
Q156 - Navigation and Deck General/Safety

1. A weight of 1,000 kips is equivalent to _____.

- 1,000 pounds
- 2,000 short tons
- 2,240 pounds
- **500 short tons**

Note:
One thousand kips is equivalent to 500 short tons. A kip is defined as 1,000 pounds, and a short ton is 2,000 pounds; therefore, 1,000 kips (1,000,000 pounds) divided by 2,000 pounds per short ton equals 500 short tons.

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2. Which of the following describes the function of the air receiver in the compressed air system on a MODU?

- Condenses moisture.
- Provides overpressure protection.
- Purifies the air.
- **Acts as an accumulator.**

Note:
The air receiver in a compressed air system functions as an accumulator, storing compressed air to smooth pressure fluctuations and provide reserve capacity. Moisture removal, air purification, and overpressure protection are handled by separate components.

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3. Rotation of the steering wheel on the navigation bridge initiates oil pressure being applied to the steering gear rams by _____.

- regulating the oil flow with the six-way valve
- moving the automatic differential valve
- moving the follow up indicator which regulates the six-way valve
- **varying the angle of a tilting box or eccentricity of a floating ring**

Note:
Steering wheel rotation initiates oil pressure to the steering gear rams by varying the angle of a tilting box or eccentricity of a floating ring, which changes the hydraulic pump's displacement and thus its output pressure.

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4. Under normal operating conditions, the rudder is hydraulically locked unless which situation occurs?

- The variable stroke pump is off stroke
- **A rudder order is given by the control system**
- An electric power system failure occurs at the steering gear
- The manual trick wheel is engaged for steering

Note:
The rudder is hydraulically locked under normal operation unless a rudder order is issued by the control system, which releases the hydraulic pressure and allows movement.

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5. The follow-up gear on an electro-hydraulic steering gear _____.

- relieves excessive fluid pressure
- **takes the pump off stroke when the desired rudder angle is attained**
- synchronizes wheel position with the rudder position
- returns the rudder to midposition when the wheel is released

Note:
The follow-up gear in an electro-hydraulic steering system stops the hydraulic pump when the desired rudder angle is achieved, preventing rudder over-travel. It provides feedback to compare the ordered and actual rudder angles, and its function is not pressure relief, rudder centering, or wheel/rudder synchronization.

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6. In an electro-hydraulic steering system, rudder movement is maintained in close synchronization with the steering wheel position by means of the _____.

- trick wheel
- **follow-up control**
- six-way valve
- Rapson slide

Note:
Follow-up control synchronizes rudder and steering wheel position by using feedback to stop hydraulic motion when the desired angle is reached. This system compares the ordered rudder angle to the actual rudder angle, driving the error to zero. A trick wheel is a manual backup, a six-way valve reroutes hydraulic flow, and a Rapson slide is a mechanical linkage; none of these provide the necessary feedback for synchronization.

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7. When the helm is turned on the navigation bridge, which of the listed actions will be the FIRST response in the steering room on a ship equipped with an electro-hydraulic steering gear?

- The pumps go to full stroke.
- The six-way valve aligns itself with the running pump.
- Both port and starboard cables are energized.
- **The synchronous receiver turns, duplicating the helm motion.**

Note:
The initial response in the steering gear room of a ship with an electro-hydraulic steering system is the synchronous receiver turning to match the helm motion on the bridge.

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8. If one hydraulic pump of an electro-hydraulic steering unit fails, the vessel's steering can initially be maintained by activating which of the following units?

- The accumulator
- **The standby pump**
- The trick wheel
- The telemotor

Note:
A standby pump is designed to maintain steering operation when a hydraulic pump fails by providing an independent hydraulic power source.

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9. Dual electro-hydraulic steering units usually operate _____.

- with both pumps on line at the same time
- only when the rudder is moved amidships
- with the follow-up gear disconnected
- **with one pump on standby**

Note:
Dual electro-hydraulic steering units typically operate with one pump on standby to ensure redundancy and minimize wear.

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10. Regulations require that OSV's under 100 GT must have a steering system that is capable of moving the rudder _____.

- At one-half the maximum astern speed without damage
- By a required auxiliary steering system under emergency conditions when duplicated main steering power systems are provided
- From 15° on one side to 15° on the other side, in 30 seconds at 7 knots, or one-half the maximum speed
- **From 35° on one side to 30° on the other side, in no more than 28 seconds, while making maximum headway**

Note:
Regulations for OSVs under 100 GT mandate a steering system capable of moving the rudder from 35 on one side to 30 on the other side in no more than 28 seconds while making maximum headway.
