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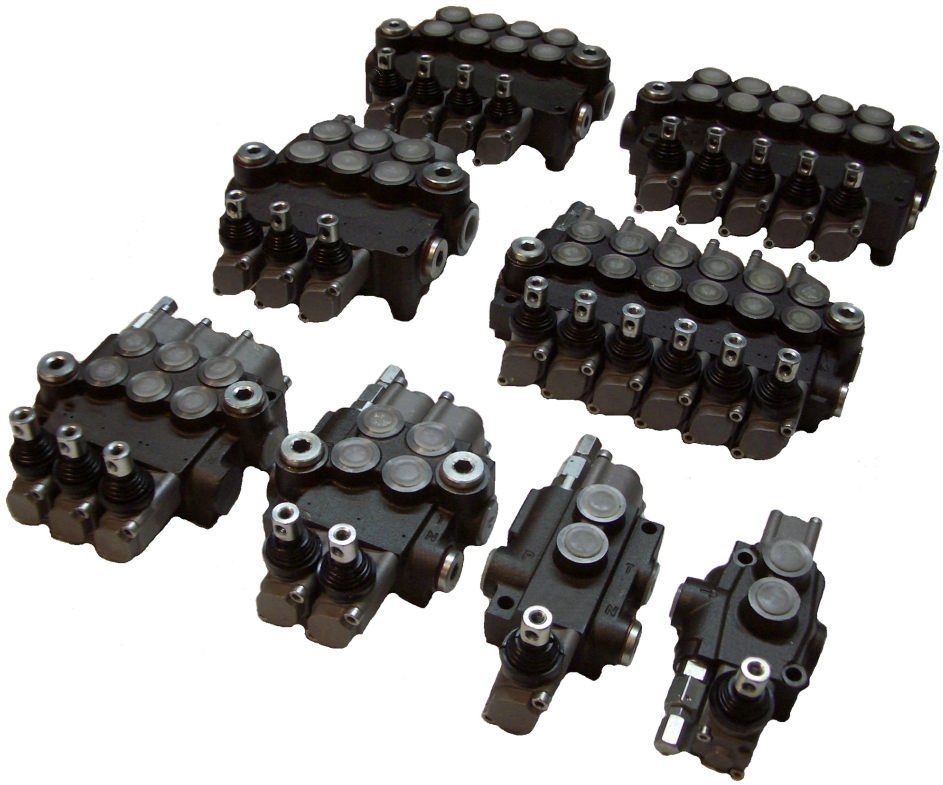
Monoblock

Directional Control Valves



Address 1: P-ta. Mihai Viteazu. No.2, 100 397, Ploiesti, Prahova, Romania
Address 2: Z.I. MOVILA VULPII E60 Km.10 Intrarea B Hala 4- Paulesti, Prahova, Romania
Tel: +(40)740.042.204 / Fax: +(40)244.544.445

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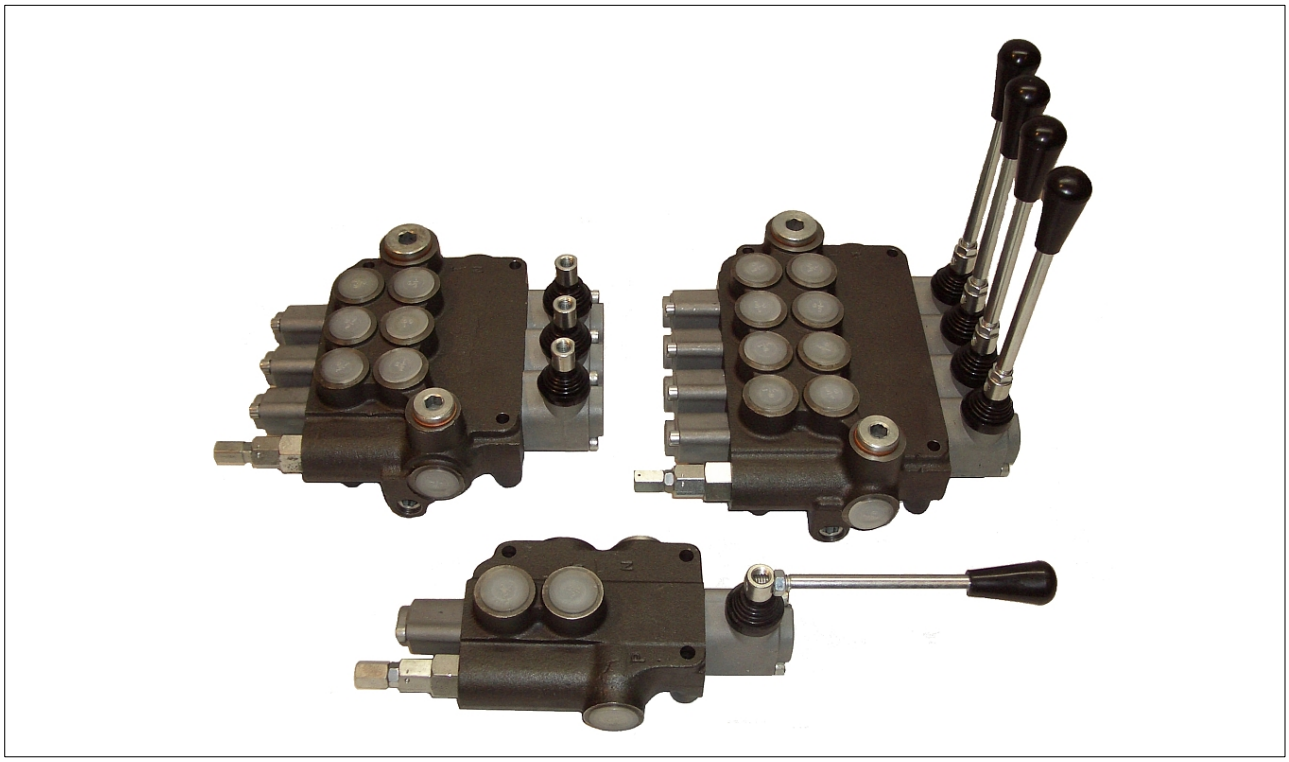

Contents

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1 Hydraulic system

1.1 General directions for circuit installation of system

1.1.1 Cleanliness

Before cabling pipelines, make sure that pipelines hollows are thoroughly clean (metal and flexible pipes), likewise fittings and seals.
The same care should be exercised during assembling and servicing operations, adapting clean procedures and working in an environment free of chips, swarf, dust and other possible sources.

1.1.2 Tank

The recommended tank capacity must be 2 ÷ 3 times the pump flow rate Q (unit volume per minute) for intermittent duties, or 6 ÷ 7 x Q for continuous duties, and up to 10 ÷ 12 x Q for heavy duties with demanding continuity, pressure and temperature conditions.
The suggested temperature of the oil in the tank should not exceed 60° C (140° F); if this limit cannot be guaranteed by the dimensions of the tank alone, a heat exchanger must be installed.

1.1.3 Pipeline diameters

The oil speed must be kept within safe limits, beyond which the operation of the system could be adversely affected.
As a general guide, recommendable limits are:

0.5 ÷1.5 m/s (1.7 ÷ 5 ft./s) suction
0.8 ÷ 2 m/s (2.2 ÷ 6.6 ft./s) return
2 ÷ 5 m/s (6.6 ÷17 ft./s) pressure

Lower speeds are adapted for applications typified by low pressure or continuous duty.
Remember that flow speed in m/s is determined by the formula [$(Q/d^2) \times 21.2$]
where
"Q" is the flow rate in liters/min.
"d" is the internal diameter of the pipe in mm.

1.1.4 Filters

Filtration 10 micron must be assured where solenoid or pilot operated valves are in use, and ⩽30 micron in other cases.
Except in certain special applications, the filter is usually assembled on the return line, that the size of element must be compatible with the maximum unloading flow rate.

1.1.5 Oil

The system should be operated only with hydraulic oil containing anti-foaming and antioxidant additives.
Selection of the right viscosity range will depend principally on the temperature and filtration parameters, the oil should be changed following the first 3000 hours operation and every 5000 hours thereafter.

1.1.6 Fittings

The threaded ports of the directional control valve housing are machined to DIN 3852 form x.
Accordingly, fittings with STRAIGHT THREADED ENDS only should be used (e.g. DIN 3852 form A or B).
In the interest of safety, fittings with TAPER THREADED ENDS (e.g. DIN 3852 form C) should never be used, as these can cause deformation and cracks in the valve housing.
Our warranty conditions will be not valid in the case of tapered fittings utilisation.

1.2 Directional control valves Operating and maintenance guide-lines

Always exercise the utmost care when carrying out any operation on the valves (assembling, stripping, tests) and pay scrupulous attention to cleanliness: this will prevent the valves from the risk of being seriously damaged attributable to chips, dust and other foreign matter.
When washing a machine to which valves are mounted, never expose the valves themselves to liquids containing detergents or corrosive agents, or to high pressure jets, which may damage them or cause rust and corrosion.

1.2.1 Spools assembling

The location of spools in the valve housing does not present any particular difficulty.
First, make sure the O-ring seals are faultlessly clean, then proceed to insert the spool into its socket, checking for smooth and unhindered sliding movement. Finally, fit the seals with the relative alignment rings, then fix on the position control and the handle assembly.

1.2.2 Assembling of valve sections

Before proceeding with the assembling of sectional valves, make sure that the mounting surface is strictly flat. Start by locating all the O-rings in their respective seats, applying a light layer of grease.
The bolts must be gradually by small increments up to the prescribed torque (see table).
Under no circumstances attempt doing this operation without the aid of a torque wrench; the bolts must be torqued up gradually and in alternation, as excessive or unevenly applied force can cause the spools to jam.
Conversely, an insufficient tightening torque can result in oil leaks and extrusion of the seals.
The operation of bolts tightening should be effected with oil components at ambient temperature (20 ÷ 30 C).
After completing the assembling and tightening operations, verify that the spools continue to slide freely and proceed with final testing.

1.3 Generals

Recommended conditions for best performance of the system. We recommend to strictly follow the conditions advised here above, failing which warranty shall be void.

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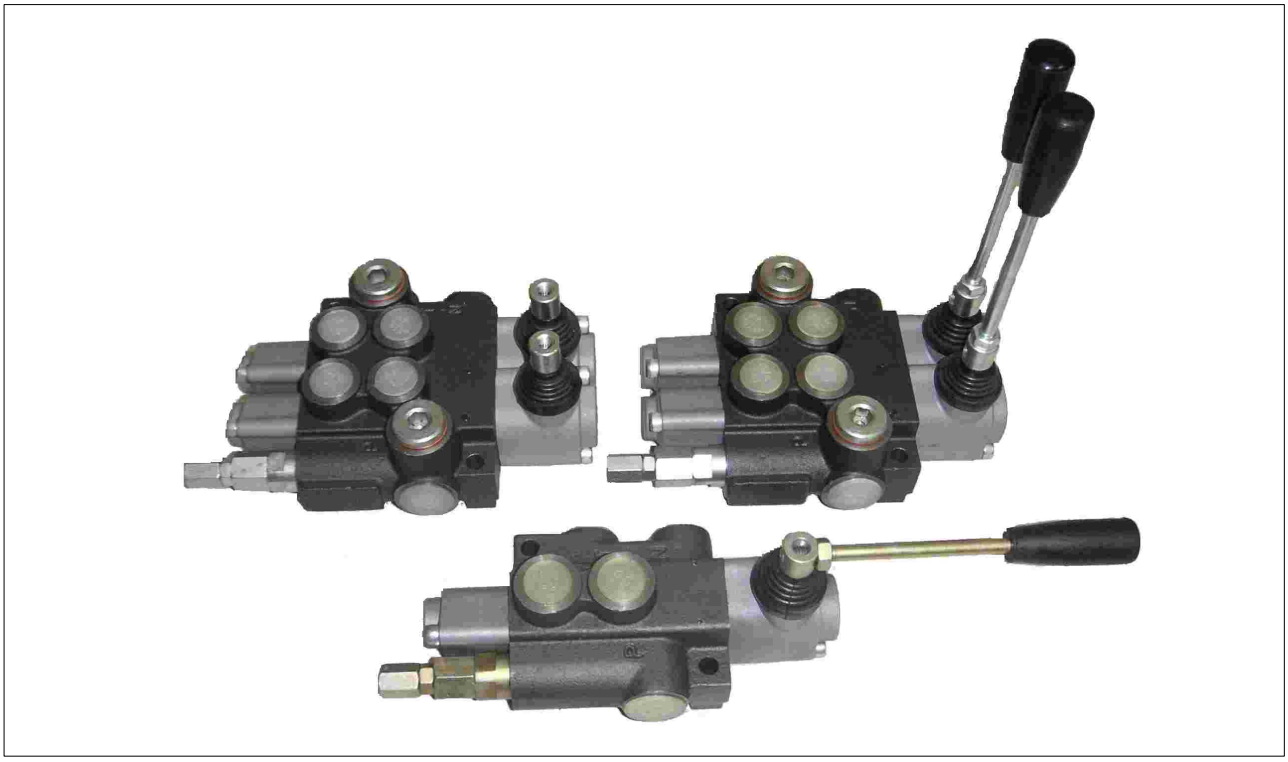
2 Monoblock directional control valve **D** 40



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2.1 General specifications

Technical specification	Metering unit system	
Max flow rate	l/min U.S.G.P.M.	45 12
Max operating pressure	bar PSI	300 4350
Max back pressure	bar PSI	50 700
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	12 0.732
Middle	cm^3/min Cu. In./min	8 0.487
Lower values on demand (to be agreed with our Sales Dpt.)		

Number of spools	1 to 7
Adjustable direct operated relief valve (tamper-proof seal available on request)	VP
Single load hold check valve	C

2.1.1 Weight

Version	Metering unit systems	Weight
D 40.1	kg LBS	3 6.61
D 40.2	kg LBS	4 8.82
D 40.3	kg LBS	5 11.03
D 40.4	kg LBS	6 13.21
D 40.5	kg LBS	7 15.41
D 40.6	kg LBS	8 17.61
D 40.7	kg LBS	9 19.83

2.1.2 Material specification:

Body: High strength cast-iron.
Spool: Hardened steel and chrome plated
Seals: Buna “N”.

2.1.3 Standard features:

1) Parallel - Tandem circuit
2) interchangeable spools (provides minimum leakage, smooth operation)
3) Wide selections inlets, work ports, and outlets threaded ports.
4) Negative overlapping of the spool.

2.1.4 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) Complete lever assembly
4) Wide range of positioners

2.1.5 Symbols:

P: inlet port
T: outlet port
A / **B**: work ports
H.P.C.O.: carry-over
VP: relief valve
P_2T_2: top inlet and outlet ports
P_1: side inlet
T_1: side outlet

P: pressure line
T : exhaust line
N : centre line (by pass).

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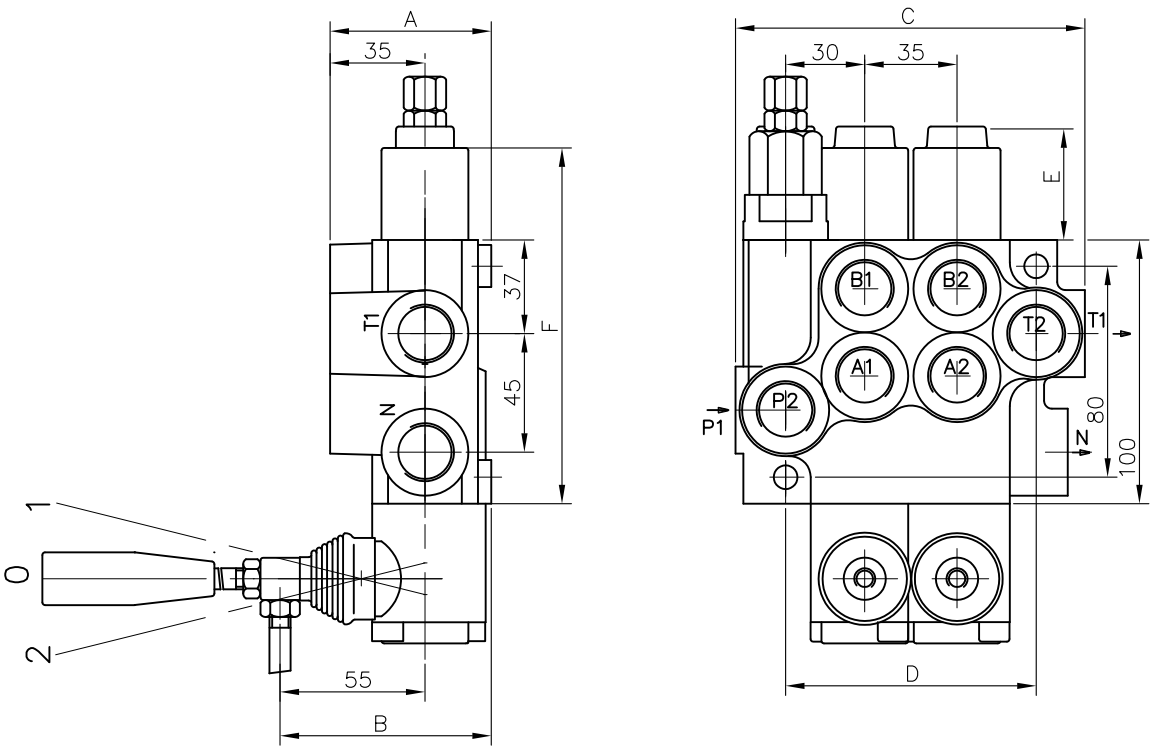
2.2 Dimensional data

D 40 1 / 2 / 3 / 4 / 5 / 6 / 7



	A	B	C	D
D 40.1	60	80	85	60
D 40.2	60	80	129	97
D 40.3	60	80	164	132
D 40.4	60	80	199	167
D 40.5	60	80	234	202
D 40.6	60	80	269	237
D 40.7	60	80	304	272

Table 4

code	working ports
11	P1 - T1
12	P1 - T2
21	P2 - T1
22	P2 - T2

Spool Positioners	E	F
1 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11	40	183
2 - 3	72	225
16	+	+

Table 5

code	Port thread			
	P	A - B	T	N
M	M22x1.5	M18x1.5	M22x1.5	M22x1.5
G	1/2" BSPP	3/8" BSPP	1/2" BSPP	1/2" BSPP
S	7/8" - 14 UNF	3/4" - 16 UNF	7/8" - 14 UNF	7/8" - 14 UNF

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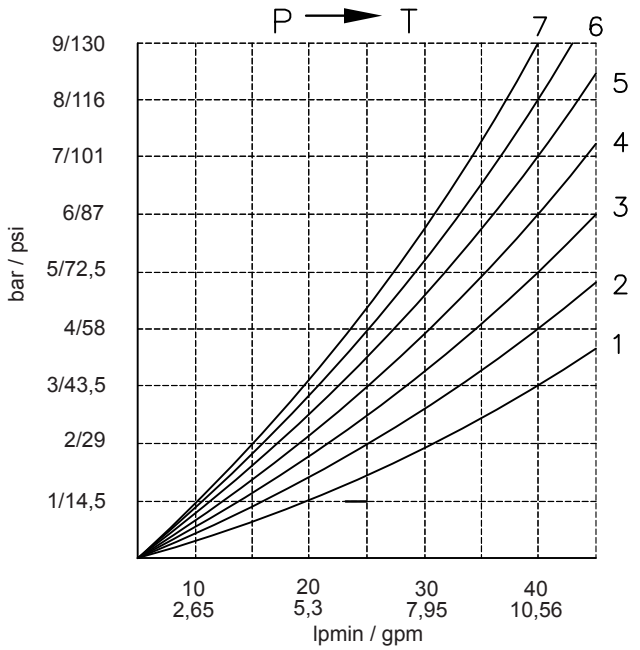
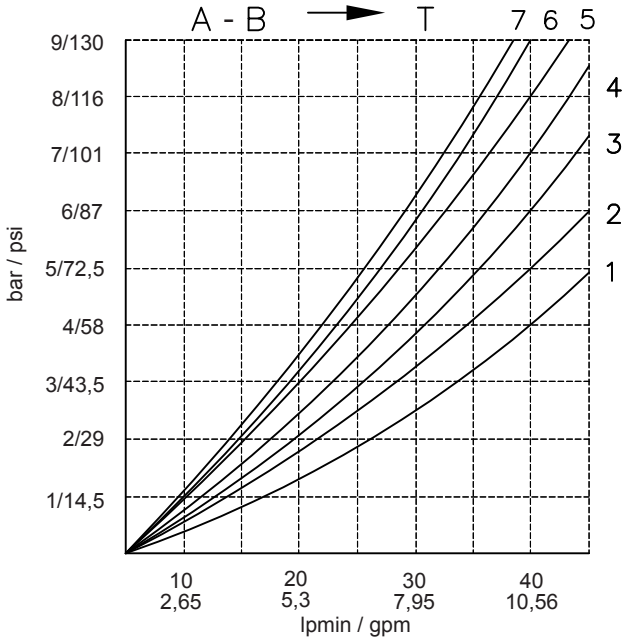
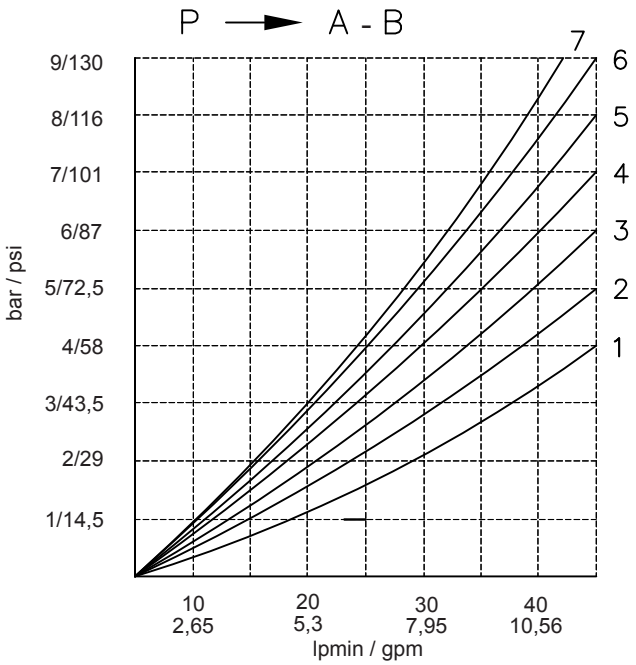
2.3 Performance curves







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

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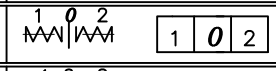
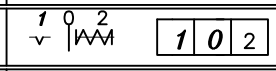
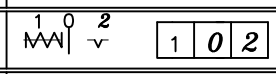
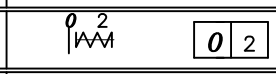
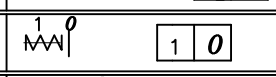
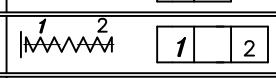
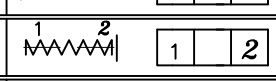
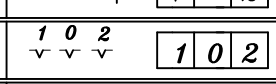
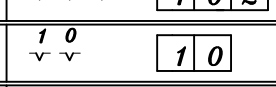
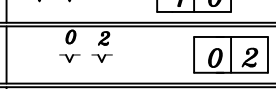
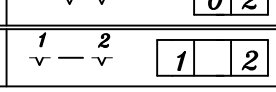
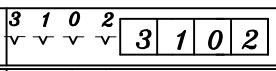
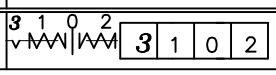
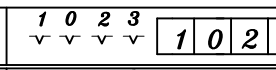
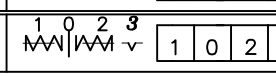
2.4 Spool charts

Table 11

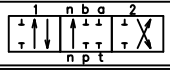
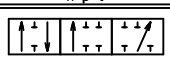
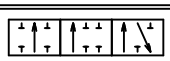
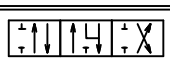
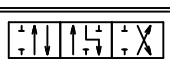
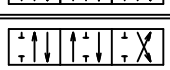
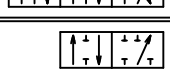
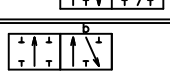
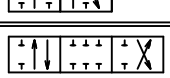
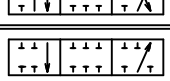
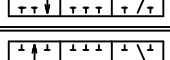
Type	Spool positioners
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
* 13	
* 16	

* for Spool scheme K only

**	13R	
**	12	

** for Spool scheme L only

Table 10

Type	Spool scheme
A	
B	
C	
D	
E	
F	
G	
H	
M	
N	
O	
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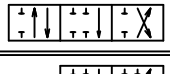
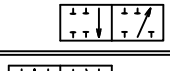
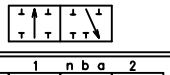
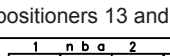
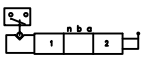
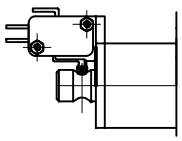
R	
S	
T	
* K	

* for Spool positioners 13 and 16 only

**	L	

** for Spool positioners 12 and 13R only

code	Microswitch option	
17		Microswitch type Omron v 165 I C5 Spool positioner 1 

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2.5 Schemes

Table 6

Code	Circuit type
P	Parallel
T	Tandem

Table 7

Code	Relief valve VP
W	Without relief valve
D180	With relief valve (factory setting 180 bar)

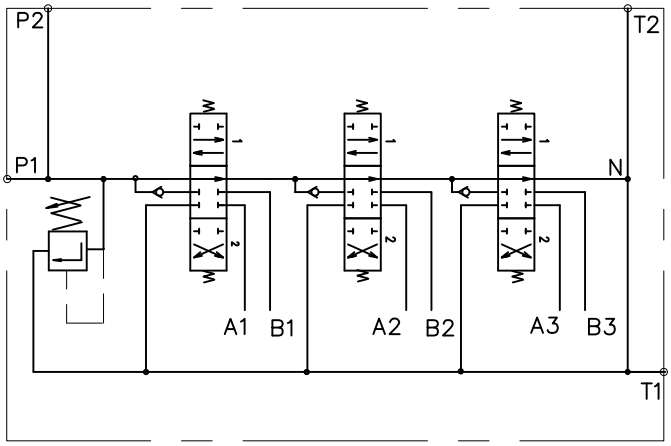
Table 3

Code	Check valve option
S	Single check valve on inlet port
C	Check valve on each section

Table 8

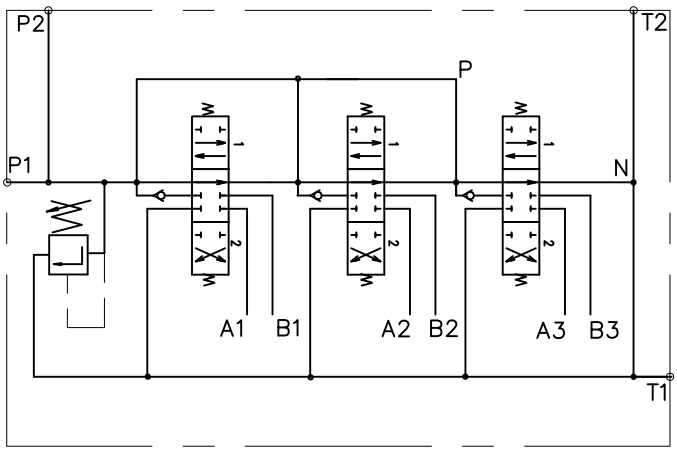
Code	Outlet port
X	Without power beyond (H.P.C.O.)
C2	Power Beyond (H.P.C.O.) 1/2" BSPP female thread
N	Prearrangement for power beyond (H.P.C.O.)
C4	Closed center

D40.3.C.T.A1.A1.A1



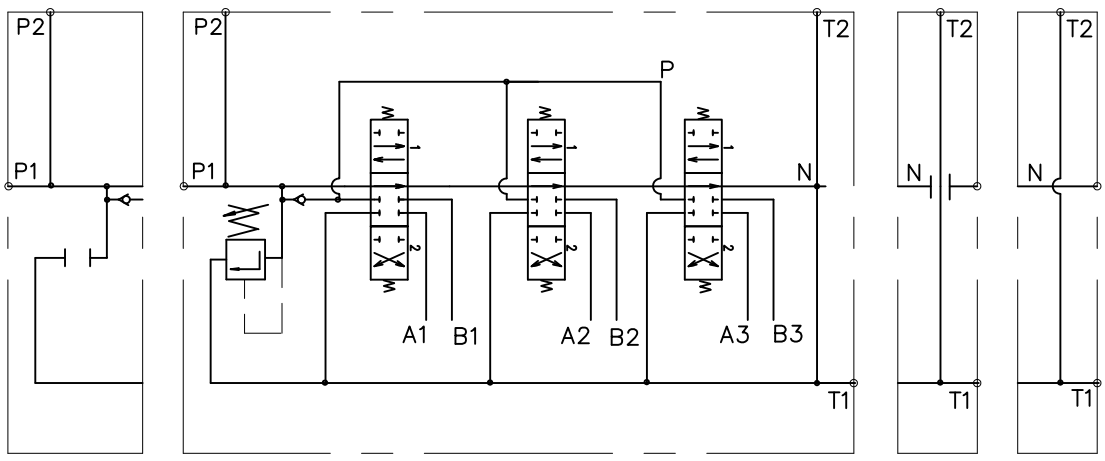
Tandem circuit
with check valve on each section

D40.3.C.P.A1.A1.A1



Parallel circuit
with check valve on each section

D40.3.S.P.A1.A1.A1



Without relief valve

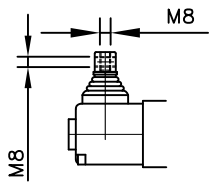
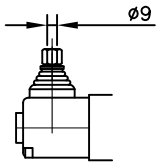
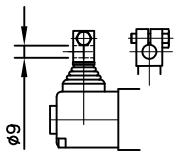
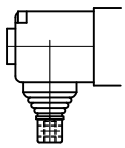
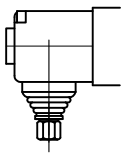
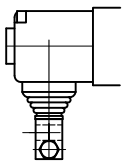
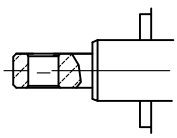
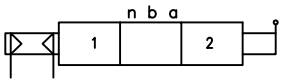
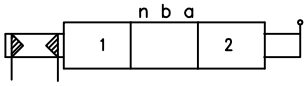
Parallel circuit
with single check valve on inlet port

Closed center

Power beyond - H.P.C.O.

2.6 Spool control

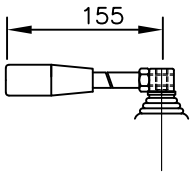
Table 12

code	feature	code	feature	code	feature
L10	 Lever control	L11	 Lever control	L12	 Lever control
L20	 Lever control	L21	 Lever control	L22	 Lever control
SL	 Without lever control	P	 Pneumatic control on-off (5-10 bar) pilot port 1/4" BSPP	H	 Hydraulic control on-off (5-20 bar) pilot port 1/4" BSPP
TC TP	Cable remote control (see paragraph 2.7)	TM	Joystick control (see paragraph 2.8)		

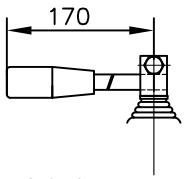
Shaft type for lever control L10, L11, L12, L20, L21 and L22 (to be ordered separately):

L155 (M8 x 155mm)

L170 (dia.9 x 170mm)



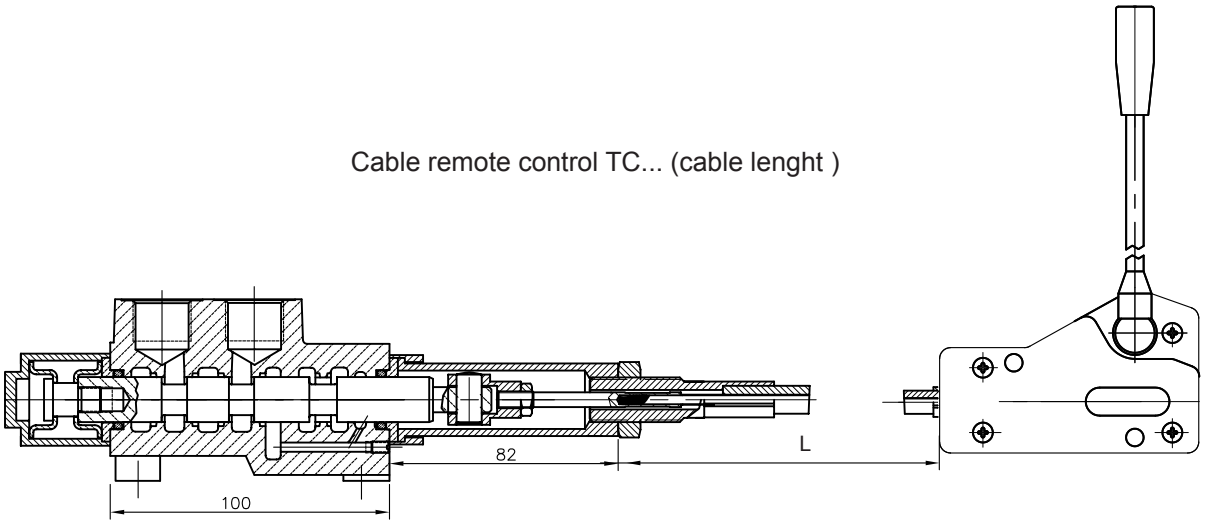
L155



L170

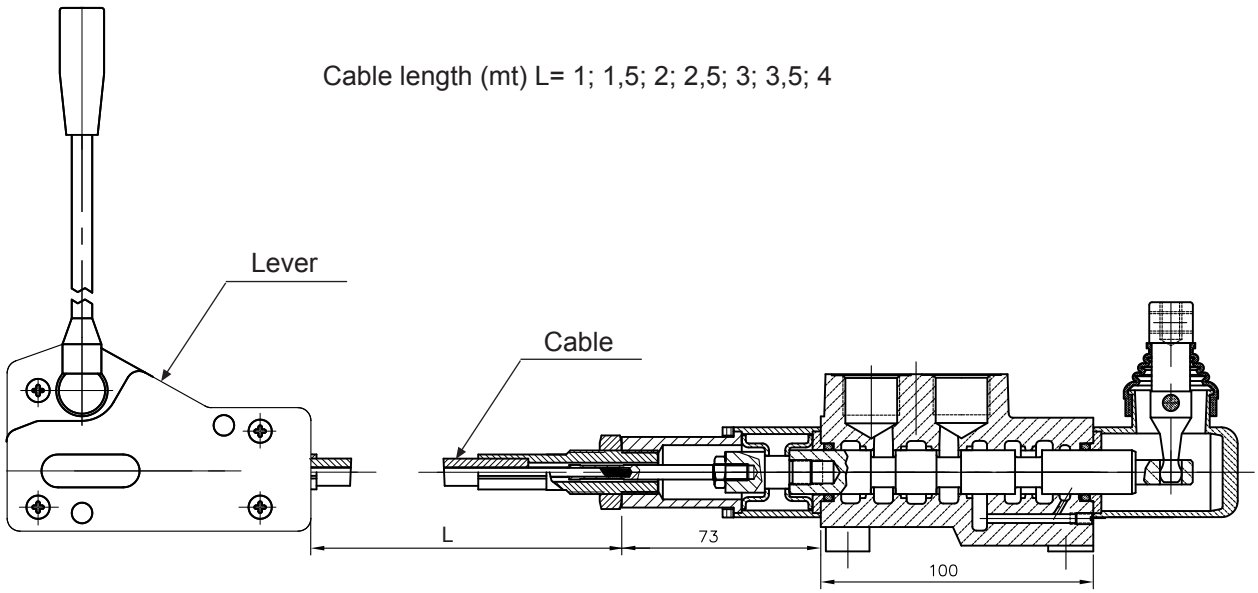
2.7 Cable remote control

Cable remote control TC... (cable lenght)



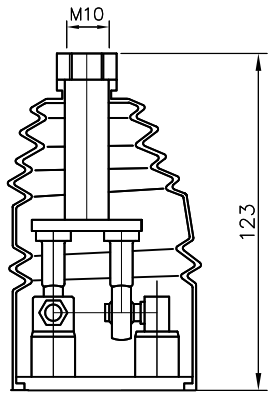
Lever			
Code	3047	3076	3077
Stroke	13+13 mm	13+13 mm	13+13 mm
Max. load	45 kg	45 kg	45 kg
Level ratio	10:1	10:1	10:1
Lock in neutral	No	No	Yes
Antireverse lock	No	Yes	No
Body colour	Black	Black	Black
Cables type	Heavy Duty	Heavy Duty	Heavy Duty
Operating temperature	−40/+80C	−40/+80C	−40/+80C

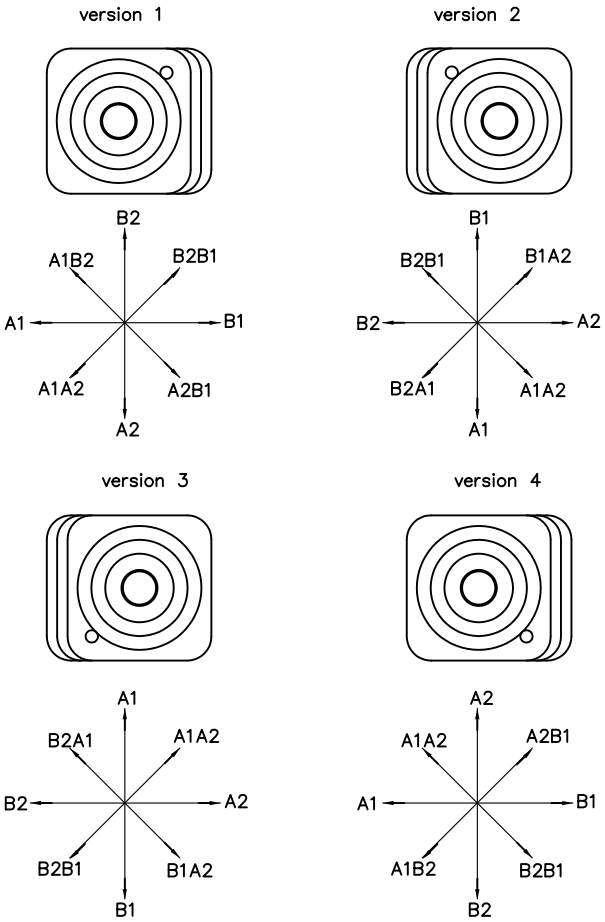
Cable length (mt) L= 1; 1,5; 2; 2,5; 3; 3,5; 4

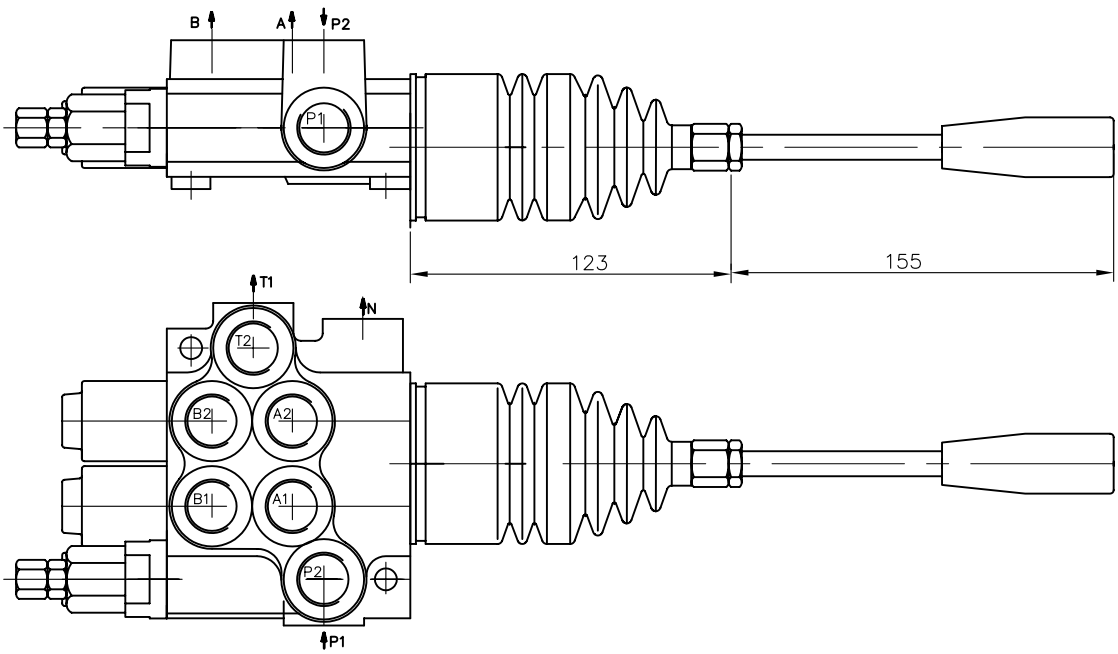


Cable remote control TP... (cable length)

2.8 Joystick control TM







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2.9 Order Code

Body features								-	Spool features			-	Spool features		
D 40	2	S	11	G	P	D180	X		A	1	L10		A	1	P
1	2	3	4	5	6	7	8		10	11	12		10	11	12

1	Valve series	D 40
2	Number of Spool	1 / 2 / 3 / 4 / 5 / 6 / 7
3	check valve option	see table 3
4	Working ports	see table 4
5	Type of thread	see table 5
6	Circuit type	see table 6
7	Relief valve VP (setting)	see table 7
8	Power Beyond (H.P.C.O.)	see table 8

10	Spool chart	see table 10
11	Spool positioner	see table 11
12	Spool control	see table 12

Example of order code:

D 40.2.S.11.G.P.D180.X - A.1.L10 - A.1.P

Reminder: shaft for lever control to be ordered separately

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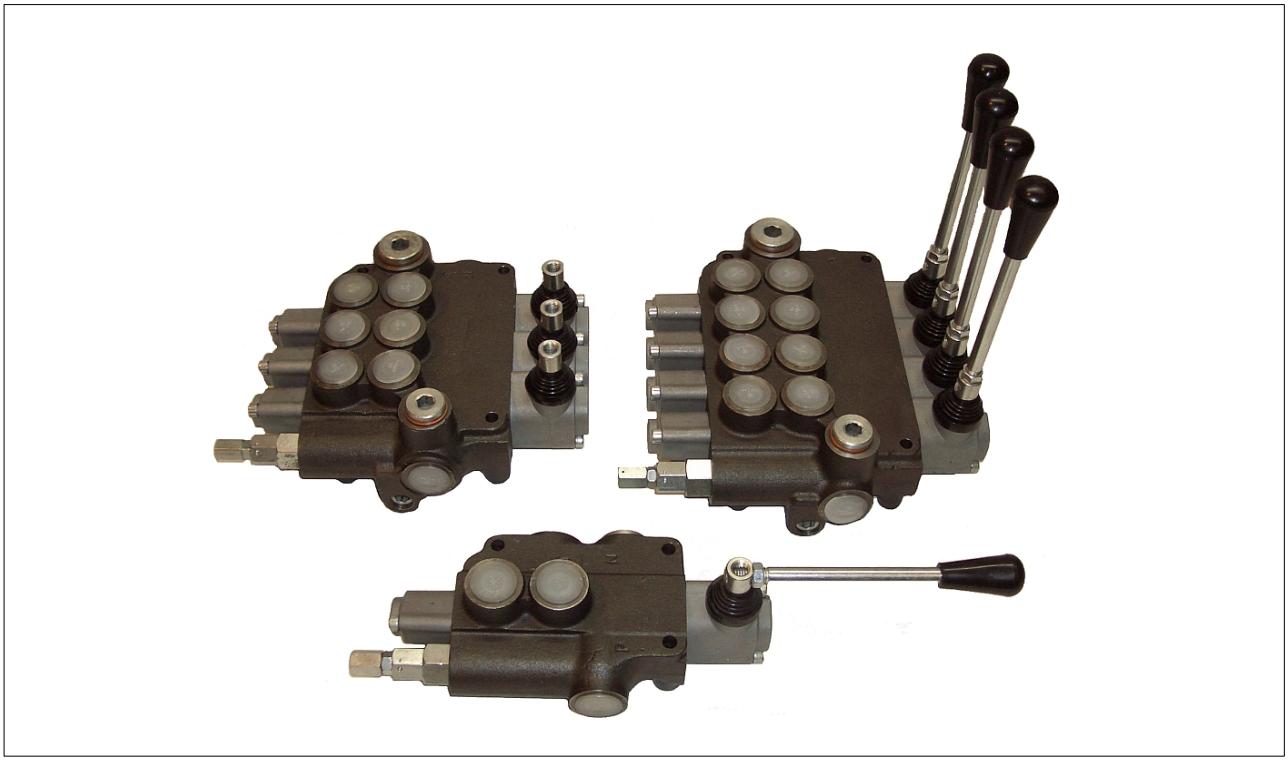
3 Monoblock directional control valve **D** 80



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3.1 General specifications

Technical specification	Metering unit system	
Max flow rate	l/min U.S.G.P.M.	80 21
Max operating pressure	bar PSI	300 4350
Max back pressure	bar PSI	50 700
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 1.10
Middle	cm^3/min Cu. In./min	12 0.73
Lower values on demand (to be agreed with our Sales Dpt.)		

Number of spools	1 to 6
Adjustable direct operated relief valve (tamper-proof seal available on request)	VP
Single load hold check valve	C

3.1.1 Weight

Version	Metering unit systems	Weight
D 80.1	kg LBS	5 11.0
D 80.2	kg LBS	7 15.4
D 80.3	kg LBS	9 19.83
D 80.4	kg LBS	10.5 23.1
D 80.5	kg LBS	12 26.4
D 80.6	kg LBS	13.6 29.9

3.1.2 Material specification:

Body: High strength cast-iron.
Spool: Hardened steel and chrome plated
Seals: Buna “N”.

3.1.3 Standard features:

1) Parallel - Tandem circuit
2) interchangeable spools (provides minimum leakage, smooth operation)
3) Wide selections inlets, work ports, and outlets threaded ports.
4) Negative overlapping of the spool.

3.1.4 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) Complete lever assembly
4) Wide range of positioners

3.1.5 Symbols:

P: inlet port
T: outlet port
A / **B**: work ports
H.P.C.O.: carry-over
VP: relief valve
P_2T_2: top inlet and outlet ports
P_1: side inlet
T_1: side outlet

P: pressure line
T : exhaust line
N : centre line (by pass).

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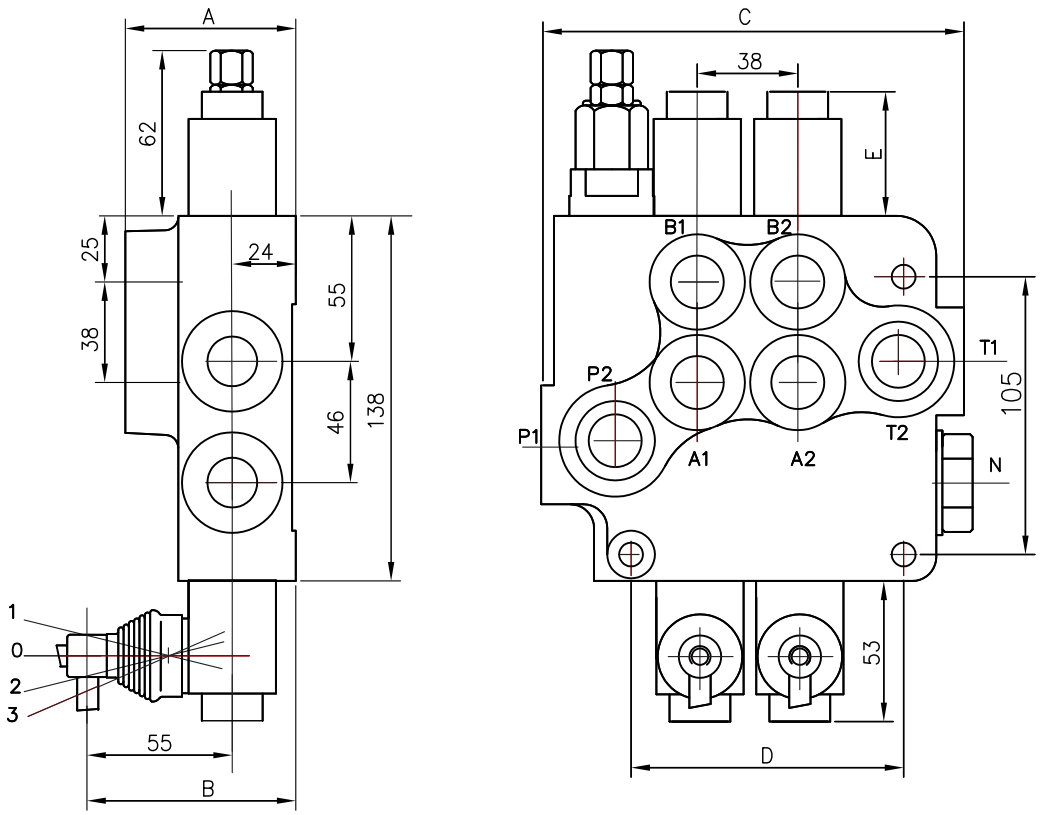
3.2 Dimensional data

D 80 1 / 2 / 3 / 4 / 5 / 6



	A	B	C	D
D 80.1	65	79	107	65
D 80.2	80	94	160	103
D 80.3	80	94	198	141
D 80.4	80	94	242	179
D 80.5	80	94	280	217
D 80.6	80	94	318	255

Table 4

code	working ports
11	P1 - T1
12	P1 - T2
21	P2 - T1
22	P2 - T2

Spool Positioners	E
1 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11	40
2 - 3 - 12 - 14	72
13	44

Table 5

code	Port thread			
	P	A - B	T	N
M	M22 x1.5	M22 x1.5	M26 x1.5	M26 x1.5
G	1/2" BSPP	1/2" BSPP	3/4" BSPP	3/4" BSPP
S	7/8" - 14 UNF	7/8" - 14 UNF	1 1/16" - 14 UNF	1 1/16" - 14 UNF

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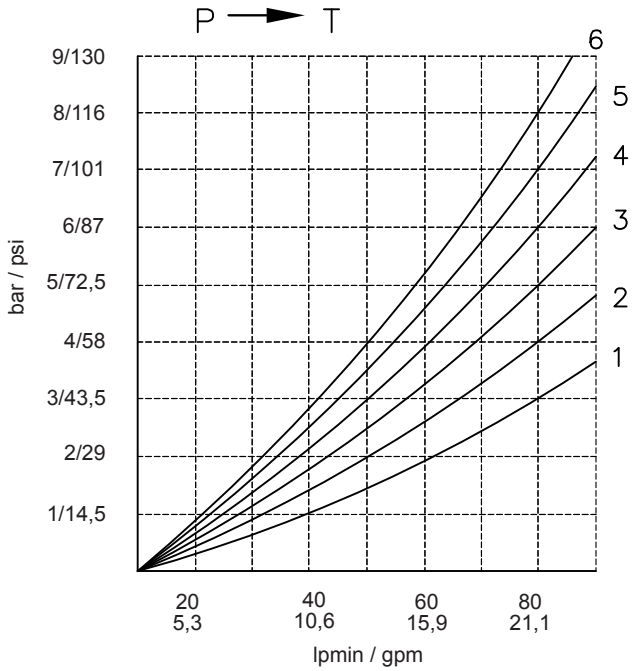
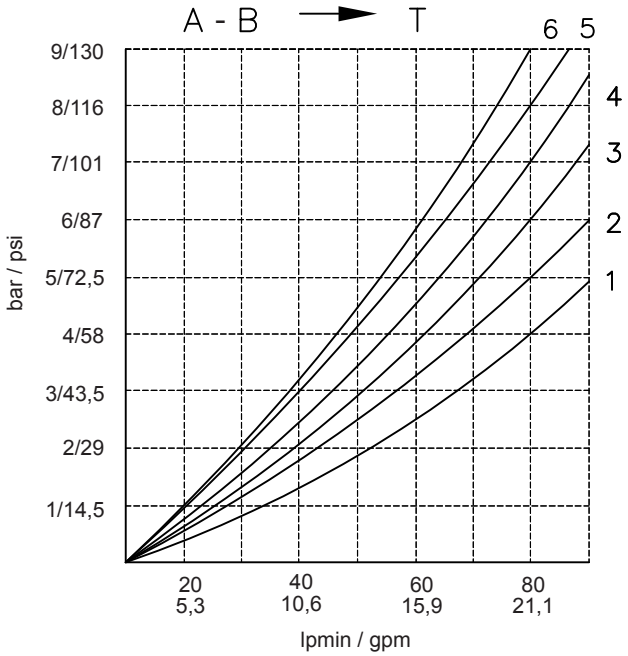
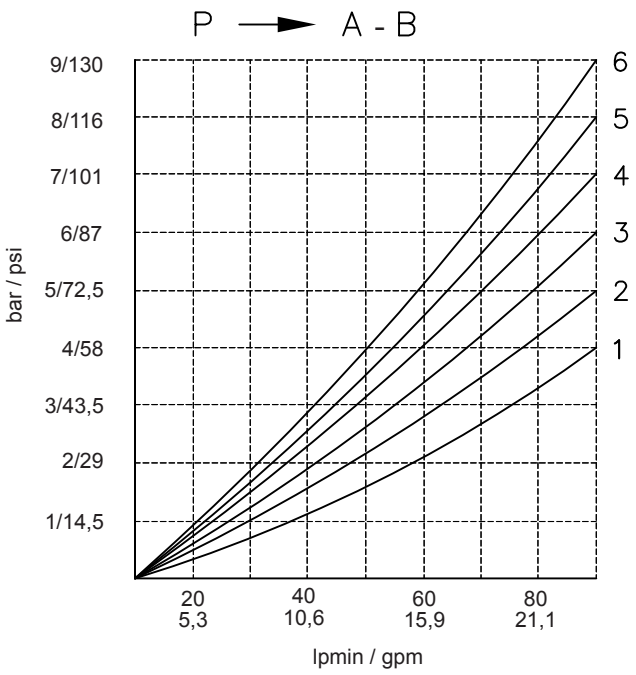
3.3 Performance curves







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

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3.4 Spool charts

Table 11

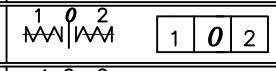
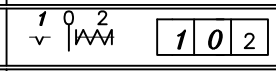
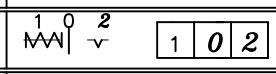
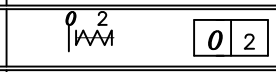
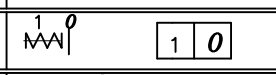
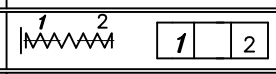
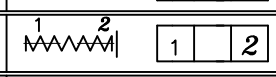
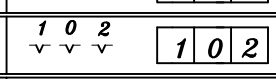
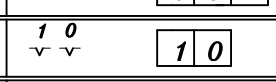
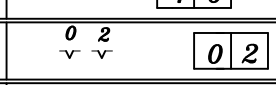
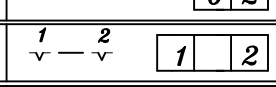
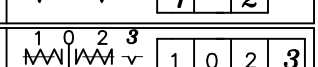
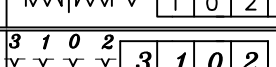
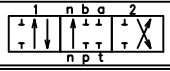
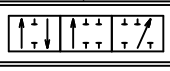
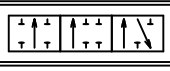
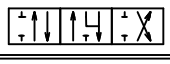
Type	Spool positioners
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

Table 10

Type	Spool scheme
A	
B	
C	
D	
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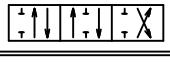
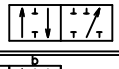
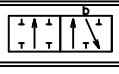
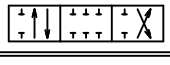
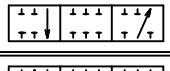
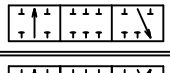
F	
G	
H	
M	
N	
O	
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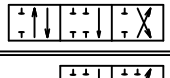
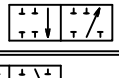
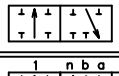
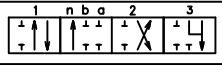
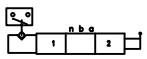
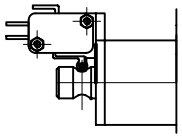
Q	
R	
S	
T	
L	

code	Microswitch option	
17		Microswitch type Omron v 165 I C5 Spool positioner 1 

3.5 Schemes

Table 6

Code	Circuit type
P	Parallel
T	Tandem

Table 7

Code	Relief valve VP
W	Without relief valve
D180	With relief valve (factory setting 180 bar)

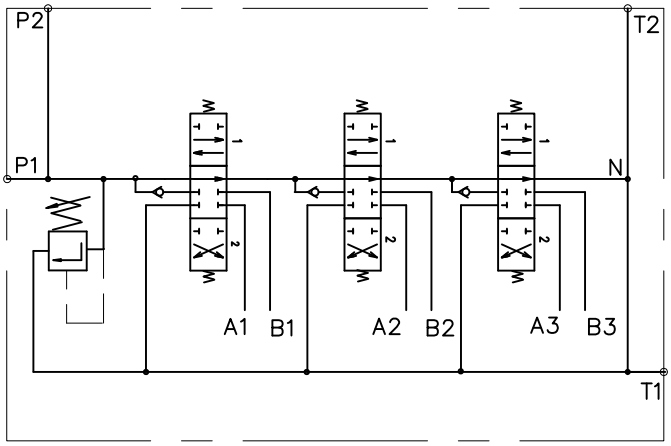
Table 3

Code	Check valve option
S	Single check valve on inlet port
C	Check valve on each section

Table 8

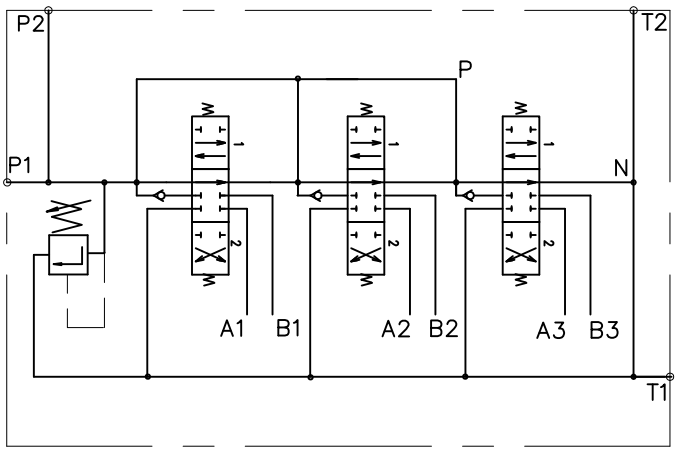
Code	Outlet port
X	Without power beyond (H.P.C.O.)
C2	Power Beyond (H.P.C.O.) 1/2" BSPP female thread
N	Prearrangement for power beyond (H.P.C.O.)
C4	Closed center

D 80.3.C.T.A1.A1.A1



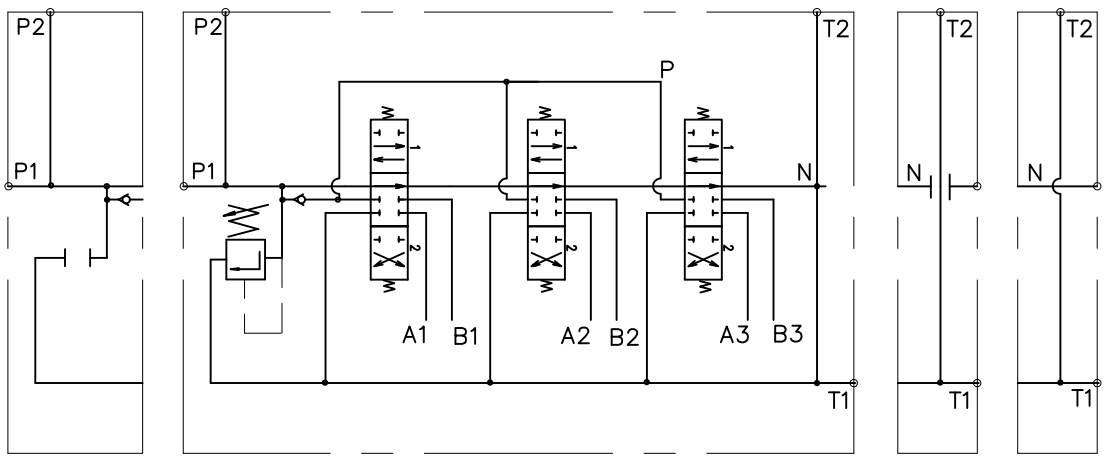
Tandem circuit
with check valve on each section

D 80.3.C.P.A1.A1.A1



Parallel circuit
with check valve on each section

D 80.3.S.P.A1.A1.A1



Without relief valve

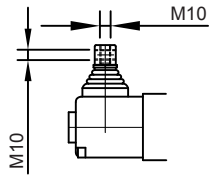
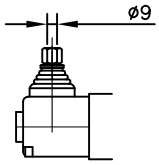
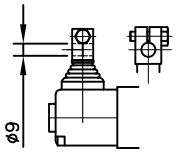
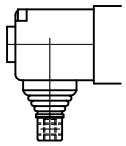
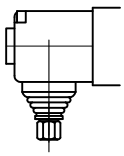
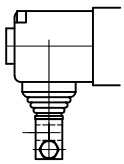
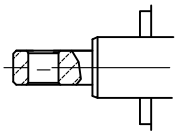
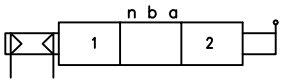
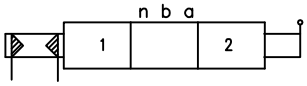
Parallel circuit
with single check valve on inlet port

Closed center

Power beyond - H.P.C.O.

3.6 Spool control

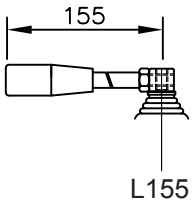
Table 12

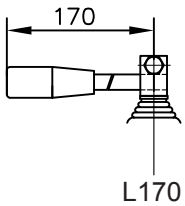
Code	Assembly	Code	Assembly	Code	Assembly
L10	 Lever control	L11	 Lever control	L12	 Lever control
L20	 Lever control	L21	 Lever control	L22	 Lever control
SL	 Without lever control	P	 Pneumatic control on-off (5-10 bar) pilot port 1/4" BSPP	H	 Hydraulic control on-off (5-20 bar) pilot port 1/4" BSPP
TC TP	Cable remote control (see paragraph 3.7)	TM	Joystick control (see paragraph 3.8)		

Shaft type for lever control L10, L11, L12, L20, L21 and L22 (to be ordered separately):

L155 (M10 x 155mm)

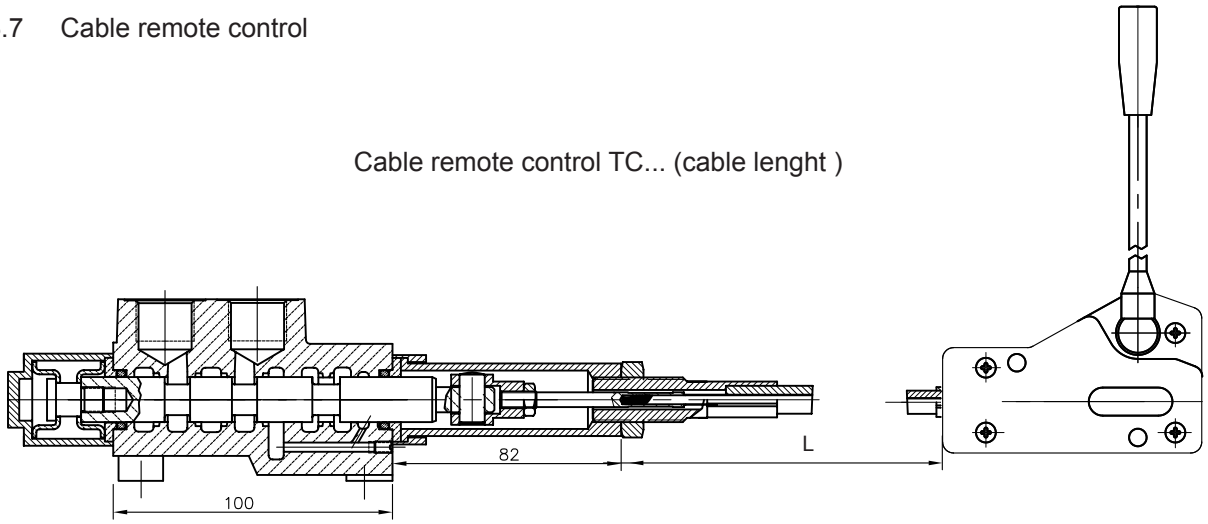
L170 (dia.9 x 170mm)





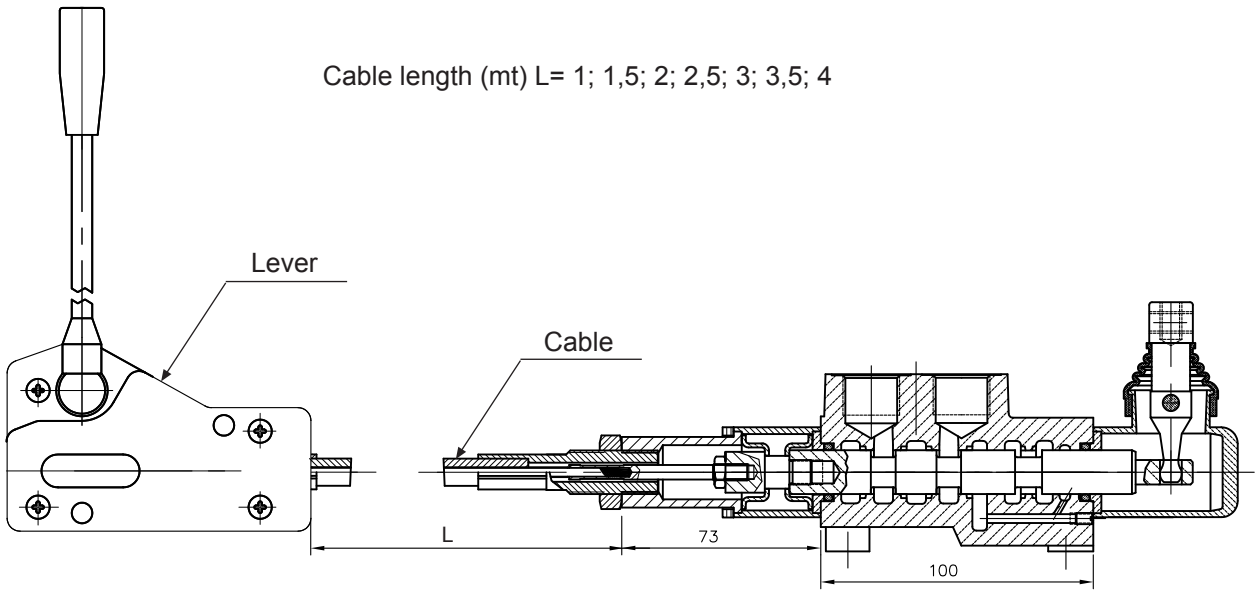
3.7 Cable remote control

Cable remote control TC... (cable lenght)



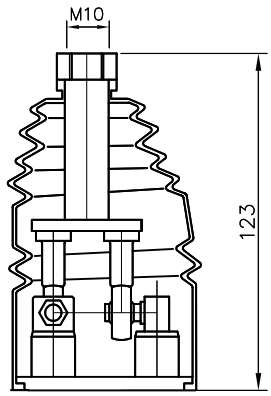
Lever			
Code	3047	3076	3077
Stroke	13+13 mm	13+13 mm	13+13 mm
Max. load	45 kg	45 kg	45 kg
Level ratio	10:1	10:1	10:1
Lock in neutral	No	No	Yes
Antireverse lock	No	Yes	No
Body colour	Black	Black	Black
Cables type	Heavy Duty	Heavy Duty	Heavy Duty
Operating temperature	−40/+80C	−40/+80C	−40/+80C

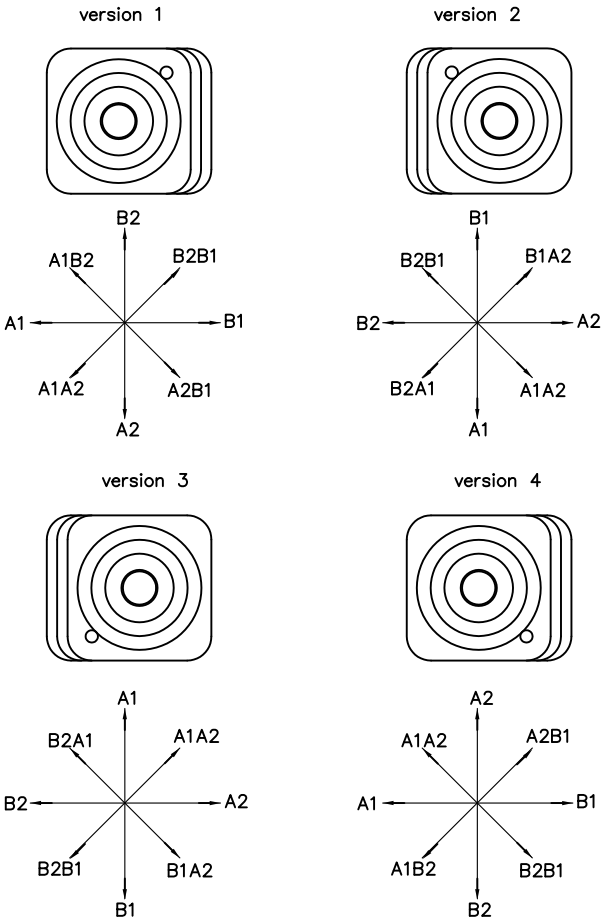
Cable length (mt) L= 1; 1,5; 2; 2,5; 3; 3,5; 4

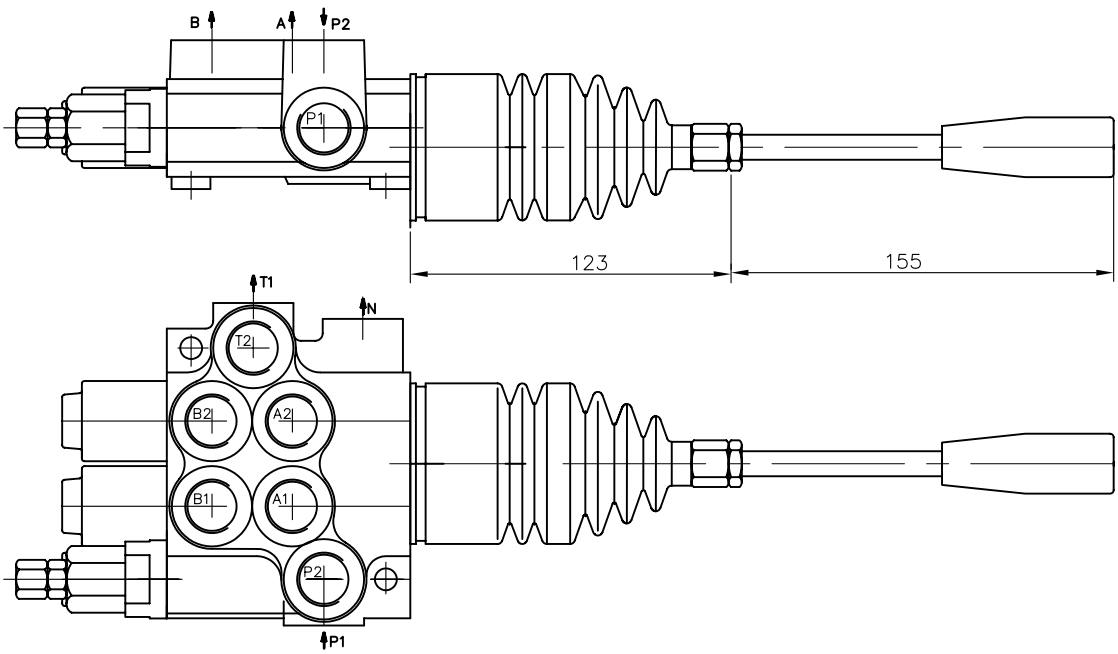


Cable remote control TP... (cable length)

3.8 Joystick control TM







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3.9 Order Code

Body features								-	Spool features			-	Spool features		
D 80	2	S	11	G	P	D180	X		A	1	L10		A	1	P
1	2	3	4	5	6	7	8		10	11	12		10	11	12

1	Valve series	D 80
2	Number of Spool	1 / 2 / 3 / 4 / 5 / 6
3	check valve option	see table 3
4	Working ports	see table 4
5	Type of thread	see table 5
6	Circuit type	see table 6
7	Relief valve VP (setting)	see table 7
8	Power Beyond (H.P.C.O.)	see table 8

10	Spool chart	see table 10
11	Spool positioner	see table 11
12	Spool control	see table 12

Example of order code:

D 80.2.S.11.G.P.D180.X - A.1.L10 - A.1.P

Reminder: shaft for lever control to be ordered separately

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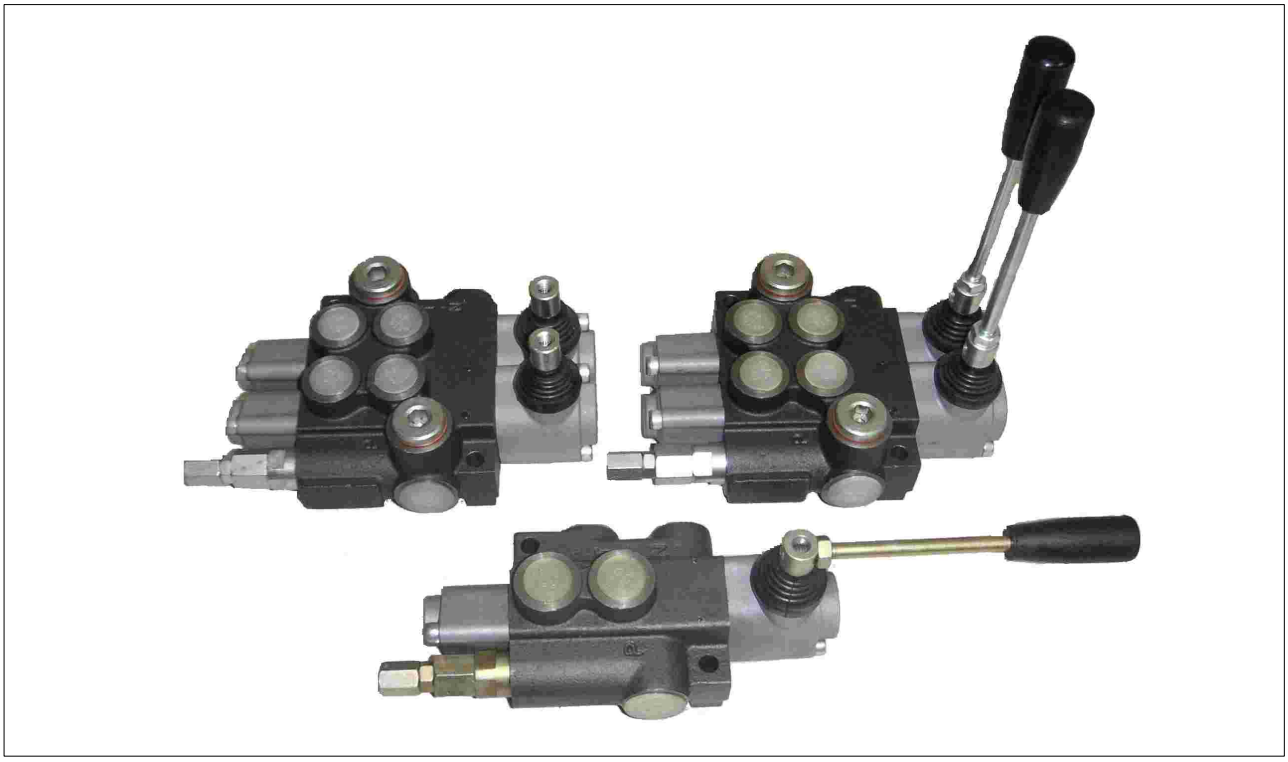
4 Monoblock directional control valve **D**120



Contents

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4.1 General specifications

Technical specification	Metering unit system	
Max flow rate	l/min U.S.G.P.M.	120 32
Max operating pressure	bar PSI	300 4350
Max back pressure	bar PSI	50 700
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	30 1.83
Middle	cm^3/min Cu. In./min	20 1,22
Lower values on demand (to be agreed with our Sales Dpt.)		

Number of spools	1 to 3
Adjustable direct operated relief valve (tamper-proof seal available on request)	VP
Single load hold check valve	C

3.1.1 Weight

Version	Metering unit systems	Weight
D 120.1	kg LBS	8 17.63
D 120.2	kg LBS	11 24.24
D 120.3	kg LBS	13 24.64

4.1.2 Material specification:

Body: High strength cast-iron.
Spool: Hardened steel and chrome plated
Seals: Buna “N”.

4.1.3 Standard features:

1) Parallel - Tandem circuit
2) interchangeable spools (provides minimum leakage, smooth operation)
3) Wide selections inlets, work ports, and outlets threaded ports.
4) Negative overlapping of the spool.

4.1.4 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) Complete lever assembly
4) Wide range of positioners

4.1.5 Symbols:

P: inlet port
T: outlet port
A / **B**: work ports
H.P.C.O.: carry-over
VP: relief valve
P_2T_2: top inlet and outlet ports
P_1: side inlet
T_1: side outlet

P: pressure line
T : exhaust line
N : centre line (by pass).

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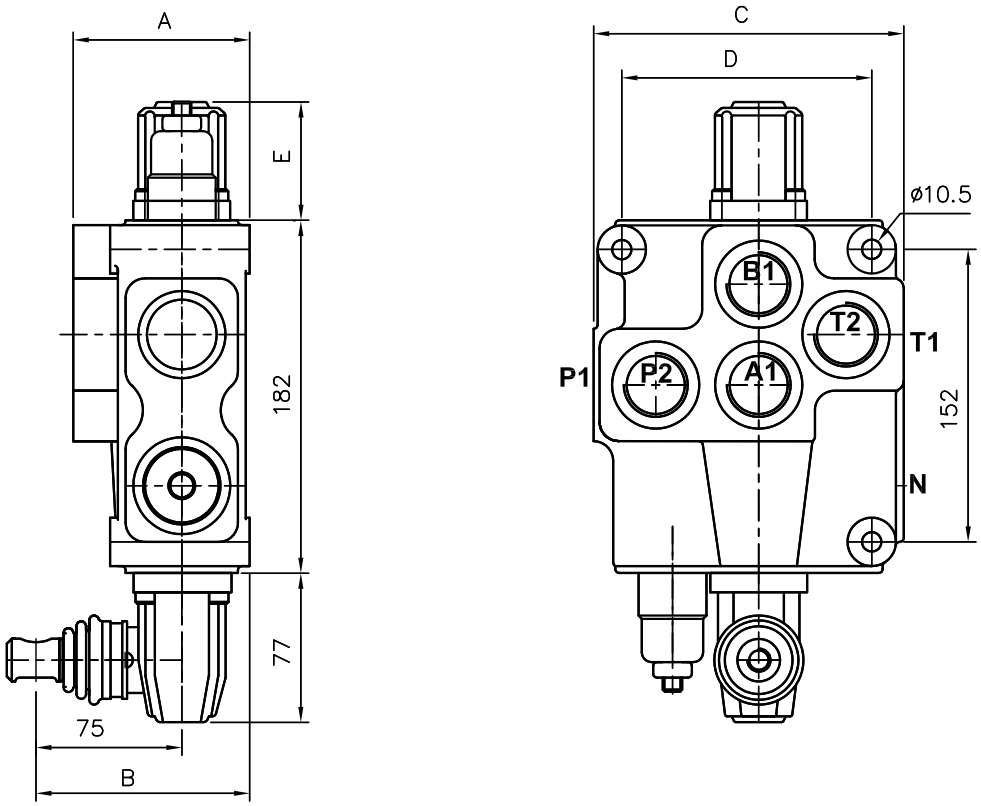
4.2 Dimensional data

D 120 1 / 2 / 3



	A	B	C	D
D 120.1	92	110	160	129
D 120.2	92	110	213	182
D 120.3	92	110	266	235

Table 4

code	working ports
11	P1 - T1
12	P1 - T2
21	P2 - T1
22	P2 - T2

Spool Positioners	E
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11	64
12	74

Table 5

code	Port thread			
	P	A - B	T	N
M	M33 x 2	M33 x 2	M33 x 2	M36 x1.5
G	1" BSPP	1" BSPP	1" BSPP	M36 x1.5
S	1"5/16 - 12 UN	1"5/16 - 12 UN	1"5/16 - 12 UN	M36 x1.5

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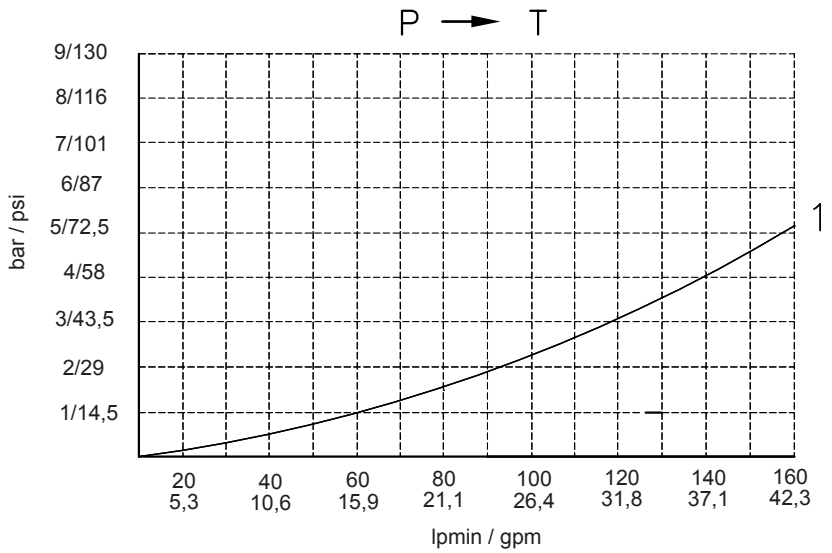
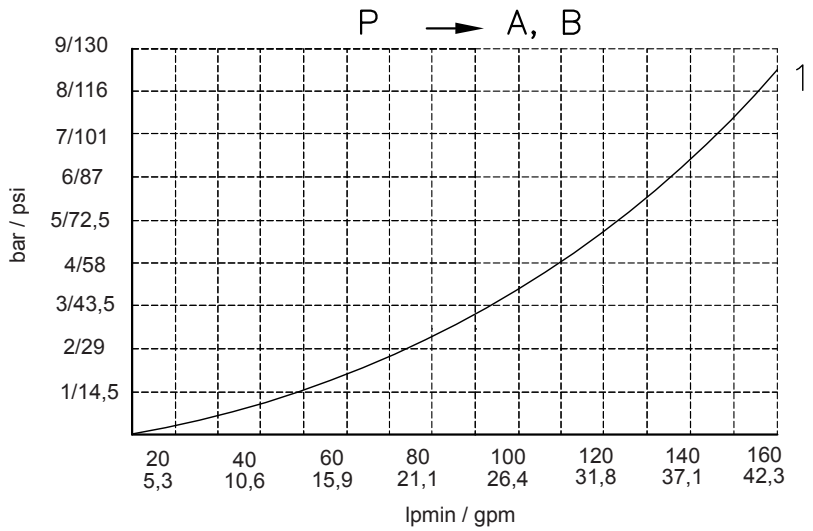
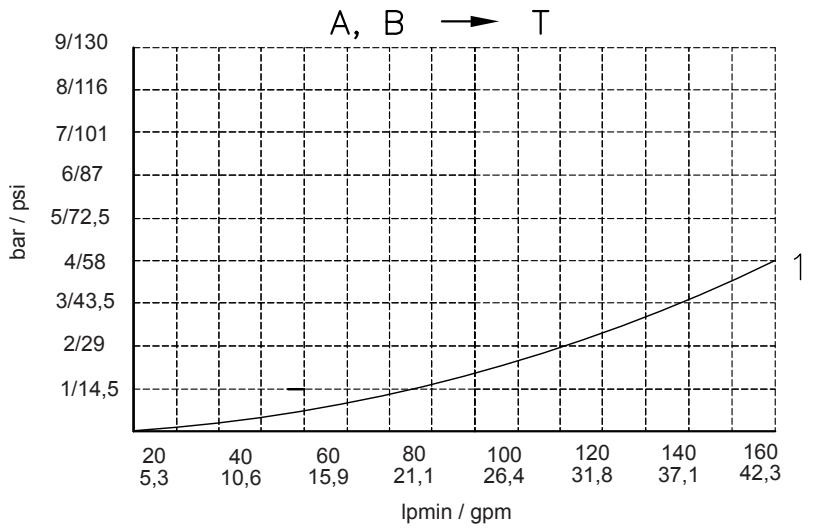
4.3 Performance curves







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

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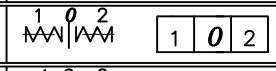
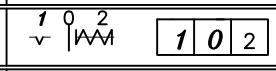
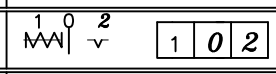
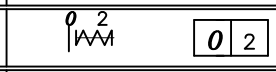
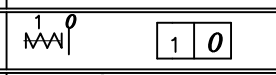
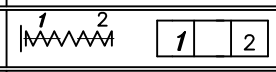
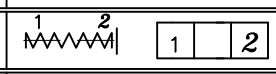
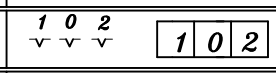
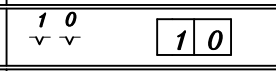
4.4 Spool charts

Table 11

Type	Spool positioners
1	
2	
3	
4	
5	
6	
7	
8	
9	
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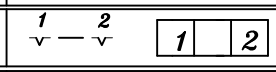
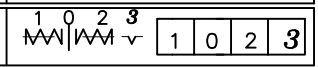
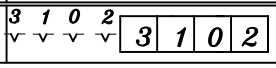
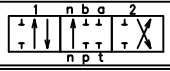
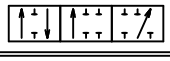
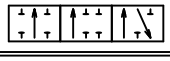
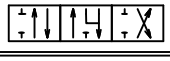
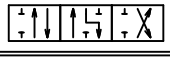
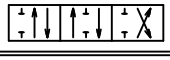
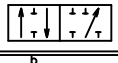
11	
12	
13	

Table 10

Type	Spool scheme
A	
B	
C	
D	
E	
F	
G	
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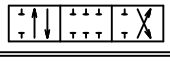
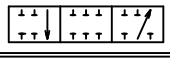
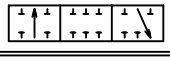
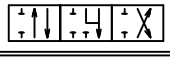
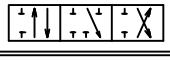
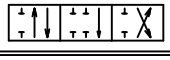
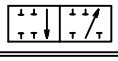
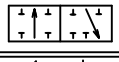
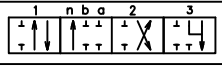
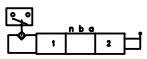
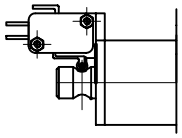
M	
N	
O	
P	
Q	
R	
S	
T	
L	

code	Microswitch option	
17		Microswitch type Omron v 165 I C5 Spool positioner 1 

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4.5 Schemes

Table 6

Code	Circuit type
P	Parallel
T	Tandem

Table 7

Code	Relief valve VP
W	Without relief valve
D180	With relief valve (factory setting 180 bar)

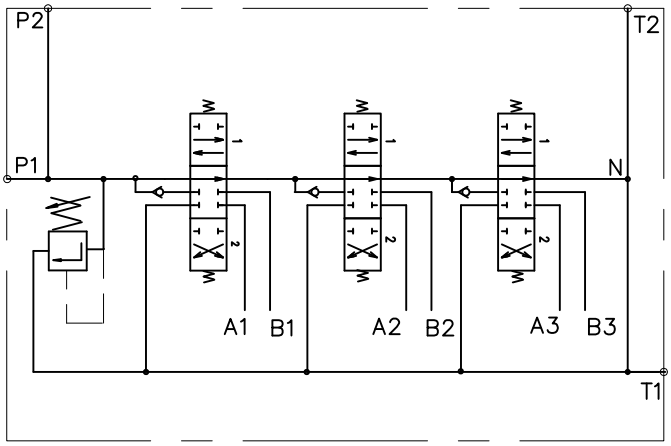
Table 3

Code	Check valve option
S	Single check valve on inlet port
C	Check valve on each section

Table 8

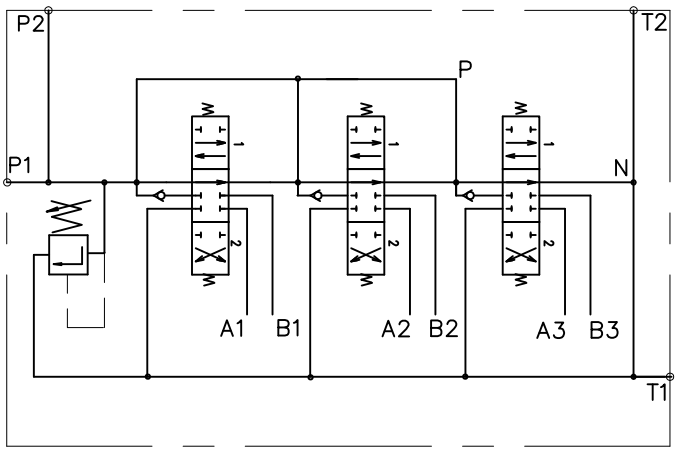
Code	Outlet port
X	Without power beyond (H.P.C.O.)
C2	Power Beyond (H.P.C.O.) 1" BSPP female thread
N	Prearrangement for power beyond (H.P.C.O.)
C4	Closed center

D120.3.C.T.A1.A1.A1



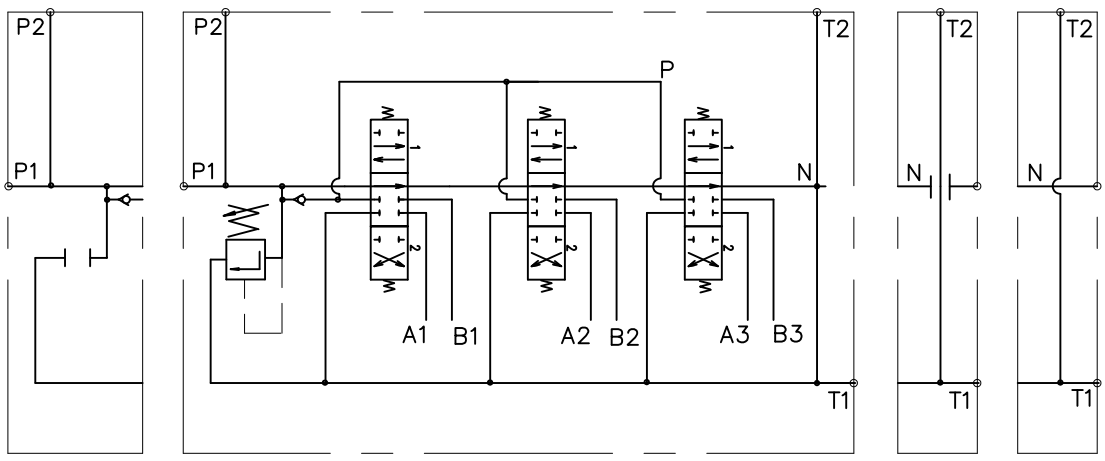
Tandem circuit
with check valve on each section

D120.3.C.P.A1.A1.A1



Parallel circuit
with check valve on each section

D120.3.S.P.A1.A1.A1



Without relief valve

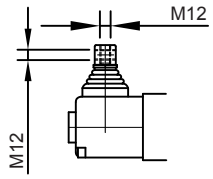
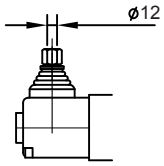
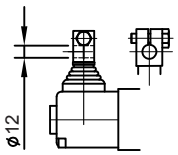
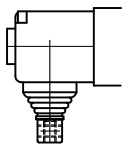
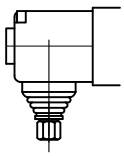
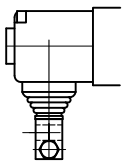
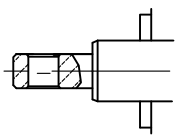
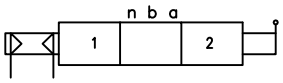
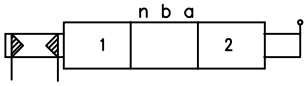
Parallel circuit
with single check valve on inlet port

Closed center

Power beyond - H.P.C.O.

4.6 Spool control

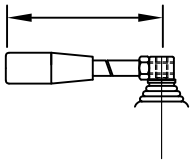
Table 12

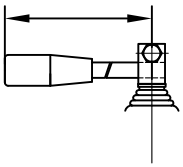
Code	Assembly	Code	Assembly	Code	Assembly
L10	 Lever control	L11	 Lever control	L12	 Lever control
L20	 Lever control	L21	 Lever control	L22	 Lever control
SL	 Without lever control	P	 Pneumatic control on-off (5-10 bar) pilot port 1/4" BSPP	H	 Hydraulic control on-off (5-20 bar) pilot port 1/4" BSPP

Shaft type for lever control L10, L11, L12, L20, L21 and L22 (to be ordered separately):

L180 (M12 x 180 mm)

L180 (dia.12 x 180 mm)


L 180


L 180

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4.7 Order Code

Body features								-	Spool features			-	Spool features		
D120	2	S	11	G	P	D180	X		A	1	L10		A	1	P
1	2	3	4	5	6	7	8		10	11	12		10	11	12

1	Valve series	D120
2	Number of Spool	1 / 2 / 3
3	check valve option	see table 3
4	Working ports	see table 4
5	Type of thread	see table 5
6	Circuit type	see table 6
7	Relief valve VP (setting)	see table 7
8	Power Beyond (H.P.C.O.)	see table 8

10	Spool chart	see table 10
11	Spool positioner	see table 11
12	Spool control	see table 12

Example of order code:

D120.2.S.11.G.P.D180.X - A.1.L10 - A.1.P

Reminder: shaft for lever control to be ordered separately

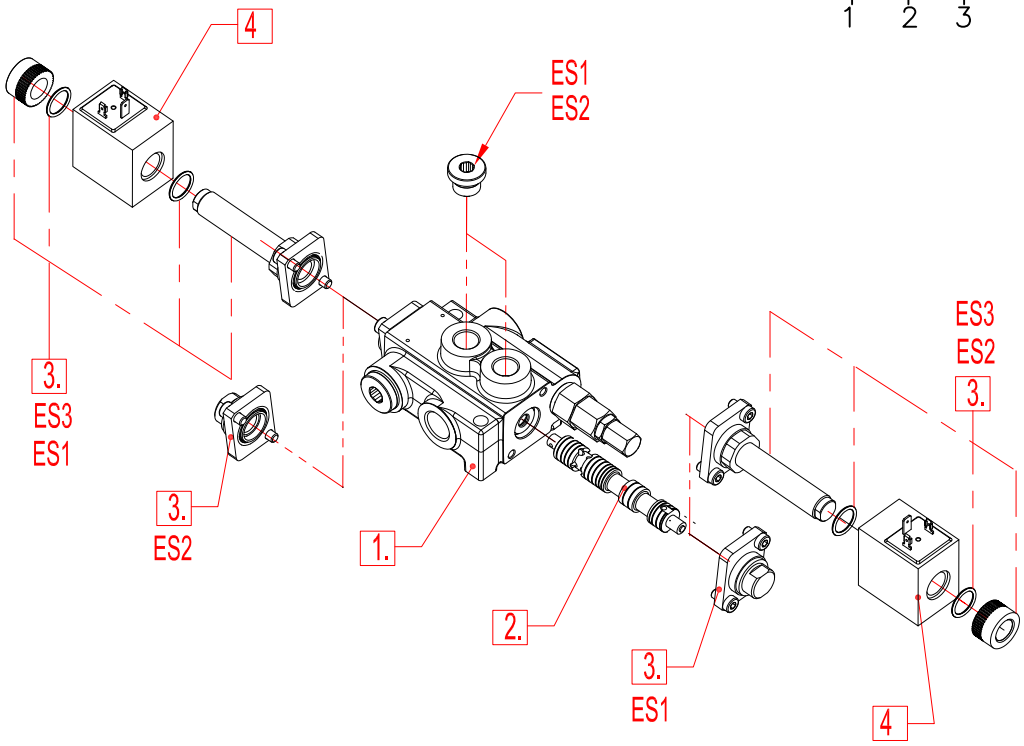
SC VISTEON PROJECT SRL
www.visteon.ro
visteon@visteon.ro

5 Z50 ES - DIRECT SOLENOID CONTROL

5.1 Order code

Z50 A ES3 12VDC G

1 2 3 4 5



1. Body kit

Type	Description
Z50.1	1 spool
Z50.2	2 spool
Z50.3	3 spool
Z50.4	4 spool
Z50.5	5 spool
Z50.6	6 spool

2. Spool options

Type	Description
A	Double acting, 3 positions
With A and B	closed in neutral position
D	Double acting, 3 positions
With A and B	open to Tank in neutral position

3. Control kit

Type	Description
ES1	Single acting P – A with spring return in neutral position
ES2	Single acting P – B with spring return in neutral position
ES3	Double acting P – A(B) with spring return in neutral position

4. Coils

Type	Description (with connector ISO 4400)
12VDC	Nominal voltage 12VDC
24VDC	Nominal voltage 24VDC

5. Threats

G	P, T – G1/2; A, B – G3/8

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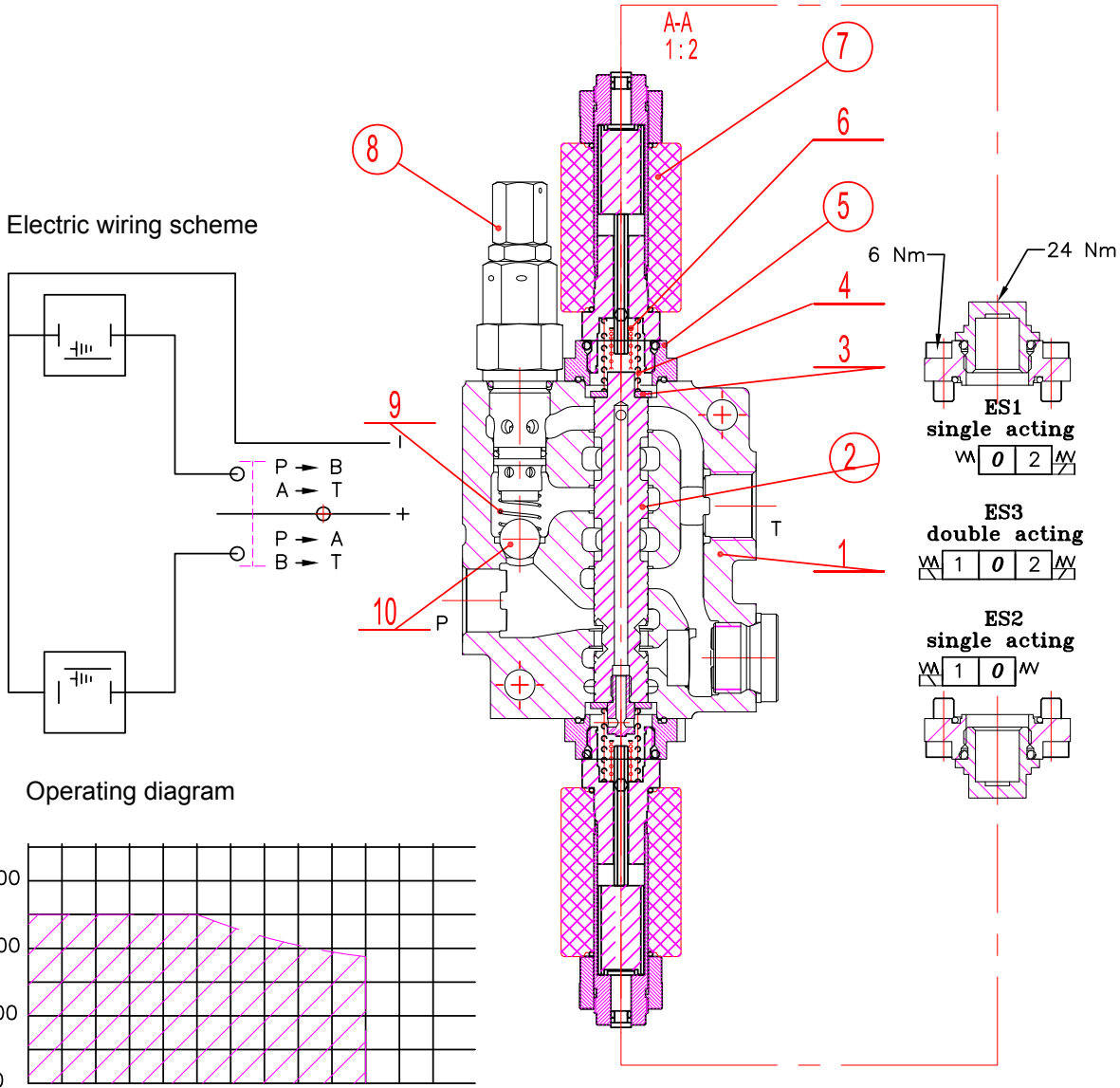

Electric wiring scheme

Operating diagram

Operating features

Control

Internal leakage A(B) T
(p=100 bar Viscosity 35 cSt : max 18ccm/min

Coil

Nominal voltage tolerance……. + 10%
Power rating ……... 37 W
Coil insulation…….. class H
Duty cycle …… 100%
Connector ISO 4400
Emergency manual override

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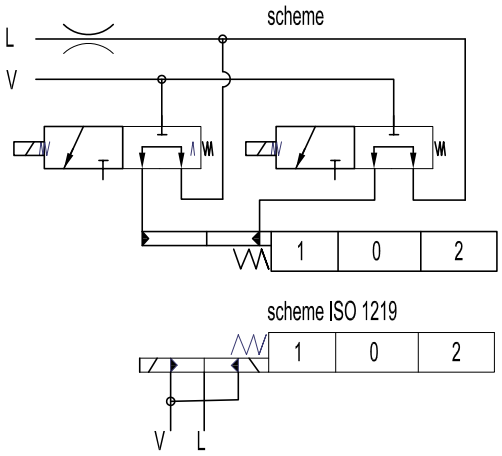
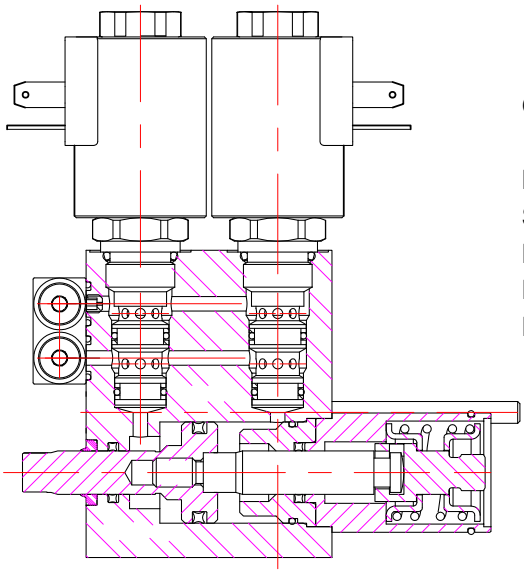
6 D40 ED3 –G12/24VDC - ELECTROHYDRAULIC CONTROL

ED3 – electro-hydraulic control ON- OFF

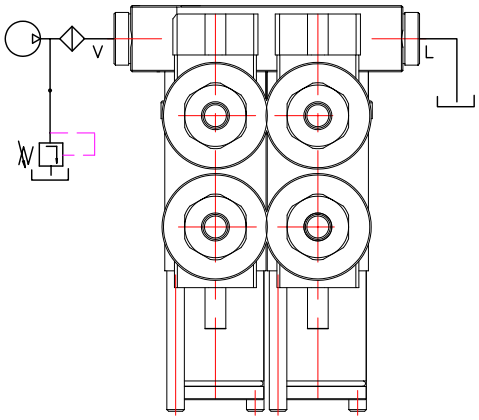


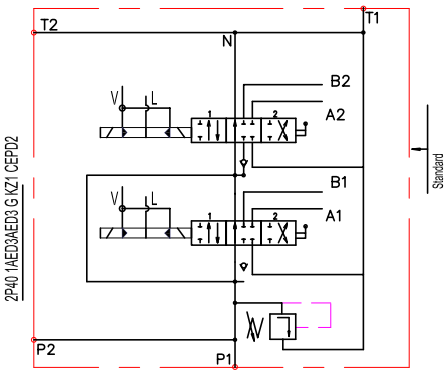


Operating pressure	min 10 bar (145 psi) max 50 bar (725 psi)
Max operating pressure in L (T line)	25 bar (360 psi)
Solenoid operating features	
Nominal voltage tolerance	± 10%
Power rating	24W
Duty cycle	100%

5.1 Ordering codes
3 – way solenoid valve – SV08 – 33
Coil D40ED3 – G – 12VDC
Coil D40ED3 – G – 24VDC

Collector kit for external pilot and drain – CEED…(1, 2, 3…)





Ordering example

D40.2 – 1A1ED3A1ED3 G KZ1 – CEED2 - 12VDC

Ordering codes (BSP threads)

CEED1D40.1	kit for 1 section
CEED1D40.2	kit for 2 section
CEED1D40.3	kit for 3 section
CEED1D40.4	kit for 4 section

. . . .

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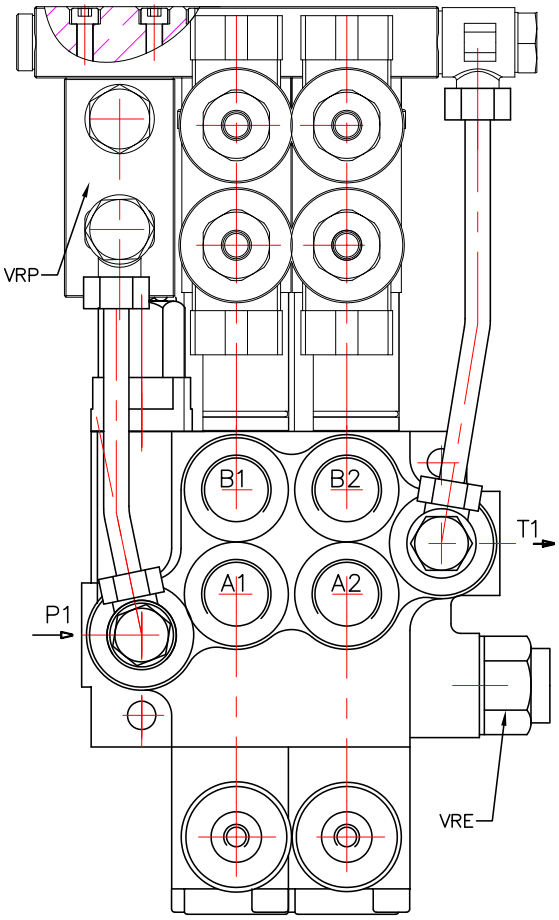
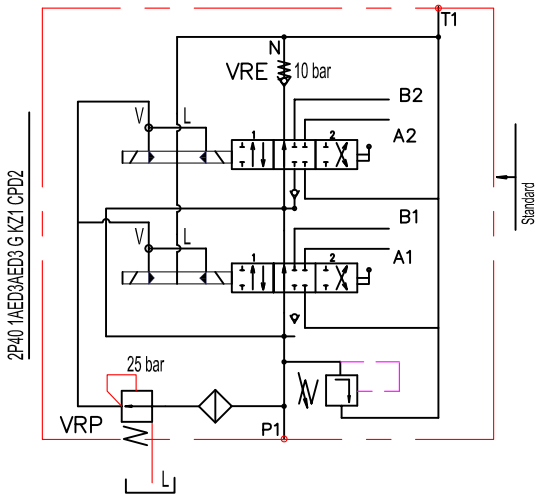
ED3 – electro – hydraulic control ON – OFF



Order codes
3 – way solenoid valve – LSV2 – 08 – 3C
Coil D40ED3 – G – 12VDC
Coil D40ED3 – G – 24VDC

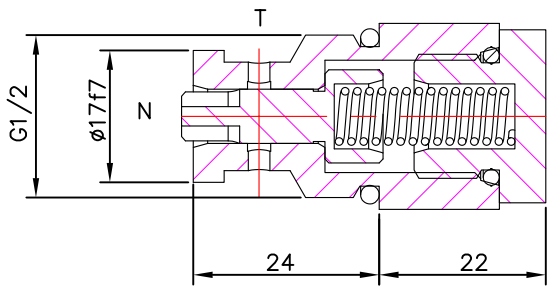
Operating pressure	min 10 bar (145 psi) max 50 bar (725 psi)
Max operating pressure in L (T line)	25 bar (360 psi)
Solenoid operating features	
Normal voltage tolerance	± 10%
Power rating	24W
Duty cycle	100%

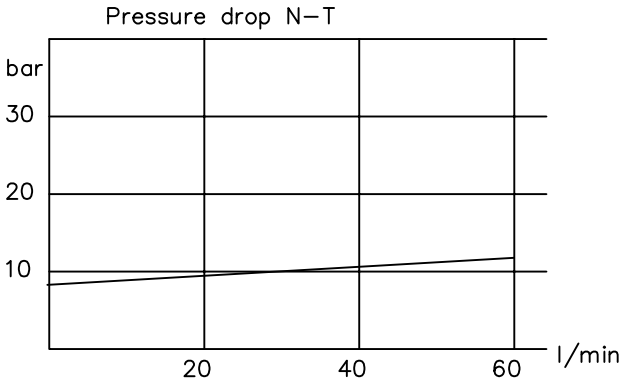


Ordering example
2D40.2 – VRP – 1A1ED3A1ED3 G KZ1 – CED2 – VRE – 12VDC

Collector kit	Ordering codes BSP threats
CED1	Kit for 1 section
CED2	Kit for 2 section
CED3	Kit for 3 section
CED4	Kit for 4 section
. . . .	

Back pressure valve VRE – P40





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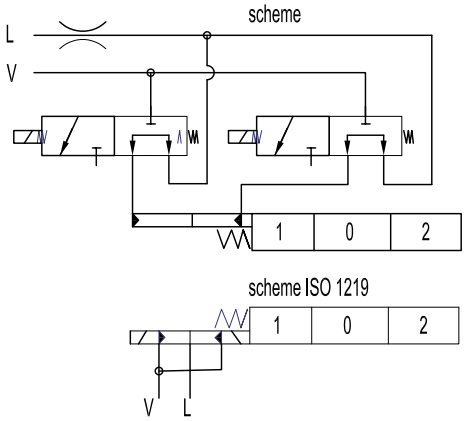
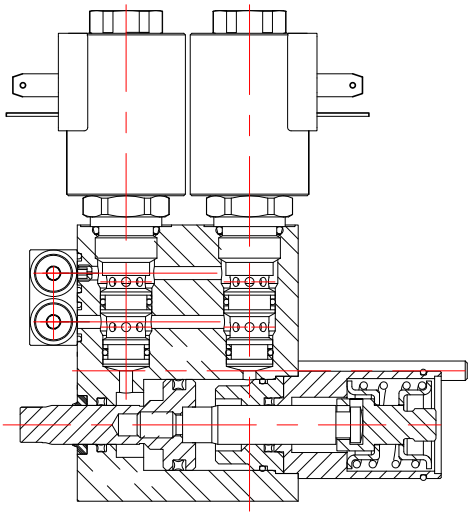
7 D80 ED3 – G12/24VDC - ELECTROHYDRAULIC CONTROL

ED3 – electro – hydraulic control ON – OFF

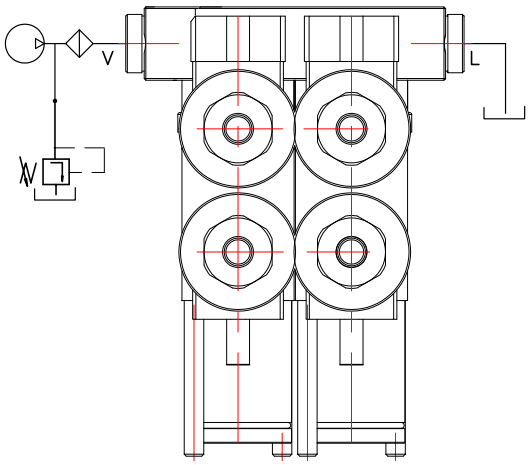


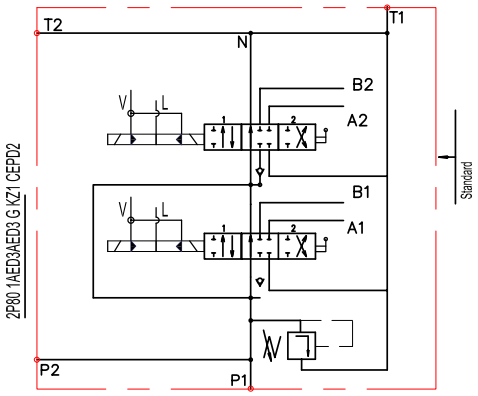


Operating pressure	min 10 bar (145 psi) max 50 bar (725 psi)
Max operating pressure in L (T line)	25 bar (360 psi)
Solenoid operating features	
Normal voltage tolerance	± 10%
Power rating	24W
Duty cycle	100%

Ordering codes
3 – way solenoid valve – SV08 -33
Coil D80ED3 – G – 12VDC
Coil D80ED3 – G – 24VDC

Collector kit for external pilot and drain – CEED…(1, 2, 3…)





Ordering example
D80.2 – 1A1EDC3A1ED3 G KZ1 – CEED2 – 12VDC

Ordering codes (BSP threads)

CEED1D80	kit for 1 section
CEED2D80	kit for 2 section
CEED3D80	kit for 3 section
CEED4D80	kit for 4 section

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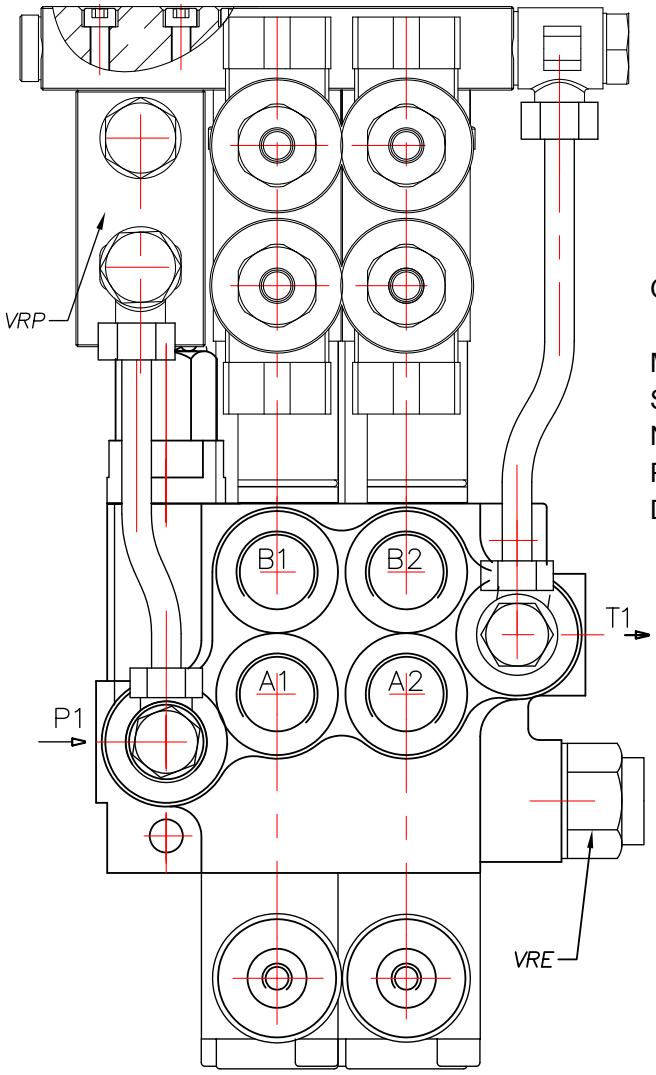
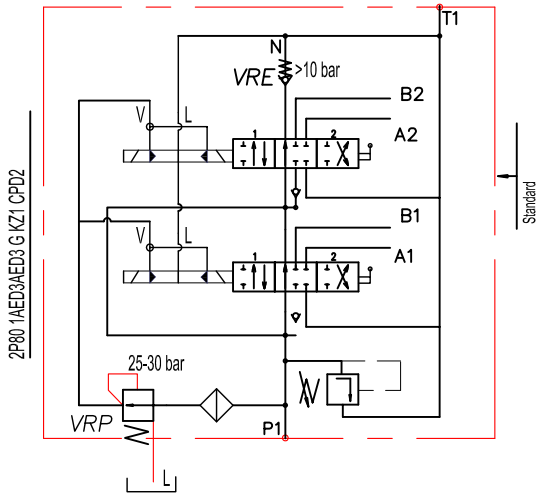


ED3 – electro – hydraulic control ON – OFF

Order codes
3 – way solenoid valve – LSV2 - 08 – 3C – NNN
Coil D40ED3 – G – 12VDC
Coil D40ED3 – G – 24VDC

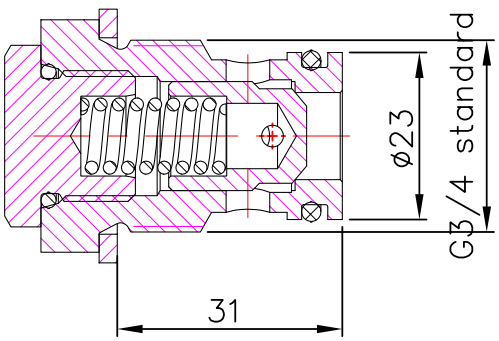
Operating pressure	min 10 bar (145 psi)
	max 50 bar (725 psi)
Max operating pressure in L (T line)	25 bar (360 psi)
Solenoid operating features	
Normal voltage tolerance	± 10%
Power rating	24W
Duty cycle	100%

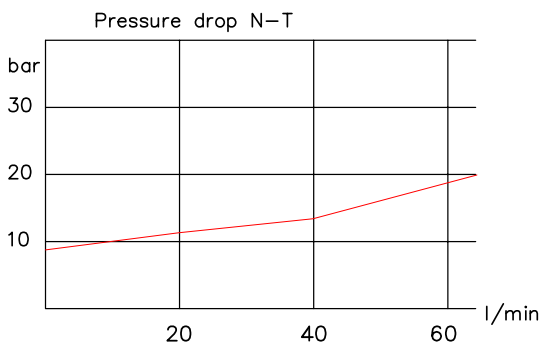


Ordering example
D80.2 – VRP 1A1ED3A1ED3 G KZ1 – CED2 – VRE – 12VDC

Collector kit	Ordering codes BSP threads
CEED1D80	kit for 1 section
CEED2D80	kit for 2 section
CEED3D80	kit for 3 section
CEED4D80	kit for 4 section

Back pressure valve VRE – D80





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