U.S.C.G. Merchant Marine Exam

UFIV – Assistant Engineer

Q690 Motor Plants

(Sample Examination)

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

1. For diesel engines, such as those used for main propulsion and auxiliary power on fishery research vessels, while running at speed, how is the ignition of fuel within the cylinder achieved?

   A. Ignition is achieved by a high voltage electric spark induced across the gap of a specially designed spark plug.
   B. Ignition is achieved by the heat of compression created by compressing the air/fuel mixture within the cylinder into a relatively small volume.
   C. Ignition is achieved by intense heat by passing electric current through the element of a specially designed glow plug.
   D. Ignition is achieved by the heat of compression created by compressing intake/charge air within the cylinder into a relatively small volume.

   Correct answer: D

2. You are assigned to a fishing industry factory ship fitted with main propulsion diesel engines of the type shown in the illustration. If the engine's crankshaft is turning at 900 rpm, what will be the rotational speed of the two camshafts? Illustration MO-0122

   A. 450 rpm
   B. 900 rpm
   C. 1800 rpm
   D. Not enough information is given to determine camshaft rpm

   Correct answer: B

3. You are assigned to a fishery research vessel fitted with main propulsion diesel engines operating on the cycle represented in the polar timing diagram shown in the illustration. When do the intake valves open and close respectively? Illustration MO-0084

   A. The intake valves open at top dead center at the beginning of the intake stroke.
      The intake valves close at bottom dead center at the end of the intake stroke.
   B. The intake valves open at 75o before top dead center on the exhaust stroke.
      The intake valves close at 45o after bottom dead center on the compression stroke.
   C. The intake valves open at bottom dead center at the end of the intake stroke.
      The intake valves close at top dead center at the beginning of the intake stroke.
   D. The intake valves open at 45o after bottom dead center on the compression stroke.
      The intake valves close at 75o before top dead center on the exhaust.

   Correct answer: B

4. The fishing industry factory ship to which you are assigned has a main propulsion engine of the type shown in the illustration. In terms of piston action, operating cycle, and piston type, what statement is true concerning this engine type? Illustration MO-0069

   A. This is a single-acting, two-stroke cycle, opposed piston type engine.
   B. This is a single-acting, two-stroke cycle, crosshead piston type engine.
   C. This is a double-acting, two-stroke cycle, crosshead piston type engine.
   D. This is a double-acting, four-stroke cycle, opposed piston type engine.

   Correct answer: A

5. When checking the cylinder jacket water cooling expansion tank level on a main propulsion diesel engine on your fishing factory ship while underway, what should be the expansion tank level?

   A. The level should be in the lower part of the sight glass when the engine is at operating temperature.
   B. The level should be in the upper part of the sight glass when the engine is at operating temperature.
   C. The level should be out of sight high in the sight glass when the engine is at operating temperature.
   D. The actual level is unimportant as long as it is visible in the sight glass when the engine is at operating temperature.

   Correct answer: B

6. You are assigned as an engineer on an uninspected fishing industry vessel using main propulsion engines of the type shown in the illustration. Assuming that the piston is properly positioned, what statement represents the procedure for inspection of the compression rings while in place inside the engine? Illustration MO-0005

   A. The inspection takes place by removing the appropriate side cover and viewing through the resulting opening.
   B. It is not possible to inspect the compression rings while in place inside the engine.
   C. The inspection takes place by removing the appropriate crankcase access door and viewing through the resulting opening.
   D. The inspection takes place by removing the appropriate cylinder head valve cover and viewing through the resulting opening.

   Correct answer: B

7. The mollusc dredger to which you are assigned is fitted with generator set drive engines as shown in the illustration. What statement is true in terms of the combustion chamber design? Illustration MO-0006

   A. The engine uses an open type combustion chamber with a flat fire-deck.
   B. The engine uses an open type combustion chamber with a hemispherical fire-deck.
   C. The engine uses turbulence chambers with a hemispherical fire-deck.
   D. The engine uses pre-combustion chambers with a flat fire-deck.

   Correct answer: A

8. The uninspected fishing trawler to which you are assigned is fitted with auxiliary engines as partly shown in the illustration. What statement is true concerning the valve guide and valve seat arrangements? Illustration MO-0013

   A. The valve guides and the valve seats are both integral (non-replaceable).
   B. The valve guides and the valve seats are both replaceable inserts.
   C. The valve guides are replaceable inserts, and the valve seats are integral (non-replaceable).
   D. The valve guides are integral (non-replaceable), and the valve seats are replaceable inserts.

   Correct answer: B

9. When starting a deck winch drive engine in preparation for seine net handling operations, what parameter must be checked FIRST upon start-up to avoid immediate engine damage?

   A. Engine lubricating oil supply header pressure
   B. Fuel oil supply header pressure
   C. Winch gear oil pump discharge pressure
   D. Cylinder jacket water pump discharge pressure

   Correct answer: A

10. You are replacing a damaged high pressure fuel injection line for #1 cylinder on an auxiliary diesel engine onboard your fishery research vessel. Which of the following statements represents the best replacement practice or strategy?

    A. Replace the damaged fuel injection line with a factory-formed fuel injection line specifically fabricated for #1 cylinder line replacement.
    B. Replace the damaged fuel injection line with a custom fabricated line without regard to the length and configuration of the bends of the original.
    C. Custom fabricate the fuel injection line as close as possible to the fuel injection line being replaced in terms of bends and overall length.
    D. Custom fabricate the fuel injection line minimizing length and bends to create the shortest possible replacement fuel injection line.

    Correct answer: A

11. The main propulsion diesel engines fitted on your fishing industry factory ship are started with compressed air using the system illustrated. What would be the FIRST consequence of having the start solenoid valve energized open by depressing the start button? Illustration MO-0200

    A. The upper cranking air motor drive pinion is disengaged from the engine flywheel.
    B. The lower cranking air motor drive pinion is engaged to the engine flywheel.
    C. The lower cranking air motor drive pinion is disengaged from the engine flywheel.
    D. The upper cranking air motor drive pinion is engaged to the engine flywheel.

    Correct answer: B

12. The various auxiliary diesel engines fitted on your fishery research vessel may employ a variety of different starting systems. What type of starting system is shown in the illustration? Illustration MO-0049

    A. Pneumatic power operated system
    B. Gas engine power operated system
    C. Electric power operated system
    D. Hydraulic power operated system

    Correct answer: D

13. The main propulsion diesel engines fitted on your uninspected fishing industry vessel are started with vane-type air-starting motors. What statement concerning air-start motor lubricator maintenance is true? (Assume a metal bowl fitted with a tubular sight glass.)

    A. The lubricator reservoir bowl should be re-filled with clean oil when the level is no longer visible in the glass.
    B. The lubricator reservoir bowl should be re-filled with clean oil when it is estimated that the bowl is completely empty.
    C. The lubricator reservoir bowl should be re-filled with clean oil as soon as the level drops to the very upper part of the glass.
    D. The lubricator reservoir bowl should be re-filled with clean oil when it becomes approximately half full as shown in the glass.

    Correct answer: D

14. The diesel generator engines onboard your mollusc dredger use a lubricating oil filtration scheme as shown in the illustration. What type of filtration system is illustrated? Illustration MO-0181

    A. Sump filtration
    B. Bypass filtration
    C. Shunt filtration
    D. Full-flow filtration

    Correct answer: D

15. The deck winch drive engine onboard your fishing seiner uses a lubricating oil filtration scheme as shown in the illustration. What type of filtration system is illustrated? Illustration MO-0182

    A. Shunt filtration
    B. Sump filtration
    C. Full-flow filtration
    D. Bypass filtration

    Correct answer: D

16. A diesel generator set on your fishing industry factory ship has a simplex lube oil strainer of the type shown in the illustration, situated on the discharge side of the lube oil pump. At a specified engine rpm and lube oil temperature, you notice that the inlet pressure is increasing, and the outlet pressure is decreasing, resulting in an unacceptable pressure drop. What should be done? Illustration MO-0057

    A. While the engine is running, the cleaning handle (A) should be rotated one or more full turns to remove the accumulated dirt from the disk stack (C).
    B. The drain plug (B) is removed to drain the sludge from the strainer sump, but the engine must be stopped to perform this operation.
    C. While the engine is running, the cleaning handle (A) should be rotated one-half turn to remove the accumulated dirt from the disk stack (C).
    D. While the engine is running, the drain plug (B) should be carefully loosened to drain the sludge from the strainer sump.

    Correct answer: A

17. Which of the following fuel systems is characterized by a complete absence of high-pressure fuel lines?

    A. Rotary plunger type system
    B. Unit injector type system
    C. Common rail type system
    D. In-line multi-plunger type system

    Correct answer: B

18. The main diesel engines on the uninspected fishing industry vessel to which you are assigned are fitted with a metal-edge duplex suction fuel strainer, where the elements must be periodically cleaned. The engine manufacturer recommends using a petroleum-based solvent for cleaning. Which of the following would typically be acceptable?

    A. Kerosene or diesel fuel
    B. Benzene or toluene
    C. White mineral spirits
    D. Perchloroethylene or trichlorethylene

    Correct answer: A

19. The manufacturer of the diesel generator set drive engines used aboard your fishing trawler recommends that no more than a 2 psig pressure drop across a fuel primary metal-edge suction strainer be allowed before recommended servicing. Assuming that the strainer inlet pressure is 4 psig, what would be the minimum allowable outlet pressure before recommended servicing?

    A. 2 psig
    B. 2" Hg
    C. 6 psig
    D. 6" Hg

    Correct answer: A

20. On diesel engines used on a fishing industry factory ship, which type of injection system is most likely to use sophisticated electronic controls for timing and metering?

    A. In-line multi-plunger pump
    B. Distributor type pump
    C. Rotary plunger type pump
    D. Unit injector type pump

    Correct answer: D

21. The uninspected fishing trawler to which you are assigned has diesel generators fitted with unit injectors with the operating principle as shown in the illustration. What statement is true concerning the beginning and ending of injection? Illustration MO-0144

    A. Injection begins when the upper fuel port is covered by the upper helix of the downward moving plunger, and injection ends when the lower fuel port is uncovered by the lower helix of the downward moving plunger.
    B. Injection begins when the lower fuel port is covered by the lower helix of the downward moving plunger, and injection ends when the upper fuel port is uncovered by the upper helix of the downward moving plunger.
    C. Injection begins when the upper fuel port is covered by the upper helix of the upward moving plunger, and injection ends when the lower fuel port is uncovered by the lower helix of the upward moving plunger.
    D. Injection begins when the lower fuel port is covered by the lower helix of the upward moving plunger, and injection ends when the upper fuel port is uncovered by the upper helix of the upward moving plunger.

    Correct answer: A

22. The fishery research vessel to which you are assigned has diesel generators fitted with fuel injectors of the type shown in figure "2" of the illustration. What statement is true concerning this type of injector? Illustration MO-0150

    A. The injector is of the open type and features port and helix metering.
    B. The injector is of the closed type and features port and helix metering.
    C. The injector is of the closed type and features pressure-time metering.
    D. The injector is of the open type and features pressure-time metering.

    Correct answer: B

23. The main propulsion diesel engines on your uninspected fishing industry vessel are fitted with mechanically operated and controlled unit injectors. In order for the engine to run properly, the injectors must be properly timed relative to the camshaft and properly synchronized relative to the other injectors. In terms of timing and synchronization, what statement is true?

    A. Injector timing is achieved by adjusting the cam follower heights of the injectors to the proper setting, and injector synchronization is also achieved by adjusting the cam follower heights of the injectors to the proper setting.
    B. Injector timing is achieved by adjusting the cam follower heights of the injectors to the proper setting, but injector synchronization is achieved by adjusting the control racks of the injectors to the proper setting.
    C. Injector timing is achieved by adjusting the control racks of the injectors to the proper setting, and injector synchronization is also achieved by adjusting the control racks of the injectors to the proper setting.
    D. Injector timing is achieved by adjusting the control racks of the injectors to the proper setting, but injector synchronization is achieved by adjusting the cam follower heights of the injectors to the proper setting.

    Correct answer: B

24. In order to minimize the abrasive action of dust particles entering the combustion spaces of the diesel engines used on the fishery research vessel to which you are assigned, each engine is protected with a heavy-duty air intake filter. Which one of the listed air intake filter elements is periodically cleaned as opposed to being periodically replaced with a new element?

    A. Wire-mesh filter element
    B. Multi-tube filter element
    C. Spiral-rotor filter element
    D. Panel-type filter element

    Correct answer: A

25. The turbocharged, four-stroke, main propulsion diesel engines on your fishery research vessel are protected with dry-type air intake filters. The engines are fitted with dial-type restriction indicators measuring the pressure in the air duct between the air intake filter and the turbocharger blower inlet. Under what conditions should the air intake filters be evaluated using the restriction indicators?

    A. The engine should be running at rated RPM with no load (propulsion clutch disengaged).
    B. The engine should be running at idle RPM with minimal load (propulsion clutch engaged).
    C. The engine should be running at idle RPM with no load (propulsion clutch disengaged).
    D. The engine should be running at rated RPM with full load (propulsion clutch engaged).

    Correct answer: D

26. The fishing industry seiner to which you are assigned has an engine as shown in the illustration. What statement concerning air box and exhaust manifold pressure is true, if the engine is running at rated speed? Illustration MO-0224

    A. The exhaust manifold pressure will be lower than the air box pressure.
    B. There is no predictable, consistent relationship between the exhaust manifold and air box pressures.
    C. The exhaust manifold pressure will be equal to the air box pressure.
    D. The exhaust manifold pressure will be higher than the air box pressure.

    Correct answer: A

27. Wire brushing and scraping can be used to remove hard carbon deposits from exhaust system surfaces. When cleaning exhaust systems associated with the diesel engines on the fishing trawler to which you are assigned, what technique can effectively be used in conjunction with mechanical cleaning to loosen and soften up these hard carbon deposits?

    A. Treating with carbon tetrachloride solvent
    B. Sand blasting with diamond dust
    C. Baking off carbon with heat lamps
    D. Treating with carbon penetrating solvent

    Correct answer: D

28. Assuming the use of low sulfur content diesel fuel, what combination of conditions associated with uninspected fishing industry vessel engine room operations would most contribute to internal corrosion of exhaust systems?

    A. High ambient temperature and high engine load
    B. Low ambient temperature and low engine load
    C. High ambient temperature and low engine load
    D. Low ambient temperature and high engine load

    Correct answer: B

29. The freshwater cooling systems serving the main engines of your uninspected fishing industry vessel are of the type shown in the illustration. What statement accurately describes the characteristics of the freshwater cooling circuit? Illustration MO-0137

    A. The freshwater circuit is a vented system using an automotive type 2-way thermostatic control valve for temperature control.
    B. The freshwater circuit is a pressurized system using a stationary/marine type 3-way thermostatic control valve for temperature control.
    C. The freshwater circuit is a pressurized system using an automotive type 2-way thermostatic control valve for temperature control.
    D. The freshwater circuit is a vented system using a stationary/marine type 3-way thermostatic control valve for temperature control.

    Correct answer: D

30. Your fishing factory ship is fitted with cooling water systems serving the main propulsion diesel engines as shown in the illustration. Which heat exchanger/cooler application and aspect would most likely require periodic mechanical cleaning with a specially designed brush? Illustration MO-0137

    A. The outside of the tubes of the RW/FW heat exchanger
    B. The inside of the tubes of the lube oil cooler
    C. The outside of the tubes of the lube oil cooler
    D. The inside of the tubes of the RW/FW heat exchanger

    Correct answer: D

31. The freshwater cooling systems serving the main engines on your uninspected fishing industry vessel are arranged as shown in the illustration. If there is excessive scale build up inside the tubes of an engine's shell and tube RW/FW heat exchanger, while the engine is in operation, what would be the resulting symptoms? Illustration MO-0137

    A. An increased temperature rise on the raw water side, and a decreased temperature drop on the freshwater side
    B. An increased temperature rise on the raw water side, and an increased temperature drop on the freshwater side
    C. A decreased temperature rise on the raw water side, and an increased temperature drop on the freshwater side
    D. A decreased temperature rise on the raw water side, and a decreased temperature drop on the freshwater side

    Correct answer: D

32. The diesel generators on the fishing industry seiner to which you are assigned are fitted with a charge air system as shown in the illustration. What statement is true concerning this type of charge air system? Illustration MO-0134

    A. The scavenging blower is a positive displacement type, and the actual displacement is not directly proportional to engine speed.
    B. The scavenging blower is a non-positive displacement type, and the actual displacement is directly proportional to engine speed.
    C. The scavenging blower is a positive displacement type, and the actual displacement is directly proportional to engine speed.
    D. The scavenging blower is a non-positive displacement type, and the actual displacement is not directly proportional to engine speed.

    Correct answer: C

33. The turbochargers on the main propulsion engines on the fishing factory ship to which you are assigned are fitted with an exhaust inlet screen to protect the turbocharger turbine. Upon inspection, pieces of broken piston rings or exhaust valves are found in the foreign object trap box. Why is it essential that this debris be removed prior to placing the engine back into operation?

    A. The debris may eventually cause the screen to become severely restricted
    B. The debris may eventually break into smaller pieces allowing turbine foreign object damage
    C. The debris will eventually become difficult to remove from the trap box
    D. The debris will cause the turbine casing to become statically imbalanced

    Correct answer: B

34. A turbocharged, two-stroke cycle main propulsion diesel engine on your fishery research vessel is emitting gray to black smoke excessively from the stack. Upon comparing the measured air box pressure against a reference engine which is producing a clear stack, the measured air box pressure is determined to be too low. Which of the following conditions would most likely be the cause for the relatively low air box pressure?

    A. Turbocharger exhaust turbine inlet screen is excessively restricted
    B. Scavenging air intake ports are excessively restricted with carbon deposits
    C. Airside aluminum fins on after coolers are excessively restricted
    D. Exhaust silencer/muffler is excessively restricted with carbon deposits

    Correct answer: C

35. The fishing industry factory ship to which you are assigned is fitted with main propulsion engines driving through pneumatic airflex clutches as shown in the illustration. What statement is true concerning this type of clutch? Illustration MO-0141

    A. The clutch is a constricting type clutch and constricts to engage against the clutch drum when inflated.
    B. The clutch is a constricting type clutch and constricts to engage against the clutch gland when inflated.
    C. The clutch is an expanding type clutch and expands to engage against the clutch gland when inflated.
    D. The clutch is an expanding type clutch and expands to engage against the clutch drum when inflated.

    Correct answer: A

36. The lubricating oil system supporting the main propulsion reduction gear on the fishing trawler to which you are assigned is fitted with a sea water cooled 4-pass shell and tube lube oil cooler. The water box sacrificial zinc anodes must be inspected periodically. Which of the following listed actions correctly states maintenance criteria pertaining to scale build-up on the zincs?

    A. Any accumulated scale build-up on sacrificial zinc anodes should be left intact to ensure proper protection from galvanic corrosion
    B. Any sacrificial zinc anodes with accumulated scale build-up should be replaced regardless of the degree of deterioration
    C. Any accumulated scale build-up on sacrificial zinc anodes should be scraped off until the zinc anodes are shiny
    D. There is no need to check for scale build-up on the sacrificial zinc anodes as this phenomenon is not physically possible

    Correct answer: C

37. The mollusc dredger to which you are assigned has a pneumatic propulsion control system as shown in the illustration. What statement is true concerning transfer of control? Illustration MO-0168

    A. The transfer valve at the engine room control station is used to transfer control of propulsion from the engine room control station to the pilot house pneumatic master control station or vice versa.
    B. The transfer valve at the pilot house pneumatic master control station is used to transfer control of propulsion from the pilot house master control station to the engine room control station or vice versa.
    C. The transfer valve at the pilot house pneumatic master control station is used to transfer control of propulsion from the pilot house master control station to the mechanical slave remote control station or vice versa.
    D. The transfer valve at the pneumatic remote control station is used to transfer control of propulsion from the pneumatic remote control station to the mechanical slave remote control station or vice versa.

    Correct answer: A

38. Diesel engine closed, recirculating cooling water systems are particularly prone to cavitation corrosion/erosion. Which of the listed cooling system/engine components has surfaces in contact with the coolant that are most susceptible to this type of corrosion and erosion?

    A. Wet-type cylinder liners
    B. Cylinder head cooling water passages
    C. Cylinder cooling water jackets
    D. Engine exhaust cooling water jackets

    Correct answer: A

39. The engine manufacturer for the main engines used on your mollusc dredger specifies a supplemental coolant additive consisting of molybdate and nitrite be used to supplement the heavy-duty antifreeze for the closed, recirculating freshwater cooling system. A test-strip comparison chart as shown in the illustration is used for coolant testing purposes. If the molybdate concentration color corresponds to row 2 and the nitrite concentration color corresponds to column B, what statement is true? Illustration MO-0211

    A. The molybdate and nitrite concentrations levels are too low, and additional supplementary coolant additive is required.
    B. It is not possible to determine the molybdate and nitrite concentration levels from the information given.
    C. The molybdate and nitrite concentrations levels are too high, and a portion of the coolant must be drained and replaced with fresh water.
    D. The molybdate and nitrite concentrations levels are within acceptable limits, and no further correction is required.

    Correct answer: A

40. In a closed, recirculating freshwater cooling system used for the towing winch drive engine on your uninspected fishing seiner, what function would chemical treatment with pure ethylene glycol mixed with fresh water primarily perform?

    A. Freezing point and boiling point depression
    B. Freezing point elevation and boiling point depression
    C. Freezing point and boiling point elevation
    D. Freezing point depression and boiling point elevation

    Correct answer: D

41. You are attempting to start a deck winch drive engine fitted with an electric cranking motor where the battery electrolyte is frozen. What should be done to facilitate starting?

    A. The battery electrolyte should be allowed to thaw, and then the battery electrolyte should be diluted with distilled water as necessary before attempting to start the engine.
    B. The battery electrolyte should be thawed by means of a battery charger, and then the battery should be recharged as necessary before attempting to start the engine.
    C. The battery electrolyte should be allowed to thaw, and then the battery should be recharged as necessary before attempting to start the engine.
    D. The engine should be started by means of jumper cables connected to another battery without any particular concern regarding the electrolyte being frozen.

    Correct answer: C

42. While underway in open waters on your commercial crabbing vessel, the low clutch air pressure alarm sounds and the faint odor of burning rubber is detected. What is the appropriate response?

    A. Investigate the cause of low clutch air pressure, then bring the throttle and clutch control to the stop position if necessary.
    B. Reduce the load and speed on the engine, then investigate the cause of low clutch air pressure.
    C. Bring the throttle and clutch control to the stop position, then investigate the cause of low clutch air pressure.
    D. Investigate the cause of low clutch air pressure, then reduce the engine load and speed if necessary.

    Correct answer: C

43. The pneumatic propulsion control system used on your fishing factory ship uses a diaphragm-operated relay valve as shown in the illustration. Periodically, the valve is to be disassembled for cleaning and inspection. What statement best describes the proper technique? Illustration MO-0052

    A. Rubber parts such as the diaphragm should be cleaned with non-flammable solvent, and metal parts such as the valve discs and seats should be washed with soap and water.
    B. Rubber parts such as the diaphragm and metal parts such as the valve discs and seats should all be cleaned with non-flammable solvent.
    C. Rubber parts such as the diaphragm should be washed with soap and water, and metal parts such as the valve discs and seats should be cleaned with non-flammable solvent.
    D. Rubber parts such as the diaphragm and metal parts such as the valve discs and seats should all be washed with soap and water.

    Correct answer: C

44. The main engines on your uninspected fishing trawler are equipped with over speed trip devices as shown in the illustration. What statement concerning the operation of the over speed trip is true? Illustration MO-0171

    A. The over speed trip senses centrifugal force proportional to engine speed and limits the engine speed to the rated speed, while allowing the engine to continue to run at the rated speed.
    B. The over speed trip senses centrifugal force proportional to engine speed and shuts the engine down at a pre-determined, specified maximum speed setting.
    C. The over speed trip senses oil pressure proportional to engine speed and shuts the engine down at a pre-determined, specified maximum speed setting.
    D. The over speed trip senses oil pressure proportional to engine speed and limits the engine speed to the rated speed, while allowing the engine to continue to run at the rated speed.

    Correct answer: B

45. The main diesel propulsion engines on your uninspected fishing industry vessel are protected with a mechanical over speed trip mechanism similar to that shown in the illustration. Upon testing the trip setting, you discover that it is necessary to make an adjustment. Assuming that several adjustments may be necessary before the final setting is accurately achieved, what statement concerning adjustment is true? Illustration MO-0101

    A. To adjust the over speed trip, the engine must be running AND the locknut must be retightened only after the final adjustment.
    B. To adjust the over speed trip, the engine must be stopped AND the locknut must be retightened after each adjustment.
    C. To adjust the over speed trip, the engine must be running AND the locknut must be retightened after each adjustment.
    D. To adjust the over speed trip, the engine must be stopped AND the locknut must be retightened only after the final adjustment.

    Correct answer: B

46. The main engines on your fishing industry factory ship are fitted with speed control governors of the type shown in the illustration. What is the purpose of the compensation system, consisting of the buffer cylinder, buffer piston, buffer springs, and compensation needle valve? Illustration MO-0158

    A. It limits engine speed to a maximum value to prevent over speeding
    B. It prevents engine hunting when responding to load changes
    C. It senses the actual engine speed of rotation
    D. It senses the engine speed setting delivered from the bridge

    Correct answer: B

47. Using the oil chart provided in the illustration for guidance, which of the oils listed below would provide the best protection against high governor oil operating temperatures for speed control applications for fishing industry main propulsion diesel engines? Illustration MO-0161

    A. All Proof 10W50 (Polyolester)
    B. Mobil 1 (Synthesized Hydrocarbon)
    C. DN600 (Hydrocarbon)
    D. Delvac I (Synthesized Hydrocarbon)

    Correct answer: A

48. The thermal fluid heating oil system on your fishing industry factory ship is configured similarly to that shown in the illustration. What system component performs expansion and deaeration functions? Illustration MO-0198

    A. 1
    B. 2
    C. 4
    D. 5

    Correct answer: D

49. The auxiliary steam boiler on your fishing vessel is equipped with a gauge glass for local level indication. On which of the following auxiliary boiler types would this gauge glass be attached to a flash chamber also known as a steam accumulator or steam separator?

    A. Fire-tube steam boiler
    B. Water-tube forced-circulation steam boiler
    C. Water-tube natural-circulation steam boiler
    D. Electric steam boiler

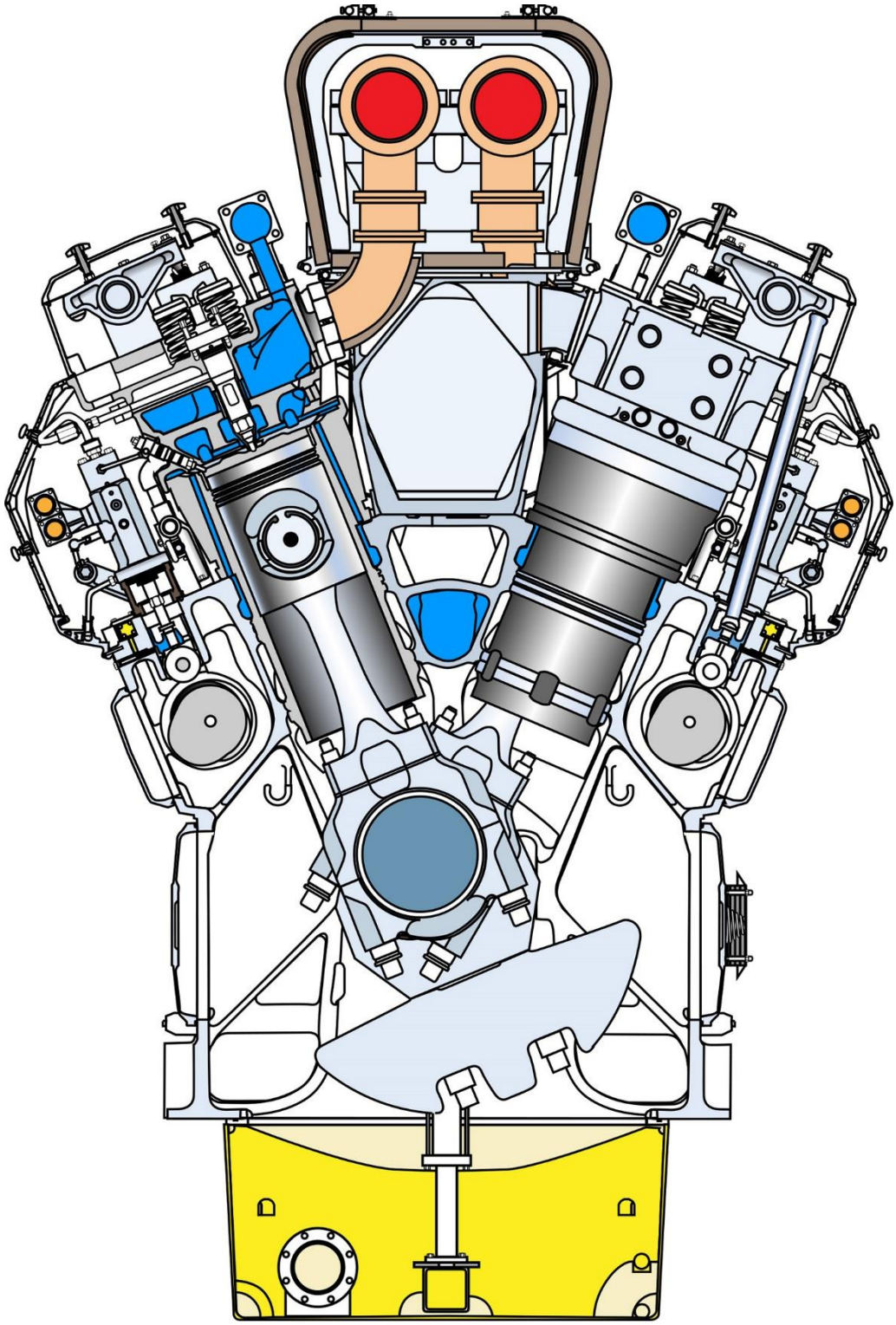
    Correct answer: B

50. What would be the most practical and efficient way of removing soot deposits from the fire sides of the tubes of an auxiliary water-tube natural-circulation boiler as fitted on your fishing factory ship?

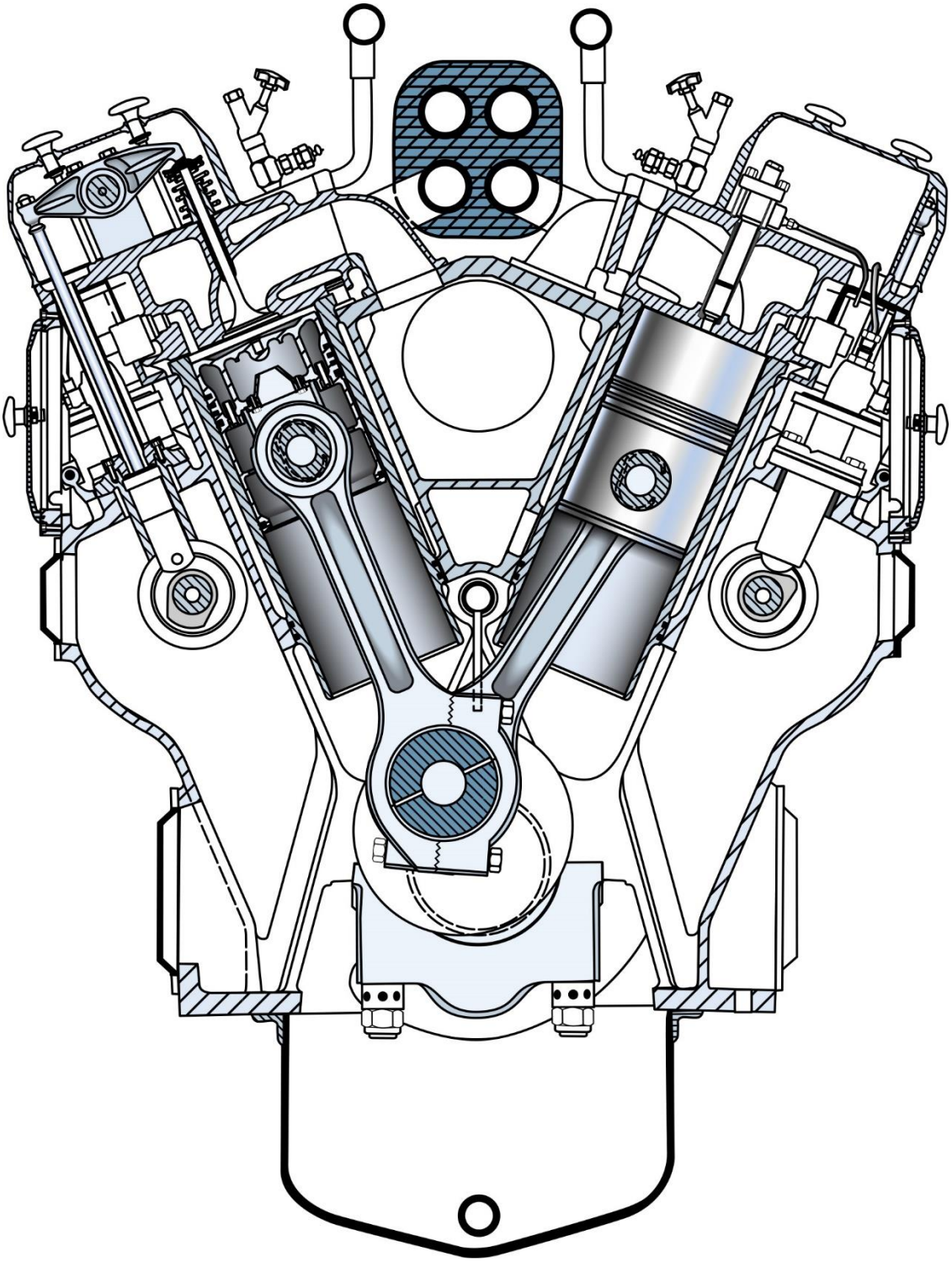
    A. Use of a suitable acid
    B. Use of a power-driven wire brush
    C. Use of an air lance
    D. Use of a high-pressure water jet

    Correct answer: C

MO-0005



MO-0006



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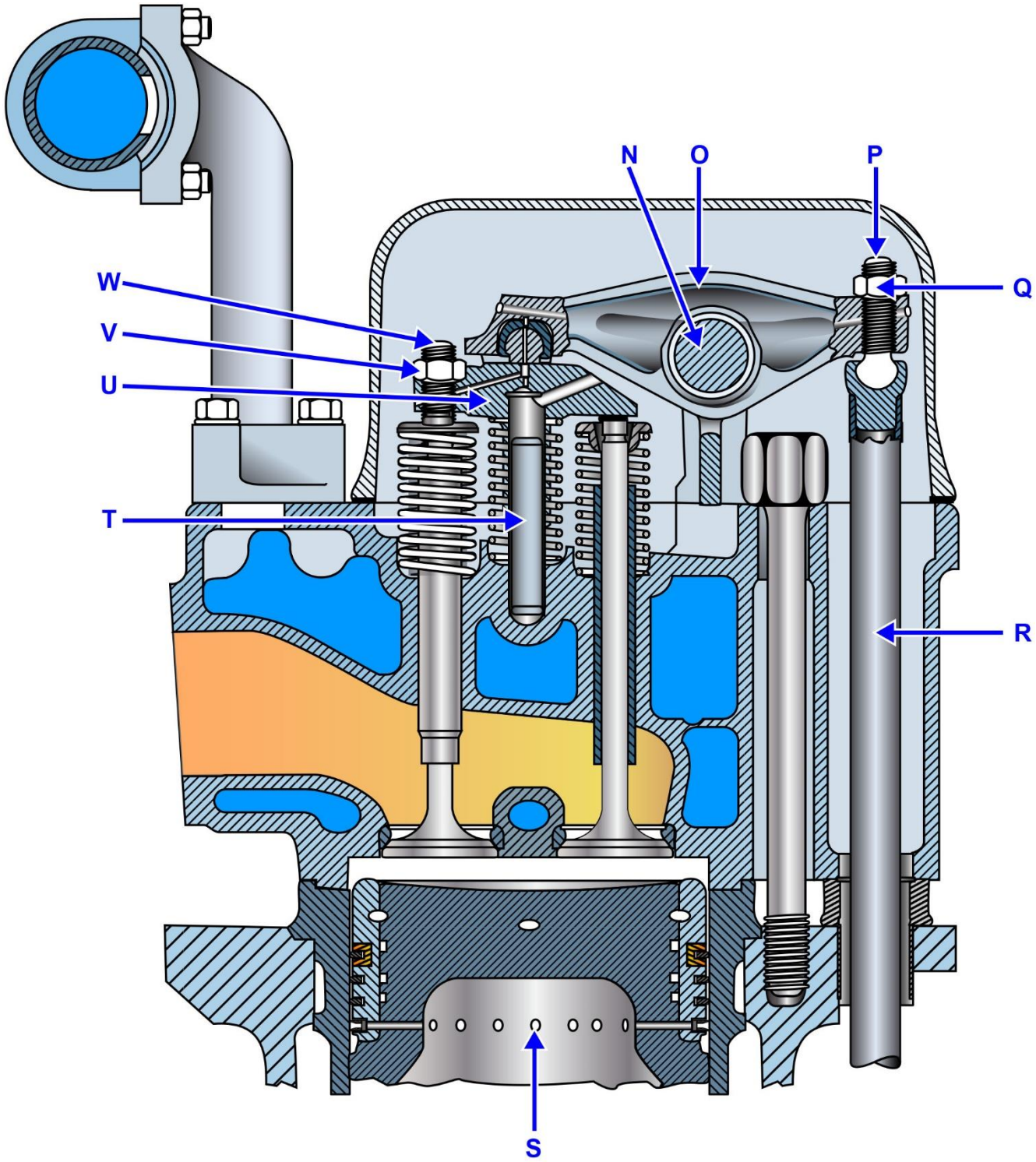
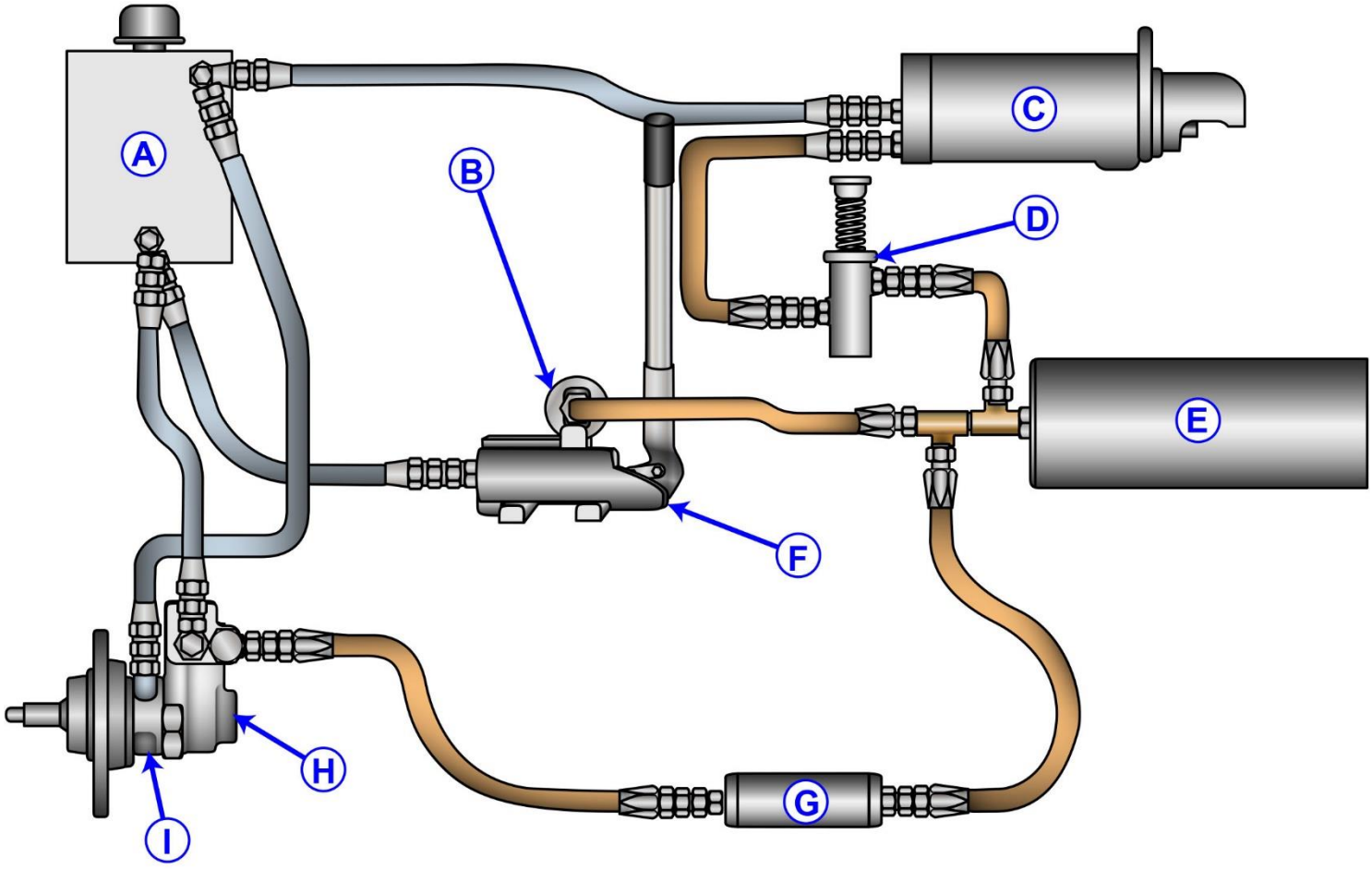
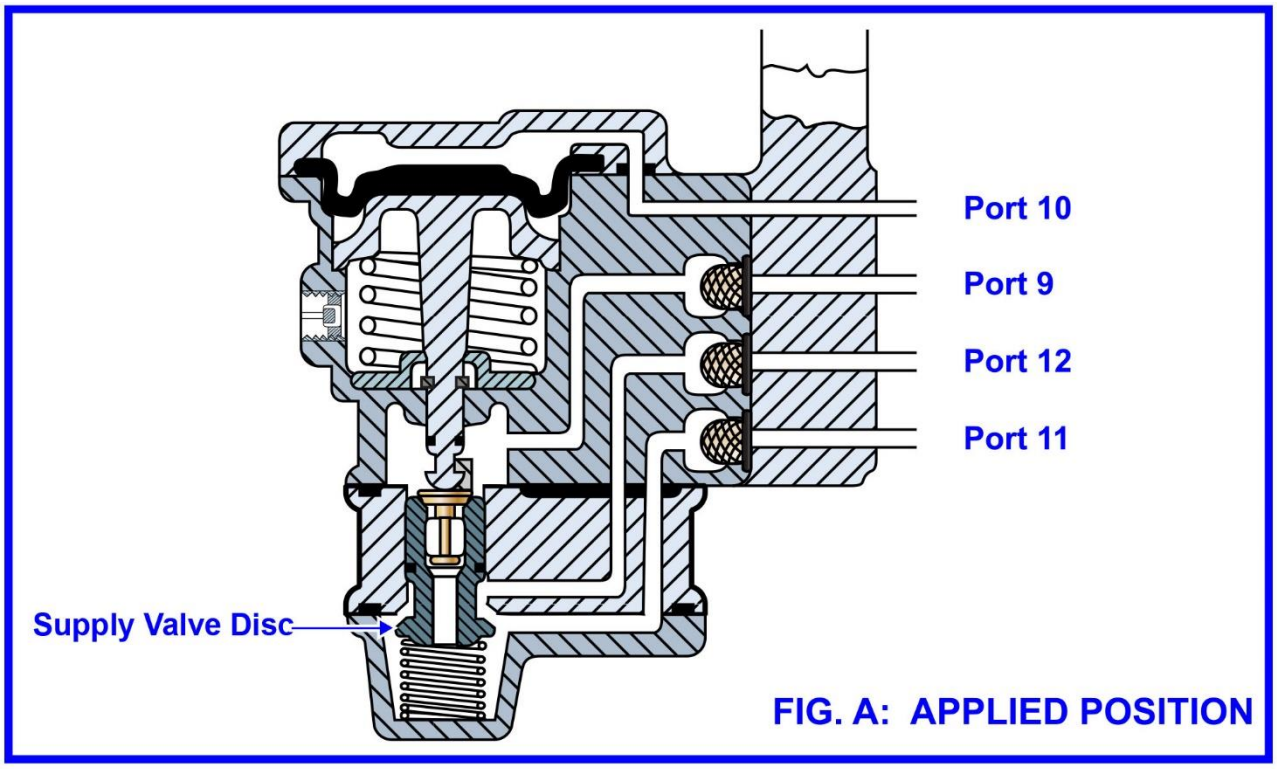
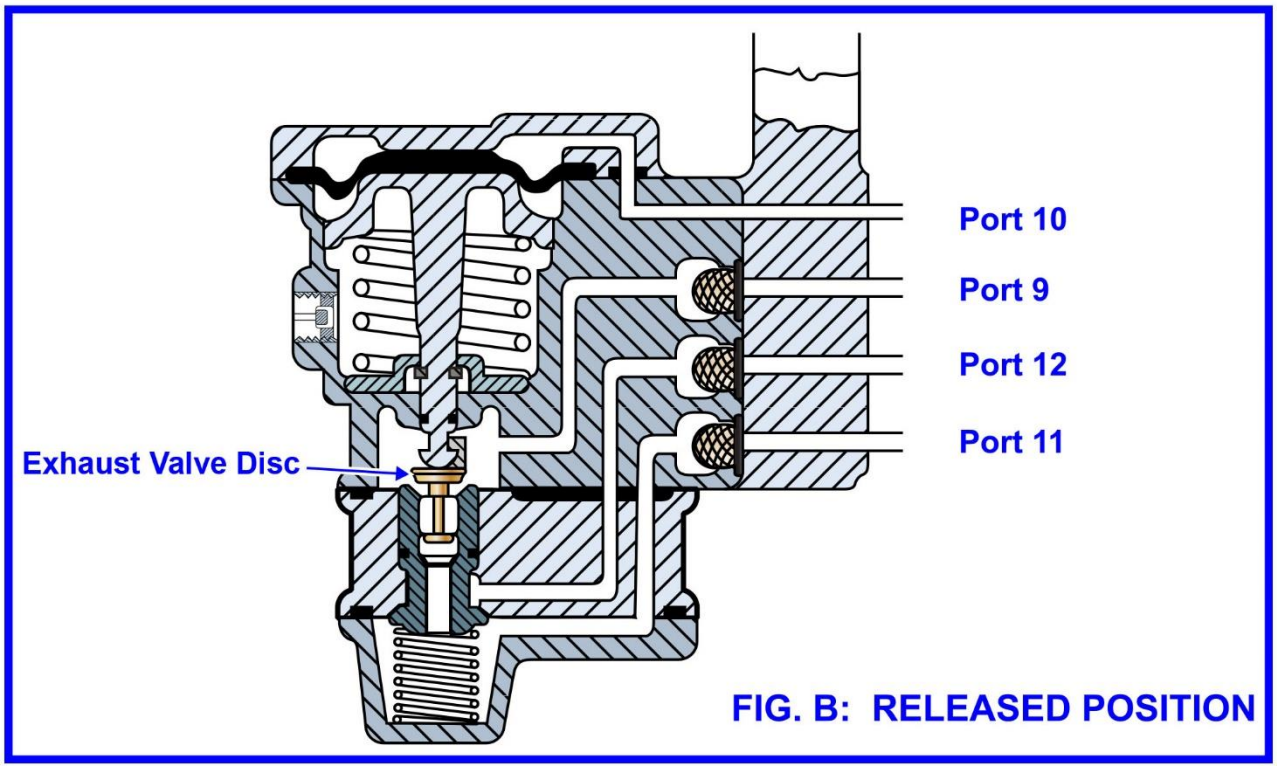


MO-0049

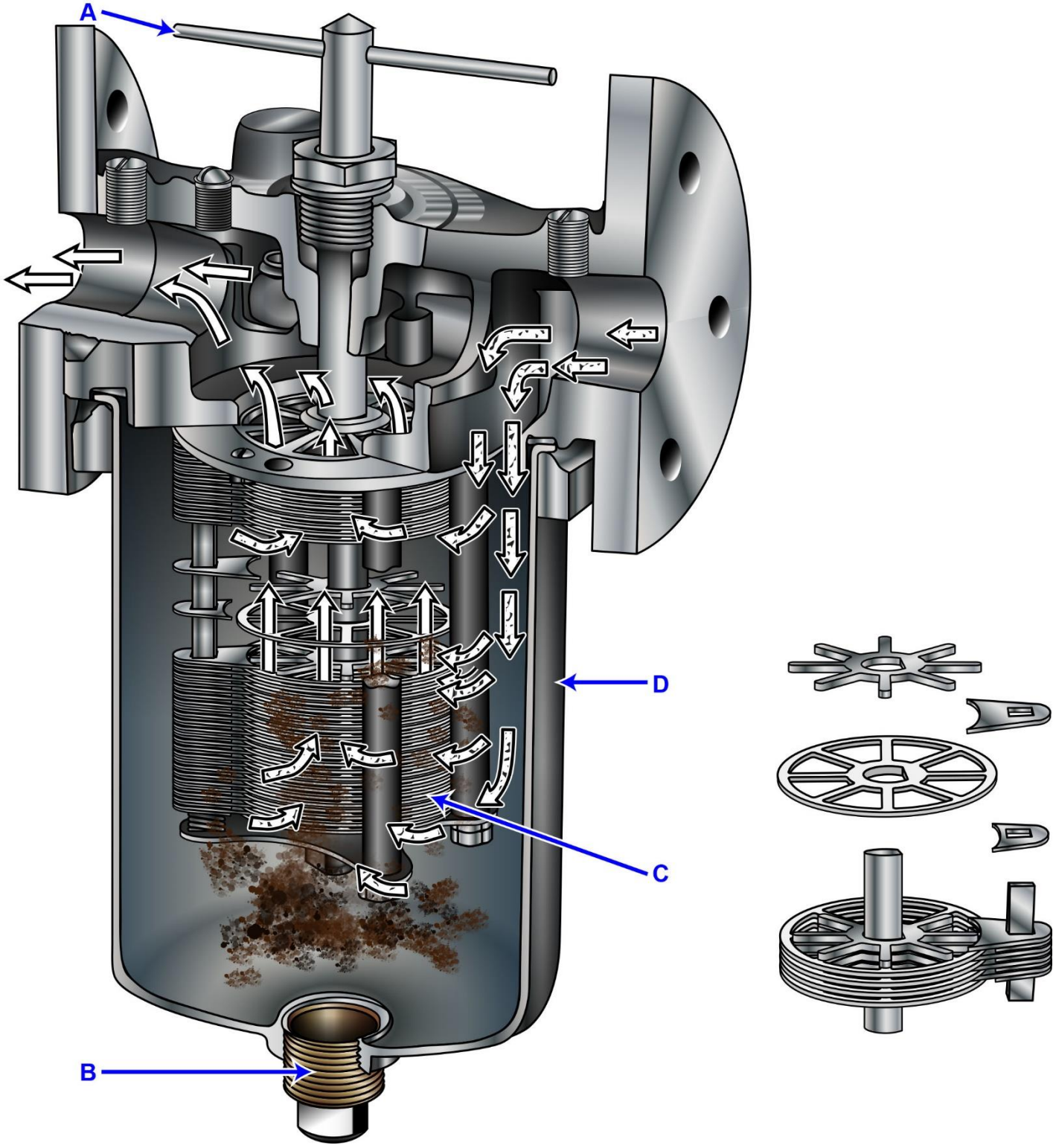


MO-0052

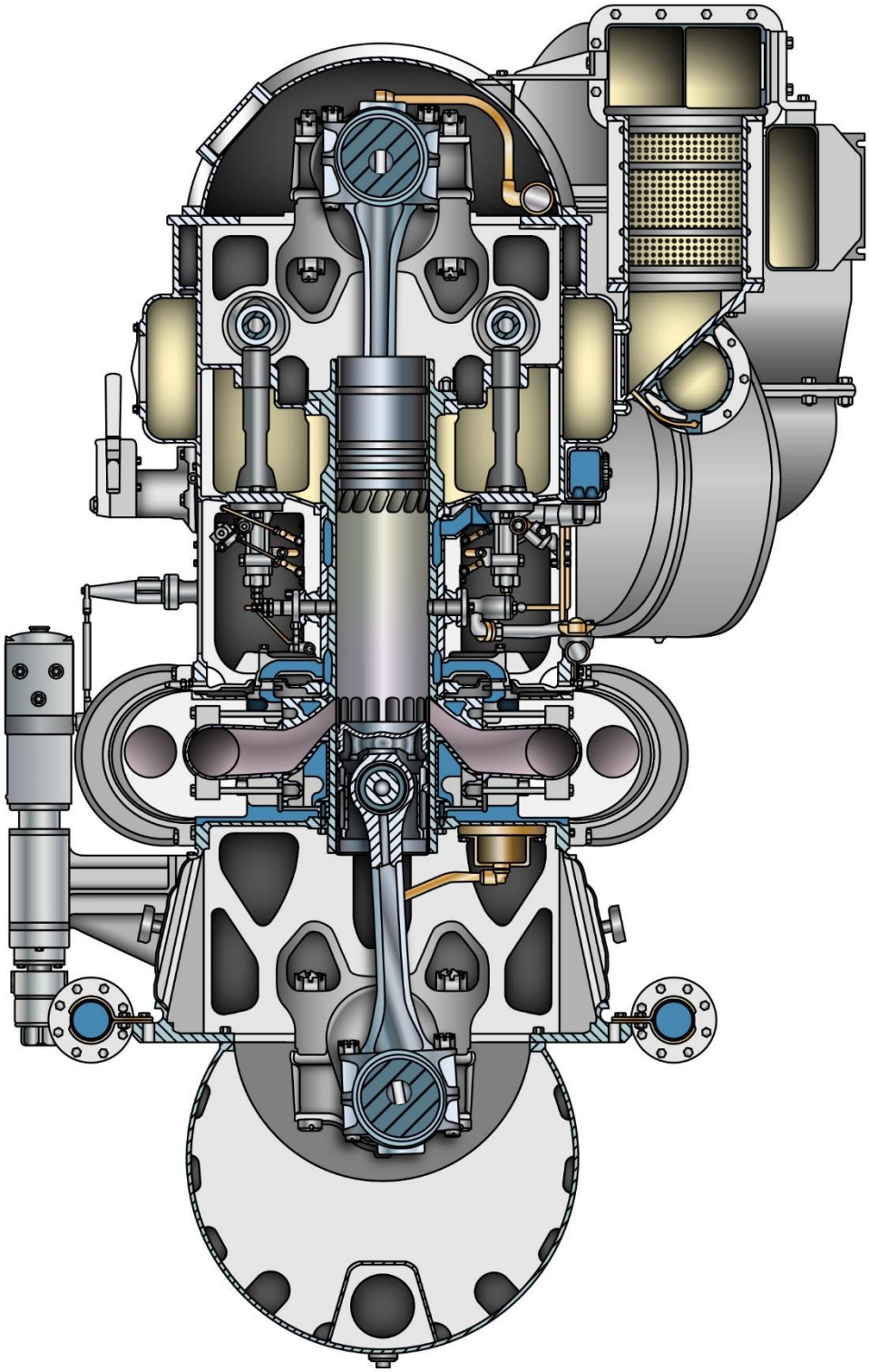




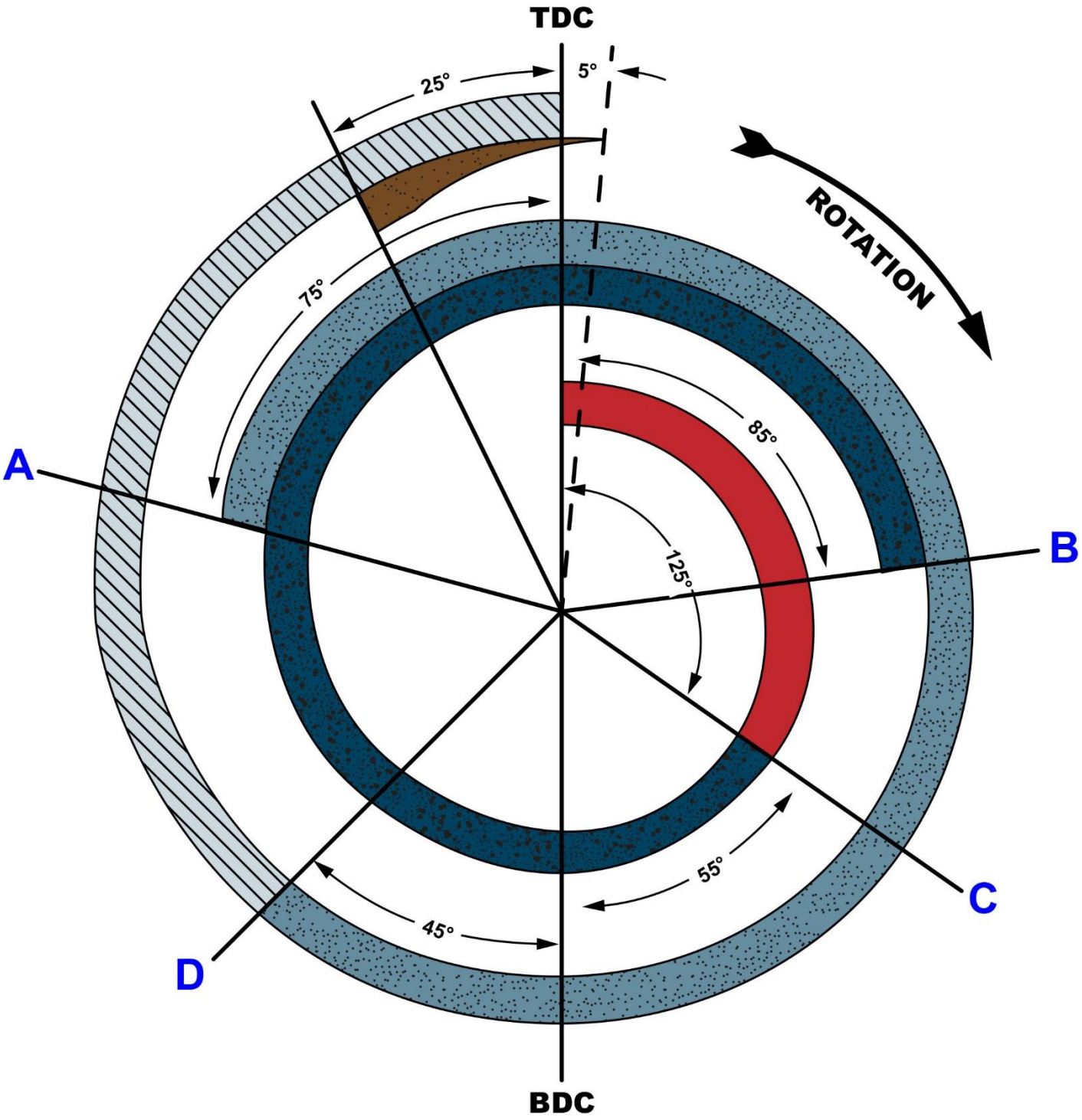
MO-0057



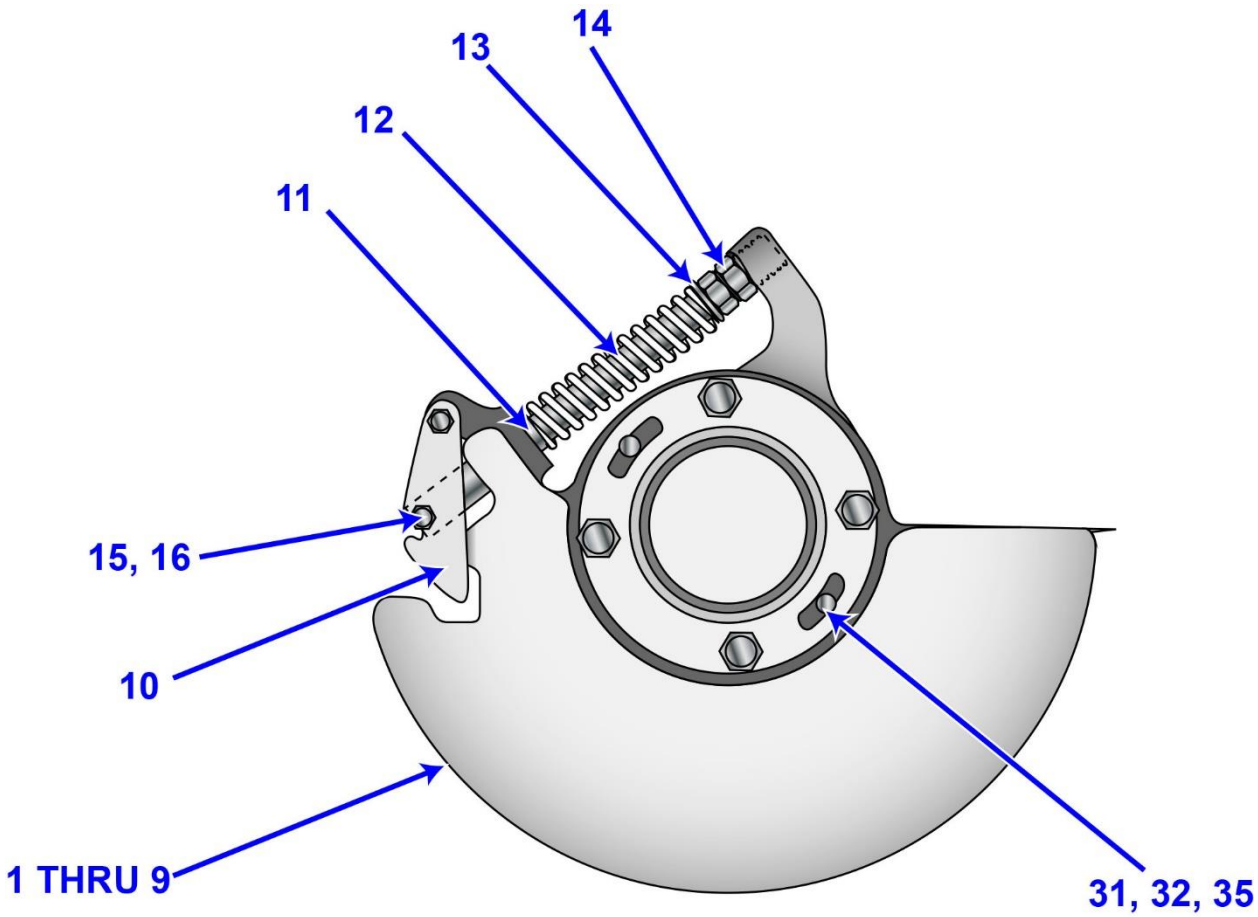
MO-0069

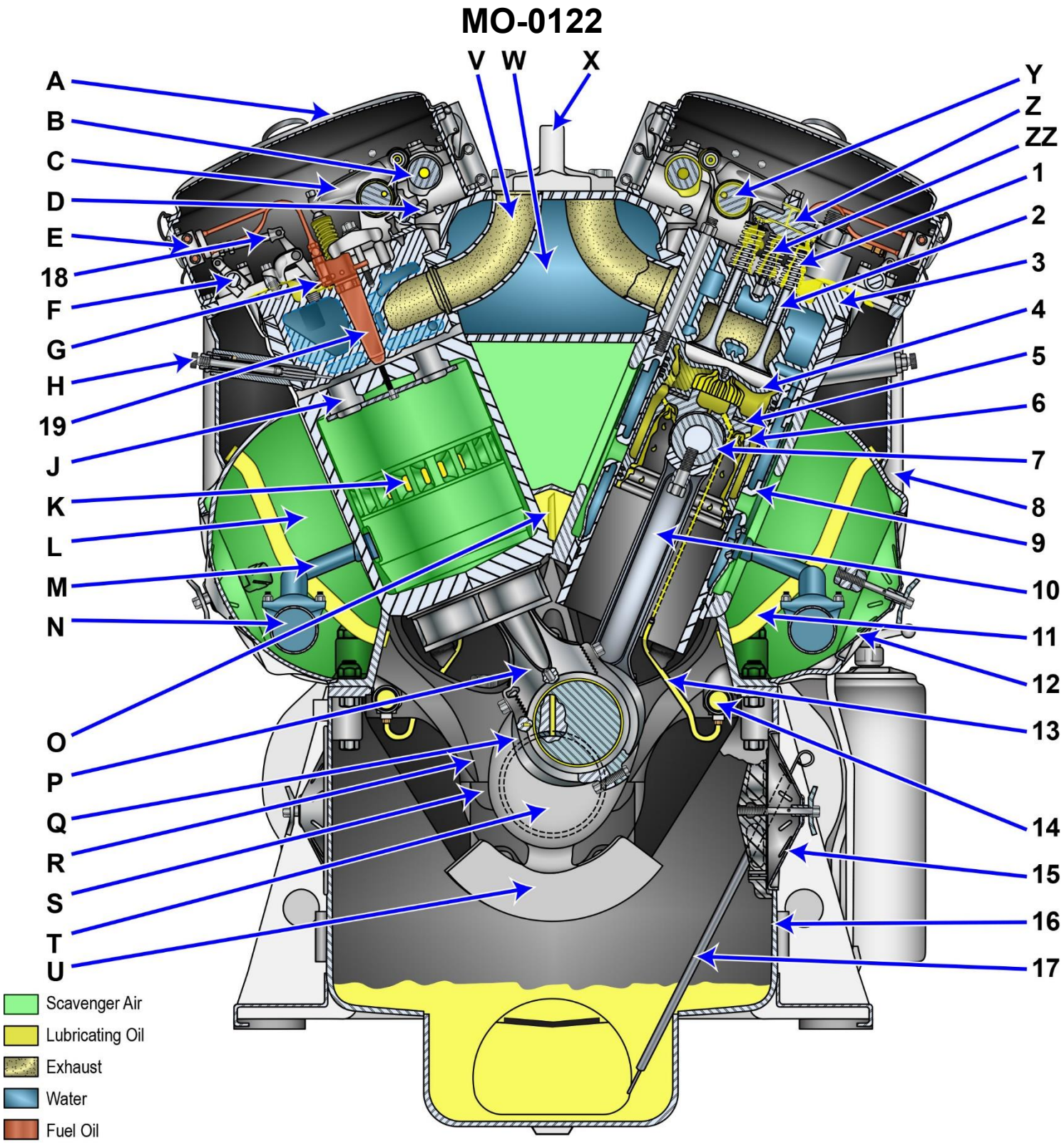


MO-0084

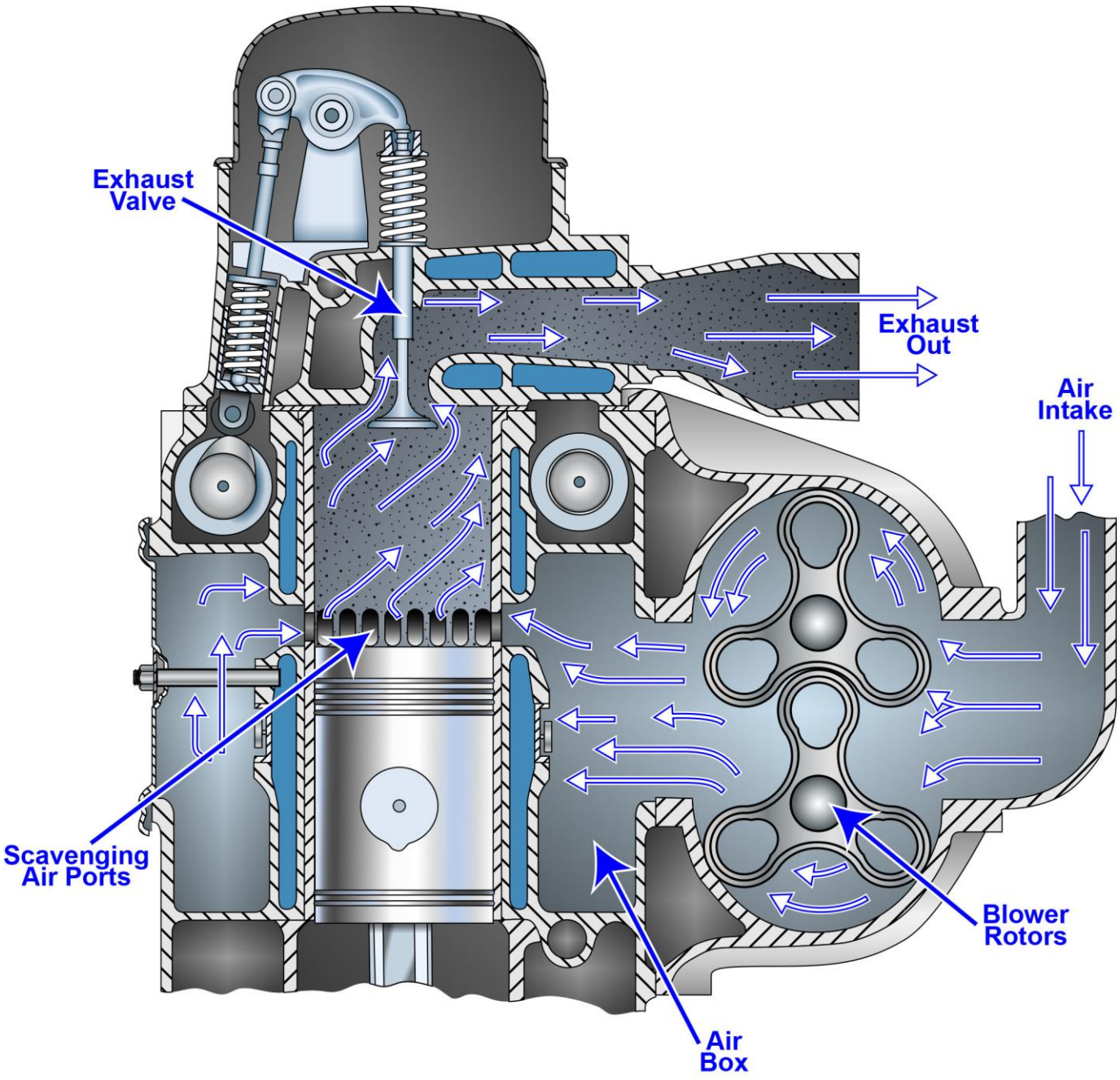


MO-0101

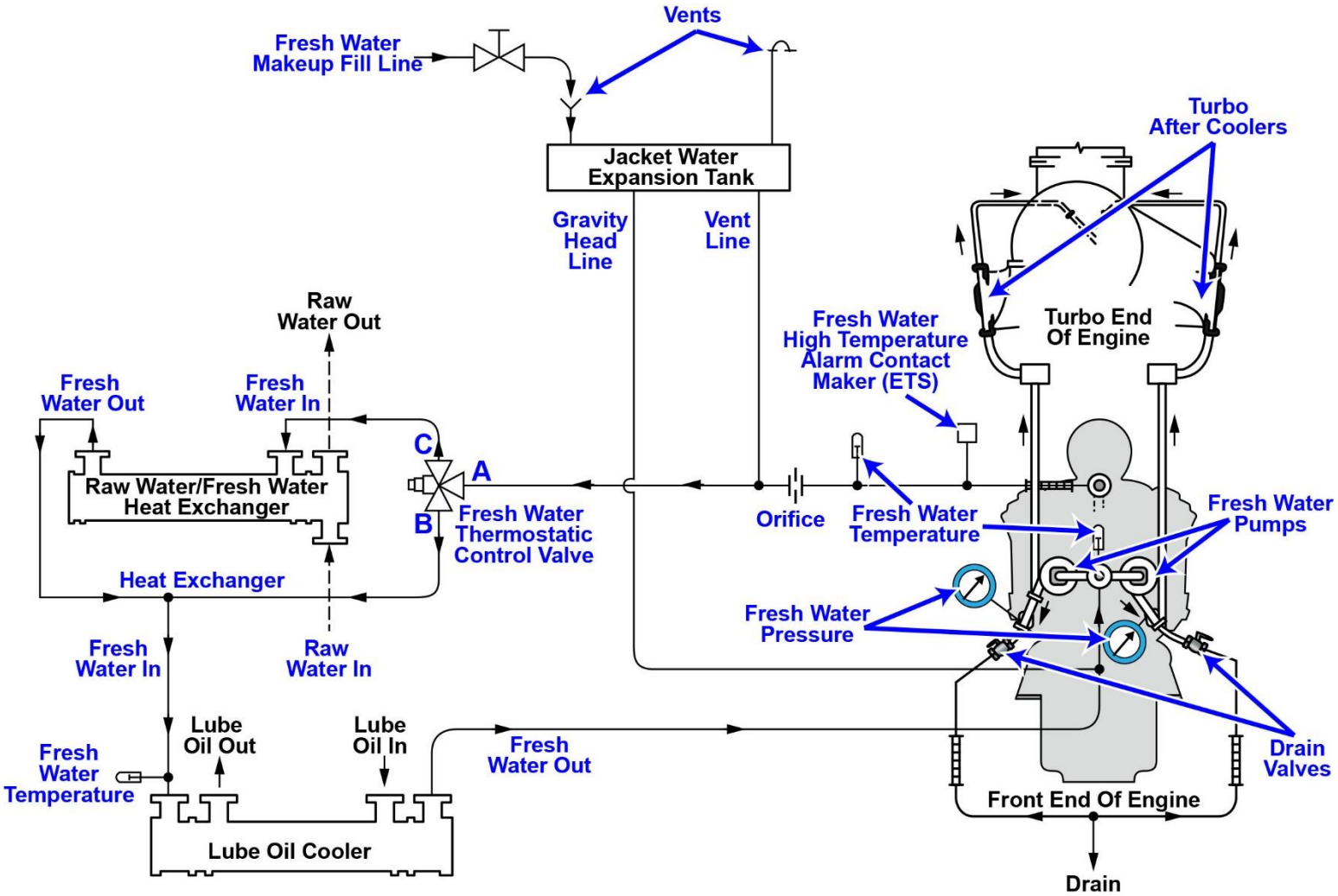




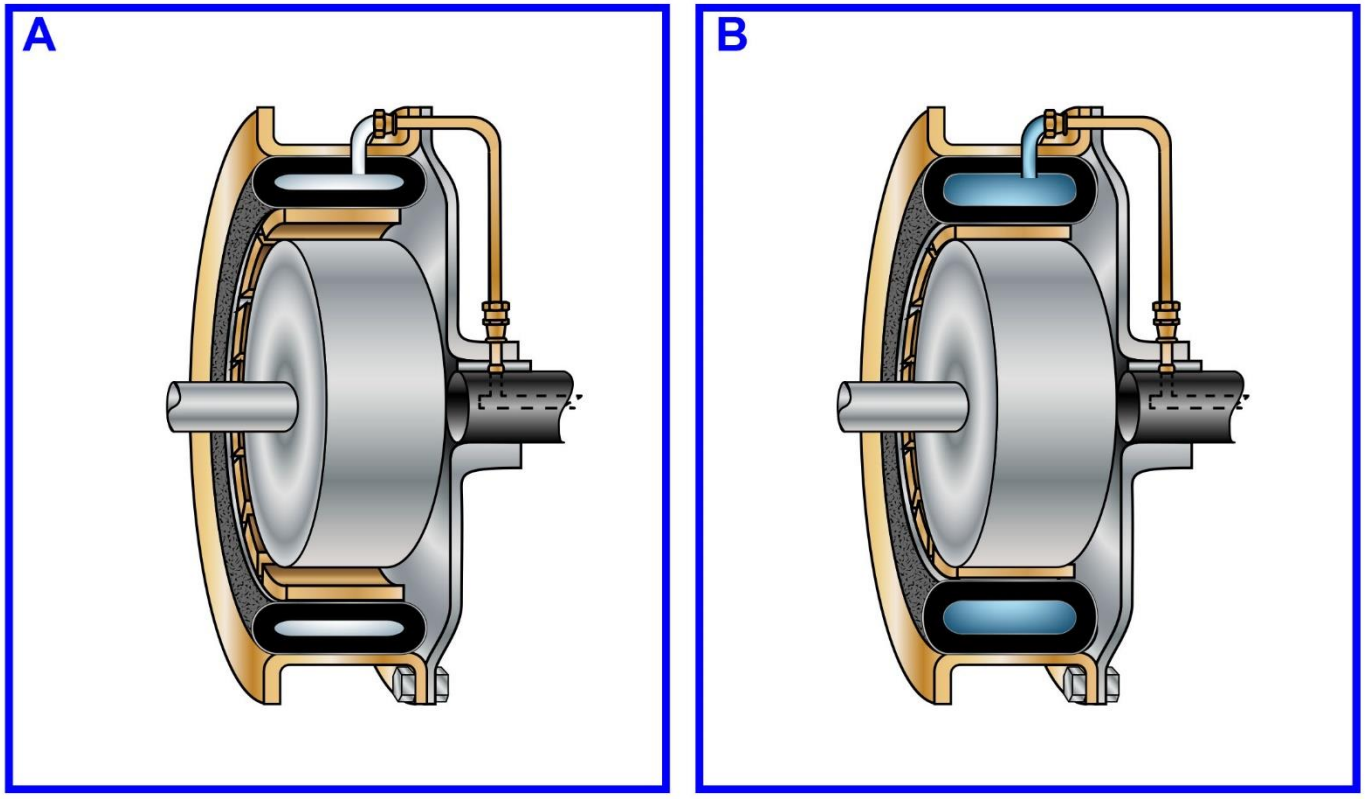
MO-0134



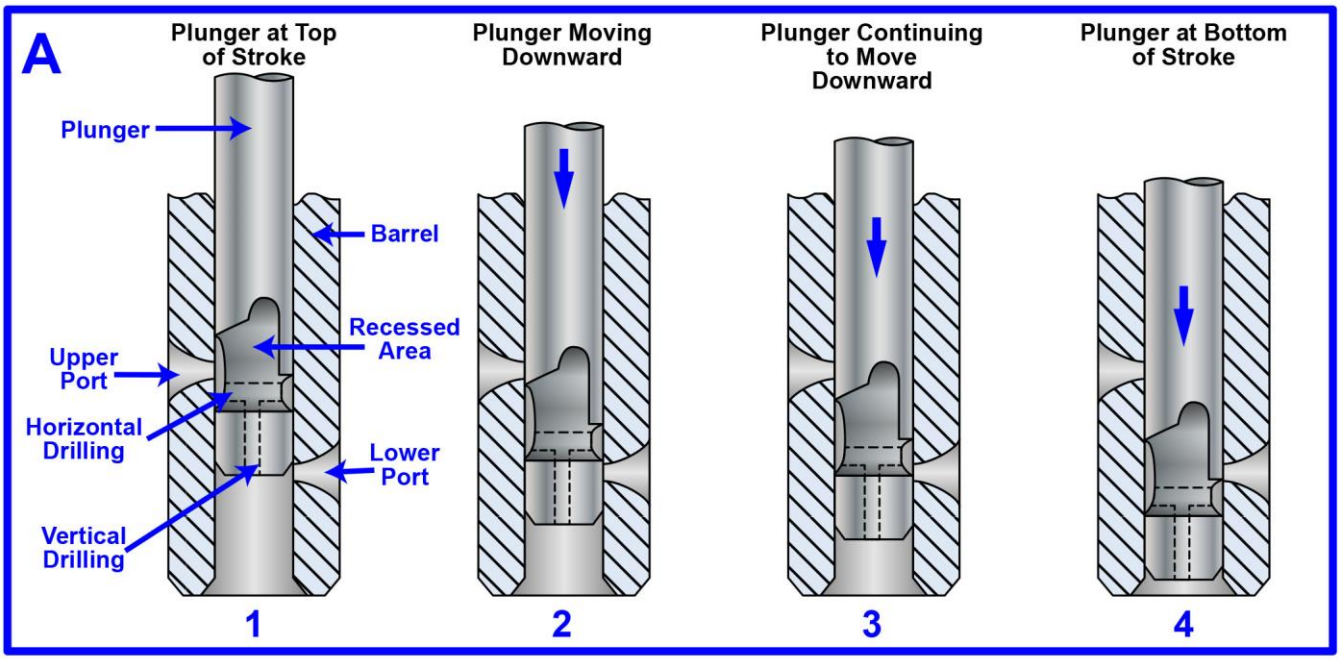
MO-0137
EMD Engine Fresh Water Cooling System with Heat Exchanger



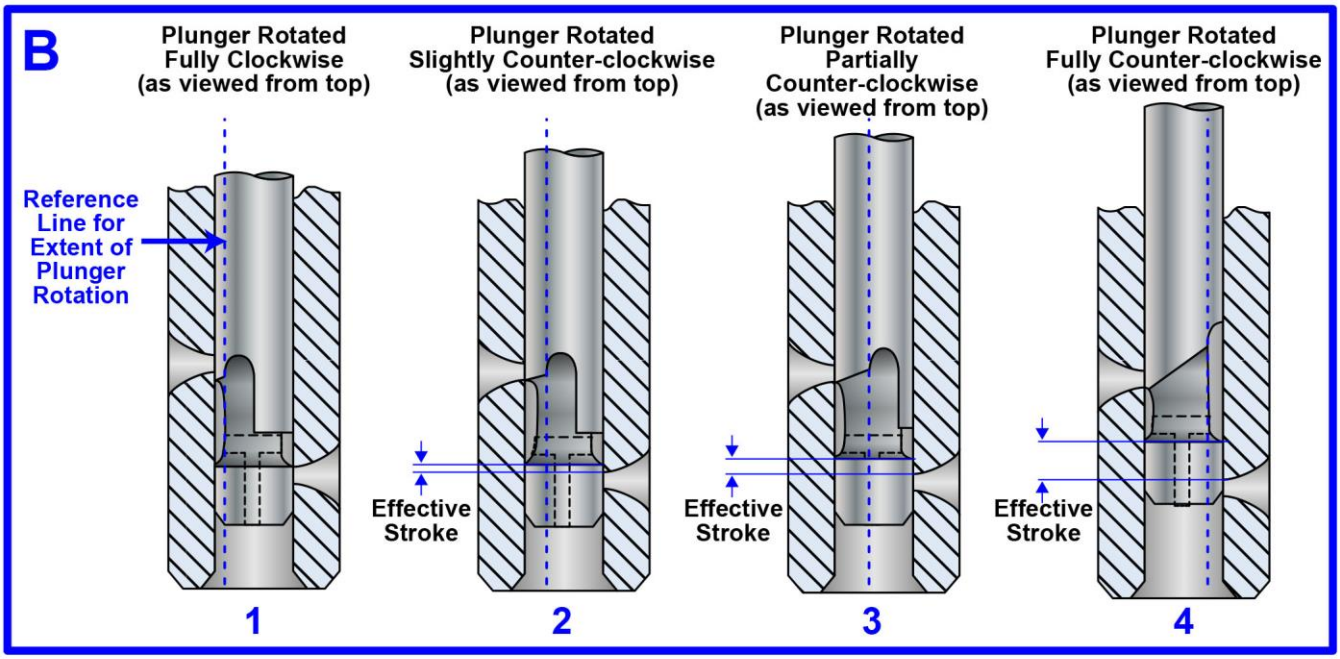
MO-0141
Pneumatic Airflex Clutch Operation



MO-0144
Detroit Diesel 71 Series Engine Unit Injector

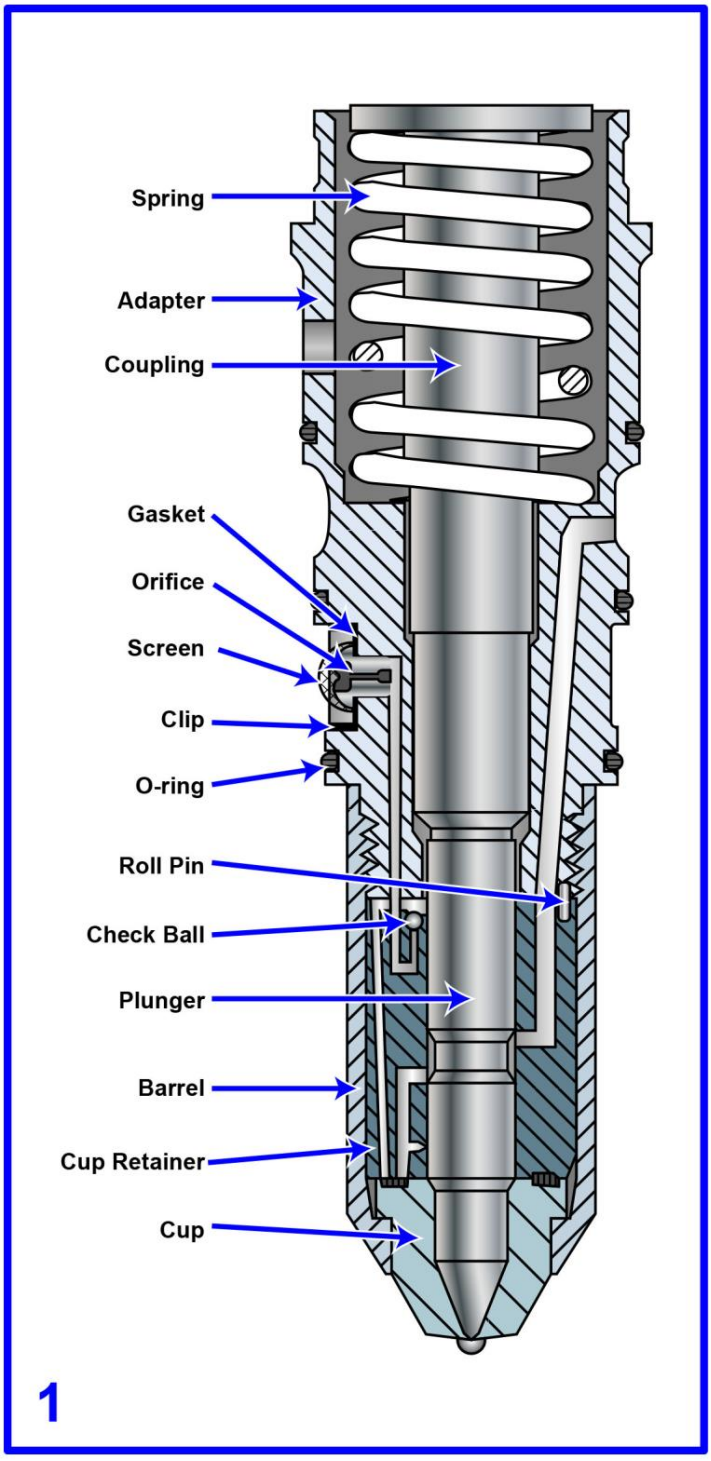


Injector Operation as a Function of Vertical Plunger Travel



Injector Operation as a Function of Extent of Plunger Rotation

MO-0150



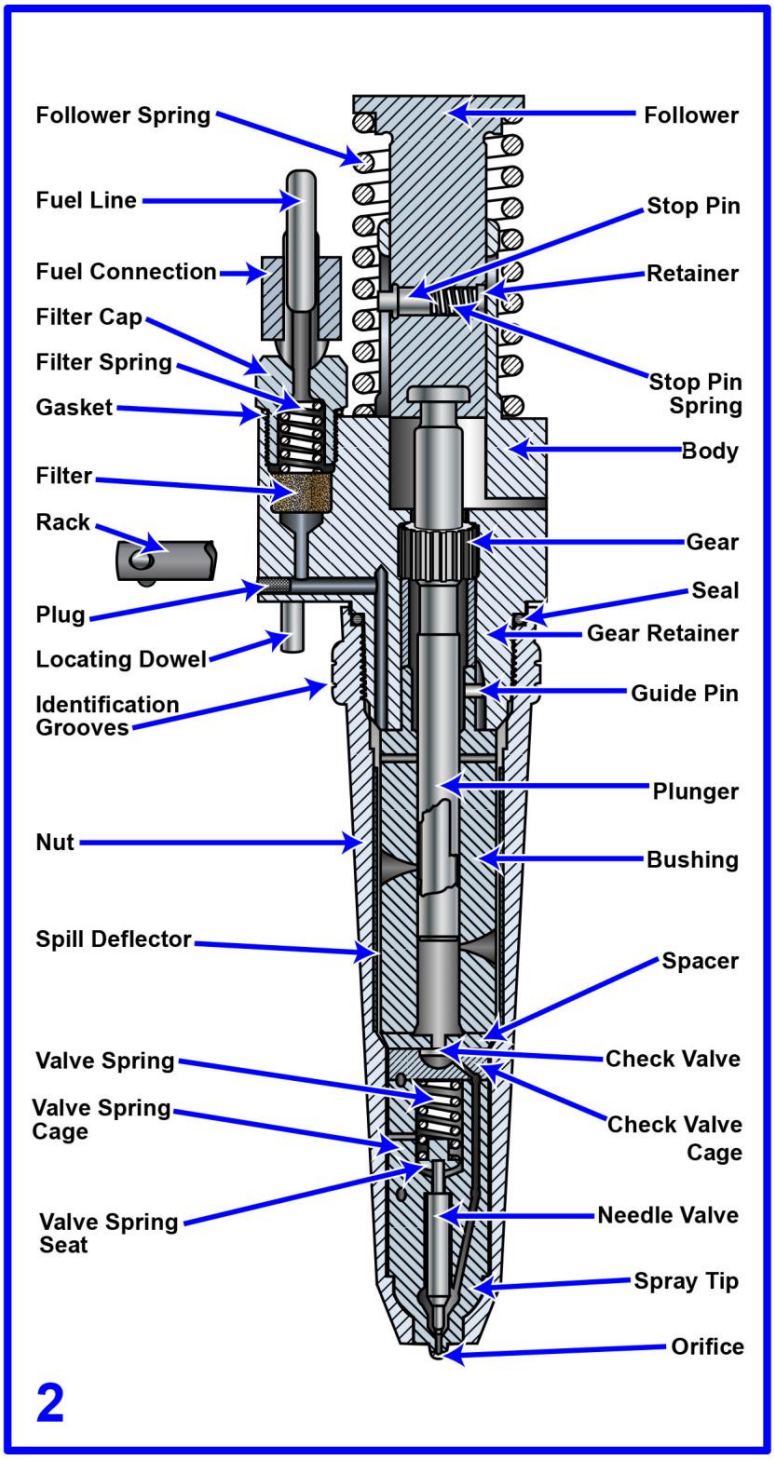
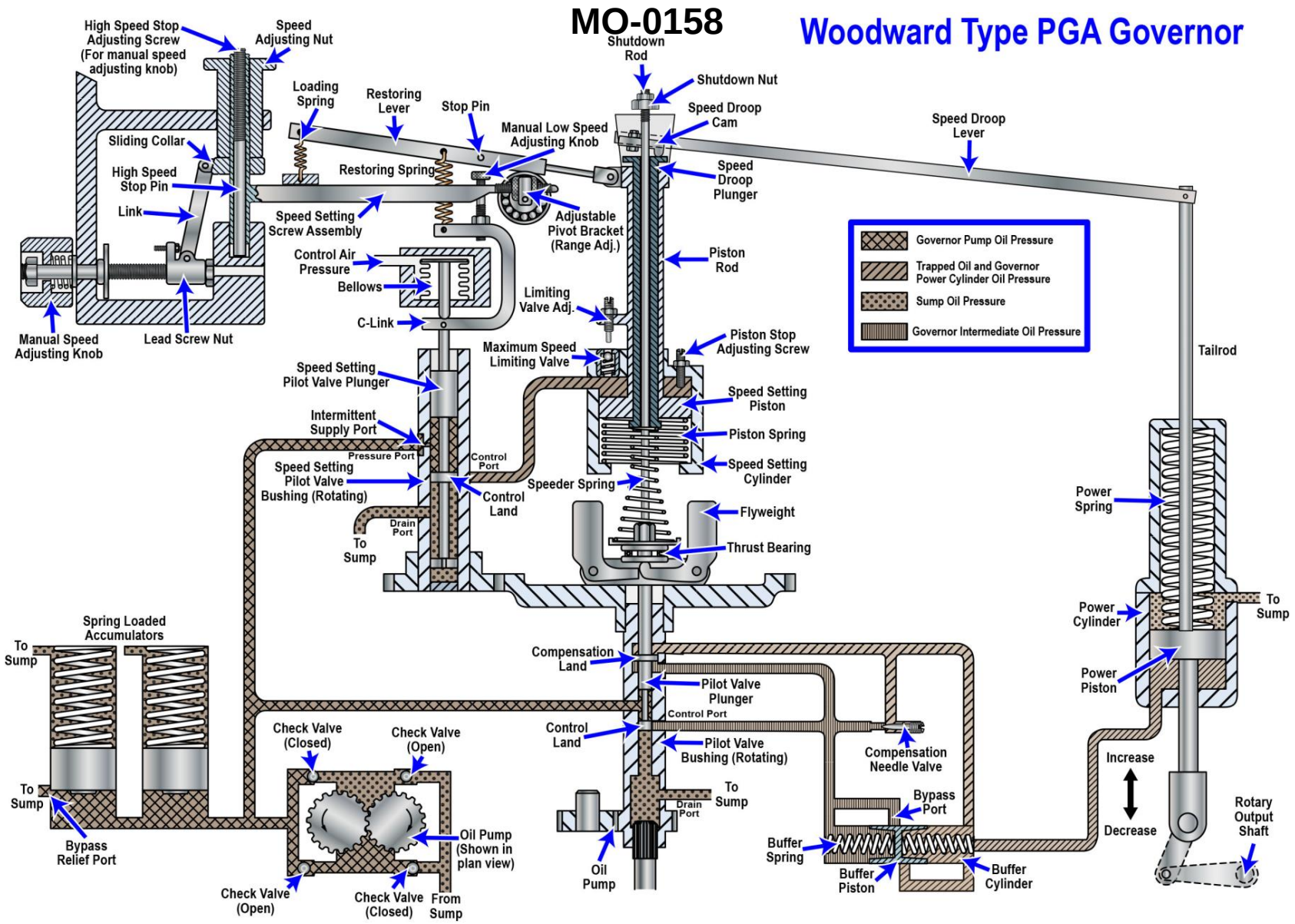
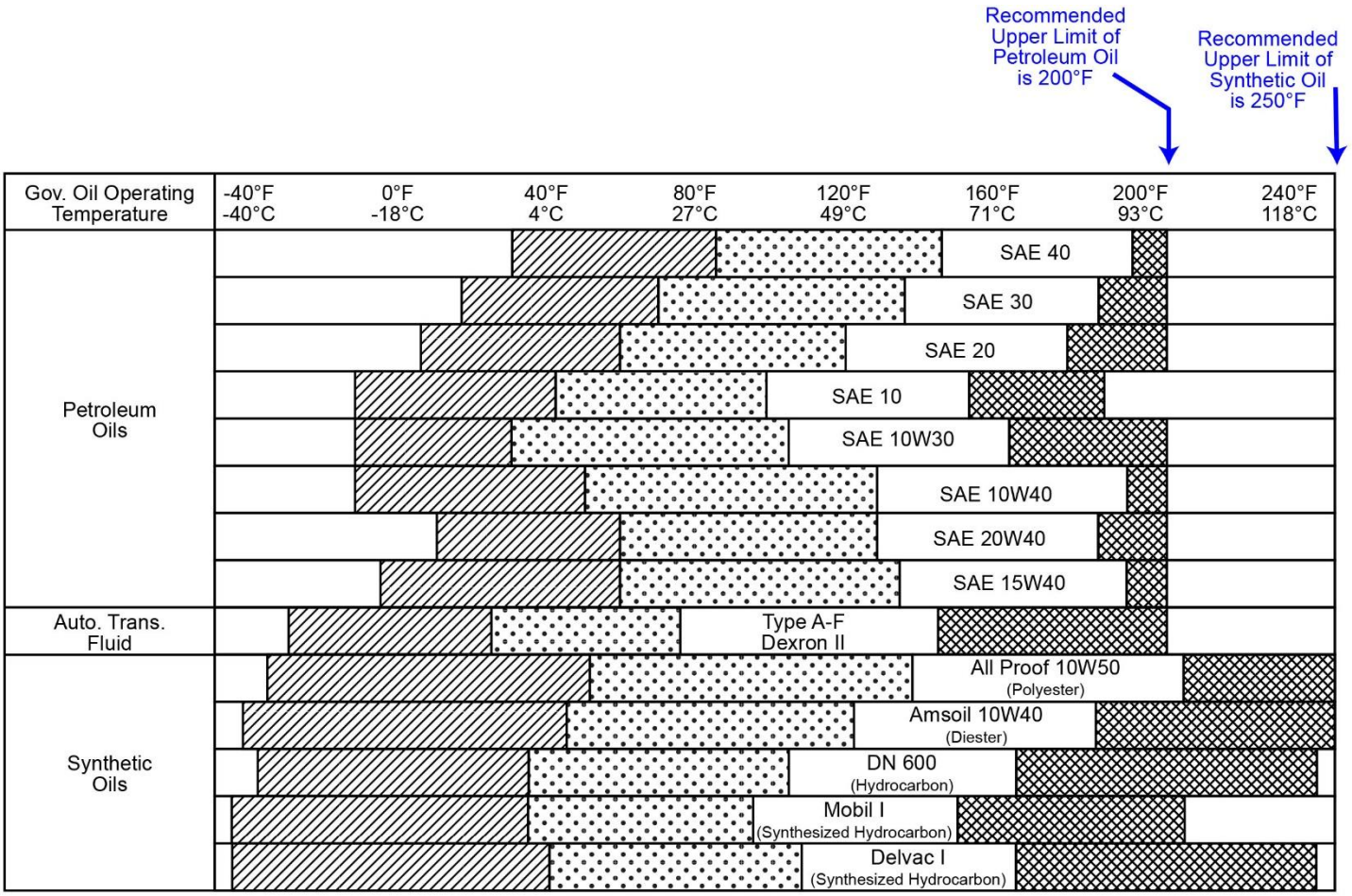


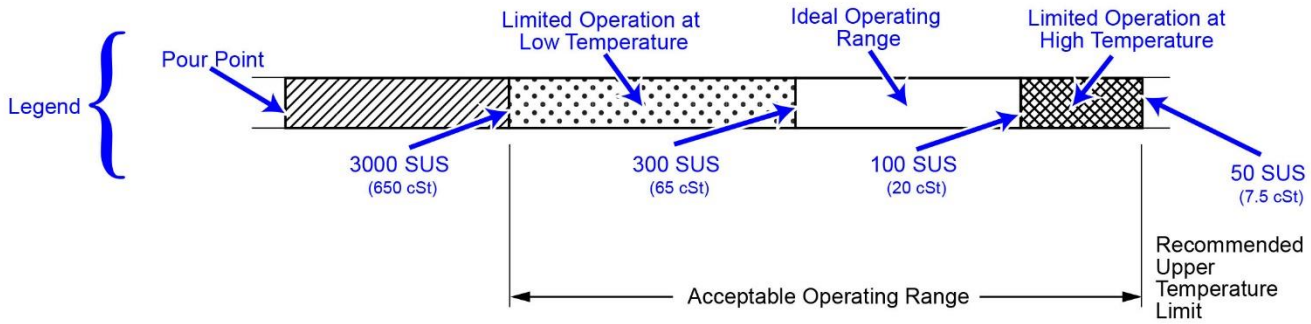
Figure 1: Adapted for testing purposes only from NORMAN, Diesel Technology: Fundamentals, Service, Repair

Figure 2: Adapted for testing purposes only from STINSON, Diesel Engineering Handbook, 12 Ed.

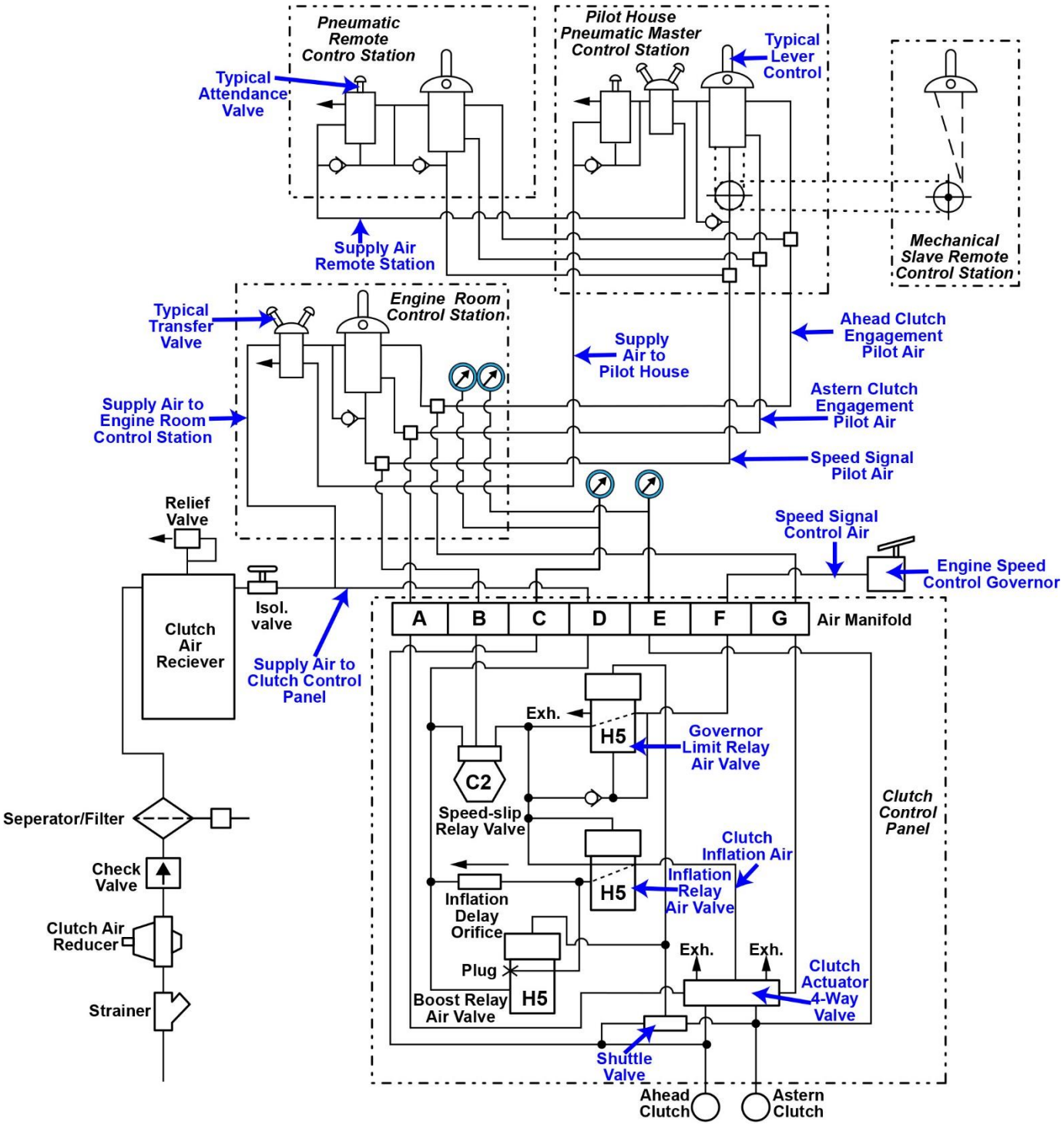


MO-0161
Oil Chart

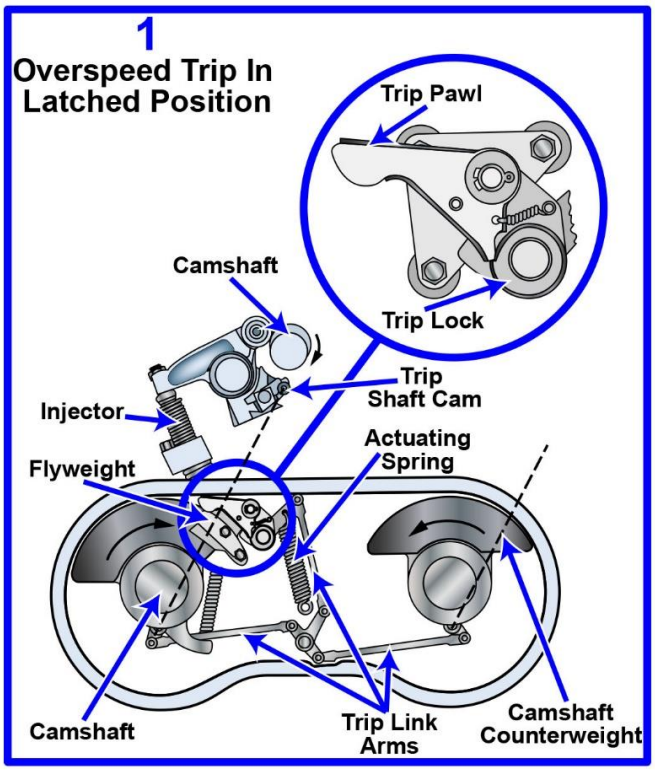


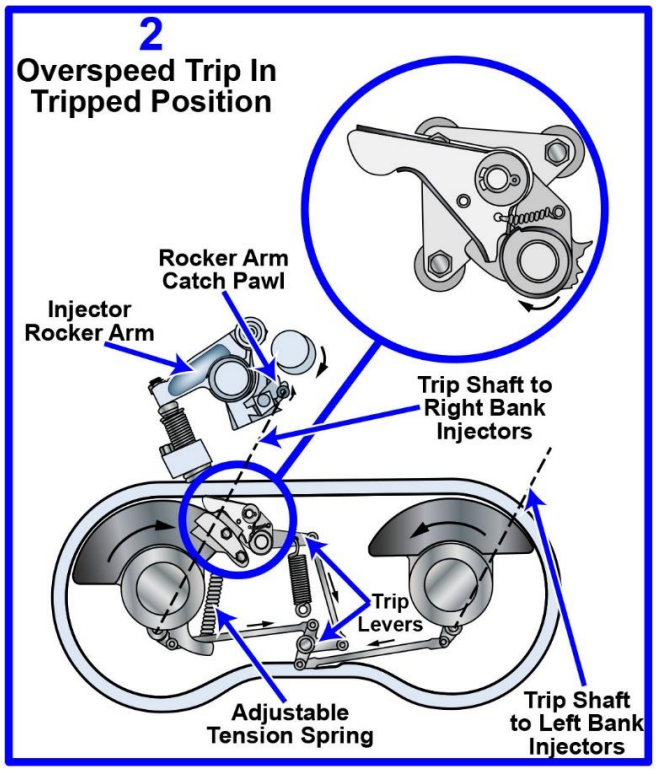


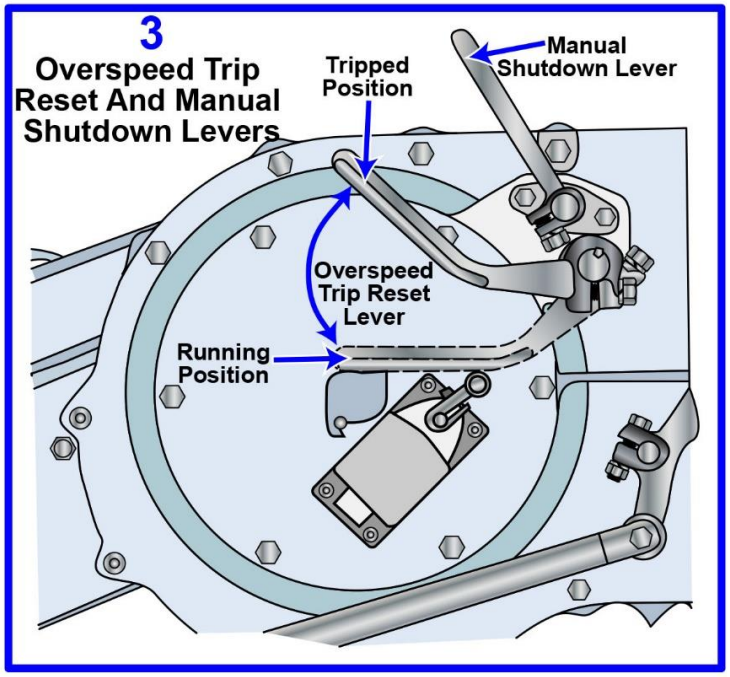
MO-0168
Pneumatic Propulsion Control System



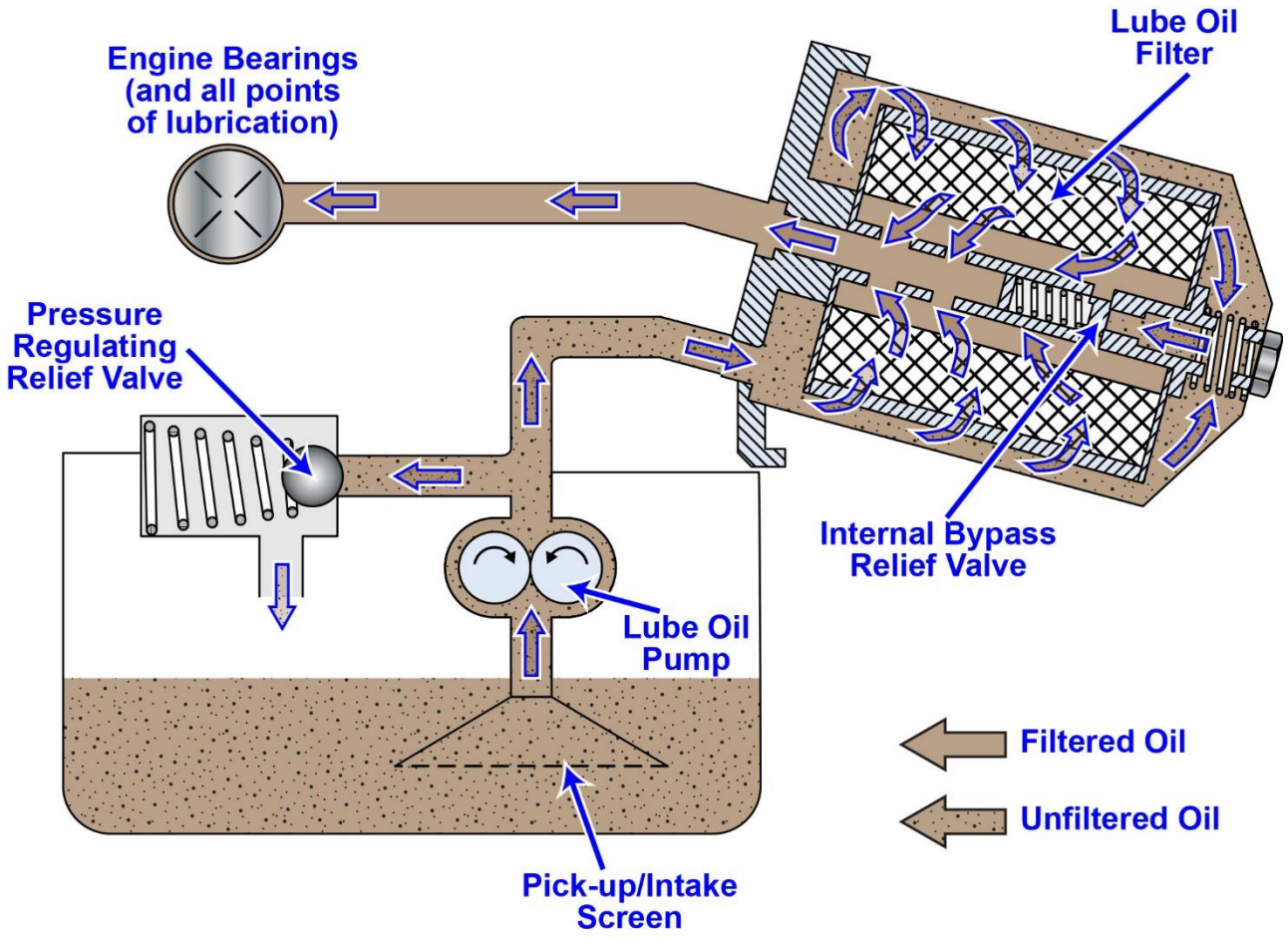
MO-0171
EMD 645 Overspeed and Manual Trips



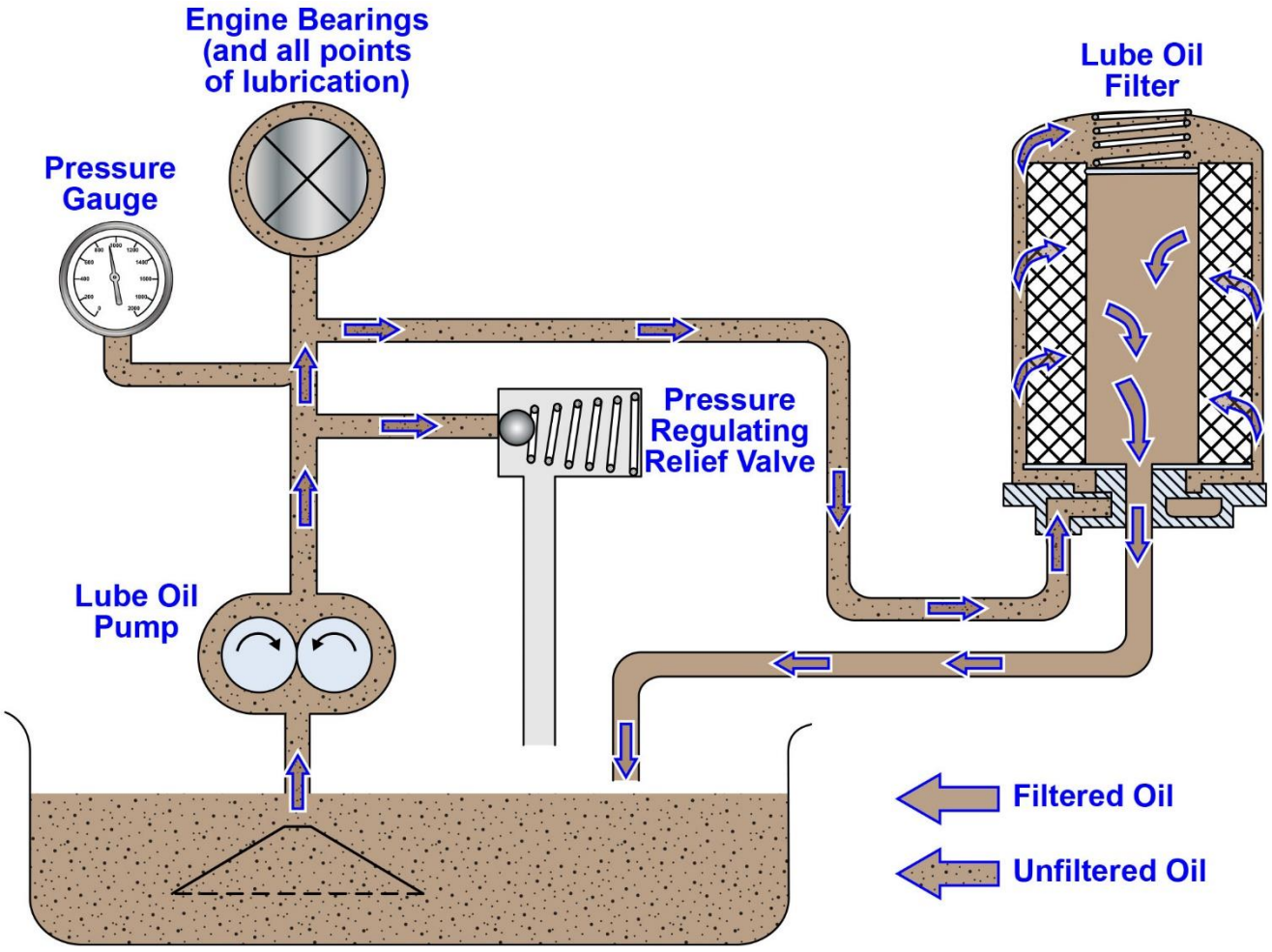




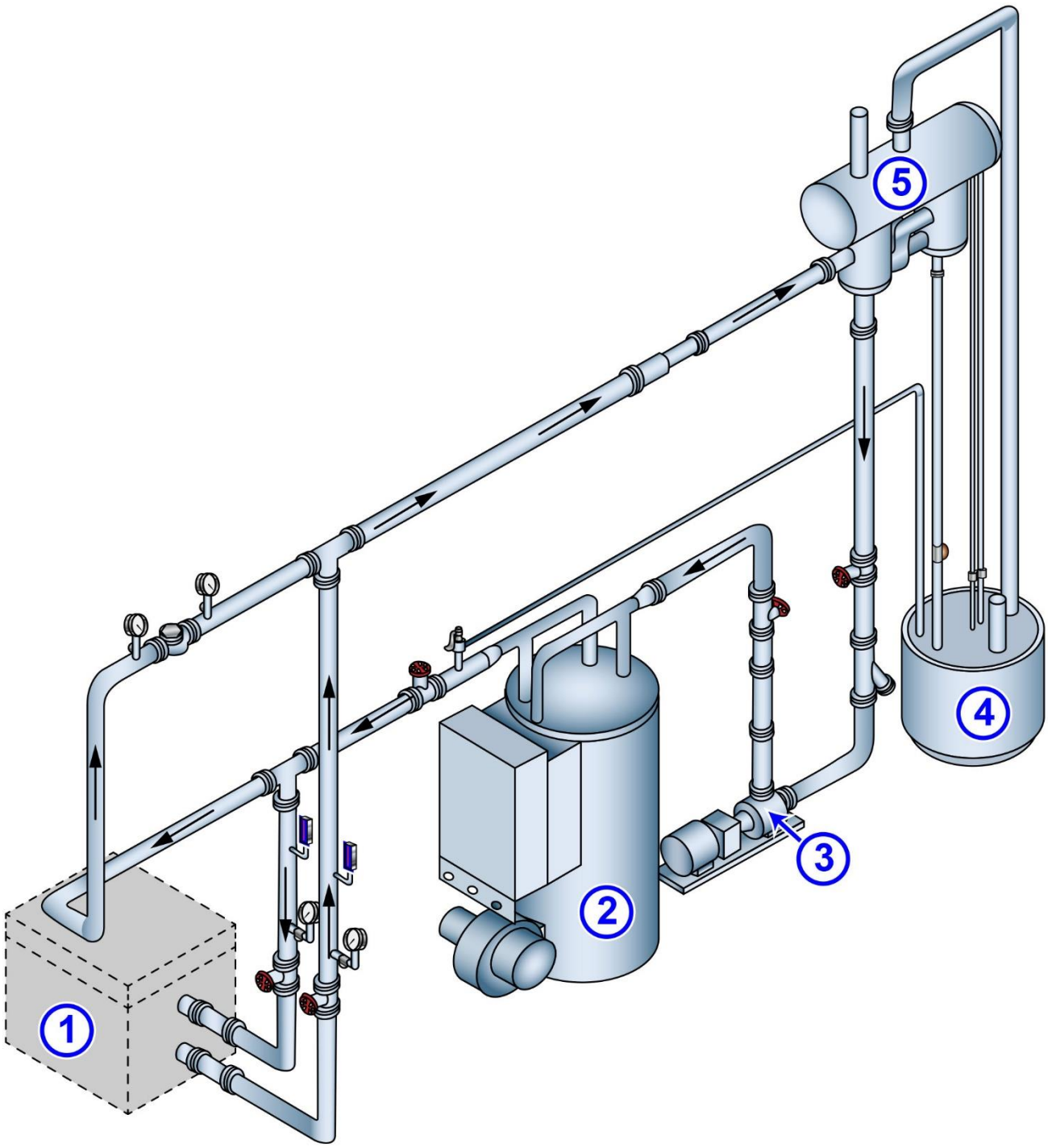
MO-0181
Simplified Lube Oil Filtration System



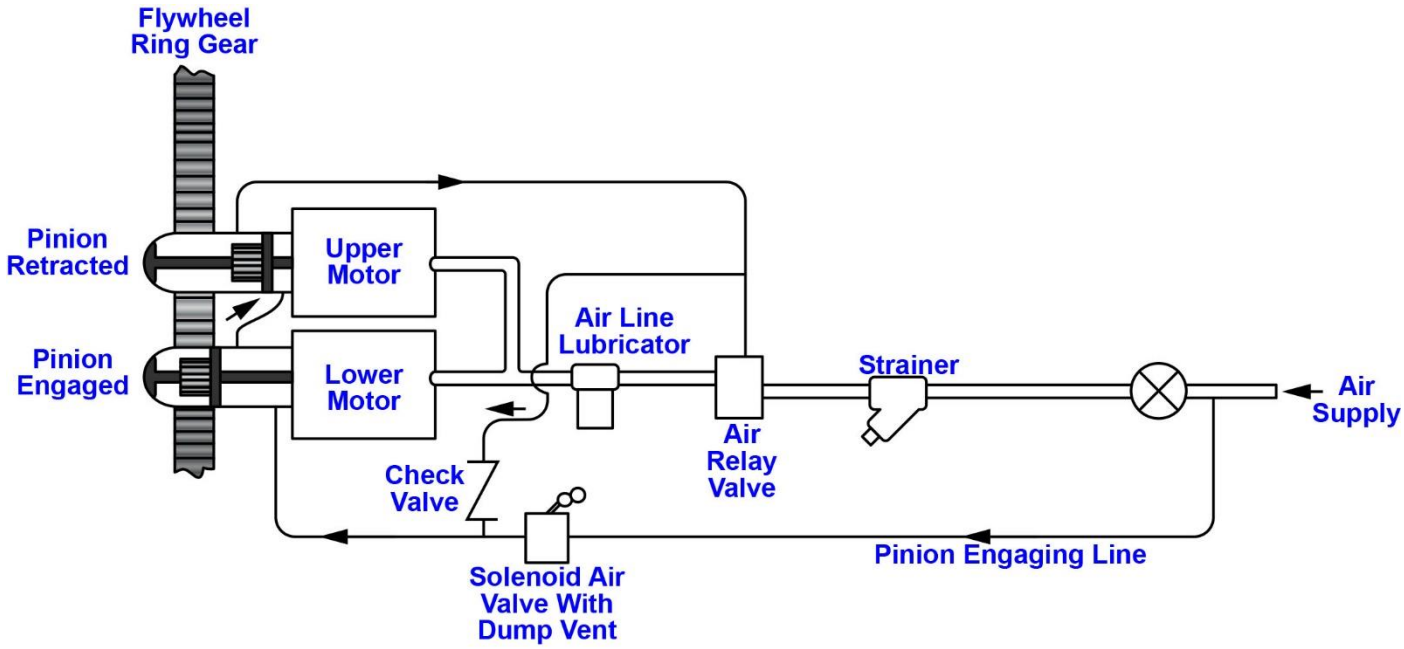
MO-0182
Simplified Lube Oil Filtration System



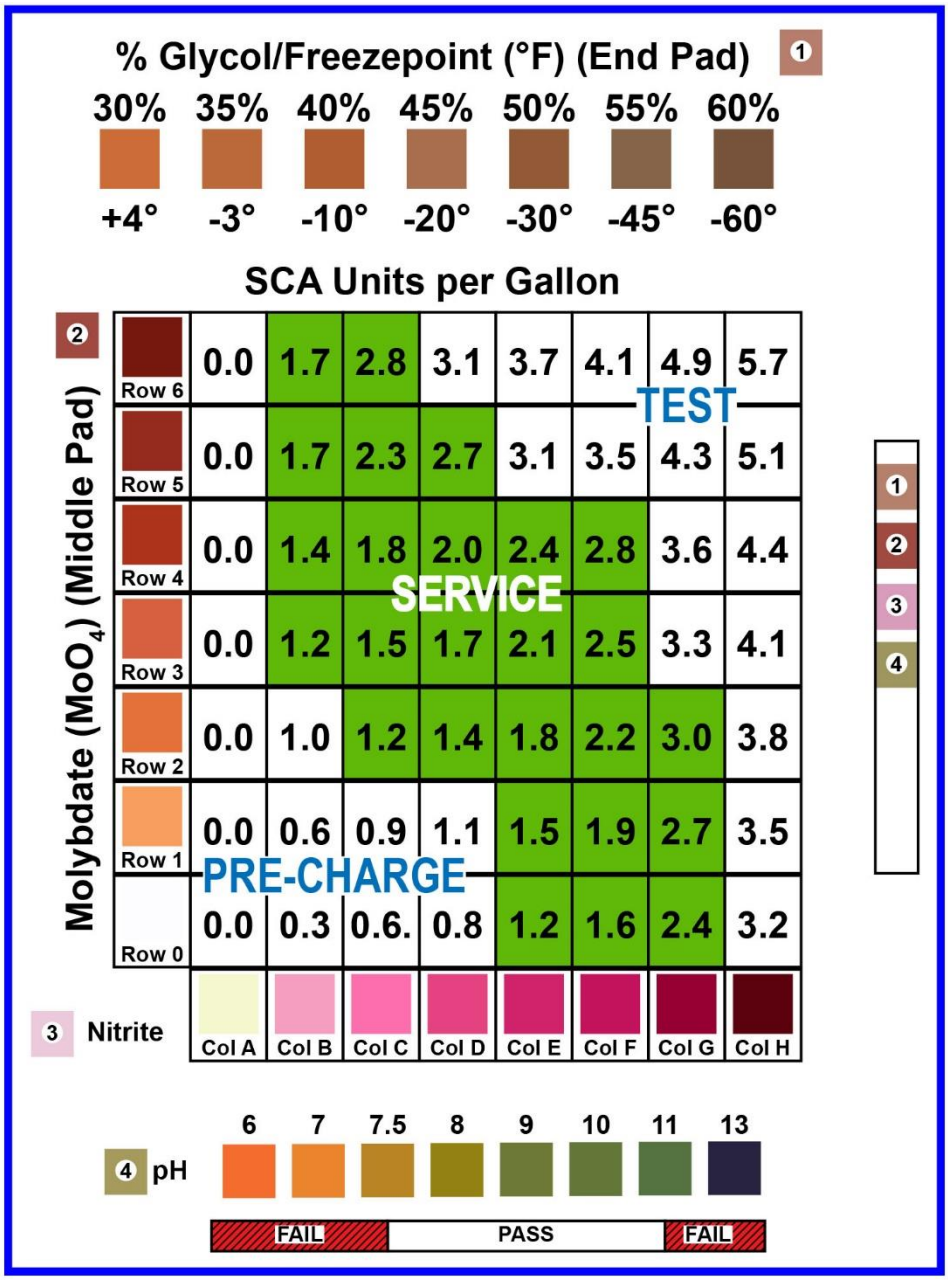
MO-0198
Thermal Fluid Heating Oil System



MO-0200
EMD Air Start System Piping at Engine



MO-0211



MO-0224