



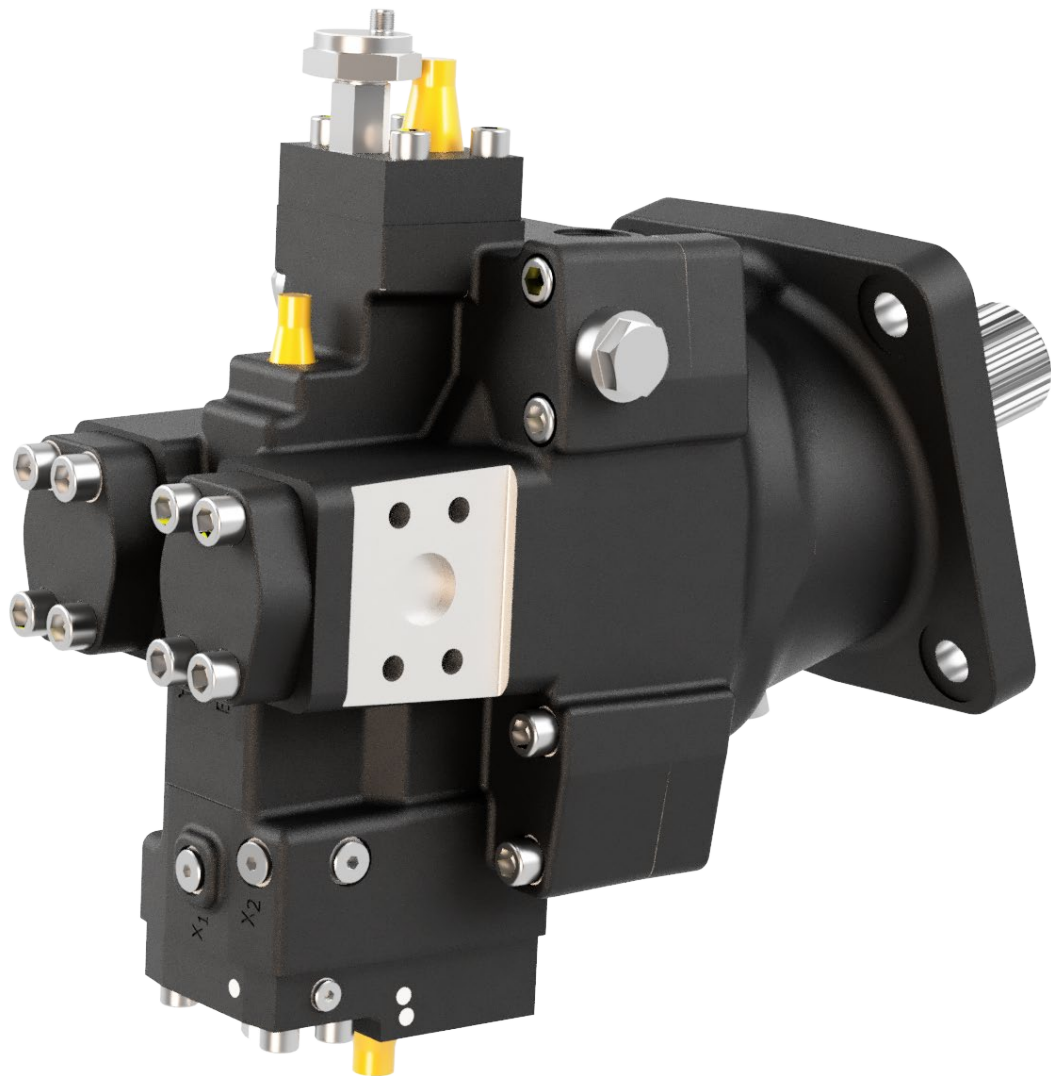
Visit our homepage for additional support [parker.com/pmde](https://parker.com/pmde)

MSG30-5526-M1/UK

# Service/ Spare Parts Manual Series V16

Effective: August, 2023

Supersedes: February, 2023



ENGINEERING **YOUR** SUCCESS.

<b>List of contents</b>	<b>Page</b>
General Information/New features V16.....	3
Cross section / Specifications.....	4
M and T version / Valves segment orientation.....	5
Displacement limiter.....	6 – 10
Ordering code.....	11
Installation information.....	12 – 13
Controls and gauge ports.....	14 – 21
Disassembling.....	22 – 33
Assembling.....	34 – 45
Disassembling / Assembling.....	46
Split Views / Spare parts V16-220/270.....	47 - 58
Test procedure.....	59

#### 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 <sup>3</sup>	=	0.061024 in <sup>3</sup>
1 m	=	3.2808 feet
1 mm	=	0.03937 in
1 °C	=	1.8 °F + 32

## General information

Series V16 is a new generation of variable displacement, bent-axis motors. A further development of our well known V12 and V14 motor series.

The new motor series is available in sizes 220 cc/rev and 270 cc/rev.

It is designed for both open and closed circuit transmissions with focus on high performance machines.

## New features:

- Zero displacement capability
- Increased operating pressure, up to 550 bar
- Accurate control response
- Easy installation

## ...mainly thanks to:

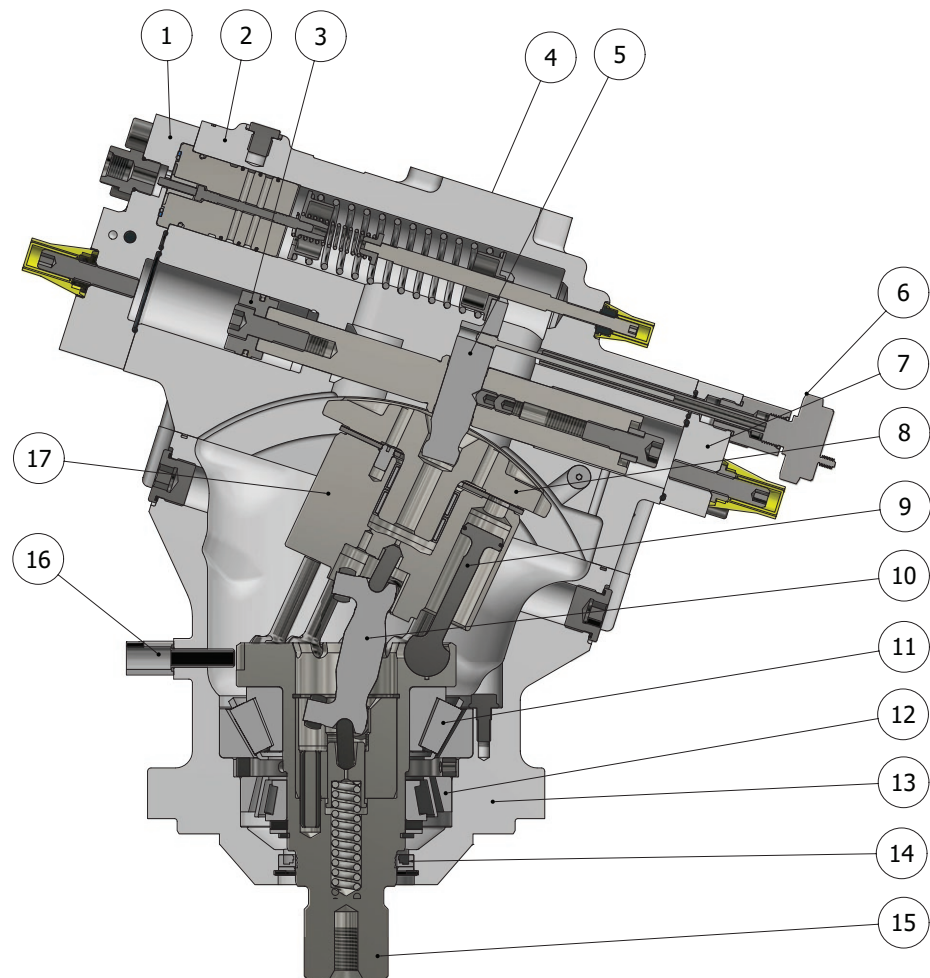
- New motor design
- New design and simulation tools
- Best in class displacement range - 5.5:1
- Position sensor and plug in speed sensor available together with a a flexible main port design

## Important features carried over from previous motors:

- High speeds, thanks to low weight pistons with laminated piston rings and a very compact design of the rotating parts.
- High overall efficiency throughout the entire displacement range
- 9 pistons provide high start-up torque and smooth operation
- Small envelope size and high power-to-weight ratio
- Low noise levels due to the compact, sturdy design and smooth fluid passages
- Positive piston locking, strong synchronizing shaft, heavy-duty bearings and a small number of parts add up to a very robust motor with long service life and proven reliability.

## V16 cross section

1. Control cover
2. End cap
3. Setting piston
4. Main pressure ports  
(axial and radial ports)
5. Connecting arm
6. Displacement sensor
7. Cover
8. Valve segment
9. Spherical piston with  
laminated piston ring
10. Synchronizing shaft
11. Inner tap. rol. bearing
12. Outer tap. rol. bearing
13. Bearing housing
14. Shaft seal
15. Output shaft
16. Plug in speed sensor
17. Cylinder barrel



## Specifications

V16 frame size	220	270
<b>Displacement [cm<sup>3</sup>/rev]</b>		
- max, at 35°	220	270
- min, at 6°	40	49
<b>Operating pressure [bar]</b>		
- max intermittent <sup>1)</sup>	550	550
- max continuous	450	450
<b>Operating speed [rpm]</b>		
- at 35°, max continuous	2950	2750
- at 6° – 20°, max continuous	4950	4600
- at 0°, max continuous	5550	5000
- min continuous	50	50

V16 frame size	220	270
<b>Flow [l/min]</b>		
- max continuous	648	743
<b>Torque (theor.) at 100 bar [Nm]</b>	350	430
<b>Max output power<sup>1)</sup> [kW]</b>	486	557
<b>Corner power [kW]</b>		
- intermittent <sup>1)</sup>	997	1139
- continuous	816	932
<b>Mass moment of inertia</b>		
(x10 <sup>-3</sup> ) [kg m <sup>2</sup> ]	20	21
<b>Weight [kg]</b>	95	97

<sup>1)</sup> Max 6 seconds in any one minute.



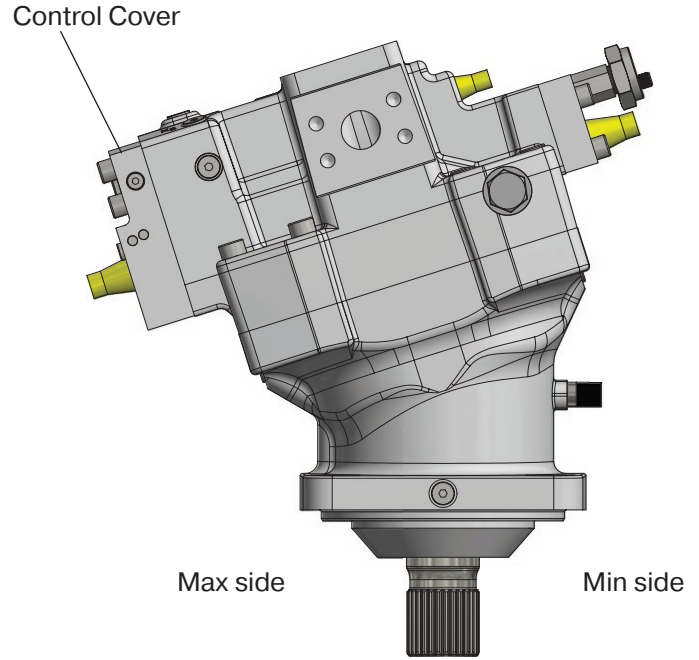
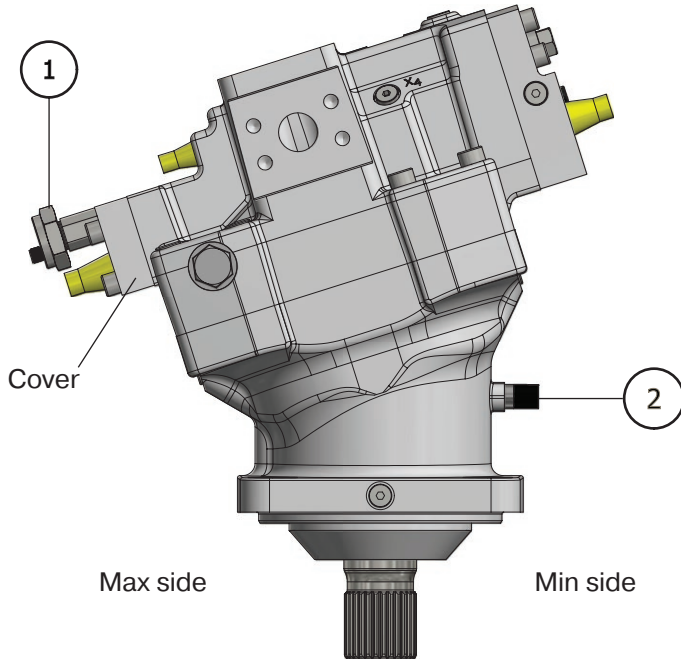
● **M and T version**

M version, negative control characteristics

Motor starts in max displacement, standard for EO, EOA, EOB, EP, EPA, EPB, HO, HOC, HP and HPC.

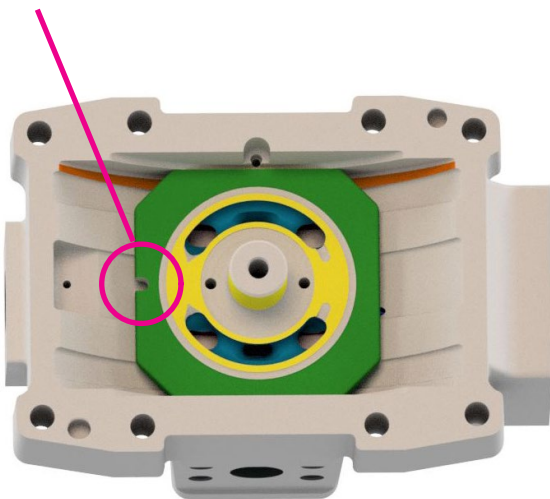
T version, positive control characteristics

Motor starts in min displacement, standard for AC; optional for EO, EOA, EOB, EP, EPA, EPB, HO, HOC, HP and HPC.

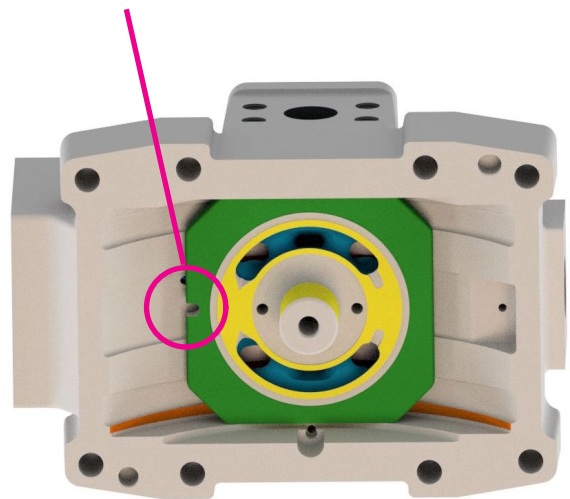


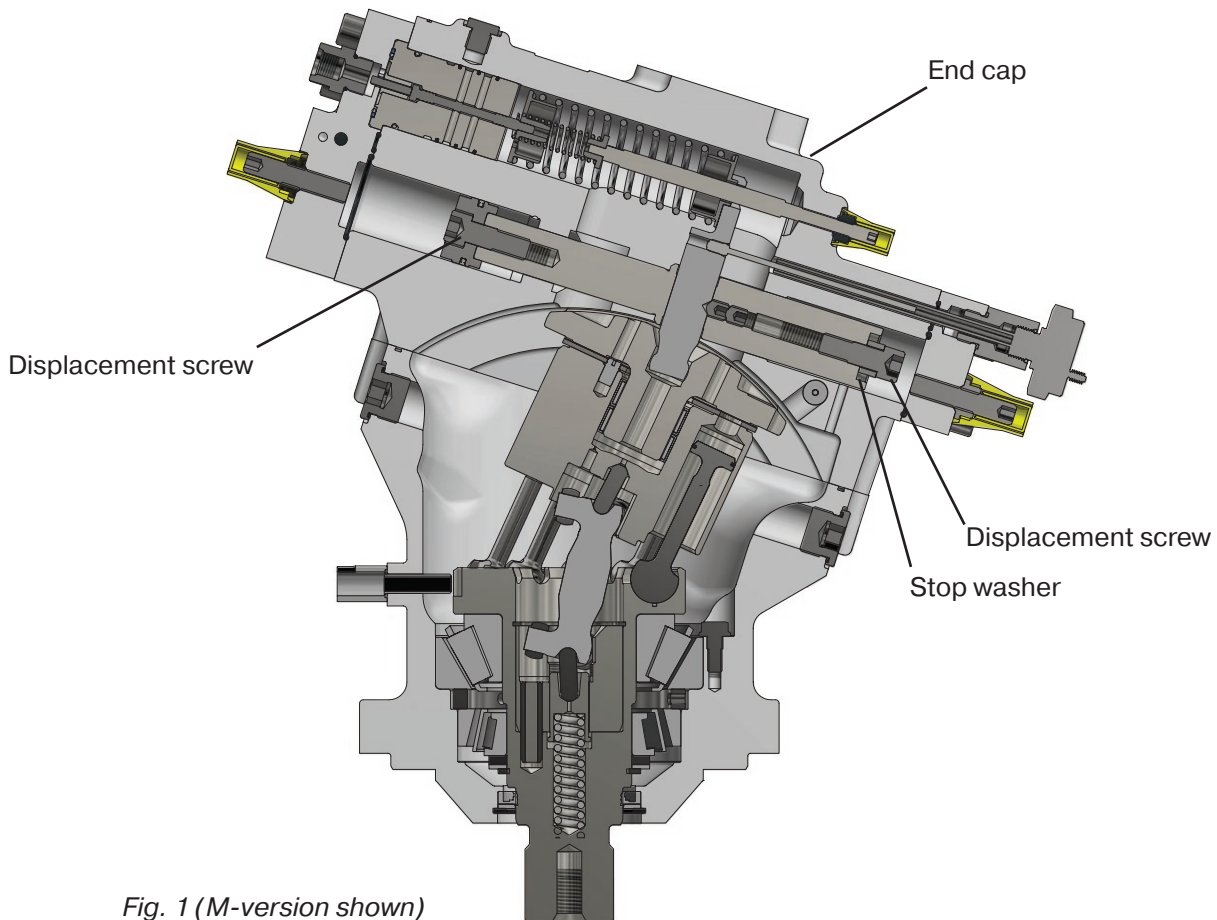
- 1. See page 46 for disassembly/assembly information
- 2. See page 46 for assembly information

The groove in the valve segment against the cover for motor assembled as M-version



The groove in the valve segment against the control cover for motor assembled as T-version





## ● V16 Displacement limiter

Max and min displacement limiter consists of a hex socket screw and stop washers or spacers, see fig. 1.

Suitable screw lengths for a particular max or min displacement range are shown on page 7-10. What length the max or min displacement spacer should have to obtain a chosen displacement is shown on pages 7-10.

The displacement spacers are available in five different lengths: 1; 1.5; 2; 5 and 10 mm. To obtain the right displacement, the spacers can be combined with each other's. The thinnest spacer has to be mounted closest to the setting piston, and the others in increasing length order.

**Note!** See page 5 for M and T version

## Displacement spacer changing procedure:


1. Disassemble the max and/or min end cover/control cover by loosening the screws for the chosen cover.
2. Loosen the socket head cap screw from setting piston.  
**Note:** This must be done when the end cap is assembled on the motor, otherwise the feedback arm could be damaged.
3. Choose spacer (s) to obtain right displacement, see page 7 - 10, and place them on the socket head cap screw.
4. Tighten the socket head cap screw in the setting piston. The tightening torque is  $114 \pm 10$  Nm.
5. Assemble the end cover / control cover. The tightening torque is  $114 \pm 10$  Nm for the screws.

Internal/external displacement limiter V16-220, M version (negative control)

Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]	Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]
0.0	0	82.0	0.0	29.0	186	14.6	67.4
6.0	40	67.4	14.6	30.0	192	12.2	69.8
6.5	43	66.2	15.8	31.0	197	9.8	72.2
7.0	47	65.1	16.9	32.0	203	7.4	74.6
7.5	50	63.9	18.1	33.0	209	5.0	77.0
8.0	53	62.7	19.3	34.0	214	2.5	79.5
8.5	57	61.6	20.4	35.0	220	0.0	82.0
9.0	60	60.4	21.6				
9.5	63	59.2	22.8				
10.0	67	58.1	23.9				
10.5	70	56.9	25.1				
11.0	73	55.8	26.2				
11.5	76	54.6	27.4				
12.0	80	53.5	28.5				
12.5	83	52.4	29.6				
13.0	86	51.2	30.8				
13.5	89	50.1	31.9				
14.0	93	48.9	33.1				
14.5	96	47.8	34.2				
15.0	99	46.7	35.3				
15.5	102	45.5	36.5				
16.0	106	44.4	37.6				
16.5	109	43.3	38.7				
17.0	112	42.1	39.9				
17.5	115	41.0	41.0				
18.0	118	39.9	42.1				
18.5	122	38.7	43.3				
19.0	125	37.6	44.4				
19.5	128	36.5	45.5				
20.0	131	35.3	46.7				
20.5	134	34.2	47.8				
21.0	137	33.0	49.0				
21.5	140	31.9	50.1				
22.0	144	30.8	51.2				
22.5	147	29.6	52.4				
23.0	150	28.5	53.5				
23.5	153	27.3	54.7				
24.0	156	26.2	55.8				
24.5	159	25.0	57.0				
25.0	162	23.9	58.1				
25.5	165	22.7	59.3				
26.0	168	21.6	60.4				
26.5	171	20.4	61.6				
27.0	174	19.2	62.8				
28.0	180	16.9	65.1				

**Displacement screw**

- M12x45
- M12x60
- M12x80
- M12x100



**External displacement limiter**

Internal/external displacement limiter V16-220, T version (positive control)

Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]	Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]
0.0	0	82.0	0.0	29.0	186	14.6	67.4
6.0	40	67.4	14.6	30.0	192	12.2	69.8
6.5	43	66.2	15.8	31.0	197	9.8	72.2
7.0	47	65.1	16.9	32.0	203	7.4	74.6
7.5	50	63.9	18.1	33.0	209	5.0	77.0
8.0	53	62.7	19.3	34.0	214	2.5	79.5
8.5	57	61.6	20.4	35.0	220	0.0	82.0
9.0	60	60.4	21.6				
9.5	63	59.2	22.8				
10.0	67	58.1	23.9				
10.5	70	56.9	25.1				
11.0	73	55.8	26.2				
11.5	76	54.6	27.4				
12.0	80	53.5	28.5				
12.5	83	52.4	29.6				
13.0	86	51.2	30.8				
13.5	89	50.1	31.9				
14.0	93	48.9	33.1				
14.5	96	47.8	34.2				
15.0	99	46.7	35.3				
15.5	102	45.5	36.5				
16.0	106	44.4	37.6				
16.5	109	43.3	38.7				
17.0	112	42.1	39.9				
17.5	115	41.0	41.0				
18.0	118	39.9	42.1				
18.5	122	38.7	43.3				
19.0	125	37.6	44.4				
19.5	128	36.5	45.5				
20.0	131	35.3	46.7				
20,5	134	34.2	47.8				
21.0	137	33.0	49.0				
21.5	140	31.9	50.1				
22.0	144	30.8	51.2				
22.5	147	29.6	52.4				
23.0	150	28.5	53.5				
23.5	153	27.3	54.7				
24.0	156	26.2	55.8				
24.5	159	25.0	57.0				
25.0	162	23.9	58.1				
25.5	165	22.7	59.3				
26.0	168	21.6	60.4				
26.5	171	20.4	61.6				
27.0	174	19.2	62.8				
28.0	180	16.9	65.1				

Displacement screw	
M12x45	
M12x60	
M12x80	
M12x100	



External displacement limiter

Internal/external displacement limiter V16-270, M version (negative control)

Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]	Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]
0.0	0	82.0	0.0	29.0	228.3	14.6	67.4
6.0	49.2	67.4	14.6	30.0	235.5	12.2	69.8
6.5	53.3	66.2	15.8	31.0	242.6	9.8	72.2
7.0	57.4	65.1	16.9	32.0	249.6	7.4	74.6
7.5	61.5	63.9	18.1	33.0	256.5	5.0	77.0
8.0	65.5	62.7	19.3	34.0	263.4	2.5	79.5
8.5	69.6	61.6	20.4	35.0	270.1	0.0	82.0
9.0	73.7	60.4	21.6				
9.5	77.7	59.2	22.8				
10.0	81.8	58.1	23.9				
10.5	85.8	56.9	25.1				
11.0	89.9	55.8	26.2				
11.5	93.9	54.6	27.4				
12.0	97.9	53.5	28.5				
12.5	101.9	52.4	29.6				
13.0	105.9	51.2	30.8				
13.5	109.9	50.1	31.9				
14.0	113.9	48.9	33.1				
14.5	117.9	47.8	34.2				
15.0	121.9	46.7	35.3				
15.5	125.9	45.5	36.5				
16.0	129.8	44.4	37.6				
16.5	133.8	43.3	38.7				
17.0	137.7	42.1	39.9				
17.5	141.6	41.0	41.0				
18.0	145.5	39.9	42.1				
18.5	149.4	38.7	43.3				
19.0	153.3	37.6	44.4				
19.5	157.2	36.5	45.5				
20.0	161.1	35.3	46.7				
20.5	164.9	34.2	47.8				
21.0	168.8	33.0	49.0				
21.5	172.6	31.9	50.1				
22.0	176.4	30.8	51.2				
22.5	180.2	29.6	52.4				
23.0	184.0	28.5	53.5				
23.5	187.8	27.3	54.7				
24.0	191.6	26.2	55.8				
24.5	195.3	25.0	57.0				
25.0	199.0	23.9	58.1				
25.5	202.8	22.7	59.3				
26.0	206.5	21.6	60.4				
26.5	210.1	20.4	61.6				
27.0	213.8	19.2	62.8				
28.0	221.1	16.9	65.1				

Displacement screw	
M12x45	
M12x60	
M12x80	
M12x100	



External displacement limiter

**Internal/external displacement limiter V16-270, T version (positive control)**

Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]	Setting angle [degree]	Displacement [cm <sup>3</sup> /rev]	Shim maximum side [mm]	Shim minimum side [mm]
0.0	0	82.0	0.0	29.0	228.3	14.6	67.4
6.0	49.2	67.4	14.6	30.0	235.5	12.2	69.8
6.5	53.3	66.2	15.8	31.0	242.6	9.8	72.2
7.0	57.4	65.1	16.9	32.0	249.6	7.4	74.6
7.5	61.5	63.9	18.1	33.0	256.5	5.0	77.0
8.0	65.5	62.7	19.3	34.0	263.4	2.5	79.5
8.5	69.6	61.6	20.4	35.0	270.1	0.0	82.0
9.0	73.7	60.4	21.6				
9.5	77.7	59.2	22.8				
10.0	81.8	58.1	23.9				
10.5	85.8	56.9	25.1				
11.0	89.9	55.8	26.2				
11.5	93.9	54.6	27.4				
12.0	97.9	53.5	28.5				
12.5	101.9	52.4	29.6				
13.0	105.9	51.2	30.8				
13.5	109.9	50.1	31.9				
14.0	113.9	48.9	33.1				
14.5	117.9	47.8	34.2				
15.0	121.9	46.7	35.3				
15.5	125.9	45.5	36.5				
16.0	129.8	44.4	37.6				
16.5	133.8	43.3	38.7				
17.0	137.7	42.1	39.9				
17.5	141.6	41.0	41.0				
18.0	145.5	39.9	42.1				
18.5	149.4	38.7	43.3				
19.0	153.3	37.6	44.4				
19.5	157.2	36.5	45.5				
20.0	161.1	35.3	46.7				
20.5	164.9	34.2	47.8				
21.0	168.8	33.0	49.0				
21.5	172.6	31.9	50.1				
22.0	176.4	30.8	51.2				
22.5	180.2	29.6	52.4				
23.0	184.0	28.5	53.5				
23.5	187.8	27.3	54.7				
24.0	191.6	26.2	55.8				
24.5	195.3	25.0	57.0				
25.0	199.0	23.9	58.1				
25.5	202.8	22.7	59.3				
26.0	206.5	21.6	60.4				
26.5	210.1	20.4	61.6				
27.0	213.8	19.2	62.8				
28.0	221.1	16.9	65.1				

Displacement screw	
M12x45	
M12x60	
M12x80	
M12x100	



**External displacement limiter**



## Ordering Code

Example: **V16** - **220** - **T** - **SAAS** - **ACE3B** - **P420** - **DT** - **000** - **220** / **054** - **200** / **070** - **250** - **000** - **0**

1    2    3 4 5    6 7 8 9 10 11    12    13    14    15    16    17    18    19    20

1. Frame size
  - 220** – 220 cm<sup>3</sup>/rev
  - 270** – 270 cm<sup>3</sup>/rev
2. Function
  - M** – Negative control characteristics.  
Motor starts in max displacement, std. for EO, EP, HO, HP.
  - T** – Positive control characteristics.  
Motor starts in min displacement, std. for AC; optional for EO, EP, HO, HP
3. Mounting flange & ports
  - I** – ISO version
  - S** – SAE version
4. Main ports
  - 00**– Axial and radial ports
  - AA**– Axial ports
  - RR** – Radial ports
  - AR**– Axial port on A-side  
Radial port on B-side
  - RA**– Radial port on A-side  
Axial port on B-side
  - A0**– Axial port on A-side,  
Radial and axial port on B-side
  - 0A**– Radial and axial port on A-side  
Axial port on B-side
  - R0**– Radial port on A-side  
Radial and axial port on B-side
  - 0R**– Radial and axial port on A-side  
Radial port on B-side
5. Shaft end
  - D (std.)** – V16-220: DIN spline W50  
V16-270: DIN spline W60
  - Z (option)** – V16-270: DIN spline W50
  - S (std.)** – V16-220: SAE spline 2" T15  
V16-270: SAE spline 2,25" T17
  - U (option)** – V16-270: SAE spline 2" T15
  - H (option)** – V16-270: SAE spline 2,25" T17 "long"
6. Control
  - AC**– Pressure compensator
  - EO** – Electro hydraulic, two-position
  - EP**– Electro hydraulic, proportional
  - HO** – Hydraulic, two position
  - HP**– Hydraulic, proportional
7. Control signal
  - A** – Pressure cut off, EO, EP, 12 VDC
  - B** – Pressure cut off, EO, EP 24 VDC
  - C** – Pressure cut off, HO, HP
  - E** – External pressure (AC, HO, HP)
  - I** – Internal pressure (AC)
  - L** – 12 VDC (EO, EP)
  - H** – 24 VDC (EO, EP)
  - D** – 24 VDC ATEX-version (EO, EP)
8. Control orifice set (orifice diameter in mm)
  - 1** – 0,6
  - 2** – 0,8
  - 3** – **1,0 (standard)**
  - 4** – 1,2
  - 5** – EOA/EPA/EOB/EPB/HOC/HPC
  - X** – Special
9. Control modulating (pressure/current)
  - N** – AC, EO, HO: 0 [bar]  
EPL, EOA, EPA 12 VDC: 900 [mA]  
EPH, EOB, EPB 24 VDC: 450 [mA]
  - A** – 15 [bar] (AC, HP, HPC)
  - B** – 25 [bar] (AC, HP, HPC)
  - C** – 35 [bar] (AC, HP, HPC)
  - D** – 50 [bar] (AC)
  - E** – 100 [bar] (AC)
10. Valve options
  - N** – None
  - B** – Brake valve and pressure relief valves
  - P** – Pressure relief valves
  - L** – Flushing valve two-sided
  - C** – Flushing valve one-sided, Flushing from A side
  - D** – Flushing valve one-sided, Flushing from B side
11. Pressure relief valve opening pressure /  
Flushing valve orifice
  - 000** – No valves (N)
  - XXX** – Pressure setting of cartridge valve [bar]
  - 0XX** – Flushing valve orifice
12. Optional
  - 00** – None
  - S0** – Speed sensor NPN
  - H0** – Speed sensor PNP
  - P0** – Position sensor
  - D0** – Speed sensor NPN + Position sensor
  - B0** – Speed sensor PNP + Position sensor
  - 0T** – Painted black
  - 0X** – Optional painting
13. Version number
  - XXX** – Factory assigned (000 = std.)
14. Max. displacement internal [cm<sup>3</sup>/rev]
  - XXX** – [cm<sup>3</sup>/rev] Non-adjustable
15. Min. displacement internal [cm<sup>3</sup>/rev]
  - XXX** – [cm<sup>3</sup>/rev] Non-adjustable
16. Max. displacement external
  - XXX** – [cm<sup>3</sup>/rev] Adjustable ≤ internal limitation
17. Min. displacement external
  - XXX** – [cm<sup>3</sup>/rev] Adjustable ≥ internal limitation
18. Threshold pressure/current
  - XXX** – [bar] alt. [mA]
19. Pressure cut off EOA/EOB/EPA/EPB/HOC/HPC
  - XXX** – [bar] (000 = without pressure cut off)
20. Seal/protection cap on adjustment screws
  - 0** – Standard seal cap in plastic
  - S** – Protection cap in steel



**Motor installation**

**Direction of rotation**

The V16 motor is bi-directional. Fig. 1 shows shaft rotation vs. A or B port pressurized.

With inlet flow at port A the shaft turns counter clockwise (left hand, L, rotation), and with inlet flow at port B the shaft turns clockwise (right hand, R, rotation).

**Note:** Before installing the V16 in series (when the A and B ports can be subject to high pressures simultaneously) contact Parker Hannifin (Pump & Motor Division Europe).

**Filtration**

Maximum motor service life is obtained when the fluid cleanliness meets or exceeds ISO code 20/18/13 (ISO 4406).

A 10 µm (absolute) filter is recommended.

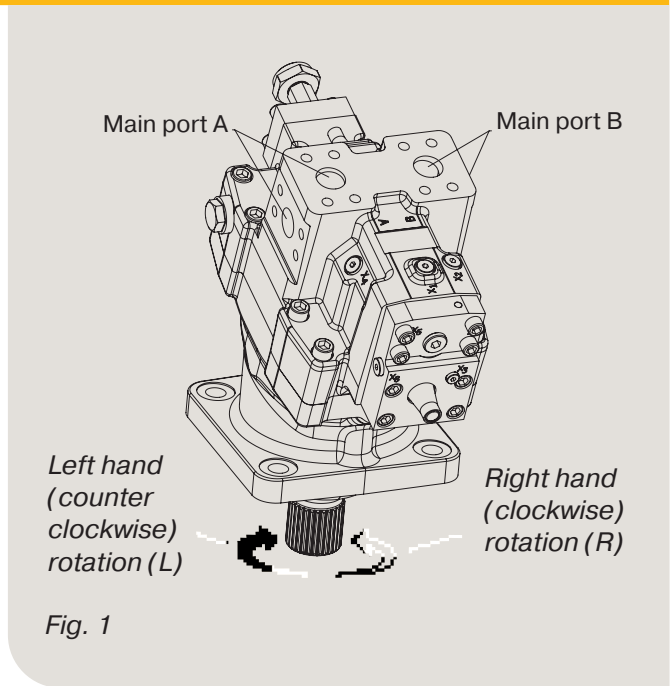
**Case pressure**

The lowest and highest recommended case pressure at selected shaft speeds is shown in the table below.

The min case pressure secures sufficient lubrication, and the max case pressure, which secures nominal seal life, should be measured at the drain port.

Size		1500	3000	4000	5000	6000
V16-220	max	8	2-6	3-5.5	4-5	-
V16-270	max	8	2-6	3-5.5	4-5	-

*Min and max case pressure [bar] vs. shaft speed [rpm].*



**Required inlet pressure**

The motor operates as a pump under certain conditions. When this occurs, a minimum pressure must be maintained at the inlet port. Increased noise and gradually deteriorating performance due to cavitation may otherwise be experienced.

A 20 bar inlet pressure, measured at the motor inlet port, satisfies most operating conditions.

Contact Parker Hannifin (Pump & Motor Div.) for more specific information on inlet pressure requirements

**Operating temperatures**

The following temperatures should not be exceeded,

Main circuit: 80°C

Drain fluid: 115°C

Continuous operation at high power levels usually requires case flushing in order for the fluid to stay above the minimum viscosity requirements.

A flushing valve and restricting nozzle, available as an option, provide the necessary main circuit flushing flow.

Refer to fig. 2 (next page).

## Drain ports

There are two drain ports on the V16; the uppermost drain port should always be utilized (fig. 3).

In order to avoid excessively high case pressure, the drain line should be connected directly to the reservoir.

**Note:** When the motor is operating, the case must be filled with fluid to at least 50 %.

## Hydraulic fluids

Ratings and performance data for series V16 motors are valid when a good quality, contamination-free, petroleum-based fluid is used in the hydraulic system.

Hydraulic fluids type HLP (DIN 51524), automatic transmission fluids type A, or API CD engine oils can be used.

Fire resistant fluids, when used under modified operating conditions, and synthetic fluids are also suitable.

When the hydraulic system has reached full operating temperature, the motor drain oil viscosity should be above 8 mm<sup>2</sup>/s (cSt).

At start-up, the viscosity should not exceed 1500 mm<sup>2</sup>/s.

The ideal operating range for the V16 series is 15 to 30 mm<sup>2</sup>/s.

The following information (available from Parker Hannifin, Pump & Motor Division Europe) provide additional information about:

- Hydraulic fluid specifications
- Fire resistant fluids

## Before start-up

Make sure the motor case as well as the entire hydraulic system is filled with hydraulic fluid. The internal leakage, especially at low operating pressures, is not sufficient to provide lubrication at start-up.

**Note:** A drain line spring loaded check valve (shown in fig. 2, 3 and 4) may have to be installed in order to prevent oil from being siphoned out of the motor case. This can otherwise happen e.g. if the reservoir is located below the utilized motor drain port.

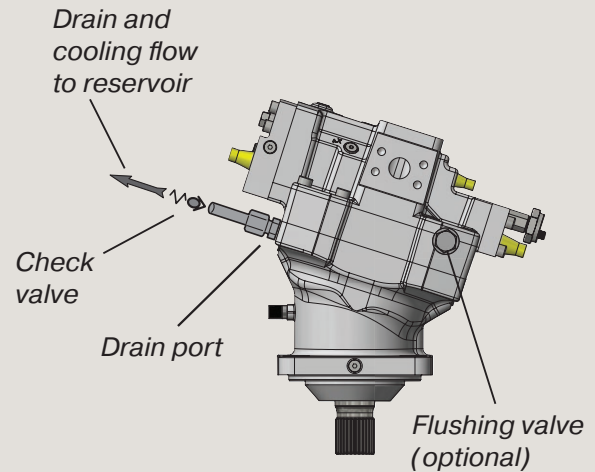


Fig. 2

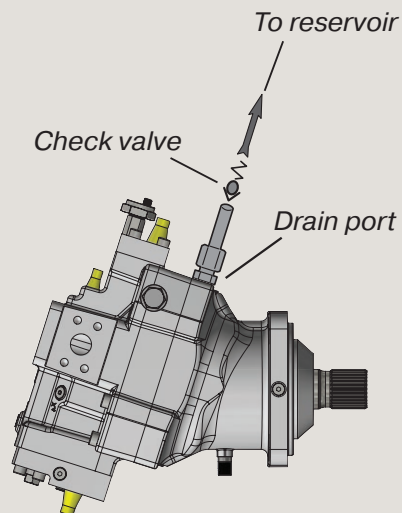


Fig. 3

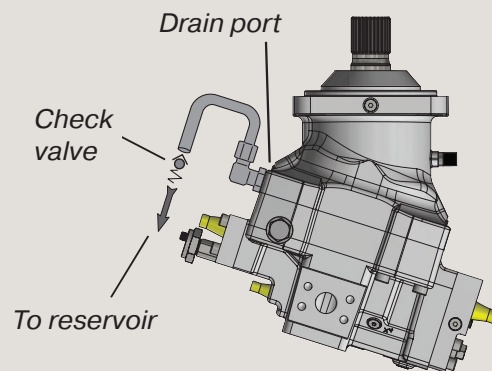


Fig. 4

## Controls

The following controls satisfy most application requirements:

- AC (automatic pressure compensator)
- EO and HO (two position controls)
- EP and HP (proportional controls)
- HPC/EPA/EPB (HP/EP control with pressure cut off)
- HOC/EOA/EOB (HO/EO control with pressure cut off)

All controls utilize a servo piston that connects to the valve segment.

The built-in three-way servo valve determines the position of the servo piston and, in turn, the displacement.

The displacement angle (between output shaft and cylinder barrel) ranges from 35° (max) to 6° (min).

Internal servo supply pressure is obtained from the pressurized main port through a built-in shuttle valve.

The response time (i.e. from max-to-min or from min-to-max displacement) is determined by restrictor nozzles in the servo valve supply and return lines; refer to the schematics in catalogue MSG30-8223/UK.

Scan QR code below.

## AC control function

Refer to the catalogue MSG30-8223/UK.

Scan QR code below.



**Gauge ports AC control**

**Threshold setting procedure**

**WARNING**

In order to prevent injury to the technician or the bystanders during the adjustment procedure, all hydraulic functions on the vehicle/machine should be disabled (e.g. wheels raised off the ground, work functions disconnected).

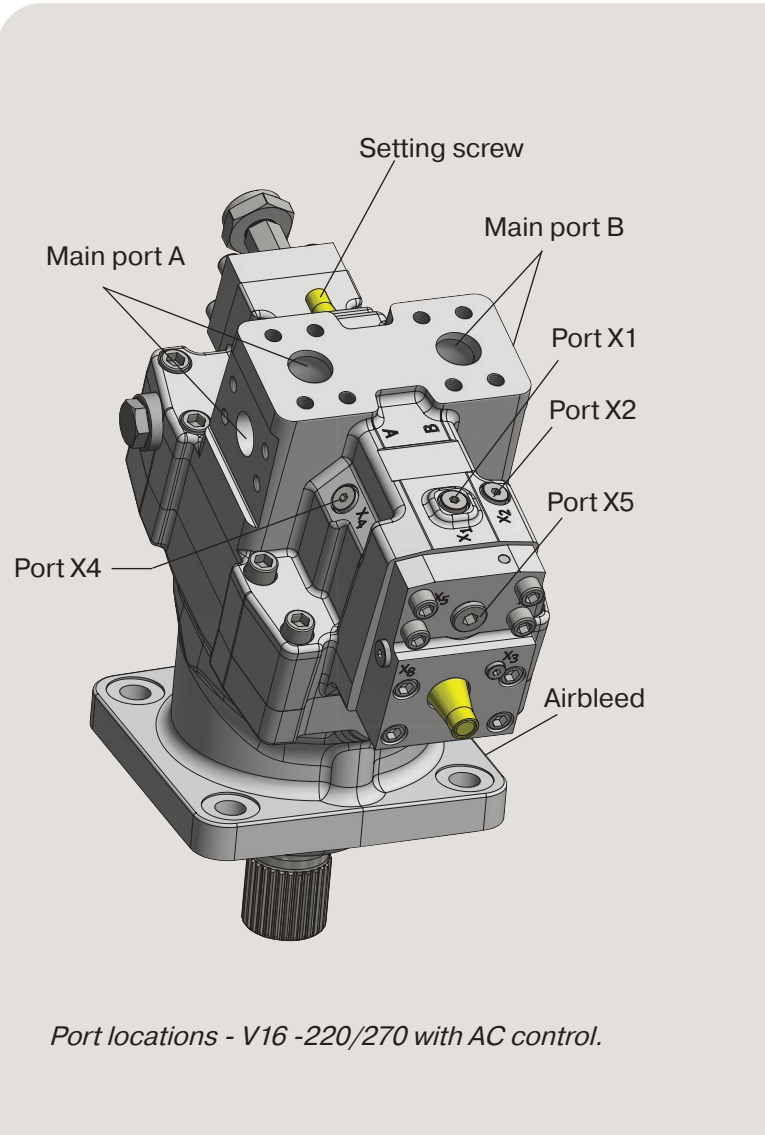
**Avoid fast forward/reversed changes that can damage the synchronizing shaft.**

AC with positive control characteristics (T code)

With motor not pressurized (ACI control type) or with port X5 (ACE control type) not pressurized, the motor will be kept at minimum displacement.

1. Make sure that the motor has been supplied with the correct modulating spring (ordering code and name plate information should agree). The hydraulic oil should be 50°C.
2. Install a 0 – 600 bar gauge in port X1 and X5.
3. Turn the adjustment screw counter clockwise to ensure that the threshold spring is unloaded.
4. Pressurize the motor (ACI control type) and port X5 for ACE control type to desired threshold pressure (at this pressure the control starts to go to max. displacement).
5. Start turn the threshold adjustment screw clockwise until the pressure gauge in port X1 starts to decrease. Right threshold pressure has been reached.

**Note:** One turn of the setting screw corresponds to 57 bar (820 psi)



*Port locations - V16 -220/270 with AC control.*

Gauge/pilot ports (ACI compensator)	
X1	Setting piston pressure (large setting piston area)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
Port sizes:	
–	M14x1.5 (ISO version)
–	9/16" -18 O-ring boss (SAE version).

Gauge/pilot ports (ACE compensator)	
X1	Setting piston pressure (large setting piston area)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X5	Pilot pressure
Port sizes:	
–	M14x1.5 (ISO version)
–	9/16" -18 O-ring boss (SAE version).

## EO/EP control function

Refer to the catalogue MSG30-8223/UK.

Scan QR code below.



**Gauge ports EO and EP**

**Threshold current setting procedure**

**WARNING**

In order to prevent injury to the technician or the bystanders during the adjustment procedure, all hydraulic functions on the vehicle/machine should be disabled (e.g. wheels raised off the ground, work functions disconnected).

**Avoid fast forward/reversed changes that can damage the synchronizing shaft.**

*EO/EP with negative control characteristics (M code)*

With a de-energized solenoid (EO/EP) the motor will be kept at maximum displacement.

1. Make sure that the motor has been supplied with the correct modulating spring (ordering code and name plate information should agree). The hydraulic oil should be 50°C.
2. Install a 0 – 600 bar gauge in port X1.
3. Turn the adjustment screw counterclockwise to ensure that the threshold spring is unloaded.
4. Apply desired threshold current (at this current the control starts to go to min. displacement). Standard factory setting is:  
 500mA (12V)  
 250mA (24V), valid for motors without displacement limiter on maximum side.
5. Start turn the threshold adjustment screw clockwise until the pressure gauge in port X1 starts to decrease. Right threshold current has been reached.

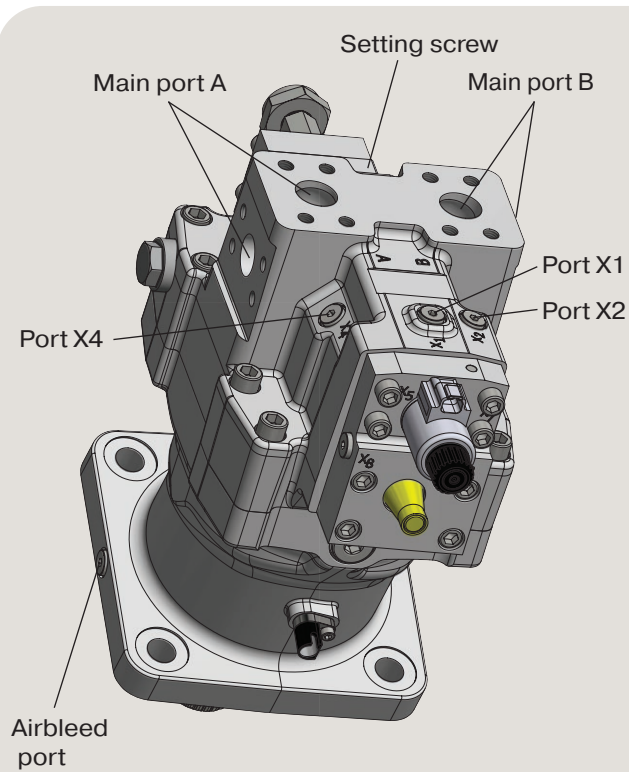
*EO/EP with positive control characteristics (T code)*

With a de-energized solenoid (EO/EP) the motor will be kept at minimum displacement.

1. Make sure that the motor has been supplied with the correct modulating spring (ordering code and name plate information should agree). The hydraulic oil should be 50°C.
2. Install a 0 – 600 bar gauge in port X1.
3. Turn the adjustment screw counterclockwise to ensure that the threshold spring is unloaded.

4. Apply desired threshold current (at this current the control starts to go to max. displacement). Standard factory setting is:  
 500mA (12V)  
 250mA (24V), valid for motors without displacement limiter on minimum side.
5. Start turn the threshold adjustment screw clockwise until the pressure gauge in port X1 starts to decrease. Right threshold current has been reached.

**Note:** One turn of the setting screw corresponds to:  
 • ~66 mA on 12 VDC solenoids (EO, EP)  
 • ~33 mA on 24 VDC solenoids (EO, EP)



*Port locations - V16 -220/270 with EO/EP control.*

<b>Gauge/pilot ports (EO/EP control):</b>	
X1	Setting piston pressure (large setting piston area)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
<b>Port sizes:</b>	
–	M14x1.5 (ISO version)
–	9/16"-18 O-ring boss (SAE version).

## ● HO/HP control function

Refer to the catalogue MSG30-8223/UK.

Scan QR code below.





## Gauge ports HO and HP

### Threshold pressure setting procedure

#### WARNING

In order to prevent injury to the technician or the bystanders during the adjustment procedure, all hydraulic functions on the vehicle/machine should be disabled (e.g. wheels raised off the ground, work functions disconnected).

**Avoid fast forward/reversed changes that can damage the synchronizing shaft.**

#### HO/HP with negative control characteristics (M code)

With X5 not pressurized (HO/HP), the motor will be kept at maximum displacement.

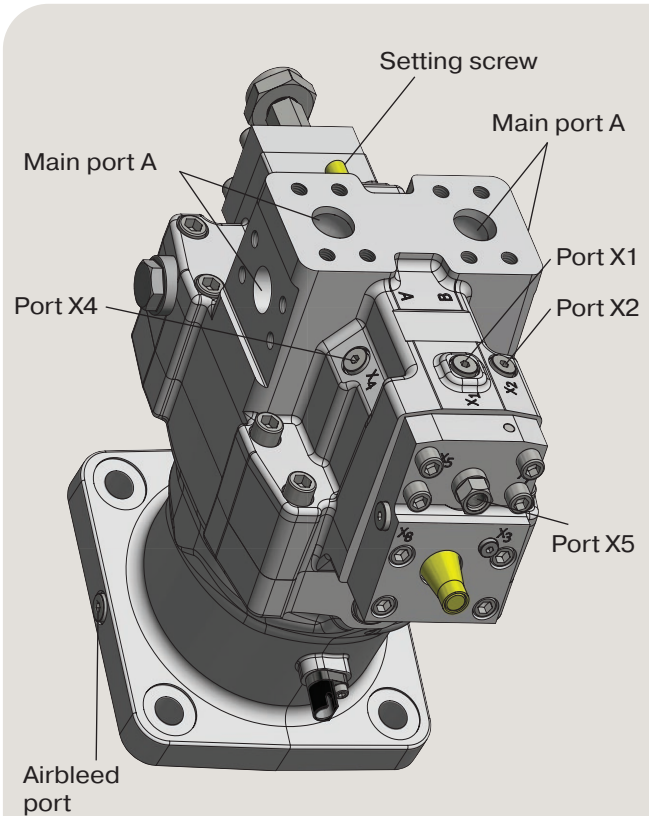
1. Make sure that the motor has been supplied with the correct modulating spring (ordering code and name plate information should agree). The hydraulic oil should be 50°C.
2. Install a 0 – 600 bar gauge in port X1.
3. Turn the adjustment screw counter clockwise to ensure that the threshold spring is unloaded.
4. Pressurize port X5 to desired threshold pressure (at this pressure the control starts to go to min. displacement). Standard factory setting is 10 bar for motors without displacement limiter on maximum side.
5. Start turn the threshold adjustment screw clockwise until the pressure gauge in port X1 starts to decrease. Right threshold current has been reached.

#### HO/HP with positive control characteristics (T code)

With X5 not pressurized (HO/HP), the motor will be kept at minimum displacement.

1. Make sure that the motor has been supplied with the correct modulating spring (ordering code and name plate information should agree). The hydraulic oil should be 50°C.
2. Install a 0 – 600 bar gauge in port X1.
3. Turn the adjustment screw counterclockwise to ensure that the threshold spring is unloaded.
4. Pressurize port X5 to desired threshold pressure (at this pressure the control starts to go to max. displacement). Standard factory setting is 10 bar for motors without displacement limiter on minimum side.
5. Start turn the threshold adjustment screw clockwise until the pressure gauge in port X1 starts to decrease. Right threshold current has been reached.

**Note:** One turn of the setting screw corresponds to:  
 • 2.1 bar (30 psi) on HO and HP controls



Port locations – V16 - 220/270 with HO control.

Gauge/pilot ports (HO control):	
X1	Setting piston pressure (large setting piston area)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X5	External pilot pressure (max 100 bar; HO and HP control)
Port sizes:	
–	M14x1.5 (ISO version)
–	9/16" -18 O-ring boss (SAE version)

● **EPA/EPB/EOA/EOB/HPC/HOC control function**

Refer to the catalogue MSG30-8223/UK.

Scan QR code below



## Pressure cut off setting procedure

*EPA/EPB/EOA/EOB/HPC/HOC with negative control characteristics (M code)*

With a de-energized solenoid (EPA/EPB/EOA/EOB) or not pressurized X5 port (HPC/HOC), the motor will be kept at maximum displacement.

1. Energize de solenoid (EPA/EPB/EOA/EOB) or pressurize port X5 so the displacement strokes to min. The hydraulic oil should be 50°C.
2. Install a 0 – 600 bar gauge in port X6.
3. Turn the cut off adjustment screw counterclockwise to ensure that the spring is unloaded.
4. Increase system pressure to desired cut off pressure.
5. Turn the cut off adjustment screw clockwise until the pressure gauge in port X6 starts to increase. Correct cut off pressure has been reached.

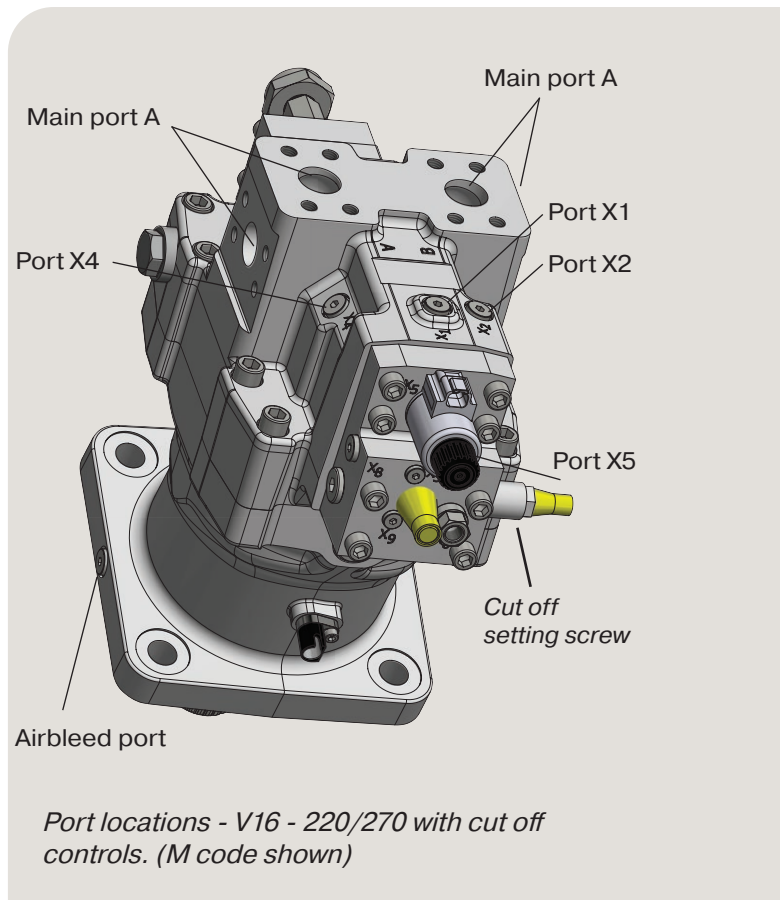
*EPA/EPB/EOA/EOB/HPC/HOC with positive control characteristics (T code)*

With a de-energized solenoid (EPA/EPB/EOA/EOB) or not pressurized X5 port (HPC/HOC), the motor will be kept at minimum displacement.

1. De-energize de solenoid (EPA/EPB/EOA/EOB) or pressurize port X5 so the displacement strokes to min. The hydraulic oil should be 50°C.
2. Install a 0 – 600 bar gauge in port X6.
3. Turn the cut off adjustment screw counterclockwise to ensure that the spring is unloaded.
4. Increase system pressure to desired cut off pressure.
5. Turn the cut off adjustment screw clockwise until the pressure gauge in port X6 starts to decrease. Correct cut off pressure has been reached.

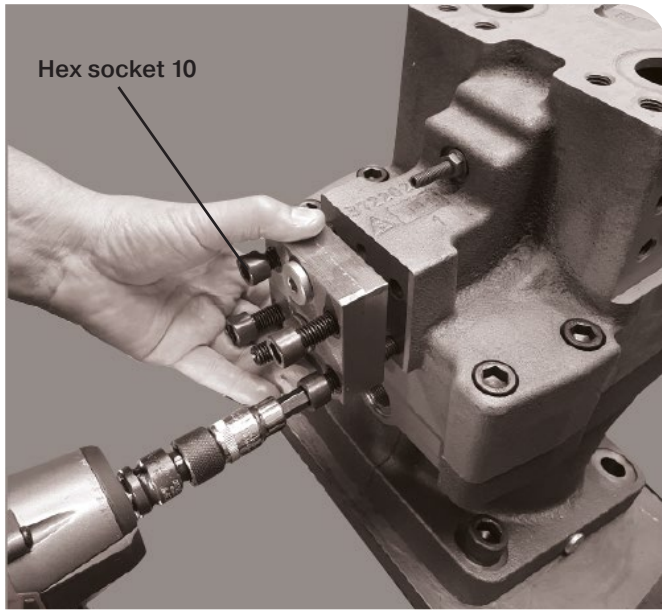
**Note:**

One turn on the cut off adjustment screw corresponds to 57 bar.

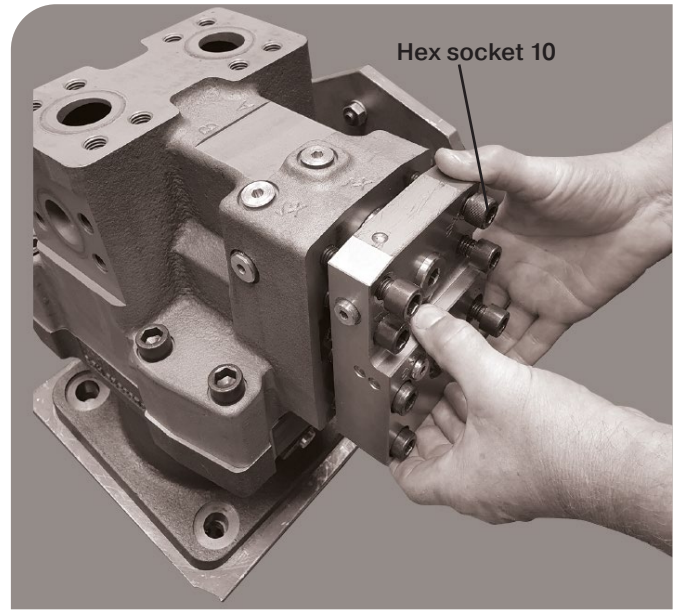


*Port locations - V16 - 220/270 with cut off controls. (M code shown)*

## Disassembling



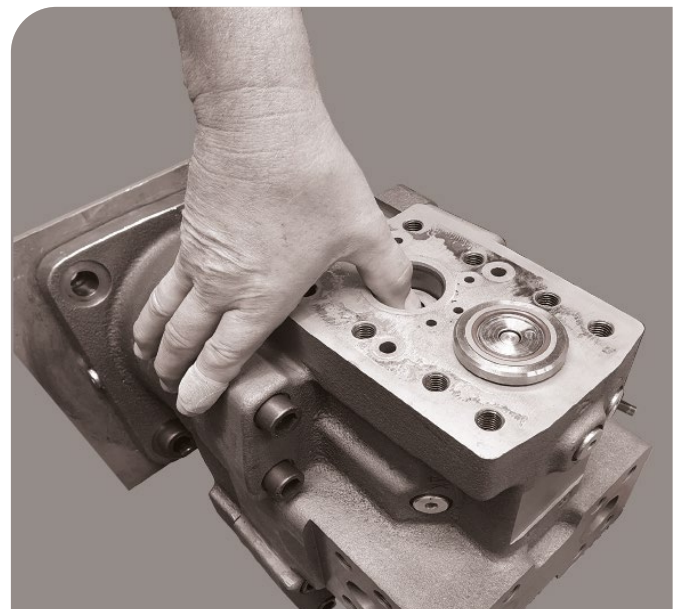
1. Remove the hex socket screws and remove the cover.



2. Remove the hex socket screws and remove the control cover.

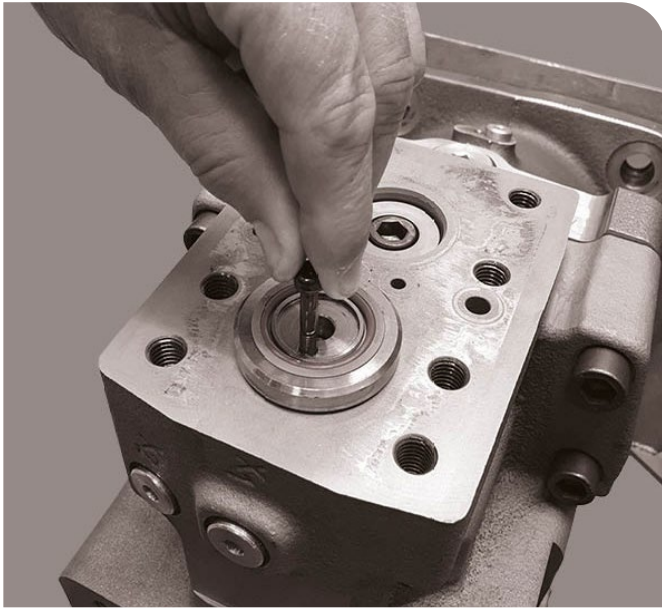


3. Remove the spacer

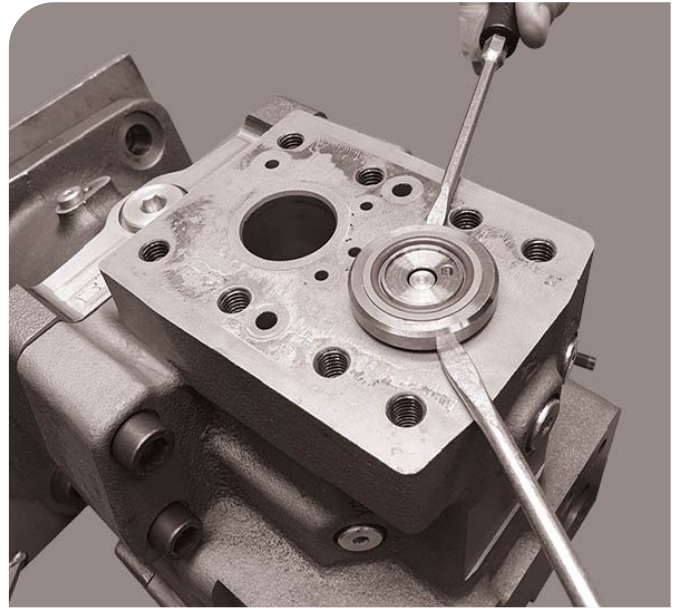


4. Push down the setting piston.

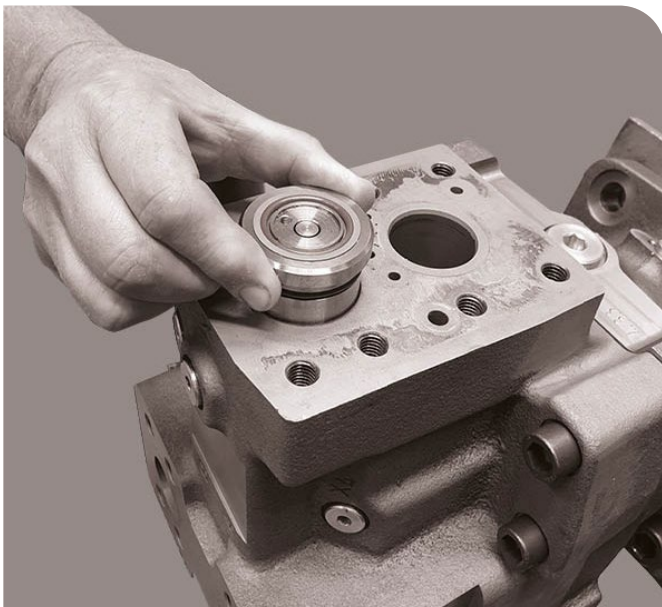




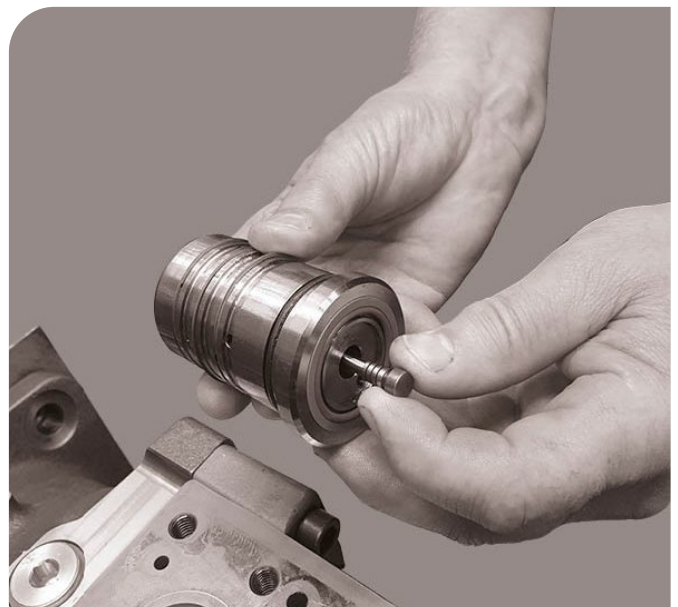
5. Assemble a screw and lift up the valve sleeve slightly.



6. Use two screwdrivers and carefully lift up the valve sleeve.



7. Remove the valve sleeve.



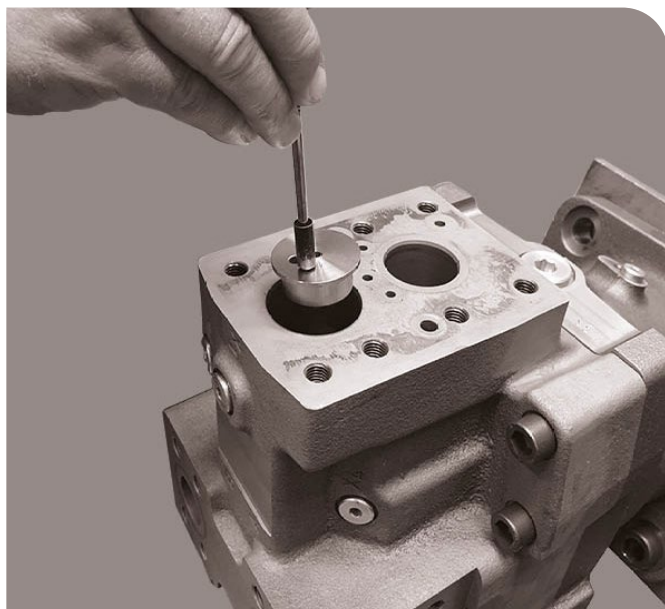
8. Remove the valve spool.



9. Remove the o-ring and support ring.



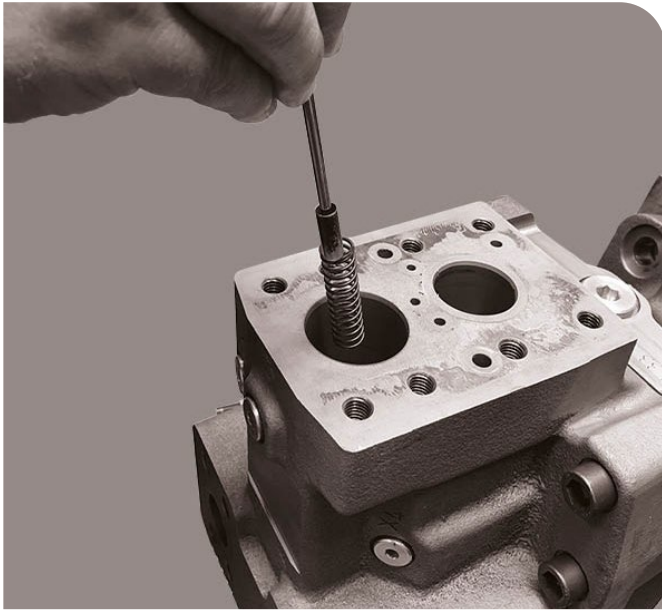
10. Remove the orifice.



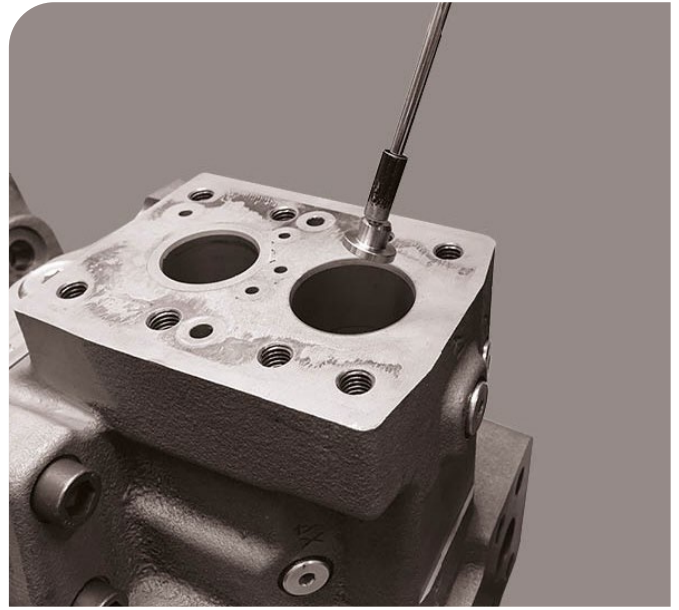
11. Use a magnet and lift up the spring seat.



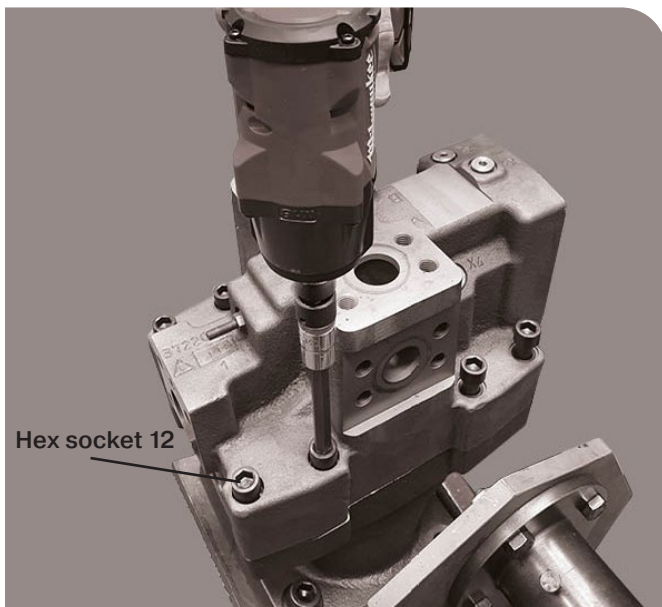
12. Remove the modulating spring.



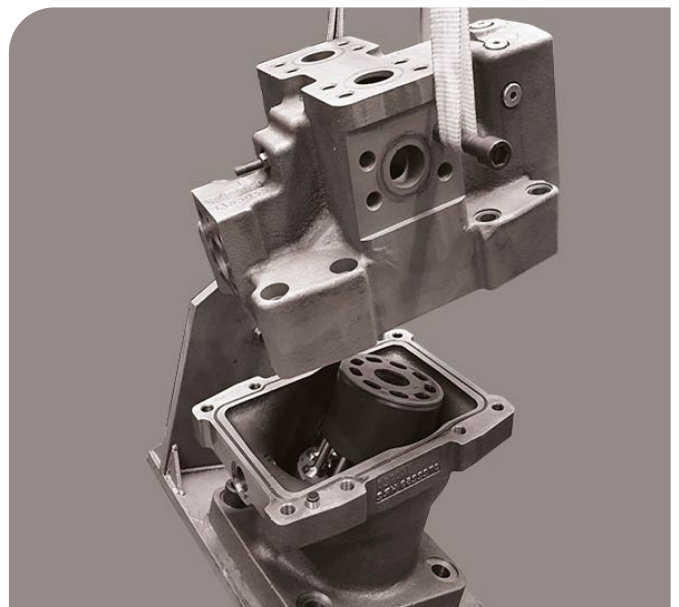
13. Remove the threshold spring with a magnet.



14. Use a magnet and lift up the second spring seat.



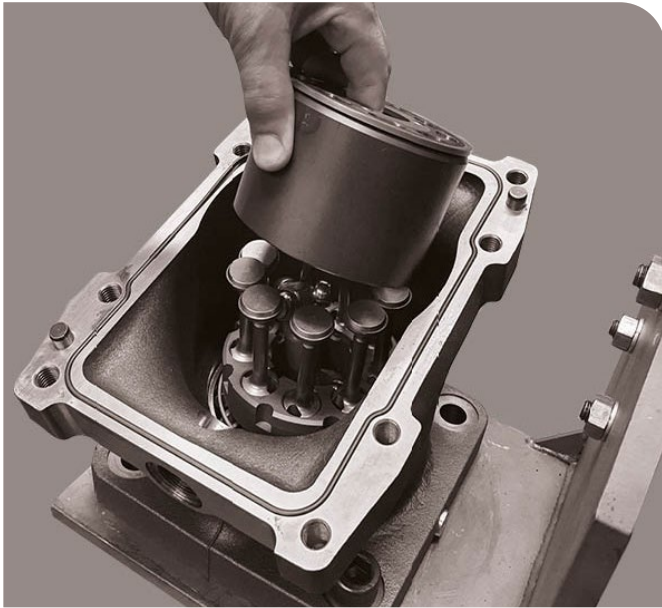
15. Loosen the hex socket bolts.



16. Carefully lift up the end cap by using a lift.



## Disassembling



17. Disassemble the cylinder barrel.

**Note:** The support pin assembled between cylinder barrel and joint shaft might fall down into the motor.



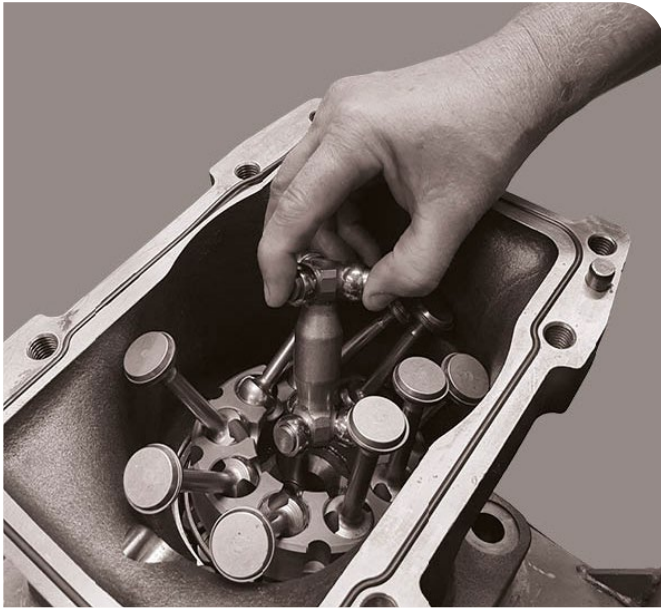
18. Remove the sliding plate.



19. Remove the guide pins.



20. Remove the support pin that was assembled between cylinder barrel and joint shaft. Locate it and use a magnet to pick it up.



21. Remove the joint shaft with rollers.



22. Remove the rollers.



23. Disassemble the o-ring.

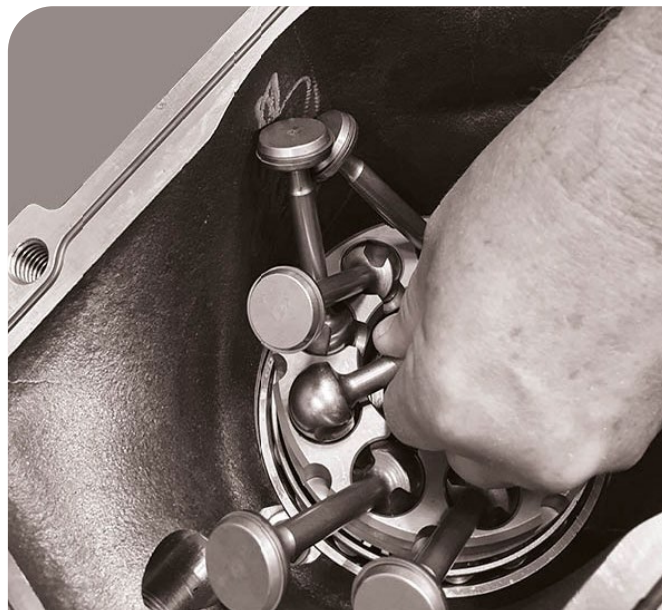


24. Disassemble the hexagon screw.

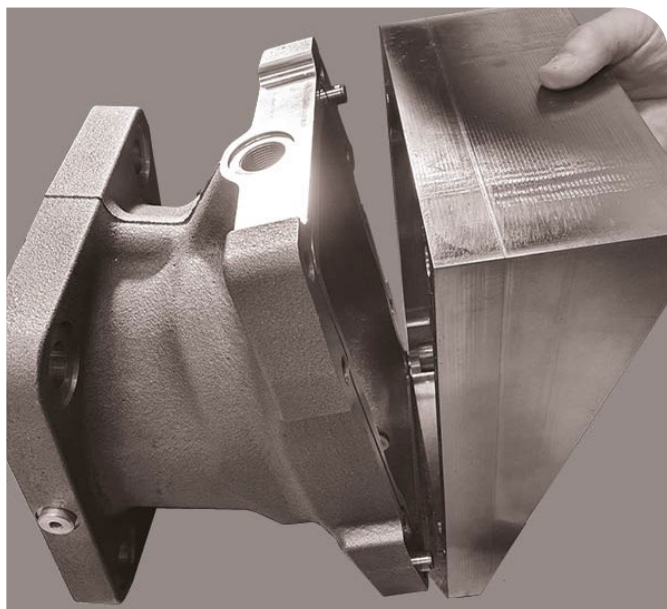




25. Remove the support pin.



26. Disassemble the pistons.

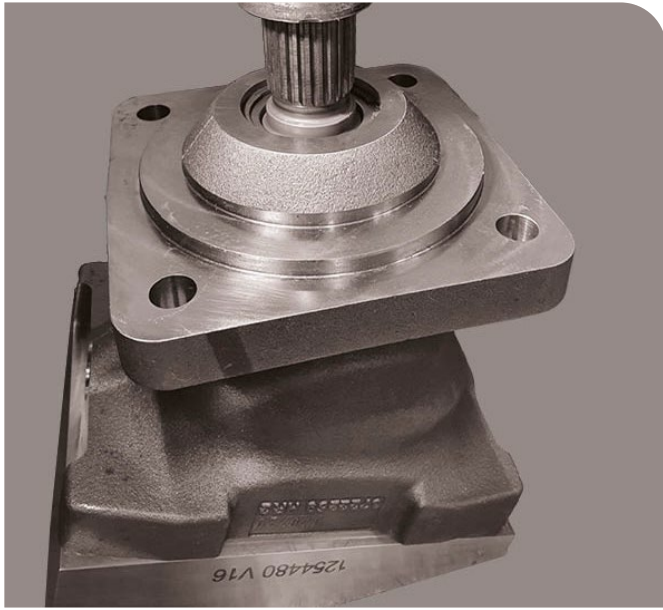


27. Use the disassembling tool for the bearing package and fit it on the bearing housing.

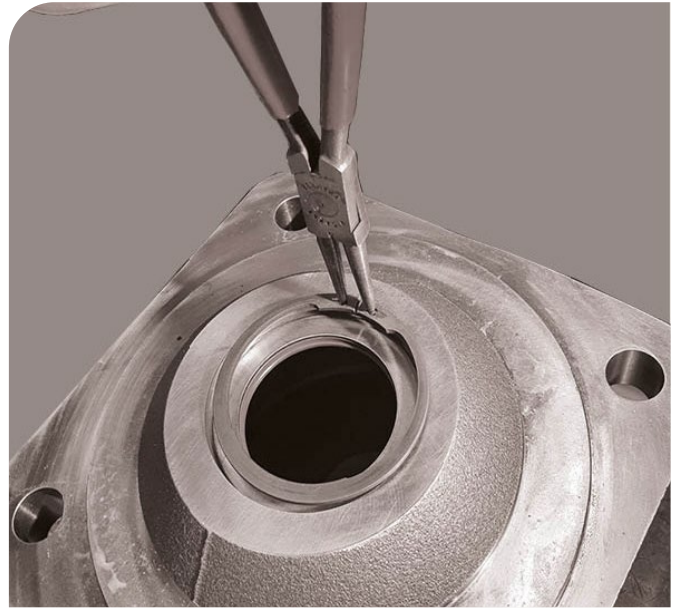
**Note:** See page 46 for information about the tool.



28. Protect the ball sockets in the shaft with some paper or a cloth before you press out the bearing package.



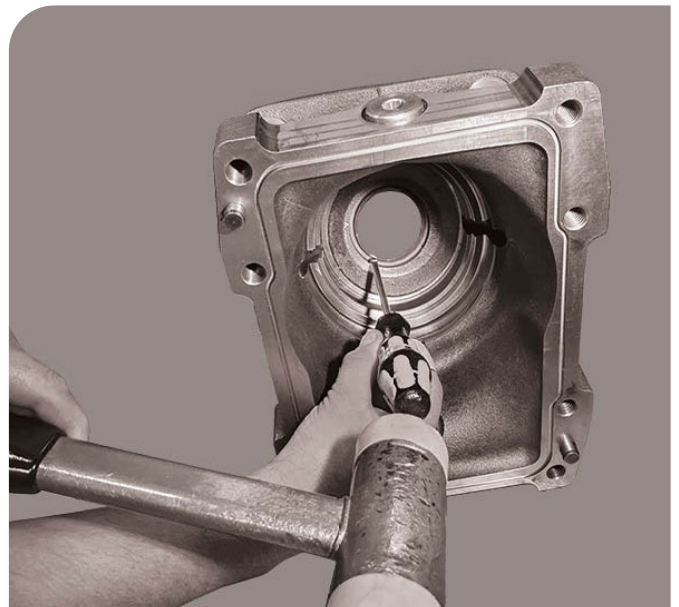
29. Press out the bearing package.



30. Disassemble the retaining ring for the shaft seal.

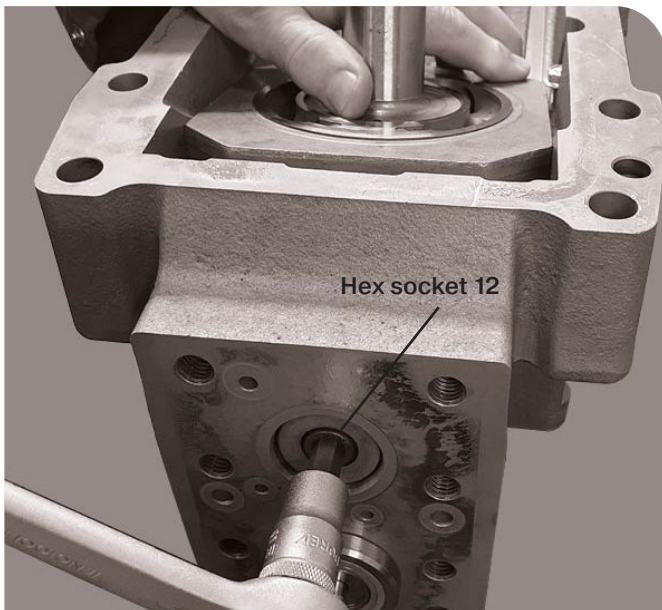


31. Remove the support ring.

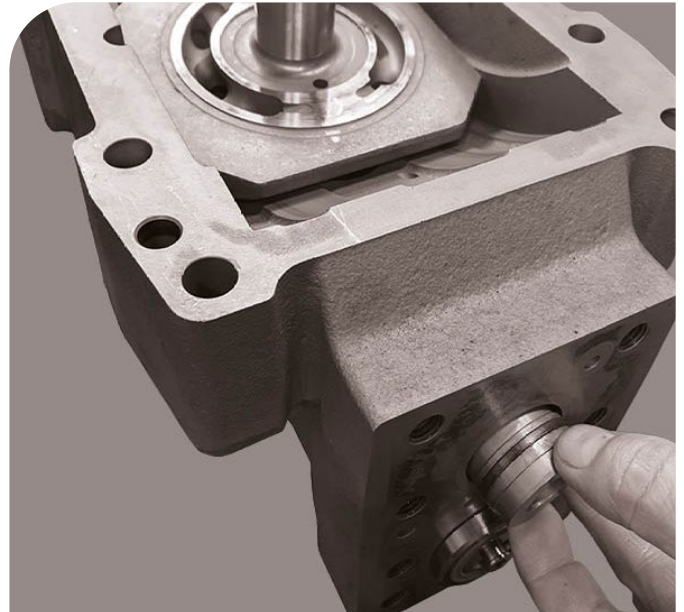


32. Tap out the shaft seal.

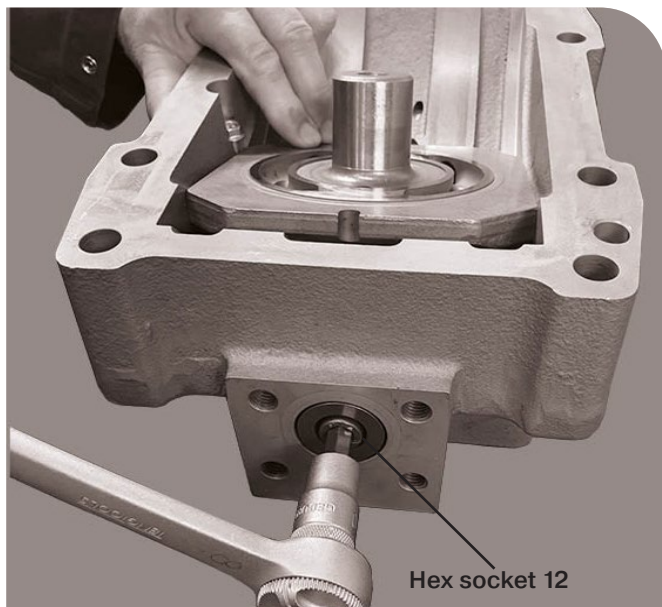




33. Make sure the valve segment is assembled before you disassemble the hex socket screw.



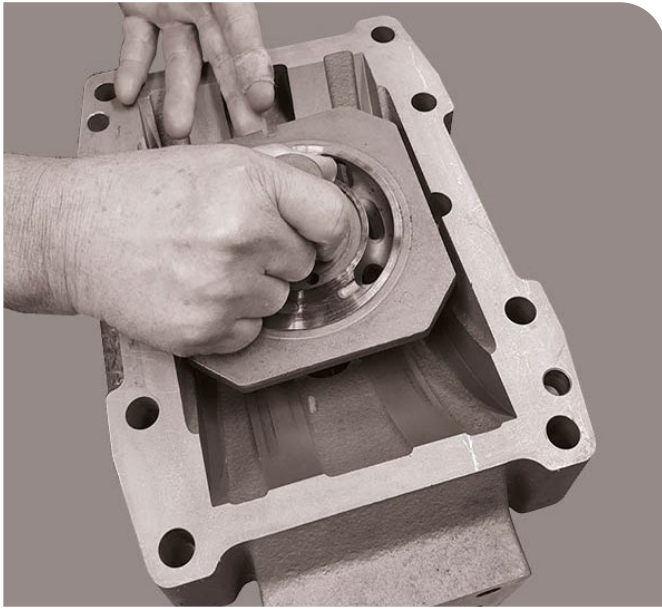
34. Remove the setting piston head.



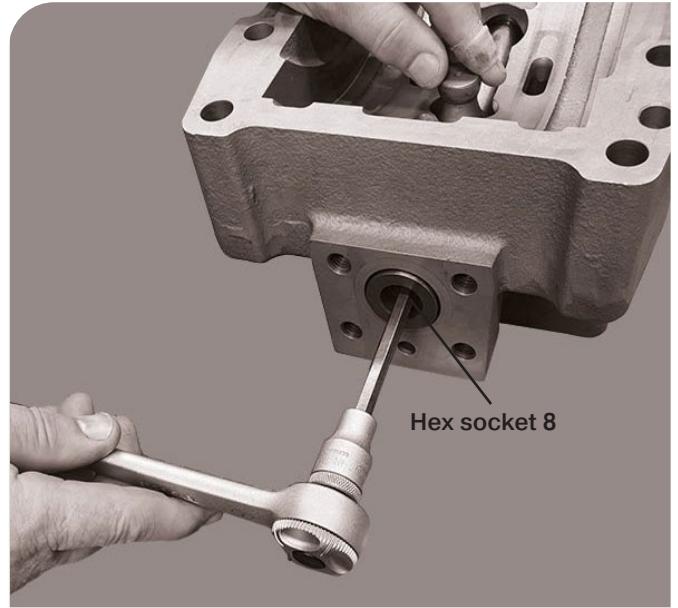
35. Make sure the valve segment is assembled before you disassemble the hex socket screw.



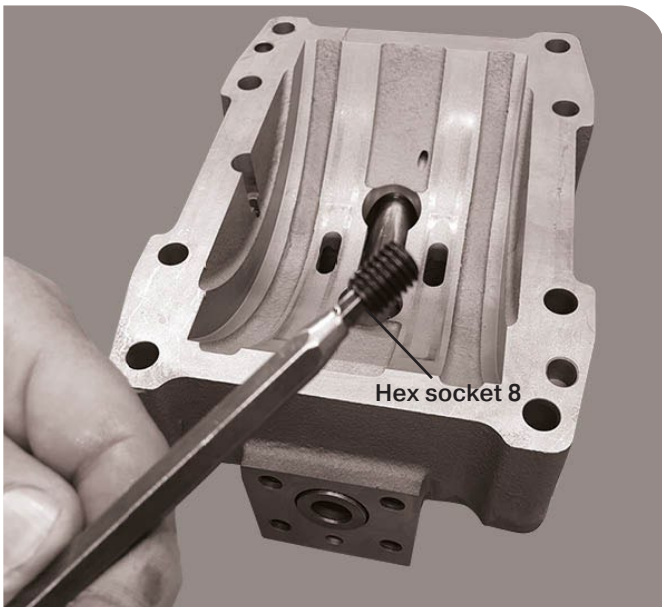
36. Disassemble the hexagon screw.



37. Remove the valve segment.



38. Disassemble the set screws.

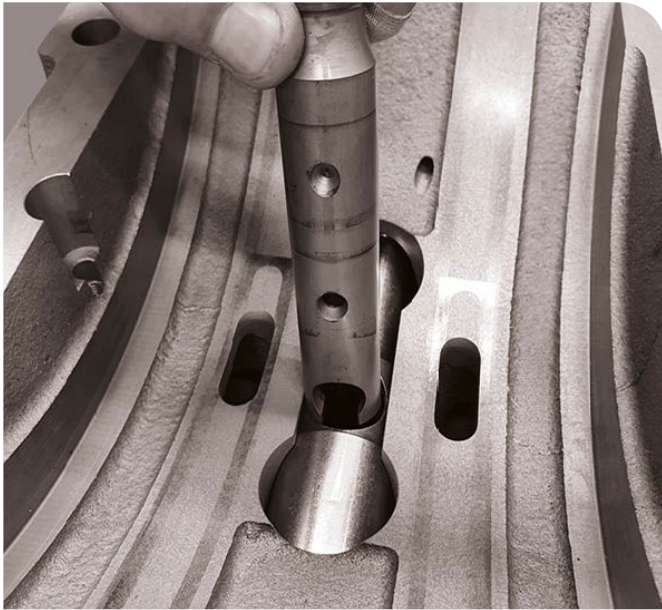


39. The outer set screw.

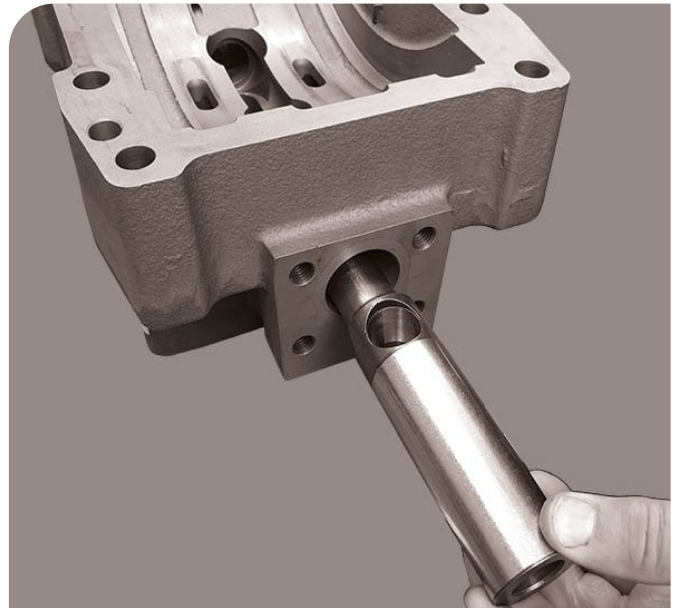


40. The inner set screw.

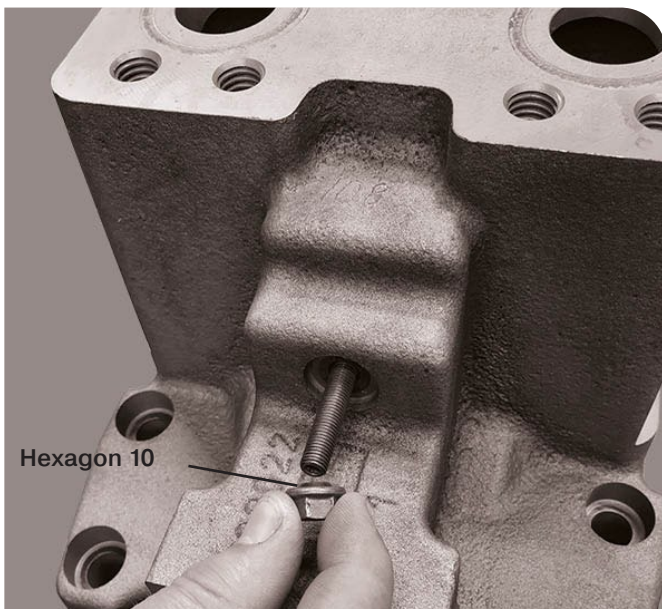




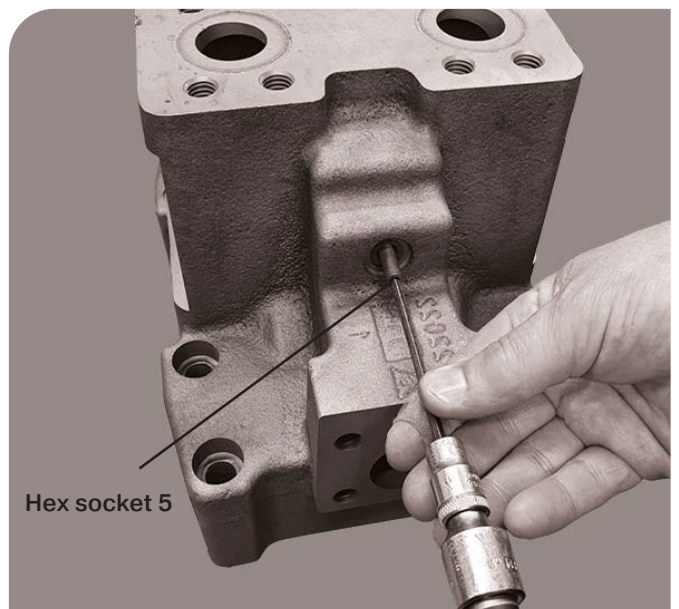
41. Lift up the connecting arm.



42. Remove the setting piston.

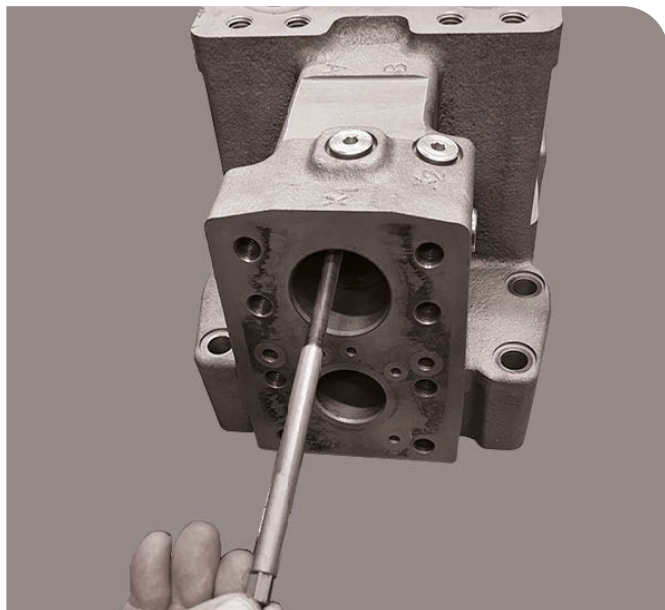


43. Disassemble the seal nut.



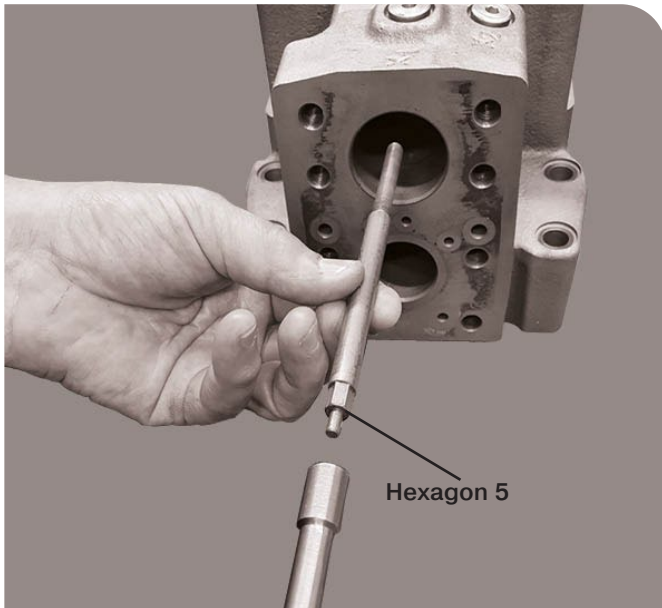
44. Screw in the adjusting screw until it loosens.





45. Remove the adjusting screw.

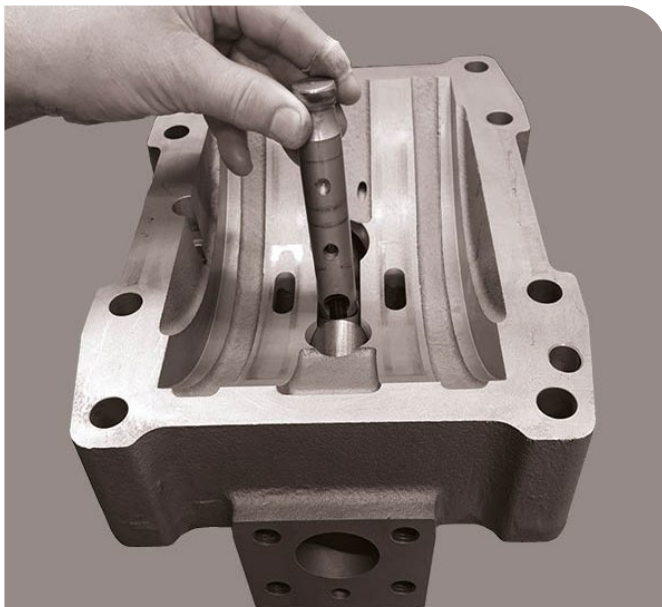
Disassembling



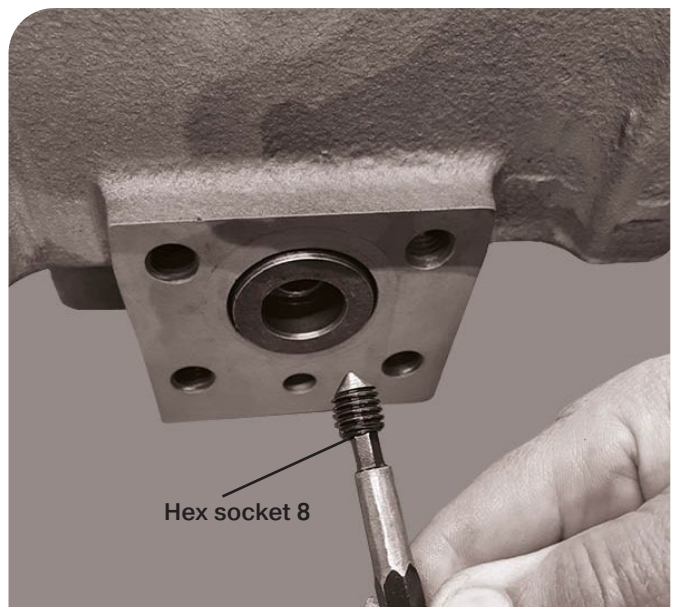
1. Assemble the adjusting screw and seal nut.



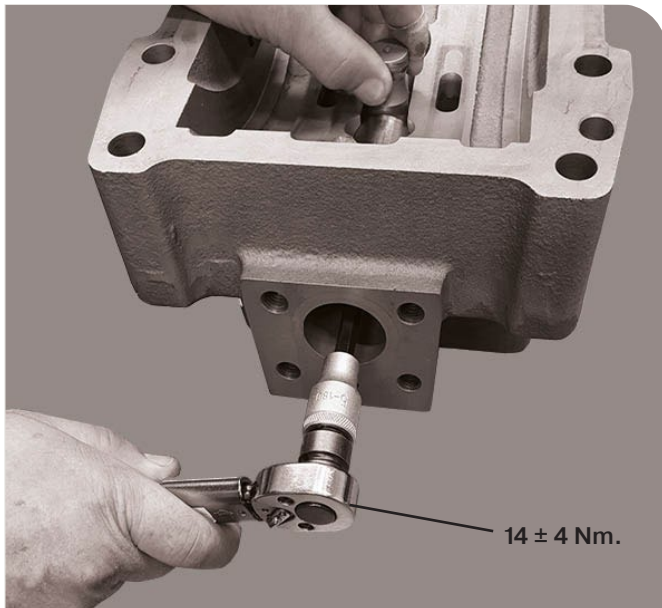
2. Assemble the setting piston



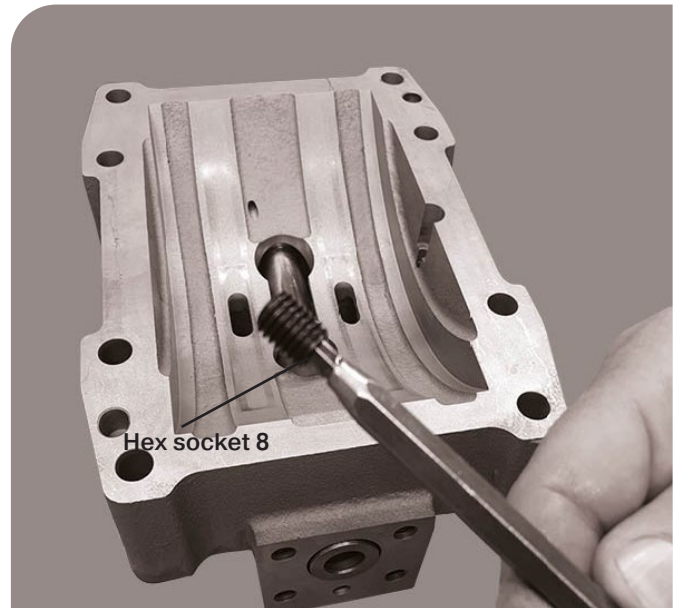
3. Place the connecting arm in the setting piston.



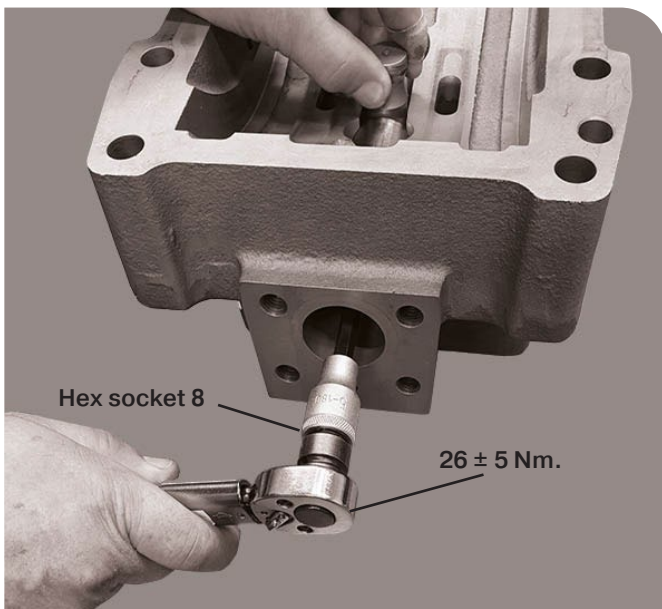
4. Fit the inner set screw. Make sure it is in right position in the connecting arm.



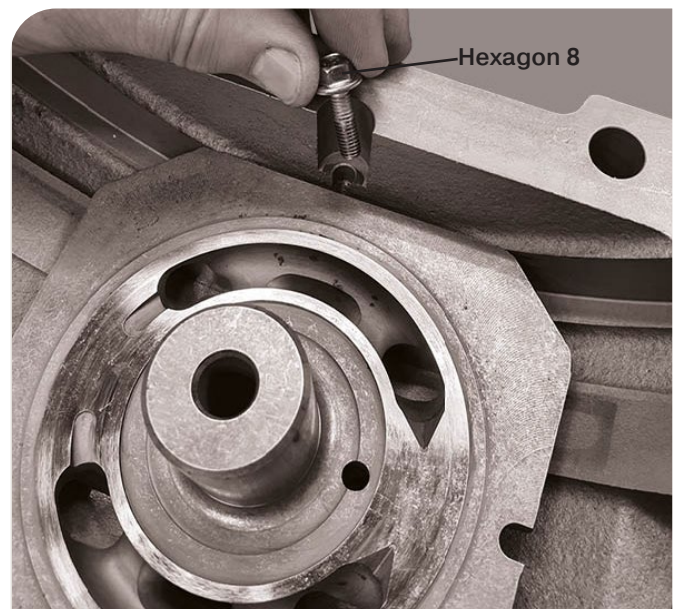
5. Torque the inner set screw to  $14 \pm 4$  Nm.



6. Fit the outer set screw.



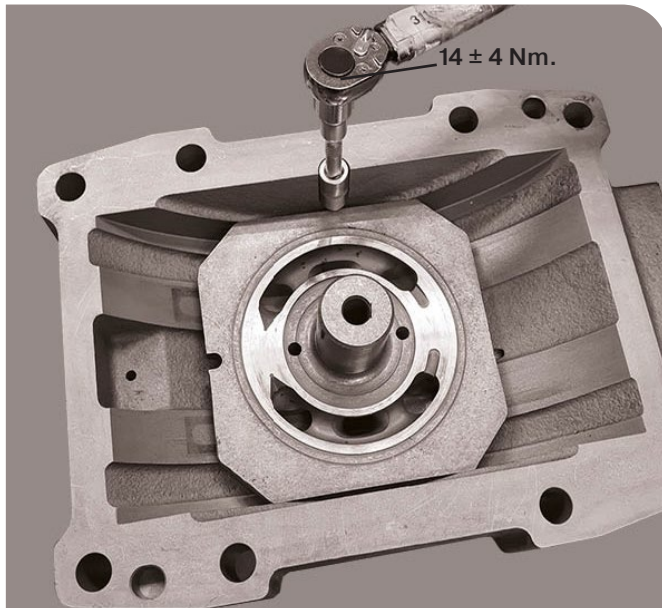
0. Torque the outer set screw to  $26 \pm 5$  Nm.



8. Assemble the valve segment and the hexagon screw.

**Note:** See page 5 for instruction in what direction the valve segment should be assembled, differs between M and T version.





9. Torque the hexagon screw to  $14 \pm 4$  Nm.

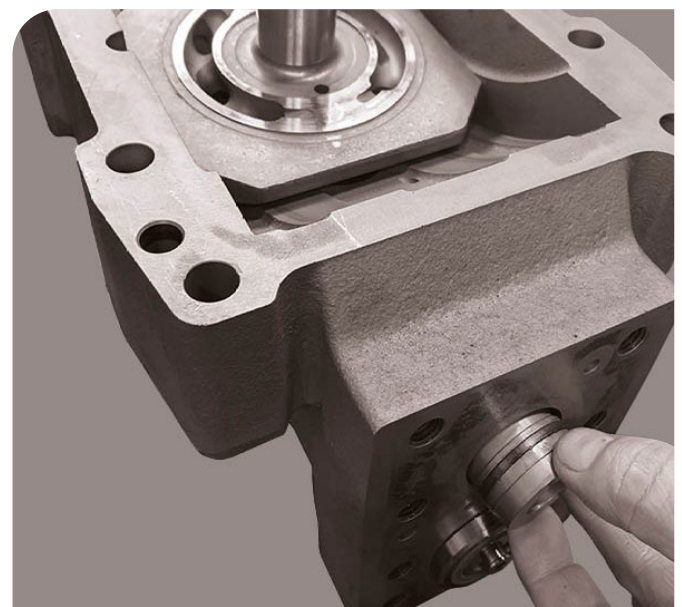
**Note:** See page 5 for instruction in what direction the valve segment should be assembled, differs between M and T version.



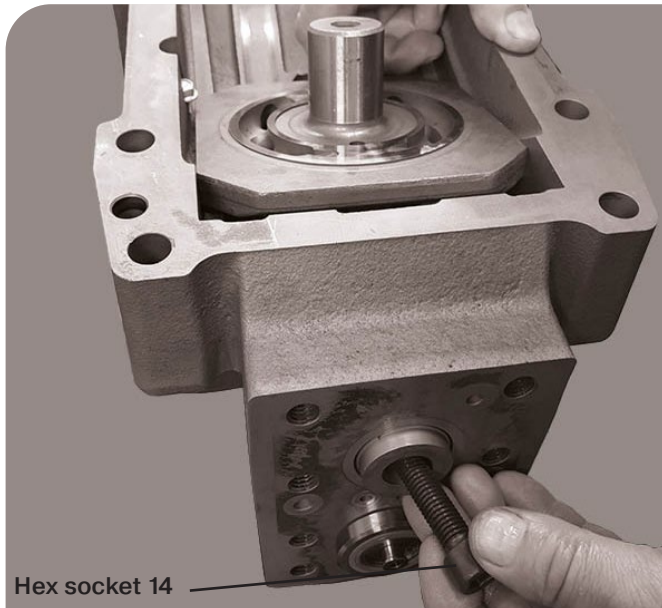
10. Assemble the hex socket screw.



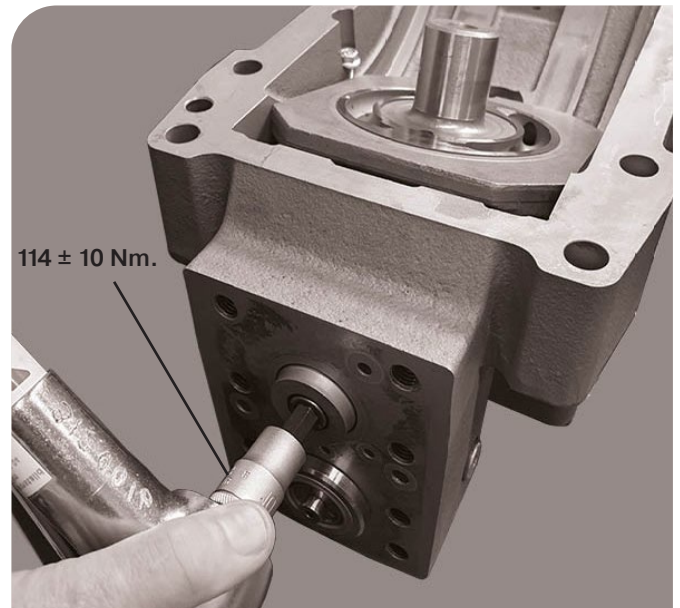
11. Make sure the valve segment is assembled before you torque the hex socket screw to  $114 \pm 10$  Nm.



12. Fit the setting piston head with a new seal.



13. Assemble the hex socket screw.



14. Make sure the valve segment is assembled before you torque the hex socket screw to  $114 \pm 10$  Nm.



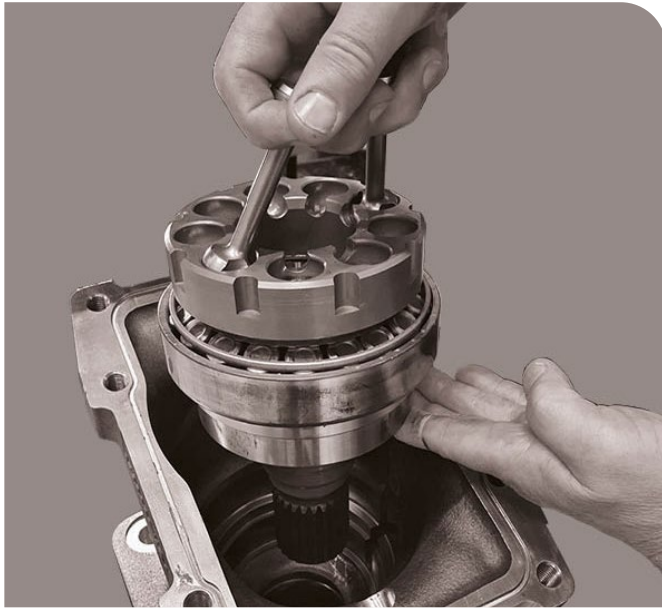
15. Choose the correct assembly tool for the bearing package, ISO or SAE.

**Note:** See page 46 for information about the tools.



16. Place the bearing housing on the assembly tool.

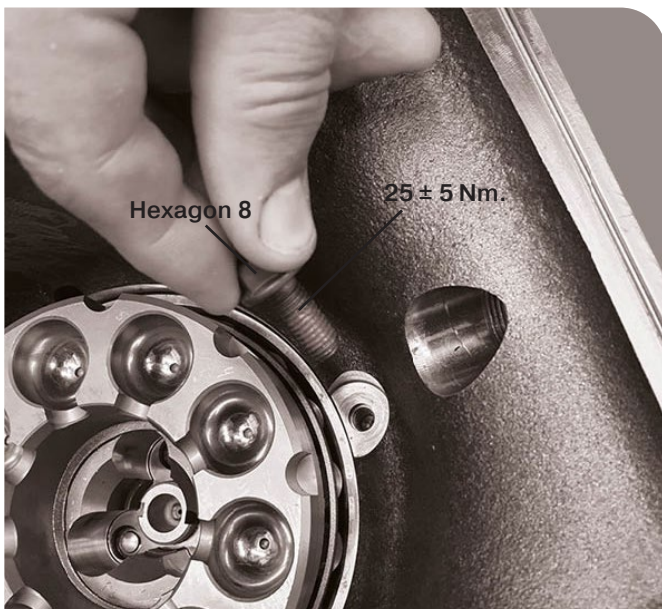




17. Locate the bearing package in the bearing housing, try to line it as straight as possible.



18. Use a press and press down the bearing package.



19. Assemble the hexagon screw. Make sure to use a new hexagon screw as it is equipped with loctite. Torque to  $25 \pm 5$  Nm.

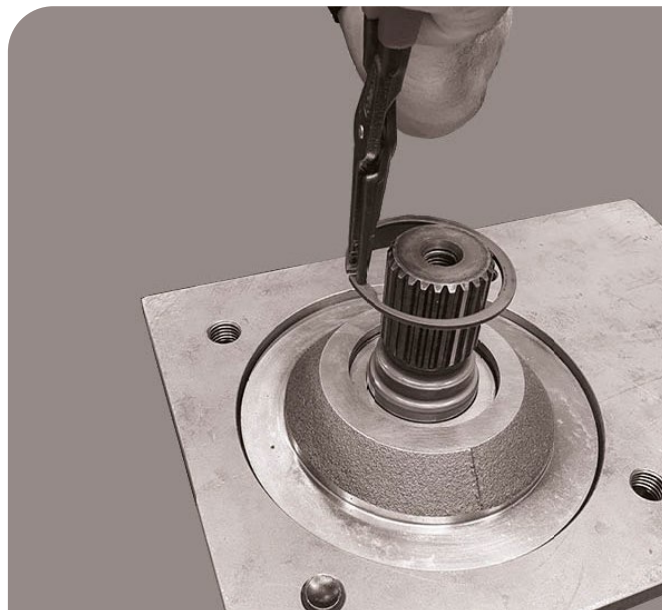


20. Fit the new shaft seal, be careful so the sealing surface isn't damaged.

**Note!** V16-270 shafts type D, S and H have a big diameter, use some tape on the shaft end to protect the sealing surface on the shaft seal.



21. Fit the support ring and carefully tap down the shaft seal and support ring.



22. Assemble the retaining ring.



23. Assemble the pistons.



24. Assemble the support pin.





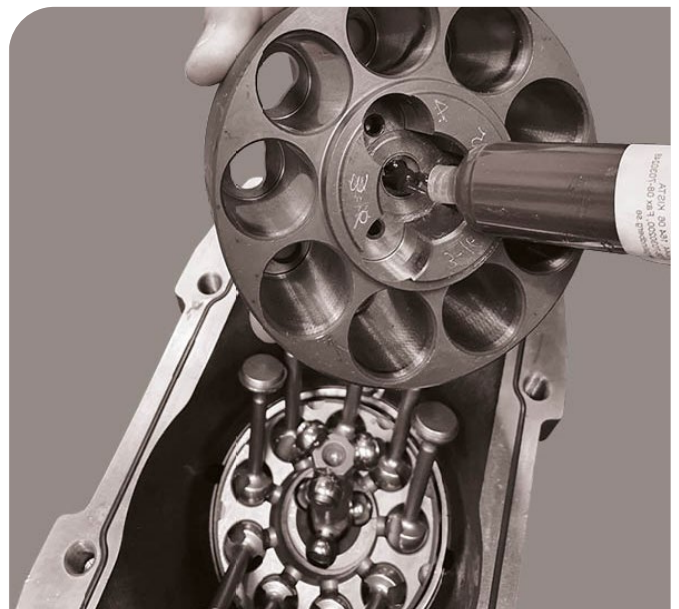
25. Assemble the joint shaft with the first 3 rollers.



26. Put grease on the joint shaft.



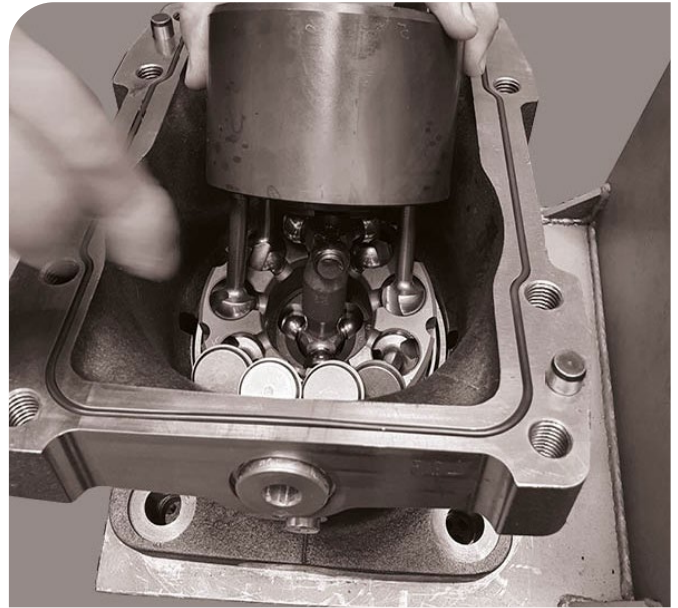
27. Assemble the rollers, grease is needed to keep them in place.



28. Put a lot of grease in the cylinder barrel.



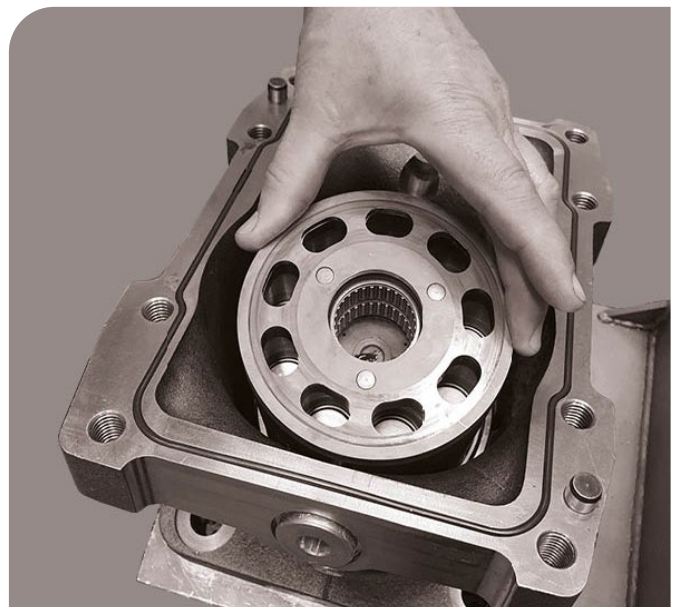
29. Assemble the support pin.



30. Assemble the cylinder barrel. Make sure that the rollers are in correct position.

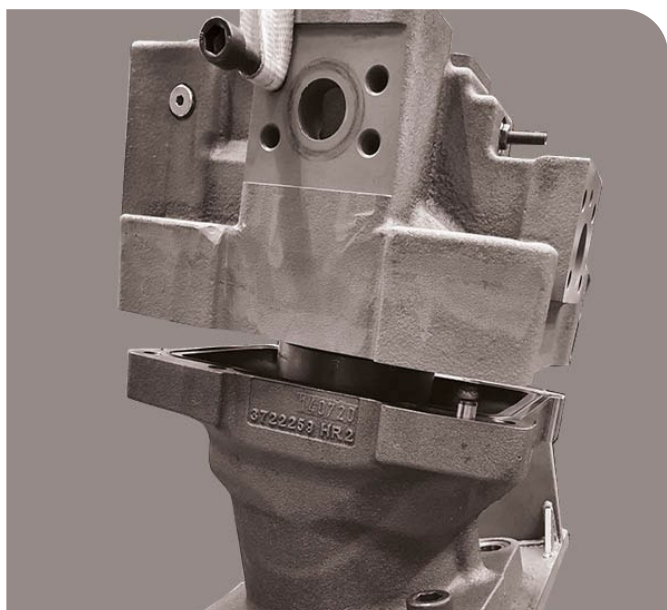


31. Make sure that the support pin is in correct position by using a thin steel wire. It should stop against the support pin. You can also see grease coming up from the centre hole in the cylinder barrel.

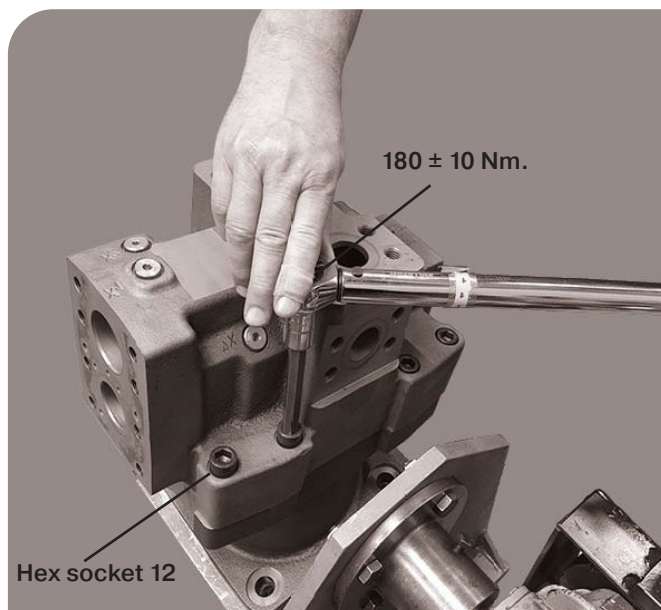


32. Assemble the guide pins and the sliding plate. Once again, make sure that support pin and rollers are in correct position.





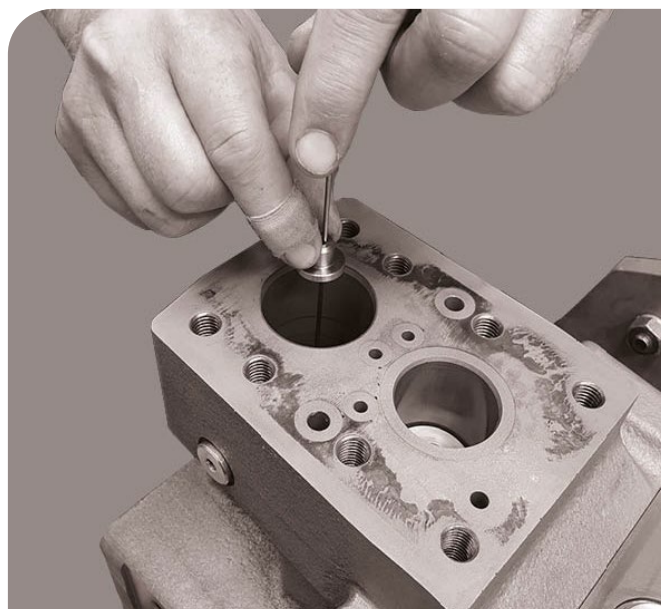
33. Use a lift and assemble the end cap. Be careful so no surfaces are damaged.



34. Assemble the hex socket screws and torque them to  $180 \pm 10$  Nm.

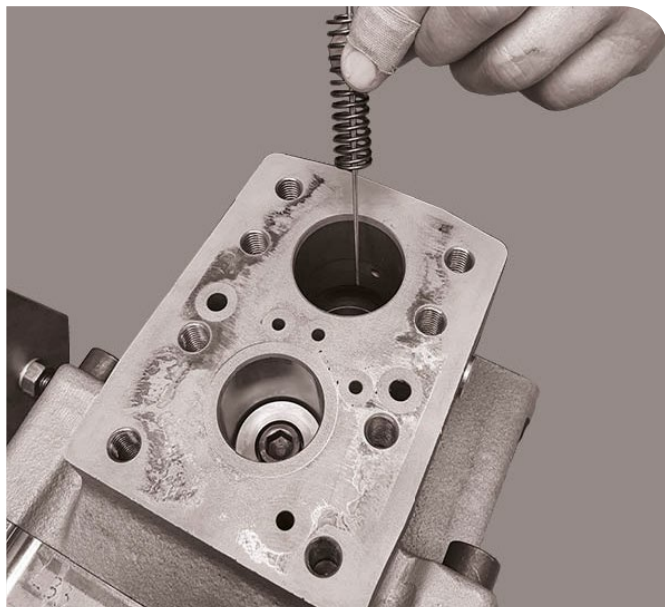


35. Locate and assemble the spring seat.

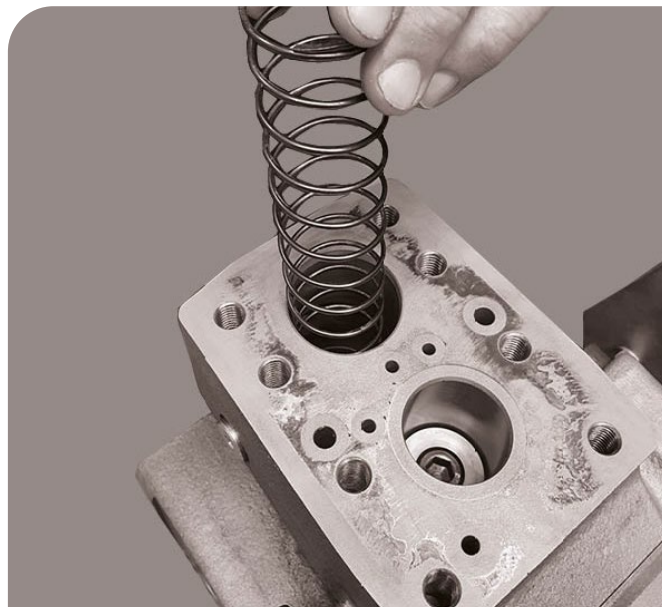


36. Locate and assemble the next spring seat.





37. Locate and assemble the threshold spring.



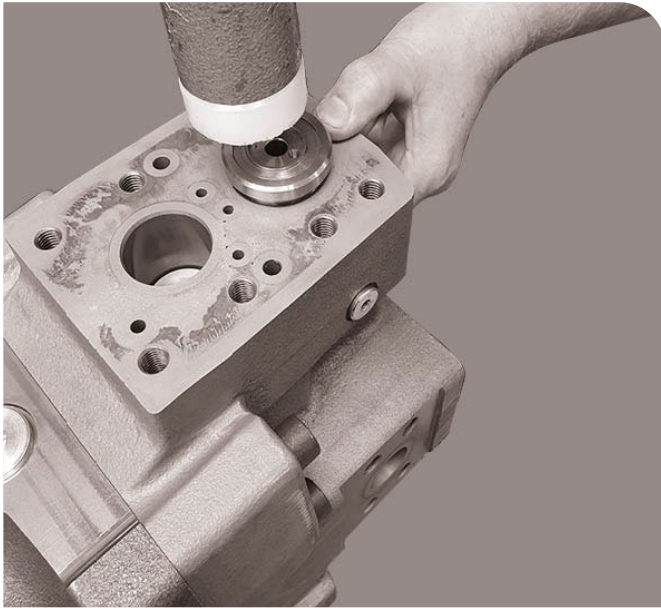
38. Assemble the modulating spring.



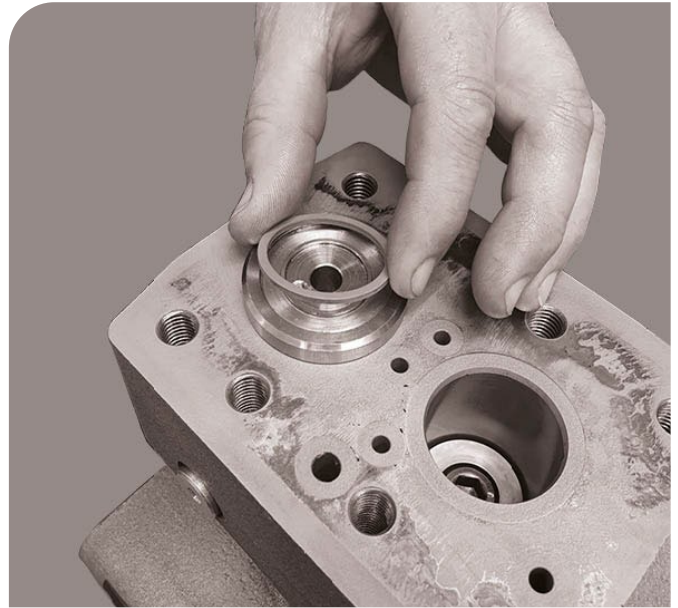
39. Assemble the spring seat.



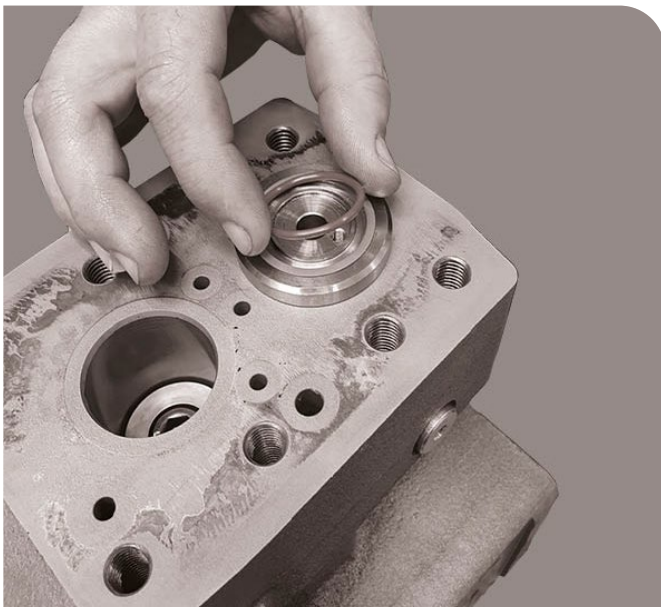
40. Locate and assemble the valve sleeve.



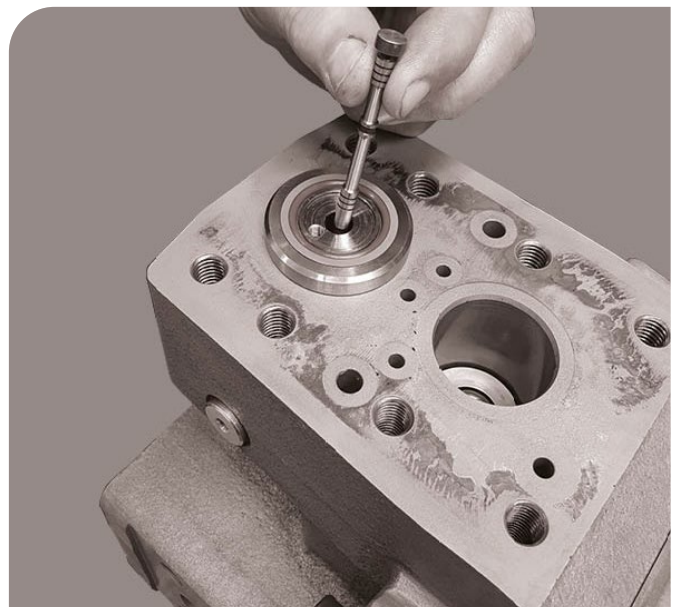
41. Carefully tap down the valve sleeve with a plastic hammer.



42. Assemble the Support ring.

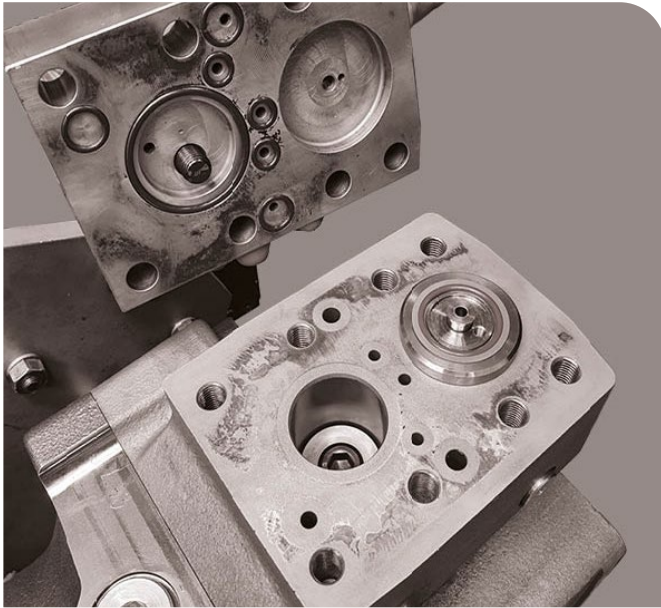


43. Assemble the o-ring.

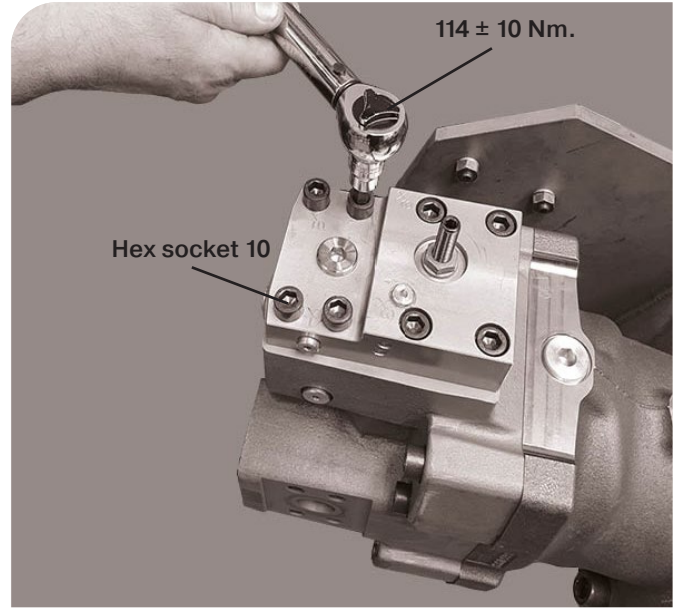


44. Assemble the valve spool.

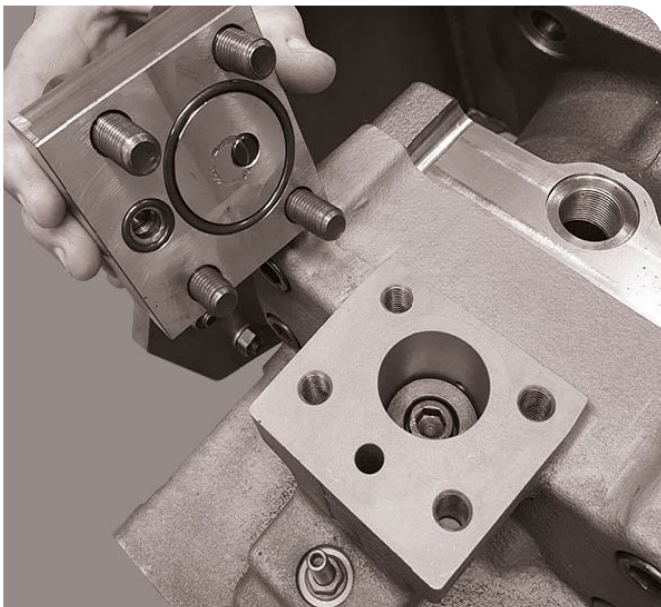




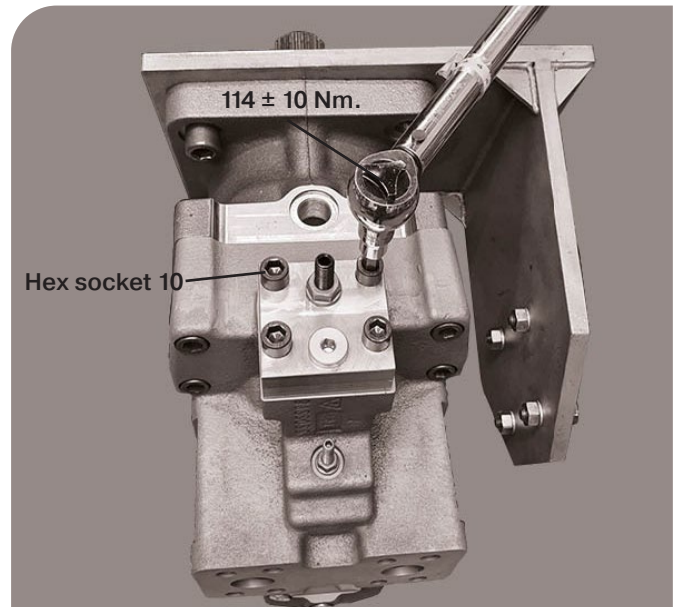
45. Assemble the control cover with o-rings. Make sure that the o-rings don't fall out, use some grease to keep them in place.



46. Assemble the hex socket screws and torque them to  $114 \pm 10$  Nm.



47. Assemble the cover with o-rings. Make sure that the o-rings don't fall out, use some grease to keep them in place.



48. Assemble the hex socket screws and torque them to  $114 \pm 10$  Nm.

## Drawings



QR code – drawing assembly  
tool bearing package



QR code – drawing disassembly  
tool bearing package

## Video tutorials



QR code – video tutorial  
disassembly position sensor



QR code – video tutorial  
assembly position sensor



QR code – video tutorial  
installation guide speed sensor

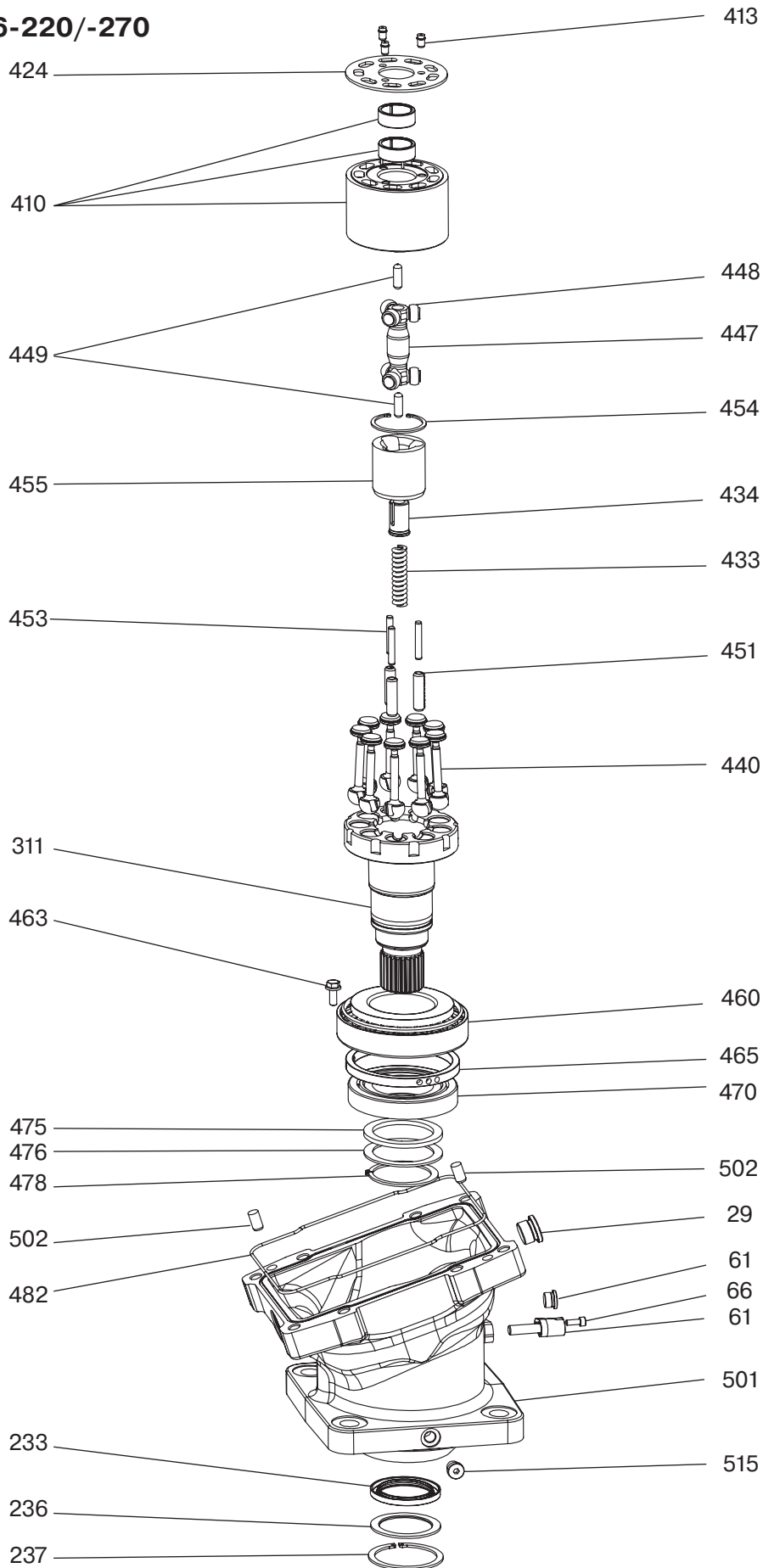
## Catalogue



QR code for the **catalogue**  
series V16 - MSG30-8223/UK



● Splitview V16-220/-270



## Spare parts V16-220/-270

Pos.	Description	Qty	Remarks
29	HEXAGON PLUG	1	Seal kit/Bearing housing kit
61	HEXAGON PLUG	1	Seal kit/Bearing housing kit
61	SPEED SENSOR	1	Speed sensor kit
66	HEX SOCKET SCREW	1	Speed sensor kit
233	SHAFT SEAL	1	Seal kit
236	BACK-UP RING	1	Seal kit
237	RETAINING RING	1	Seal kit
311	SHAFT	1	Shaft kit
410	CYLINDER BARREL ASSY	1	Cylinder barrel kit
413	GUIDE PIN	3	Cylinder barrel kit
424	SLIDING PLATE	1	Cylinder barrel 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
463	FLANGE BOLT	1	Shaft kit/Bearing housing kit
465	SPACER RING	1	Shaft kit
470	TAP ROL BEARING	1	Shaft kit
475	SUPPORT WASHER	2	Shaft kit
476	SPACER WASHER	1	Shaft kit
478	RETAINING RING	1	Shaft kit
482	O-RING	1	Seal kit
501	BEARING HOUSING	1	Bearing housing kit
502	PIN	2	Bearing housing kit
515	HEX SOCKET PLUG M14	1	Bearing housing kit

**Speed sensor kit**

including Pos. 61 and 66

Part no.	Description
3724736	NPN V16-220/-270
3724737	PNP V16-220/-270

**Piston Kit**

including Pos. 440 (9 pcs)

Part no.	Description
3724697	V16-220
3724698	V16-270

**Joint shaft Kit**

including Pos. 447, 448, 449

Part no.	Description
3724699	V16-220/-270

**Cylinder Barrel Kit**

including Pos. 410, 413, 424

Part no.	Description
3724700	V16-220
3724701	V16-270

**Bearing housing Kit**

including Pos. 29, 61, 463, 501, 502, 515

Part no.	Description
3724703	SAE
3724702	ISO

**Shaft Kit**

including Pos. 311, 433, 434, 451, 453, 454, 455, 460, 463, 465, 470, 475, 476, 478

Part no.	Description	Remarks
3724704	V16-220	Typ D
3724705	V16-270	Typ D
3724706	V16-220	Typ S
3724707	V16-270	Typ S
3724708	V16-270	Typ U
3724709	V16-270	Typ H
3724710	V16-270	Typ G
3724711	V16-270	Typ Z

**Seal kit V16-220/-270**

including Pos. 21, 22, 23, 24, 29, 61, 123, 125, 140, 141, 233, 236, 237, 482, 515, 714, 717, 719, 720, 722, 723, 725, 726, 727, 728, 729, 733, 735, 736, 737, 738, 775, 793, 796, 798

Part no.	Description
3724712	V16-220/-270



### Separate Items

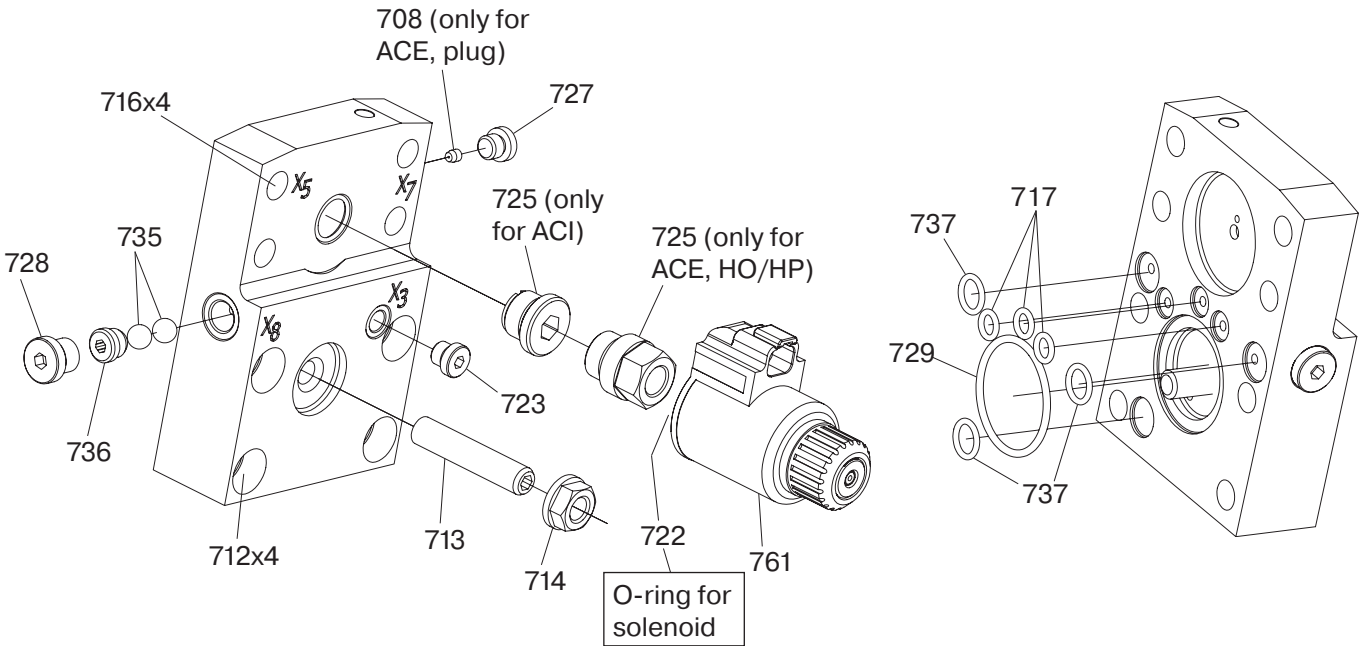
#### Plug position

Pos.	Part no.	Description
29 (ISO)	VSTI26X1.5EDVITCF	Hex skt plug M26
29 (SAE)	16 HP5ON-S V0894	Hex skt plug 1 5/16-12
61	VSTI12X1EDVITCF	Hex skt plug M12
515 (ISO)	VSTI14X1.5EDVITCF	Hex skt plug M14
515 (SAE)	6 HP5ON-S V0894	Hex skt plug 9/16-18

#### Tightening Torque

Pos.	Nm
29	ISO 70 ± 5 / SAE 70 ± 5
61	14 ± 4
66	14 ± 4
463	25 ± 5
515	ISO: 38± 8; SAE: 25 ± 5

**Splitview  
 AC/EO/EP/HO/HP Control**

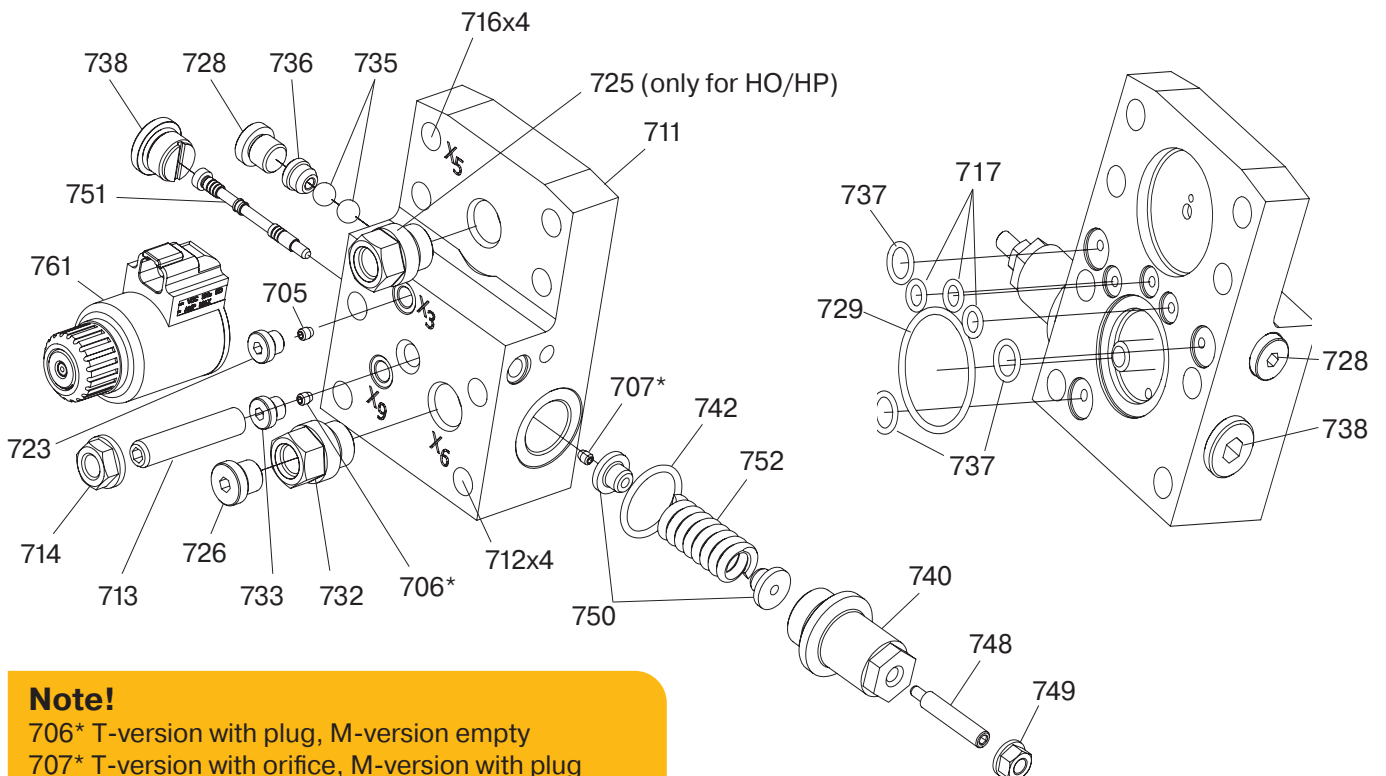


**Splitview  
 EO/EP/HO/HP Control with pressure cut off**

For M and T version see page 5.

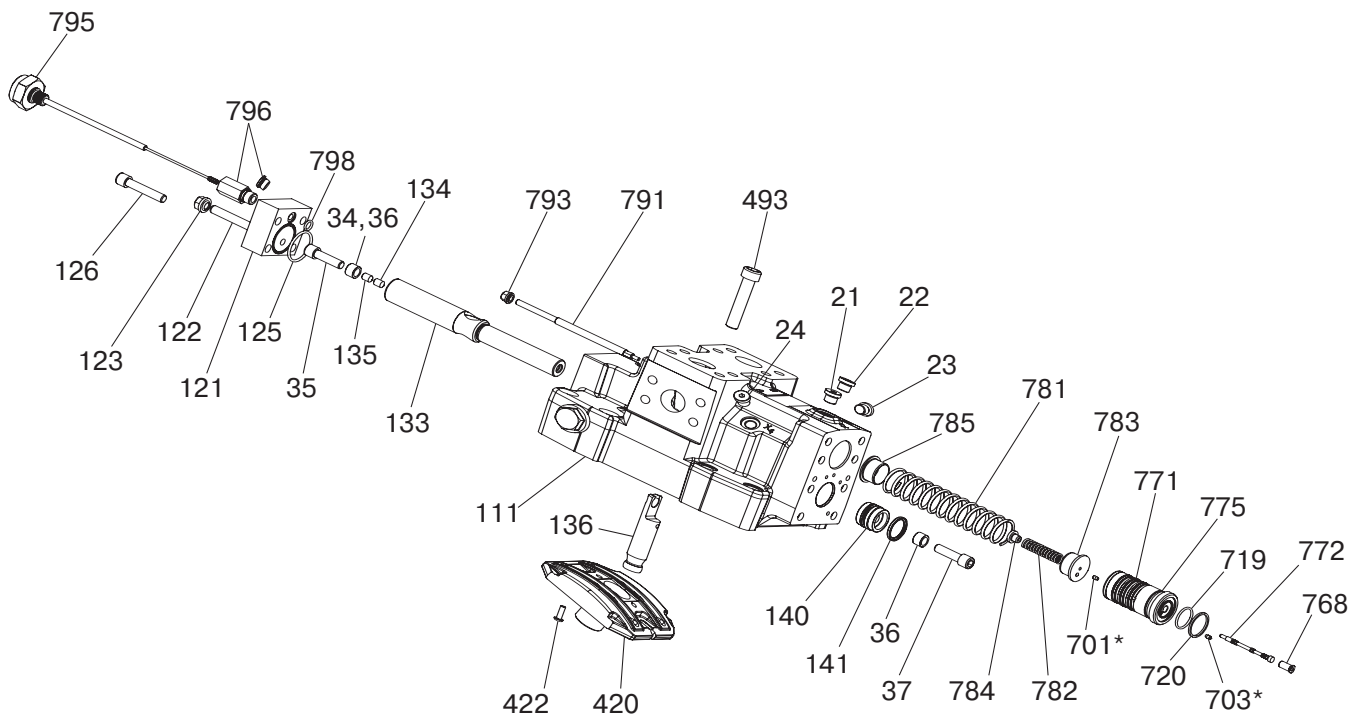
**Note!** Pos 722, O-ring for solenoid is shown on splitview above.

**Note!**  
 Pos. 705 1,5 mm, M-version  
 Pos. 705 0,8 mm, T-version  
 Pos. 707 0,8 mm, T-version



**Note!**  
 706\* T-version with plug, M-version empty  
 707\* T-version with orifice, M-version with plug

## Splitview End cap internal parts



### Note!

701\*

For controls with pressure cut off, always  
1,0 mm orifice.  
All other controls according to  
product code.

703\*

For electric controls (EO, EP)  
open, no plug.  
For all other controls (AC, HO,  
HP) a plug should be assembled.



**Spare parts AC/AH Control, EO/EP/EPC Control and HO/HP/HPC Control**

Pos.	Description	Qty	Remarks
21	HEX SKT PLUG	1	Seal Kit / end cap kit
22	HEX SKT PLUG	1	Seal Kit / end cap kit
23	HEX SKT PLUG	1	Seal Kit / end cap kit
24	HEX SKT PLUG	1	Seal Kit / end cap kit
34, 36	STOP WASHER		Stop washer Kit
35	HEX SKT SCREW	2	Stop washer Kit / setting piston kit
37	HEX SKT SCREW	1	Stop washer Kit / setting piston kit
111	END CAP	1	End cap kit
121	COVER	1	Cover Kit
122	SET SCREW	1	Cover Kit
123	SEAL NUT	1	Cover Kit
125	O-RING	1	Seal kit / cover kit
126	HEX SKT SCREW	4	Cover Kit
133	SETTING PISTON	1	Setting piston kit
134	SET SCREW	1	Setting piston kit
135	SET SCREW	1	Setting piston kit
136	COMPANION PIN	1	Setting piston kit
140	PISTON HEAD	1	Setting piston kit
141	PISTON SEAL ASSY	1	Seal Kit / setting piston kit
420	VALVE SEGMENT	1	Valve Segment Kit
422	FLANG SCREW	1	Valve Segment Kit
493	HEX SKT SCREW	8	End cap kit
701	NOZZLE	1	Nozzle Kit
703	NOZZLE	1	Nozzle Kit
705	NOZZLE	1	Nozzle Kit
706	PLUG	1	T mounted with pressure cut off - Nozzle Kit
707	NOZZLE	1	T mounted with pressure cut off - Nozzle Kit
707	PLUG	1	M mounted with pressure cut off - Nozzle Kit
708	NOZZLE	1	Only ACE, HOE, HPE, EOL, EOH, EPL, EPH, EPD
711	CONTROL COVER	1	Control cover kit
712	HEX SKT SCREW	4	Control cover kit
713	SET SCREW	1	Control cover kit
714	SEAL NUT	1	Control cover kit
716	HEX SKT SCREW	4	Control cover kit (not shown on splitview)
717	O-RING	3	Seal kit / control cover kit
719	O-RING	1	Seal kit / valve sleeve kit (not shown on split view)
720	BACK-UP RING	1	Seal kit / valve sleeve kit (not shown on split view)
722	O-RING	1	Seal Kit / solenoid kit
723	HEX SKT PLUG	1	Control cover kit
725	ADAPTER FITTING	1	Control cover kit (Only used for ACE, HO, HP)
725	HEX SKT PLUG	1	Control cover kit (Only used for ACI control)
726	HEX SKT PLUG	1	Control cover kit (only controls with cut off valve)
727	HEX SKT PLUG	1	Control cover kit
728	HEX SKT PLUG	1	Control cover kit
729	O-RING	1	Seal kit/control cover kit
732	ADAPTER FITTING	1	Control cover kit (only controls with cut off valve)
733	HEX SKT PLUG	1	Control cover kit (only controls with cut off valve)
735	BALLS	2	Control cover kit
736	VALVE SEAT	1	Control cover kit

## Spare parts AC/AH Control, EO/EP/EPC Control and HO/HP/HPC Control

Pos.	Description	Qty	Remarks
737	O-RING	3	Seal kit / control cover kit
738	HEX SKT PLUG	1	Control cover kit
740	SPRING CHAMBER	1	Control cover kit (only controls with cut off valve)
748	ADJUSTING SCREW	1	Control cover kit (only controls with cut off valve)
749	SEAL NUT	1	Control cover kit (only controls with cut off valve)
750	SPRING SEAT	2	Control cover kit (only controls with cut off valve)
751	VALVE SPOOL	1	Control cover kit (only controls with cut off valve)
752	COMPRESSION SPRING	1	Control cover kit (only controls with cut off valve)
761	SOLENOID	1	Solenoid kit
763	GUIDING PIN	1	Solenoid kit
768	SPACER	1	Valve sleeve kit
771	VALVE SLEEVE ASSY	1	Valve sleeve kit
772	VALVE SPOOL	1	Valve sleeve kit
775	O-RING	1	Valve sleeve kit
781	FEED BACK SPRING	1	Adjusting kit
782	COMPRESSION SPRING	1	Adjusting kit
783	SPRING SEAT	1	Adjusting kit
784	SPRING SEAT	1	Adjusting kit
785	SPRING SEAT	1	Adjusting kit
791	ADJUSTING SCREW	1	Adjusting kit
793	SEAL NUT	1	Adjusting kit
795	POSITION SENSOR	1	Position sensor kit
796	ADAPTER	1	Position sensor kit
796	HEX SKT PLUG	1	Seal kit / cover kit
798	O-RING	1	Seal kit / cover kit

## Tightening Torque

Pos.	Nm	Pos.	Nm
21	ISO 38 ± 8; SAE 25 ± 5	725 (Hex Skt Plug, only ACI)	65 ± 5
22	ISO 38 ± 8; SAE 25 ± 5	725 (Adapter)	65 ± 5
23	ISO 38 ± 8; SAE 25 ± 5	726	ISO 38 ± 8; SAE 25 ± 5
24	ISO 38 ± 8; SAE 25 ± 5	727	13 ± 2
35	114 ± 10	728	38 ± 8
37	114 ± 10	732	65 ± 5
123	65 ± 5	733	13 ± 2
126	114 ± 10	736	38 ± 8
134	14 ± 4	738	65 ± 5
135	26 ± 5	740	65 ± 5
422	14 ± 4	749	10 ± 1.5
493	180 ± 10	761	17 ± 3
701, 703, 705, 706	1.4 ± 0.2	793	10 ± 1.5
707, 708	1.4 ± 0.2	795	65 ± 5
712	114 ± 10	796 (Hex Skt Plug)	65 ± 5
714	65 ± 5	796 (Adapter)	65 ± 5
716	114 ± 10		
723	13 ± 2		

## V16 Spare parts kits

### Position sensor kit

Including Pos. 795 and 796

Part no.	Description	Remarks
3724735	V16-220/270	

### Disassembly / assembly tool for position sensor

Part no.	Description	Remarks
3723450	V16-220/270	

### Solenoid kit

Including Pos. 722, 761 and 763

Part no.	Description	Remarks
3724730	V16-220/270	12V
3724729	V16-220/270	24V

### Setting piston Kit

including Pos. 34, 36, 37, 131, 134, 135, 136, 140, 141

Part no.	Description	Remarks
3724720	V16-220/270	Pos. 37, hexagon screw, must be used

### Stop washer Kit (up to serial no. 202302199999)

including Pos. 34, 36, 37

Part no.	Description	Remarks
3723320	V16-220/ V16-270	Up to serial no. 202302199999

### Stop washer Kit (from serial no. 202302200001)

including Pos. 34, 36, 37

Part no.	Description	Remarks
3723428	V16-220/ V16-270	From serial no. 202302200001

### Adjusting kit

including Pos. 781, 782, 783, 784, 785, 791, 793

Part no.	Description	Remarks
3724732	V16-220/ V16-270	

### Cover Kit

including Pos. 121, 122, 123, 125, 126, 796, 798

Part no.	Description	Remarks
3724731	V16-220/ V16-270	

### Nozzle Kit M5\*1

including Pos. 701, 703, 705, 706, 707, 708

Part no.	Description	Remarks
3723156	V16-220/ V16-270	5 of each nozzle diam.

### Valve sleeve kit

including Pos. 719, 720, 768, 771, 772, 775

Part no.	Description	Remarks
3724733	V16-220/ V16-270	



**Flange kit for main ports (Not shown on splitview)**

Part no.	Description	Remarks
3724734	V16-220/270	ISO and SAE bolts and two covers included

**Valve segment kit**

including Pos. 420, 422

Part no.	Description	Remarks
3724725	V16-220	
3724726	V16-270	

**Control cover kit AC, EO, EP, HO, HP**

including Pos. 703, 708, 711, 712, 713, 714, 716, 717, 718, 722, 723, 725, 727, 728, 729, 735, 736, 737

Part no.	Description	Remarks
3724727	V16-220/ V16-270	

**Control cover kit EOA, EOB, EPA, EPB, HOC, HPC**

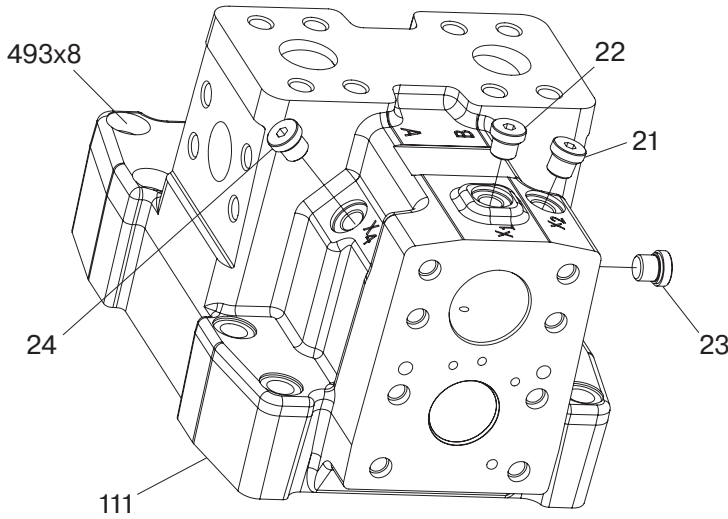
including Pos. 703, 711, 712, 713, 714, 716, 717, 718, 722, 723, 725, 726, 728, 729, 732, 733, 735, 736, 737, 738, 740, 748, 749, 750, 751, 752

Part no.	Description	Remarks
3724728	V16-220/ V16-270	

**Separate Items****Plug position**

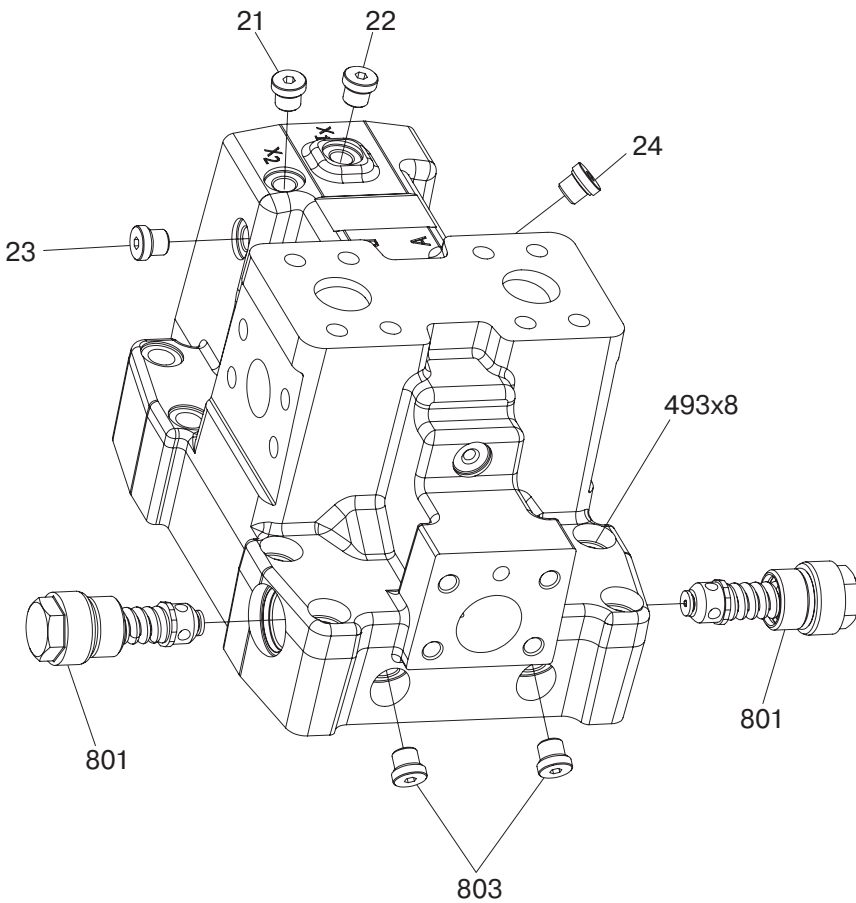
Pos.	Part no.	Description
21, 22, 23, 24 (ISO)	VSTI14X1.5EDVITCF	Hex skt plug M14
21, 22, 23, 24 (SAE)	6 HP50N-S V0894	Hex skt plug 9/16-18
723	VSTI10X1EDVITCF	Hex skt plug M10
727	VSTI10X1EDVITCF	Hex skt plug M10
733	VSTI10X1EDVITCF	Hex skt plug M10
796	VSTI18X1,5EDVITCF	Hex skt plug M18
803	VSTI14X1.5EDVITCF	Hex skt plug M14
841	VSTI14X1.5EDVITCF	Hex skt plug M14
844	VSTI14X1.5EDVITCF	Hex skt plug M14

Splitview End Cap



End Cap Type N	
Pos: 21, 22, 23, 24, 111, 493	
V16-220/270	
ISO	3724713
SAE	3724714

Pos 493 shown on page 52

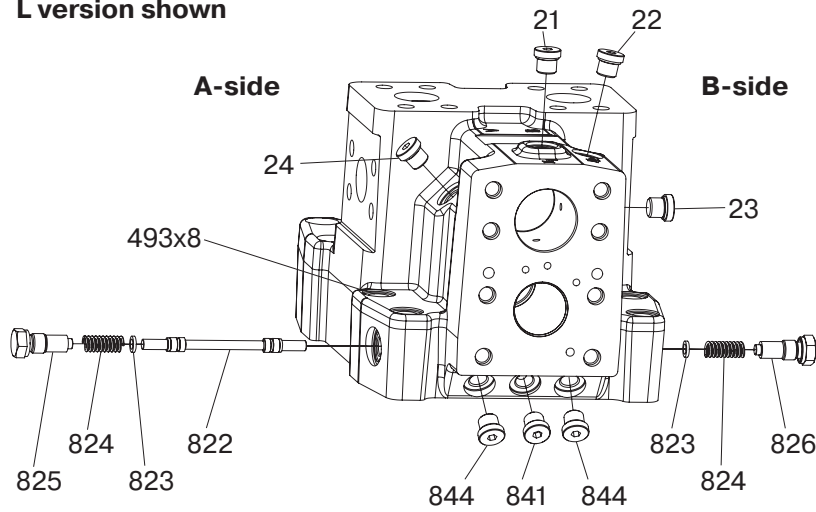


End Cap Type P	
Pos: 21, 22, 23, 24, 111, 493, 803	
V16-220/270	
ISO	3724717
SAE	3724718

Valve Cartridge Pos: 801	Part no.
P230	20006727
P250	20004981
P280	20007439
P300	20005798
P350	20000990
P380	20006115
P420	00153491

**Splitview End Cap**

L version shown

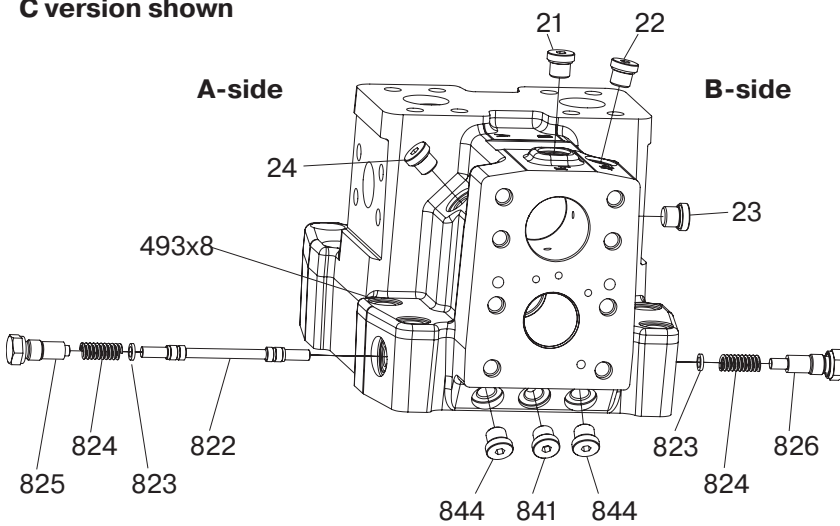


<b>End Cap Type L, C, D</b>	
<b>Pos: 21, 22, 23, 24, 111, 493, 841, 844</b>	
	<b>V16-220/270</b>
ISO	3724715
SAE	3724716

<b>Flushing valve kit</b>	
<b>Pos: 822, 823, 824, 825, 826, 835*, 841, 844</b>	
	<b>V16-220/-270</b>
	3724719

\* Nozzle diam (mm) - (plug, 1.3, 1.5, 1.7, 2.0, 2.5, 3.0)

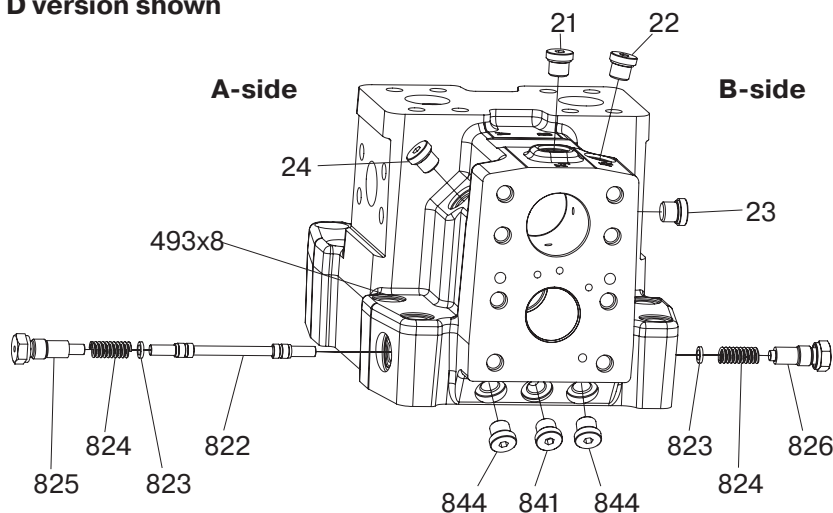
C version shown



Pos 493 shown on page 52

**C version - pos 826 long hex plug,  
B-side  
Flushing from A-side**

D version shown



**D version - pos 825 long hex plug,  
A-side  
Flushing from B-side**

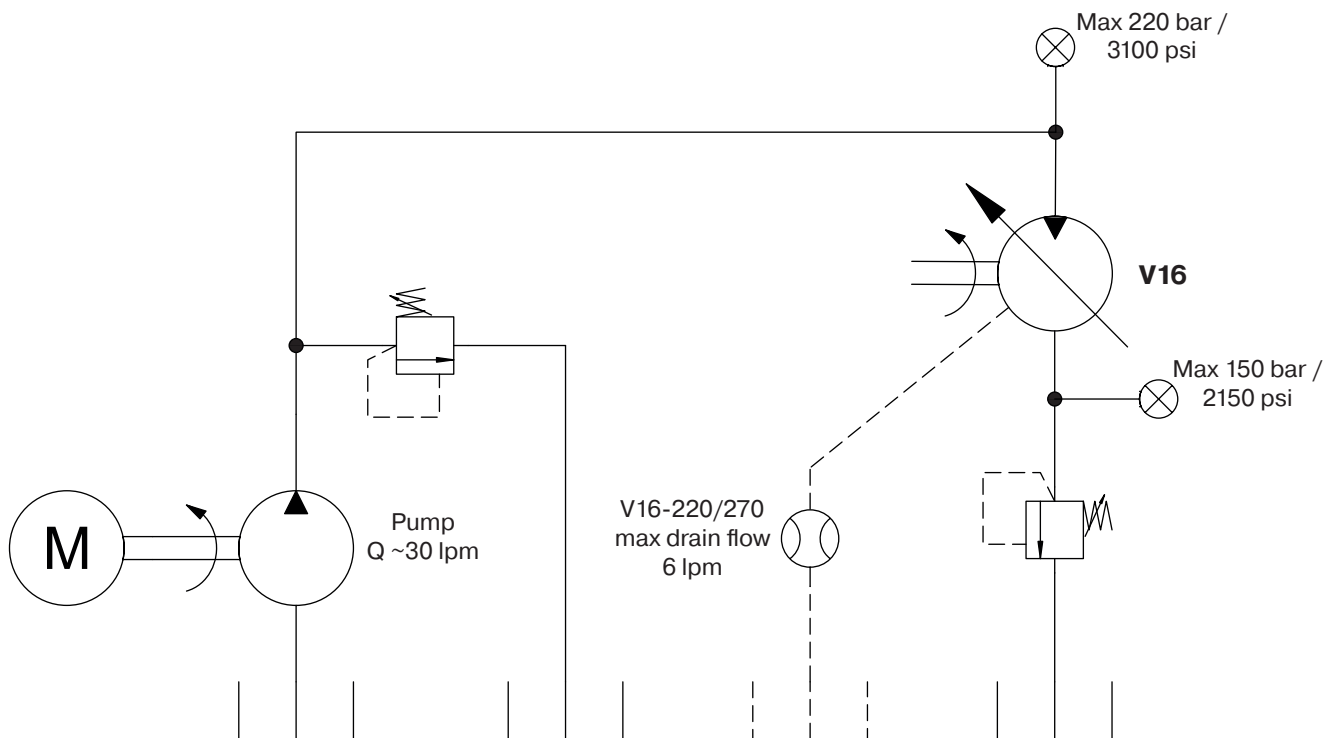


## Test procedure

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.



## Position notification regarding Machinery Directive 2006/42/EC:

Products made by the Pump & Motor Division Europe (PMDE) of Parker Hannifin are excluded from the scope of the machinery directive following the "Cetop" Position Paper on the implementation of the Machinery Directive 2006/42/EC in the Fluid Power Industry.

All PMDE products are designed and manufactured considering the basic as well as the proven safety principles according to:

- 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



## WARNING – USER RESPONSIBILITY

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalogue and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

## Offer of Sale

Please contact your Parker representation for a detailed "Offer of Sale".



**Parker Hannifin Manufacturing Sweden AB**  
Pump and Motor Division Europa  
Flygmotorvägen 2  
461 82 Trollhättan  
Schweden  
Tel. +46 (0)520 40 45 00  
www.parker.com/pmde

MSG30-5526-M1/UK

© Copyright 2023  
Alle Rechte vorbehalten