

U.S.C.G. Merchant Marine Exam
Master/Chief Mate of Unlimited Tonnage
Q103 Deck Safety
(Sample Examination)

Choose the best answer to the following Multiple Choice Questions:

1. Which of the following terms defines the minimum temperature required to ignite gas or vapor without a spark or flame being present?
- (A) Lower explosive limit
 - (B) Fire point
 - (C) Flash point
 - (D) Autoignition temperature

If choice D is selected set score to 1.

2. If a rescuer finds an electrical burn victim in the vicinity of live electrical equipment or wiring, what would be the first action to take?
- (A) Get assistance to shut down electrical power in the area
 - (B) Apply ointment to the burned areas on the patient
 - (C) Flush water over any burned area of the patient
 - (D) Remove the patient from the vicinity of the live electrical equipment or wiring

If choice A is selected set score to 1.

3. The vessel shown in illustration D025DG has broken down and you are going to take her in tow. The wind is coming from her starboard beam. You are making more leeway than she. Where should you position your vessel when you start running lines?
- (A) A
 - (B) B
 - (C) C
 - (D) D

If choice A is selected set score to 1.

4. Which is the most serious effect of air trapped in a non-treated diesel engine jacket water cooling system?
- (A) It can form pockets which block the flow of coolant through the system
 - (B) The air causes corrosion
 - (C) It reduces the ability of the system to cool the engine
 - (D) It accelerates formation of metal plating

If choice B is selected set score to 1.

5. Of the following, which is the most important consideration for a tank vessel?

- (A) GM
- (B) The vertical center of gravity
- (C) The longitudinal center of gravity
- (D) The stress on the hull

If choice D is selected set score to 1.

6. When a ship is abandoned and there are several liferafts in the water, which task must be done to aid in your rescue?

- (A) Separate the rafts by drifting away to increase chances of detection
- (B) Transfer all the injured to one raft
- (C) Transfer all supplies to one raft and post a guard
- (D) Secure the rafts together to keep them from drifting apart

If choice D is selected set score to 1.

7. In general, how often are sanitary inspections of passenger and crew quarters made aboard passenger vessels in river service?

- (A) Once each day
- (B) Once each week
- (C) Once each month
- (D) Once each trip

If choice C is selected set score to 1.

8. In small angle stability theory, the metacenter is located at the intersection of the inclined vertical centerline and a vertical line through which point?

- (A) F
- (B) G
- (C) B
- (D) K

If choice C is selected set score to 1.

9. You are picking up an unconscious person that has fallen overboard in a fresh breeze. For safety reasons how should a small craft approach?

- (A) With the victim to leeward
- (B) With the wind on your port side
- (C) With the victim to windward
- (D) With the wind on your starboard side

If choice C is selected set score to 1.

10. On what type of pump would you find an impeller?

- (A) Piston
- (B) Centrifugal
- (C) Gear
- (D) Vane

If choice B is selected set score to 1.

11. What term indicates the immersed body of the vessel forward of the parallel mid-body?

- (A) Run
- (B) Flare
- (C) Sheer
- (D) Entrance

If choice D is selected set score to 1.

12. An important step in fighting any electrical fire is to take which action?

- (A) Apply water to extinguish the fire
- (B) Stop ventilation
- (C) Stop the vessel
- (D) De-energize the circuit

If choice D is selected set score to 1.

13. Your vessel is damaged with no list, but down by the stern. There is progressive flooding and trim by the stern is increasing. What is the effect on transverse stability after the deck edge at the stern is submerged?

- (A) KG increases due to the weight of the added water on deck
- (B) BM decreases from loss of water plane and greater volume.
- (C) KB increases, increasing BM and therefore GM
- (D) There is no effect on transverse stability.

If choice B is selected set score to 1.

14. A vessel aground may have negative GM since the _____.

- (A) lost buoyancy method is used to calculate KM, and KB is reduced
- (B) displacement lost acts at the point where the ship is aground
- (C) virtual rise of G is directly proportional to the remaining draft
- (D) decrease in KM is equal to the loss of draft

If choice B is selected set score to 1.

15. Which is one of the signals, other than a distress signal, that can be used by a rescue boat to attract attention?

- (A) A red star shell
- (B) A burning barrel
- (C) Orange smoke signal
- (D) A searchlight

If choice D is selected set score to 1.

16. The floors in a vessel's hull structure are kept from tripping, or folding over, by which item?

- (A) Face plates
- (B) Transverse deck beams
- (C) Bottom longitudinals
- (D) Longitudinal deck beams

If choice C is selected set score to 1.

17. What is the result of a vertical shift of weight to a position above the vessel's center of gravity?

- (A) Decrease KG
- (B) Increase KM
- (C) Increase reserve buoyancy
- (D) Decrease the righting moments

If choice D is selected set score to 1.

18. Sudden unloading of a diesel engine can cause which to occur?

- (A) Increased exhaust temperature
- (B) The overspeed trip to activate
- (C) Black smoke
- (D) Decreased fuel efficiency

If choice B is selected set score to 1.

19. You are reading the draft marks as shown in illustration D032DG. The water level forward leaves about 4 inches of the 11 visible, and the water level aft is at the top of the 10. What is the mean draft?

- (A) 10'-06"
- (B) 10'-08"
- (C) 10'-10"
- (D) 11'-02"

If choice C is selected set score to 1.

20. When approaching a fire from windward, you should shield firefighters from the fire by using which method?

- (A) A straight stream of water
- (B) High-velocity fog
- (C) Foam spray
- (D) Low-velocity fog

If choice D is selected set score to 1.

21. The welds used to join shell plates in flush construction are known as _____.

- (A) continuous welds
- (B) butt welds
- (C) fillet welds
- (D) seam welds

If choice B is selected set score to 1.

22. If you reach shore in a liferaft, the first thing to do is _____.

- (A) drag the raft ashore and lash it down for a shelter
- (B) set the raft back out to sea so someone may spot it
- (C) get the provisions out of the raft
- (D) find some wood for a fire

If choice A is selected set score to 1.

23. What are the symptoms of a fractured back?

- (A) Leg cramps in the muscles in one or both legs
- (B) Vomiting and involuntary urination or bowel movement
- (C) Pain at the site of the fracture and possible numbness or paralysis below the injury
- (D) Pain and uncontrolled jerking of the legs and arms

If choice C is selected set score to 1.

24. Which describes how to determine a vessel's LCG?

- (A) Dividing the total vertical moment summations by displacement
- (B) Multiplying the MT1 by the longitudinal moments
- (C) Subtracting LCF from LCB
- (D) Dividing the total longitudinal moment summations by displacement

If choice D is selected set score to 1.

25. Utilizing illustration D035SA below, the Master has ordered you to pull the remote ventilation shut down, where is it found?

- (A) Port side of the wheelhouse, frame 122
- (B) Starboard side of the wheelhouse, frame 122
- (C) Starboard side exterior, frame 132
- (D) Port side fan room, frame 138

If choice B is selected set score to 1.

26. What is one of the main purposes of the inclining experiment on a vessel?

- (A) To locate the position of the metacenter
- (B) To locate of the center of gravity of the light ship
- (C) To locate the position of the center of buoyancy
- (D) To determine the maximum load line

If choice B is selected set score to 1.

27. You have abandoned ship in tropical waters. Which procedure(s) should be used during a prolonged period in a raft?

- (A) Wet clothes during the day to decrease perspiration.
- (B) Get plenty of rest.
- (C) Keep the entrance curtains open.
- (D) All of the above

If choice D is selected set score to 1.

28. A short ton is a unit of weight consisting of _____.

- (A) 1,000 pounds
- (B) 2,205 pounds
- (C) 2,240 pounds
- (D) 2,000 pounds

If choice D is selected set score to 1.

29. In illustration D033DG below, what is the plating indicated by the letter N known as?

- (A) Tank-top rider plating
- (B) Ceiling
- (C) Inner bottom
- (D) Floor riders

If choice C is selected set score to 1.

30. What would be the result of physical exertion on the part of a person who has fallen into cold water?

- (A) It will increase the rate of heat loss from the body
- (B) It will decrease exposure of the body surface to cold water
- (C) It will increase the water temperature between the body and layers of clothing
- (D) It will increase survival time in the water

If choice A is selected set score to 1.

31. When a vessel's LCG is aft of her LCB, how will the vessel respond?

- (A) The vessel will be trimmed by the head
- (B) The vessel will have a list
- (C) The vessel will be trimmed by the stern
- (D) The vessel will be on an even keel

If choice C is selected set score to 1.

32. Why are lifeboats usually double-enders?

- (A) They can go forward and backward more easily.
- (B) There is no particular reason for this.
- (C) They are more seaworthy and less likely to be swamped or broach to.
- (D) They require less space for stowing aboard ship.

If choice C is selected set score to 1.

33. Which term indicates the rise in height of the bottom plating from the plane of the base line?

- (A) Molded height
- (B) Sheer
- (C) Camber
- (D) Deadrise

If choice D is selected set score to 1.

34. When the handle of an all-purpose nozzle is in the vertical position and without an applicator, the all-purpose nozzle will _____.

- (A) produce high-velocity fog
- (B) produce a straight stream
- (C) shut off the water
- (D) produce low-velocity fog

If choice A is selected set score to 1.

35. While in dry dock your vessel will be belt-gauged. This process involves _____.

- (A) taking the vessel's offsets to check for hull deformation
- (B) measuring the thickness of the tail shaft liner
- (C) drilling or sonic-testing the hull to determine the plate thickness
- (D) testing and examining the anchor cables for defective links

If choice C is selected set score to 1.

36. Why should storage batteries be charged in a well ventilated area?

- (A) Because of the toxic fumes they emit
- (B) They generate heat
- (C) They recharge faster in a well ventilated space
- (D) They emit hydrogen

If choice D is selected set score to 1.

37. One of your crew members falls overboard from the starboard side. You should IMMEDIATELY take which action?

- (A) Position your vessel to windward and begin recovery
- (B) Apply left rudder
- (C) Begin backing your engines
- (D) Throw the crew member a life preserver

If choice D is selected set score to 1.

38. Which is TRUE if passengers are on board when an abandon ship drill is carried out?

- (A) The passengers should take part in the drill
- (B) The passengers should just watch
- (C) Passenger should go to their quarters during drills
- (D) The passengers should stay out of the way and do what they want

If choice A is selected set score to 1.

39. While steering by autopilot you notice that the vessel is deviating from the given course and there is no follow up with corrective rudder action to return to the proper heading. The emergency operating procedure should require you to immediately change operation from _____.

- (A) "hand" to "gyro"
- (B) "control" to "hand"
- (C) "gyro" to "hand"
- (D) "gyro" to "control"

If choice C is selected set score to 1.

40. You are fighting a class "B" fire with a portable dry chemical extinguisher. How should the discharge be directed at the fire?

- (A) At the main body of the fire
- (B) At the seat of the fire, starting at the near edge
- (C) Over the top of the fire
- (D) To bank off a bulkhead onto the fire

If choice B is selected set score to 1.

41. Distress signals may be _____.

- (A) sound signals
- (B) red flares
- (C) smoke signals
- (D) Any of the above

If choice D is selected set score to 1.

42. What is the Ring life buoy requirement on your small passenger vessel that has a length of 28 feet?

- (A) A minimum of one life buoy not less than 24 inches in diameter
- (B) A minimum of one life buoy less than 20 inches in diameter
- (C) A minimum of two life buoys less than 20 inches in diameter
- (D) A minimum of two life buoys not less than 24 inches in diameter

If choice A is selected set score to 1.

43. If your vessel is equipped with inflatable liferafts, how should they be maintained?

- (A) Have your crew check them annually.
- (B) Have them serviced by the shipyard annually.
- (C) Have them sent ashore to an approved maintenance facility annually.
- (D) They do not need any maintenance.

If choice C is selected set score to 1.

44. You are at sea and have received a General Emergency message announcing the outbreak of war in Europe. You are directed to comply with the instructions in NGA (NIMA) PUB 117, Chapter Eight. Which statement is TRUE?

- (A) If on a coastwise voyage along the east coast of the U.S., you should put into the nearest port.
- (B) You should attempt to submit an AMVER report to NSA.
- (C) You should only enter a port in the danger zone during hours of darkness.
- (D) When over 200 miles from a port in the danger zone, you should not darken ship.

If choice B is selected set score to 1.

45. Why are deck beams cambered on a vessel?

- (A) To provide drainage from the decks
- (B) To relieve deck stress
- (C) To increase their strength
- (D) To allow for welding expansion

If choice A is selected set score to 1.

46. You have completed stability calculations for your vessel prior to getting underway. Your vessel's GM is small but positive. Which of the following is true?

- (A) The vessel will possess a short rolling period
- (B) The vessel will possess a long rolling period
- (C) The vessel will possess high initial stability
- (D) The vessel will possess negative stability

If choice B is selected set score to 1.

47. A self-righting survival craft will return to an upright position provided that all personnel _____.

- (A) are seated with seat belts on and doors shut
- (B) escape from the craft
- (C) are to shift to one side to right it
- (D) are seated with seat belts on and doors open

If choice A is selected set score to 1.

48. In illustration D039SA below, what is the fire control plan symbol represented by number (64)?

- (A) Infrared gas detector
- (B) Dry chemical installation
- (C) Inertial gauge
- (D) Inert gas installation

If choice D is selected set score to 1.

49. If an inflatable liferaft inflates upside down, you can right it by taking which action?

- (A) Getting at least three or four men to push down on the side containing the CO2 cylinder
- (B) doing nothing; it will right itself after the canopy supports inflate
- (C) Pushing up on one side of the raft
- (D) Standing on the CO2 bottle, holding the bottom straps, and throwing your weight backwards

If choice D is selected set score to 1.

50. A thrust bearing is designed to accomplish which action?

- (A) To transmit the thrust of the engine to the propeller
- (B) To absorb the shock of wave pressure at the bow
- (C) To be placed between the engines and the foundation to absorb the vibration
- (D) To transmit the thrust of the propeller to the vessel

If choice D is selected set score to 1.

51. You are the person in charge of a lifeboat when land is sighted. Due to a medical emergency you have made the decision to beach the lifeboat through the surf. Which of the following is of greatest consideration in making this decision?

- (A) if there is a supply of freshwater near the landing area
- (B) the likelihood of broaching or capsizing the survival craft
- (C) the likelihood of the landing area being inhabited
- (D) if the surf appears less rough from the sea

If choice B is selected set score to 1.

52. Which of the following best defines the term "chock"?

- (A) A casting fitted at the side of a deck used as a fairlead
- (B) A smoke pipe from the galley stove
- (C) A sharp block of wood used to support hygroscopic cargo
- (D) A deck fitting used to secure mooring lines

If choice A is selected set score to 1.

53. When evacuating a seaman by helicopter lift, which statement is TRUE?

- (A) The hoist area should be located as far aft as possible so the pilot will have a visual reference while approaching.
- (B) The drop line should be grounded first then secured as close to the hoist point as possible.
- (C) Flags should be flown to provide a visual reference as to the direction of the apparent wind.
- (D) The vessel should be stopped with the wind dead ahead during the hoisting operation.

If choice C is selected set score to 1.

54. What would be the most effective agent to use to extinguish a fire in drums of flammable liquids stowed on the weather deck of a vessel?

- (A) Water fog
- (B) Carbon dioxide
- (C) Steam
- (D) Foam

If choice D is selected set score to 1.

55. When evacuating a seaman by helicopter lift, which course should the ship take?

- (A) A course that will have the hoist area in the lee of the superstructure.
- (B) A course that will keep a free flow of air, clear of smoke, over the hoist area.
- (C) Downwind so that the apparent wind is close to nil.
- (D) With the wind dead ahead because the helicopter is more maneuverable when going into the wind.

If choice B is selected set score to 1.

56. The vessel shown in illustration D025DG has broken down and you are going to take her in tow. The wind is on her starboard beam. She is making more leeway than you. Where should you position your vessel when you start running lines?

- (A) A
- (B) B
- (C) C
- (D) D

If choice D is selected set score to 1.

57. Which statement about damage control is TRUE?

- (A) Water flowing over the fo'c'sle bulwark is more dangerous than a hole in the hull at the waterline.
- (B) A hole in the hull at the waterline is more dangerous than a hole below the inner bottom.
- (C) Water flowing into a lower compartment on a ship is more dangerous than water on deck or flowing into an upper compartment.
- (D) The amount of water entering a ship through a hole varies inversely to the area of the hole.

If choice B is selected set score to 1.

58. How long must GMDSS Radio Logs be retained by the licensee when they relate to a distress situation or disaster?

- (A) 2 years
- (B) 6 months
- (C) 3 years
- (D) 1 year

If choice C is selected set score to 1.

59. How does the rotation of the steering wheel on the navigation bridge initiate oil pressure being applied to the steering gear rams?

- (A) By varying the angle of a tilting box or eccentricity of a floating ring
- (B) It is moving the automatic differential valve
- (C) It is moving the follow up indicator which regulates the six-way valve
- (D) By regulating the oil flow with the six-way valve

If choice A is selected set score to 1.

60. Which term is given to the brickwork surrounding the firebox of a boiler?

- (A) The fire plate
- (B) Refractory
- (C) The waterwall
- (D) The screen wall

If choice B is selected set score to 1.

61. How do you determine the weight of the vessel that is supported by the ground when a vessel has run aground?

- (A) Use the inclining experiment formula and substitute the change of trim for the angle of list.
- (B) Use the hydrostatic tables and enter with the mean draft before grounding and the mean draft after grounding.
- (C) This requires extensive calculation and is usually performed only by a naval architect not by a ship's officer.
- (D) Determine the point where aground and the draft at that point, then calculate it using the grounding formula.

If choice B is selected set score to 1.

62. Yawing is angular motion of the vessel about what axis?

- (A) Transverse
- (B) Longitudinal
- (C) Centerline
- (D) Vertical

If choice D is selected set score to 1.

63. In ship construction, where should the keel scantlings be the greatest thickness?

- (A) One-third the distance from the stern
- (B) One-third the distance from the bow
- (C) Amidships
- (D) At each frame

If choice C is selected set score to 1.

64. Utilizing illustration D038SA below of the fire control plan of the lower engine room, what does the arrow between frames 135 and 140 represent?

- (A) Secondary means of escape
- (B) Direction of fire main
- (C) Missing person search pattern
- (D) Primary means of escape

If choice D is selected set score to 1.

65. What is the correct interpretation of the flag hoist F 2 1 3 second substitute?

- (A) F213F213
- (B) F2131
- (C) F213213
- (D) F2132

If choice B is selected set score to 1.

66. Your vessel has a midships engine room and the cargo is concentrated in the end holds. Which is TRUE of your vessel?

- (A) The vessel is hogging with compressive stress on main deck
- (B) The vessel is sagging with tensile stress on main deck
- (C) The vessel is hogging with tensile stress on main deck
- (D) The vessel is sagging with compressive stress on main deck

If choice C is selected set score to 1.

67. What should you do if you have transmitted a distress call a number of times on channel 16 and have received no reply?

- (A) Report the problem to the head electrician.
- (B) Repeat the message using any other channel on which you might attract attention.
- (C) Turn up the volume on the receiver before transmitting again.
- (D) Key the microphone several times before transmitting again.

If choice B is selected set score to 1.

68. CO₂ mainly extinguishes a fire by which of the following?

- (A) Smothering
- (B) Cooling
- (C) Chemical action
- (D) All of the above

If choice A is selected set score to 1.

69. Which of the following statements is FALSE concerning the proper procedure in handling a fire hose?

- (A) The fire hose should be partially charged before deploying it from the fire station.
- (B) A 1½ inch hose should be deployed with a minimum of a nozzleman and hoseman.
- (C) The nozzleman should always hold the nozzle with one hand on top, to prevent kickback.
- (D) Back-up hosemen should be positioned wherever the hose makes a significant turn.

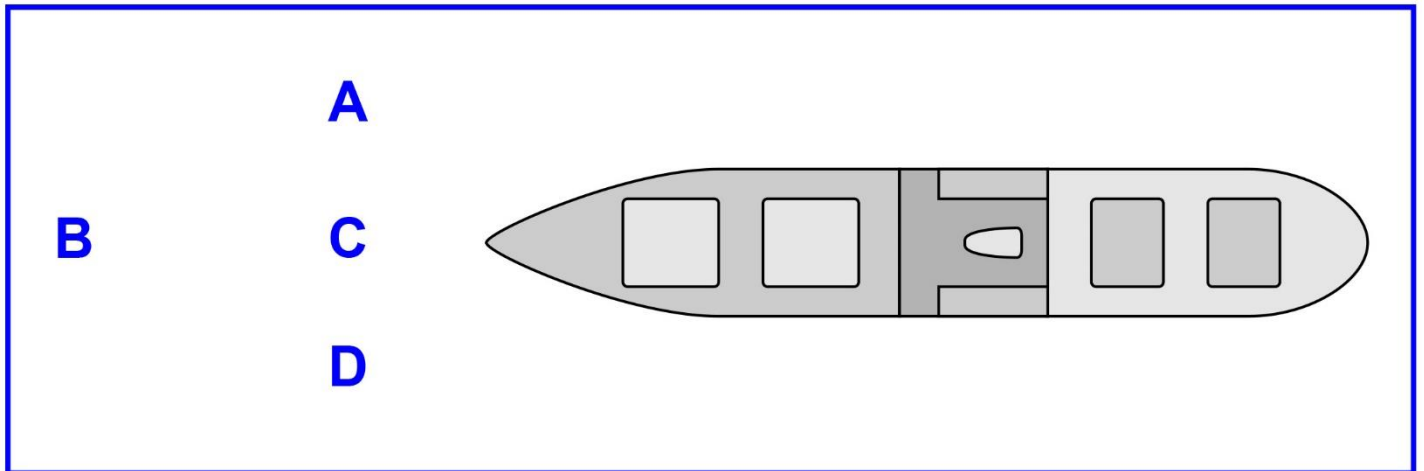
If choice A is selected set score to 1.

70. Your vessel has grounded on a bar. What should you do?

- (A) Run the engine full astern to keep from being set further onto the bar.
- (B) If you cannot get clear immediately, lighten the ship by pumping all ballast overboard.
- (C) Switch to the high suction for condenser circulating water, if it is submerged.
- (D) All of the above

If choice C is selected set score to 1.

D025DG



D032DG

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**AFT DRAFT
MARKS**

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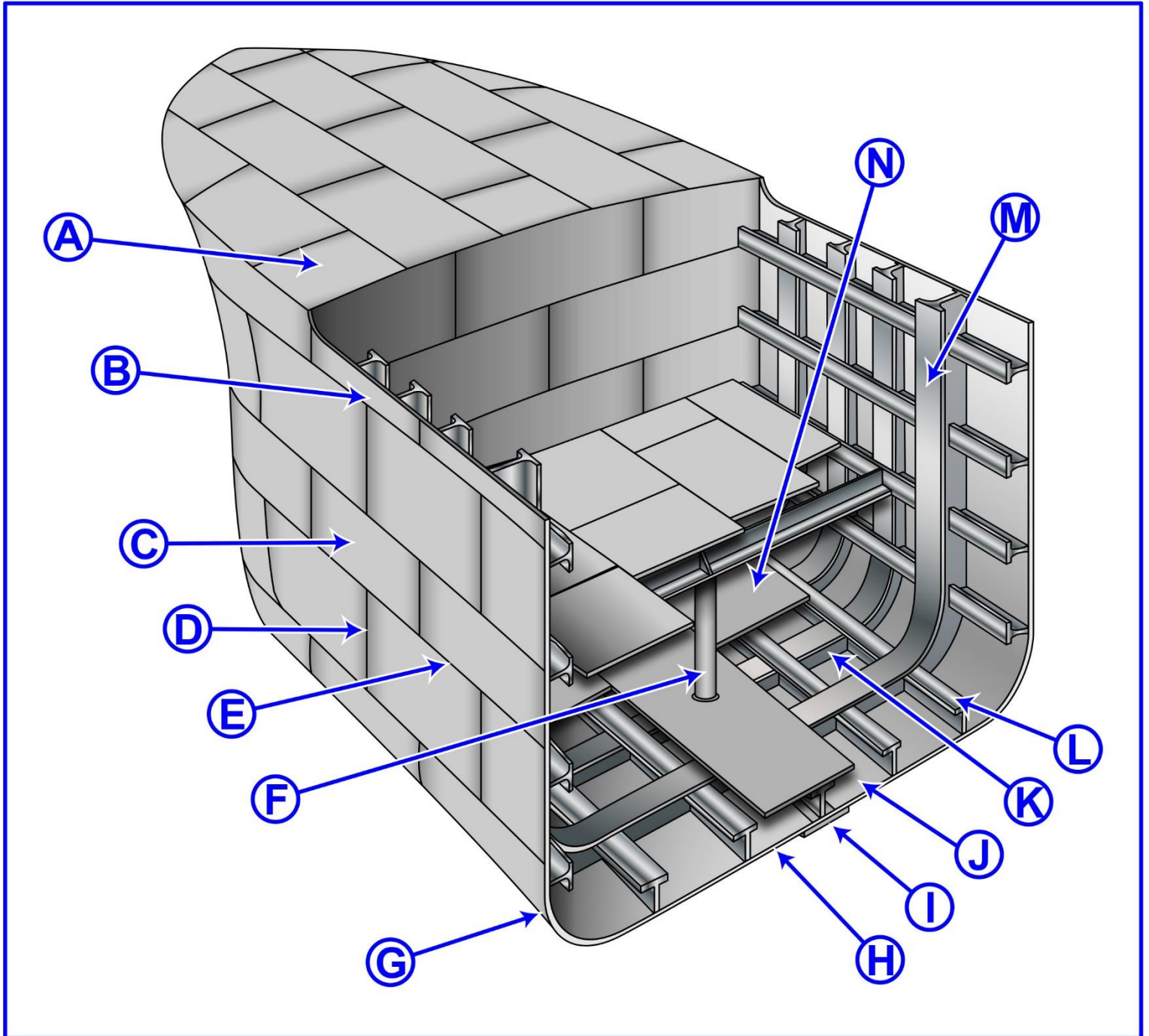
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**FWD DRAFT
MARKS**



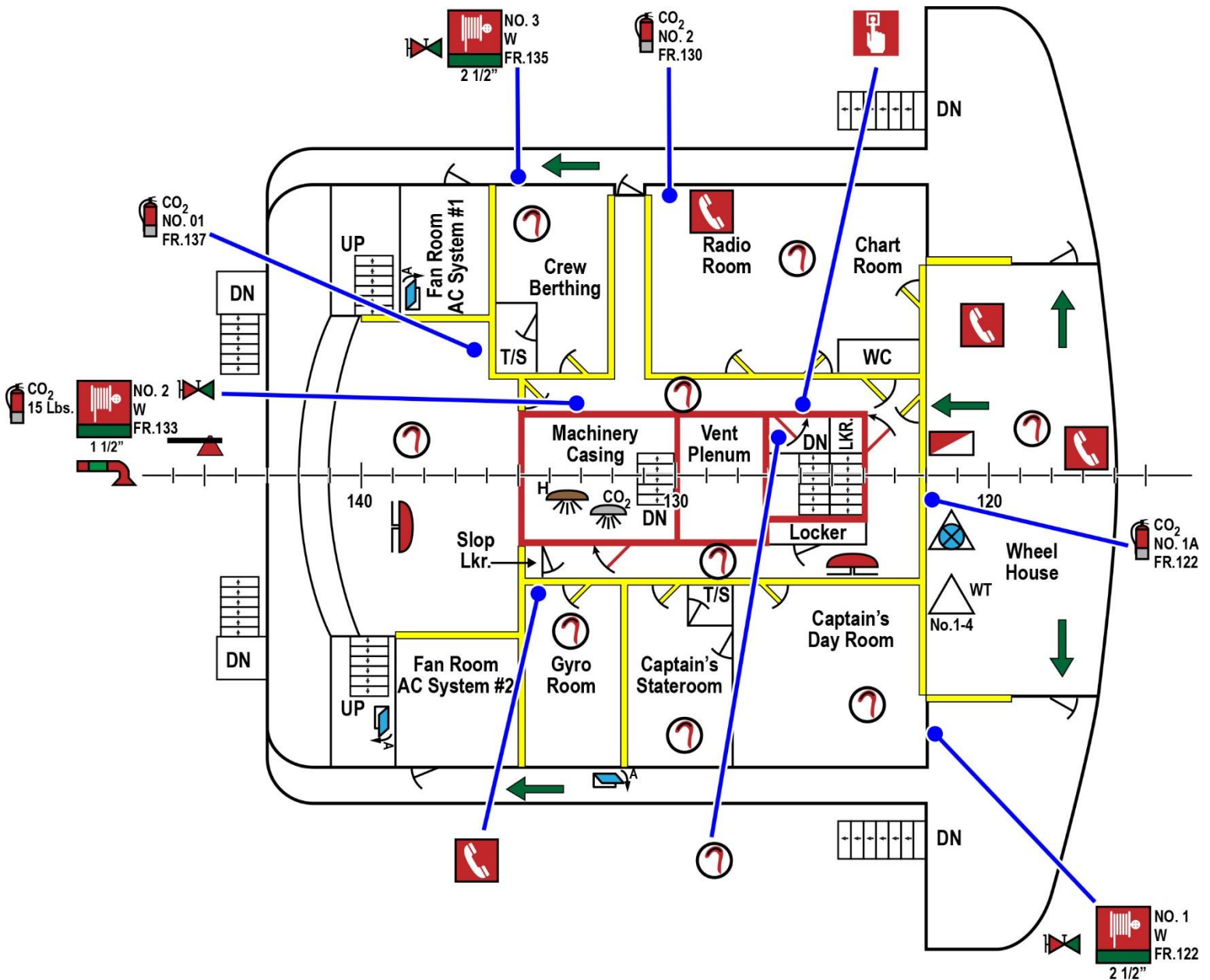
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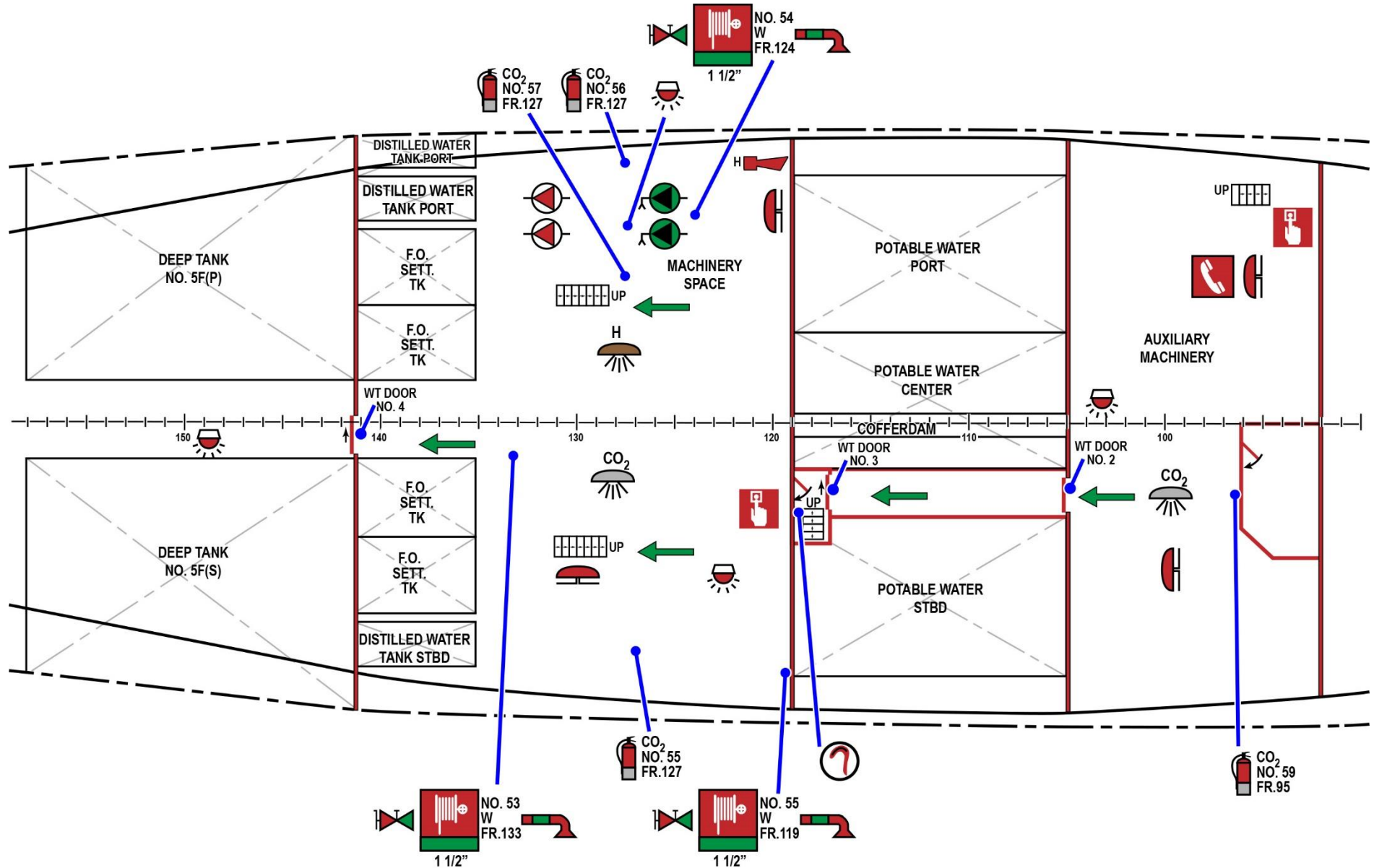
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D035SA



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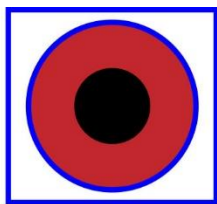


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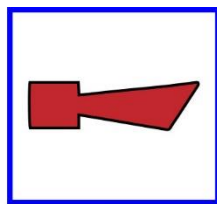
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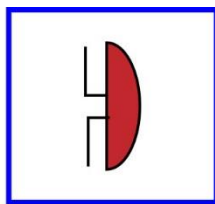
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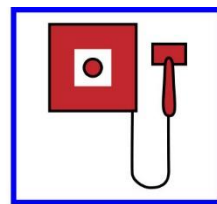
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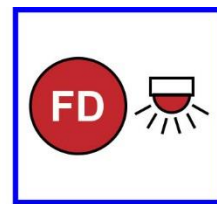
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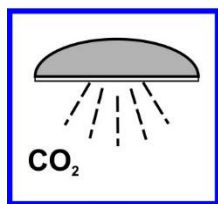
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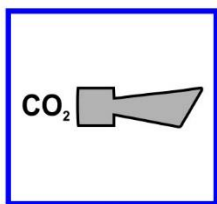
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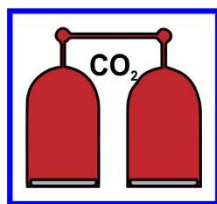
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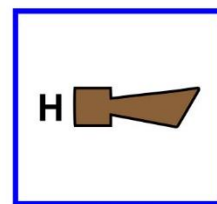
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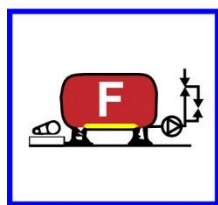
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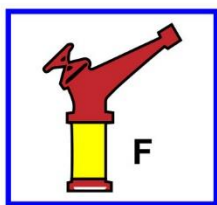
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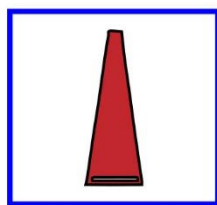
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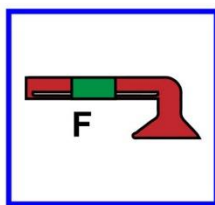
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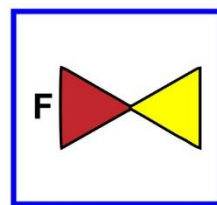
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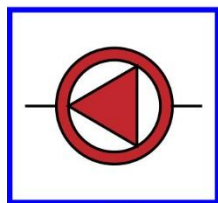
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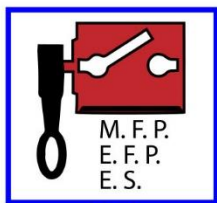
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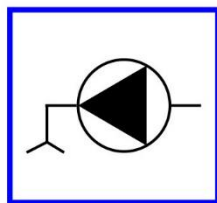
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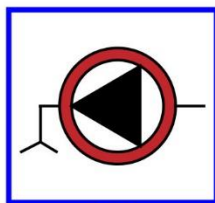
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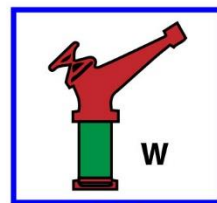
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(21)



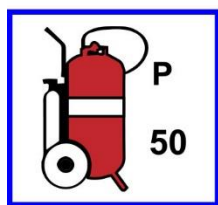
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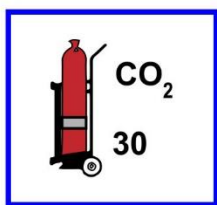
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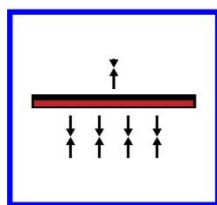
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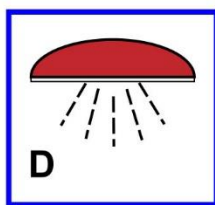
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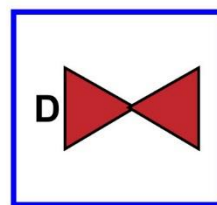
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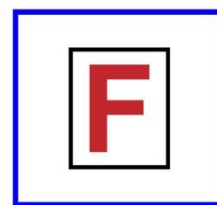
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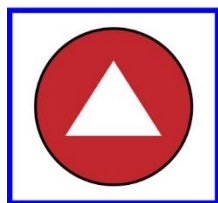
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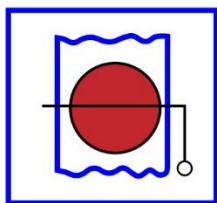
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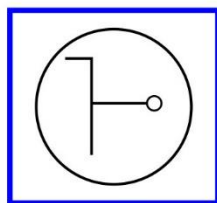
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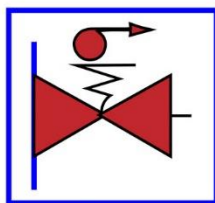
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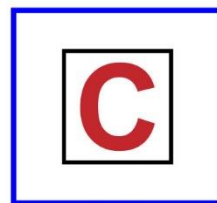
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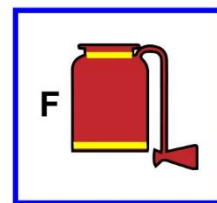
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(34)

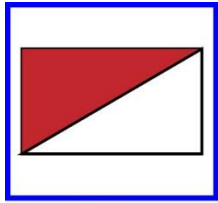


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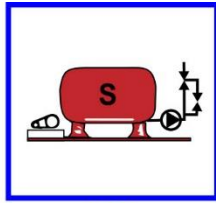


(36)

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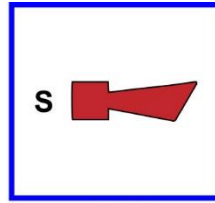
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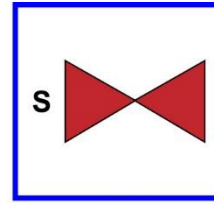
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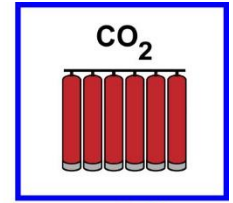
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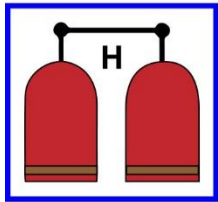
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(41)



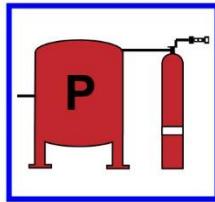
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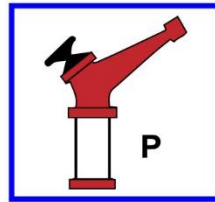
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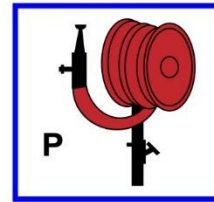
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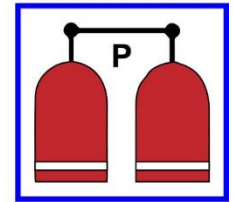
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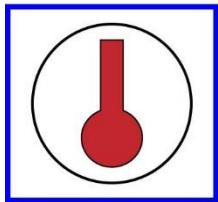
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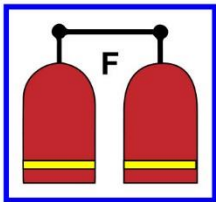
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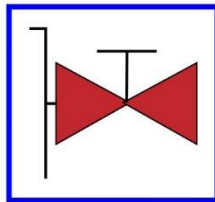
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(49)



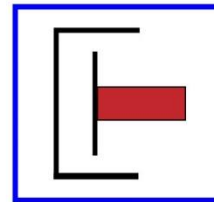
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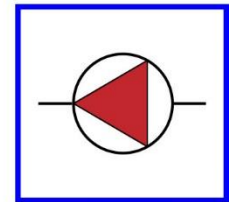
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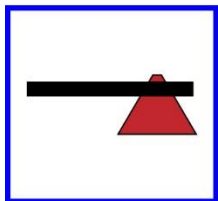
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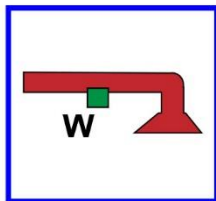
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(54)



(55)



(56)



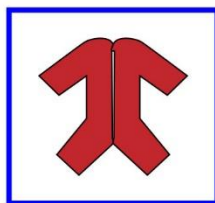
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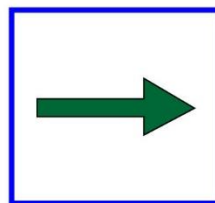
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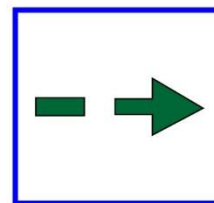
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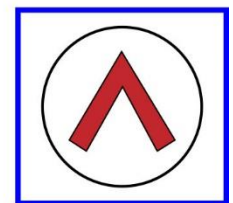
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(61)



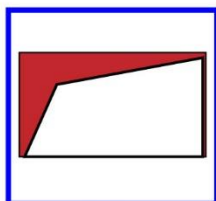
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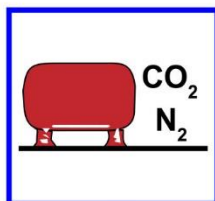
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(64)



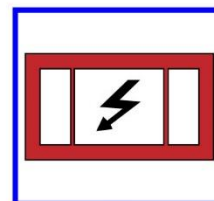
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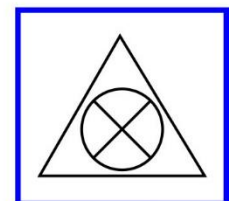
(66)



(67)



(68)



(69)