



# Hydraulic Motors

Series V12, V14  
Variable Displacement



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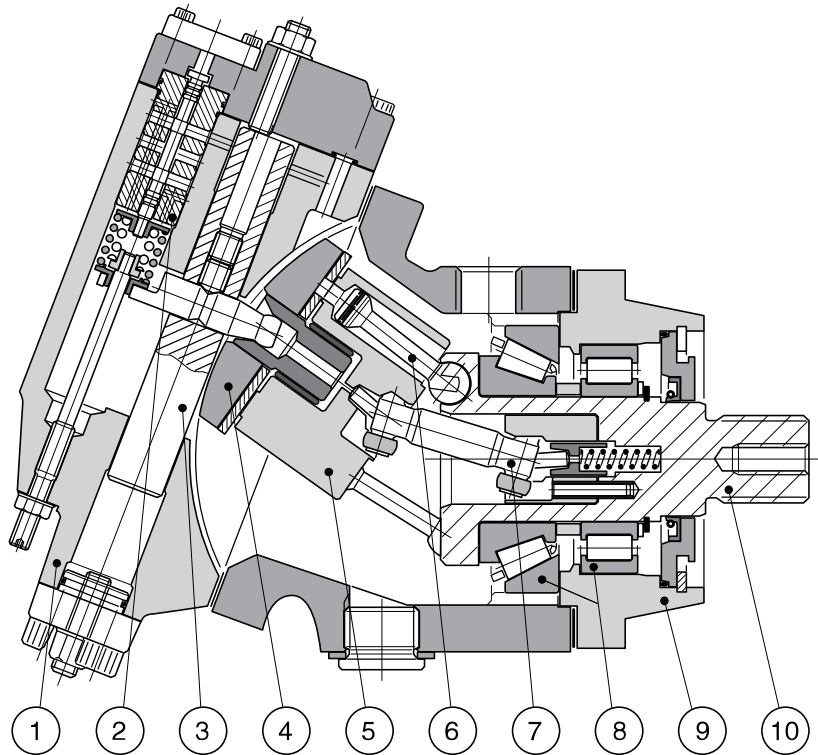
# V12



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**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



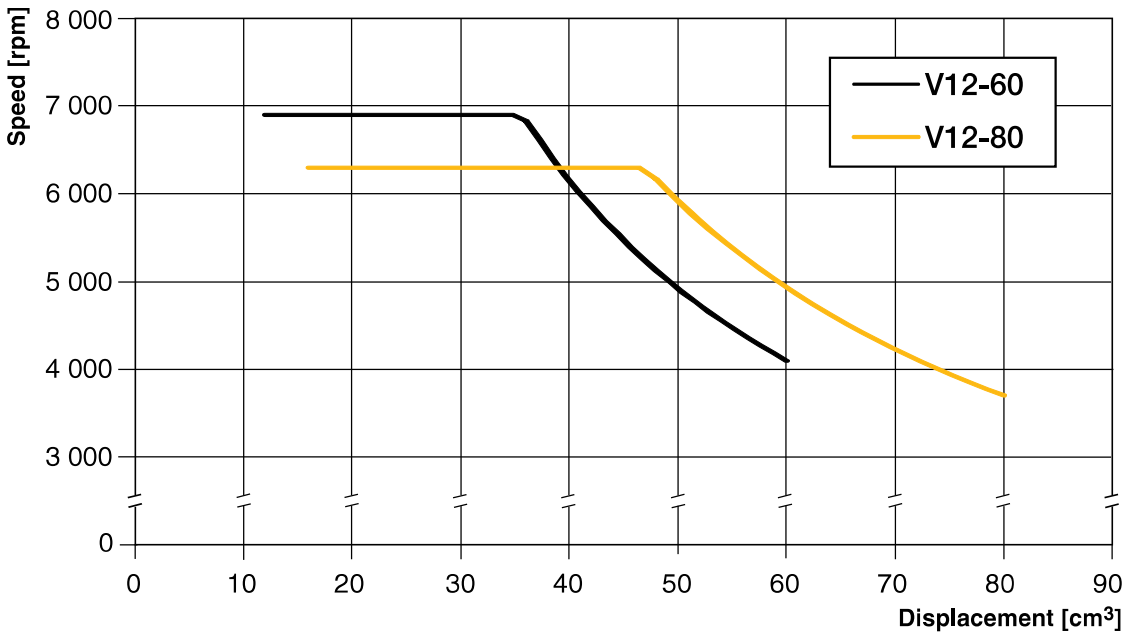
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**Specifications**

V12 frame size	60	80
<b>Displacement</b> [cm <sup>3</sup> /rev]		
- max, at 35°	60	80
- min, at 6.5°	12	16
<b>Operating pressure</b> [bar]		
- max intermittent <sup>1)</sup>	480	480
- max continuous	420	420
<b>Operating speed</b> [rpm]		
- at 35°, max intermittent <sup>1)</sup>	4 700	4 300
- at 35°, max continuous	4 100	3 700
- at 6.5°–20°, max intermittent <sup>1)</sup>	7 900	7 200
- at 6.5°–20°, max continuous	6 900	6 300
- min continuous	50	50
<b>Flow</b> [l/min]		
- max intermittent <sup>1)</sup>	282	344
- max continuous	246	296
<b>Torque</b> (theor.) at 100 bar [Nm]	95	127
<b>Max Output power</b> <sup>1)</sup> [kW]	170	205
<b>Corner power</b> [kW]		
- intermittent <sup>1)</sup>	380	460
- continuous	290	350
<b>Mass moment of inertia</b>		
(x10 <sup>-3</sup> ) [kg m <sup>2</sup> ]	3.1	4.4
<b>Weight</b> [kg]	28	33

1) Max 6 seconds in any one minute.

**Continuous Speed vs. Displacement**

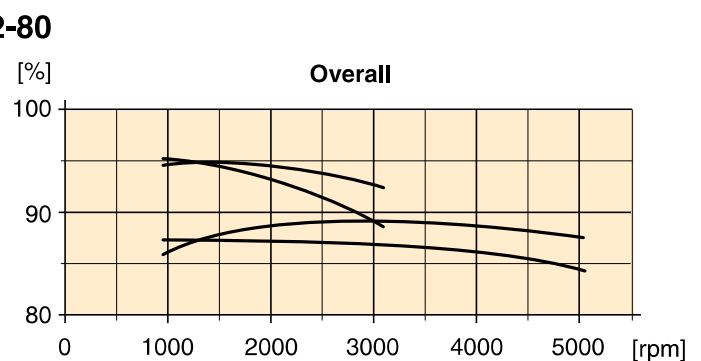
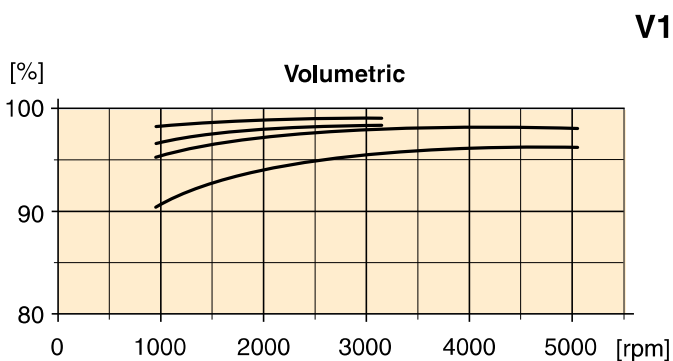
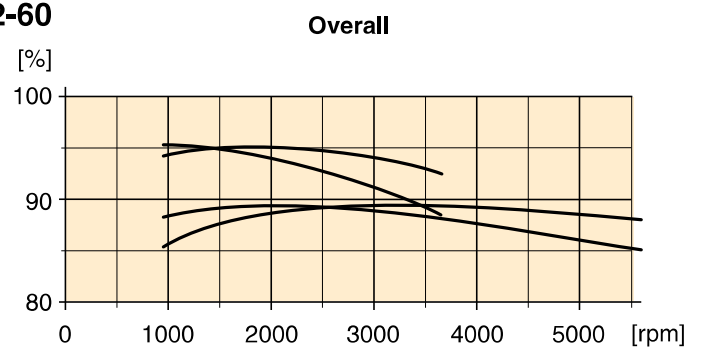
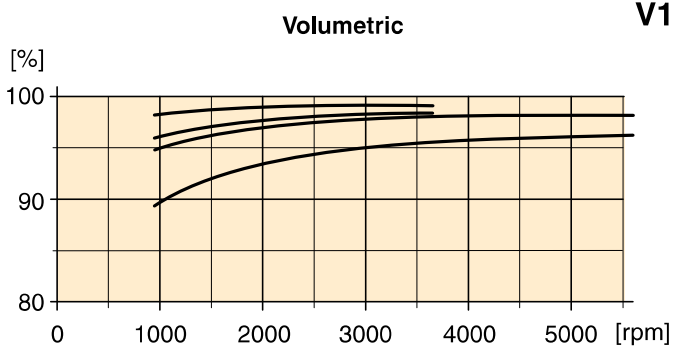


**Efficiency diagrams**

The following diagrams show volumetric and overall efficiencies versus shaft speed at 210 and 420 bar operating pressure, and at full (35°) and reduced (10°) displacements.

Information on efficiencies for a specific load condition can be made available from Parker Hannifin.

- 210 bar at full displacement
- 420 bar “ “ “
- 210 bar at reduced displacement
- 420 bar “ “ “



**AH pressure compensator**

The AH compensator is similar to the AC (page 9) but incorporates an hydraulic override device. It is utilized in hydrostatic transmissions where a high degree of manoeuvrability at low vehicle speeds is desirable.

When the override is pressurized, the servo piston moves to the max displacement position irrespective of system pressure, provided the servo supply pressure is at least 20 bar.

The AH compensator is available in two versions:

**AHI 01 I** - Same as the ACI except for the override; internal pilot pressure.

**AHE 01 I** - External pilot pressure (port X5; compare (optional) ACE, page 9).

Required override pressure, port X7 (min 20 bar):

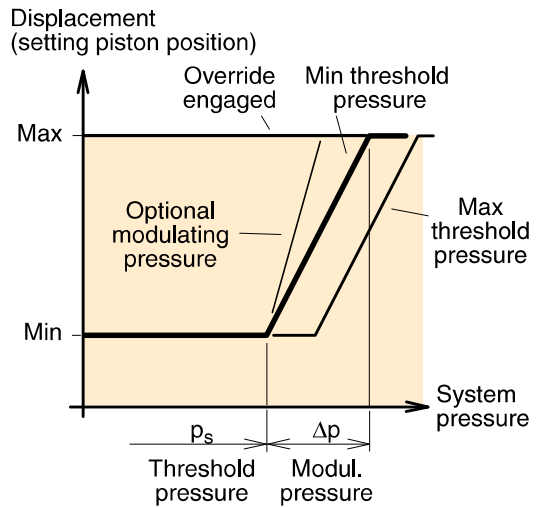
$$p_7 = \frac{p_s + \Delta p}{24} \text{ [bar]}$$

$p_7$  = Override pressure

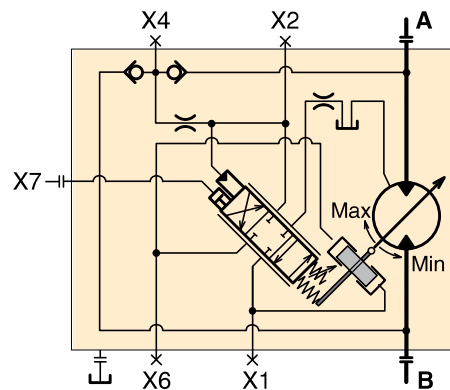
$p_s$  = System pressure

$\Delta p$  = Modulating pressure

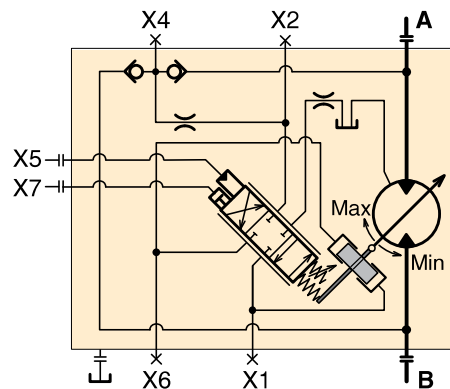
Gauge/pilot ports (AH compensator)	
X1	Setting piston pressure (increasing displ.)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X5	External pilot pressure
X6	Setting piston pressure (decreasing displ.)
X7	Override pressure
Port sizes:	
-	M14x1.5 (ISO and cartridge versions)
-	9/16"-18 O-ring boss (SAE version).



AH diagram.

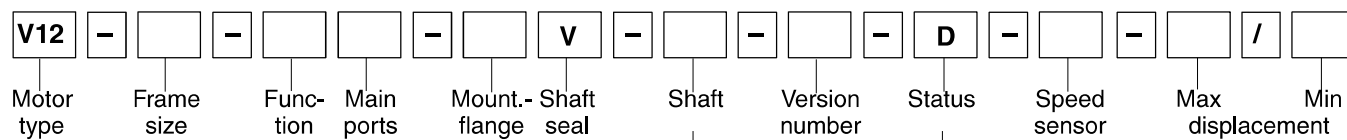


AHI 01 I schematic (spool in a balanced, mid-pos.).



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

**ISO version (basic configuration)**



Frame size	
Code	Displacem. (cm <sup>3</sup> /rev)
060	60
080	80

Frame size		60	80
Code	Function		
M	Motor; normal end cap position: EO, EP, HO and HP	x	x
T	Motor; normal end cap position: AC, AH and AD	x	x

Frame size		60	80
Code	Main ports		
A	SAE flange; metric threads, rear ports	x	x
F	SAE flange; metric threads, side ports	x	x

Frame size		60	80
Code	Mounting flange		
I	ISO flange	x	x
N	ISO flange	(x)	(x)

Frame size		60	80
Code	Shaft seal		
V	PPS	x	x

Frame size		60	80
Code	Shaft (DIN 5480)		
C	Spline	(x)	(x)
D	Spline	x	x

Max and min displacement	
[cm <sup>3</sup> /rev]	

Code	Speed sensor*
P	Prepared for speed sensor
O	None

Code	Status
D	Control pressure setting; max and min displacement screws sealed

Version number	
Factory assigned for special versions	

\* Note.  
 See information on page 18, Speed Sensor

**2**

x: Available (x): Optional - : Not available

Controls and flushing valve, see page 22



**Control installation dimensions**

**NOTE:** - The basic motor side port locations are shown on pages 24, 26 and 28.

- End cap position: Refer to the ordering codes, pages 19-21.

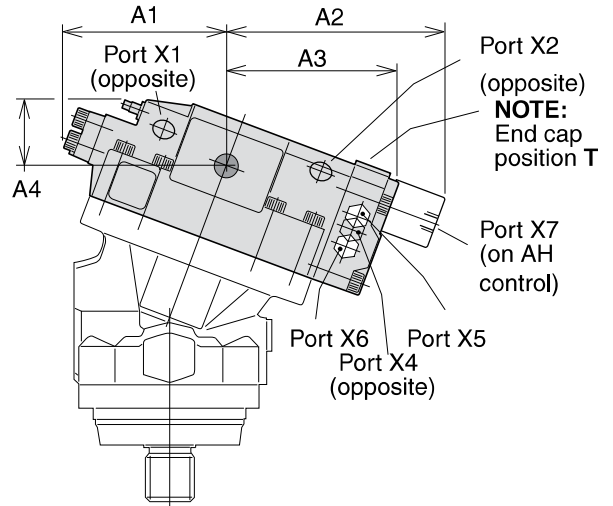
- Control/gauge ports are:

- M14x1.5 (ISO and cartridge versions).
- 9/16"-18 UNF (SAE version).

- All dimensions are max.

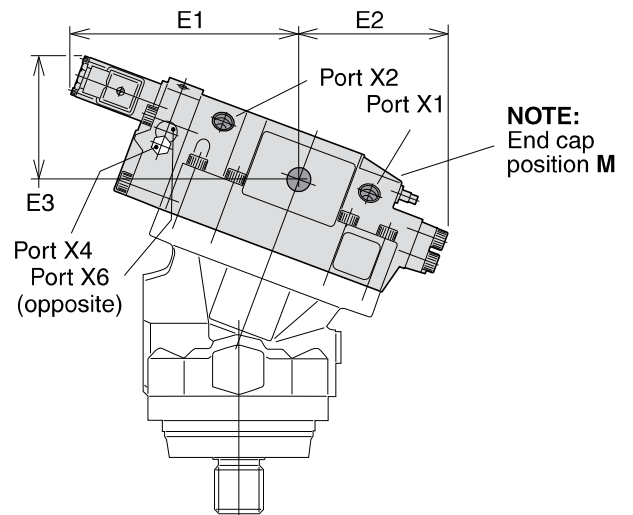
**AC and AH compensators**

Dim.	V12-60	(inch)	V12-80	(inch)
A1	132	5.20	138	5.43
A2	186	7.32	188	7.40
A3	143	5.63	145	5.71
A4	55	2.17	57	2.24



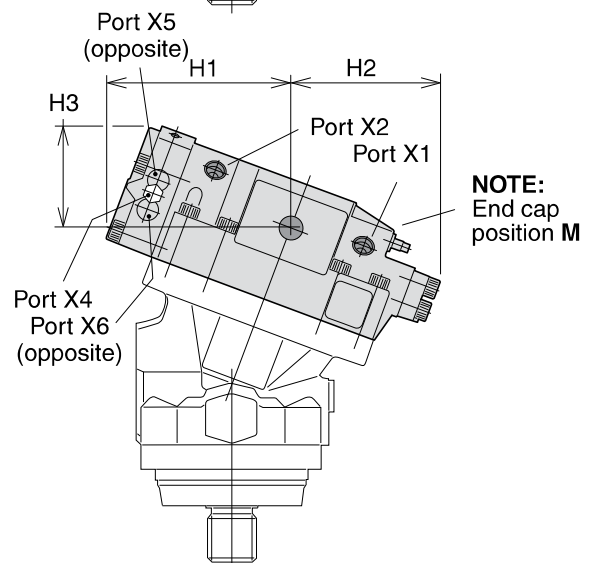
**EO and EP controls**

Dim.	V12-60	(inch)	V12-80	(inch)
E1	190	7.48	192	7.56
E2	121	4.76	125	4.92
E3	106	4.17	106	4.17



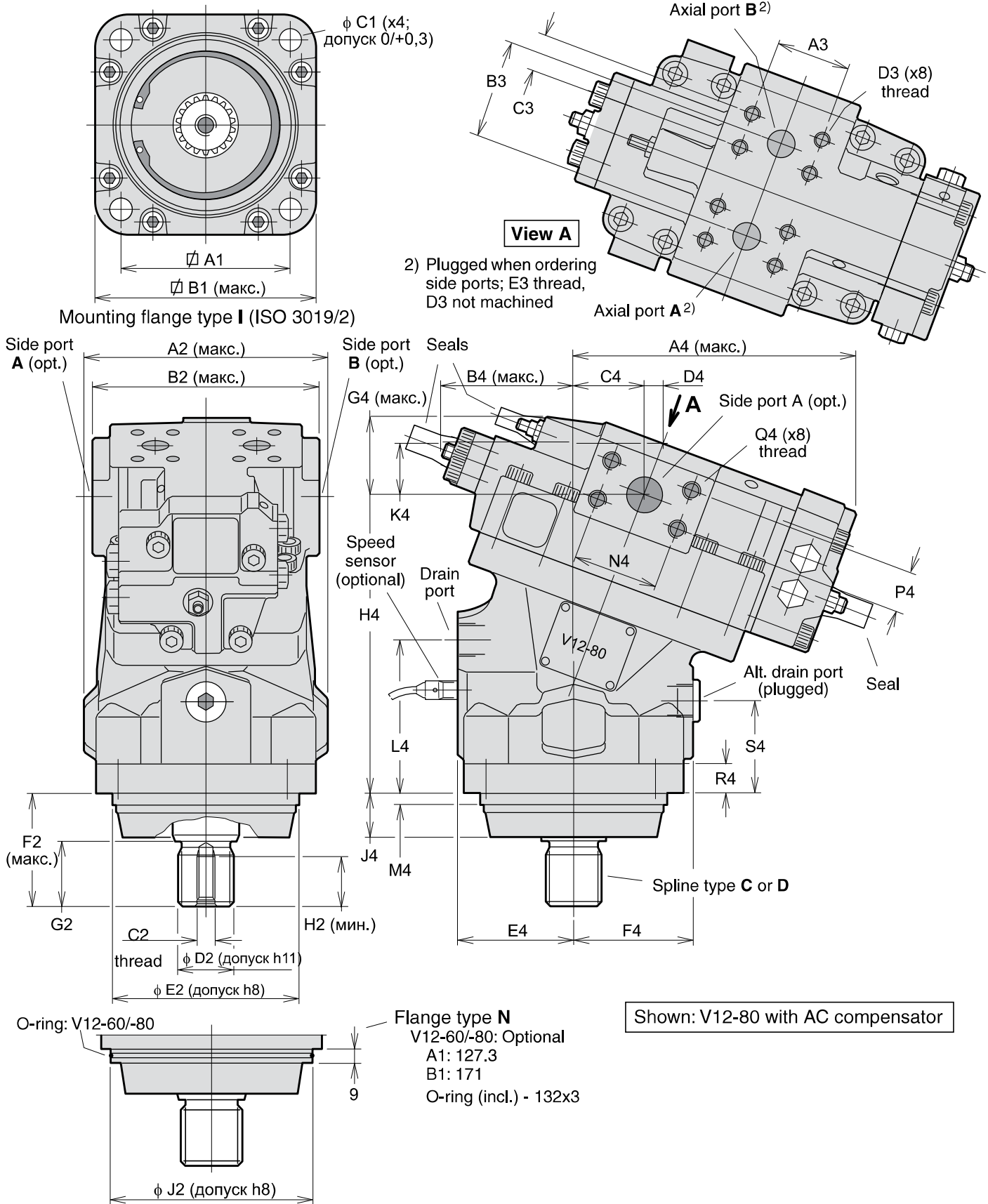
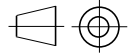
**HO and HP controls**

Dim.	V12-60	(inch)	V12-80	(inch)
H1	153	6.02	156	6.14
H2	121	4.76	125	4.92
H3	86	3.39	85	3.35





**ISO version**



Size	V12-60	V12-80
A1	113.2	113.2
B1	151	151
C1	14	14
A2	159	165
B2	146	154
C2	M12	M12
D2*	34.6	39.6
E2	125	125
F2*	73	78
G2*	40	45
H2	28	24
J2	140	140
A3	50.8	50.8
B3	66	66
C3	23.8	23.8
D3 <sup>1)</sup>	M10x20	M10x20
E3 <sup>2)</sup>	M22x1.5	M22x1.5
A4	188	193
B4	87	90
C4	45	48.3
D4	13.4	13.1
E4	76	78
F4	77	80
G4	55	57
H4	188	199
J4	31.5	31.5
K4	35.5	34.6
L4	94	101
M4	9	9
N4	50.8	57.2
P4	23.8	27.8
Q4 <sup>1)</sup>	M10x20	M12x23
R4	20	20
S4	57.5	60.5

\* Dimension for shaft type **D**.  
 Shaft type **C** dimensions are 5 mm shorter than those of type **D**.

- 1) Metric thread x depth in mm
- 2) Metric thread x pitch in mm
- 3) '30° involute spline, side fit'.

Ports

Type	V12-60	V12-80
Axial	19 [ <sup>3</sup> / <sub>4</sub> "]	19 [ <sup>3</sup> / <sub>4</sub> "]
Side	19 [ <sup>3</sup> / <sub>4</sub> "]	25 [1"]
Drain <sup>2)</sup>	M22x1.5	M22x1.5

Main ports: ISO 6162, 41.5 MPa, type II  
 (SAE J518c, 6000 psi)

Spline type **C**<sup>3)</sup> (DIN 5480)

Size	Dimension
V12-60	W30x2x14x9g
V12-80	W35x2x16x9g

Spline type **D**<sup>3)</sup> (DIN 5480)

Size	Dimension
V12-60	W35x2x16x9g
V12-80	W40x2x18x9g

Flange

Size	I	N
V12-60	standard	optional
V12-80	standard	optional