

**CERTIFICATES OF COMPETENCY IN THE MERCHANT NAVY  
MARINE ENGINEER OFFICER**

**STCW 78 as amended MANAGEMENT ENGINEER REG. III/2 (UNLIMITED)**

**040-36 - ENGINEERING, SYSTEMS AND SHIP'S DRAWINGS**

**WEDNESDAY, 20 MARCH 2024**

**1315 - 1615 hrs**

Materials to be supplied by examination centres

Candidate's examination workbook  
Graph paper

Examination Paper Inserts

DRG - 150  
DRG - 151  
DRG - 152  
DRG - 153  
DRG - 154

Notes for the guidance of candidates:

1. Examinations administered by SQA on behalf of the Maritime & Coastguard Agency
2. Candidates are required to obtain 50% of the total marks allocated to this paper to gain a pass **AND** also obtain a minimum 40% in Sections A and B of the paper.
3. Non-programmable calculators may be used.
4. All formulae used must be stated and the method of working and ALL intermediate steps must be made clear in the answer.



Maritime &  
Coastguard  
Agency





## ENGINEERING, SYSTEMS AND SHIP'S DRAWINGS

Attempt ALL questions

Marks for each part question are shown in brackets

### Section A

1. DRG. 150

State what the following items are and describe their function in the illustrated system.



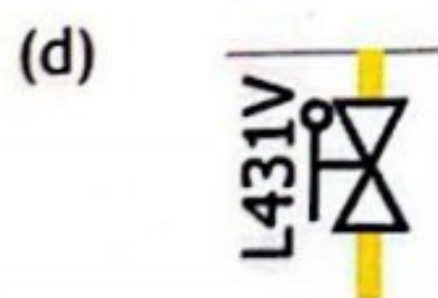
(2)



(2)



(2)



(2)



(2)

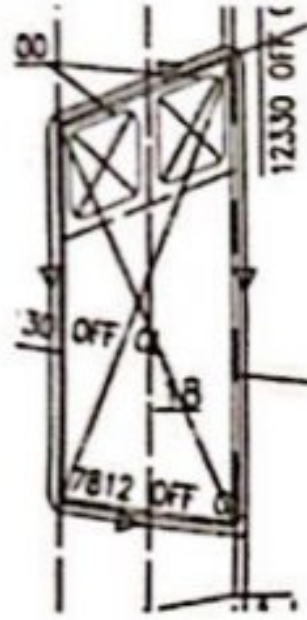
[OVER

2. DRG. 151

- (a) Using drawing references, describe what the highlighted detail is and how it functions. (4)
- (b) Describe the assembly that supports the rudder stock. (6)

3. DRG. 152

(a)



(2)

(b)



(2)

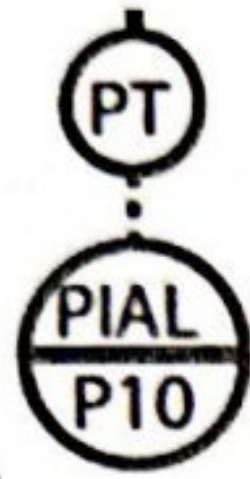
- (c) Describe what is apparent in the supplied illustration, that makes the designated area a suitable 'Tug Push Zone'. (2)
- (d) State the frame number of the fore Engine Room bulkhead. (2)
- (e) State the heaviest plate visible on the shear strake. (2)



4. DRG. 153

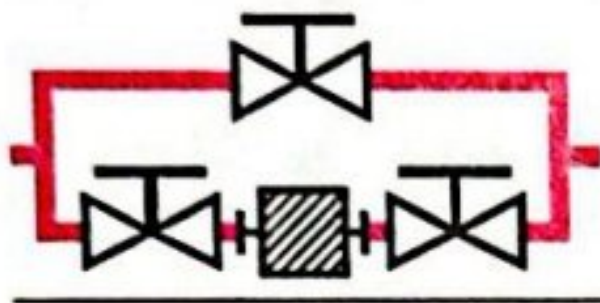
State what the following items are and describe their function in the illustrated system.

(a)



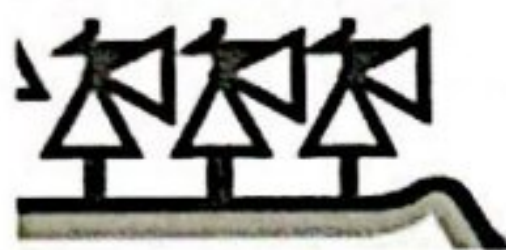
(2)

(b)



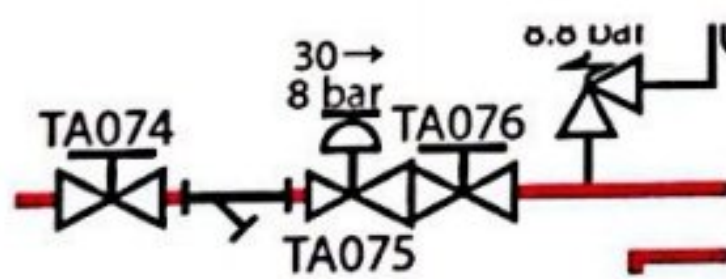
(2)

(c)



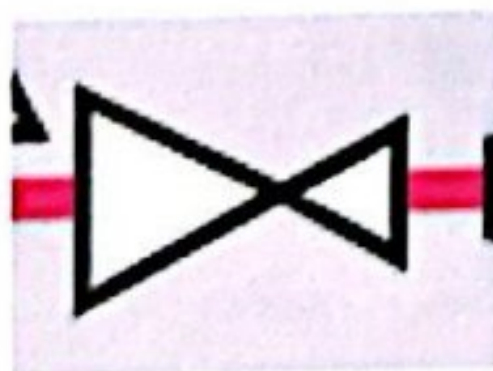
(2)

(d)



(2)

(e)

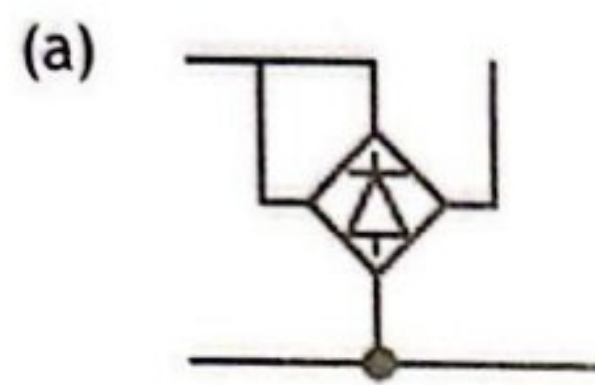


(2)

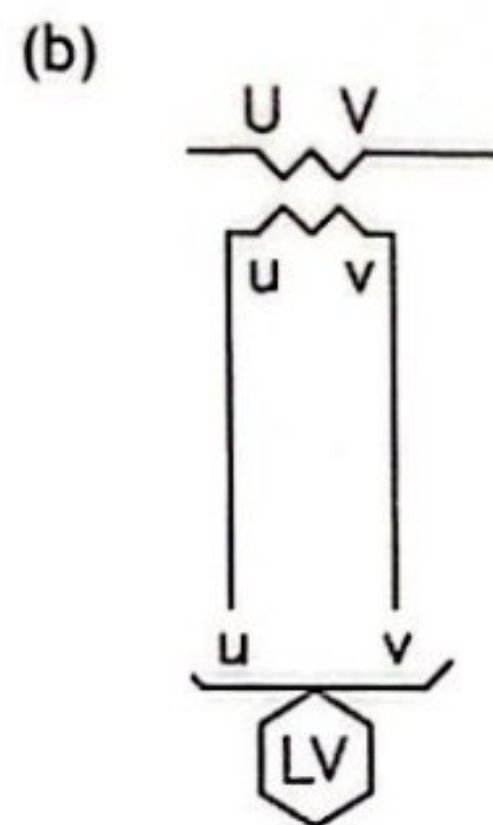
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5. DRG. 154

State what the following items are and describe their purpose in the illustrated system.



(2)



(2)

(c) Using drawing references describe the sequence of actions that occur in the illustrated circuit when local start button 3C is pressed, to supply power to the motor.

(6)

## Section B

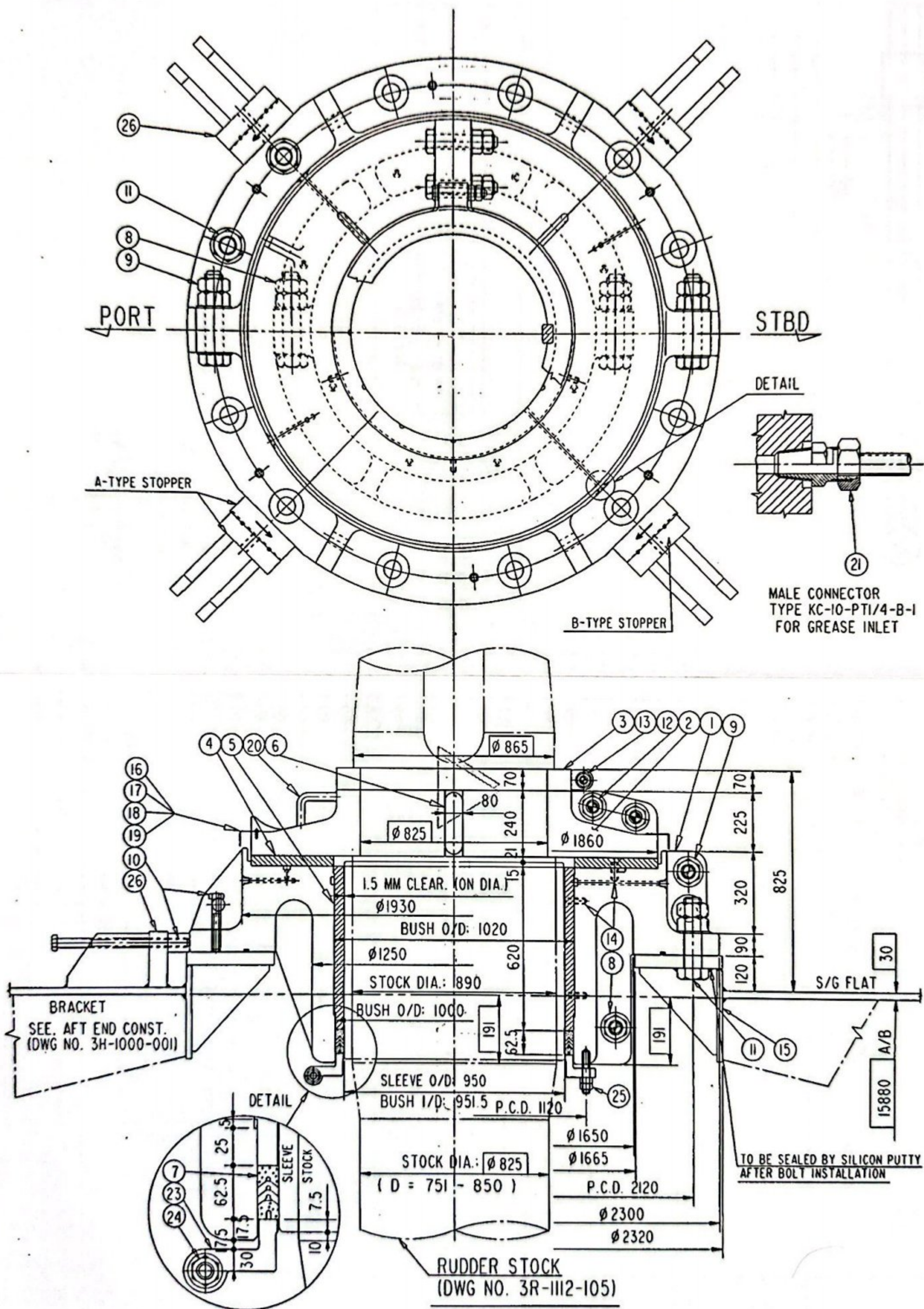
### 6. DRG. 150

- (a) Using drawing references, describe the normal flow paths of oil and air when the illustrated system is functioning normally and identify what system component would not be in use during normal operation. (15)
- (b) Describe the change in configuration required when there is a problem with the air control unit. (10)

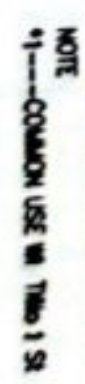
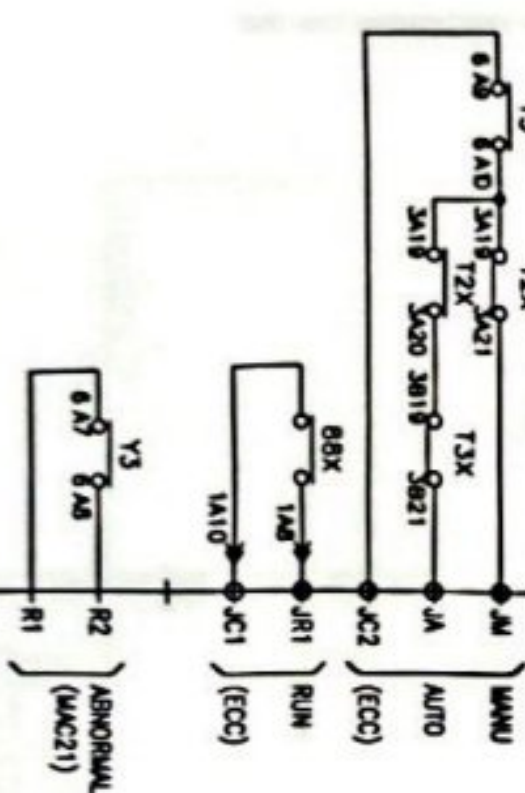
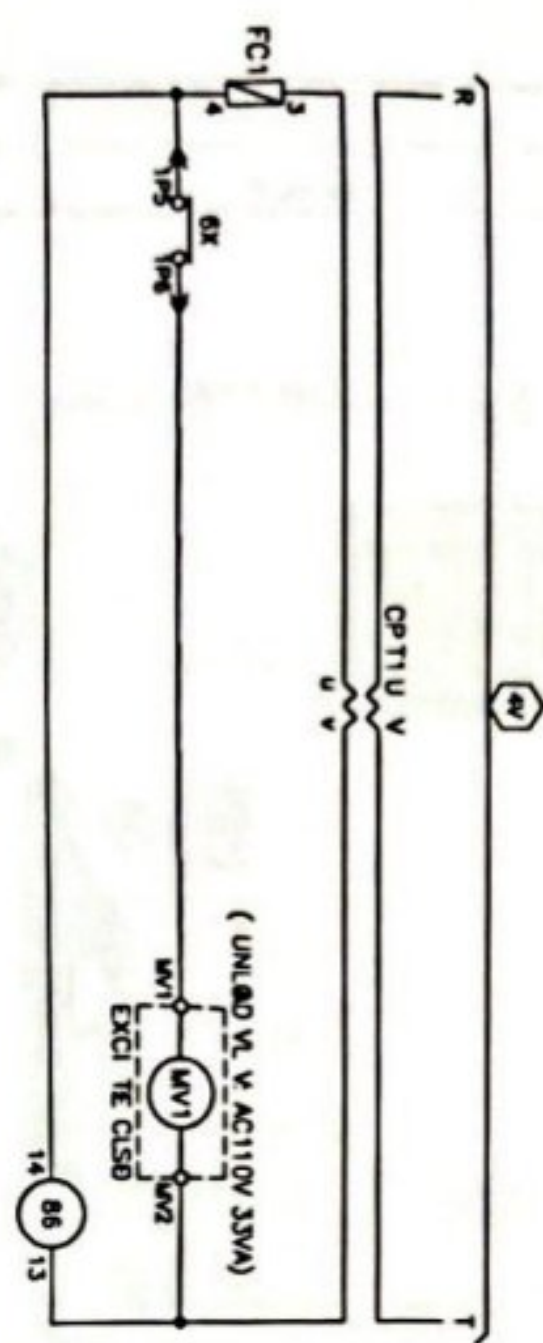
### 7. DRG. 152

- (a) Describe how you would ascertain the approximate length of the vessel from the supplied illustration. (5)
- (b) During inspection of the vessel a serious indentation was confirmed between frames 32 to 38 in way of the upper platform.  
  
Describe the complications evident from the drawing that may influence the cost and duration of the repair. (20)

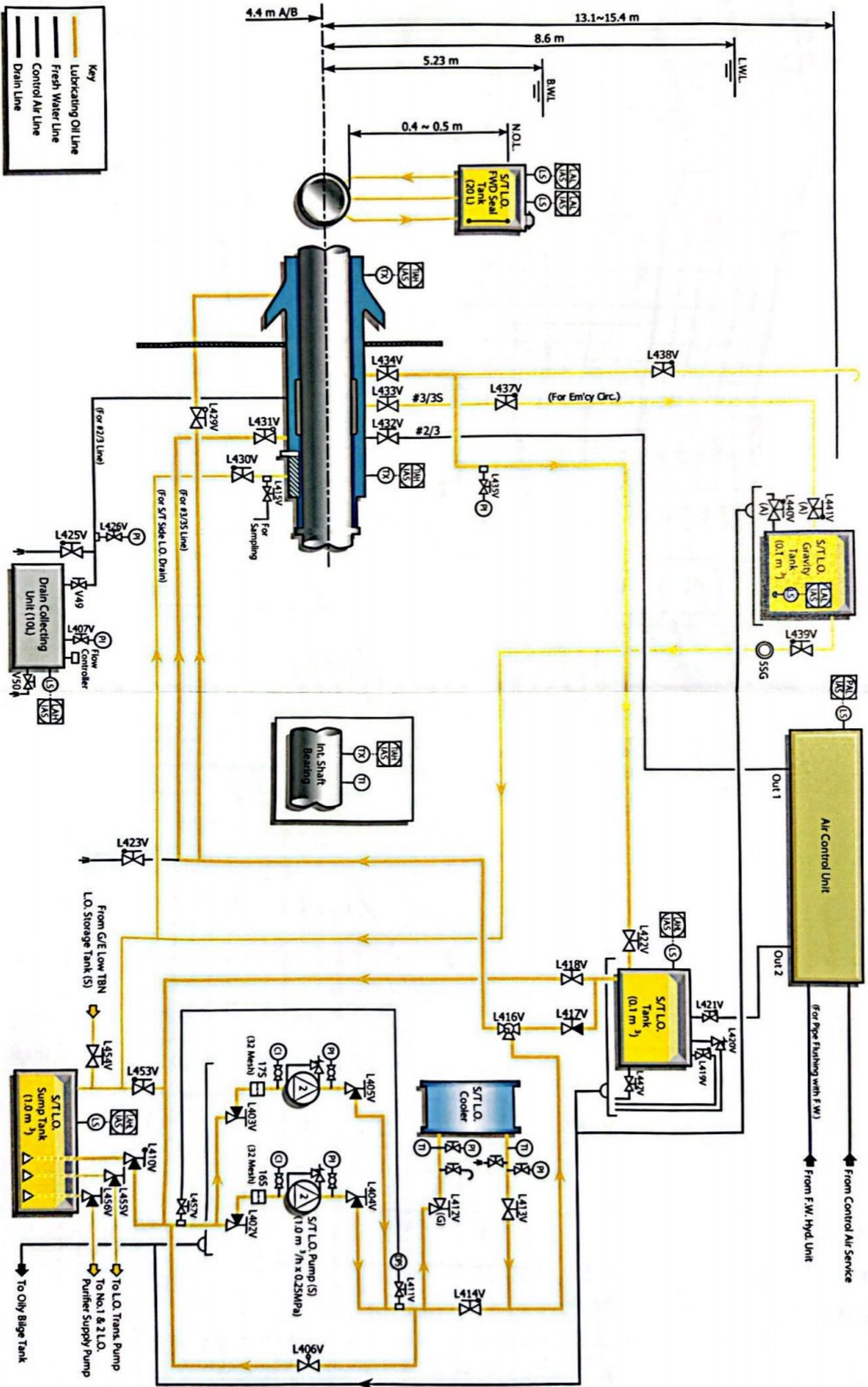




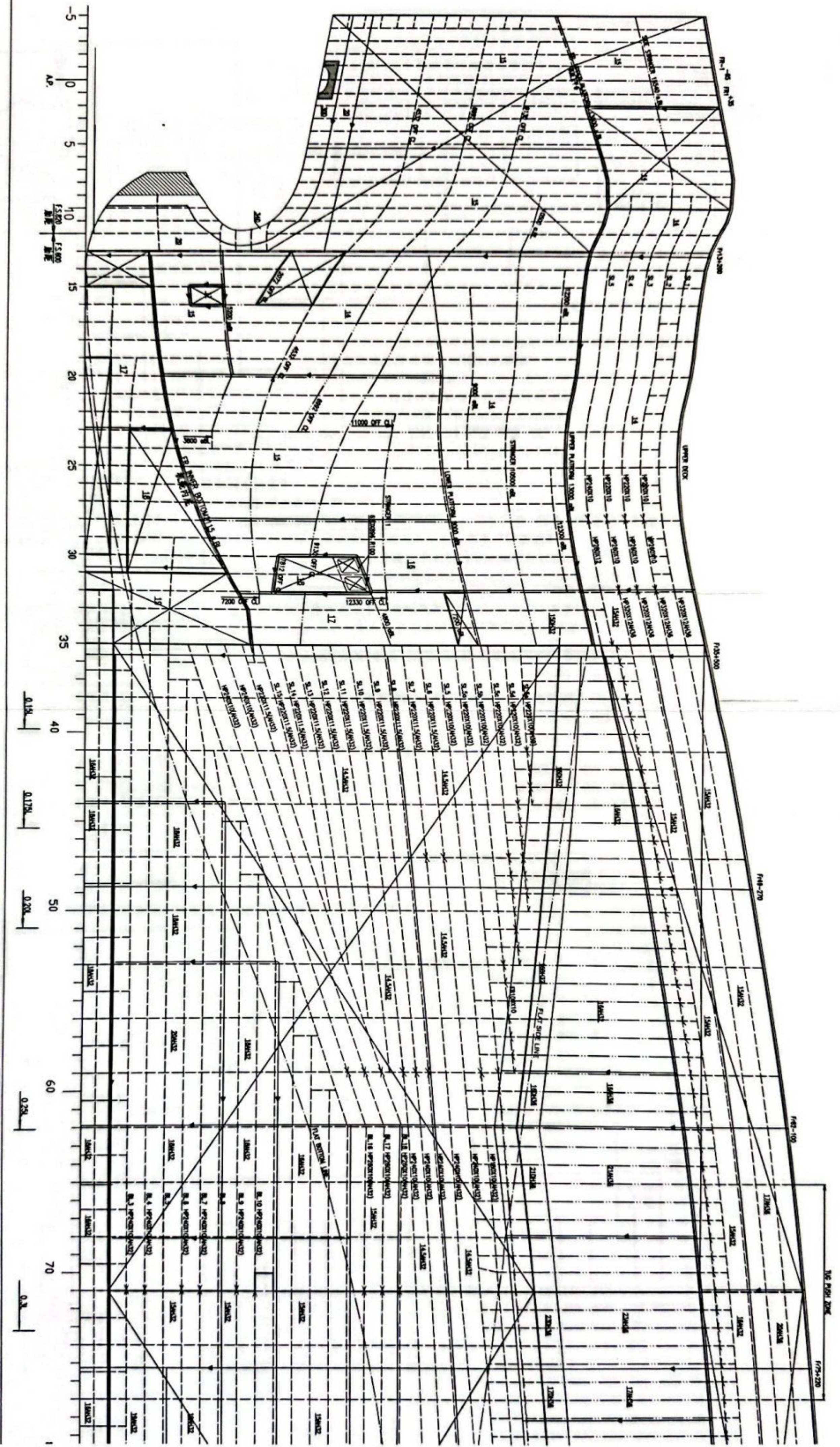




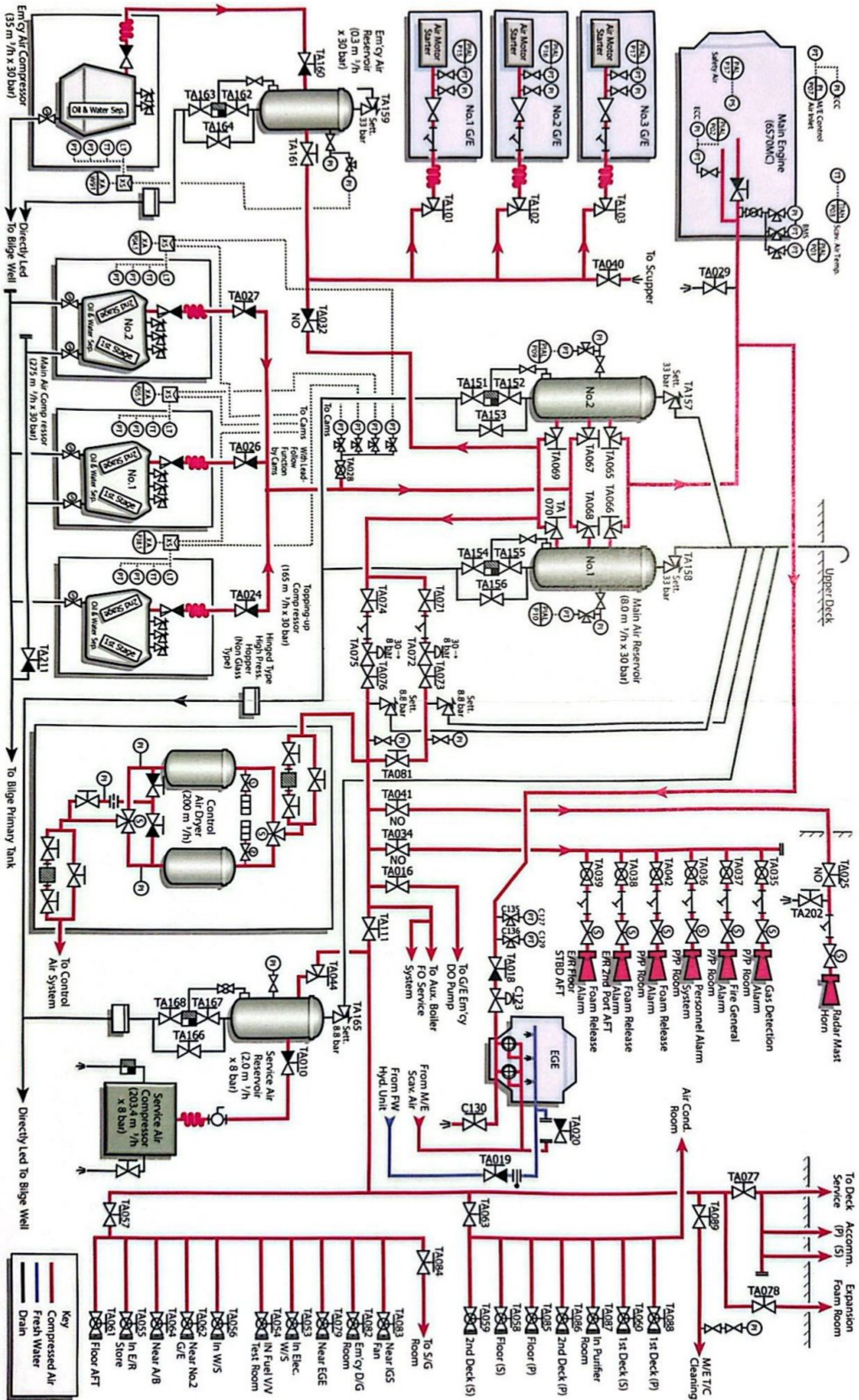














## 040-36 Exam

MCA <mca@sqa.org.uk>

Wed 2024-03-20 14:23

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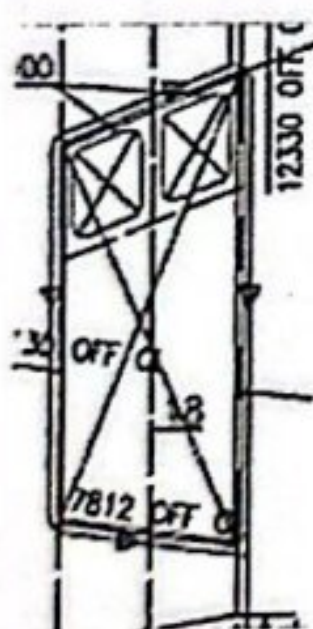
Dear Examination officers,

We have had a query with question 3, there is a line of text missing relating to parts (a) and (b) of Q3 after DRG 152. The question should read:

**DRG. 152**

State what the following items are and describe their function in the illustrated system.

(a)



(b)



Please note there is no extra time for the candidates.