

U.S.C.G. Merchant Marine Exam

QMED

Q807 Machinist

(Sample Examination)

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

1. An oxygen indicator will detect _____.
- A. an oxygen deficiency in a space
 - B. concentrations of explosive gas
 - C. the presence of harmful amounts of carbon monoxide
 - D. all of the above

Correct answer: A

2. Which of the following is an example of a solid bearing?
- A. Piston pin bushing
 - B. Turbo-generator turbine bearing
 - C. Spring bearing
 - D. Thrust bearing

Correct answer: A

3. In managing a situation involving multiple injuries, the rescuer must be able to _____.
- A. prescribe treatment for the victim
 - B. accurately diagnose the ailment or injury
 - C. rapidly evaluate the seriousness of obvious injuries
 - D. provide the necessary medication

Correct answer: C

4. When using the rainwater collection tubes on a life raft, the FIRST collection should be _____.
- A. passed around so all can drink
 - B. poured overboard because of salt washed off the canopy
 - C. saved to be used at a later time
 - D. used to boil food

Correct answer: B

5. Following a grounding, what action should be performed prior to the use of the main engines?
- A. Shift to a high sea suction
 - B. Shift to a low fuel oil suction
 - C. Shift to a high fuel oil suction
 - D. Shift to a low sea suction

Correct answer: A

6. The spreading of fire as a result of heat being carried through a vessel's ventilation system, is an example of heat transfer by _____.
- A. convection
 - B. conduction
 - C. windage
 - D. radiation

Correct answer: A

7. Which of the following methods is normally used to lubricate bearings in a small high-speed diesel engine?
- A. Pressure lubrication
 - B. Mechanical lubricators
 - C. Sight feed lubricators
 - D. Splash lubrication

Correct answer: A

8. Where will you find the procedures for the reporting of oil discharge into the water?
- A. The vessel's Certificate of Inspection
 - B. The vessel's Response plan
 - C. The vessel's International Oil Pollution Prevention Certificate
 - D. The vessel's Oil Record Book

Correct answer: B

9. For a lubricating oil, what is the relationship between viscosity and temperature?
- A. As the temperature of a lubricating oil varies in either direction, the viscosity of the lubricating oil remains constant.
 - B. As the temperature of a lubricating oil increases, the viscosity of the lubricating oil decreases.
 - C. As the temperature of a lubricating oil increases, the viscosity of the lubricating oil may increase or decrease, depending upon the lubricant.
 - D. As the temperature of a lubricating oil increases, the viscosity of the lubricating oil also increases.

Correct answer: B

10. Which unit will provide excellent mobility to the wearer in an unsafe atmosphere and provide oxygen to sustain life?
- A. An ammonia gas mask
 - B. A self-contained breathing apparatus
 - C. A fresh air breathing apparatus
 - D. All of the above

Correct answer: B

11. What type of fuel oil as part of an oily-water mixture is most likely to have a density approaching that of water?
- A. Light distillate oil
 - B. Heavy residual fuel oil
 - C. Marine diesel oil
 - D. Distillate/residual fuel oil blends

Correct answer: B

12. Which problems can occur if the brake band lining of a wildcat brake becomes excessively worn?
- A. The anchor will immediately drop.
 - B. The clutch will overheat.
 - C. The driving engine will overspeed.
 - D. The brake's effectiveness will be reduced.

Correct answer: D

13. The main difference between a common lathe dog and a safety lathe dog is that the latter _____.

- A. is more easily centered
- B. has a spring-loaded catch
- C. allows for misaligned center holes
- D. has a headless set screw

Correct answer: D

14. For greater accuracy, some micrometers have a Vernier scale making it possible to read in increments of _____.

- A. five thousandths of an inch
- B. ten thousandths of an inch
- C. twenty-five thousandths of an inch
- D. one fortieth of an inch

Correct answer: B

15. To set the dividers to the proper radius, you should use a _____.

- A. caliper
- B. micrometer
- C. scribing circle
- D. steel rule

Correct answer: D

16. Proper hacksaw cutting is accomplished when pressure is applied only on the _____.

- A. top of the hacksaw frame
- B. forward stroke
- C. front of the hacksaw frame
- D. backward stroke

Correct answer: B

17. Which of the wrenches listed practically eliminates the possibility of it slipping off while tightening a nut or bolt?

- A. Open end wrench
- B. Crescent wrench
- C. Box end wrench
- D. Monkey wrench

Correct answer: C

18. Besides extreme exertion in a hot environment such as an engine room, what causes heat cramps which is pain and spasms associated with the abdomen, leg, and arm muscles?

- A. Taking in excessive amounts of salt in an attempt to restore electrolyte balance
- B. Failure to replace salt lost as a result of profuse sweating
- C. Failure to replace water lost as a result of profuse sweating
- D. Taking in excessive amounts of salt and water in an attempt to rehydrate

Correct answer: B

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

- A. Calcium-based
- B. Lime-based
- C. Aluminum-based
- D. Lithium-based

Correct answer: D

20. In figure 1 of the illustration, fire would spread to compartment "B" by _____. Illustration SF-0013

- A. conduction
- B. impingement
- C. convection
- D. radiation

Correct answer: A

21. How is the emergency bilge suction valve typically used?

- A. when the main condenser becomes fouled, in order to provide additional cooling water circulation
- B. if the bilges become flooded and they cannot be emptied by any other means
- C. to connect the rose box to the independent bilge suction
- D. to inject cleaning additives when the bilges are extremely dirty

Correct answer: B

22. Reheating a hardened component to a temperature lower than the hardening temperature and then cooling it is known as _____.

- A. tempering
- B. annealing
- C. case hardening
- D. low temperature hardening

Correct answer: A

23. If for any reason it is necessary to abandon ship while far at sea, it is important for the crew members to _____.

- A. separate from each other as this will increase the chances of being rescued
- B. get away from the area because sharks will be attracted to the vessel
- C. immediately head for the nearest land
- D. remain together in the area because rescuers will start searching at the vessel's last known position

Correct answer: D

24. Which of the following methods will reduce the possibility of producing an electrical spark?

- A. Placing an insulating flange or a section of non-conducting hose in the hose setup
- B. Using a cargo hose with a built-in electrical bonding wire
- C. Connecting a bonding wire between the shoreside piping and the vessel
- D. All of the above

Correct answer: D

25. The letters "NPT" used in the notation 1/8-27 NPT as shown in the illustration, indicates the _____ . Illustration GS-0010

- A. thread profile
- B. class of finish
- C. class of fit
- D. thread series

Correct answer: D

26. Using a sea anchor with the survival craft will _____ .

- A. reduce your drift rate
- B. keep the survival craft from turning over
- C. aid in recovering the survival craft
- D. increase your visibility

Correct answer: A

27. In machine shop practice, a center gauge is used for checking the angle of _____ .

- A. screw thread pitch
- B. 60° thread cutting tools
- C. screw threads
- D. drill points

Correct answer: B

28. The sorting of accident victims according to the severity of their injuries is called _____ .

- A. surveying
- B. evaluation
- C. triage
- D. prioritizing

Correct answer: C

29. As a firefighting medium, CO₂ can be dangerous under certain conditions as it can cause _____ .

- A. undulation
- B. freeze burns and blistering
- C. hallucinations
- D. carbon monoxide poisoning

Correct answer: B

30. A fire is considered "under control" when _____ .

- A. the fixed systems are activated
- B. all hands are at their fire stations
- C. all firefighting equipment is at the scene
- D. the fire is contained and no longer spreading

Correct answer: D

31. Span gas is used aboard liquefied natural gas carriers to _____.

- A. odorize the cargo
- B. detect leaks in cargo piping
- C. calibrate the gas leak detectors
- D. inert the barrier spaces

Correct answer: C

32. A pump shaft that is bent or distorted should normally be _____.

- A. reconditioned by metalizing and machining
- B. repaired by a suitable welding process
- C. replaced with a satisfactory spare
- D. straightened by applying heat and torsion

Correct answer: C

33. The most effective first aid treatment for chemical burns is to immediately _____.

- A. apply an ice pack to the burned area
- B. apply ointment to burned area
- C. flood the affected area with water
- D. wrap the burn with sterile dressing

Correct answer: C

34. Copper coil tubing is best cut with a _____.

- A. tubing cutter
- B. hand hacksaw
- C. flare cutter
- D. pipe cutter

Correct answer: A

35. When replacing ball bearings on an electric motor shaft, you should _____.

- A. tap the outer race with a mallet
- B. apply even pressure to the outer race
- C. apply pressure evenly to both the inner and outer races
- D. apply even force to the inner race

Correct answer: D

36. To obtain a 1/2 inch per foot taper on an 18 inch workpiece, the tailstock of the lathe must be set over _____.

- A. 3/8 inch
- B. 1/2 inch
- C. 3/4 inch
- D. 7/8 inch

Correct answer: A

37. Which figure shown in the illustration, is the nut lock improperly used? Illustration GS-0156

- A. "A"
- B. "B"
- C. "C" and "D"
- D. "C" and "E"

Correct answer: D

38. What type of direct reading thermometer works on the principle of thermal volumetric expansion of a liquid as the temperature rises and features a linear scale?

- A. Bourdon tube thermometer
- B. Bimetallic thermometer
- C. Thermocouple pyrometer
- D. Liquid-in-glass thermometer

Correct answer: D

39. Before drilling a hole in a piece of metal, the location of the hole center should be _____.

- A. scribed
- B. blued
- C. marked with chalk
- D. center punched

Correct answer: D

40. Which of the following statements is true concerning the valve shown in the illustration? Illustration GS-0047

- A. The valve only requires one turn of the handwheel to fully open
- B. The valve seats cannot be replaced or repaired
- C. The valve is normally used to throttle the flow of liquid
- D. The valve is a non-rising stem design

Correct answer: D

41. While fires are lit in a boiler, in terms of uptake dampers and air register doors, what conditions must be met?

- A. All uptake dampers should be locked open, all air register doors on lit burners should be wide open or throttled, and all air register doors on idle burners should be closed.
- B. All uptake dampers should be locked open, all air register doors on lit burners should be throttled according to the firing rate, and all air register doors on idle burners should be open.
- C. All uptake dampers should be throttled according to the firing rate, all air register doors on lit burners should be wide open, and all air register doors on idle burners should be closed.
- D. All uptake dampers should be throttled according to the firing rate, all air register doors on lit burners should be throttled according to the firing rate, and all air register doors on idle burners should be closed.

Correct answer: A

42. Needle nosed pliers are best used to _____.

- A. cut recessed cotter pins
- B. grasp items positioned in tight places
- C. tighten electrical wire clamps
- D. strip insulation from electric wire or cable

Correct answer: B

43. If you are machining work held between lathe centers, and the lathe centers begin to squeal, you should first _____.

- A. lubricate the centers
- B. stop the lathe
- C. change the cutting bit
- D. run the lathe at a slower speed

Correct answer: B

44. If you wish to initiate a station-to-station call over a sound-powered telephone circuit, what is the correct procedure?

- A. Select the station you wish to call with the rotary selector switch, turn the hand-crank a few revolutions, and listen for your party to answer the call.
- B. Select the station you are calling from with the rotary selector switch, turn the hand-crank a few revolutions, depress the button on the handset, and listen for your party to answer the call.
- C. Select the station you wish to call with the rotary selector switch, depress the button on the handset, and listen for your party to answer the call.
- D. Select the station you wish to call with the rotary selector switch, turn the hand-crank a few revolutions, depress the button on the handset, and listen for your party to answer the call.

Correct answer: D

45. Under what conditions is a DANGER tag installed at equipment control stations in preparation for performing maintenance or repairs?

- A. When operation of the equipment will endanger personnel ONLY
- B. When operation of the equipment will endanger personnel OR harm the equipment
- C. When operation of the equipment will harm the equipment ONLY
- D. When operation of the equipment requires unusual caution to be exercised

Correct answer: B

46. When applying paint with a brush, which of the following pairs of techniques are recommended?

- A. Brushes should be dipped into the paint to cover the entire length of the bristles, and the paint should be applied in parallel strokes only.
- B. Brushes should be dipped into the paint to cover the entire length of the bristles, and the paint should be applied in cross strokes only.
- C. Brushes should be dipped into the paint to cover only the ends of the bristles, and the paint should be applied in parallel strokes only.
- D. Brushes should be dipped into the paint to cover only the ends of the bristles, and the paint should be applied in cross strokes only.

Correct answer: C

47. When re-entering an engine room that has been flooded with CO₂, the investigating team should initially _____.
- A. attempt to operate propulsion machinery
 - B. leave the access door partially open
 - C. enter from the highest level with breathing apparatus
 - D. enter from the lowest possible level

Correct answer: C

48. Antiseptics are used principally to _____.
- A. reduce inflammation
 - B. prevent infection
 - C. increase blood circulation
 - D. promote healing

Correct answer: B

49. Suppose a remote valve operator is fitted with a gearbox. What is the purpose of the gearbox?
- A. The gearbox is strictly used to change the orientation of the handwheel to the valve stem. The gearbox is never used to reduce the turning effort.
 - B. The gearbox may be used to change the orientation of the handwheel to the valve stem, or it may be used to reduce the turning effort, but NEVER both.
 - C. The gearbox is strictly used to reduce the turning effort. The gearbox is never used to change the orientation of the handwheel to the valve stem.
 - D. The gearbox may be used to change the orientation of the handwheel to the valve stem, or it may be used to reduce the turning effort, OR both.

Correct answer: D

50. The advantage of using a dry chemical fire extinguishing agent is _____.
- A. permanent extinguishment regardless of the reignition sources
 - B. its excellent cooling ability
 - C. its good stability and nontoxicity
 - D. all of the above

Correct answer: C

51. When internal threading for bolts, where the work permits the tap to be run entirely through, you can begin and end the tapping of the hole by using a _____.
- A. taper tap
 - B. plug tap
 - C. finishing tap
 - D. bottoming tap

Correct answer: A

52. If a micrometer were opened to a distance of 0.0001 inch, you would say the reading is _____.
- A. one ten thousandth of an inch
 - B. ten one thousandths of an inch
 - C. one millionth of an inch
 - D. ten millionths of an inch

Correct answer: A

53. The component shown in the illustration would be installed in which of the following types of fire detection systems? Illustration SF-0004
- A. Line type pneumatic
 - B. Fixed temperature
 - C. Combined fixed temperature and rate-of-rise
 - D. Rate-of-rise

Correct answer: B

54. Back injuries are one of the most common injuries that result in lost work time. What is the proper technique for lifting an object?
- A. Bend the knees and grasp the object firmly. While keeping the back straight, lift the object by straightening the legs. Move the object while standing erect and keep object close to the body.
 - B. Bend over and grasp the object loosely. While keeping the legs straight, lift the object by straightening the back. Move the object while standing erect and keep object close to the body.
 - C. Bend over and grasp the object firmly. While keeping the legs straight, lift the object by straightening the back. Move the object while standing erect and keep object away from the body.
 - D. Bend the knees and grasp the object loosely. While keeping the back straight, lift the object by straightening the legs. Move the object while standing erect and keep object away from the body.

Correct answer: A

55. During oil transfer operations, who would be responsible to guarantee that the posted transfer procedures are being followed?
- A. The senior able seaman
 - B. The oiler
 - C. The designated person in charge
 - D. The tankerman

Correct answer: C

56. The minimum length of dimension "C" shown in the illustration is _____. Illustration GS-0014
- A. $27/32$ inch
 - B. $11/16$ inch
 - C. $21/32$ inch
 - D. $33/64$ inch

Correct answer: D

57. When fighting an oil or gasoline fire, which of the listed fire extinguishing agents should NEVER be sprayed directly into the fire?

- A. High velocity fog
- B. Low velocity fog
- C. Dry chemical
- D. Steam smothering

Correct answer: C

58. Which of the following symptoms may be observed in a victim of cardiac arrest as a result of electric shock?

- A. respiration is weak or has stopped
- B. flushed face
- C. weak pulse at wrist or neck
- D. all of the above symptoms

Correct answer: A

59. Which of the following extinguishing effects for dry chemical extinguishing agents is considered the most prevalent?

- A. cooling the fuel below ignition temperature
- B. removing the fuel by absorbing the heated vapors
- C. smothering and removing the oxygen from the fuel
- D. breaking up the molecular chain reaction

Correct answer: D

60. The tool used to prepare copper tubing for the installation of fittings is called a _____.

- A. flaring tool
- B. stretcher
- C. swaging tool
- D. spreader

Correct answer: A

61. To operate a carbon dioxide extinguisher having the type of head shown in the illustration, you would _____ . Illustration SF-0008

- A. pull pin, open valve, and pull up on release lever
- B. open valve, pull pin, and pull up on release lever
- C. open valve and pull pin
- D. pull pin and open valve

Correct answer: D

62. To drill a hole in round stock, perpendicular to the axis of the piece, the stock should be mounted in a _____.

- A. clamp
- B. morse sleeve
- C. collet
- D. V-block

Correct answer: D

63. Low velocity water fog is used in firefighting EXCEPT?

- A. smothering agent
- B. barrier against radiant heat
- C. cooling agent
- D. creating a coarse water spray

Correct answer: D

64. Which of the following direct reading gauge types is the most popular type used for local display of pressures in the engine room?

- A. Bellows type
- B. Helix or spiral tube type
- C. Diaphragm type
- D. Bourdon tube type

Correct answer: D

65. A coolant is usually used when cutting metal in a power hacksaw to prevent the _____.

- A. blade from bending
- B. blade from overheating
- C. cut from clogging
- D. blade from catching on the work piece

Correct answer: B

66. According to the temperature/enthalpy diagram for water at atmospheric pressure, if the substance is undergoing a heat loss, what heat transfer process is represented by the region associated with "4"?
Illustration SG-0001

- A. Water absorbing its specific heat and experiencing a rise in temperature
- B. Steam losing its specific heat and experiencing a drop in temperature
- C. Water absorbing its latent heat of vaporization and changing its physical state to become steam
- D. Steam losing its latent heat of condensation and changing its physical state to become water

Correct answer: D

67. The lengthening of a crack formed in the shell plating of a ship may be prevented by _____.

- A. chipping out and slot welding the entire crack
- B. welding brackets across both ends of the crack
- C. drilling a hole at each end of the crack
- D. cutting a square notch at each end of the crack

Correct answer: C

68. When the compressed air reservoir is placed in line with an air compressor and is used as an aftercooler, what must be done with the reservoir?

- A. It must be fitted with a manhole
- B. It must be frequently drained of condensed water
- C. It must be fitted with a sight glass
- D. It must be fitted with a moisture trap at the inlet

Correct answer: B

69. Which of the following voltage testers would be associated with high quality, be safe to use, and minimize the electric shock hazard?

- A. a voltage tester with a high input impedance and a lower voltage rating than any expected measured voltages
- B. a voltage tester with a high input impedance and a voltage rating higher than any expected measured voltages
- C. a voltage tester with a low input impedance and a lower voltage rating than any expected measured voltages
- D. a voltage tester with a low input impedance and a higher voltage rating than any expected measured voltages

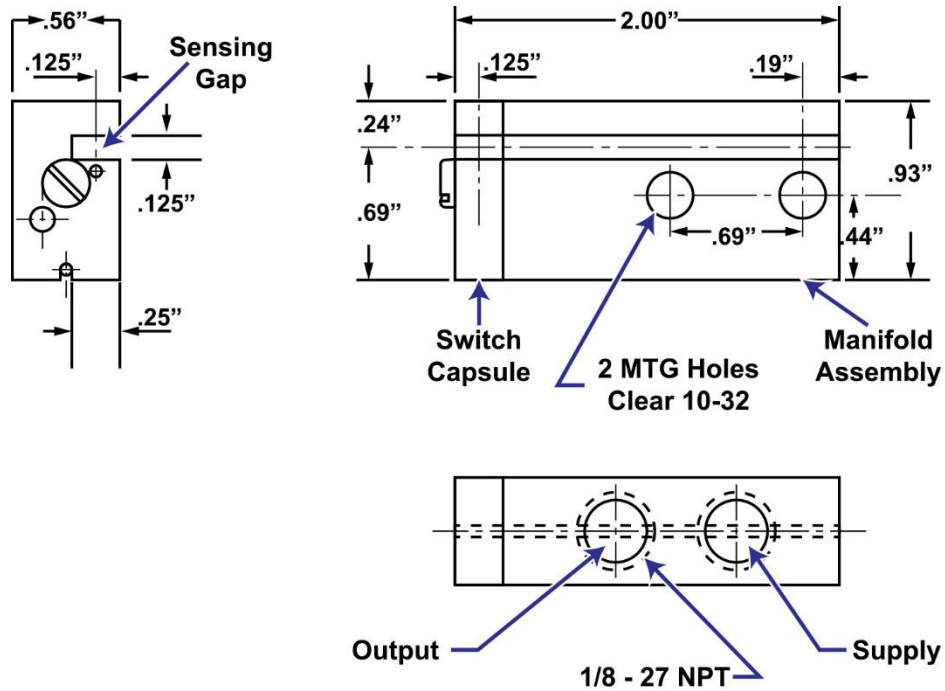
Correct answer: B

70. If a person gets something in his eye and you observe that it is not embedded, you can _____.

- A. remove it with a match or toothpick
- B. remove it with a piece of dry sterilized cotton rag
- C. remove it with a moist cotton-tipped applicator
- D. get him to rub his eye until the object is gone

Correct answer: C

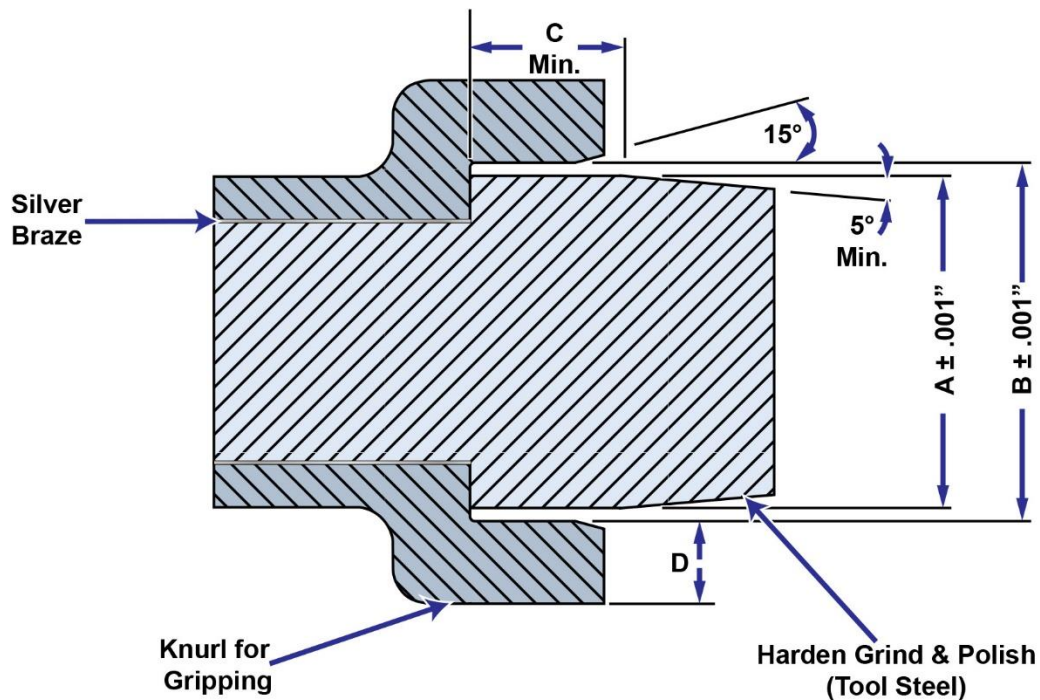
GS-0010



Left Hand Limit Sensor Assembly

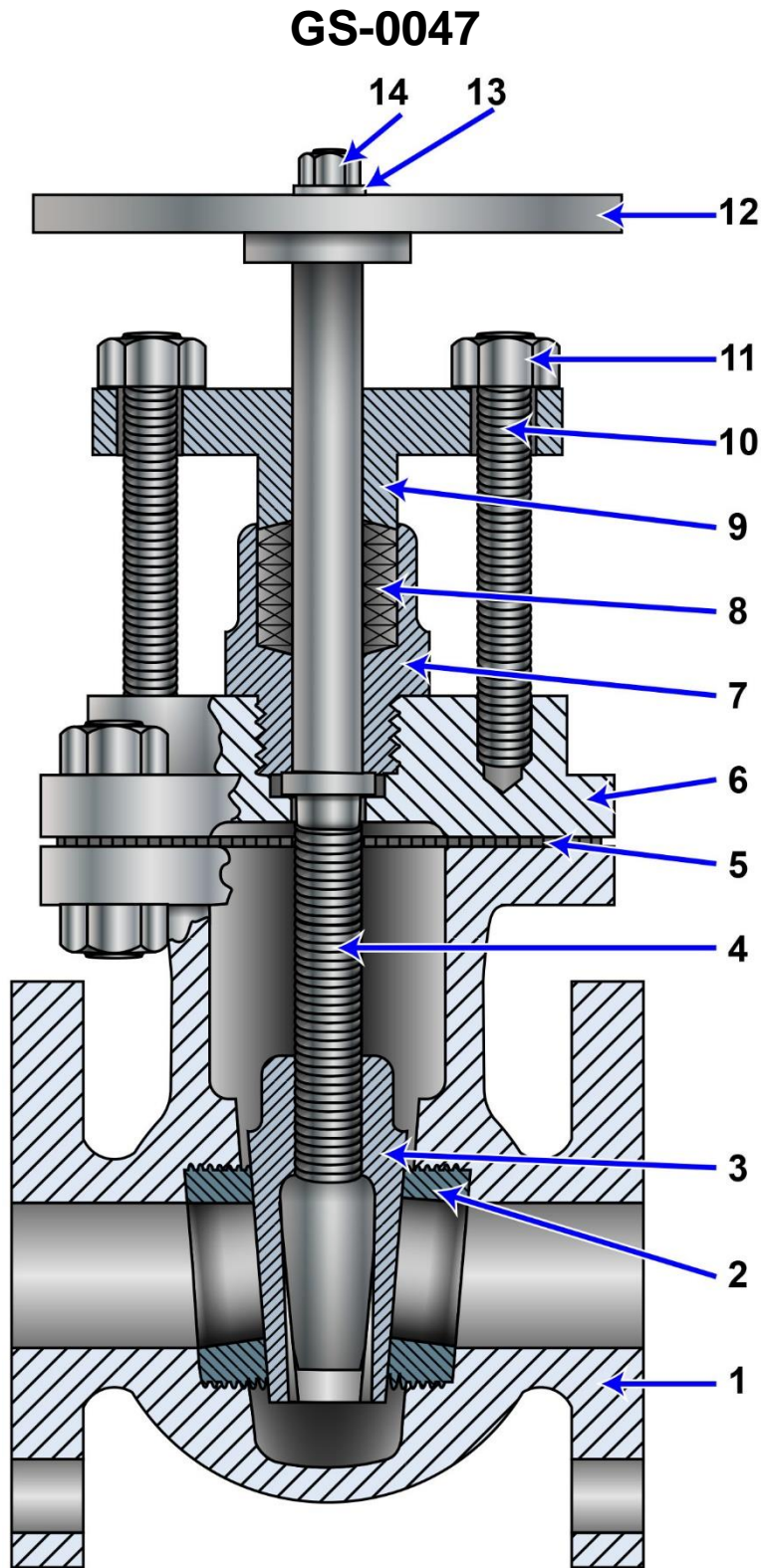
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GS-0014



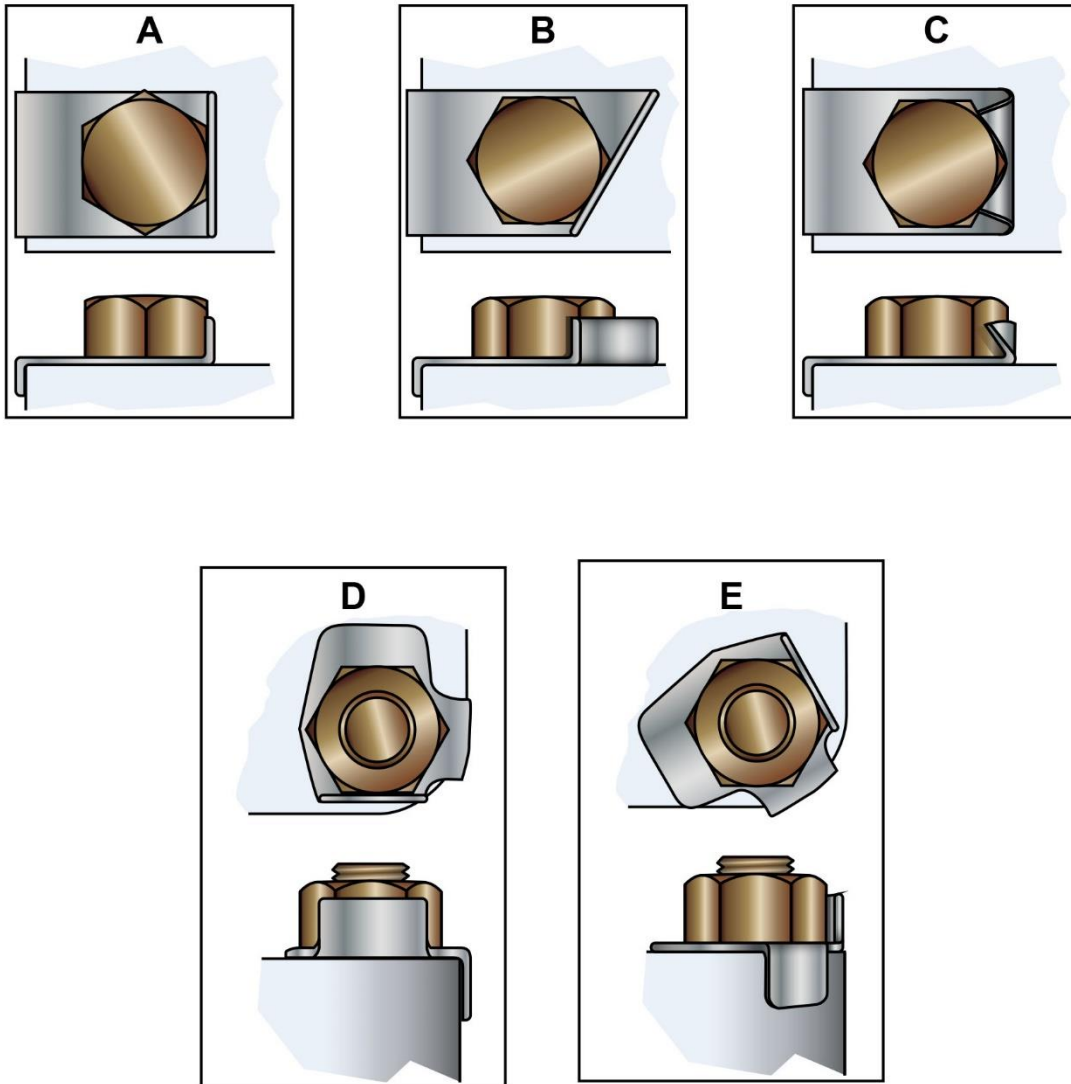
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3/8	.535	.675	9/16	1/4
1/2	.700	.840	5/8	1/4
3/4	.910	1.050	21/32	1/4
1	1.175	1.315	11/16	3/8
1 1/4	1.520	1.660	3/4	3/8
1 1/2	1.760	1.900	7/8	7/16
2	2.235	2.375	27/32	1/2

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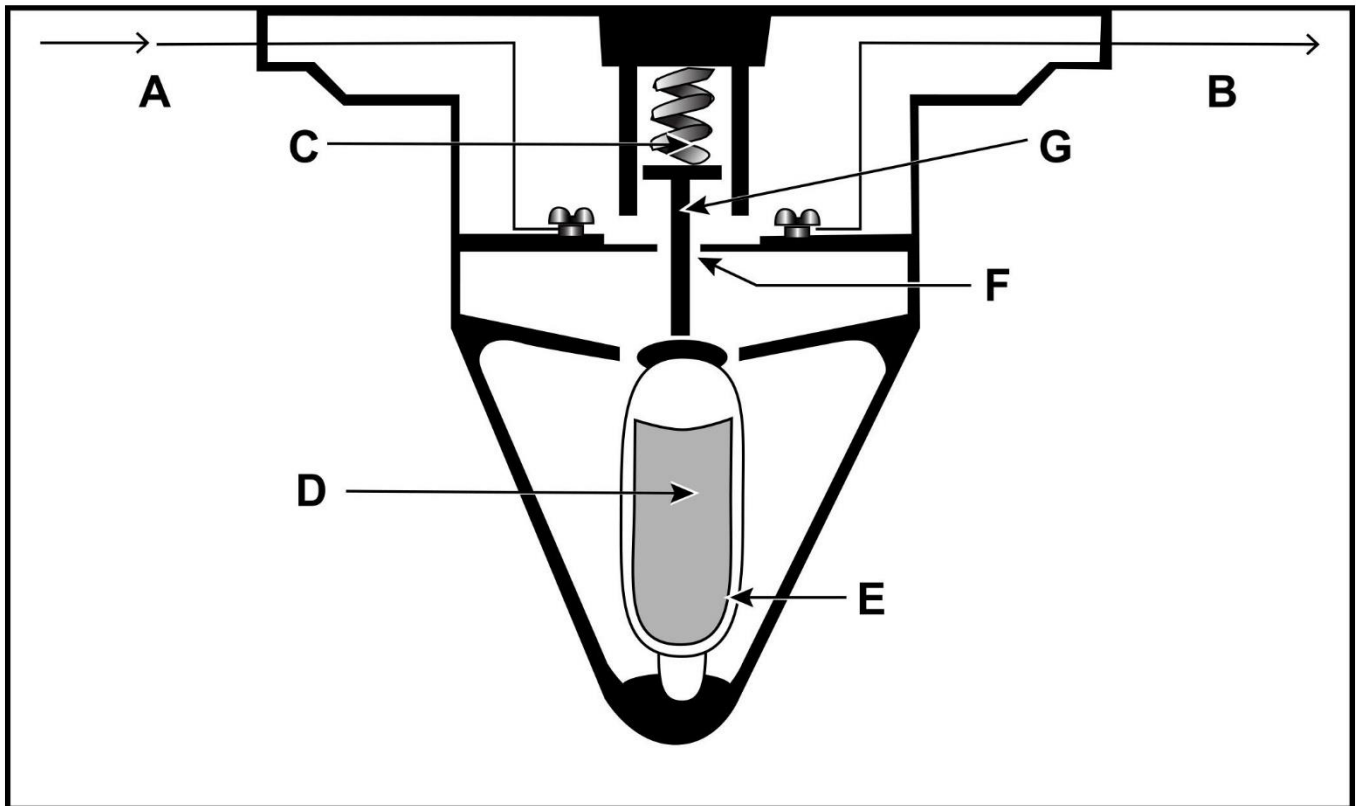
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GS-0156



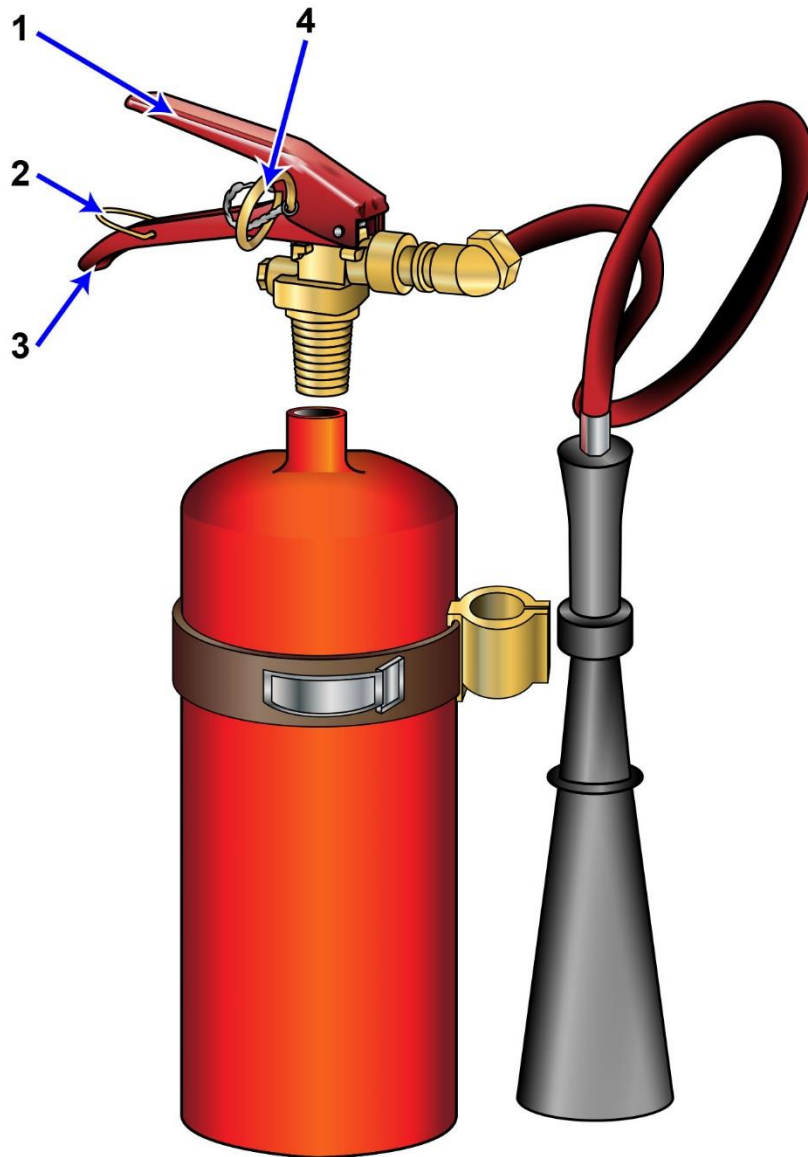
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SF-0013

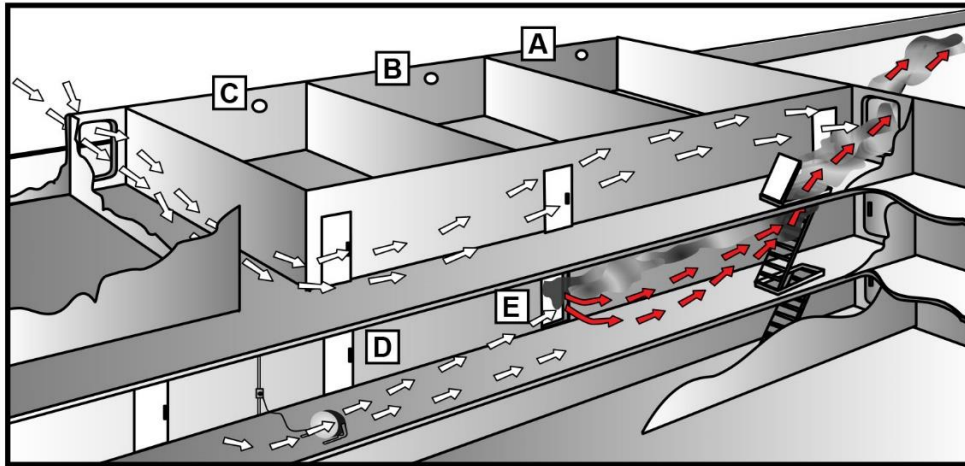


Figure 1

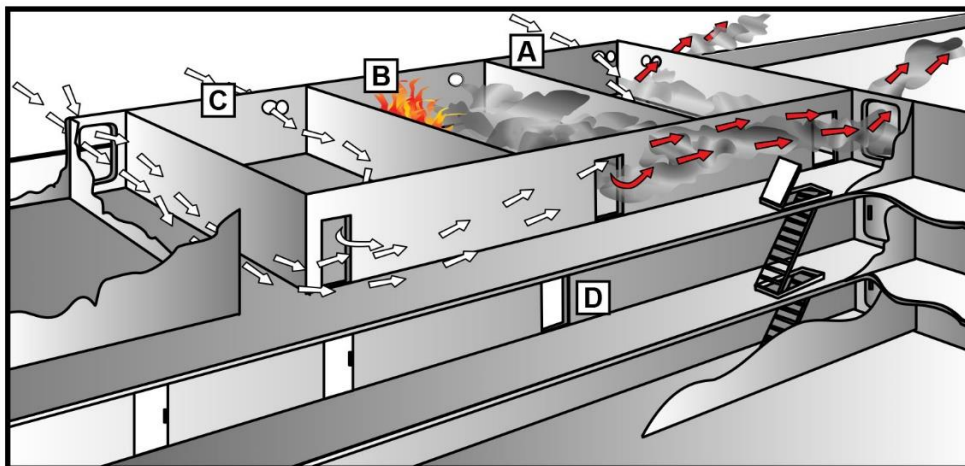


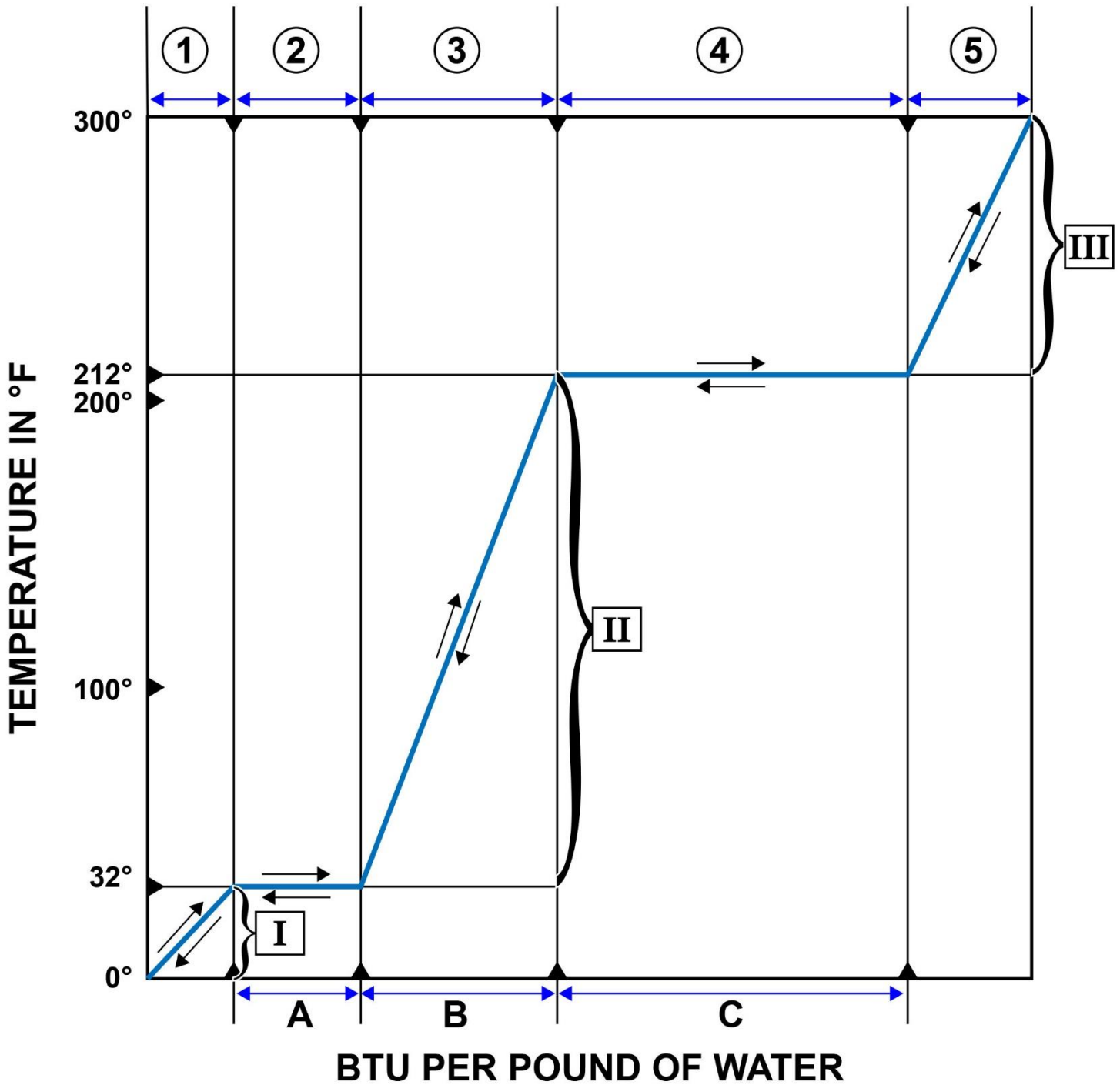
Figure 2



Figure 3

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