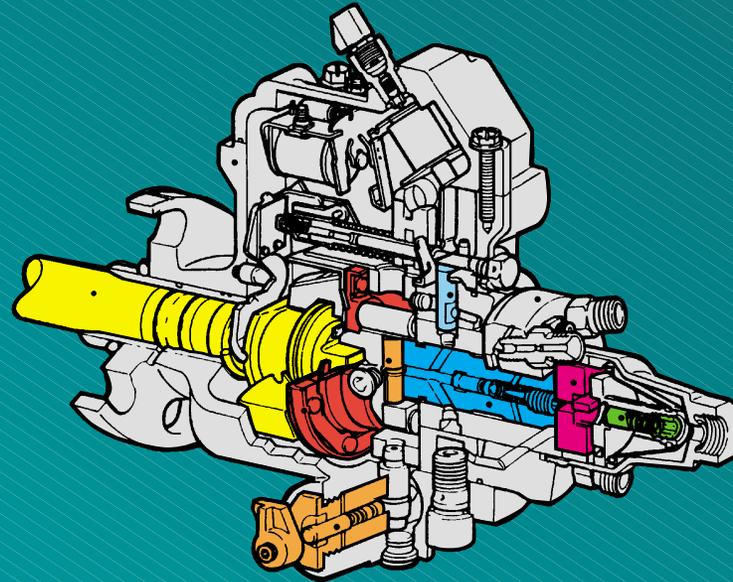


STANADYNE DB2 FUEL INJECTION PUMP SYSTEM FOR THE MILITARY M998A2 SERIES VEHICLES



Pump Operation, Inspection/Diagnosis and Fuel Injection Nozzle Description

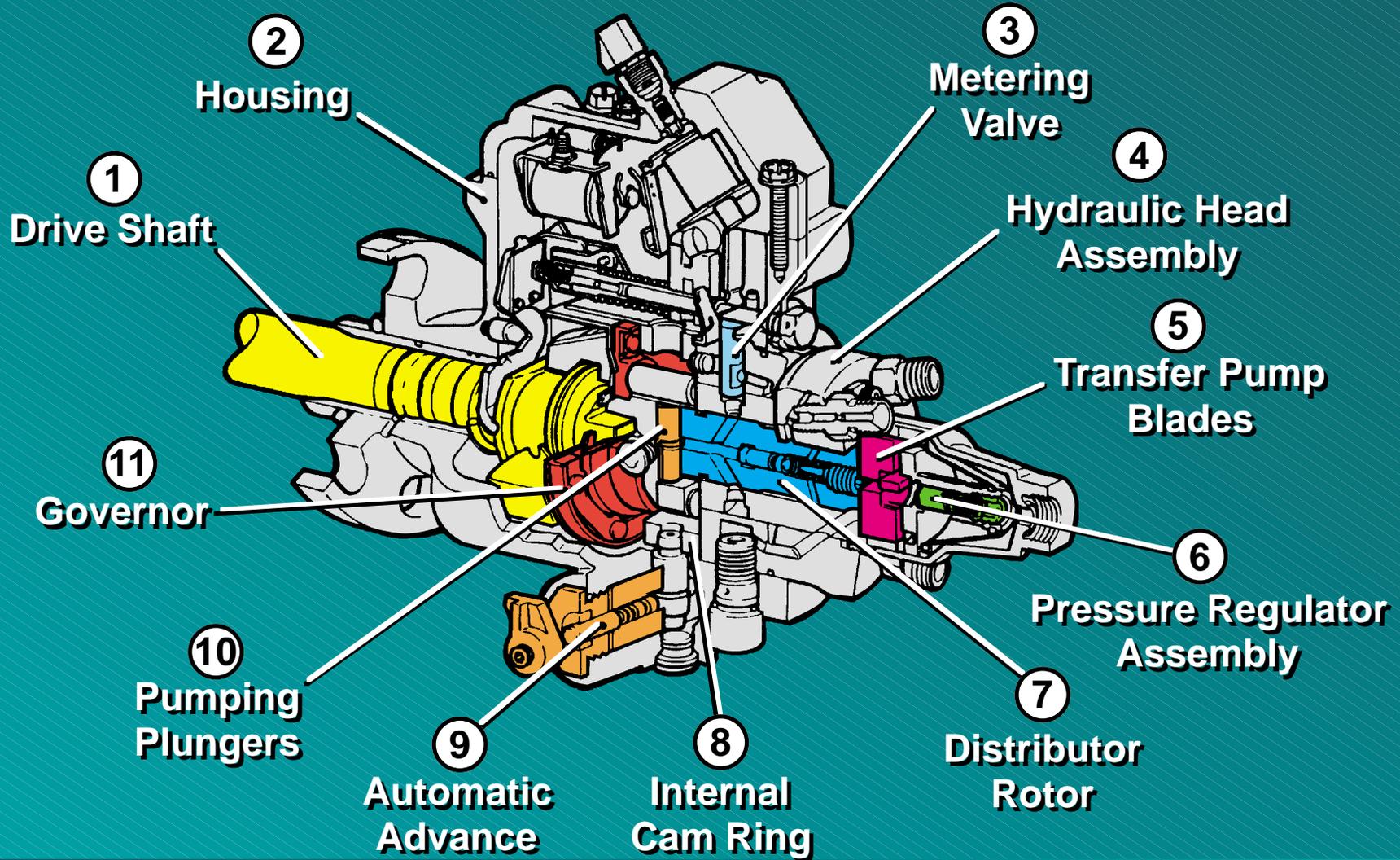
Model Number System

a **b** **c** **d** **e**
DB2 **8** **33** **JN** **3000**

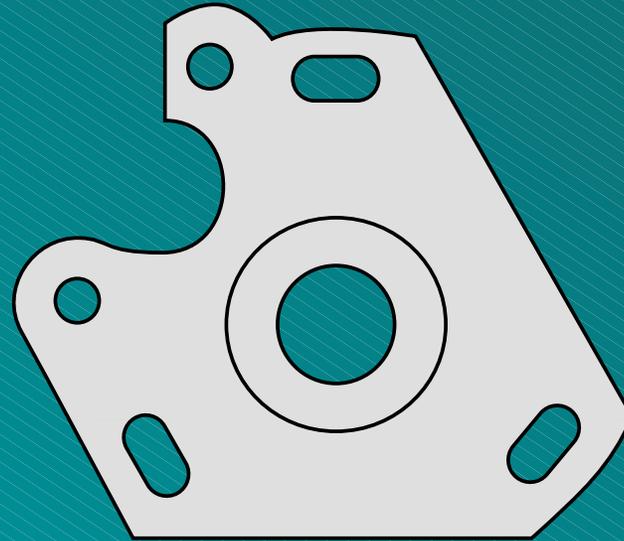
- a. **DB2= D-Series pump, B- Rotor, 2- 2nd. Generation pump**
- b. **8= Number of cylinder (available in 2,3,4,6 & 8 cylinders).**
- c. **33= Abbreviation of plunger diameter.**

25= .250" (6.35mm)	31= .310" (7.87mm)
27= .270" (6.86mm)	33= .330" (8.38mm)
29= .290" (7.37mm)	35= .350" (8.89mm)
- d. **JN= Accessory code: This code pertains to combinations of special accessories such as electrical shutoff, automatic advance, etc.**
- e. **3000= Specification Number. Determines selection of parts and adjustments for a given application.**

Components and Functions

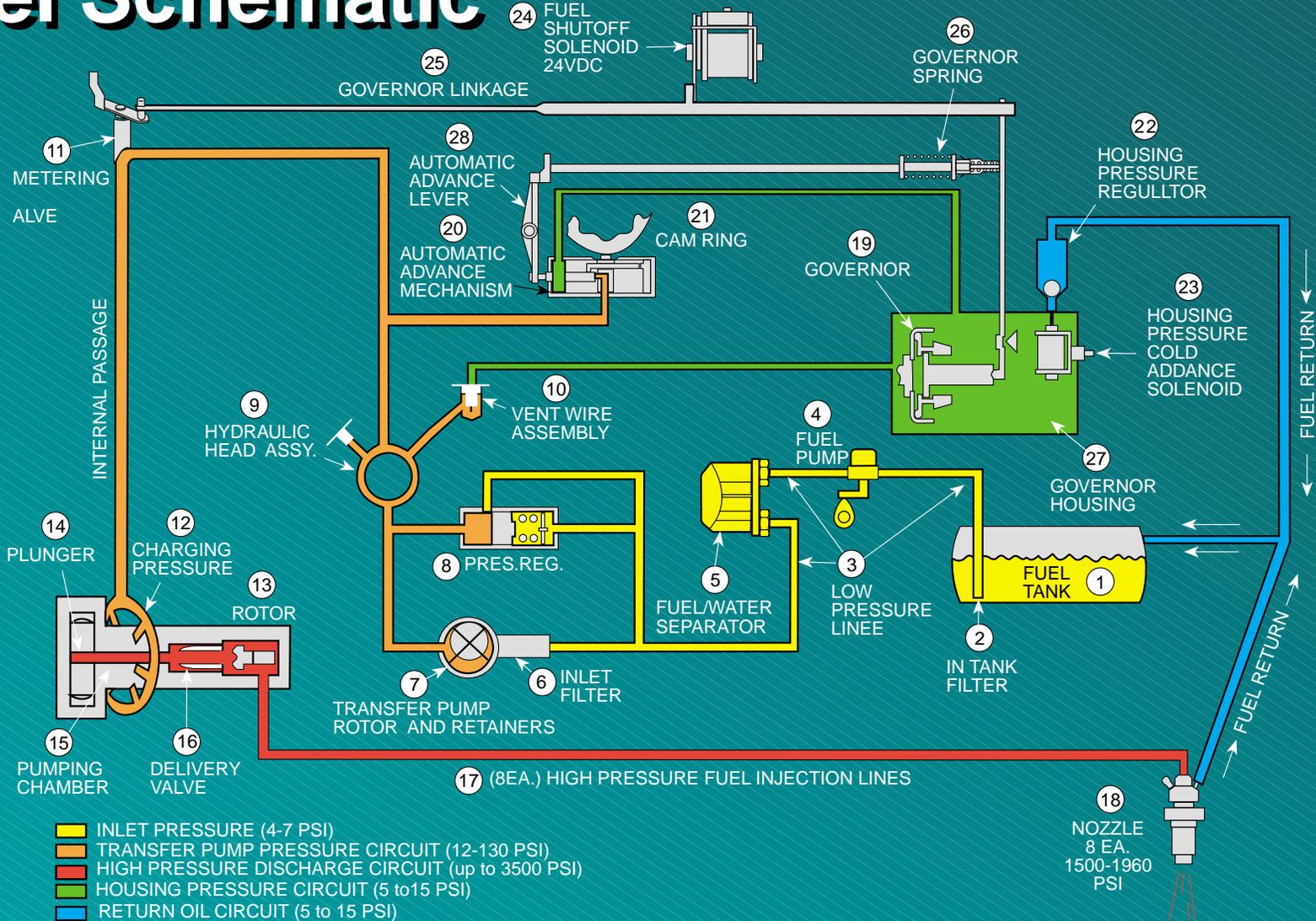


Mounting Flanges

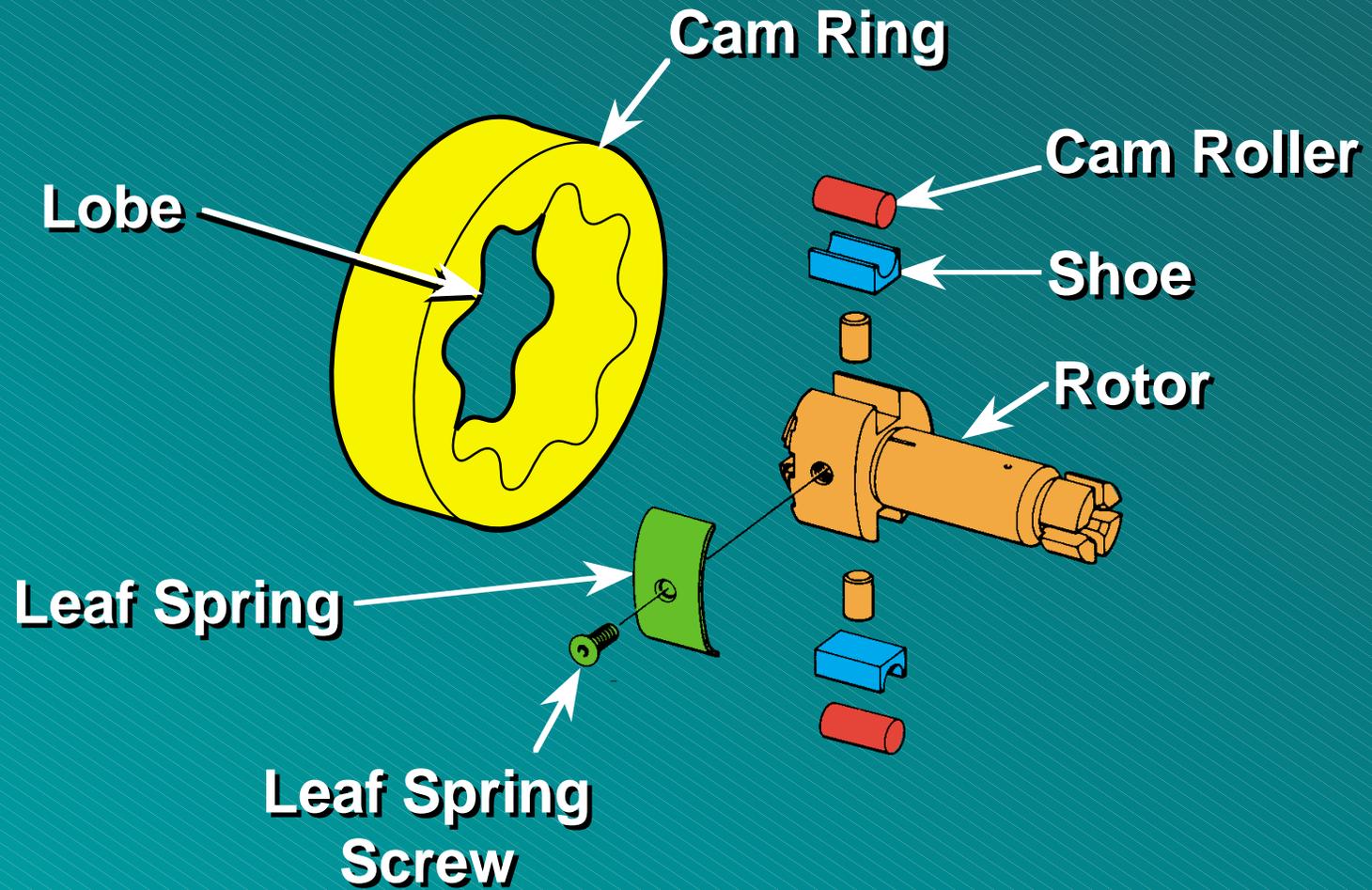


HMMWV

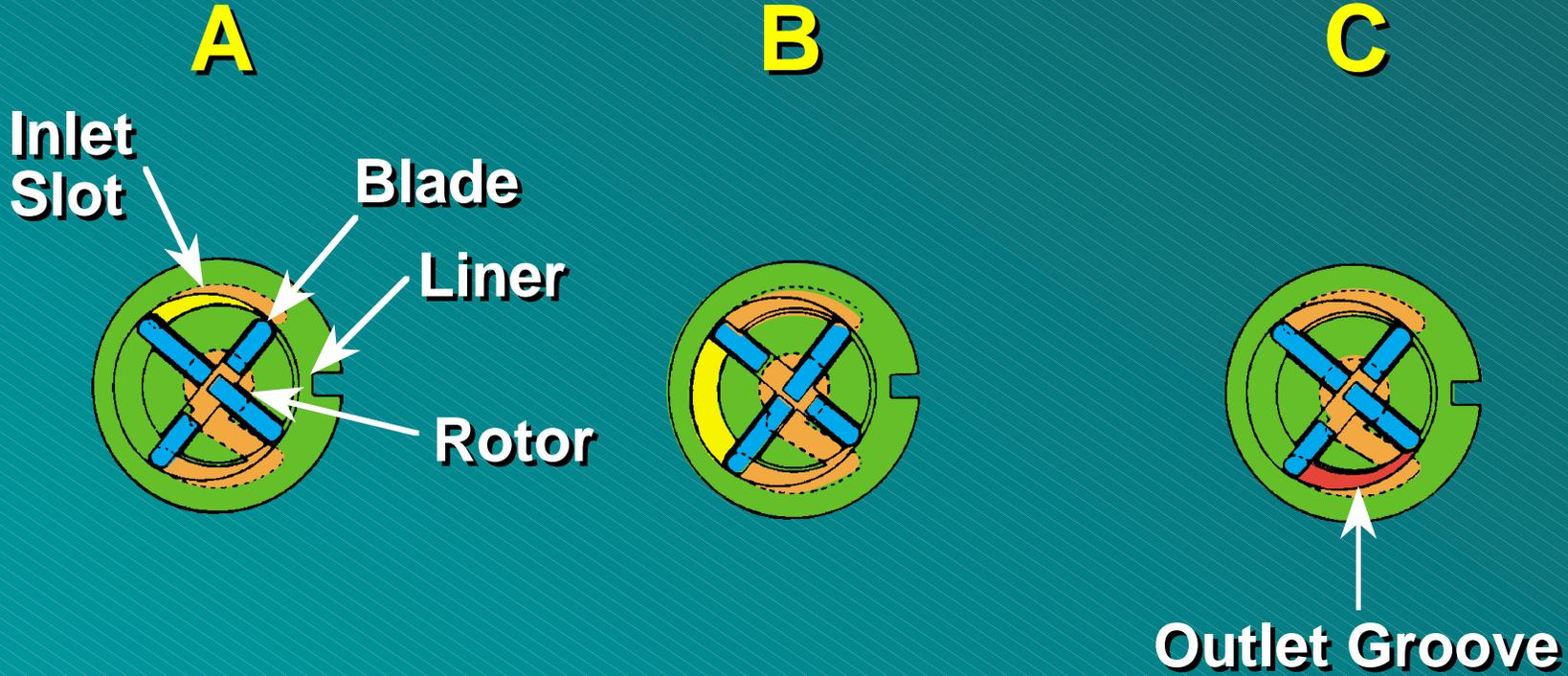
Fuel Schematic



Rotor Operation

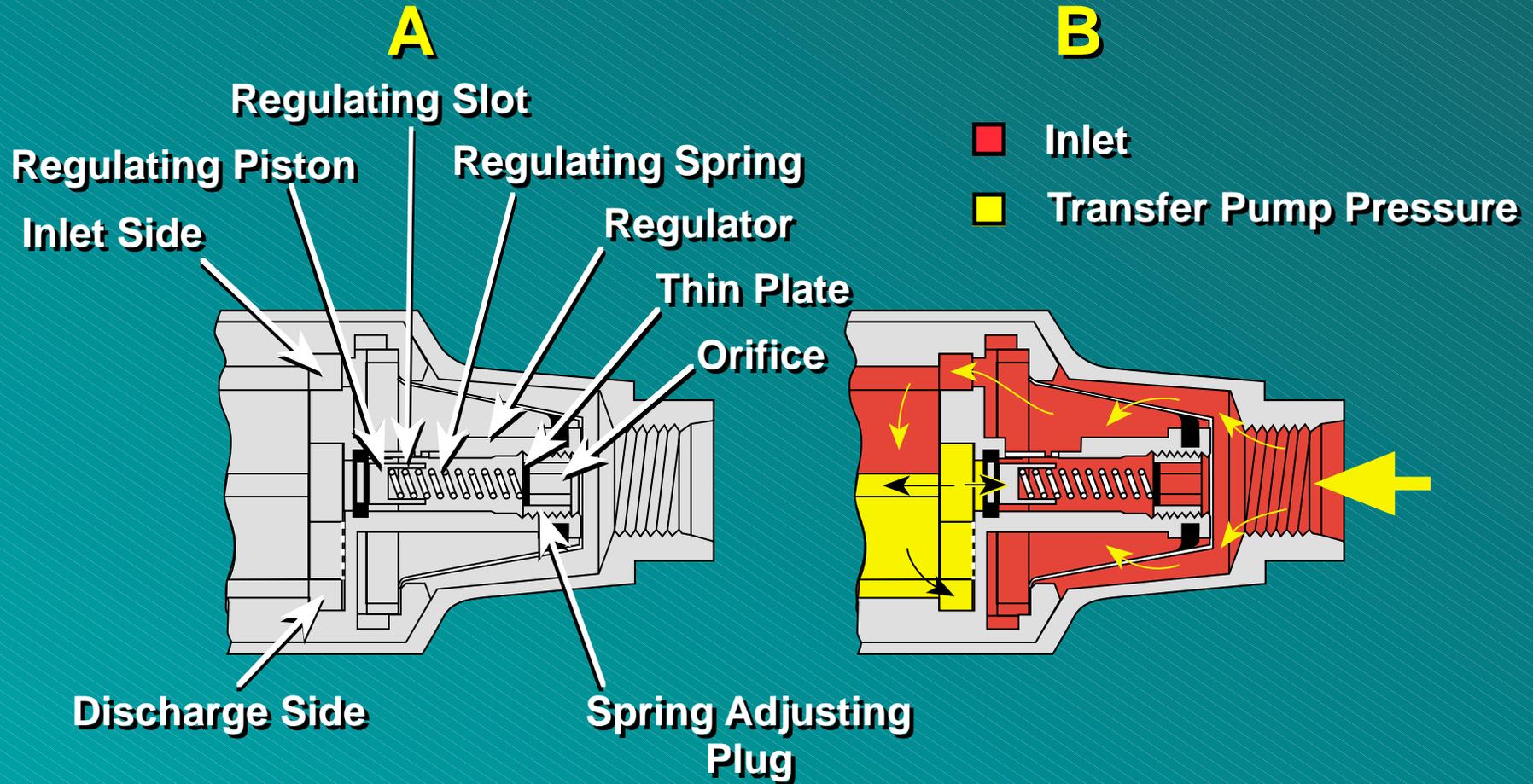


Transfer Pump

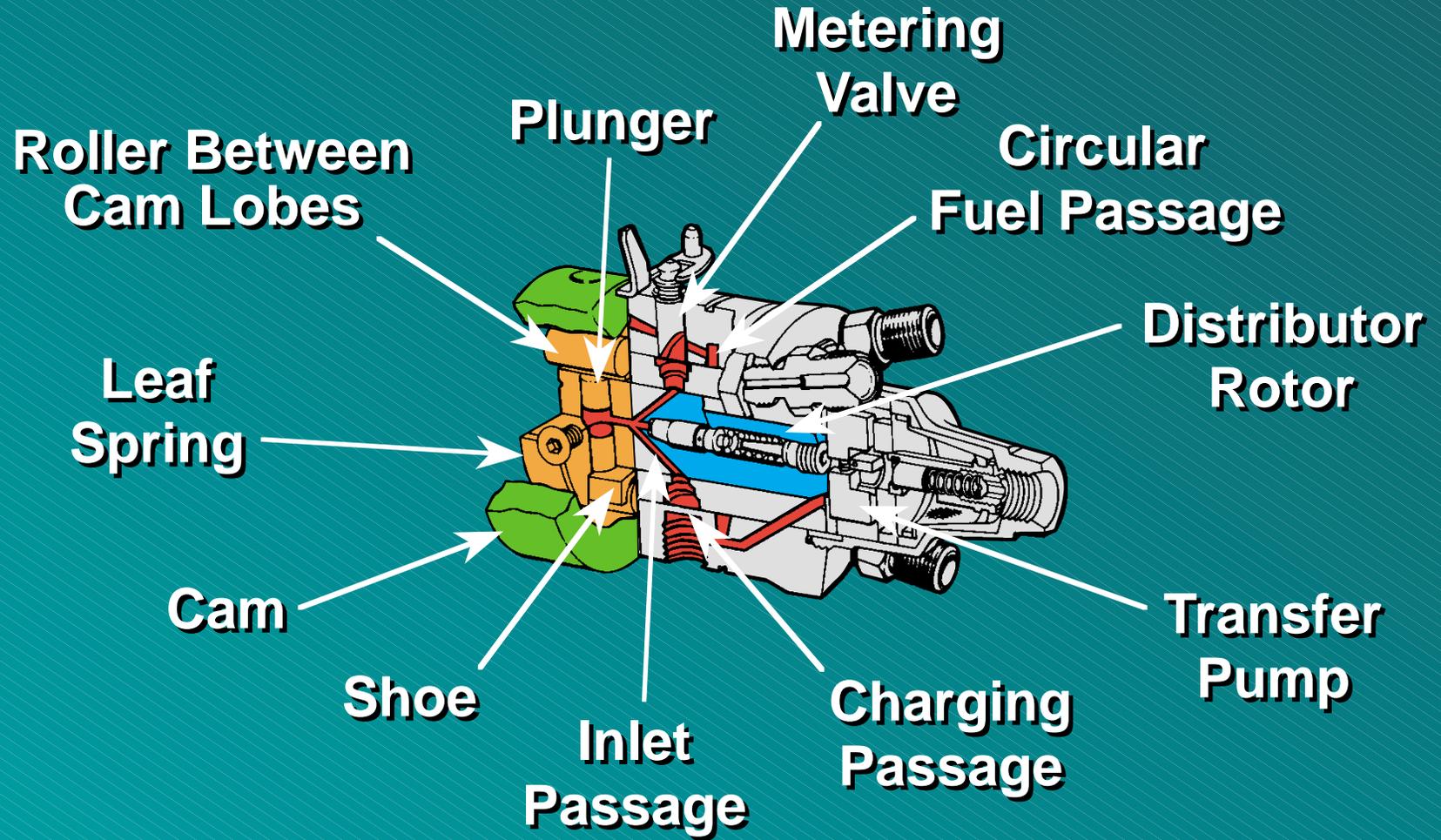


- Inlet
- Transfer Pump Pressure

Regulator Assembly Operation/Viscosity Compensation

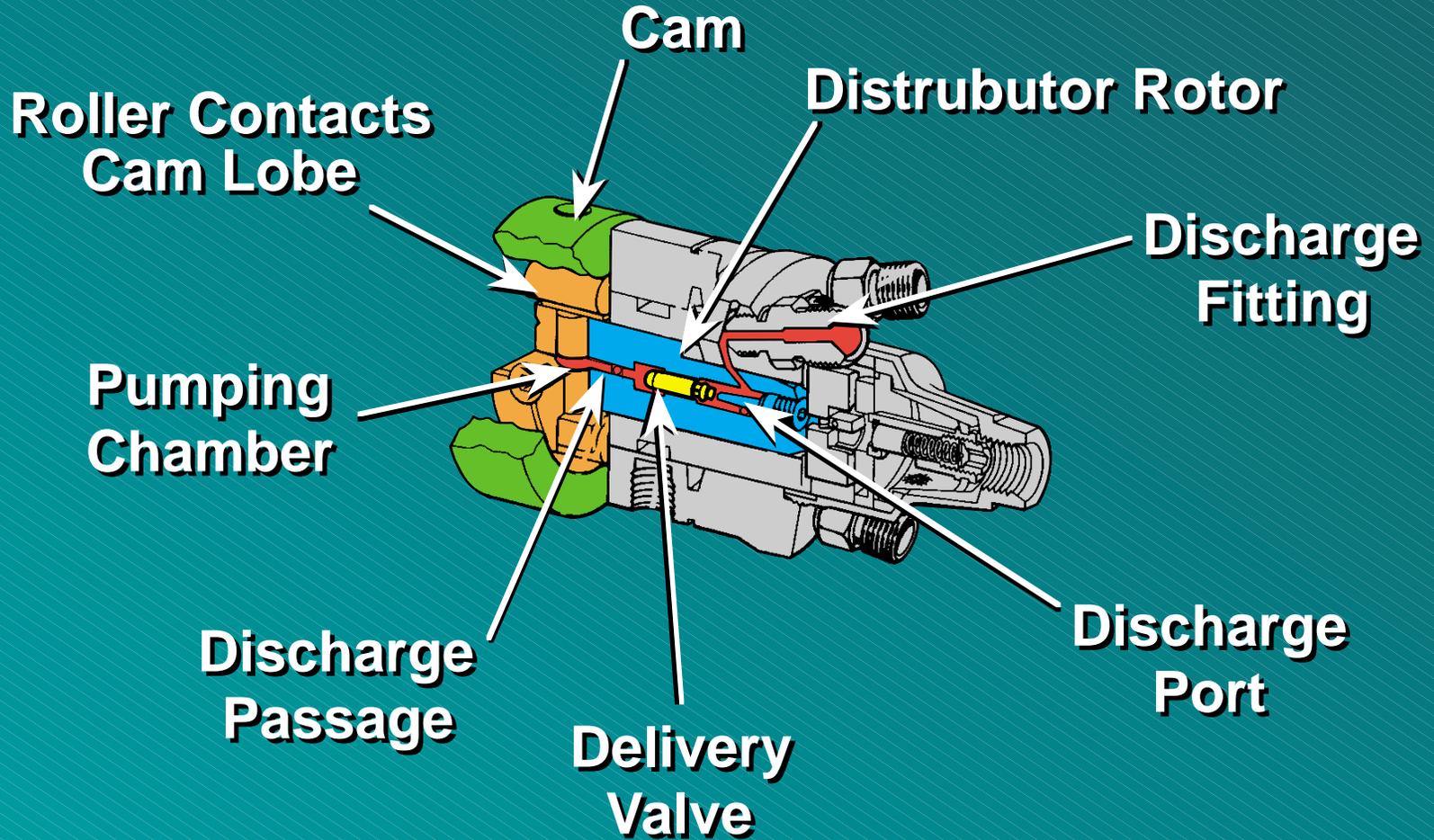


Charging Cycle



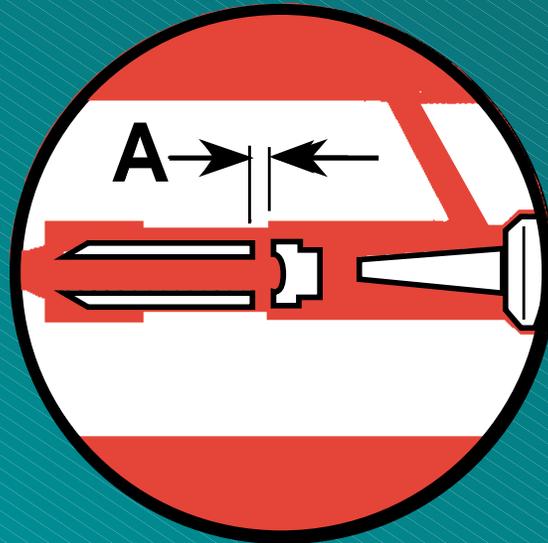
■ Transfer Pump Pressure

Discharge Cycle



■ Injector Pressure

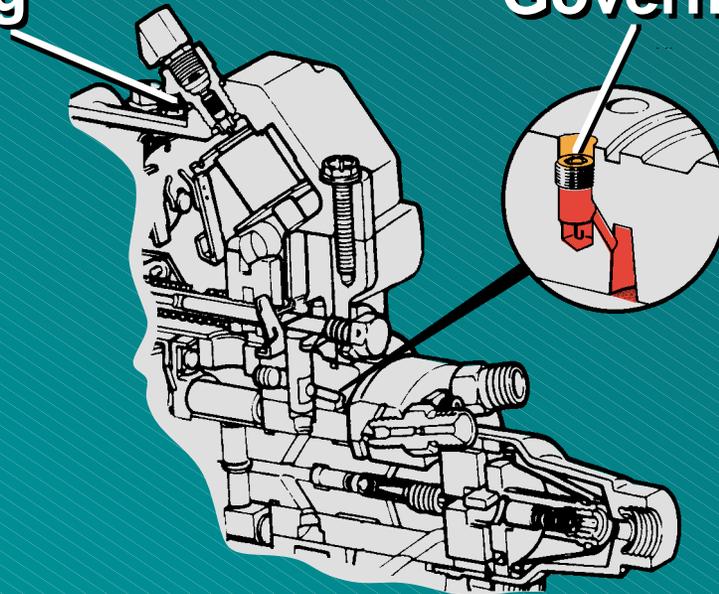
Delivery Valve



Fuel Return Circuit

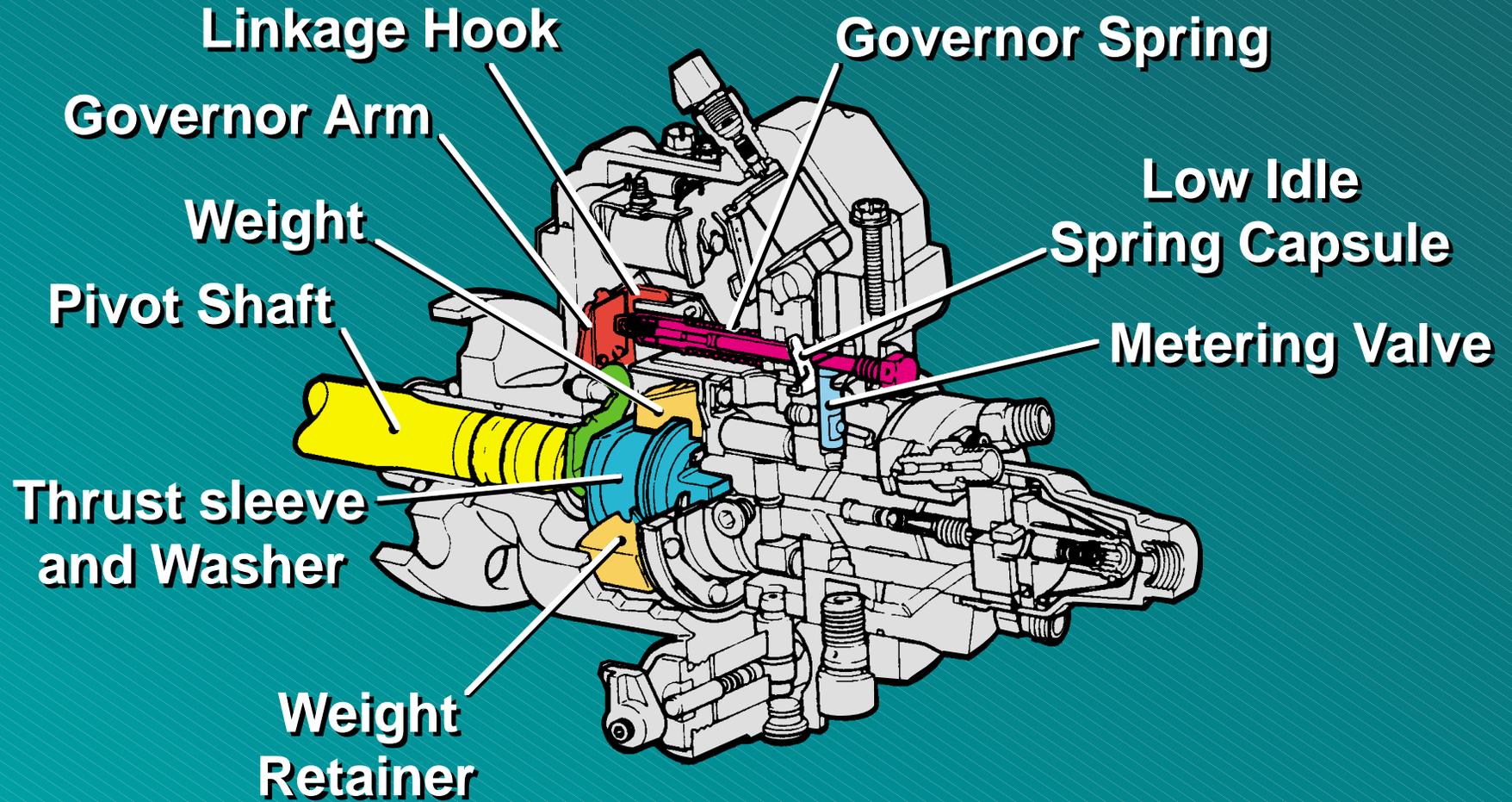
Ballcheck Return
Fuel Fitting

Air Vent Passage to
Governor Compartment



- Housing Pressure
- Transfer Pressure

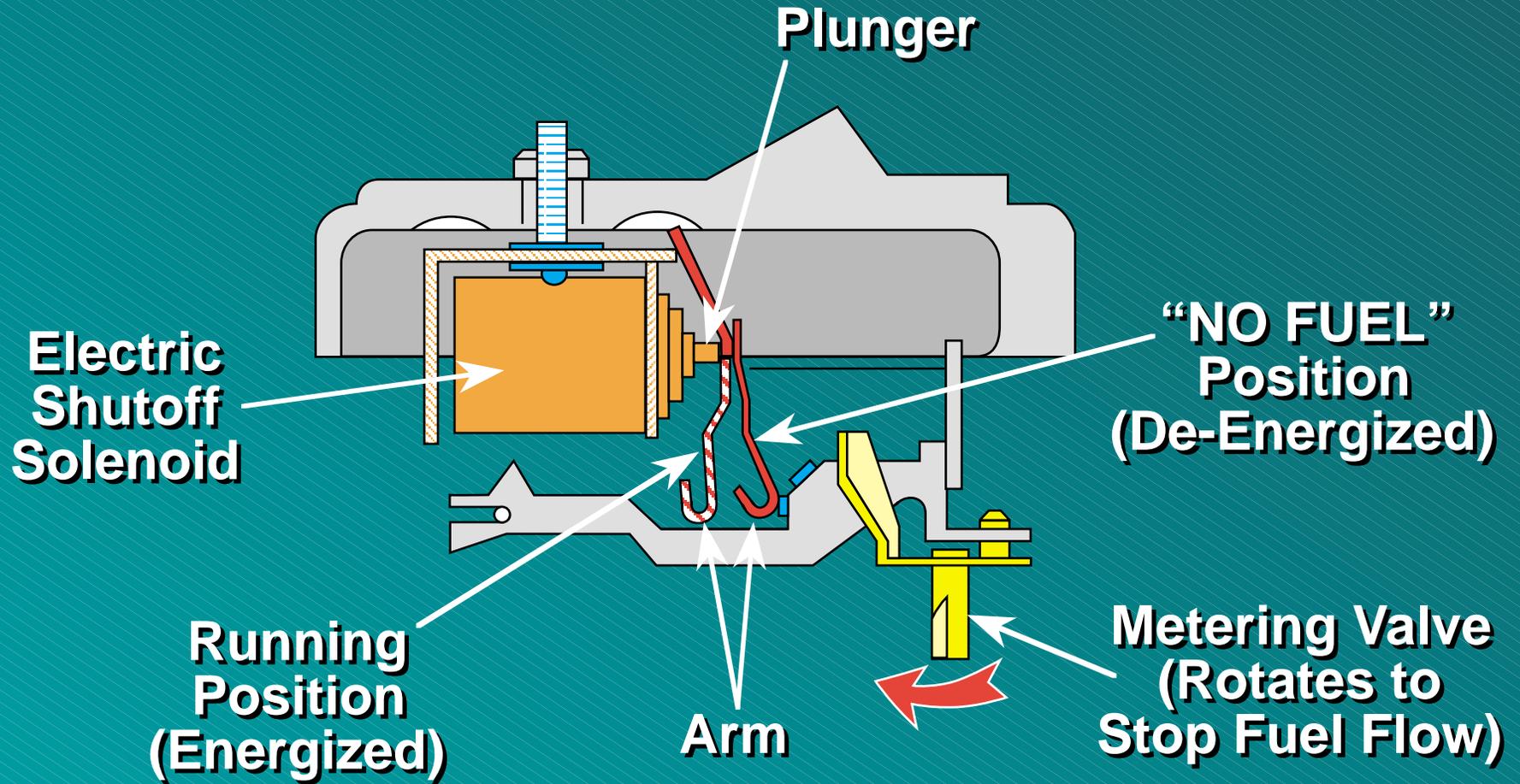
Mechanical Governor



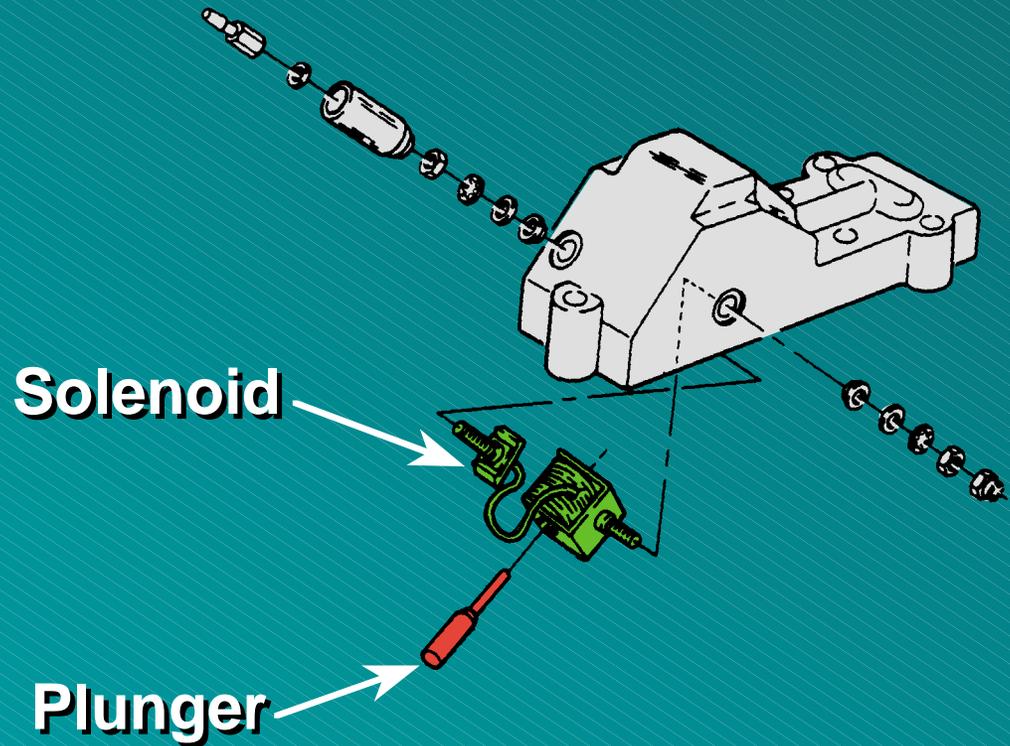
Detailed Inspection

Examine For:		Excessive Wear	Foreign Material or Rust	Nicks or Chipping	Scratches or Scores	Thread Damage	Cracks	Distortion	Freedom of Movement	
Housing & Drive	Housing Drive Shaft	X	X	X	X	X	X	X		
Hydraulic Head & Rotor	Hydraulic Head	X	X	X	X	X	X			
	Vent Wire Assembly		X						X	
	Discharge Fittings	X	X	X	X	X	X			
	Distributor Rotor	X	X	X	X	X	X		X	
	Delivery Valve	X	X	X	X		X		X	
	Plungers	X	X	X	X	X	X		X	
	Cam Rollers & Screws	X	X	X	X	X	X		X	
	Leaf Springs & Screws(s)	X	X	X	X	X	X		X	
	Cam	X	X	X	X	X	X		X	Where weights pivot in retainer socket
	Governor Weight Retainer	X	X	X			X		X	
Governor Weights	Governor Weights	X	X	X	X	X	X	X	X	Contact area for excessive wear
	Governor Thrust Washer	X	X	X	X	X	X	X	X	Point of contact with governor arm for excessive wear
	Governor Thrust Sleeve	X	X	X	X	X	X	X	X	
Hydraulic Head & Rotor	End Cap		X			X	X	X	X	Screen and soldered area for break up
	Inlet Screen		X				X	X		Tightness in regulator, loose plate
	End Plate / Adj. Plug	X	X			X				
	Regulating Piston		X	X	X				X	
	Regulator	X	X	X	X	X	X	X		
	Blade	X	X	X	X		X			
Liner	Liner	X	X	X	X				X	Inside diameter in high pressure area for wear
	Rotor Retainers	X	X	X	X					
Governor	Pivot Shaft	X	X	X		X		X		Chipped or worn Knife edge
	Arm	X	X	X			X	X	X	Point of contact with thrust sleeve & pivot shaft for excessive wear
Metering Valve	Metering Valve	X	X	X	X		X		X	Contact area of body for excessive wear
	Metering Valve Arm	X	X	X	X		X	X		Inspect pin for wear or looseness
Linkage	Linkage Hook	X	X	X	X	X	X	X		Metering valve pin hole
Advance	Piston	X	X	X	X				X	Bore for excessive wear
	Cam Advance Screw	X	X	X	X	X	X		X	Orifice
	Plug	X	X	X	X	X	X	X		
	Head Locking Screw		X	X	X	X	X			

Fuel Shutoff Solenoid

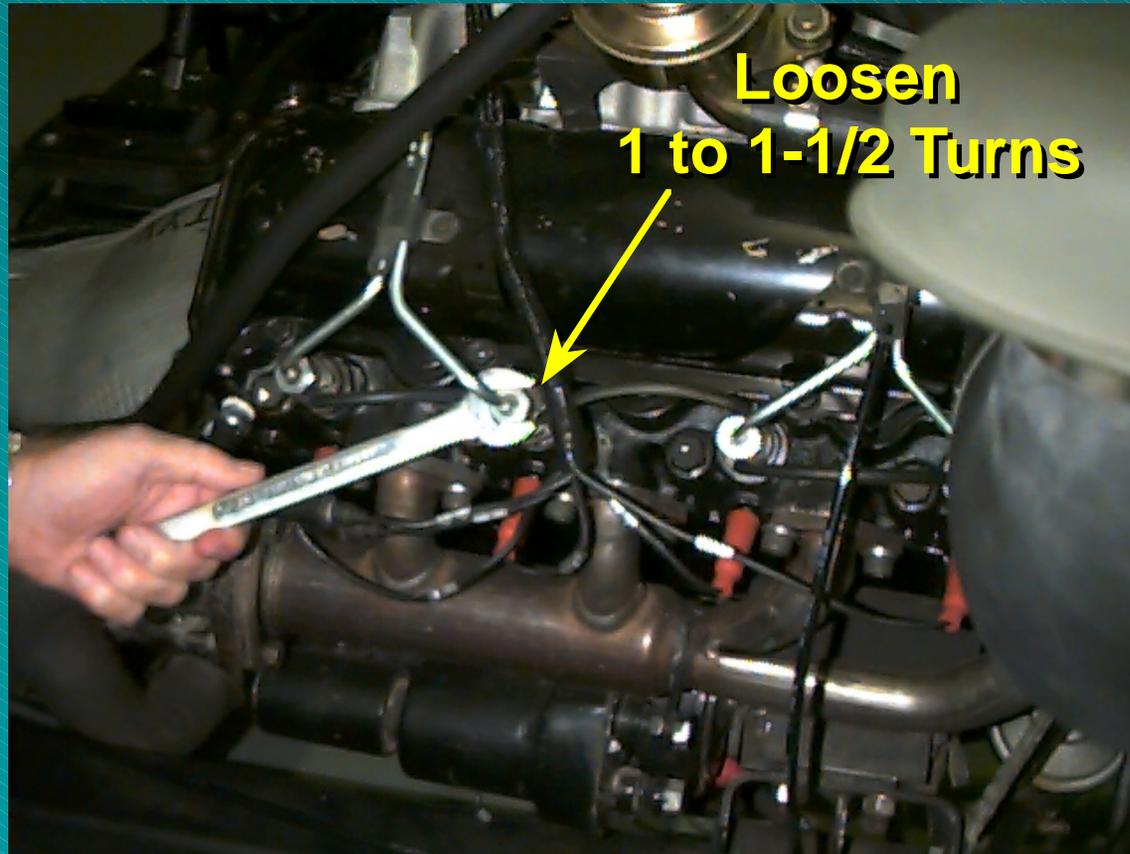


H.P.C.A. Housing Pressure Cold Advance Solenoid

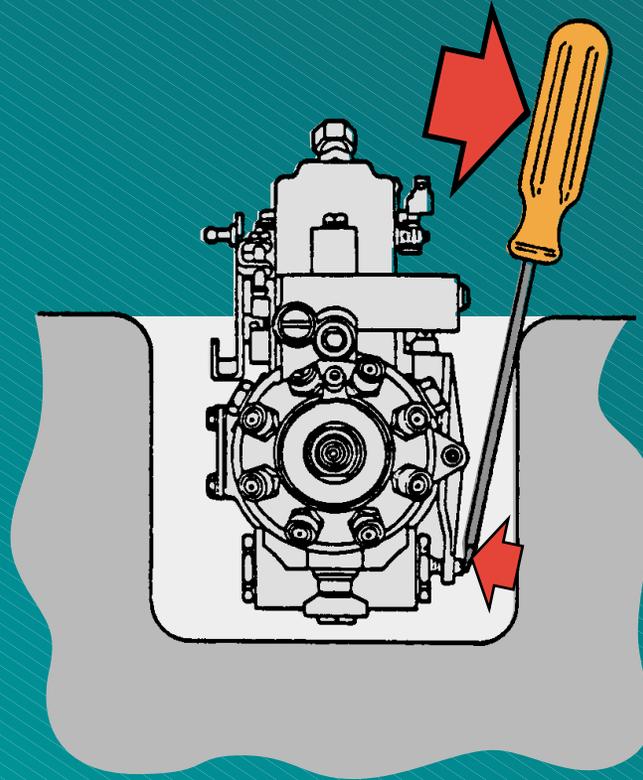


Defective Nozzle Check

(Engine knocking due to nozzle stuck open)



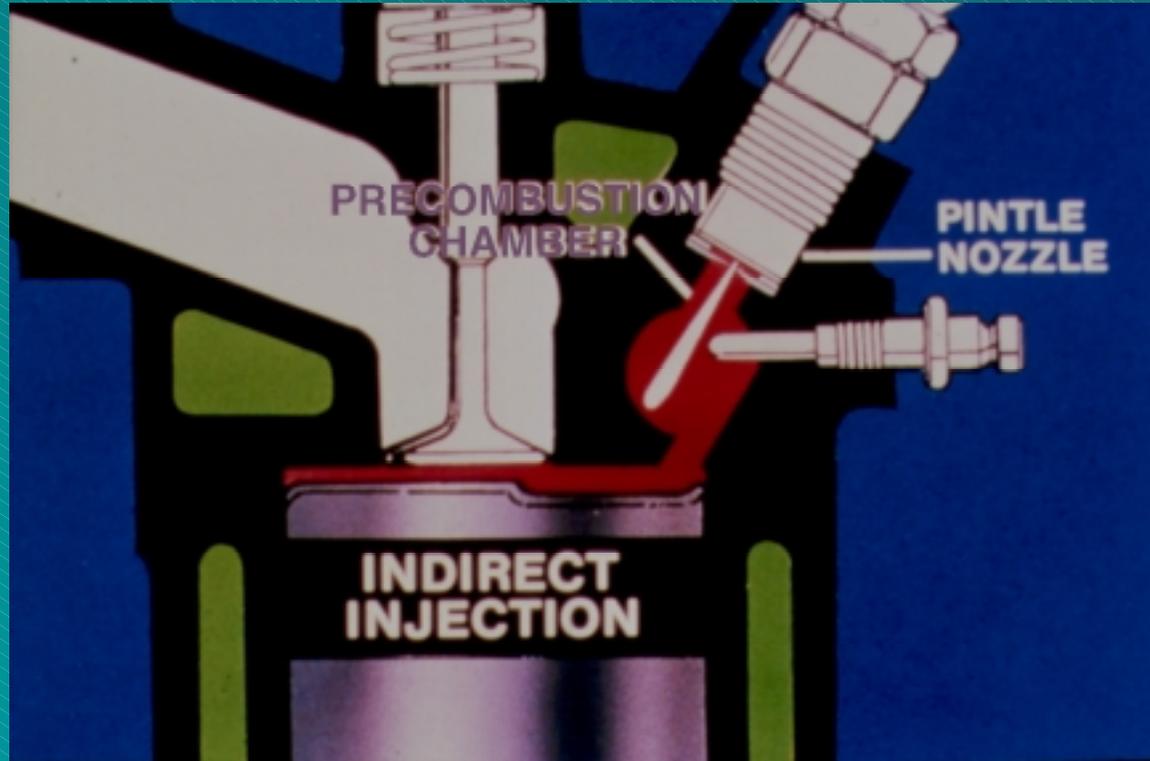
Mechanical Light Load Advance Check



Fuel Injectors



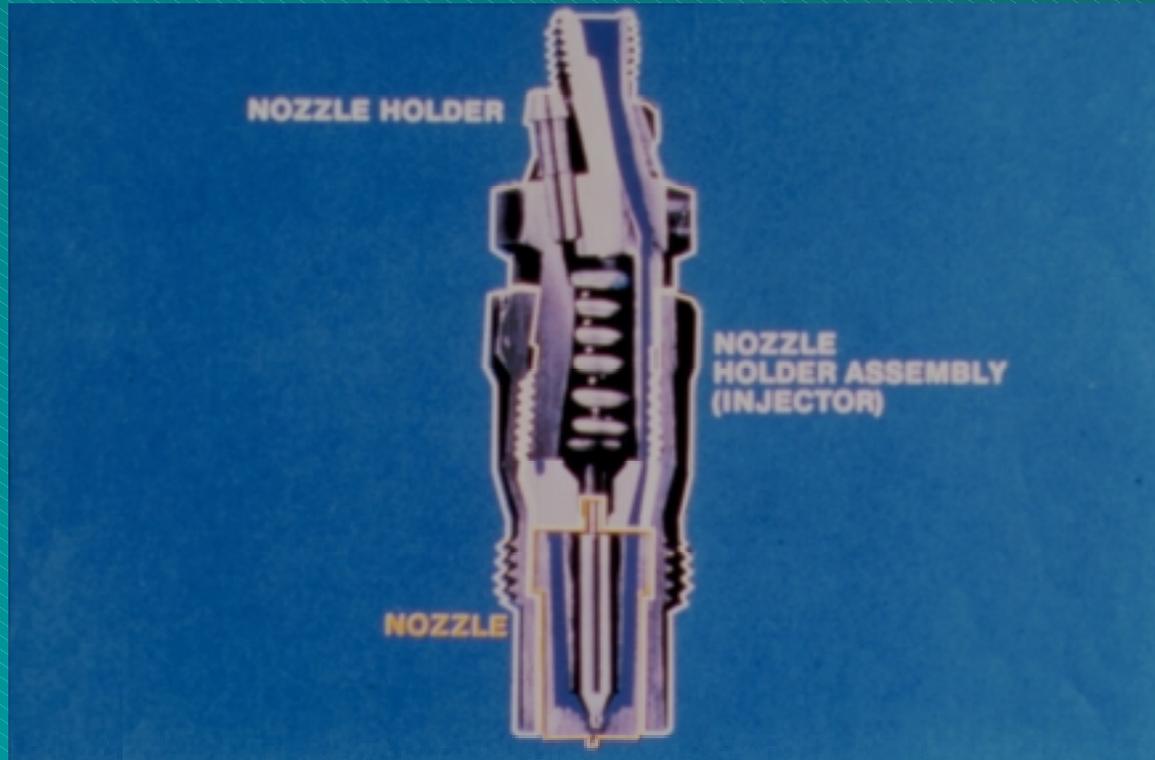
Main Purpose of Injector Nozzle



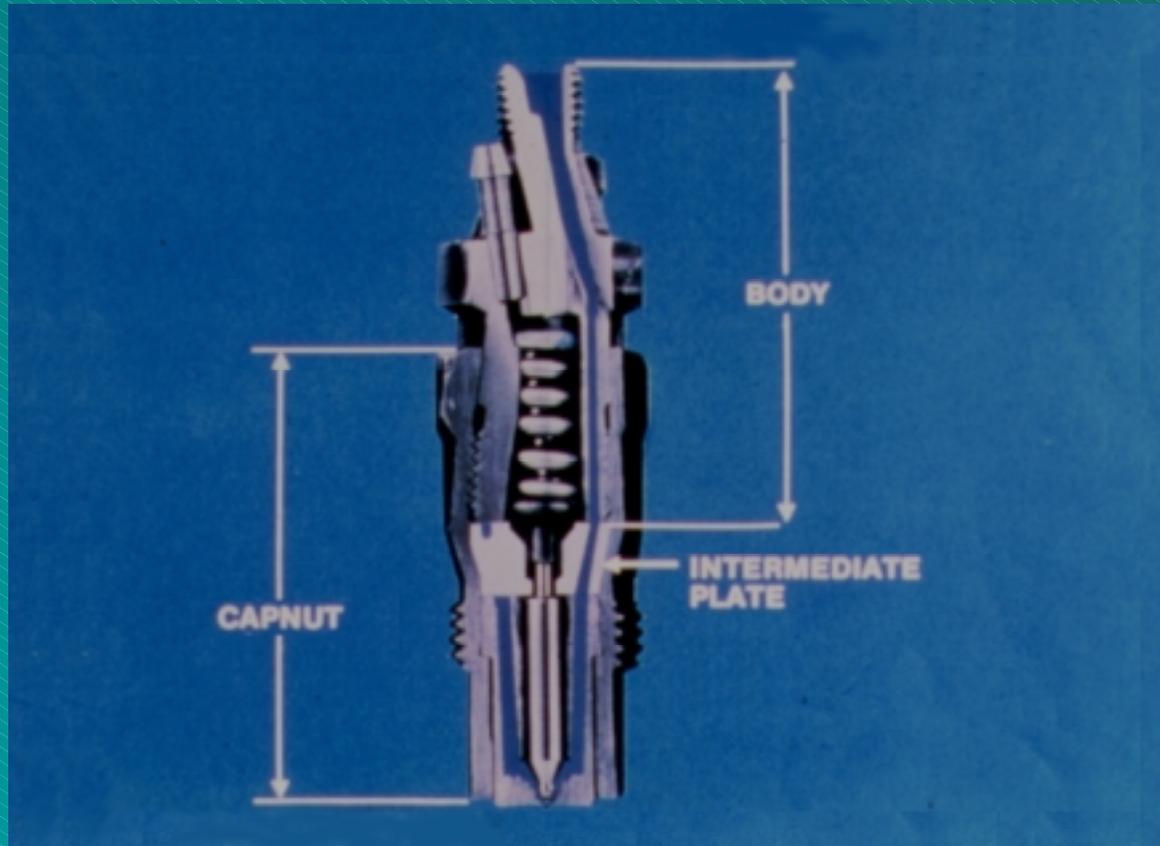
Types of Needle Valves



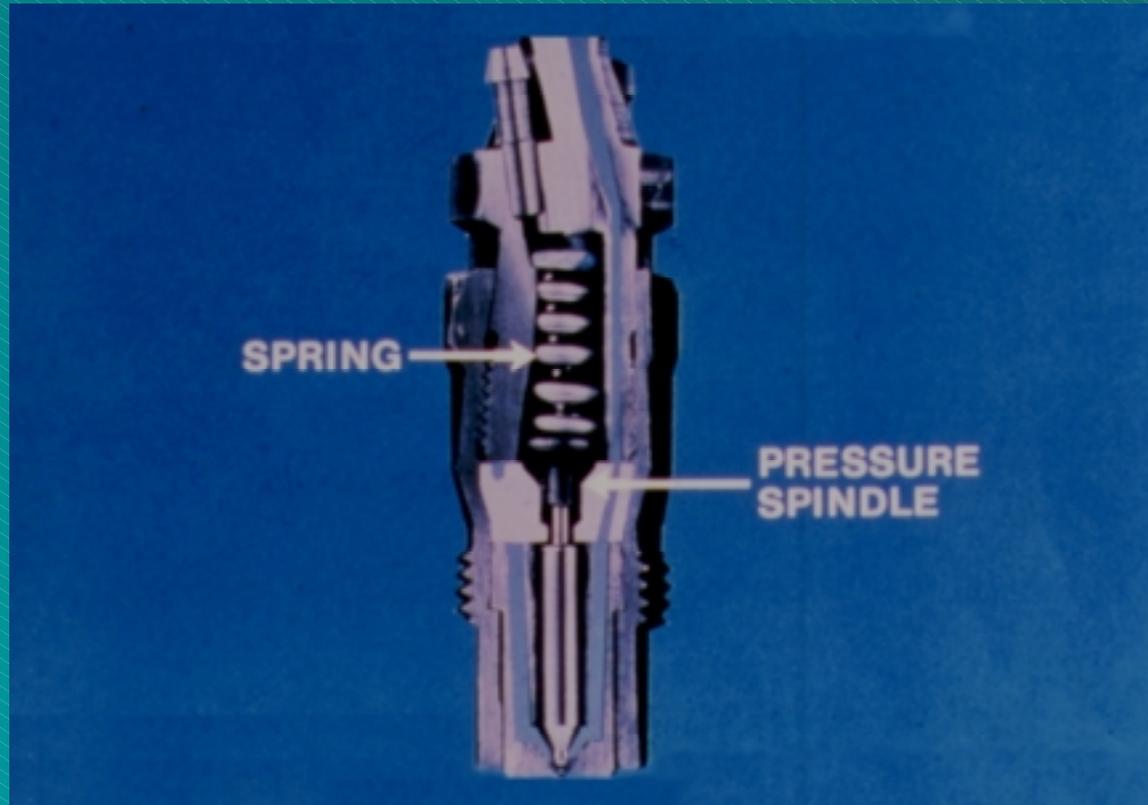
Purpose of Nozzle Holder Assembly



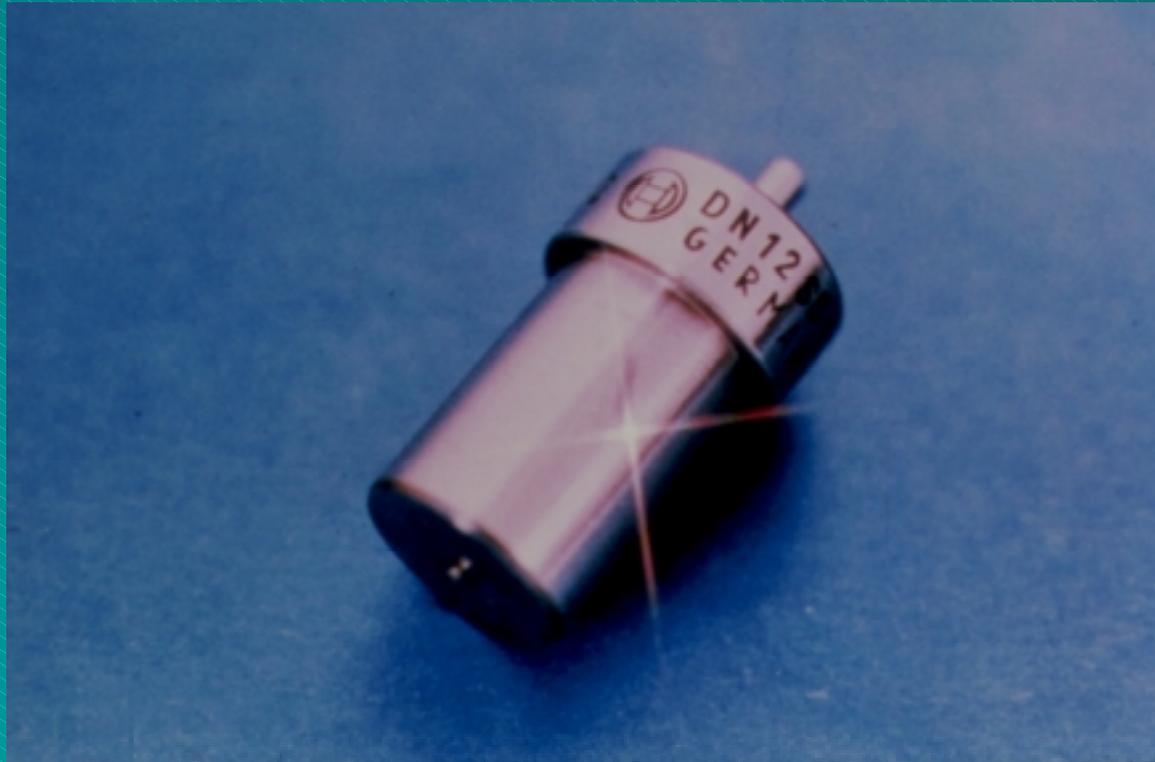
Body, Cap-Nut & Intermediate Plate



Additional Parts of Nozzle Holder



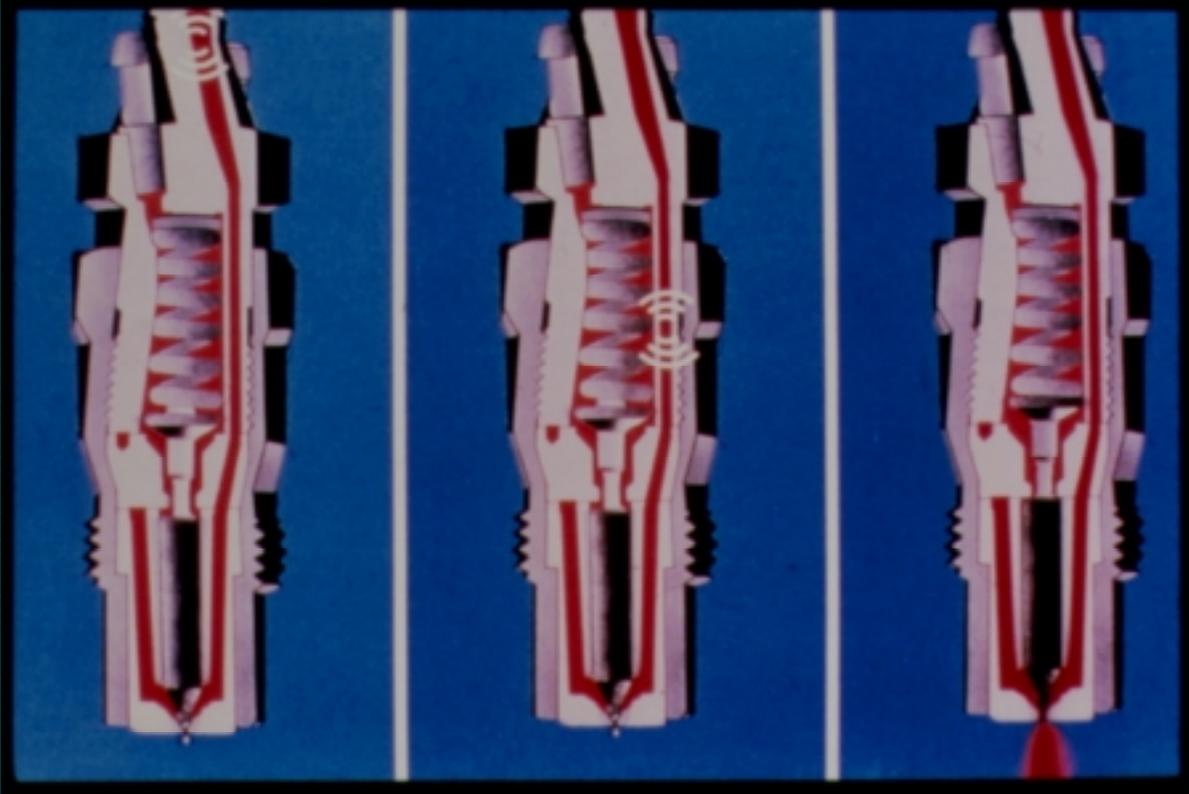
HMMWV Pintle Nozzle



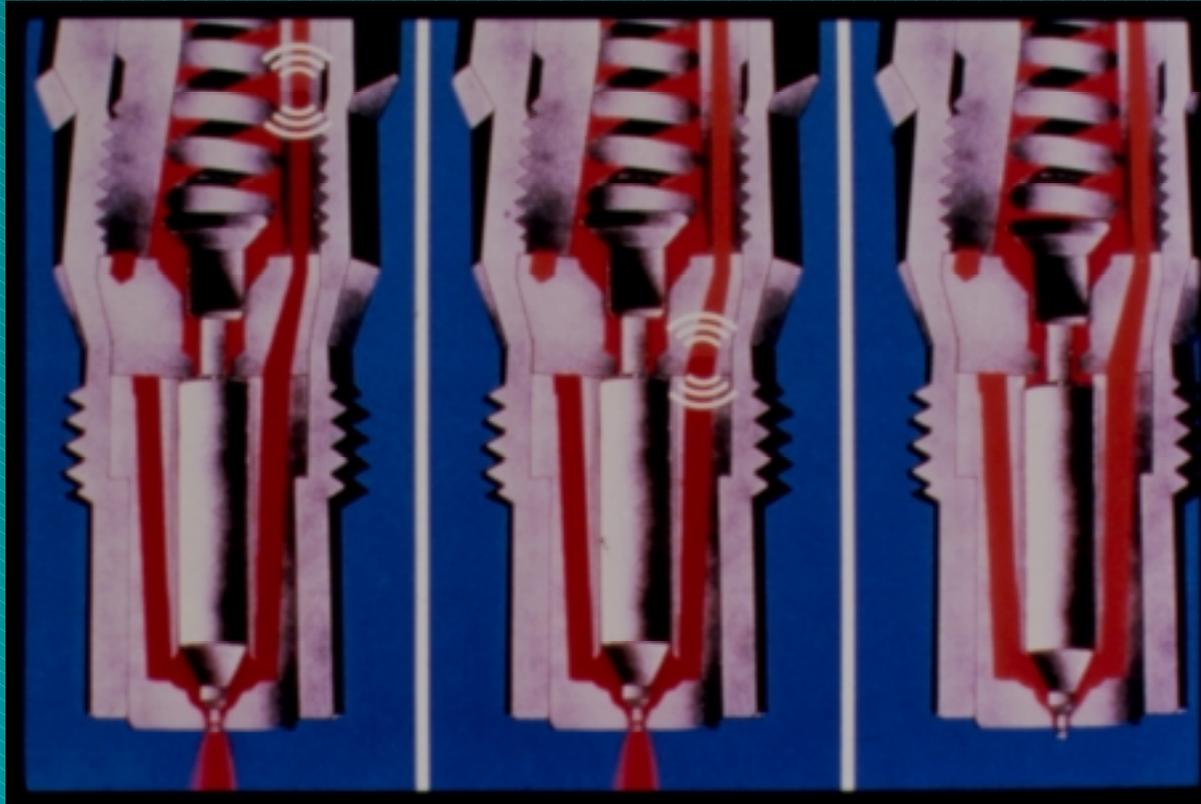
Internal Head Shield



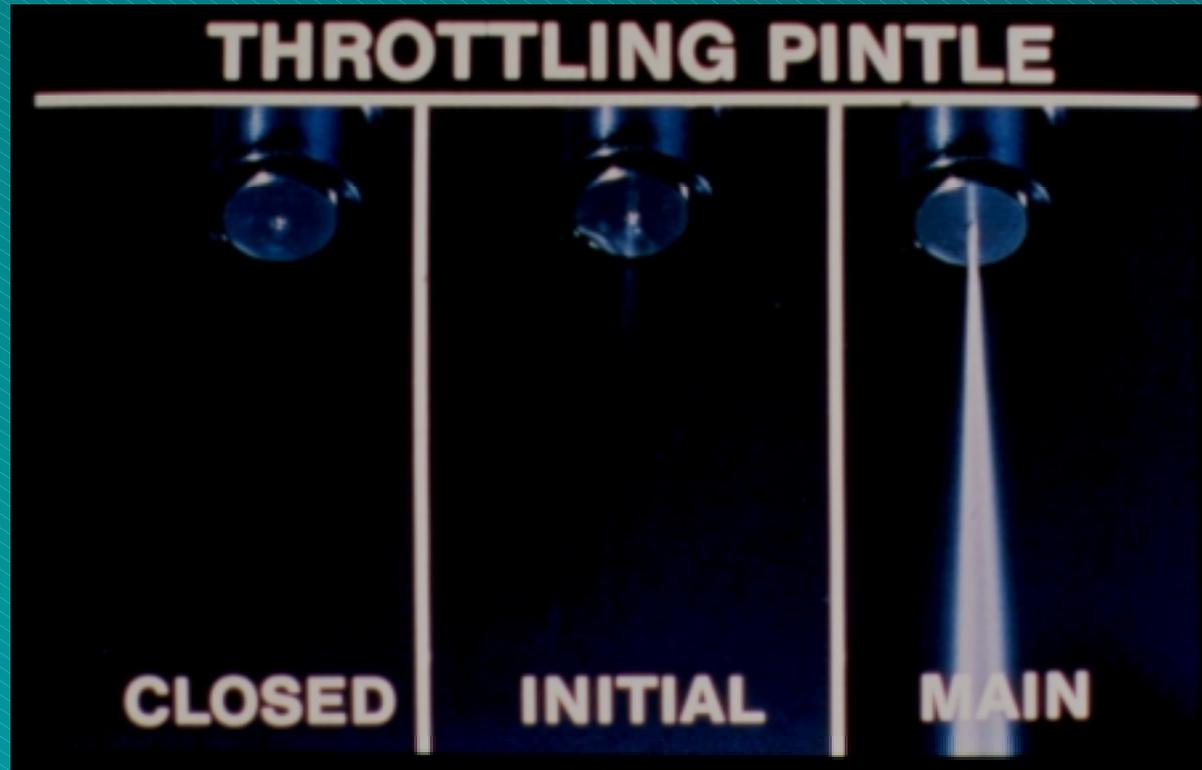
Nozzle Operation



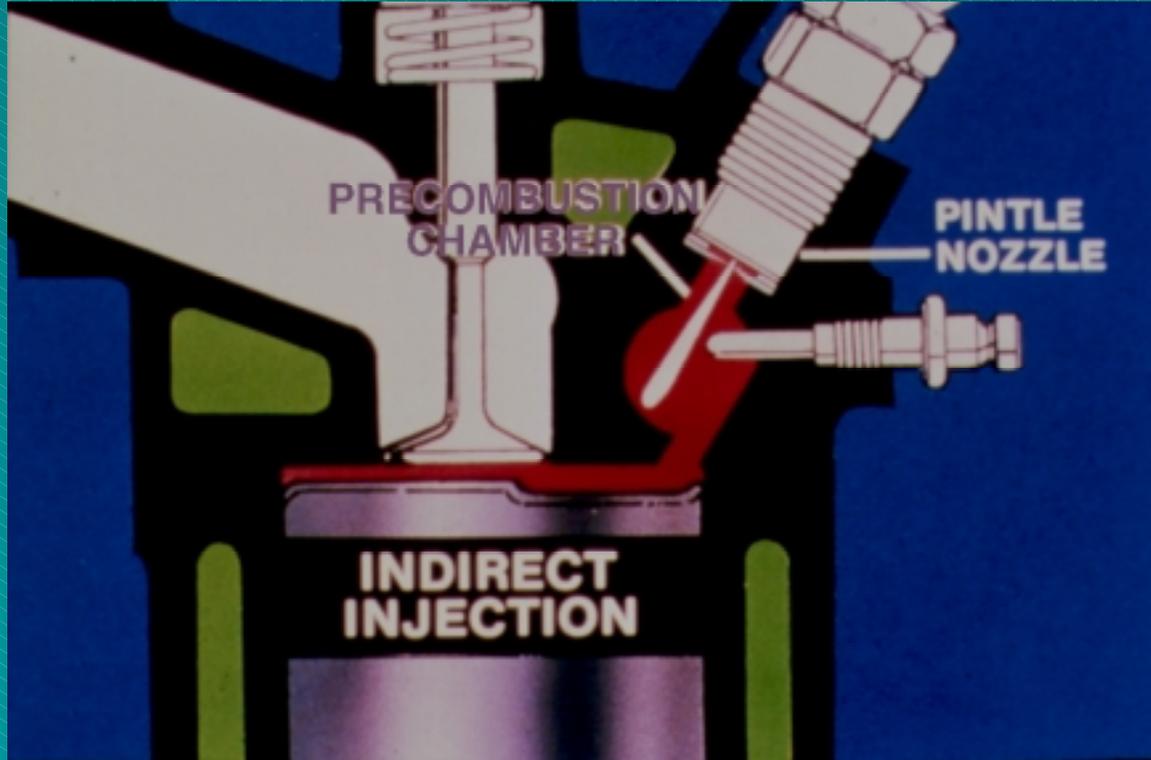
Nozzle Operation



Stages of Operation



Precombustion Chamber



Stanadyne DB2 Fuel Injection Pump Specifications

(Service/Assembly)

Full Load RPM: 3400

AM General Part # 05743796

Model # DB28331-5149

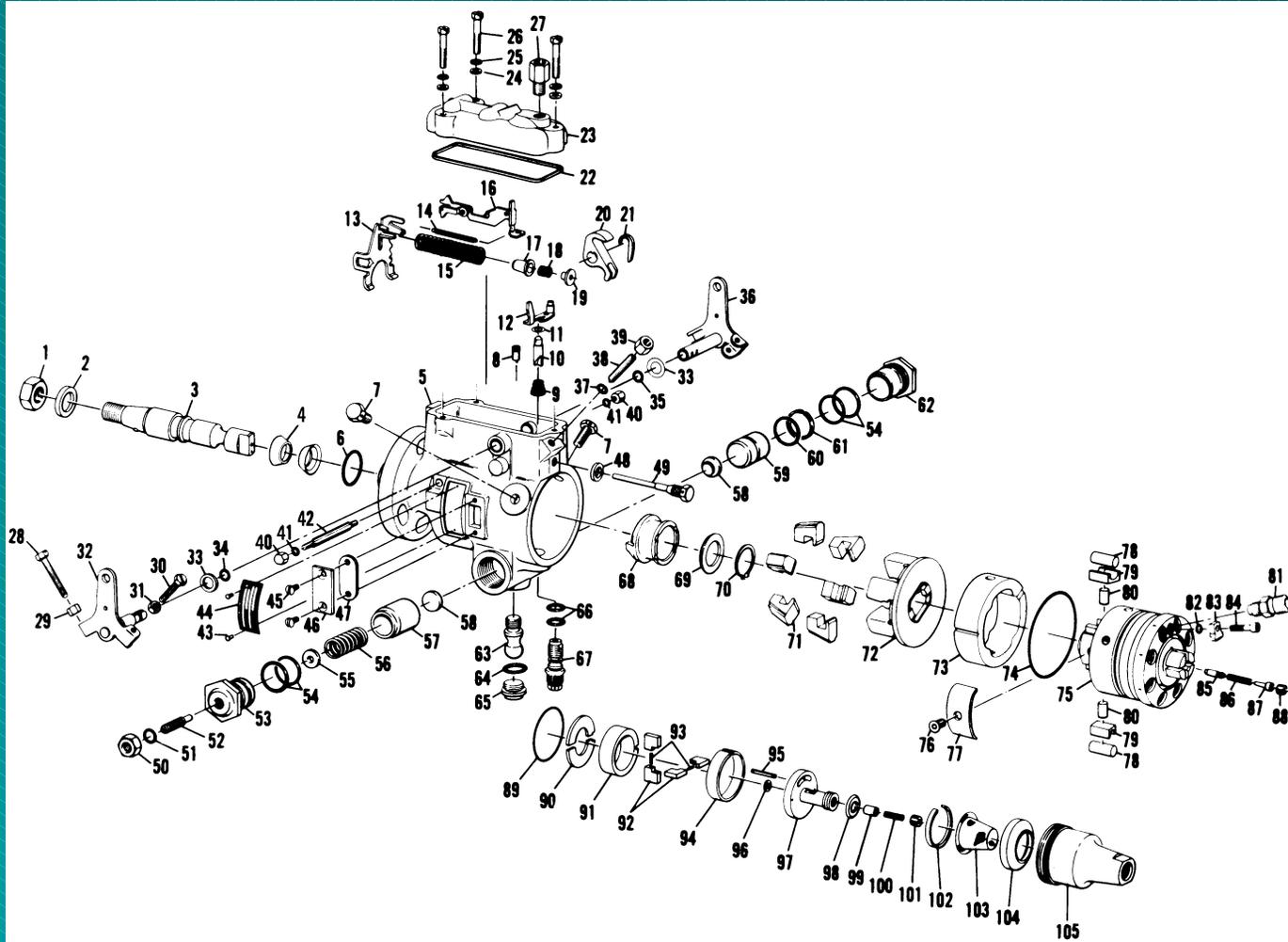
Gov. Regulation:%

MFG. Part # 125504396

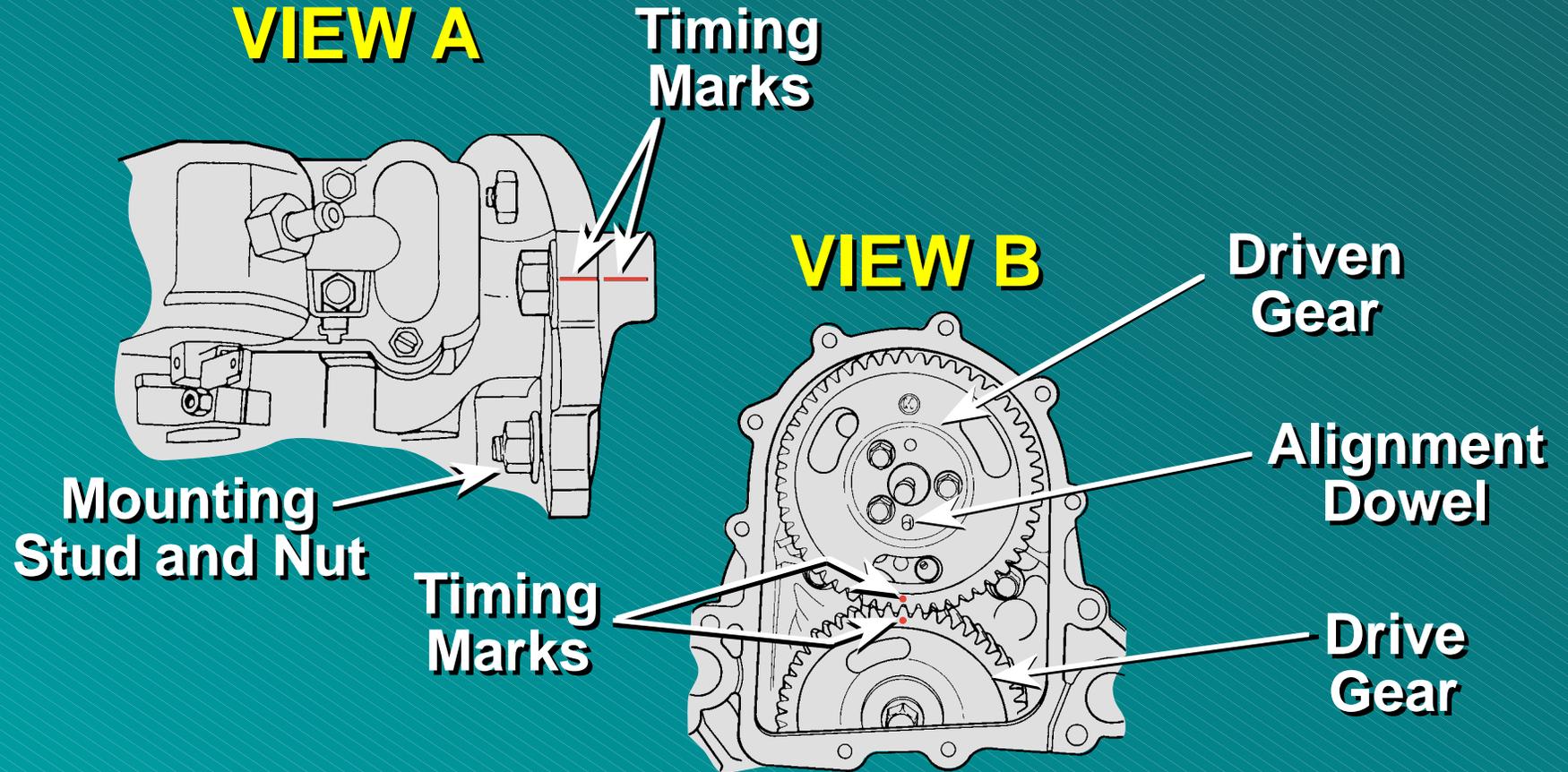
Engine: 6.5L-170 BHP

Application: Heavy duty–Military (1.2 CST Min.)

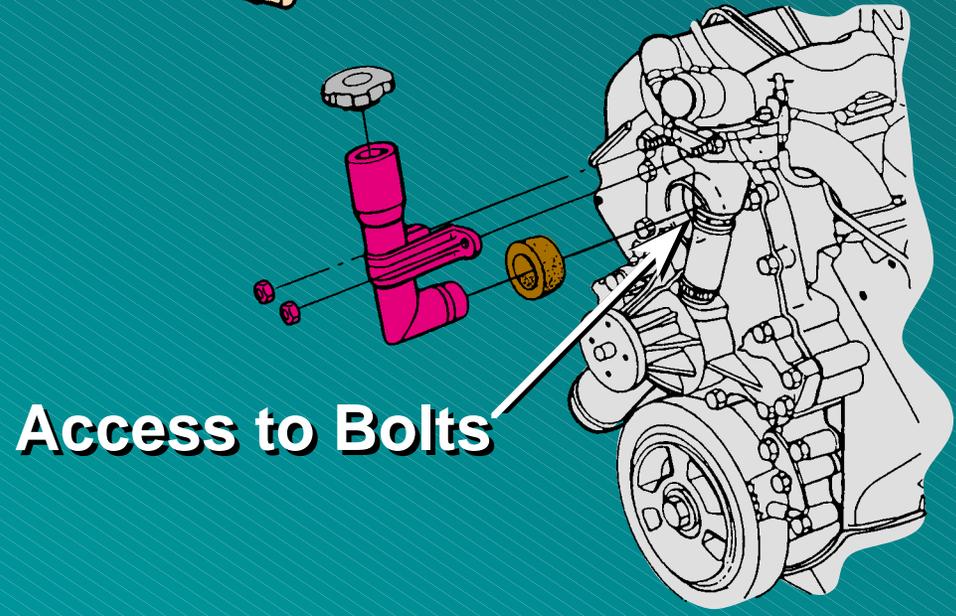
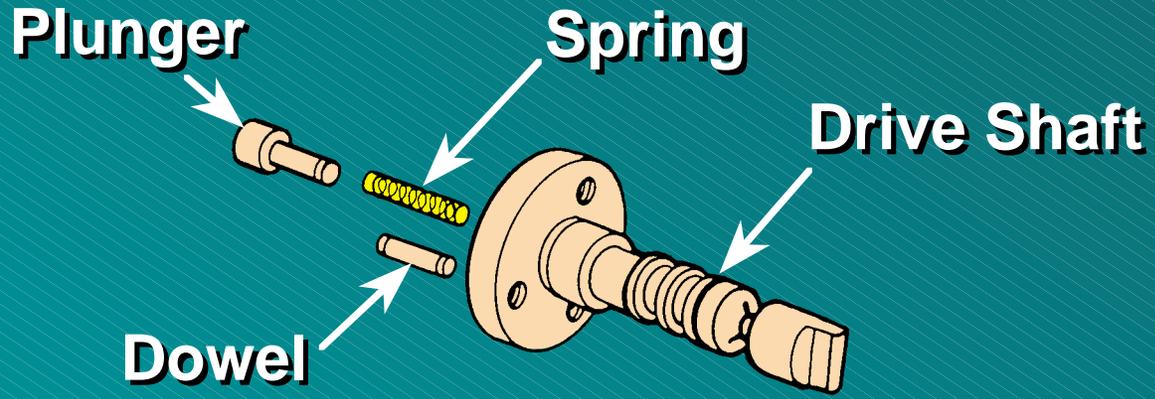
Exploded View



Injection Pump Mounting and Drive

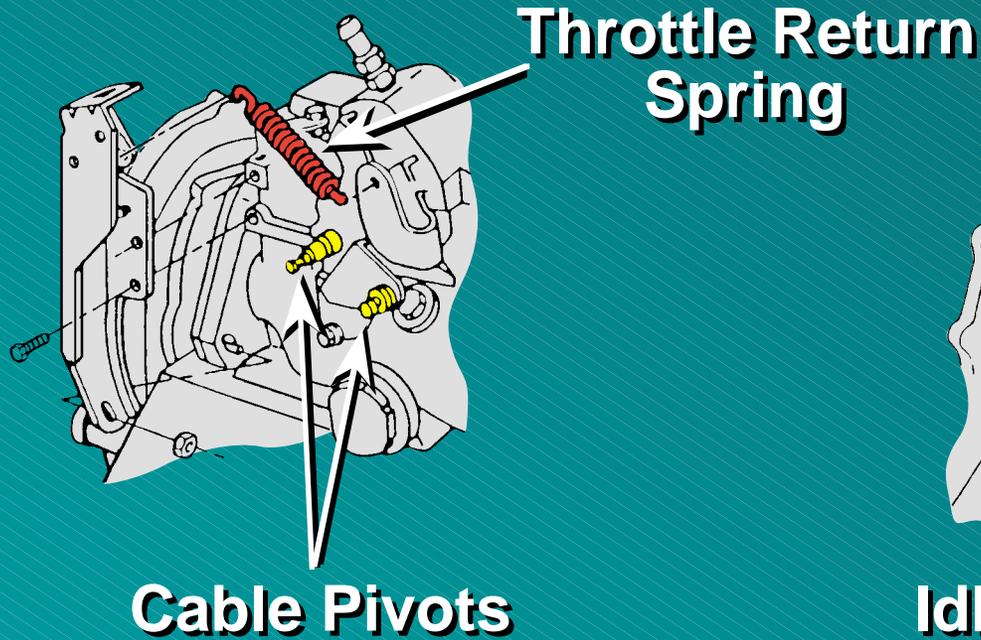


Injection Pump Mounting and Drive

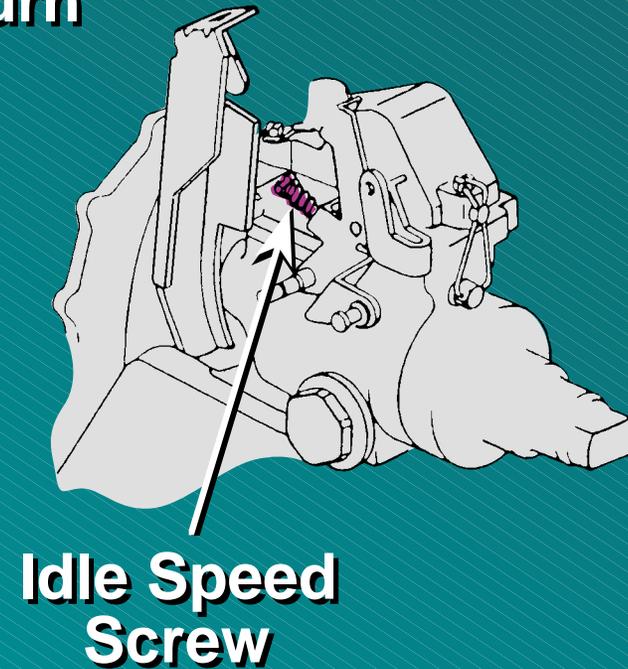


Injection Pump External Linkage

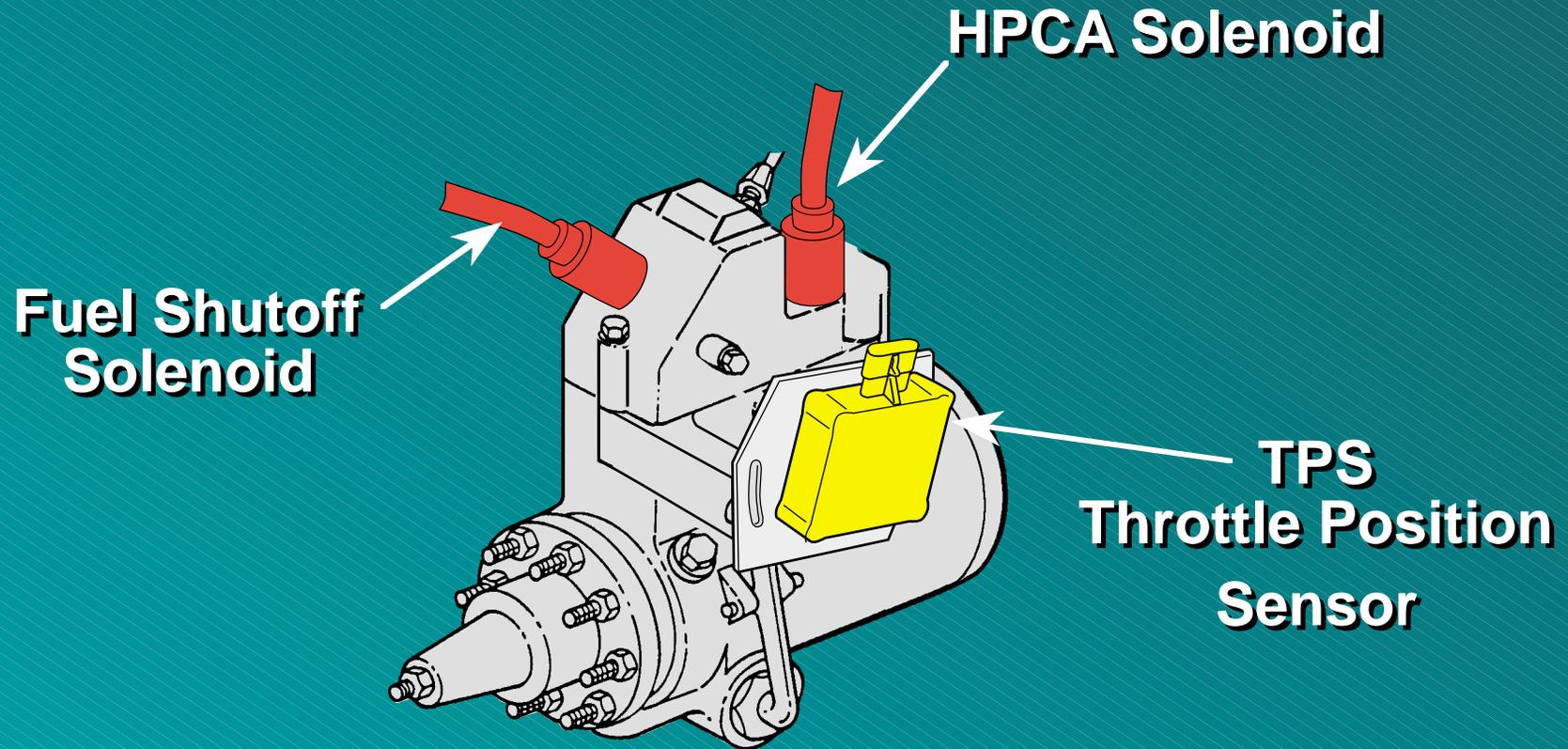
VIEW A



VIEW B

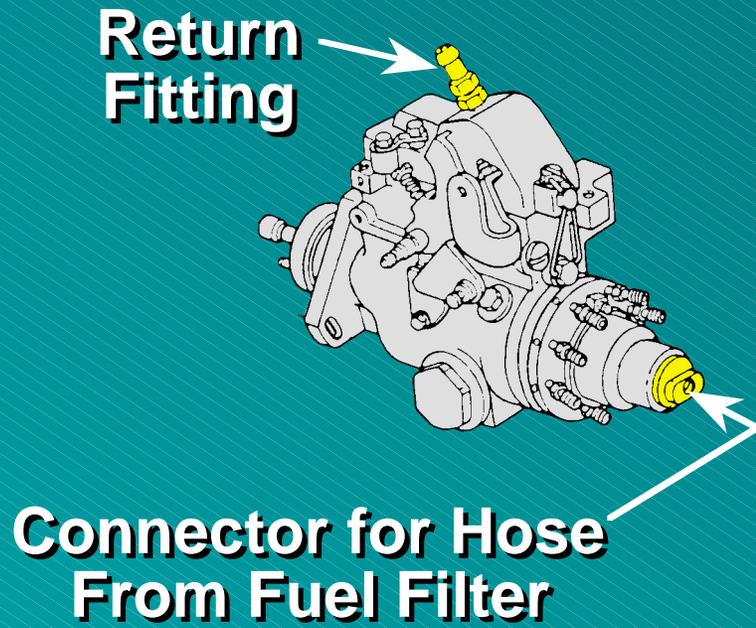


Electrical Pump Electrical Connections

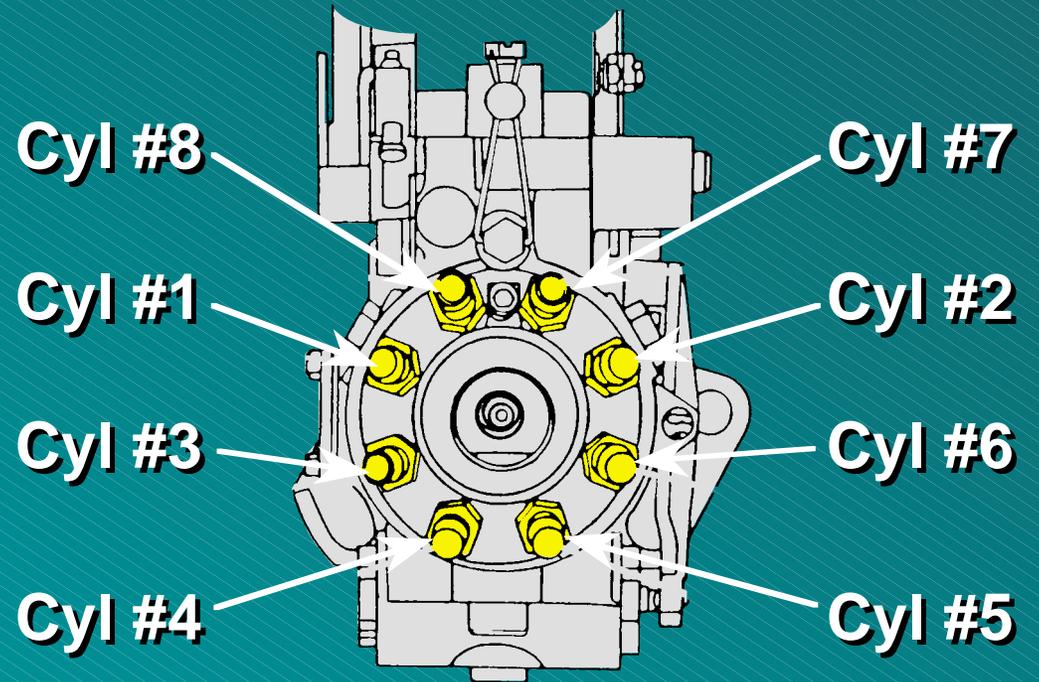


Injection Pump Fuel System Connections

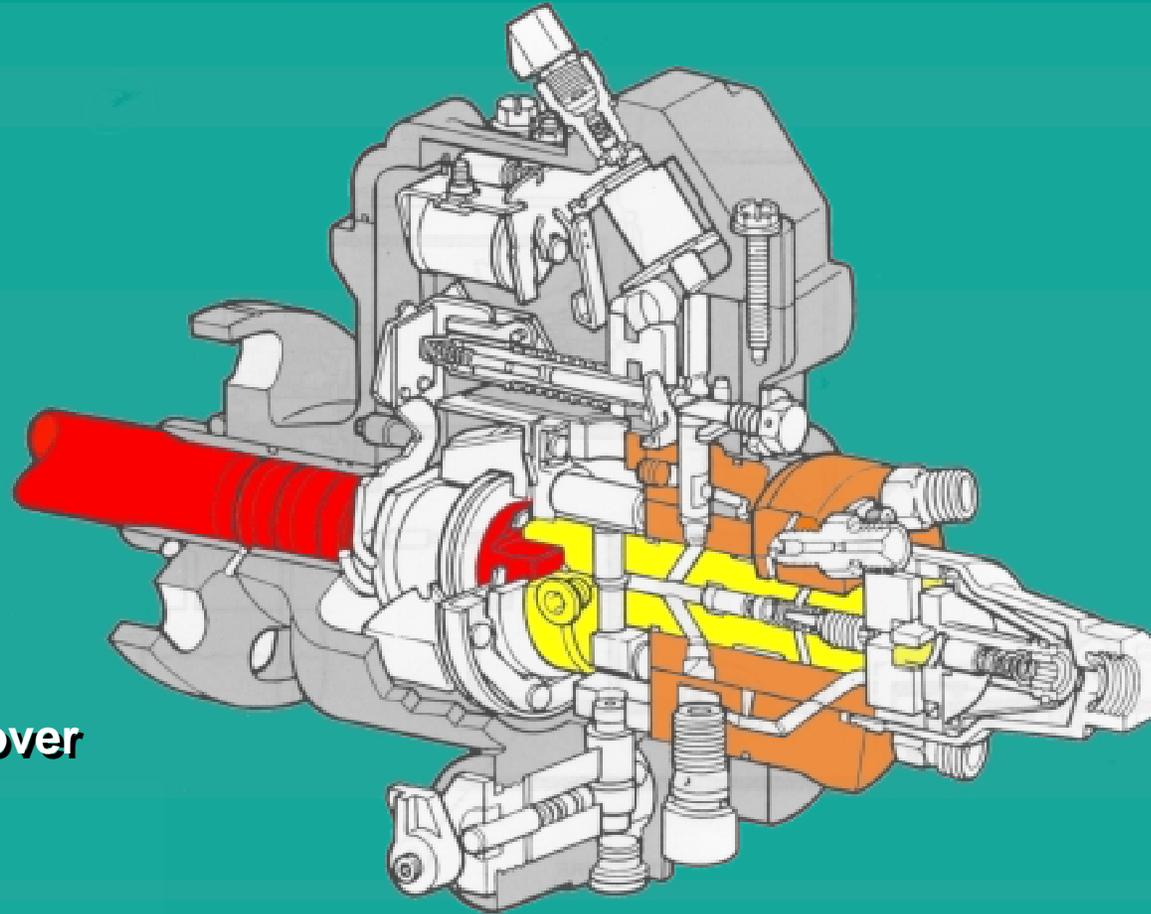
VIEW A



VIEW B

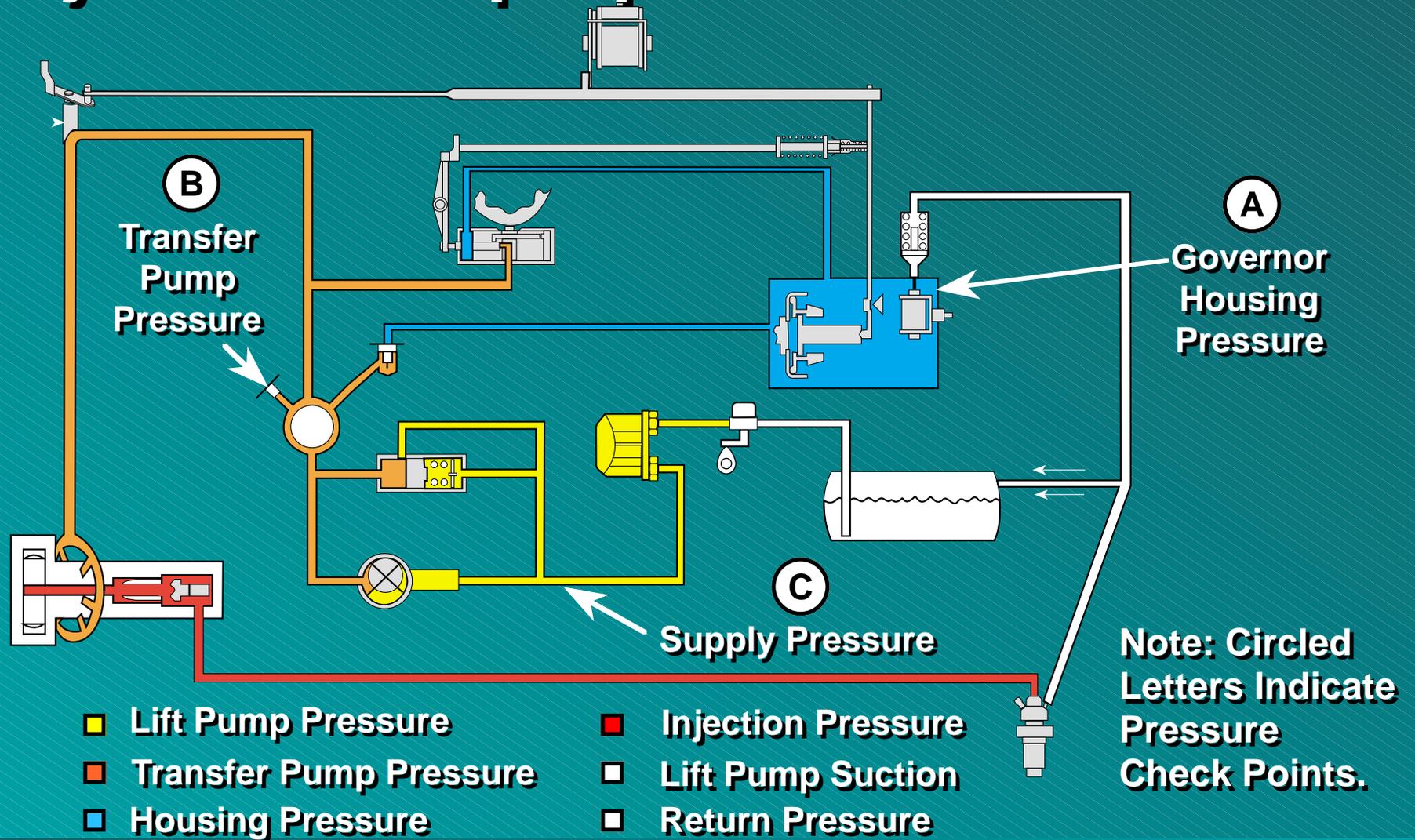


Injection Pump Construction

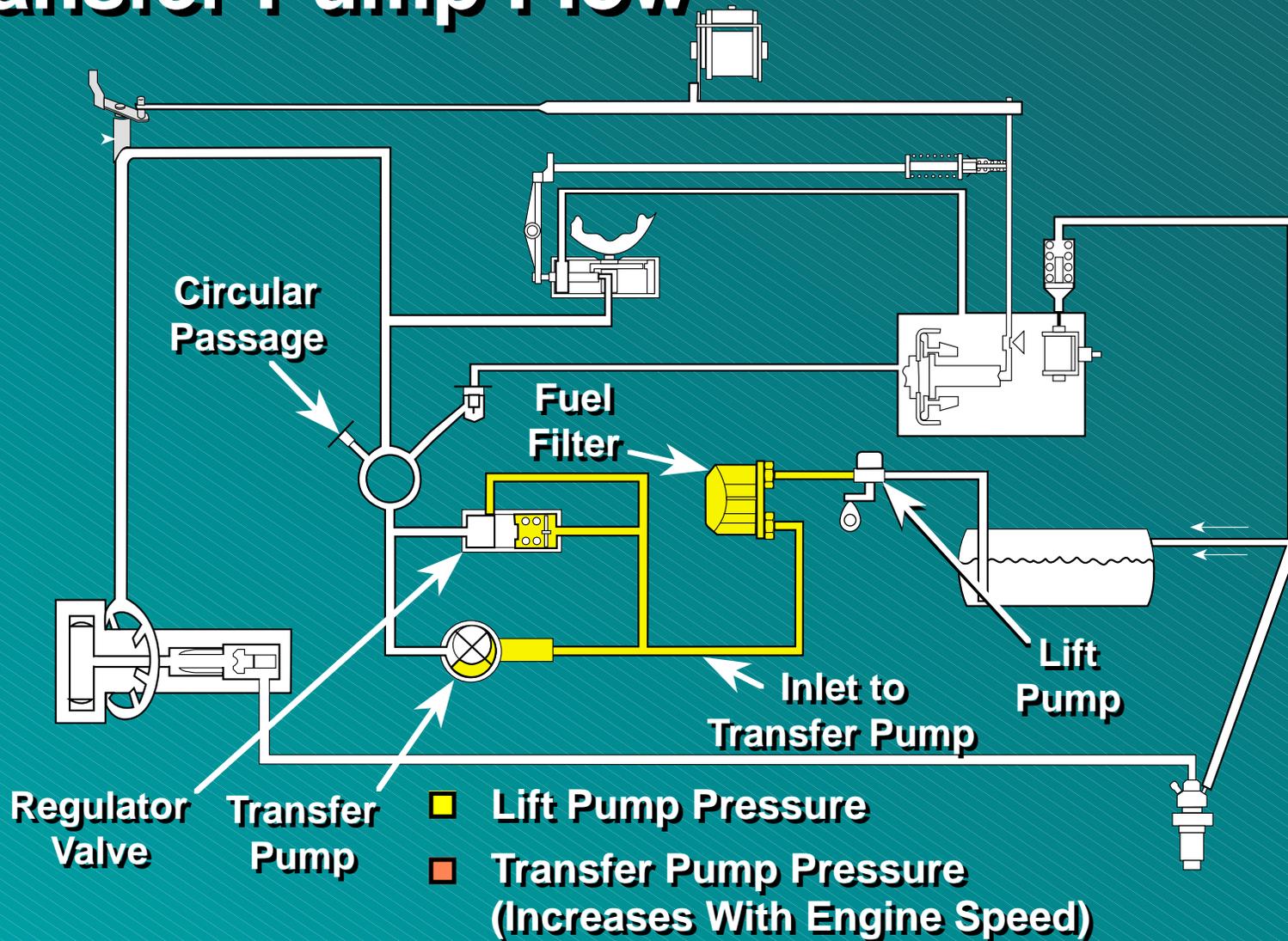


- Housing/Cover
- Drive Shaft
- Rotor
- Head

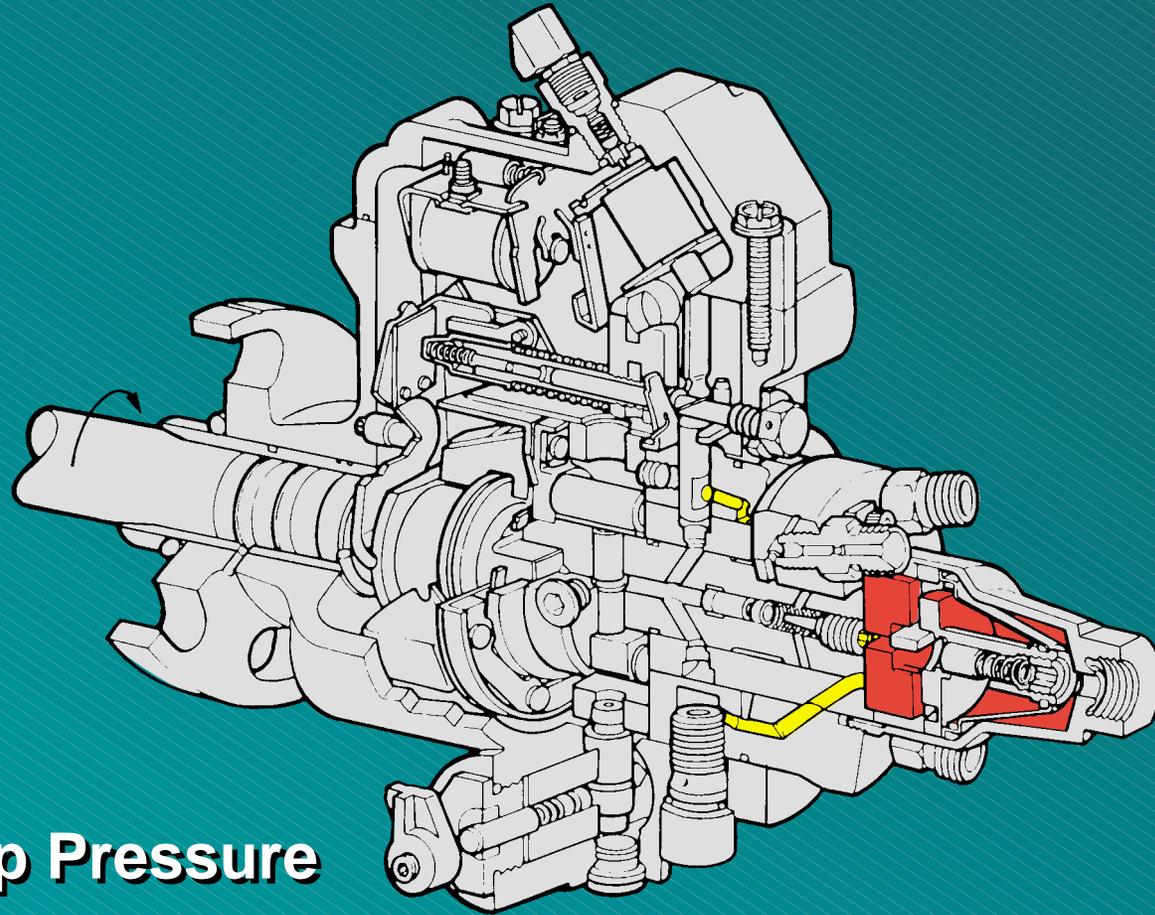
Injection Pump Operation



Transfer Pump Flow

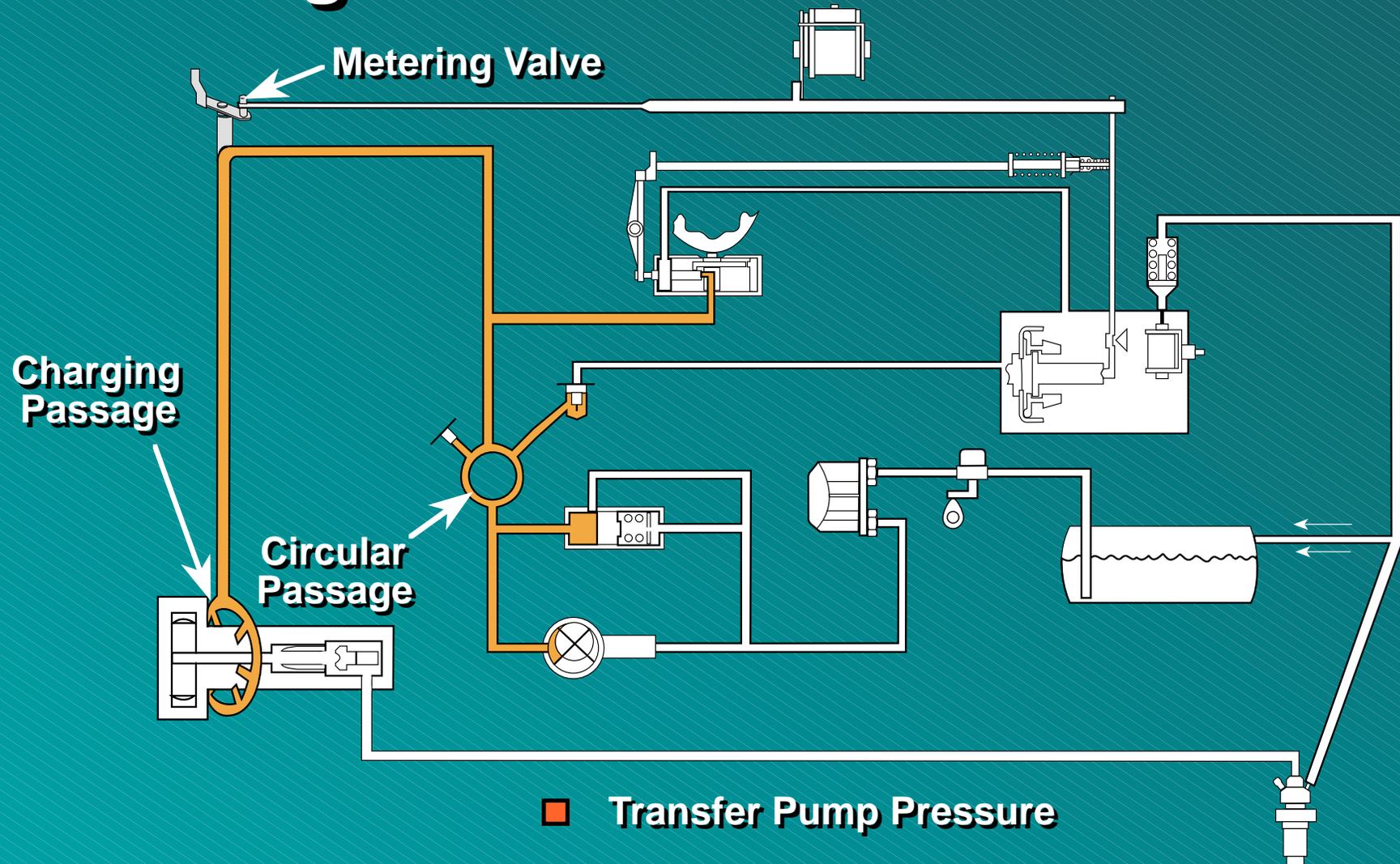


Transfer Pump Operation

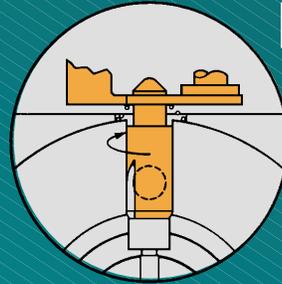
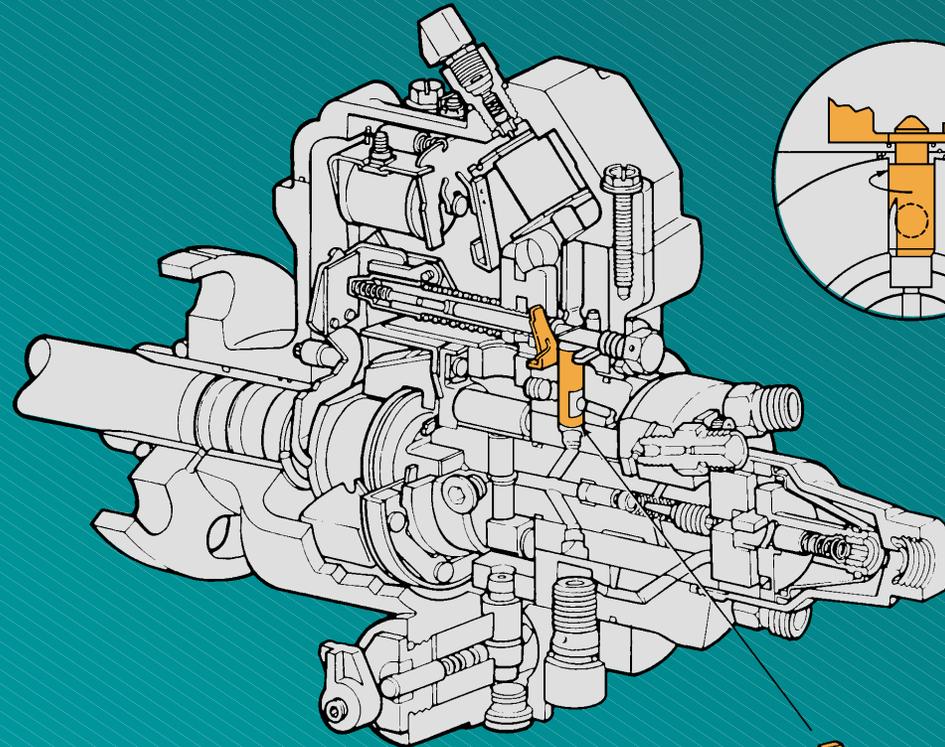


- Lift Pump Pressure
- Transfer Pump Pressure

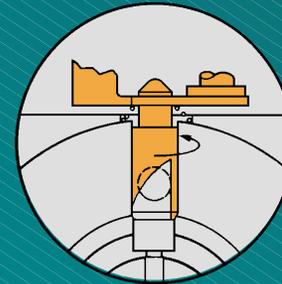
Metering Valve Flow



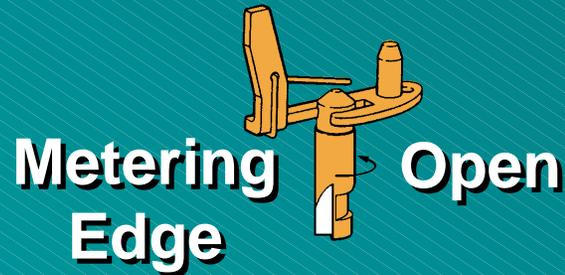
Metering Valve Operation



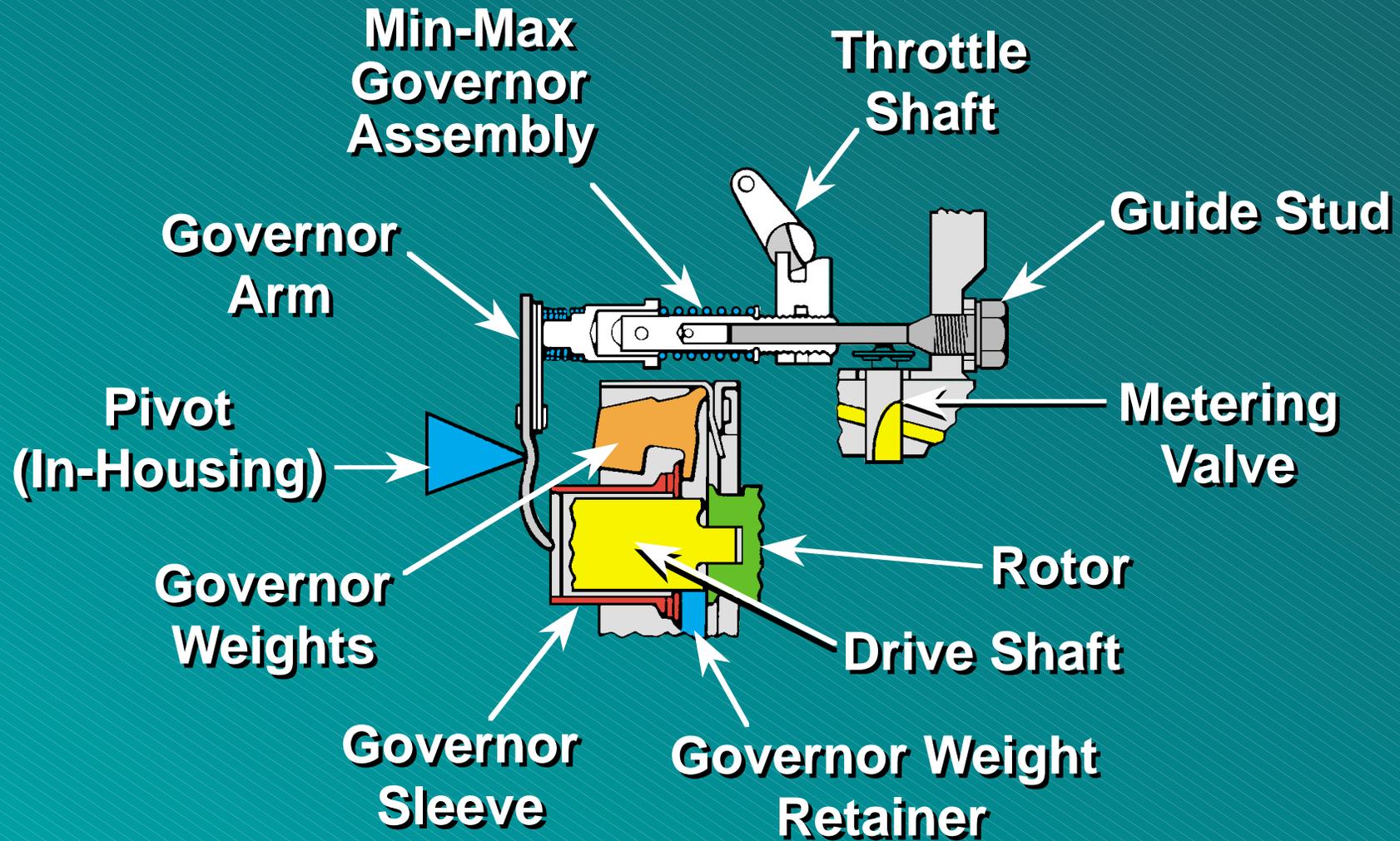
Less Fuel



More Fuel

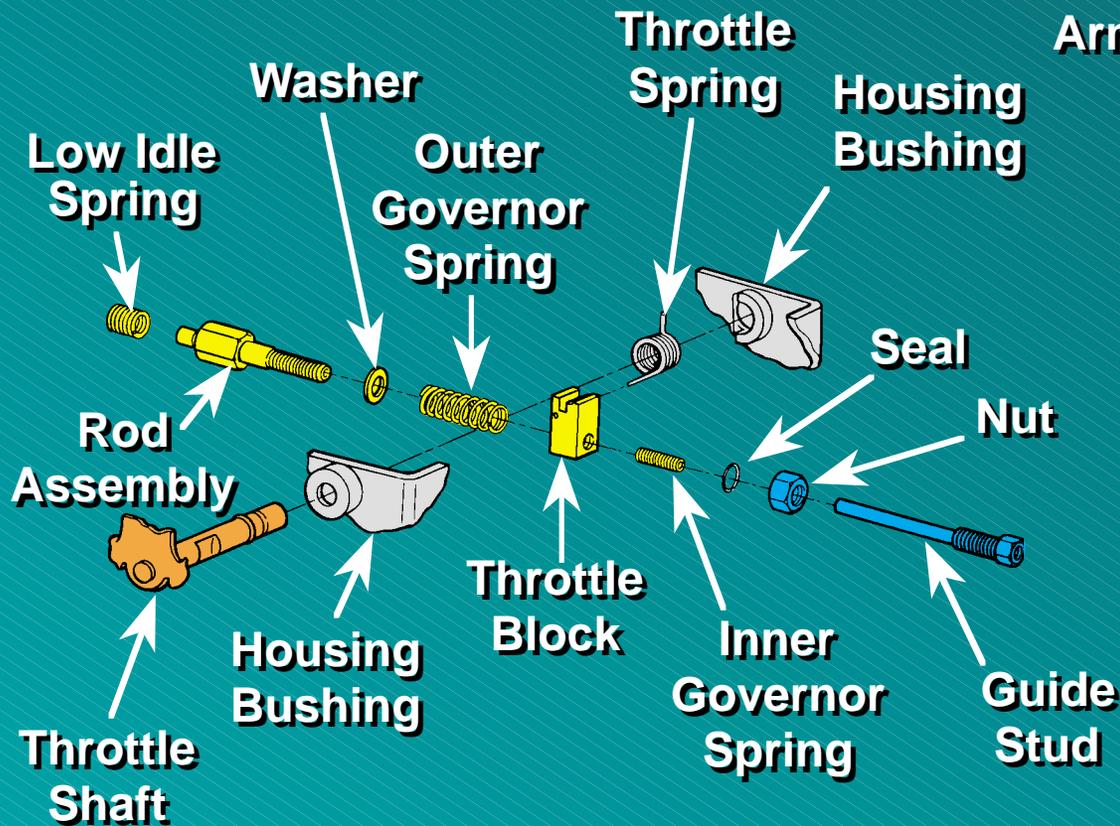


Governor Mechanism Parts

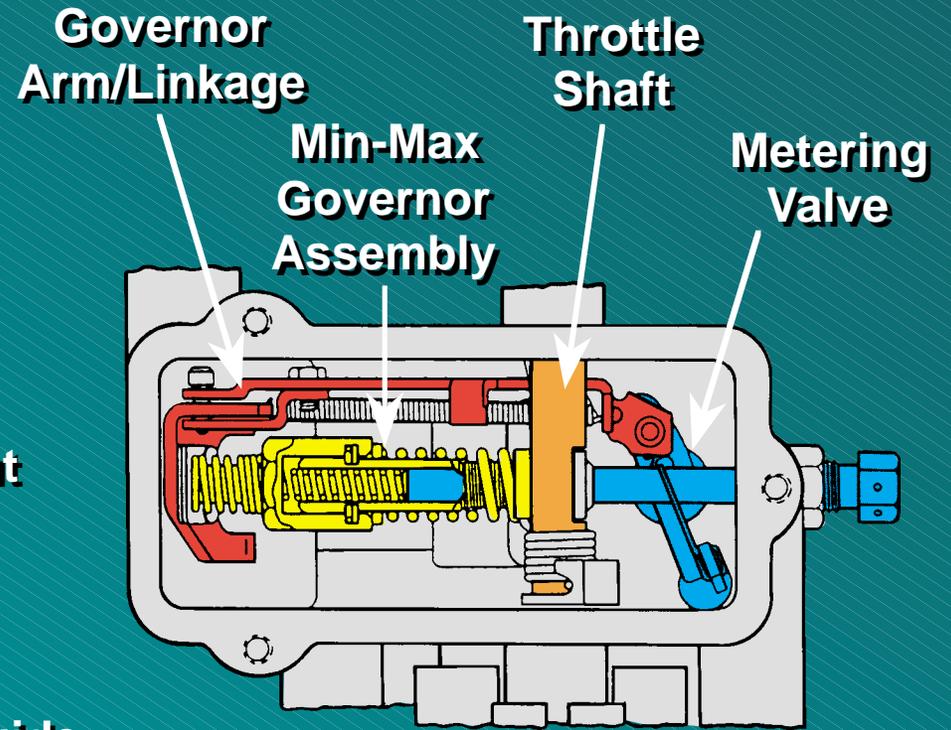


Min-Max Governor Assembly

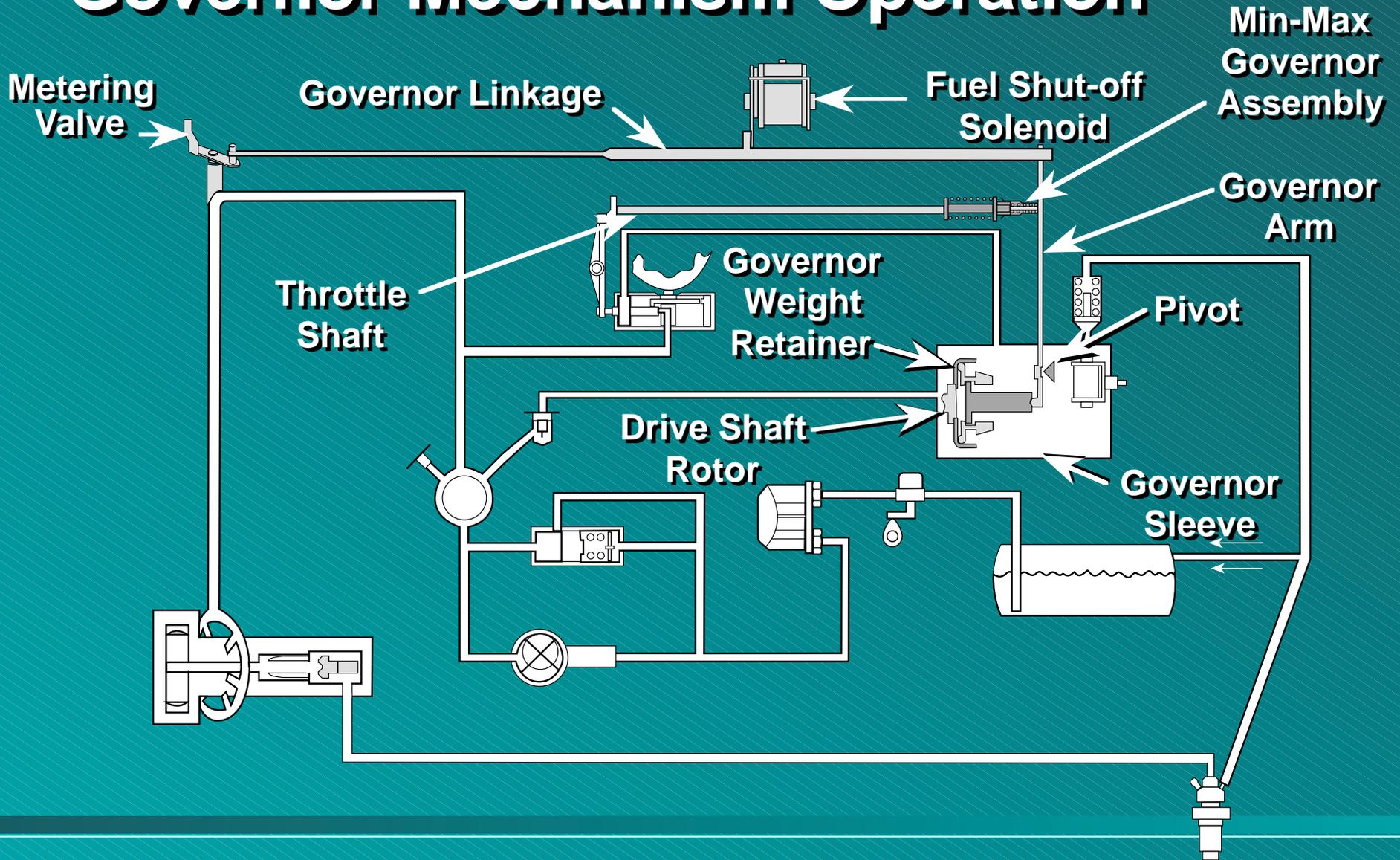
VIEW A



VIEW B

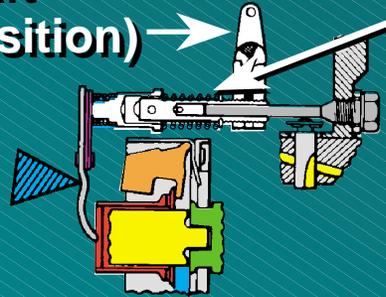


Governor Mechanism Operation

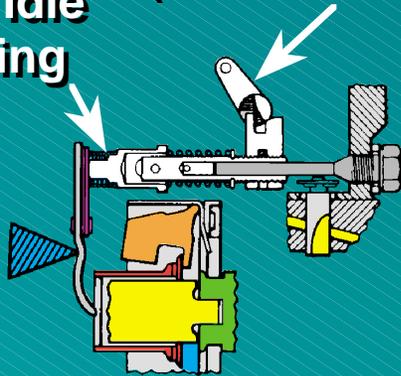


Governor Mechanism Operation

Throttle Shaft
(Half Throttle Position) → Outer Spring

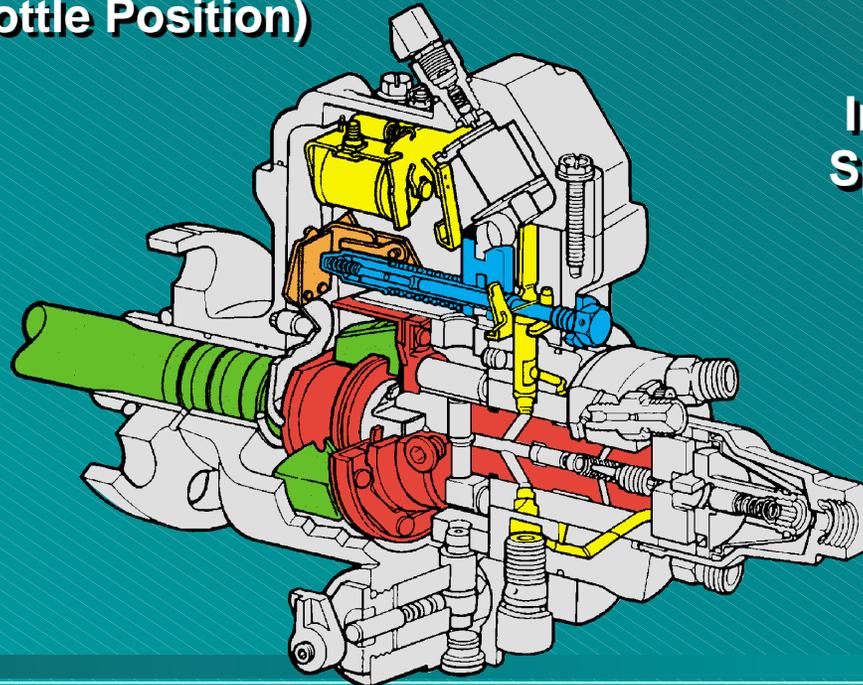
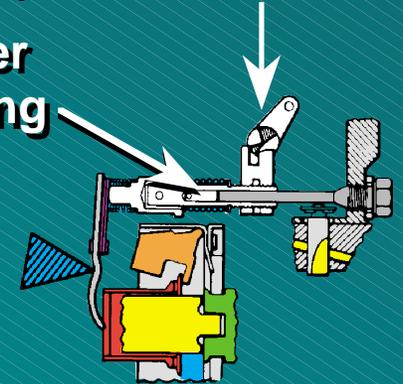


Low Idle Spring
Throttle Shaft
(Low Idle Throttle Position)

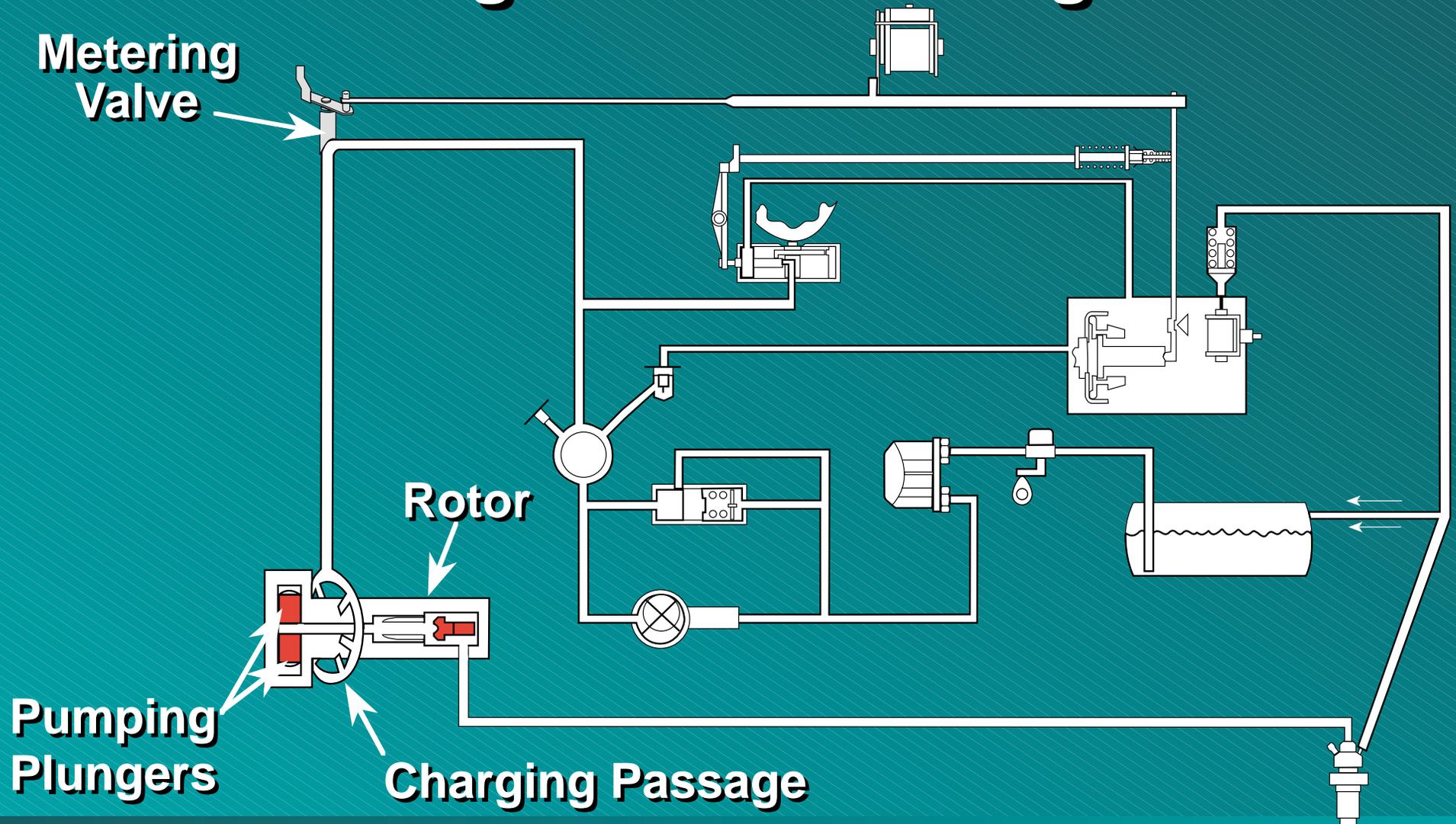


Throttle Shaft
(Full Throttle Position)

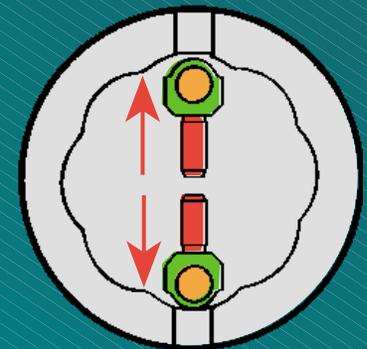
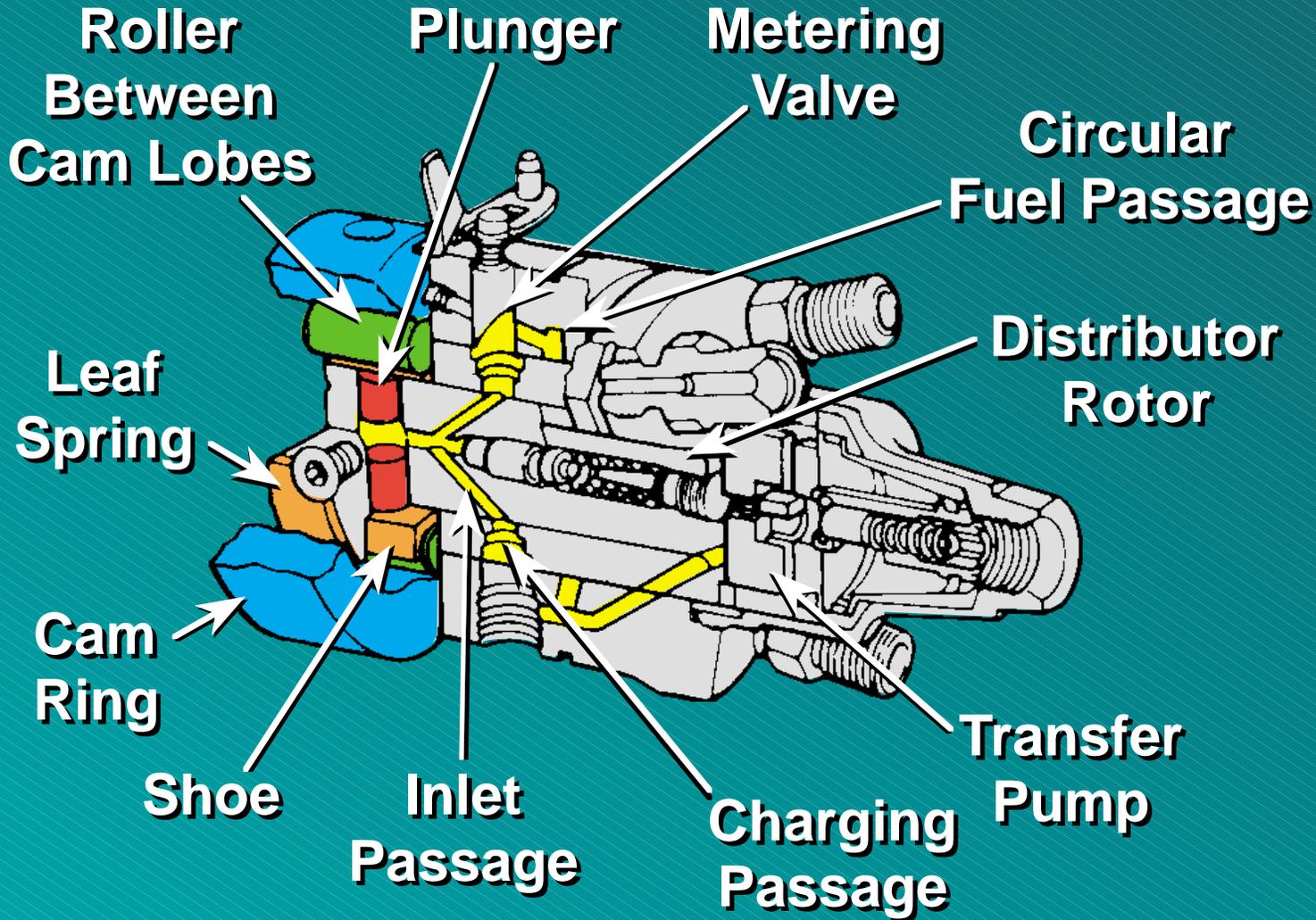
Inner Spring



Pressurizing and Distributing

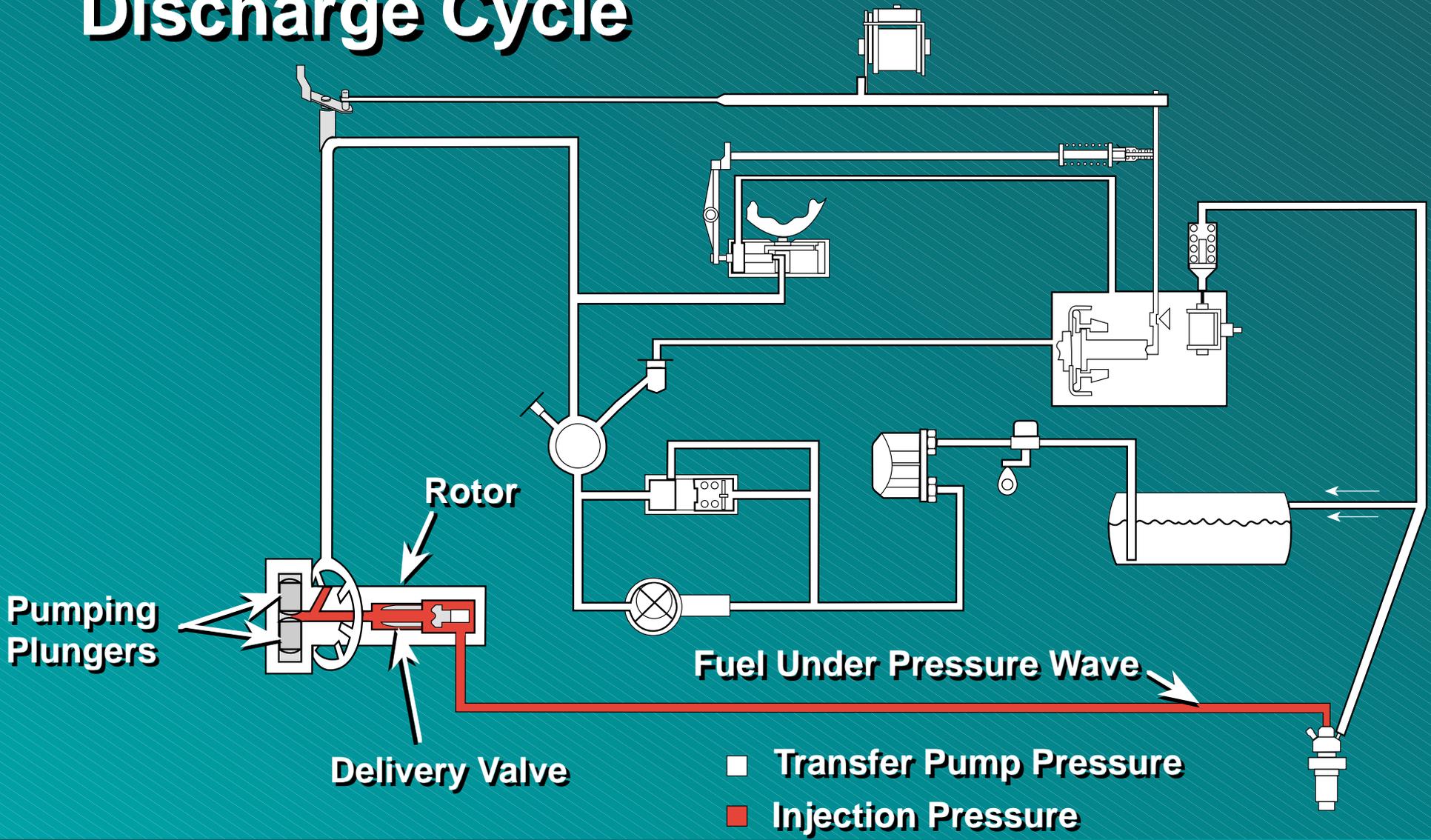


Charge Cycle



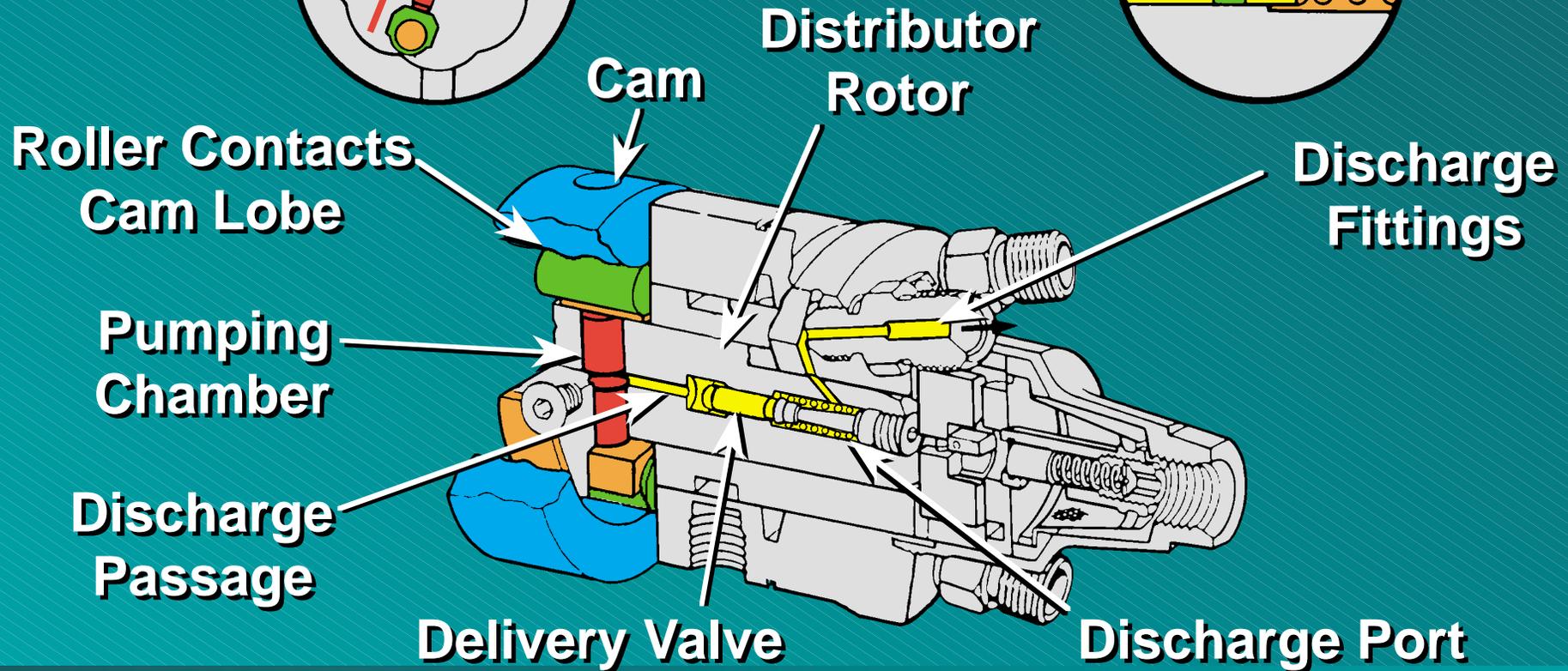
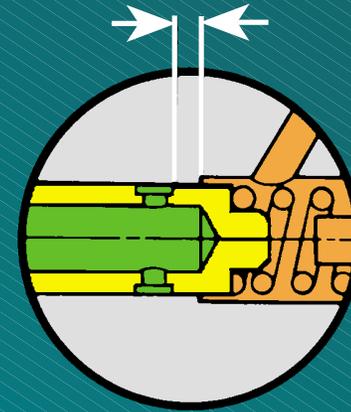
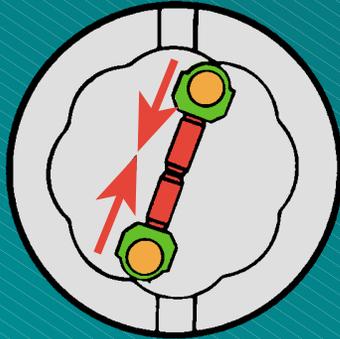
Plunger
Movement

Discharge Cycle

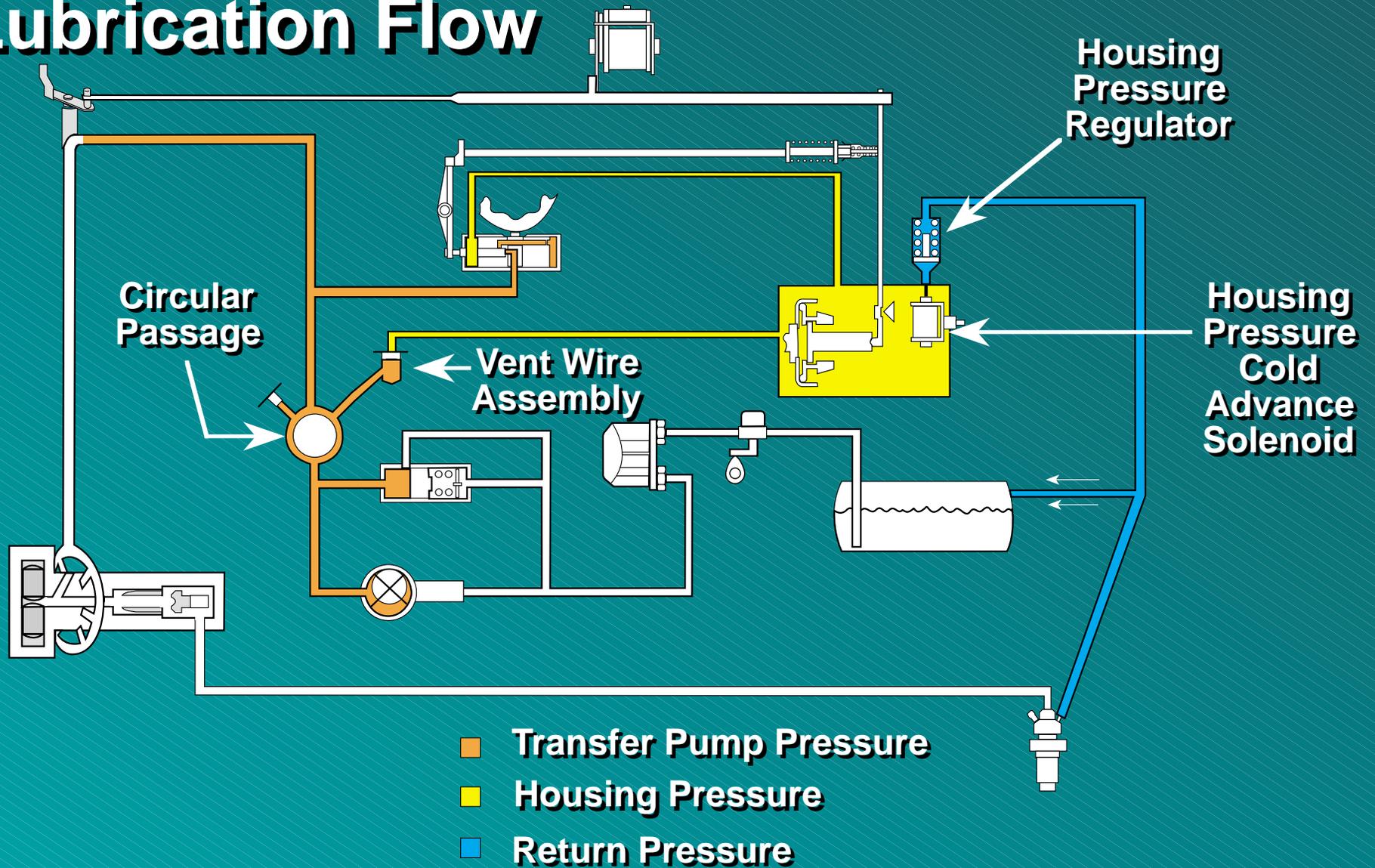


Discharge Cycle

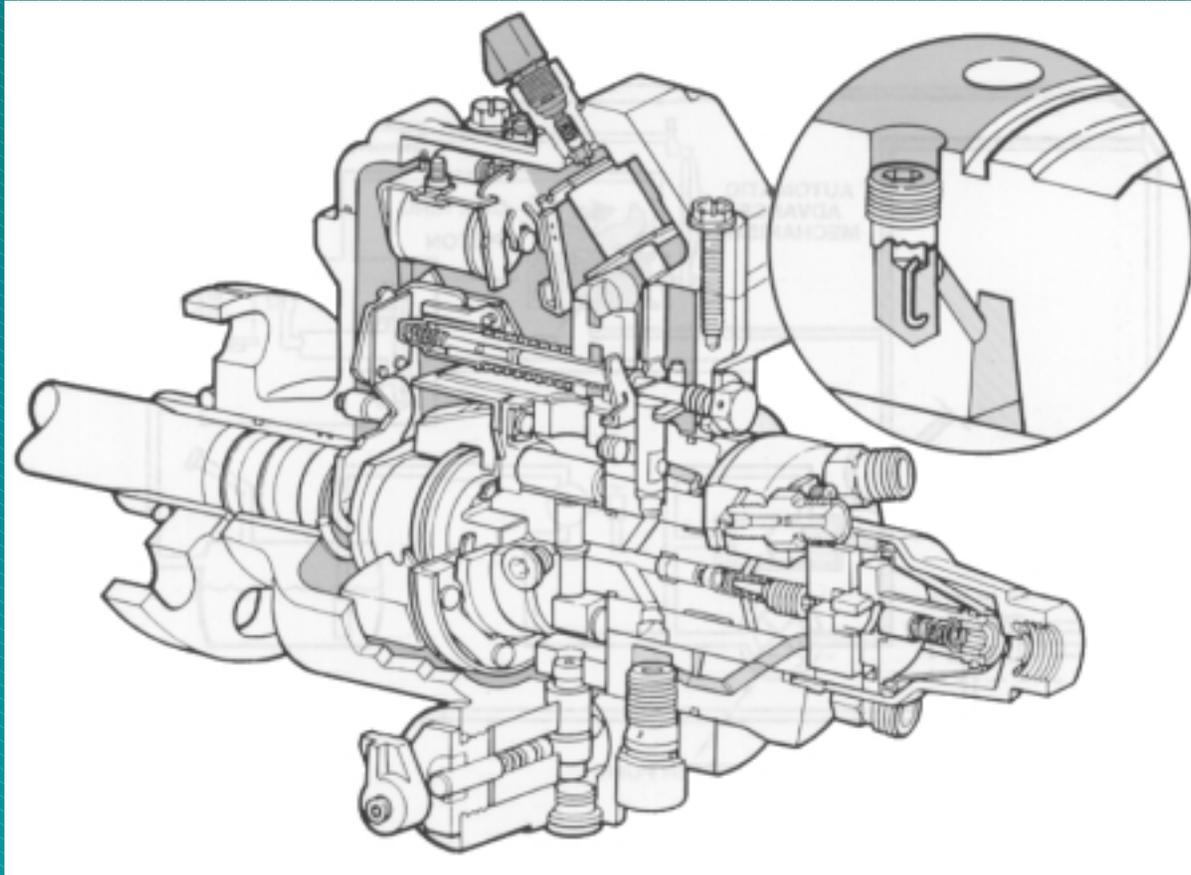
Valve Retracts
Before Fuel Moves



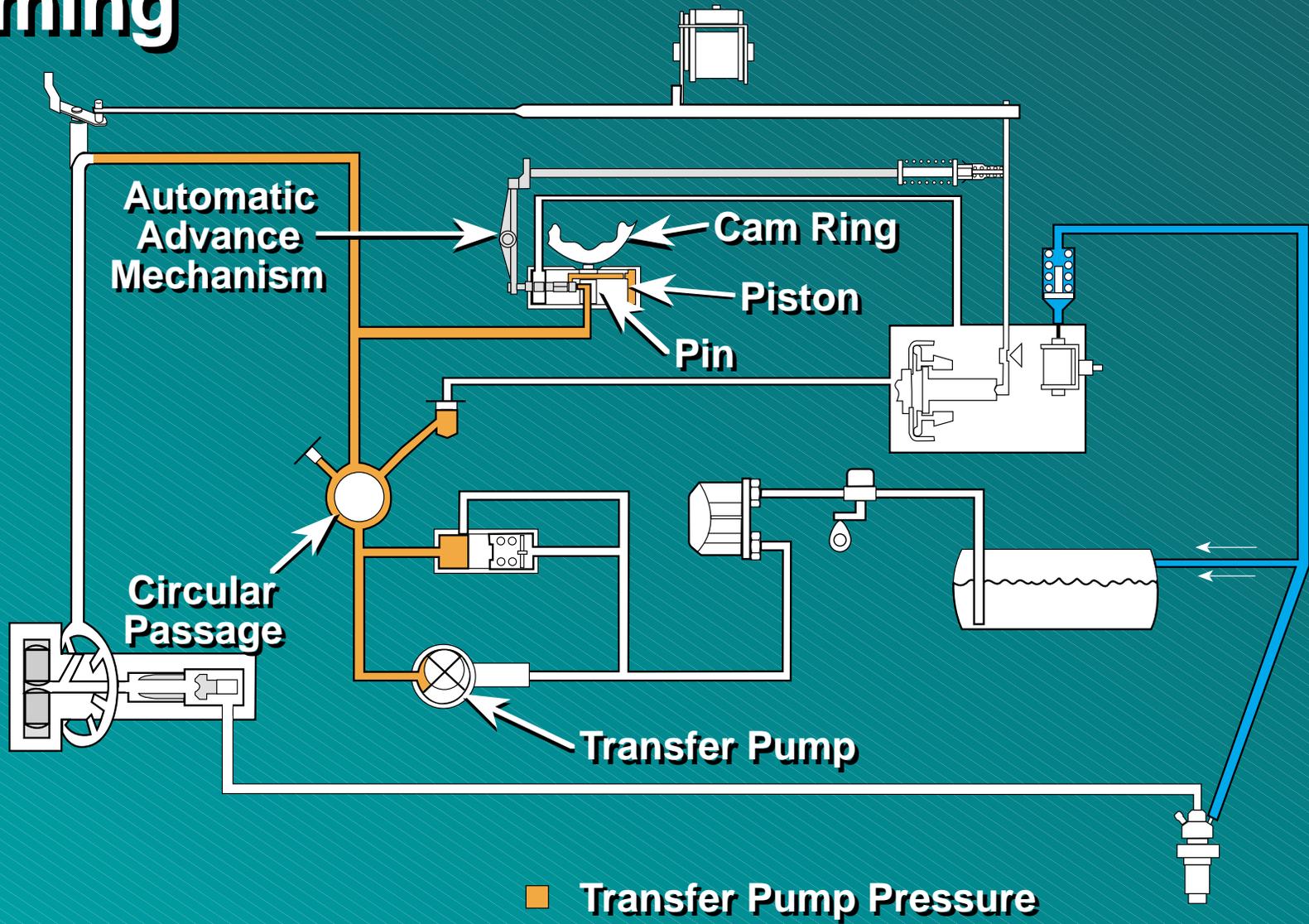
Lubrication Flow



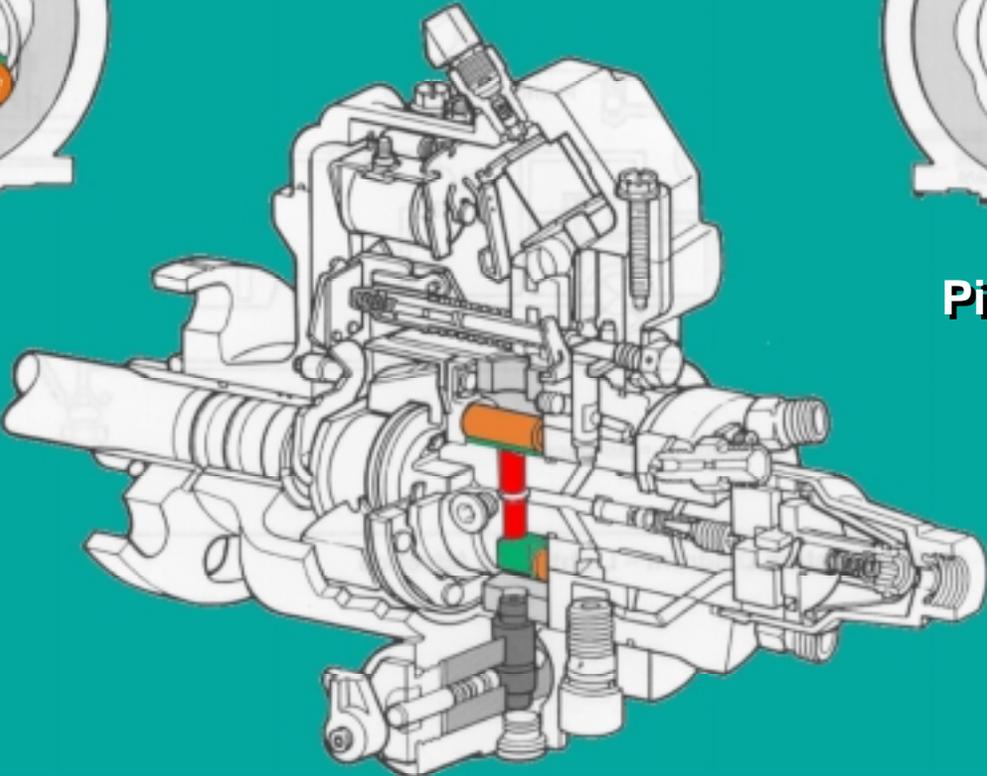
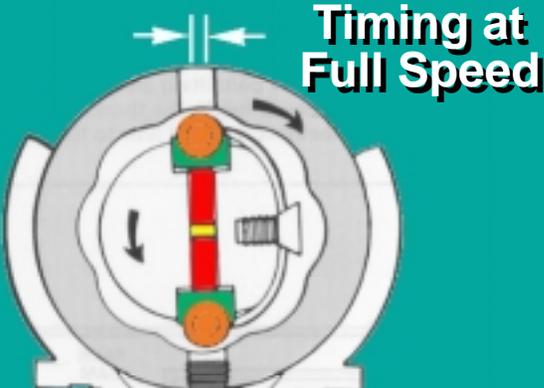
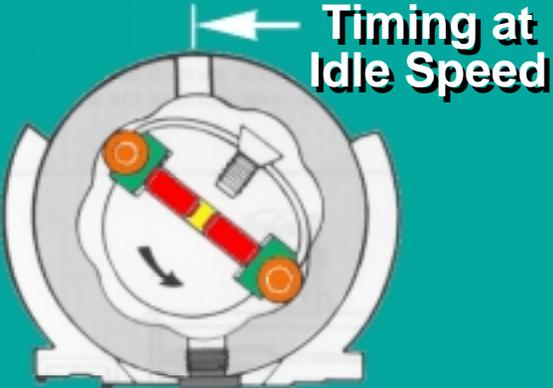
Lubrication



Timing

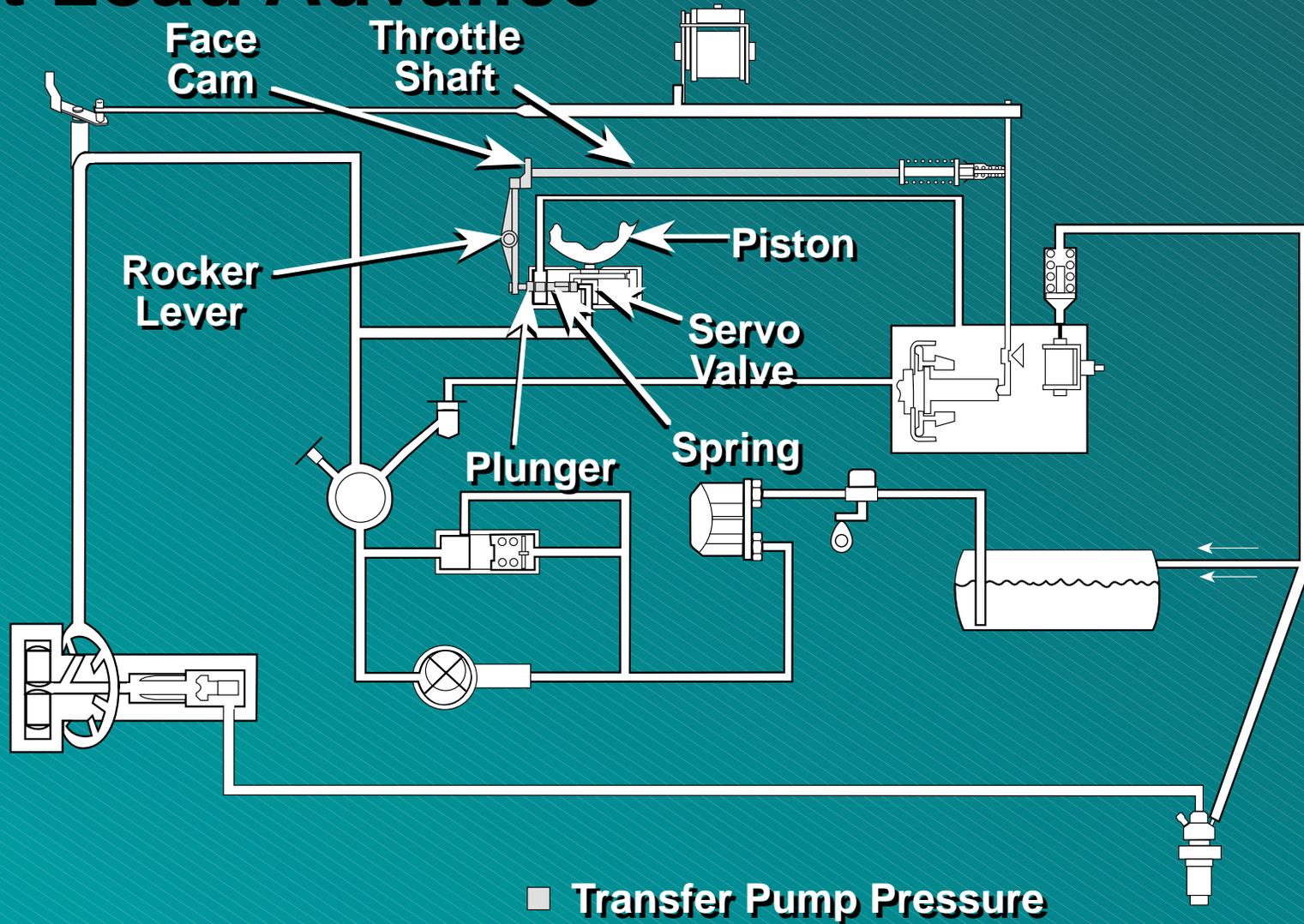


Timing

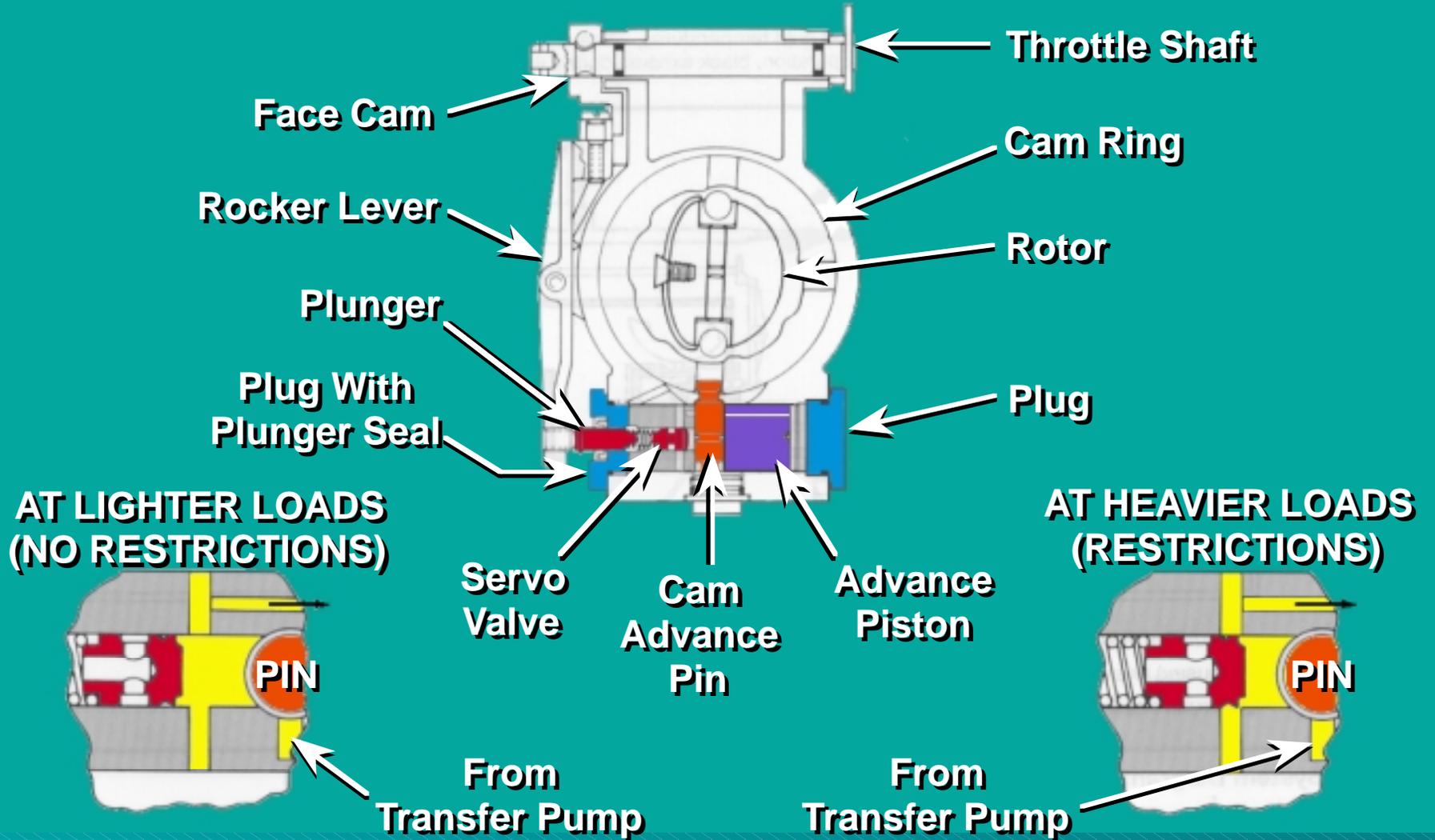


← **Piston Moves**

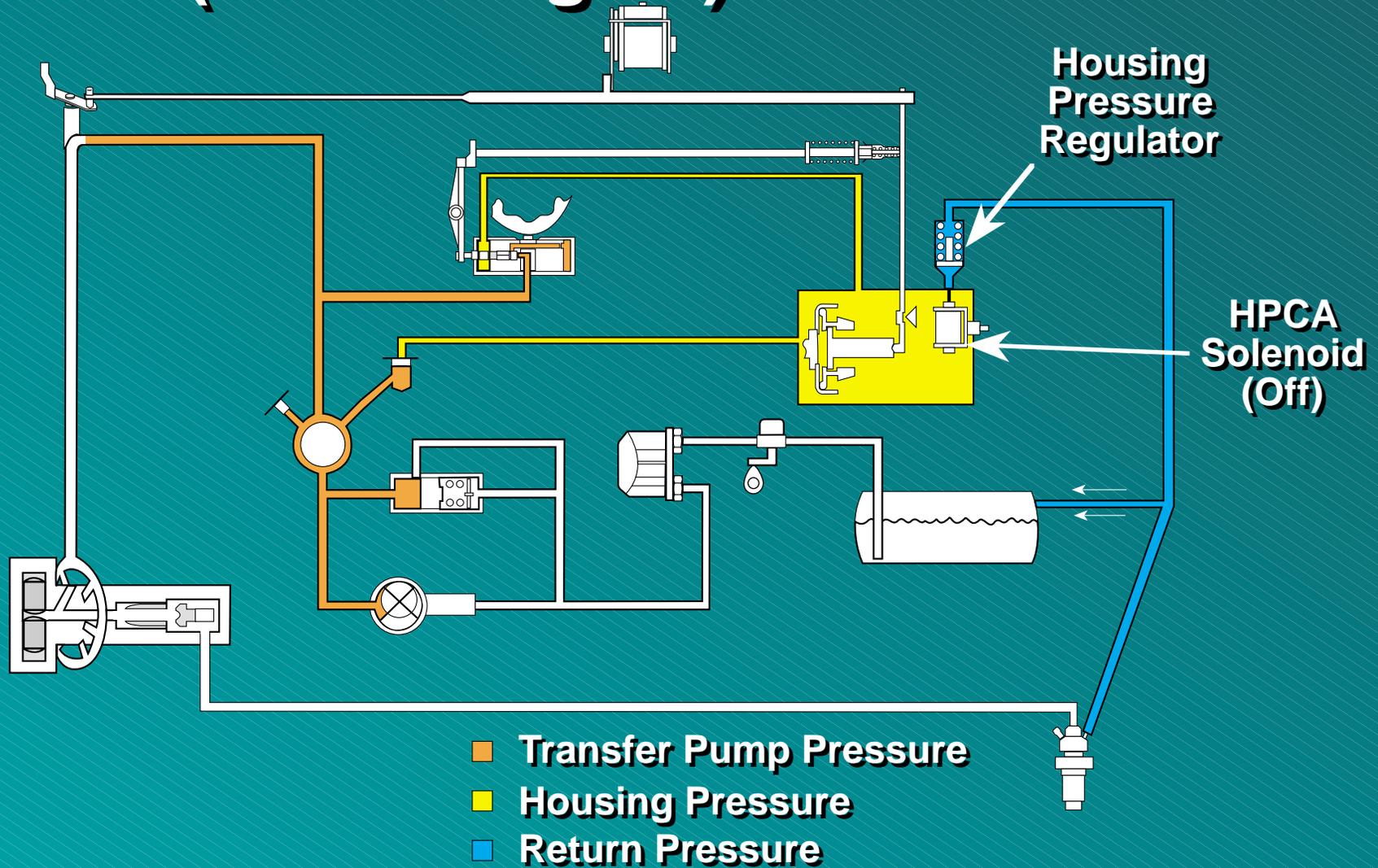
Light Load Advance



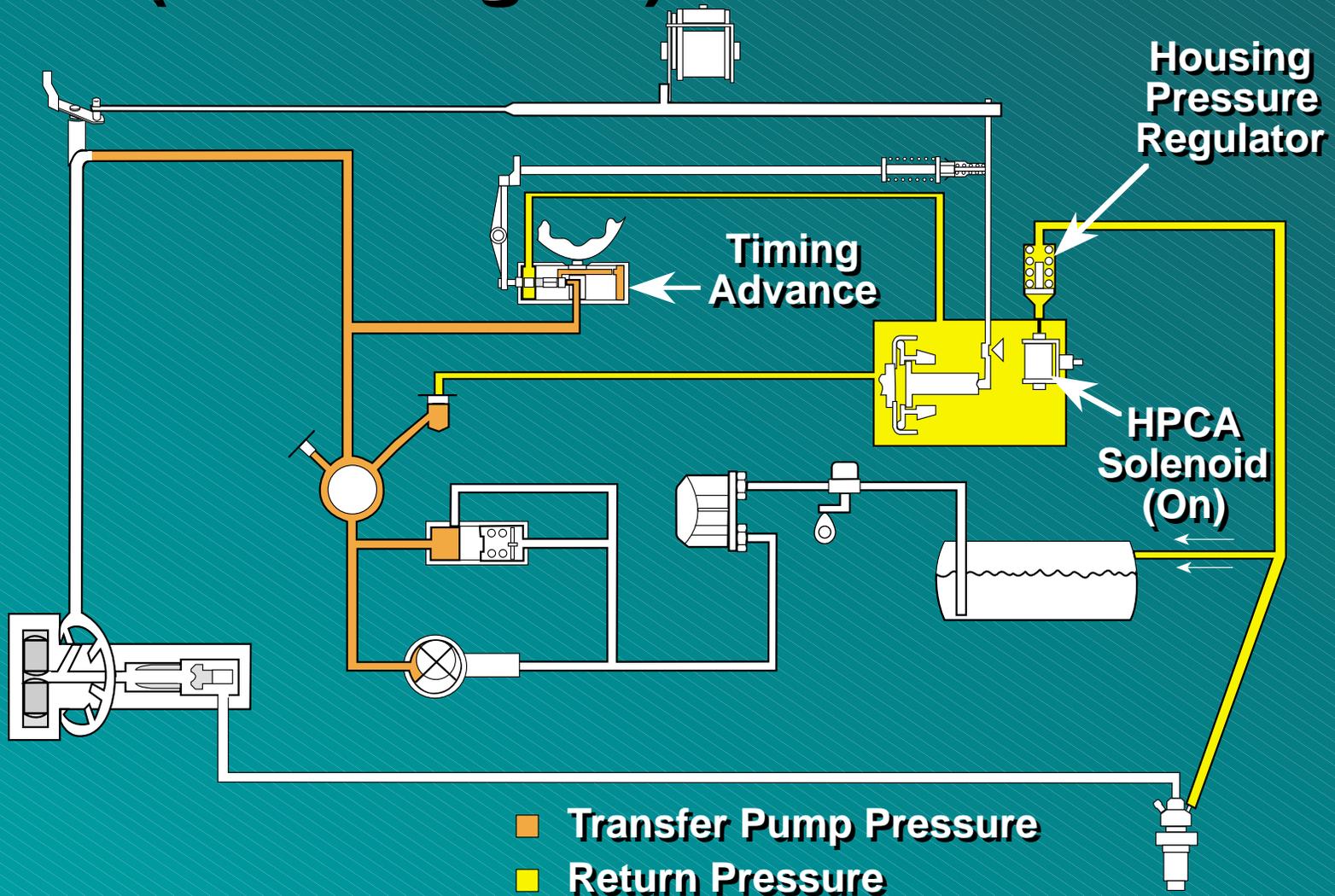
Light Load Advance



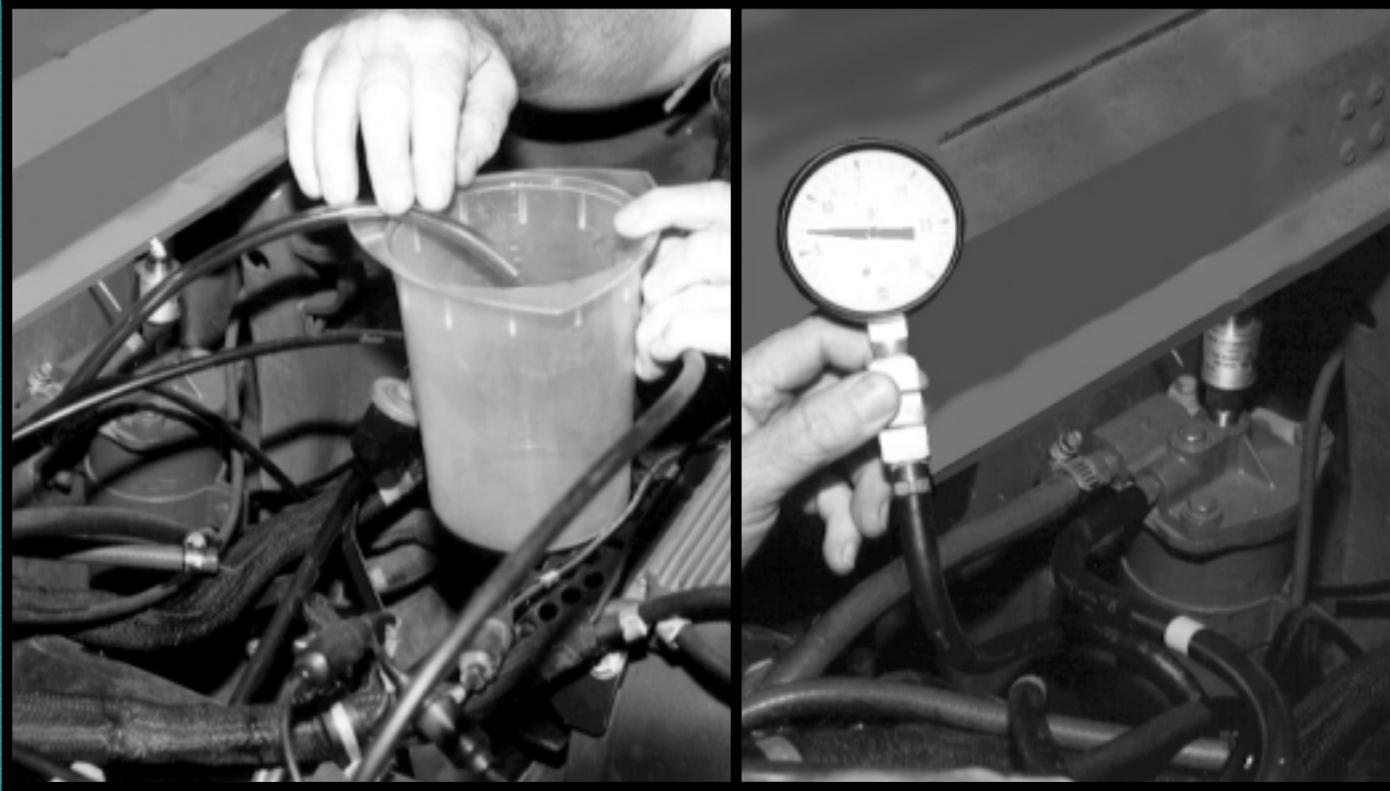
HPCA (Warm Engine)



HPCA (Cold Engine)



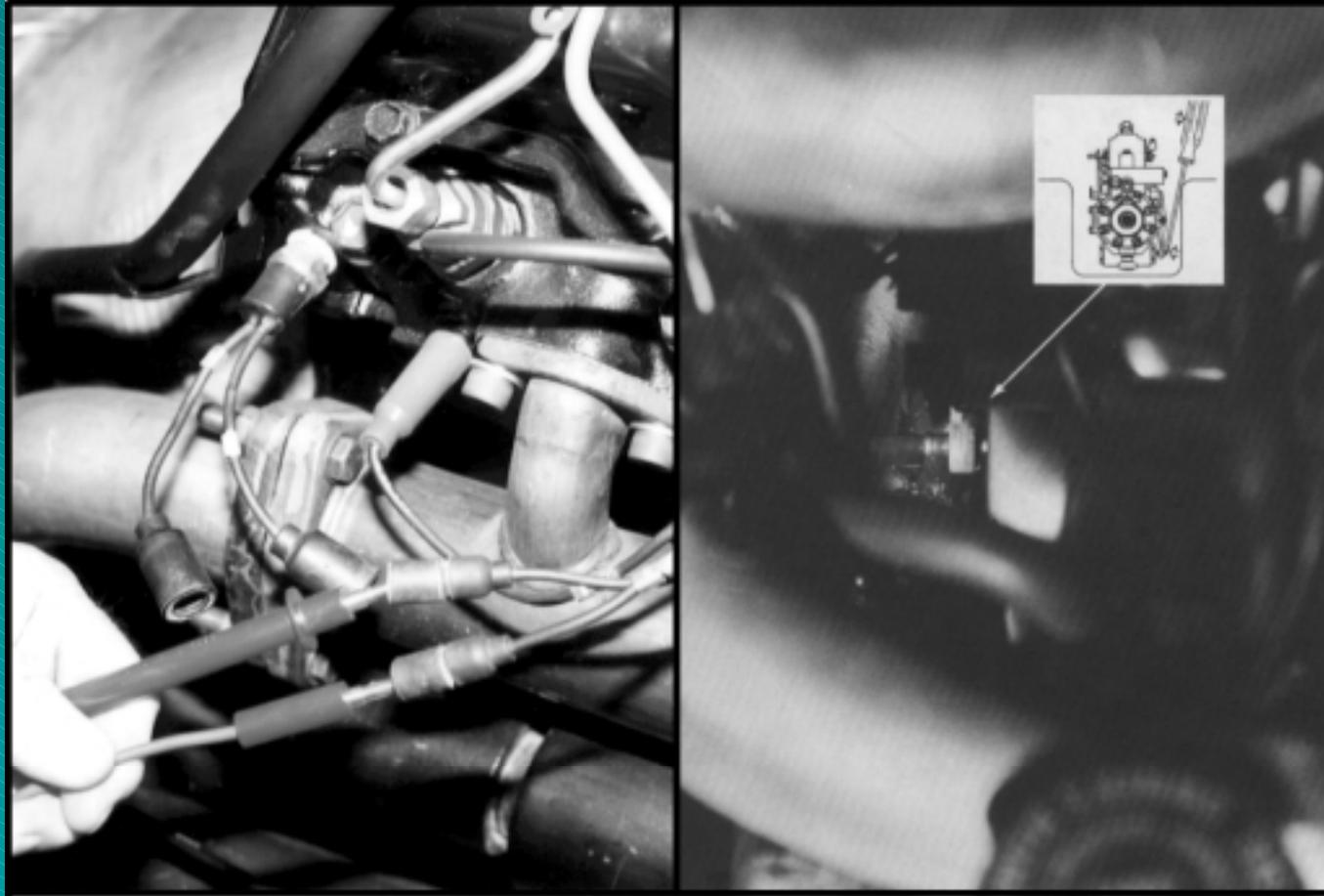
Fuel Supply Checks



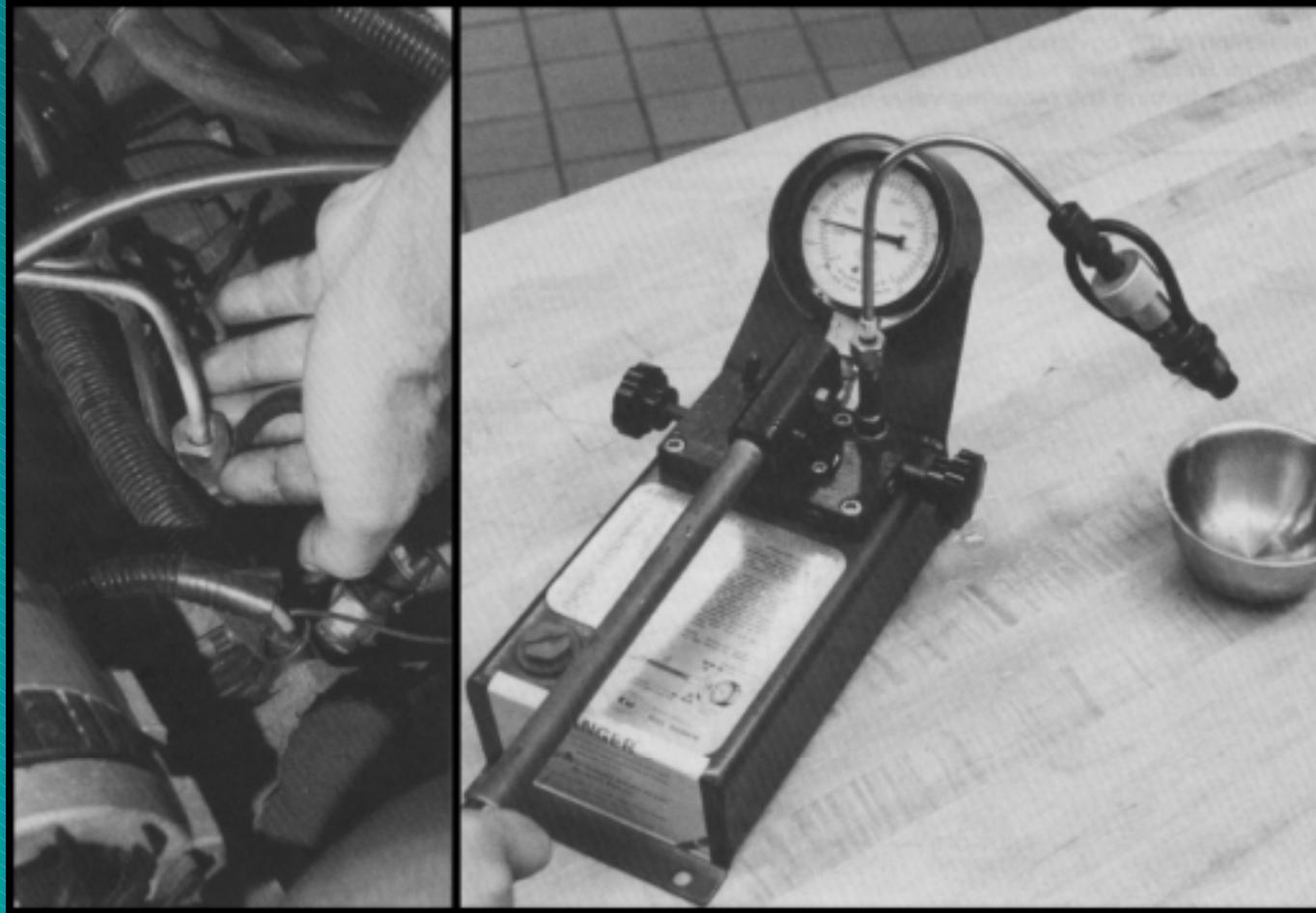
Fuel Return Pressure Checks



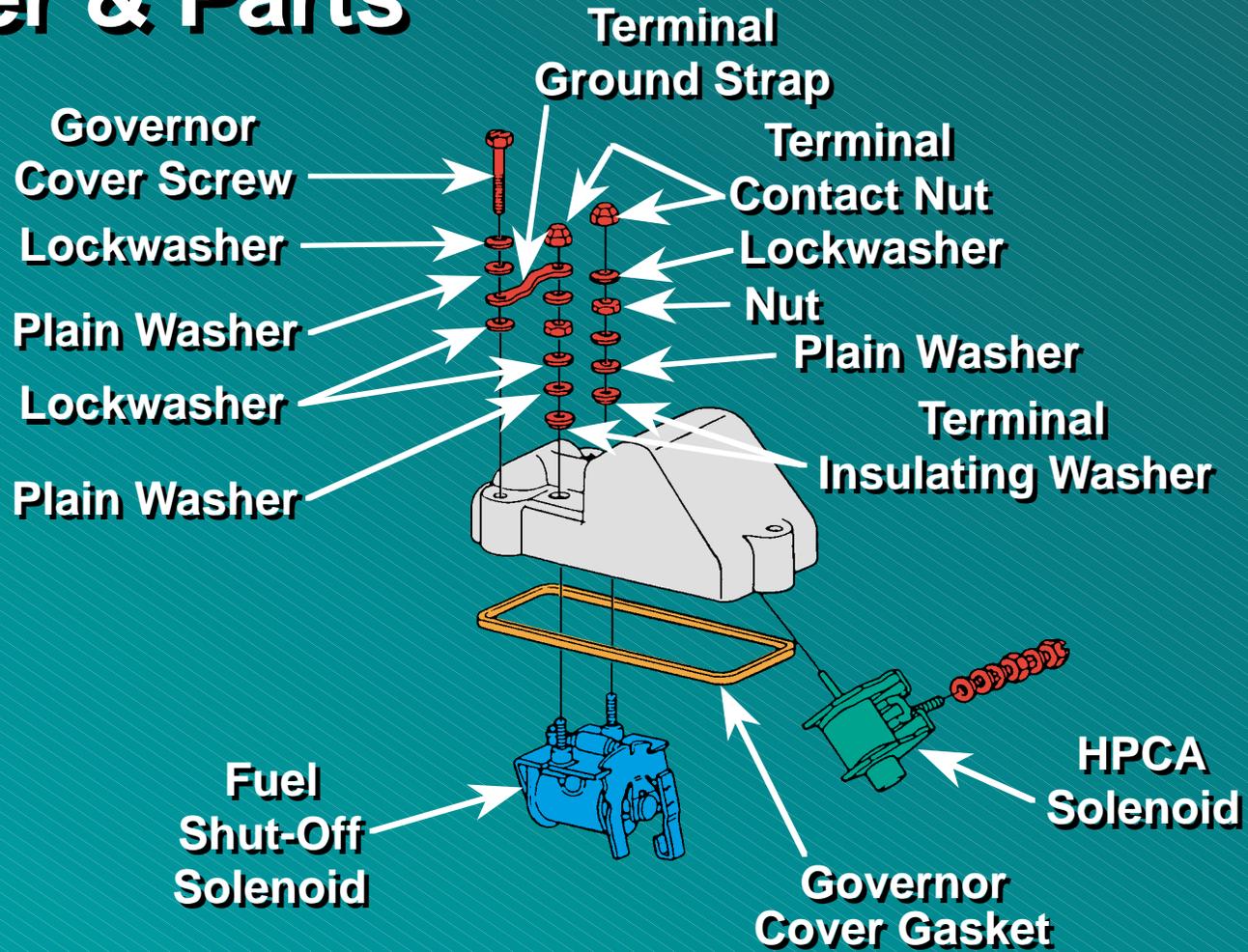
Advance Mechanism Checks



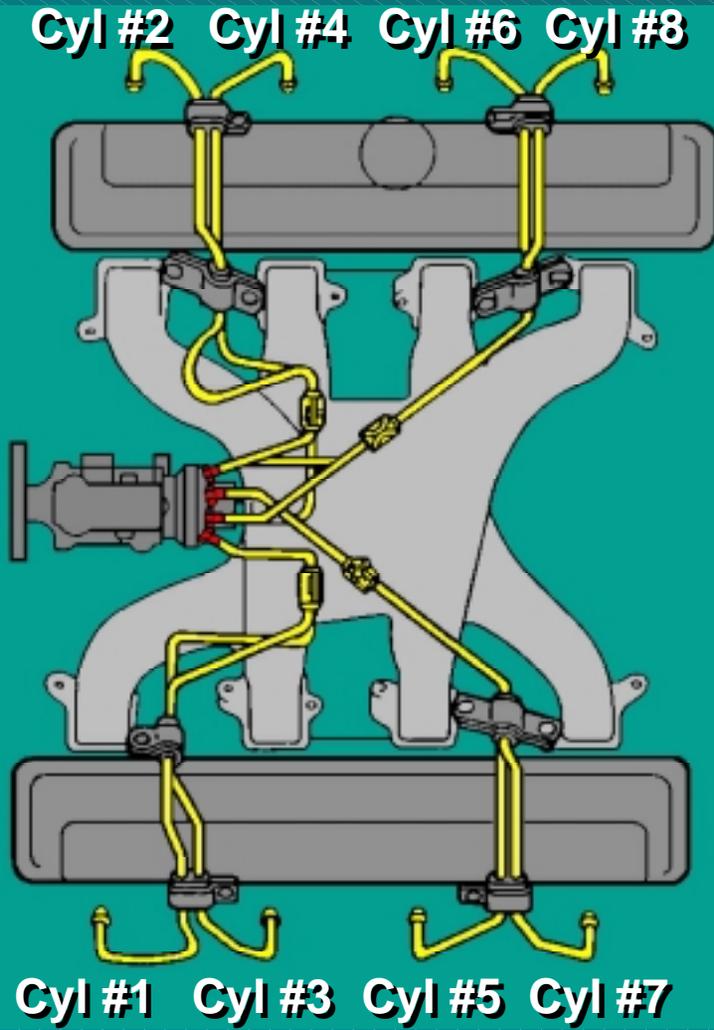
Injection Line & Nozzle Checks



Injection Pump Governor Cover & Parts



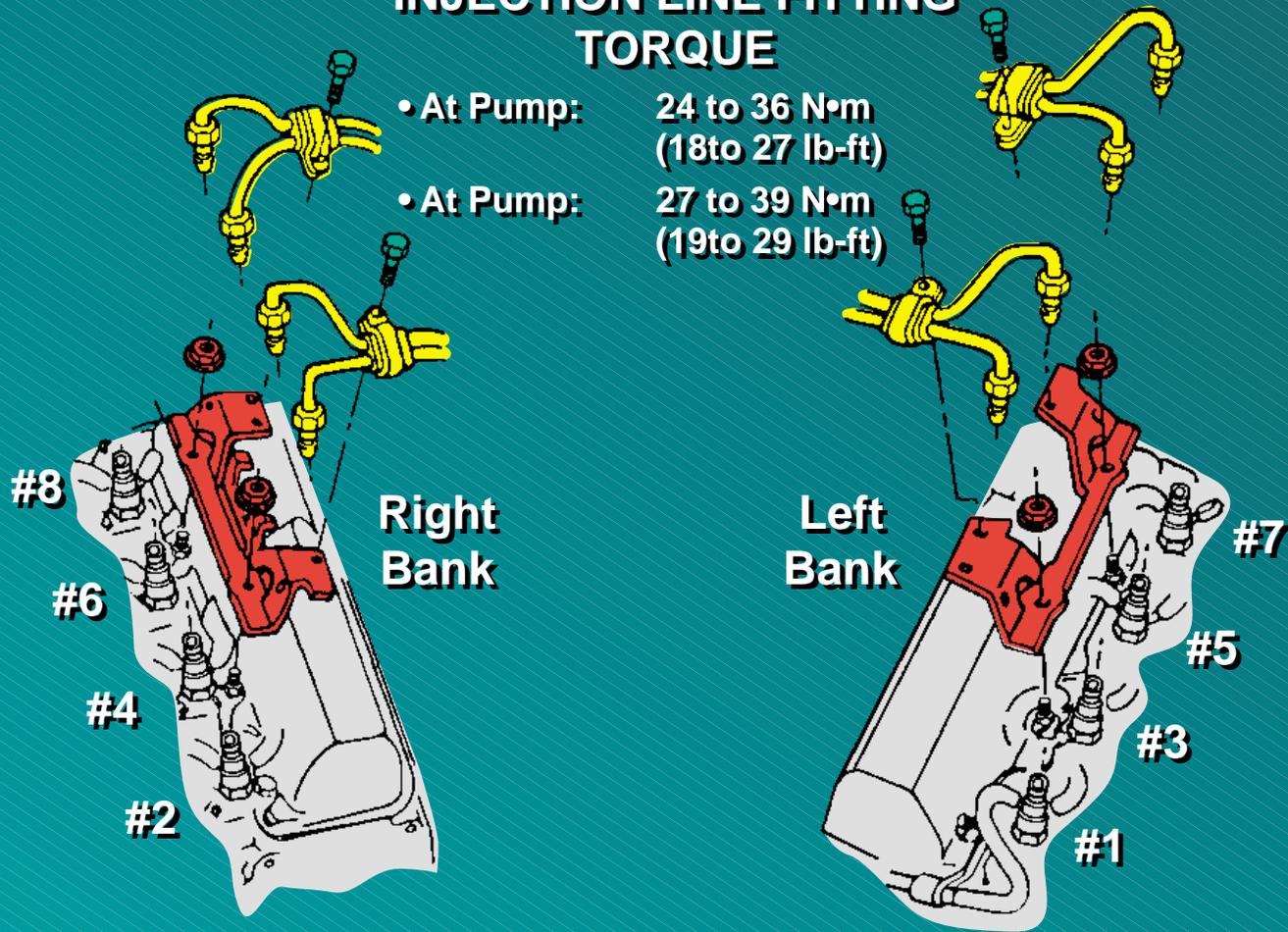
Injection Lines



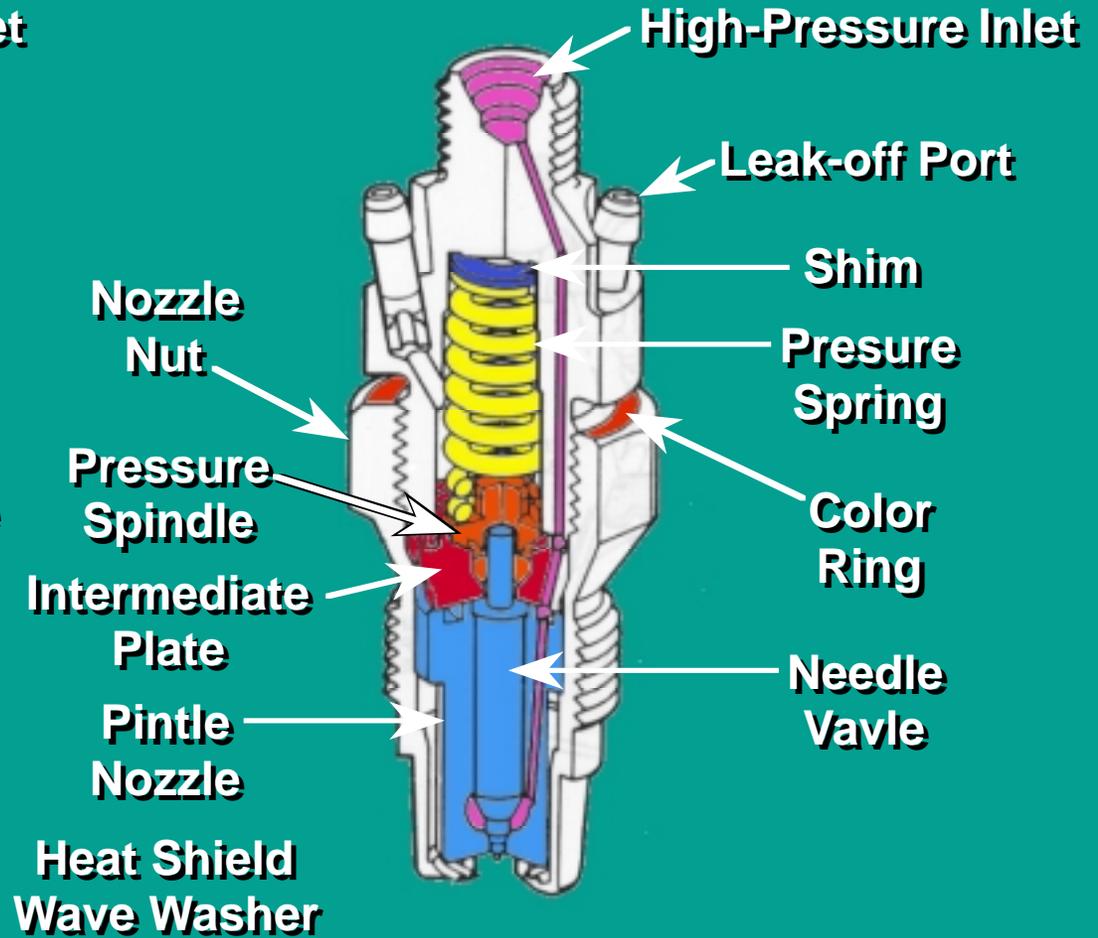
Injection Lines

INJECTION LINE FITTING TORQUE

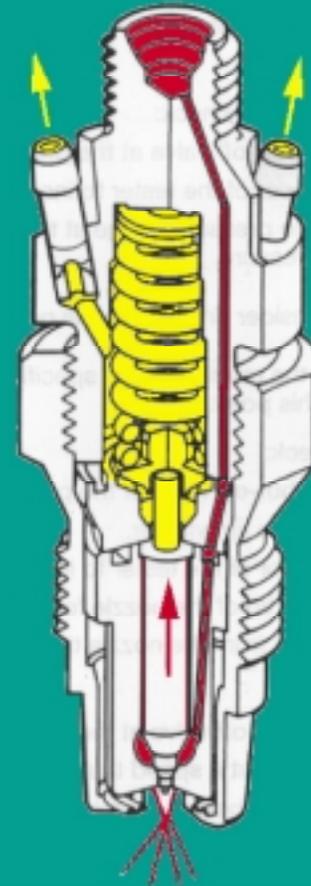
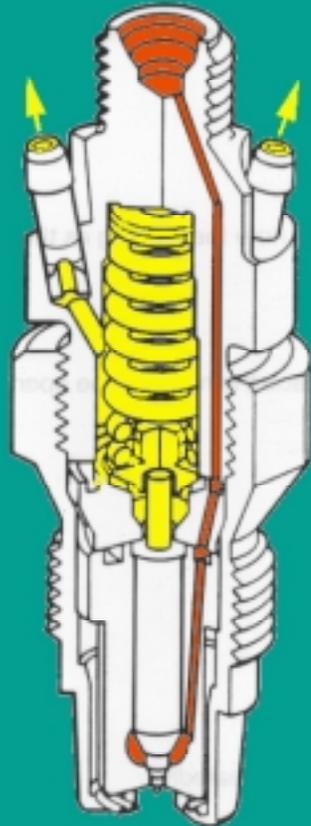
- At Pump: 24 to 36 N•m (18 to 27 lb-ft)
- At Pump: 27 to 39 N•m (19 to 29 lb-ft)



Construction and Operation



Injection Nozzle Operation



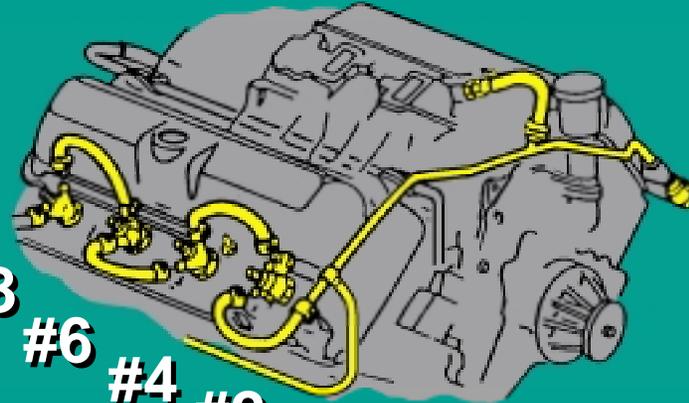
- Residual Pressure
- Injection Pressure
- Return Pressure

Injection Nozzle Testing

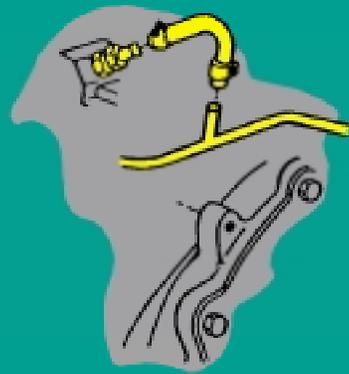


Fuel Return System

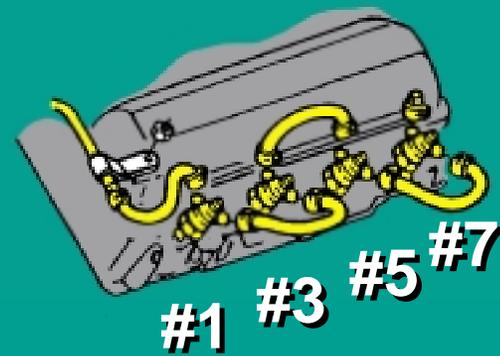
VIEW A



VIEW B



VIEW C



#8
#6
#4
#2

#1
#3
#5
#7