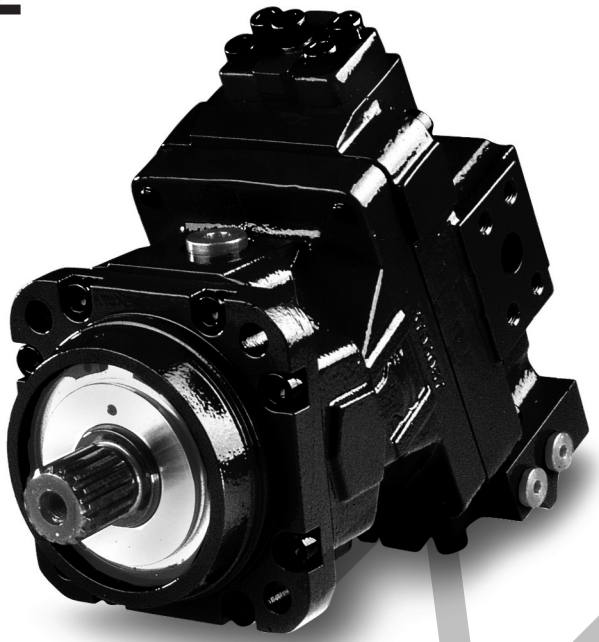
V12



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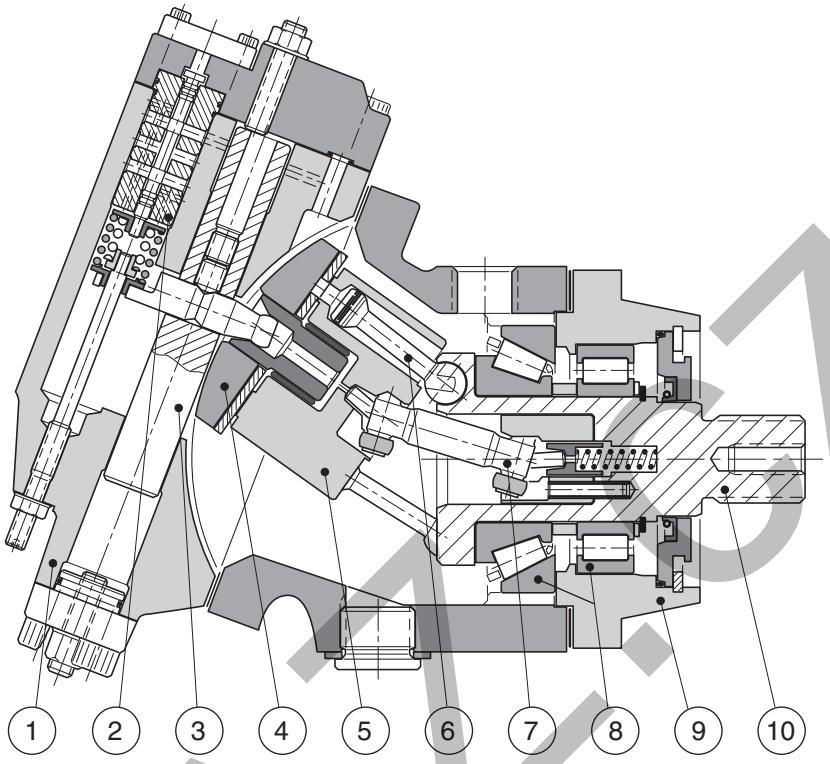
V12 cross section

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



Specifications

V12 frame size	**60**	**80**
Displacement [cm³/rev]		
- max, at 35°	60	80
- min, at 6.5°	12	16
Operating pressure [bar]		
- max intermittent [1)]	480	480
- max continuous	420	420
Operating speed [rpm]		
- at 35°, max intermittent [1)]	4 700	4 300
- at 35°, max continuous	4 100	3 700
- at 6.5°–20°, max intermittent [1)]	7 900	7 200
- at 6.5°–20°, max continuous	6 900	6 300
- min continuous	50	50
Flow [l/min]		
- max intermittent [1)]	282	344
- max continuous	246	296
Torque (theor.) at 100 bar [Nm]	95	127
Max Output power [1)] [kW]	170	205
Corner power [kW]		
- 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.

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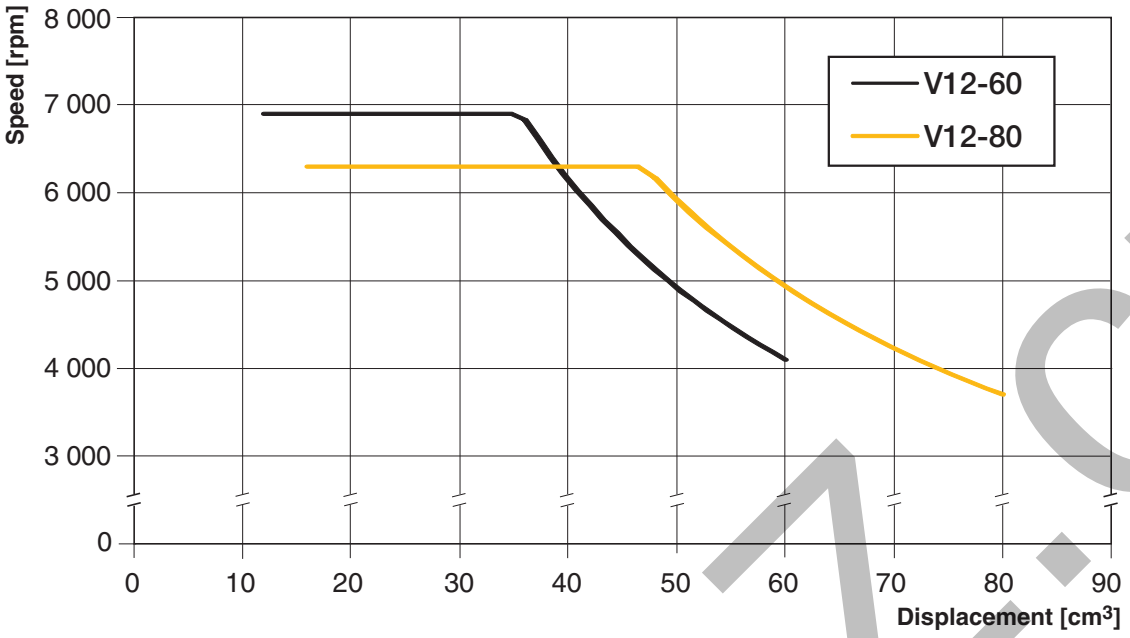
Continuous Speed vs. Displacement



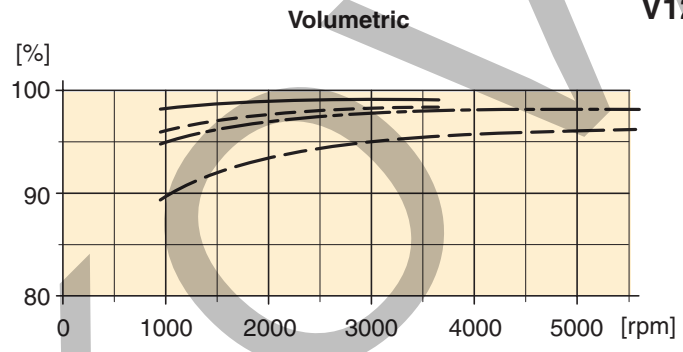
Efficiency diagrams

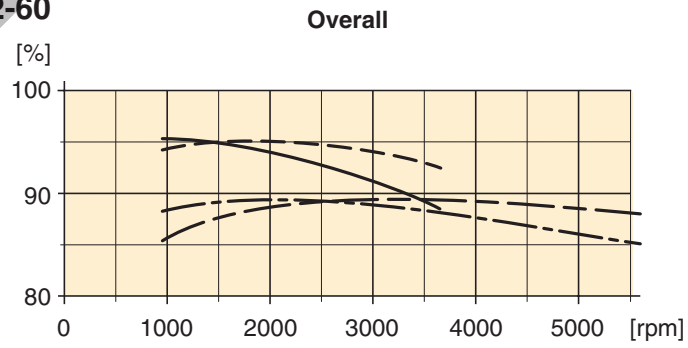
The following diagrams show volumetric and overall efficiencies versus shaft speed at 210 and 420 bar operating pressure, and at full (35°) and reduced (10°) displacements.

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

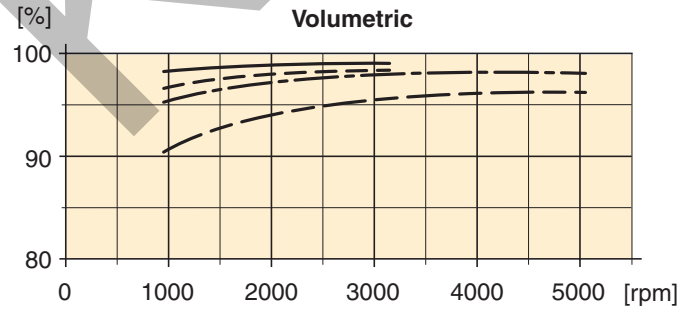
210 bar at full displacement
420 bar " " "
210 bar at reduced displacement
420 bar " " "

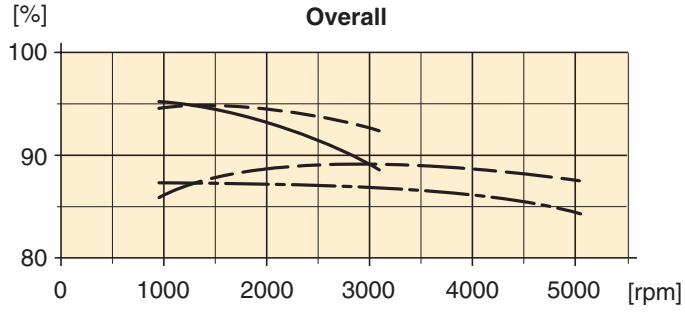
V12-60





V12-80





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Controls (general information)

The following six V12 controls described below satisfy most application requirements:

- **AC** and **AH** (Pressure compensator)
- **EO** and **HO** (Two-position controls)
- **EP** and **HP** (Proportional controls).

All controls utilize a setting piston that connects to the valve segment (refer to the picture on page 8).

The built-in four-way servo valve acts on the setting piston and determines the displacement which can vary between 35° (max) and 6.5° (min).

Servo supply pressure is usually obtained from the main high pressure port through the built-in shuttle valve.

When using external servo supply, the servo pressure should be at least 30 bar.

The response time (i.e. from max to min displacement) is determined by orifices in the servo valve supply and return lines.

NOTE: The modulating pressure/current, Δp/ΔI values are valid for motors that are not displacement limited.

AC pressure compensator

The AC compensator is used in off-road vehicle hydrostatic transmissions; it automatically adjusts motor displacement to the output torque requirement (up to max available system pressure).

Normally, the motor stays in the minimum displacement position. When there is a demand for additional torque, i.e. when the vehicle enters an upgrade, the displacement increases (providing more torque) while the motor shaft speed decreases proportionally.

The threshold pressure ('ps'; refer to the AC diagram) where displacement starts to increase, is adjustable between 150 and 400 bar.

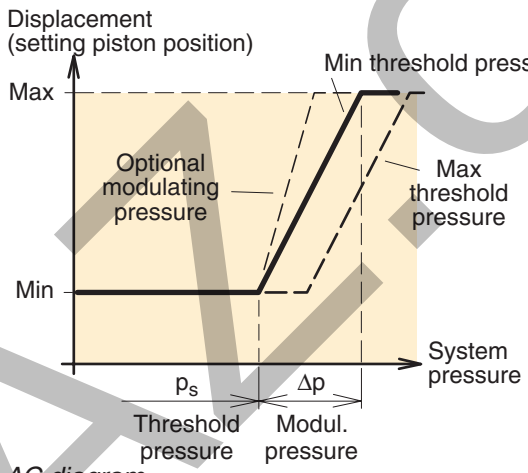
To reach max displacement, an additional modulating pressure (Δp) above the threshold pressure (ps) is required.

To satisfy specific hydraulic circuit requirements, a modulating pressure, Δp, of 15, 25 or 50 bar can be selected.

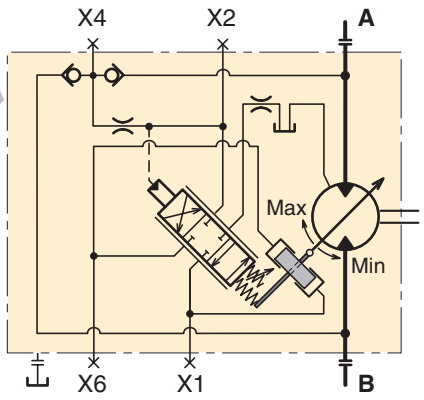
The AC compensator is available in two versions:

ACI 01 I - Internal pilot pressure

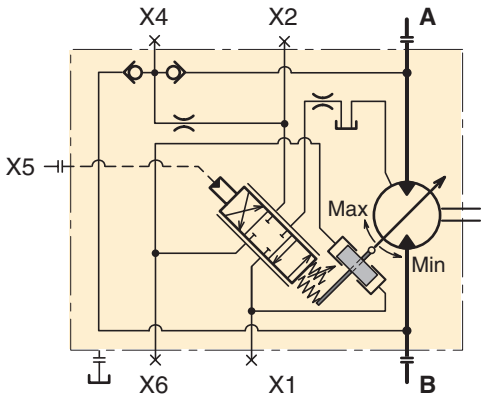
ACE 01 I (optional) - External pilot pressure; port X5 can, for example, be connected to the 'forward drive' pressure line of a vehicle transmission to prevent motor displacement increase when the vehicle is going downhill.



AC diagram.



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



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

Gauge/pilot ports (AC 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.)
Port sizes:	
–	M14x1.5 (ISO and cartridge versions)
–	$^{9}/_{16}$"-18 O-ring boss (SAE version).

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AH pressure compensator

The AH compensator is similar to the AC (page 10) 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 30 bar.

The AH compensator is available in two versions:

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

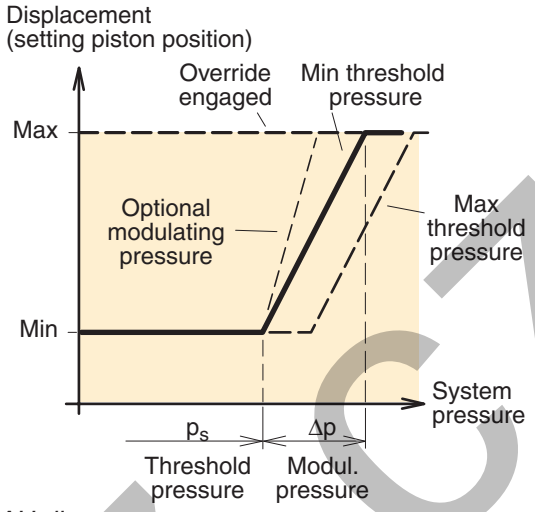
AHE 01 I (optional) - External pilot pressure (port X5; compare ACE, page 10).

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

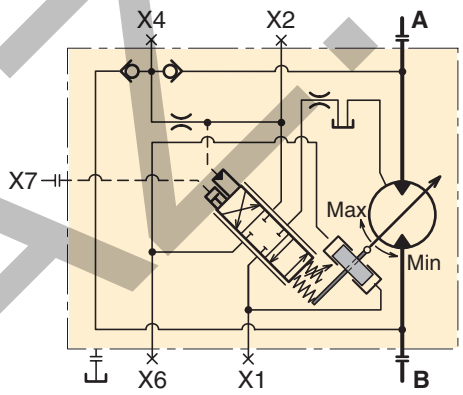
$$p_7 = \frac{p_S + \Delta p}{24} \text{ [bar]}$$

p_7 = Override pressure
p_s = System pressure
Δp = Modulating pressure

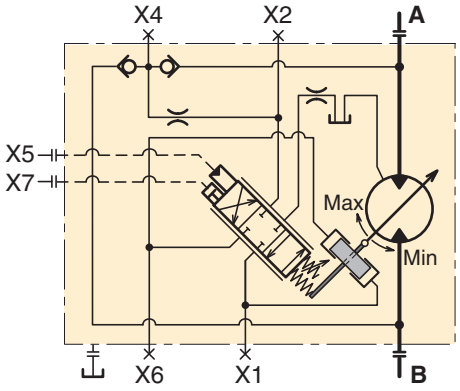
Gauge/pilot ports (AH compensator)	
X1	Setting piston pressure (increasing displ.)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X5	External pilot pressure
X6	Setting piston pressure (decreasing displ.)
X7	Override pressure
Port sizes:	
–	M14x1.5 (ISO and cartridge 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.).

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AD pressure compensator with brake defeat

The **AD** control is similar to the ACI (internal pilot pressure supply; page 10) but incorporates a solenoid controlled override function.

In addition, the AD includes a brake defeat valve which prevents motor displacement increase in the braking mode.

The **override** consists of a piston built into the AD end cover and an external electrohydraulic solenoid valve. When the solenoid is energized, system pressure is directed to the piston which in turn pushes on the spool of the servo control valve.

This causes the motor to lock in the max displacement position, irrespective of system pressure (min 30 bar).

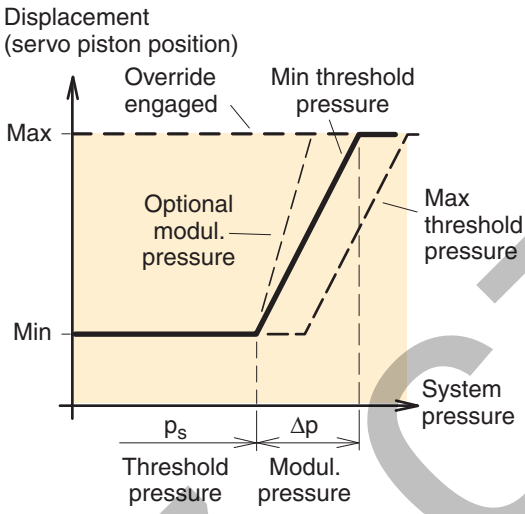
Solenoids are available in 12 VDC (designated **L**) and 24 VDC (design. **H**); the required current is 2 and 1 A respectively.

The **brake defeat** valve is also part of the AD end cover and consists of a two-position, three-way spool. The two ports, x9 and x10 (below) should be connected to the corresponding ports of the displacement control of the variable displacement pump.

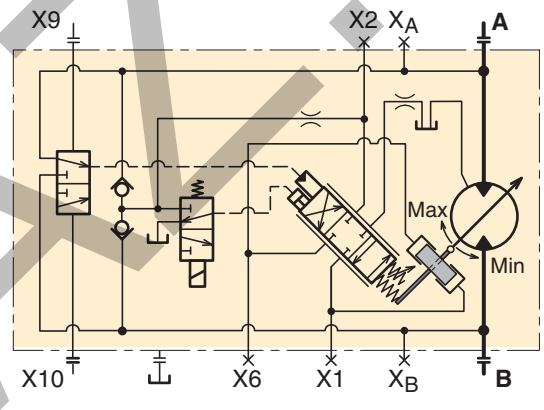
The brake defeat function prevents the motor outlet port pressure to influence the pressure compensator. If, for example, port A is being pressurized when driving 'forward', pressure in port B during braking will not cause the motor to increase its displacement.

Likewise, when driving in 'reverse' (port B pressurized), any braking pressure in port A will not influence the control; refer to the schematic.

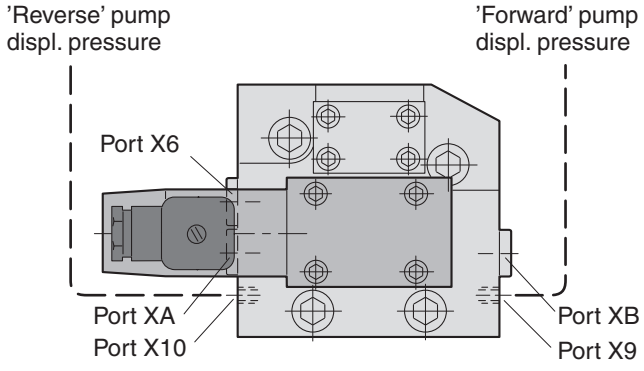
Gauge/pilot ports (AD control)	
XA	System pressure, port A
XB	System pressure, port B
X1	Servo piston pressure (increasing displ.)
X2	Servo supply pressure (after orifice)
X6	Servo piston pressure (decreasing displ.)
X9	Brake defeat, port A
X10	Brake defeat, port B
Port sizes:	
–	M14x1.5 (ISO and cartridge versions)
–	$^{9}/_{16}$"-18 O-ring boss (SAE version).



AD diagram.



AD schematic (spool in balanced, mid-position).



AD end cover with solenoid valve and brake defeat.

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EO two-position control

The EO is a two-position control, where max and min displacements are governed by a DC solenoid attached to the control cover (refer to the installation drawing on page 30).

The EO control is utilized in transmissions where only two operating modes are required: Low speed/high torque or high speed/low torque.

The servo piston, normally in the max displacement position, shifts to the min displacement position when the solenoid is activated. Intermediate displacements cannot be obtained with this control.

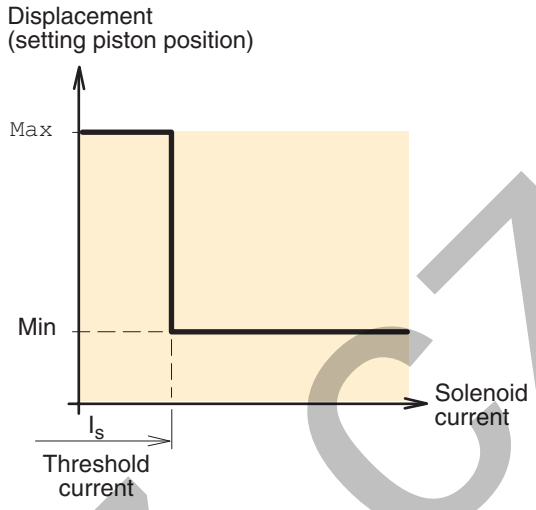
Servo pressure is supplied internally (through the shuttle valve from one of the main high pressure ports) or externally (port X4).

The solenoid is either 12 or 24 VDC, requiring 1200 and 600 mA respectively. An electrical connector is included (DIN 43650/IP54).

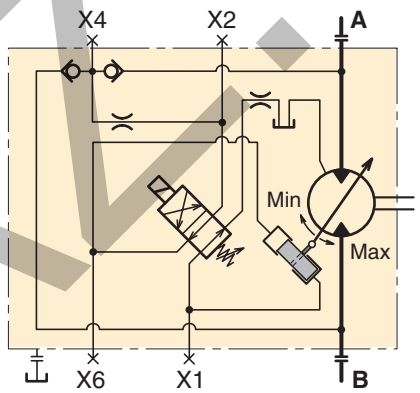
The EO two-position control is available in four versions:

EOH 01 I - Internal servo supply, 24 VDC
EOL 01 I - Internal servo supply, 12 VDC
EOH 01 E - External servo supply, 24 VDC (optional)
EOL 01 E - External servo supply, 12 VDC (optional)

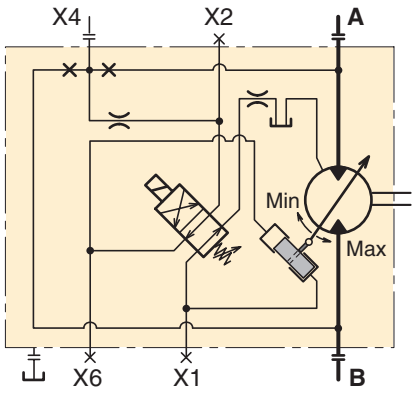
Gauge/pilot ports (EO control):	
X1	Setting piston pressure (max-to-min)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X6	Setting piston pressure (min-to-max)
Port sizes:	
–	M14x1.5 (ISO and cartridge versions)
–	$^{9}/_{16}$"-18 O-ring boss (SAE version).



EO diagram.



EO H 01 I schematic (non-activated solenoid).



EO H 01 E schematic (non-activated solenoid).

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EP proportional control

The EP electrohydraulic proportional control is used in hydrostatic transmissions requiring a continuously variable shaft speed. The position of the setting piston is governed by a DC solenoid attached to the control cover.

When the solenoid current increases above the threshold current, the servo piston starts to move from the max towards the min displacement position. The displacement vs. solenoid current is shown in the diagram to the right. Please note, that the shaft speed vs. current is non-linear; refer to the diagram below.

Solenoids are available in 12 and 24 VDC versions, requiring a max current of approx. 1100 and 550 mA respectively. An electrical connector is included (DIN43650/IP54).

The threshold current (I_s) is factory set 400 mA at 12 VDC/200 mA at 24 VDC) but is adjustable (12 VDC: 250–450 mA; 24 VDC: 100–230 mA).

When utilizing the full displacement range, the required modulating current (ΔI) is 600 and 300 mA respectively. In order to minimize hysteresis, a pulse-width modulated control signal of 70 to 90 Hz should be utilized.

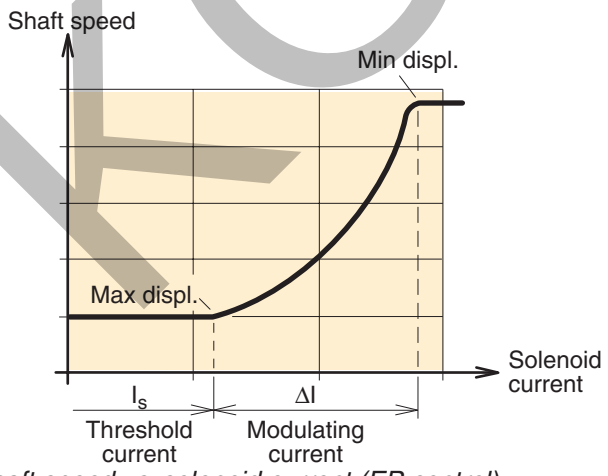
See also “Controls, Note” on page 10.

NOTE: The modulating current (ΔI) is not adjustable.

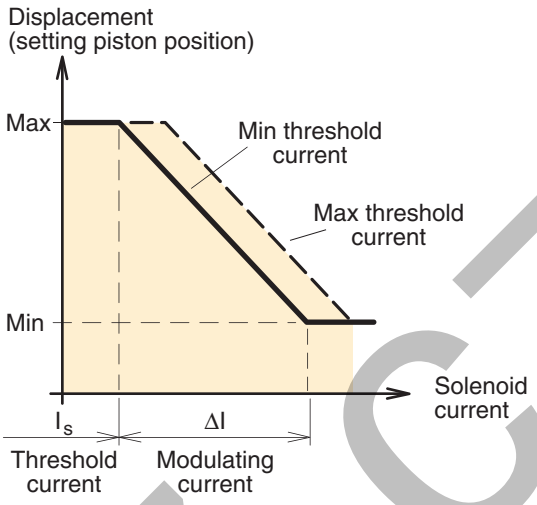
The EP control is available in four versions:

EP H 01 I - Internal servo supply, 24 VDC
EP L 01 I - Internal servo supply, 12 VDC
EP H 01 E - External servo supply, 24 VDC (optional)
EP L 01 E - External servo supply, 12 VDC (optional)

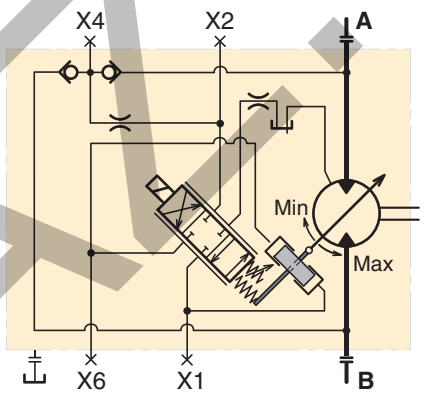
Gauge/pilot ports (EP control):	
X1	Setting piston pressure (decreasing displ.)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X6	Setting piston pressure (increasing displ.)
Port sizes:	
–	M14x1.5 (ISO and cartridge versions)
–	$^{9}/_{16}$"-18 O-ring boss (SAE version).



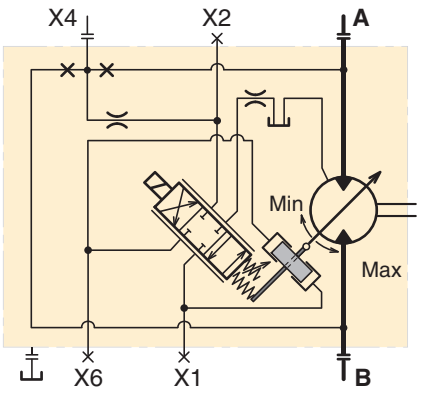
Shaft speed vs. solenoid current (EP control).



EP diagram.



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



EP H 01 E schematic (spool in a balanced, mid-pos.).

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HO two-position control

The two-position HO control is similar to the EO (page 13) but the pilot signal is hydraulic. The position of the setting piston is governed by the built-in servo valve (same on all compensators and controls).

When the applied pilot pressure (port X5) exceeds the pre-set threshold pressure, the setting piston moves from the max to the min displacement position.

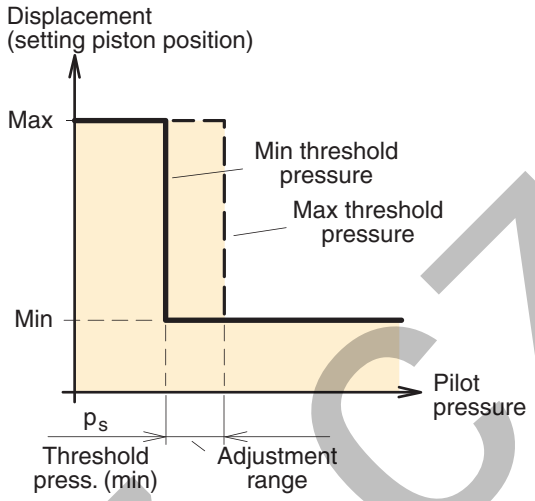
The threshold pressure is factory set at 10 bar but can be adjusted between 5 and 25 bar.

The HO two-position control is available in two versions:

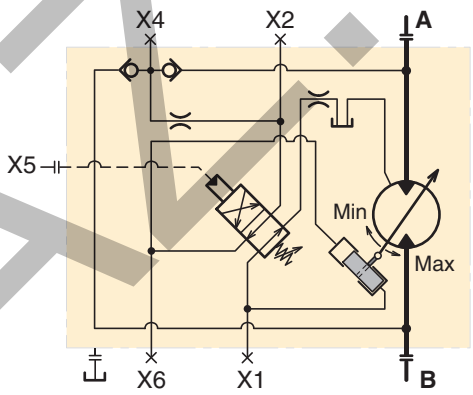
HO S 01 I - Internal servo supply

HO S 01 E - External servo supply (port X4) (optional)

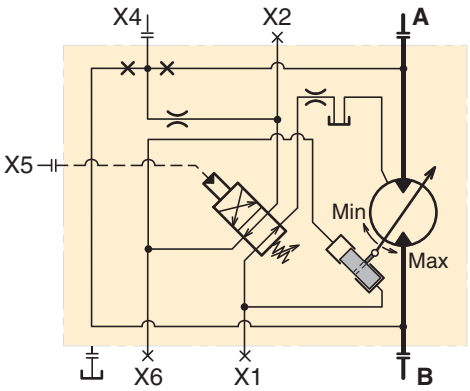
Gauge/pilot ports (HO control):	
X1	Setting piston pressure (max-to-min)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X5	External pilot pressure (max 100 bar)
X6	Setting piston pressure (min-to-max)
Port sizes:	
–	M14x1.5 (ISO and cartridge versions)
–	$^{9}/_{16}$"-18 O-ring boss (SAE version).



HO diagram.



HO S 01 I schematic (X5 not pressurized).



HO S 01 E schematic (X5 not pressurized).

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HP proportional control

Like the EP control described on page 14, the HP proportional control offers continuously variable displacement, but the pilot signal is hydraulic.

Normally, the setting piston stays in the max displacement position. When a sufficiently high pilot pressure (p_s) is applied to port X5, the setting piston starts to move towards the min displacement position.

As can be seen in the diagram to the right, the displacement changes in proportion to the applied modulating pressure.

In contrast, shaft speed vs. pilot pressure is non-linear; refer to the diagram below.

The following modulating pressures (Δp) can be selected: 15 or 25 bar.

The threshold pressure (p_s) is factory set at 10 bar but is adjustable between 5 and 25 bar.

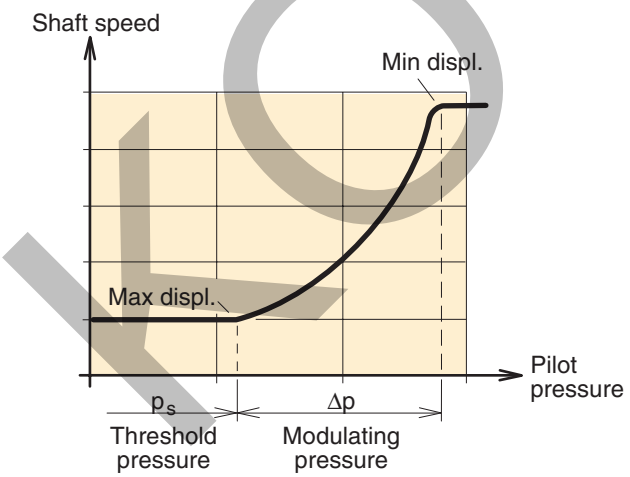
See also “Controls, Note” on page 10.

Two versions of the HP control are available:

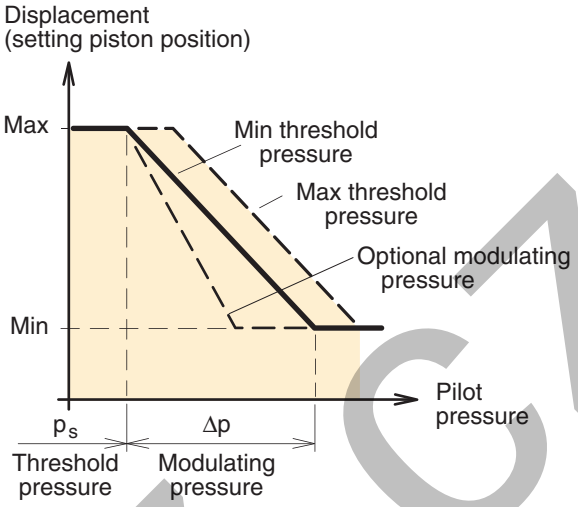
HPS 01 I - Internal servo supply

HPS 01 E - External servo supply (port X5) (optional)

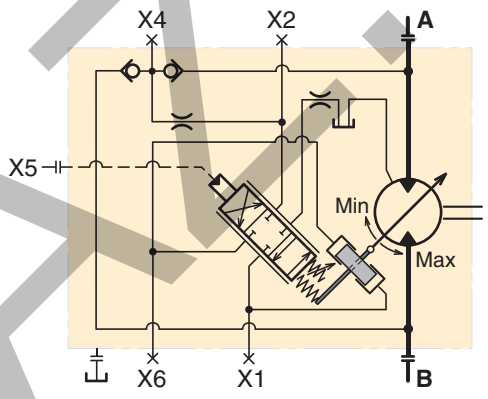
Gauge/pilot ports (HP control):	
X1	Setting piston pressure (decreasing displ.)
X2	Servo supply pressure (after orifice)
X4	Servo supply pressure (before orifice)
X5	External pilot pressure (max 100 bar)
X6	Seetting piston pressure (increasing displ.)
Port sizes:	
–	M14x1.5 (ISO and cartridge versions)
–	$^{9}/_{16}$"-18 O-ring boss (SAE version).



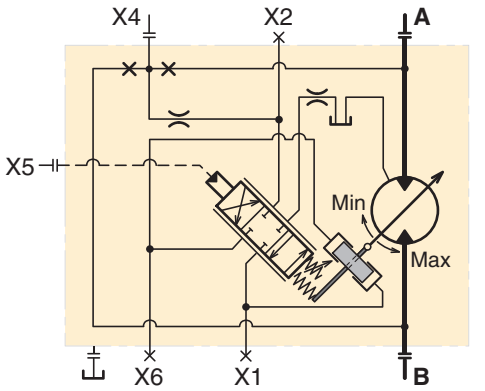
Shaft speed vs. pilot pressure (HP control).



HP diagram.



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



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

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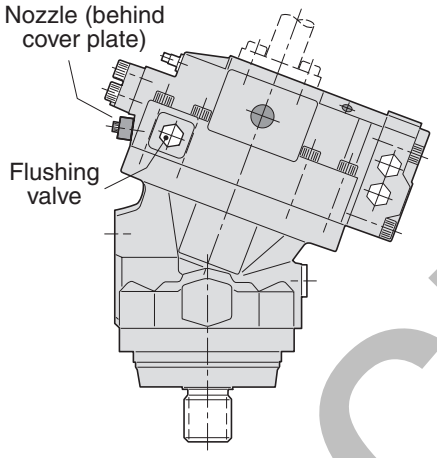
Flushing valve

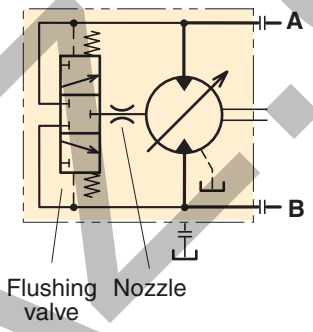
As an option, **L**, the V12 is available with a flushing (or shuttle) valve that supplies the motor with a cooling flow through the case. Cooling the motor may be required when operating at high speeds and/or power levels.

The flushing valve consists of a three-position, three-way spool valve built into a special end cap. It connects the low pressure side of the main circuit to a nozzle (optional size) that empties fluid into the motor case.

In a closed circuit transmission, the flushing valve removes part of the fluid in the main loop. The removed fluid is continuously being replaced by cool, filtered fluid from the low pressure charge pump on the main pump.

NOTE: The flushing valve ordering code is shown on page 23 (‘L 01’).





Nozzle design.	Orifice size [mm]	Status	Flow [l/min] at		
			15 bar	20 bar	25 bar
L01	**1.3**	**Standard**	**3.9**	**4.5**	**5.0**
L02	0.8	Optional	1.5	1.7	1.9
L03	1.0	Optional	2.3	2.7	3.0
L04	1.2	Optional	3.2	3.7	4.1
L05	1.5	Optional	5.2	6.0	6.7
L06	1.7	Optional	6.6	7.7	8.6
L07	2.0	Optional	9.2	10.6	11.9
L08	3.0	Optional	20.0	23.1	25.8

NOTE: ’L00’ = plug

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High Speed / High Power operation

Running in procedure at mid. displacement

Running in procedure Parker Motors

We suggest the following procedure to run in the V12 motors.

1.Start @ 500 rpm, differential pressure 250 bar, outlet 10-15 bar.

2.Run until the drain temperature has passed its maximum* and has decreased 1-2 °C

3.Increase differential pressure to 350 bar

4.Run until the drain temperature has passed its maximum* and has decreased 1-2 °C

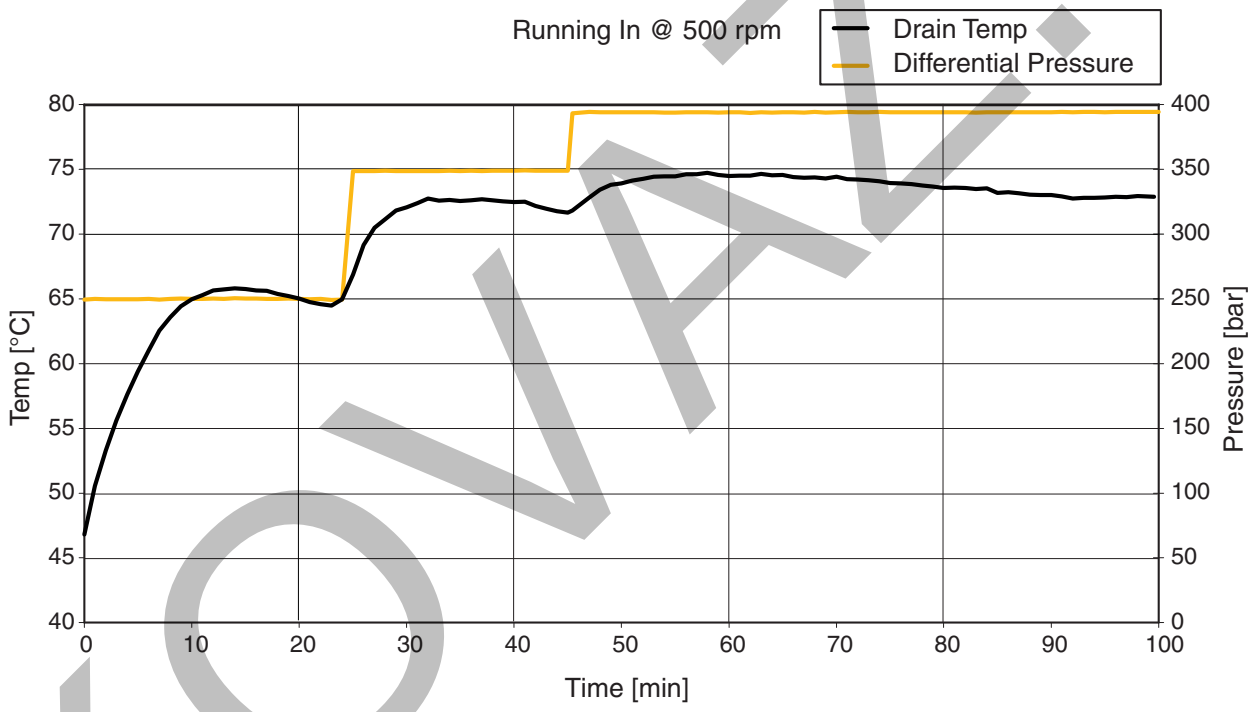
5.Increase differential pressure to 400 bar

6.Run until the drain temperature has passed its maximum* and has stabilized.

*If, at any point, the temperature tends to pass 100 °C, decrease the pressure at once.

Please make sure the drain temperature probe is in the drain oil flow to measure the correct temp.

Running In Example:



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Pump and Motor Division
Trollhättan, Sweden

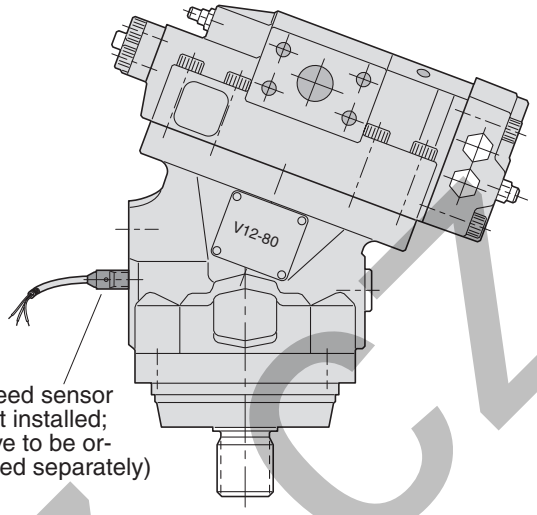
Speed sensor

A speed sensor kit is available for the **ISO, Cartridge** and **SAE** versions of series V12, V12-80-Cartridge excepted.

The ferrostat differential (Hall-effect) sensor installs in a separate, threaded hole in the V12 bearing housing.

The speed sensor is directed towards the V12 shaft flange and outputs a 2 phase shifted square wave signal within a frequency range of 0 Hz to 15 kHz. Number of pulses per shaft rev is 36 which, at 5 Hz, corresponds to approx. 8 rpm.

When a 'Speed sensor' is needed (refer to the ordering codes on pages 20 to 22), the housing is machined with the threaded hole; the speed sensor kit have to be ordered on a separate order line.



Speed sensor (not installed; have to be ordered separately)

NOTE:
- The motor bearing housing must be prepared for the speed pick-up; refer to the V12 ordering codes on pg. 20, 21 and 22 (Code P).
- Additional information is provided in our publication HY30-8301/UK 'Speed sensor for series F11/F12 and V12/T12/V14'; available from Parker Hannifin.
- The speed sensor is also shown in the illustrations on pg. 24 and 28.

How to order

Please order the speed sensor on a separate order line next to the product order line.

Part number for speed sensor is 3785190.

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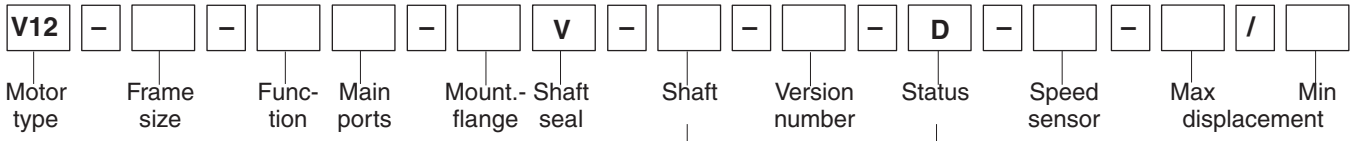
ISO version (basic configuration)



Frame size	
Code	Displacem. (cm^3/rev)
060	60
080	80

Max and min displacement
[cm^3/rev]

Code	Speed sensor*
P	Prepared for speed sensor
O	None

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 and AH	x	x

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

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

Version number
Factory assigned for special versions

* Note.
See information on page 19, Speed Sensor

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

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

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Controls and flushing valve, see page 23

Cartridge version (basic configuration)

V12	–		–			–	C	V	–		–		–	D	–		–		/	
Motor type		Frame size		Func-tion	Main ports		Mount.-flange	Shaft seal		Shaft		Version number		Status		Speed sensor		Max displacement		Min

Frame size	
Code	Displacem. (cm^3/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 and AH	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		
C	Cartridge 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

Version number
Factory assigned for special versions

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

Code	Speed sensor*
P	(Speed sensor only available for V12-60)
O	None

Max and min displacement
[cm^3/rev]

* Note.
See information on page 19, Speed Sensor

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

Controls and flushing valve, see page 23

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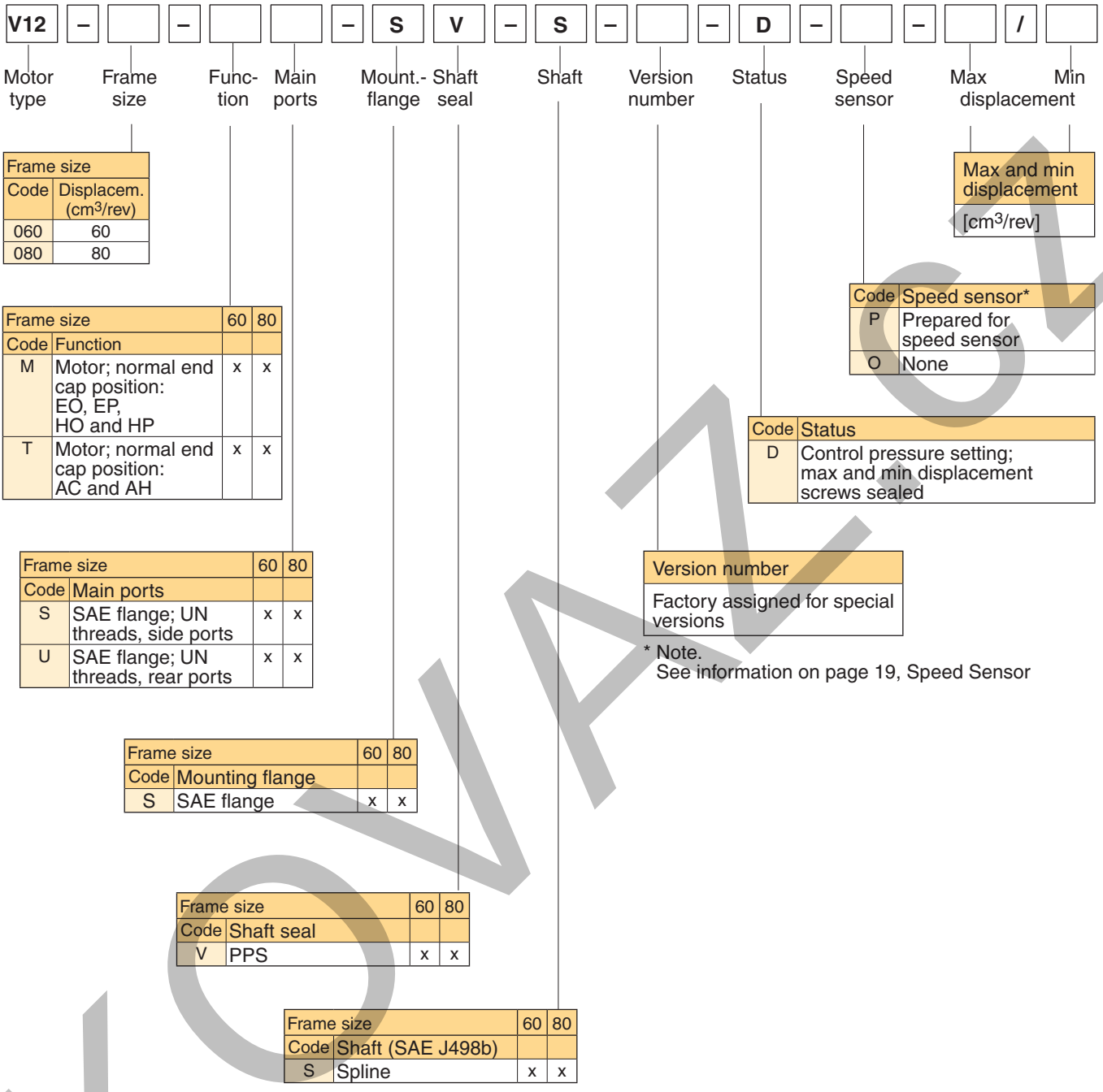
Pump and Motor Division
Trollhättan, Sweden

SAE version (basic configuration)



Frame size	
Code	Displacem. (cm^3/rev)
060	60
080	80

Max and min displacement
[cm^3/rev]

Code	Speed sensor*
P	Prepared for speed sensor
O	None

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 and AH	x	x

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

Frame size		60	80
Code	Main ports		
S	SAE flange; UN threads, side ports	x	x
U	SAE flange; UN threads, rear ports	x	x

Version number
Factory assigned for special versions

* Note.
See information on page 19, Speed Sensor

Frame size		60	80
Code	Mounting flange		
S	SAE flange	x	x

Frame size		60	80
Code	Shaft seal		
V	PPS	x	x

Frame size		60	80
Code	Shaft (SAE J498b)		
S	Spline	x	x

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

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Controls and flushing valve, see page 23

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Trollhättan, Sweden

Controls and flushing valve

Basic configuration (ISO, Cartridge or SAE; see previous three pages) – [ ] – [ ] – [ ]

Control designation | Settings | Flushing valve

Frame size		60	80
Code	Control designation		
AC I 01 I	Pressure compensator, internal pilot pressure, internal servo supply	x	x
AC E 01 I	Pressure compensator, external pilot pressure, internal servo supply	(x)	(x)
AH I 01 I	Pressure compensator, hydraulic override, internal pilot pressure, internal servo supply	x	x
AH E 01 I	Pressure compensator, hydraulic override, external pilot pressure, internal servo supply	(x)	(x)
ADL 01 B	Pressure compensator electrohydraulic override, 12 VDC	-	x
ADH 01 B	Pressure compensator electrohydraulic override, 24 VDC	-	x
EOL 01 I	Electrohydraulic, two-position, 12 VDC, internal servo supply	x	x
EOL 01 E	Electrohydraulic, two-position, 12 VDC, external servo supply	(x)	(x)
EOH 01 I	Electrohydraulic, two-position, 24 VDC, internal servo supply	x	x
EOH 01 E	Electrohydraulic, two-position, 24 VDC, external servo supplyv	(x)	(x)
EPL 01 I	Electrohydraulic proportional, 12 VDC, internal servo supply	x	x
EPL 01 E	Electrohydraulic, proportional, 12 VDC, external servo supply	(x)	(x)
EPH 01 I	Electrohydraulic, proportional, 24 VDC, internal servo supply	x	x
EPH 01 E	Electrohydraulic, proportional, 24 VDC, external servo supply	(x)	(x)
HOS 01 I	Hydraulic two-position, standard version internal servo supply	x	x
HOS 01 E	Hydraulic two-position, standard version external servo supply	(x)	(x)
HPS 01 I	Hydraulic proportional, standard version internal servo supply	x	x
HPS 01 E	Hydraulic proportional, standard version external servo supply	(x)	(x)

NOTE: '01' - Standard nozzles x: Available (x): Optional – : Not available

Settings	
AC, AD, AH:	Threshold pressure: 150 to 400 bar / Modulating pressure: 015, 025 or 050 bar
EO, EP:	Threshold current: 12 VDC - 400 mA; 24 VDC - 200 mA Modulating current: EO - 000; EP, 12 VDC - 600 mA; EP, 24 VDC - 300 mA
HO, HP:	Threshold pressure: 010 bar / Modulating pressure: HO - 000; HP - 015 or 025 bar

Code	Flushing valve
L 01	Integrated flushing valve; 01 - std. nozzle 1.3 mm (option; refer to page 17).

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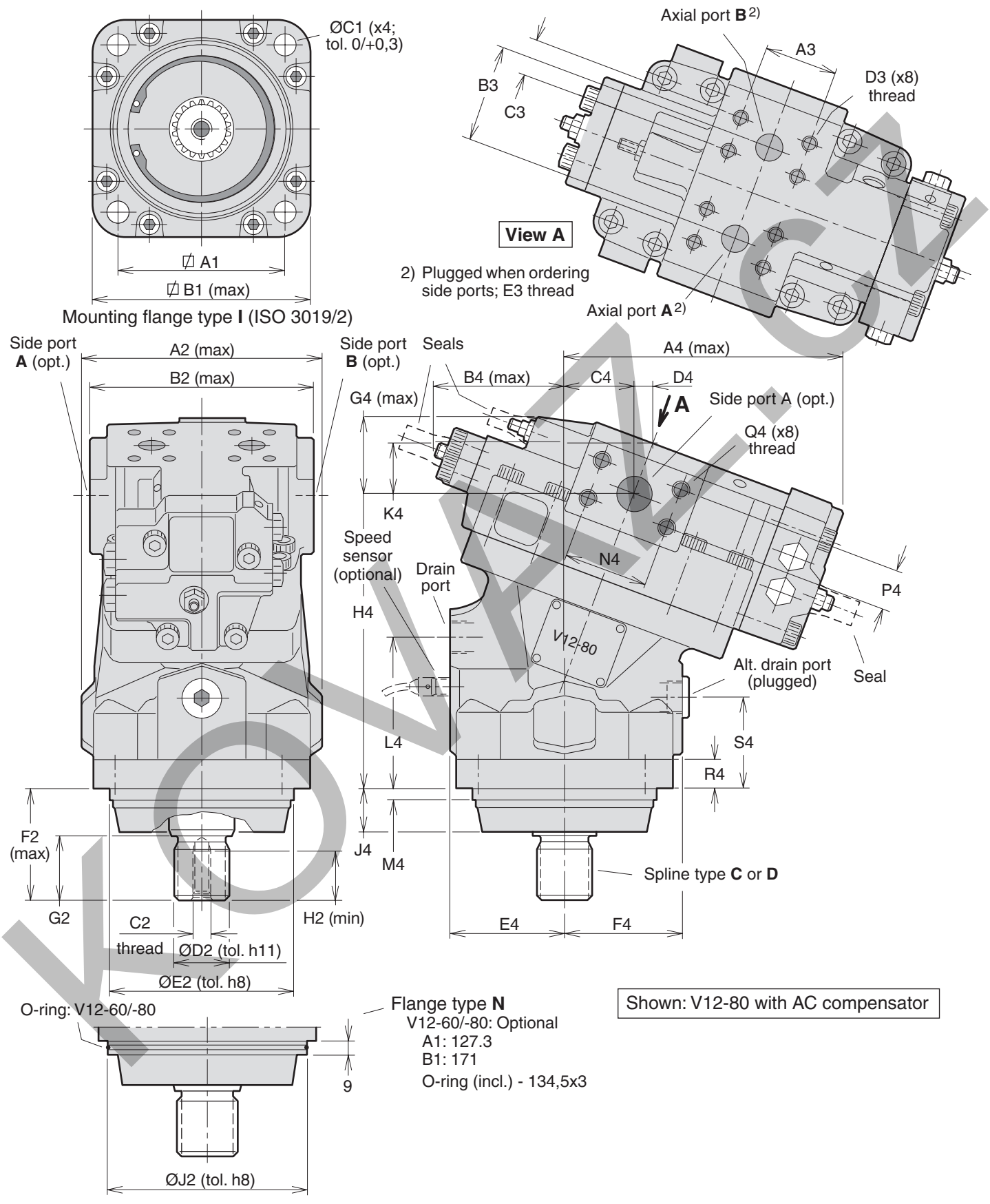
ISO version


ØC1 (x4; tol. 0/+0,3)
⏍ A1
⏍ B1 (max)
Mounting flange type **I** (ISO 3019/2)
Axial port **B** 2)
A3
B3
C3
D3 (x8) thread
View A
2) Plugged when ordering side ports; E3 thread
Axial port **A** 2)
Side port **A** (opt.)
A2 (max)
B2 (max)
Side port **B** (opt.)
Seals
A4 (max)
B4 (max)
C4
D4
G4 (max)
A
Side port A (opt.)
Q4 (x8) thread
K4
Speed sensor (optional)
Drain port
N4
P4
H4
V12-80
Alt. drain port (plugged)
Seal
L4
S4
R4
F2 (max)
J4
M4
Spline type **C** or **D**
G2
C2
thread
H2 (min)
ØD2 (tol. h11)
ØE2 (tol. h8)
E4
F4
O-ring: V12-60/-80
Flange type **N**
V12-60/-80: Optional
A1: 127.3
B1: 171
O-ring (incl.) - 134,5x3
9
ØJ2 (tol. h8)
Shown: V12-80 with AC compensator

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[1)]	M10x20	M10x20
E3[2)]	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[1)]	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 [$^3/_4$"]	19 [$^3/_4$"]
Side	19 [$^3/_4$"]	25 [1"]
Drain[2)]	M22x1.5	M22x1.5

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

Spline type **C** [3)] (DIN 5480)

Size	Dimension
V12-60	W30x2x14x9g
V12-80	W35x2x16x9g

Spline type **D** [3)] (DIN 5480)

Size	Dimension
V12-60	W35x2x16x9g
V12-80	W40x2x18x9g

Flange

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

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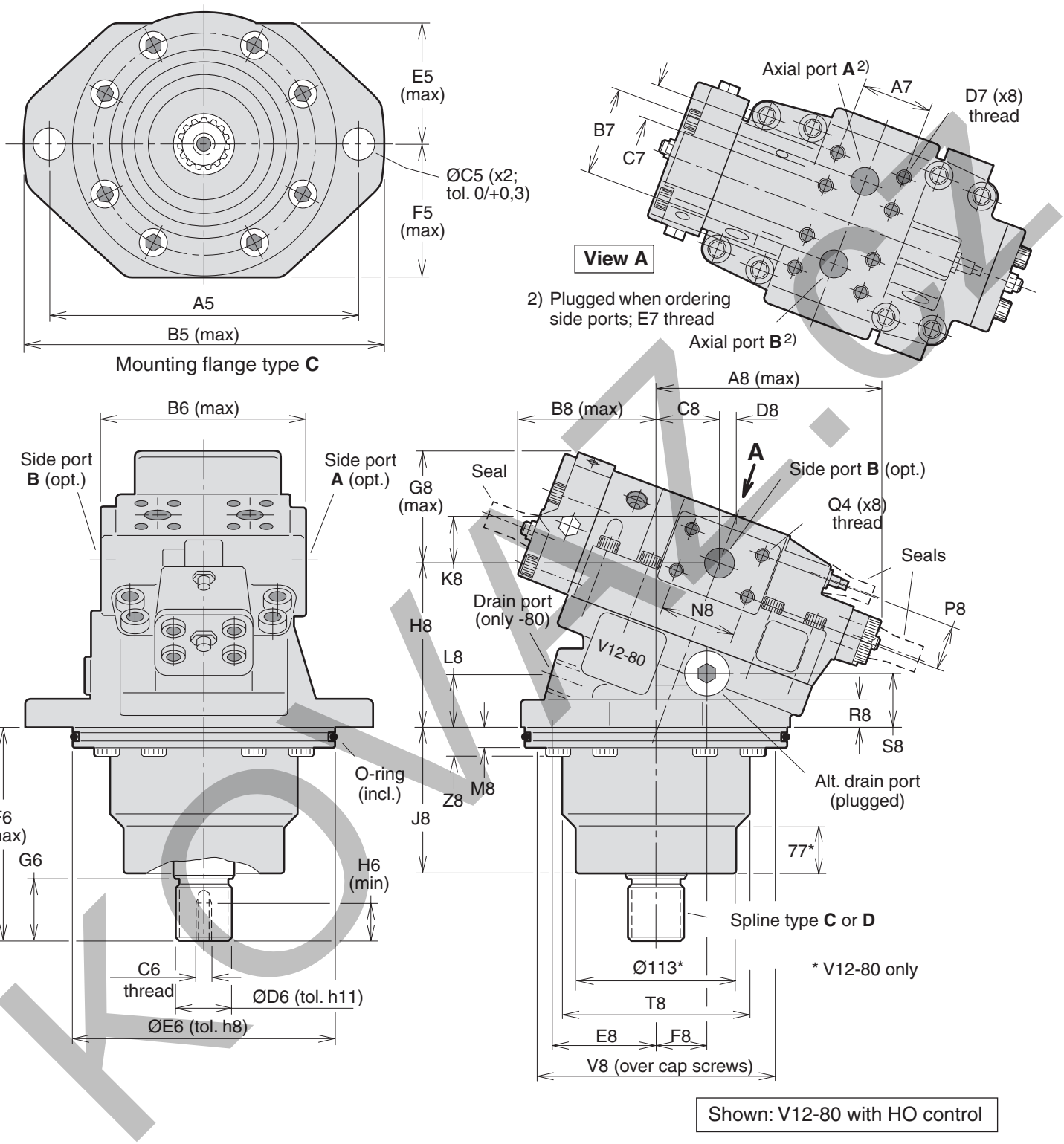
Cartridge version



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Size	V12-60	V12-80
A5	200	224
B5	238	263
C5	18	22
E5	78.5	89.5
F5	83	99.5
B6	146	154
C6	M12	M12
D6*	34.6	39.6
E6	160	190
F6	133	156.5
G6*	40	45
H6	28	28
A7	50.8	50.8
B7	66	66
C7	23.8	23.8
D7[1)]	M10x20	M10x22
E7[2)]	M22x1.5	M22x1.5
A8	166	173
B8	108	108
C8	45	48.3
D8	13.4	13.1
E8	77	77.5
F8	39	38
G8	86	85
H8	127	120.5
J8	90	106
K8	35.5	34.6
L8	39	39
M8	15	15
N8	50.8	57.2
P8	23.8	27.8
Q8[1)]	M10x20	M12x23
R8	20	20
S8	39	39
T8	121	139
V8	151	177
Z8	22	22

* 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 [$^3/_4$"]	19 [$^3/_4$"]
Side	19 [$^3/_4$"]	25 [1"]
Drain	–	M22x1.5
Alt. drain	M18x1.5	M18x1.5

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

Spline type **C** [3)] (DIN 5480)

Size	Dimension
V12-60	W30x2x14x9g
V12-80	W35x2x16x9g

Spline type **D** [3)] (DIN 5480)

Size	Dimension
V12-60	W35x2x16x9g
V12-80	W40x2x18x9g

O-rings

Size	Dimension
V12-60	150x4
V12-80	180x4

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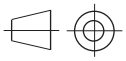
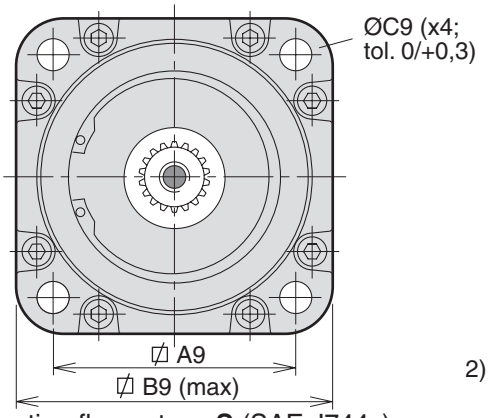
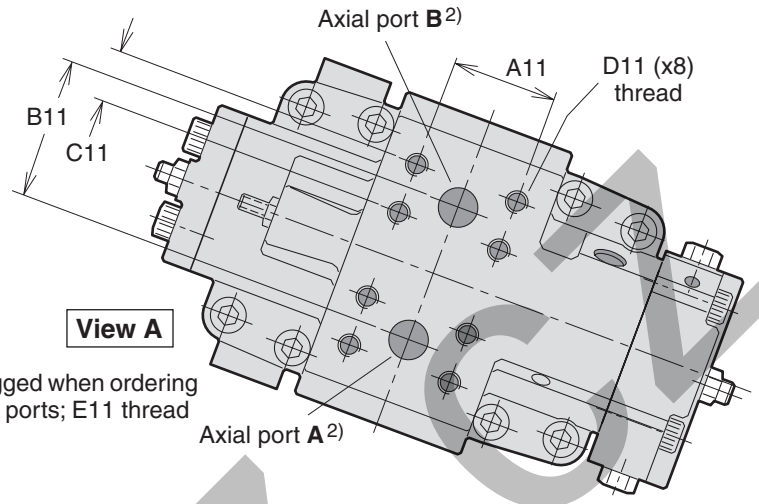
SAE version

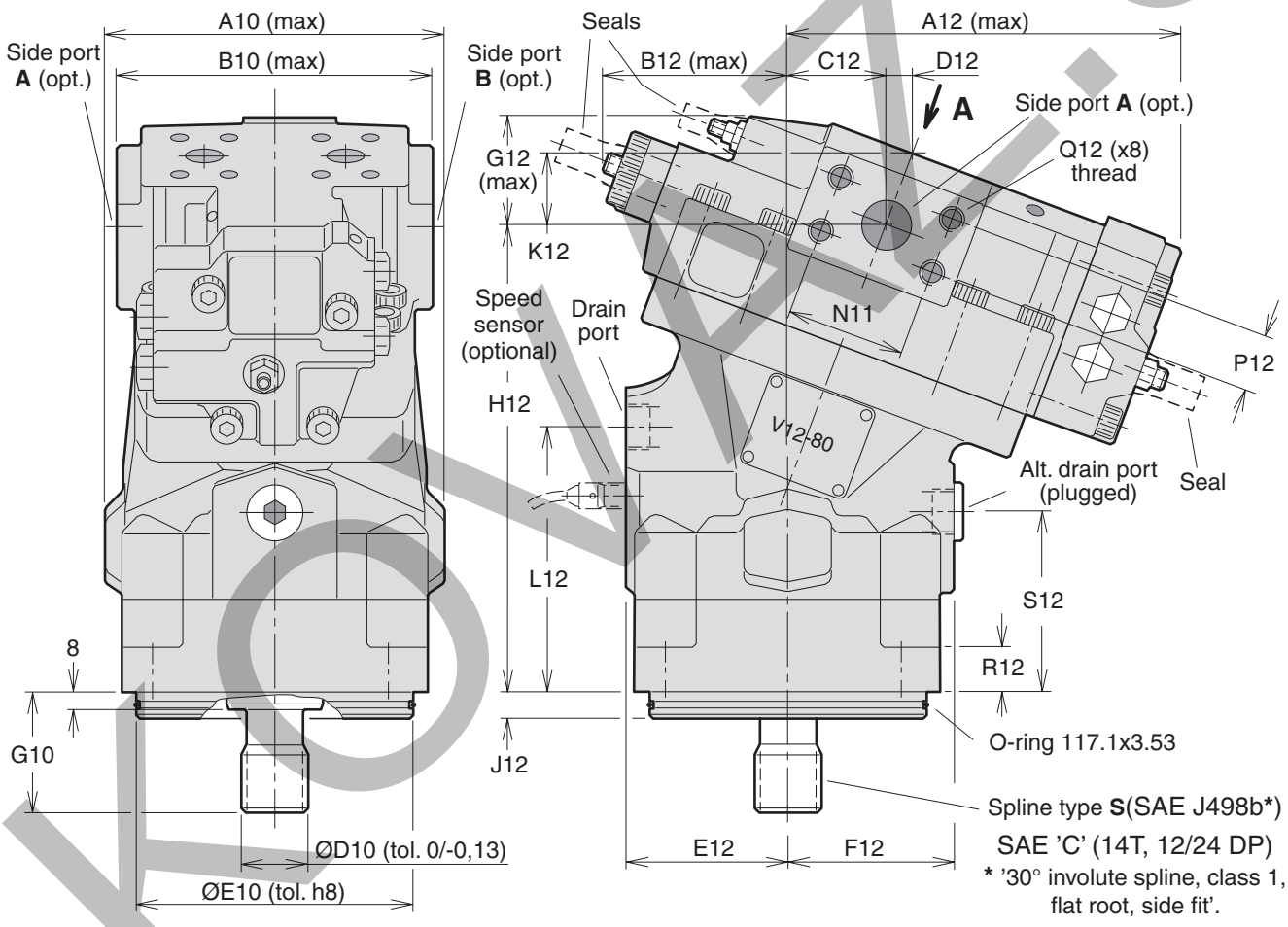




Mounting flange type **S** (SAE J744c)
Dimension SAE C



2) Plugged when ordering side ports; E11 thread



* '30° involute spline, class 1, flat root, side fit'.

Shown: V12-80 with AC compensator

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Pump and Motor Division
Trollhättan, Sweden

Size	V12-60	(inch)	V12-80	(inch)
A9	114.5	4.51	114.5	4.51
B9	149	5.87	149	5.87
C9	14.3	0.56	14.3	0.56
A10	159	6.26	165	6.50
B10	146	5.75	154	6.06
D10	31.22	1.23	31.22	1.23
E10	127.00	5.00	127.00	5.00
G10	55.6	2.19	55.6	2.19
A11	50.8	2.00	50.8	2.00
B11	66	2.60	66	2.60
C11	23.8	0.98	23.8	0.98
D11[1)]	3/8"-16 x20	3/8"-16 x0.79	3/8"-16 x20	3/8"-16 x0.79
E11[2)]	M22x1.5	-	M22x1.5	-
A12	188	7.40	193	7.60
B12	87	3.43	90	3.54
C12	45	1.77	48.3	1.90
D12	13.4	0.53	13.1	0.52
E12	76	2.99	78	3.07
F12	77	3.03	80	3.15
G12	55	2.17	57	2.24
H12	212	8.35	223	8.78
J12	12.7	0.50	12.7	0.50
K12	35.5	1.40	34.6	1.36
L12	118	4.65	125	4.92
N12	50.8	2.00	57.2	2.25
P12	23.8	0.93	27.8	1.09
Q12*	3/8"-16 x20	3/8"-16 x0.79	7/16"-14 x20	7/16"-14 x0.79
R12	20	0.79	20	0.79
S12	81.5	3.21	84.5	3.33

1) UNC thread x depth in mm
2) Metric thread x pitch in mm.

Ports

Type	V12-60	V12-80
Axial	3/4"	3/4"
Side	3/4"	1"
Drain	7/8"-14	7/8"-14

Main ports: 6000 psi (SAE J518c).
Drain ports: O-ring boss, UNF thread (SAE 514).

2

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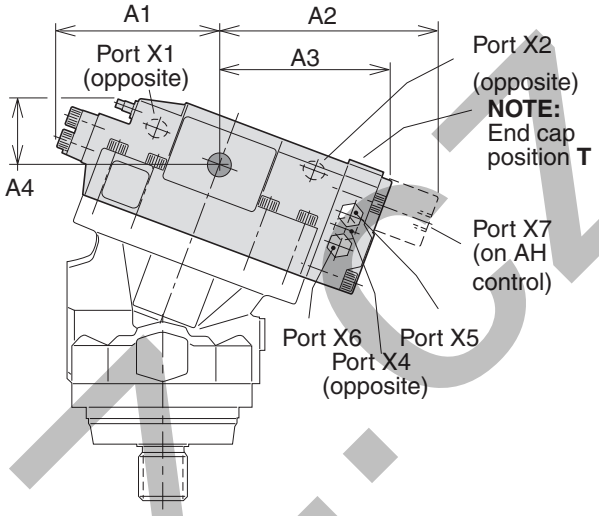
Control installation dimensions

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

- End cap position: Refer to the ordering codes, pages 20-22.
- Control/gauge ports are:
  - M14x1.5 (ISO and cartridge versions).
  - $^{9}/_{16}$"-18 UNF (SAE version).
- All dimensions are max.

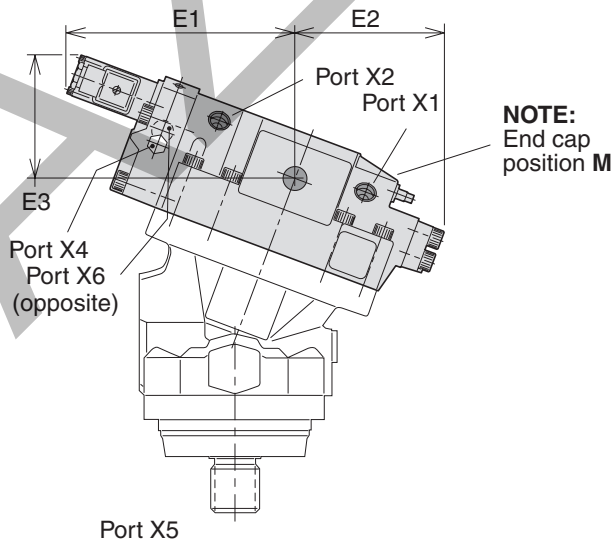
AC and AH compensators

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



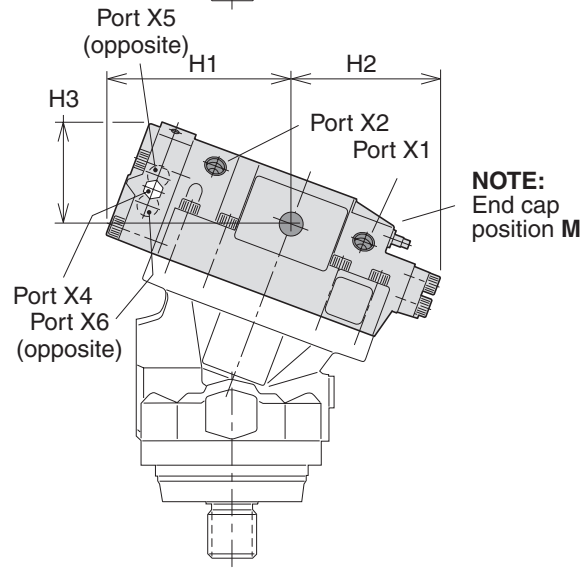
EO and EP controls

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



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