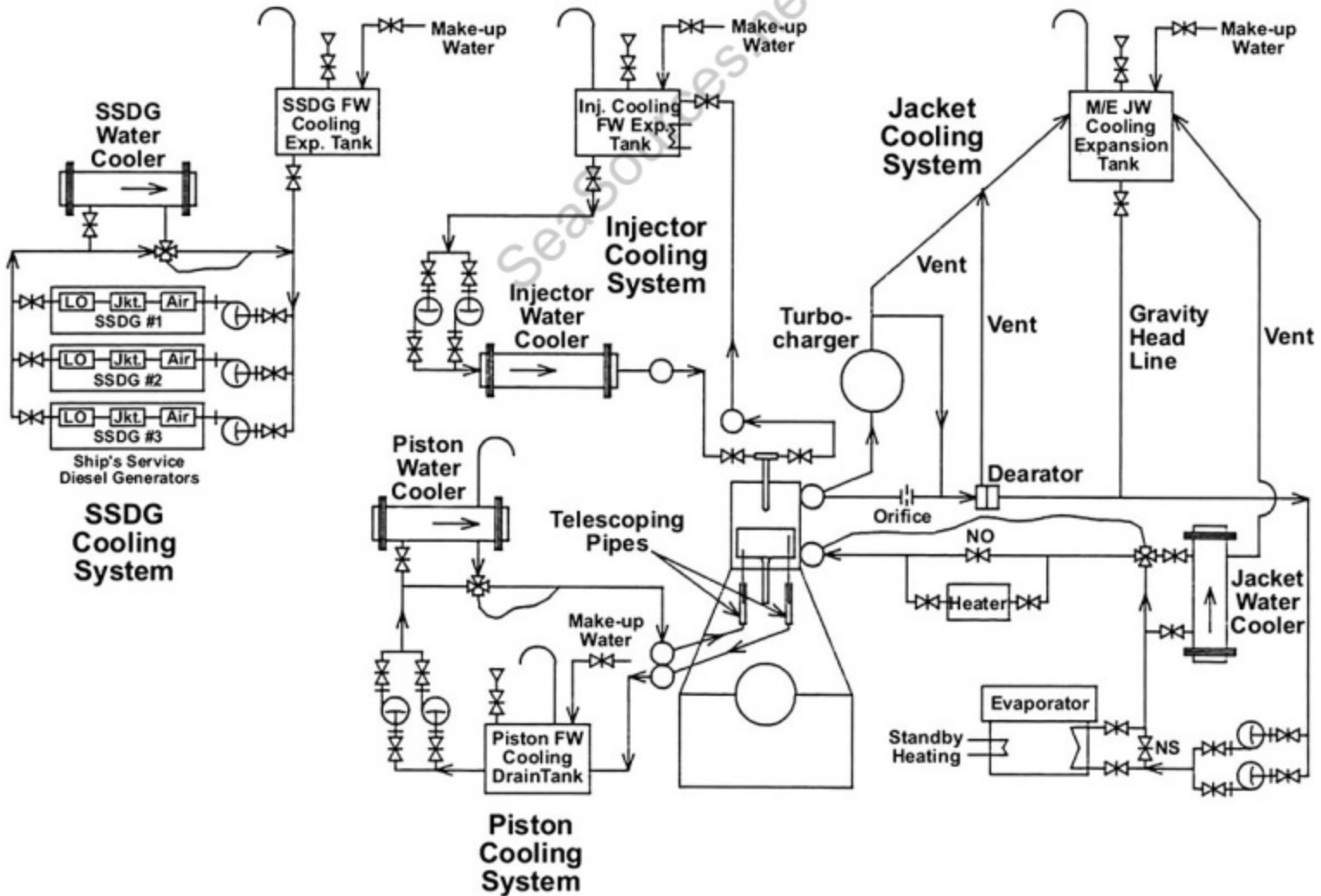
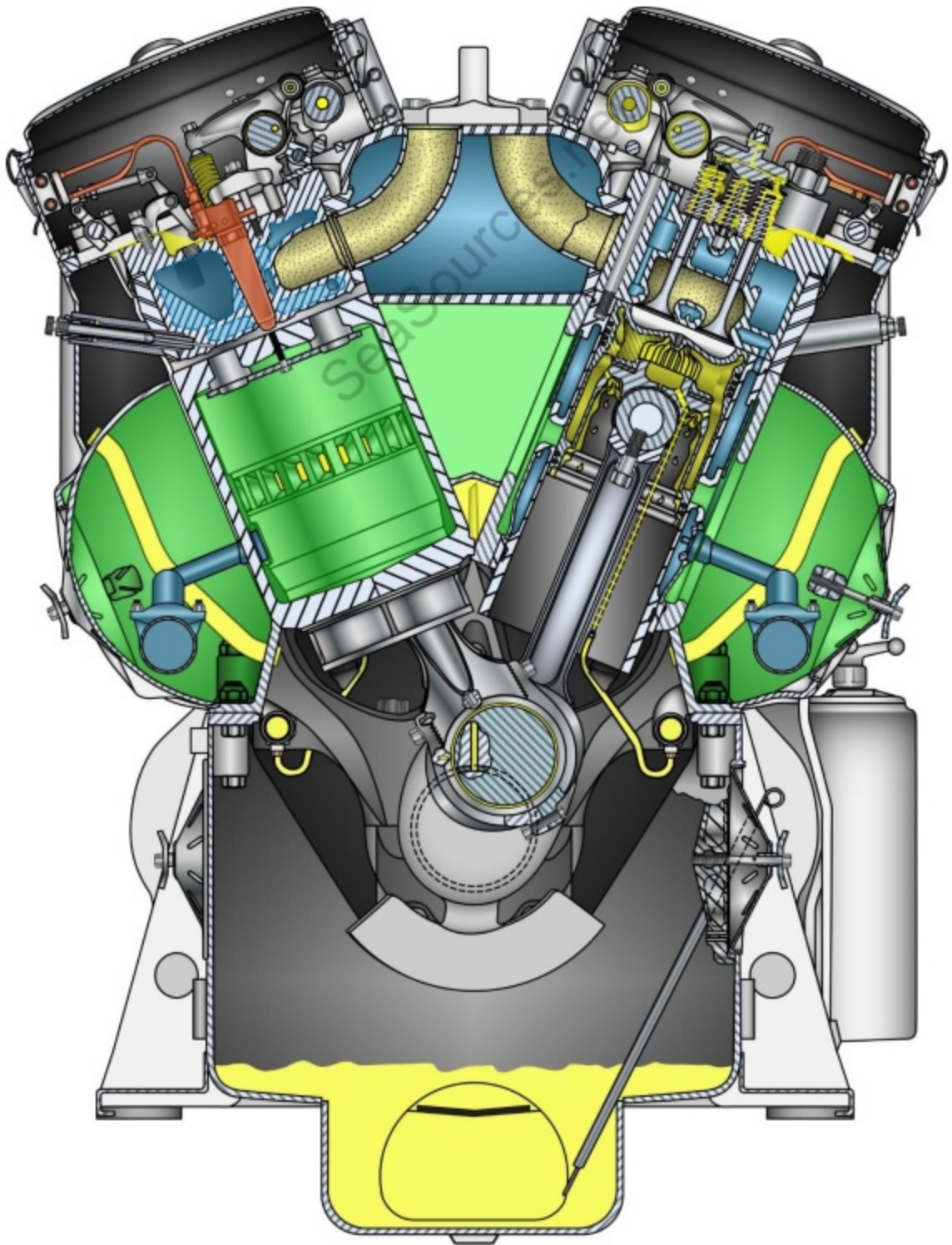


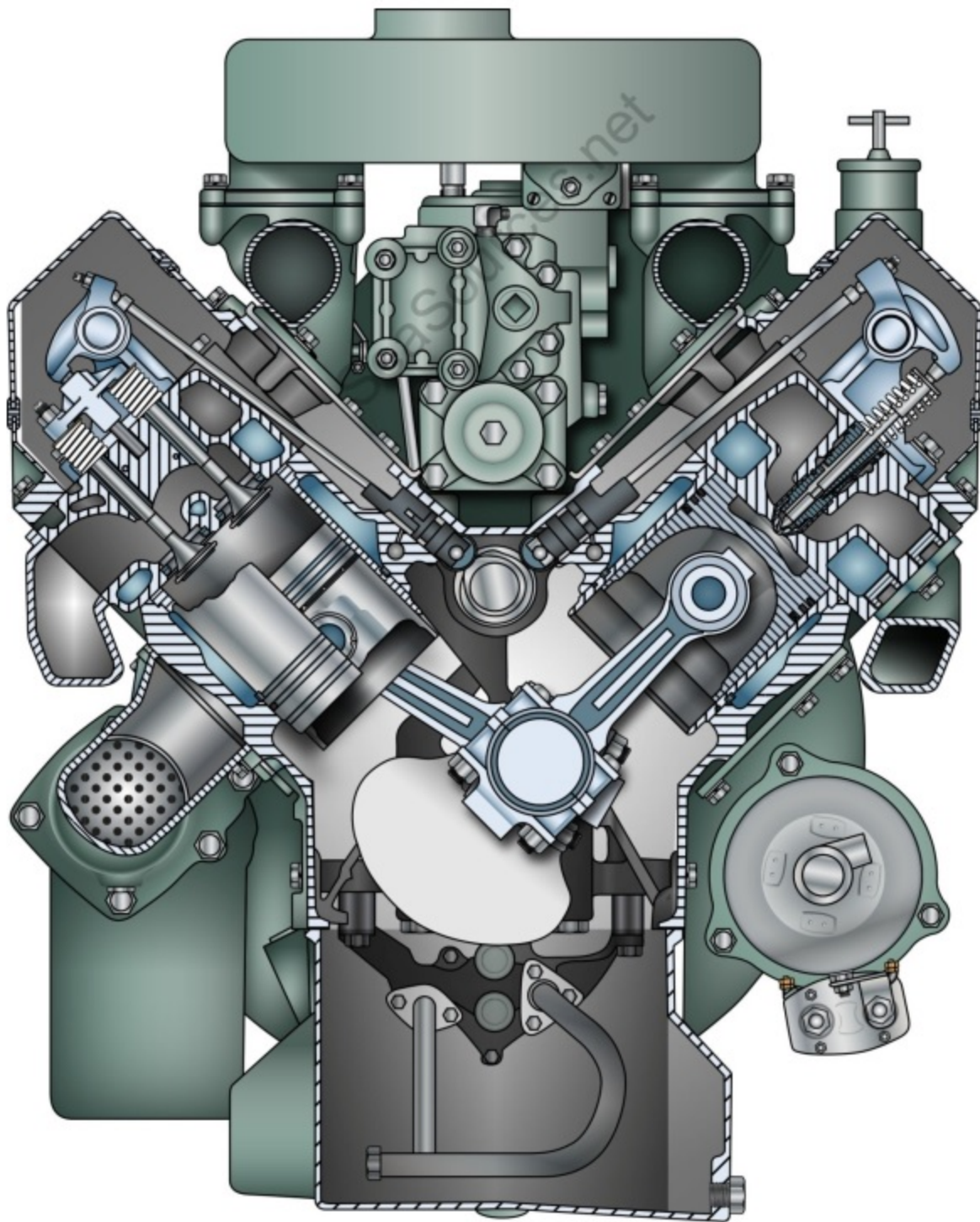
Fresh Water Cooling Systems



MP-MS-12

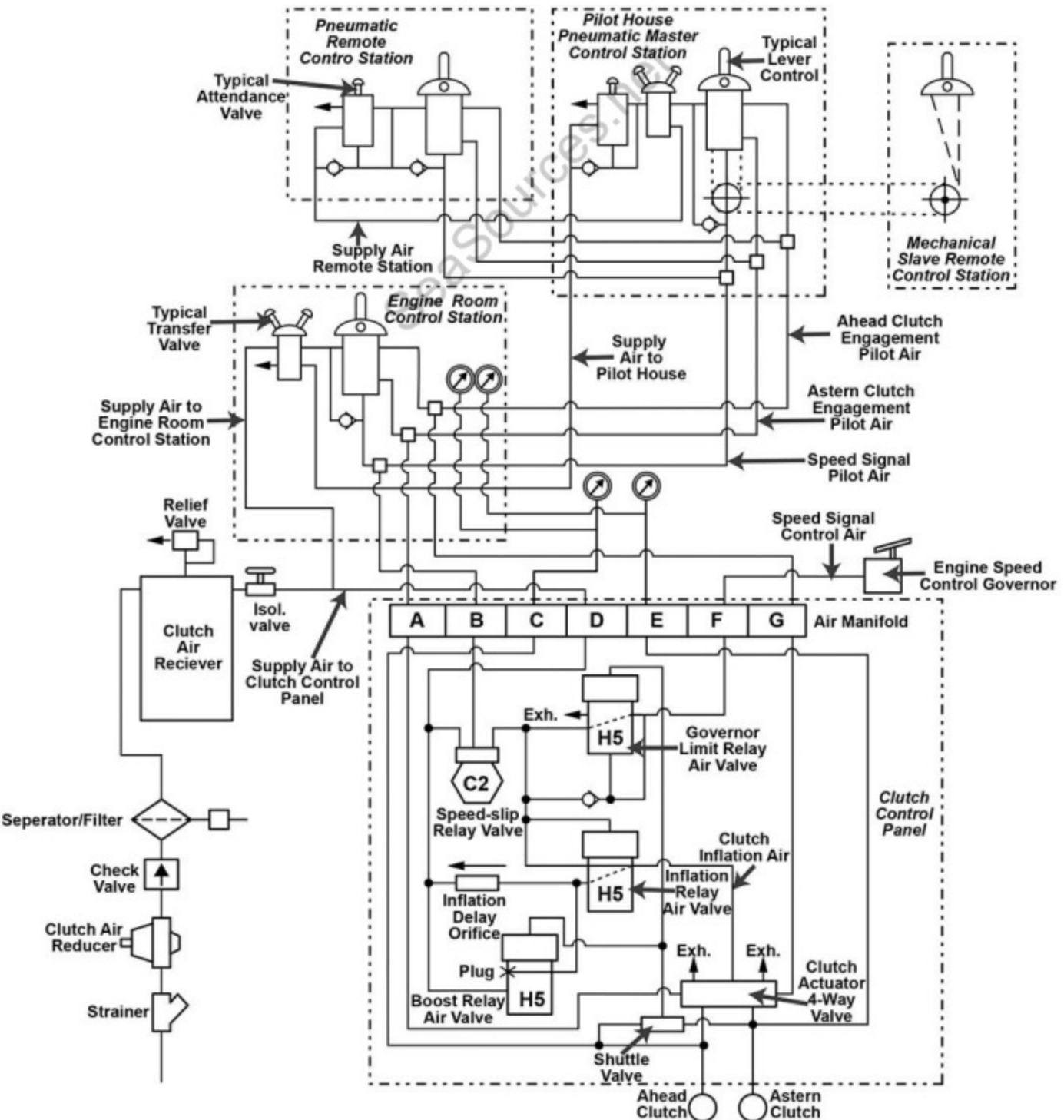


MP-HS-03

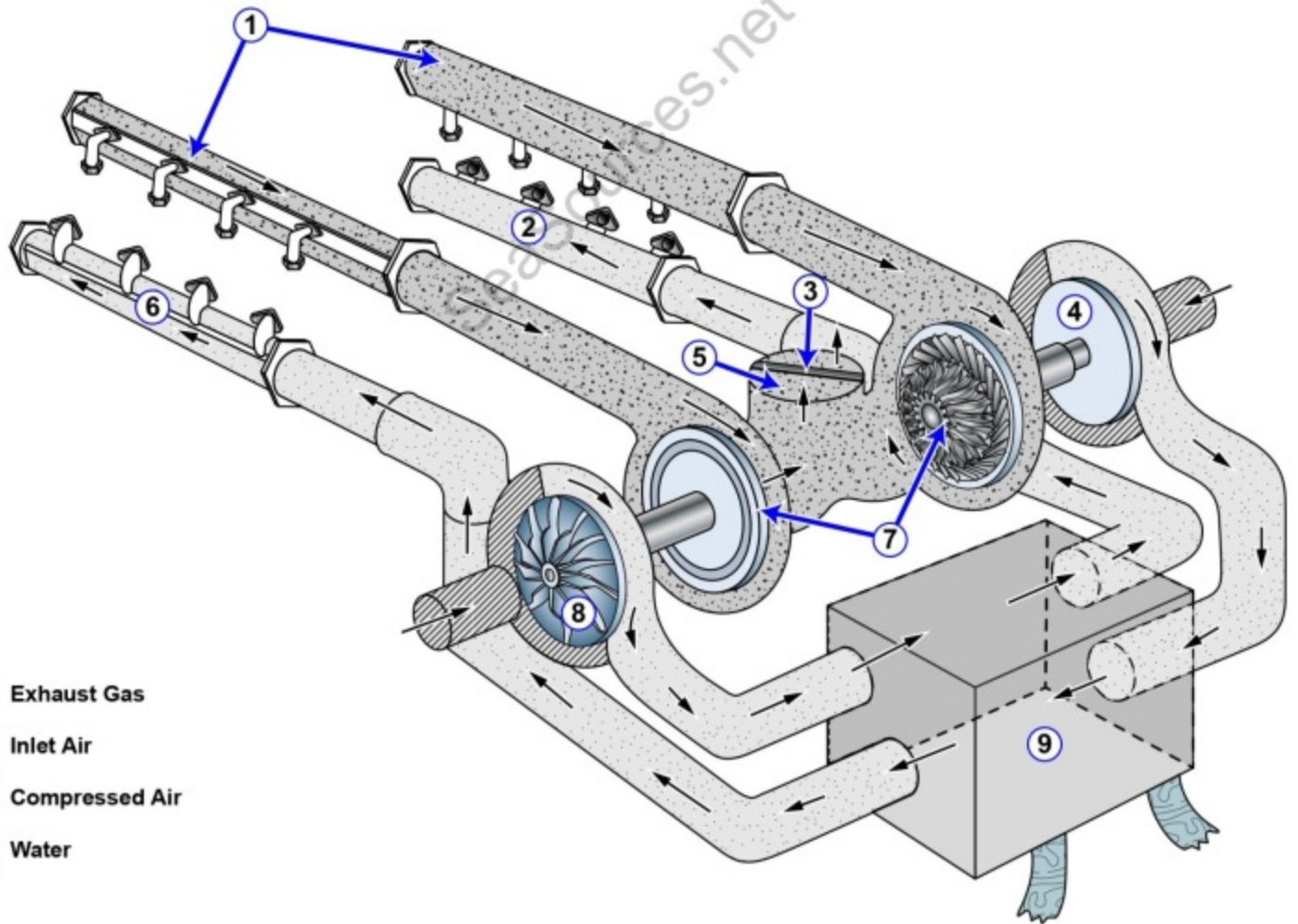


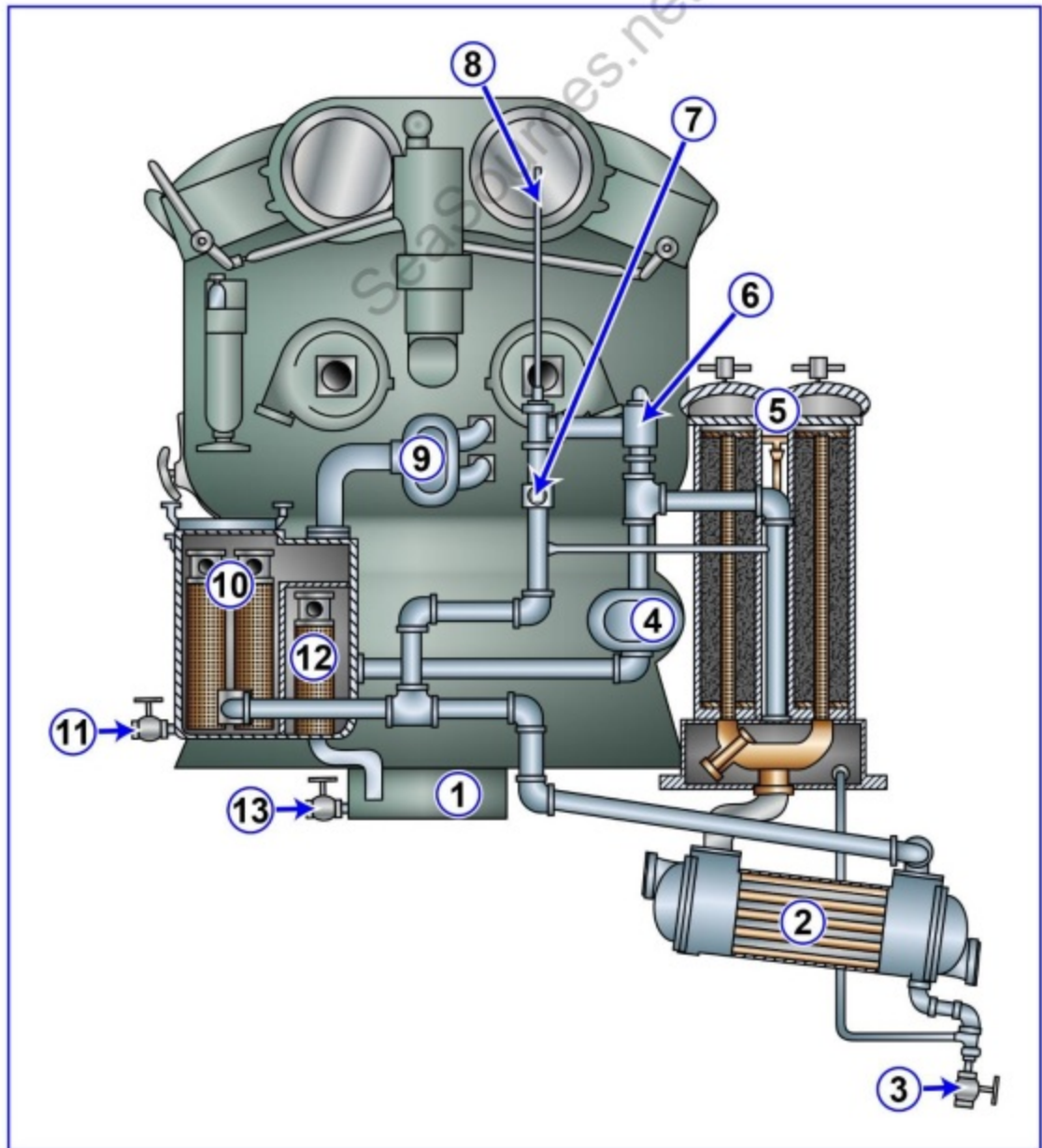
MP-IC-12

Pneumatic Propulsion Control System



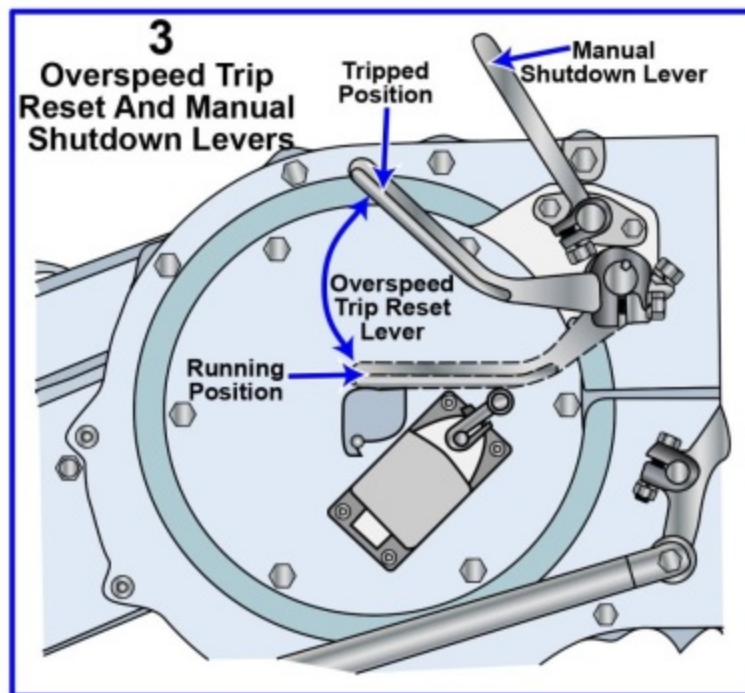
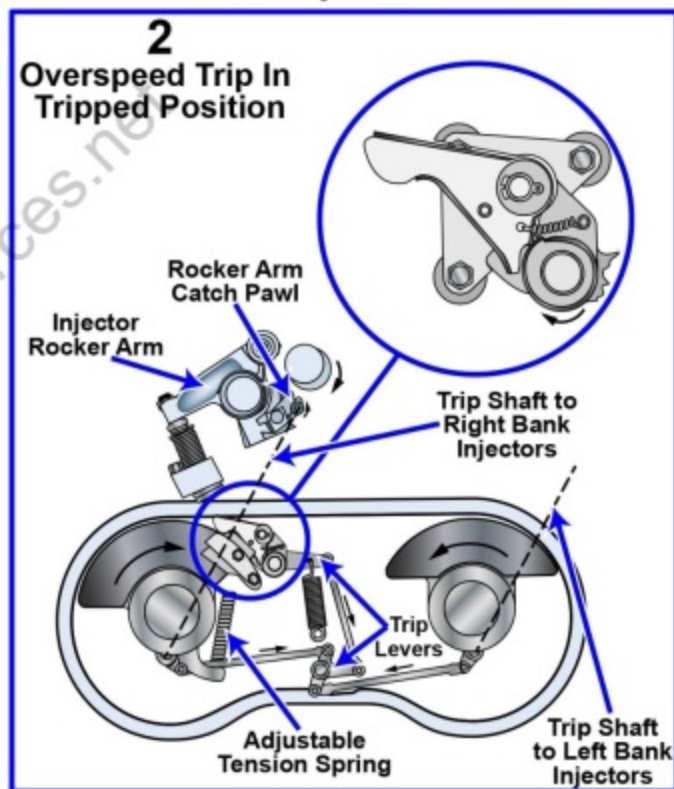
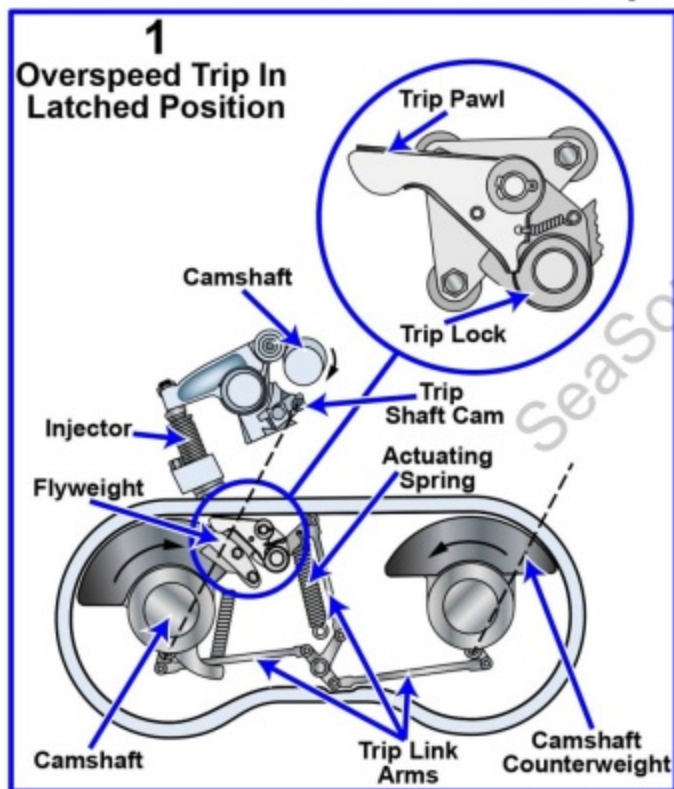
MP-IX-08



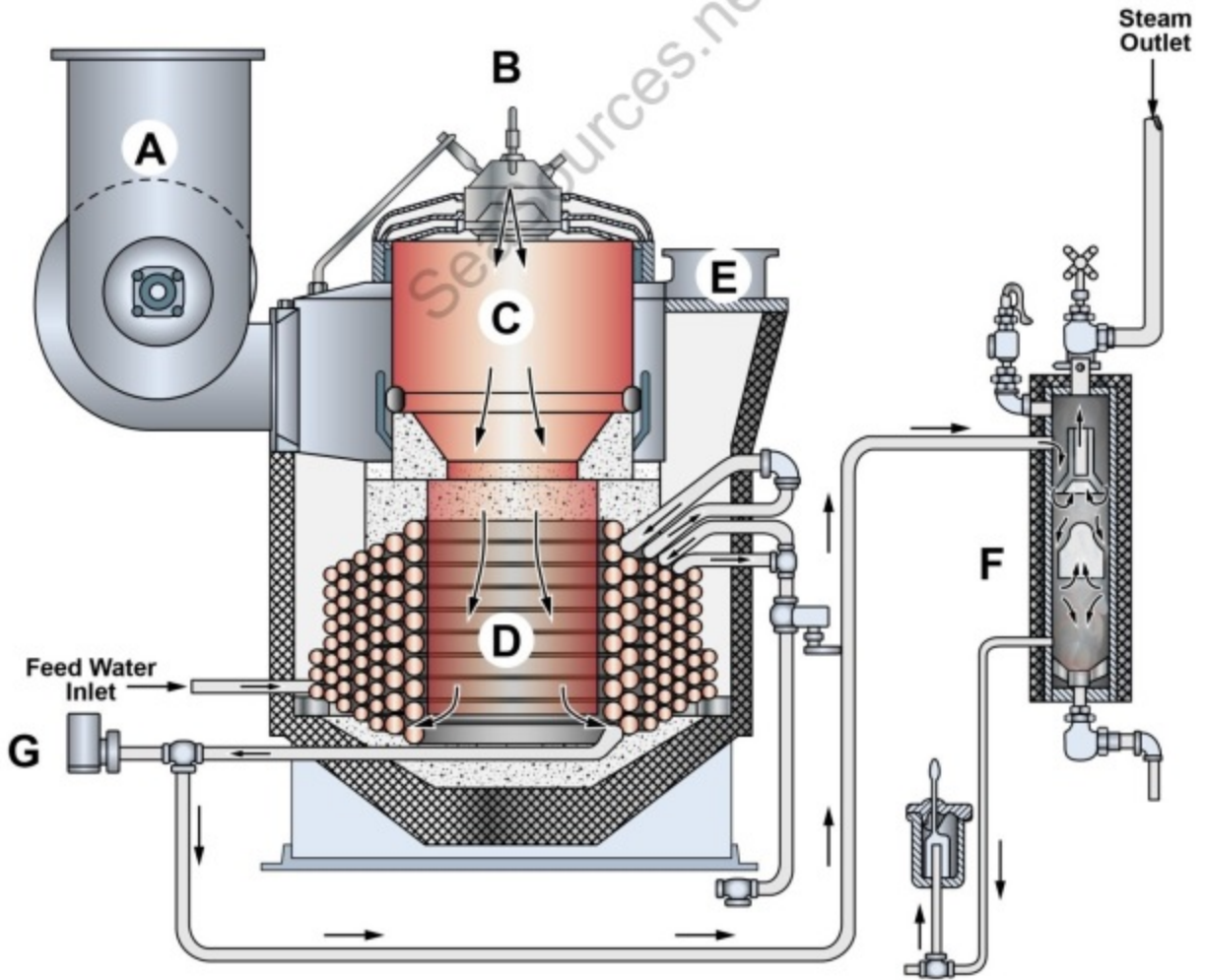


MP-IC-15

EMD 645 Overspeed and Manual Trips

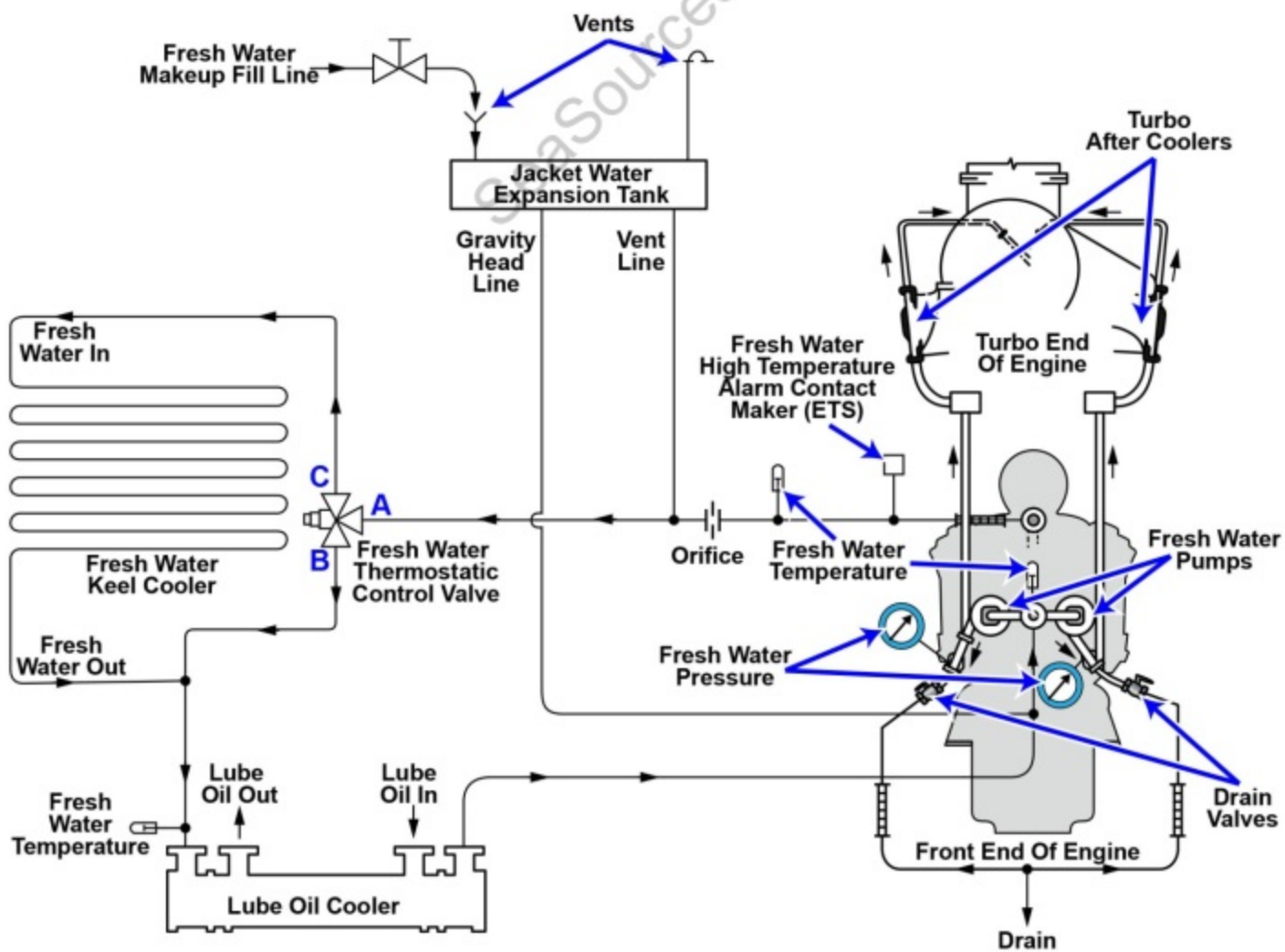


MP-SP-11 Once-through Boiler



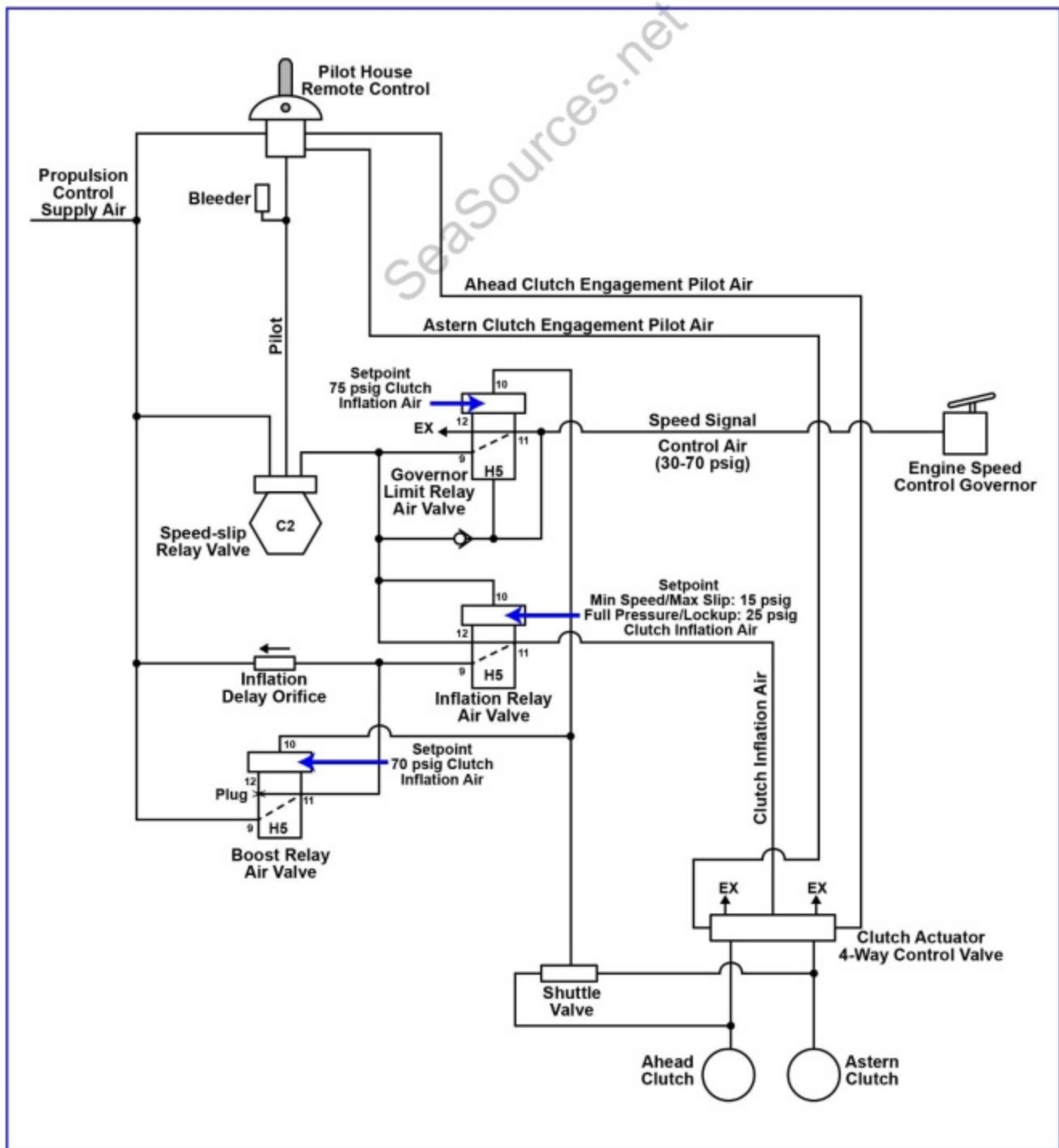
MP-CW-16

EMD Engine Fresh Water Cooling System with Keel Cooler



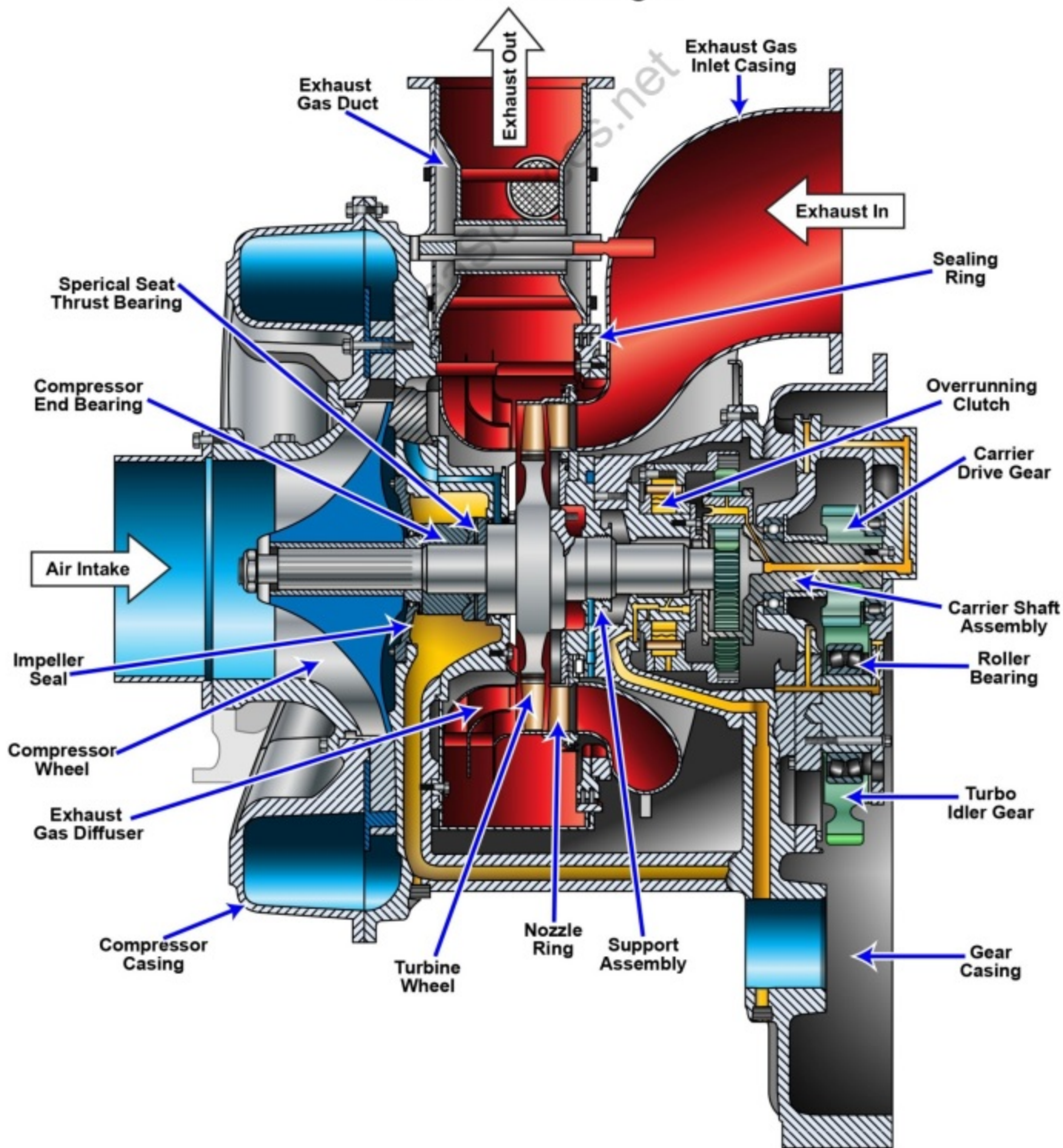
MP-IC-08

Pneumatic Propulsion Control System with Single Lever Pilot House Control



MP-CA-08

EMD Turbocharger

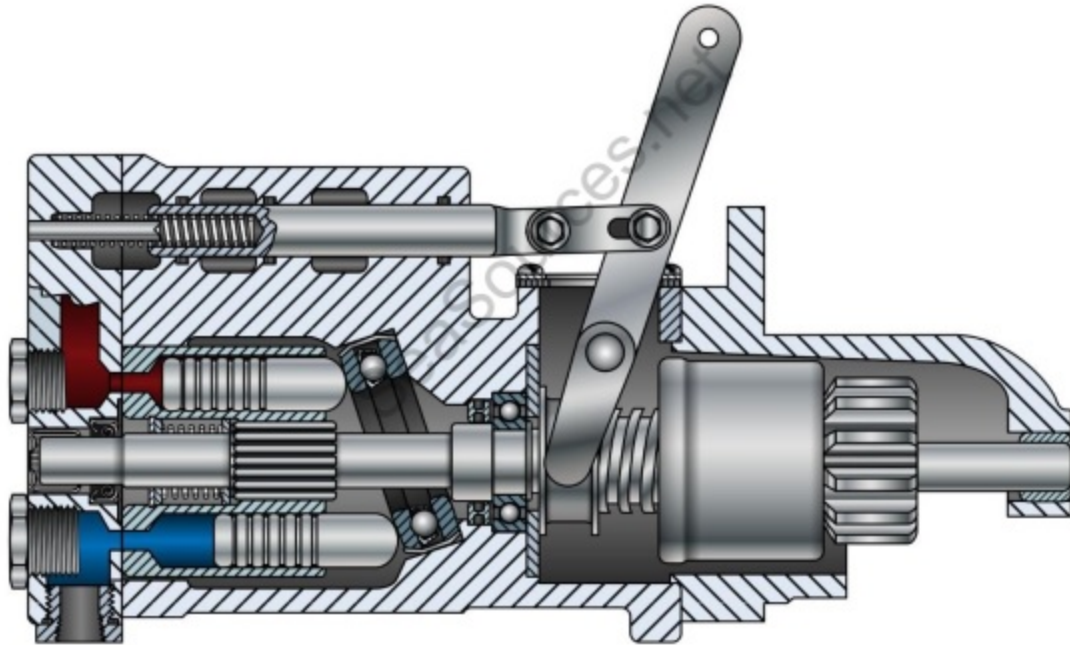


MP-HS-05

Number of Cylinders	Four-Stroke Engines		Two-Stroke Engines	
	Arrangement of Cranks	Firing Order	Arrangement of Cranks	Firing Order
2		1-2 1-2		1-2
3		1-3-2		1-2-3
4		1-2-4-3 or 1-3-4-2		1-4-2-3
5		1-3-5-4-2		1-4-3-2-5
6		1-5-3-6-2-4		1-4-5-2-3-6
6		1-4-3-6-2-5		1-6-2-4-3-5
8		1-5-2-6-8-4-7-3		1-6-4-7-2-5-3-8
8		1-6-2-8-4-7-3-5		1-8-6-4-2-7-5-3

MP-SR-09 Starting Motors

A



B

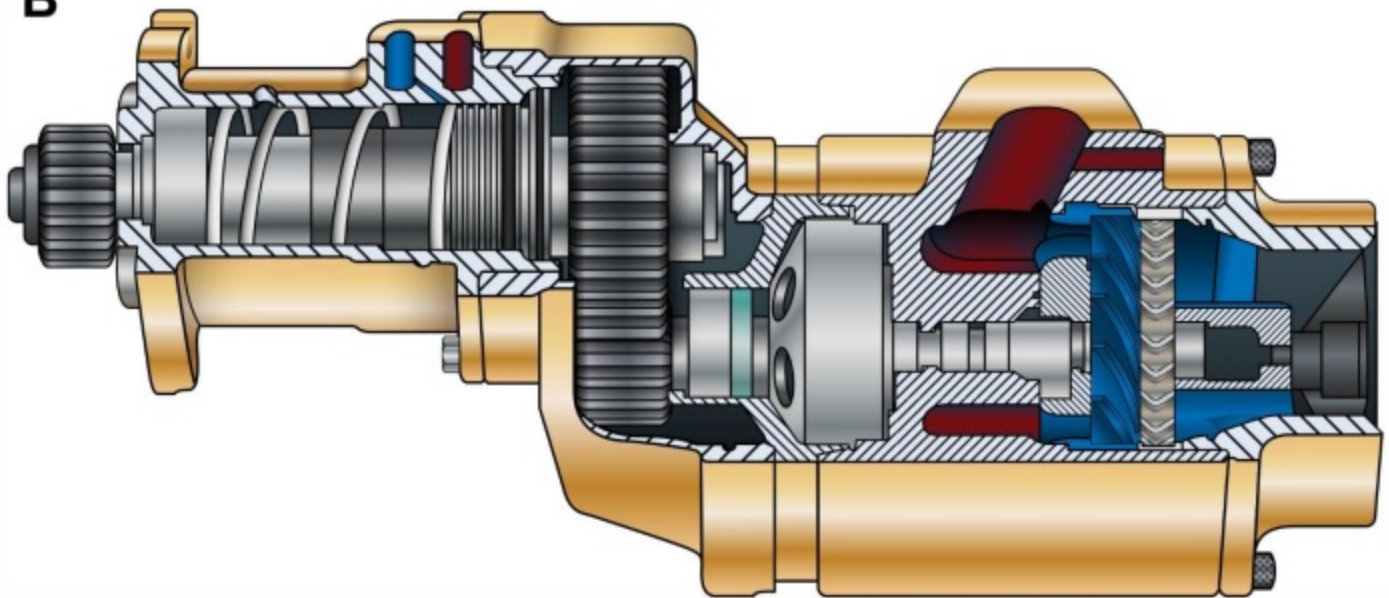
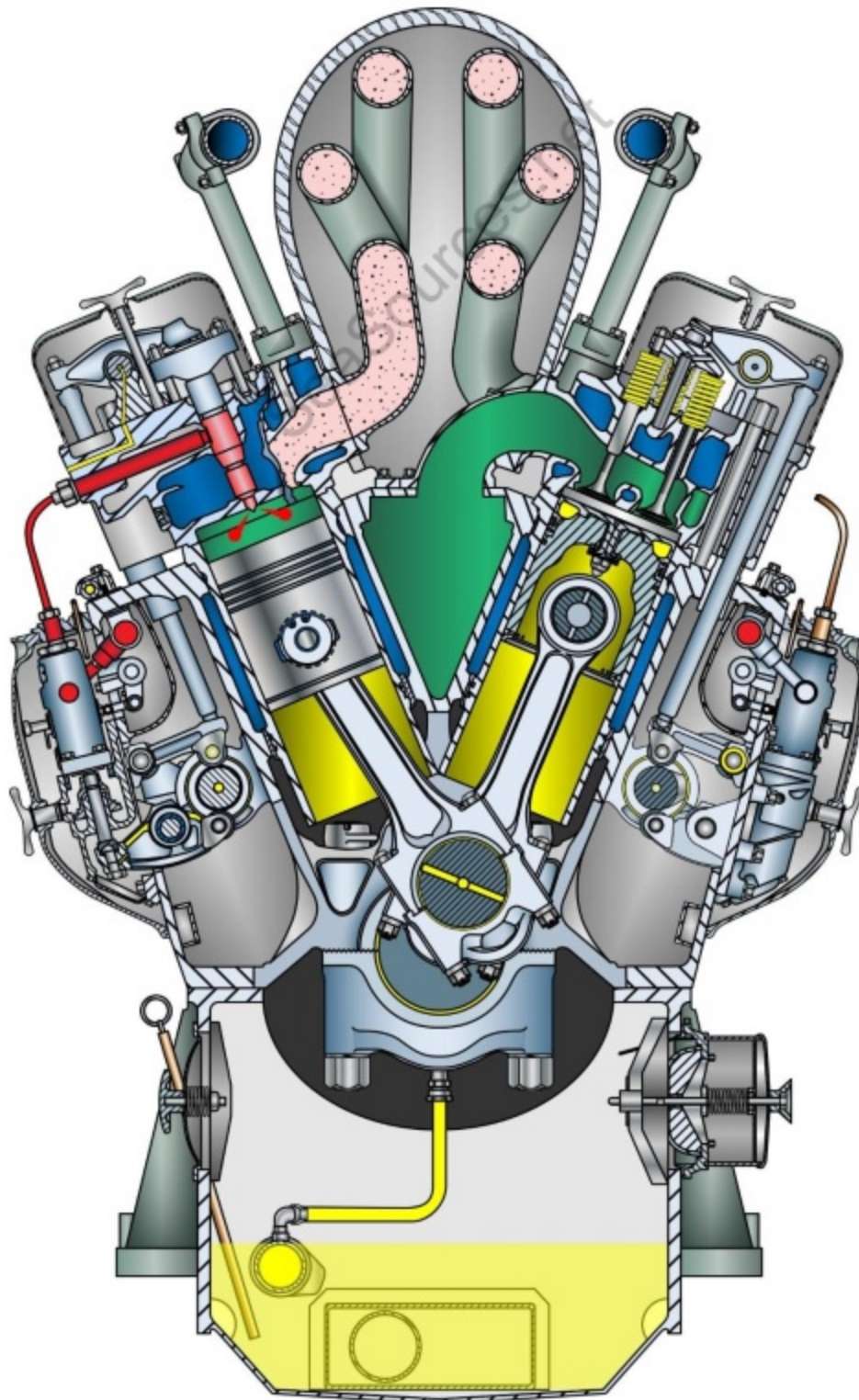


Fig. A:

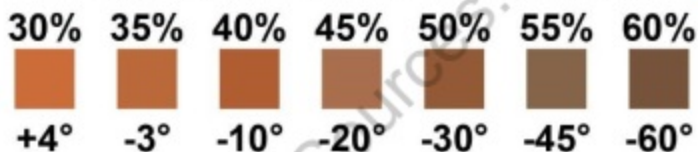
Fig. B:

MP-MS-07
ALCO 251 Series Engine



















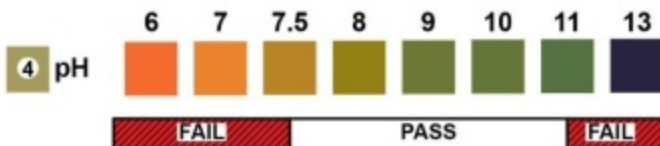
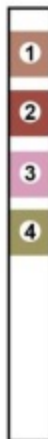
MP-WC-12

% Glycol/Freezepoint (°F) (End Pad) 1



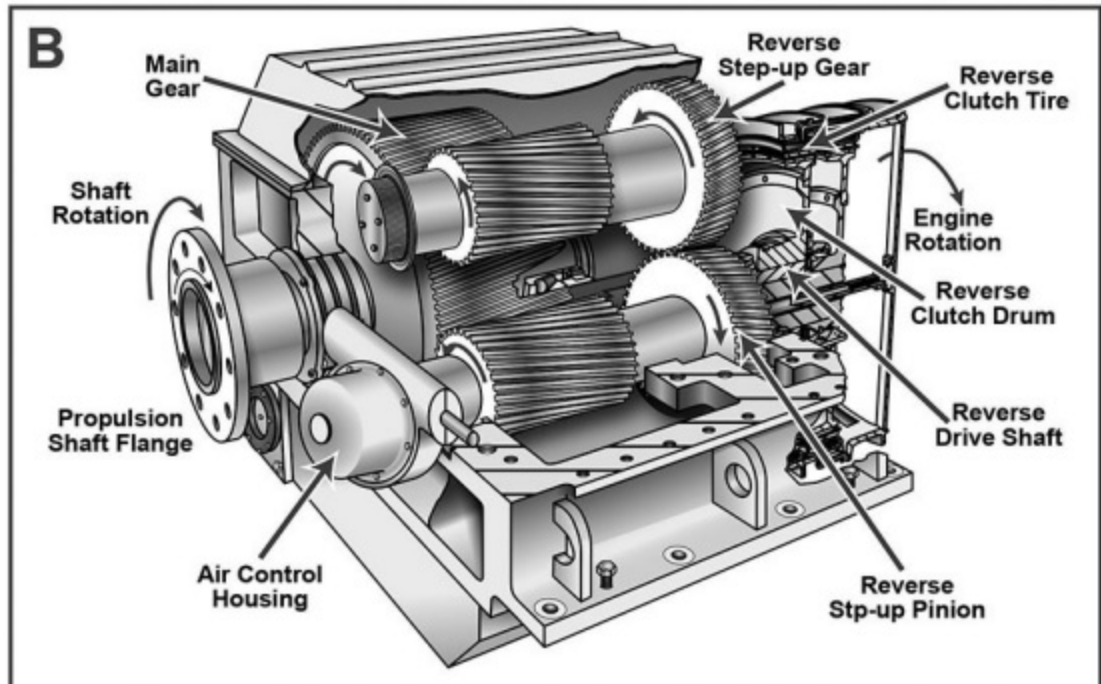
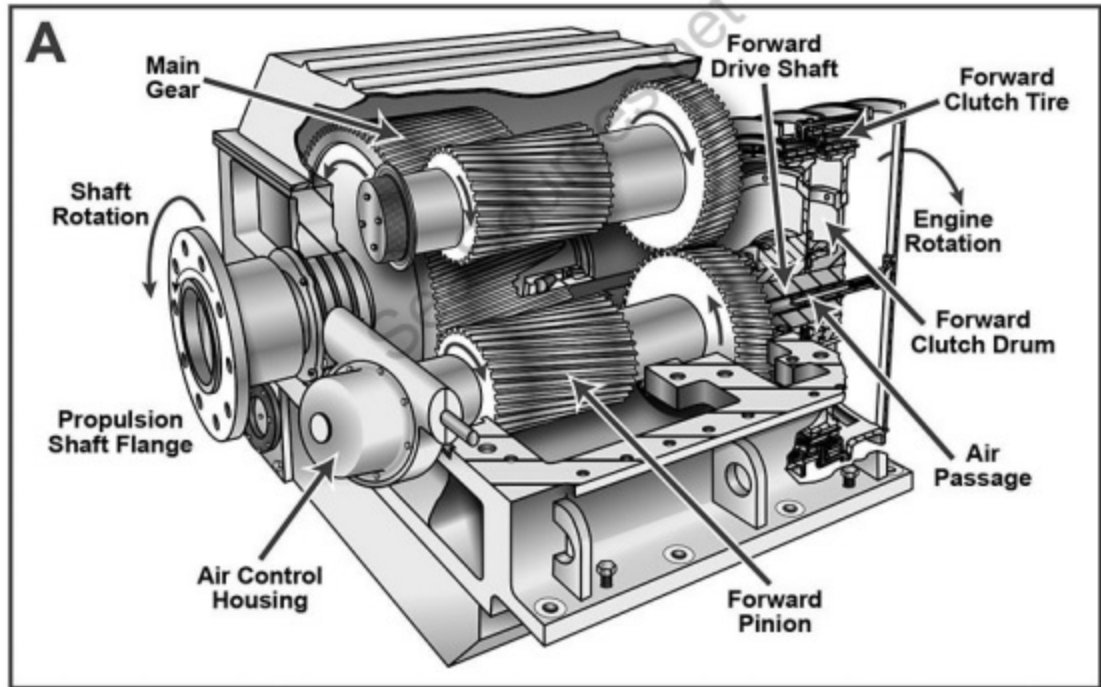
SCA Units per Gallon

Molybdate (MoO₄) (Middle Pad)	2 	0.0	1.7	2.8	3.1	3.7	4.1	4.9	5.7
	Row 6								
		0.0	1.7	2.3	2.7	3.1	3.5	4.3	5.1
	Row 5								
		0.0	1.4	1.8	2.0	2.4	2.8	3.6	4.4
	Row 4								
		0.0	1.2	1.5	1.7	2.1	2.5	3.3	4.1
Row 3									
	0.0	1.0	1.2	1.4	1.8	2.2	3.0	3.8	
Row 2									
	0.0	0.6	0.9	1.1	1.5	1.9	2.7	3.5	
Row 1									
	0.0	0.3	0.6	0.8	1.2	1.6	2.4	3.2	
Row 0									
3 Nitrite									
	Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	



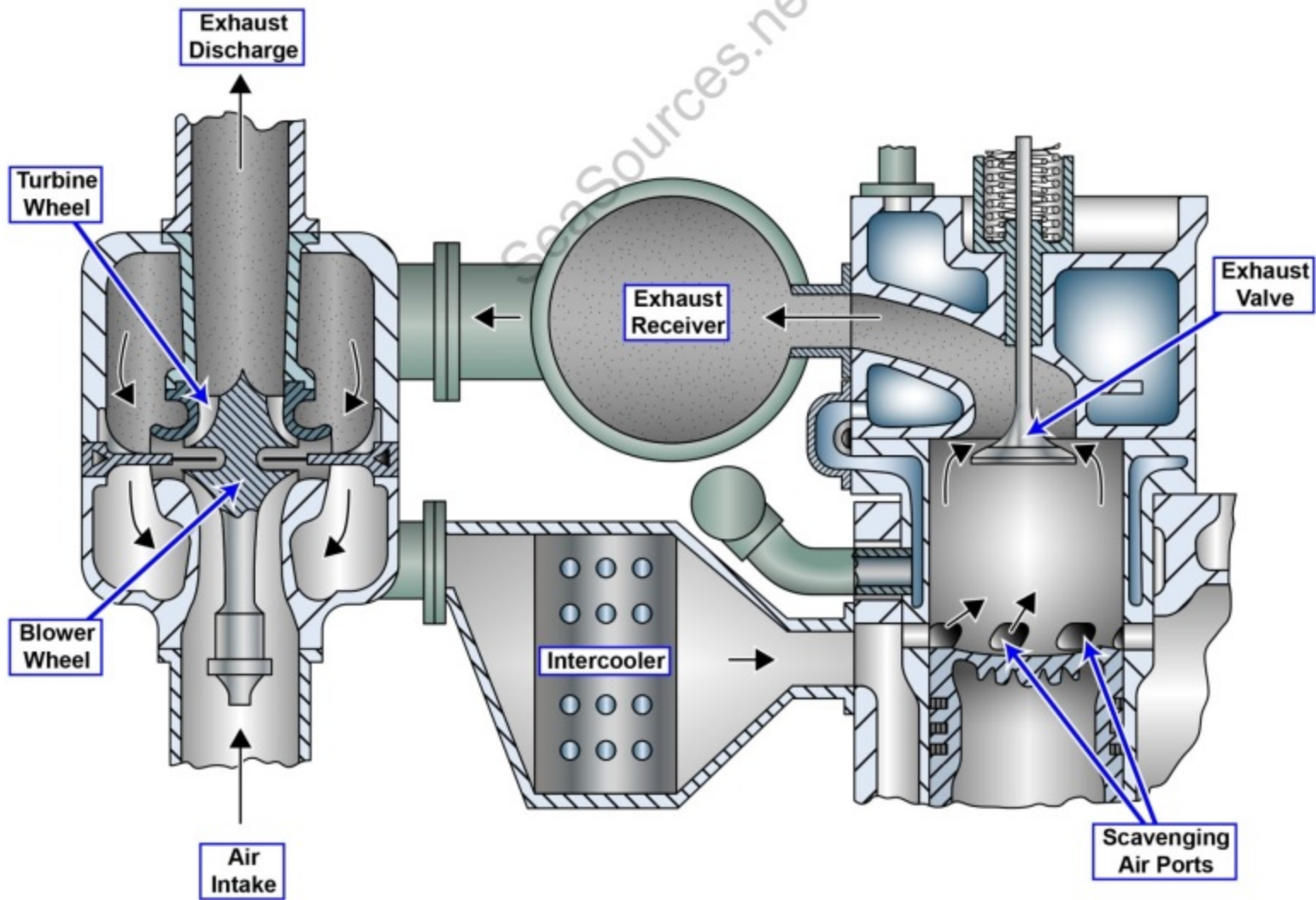
MP-DS-16

Reversing Reduction Gear Operation

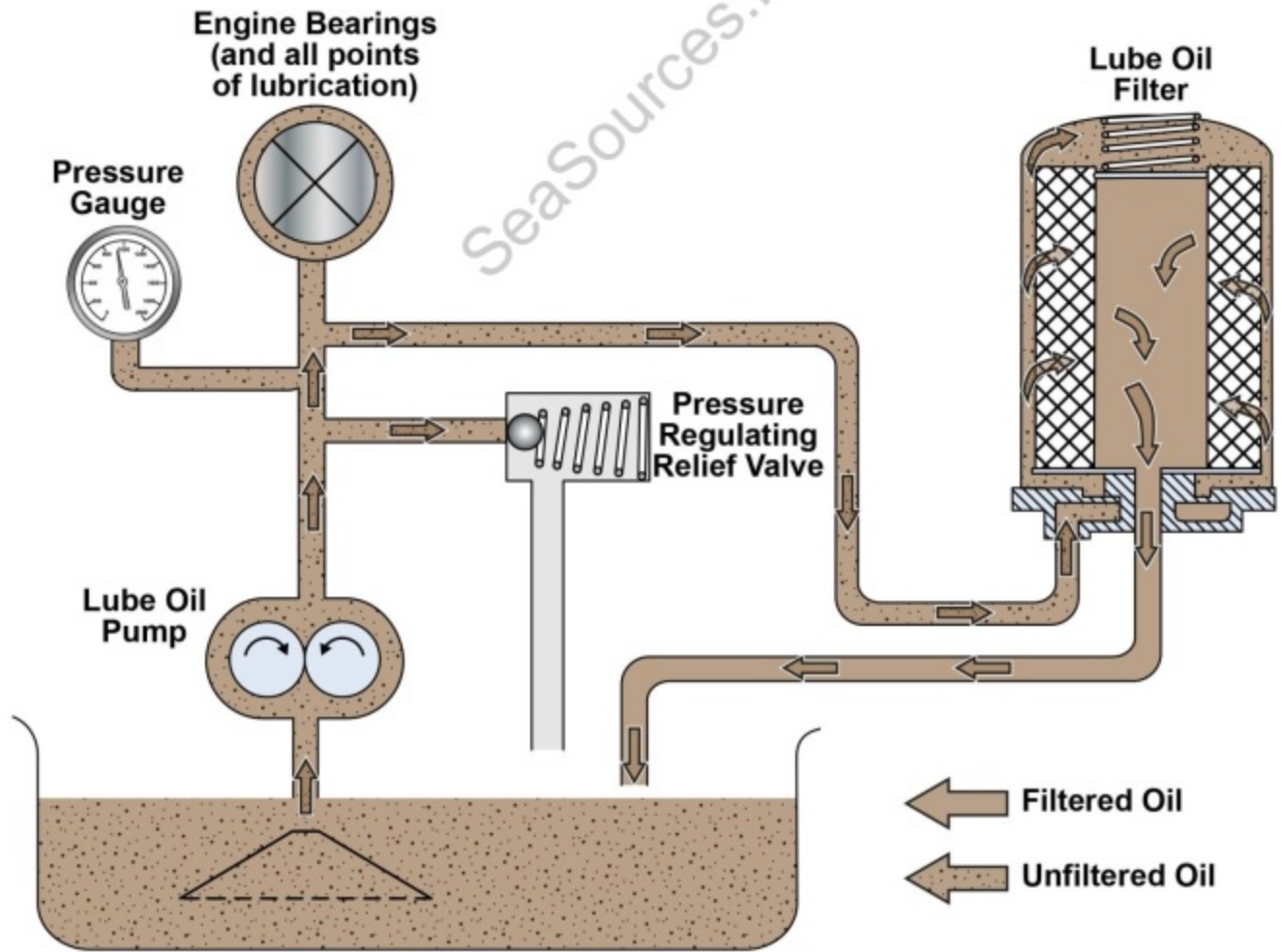


MP-IX-11

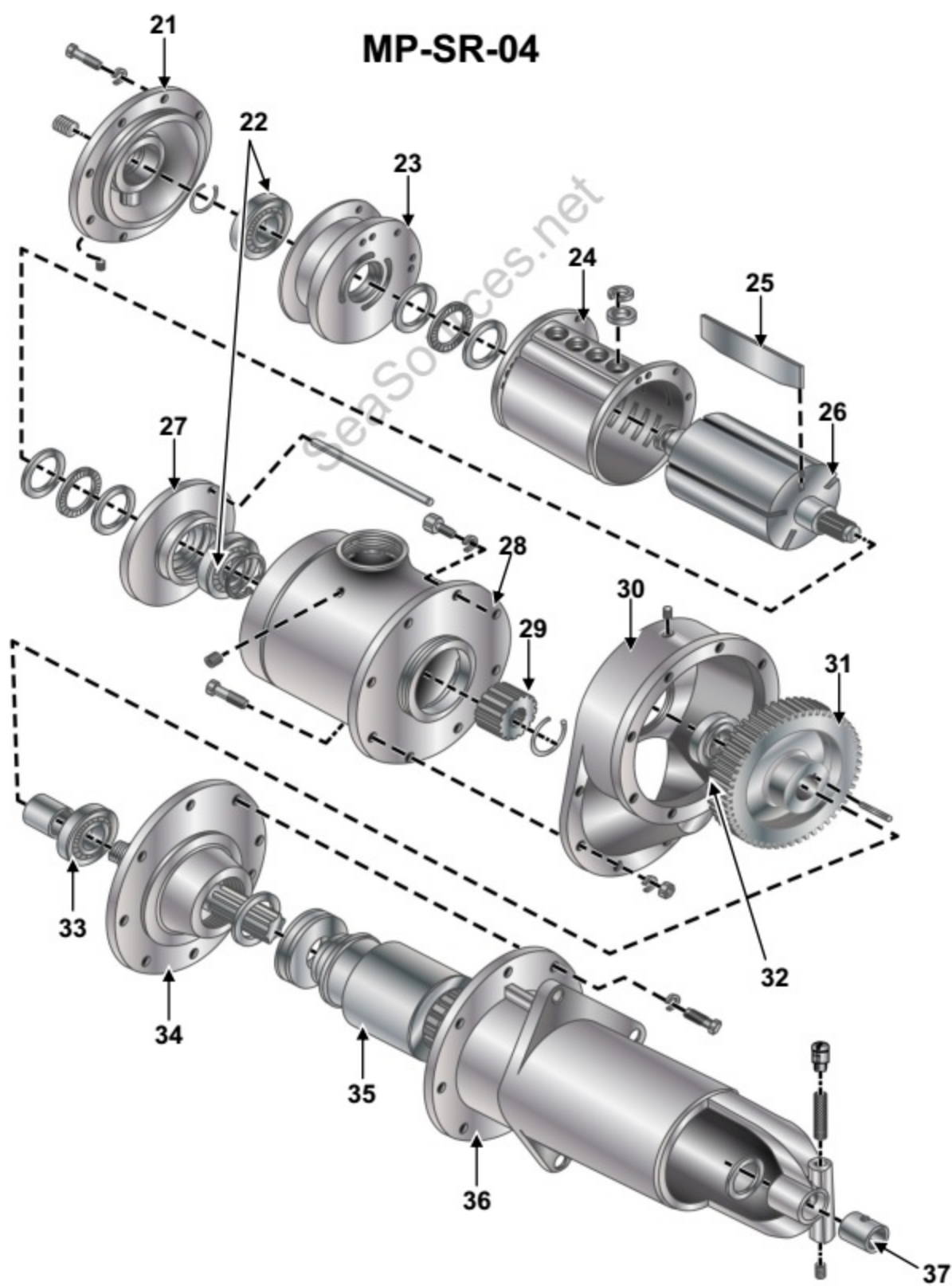
Generic Turbocharged 2-Stroke Engine Intake and Exhaust Systems



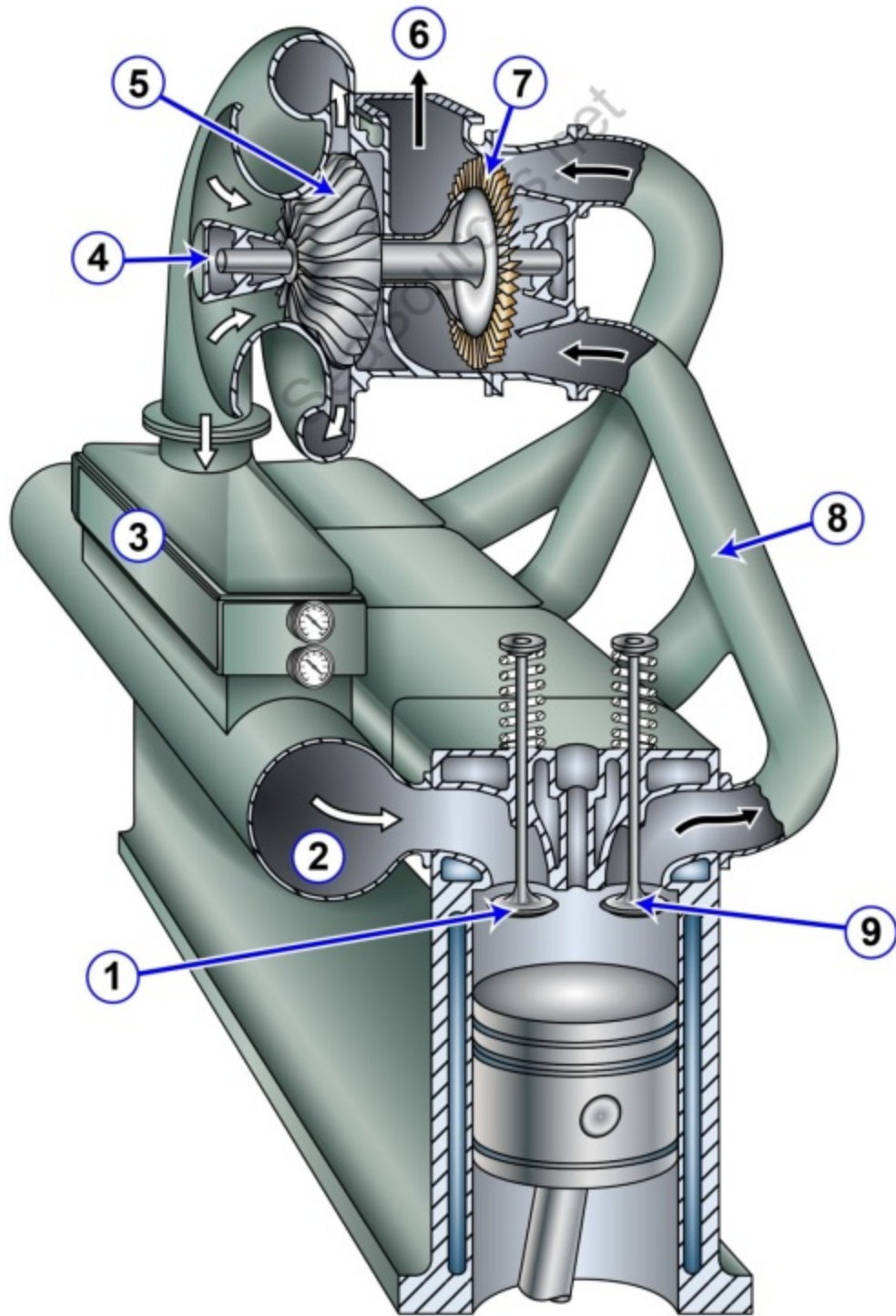
MP-LO-06 Simplified Lube Oil Filtration System



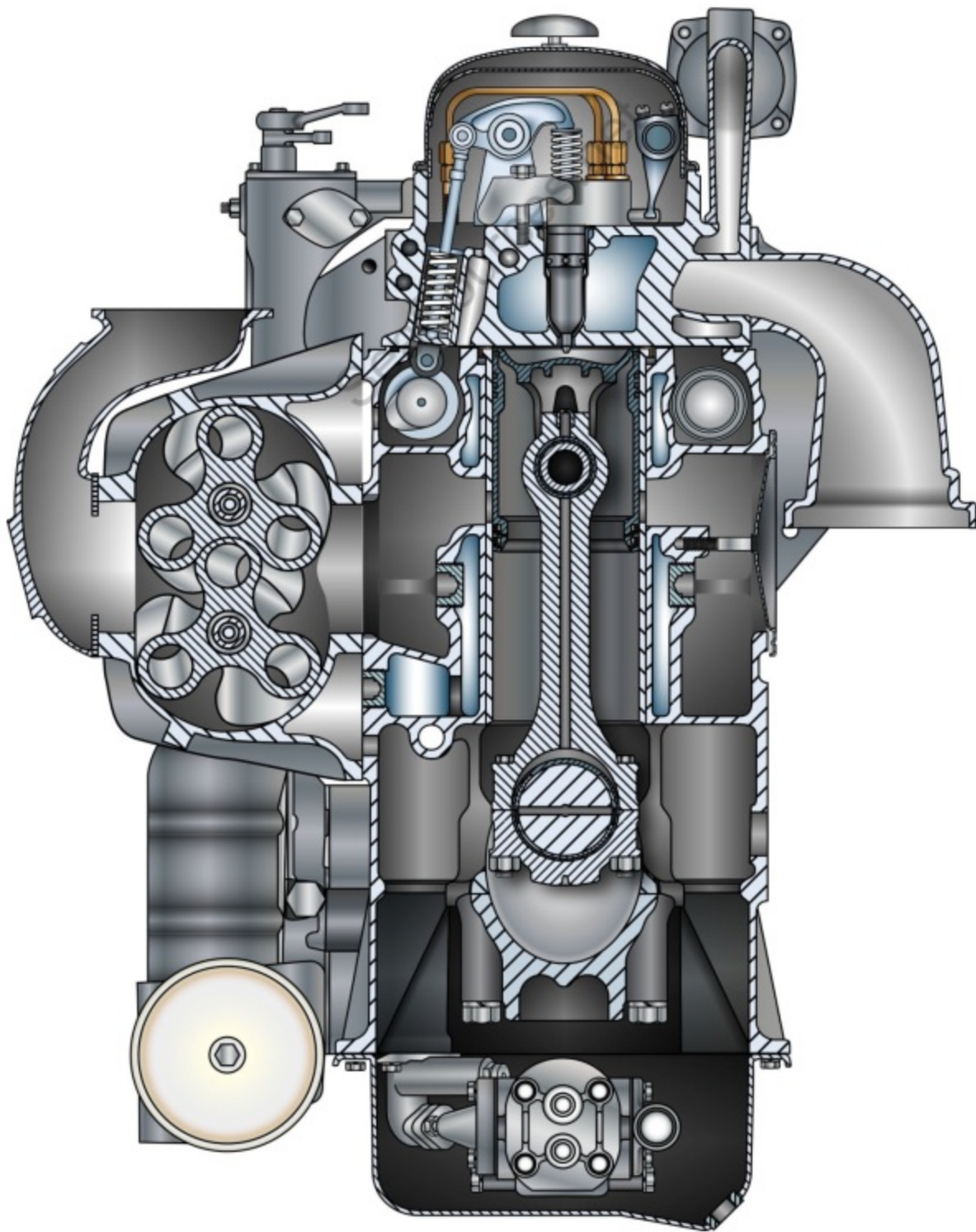
MP-SR-04



MP-IX-06

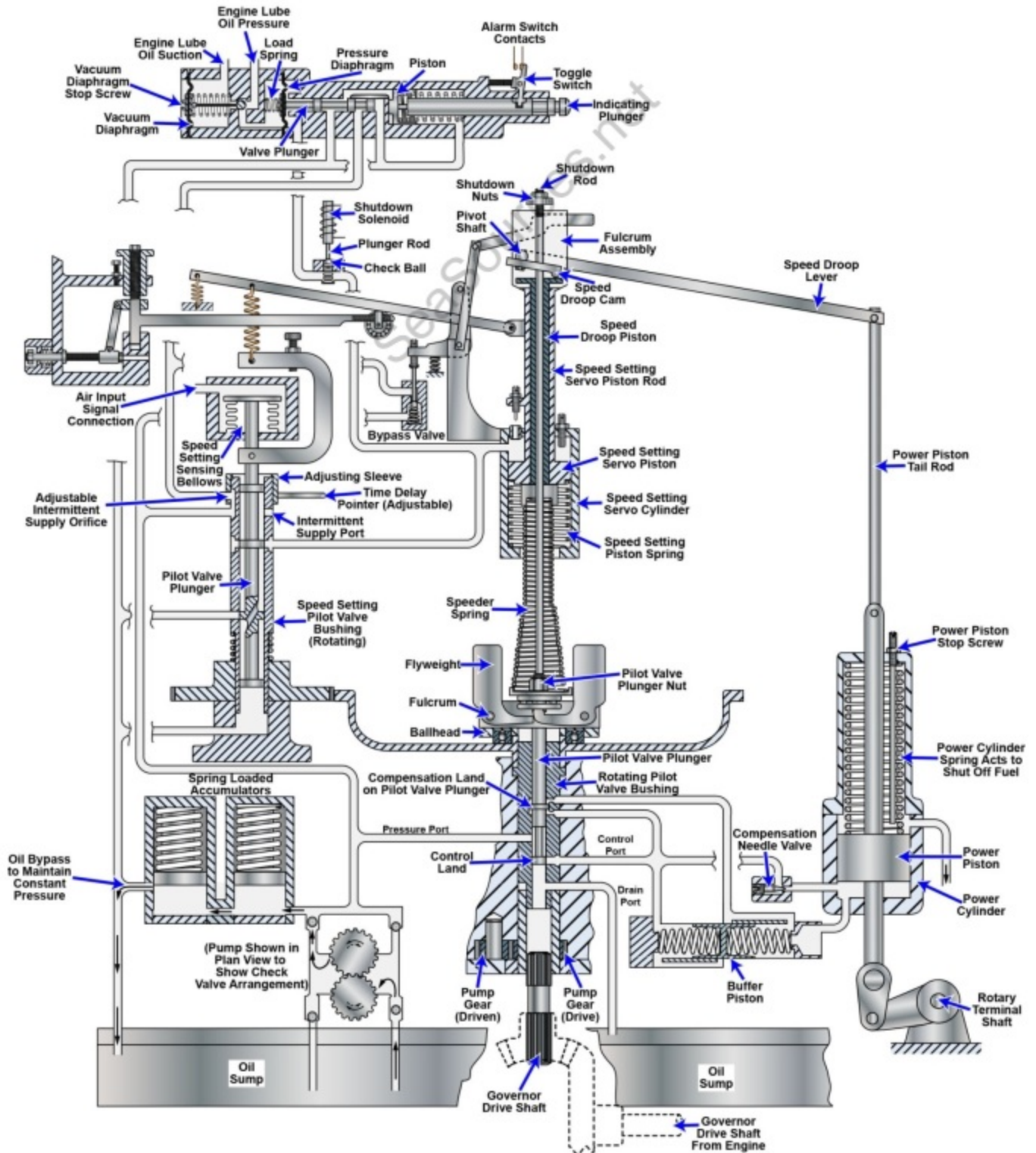


MP-HS-07



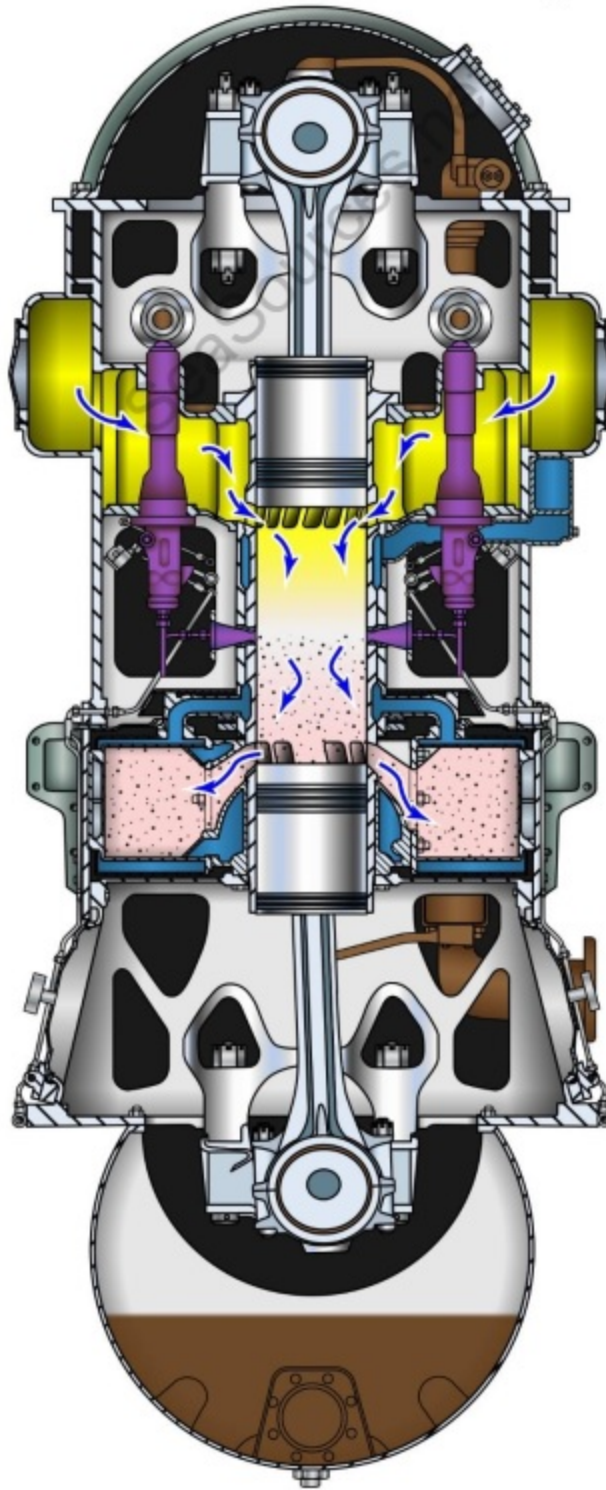
MP-GV-03

Woodward Type PGA Governor Schematic Diagram

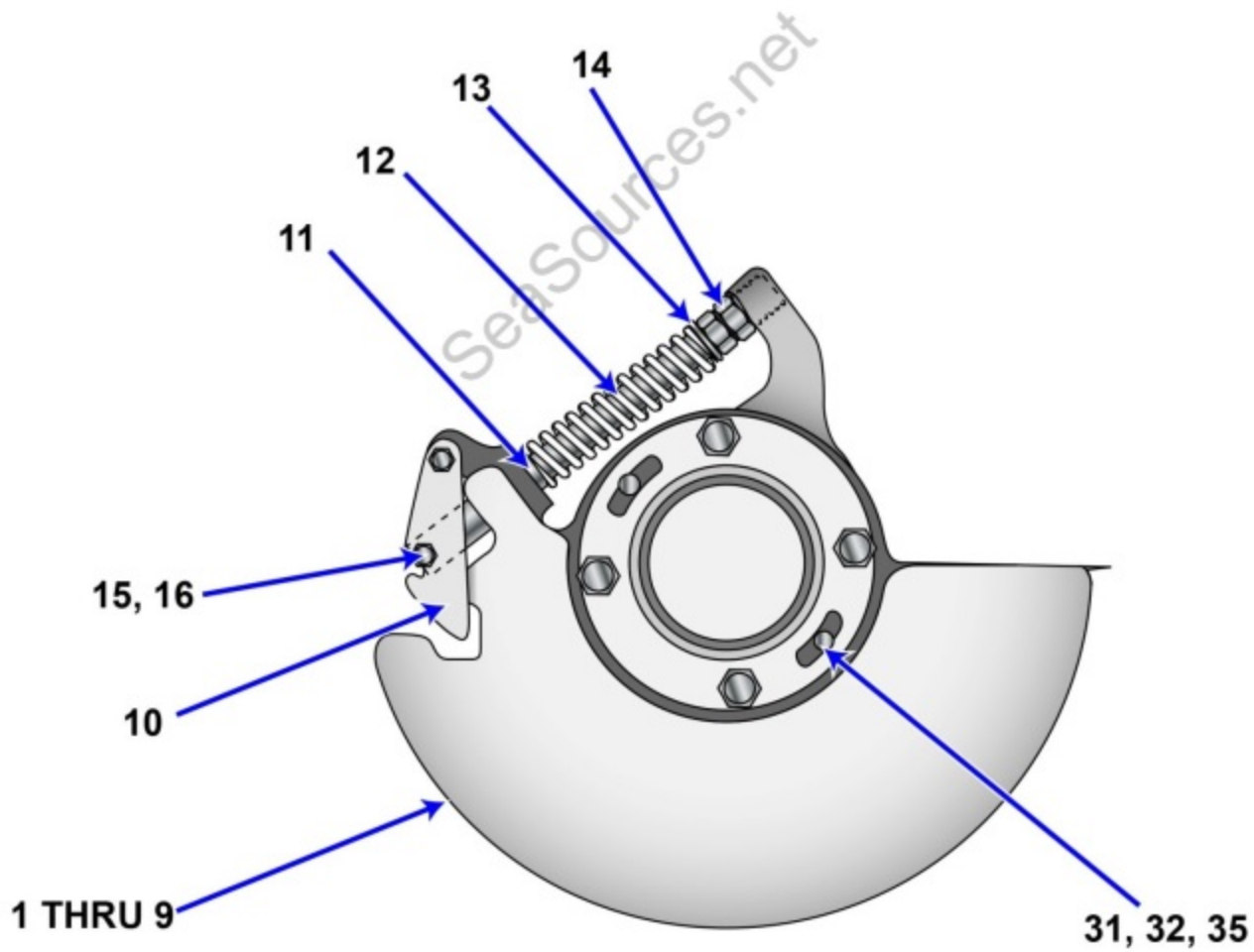


MP-MS-03

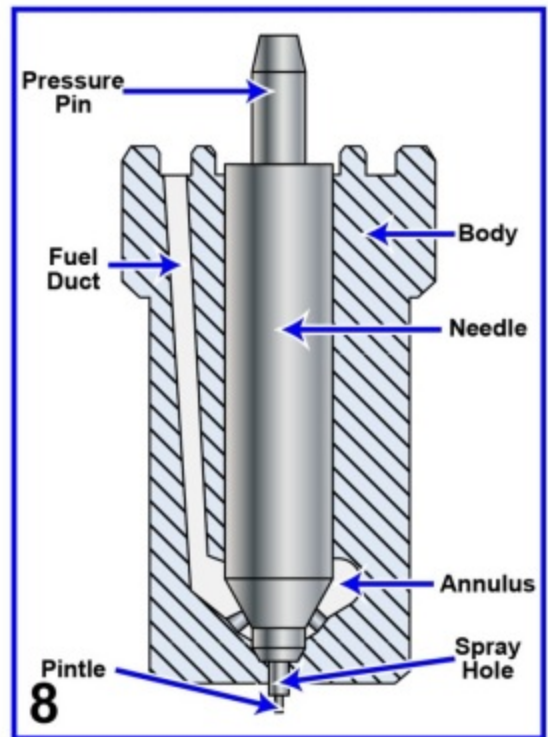
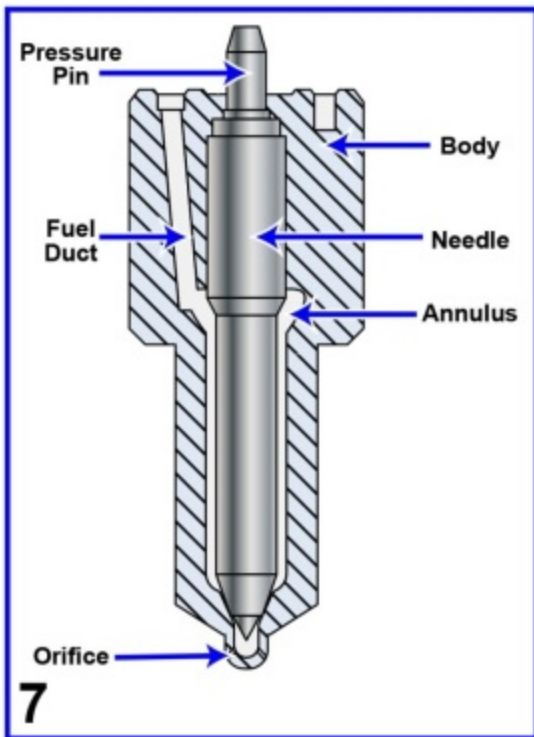
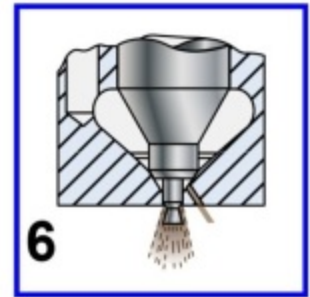
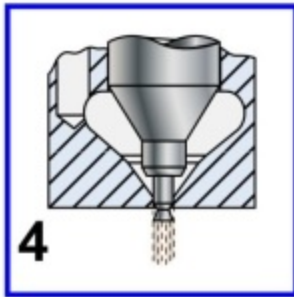
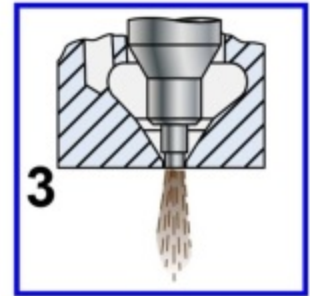
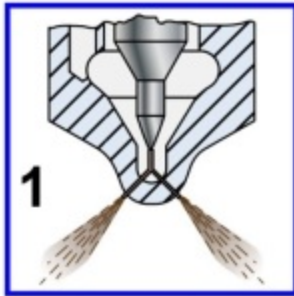
Fairbanks Morse Diesel Engine



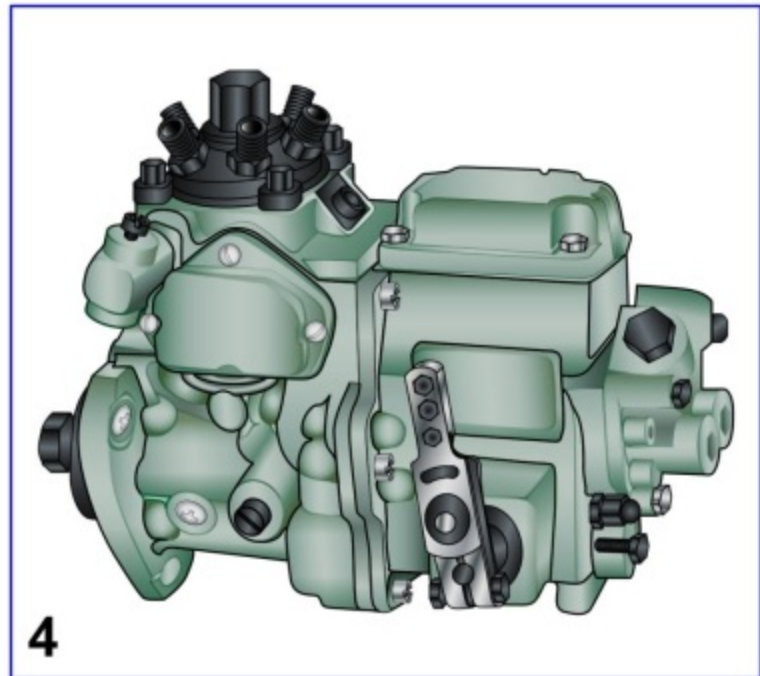
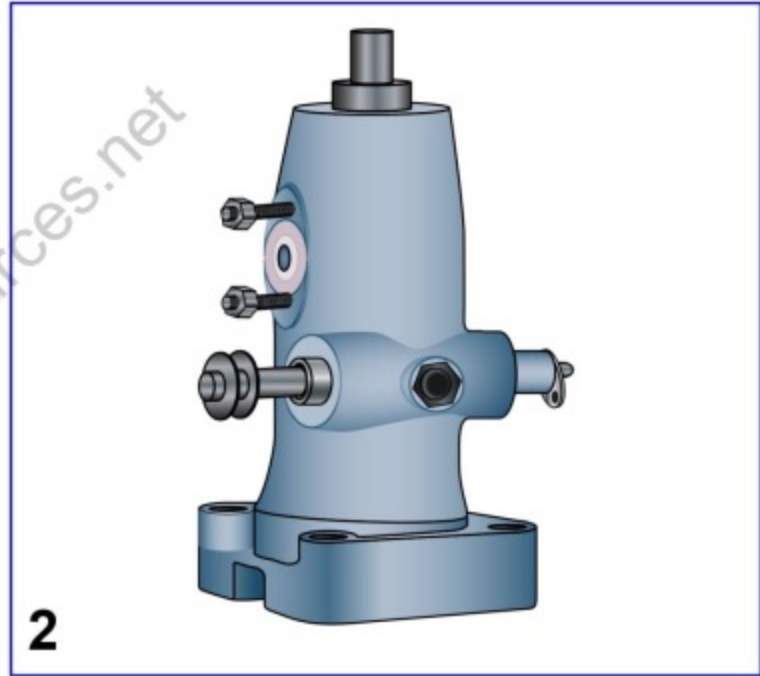
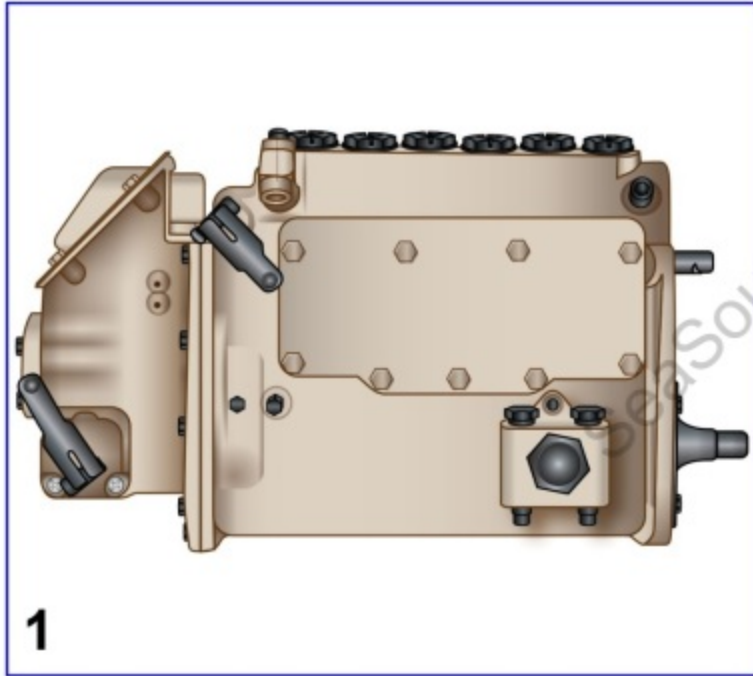
MP-SF-06



MP-FI-18

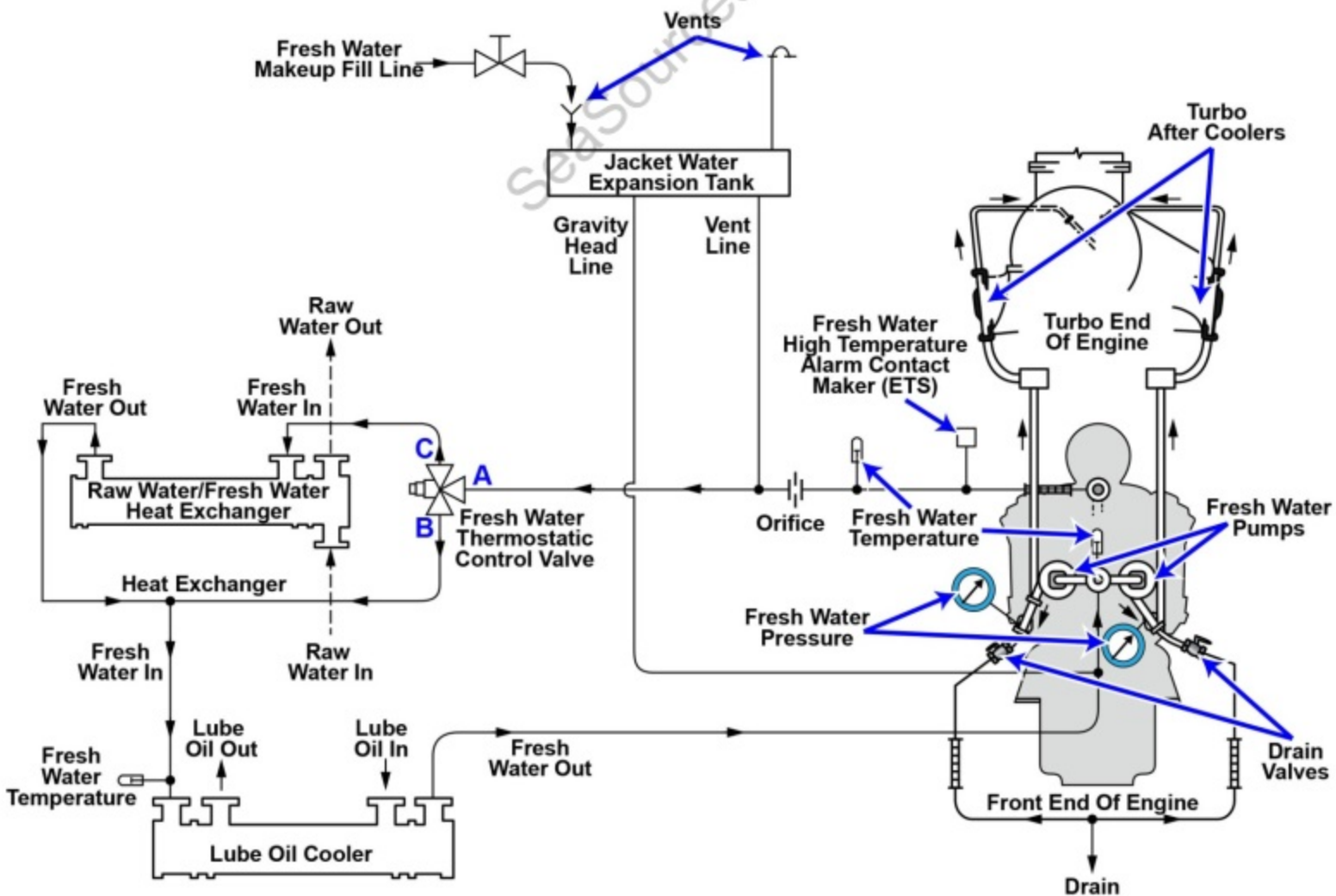


MP-FI-19

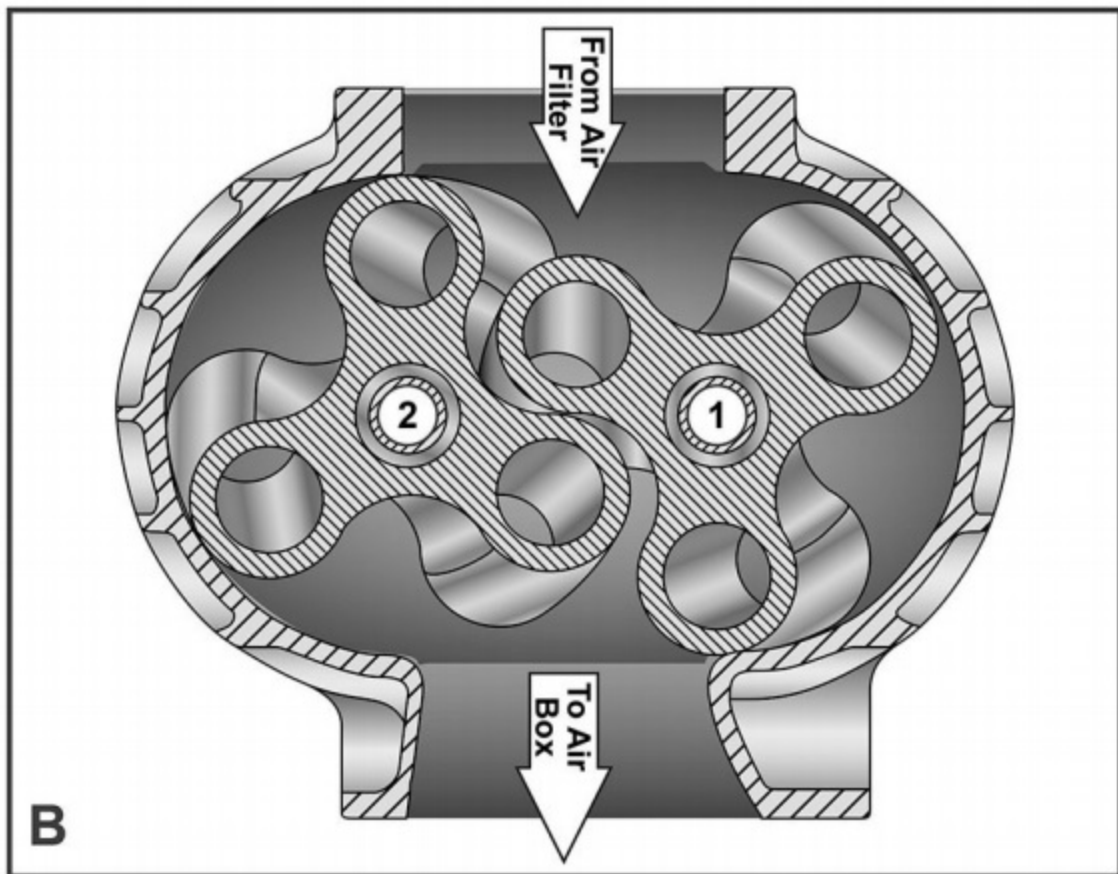
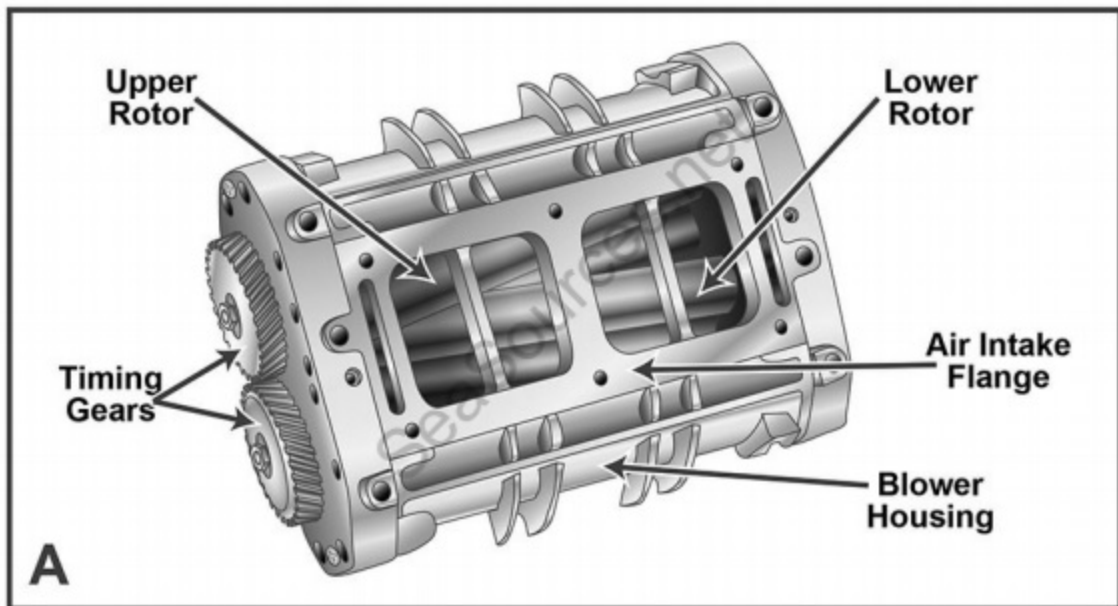


MP-CW-15

EMD Engine Fresh Water Cooling System with Heat Exchanger

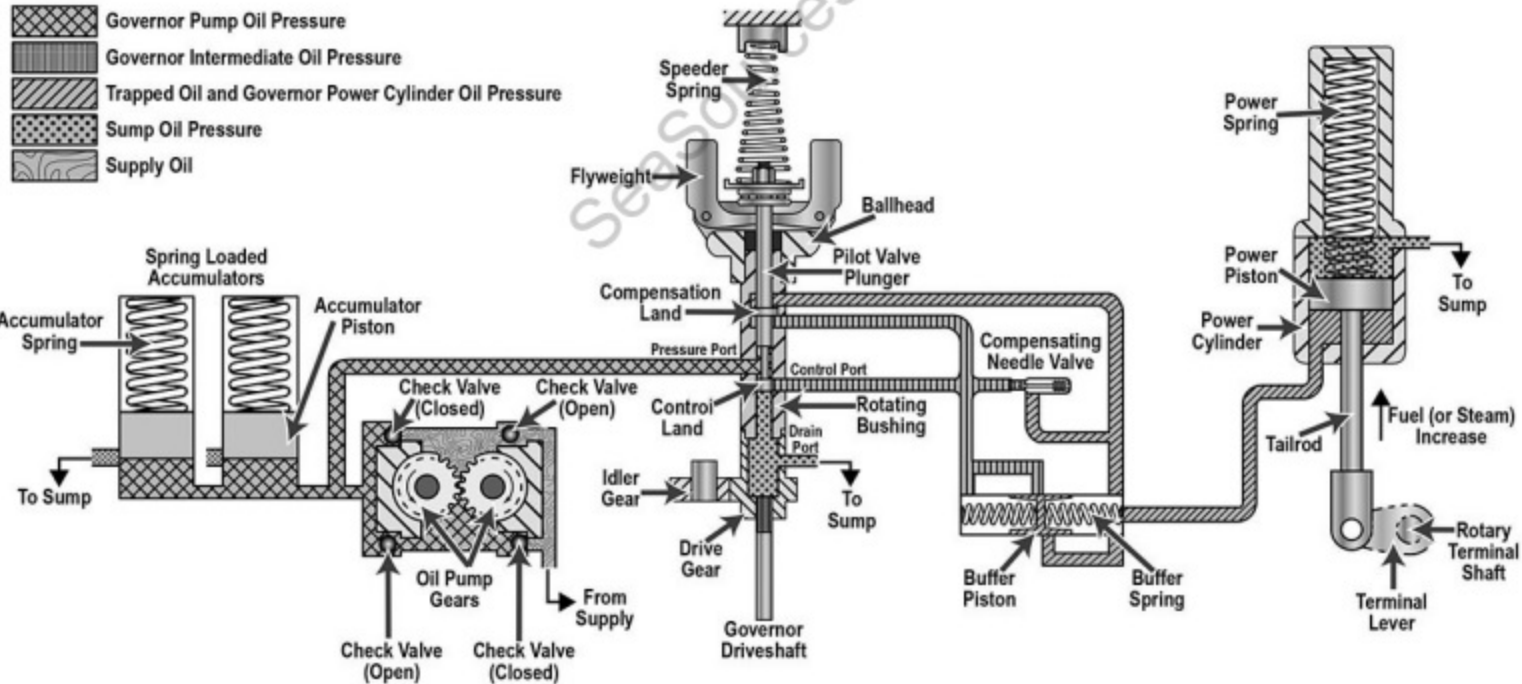


MP-CA-12

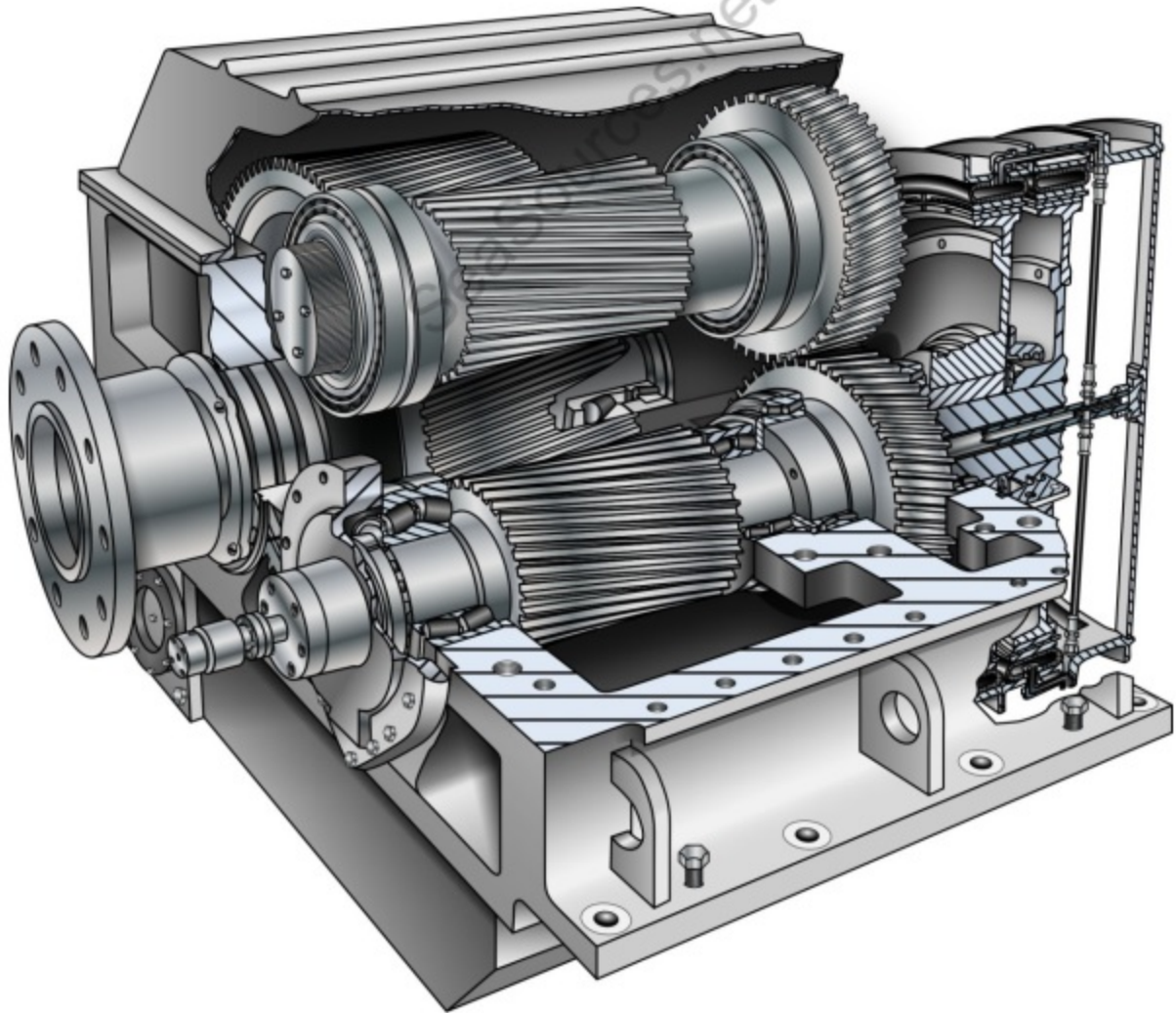


MP-GV-18

Basic Woodward PG Governor

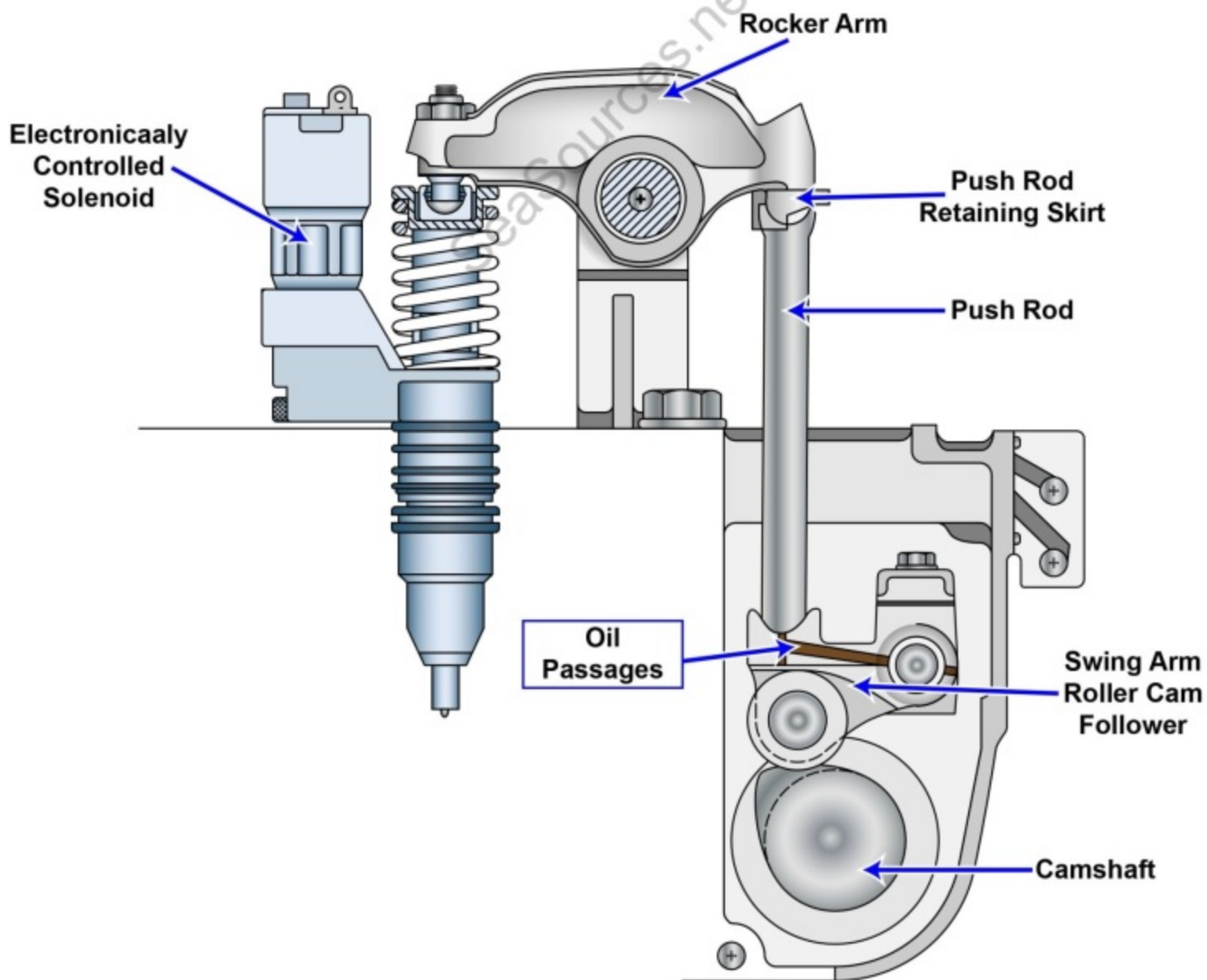


MP-DS-04

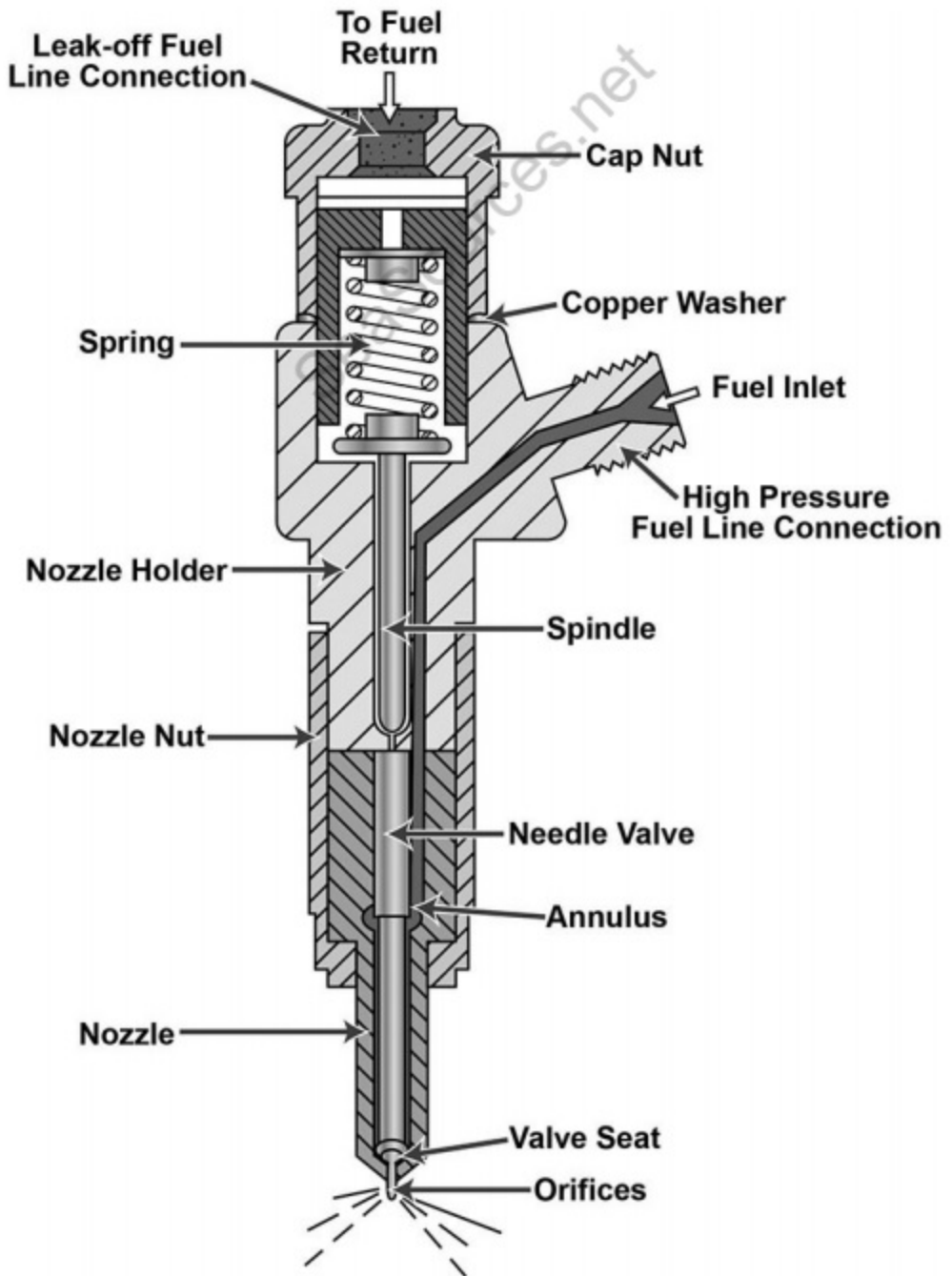


MP-FI-10

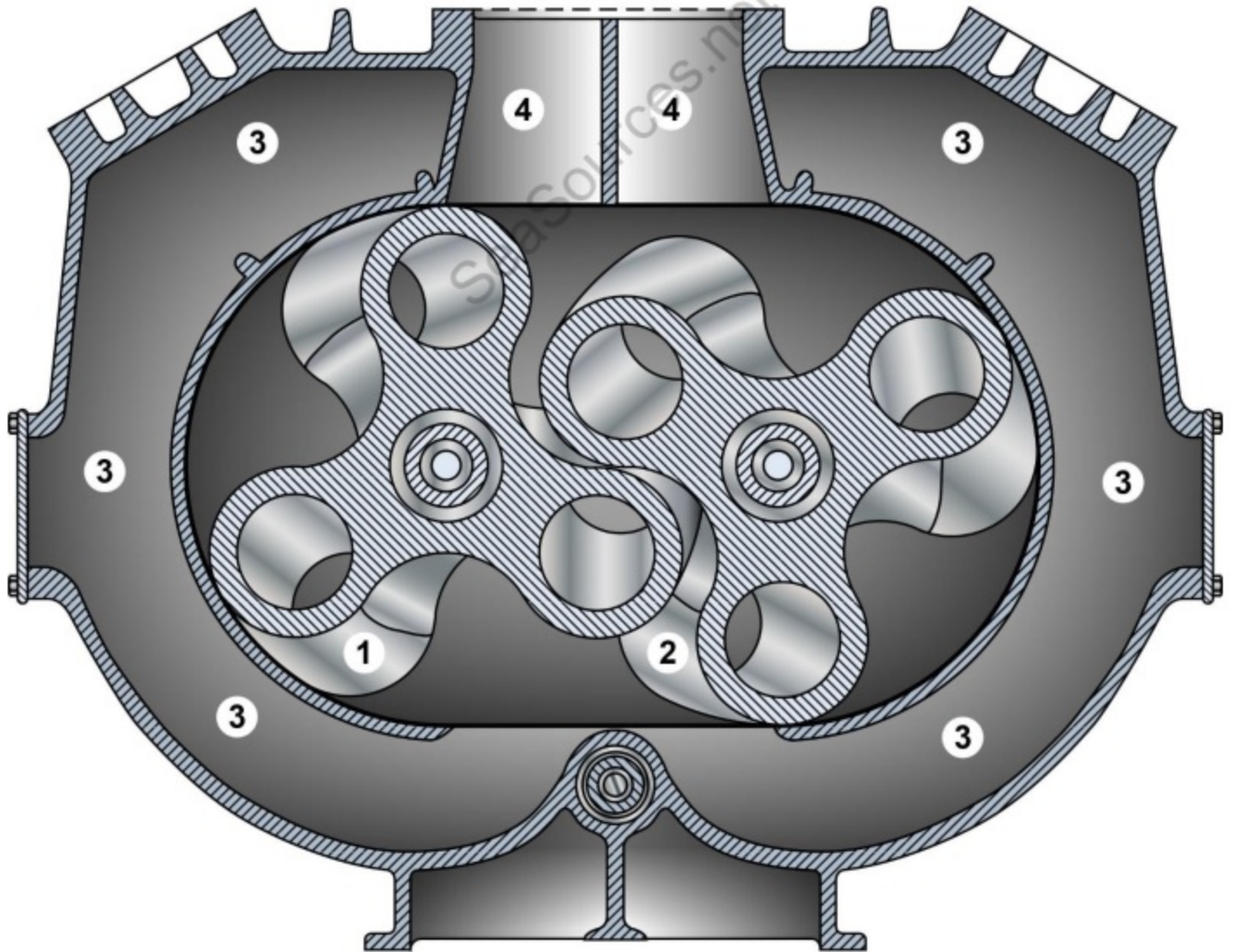
Detroit Diesel 60 Series Engine Unit Injector Arrangements



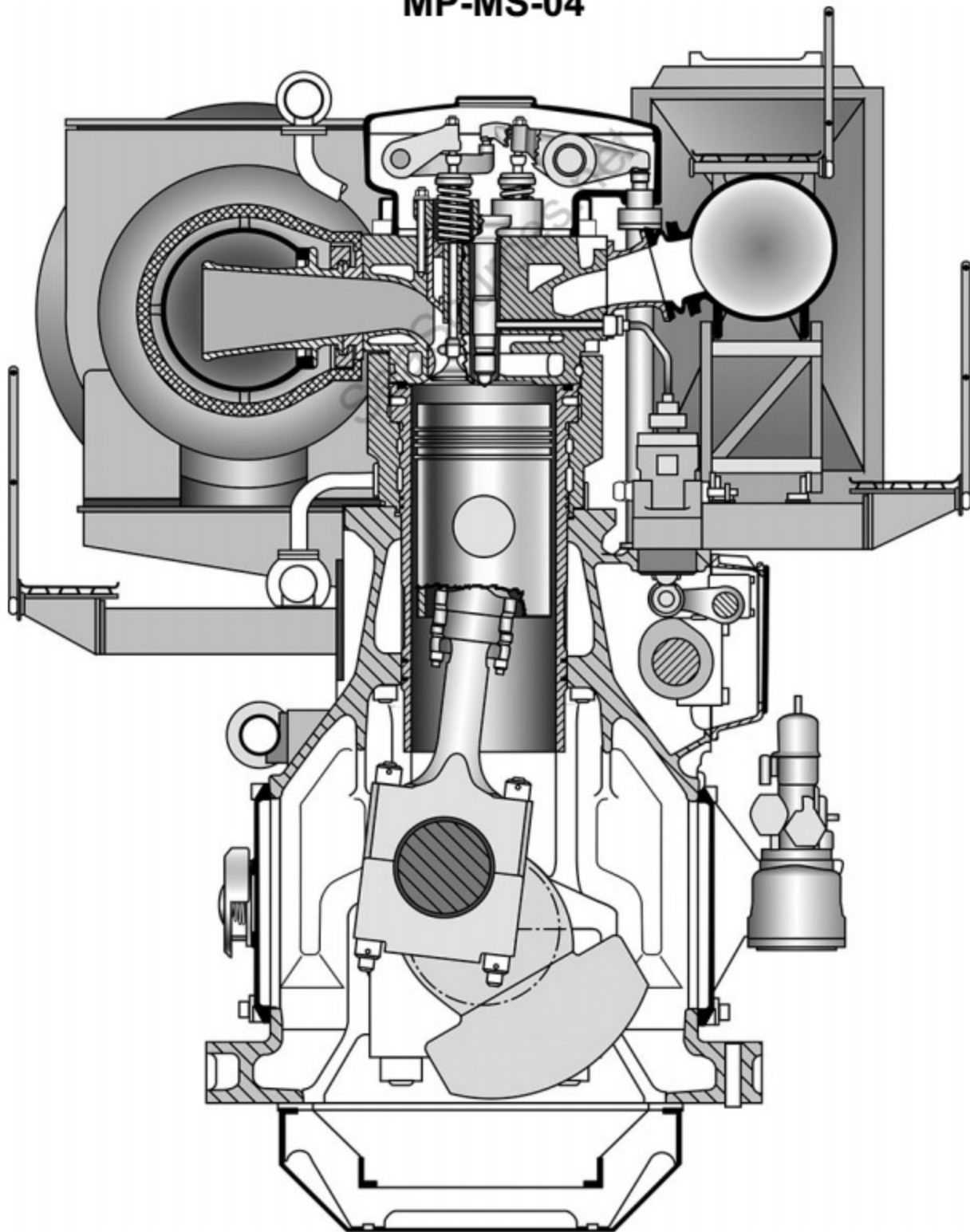
MP-FI-22



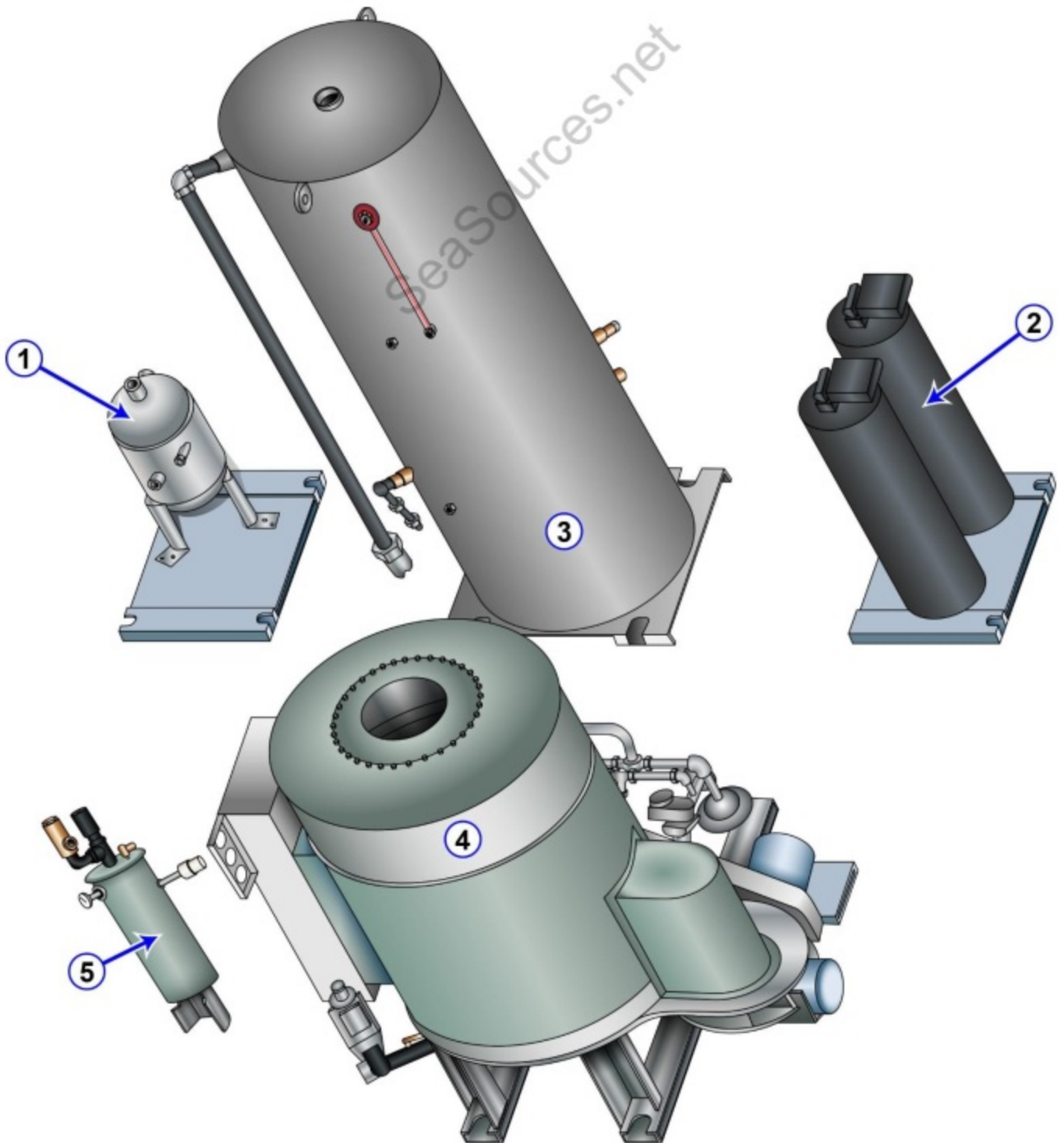
MP-CA-09



MP-MS-04

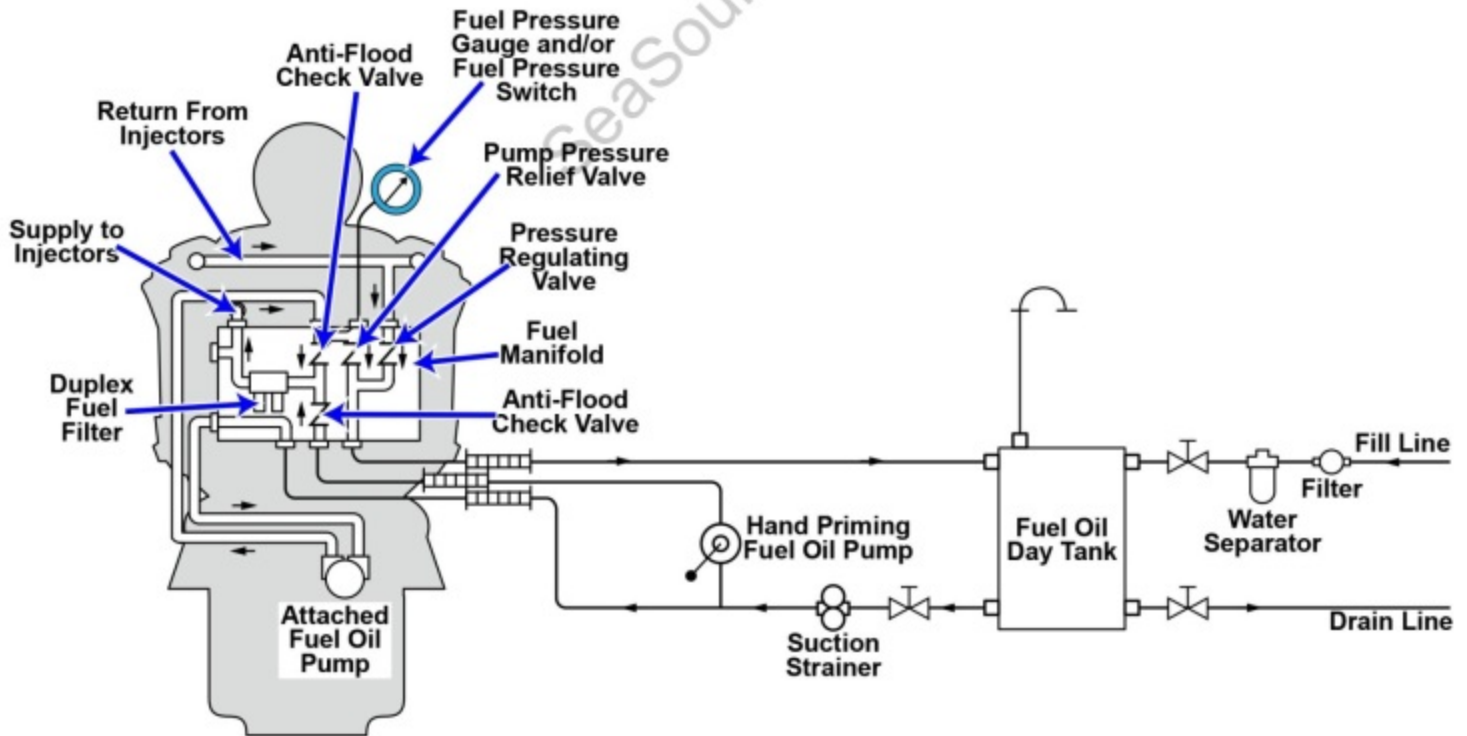


MP-SP-20

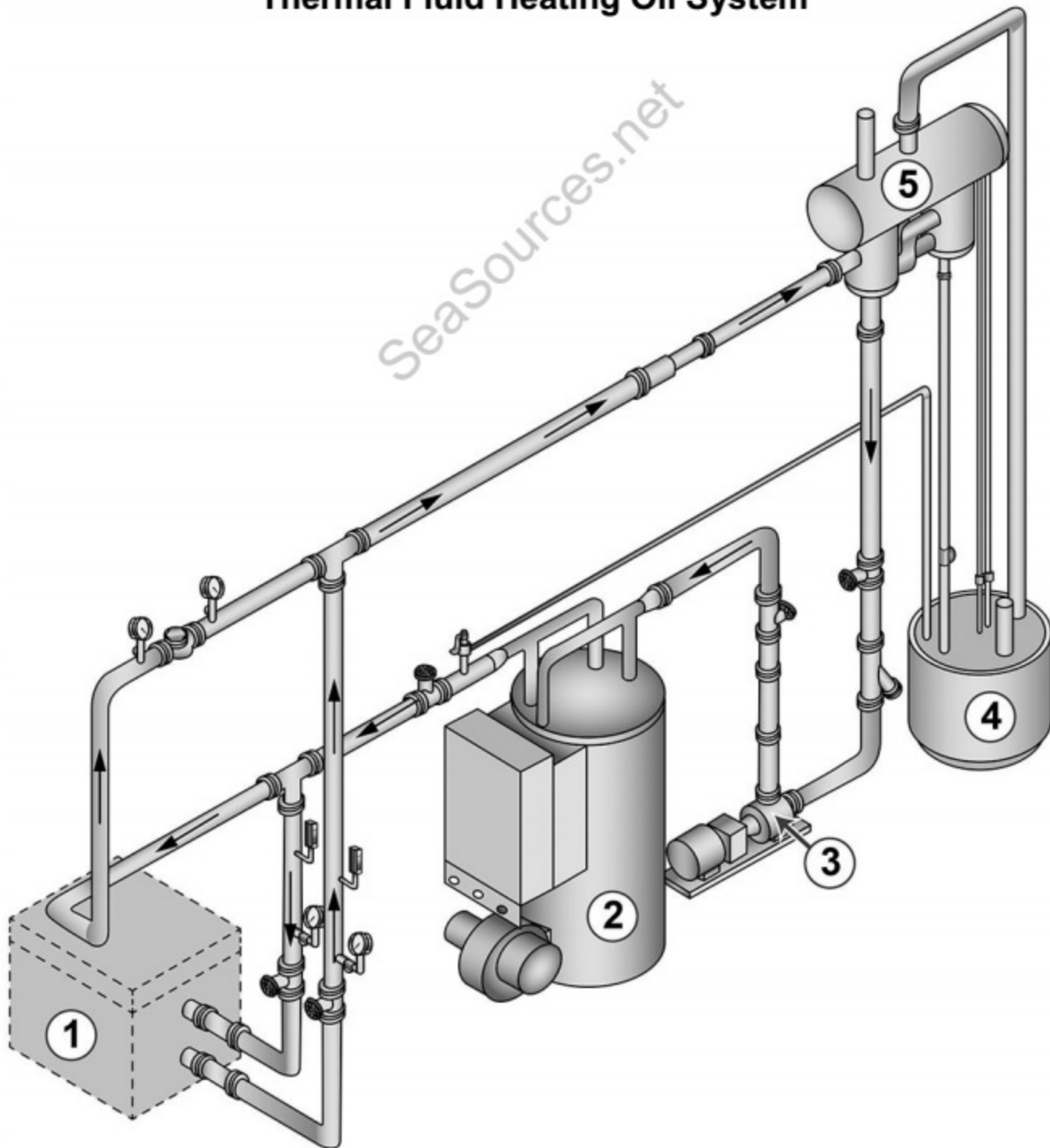


MP-FO-06

EMD 645 Series Engine Fuel Oil System

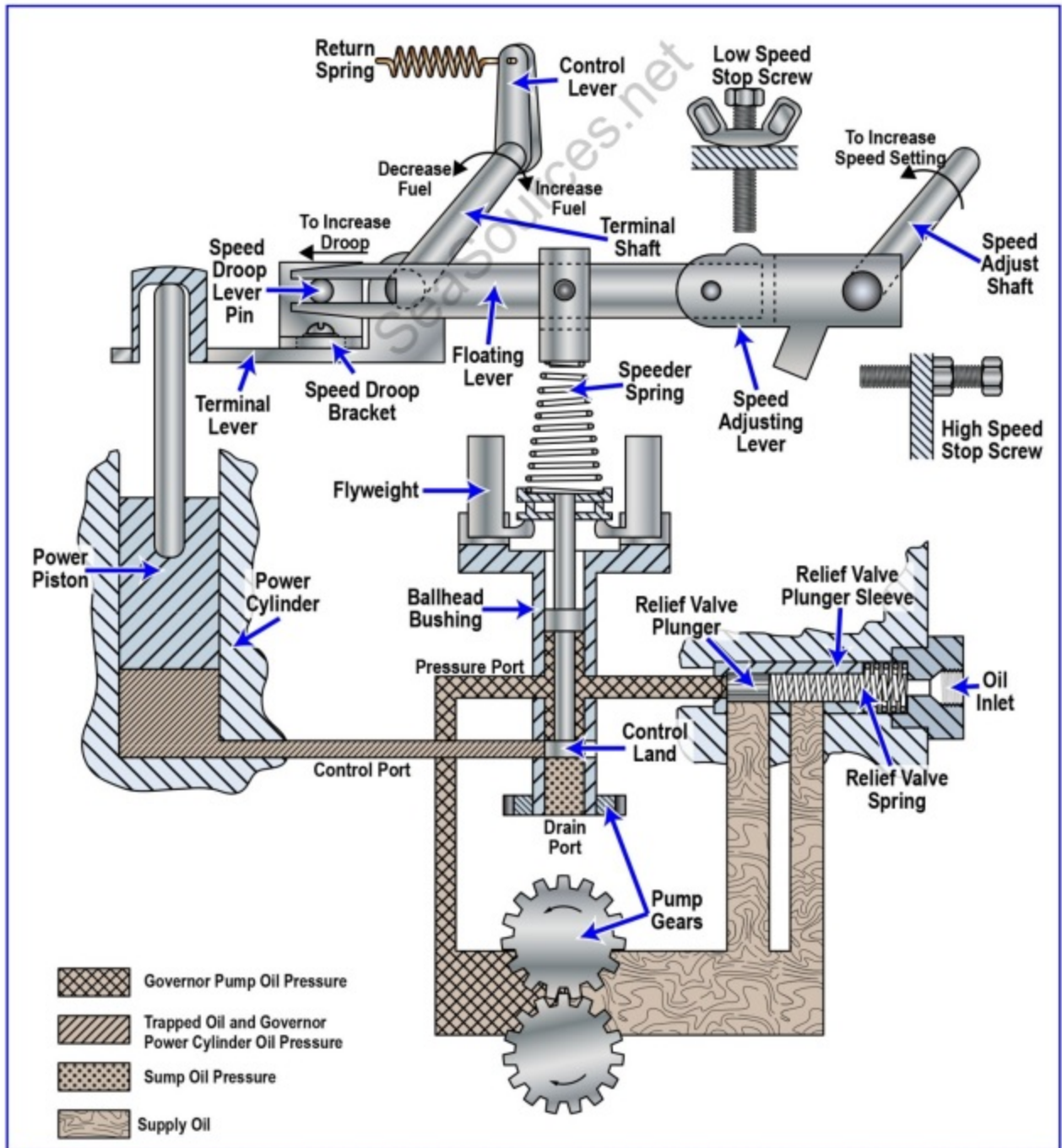


MP-SP-23 Thermal Fluid Heating Oil System

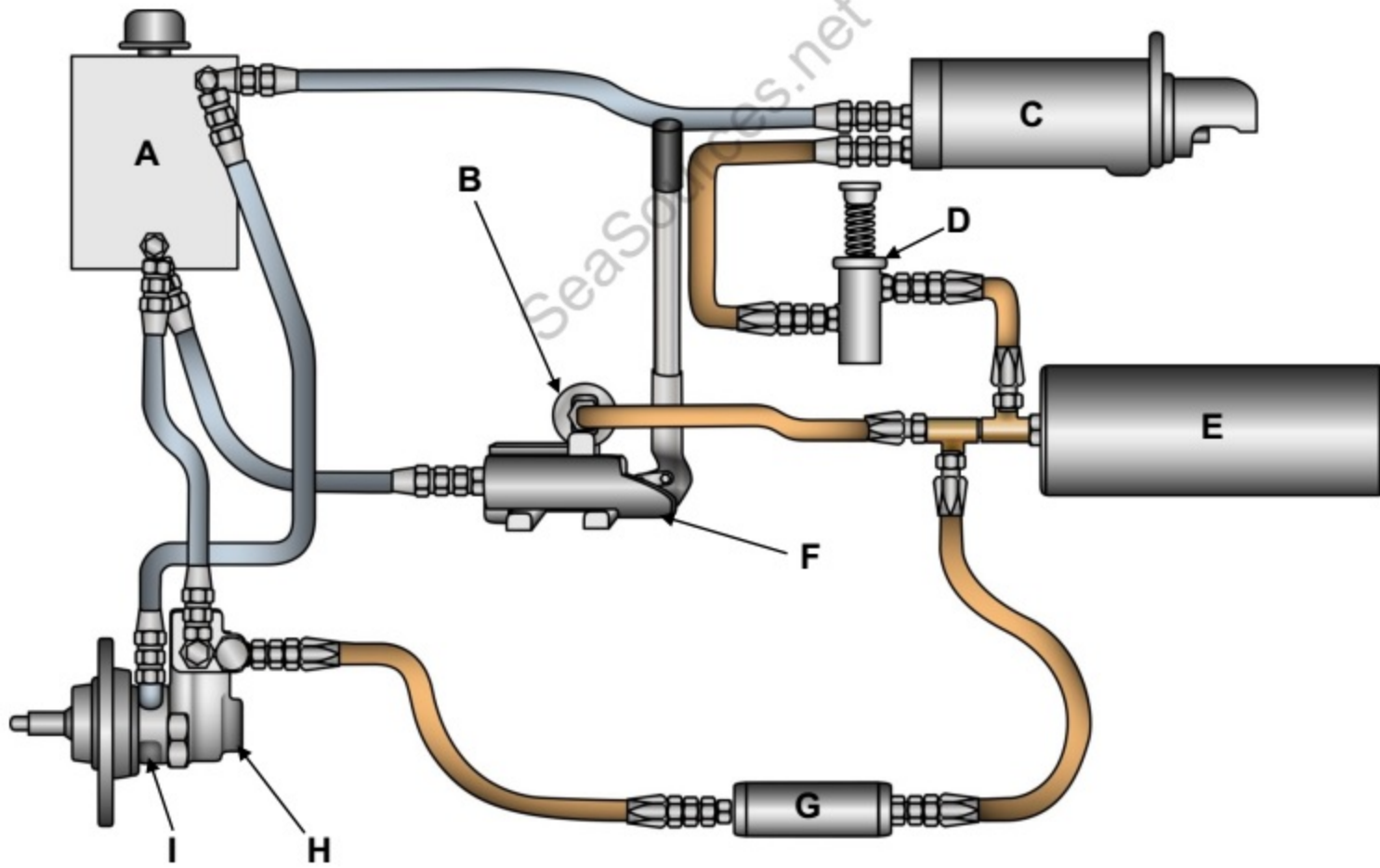


MP-GV-10

Woodward Type SG Governor

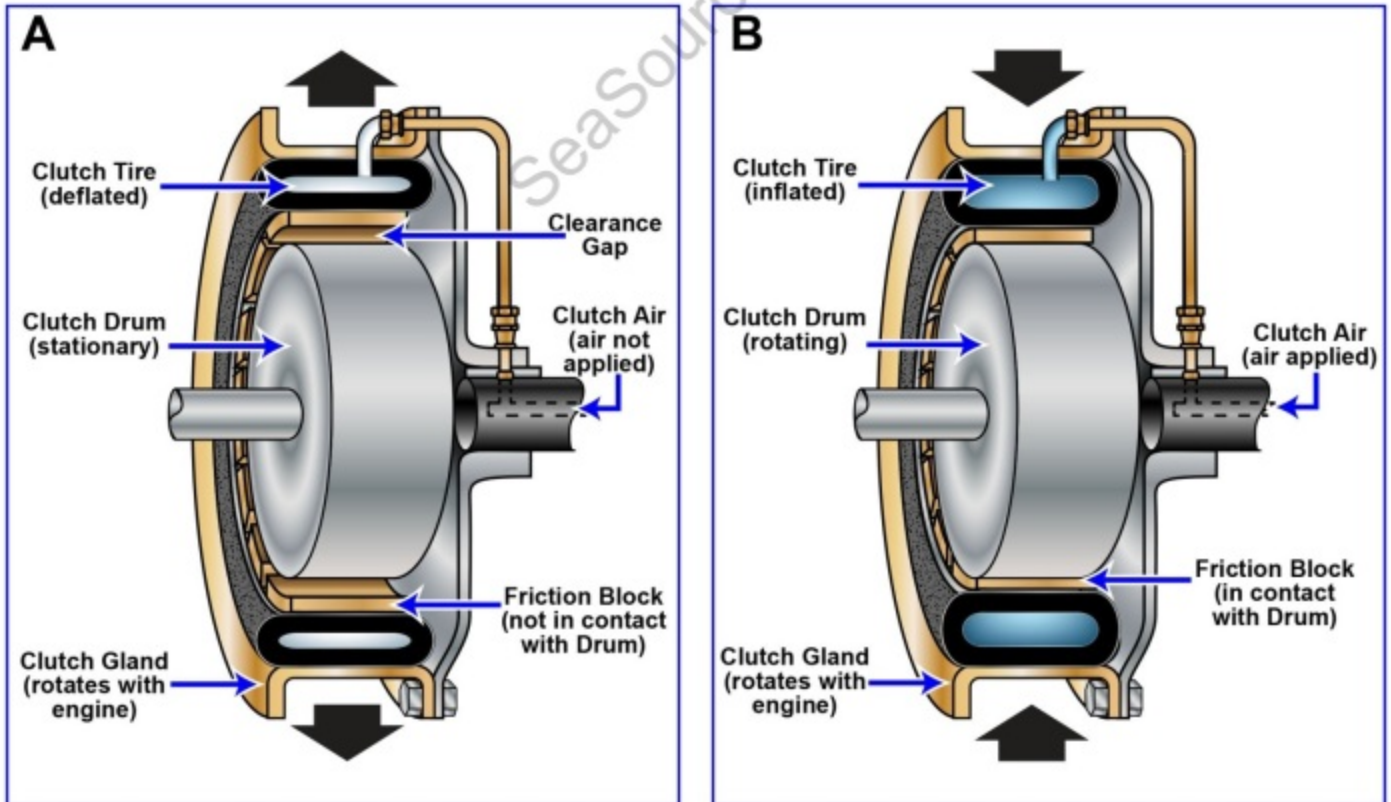


MP-SR-05



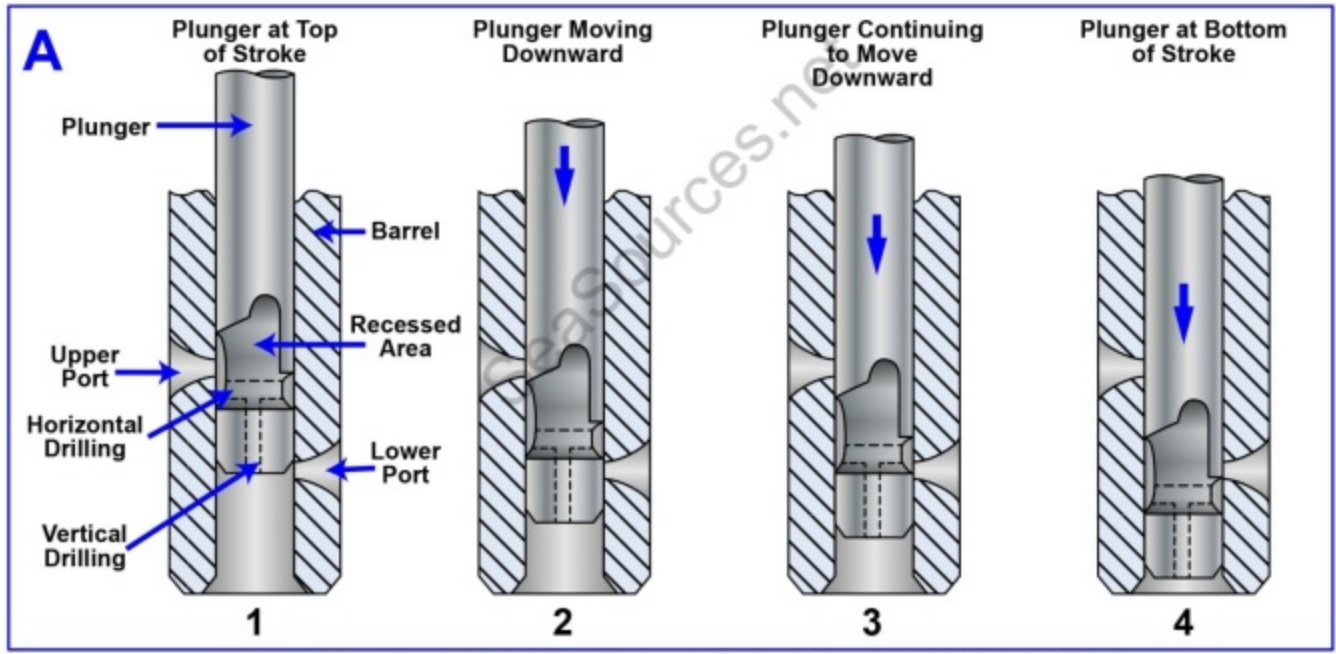
MP-DS-11

Pneumatic Airflex Clutch Operation

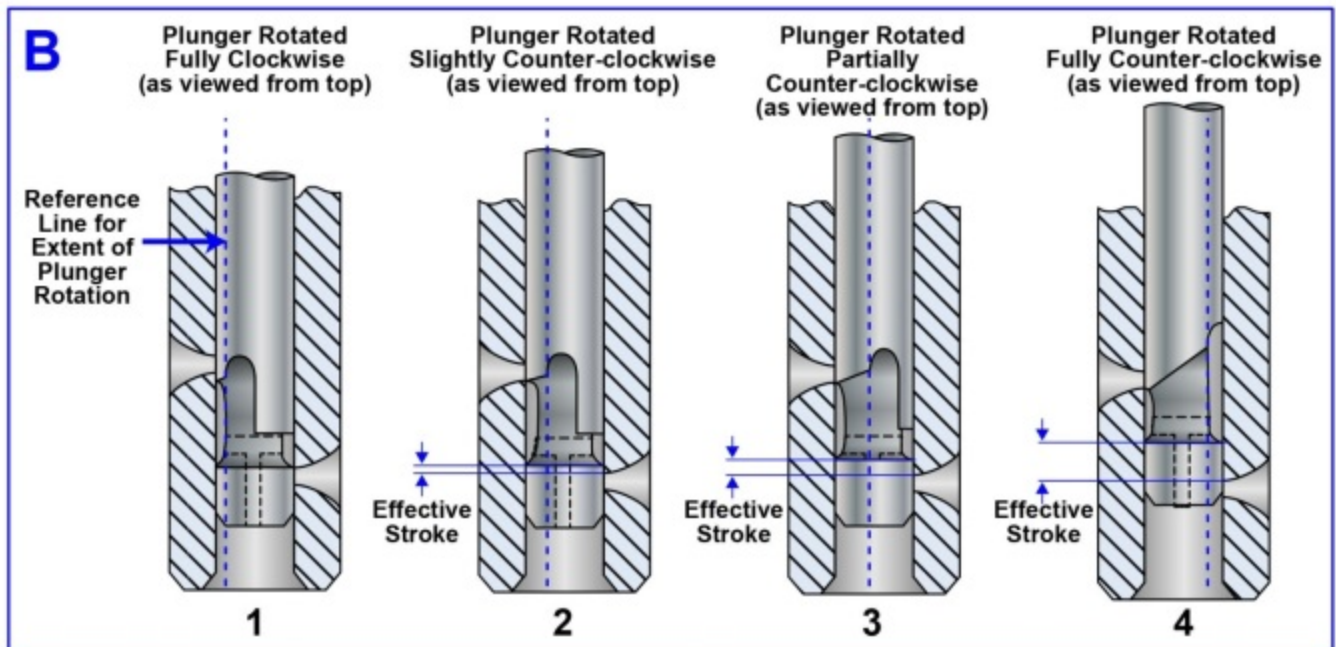


MP-FI-12

Detroit Diesel 71 Series Engine Unit Injector

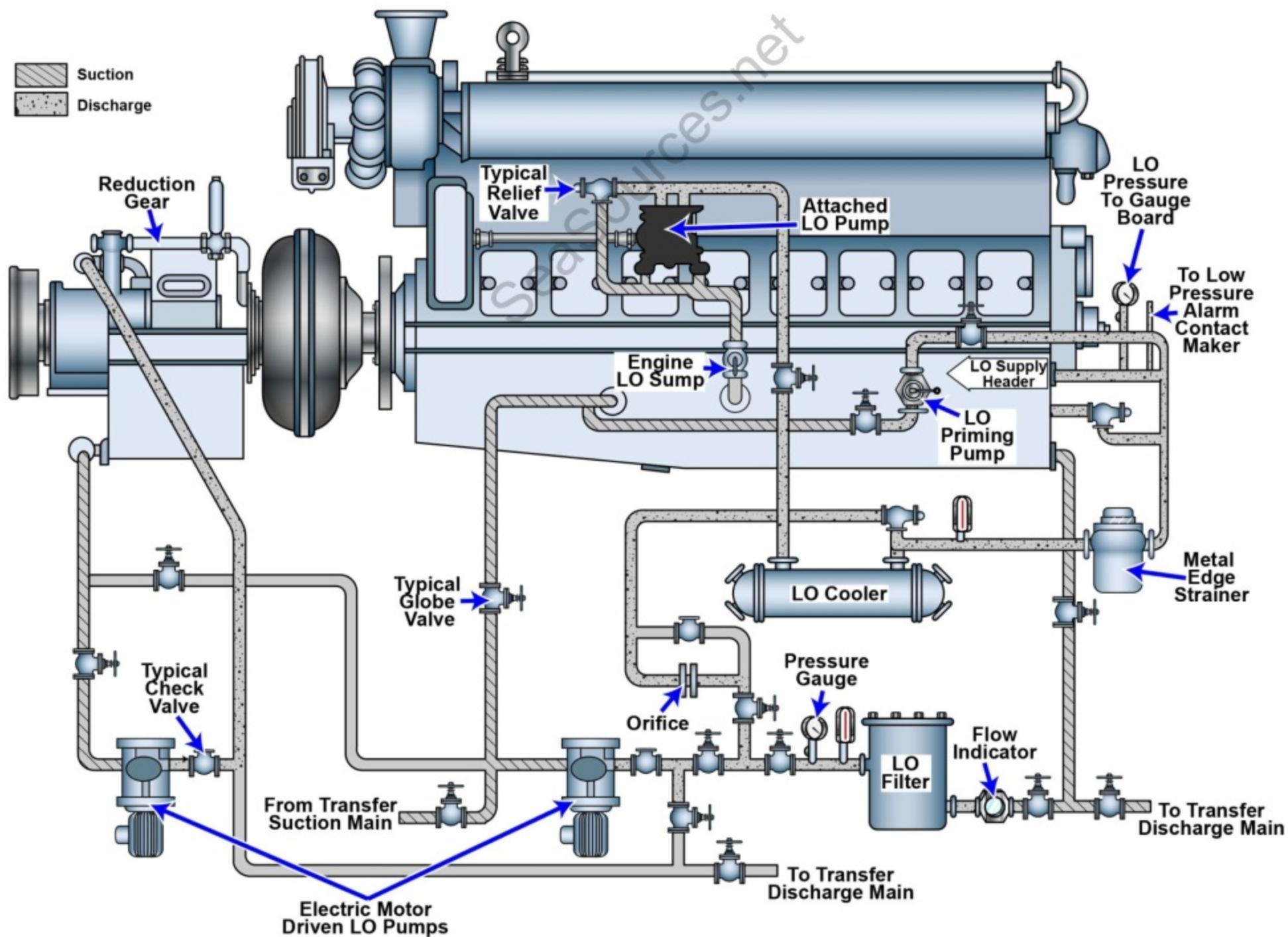


Injector Operation as a Function of Vertical Plunger Travel



Injector Operation as a Function of Extent of Plunger Rotation

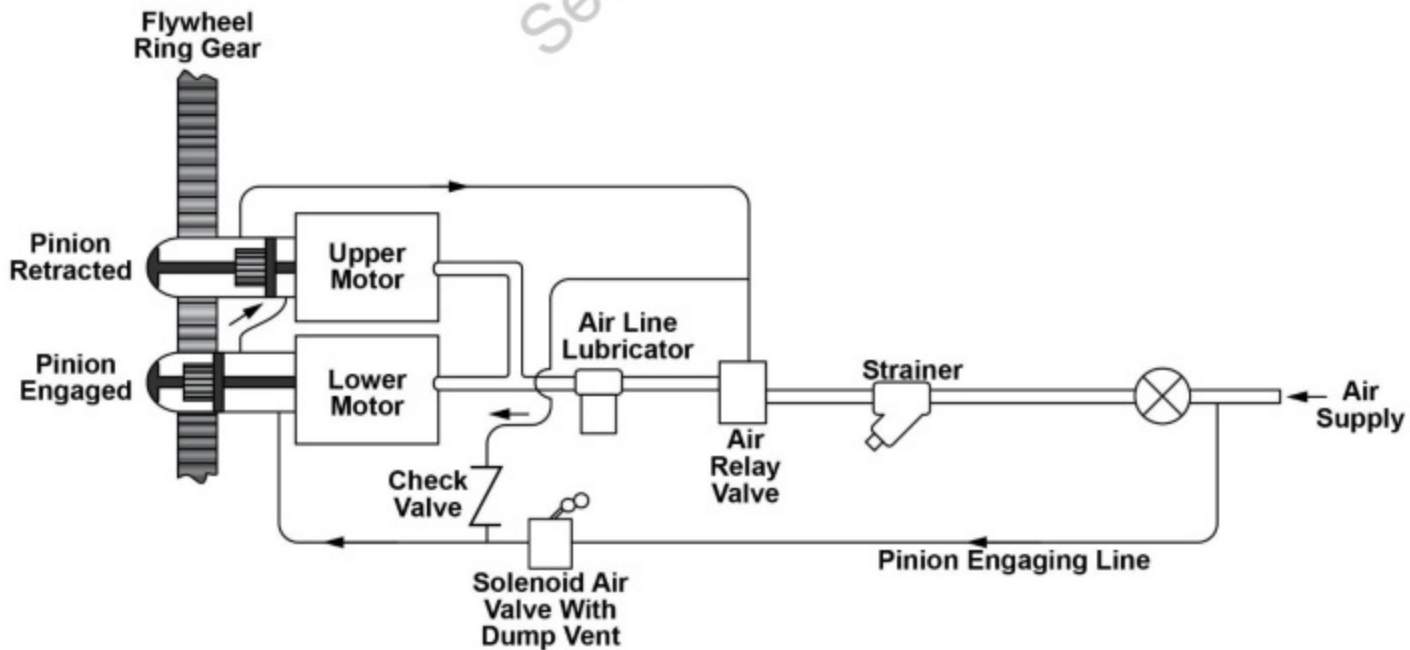
MP-LO-09 M/E Lubricating Oil System



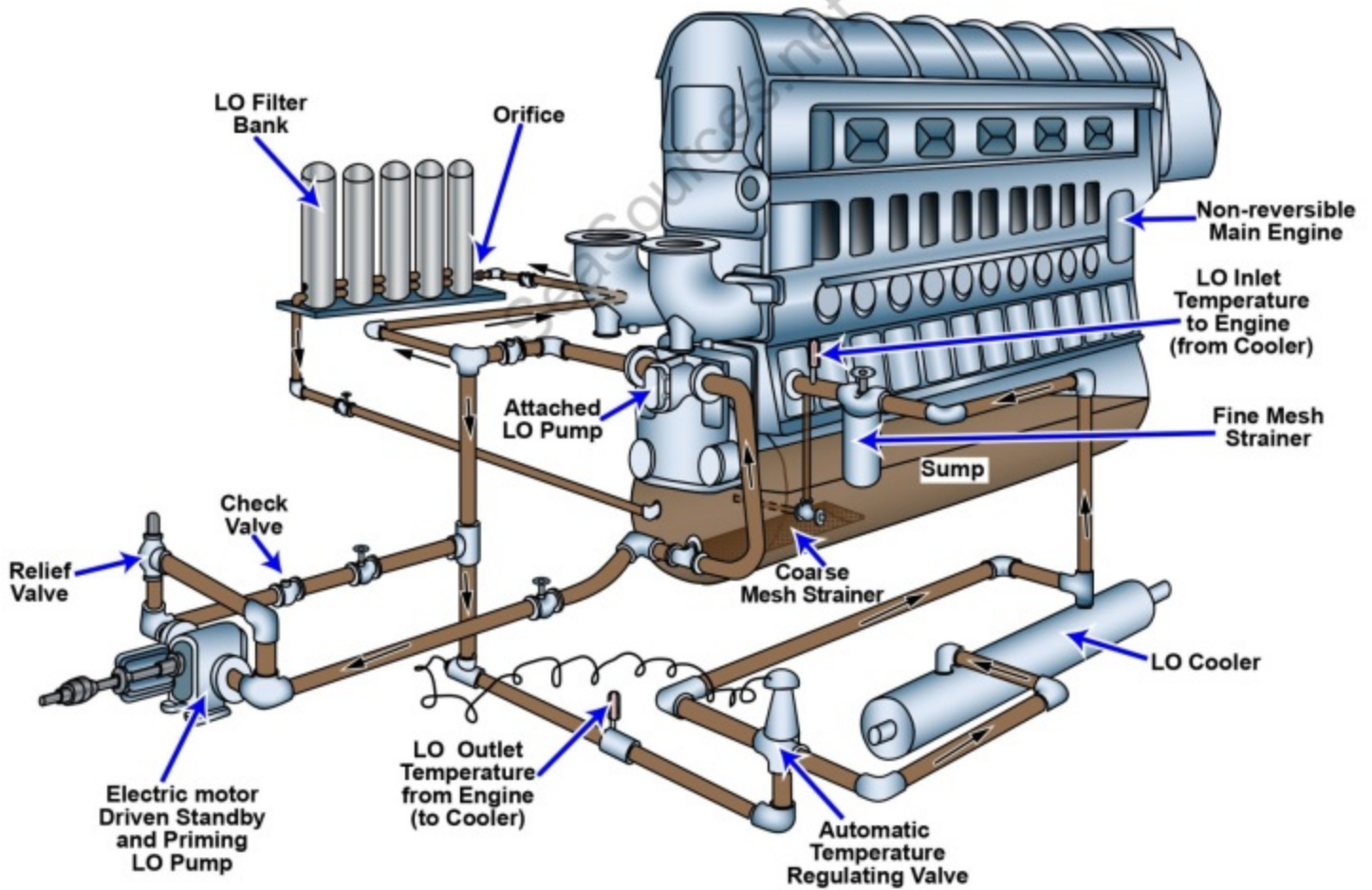
MP-SR-08

EMD Air Start System Piping at Engine

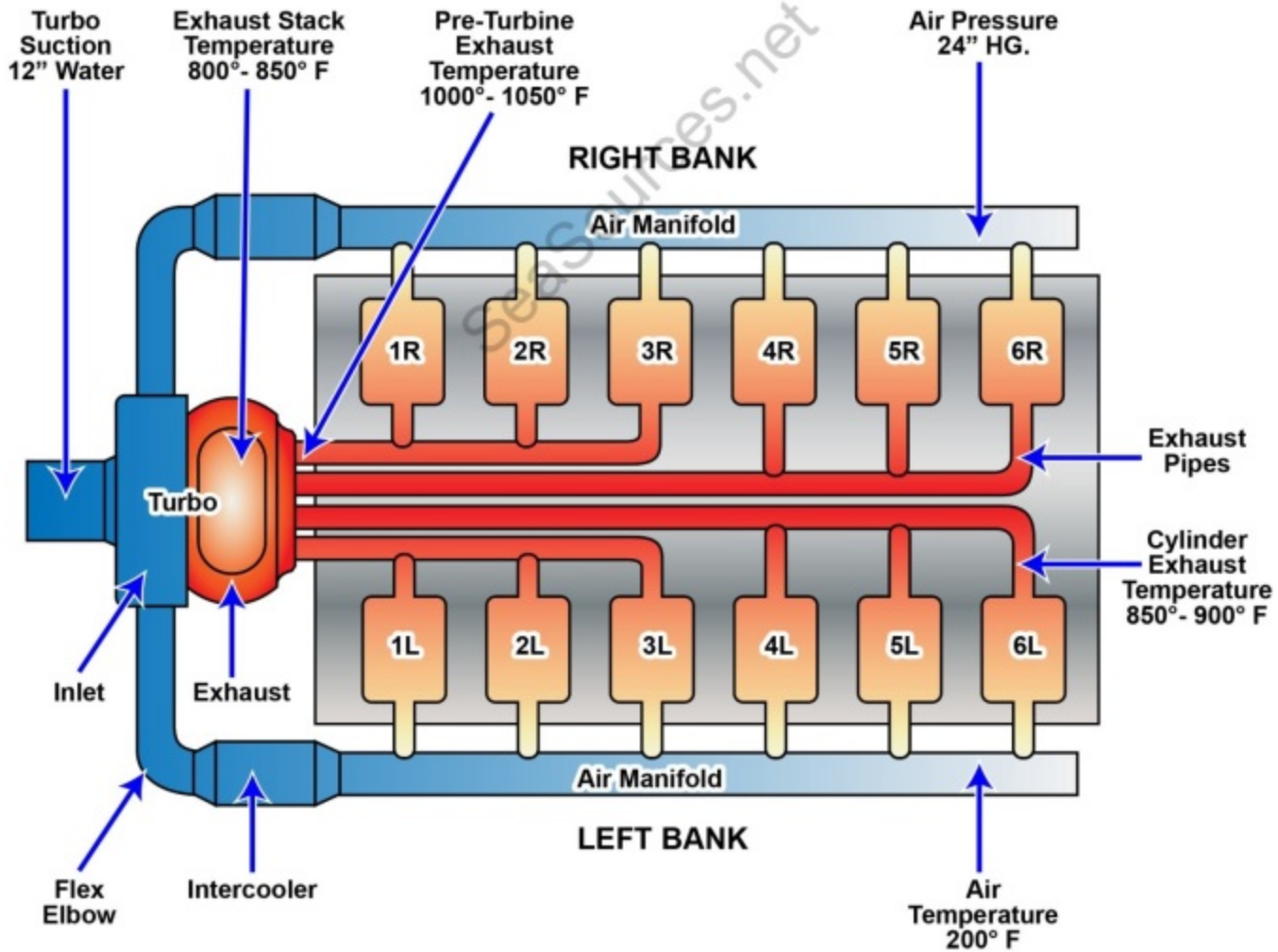
SeaSources.net



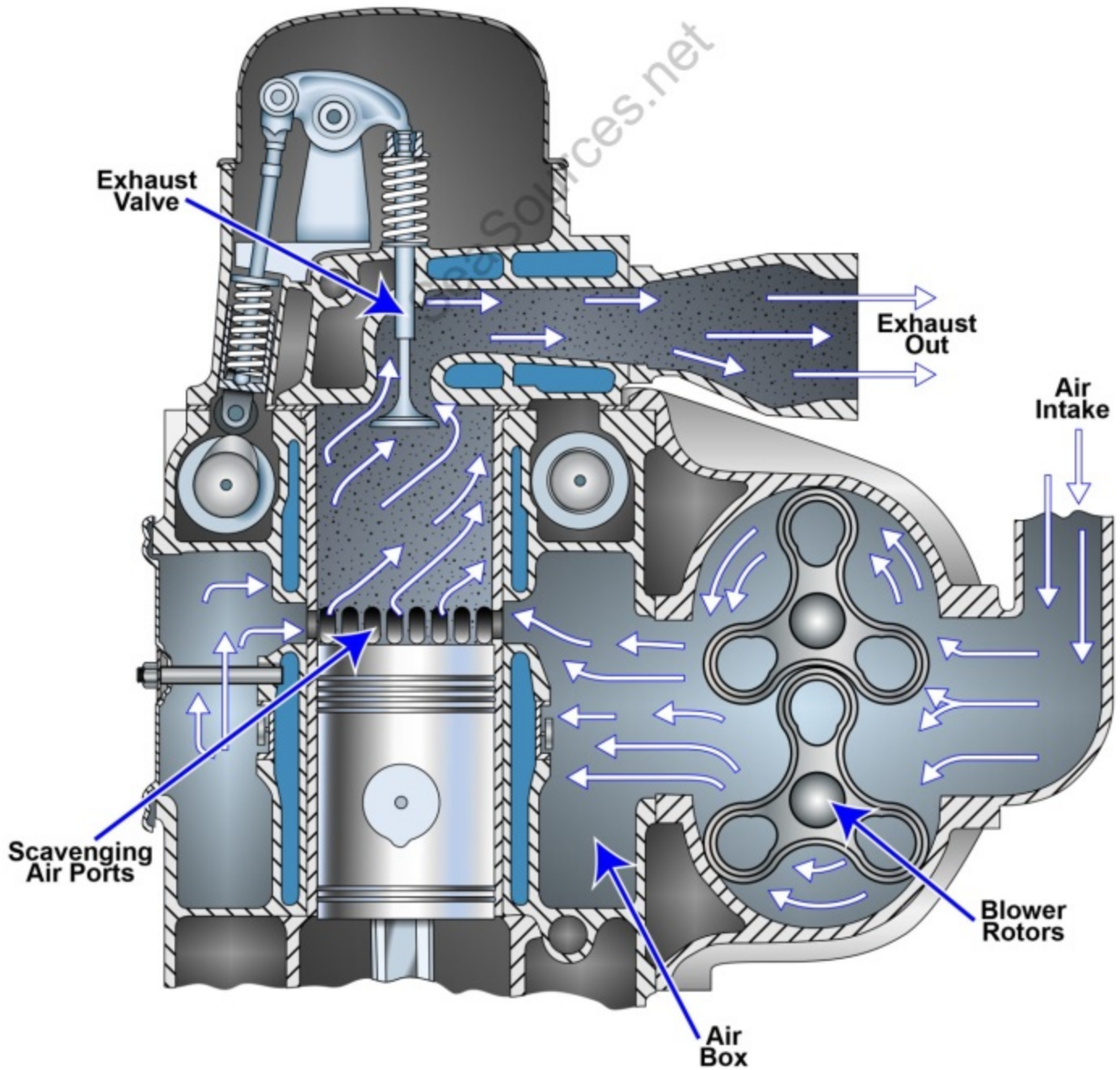
MP-LO-14



MP-IX-14

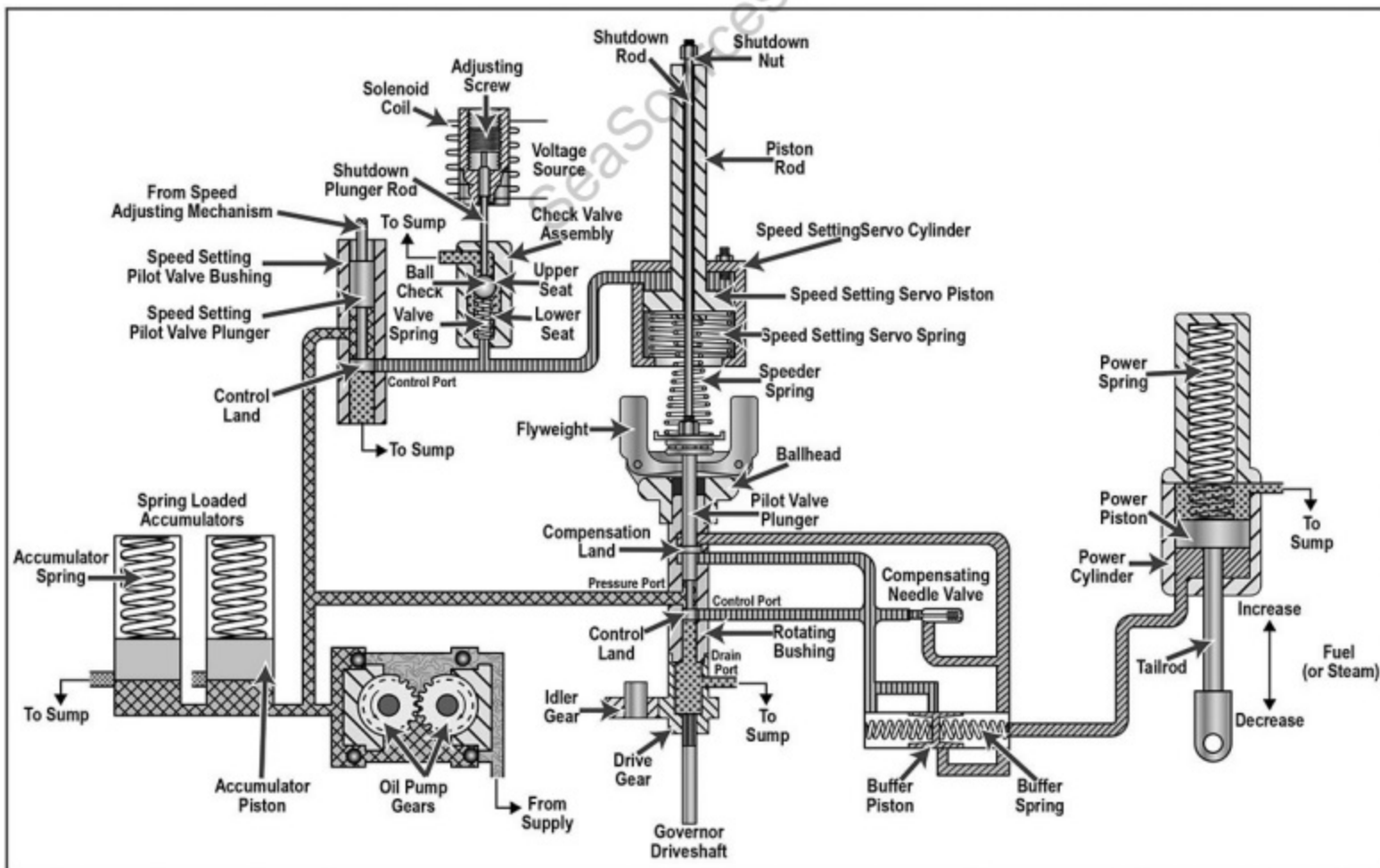


MP-CA-10

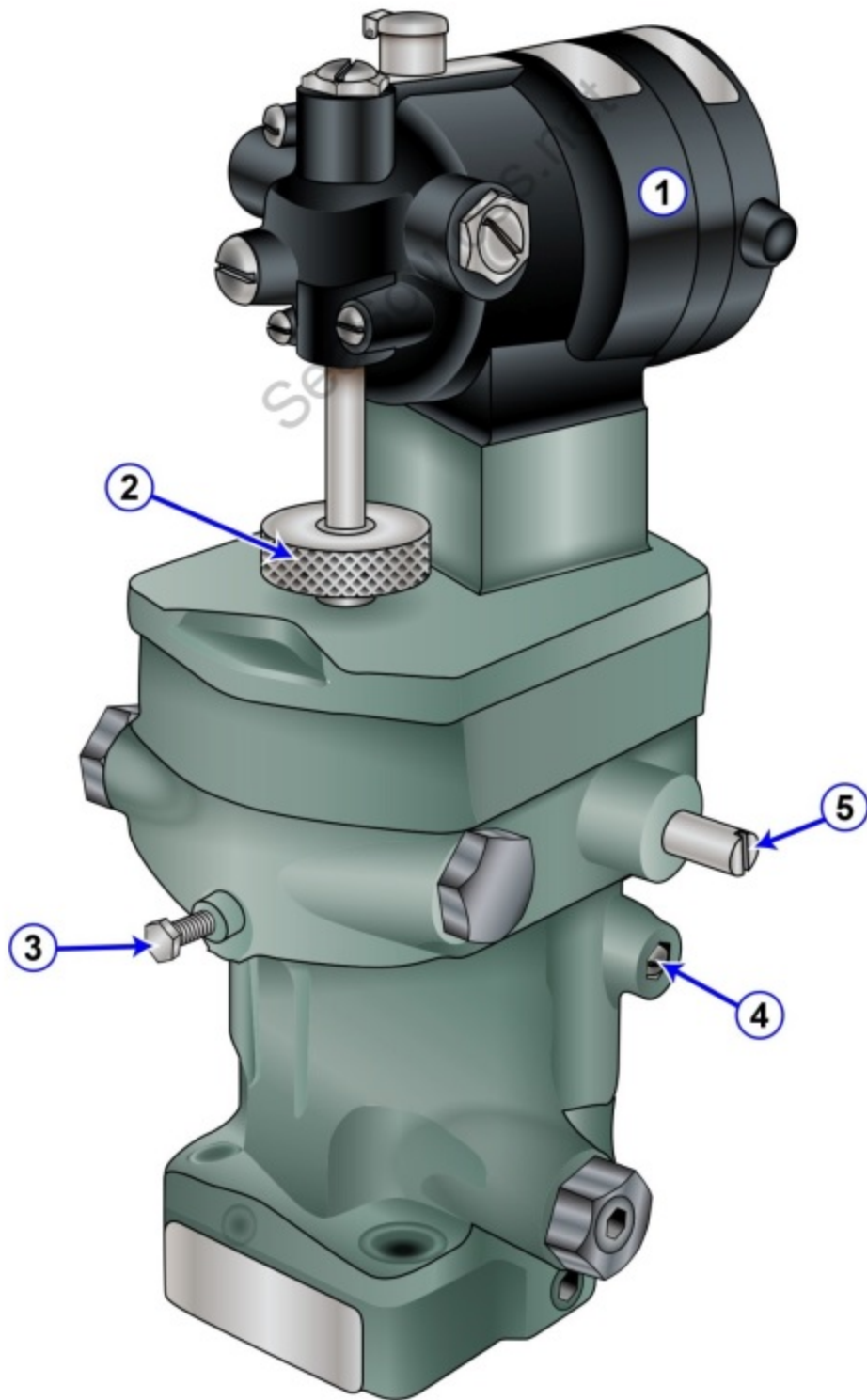


MP-IC-14

Woodward PG Governor with Shutdown Solenoid Assembly



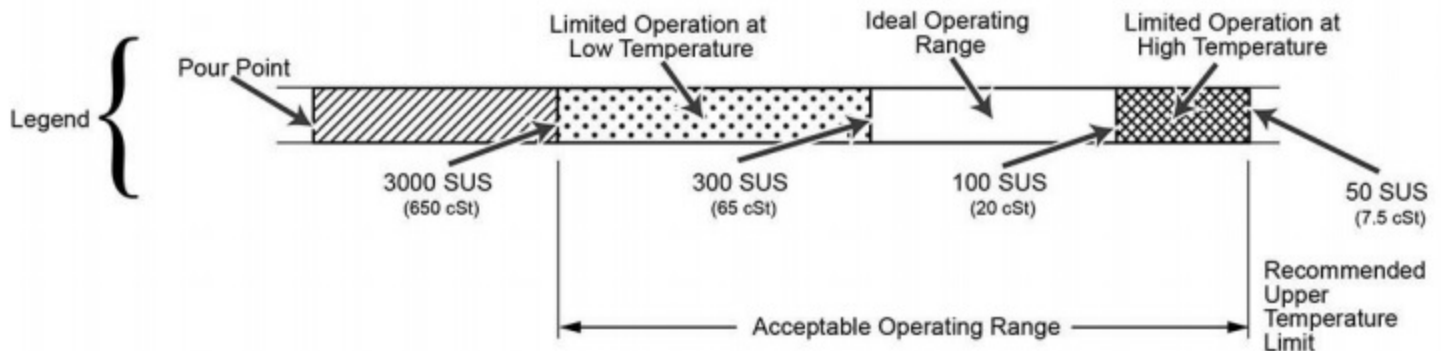
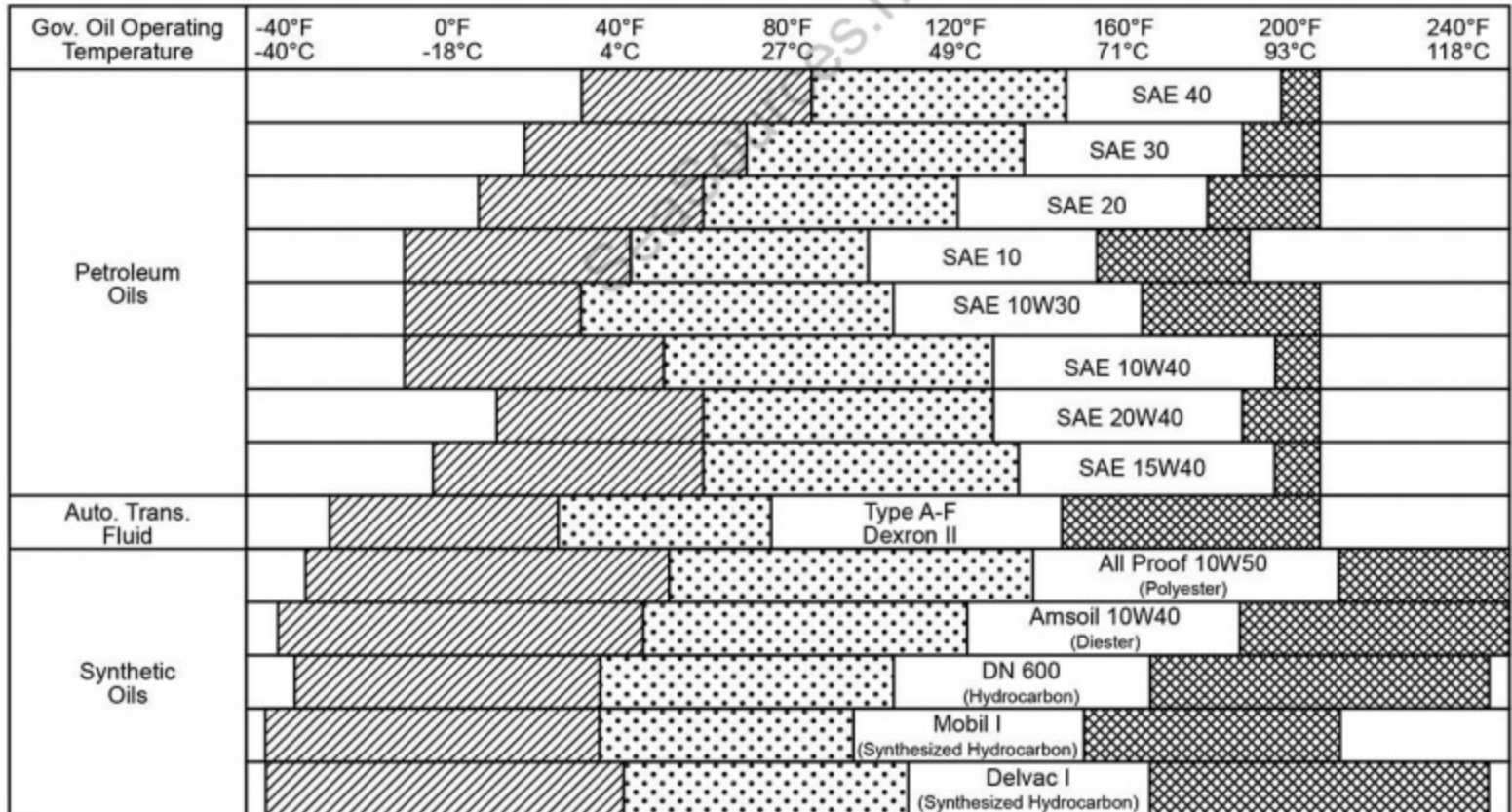
MP-GV-28 Woodward PSG Governor



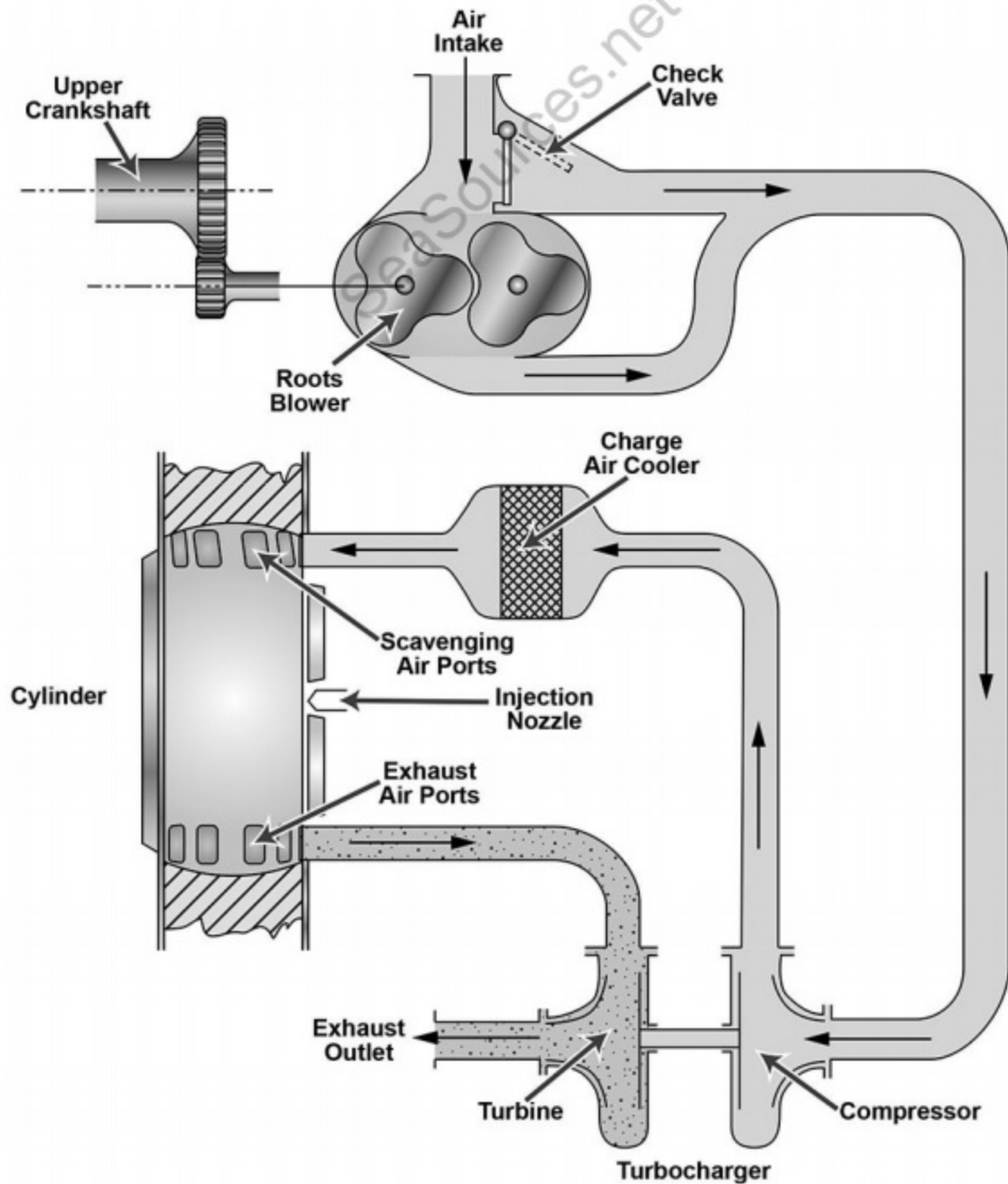
MP-GV-35 Oil Chart

Recommended
Upper Limit of
Petroleum Oil
is 200°F

Recommended
Upper Limit of
Synthetic Oil
is 250°F



MP-IX-10 Fairbanks-Morse Opposed Piston Engine Intake and Exhaust System



MP-FI-20

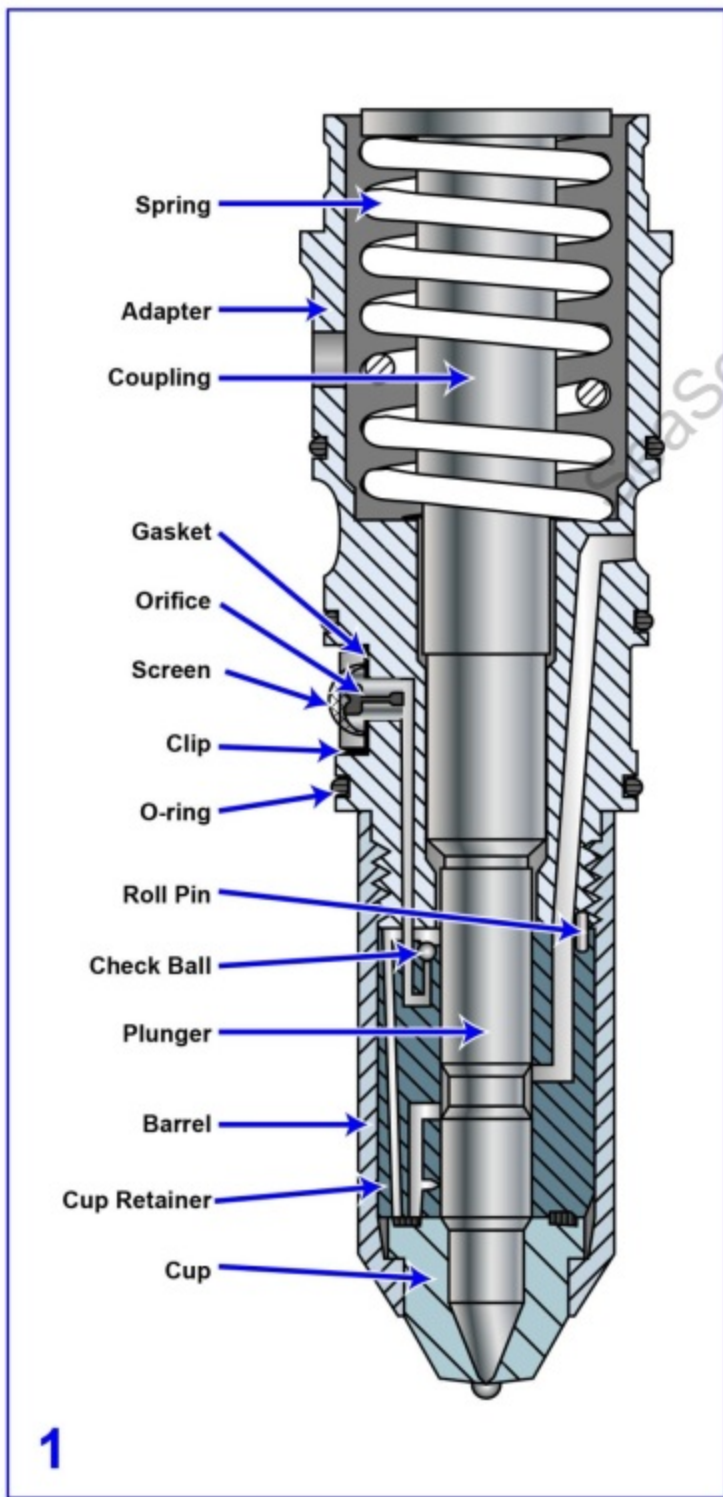


Figure 1

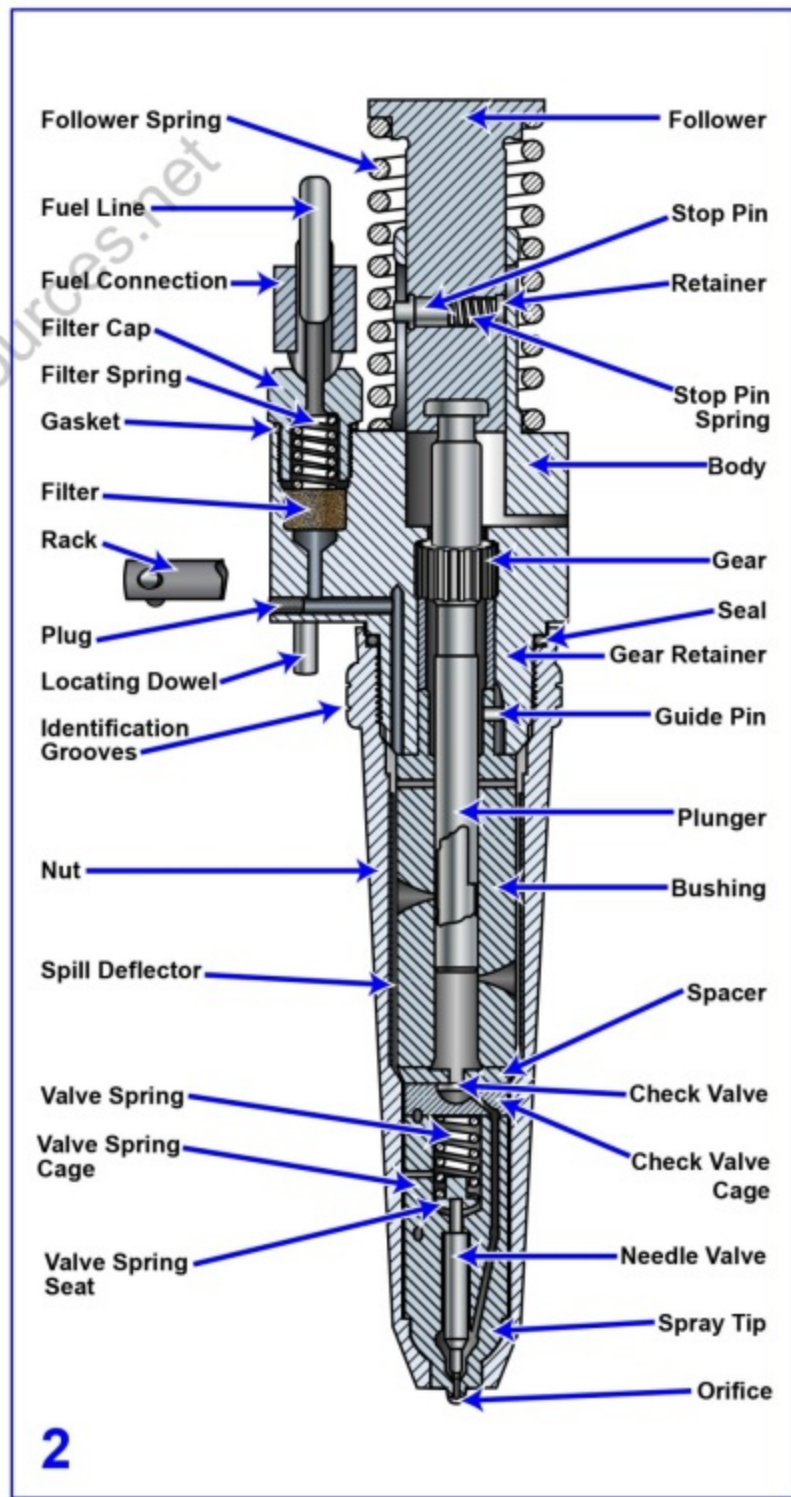
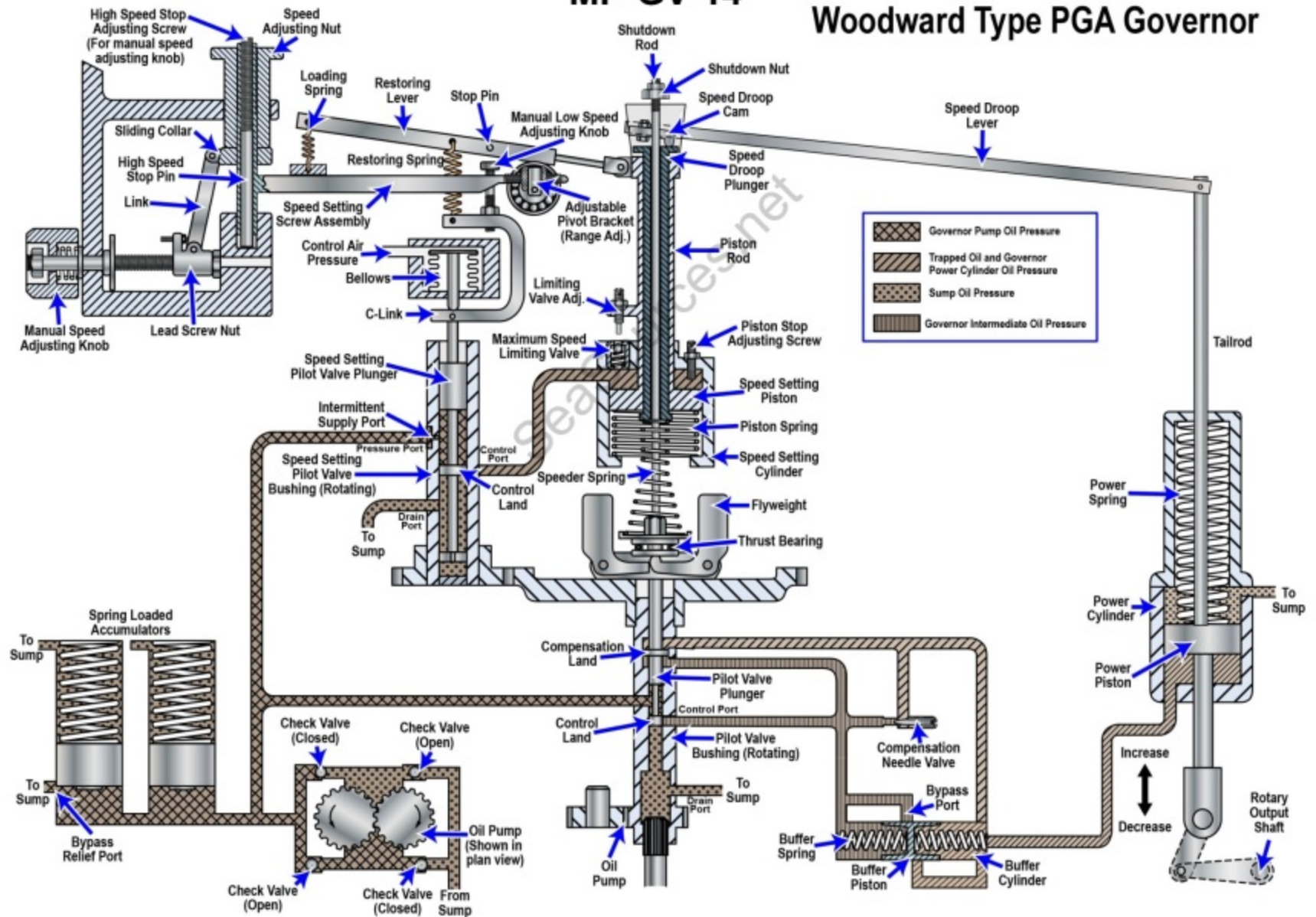


Figure 2

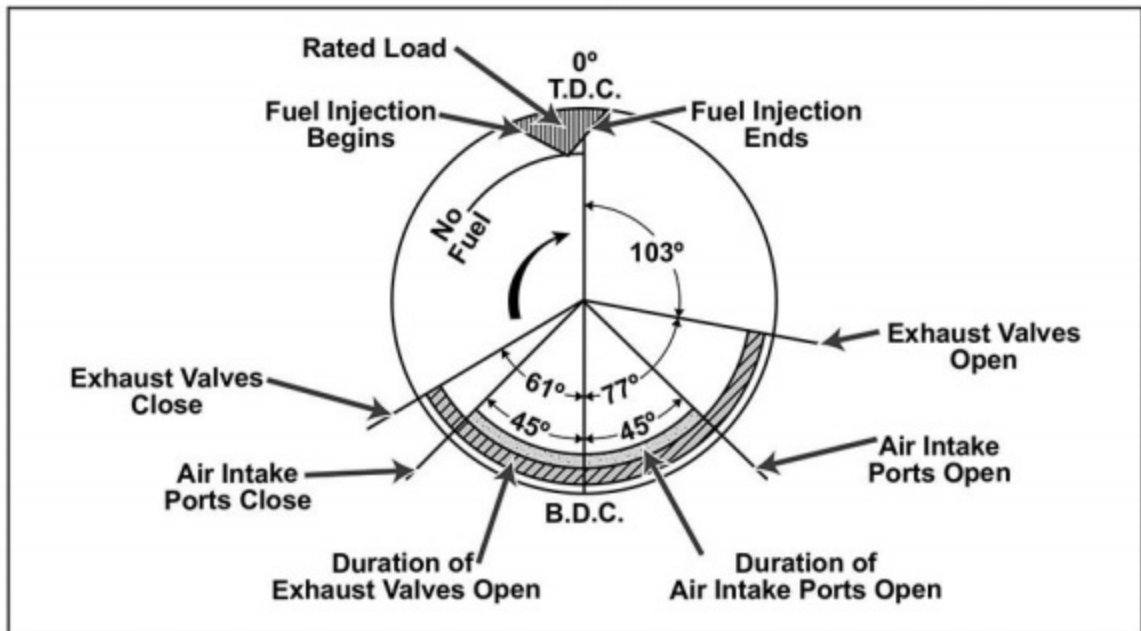
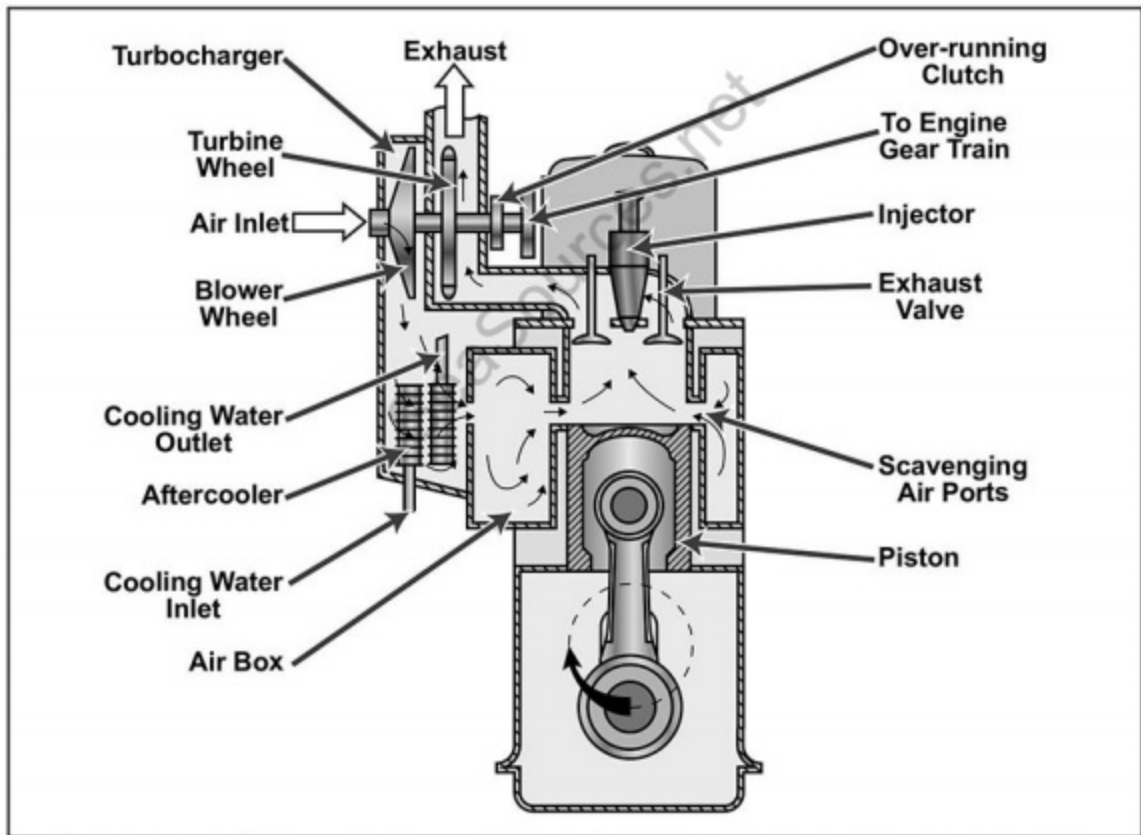
MP-GV-14

Woodward Type PGA Governor

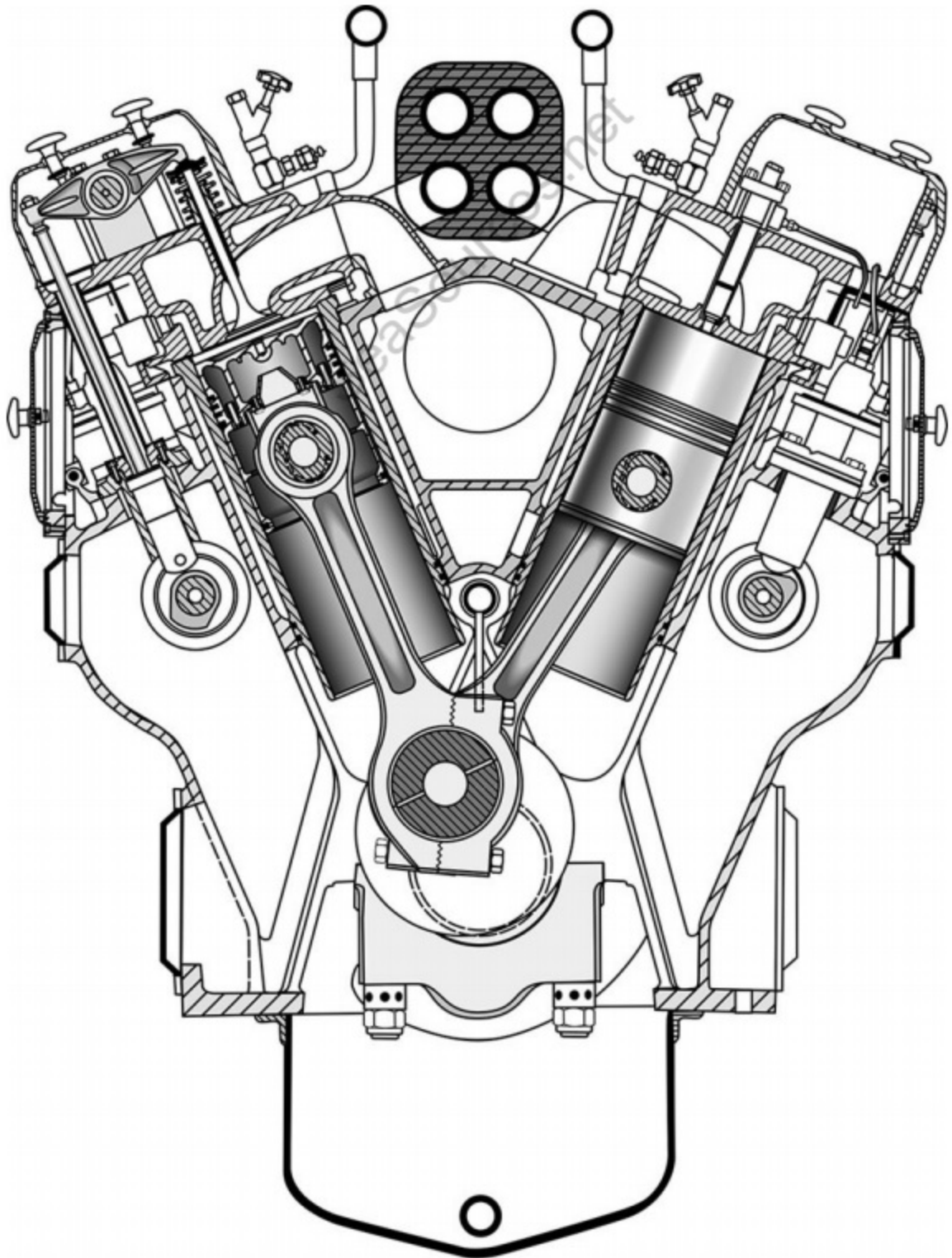


MP-TH-15

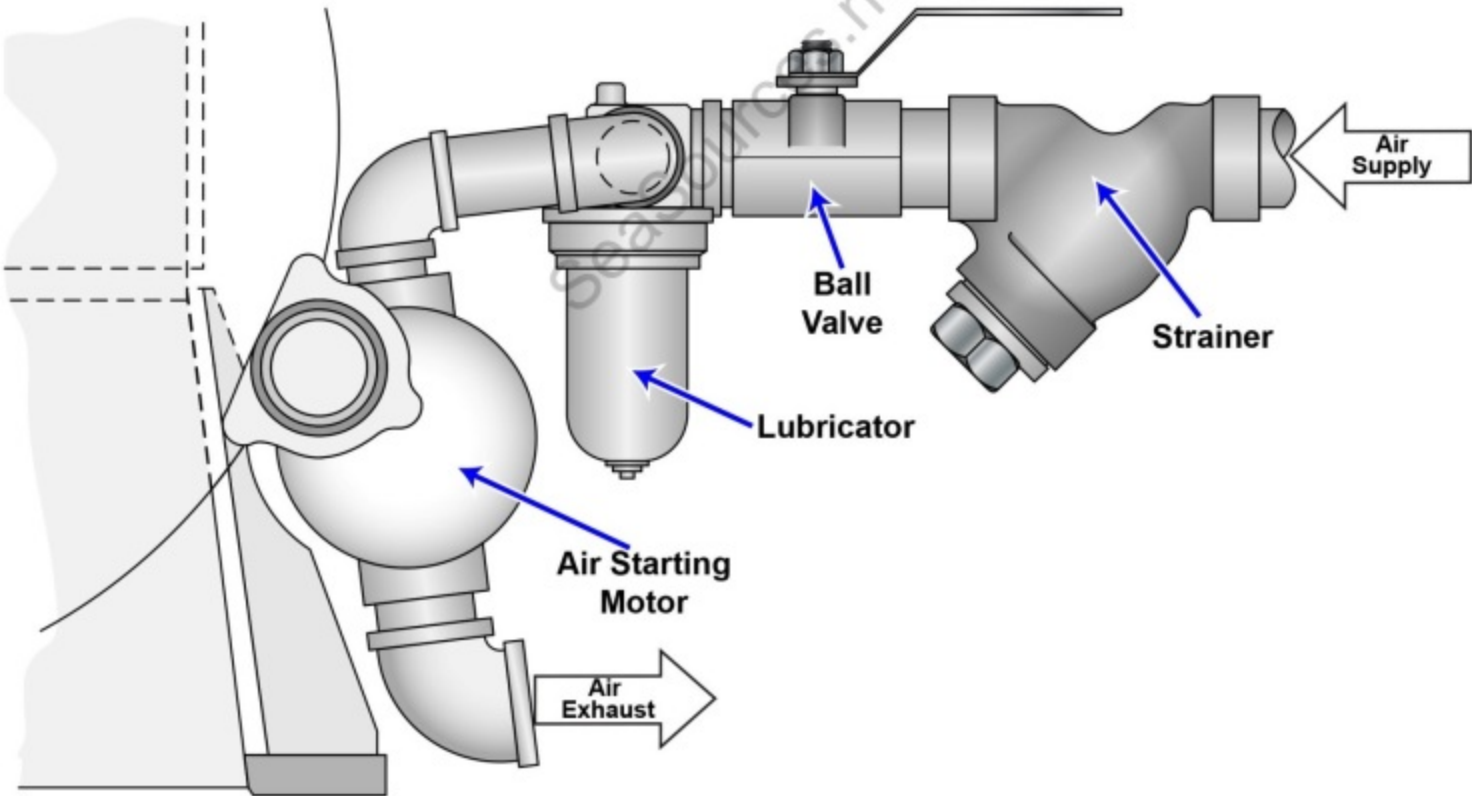
EMD 645 Engine Operating Cycle



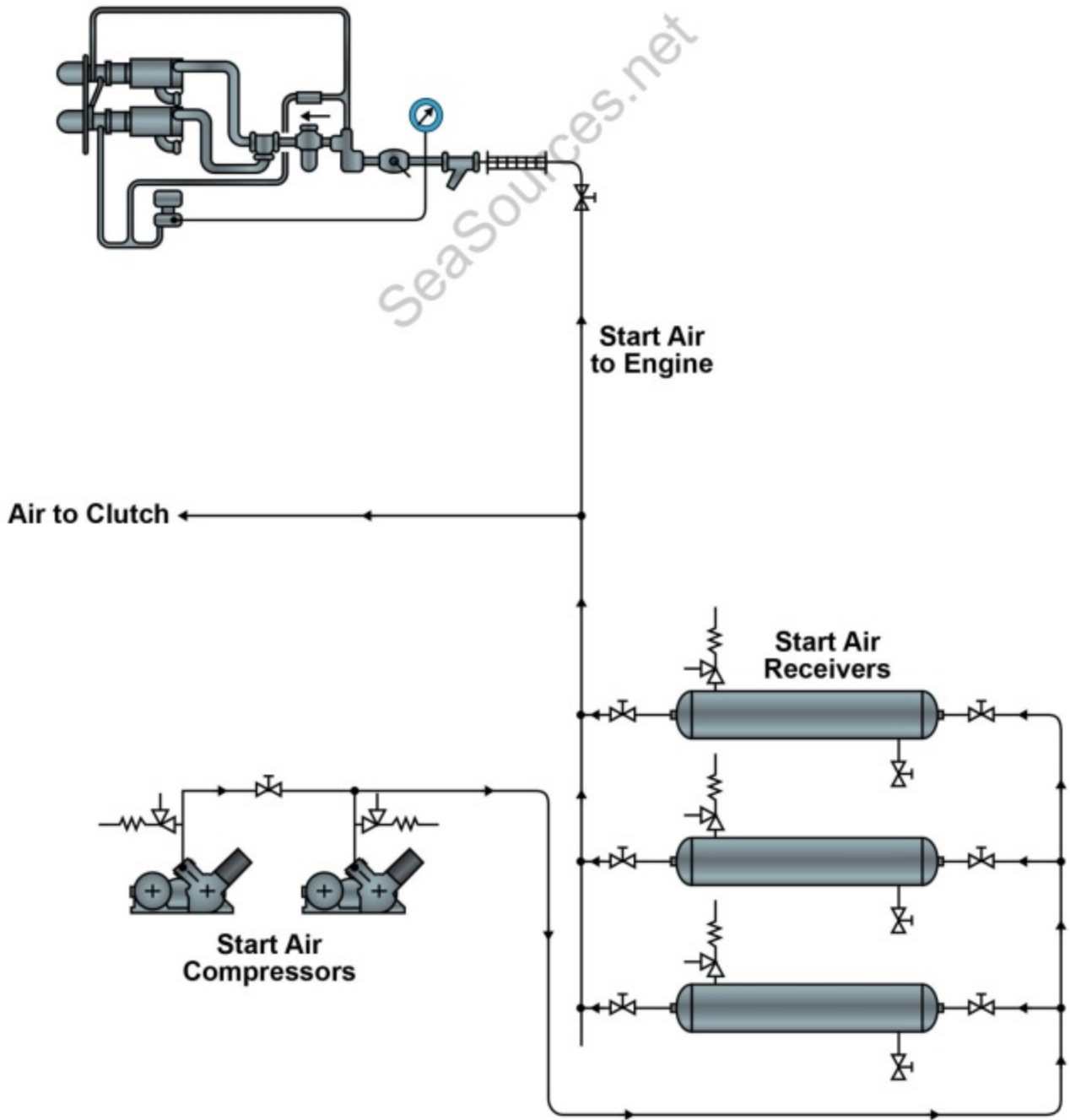
MP-HS-04



MP-SR-13 Simplified Air Starting System



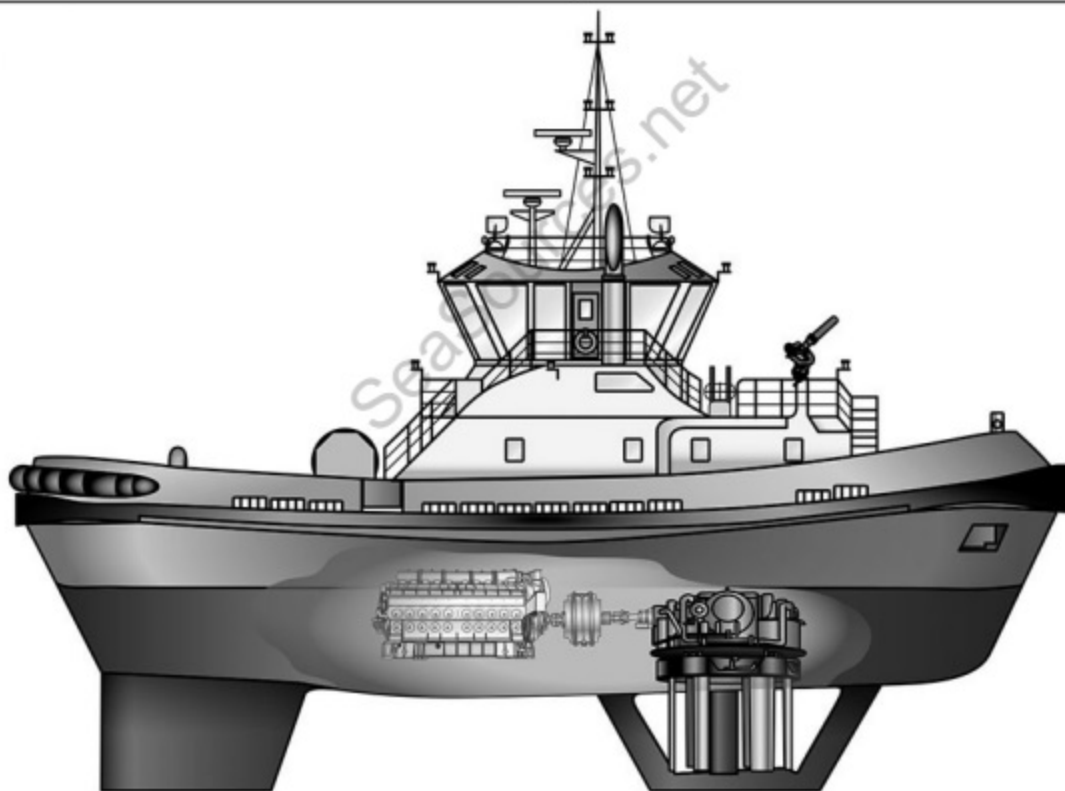
MP-SR-07 Simplified Lube Oil Filtration System



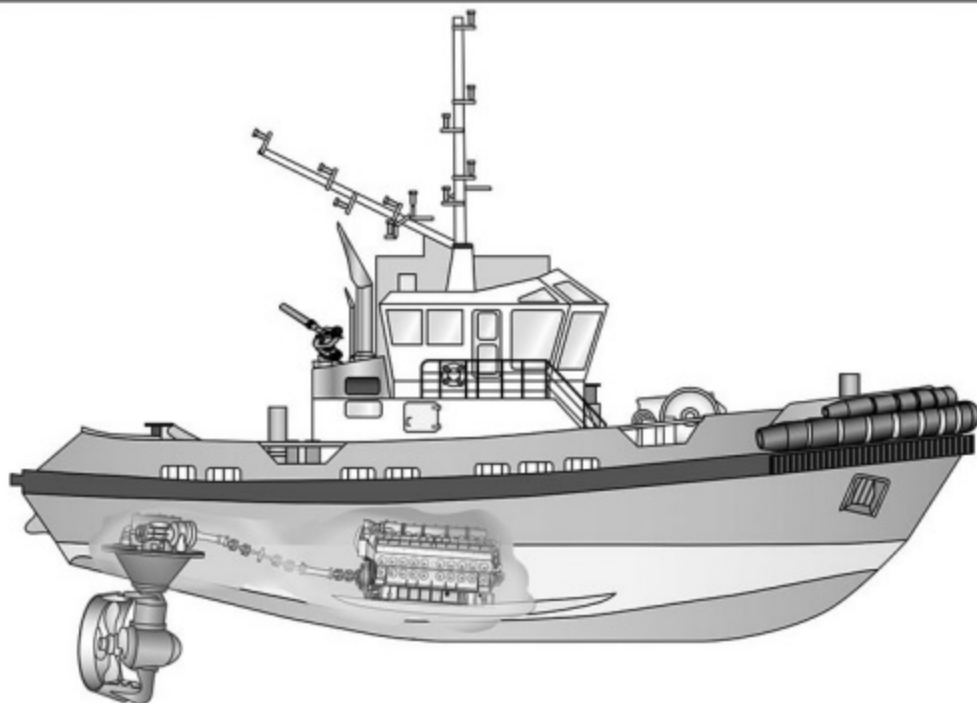
MP-DS-09

Tractor Tug Drives

A



B

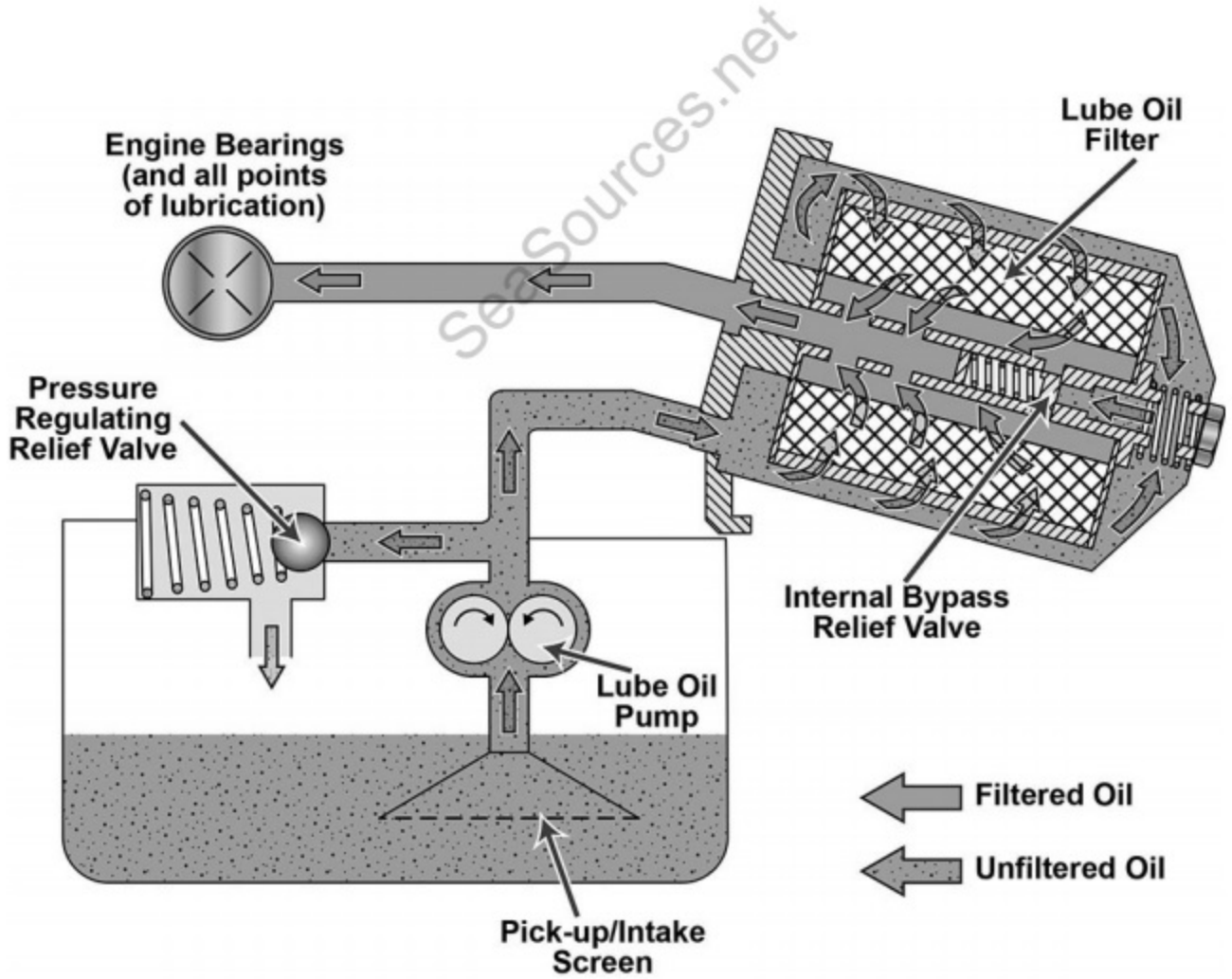


MP-WC-05

CAT Minimum Acceptable Water Requirements

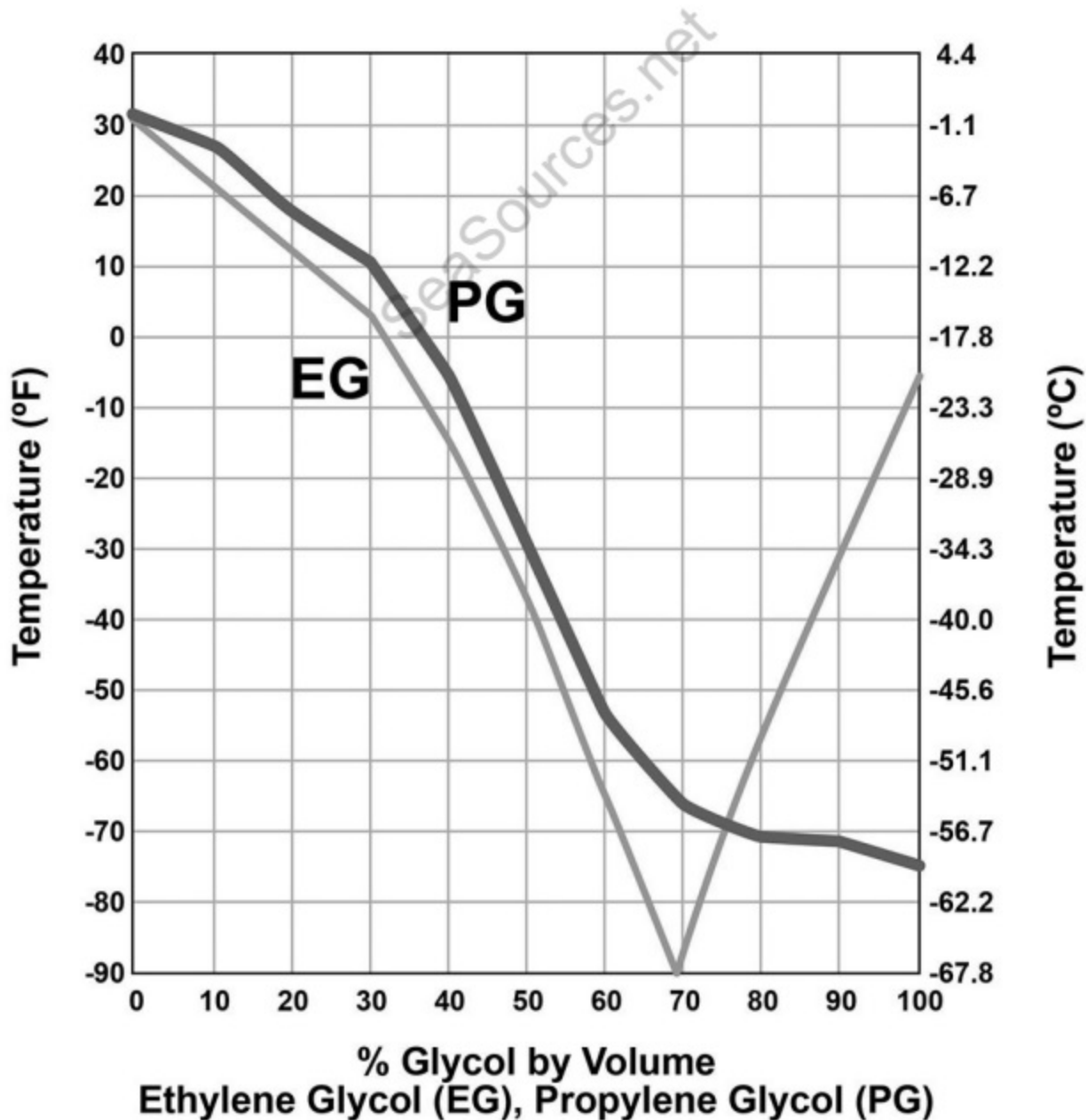
Property	Maximum Limit	ASTM Test
Chloride (Cl)	40 mg/L (2.4 grains/US gal)	D512, D4327
Sulfate (SO ₄)	100 mg/L (5.9 grains/US gal)	D516, D4327
Total Hardness	170 mg/L (10 grains/US gal)	D1126
Total Solids	340 mg/L (20 grains/US gal)	D1888 Federal Method 2504B
Acidity	pH of 5.5 to 9.0	D1293

MP-LO-05 Simplified Lube Oil Filtration System

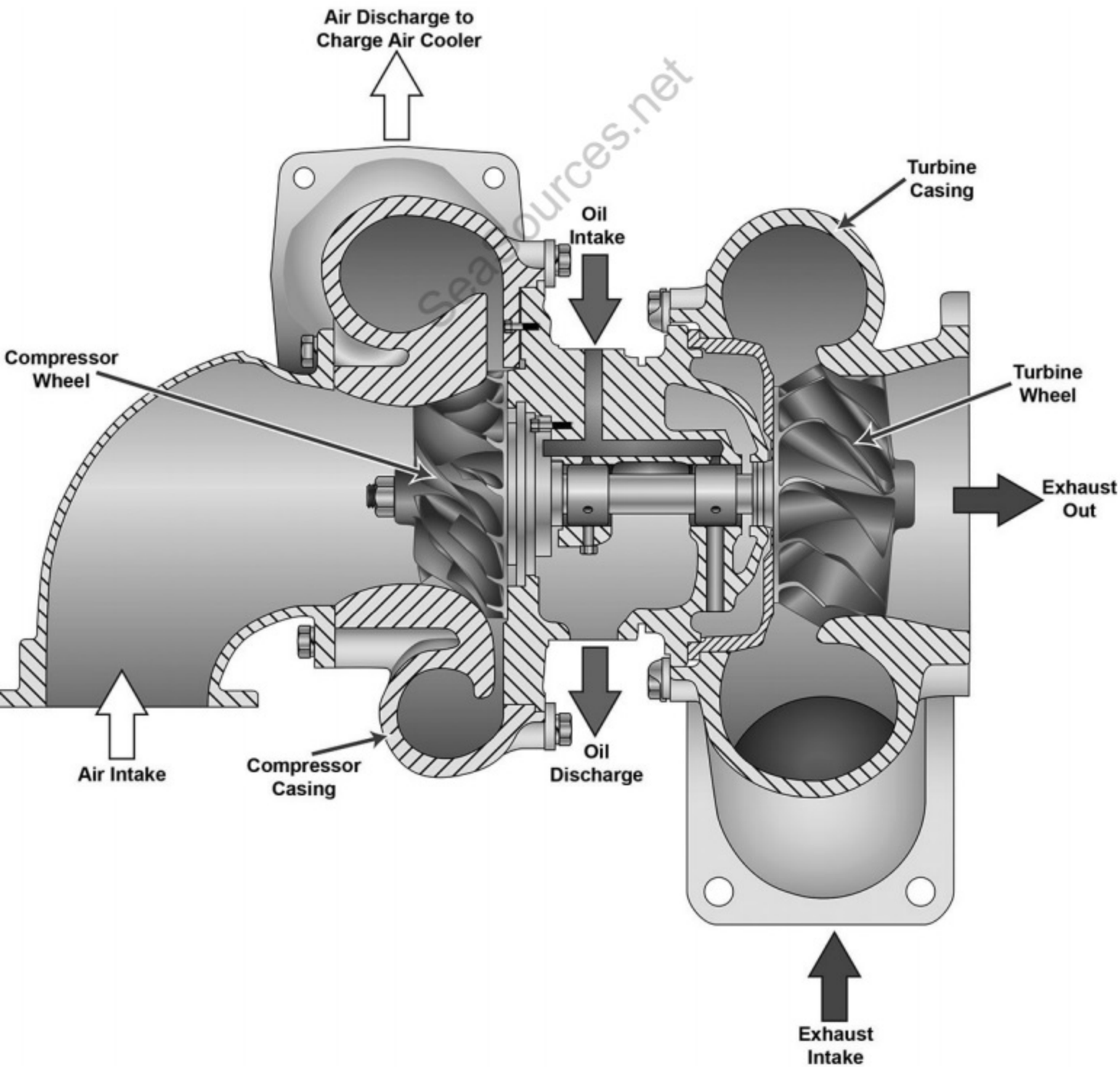


MP-WC-04

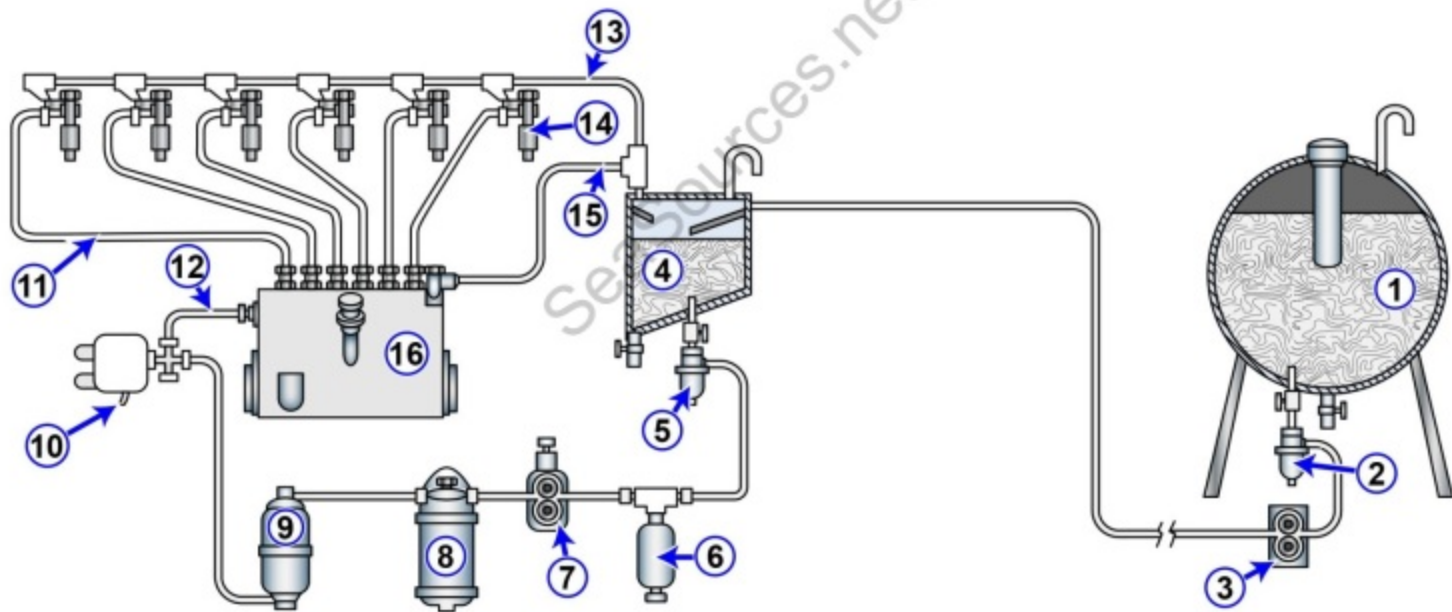
Freezing Point of Coolant as a Function of Glycol Concentration



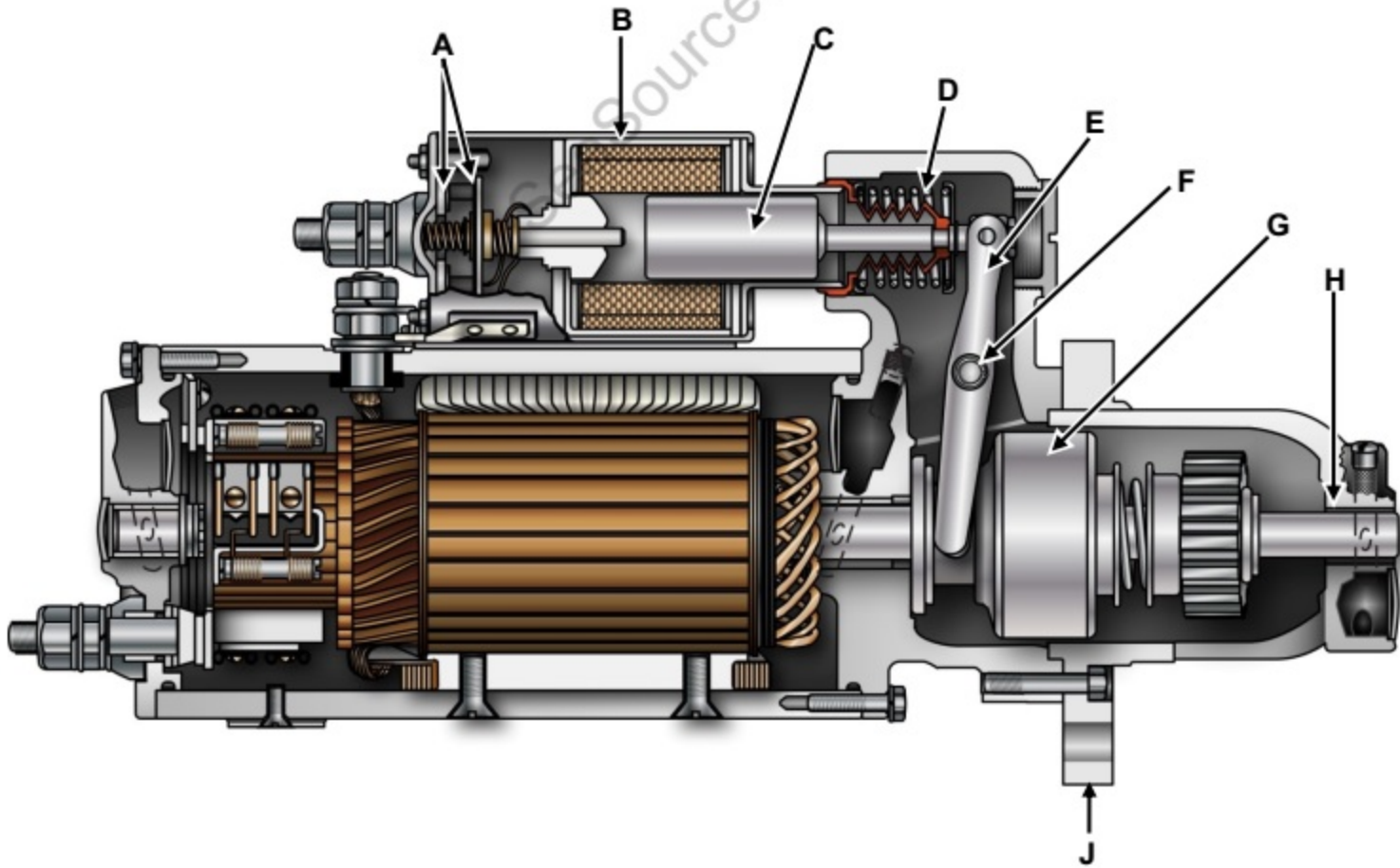
MP-CA-06



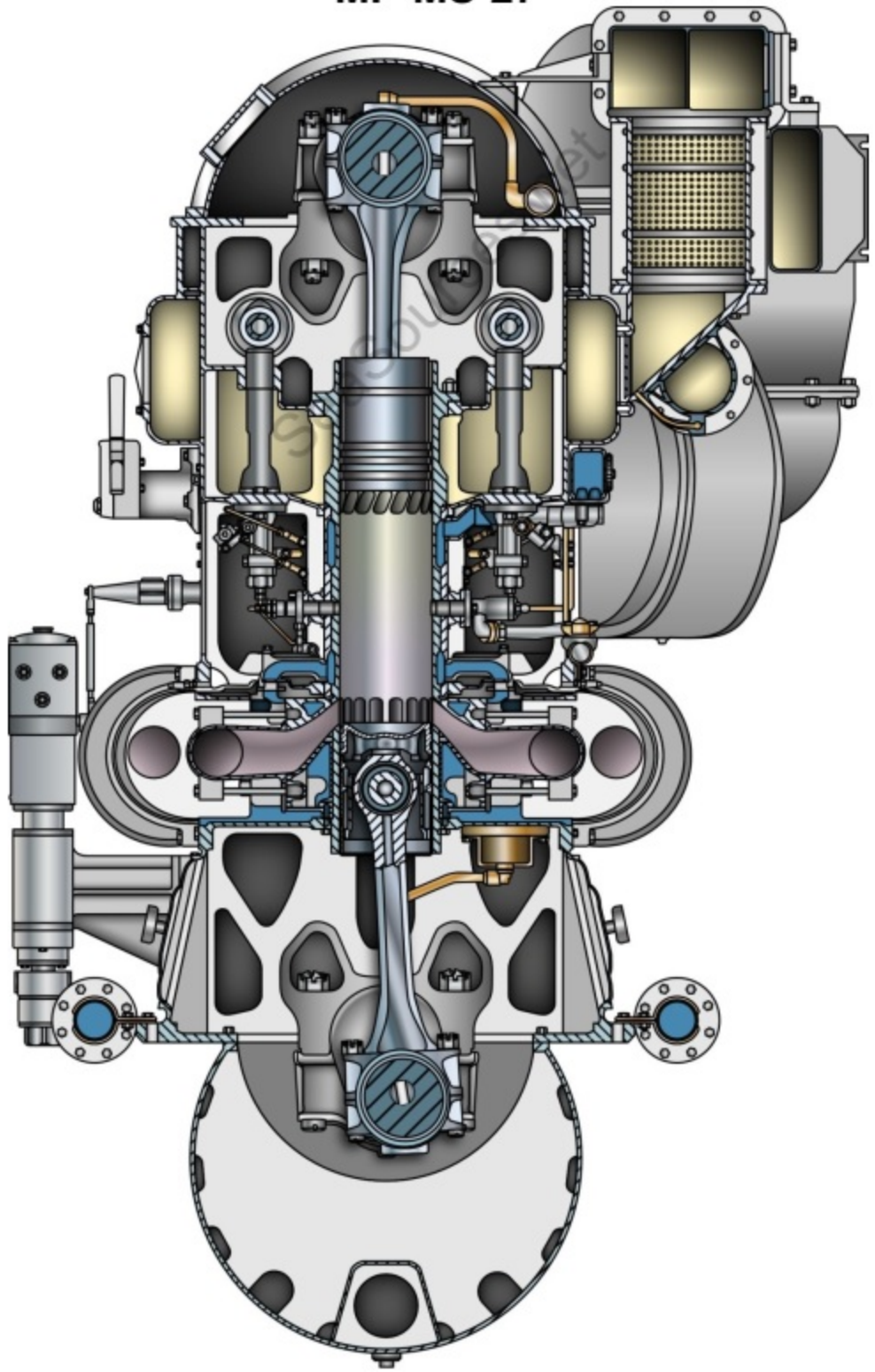
MP-FO-17



MP-SR-06

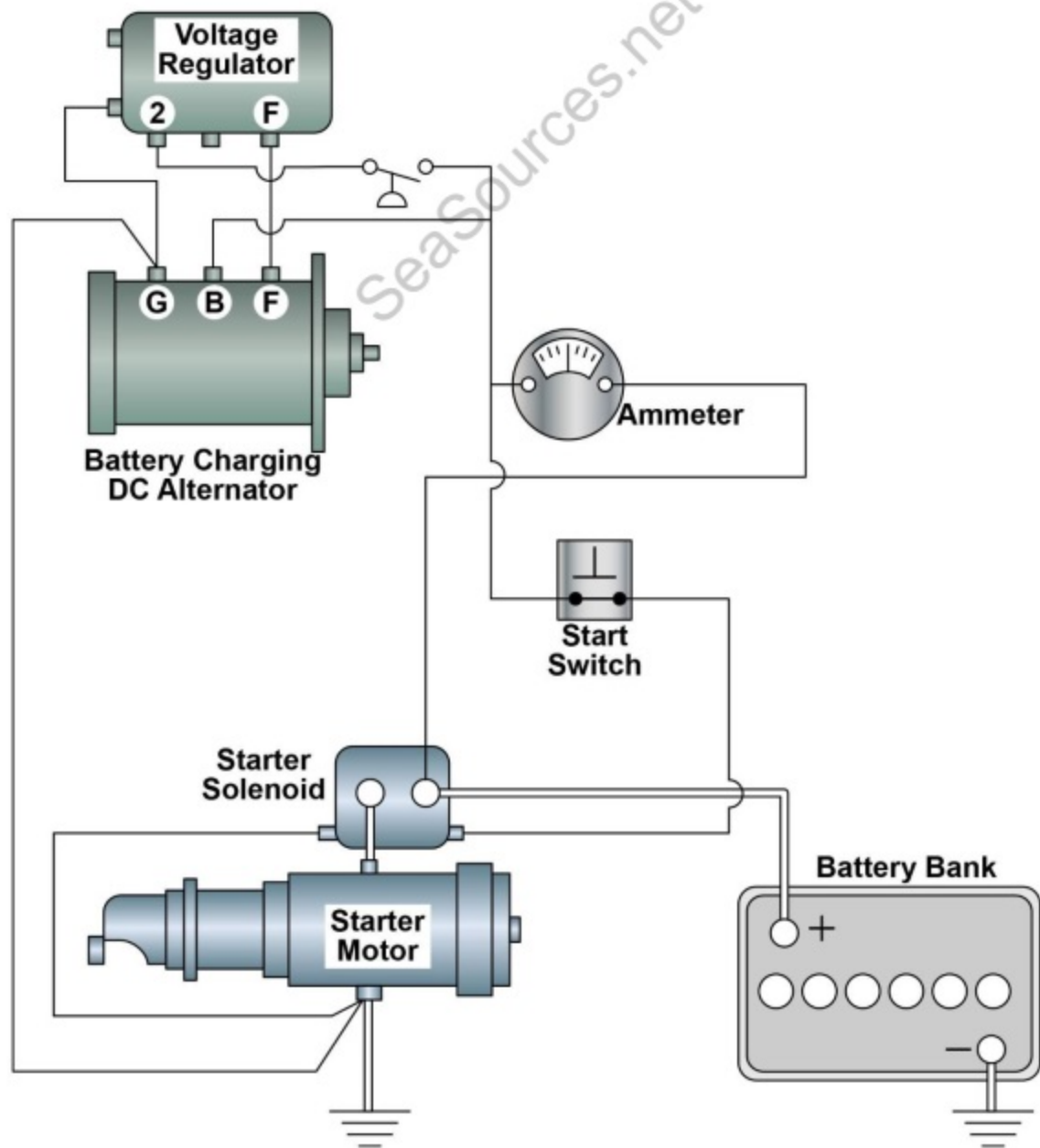


MP-MS-27



MP-SR-10

Simplified Electric Starting System



MP-IC-15

EMD 645 Overspeed and Manual Trips

