



SDM122 DLM122

**Monoblock valves for
Front Loaders Applications**

SDM122-DLM122

Features

- Configuration open centre SDM122 and Load Sensing DLM122
- Fitted with a main pressure relief valve (on SDM122) and load check valve on every working section
- Optional power beyond port (on SDM122)
- Anticavitation and antishock valves (with fixed setting) available on every section
- Dedicated range of controls: manual, mechatronic and remote with flexible cable

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.**

3rd edition October 2014

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SDM122-DLM122

Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46mm²/s - 46 cSt viscosity at 40°C - 104°F temperature.

Max. flow rating		80 l/min	21 US gpm
Operating pressure (max.)		250 bar	3600 psi
Back pressure (max.)	on outlet port T	10 bar	1450 psi
Medium internal leakage	A(B)⇒T with $\Delta p = 100 \text{ bar} - 1450 \text{ psi}$	3 cm ³ /min	0.18 in ³ /min
Fluid		Mineral based 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 ² /s	from 15 to 75 cSt
	min.	12 mm ² s	12 cSt
	max.	400 mm ² 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 mechatronic devices	from -25°C to 60°C	from -13°F to 122°F

NOTE - For different conditions please contact our Sales Dpt.

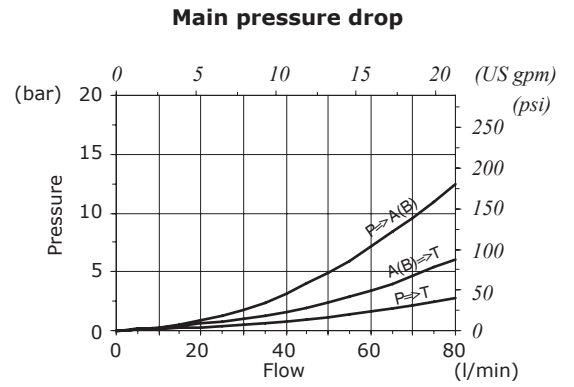
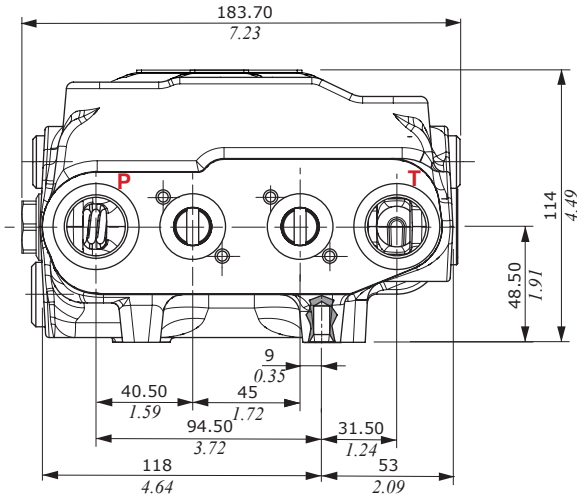
Standard threads

REFERENCE STANDARD					
		BSP	UN-UNF	METRIC	METRIC ISO
THREAD ACCORDING TO		ISO 228/1	ISO 263		
		BS 2779	ANSI B1.1 unified	ISO 261	ISO 261
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926	9974/1	6149
	SAE		J11926		J2244
	DIN	3852-2 shape X or Y			

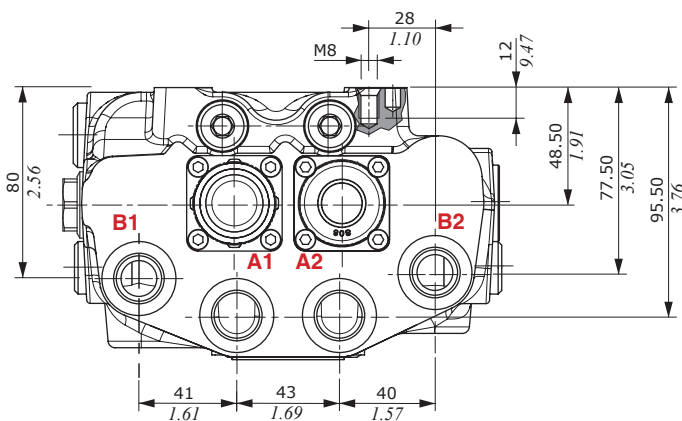
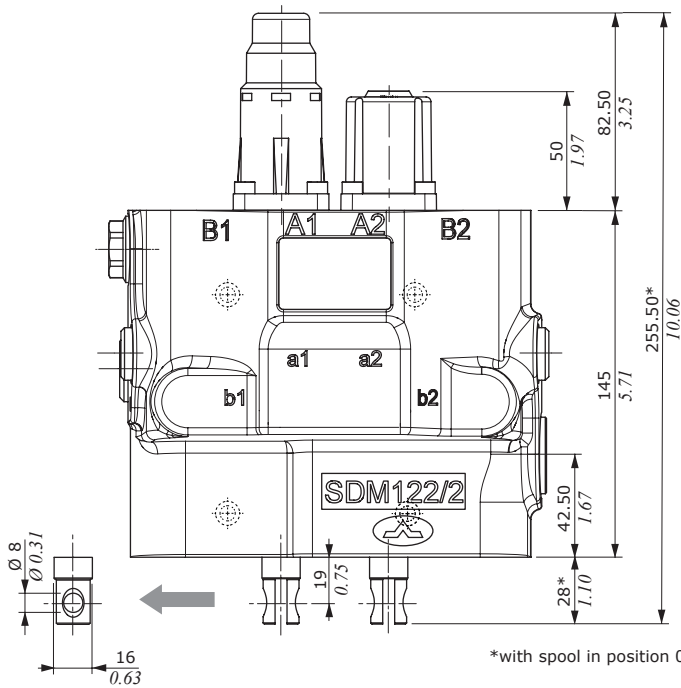
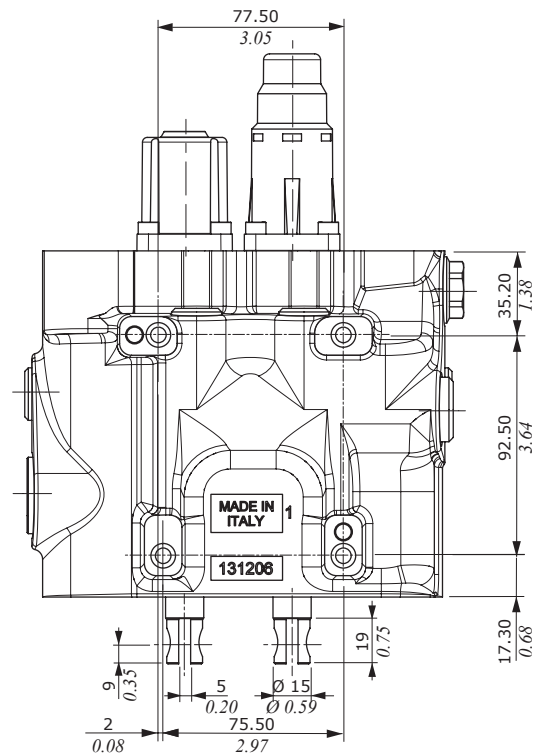
PORTS THREADING			
MAIN	BSP	UN-UNF	METRIC
Inlet P and carry-over C	G 3/4	11/16-12 (SAE 12)	M27x2
Ports A and B	G 1/2	7/8-14 (SAE 10)	M22x1.5
Outlet T	G 3/4	11/16-12 (SAE 12)	M27x2
Load Sensing LS	G 1/4	9/16-18 (SAE 6)	M14x1.5

Note: for different port size contact our Sales Dpt.

Mechanical control



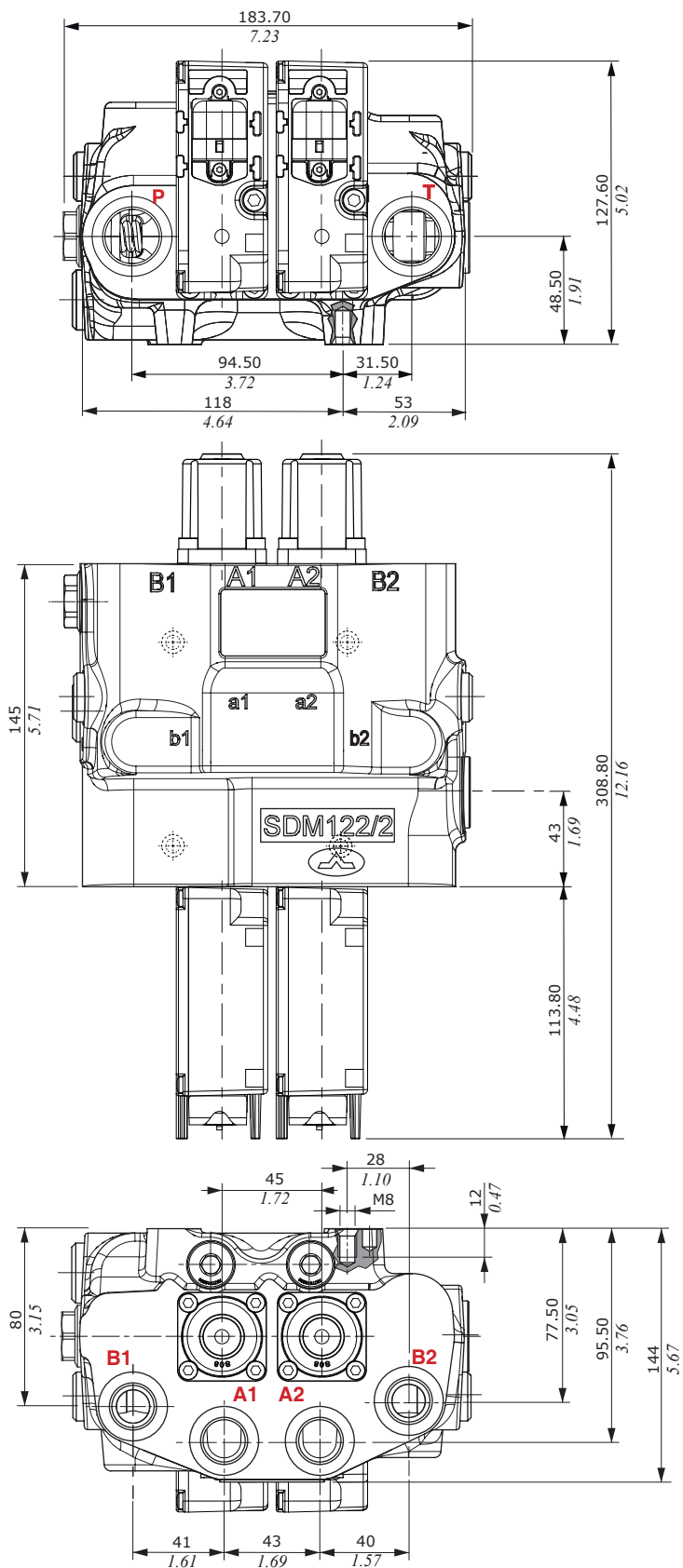
Bottom view



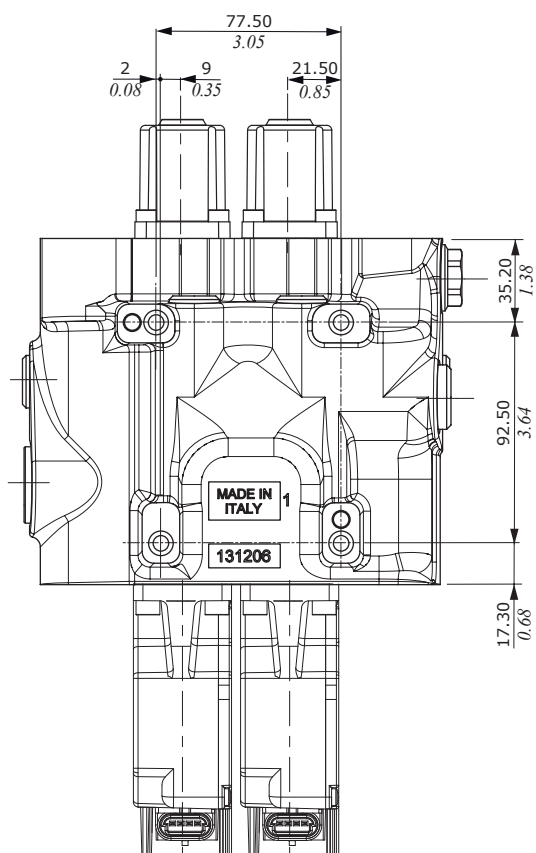
SDM122

Dimensional data

Mechatronic control

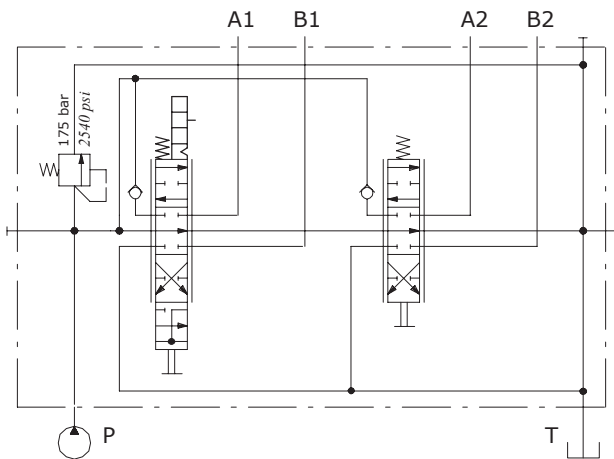


Bottom view

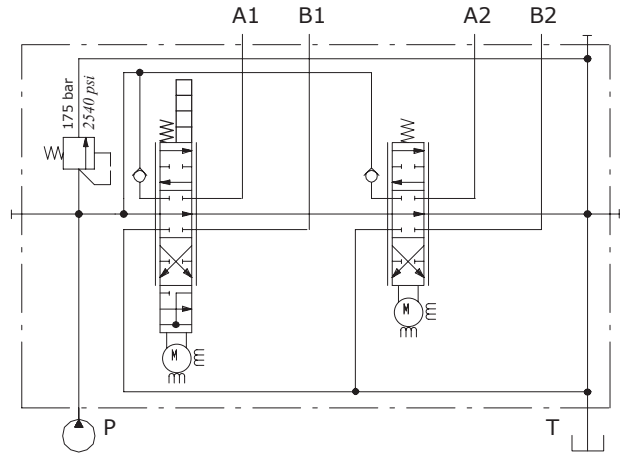


Configuration without port valves

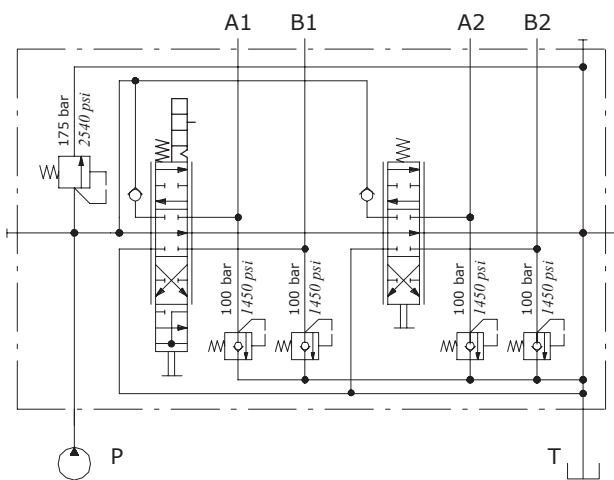
Mechanical control



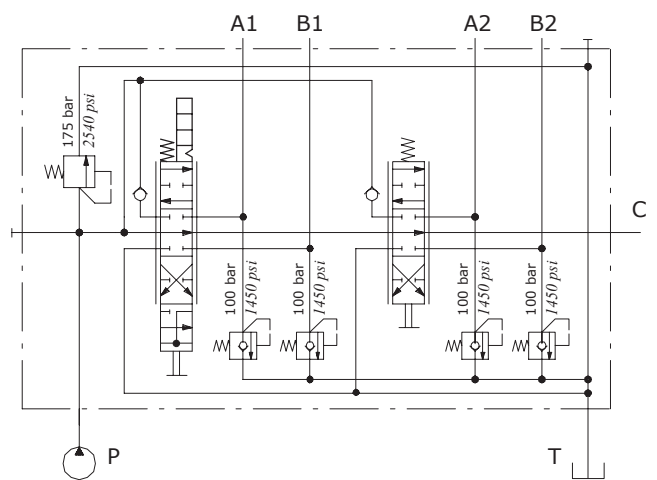
Mechatronic control



Configuration with port valves



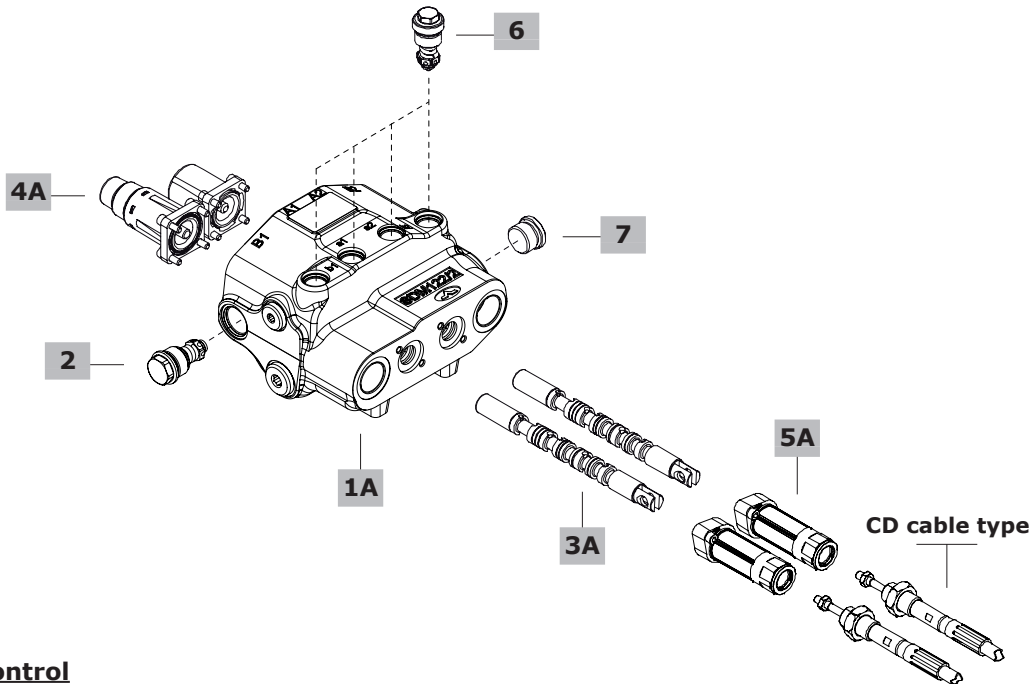
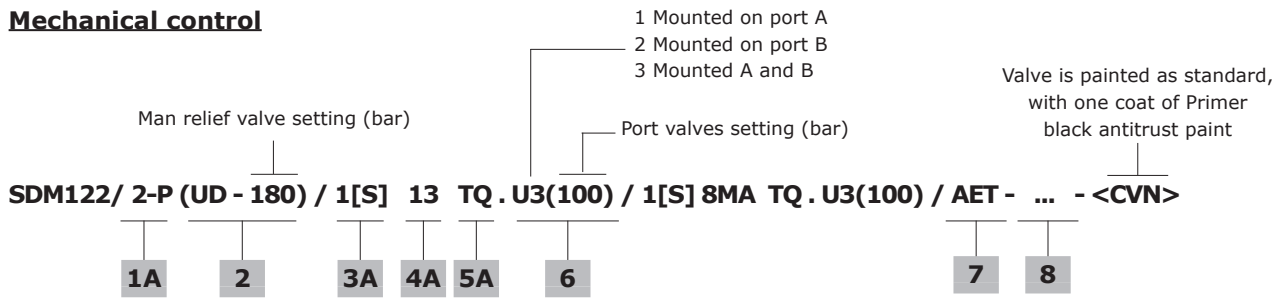
Configuration with port valves and carry-over



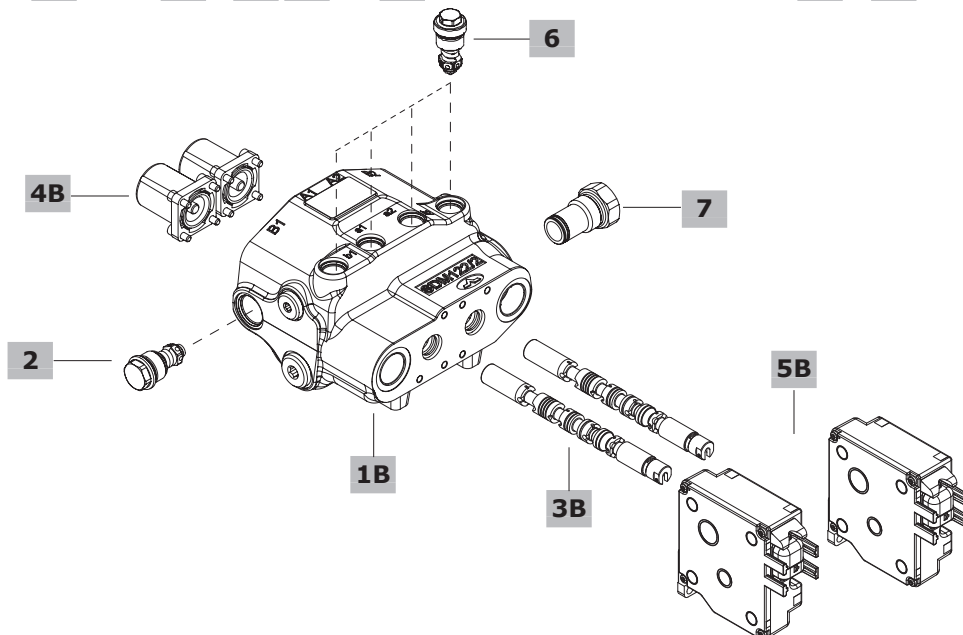
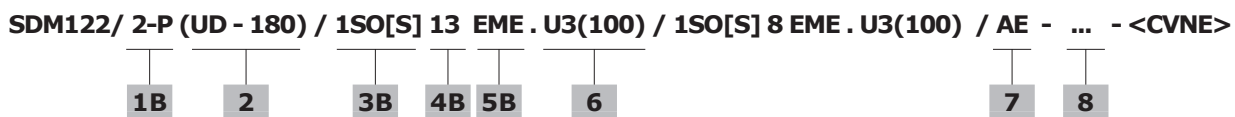
SDM122

Ordering codes

Mechanical control



Mechatronic control



With mechanical control**1A Body kit***

TYPE: SDM122/2-P	CODE: 5KC1843005
DESCRIPTION: Without port valves arrangement	
TYPE: SDM122/2-P/P3T	CODE: 5KC1843006
DESCRIPTION: With port valves arrangement on all port	
TYPE: SDM122/2-P/P3(s2)	CODE: 5KC1843004
DESCRIPTION: With port valves arrangement on ports A2-B2	

3A Spool page 11

TYPE	CODE	DESCRIPTION
1[S]	3CU5110100	<u>With positioner kit 8MA</u> : double acting, 3 positions, A and B closed in neutral position <u>With positioner kit 13</u> : 4 positions, A and B to tank in 4 th positions (float)

4A "A" side spool positioners page 12

TYPE	CODE	DESCRIPTION
8MA	5V08108240	3 positions with spring return in neutral position
13	5V13108040	4 positions, detent in 4 th position with detent spring return in neutral position

5A "B" side spool control kit page 12

TYPE	CODE	DESCRIPTION
TQ81	5TEL108220	Cable control arrangement

For all configurations**2 Main relief valves page 10**

TYPE	CODE	DESCRIPTION
SV	XTAP528480	Valve blanking plug

Fixed setting valves

Setting is referred to 10 l/min - 2.6 US gpm flow

UD-170	5KIT324170	170 bar - 2450 psi
UD-180	5KIT324180	180 bar - 2600 psi
UD-190	5KIT324190	190 bar - 2750 psi
UD-210	5KIT324210	210 bar - 3050 psi
UD-230	5KIT324230	230 bar - 3350 psi

6 Port valves page 10

TYPE	CODE	DESCRIPTION
UT	XTAP522441	Valve blanking plug
SE/DE	XKIT408200	Single/double effect selector

Fixed setting antishock valves

Setting is referred to 10 l/min - 2.6 US gpm flow

U025	5KIT330025	Valve setting 25 bar - 360 psi
U030	5KIT330030	Valve setting 30 bar - 430 psi
U040	5KIT330040	Valve setting 40 bar - 580 psi
U050	5KIT330050	Valve setting 50 bar - 720 psi
U063	5KIT330063	Valve setting 63 bar - 900 psi
U080	5KIT330080	Valve setting 80 bar - 1150 psi
U100	5KIT330100	Valve setting 100 bar - 1450 psi
U110	5KIT330110	Valve setting 110 bar - 1600 psi
U125	5KIT330125	Valve setting 125 bar - 1800 psi
U140	5KIT330140	Valve setting 140 bar - 2050 psi
U150	5KIT330150	Valve setting 150 bar - 2150 psi
U160	5KIT330160	Valve setting 160 bar - 2300 psi
U175	5KIT330175	Valve setting 175 bar - 2550 psi

With mechatronic control**1B Body kit***

TYPE: SDM122/2-P/EME	CODE: 5KC1843024
DESCRIPTION: Without port valves arrangement	

Note: For port valves arrangement please contact our Sales Dpt.

3B Spool page 11

TYPE	CODE	DESCRIPTION
1SO[S]-EME	3CU5110111	<u>With positioner kit 8</u> : double acting, 3 positions, A and B closed in neutral position <u>With positioner kit 13</u> : 4 positions, A and B to tank in 4 th positions (float)

4B "A" side spool positioners page 13

TYPE	CODE	DESCRIPTION
8	5V08112001	3 positions with spring return in neutral position
13	5V13112001	4 positions, detent in 4 th position with detent spring return in neutral position

5B "B" side spool control kit page 13

TYPE	CODE	DESCRIPTION
EME(8)	5MEC080803	Mechatronic control kit for positioner type 8
EME(13)	5MEC130803	Mechatronic control kit for positioner type 13

6 Port valves (continue) page 10

TYPE	CODE	DESCRIPTION
U190	5KIT330190	Valve setting 190 bar - 2750 psi
U200	5KIT330200	Valve setting 200 bar - 2900 psi
U210	5KIT330210	Valve setting 210 bar - 3050 psi
U220	5KIT330220	Valve setting 220 bar - 3200 psi
U230	5KIT330230	Valve setting 230 bar - 3350 psi
U240	5KIT330240	Valve setting 240 bar - 3500 psi
U250	5KIT330250	Valve setting 250 bar - 3600 psi

7 Return circuit* page 14

TYPE	CODE	DESCRIPTION
AET	3XTAP732201	Open center plug
AEK	3XTAP532450	Closed center plug
AE G3/4	XGIU536692	G3/4 female carry-over sleeve
AE G1/2-F	XGIU532470	G1/2 female carry-over sleeve
MAE G3/4	XGIU532475	G3/4 male carry-over sleeve

8 Threading specification

Specify thread type only if it's different from BSP standard: see page 4

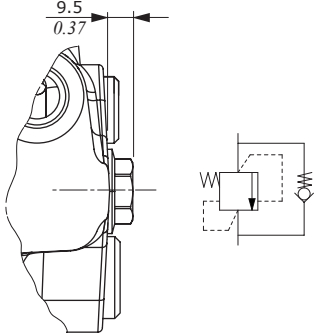
Note (*): Codes are referred to UN-UNF standard thread

Main relief valves

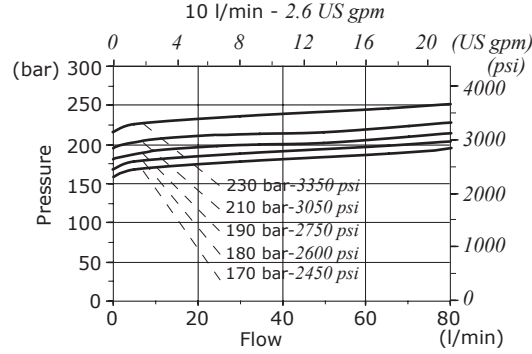
Description example: **(UD-180)**

□ Valve setting (bar)

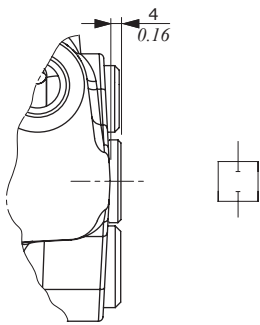
UD fixed setting valve



Setting examples



Valve seat plug

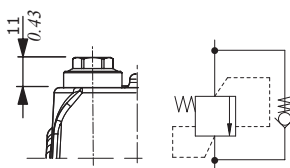


Port valves

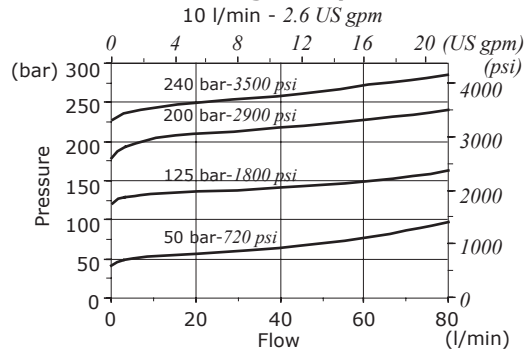
Description example: **U3(100)**

- Valve setting (bar)
- 1 Mounted on port A
 - 2 Mounted on port B
 - 3 Mounted on ports A and B

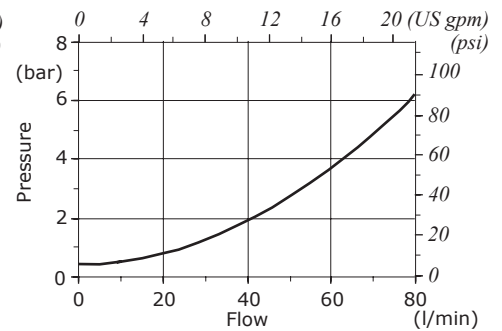
U type fixed setting valve



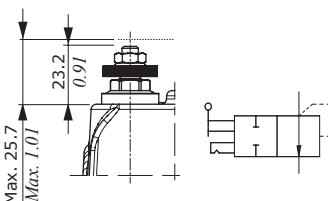
Setting examples



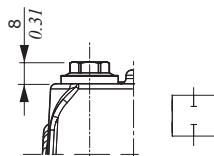
Pressure drop



SE/DE Single/double effect selector



Valve seat plug

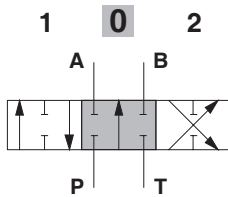


3 positions configuration

Configuration with double acting, 3 positions, A and B closed in neutral position.

1[S] type for mechanical control.

1SO[S] type for mechatronic control.



Spool stroke: type 1[S]

position 1: + 7 mm / + 0.28 in

position 2: - 7 mm / - 0.28 in

Spool stroke: type 1SO[S]-EME

position 1: + 6.6 mm / + 0.26 in

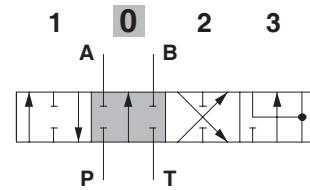
position 2: - 6.6 mm / - 0.26 in

4 positions configuration

Configuration with 4 positions, A and B to tank in 4th position (float).

1[S] type for mechanical control.

1SO[S] type for mechatronic control.



Spool stroke: type 1[S]

position 1: + 7 mm / + 0.28 in

position 2: - 7 mm / - 0.28 in

position 3 (floating): -12 mm / - 0.47 in

Spool stroke: type 1SO[S]-EME

position 1: + 6.6 mm / + 0.26 in

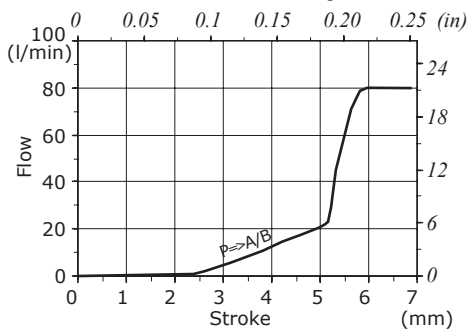
position 2: - 6.6 mm / - 0.26 in

position 3 (floating): -11.6 mm / - 0.46 in

Type 1[S] spool metering curve

$Q_{in} = 80 \text{ l/min} - 21 \text{ US gpm}$

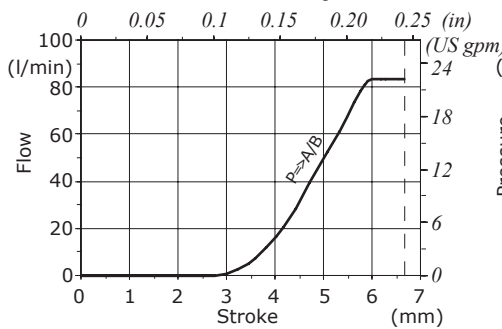
$P = 150 \text{ bar} - 2200 \text{ psi}$



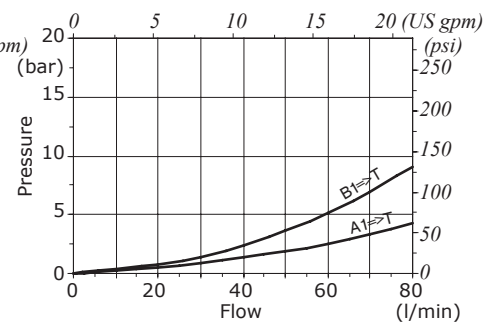
Type 1SO[S]-EME spool metering curve

$Q_{in} = 80 \text{ l/min} - 21 \text{ US gpm} (*)$

$P = 150 \text{ bar} - 2200 \text{ psi}$



Pressure drop in float position

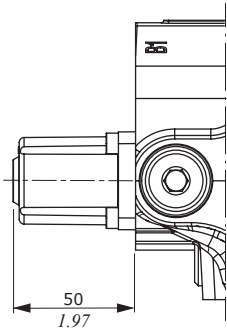


NOTE (*) - For mechatronic control: spools with flow rates up to 100 l/min (26.4 US gpm) are recommended for flow rates higher than 80 l/min (21 US gpm). For availability, please contact our Sales Dpt.

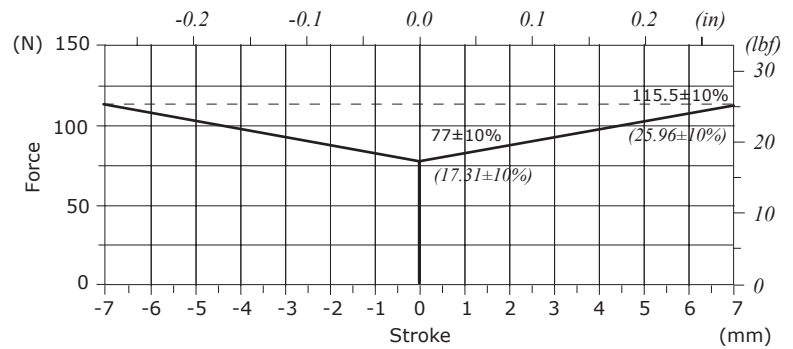
SDM122

"A" side spool positioners for mechanical control

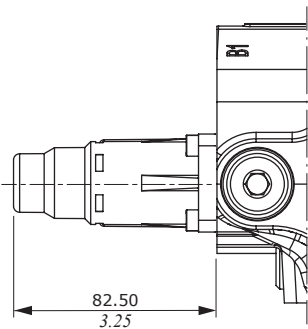
Type 8MA



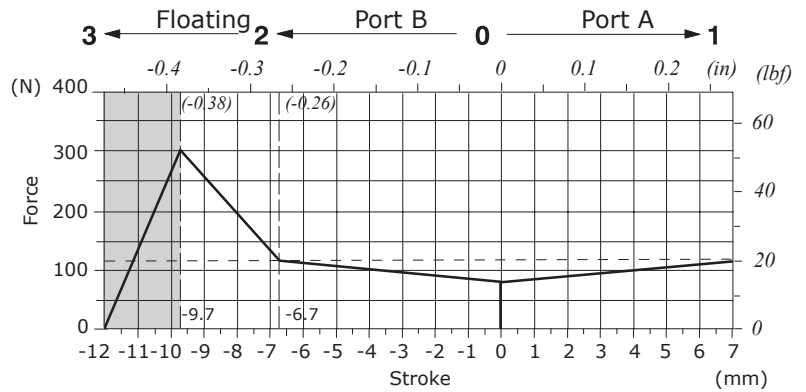
Force-stroke diagram



Type 13



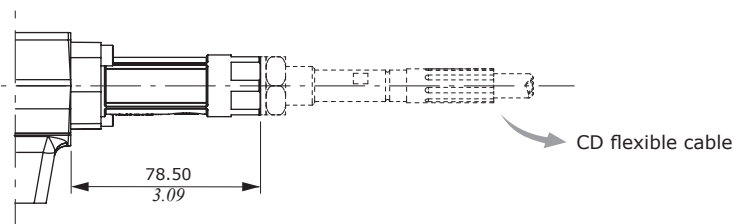
Force-stroke diagram



Detent area
 Locking force: 300 N/67.4 lbf ± 10%
 Release force: 270 N/60.7 lbf ± 10%

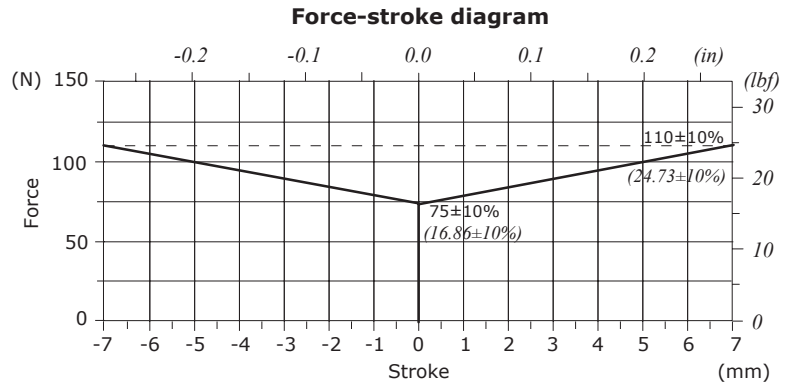
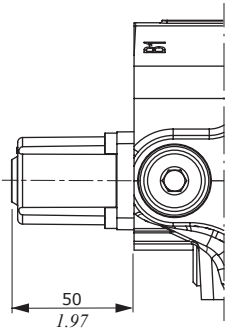
"B" side spool control kit for mechanical control

Type TQ81

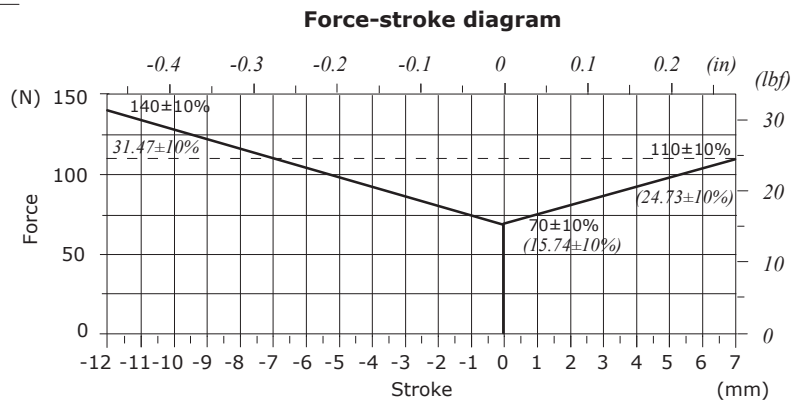
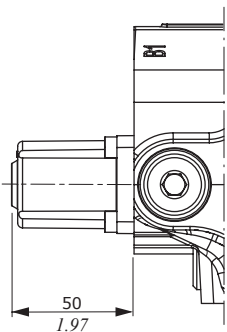


"A" side spool positioners for mechatronic control

Type 8EMC



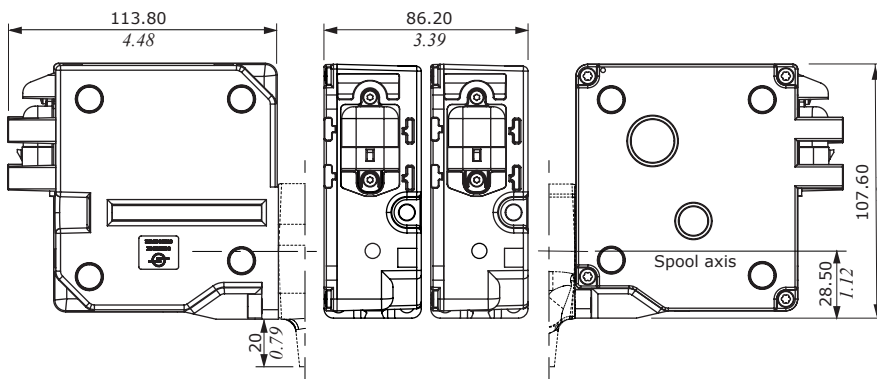
Type 13EMC



"B" side spool control kit for mechatronic control

Type EME

The dimensions of the type (8) and the type (13) are the same.

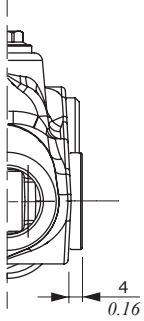


TECHNICAL DATA		
Force	up to 160 N	up to 35.97 lbf
Speed	up to 80 mm/s	up to 80 cSt
Residual force	<45 N	10.12 lbf
Travel	± 12 mm	±0.47 in
Resolution	0.01 mm/inchr.	0.0004 in/inchr
Protocol	SAE J1939	
Supply voltage	9-16 VDC	
Max. axial play	<0.25 mm	<0.01 in
EMC	ISO 14982	
Vibration	IEC 68-2	

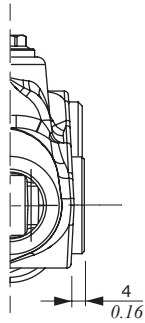
Notes: Parameter such as spool stroke may be limited by WST software according to the application.

Return circuit

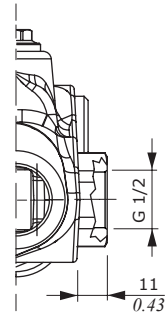
AET
open center plug



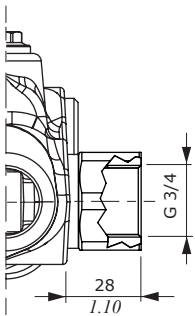
AEK
closed center plug



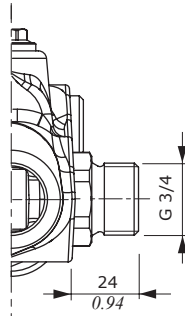
AE-BSP12
G1/2 female "carry-over" sleeve



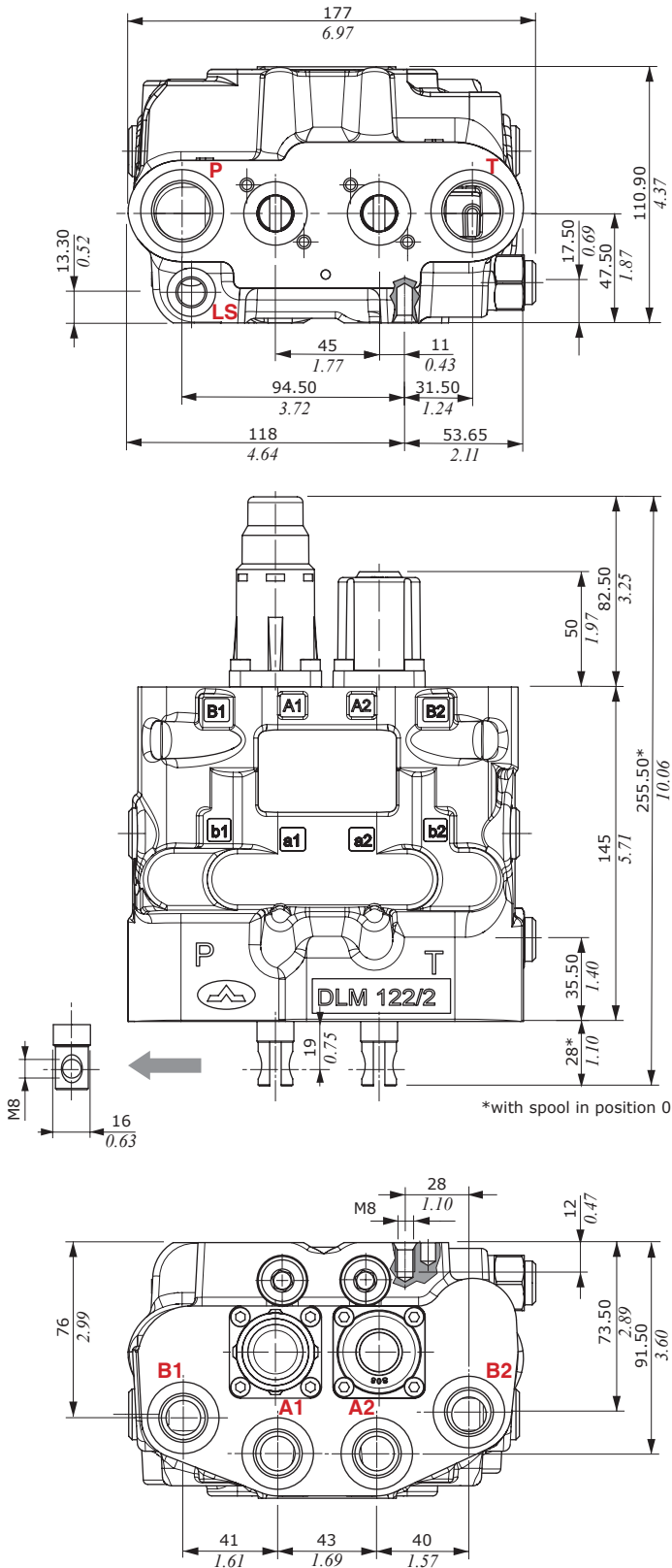
AE
G3/4 female "carry-over" sleeve



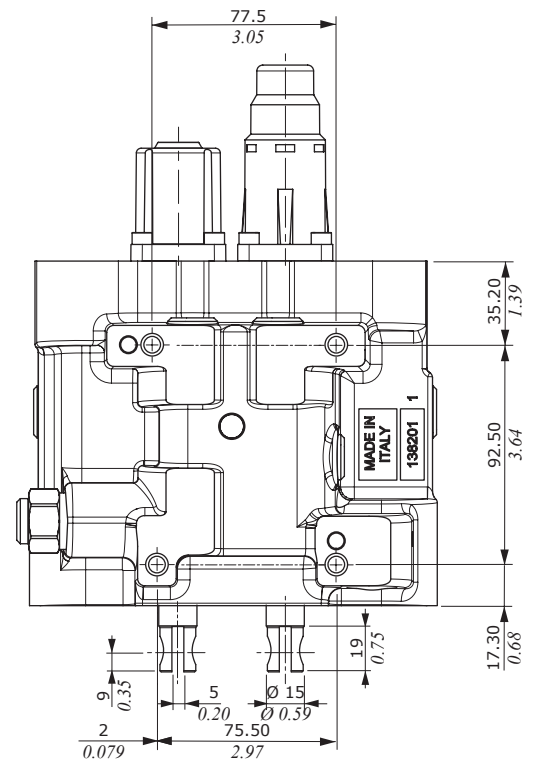
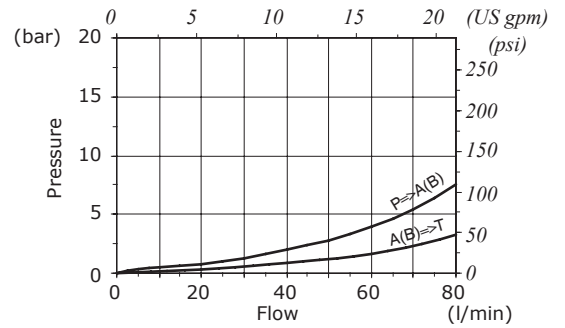
MAE
G3/4 male "carry-over" sleeve



Mechanical control



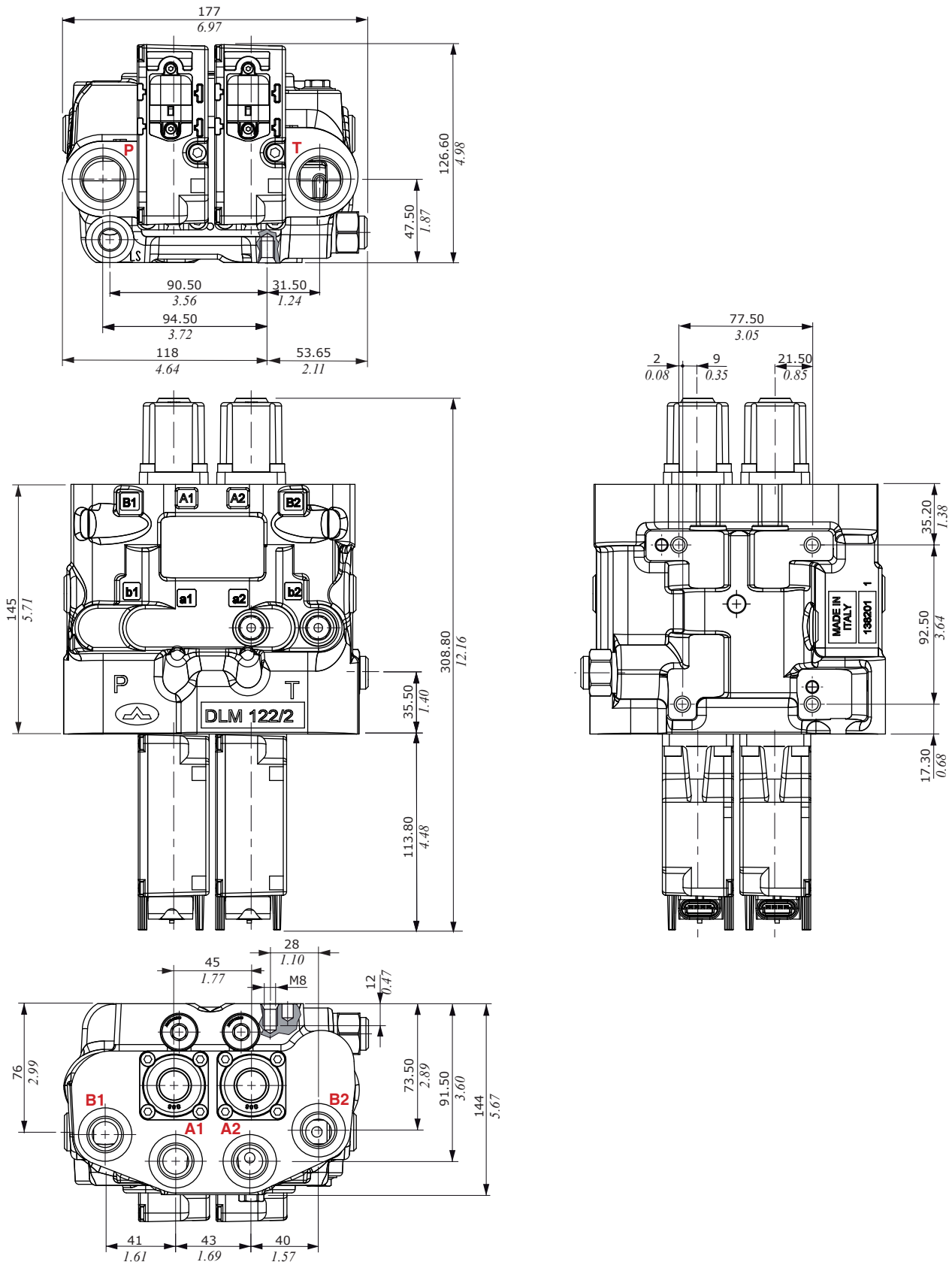
Main pressure drop



DLM122

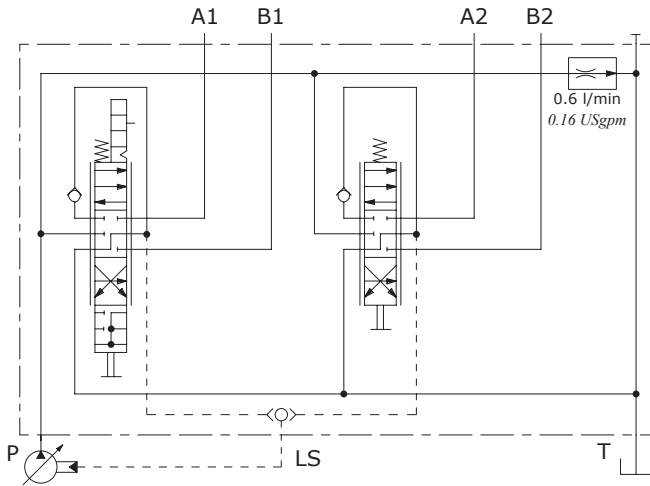
Dimensional data

Mechatronic control

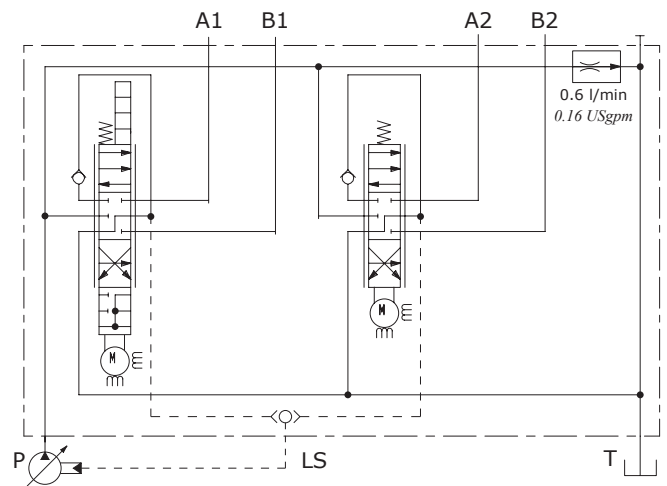


Configuration without port valves, with Bleed valve

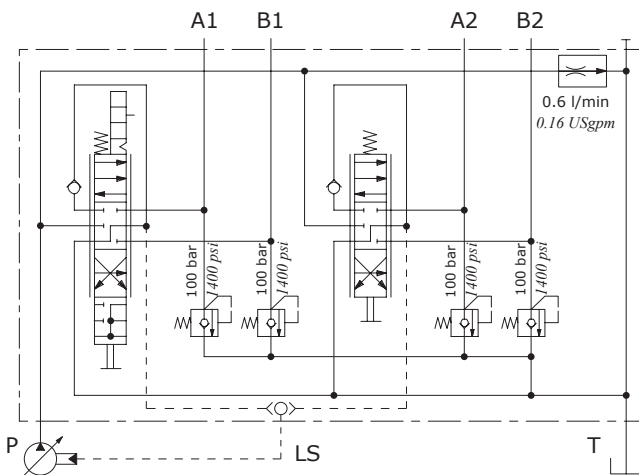
Mechanical control



Mechatronic control



Configuration with port valves and Bleed valve



DLM122

Ordering codes

Mechanical control

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

Port valves setting (bar)

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

DLM122/ 2-AP / 1[S] 13 TQ . U3(100) / 1[S] 8MA TQ . U3(100) / VB / ... - <CVN>

1A

2A

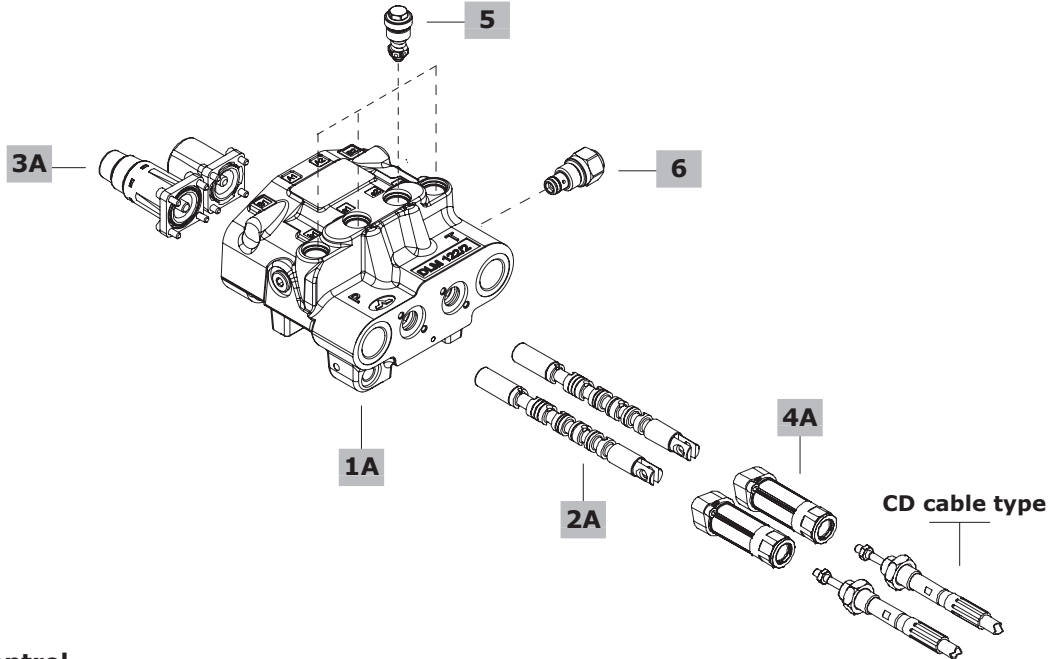
3A

4A

5

6

7



Mechatronic control

DLM122/ 2-AP / 1[S] 13 EME . U3(100) / 1[S] 8 EME . U3(100) / VB / ... - <CVN>

1B

2B

3B

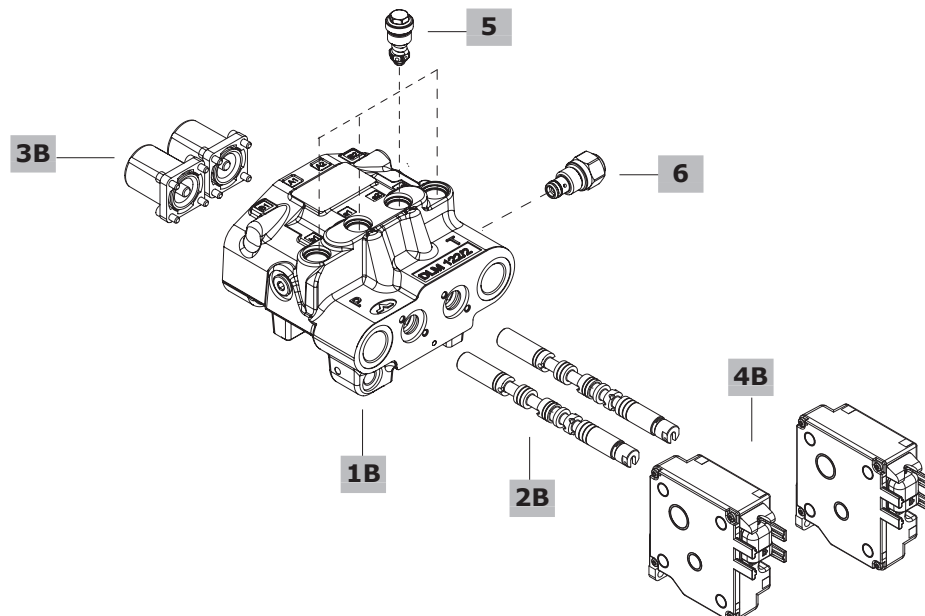
4B

5

6

7

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



With mechanical control

1A Body kit*

TYPE: DLM122/2-P	CODE: 5KC1843008
DESCRIPTION: Configuration without bleed valve arrangement	
TYPE: DLM122/2-P/VBF	CODE: 5KC1843012
DESCRIPTION: Configuration with bleed valve arrangement	
TYPE: DLM122/2-P/VBF-P3T	CODE: 5KC1843009
DESCRIPTION: As previous, port valves arrangement on all ports	

2A Spool page 20

TYPE	CODE	DESCRIPTION
1[S]	3CU5111100	<u>With positioner kit 8MA</u> : double acting, 3 positions, A and B closed in neutral position <u>With positioner kit 13</u> : 4 positions, A and B to tank in 4 th positions (float)

3A "A" side spool positioners page 12

TYPE	CODE	DESCRIPTION
8MA	5V08108240	3 positions with spring return in neutral position
13	5V13108040	4 positions, detent in 4 th position with detent spring return in neutral position

4A "B" side spool control kit page 12

TYPE	CODE	DESCRIPTION
TQ81	5TEL108220	Cable control arrangement

With mechatronics control

1B Body kit*

TYPE: DLM122/2-P/EME	CODE: 5KC1843025
DESCRIPTION: Configuration without bleed valve arrangement	
TYPE: DLM122/2-A/VBF-EME	CODE: 5KC1843026
DESCRIPTION: Configuration with bleed valve arrangement	

Note: For port valves arrangement please contact our Sales Dept.

2B Spool page 20

TYPE	CODE	DESCRIPTION
1[S]-EME	3CU5111111	<u>With positioner kit 8</u> : double acting, 3 positions, A and B closed in neutral position <u>With positioner kit 13</u> : 4 positions, A and B to tank in 4 th positions (float)

3B "A" side spool positioners page 13

TYPE	CODE	DESCRIPTION
8	5V08112001	3 positions with spring return in neutral position
13	5V13112001	4 positions, detent in 4 th position with detent spring return in neutral position

4B "B" side spool control kit page 13

TYPE	CODE	DESCRIPTION
EME(08)	5MEC080804	Mechatronics control kit for positioner type 8
EME(13)	5MEC130804	Mechatronics control kit for positioner type 13

For all configurations

5 Port valves page 10

TYPE	CODE	DESCRIPTION
UT	XTAP522441	Valve blanking plug
SE/DE	XKIT408200	Single/double effect selector

Fixed setting antishock valves

Setting is referred to 10 l/min - 2.6 US gpm flow

U025	5KIT330025	Valve setting 25 bar - 360 psi
U030	5KIT330030	Valve setting 30 bar - 430 psi
U040	5KIT330040	Valve setting 40 bar - 580 psi
U050	5KIT330050	Valve setting 50 bar - 720 psi
U063	5KIT330063	Valve setting 63 bar - 900 psi
U080	5KIT330080	Valve setting 80 bar - 1150 psi
U100	5KIT330100	Valve setting 100 bar - 1450 psi
U110	5KIT330110	Valve setting 110 bar - 1600 psi
U125	5KIT330125	Valve setting 125 bar - 1800 psi
U140	5KIT330140	Valve setting 140 bar - 2050 psi
U150	5KIT330150	Valve setting 150 bar - 2150 psi
U160	5KIT330160	Valve setting 160 bar - 2300 psi
U175	5KIT330175	Valve setting 175 bar - 2550 psi
U190	5KIT330190	Valve setting 190 bar - 2750 psi
U200	5KIT330200	Valve setting 200 bar - 2900 psi
U210	5KIT330210	Valve setting 210 bar - 3050 psi
U220	5KIT330220	Valve setting 220 bar - 3200 psi
U230	5KIT330230	Valve setting 230 bar - 3350 psi
U240	5KIT330240	Valve setting 240 bar - 3500 psi
U250	5KIT330250	Valve setting 250 bar - 3600 psi

6 Bleed valves page 21

TYPE	CODE	DESCRIPTION
LC(FC0.8)	XTAP722421	Screw with orifice Ø 0.8 mm - Ø 0.03 in
LC(NFC)	XTAP722420	Screw without orifice
VB	X138810000	Bleed valve with standard orifice Ø 0.7 mm - Ø 0.03 in
VB(1.2)	X138810010	Bleed valve with orifice Ø 1.2 mm - Ø 0.05 in

7 Threading specification

Specify thread type only if it's different from BSP standard: see page 4

Notes (*): Codes are referred to UN-UNF standard thread

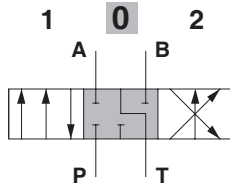
Spools

3 positions configuration

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

1[S] type for mechanical control.

1[S]-EME type for mechatronic control.



Type 1[S] spool stroke

position 1: + 7 mm / + 0.28 in
position 2: - 6.7 mm / - 0.26 in

Type 1[S]-EME spool stroke

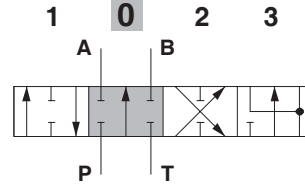
position 1: + 6.6 mm / + 0.25 in
position 2: - 6.6 mm / - 0.25 in

4 positions configuration

Double acting spool, 4 positions, A and B to tank in 4th position (float).

1[S] type for mechanical control.

1[S]-EME type for mechatronic control.



Type 1[S] spool stroke

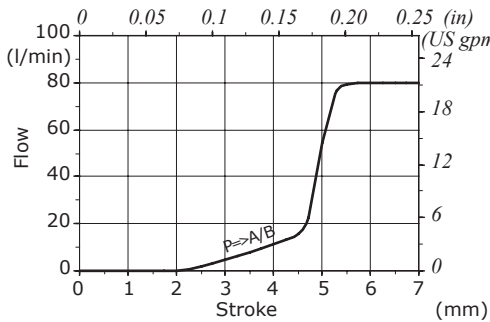
position 1: + 7 mm / + 0.28 in
position 2: - 6.7 mm / - 0.26 in
position 3 (floating): -12 mm / - 0.47 in

Type 1[S]-EME spool stroke

position 1: + 6.6 mm / + 0.25 in
position 2: - 6.6 mm / - 0.25 in
position 3 (floating): -11.6 mm / - 0.45 in

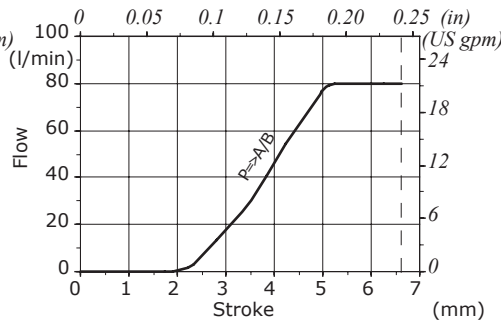
1[S] type Spool metering curve

Q_{in} = 80 l/min - 21 US gpm
P = 150 bar - 2200 psi

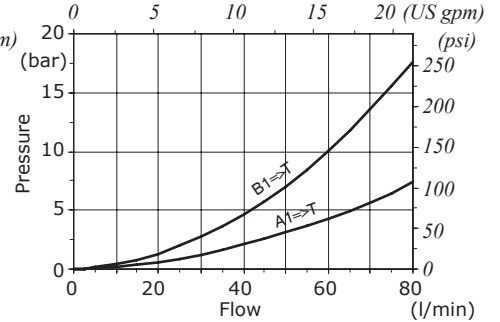


1[S]-EME type Spool metering curve

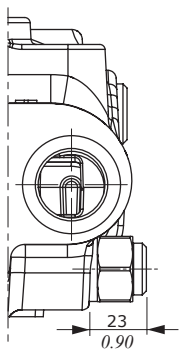
Q_{in} = 80 l/min - 21 US gpm
P = 150 bar - 2200 psi



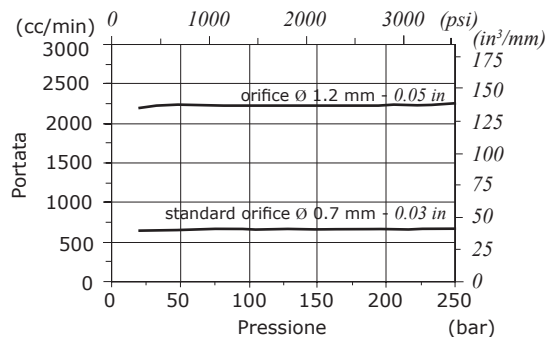
Pressure drop in float position



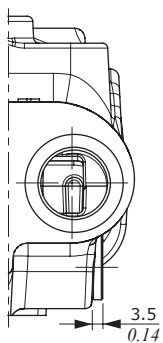
Bleed valves



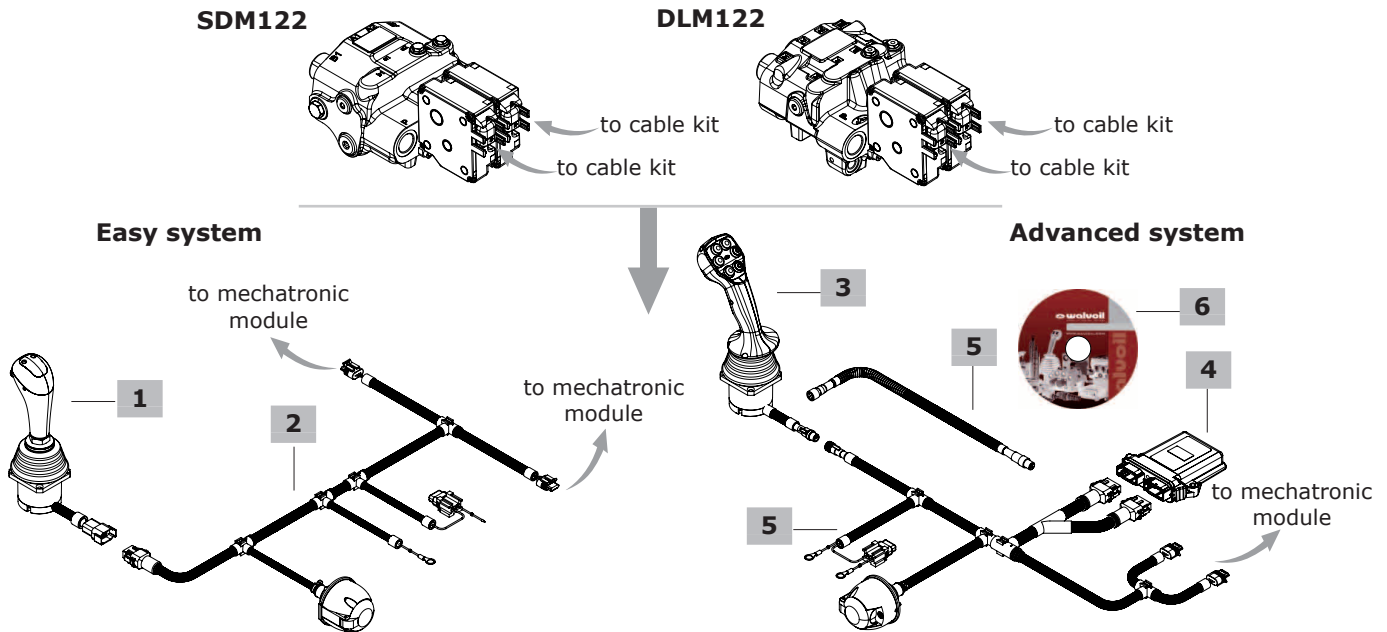
Pressure drop VB bleed valve



Screw with or without metering hole option



Ordering codes



Easy system

1 Joystick

TYPE: **CJW2043B-FWV-B-1MV2-2KN5-3MR3-4RL-5VL/(D2F08035)-(TC)**

CODE: 183530010

DESCRIPTION: Two proportional axis joystick with auxiliary and ON/OFF functions, CAN-Bus, and FWV-B type handle with 3 push-up buttons and symbols according to UNI-EN 12525

Supply voltage from 8 to 31 V

Output CAN protocols SAE J1939

Working temperature from -40° C to +85° C / from -40° F to 185° F

Weather protection IP65

Advanced system

3 Joystick

TYPE: **CJW2040A-PMB6000AQ-1N2-2N2-3R4-4N2-5Y8-6V9/(F1M05150)-(TC)**

CODE: 183530017

DESCRIPTION: Two proportional axis joystick with auxiliary and ON/OFF functions, P type handle with 6 push-up buttons

Supply voltage from 8 to 31 V

Output CAN protocols SAE J1939

Working temperature from -40° C to +85° C / from -40° F to 185° F

Weather protection IP65

4 Electronic control unit

TYPE: **CED040/WALVOIL/PHC250C-12V/ v6.00**

CODE: 183360010

DESCRIPTION: Electronic control unit

Supply voltage from 9 to 16 V

Working temperature from -40° C to +85° C / from -40° F to 185° F

Weather protection IP67 with mating connector attached

2 Cable kit

TYPE: **KCD05/D2M06-01CCF07600(TC)-02M2M04345(TC)-03M2M04345(TC)-AU2F15734(TC)-AU1730(TC)**

CODE: 183480165

DESCRIPTION: Cable kit for directional valve connection to joystick and auxiliary functions

5 Cable kit

TYPE: **KCD05/(D2M12-D2M12)-01F1F05080(TC)02CCF07330(TC)-03M2M04180(TC)-04M2M04180(TC)-AU1F15350(TC)**

CODE: 183480166

DESCRIPTION: Cable kit for directional valve connection to joystick and auxiliary functions

TYPE: **F1M05-F1F05(TC)**

CODE: 183490001

DESCRIPTION: Extension for cable kit

6 Accessories

TYPE: **PROGRAMMING CABLE FOR EME MODULES**

CODE: VCAV600020

DESCRIPTION: Programming cable (L=1.5 m / 59 in)

TYPE: **WST**

CODE: DCDSW0210004

DESCRIPTION: System programming software "Walvoil service tool"

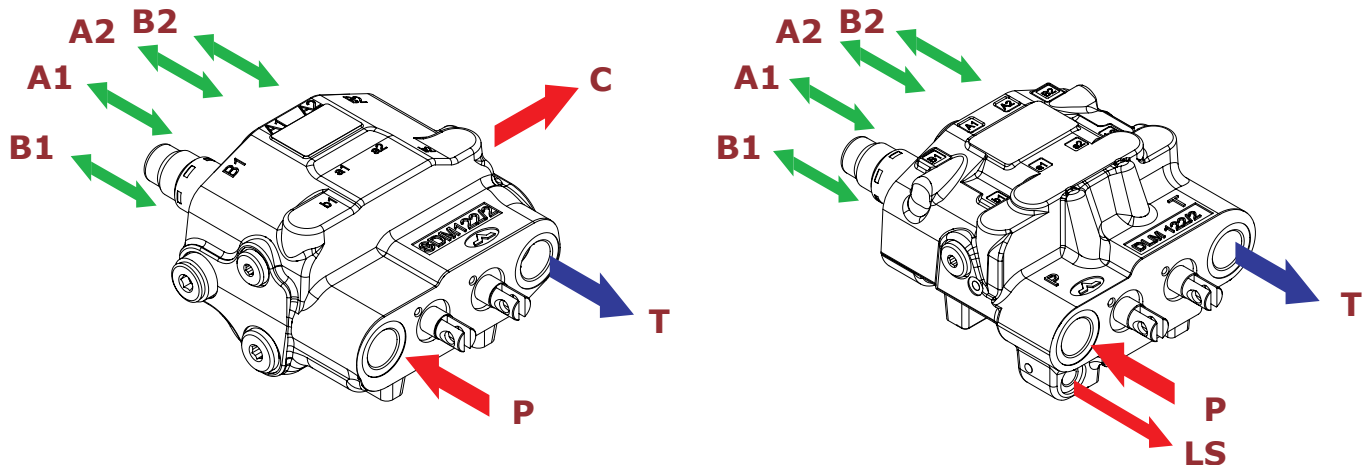
Note: for technical specifications see the catalog of Electronic components and PHC systems code D1WWE01E

Installation and maintenance

The SDM122-DLM122 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; in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the spool control kit, do not use high pressure wash down directly on the valve;
- prior to painting, ensure plastic port plugs are tightly in place.



Fitting tightening torque - Nm / lbft

THREAD TYPE	P and C ports	A and B ports	T port	LS port
BSP	G 3/4	G 1/2	G 3/4	G 1/4
With O-Ring seal	70 / 51.6	50 / 36.9	70 / 51.6	25 / 18.4
With copper washer	70 / 51.6	60 / 44.3	70 / 51.6	30 / 22.1
With steel and rubber washer	70 / 51.6	60 / 44.3	70 / 51.6	16 / 11.8
UN-UNF	1 1/16-12 (SAE 12)	7/8-14 (SAE 10)	1 1/16-12 (SAE 12)	9/16-18 (SAE 6)
With O-Ring seal	95 / 70.1	60 / 44.3	95 / 70.1	30 / 22.1
METRIC	M27 x 2	M22 x 1.5	M27 x 2	M14 x 1.5
With O-Ring seal	90 / 66.4	50 / 36.9	90 / 66.4	25 / 18.4
With copper washer	60 / 44.3	40 / 29.5	60 / 44.3	30 / 22.1
With steel and rubber washer	70 / 51.6	60 / 44.3	70 / 51.6	20 / 14.7

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

Malfunction	Cause	Remedy
External leakage control kit or opposite side.	Worn spool seal due to mechanical actuation or high back pressure.	Locate the leakage and replace the seal. Check back pressure level.
Excessive internal leakage on A and B ports.	Increase clearance between spools and body due to high wear.	Replace the directional control valve and check the oil contamination level.
Dropping load during transition while raising.	High leakage on the load check valve.	Remove the load check valve and clean the seat.
Inability to build pressure on A and B	Main pressure relief valve blocked open.	Remove and clean or replace the main relief valve.
	Port relief valve open.	Remove and clean or replace the port relief valve.
	Low pump pressure and flow.	Check the pump and the circuit.

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