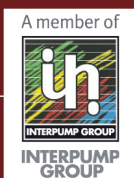


# SDS140

Sectional directional control valves



## Features

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### SDS140

Simple, compact and heavy duty designed sectional valve from 1 to 12 sections for open and closed centre hydraulic systems.

- Several type of inlet sections: open centre, open centre with flow unloading, closed centre, priority valve.
- Basically proportional control. Available all other standard controls.
- Working section type Q and P (with direct and pilot port relief valves).
- Flow unloader system.
- Proportional electrohydraulic controls.
- Load Sensing circuit available.
- Spool position sensors.

### Additional information

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

### 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.**

1<sup>st</sup> edition September 2015

### SDS140

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  - Working conditions . . . . . page 4
  - Standard threads . . . . . page 4
  - Dimensions . . . . . page 5
  - Performance data . . . . . page 5
  - Hydraulic circuit . . . . . page 6
  - Complete sections ordering codes . . . . . page 7
- Inlet section
  - Parts ordering codes . . . . . page 8
  - Dimensional data and hydraulic circuit . . . . . page 10
  - Main pressure relief valve . . . . . page 13
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  - Parts ordering codes . . . . . page 18
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### Working conditions

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

Nominal flow rating	standard	90 l/min	24 US gpm
	for AN and AM inlet sections	120 l/min	32 US gpm
Max. pressure		315 bar	4600 psi
Backpressure (max.) on outlet port <b>T</b>	with mechanical devices	10 bar	145 psi
	with hydraulic/pneumatic devices	30 bar	435 psi
	with electrohydraulic devices	10 bar	145 psi
Internal leakage A(B)⇒T (standard)	Δp = 100 bar / 1450 psi	max. 10 cm <sup>3</sup> /min	max. 0.61 in <sup>3</sup> /min
	With port valves Δp = 100 bar / 1450 psi	max. 15 cm <sup>3</sup> /min	max. 0.91 in <sup>3</sup> /min
Fluid		Mineral base oil	
Fluid temperature	with NBR (BUNA-N) seals	from -20°C to 80°C	from -4°F to 176°F
	with FPM (VITON) seals	from -20°C to 100°C	from -4°F to 212°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
Max. contamination level		-/19/16 - ISO 4406	NAS 1638 - class 10
Ambient temperature for working conditions	with mechanical devices	from -40°C to 60°C	from -40°F to 140°F
	with hydraulic/pneumatic devices	from -30°C to 60°C	from -22°F to 140°F
	with electrohydraulic devices	from -30°C to 50°C	from -4°F to 122°F
Tie rod tightening torque (wrench 13)		30 Nm	22 lbft

NOTE - For different conditions please contact our Sales Dept.

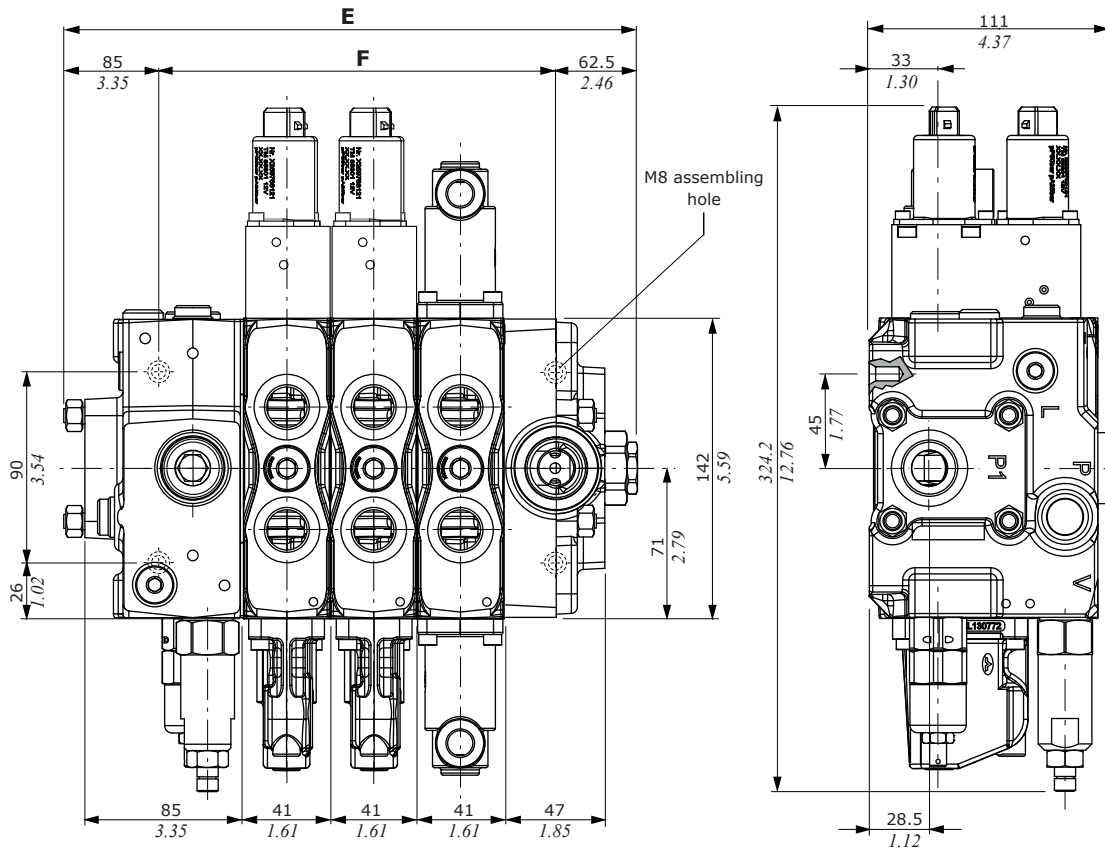
### Standard thread

REFERENCE STANDARD					
	BSP	UN-UNF	METRIC (*)	METRIC ISO (*)	NPTF
THREAD ACCORDING TO	ISO 228/1	ISO 263	ISO 262	ISO 262	ANSI B1.20.3
	BS 2779	ANSI B1.1 unified			
CAVITY DIMENSION ACCORDING TO	ISO 1179-1	11926-1	9974-1	6149	
	SAE	J1926-1		J2244	J476a
	DIN 3852-2 shape X o Y		3852-2 shape X o Y	3852-1 shape X o Y	

NOTE (\*) - Metric threading is available on request.

PORTS THREADING			
MAIN PORTS	BSP	UN-UNF	METRIC
Inlet <b>P</b>	G 3/4	7/8-14 (SAE 12)	M27x2
Ports <b>A</b> and <b>B</b>	G 1/2	3/4-16 (SAE 8)	M22x1.5
Outlet <b>T</b> and carry-over <b>C</b>	G 3/4	1 1/6-12 (SAE 12)	M27x2
PILOT PORTS			
Hydraulic	G 1/4	9/16-18 (SAE 6)	G 1/4
Pneumatic	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27

Dimensions

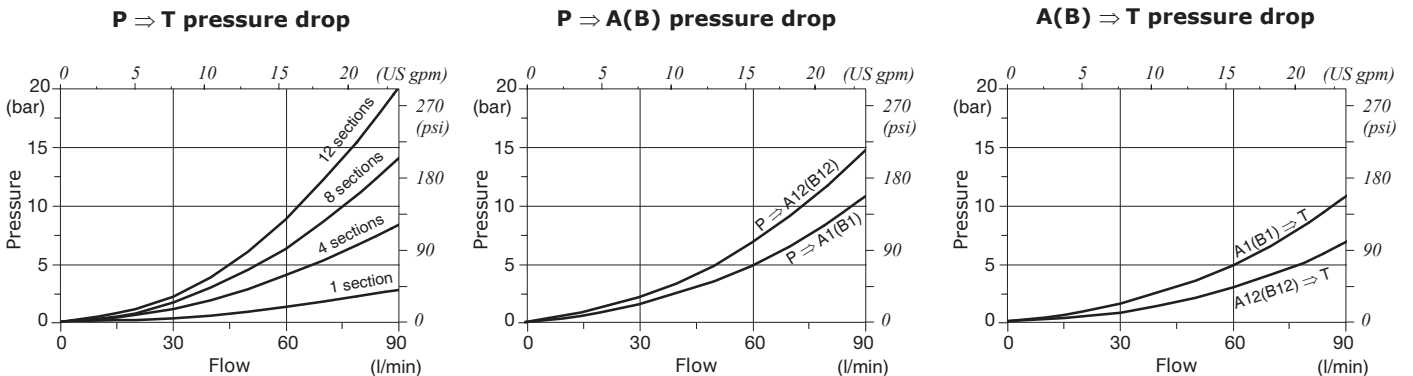


NOTE - Drawings and dimensions are referred to **BSP** thread configuration.  
For assembling hole of different inlet sections see related pages.

TYPE	E		F		Weight	
	mm	in	mm	in	Kg	lb
SDS140/1	188.5	7.42	102	4.01	15.2	33.51
SDS140/2	229.5	9.03	143	5.63	19.4	42.77
SDS140/3	270.5	10.65	184	7.24	23.6	52.03
SDS140/4	311.5	12.26	225	8.86	27.8	61.29
SDS140/5	352.5	13.88	266	10.47	32	70.55
SDS140/6	393.5	15.49	307	12.09	36.2	79.81
SDS140/7	434.5	17.11	348	13.7	40.4	89.07

TYPE	E		F		Weight	
	mm	in	mm	in	Kg	lb
SDS140/8	475.5	18.72	389	15.23	44.6	98.33
SDS140/9	516.5	20.33	430	16.93	48.8	107.58
SDS140/10	557.5	21.95	471	18.54	53	116.84
SDS140/11	598.5	23.56	512	20.16	57.2	126.1
SDS140/12	639.5	25.18	553	21.77	61.4	135.36
SDS140/13	680.5	26.79	594	23.38	65.6	144.62
SDS140/14	721.5	28.4	635	25	69.8	153.88

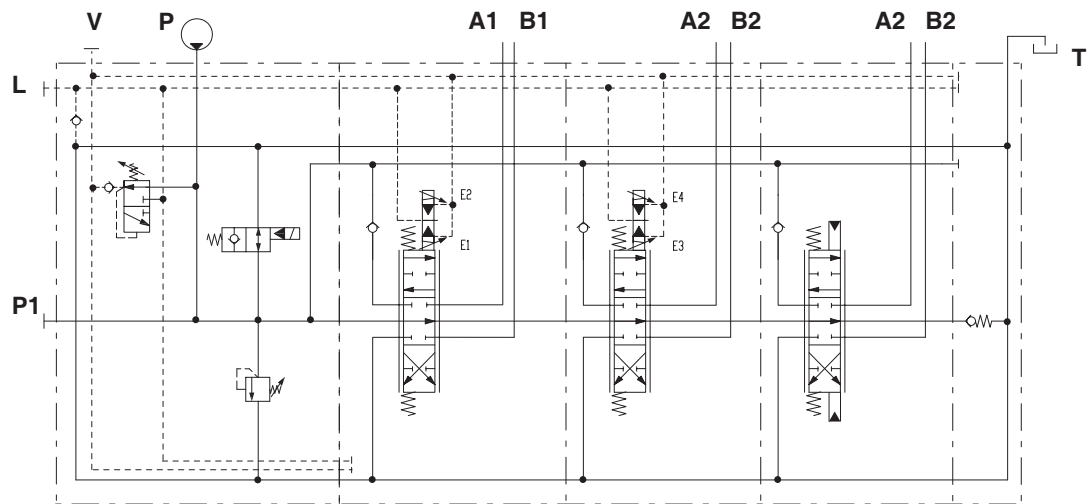
Performance data



### Hydraulic circuit

#### Parallel circuit

Example of configuration, open centre circuit.

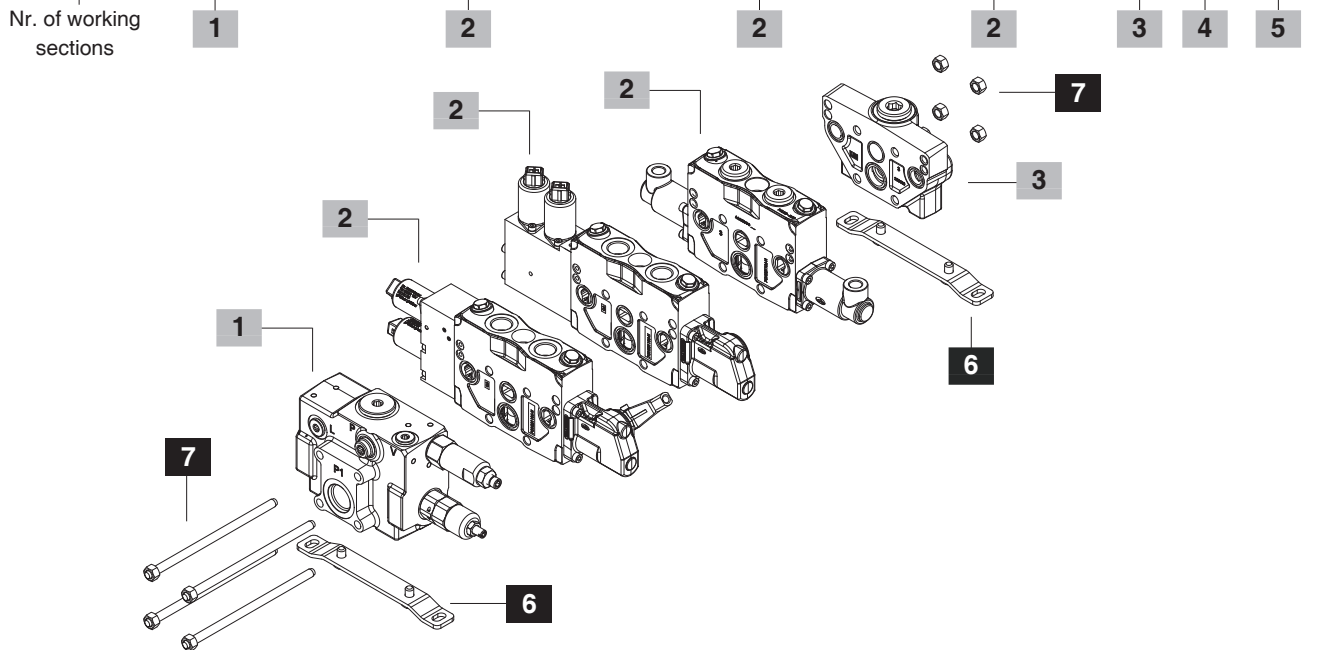


Description example:

SDS140/3/AD(YG3-175/ELNW)/QZ-1EZ8EZH3SLCQ/QZ-1EZ8EZH3SLCQ/QA-1M8IM/RVC-12VDC

Complete section ordering codes

Standard: omitted in description  
 SDS140 / 3 / AC(YG3-175)-R(32) / PZ-1EZ8EZH3LQ.U3T / PZ-1EZ8EZ3SLCQ.U3T / PA1M8IM.U3T / RVC - .... - 12VDC



**1 Inlet section \*** **page 8**

TYPE: **AC(YG3-175)** CODE: 61D201000  
 DESCRIPTION: Side inlet port, with direct pressure relief valve and pressure reducing valve, pilot V and drain L ports plugged

TYPE: **ADT(SV)** CODE: 61D201001  
 DESCRIPTION: With upper inlet and side outlet ports, without pressure relief valve, with pressure reducing valve, pilot V and drain L ports plugged

TYPE: **AP-D(0.7)-SB9-Q40(0.8)(XGM-270/ELNW)-12VDC** CODE: 61D201002  
 DESCRIPTION: With LS priority valve, pilot pressure relief valve, pressure reducing valve, unloading valve, upper inlet port and LS port open, pilot V and drain L ports plugged

TYPE: **AM(TGW3-175\ESFPW(NC))** CODE: 61D201003  
 DESCRIPTION: With compensator for open center circuit, upper inlet and outlet port open, with LS relief valve, pressure reducing valve, unloading valve, pilot V and drain L ports plugged

**2 Working section \*** **page 18**

TYPE: **PZ-1EZ8EZH3LQ.U3T-12VDC** CODE: 61D101000  
 DESCRIPTION: Parallel circuit arranged for port valves, horizontal electrohydraulic control with lever

TYPE: **QZ-1EZ8EZH3SLCQ-12VDC** CODE: 61D101001  
 DESCRIPTION: Parallel circuit without port valves, vertical electrohydraulic control without lever

TYPE: **PZ-1EZ8EZ3SLCQ.U3T-12VDC** CODE: 61D101002  
 DESCRIPTION: Parallel circuit arranged for port valves, vertical electrohydraulic control without lever

TYPE: **PA-1M8IM.U3T** CODE: 61D101003  
 DESCRIPTION: Parallel circuit arranged for port valves, proportional hydraulic control

**4 Valve threading**

Specify only if it is different from BSP standard (see page 4)

**3 Outlet section \*** **page 30**

TYPE	CODE	DESCRIPTION
<b>RF</b>	61D301000	With side and upper outlet ports plugged
<b>RC</b>	61D301001	With side port open, upper port plugged
<b>RVC</b>	61D301002	With backpressure valve, upper port open
<b>RVE</b>	61D301003	With backpressure valve, side carry-over sleeve, upper port open
<b>RFC</b>	61D301004	As RF with tapered plug with metering hole

**5 Voltage** **page 33**

Coils voltage specification; for list of available coils see related pages

**6 Fixing bracket \*\*** **page 35**

TYPE	CODE	DESCRIPTION
<b>STAF</b>	5STA125190	For AC, AD, ADT and AP inlet sections with fixing screws
<b>STAF</b>	5STA125191	For AN ad AM inlet sections with fixing screws

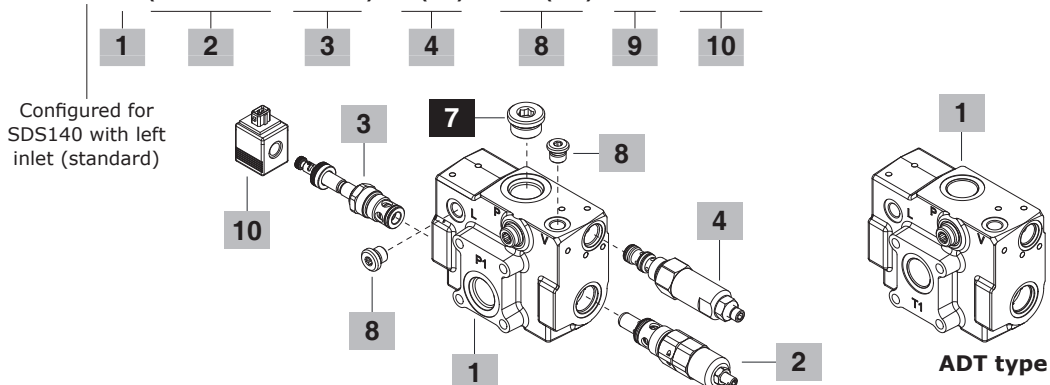
**7 Assembling kit**

CODE	DESCRIPTION	CODE	DESCRIPTION
<b>Standard tie rods: for AD, AC, ADT, AN and AM inlet sections</b>			
5TIR108169	For 1 section valve	5TIR108415	For 7 sections valve
5TIR108210	For 2 sections valve	5TIR108456	For 8 sections valve
5TIR108251	For 3 sections valve	5TIR108497	For 9 sections valve
5TIR108292	For 4 sections valve	5TIR108538	For 10 sections valve
5TIR108333	For 5 sections valve	5TIR108579	For 11 sections valve
5TIR108374	For 6 sections valve	5TIR108620	For 12 sections valve
<b>Special tie rods: for AP inlet section</b>			
5TIR108128	For 1 section valve	5TIR108374	For 7 sections valve
5TIR108169	For 2 sections valve	5TIR108415	For 8 sections valve
5TIR108210	For 3 sections valve	5TIR108456	For 9 sections valve
5TIR108251	For 4 sections valve	5TIR108497	For 10 sections valve
5TIR108292	For 5 sections valve	5TIR108538	For 11 sections valve
5TIR108333	For 6 sections valve	5TIR108579	For 12 sections valve

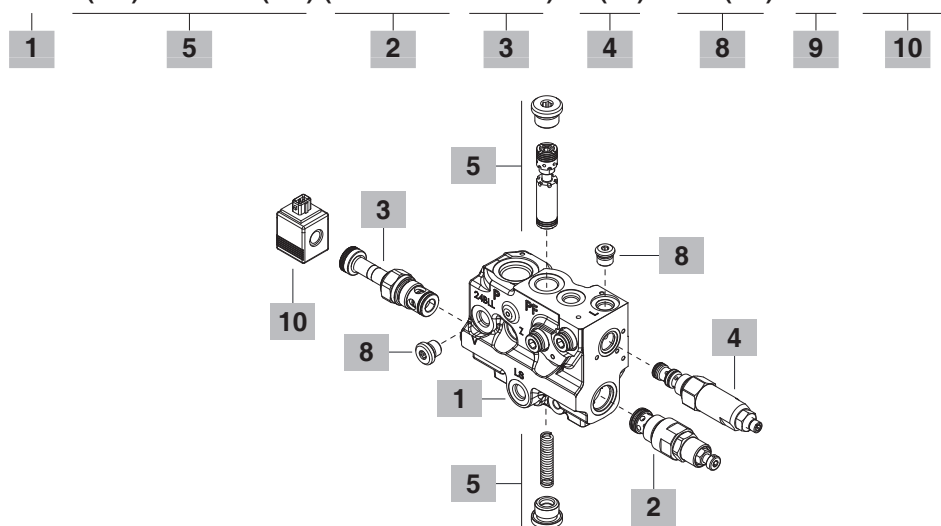
NOTES (\*) - Codes are referred to **BSP** thread.  
 (\*\*) - For fixing bracket of AN and AM inlet section contact our Sales Dept  
 For right inlet section please contact our Sales Dept.

## Parts ordering codes

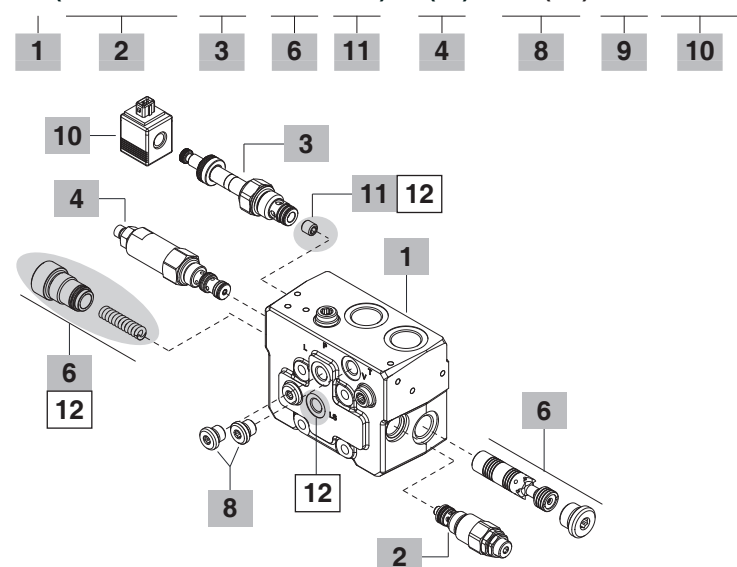
FE SDS140 / A C (YG3-175 \ ELTW) - R(32) - TAP(VL) - ..... - 12VDC



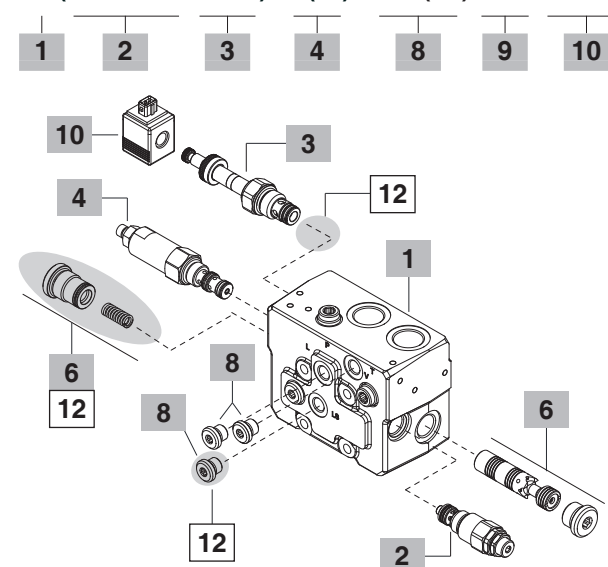
FE SDS140 / AP - D(0.7)-SB9-Q40(0.8) (XGM-270 / ELNW) - R(32) - TAP(VL) - ..... - 12VDC



FE SDS140 / AN (TGW3-175/ESFP/SB20/FC3) - R(32) - TAP(VL) - .... - 12VDC



FE SDS140 / AM (TGW3-175/ESFF) - R(32) - TAP(VL) - ..... - 12VDC





**1 Inlet section kit\* page 10**

TYPE: **SDS140/C-D** CODE: 5FIA113300  
 DESCRIPTION: With side and upper inlet ports, pilot V and drain L ports, arranged for pressure relief valve, unloading valve, pressure reducing valve  
 TYPE: **SDS140/DT** CODE: 5FIA113301  
 DESCRIPTION: As previous one, with upper inlet and side outlet ports  
 TYPE: **SDS140/P** CODE: 5FIA113302  
 DESCRIPTION: With upper inlet port, pilot V, drain L and LS ports, arranged for priority valve, pressure relief valve, unloading valve, pressure reducing valve  
 TYPE: **SDS140/M-N** CODE: 5FIA1133A0  
 DESCRIPTION: With upper inlet and outlet port, pilot V, drain L and LS ports, arranged for LS pressure relief valve, unloading valve, pressure reducing valve

**2 Main pressure relief valve page 13**

**For AC, AD, ADT inlet sections**  
 Standard setting is referred to 10 l/min (2.6 US gpm).  

TYPE	CODE	DESCRIPTION
<b>SV</b>	XTAP526340	Relief valve blanking plug
<u>Direct operated type Y</u>		
<b>(YG2-125)</b>	3XCAR110212	Range 100-160 bar (1450-2300 psi) standard setting 125 bar (1800 psi)
<b>(YG3-175)</b>	3XCAR110213	Range 125-250 bar (1800-3600 psi) standard setting 175 bar (2500)
<b>(YG4-220)</b>	3XCAR110214	Range 200-315 bar (2900-4600 psi) standard setting 220 bar (3200 psi)
<u>Pilot operated type X</u>		
<b>(XGA-200)</b>	X006211350	Fixed setting 200 bar (2900 psi)

**For AM, AN inlet sections**  
 Valves standard setting is referred to 5 l/min (1.3 US gpm) flow.  

TYPE	CODE	DESCRIPTION
<b>SV</b>	XTAP524340	Relief valve blanking plug
<u>Pilot operated type</u>		
<b>(TGW2-80)</b>	OMC09002000	Range 10-120 bar (145-1750 psi) std setting 80 bar (1160 psi)
<b>(TGW3-175)</b>	OMC09002001	Range 40-220 bar (580-3200 psi) std setting 175 bar (2550 psi)
<b>(TGW4-250)</b>	OMC09002002	Range 200-350 bar (2900-5100 psi) std setting 250 bar (3600 psi)
<b>(TGW5-300)</b>	OMC09002003	Range 290-385 bar (4200-5600 psi) std setting 300 bar (4350 psi)

**7 Plug\* page 10**

CODE	DESCRIPTION
3XTAP732200	G3/4 plug for AC, AD and ADT section

**8 Plug\* page 10**

CODE	DESCRIPTION
3XTAP719150	G1/4 plug for V, L and Ls ports

For pilot V and drain L ports description are:

TYPE	DESCRIPTION
<b>TAP(VL)</b>	Plugs (2 pieces), standard omitted in description
<b>NOTAP(L)</b>	Plug (1 piece)
<b>NOTAP(V)</b>	Plug (1 piece)
<b>NOTAP(VL)</b>	Without plugs

**12 Circuit conversion kit page 10**

CODE	DESCRIPTION
5KIT530000	Circuit conversion from closed center to open center
5KIT530001	Circuit conversion from open center to closed center

**3 Inlet valve options page 16**

**For C, D, DT inlet sections**

TYPE	CODE	DESCRIPTION
<b>LT</b>	XTAP526340	Valve blanking plug
<b>F</b>	3XCAR410200	Inlet anti-cavitation valve
<b>L</b>	XCAR410311	Hydraulic operated unloader valve

Solenoid operated unloading valve

TYPE	CODE	DESCRIPTION
<b>ELNW</b>	0EFW0062001	Without emergency
<b>ELTW</b>	0EFW0062000	Push and twist type with detent emergency
<b>ELPW</b>	0EFW0062002	Push-button emergency

**For P inlet section**

TYPE	CODE	DESCRIPTION
<u>Solenoid operated unloading valve</u>		
<b>ELNW</b>	0EFW0062001	Without emergency
<b>ELTW</b>	0EFW0062000	Push and twist type with detent emergency
<b>ELPW</b>	0EFW0062002	Push-button emergency

**For N and M inlet section**

TYPE	CODE	DESCRIPTION
<b>LT</b>	3XTP3544200	Valve blanking plug
<u>Solenoid operated unloading valve (NC)</u>		
<b>ESFNW(NC)</b>	0EF10002011	Without emergency
<b>ESFTW(NC)</b>	0EF10002013	pull & twist with detent emergency
<b>ESFVW(NC)</b>	0EF10002012	With screw emergency
<b>ESFPW(NC)</b>	0EF10002010	With pull-button emergency

**4 Pressure reducing valve page 15**

TYPE	CODE	DESCRIPTION
<b>R(32)</b>	4AC9539900	Valve with standard setting @ 32 bar (464 psi). Type omitted in description; specify only if it different from standard
<b>(RT)</b>	3XTP3535100	Valve blanking plug (SAE 8/3)

**5 Priority valve kit page 15**

TYPE: **D(0.7)-SB9-Q40(0.8)** CODE: 5KIT440370  
 DESCRIPTION: Stand-by 9 bar (130 psi), regulated flow = 40 l/min (10.5 US gpm)

**6 Compensator kit page 15**

TYPE	CODE	DESCRIPTION
<b>SB4</b>	5CAS318083	Standard 4 bar for M inlet section
<b>SB25</b>	5CAS318084	Standard 25 bar for N inlet section

Specify in description when it is different from standard.

**9 Section threading page 15**

Specify threading always when it is different from BSP standard (see page 4).

**10 Coils page 33**

TYPE	CODE	DESCRIPTION
<b>12VDC</b>	4SLE001203	<b>BER type</b> , 12 VDC, AMP JPT connector

**11 Metering hole page 33**

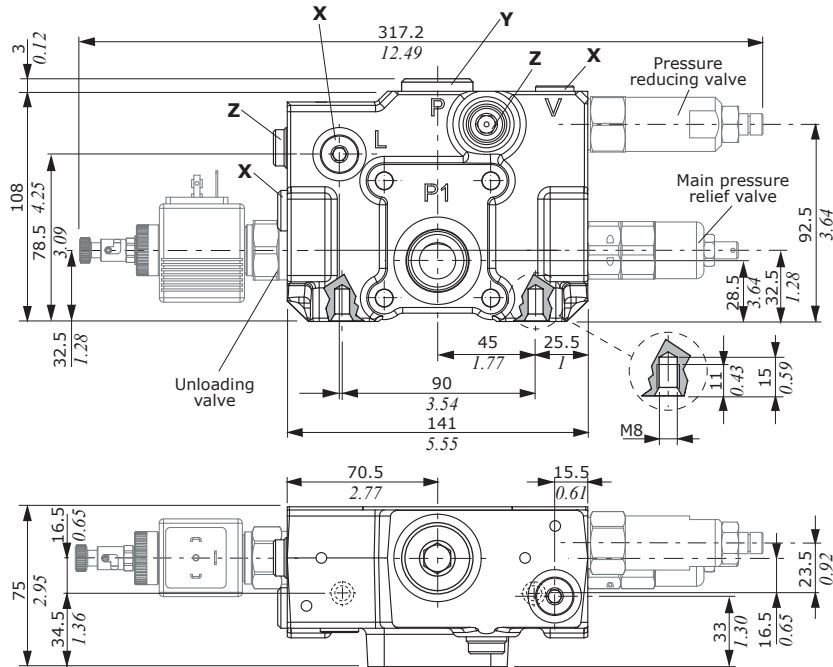
TYPE	CODE	DESCRIPTION
<b>FC3.8</b>	3VT27100105-H	Standard for N inlet section

Specify in description when it is different from standard.  
 NOTE (\*) – Codes are referred to **BSP** thread.

### Dimensional data and hydraulic circuit

#### Standard inlet cover configuration

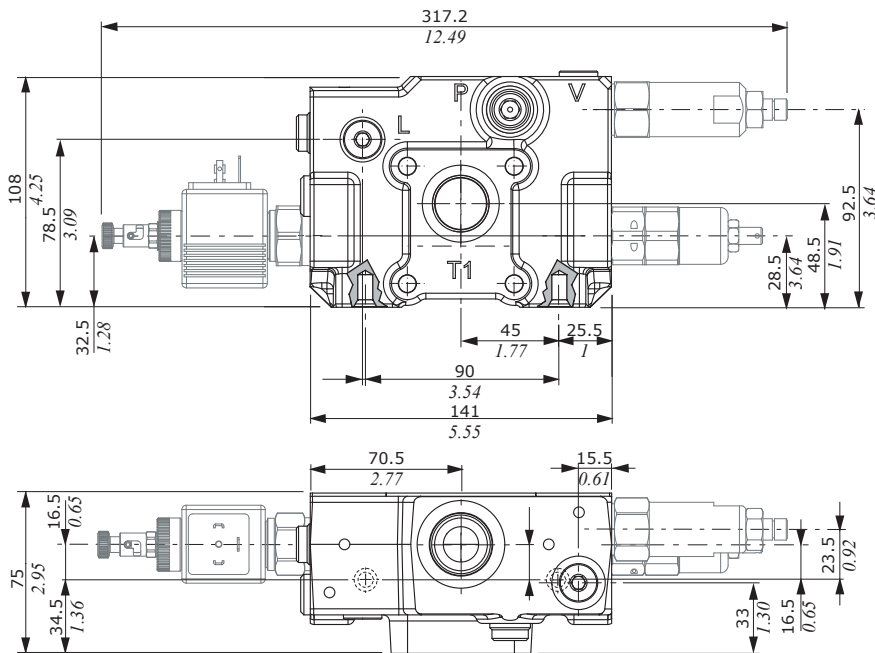
**AC inlet section**  
dimensions are the same for AD inlet section



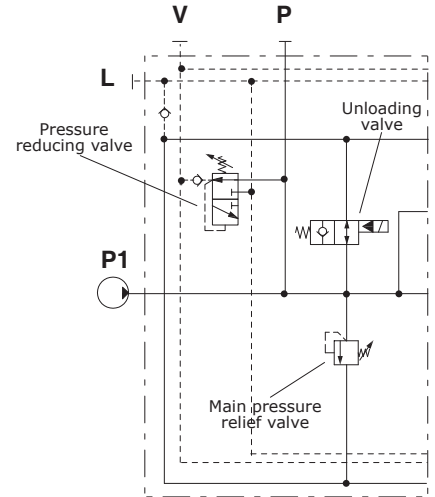
**Wrenches and tightening torques**

- X = allen wrench 6 - 24 Nm (17.7 lbft)
- Y = allen wrench 12 - 42 Nm (31 lbft)
- Z = wrench 8 - 42 Nm (31 lbft)

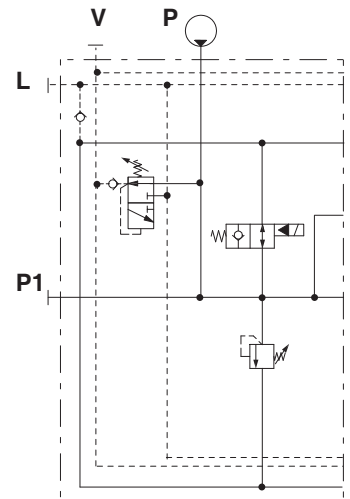
**ADT inlet section**



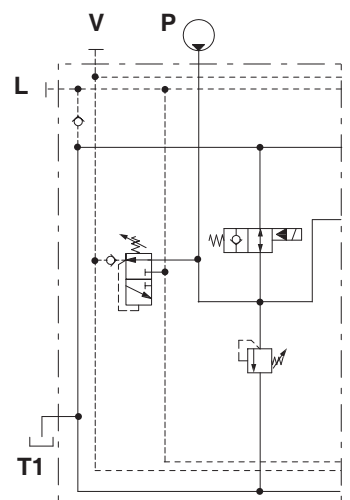
**AC inlet section with side inlet**



**AD inlet section with upper inlet**



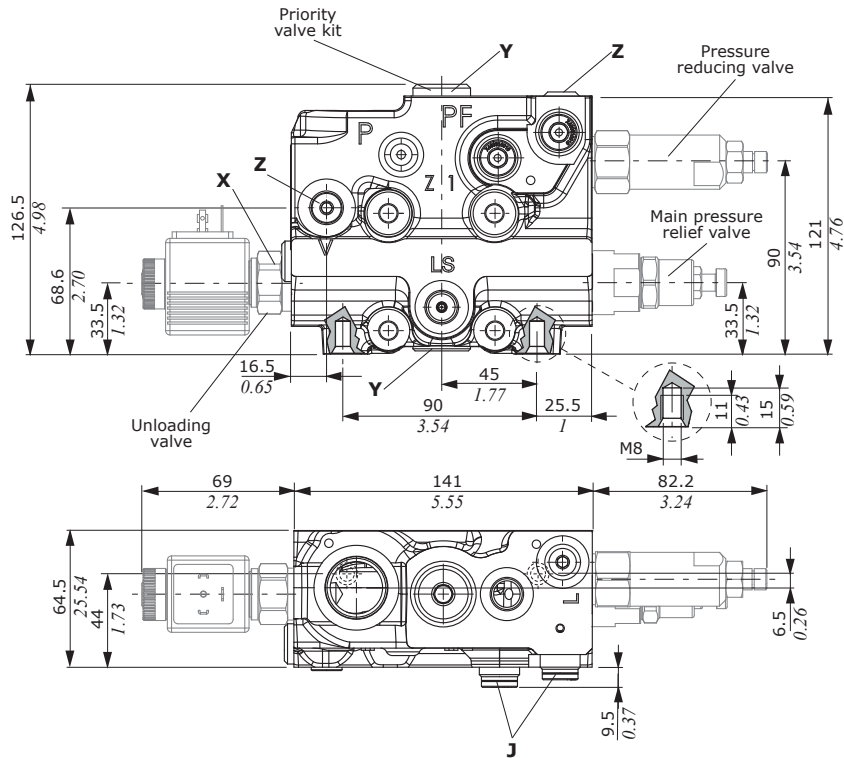
**ADT inlet section with upper inlet and side outlet**



NOTE - for wrenches and tightening torques about valves see dedicated pages.

Dimensional data and hydraulic circuit

Configuration with priority valve



**Wrenches and tightening torques**

X = allen wrench 6 - 24 Nm (17.7 lbf<sup>t</sup>)

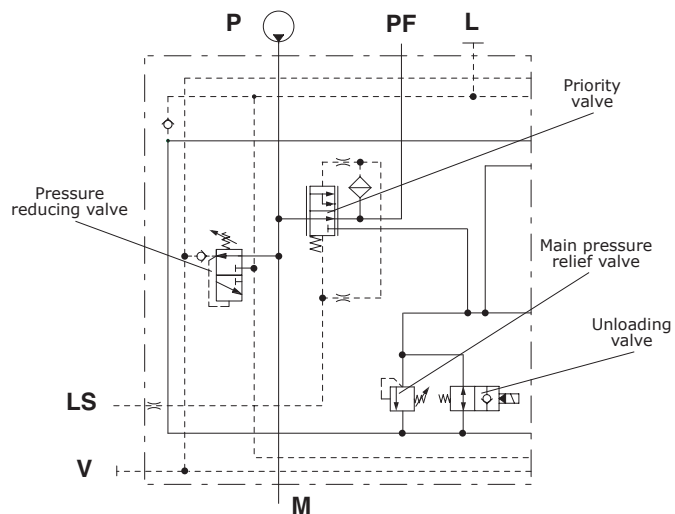
Y = allen wrench 8 - 24 Nm (17.7 lbf<sup>t</sup>)

Z = allen wrench 6 - 24 Nm (17.7 lbf<sup>t</sup>)

J = wrench 8 - 42 Nm (31 lbf<sup>t</sup>)

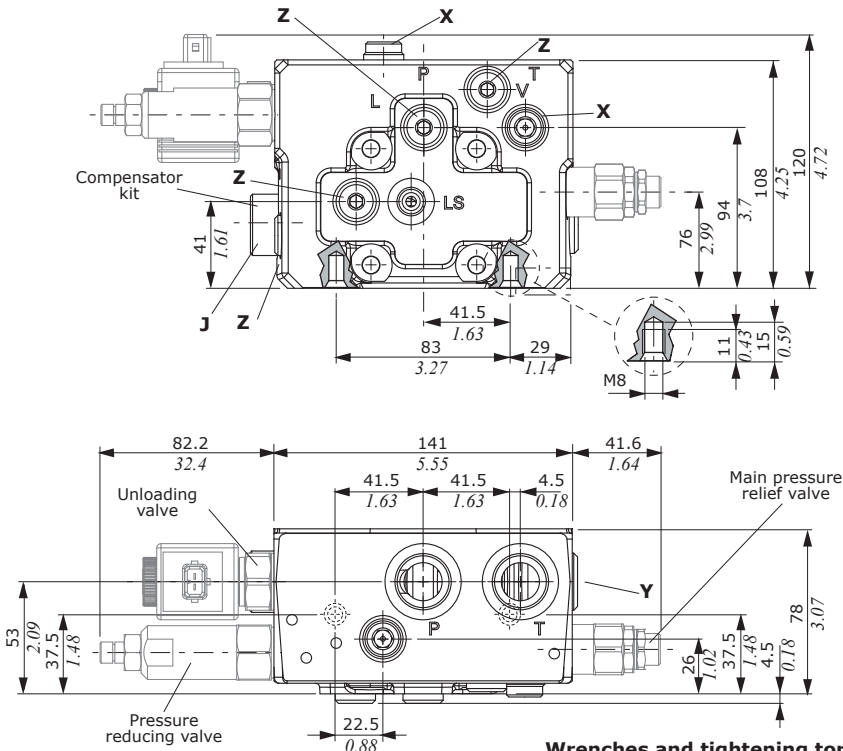
NOTE - for wrenches and tightening torques about valves see dedicated pages.

**AP inlet section with priority valve**



Dimensional data and hydraulic circuit

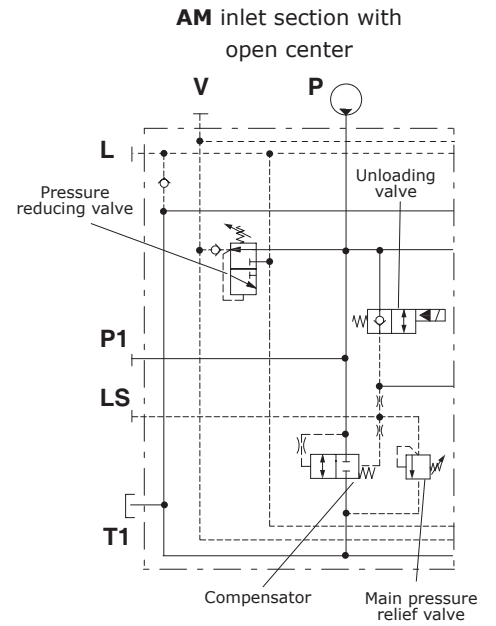
Inlet section configuration with flow unloader option



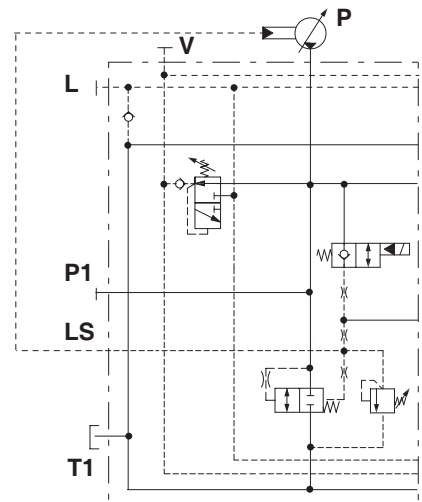
Wrenches and tightening torques

- X = wrench 8 - 42 Nm (31 lbft)
- Y = allen wrench 8 - 24 Nm (17.7 lbft)
- Z = allen wrench 6 - 24 Nm (17.7 lbft)
- J = allen wrench 10 - 42 Nm (31 lbft)

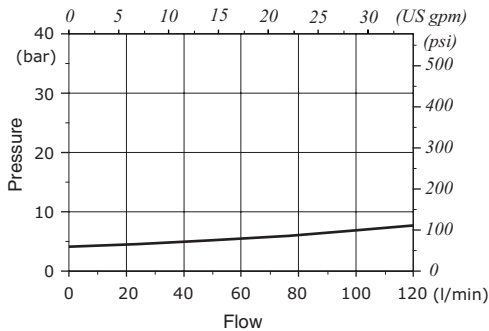
NOTE - for wrenches and tightening torques about valves see dedicated pages.



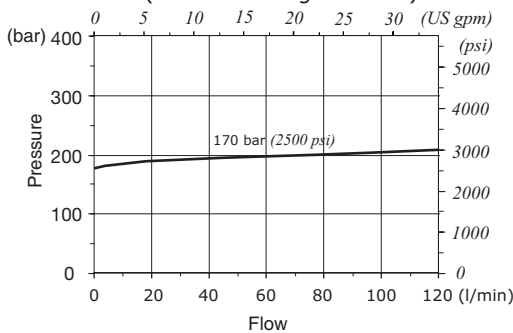
AN inlet section with closed center



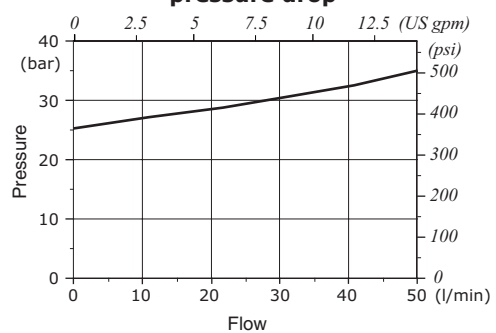
M compensator kit with unloading pressure drop



Pressure relief valve setting example on type M inlet section (with unloading valve on)



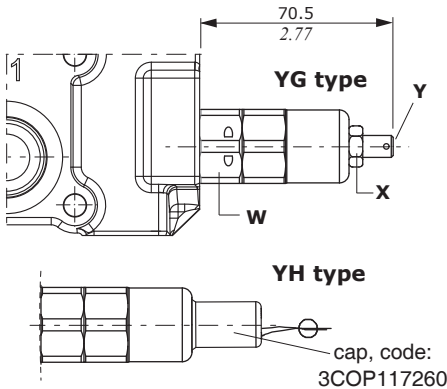
N compensator kit with unloading pressure drop



Main pressure relief valves

Direct operated Y.. type

Configuration type:

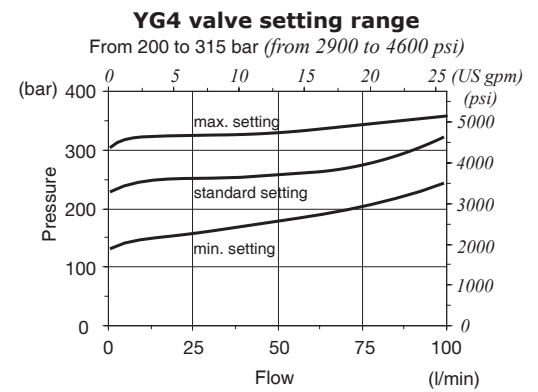
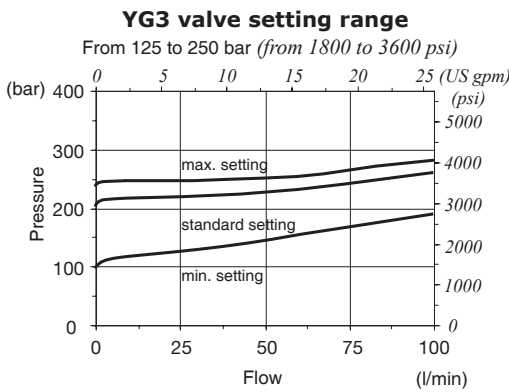
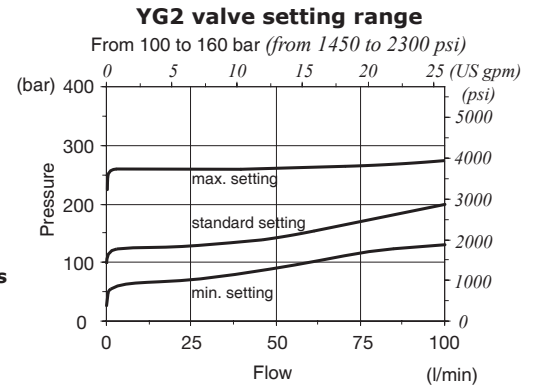


Legenda

G: adjustable with screw  
Z: valve set and locked with tamper proof cap

Wrenches and tightening torques

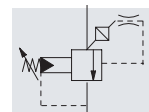
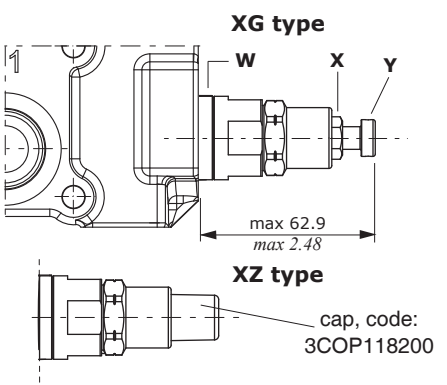
X = wrench 13 - 24 Nm (17.7 lbft)  
Y = allen wrench 4  
W = wrench 27 - 42 Nm (31 lbft)



NOTE - Not for N and M inlet section.

Pilot operated X..A type

Configuration type:

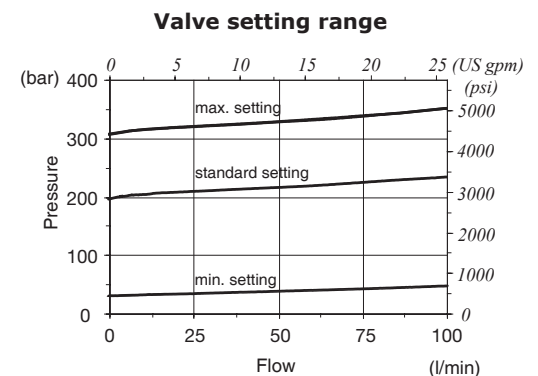


Legenda

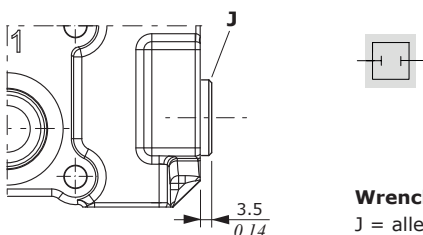
G: adjustable with screw  
Z: valve set and locked with tamper proof cap

Wrenches and tightening torques

X = wrench 13 - 24 Nm (17.7 lbft)  
Y = wrench 6  
W = wrench 27 - 42 Nm (31 lbft)



SV relief valve blanking plug



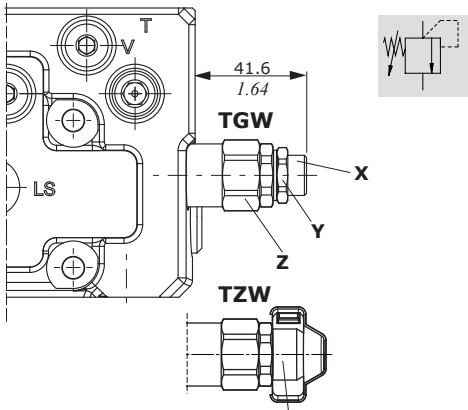
Wrenches and tightening torques

J = allen wrench 10 - 24 Nm (17.7 lbft)

Main pressure relief valve

Pilot operated T type

For AM and AN inlet sections setting types



Legenda

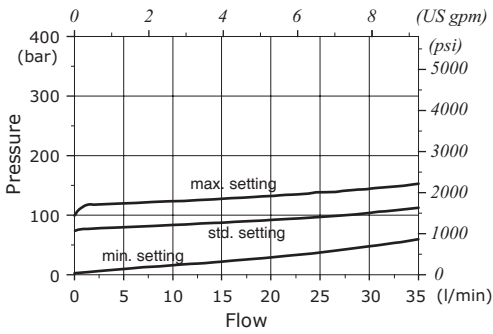
- TGW: free setting
- TZW: valve set and locked

Wrenches and tightening torques

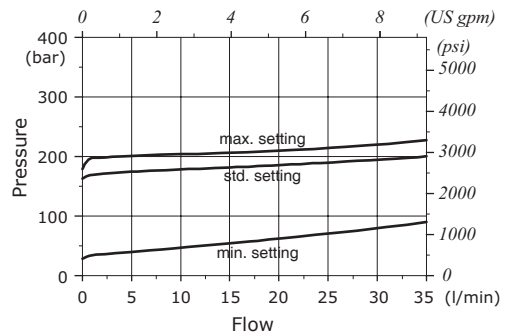
- X = allen wrench 5
- Y = wrench 19 - 20 Nm (14.7 lbf)
- Z = wrench 24 - 42 Nm (31 lbf)

cap. code:  
4COP126301, n.2 pcs  
RAL3003 pigmented

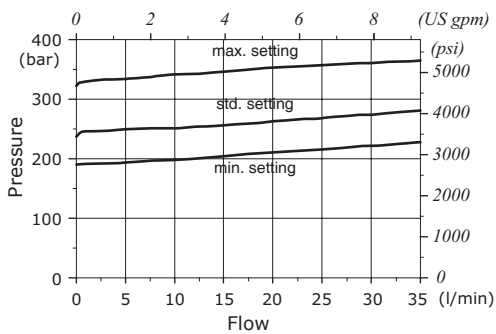
Setting range: TGW2 type



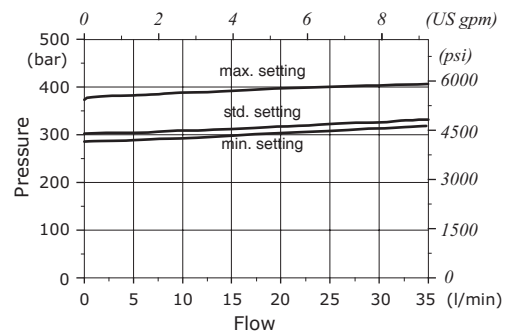
Setting range: TGW3 type



Setting range: TGW4 type

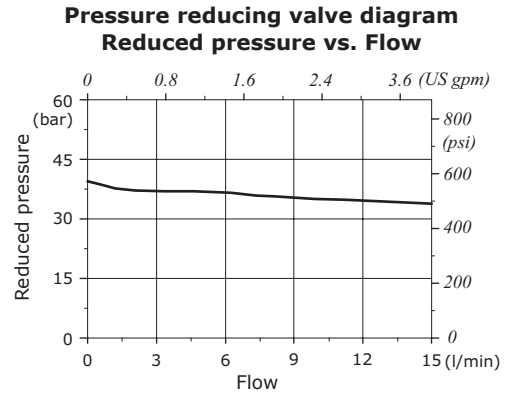
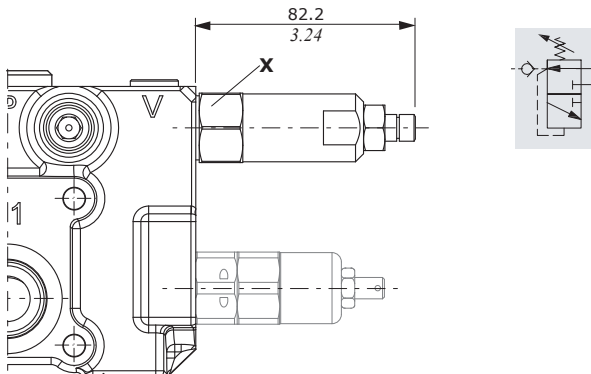


Setting range: TGW5 type



Pressure reducing valve

R(32) type



**Wrenches and tightening torques**

X = wrench 24 - 30 Nm (22 lbft)

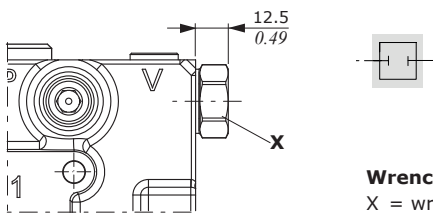
**Pressure reducing valve features**

Reduced press. range . . : from 3.5 to 35 bar  
(from 50 to 500 psi)

Max. inlet pressure . . . : 420 bar (5500 psi)

Nominal flow . . . . . : 15 l/min (4 US gpm)

**RT valve blanking plug**

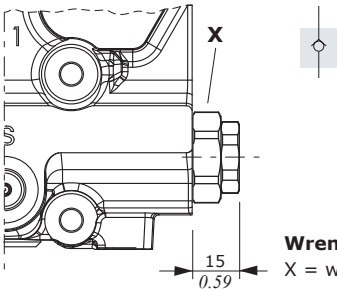


**Wrenches and tightening torques**

X = wrench 24 - 30 Nm (22 lbft)

Inlet valve options

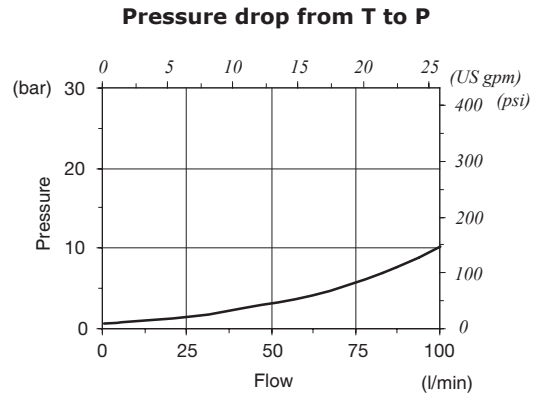
Anti-cavitation valve F



**Wrenches and tightening torques**  
 X = wrench 27 - 42 Nm (31 lbft)

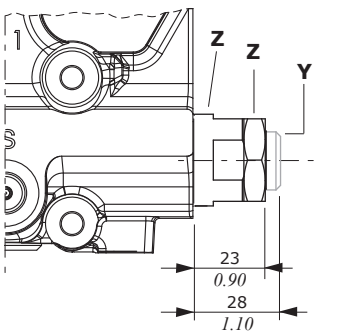
**Features**

Nominal flow . . . . .: 90 l/min (23.77 US gpm)  
 Internal leakage . . . . .: 2 cm<sup>3</sup>/min @ 100 bar (0.122 in<sup>3</sup>/mm @ 1450 psi)



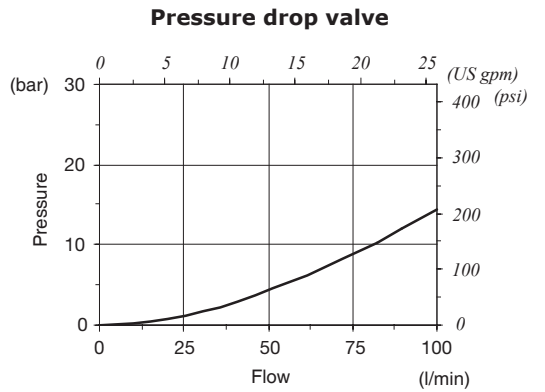
Unloading valves

Hydraulic operated



**Wrenches and tightening torques**  
 Z = wrench 27 - 42 Nm (31 lbft)  
 Y = wrench 6 - 24 Nm (17.7 lbft)  
 W = 6.6 Nm (4.87 lbft)

NOTE - For safety reasons the valve is supplied with blanking plug



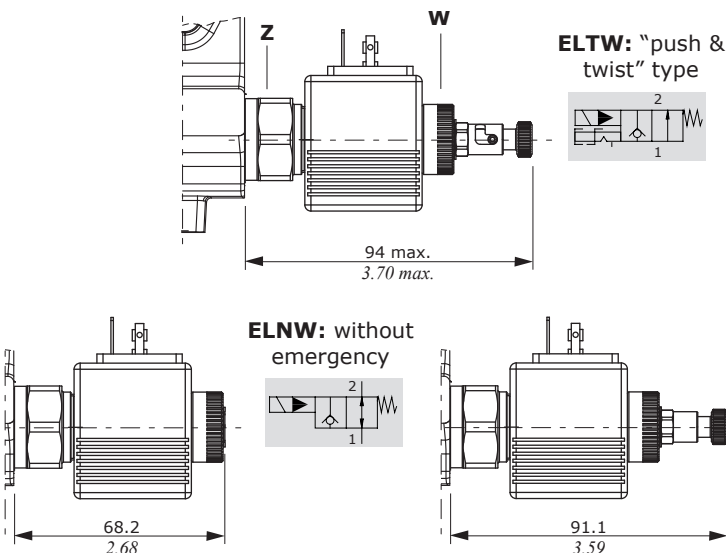
**Valve L type features**

Nominal flow . . . . .: 80 l/min (21.13 US gpm)  
 Internal leakage.. . . .: 18 cm<sup>3</sup>/min @ 100 bar  
 (1.1 in<sup>3</sup>/mm @ 1450 psi)

Solenoid operated

Emergency with push button and spring return; for detent position turn the button after press it.

**WARNING:** the manual override option is intended for emergency use, not for continuous duty operation.

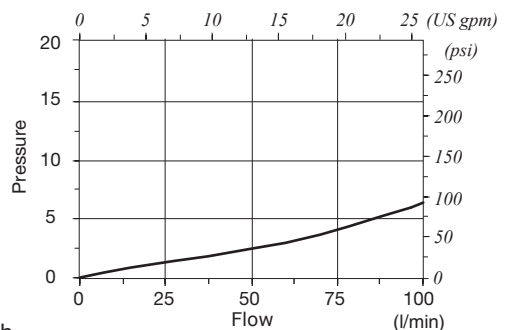


**ELTW: "push & twist" type**

**ELNW: without emergency**

**ELPW: push button type**

Pressure drop valve



**Features**

Nominal flow . . . . .: 100 l/min (26.4 US gpm)  
 Max. pressure. . . . .: 315 bar (4600 psi)  
 Internal leakage.. . . .: 1 cm<sup>3</sup>/min @ 100 bar  
 (0.061 in<sup>3</sup>/mm @ 1450 psi)  
 For **BER** coils features and options see page 33

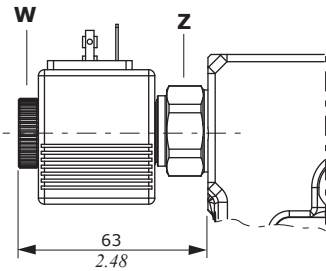


Unloading valves

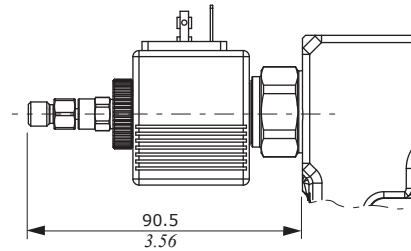
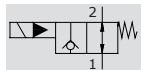
Solenoid operated for AM and AN inlet sections

Emergency with pull button and spring return; for detent position turn the button after pull it.

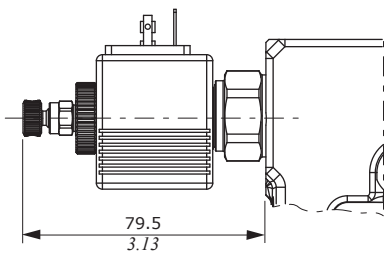
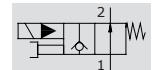
**WARNING:** the manual override option is intended for emergency use, not for continuous duty operation.



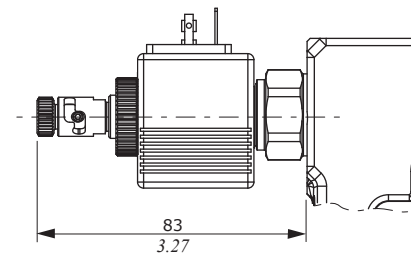
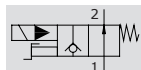
**ESFNW(NC):**  
without emergency



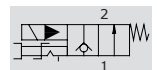
**ESFPW(NC):** pull  
button type



**ESFVW(NC):**  
screw type



**ESFTW(NC):**  
"pull & twist" type

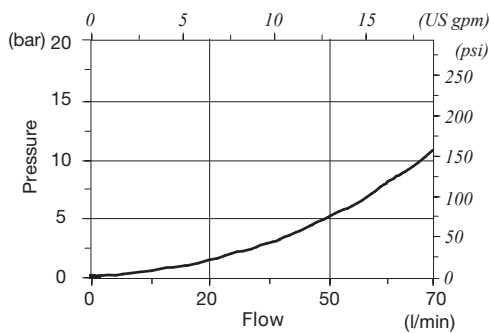


**Wrenches and tightening torques**

Z = wrench 27 - 42 Nm (31 lbf·ft)

W = 6.6 Nm (4.87 lbf·ft)

**Pressure drop valve**



**Features**

Nominal flow . . . . . : 70 l/min (78 US gpm)

Max. pressure. . . . . : 350 bar (5100 psi)

Internal leakage. . . . . : 25 cm<sup>3</sup>/min @ 210 bar  
(0.015 in<sup>3</sup>/min @ 3050 psi)

For **BER** coils features and options see page 33

## Parts ordering codes

Standard: omitted in description      valve setting (bar)

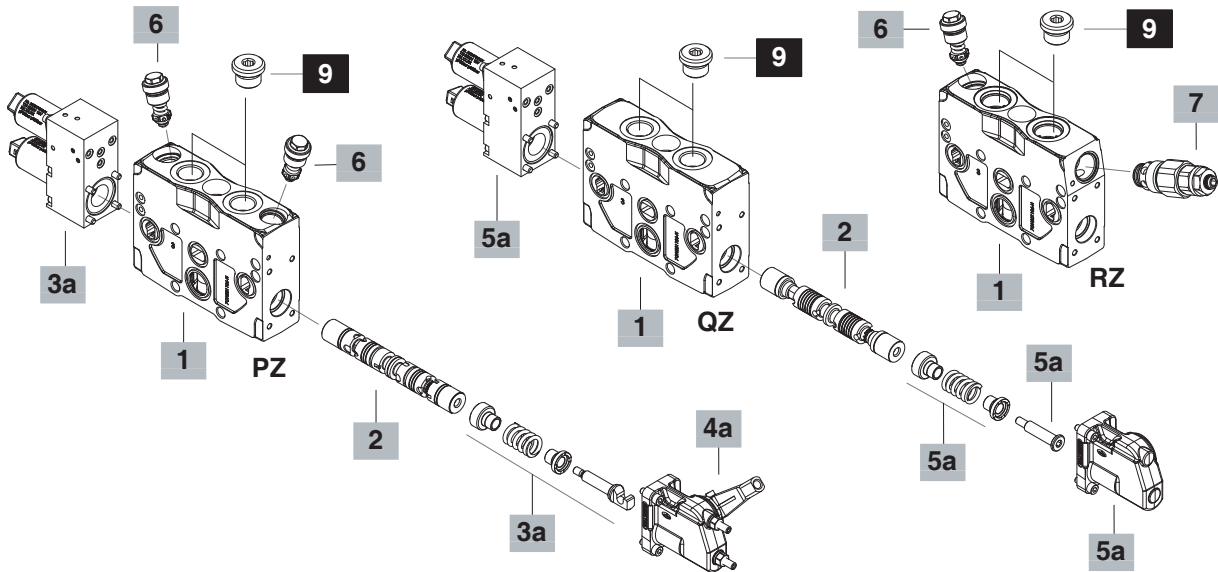
EL SDS140 / PZ - 1EZ 8EZH3 LQF3(20) . U3(220) - .... - 12VDC

1 - on port A  
2 - on port B  
3 - on ports A and B

1 2a 3a 4a 3a 6 8 3a

EL SDS140 / QZ - 1EZ 8EZH3SLCQ - .... - 12VDC

1 2a 5a 8 5a



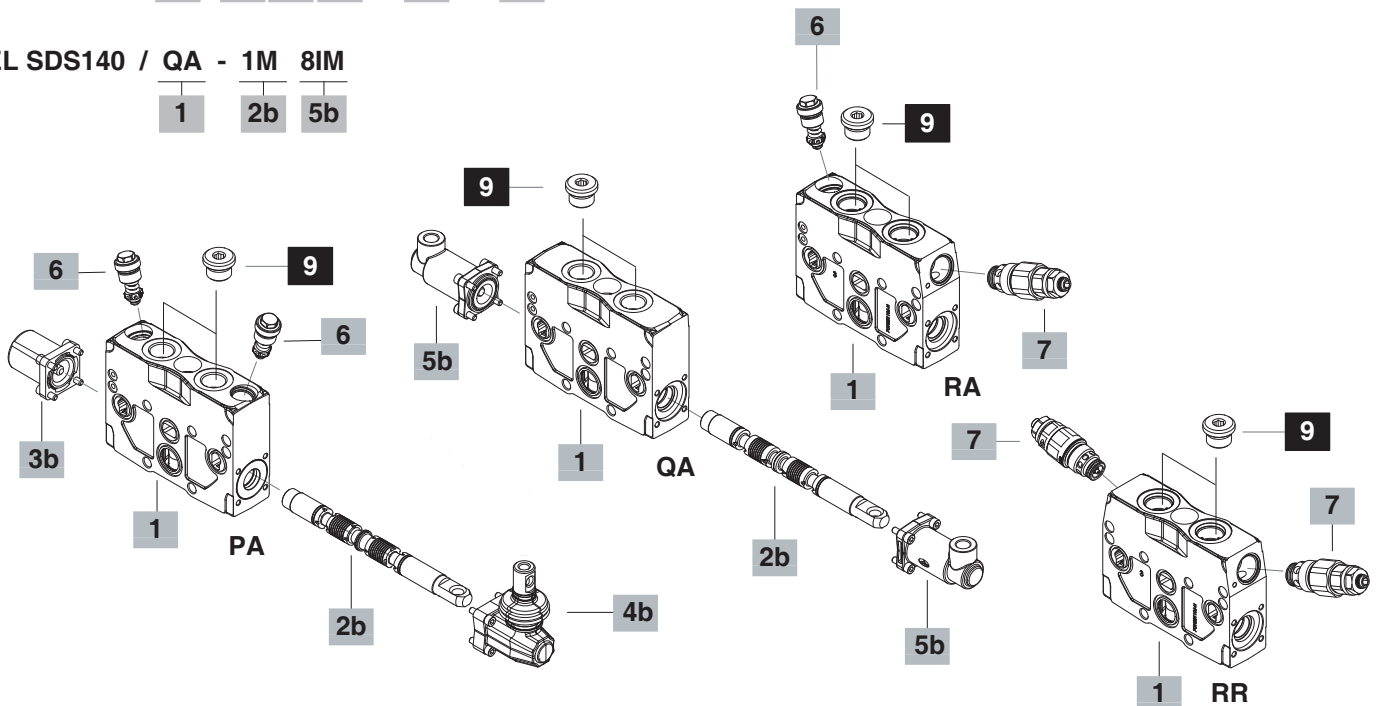
EL SDS140 / PA - 1 8 L . U3(200) - .... -

1 - on port A  
2 - on port B  
3 - on ports A and B

1 2 3b 4b 6 8

EL SDS140 / QA - 1M 8IM

1 2b 5b



## Parts ordering codes

**1 Working section kit \* page 21**

TYPE	CODE	DESCRIPTION
<b>For electrohydraulic controls</b>		
<b>QZ</b>	5EL1133010	As PZ without arrangement for port valves
<b>PZ</b>	5EL1133005	Parallel circuit with anti-shock valves
<b>RZ</b>	5EL1133006	As PZ with pilot operated anti-shock and anti-cavitation valve (on B side)
<b>For mechanical controls</b>		
<b>QA</b>	5EL1133014	For parallel circuit without port valves arrangement
<b>PA</b>	5EL1133004	For parallel circuit arranged for anti-shock valves
<b>RA</b>	5EL1133003	As PA arranged for pilot operated anti-shock and anti-cavitation valve (on B side)
<b>RR</b>	5EL1133015	Parallel circuit arranged for 2 anti-cavitation valves: <b>it needs to be positioned only near the outlet section or after all Z elements</b>
<b>For proportional hydraulic controls</b>		
<b>QA</b>	5EL1133014A	For parallel circuit without port valves arrangement
<b>PA</b>	5EL1133004A	For parallel circuit arranged for anti-shock valves
<b>RA</b>	5EL1133003A	As PA arranged for pilot operated anti-shock and anti-cavitation valve (on B side)
<b>RR</b>	5EL1133015A	Parallel circuit arranged with 2 ports for anti-shock and anti-cavitation valves: <b>it needs to be positioned only near the outlet section or after all Z elements</b>

**2b Spools page 23**

TYPE	CODE	DESCRIPTION
<b>For mechanical and proportional hydraulic controls</b>		
<b>1</b>	3CU2310100	Double acting, 3 positions, with A and B closed in neutral position
<b>1CSG</b>	3CU2310250	As type 1, with fine metering suggested for flow up to 70 l/min (18.5 US gpm)
<b>1M</b>	3CU2310130	As type 1 with metering suggested for flow rates above to 70 l/min (18.5 US gpm)
<b>1A</b>	3CU2321100	Double acting, 3 positions, with A open to tank in neutral position
<b>1B</b>	3CU2322100	Double acting, 3 positions, with B open to tank in neutral position
<b>2</b>	3CU2325100	Double acting, with A and B open to tank in neutral position
<b>2CSG</b>	3CU2325255	As type 2, with fine metering suggested for flow up to 70 l/min (18.5 US gpm)
<b>2H</b>	3CU2325225	Double acting, with A and B partially open to tank in neutral position
<b>3</b>	3CU2331110	Single acting on A, 3 positions, B plugged, <b>needs G1/2 plug</b>
<b>4</b>	3CU2335100	Single acting on B, 3 positions, A plugged, <b>needs G1/2 plug</b>
<b>4M</b>	3CU2335110	As type 4 with metering suggested for flow rates above to 70 l/min (18.5 US gpm), <b>need G1/2 plug</b>

**3b "A" side spool positioners**

See SD8 catalogue.

**4b "B" side spool control kit**

See SD8 catalogue.

**2a Spools page 23**

TYPE	CODE	DESCRIPTION
<b>For electrohydraulic controls</b>		
<b>1EZ</b>	3CU2910001	Double acting, 3 positions, with A and B closed in neutral position
<b>1CSGEZ</b>	3CU2910003	As type 1, with fine metering suggested for flow up to 70 l/min (18.5 US gpm)
<b>1MEZ</b>	3CU2910004	Double acting, 3 positions, with A and B closed in neutral position with metering suggested for flow rates above to 70 l/min (18.5 US gpm)
<b>2EZ</b>	3CU2925000	Double acting, with A and B open to tank in neutral position
<b>2CSGEZ</b>	3CU2925003	As type 2, with fine metering suggested for flow up to 70 l/min (18.5 US gpm)
<b>4MEZ</b>	3CU2935001	As type 4 with metering suggested for flow rates above to 70 l/min (18.5 US gpm), <b>need G1/2 plug</b>

**3a One-side electrohydraulic control page 26****Combine to "B" side options**

TYPE	CODE	DESCRIPTION
<b>8EZH3(20)-12VDC</b>	5IDR601302	With AMP connector, horizontal configuration
<b>8EZH3(20)-24VDC</b>	5IDR601303	With AMP connector, horizontal configuration
<b>8EZH34(20)-12VDC</b>	5IDR601308	With Deutsch connector, horizontal configuration
<b>8EZH34(20)-24VDC</b>	5IDR601309	With Deutsch connector, horizontal configuration
<b>8EZ3(20)-12VDC</b>	5IDR601304	With AMP connector
<b>8EZ3(20)-24VDC</b>	5IDR601305	With AMP connector
<b>8EZ34(20)-12VDC</b>	5IDR601306	With Deutsch connector
<b>8EZ34(20)-24VDC</b>	5IDR601307	With Deutsch connector
<i>With spool position sensor</i>		
<b>8EZ34SPSD(20)-12VDC</b>	CODE: 5IDR601312	DESCRIPTION: Deutsch connector and digital sensor
<b>8EZ34SPSD-24VDC</b>	CODE: 5IDR601313	DESCRIPTION: Deutsch connector and digital sensor
<b>8EZ34SPSL-0.5(A)-4.5(B)-12VDC</b>	CODE: 5IDR601316	DESCRIPTION: Deutsch connector and analog sensor
<b>8EZ34SPSL-0.5(A)-4.5(B)-24VDC</b>	CODE: 5IDR601317	DESCRIPTION: Deutsch connector and analog sensor
Are available different spring setting: 17, 20 and 23 bar (246, 290 and 333 psi). Type standard (20) is omitted. Specify in description when it is different from standard.		

**4a "B" side options page 27**

TYPE	CODE	DESCRIPTION
<b>For one-side electrohydraulic control</b>		
<b>LQ</b>	5LEV100700	Lever box
<b>LQF3</b>	5LEV100701	Lever box with spool stroke limiter
<b>LQSL</b>	5COP204100	Lever box without lever

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

### Parts ordering codes

#### 5a Complete one-side e.h. control page 28

##### Controls already comprehensive of endcap on B side

TYPE	CODE	DESCRIPTION
<b>8EZH3SLCQ-12VDC</b>	5IDR601318	With AMP connector
<b>8EZH3SLCQ-24VDC</b>	5IDR601319	With AMP connector
<b>8EZH34SLCQ-12VDC</b>	5IDR601320	With Deutsch connector
<b>8EZH34SLCQ-24VDC</b>	5IDR601321	With Deutsch connector
<b>8EZ3SLCQ-12VDC</b>	5IDR601322	With AMP connector
<b>8EZ3SLCQ-24VDC</b>	5IDR601323	With AMP connector
<b>8EZ34SLCQ-12VDC</b>	5IDR601324	With Deutsch connector
<b>8EZ34SLCQ-24VDC</b>	5IDR601325	With Deutsch connector

#### 5b Complete controls \*

TYPE	CODE	DESCRIPTION
<b>8IM</b>	5IDR208300	Proportional hydraulic control
<b>8IMF3</b>	5IDR208220	Proportional hydraulic control with screw for spool stroke adjusting

See SD8 catalogue.

#### 6 Port valves page 29

TYPE	CODE	DESCRIPTION
<b>UT</b>	XTAP522441	Valve blanking plug
<b>C</b>	5KIT410000	Anti-cavitation valve

##### Fixed setting antishock and anticavitation valves with prefill:

setting is referred to 10 l/min (2.6 US gpm)

TYPE: **U 100** CODE: 5KIT330 100  
 └ setting (bar)                      └ setting (bar)

##### SETTING:

25 bar (363 psi)	30 bar (435 psi)	40 bar (580 psi)
50 bar (725 psi)	63 bar (914 psi)	80 bar (1150 psi)
100 bar (1450 psi)	110 bar (1590 psi)	125 bar (1800 psi)
140 bar (2050 psi)	150 bar (2150 psi)	160 bar (2300 psi)
175 bar (2550 psi)	190 bar (2750 psi)	200 bar (2900 psi)
210 bar (3050 psi)	220 bar (3190 psi)	230 bar (3350 psi)
240 bar (3500 psi)	250 bar (3600 psi)	260 bar (3750 psi)
270 bar (3900 psi)	280 bar (4050 psi)	290 bar (4200 psi)
300 bar (4350 psi)	310 bar (4500 psi)	320 bar (4650 psi)
340 bar (4950 psi)	360 bar (5200 psi)	400 bar (5800 psi)
420 bar (6100 psi)		

#### 7 Port valves page 29

##### For Ra, Rz And Rr Working Section Kit

Pilot operated anti-shock and anti-cavitation valve

TYPE	CODE	DESCRIPTION
-	3XTAP524290	Valve blanking plug (omitted in description)
<b>UXW(G-270)</b>	X005421270	Range 40-315 bar (580-4600 psi) standard setting 270 bar (3900 psi)

For other valves see SD8 catalogue code D1WWEB05E.

#### 8 Section threading

Specify threading always when it is different from BSP standard (see page 4).

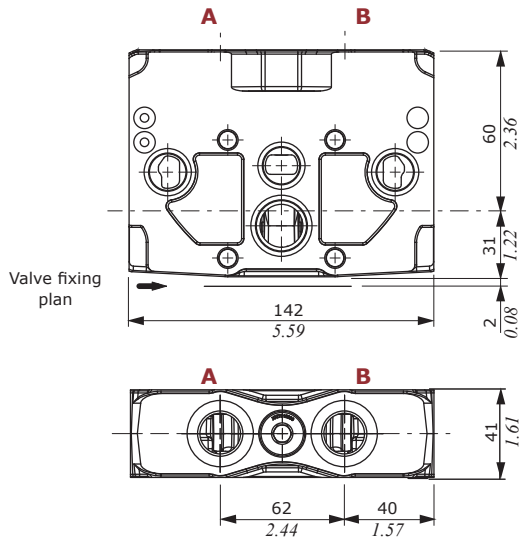
#### 9 Port plugs\*

CODE	DESCRIPTION
3XTAP727180	G1/2 plug for single acting spool

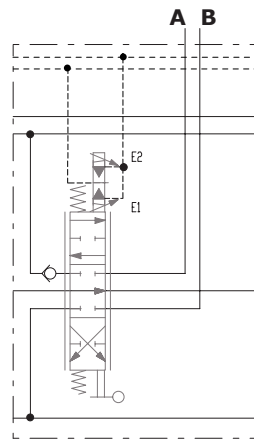
NOTE (\*) – Codes are referred to **BSP** thread.

Dimensional data and hydraulic circuit

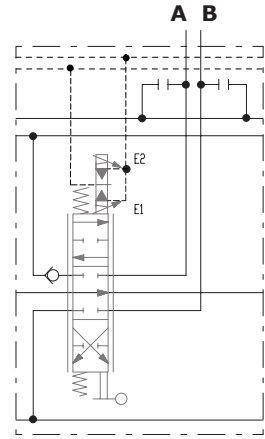
**Q type**  
(Dimensions are the same for QZ and QA)



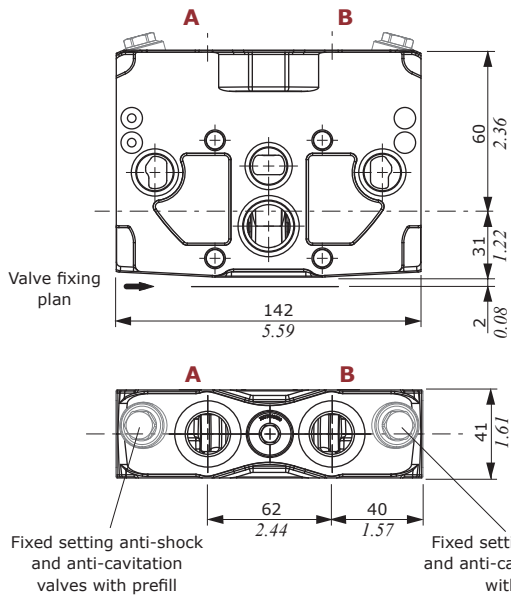
**QZ type**



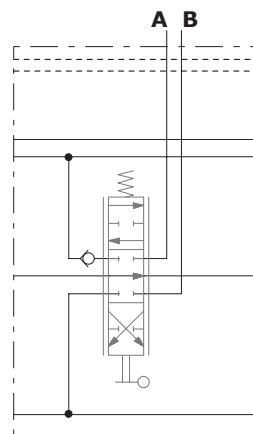
**PZ type**



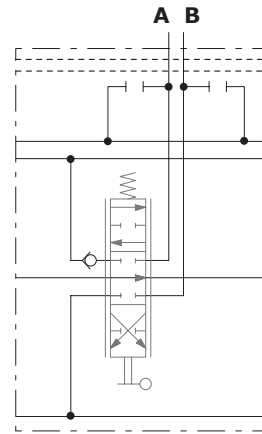
**P type**  
(Dimensions are the same for PZ and PA)



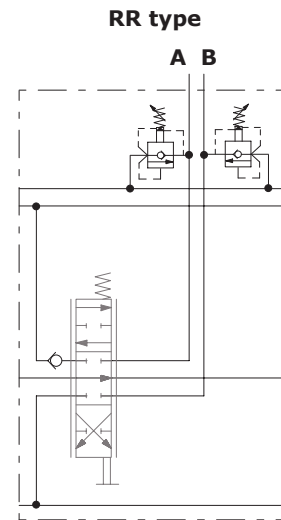
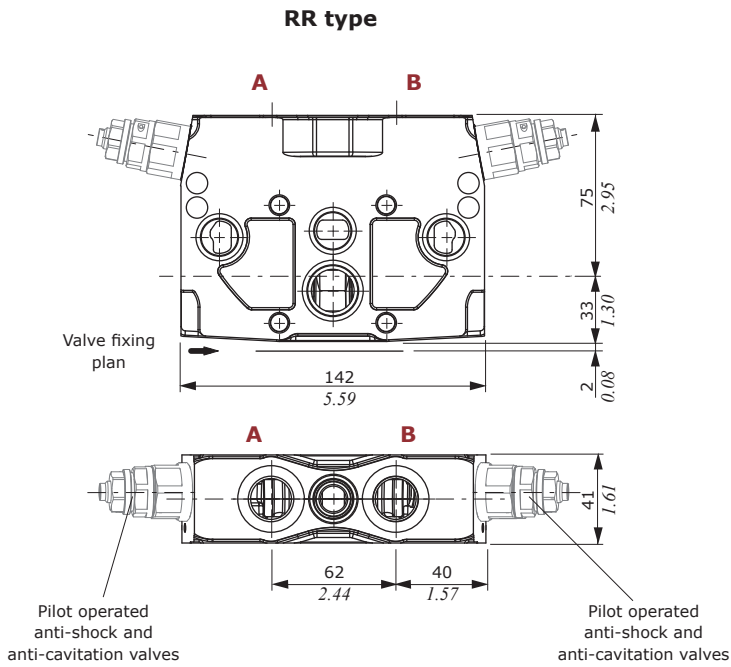
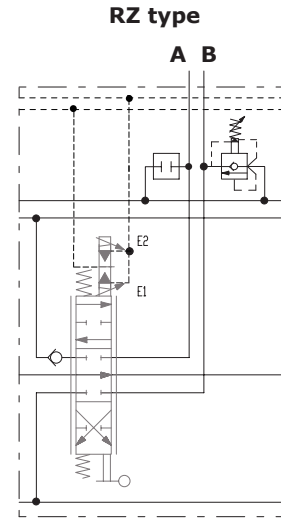
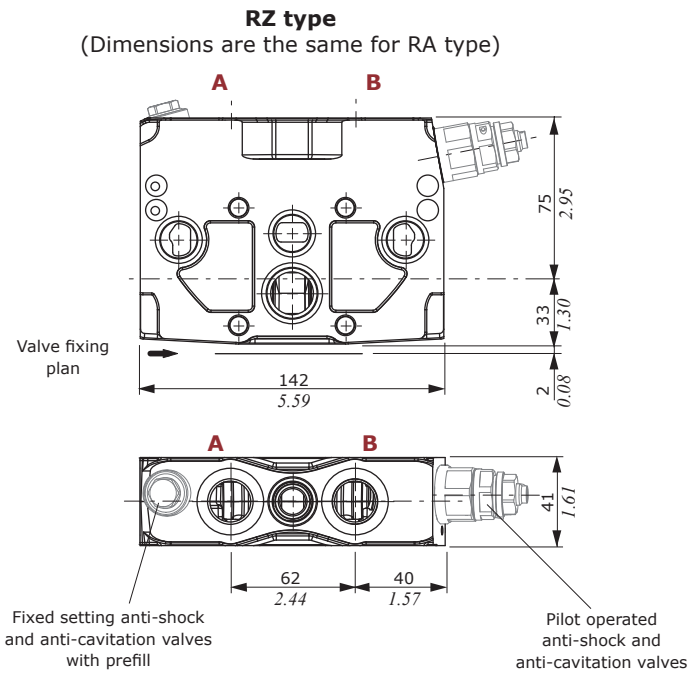
**QA type**



**PA type**

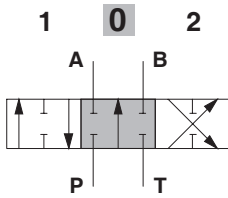


Dimensional data and hydraulic circuit



**Type 1 (1CSG/1M/  
1CSGEZ/1MEZ) spool**

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

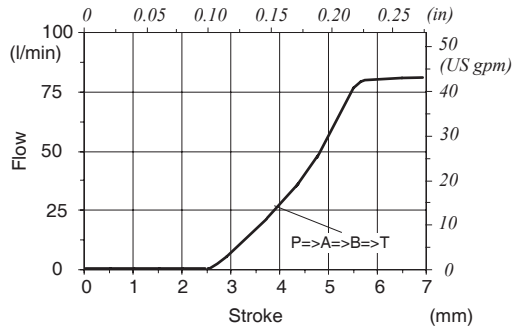


**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

**Type 1 spool metering**

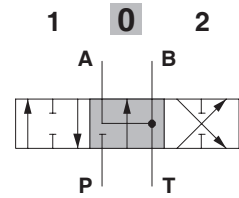
$Q_{in} = 80 \text{ l/min (42 US gpm)}$

$P_{(on ports)} = 100 \text{ bar (1450 psi)}$



**Type 2 (2CSG/  
2CSGEZ) spool**

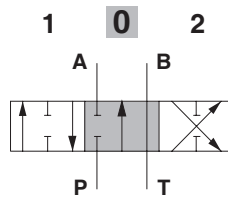
Double acting, 3 positions, with A and B open to tank in neutral position



**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

**Type 1B spool**

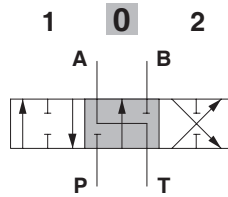
Double acting, 3 positions, with B open to tank in neutral position



**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

**Type 1A spool**

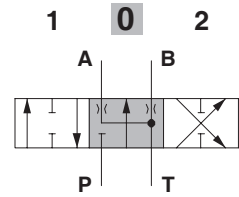
Double acting, 3 positions, with A open to tank in neutral position



**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

**Type 2H spool**

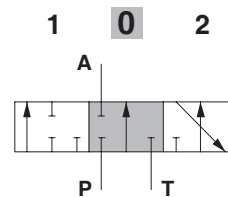
Double acting, 3 positions, with A and B partially open to tank in neutral position



**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

**Type 3 spool**

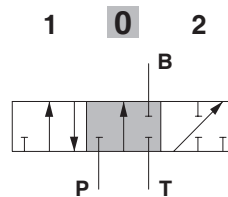
Single acting on A, 3 positions, B plugged, needs G1/2 plug



**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

**Type 4 (4M/4MEZ) spool**

Single acting on B, 3 positions, A plugged, needs G1/2 plug



**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

### Electrohydraulic controls

#### Performace data

Following specifications are measured with:

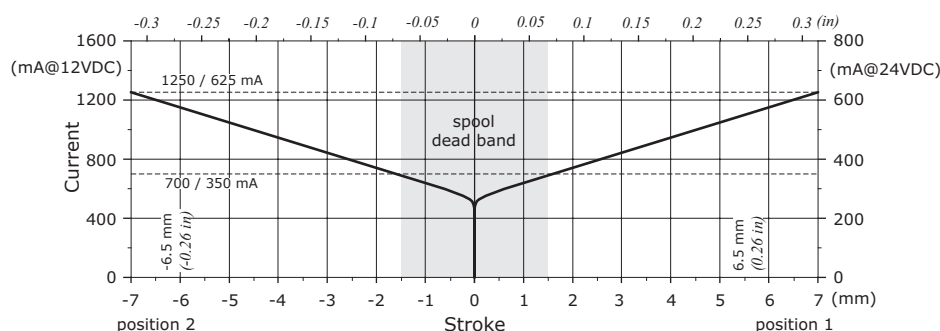
- mineral oil of 46 mm<sup>2</sup>/s (46 cSt) viscosity at 40°C (104°F) temperature.
- standard spools, connecting P⇒A⇒B⇒T ports without flow multiplication
- 12 VDC and 24 VDC nominal voltage with tolerance ± 10%.

Following electrohydraulic controls need CED100X or CED400X electronic unit; for information contact Sales Department.

Specifications		
<b>Electric specifications</b>		<b>8EZ3</b>
Coil impedance	12 VDC	4.72 Ω
	24 VDC	20.8 Ω
Max. operating current	12 VDC	1.5 A
	24 VDC	0.75 A
No load current consumption		0
<u>Controls configured with lever box</u>		
Hysteresis max. <sup>(1)</sup>	external drain	7%
	internal drain	9%
Time response	from 0 ⇒ 100% and from 100% ⇒ 0 of stroke	< 50 ms
Min. flow control signal	12 VDC	700 mA
	24 VDC	350 mA
Flow control signal	12 VDC	1250 mA
	24 VDC	625 mA
Max. float flow control signal	12 VDC	
	24 VDC	
Dither frequency	low frequency	150 Hz
	high frequency	180 Hz - 200 mA
Insertion		100%
Coil insulance		Class H (180°C - 356°F)
Connector type		AMP JPT - Deutsch DT
Weather protection (connector)		IP65 (type JPT) - IP69K (type DT)
<b>Hydraulic specifications</b>		
Max. pressure		50 bar (725 psi)
Max. back pressure		10 bar (145 psi)

NOTE (1) hysteresis is indicated at nominal supply voltage and f = 0.008 Hz for one cycle (one cycle = neutral ⇒ full A ⇒ neutral ⇒ full B ⇒ neutral). For the calculation rules see "Appendix A" on page 35.

**Types 8EZ3: Stroke vs. Current diagram**





Electrohydraulic controls

**Spool position sensor**

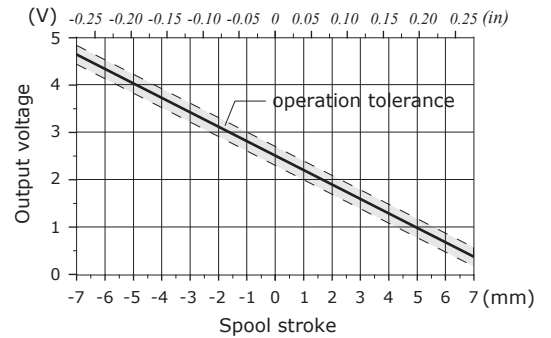
The sensor can be ordered exclusively through the electrohydraulic controls type EZ; see page 19 for available control list.

**SPSL sensor**

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

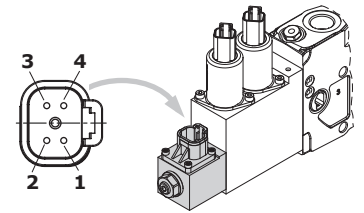
Working conditions		
Voltage supply		5 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10 <sup>6</sup>
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C (from -40°F to 221°F)
Working pressure		350 bar (5100 psi)
Max. electrical stroke		±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



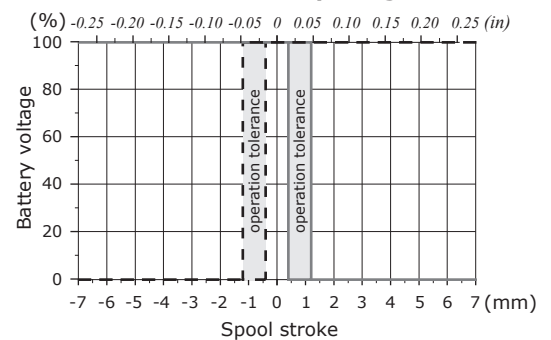
Mating connector Deutsch DT06-4S, code 5CON140072

**SPSD sensor**

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

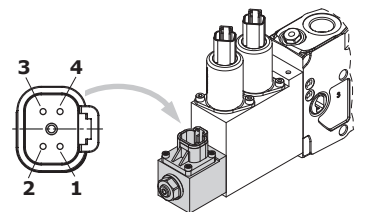
Working conditions		
Voltage supply		from 9 to 32 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10 <sup>6</sup>
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C (from -40°F to 221°F)
Working pressure		350 bar (5100 psi)
Max. electrical 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

SPSP sensor output signal



Deutsch DT04-4P connector

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



Mating connector Deutsch DT06-4S, code 5CON140072

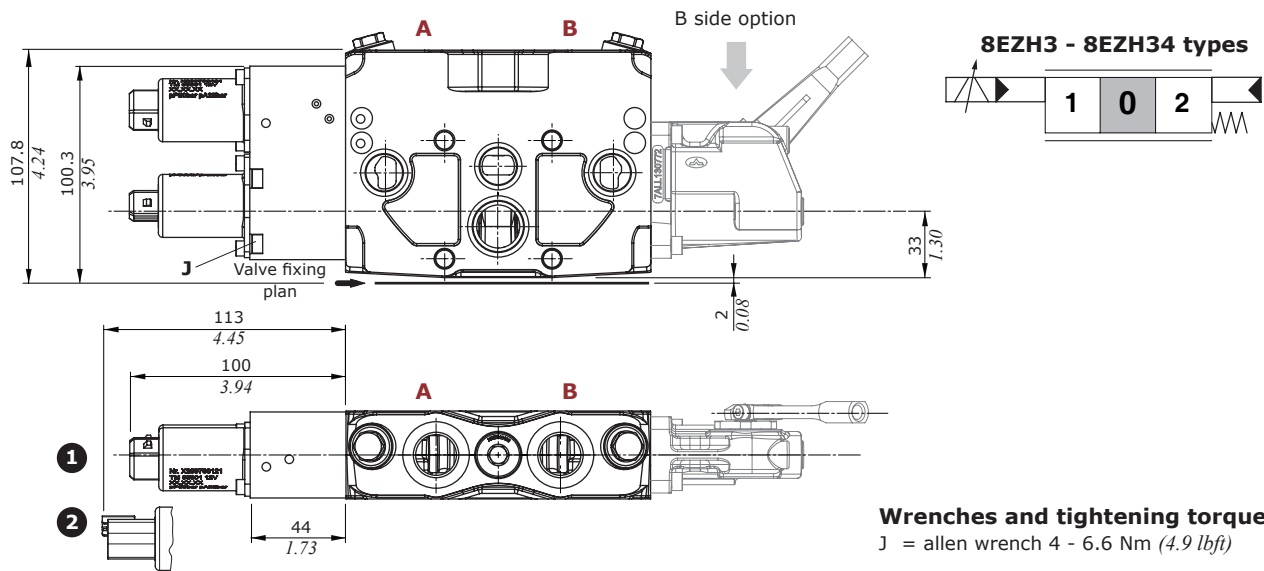
Electrohydraulic controls

One-side electrohydraulic control

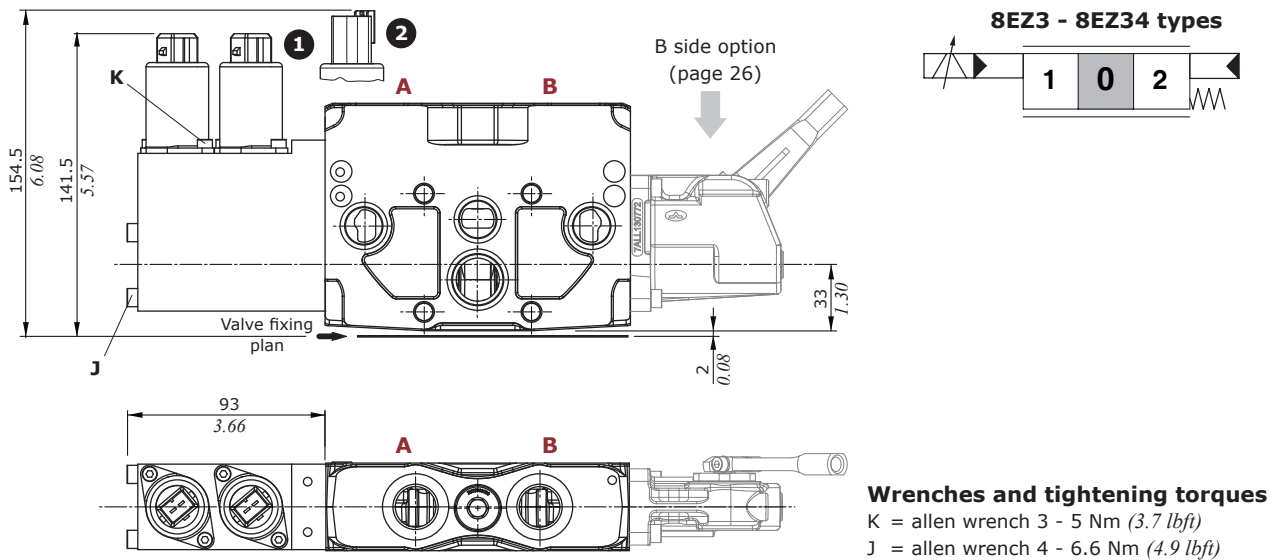
Control Types

- 1 : With AMP JPT connector - AMP JPT mating connector, code: 5CON003
- 2 : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

With horizontal valves: 8EZH3 Type



With vertical valves: 8EZ3 type

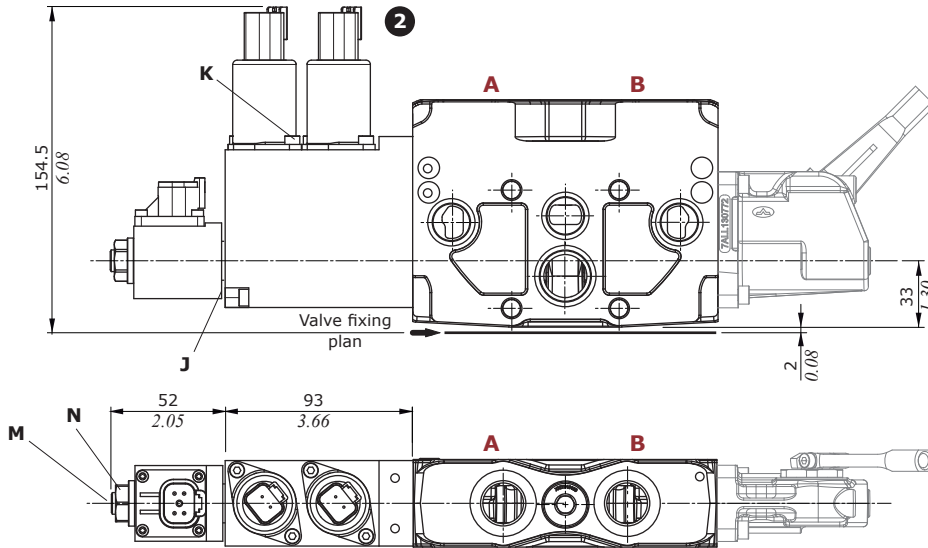


One-side electrohydraulic control

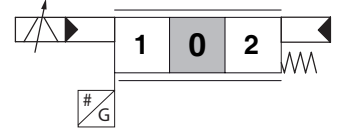
Control Types

②: With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

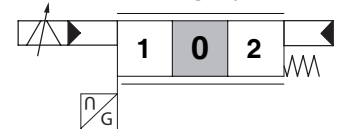
8EZ3SPSD control with spool position sensor



8EZ34SPSD type  
CANbus interface



8EZ34SPSL type  
Analog input



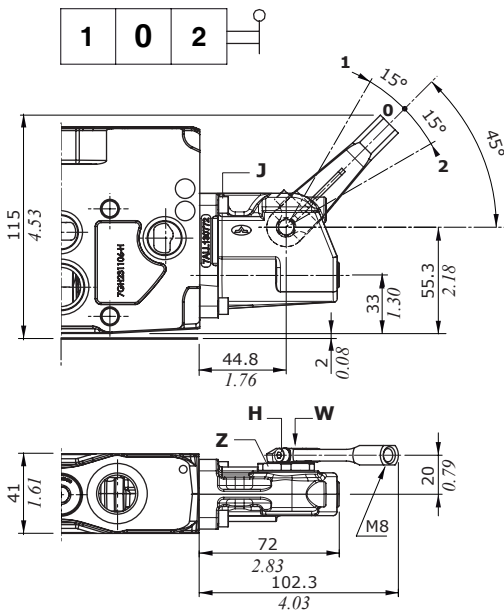
Wrenches and tightening torques

- K = allen wrench 3 - 5 Nm (3.7 lbft)
- J = allen wrench 4 - 6.6 Nm (4.9 lbft)
- M = wrench 4 - 9.8 Nm (7.2 lbft)
- N = wrench 17 - 9.8 Nm (7.2 lbft)

"B" side options

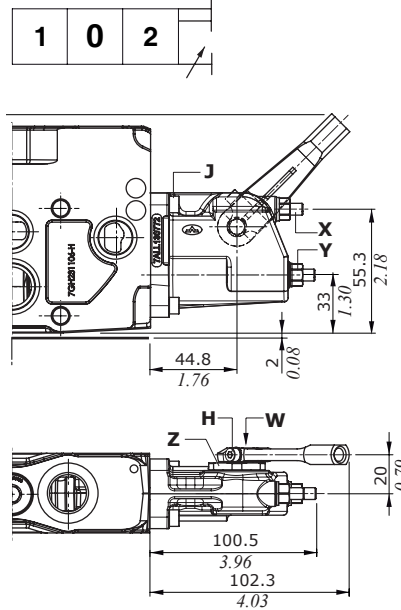
These options are available for one-side electrohydraulic controls only.

LQ type



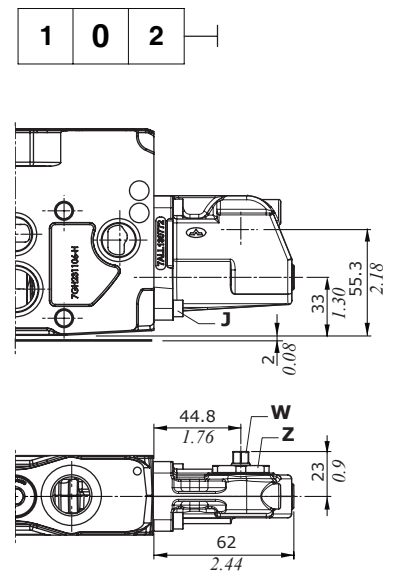
LQF3 type

Spool stroke limiter on ports A and B



LQSL type

Without lever



Wrenches and tightening torques

- H = allen wrench 3 - 6.6 Nm (4.9 lbft)
- J = allen wrench 4 - 6.6 Nm (4.9 lbft)
- X = allen wrench 3
- Y = wrench 10 - 9.8 Nm (7.2 lbft)
- Z = wrench 29 - 24 Nm (17.7 lbft)
- W = wrench 8

Electrohydraulic controls

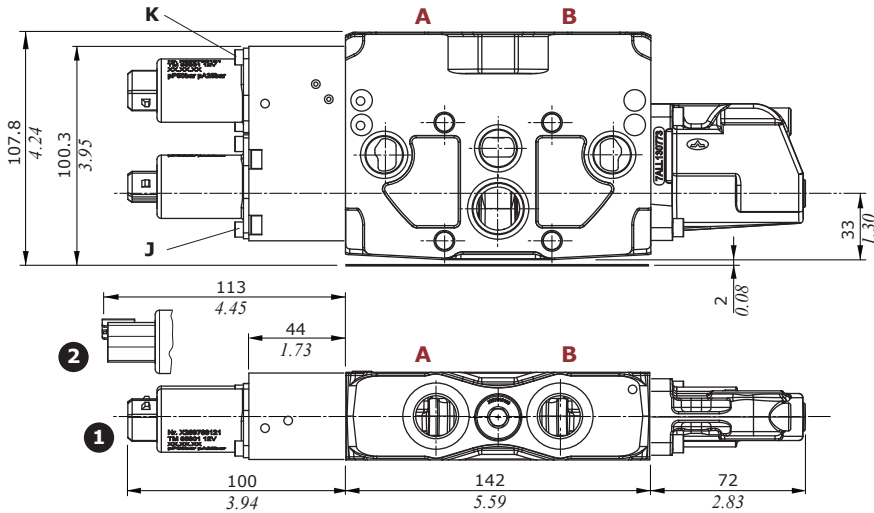
Complete one-side electrohydraulic control

Controls already comprehensive of endcap on B side.

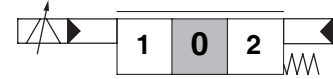
Control Types

- 1 : With AMP JPT connector - AMP JPT mating connector, code: 5CON003
- 2 : With Deutsch DT04 connector - Deutsch DT06-2S code mating connector: 5CON140031

8EZH3SLCQ complete control



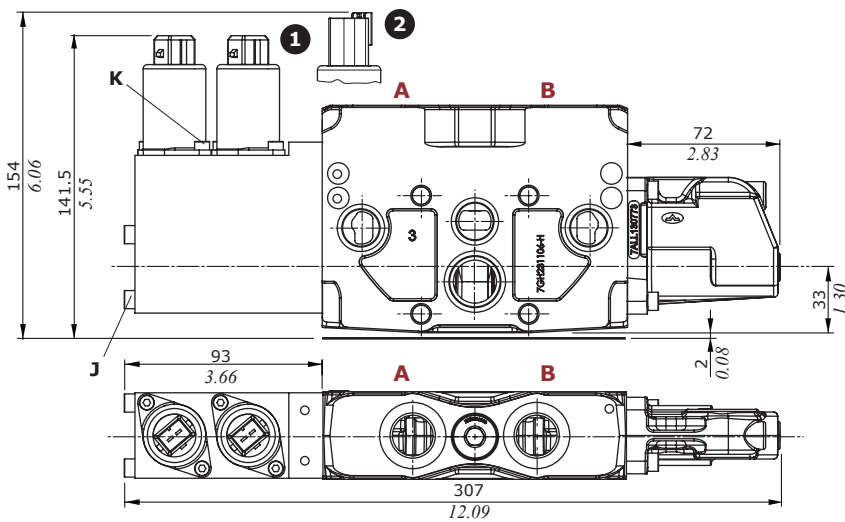
8EZH3SLCQ - 8EZH34SLCQ types



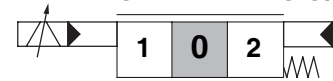
Wrenches and tightening torques

- K = allen wrench 3 - 5 Nm (3.7 lbft)
- J = allen wrench 4 - 6.6 Nm (4.9 lbft)

8EZ3SLCQ complete control



8EZ3SLCQ - 8EZ34SLCQ types

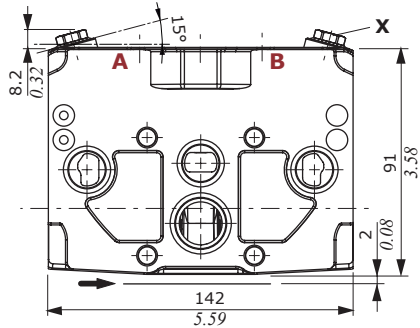


Wrenches and tightening torques

- J = allen wrench 4 - 6.6 Nm (4.9 lbft)
- K = allen wrench 3 - 5 Nm (3.7 lbft)

**Anti-shock and anti-cavitation valves with prefill**

For flow rates up to 60 l/min (16 US gpm) and higher valve setting.



**Wrenches and tightening torques**

X = wrench 13 - 24 Nm (17.7 lbf)

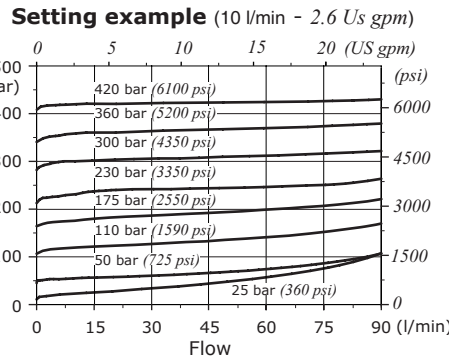
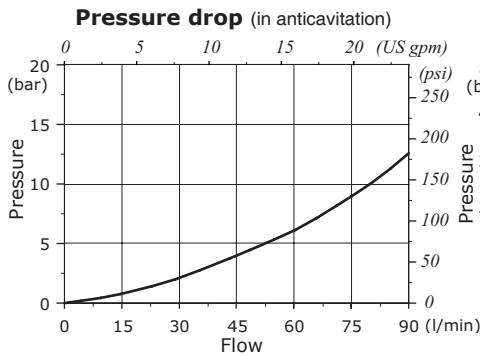
**U type**



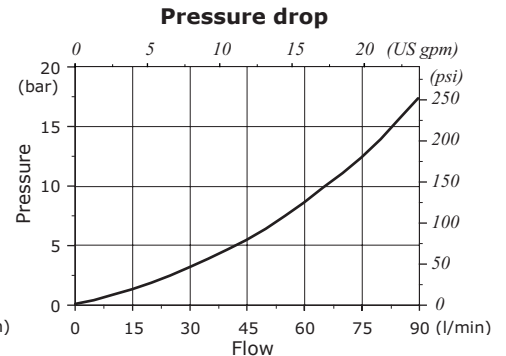
**C type**



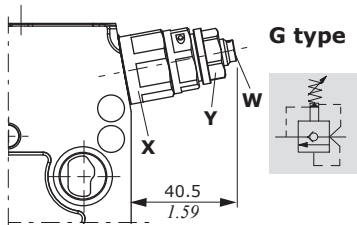
**U type: antishock valves with prefill**



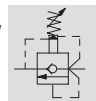
**C type: anticavitation valves**



**Pilot operated anti-shock and anti-cavitation valve UXW type**



**G type**



**Legenda**

G: adjustable with screw

**Wrenches and tightening torques**

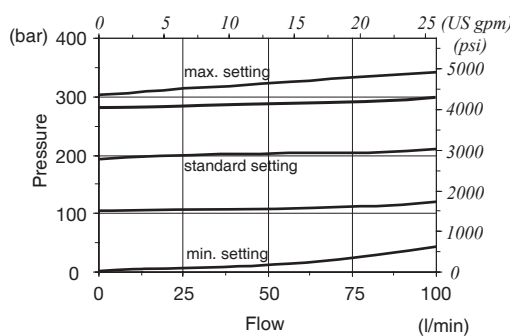
X = wrench 24 - 42 Nm (31 lbf)

Y = cwrench 17 - 24 Nm (17.7 lbf)

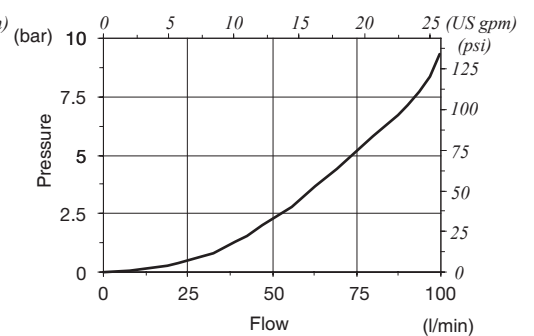
W = wrench 5

NOTE - Verify the dimensions when the lever controls are used. Please contact our Sales Dept.

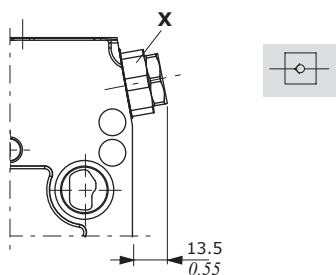
**Range setting**



**Pressure drop in anticavitation**



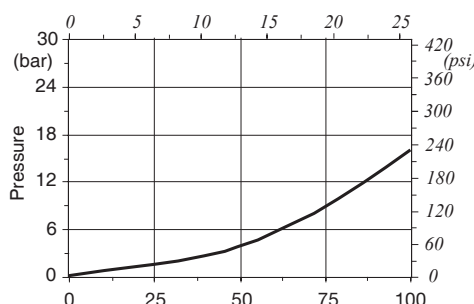
**Anti-cavitation valve C type**



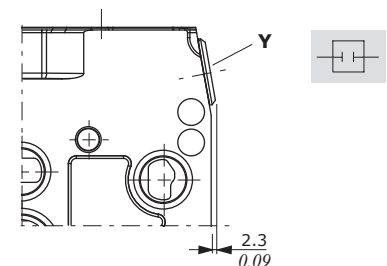
**Wrenches and tightening torques**

X = wrench 24 - 42 Nm (31 lbf)

**Pressure drop**



**Valve blanking plug**



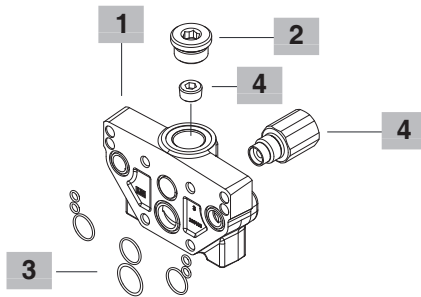
**Wrenches and tightening torques**

Y = allen wrench 10 - 42 Nm (31 lbf)

### Parts ordering codes

#### FS SDS140 / RC

- RC** With side outlet: **requires external pilot source**
- RD** With upper outlet: **requires external pilot source**
- RE** With upper outlet and side carry-over sleeve: **requires external pilot source**
- RVC** With backpressure valve: **requires internal pilot source, to build up pressure**
- RVE** With backpressure valve and side carry-over sleeve
- RF** With side and upper ports plugged
- RFC** As RF with tapered plug with metering hole for N and M type
- RDC** As RD with tapered plug with metering hole for N and M type



#### 1 Outlet section \*

CODE	DESCRIPTION
3FIA213300	Outlet section body

#### 2 Plug \*

CODE	DESCRIPTION
3XTAP732200	G 3/4 plug

#### 3 O-ring seals

CODE	DESCRIPTION
4GUA118818	O-ring 18.77x1.78 NBR 70 SH (3 pieces)
4GUA125118	O-ring 25.12x1.78 NBR 70 SH (1 piece)
4GUA106818	O-ring 6.75x1.78 NBR 70 SH (4 pieces)

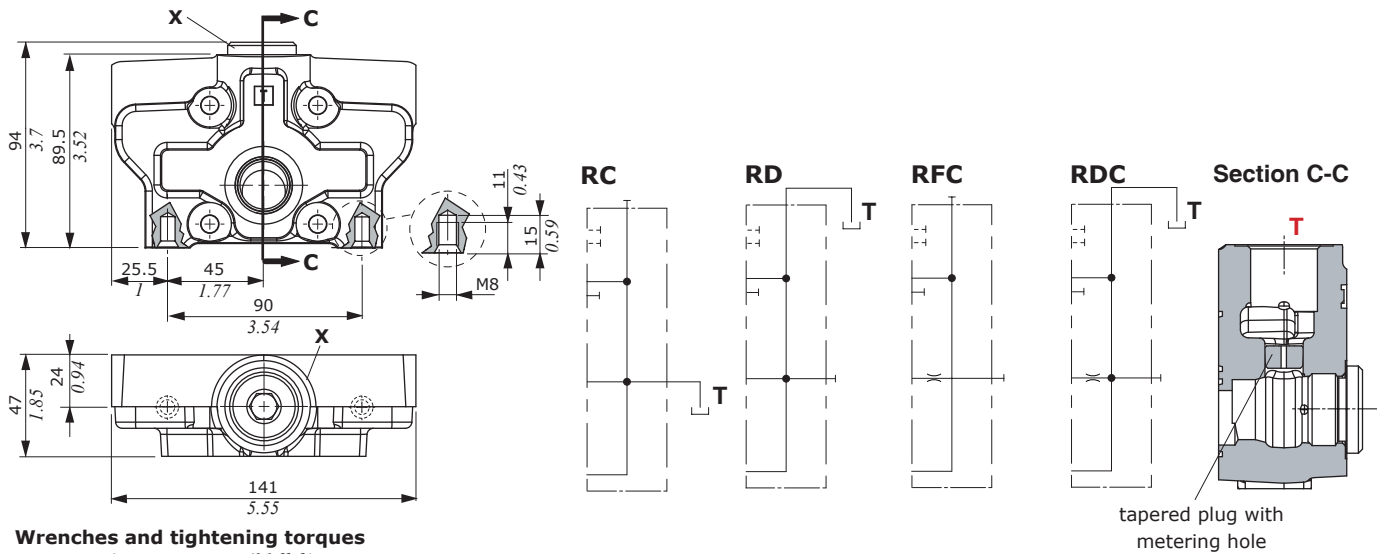
#### 4 Circuit option\*

page 31

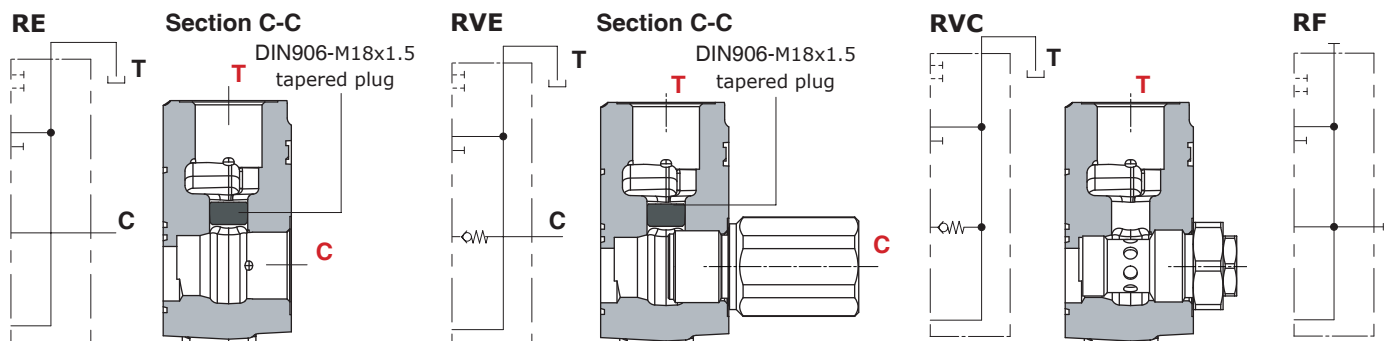
CODE	DESCRIPTION
4TAP318010	M18x1.5 plug for carry-over (RE) and closed centre options
X047710010(*)	VRE backpressure valve for RVE configuration with side carry-over sleeve
X147600007(*)	VRC backpressure valve for RVC configuration
3VT2730100	FC5 plug with metering hole for RFC and RDC

NOTE (\*) - Codes are referred to **BSP** thread.

### Dimensional data and hydraulic circuit



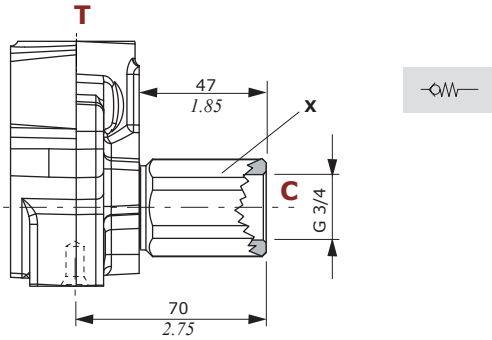
**Wrenches and tightening torques**  
X = wrench 12 - 42 Nm (31 lbft)



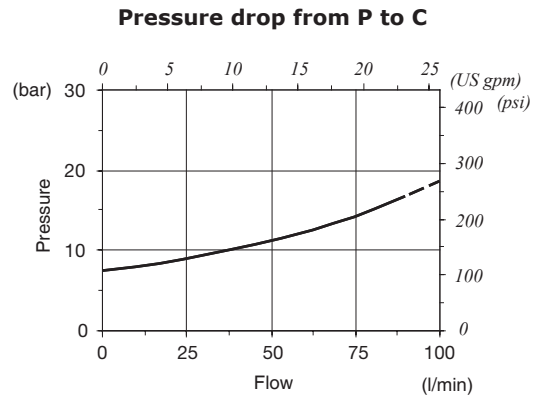
**Circuit option**

The VRE and VRC valves are assembled on flow through passage of outlet cover; it's necessary to provides pilot pressure to the actuator. For initial movement.

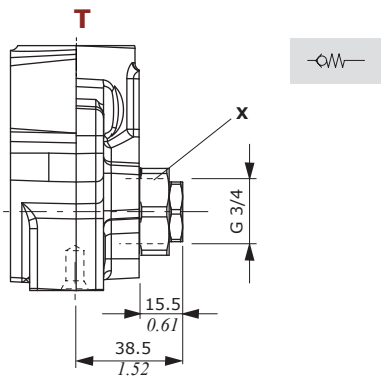
**VRE backpressure valve**



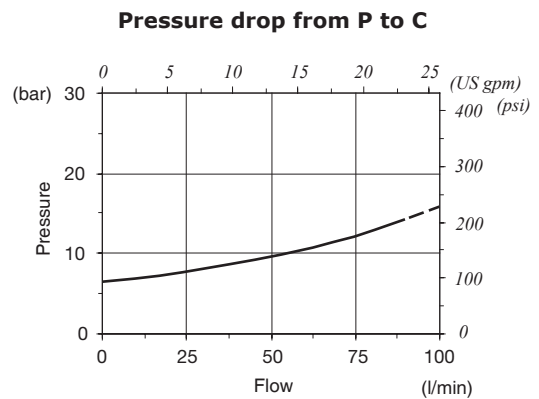
**Wrenches and tightening torques**  
 X = wrench 34 - 42 Nm (31 lbf<sub>t</sub>)



**VRC backpressure valve**



**Wrenches and tightening torques**  
 X = wrench 32 - 42 Nm (31 lbf<sub>t</sub>)

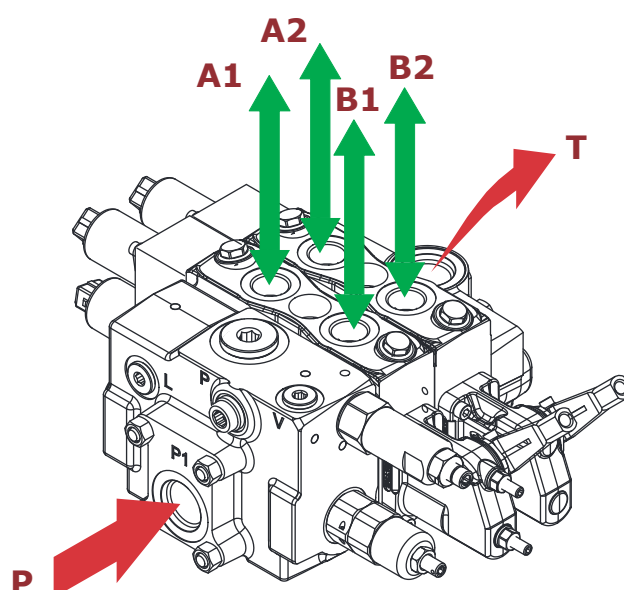


## Installation and maintenance

The SDS140 valves are assembled and tested as per the technical specification of this catalogue.

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

- the valve can be assembled in any position; order to prevent working section deformation and spool sticking mount the product on a flat surface;
- in order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- prior to painting, ensure plastic port plugs are tightly in place.



### Fitting tightening torque - Nm (*lbft*)

THREAD TYPE	port P	ports A, B	ports T, C	LS signal
BSP	G 3/4	G 1/2	G 3/4	G 1/4
With O-Ring seal	90 - 66.4	50 - 36.9	90 - 66.4	20 - 14.7
With copper washer	90 - 66.4	60 - 44.3	90 - 66.4	25 - 18.4
With steel and rubber washer	70 - 51.6	60 - 44.3	70 - 51.6	16 - 11.8
UN-UNF	7/8-14 (SAE 12)	3/4-16 (SAE 8)	7/8-14 (SAE 12)	9/16-18 (SAE 6)
With O-Ring seal	90 - 66.4	60 - 44.3	90 - 66.4	30 - 22.1
METRIC	M27x2	M22x1.5	M27x2	M14x1.5
With O-Ring seal	100 - 73.7	60 - 44.3	100 - 73.7	35 - 25.8

NOTE – These torque are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish. The manufacturer shall be consulted.



**Types and ordering codes**

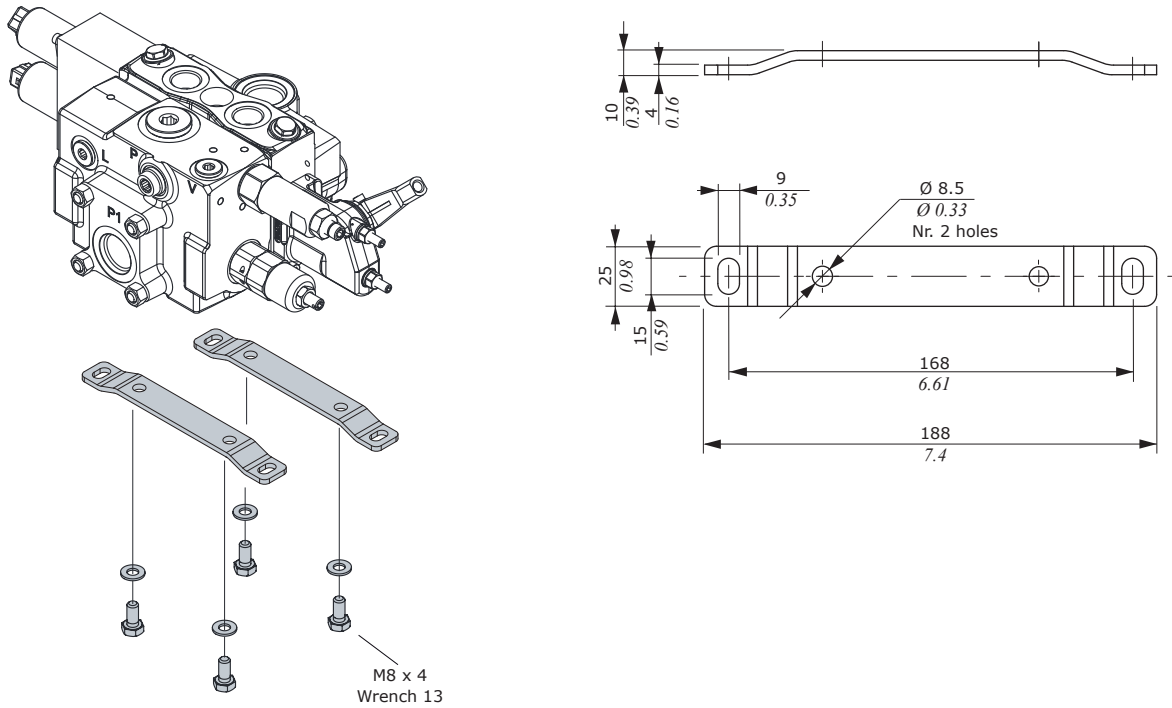
Coil type	Voltage	Connectors					
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	Flying leads (without conn.)
BER	10 VDC	4SLE001000	-	-	-	-	-
	12 VDC	4SLE001200	4SLE001201 <sup>(5)</sup>	4SLE001203 <sup>(5)</sup>	4SLE001210 <sup>(2)</sup>	4SLE001214 <sup>(2)</sup>	4SLE001207
		4SLE001217 <sup>(3)</sup>	4SLE001209 <sup>(3-5)</sup>	4SLE001211 <sup>(3-5)</sup>			
			4SLE001202 <sup>(6)</sup>				
			4SLE001216 <sup>(3-6)</sup>				
	24 VDC	4SLE002400	4SLE002401 <sup>(5)</sup>	4SLE002403 <sup>(5)</sup>	-	-	4SLE002404
		4SLE002408 <sup>(3)</sup>	4SLE002407 <sup>(3-5)</sup>				
	4SLE302400 <sup>(1)</sup>	4SLE002402 <sup>(6)</sup>					
48 VDC	4SLE004800	-	-	-	-	-	
	4SLE304800 <sup>(1)</sup>						
110VDC	4SLE011000	-	-	-	-	-	
	4SLE311000 <sup>(1)</sup>						
220 VDC	4SLE022000	-	-	-	-	-	
	4SLE322000 <sup>(1)</sup>						
<b>Mating connectors</b> (for connector with rectifier see following table)		4CN1009995	5CON140031	5CON003	5CON001	5CON017	-

NOTES - <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	BT type coil
24 VDC	4CN1010240	4CN3010240
48 VDC	4CN1010480	4CN3010480
110 VDC	4CN1011100	4CN3011100
220 VDC	4CN1012200	4CN3012200



Fixing brackets



NOTE - For fixing bracket code see page 7.

Painting

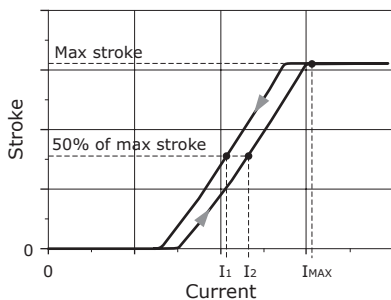
SDS140 valve can be supplied with one coat of black paint (**CVN** configuration).  
 Description example: SDS140/2/AC(YG3-175)-R(32)/PZ-1EZ8EZH3LQ.U3T/RD-**<CVN>**  
 NOTE – For different colour contact our Sales Dpt.

Appendix A

**Electrohydraulic controls: hysteresis calculation rule**

Hysteresis is calculated as difference between control currents ( $I_2 - I_1$ ), needed to reach 50% of nominal spool stroke, referred to maximum control current  $I_{MAX}$ , needed to reach 100% of spool stroke.  
 $I_2$  is determined on spool stroke increase line,  $I_1$  is determined on spool stroke decrease line.

**Example diagram for data detection**



$$\text{Hysteresis \%} = \frac{I_2 - I_1}{I_{MAX}} \times 100$$

1<sup>st</sup> edition September 2015

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