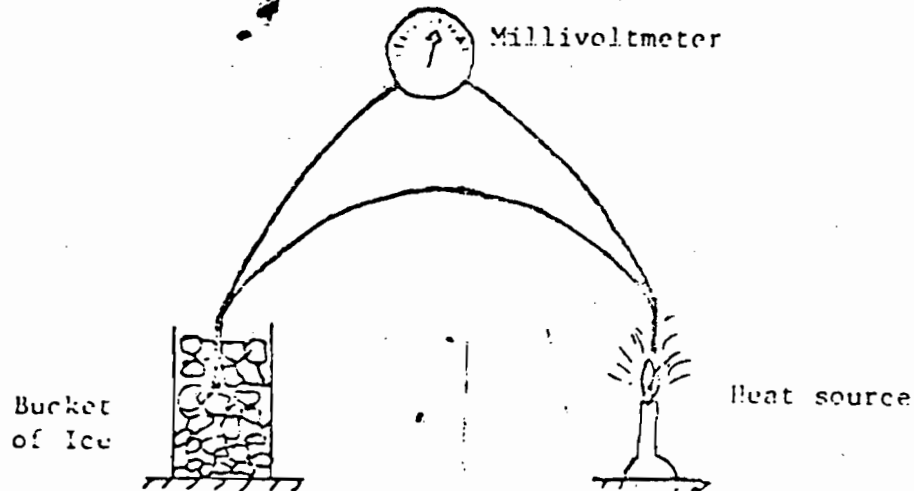


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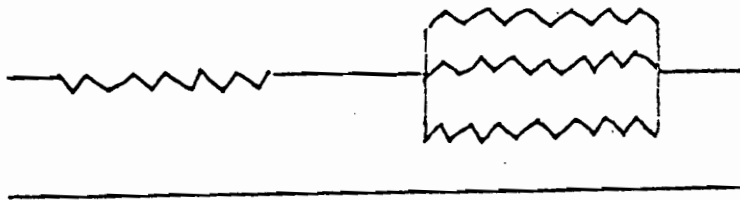
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1. What will the following instrument (thermo-couple) record?



1. Pressure
 - ✓ 2. Temperature
 3. Current
 4. Weight
2. According to the Oil Pollution Regulations, "oily mixture" means:
1. A mixture with any oil content;
 2. Crude oil, fuel oil, heavy diesel oil and lubricating oil; ← ✓
 3. A mixture with any content of persistent oil; ✓
 4. All the answers given in 1, 2 and 3 above. ← ✗
3. Persistent oil or a persistent oily mixture may be discharged into the water from a ship other than a tanker where:
1. the ship is proceeding en route;
 2. ✓ the persistent oil content of the discharge is less than 100 parts per 1,000,000 parts of the mixture;
 3. the discharge is made as far as practicable from the land;
 4. All of the answers given in 1, 2 and 3 above.

4. What is the name given to the following type of electrical circuit?

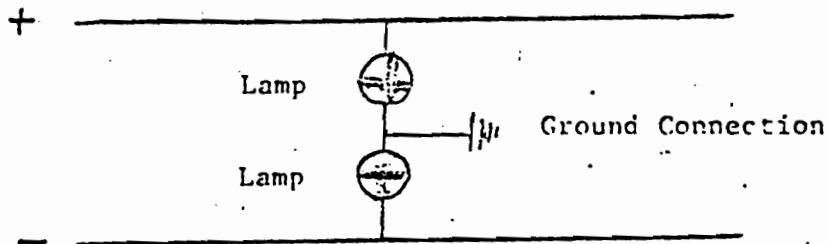


1. Series circuit;
2. Parallel circuit;
3. Series/Parallel circuit
4. Wheatstone bridge circuit

5. An automatic circuit breaker is provided on an electrical switchboard to:

1. Protect against overload;
2. Protect against reverse current;
3. Protect against low voltage;
4. All of the above.

6. In the following circuit a positive ground (earth) will be indicated by:



1. The positive lamp glowing more brightly;
2. The negative lamp glowing more brightly;
3. Both lamps glowing with equal brilliance;
4. Both lamps going out.

7. A moving coil instrument can be used:

1. in an A.C. circuit only;
2. in a D.C. circuit only;
3. in both A.C. and D.C. circuits;

14

8. A moving iron instrument can be used:

1. in an A.C. circuit only;
2. in a D.C. circuit only;
3. in both A.C. and D.C. circuits;
4. in neither A.C. or D.C. circuits.

9. Ohms Law states that $V=IR$ where V = Voltage

I = Current (Amps)

R = Resistance (Ohms)

What is the value of I when $V = 100$ volts

$R = 20$ Ohms

1. 3 Amps
2. 4 Amps
3. 5 Amps
4. 15 Amps.

10. A continuous ringing of the ship's alarm bells means:

1. Evacuate the engine room;
2. Proceed to fire station;
3. Abandon ship;
4. All of the above 1, 2 and 3.

11. The best way to prevent a fire in the engine room bilges is to:

1. keep the bilges clean and brightly painted;
2. keep the bilges well lighted;
3. wash the bilges often;
4. All of the above 1, 2 and 3.

12. What type of extinguisher would be used on an electrical fire?

1. Pressurized water;
2. Foam;
3. CO₂ (Carbon dioxide)
4. Any of the above 1, 2 and 3.

13. Convert 15.73 metres to mm.

1. .1 573
2. 1 573
3. 15 730
4. 157.3

14. 1 kilometer is equal to:

1. 100 dam
2. 10 hm
3. 1 000 m
4. Answers 1, 2 and 3 above.

15. 4.53 kilograms (kg) is equal to:

1. 453 g
2. 4 530 g
3. 45 300 g
4. 453 000 g

16. Mass is:

1. the amount of matter a body contains;
2. the weight of a body;
3. answers 1 and 2 above;
4. neither of answers 1 and 2 above.

17. 2 tonnes is equal to:

1. 2 000 kg
2. 200 kg
3. 40 000 kg
4. 400 000 kg

18. The unit which gives a mass of 1 kg an acceleration of one metre per second per second is termed:

1. a newton;
2. a kilogram;
3. a megagram;
4. none of the above.

19. What is the meaning of "weight"?

1. the amount of substance in an object;
2. the force on an object, caused by gravity;
3. the Earth's gravitational acceleration;
4. the mass of the standard kilogram.

20. What is the mass of 1 kl of fresh water at 4°C?

1. 1 g
2. 1 kg
3. 5 kg
4. 1 t

21. A rectangular plate measures 500 mm by 400 mm. The area is:

1. 20 m²
2. 200 m²
3. .2 m²
4. .02 m²

22. A rectangular plate measures 300 cm by 200 cm. The area is:

1. .6 m²
2. 600 m²
3. 60 000 m²
4. 6 m²

23. The work done in moving a body through a certain distance is accomplished by the application of a:

1. couple
- 2. force
3. torque
4. moment

24. The CO₂ cylinder fitted to an inflatable life raft is used for:

1. extinguishing fires;
2. buoyancy purposes;
3. inflating the life raft;
4. none of the above.

17

25. When using an inflatable life raft in cold temperatures you would:
1. deflate the roof and leave the floor deflated for better retention of body heat;
 2. leave the roof inflated and inflate the floor for better insulation;
 3. deflate the roof and inflate the floor for better insulation;
 4. light the portable heater.
26. The peak firing pressure of each cylinder obtained and compared. This will indicate:-
1. Timing of inlet and exhaust valves.
 2. Balance between power output of each cylinder of this engine.
 3. Average pressure of gases in each cylinder.
 4. Compression pressure of gas in each cylinder.
27. Prolonged idling causes:-
1. Carbon build up.
 2. Overheating.
 3. Increased L.O. consumption.
 4. Smokey exhaust.
28. A four stroke engine operates at reduced output with fuel normal, this could be caused by:-
1. Air inlet restricted.
 2. L.O. filter restricted.
 3. Air inlet clearance less than normal.
 4. E.R. vents are open.
29. Blue smoke indicates:-
1. Broken piston rings.
 2. Defective oil control rings.
 3. Defective scavenge blower.
 4. All of the above.
30. Lube oil has to fulfill the functions of:-
1. cooling
 2. lubricating
 3. carrying away dirt and initial particles.
 4. working under various load conditions.

To meet these four opposing characteristics the oil companies use:-

1. additives.
2. heavy duty oil.
3. oil from a single source.

31. A motorship burning heavy oil:-
1. heats fuel when manoeuvring
 2. cools fuel when manoeuvring
 3. recirculates oil when manoeuvring
 4. does as in #3 or switches to lighter fuel.
32. A diesel engine with a precombustion chamber:-
1. smoother combustion takes place
 2. has lower peak combustion chamber press
 3. less sensitive to differing quality of fuel
 4. all of the above.
33. The hydraulic ram uses the principal developed by:-
1. Hood
 2. Boyle
 3. Pascal
 4. Bernoulli
34. The Sharples super centrifuge is a:-
1. disc type
 2. tube type
 3. high-speed type
 4. gear driven.
35. The gear tooth coupler, illustrated is used to:-
1. cure alignment problems
 2. counter act design errors
 3. both 1 and 2
 4. neither 1 and 2.
36. Diagram showing 10,000 N of weight exerted on 1 meter squared equals.
1. 10 kpa
 2. 100 kpa
 3. 1000 kpa
 4. 1 kpa
37. The oil filter should be checked if the pressure increases by _____ kpa.
1. 400
 2. 40
 3. 4
 4. 140
- Handwritten notes:*
 $1 \text{ N/m}^2 = 1 \text{ Pa}$
 $1000 \text{ N/m}^2 = 1000 \text{ Pa} = 1 \text{ kPa}$

38. What is the main cause of valve breakage?
1. over stressing by valve gear
 2. high temperatures
 3. too hard a valve face
 4. all of the above.
39. What causes piston crown cracking:-
1. repeated over loading
 2. carbon deposits
 3. lube oil too cool.
 4. too much cool air entering cylinder.
40. What can D.C. current not be used for?
1. a booster
 2. a transformer
 3. a battery charger
 4. a generator.
41. The proper thing to do when trouble shooting is:-
1. to analyse the problem.
 2. due to easiest things first and double check when re-assembling
 3. correct the basic problem
 4. follow the order listed in 1, 2 and 3.
42. Exhaust valves are made out of special alloys that help to reduce:-
1. creep
 2. corrosion
 3. high temperature changes
 4. all the above.
43. Foreign material in a hydraulic system can be detected by _____ noise.
1. popping
 2. grinding
 3. screaming
 4. cracking
44. A torque wrench is used on connecting rod bearing cap bolts:-
1. to make sure all bolts tightened equally
 2. so bearings are not over tightened
 3. so there will be no problem removing them next overhaul
 4. all the above.

45. A torque wrench is used on main bearing caps bolts and nuts:-

1. so bolts are not over stressed
2. so bearing not over tightened
3. so no trouble removing next overhaul
4. overstressing the bedplate.

46. A ship that is equipped with two fire pumps:-

1. non-return valves must be fitted at the discharge 2 (P)
2. one must be able to be run manually
3. both can be run from the main engine
4. one must be able to pump the bilges and ballast tanks.

47. A partially filled double bottom tank:-

1. increases stability
2. decreases stability
3. changes stability
4. all the above.

48. A diagram showing a milliampmeter with the wire going into a cold jar and then over a heat source and back to the gauge measures:-

1. temperature
2. current
3. difference in pressure
4. all the above.

49. To measure resistance of insulation the type of gauge used is:-

1. ohmeter
2. galvanometer
3. megger
4. ammeter

50. Failure of a crank main bearing is detected by:-

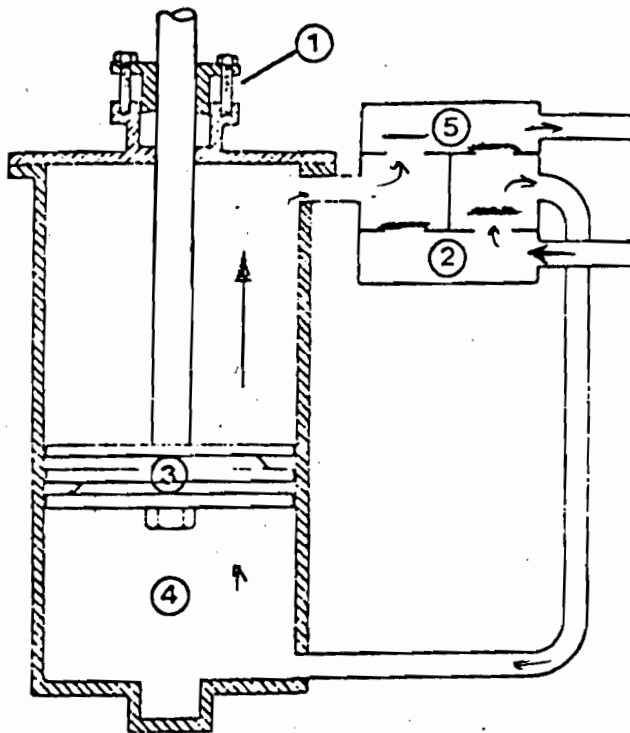
1. increased oil temperature
2. metal particles in oil filter
3. intermitant grinding noises
4. all the above.

51.

40 04 01 01 01

THE PART INDICATED BY NUMBER 5 IN THE ILLUSTRATION IS KNOWN AS THE:

- (1) suction valve
- (2) discharge valve
- (3) gland
- (4) piston



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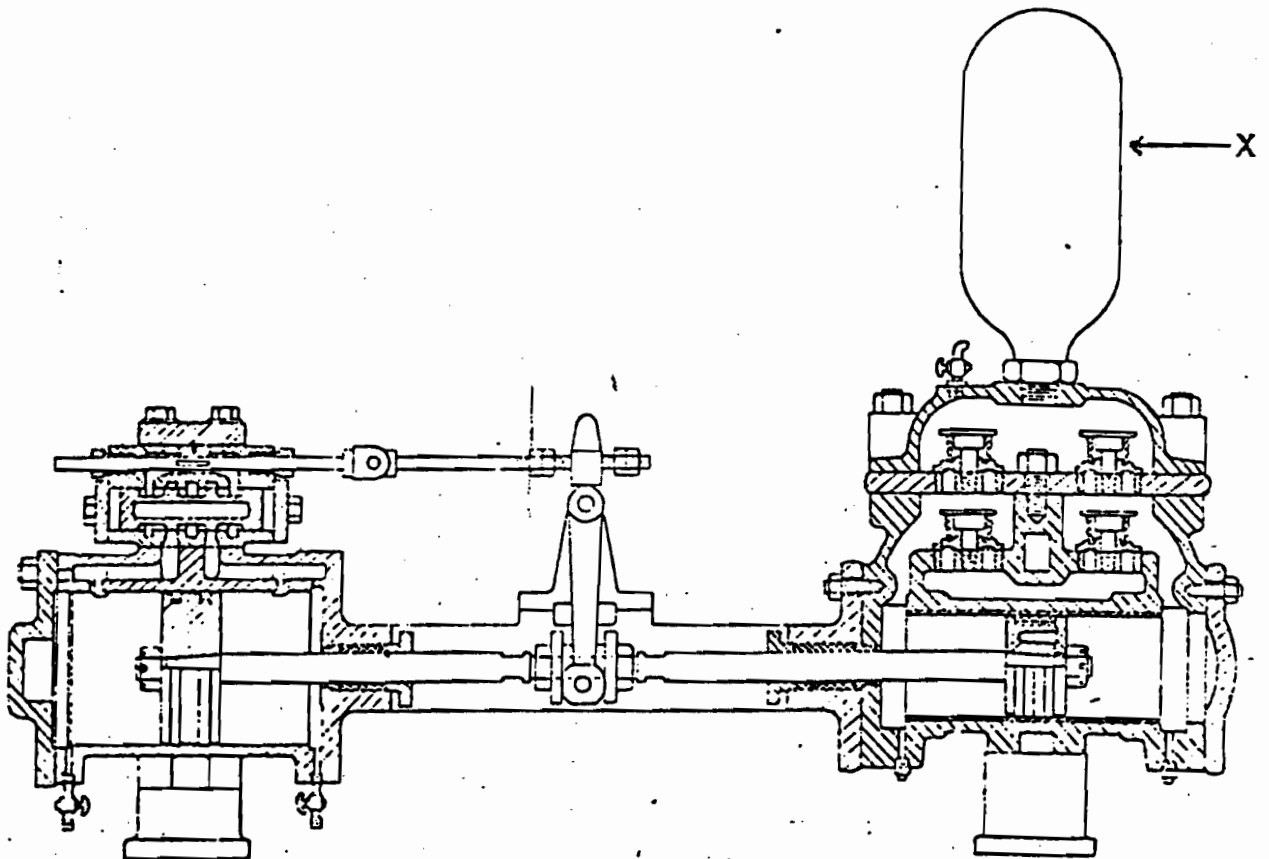
22

52.

40 04 01 01 06

THE PART INDICATED BY (X) IN THE ILLUSTRATION IS KNOWN
AS THE:

- (1) steam cylinder
- (2) valve chest
- (3) air chamber
- (4) suction chamber



53.

40 04 01 02 11

A CENTRIFUGAL PUMP THAT IS IN OPERATION MAY FAIL TO
DELIVER WATER BECAUSE THE:

- (1) pump impeller is revolving too slowly
- (2) pump impeller is revolving too quickly
- (3) pump suction is too deeply submerged
- (4) water being pumped is too cold

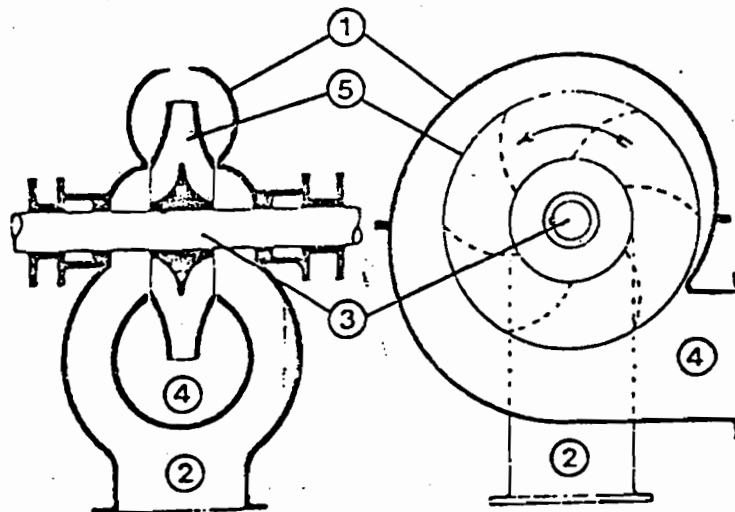
(24)

54.

40 04 01 02 12

IN THE ILLUSTRATION THE IMPELLER IS INDICATED BY:

- (1) number 1
- (2) number 2
- (3) number 3
- (4) number 5



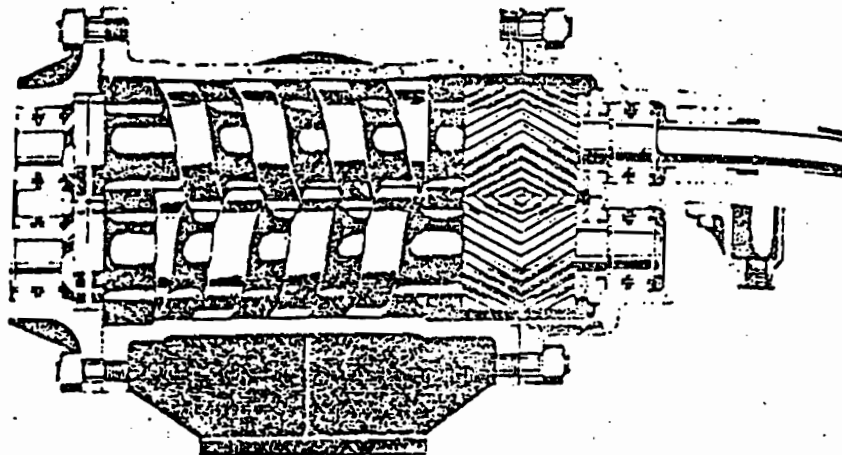
Centrifugal Pump

55.

40 04 01 03 02

THE SCREW DISPLACEMENT PUMP ILLUSTRATED IS SUITABLE FOR PUMPING:

- (1) sanitary water to the ship's toilets
- (2) high pressure fuel oil to the boiler burners
- (3) cooling water to the refrigeration condenser
- (4) hydraulic fluid to the steering gear rams

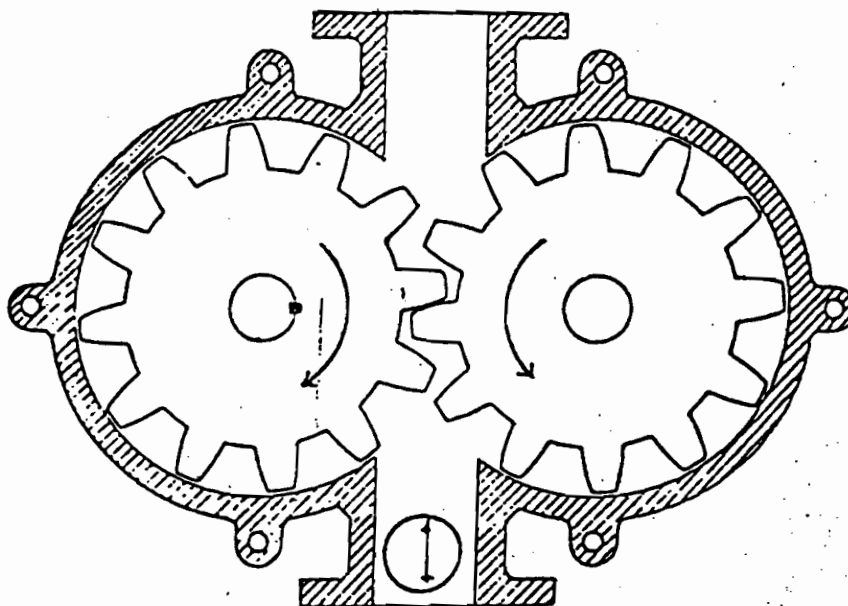


56.

40 04 01 03 05

THE PART INDICATED BY THE NUMBER 1 IN THE ILLUSTRATION
IS KNOWN AS THE:

- (1) pump suction
- (2) pump discharge
- (3) body of the pump
- (4) pump gear



Gear Wheel Pump

57.

40 04 01 04 01

STEAM JET AIR EJECTORS ARE USUALLY FITTED TO REMOVE THE AIR AND NONCONDENSABLE GASES FROM THE CONDENSER OF A SHIP PROPELLED BY:

- (1) diesel engines
- (2) gas turbines
- (3) steam reciprocating engines
- (4) ~~steam turbines~~

58.

40 04 01 04 02

THE PURPOSE OF THE BOILER FEED INJECTOR IS TO:

- (1) remove water from the boiler
- (2) ~~supply water to the boiler~~
- (3) utilize exhaust steam to heat the boiler water
- (4) act as a steam jet to creat a draft through the boiler

59.

40 04 02 01 05

AN EXPANSION JOINT IS FITTED IN A STEAM LINE TO ALLOW FOR THE CHANGE IN LENGTH CAUSED BY:

- (1) an increase or decrease in steam volume
- (2) an increase or decrease in steam pressure
- (3) ~~an increase or decrease in steam temperature~~
- (4) none of the conditions mentioned in (1), (2) and (3)

60.

40 04 02.01 07

THE DOUBLE BOTTOM TANKS OF A SHIP THAT ARE TO BE USED FOR THE STORAGE OF FRESH WATER ARE SEPARATED FROM THOSE USED FOR STORING FUEL OIL BY:

- (1) doubler plates
- (2) thicker plating
- (3) corrugated plating
- (4) ✓ cofferdams

61.

40 04 02 02 01

UNDER NORMAL OPERATING CONDITIONS THE BILGE INJECTION VALVE IS KEPT IN THE _____ POSITION.

- (1) open
- (2) ✓ closed
- (3) locked open
- (4) locked closed

62.

40 04 02 02 08

THE TYPE OF VALVE USED FOR A BILGE SUCTION IS A:

- (1) screw lift gate valve
- (2) screw lift globe valve
- (3) ✓ screw down non-return valve
- (4) screw down throttle valve

63.

40 04 02 02 24

WHERE RAPID CORROSION OF SECTIONS OF STEEL BILGE AND BALLAST PIPING OCCURS THE PROBLEM MAY BE REDUCED BY:

- (1) fitting metallic jointing material between the sections
- (2) cleaning the pipe to remove the rust
- (3) covering the pipe with insulating material
- (4) fitting galvanized pipe

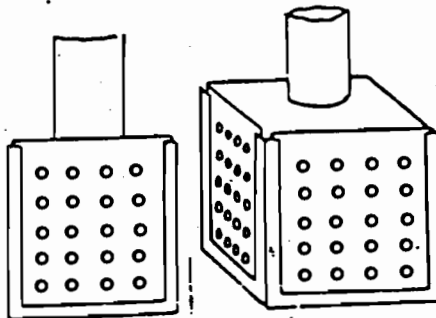
30

40 04 02 02 28

64.

THE ILLUSTRATION SHOWS A FITTING USUALLY FITTED TO THE
OPEN END OF A _____ SUCTION PIPE.

- (1) bilge
- (2) ballast
- (3) fuel
- (4) cofferdam

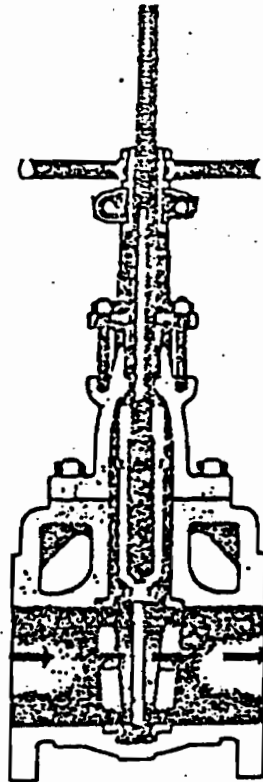


65.

40 04 02 04 02

THE GATE VALVE ILLUSTRATED IS GENERALLY FOUND IN PIPELINES WHERE:

- (1) throttling of the fluid is desired
- (2) a rapid acting non-return valve is required
- (3) - a full opening with the least restriction of the flow is required
- (4) a globe valve of the same pipe size would be more expensive

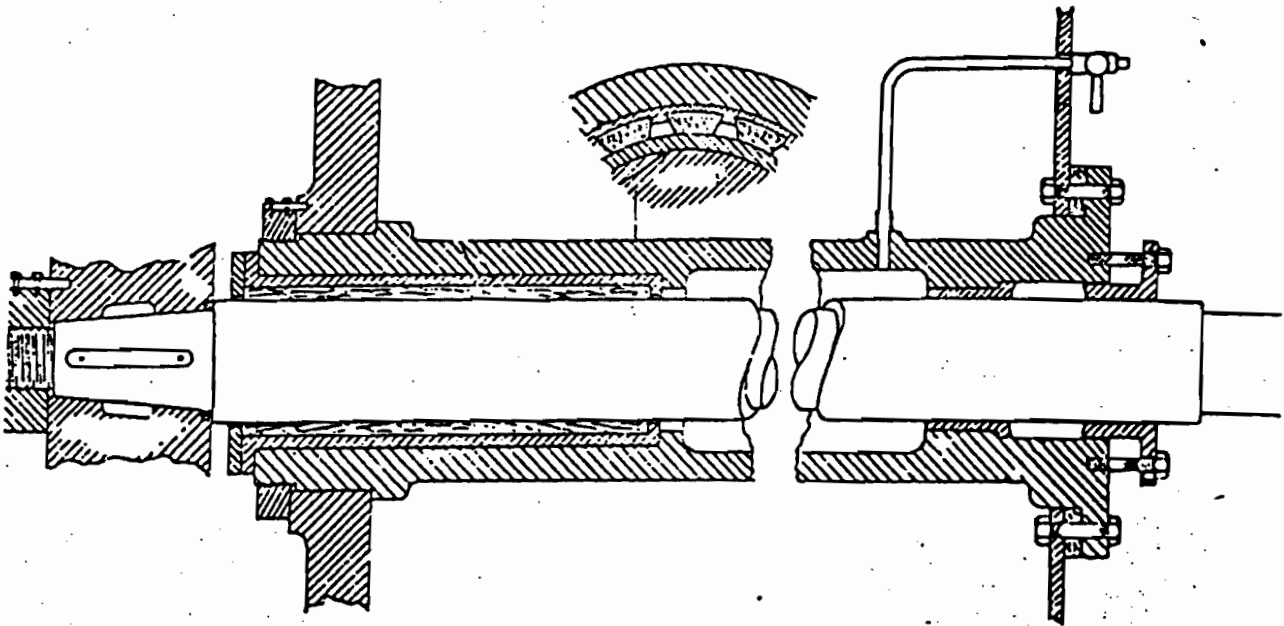


66.

40 05 01 00 01

IN THE ARRANGEMENT ILLUSTRATED THE PROPELLER SHAFT AND THE STERN BEARING ARE LUBRICATED WITH:

- (1) sea water
- (2) oil
- (3) grease
- (4) graphite contained within the bearing material

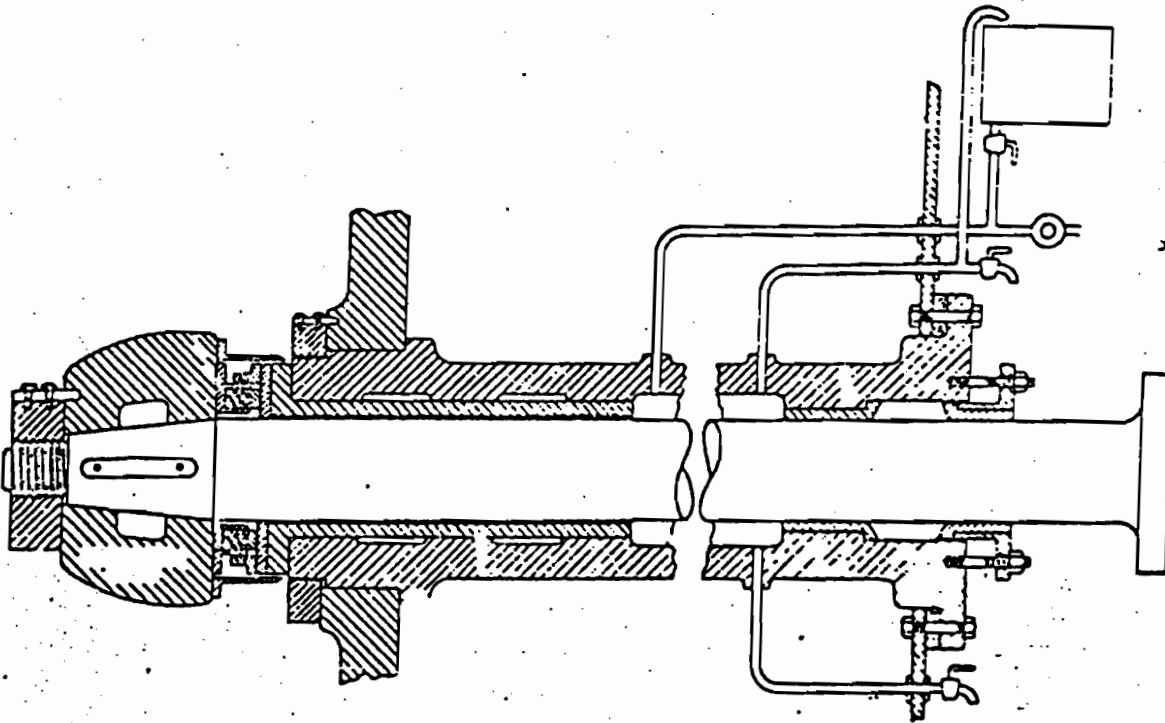


40 05 01 00 04

67.

THE ADVANTAGE CLAIMED FOR THE OIL LUBRICATED STERN TUBE ARRANGEMENT ILLUSTRATED IS THAT:

- (1) cost is reduced since no liner is required on the propeller shaft
- (2) any wear or corrosion of the propeller shaft is visible
- (3) it has a low coefficient of friction
- (4) all the reasons in (1), (2) and (3) are valid

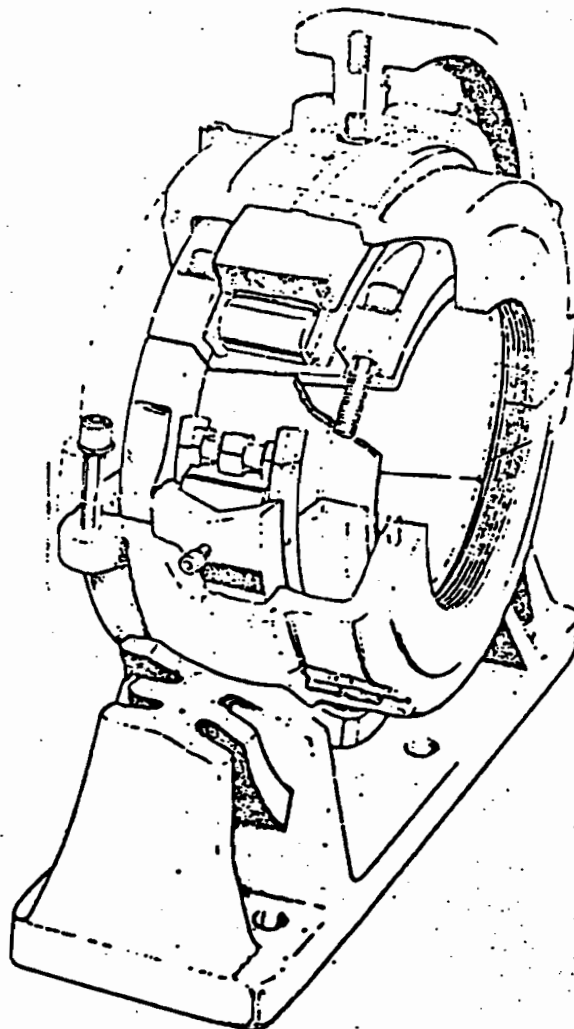


68.

40 05 02 00 14

ROLLER BEARINGS, SIMILAR TO THE ONE SHOWN IN THE ILLUSTRATION, ARE USED TO SUPPORT THE INTERMEDIATE SHAFT AND ARE USUALLY LUBRICATED WITH A SODA-BASED GREASE MIXED WITH _____ INHIBITOR TO ENSURE LONG LIFE WITH A MINIMUM OF MAINTENANCE.

- (1) a nitrogen
- (2) a hydrogen
- (3) - an oxygen
- (4) a salt water



40 05 04 00 04

9.

THE DEVICE ILLUSTRATED IS KNOWN AS A _____

COUPLING.

- (1) claw
- (2) universal
- (3) sleeve
- (4) clutch



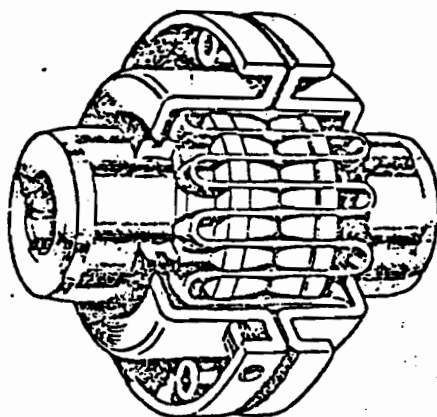
36

70.

40 05 04 00 05

THE TYPE OF COUPLING ILLUSTRATED IS INTENDED TO COMPENSATE FOR:

- (1) errors in the design of the machinery
- (2) problems associated with the repair of the machinery
- (3) problems associated with the alignment of the machinery
- (4) none of the conditions in (1), (2) and (3)

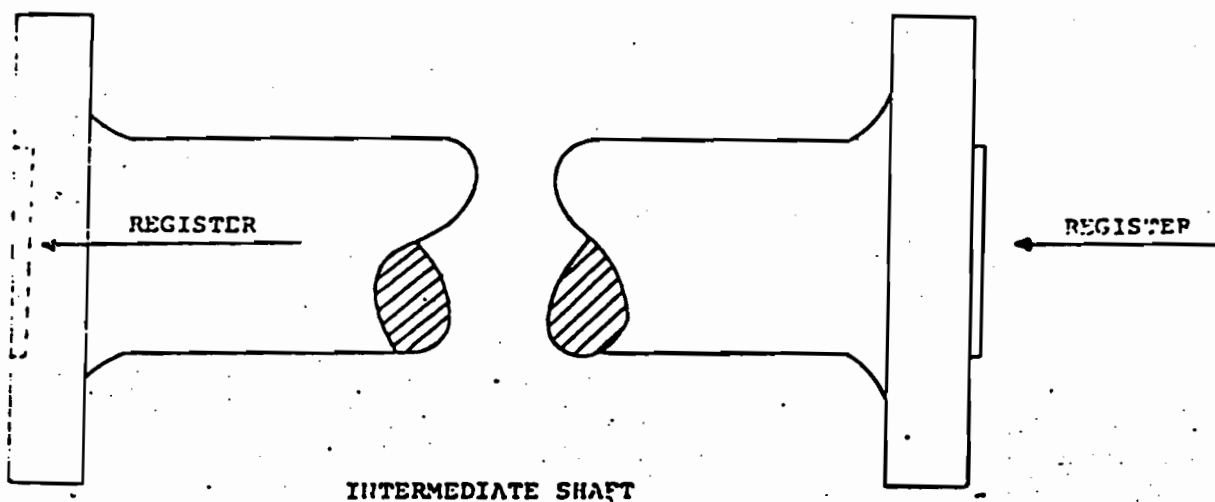


71.

40 05 04 00 07

THE INTERMEDIATE SHAFT ILLUSTRATED HAS A REGISTER MACHINED ON EACH OF THE COUPLING FLANGES. THIS IS REQUIRED:

- (1) to assist in the correct alignment of the shaft
- (2) to reduce the space required for the shaft
- (3) to ensure that a short distance is left between the flanges when the coupling bolts are tightened
- (4) for all the reasons stated in (1), (2) and (3)

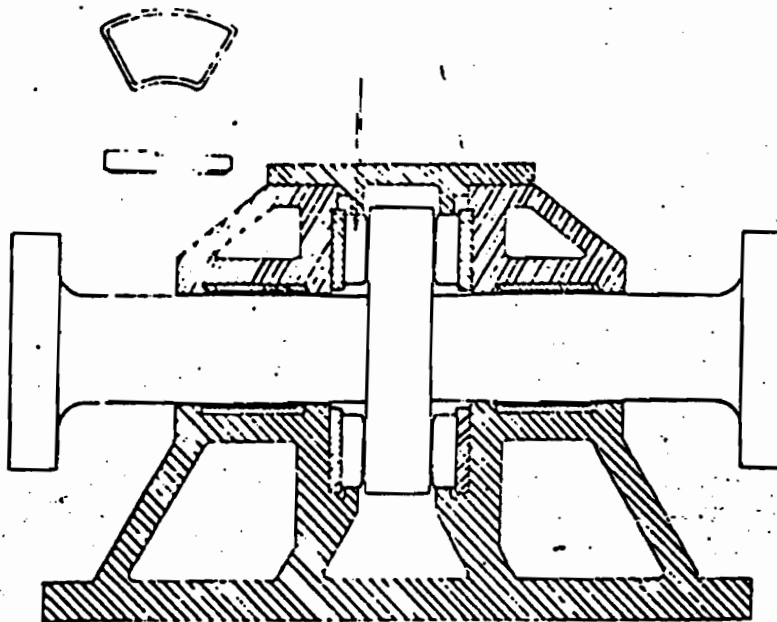


72.

40 05 02 00 01

THE TYPE OF MAIN THRUST BEARING ILLUSTRATED IS FITTED
IN A SHIP TO:

- (1) transfer the axial thrust of the main engine to the ship's structure
- (2) support the after end of the main engine crankshaft
- (3) transfer the thrust of a steam turbine rotor to the ship's structure
- (4) transfer the thrust of the propeller to the ship's structure

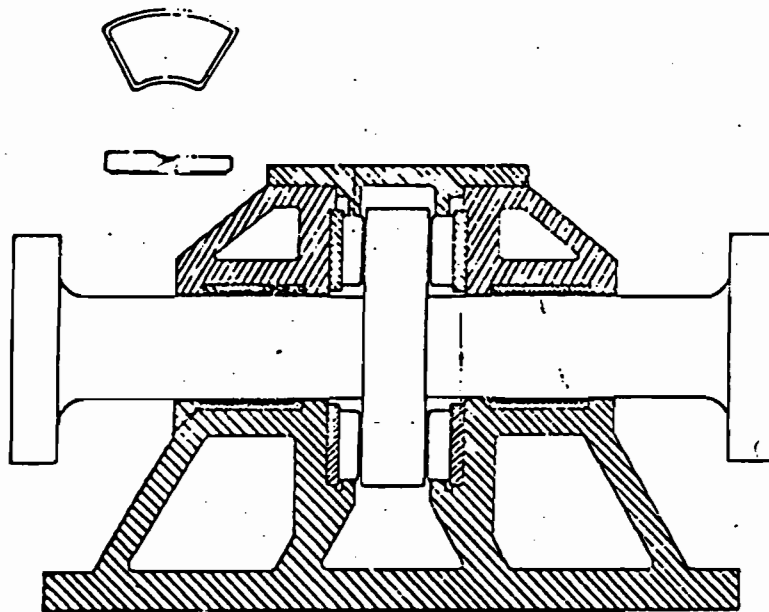


74.

40 05 02 00 07

THE MECHANISM ILLUSTRATED IS KNOWN AS A _____
TYPE OF THRUST BEARING.

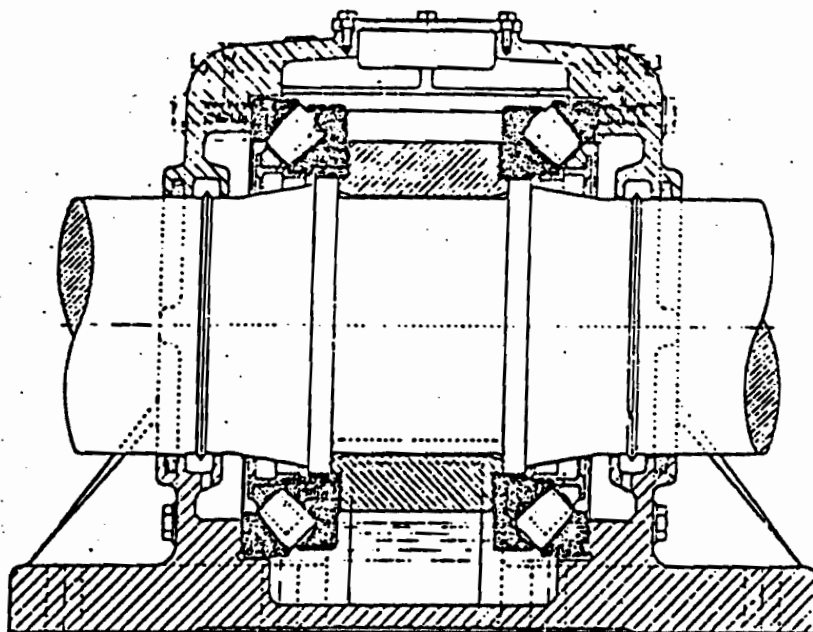
- (1) multi-collar, pivoted pad
- (2) multi-collar, fixed pad
- (3) ✓ single-collar, pivoted pad
- (4) single-collar, fixed pad



40 05 02 00 05

THE DOUBLE TAPERED ROLLER MAIN THRUST BEARING ILLUSTRATED
HAS THE ADVANTAGE THAT IT IS:

- (1) completely frictionless
- (2) cheaper to manufacture than a collar and pad type
- (3) cheaper to install than a collar and pad type
- (4) able to support both radial and axial loads.



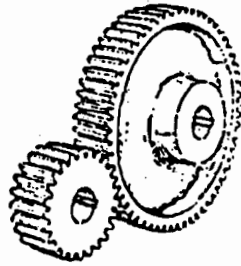
40 05 05 00 03

75.

THE TYPE OF GEARING ILLUSTRATED IS KNOWN AS _____

GEARING.

- (1) spur
- (2) rack and pinion
- (3) bevel
- (4) worm



42

76.

40 05 05 00 04

THE TYPE OF GEAR ARRANGEMENT ILLUSTRATED IS KNOWN AS

_____ GEARING.

- (1) helical
- (2) ~~rack and pinion~~
- (3) bevel
- (4) worm

