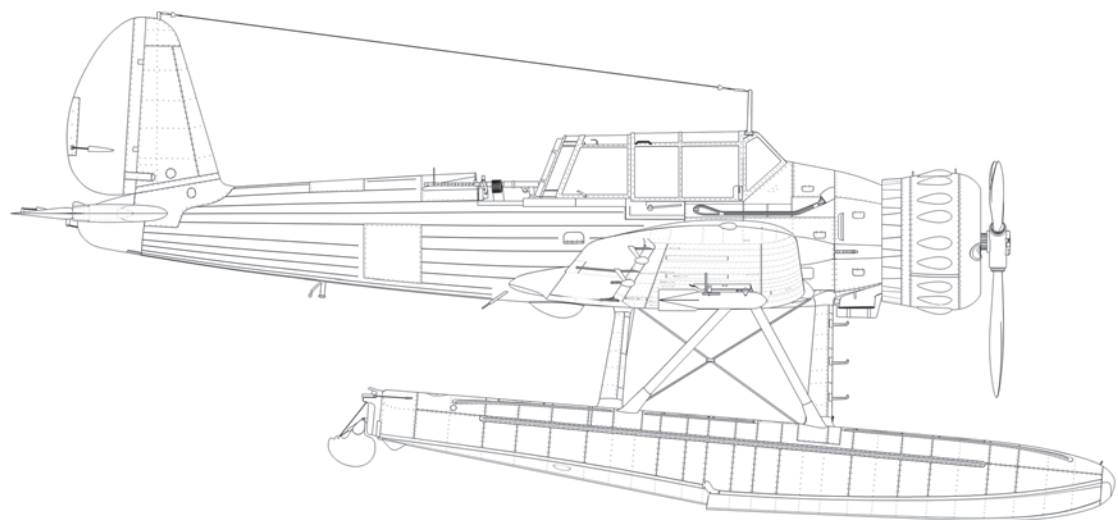
**ARADO AR 196 A FLOATPLANE (1/75 SCALE)**

**H1/1 RIGHT PROFILE, A-2 VARIANT**

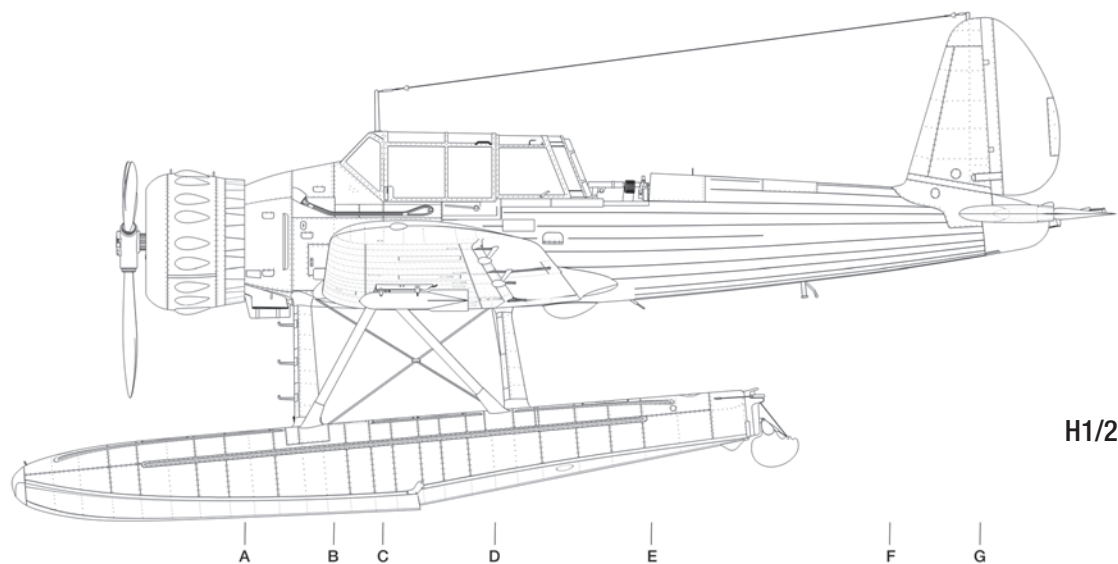
**H1/2 LEFT PROFILE, A-2 VARIANT**

**H1/3 LEFT PROFILE, A-3 VARIANT (FRAGMENT; ONLY AIRCRAFT WITH THE MARKINGS T3+MK)**

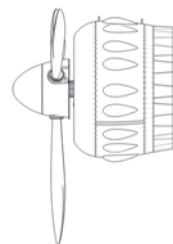
**H1/4 FUSELAGE SECTIONS**



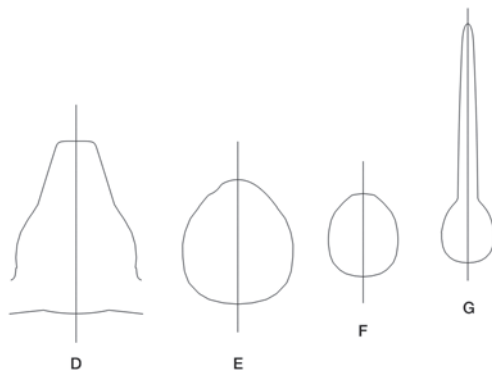
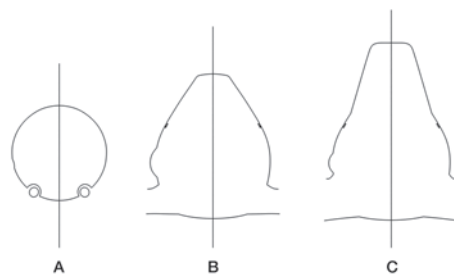
**H1/1**



**H1/2**



**H1/3**

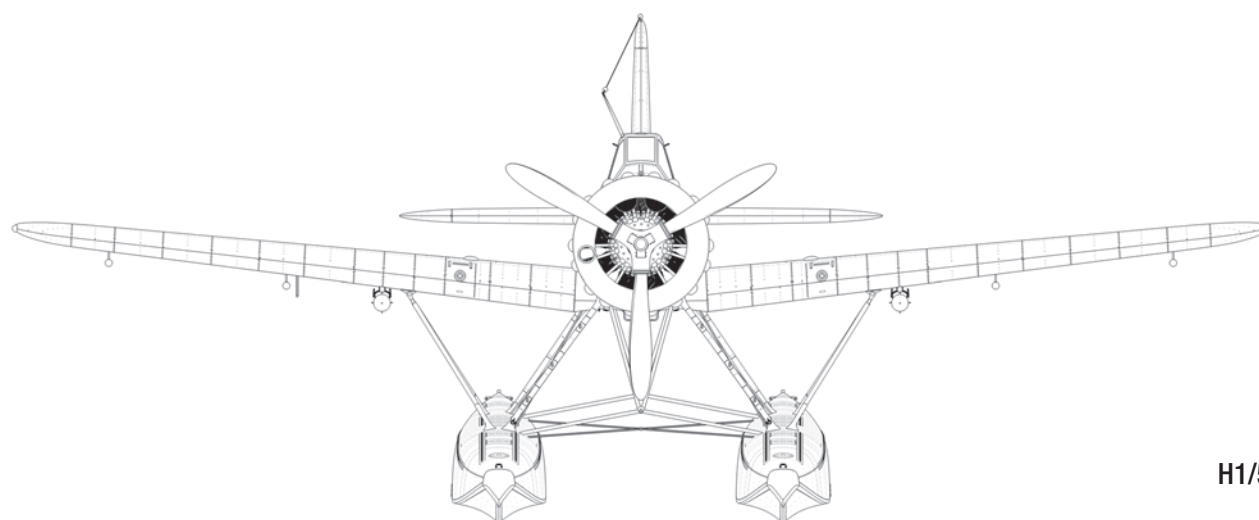


**H1/4**

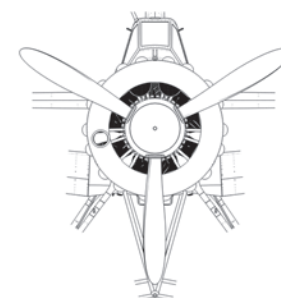


H1/4 FRONT VIEW, A-2 VARIANT

H1/5 FRONT VIEW, A-3 VARIANT (FRAGMENT; ONLY AIRCRAFT WITH  
THE MARKINGS T3+MK)



H1/5



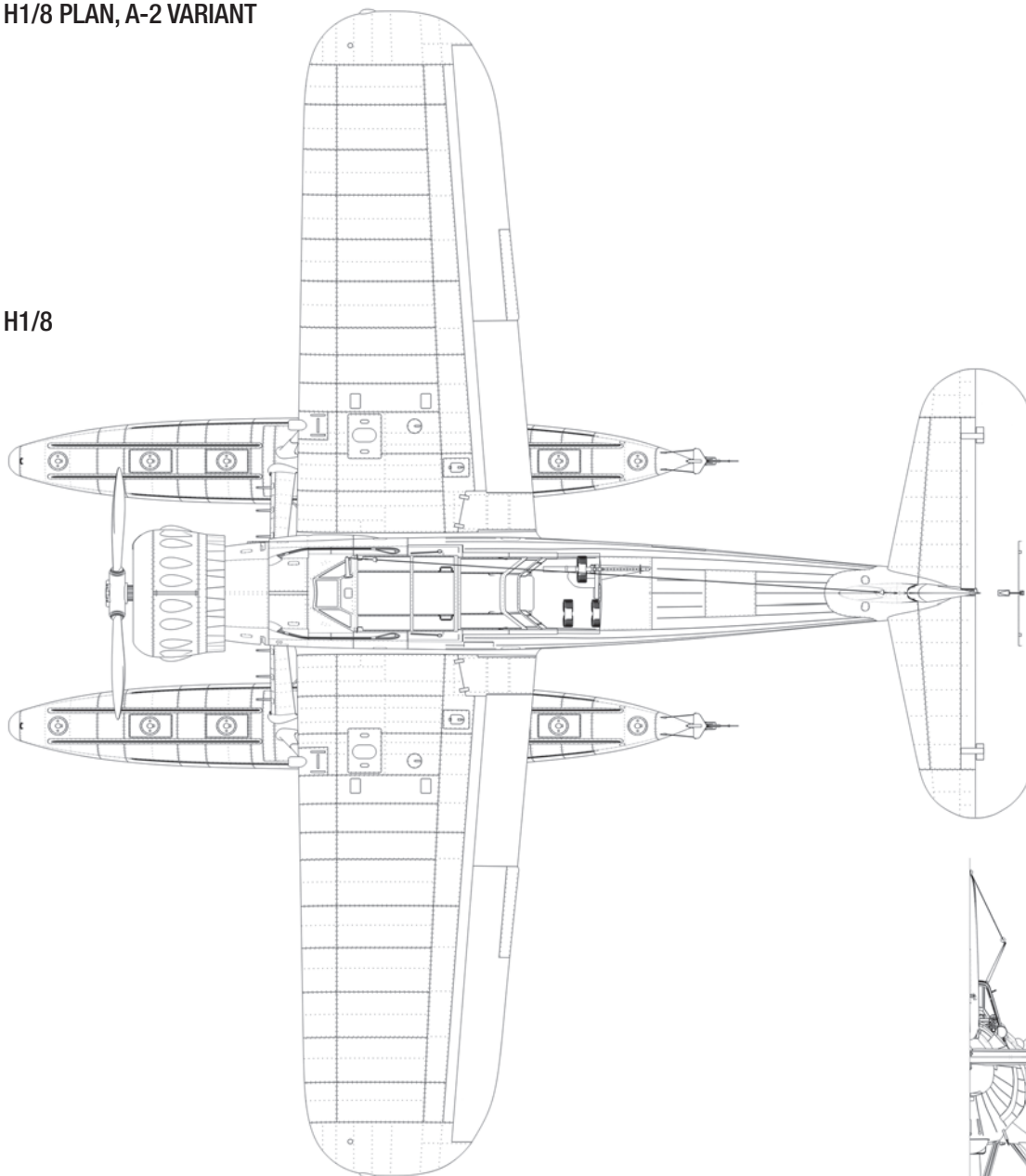
H1/6

ARADO AR 196 A FLOATPLANE (1/75 SCALE)

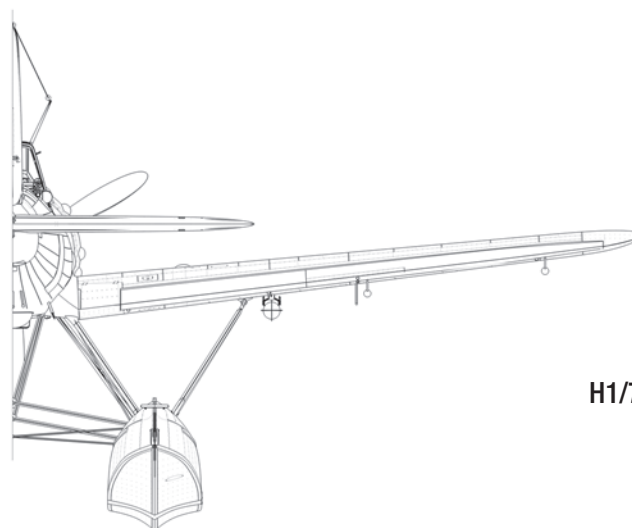
H1/7 BACK VIEW (FRAGMENT)

H1/8 PLAN, A-2 VARIANT

H1/8

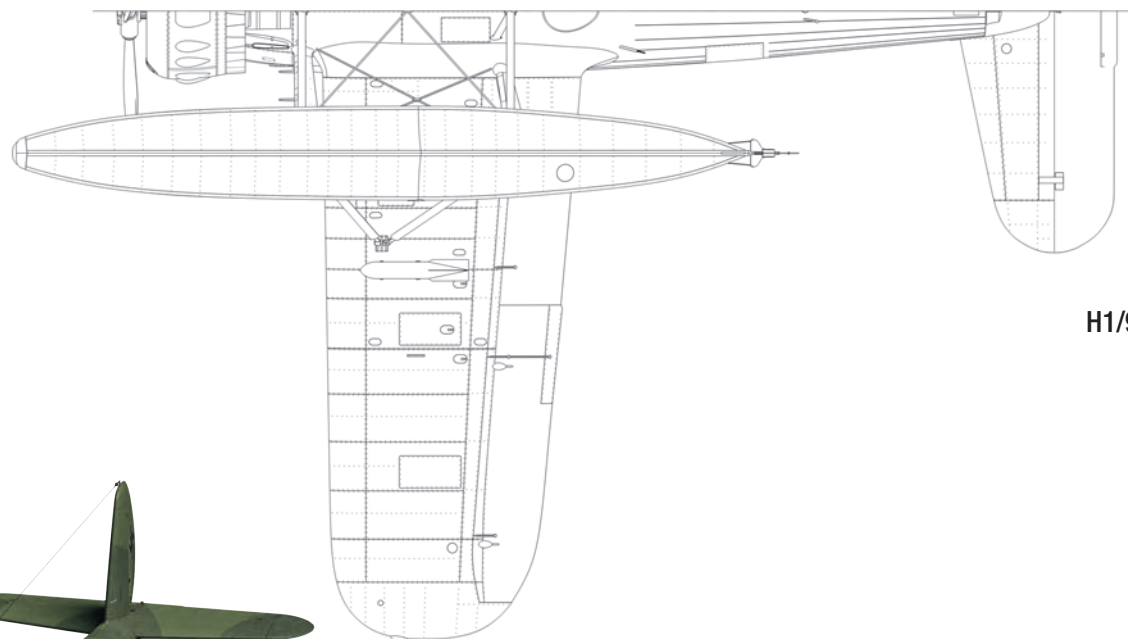


Markings of Ar 196 aircraft  
boarded on the *Bismarck*

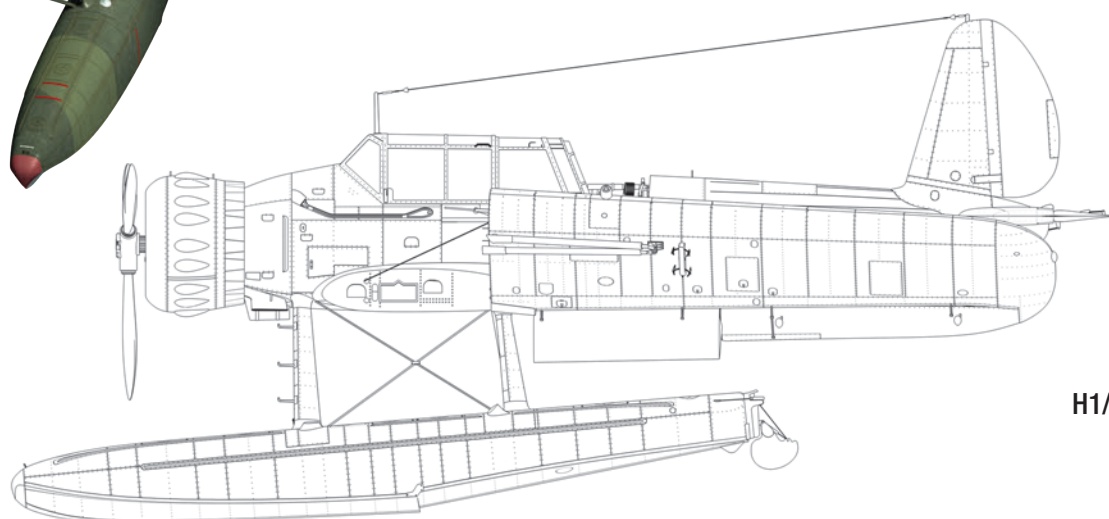


H1/7

H1/9 BOTTOM VIEW, A-2 VARIANT  
H1/10 LEFT PROFILE WITH FOLDED WINGS



H1/9



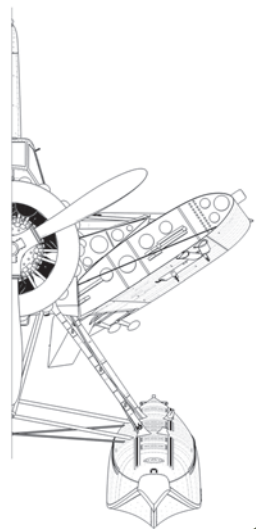
H1/10



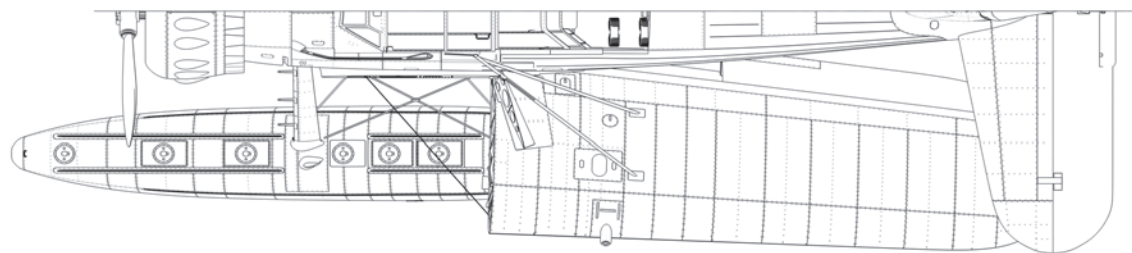
ARADO AR 196 A FLOATPLANE (1/75 SCALE)

H1/11 FRONT VIEW WITH FOLDED WINGS

H1/12 PLAN WITH FOLDED WINGS

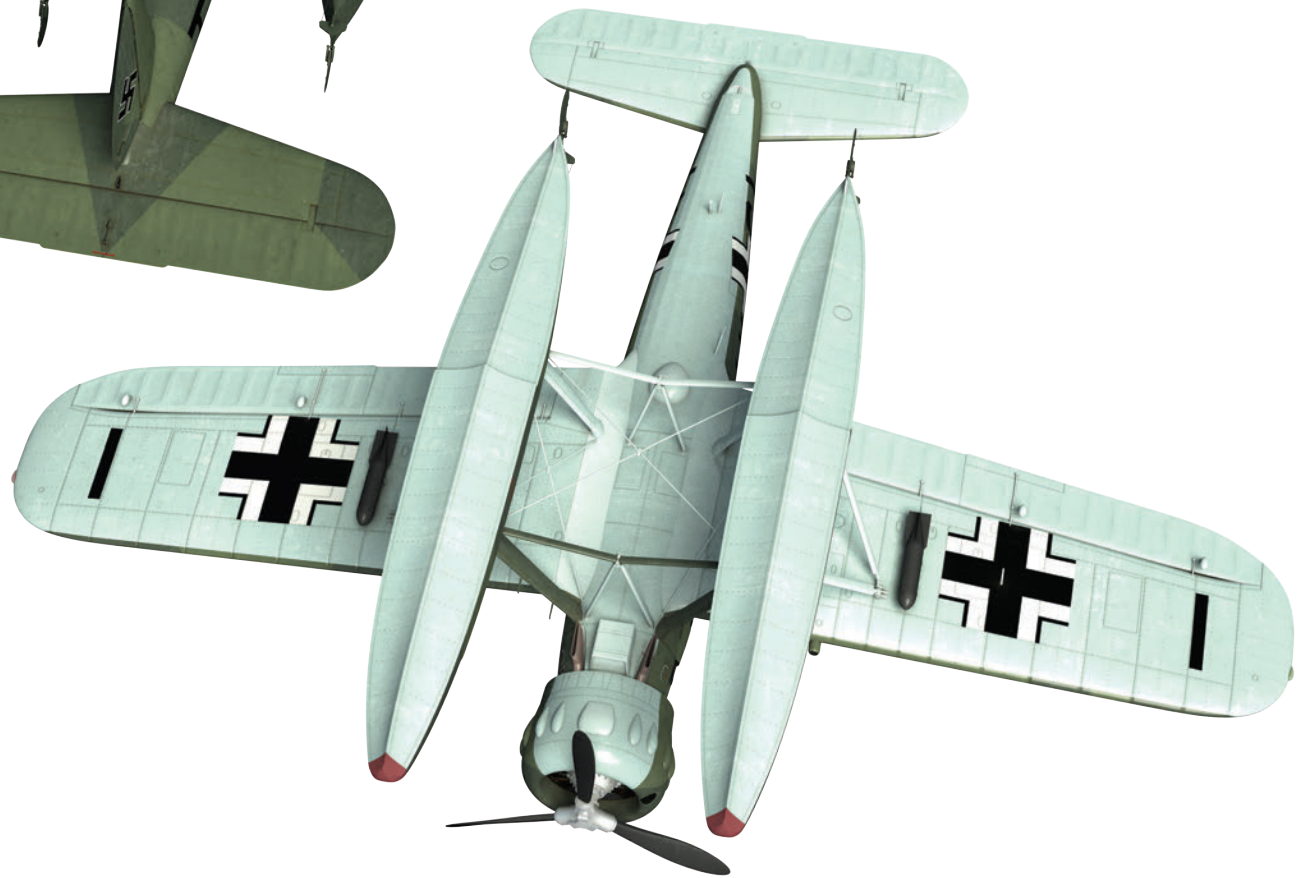
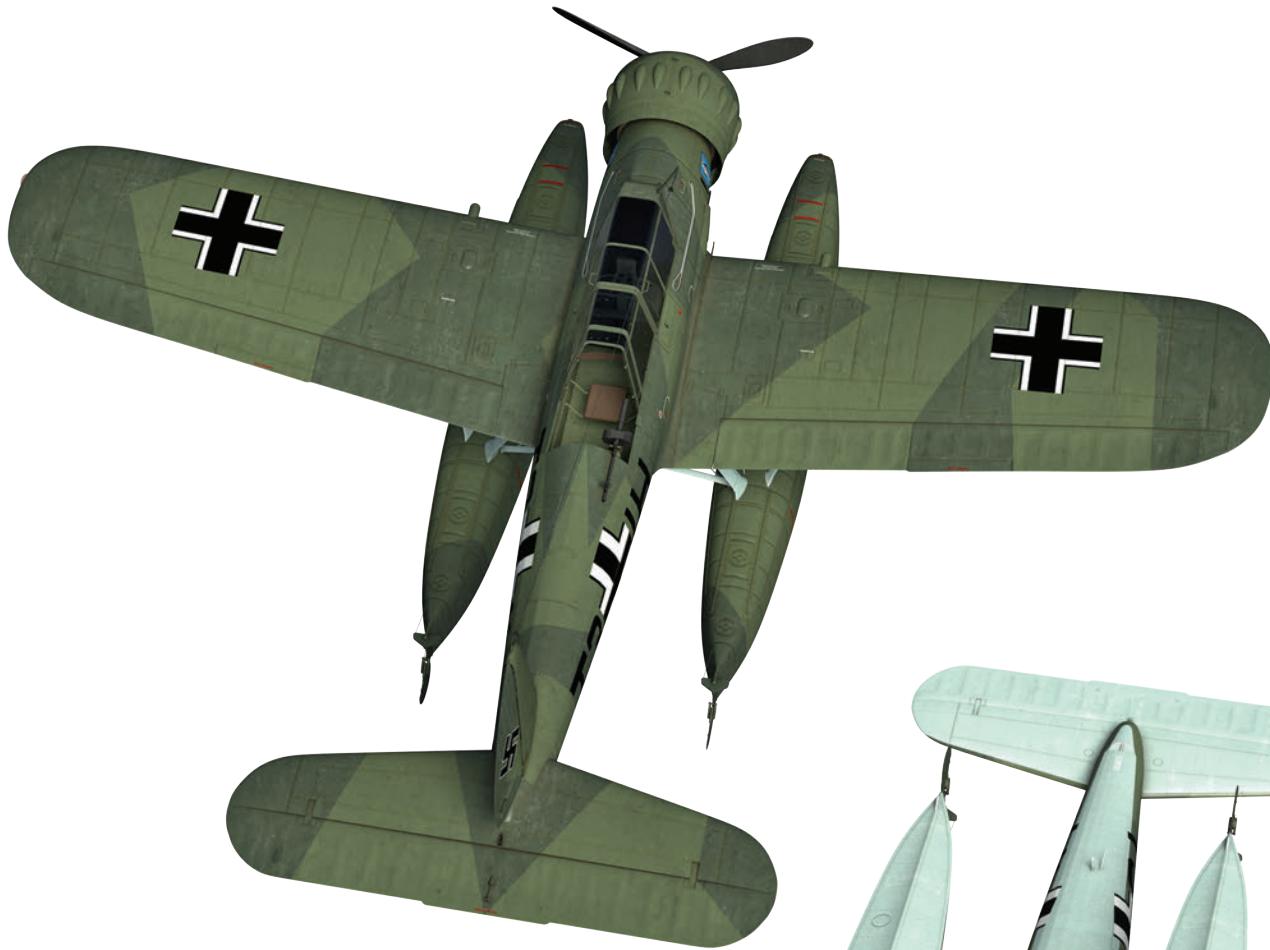


H1/11



H1/12





**CATAPULT (1/150 SCALE)**

H2/1 RIGHT PROFILE

H2/2 FRONT VIEW

H2/3 PLAN



H2/1



H2/2



H2/3

**CATAPULT CONTROL PANEL (1/75 SCALE)**

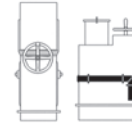
H2/4 RIGHT PROFILE

H2/5 BACK VIEW

H2/6 PLAN



H2/4



H2/5



H2/6

**RETRACTABLE FLOATPLANE CRADLE (1/75 SCALE)**

H2/7 PROFILE

H2/8 FRONT VIEW

H2/9 PLAN



H2/7



H2/8



H2/9



FLOATPLANE TRANSPORT AND STOWAGE TROLLEY (1/150 SCALE)

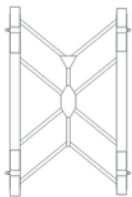
H2/10 PROFILE  
H2/11 BACK VIEW  
H2/12 PLAN



H2/10



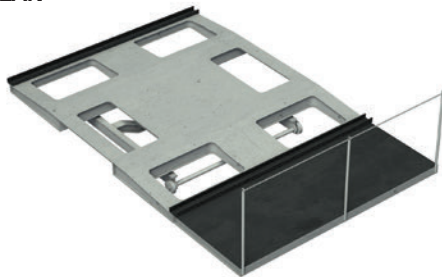
H2/11



H2/12

TILTING TURNTABLE (1/150 SCALE)

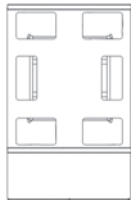
H2/13 PROFILE  
H2/14 FRONT VIEW  
H2/15 PLAN



H2/13



H2/14



H2/15

FLOATPLANE TAKEOFF TROLLEY (1/150 SCALE)

H2/16 PROFILE  
H2/17 BACK VIEW  
H2/18 PLAN



H2/16



H2/17



H2/18



**FLOATPLANE TAKEOFF TROLLEY (1/75 SCALE)**

**H2/19 VICINITY OF STARBOARD SIDE CATAPULT – PLAN**

**(1/150 SCALE)**

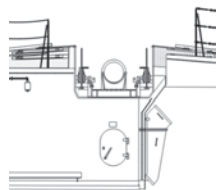
- 1 Starboard side catapult extended outboards for takeoff
- 2 Removable deck tracks for floatplane transport between catapult and hangars (present only during flight operations)

**CATAPULT TUB WITH THE CATAPULT OMITTED FOR CLARITY**

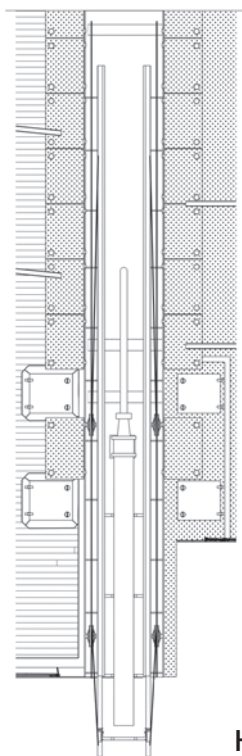
**(1/150 SCALE)**

**H2/20 RIGHT PROFILE**

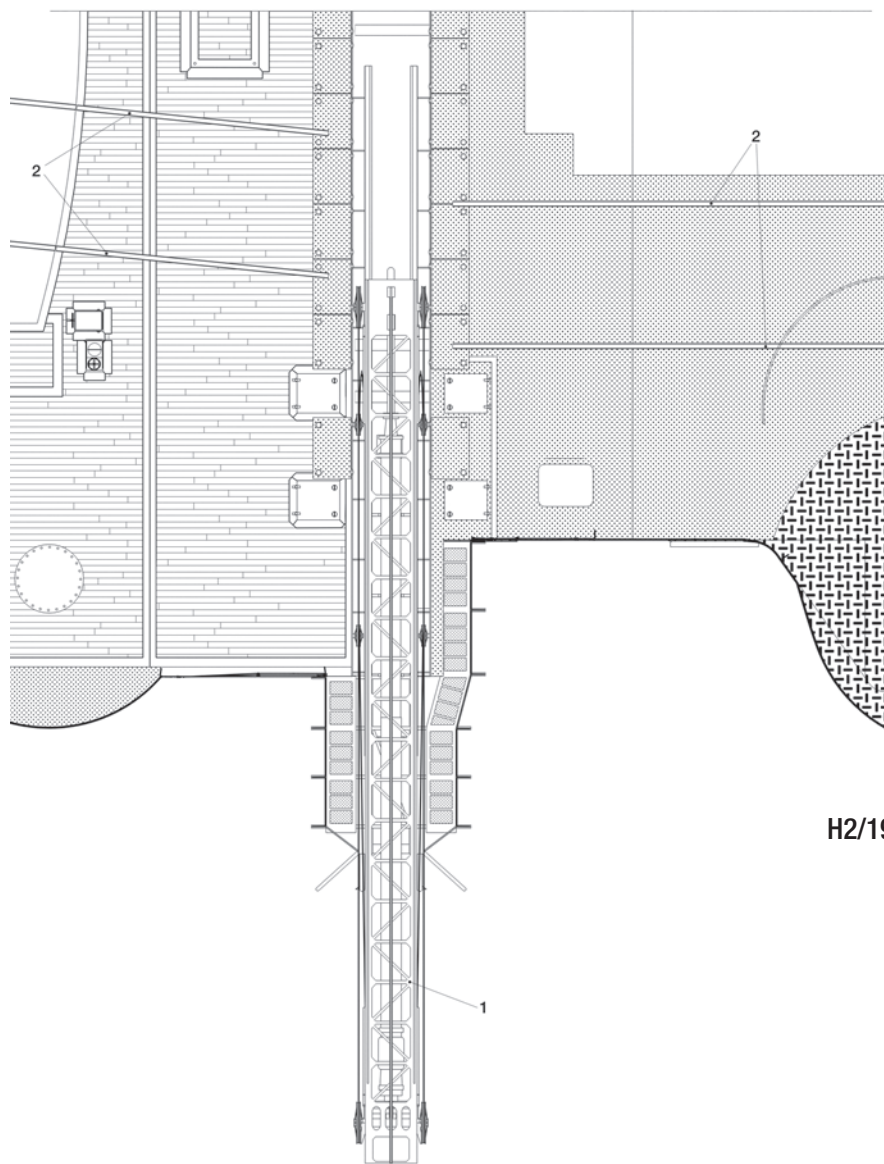
**H2/21 PLAN**



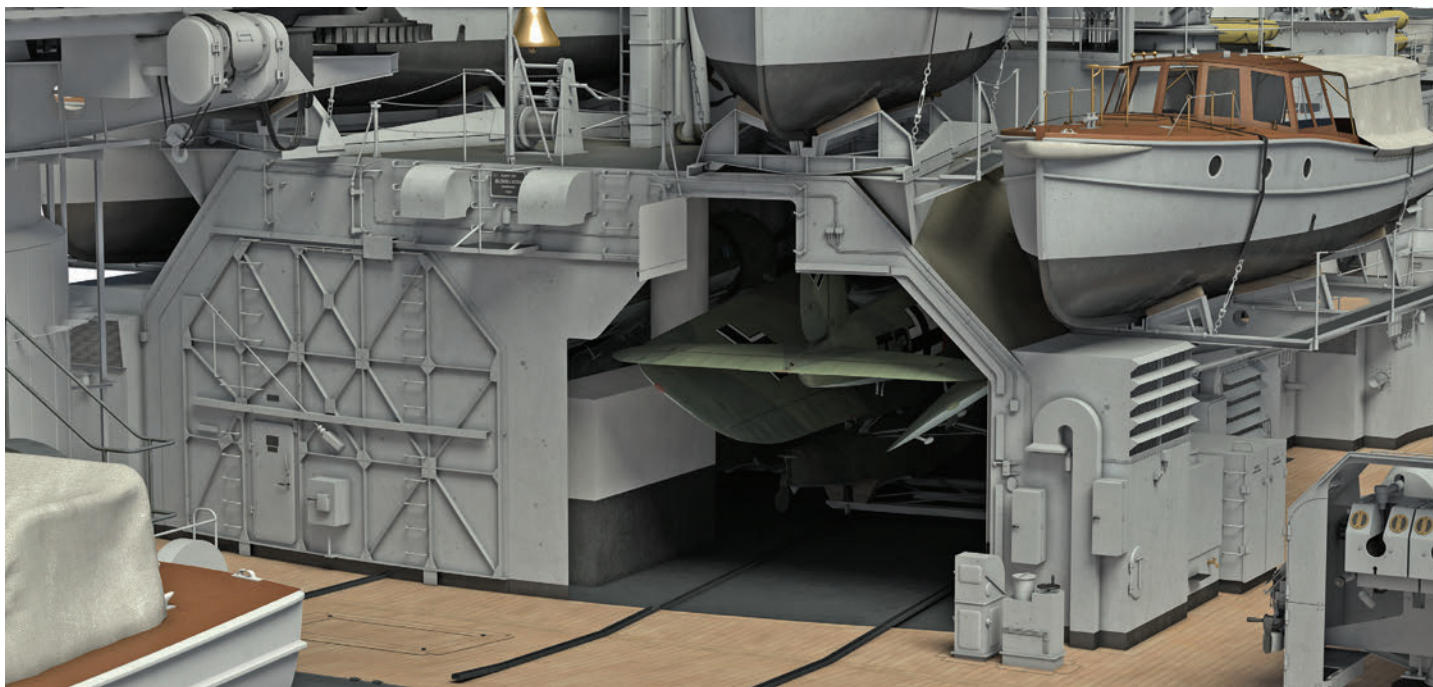
H2/20



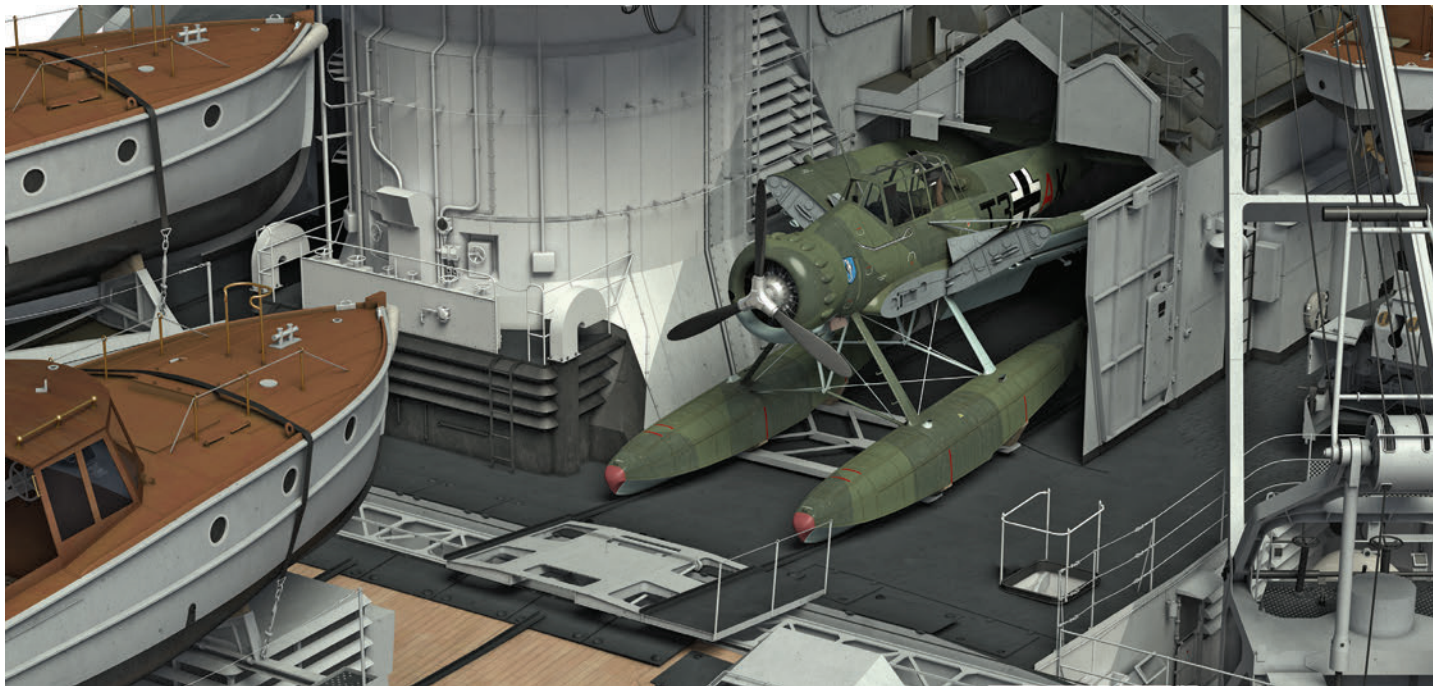
H2/21



H2/19

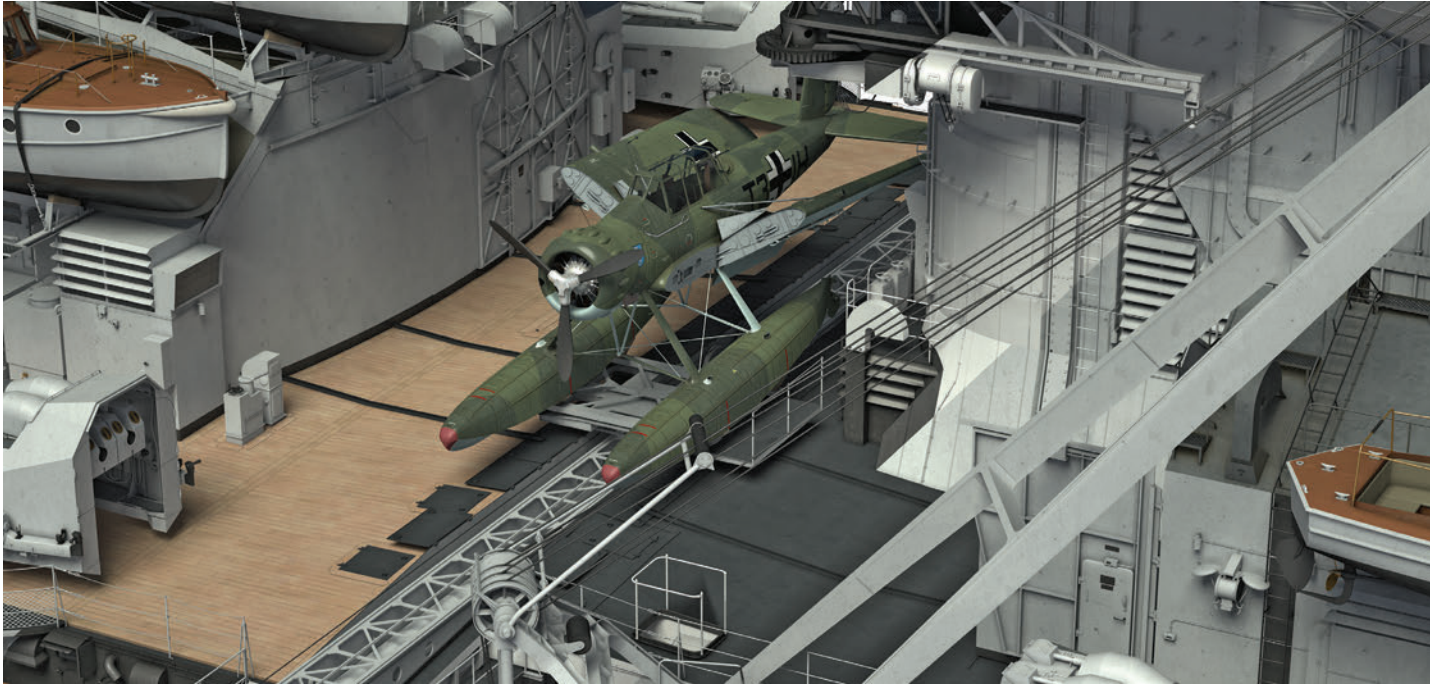


Hangar no. 1 with its port side door open and aircraft visible inside.



Floatplane is being pulled out of hangar no. 3 on removable tracks. Tilting turntable is prepared on starboard side catapult.



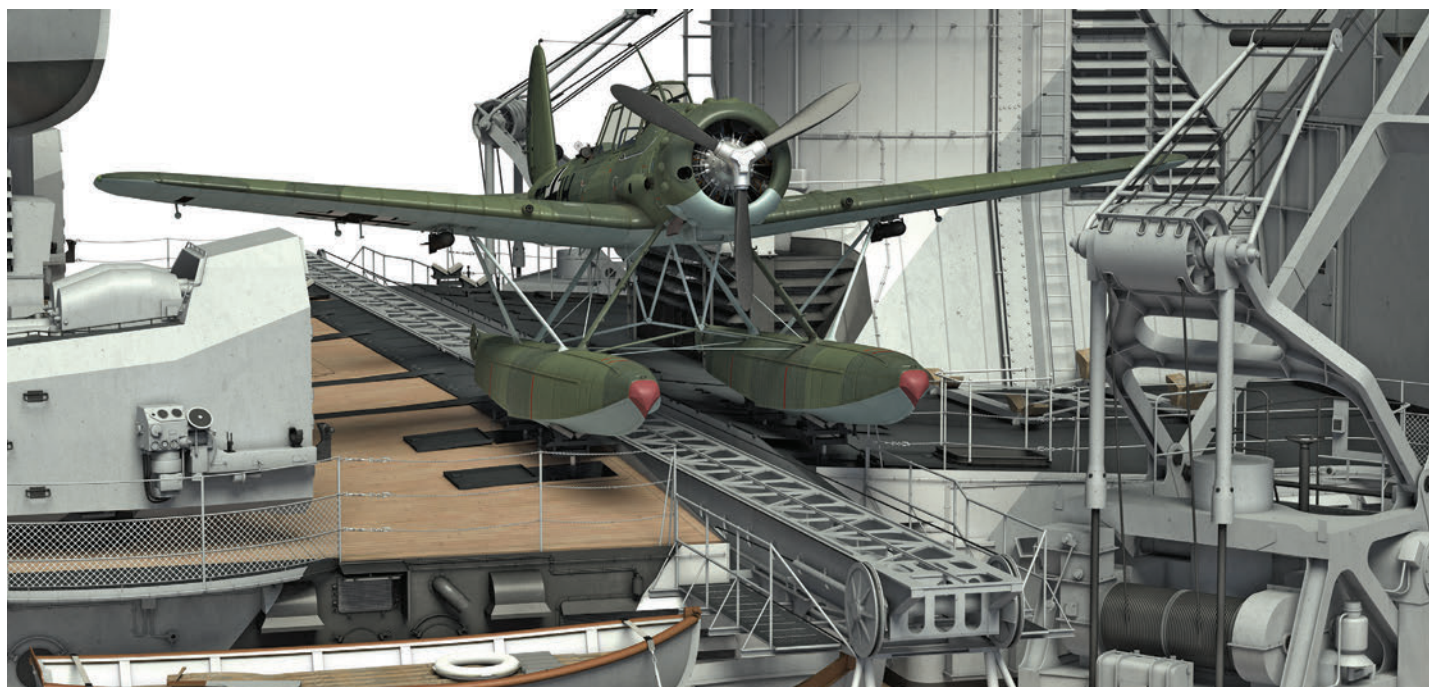


Floatplane with its trolley are sitting on the turntable, facing outboards.

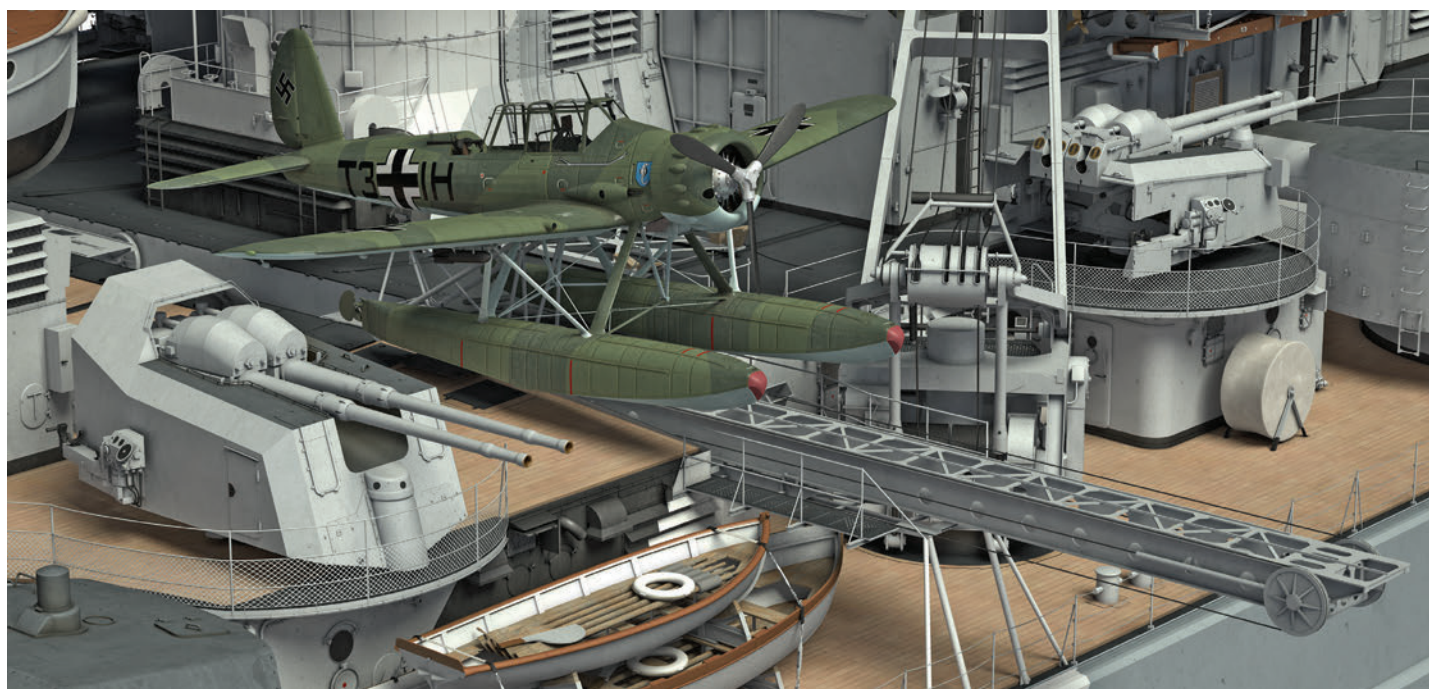


An alternative way to transfer the floatplane from the hangar to the catapult – by means of an overhead crane.

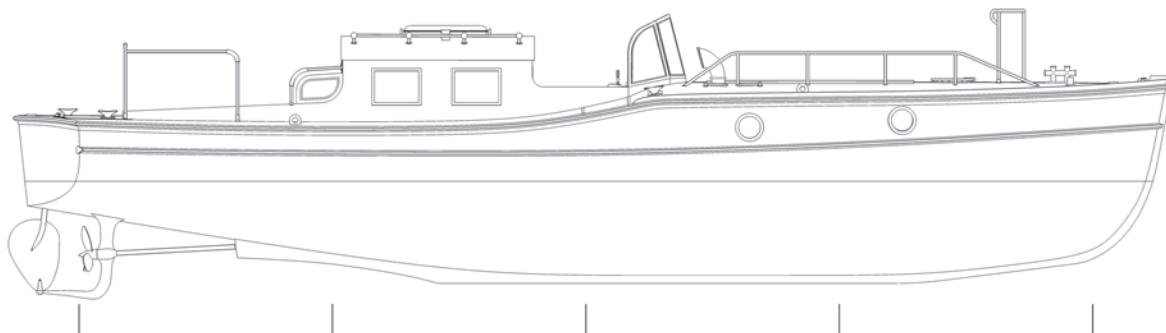
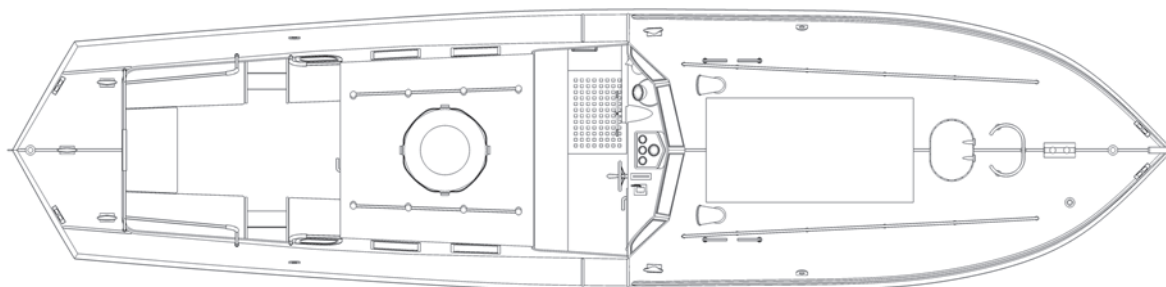
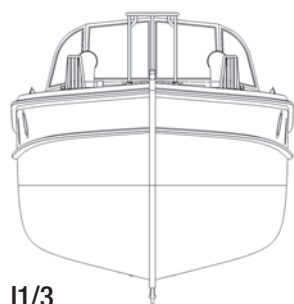
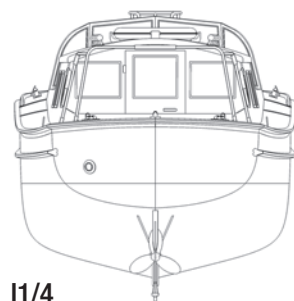
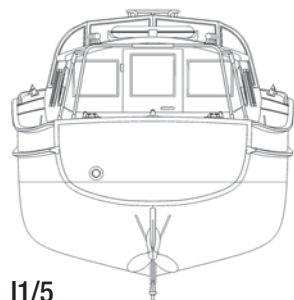




Floatplane in a stand-by position – sitting on retractable aircraft cradle. Wings have been unfolded for takeoff.



Floatplane sitting on its takeoff trolley. Preparations for launch have been made: catapult has been extended outboards, 10.5cm mount trained 90° outboards, crane tackle lowered, and nearby railings taken down.

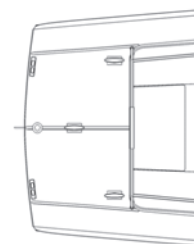
**ADMIRAL'S BOAT – ADMIRALSBOOT (1/75 SCALE)****I1/1 PROFILE****I1/2 PLAN****I1/3 FRONT VIEW****I1/4 BACK VIEW****I1/5 BACK VIEW – NEWER TYPE WITH  
ROUNDED STERN (PORT SIDE BOAT ONLY)****I1/1****I1/2****I1/3****I1/4****I1/5**



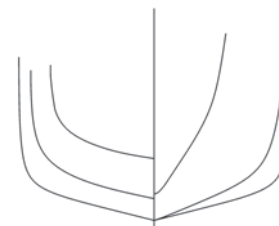
I1/6 PLAN (FRAGMENT) – NEWER TYPE WITH ROUNDED STERN  
(PORT SIDE BOAT ONLY)

I1/7 BODY PLAN

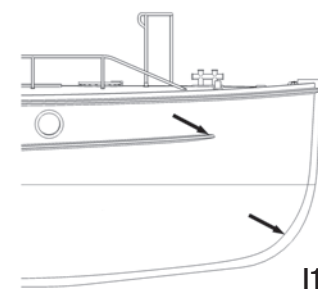
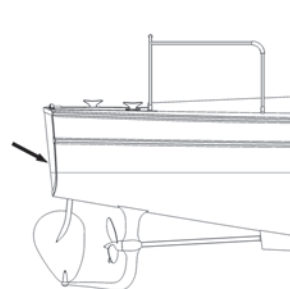
I1/8 PROFILE (FRAGMENT) – NEWER TYPE WITH ROUNDED STERN  
(PORT SIDE BOAT ONLY)



I1/6



I1/7



I1/8



TRANSPORTATION BOAT – *VERKEHRSBOOT* (1/75 SCALE)

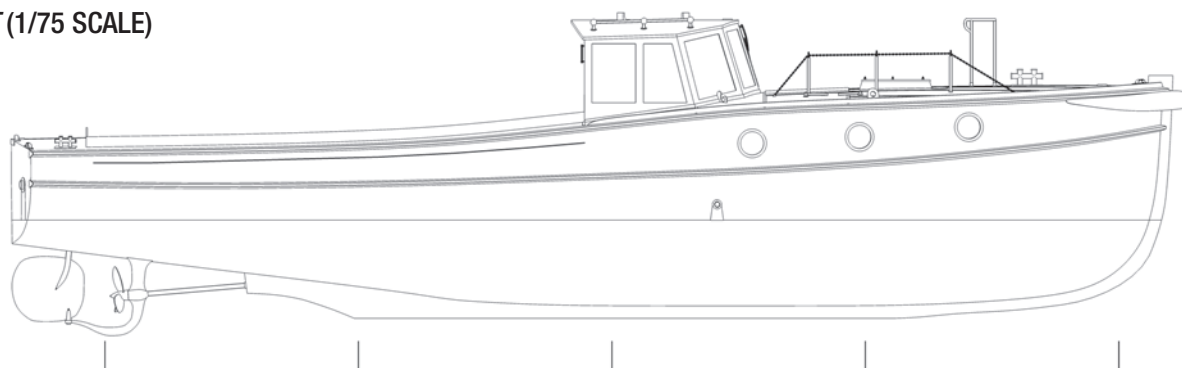
I2/1 PROFILE

I2/2 PLAN

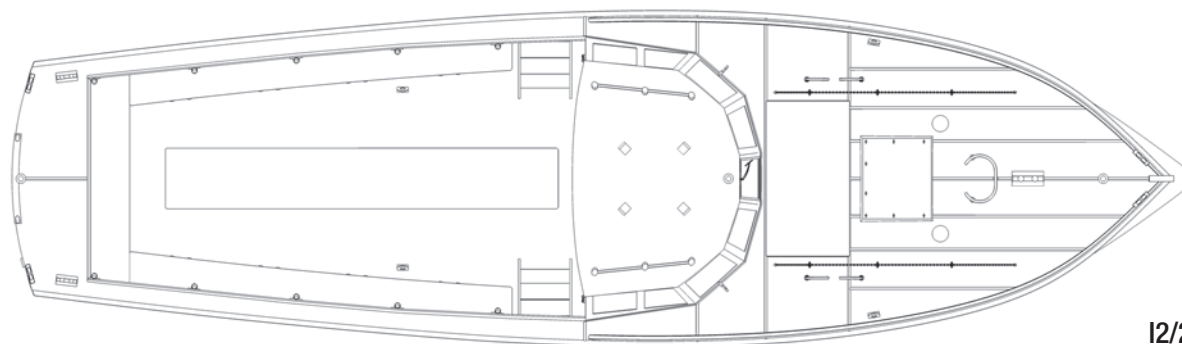
I2/3 FRONT VIEW

I2/4 BACK VIEW

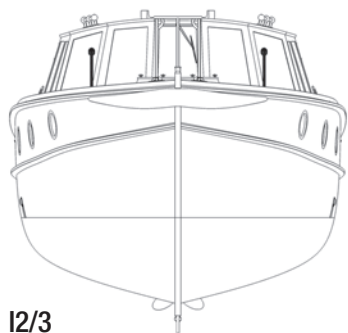
I2/5 BODY PLAN



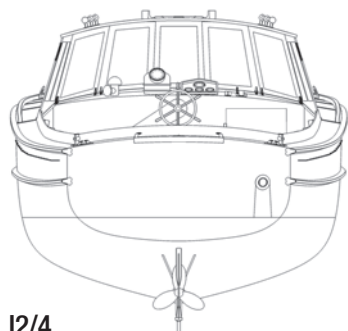
I2/1



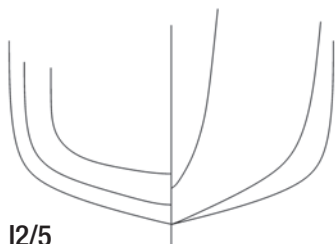
I2/2



I2/3



I2/4



I2/5



# MOTOR PINNACE – *MOTORPINASSE* (1/75 SCALE)

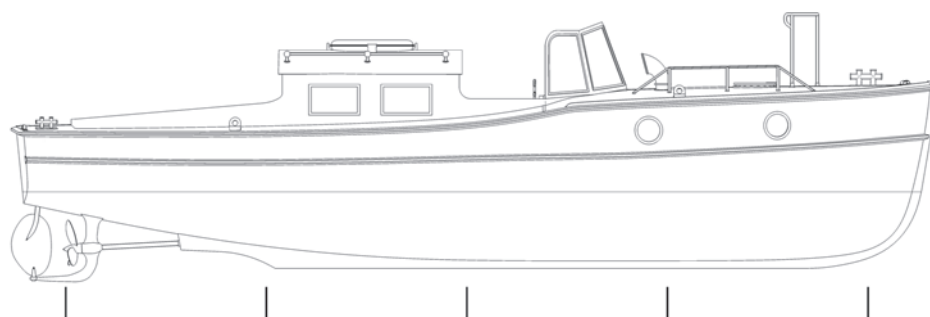
I3/1 PROFILE

I3/2 PLAN

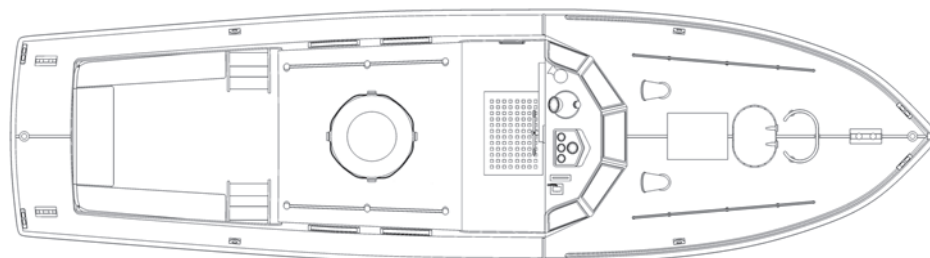
I3/3 FRONT VIEW

I3/4 BACK VIEW

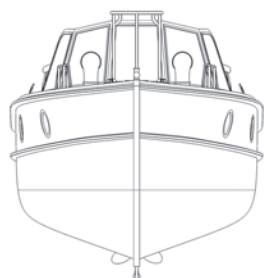
I3/5 BODY PLAN



I3/1



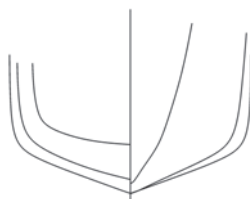
I3/2



I3/3



I3/4



I3/5





**MOTOR YAWL – MOTORJOLLE (1/75 SCALE)**

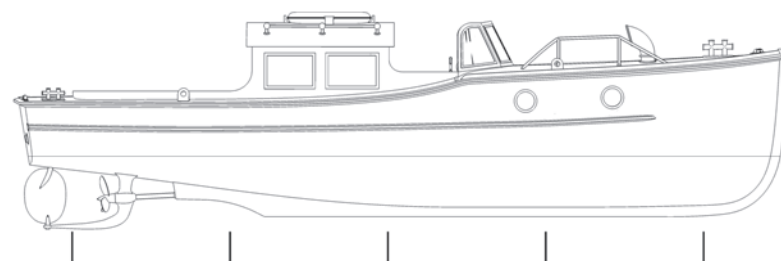
I4/1 PROFILE

I4/2 PLAN

I4/3 FRONT VIEW

I4/4 BACK VIEW

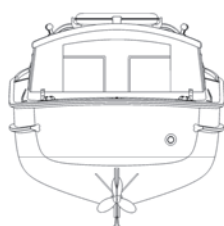
I4/5 BODY PLAN



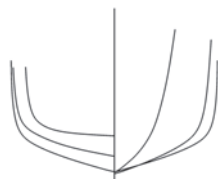
I4/1



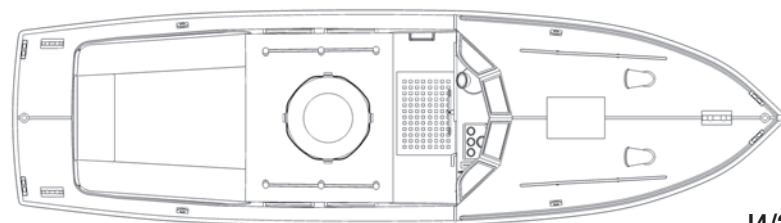
I4/3



I4/4



I4/5



I4/2



# ROW CUTTER, 2ND CLASS – *KUTTER KLASSE II* (1/75 SCALE)

I5/1 PROFILE

I5/2 INTERNAL PROFILE

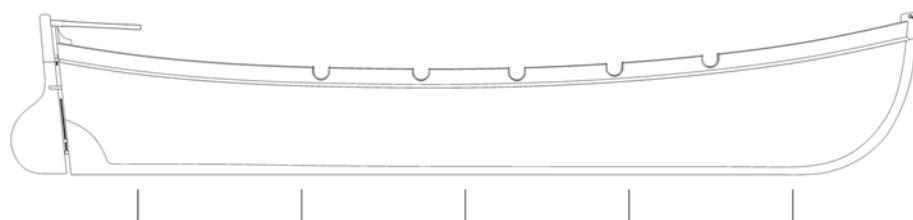
I5/3 PLAN

I5/4 FRONT VIEW

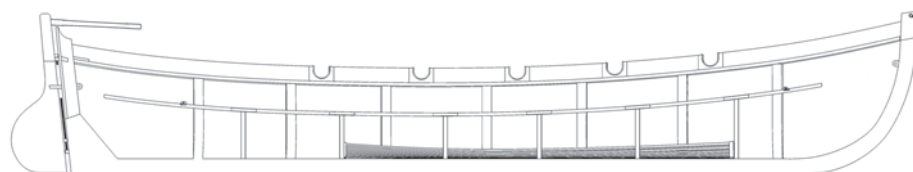
I5/5 BACK VIEW

I5/6 BODY PLAN

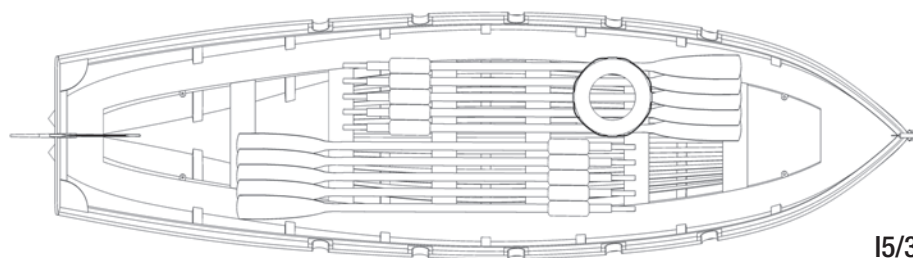
I5/7 BOAT CRADLE



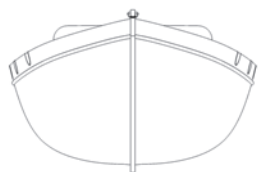
I5/1



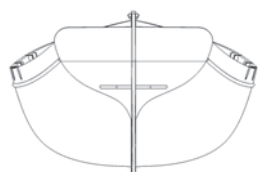
I5/2



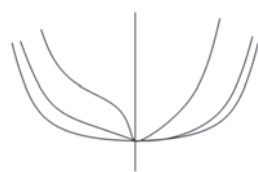
I5/3



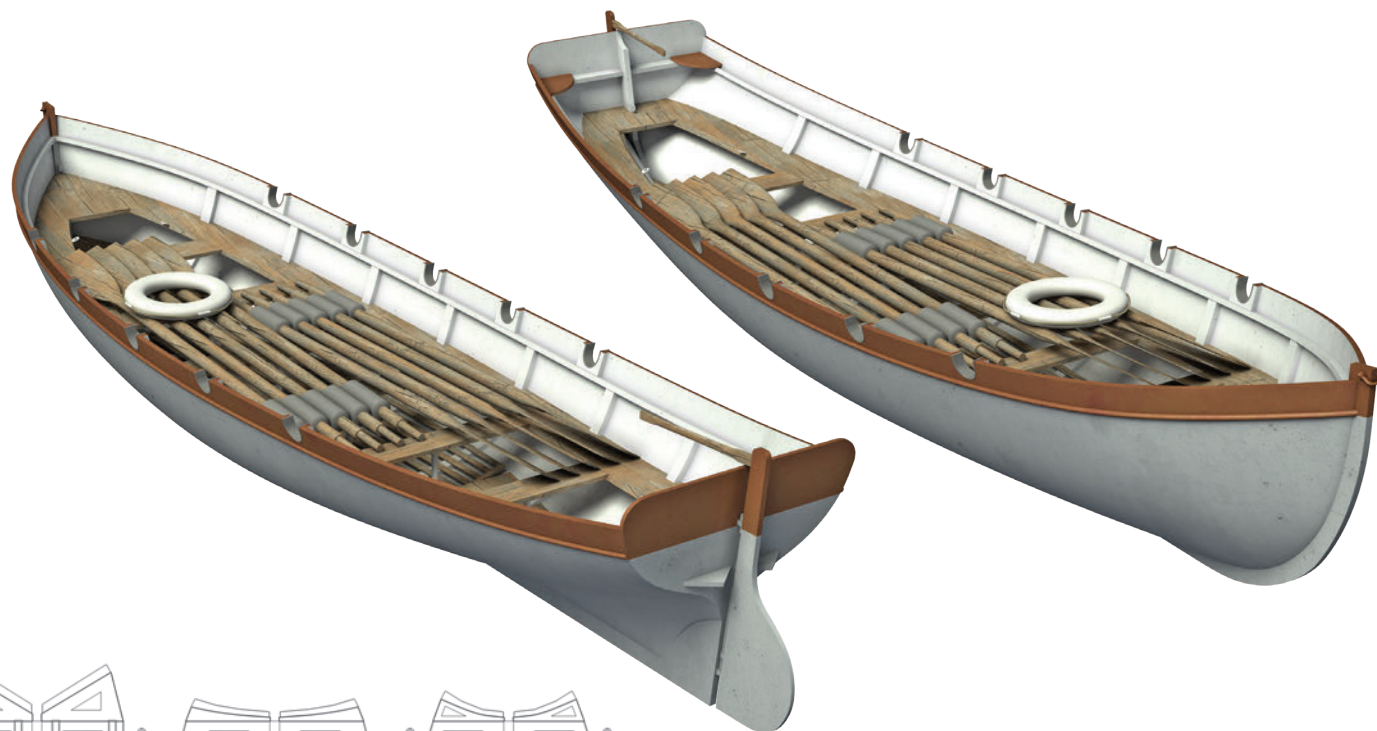
I5/4



I5/5

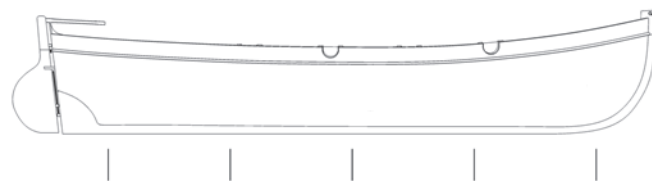
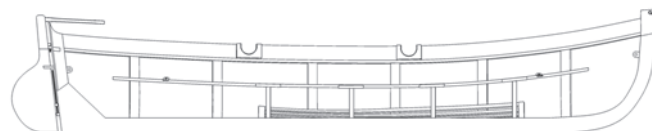
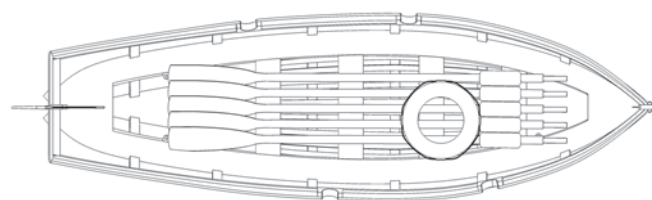
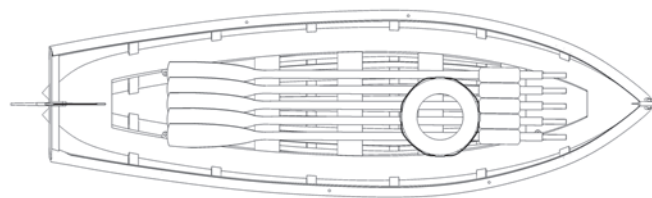
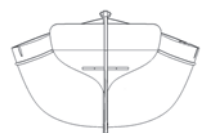
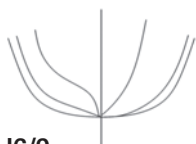


I5/6



I5/7



**ROW YAWL, 1ST CLASS – JOLLE KLASSE I (1/75 SCALE)****I6/1 PROFILE****I6/2 PROFILE (ONLY STARBOARD SIDE BOAT STOWED ON UPPER DECK)****I6/3 INTERNAL PROFILE****I6/4 PLAN****I6/5 PLAN (ONLY STARBOARD SIDE BOAT STOWED ON UPPER DECK)****I6/6 FRONT VIEW****I6/7 FRONT VIEW (ONLY STARBOARD SIDE BOAT STOWED ON UPPER DECK)****I6/8 BACK VIEW****I6/9 BODY PLAN****I6/10 BOAT CRADLE****I6/1****I6/2****I6/3****I6/4****I6/5****I6/6****I6/7****I6/8****I6/9****I6/10**



ROW DINGHY – *DINGI* (1/75 SCALE)

I7/1 PROFILE

I7/2 INTERNAL PROFILE

I7/3 PLAN

I7/4 FRONT VIEW

I7/5 BACK VIEW

I7/6 BODY PLAN

I7/7 BOAT CRADLE



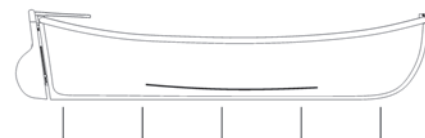
I7/4



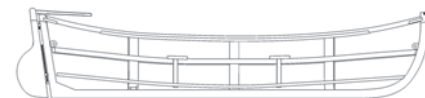
I7/5



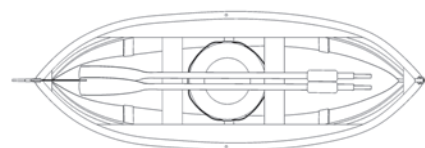
I7/6



I7/1



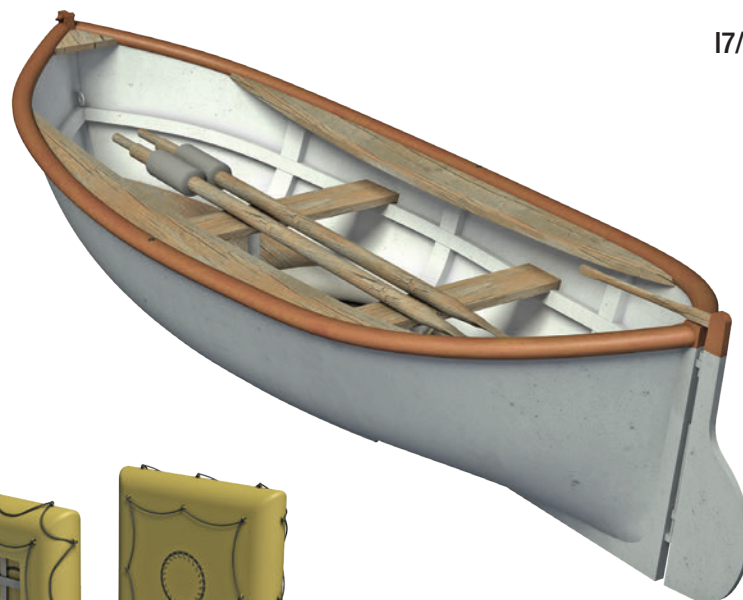
I7/2



I7/3



I7/7



## LIFE RAFT (1/75 SCALE)

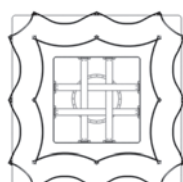
I8/1 PROFILE

I8/2 PLAN

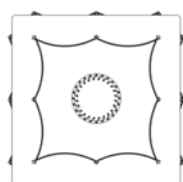
I8/3 BOTTOM VIEW



I8/1



I8/2



I8/3

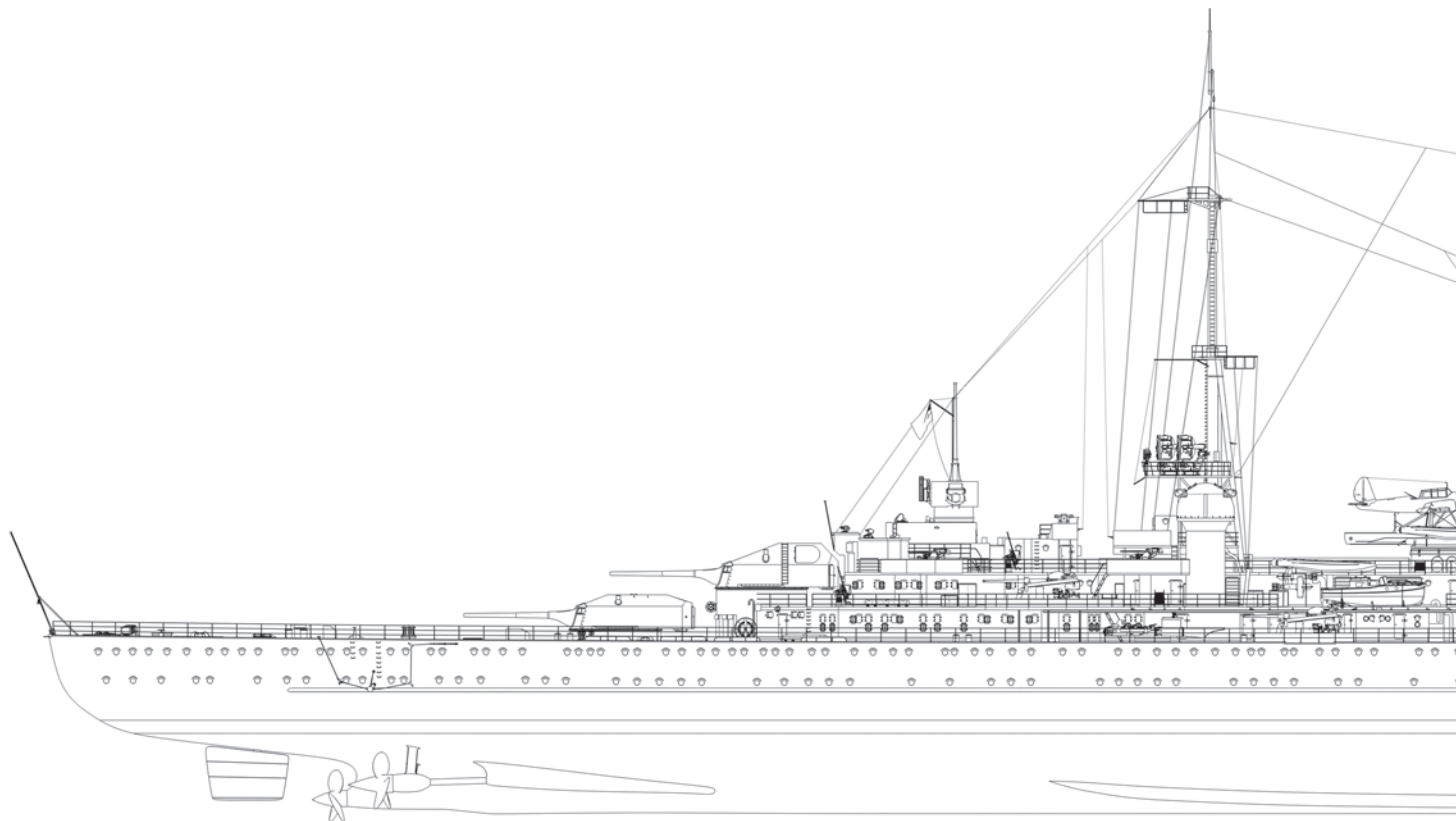


GERMAN HEAVY CRUISER *PRINZ EUGEN* (1/550 SCALE)

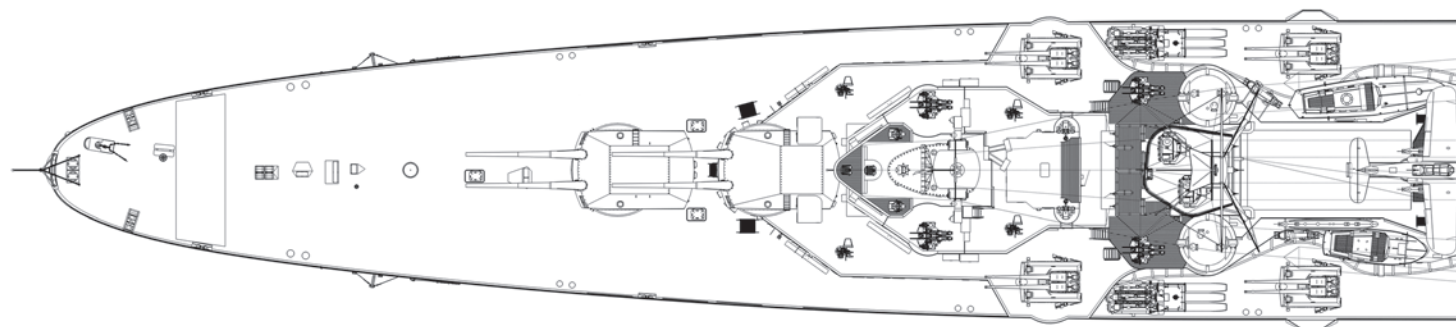
J1/1 RIGHT PROFILE

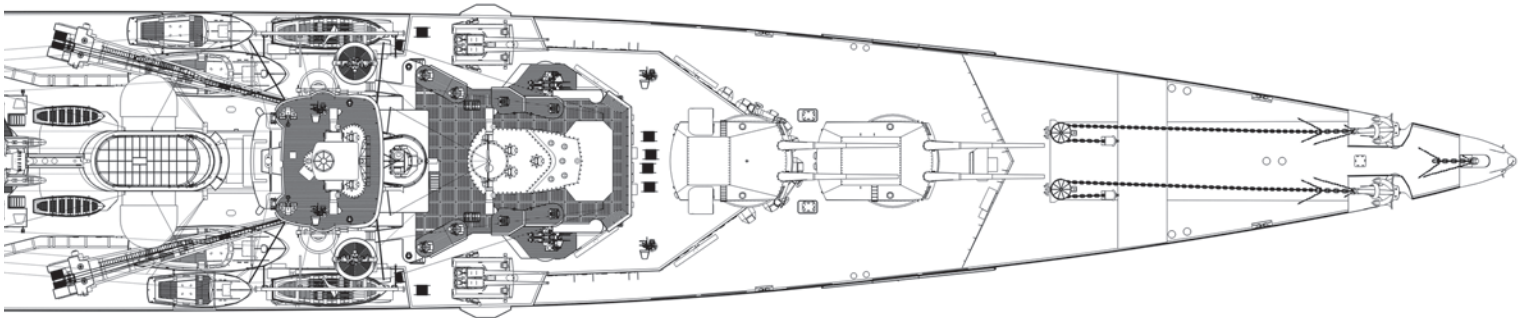
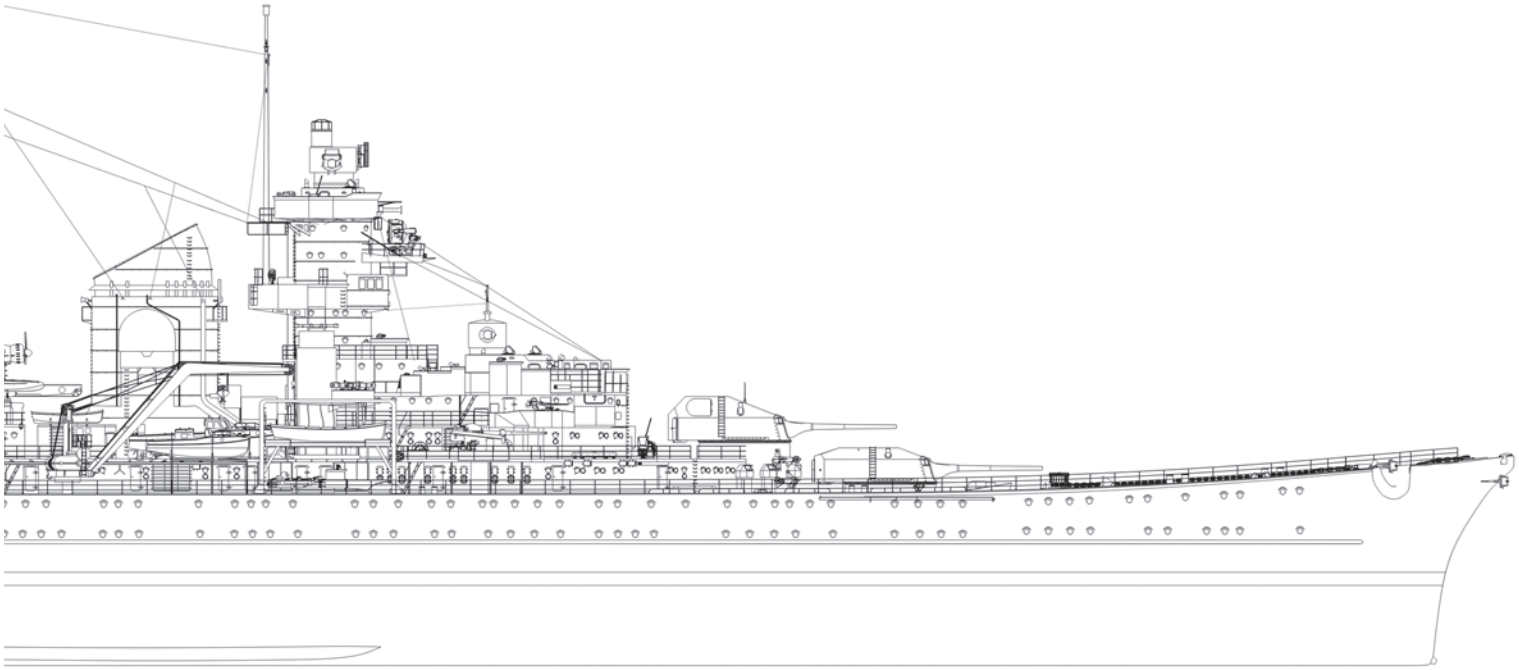
J1/2 PLAN

J1/1

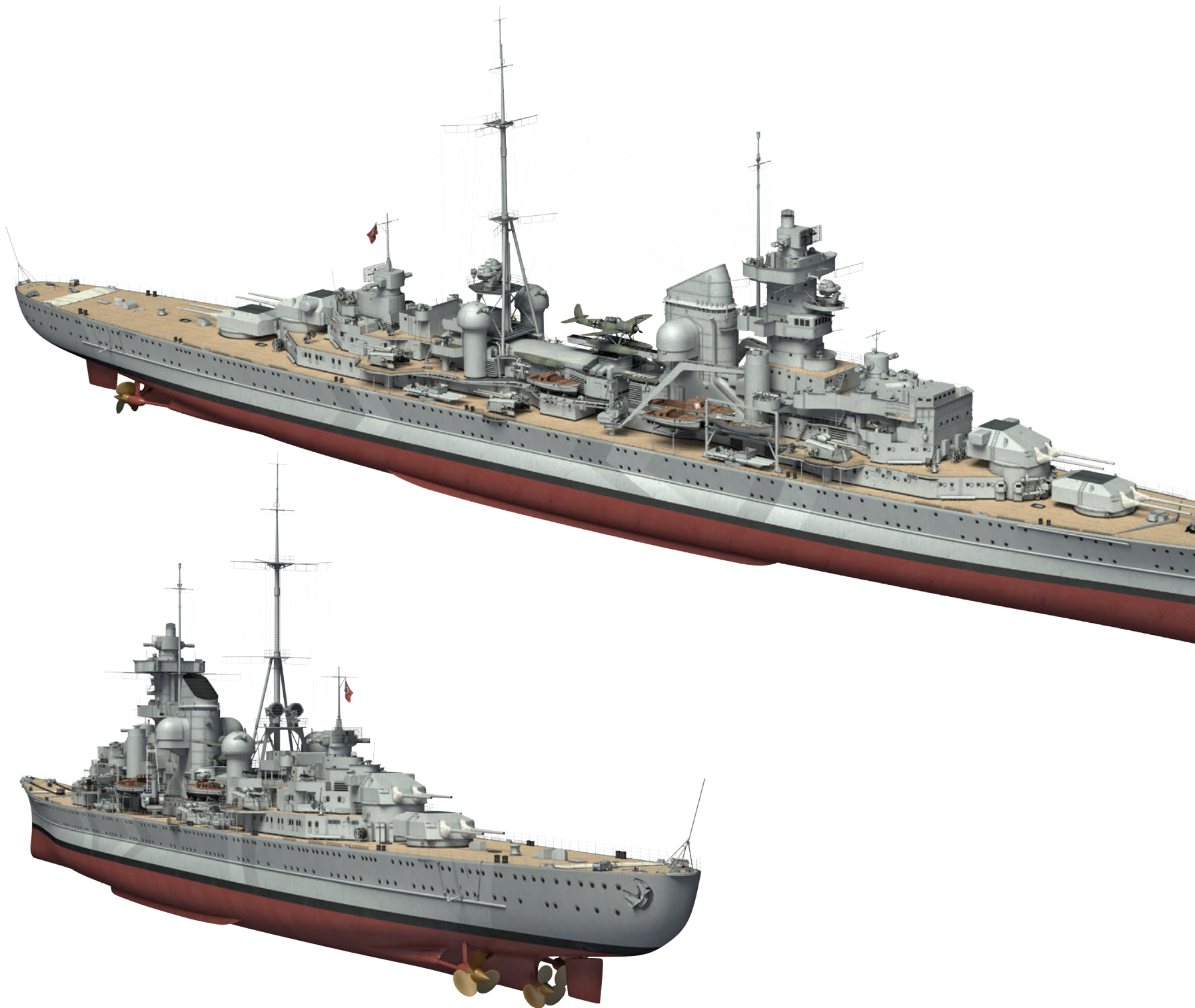


J1/2





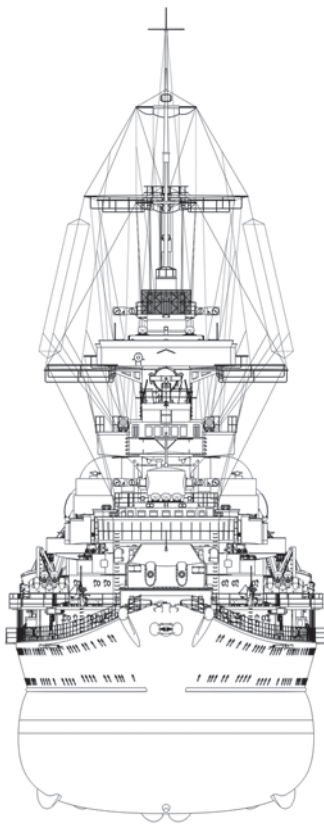
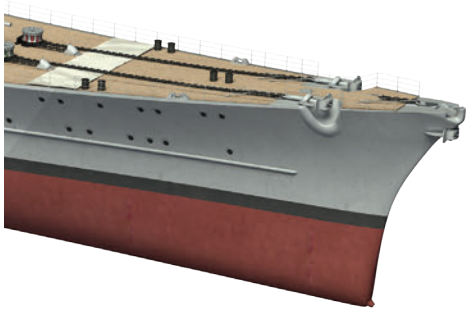




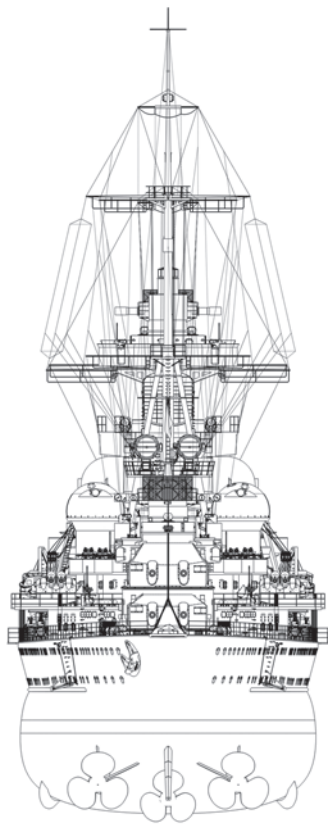
GERMAN HEAVY CRUISER *PRINZ EUGEN* (1/550 SCALE)

J1/3 FRONT VIEW

J1/4 BACK VIEW



J1/3



J1/4

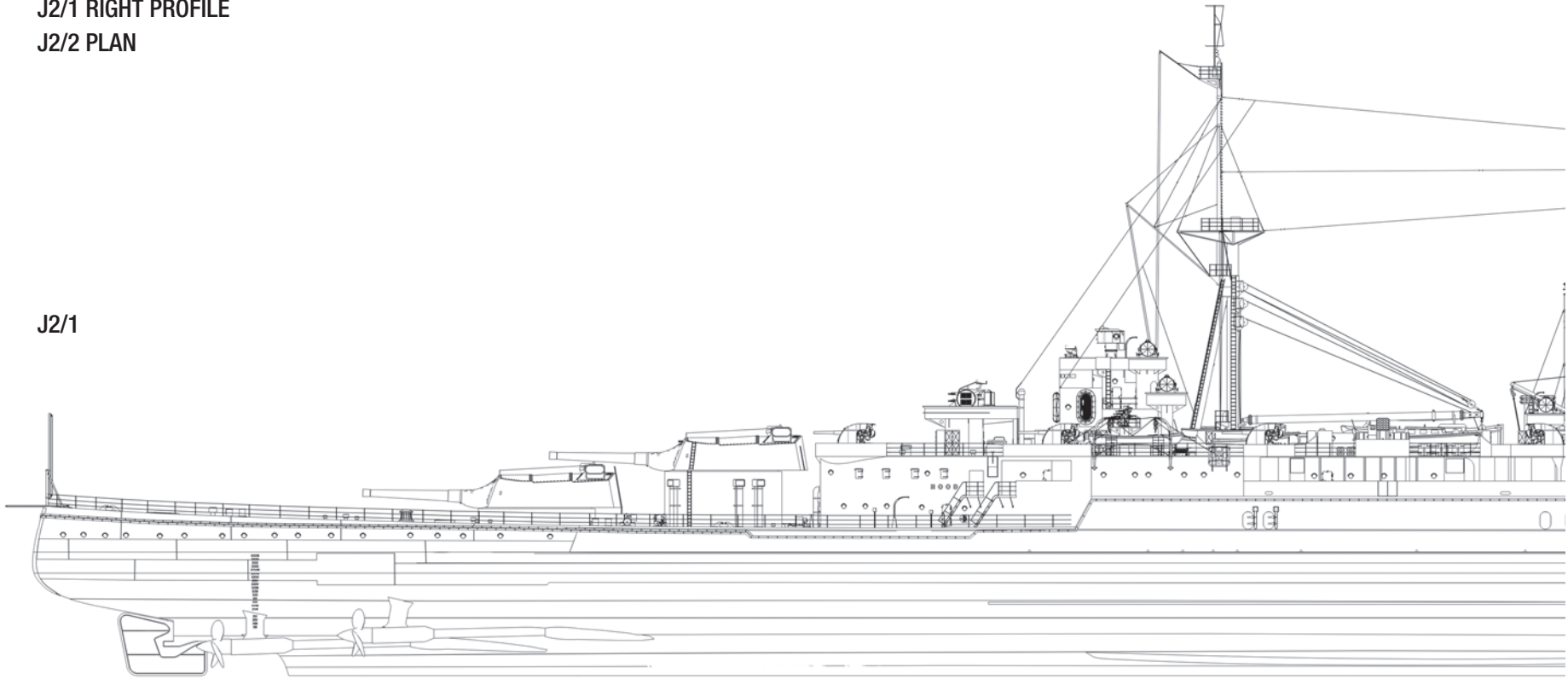
Principal characteristics, May 1941	
Displacement (standard)	14,240 tonnes
Displacement (full load)	19,042 tonnes
Length (overall)	212.5m
Width	31.8m
Draught (at full load displacement)	7.2m
Maximum speed	32 knots
Range	6 800nm at 16 knots
Armament	8 x 20.3cm SK C/34 (4 x II) 12 x 10.5cm SK C/33 (6 x II) 12 x 3.7cm C/30 (6 x II) 8 x 2cm C/30 (8 x I) 12 x 53.3cm torpedo tube (4 x III) 2 x WBD depth charge rack
Complement	1600 officers and men

BRITISH BATTLECRUISER HMS *HOOD* (1/550 SCALE)

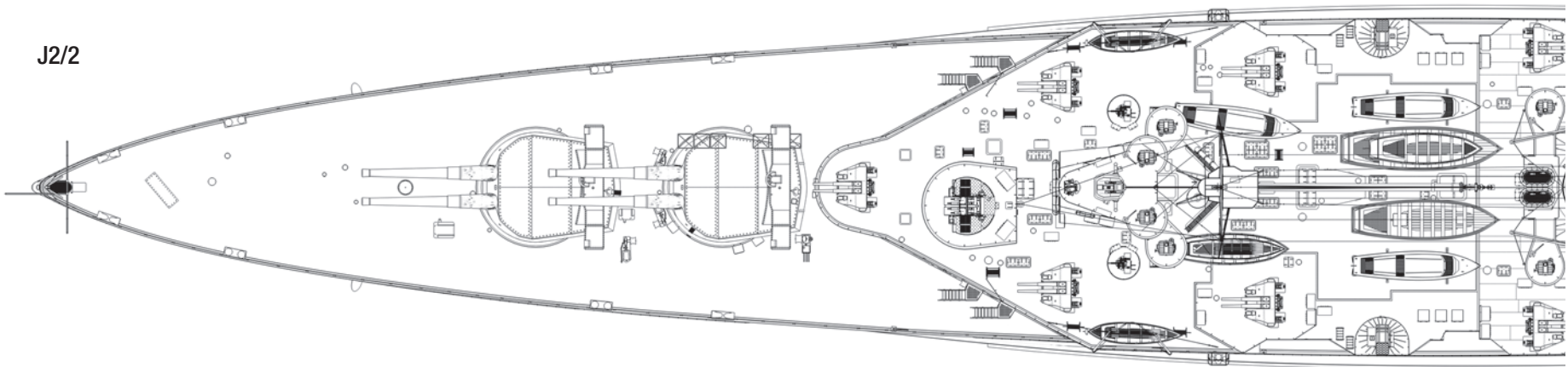
J2/1 RIGHT PROFILE

J2/2 PLAN

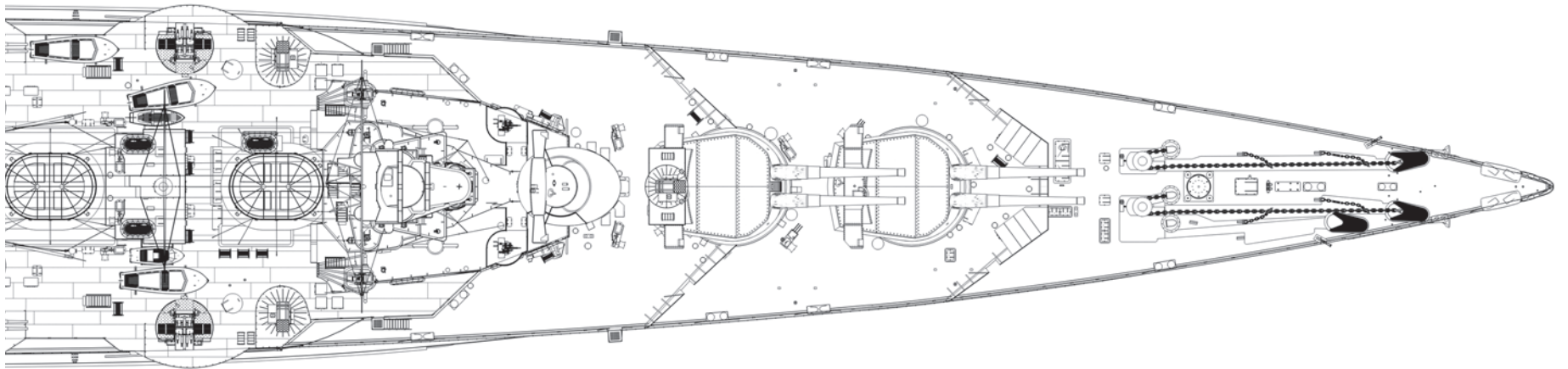
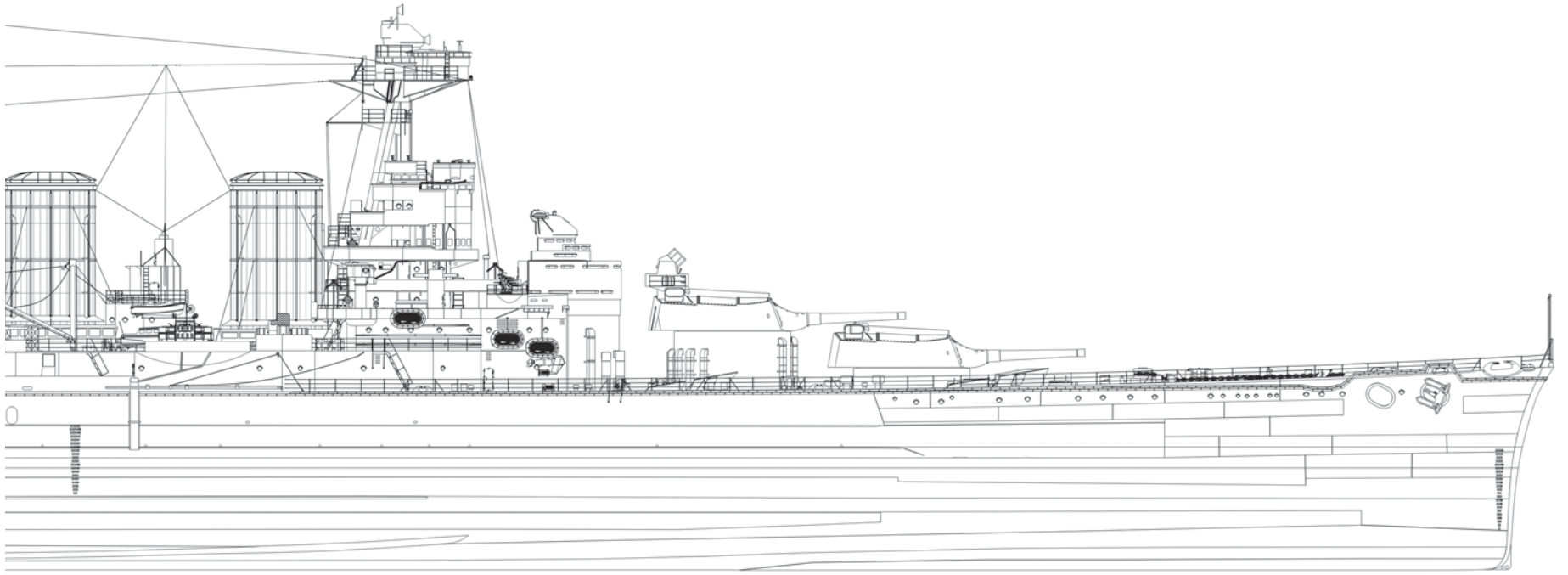
J2/1

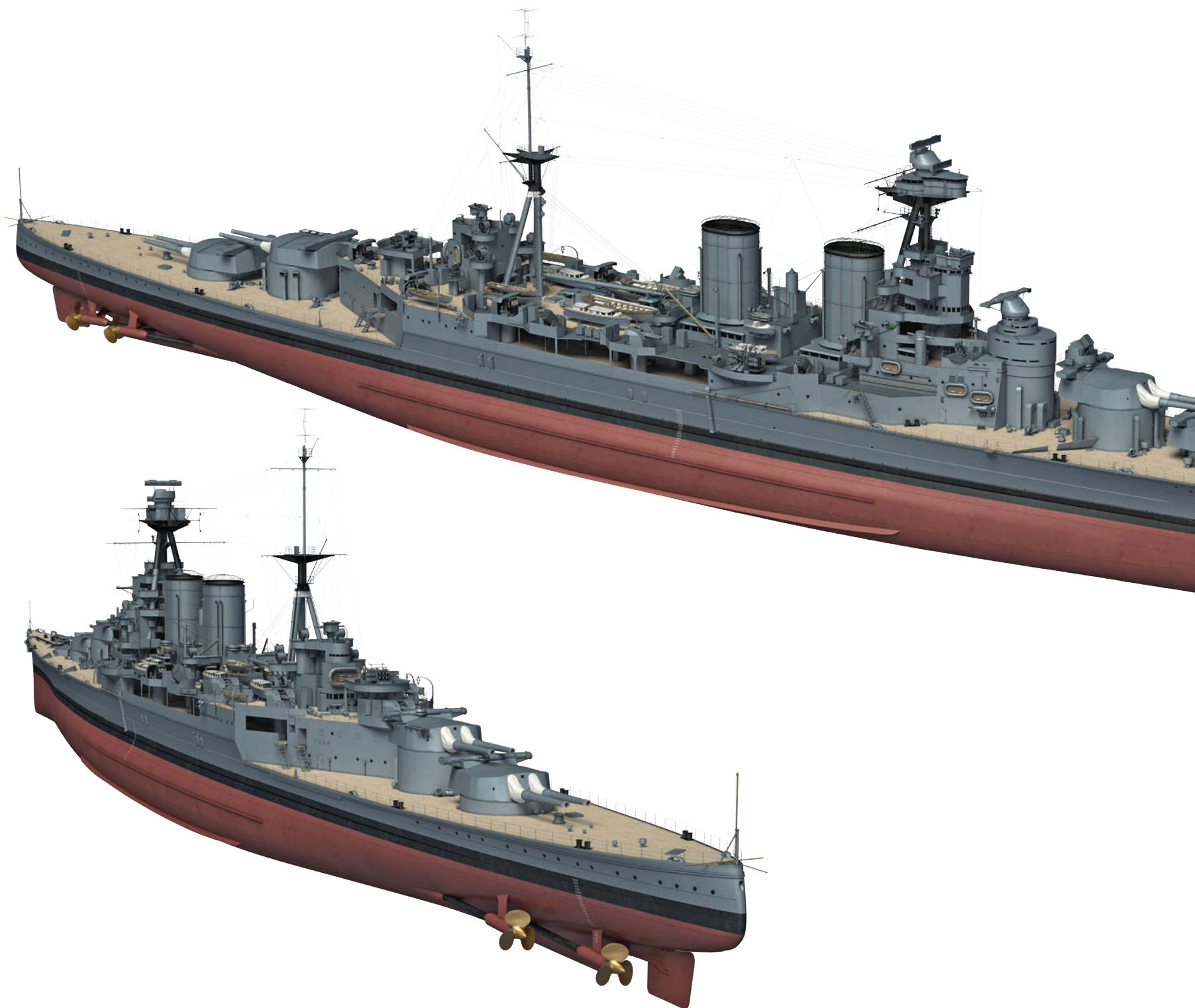


J2/2





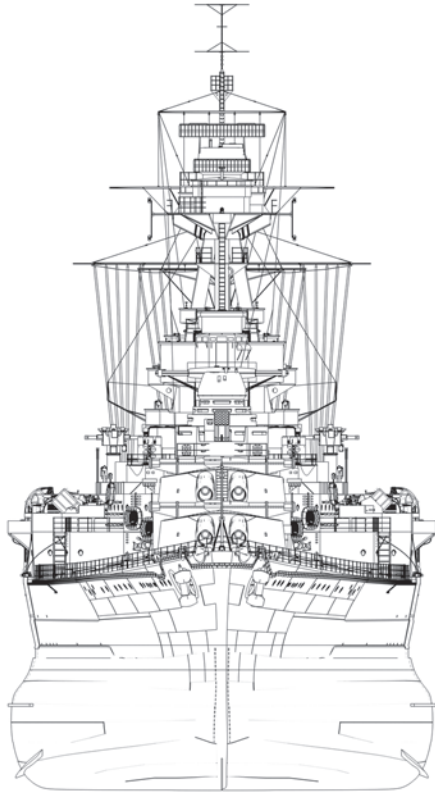
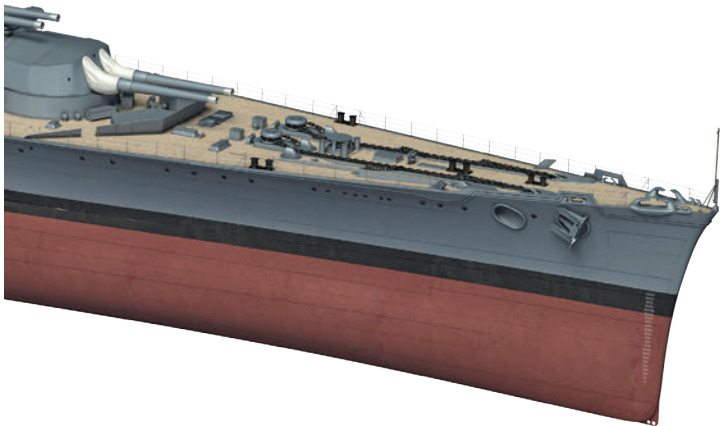




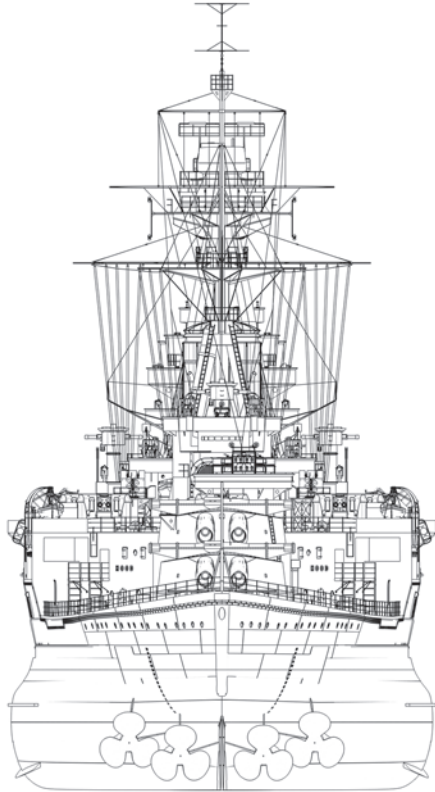
BRITISH BATTLECRUISER HMS *HOOD* (1/550 SCALE)

J2/3 FRONT VIEW

J2/4 BACK VIEW



J2/3



J2/4

Principal characteristics, May 1941	
Displacement (light)	42,462 tons
Displacement (deep)	48,360 tons
Length (overall)	262.3m
Width (with torpedo bulges)	31.8m
Draught (at light displacement)	9m
Draught (at deep displacement)	10.1m
Maximum speed	28 knots
Range	5 300nm at 20 knots
Armament	8 x 15in Mk I (381mm; 4 x II) 14 x 4in Mk XVI (102mm; 7 x II) 24 x 2pdr Mk VIII (40mm; 3 x VIII) 16 x 0.5in Mk III (12.7mm; 4 x IV) 5 twenty-tube UP rocket launchers 4 above water 21in (533mm) torpedo tube
Complement	1400 officers and men



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