

About

Practice Head is assembled with Practice Torpedo intended for carrying out exercise firings. It is assembled with Homing Head in the forward section and oxygen flask in the rear section. Practice Head imparts positive buoyancy to the Torpedo at the end of run. The Practice Head is divided into two compartments viz. Ballast Compartment (Houses Light Device, Depth & Roll Recorder, Signal Flare Ejector, Discharge Valve, Stop Cock, Water discharge Valve, Bellow reducing Valve, Release Mechanism, Recess, Bypass Valve, Pressure Equalizer, Float, Sinking Plug etc.) which provides positive buoyancy at the end of run by discharging water (140 ltrs.) filled in the compartment and Instrument compartment (dry), houses (safety & recovery unit and its battery, combined homing and influence exploder equipment, noise maker, bollards & safety valve etc.) The recess in Ballast compartment houses the float which gets inflated at the end of run to provide floatation to the surfaced Torpedo. Several hand holes/recesses are provided on the casing/shell of Practice Head for assembly of the following components:-

- a) Signal Flare Ejector Assembly
- b) Depth and Roll Recorder Assembly
- c) Light Device
- d) Pressure equalizer
- e) Drain/Discharge Valve assembly
- f) Bollard Assembly
- g) Holding for Floater/Balloon Assembly
- h) Sinking Valve
- i) Safety Valve
- j) Inspection hand hole



Technical Details

SrNo	Items	Specifications
1	Aluminum Alloy (AlMg5) Casing Body	<p>Material: AlMg5</p> <ul style="list-style-type: none"> • Larger Outer Diameter of the Casing: 532.4 MM • Smaller Outer Diameter of the Casing: 503.05 MM • Total Length: 1204.20 MM • Thickness: 6-8 mm • Structural Details of Casing: The casing is of uniform outer dia for a certain distance from rear side and tapered from a definite distance to the front side. (Refer T-DAP-A1828-GADWG-PH- REV 00) • Slope of the Tapered Portion: 1/8 • Mass of Casing (Without components mounting, but including the ribs and collars on the body): 58.5 kg • Maximum External Test Pressure: 12 kgf/cm² • Maximum Internal Test Pressure:- <ul style="list-style-type: none"> i. For Ballast Compartment: 2 kgf/cm² ii. For Instrument Compartment: 1 kgf/cm² • Innerspace of casing assembly have 2 compartments:- <ul style="list-style-type: none"> i. Ballast Compartment and ii. Instrument Compartment • Cut outs/ recesses shall be provided for the assembly of following components. <ul style="list-style-type: none"> a) Signal Flare Ejector Assembly b) Depth and Roll Recorder Assembly c) Light Device d) Pressure Equalizer e) Drain/ discharge valve assembly
2	Front Side Collar	<p>Material: AlMg5</p> <ul style="list-style-type: none"> • Maximum Outer Diameter: 500 MM • Pitch Circle Diameter: 468 MM • All Dimensions as per drawing T-DAP-A1828-MDWG-C&R-REV-00

3	Back Side Collar	<ul style="list-style-type: none"> • Material: AlMg5 • Maximum Outer Diameter: 532.40 MM • Pitch Circle Diameter: 516 MM <p>(Total no of holes is 30. two holes left without tapping)</p> <ul style="list-style-type: none"> • All Dimensions as per drawing T-DAP-A1828-MDWG-C&R-REV-00
4.	Ribs	<ul style="list-style-type: none"> • Material: AlMg5 • Max Outer Diameter: 516. 4 MM • Thickness: 15 MM • Inner Diameter: 480.4 MM • Shall be welded inside the casing in order to increase strength and integrity • Shall be placed at pre-determined position for uniform load distribution at each portion. <p>All Dimensions as per drawing T-DAP-A1828-MDWG-C&R-REV-00</p>
5.	Rib at Tapered Portion	<ul style="list-style-type: none"> • Material: AlMg5 • Max Outer Diameter: 520 MM • Min Outer Diameter: 518 MM • Thickness: 15 MM • Max Inner Diameter: 484 MM • Min Inner Diameter: 482 MM • welded inside the casing on the tapered portion, 145 MM from front side, in order to increase strength and structural integrity • Slope/Taper: 1/8
6.	Seperation Plate	<ul style="list-style-type: none"> • Seperating Instrument Compartment and Ballast Compartment. • Concave Shape • Material: AlMg5 • Max Outer Diameter: 516.4 MM • Thickness of the Plate: • Bended in portion facing high pressure compartment (Ballast Compartment) and Bulged out portion facing low pressure compartment (Instruments Compartment)
7.	SS Dowell	<ul style="list-style-type: none"> • 1 SS Dowell in larger diameter Coller
8.	SS Female Thread	<ul style="list-style-type: none"> • SS Female thread in Larger Diameter coller: Inserted in Coller
9.	SS Female Thread	<ul style="list-style-type: none"> • SS Female thread in Smaller Diameter coller: Inserted in Coller

Application

In a torpedo, the ballast components and instrument compartment play crucial roles in maintaining stability, control, and overall operational effectiveness. The ballast system primarily manages buoyancy and trim, ensuring that the torpedo maintains a stable trajectory underwater. This includes ballast tanks that adjust buoyancy for depth control, weight distribution mechanisms to prevent unintended pitch or roll, and trim systems that help keep the torpedo level. In some advanced torpedoes, compressed air or pumps may be used to dynamically adjust the ballast, allowing for precise manoeuvring.

The instrument compartment houses essential electronics and control systems that govern the torpedo's functionality. This includes navigation and guidance systems such as gyroscopes, accelerometers, and sonar, which help maintain the intended course. Additionally, it contains control electronics responsible for managing propulsion, steering, and detonation mechanisms. Communication systems may also be present, allowing the torpedo to receive updates or commands if needed. Furthermore, power sources like batteries or fuel cells supply the necessary energy to operate all these systems. Together, the ballast components and instrument compartment ensure that the torpedo remains stable, follows its intended path, and effectively reaches its target.



Key Features

- **Buoyancy Control:** Adjusts ballast to regulate depth.
- **Trim Stability:** Ensures proper weight distribution to prevent pitch or roll.
- **Dynamic Adjustment:** Use compressed air for real-time buoyancy control.
- **Hydrodynamic Efficiency:** Helps maintain a streamlined motion through water.
- **Automatic Depth Regulation:** Works with on-board sensors to maintain the desired depth.

