

MSB-5 SERIES

Monoblock Directional Control Valves

FOR MOBILE AND INDUSTRIAL
HYDRAULIC APPLICATIONS



Innovative Designs
Professional Quality
Customer Satisfaction !



油力油壓工業股份有限公司
YOU LI HYDRAULIC INDUSTRIAL CO.,LTD.

公司：41163 台中市太平區溪洲路 87 巷 7 號
工廠：41468 台中市烏日區太明路 145 巷 9 號

OFFICE & FACTORY :

No.9, LANE 145, TAI MING RD., WU ZIH DIST., TAICHUNG CITY, TAIWAN 41468

TEL : 886-4-2335 8996 FAX : 886-4-2335 8997

Http://www.tw-youli.com.tw/ E-mail : sales@tw-youli.com.tw

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For Mobile And Industrial Hydraulic Applications.



MB-2

ONLY ONE SECTION AVAILABLE

Nominal flow rate	45 l/min	12 US gpm
Operating pressure (maximum)	250 bar	3600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi



MB-3

AVAILABLE SECTIONS FROM 1 TO 7

Nominal flow rate	45 l/min	12 US gpm
Operating pressure (maximum)	315 bar	4600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi



MB-4

AVAILABLE SECTIONS FROM 1 TO 6

Nominal flow rate	60 l/min	16 US gpm
Operating pressure (maximum)	315 bar	4600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi



MB-5

AVAILABLE SECTIONS FROM 1 TO 6

Nominal flow rate	80 l/min	21 US gpm
Operating pressure (maximum)	315 bar	4600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi

MONOBLOCK DIRECTIONAL CONTROL VALVES

MB-2 / MB-3 / MB-4 / MB-5 / MSB-5

SECTIONAL DIRECTIONAL CONTROL VALVES

SN-3 / SN-4 / SN-6



MSB-5

AVAILABLE SECTIONS FROM 1 TO 6

With Independent load check valve in each section, and optional port relief.

Nominal flow rate	80 l/min	21 US gpm
Operating pressure (maximum)	315 bar	4600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi



SN-3

AVAILABLE SECTIONS FROM 1 TO 12

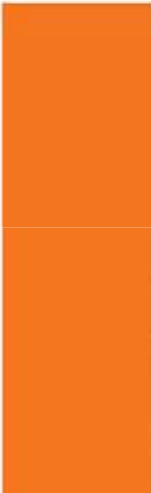
Nominal flow rate	50 l/min	13 US gpm
Operating pressure (maximum)	315 bar	4600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi



SN-4

AVAILABLE SECTIONS FROM 1 TO 12

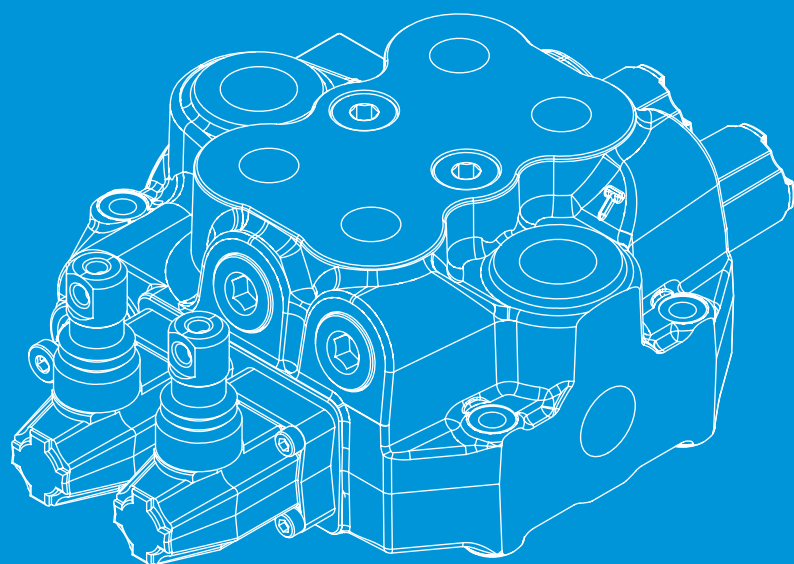
Nominal flow rate	80 l/min	21 US gpm
Operating pressure (maximum)	315 bar	4600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi



SN-6

AVAILABLE SECTIONS FROM 1 TO 12

Nominal flow rate	140 l/min	37 US gpm
Operating pressure (maximum)	315 bar	4600 psi
Back pressure (maximum) on outlet port T	25 bar	360 psi



Innovative Designs
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AVAILABLE SECTIONS FROM

1 TO 6

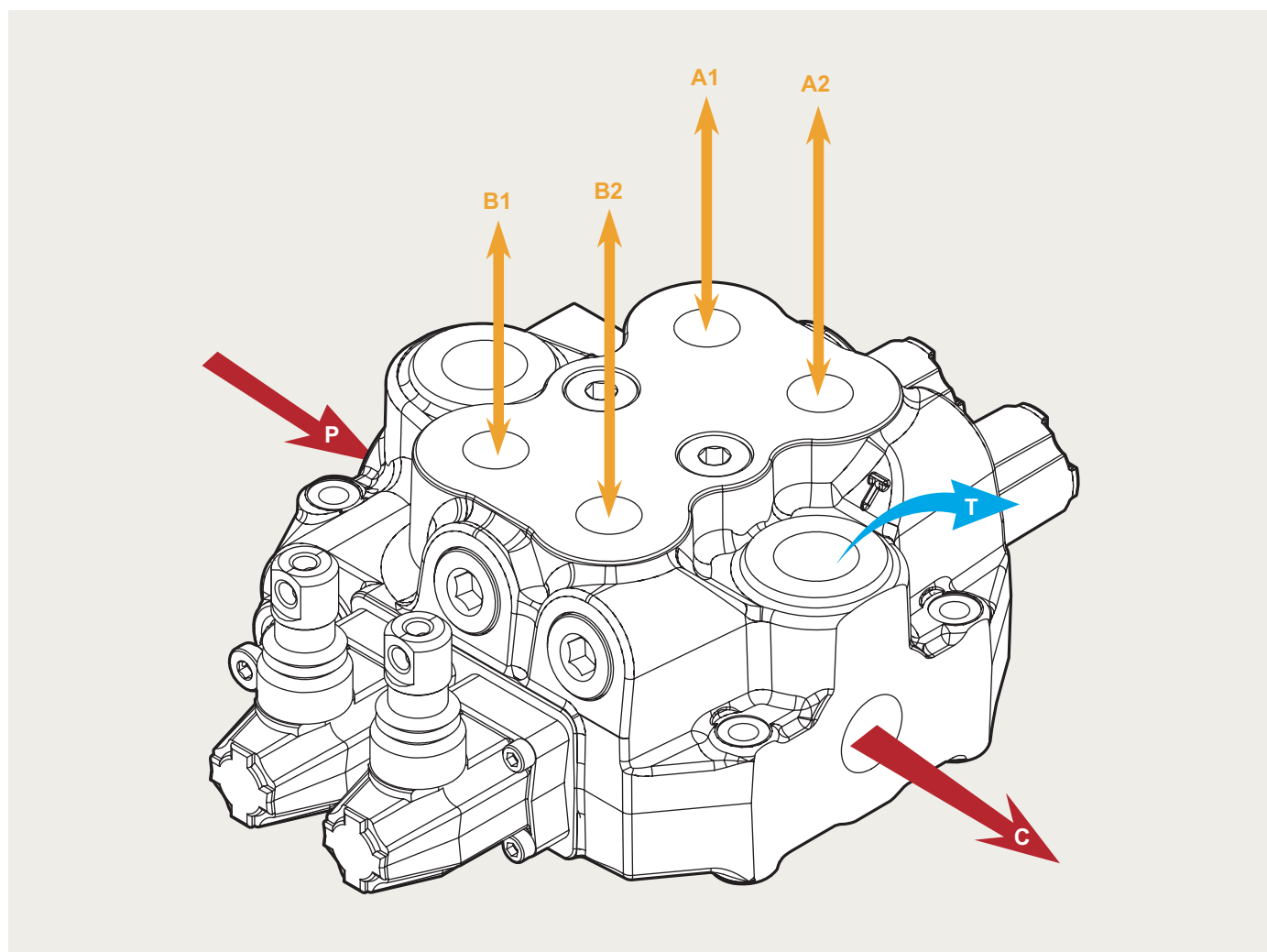
MSB-5

Monoblock Directional Control Valves



MSB-5

Monoblock Directional Control Valves



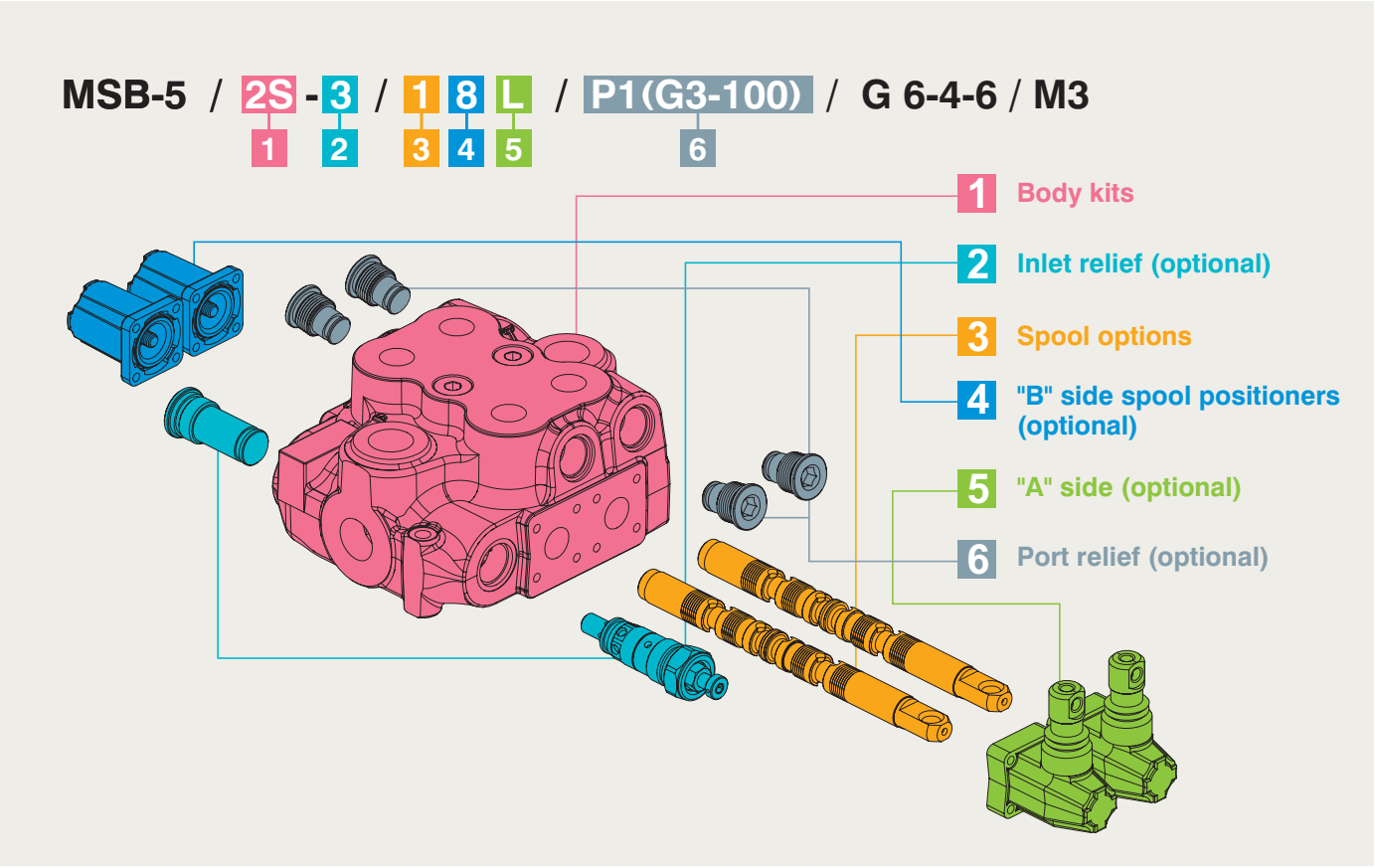
MSB-5 Specifications

Nominal flow rate		80 l/min	21 US gpm
Operating pressure (maximum)		315 bar	4600 psi
Back pressure (maximum)	on outlet port T	25 bar	360 psi
Fluid temperature range	with NBR(BUNA-N) seals	from - 20° to 80°C	from - 4° to 176° F
	with FPM(VITON) seal	from - 20° to 100°C	from - 4° to 212° F
Viscosity	operating range	from 15 to 75 mm²/s	from 15 to 75 cst
	min	12 mm²/s	12 cst
	max.	400 mm²/s	400 cst
Ambient temperature range		from - 40° to 60°C	from - 40° to 140° F

• All specifications, dimensions and design characteristics shown in this catalogue are subject to change without notice.

MSB-5

Monoblock Directional Control Valves



1:	Body Kits	WITHOUT SERVICE PORT VALVES PREARRANGEMENT (INCLUDE BODY, SEALS, RINGS AND LOAD CHECK VALVE.)
TYPE		DESCRIPTION
1 - S		1 section
2 - S		2 sections
3 - S		3 sections
4 - S		4 sections
5 - S		5 sections
6 - S		6 sections

2:	Inlet Relief (Optional)			
TYPE		CODE	DESCRIPTION	PAGE
XWG		YLMSB52001	Pilot operated pressure relief valve Range 25 to 315 bar/ 360 to 4600 psi, standard setting 125 bar/ 1800 psi	P. 11
WG-2		YLMSB52002	Direct pressure relief valve Range 80 to 160 bar/ 1150 to 2300 psi, standard setting 125 bar/ 1800 psi	P. 11
WG-3		YLMSB52003	Direct pressure relief valve Range 125 to 250 bar/ 1800 to 3600 psi, standard setting 175 bar/ 2500 psi	P. 11
WG-4		YLMSB52004	Direct pressure relief valve Range 200 to 315 bar/ 2900 to 4600 psi, standard setting 220 bar/ 3200 psi	P. 11
SV		YLMSB52100	Relief valve blanking plug	P. 11

3: Spool Options

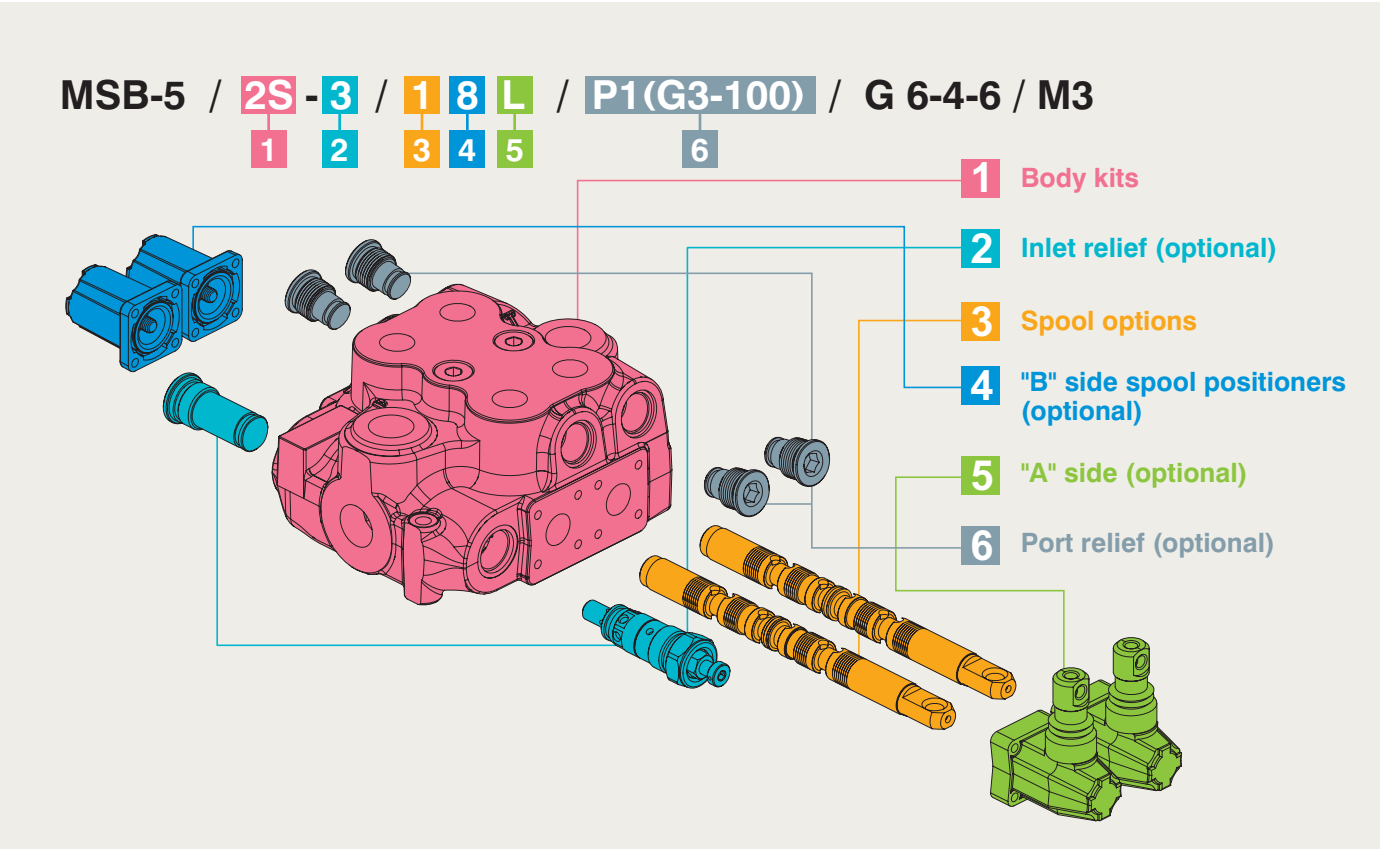
TYPE	CODE	DESCRIPTION	PAGE
1	YLMSB53001	Double acting, 3 positions, with A, B closed in neutral position	P. 12
2	YLMSB53002	Double acting, 3 positions, with A, B open to Tank in neutral position	P. 12
3	YLMSB53003	Single acting on A closed in neutral position, 3 positions, B plugged	P. 13
4	YLMSB53004	Single acting on B closed in neutral position, 3 positions, A plugged	P. 13
5	YLMSB53005	Double acting, 3 positions, with B open to Tank in neutral position	P. 14
6	YLMSB53006	Double acting, 3 positions, with A open to Tank in neutral position	P. 14
7	YLMSB53007	Single acting on A open to Tank in neutral position, 3 positions, B plugged	P. 15
8	YLMSB53008	Single acting on B open to Tank in neutral position, 3 positions, A plugged	P. 15

4: B Side Spool Positioners

TYPE	CODE	DESCRIPTION	PAGE
6-1	YLWSN43061	Detent in pos. 1-0-2, without spring centered	P. 20
6-2	YLWSN43062	2 positions, detent in pos. 0-2, without spring centered	P. 20
6-3	YLWSN43063	2 positions, detent in pos. 1-0, without spring centered	P. 20
8D2	YLWSN43082	With spring return to neutral position and pin with M8 male thread for dual control	P. 20
8EP3	YLWSN44300	ON/OFF Electro-Pneumatic actuator	P. 21
8P	YLWSN43080	ON/OFF Pneumatic actuator	P. 21
8MG1 (NO)	YLWSN43801	Microswitch kit operated in pos. 1 (Normally Open)	P. 24
8MG2 (NO)	YLWSN43802	Microswitch kit operated in pos. 2 (Normally Open)	P. 24
8MG3 (NO)	YLWSN43803	Microswitch kit operated in pos. 1&2 (Normally Open)	P. 24
MG (NO)	YLWSN43804	Microswitch with NO terminal	P. 24
8MG1 (NC)	YLWSN438011	Microswitch kit operated in pos. 1 (Normally Closed)	P. 24
8MG2 (NC)	YLWSN438021	Microswitch kit operated in pos. 2 (Normally Closed)	P. 24
8MG3 (NC)	YLWSN438031	Microswitch kit operated in pos. 1&2 (Normally Closed)	P. 24
MG (NC)	YLWSN438041	Microswitch with NC terminal	P. 24
8	YLWSN43008	With spring return to neutral position	P. 25
8-1	YLWSN44801	2 positions, with spring centered from pos. 1	P. 25
8-2	YLWSN44082	2 positions, with spring centered from pos. 2	P. 25
9-1	YLWSN43091	Detent in pos. 1, 2 with spring centered	P. 25
9-2	YLWSN43092	Detent in pos. 2 with spring centered	P. 25
9-3	YLWSN43093	Detent in pos. 1 with spring centered	P. 25
8ED3+RV-KE1R3	YLMSB54201	1S: ON/OFF Electro-Hydraulic control kit with pilot and drain line+backpressure valve (12/24 VDC)	P. 22
8ED3+RV-KE2R3	YLMSB54202	2S: ON/OFF Electro-Hydraulic control kit with pilot and drain line+backpressure valve (12/24 VDC)	P. 22
8ED3+RV-KE3R3	YLMSB54203	3S: ON/OFF Electro-Hydraulic control kit with pilot and drain line+backpressure valve (12/24 VDC)	P. 22
8ED3+RV-KE4R3	YLMSB54204	4S: ON/OFF Electro-Hydraulic control kit with pilot and drain line+backpressure valve (12/24 VDC)	P. 22
8ED3+RV-KE5R3	YLMSB54205	5S: ON/OFF Electro-Hydraulic control kit with pilot and drain line+backpressure valve (12/24 VDC)	P. 22
8ED3+RV-KE6R3	YLMSB54206	6S: ON/OFF Electro-Hydraulic control kit with pilot and drain line+backpressure valve (12/24 VDC)	P. 22
8ER3+KE1S0	YLMSB54401	1S: ON/OFF Electro-hydraulic control kit with collector kit for external pilot and drain	P. 23
8ER3+KE2S0	YLMSB54402	2S: ON/OFF Electro-hydraulic control kit with collector kit for external pilot and drain	P. 23
8ER3+KE3S0	YLMSB54403	3S: ON/OFF Electro-hydraulic control kit with collector kit for external pilot and drain	P. 23
8ER3+KE4S0	YLMSB54404	4S: ON/OFF Electro-hydraulic control kit with collector kit for external pilot and drain	P. 23
8ER3+KE5S0	YLMSB54405	5S:ON/OFF Electro-hydraulic control kit with collector kit for external pilot and drain	P. 23
8ER3+KE6S0	YLMSB54406	6S: ON/OFF Electro-hydraulic control kit with collector kit for external pilot and drain	P. 23

MSB-5

Monoblock Directional Control Valves



5: A Side (Optional)

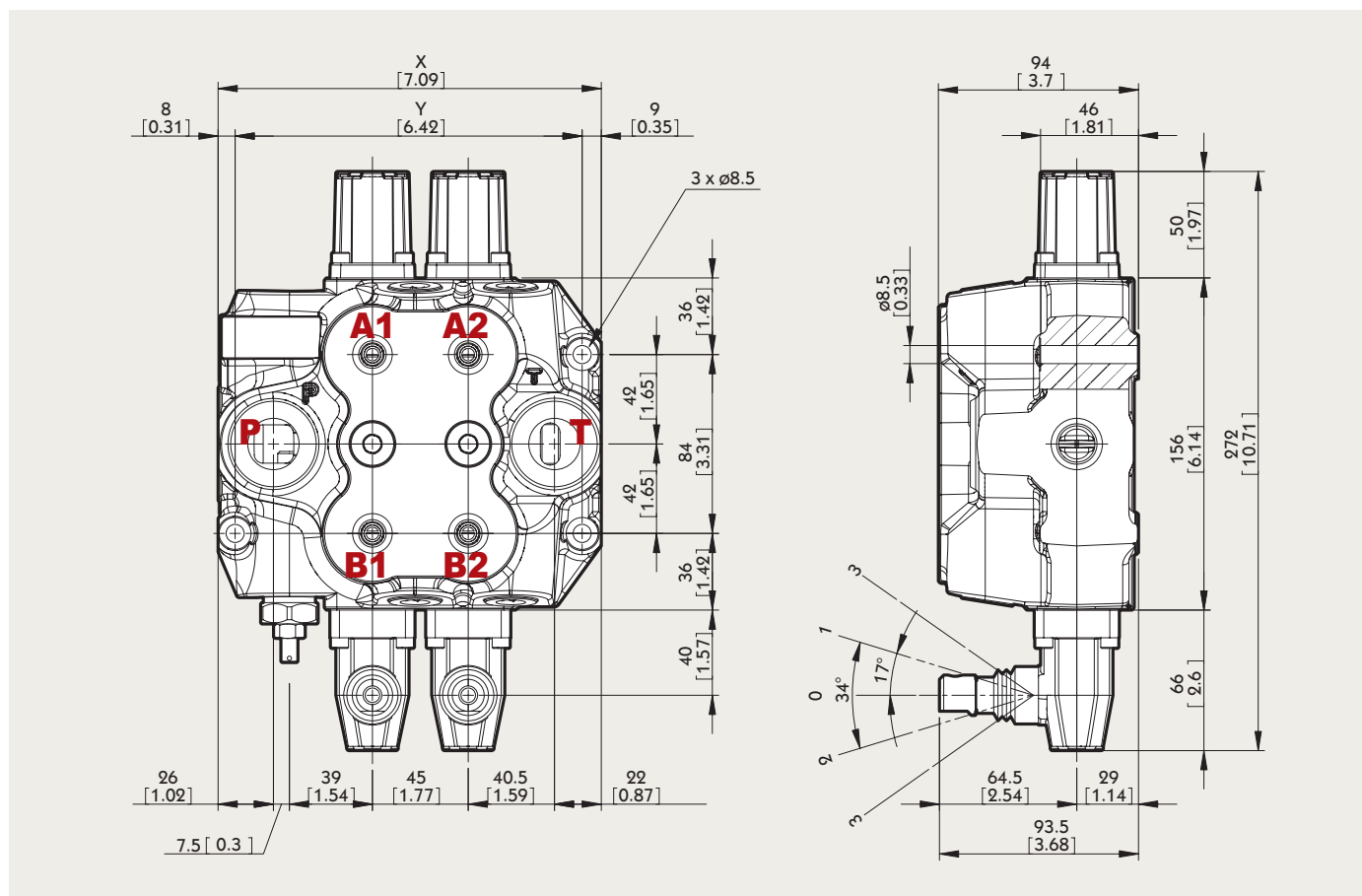
TYPE	CODE	DESCRIPTION	PAGE
L	YLWSN44000	Standard lever box	P. 16
SLP	YLWSN44001	Without lever box, with dust-proof plate	P. 16
LCB	YLWSN45002	Joystick lever for 2 section operation	P. 17
TQ	YLWSN44003	Flexible cable connection	P. 18

6: Port Relief (Optional)

TYPE	CODE	DESCRIPTION	PAGE
P (G2-63)	YLWSN45002	Anti-shock valve, range 63 to 125 bar / form 900 to 1800 psi standard setting 63 bar / 900 psi	P. 26
P (G3-100)	YLWSN45003	Anti-shock valve, range 100 to 250 bar / form 1450 to 3600 psi standard setting 100 bar / 1450 psi	P. 26
P (G4-200)	YLWSN45004	Anti-shock valve, range 200 to 315 bar / form 2900 to 4600 psi standard setting 200 bar / 2900 psi	P. 26
PM (G2-63)	YLWSN45005	Anti-shock valve, range 63 to 125 bar / form 900 to 1800 psi standard setting 63 bar / 900 psi, for low setting	P. 26
U (G2-63)	YLWSN45012	Anti-shock valve and Anti-cavitation valve, range 63 to 125 bar / form 900 to 1800 psi standard setting 63 bar / 900 psi	P. 26
U (G3-100)	YLWSN45013	Anti-shock valve and Anti-cavitation valve, range 100 to 250 bar / form 1450 to 3600 psi standard setting 100 bar / 1450 psi	P. 26
U (G4-200)	YLWSN45014	Anti-shock valve and Anti-cavitation valve, range 200 to 315 bar / form 2900 to 4600 psi standard setting 200 bar / 2900 psi	P. 26
C	YLWSN45100	Anti - cavitation	P. 26

MSB-5 Dimensions

Monoblock Directional Control Valves



Standard threads

Ports	Inlet P	A and B ports	Outlet T and poewr beyond C
BSP	G3/4	G1/2	G3/4
UN-UNF	1" 1/16-12 UN (SAE 12)	7/8-14 UNF (SAE 10)	1" 1/16-12 UN (SAE 12)
METRIC	M27x2	M22x1.5	M27x2

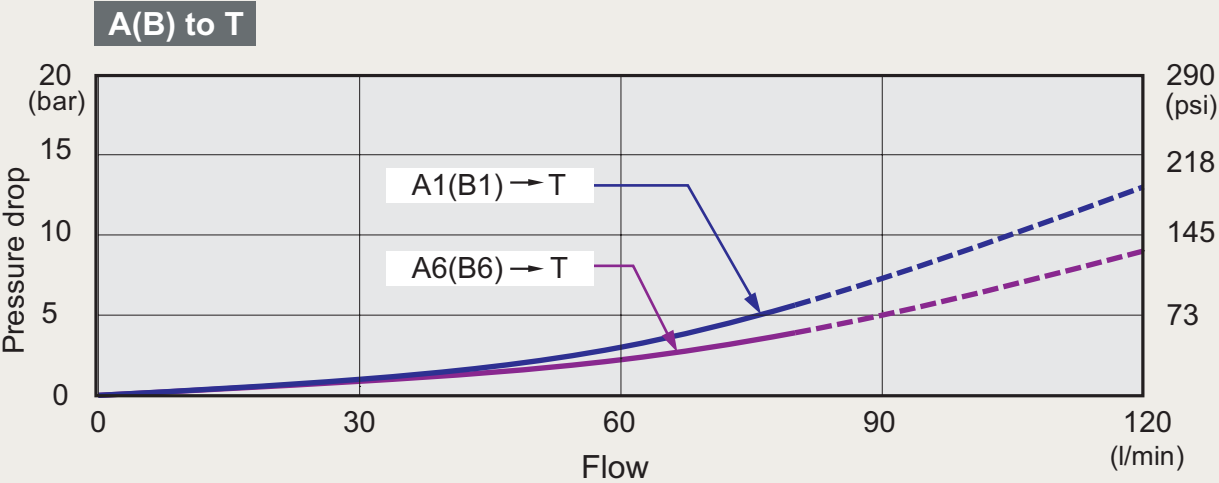
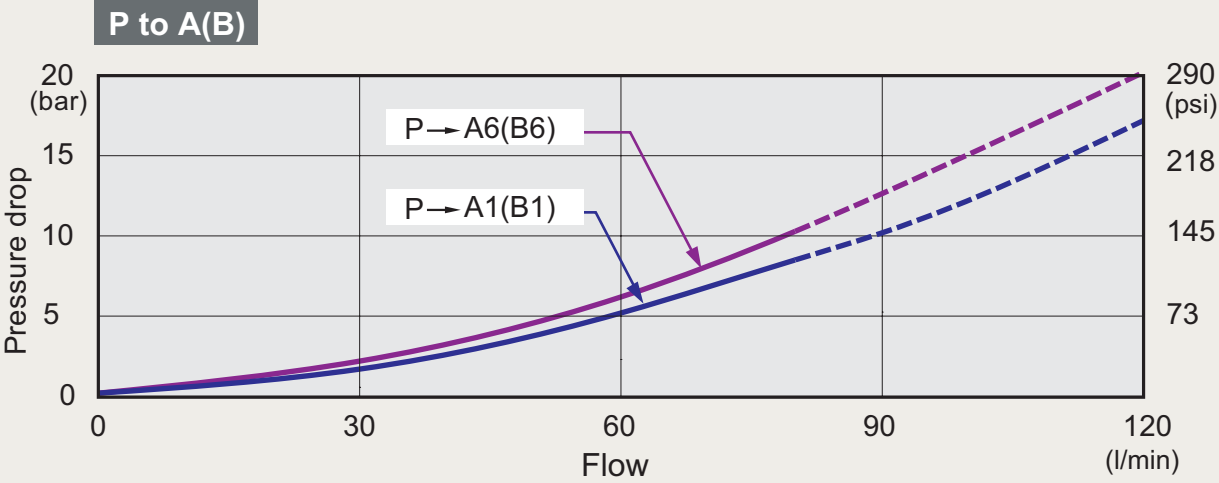
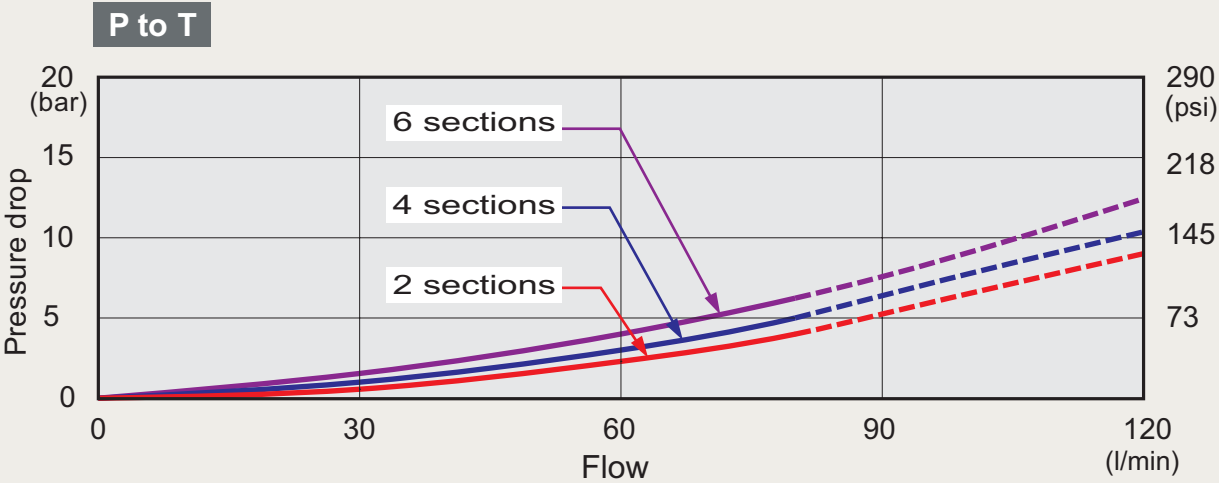
• G-1/2 : G4 G-3/8 : G3 G-3/4 : G6
 • SAE 8: E8 SAE 10: E10 SAE 12: E12 SAE 16: E16

Standard dimensions

TYPE	X		Y	
	mm	in	mm	in
MSB5 /1S	135	5.32	118	4.65
MSB5 /2S	180	7.09	163	6.42
MSB5 /3S	225	8.86	208	8.19
MSB5 /4S	270	10.63	253	9.96
MSB5 /5S	315	12.40	298	11.73
MSB5 /6S	360	14.17	343	13.50

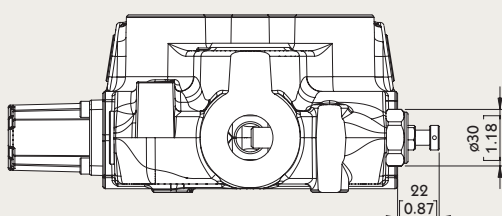
MSB-5 Performance Curve Chart

Monoblock Directional Control Valves

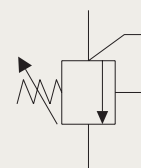


MSB-5 Inlet Relief (Optional) Monoblock Directional Control Valves

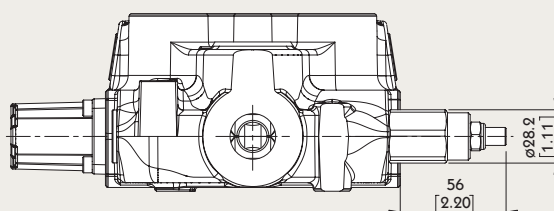
Type WG



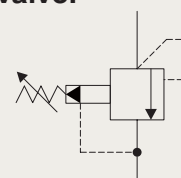
Direct pressure relief valve:



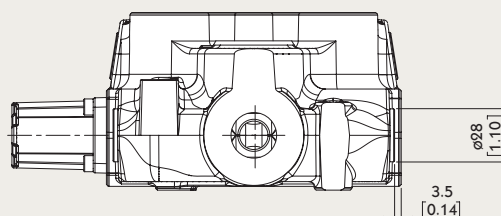
Type XWG



Pilot operated pressure relief valve:



Type SV

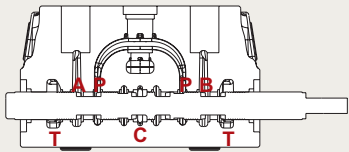
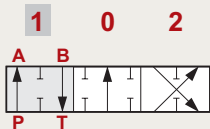
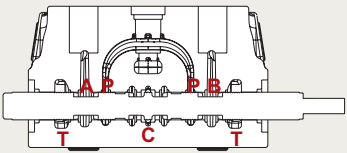
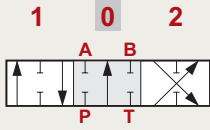
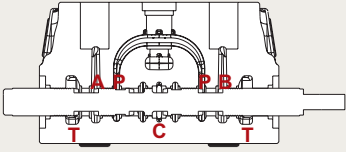
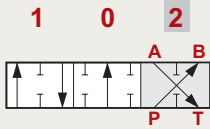


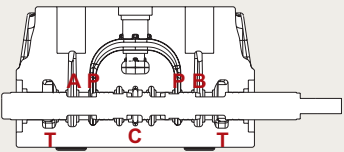
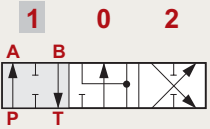
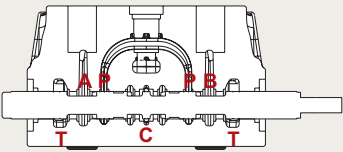
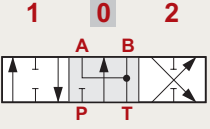
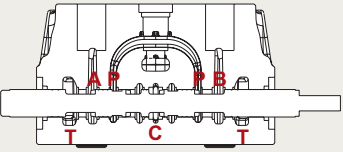
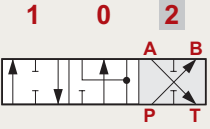
Relief valve blanking plug:



MSB-5 spool Options

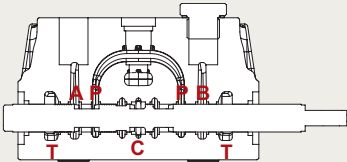
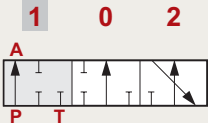
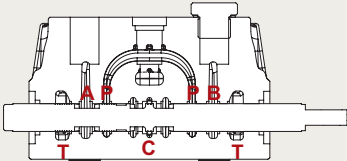
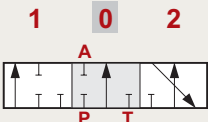
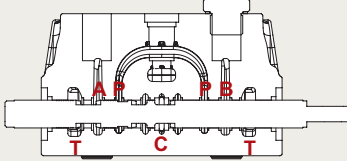
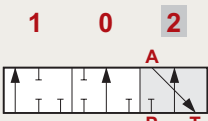
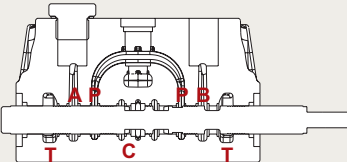
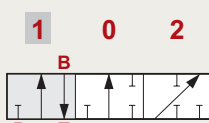
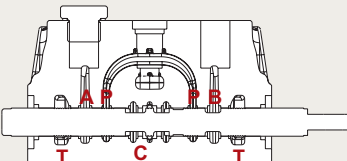
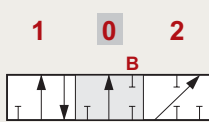
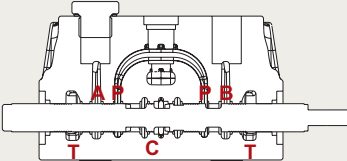
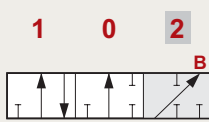
Monoblock Directional Control Valves

TYPE 1		
	P → A B → T C closed	
	P & T & A & B closed C open	
	P → B A → T C closed	

TYPE 2		
	P → A B → T C closed	
	A & B → T P closed C open	
	P → B A → T C closed	

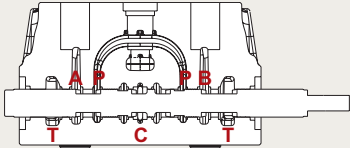
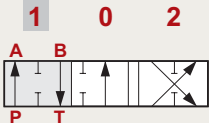
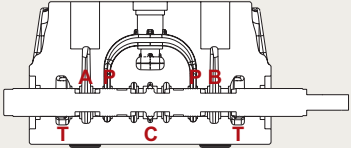
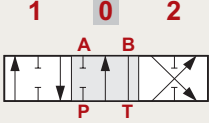
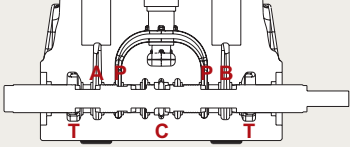
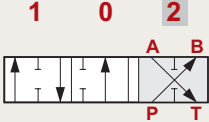
MSB-5 spool Options

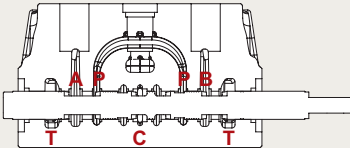
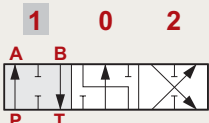
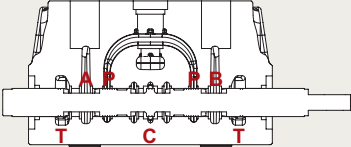
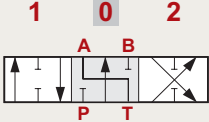
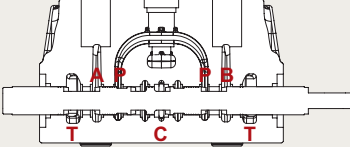
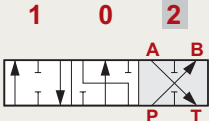
Monoblock Directional Control Valves

TYPE 3		
	P → A C closed	1 0 2  "B" port plugged
	P & T & A closed C open	1 0 2  "B" port plugged
	A → T C open	1 0 2  "B" port plugged
TYPE 4		
	B → T C closed	1 0 2  "A" port plugged
	P & T & B closed C open	1 0 2  "A" port plugged
	P → B C closed	1 0 2  "A" port plugged

MSB-5 spool Options

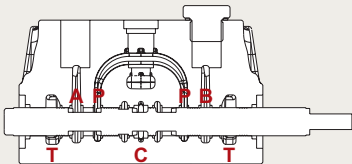
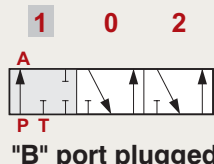
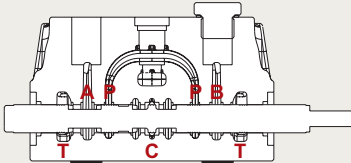
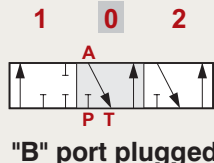
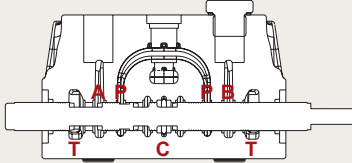
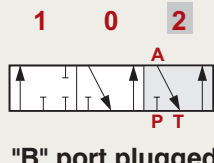
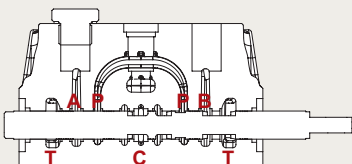
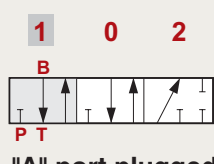
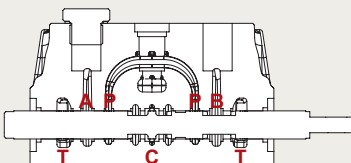
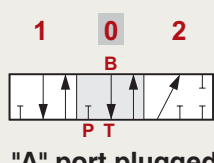
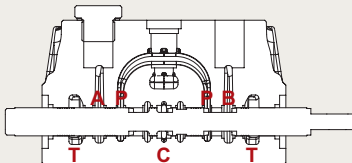
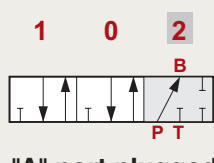
Monoblock Directional Control Valves

TYPE 5		
	P → A B → T C closed	
	B → T P & A closed C open	
	P → B A → T C closed	

TYPE 6		
	P → A B → T C closed	
	A → T P & B closed C open	
	P → B A → T C closed	

MSB-5 spool Options

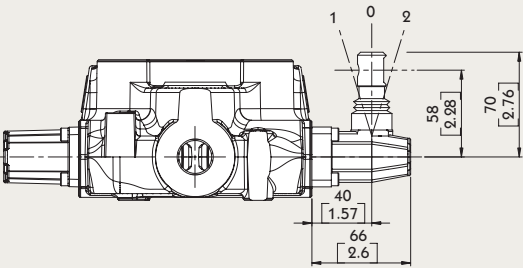
Monoblock Directional Control Valves

TYPE 7		
	A → T P closed C open	1 0 2  "B" port plugged
	P → A P closed C open	1 0 2  "B" port plugged
	A → T P closed C open	1 0 2  "B" port plugged
TYPE 8		
	B → T P closed C open	1 0 2  "A" port plugged
	B → T P closed C open	1 0 2  "A" port plugged
	P → B C & T closed	1 0 2  "A" port plugged

MSB-5 A side

Monoblock Directional Control Valves

Type L



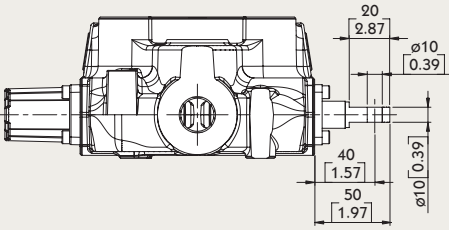
Technical drawing of the MSB-5 A side Type L valve. The drawing shows the valve body with dimensions: 40 [1.57], 66 [2.6], 58 [2.28], 70 [2.76]. The port configuration is indicated by 1, 0, 2.



Port configuration diagram for Type L valve showing ports 1, 0, and 2.

Type L :
STANDART LEVER KIT

Type SLP



Technical drawing of the MSB-5 A side Type SLP valve. The drawing shows the valve body with dimensions: 20 [2.87], 40 [1.57], 50 [1.97], 10 [0.39], 10 [0.39]. The port configuration is indicated by 1, 0, 2.



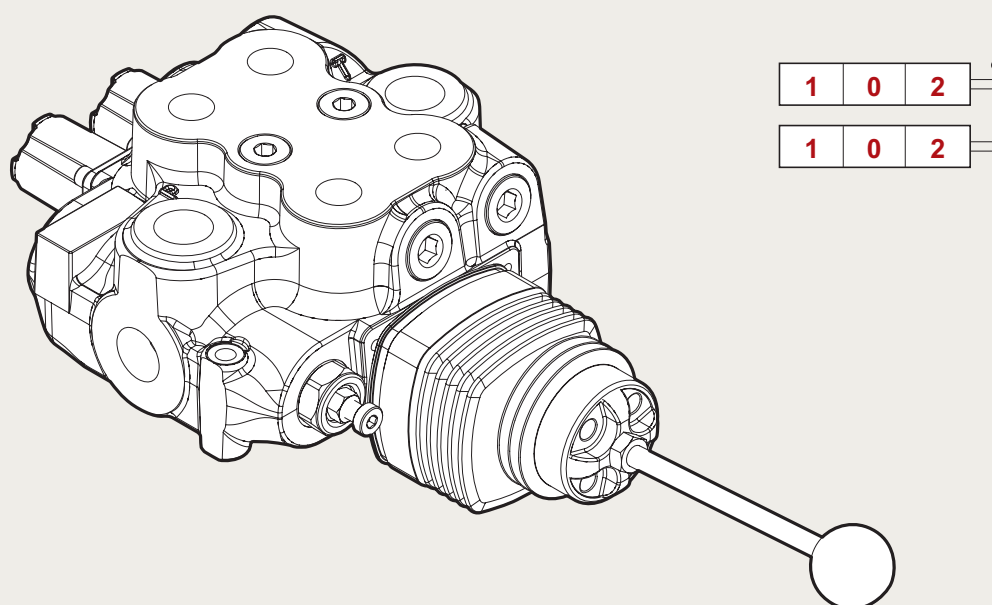
Port configuration diagram for Type SLP valve showing ports 1, 0, and 2.

Type SLP :
WITH DUST-PROOF PLATE

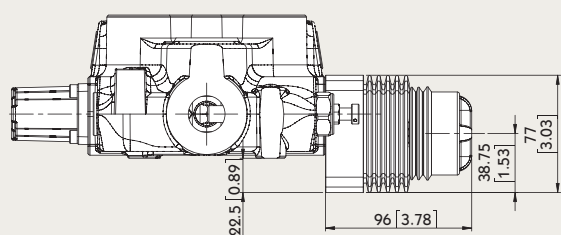
MSB-5 A Side

Monoblock Directional Control Valves

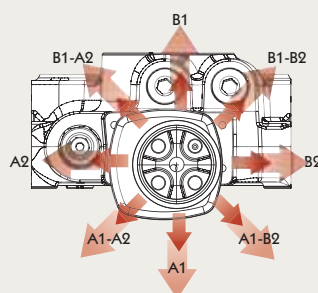
LCB: Joystick control



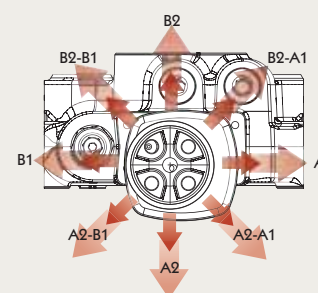
Type LCB



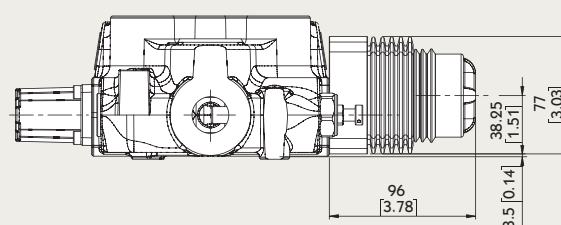
LCB1



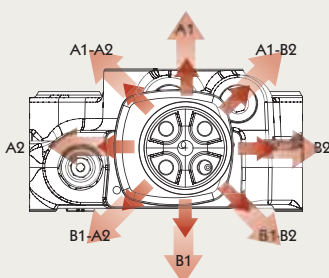
LCB2



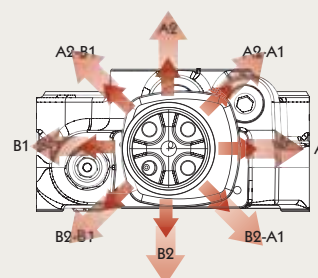
Type LCB



LCB3

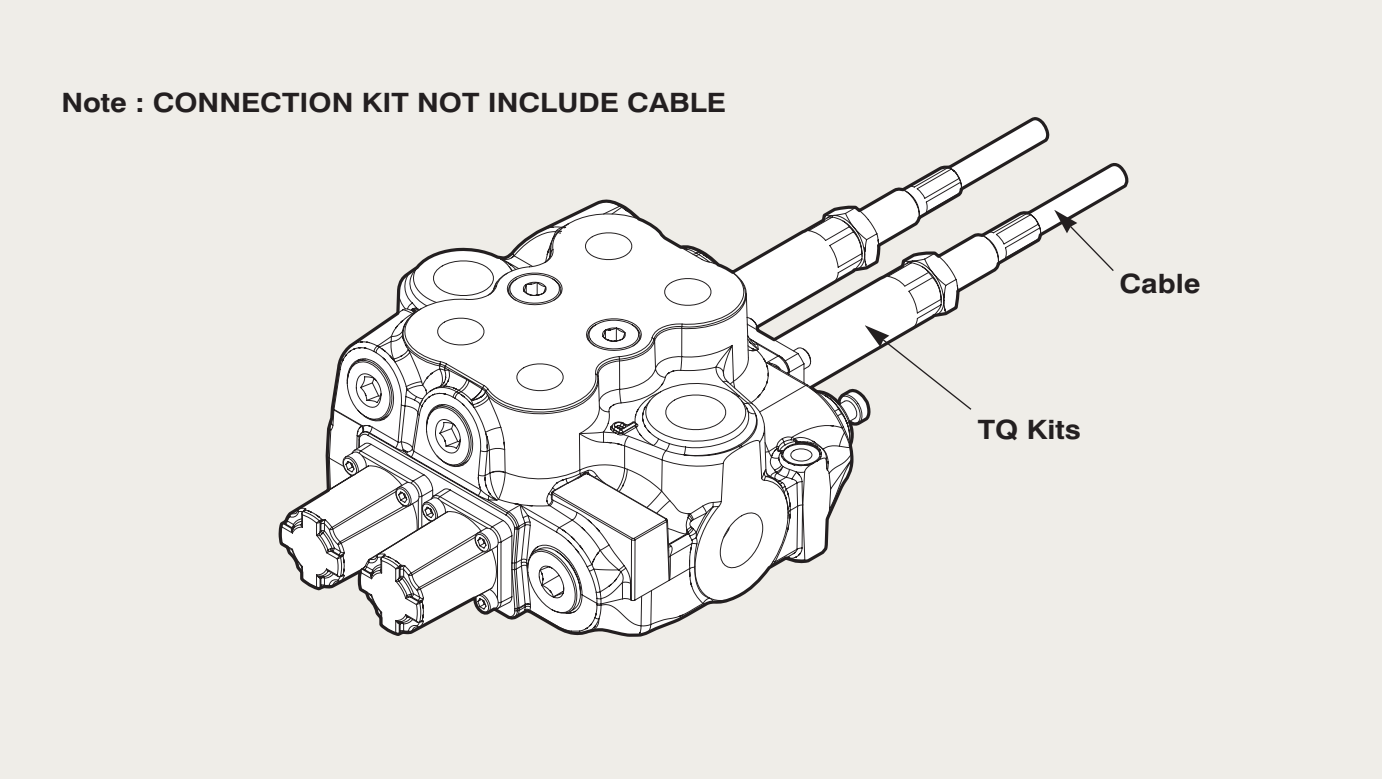


LCB4



MSB-5 A Side

Monoblock Directional Control Valves



Type TQ

Technical drawing of a valve assembly. The drawing shows a side view of the valve with a central body and a handle. The handle is labeled with the thread specification M6x1.0. The main body is labeled with the thread specification M16x1.5. The drawing includes the following dimensions:

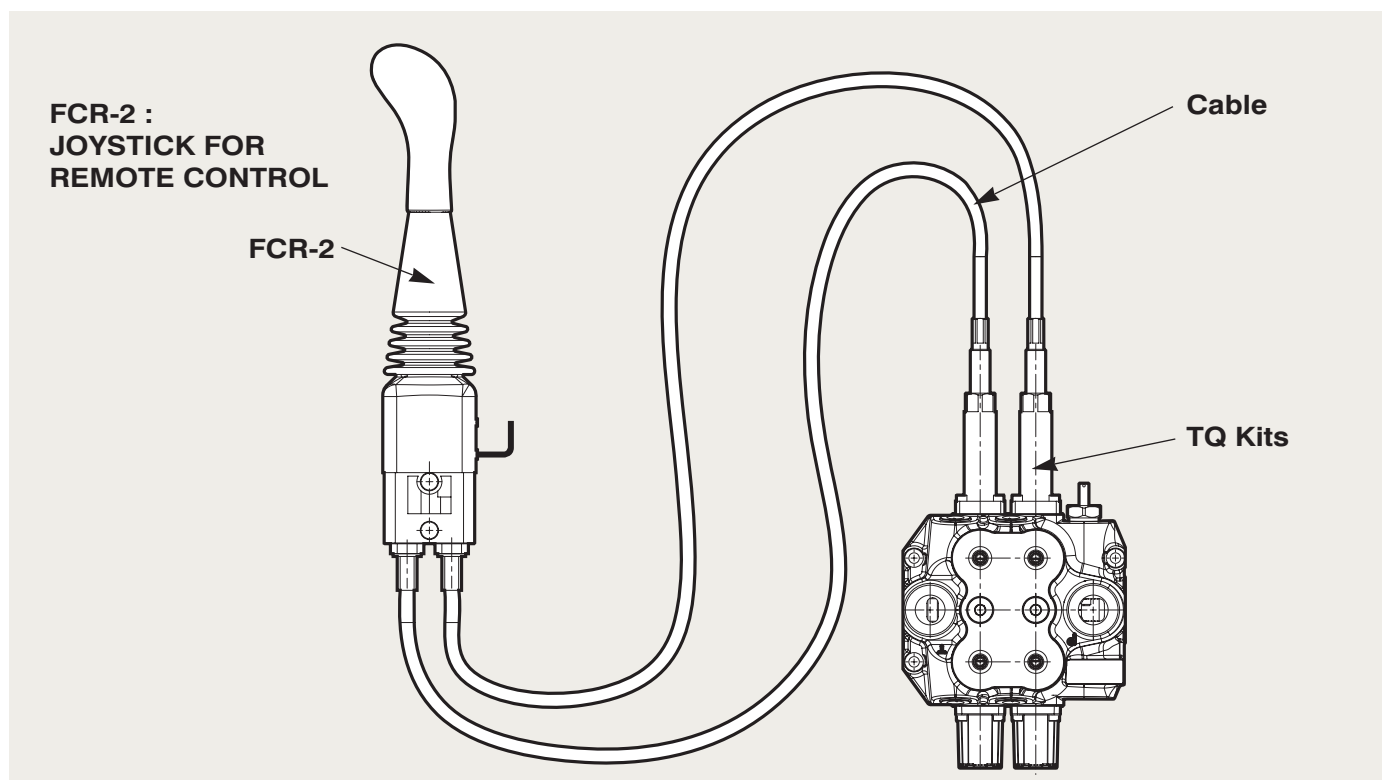
- 10 [0.39]
- 87.5 [3.44]
- 97.5 [3.84]

TQ Kit:

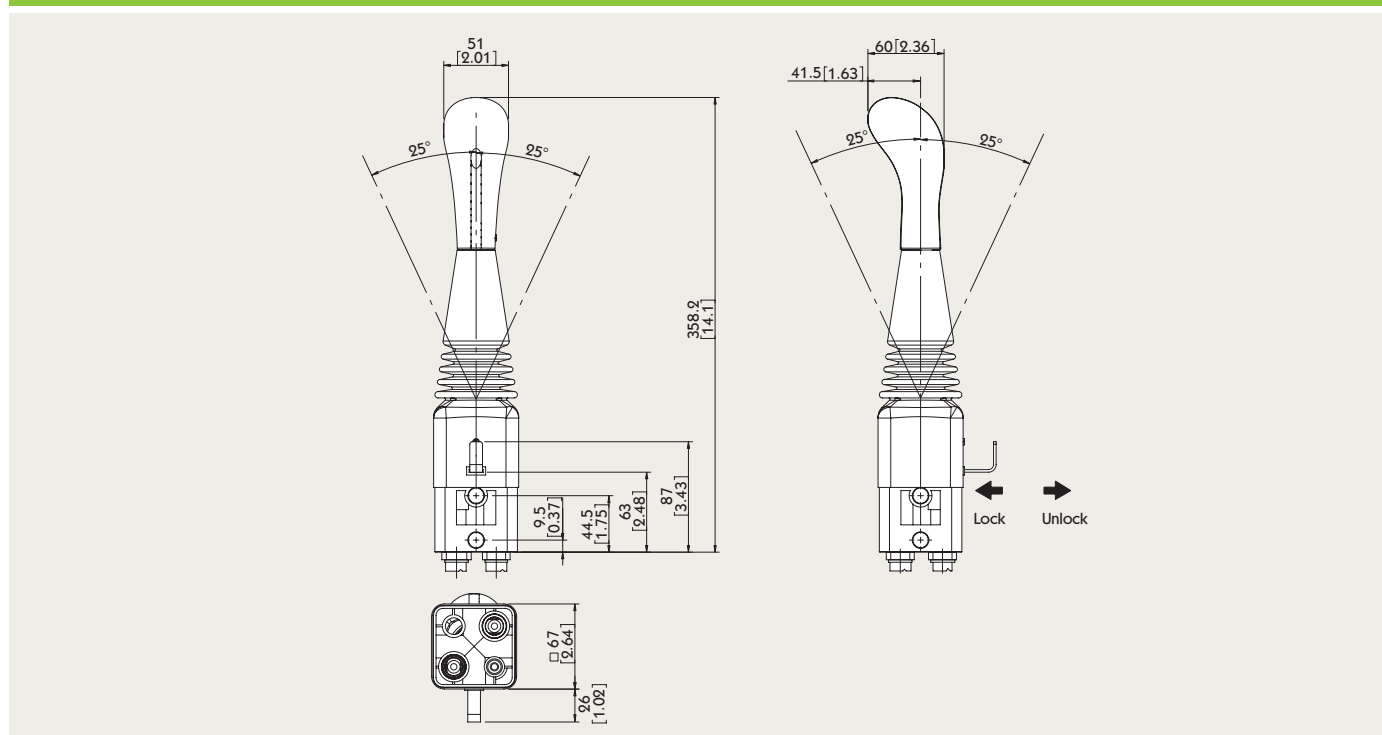
Diagram of the TQ Kit assembly. The kit consists of three components labeled 1, 0, and 2. Component 1 is a small cylindrical part. Component 0 is a larger cylindrical part. Component 2 is a small cylindrical part. The components are shown in a row, with component 1 on the left, component 0 in the middle, and component 2 on the right. The components are connected by a central shaft.

MSB-5 A Side

Monoblock Directional Control Valves

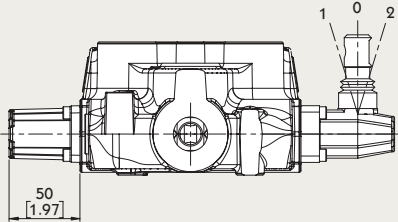


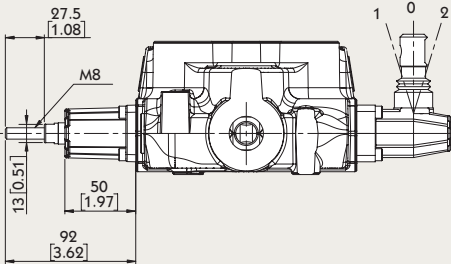
Type FCR-2



MSB-5 B Side

Monoblock Directional Control Valves

Type 6		
		6-1 Kit: DETENT IN POS. 1-0-2, WITHOUT SPRING CENTERED
		6-2 Kit: 2 POSITIONS, DETENT IN POS. 0-2, WITHOUT SPRING CENTERED
		6-3 Kit: 2 POSITIONS, DETENT IN POS. 1-0, WITHOUT SPRING CENTERED

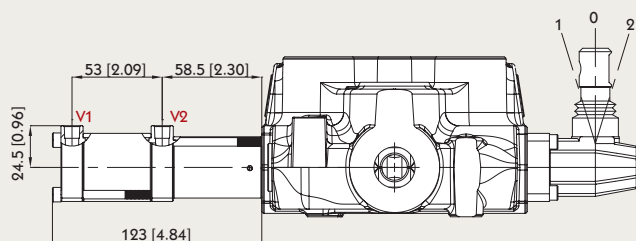
Type 8D2		
		8D2 Kit: WITH SPRING RETURN TO NEUTRAL POSITION AND PIN WITH M8 MALE THREAD FOR DUAL CONTROL

MSB-5 B Side

Monoblock Directional Control Valves

Type 8P

V1 & V2: NPT 1/8 - 27

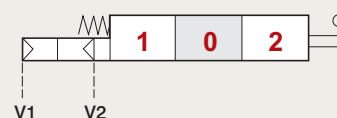


Operating feature :

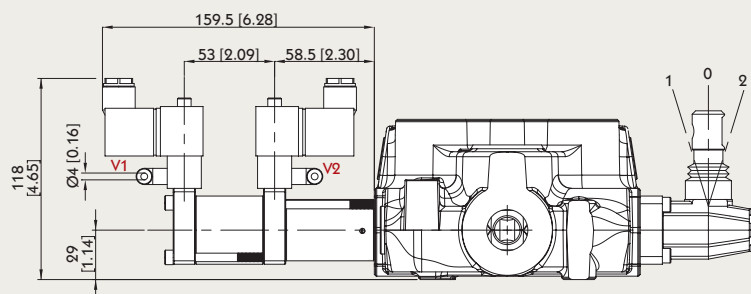
PILOT PRESSURE (MIN.): 6 BAR / 87 PSI

PILOT PRESSURE (MAX.): 12 BAR / 174 PSI

ON/OFF PNEUMATIC KIT



Type 8EP3

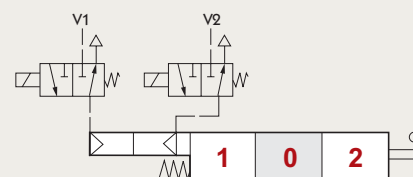


Solenoid operating features :

NOMINAL VOLTAGE: 24VDC

NOMINAL VOLTAGE TOLERANCE: $\pm 10\%$

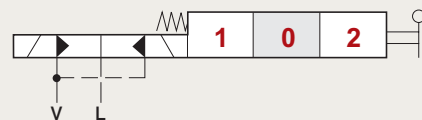
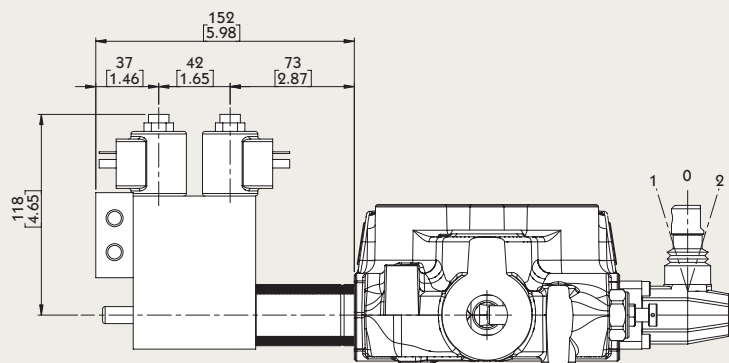
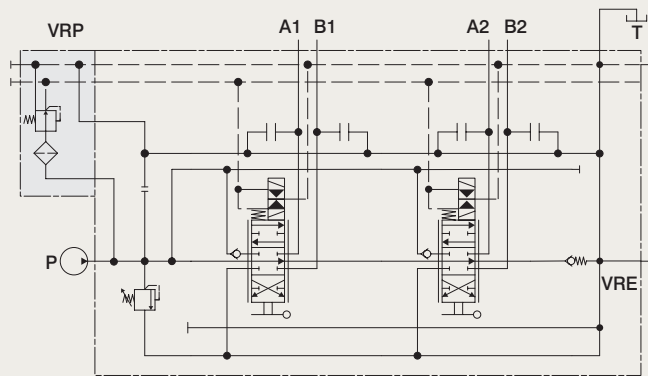
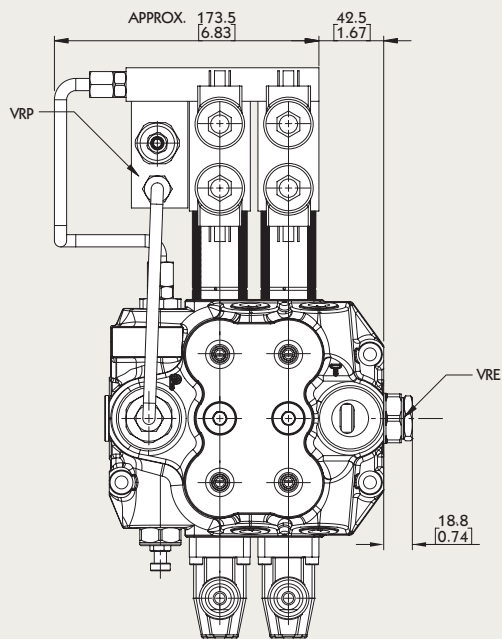
POWER RATING: 5W



MSB-5 B Side

Monoblock Directional Control Valves

Type 8ED3



Operating features :

PILOT PRESSURE: • MIN. 10 BAR / 145 PSI
 • MAX. 50 BAR / 725 PSI
 MAX. BACKPRESSURE ON DRAIN L: 25 BAR / 360PSI

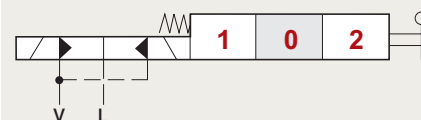
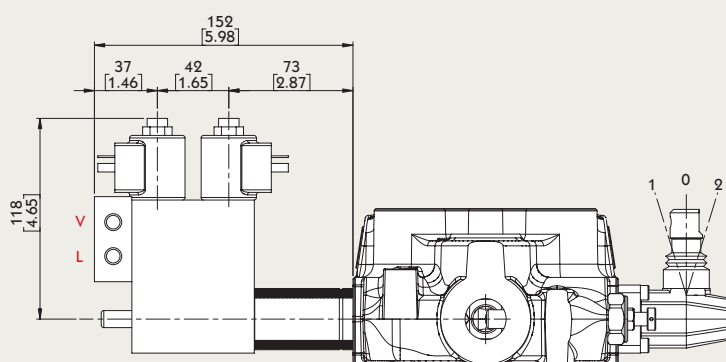
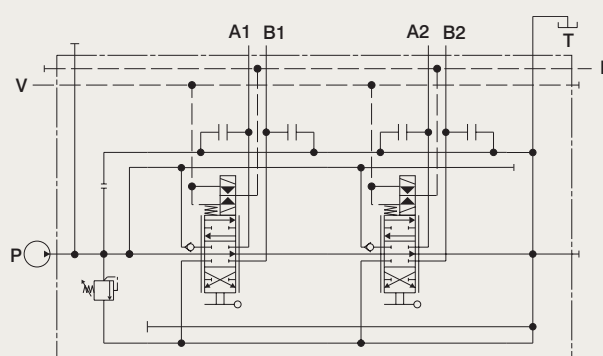
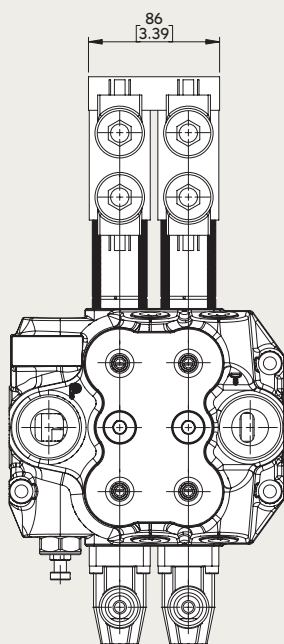
Coil features :

NOMINAL VOLTAGE TOLERANCE: ±10%
 ELECTRIC POWER: 21 W
 STANDARD VOLTAGE: 12 VDC / 24 VDC

MSB-5 B Side

Monoblock Directional Control Valves

Type 8ER3



Operating features :

PILOT PRESSURE: • MIN. 10 BAR / 145 PSI
• MAX. 50 BAR / 725 PSI

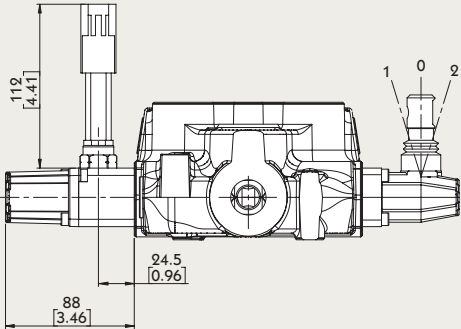
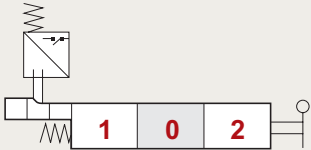
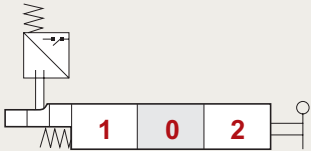
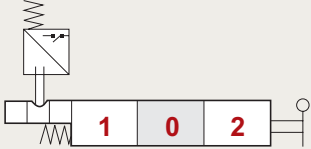
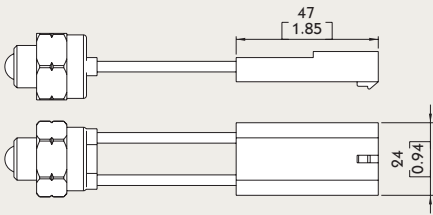
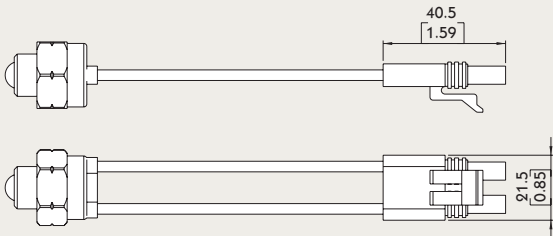
MAX. BACKPRESSURE ON DRAIN L: 25 BAR / 360PSI

Coil features :

NOMINAL VOLTAGE TOLERANCE: $\pm 10\%$
ELECTRIC POWER: 21 W
STANDARD VOLTAGE: 12 VDC / 24 VDC

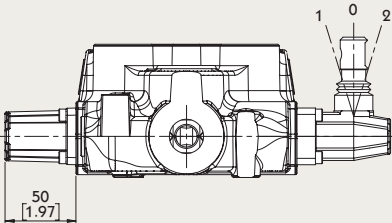
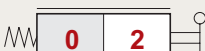
MSB-5 B Side

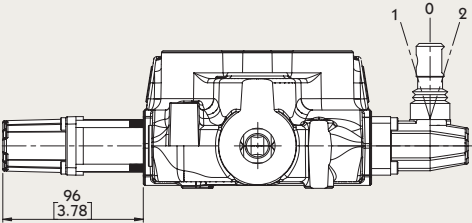
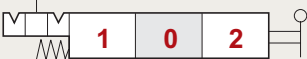
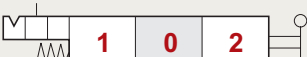
Monoblock Directional Control Valves

Type 8MG		
 MICROSWITCH Operating features : MECHANICAL LITE: 5X10⁵ OPERATIONS ELECTRICAL LITE (RESISTIVE LOAD): • 10⁵ OPERATIONS - 7A / 13.5 VDC • 5x10⁴ OPERATIONS - 10A / 12 VDC • 5x10⁴ OPERATIONS - 3A / 28 VDC	 8MG1 Kit: MICROSWITCH WITH MALE/FEMALE CONNECTOR, OPERATED IN POS. 1	
	 8MG2 Kit: MICROSWITCH WITH MALE/FEMALE CONNECTOR, OPERATED IN POS. 2	
	 8MG3 Kit: MICROSWITCH WITH MALE/FEMALE CONNECTOR, OPERATED IN POS. 1 AND POS. 2	
	With NO contact (female connector with male end) 	
	With NC contact (male connector with female end) 	

MSB-5 B Side

Monoblock Directional Control Valves

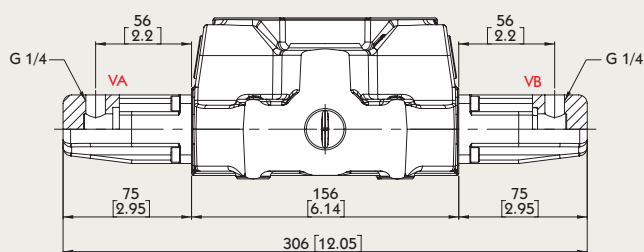
Type 8		
		8 Kit: SPRING RETURN TO NEUTRAL POSITION.
		8-1 Kit: SPRING RETURN TO NEUTRAL POSITION. (2 POSITIONS)
		8-2 Kit: SPRING RETURN TO NEUTRAL POSITION. (2 POSITIONS)

Type 9		
		9-1 Kit: DETENT IN POS. 1, 2 WITH SPRING CENTERED
		9-2 Kit: DETENT IN POS. 2 WITH SPRING CENTERED
		9-3 Kit: DETENT IN POS. 1 WITH SPRING CENTERED

MSB-5 B Side

Monoblock Directional Control Valves

Type 8IM



Operating features :

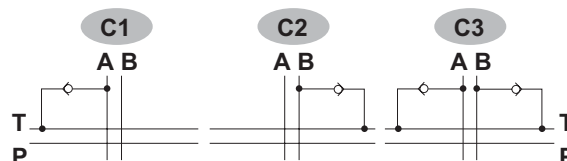
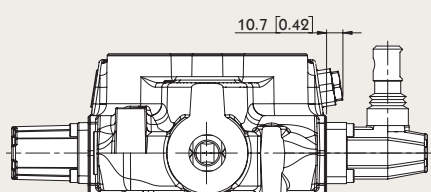
PILOT PRESSURE : MAX. 50 BAR

INTERNAL LEAKAGE A(B) -> T : MAX. 6 CM³/MIN
(100 BAR / 40°C)

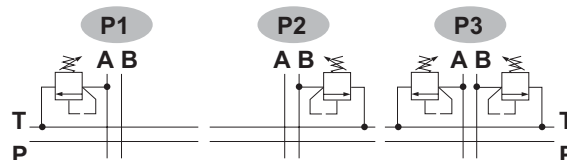
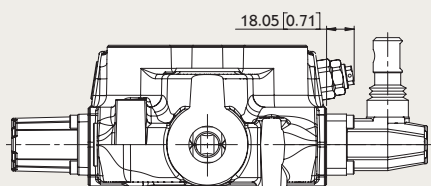
MSB-5 Port Relief

Monoblock Directional Control Valves

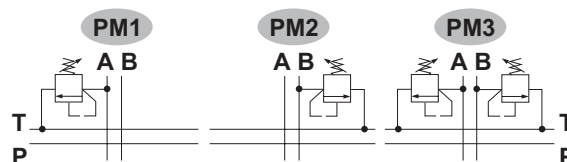
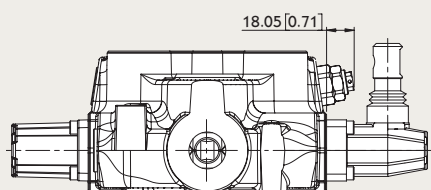
TYPE C



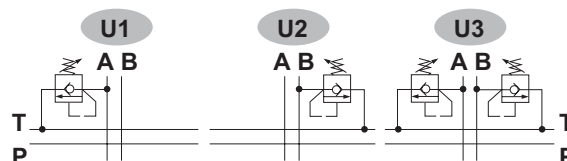
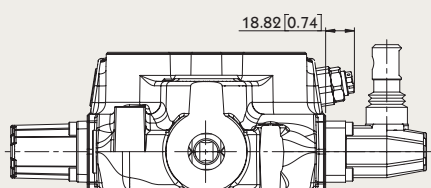
TYPE P



TYPE PM



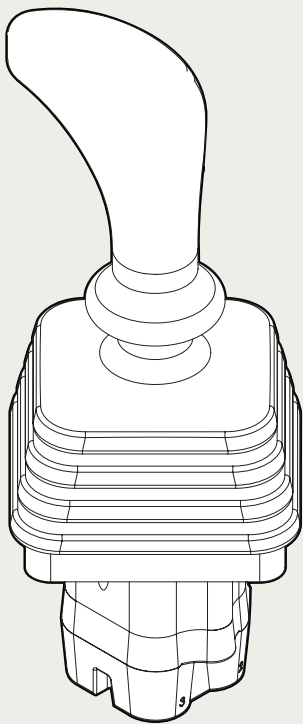
TYPE U



MSB-5 Accessories

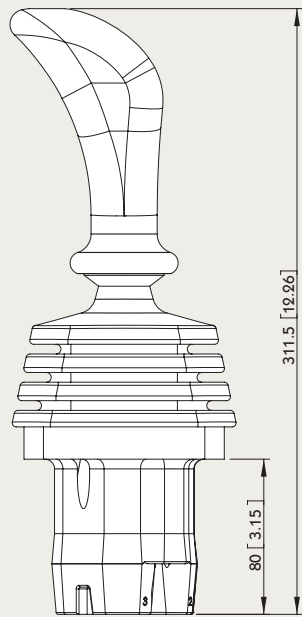
Monoblock Directional Control Valves

Type JHP-2

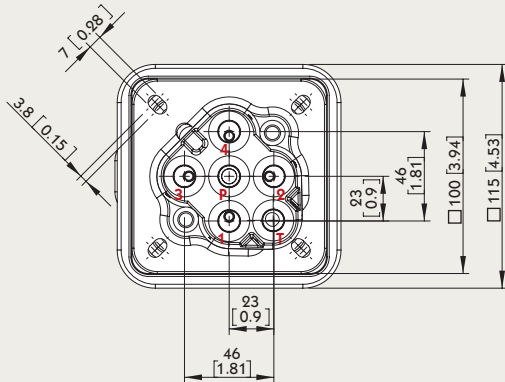
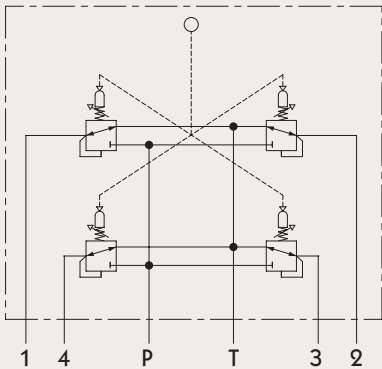


Specifications:

- This data sheet shows technical spec. with mineral oil of 46 mm²/s (cSt) viscosity at 40 °C (104 °F)
- Flow : 5 ~ 20 LPM
- Feeding pressure : 30 ~ 100 bar
- Max. backpressure : 3 bar
- Internal leakage at 30 bar : 10 ~ 18 cm³/min
- Fluid : mineral oil
- Fluid temperature : - 10 ~ 80 °C
- Ambient temperature : - 40 ~ 60 °C



HYDRAULIC SCHEME:



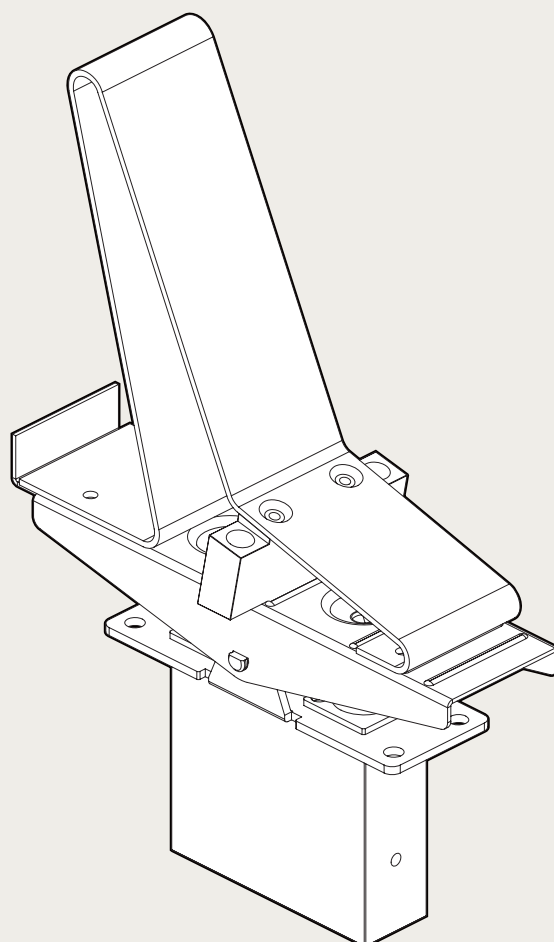
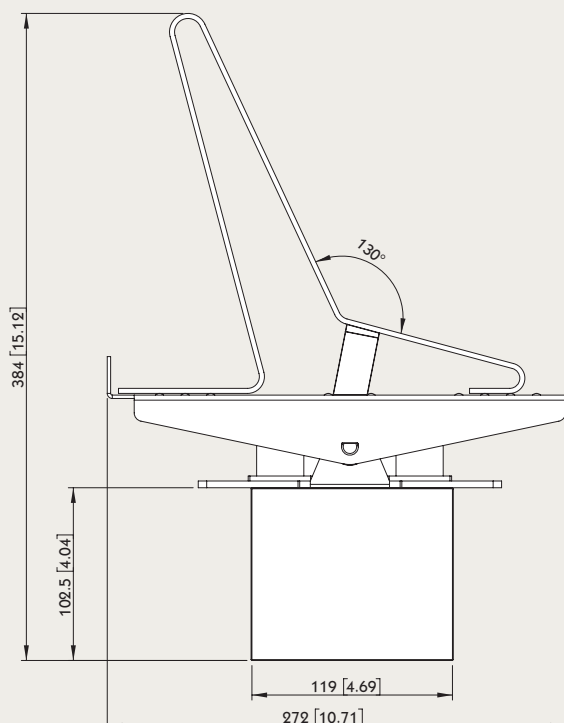
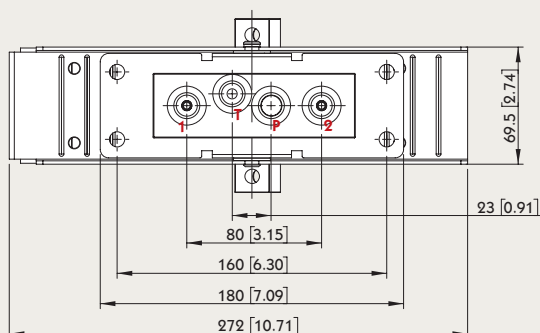
MSB-5 Accessories

Monoblock Directional Control Valves

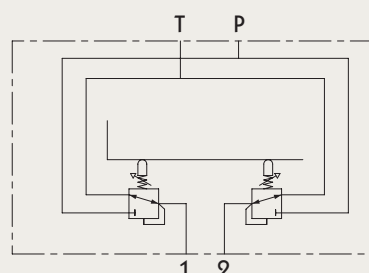
Type PHP-1

Specifications:

- This data sheet shows technical spec. with mineral oil of 46 mm²/s (cSt) viscosity at 40 °C (104 °F)
- Flow : 5 ~ 20 LPM
- Feeding pressure : 30 ~ 100 bar
- Max. backpressure : 3 bar
- Internal leakage at 30 bar : 10 ~ 18 cm³/min
- Fluid : mineral oil
- Fluid temperature : - 10 ~ 80 °C
- Ambient temperature : - 40 ~ 60 °C



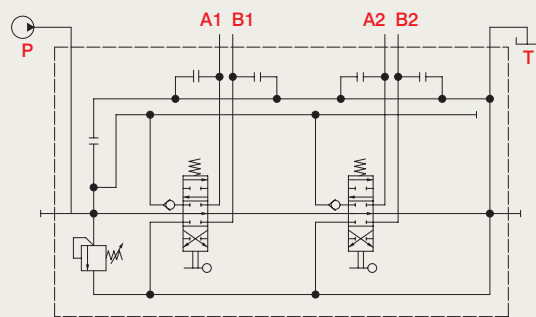
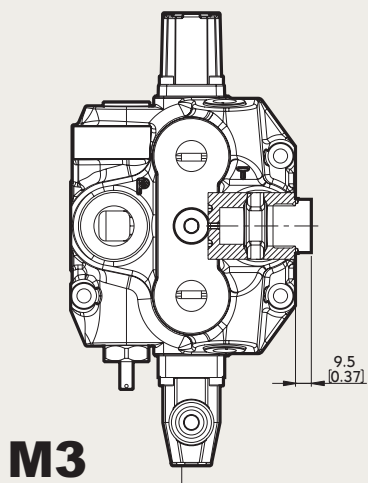
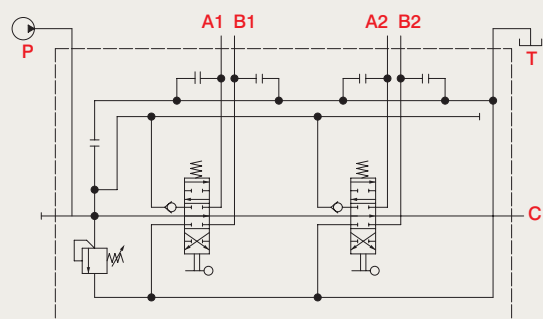
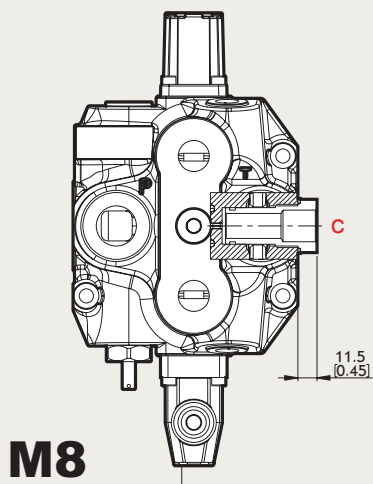
HYDRAULIC SCHEME:



MSB-5 Outlet

Monoblock Directional Control Valves

Power Beyond Conversion plug
(Closed center plug)



[illegible]

[illegible]