



**DVS 14**  
**Sectional directional**  
**control valve**

**TECHNICAL CATALOGUE**



## Features

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Simple, compact and heavy duty designed sectional valve from 1 to 10 sections for hydraulic systems with fixed or variable displacement pumps.

- Available in left or right inlet configurations.
- Working sections with and without port valves arrangement.
- Flow Unloader configuration available.
- Proportional electrohydraulic controls.
- Optional spool position sensors.

### Additional information

This catalogue shows the product in the most standard configurations.  
Please, contact Sales Dpt. for more detailed information or special request.

### WARNING!

All specifications of this catalogue refer to the standard product at this date.  
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications without notice.

WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN  
INCORRECT USE OF THE PRODUCT.

5<sup>th</sup> edition November 2021

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### Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm<sup>2</sup>/s - 46 cSt viscosity at 40°C - 104°F temperature.

Nominal flow rating	standard	80 l/min	22 US gpm
	Flow Unloader valve configuration	120 l/min	32 US gpm
Max. pressure (1)		350 bar	5100 psi
Back pressure (max.) on outlet <b>T</b> port	with mechanical controls	20 bar	290 psi
	with hydraulic controls	20 bar	290 psi
	with electrohydraulic controls	5 bar	73 psi
Standard internal leakage A(B)->T	$\Delta p = 100 \text{ bar} - 1450 \text{ psi}$	8 cm <sup>3</sup> /min max.	0.5 in <sup>3</sup> /min max.
Fluid		Mineral oil	
Fluid temperature range	with NBR (BUNA-N) seals	from -20°C to 80°C	from -4°F to 176°F
Viscosity	operating range	from 15 to 75 mm <sup>2</sup> /s	from 15 to 75 cst
	min.	12 mm <sup>2</sup> s	12 cst
	max.	400 mm <sup>2</sup> s	400 cst
Contamination level		-/19/16 - ISO 4406	-/19/16 - ISO 4406
Environmental temperature for working conditions	with mechanical, hydraulic, electric and electrohydraulic devices	from -40°C to 60°C	from -40°F to 140°F
Tie rods tightening torque (ch 13)		40 Nm	29,5 Nm

NOTE - (1) Intermittent pressure at max. 250,000 cycles with specific internal testing.

- For different working conditions please, contact our Sales Department.

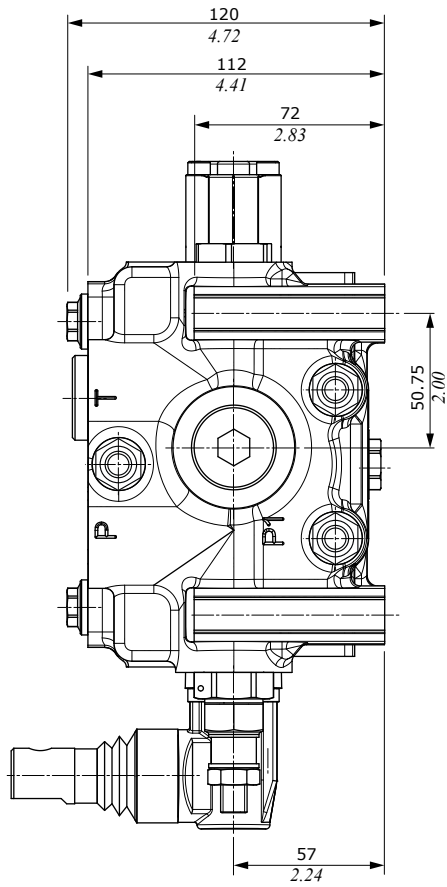
### Standard thread

REFERENCE STANDARD				
		BSP	UN-UNF	NPTF
THREAD ACCORDING TO		ISO 228/1	ISO 263	ANSI B1.20.3
		BS 2779	ANSI B1.1 unified	
CAVITY	ISO	1179-1	11926-1	
DIMENSION	SAE		J1926-1	J476a
ACCORDING TO	DIN	3852-2 shape X or Y		

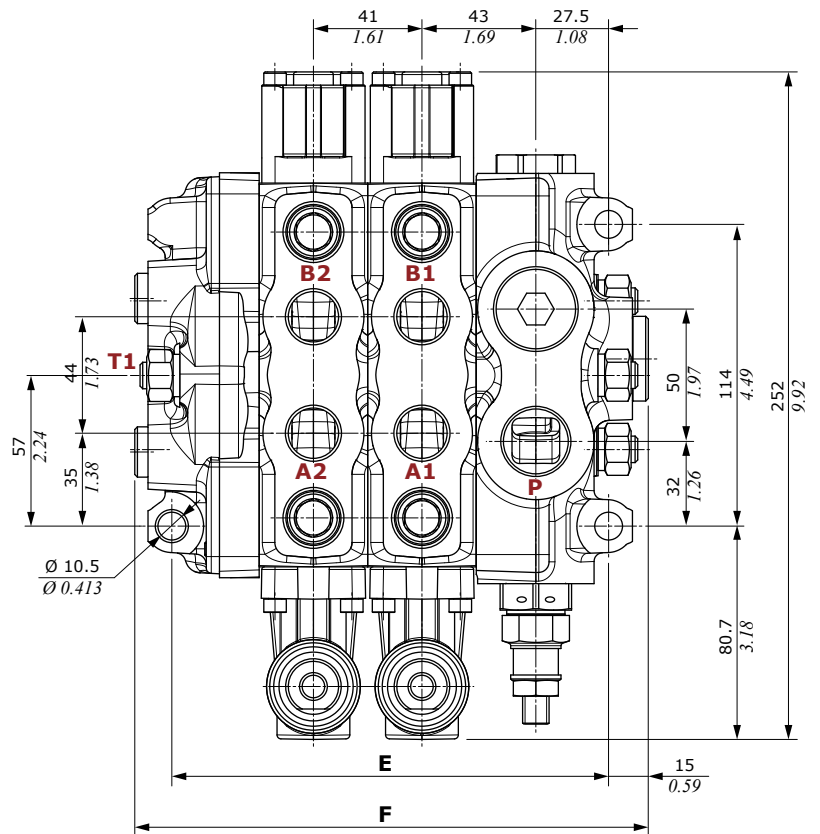
PORTS THREADING		
	BSP	UN-UNF
<b>P</b> inlet	G 3/4	1 1/6-12 (SAE 12)
<b>A</b> and <b>B</b> ports	G 1/2	7/8-14 (SAE 10)
<b>T</b> outlet, <b>HPCO</b> carry-over	G 3/4	1 1/6-12 (SAE 12) - 7/8-14 (SAE 10)*
<b>Y</b> pilot	G 1/4	9/16-18 (SAE 6)
<b>X</b> drain	G 1/4	9/16-18 (SAE 6)
Hydraulic controls	G 1/4	9/16-18 (SAE 6)

NOTE (\*) - on outlet section (mechanical and hydraulic controls)

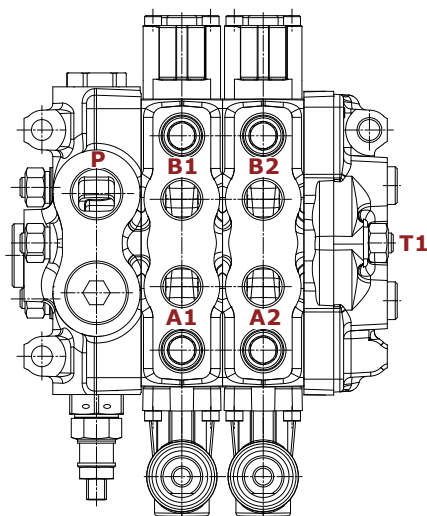
Mechanical control configuration



Right Inlet configuration example



Left Inlet configuration example

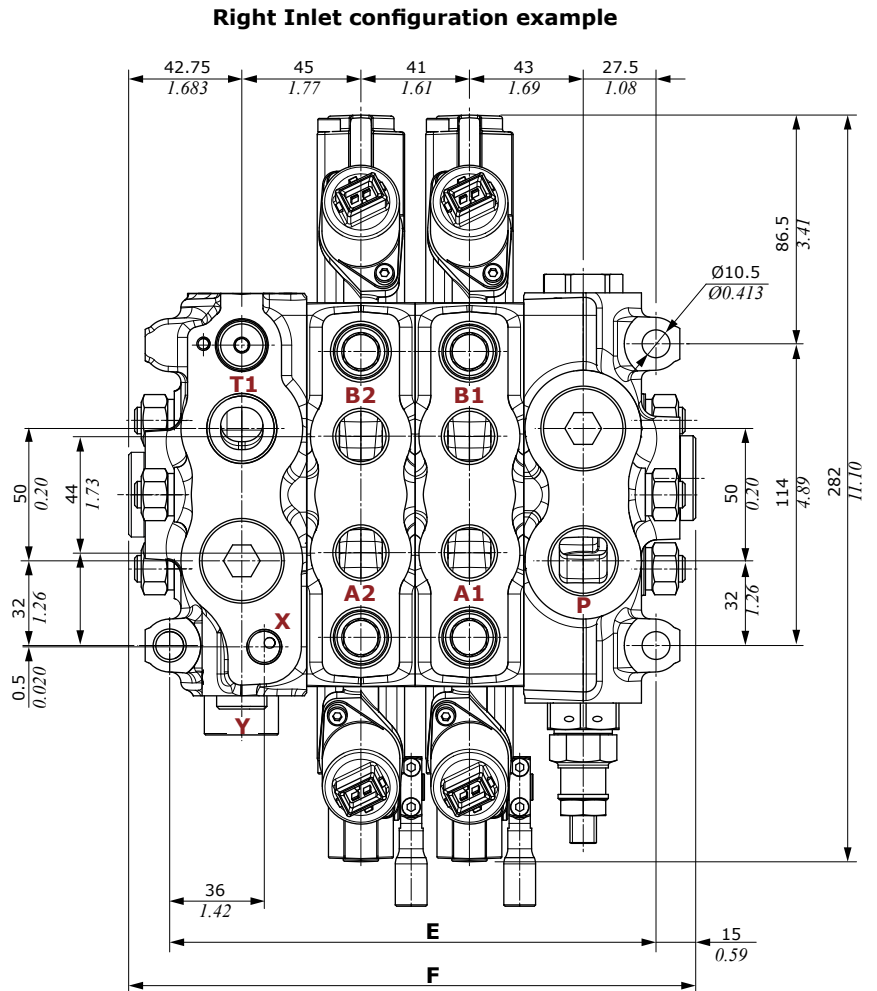
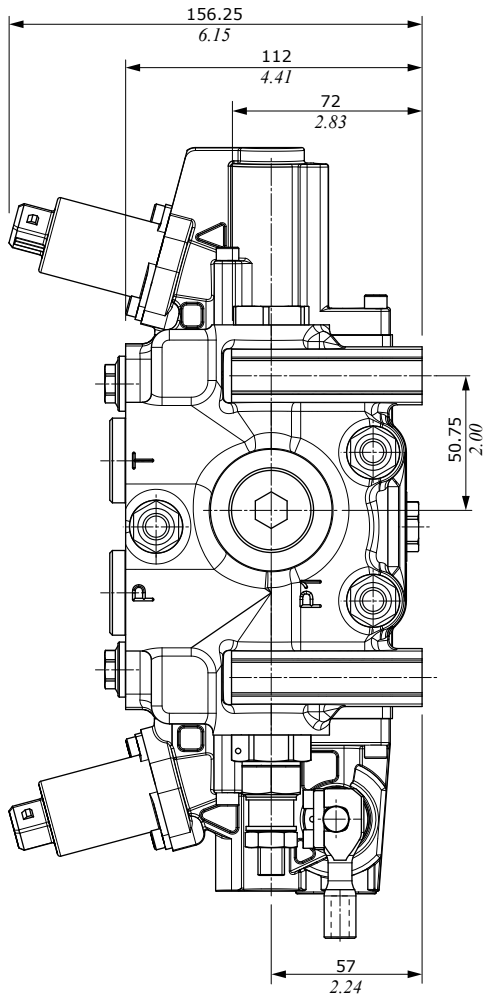


TYPE	E		F	
	mm	in	mm	in
DVS14/1	124	4.88	153	6.02
DVS14/2	165	6.50	194	7.64
DVS14/3	206	8.11	235	10.43
DVS14/4	247	9.72	276	10.87
DVS14/5	288	11.34	317	12.48
DVS14/6	329	12.95	358	14.09
DVS14/7	370	14.57	399	15.71
DVS14/8	411	16.18	440	17.32
DVS14/9	452	17.80	481	18.94
DVS14/10	493	19.41	522	20.55

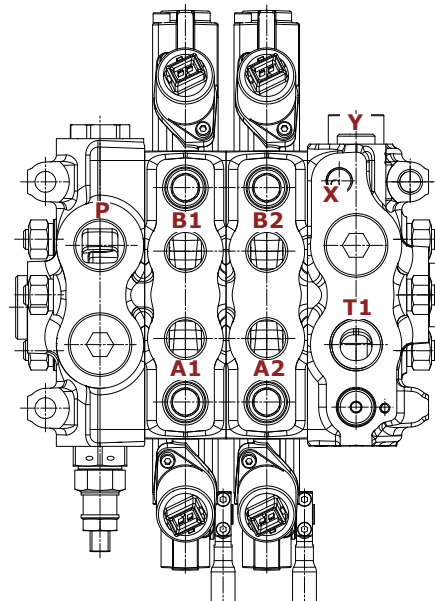
NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.

### Dimensional data

#### Electrohydraulic control configuration



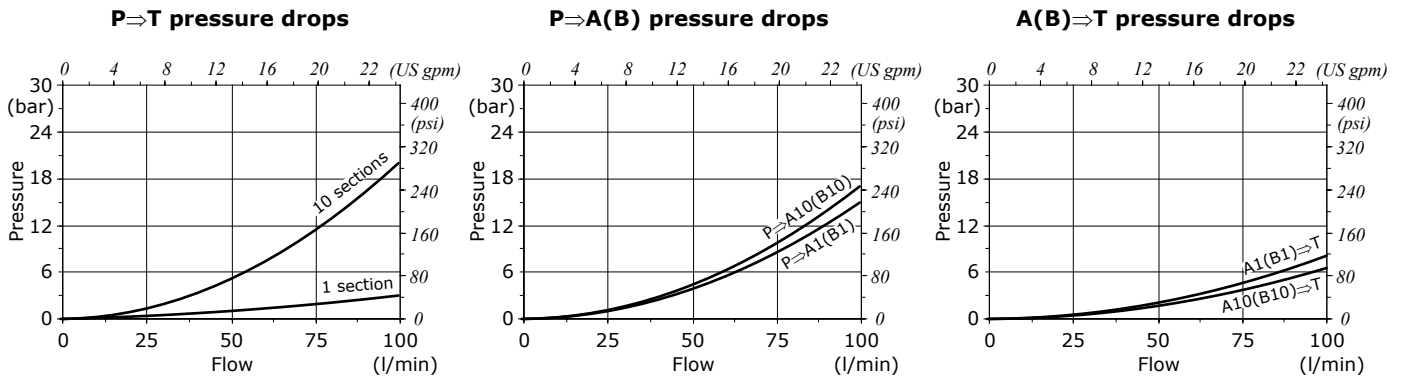
#### Left Inlet configuration example



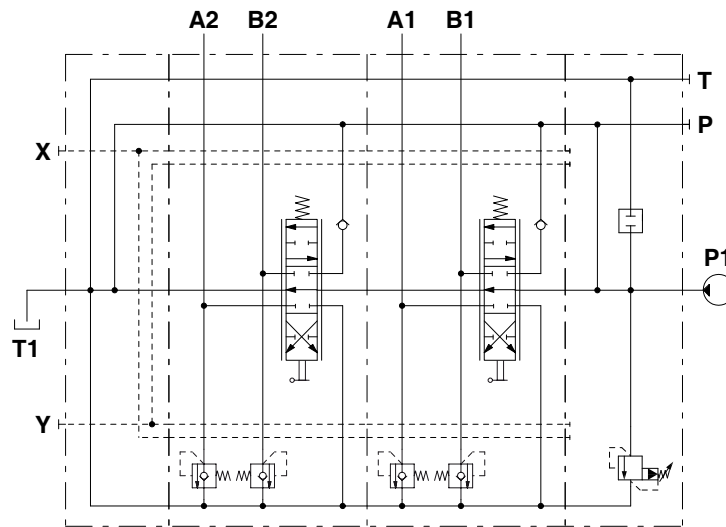
TYPE	E		F	
	mm	in	mm	in
DVS14/1	144	5.67	173.25	6.82
DVS14/2	185	7.28	214.25	8.44
DVS14/3	226	8.90	255.25	10.05
DVS14/4	267	10.51	296.25	11.66
DVS14/5	308	12.13	337.25	13.28
DVS14/6	349	13.74	378.25	14.89
DVS14/7	390	15.35	419.25	16.51
DVS14/8	431	16.97	460.25	18.12
DVS14/9	472	18.58	501.25	19.73
DVS14/10	513	20.20	542.25	21.35

NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.

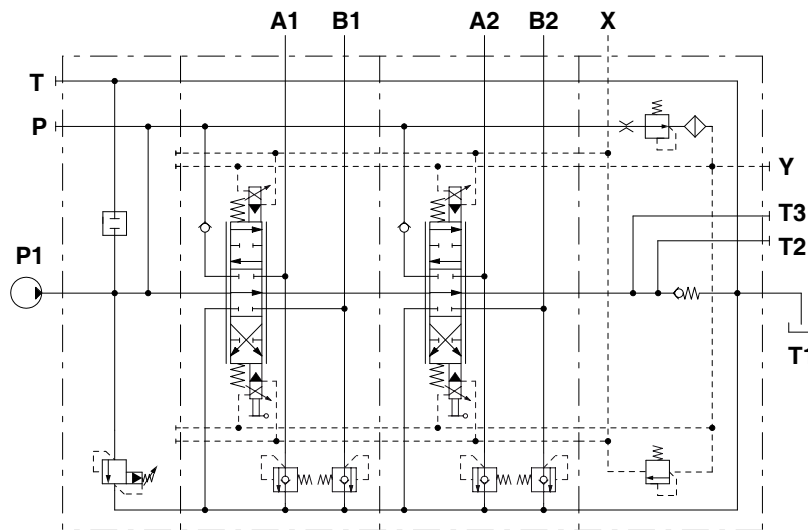
Performances



Hydraulic circuit



Right Inlet valve with mechanical controls configuration:  
 DVS14/2/MR-V1A(175)V3B-A-G05/W001A-H001-F001A-RP1-G04.03TF-PA(100)\03TF-PB(100)/  
 W001A-H001-F001A-RP1-G04.03TF-PA(100)\03TF-PB(100)/KZM1-G05



Left Inlet valve with electrohydraulic controls configuration:  
 DVS14/2/ML-V1A(200)V7B-C12-A-G05/W001A-HP04-FP04-B12AJ-RP1-G04.03TF-PA(100)\03TF-PB(100)/  
 W001A-HP04-FP04-B12AJ-RP1-G04.03TF-PA(100)\03TF-PB(100)/KZP1-G05

### Complete section ordering codes

#### Mechanical/hydraulic controls valve configuration example

Right Inlet: R  
Left Inlet: L

**DVS14/2/MR-V2A(200)V3B-A-G05/W001A-H001-F001A-RP1-G04.05TF-PA\05TF-PB/....**

Nr. of working sections

**1**

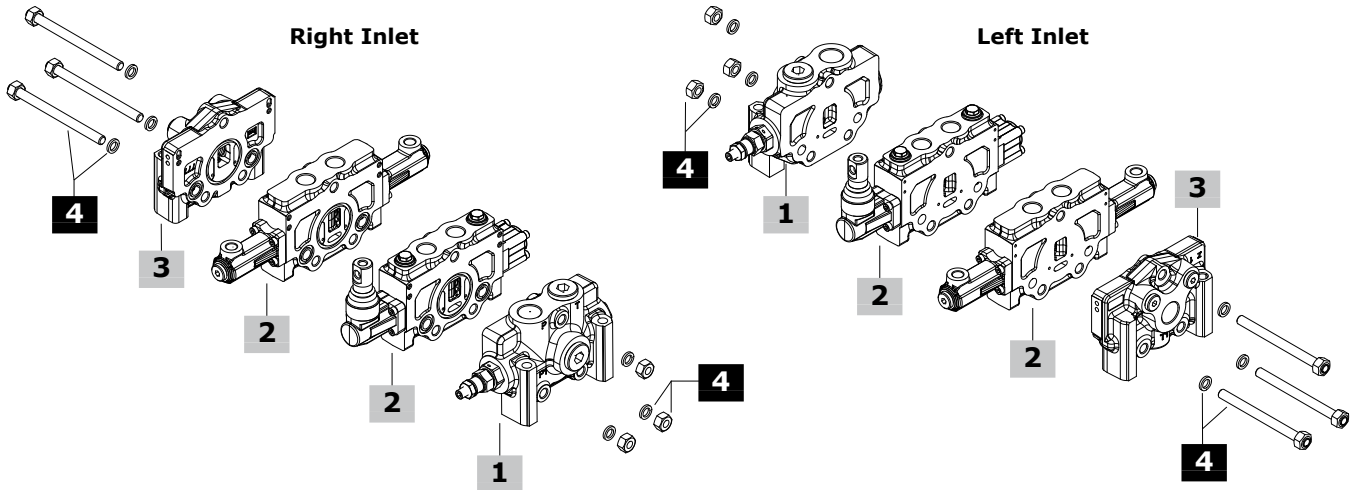
**2**

**W001A-HP05A-RP2-G04/KZM1-G05-<P006/2>**

**2**

**3**

Valve is painted as standard, with one coat of Primer RAL9005 black antitrust paint



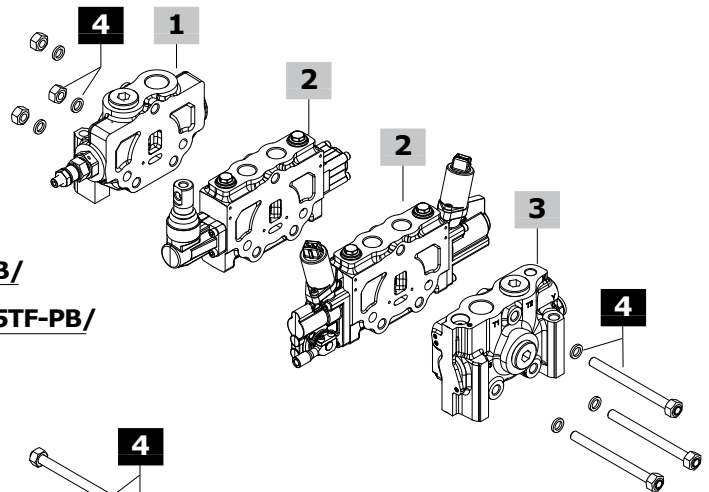
#### Mechanical/electrohydraulic controls valve configuration example with Left Inlet

**DVS14/2/ML-V2A(200)V3B-A-G05/** **1**

**2** **W001A-H001-F001A-RP1-G04.05TF-PA\05TF-PB/**

**2** **W001A-HP04-FP04-B12AJ-RP1-G04.05TF-PA\05TF-PB/**

**3** **KZP1-G05-<P006/2>**



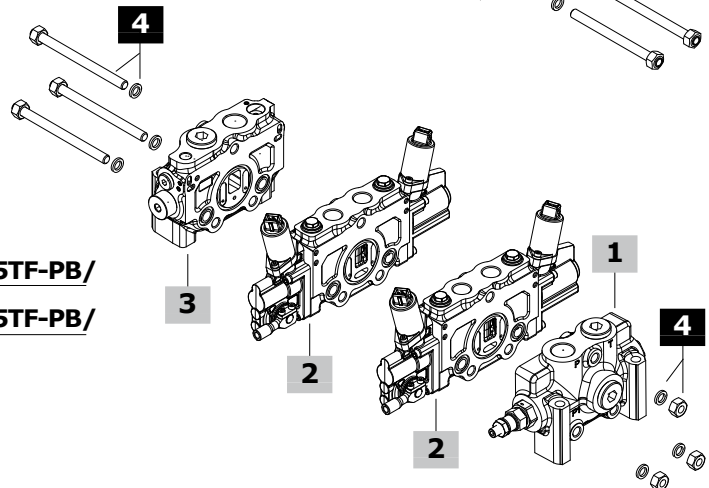
#### Electrohydraulic controls valve configuration example with Right Inlet

**DVS14/2/MR-V2A(200)V3B-A-G05/** **1**

**2** **W001A-HP04-FP04-B12AJ-RP1-G04.05TF-PA\05TF-PB/**

**2** **W001A-HP04-FP04-B12AJ-RP1-G04.05TF-PA\05TF-PB/**

**3** **KZP1-G05-<P006/2>**





**1 Inlet section \*** page 10**Right Inlet configuration**

TYPE: **MR-V2A(200)-V3B-A-G05** CODE: SHE140006  
 DESCRIPTION: Upper inlet open, side inlet and upper outlet plugged, with pilot operated main relief valve

TYPE: **MR-V3A-V3B-A-G05** CODE: SHE140007  
 DESCRIPTION: Upper inlet open, side inlet and upper outlet plugged, without main relief valve

**Left Inlet configuration**

TYPE: **ML-V2A(200)-V3B-A-G05** CODE: SHE140001  
 DESCRIPTION: Upper inlet open, side inlet and upper outlet plugged, with pilot operated main relief valve

TYPE: **ML-V3A-V3B-A-G05** CODE: SHE140002  
 DESCRIPTION: Upper inlet open, side inlet and upper outlet plugged, without main relief valve

**2 Working section \*** page 14**Right Inlet configuration**

TYPE: **SD\W001A-H001-F001A-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140015

DESCRIPTION: Parallel circuit with port valves arrangement (seat plugged), 3 positions double acting spool, lever control and spring return to neutral position

TYPE: **SD\W001A-HP05A-RP2-G04**

CODE: SHL140019  
 DESCRIPTION: Parallel circuit without port valves arrangement, 3 positions double acting spool, proportional hydraulic control with spring return in neutral position

TYPE: **SD\W001A-HP04-FP04-B12AJ-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140017

DESCRIPTION: Parallel circuit with port valves arrangement (seat plugged), 3 positions double acting spool, 12VDC proportional electrohydraulic control (AMP JPT connector) with lever and spring return to neutral position

TYPE: **SD\W001A-HP04-FP04-B12AJ-RP2-G04**

CODE: SHL140018  
 DESCRIPTION: As previous one without port valves arrangement

**Left Inlet configuration**

TYPE: **SS\W001A-H001-F001A-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140009

DESCRIPTION: Parallel circuit with port valves arrangement (seat plugged), 3 positions double acting spool, lever control and spring return to neutral position

TYPE: **SS\W001A-HP05A-RP2-G04**

CODE: SHL140005  
 DESCRIPTION: Parallel circuit without port valves arrangement, 3 positions double acting spool, proportional hydraulic control with spring return in neutral position

TYPE: **SS\W001A-HP04-FP04-B12AJ-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140001

DESCRIPTION: Parallel circuit with port valves arrangement (seat plugged), 3 positions double acting spool, 12VDC proportional electrohydraulic control (AMP JPT connector) with lever and spring return to neutral position

TYPE: **SS\W001A-HP04-FP04-B12AJ-RP2-G04**

CODE: SHL140003  
 DESCRIPTION: As previous one without port valves arrangement

**3 Outlet section \*** page 31

TYPE CODE DESCRIPTION

**For all control types, without pressure reducing valve**

**KZM1-G05** SHU140009 T1 port open, Y pilot and drain X plugged

**KZM2-G05** SHU140010 All ports plugged

**KZM3-G05** SHU140017 All ports open

**KZM4-G05** SHU140018 T1 port plugged, Y pilot and drain X open

**KZMH1-G05** SHU140019 With carry-over (HPCO) on T1 port, Y pilot and drain X plugged

**KZMH2-G05** SHU140020 With carry-over (HPCO) on T1 port, Y pilot and drain X open

**For electrohydraulic control, with pressure reducing valve**

**KZP1-G05** SHU140001 With backpressure valve, upper T1 port and X drain open, T2-T3 outlets and Y pilot plugged

**KZP3-G05** SHU140002 With backpressure valve, X drain open, ports and Y pilot plugged

**KZP6-G05** SHU140021 Without backpressure valve, upper T1-T2 ports and Y pilot plugged, side T3 port and X drain open

**KZPH1-G05** SHU140022 Without backpressure valve, carry-over (HPCO) on upper T2 port, upper T1 port and drain X open, side T3 port and Y pilot plugged

**KZPH2-G05** SHU140023 Without backpressure valve, carry-over (HPCO) on side T3 port, upper T1 port and drain X open, upper T2 port and Y pilot plugged

**4 Tie rods kit**

CODE DESCRIPTION

**For valve with KZM type outlet section**

5TIRDVS1401 For 1 section valve

5TIRDVS1402 For 2 sections valve

5TIRDVS1403 For 3 sections valve

5TIRDVS1404 For 4 sections valve

5TIRDVS1405 For 5 sections valve

5TIRDVS1406 For 6 sections valve

5TIRDVS1407 For 7 sections valve

5TIRDVS1408 For 8 sections valve

5TIRDVS1409 For 9 sections valve

5TIRDVS1410 For 10 sections valve

**For valve with KZP type outlet section**

5TIRDVS1401EI For 1 section valve

5TIRDVS1402EI For 2 sections valve

5TIRDVS1403EI For 3 sections valve

5TIRDVS1404EI For 4 sections valve

5TIRDVS1405EI For 5 sections valve

5TIRDVS1406EI For 6 sections valve

5TIRDVS1407EI For 7 sections valve

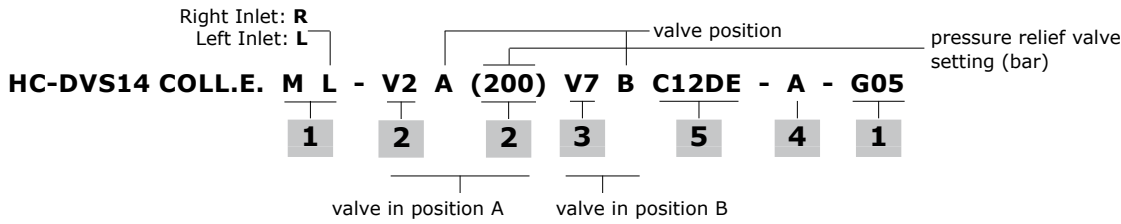
5TIRDVS1408EI For 8 sections valve

5TIRDVS1409EI For 9 sections valve

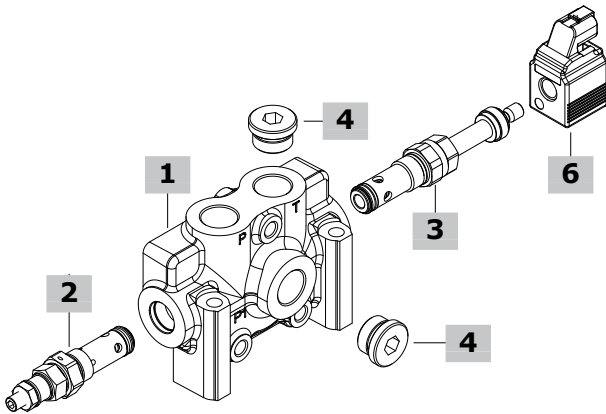
5TIRDVS1410EI For 10 sections valve

NOTE (\*): Codes are referred to a **BSP** thread

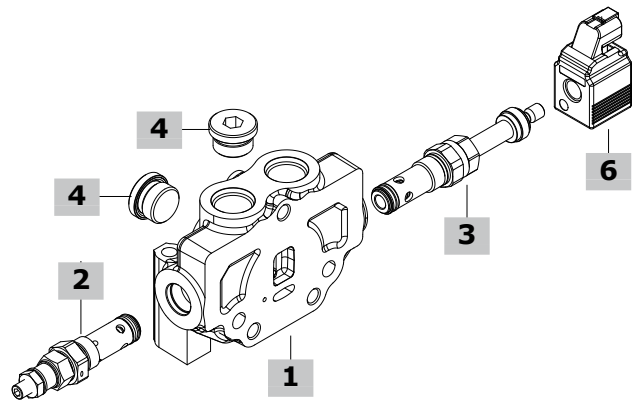
### Part ordering codes



Right Inlet configuration example



Left Inlet configuration example



#### 1 Section body \* page 11

TYPE	CODE	DESCRIPTION
<b>ML-G05</b>	4205C3002	Inlet section body, G3/4 thread

#### 2 Main relief valve page 12

TYPE	CODE	DESCRIPTION
<b>V2(200)</b>	91501C302	Pilot operated, setting range from 50 to 350 bar (725 to 5100 psi)
<b>V3</b>	4301C3001	Valve blanking plug

#### 3 Secondary inlet valves page 13

TYPE	CODE	DESCRIPTION
<b>V4</b>	91505C301	Anticavitation valve
<b>V6</b>	91504C301*	Hydraulic operated unloading valve
<b>V7</b>	91504C302	Solenoid operated unloading valve (without coil), "push&twist" emergency actuation
<b>V8</b>	91504C303	As previous one without emergency actuation
<b>V3</b>	4301C3001	Valve blanking plug
<b>V13</b>	4301C3002*	Valve blanking plug with G1/4 port for pressure gauge arrangement

#### 4 Port configuration \* page 12

TYPE	CODE	DESCRIPTION
<b>A</b>	430000020	G3/4 plug: nr.2 - Upper P inlet port open, side P1 inlet port and upper T outlet port plugged
<b>B</b>	430000020	G3/4 plug: nr.1
	300007006	G3/4 plug with G1/4 press. gauge arrangement: n.1 Upper P inlet port open, side P1 inlet port with press. gauge arrangement, upper T outlet port plugged
<b>C</b>	430000020	G3/4 plug: nr.1 - Side P1 inlet port open, upper P inlet port and T outlet port plugged
<b>D</b>	430000020	G3/4 plug: nr.1
	300007006	G3/4 plug with G1/4 press. gauge arrangement: n.1 Side P1 inlet port open, upper P inlet port with press. gauge arrangement, upper T outlet port plugged
<b>E</b>	430000020	G3/4 plug: nr.1 - Side P1 inlet port plugged, upper P inlet port and T outlet port open
<b>F</b>	300007006	G3/4 plug with G1/4 press. gauge arrangement: n.1 Side P1 inlet port with press. gauge arrangement, upper P inlet port and T outlet port open
<b>G</b>	430000020	G3/4 plug: nr.1 - Side P1 inlet port and upper T outlet port open, upper P inlet port plugged
<b>H</b>	300007006	G3/4 plug with G1/4 press. gauge arrangement: n.1 Side P1 inlet port and upper T outlet port open, upper P inlet port with press. gauge arrangement

#### 5 Coils page 44

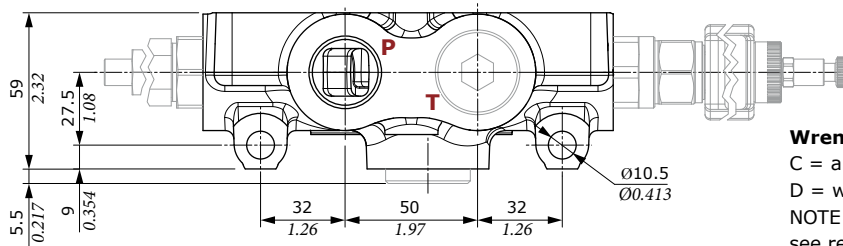
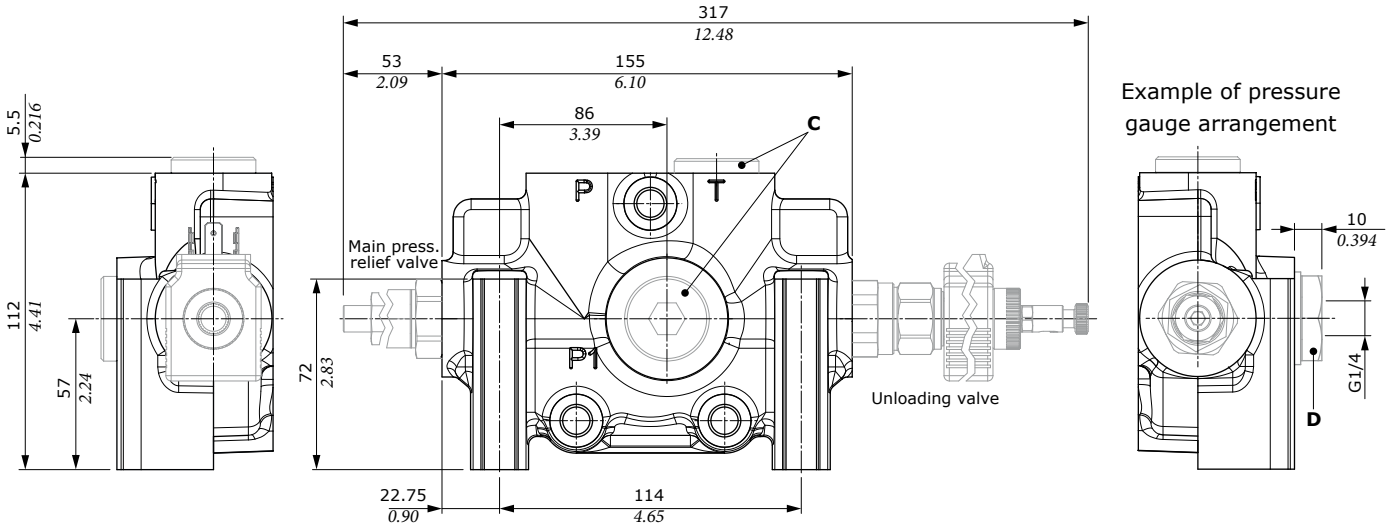
TYPE	CODE	DESCRIPTION
<b>C12DI</b>	4SLE001200A	<b>BER</b> type, 12 VDC, ISO4400 connector
<b>C12AJ</b>	4SLE001203A	<b>BER</b> type, 12 VDC, AMP JPT connector
<b>C12DE</b>	4SLE001202A	<b>BER</b> type, 12 VDC, Deutsch connector

For complete available coil code list see page 45.

NOTE (\*): Codes are referred to a **BSP** thread

Dimensional data and hydraulic circuit

**MR type inlet section example**  
 dimensions are the same for MR and ML type



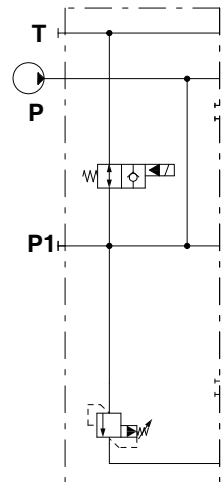
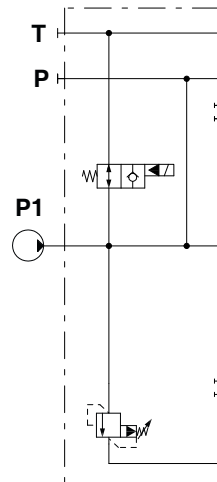
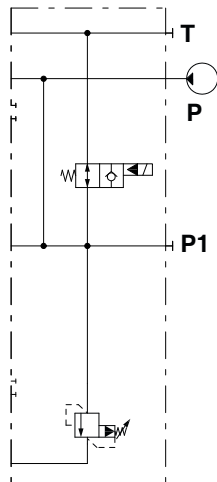
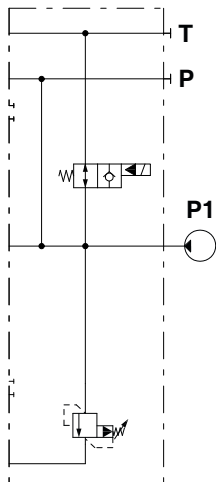
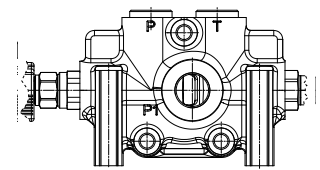
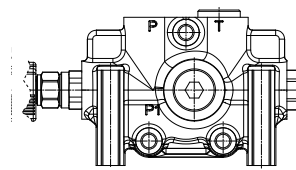
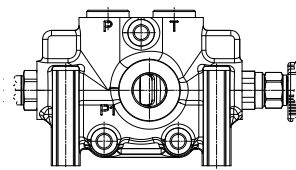
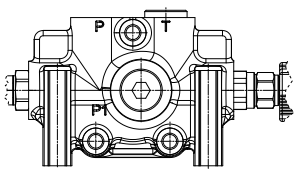
**Wrenches and tightening torques**  
 C = allen wrench 12 - 90 Nm (66 lbf<sub>t</sub>)  
 D = wrench 32 - 90 Nm (66 lbf<sub>t</sub>)  
 NOTE: for valves wrench and torque, see related pages

**MRA section type, upper inlet**

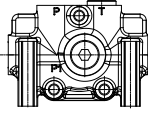
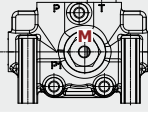
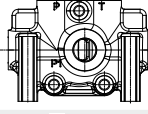
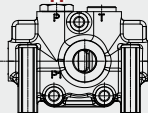
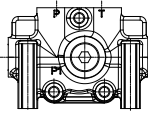
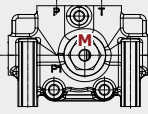
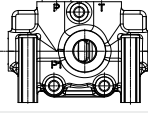
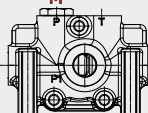
**MRC section type, side inlet**

**MLA section type, upper inlet**

**MLC section type, side inlet**



### Port configuration

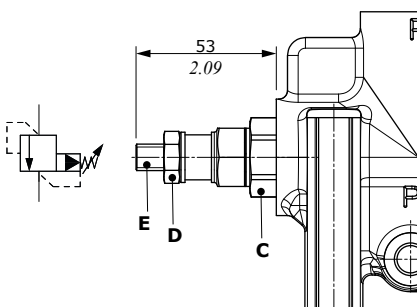
Type	P inlet port	P1 inlet port	T outlet port	
A	open	closed	closed	
B	open	pressure gauge arrangement	closed	
C	closed	open	closed	
D	pressure gauge arrangement	open	closed	
E	open	closed	open	
F	open	pressure gauge arrangement	open	
G	closed	open	open	
H	pressure gauge arrangement	open	open	

### Inlet valves

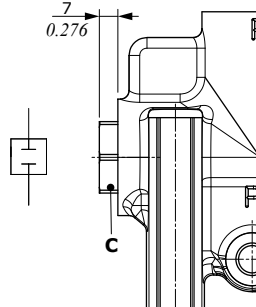
#### Main relief valve

Drawings show valve on **MR** type inlet section.

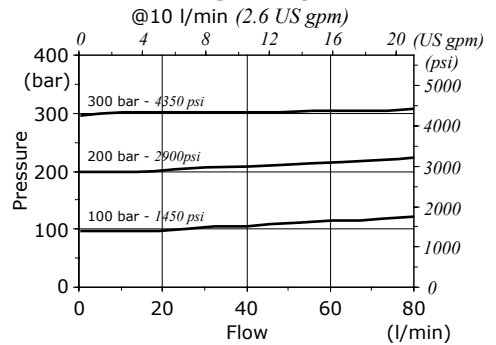
**V2 type**  
Pilot operated



**V3 type**  
Valve blanking plug



**Setting example**



#### Wrenches and tightening torques

- C = wrench 27 - 80 Nm (59 lbft)
- D = wrench 16 - 25 Nm (18.4 lbft)
- E = allen wrench 5

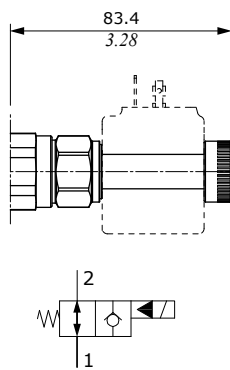
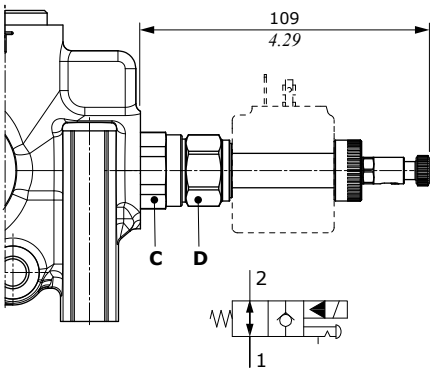
Secondary inlet valves

Drawings show valves on MR type inlet section.

Solenoid operated unloading valve

V8 type: push&twist emergency actuation

V7 type: without emergency actuation



Valve features

- Nominal flow . . . . . : 2 l/min (0.53 US gpm)
- Max. pressure. . . . . : 350 bar (5100 psi)
- Max. internal leakage.. : 0.25 cm<sup>3</sup>/min @ 210 bar  
(0.015 in<sup>3</sup>/min @ 3050 psi)

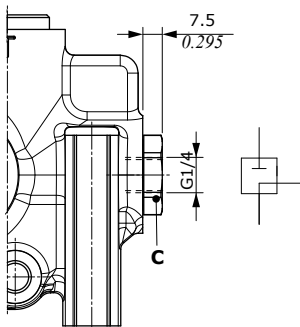
For BER type coils, see page 44

Wrenches and tightening torques

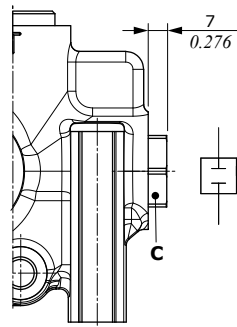
C = wrench 27 - 80 Nm (59 lbft)

D = wrench 24 - 30 Nm (22 lbft)

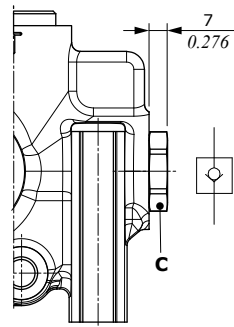
V13 type  
Plug with pressure  
gauge arrangement



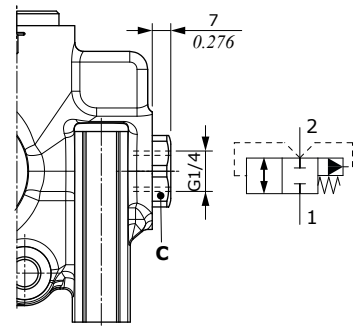
V3 type  
Valve blanking plug



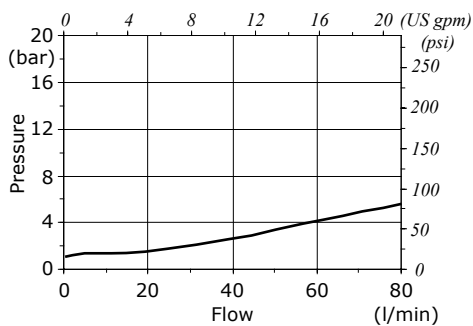
V4 type  
Anticavitation valve



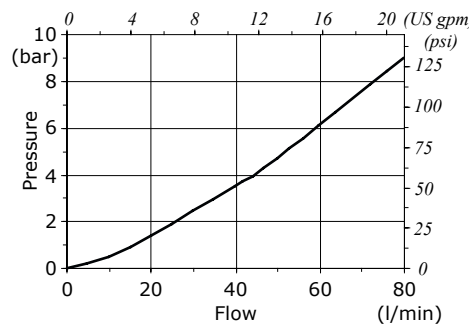
V6 type  
Hydraulic operated  
unloading valve



V6-V7-V8 valves pressure drops  
2 → 1



V4 valve pressure drops



## Part ordering codes

### Mechanical control valve configuration example for Left Inlet

Right Inlet: **D**  
Left Inlet: **S**

**HC-DVS14 - SS/W001A-H001-F001**

**2A 3A 4A**

valve setting (bar)

port valve position

**-RP1-G04.03TF-PA(100)\03TF-PB(80)**

**1A**

**6**

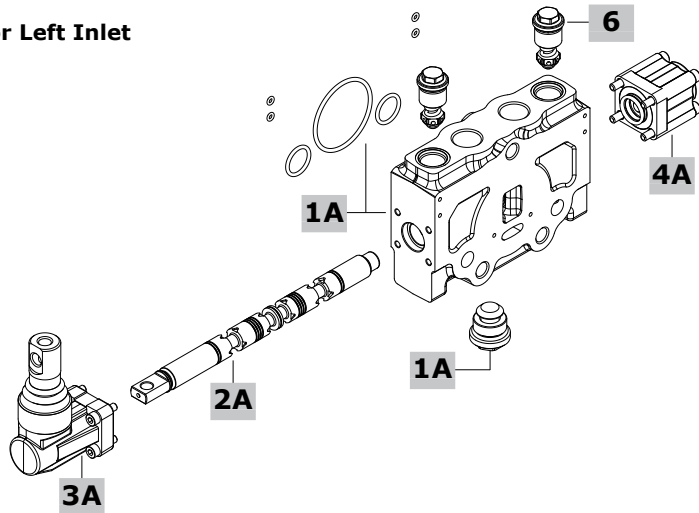
**6**

**6**

**6**

valve on A port

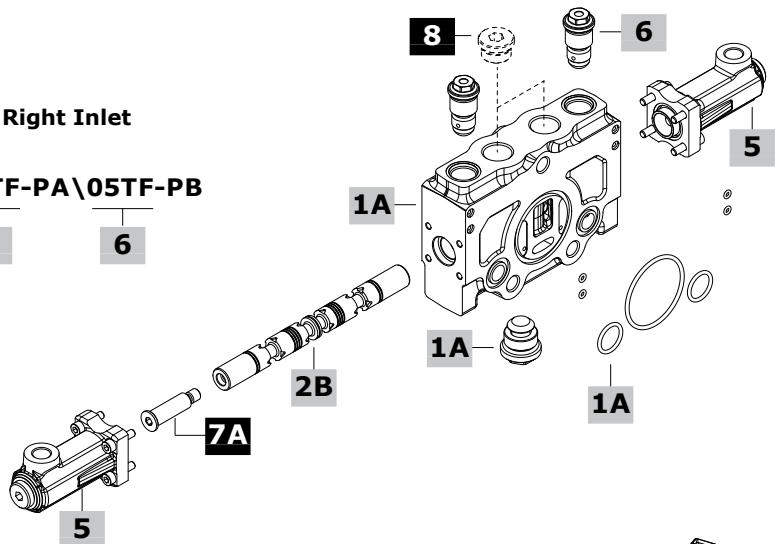
valve on B port



### Hydraulic control valve configuration example for Right Inlet

**HC-DVS14-SD/W001A-HP05A-RP1-G04.05TF-PA\05TF-PB**

**2B 5 1A 6 6**



### Electrohydraulic control valve configuration example for Right Inlet

**HC-DVS14-SD/W001A-HP04-FP04-B12AJ**

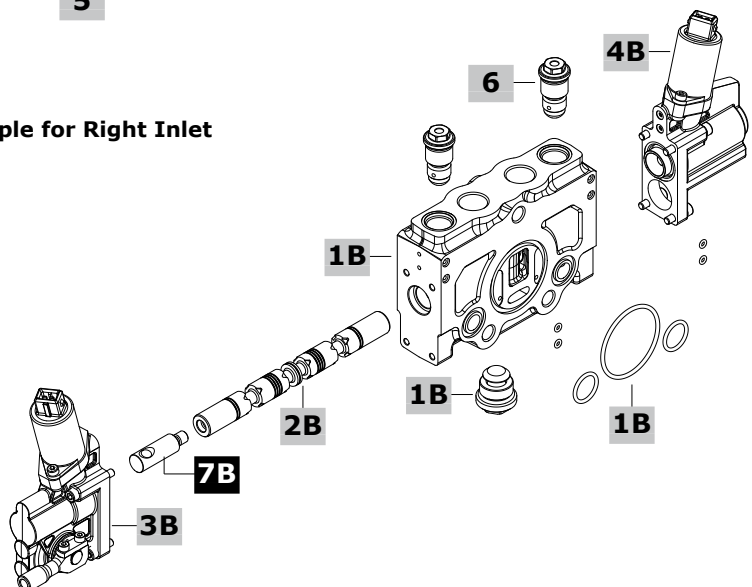
**2B 3B 4B 3B-4B**

**-RP1-G04.02TF-PA\02TF-PB**

**1B**

**6**

**6**



## MECHANICAL CONTROL SECTION

**1A Section body kit \*** page 17

TYPE: **RP1-G04** CODE: 5EL4208C3003  
 DESCRIPTION: Parallel circuit, with port valves arrangement  
 TYPE: **RP2-G04** CODE: 5EL4208C3014  
 DESCRIPTION: Parallel circuit, without port valves arrangement

**3A A side controls** page 21

TYPE	CODE	DESCRIPTION
<b>H001</b>	3203C3001	Lever box control
	3203C3011	Lever box control for floating circuit. <b>Spool type W012A and F005A control are required</b>
<b>H002</b>	3203C3001	Lever box control, assembled rotated 180°
	3203C3011	Lever box control for floating circuit, assembled rotated 180°. <b>Spool type W012A and F005A control are required</b>
<b>H004</b>	3203C3013	Without lever box, with dust proof rubber bellow
	3203C3014	As previous one, for floating circuit. <b>Spool type W012A and F005A control are required</b>
<b>Joystick control</b>		
<b>H009-H120</b>	3206C3003	For Right Inlet, pivot on 1 <sup>st</sup> section. Obligatory description for 2 <sup>nd</sup> section: H120.
<b>H120-H012</b>	3206C3003	For left Inlet, pivot on 2 <sup>nd</sup> section. Obligatory description for 1 <sup>st</sup> section: H120.
<b>H120-H010</b>	3206C3004	For Right Inlet, pivot on 2 <sup>nd</sup> section. Obligatory description for 1 <sup>st</sup> section: H120.
<b>H011-H120</b>	3206C3004	For left Inlet, pivot on 1 <sup>st</sup> section. Obligatory description for 2 <sup>nd</sup> section: H120.

**2A Spools** page 18

TYPE	CODE	DESCRIPTION
<b>Double acting spools</b>		
<b>W001A</b>	4212C3022	3 positions, A and B closed in neutral position, for 70 l/min (18.5 US gpm)
<b>W001B</b>	4212C3023	As previous one, for 40 l/min (10.6 US gpm)
<b>W012A</b>	4212C3062	4 positions, for floating circuit. <b>Special RPF1 body kit is required; contact Sales Department. Dedicated A and B side controls are required</b>

**4A B side controls** page 23

TYPE	CODE	DESCRIPTION
<b>With spring return to neutral position</b>		
<b>F001A</b>	3207C3006	3 positions
<b>F001B</b>	3207C3007	As F001A type, with light spring
<b>F001C</b>	3207C3008	As F001A type, with heavy spring
<b>F001ASL</b>	3200C3005	3 pos., with analog spool position sensor(#)
<b>F001ASD</b>	3200C3004	3 pos., with digital spool position sensor(#)
<b>F002A</b>	3208C3005	3 positions, detent in A and B
<b>F003A</b>	3208C3006	3 positions, detent in A
<b>F004A</b>	3208C3007	3 positions, detent in B
<b>F013A</b>	3207C3009	3 positions, double control arrangement
<b>F005A</b>	3208C3004	4 positions, detent in 4 <sup>th</sup> position <b>Spool type W012A and dedicated A side controls are required.</b>

**Note (#): For sensors features please see page 20.**

## HYDRAULIC CONTROL SECTION

**1A Section body kit \*** page 17

See body kit for mechanical controls

**2B Spools** page 18

See spool for electrohydraulic controls

**7A Spool end kit** page 19

CODE	DESCRIPTION
420311025	Spool end for hydraulic controls

**5 A+B controls\*** page 28

TYPE	CODE	DESCRIPTION
<b>With spring return to neutral position</b>		
<b>HP05A</b>	3205C3015	With upper ports
<b>HP05C</b>	3205C3017	With side ports
<b>HP05L</b>	3205C3019	With upper ports and spool stroke limiter

## PORT VALVES AND ACCESSORIES

**6 Port valves** page 30

TYPE	CODE	DESCRIZIONE
<b>05TF</b>	4300C3002	Valve blanking plug
<b>02TF</b>	915089001	Anticavitation valve
<b>Fixed setting antishock and anticavitation valves:</b> setting is referred to 10 l/min (2.6 US gpm) flow		
TYPE: <b>03TF(100)</b>	CODE: 915870	100
	└ setting (bar)	└ setting (bar)

SETTING RANGE:  
From 40 to 350 bar (580 to 5100 psi), 10 bar (145 psi) step

**8 Plug for single acting**

CODE	DESCRIPTION
430000019	G1/2 plug

NOTE (\*): Codes are referred to **BSP** thread

Part ordering codes

ELECTROHYDRAULIC CONTROL SECTION

**1B Section body kit \*** page 20

TYPE: **RP1-G04** CODE: 5EL4208C3002  
 DESCRIPTION: Parallel circuit with port valves arrangement  
 TYPE: **RP2-G04** CODE: 5EL4208C3011  
 DESCRIPTION: Parallel circuit without port valves arrangement

**2B Spools** page 21

TYPE	CODE	DESCRIPTION
<b>Double acting spools</b>		
<b>W001A</b>	4212C3001	3 positions, A and B closed in neutral position, for 70 l/min (18.5 US gpm)
<b>W001B</b>	4212C3002	As previous one, for 40 l/min (10.6 US gpm)
<b>W002A</b>	4212C3003	3 positions, A and B to tank in neutral position, for 70 l/min (18.5 US gpm)
<b>W002B</b>	4212C3004	As previous one, for 40 l/min (10.6 US gpm)
<b>W003A</b>	4212C3005	3 positions, A to tank and B closed in neutral position, for 70 l/min (18.5 US gpm)
<b>W003B</b>	4212C3006	As previous one, for 40 l/min (10.6 US gpm)
<b>W004A</b>	4212C3005	3 positions, A closed and B to tank in neutral position, for 70 l/min (18.5 US gpm)
<b>W004B</b>	4212C3006	As previous one, for 40 l/min (10.6 US gpm)
<b>W012A</b>	4212C3013	4 positions, for floating circuit.

**Special RPF1 body kit is required; contact Sales Department**

**Single acting spools: G1/2 plug is required**

<b>W005A</b>	4212C3007	3 positions, single acting in A, for 70 l/min (18.5 US gpm)
<b>W005B</b>	4212C3008	As previous one, for 40 l/min (10.6 US gpm)
<b>W006A</b>	4212C3007	3 positions, single acting in B, for 70 l/min (18.5 US gpm)
<b>W006B</b>	4212C3008	As previous one, for 40 l/min (10.6 US gpm)

**Double acting spools partially to tank**

<b>W001AK10</b>	4212C3059	Double acting, 3 positions, A to tank in neutral position, for 70 l/min (18.5 US gpm)
<b>W001AY10</b>	4212C3059	Double acting, 3 positions, B to tank in neutral position, for 70 l/min (18.5 US gpm)
<b>W001AJ10</b>	4212C3058	Double acting, 3 pos., A and B to tank in neutral position, for 70 l/min (18.5 US gpm)
<b>W001BJ10</b>	4212C3009	Double acting, 3 positions, A and B to tank in neutral position, for 40 l/min (10.6 US gpm)
<b>W001BK10</b>	4212C3021	Double acting, 3 positions, A to tank in neutral position, for 40 l/min (10.6 US gpm)
<b>W001BY10</b>	4212C3021	Double acting, 3 positions, B to tank in neutral position, for 40 l/min (10.6 US gpm)

**7B Spool end kit** page 19

CODE	DESCRIPTION
422501293	Spool end for electrohydraulic controls, standard type
422501294	As previous one, milled type

**3B A side controls** page 26

TYPE	CODE	DESCRIPTION
<b>HP07-B12AJ</b>	322593026	Without lever, 12VDC, AMP connector
<b>HP07-B24AJ</b>	322593027	As previous one, 24VDC
<b>HP07-B12DE</b>	322593028	Without lever, 12VDC, Deutsch connector
<b>HP07-B24DE</b>	322593029	As previous one, 24VDC
<b>HP07L-B12AJ</b>	322593046	Without lever, 12VDC, with spool stroke limiter, AMP connector
<b>HP07L-B24AJ</b>	322593047	As previous one, 24VDC
<b>HP07L-B12DE</b>	322593048	Without lever, 12VDC, with spool stroke limiter, Deutsch connector
<b>HP07L-B24DE</b>	322593049	As previous one, 24VDC
<b>HP04-B12AJ</b>	322593018	With lever, 12VDC, AMP connector
<b>HP04-B24AJ</b>	322593019	As previous one, 24VDC
<b>HP04-B12DE</b>	322593020	With lever, 12VDC, Deutsch connector
<b>HP04-B24DE</b>	322593021	As previous one, 24VDC
<b>HP04L-B12AJ</b>	322593022	With lever, 12VDC, with spool stroke limiter, AMP connector
<b>HP04L-B24AJ</b>	322593023	As previous one, 24VDC
<b>HP04L-B12DE</b>	322593024	With lever, 12VDC, with spool stroke limiter, Deutsch connector
<b>HP04L-B24DE</b>	322593025	As previous one, 24VDC

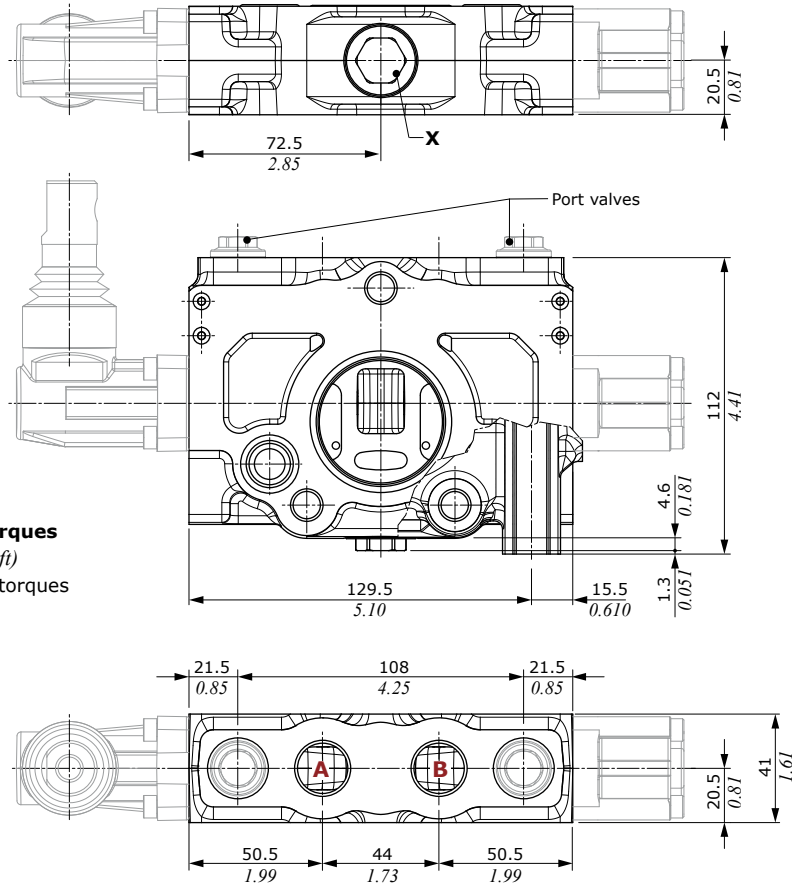
**4B B side controls** page 27

TYPE	CODE	DESCRIPTION
<b>With spring return to neutral position</b>		
<b>FP04-B12AJ</b>	3225C3106	12VDC, AMP connector
	3225C3301	As previous one, for floating circuit
		<b>Spool type W012A is required</b>
<b>FP04-B24AJ</b>	3225C3107	As previous one, 24VDC
	3225C3302	As previous one, for floating circuit
		<b>Spool type W012A is required</b>
<b>FP04-B12DE</b>	3225C3108	12VDC, Deutsch connector
	3225C3303	As previous one, for floating circuit
		<b>Spool type W012A is required</b>
<b>FP04-B24DE</b>	3225C3109	As previous one, 24VDC
	3225C3304	As previous one, for floating circuit
		<b>Spool type W012A is required</b>
<b>FP04SL-B12AJ</b>	3225C3119	12VDC, analog spool position sensor, AMP connector
<b>FP04SL-B24AJ</b>	3225C3120	As previous one, 24VDC
<b>FP04SL-B12DE</b>	3225C3121	12VDC, analog spool position sensor, Deutsch connector
<b>FP04SL-B24DE</b>	3225C3122	As previous one, 24VDC
<b>FP04SD-B12AJ</b>	3225C3123	12VDC, digital spool position sensor, AMP connector
<b>FP04SD-B24AJ</b>	3225C3124	As previous one, 24VDC
<b>FP04SD-B12DE</b>	3225C3125	12VDC, digital spool position sensor, Deutsch connector
<b>FP04SD-B24DE</b>	3225C3126	As previous one, 24VDC
<b>FP04L-B12AJ</b>	3225C3110	Spool stroke limiter, 12VDC, AMP connector
<b>FP04L-B24AJ</b>	3225C3111	As previous one, 24VDC
<b>FP04L-B12DE</b>	3225C3112	Spool stroke limiter, 12VDC, Deutsch conn.
<b>FP04L-B24DE</b>	3225C3113	As previous one, 24VDC

NOTE (\*): Codes are referred to **BSP** thread

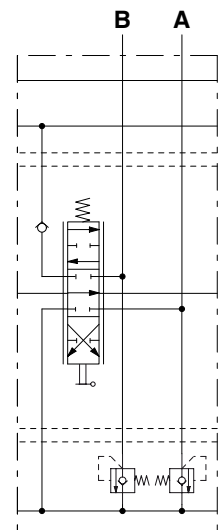
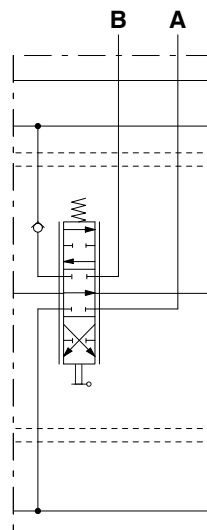
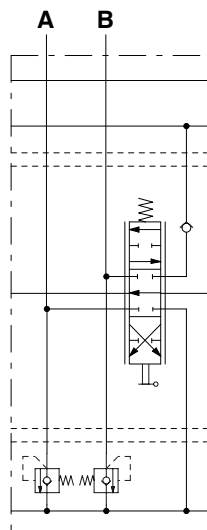
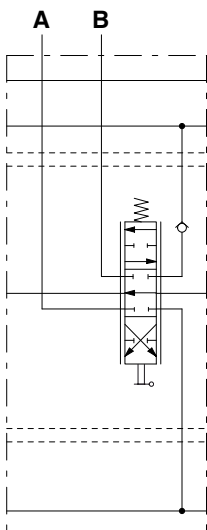


Dimensional data and hydraulic circuit



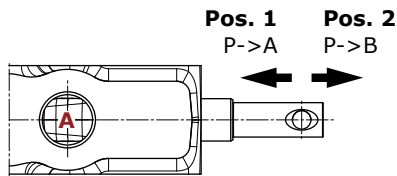
**Wrenches and tightening torques**  
 X = wrench 17 - 130 Nm (96 lbft)  
 NOTE: for valve wrenches and torques see related pages

**SD\RP2 type** without port valves arrangement    **SD\RP1 type** with port valves arrangement    **SS\RP2 type** without port valves arrangement    **SS\RP1 type** with port valves arrangement

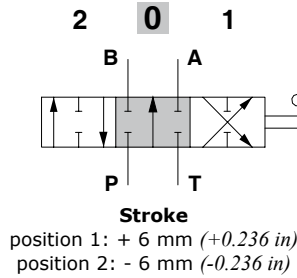


### Spools

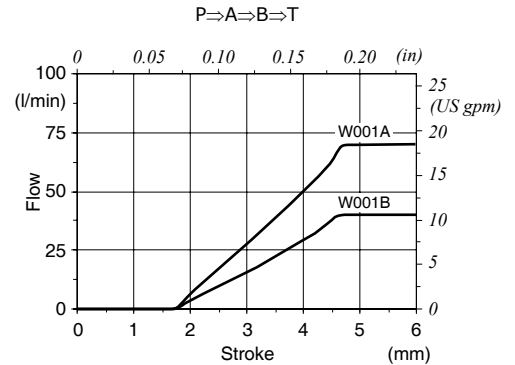
#### Standard spools



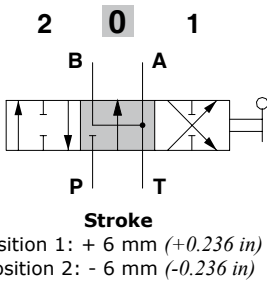
**W001A/W001B types**  
Double acting, 3 positions,  
A and B closed in neutral position



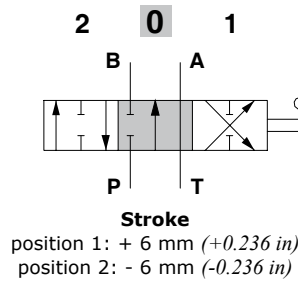
**W001A/W001B types**  
metering curves



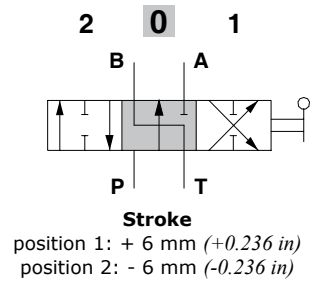
**W002A/W002B types**  
Double acting, 3 positions,  
A and B to tank in neutral position



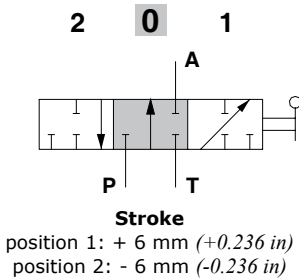
**W003A/W003B types**  
Double acting, 3 positions, B closed  
and A to tank in neutral position



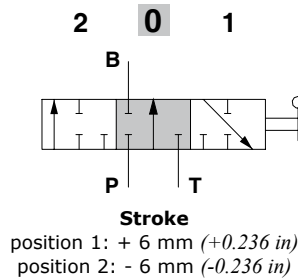
**W004A/W004B types**  
Double acting, 3 positions, A closed  
and B to tank in neutral position



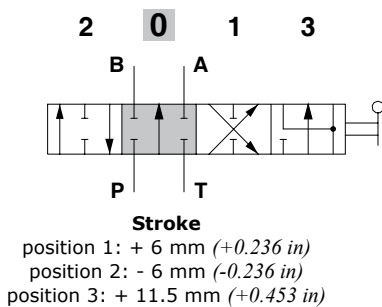
**W005A/W005B types**  
Single acting in A, 3 positions



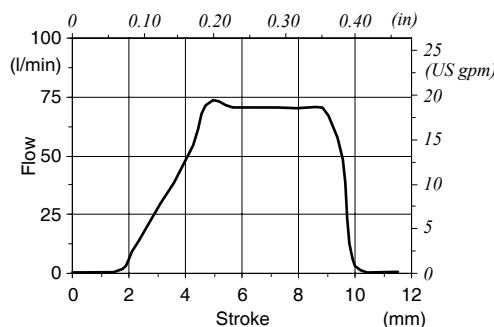
**W006A/W006B types**  
Single acting in B, 3 positions



**W012A type**  
Double acting, 4 positions,  
float in 4<sup>th</sup> position



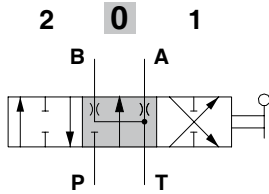
**W012A type metering curve**  
P->A->B->T



Partially to tank spools

**W001AJ10/W001BJ10 types**

Double acting, 3 positions, A and B partially to tank in neutral position

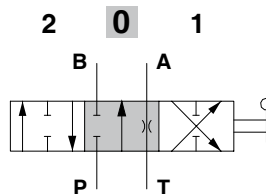


**Stroke**

position 1: + 6 mm (+0.236 in)  
position 2: - 6 mm (-0.236 in)

**W001BK10 type**

Double acting, 3 positions, A partially to tank and B closed in neutral position

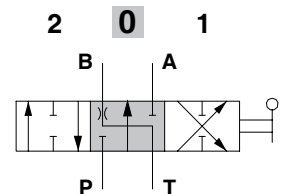


**Stroke**

position 1: + 6 mm (+0.236 in)  
position 2: - 6 mm (-0.236 in)

**W001BY10 type**

Double acting, 3 positions, B partially to tank and A closed in neutral position

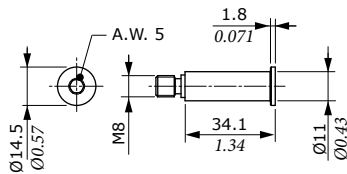
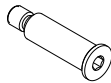


**Stroke**

position 1: + 6 mm (+0.236 in)  
position 2: - 6 mm (-0.236 in)

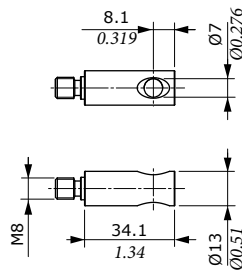
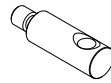
Spools end kit

**Spool end for hydraulic controls**

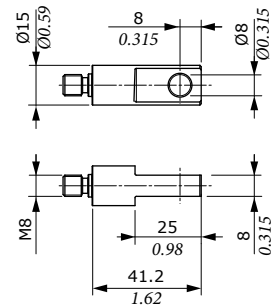
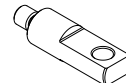


**Spool end for electrohydraulic controls**

Standard type



Milled type



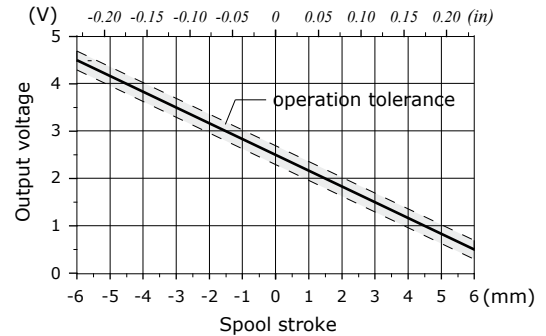
### Spool position sensors

#### SPSL sensor

The SPSL position sensor converts the spool movements into a voltage linear signal.

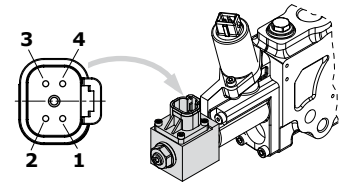
Working conditions		
Voltage supply		5 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10 <sup>6</sup>
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C (from -40°F to 221°F)
Working pressure		350 bar (5100 psi)
Max. electrical stroke		±10 mm (±0.39 in)
Max. mechanical stroke		±10 mm (±0.39 in)
Output signal	range	from 0.5 to 4.5 V
	linearity	± 5%
	spool in neutral	2.5 ± 0.2 V
	max. current	1 mA
EMC compatibility		ISO 13766 / ISO 14982
Mechanical vibrations, shock, bumps		IEC 68-2-6,-27,-29

**SPSL sensor output signal**



#### Deutsch DT04-4P connector

Pin	Function
1	+ 5V
2	not connected
3	GND
4	signal OUT



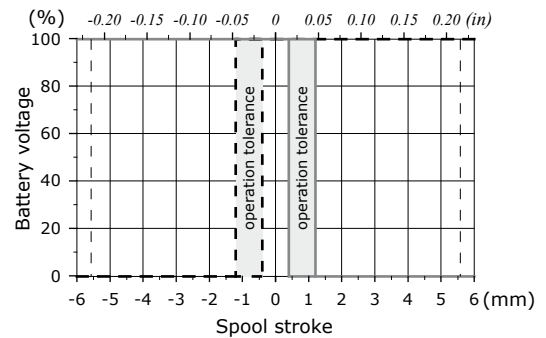
Deutsch DT06-4S mating connector, code 5CON140072

#### SPSD sensor

The SPSP position sensor converts the spool movements into an electric digital signal.

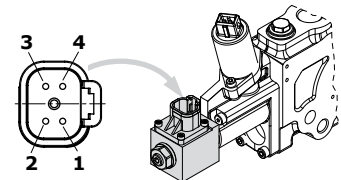
Working conditions		
Voltage supply		from 9 to 32 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10 <sup>6</sup>
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C (from -40°F to 221°F)
Working pressure		350 bar (5100 psi)
Max. electrical stroke		±10 mm (±0.39 in)
Max. mechanical stroke		±10 mm (±0.39 in)
Output signal	type	PNP
	max. current	6 mA
EMC compatibility		ISO 13766 / ISO 14982
Mechanical vibrations, shock, bumps		IEC 68-2-6,-27,-29

**SPSD sensor output signal**



#### Deutsch DT04-4P connector

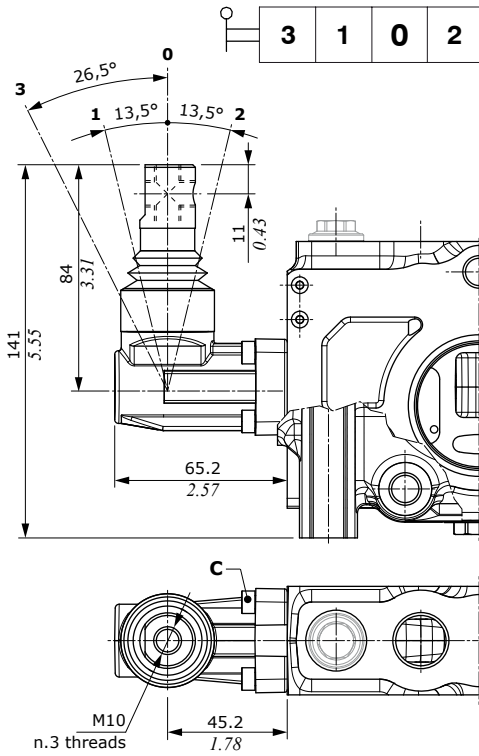
Pin	Function
1	Out A
2	GND
3	VB +
4	Out B



Deutsch DT06-4S mating connector, code 5CON140072

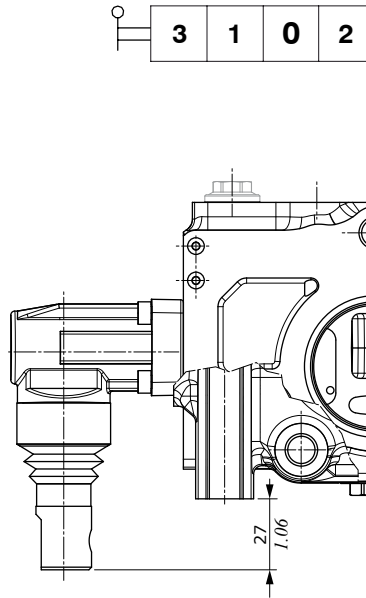
A side controls

**H001 type**  
Lever box



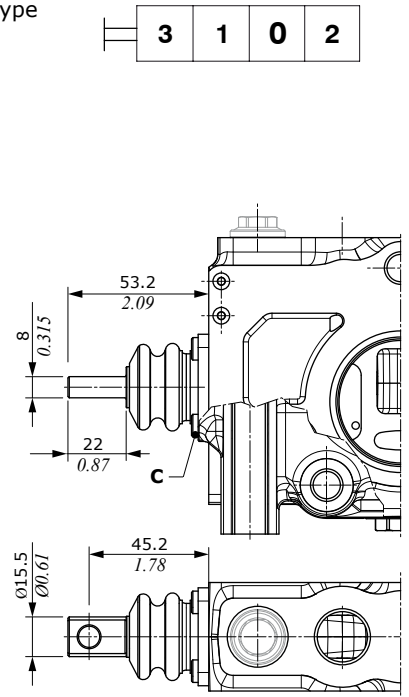
**H002 type**

Lever box assembled rotated 180°. Dimensions are the same of H001 type

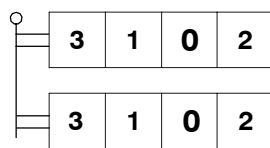


**H004 type**

With dust proof rubber bellow



Joystick controls

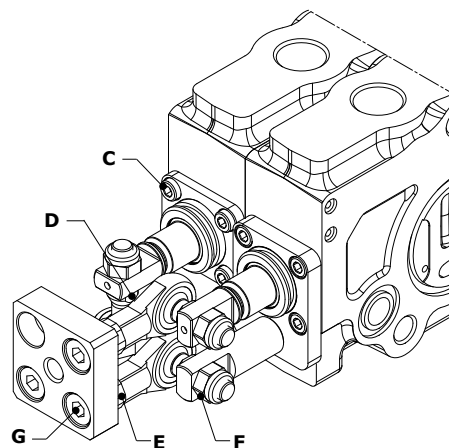
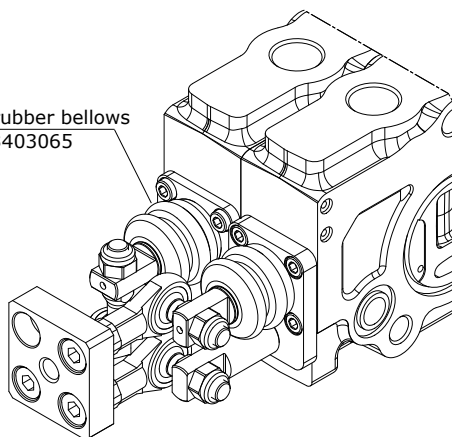


**Wrenches and tightening torques**

- C = allen wrench 4 - 5/7 Nm (3.7/5.2 lbf<sub>t</sub>)
- D = wrench 10
- E = wrench 6
- F = wrench 13 - 7 Nm (5.2 lbf<sub>t</sub>)
- G = allen wrench 6 - 7 Nm (5.2 lbf<sub>t</sub>)

Configuration examples

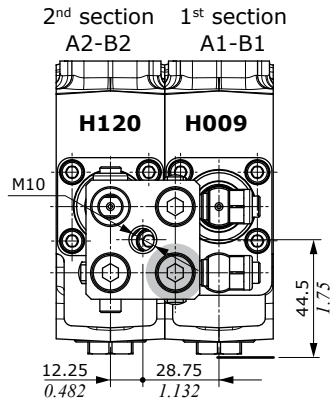
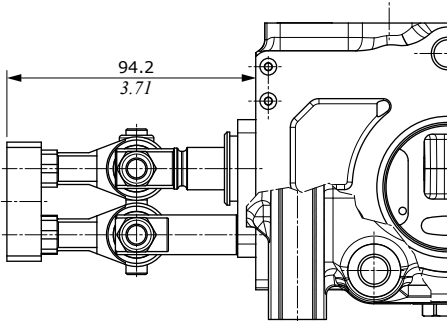
Optional rubber bellows  
code: 423403065



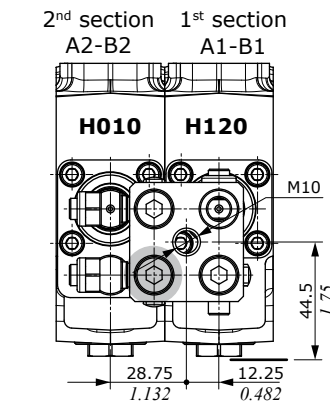
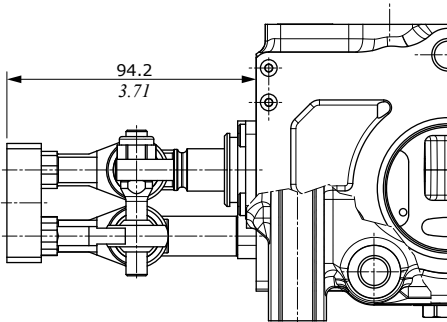
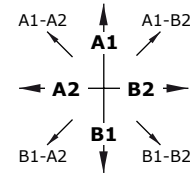
Mechanical controls

A side controls

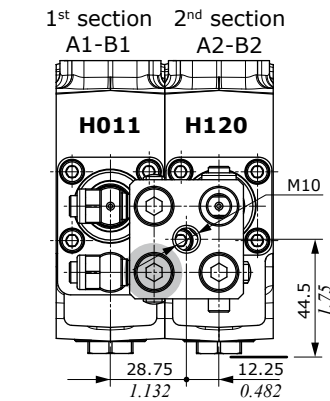
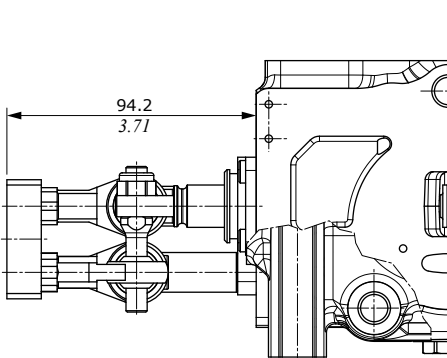
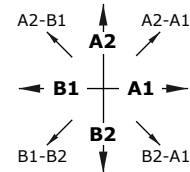
Joystick controls



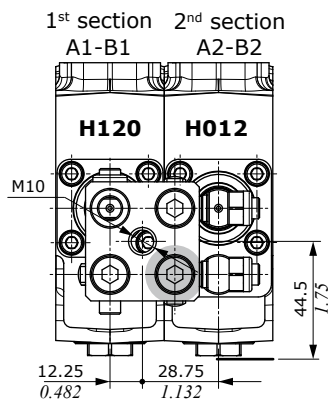
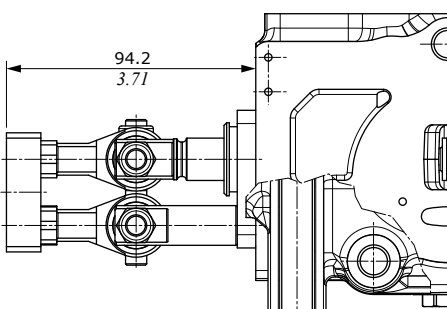
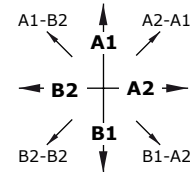
**Right Inlet configuration  
H009-H120 type**  
pivot "●" on 1<sup>st</sup> section



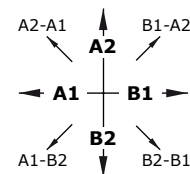
**Right Inlet configuration  
H120-H010 type**  
pivot "●" on 2<sup>nd</sup> section



**Left Inlet configuration  
H011-H120 type**  
pivot "●" on 1<sup>st</sup> section



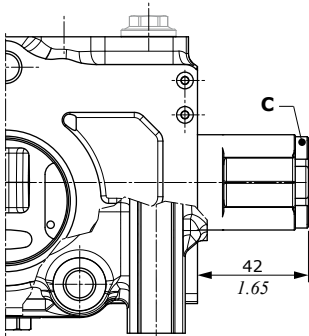
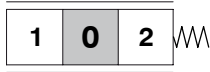
**Left Inlet configuration  
H120-H012 type**  
pivot "●" on 2<sup>nd</sup> section



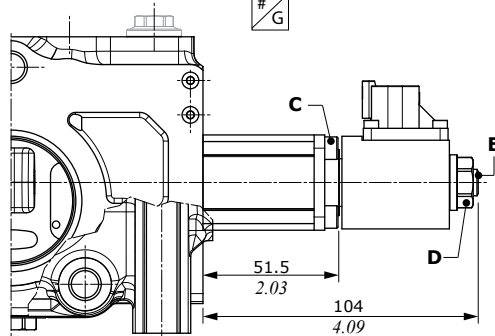
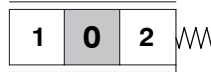
**B side controls**

**With spring return in neutral position**

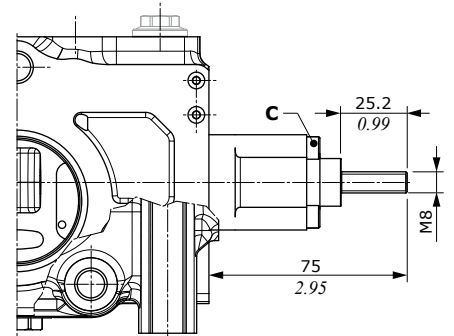
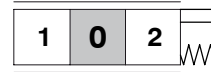
**F001A-F001B-F001C types**



**F001ASL - F001ASD types**

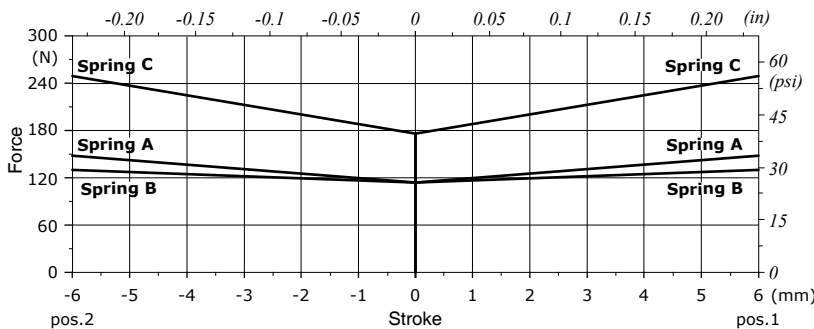


**F013A type**  
M8 male external pin



**Wrenches and tightening torques**  
 C = allen wrench 4 - 5/7 Nm (3.7/5.2 lbft)  
 D = wrench 17 - 9,8 Nm (7.2 lbft)  
 E = allen wrench 4 - 9,8 Nm (7.2 lbft)

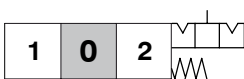
**Force vs. Stroke diagram**



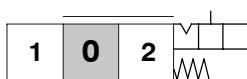
**Legenda**  
 Spring A = from 114 N to 148 N (25.6 lb to 33.3 lb)  
 Spring B = from 114 N to 130 N (25.6 lb to 29.2 lb)  
 Spring C = from 176 N to 249 N (39.6 lb to 56 lb)

**With detent and spring return in neutral position**

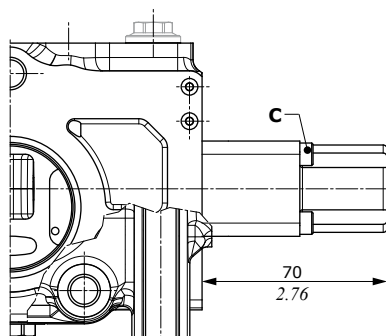
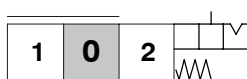
**F002A type**  
detent in A and B



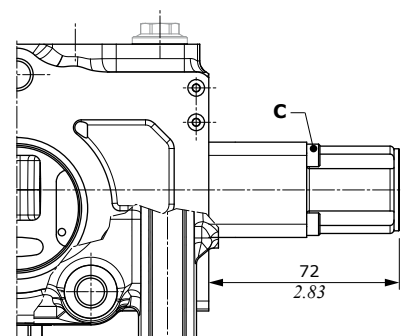
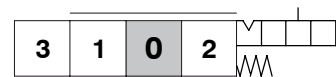
**F003A type**  
detent in A



**F004A type**  
detent in B



**F005A type**  
4 position, detent in position 3,  
W012A spool is required



## Proportional electrohydraulic controls

### Performance data

Following specifications are measured with:

- mineral oil of 46 mm<sup>2</sup>/s (46 cSt) viscosity at 40°C (104°F) temperature.
- standard spools, connecting P⇒A⇒B⇒T ports without flow multiplication
- 12 VDC and 24 VDC nominal voltage with ± 10% tolerance.

The following electrohydraulic controls need a CED400W electronic unit; for information, please contact our Sales Department.

### A and B sides spool controls

#### Electric specifications

Coil impedance	12 VDC	4.7 Ω
	24 VDC	20.8 Ω
Max. operating current	12 VDC	1.5 A
	24 VDC	0.75 A
No load current consumption		0
Min. flow control signal	12 VDC	400 mA
	24 VDC	200 mA
Flow control signal	12 VDC	1200 mA
	24 VDC	600 mA
Dither frequency		70 - 90 Hz
Insertion		100%
Coil insulation		Class H (180°C - 356°F)
Connector type		AMP JPT Deutsch DT
Weather protection (connector)		IP65 (JPT type) IP69K (DT type)

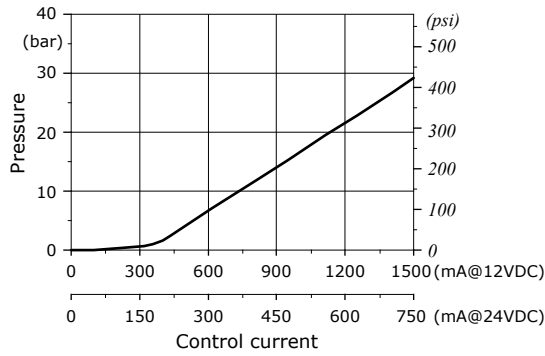
#### Hydraulic specifications

Max. pressure	40 bar (580 psi)
Max. back pressure on solenoid valve drain	5 bar (72.5 psi)

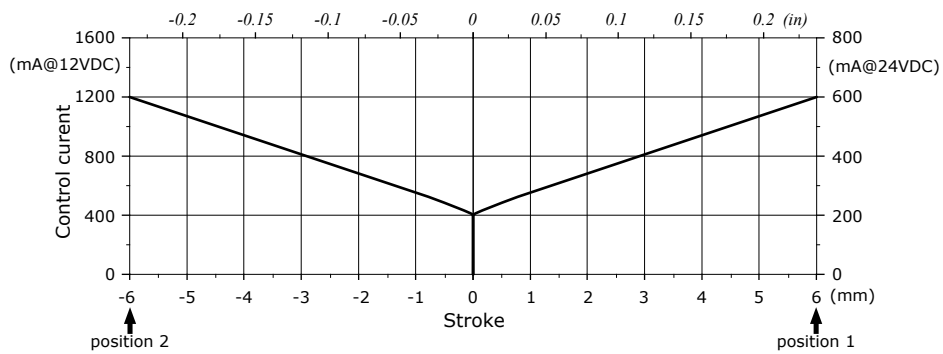


Performance data

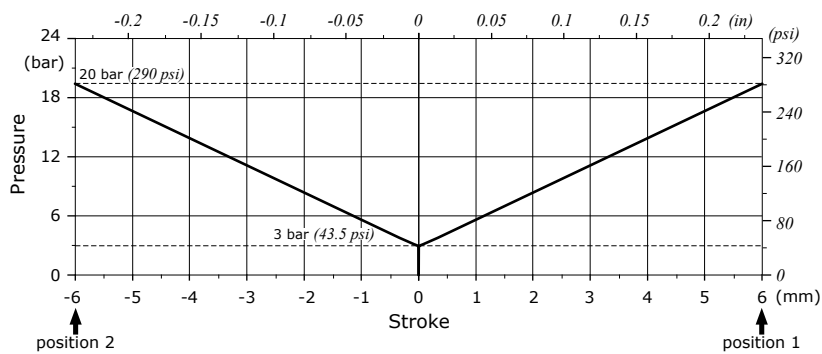
Solenoid pressure reducing valve performance



Stroke vs. Current diagram



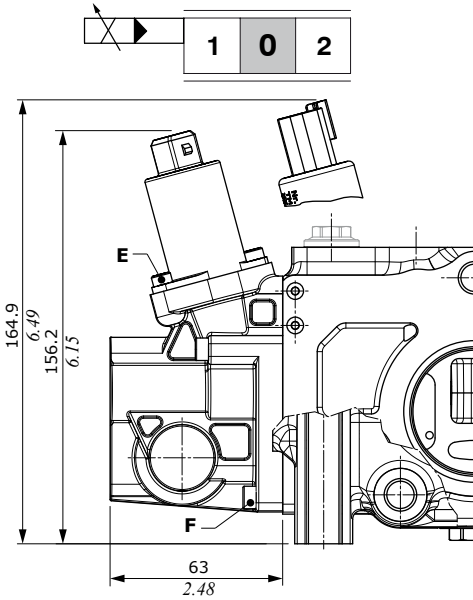
Stroke vs. Pressure diagram



## Proportional electrohydraulic controls

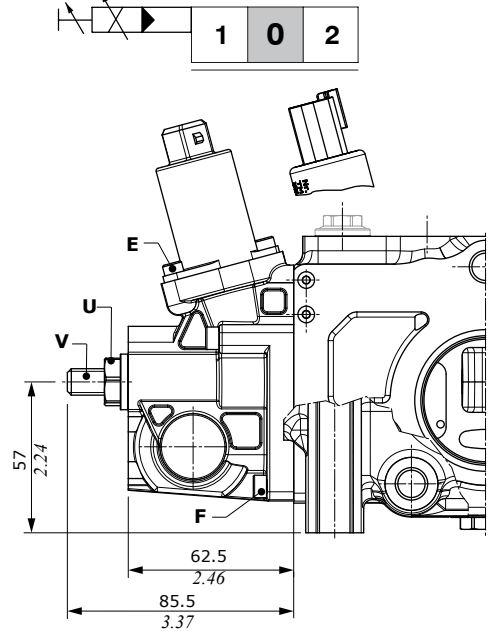
### A side controls

**HP07 type**

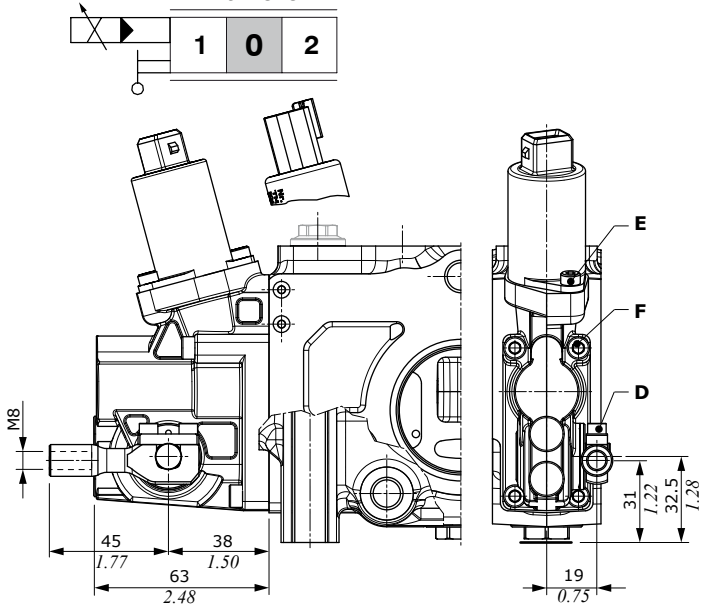


**HP07L type**

with spool stroke limiter on B port

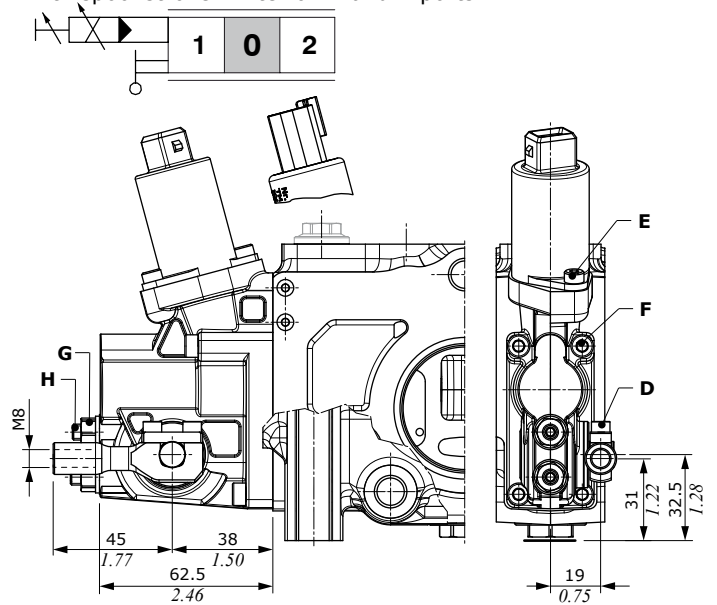


**HP04 type**  
with lever



**HP04L type**

with spool stroke limiter on A and B ports

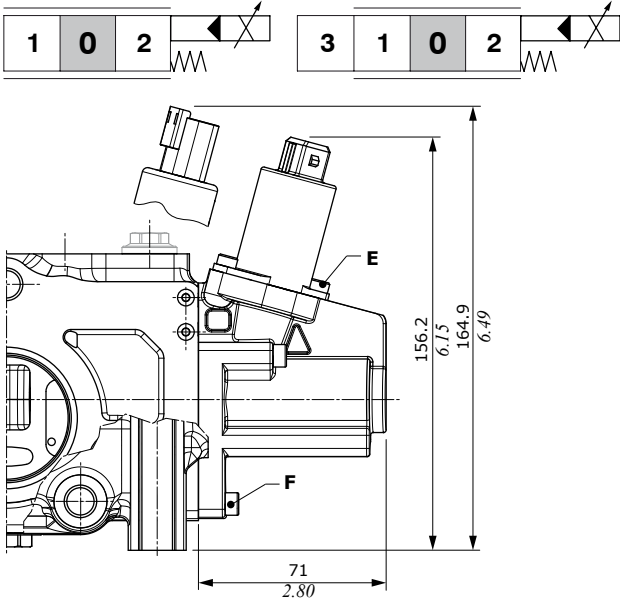


#### Wrenches and tightening torques

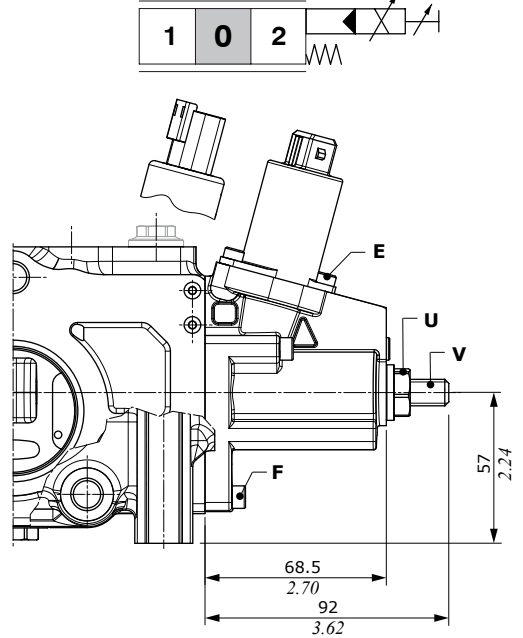
- D = allen wrench 3 - 2 Nm (1.5 lbft)
- E = allen wrench 3 - 2 Nm (1.5 lbft)
- F = allen wrench 4 - 5/7 Nm (3.7/5.2 lbft)
- G = wrench 10 - 15 Nm (11 lbft)
- H = allen wrench 3
- U = wrench 17 - 24 Nm (11 lbft)
- V = allen wrench 5

B side controls

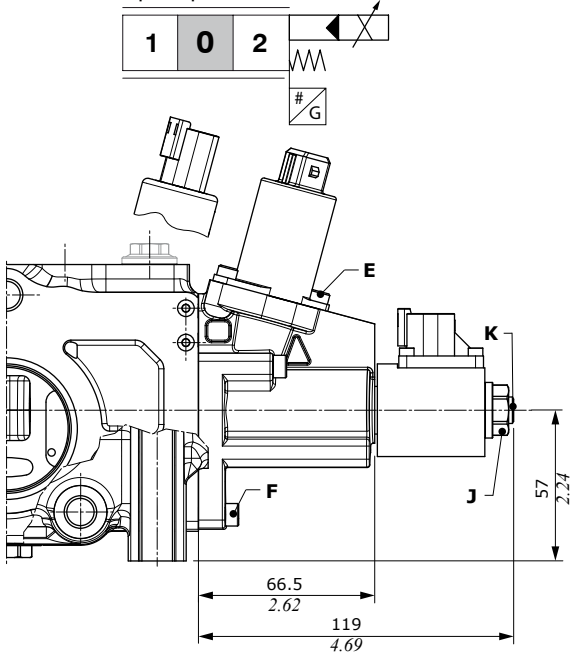
FP04 type



FP04L type  
with spool stroke limiter on A port



FP04SL - FP04SD type  
with spool position sensor



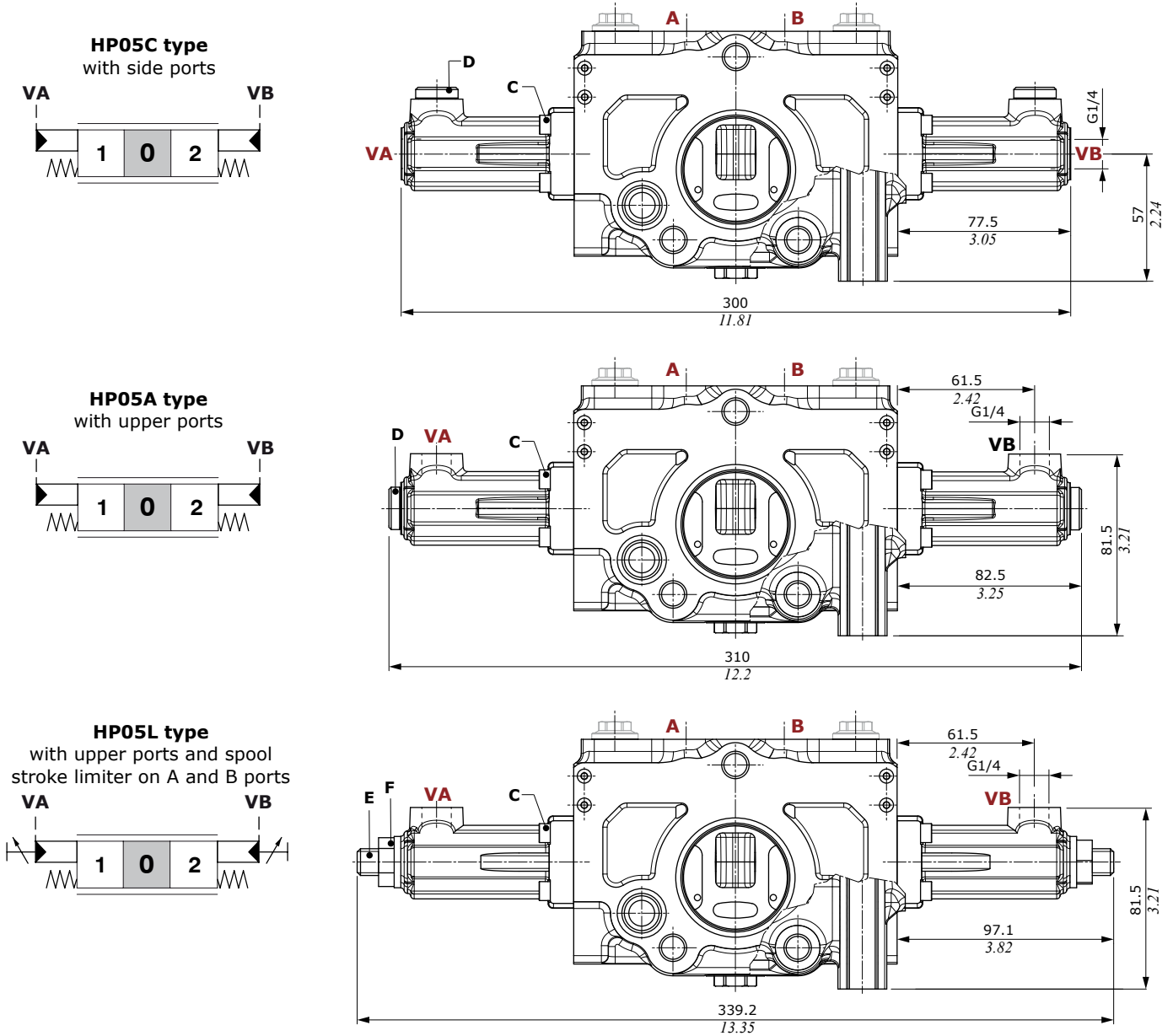
**Wrenches and tightening torques**

- E = allen wrench 3 - 2 Nm (1.5 lbf<sup>t</sup>)
- F = allen wrench 4 - 5/7 Nm (3.7/5.2 lbf<sup>t</sup>)
- J = wrench 17 - 9.8 Nm (7.2 lbf<sup>t</sup>)
- K = allen wrench 4 - 9.8 Nm (7.2 lbf<sup>t</sup>)
- U = wrench 17 - 24 Nm (11 lbf<sup>t</sup>)
- V = allen wrench 5

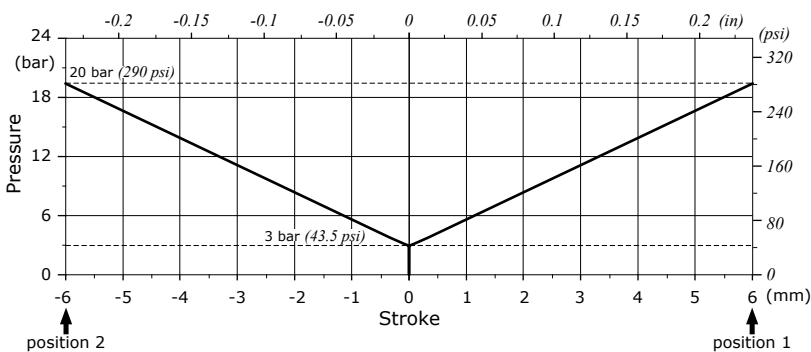
## Proportional hydraulic controls

### A and B side s controls

Controls are available with upper or side ports and with spool stroke limiter.



Stroke vs. Pressure diagram



### Wrenches and tightening torques

C = allen wrench 4 - 5/7 Nm (3.7/5.2 lbft)

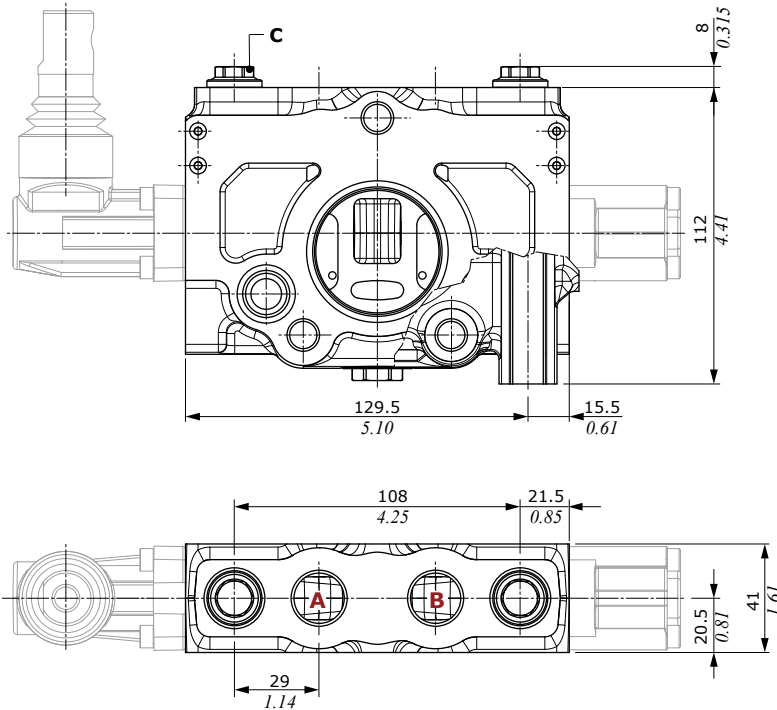
D = allen wrench 6 - 30 Nm (22 lbft)

E = allen wrench 6

F = wrench 19 - 15 Nm (11 lbft)

**Wrenches and tightening torques**

C = wrench 13 - 40 Nm (29.5 lbf<sub>t</sub>)



**03TF type**

combined antishock and anticavitation valve, with fixed setting



**02TF type**

anticavitation valve



**05TF type**

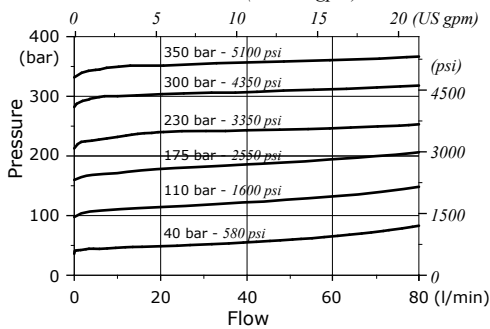
valve blanking plug



**03TF type: combined valves**

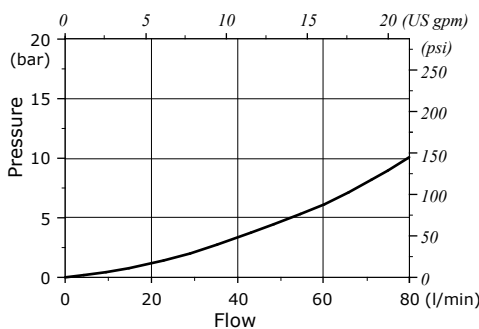
**Setting example**

@10 l/min (2.6 US gpm)



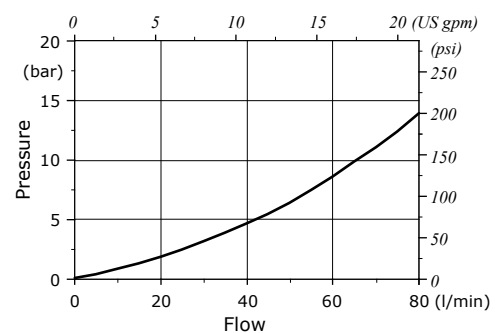
**Pressure drops**

(in anticavitation)



**02TF type: anticavitation valve**

**Pressure drops**



Dimensional data and hydraulic circuit

KZM configuration

For mechanical, hydraulic and electrohydraulic controls, without pressure reducing valve.

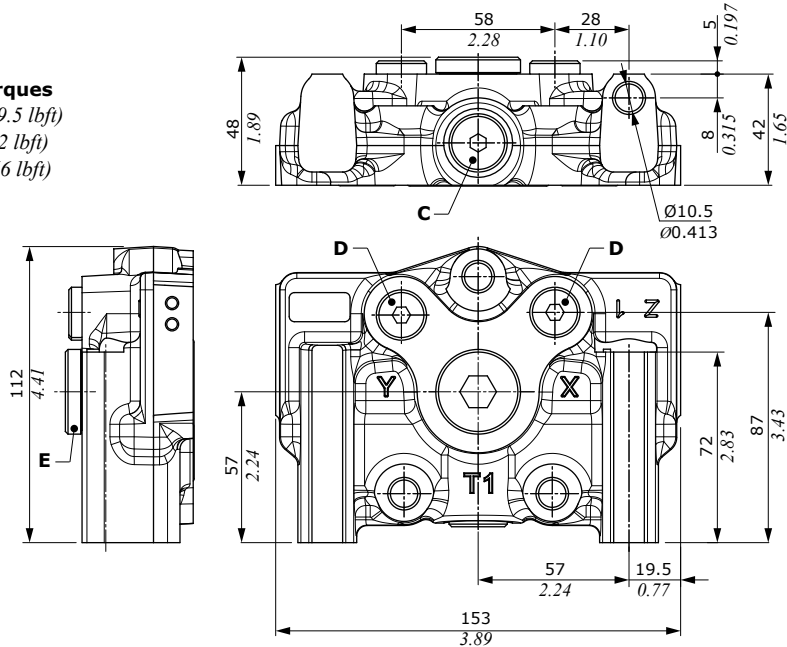
**KZM2 type:** outlet port plugged, Y pilot and X drain plugged

**Wrenches and tightening torques**

C = allen wrench 6 - 40 Nm (29.5 lbf<sup>t</sup>)

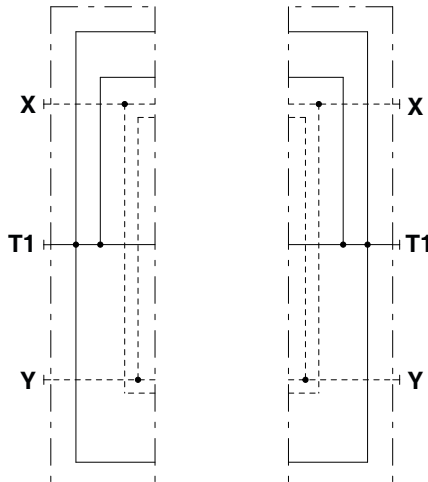
D = allen wrench 6 - 30 Nm (22 lbf<sup>t</sup>)

E = allen wrench 12 - 90 Nm (66 lbf<sup>t</sup>)



Right Inlet circuit

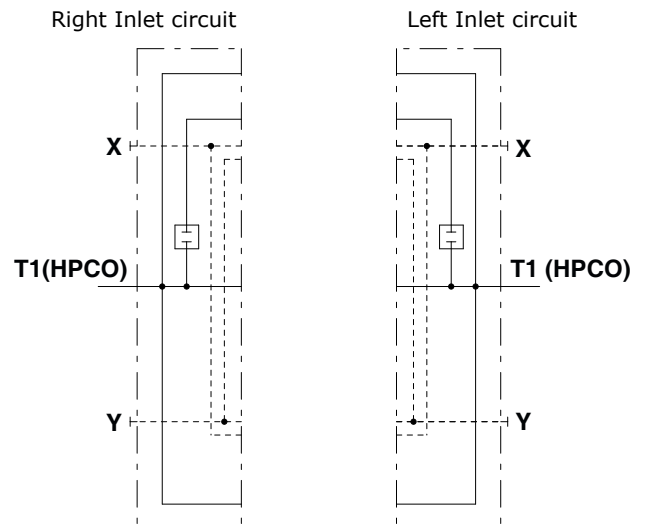
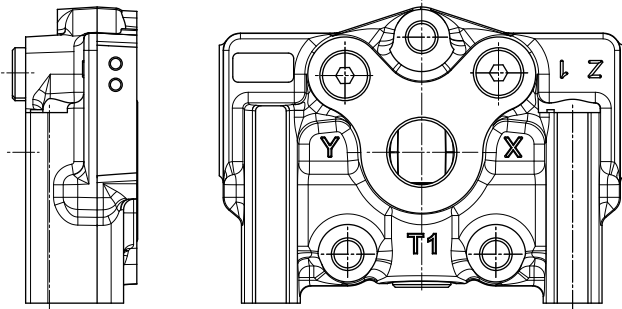
Left Inlet circuit



Dimensional data and hydraulic circuit

KZM configuration

**KZMH1 type:** with HPCO carry over on T1 port,  
Y pilot and X drain plugged



Port configuration

Type	T1 port	X drain	Y pilot	
<b>KZM1</b>	open	plugged	plugged	
<b>KZM2</b>	plugged	plugged	plugged	
<b>KZM3</b>	open	open	open	
<b>KZM4</b>	plugged	open	open	
<b>KZMH1</b>	HPCO open	plugged	plugged	
<b>KZMH2</b>	HPCO open	open	open	

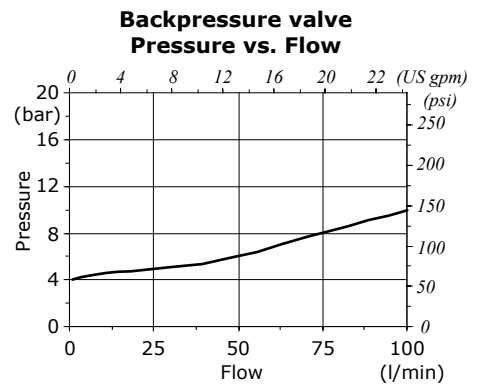
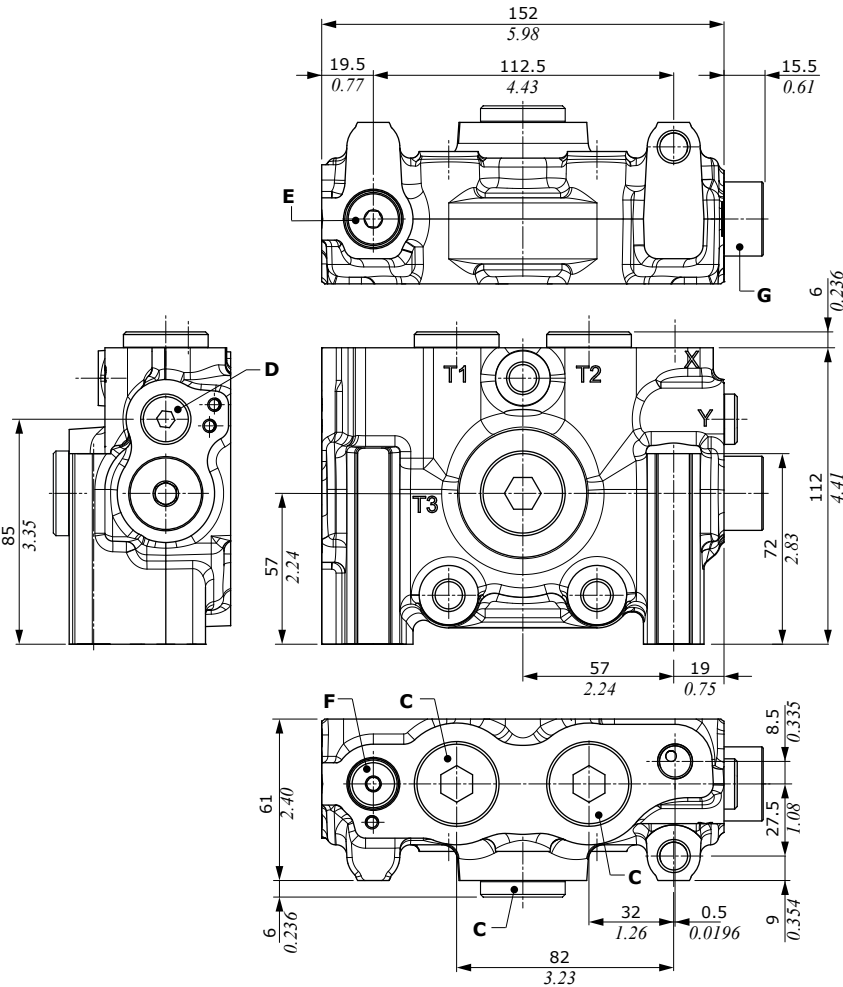
## Dimensional data and hydraulic circuit

### KZP configuration

For mechanical, hydraulic and electrohydraulic controls, with pressure reducing valve and backpressure valve.

#### Type KZP3

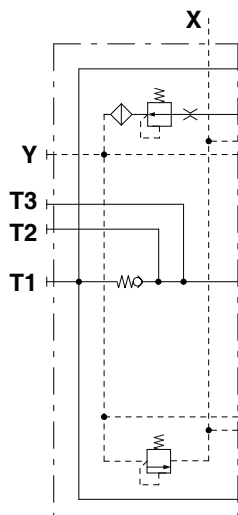
ports plugged, pilot Y plugged, X drain open



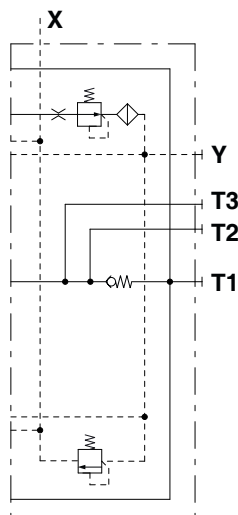
#### Wrenches and tightening torques

- C = allen wrench 12 - 90 Nm (66 lbft)
- D = allen wrench 6 - 30 Nm (22 lbft)
- E = allen wrench 6 - 30/35 Nm (22/25.8 lbft)
- F = allen wrench 5 - 20/25 Nm (14.8/34 lbft)
- G = allen wrench 8 - 50 Nm (37 lbft)

Right Inlet circuit



Left Inlet circuit



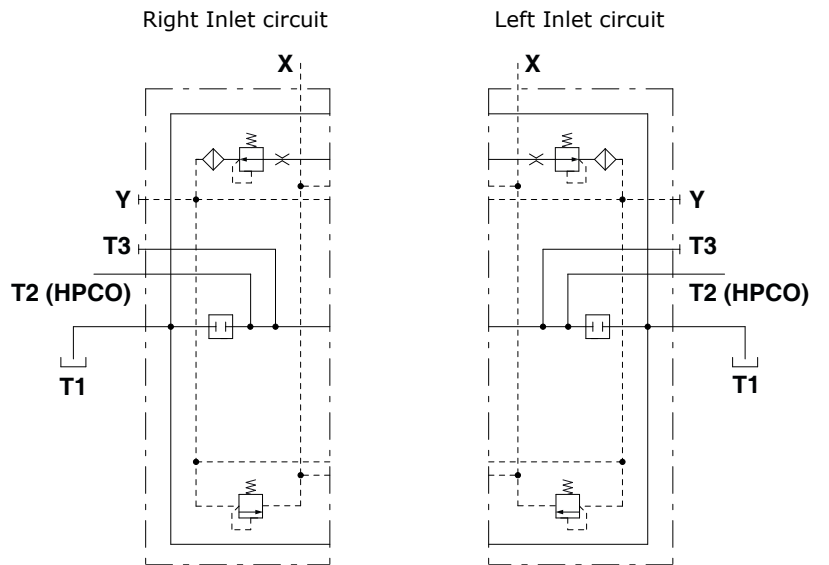
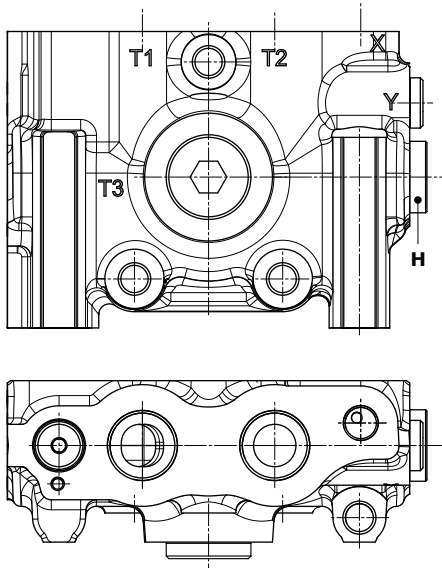


Dimensional data and hydraulic circuit

KZP configuration

KZPH1 type

HPCO on T2 port, T1 port and X drain open, T3 port and Y pilot closed, without backpressure valve



Wrenches and tightening torques

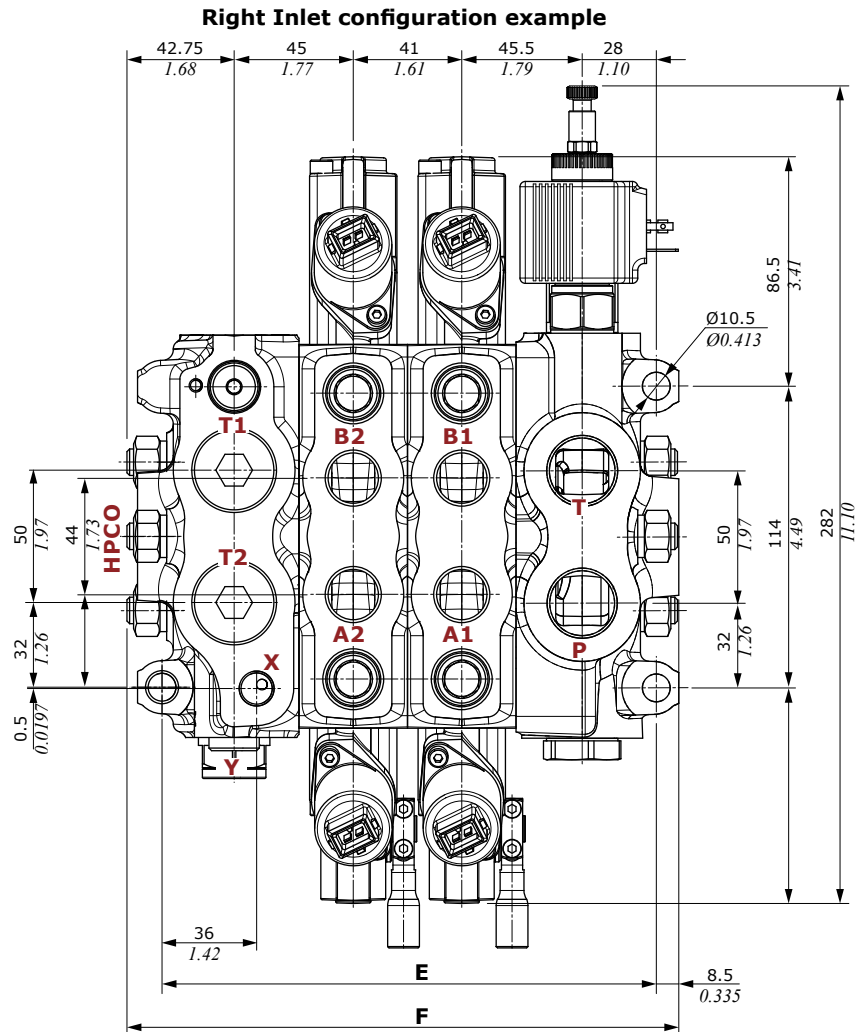
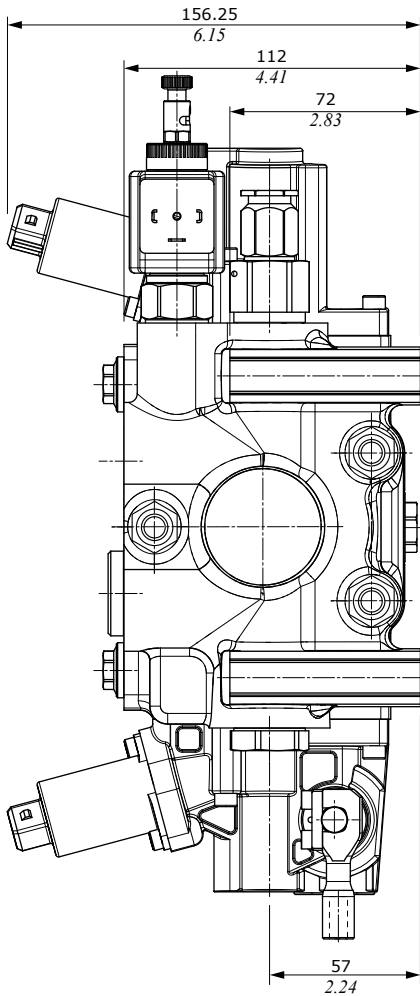
H = allen wrench 8 - 50 Nm (37 lbf)

Port configuration

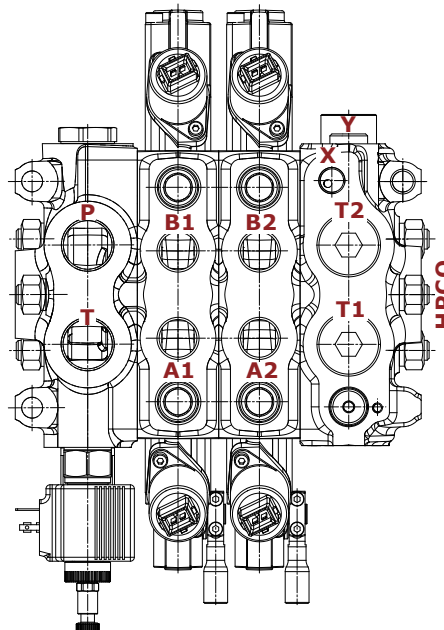
Type	T1 port	T2 port	T3 port	X drain	Y pilot	Backpressure valve	
KZP1	open	plugged	plugged	open	plugged	yes	
KZP3	plugged	plugged	plugged	open	plugged	yes	
KZP6	plugged	plugged	open	open	plugged	no	
KZPH1	open	HPCO open	plugged	open	plugged	no	
KZPH2	open	plugged	HPCO open	open	plugged	no	

### Dimensional data and hydraulic circuit

Configuration with electrohydraulic controls.



**Left Inlet configuration example**



TYPE	E		F	
	mm	in	mm	in
DVS14/1	144	5.67	173.25	6.82
DVS14/2	185	7.28	214.25	8.44
DVS14/3	226	8.90	255.25	10.05
DVS14/4	267	10.51	296.25	11.66
DVS14/5	308	12.13	337.25	13.28
DVS14/6	349	13.74	378.25	14.89
DVS14/7	390	15.35	419.25	16.51
DVS14/8	431	16.97	460.25	18.12
DVS14/9	472	18.58	501.25	19.73
DVS14/10	513	20.20	542.25	21.35

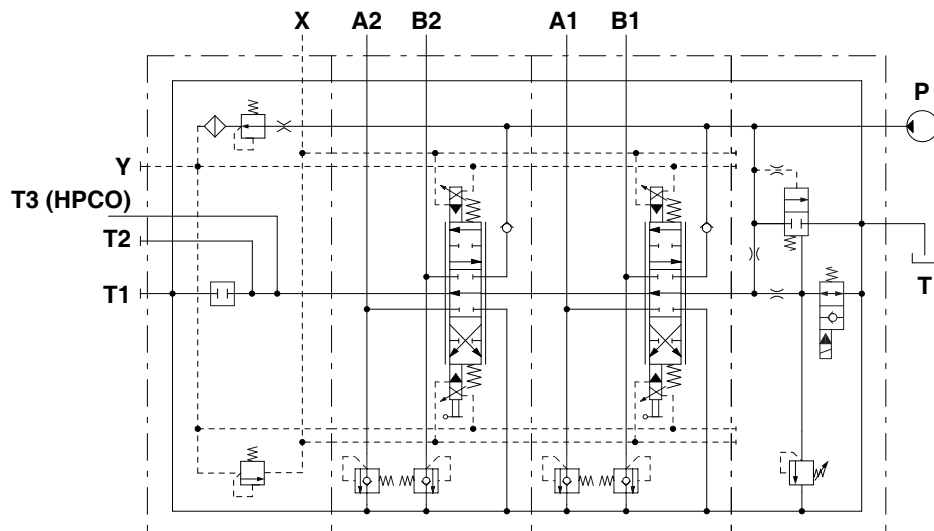
NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.

Dimensional data and hydraulic circuit

The DVS14 sectional valve is available in Flow Unloader configuration as well.

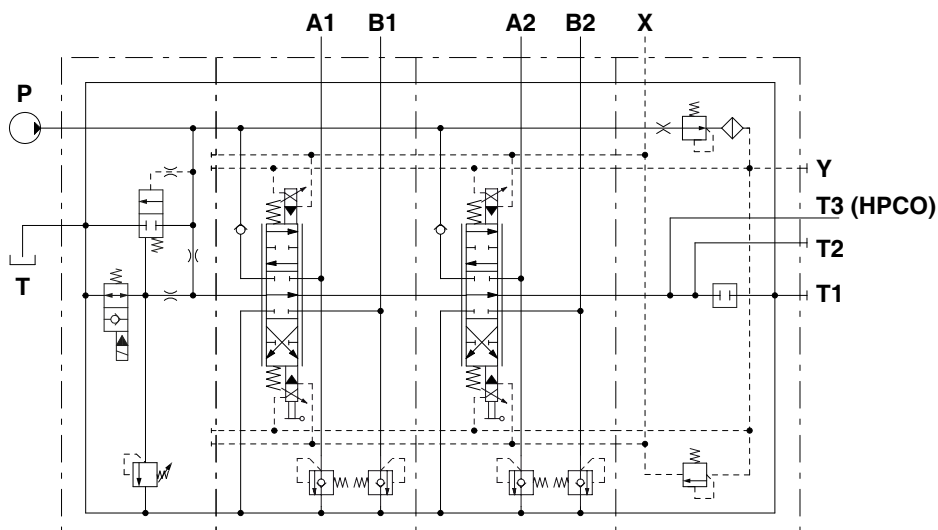
Feature of this configuration is to limit flow on "free flow line" (typically 20 l/min - 5.3 US gpm) making it possible to manage all flow (80 l/min - 21 US gpm) by working ports, when the spools are operated till to stroke end.

The Flow Unloader system is configured with special inlet section, fitted with compensator and dedicated spools.



Right Inlet valvet with electrohydraulic controls configuration:

DVS14/2/MRQ-V1A(200)V7B-C12DI-E-MA-X-G05/W001Q-HP04-FP04-B12AJ-RP1-G04.03TF-PA(100)\03TF-PB(100)/W001Q-HP04-FP04-B12AJ-RP1-G04.03TF-PA(100)\03TF-PB(100)/KZPH4-G05



Left Inlet valvet with electrohydraulic controls configuration:

DVS14/2/MLQ-V1A(200)V7B-C12DI-E-MA-X-G05/W001Q-HP04-FP04-B12AJ-RP1-G04.03TF-PA(100)\03TF-PB(100)/W001Q-HP04-FP04-B12AJ-RP1-G04.03TF-PA(100)\03TF-PB(100)/KZPH4-G05

### Part ordering codes

Right Inlet: **R**  
Left inlet: **L**

valve position      valve position      T port open

**DVS14/2/MLQ - V1 A (200) V7 B - C12DI - E - MA - X - G05 / W001Q-HP04-FP04-B12AJ-RP1-G04.02TF-**

**1    2    2    3    4    5    6    1    7**

valve in position A      valve in position B

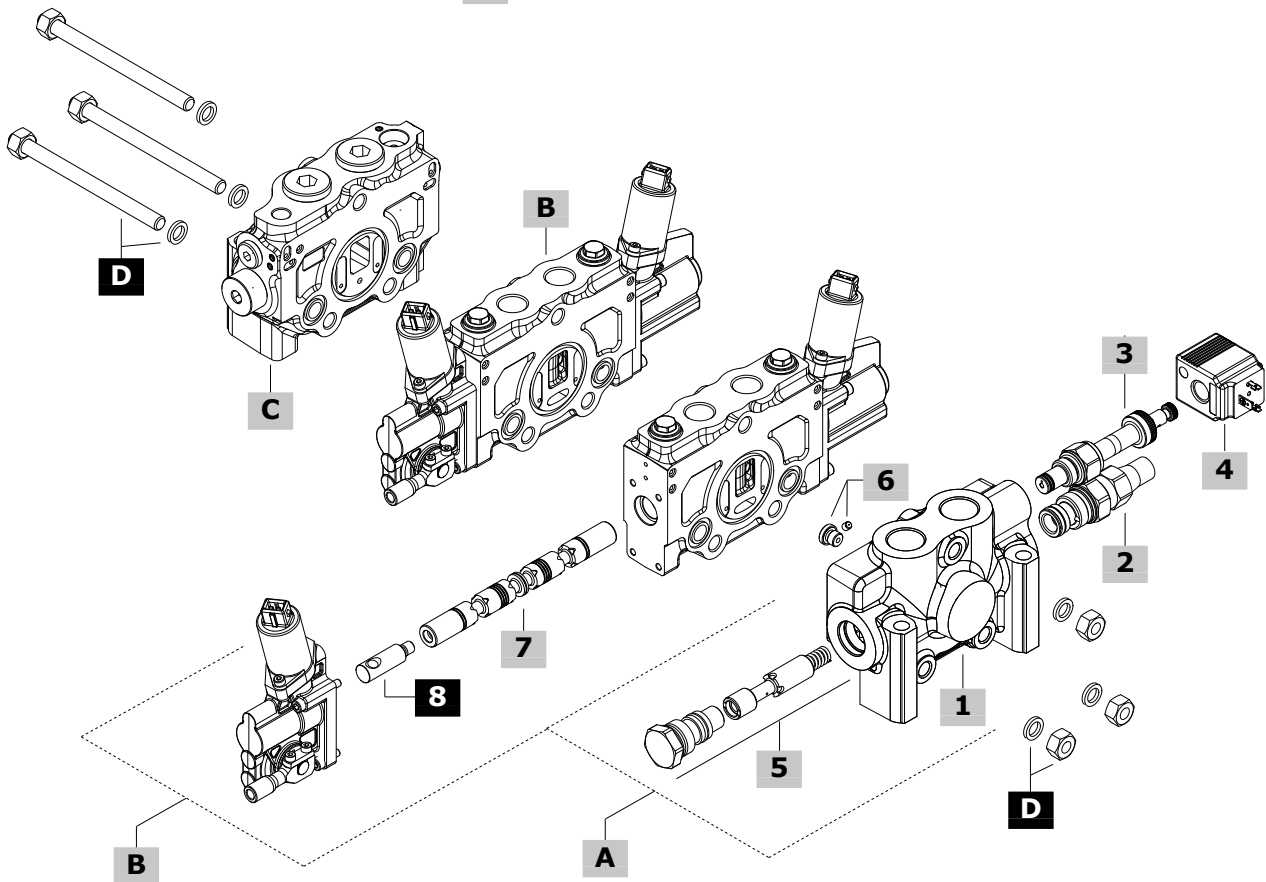
**A**      **B**

**PA\02TF-PB/W001Q-HP04-FP04-B12AJ-RP1-G04.02TF-PA\02TF-PB/KZPH4-G05-<P006/2>**

**7**      **C**

**B**

Valve is painted as std, with one coat of Primer RAL9005 black antitrust paint



Part ordering codes

**A Complete inlet section \* page 38**

TYPE: **MLQ-V1A(200)-V7B-C12DI-E-MA-X-G05**  
 CODE: SHE140004  
 DESCRIPTION: With compensator, upper outlet and inlet ports, direct operated main pressure relief valve, 12VDC solenoid operated unloading valve (DIN connector)

**B Complete working section \* page 14**

**Right Inlet configuration**

TYPE: **SD\W001Q-HP04-FP04-B12AJ-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140013

DESCRIPTION: Parallel circuit with port valves arrangement (seat plugged), 3 positions double acting spool with A and B closed in neutral position, 12VDC proportional electrohydraulic control (AMP JPT connector) with lever and spring return to neutral position

TYPE: **SD\W002Q-HP04-FP04-B12AJ-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140014

DESCRIPTION: As previous one, 3 positions double acting spool with A and B to tank in neutral position

**Left Inlet configuration**

TYPE: **SS\W001Q-HP04-FP04-B12AJ-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140011

DESCRIPTION: Parallel circuit with port valves arrangement (seat plugged), 3 positions double acting spool with A and B closed in neutral position, 12VDC proportional electrohydraulic control (AMP JPT connector) with lever and spring return to neutral position

TYPE: **SS\W002Q-HP04-FP04-B12AJ-RP1-G04.05TF-PA/05TF-PB**  
 CODE: SHL140012

DESCRIPTION: As previous one, 3 positions double acting spool with A and B to tank in neutral position

**1 Inlet section body \* page 38**

TYPE	CODE	DESCRIPTION
<b>Q-G05</b>	4205C3003	Section body for Flow Unloader configuration, with compensator arrangement, G3/4 ports

**2 Main relief valve page 39**

TYPE	CODE	DESCRIPTION
<b>V1(100)</b>	91502C302	Direct operated, setting range from 50 to 200 bar (725 to 2900 psi)
<b>V1(250)</b>	91502C301	Direct operated, setting range from 200 to 420 bar (2900 to 6100 psi)
<b>V3</b>	430155001	Valve blanking plug

**3 Unloading valve page 39**

TYPE	CODE	DESCRIPTION
<b>V8</b>	0EB08002001	Solenoid operated unloading valve (without coil), without emergency actuation
<b>V7</b>	0EB08002000	As previous one with "push&twist" emergency actuation
<b>V3</b>	430059003-H	Valve blanking plug

**4 Coils page 44**

TYPE	CODE	DESCRIPTION
<b>C12DI</b>	4SLE001200A	<b>BER</b> type, 12 VDC, ISO4400 connector
<b>C12AJ</b>	4SLE001203A	<b>BER</b> type, 12 VDC, AMP JPT connector
<b>C12DE</b>	4SLE001202A	<b>BER</b> type, 12 VDC, Deutsch connector

For complete available coil code list see page 45

**C Complete outlet section \* page 41**

TYPE	CODE	DESCRIPTION
<b>For electrohydraulic controls, with pressure reducing valve</b>		
<b>KZP2-G05</b>	SHU140013	Without backpressure valve, upper T1 port and X drain open, T2-T3 outlets and Y pilot plugged
<b>KZP4-G05</b>	SHU140014	Without backpressure valve, X drain open, other ports plugged
<b>KZP6-G05</b>	SHU140021	Without backpressure valve, upper T1-T2 ports and Y pilot plugged, side T3 port and X drain open
<b>KZPH3-G05</b>	SHU140003	Without backpressure valve, carry-over (HPCO) on upper T2 port, upper T1 and side T3 ports plugged, X drain open, Y pilot plugged
<b>KZPH4-G05</b>	SHU140004	Without backpressure valve, carry-over (HPCO) on side T3 port, upper T1 and T2 ports plugged, drain X open, Y pilot plugged

**D Tie rods kit**

CODE	DESCRIPTION
5TIRDVS1401EI	For 1 section valve
5TIRDVS1402EI	For 2 sections valve
5TIRDVS1403EI	For 3 sections valve
5TIRDVS1404EI	For 4 sections valve
5TIRDVS1405EI	For 5 sections valve
5TIRDVS1406EI	For 6 sections valve
5TIRDVS1407EI	For 7 sections valve
5TIRDVS1408EI	For 8 sections valve
5TIRDVS1409EI	For 9 sections valve
5TIRDVS1410EI	For 10 sections valve

**5 Compensator page 40**

TYPE	CODE	DESCRIPTION
<b>MA</b>	4300C3017	Compensator kit for Flow Unloader section, spring A type

**6 Tappi con fori calibrati**

TYPE	CODE	DESCRIPTION
	423411308	M5 screw with $\varnothing 0.6$ mm ( $\varnothing 0.0236$ in) tapered hole: <b>nr.1 always present</b>
<b>G1/8 plug with tapered hole for compensator flow control.</b>		
<b>X</b>	423400145	$\varnothing 3.5$ mm ( $\varnothing 0.138$ in) for 20 l/min (5.3 US gpm) flow
<b>Y</b>	423400142	$\varnothing 4.0$ mm ( $\varnothing 0.157$ in) for 28 l/min (7.4 US gpm) flow
<b>Z</b>	423400116	$\varnothing 4.5$ mm ( $\varnothing 0.177$ in) for 36 l/min (9.5 US gpm) flow
<b>K</b>	423400191	$\varnothing 5.0$ mm ( $\varnothing 0.197$ in) for 44 l/min (11.6 US gpm) flow

**7 Spools page 40**

TYPE	CODE	DESCRIPTION
<b>Double acting spools</b>		
<b>W001Q</b>	4212C3056	3 positions, A and B closed in neutral position, for 70 l/min (18.5 US gpm)
<b>W002Q</b>	4212C3057	3 positions, A and B to tank in neutral position, for 70 l/min (18.5 US gpm)

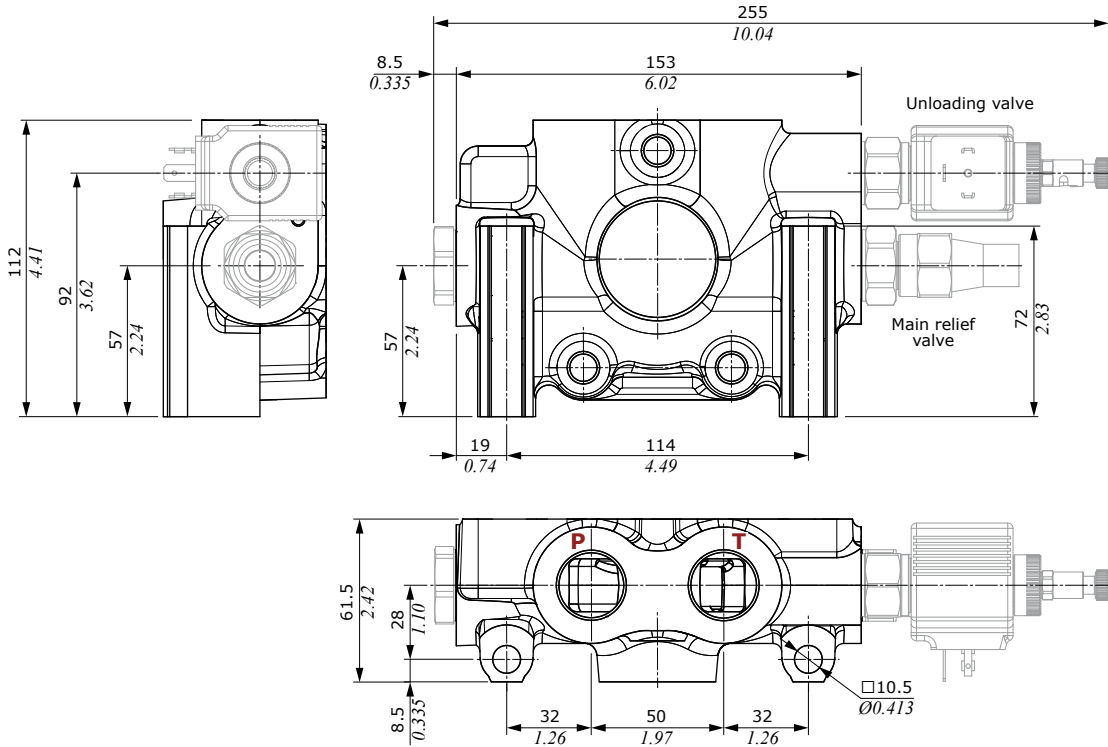
**8 Spool pin**

CODE	DESCRIPTION
422501293	Spool pin for electrohydraulic controls

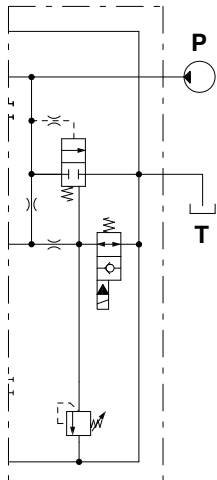
NOTE (\*): Codes are referred to **BSP** thread

### Inlet section

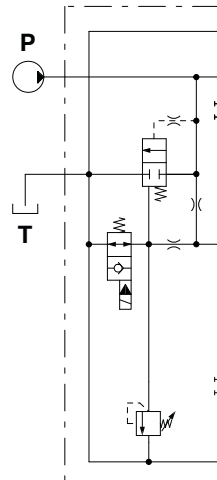
#### Dimensional data and hydraulic circuit



**MRQ type**  
for Right Inlet



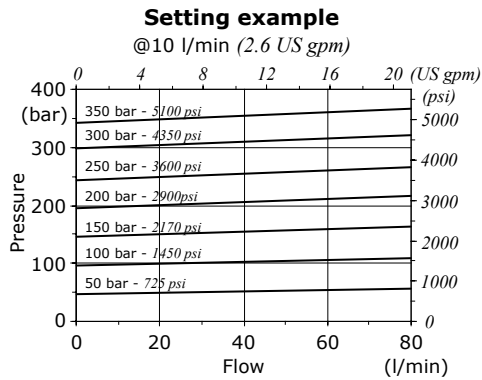
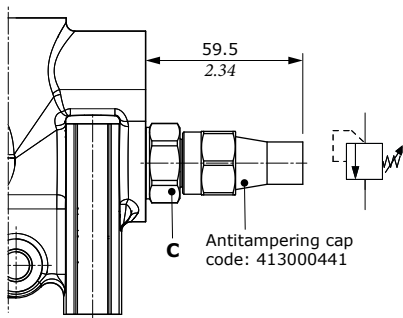
**MLQ type**  
for Left Inlet



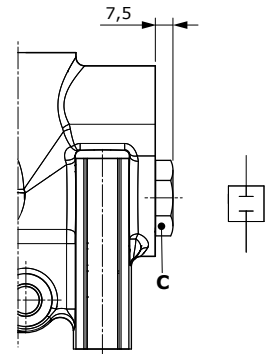
**Inlet valves**

**Main relief valve**

**V1 type  
Direct operated**



**V3 type  
Valve blanking plug**



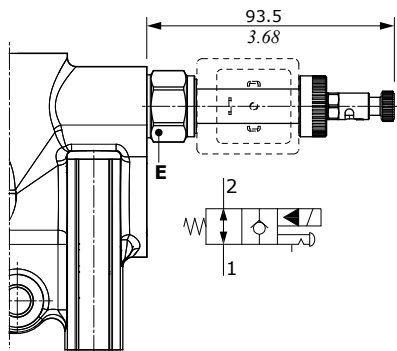
**Wrenches and tightening torques**

C = wrench 27 - 80 Nm (59 lbft)

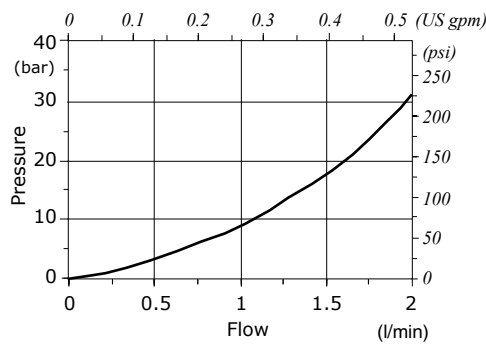
**Unloading valve**

**Tipo V7  
Solenoid operated**

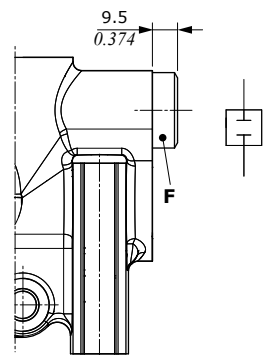
With push&twist emergency actuation



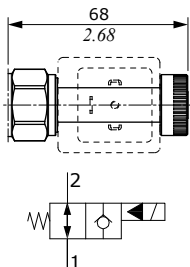
**Pressure drops**



**V3 type  
Valve blanking plug**



Without emergency actuation



**Wrenches and tightening torques**

E = wrench 24 - 30 Nm (22 lbft)

F = allen wrench 8 - 30 Nm (22 lbft)

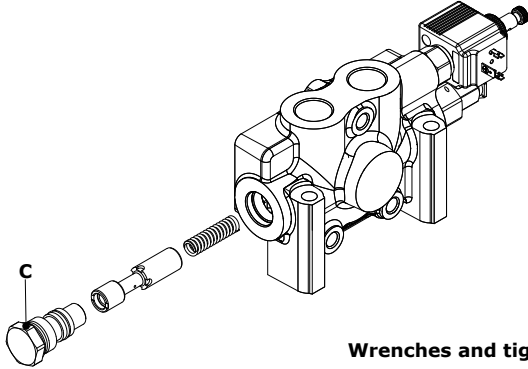
**Valve features**

Nominal flow . . . . . : 2 l/min (0.53 US gpm)  
 Max. pressure. . . . . : 350 bar (5100 psi)  
 Max. internal leakage.. : 0.25 cm<sup>3</sup>/min @ 210 bar  
 (0.015 in<sup>3</sup>/min @ 3050 psi)

For **BER** type coils see page 44

### Inlet section

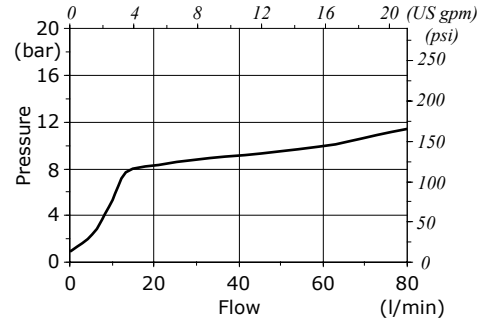
#### Compensator kit



**Wrenches and tightening torques**  
C = wrench 27 - 80 Nm (59 lbf)

#### P⇒T Pressure drop inlet compensator (margin pressure)

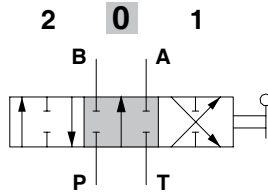
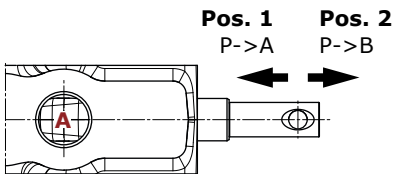
Flow = 80 l/min (21 US gpm)



### Spools

#### W001Q type

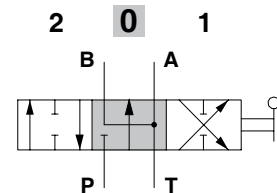
Double acting, 3 position,  
A and B closed in neutral position



**Stroke**  
position 1: + 6 mm (+0.236 in)  
position 2: - 6 mm (-0.236 in)

#### W002Q type

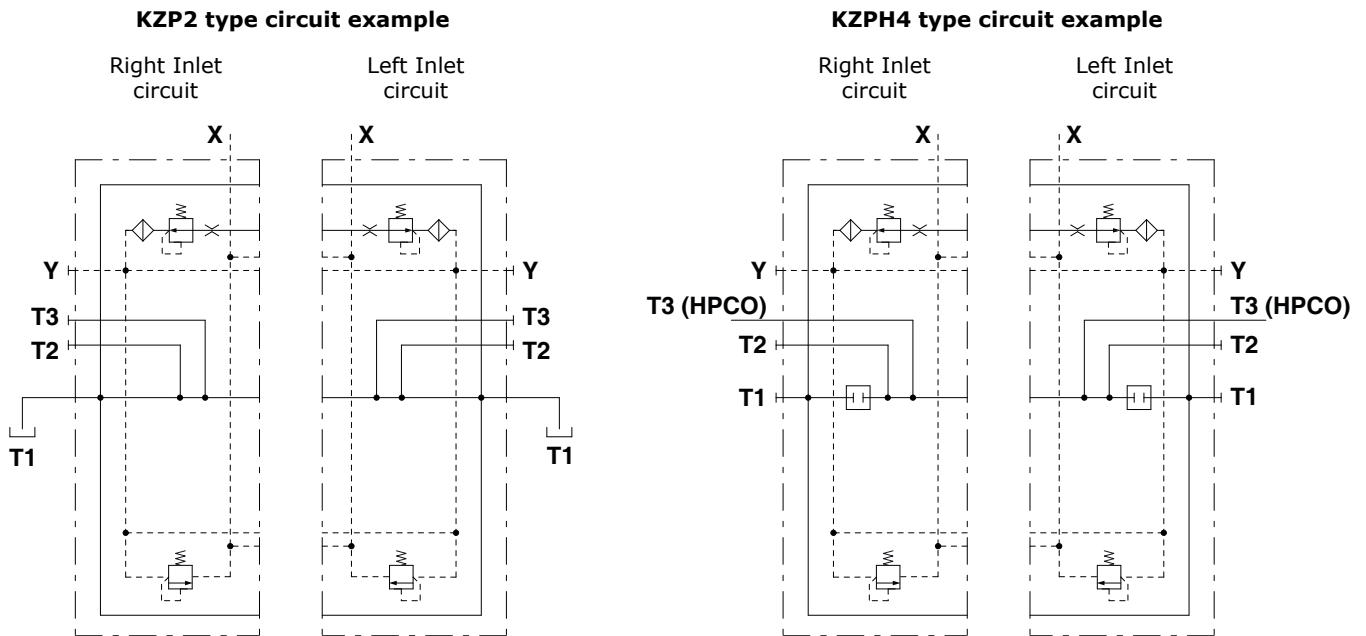
Double acting, 3 position,  
A and B to tank in neutral position



**Stroke**  
position 1: + 6 mm (+0.236 in)  
position 2: - 6 mm (-0.236 in)



For section dimensions see pages 32/33.



Port configuration

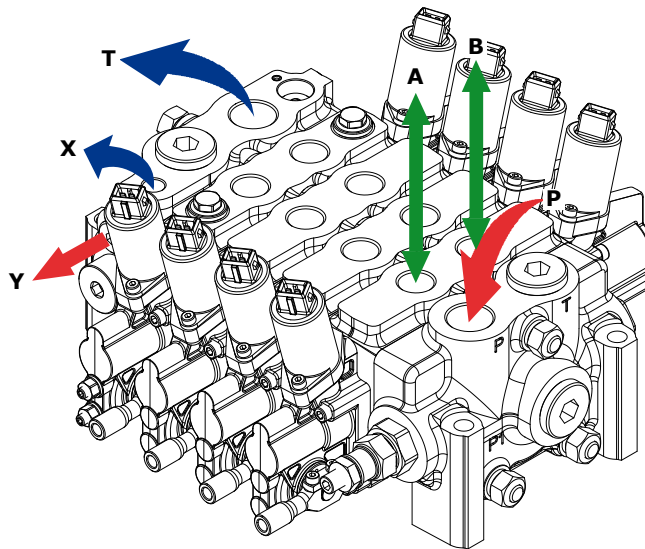
Type	T1 port	T2 port	T3 port	X drain	Y pilot	Backpressure valve	
KZP2	open	plugged	plugged	open	plugged	no	
KZP4	plugged	plugged	plugged	open	plugged	no	
KZP6	plugged	plugged	open	open	plugged	no	
KZPH3	plugged	HPCO open	plugged	open	plugged	no	
KZPH4	plugged	plugged	HPCO open	open	plugged	no	

### Main rules

The DVS14 valve is assembled and tested as per the technical specifications of this catalogue.

Before the final installation on your equipment, please follow the below recommendations:

- the valve can be assembled in any position; in order to prevent body deformation and spool sticking, mount the product on a flat surface;
- In order to prevent the possibility of water entering the spool control kit, do not use high pressure washdown directly on the valve;
- prior to painting, ensure that plugs on normally open ports are tightly in place.



### FITTING TIGHTENING TORQUE - Nm (lbft)

THREAD TYPE	P port	A and B ports	T and HPCO ports	Y pilot	X drain
<b>BSP</b>	G 3/4	G 1/2	G 3/4	G 1/4	G 1/4
With O-Ring seal	90 (66.4)	50 (36.9)	90 (66.4)	20 (14.8)	20 (14.8)
With copper washer	90 (66.4)	60 (44.3)	90 (66.4)	25 (18.4)	25 (18.4)
With steel and rubber washer	70 (51.6)	60 (44.3)	70 (51.6)	16 (11.8)	16 (11.8)
<b>UN-UNF</b>	1 1/6-12 (SAE 12)	7/8-14 (SAE 10)	1 1/6-12 (SAE 12)	7/8-14 (SAE 10)	9/16-18 (SAE 6)
With O-Ring seal	95 (70)	90 (66.4)	95 (70)	90 (66.4)	30 (22)

NOTE – These torques are recommended.

Assembly tightening torque depends on many factors, including lubrication, coating and surface finishing.

Carry-over transformation rules

**KZM type outlet section**

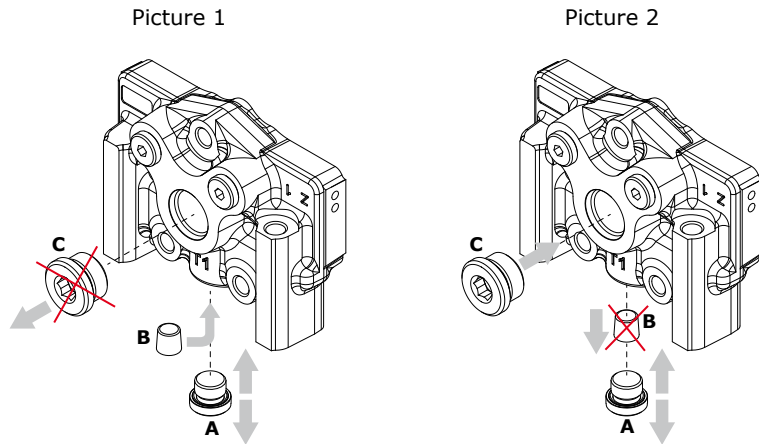
In order to transform the KZM outlet section in a HPCO carry-over configuration (picture 1), it is necessary to unscrew the **A** bottom plug, to insert the tapered **B** plug, **413010203** code, and to screw the **A** plug.

If the **C** plug is present, it is necessary to remove it from T1 port: this one will be used for HPCO.

If the HPCO port is no longer used, please remove the **B** tapered plug (picture 2) and, if necessary, close the T1 port with the **C** plug, **430000020** code.

**Wrenches and tightening torques**

- A = allen wrench 6 - 40 Nm (29.5 lbf<sup>t</sup>)
- B = allen wrench 6 - 40 Nm (29.5 lbf<sup>t</sup>)
- C = allen wrench 12 - 90 Nm (66.4 lbf<sup>t</sup>)



**KZP type outlet section**

If needed, a HPCO carry-over configuration is available on T2 or T3 ports.

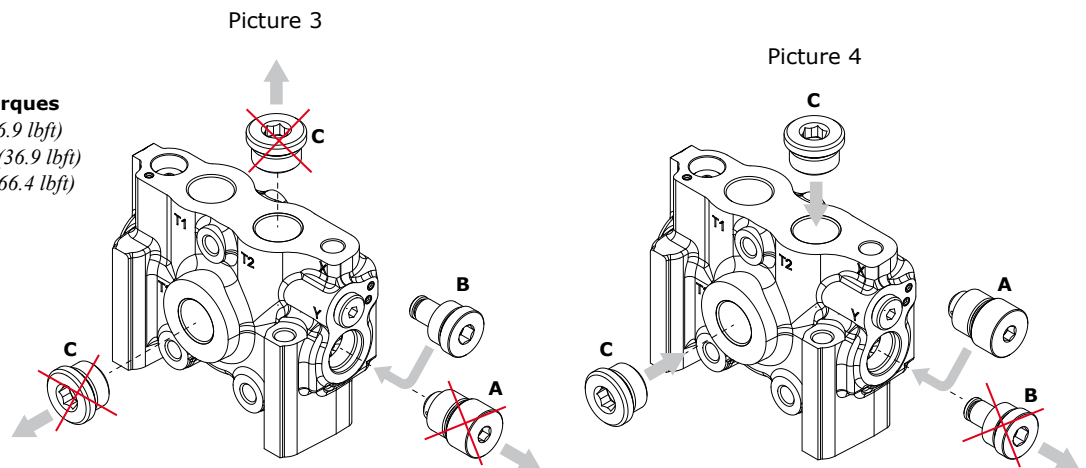
It is necessary (picture 3) to remove the **A** backpressure valve and replaced it with the **B** plug, **4300C3004** code.

Select the port for HPCO configuration and remove one of the **C** plugs.

If the HPCO port is no longer used, please remove the **B** plug (picture 4), insert the **A** backpressure valve, **3202C3004** code, and close both the T2 and T3 ports with the **C** plug, **430000020** code.

**Wrenches and tightening torques**

- A = allen wrench 8 - 50 Nm (36.9 lbf<sup>t</sup>)
- B = allen wrench 10 - 50 Nm (36.9 lbf<sup>t</sup>)
- C = allen wrench 12 - 90 Nm (66.4 lbf<sup>t</sup>)

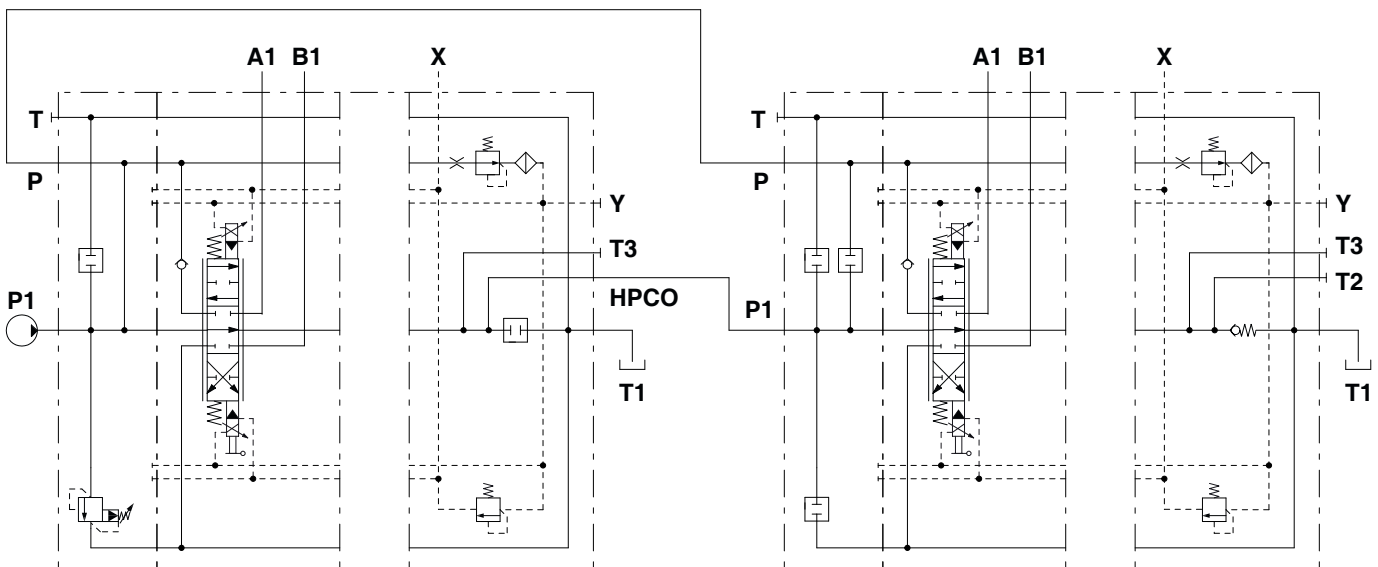
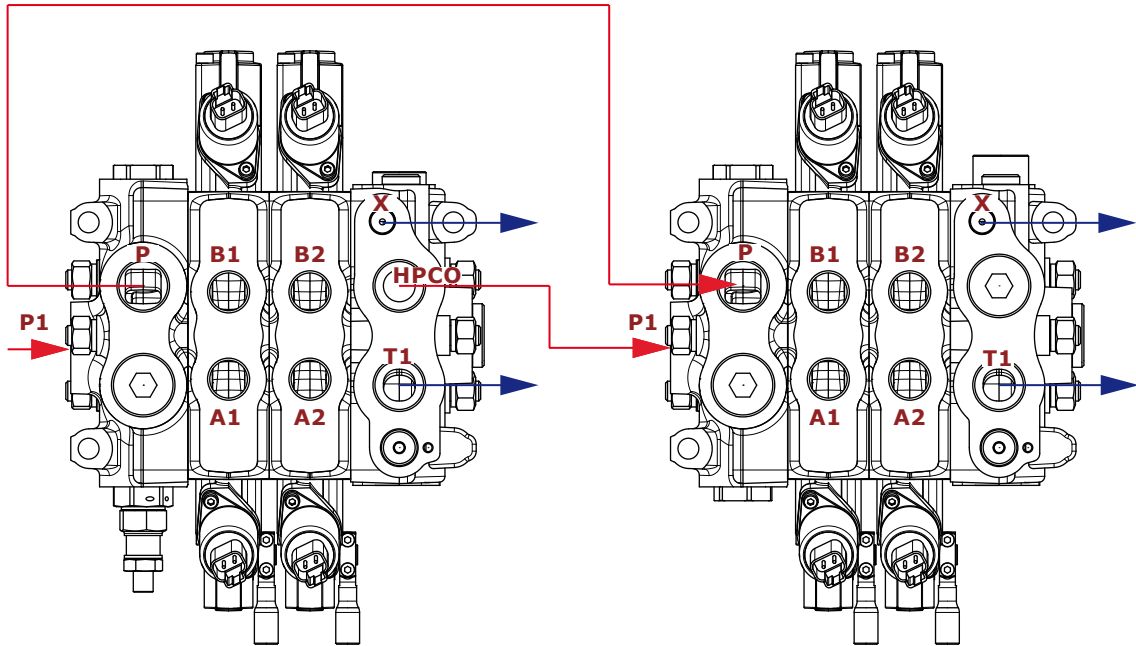


### Two valves connection

This system, named IZ, allows the contemporary use of nr. 2 DVS14 valves when they are connected in parallel circuit and to the same pump.

The pump connected to the first DVS14 valve feeds also the pressure line of the second valve, while the "free flow line" from the HPCO of the first valve is connected to the "free flow line" of the following valve.

The pump can be connected indifferently to P or P1 ports of the first valve, while the HPCO must be connected to P1 port of the second DVS14 valve.



Coils and connectors

Dimensional data and features

Coil type	Voltage	Connectors					
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	Flying leads (without conn.)
BER	10 VDC	4SLE001000A	-	-	-	-	-
	12 VDC	4SLE001200A 4SLE001217A <sup>(3)</sup>	4SLE001201A <sup>(5)</sup>	-	-	-	-
			4SLE001209A <sup>(3-5)</sup>	4SLE001203A <sup>(5)</sup>	4SLE001210A <sup>(2)</sup>	4SLE001214A <sup>(2)</sup>	4SLE001207A
			4SLE001202A <sup>(6)</sup>	4SLE001211A <sup>(3-5)</sup>	-	-	-
			4SLE001216A <sup>(3-6)</sup>	-	-	-	-
	14 VDC	-	4SLE001206A <sup>(2)</sup>	4SLE001400A <sup>(6)</sup>	4SLE001403A <sup>(3-5)</sup>	-	-
			-	4SLE001401A <sup>(3-6)</sup>	-	-	-
	24 VDC	4SLE002400A 4SLE002408A <sup>(3)</sup> 4SLE302400A <sup>(1)</sup>	4SLE001402A <sup>(3-5)</sup>	4SLE002401A <sup>(5)</sup>	4SLE002403A <sup>(5)</sup>	-	4SLE002404A
			-	4SLE002407A <sup>(3-5)</sup>	-	-	-
	28 VDC	-	4SLE002802A <sup>(6)</sup>	4SLE002800A <sup>(5)</sup>	-	-	-
48 VDC	4SLE004800A 4SLE304800A <sup>(1)</sup>	-	-	-	-	-	
110VDC	4SLE011000A 4SLE311000A <sup>(1)</sup>	-	-	-	-	-	
220 VDC	4SLE022000A 4SLE322000A <sup>(1)</sup>	-	-	-	-	-	
		-	-	-	-	-	
<b>Mating connectors</b> (For connector with rectifier see following table)		4CN1009995	5CON140031	5CON003	5CON001	5CON017	-

Note: <sup>(1)</sup> supply with AC and use only with rectifier connector - <sup>(2)</sup> with flying leads - <sup>(3)</sup> with bidirectional diode - <sup>(4)</sup> with unidirectional diode - <sup>(5)</sup> integrated perpendicular type - <sup>(6)</sup> integrated parallel type

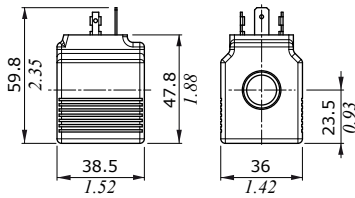
Voltage	ISO 4400 mating connector with rectifier	
	BER type coil	
24 VDC	4CN1010240	
48 VDC	4CN1010480	
110 VDC	4CN1011100	
220 VDC	4CN1012200	

Coils and connectors

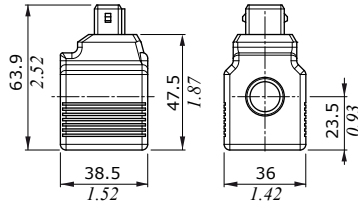
Dimensional data and features

BER type

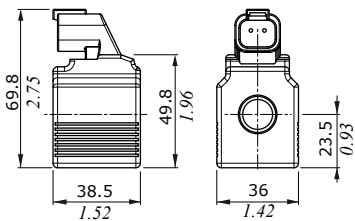
ISO4400 connector



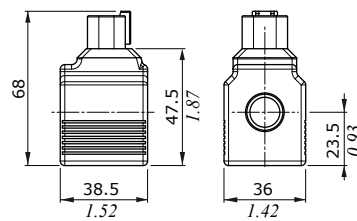
AMP JPT connector



DEUTSCH DT04 connector  
(parallel type)



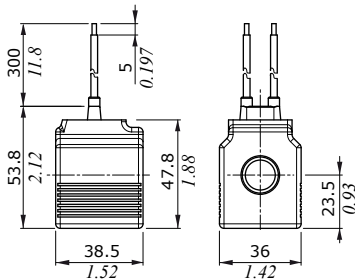
DEUTSCH DT04 connector  
(perpendicular type)



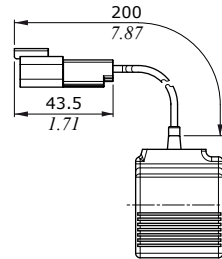
Features

- Nominal voltage tolerance : ±10%
- Power rating . . . . . : 19.2 W - 12/24 VDC - 48 RAC  
: 19.1 W - 28 VDC  
: 19 W - 10/14/48/110/220 VDC  
: 24/110/220 RAC
- Max. operating current . . . : 1.90 A - 10 VDC  
: 1.60 A - 12 VDC  
: 1.36 A - 14 VDC  
: 0.80 A - 24 VDC  
: 0.68 A - 28 VDC  
: 0.40 A - 48 VDC  
: 0.17 A - 110 VDC  
: 0.09 A - 220 VDC  
: 0.89 A - 24 RAC  
: 0.45 A - 48 RAC  
: 0.19 A - 110 RAC  
: 0.09 A - 220 RAC
- Coil insulation . . . . . : Class H (180°C - 356°F)
- Weather protection . . . . . : IP65 - ISO4400  
: IP69K - Deutsch DT  
: IP65 - AMP JPT  
: IP67 - Weatherpack  
: IP67 - Metri-pack
- Insertion . . . . . : 100%

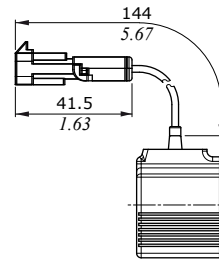
Flying leads



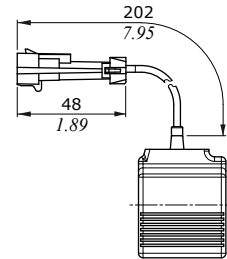
Flying leads with  
DEUTSCH DT04 connector



Flying leads with PACKARD  
WEATHER-PACK connector



Flying leads with PACKARD  
METRI-PACK connector







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