

U.S.C.G. Merchant Marine Exam

Chief Engineer-MODU

Q750 General Subjects

(Sample Examination)

Choose the best answer to the following Multiple Choice Questions.

1. What should be done when performing maintenance of circuit breaker contacts?

- (A) inspect for wear and misalignment of main contacts
- (B) use a metallic oxide abrasive cloth to dress contacts
- (C) smooth roughened contact surfaces with a file
- (D) apply a thin film of oil on contact surfaces

If choice A is selected set score to 1.

2. What statement is true concerning the use of a thermal imager for the purposes of conducting a thermo graphic analysis of equipment?

- (A) The imager detects heat patterns in the infrared spectrum without making direct contact with the equipment being evaluated.
- (B) The imager detects heat patterns in the infrared spectrum requiring direct contact with the equipment being evaluated.
- (C) The imager detects heat patterns in the ultraviolet spectrum without making direct contact with the equipment being evaluated.
- (D) The imager detects heat patterns in the ultraviolet spectrum without making direct contact with the equipment being evaluated.

If choice A is selected set score to 1.

3. When the sensing bulb of a thermostatic expansion valve is charged with a fluid different from the charge used in the system, what name of the charge is associated with the power element?

- (A) cross charged
- (B) blended charged
- (C) straight charged
- (D) mixed charged

If choice A is selected set score to 1.

4. Marine sanitation devices installed on vessels must be certified by the _____.

- (A) U.S. Coast Guard
- (B) American Bureau of Shipping
- (C) Society of Naval Architects and Marine Engineers
- (D) Environmental Protection Agency

If choice A is selected set score to 1.

5. As a manager, one of the practices of positive confrontation reduction skills essential to conflict resolution involves a type of listening. What type of listening would be most effective in resolving a conflict?

- (A) Passive listening
- (B) Defensive listening
- (C) Reactive listening
- (D) Active listening

If choice D is selected set score to 1.

6. The size of ball and roller bearings can be identified by the _____.

- (A) inner race cone width
- (B) manufacturer's numerical code
- (C) outer ring width
- (D) rolling member size

If choice B is selected set score to 1.

7. If oil under pressure is supplied to the area noted as "N" on the vane in the illustration _____.
Illustration GS-0116

- (A) "O" will be hydraulically locked in place even though oil is returned to the main pump from the area between "M" and "I"
- (B) "O" will rotate clockwise as oil is returned from the area between "M" and "I"
- (C) "O" will rotate counter-clockwise as oil is returned from the area between "M" and "I"
- (D) "Q" will rotate counter-clockwise as oil is returned from the area between "M" and "I"

If choice C is selected set score to 1.

8. A vessel you are sailing on as Chief Engineer had its last special survey 2 years prior to now. When is the next special survey due?

- (A) Within 1 year from now.
- (B) Within 2 years from now.
- (C) Within 3 years from now.
- (D) Within 5 years from now.

If choice C is selected set score to 1.

- 9.** The compressor used in a water-cooled air conditioning system is short-cycling. A service check determines that the suction pressure remains above the normal cut-in point during cycling and that the discharge pressure rapidly builds up to the cut-out point while running and gradually falls to the cut-in point during the off cycle. What is likely the cause?
- (A) front seated liquid line service valve
 - (B) back seated discharge service valve
 - (C) loosely fitted compressor drive belt
 - (D) reduction in condenser water flow (scaled condenser)

If choice D is selected set score to 1.

- 10.** Suppose it is desired to determine the integrity of the insulation of a 4160 VAC motor. What type of insulation resistance tester (megger) would be suitable?
- (A) 500 V megger
 - (B) 1000 V megger
 - (C) 2500 V megger
 - (D) 5000 V megger

If choice D is selected set score to 1.

- 11.** For the purposes of safety and determining the shock hazard, nominal voltage is defined as the normal electrical system design voltage. This can be determined from what is displayed on nameplates, dataplates, schematics, or single-line diagrams. What does the nominal voltage represent?
- (A) phase to hull ground voltage
 - (B) phase to neutral voltage
 - (C) phase to phase voltage
 - (D) average of phase to phase and phase to hull ground voltages

If choice D is selected set score to 1.

- 12.** One of the means of alternative dispute resolution regarding a collective bargaining agreement dispute is arbitration. What is meant by arbitration?
- (A) Direct, in-house negotiated settlement between company and union representatives.
 - (B) Agreement to abide by a binding decision rendered by a company and union agreed-upon impartial person.
 - (C) Settlement reached as the result of litigation as part of a judicial proceeding in court.
 - (D) Negotiated settlement between company and union representatives facilitated by a mediator.

If choice B is selected set score to 1.

13. Referring to the illustration, what would be the result if the upper oil/water interface detection probe became faulty? Illustration GS-0175

- (A) The unit would not be able to transition from ending the separation processing mode to initiating the oil discharge mode.
- (B) The unit would not be able to transition from the overboard discharge mode to the recirculation mode while in the separation processing mode.
- (C) The unit would not be able to transition from ending the oil discharge mode to initiating the separation processing mode.
- (D) The unit would not be able to come out of the oily-water separator idle mode and begin processing bilge water.

If choice C is selected set score to 1.

14. Which of the listed statements describes the reason why oil foaming occurs when starting a refrigeration compressor?

- (A) This phenomenon is inherent only in hermetically sealed units and is always provisional.
- (B) This will occur only if crankcase heaters are used.
- (C) This condition is the result of the sudden low-pressure created in the crankcase at start up causing the release of refrigerant absorbed within the oil.
- (D) If the oil level is not initially high, this condition is the result of agitation created by the movement of the mechanical components.

If choice C is selected set score to 1.

15. If a problem confronts an entire work group, what is the best technique for communication of the issues and concerns?

- (A) Conduct a meeting with the entire workgroup.
- (B) Communicate with everyone individually on a one-on-one basis.
- (C) Communicate with everyone in pairs on a one-on-two basis.
- (D) No communication is necessary as the problem will eventually resolve itself.

If choice A is selected set score to 1.

16. What type of motor is generally used in DC propulsion drive systems?

- (A) shunt wound
- (B) differentially compounded
- (C) series wound
- (D) permanent magnet

If choice A is selected set score to 1.

- 17.** The coil temperature measured at the expansion valve sensing bulb of an operating system is 10°F. The low side pressure with the compressor running as shown on the gauge illustrated indicates 15 psig. What adjustments or changes, if any, should be made to the system? Illustration GS-RA-16
- (A) The evaporator coils need to be steam cleaned or high-pressure washed.
 - (B) The liquid line strainer is obviously fouled and needs to be cleaned.
 - (C) The expansion valve should not be adjusted, as the degree of superheat is within the accepted range.
 - (D) The filter drier needs to be changed to increase the suction pressure.

If choice C is selected set score to 1.

- 18.** Which of the following types of maintenance would be considered a reactive approach to maintenance as opposed to proactive?
- (A) Planned maintenance
 - (B) Corrective maintenance
 - (C) Predictive maintenance
 - (D) Condition-based maintenance

If choice B is selected set score to 1.

- 19.** A water line ruptures under pressure and floods the engine room causing \$30,000(USD) damage to the machinery. By law, this must be reported to the _____.
- (A) insurance underwriter
 - (B) engine manufacturer
 - (C) owner or his agent
 - (D) U.S. Coast Guard

If choice D is selected set score to 1.

- 20.** When it comes to motivating employees, it is important to distinguish between intrinsic and extrinsic motivation. What statement best represents the difference?
- (A) Intrinsic motivation is derived from doing the job itself (such as enjoyment), where extrinsic motivation is derived from the consequences of doing the job (such as pay).
 - (B) Intrinsic motivation is derived from the consequences of doing the job (such as pay), where extrinsic motivation is derived from doing the job itself (such as enjoyment).
 - (C) Intrinsic motivation is derived from the consequences of doing the job (such as pay), where extrinsic motivation is derived from the fear of the consequences of not doing the job (such as getting fired).
 - (D) Intrinsic motivation is derived from doing the job itself (such as enjoyment), where extrinsic motivation is derived from the fear of the consequences of not doing the job (such as getting fired).

If choice A is selected set score to 1.

21. As it pertains to a "constant-tension" mooring winch, what statement is true?

- (A) A constant-tension mooring winch is set to automatically render, but not recover, mooring line using the prime mover when the mooring line tension varies above a certain preset tension.
- (B) A constant-tension mooring winch is set to automatically render, but not recover, mooring line using the brake when the mooring line tension varies above certain preset tension.
- (C) A constant-tension mooring winch is set to automatically render and recover mooring line using the prime mover when the mooring line tension varies outside of narrow preset adjustable tension limits.
- (D) A constant-tension mooring winch is set to automatically recover, but not render, mooring line using the prime mover when the mooring line tension varies below a certain preset tension.

If choice C is selected set score to 1.

22. Which of the following would be a positive outcome associated with performing a trend analysis of data acquired from lube oil testing, vibration sensors, performance data sensors, and thermo graphic sensors?

- I) Avoidance of catastrophic failures.
- II) Determining the need of when to perform corrective maintenance.
- III) Improving the overall effectiveness of the engineering plant.

- (A) I only.
- (B) II only.
- (C) I and II only.
- (D) I, II, and III.

If choice D is selected set score to 1.

23. A liquid line solenoid valve controls refrigerant flow to the evaporator by what means?

- (A) sensing the temperature in the liquid line
- (B) fully opening or closing
- (C) throttling the refrigerant
- (D) sensing the superheat in the tail coil

If choice B is selected set score to 1.

24. If a computer display is flickering, how may this be remedied?

- (A) Increase the resolution bandwidth
- (B) Increase the refresh rate
- (C) Decrease the resolution bandwidth
- (D) Decrease the refresh rate

If choice B is selected set score to 1.

25. During its operation, loud buzzing and resultant welding of contacts of a magnetic relay may occur. Which of the following would be the likely cause?

- (A) lubrication of the contact bearing points
- (B) overheating of the contactor coil
- (C) low voltage on the operating coil
- (D) low insulation resistance to ground

If choice C is selected set score to 1.

26. When opening or closing compressor service and line isolation valves on a typical refrigeration system that is fitted with packed valves, what must you do?

- (A) you should replace the gasket each time the valve position is changed
- (B) you should never loosen or tighten the packing gland
- (C) you must first remove the stem seal cap
- (D) you should turn valves slowly to avoid thermal stresses due to low temperatures

If choice C is selected set score to 1.

27. Refillable tanks used to ship CFC and HCFC refrigerants or used to recover these refrigerants must meet the standards of what entity?

- (A) the United States Department of Transportation
- (B) the Environmental Protection Agency
- (C) the United States Coast Guard
- (D) the Underwriters Laboratories

If choice A is selected set score to 1.

28. When installing a mechanical shaft seal on a refrigeration compressor, extreme care must be taken to prevent what from happening?

- (A) dirt and foreign particles from coming in contact with the highly polished sealing surfaces
- (B) any lubricant from contacting the carbon surface that would cause the expulsion of the saturated Teflon film
- (C) any lubricant from contacting the stationary seal face that would cause etching of the face surface
- (D) the spring from being damaged by the corrosive effects of excessive handling

If choice A is selected set score to 1.

29. Referring to the illustration, suppose the oily-water separator vessel compound gauge is showing an unusually deep vacuum for operating in the separation processing mode with the separator service pump running. The oil content is 8.3 ppm. What is most likely the cause? Illustration GS-0175

- (A) The oily-water separator bilge suction strainer is clogged.
- (B) The oily-water separator vessel relief valve is leaking.
- (C) The oily-water separator service pump is worn.
- (D) The bilge water holding tank level is unusually high resulting in a high level alarm.

If choice A is selected set score to 1.

30. An obstructed expansion valve may be indicated by an incompletely cooled evaporator and what other symptom?

- (A) frosting at the evaporator inlet
- (B) frosting at the suction side of the compressor
- (C) a higher than normal discharge pressure
- (D) a decrease in the amount of frosting across the drier

If choice A is selected set score to 1.

31. What is the length of the stud used to secure the packing gland shown in the illustration? Illustration GS-0012

- (A) 1 inch
- (B) 1 1/4 inches
- (C) 1 1/2 inches
- (D) 2 1/2 inches

If choice D is selected set score to 1.

32. For troubleshooting purposes, the key indicator to the safety and general condition of high voltage circuitry is insulation resistance. For a 6.6 kV high voltage system, what would be the recommended minimum insulation resistance value?

- (A) 1 megohm
- (B) 5.6 megohms
- (C) 6.6 megohms
- (D) 7.6 megohms

If choice D is selected set score to 1.

- 33.** In addition to high voltage circuit grounding with ground-connecting switching devices, for additional operator safety and confidence, portable grounding straps may be used. What is the proper procedure for connecting these portable grounding straps?
- (A) The common to hull ground connection and the phase connections to common should all be made simultaneously.
 - (B) The common to hull ground connection and the phase connections to common can be made in any sequence.
 - (C) Connect the common connection to hull ground first, and then connect the phase connections to common.
 - (D) Connect the phase connections to common first, and then connect the common connection to hull ground.

If choice C is selected set score to 1.

- 34.** In planning for a fire and emergency drill, to insure drill success within the context of a comprehensive fire and emergency training program, what should be planned for?
- (A) The fire drill should be a simulated outbreak in a low fire risk area and for each fire drill the location should remain the same.
 - (B) The fire drill should be a simulated outbreak in a low fire risk area and for each fire drill the location should be changed.
 - (C) The fire drill should be a simulated outbreak in a high fire risk area and for each fire drill the location should be changed.
 - (D) The fire drill should be a simulated outbreak in a high fire risk area and for each fire drill the location should remain the same.

If choice C is selected set score to 1.

- 35.** The introduction of outside air to the air conditioning system is 90°F with a relative humidity of 60%. The air has been conditioned to 70°F with a relative humidity of 80%. Using the psychrometric chart, shown in the illustration, determine the quantity of moisture removed from one pound of the conditioned air. Illustration GS-RA-22
- (A) 20 grains
 - (B) 30 grains
 - (C) 40 grains
 - (D) 50 grains

If choice C is selected set score to 1.

36. Some managers think the average person likes work, willingly assumes responsibility, and is trustworthy. What type of leadership style is such a manager likely to adopt?

- (A) Transactional leadership style.
- (B) Structured, autocratic leadership style.
- (C) Hierarchical, dictatorial leadership style.
- (D) Supportive, participative leadership style.

If choice D is selected set score to 1.

37. On vessels with AC distribution systems, which of the following statements represents the most difficult problem involved in obtaining a DC potential suitable for use by computer components?

- (A) Rectifiers cannot operate with voltage regulators.
- (B) A step-down transformer is always required.
- (C) Vessel vibrations affect the voltage source.
- (D) The voltage must be rectified and made ripple free.

If choice D is selected set score to 1.

38. What is the wet bulb temperature of air if the dry bulb temperature of the air is 90 degrees and the relative humidity is 65%? Illustration GS-RA-22

- (A) 62 degrees F
- (B) 63 degrees F
- (C) 77 degrees F
- (D) 80 degrees F

If choice D is selected set score to 1.

39. In the illustration shown, what type of protection is provided to the potable pump drive motor? Illustration EL-0043

- (A) thermal overload protection and low voltage release
- (B) magnetic overload protection and low voltage protection
- (C) thermal overload protection and low voltage protection
- (D) magnetic overload protection and low voltage release

If choice A is selected set score to 1.

40. As shown in the illustrated alternator protection scheme diagram, under what circumstances would an earth leakage relay (EL) be used? Illustration EL-0067

- (A) in grounded low voltage systems
- (B) in ungrounded low voltage systems
- (C) in high voltage systems with a low impedance earthing resistor or transformer
- (D) in high voltage systems with a high impedance earthing resistor or transformer

If choice D is selected set score to 1.

41. As a root cause analysis tool, what is the primary disadvantage to the fishbone (also known as the cause-and-effect) graphical approach to root cause analysis?

- (A) The fishbone diagram does not show any cause sequences leading to failure.
- (B) The fishbone diagram does not allow for more than one potential cause to be considered.
- (C) The fishbone diagram does not attempt to group possible causes into categories.
- (D) The fishbone diagram does not attempt to identify all the possible causes.

If choice A is selected set score to 1.

42. What damage may occur to the components of a winch master control switch, if the cover gasket becomes deteriorated?

- (A) Rapid corrosion of switch components.
- (B) Contamination of lube oil.
- (C) Sparking at the winch motor brushes.
- (D) Overheating of the winch motor.

If choice A is selected set score to 1.

43. Which of the following comprehensive computerized maintenance system database modules would be used to generate a maintenance due report?

- (A) Planned maintenance management module
- (B) Inventory management module
- (C) Requisitions management module
- (D) Equipment management module

If choice A is selected set score to 1.

44. Which term represents the ability of a speed control governor to maintain prime mover speed without hunting?

- (A) Stability
- (B) Sensitivity
- (C) Promptness
- (D) Dead band

If choice A is selected set score to 1.

45. In a closed-loop process control system, what term is used to describe the undesirable characteristic in which the error of a control system oscillates with constant or increasing amplitude?

- (A) Instability
- (B) Saturation
- (C) Dead band
- (D) Error

If choice A is selected set score to 1.

46. Hydraulically, servo-operated, automatic, change over valves, utilized in a two ram hydraulic steering gear, serve to _____.

- (A) prevent either main pump from being hydraulically motored when idle by cross pressure flow
- (B) allow an alternate main pump to start in the fully loaded condition thus developing immediate full torque
- (C) prevent both units from operating simultaneously which could result in doubling the flow of oil and pressure leading to over pressurization of the system
- (D) all of the above

If choice A is selected set score to 1.

47. If a digital multimeter is set up as shown in figure "A" of the illustration to test a capacitor, what would the display read if the capacitor is functioning properly? Illustration EL-0213

- (A) the ohmic value would read very low and remain at that value
- (B) the ohmic value would initially read very low, but over time the ohmic value would gradually rise to an extremely high value (OL ohms)
- (C) the ohmic value would initially read very high (OL ohms), but over time the ohmic value would gradually drop to an extremely low value
- (D) the ohmic value would read very high (OL ohms) and remain at that value

If choice B is selected set score to 1.

48. A hydraulic flow control circuit is shown in the illustration, and is known as a _____. Illustration GS-0107

- (A) bleed-in circuit
- (B) metered-in circuit
- (C) bleed-off circuit
- (D) metered-out circuit

If choice C is selected set score to 1.

49. During the "forming" stage of group development, members are trying to determine the task of the group and their role expectations of one another. As a manager, what should be done to help facilitate the "forming" process?

- (A) The group members should be similar in background regardless of the degree of complexity of the task.
- (B) The group should not have a designated leader to promote equality.
- (C) The group should have a designated leader to provide structure and guidance.
- (D) The group members should be widely differing in background regardless of the degree of complexity of the task.

If choice C is selected set score to 1.

- 50.** When troubleshooting a printed circuit board, one technique that can be used is swapping the suspected damaged board with a new board. When installing the new board which was stored in a specially manufactured antistatic bag, how may damage due to electrostatic discharge be prevented?
- (A) Before touching the board, you should discharge any static buildup on yourself by touching a conductive surface or use a grounding wrist strap, and the board should be handled by its insulated edges only.
 - (B) Before touching the board, you should discharge any static buildup on yourself by touching a conductive surface or use a grounding wrist strap, and the board should be handled by grasping trace solder surfaces.
 - (C) Before touching the board, you should discharge any static buildup on the board by touching the board to a conductive surface, and the board should be handled by grasping trace solder surfaces.
 - (D) Before touching the board, you should discharge any static buildup on the board by touching the board to a conductive surface, and the board should be handled by its insulated edges only.

If choice A is selected set score to 1.

- 51.** As shown in the illustrated block diagram for a distributed automation system, what statement is true concerning the area networks? Illustration EL-0096
- (A) The LAN is a single non-redundant network and the partitioned CAN is a dual redundant network, with both networks being interconnected.
 - (B) The LAN is a dual redundant network and the partitioned CAN is also a dual redundant network, with no interconnectivity between the two networks.
 - (C) The LAN is a dual redundant network and the partitioned CAN is also a dual redundant network, with both networks being interconnected.
 - (D) The LAN is a single non-redundant network and the partitioned CAN is a dual redundant network, with no interconnectivity between the two networks.

If choice C is selected set score to 1.

- 52.** What statement is TRUE concerning the Azipod propulsion system?
- (A) It is an electric drive system in which the motor drives a controllable-pitch propeller (CPP).
 - (B) It is an electric drive system where the propulsion motor is installed in a submerged housing capable of swiveling.
 - (C) It is an electric drive system that incorporates a DC motor.
 - (D) It is an electric drive system using water jets.

If choice B is selected set score to 1.

53. What form of communication provides the greatest information richness, which is the amount of verbal and non-verbal information that a communication channel carries?

- (A) Large-group meeting
- (B) One-on-one, face-to-face
- (C) Small-group meeting
- (D) Telephone conversation

If choice B is selected set score to 1.

54. What statement is true concerning the checks to be undertaken in the "checks prior to transfer" section of the bunkering safety checklist where the transfer is from barge-to-ship?

- (A) These are checks to be performed solely by the person in charge (PIC) of the barge's role of the bunkering operation.
- (B) These are checks to be performed jointly by the persons in charge (PICs) of both the barge's and ship's roles of the bunkering operation.
- (C) These are checks to be performed solely by the person in charge (PIC) of the ship's role of the bunkering operation.
- (D) These are checks to be performed jointly by the person in charge (PIC) of the ship's role of the bunkering operation and the USCG marine inspector.

If choice B is selected set score to 1.

55. When performing mariner competency assessment onboard a vessel, as an assessor you must be mindful of the potential influence of other crew members. Which of the following statements regarding this potential influence is true?

- (A) While you should never allow an assessment candidate to observe others being assessed for the same competency, other crew members can be allowed to interfere with the assessment.
- (B) While you can allow an assessment candidate to observe others being assessed for the same competency, you should never allow other crew members to interfere with an assessment.
- (C) You should never allow an assessment candidate to observe others being assessed for the same competency, and you should never allow other crew members to interfere with an assessment.
- (D) You can allow an assessment candidate to observe others being assessed for the same competency, and you can allow other crew members to interfere with an assessment.

If choice C is selected set score to 1.

56. A self-propelled mobile offshore drilling unit is required to have its emergency storage batteries tested in accordance with 46 CFR regulations applicable to tests, drills, and inspections for MODU operations. What are the test criteria?

- (A) The emergency batteries are to be tested once each 6 months and furnish power to the actual connected loads for a period of not less than 18 continuous hours.
- (B) The emergency batteries are to be tested once each 6 months and furnish power to the actual connected loads for a period of not less than 2 continuous hours.
- (C) The emergency batteries are to be tested once each 6 months and furnish power to the actual connected loads for a period of not less than 6 continuous hours.
- (D) The emergency batteries are to be tested once each month and furnish power to the actual connected loads for a period of not less than 2 continuous hours.

If choice B is selected set score to 1.

57. Why can CFC or HCFC refrigerants leaking into a confined space or in limited surroundings cause suffocation?

- (A) Refrigerants are heavier than air and displace oxygen.
- (B) Refrigerants contain an acidic substance.
- (C) Refrigerants obnoxious odor prevents breathing.
- (D) Refrigerants lighter than air will rise.

If choice A is selected set score to 1.

58. As shown in the illustrated digital gyrocompass functional block diagram and the associated communications protocols table, what would the rate of turn signal voltage be if the rate of turn is 30 degrees per minute to port, assuming that rate of turn to port is negative and rate of turn to starboard is positive in polarity? Illustration EL-0194

- (A) -0.5 VDC
- (B) -1.0 VDC
- (C) -1.5 VDC
- (D) +1.5 VDC

If choice C is selected set score to 1.

59. To prevent shaft currents in an alternator, the outboard bearing shell or outboard bearing pedestal is insulated. If the methodology used is the insulated bearing pedestal, how is the pedestal insulation evaluated?

- (A) Measuring the resistance between the bearing pedestal and the bearing bedplate of a disassembled machine with a digital multimeter setup as an ohmmeter.
- (B) Measuring the resistance between the bearing pedestal and the bearing bedplate of an assembled machine with a 500-Volt megohmmeter.
- (C) Measuring the resistance between the bearing pedestal and the bearing bedplate of an assembled machine with a digital multimeter setup as an ohmmeter.
- (D) Measuring the resistance between the bearing pedestal and the bearing bedplate of a disassembled machine with a 500-Volt megohmmeter.

If choice D is selected set score to 1.

60. A dented race in an antifriction bearing could be caused by _____.

- (A) vibration while the bearing is not in operation
- (B) abrasives in the lubricant
- (C) dirt in the bearing
- (D) water in the bearing

If choice A is selected set score to 1.

61. If the inputs to the diagram shown in figure "2" of the illustration were A=0 and B=0, what logic levels would be indicated at points "C", "D", "E", and "F" respectively? Illustration EL-0089

- (A) C=0, D=0, E=1, and F=1
- (B) C=1, D=0, E=0, and F=1
- (C) C=1, D=0, E=1, and F=0
- (D) C=1, D=1, E=0, and F=1

If choice D is selected set score to 1.

62. Control system diagrams use standard symbols to describe the component function required for the system to achieve its intended control functions. Standard symbols are used to allow engineers to describe the logic and component functions. Define the function of symbol "I" as shown in the illustration. Illustration GS-0180

- (A) High Select Signal Processor.
- (B) Integral Processor.
- (C) Low Select Signal Processor.
- (D) Difference Signal Processor.

If choice C is selected set score to 1.

- 63.** As you manage the engine room familiarization training program for new engine department employees, what should you explain to these new employees?
- (A) There is really insufficient time for familiarization training that is mandated, and the new employee should not worry about it.
 - (B) The familiarization training that is mandated is excessive overkill, and the new employee should not worry about it.
 - (C) The employee should do his or her best and the appropriate entries shall be made in the training record book regardless of familiarity achieved.
 - (D) The employee has the obligation to notify his or her supervisor if they don't feel sufficiently familiar to be competent.

If choice D is selected set score to 1.

- 64.** In accordance with 33 CFR Subchapter O (Pollution), which of the following statements is true concerning the signature of the Oil Record Book?
- (A) The officer in charge of the engineering watch signs each entry occurring on the watch, and the chief engineer signs each page.
 - (B) The officer in charge of the navigational watch signs each entry occurring on the watch, and the master signs each page.
 - (C) The person in charge of an operation signs for that entry, and the master signs each page.
 - (D) The person in charge of an operation signs for that entry, and the chief engineer signs each page.

If choice C is selected set score to 1.

- 65.** When new piping sections have been fabricated for installation in a hydraulic system, prior to installation the piping should be _____.
- (A) cleaned using a water-based detergent
 - (B) descaled by using a pickling solution
 - (C) hydrostatically tested to 100% of maximum working pressure
 - (D) all of the above

If choice B is selected set score to 1.

- 66.** What is the normal direction of flow through the device shown in the illustration while operating in the processing mode? Illustration GS-0153
- (A) The oily-water mixture enters through valve "4" and exits as processed liquid through valve "14".
 - (B) The oily-water mixture enters through valve "5" and exits the separator through valve "14" as processed liquid.
 - (C) The oily-water mixture enters through the pressure control valve "2" and exits with the processed liquid through valve "14".
 - (D) The oily-water mixture enters through valve "14" and exits with the processed liquid through valve "4".

If choice B is selected set score to 1.

67. Dimension "X" indicated on the architects scale, shown in the illustration, will be equal to _____ . Illustration GS-0023

- (A) 5 feet 3/4 inch
- (B) 5 feet 4 inches
- (C) 83 feet
- (D) 93 1/4 feet

If choice B is selected set score to 1.

68. A hydraulic system gear pump being fed from a reservoir frequently indicates signs of excessive pitting after two months of service. Which of the following would most likely contribute to this condition?

- (A) A partial restriction in the return line has developed.
- (B) Abnormal pressurization is occurring in the reservoir.
- (C) Operating oil temperature is determined to be below normal.
- (D) A vacuum condition has developed in the reservoir.

If choice D is selected set score to 1.

69. Consider the following training objective for a training session designed for training your crew how to pump bilges:

"Using the engine room bilge system of the M/V Underway where a bilge pocket requires pumping out and the automated bilge pumping controls have been disabled, by the end of the training session the participants will be able to pump an engine room bilge pocket dry manually to the bilge water holding tank in conformance with the vessel's engine room bilge pumping procedure checklist. There shall be no violations of the domestic and international pollution prevention regulations."

What role does the phrase "in conformance with the vessel's engine room bilge pumping procedure checklist" serve in the objective statement?

- (A) It specifies a performance input condition.
- (B) It states a performance by using action words.
- (C) It states one of the standards of performance to be achieved.
- (D) It specifies the single outcome to be achieved.

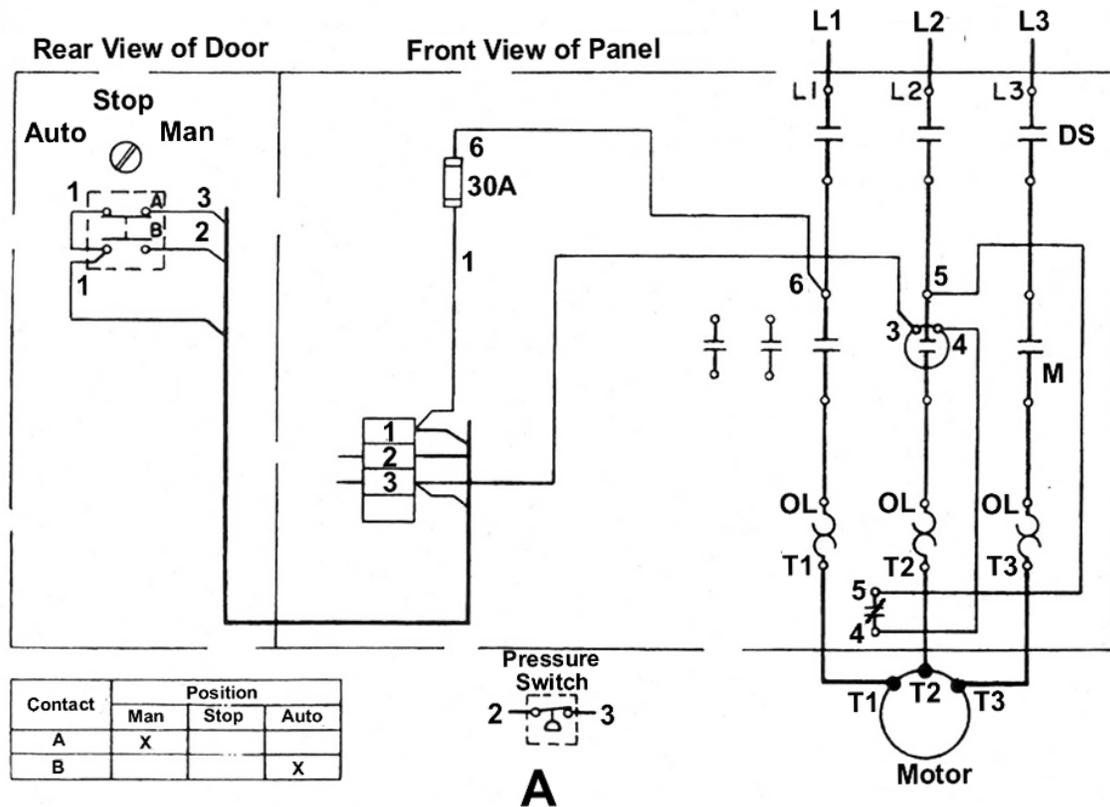
If choice C is selected set score to 1.

70. To test fuses in an energized circuit, what testing apparatus or meter should be used?

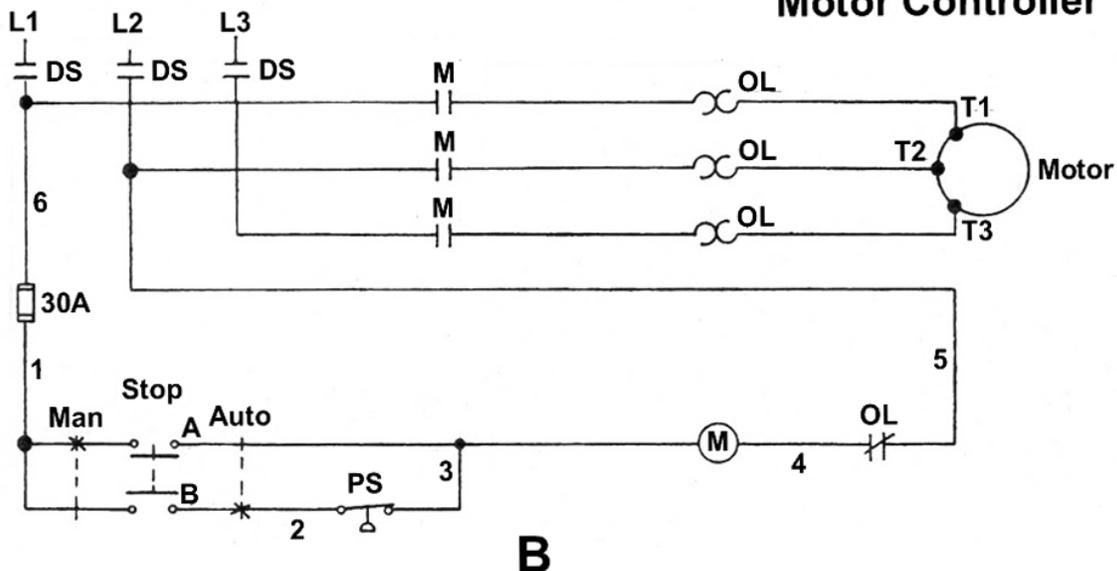
- (A) voltmeter
- (B) continuity tester
- (C) megohmmeter
- (D) resistance meter

If choice A is selected set score to 1.

EL-0043

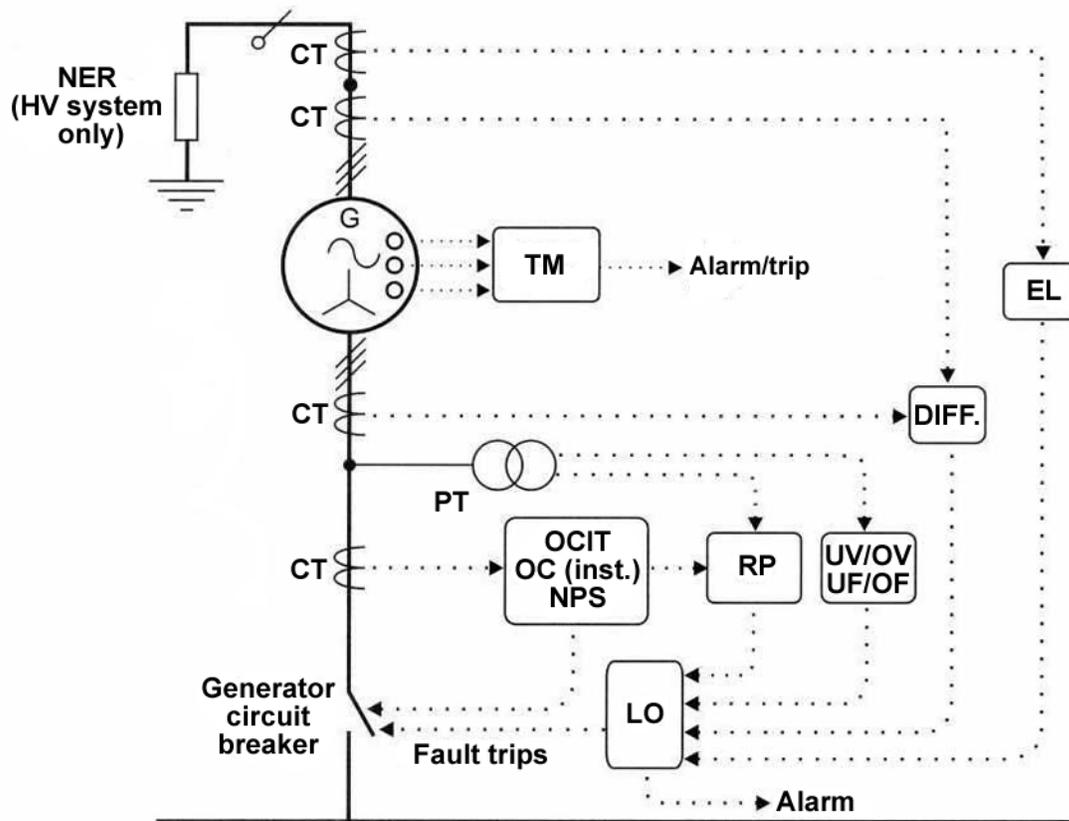


Potable Water Pump Motor Controller



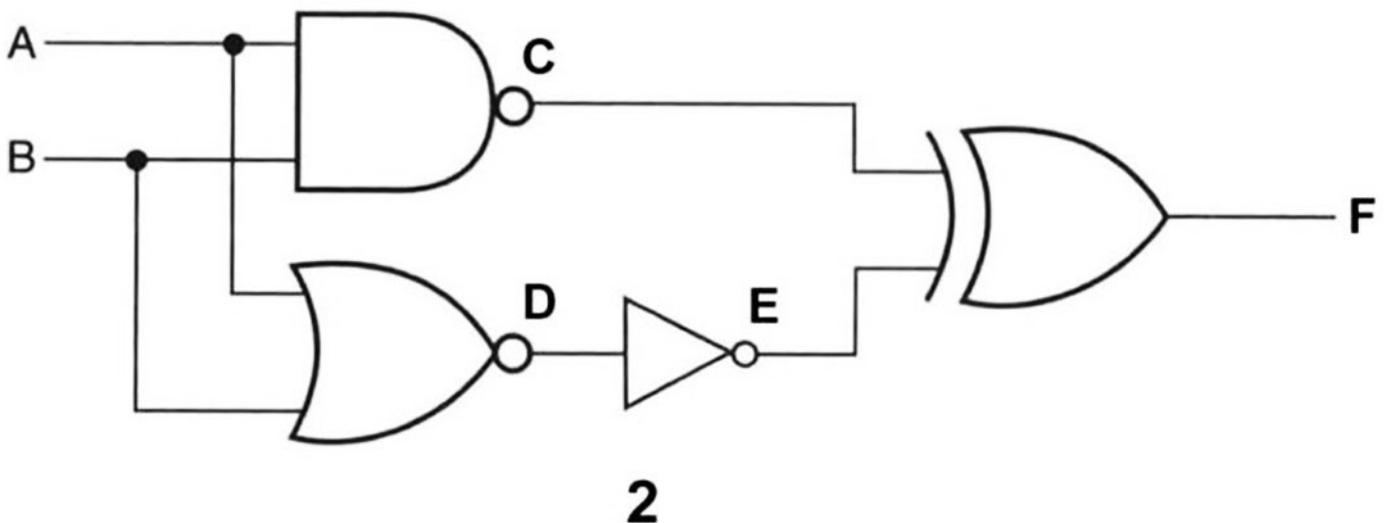
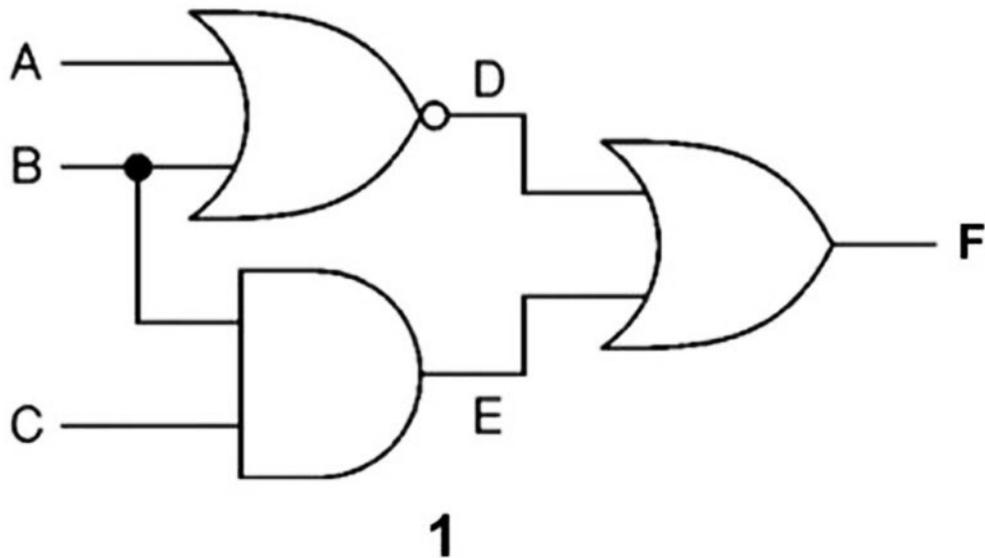
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EL-0067



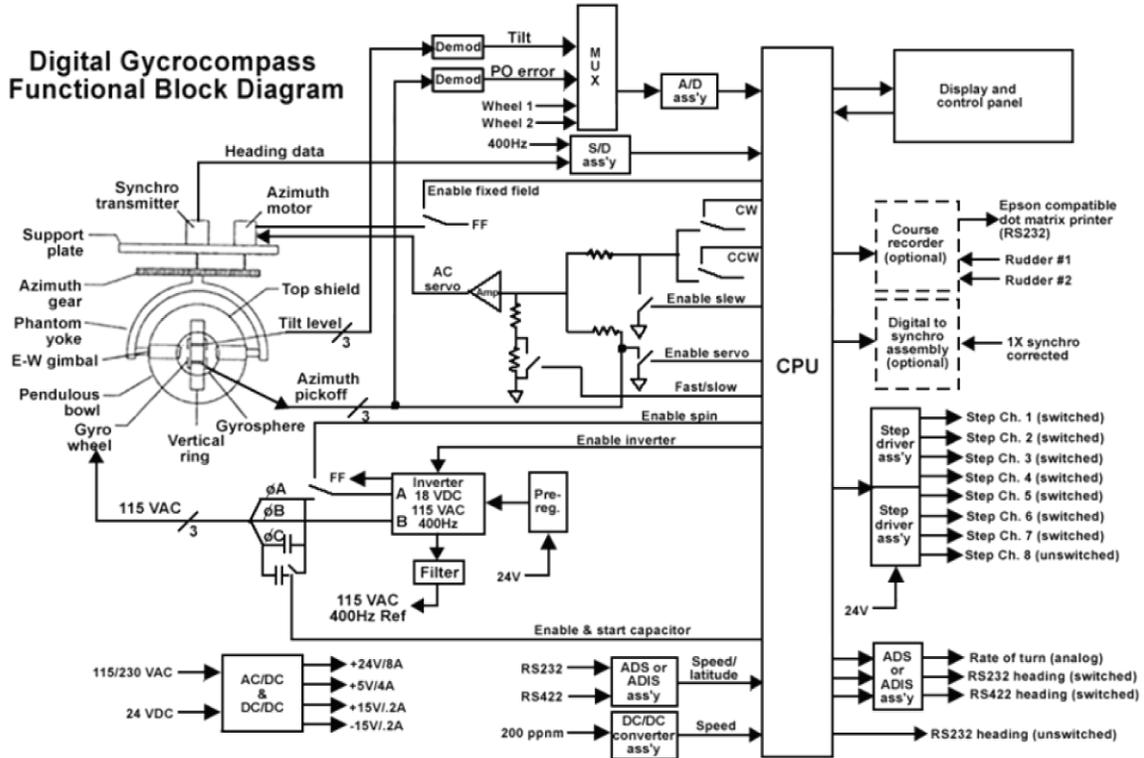
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EL-0089



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EL-0194



Digital Gyrocompass Communication Protocols

Inputs

- Speed:** Pulsed Automatic, 200 ppm
Serial Automatic from digital sources, RS-232/422 in NMEA 0183 format \$V_{BW}, \$V_{HW}, \$V_{TG}
Manual Manually via the control panel
- Latitude** Automatic from GPS via RS-232/422 in NMEA format \$G_{LL}, \$G_{GA}
Automatic from digital sources via RS-232/422 in NMEA 0183 format \$G_{LL}
Manually via the control panel

Outputs

- Rate of Turn** 50 mV per deg.min (+/- 4.5 VDC full scale = +/- 90 /min) NMEA 0183 format \$S_{HEROT}, X.XXX, A*hh<CR><LF> 1 Hz, 4800 baud
- Step Repeaters** Eight 24 VDC step data outputs. (An additional 12-step data output at 35 VDC or 70 VDC from the optional transmission unit)
7 - switched, 1 - unswitched
- Heading Data** One RS-422, capable of driving up to 10 loads in NMEA 0183 format \$S_{HEHDT}, XXX.XXX, T*hh<CR><LF>
Two RS-232, each capable of driving one load in NMEA format \$S_{HEHDT}, XXX.XXX, T*hh<CR><LF> 10 Hz, 4800 baud
1 - 232 switched, 1 - 232 unswitched, 1 - 422 switched
- Alarm Outputs** A relay and a battery-powered circuit activates a fault indicator and audible alarm during a power loss.
Compass alarm - NO/NC contacts. Power alarm - NO/NC contacts
- Course Recorder** (if fitted) RS-232 to dot matrix printer
- Synchro Output** (if fitted) 90 V line-to-line with a 115 VAC 400 Hz reference.
Can be switched or unswitched.

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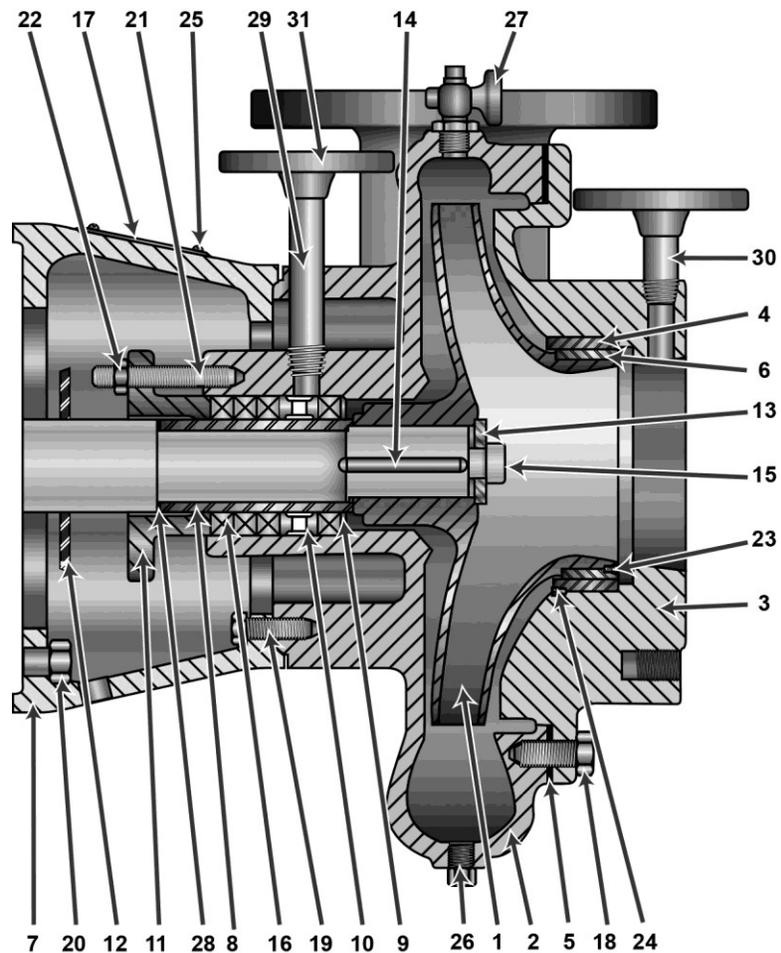
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GS-0012

ITEM	QTY	DESCRIPTION	MATERIAL	REMARKS
1	1	Impeller	NI-CU Alloy	3H1A
2	1	Volute	Gunmetal	3H4C
3	1	Suction Cover	Gunmetal	3H193
4	1	Volute Wear Ring	Valve Bronze	A-3H180A
5	1	Volute Gasket	Asbestos	P/N 3H37
6	1	Impeller Wear Ring	NI-CU Alloy	3H180
7	1	Motor Bracket	Cast Steel	2L3C
8	1	Shaft Sleeve	NI-CU Alloy	P/N A-014-20A-0-01
9	1	Throat Bushing	NI-CU Alloy	P/N 4L26-4
10	1	Lantern Ring	NI-CU Alloy	4L169
11	2	Gland Half	Bronze	B-017-5AH-A
12	1	Slinger	Neoprene	1 47/64 X 3 3/4 X 1/8TH
13	1	Impeller Washer	NI-CU Alloy	17/32 X 9/16 X 3/16TH
14	1	Impeller Key	NI-CU Alloy	1/4 SQ X 2 5/16 TH
15	1	SKT HD Capscrew	SST	1/2-13 NC X 1 1/4 LG NYLOCK
16	5	Packing Rings	Plastic Mtlc	1 3/4 X 2 5/8 X 7/16 SQ
17	1	Name Plate	BPass	P/N A-226-00N-0-03
18	8	Hex Head Capscrews	NI-CU Alloy	1/2-13 NC X 1 LG
19	4	Hex Head Capscrews	NI-CU Alloy	3/8-16 x 1 LG
20	4	Hex Head Capscrews	NI-CU Alloy	1/2-13 NC X 1 1/4 LG
21	2	Stud	SST	3/8-16 NC X 2 1/2 LG
22	2	Hex Nut	Bronze	3/16-16 2
23	3	Setscrew	NI-CU Alloy	10-24 NC X 1/4 LG CUP
24	3	Setscrew	NI-CU Alloy	10-24 NC X 1/4 LG CUP
25	4	Drive Screw	Brass	6-24 X 1/4 LG
26	3	Pipe Plug	Bronze	1/4 NPT
27	1	Vent Valve	Bronze	1/4 NPT
28	1	O Ring	Bunh "N"	1 5/16 ID 1/16 WIDE
29	1	Pipe	70-30 CU-NI	4 11/16 LG 1/4 NPT
30	1	Pipe	70-30 CU-NI	3 3/16 LG 1/4 NPT
31	1	Flange	Valve Bronze	1/4 INCH 150#

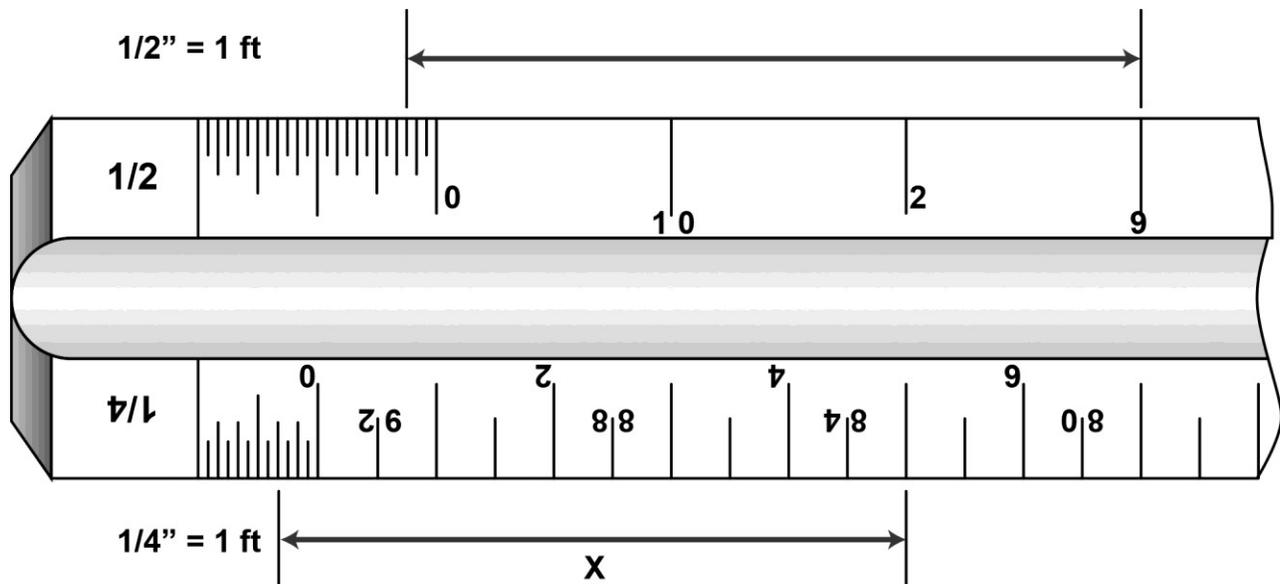
Note: Inside dia. of Wearing Ring, PC No. (4) is .020 undersize outside dia. of Wearing Ring, PC No. (6) is .020 oversize when finished as repair parts and are designated as part No. 5 A3H180A-1 U/S and 3H180-1 O/S



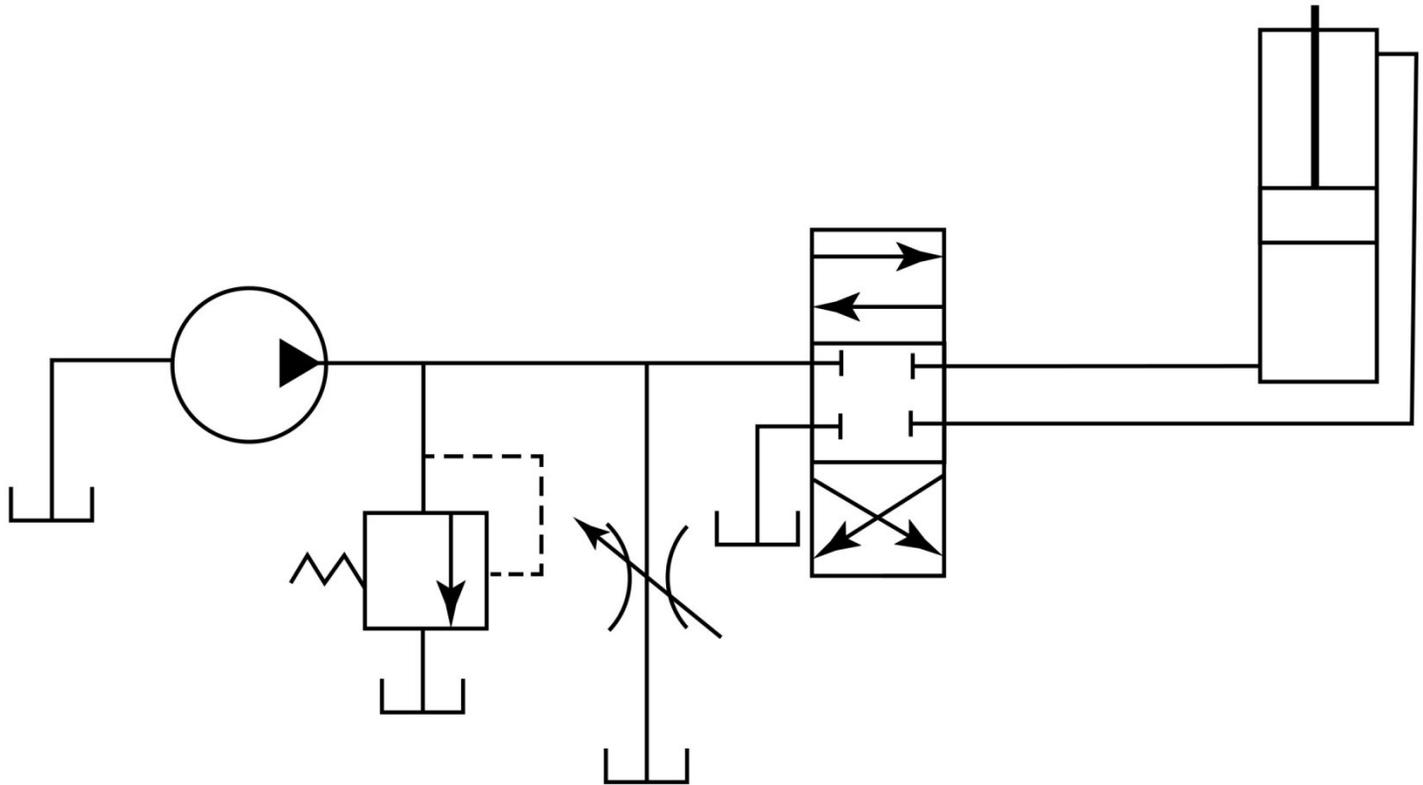
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GS-0023



GS-0107

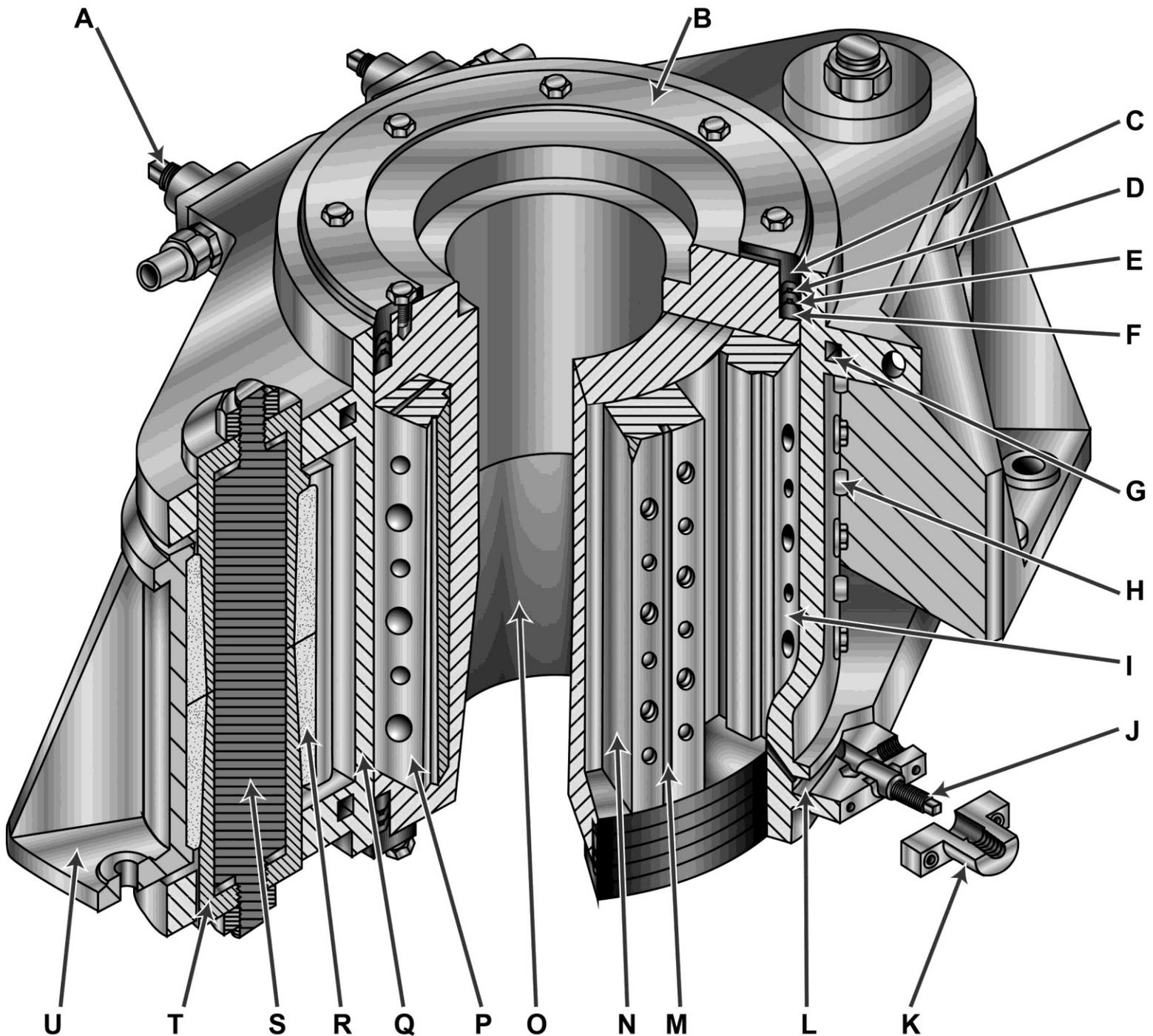


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GS-0116



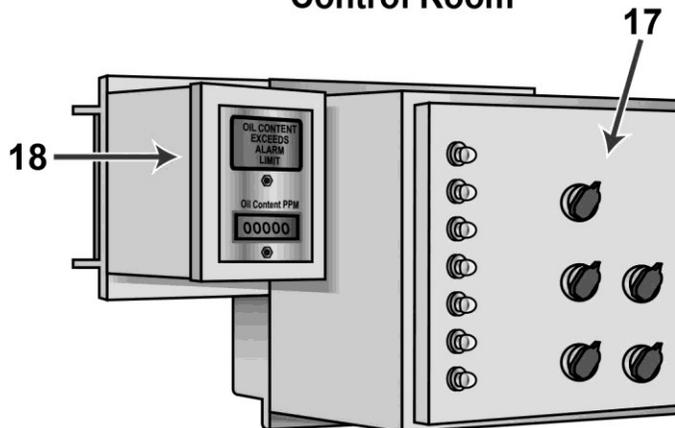
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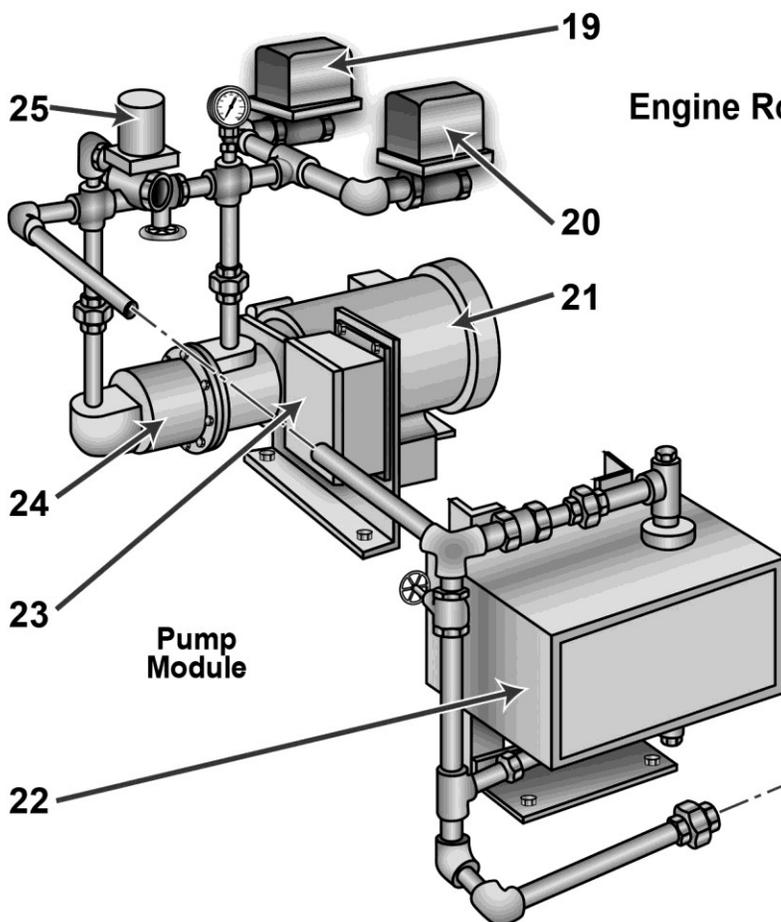
GS-0153

Control Room

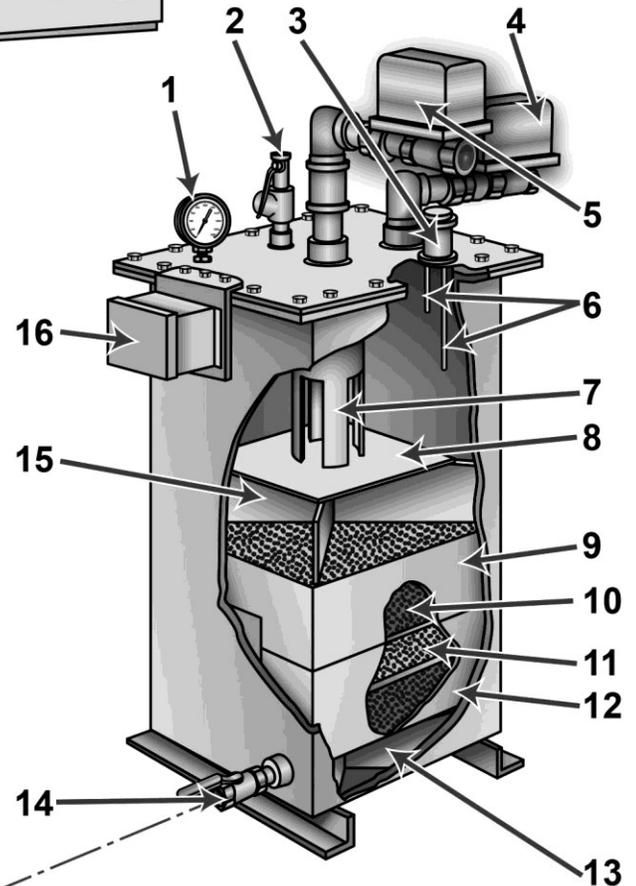


Control Panel
Assembly

Engine Room



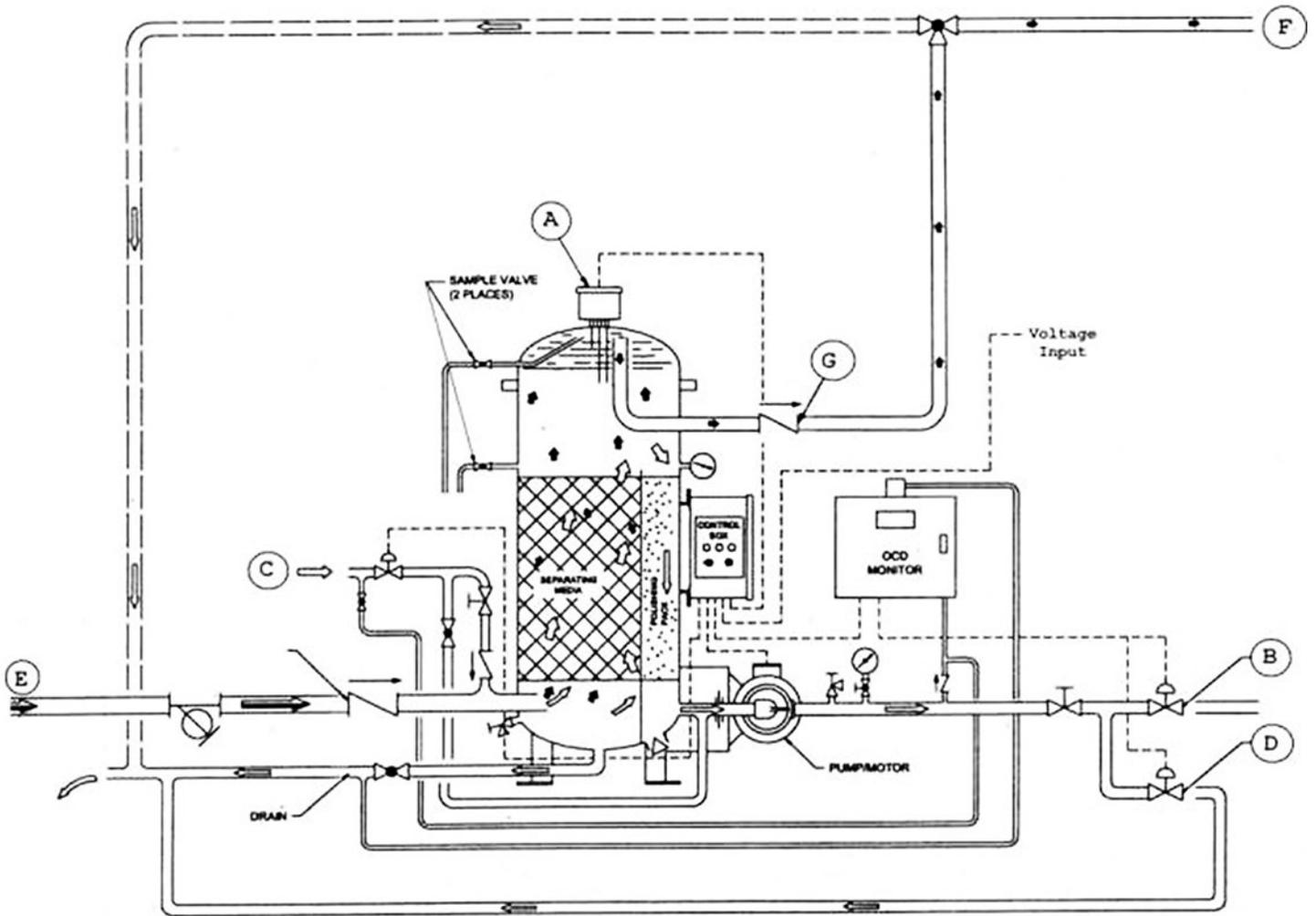
Pump
Module



Separator Tank
Module

Adapted for testing purposes only from Operator, Unit and Direct Support Maintenance Manual
Including Repair Parts and Special Tools List for Oil Water Separator
TM 55-1925-285-13 & P

GS-0175



Adapted for testing purposes only from Heli-Sep Model 550/OCD Technical Manual

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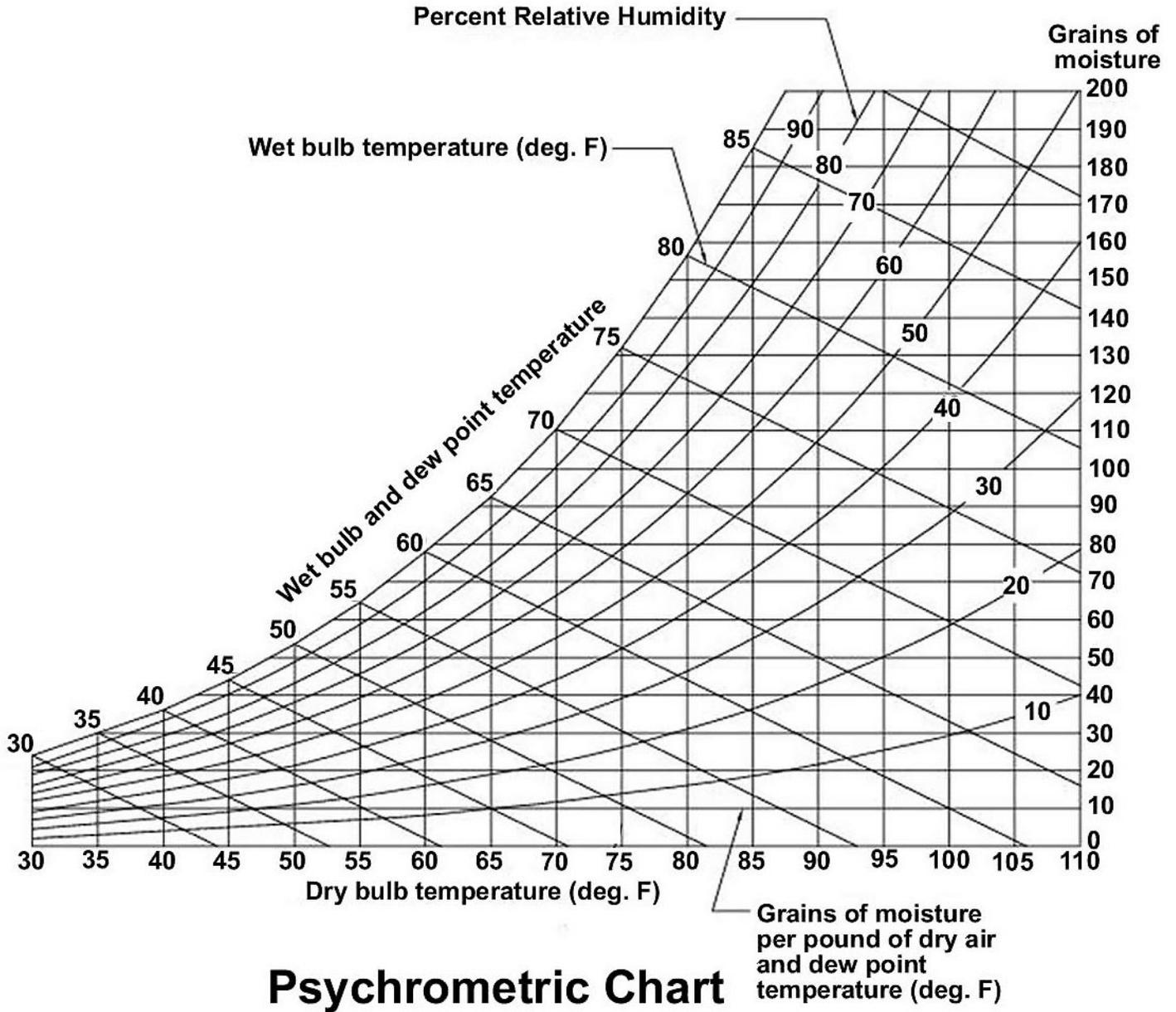
GS-0180



GS-RA-16



GS-RA-22



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