

Bronzewing & Currawong Bilge Pump-Out Procedure

1. OVERVIEW

Prior to the installation of the Duplex pump on the dock and the on-dock Bilge Pump-Out system, when a tug's bilge had to be pumped out, it was done manually, in the engine room, using a rotary hand pump or a small electric pump. It was a very messy and difficult task as it required handling long pieces of plastic hose covered in oil/water, sucking the liquid out of the bilges into 20 L drums then lifting the heavy drums from the engine room up ladders, across the tug's gunnels, up ramps then lifting the drums from the ground up to the top of the waste oil container to pour the liquid into the container.

When Keith Wiig came back to the tugs in mid-2023 he took on the task of setting up a shore-based pump-out system, he found an old non-operational pump, refurbished it, then implemented the system.

The system comprises a Duplex pump on the dock driven by compressed air and hoses connecting the pump to the tug's suction system, moving the liquids from the bilges to the oily water separator on dock.

This document describes setting up the pump, hoses and other tasks required to perform the pump-out.

Note the characters in parenthesis, label specific items in the system and are cross referenced in the document text, schematic and images. All the labels are listed in Appendix A.

Lady Hopetoun [L H]

In October 2024 the suction hose (H) was extended along the pontoon so that the LH can use it. The LH has an aged wooden hull which has leaked in the past. A 240 volt pump has been installed on the L H which operates 24/7. The pump can be switched ON/OFF from the deck of the LH using switch (W) and any bilge water from the LH is pumped from inlet point (S), [located at the end of the pontoon next to the 'spud' pile], direct to the oil/water separator using the same suction hoses as the two tugs. Tugs are not to use this entry point. The L H does not use the Duplex pump.

IT IS VERY IMPORTANT ON Completion of a tug pump out TO RESET ALL THE VALVES FOR THE LH pump-out IN THEIR CORRECT POSITION and also switch ON the LH 240V pump TO ENSURE THAT THE LH CAN DISCHARGE 24/7 STRAIGHT INTO THE OIL/SEPARATOR and BYPASS the DUPLEX PUMP. (see Bilge Pump-Out Schematic – Lady Hopetoun)

2. DUPLEX PUMP ON THE DOCK CHECK LIST

2.1. The Lady Hopetoun (LH) and Tugs pump out systems use the same suction hoses. When the tug pump out is to be performed the LH pump out valves (S) must be turned OFF and the power to LH 240v pump, switch (W) turned OFF.

2.1.1. Bypass valve (U) to be turned OFF

2.2. A compressed air line (B1) is connected to the pump (B2), the air valve lever (C) on the air line is turned OFF and compressed air is available. If an airline is not attached, one must be found and attached, this may require help from other Rozelle personnel who have knowledge of the compressed air setup. If there is no compressed air in the air line check that the valve is turned on at the compressed air valve rack (B). If there is still no air then the air compressor must be turned off, ask Rozelle engineering personnel to turn on the compressor in the air compressor shed (A)

2.3. The air control valve (D) on the pump is turned OFF.

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- 2.4. The Duplex pump has 2 inputs, only 1 of which can be active at a time.
 - 2.4.1. Suction hose (H) is fixed to the side of the pontoon and is accessed through valve (V) halfway along pontoon and hose connector (I). to which the tug suction hose (J) is connected, this hose is stored in one of the tugs stern compartments
 - 2.4.2. Suction hose connection (H1) is for a flexible suction hose ,that can be connected to a tug berthed within reach of the flexible hose . The flexible hose (J) can be used from this connection. The valve (T) controls the flow through the flexible hose. When this option is used the valve (S) on the end of the pontoon dock must be closed. (OFF)
- 2.5. The discharge (F) is connected to the oily water separator (G1),, this should be connected at all times.
- 2.6. The air cock (E) on top of the pump is OFF

3. OILY WATER SEPARATOR CHECK LIST

- 3.1. Inlet valve (G) is open. (Should always be open)
- 3.2. The electric cable from the submersible pump (G1) that pumps the clean water to the sewer, is connected to a power point fitted on the OWS containment tank. This is feed from the orange distribution board (G2). (This should always be left connected and power on, for when others use the OWS system such as Waratah)

4. TUG DECK CHECK LIST

- 4.1. The suction hose (H) from the pump is fixed to the side of the pontoon and runs to the end of the pontoon having the pylon. It has a connection (I) to the tug's suction hose (J). The tug's suction hose (J) is connected to the tug's suction system deck fitting (K), this is the yellow pipe on deck adjacent to the engine room hatch.
- 4.2. Check all the hose connection to ensure that they are securely connected to avoid possibility of oil leaks into the harbour.
- 4.3. All hoses and connections should be monitored while in use to ensure they are not leaking.
- 4.4. The pump has 2 input sources, the second is a manually connected suction hose (H1) which can be connected to a tug berthed on the smaller pontoon
- 4.5. Note that only one input source can be pumped out at a time so the valve of the other source must be turned off when in operation

5. ENGINE ROOM CHECK LIST

- 5.1. The suction system valve (L) at the base of the yellow pipe through the deck is turned ON. This is a screw lift valve. All other valves on manifold are non-return valves.
- 5.2. All the black bilge manifold valves (M) are turned OFF except the one furthest on the port side (M1) which should be opened and then closed approx. 1 turn. (This is normal for all valve operation)
- 5.3. Check the "T" port cock (N) on the fire pump sea suction is closed to the manifold. The liquid flow direction engraved into the stem of the valve should be in the 'L' position

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- 5.4. Ensure that the suction valve (O) to the engine bilge pump is closed as this blocks the bilge liquid from flowing into the port engine driven bilge pump.
- 5.5. At the foot of the entry steps there are two removable circular cover plates. Remove the aft one of the two as the bilge suction valve (P) is located beneath this cover. Open the valve, again closing it one turn after completely opening it. The strum box (R) is also located beneath the plates in front of the valve.
- 5.6. Check the liquid (water/oil / diesel?) level in the bilge (Q) and monitor its level during the pump out.

6. PUMPING OUT THE BILGE

- 6.1. The air valve lever (C) on the air line (B1) connected to the pump is turned ON.
- 6.2. Start the pump on the dock by opening the air control valve (D) sufficiently to pump out the bilges, adjust this valve to achieve the correct flow. The pump just needs to run at a steady slow pace. The pump does not need to race to pump out the bilges. The speed can be around 60 to 80 strokes a minute – sing along ‘Staying Alive’
- 6.3. Open the air cock (E) on top of pump to ensure pump is pumping liquid.
- 6.4. The pump may need to be primed – remove the hose from the deck fitting (K) and place it in the water and suck out sea water, then reconnect to the deck fitting.
- 6.5. When the pump is operating properly, you should be able to hear the valves clicking in the valve chest.
- 6.6. Give the pump sufficient time to lift liquid from the tug bilges.
- 6.7. When the bilge (Q) has been pumped out, the air valve lever (C) on the air line is turned OFF

7. FINISHING / CLEANUP

- 7.1. If the bilge (Q) is covered with oil, spray a degreaser into the bilge and wash it out with fresh water then pump out the bilge again.
- 7.2. When the pump out is completed, disconnected the hose from the tug’s deck fitting (K), turn OFF the air control valve (D) on the pump.
- 7.3. Disconnect the tug suction hose (J) from the dock suction connection (I) replace the hose plug & deck fitting cap to prevent spills. Replace the tug suction hose in the stern compartment of the tug.
- 7.4. Upon completion of pump-out disconnect pontoon suction hose (H or H1) from pump connection (I or T) and again run the pump with a freshwater hose pushed into pump suction connector (I or T) for approximately 5 minutes. This will remove sea water and reduce possibility of corrosion in pump.
- 7.5. Turn OFF fresh water, turn air valve lever (C) on the air line (B1) and control valve (D) OFF, reconnect pontoon suction hose (H or H1) to pump by valves (I or T)
- 7.6. On the oily water separator, the electric cable (G1) can be left on. DO NOT close the Inlet valve (G) as it is left open and leave the power on to the submersible pump.
- 7.7. In the engine room turn OFF
 - the suction system valve (L)

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- the bilge suction valve (P)
- the bilge manifold valve furthest to port (M1)

7.8. Turn OFF valve on compressed air valve rack (B).

7.9. The Lady Hopetoun's 24/7 bilge system must be reconnected to the suction hoses, see Section 8

7.10. It is an AMSA requirement under MARPOL 73/78 (The International Convention for the Prevention of Pollution from Ships) Annex I (Regulations for the prevention of pollution by oil) that all oily wastewater discharges from a vessel must be recorded in the vessel's Oil Record Book. This is in one of the engineering folders kept on board.

7.11. Strum box (R) should be cleaned approximately twice a month.

8. Lady Hopetoun-Summary of Valve Settings when Tugs not using Bilge Pump Out System

8.1 Refer to the Overview at start of these notes. The LH requires 24/7 direct access to the oil water separator.

8.2 The position of the valves when the Tugs are NOT using the bilge water pump out system:

- Switch W, located on starboard aft end of superstructure turned ON
- Valve S, located next to the 'spud' pile is to be open (ON)
- Valve V, located about halfway along the pontoon from the 'spud' pile is to be kept closed (OFF)
- Valve U, close to the Duplex Pump is to be kept open (ON)
- Valve T, close to the Duplex Pump that controls the flexible hose flow from the tugs is to be kept closed (OFF)

9. Routine Maintenance

9.1 Lubrication. As the pump is not used daily it is to be lubricated at least monthly.

- Apply lubricating oil to the four shafts and associated mechanism located between either end of the pump. A few drops on each moving part.

10. Pump Blockages

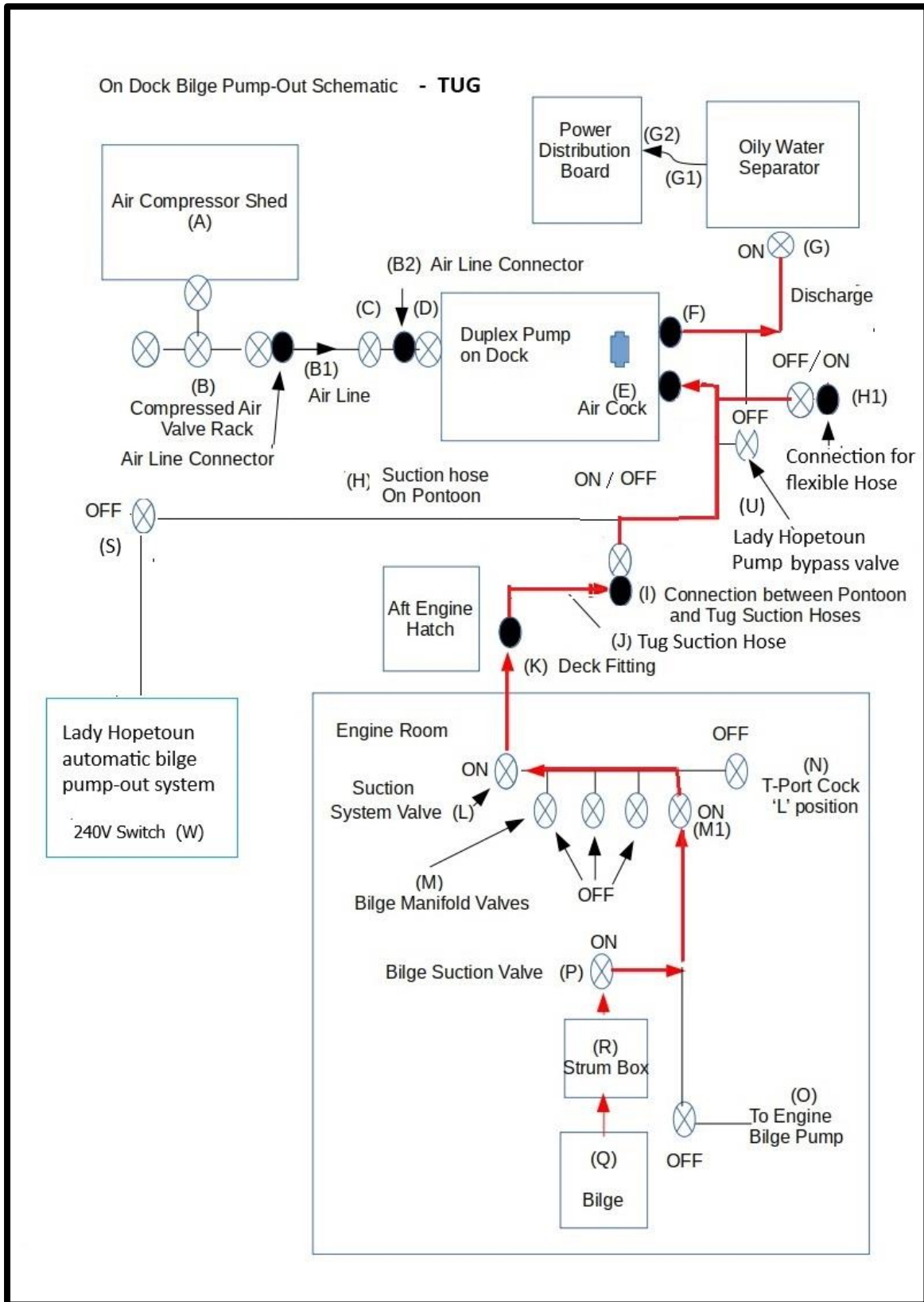
10.1 As the pump is mainly used for moving bilge water it is quite likely that occasionally there will be small items of cleaning materials, floating debris of various kinds that get carried along in the bilge water. To clear the suction hose:

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- Disconnect the tug suction hose (J) from the deck fitting (K) and the inlet valve (I) to check for blockages. A small quantity of water poured into one end of suction hose J should confirm if it is clear.
- Reconnect at inlet valve (I) and place other end in sea water. Disconnect the discharge line running from the Duplex Pump to the oil/water separator. Place a suitable container at the discharge point to prevent sea water contaminated with any oily liquids going into the Harbour. If there is no liquid from the discharge end of the Duplex pump assume the problem is with the pump suction and discharge valves.
- Remove the four nuts holding the casing cover on which the Air Cock (E) is located. The casing will be lifted sufficiently by the valve springs to allow you to get your fingers beneath it to lift the cover off completely. Note the gasket between the pump and the cover. Do not damage it.
- Under the cover there are four discharge valves on top and four suction valves beneath them, all held in place by springs. To stop the pump pumping, there will likely be debris under one of the suction valves, (Bottom Valves) holding the valve off the seat. It is wise to check all the suction valves while the pump is open. If any debris is discovered remove it from the valve chest. Small items can prevent the valves from operating efficiently. If the debris cannot be removed by hand, pull the suction pipe from the Poly pipe fitting and flush the valve chest with water to wash any debris out. It may be necessary to put a bucket under the suction fitting to prevent any oil washing into the harbour.
- When it is all clear, reassemble.

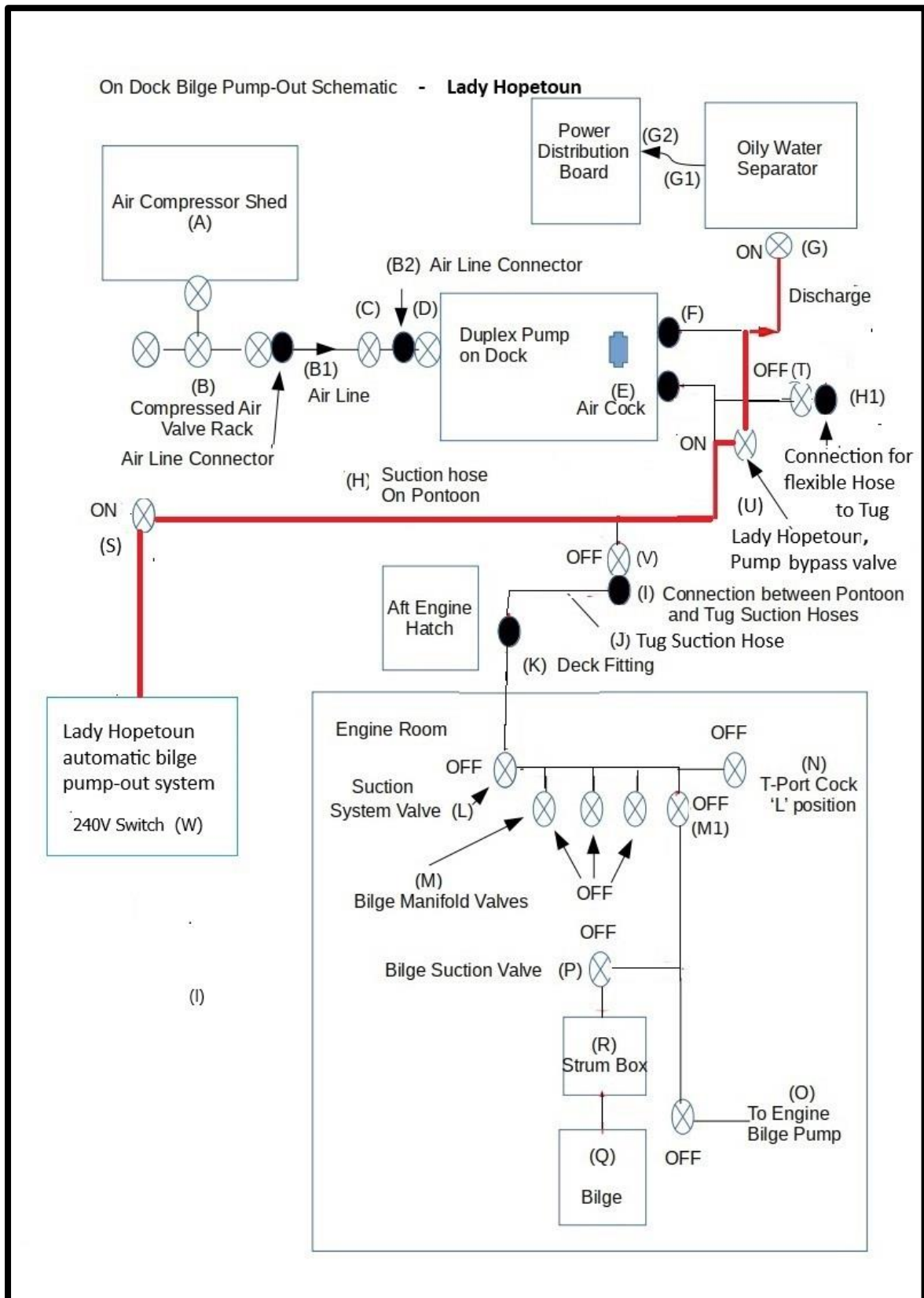
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Bilge Pump-Out Schematic - TUG



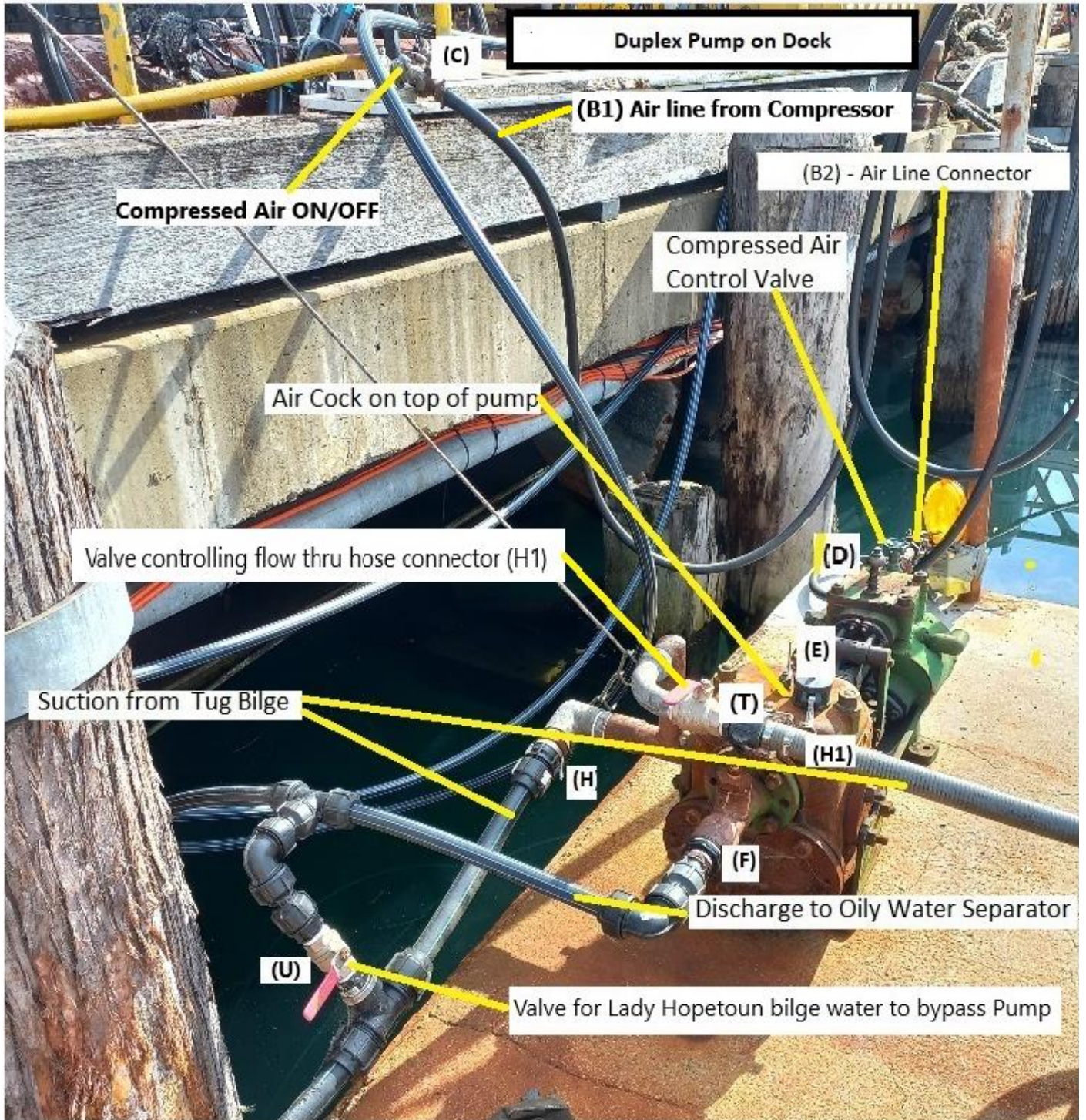
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Bilge Pump-Out Schematic – Lady Hopetoun



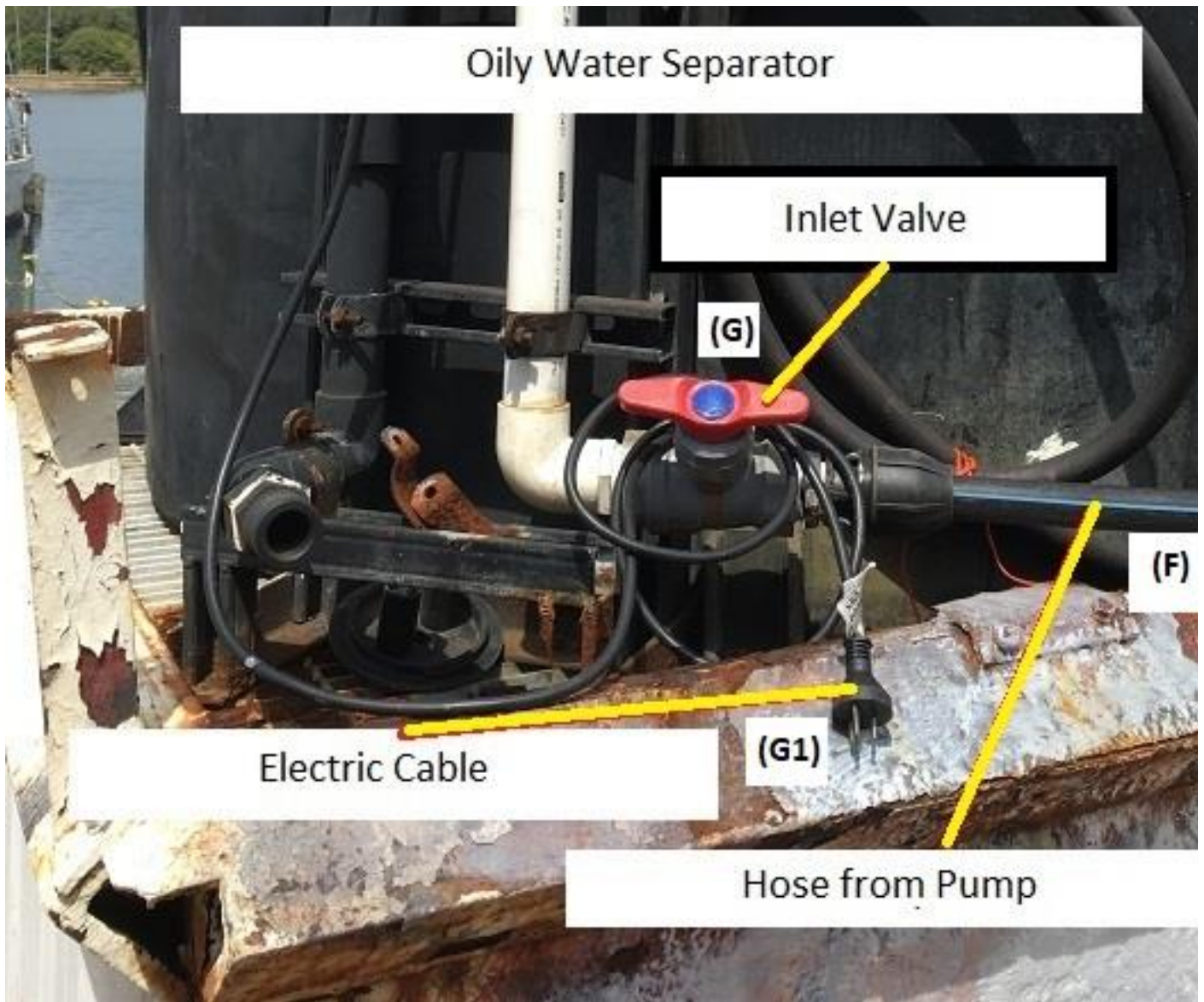
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IMAGE 1 -DUPLEX PUMP ON THE DOCK



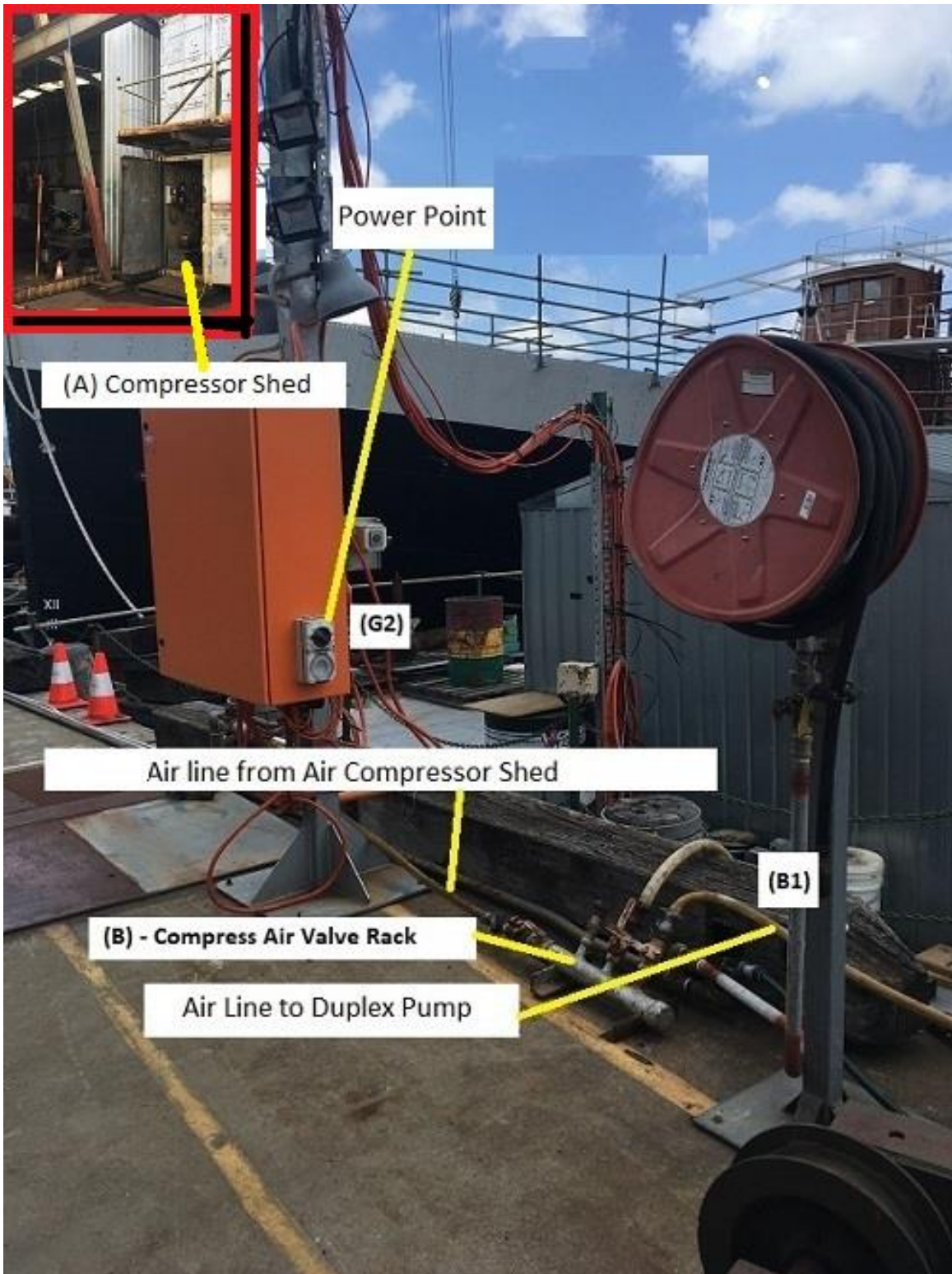
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IMAGE 2 -OILY WATER SEPARATOR



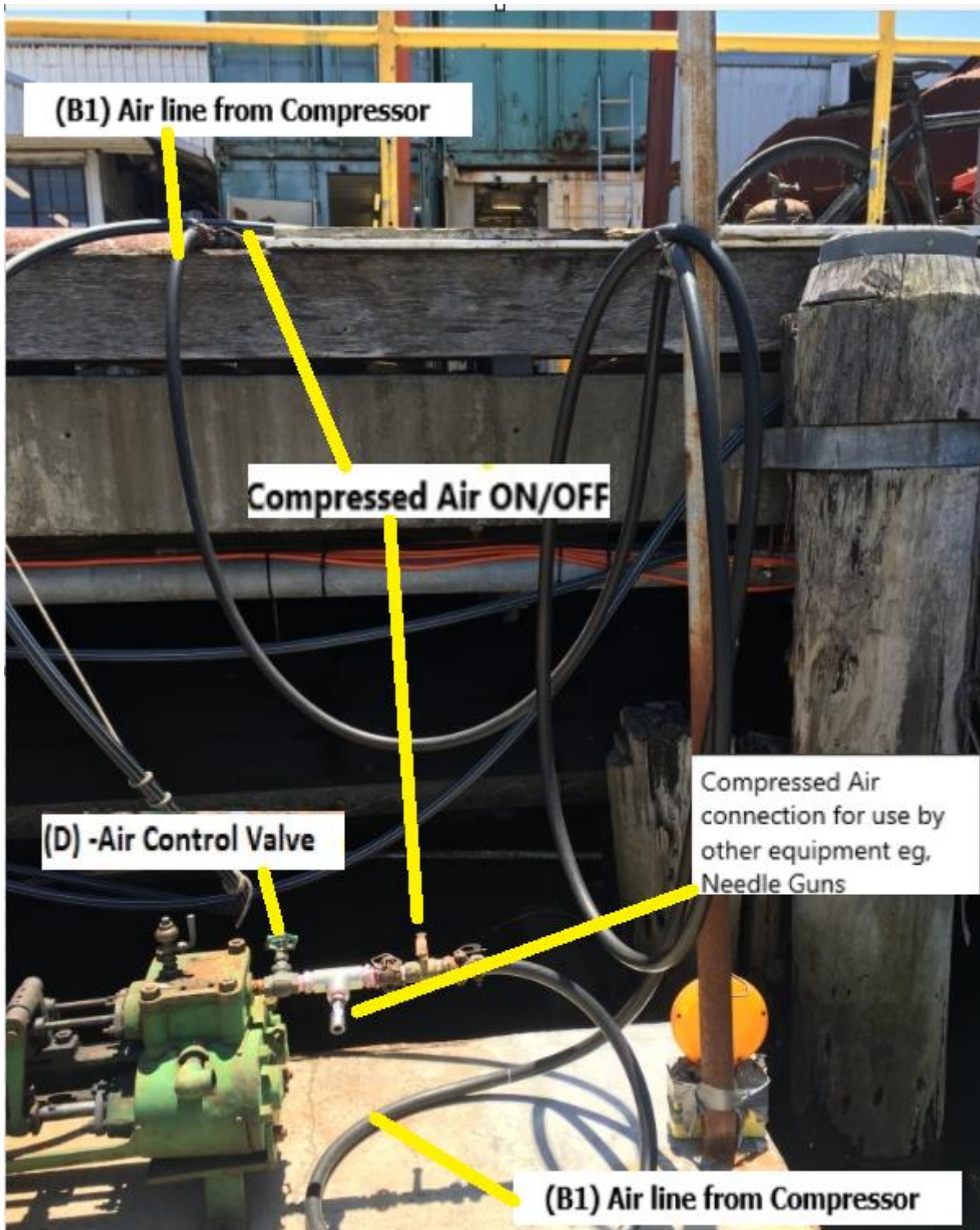
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IMAGE 3 -POWER POINT ON DISTRIBUTION BOARD AND COMPRESSED AIR VALVE RACK



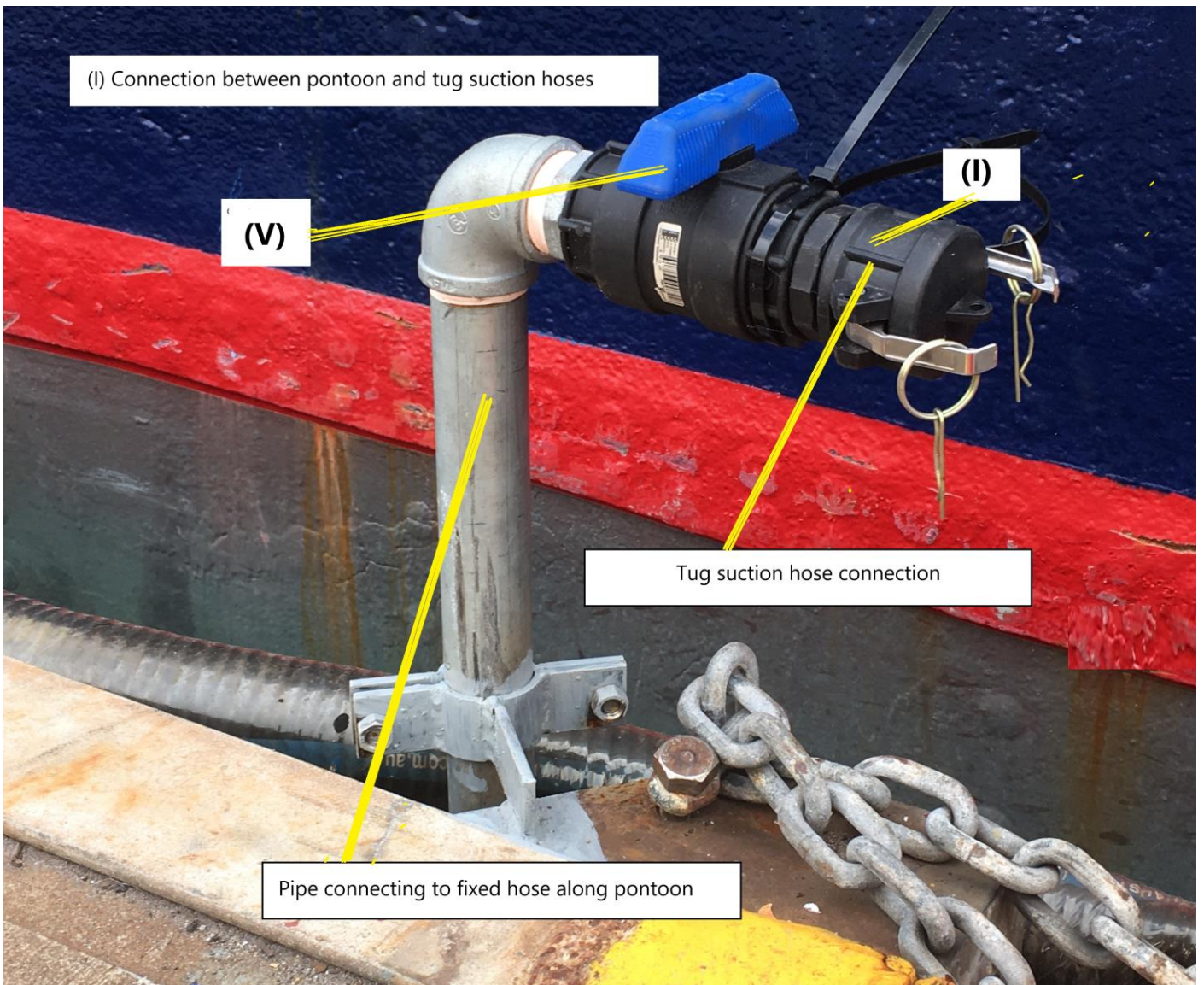
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IMAGE 4 -AIR CONTROL VALVE ON PUMP



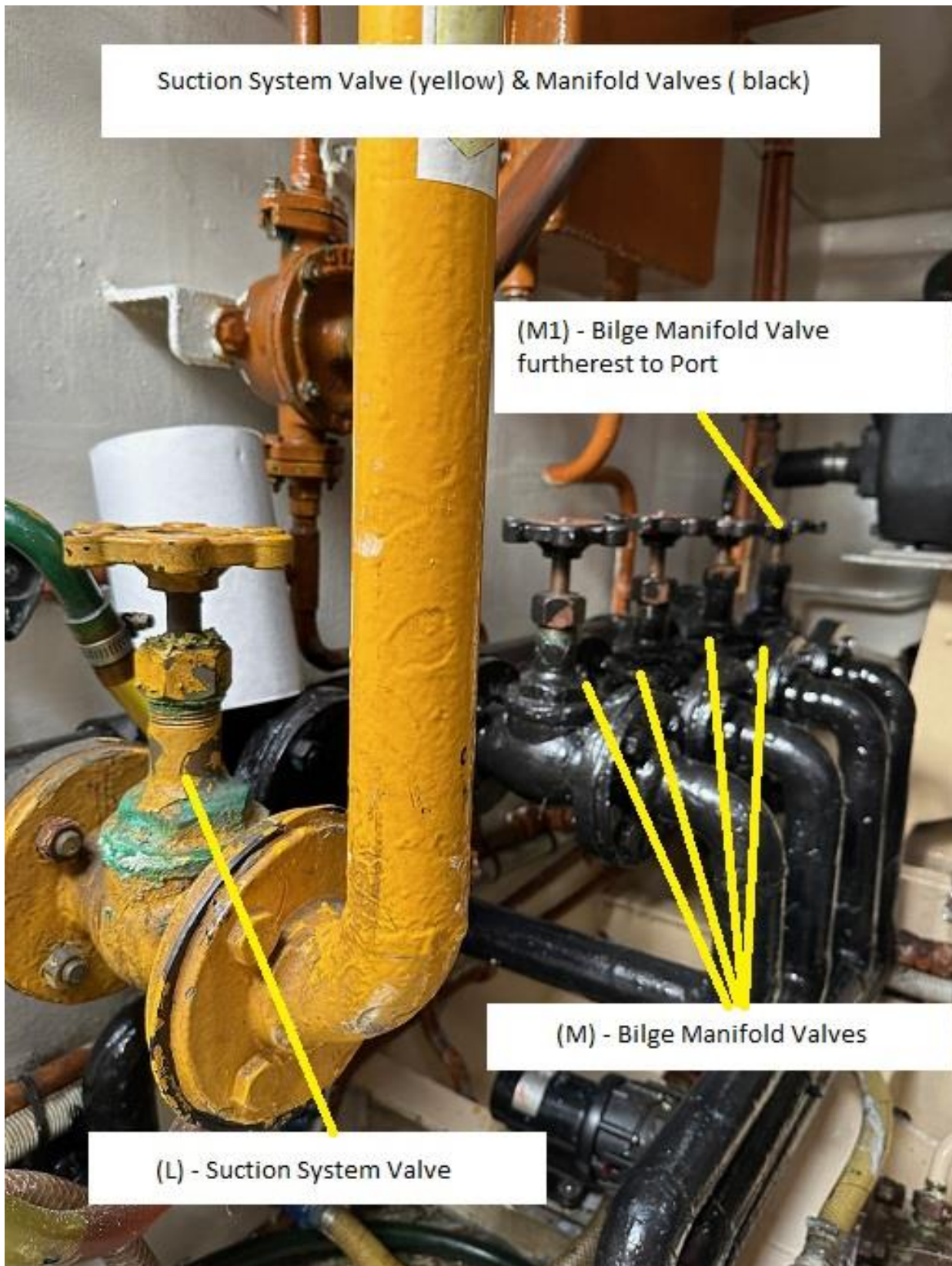
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IMAGE 5 -CONNECTION BETWEEN PONTOON AND TUG SUCTION HOSES



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IMAGE 6 -BILGE MANIFOLD



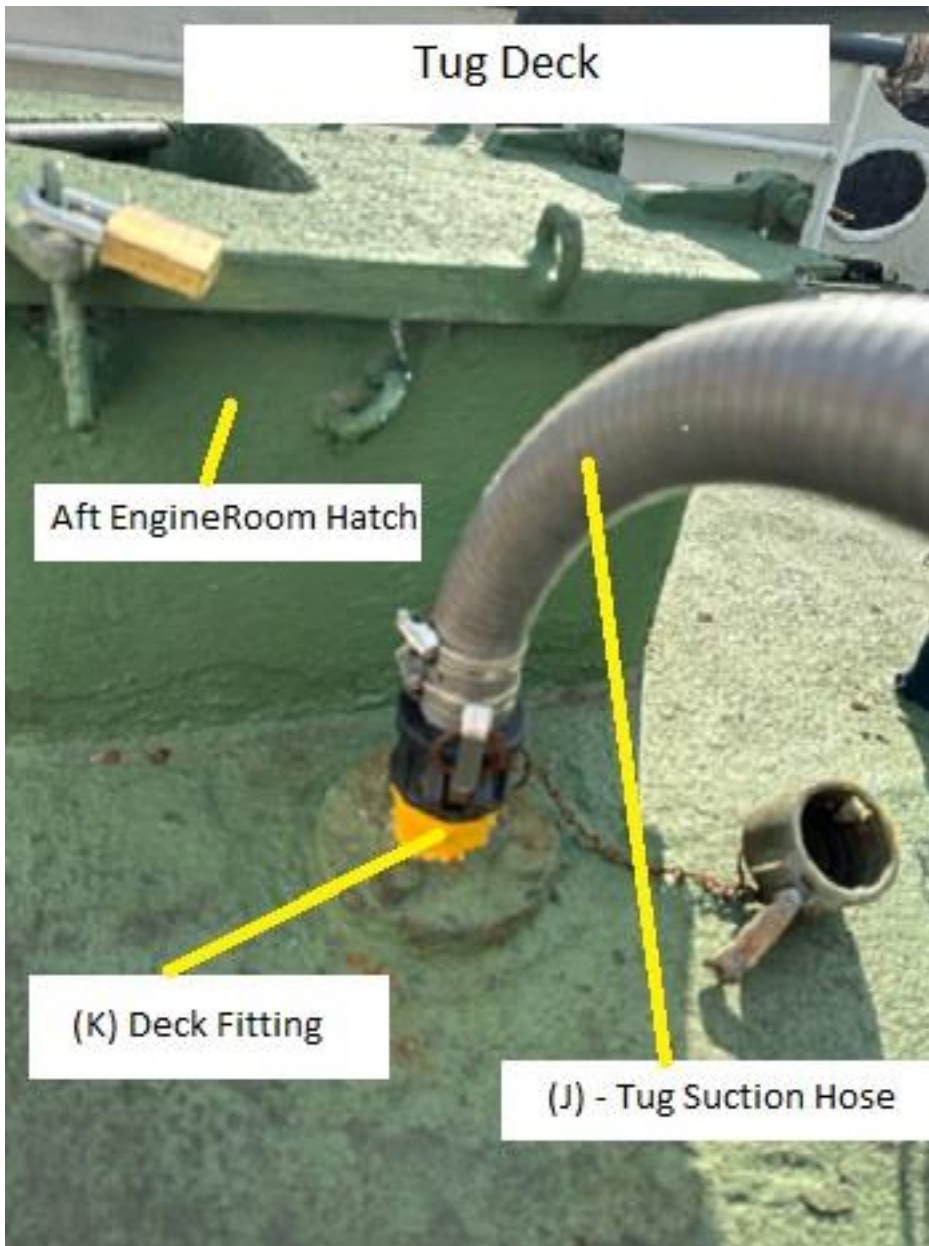
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IMAGE 7 -T-PORT COCK CONNECTION TO BILGE MANIFOLD



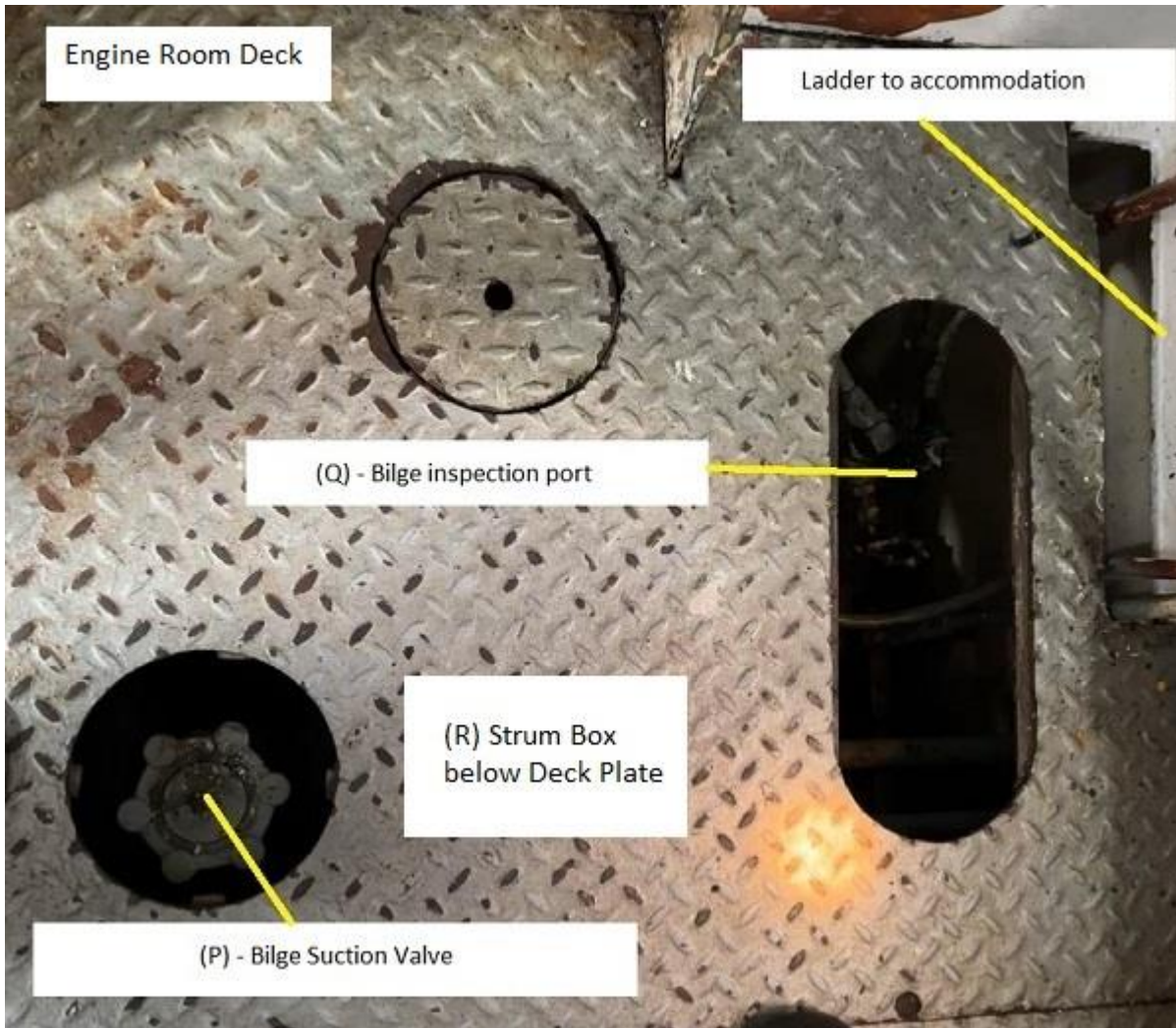
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IMAGE 8 -DECK FITTING



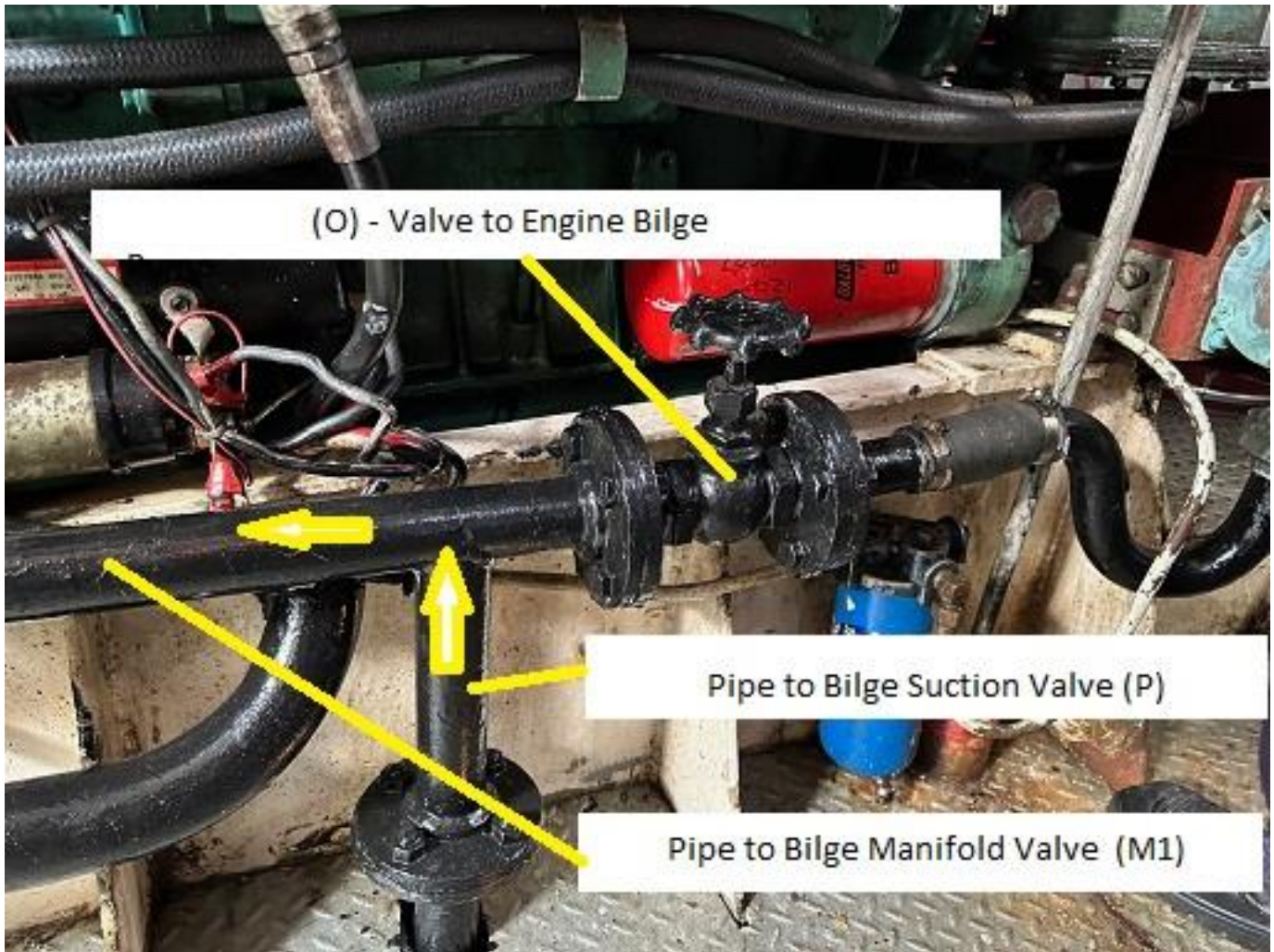
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IMAGE 9 -ENGINE ROOM DECK



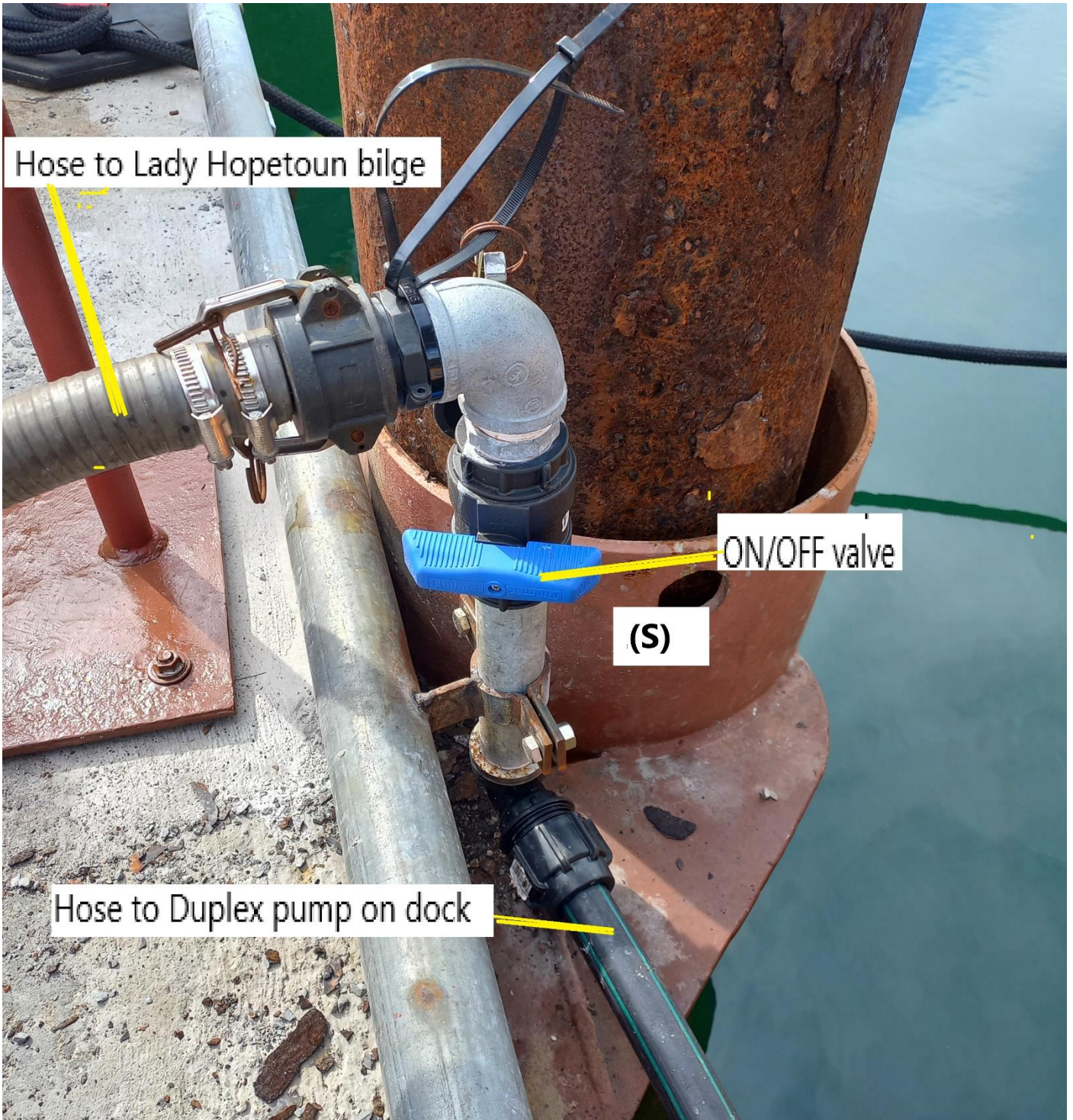
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IMAGE 10 -ENGINE BILGE PUMP VALVE



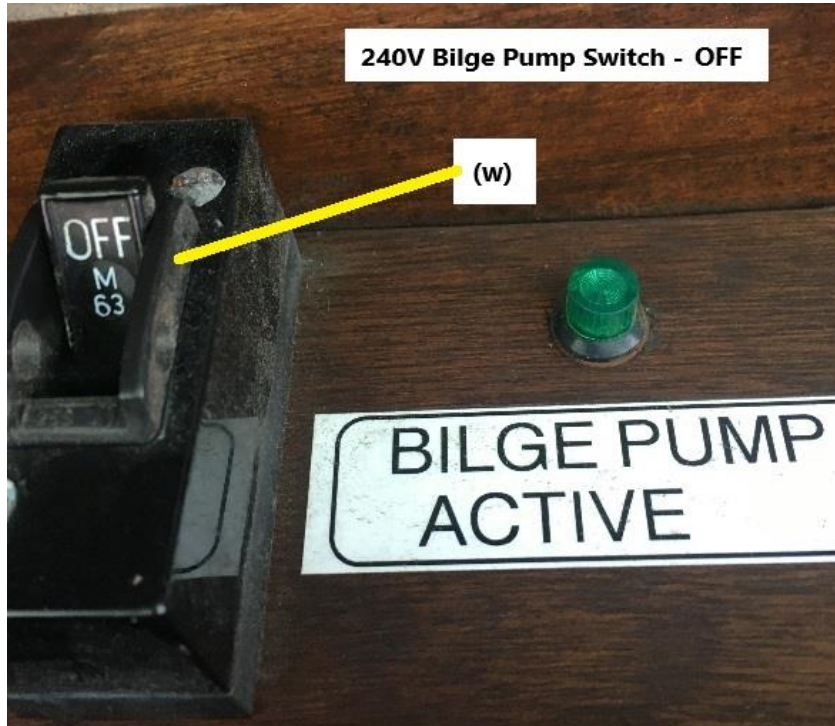
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IMAGE 11 -LADY HOPETOUN BILGE PUMP VALVE



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IMAGE 12 - LADY HOPETOUN 240V BILGE PUMP SWITCH (w)



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APPENDIX A

Label	Description	See Image
A	Air compressor shed	3
B	Compressed air valve rack	3
B1	Compressed air line from Compressed air valve rack to pump	1, 3
B2	Airline connector on pump	1, 4
C	On/OFF valve that controls compressed air flow from compressor	1
D	Air control valve on pump	1, 4
E	Air cock on pump	1
F	Discharge hose from pump to Oily Water Separator	1, 2
G	Valve on Oily Water Separator	2
G1	Electrical cable from Oily Water Separator	2
G2	Power point on electrical distribution board	3
H	Fixed suction hose from dock with the pylon	1
H1	Connection for moveable suction hose that can be connected to any vessel	1, 4, 5
I	Connection between hose from pump along pontoon and tug's suction hose	5
J	Tugs suction hose	5, 8
K	Tugs Suction System deck fitting	8
L	Suction System valve in engine room	6
M	Bilge manifold valves in engine room	6
M1	Manifold valve furthest to Port	6
N	T-Port cock in engine room	7
O	Valve to engine bilge pump	10
P	Bilge suction valve in engine room	9
Q	Bilge	9
R	Strum Box	9
S	ON/OFF valve next to 'spud' pile that control bilge flow from Lady Hopetoun	11
T	ON/OFF Valve at Pump to control flow from the moveable suction hose H1	1
U	ON/OFF Valve at Pump to allow Lady Hopetoun bilge to bypass pump and flow directly to Oily Water Separator	1
V	ON/OFF Valve to control flow from the tug, along fixed suction hose from connection (I)	5
W	Lady Hopetoun 240V bilge pump switch on Starboard aft end of superstructure	12

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