HDS30 Series

Sectional Directional Control Valve

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Sectional Directional Control Valve

General Specifications

Technical specification	Metering unit system	
Max flow rate	l/min U.S.G.P.M.	120 31
Max operating pressure	bar PSI	320 4600
Max back pressure	bar PSI	30 400
Oil temperature	° C ° F	-10 to +80 14 to 180
Oil viscosity	° E cSt	2.4 to 10 16 to 75
Oil filtration	µ	⩽30

Spool leakage at 100 bar (1450 PSI), Temp. 50° C (120° F), viscosity 27 cSt:		
Maximum	cm^3/min Cu. In./min	18 1.281
Average	cm^3/min Cu. In./min	12 0.854
Lower values on demand (to be agreed with our Sales Dpt.)		

Number of spools	1 to 10
Adjustable direct acting relief valve (tamper-proof seal available on request)	RV
Load hold check valve in each section	LC
Cartridge anti-shock, anticavitation and service relief valve	OA-UC-C

Weight

Technical specification	Metering unit systems	
Inlet with RV	kg LBS	3.65 8.04
1 spool section	kg LBS	4.12 9.08
End cover standard	kg LBS	2.40 5.29

Dimensional data shown in mm and inches

Material specification:

Body: High strength cast-iron.
Spool: Hardened steel - Chrome plated.
Seals: Buna "N".

Standard features:

1) Internal load holding check valves (prevent reverse flow through valve when shifting)
2) Parallel circuit.
3) Balanced interchangeable spools (provides minimum leakage, smooth operation)
4) Wide selection inlets, work ports, and outlets threaded ports.
5) Negative overlapping of the spool.

Optional features available:

1) Open or closed centre circuit, 3 or 4 way operations, 3 or 4 position (float position), full open centre (motor spool) and other spool options.
2) Carry over.
3) Series connection and priority pressure.
4) Complete lever assembly.

Symbols:

P: inlet port
T: outlet port
A/B: work ports
H.P.C.O.: carry-over
RV: relief valve
P_1T_1: side inlet and outlet
3.1.0.2: spool position
P: pressure line
T : exhaust line
E: centre line (by pass).
X: remote control port for RV

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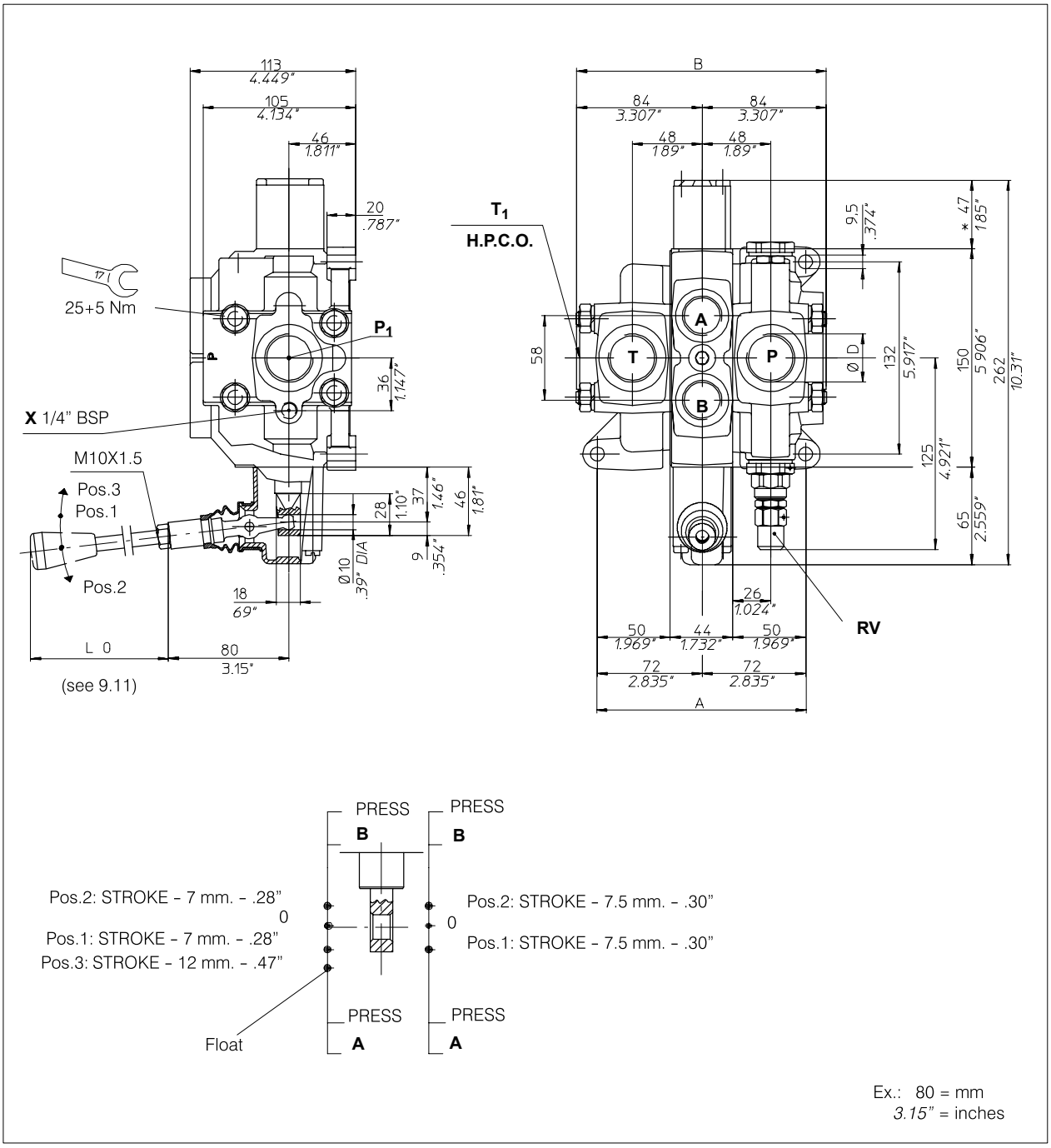
Dimensional data

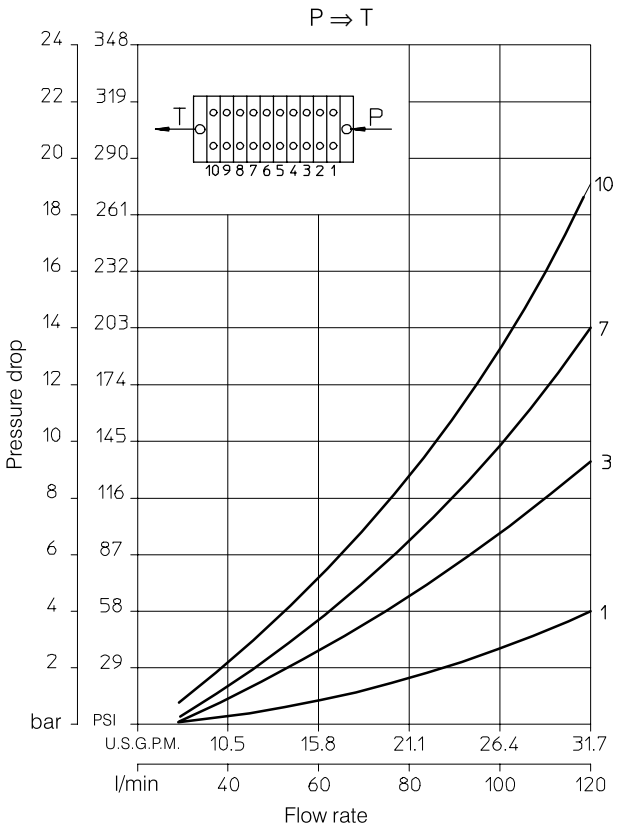


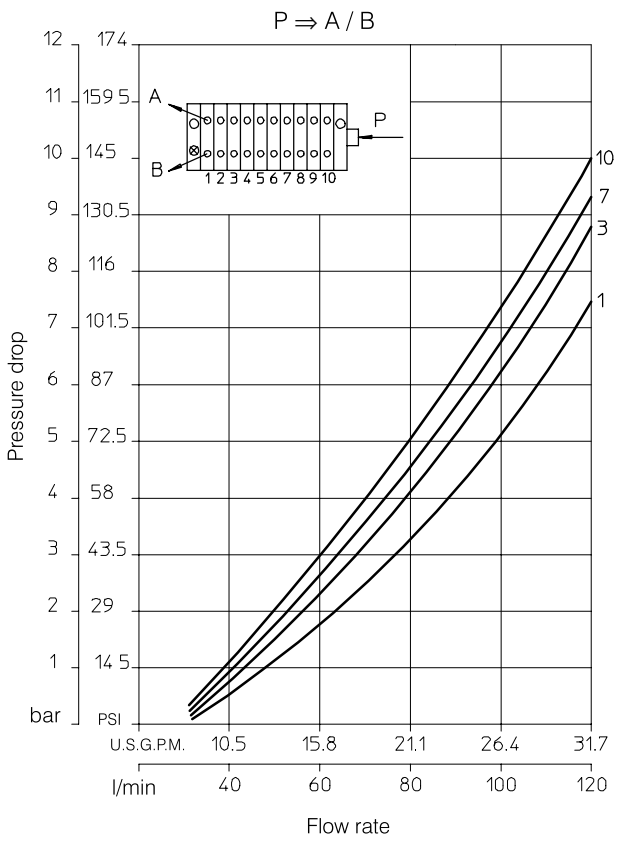
N. of sections	1	2	3	4	5	6	7	8	9	10
Dimension **A**	144	188	232	276	320	364	408	452	496	540
	5.67"	7.40"	9.13"	10.86"	12.60"	14.33"	16.06"	17.80"	19.53"	21.26"
Dimension **B**	168	212	256	300	344	388	432	476	520	564
	6.62"	8.34"	10.08"	11.81"	13.54"	15.28"	17.01"	18.74"	20.47"	22.21"

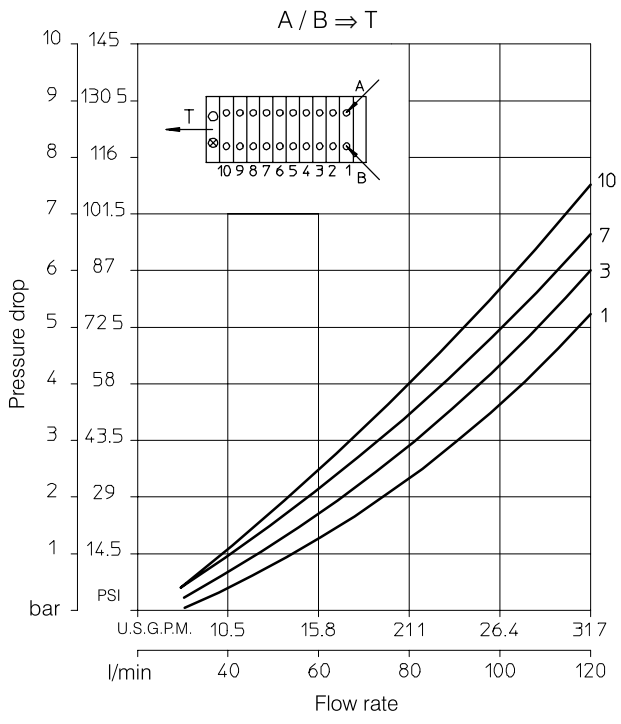
Performance curves

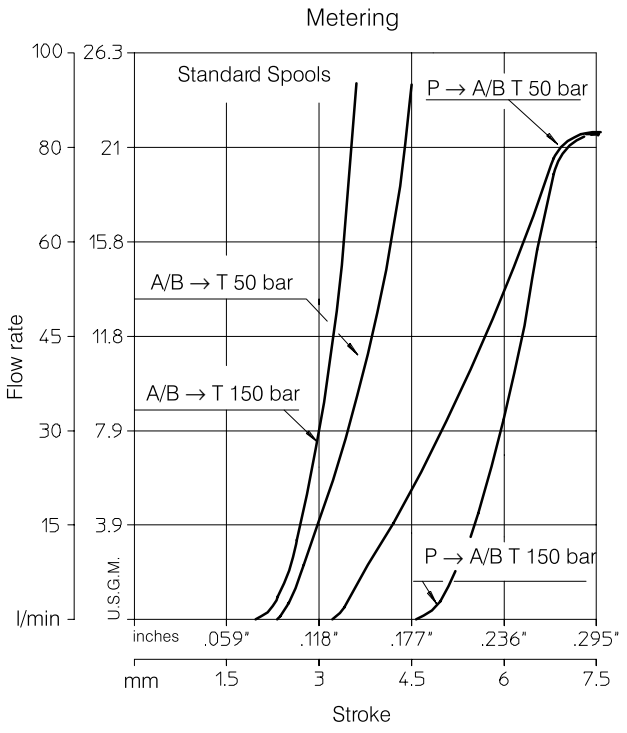
Parallel circuit

Oil: Shell Tellus T37
Temperature: 50° C (120° F)
Viscosity: 27 cSt

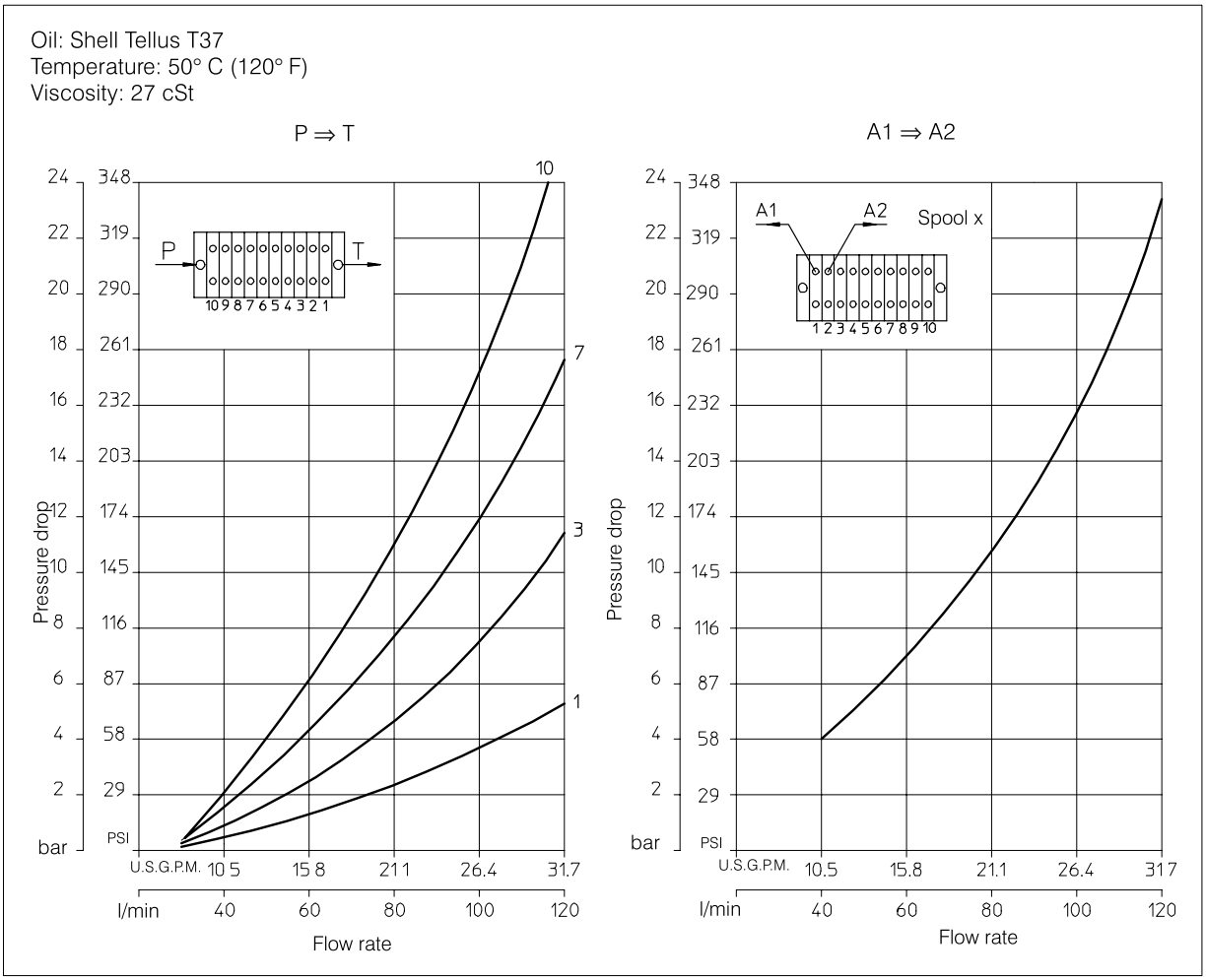




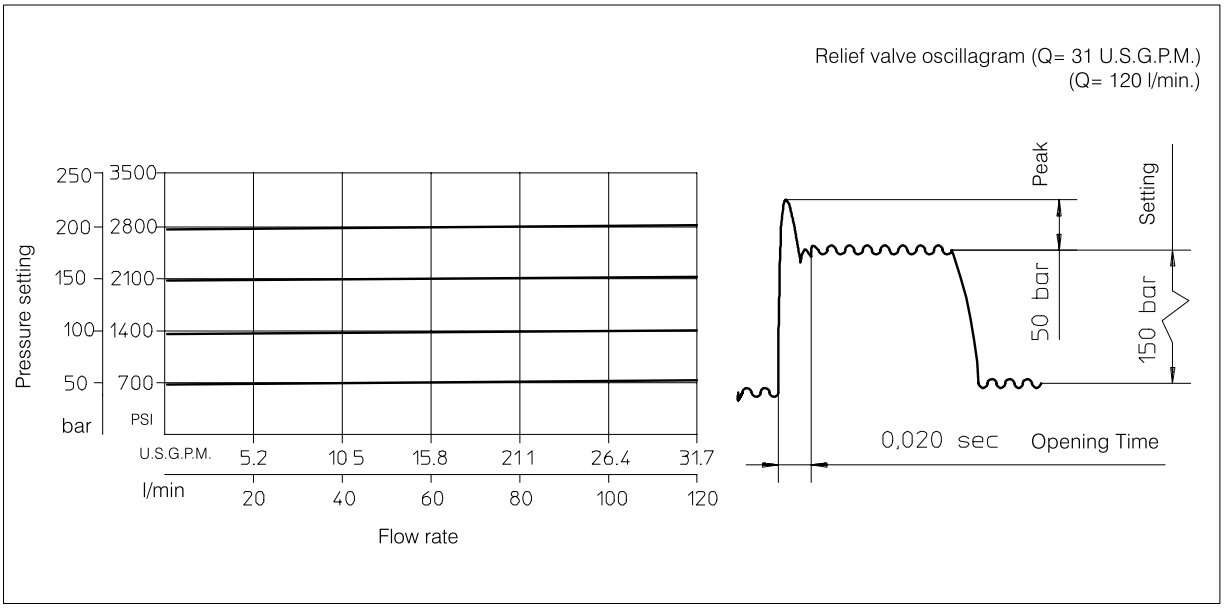




Series circuit

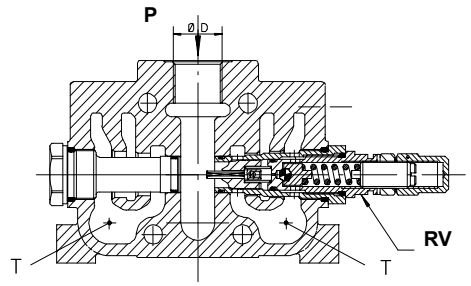


Transient hydraulic characteristics
Relief Valve RV



Inlet Cover

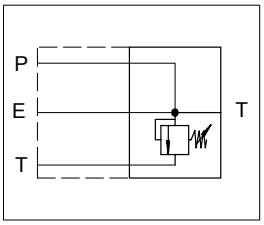
Right and left standard inlet cover



Port relief valve settings

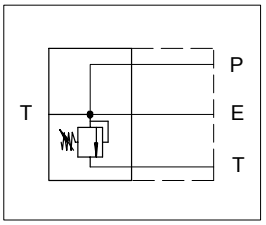
Range of Adjustment bar (PSI)	Setting bar (PSI)	Code
30 - 320 (420 - 4600)	150 (2100)	**15**

Right inlet cover with P and RV for parallel circuit



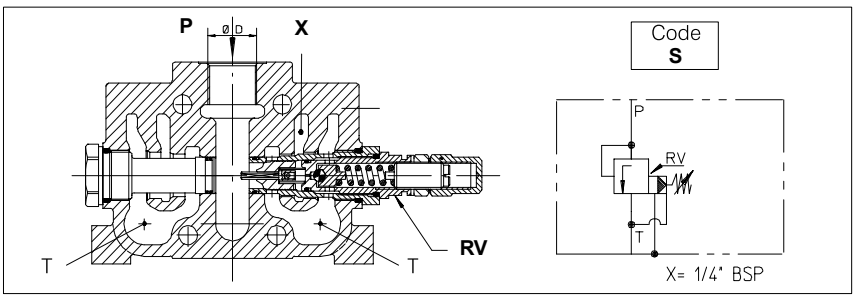
Ø D (diameter)	Code
1" BSP std	**T02*** 200.9316.5001.0
SAE 16	**T04*** 200.9316.9001.0

Left inlet cover with P and RV for series circuit



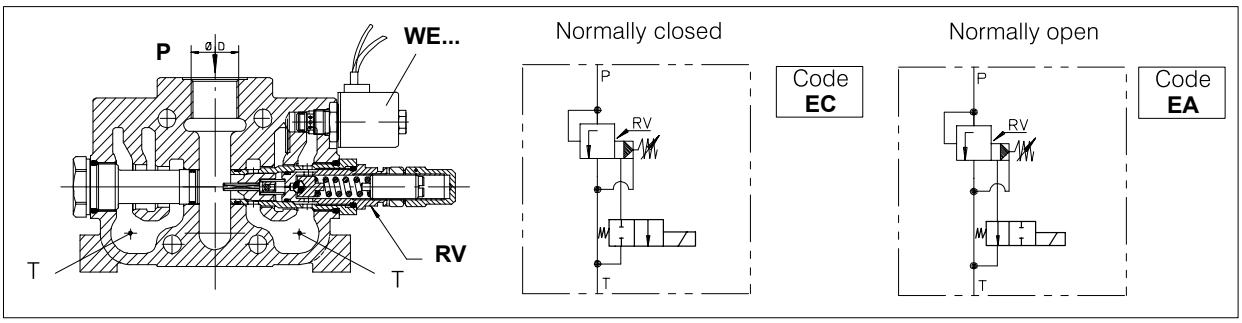
Ø D (diameter)	Code
1" BSP	**T10*** 200.9316.5002.0
SAE 16	**T12*** 200.9316.9002.0

System RV remote control: vent type



Ø D (diameter)	Code
1" BSP std (right)	**T25*** 200.9316.5010.0
1" BSP (left)	**T24*** 200.9316.5009.0

System RV remote control: electrical type

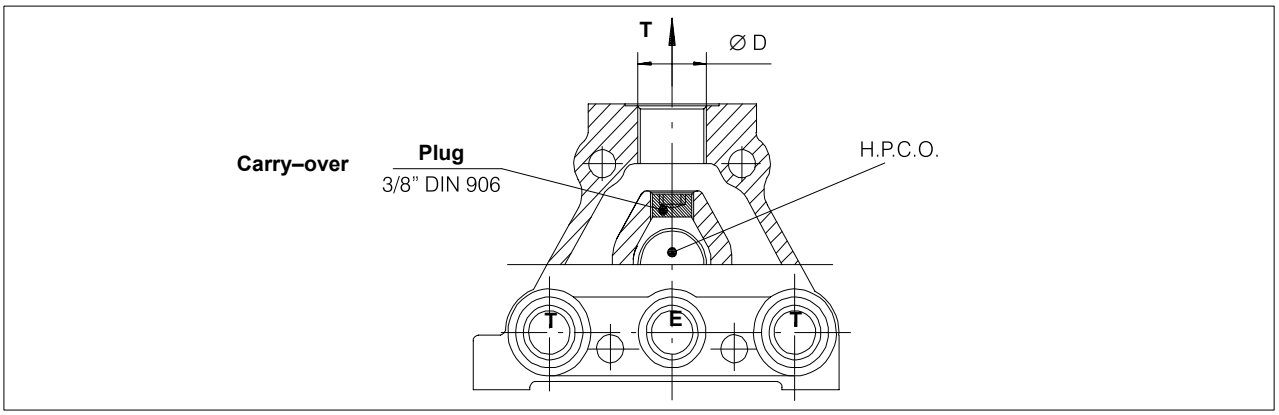


Solenoid series mini	**12 V. D.C.**	**24 V. DC.**
Power consumption (W)	30	20.64
Intensity of current (A)	2.5	0.86
Resistance (Ω)	4.8	28
ED (%)	60	100
Voltage (V. D.C. ±10 %)	24	110
Solenoid code	200.5412.10017	200.5412.20016

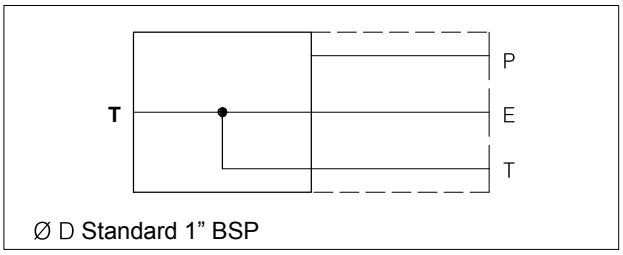
Ø D (diam.)	Code without WE... valve	Code with WEA valve	Code with WEC valve
1" BSP std (right)	**T22*** 200.9316.5007.0	**T26*** 200.9316.5017.0	**T26*** 200.9316.5011.0
1" BSP (left)	**T23*** 200.9316.5008.0	**T27*** 200.9316.5030.0	**T27*** 200.9316.5012.0

* Group code with RV set at standard pressure (150 bar / 2100 PSI)

End Cover

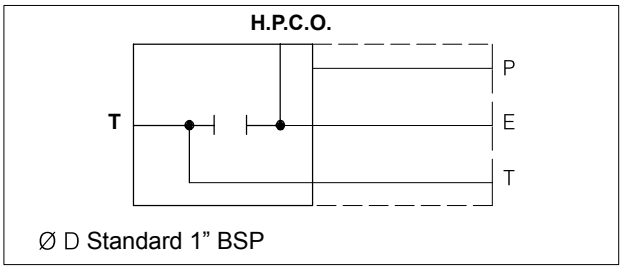


Left outlet cover with T for parallel circuit (Standard)



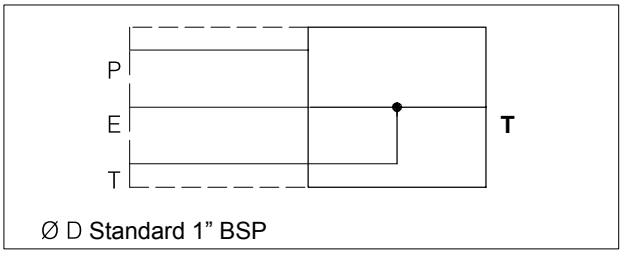
Ø D (diameter)	Code
1" BSP std	**P02** 200.9306.5001.0
SAE 16	**P04** 200.9306.9001.0

Left outlet cover with T and carry–over H.P.C.O.



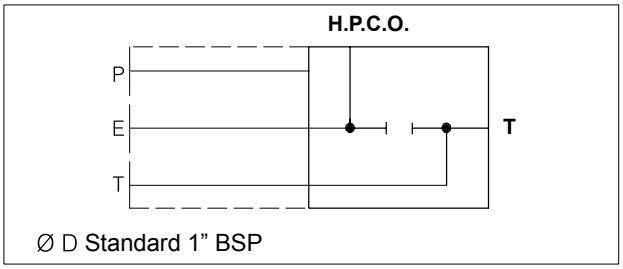
Ø D (diameter)	Code
1" BSP std	**P06** 200.9306.5002.0
SAE 16	**P08** 200.9306.9002.0

Right outlet cover with T (standard on series circuit)



Ø D (diameter)	Code
1" BSP std	**P10** 200.6306.5003.0
SAE 16	**P12** 200.6306.9003.0

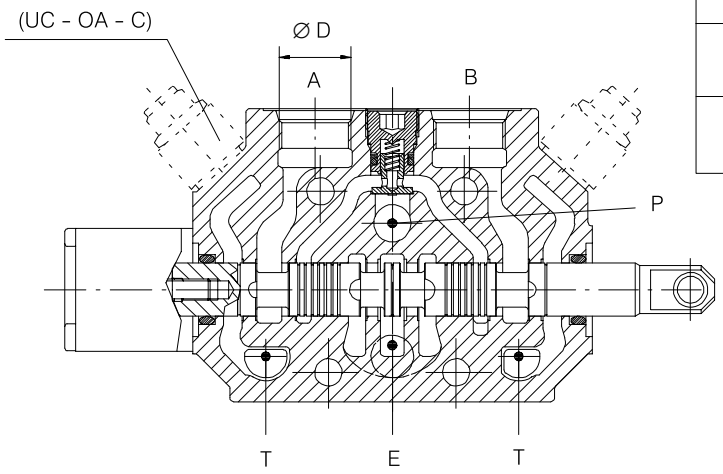
Right outlet cover with T and carry–over H.P.C.O.



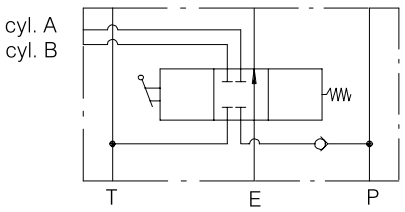
Ø D (diameter)	Code
1" BSP std	**P14** 200.9306.5004.0
SAE16	**P16** 200.9306.9004.0

Sectional body

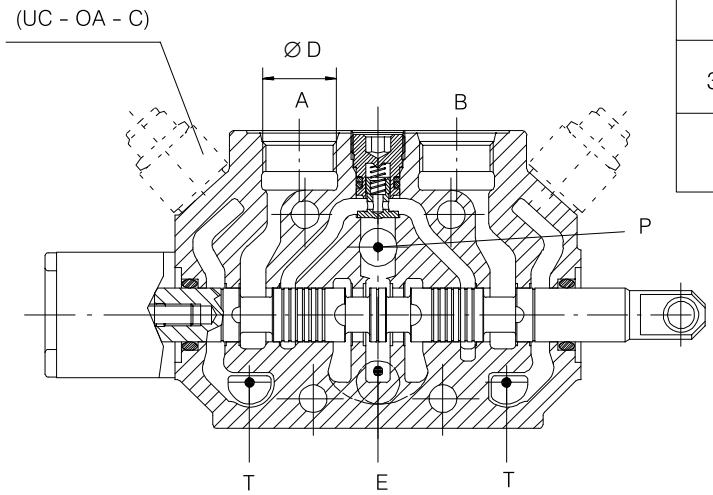
Standard circuit: parallel



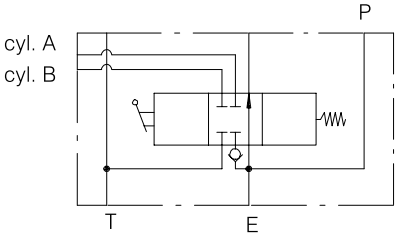
Ø D	Code	
	Standard	Section with valve UC - OA - C
3/4" BSP	**K02** 200.9417.4001.0	**K06** 200.9417.4011.0
SAE 12	**K04** 200.9417.9002.0	**K08** 200.9417.9003.0



Optional circuit: series and tandem



Ø D	Code	
	Standard	Section with valve UC - OA - C
3/4" BSP	**K47** 200.9417.4003.0	**K51** 200.9417.4010.0
SAE 12	**K49** 200.9417.9004.0	**K53** 200.9417.9005.0



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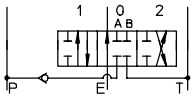
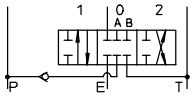
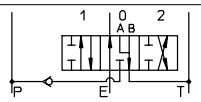
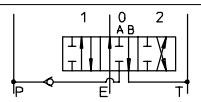
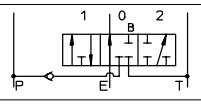
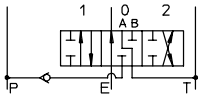
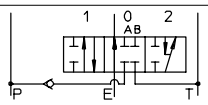
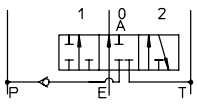
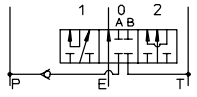
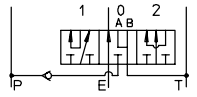
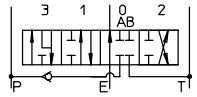
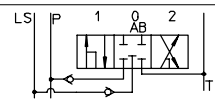
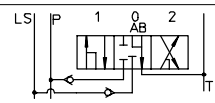
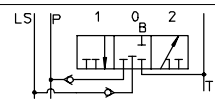
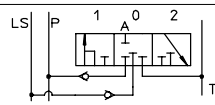
Sectional Directional Control Valve

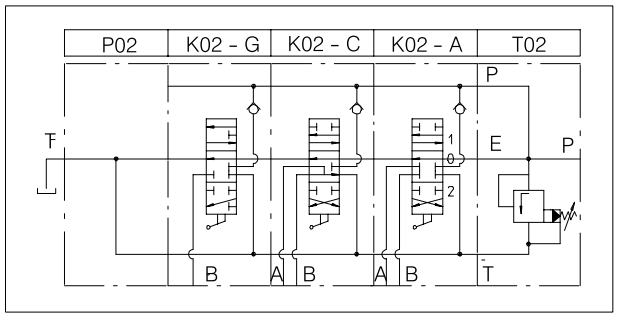
Spool chart

Type	Spool scheme	Spool features
A		4 way - 3 position A/B: blocked E: open by pass
B		4 way - 3 position A/B: blocked E: closed
C		4 way - 3 position A/B to tank in neutral E: open by pass
D		4 way - 3 position A: blocked B: to tank in neutral
G		3 way - 3 position B: blocked E: open by pass
L		4 way - 3 position B: blocked A: to tank in neutral
R**		4 way - 3 position with regenerative spool in 2nd pos.
**: special body required		

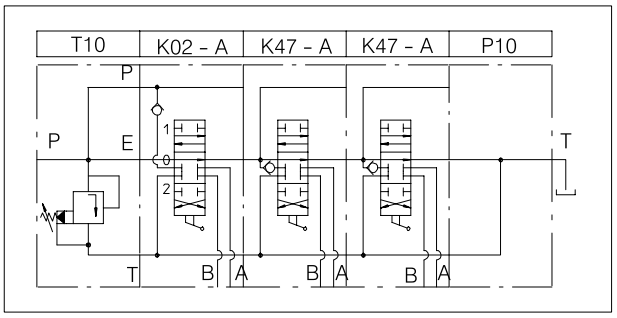
S		3 way - 3 position A: blocked E: open by pass
X		4 way - 3 position series connection
Xc		4 way - 3 position A/B: to tank in neutral
Z		4 way - 4 position 4th float position
LsA **		4 way - 3 position A/B: blocked Load Sensing
LsC **		4 way - 3 position A/B: to tank in neutral Load Sensing
LsG **		3 way - 3 position B: blocked Load Sensing
LsS **		3 way - 3 position A: blocked Load Sensing

Hydraulic circuits

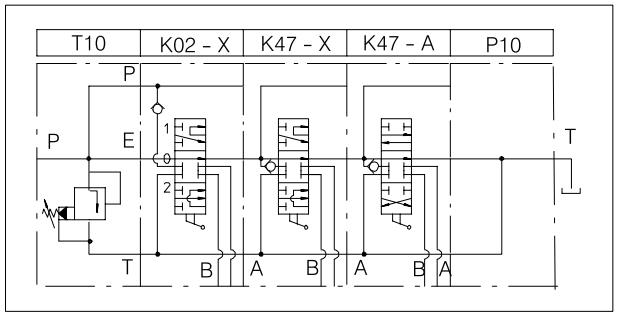
Standard parallel circuit



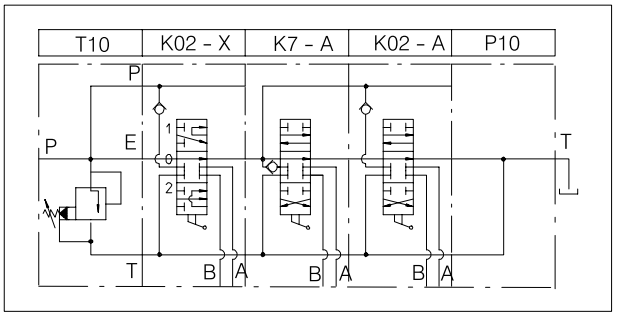
Optional tandem circuit



Optional series circuit



Combined parallel/series circuit



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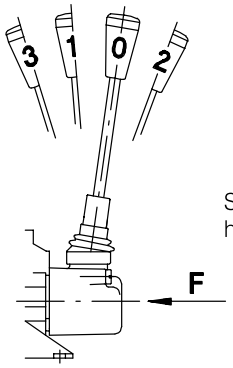
Spool action

Type	Spool position				Stroke	Code
	3	1	0	2	mm	
01		○	✶	○	7.5	200.9686.1002.0
02		●	●	○	7.5	200.9686.3002.0
03		●	●	●	7.5	200.9686.2002.0
05			●	●	7.5	200.9686.2004.0
06		✶		○	15	200.9686.1004.0
07		●	●		7.5	200.9686.2007.0
09		○	✶		7.5	200.9686.1011.0
11		●		●	15	200.9686.2009.0
19		○	●	●	7.5	200.9686.3008.0
24		○	✶	○	7.5	200.9686.5013.0
31		○	✶	○	7.5	200.9686.1054.0
46		○	✶	○	7.5	200.9686.1076.0
47		○	✶	○	7.5	200.9686.1078.0
50		○	✶	○	7.5	200.9686.5020.0
56		○	✶	○	7.5	200.9686.1086.0
83		○	✶	○	7.5	200.9686.1096.0
125	●	○	✶	○	5 - 7 - 7	200.9686.4007.0

✶ Initial hand lever position
● Hand lever in detent position
○ Spring return position of hand lever



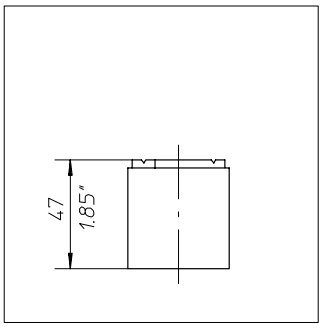
Spool position corresponds to hand lever position

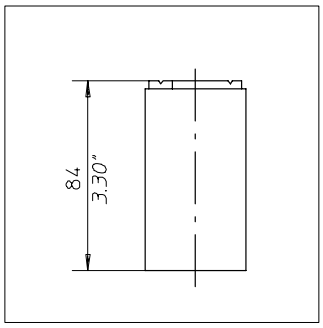
Force (F) for spool movement

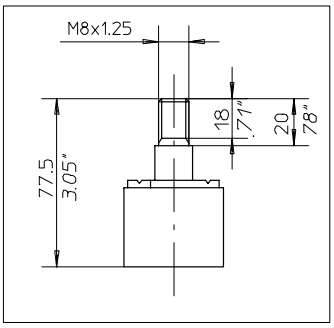
Spool position control	F (N)
01 (standard)	350
56	280

Note: consult factory for other configurations.

Spool positioners dimensions







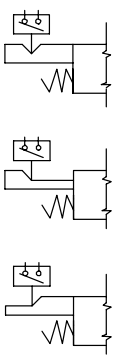
Spool positioners: **01 – 02 – 03 – 05 – 06 07 – 09 – 11 – 19 – 56**	Spool positioners: **125** (Z spool type)	Spool positioners: **83**

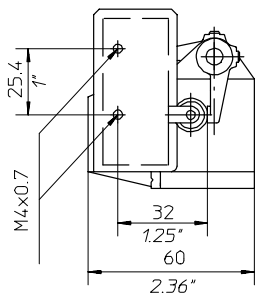
Microswitch control

31 Microswitch operated with spool in pos.1 and 2

46 Microswitch operated with spool in pos.1

47 Microswitch operated with spool in pos.2

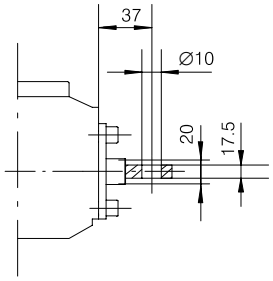




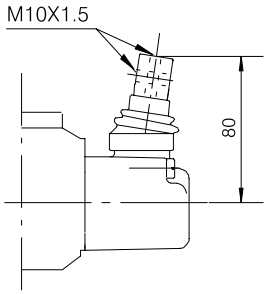
The microswitch code 200.9625.0001.0 is supplied only on customer's request.

Lever styles

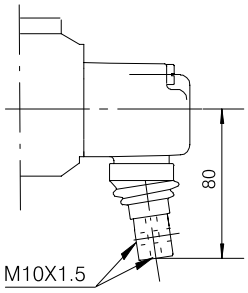
Type **L55**

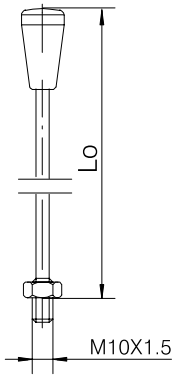


Type **L100**



Type **L300**

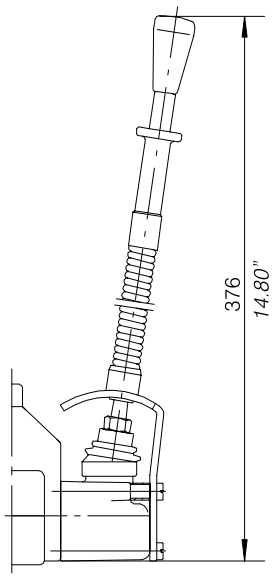




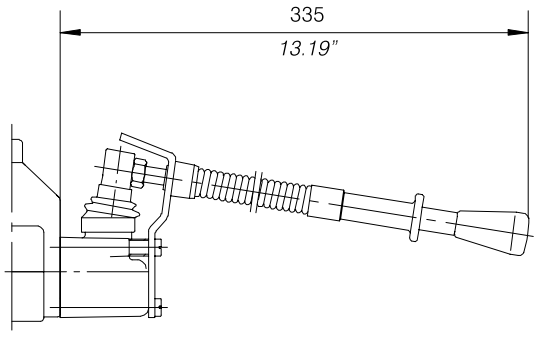
Type	Lo		Code
	mm	inches	
AL001	185	7.28	200.7022.2001.0
AL002	250	9.84	200.7022.2003.0
AL003	300	11.81	200.7022.2004.0
AL004	350	13.78	200.7022.2005.0

Safety levers

Type **L47**

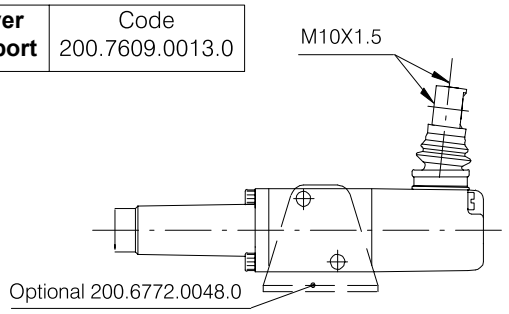


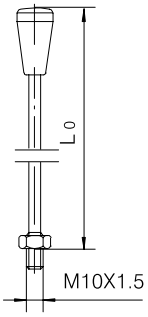
Type **L46**



Remote cable control

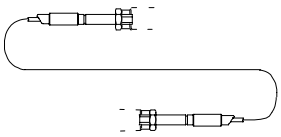
Lever Support	Code
	200.7609.0013.0





Type	Lo		Code
	mm	inches	
AL001	185	7.28	200.7022.2001.0
AL002	250	9.84	200.7022.2003.0
AL003	300	11.81	200.7022.2004.0
AL004	350	13.78	200.7022.2005.0

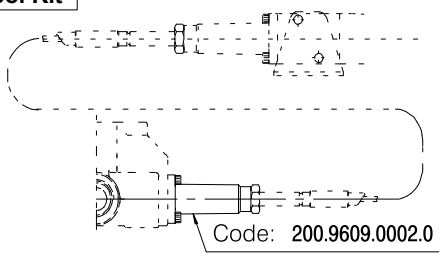
Cable



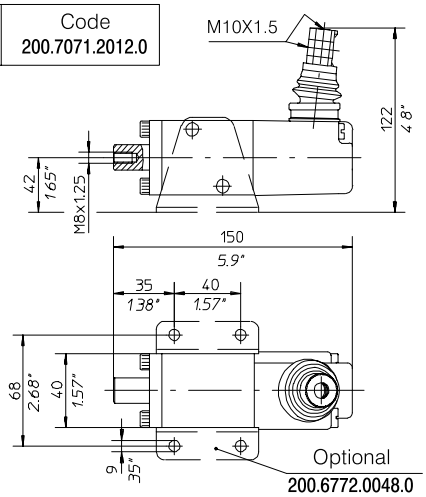
Cable length	Code
1000 mm	200.5441.04002
1500 mm	200.5441.04005
2000 mm	200.5441.04006
2500 mm	200.5441.04007
3000 mm	200.5441.04008
4000 mm	200.5441.04009

Cables are assembled on the valve only on request and with an extra charge.

Spool Kit

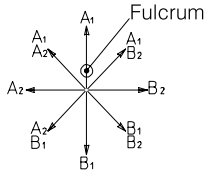


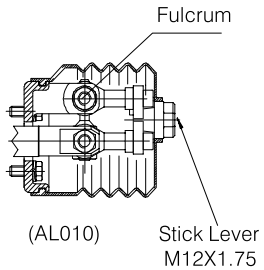
Type	Code
L142	200.7071.2012.0

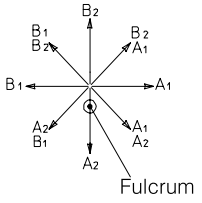


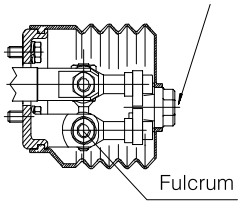
Only for rod remote control

Type	Code
L133	200.9759.3020.0

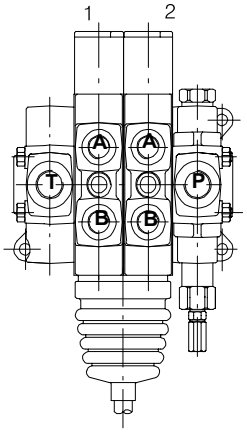






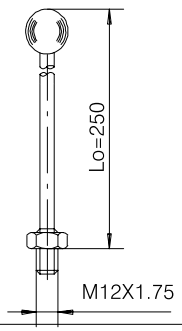


Type	Code
L134	200.9759.3020.0

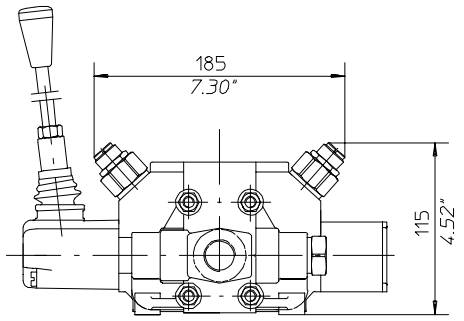


Cross joystick for dual axis control

Type	Code
AL010	200.7022.3004.0



Anti-shock and anticavitation valves

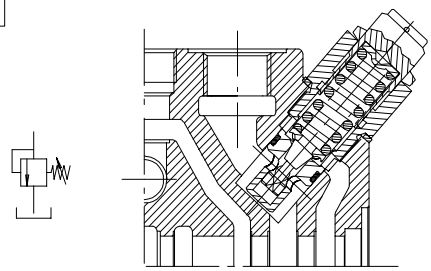


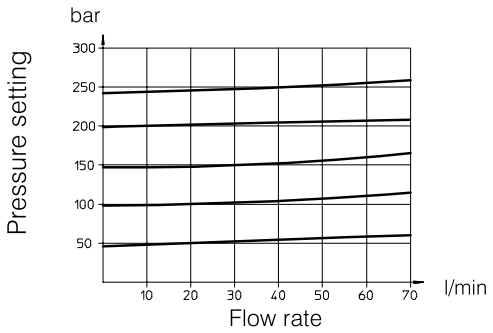
Port relief valve settings

Range of Adjustment bar (PSI)	Spring colour	Std. setting bar (PSI)	Setting Code
30 - 95 (400 - 1300)	Yellow (YE)	60 (860)	**06**
96 - 210 (1300 - 3000)	Green (GR)	150 (2100)	**15**
211 - 320 (3000 - 4600)	Blue (BL)	260 (3700)	**26**

Port relief valve

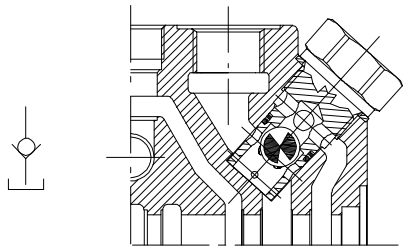
Type **OA**

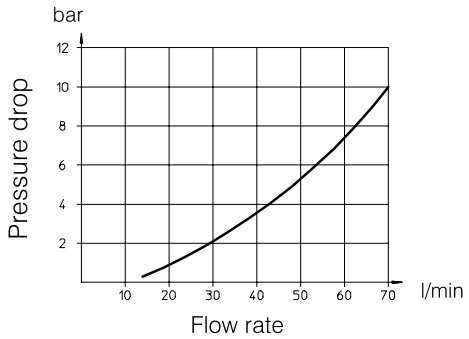




Anticavitation valve

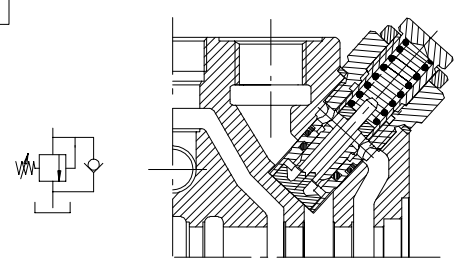
Type **C**

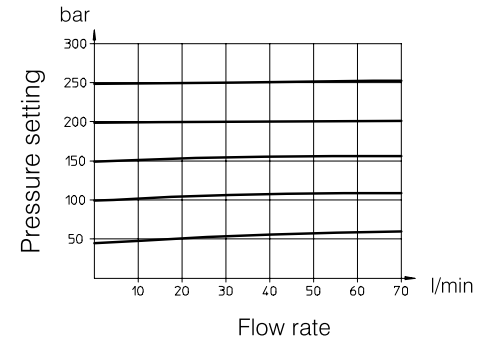




Combined port relief and anticavitation valve

Type **UC**





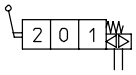
HDS30 Series

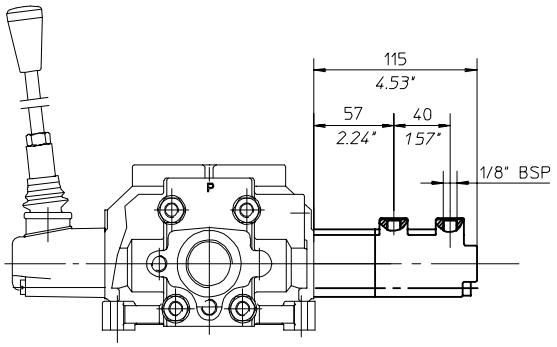
Sectional Directional Control Valve

Pneumatic controls

Pneumatic control ON–OFF

Type	Code
P 24	200.9686.5013.0

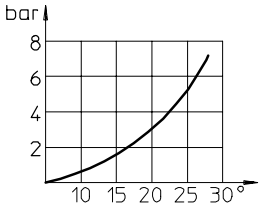


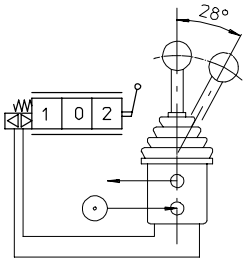


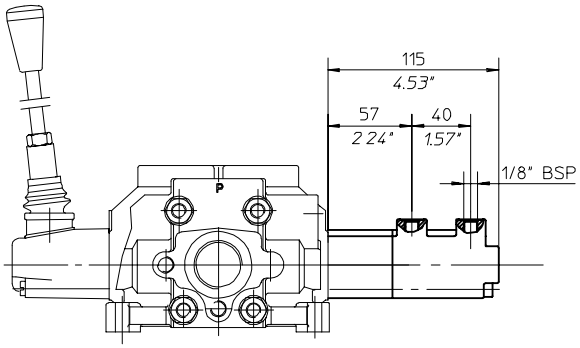
Operating conditions
Pressure range: (bar): Min. 6 - Max. 10
(PSI): Min. 85 - Max. 145

Pneumatic proportional control

Type	Code
PP 151	200.9686.5010.0



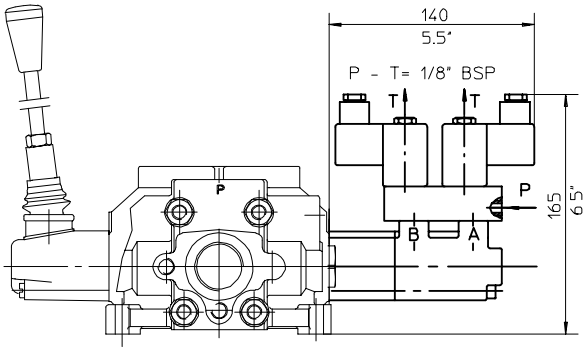




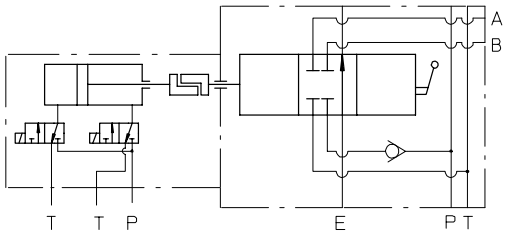
Electro–pneumatic control ON–OFF

Type	Voltage	Code
EP 77	12 VDC	200.9686.6024.0
EP 78	24 VDC	200.9686.6027.0

Electrical data
Insulation class H - 180° C (356° F)
Encapsulation material: nylon
Temperature range:
-10° C to 80° C (14° F to 170° F)
Duty cycle: 100% at 20° C ambient (68° F)
Voltage variation: -10% to + 15% of nominal voltage
Power consumption DC - 10 W
Electrical connection: DIN43650/A (2P + E)
Cable connection PG9
Protection class: IP65 (with connector)



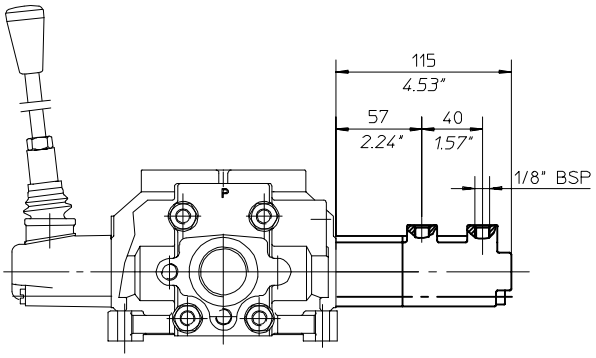
Operating conditions
Pressure range: (bar): Min. 6 - Max. 10
(PSI): Min. 85 - Max. 145
Ambient temperature: -10° C to 50° C (14° F to 122° F)
Response time: 6 - 8 milliseconds
Mounting in any position



Hydraulic controls

Hydraulic control ON–OFF

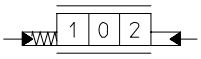
Type	Code
H 24	200.9686.5013.0



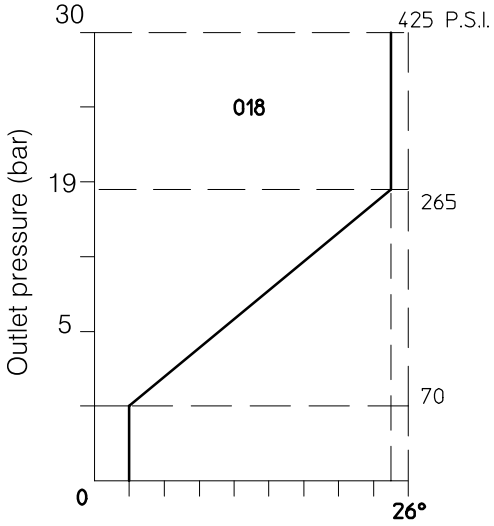
Operating conditions
Pressure range: (bar): Min. 6 - Max. 15
(PSI): Min. 85 - Max. 215

Hydraulic proportional control

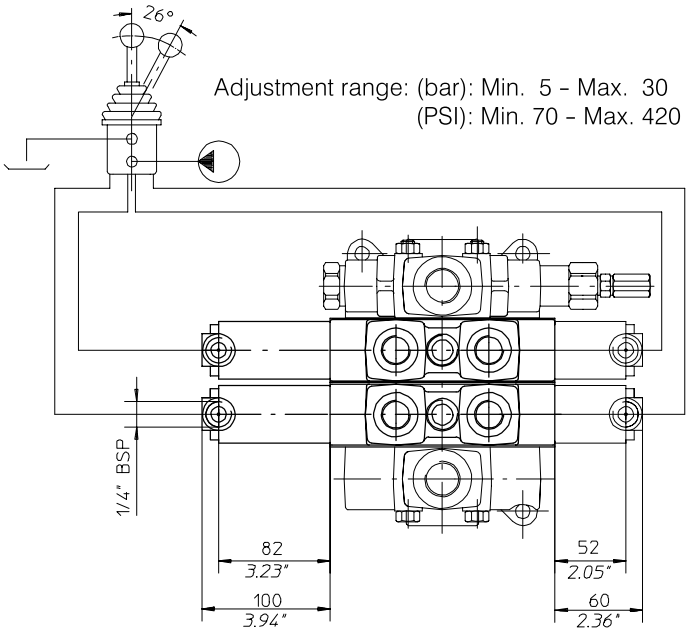
Type	Code
HP 50	200.9686.5017.0



Joystick adjustment diagram



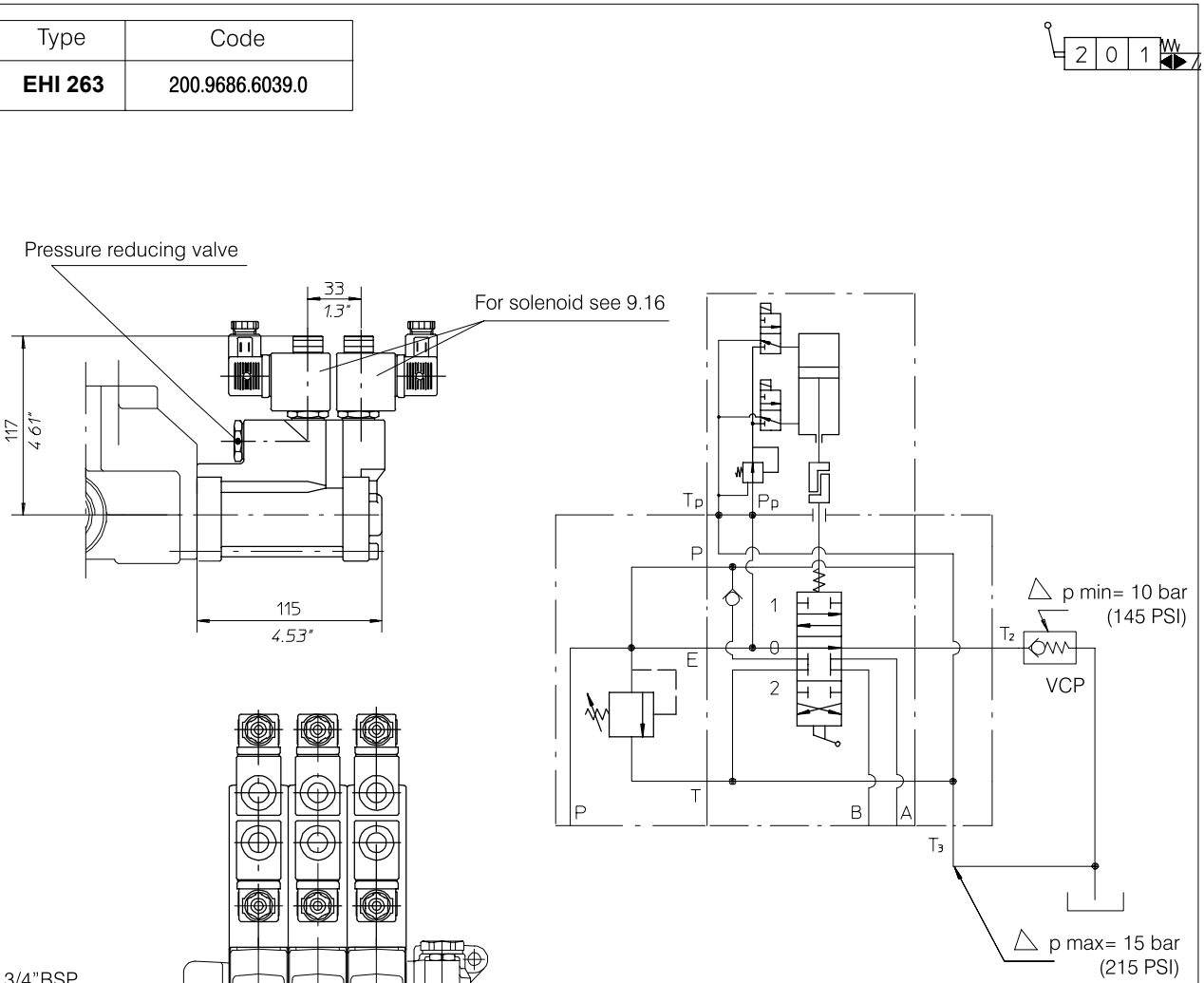
Adjustment range: (bar): Min. 5 - Max. 30
(PSI): Min. 70 - Max. 420



Electro-hydraulic controls

Electro–hydraulic control internal pilot version
ON–OFF with pressure reducing valve

Type	Code
EHI 263	200.9686.6039.0



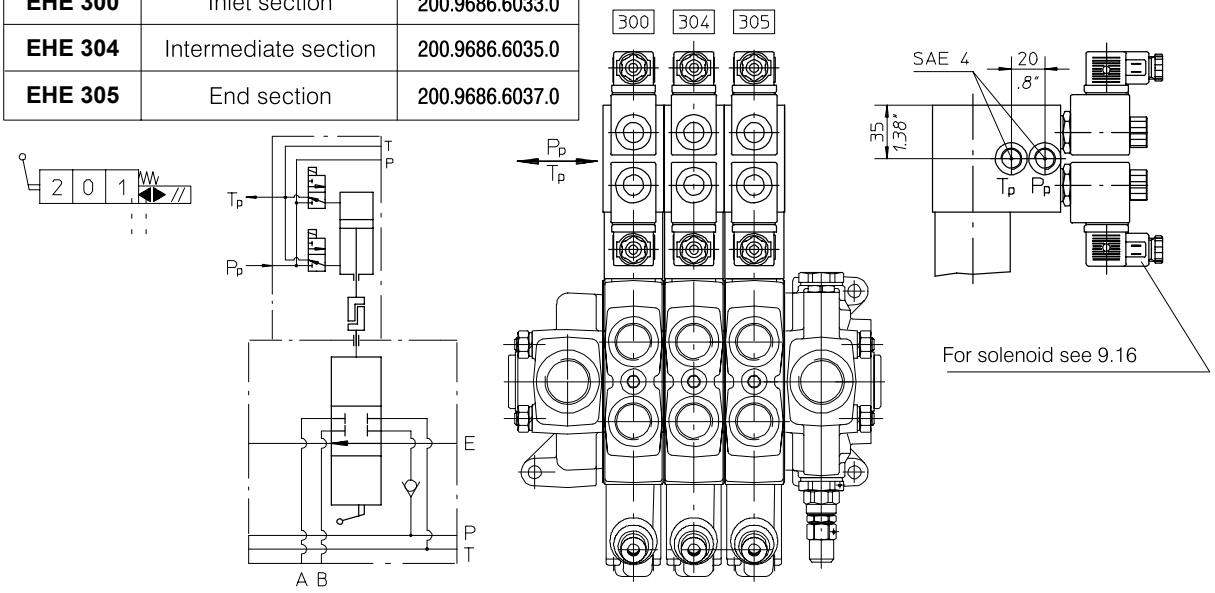
Mechanical and hydraulic features

Max pressure on P_p port . . . . . 300 bar (4300 PSI)
Reduced pressure after
pressure reducing valve . . . . . 10 bar (145 PSI)
Fixed delivery on P_p
pilot line . . . . . 1 l/min (0.26 U.S.G.P.M)

Leakage of pressure reducing
valve (in neutral pos.) . . . . . 100 ml/min (6.1 in^3/min)
Min. suggested filtration . . . . . 25 micron
Operating oil temperature . . . . . min.-30°C- max. 90°C
. . . . . min.-22°F - max 194°F

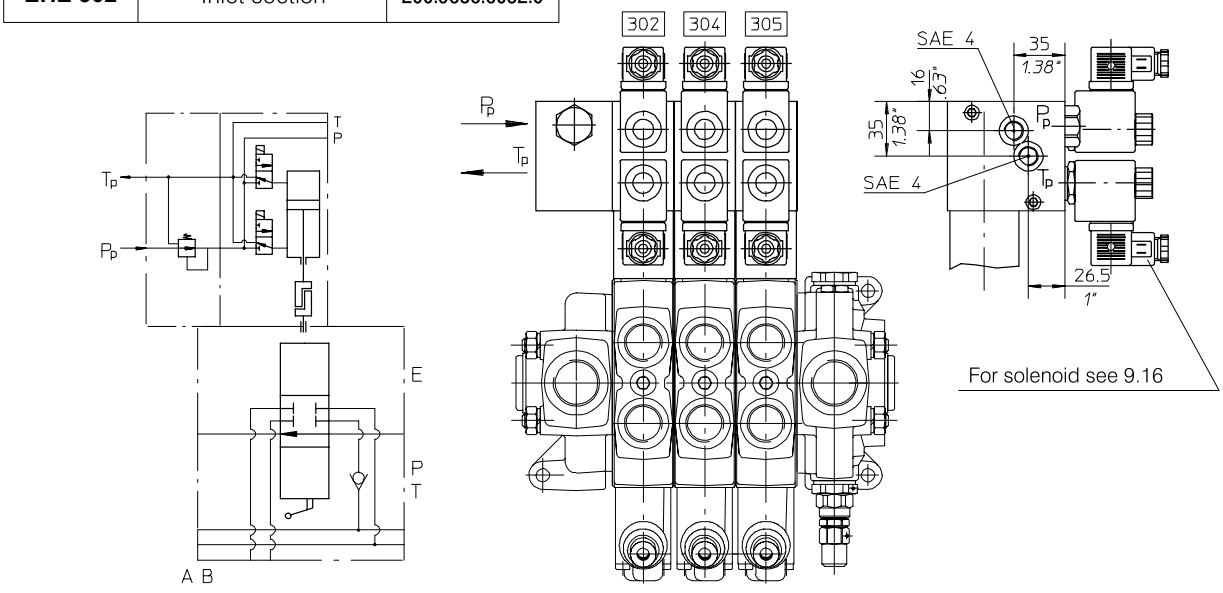
Electro–hydraulic control external pilot version
ON–OFF

Type	Description	Code
EHE 300	Inlet section	200.9686.6033.0
EHE 304	Intermediate section	200.9686.6035.0
EHE 305	End section	200.9686.6037.0



Electro–hydraulic control external pilotversion
ON–OFF with pressure reducing valve on inlet manifold

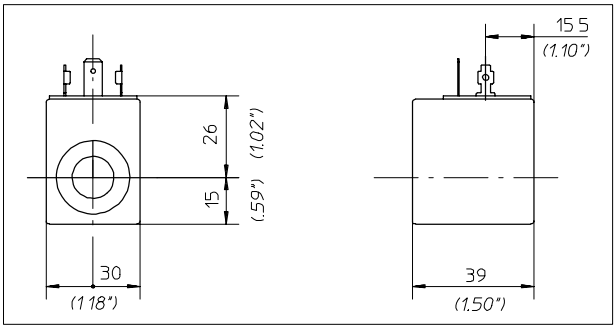
Type	Description	Code
EHE 302	Inlet section	200.9686.6032.0



Mechanical and hydraulic features

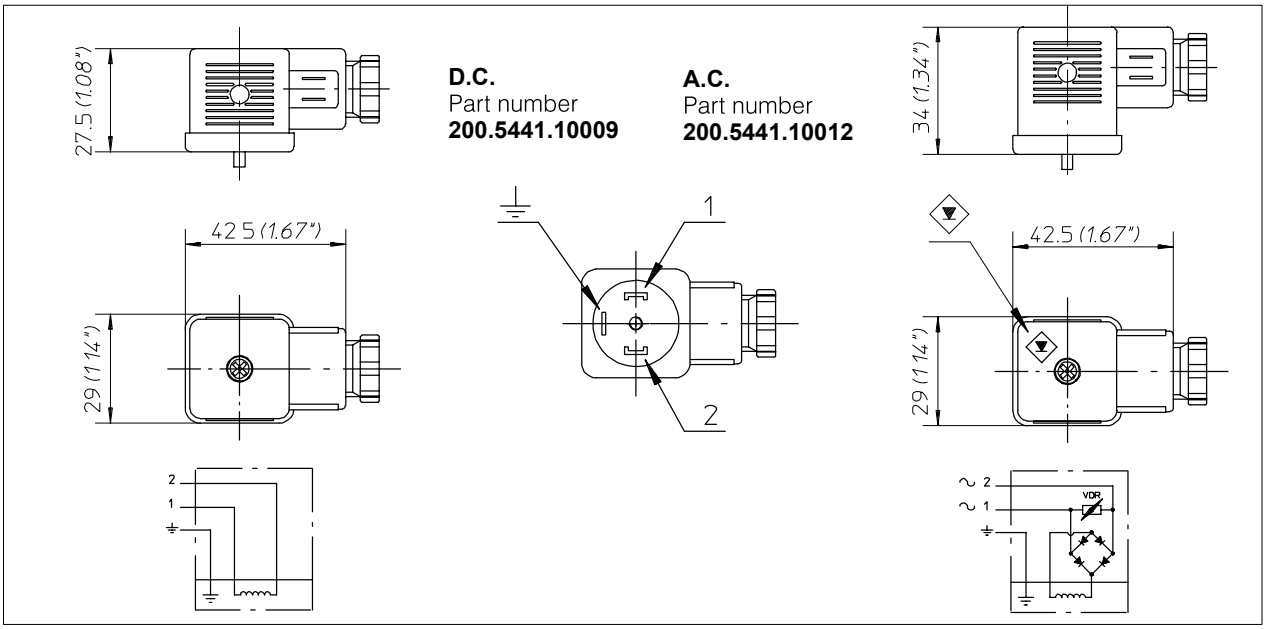
Pilot pressure with pressure reducing valve . . . . . 12 bar (175 PSI)
Pilot flow to each working section . . . . . 1 l/min (0.26 U.S.G.P.M.)
Operating oil temperature . . . . . min.-30°C- max. 90°C
. . . . . min.-22°F - max. 194°F
Leakage of pressure reducing valve (in neutral pos.) . . . . . 100 ml/min (6.1 in^3/min)
Min. suggested filtration . . . . . 25 micron

Solenoids for pilot electrovalves EHI-EHE



Wire class	**F (VDE 0580)**
Coil insulation	**IP65 (DIN 40050)**
Duty rating	**ED 100%**
Stabilized temperature	**70 °C**
Voltage tolerance	**± 10%**

Coil code	Voltage	Nominal voltage	Power (Watt)	Resistance (Ohm)		Current (Ampere)	
				Ambient temp.	Stabilized temp.	Ambient temp.	Stabilized temp.
200.6749.1003.0	12 V. DC	12 V. DC	18.7	7.7	10.8	1.56	1.11
200.6749.2003.0	24 V. DC	24 V. DC	18.6	31	41.4	0.77	0.58
200.6748.2003.0	24 V. AC	21.6 V. DC	17.3	27	36	0.80	0.60
200.6748.4003.0	110 V. AC	98 V. DC	15.6	630	825	0.157	0.120
200.6748.6003.0	220 V. DC	198 V. DC	15.7	2500	3300	0.08	0.06



Armour clamp	**Pg 9**
∅ cable	**6 – 8 mm**
Diodes	**1N 4007 GP**
Overvoltage protection	**VDR**
Connector type	**DIN 43650**
Number of poles	**2 + ⏚**
Supply voltage	**max. 220 V**
Nom. capacity at contacts	**10 Ampere**

Max capacity at contacts	**16 Ampere**
Resistance at contacts	**≥ 4 mOhm**
Max section of cable	**1.5 mm²**
Outer material	**Glass fibre reinforced nylon**
Protection factor	**IP65 (DIN 40050)**
Insulation class	**C (VDE 0110)**
Temperature range	**–40° +90°C**

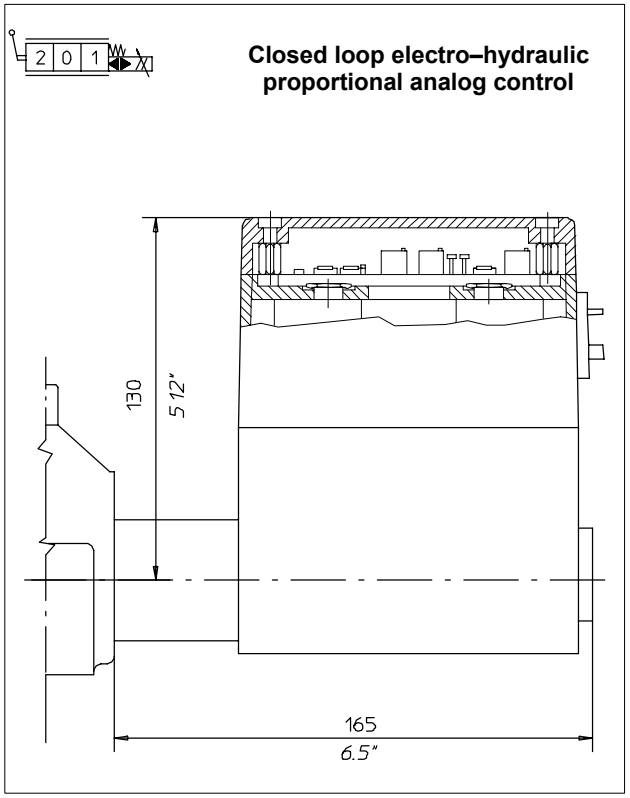
HDS30 Series

Sectional Directional Control Valve

Electro-hydraulic proportional control

Type	Description	Code
	Inlet cover with pressure reducing valve and electric by-pass	200.5333.20014
EHP160	Inlet section	200.9686.6002.0
EHP161	Intermediate section	200.9686.6004.0
EHP162	End section	200.9686.6006.0

- High response accuracy, as a function of the input signal.
- Low hysteresis and high repeatability.
- The system is unaffected by disturbance forces, such as stiction of the driven sliding spool, changes in oil temperature or varying dynamic flow forces



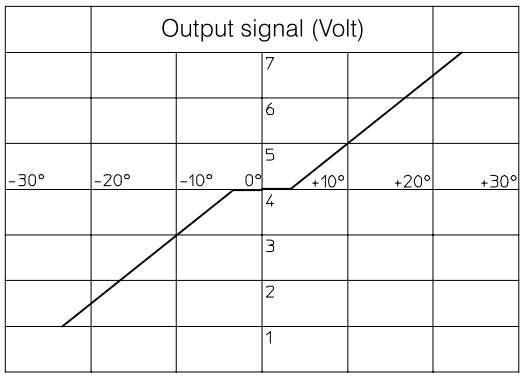
Mechanical and hydraulic features

Pilot pressure (reduced) . . . . . 16 - 18 bar (220 PSI)
Pilot flow to each working section . . . . . l/min (0.26 GPM)
Max leakage . . . . . 0.4 l/min (2.3 c.i./min)
Response time from neutral to max. stroke . . . . . 180 ms
Response time from max stroke to neutral . . . . . 80 ms
Min. suggested filtration . . . . . 25 micron

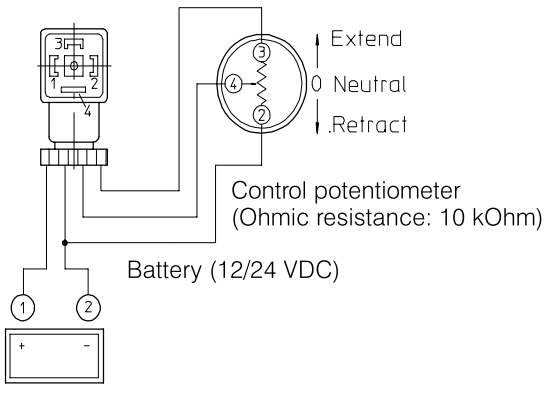
Electric features

Supply voltage . . . . . 12 - 24 VDC (12 - 24 VGS)
Control current range (PWM) . . . . . 200 -900 mA
Control potentiometer ohmic resistance . . . . . 10 k Ω
Input voltage to the control potentiometer . . . . . 8 V
Control voltage to the electronic circuit:
neutral position . . . . . 4 V
max. stroke A . . . . . 6 V
max. stroke B . . . . . 2 V

Joystick control characteristics



Electrical wiring DIN 43650 connector

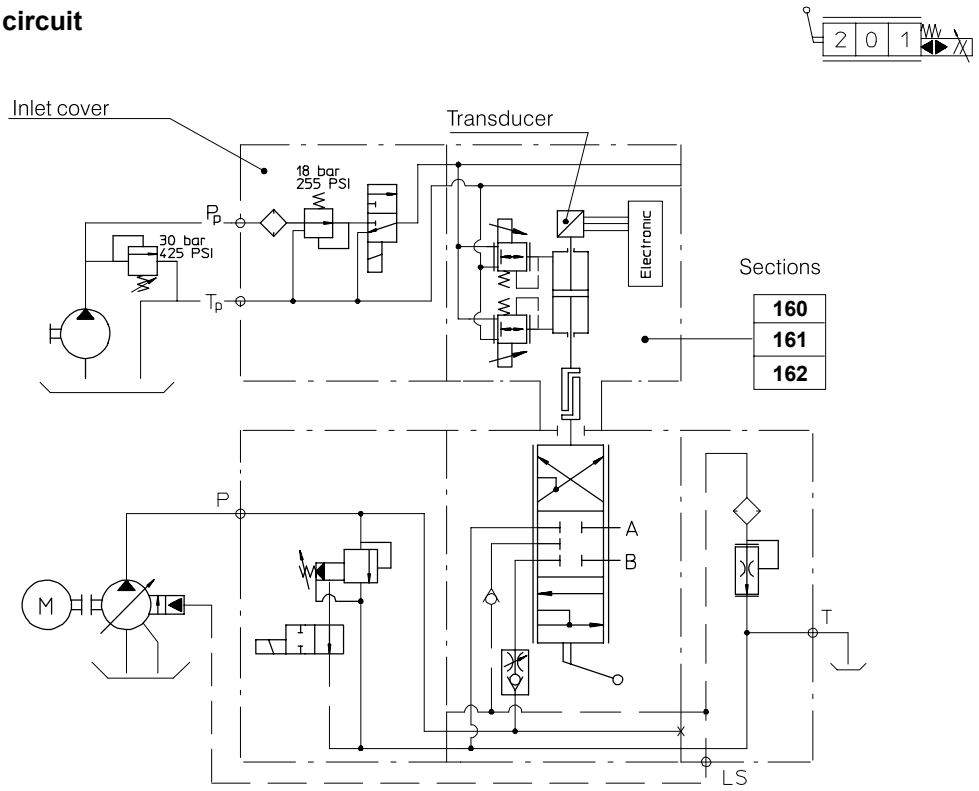


HDS30 Series

Sectional Directional Control Valve

Type **EHP**

Hydraulic circuit



HOW TO ORDER

HDS30 / 3 - T04 - 140 - P08 1 K08 A 03 L100 - UC 150 150 *

- HDS30 — Valve Series
- 3 — Number of Spools
- T04 — Inlet Cover Code
- 140 — Relief Valve Setting (Bar)
- P08 — Outlet Cover Code
- 1 — Position of the Section
- K08 — Type of Sectional Body - Code
- A — Spool Code
- 03 — Spool Positioner Code
- L100 — Hand Lever Style
- UC — Service Port Valve Code (Option) (Omit for No Service Port Valve)
- 150 — Port ‘A’ Setting
- 150 — Port ‘B’ Setting
- * — *Repeat Coding from ‘Position of Section’ for Subsequent Valve Sections