



**SDS 140**  
**Sectional directional**  
**control valves**

**TECHNICAL CATALOG**



## 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.

- 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 option.

### 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.**

7<sup>th</sup> edition December 2021

### SDS140

- Valve general information
  - Working conditions . . . . . page 4
  - Standard threads . . . . . page 4
  - Dimensional data . . . . . page 5
  - Performance data . . . . . page 5
  - Hydraulic circuit . . . . . page 6
  - Complete sections ordering codes . . . . . page 8
- Inlet section
  - Part ordering codes . . . . . page 10
  - Dimensional data and hydraulic circuit . . . . . page 12
  - Main pressure relief valves . . . . . page 15
  - Pressure reducing valve . . . . . page 17
  - Inlet valve options . . . . . page 18
- Working section
  - Part ordering codes . . . . . page 20
  - Dimensional data and hydraulic circuit . . . . . page 23
  - Spools . . . . . page 25
  - Electrohydraulic controls . . . . . page 27
  - Port valves . . . . . page 34
- Outlet section
  - Part ordering codes . . . . . page 36
  - Dimensional data and hydraulic circuit . . . . . page 37
  - Circuit option . . . . . page 38
  
- Installation and maintenance . . . . . page 39
- Accessories . . . . . page 40
- Appendix A . . . . . page 42

### 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
Back pressure (max.) on <b>T</b> outlet port	with mechanical devices	10 bar	145 psi
	with hydraulic/pneumatic devices	30 bar	435 psi
	with electrohydraulic devices	5 bar	72.5 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
Environmental 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 threads

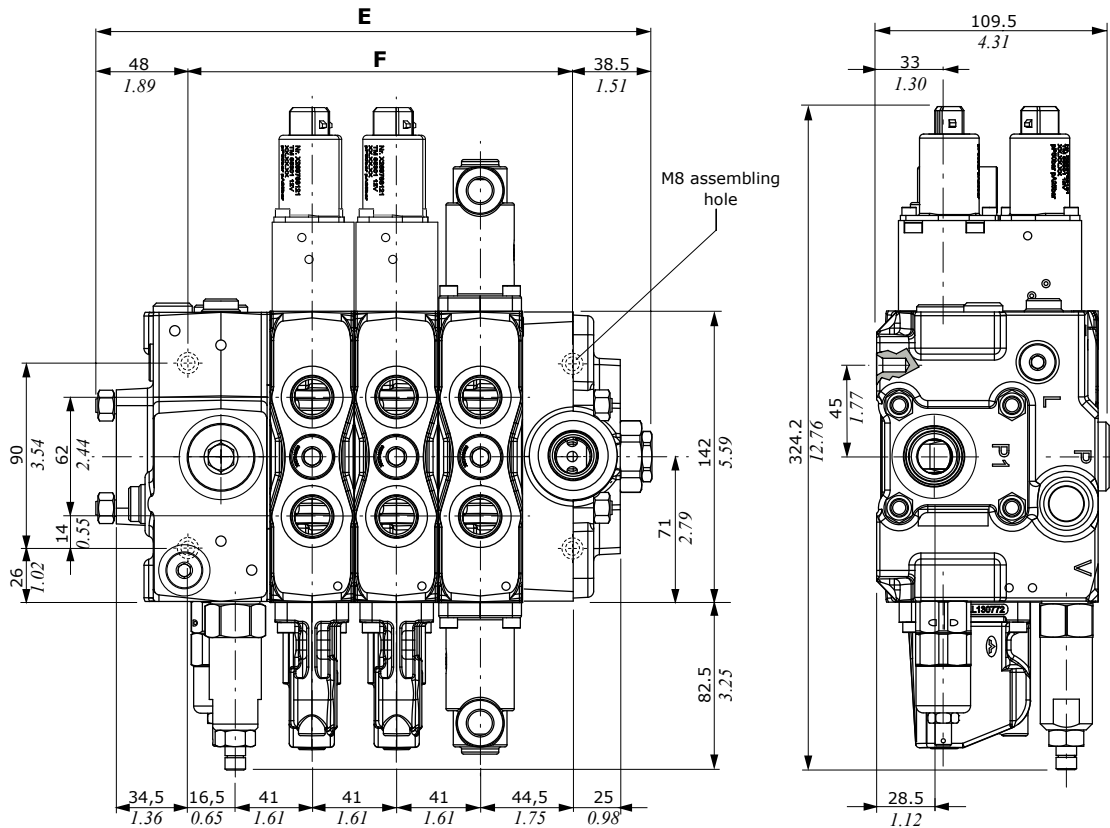
REFERENCE STANDARD					
	BSP	UN-UNF	METRIC (*)	METRIC ISO (*)	NPTF
THREAD	ISO 228/1	ISO 263	ISO 262	ISO 262	ANSI B1.20.3
ACCORDING TO	BS 2779	ANSI B1.1 unified			
CAVITY	ISO 1179-1	11926-1	9974-1	6149	
DIMENSION	SAE	J1926-1		J2244	J476a
ACCORDING TO	DIN 3852-2, X or Y shape		3852-2, X or Y shape	3852-1,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

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

PORT THREADING			
MAIN PORTS	BSP	UN-UNF	METRIC
<b>P</b> inlet	G 3/4	7/8-14 (SAE 12)	M27x2
<b>A</b> and <b>B</b> ports	G 1/2	3/4-16 (SAE 8)	M22x1.5
<b>T</b> outlet and <b>C</b> carry-over	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



Dimensional data

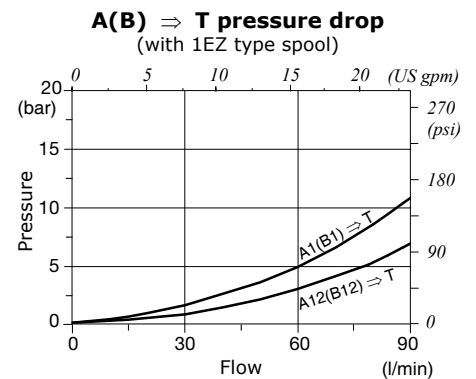
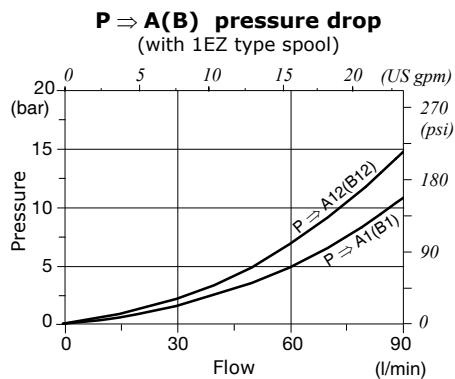
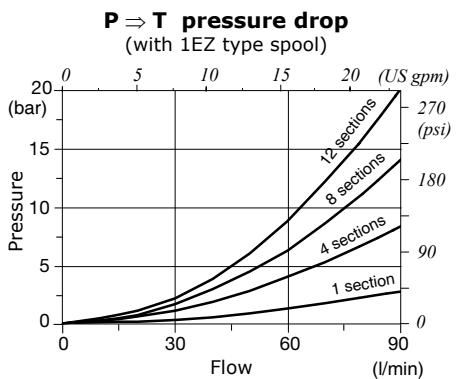


NOTES - Drawings and dimensions are referred to **UN-UNF** thread configuration.  
For assembling hole of different inlet sections see related pages.

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

TYPE	E		F		Weight	
	mm	in	mm	in	Kg	lb
SDS140/7	434.5	17.11	348	13.7	40.4	89.07
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

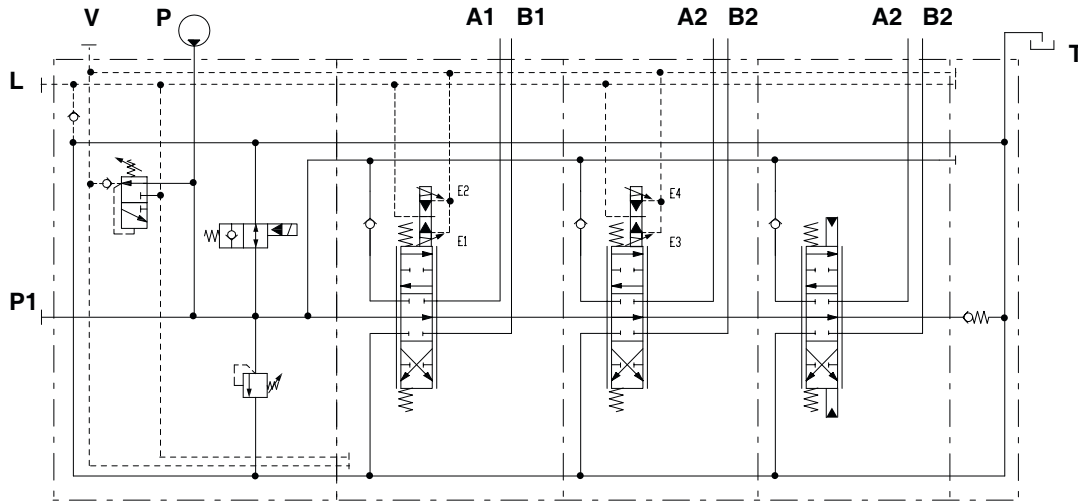
Performance data



Hydraulic circuit

Parallel circuit

Example of configuration, open centre circuit.



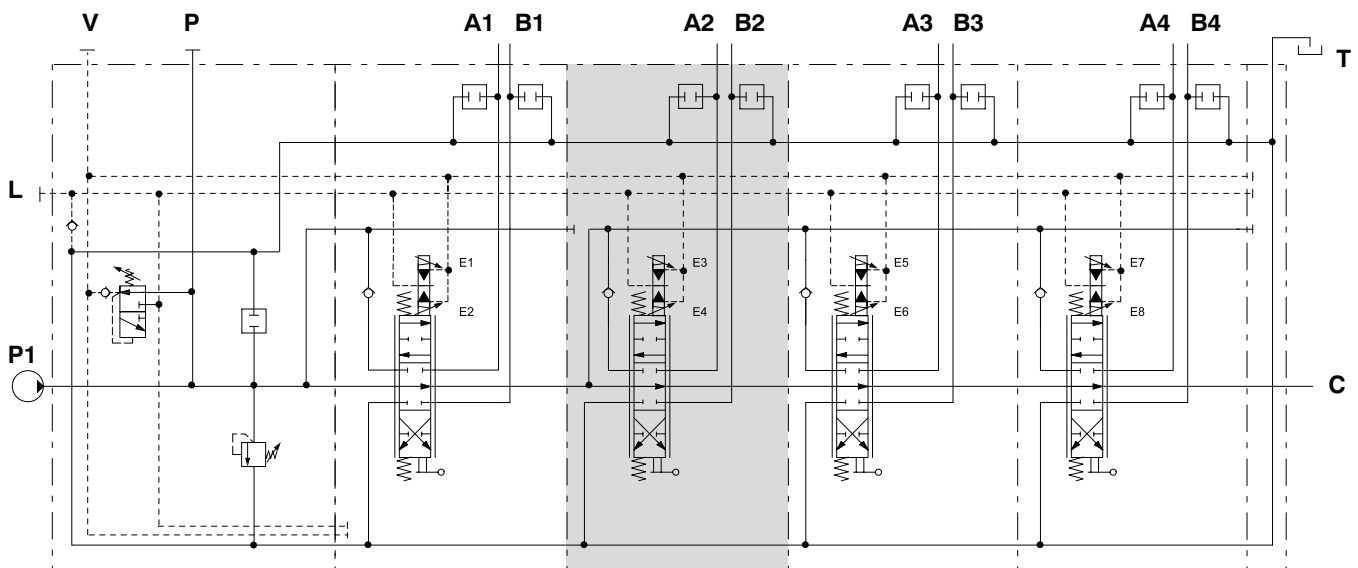
Description example:

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

Series-parallel (tandem) circuit

A special working section **SPZ** is required.

Tandem section is fed by the free flow pressure line; it is excluded when an upstream section is operated.



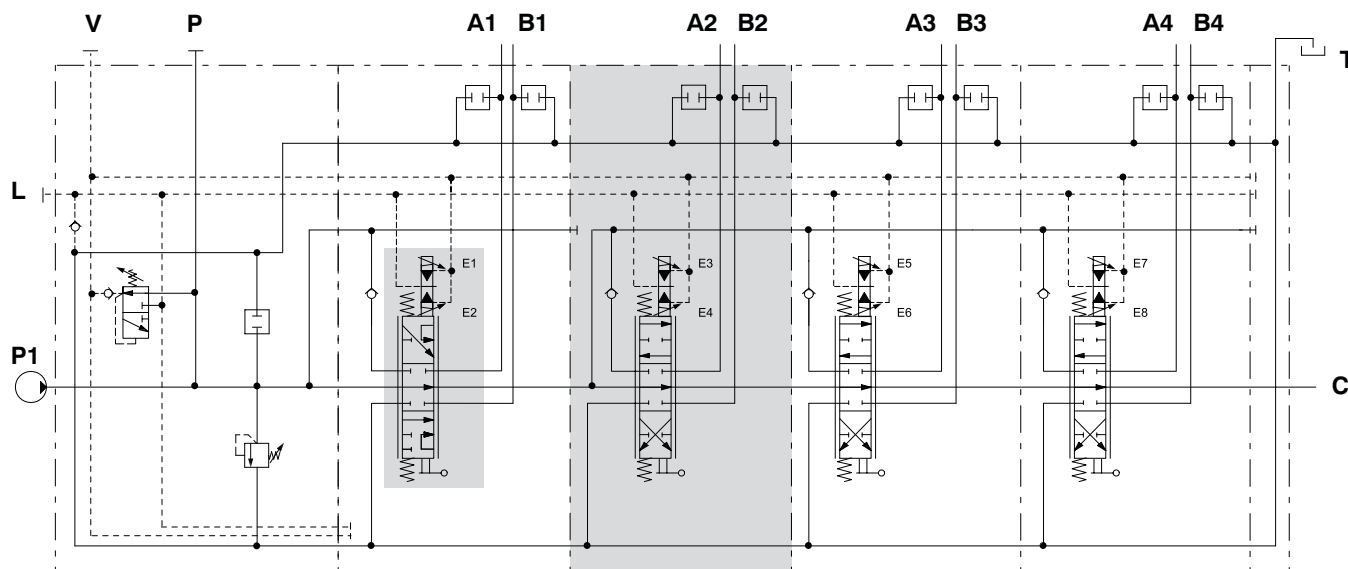
Description example:

SDS140/4/AC(XGA-180)/PZ-1CSGEZ8EZ3LQ(240).U3T/SPZ-1CSGEZ8EZ3LQ(240).U3T/PZ-1CSGEZ8EZ3LQ(240).U3T/PZ-1CSGEZ8EZ3LQ(240).U3T/RE-12VDC

**Series circuit**

The series version is obtained by mounting a **1SEZ** spool (or 2SEZ, see pages 21 and 26) on a standard parallel working section with special **LQCS** lever, special **8EZHCS3** control or standard type **8EZ3** control.

The next working section must be a **SPZ** one (series-parallel) combined with standard versions of spools, controls and levers.



Description example:

SDS140/4/AC(XGA-180)/PZ-1SEZ8EZ3LQCS(240).U3T/SPZ-1CSGEZ8EZ3LQ(240).U3T/PZ-1CSGEZ8EZ3LQ(240).  
U3T/PZ-1CSGEZ8EZ3LQ(240).U3T/RE-12VDC

### Complete section ordering codes

SDS140 / 3 / AC(YG3-175) / PZ-1EZ8EZ3LQ.U3T / PZ-1EZ8EZ3SLCQ.U3T / PA1M8IM.U3T / RVC - .... - 12VDC

Nr. of working sections

1

2

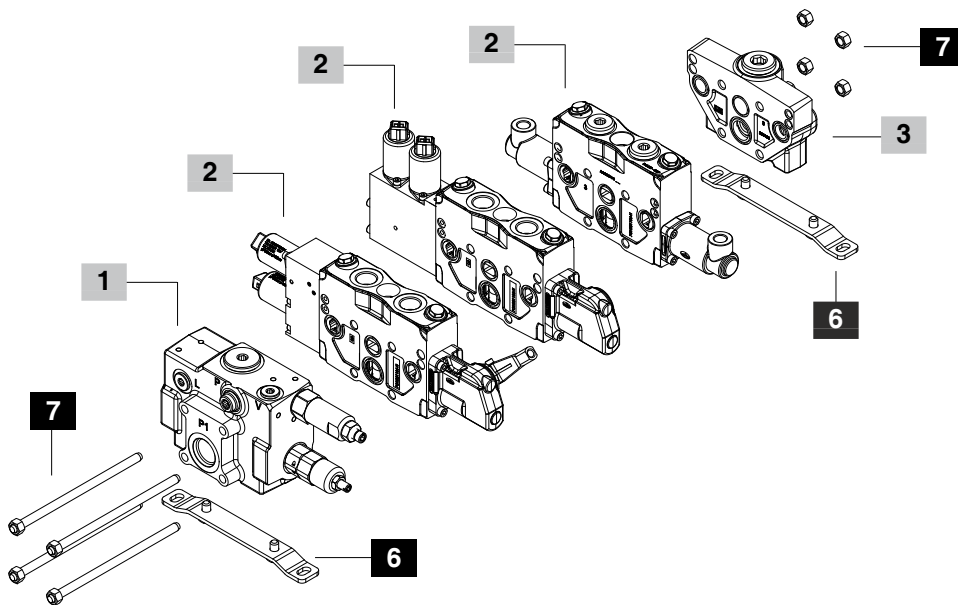
2

2

3

4

5



## Complete section ordering codes

**1 Inlet section \*** page 10

TYPE: **AC(YG3-175)-SAE** CODE: 61D205000  
 DESCRIPTION: Side inlet port, with direct pressure relief valve and pressure reducing valve, pilot V and drain L ports plugged

TYPE: **ADT(SV)-SAE** CODE: 61D205001  
 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)-SB8-Q40(XGA-270\ELNW)-SAE-12VDC** CODE: 61D205002  
 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)-SAE-12VDC)** CODE: 61D205003  
 DESCRIPTION: With compensator for open centre 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 20

TYPE: **PZ-1EZ8EZ3LQ.U3T-SAE-12VDC** CODE: 61D105000  
 DESCRIPTION: Parallel circuit arranged for port valves, horizontal electrohydraulic control, with lever

TYPE: **QZ-1EZ8EZ3SLCQ-SAE-12VDC** CODE: 61D105001  
 DESCRIPTION: Parallel circuit, without port valves, horizontal electrohydraulic control, without lever

TYPE: **PZ-1EZ8EZ3SLCQ.U3T-SAE-12VDC** CODE: 61D105002  
 DESCRIPTION: Parallel circuit arranged for port valves, vertical electrohydraulic control, without lever

TYPE: **PA-1M8IM.U3T-SAE** CODE: 61D105003  
 DESCRIPTION: Parallel circuit arranged for port valves, proportional hydraulic control

TYPE: **SPZ-1EZ8EZ3LQ.U3T-12VDC** CODE: 61D125000  
 DESCRIPTION: Series-Parallel circuit arranged for antishock valves, vertical electrohydraulic control

**3 Outlet section \*** page 36

TYPE	CODE	DESCRIPTION
<b>RF-SAE</b>	61D305000	With side and upper outlet ports plugged
<b>RFC-SAE</b>	61D305004	As RF for M inlet section
<b>RC-SAE</b>	61D305001	With side port open, upper port plugged
<b>RVC-SAE</b>	61D305002	With back pressure valve, upper port open
<b>RE-SAE</b>	61D305006	With upper outlet and side carry-over sleeve
<b>RVE-SAE</b>	61D305003	With back pressure valve, side carry-over sleeve and upper outlet

**4 Valve threading**

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

**5 Voltage** page 40

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

**6 Fixing bracket** page 42

TYPE	CODE	DESCRIPTION
<b>STAF</b>	5STA125190	For inlet sections, with fixing screws

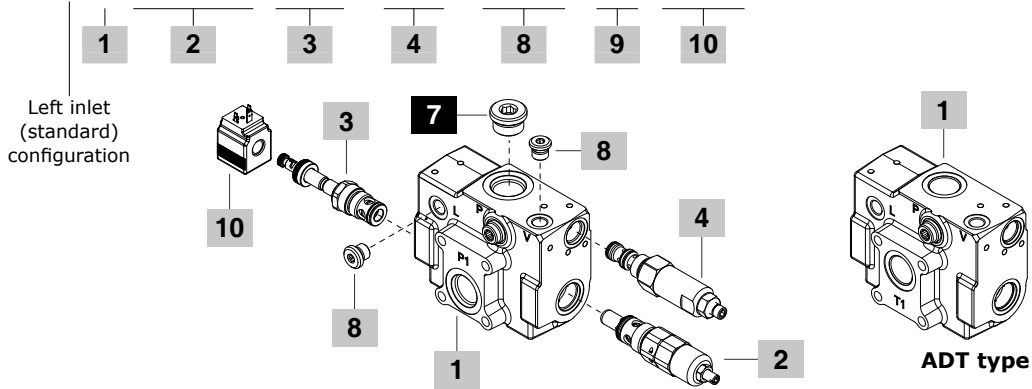
**7 Assembling kit**

CODE	DESCRIPTION	CODE	DESCRIPTION
<b>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>For AP inlet section</b>			
5TIR108138	For 1 section valve	5TIR108382	For 7 sections valve
5TIR108177	For 2 sections valve	5TIR108424	For 8 sections valve
5TIR108220	For 3 sections valve	5TIR108465	For 9 sections valve
5TIR108262	For 4 sections valve	5TIR108506	For 10 sections valve
5TIR108301	For 5 sections valve	5TIR108547	For 11 sections valve
5TIR108342	For 6 sections valve	5TIR108588	For 12 sections valve

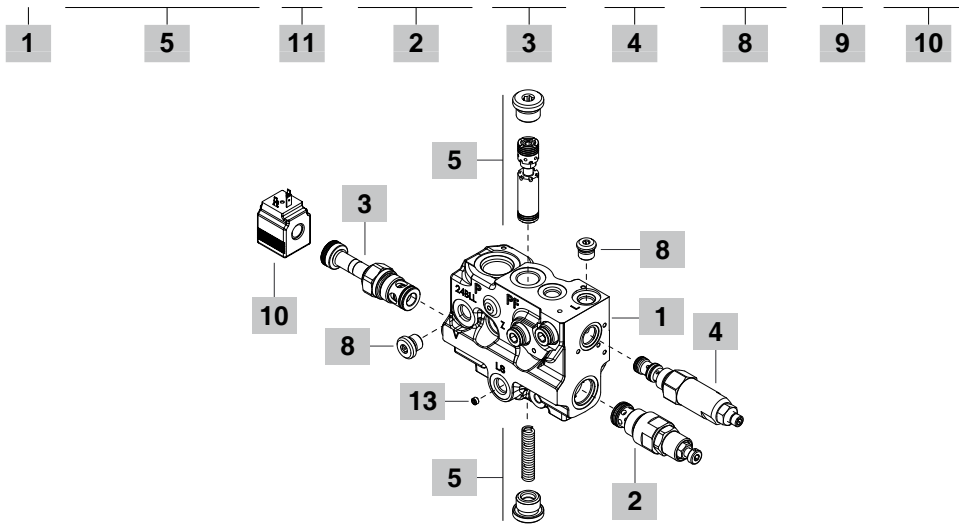
NOTES (\*) – Codes are referred to **UN-UNF** thread.  
 For right inlet section please contact our Sales Dept.

## Part ordering codes

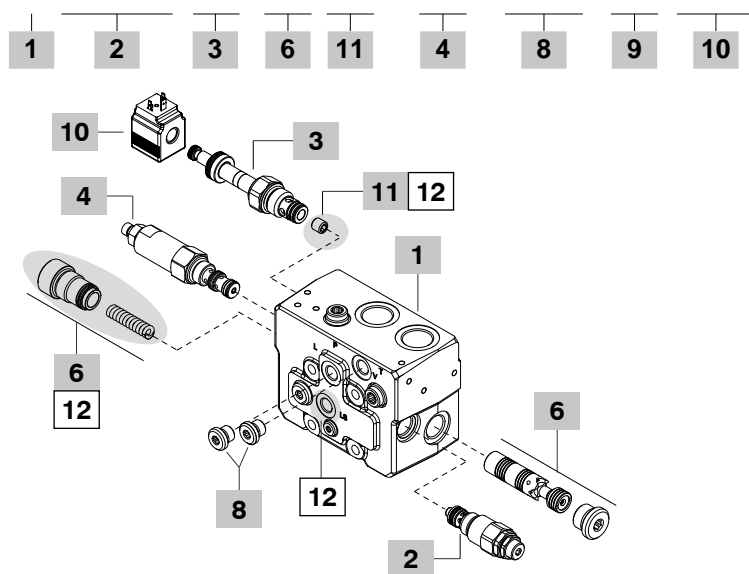
FE SDS140 / A C (YG3-175 \ ELTW) - R(32) - TAP(VL) - ..... - 12VDC



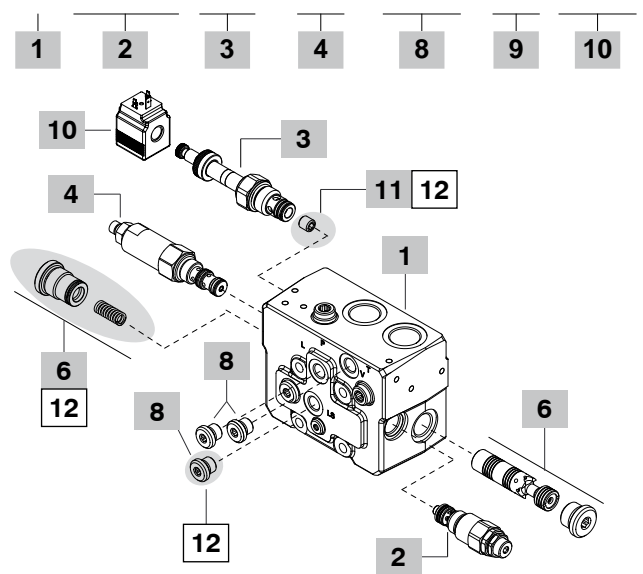
FE SDS140 / A P - D(0.7)-SB8-Q40-LS(1) (XGM-270 / ELNW) - R(32) - TAP(VL) - ..... - 12VDC



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



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



**1 Inlet section body kit\* page 12**

TYPE: **SDS140/C-D-SAE** CODE: 5FIA113700  
 DESCRIPTION: With side and upper inlet ports, V pilot and L drain ports, arranged for pressure relief valve, unloading valve, pressure reducing valve

TYPE: **SDS140/DT-SAE** CODE: 5FIA113701  
 DESCRIPTION: As previous one, with upper inlet and side outlet ports

TYPE: **SDS140/P-SAE** CODE: 5FIA113702  
 DESCRIPTION: With upper inlet port, V pilot, L drain and LS ports, arranged for priority valve, pressure relief valve, unloading valve, pressure reducing valve

TYPE: **SDS140/M-N-SAE** CODE: 5FIA1137A0  
 DESCRIPTION: With upper inlet and outlet port, V pilot, L drain and LS ports, arranged for LS pressure relief valve, unloading valve, pressure reducing valve

**2 Main pressure relief valve page 15**

**For C, D, DT 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>Y type direct operated</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)

X type pilot operated

<b>(XGA-200)</b>	X006211350	Range 20-315 bar (290-4600 psi) standard setting 200 bar (2900 psi)
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**For M, N 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\***

CODE	DESCRIPTION
3XTAP832200	SAE12 plug for C, D and DT section

**8 Plug\***

CODE	DESCRIPTION
3XTAP817130	SAE6 plug for V, L and LS ports
For V pilot and L drain 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**

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 18**

**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

<b>ELNW</b>	0EFW0062001	Without emergency
<b>ELTW</b>	0EFW0062000	Push & 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 & twist type with detent emergency
<b>ELPW</b>	0EFW0062002	With push-button emergency

For N and M inlet section

TYPE	CODE	DESCRIPTION
<b>LT</b>	3XTAP826160	Valve blanking plug for M type with external pilot source or N type

Solenoid operated unloading valve (NC)

<b>ESFNW(NC)</b>	0EF10002011	Without emergency
<b>ESFTW(NC)</b>	0EF10002013	Pull & twist type 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 17**

TYPE	CODE	DESCRIPTION
<b>R(32)</b>	4AC9539900A	Valve with standard setting @ 32 bar (464 psi). Type omitted in description; specify only if it different from standard
<b>(RT)</b>	XTAP324541	Valve blanking plug (SAE 8/3)

**5 Priority valve kit**

TYPE: <b>D(0.7)-SB8-Q40</b>	CODE: 5KIT440370
DESCRIPTION: Stand-by 8 bar (116 psi), reg. flow = 40 l/min (10.5 US gpm)	

**6 Compensator kit**

TYPE	CODE	DESCRIPTION
<b>SB4</b>	5CAS318083	Standard 4 bar (58 psi) for M inlet section
<b>SB25</b>	5CAS318084	Standard 25 bar (362 psi) for N inlet section
Specify in description when it is different from standard.		

**9 Section threading**

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

**10 Coil page 40**

TYPE	CODE	DESCRIPTION
<b>12VDC</b>	4SLE001200A	<b>BER type</b> , 12 VDC, ISO4400 connector
For complete available coil list please see page 33.		

**11 Metering hole**

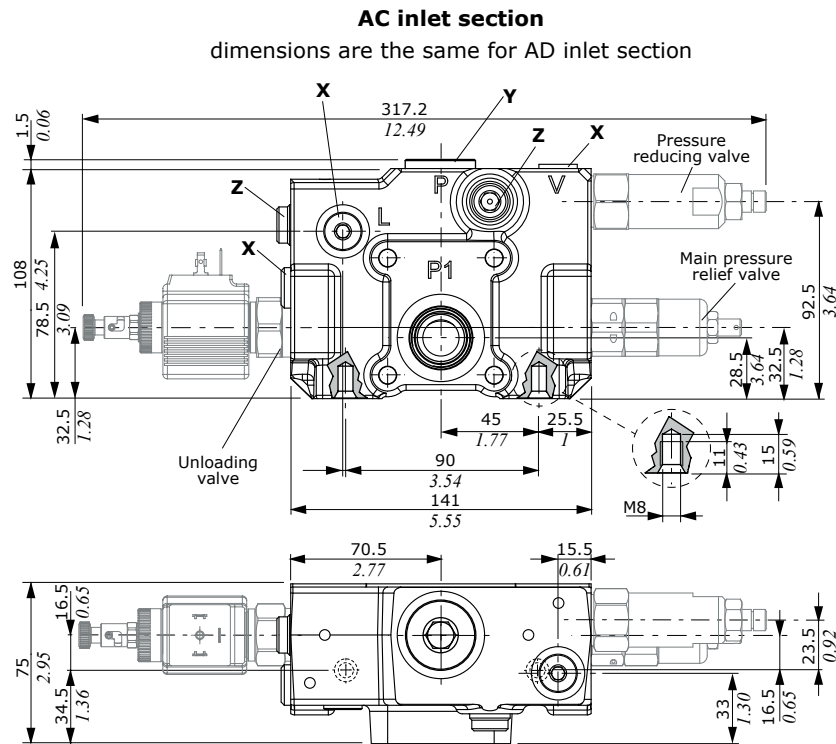
TYPE	CODE	DESCRIPTION
<b>FC3.9</b>	3VT2710108	Standard for N inlet section
<b>FC5</b>	3VT2710106	Standard for M inlet section
Specify in description when it is different from standard.		

**13 LS restrictor**

TYPE	CODE	DESCRIPTION
<b>NFC</b>	-	Without restrictor (omitted in description)
<b>LS(1)</b>	3VT2700065	Restrictor 1 mm diameter on LS port
Specify in description when it is different from standard. Different diameter are available, please contact our Sales Dpt.		
NOTE (*) - Codes are referred to <b>UN-UNF</b> thread.		

### Dimensional data and hydraulic circuit

#### Standard inlet cover configuration



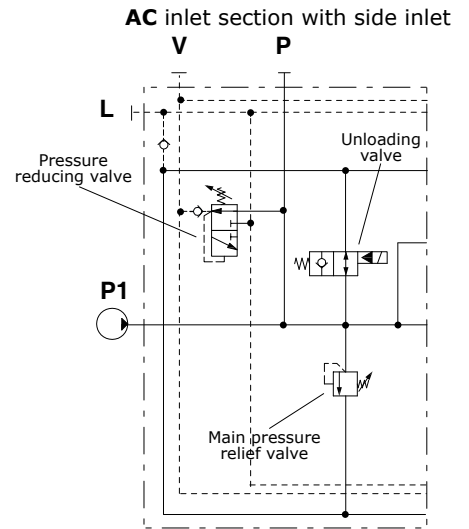
**Wrenches and tightening torques**

X = allen wrench 6 - 24 Nm (17.7 lbft)

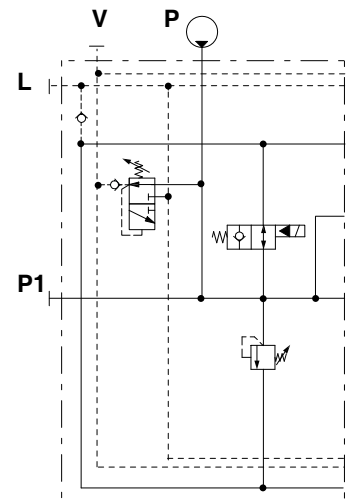
Y = allen wrench 12 - 42 Nm (31 lbft)

Z = wrench 8 - 42 Nm (31 lbft)

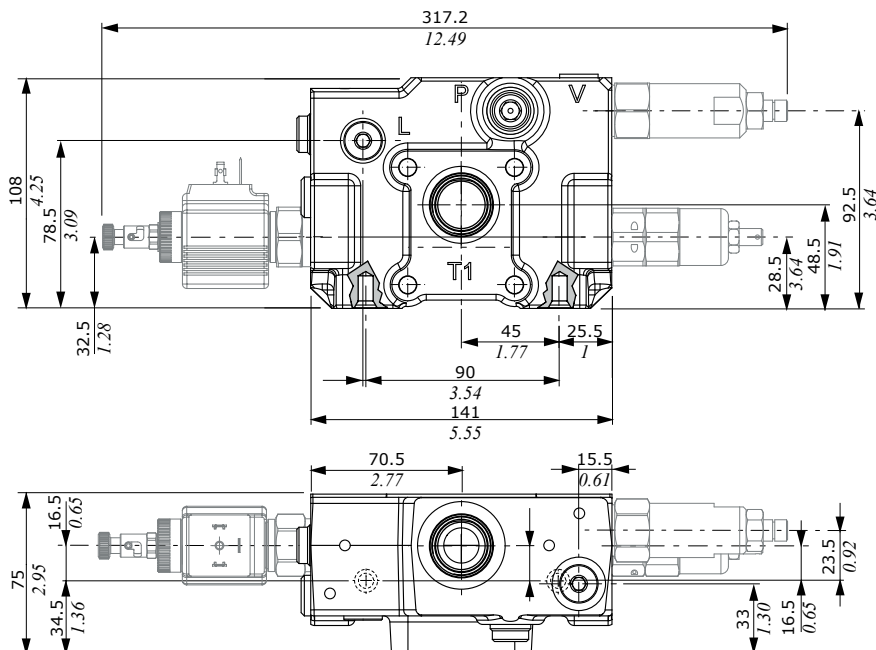
NOTE - for wrenches and tightening torques about valves, please see dedicated pages.



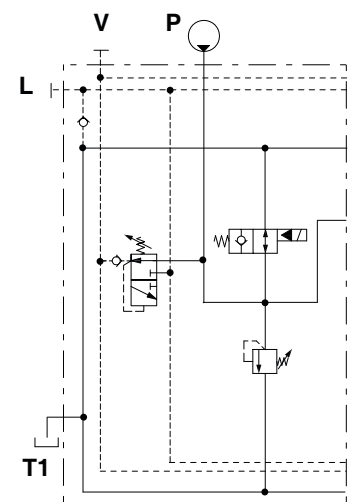
**AD inlet section with upper inlet**



**ADT inlet section**



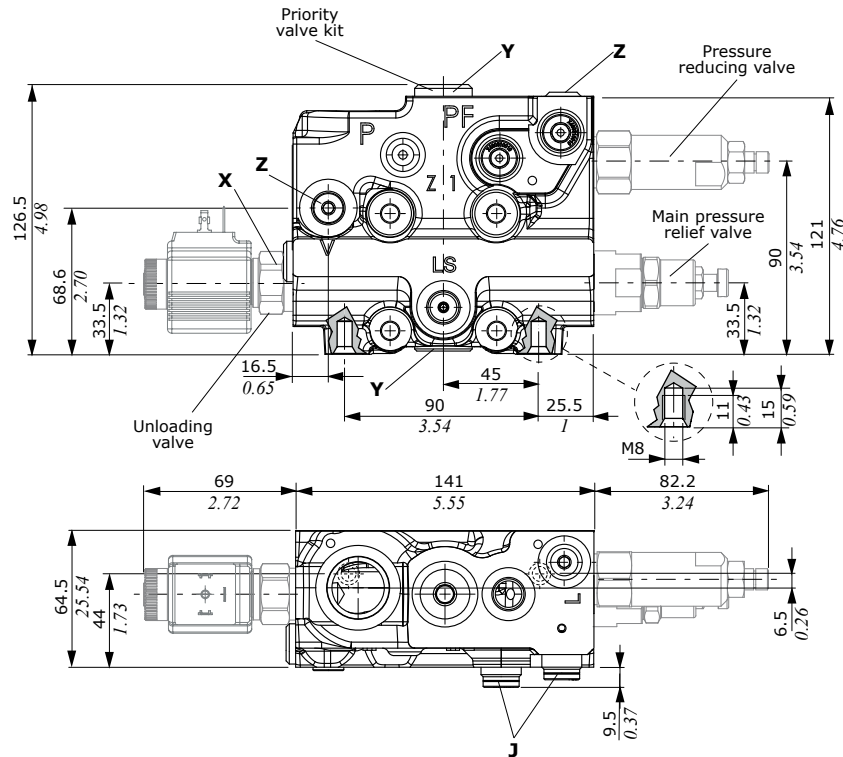
**ADT inlet section with upper inlet and side outlet**





Dimensional data and hydraulic circuit

Configuration with priority valve



**Wrenches and tightening torques**

X = allen wrench 6 - 24 Nm (17.7 lbft)

Y = allen wrench 8 - 24 Nm (17.7 lbft)

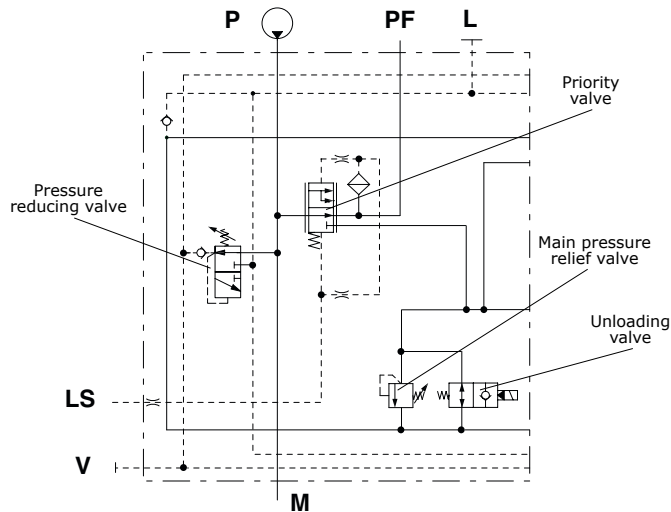
Z = allen wrench 6 - 24 Nm (17.7 lbft)

J = wrench 8 - 42 Nm (31 lbft)

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

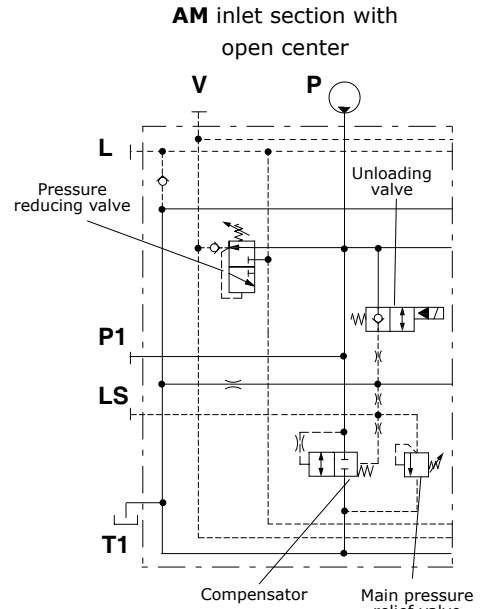
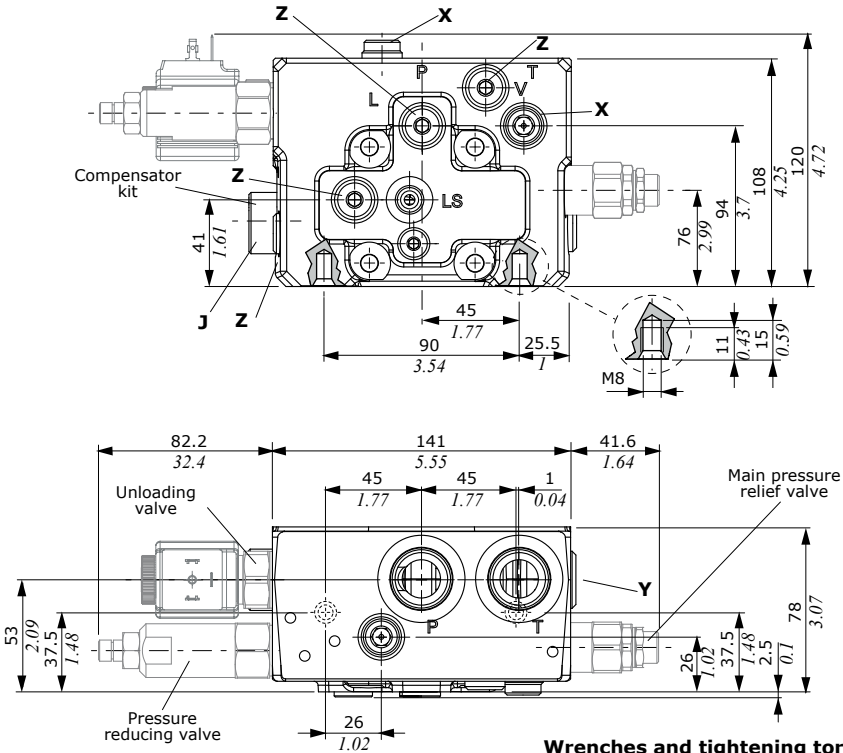
NOTE - for wrenches and tightening torques about valves, please see dedicated pages.

**AP inlet section with priority valve**



Dimensional data and hydraulic circuit

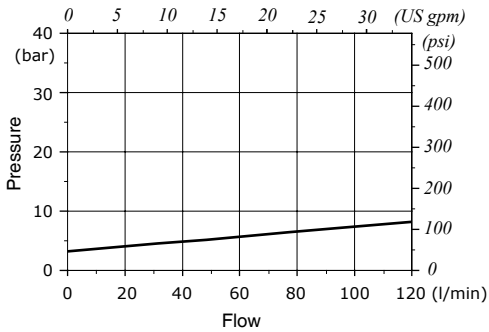
Inlet section configuration with flow unloader option



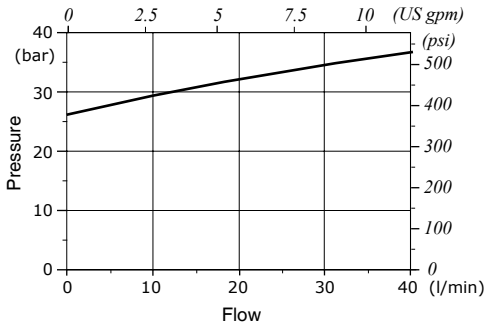
**Wrenches and tightening torques**  
 X = wrench 8 - 42 Nm (31 lbft)  
 Y = allen wrench 8 - 24 Nm (17.7 lbft)  
 Z = allen wrench 6 - 24 Nm (17.7 lbft)  
 J = allen wrench 10 - 42 Nm (31 lbft)

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

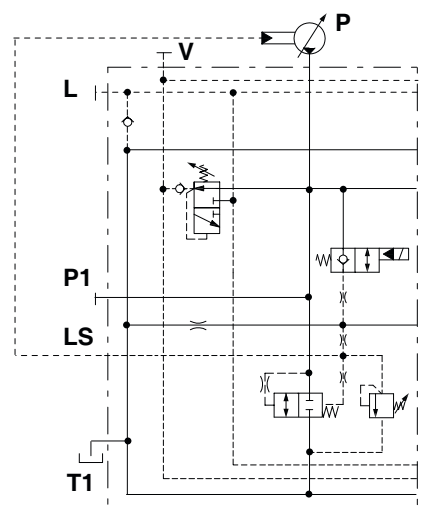
**M compensator kit with unloading pressure drop**



**N compensator kit with unloading pressure drop**



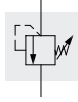
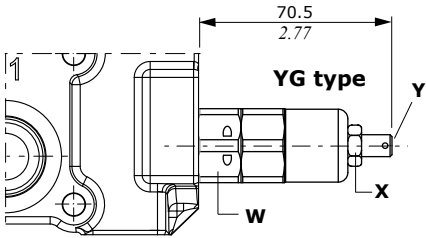
**AN inlet section with closed center**



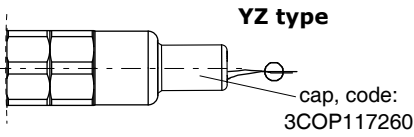
Main pressure relief valves

Y.. type direct operated

Configuration type:

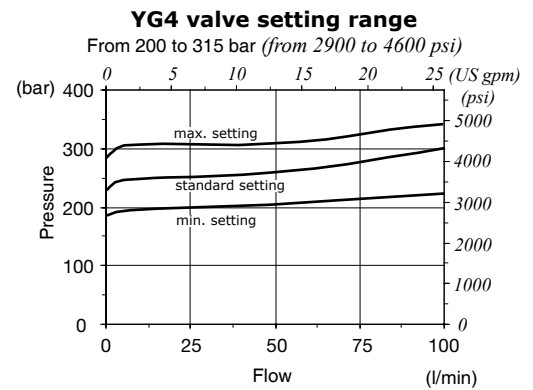
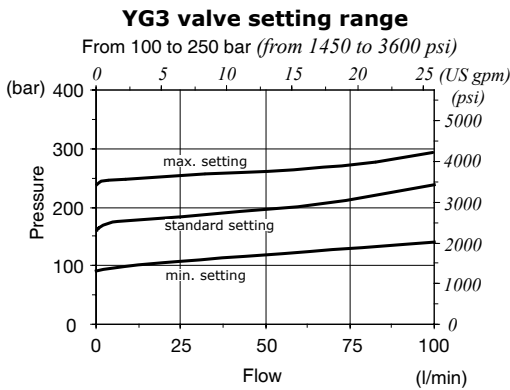
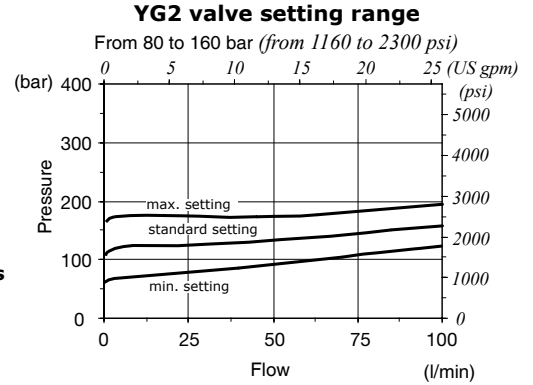


**Legenda**  
**G:** adjustable with screw  
**Z:** valve set and locked with tamper proof cap



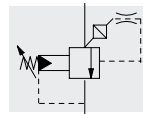
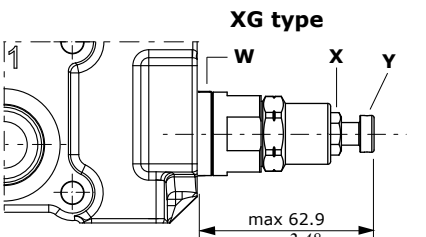
**Wrenches and tightening torques**  
 X = wrench 13 - 24 Nm (17.7 lbft)  
 Y = allen wrench 4  
 W = wrench 27 - 42 Nm (31 lbft)

NOTE - Not for N and M inlet section.

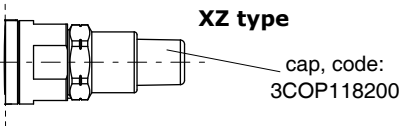


X..A type pilot operated

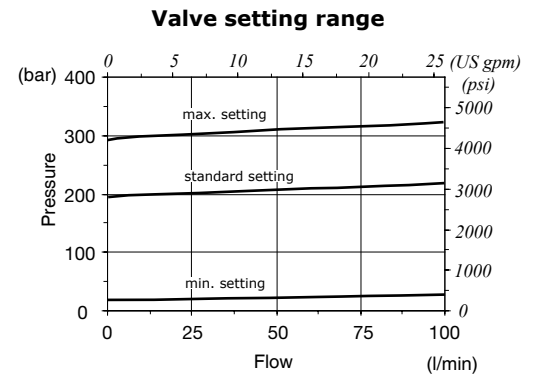
Configuration type:



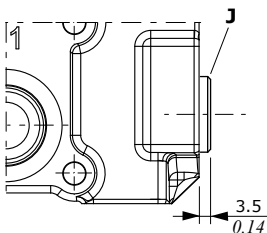
**Legenda**  
**G:** adjustable with screw  
**Z:** valve set, with tamper proof cap



**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

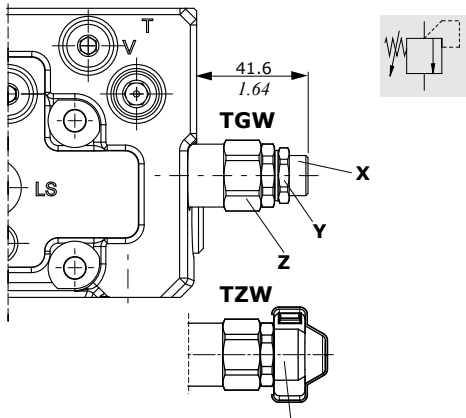


**Wrenches and tightening torques**  
 J = allen wrench 10 - 24 Nm (17.7 lbft)

Main pressure relief valves

T type pilot operated

For AM and AN inlet sections setting types



Legenda

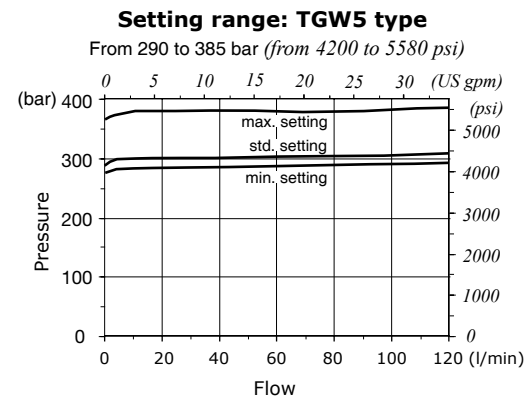
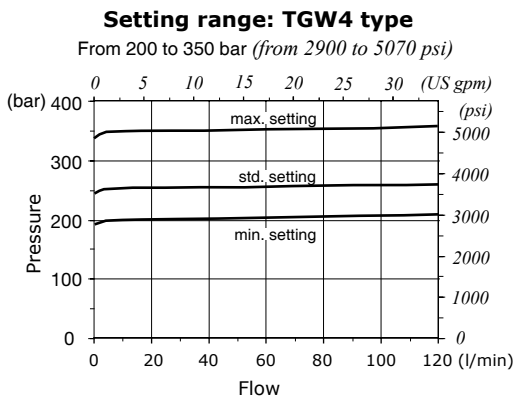
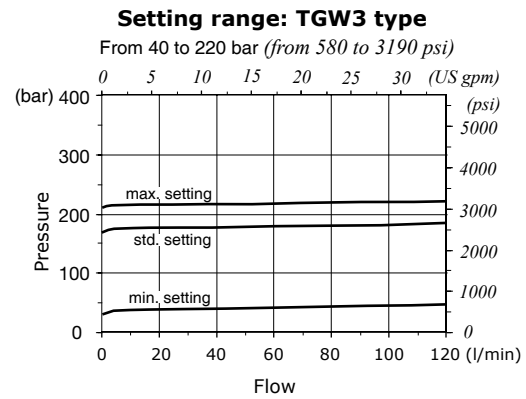
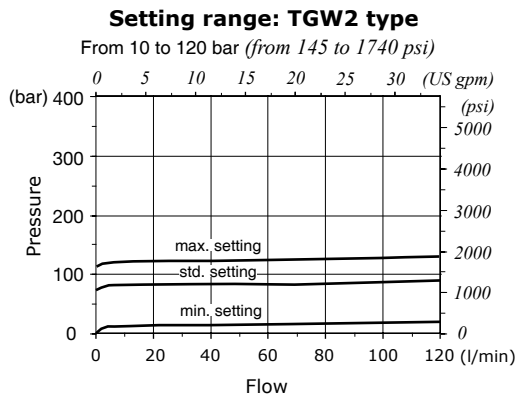
- TGW: free setting
- TZW: valve set, with tamper proof cap

Wrenches and tightening torques

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

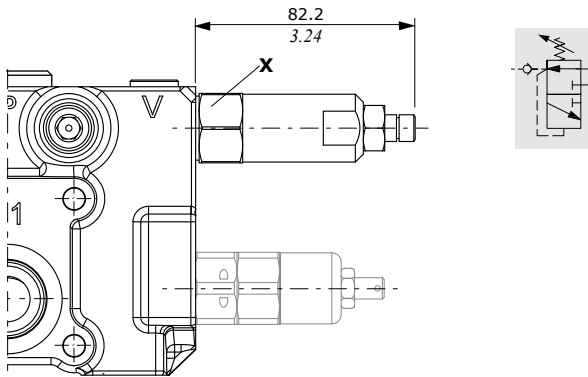
cap, code:  
4COP126301, n.2 pcs  
RAL3003 pigmented

Pressure relief valve setting example on type M inlet section

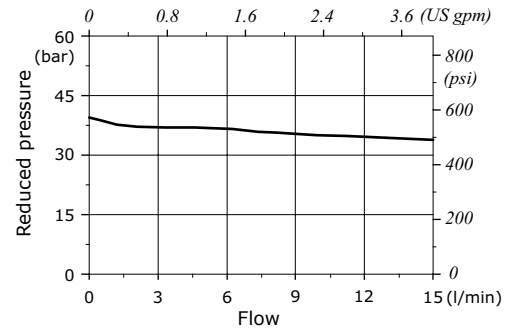


Pressure reducing valve

R(32) type



Pressure reducing valve diagram  
Reduced pressure vs. Flow



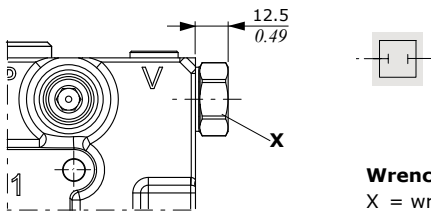
Wrenches and tightening torques

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

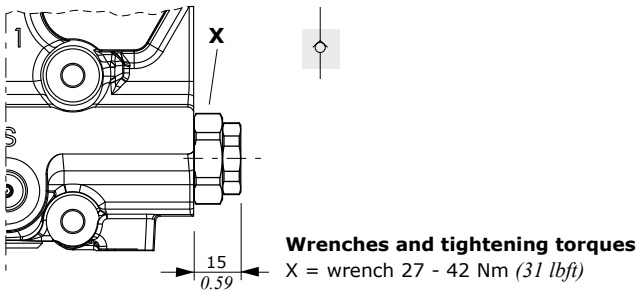


Wrenches and tightening torques

X = wrench 24 - 30 Nm (22 lbft)

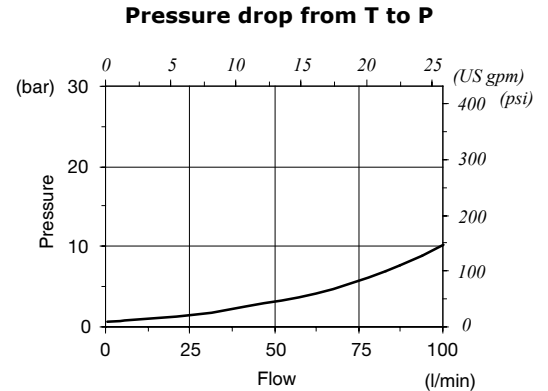
### Inlet valve options

#### F anti-cavitation valve



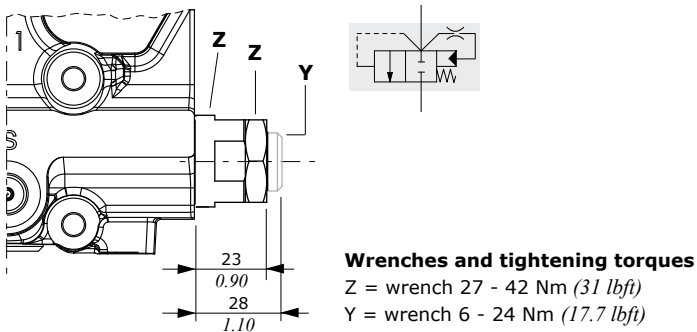
#### Features

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)

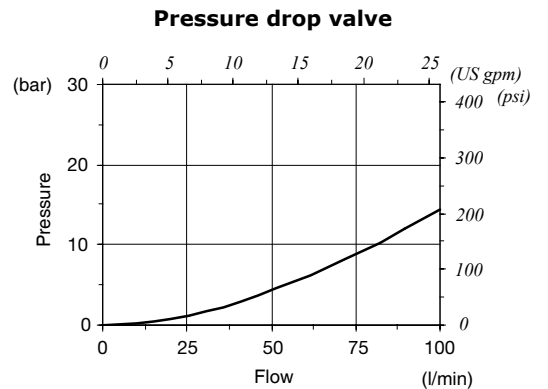


#### Unloading valves

##### Hydraulic operated



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



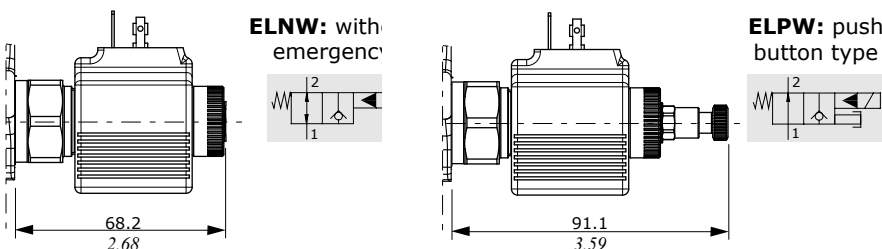
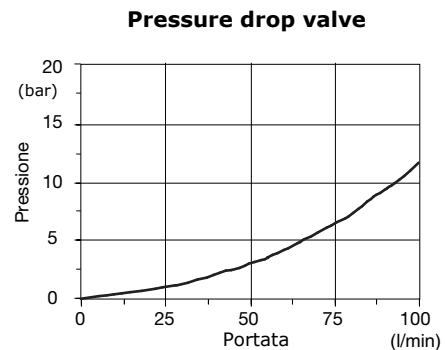
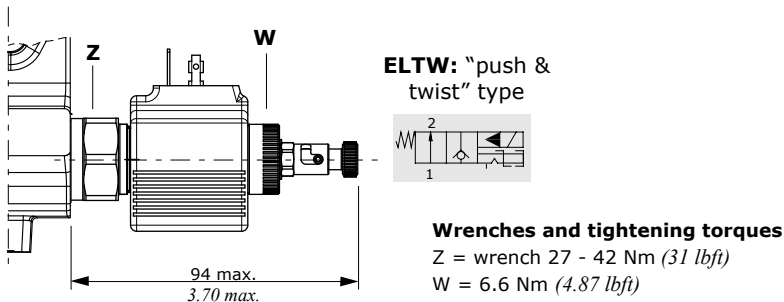
#### Valve L type features

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 only for emergency operation, not for continuative operation.



#### Features

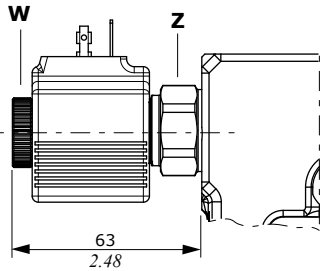
Nominal flow . . . . . : 100 l/min (26.4 US gpm)  
 Max. pressure . . . . . : 315 bar (4600 psi)  
 Internal leakage . . . . . : 1 cm<sup>3</sup>/min @ 100 bar (0.061 in<sup>3</sup>/mm @ 1450 psi)  
 For **BER** coils features and options see page 41

Unloading valves

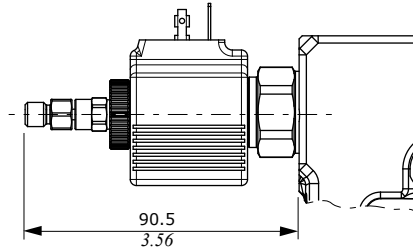
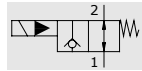
Solenoid operated for M and N inlet sections

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

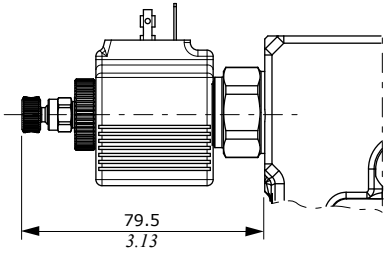
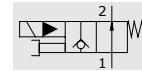
**WARNING:** the manual override option is intended for emergency use, not for continuous duty operation.



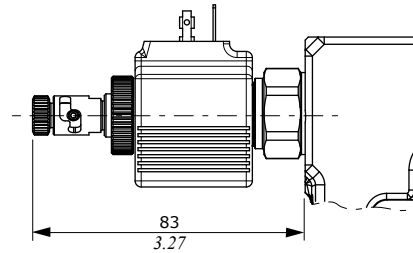
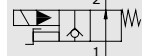
**ESFNW(NC):**  
without emergency



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



**ESFVW(NC):**  
screw type



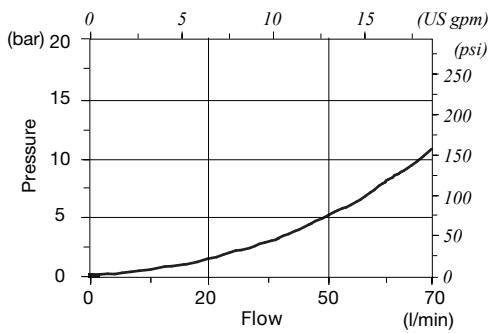
**ESFTW(NC):**  
"pull & twist" type



**Wrenches and tightening torques**

Z = wrench 27 - 42 Nm (31 lbft)  
W = 6.6 Nm (4.87 lbft)

**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 41

## Part ordering codes

Standard: omitted in description      valve setting (bar)

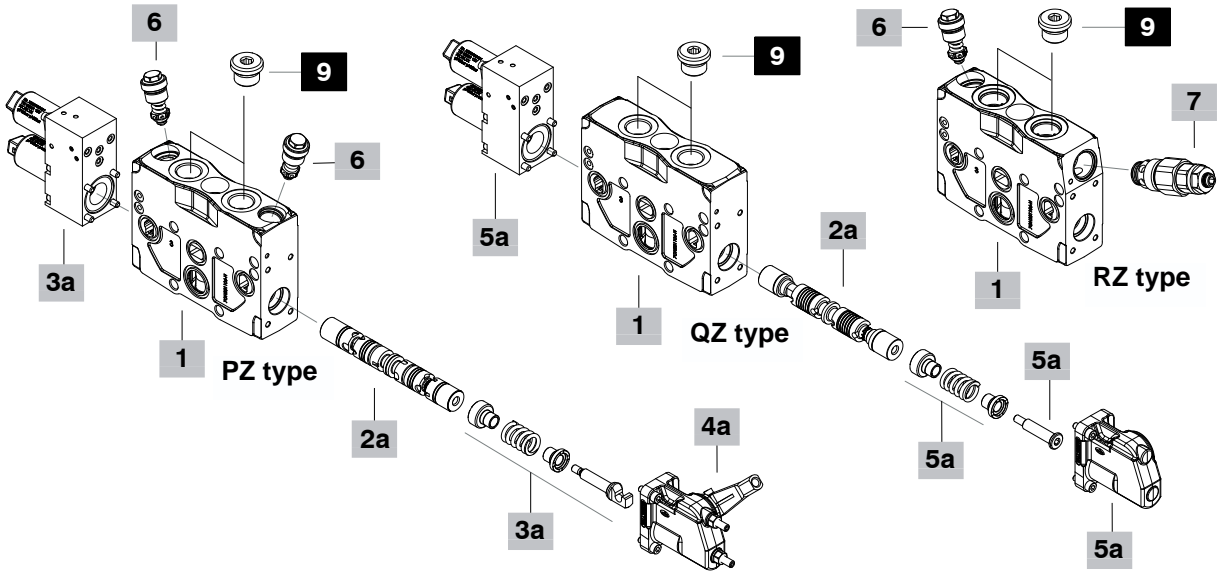
EL SDS140 / PZ - 1EZ 8EZH3 LQF3(20) . U3(220) - .... - 12VDC

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

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

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

1    2a    5a    8    5a



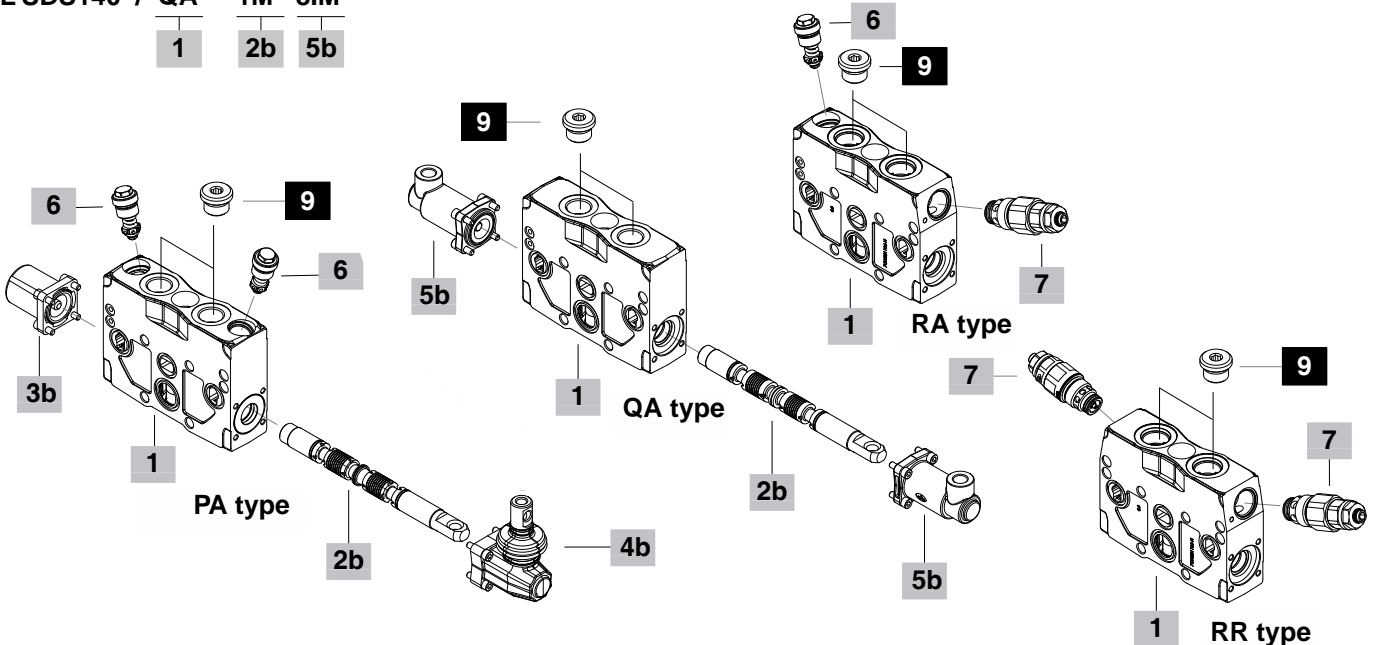
EL SDS140 / PA - 1 8 L . U3 (200) - .... -

1    2    3b    4b    6    8

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

EL SDS140 / QA - 1M 8IM

1    2b    5b





## Part ordering codes

**1 Working section kit \* page 23**

TYPE	CODE	DESCRIPTION
<b>For electrohydraulic controls</b>		
<b>QZ-SAE</b>	5EL1137010	Parallel circuit without port valves arrangement
<b>PZ-SAE</b>	5EL1137005	Parallel circuit arranged for anti-shock valve
<b>RZ-SAE</b>	5EL1137006	As PZ with pilot operated anti-shock and anti-cavitation valve (on B side)
<b>Q5Z</b>	5EL1137210	As QZ type: <b>for 5EZ spool and 13EZHZSLC control</b>
<b>SPZ</b>	5EL13137000	Series-Parallel circuit arranged for antishock valves it requires standard spools, controls and levers
<b>For mechanical controls</b>		
<b>QA-SAE</b>	5EL1137014	Parallel circuit without port valves arrangement
<b>PA-SAE</b>	5EL1137004	Parallel circuit arranged for anti-shock valves
<b>RA-SAE</b>	5EL1137003	As PA arranged for pilot operated anti-shock and anti-cavitation valve (on B side)
<b>RR-SAE</b>	5EL1137015	Parallel circuit arranged with 2 ports for anti-shock and anti-cavitation valves, without pilot lines: <b>must be positioned as last electrohydraulic control section</b>
<b>For proportional hydraulic controls</b>		
<b>QA-SAE-IM</b>	5EL1137014A	Parallel circuit without port valves arrangement
<b>PA-SAE-IM</b>	5EL1137004A	Parallel circuit arranged for anti-shock valves
<b>RA-SAE-IM</b>	5EL1137003A	As PA arranged for pilot operated anti-shock and anti-cavitation valve (on B side)
<b>RR-SAE-IM</b>	5EL1137015A	Parallel circuit arranged with 2 ports for anti-shock and anti-cavitation valves, without pilot lines: <b>must be positioned as the last electrohydraulic control section</b>

**2b Spools page 25**

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>G1/2 plug is required</b>
<b>4</b>	3CU2335100	Single acting on B, 3 positions, A plugged, <b>G1/2 plug is required</b>
<b>4M</b>	3CU2335110	As type 4 with metering suggested for flow rates above to 70 l/min (18.5 US gpm), <b>G1/2 plug is required</b>

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

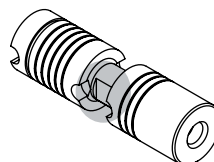
See SD8 catalogue, code D1WWEB05E.

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

See SD8 catalogue, code D1WWEB05E.

**2a Spools page 25**

TYPE	CODE	DESCRIPTION
<b>For electrohydraulic controls</b>		
<b>1EZ</b>	3CU2910004	Double acting, 3 positions, with A and B closed in neutral position
<b>1SEZ</b>	3CU2911000	As type 1, for series circuit, used with <b>8EZHC33</b> special control or <b>8EZ3</b> standard control and <b>LQCS</b> special lever; <b>to be used on standard section with SPZ working section assembled downstream</b>
<b>2SEZ</b>	3CU2927000	As type 2, for series circuit, used with <b>8EZHC33</b> special control or <b>8EZ3</b> standard control and <b>LQCS</b> special lever; <b>to be used on standard section with SPZ working section assembled downstream</b>
<b>1CSG EZ</b>	3CU2910003	As type 1, with fine metering suggested for flow up to 70 l/min (18.5 US gpm)
<b>1MEZ</b>	3CU2910001	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>2MEZ</b>	3CU2925000	Double acting, with A and B open to tank in neutral position, with metering suggested for flow rates above to 70 l/min (18.5 US gpm)
<b>2CSG EZ</b>	3CU2925003	As type 2, with fine metering suggested for flow up to 70 l/min (18.5 US gpm)
<b>5EZ</b>	3CU2943100	Double acting, 4 positions, floating in, <b>Q5Z working section are required</b>
<b>3MEZ/4MEZ</b>	3CU2925001	Single acting on A or B (according to the orientation*), with metering suggested for flow rates above to 70 l/min (18.5 US gpm), <b>G1/2 plug is required</b>



(\* ) When the "spool key" is oriented towards B side, the spool is single acting on B (4MEZ), when the "spool key" is oriented towards A side the spool is single acting on A (3MEZ).

**3a One-side electrohydraulic control page 29****Combine to "B" side options**

TYPE	CODE	DESCRIPTION
<b>8EZHZ(20)-12VDC</b>	5IDR601302	With AMP connector, horizontal configuration
<b>8EZHZ(20)-24VDC</b>	5IDR601303	With AMP connector, horizontal configuration
<b>8EZHZ34(20)-12VDC</b>	5IDR601308	With Deutsch connector, horizontal configuration
<b>8EZHZ34(20)-24VDC</b>	5IDR601309	With Deutsch connector, horizontal configuration
<b>8EZ3(20)-12VDC</b>	5IDR601304	With AMP connector, vertical configuration
<b>8EZ3(20)-24VDC</b>	5IDR601305	With AMP connector, vertical configuration
<b>8EZ34(20)-12VDC</b>	5IDR601306	With Deutsch connector, vertical configuration
<b>8EZ34(20)-24VDC</b>	5IDR601307	With Deutsch connector, vertical configuration

(Continue. See the next page)

NOTE (\*) - Codes are referred to **UN-UNF** thread

Part ordering codes

**3a One-side electrohydraulic control page 29**

**Combine to "B" side options**

TYPE	CODE	DESCRIPTION
<b>8EZHC3-12VDC</b>	5IDR601343	With AMP connector horizontal configuration, for <b>1SEZ, 2SEZ</b> spools type and <b>LQCS</b> lever type
<b>8EZHC3-24VDC</b>	5IDR601346	With AMP connector horizontal configuration, for <b>1SEZ, 2SEZ</b> spools type and <b>LQCS</b> lever type

With spool position sensor: **vertical configuration only**

<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	
Different spring setting are available: 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>LQCS</b>	5LEV140702	Lever box for control type <b>8EZ3, 8EZHC3</b> and for spools type <b>1SEZ, 2SEZ</b>
<b>LQSL</b>	5COP204100	Without lever

**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, horizontal configuration
<b>8EZH3SLCQ-24VDC</b>	5IDR601319	With AMP connector, horizontal configuration
<b>8EZH34SLCQ-12VDC</b>	5IDR601320	With Deutsch connector, horizontal configuration
<b>8EZH34SLCQ-24VDC</b>	5IDR601321	With Deutsch connector, horizontal configuration
<b>8EZ3SLCQ-12VDC</b>	5IDR601322	With AMP connector, vertical configuration
<b>8EZ3SLCQ-24VDC</b>	5IDR601323	With AMP connector, vertical configuration
<b>8EZ34SLCQ-12VDC</b>	5IDR601324	With Deutsch connector, vertical configuration
<b>8EZ34SLCQ-24VDC</b>	5IDR601325	With Deutsch connector, vertical configuration
<b>13EZH3SLC-12VDC</b>	5IDR611302	With AMP connector, horizontal configuration; <b>5EZ floating spool and Q5Z working section are required</b>
<b>13EZH3SLC-24VDC</b>	5IDR611303	With AMP connector, horizontal configuration; <b>5EZ floating spool and Q5Z working section are required</b>

**5b Complete controls \***

TYPE	CODE	DESCRIPTION
<b>8IM</b>	5IDR208700	Proportional hydraulic control
<b>8IMF3</b>	5IDR208730	Proportional hydraulic control with screw for spool stroke adjusting

See SD8 catalogue, code D1WWEB05A.

**6 Port valves page 29**

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

**Fixed setting antishock and anticavitation valves: setting is referred to 10 l/min (2.6 US gpm)**

TYPE: <b>U 100</b>	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 antishock and anticavitation 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).

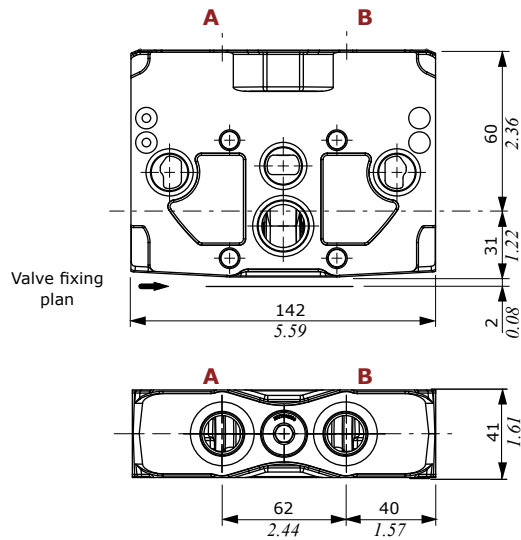
**9 Port plugs\***

CODE	DESCRIPTION
3XTAP822150	SAE 8 plug for single acting spool

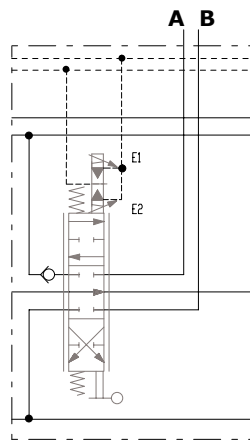
NOTE (\*) – Codes are referred to **UN-UNF** thread.

Dimensional data and hydraulic circuit

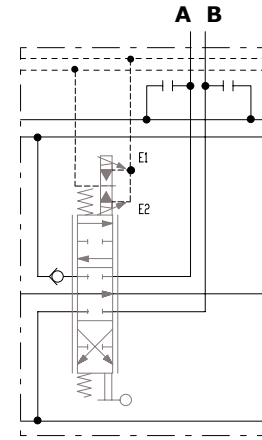
**Q type**  
(Dimensions are the same for QZ and QA)



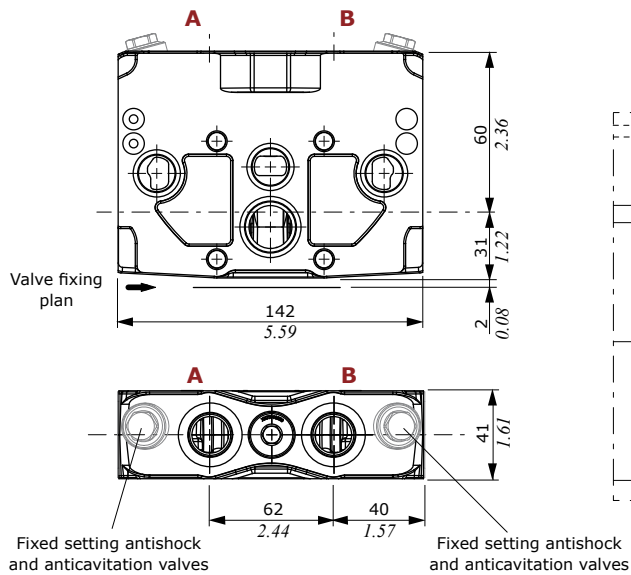
**QZ type**



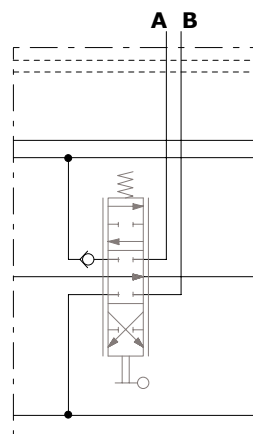
**PZ type**



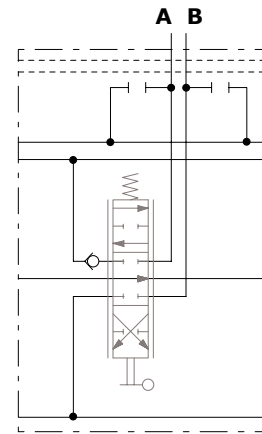
**P type**  
(Dimensions are the same for PZ and PA)



**QA type**

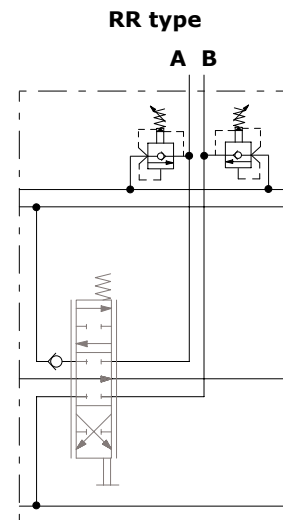
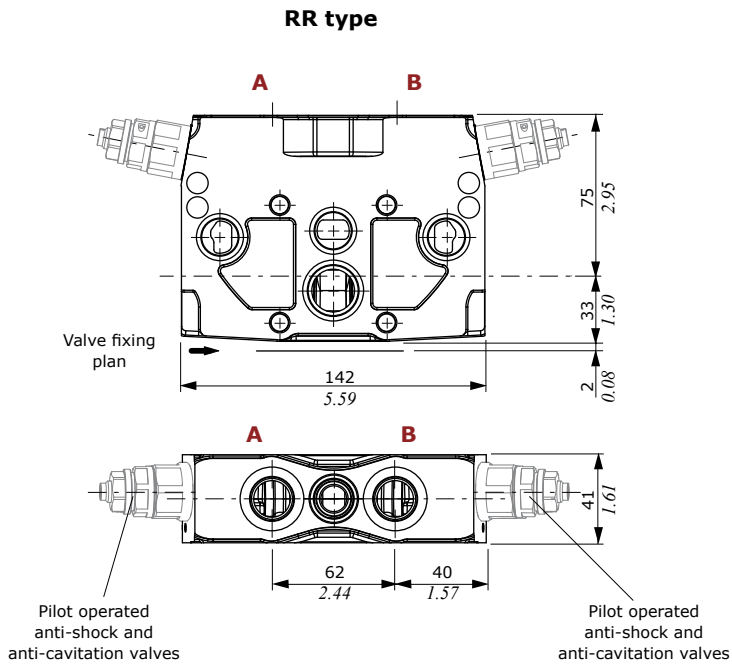
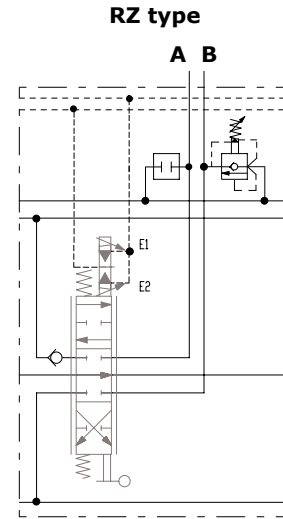
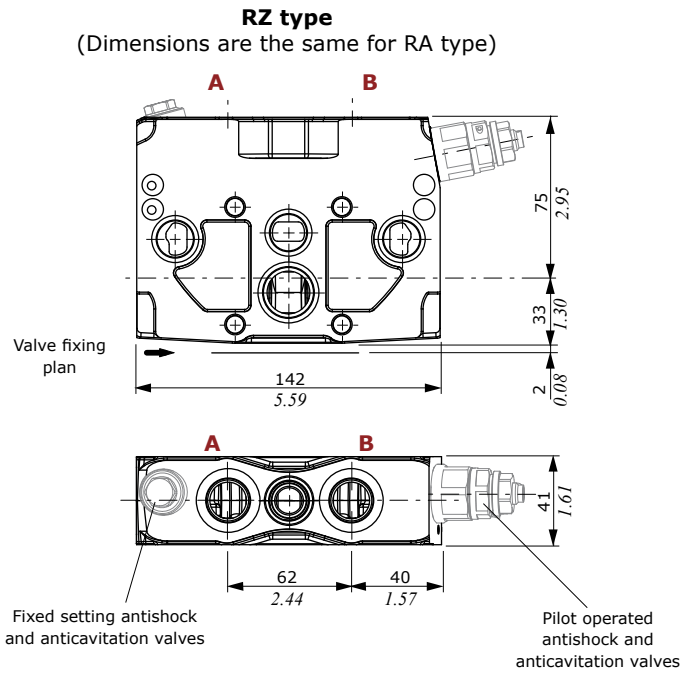


**PA type**



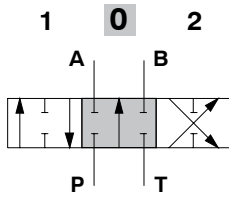
**Dimensional data and hydraulic circuit**

Without pilot lines; must be positioned after all electrohydraulic elements.



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

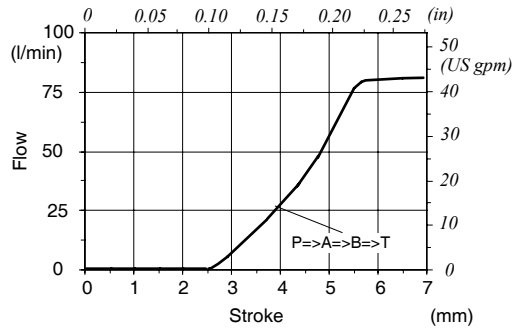
Double acting, 3 positions, with A and B closed in neutral position



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

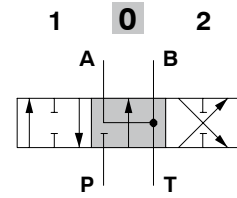
**1 type spool metering**

$Q_{in} = 80 \text{ l/min (21 US gpm)}$   
 $P_{(on\ ports)} = 100\text{bar (1450 psi)}$



**2 (2CSG/2CSGEZ/2MEZ) type spool**

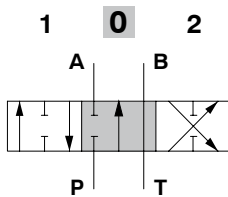
Double acting, 3 positions, with A and B open to tank in neutral position



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

**1B type spool**

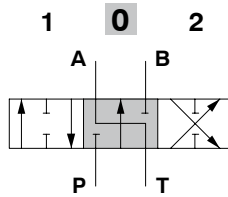
Double acting, 3 positions, with B open to tank in neutral position



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

**1A type spool**

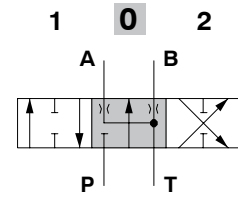
Double acting, 3 positions, with A open to tank in neutral position



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

**2H type spool**

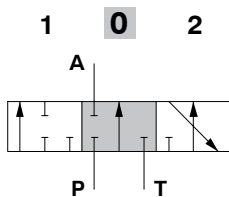
Double acting, 3 positions, with A and B partially open to tank in neutral position



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

**3 (3MEZ) type spool**

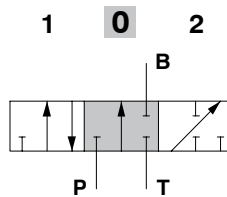
Single acting on A, 3 positions, B plugged, needs G1/2 plug



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

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

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

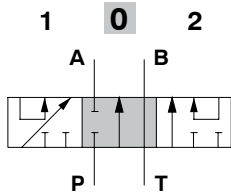


**Spool stroke**  
position 1: + 7 mm (+ 0.28 in)  
position 2: - 7 mm (- 0.28 in)

Spools

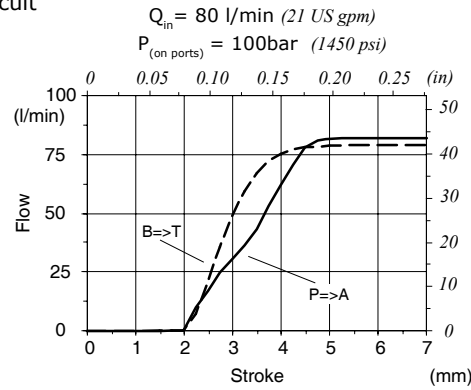
**1SEZ type spool**

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

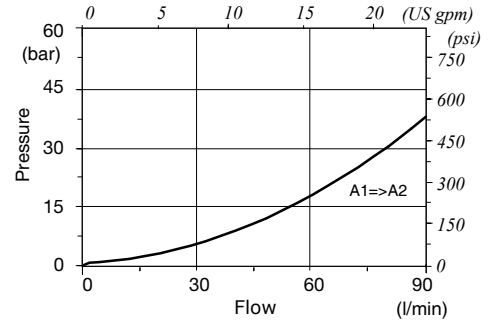


**Spool stroke**  
 position 1: + 7 mm (+ 0.28 in)  
 position 2: - 7 mm (- 0.28 in)

**1SEZ type spool metering**

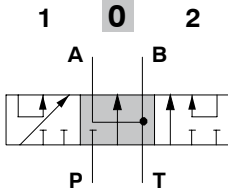


**Pressure drop on series connection**



**2SEZ type spool**

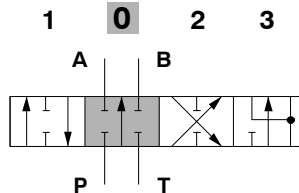
Double acting, 3 positions, with A and B connected to tank in neutral position, for series circuit



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

**5EZ type spool**

Double acting, with A and B closed in neutral position, 4 positions, floating in position 3



**Spool stroke**  
 position 1: + 7 mm (+ 0.28 in)  
 position 2: - 7 mm (- 0.28 in)  
 position 3: - 12 mm (+ 0.47 in)

## Electrohydraulic controls

## Performance data

Following specifications are measured with:

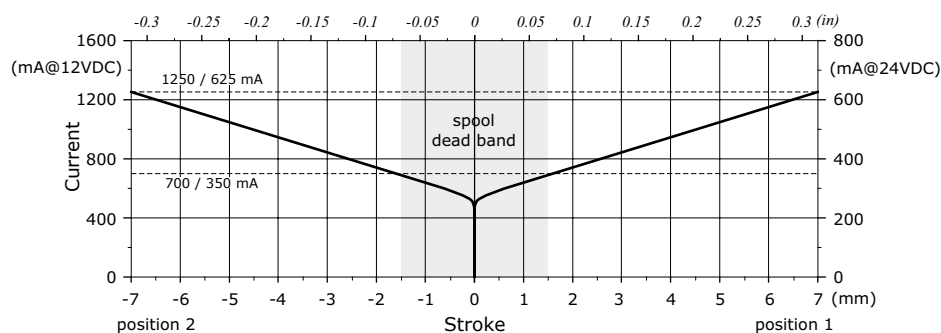
- mineral oil of 46 mm<sup>2</sup>/s (46 cSt) viscosity at 40°C (104°F) temperature.
- standard spools, connecting P⇒A⇒B⇒T ports without flow multiplication
- 12 VDC and 24 VDC nominal voltage with tolerance ± 10%.

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

Specifications		
Electric specifications	8EZ3	
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
Dither frequency	low frequency	150 Hz
	high frequency	180 Hz - 200 mA
Insertion	100%	
Coil insulation	Class H (180°C - 356°F)	
Connector type	AMP JPT - Deutsch DT	
Weather protection (connector)	IP65 (type JPT) - IP69K (type DT)	
Hydraulic specifications		
Max. pressure	50 bar (725 psi)	
Max. back pressure	5 bar (72.5 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, please see "Appendix A" on page 42.

8EZ3 type: Stroke vs. Current diagram



### Electrohydraulic controls

#### Spool position sensor

The sensor can be ordered exclusively through the EZ type electrohydraulic controls; please see page 22 for available control list.

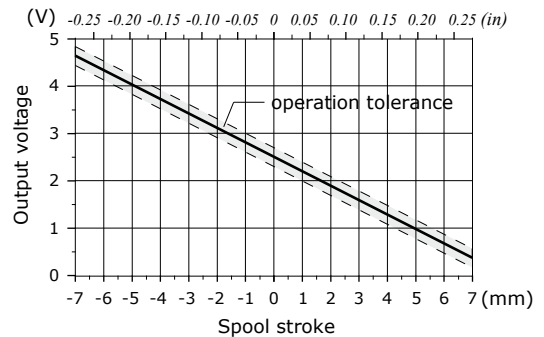
#### SPSL sensor

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

##### Working conditions

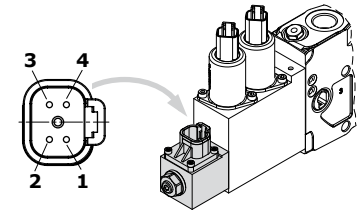
Voltage supply	5 VDC
Current absorption	< 10 mA (no load)
Mechanical life	3x10 <sup>6</sup>
Connector type	DT04-4P Deutsch
Weather protection	IP67 / IP69K
Working temperature	from -40°C to 105°C (from -40°F to 221°F)
Working pressure	350 bar (5100 psi)
Max. electrical stroke	±10 mm (±0.39 in)
Max. mechanical 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



Deutsch DT06-4S mating connector, code 5CON140072

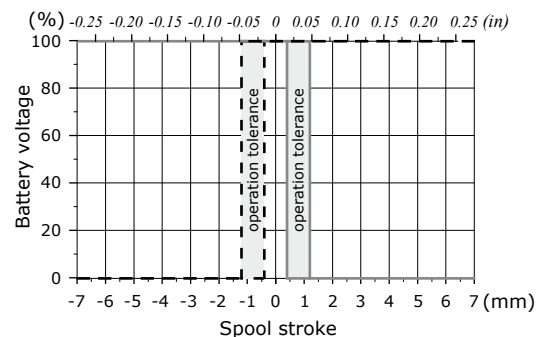
#### SPSD sensor

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

##### Working conditions

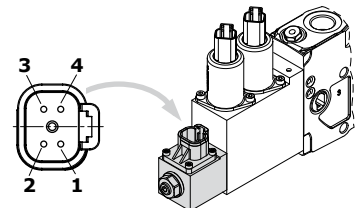
Voltage supply	from 9 to 32 VDC
Current absorption	< 10 mA (no load)
Mechanical life	3x10 <sup>6</sup>
Connector type	DT04-4P Deutsch
Weather protection	IP67 / IP69K
Working temperature	from -40°C to 105°C (from -40°F to 221°F)
Working pressure	350 bar (5100 psi)
Max. electrical stroke	±10 mm (±0.39 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

##### SPSP 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

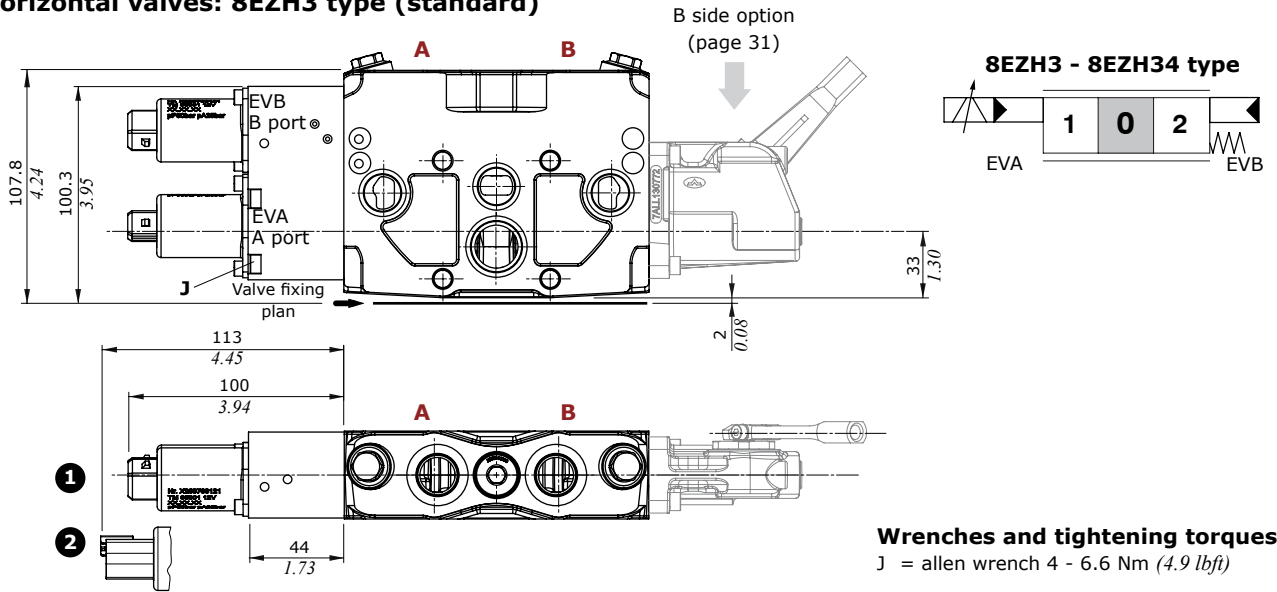


One-side electrohydraulic control

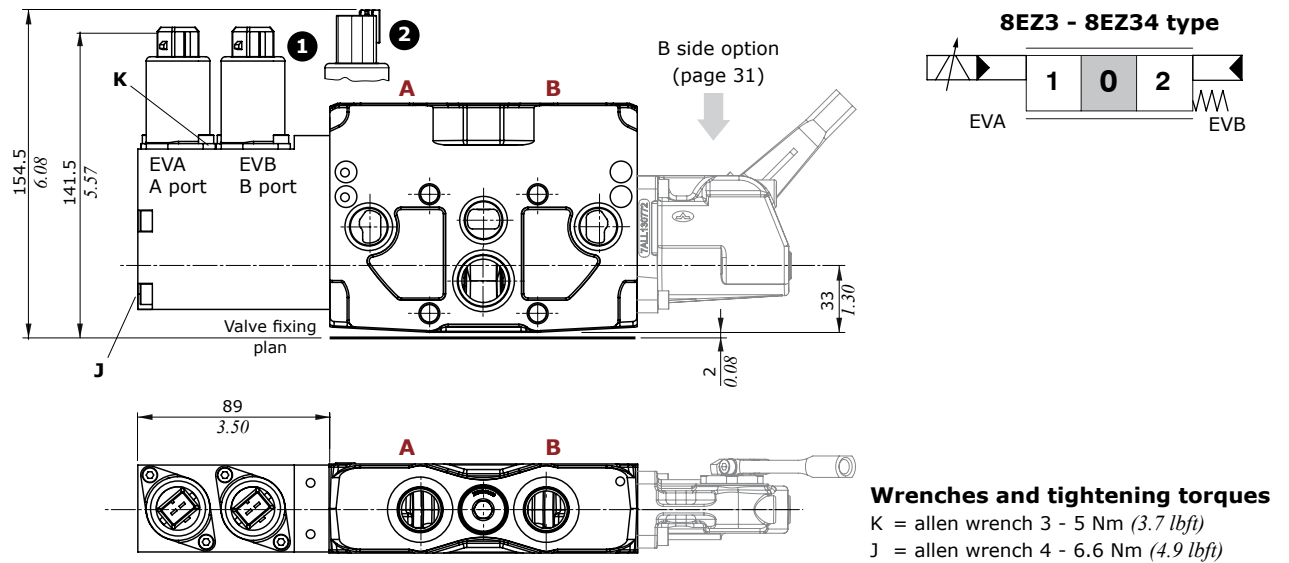
Control type

- 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 (standard)



With vertical valves: 8EZ3 type



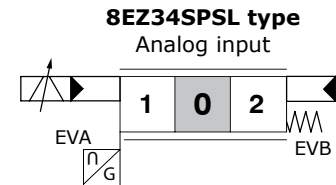
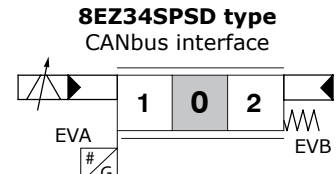
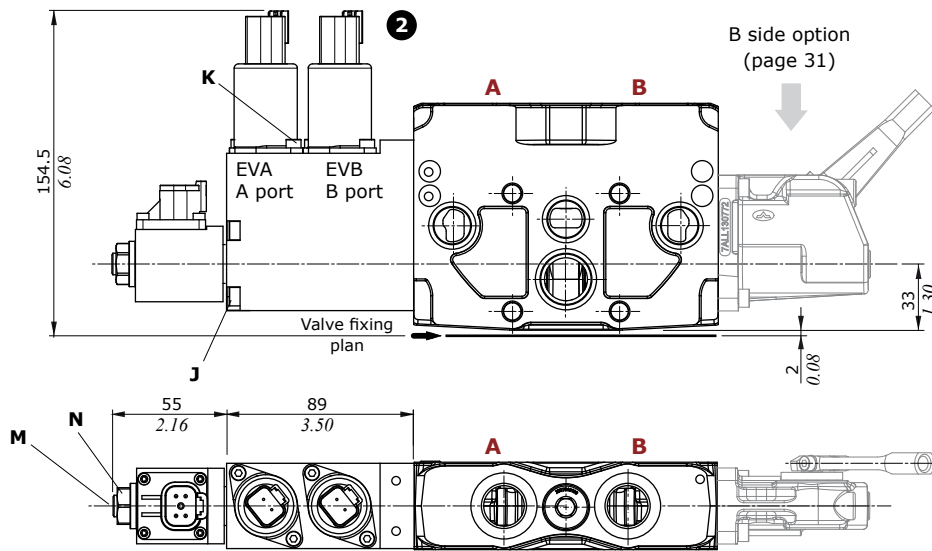
Electrohydraulic controls

One-side electrohydraulic control

Control type

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

With spool position sensor: 8EZ34SPSD type

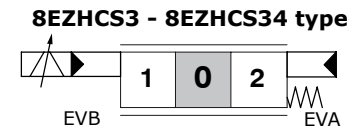
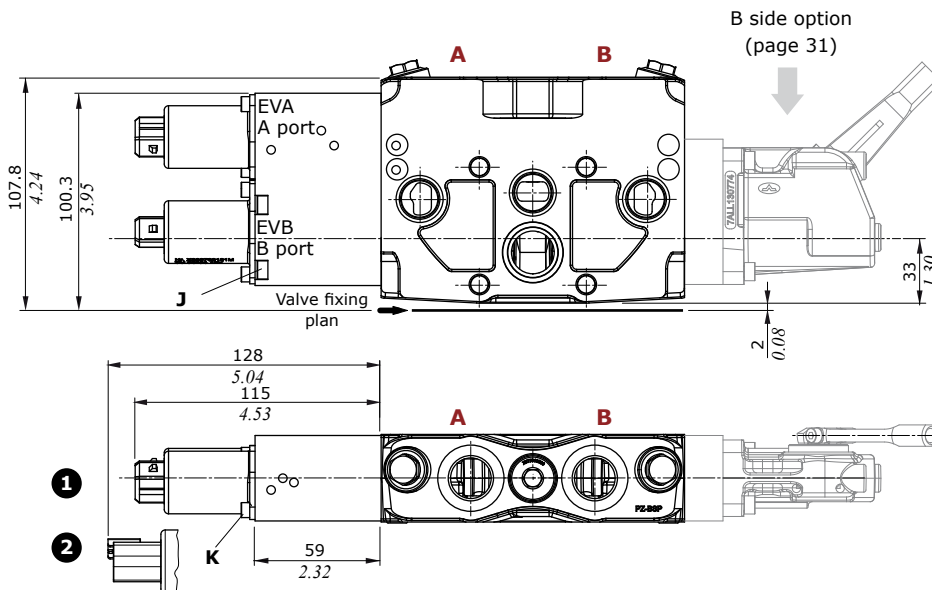


**Wrenches and tightening torques**

- K = allen wrench 3 - 5 Nm (3.7 lbf<sub>t</sub>)
- J = allen wrench 4 - 6.6 Nm (4.9 lbf<sub>t</sub>)
- M = wrench 4 - 9.8 Nm (7.2 lbf<sub>t</sub>)
- N = wrench 17 - 9.8 Nm (7.2 lbf<sub>t</sub>)

For series circuit: 8EZHC3 type

For using with 1SEZ, 2SEZ spools type and LQCS lever type.



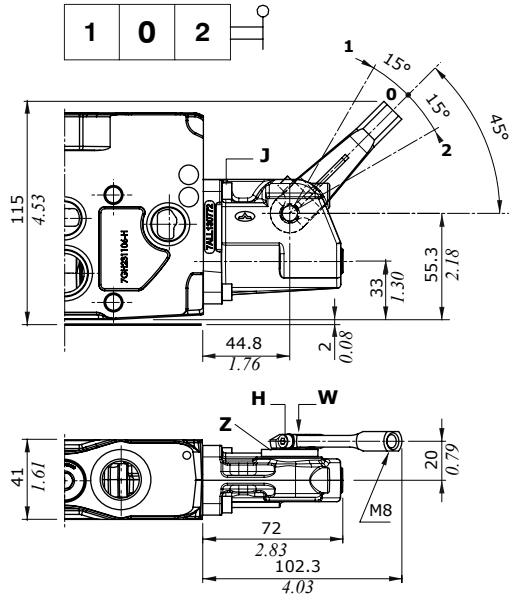
**Wrenches and tightening torques**

- K = allen wrench 3 - 5 Nm (3.7 lbf<sub>t</sub>)
- J = allen wrench 4 - 6.6 Nm (4.9 lbf<sub>t</sub>)

**"B" side options**

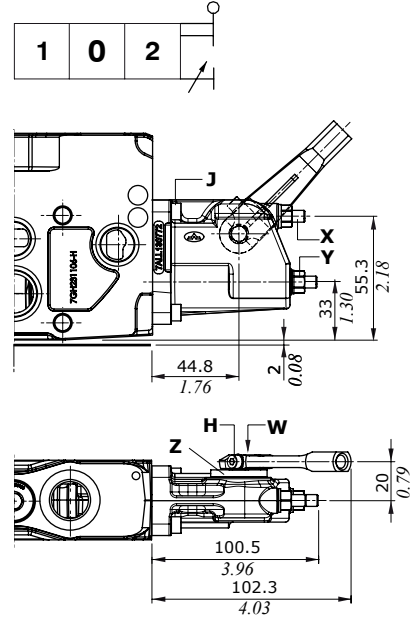
These options are available for one-side electrohydraulic controls only.

**LQ type**



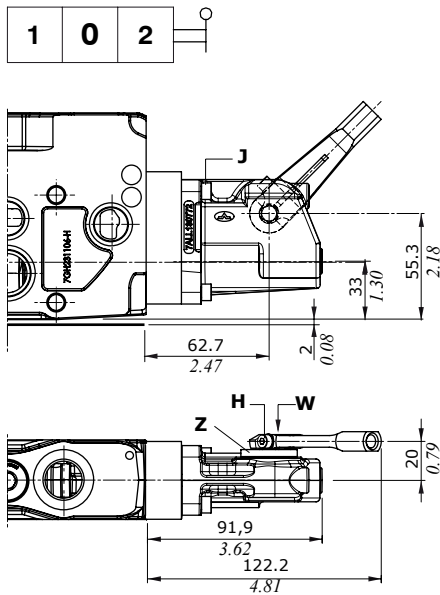
**LQF3 type**

Spool stroke limiter on ports A and B



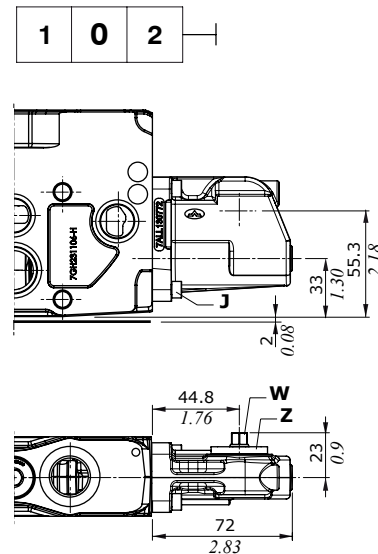
**LQCS type**

For using with 1SEZ, 2SEZ spools type and 8EZHC3 control type



**LQSL type**

Without lever



**Wrenches and tightening torques**

- H = allen wrench 3 - 6.6 Nm (4.9 lbf<sup>t</sup>)
- J = allen wrench 4 - 6.6 Nm (4.9 lbf<sup>t</sup>)
- X = allen wrench 3
- Y = wrench 10 - 9.8 Nm (7.2 lbf<sup>t</sup>)
- Z = 24 Nm (17.7 lbf<sup>t</sup>)
- W = wrench 8

Electrohydraulic controls

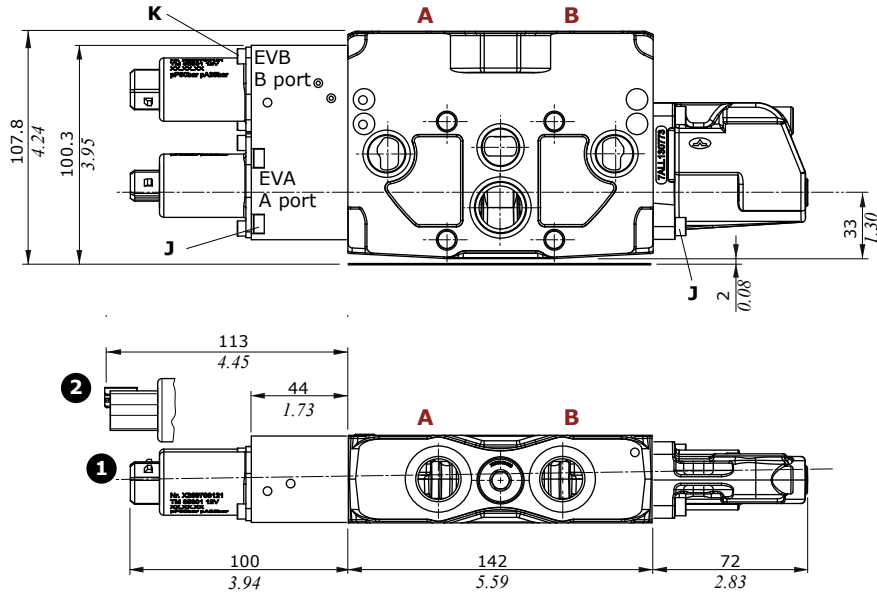
Complete one-side electrohydraulic control

Controls are comprehensive of endcap on B side.

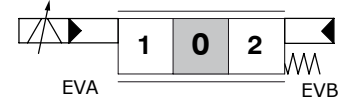
Control type

- 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: 8EZH3SLCQ type (standard)



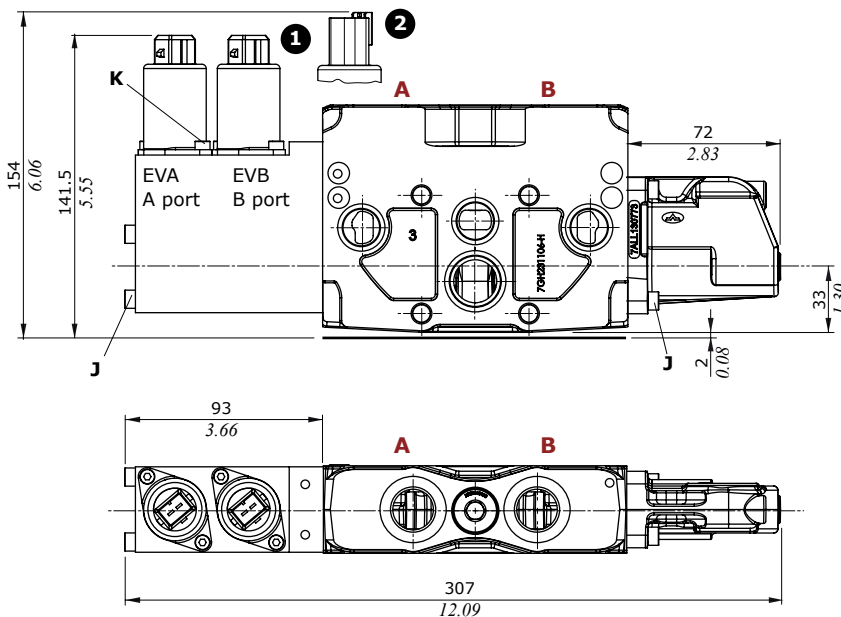
8EZH3SLCQ - 8EZH34SLCQ type



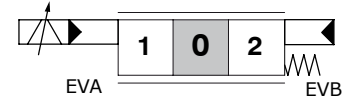
Wrenches and tightening torques

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

With vertical valves: 8EZ3SLCQ type



8EZ3SLCQ - 8EZ34SLCQ type



Wrenches and tightening torques

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

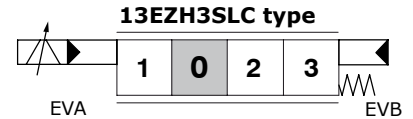
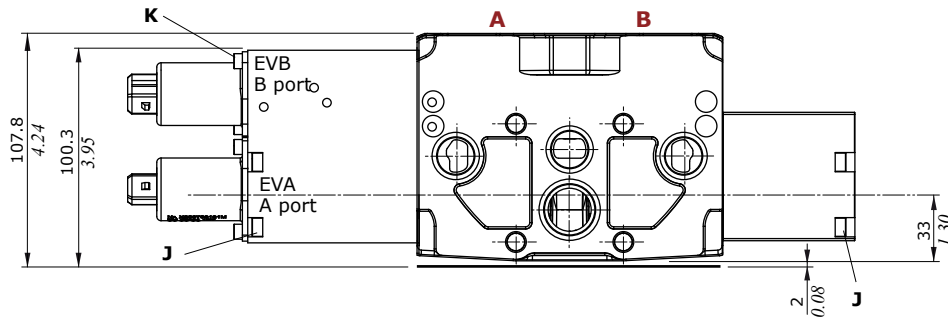
**Complete one-side electrohydraulic control**

Controls are comprehensive of endcap on B side.

**Control type**

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

**For floating circuit: 13EZH3SLC type**



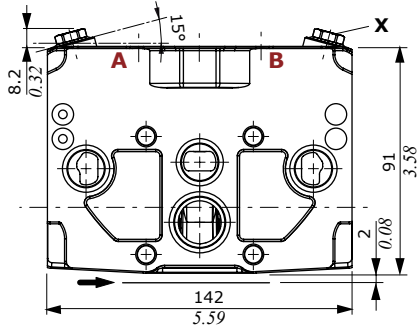
**Wrenches and tightening torques**

- K = allen wrench 3 - 5 Nm (3.7 lbf<sup>t</sup>)
- J = allen wrench 4 - 6.6 Nm (4.9 lbf<sup>t</sup>)

Port valves

Anti-shock and anti-cavitation valves

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)

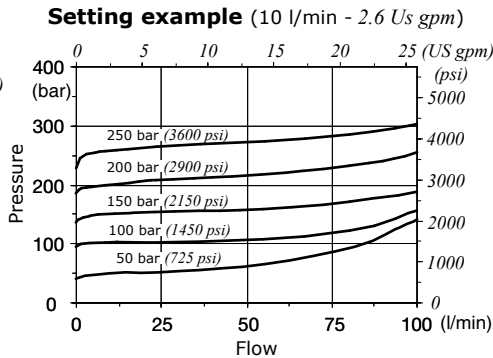
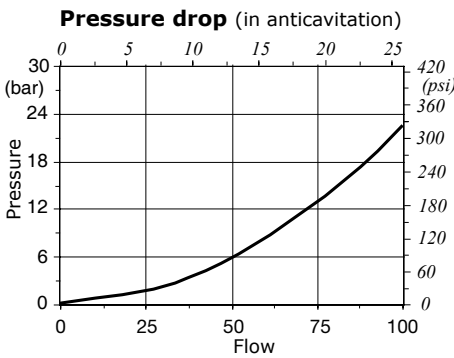
U type



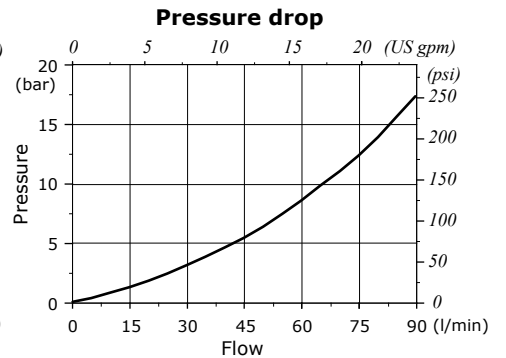
C type



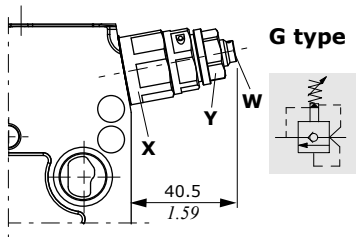
U type: antishock valves with prefill



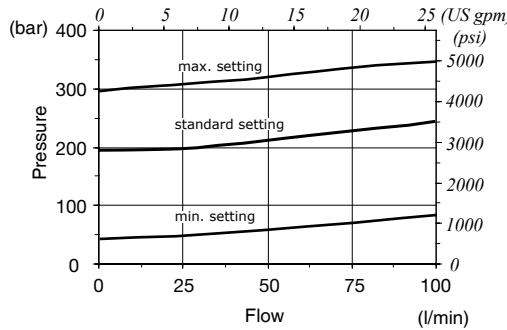
C type: anticavitation valves



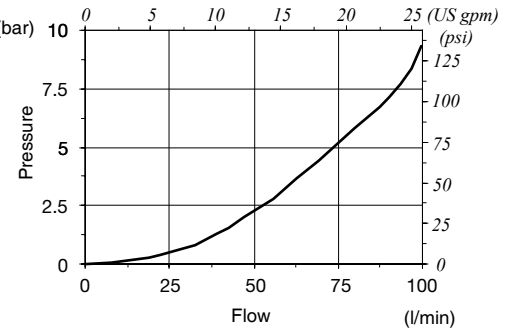
Pilot operated anti-shock and anti-cavitation valve UXW type



Range setting



Pressure drop in anticavitation



Legenda

G: adjustable with screw

Wrenches and tightening torques

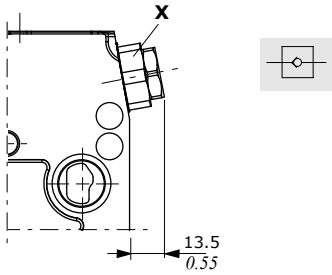
X = wrench 24 - 42 Nm (31 lbf)

Y = wrench 17 - 24 Nm (17.7 lbf)

W = wrench 5

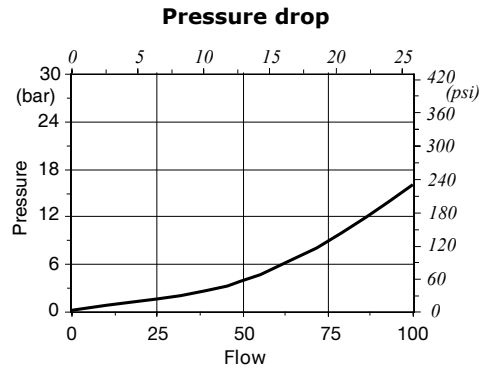
NOTE - It can not be used with mechanical controls with lever.

Anti-cavitation valve C type

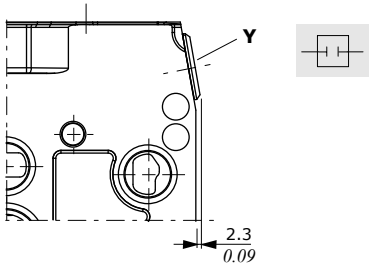


**Wrenches and tightening torques**

X = wrench 24 - 42 Nm (31 lbft)



**Valve blanking plug**



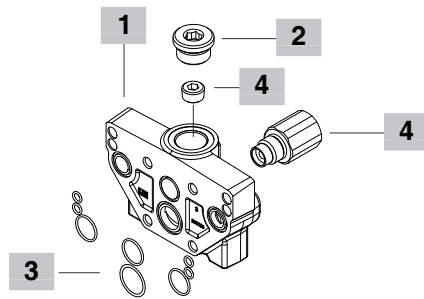
**Wrenches and tightening torques**

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

### Part 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: **for external pilot circuit**
- RVC** With back pressure valve: **for electrohydraulic controls with internal pilot**
- RVE** With back pressure valve, carry-over sleeve and upper outlet: **for electrohydraulic controls with internal pilot**
- RF** With side and upper ports plugged for N, DT type inlet section and for M type inlet section, **for external pilot circuit**
- RFC** As RF with tapered plug with metering hole for M type inlet sections, **for electrohydraulic controls with internal pilot**
- RDC** As RD with tapered plug with metering hole for M type inlet section, **for electrohydraulic controls with internal pilot**



#### 1 Outlet section \*

CODE	DESCRIPTION
3FIA213700	Outlet section body

#### 2 Plug \*

CODE	DESCRIPTION
3XTAP832200	SAE 12 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
XGIU536711	Junction for carry-over (RE)
X019630007(*)	VRC back pressure valve for RVC configuration
X019730007(*)	VRE back pressure valve for RVE configuration
3VT2730100	FC5 plug with metering hole for RFC and RDC

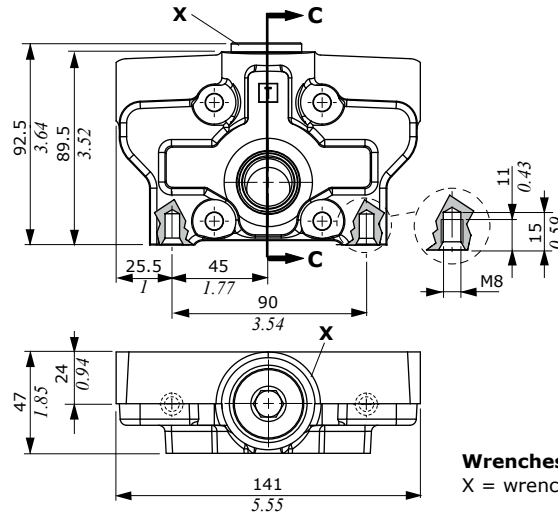
#### 5 Section threading

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

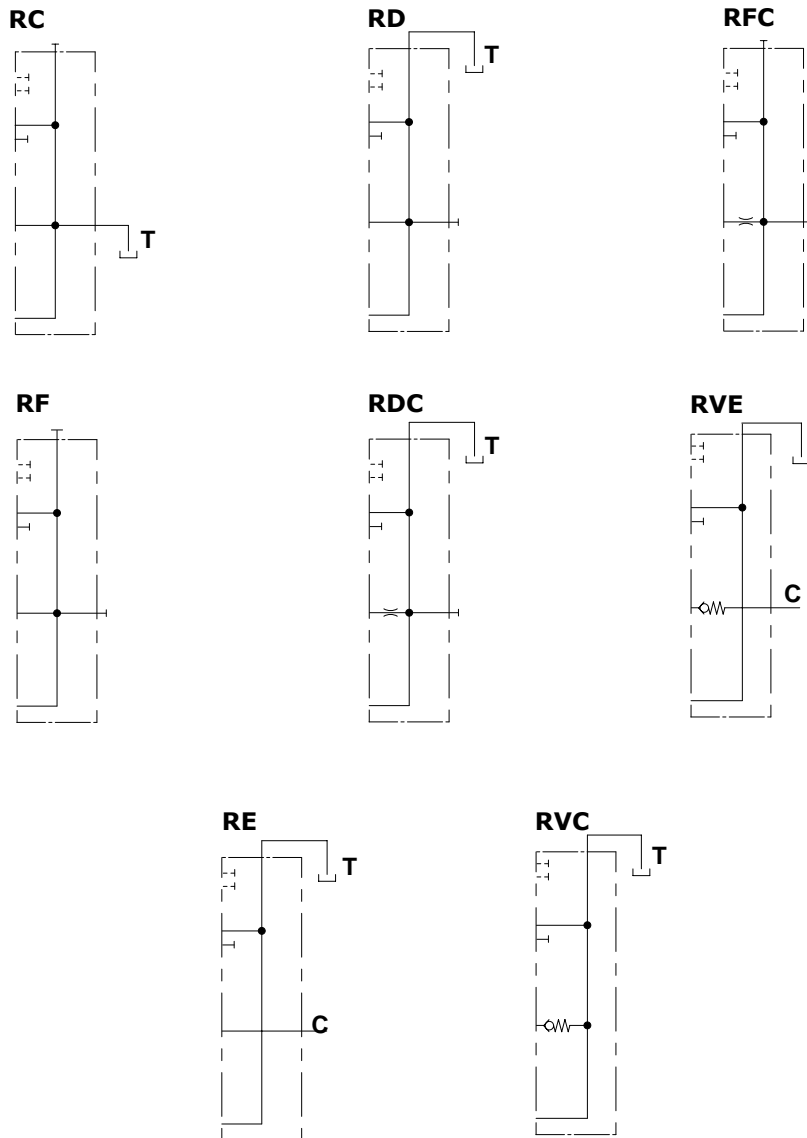
NOTE (\*) - Codes are referred to **UN-UNF** thread.



Dimensional data and hydraulic circuit



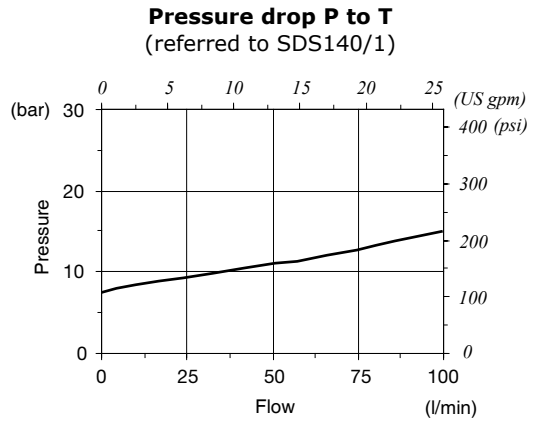
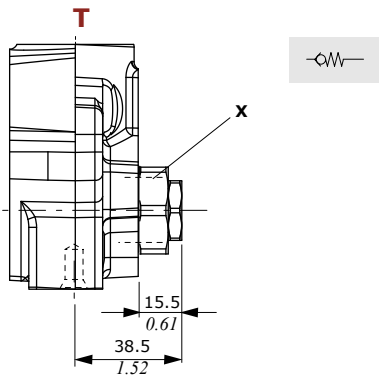
**Wrenches and tightening torques**  
 X = wrench 12 - 42 Nm (31 lbft)



Circuit option

VRC back pressure valve

The VRC valve is assembled on flow through passage of outlet cover. It's used when the directional valve is configured with electrohydraulic controls and it provides the necessary pilot pressure.

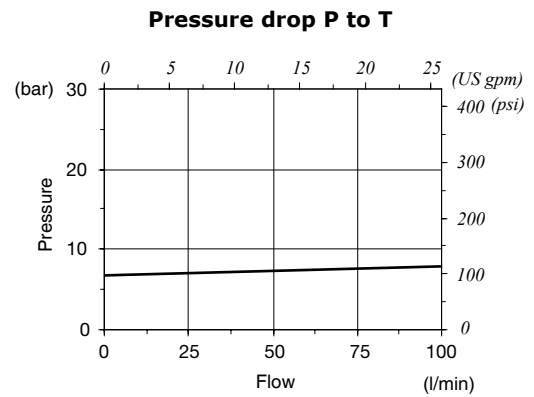
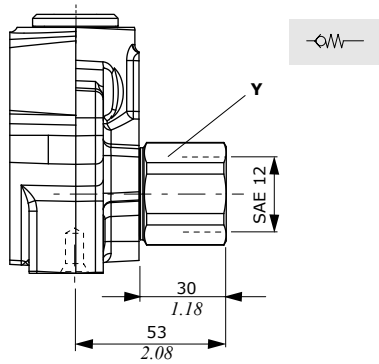


Wrenches and tightening torques

X = wrench 32 - 42 Nm (31 lbf)

VRE back pressure valve

It's assembled and used as VRC valve type, with carry-over port.



Wrenches and tightening torques

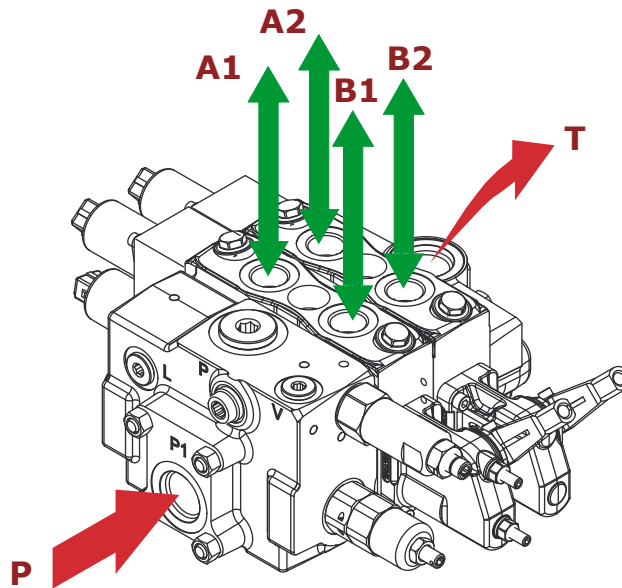
Y = wrench 36 - 42 Nm (31 lbf)

## Installation and maintenance

The SDS140 valves are 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 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 washdown directly on the valve;
- prior to painting, ensure plastic port plugs are tightly in place.



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

THREAD TYPE	P port	A, B ports	T, C ports	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 – This torque is recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish. The manufacturer has to be consulted.

Coils

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	4SLE001000A	-	-	-	-	-	
	12 VDC	4SLE001200A 4SLE001217A <sup>(3)</sup>	4SLE001201A <sup>(5)</sup>	4SLE001209A <sup>(3-4)</sup>	4SLE001203A <sup>(4)</sup>	4SLE001210A <sup>(2)</sup>	4SLE001214A <sup>(2)</sup>	4SLE001207A
			4SLE001202A <sup>(5)</sup>	4SLE001216A <sup>(3-5)</sup>	4SLE001211A <sup>(3-4)</sup>			
			4SLE001216A <sup>(3-5)</sup>	4SLE001206A <sup>(2)</sup>				
			4SLE001400A <sup>(5)</sup>					
	14 VDC	-	4SLE001401A <sup>(3-5)</sup> 4SLE001402A <sup>(3-4)</sup>	4SLE001403A <sup>(3-4)</sup>	-	-	-	
	24 VDC	4SLE002400A 4SLE002408A <sup>(3)</sup> 4SLE302400A <sup>(1)</sup>	4SLE002401A <sup>(4)</sup>	4SLE002407A <sup>(3-4)</sup>	4SLE002403A <sup>(4)</sup>	-	-	4SLE002404A
			4SLE002402A <sup>(5)</sup>					
	28 VDC	-	4SLE002802A <sup>(5)</sup>	4SLE002800A <sup>(4)</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	-	

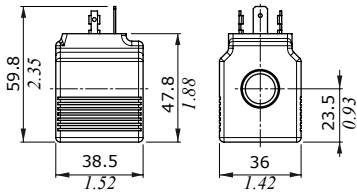
NOTES - <sup>(1)</sup> supply with AC and use only with rectifier connector - <sup>(2)</sup> with flying leads - <sup>(3)</sup> with bidirectional diode  
<sup>(4)</sup> with unidirectional diode - <sup>(5)</sup> integrated perpendicular type - <sup>(6)</sup> integrated parallel type

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

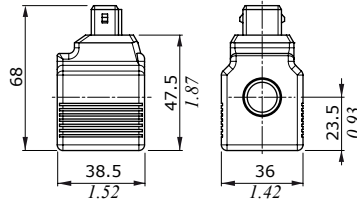
**Dimensions and features**

**BER type**

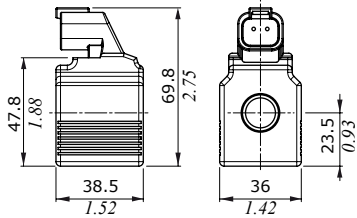
**ISO4400 connector**



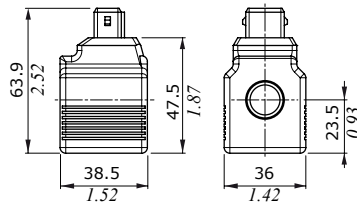
**DEUTSCH DT04 connector  
(perpendicular type)**



**DEUTSCH DT04 connector  
(parallel type)**



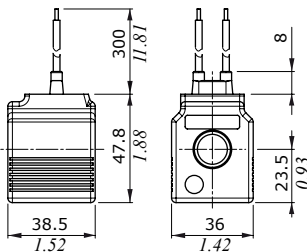
**AMP JPT connector**



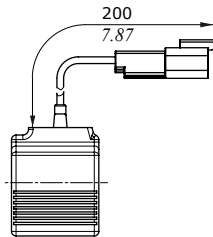
**Features**

- Nominal voltage tolerance : ±10%
- Power rating . . . . . : 19.2 W - 10/12/24/48/  
110/220 VDC
- : 19 W - 24/110/220 RAC
- : 19.2 W - 48 RAC
- Max. operating current . . . : 1.9 A - 10 VDC
- : 1.61 A - 12 VDC
- : 0.80 A - 24 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%

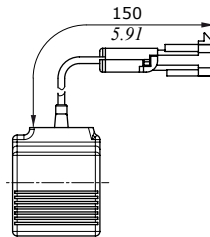
**Flying leads**



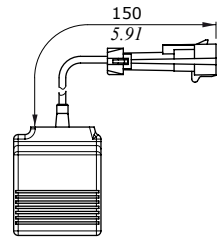
**Flying leads with  
DEUTSCH DT04 connector**



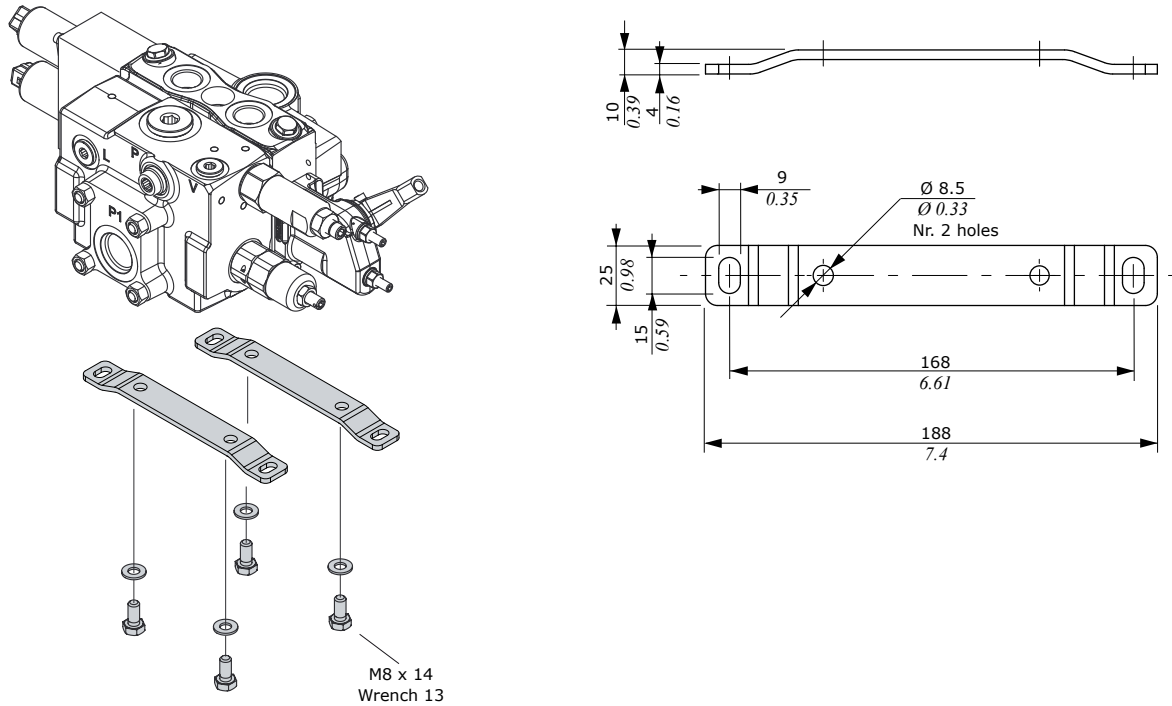
**Flying leads with PACKARD  
WEATHER-PACK connector**



**Flying leads with PACKARD  
METRI-PACK connector**



Fixing brackets



NOTE - For fixing bracket code please see page 9.

Painting

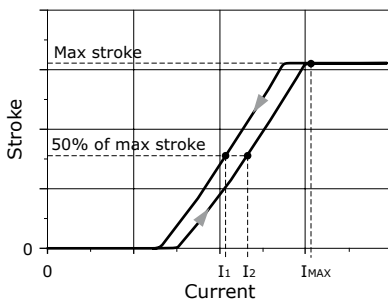
SDS140 valve can be supplied with one coat of black paint (**CVN** configuration).  
 Description example: SDS140/2/AC(YG3-175)-R(32)/PZ-1EZ8EZH3LQ.U3T/RD-**<CVN>**  
 NOTE – For different colour please contact our Sales Dpt.

Appendix A

**Electrohydraulic controls: hysteresis calculation rule**

Hysteresis is calculated as the 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**



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





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