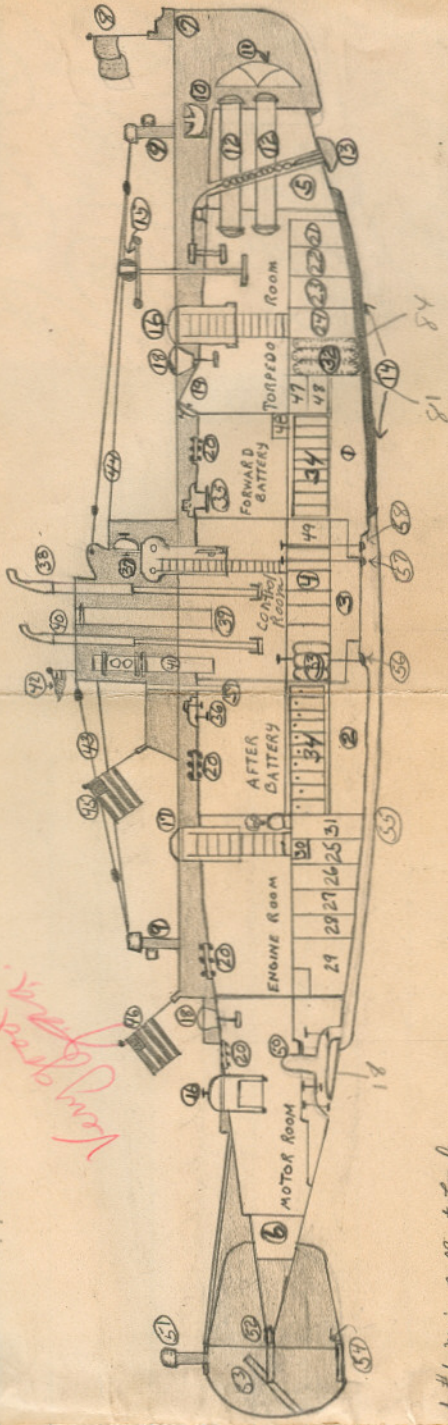


D-BOAT

Longitudinal View

#1

New design



- 1. #1 main Ballast Tank
- 2. #2 "
- 3. Auxiliary Tank
- 4. Regulator Tank
- 5. Forward Trim Tank
- 6. After
- 7. Hull Nose
- 8. Jack
- 9. Mast masts
- 10. Deck Anchor
- 11. Bow Cap
- 12. Torpedo Tubes
- 13. Submerged Anchor

- 14. Table Keel
- 15. U.K. Sound Device
- 16. Rescue and escape Hatch (Type 1) and Motor Room
- 17. Escape Hatch
- 18. Marker Buoy
- 19. Type 1 Buoy Hatch
- 20. Light Patches
- 21. 1630 Fuel Tanks
- 30. Sump Tank
- 31. Fuel Oil Tank
- 32. Air Bottle well (21 bottles)
- 33. " " " (9 ")
- 34. Batteries (6 cells each)

- 35. "A" Vent
- 36. "B" "
- 37. Conning Tower
- 38. #1 Periscope
- 39. main Induction
- 40. #2 Buoys
- 41. Radio Tank
- 42. Commission Buoy
- 43. Radio Antenna
- 44. Clearing Line
- 45. Colors at sea
- 46. " " " anchor
- 47. ammunition magazine
- 48. Battery water (4 Pts. 16 Tanks in 5-gal. keel and 2 normal 20-gal. keel)

- 49. Fresh water Tank
- 50. Low Pressure Pump
- 51. Low Stem Light
- 52. Skye
- 53. Signal
- 54. Vertical Rudder
- 55. main Drain
- 56. #1 main Ballast Tank
- Drain Valve
- 57. Auxiliary Drain Valve
- 58. #1 main Ballast Tank Drain Valve
- 59. Signal Gun
- 60. Head

First week

1. The keel on an O-boat is divided into two parts the false keel this is the forward section of the keel which is generally filled in with red leaded wood, this is to take up and absorb the shocks of grounding. The after section of the keel is water tight but hollow, this is known as main drain and is used as the main pumping connection between #1 and #2 main ballast tanks, auxiliary tank to the high and low pressure pumps.
2. A. The frames in the center section of the boat are circular in form, forward frames are elliptical in shape with major axis vertical, after frames are elliptical in shape with major axis horizontal. Frames are numbered from aft forward, are spaced 18" apart, and are $46''$ by $36''$ angle iron.
B. Bulkheads are watertight athwartship plating dividing the pressure hull into compartments having a watertight door opening and packing gland fixtures for allowing air, fuel and water lines to pass through them.

6 Torpedo Room

1 Under deck of torpedo room are four battery water tanks also a magazine for the storage of ammunition.

2 Air bottle well containing 21 of 30 air bottles for storage of compressed air

3 Four fuel oil tanks

4 Escape and rescue hatch

6 A The main ballast tanks are tanks provided primarily to furnish buoyancy on the surface and which are carried full of water when submerged

B Variable tanks are ballast tanks not carried full of water when submerged, designed for weight compensation

C Trimming tanks is the variable tank located forward ^{near bow} known as the forward trim tank and the variable tank located aft near the stern known as after trim tank

7 The hawsepipe leads up through the trim tank, slanting slightly aft at the top. at the top of hawsepipe is a sheave and cable cutter to cut the submerged anchor in case of fouling

8 a. The escape hatches are in the torpedo room, engine room and motor room

b. The rescue hatches are in the motor room and torpedo room

c. Escape equipment is equipment carried in the submarine for use in effecting an escape

d. Rescue equipment is equipment carried onboard salvage vessel necessary for effecting the rescue of crew and possible salvage of the boat.

9. a. The deck anchor is a short shank patent anchor of 900[#]

b. The chain is marked ever 15 fathoms at the end of the first 15 fathoms is one white link and at the end of the next 15 fathoms is two white links and so on, till it reaches 60 fathoms which is the length of the chain

c. To let the deck anchor out all you have to do is release the brake band and haul until it reaches desired depth. The anchor is brought in by electric motor. When stowed in chain locker it is carefully jiced to prevent kinking and piling up

2. Galley sink pump and discharge line with sea valve
 3. Galley range with hot plates and oven mess gear locker and under it refrigeration machinery, ice box, scuttlebutt etc.
 - 4 across after end are uptakes for battery ventilation system
 - 5 Main switch board for all connections between batteries and electrically operated machinery.
 6. An identification signal gun is over head at forward aft
 7. Motors generators for sending and receiving via radio
4. Control Room
1. Contains the main control apparatus of the boat
 2. On forward bulkhead is the hand and electric steering control
 3. main motor control
 4. Radio sending and receiving equipment
 5. Bow and stern plane controls both hand and electric

- 6 Depth ganges and sensitive gauge
- 7 Barometer for measuring atmospheric pressure
- 8 On after bulkhead is the air manifold including the bank.
- 9 Blow and vent manifold with pressure for sea

10 Periscopes

11 main induction valve operating wheel and flapper

12 Torpedo impulse tank repeater ganges

The bulkheads at forward and after end of this room are built to safely withstand 88.8 lbs. pressure. all other bulkheads between rooms are built to withstand 25 lbs.

5 Forward Battery room

1 above the decks are bunks for crew and officers living quarters

2 Battery ventilating system including blow

3. huitable flapper valve to insure watertightness of ventilation system

4 Lockers for storage of charts

5 Navigation instruments

10 A. The submerged anchor is of the mushroom type and is 2,000# in weight there is 50 fathoms of $\frac{3}{4}$ " galvanized steel wire cable

B. The submerged anchor is raised and lowered the same as the deck anchor just release pawl and brake band and is raised by a electric motor

C. The cable leads up through the hawes, over sheave, and back through superstructure to submerged anchor drum where it is stowed around drum.

D. A dial located in torpedo room is geared to drum and as drum rotates the dial shows how much cable is out to the anchor.

11. The main air induction will not supply enough air to main engines while running full speed therefore it is necessary that no door nor hatch in path of air supply to main engines be closed to do so would endanger lives of the crew

12 A. The superstructure is upon the strong pressure hull, from stem to stern, which is suitably reinforced in vicinity of the cleats and anchor gun.

B. The conning tower shears is the part of the superstructure which precedes the conning tower and is shaped like a knife to protect the conning tower from floating debris.

C. The periscope shears is the structure that precedes the periscope and is shaped like a knife to protect the periscope from floating debris.

13 A gear and deck lockers stored in superstructure should be properly secured because the superstructure isn't watertight it could get washed overboard.

14 A. The rooms that have soft patches are motor room, engine room, after battery & forward battery.

A soft patch is used for taking something on or off of the ship when the hatches cannot be used.

B. Marker buoys are located in the torpedo room and motor room, they are used in case the ship is damaged and cannot raise they send up these marker buoys so they can be found.

- 15 A. The towing pennant release is a mechanism operated from inside torped room by a vertical shaft and wrench with proper gears to turn release lug to release position. This pennant is used to tow a disabled sub.
- B. The cable cutter is located overhead in the torped room is used for cutting cable on submerged anchor in case it should become fouled.
- C. The signal gun is overhead in the after battery room is used for identification.
- D. The J. K. Device is used to obtain ranges and bearings in a submerged condition or in a surface condition and also used on surface craft.
- 16 The difference between the gyro compass and the magnetic compass is the gyro compass gives true bearings whereas the magnetic compass would give a magnetic north and south reading.
- 17 Emergency rations and water are stored in all compartments except in the after battery room.

18. Smoking is not permitted on a dive all the oxygen is needed for the crew not cigarettes. Silence is also necessary on a dive because and enemy craft can easily pick up the sound, sound carries very easily under water.
19. You shift to hand power on the bow and stern planes by pushing down on clutch and turning hand wheel until the gears are meshed.
20. The precautions that must be taking when a man is going to enter a tank one for the ballast tanks an oxygen line is placed in the tank for 24 hrs. blowing out foul air when a man goes in another stands by and talks to him all the time to see that he is all right. For the fuel tank it is boiled out with steam and then an oxygen line for 24 hrs just like for ballast tanks.
21. Precautions taking for fighting fire in a confined space are if it is an electrical fire shut off all the motors and try to smother the fire if that doesn't work use C.O₂ or if it still gets larger close off the

compartment and smother the fire from the lack of oxygen. For an oil fire it is about the same thing if it gets close to the magazine flood it.

- 22 answered in 21
- 23 For fighting fire near magazines you should flood the magazines immediately *if out of control*
- 24 The necessary connections for a tank are flood, drain, blow, vent, & gauge *man hole*

Tank capacities		Tons
Main Ballast tank forward		42.76
" " " after		43.54
Forward trimming tank		6.75
after " "		2.7
Auxiliary tank		20.07
Regulator "		.99
Fuel oil		Barrels
#1 Fuel tank		871
#2 " "		873
#3 " "		1258
#4 " "		1632
#5 " "		1558

#6 Fuel tank	1219
#7 " "	1094
#8 " "	953
#9 " "	<u>631</u>
Total capacity normal fuel oil	10089
#2 M. B. T. (Reserve fuel oil)	<u>11380</u>
Total capacity, normal and reserve	21469
#6 fuel tank being used for reserve lub. oil	
Lubricating Oil	Sal.
main lub. tank	968
Sump tank	<u>251</u>
Total capacity lub. oil	1219
#6 fuel oil tank (reserve lub. oil)	<u>1219</u>
Total capacity, normal & reserve	2438
Fresh water tank	Sal.
Ships fresh water	947
Battery fresh water (six tanks)	390

3.2

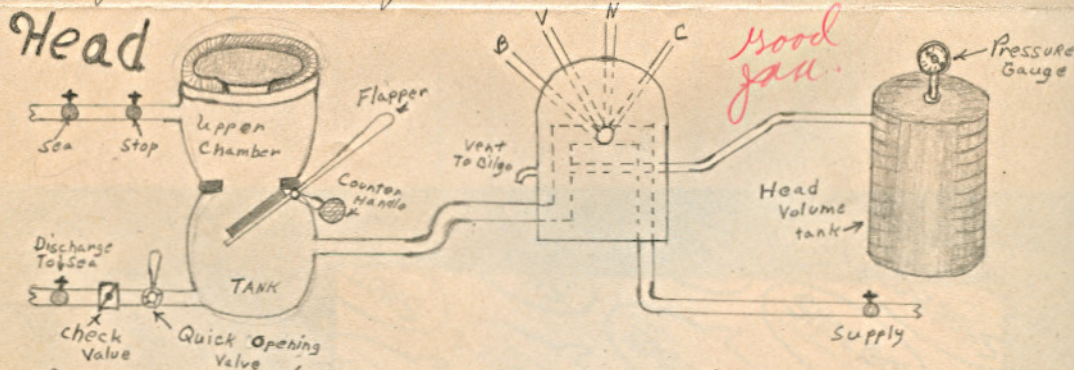
#2

The toilet on shore is the head on board ships

On board submarine, the head being below the water line, it is necessary that the refuse be put into a tank, and with pressure applied, forced overboard to the sea. For that reason (see sketch) there is an upper chamber, the same as a toilet bowl with a normal amount of water in it, put there by opening the sea and stop valves. The trap is replaced by a flapper valve, and instead of flushing the bowl, the flapper is opened and the refuse is allowed to drop into lower chamber (the tank), then by means of opening a discharge line from tank to sea and applying pressure to tank the refuse is blown overboard clear of the ship.

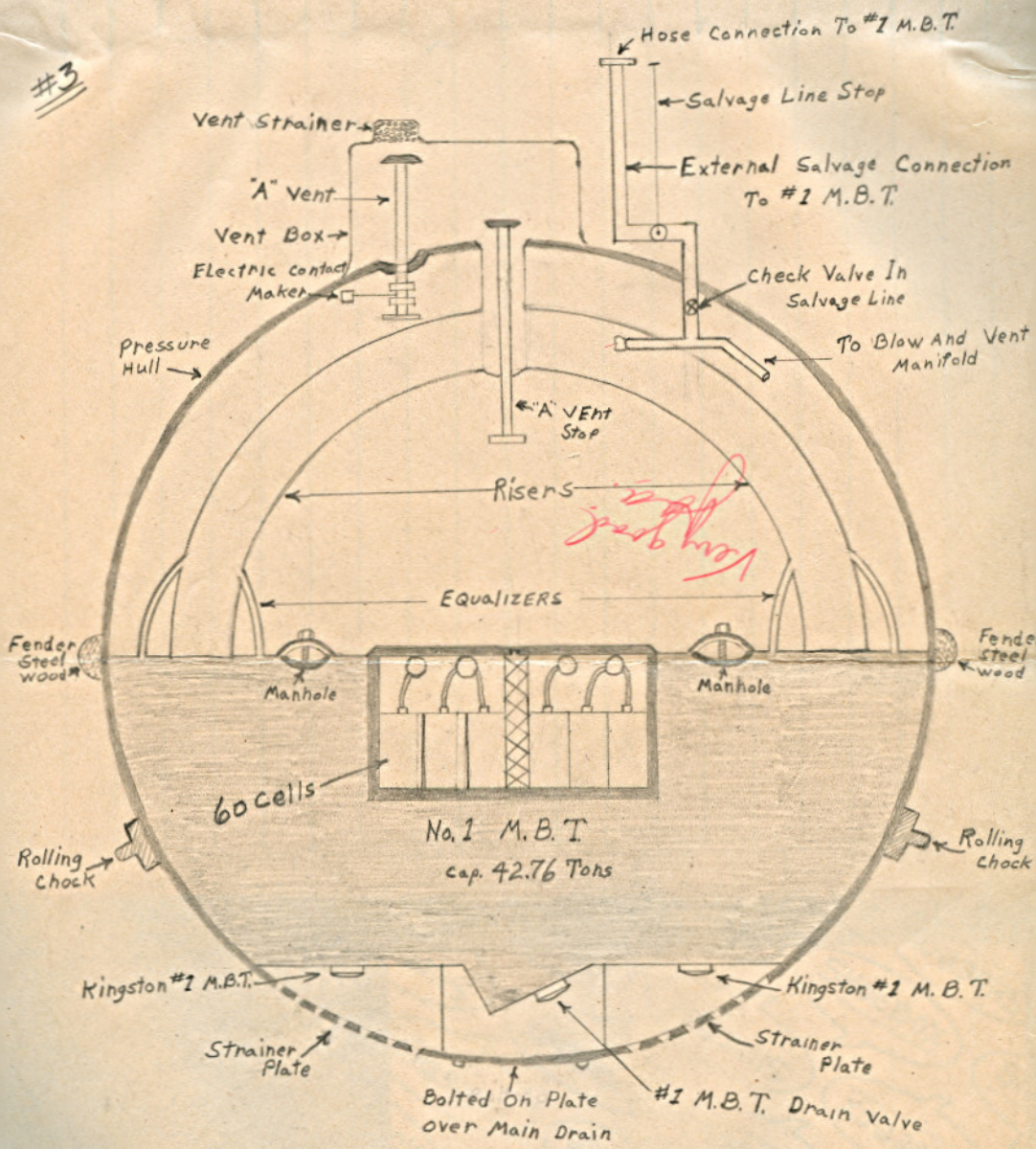
How to Operate the Head

1. Open sea and stop valves, flood water into upper chamber as desired, secure sea and stop valves and use head
2. Open flapper (using counter weighted lever) allowing water and refuse to pass down into lower chamber, close flapper, making certain gasket seats properly



3. Open supply valve from 100 lb. service air line
4. By use of control valve (rocker type) charge volume tank to 15th over sea pressure
5. Open sea valve on discharge line, open quick opening valve on discharge line from lower chamber (tank)
6. Push rocker control valve to "blow" (holding about five seconds) release rocker control valve to neutral.
7. Close quick opening valve, close sea valve
8. Close supply valve
9. Vent remaining pressure from lower chamber and volume tank into bilge, by pushing rocker control valve to "vent." Head is then secured, all valves closed, pressure has been returned to normal.

#3



No. 1 M.B.T.
cap. 42.76 Tons

60 cells

Very good