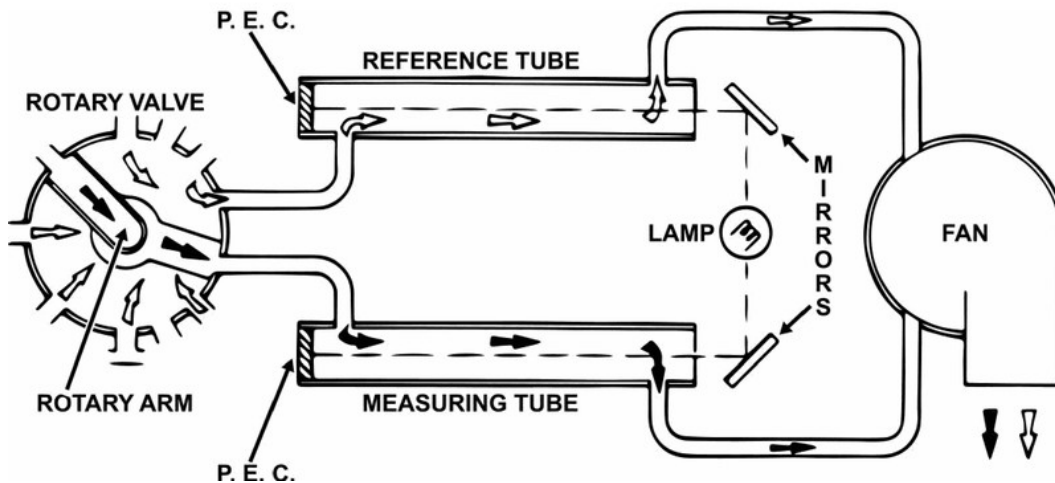


Demo PDF file. This file includes questions: 10 from 155. Full version of file looks the same as demo, but full version includes all questions. You may download file with all questions by link on bottom of this page

Q730 - Motor Plants

1. The device shown in the illustration is a _____

MO-0008



- photoelectric, explosive gas indicator, for use in high-speed, two-stroke, trunk type piston engines
- **comparator type mist detector for large low-speed, crosshead type engines**
- rotary type mist detector, designed for use in four-stroke, high-speed diesel engines
- level type explosimeter, for small medium-speed, trunk type piston engines

Note:

The illustration depicts a comparator type mist detector, characterized by its use of reference and measuring tubes to compare air streams, a design specific to large, low-speed, crosshead engines.

2. Poor combustion in a diesel engine can be caused by _____.

- **low compression temperature**
- high compression pressure
- high scavenge air pressure
- low exhaust pressure

Note:

Low compression temperature prevents adequate fuel ignition due to insufficient air temperature at the end of compression, resulting in poor combustion.

3. On a diesel-propelled vessel operating with constant slip what is the effect on fuel consumption with an increase in shaft RPM?

- **fuel consumption varies as the cube of the shaft RPM**
- fuel consumption varies directly proportional to the shaft RPM
- fuel consumption varies as the square of the shaft RPM
- fuel consumption varies inversely with the shaft RPM

Note:

Fuel consumption increases as the cube of shaft RPM because power required to drive a displacement vessel rises proportionally to the cube of its speed, and ship speed is directly related to shaft RPM when propeller slip is constant.

4. Which of the following statements concerning the factors affecting ignition delay is correct?

- An increase in combustion chamber turbulence will increase ignition delay.
- **An increase in coolant temperature will decrease ignition delay.**
- An increase in intake air temperature will increase ignition delay.
- An increase in compression ratio will increase ignition delay.

Note:

Increased coolant temperature decreases ignition delay by raising cylinder wall and air temperatures, bringing the fuel-air charge closer to auto-ignition conditions. Ignition delay is the time between fuel injection and combustion; higher temperatures and pressures shorten this delay. Increased intake air temperature and compression ratio reduce, not increase, ignition delay. Combustion chamber turbulence reduces ignition delay by improving mixing and heat transfer.

5. The pressure in an operating diesel engine cylinder continues to rise for a short period after the piston passes top dead center as a result of the _____.

- **expansion during the combustion process**
- maximum compression pressure is just being attained
- fuel injection occurring at that point and combustion begins
- exhaust and intake valves just closing

Note:

Cylinder pressure rises briefly after top dead center due to ongoing combustion adding heat faster than the expanding gases can relieve it.

6. The purpose of an oil mist detector in a main propulsion diesel engine is to warn of _____.

- **a possible overheated bearing**
- excessively high crankcase vacuum
- low cylinder oil pressure
- excessive carbon buildup in the lube oil

Note:

Oil mist detectors identify increased oil vapor, typically caused by an overheated bearing, which poses a risk of crankcase explosion. These detectors monitor oil mist concentration, not crankcase vacuum, cylinder oil pressure, or lube oil carbon content; their purpose is to provide early warning of potentially dangerous conditions.

7. Which of the following problems could develop due to the accumulation of oil vapors in the crankcase of a diesel engine?

- Reduced lubrication
- Poor fuel economy
- Combustion knock
- **Crankcase explosion**

Note:

Accumulated oil vapors in a diesel engine crankcase can form an explosive mixture, posing a risk of crankcase explosion due to ignition from a hot spot; this hazard is unrelated to lubrication, fuel economy, or combustion knock.

8. If a crankcase explosion due to a hot spot were to occur, the size of the explosion is dependent on which of the following?

- **The ratio of oil mist to air in the crankcase.**
- The amount of water in the oil in the crankcase.
- The temperature of the hot spot in the crankcase.
- The amount of debris in the oil in the crankcase.

Note:

The size of a crankcase explosion resulting from a hot spot is primarily determined by the ratio of oil mist to air in the crankcase; this mixture's flammability dictates the explosion's magnitude.

9. Which of the following oil mist to air ratios would most likely lead to the most severe crankcase explosion?

- 2-3% by volume
- **5-7% by volume**
- 9-10% by volume
- 12-15% by volume

Note:

A crankcase explosion is most severe with an oil mist to air ratio of 5-7% by volume, as this concentration is closest to the stoichiometric mixture, resulting in the most complete combustion and highest explosion pressure.

10. After stopping a diesel engine with a high main bearing temperature, what is the time one needs to wait before a diesel engine crankcase can be opened?

- Not less than 15 minutes.
- **Not less than 30 minutes.**
- Not less than 60 minutes.
- Not less than 120 minutes.

Note:

Wait at least 30 minutes after stopping a diesel engine with a high main bearing temperature before opening the crankcase to allow for temperature reduction and oil mist dissipation, preventing potential ignition hazards.
