U.S.C.G. Merchant Marine Exam

Chief Engineer – Limited

Q601 General Subjects

(Sample Examination)

Choose the best answer to the following Multiple-Choice Questions.

1. When new piping sections have been fabricated for installation in a hydraulic system, prior to installation the piping should be _____.

A. hydrostatically tested to 100% of maximum working pressure
B. descaled by using a pickling solution
C. cleaned using a water-based detergent
D. all of the above

Correct answer: B

2. Purging air from a hydraulic system is necessary when _____.

A. the system has been drained and then filled with new oil
B. adding small amounts of oil to the system
C. the system has been idle for a long period of time
D. the system has been overheated

Correct answer: A

3. Overheating of the oil in a hydraulic system can be caused by _____.

A. insufficient external pump slippage
B. fluctuating pump discharge pressure in response to normal load variations
C. continuous leakage through the pressure relief valve
D. an increase in the number of the hydraulic fluid film layers

Correct answer: C

4. While starting a hydraulic anchor windlass, you observe that hydraulic pressure does not develop in spite of the proper operation of the electric drive motor. Which of the following actions should you take FIRST to restore pressure?

A. Check for full voltage supply to the electric motor.
B. Make certain that the hydraulic reservoir is filled to the proper level.
C. Check the electric motor for an open overload relay contact.
D. Inspect the disc brake on the electric motor for proper operation.

Correct answer: B

5. When the oily-water separator, shown in the illustration, is in operation and processing clear bilge water, what should be the internal water level? Illustration GS-0153

A. The water level in the tank should be slightly above the upper coalescer bed "9".
B. The water level should be located in the lower section of the tank as controlled by flow control valve "14".
C. The water level should be located in the upper section of the tank.
D. No water level is maintained in the tank.

Correct answer: C

6. The line labeled "E", as shown in the illustration, would be identified as the _____. Illustration GS-0175

A. processed water outlet line
B. clean water inlet line
C. waste oil outlet line
D. oily bilge water inlet line

Correct answer: D

7. Referring to the illustration, suppose after initiating the oil discharge mode, the oily-water separator fails to come out of the oil discharge mode in a timely fashion. Cracking open the upper sampling valve reveals the presence of oil exiting under positive pressure. What is most likely the cause? Illustration GS-0175

A. The upper oil/water interface detection probe fails to end the oil discharge mode.
B. The oil discharge check valve fails to open, and as a result no oil actually discharges.
C. The clean water supply solenoid fails to open, and as a result provides no discharge pressure.
D. The lower oil/water interface detection probe fails to initiate the oil discharge mode.

Correct answer: B

8. The process of grinding, shredding, or reducing the size of sewage particles is known as _____.

A. detention
B. maceration
C. bulking
D. chlorinating

Correct answer: B

9. Coast Guard regulations concerning marine sanitation devices may be found in _____.

A. 33 CFR Section 159
B. 33 CFR Section 153
C. 33 CFR Section 155
D. 33 CFR Section 156

Correct answer: A

10. In a closed-loop process control system, what is meant by the proportional mode of control?

A. It is a control mode that produces a control action that is proportional to the accumulation of error over time.
B. It is a control mode that produces a control action that is proportional to the error.
C. It is a control mode that produces a control action that is proportional to the gain.
D. It is a control mode that produces a control action that is proportional to the rate at which the error is changing.

Correct answer: B

11. In a closed-loop process control system, what term is used to describe the action of measuring the difference between the actual result and the desired result and using that difference to drive the actual result toward the desired result?

A. Feedback
B. Deadband
C. Gain
D. Instability

Correct answer: A

12. In a closed-loop process control system, what is meant by the derivative mode of control?

A. It is a control mode that produces a control action that is proportional to the gain.
B. It is a control mode that produces a control action that is proportional to the accumulation of error over time.
C. It is a control mode that produces a control action that is proportional to the rate at which the error is changing.
D. It is a control mode that produces a control action that is proportional to the error.

Correct answer: C

13. A 'Proportional Only' controlled automatic process loop is oscillating continually, above and below the setpoint. To stabilize this controller and loop using the 'gain' adjustment, what controller/loop response would you expect upon process changes vs. setpoint?

A. By increasing gain, the system's oscillations should subside vs. setpoint after an upset.
B. By decreasing gain, the process should return to a straight-line response vs. setpoint after an upset.
C. By decreasing gain gradually, the process should stabilize in a 'quarter wave' response to system's upsets vs. the setpoint.
D. By decreasing reset, the system's oscillations should subside vs. setpoint after an upset.

Correct answer: C

14. While calibrating a 4-20 mA electronic, or a 3-15 psi pneumatic controller, with a process output of 50-250 psi, what is the controller span/range you are dealing with?

A. Output process span is 200 psi.
B. Output process range is 0-250 psi.
C. Controller process output span is 0-250 psi.
D. Controller input ranges are 0-40 mA and 0-15 psi.

Correct answer: A

15. Who is responsible for ensuring that someone is assigned to close the watertight doors in an emergency?

A. Coast Guard
B. Chief Mate
C. Chief Engineer
D. Master of the vessel

Correct answer: D

16. The Certificate of Inspection for your vessel was issued in January. In March of the same year, you need to replace a cooling water pump for the refrigeration system. What action would be appropriate?

A. Inform the Coast Guard if the replacement will involve welding or burning.
B. Replace the pump, as the Coast Guard need not be informed of the pump replacement.
C. Defer informing the Coast Guard of the pump's replacement until the mid-period inspection.
D. Inform the nearest Officer in Charge, Marine Inspection of the pump replacement.

Correct answer: B

17. In order to assess each trainee in the performance of a practical demonstration, the assessor should _____.

A. evaluate according to their discretion, simply by their ability to "tell" when a candidate is performing well
B. refer to a checklist that represents the skill process as required on board the vessel
C. create a unique set of subjective questions for each trainee
D. sign off the remaining half of all skills to be demonstrated based upon the success of the first half of the skill demonstration

Correct answer: B

18. 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. owner or his agent
B. engine manufacturer
C. U.S. Coast Guard
D. insurance underwriter

Correct answer: C

19. In the illustrated schematic, which component is the device that was used to replace the six-way valve, as found on many older type steering gears? Illustration GS-0123

A. "A"
B. "B"
C. "F"
D. "H"

Correct answer: A

20. A command signal input to the steering gear has initiated rudder movement for 20° right rudder. The follow-up mechanism at the beginning of the rudder movement will _____. Illustration GS-0123

A. not be in motion, thus a null input
B. be in motion providing an input to place the variable stroke pump on maximum stroke
C. be in motion with a null input
D. be in motion providing an input to place the variable stroke pump at null stroke

Correct answer: C

21. Which capstan drive arrangement requires a flexible coupling between the reduction gear output shaft and the capstan head input shaft?

A. The drive arrangement where the drive motor, electric brake, gear reducer, and capstan head are all located on the weather deck.
B. The drive arrangement where the drive motor, electric brake, gear reducer are hung from the underside of the weather deck, and only the capstan head is located on the weather deck.
C. The drive arrangement where the drive motor, electric brake, gear reducer are mounted on the deck below the weather deck, and only the capstan head is located on the weather deck.
D. A flexible coupling is required on all three drive arrangements listed above.

Correct answer: C

22. As it pertains to the automatic electric brake of a capstan, what statement is true?

A. The brake is electrically set and spring released, and the brake automatically releases when power is removed from the electric drive motor.
B. The brake is spring set and electrically released, and the brake automatically releases when electric power is removed from the electric drive motor.
C. The brake is electrically set and spring released, and the brake automatically sets when electric power is removed from the electric drive motor.
D. The brake is spring set and electrically released, and the brake automatically sets when electric power is removed from the electric drive motor.

Correct answer: D

23. A horizontal electro-mechanical anchor windlass is equipped with two warping heads, two wildcats, two manual brake handwheels, two clutch control levers, and a multipoint lever-operated, pedestal-mounted controller. What statement is true as it pertains to the operation of the warping heads and wildcats?

A. The wildcats can be rotated in either direction of rotation without rotating the warping heads by disengaging the warping head clutches. As long as electric power is applied to the electric drive motor, the warping heads will rotate.
B. The wildcats can be rotated in either direction of rotation without rotating the warping heads by disengaging the warping head clutches. As long as electric power is applied to the electric drive motor, the wildcats will rotate.
C. The warping heads can be rotated in either direction of rotation without rotating the wildcats by disengaging the wildcat clutches. As long as electric power is applied to the electric drive motor, the warping heads will rotate.
D. The warping heads can be rotated in either direction of rotation without rotating the wildcats by disengaging the wildcat clutches. As long as electric power is applied to the electric drive motor, the wildcats will rotate.

Correct answer: C

24. In the illustrated single zone HVAC system, what statement represents the relationship between the exhaust, outside air and recirculation dampers? Illustration RA-0009

A. The more the exhaust and recirculation dampers are open, the more the outside air damper is closed, and vice versa.
B. The exhaust, outside air, and recirculation dampers are all open or closed to the same degree for all operating conditions.
C. The more the exhaust and outside air dampers are open, the more the recirculation damper is closed, and vice versa.
D. The more the outside air and recirculation dampers are open, the more the exhaust damper is closed, and vice versa.

Correct answer: C

25. Referring to the illustrated single zone HVAC system diagram, what statement is true concerning the damper controls? Illustration RA-0009

A. The exhaust and outside air dampers are normally open and the recirculation damper is normally closed and each damper is controlled by its own pilot air signal.
B. The exhaust and outside air dampers are normally closed and the recirculation damper is normally open and all three dampers are controlled by a single pilot air signal.
C. The exhaust and outside air dampers are normally open and the recirculation damper is normally closed and all three dampers are controlled by a single pilot air signal.
D. The exhaust and outside air dampers are normally closed and the recirculation damper is normally open and each damper is controlled by its own pilot air signal.

Correct answer: B

26. What statement is true concerning a one-pipe hydronic heating system?

A. Each heating coil inlet temperature is different, as the hot water inlet temperature to each heating coil progressively drops as the water passes through each successive series-connected coil.
B. Each heating coil inlet temperature is identical, as the hot water inlet temperature to each heating coil progressively drops as the water passes through each successive series-connected coil.
C. Each heating coil inlet temperature is identical, as the hot water inlet temperature to each heating coil progressively rises as the water passes through each successive series-connected coil.
D. Each heating coil inlet temperature is different, as the hot water inlet temperature to each heating coil progressively rises as the water passes through each successive series-connected coil.

Correct answer: A

27. Referring to the illustrated psychrometric chart, suppose air at a dry bulb temperature of 60oF and a relative humidity of 52% passes over a heating coil, resulting in sensible heat gain, and the off-coil temperature is now 80oF. What is off-coil relative humidity? Illustration RA-0022

A. 19%
B. 27%
C. 55%
D. 70%

Correct answer: B

28. An important communication tool for managers is known as active listening. It helps better ensure that managers understand employees and that feedback is encouraged. What is active listening?

A. Active listening is when you maintain eye contact with the employee the whole time they are speaking.
B. Active listening is when you listen to an employee with undivided attention and not be distracted.
C. Active listening is when you make a response that states what you have heard from the employee.
D. Active listening is when you allow the employee to finish what they are saying before speaking.

Correct answer: C

29. 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. One-on-one, face-to-face
B. Telephone conversation
C. Large-group meeting
D. Small-group meeting

Correct answer: A

30. When removing roller bearings from a shaft, the force of the puller should be applied to the bearing _____.

A. outer race
B. inner race
C. retainer plate
D. raceway

Correct answer: B

31. As the speed of an oil lubricated ball bearing increases, fluid friction, due to churning, generates heat. This condition may be avoided by _____.

A. reducing the quantity of lubricant until only a mist of oil is present on the ball bearings
B. installing oil rings on the ball bearings
C. adding more lubricant until the ball bearings are completely covered with a layer of oil
D. maintaining a continuous fluid film of oil on the bearings

Correct answer: A

32. Which of the following statements describes the characteristics of precision manufactured roller bearings?

A. They have a relatively high power loss due to friction.
B. They are well adapted to variable speed operation.
C. Their lubrication is complicated and requires constant attention.
D. They are not capable of maintaining alignment over long periods of time.

Correct answer: B

33. What leadership style tends to extrinsically motivate employees on a contingent reward system where the focus is on outcomes?

A. Adaptive leadership
B. Transformational leadership
C. Developmental leadership
D. Transactional leadership

Correct answer: D

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

Correct answer: A

35. Which of the following conflict resolution techniques represents a strategy where everyone wins?

A. Compromise by both sides.
B. Voluntary submission of one side.
C. Struggle and victory of one side over the other.
D. Joint problem solving by both sides.

Correct answer: D

36. Of all the individual components of a pre-fire planning package, which component contains information about emergency duty station locations and responsibilities for each crew member by position AND name?

A. Muster list
B. Fire control plan
C. Station bill
D. Pre-fire plan

Correct answer: A

37. An important component of pre-planning for fire emergencies is the fire control plan. What type of drawings are generally furnished in the fire control plan?

A. End elevation views (from bow and stern)
B. Top plan views (for each deck)
C. Side elevation views (from port and starboard)
D. Perspective view (overall)

Correct answer: B

38. According to 46 CFR regulations pertaining to periodic tests and inspections as related to automatic auxiliary boilers, flame safeguard controls must be checked for proper shutdown operation. Which of the following must be checked? 1) Flame failure. 2) Ignition failure. 3) Audible alarm of shutdown. 4) Visual indication of shutdown. 5) Shutdown times.

A. 1,2,3,4
B. 1,2,3,4,5
C. 1,2,3,5
D. 1,2,5

Correct answer: B

39. According to 46 CFR regulations pertaining to tests and inspections as related to automatic auxiliary boilers, the fuel pressure limit control must be checked for proper shutdown operation. What statement is true?

A. To initiate a safety shutdown, the fuel pressure must be raised to a value above what is required for safe combustion. After the safety shutdown, the boiler is required to restart automatically upon restoration of normal pressure.
B. To initiate a safety shutdown, the fuel pressure must be lowered to a value below what is required for safe combustion. After the safety shutdown, the boiler is required to restart automatically upon restoration of normal pressure.
C. To initiate a safety shutdown, the fuel pressure must be raised to a value above what is required for safe combustion. After the safety shutdown, a manual reset must be required before boiler restart.
D. To initiate a safety shutdown, the fuel pressure must be lowered to a value below what is required for safe combustion. After the safety shutdown, a manual reset must be required before boiler restart.

Correct answer: D

40. You are at a shipyard in dry-dock. New anodes for the impressed current system are being installed. The yard workers are installing the capastic layer on the hull. What is the primary function of the capastic epoxy?

A. It protects the anode from impact with foreign objects.
B. It raises the anode off the hull so as to improve the range of the anode current.
C. It prevents shorting of the anode current to the hull and aids in a wider current distribution to the hull.
D. It protects the hull coating from excessive current.

Correct answer: C

41. One is slated to be a senior officer of a new vessel and is to participate in the 'Builder's Sea Trials'. What would you consider your responsibilities when asked to witness scheduled tests?

A. Observe, report any possible deficiencies to the representatives of the regulatory bodies present.
B. Observe, report any possible deficiencies to shipyard representatives and regulatory body representatives.
C. Observe, note any deficiencies you may feel exist and convey them to your vessel owner's representatives.
D. Observe and convey your comments of any possible deficiencies to the shipyard representative conducting the test.

Correct answer: C

42. A vessel you are sailing on as chief engineer had its last dry-docking survey 2 years prior and is not enrolled in an underwater survey program in lieu of dry-docking. When is the next dry-docking due?

A. 1 year
B. 6 months
C. 2 years
D. 3 years

Correct answer: A

43. As it pertains to graphical tools used to visualize task scheduling in project management, what statement best represents the difference between a Gantt chart and a PERT chart?

A. The PERT chart (which is a line diagram) makes it easy to visualize task dependencies and milestones, whereas the Gantt chart (which is a bar chart) makes it easy to visualize progress with respect to an actual calendar.
B. The Gantt chart makes it easy to visualize task dependencies and milestones, whereas the PERT chart makes it easy to visualize progress with respect to an actual calendar. Both are line diagrams.
C. The PERT chart (which is a bar chart) makes it easy to visualize task dependencies and milestones, whereas the Gantt chart (which is a line diagram) makes it easy to visualize progress with respect to an actual calendar.
D. The Gantt chart makes it easy to visualize task dependencies and milestones, whereas the PERT chart makes it easy to visualize progress with respect to an actual calendar. Both are bar charts.

Correct answer: A

44. Who onboard is responsible for identifying all new crew members and ensuring that the safety training and shipboard familiarization training program is implemented according to written policy and procedures?

A. Chief engineer
B. Chief mate
C. Ship's master
D. Designated ship's training officer

Correct answer: C

45. 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 "where a bilge pocket requires pumping out" serve in the objective statement?

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

Correct answer: B

46. Decisions must be made based upon the appropriate response to a given situation. Which of the following situations requiring a decision require a different response each time and are considered unprogrammed decisions?

A. Deciding what to do as a result of a severe accident occurring in the engine room.
B. Deciding what to do for scheduling familiarization training when new engine department personnel report aboard.
C. Deciding what to do upon failure of an engine department watchstander to report for watch on time without permission.
D. Deciding what to do in preparing a maintenance schedule for the upcoming month.

Correct answer: A

47. Which of the following document types would offer the greatest flexibility in carrying out its intent?

A. Regulations
B. Rules
C. Policies
D. Standing orders

Correct answer: C

48. What is meant by the term empowering employees?

A. Gaining employee acceptance and identification based on personal charisma.
B. Granting employee's authority to make key decisions by delegation.
C. Gaining employee compliance under threat of punishment such as pulling overtime.
D. Rewarding employees with positive rewards such as the availability of overtime.

Correct answer: B

49. What type of managerial controls measure actions or activities that have already occurred and implement corrective action if needed?

A. Feedback controls
B. Screening controls
C. Concurrent controls
D. Feedforward controls

Correct answer: A

50. The "hot stove" rule is sometimes used to illustrate the principles of fair, effective discipline. Which of the following principles illustrates the principle of discipline carrying a clear warning?

A. A hot stove always burns you when you touch it.
B. If you touch a hot stove, it burns you right away.
C. A hot stove doesn't care whom it burns.
D. You know what will happen if you touch a hot stove.

Correct answer: D

51. As an engineering department manager in dealing with a grievance presented by an unlicensed engine department crew and union member, what documentation spells out the grievance procedure?

A. Title 29 CFR Department of Labor
B. Collective Bargaining Agreement between Company and Union
C. Title 46 CFR U.S. Coast Guard (Shipping)
D. Shipping Articles of Agreement

Correct answer: B

52. You are installing a new refrigeration system aboard your vessel. The system comes with a 240 psi rupture disk, a safety valve set at 240 psi and a pressure gauge connection and gauge. In accordance with 46 CFR, what is the preferred setup for installing the equipment on the condenser?

A. Pressure gauge closest to the condenser, then safety valve then rupture disk in series after the pressure gauge.
B. Rupture disk closest to the condenser, then pressure gauge then safety valve in series after the rupture disk.
C. The rupture disk, safety valve, and pressure gauge are all piped in parallel.
D. Safety valve closest to the condenser, then pressure gage then rupture disk in series after the safety valve.

Correct answer: D

53. While a vessel is underway in periodically unmanned engine room condition, No.2 SSDG is to be down for repairs for at least the next 24 hours. Since the vessel is nearing US navigable waters, as chief engineer you wish the bridge be immediately informed of the availability of No.2 SSDG to support the electrical power requirements of maneuvering. How would you best insure that the bridge be so informed?

A. The request would be written as a special instruction in the Chief Engineer's night order book.
B. The request would be written as a note posted on the No.2 SSDG panel of the main switchboard.
C. The request would be written as a note posted on the first assistant engineer's stateroom door.
D. The request would be made of the duty engineer orally assuming that the word shall be passed on to his or her relief.

Correct answer: A

54. As a chief engineer, which of the following instructions would be most appropriately entered into the Chief Engineer's night orders due to the non-routine nature of the instruction?

A. The officer in charge of the engineering watch shall notify the chief engineer without delay when No.2 SSDG repairs are complete and the generator has been prepared for testing.
B. All discharges, transfers, or disposal of bilge water must be logged in the oil record book by the officer in charge of the operation.
C. When the engine room is in the periodic unmanned condition, the duty engineer shall be immediately available and on call to attend the machinery spaces.
D. The officer in charge of the engineering watch shall notify the chief engineer without delay when a malfunction occurs which may be such as to endanger the safe operation of the ship.

Correct answer: A

55. In what part of 33CFR can be found the recordkeeping requirements for specific machinery space operations onboard all ships of 400 gross tons or above other than a tanker that must be entered into an Oil Record Book?

A. 33CFR Part 151.15
B. 33CFR Part 151.25
C. 33CFR Part 151.55
D. 33CFR Part 151.2070

Correct answer: B

56. Resonant vibrations, which can cause machinery failure, occur when which of the following conditions happen?

A. The natural frequency of the machinery is the same as the free vibration frequency.
B. The frequency of an external vibration is the same as one of the natural frequencies of the machinery.
C. The machinery is operated at the natural frequency with no external forces in play.
D. A forced frequency is placed on a piece of operating machinery.

Correct answer: B

57. Elevated metal levels present in a recent sample of used diesel engine crankcase lubricating oil is indicative of a condition. What would high silicon levels indicate?

A. The lubricating oil has become contaminated with sand, dust, and dirt.
B. The lubricating oil's detergent additives have become depleted.
C. The lubricating oil has become excessively diluted with fuel oil.
D. The lubricating oil has become contaminated with engine coolant.

Correct answer: A

58. Fuel density is easily checked on board ship to facilitate proper fuel treatment. What is the maximum fuel density at 15oC allowed for proper centrifugation to take place?

A. 791 kg/m3
B. 891 kg/m3
C. 991 kg/m3
D. 1091 kg/m3

Correct answer: C

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

A. Requisitions management module
B. Planned maintenance management module
C. Inventory management module
D. Equipment management module

Correct answer: B

60. Which of the following comprehensive computerized maintenance system database modules would contain data such as part numbers and part stowage locations?

A. Inventory management module
B. Planned maintenance management module
C. Equipment management module
D. Requisitions management module

Correct answer: A

61. What type of maintenance system would be associated with a vibration monitoring analysis system?

A. Predictive maintenance system
B. Corrective maintenance system
C. Planned maintenance system
D. Scheduled maintenance system

Correct answer: A

62. Which of the following maintenance criteria would be the basis of condition-based maintenance?

A. Equipment running hours
B. Vibration analysis
C. Calendar based interval of time
D. Equipment breakdown

Correct answer: B

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

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

Correct answer: B

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

A. carbon monoxide
B. petroleum crystals
C. phosgene gas
D. water vapor

Correct answer: C

65. Which of the projections represents the left side view of the object "X" in the illustration? Illustration GS-0022

A. A
B. B
C. C
D. D

Correct answer: A

66. Which of the listed types of machined 'hole' is represented by "B" as shown in the illustration? Illustration GS-0015

A. Counterbore
B. Countersink
C. Counterdrill
D. Spotface

Correct answer: C

67. 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

Correct answer: D

68. Which of the tolerances listed is allowed on the outside diameter of the bushing illustrated? Illustration GS-0017

A. 0.0005 inch
B. 0.002 inch
C. 0.060 inch
D. 1.6015 inches

Correct answer: A

69. A hydraulic system flow control circuit is shown in the illustration and is known as a _____. Illustration GS-0105

A. bleed-in circuit
B. metered-in circuit
C. bleed-off circuit
D. metered-out circuit

Correct answer: B

70. A hydraulic fluid flow control circuit, controlling linear actuator speed, with the pump operating below maximum operating pressure is known as the _____.

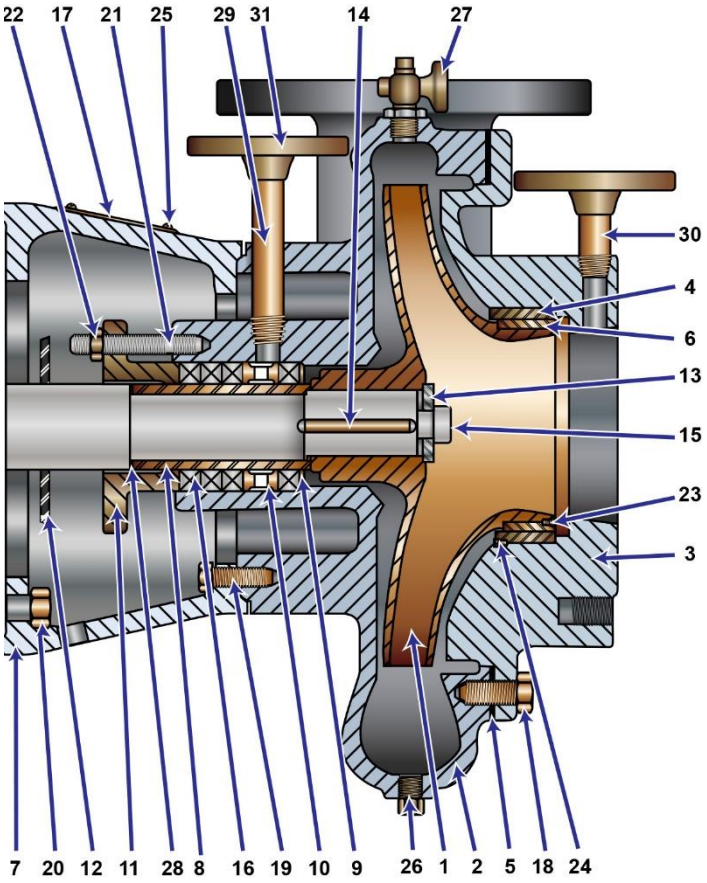
A. bleed-in circuit
B. metered-out circuit
C. metered-in circuit
D. bleed-off circuit

Correct answer: D

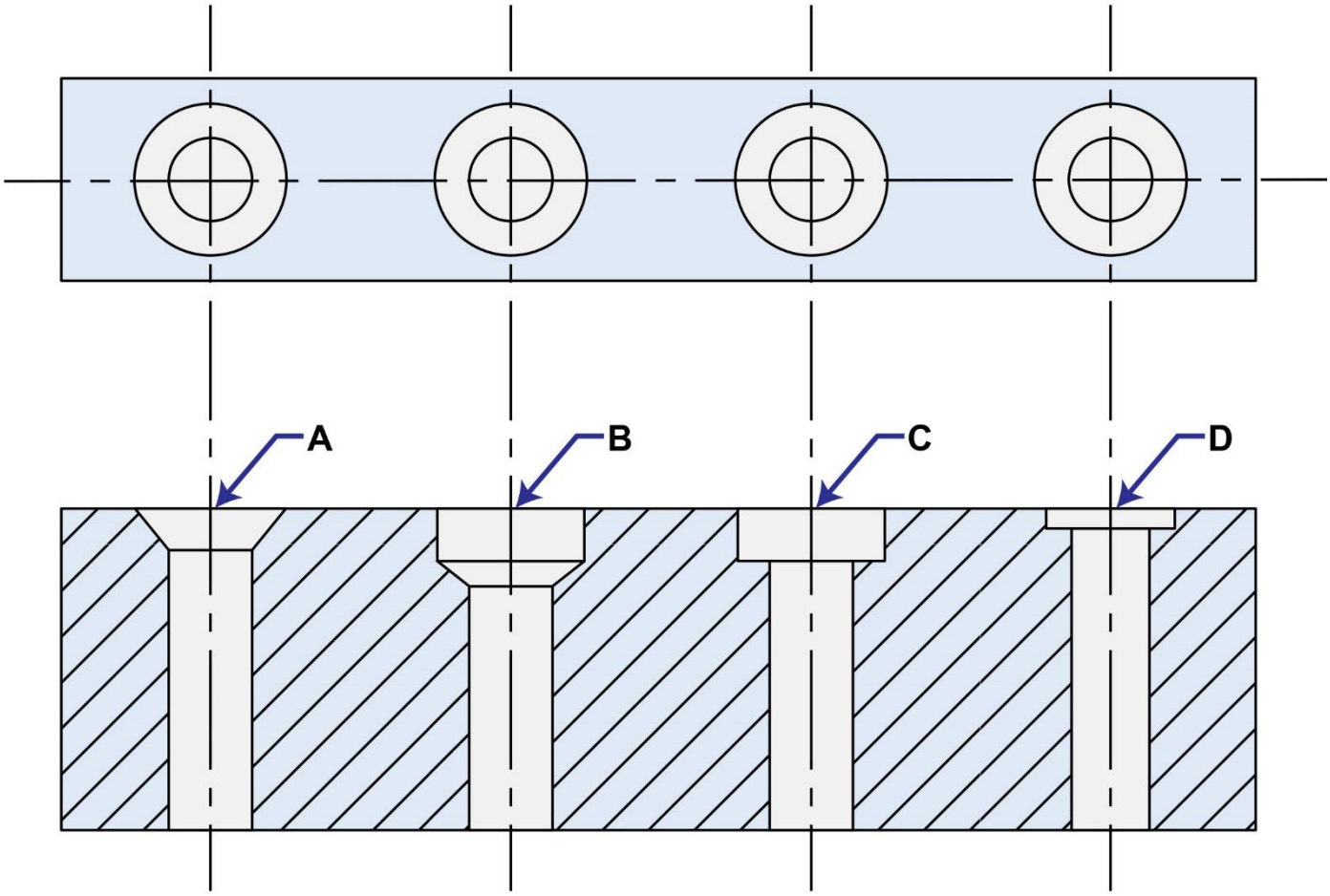
GS-0012

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	PTFE/ Glass Fiber Reinforced	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 ¾ 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	¼ SQ X 2 5/16 TH
15	1	SKT HD Capscrew	SST	½-13 NC X 1¼ LG NYLOCK
16	5	Packing Rings	Plastic Metallic	1¾ X 2 5/8 X 7/16 SQ
17	1	Name Plate	Brass	P/N A-226-00N-0-03
18	8	Hex Head Capscrews	NI-CU Alloy	½-13 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	½-13 NC X 1 1/4 LG
21	2	Stud	SST	3/8-16 NC X 2½ LG
22	2	Hex Nut	Bronze	3/16-16 2
23	3	Setscrew	NI-CU Alloy	10-24 NC X ¼ LG CUP
24	3	Setscrew	NI-CU Alloy	10-24 NC X ¼ LG CUP
25	4	Drive Screw	Brass	6-24 X ¼ LG
26	3	Pipe Plug	Bronze	¼ NPT
27	1	Vent Valve	Bronze	¼ NPT
28	1	O Ring	Buna “N”	1 5/16 ID 1/16 WIDE
29	1	Pipe	70-30 CU-NI	4 11/16 LG ¼ NPT
30	1	Pipe	70-30 CU-NI	3 3/16 LG ¼ NPT
31	1	Flange	Valve Bronze	¼ 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



GS-0015



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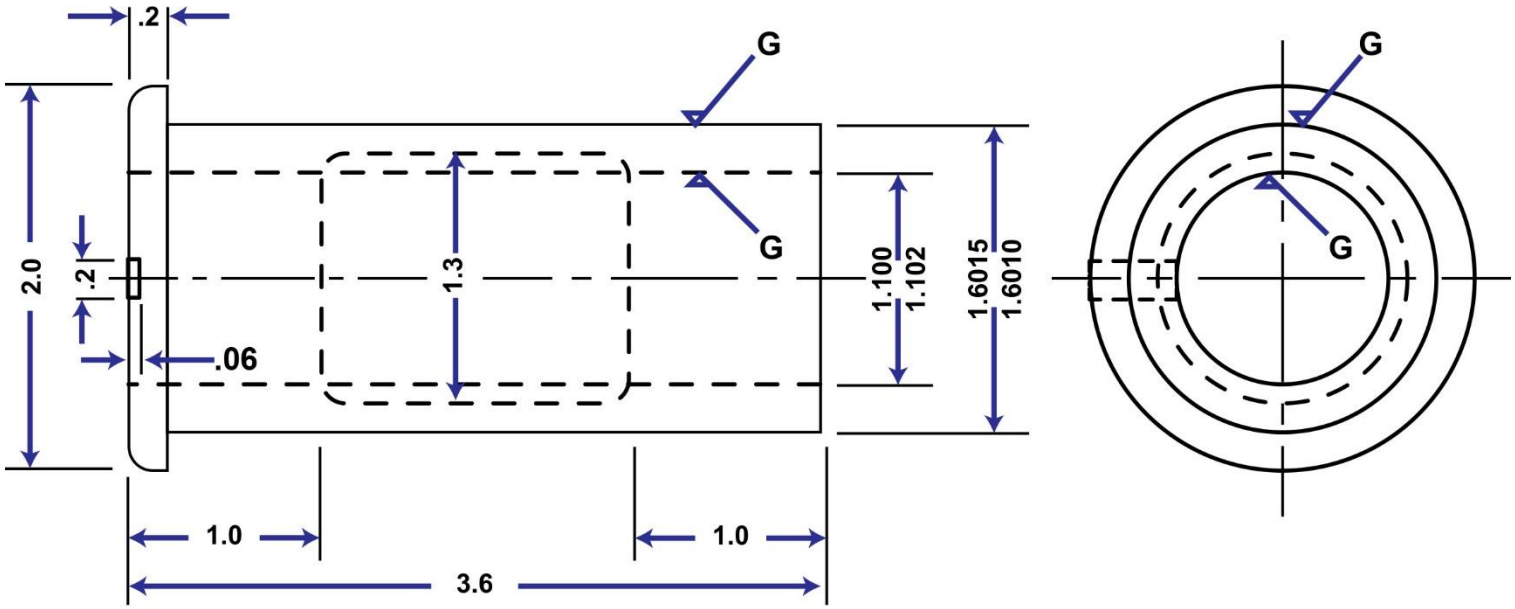
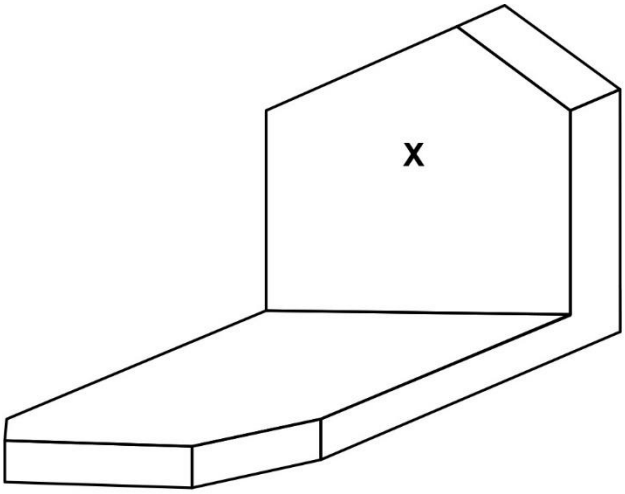
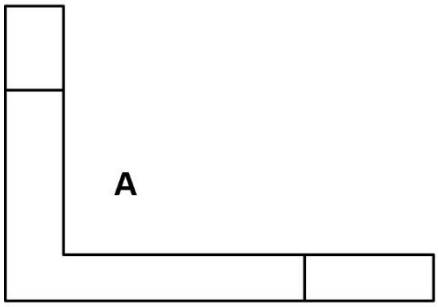
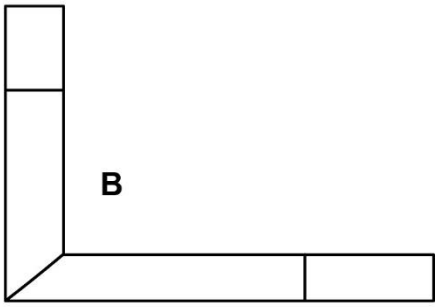


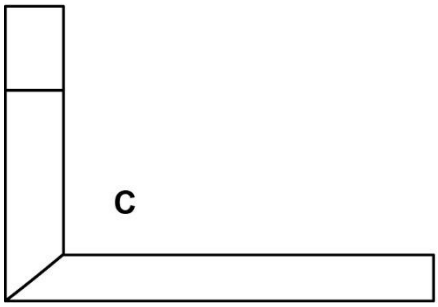
Bushing
AISI 1095 SAE Carbon Steel
Hardened and Tempered
Designated Surfaces Ground
To Specified Tolerances

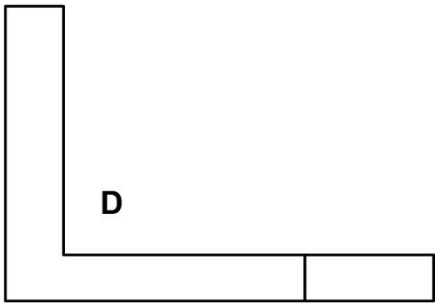
GS-0022



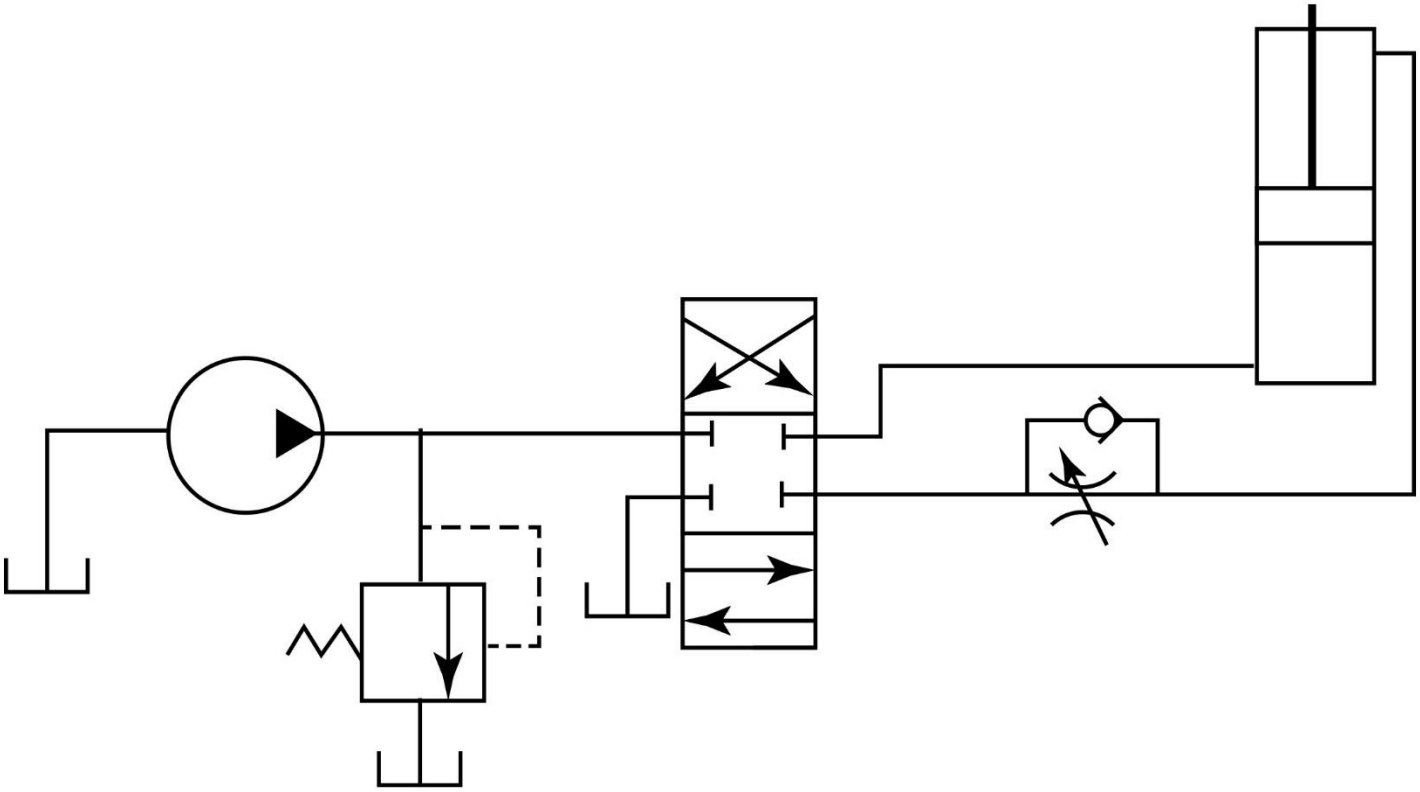








GS-0105



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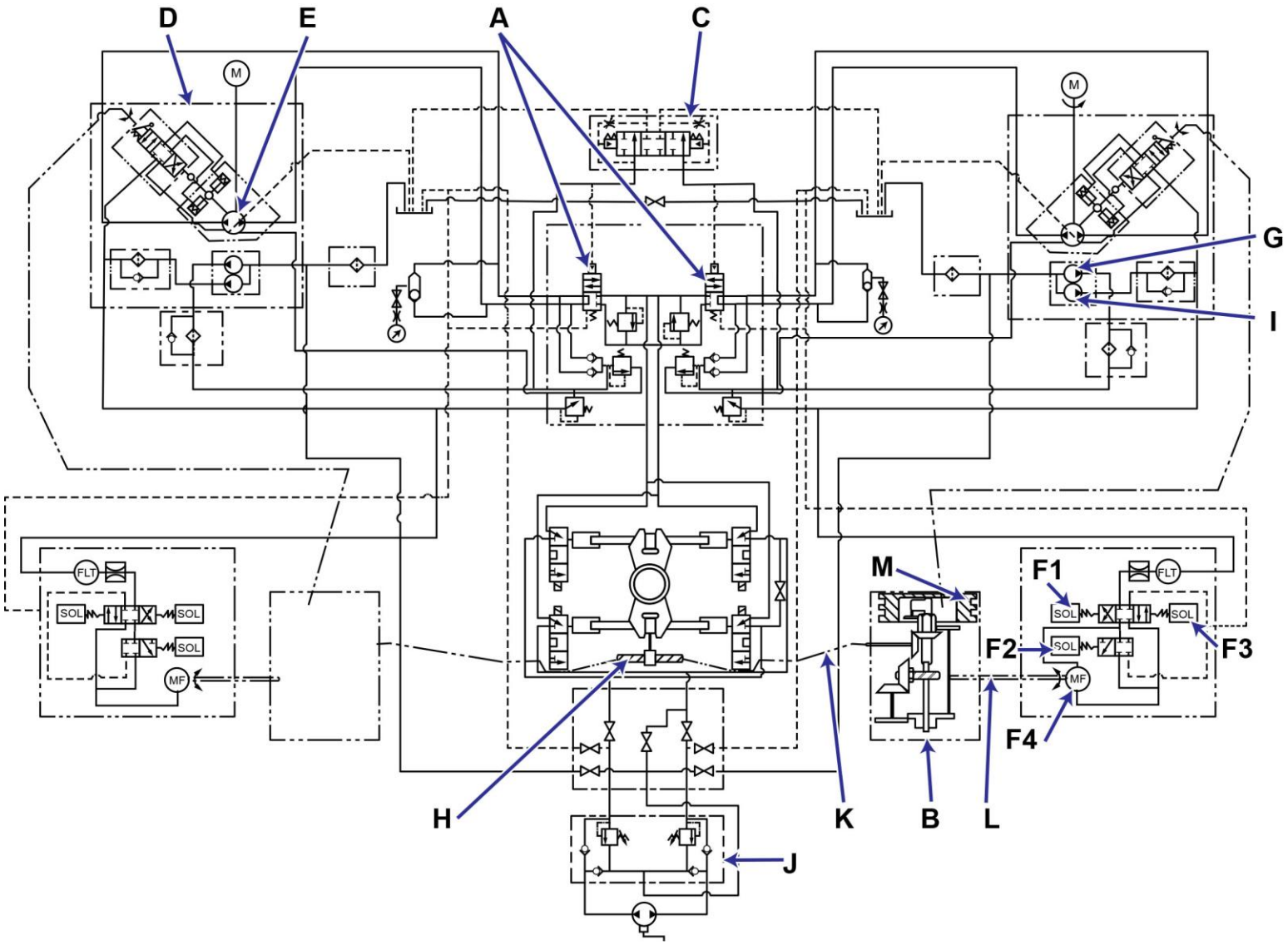

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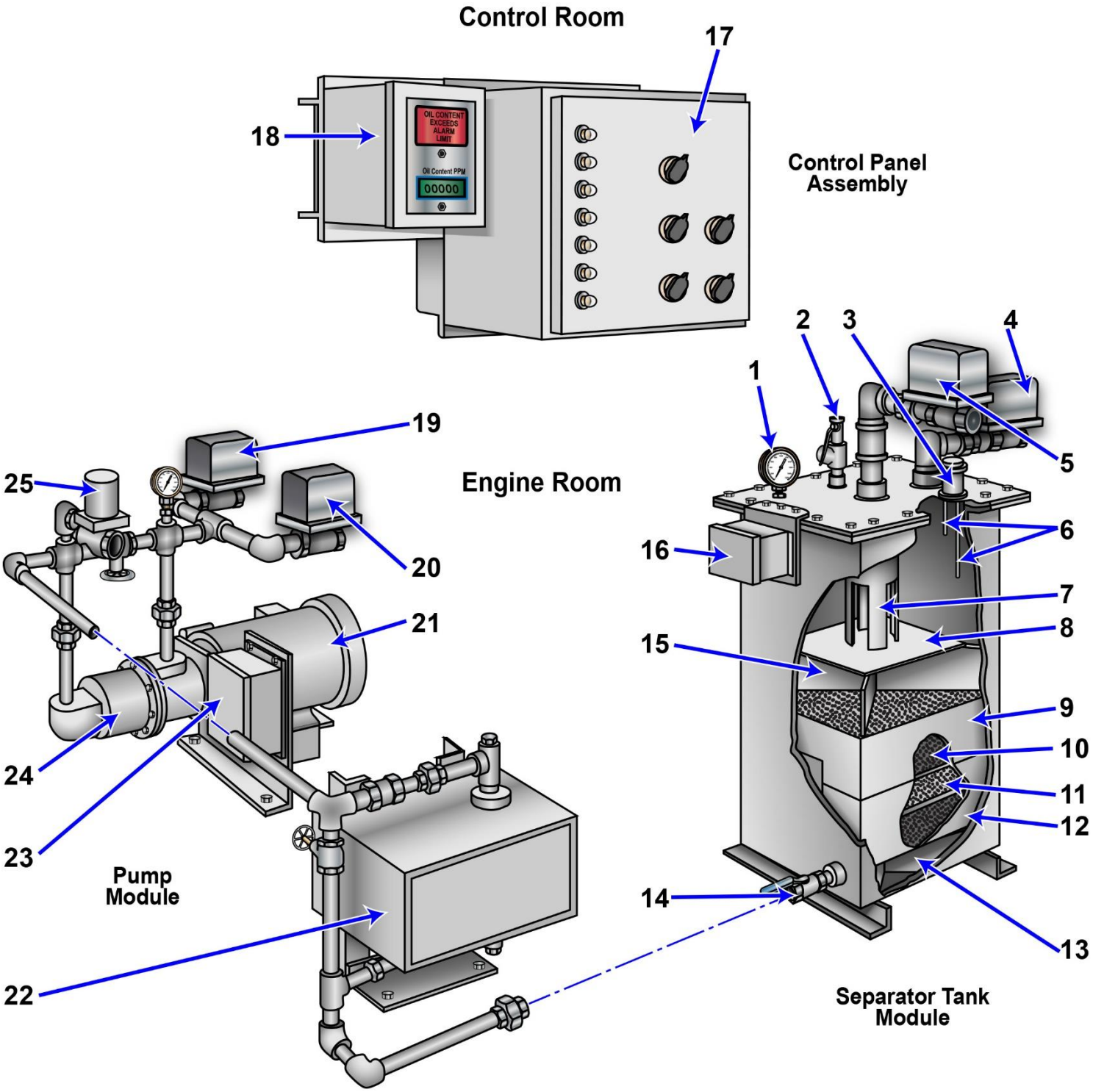
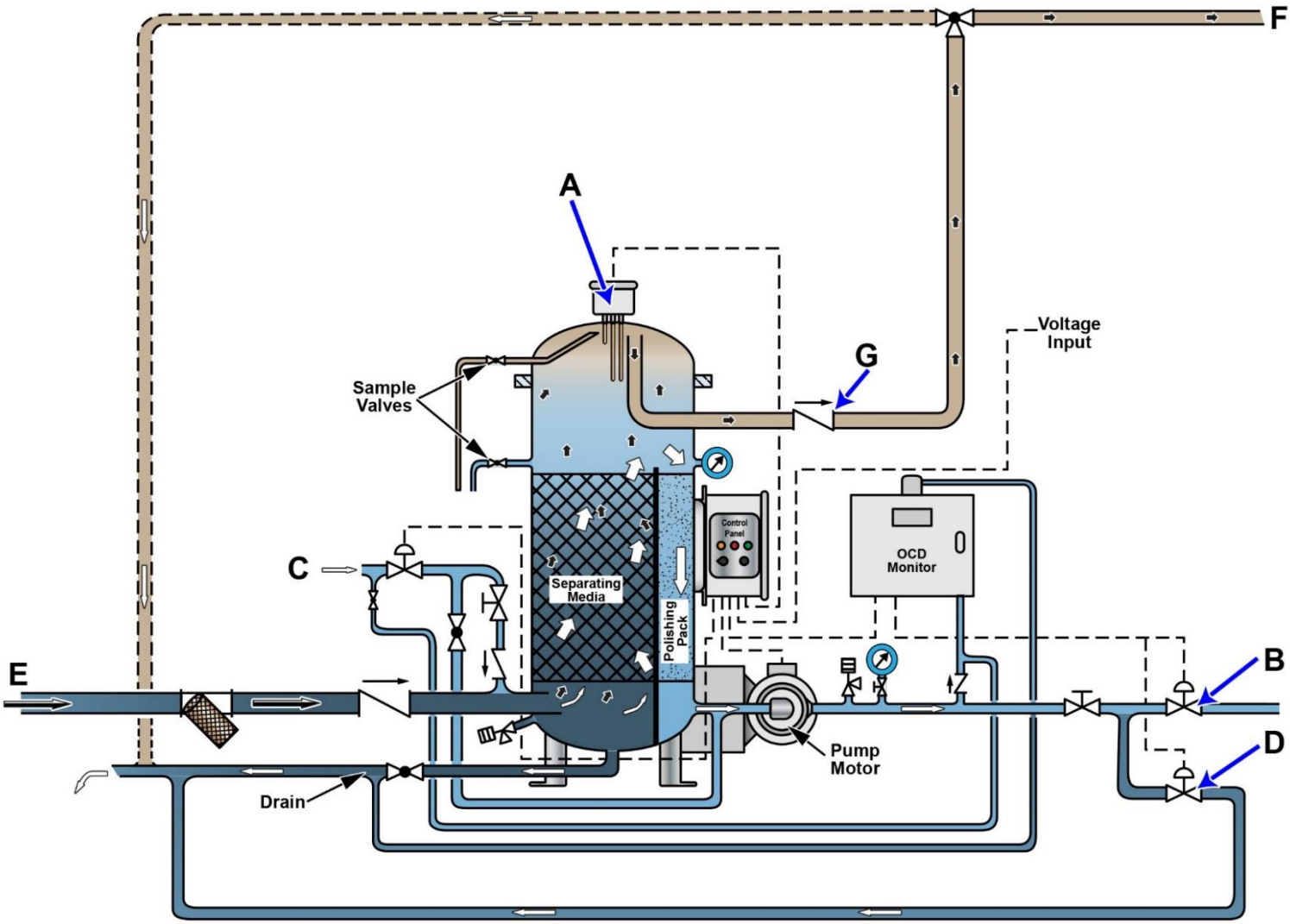
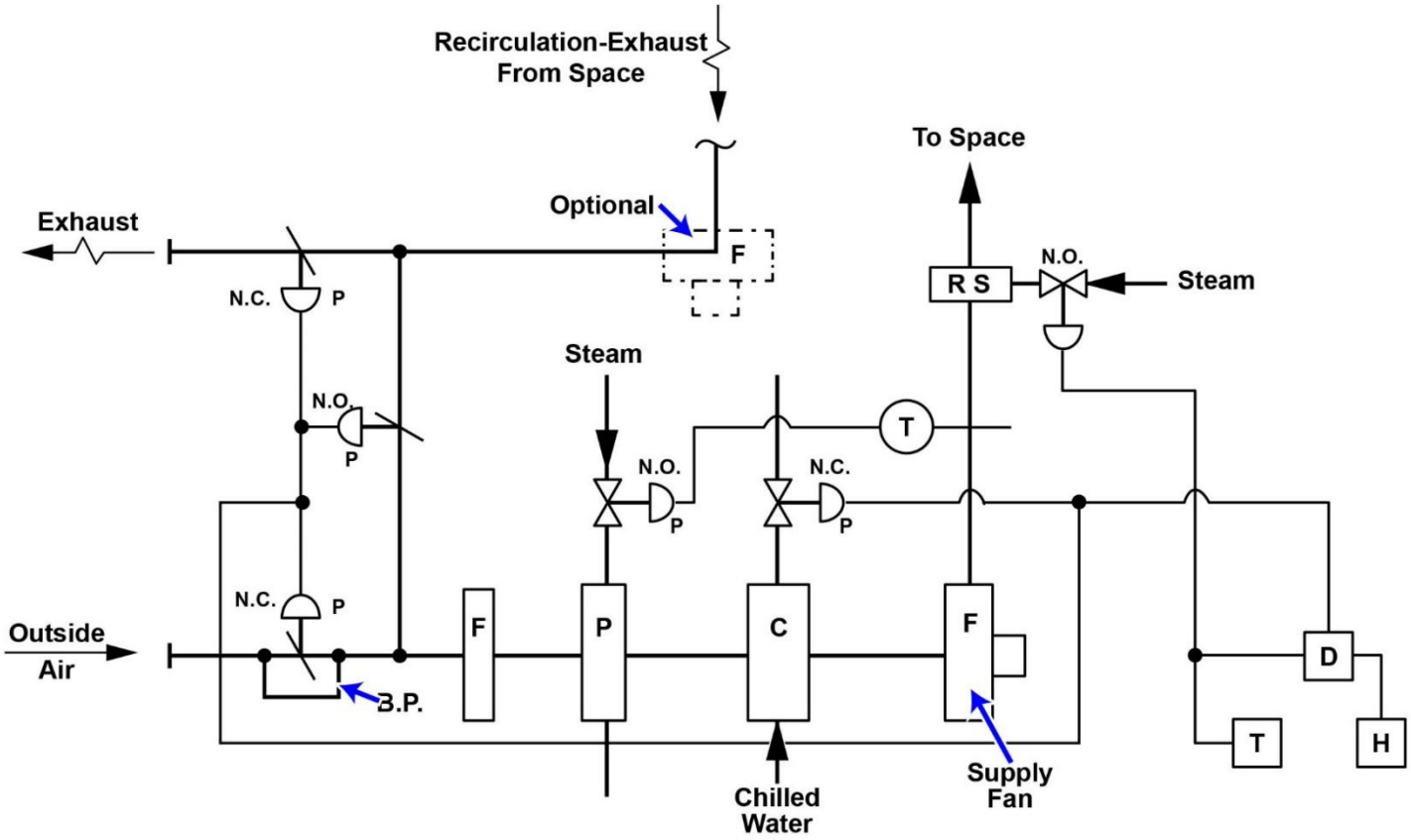


Adapted for testing purposes only from Operator, Unit and Direct Support Maintenance Manual Including Repair Parts and Special Tools List for Oil Water Separator TM 55-1925-285-13 & P

GS-0175

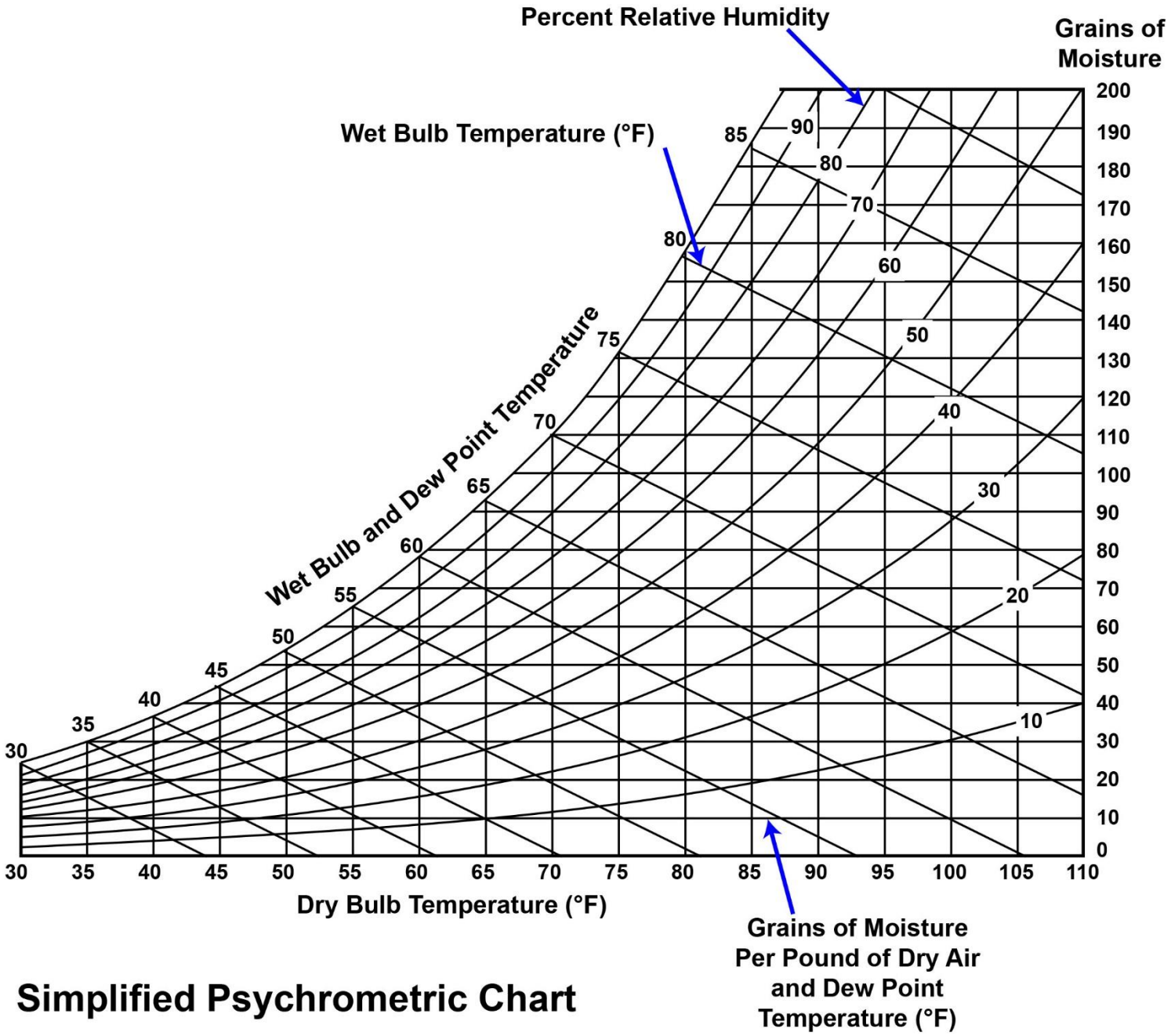


RA-0009



H	Humidistat	T	Room Thermostat
F	Fan	D	Diverting Relay
F	Filter		Pneumatic Damper and Motor
			Pneumatic Relay
C	Cooling Coil	N.C.	Normally Closed (Valve or Damper)
P	Preheater (Steam)	N.O.	Normally Open (Valve or Damper)
		B.P.	Minimum Outside Air Bypass
R S	Reheater (Steam)		
T	Duct Thermostat	P	Positive Positioning Relay

RA-0022



Simplified Psychrometric Chart