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MSG30-5506-M1/UK

Service/ Spare Parts Manual Series V12

Effective: August, 2023
Supersedes: March, 2023

ENGINEERING YOUR SUCCESS.

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Conversion factors

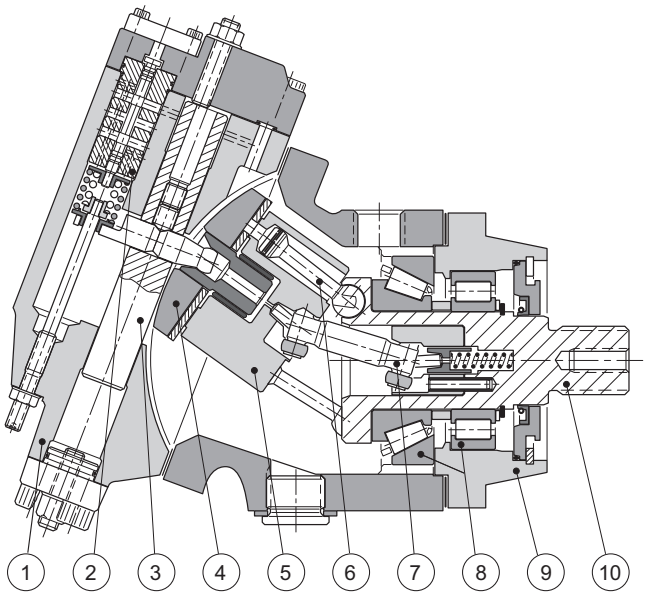
1 kg	=	2.2046 lb
1 N	=	0.22481 lbf
1 bar	=	14.504 psi
1 l	=	0.21997 UK gallon
1 l	=	0.26417 US gallon
1 cm^3	=	0.061024 in^3
1 m	=	3.2808 feet
1 mm	=	0.03937 in
1 °C	=	1.8 °F + 32

Specifications

V12 Frame size	60	80
Displacement (cm^3/rev)		
at 35° (max)	60	80
at 6,5° (min)	12	16
Operating pressure (bar)		
max intermittent [1]	480	480
max continuous	420	420
Operating speed (rpm)		
max intermittent at 35° [1]	4700	4300
max continuous at 35°	4100	3700
max intermittent at 6.5° – 20° [1]	7900	7200
max continuous at 6.5° – 20°	6900	6300
min continuous	50	50
Flow (l/min)		
max intermittent [1]	282	344
max continuous	246	296
Output torque (Nm) at 100 bar (theor.)	95	127
Max output power (kW)		
max intermittent [1]	170	205
Corner power (kW)		
max intermittent [1]	380	460
continuous	290	350
Mass moment of inertia ($x10^{-3}$) [kg m^2]	3.1	4.4
Weight (kg)	28	33

[1] Max 6 seconds in any one minute

V12 cross section

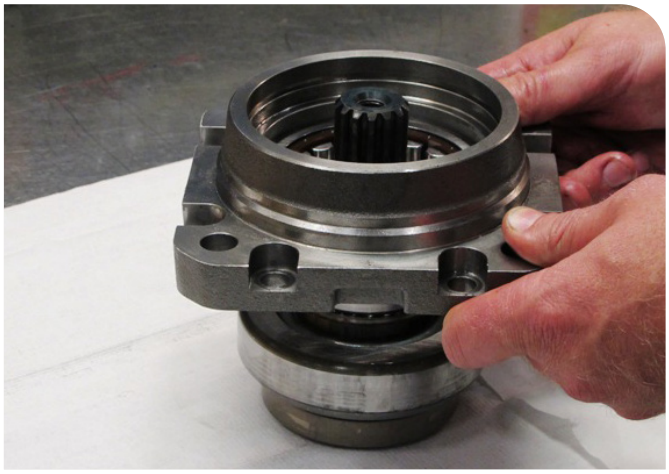


1. End cap
2. Servo control valve
3. Setting piston
4. Valve segment
5. Cylinder barrel
6. Spherical piston with laminated piston ring
7. Synchronizing shaft
8. Heavy-duty roller bearings
9. Bearing housing
10. Output shaft

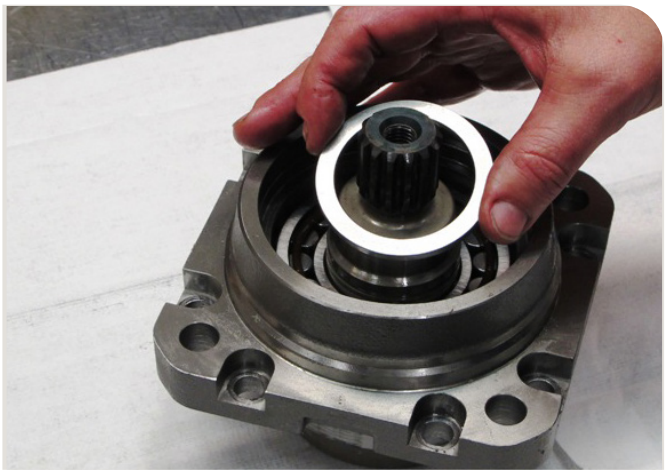
Assembling, shaft package

1. Press down the big tappered roller bearing and the inner ring for the roller bearing in two steps.

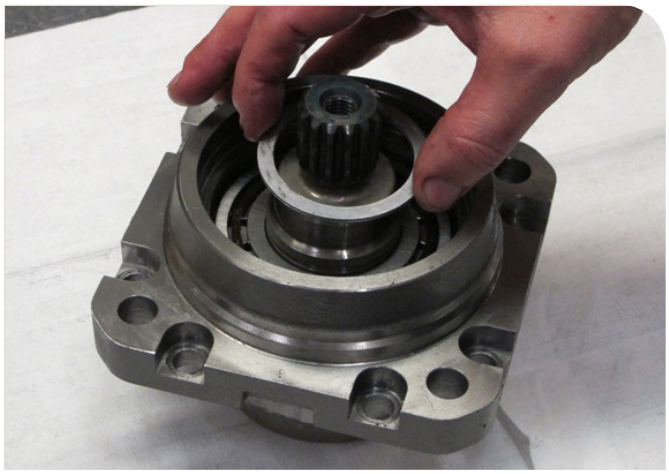
Note: On V12-060 there is a distance between the bearings.



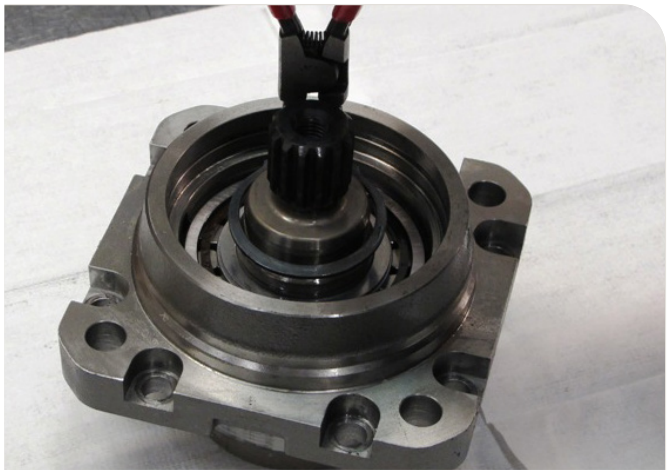
2. Press down the roller bearing with the text upwards into the flange and assemble it on the shaft package.



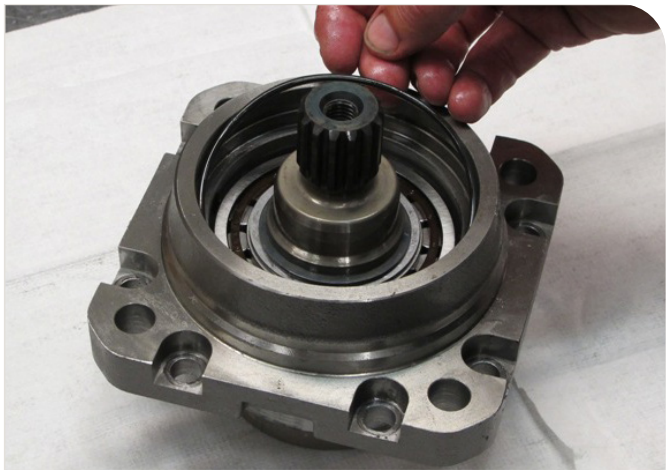
3. Assemble the bearing ring with the text downwards.



4. Assemble the shim.

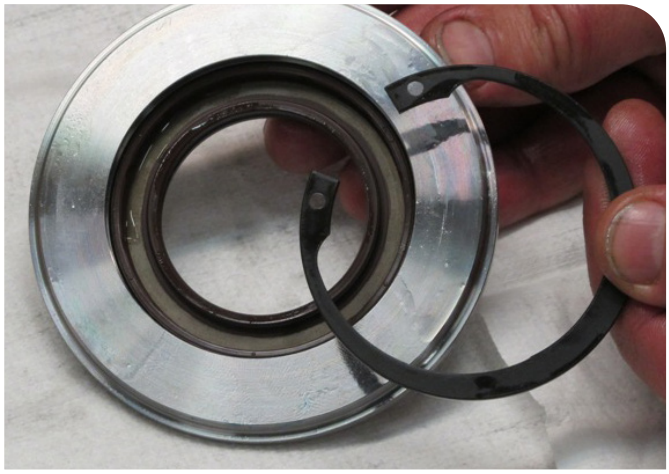


5. Assemble the retaining ring. Make sure it is all the way into the groove. Check the pre-load of the bearings, not to tight and no back-lash.

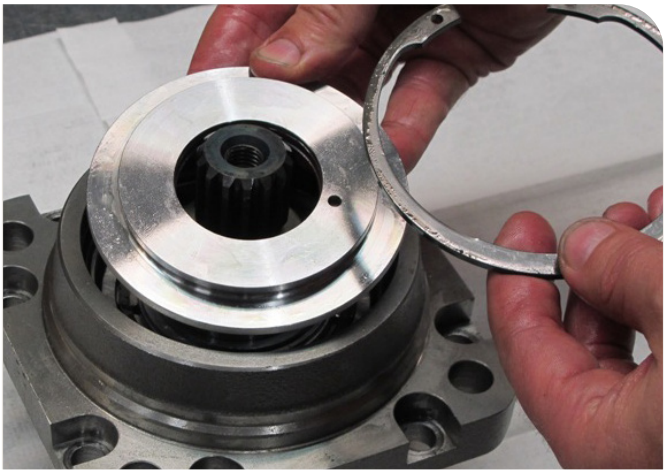


6. Assemble the O-ring.

Assembling, shaft package, cylinder barrel, joint shaft and cover



7. Press down the shafts seal in the seal carrier and assemble the retaining ring.



8. Assemble the seal carrier with shaft seal and the retaining ring. Make sure it is all the way into the groove.

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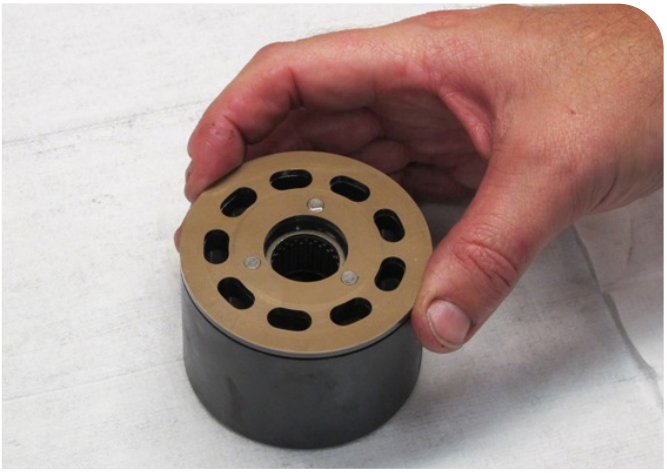
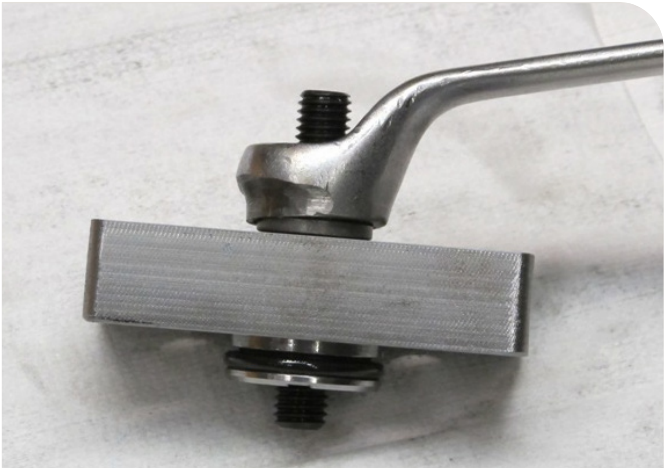
9. Assemble the guide pins.



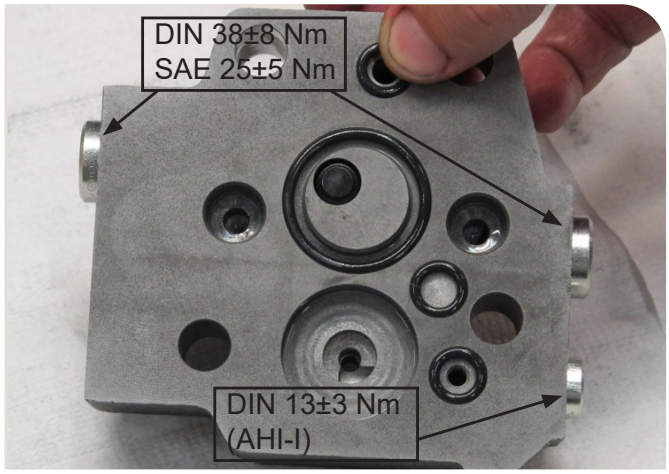
10. Assemble the sliding plate.

11. Assemble the joint rollers on the joint shaft. Make sure the step on the joint rollers is fitted inwards.

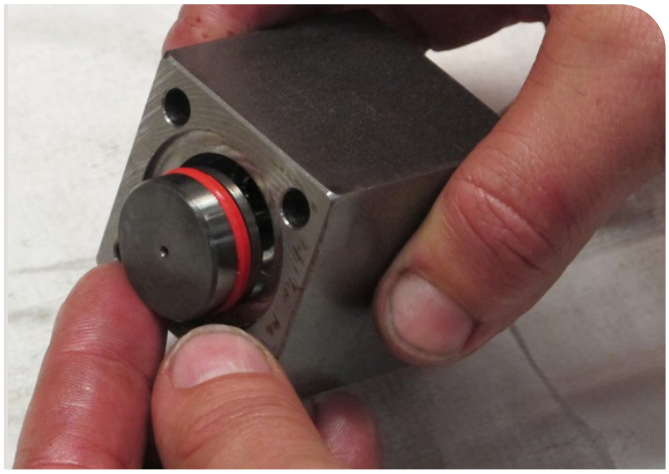


12. Assemble the displacement setting screw, seal nut and the O-ring.

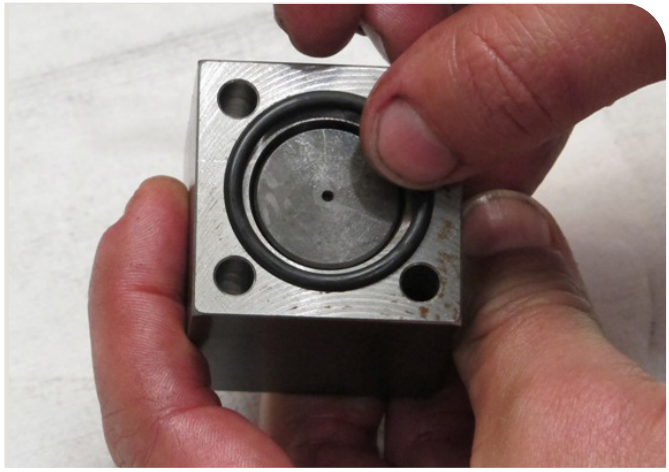
Assembling, control cover



13. Assemble the O-rings and plugs that are required for the specific control cover. AH-control is shown in the picture.

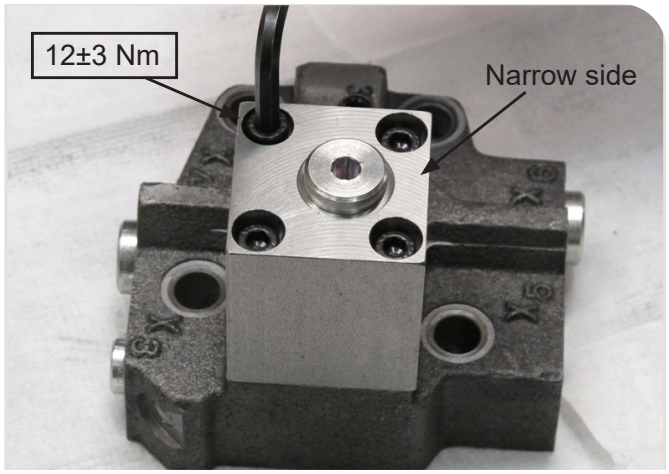


14. Assemble the control piston in the AH-housing.

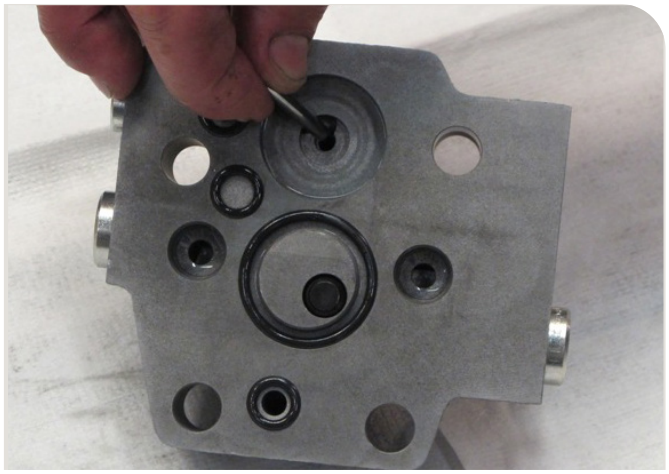


15. Assemble the O-ring.

16. Assemble the hexagon plug.

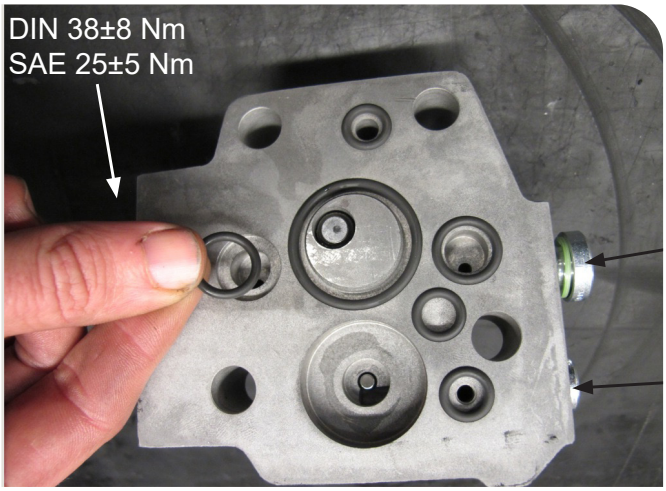


17. Assemble the AH-housing. The narrow side against X5.



18. Put some grease on the guide pin and assemble it in the control cover.

Assembling, control cover, New version without valve cones and valve guides



The control cover shown in picture is bi-directional.

DIN 38±8 Nm
SAE 25±5 Nm

DIN 13±3 Nm
(AHI-I)

A. Assemble the O-rings and plugs that are required for the specific control cover. AH-control is shown in the picture.

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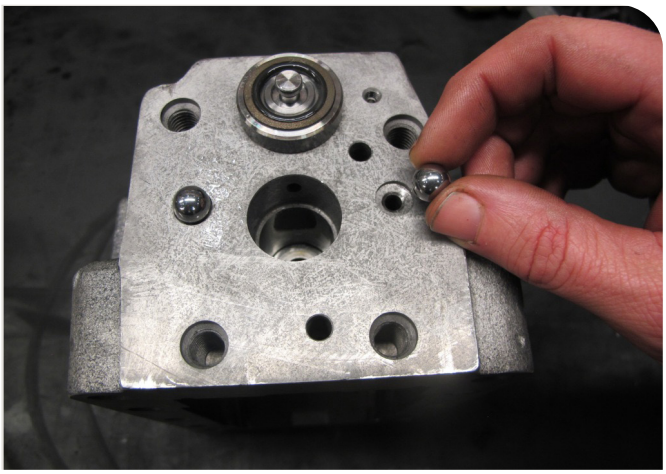
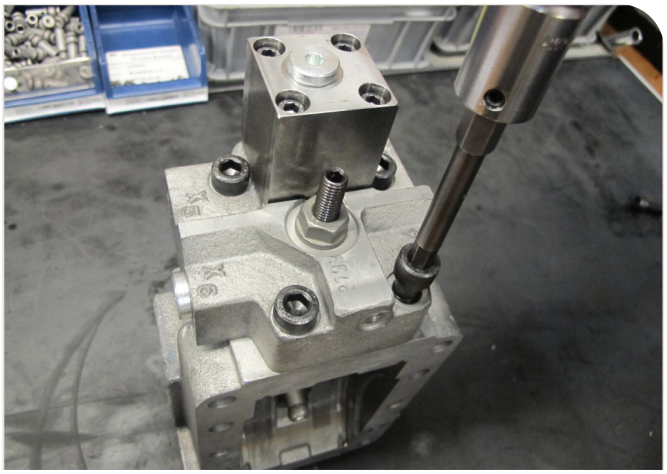
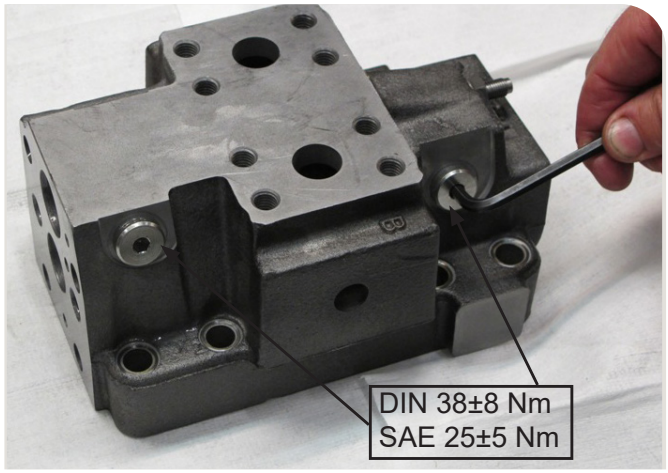


B. Assemble the check balls.

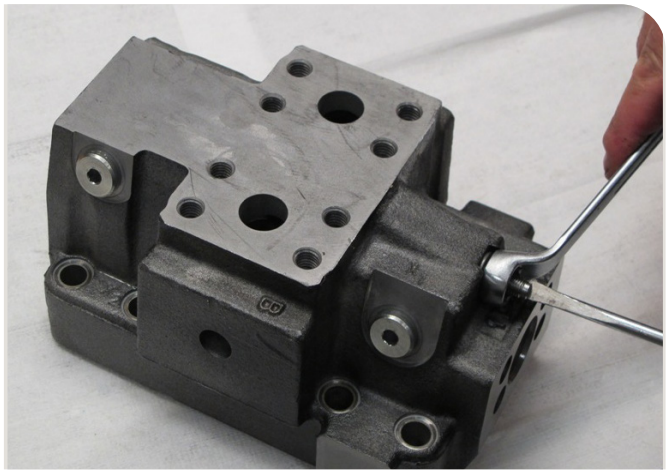


C. Assemble the control cover and torque the screws to 65±10 Nm for V12-60, -80 and -110. 105±20 Nm for V12-160.

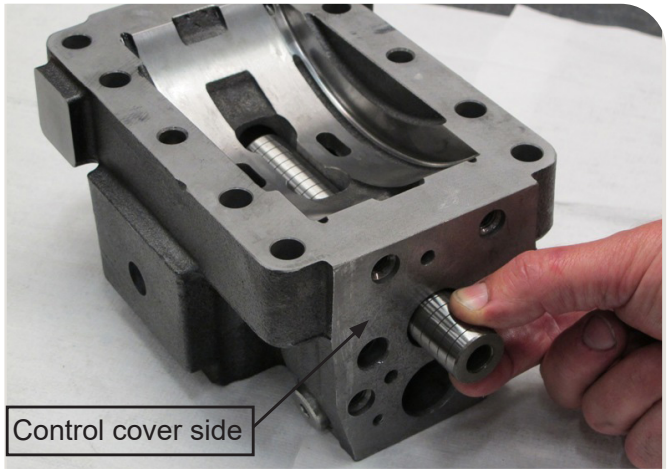
Assembling, end cap



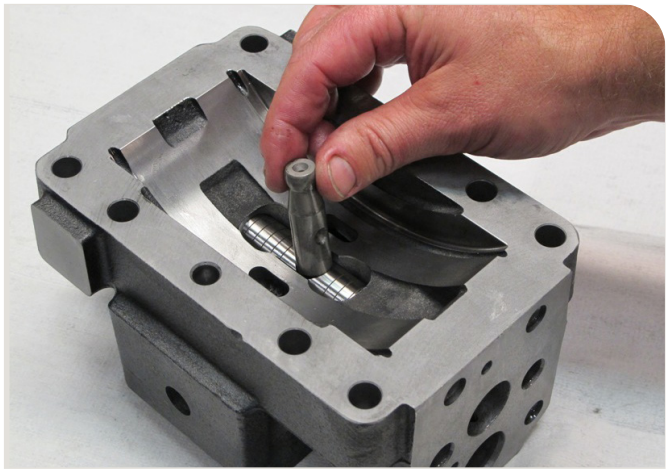
19. Assemble the hexagon plugs.



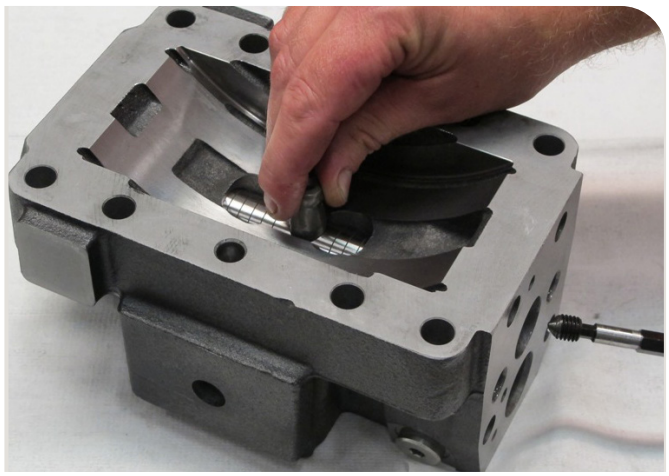
20. Assemble the adjusting screw and seal nut.



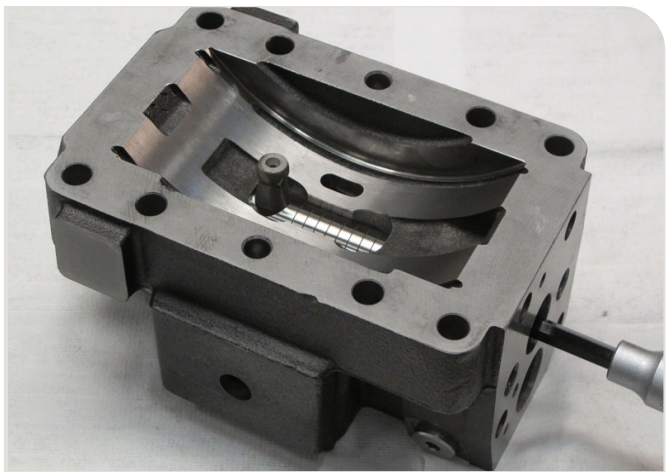
21. Assemble the setting piston in the end cap. Make sure the thread is against the control cover side.



22. Assemble the companion pin in the setting piston. Make sure the location hole is against the control cover side.

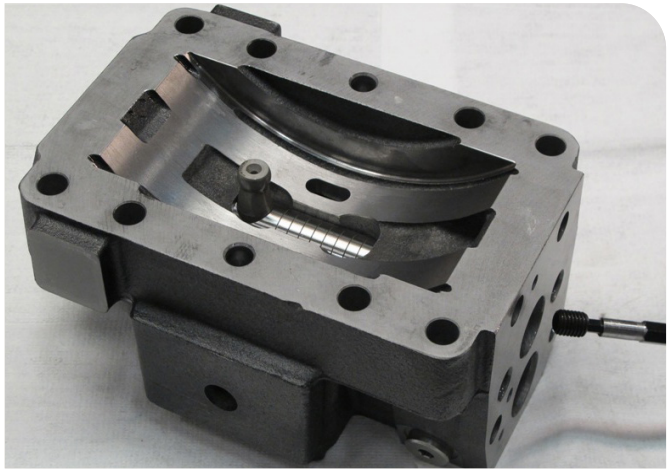


23. Assemble the set screw with the pointed end. Make sure that it hits the location hole in the companion pin.

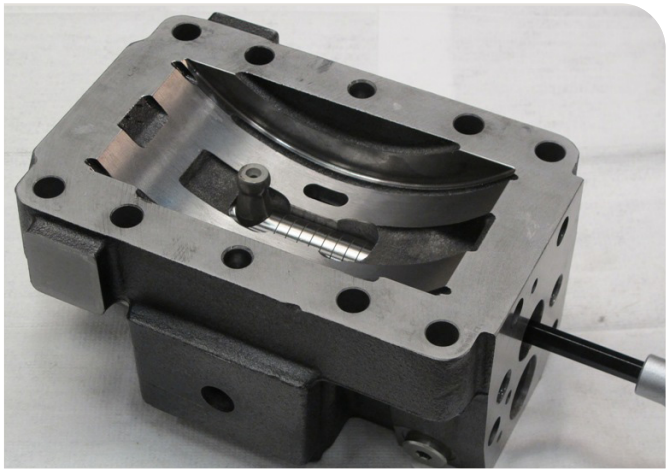


24. Torque the set screw to 14±4 Nm.

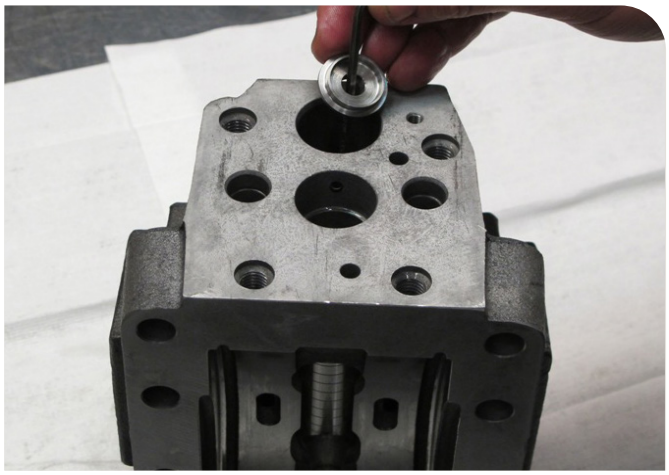
Assembling, end cap



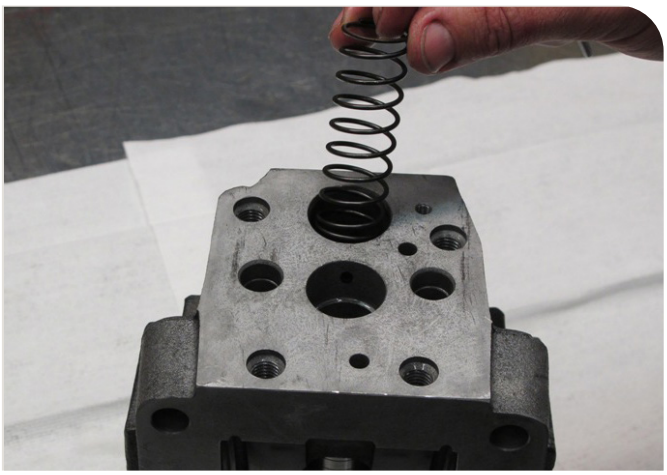
25. Assemble the set screw with the flat end.



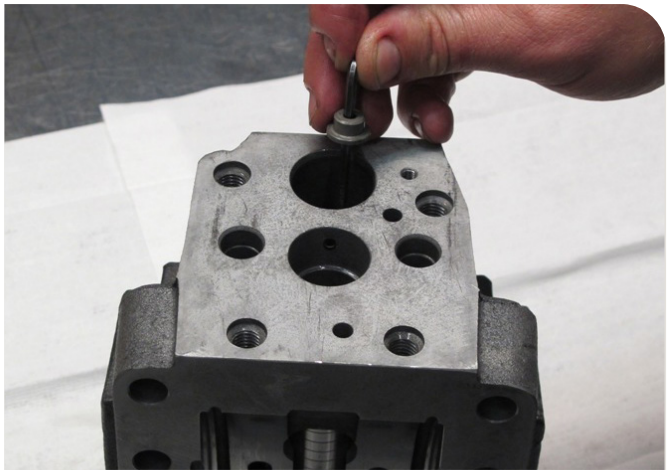
26. Torque the set screw to 26±6 Nm. Move the companion pin back and forward to make sure it moves smooth.



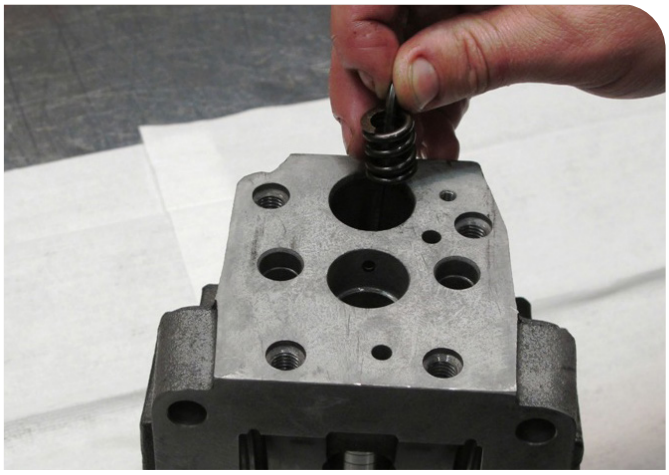
27. Assemble the spring guide. Use a long allen key to locate the spring guide.



28. Assemble the modulating spring.

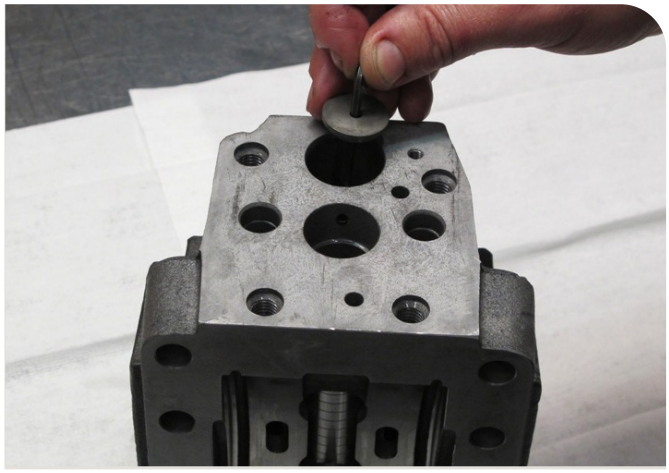


29. Assemble the spring seat.



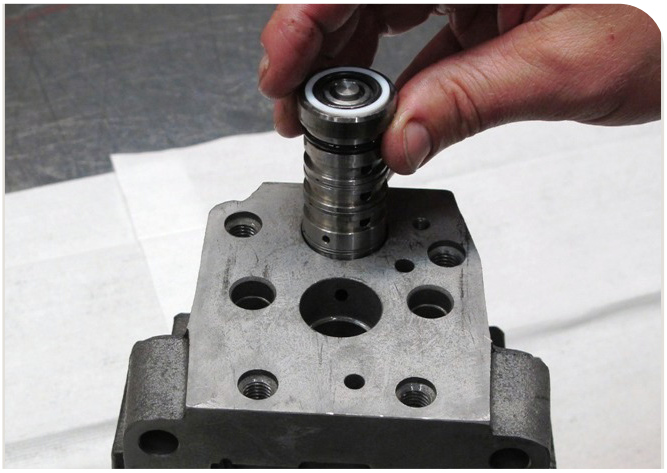
30. Assemble the threshold spring.

Assembling, end cap (old version)

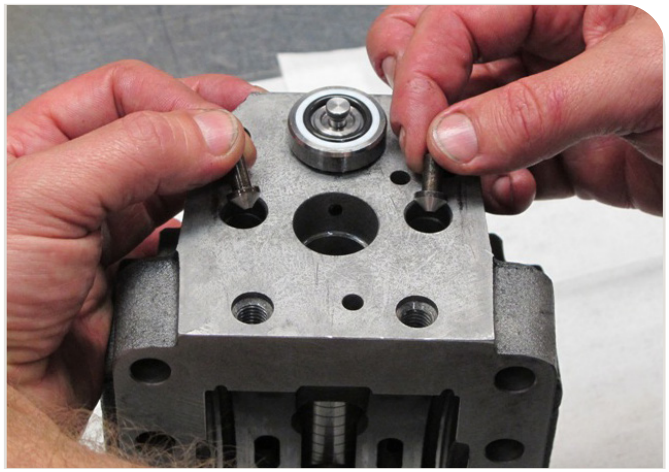


31. Assemble the spring seat.

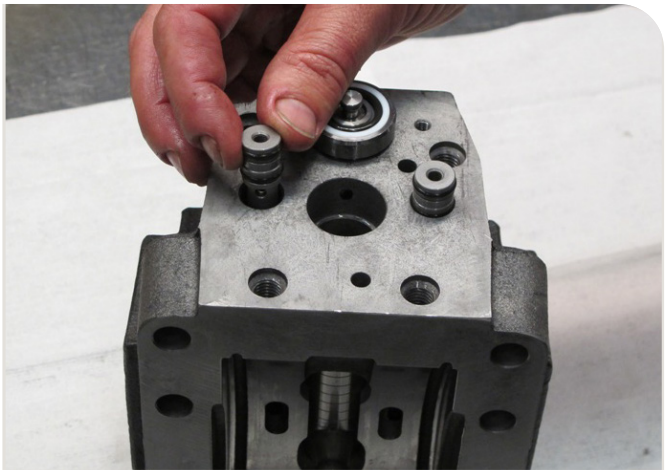
32. Assemble the nozzles and torque them to 1,2±0,2 Nm.



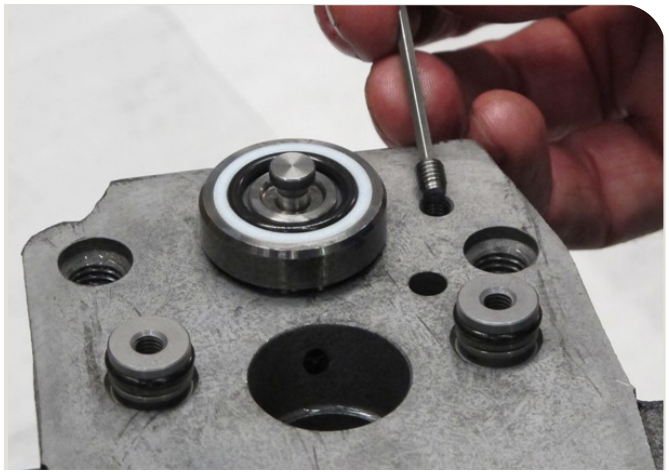
33. Assemble the valve sleeve assy. Make sure the spool hits the guide hole in the spring seat.



34. Assemble the valve cones.

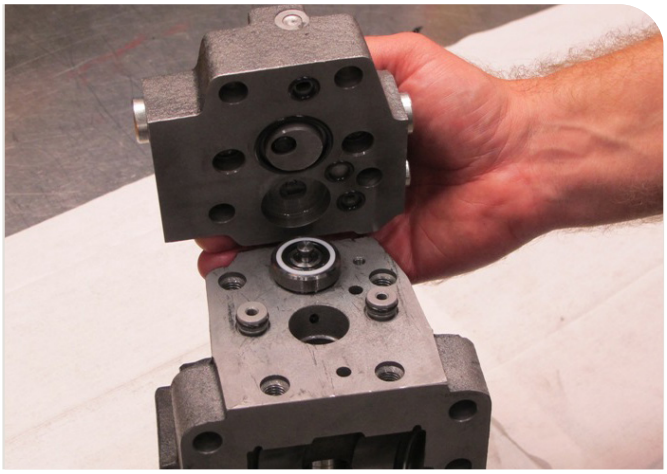


35. Assemble the valve guides assy. Carefully tap them down with a hammer.

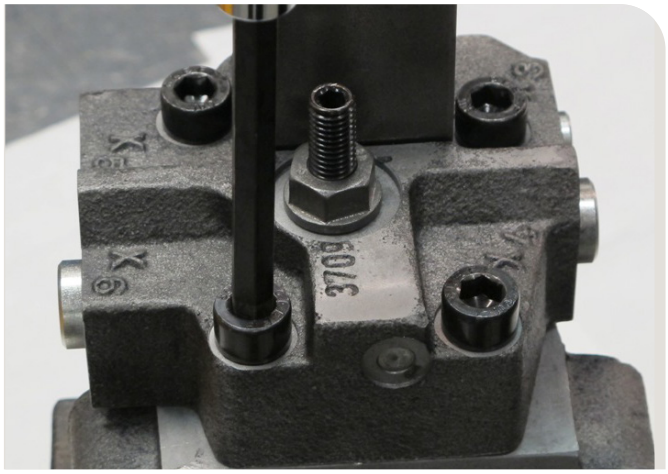


36. Assemble the nozzles and torque them to 1,2±0,2 Nm.

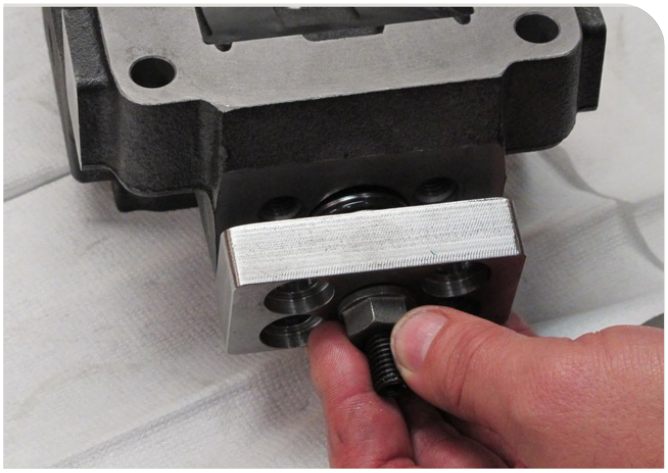
Assembling, end cap (old version)



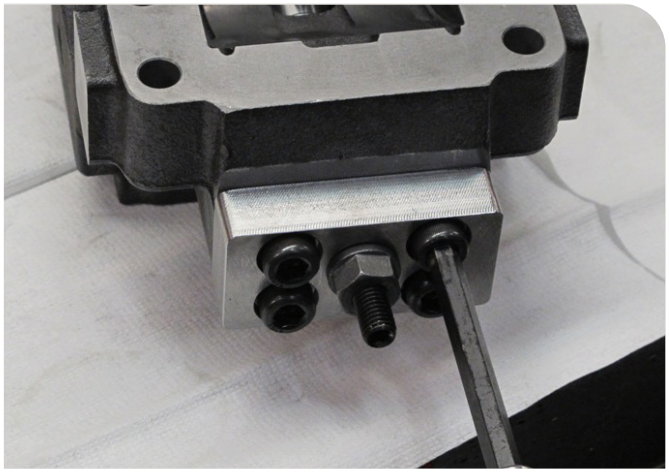
37. Assemble the control cover assy. Make sure the O-rings are in correct position.



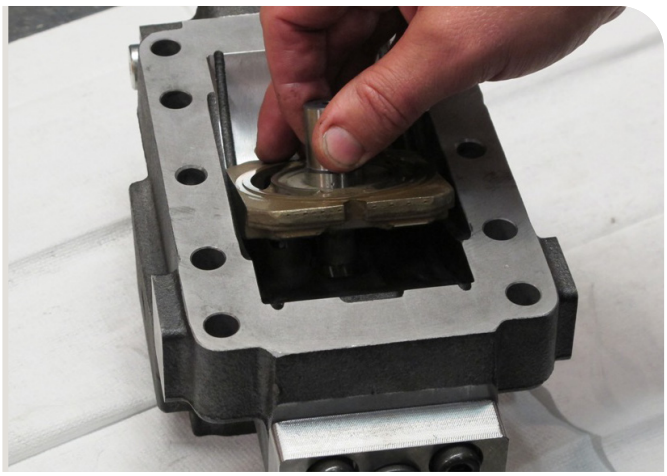
38. Torque the screws to 65±10 Nm for V12-60 – -110, 105±20 Nm for V12-160.



39. Assemble the cover assy. Make sure not to damage the O-ring.

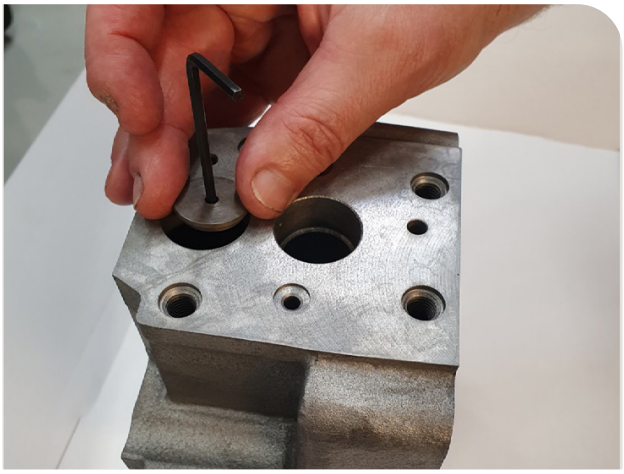


40. Torque the screws to 65±10 Nm for V12-60 – -110, 105±20 Nm for V12-160.



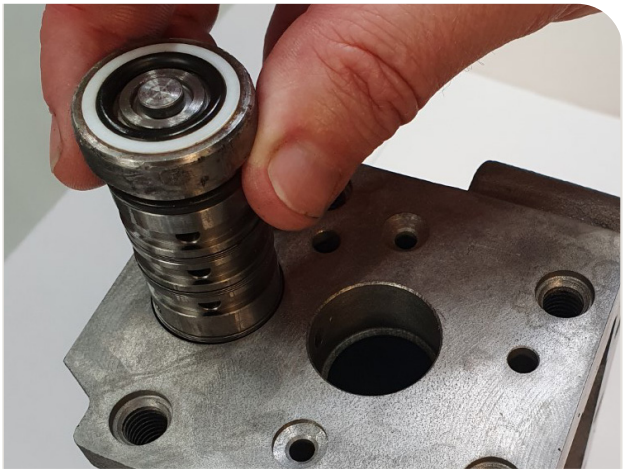
41. Assemble the valve segment in the end cap. The slot in the valve segment against the cover side.

Assembling, end cap (new version)

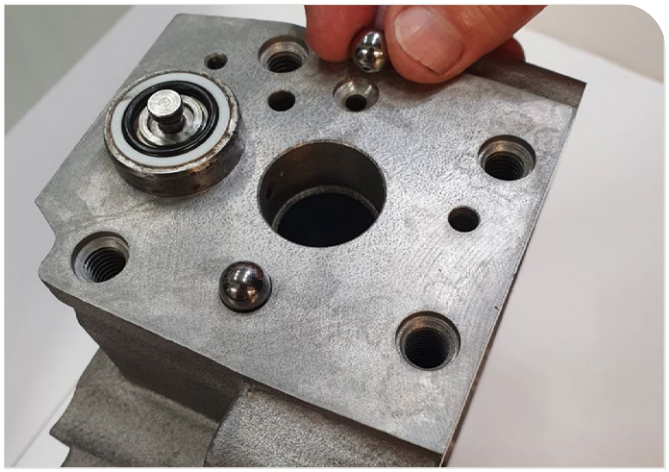


31. Assemble the spring seat.

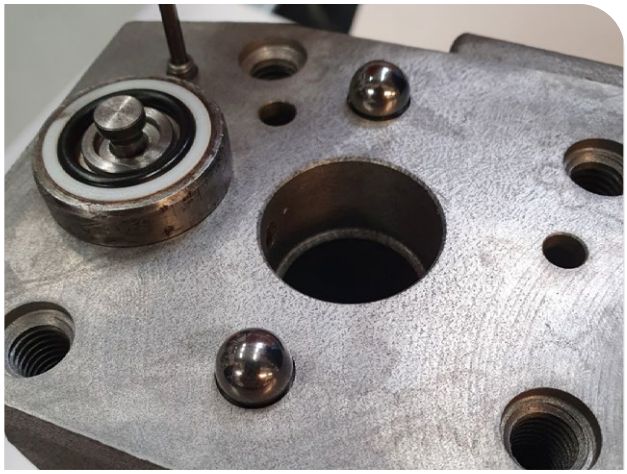
32. Assemble the nozzles and torque them to 1,2±0,2 Nm.



33. Assemble the valve sleeve assy. Make sure the spool hits the guide hole in the spring seat.

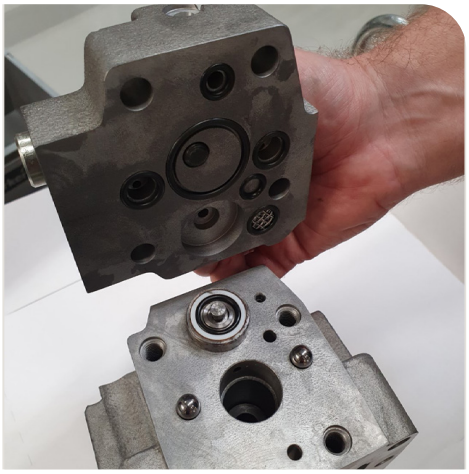


35. Assemble the check valve balls.

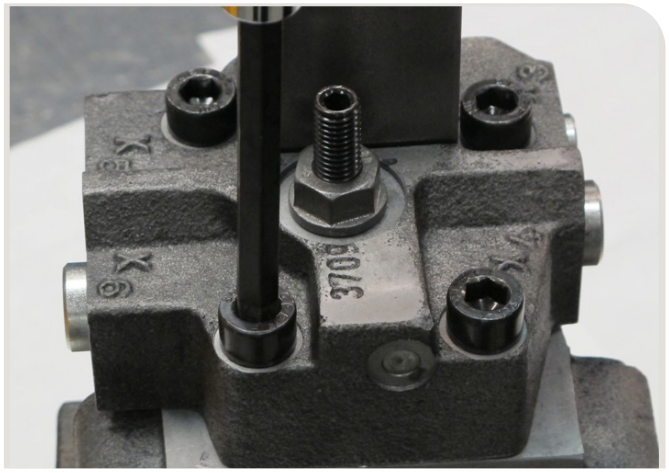


36. Assemble the nozzles and torque them to 1,2±0,2 Nm.

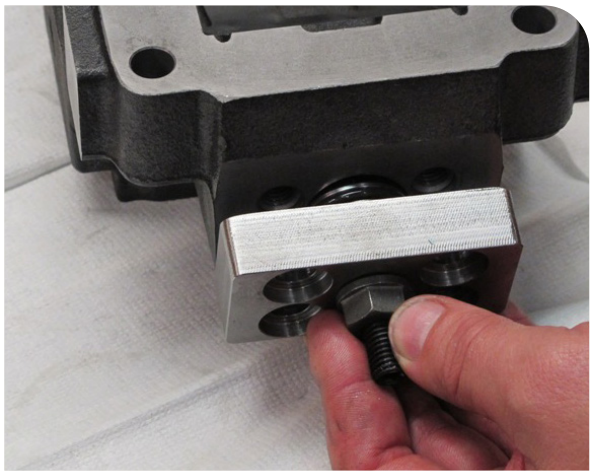
Assembling, end cap (new version)



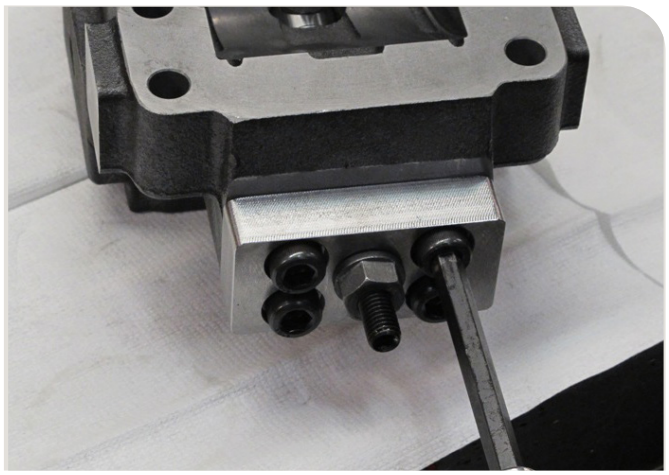
37. Assemble the control cover assy. Make sure the O-rings and check valve balls are in correct position.



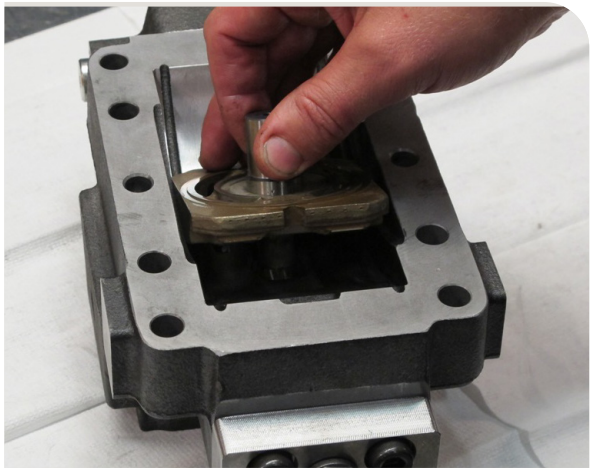
38. Torque the screws to 65±10 Nm for V12-60 – -110, 105±20 Nm for V12-160.



39. Assemble the cover assy. Make sure not to damage the O-ring.

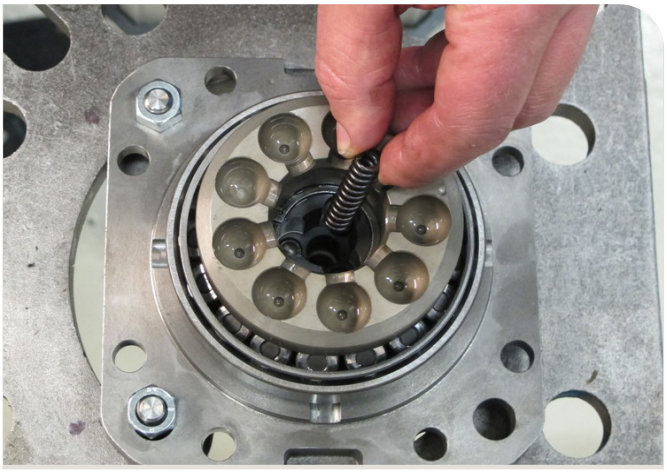


40. Torque the screws to 65±10 Nm for V12-60 – -110, 105±20 Nm for V12-160.

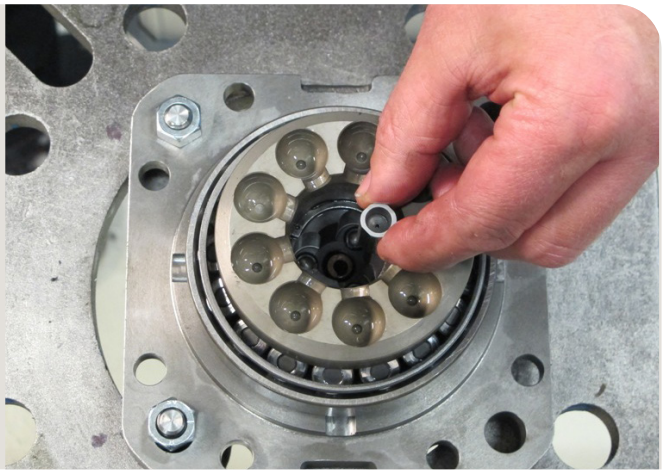


41. Assemble the valve segment in the end cap. The slot in the valve segment against the cover side.

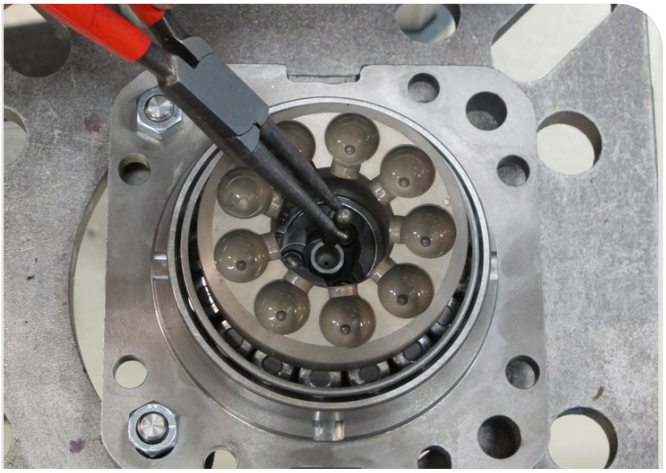
Assembling, complete unit



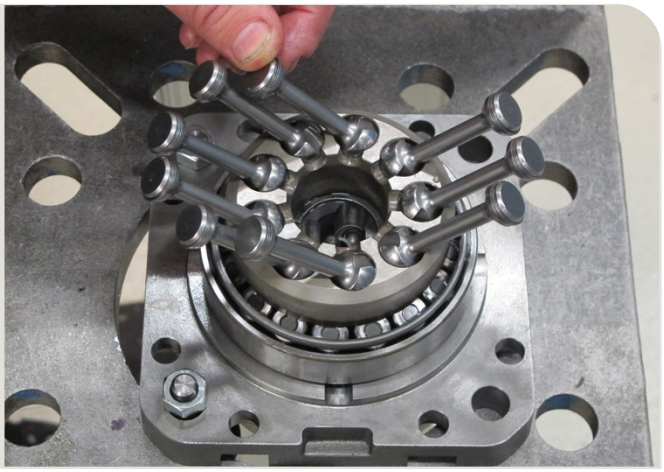
42. Place the bearing package in a fixture. Assemble the compression spring.



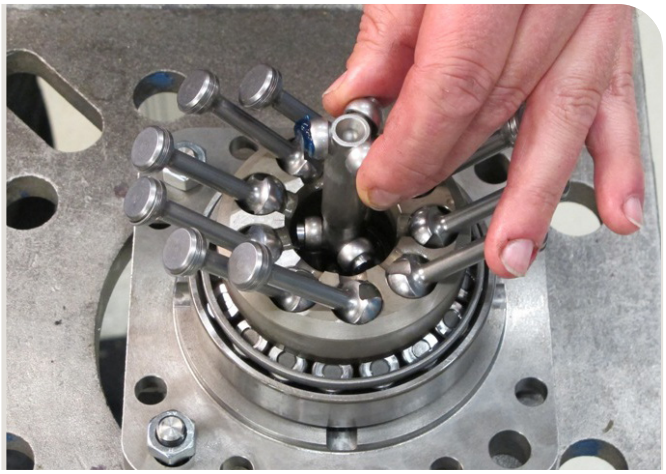
43. Assemble the guide pin.



44. Assemble the support pin.



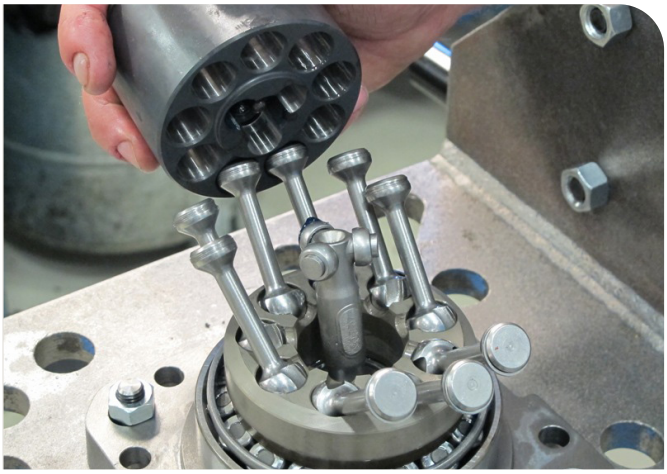
45. Assemble the pistons and line them up as shown in picture.



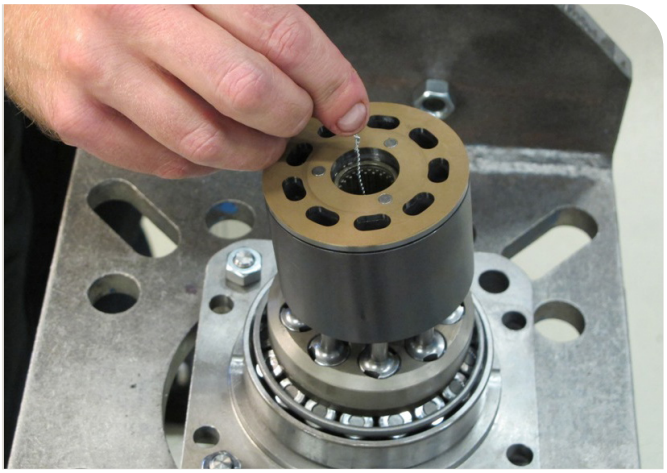
46. Assemble the joint shaft with joint rollers. Add some grease to keep the joint rollers in place.

47. Assemble the support pin. Use a lot of grease to keep it in place.

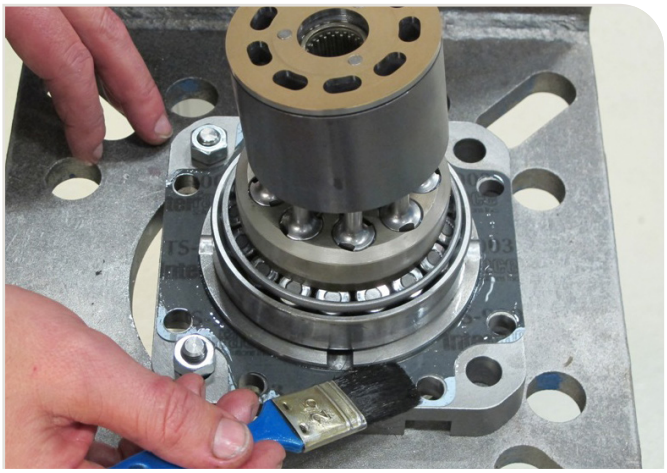
Assembling, complete unit



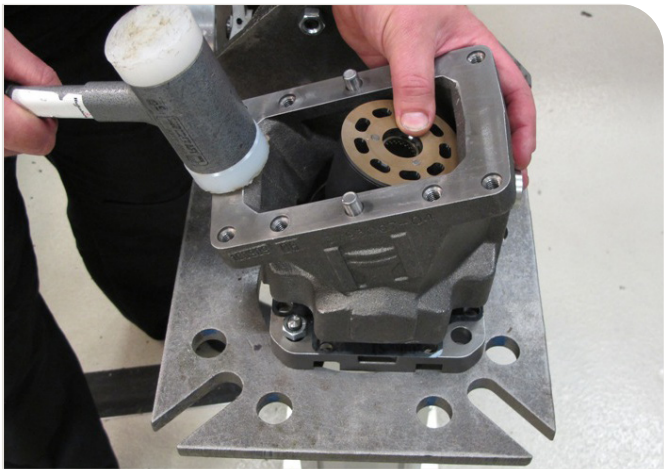
48. Assemble the cylinder barrel. Make sure that all rollers are in place.



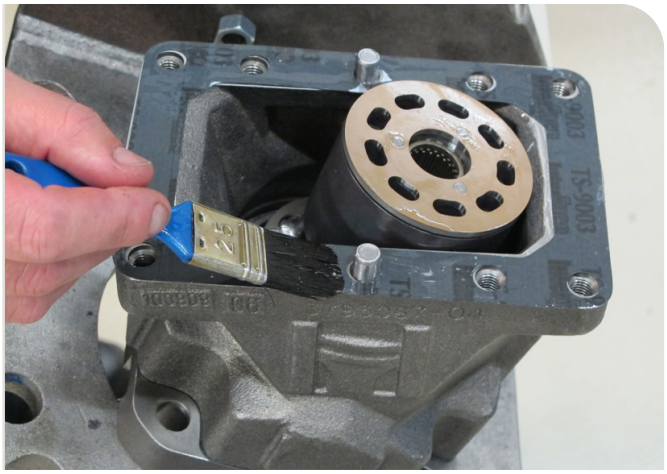
49. Make sure the support pin is in correct position by using a steel wire.



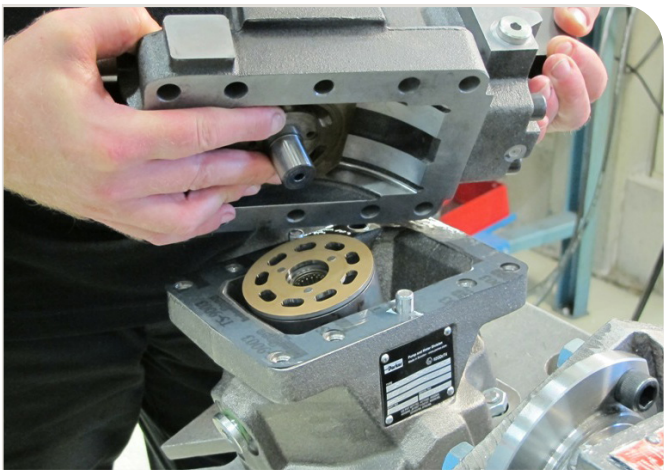
50. Assemble the gasket and lubricate it with hydraulic oil.



51. Assemble the bearing housing. Carefully knock it down with a plastic hammer. Secure the housing by assembling one screw.

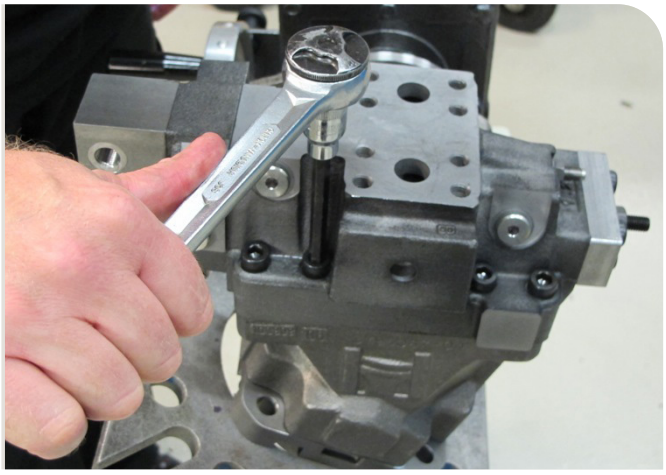


52. Assemble the gasket and lubricate it with hydraulic oil.



53. Assemble the end cap assy. Mind your fingers, don't squeeze them. Refer to page 17 for end cap location.

Assembling, complete unit



54. Assemble the screws and torque the screws to 65±10 Nm for V12-60/80 and 105±20 Nm for V12-110/160.

55. Assemble the screws and torque the screws to 65±10 Nm for V12-60/80 and 105±20 Nm for V12-110/160.

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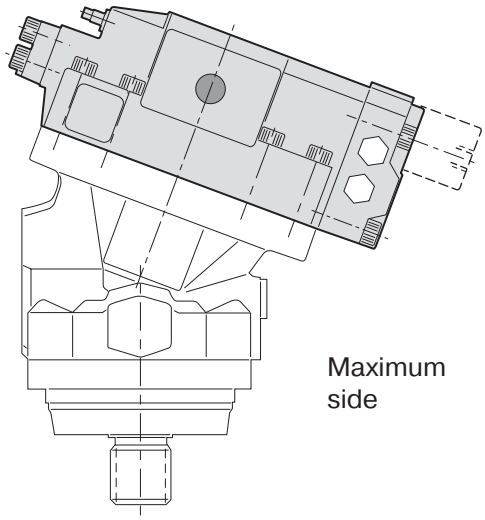
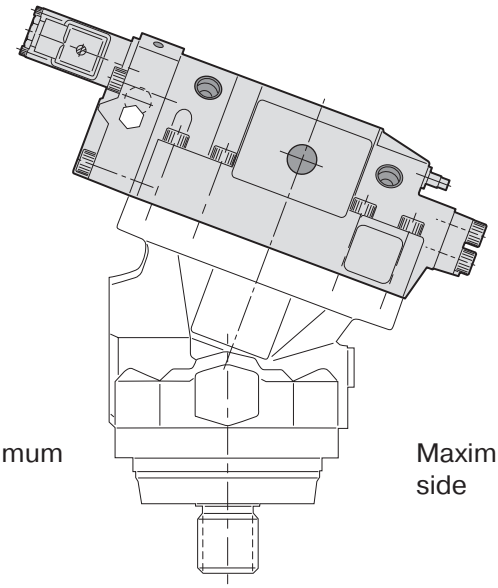
End Cap location



Minimum side

Maximum side

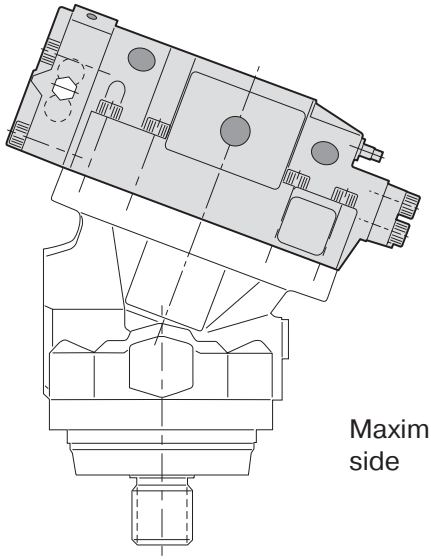
AC and AH control shold be assembled with the control cover at the maximum side.



Minimum side

Maximum side

EO and EP control shold be assembled with the control cover at the minimum side.

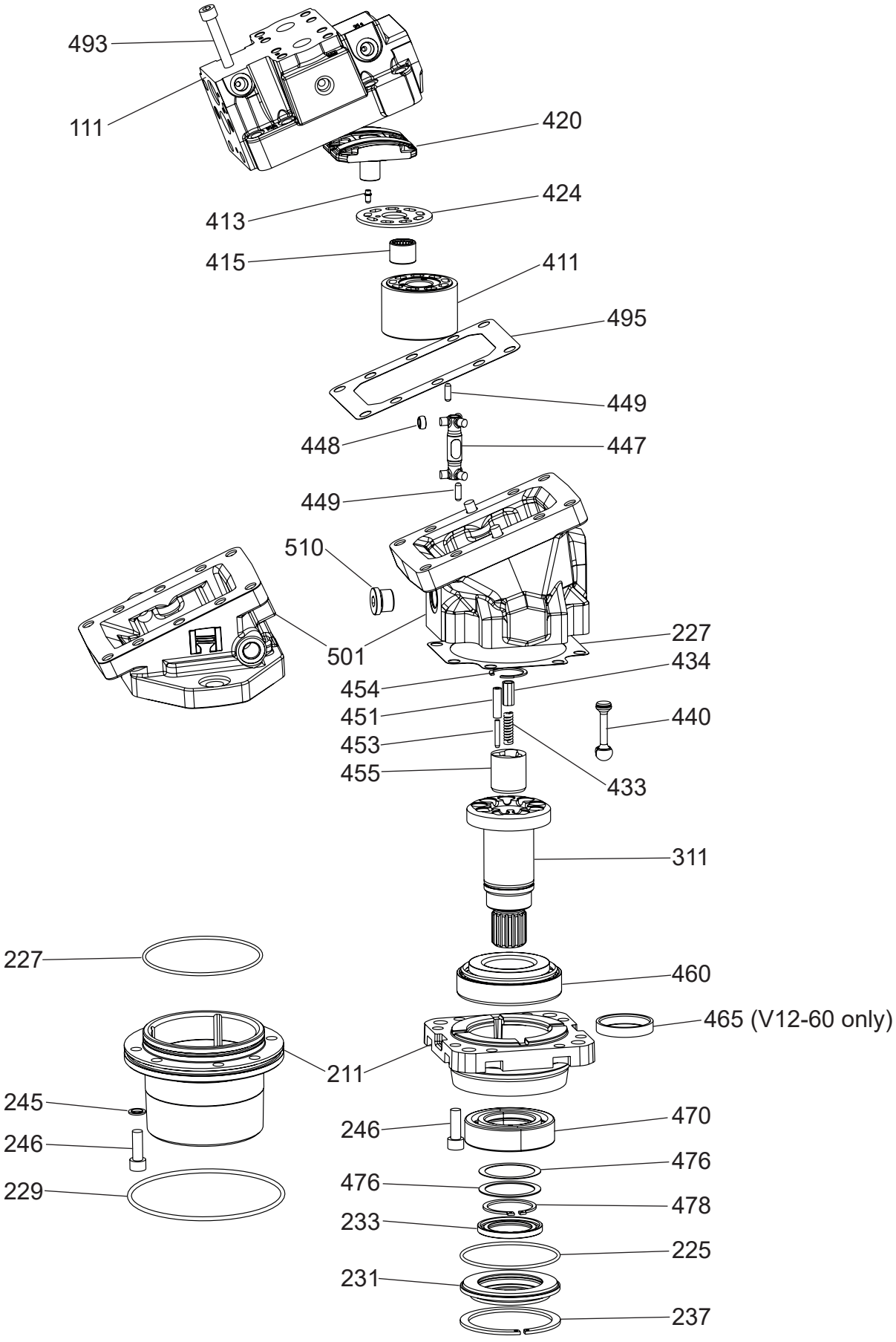


Minimum side

Maximum side

HO and HP control shold be assembled with the control cover at the minimum side.

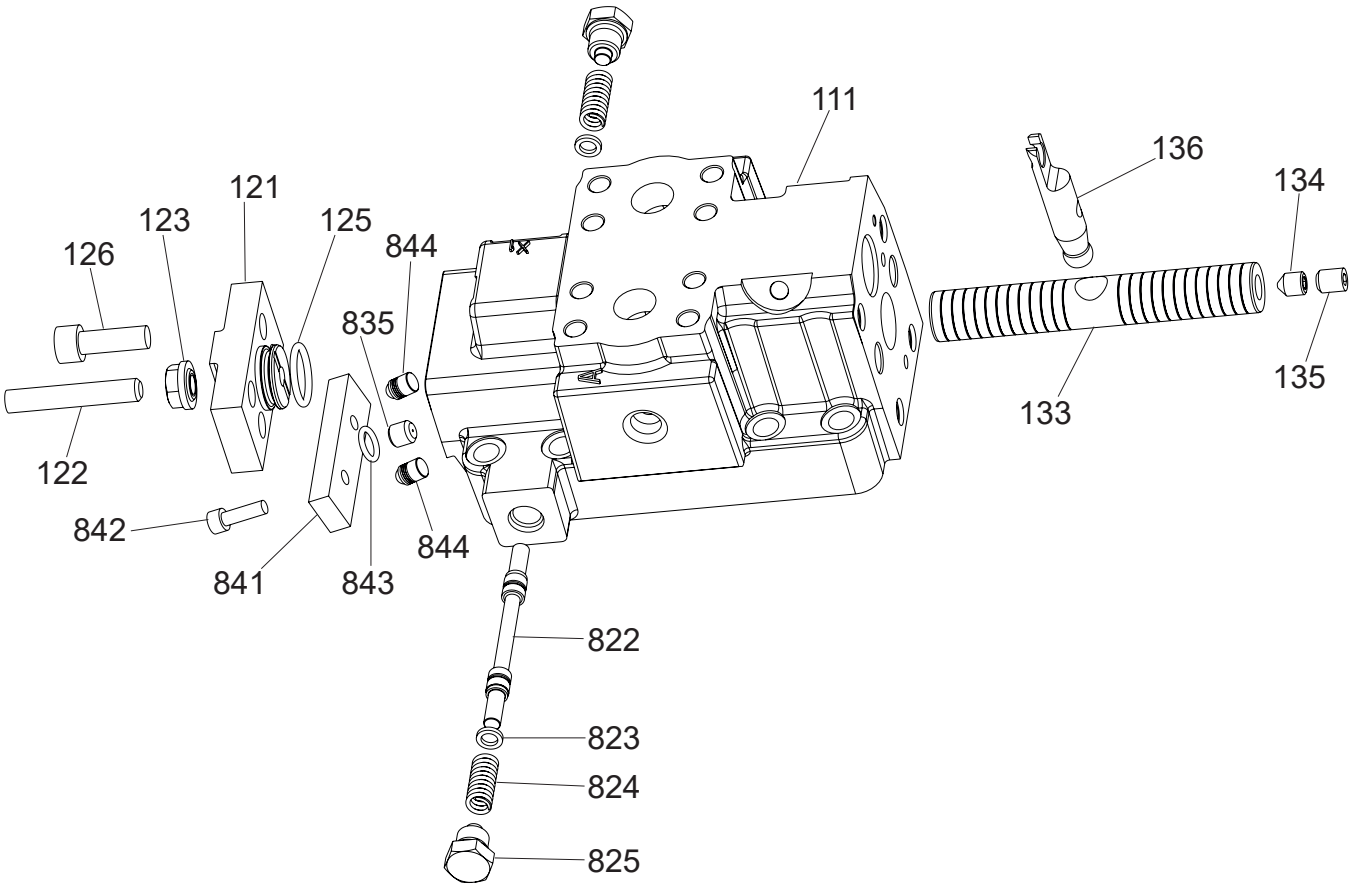
Split View V12



General Parts

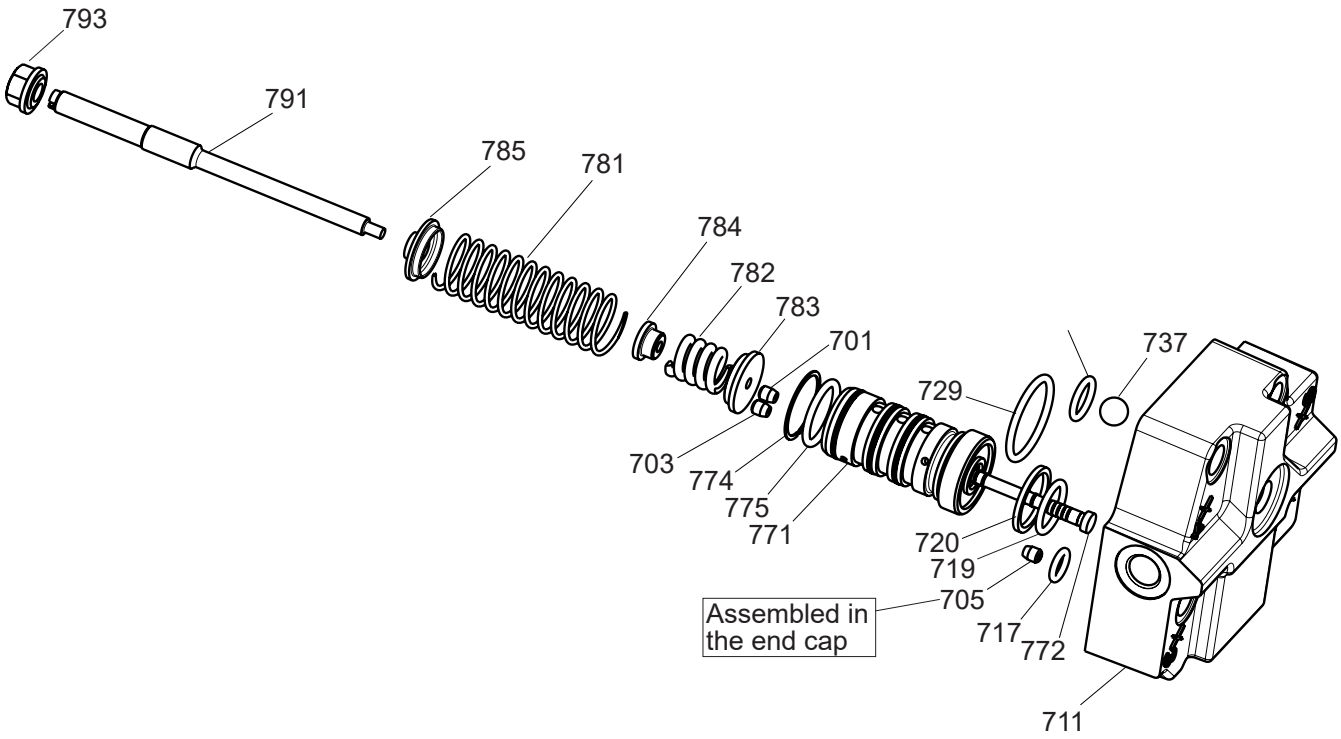
Pos.	Description	Qty	Remarks
111	End Cap	1	
211	Bearing Housing	1	
225	O-Ring	1	Seal kit
227	Gasket	1	Seal kit
227	O-Ring	1	Seal kit
229	O-Ring	1	Seal kit
231	Seal Carrier	1	
233	Shaft Seal	1	Seal kit
237	Retaining Ring	1	Seal kit
245	Seal Washer	8	Seal kit, Shaft kit
246	Hex Socket Screw	8	Shaft kit
311	Shaft	1	Shaft kit
411	Cylinder Barrel	1	Cylinder barrel kit
413	Guide Pin	3	Sliding plate kit
415	Needle Bearing	1	Cylinder barrel kit
420	Valve Segment	1	
424	Sliding Plate	1	Sliding plate kit
433	Compression Spring	1	Shaft kit
434	Guide Pin	1	Shaft kit
440	Piston Assy	9	Piston kit
447	Joint Shaft	1	Joint shaft kit
448	Joint Roller	6	Joint shaft kit
449	Support Pin	2	Joint shaft kit
451	Spring Pin	3	Shaft kit
453	Pin	3	Shaft kit
454	Retaining ring	1	Shaft kit
455	Joint Coupling	1	Shaft kit
460	Tap Rol Bearing	1	Shaft kit
465	Spacer Sleeve	1	Shaft kit
470	Cyl Bearing	1	Shaft kit
476	Spacer Washer	1	Shaft kit
476	Spacer Washer	1	Shaft kit
478	Retaining Ring	1	Shaft kit
493	Hex Socket Screw	8	
495	Gasket	1	Seal kit
501	Bearing Housing	1	
510	Hexagon Plug	1	

Splitview/Spare parts End Cap



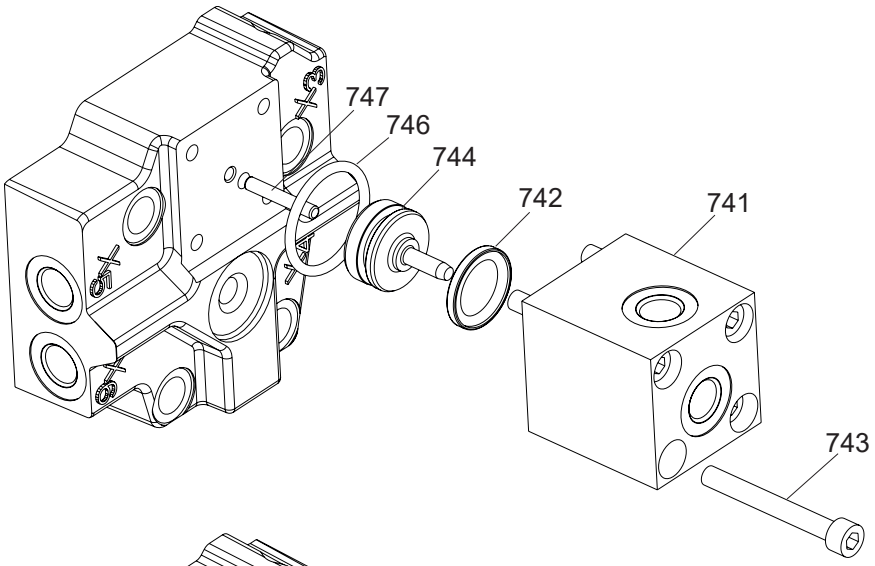
Pos.	Description	Qty	Remarks
111	End Cap		
121	Cover	1	Displacement setting kit
122	Set Screw	1	Displacement setting kit
123	Seal Nut	1	Displacement setting kit
125	O-Ring	1	Displacement setting kit
126	Hex Socket	4	Displacement setting kit
133	Setting Piston	1	Displacement setting kit
134	Set Screw	1	Displacement setting kit
135	Set Screw	1	Displacement setting kit
136	Companion Pin	1	Displacement setting kit
822	Shuttle	1	Flushing valve kit
823	Washer	2	Flushing valve kit
824	Compression Spring	2	Flushing valve kit
825	Hexagon Plug	2	Flushing valve kit
835	Nozzle	1	Flushing valve kit
841	Protective Cover	1	Flushing valve kit
842	Hex Socket Screw	2	Flushing valve kit
843	O-Ring	1	Flushing valve kit
844	Expanding Plug	2	Flushing valve kit

Splitview/Spare parts Control

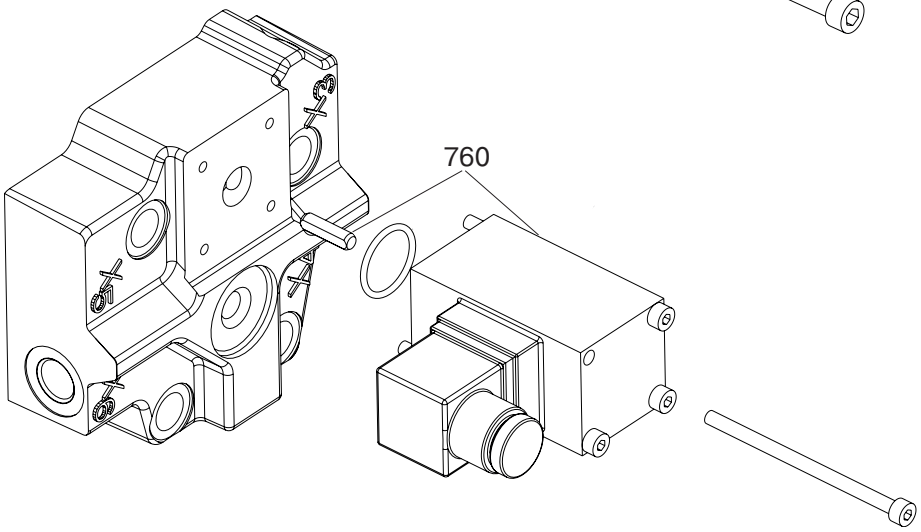


Pos.	Description	Qty	Remarks
701	Nozzle	1	Nozzle kit
703	Nozzle	1	Nozzle kit
705	Nozzle	2	Nozzle kit
711	Control Cover	1	
719	O-Ring	1	Valve sleeve kit
720	Support Ring	1	Valve sleeve kit
729	O-Ring	1	Seal kit
737	O-Ring with Support Ring	4	Seal kit
771	Valve Sleeve	1	Valve sleeve kit
772	Valve Spool	1	Valve sleeve kit
774	Piston Ring	9	Valve sleeve kit
775	O-Ring	1	Valve sleeve kit
781	Modulating Spring	1	Adjusting kit
782	Threshold Spring	1	Adjusting kit
783	Spring Seat	1	Adjusting kit
784	Spring Seat	1	Adjusting kit
785	Spring Guide	1	Adjusting kit
791	Adjusting Screw	1	Adjusting kit
793	Sealing Nut	1	Adjusting kit

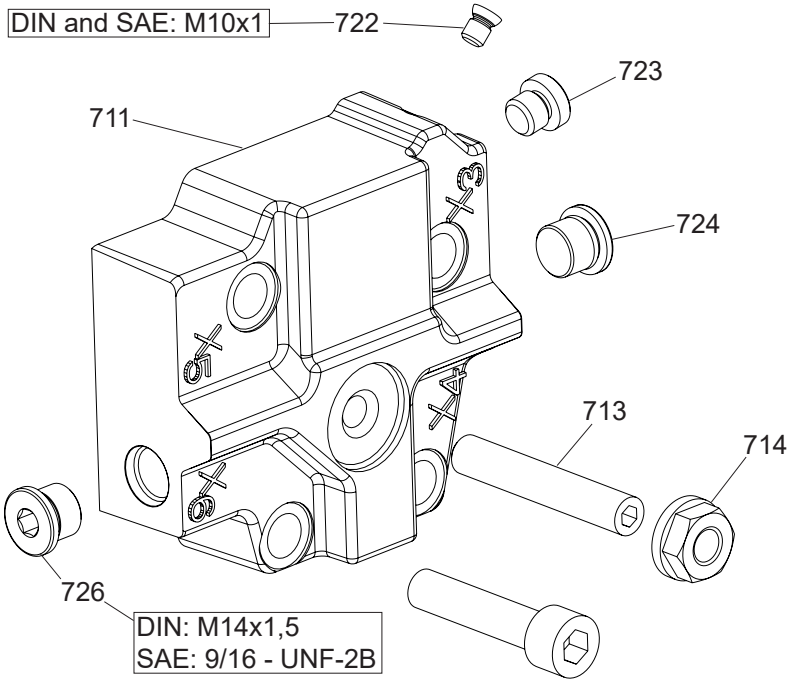
General Parts Controls



Pos.	Description
741	AH Housing
742	O-Ring
743	Hex S Screw
744	Control Piston
746	Piston Seal
747	Guide Pin

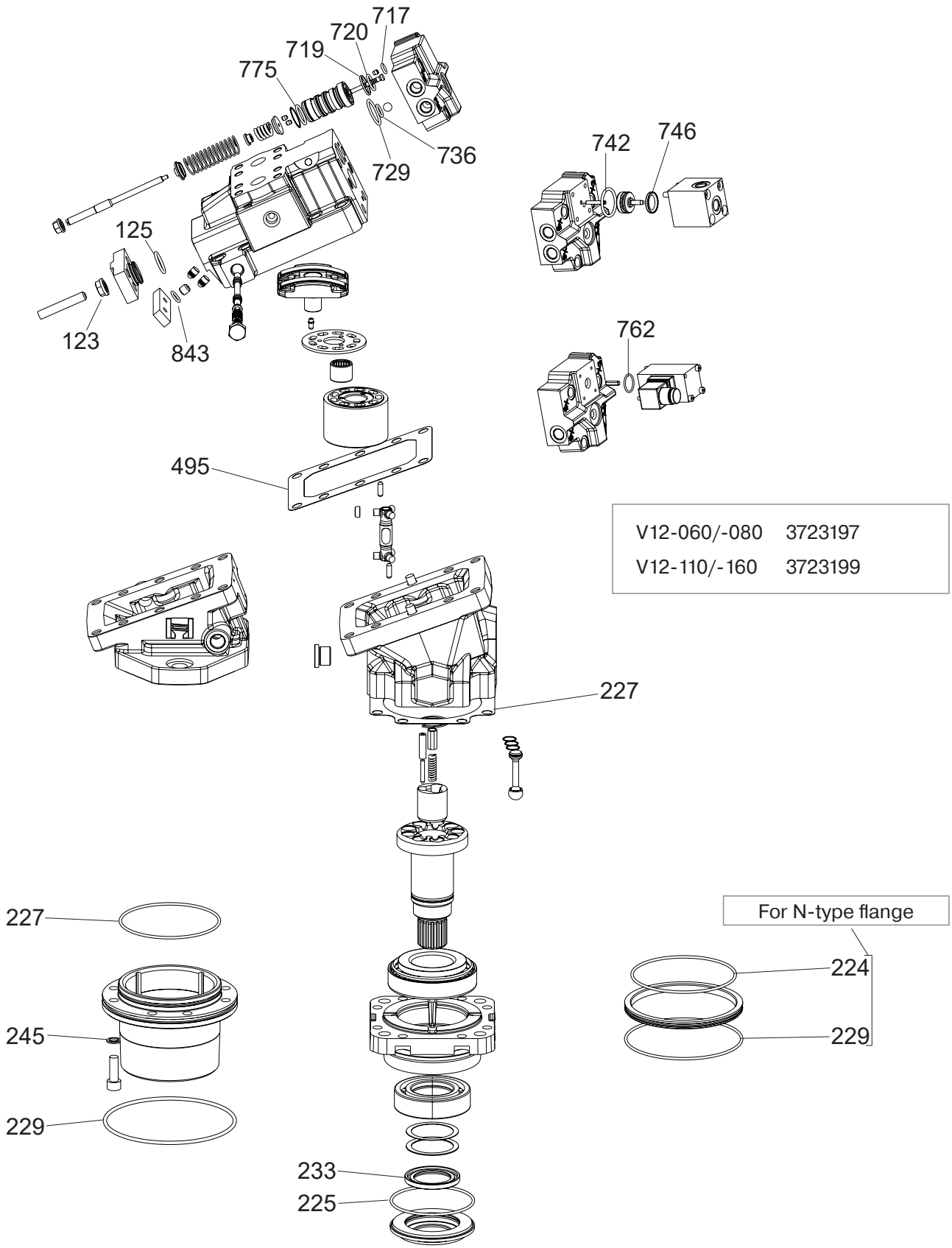


Pos.	Description
760	Solenoid and Guide Pin



Pos.	Description
711	Control Cover
713	Set Screw
714	Seal Nut
722	Seal Plug
723	Hexagon Plug
724	Hexagon Plug
726	Hexagon Plug

Seal Kit Specification



V12-060/-080	3723197
V12-110/-160	3723199

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All V12 kits

Pos.	Description
3723183	Shaft V12-60 Type C rpm + bearings
3723184	Shaft V12-60 Type D rpm + bearings
3723185	Shaft V12-60 Type S rpm + bearings
3723186	Shaft V12-80 Type C rpm + bearings
3723187	Shaft V12-80 Type D rpm + bearings
3723188	Shaft V12-80 Type S rpm + bearings
3723189	Flushing valve kit V12
3723190	Sliding plate kit V12-60
3723191	Sliding plate kit V12-80
3723192	Joint shaft kit V12-60/-80
3723193	Piston kit 9 pcs V12-60
3723194	Piston kit 9 pcs V12-80
3723195	Displacement setting kit V12-60
3723196	Displacement setting kit V12-80
3723197	V12-60/80 Seal kit
3723199	V12-110/160 seal kit
3723200	Adjusting kit – AC/AH V12-60
3723201	Adjusting kit – AC/AH V12-80
3723202	Adjusting kit – EO/EP V12-60-80
3723203	Adjusting kit – HO/HP V12-60
3723204	Adjusting kit – HO/HP V12-80
3780957	Valve sleeve assy V12
3723156	V12 Orifice Kit M5*1
3791753	Cylinder barrel V12-60
3792936	Cylinder barrel V12-80

V12-60 Control cover kits

Pos.	Description
3723445	Control cover kit ACI-I, ISO
3723451	Control cover kit ACI-I, SAE
3723454	Control cover kit AHI-I, ISO
3723455	Control cover kit AHI-I, SAE
3723446	Control cover kit HOS/HPS-I, ISO
3723447	Control cover kit HOS/HPS-I, SAE
3723448	Control cover kit EO/EP-I, ISO
3723449	Control cover kit EO/EP-I, SAE

V12-80 Control cover kits

3723462	Control cover kit ACI-I, ISO
3723463	Control cover kit ACI-I, SAE
3723467	Control cover kit AHI-I, ISO
3723468	Control cover kit AHI-I, SAE
3723469	Control cover kit HOS/HPS-I, ISO
3723471	Control cover kit HOS/HPS-I, SAE
3723465	Control cover kit EO/EP-I, ISO
3723466	Control cover kit EO/EP-I, SAE

Spare Items

Pos.	Part no.	Description	Qty	Remarks
421	3793196	V12-60	1	Valve segment
420	3792937	V12-80	1	Valve segment
211	On request	V12-60/-80	1	Flange
111	On request	V12-60/-80	1	End Cap
501	On request	V12-60/-80	1	Bearing housing
231	3796201	V12-60/-80	1	Seal Carrier
760	3723276	Solenoid	1	12V
760	3723275	Solenoid	1	24V
760	3787488	Connector	1	DEUTSCH DT06-2 Female

Plug position

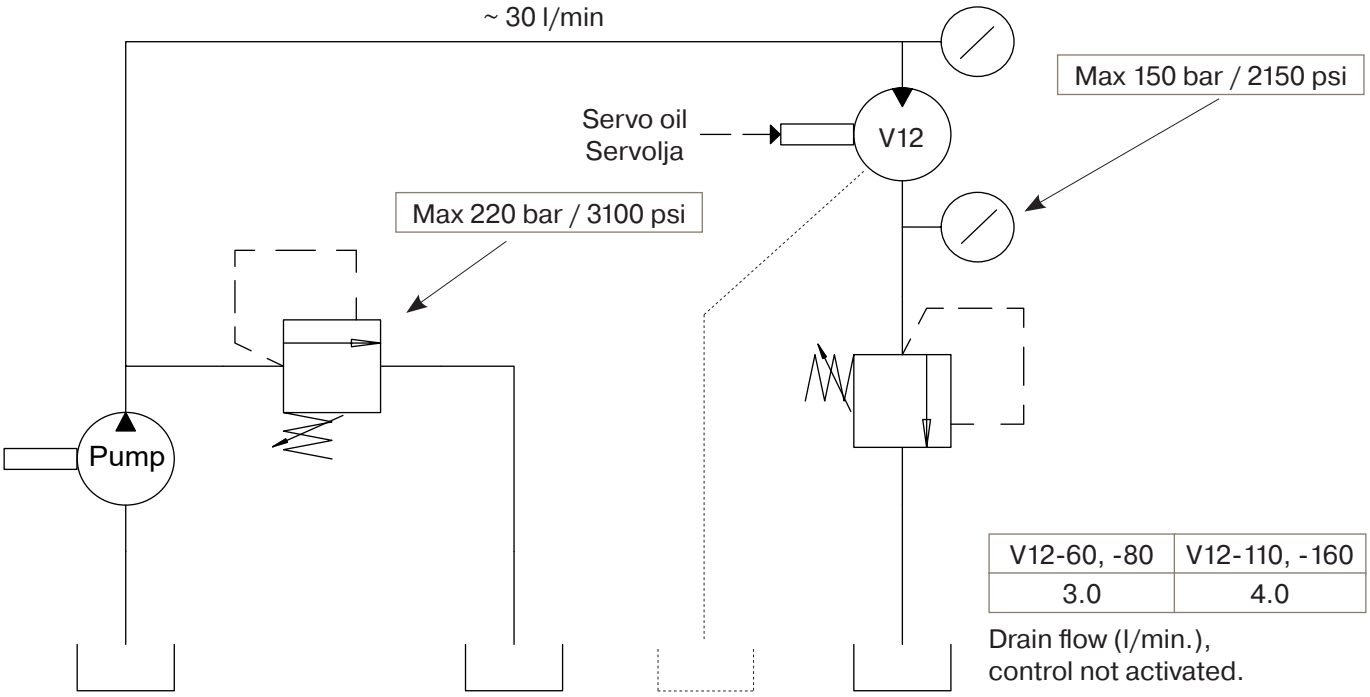
Pos.	Part no.	Description
723	VSTI10X1EDVITCF	M10
510, 145	VSTI22X1.5EDVITCF	M22
510, 520	VSTI18X1.5EDVITCF	M18
61	VSTI12X1EDVITCF	M12
21, 22, 724, 726, 727, 825	VSTI14X1.5EDVITCF	M14
510	10 HP5ON-S	7/8»
21, 22, 724, 726	6 HP5ON-S	9/16»-18

Test procedure

Use a test stand that supplies a flow of about 30 l/min. and pressures of up to 300 bar.
A secondary flow of 3 – 5 l/min. at a pressure of 25 bar is required to supply low pressure for externally supplied controls.
EP control requires an amplifier supplying correct current according to specification.

Test

1. Fill housing with hydraulic fluid and start the pump in the test stand.
2. Increase the pressure with the restrictor valve on the return line. Max allowed pressure is 150 bar/2150 psi.
3. Check the drain flow and compare with the table.



V12-60, -80	V12-110, -160
3.0	4.0

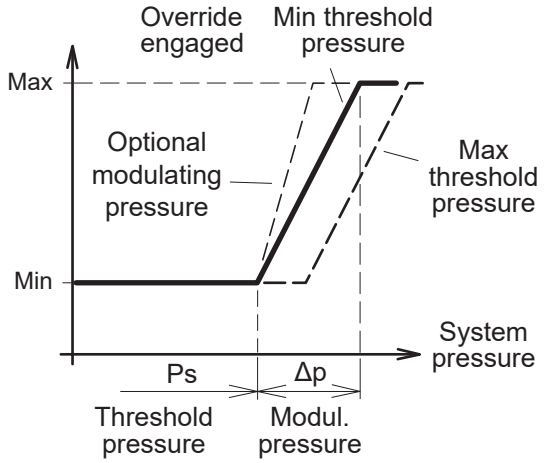
Drain flow (l/min.),
control not activated.

Gauge/Pilot ports (AC and AH control)

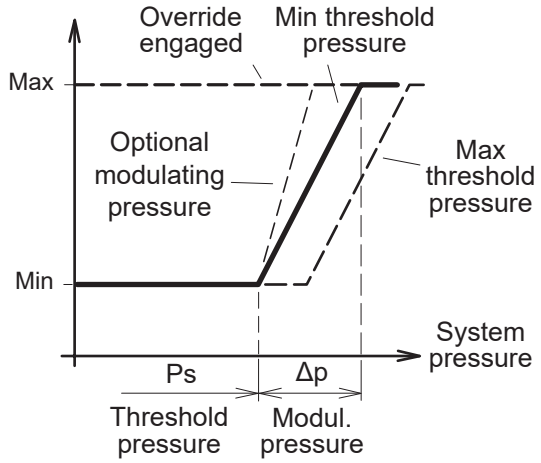
X1 Setting piston pressure (increasing displ.)
X2 Servo supply pressure (after orifice)
X4 Servo supply pressure (before orifice)
X5 External pilot pressure
X6 Setting piston pressure (decreasing displ.)
X7 Override pressure (only AH control)

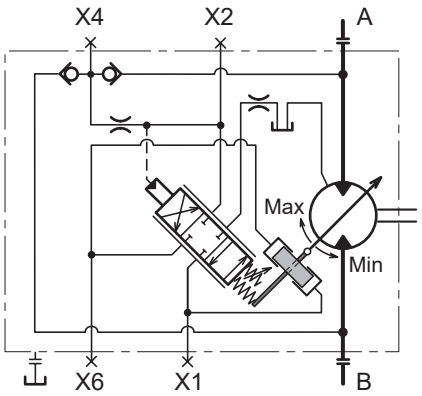
Ports are:
- M14x1.5 (ISO and cartridge versions)
- 9/16"-18 O-ring boss (SAE version)

Displacement
(setting piston position)

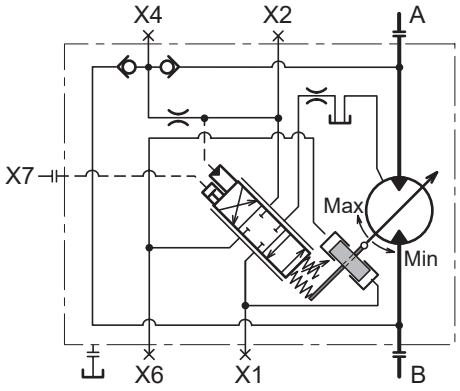


Displacement
(setting piston position)

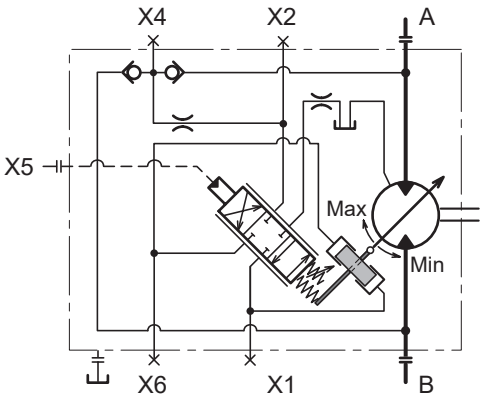




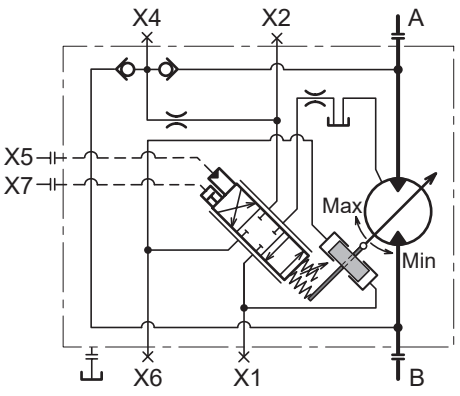
ACI 01 I schematic (spool in a balanced, mid-pos.)



AHI 01 I schematic (spool in a balanced, mid-pos.)



ACE 01 I schematic (spool in a balanced, mid-pos.)



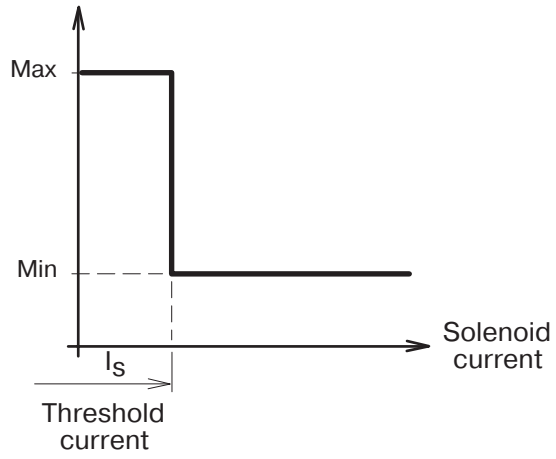
AHE 01 I schematic (spool in a balanced, mid-pos.)

Gauge/Pilot ports (EO and EP control)

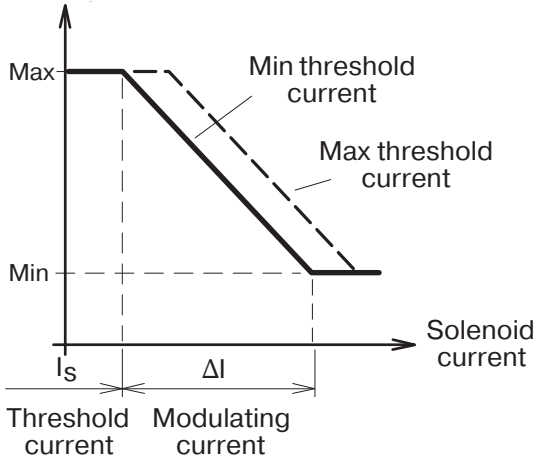
X1 Setting piston pressure (max-to-min, EO)
X1 Setting piston pressure (decreasing displ. EP)
X2 Servo supply pressure (after orifice)
X4 Servo supply pressure (before orifice)
X6 Setting piston pressure (min-to-max, EO)
X6 Setting piston pressure (increasing displ. EP)

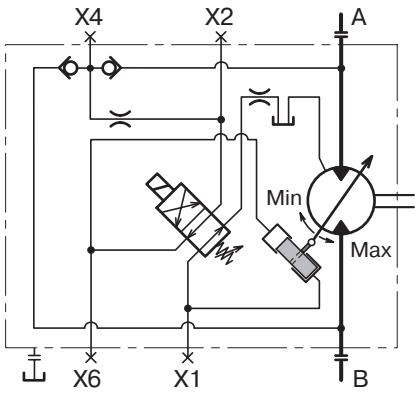
Ports are:
- M14x1.5 (ISO and cartridge versions)
- 9/16”-18 O-ring boss (SAE version)

Displacement
(setting piston position)

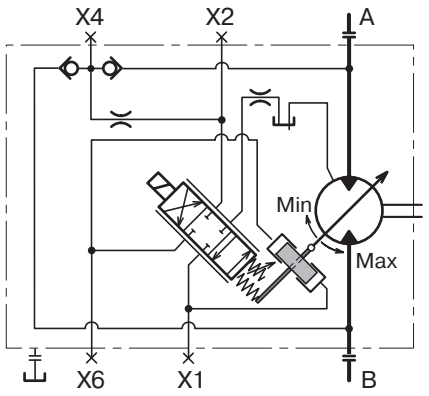


Displacement
(setting piston position)

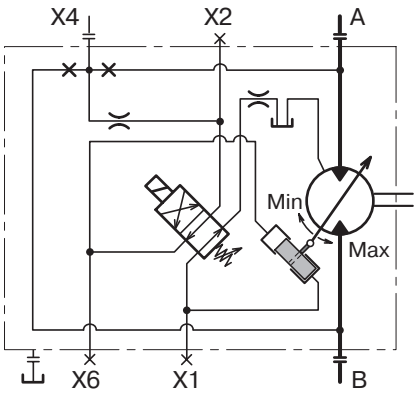




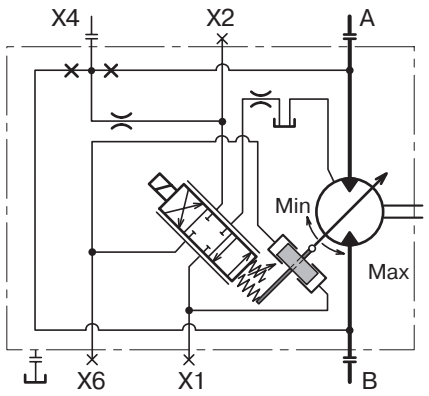
EOH 01 I schematic (non-activated solenoid)



EPH 01 I schematic (spool in balanced, mid-pos.)



EOH 01 E schematic (non-activated solenoid)



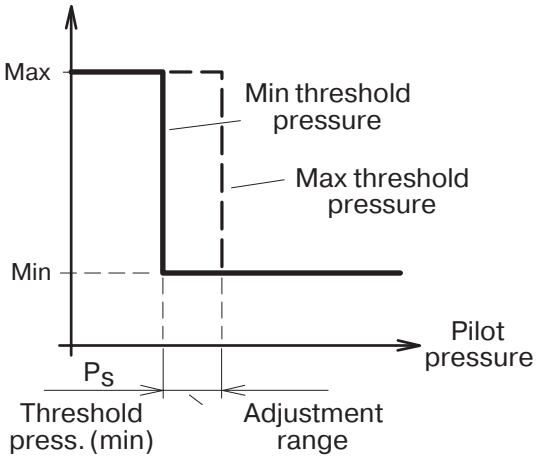
EPH 01 E schematic (spool in balanced, mid-pos.)

Gauge/Pilot ports (HO and HP control)

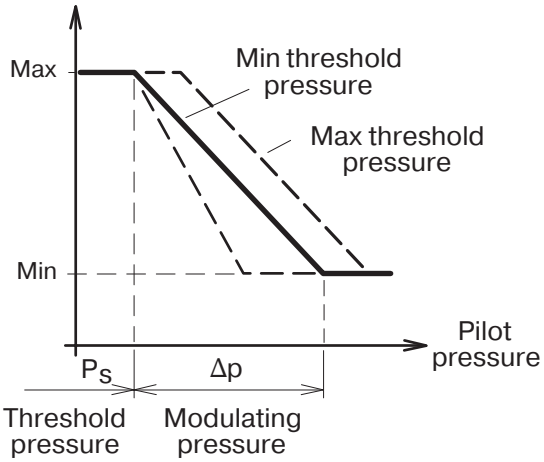
X1 Setting piston pressure (max-to-min, HO)
X1 Setting piston pressure (decreasing displ. HP)
X2 Servo supply pressure (after orifice)
X4 Servo supply pressure (before orifice)
X5 External pilot pressure (max 100 bar)
X6 Setting piston pressure (min-to-max, HO)
X6 Setting piston pressure (increasing displ. HP)

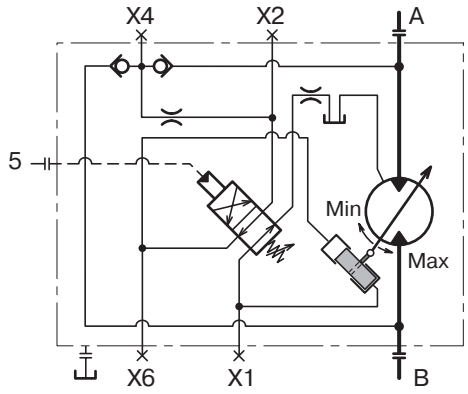
Ports are:
- M14x1.5 (ISO and cartridge versions)
- 9/16”-18 O-ring boss (SAE version)

Displacement
(setting piston position)

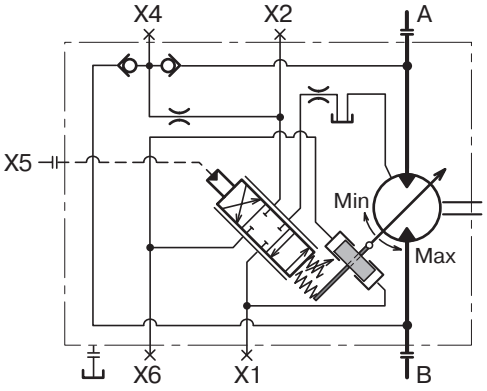


Displacement
(setting piston position)

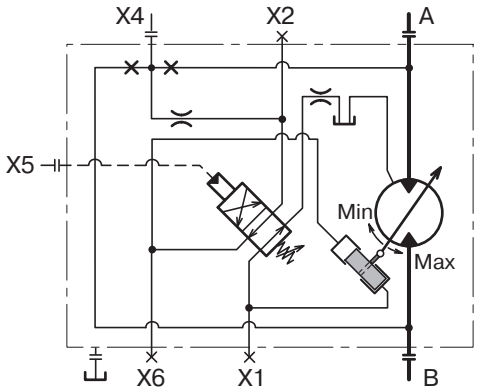




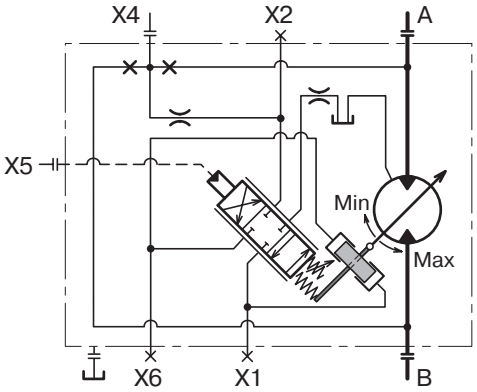
HO S 01 I schematic (X5 not pressurized)



HP S 01 I schematic (spool in a balanced, mid-pos.)



HO S 01 E schematic (X5 not pressurized)



HP S 01 E schematic (spool in a balanced, mid-pos.)

Parker Hannifin
Pump & Motor Division Europe
Trollhättan, Sweden

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- ISO 13849-1:2015
- SS-EN ISO 4413:2010

so that the machines in which the products are incorporated meet the essential health and safety requirements.

Confirmations for components to be proven component, e. g. for validation of hydraulic systems, can only be provided after an analysis of the specific application, as the fact to be a proven component mainly depends on the specific application.

Christian Jäger
General Manger
Pump & Motor Division Europe

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