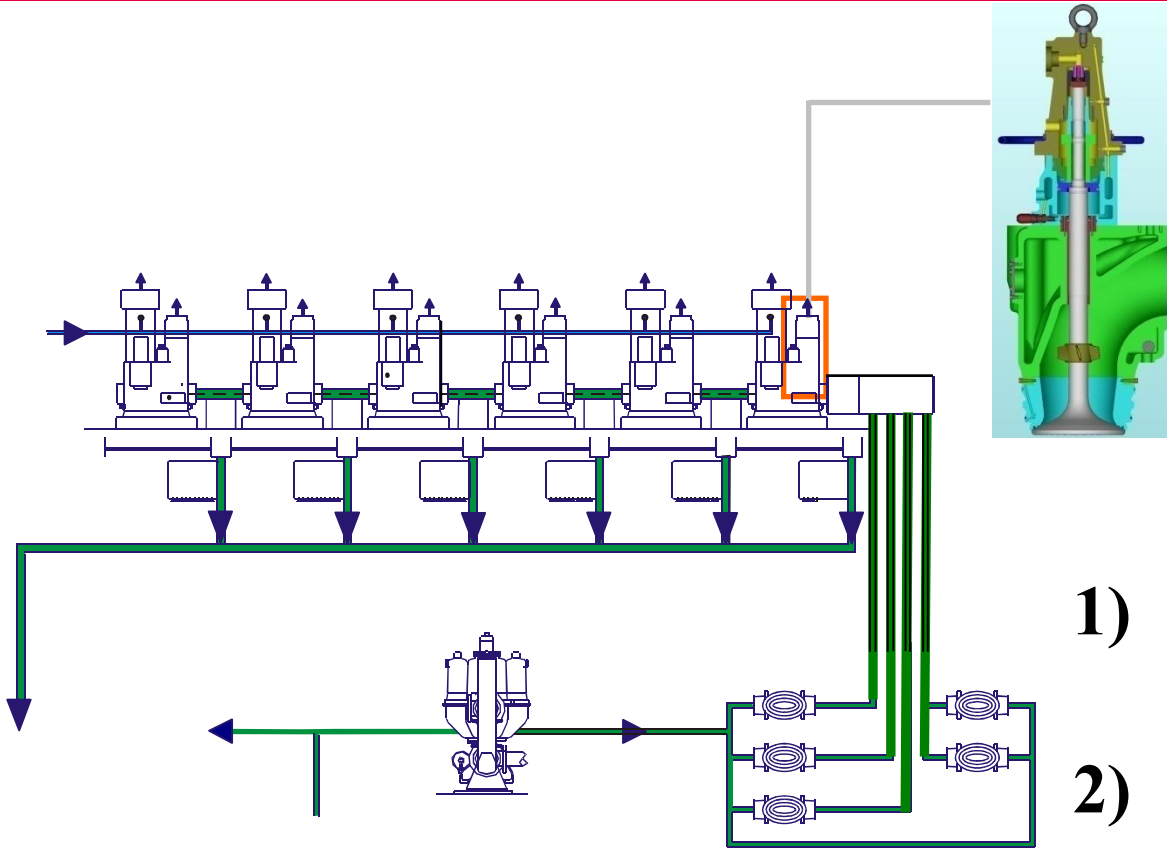


MAN Diesel PrimeServ Academy

Exhaust Valve Design

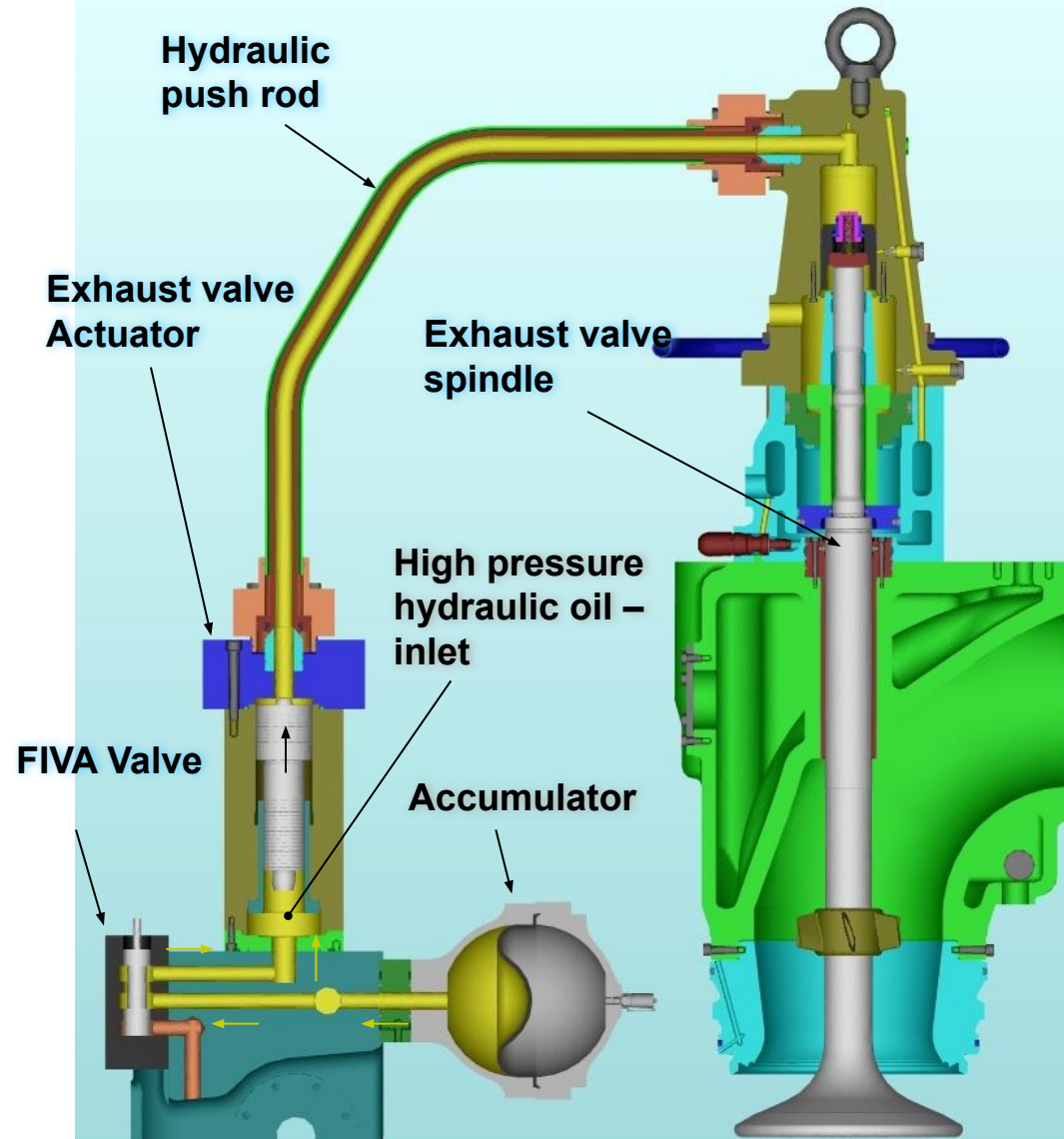
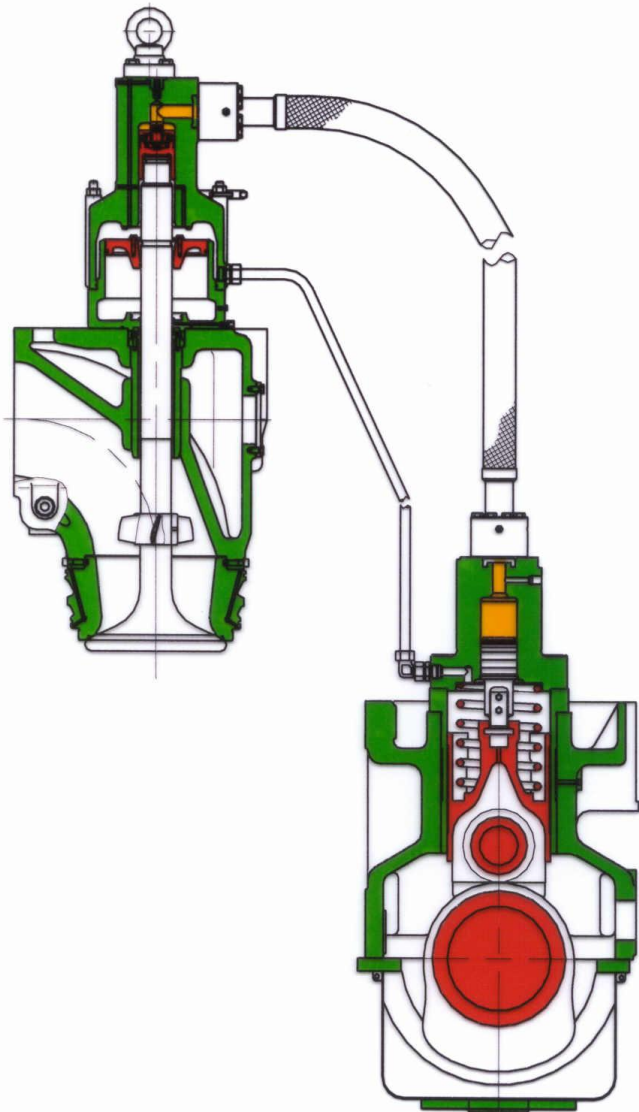


Exhaust Valve System

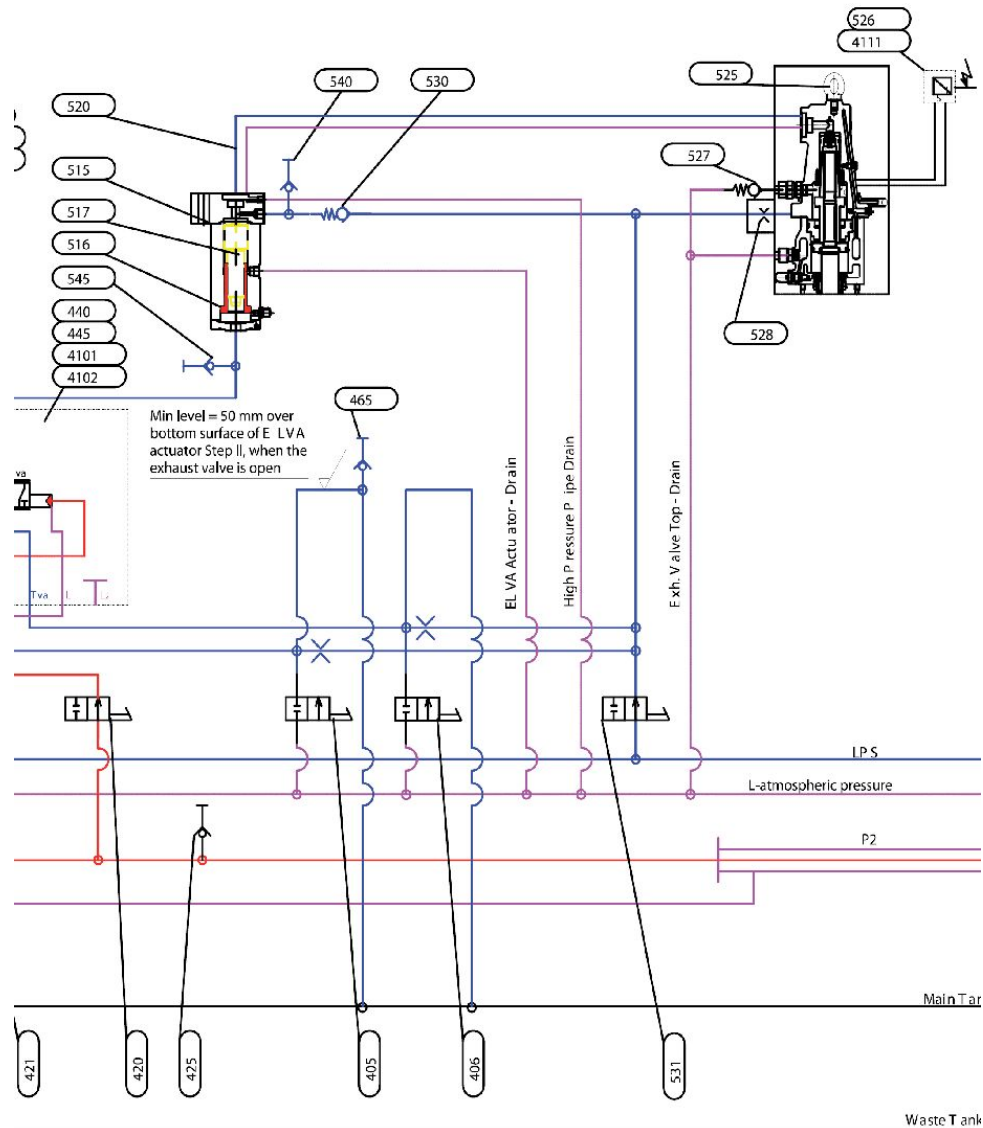


- 1) Exhaust valve actuator
- 2) Exhaust valve
- 3) Special running conditions

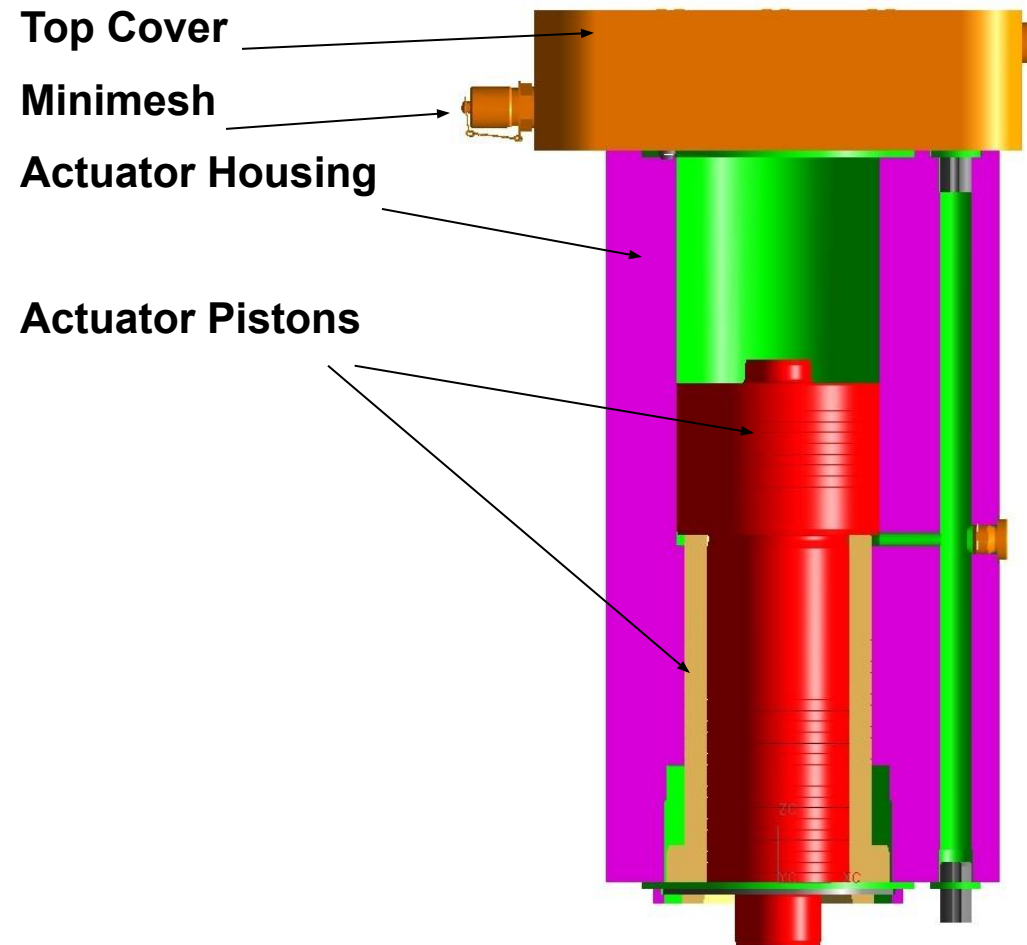
Exhaust Valve Actuation MC versus ME



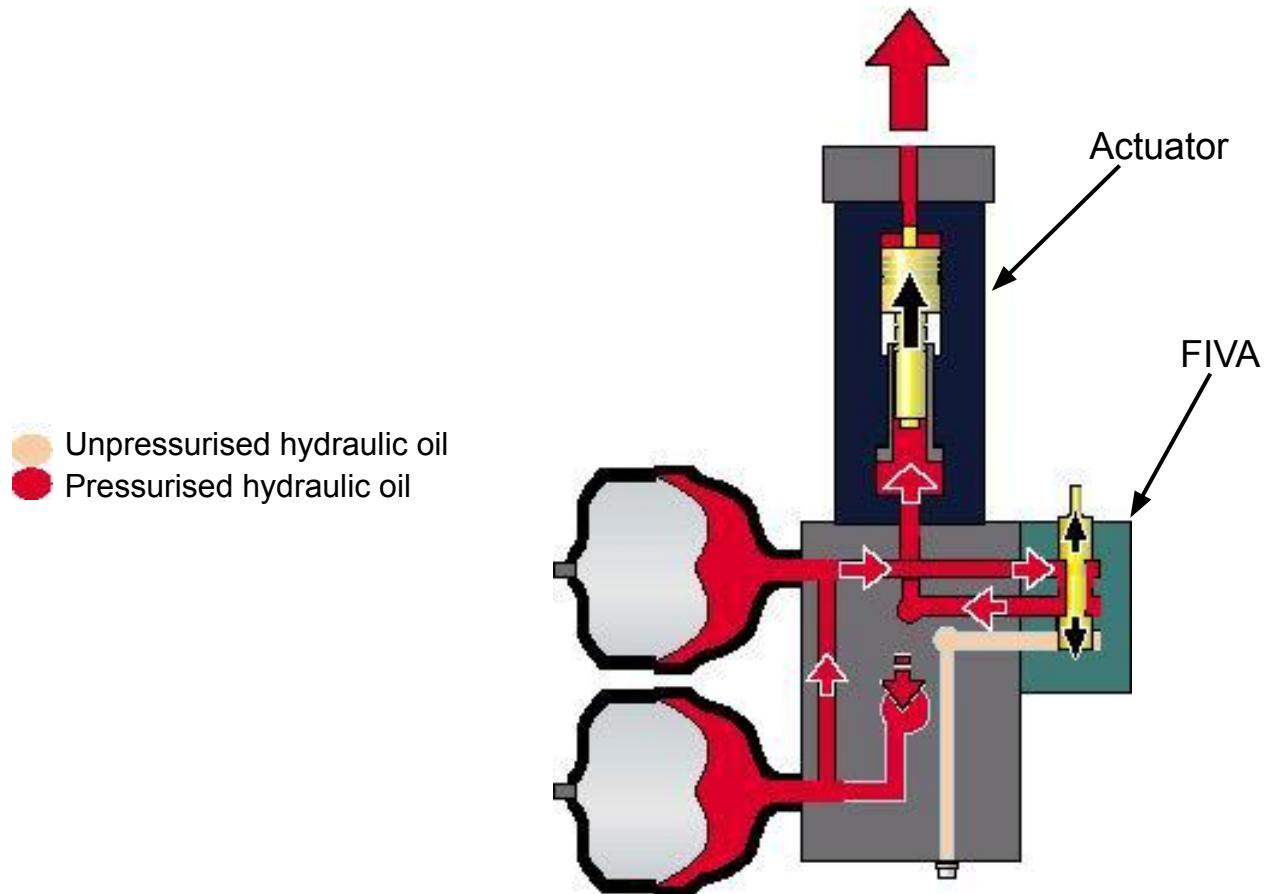
Exhaust Valve Pipe Connections



Exhaust Valve Actuator



Exhaust Valve Actuator Working Principle



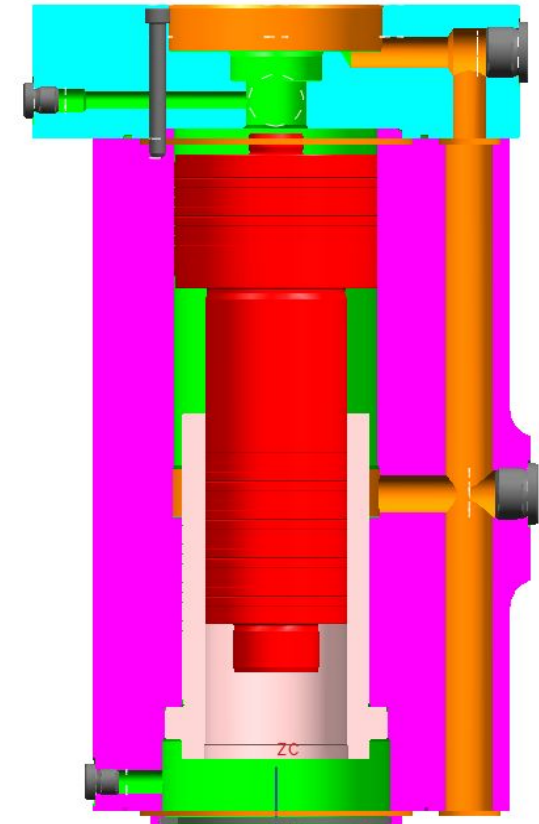
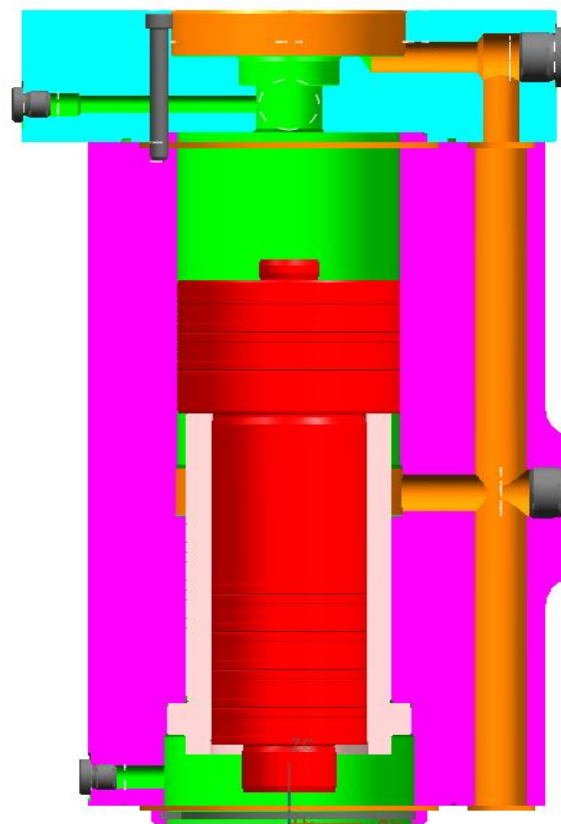
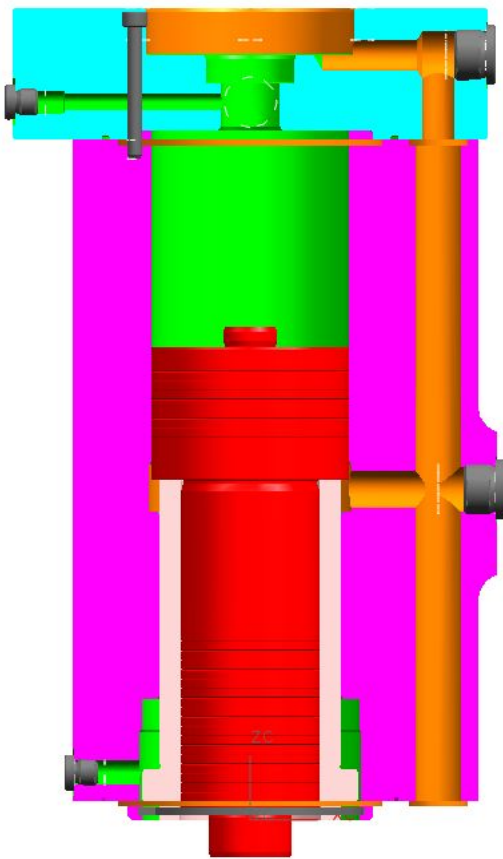
Exhaust Valve Actuation



Initial Position

Step 1

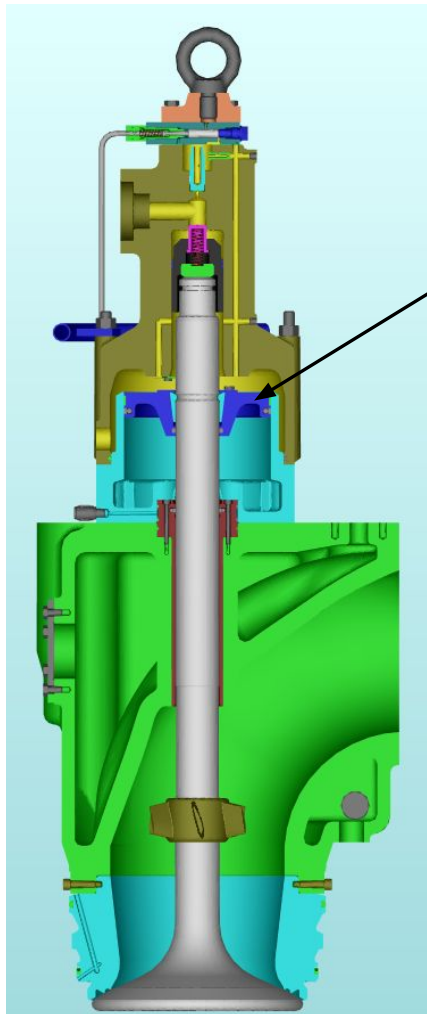
Step 2



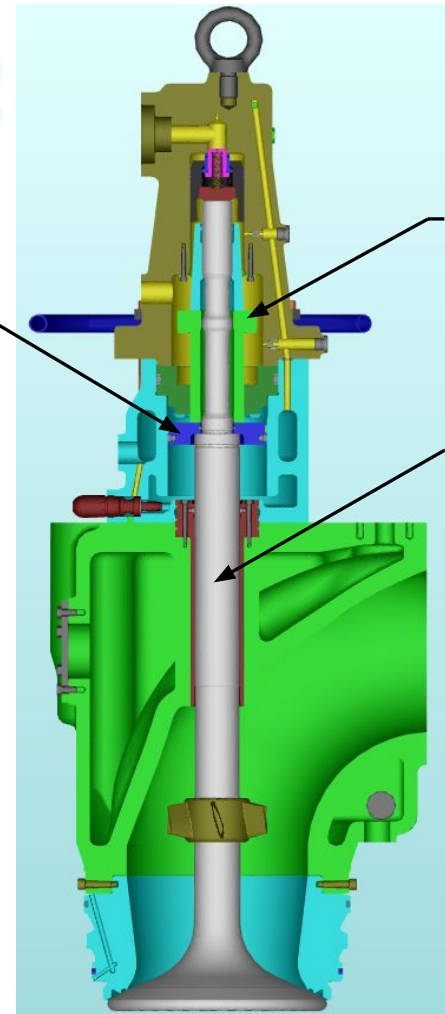
Design Features MC versus ME



S50MC-C



S50ME-C

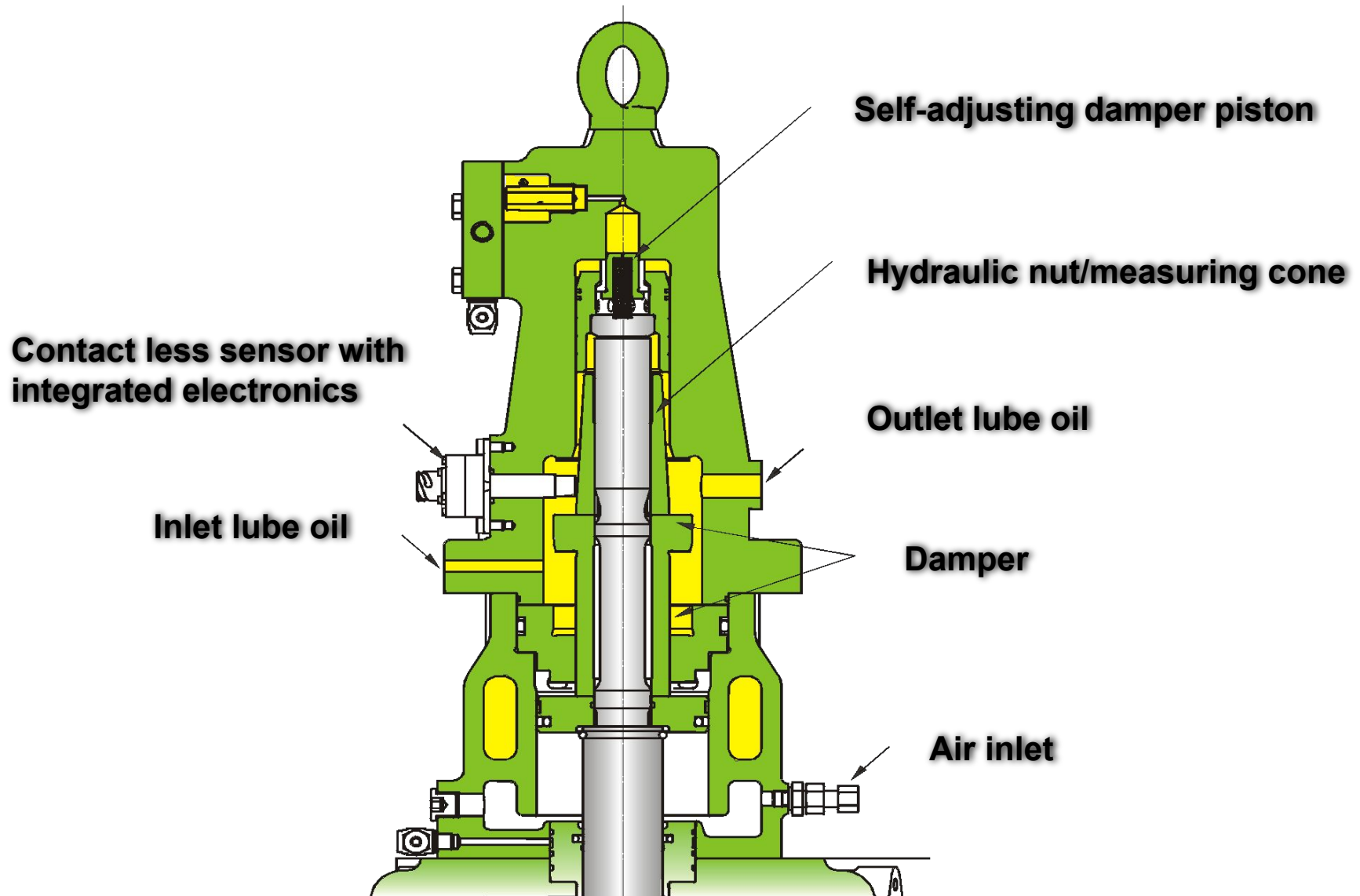


Air spring size for closing the exhaust valve reduced

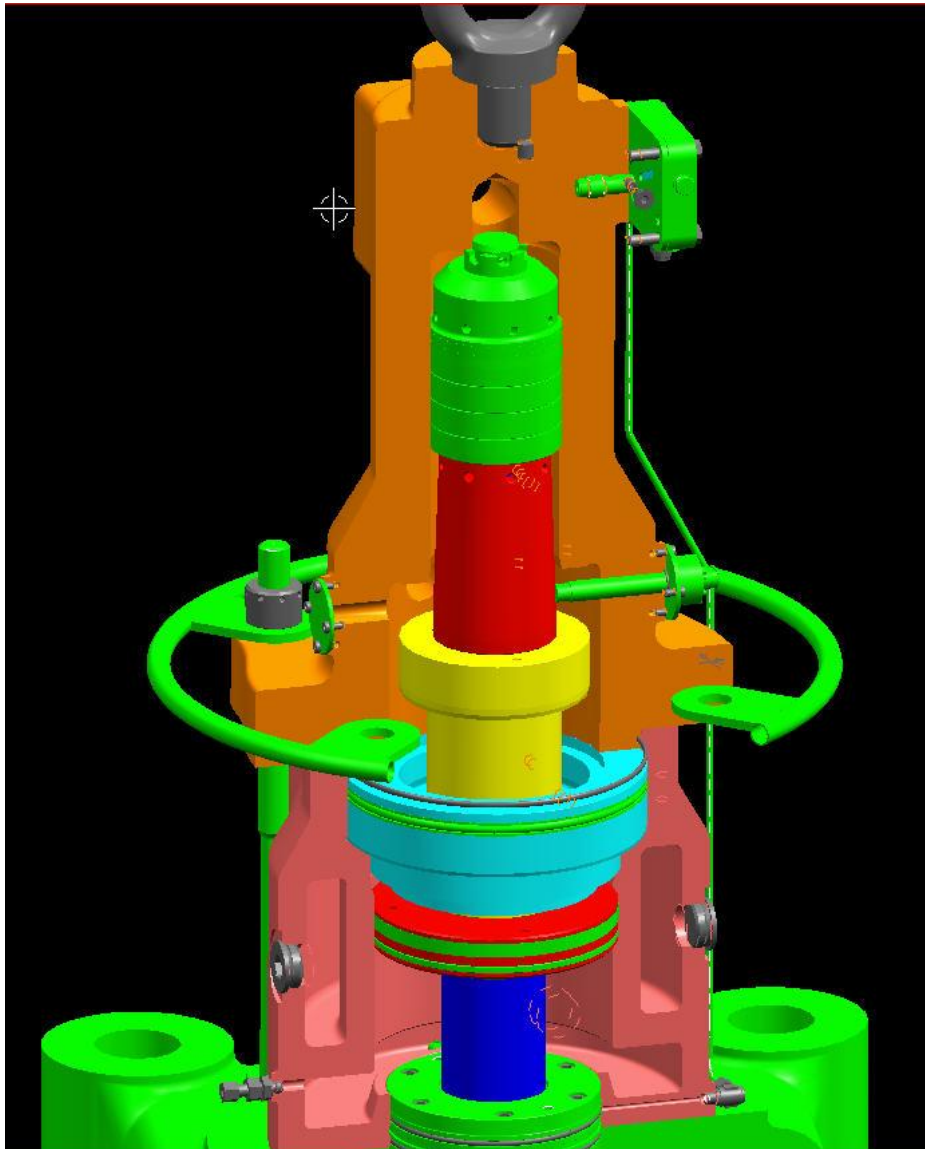
Hydraulic damper for fixed valve stroke

Different valve spindle design

Design Details



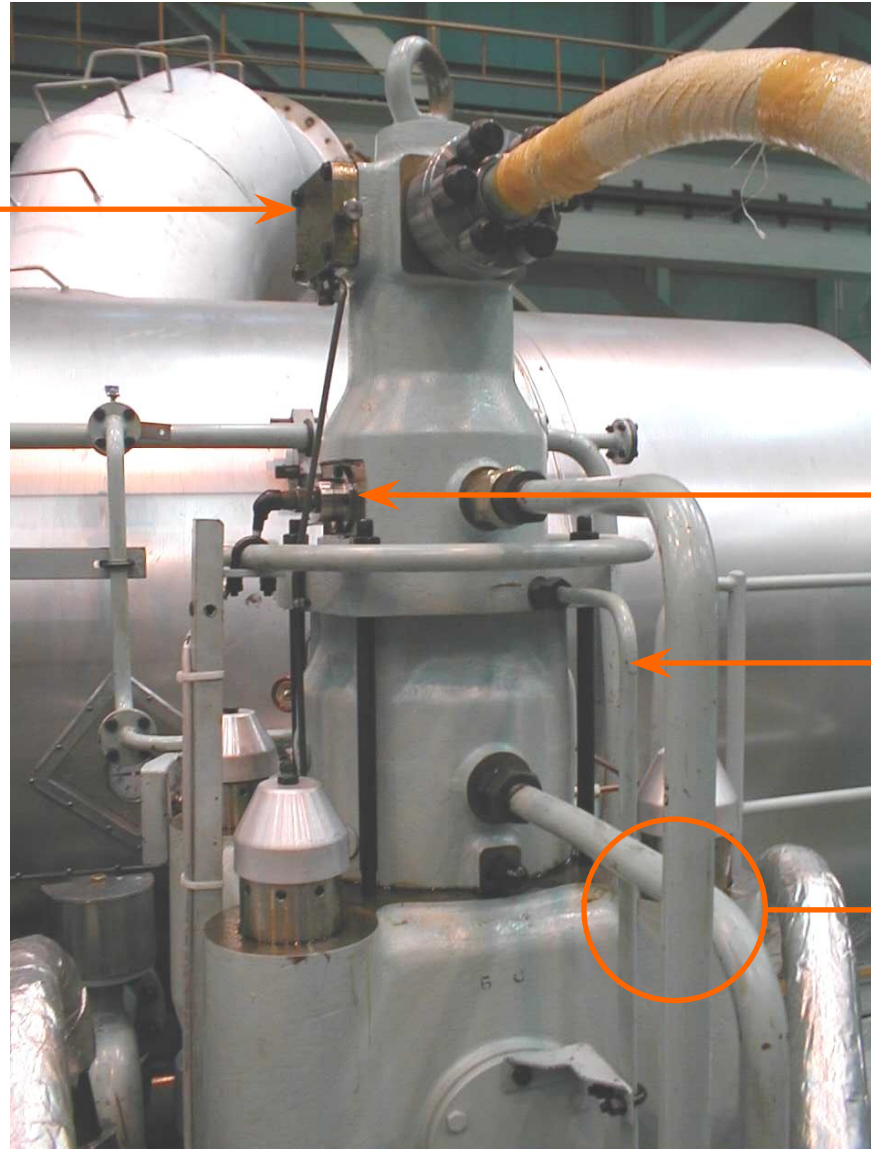
Exhaust Valve Assembly



Exhaust Valve



Sealing Oil Control Unit

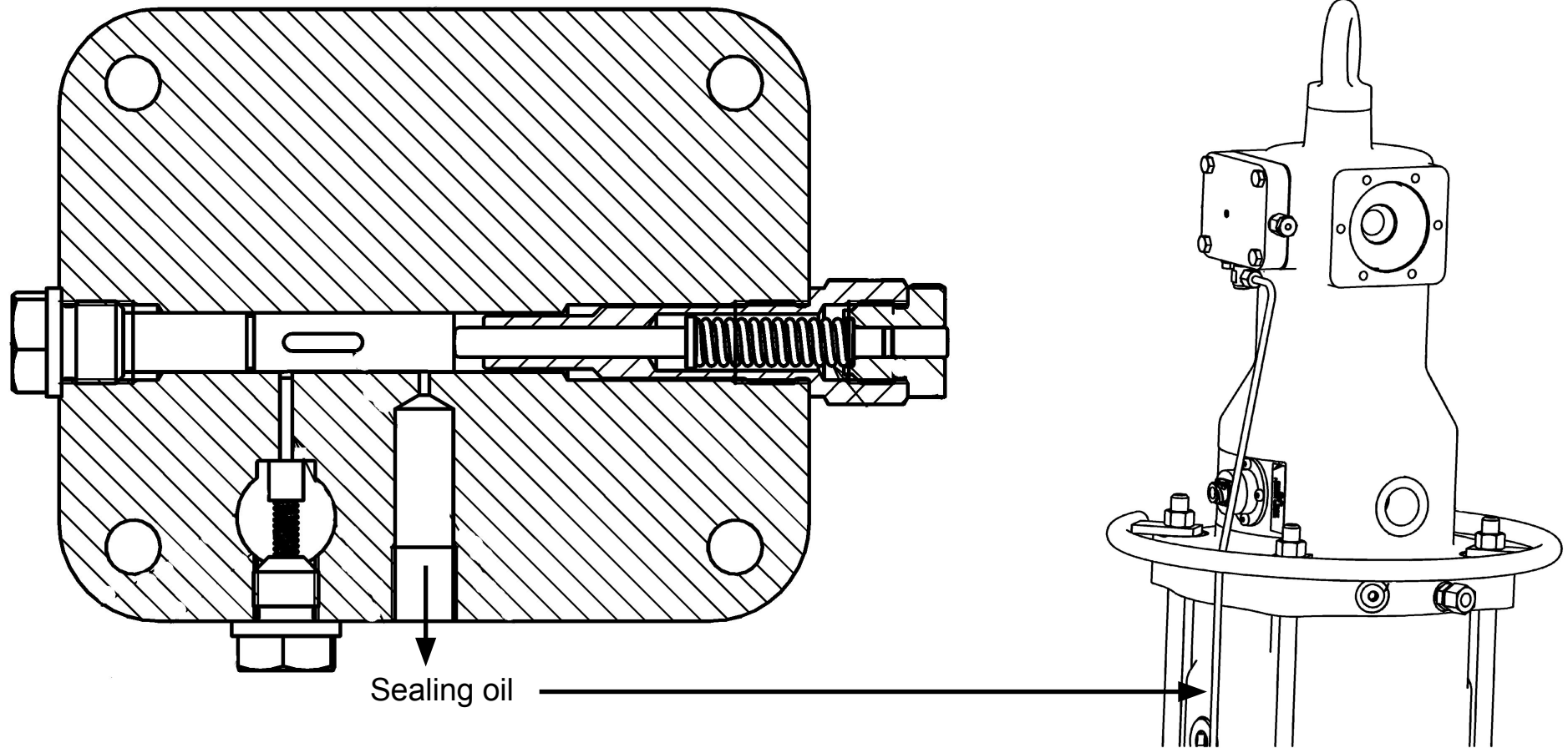


Feed back sensor

Oil inlet to damper

Drain pipes

Sealing Oil Control Unit



Sealing oil



MOP Exhaust Valve Adjustments



0 0 15 0

Engine ▶ Cylinder Pressure 2006-09-18 11:01:30

All 1 2 3 4 5 6 7 8 9 10 11 12

Maximum Cylinder Pressure Offset [Bar]

0	0	---	---	---	---	---	---	---	---	---	---	---
---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Compression Ratio Offset [-]

0.0	0.0	---	---	---	---	---	---	---	---	---	---	---
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Exhaust Valve Open Timing Offset [DEG]

0.0	0.0	---	---	---	---	---	---	---	---	---	---	---
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Alarms...

Engine ▶

Operation

Status

Process Information

Cylinder Load

Cylinder Pressure

Auxiliaries...

Maintenance

Access

Chief

Adjustment of exhaust valve closing time

Adjustment of exhaust valve opening time

Special running conditions, open exh-valve Small Bore Program (50 ME)

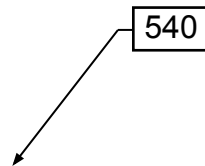


Check pressure free at “minimess” point 455

Close

Open

Special running conditions, open exh-valve Small Bore Program (50 ME)



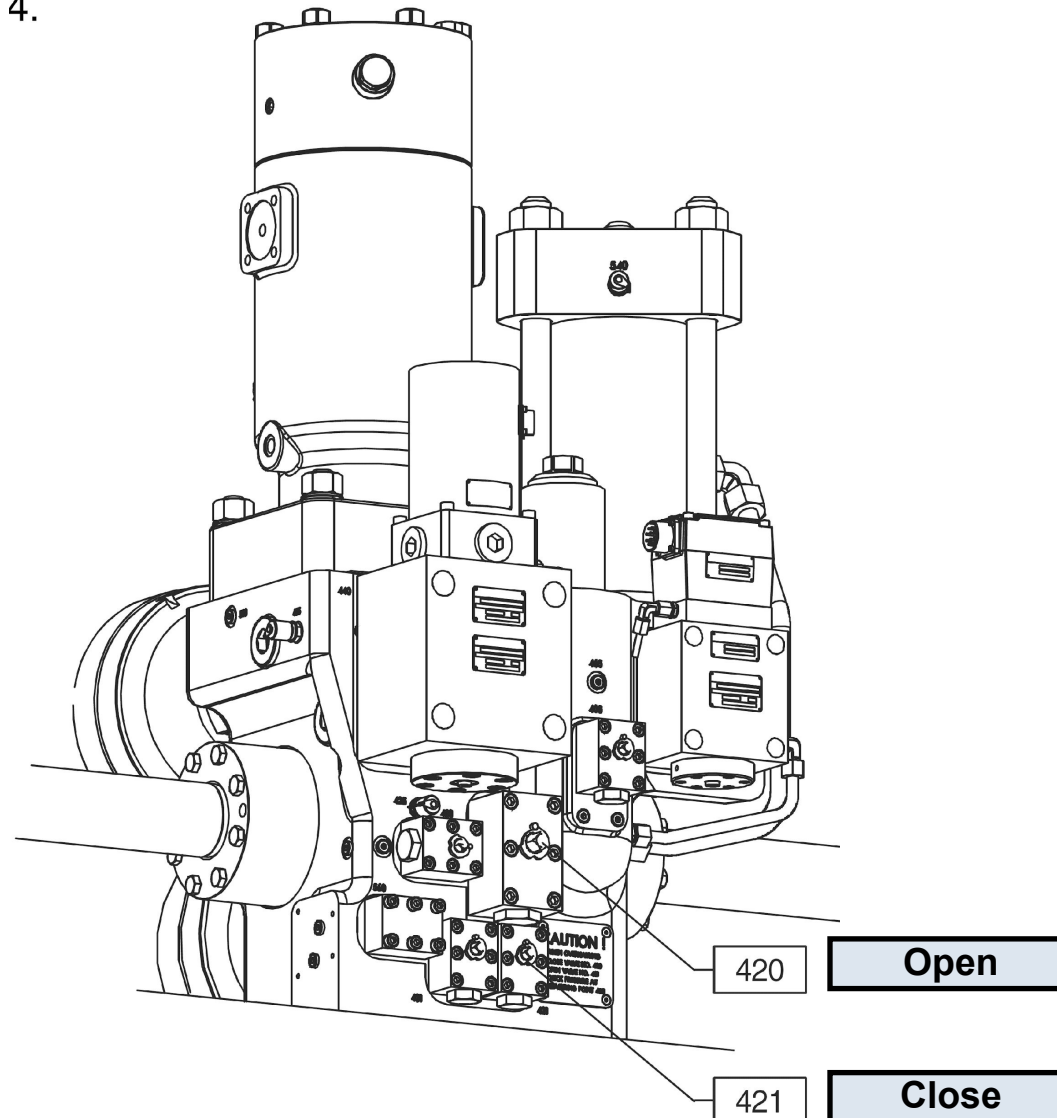
**Connect the mini-mesh
hose between top
flange on actuator
point 540 and point 425
at the hydraulic block**

Special running conditions, open exh-valve

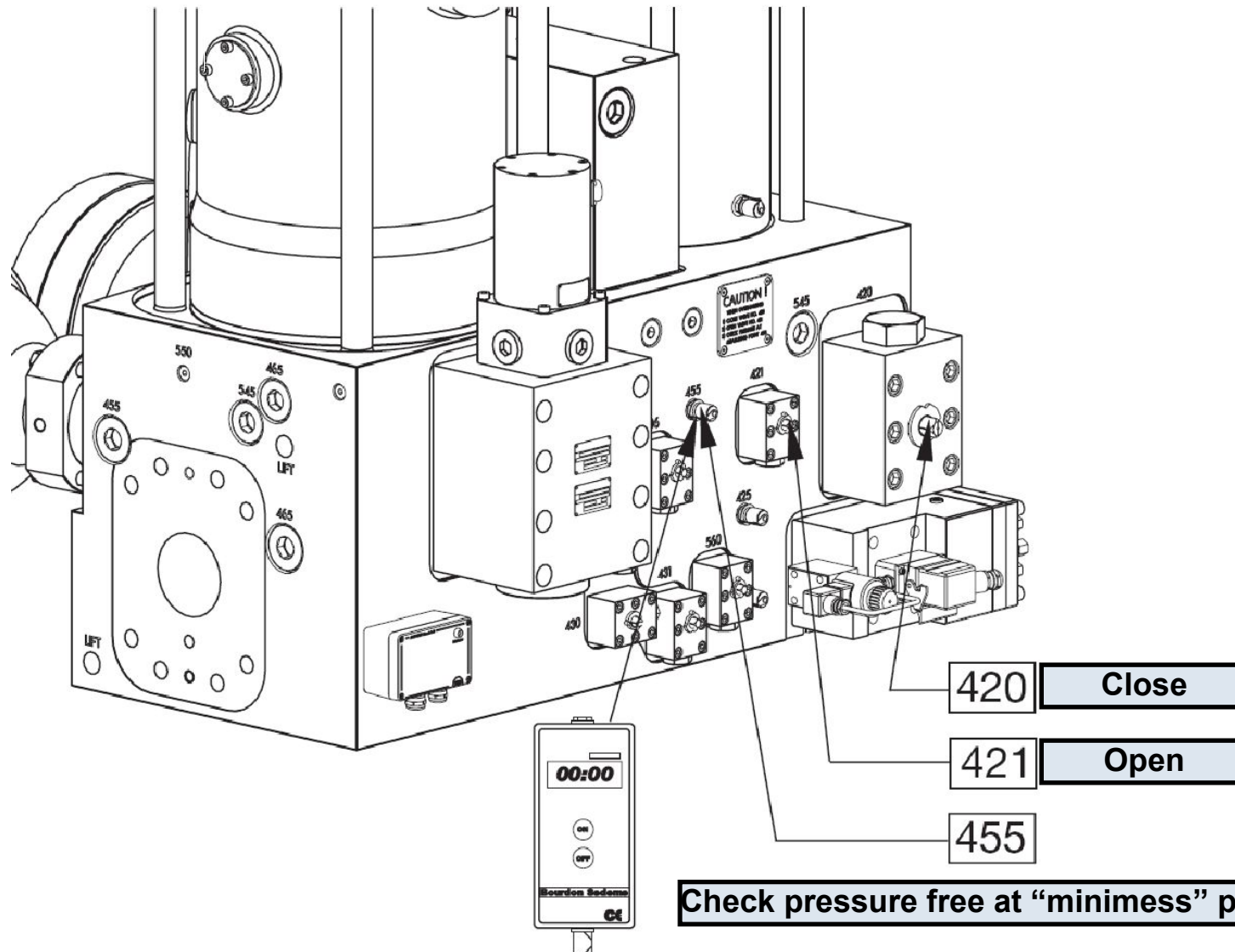
Small Bore Program (50 ME)



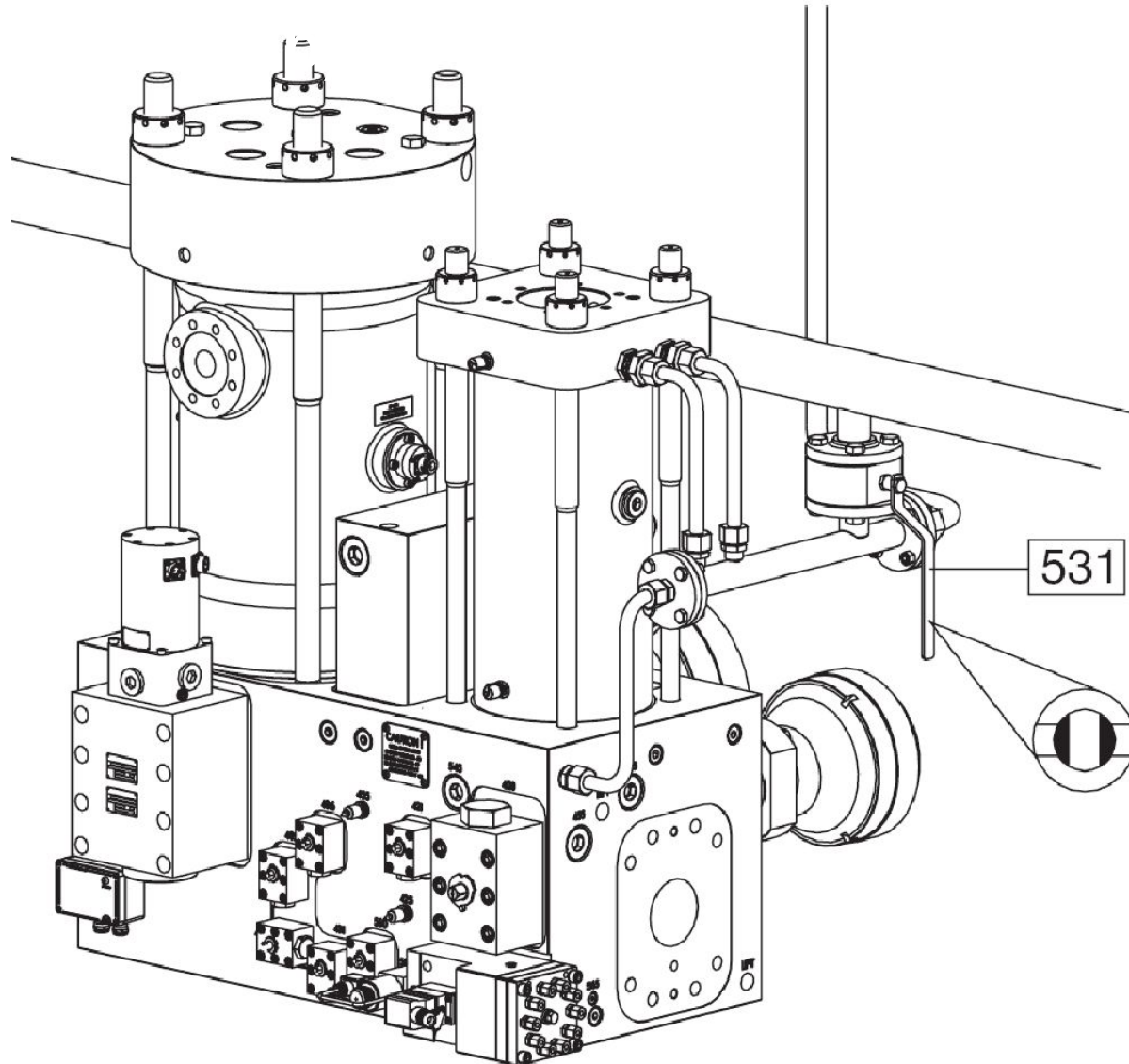
4.



Special running conditions, open exh-valve Large Bore Program (From 60 and up)



Special running conditions, open exh-valve Large Bore Program (From 60 and up)



**Close valve 531 to
shut off oil to damper**

Special running conditions, open exh-valve Large Bore Program (From 60 and up)



Disconnect air supply to air spring

Drain off air pressure from air cylinder with a mandrel

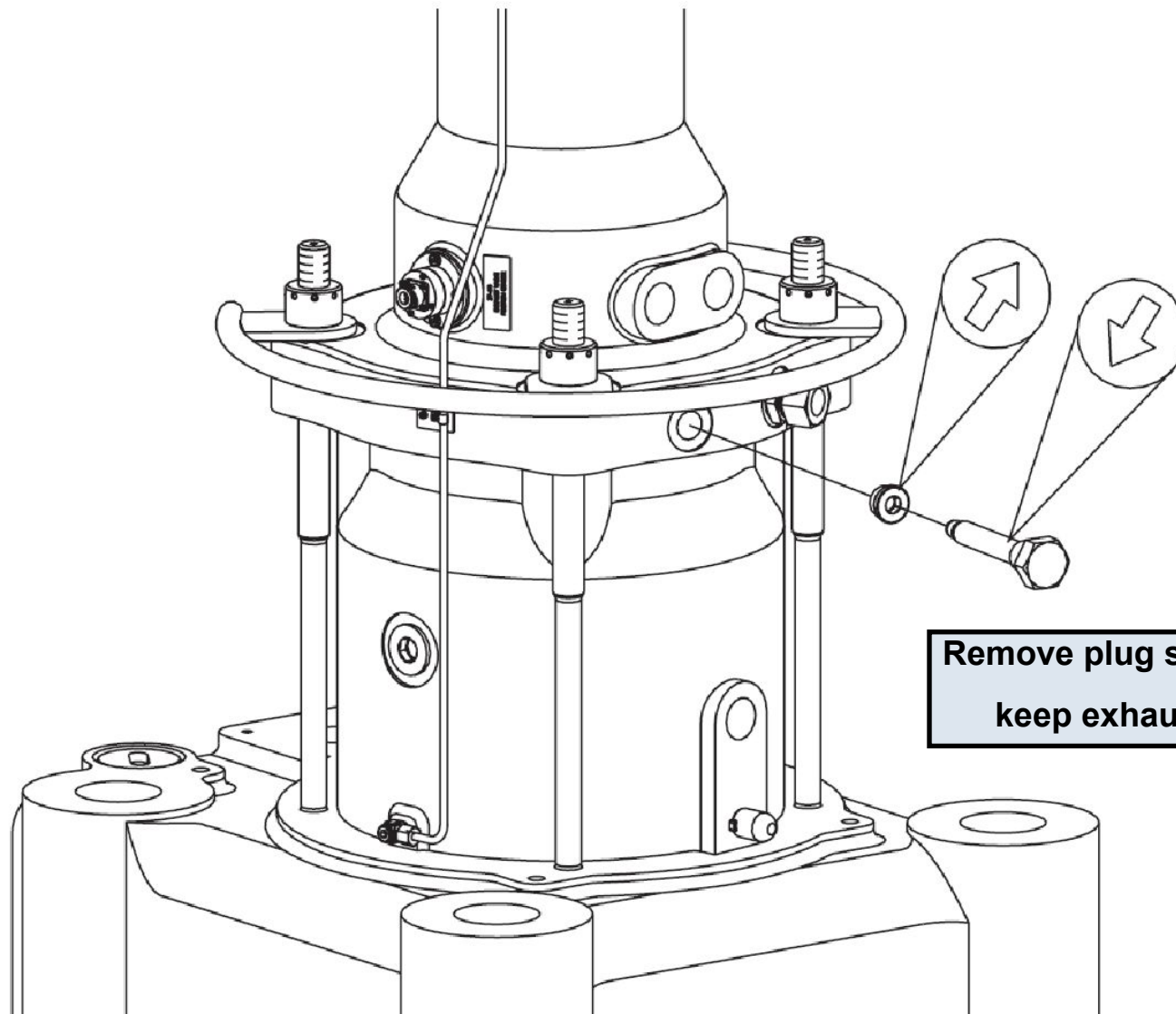
Check that the exh. valve spindle has moved to open position on the Main Operating Panel, 'Maintenance' – 'System View I/O Test' – CCU, Ch 34

Ch. No	Status	Signal ID	Description
34	A	4111	Exhaust Valve Position

Electrical Value: 5.8 mA
Process Value: 0 mA

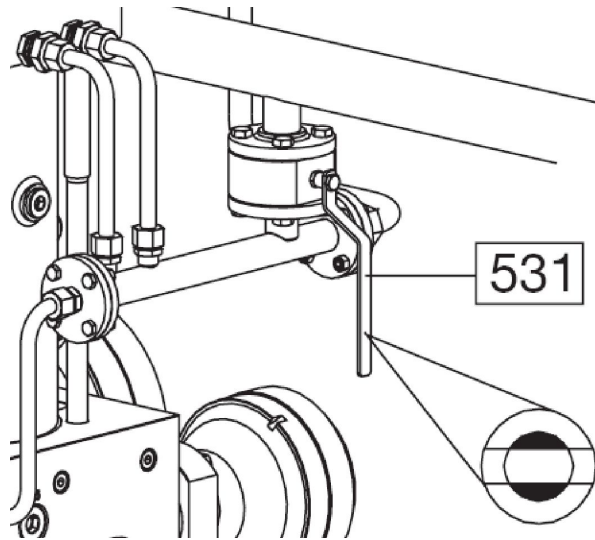
Channel Setup: Analog Input, 4 - 20 mA

Special running conditions, open exh-valve Large Bore Program (From 60 and up)



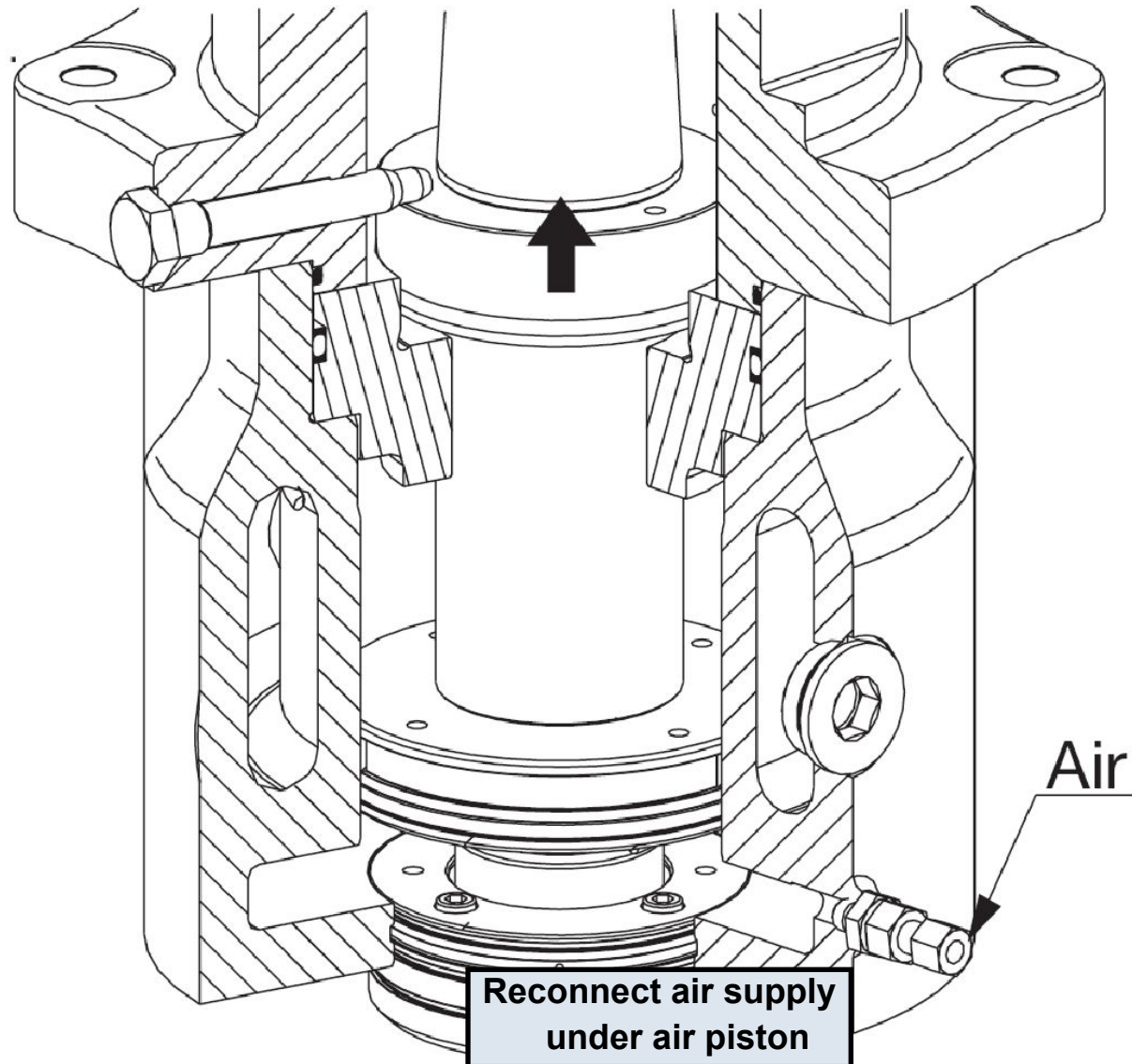
**Remove plug screw and mount tools to
keep exhaust valve spindle open**

Special running conditions, open exh-valve Large Bore Program (From 60 and up)



531

**Open damper oil supply
Valve 531**



Air

**Reconnect air supply
under air piston**