

U.S.C.G. Merchant Marine Exam

QMED

Q804 Oiler, Part I

(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. One of the consequences in continuing to operate a centrifugal bilge pump with the discharge valve closed, is that the _____.
- (A) motor overload will open
 - (B) motor will overheat
 - (C) relief valve will open
 - (D) pump will overheat

If choice D is selected set score to 1.

2. If it is necessary to prevent the rudder from moving while a repair is made on the steering system using the illustrated actuator _____ . Illustration GS-0116
- (A) tighten the locking screws in item "S"
 - (B) tighten the locking pins, item "H" at each position of item "I" to keep the rudder from swinging
 - (C) secure the valves in the supply and return lines
 - (D) screw in the locking pin, item "J"

If choice C is selected set score to 1.

3. Heat exchangers are most commonly found in a small auxiliary diesel engine _____.
- (A) lube oil system
 - (B) governing system
 - (C) air starting system
 - (D) fuel oil system

If choice A is selected set score to 1.

4. Where is the air charge for an air starting system stored?
- (A) Air compressor
 - (B) Pressurized tank
 - (C) Distributor assembly
 - (D) Cylinder check valve

If choice B is selected set score to 1.

5. According to the illustrated diesel engine fuel treatment and fuel service systems schematic, what is the purpose of the valve labeled "1"? Illustration MO-0077
- (A) HFO/DO fuel mixing valve for main engine
 - (B) HFO/DO fuel changeover valve for auxiliary engines (and boiler)
 - (C) HFO/DO fuel changeover valve for main engine
 - (D) HFO/DO fuel mixing valve for auxiliary engines (and boiler)

If choice C is selected set score to 1.

6. In a main propulsion steam turbine installation, the condensate pump initially discharges to the _____.

- (A) distillate tank
- (B) air ejector condenser
- (C) deaerating feed tank
- (D) first stage heater

If choice B is selected set score to 1.

7. When starting a turbo-generator in an automated plant, you must provide lube oil pressure to the unit by means of _____.

- (A) the hand-operated or auxiliary lube oil pump
- (B) a line from the other generator
- (C) a line from the gravity tank
- (D) the main lube oil pump

If choice A is selected set score to 1.

8. What is the primary purpose of self-aligning spherically-seated line shaft bearings?

- (A) To compensate for torsional twisting of the shaft in response to torque variations.
- (B) To compensate for variations in propeller thrust loading in response to load changes.
- (C) To compensate for flexing of the hull in response to different loading conditions.
- (D) To compensate for propeller induced vibrations as a result of propeller irregularities.

If choice C is selected set score to 1.

9. The primary function of line "J" shown in the illustration is to _____. Illustration MO-0110

- (A) remove air and non-condensable gases from the unit
- (B) remove condensable gases from the unit
- (C) allow for removal of produced distillate
- (D) prevent backflow of eductor discharge

If choice A is selected set score to 1.

10. Which one of the following is a difference between a typical relief valve and a typical safety valve?

- (A) Relief valves are capable of being gagged whereas safety valves are not.
- (B) The blow down of a relief valve is greater than the blow down of a safety valve.
- (C) The actuator closing spring on a relief valve is in a compressed state whereas the actuator closing spring on a safety valve acts in tension.
- (D) A relief valve gradually opens as pressure increases above set point pressure whereas a safety valve fully opens at the set point pressure.

If choice D is selected set score to 1.

11. In which of the following types of evaporators is the control of brine density least important?

- (A) Flash evaporators
- (B) Submerged tube evaporators
- (C) Solo shell evaporators
- (D) Basket evaporators

If choice A is selected set score to 1.

12. Reduction gear casings are vented in order to _____.

- (A) allow windage to exist for cooling the gears
- (B) avoid a buildup of pressure within the gear case
- (C) minimize lube oil foaming within the case
- (D) allow for axial clearance between the gears

If choice B is selected set score to 1.

13. To prevent pulsations from developing in the boiler feed water lines, the discharge side of a reciprocating feed pump is equipped with a/an _____.

- (A) feed water regulator
- (B) air chamber
- (C) reed valve
- (D) relief valve

If choice B is selected set score to 1.

14. The jacking gear must be engaged as quickly as possible when securing the main turbines in order to _____.

- (A) prevent uneven cooling of the turbine rotors
- (B) maintain a constant supply of lube oil to the main unit
- (C) prevent the stern tube bearing from overheating
- (D) permit rapid cooling of the reduction gears

If choice A is selected set score to 1.

15. In order to take suction on the lube oil drain tank cofferdam with the bilge pump shown in the illustration, how many suction side valves must be open? Illustration GS-0042

- (A) One
- (B) Two
- (C) Three
- (D) Four

If choice B is selected set score to 1.

16. Greases used for most marine applications would use what thickening base?

- (A) Calcium-based
- (B) Lime-based
- (C) Aluminum-based
- (D) Lithium-based

If choice D is selected set score to 1.

17. On a main propulsion turbine set of a merchant ship, where is the astern staging generally located?

- (A) Within the low-pressure turbine
- (B) Within the intermediate pressure turbine
- (C) Within a separate astern turbine
- (D) Within the high-pressure turbine

If choice A is selected set score to 1.

18. As shown in the illustrated D type single furnace boiler, what does item "E" represent? Illustration SG-0008

- (A) Riser tubes
- (B) Downcomer tubes
- (C) Upcomer tubes
- (D) Support tubes

If choice B is selected set score to 1.

19. The maximum pressure developed by a waste heat boiler is determined by the main engine exhaust _____.

- (A) gas composition
- (B) gas temperature
- (C) pressure
- (D) timing

If choice B is selected set score to 1.

20. Which of the following statements concerning fire-tube boilers is correct?

- (A) Combustion gases flow through the tubes.
- (B) Flames impinge on the tubes.
- (C) Combustion occurs in the tubes.
- (D) Water flows through the tubes.

If choice A is selected set score to 1.

21. Which of the following types of bearings are used as line shaft bearings?

- (A) Ring-oiled, Babbitt-faced, spherical seat, shell
- (B) Rigidly mounted, radial sleeve
- (C) Tapered roller, split type radial
- (D) Segmental, pivoted-shoe thrust

If choice A is selected set score to 1.

22. Lubrication for the main reduction gears used with diesel engines is usually supplied by _____.

- (A) oil from the main engine sump
- (B) the stern bearing head tank
- (C) the stern bearing sump tank
- (D) an independent lube oil system

If choice D is selected set score to 1.

23. Assuming that the turbine in question is a condensing turbine, what system connections are represented by areas labeled "E" and "F" on the illustrated turbine gland? Illustration SE-0006

- (A) Both "E" and "F" represent the gland sealing steam system connections.
- (B) Both "E" and "F" represent the gland exhaust steam system connections.
- (C) "E" represents the gland sealing steam system connection and "F" represents the gland exhaust steam system connection.
- (D) "E" represents the gland exhaust steam system connection and "F" represents the gland sealing steam system connection.

If choice C is selected set score to 1.

24. The main reason for having a low suction line on the fuel oil service or settling tanks is to _____.

- (A) increase the amount of fuel available for use
- (B) decrease suction head on the pump
- (C) prevent loss of suction during rough weather
- (D) facilitate water removal

If choice D is selected set score to 1.

25. Lube oil pumps taking suction from the sump of most small marine engines are usually _____.

- (A) diaphragm type
- (B) eductor type
- (C) centrifugal type
- (D) positive displacement type

If choice D is selected set score to 1.

26. The device shown in the illustration is a/an _____. Illustration GS-0116

- (A) mechanical shaft seal
- (B) vane type steering gear
- (C) diesel engine motor mount
- (D) oil scraper ring stuffing box for a crosshead engine

If choice B is selected set score to 1.

27. Zincs are installed in the main and auxiliary condenser water boxes to _____.

- (A) prevent air pockets
- (B) prevent scaling
- (C) reduce turbulence
- (D) reduce the effects of electrolysis

If choice D is selected set score to 1.

28. The relative air pressure in the inlet manifold of a turbocharged diesel engine is usually _____.

- (A) greater than the average exhaust manifold pressure
- (B) less than the average exhaust manifold pressure
- (C) greater at the turbine wheel than at the impeller
- (D) greater at reduced engine speed

If choice A is selected set score to 1.

29. According to the illustrated main and auxiliary diesel engine cooling water systems diagram, which of the following heat exchangers uses fresh water as both the cooling and cooled medium? Illustration MO-0129

- (A) Central cooler
- (B) Jacket water cooler
- (C) Fresh water generator (evaporator)
- (D) Scavenge air cooler(s)

If choice B is selected set score to 1.

30. An increase in the air inlet manifold pressure of a diesel engine will result in a/an _____.

- (A) decrease in maximum cylinder pressure
- (B) increase in ignition lag
- (C) decrease in fuel consumption per horsepower-hour
- (D) decrease in exhaust manifold pressure

If choice C is selected set score to 1.

31. One advantage of electromagnetic slip couplings is _____.

- (A) torsional vibrations are reduced
- (B) torque increases with a decrease in excitation current
- (C) the coupling rapidly responds to sudden changes of load
- (D) excitation and induction power losses appear as a change in torque instead of rotational speed between the primary and secondary elements

If choice A is selected set score to 1.

32. The bearing shown in the illustration is designed to carry thrust when applied _____.
Illustration MO-0001

- (A) left to right only
- (B) right to left only
- (C) in either direction
- (D) the bearing pictured is not designed to carry thrust

If choice B is selected set score to 1.

33. Main condensate recirculating systems are primarily intended to _____.

- (A) prevent excessive overheating of the condensate pumps
- (B) balance and control condensate temperatures at full load
- (C) provide adequate cooling water for the air ejector condensers
- (D) vent accumulated vapors from the condensate pump discharge

If choice C is selected set score to 1.

34. Which of the following statements is correct concerning heat transfer?

- (A) Heat is given off from a high temperature region known as a heat sink.
- (B) Heat transfer rate is affected most by the size of the heat sink involved.
- (C) Heat transfer rate is affected most by the temperature difference between the heat source and the heat sink.
- (D) Heat transfer by radiation will occur only by mass motion of a fluid substance.

If choice C is selected set score to 1.

35. Steam supplied to the main propulsion turbines is _____.

- (A) desuperheated steam
- (B) superheated steam
- (C) saturated steam
- (D) wet steam

If choice B is selected set score to 1.

36. If a boiler is brought on the line with its steam pressure much higher than that of the boiler already on the line, there is danger of _____.

- (A) thermal shock
- (B) low water
- (C) an overloaded superheater
- (D) priming and carryover

If choice D is selected set score to 1.

37. The drains of lavatory sinks are fitted with P-type or S-type traps to _____.

- (A) reduce water velocity and minimize erosion
- (B) create a strong siphon effect
- (C) provide a cushion of water to reduce the effects of water hammer
- (D) provide a seal against sewer gas rising into the compartment

If choice D is selected set score to 1.

38. Movement of the pump control rack in a fuel injection system using individual plunger-type pumps _____.

- (A) varies the compression of the delivery valve spring
- (B) changes the length of the pump stroke
- (C) changes the position of the fuel inlet ports
- (D) varies the quantity of fuel delivered

If choice D is selected set score to 1.

39. The cubic inch (or liter) displacement of a cylinder is determined by the diameter of the piston and the _____.

- (A) length of the crankshaft
- (B) volume of the clearance space
- (C) weight of the piston
- (D) length of the stroke

If choice D is selected set score to 1.

40. Valve '1', as shown in the illustration, should be operated when _____. Illustration MO-0077

- (A) entering or departing port
- (B) starting auxiliary boilers
- (C) viscosimeter 'V' measures low viscosity
- (D) mixing tank is 'full'

If choice A is selected set score to 1.

41. Which of the following statements is correct relative to distillation plant operation?

- (A) Distillation is the process of boiling sea water to produce vapor which is condensed into fresh water.
- (B) Evaporation is the second part of the distillation process where brine is removed.
- (C) Distillate is the product resulting from the evaporation of fresh water vapor.
- (D) Brine is the result of condensed sea water vapor.

If choice A is selected set score to 1.

42. The steam drum in a D-type marine boiler _____.

- (A) maintains circulation by forcing steam bubbles downward in the generating tubes
- (B) acts as a receptacle for heavy suspended solids in boiler feed water
- (C) supports the superheater tube bank
- (D) provides a space for moisture to separate from the steam

If choice D is selected set score to 1.

43. Which of the following desalination plants will always require a sterilizer when providing water to a potable water system?

- (A) Submerged tube type unit
- (B) Titanium plate type unit
- (C) Reverse osmosis type unit
- (D) Multi-stage flash type unit

If choice C is selected set score to 1.

44. A "hygroscopic" lubricant used in refrigeration compressors would have what characteristic?

- (A) losing its lubrication qualities at higher temperatures
- (B) having a high affinity for moisture which requires it to be kept in a sealed container
- (C) decreasing in viscosity at low temperatures
- (D) being highly toxic

If choice B is selected set score to 1.

45. The main feed check valve functions to _____.

- (A) reduce feed pump discharge pressure loading
- (B) prevent backflow of water from the boiler in the event of a feed pump failure
- (C) check pressure pulsations in the feed line
- (D) provide feed pump positive discharge head

If choice B is selected set score to 1.

46. In order for microbiological growths to thrive in a fuel tank it is necessary for _____.

- (A) vanadium to be present
- (B) low temperatures to exist
- (C) moisture or water to be present
- (D) electrolysis to be occurring

If choice C is selected set score to 1.

47. The amount of fuel delivered by a helical plunger fuel injection pump is controlled by _____.

- (A) varying the pump discharge pressure
- (B) varying the pump return pressure
- (C) rotation of the pump plunger
- (D) rotation of the pump barrel

If choice C is selected set score to 1.

48. The DC heater functions to _____.

- (A) remove air from feed water
- (B) heat feed water
- (C) store feed water
- (D) all of the above

If choice D is selected set score to 1.

49. Fuel oil day tanks for diesel engines must be checked and cleaned at regular intervals in order to remove _____.

- (A) micro-organism growth
- (B) water
- (C) sludge
- (D) all of the above

If choice D is selected set score to 1.

50. What is the source of heat for a second stage feed heater (deaerating feed tank) while a vessel is underway under full load?

- (A) Intermediate pressure bleed steam
- (B) High-pressure bleed steam
- (C) Low-pressure bleed steam
- (D) Auxiliary exhaust steam

If choice D is selected set score to 1.

51. Air motors used for starting some auxiliary diesel engines are generally the type known as _____.

- (A) vane motors
- (B) accumulator motors
- (C) plunger motors
- (D) gear motors

If choice A is selected set score to 1.

52. If manual control of the water level in a steaming boiler is required, the proper method of control is with the auxiliary feed _____.

- (A) pump pressure control
- (B) stop-check valve
- (C) stop valve
- (D) pump speed control

If choice B is selected set score to 1.

53. Which of the devices listed is commonly used to compensate for the expansion and minor misalignments occurring between the main turbine rotor and the reduction gear?

- (A) Sliding sleeve
- (B) Quill shaft
- (C) Expansion gear
- (D) Gear-type flexible coupling

If choice D is selected set score to 1.

54. The cylinders and intercoolers of most low-pressure air compressor's are cooled by _____.

- (A) air
- (B) CO₂
- (C) oil
- (D) water

If choice A is selected set score to 1.

55. In the presence of an open flame or hot surfaces, chlorinated fluorocarbon refrigerants decompose and form what chemical substance?

- (A) water vapor
- (B) petroleum crystals
- (C) carbon monoxide
- (D) phosgene gas

If choice D is selected set score to 1.

56. Which of the following devices will increase the power output of a diesel engine without increasing its frictional load?

- (A) Positive displacement blower
- (B) Roots-type rotary blower
- (C) Gear-driven centrifugal blower
- (D) Turbine-driven centrifugal blower

If choice D is selected set score to 1.

57. In a naturally aspirated diesel engine, the volume of air intake is directly associated with engine _____.

- (A) compression ratio
- (B) displacement
- (C) fuel pressure
- (D) cylinder clearance volume

If choice B is selected set score to 1.

58. In a diesel engine exhaust system, the cooling of the exhaust gases below their dew point will result in _____.

- (A) increased engine back pressure
- (B) sulfuric acid corrosion
- (C) surface pitting of the turbocharger compressor blades
- (D) moisture impingement on the turbocharger compressor blading

If choice B is selected set score to 1.

59. If the bearings of a piece of machinery are fed by a gravity feed lubricating oil system, what statement is true?

- (A) The lube oil pump draws suction on the lube oil reservoir/sump and discharges directly to the bearings. The return oil then gravity drains to the lube oil gravity tank which overflows to the lube oil reservoir/sump.
- (B) The lube oil pump draws suction on the lube oil gravity tank and discharges directly to the bearings. The return oil then gravity drains to the lube oil gravity tank.
- (C) The lube oil pump draws suction on the lube oil reservoir/sump and discharges directly to the bearings. The return oil then gravity drains to the lube oil reservoir/sump.
- (D) The lube oil pump draws suction on the lube oil reservoir/sump and discharges to the lube oil gravity tank. The oil then gravity feeds the bearings and the return oil drains to the lube oil reservoir/sump.

If choice D is selected set score to 1.

60. Overfilling a refrigerant container is extremely dangerous because of the high pressures generated. The generation of pressure is the result of what?

- (A) hydrostatic pressure of the expanding liquid
- (B) vapor pressure of the refrigerant at saturation temperature
- (C) discharge pressure from the recovery cylinder
- (D) discharge pressure of the recovery compressor

If choice A is selected set score to 1.

61. According to the illustrated diesel propulsion plant fresh water cooling systems diagram, in which subsystem is the deaerator located? Illustration MO-0072

- (A) Main engine cylinder jacket cooling water system
- (B) Main engine fuel injector cooling water system
- (C) SSDG cylinder jacket cooling water system
- (D) Main engine piston cooling water system

If choice A is selected set score to 1.

62. Traditionally, which of the listed refrigerants has been more suitable than the others for use in a centrifugal refrigeration compressor?

- (A) R-11
- (B) R-12
- (C) Ammonia
- (D) Carbon dioxide

If choice A is selected set score to 1.

63. Which of the following reasons represents why the designed compression ratio of a gasoline engine is lower than that of a diesel engine?

- (A) Compression must be low for smooth operation.
- (B) The heat of compression is not used as an ignition source of the fuel.
- (C) Compression must be low to have effective pre-ignition.
- (D) Compression must be low for effective spark ignition.

If choice B is selected set score to 1.

64. Which of the listed devices would be installed at a control system air pressure reducing station?

- (A) Non-return valve
- (B) Vacuum breaker
- (C) Lubricator
- (D) Moisture separator

If choice D is selected set score to 1.

65. The condensers located in the various stages of a flash evaporator are cooled by _____.

- (A) distillate
- (B) brine
- (C) air
- (D) sea water

If choice D is selected set score to 1.

66. Clean low-pressure steam drains are collected in the _____.

- (A) deaerating feed water heater
- (B) contaminated drain inspection tank
- (C) atmospheric drain tank
- (D) main condenser hot well

If choice C is selected set score to 1.

67. One of the factors limiting the amount of load which can be put on a modern marine diesel engine is the _____.

- (A) governor sensitivity
- (B) exhaust temperature
- (C) fuel injection pressure
- (D) speed of the camshaft

If choice B is selected set score to 1.

68. When any low-pressure distilling plant is operated with less than the designed vacuum, the _____.

- (A) scale formation decreases
- (B) heat level drops
- (C) heat level rises
- (D) capacity increases

If choice C is selected set score to 1.

69. If a steam propulsion plant is provided with two main propulsion boilers, two fuel oil service heaters, two fuel oil service pumps, and two fuel oil settling tanks, what is the capacity of each fuel oil service heater?

- (A) Each heater has the capacity to supply heated fuel to both boilers under full load with one service pump running.
- (B) Each heater has the capacity to supply heated fuel to both boilers under full load with both service pumps running.
- (C) Each heater has the capacity to supply heated fuel to just one boiler under full load with both service pumps running.
- (D) Each heater has the capacity to supply heated fuel to just one boiler under full load with one service pump running.

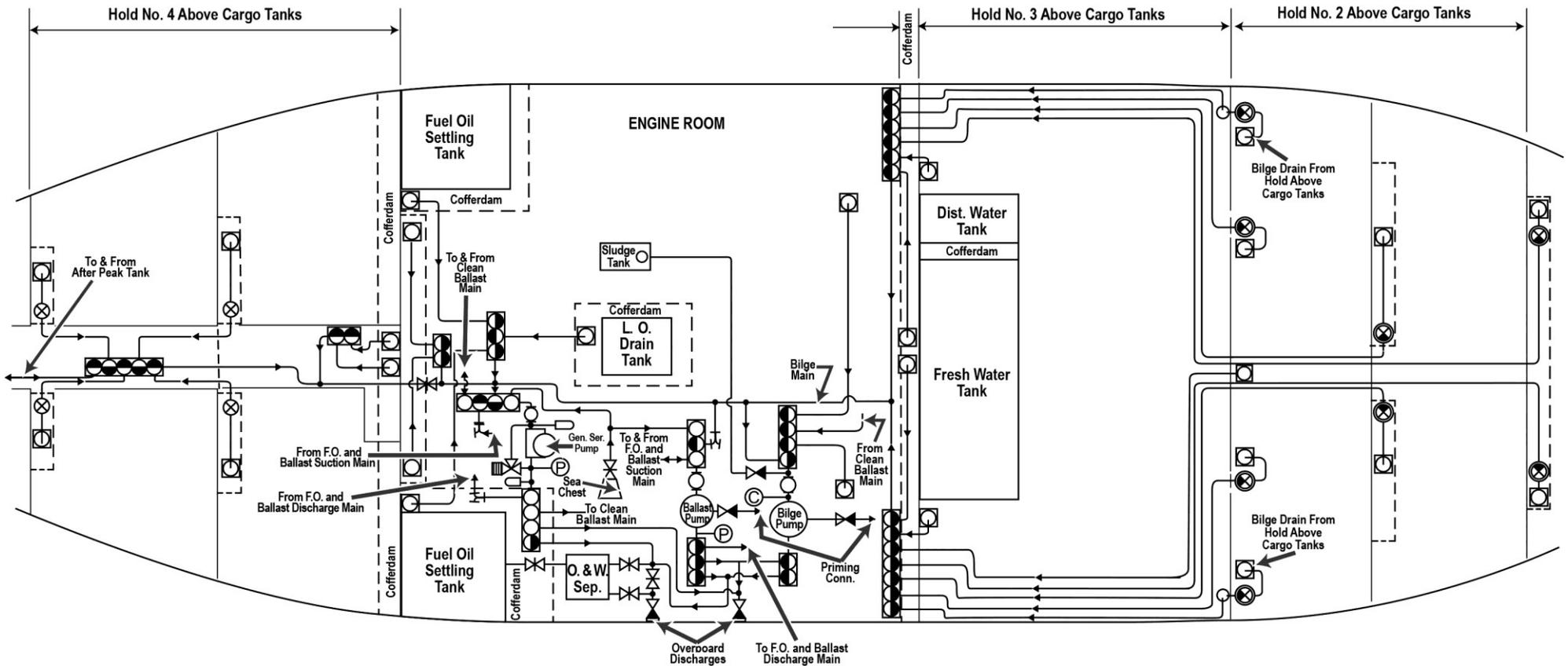
If choice A is selected set score to 1.

70. Bottom blow valves are installed on auxiliary water-tube boilers to _____.

- (A) completely drain the boiler in an emergency
- (B) prevent sludge from forming in the steam drum
- (C) remove floating impurities from the boiler water surface
- (D) remove settled solids from the water drum

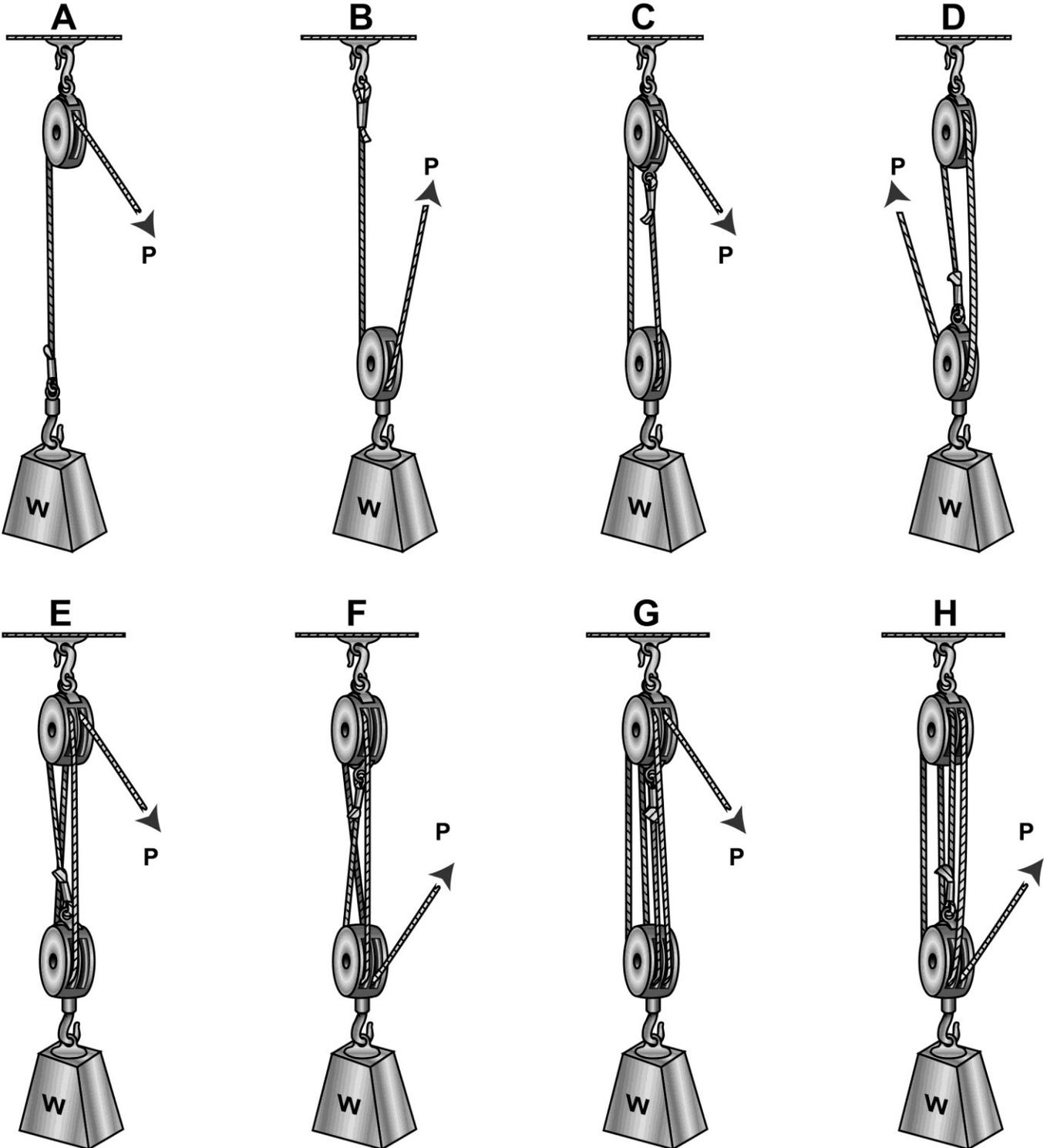
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GS-0042



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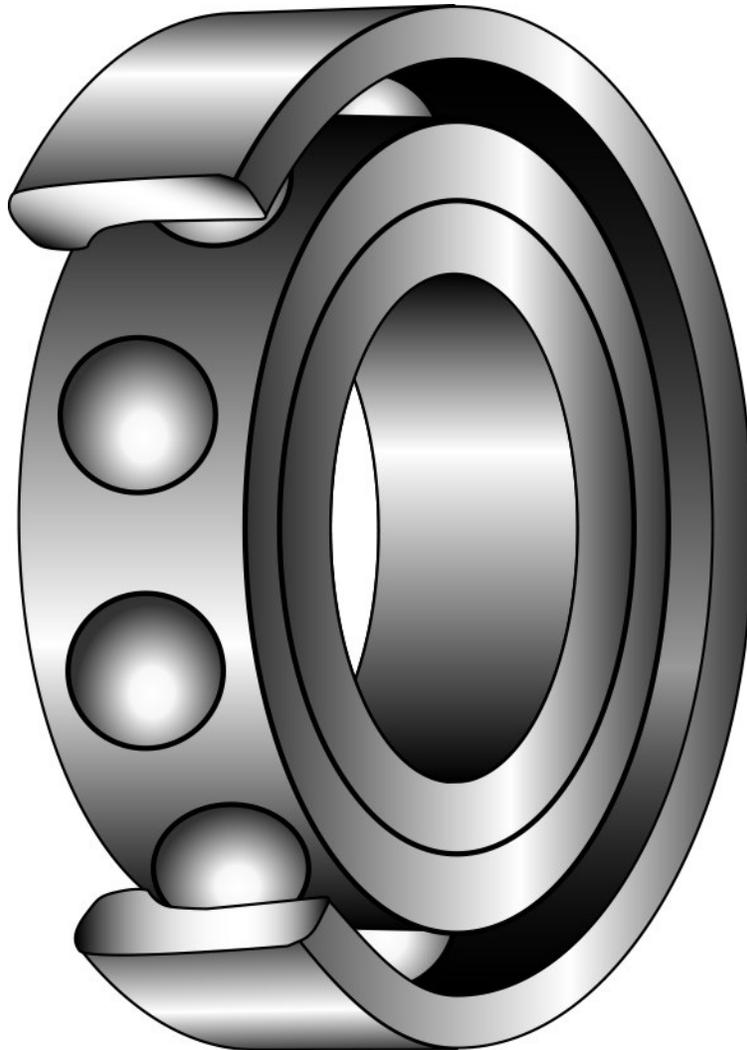


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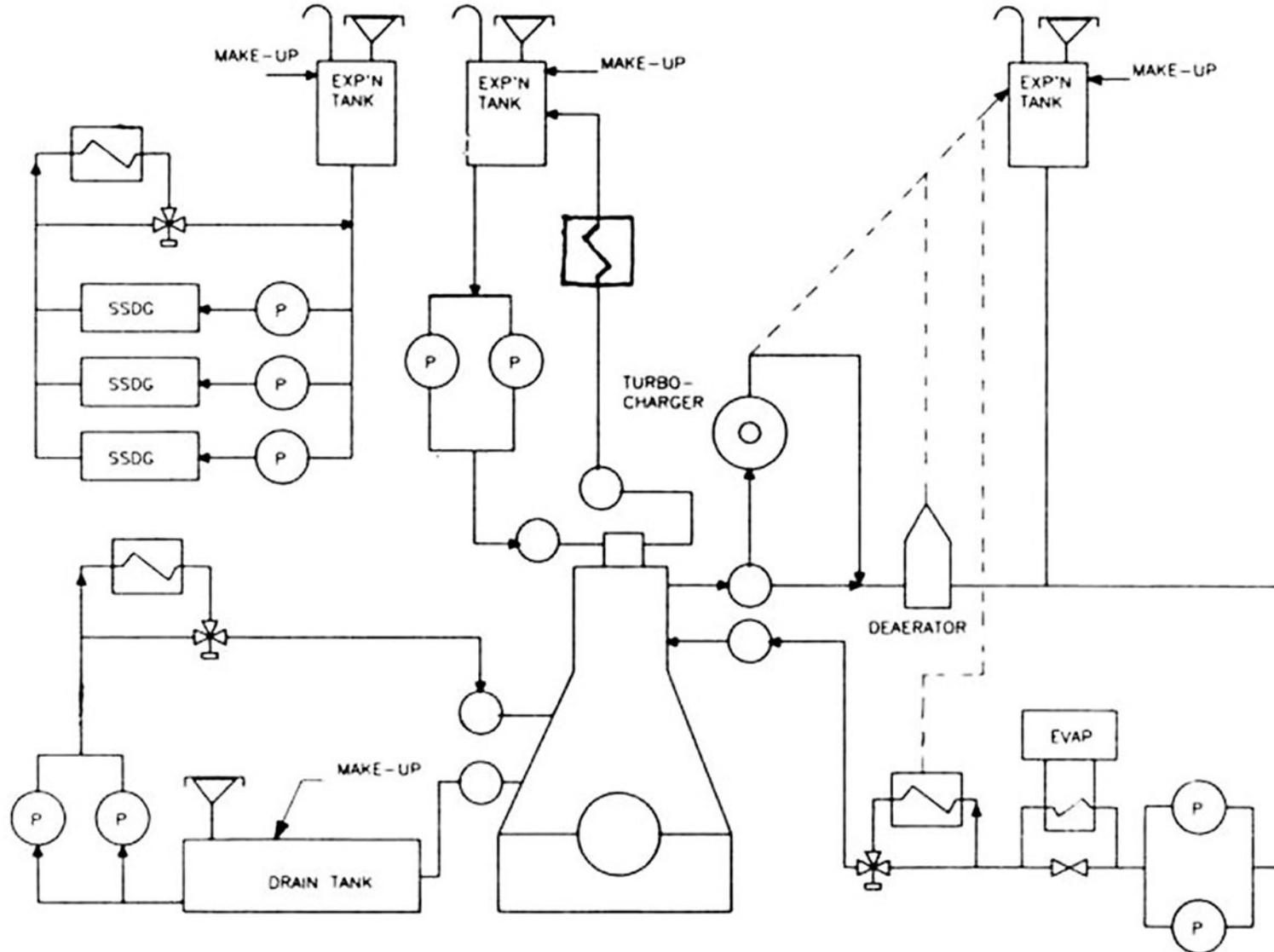
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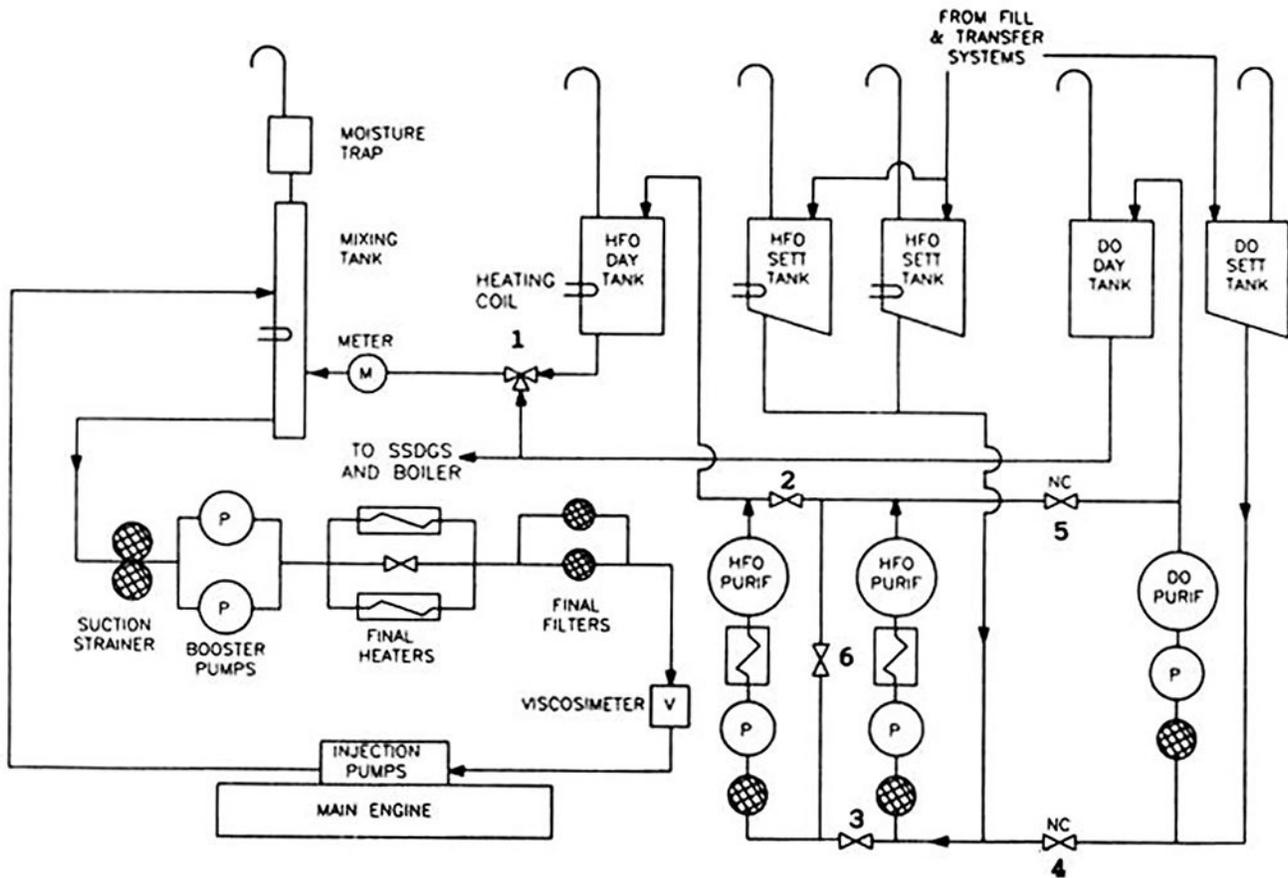
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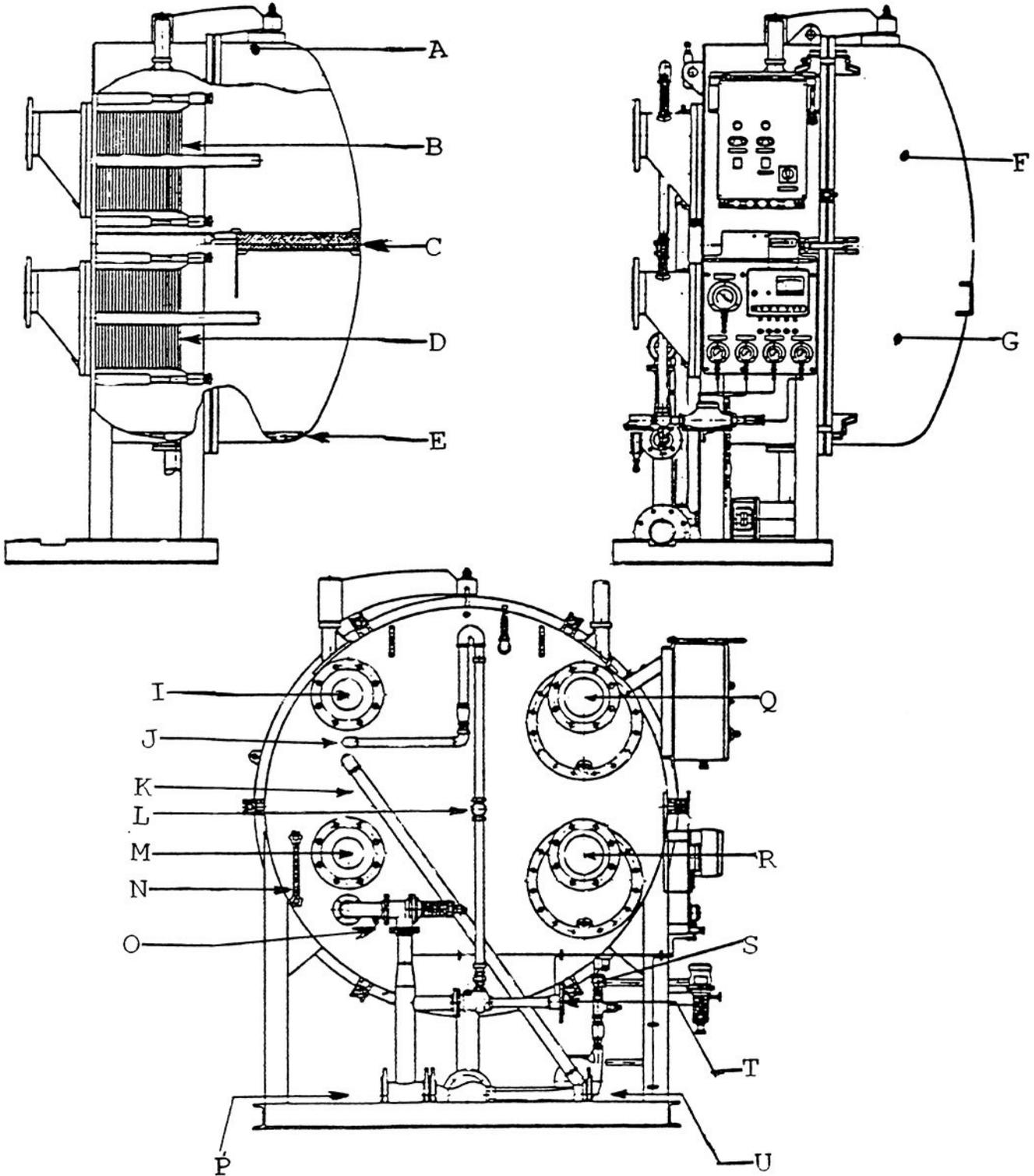
MO-0077



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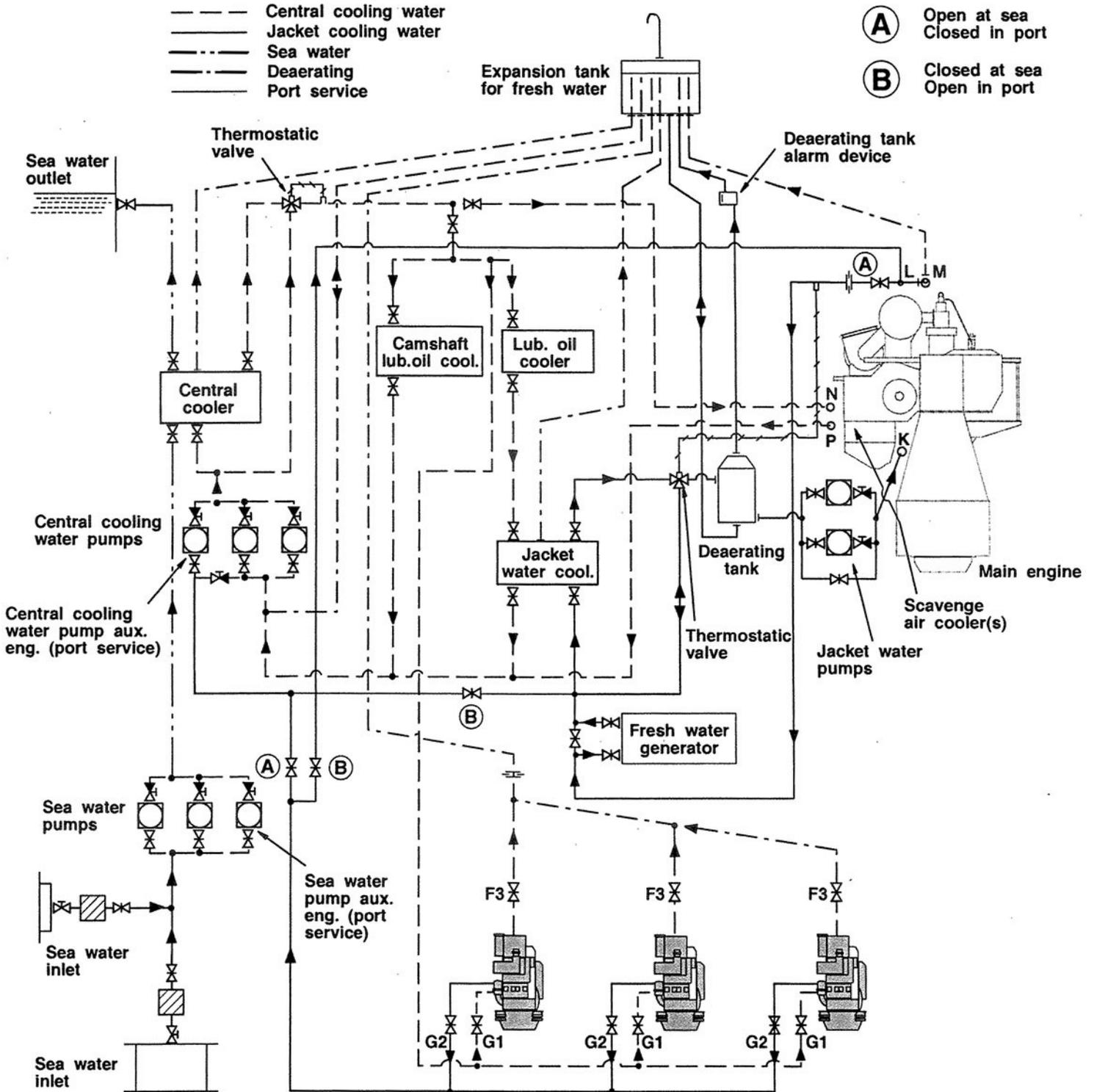
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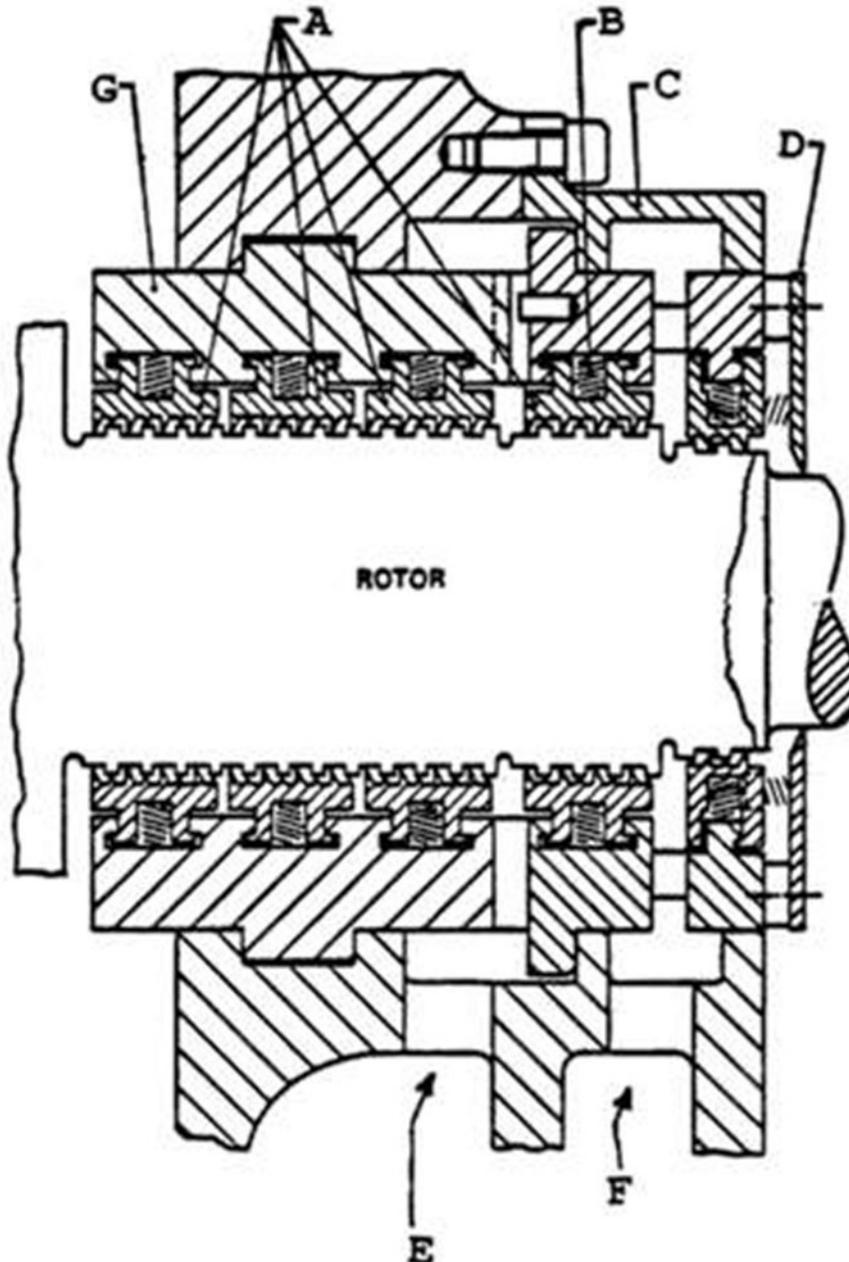


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MO-0129



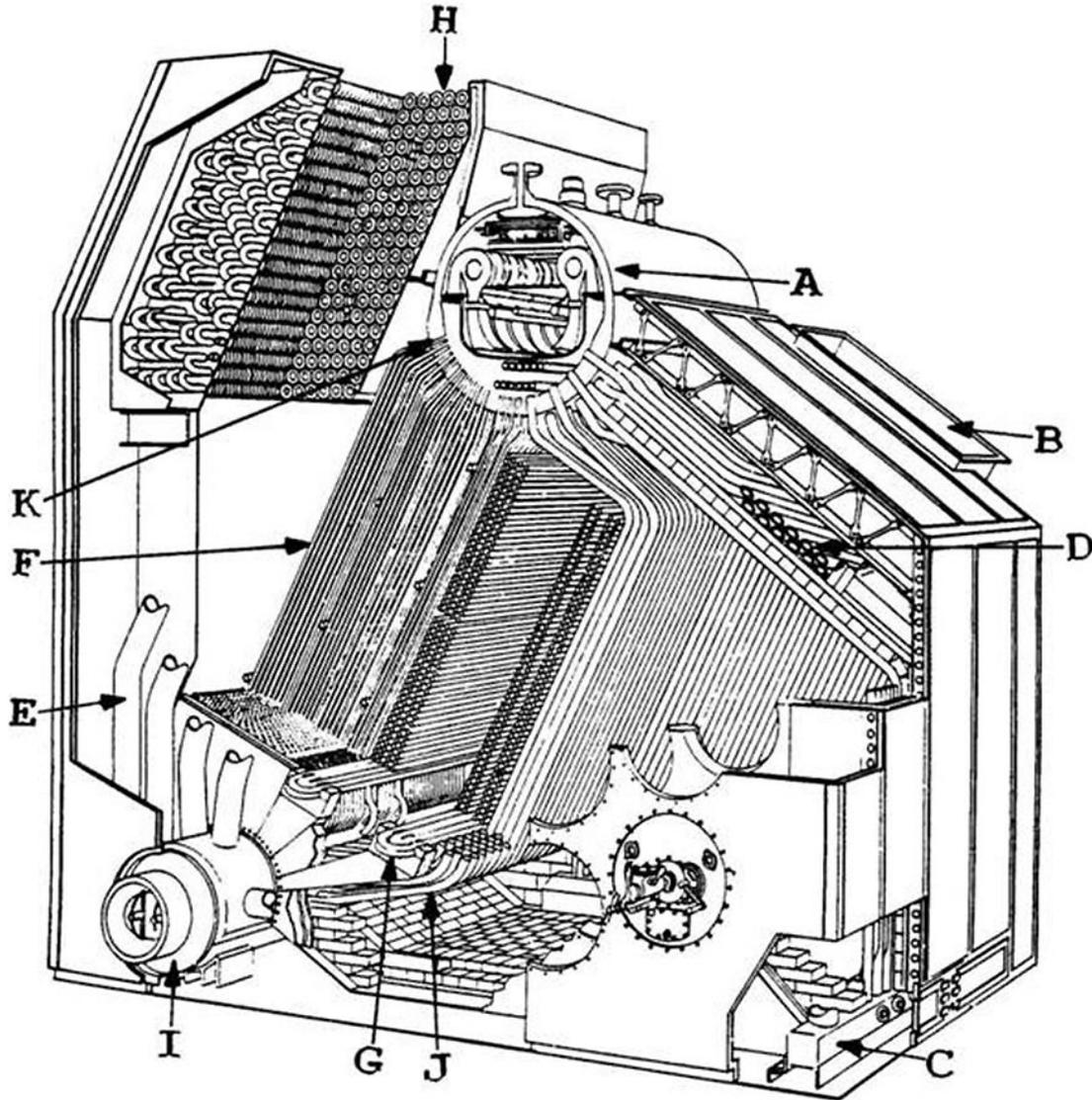
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