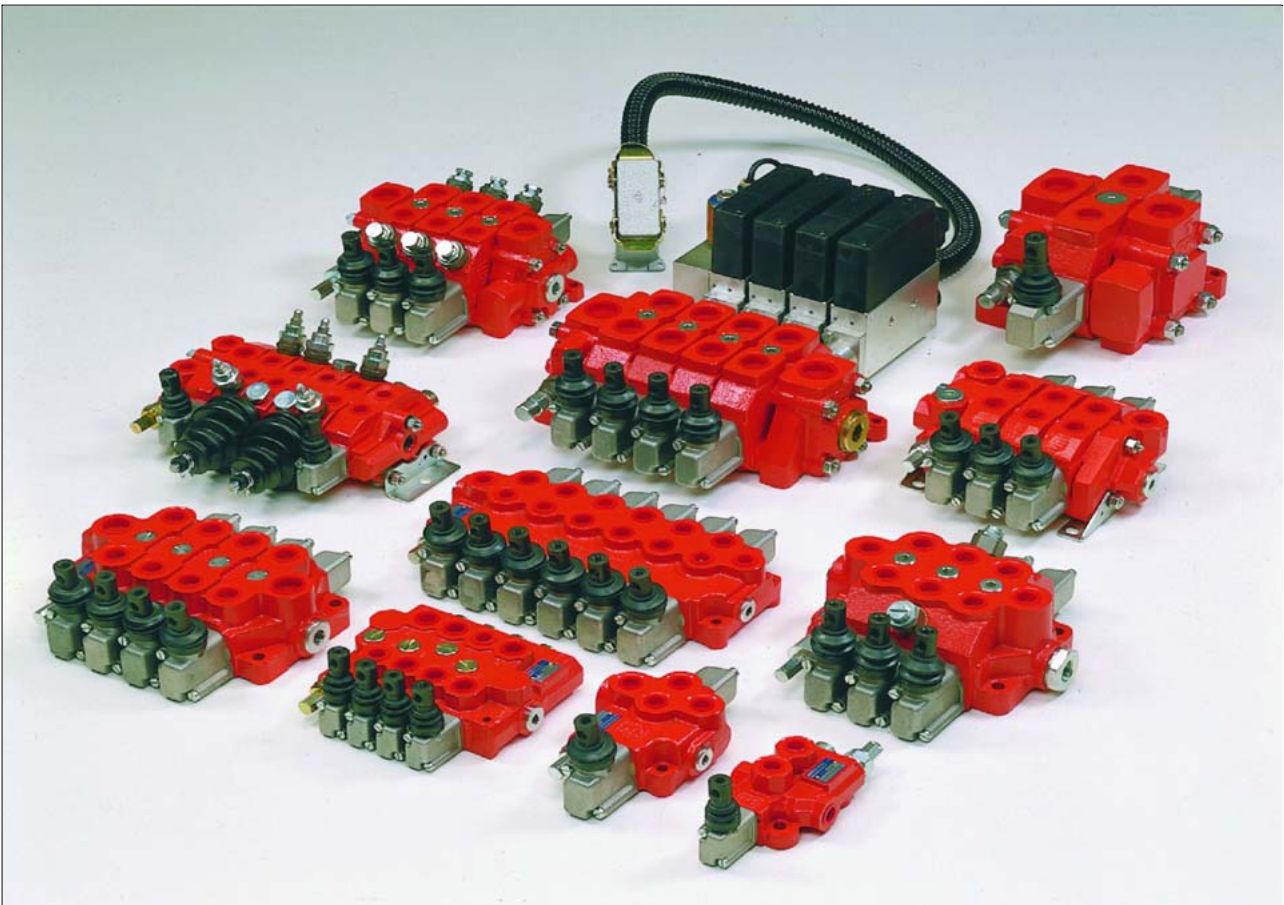


Monobloc and Sectional Directional Control Valves



8 Sectional directional control valves HDS11

8A Standard valves p.101



Contents

8A.1	General specification	101
8A.2	Dimensional data	102
8A.3	Performance curves	103
8A.4	Inlet and outlet covers	105
8A.5	Adjustable direct acting Relief Valve RV	106
8A.6	End covers	107
8A.7	Sectional bodies	109
8A.8	Spool charts	109
8A.9	Hydraulic circuits	109
8A.10	Spool positioners	113
8A.11	Lever styles	115
8A.12	Port relief and anti-cavitation valves	116
8A.13	Hydraulic-Pneumatic control ON-OFF	117

8B Electromagnetic control EMC - (ON-OFF) p.117



Contents

8B.1	General specification	117
8B.2	Dimensional data	118
8B.3	Performance curves	119
8B.4	Operating limits	120
8B.5	Sectional bodies	121
8B.6	Spool charts	122
8B.7	Spool actions	123
8B.8	4 th Floating Position	123

8C Elements with pressure and flow control PQ p.125



Contents

8C.1	General specification	125
8C.2	Sectional body K100	126
8C.3	Inlet cover T100	127
8C.4	Sectional body K88	128
8C.5	Inlet cover T88	129
8C.6	Sectional body K90	130
8C.7	Inlet cover T90	131
8C.8	Inlet cover T89	132
8C.9	Proportional flow control PFCR11	133
8C.10	Special sectional bodies	134
8C.11	By-pass solenoid valve -BP3-	135
8C.12	End cover for K100 and T100	136

HDS11

8A Standard valves

8A.1 General specifications

Technical specification		
Max flow rate	l/min U.S.G.P.M.	45 12
Max continuous operating pressure supply port P	bar PSI	250 3600
Max intermittent peak pressure work port A/B	bar PSI	320 4600
Max back pressure tank port T	bar PSI	30 430
Oil temperature	° C ° F	-10 to +80 14 to 180
Oil viscosity	mm ² /s	16 to 75
Oil filtration	μ	≤30

Spool leakage at 100 bar (1450 PSI), Temp. 50° C (120° F), viscosity 27 mm ² /s:		
Maximum	cm ³ /min Cu. In./min	12 0.854
Average	cm ³ /min Cu. In./min	6 0.427

Number of spools	1 to 10
Adjustable direct operated relief valve (tamper-proof seal available on request)	RV
Load hold check valve in each section	LC
Cartridge anti-shock, anti-cavitation and service relief valve	OA-UC-C
Mechanical release check valve	RSM1

8A.1.1 Weight

Version	kg	lb
Inlet with RV and P	1	2.21
1 spool section (standard without options)	1.30	2.86
End cover standard	0.65	1.43
End cover with T and H.P.C.O.	0.75	1.65

8A.1.2 Material specification:

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

8A.1.3 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 selections inlets, work ports, and outlets threaded ports.
- 5) Negative overlapping of the spool.

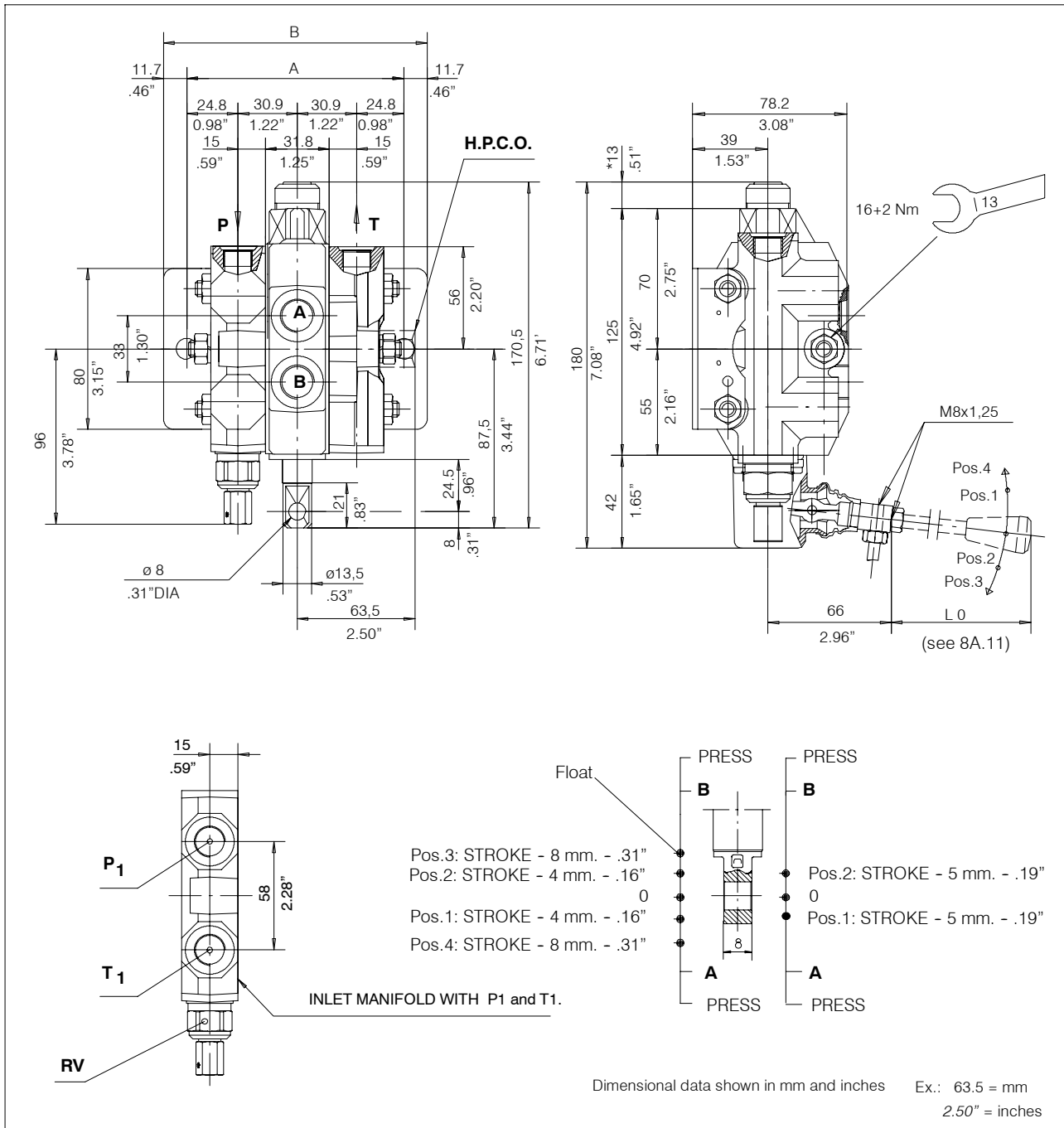
8A.1.4 Optional features available:

- 1) Open or closed centre positions, 3 or 4 way operations, 3 or 4 position (float position), full open centre (motoring spool) and other spool options.
- 2) Carry over.
- 3) Series connection and priority pressure.
- 4) Pressure compensated flow control.
- 5) Complete lever assembly.

8A.1.5 Symbols:

P: inlet port
T: outlet port
A/B: work ports
H.P.C.O.: carry-over
RV: relief valve
P₁T₁: top inlet and outlet
 3.1.0.2: spool position
 P: pressure line
 T: exhaust line
 E: centre line (by pass).

8A.2 Dimensional data

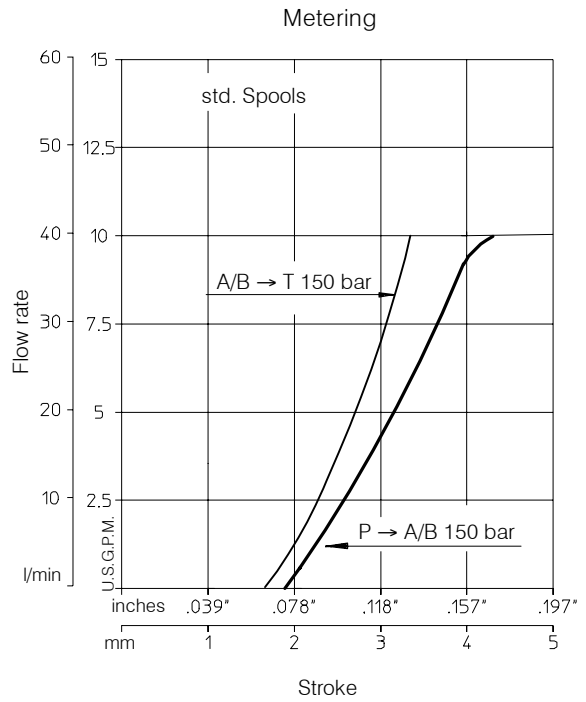
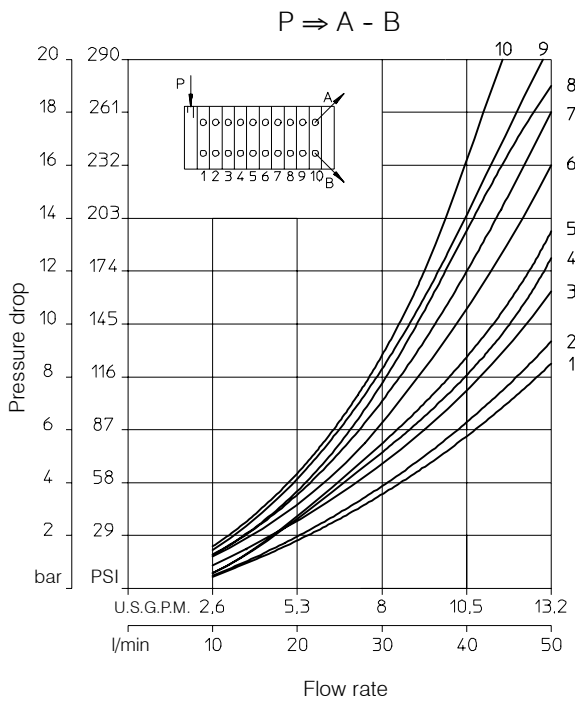
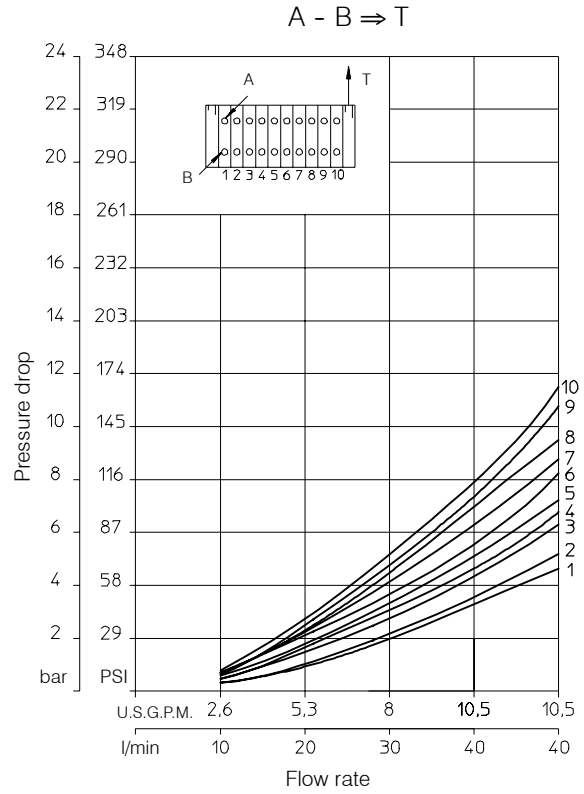
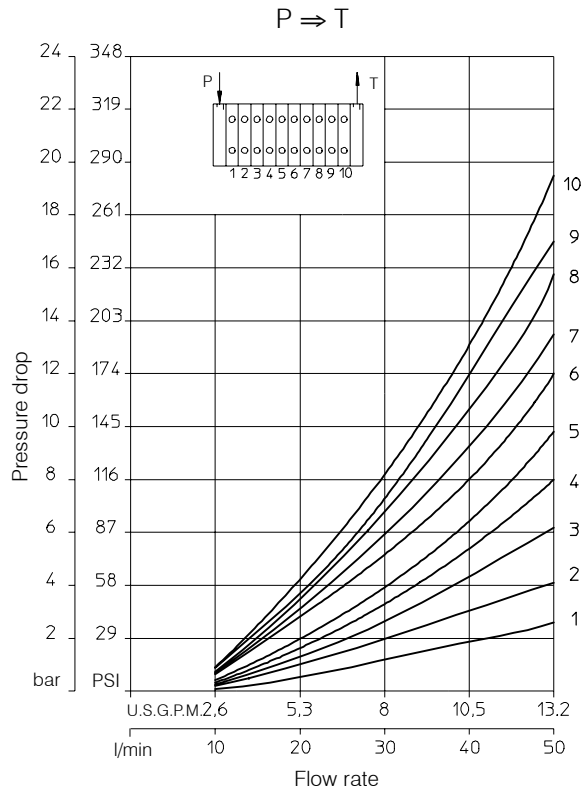


N. of sections		1	2	3	4	5	6	7	8	9	10
Dimension	A	111.4	143.2	175	206.8	238.6	270.4	302.2	334	365.8	397.6
		4.38"	5.64"	6.89"	8.14"	9.39"	10.64"	11.90"	13.15"	14.40"	15.65"
Dimension	B	134.8	166.6	198.4	230.2	262	293.8	325.6	357.4	389.2	421
		5.31"	6.56"	7.81"	9.06"	10.31"	11.57"	12.82"	14.07"	15.32"	16.57"

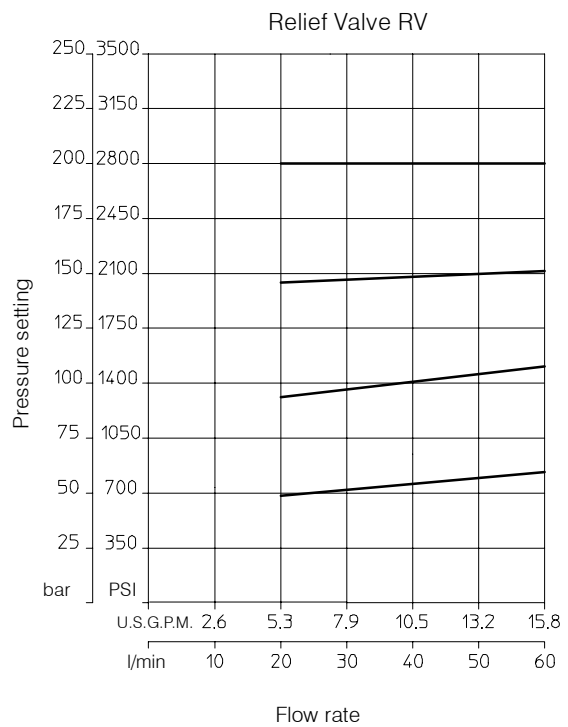
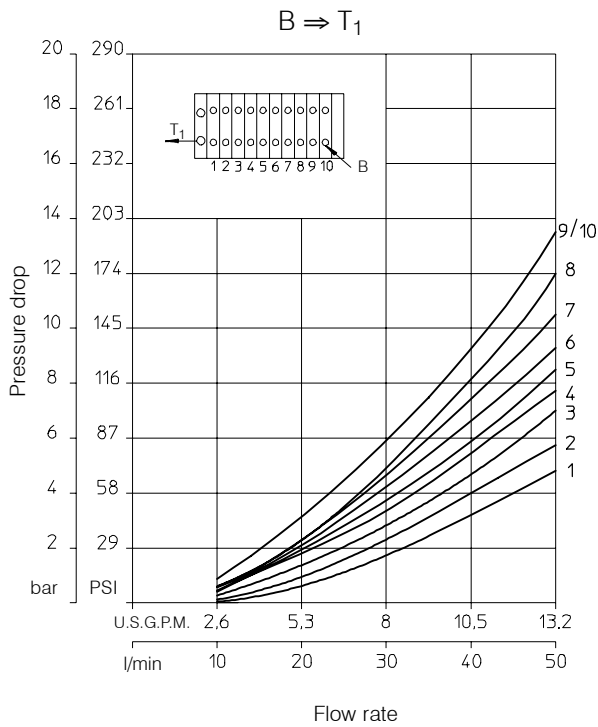
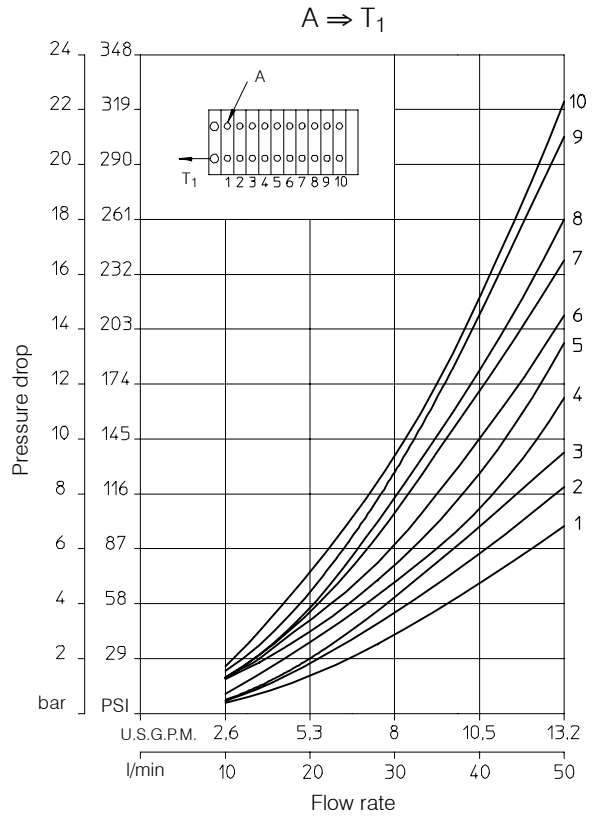
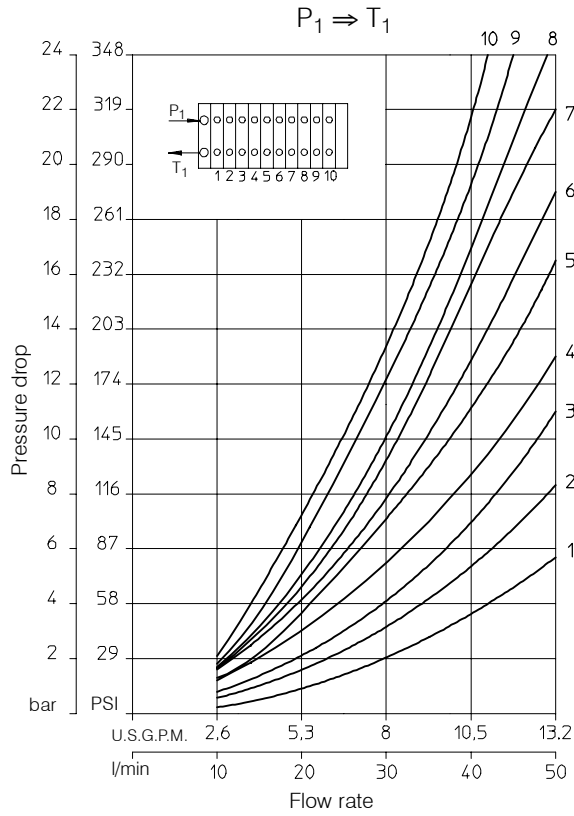
HDS11

8A.3 Performance curves

Oil: Shell Tellus T37
 Temperature: 50° C (120° F)
 Viscosity: 27 mm²/s



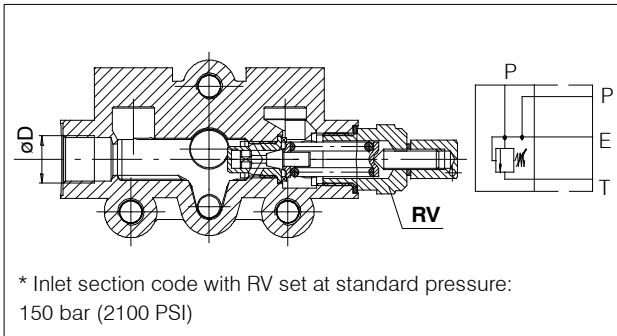
Oil: Shell Tellus T37
 Temperature: 50° C (120° F)
 Viscosity: 27 mm²/s



HDS11

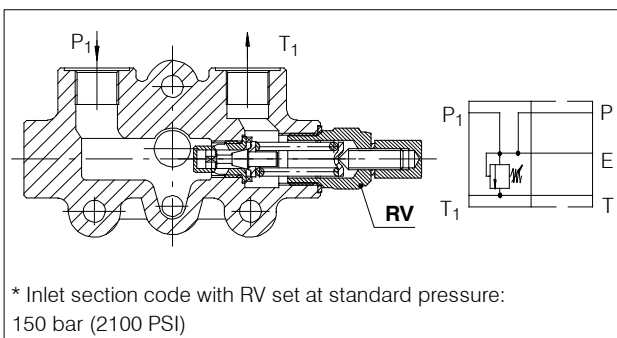
8A.4 Inlet and outlet covers

8A.4.1 Inlet manifold (standard) with P and RV



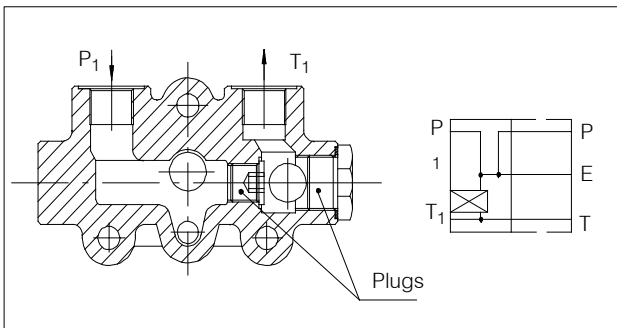
Ø D	Type	Code
SAE6	T06	* 200.9310.6002.0
SAE8	T07	* 200.9310.7003.0
3/8" BSP	T09	* 200.9310.2002.0
M18X1.5	T10	* 200.9310.1003.0

8A.4.2 Inlet manifold with P₁ - T₁ - RV



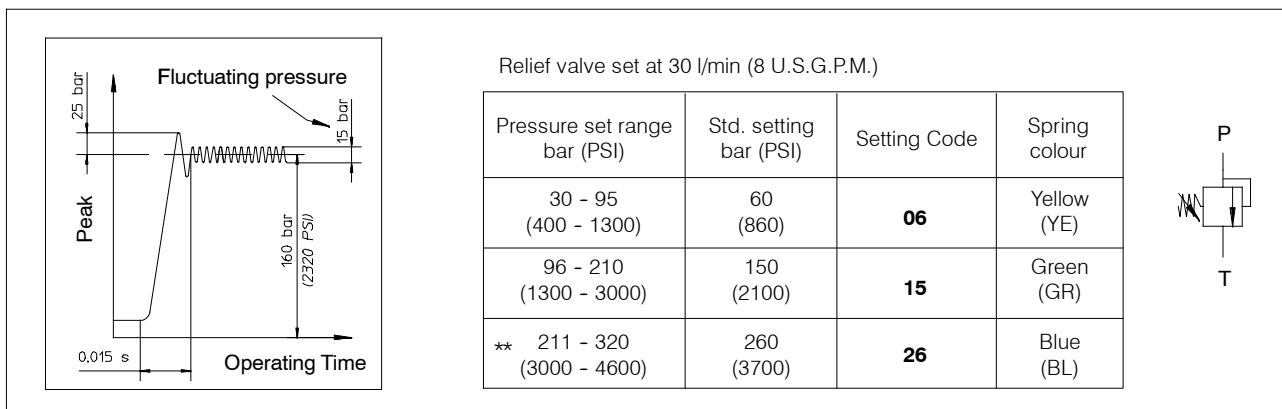
Ø D	Type	Code
SAE6	T11	* 200.9310.6003.0
SAE8	T12	* 200.9310.7002.0
3/8" BSP	T14	* 200.9310.2003.0
M18X1.5	T15	* 200.9310.1002.0

8A.4.3 Inlet manifold with P₁ - T₁



Ø D	Type	Code
SAE6	T16	200.9310.6004.0
SAE8	T17	200.9310.7005.0
3/8" BSP	T19	200.9310.2004.0
M18X1.5	T20	200.9310.1004.0

8A.5 Adjustable direct acting pressure Relief Valve RV

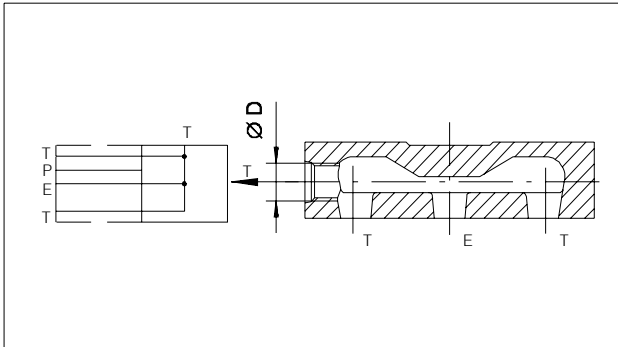


** The maximum operating pressure for each valve series is indicated in the "Technical specification" at the first page of each valve section.

HDS11

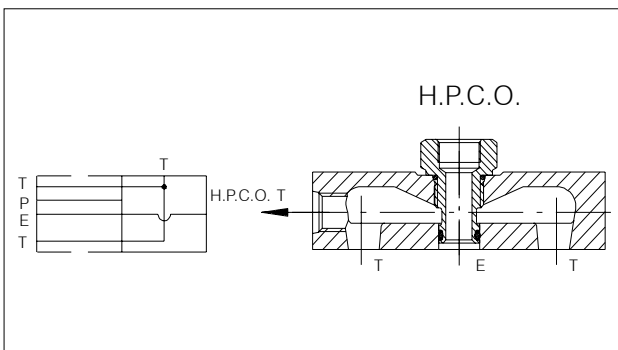
8A.6 End covers

8A.6.1 Outlet manifold (std) with T and open center



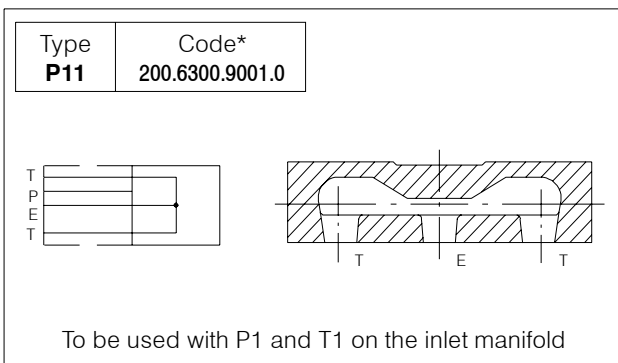
Ø D	Type	Code
SAE6	P01	200.6300.6001.1
SAE8	P02	200.6300.7001.0
3/8" BSP	P04	200.6300.2001.1
M18X1.5	P05	200.6300.1001.0

8A.6.2 Outlet manifold with T and H.P.C.O. (power beyond)

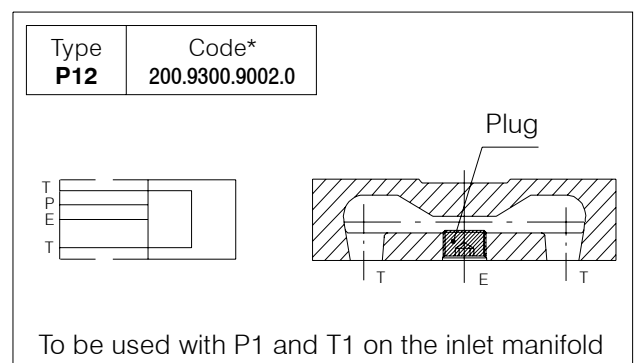


Ø D	Type	Code
SAE6	P06	200.9300.6002.0
SAE8	P07	200.9300.7002.0
3/8" BSP	P09	200.9300.2002.0
M18X1.5	P10	200.9300.1002.0

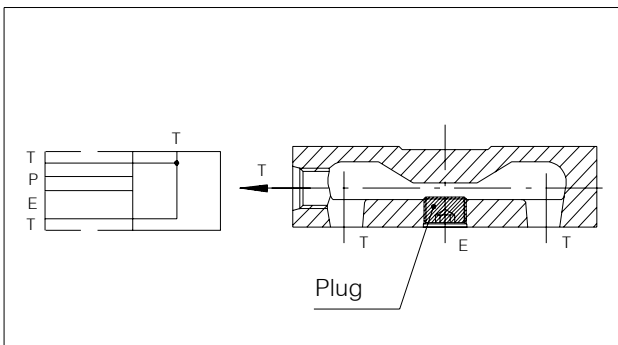
8A.6.3 Outlet manifold with open center



8A.6.4 Outlet manifold with closed center



8A.6.5 Outlet manifold with T and closed center

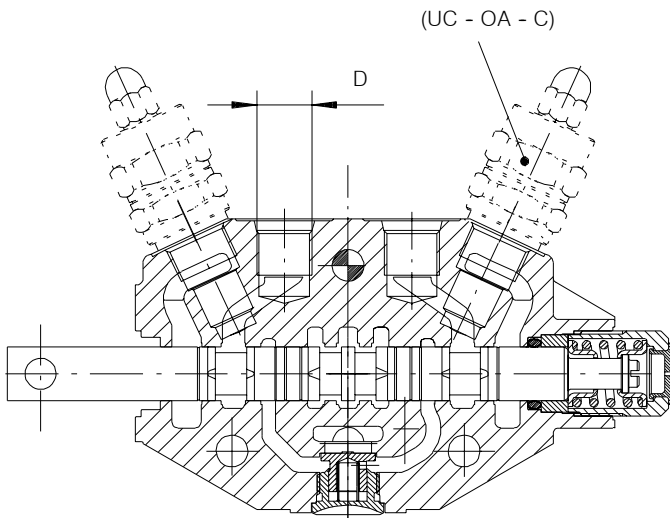


Ø D	Type	Code
SAE6	P13	200.9300.6003.0
SAE8	P14	200.9300.7003.0
3/8" BSP	P16	200.9300.2003.0
M18X1.5	P17	200.9300.1003.0

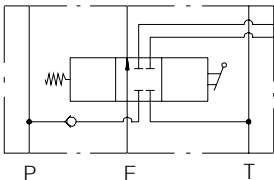
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8A.7 Sectional bodies

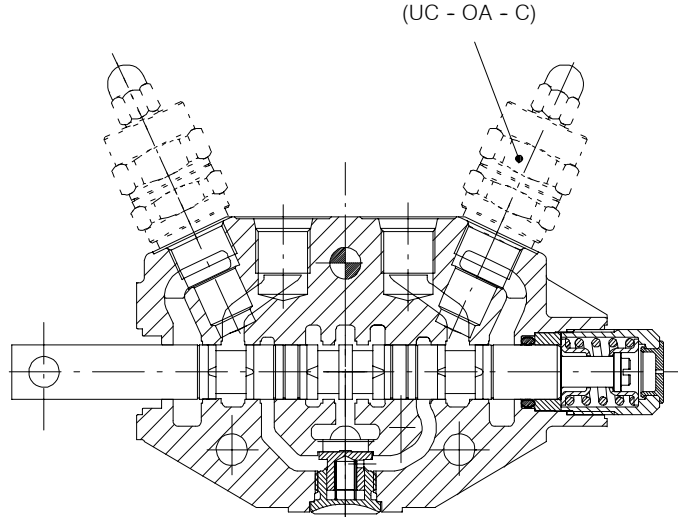
8A.7.1 Standard circuit: parallel



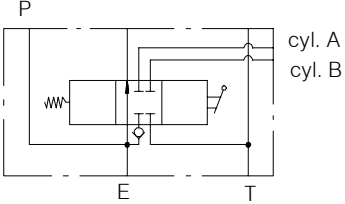
Ø D	Type/Code	
	Standard	Section with valve UC - OA - C
SAE6	K01 200.9413.6051.0	K06 200.9413.6053.0
SAE8	K02 200.9413.7027.0	K07 200.9413.7028.0
3/8" BSP	K04 200.9413.2624.0	K09 200.9413.2625.0
M18X1.5	K05 200.9413.1272.0	K10 200.9413.1273.0



8A.7.2 Optional circuit: series and tandem



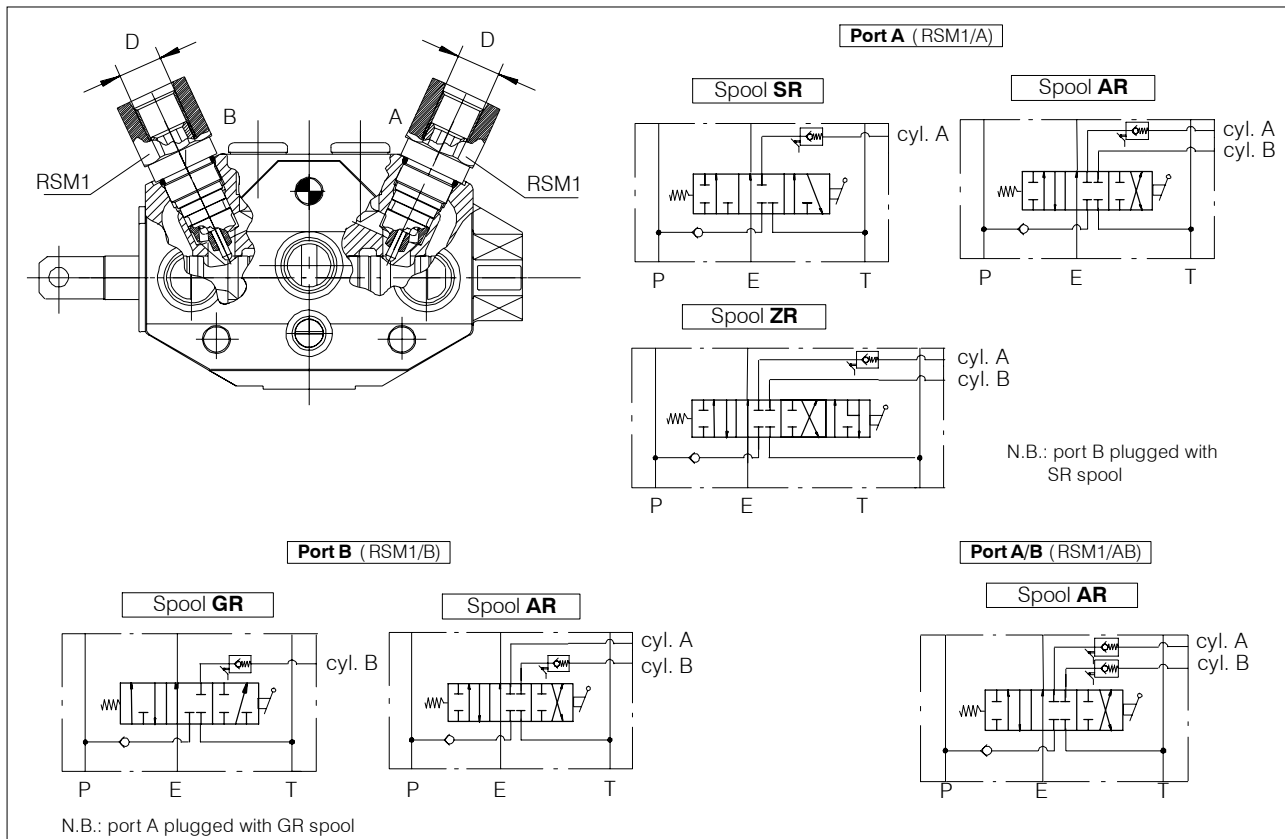
Ø D	Type/Code	
	Standard	Section with valve UC - OA - C
SAE6	K47 200.9413.6052.0	K52 200.9413.6054.0
SAE8	K48 200.9413.7029.0	K53 200.9413.7030.0
3/8" BSP	K50 200.9413.2626.0	K55 200.9413.2627.0
M18X1.5	K51 200.9413.1274.0	K56 200.9413.1275.0



Note: Body code consist of machined casting, seals and hold check valve only. Not to be used for complete valve order.

8A.7.3 Check valves with mechanical release RSM1 on A/B ports

The check valve taper seal is released by means of a taper on the spool and by a push rod.



8A.7.4 Directional control valve bodies for RSM1 valve

Ø D	RSM1/A		RSM1/B	RSM1/A-B	RSM1 Code
	Spool SR-AR	Spool ZR	Spool GR-AR	Spool AR	
	Type/Code	Type/Code	Type/Code	Type/Code	
SAE6	K65 200.9413.6061.0		K66* 200.9413.6062.0	K62* 200.9413.9014.0	200.7876.0192.0
3/8" BSP	K63 200.9413.2034.0	K40** 200.9413.2033.0	K64* 200.9413.2035.0		200.7876.0191.0
M18X1.5	K60 200.9413.1279.0	K70** 200.9413.1046.0	K61* 200.9413.1280.0		200.7876.0190.0

* : K61 - K62 - K64 - K66 need special lever L153 - L353

** : K40 - K70 need special lever L175-L375

Note: Body code consist of machined casting, seals and hold check valve only. Not to be used for complete valve order.

HDS11

8A.8 Spool charts

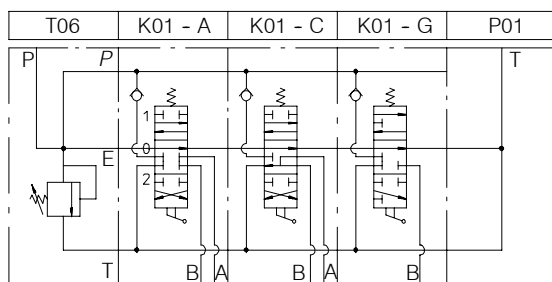
Spool scheme	Spool features	Type
	4 way - 3 position A/B closed E open by pass	A AR**
	High metering spool (max flow suggested 15 l/min.)	AS
	4 way - 3 position A/B-E closed	B
	4 way - 3 position A/B to tank in neutral E open by pass	C
	3 way - 3 position B closed E open by pass	G GR**

	3 way - 3 position A closed E open by pass	S SR**
	4 way - 3 position series connection	X
	4 way - 4 position 4 th floating position	Z ZR**
	4 way - 4 position 4 th floating position	WW *

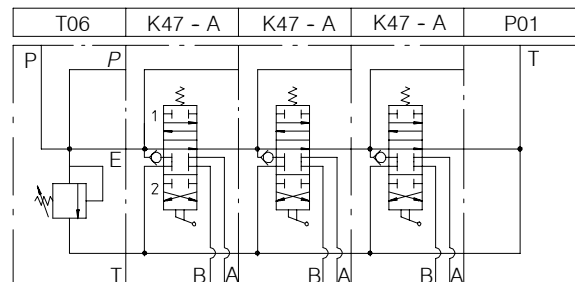
* : "WW" spool require special body (K...), positioner (240) and lever (L192)
** : special body required

8A.9 Hydraulic circuits

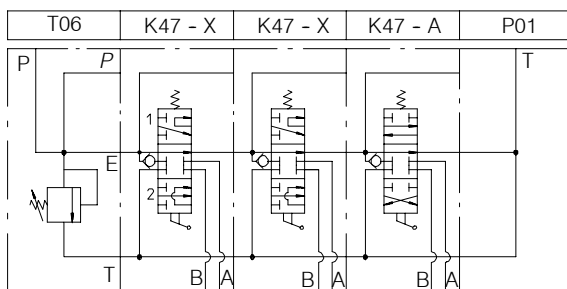
Standard parallel circuit



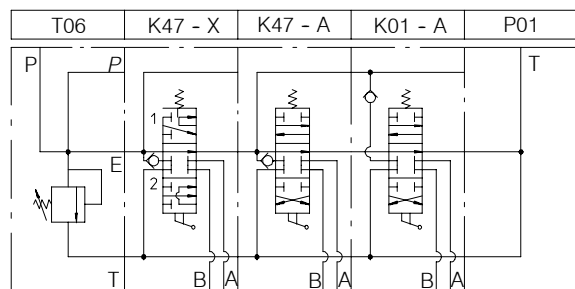
Optional tandem circuit



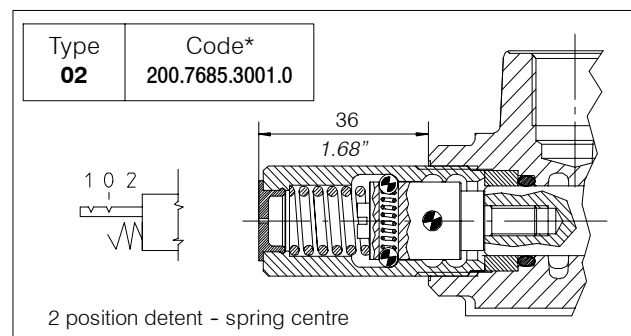
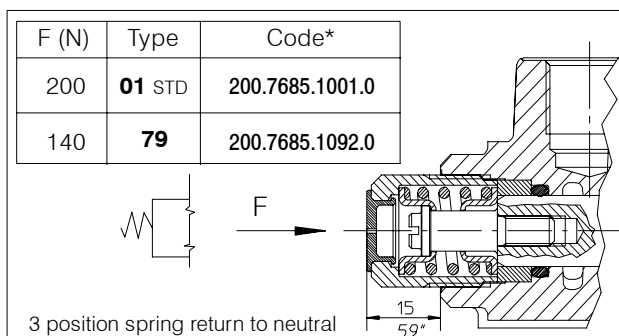
Optional series circuit



Combined parallel/series circuit



8A.10 Spool positioners



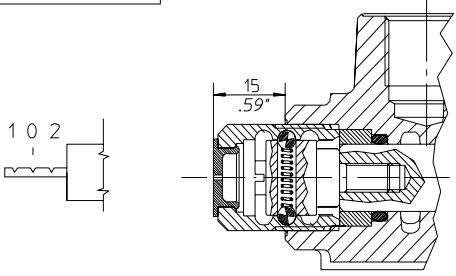
* : code without plastic plug; plastic plug code: 200.6780.0008.0

Code F (N)**: force in Newton (N) needed to operate the spool

200-P-991210-EN-03/09.2015

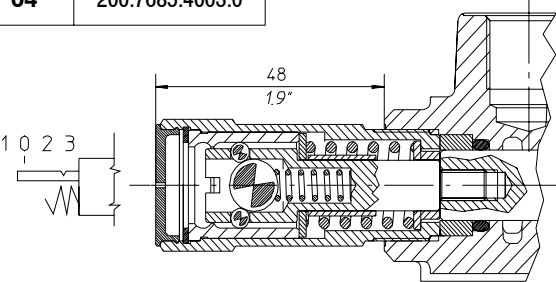
HDS11

Type 03	Code* 200.7685.2001.0
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3 position detent

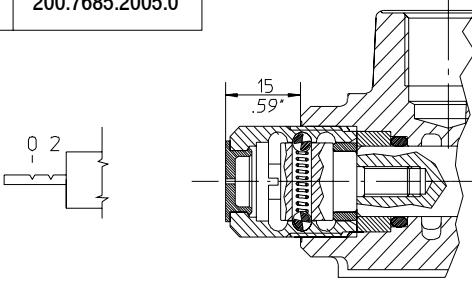
Type 04	Code 200.7685.4003.0
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4 position float

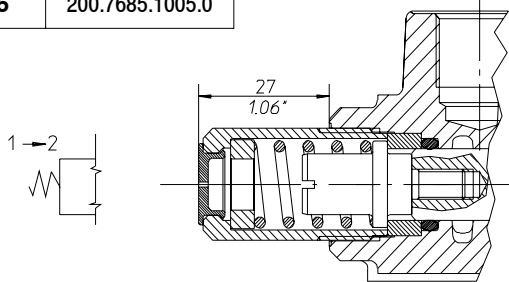
Plastic plug code: 200.6780.0009.0

Type 05	Code* 200.7685.2005.0
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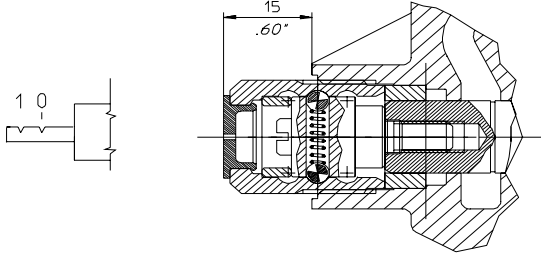
2 position detent

Type 06	Code* 200.7685.1005.0
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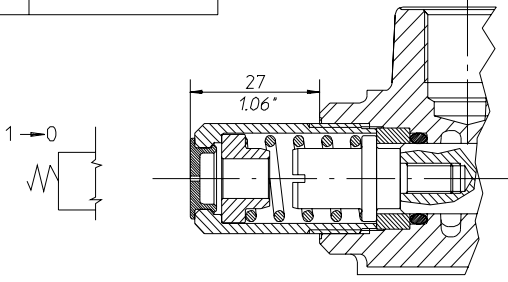
2 position spring return

Type 07	Code* 200.7685.2027.0
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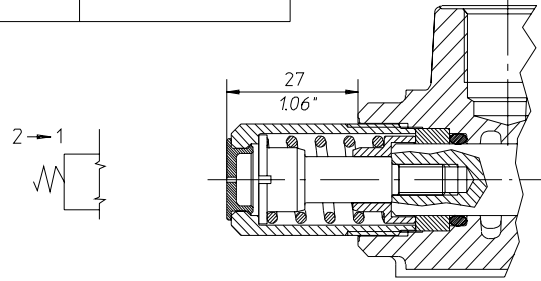
2 position detent

Type 12	Code* 200.7685.1021.0
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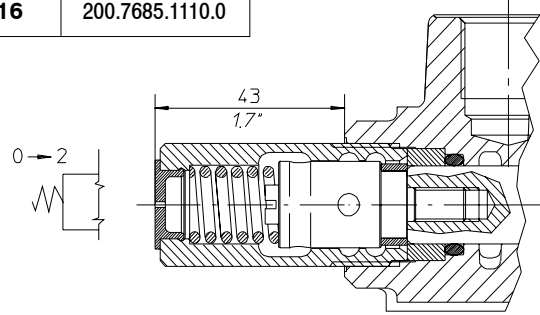
2 position spring return

Type 15	Code* 200.7685.1109.0
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2 position spring return

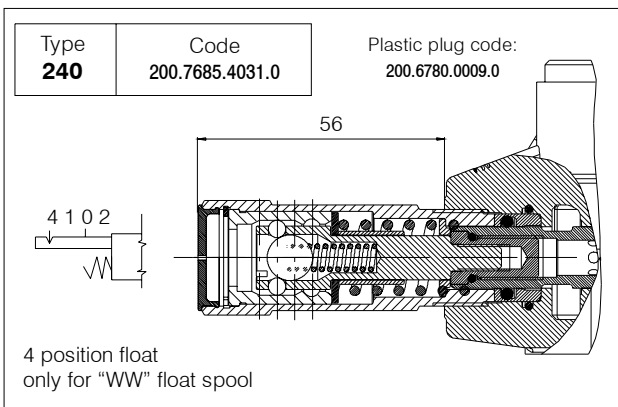
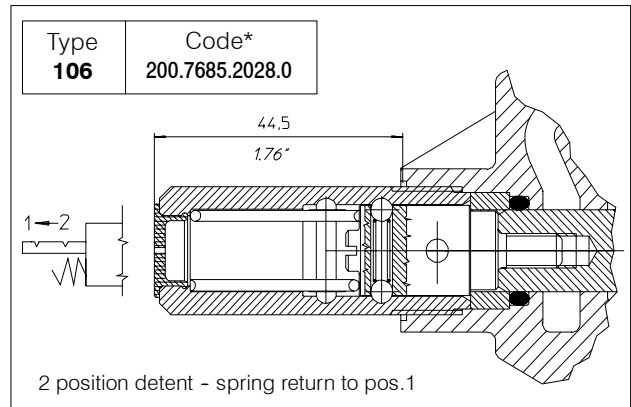
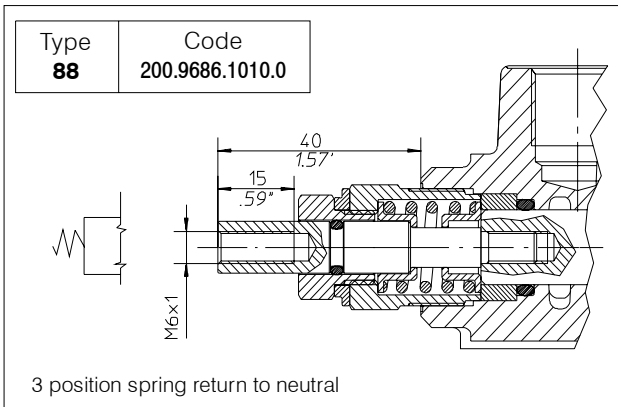
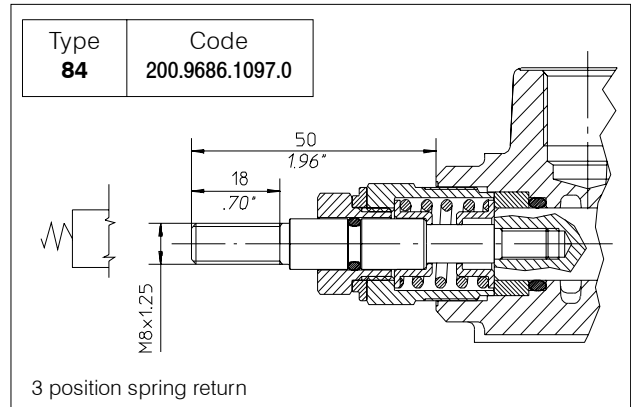
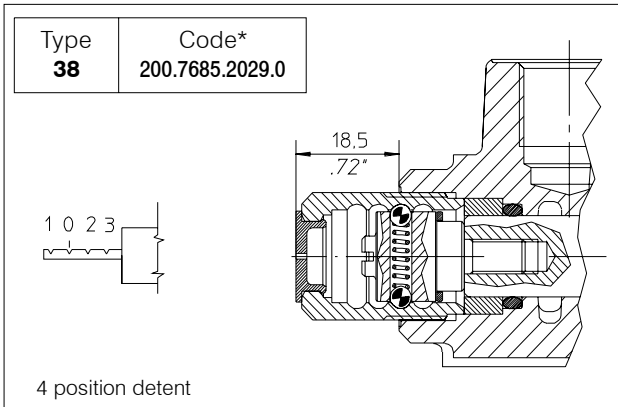
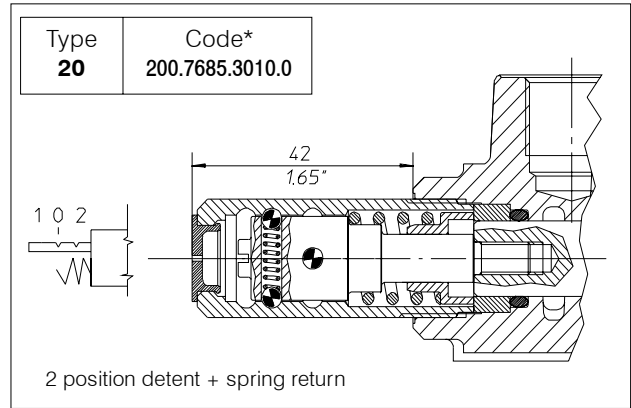
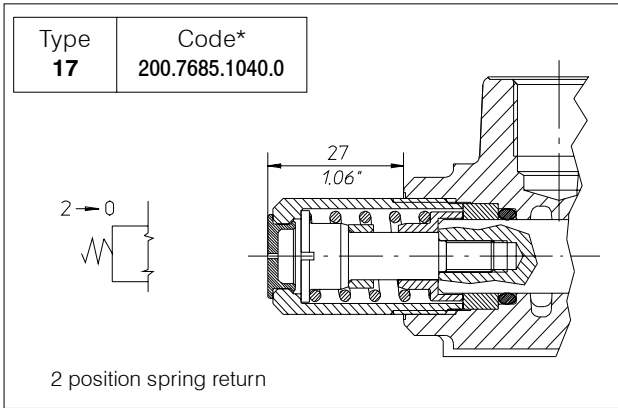
Type 16	Code* 200.7685.1110.0
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2 position spring return

* : code without plastic plug; plastic plug code: 200.6780.0008.0

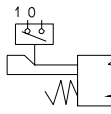
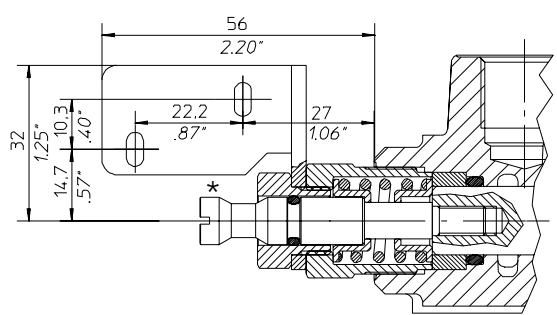
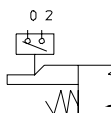
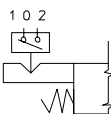
HDS11



* : code without plastic plug; plastic plug code: 200.6780.0008.0

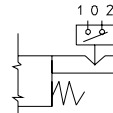
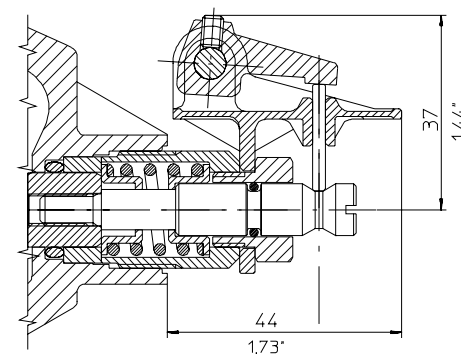
HDS11

8A.10.1 Microswitch control on each single element

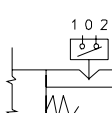
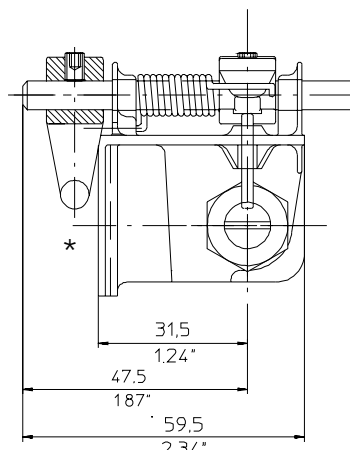
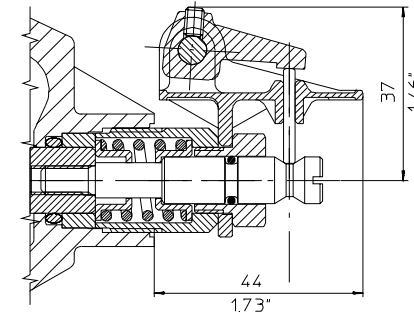
Type 30	Code 200.9686.1050.0	Microswitch is operated when the spool is in pos. 1		
Type 32	Code 200.9686.1060.0	Microswitch is operated when the spool is in pos. 2		
Type 34	Code 200.9686.1064.0	Microswitch is operated when the spool is in pos. 1 and 2		

* The microswitch is supplied only on customer's request

8A.10.2 Single microswitch control for multi-sectional valves (from 1st up to second-last element).

Type 39 (MSF)	Code 200.9686.1139.0	Microswitch is operated when the spool is in pos. 1 and 2		

8A.10.3 Single microswitch control for multi-sectional valves (last element, T side).

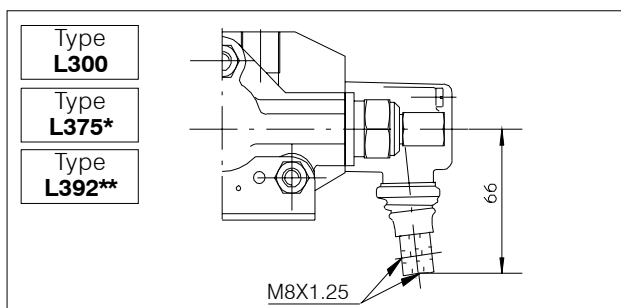
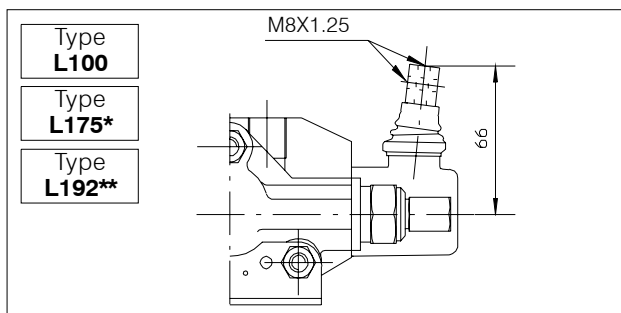
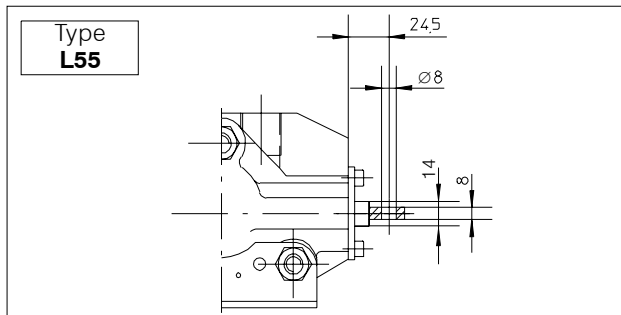
Type 40 (MFL)	Code 200.9686.1140.0	Microswitch is operated when the spool is in pos. 1 and 2			

* The microswitch is supplied only on customer's request

1 - Positioner 40 must be assembled only on the last element near T port
2 - Positioner 40 require T port plugged. Use T1 on inlet cover

HDS11

8A.11 Lever styles

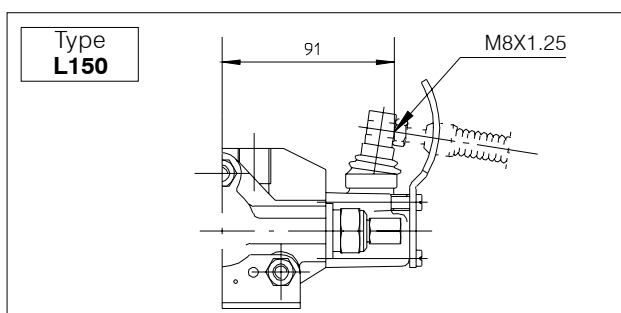
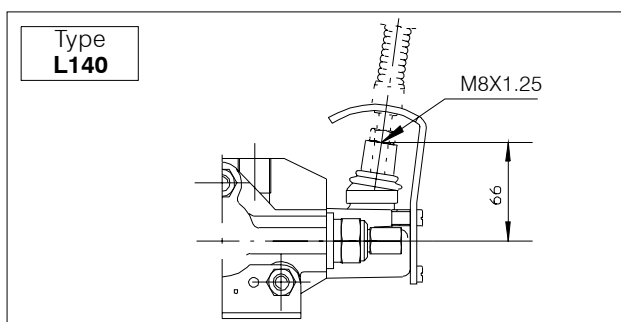


Lo		Type	Code
mm	inches		
150	5.90	AL001	200.7022.1019.0
200	7.87	AL002	200.7022.1003.0
250	9.84	AL003	200.7022.1005.0
300	11.81	AL004	200.7022.1006.0

*: L175 - L375 only for "Z" spool application

** : L192 - L392 only for "WW" spool application

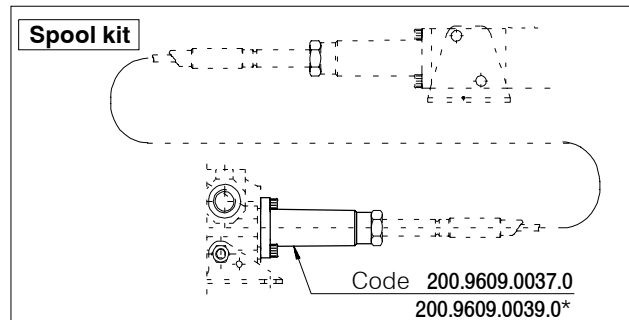
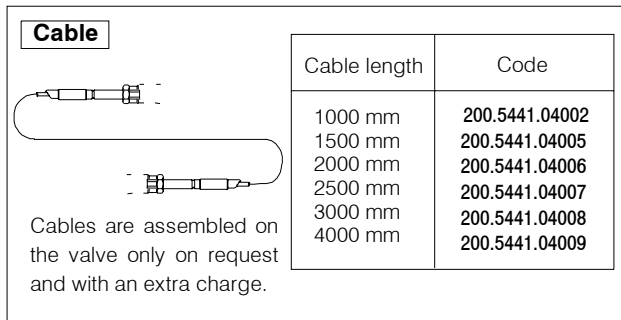
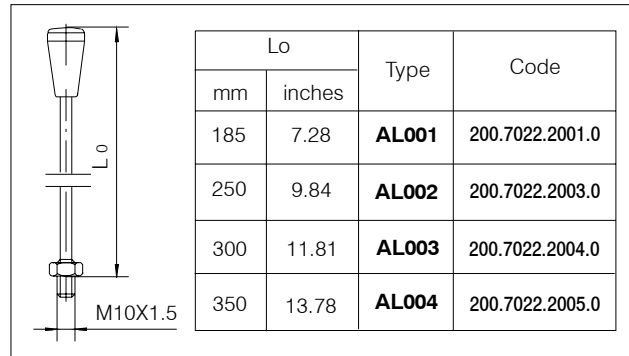
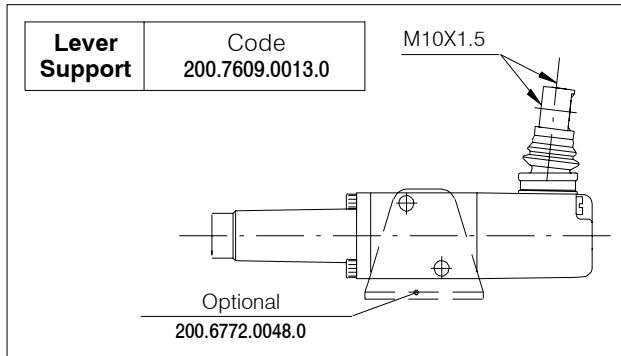
8A.11.1 Safety levers



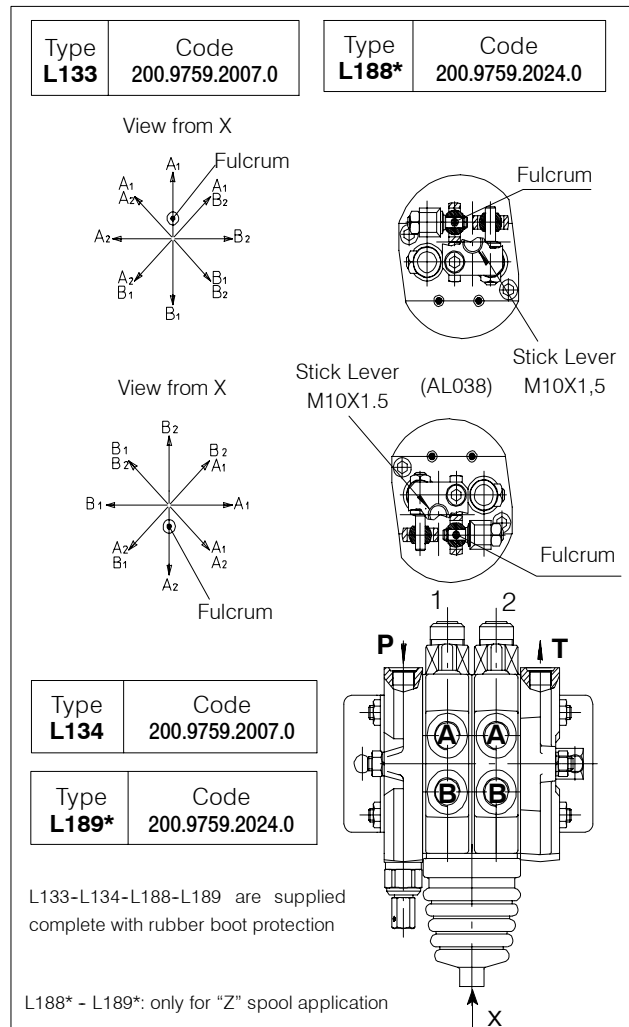
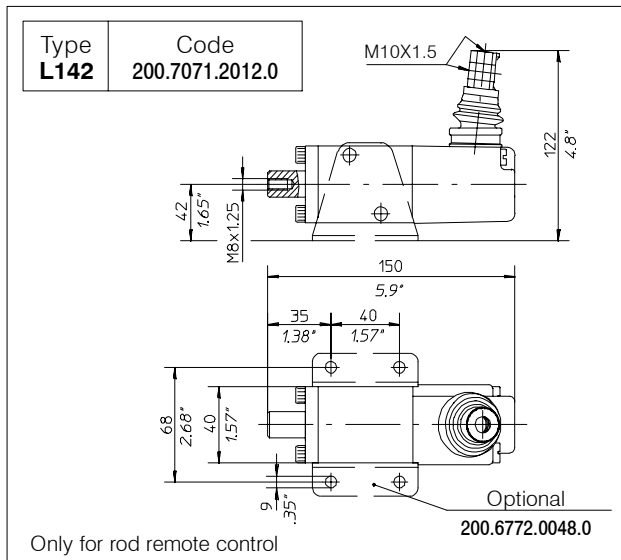
Lo		Type	Code
mm	inches		
160	6.30	AL014	200.7022.1009.0
180	7.08	AL018	200.7022.1011.0

HDS11

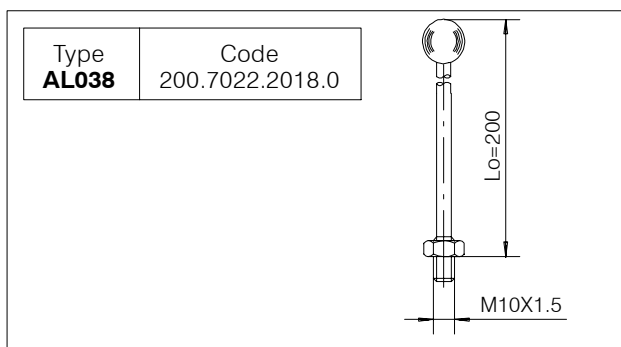
8A.11.2 Remote cable control



* only for "Z" spool application



8A.11.3 Cross joystick for dual axis spool control



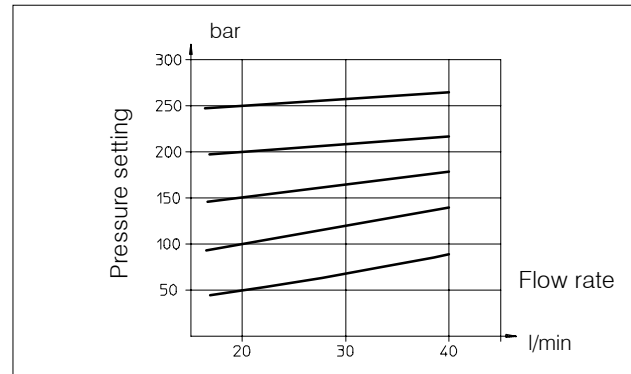
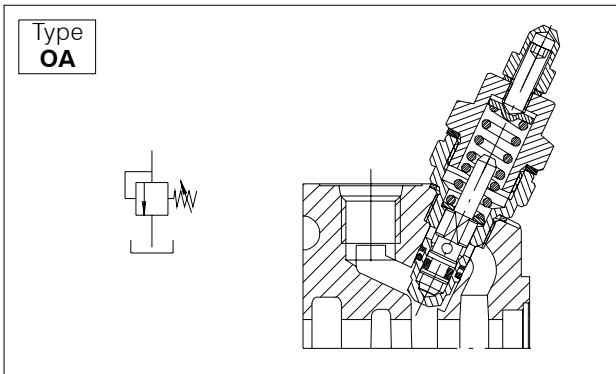
HDS11

8A.12 Port relief and anti-cavitation valves

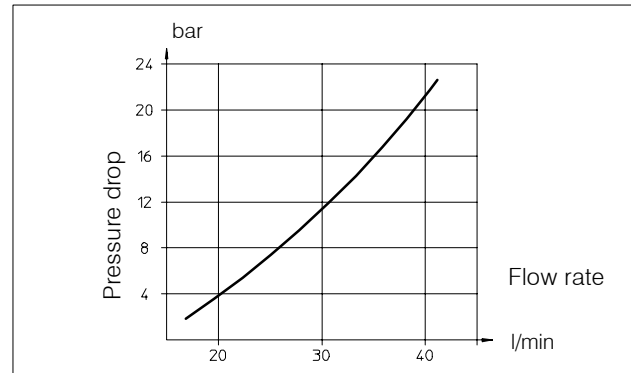
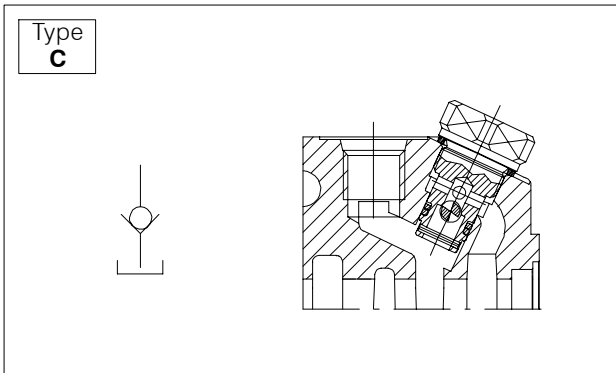
Port relief valve settings

Pressure set range bar (PSI)	Std. Setting bar (PSI)	Type	Spring colour
30 - 130 (400 - 1850)	60 (860)	06	Yellow (YE)
131 - 320 (1850 - 4600)	150 (2100)	15	Green (GR)

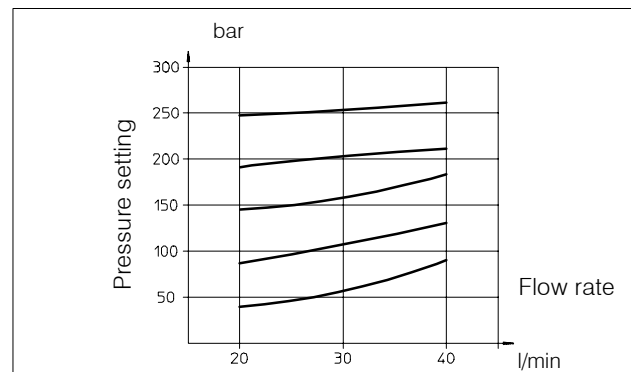
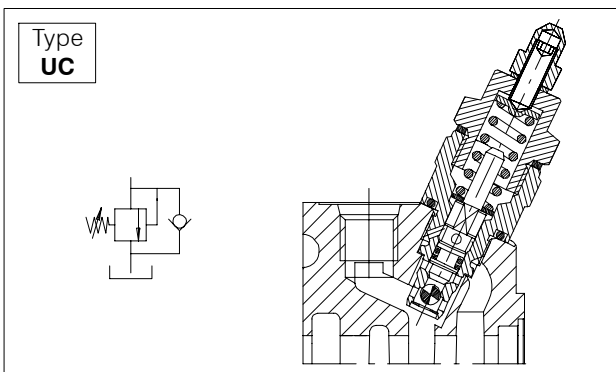
8A.12.1 Port relief valve



8A.12.2 Anti-cavitation valve



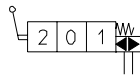
8A.12.3 Combined port relief and anti-cavitation valve



HDS11

8A.13 Hydraulic-Pneumatic control ON-OFF

Type	Code
HP 24	200.9686.5049.0



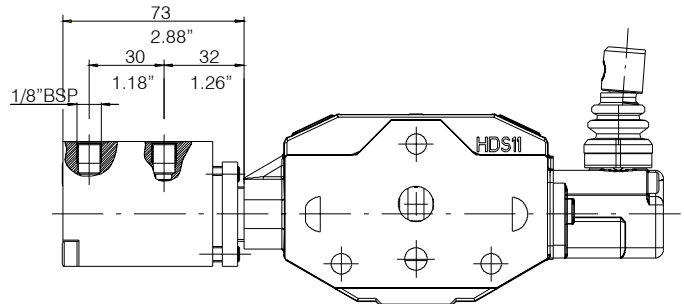
Operating conditions

Hydraulic control:

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

Pneumatic control:

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



HDS11

8B Electromagnetic control EMC (ON-OFF)

8B.1 General specifications

Technical specification		
Max flow rate	l/min U.S.G.P.M.	40 11
Max continuous operating pressure supply port P	bar PSI	250 3600
Max intermittent peak pressure work port A/B	bar PSI	320 4600
Max back pressure on the channel "T"	bar PSI	20 290
Oil temperature	° C ° F	-10 to +80 14 to 180
Oil viscosity	mm ² /sec	20 to 50
Oil filtration	μ	≤ 25

Spool leakage at 100 bar (1450 PSI), Temp. 50° C (120° F), viscosity 27 mm ² /sec:		
Maximum	cm ³ /min Cu. In./min	16 1.138
Average	cm ³ /min Cu. In./min	12 0.854

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

8B.1.1 Material specification:

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

8B.1.2 Optional features available

Series circuit;
Load sensing circuit;
Spool 3-way or 4-way at 2-3 positions;
Port relief and anti-cavitation valves -OA-UC-C-
Cross port relief valve - AA-

Pilot - Actuated Check Valve - RP-

8B.1.3 Ports

P-T-P₁-T₁-A-B-HPCO (M18X1.5 - 3/8" BSP
-SAE6 - SAE8)

8B.1.4 Input voltages

Continuous Current 12VDC - 24VDC *

8B.1.5 Solenoid specification

Technical specification		
Continuous current voltage	V. D.C.	12 (24) +5% -10%
Power consumption	Watt (W)	36 (37)
Intensity of current	Ampere (A)	3 (1.55)
Resistance	Ohm (Ω)	4 (15.5)
Duty cycle (continuous)	ED	100%
Stabilized temperature at nominal voltage	° C	110
Ambient temperature	° C	-20 to +40

Protection class IP65 (DIN 40050)
Coil insulation class H (VDEO 0580)
STD. connection (DIN 43650)
Manual override.
Explosion-proof version on demand.

8B.1.6 Mechanical specification

Spool diameter 10 mm
Spool stroke 2.50 mm
Overlapping 1.25 mm
Internal passage 10 mm
Dimensional section (width) 40 mm

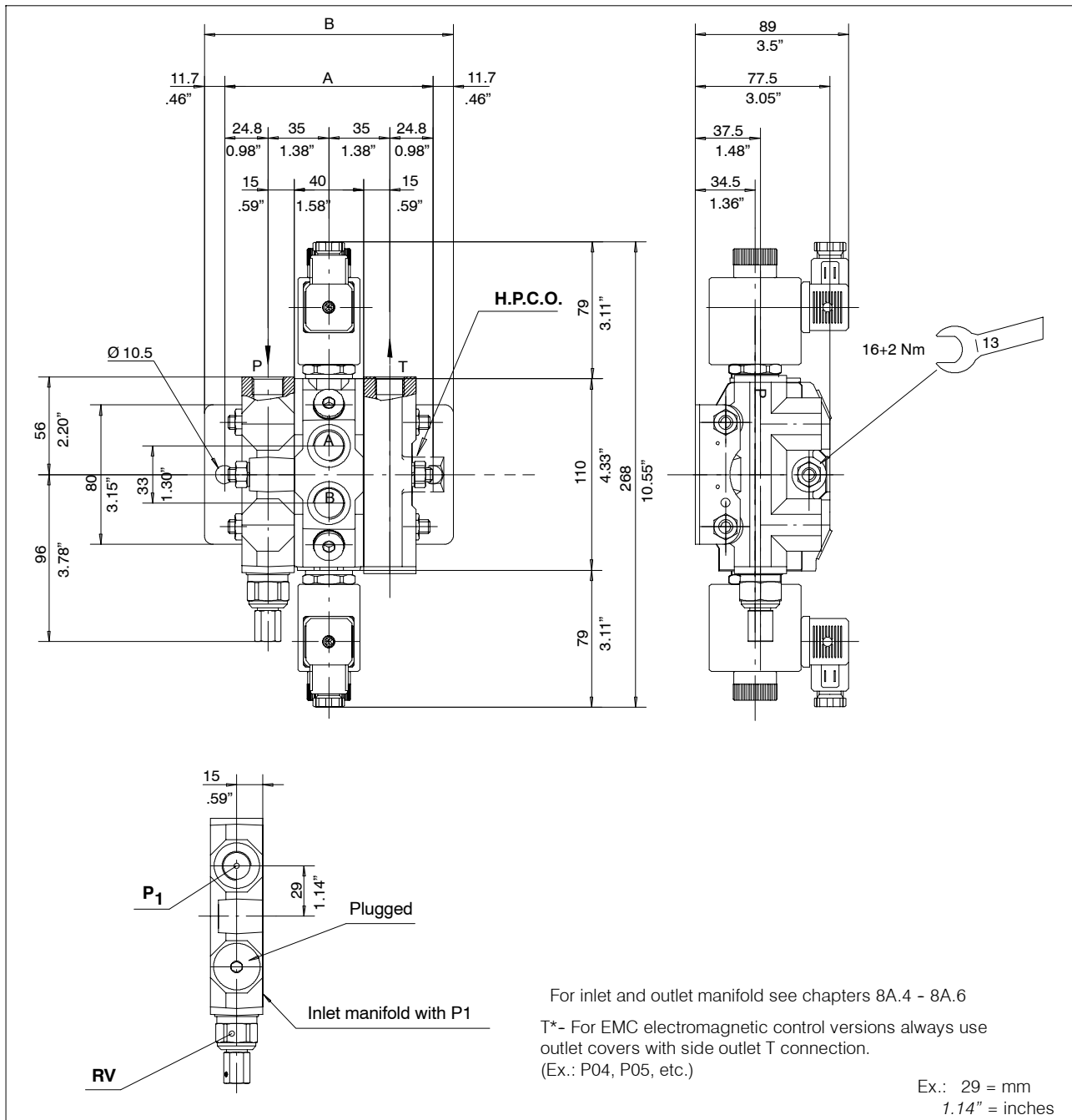
8B.1.7 Weight

Version	kg	lb
Inlet with RV and P	1.0	2.23
1 spool section with 2 solenoid	2.50	5.50
1 spool with 1 solenoid	2.10	4.62
End cover with T and HPCO	0.75	1.65

* for non indicated tension valves, please contact our Sales Department

HDS11

8B.2 Dimensional data

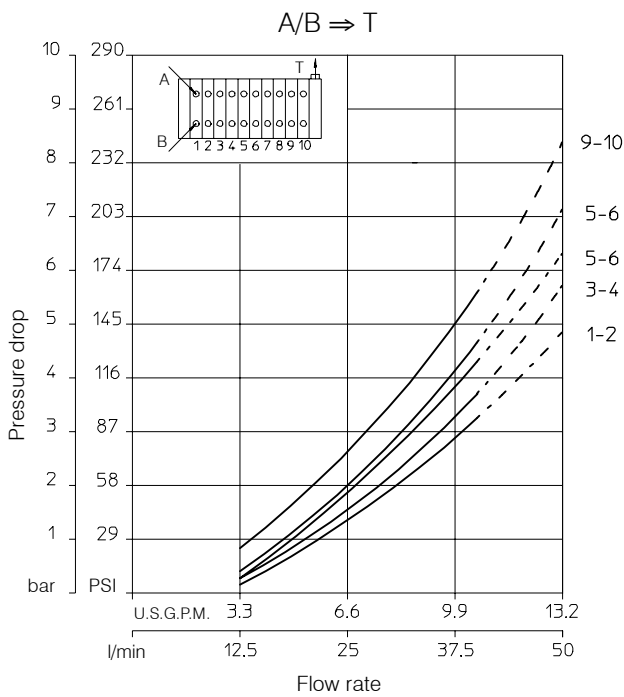
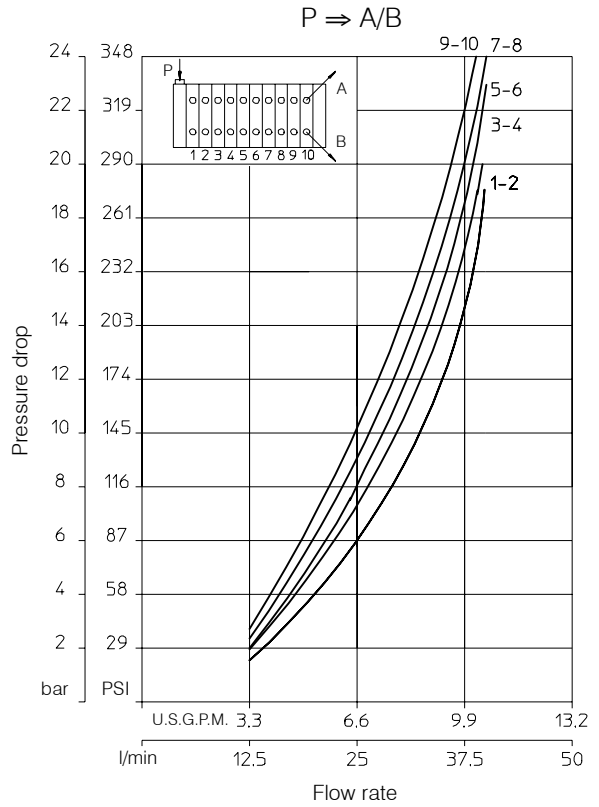
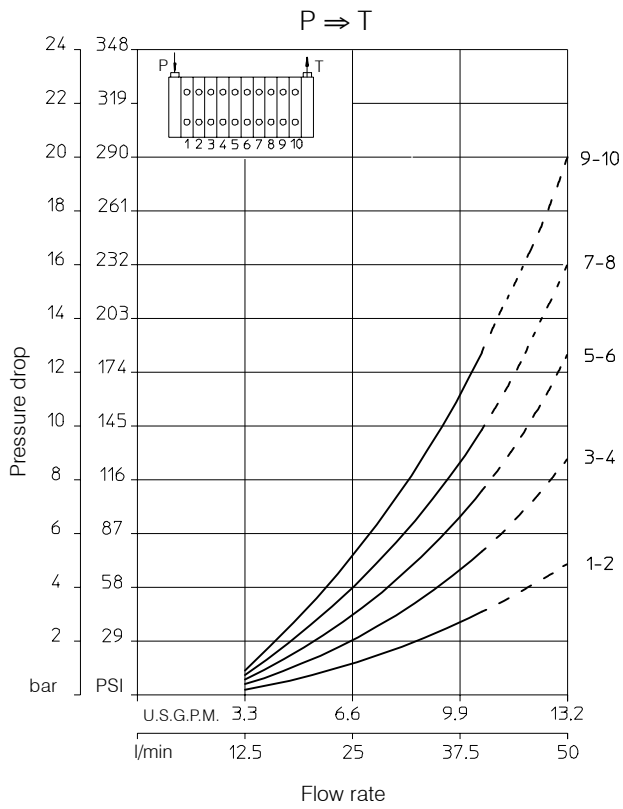


N. of sections		1	2	3	4	5	6	7	8	9	10
Dimension	A	119.6	159.6	199.6	239.6	279.6	319.6	359.6	399.6	439.6	479.6
		4.71"	6.28"	7.86"	9.43"	11.01"	12.58"	14.16"	15.73"	17.31"	18.88"
Dimension	B	143	183	223	263	303	343	383	423	463	503
		5.63"	7.20"	8.78"	10.35"	11.93"	13.50"	15.08"	16.65"	18.23"	19.80"

HDS11

8B.3 Performance curves

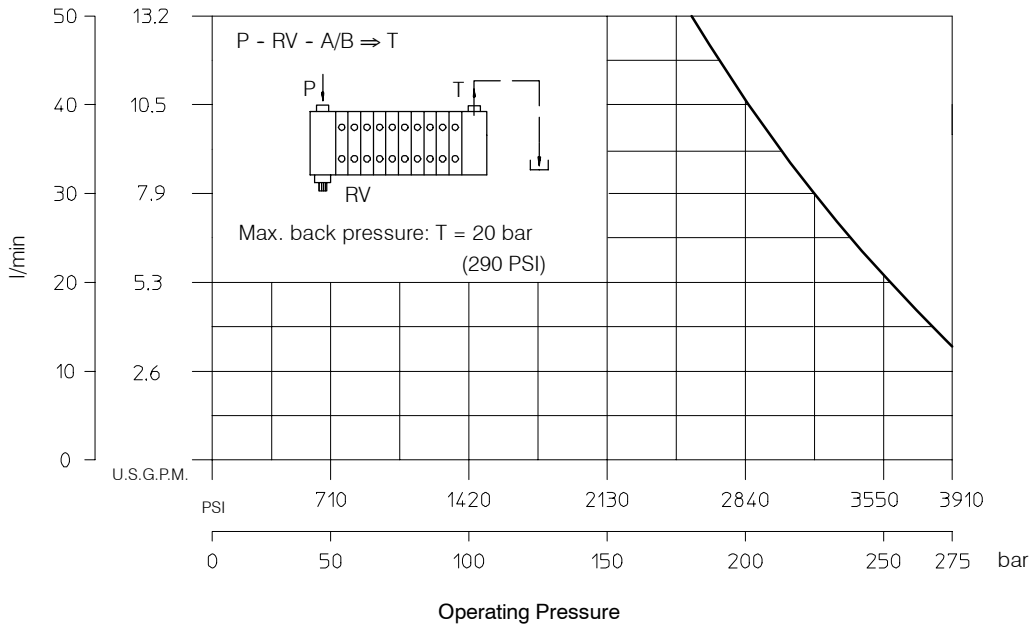
Oil: Shell Tellus T37
 Temperature: 50°C (120°F)
 Viscosity: 27 mm²/sec



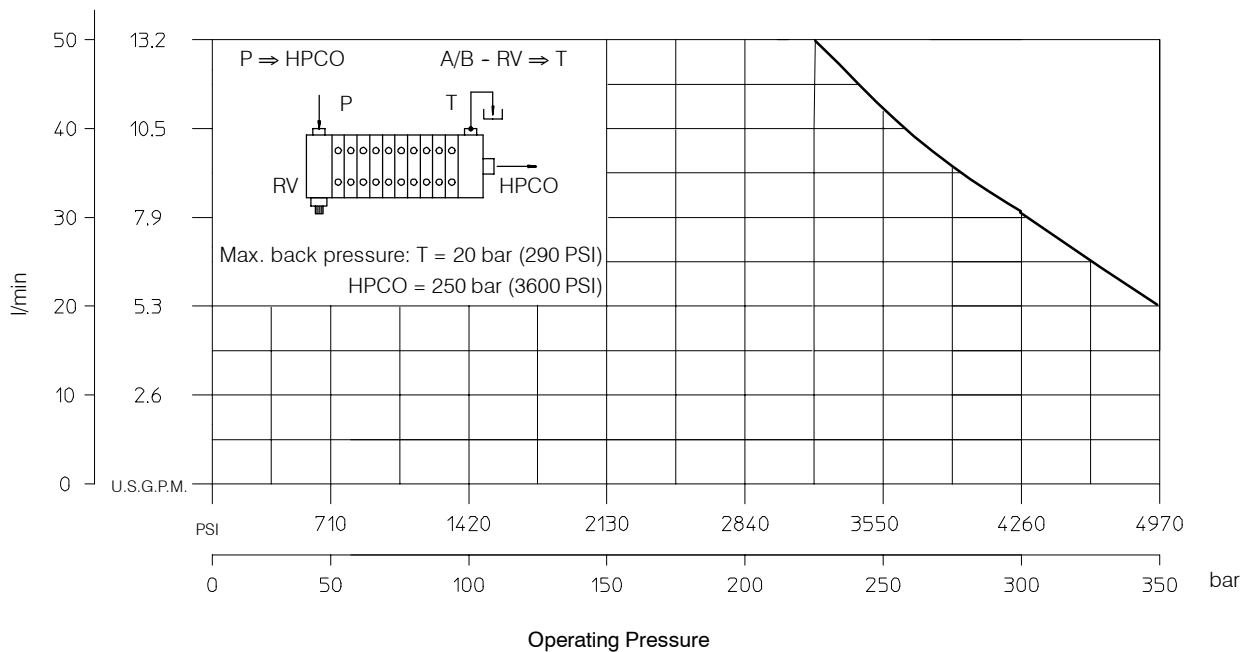
8B.4 Operating limits

Oil: Shell Tellus T37
 Temperature: 50°C (120°F)
 Viscosity: 27 mm²/sec
 Tested with voltage V = -10%

Standard Circuit



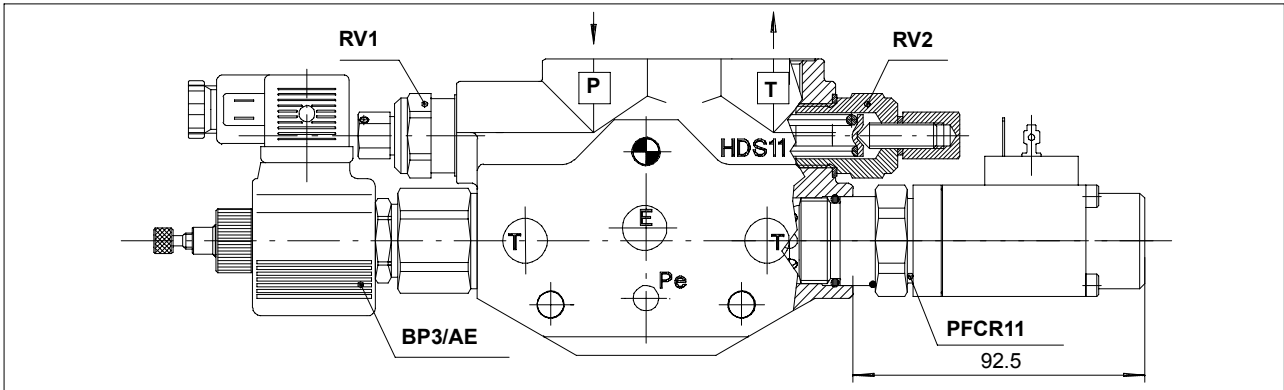
Carry-over Circuit



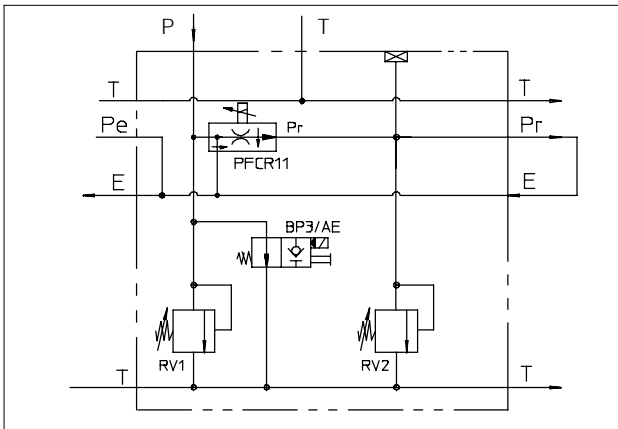
HDS11

8C.9 Proportional flow control PFCR11

8C.9.1 Example of application on K100 body



8C.9.2 Example of hydraulic scheme K100



8C.9.3 Electric performances

Electric performances		
Coil according to	VDE 0580	
Connector type	DIN 43650	
Duty rating	ED=100%	
Suggested dither	0-150 Hertz (*)	
Insulation class	IP54 (DIN 40050) without connector IP65 (DIN 40050) with connector	
Coil winding class	F	
Voltage $\pm 5\%$	12 V (DC)	24 V (DC)
Max. current	2.25 A.	1.08 A.
Resistance at 20 °C	2.8 Ohm	12.7 Ohm
Nominal power	17.2 Watt	17.4 Watt
Inductance	31 mH armature falling down	140 mH armature rising
	90 mH armature falling down	406 mH armature rising

8C.9.4 Code

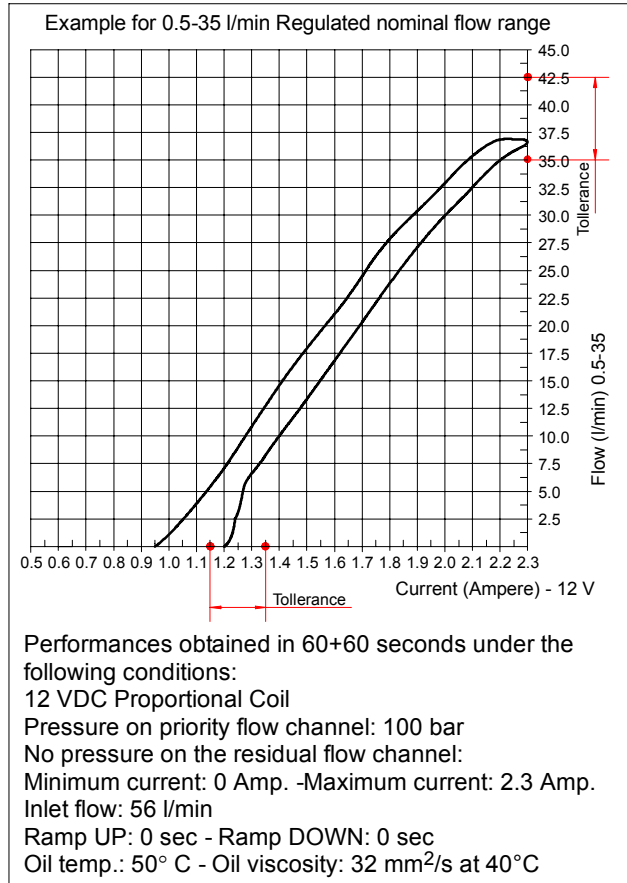
Flow l/min	Voltage	Type	Code**
14	12 V	PFCR11/V2-14-P2-13	200.7880.0011.0
14	24 V	PFCR11/V2-14-P2-23	200.7880.0012.0

35	12 V	PFCR11/V8-35-P2-13	200.7880.0007.0
35	24 V	PFCR11/V8-35-P2-23	200.7880.0008.0

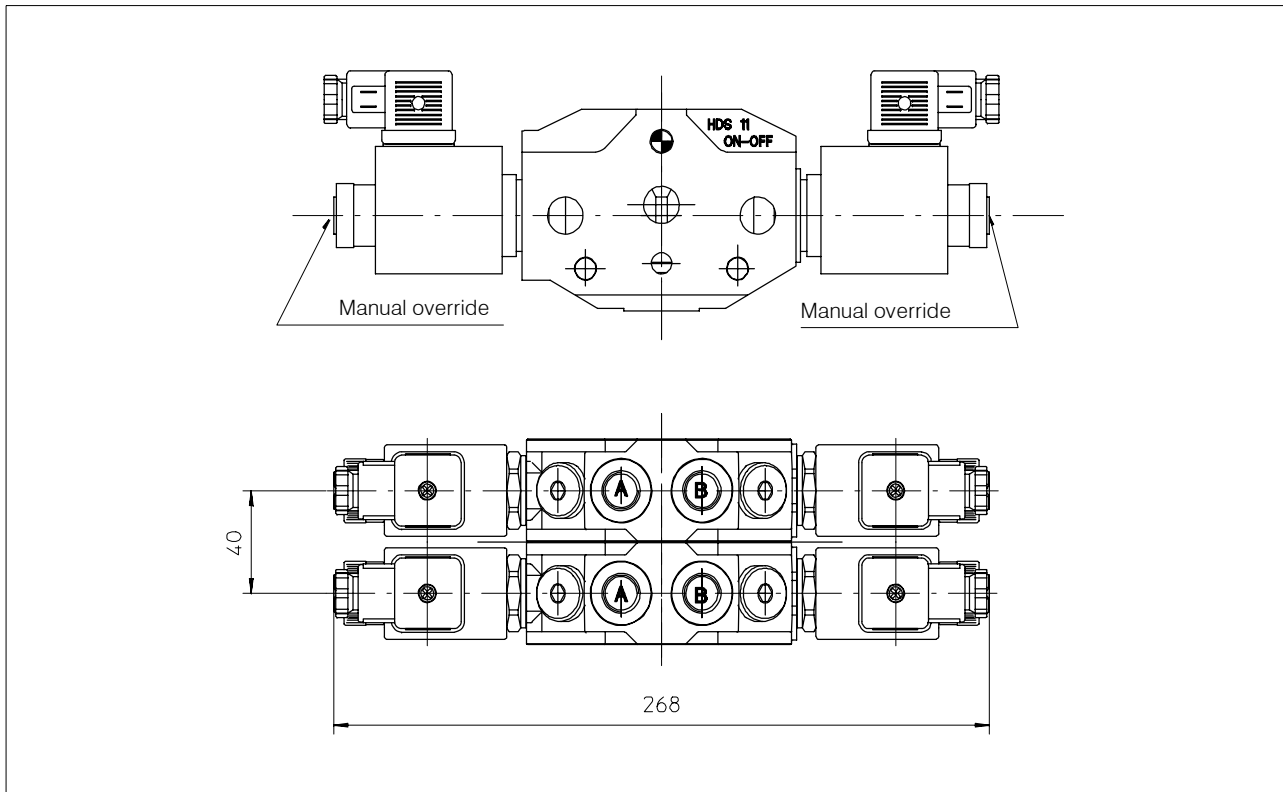
8C.9.5 Hydraulic performances

Max. pressure	270 bar
Max. recommended pressure	230 bar
Regulated nominal flow range	0.5 - 14 l/min
	0.5 - 35 l/min
Temperature range	-5/+70° C

8C.9.6 Current/flow regulated diagram



(*: frequency could affect the valve seal)
 (**: code without connector)



8B.6 Spool charts

Spool scheme	Spool features	Type
	4 way - 3 position A/B closed E open by pass	AE
	4 way - 3 position A/B-E closed	BE
	4 way - 3 position A/B to tank in neutral E open by pass	CE
	4 way - 3 position A closed B to tank in neutral	DE
	3 way - 3 position B closed E open by pass	GE
	4 way - 3 position B closed A to tank in neutral	LE
	3 way - 3 position A closed E open by pass	SE

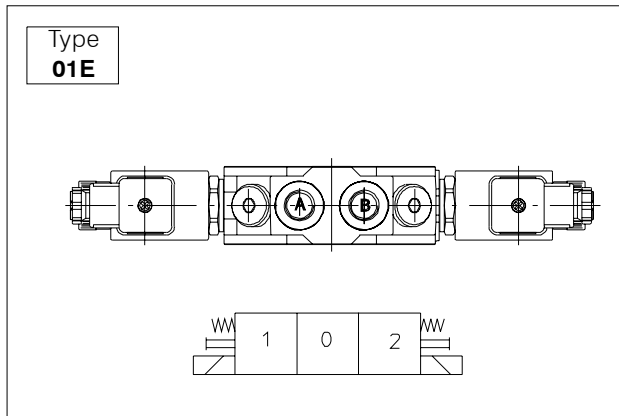
	4 way - 3 position A/B closed series connection	XE*
	4 way - 3 position A/B to tank in neutral series connection	XCE*
	4 way - 3 position A/B closed Load Sensing	LAE**
	4 way - 3 position A/B to tank in neutral Load Sensing	LCE**
	3 way - 3 position B closed Load Sensing	LGE**
	3 way - 3 position A closed Load Sensing	LSE**
* series body required ** special body required		

Note: For availability of L/S versions please contact our Sales Department

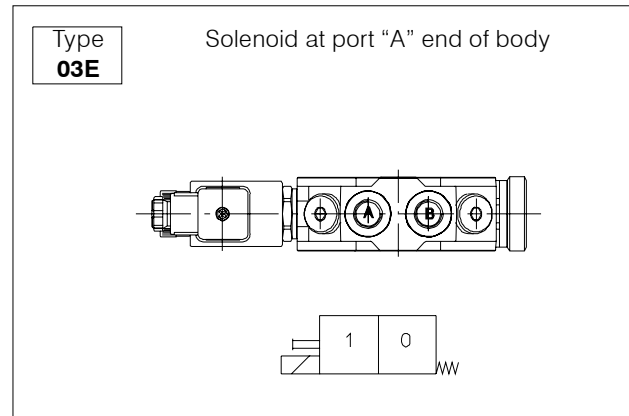
HDS11

8B.7 Spool actions

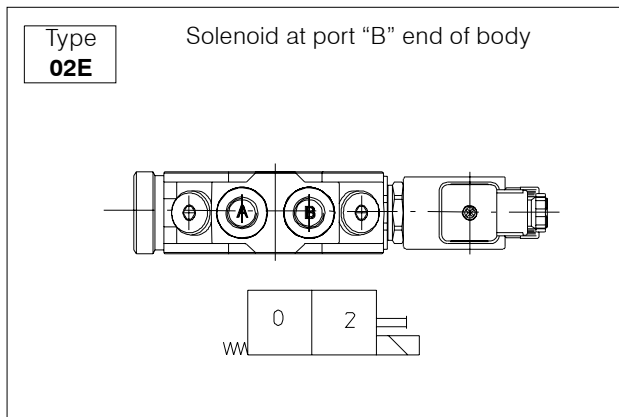
8B.7.1 Double-Solenoid spring-centered valves



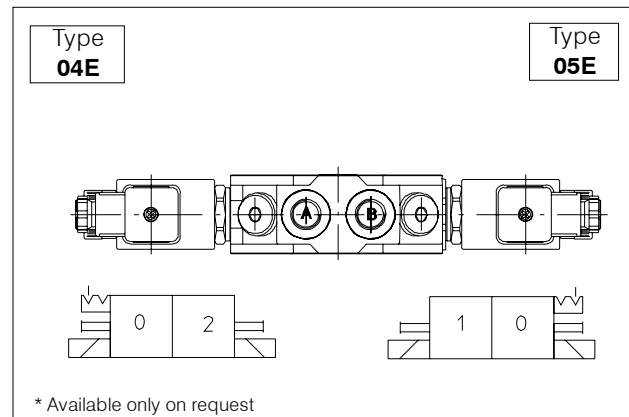
8B.7.3 Single Solenoid spring offset valves



8B.7.2 Single Solenoid spring offset valves



8B.7.4 Double Solenoid, two detent position valves*



* Available only on request

8B.8 4th Floating position

8B.8.1 Main features

Max operating pressure: 250 bar
 Max admitted flow: 35 l/min

Average leakage: 30 cm³/min (100 bar, 50°C, 27 mm²s⁻¹)
 Solenoid power: 48 Watt (12-24 Vdc)

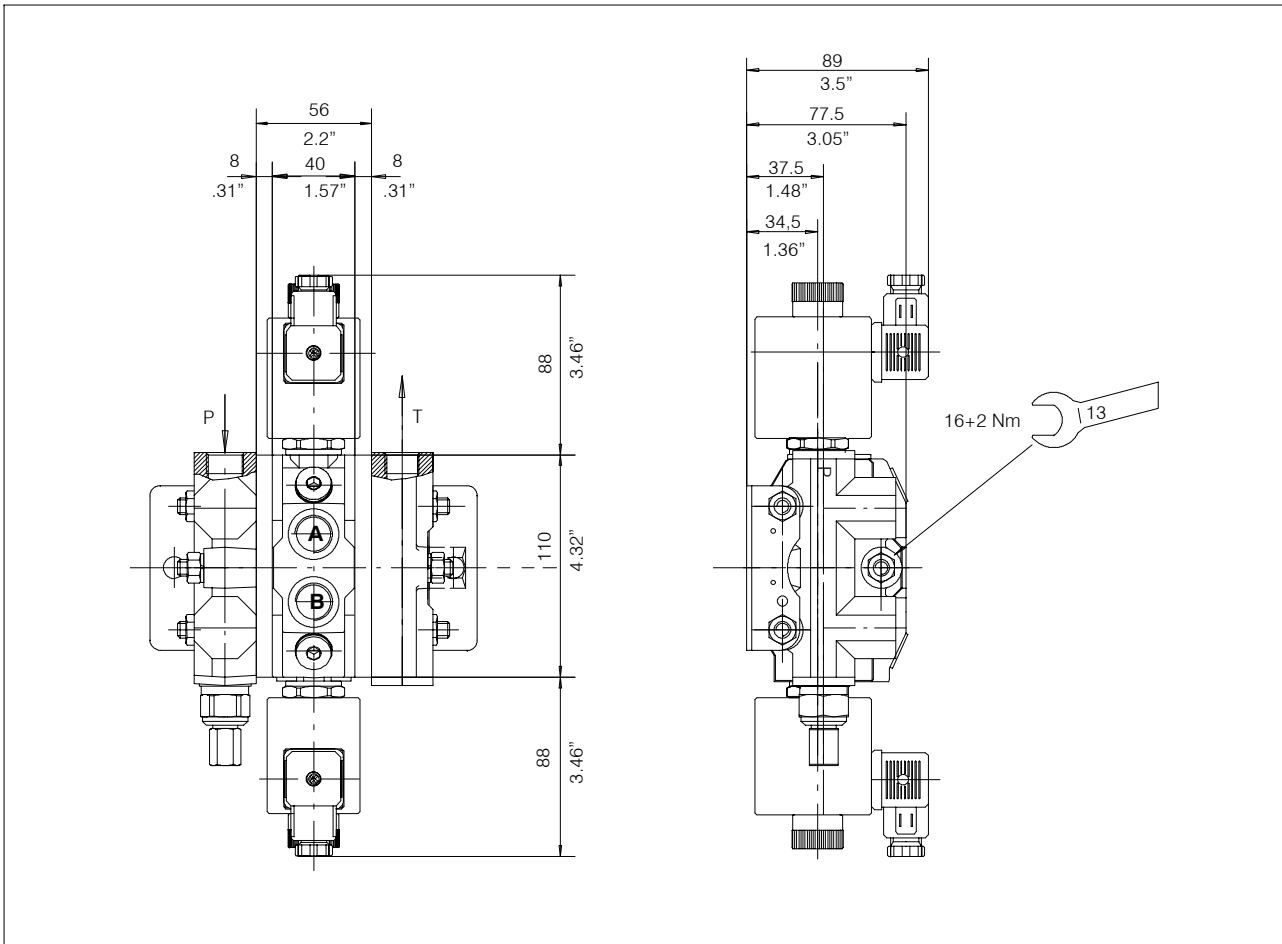
8B.8.2 General specification

- Pressure drops with 35 lt/min:
- Pos 0
- P ⇒ T 2 bar
- Pos 1 and 2
- P ⇒ A / P ⇒ B 9 bar
- B ⇒ T / A ⇒ T 5.5 bar
- Pos 3 (4th floating position)
- A ⇒ T / B ⇒ T 12.5 bar
- Parallel circuit, electric operated
- Compatible for assembling on HDS11 valve series
- Intermediate spacers 15 mm width needed

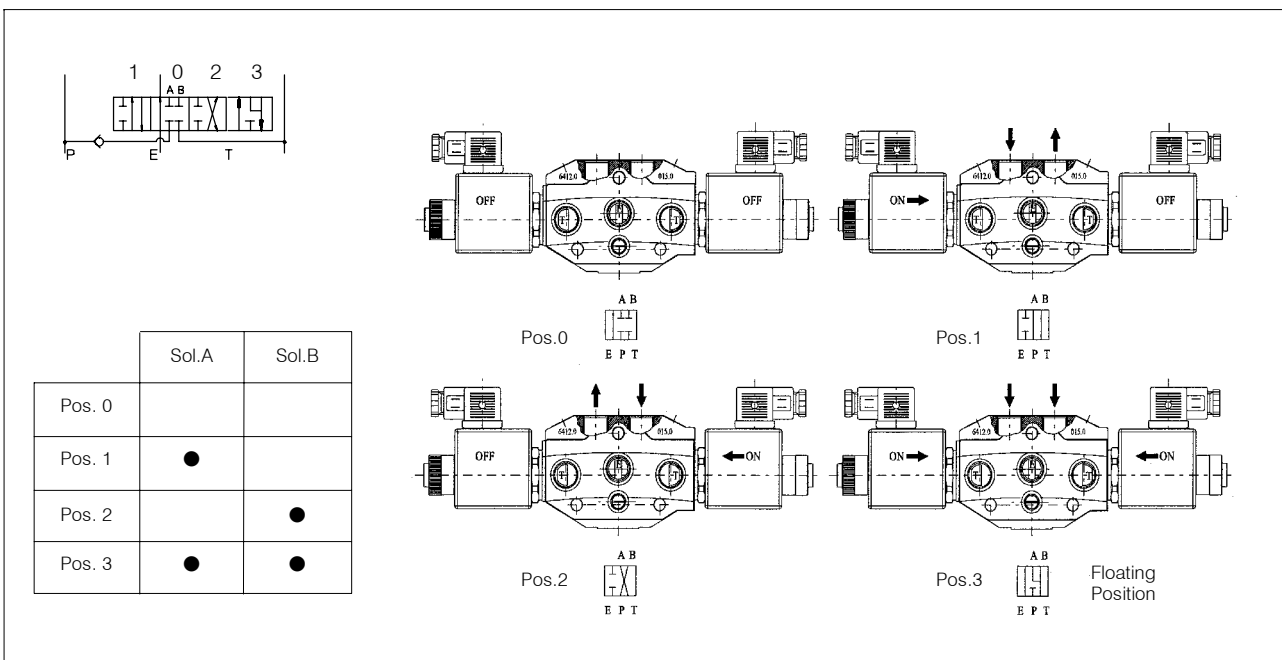
- In case the directional control valve consists of 2 or more sections, we suggest to position the section (or the sections) with 4th floating position as last section in the pack close to the "T" outlet cover.
- In the electric 4th floating position it is necessary to use always the cover with "T" side outlet (ex. P04, P05, etc.)
- To be used, if possible, in circuits without the carry-over version (on the contrary please contact our Sales Department)
- The 4th floating position must always be realized as from the "0" neutral position with both solenoids not energized.
- It is not possible to have versions with OA-C-UC valves with the 4th floating position section.

HDS11

8B.8.3 Dimensional data



8B.8.4 Hydraulic circuit



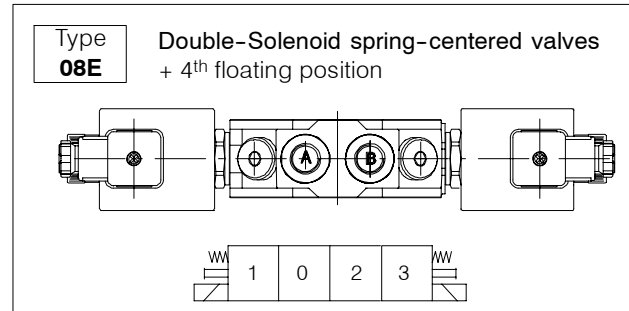
HDS11

8B.8.5 Spool chart

Spool scheme	Spool features	Type
	4 way - 4 position 4 th floating electric position	ZE*

* Special body required

8B.8.6 Spool action



8B.8.7 Sectional body and manifold

∅ D	Type/Code
	Standard
SAE6	K225 200.9413.6071.0
SAE8	K226 200.9413.7043.0
3/8" BSP	K227 200.9413.2633.0
M18X1.5	K228 200.9413.1289.0

H	Code
8 mm	200.7649.0035.0

(*) bodies with ports for OA-UC valves are not available

8C Elements with pressure and flow control PQ

8C.1 General specifications

Max continuous operating pressure supply port P 250 bar
 Max intermittent peak pressure work port A/B 320 bar
 Max back pressure tank port T 30 bar
 Nominal flow max. 50 l/min

Adjustable setting flow range on 350° turning-knob:
 Min flow 0 l/min
 Max flow (input) 40 l/min

Fixed priority flow VDPF = 0 to 40 l/min
 Adjustable priority flow VDP 06 = 0 to 6 l/min
 VDP 12 = 0 to 12 l/min
 VDP 25 = 0 to 25 l/min
 VDP 40 = 0 to 40 l/min

Control accuracy ± 5 %
 Pressure difference Δp max. 6 bar
 Oil temperature range -10° to +80° C
 Viscosity range 16 to 75 mm²/sec
 Recommended filtration ≤25 micron

Adjustable direct acting:
 Relief valve on the lines Inlet flow: RV1
 Priority flow: RV2
 Residual flow: RV3

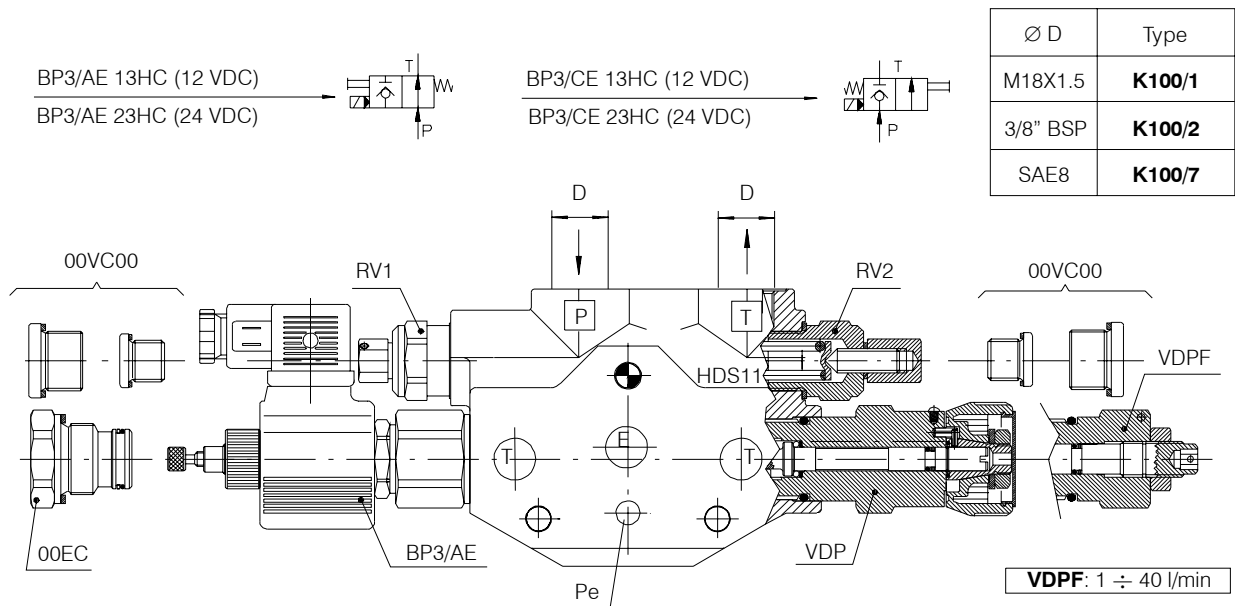
By-pass solenoid valve BP3/AE
 BP3/CE

HDS11

8C.2 Sectional body K100

8C.2.1 Application variation

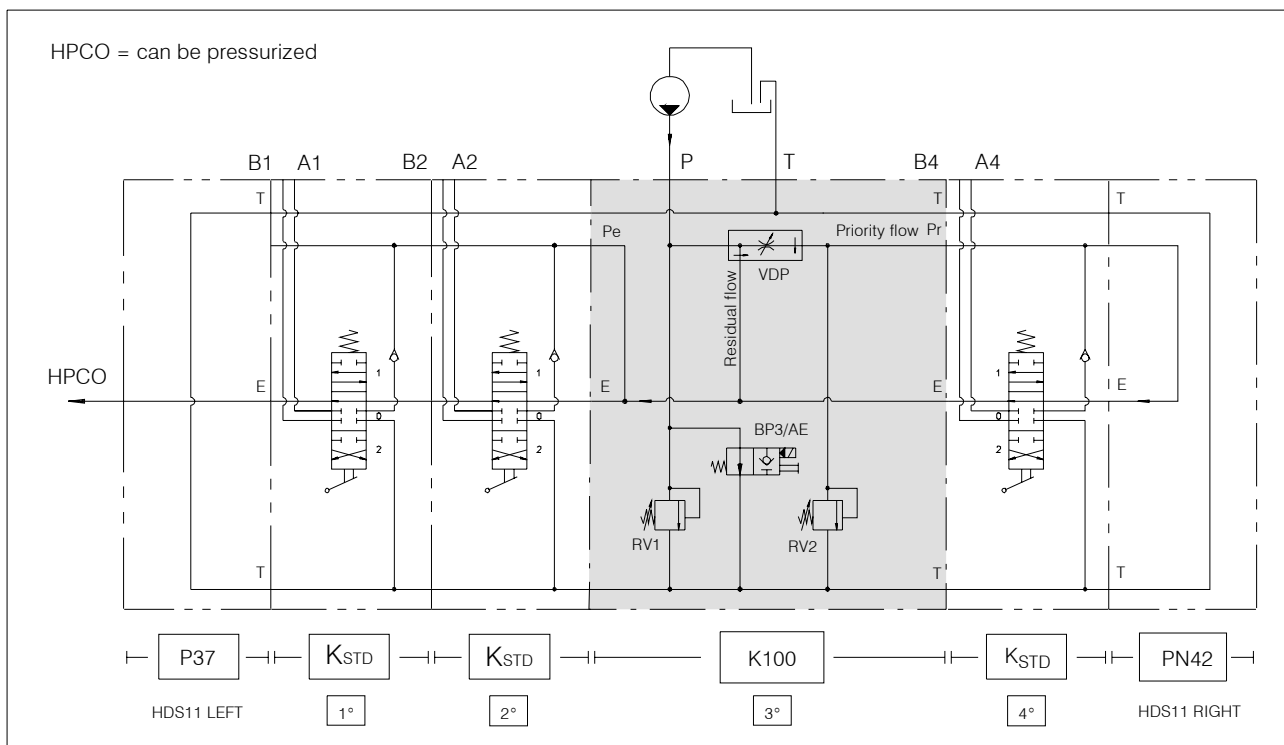
Intermediate section with priority flow divider pressure compensated valve, pressure relief valves and by-pass valve.



Pressure set range (bar)	Standard Setting bar	Relief valves Type
30 ÷ 95	60	RV1 or RV2 - 06
96 ÷ 210	150	RV1 or RV2 - 15
211 ÷ 320	260	RV1 or RV2 - 26

Flow set range (l/min)	Standard Setting l/min	Flow regulator Type
0 ÷ 6	6	VDP 06
0 ÷ 12	12	VDP 12
0 ÷ 25	25	VDP 25
0 ÷ 40	40	VDP 40

8C.2.2 Scheme example

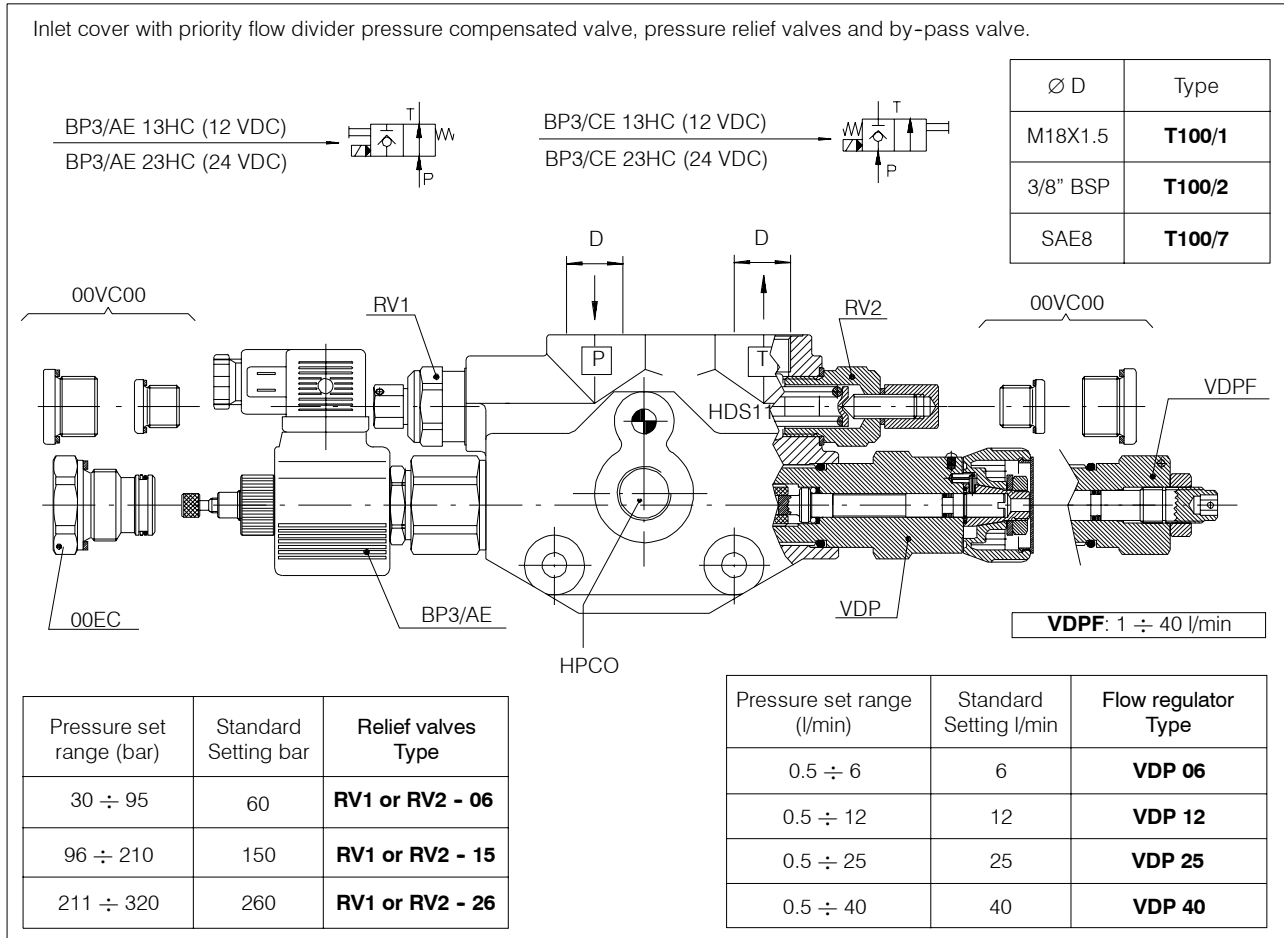


HDS11

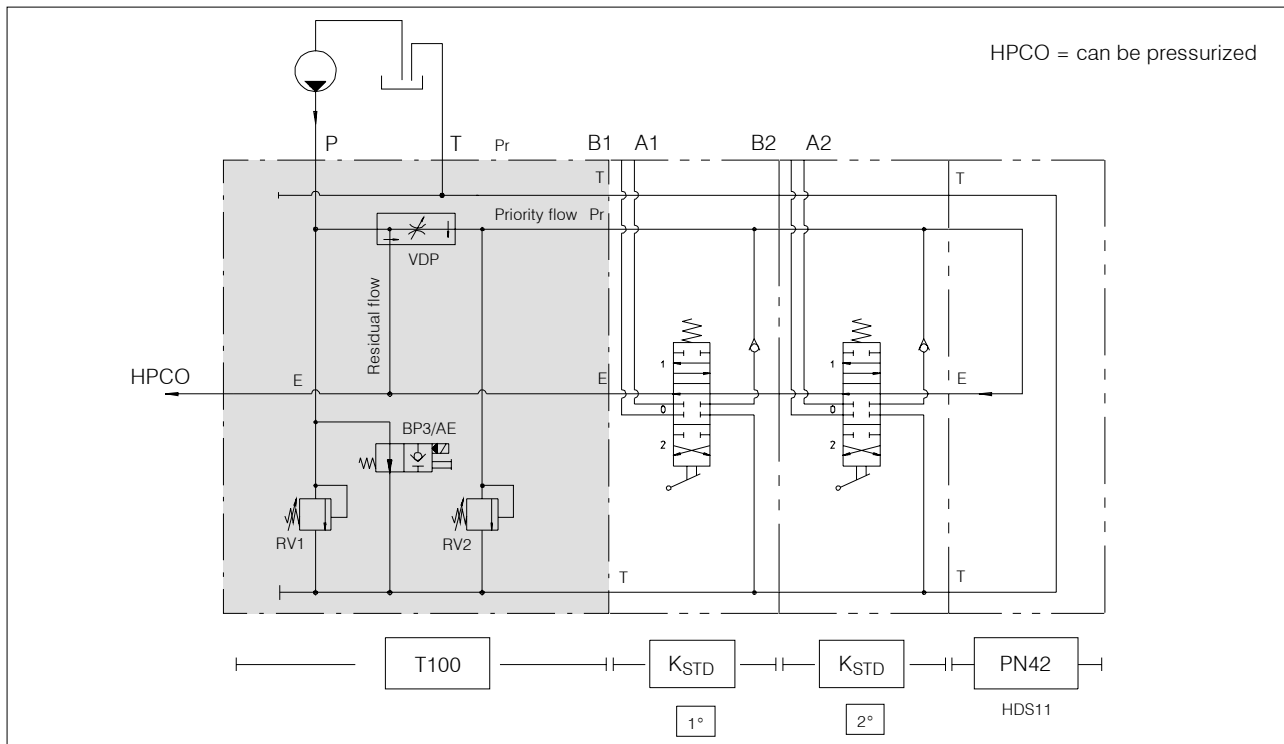
8C.3 Inlet cover T100

8C.3.1 Application variation

Inlet cover with priority flow divider pressure compensated valve, pressure relief valves and by-pass valve.



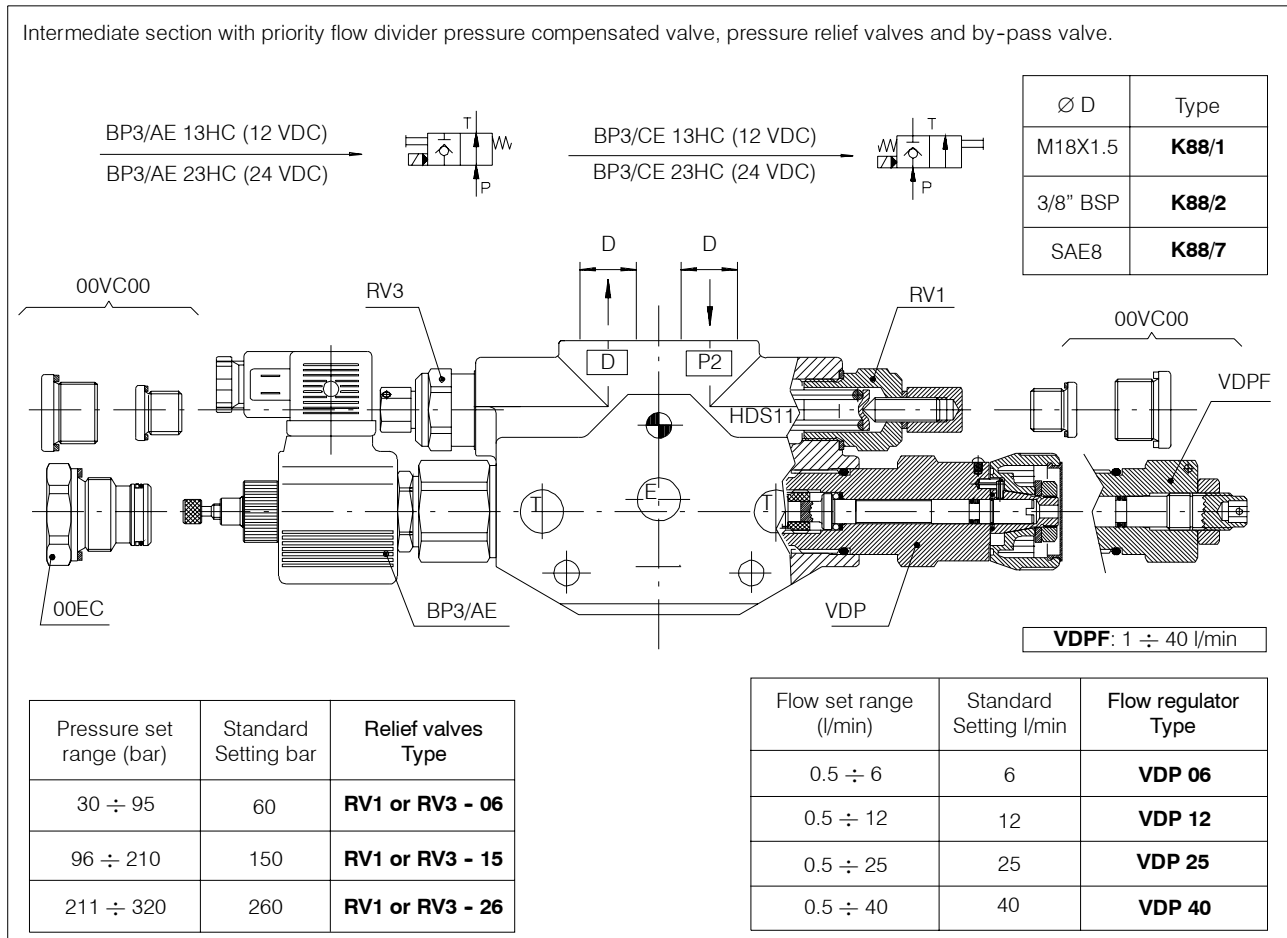
8C.3.2 Scheme example



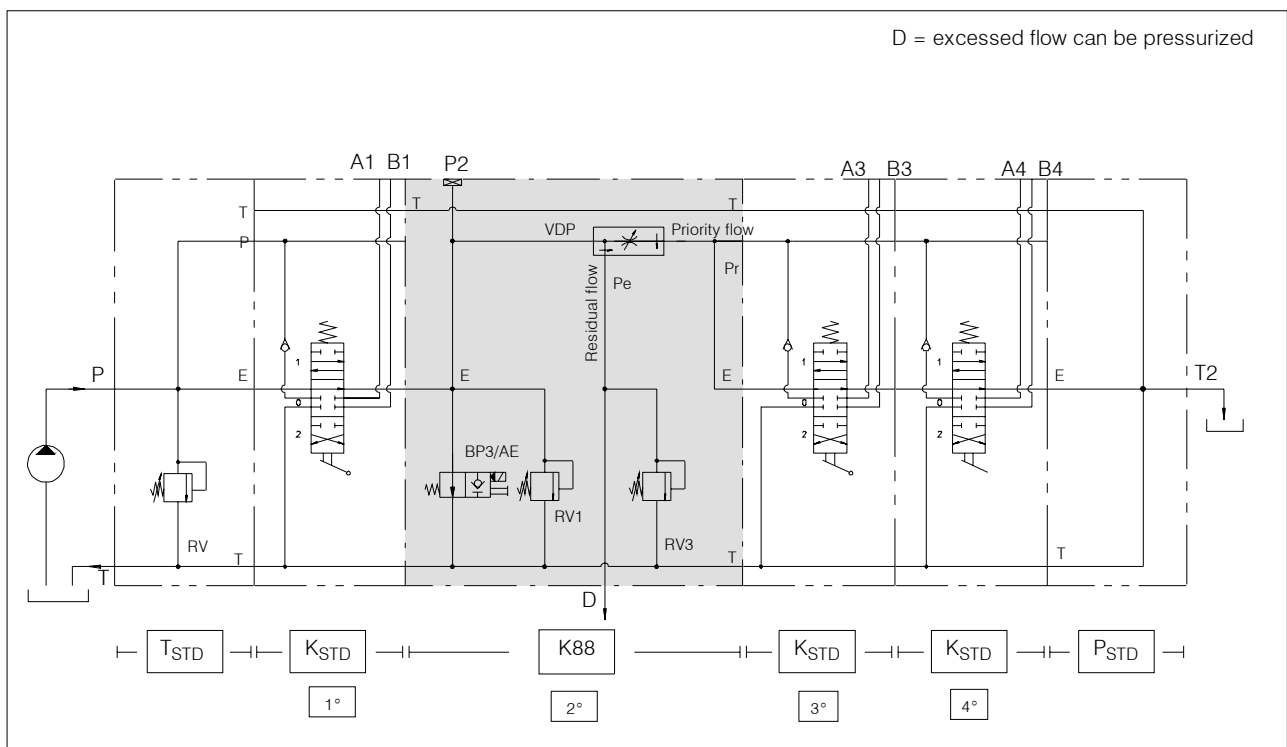
HDS11

8C.4 Sectional body K88

8C.4.1 Application variation



8C.4.2 Scheme example

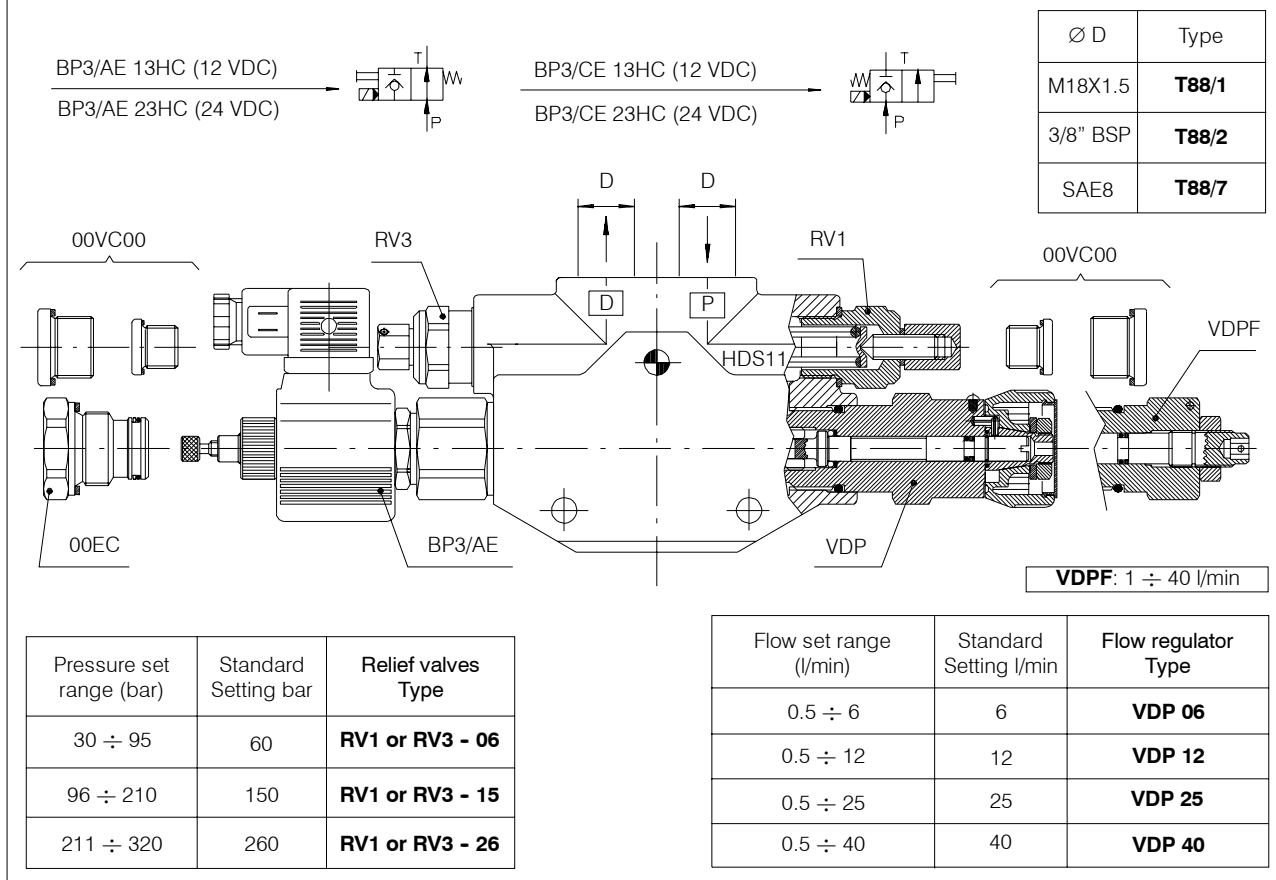


HDS11

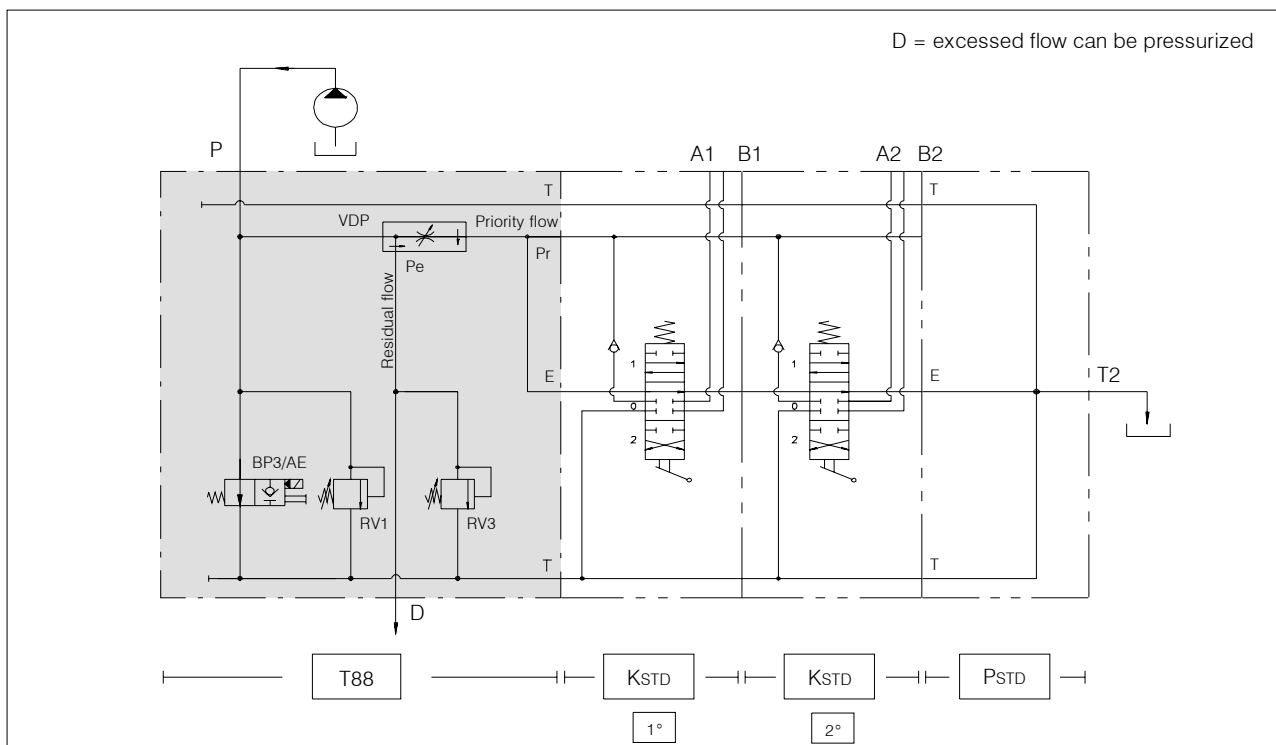
8C.5 Inlet cover T88

8C.5.1 Application variation

Inlet cover with priority flow divider pressure compensated valve, pressure relief valves and by-pass valve.



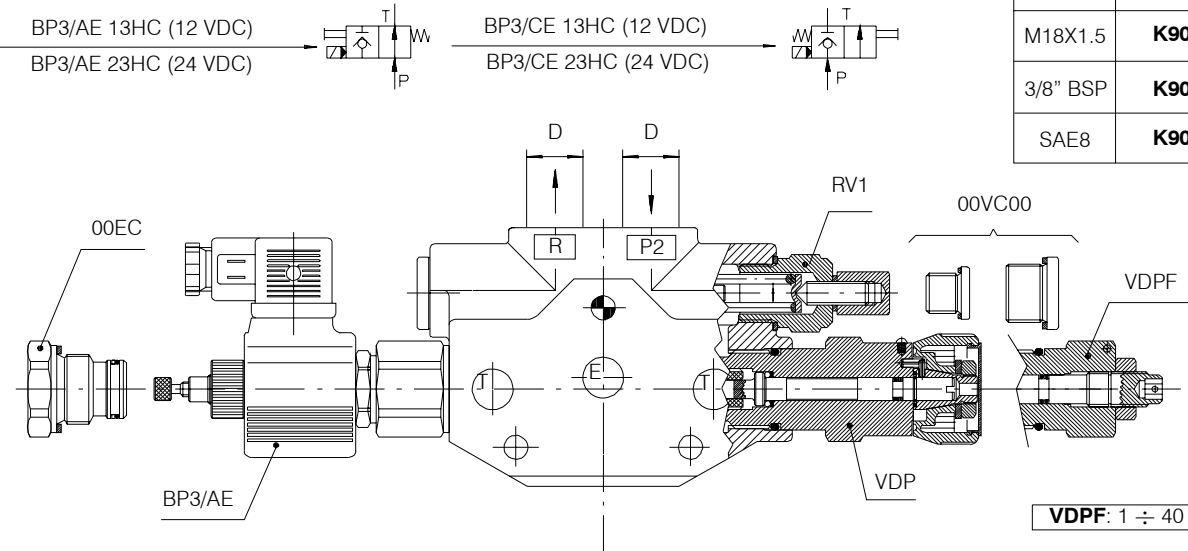
8C.5.2 Scheme example



8C.6 Sectional body K90

8C.6.1 Application variation

Intermediate section with priority flow divider pressure compensated valve, pressure relief valves and by-pass valve.
Excess flow to tank.

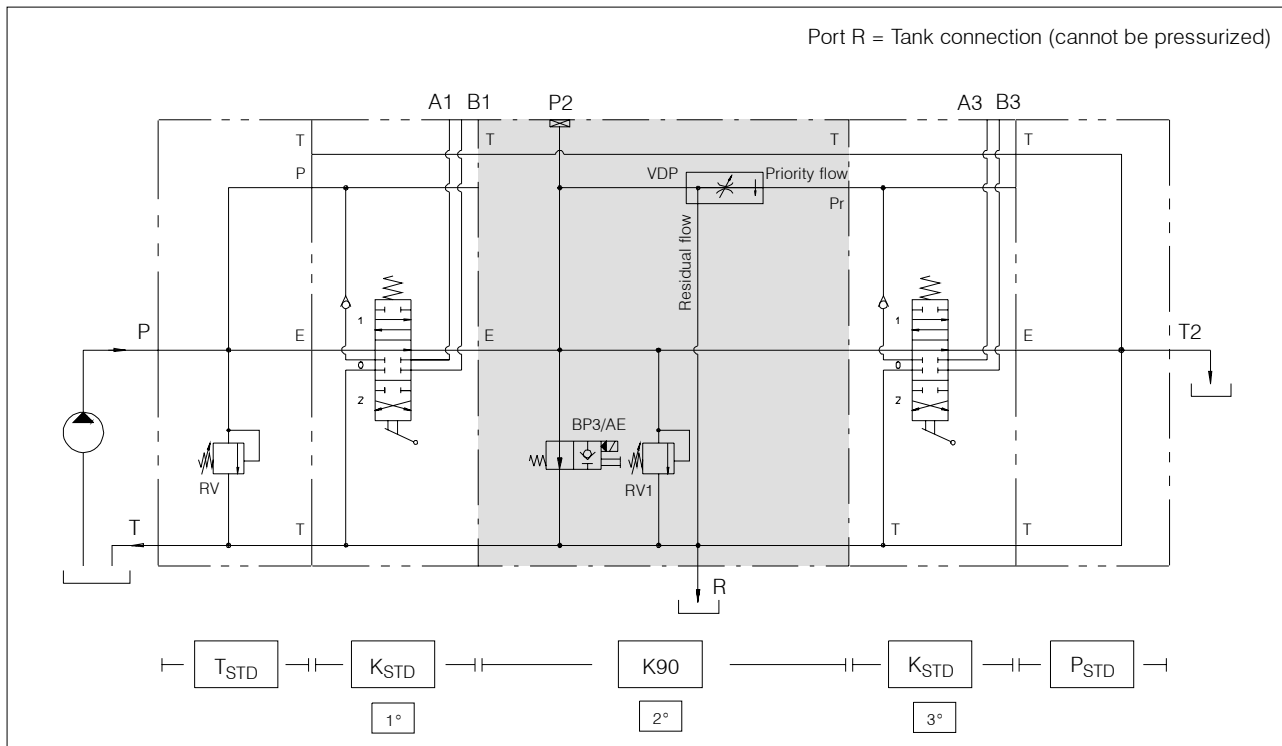


∅ D	Type
M18X1.5	K90/1
3/8" BSP	K90/2
SAE8	K90/7

Pressure set range (bar)	Standard Setting bar	Relief valves Type
30 ÷ 95	60	RV1 - 06
96 ÷ 210	150	RV1 - 15
211 ÷ 320	260	RV1 - 26

Flow set range (l/min)	Standard Setting l/min	Flow regulator Type
0.5 ÷ 6	6	VDP 06
0.5 ÷ 12	12	VDP 12
0.5 ÷ 25	25	VDP 25
0.5 ÷ 40	40	VDP 40

8C.6.2 Scheme example

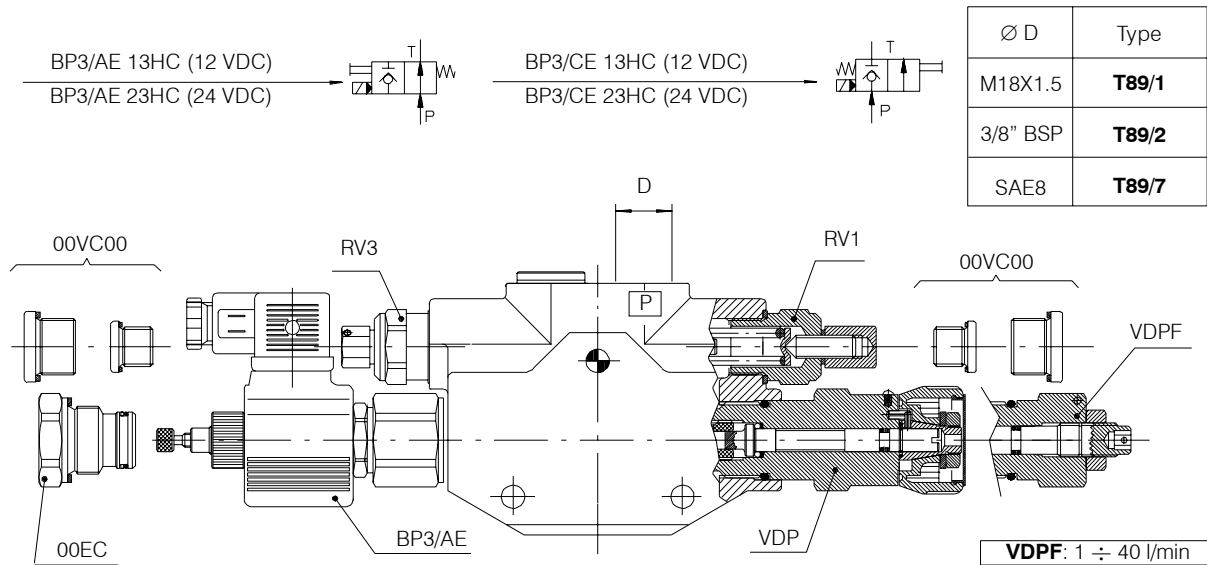


HDS11

8C.8 Inlet cover T89*

8C.8.1 Application variation

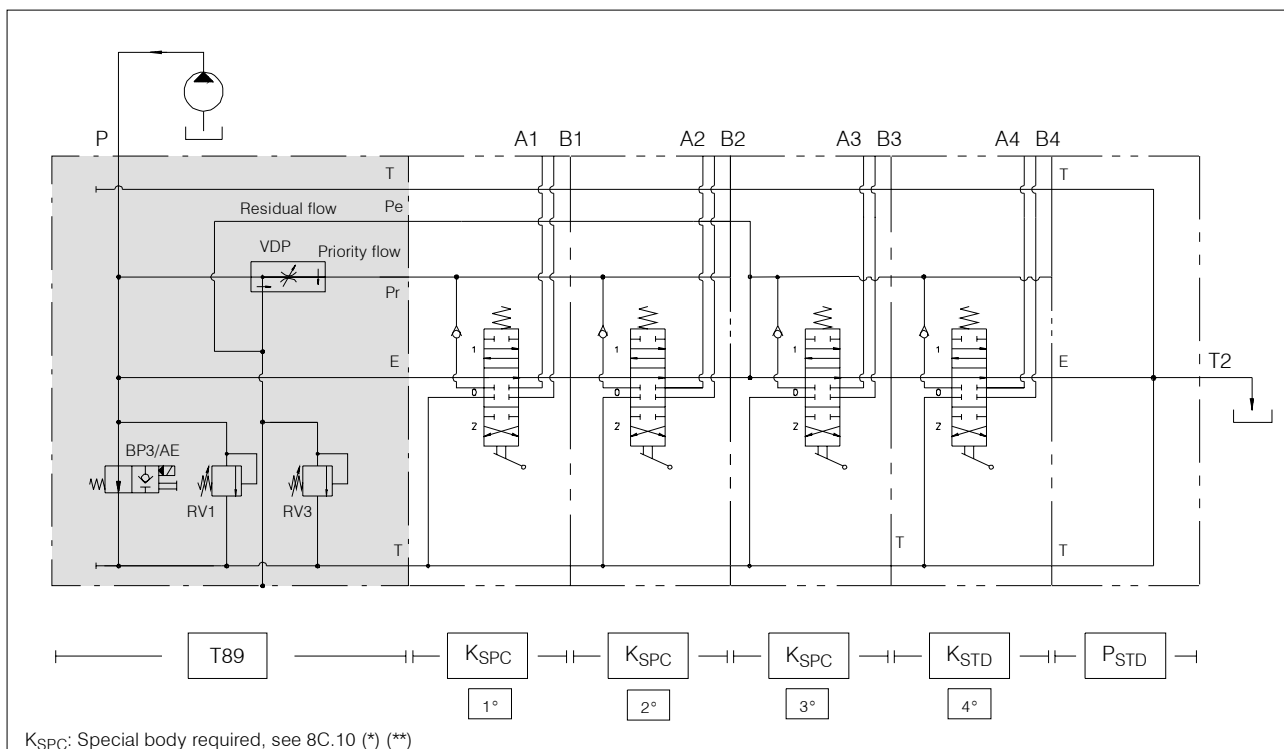
Inlet cover with priority flow divider pressure compensated valve, pressure relief valves and by-pass valve.



Pressure set range (bar)	Standard Setting bar	Relief valves Type
30 ÷ 95	60	RV1 or RV3 - 06
96 ÷ 210	150	RV1 or RV3 - 15
211 ÷ 320	260	RV1 or RV3 - 26

Flow set range (l/min)	Standard Setting l/min	Flow regulator Type
0.5 ÷ 6	6	VDP 06
0.5 ÷ 12	12	VDP 12
0.5 ÷ 25	25	VDP 25
0.5 ÷ 40	40	VDP 40

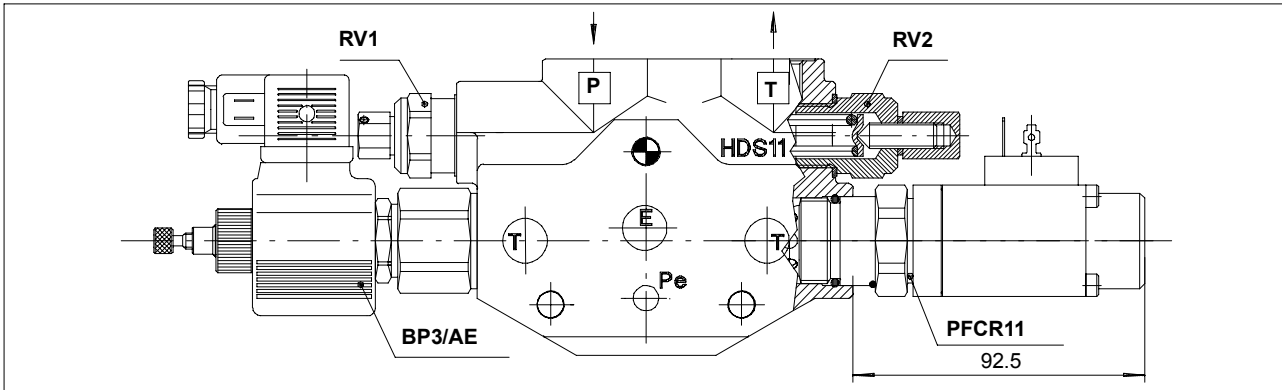
8C.8.2 Scheme example



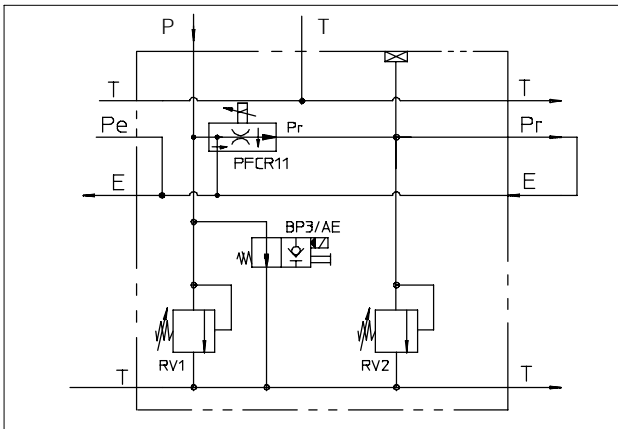
HDS11

8C.9 Proportional flow control PFCR11

8C.9.1 Example of application on K100 body



8C.9.2 Example of hydraulic scheme K100



8C.9.3 Electric performances

Electric performances		
Coil according to	VDE 0580	
Connector type	DIN 43650	
Duty rating	ED=100%	
Suggested dither	0-150 Hertz (*)	
Insulation class	IP54 (DIN 40050) without connector IP65 (DIN 40050) with connector	
Coil winding class	F	
Voltage $\pm 5\%$	12 V (DC)	24 V (DC)
Max. current	2.25 A.	1.08 A.
Resistance at 20 °C	2.8 Ohm	12.7 Ohm
Nominal power	17.2 Watt	17.4 Watt
Inductance	31 mH armature falling down	140 mH armature rising
	90 mH armature falling down	406 mH armature rising

8C.9.4 Code

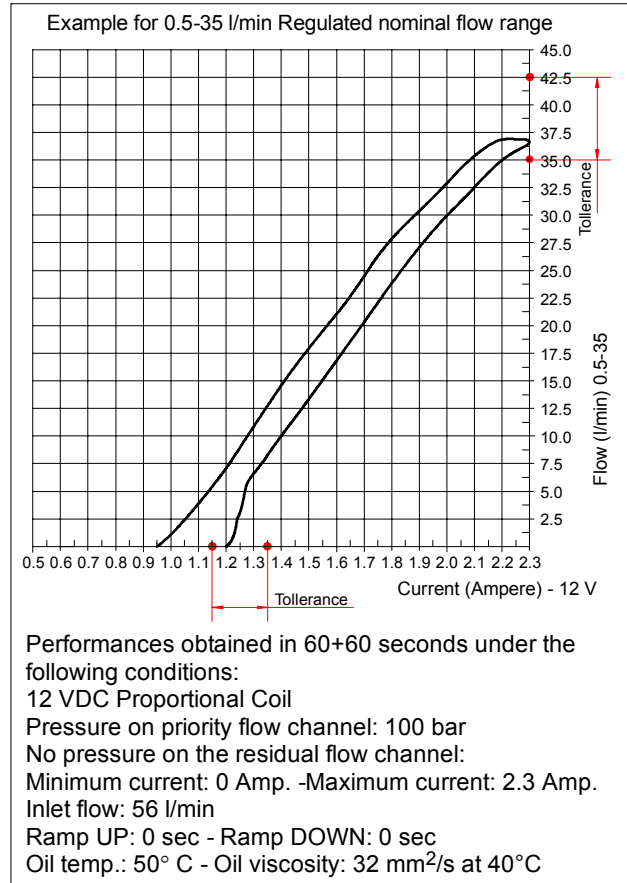
Flow l/min	Voltage	Type	Code**
14	12 V	PFCR11/V2-14-P2-13	200.7880.0011.0
14	24 V	PFCR11/V2-14-P2-23	200.7880.0012.0

35	12 V	PFCR11/V8-35-P2-13	200.7880.0007.0
35	24 V	PFCR11/V8-35-P2-23	200.7880.0008.0

8C.9.5 Hydraulic performances

Max. pressure	270 bar
Max. recommended pressure	230 bar
Regulated nominal flow range	0.5 - 14 l/min
	0.5 - 35 l/min
Temperature range	-5/+70° C

8C.9.6 Current/flow regulated diagram



(*): frequency could affect the valve seal)
 (**): code without connector)

HDS11

8C.10 Special sectional bodies

8C.10.1 Special element (priority flow): to be used only with T89 (*) inlet cover

Ø D	Type/Code	
	Standard	Section with valve UC - OA - C
SAE6	K111 200.9413.6064.0	K27 200.9413.6056.0
SAE8	K112 200.9413.7038.0	K24 200.9413.7037.0
3/8" BSP	K113 200.9413.2041.0	K58 200.9413.2040.0
M18X1.5	K114 200.9413.1033.0	K59 200.9413.1032.0

8C.10.2 Special element (residual flow): to be used only with T89 (**) inlet cover

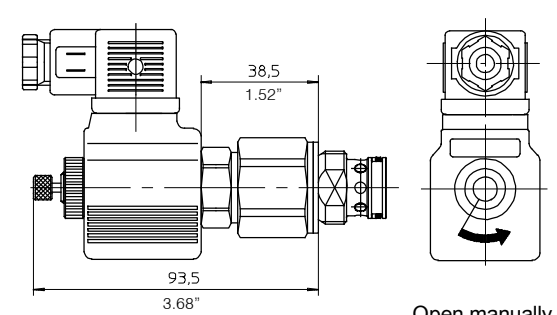
Ø D	Type/Code	
	Standard	Section with valve UC - OA - C
SAE6	K116 200.9413.6063.0	K81 200.9413.6059.0
SAE8	K117 200.9413.7036.0	K82 200.9413.7035.0
3/8" BSP	K118 200.9413.2039.0	
M18X1.5	K119 200.9413.1031.0	K86 200.9413.1030.0

Note: Body code consist of machined casting, seals and hold check valve only. Not to be used for complete valve order.

HDS11

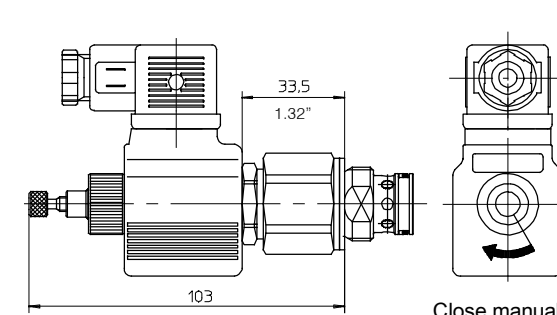
8C.11 By-Pass solenoid valve - BP3 -

8C.11.1 Normally closed with manual override



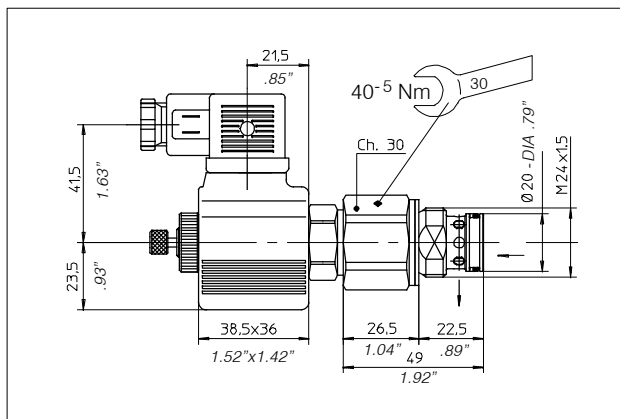
Voltage	Type	Code
without coil	BP3/CE HDS11PQ p.m.	200.7572.0048.0
12 V. D.C.	BP3/CE 13- HC27 HDS11PQ	200.9570.1007.4
24 V. D.C.	BP3/CE 23- HC27 HDS11PQ	200.9570.2007.1

8C.11.2 Normally open with manual override



Voltage	Type	Code
without coil	BP3/AE HDS11PQ p.m.	200.7572.0049.0
12 V. D.C.	BP3/AE 13- HC27 HDS11PQ	200.9570.1008.3
24 V. D.C.	BP3/AE 23- HC27 HDS11PQ	200.9570.2007.2

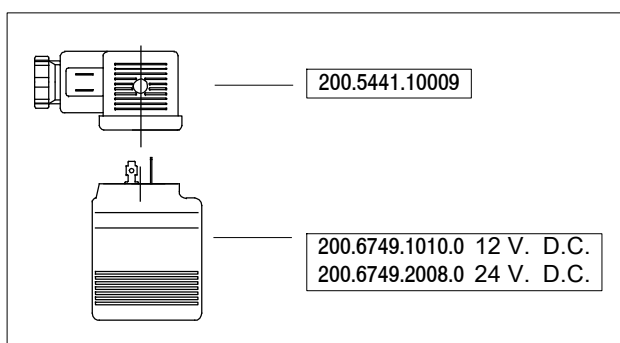
8C.11.3 Dimension



8C.11.4 BP3 Solenoid valve performances

Max. pressure	315 bar
Max. flow	60 l/min
Power	27 Watt
Intermittence	ED 100%
Voltage tolerance	± 10%
Temperature range	-20/+80 °C
Oil filtration	≤ 25 micron
Pressure drop Q= 30 l/min	7.5 bar
Pressure drop Q= 50 l/min	12.7 bar

8C.11.5 Spare parts



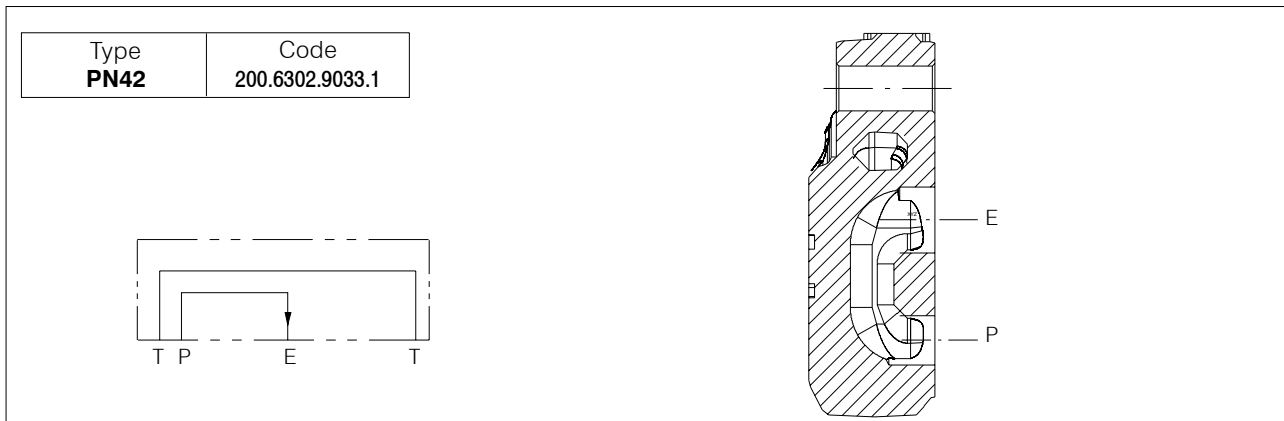
8C.11.6 Coil specifications

Voltage	12	24	V. D.C.
Power	27.2	27	Watt
Resistance (Ambient Temp.)	5.3	21.3	Ohm
Resistance (Stabilized Temp.)	8	32	Ohm
Current (Ambient Temp.)	2.2	1.12	Ampere
Current (Stabilized Temp.)	1.5	0.75	Ampere

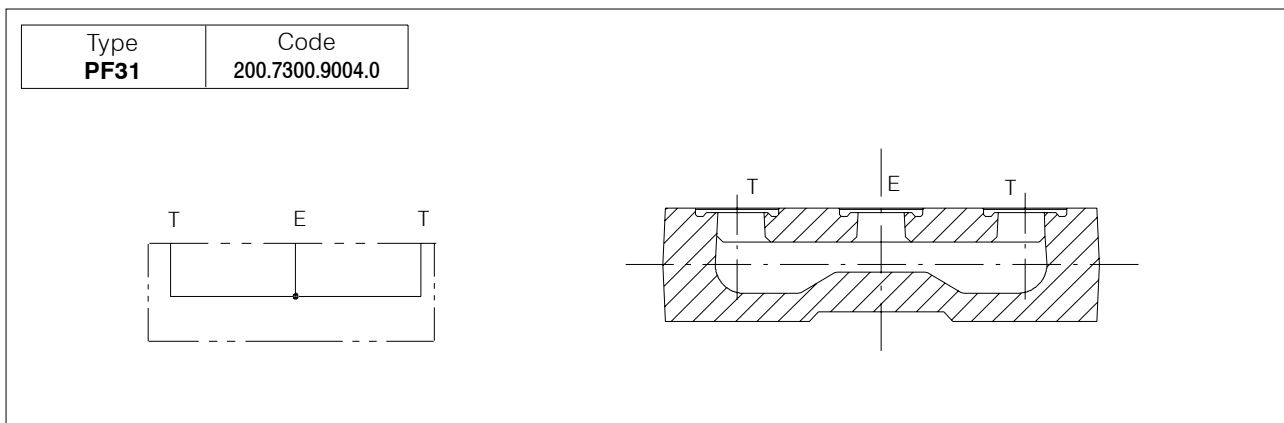
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8C.12 End cover for K100 and T100

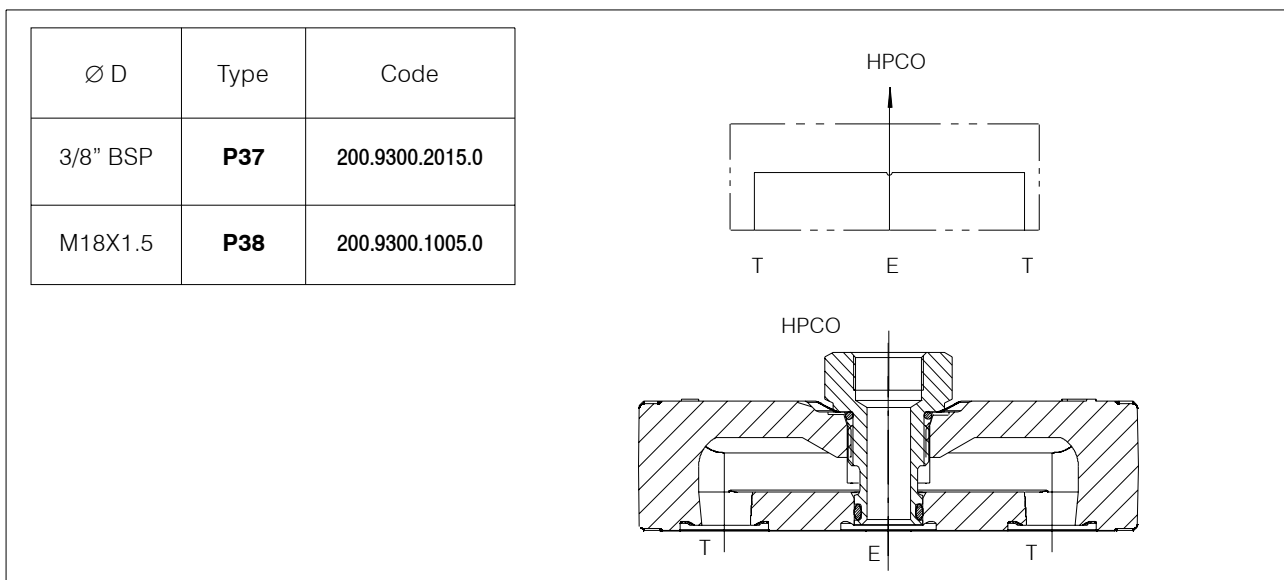
8C.12.1 Right cover



8C.12.2 Standard left cover



8C.12.3 Carry-over left cover



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