



90L GM GMC

GMS

hydraulic

Specifications

Spool: 1,2,3,4,5,6 / Double - Single - Closed Center - Motor - Floating - Regenerative Spool

Liter: 90L Nominal - 100L Max

Ports: 1/2 Standard - 3/4 Optional

Front Cap: Handle - Mechanical Joystick - Hydraulic Joystick - Remote Cable Control - Lock Handle

End Cap: Spring - Detent - Floating - Wood Splitter - Pneumatic - Proportional Coil - Hydraulic Control - Electro Hydraulic - Remote Cable Control

Open Center / Carry over / Parallel Circuit

90L GM

Working conditions

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

Nominal flow rating		90 l/min.	
Max. flow		100 l	
Operating pressure (max.)		315 bar	4600 psi
Max. back pressure	on outlet port T	20 bar	290 psi
Internal leakage A(B)→T	Δp=100 bar – 1450psi with fluid and valve at 40°C	3cm ³ /min.	0.18 in ³ /min.
Hydraulic fluid		Mineral base oil	
Fluid temperature	with NBR seals	from - 20° to 80°C	
	with FPM (VITON) seals	from - 20° to 100°C	
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. level of contamination		19/16 – ISO 4406	

Standard threads

REFERENCE STANDARDS

		BSP	UN-UNF	METRIC
THREAD ACCORDING TO		ISO 228/1	ISO 263	ISO 262
		BS 2779	ANSI B1.1 unified	
CAVITY ACCORDING TO	ISO	1179	11926	9974-1
	SAE		J1926	
	DIN	3852-2 shape X o Y		3852-1 shape X o Y

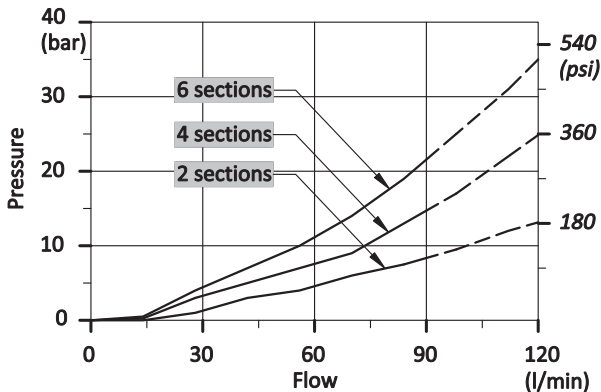
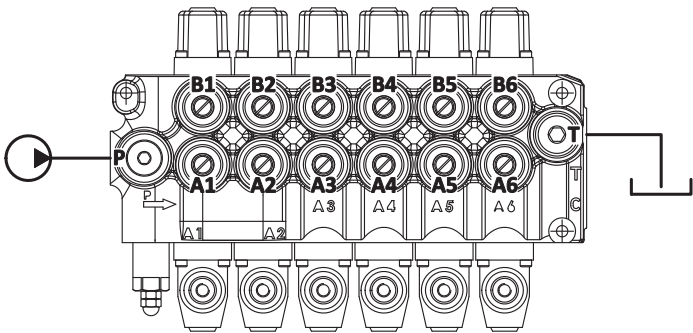
PORTS THREAD

MAIN PORTS	BSP	OPTIONAL	UN-UNF	METRIC
Inlet P and carry-over C	G 1/2	G 3/4	7/8 - 14 (SAE 10)	M18x1,5
Ports A and B	G 1/2	G 3/4	3/4 – 16 (SAE 8)	M18x1,5
Outlet T	G 3/4	-	7/8 - 14 (SAE 10)	M22x1,5
CONTROL PILOT PORTS				
Pneumatics	G 1/8		-	-
Hydraulics	G 1/4		-	-

Performance data (pressure drop vs. flow)

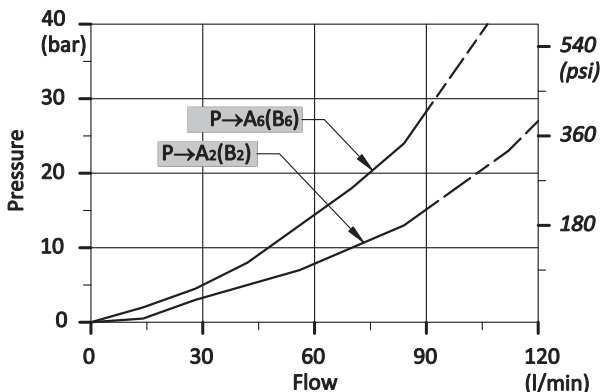
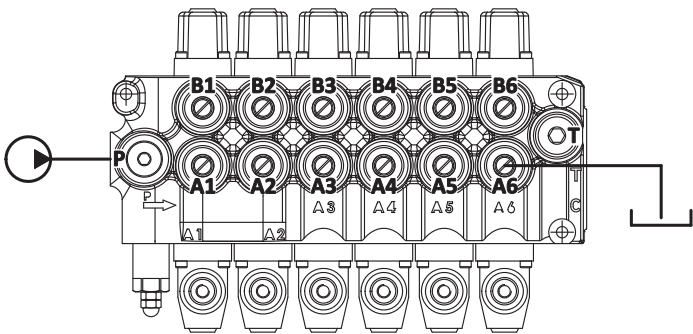
Open centre

From side inlet to side outlet.



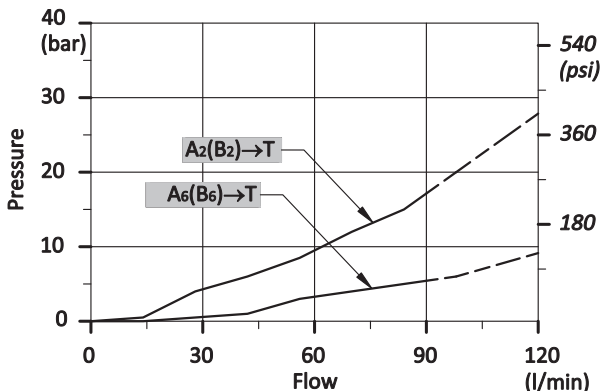
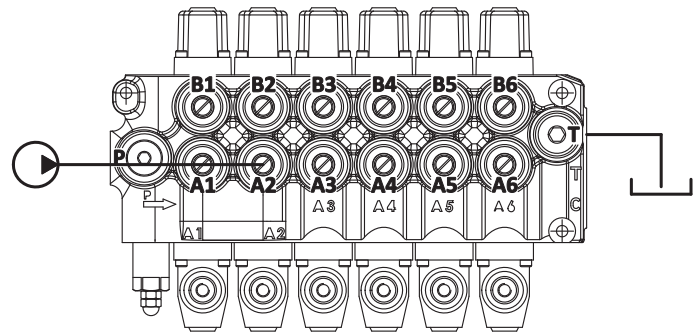
Inlet to work port

From side inlet to B port (spool in position 1) or A port (spool in position 2).

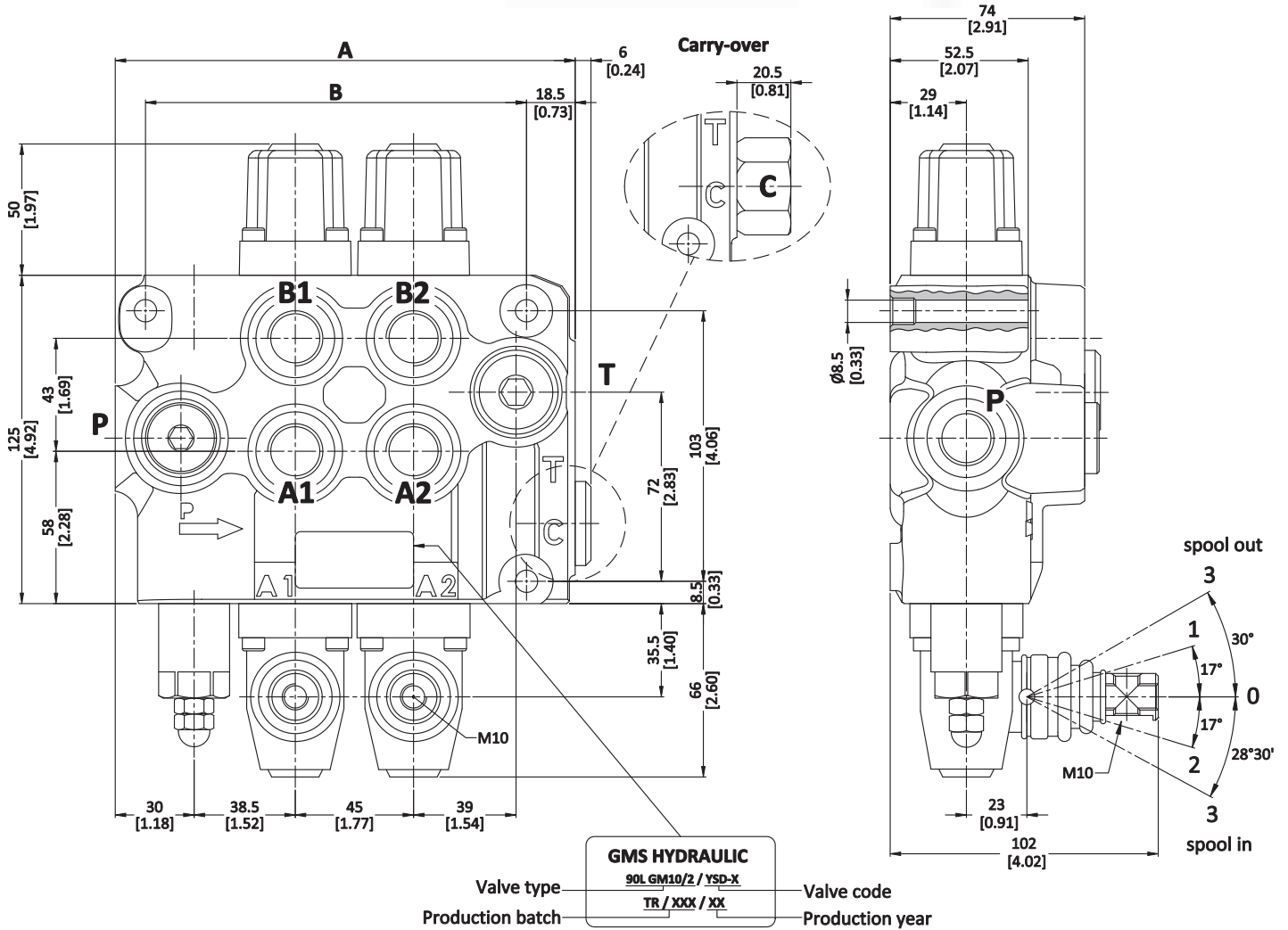


Work port to outlet

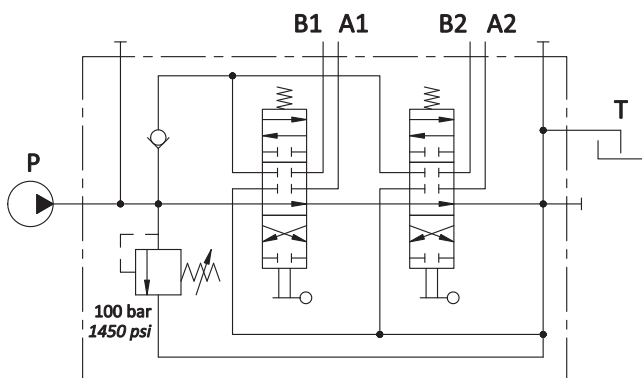
From B port (spool in position 2) or A port (spool in position 1) to side outlet.



Dimensional data (parallel circuit)



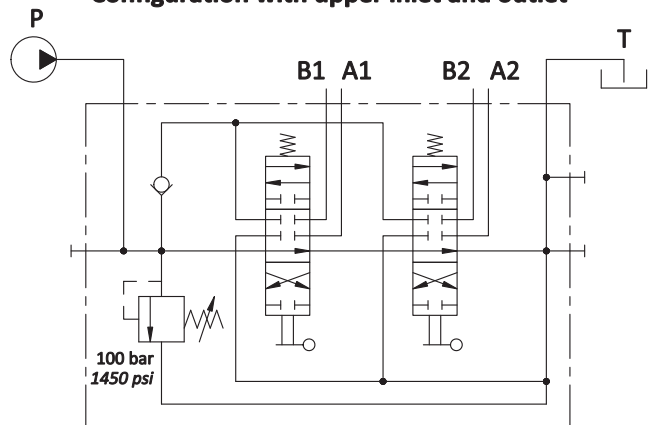
Standard configuration



Description example
90L GM10/2/YSD-YSD-X

TYPE	A		B		Weight	
	mm	in	mm	in	kg	lb
90L GM 10/1	130	5.12	100	3.94	5.8	12.80
90L GM 10/2	175	6.89	145	5.71	8.3	18.30
90L GM 10/3	220	8.66	190	7.48	10.9	24.00

Configuration with upper inlet and outlet



Description example
90L GM10/2/YSD-YSD-X-UC

TYPE	A		B		Weight	
	mm	in	mm	in	kg	lb
90L GM 10/4	265	10.43	235	9.25	13.4	29.50
90L GM 10/5	310	12.21	280	11.02	16.5	36.40
90L GM 10/6	355	13.98	325	12.80	19.2	42.30

Ordering codes

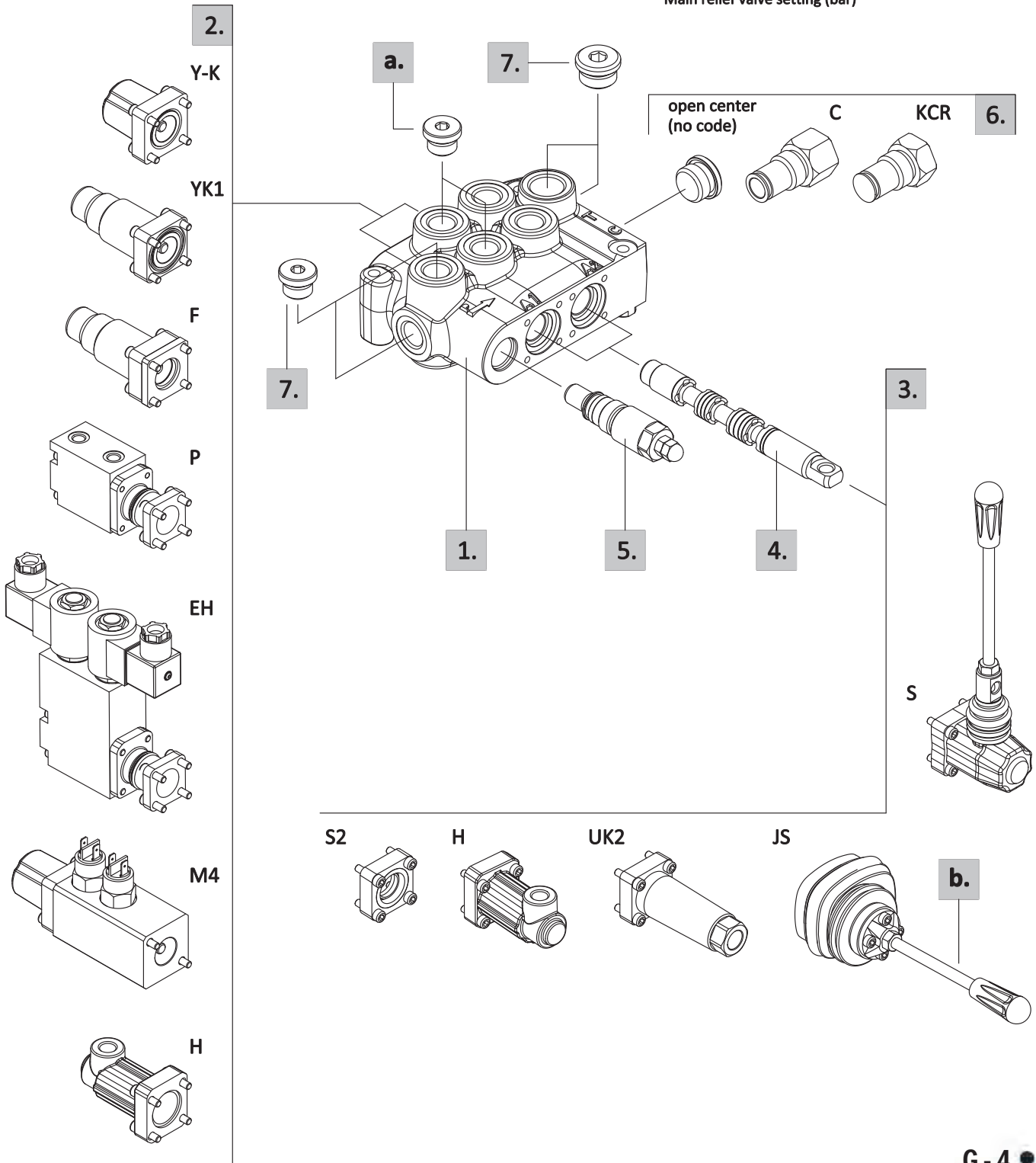
Description example:

90L GM10 / 2 / Y S D - FSF - X(100) C - UC

1st section following section

1. 2. 3. 4. 5. 6. 7.

Main relief valve setting (bar)

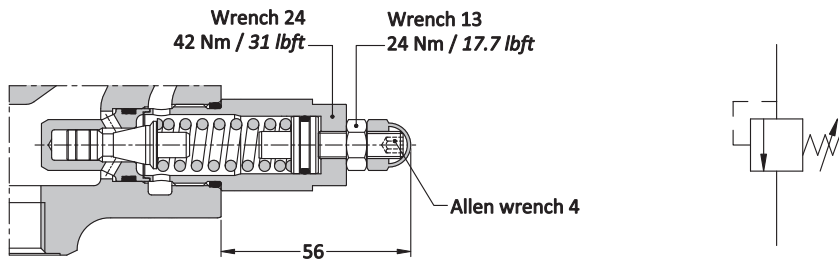


directional valve with left inlet

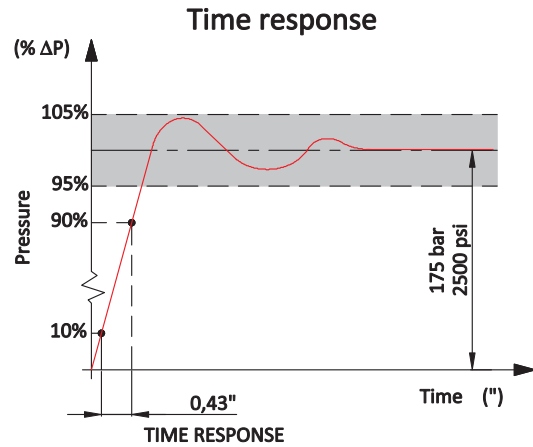
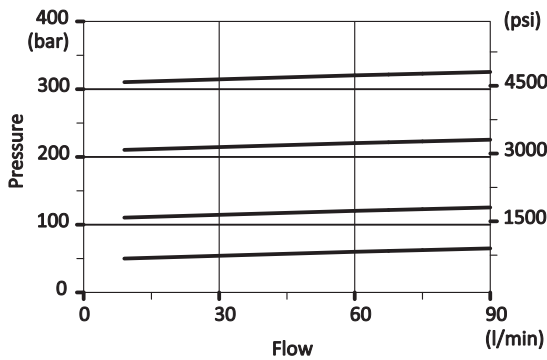
Direct pressure relief valve

Valve type

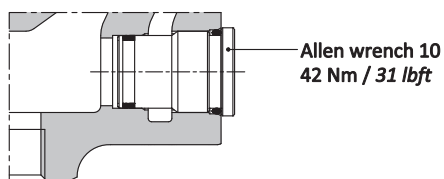
X : with screw



Performance data



V : relief valve blanking plug

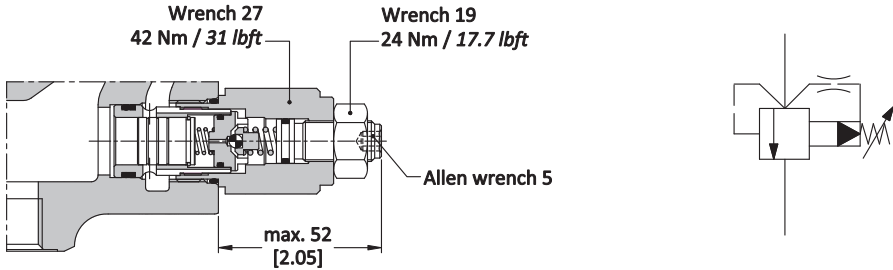


directional valve with left inlet

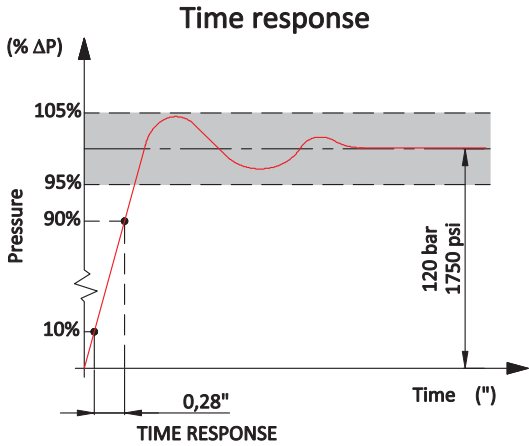
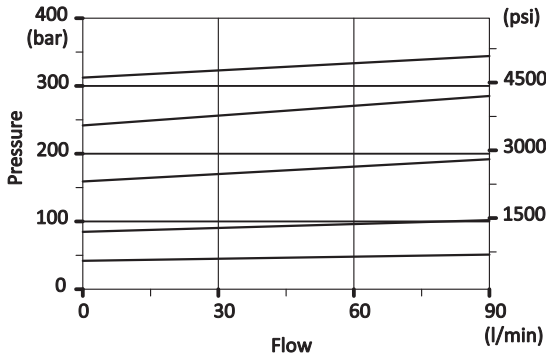
Pilot pressure relief valve

Valve type

Z : with screw



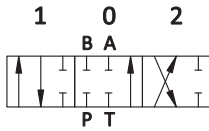
Performance data



directional valve with left inlet

Spool options

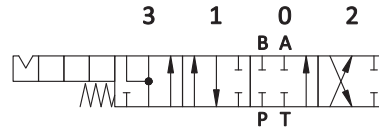
Type D



+ 7 mm / 0.28 in
 (1) ▶
 ◀▶ (0)
 ◀ (2)
 - 7 mm / 0.28 in

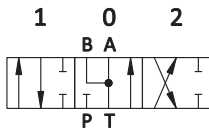
Type F

For F kit



+ 12 mm / 0.47 in
 (3) ▶▶
 + 6 mm / 0.24 in
 (1) ▶
 ◀▶ (0)
 ◀ (2)
 - 6 mm / 0.24 in

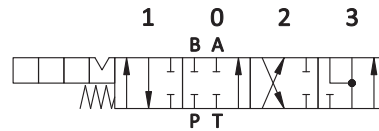
Type J



+ 7 mm / 0.28 in
 (1) ▶
 ◀▶ (0)
 ◀ (2)
 - 7 mm / 0.28 in

Type F1

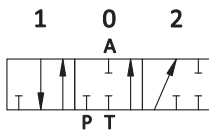
For F1 kit



+ 6 mm / 0.24 in
 (1) ▶
 ◀▶ (0)
 ◀ (2)
 - 5 mm / 0.20 in
 ◀◀ (3)
 - 10.5 mm / 0.41 in

Type TA

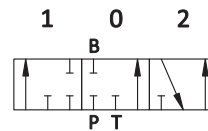
For Y3 kit



+ 4.5 mm / 0.18 in
 (1) ▶
 ◀▶ (0)
 ◀ (2)
 - 4.5 mm / 0.18 in

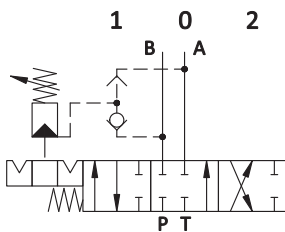
Type TB

For Y3 kit



+ 4.5 mm / 0.18 in
 (1) ▶
 ◀▶ (0)
 ◀ (2)
 - 4.5 mm / 0.18 in

Type KO



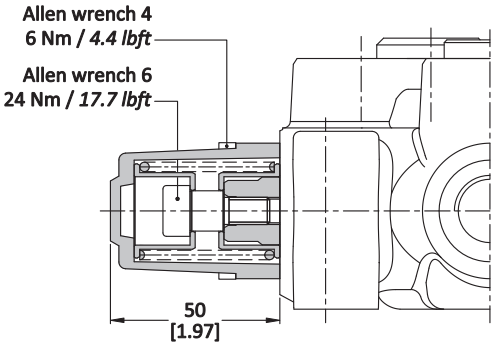
+ 7 mm / 0.28 in
 (1) ▶
 ◀▶ (0)
 ◀ (2)
 - 7 mm / 0.28 in

directional valve with left inlet

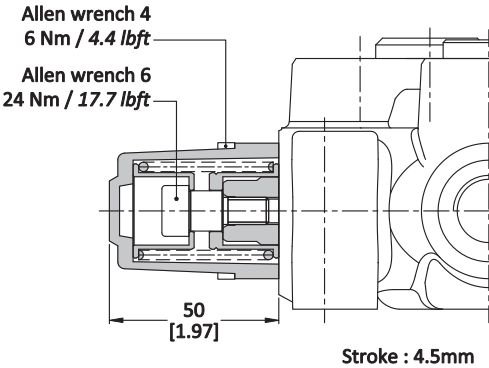
End cap options

With spring return in neutral position

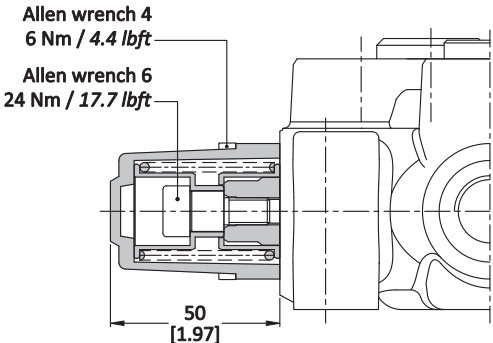
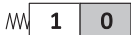
Y kit



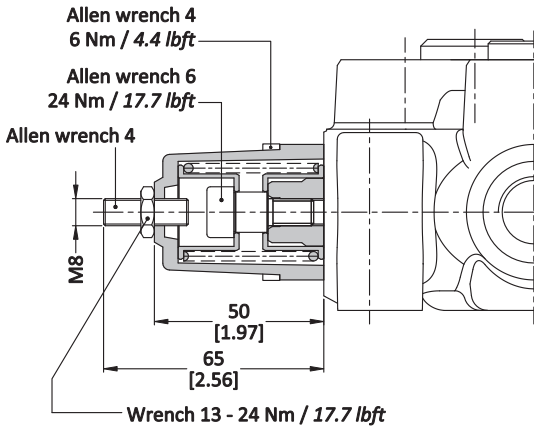
Y3 kit



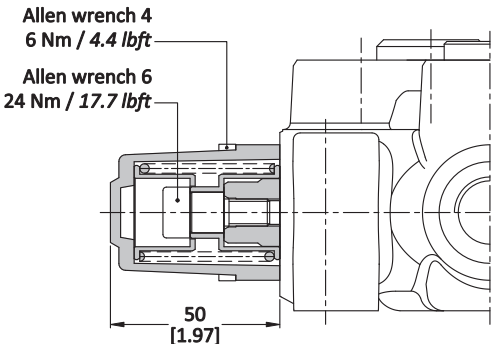
Y1 kit



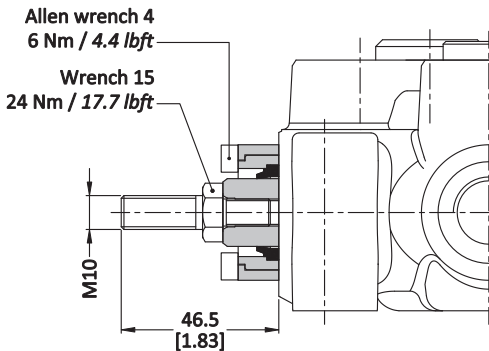
YL kit



Y2 kit



UK3 kit



directional valve with left inlet

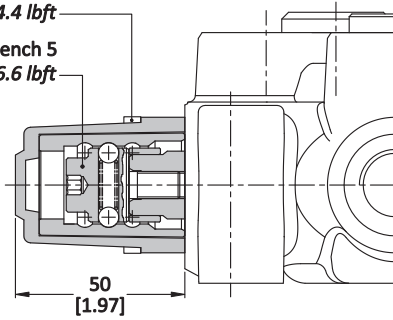
End cap options

With detent

K kit



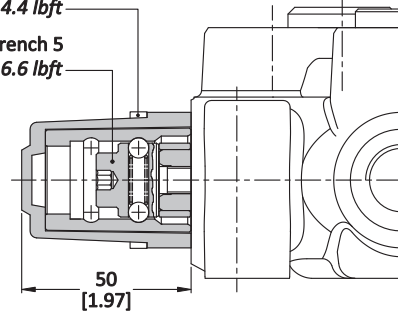
Allen wrench 4
6 Nm / 4.4 lbft
Allen wrench 5
9 Nm / 6.6 lbft



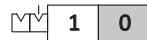
K3 kit



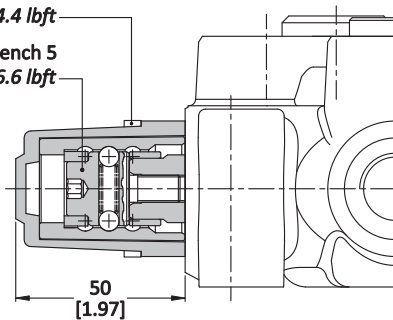
Allen wrench 4
6 Nm / 4.4 lbft
Allen wrench 5
9 Nm / 6.6 lbft



K1 kit



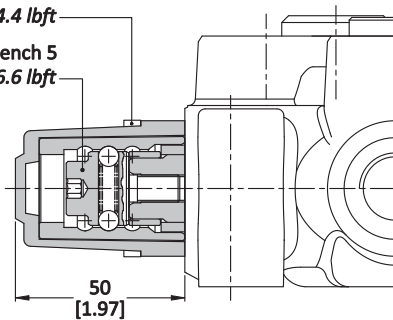
Allen wrench 4
6 Nm / 4.4 lbft
Allen wrench 5
9 Nm / 6.6 lbft



K2 kit



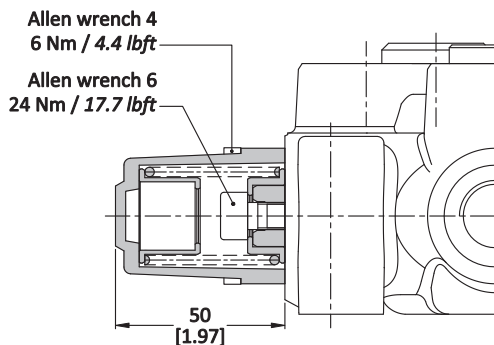
Allen wrench 4
6 Nm / 4.4 lbft
Allen wrench 5
9 Nm / 6.6 lbft



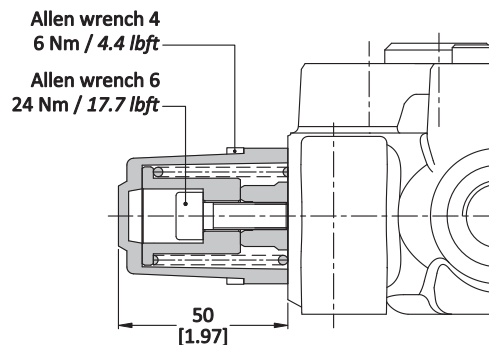
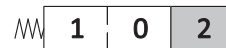
directional valve with left inlet

End cap options

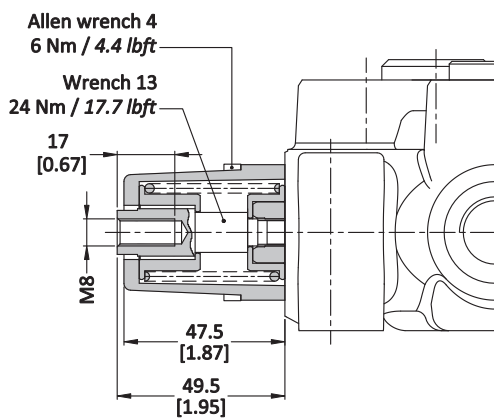
W1 kit



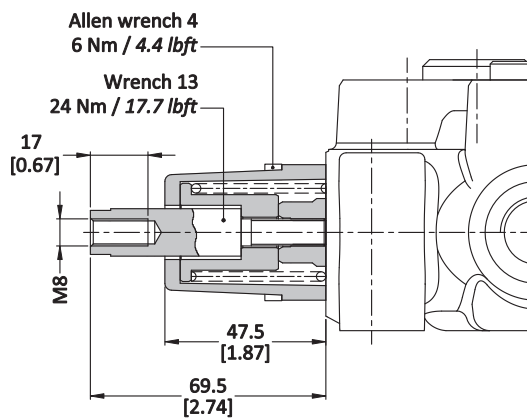
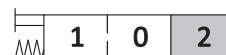
W2 kit



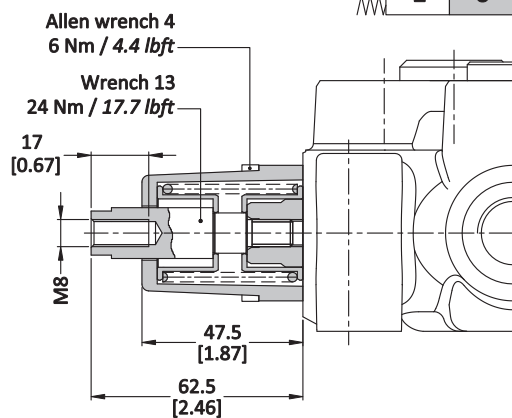
W3 kit



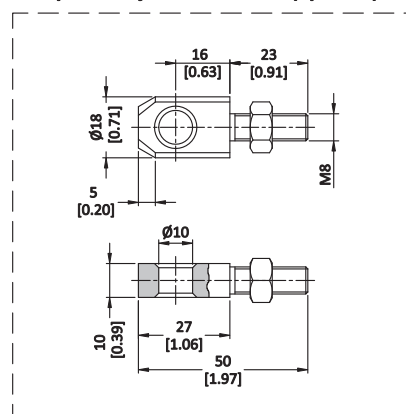
W4 kit



W5 kit



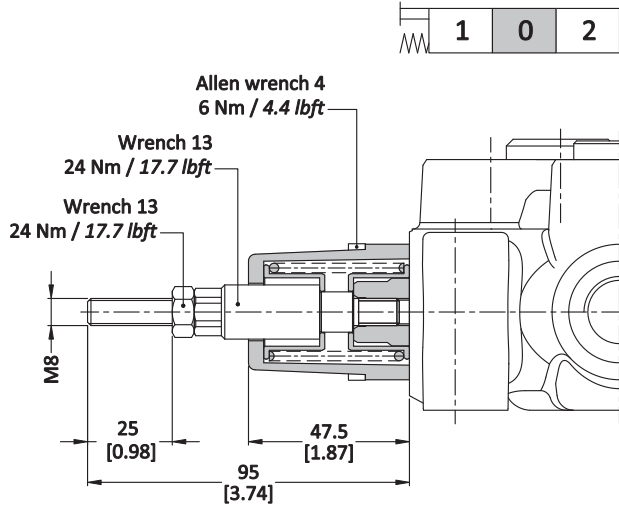
Spool end joint dimensions (optional)



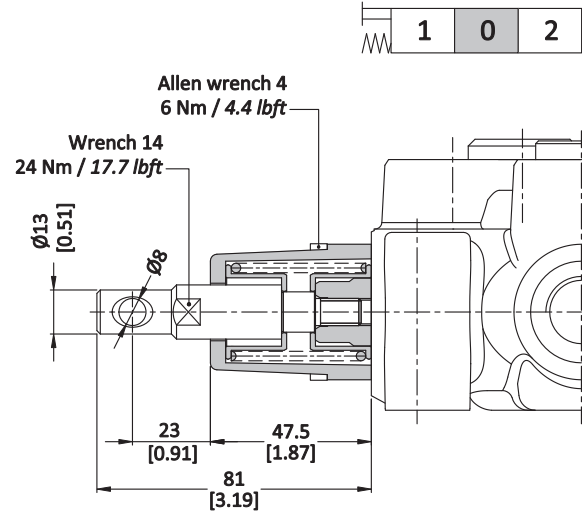
Not included to W5 kit

End cap options

W6 kit

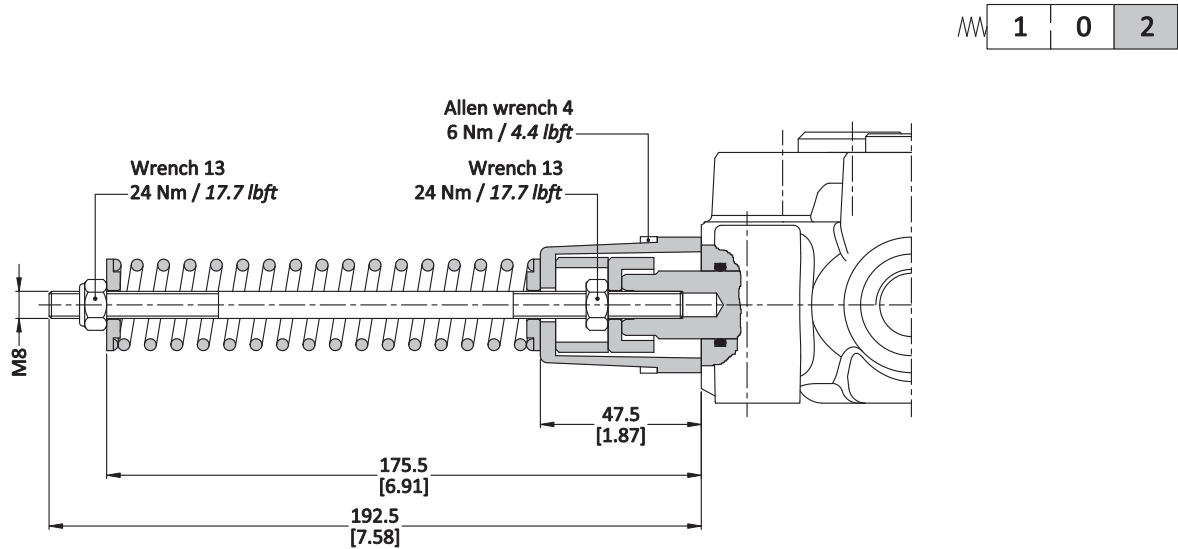


W8 kit



W9 kit

Probe control

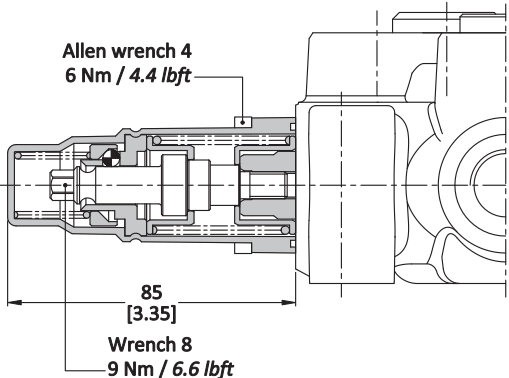
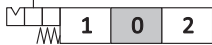


directional valve with left inlet

End cap options

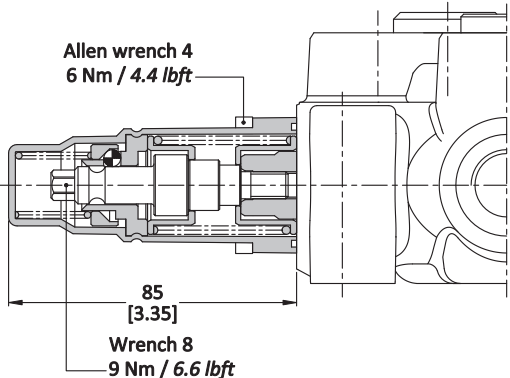
With detent and spring return to neutral position from either directions

YK1 kit

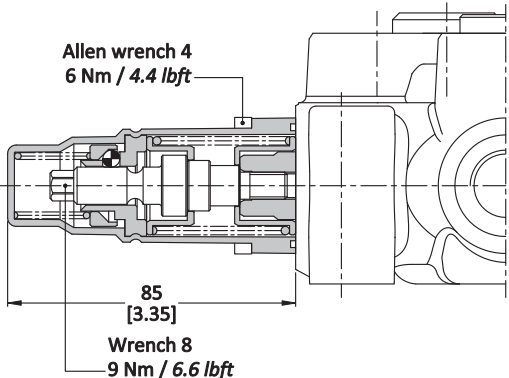


YK4 kit

For single acting spool
Stroke : 4.5mm

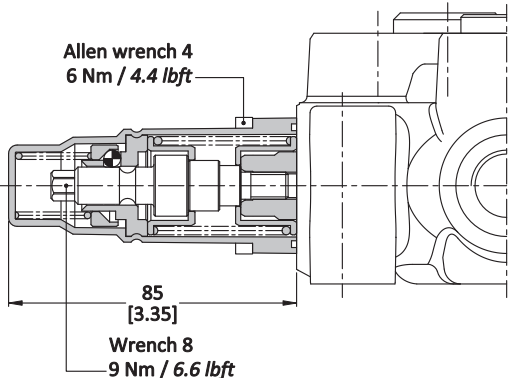


YK2 kit

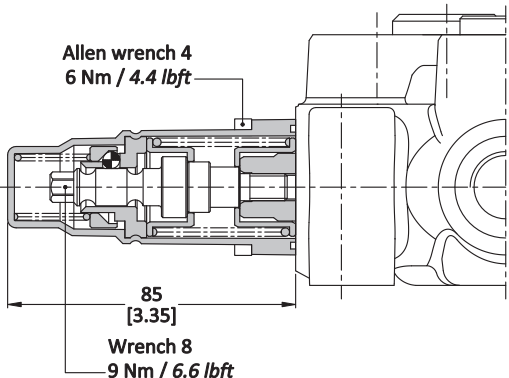


YK5 kit

For single acting spool
Stroke : 4.5mm

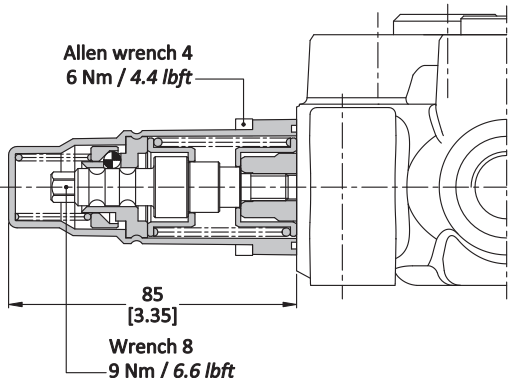


YK3 kit



YK6 kit

For single acting spool
Stroke : 4.5mm

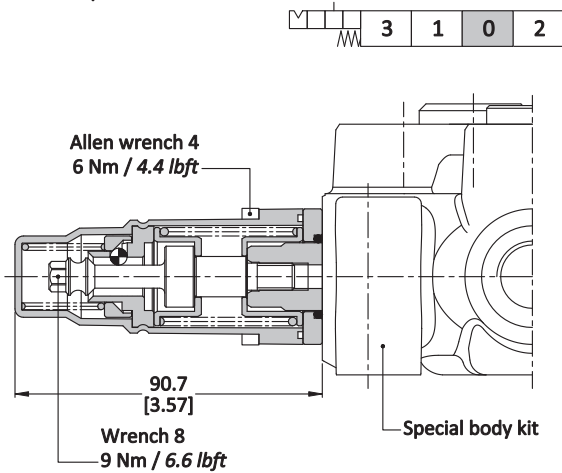


End cap options

Particular positioner kits for special spools

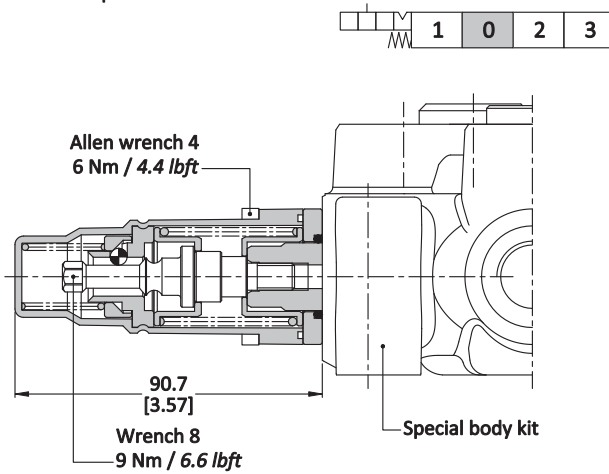
F kit

Suitable to F spool



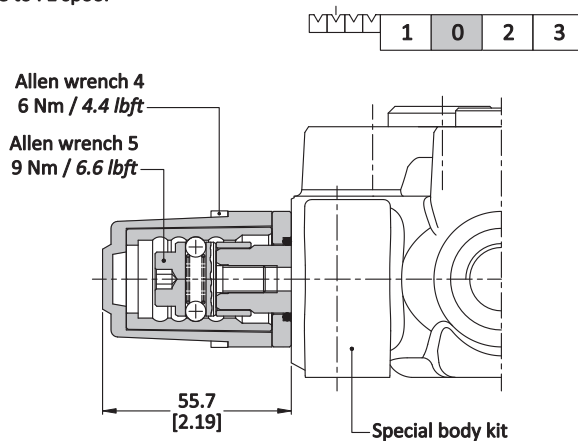
F1 kit

Suitable to F1 spool



F2 kit

Suitable to F1 spool



End cap options

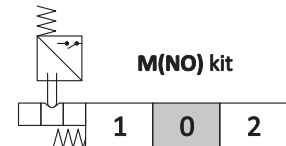
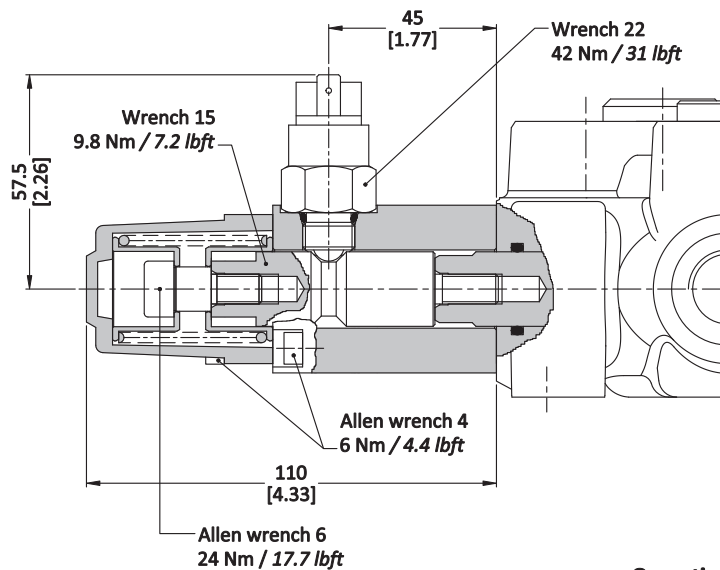
With microswitch type M(NO)

With spring return in neutral position and microswitch operated in both directions.

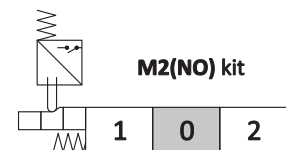
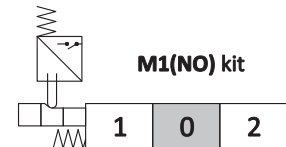
Also available **M1(NO)** configuration (microswitch operated in position 1) and **M2(NO)** configuration (microswitch operated in position 2); dimensions are the same of M(NO) configuration.

Same configurations are available with normally closed (NC) contact.

For more information contact Sales Department.



Other configurations



Operating features

MICROSWITCH

Mechanical life

: 5×10^5 operations

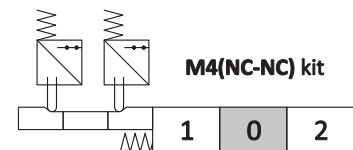
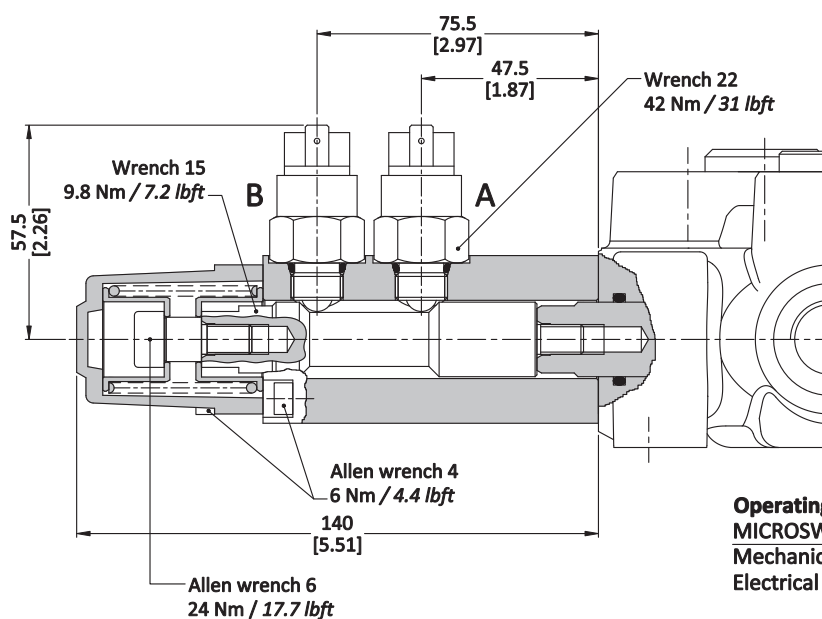
Electrical life (resistive load)

: 5×10^4 operations 12V

: 5×10^4 operations 24V

Type M4(NC-NC)

With double microswitch in position 1 and 2



Positions	A	B
1		
0		
2		

Operating features

MICROSWITCH

Mechanical life

: 5×10^5 operations

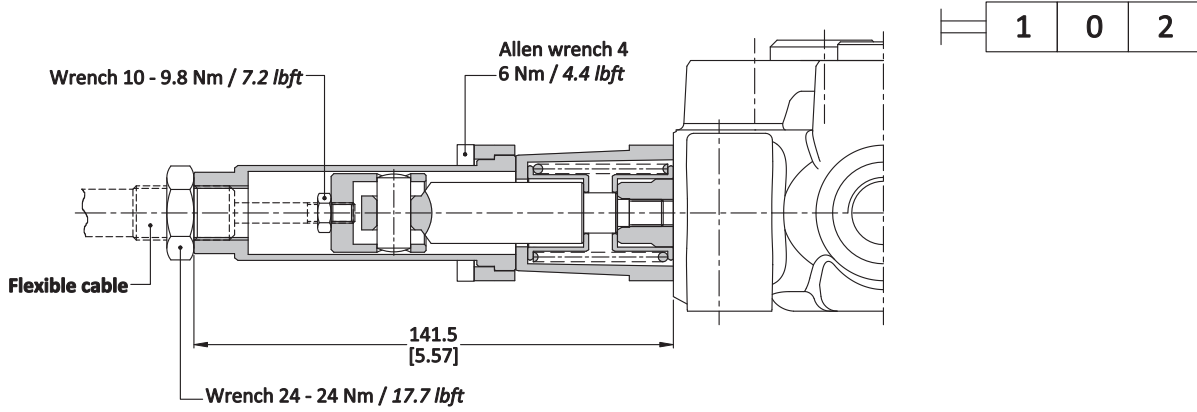
Electrical life (resistive load)

: 5×10^4 operations 12V

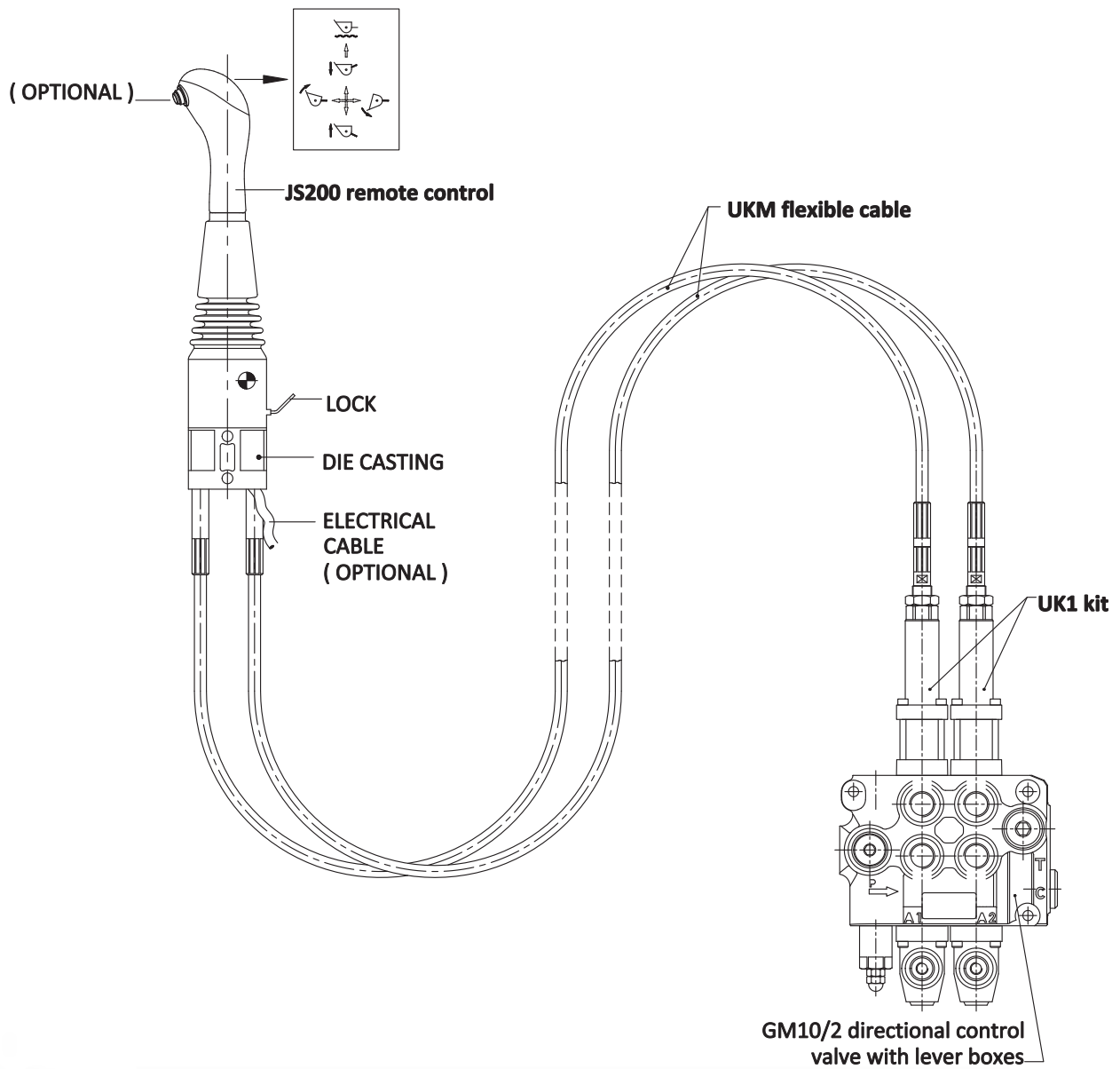
: 5×10^4 operations 24V

End cap options

UK1 cable remote control kit



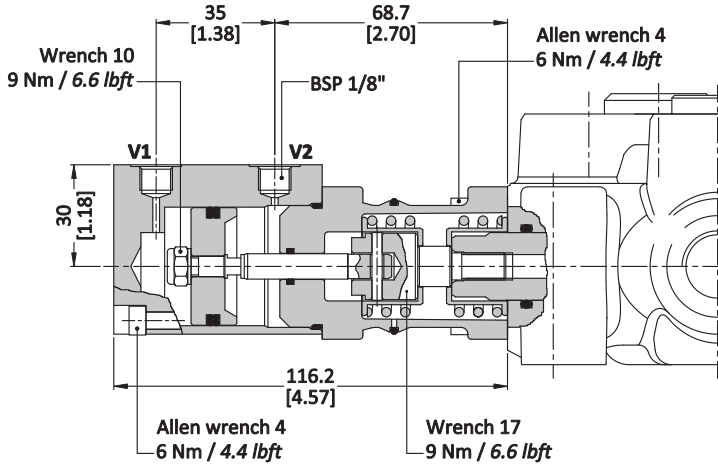
Connection example



directional valve with left inlet

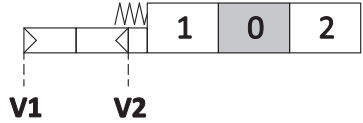
ON/OFF pneumatic kit type P

With spring return to neutral position.

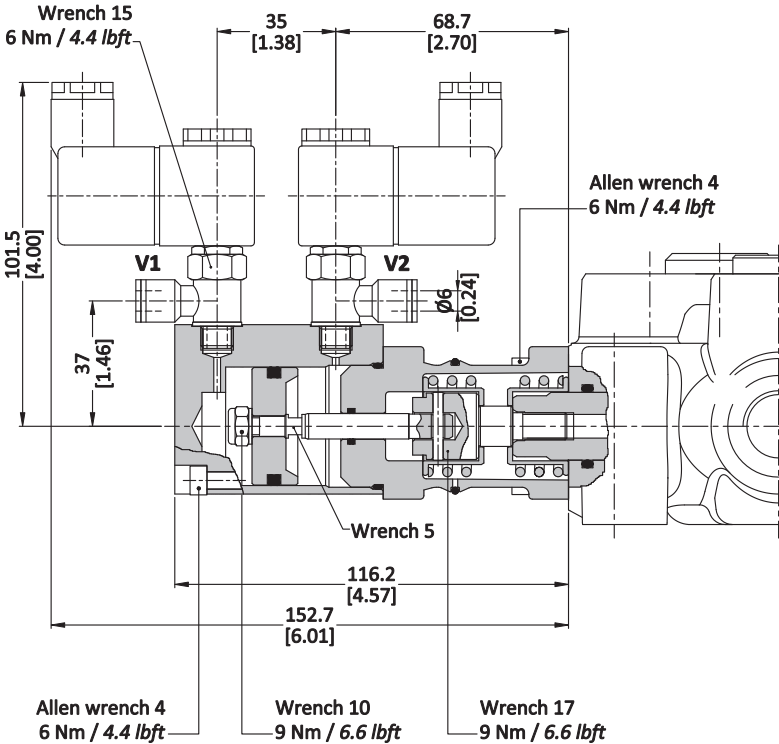


Operating features

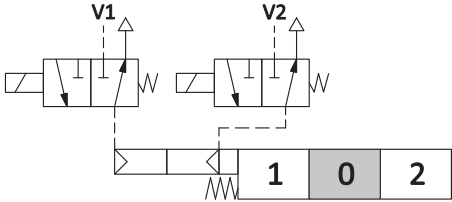
Pilot pressure.....: min. 5.5 bar / 80 psi
: max.10 bar / 145 psi



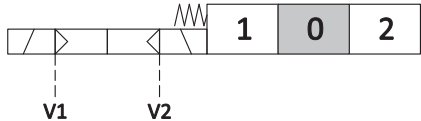
ON/OFF electro-pneumatic kit type EP



Scheme



Scheme ISO 1219

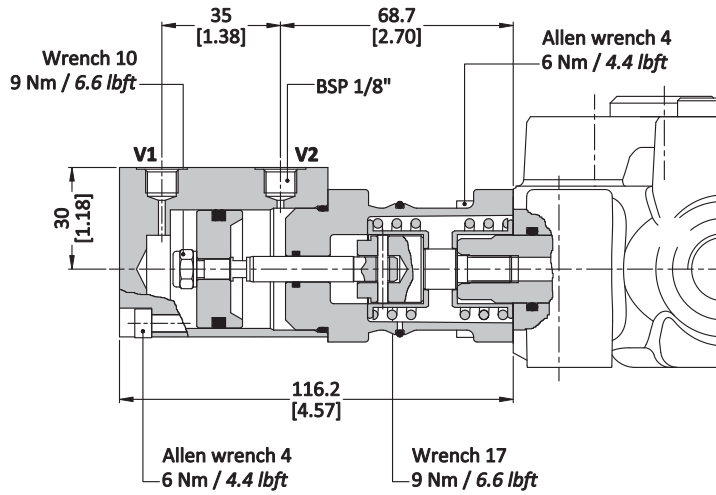
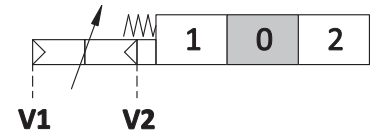


Operating features

- CONTROL**
- Pilot pressure : 6 bar / 87 psi
: max. 15 bar / 218 psi
- COIL**
- Nominal voltage tolerance : ±10%
 - Power rating : 8 W
 - Nominal current : 12 VDC
: 24 VDC
 - Coil insulation : Class H
 - Weather protection : IP65

Proportional pneumatic kit type P1

With spring return to neutral position.



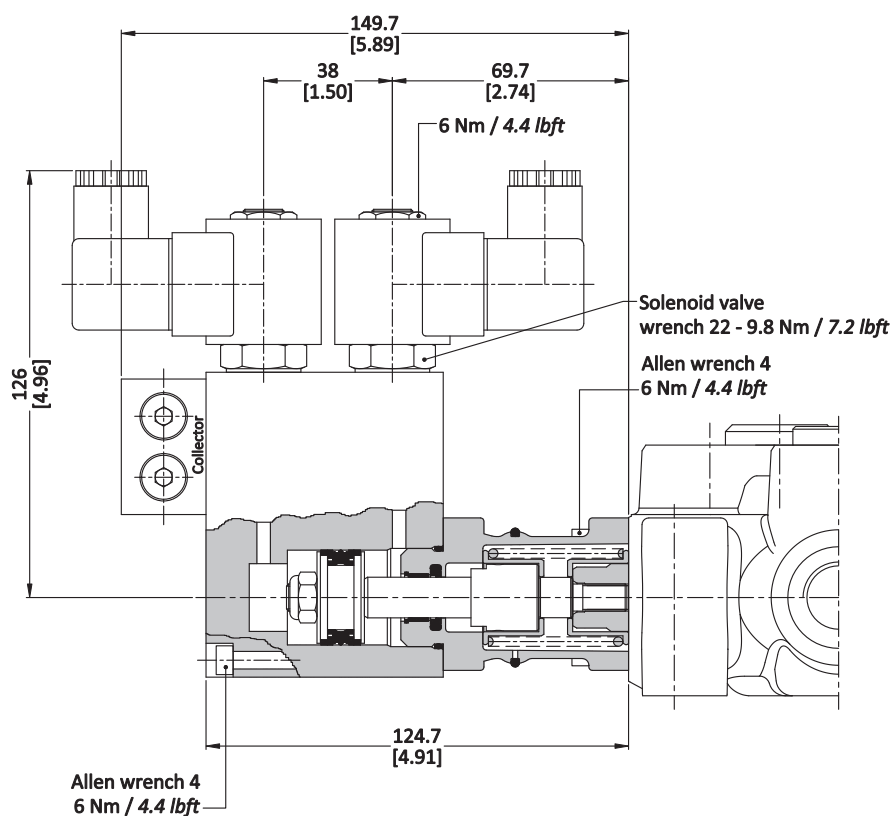
Operating features

Pilot pressure.....: min. 2 bar / 29 psi
: max.10 bar / 145 psi

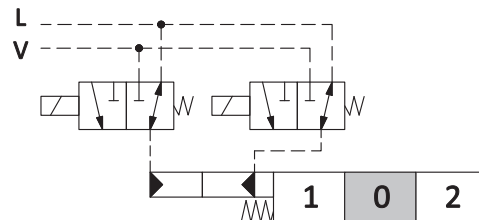
directional valve with left inlet

ON/OFF electro-hydraulic kit type EH

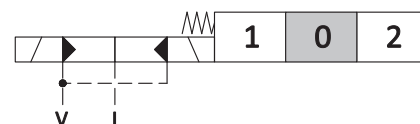
With external pilot and drain.



Scheme



Scheme ISO 1219



Operating features

CONTROL

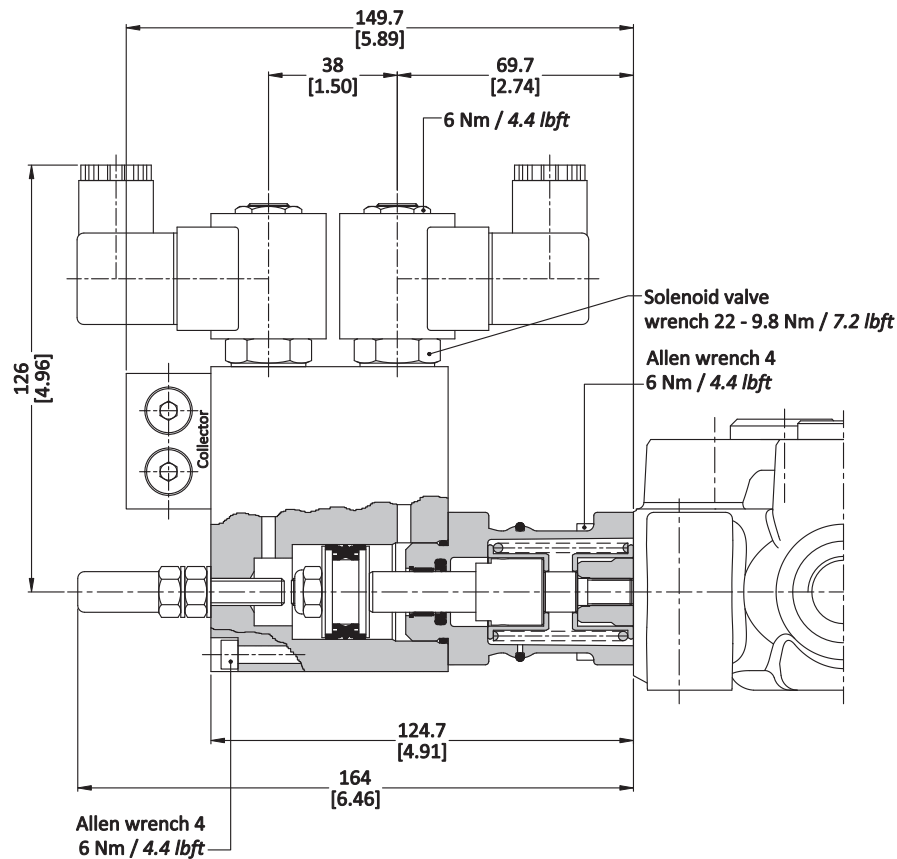
Pilot pressure	: min. 10 bar / 145 psi
	: max. 50 bar / 725 psi
Max. backpressure on drain L	: 25 bar / 360 psi

COIL

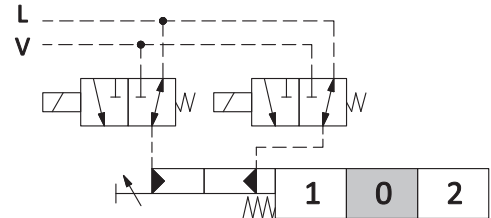
Nominal voltage tolerance	: ±10%
Power rating	: 21 W
Nominal current	: 12 VDC - 24 VDC
Coil insulation	: Class F
Weather protection	: IP65

ON/OFF electro-hydraulic kit type EH1

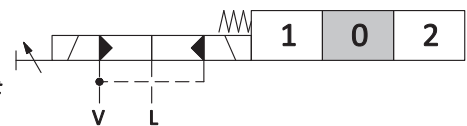
Collector kit with pilot and drain lines with stroke limiter



Scheme



Scheme ISO 1219



Operating features

CONTROL

Pilot pressure	: min. 10 bar / 145 psi
	: max. 50 bar / 725 psi
Max. backpressure on drain L	: 25 bar / 360 psi

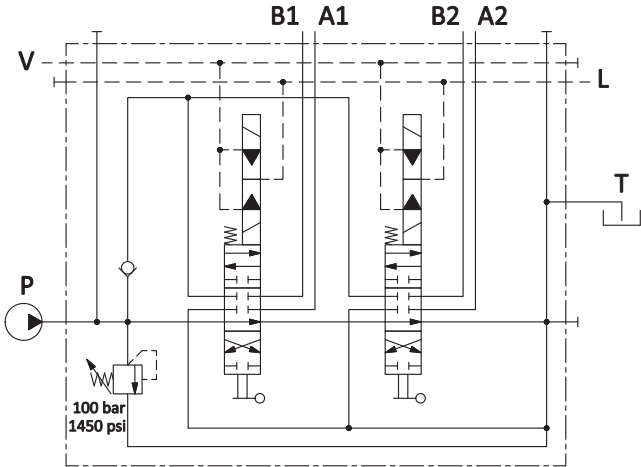
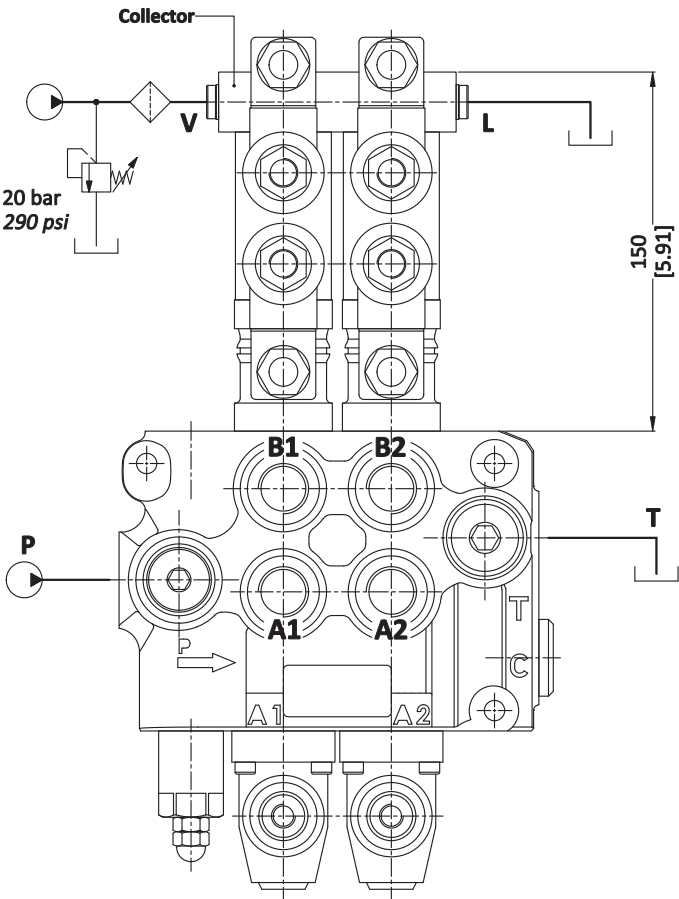
COIL

Nominal voltage tolerance	: ±10%
Power rating	: 21 W
Nominal current	: 12 VDC - 24 VDC
Coil insulation	: Class F
Weather protection	: IP65

directional valve with left inlet

ON/OFF electro-hydraulic kit type EH2

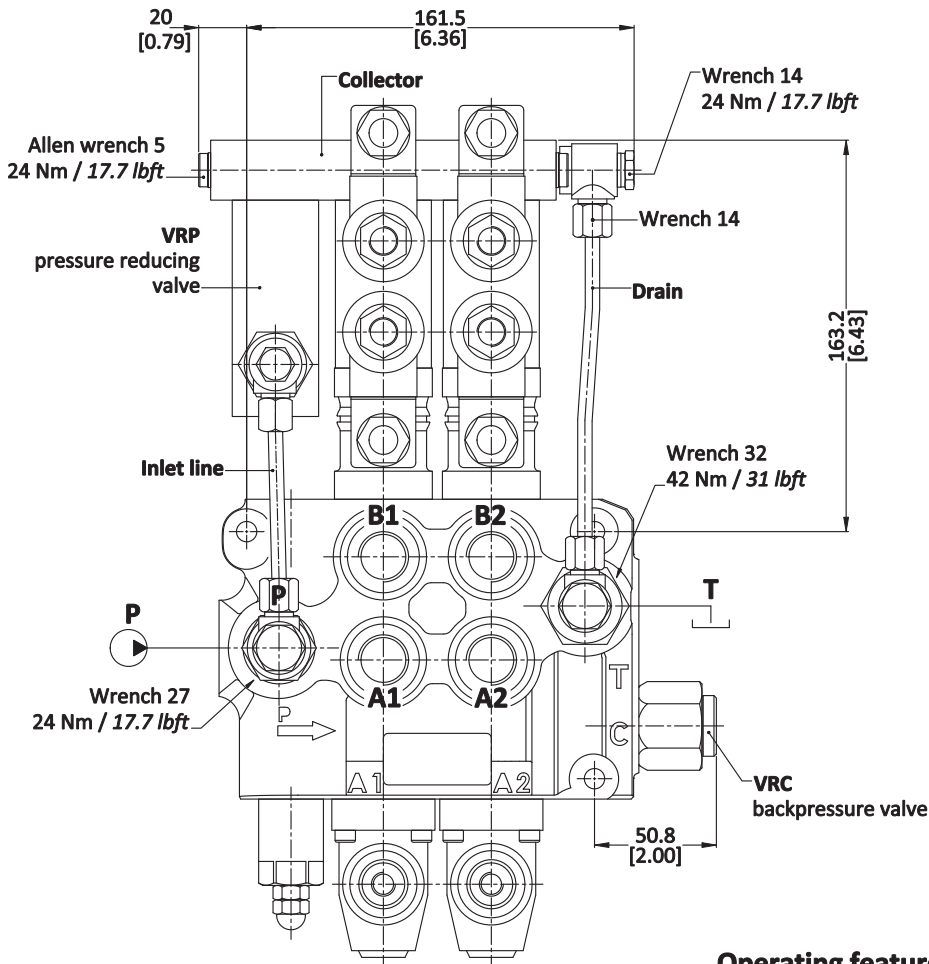
Collector kit for external pilot and drain



Description example :
90L GM10/2/EH2SD-EH2SD-X-24V

ON/OFF electro-hydraulic kit type EH

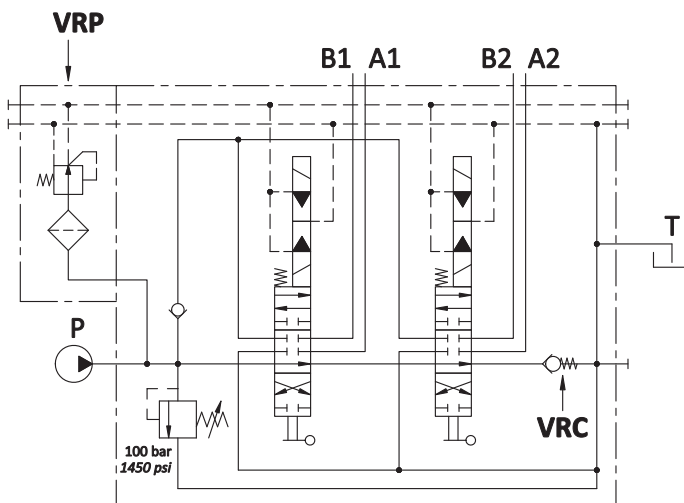
Collector kit with pilot and drain lines



Operating features

VRP VALVE

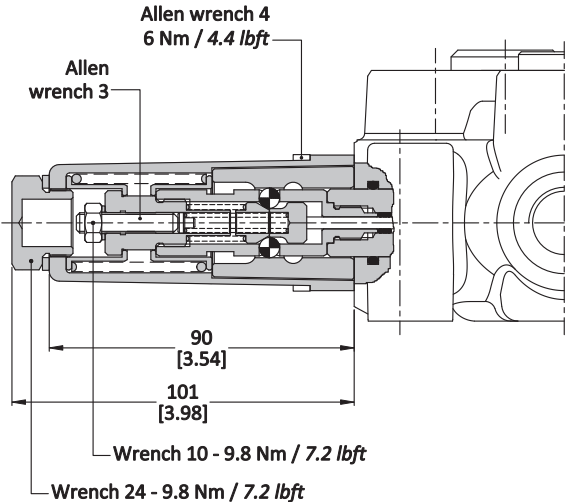
Output pressure	: 20 bar / 290 psi
Max. flow	: 8 l/min
Filtering	: 80 μ



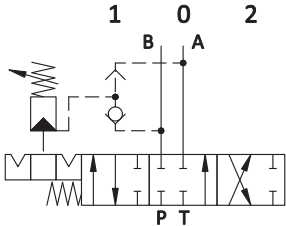
directional valve with left inlet

With detent and automatic release in neutral position

KO Kit



+ 7 mm / 0.28 in
(1) ▶
◀▶ (0)
◀ (2)
- 7 mm / 0.28 in



directional valve with left inlet

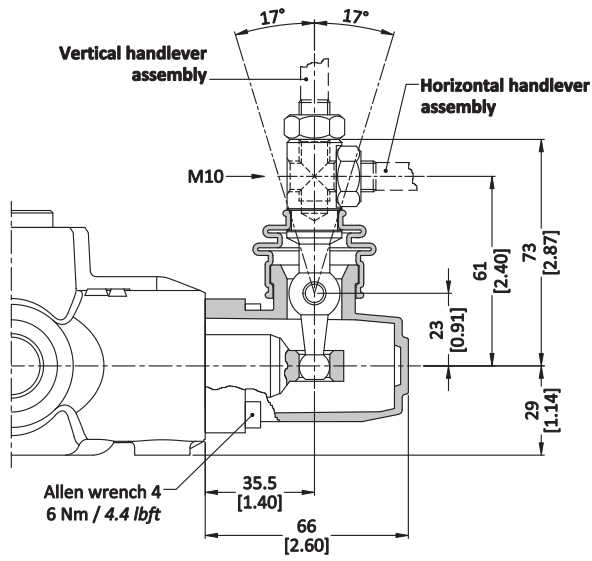
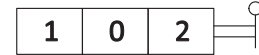
Front cap options

Lever control

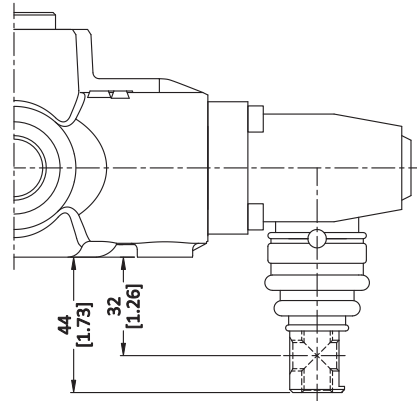
Type S

Type S18

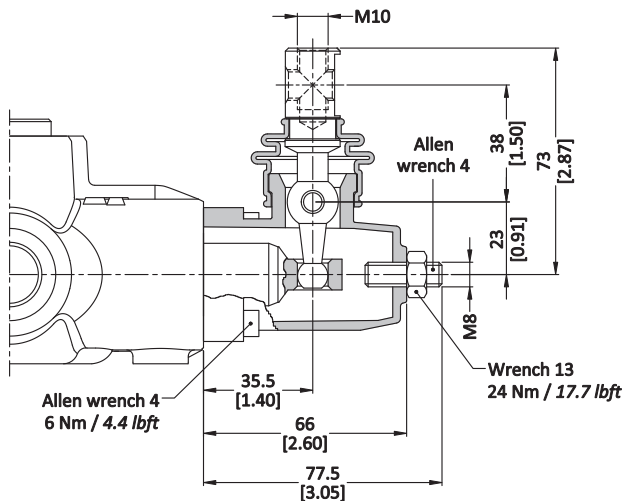
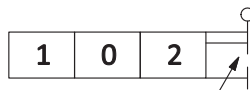
Alluminium with protection boot lever pivot box; it can be rotated 180° (execution S18)



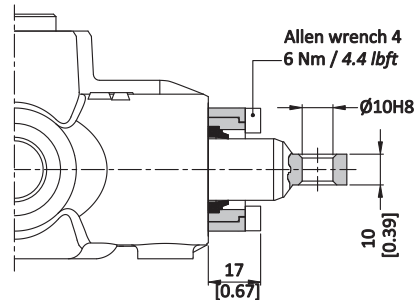
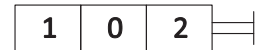
Execution S18



Type SL



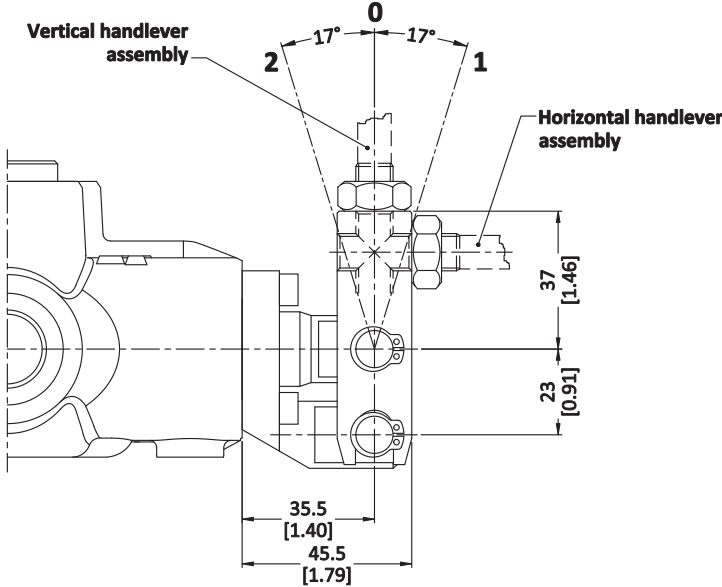
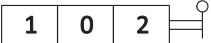
Type S2



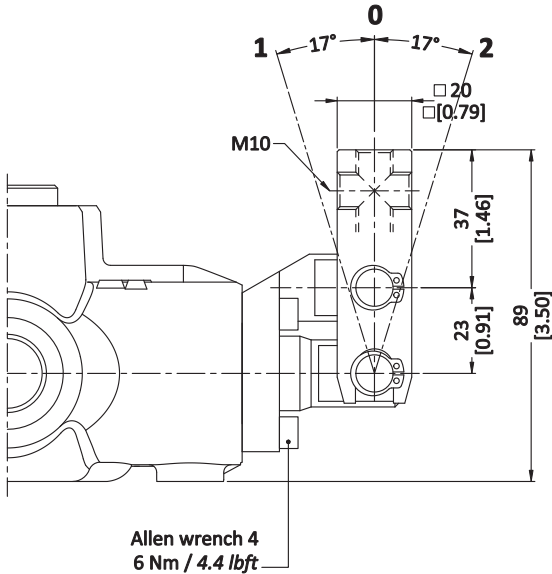
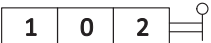
Front cap options

Lever control

Type S6



Type S7



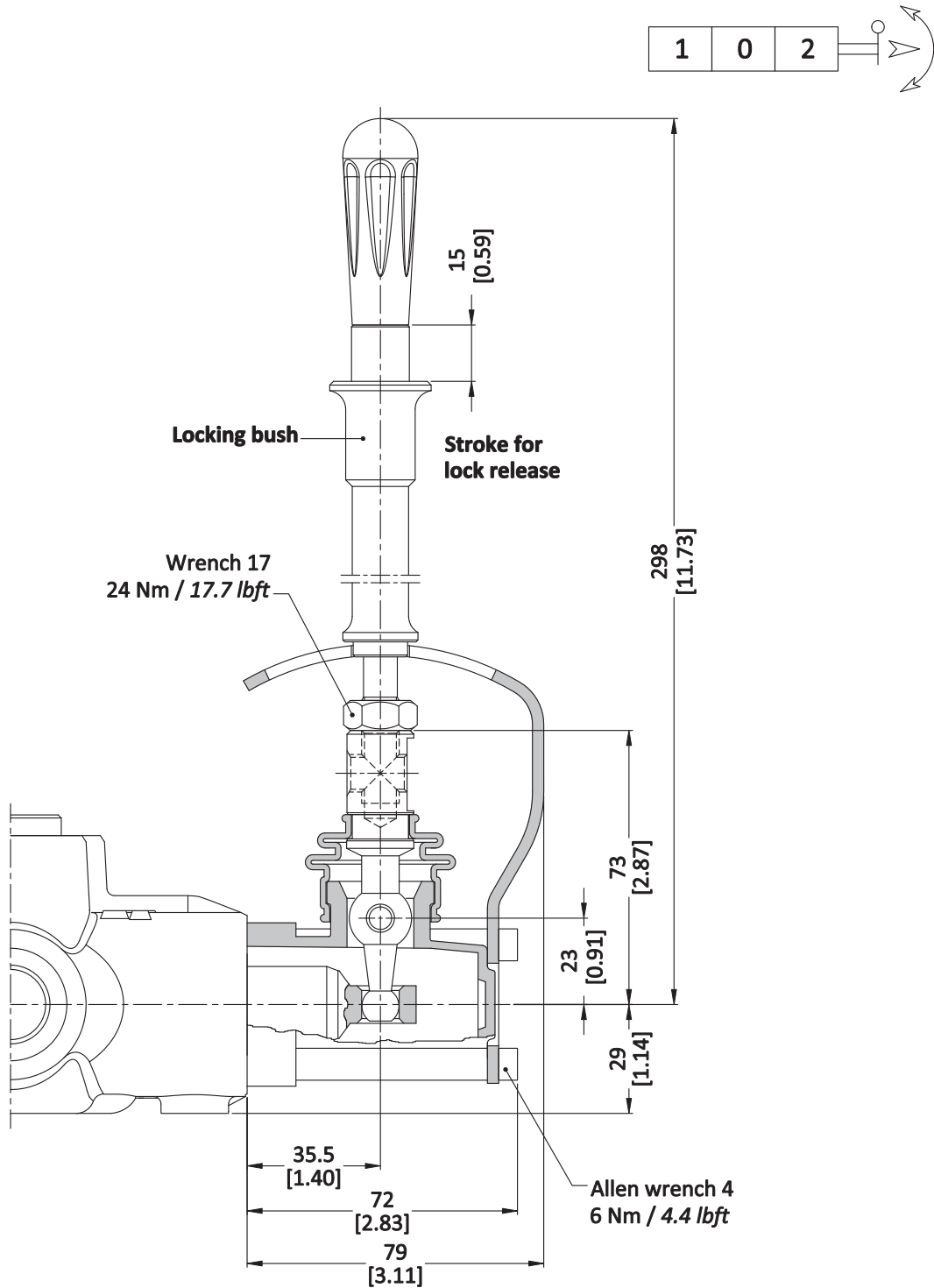
Allen wrench 4
6 Nm / 4.4 lbft

Front cap options

Safety lever control

Safety levers with lock in neutral complete with handlever; lift handlever knob to operate
Nonconductive hand levers are available.

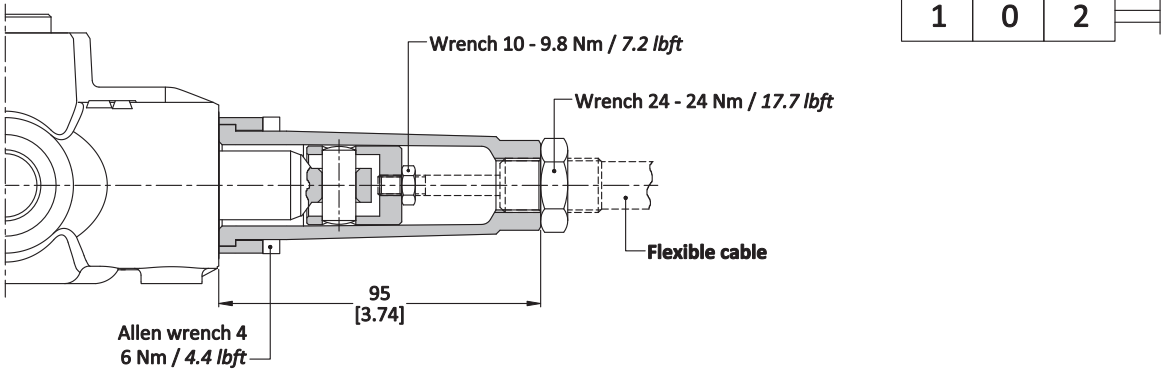
Type G1



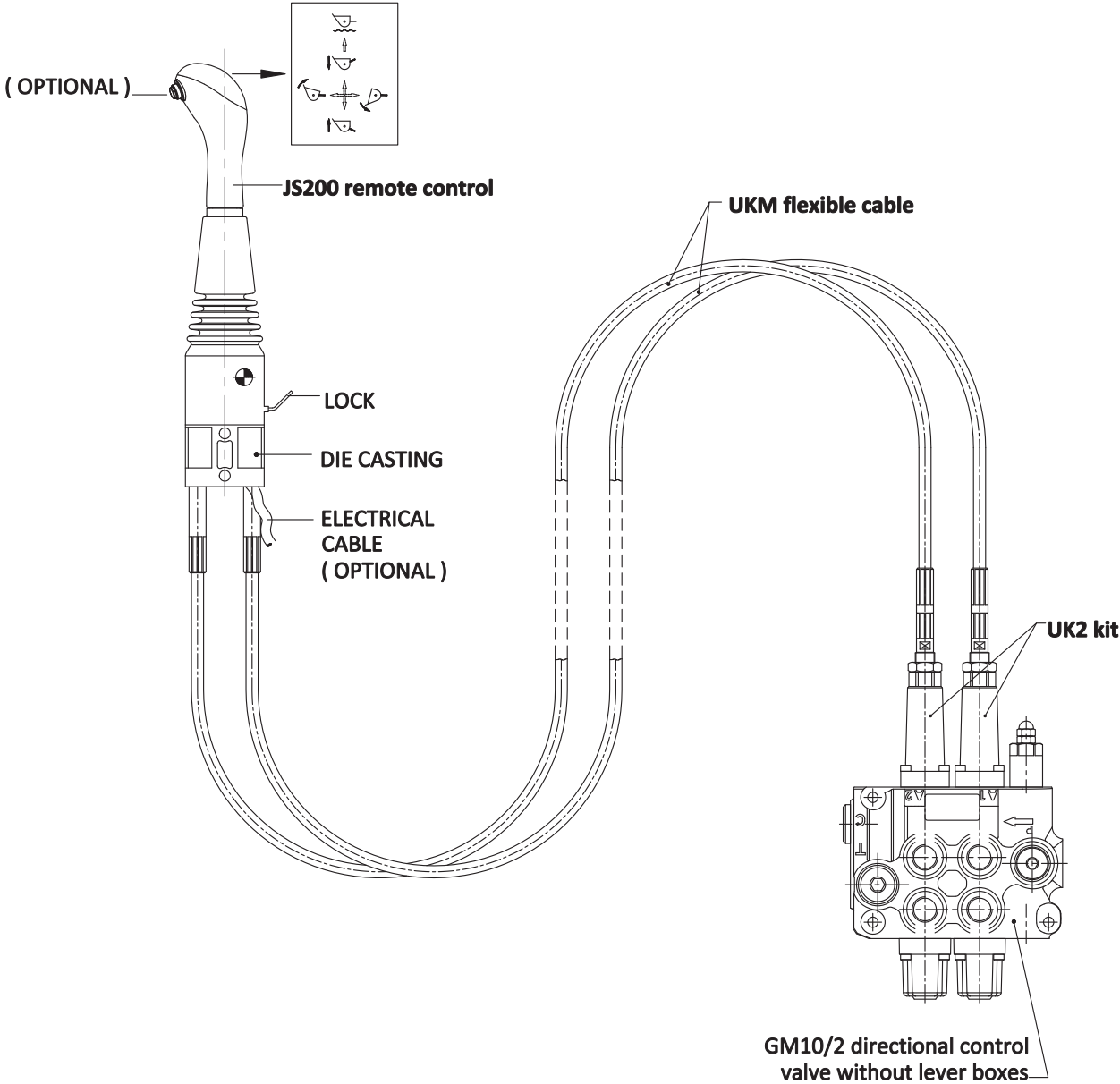
directional valve with left inlet

Front cap options

UK2 cable remote control kit

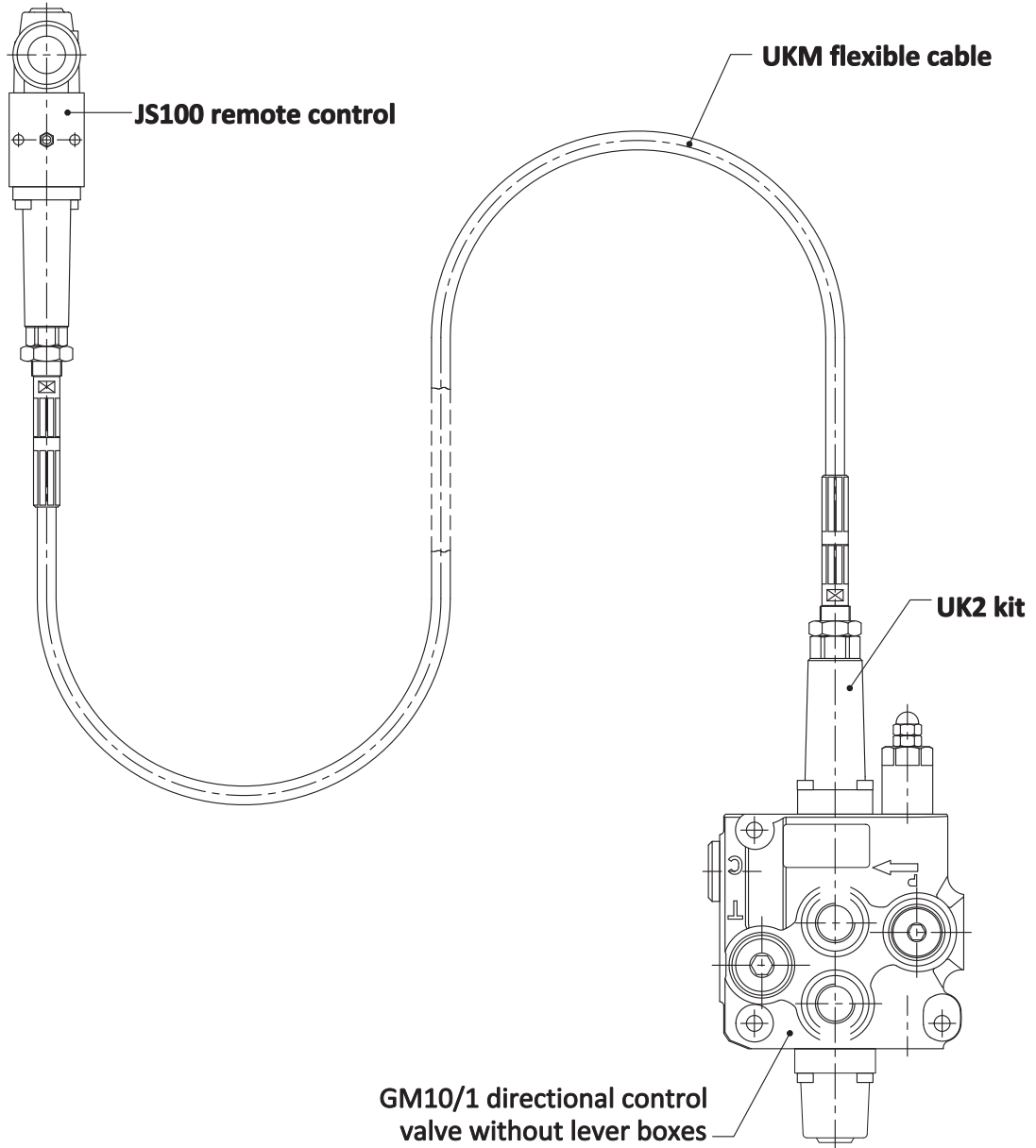


Connection example



Front cap options

Connection example

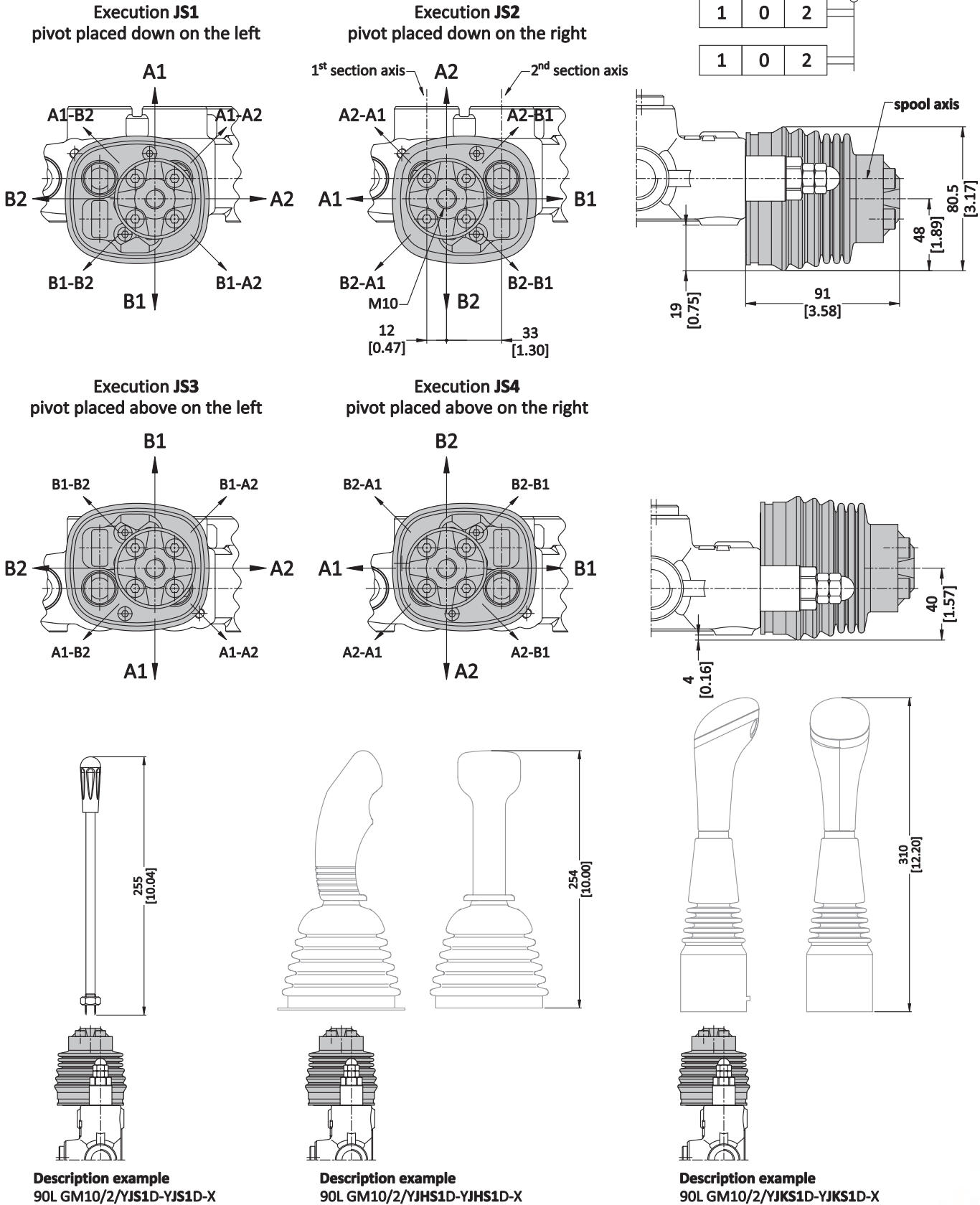


directional valve with left inlet

Front cap options

JS mechanical joystick for two sections control

Dimensions and movement scheme

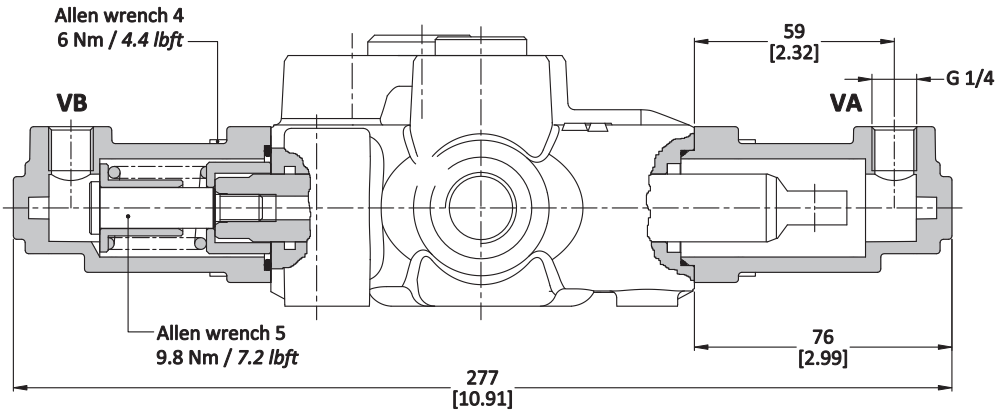
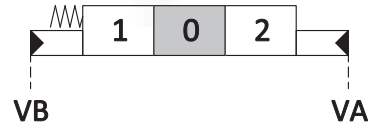


directional valve with left inlet

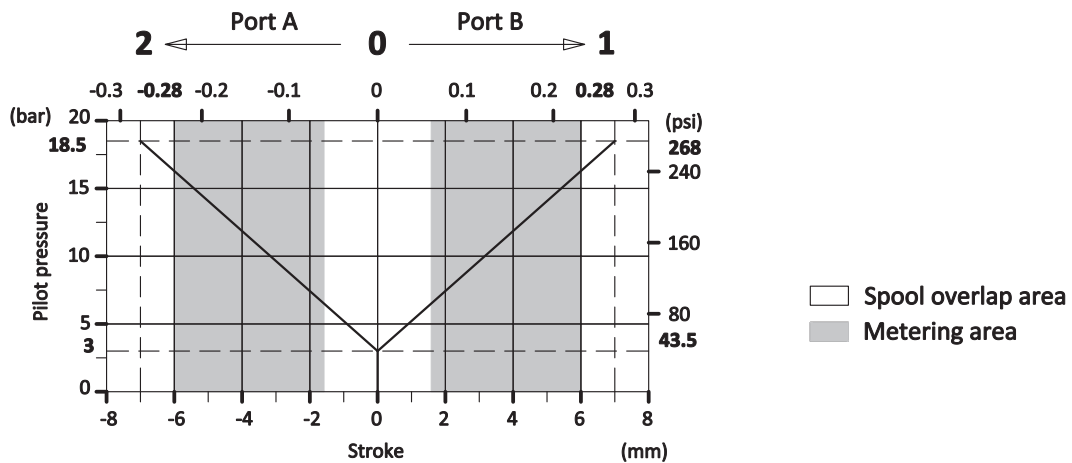
Proportional hydraulic kit type H

Operating features

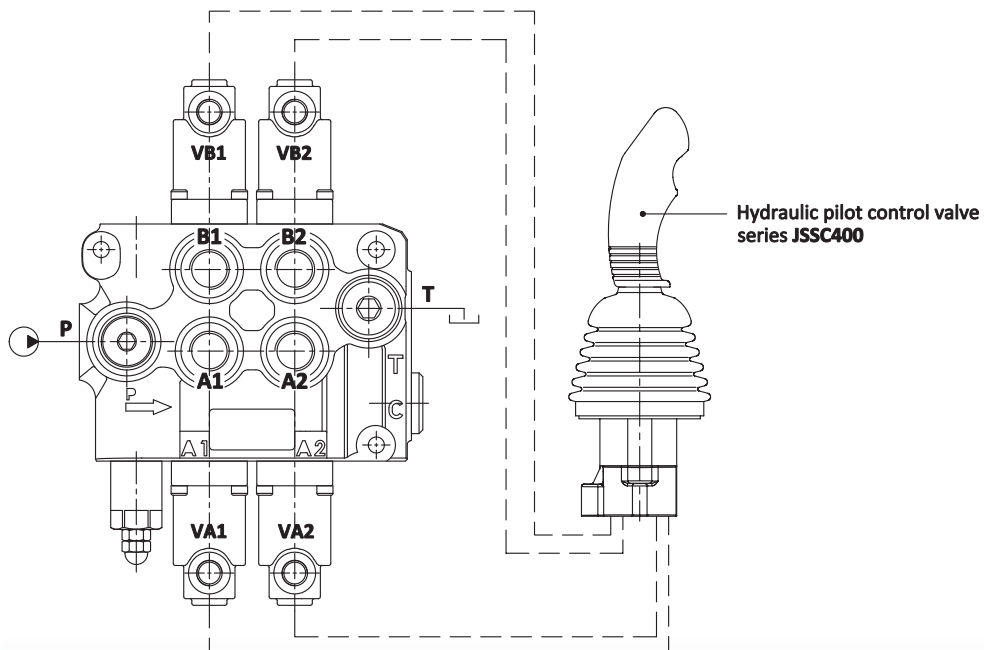
Max. pilot pressure : max. 50 bar / 725 psi



Pilot pressure - stroke diagram



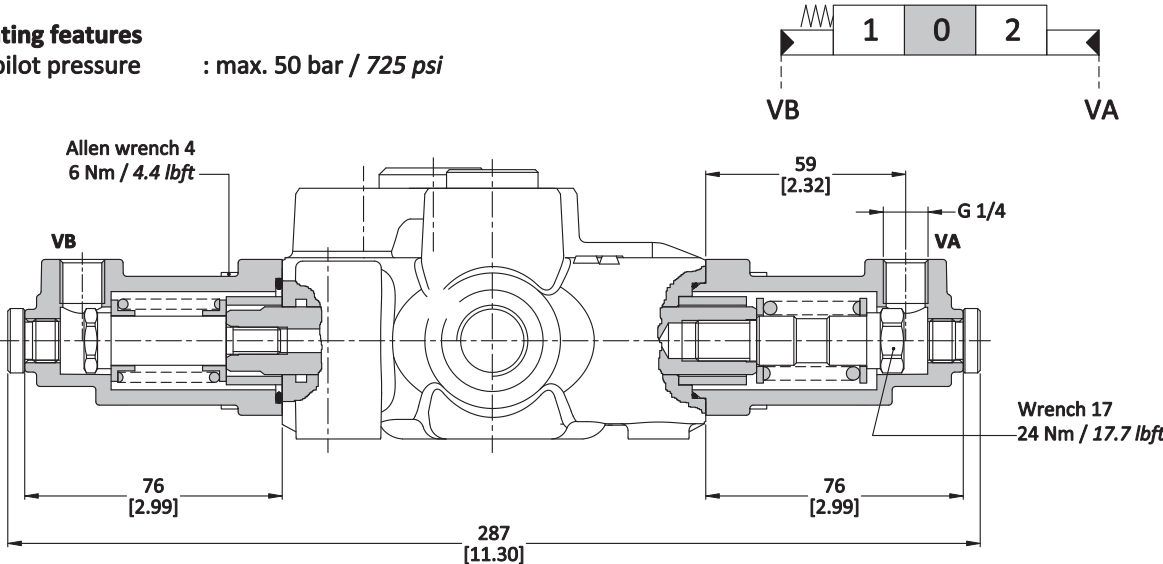
Connection example



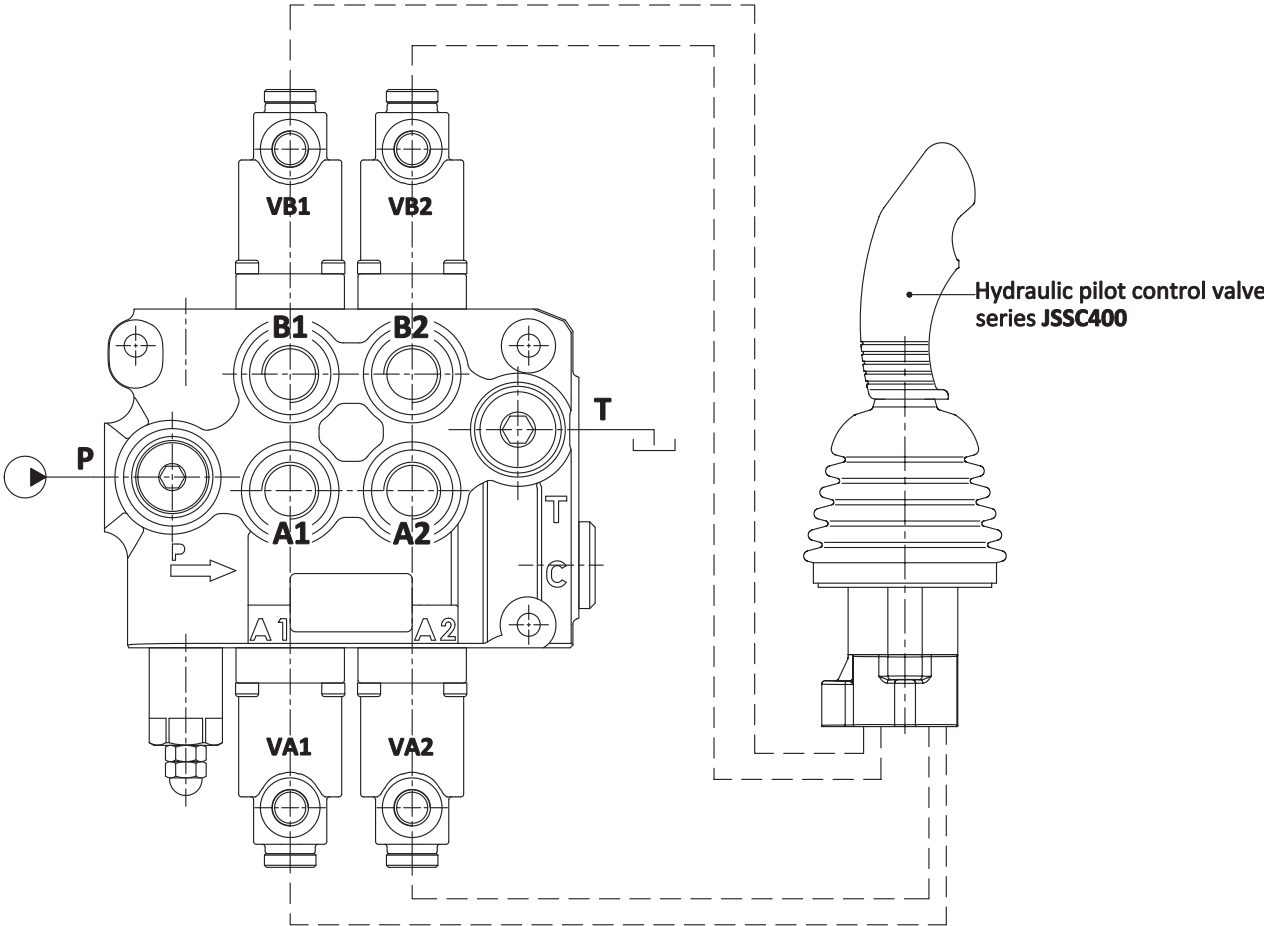
directional valve with left inlet

Proportional hydraulic kit type H1

Operating features
Max. pilot pressure : max. 50 bar / 725 psi



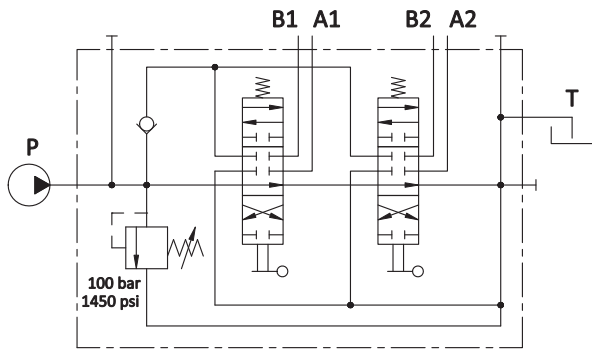
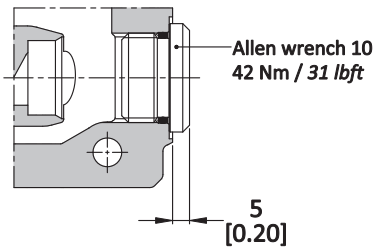
Connection example



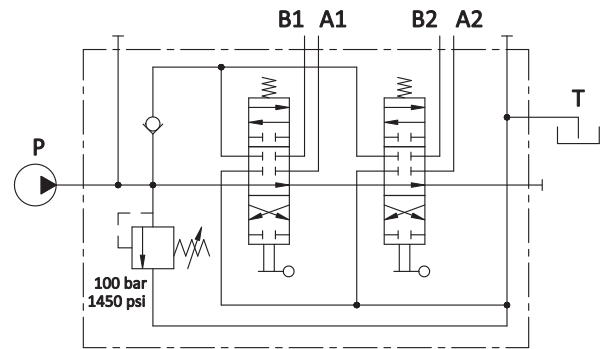
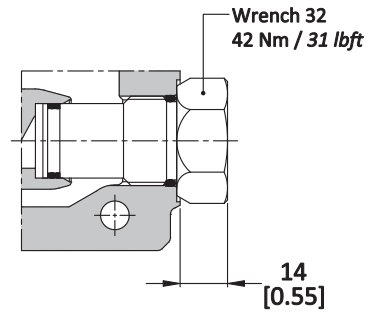
directional valve with left inlet

Outlet port options

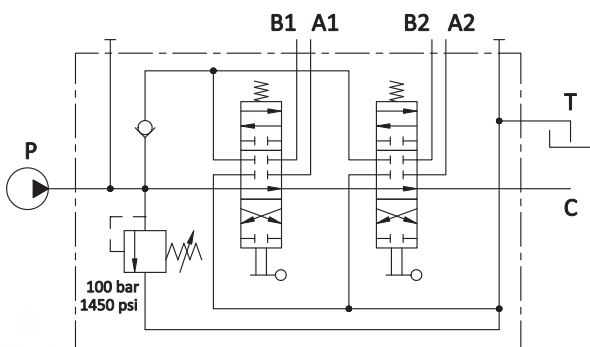
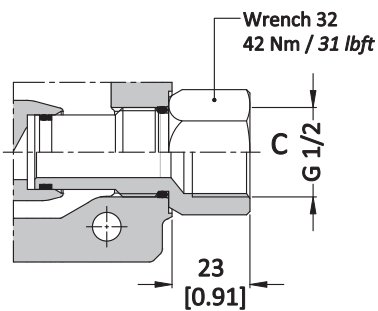
**n/a : open center
(no code)**



KCR : closed centre

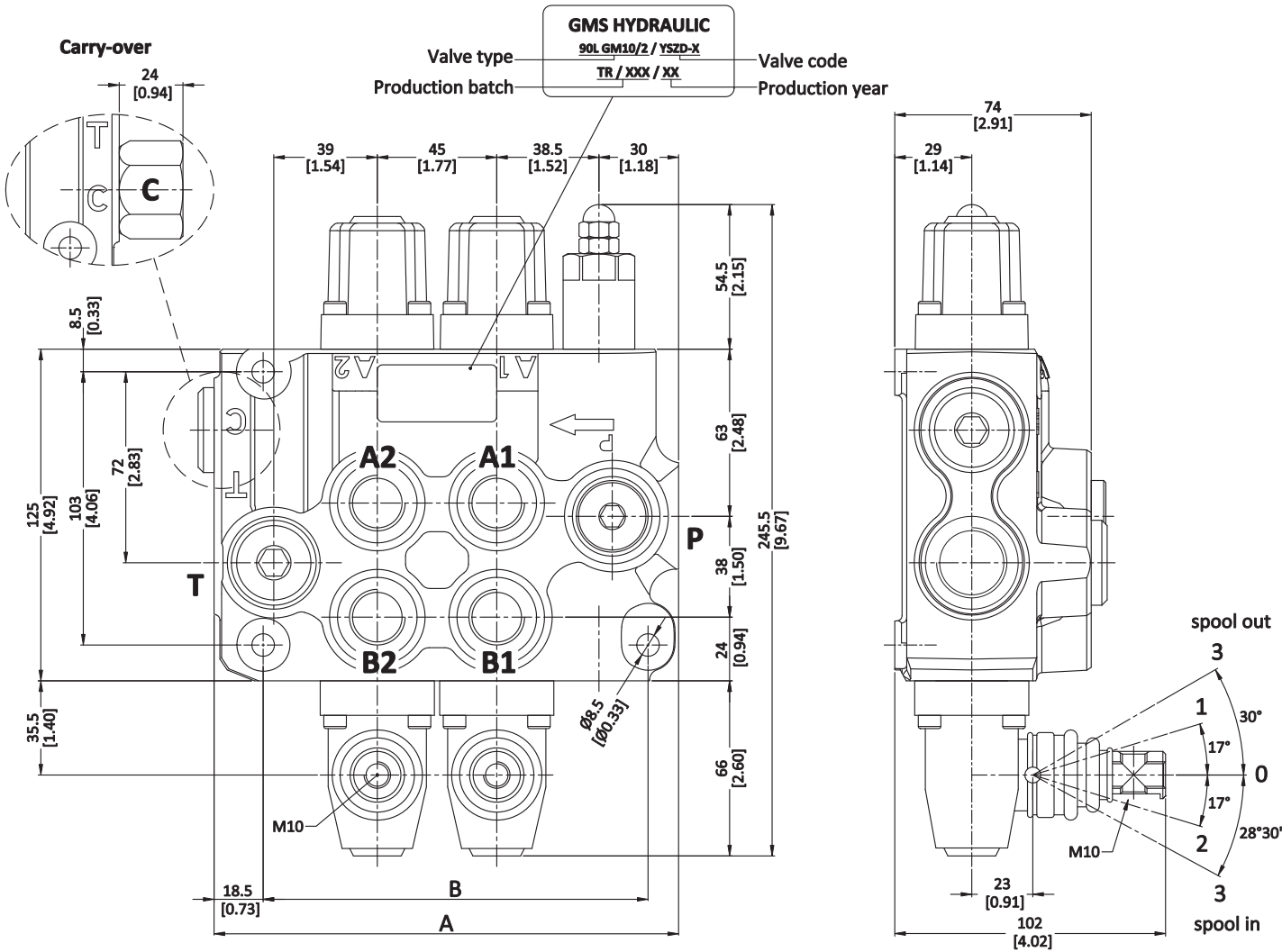


C : with carry-over



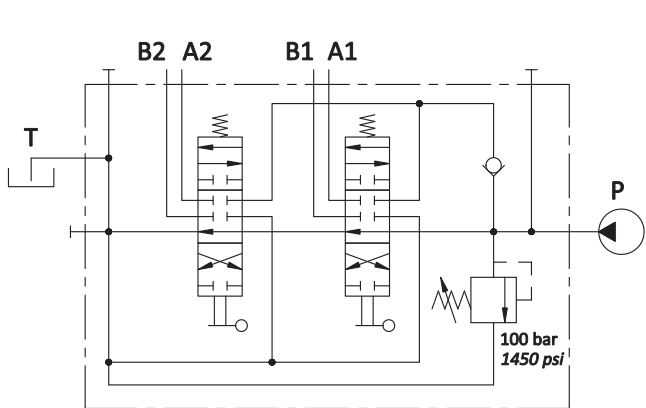
directional valve with right inlet

Dimensional data (parallel circuit)

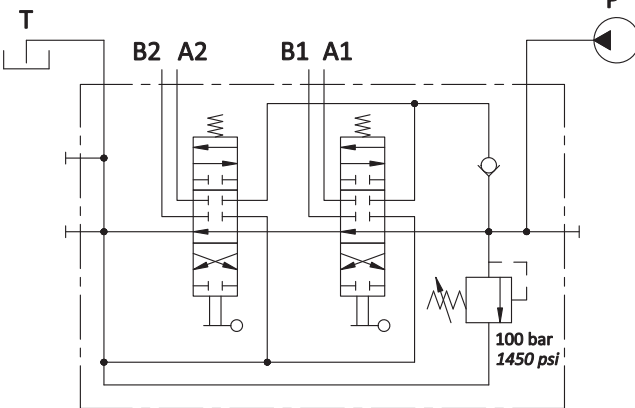


Standard configuration

Configuration with upper inlet and outlet



Description example
90L GM10/2/YSZD-YSZD-X



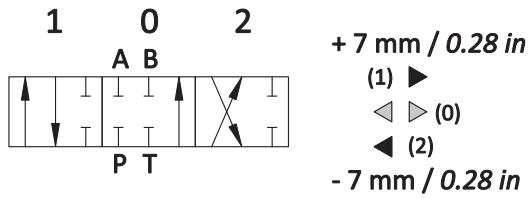
Description example
90L GM10/2/YSZD-YSZD-X-UC

TYPE	A		B		Weight	
	mm	in	mm	in	kg	lb
90L GM 10/1	130	5.12	100	3.94	5.8	12.80
90L GM 10/2	175	6.89	145	5.71	8.3	18.30
90L GM 10/3	220	8.66	190	7.48	10.9	24.00

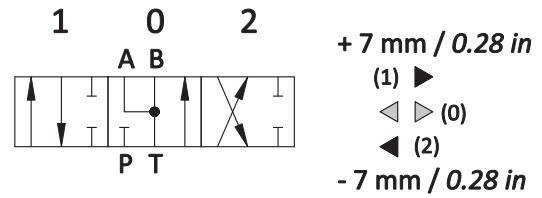
TYPE	A		B		Weight	
	mm	in	mm	in	kg	lb
90L GM 10/4	265	10.43	235	9.25	13.4	29.50
90L GM 10/5	310	12.21	280	11.02	16.5	36.40
90L GM 10/6	355	13.98	325	12.80	19.2	42.30

Spool options

Type ZD

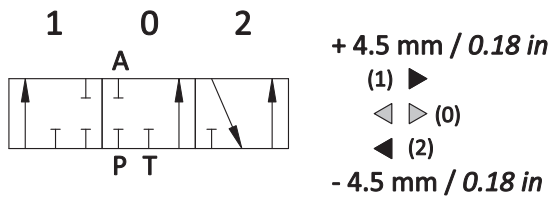


Type ZJ



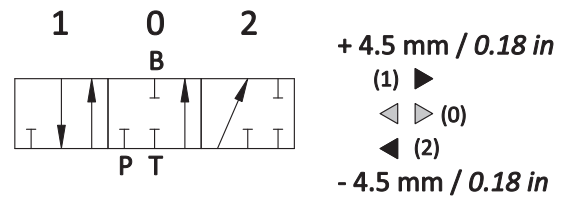
Type ZTA

For Y3 kit



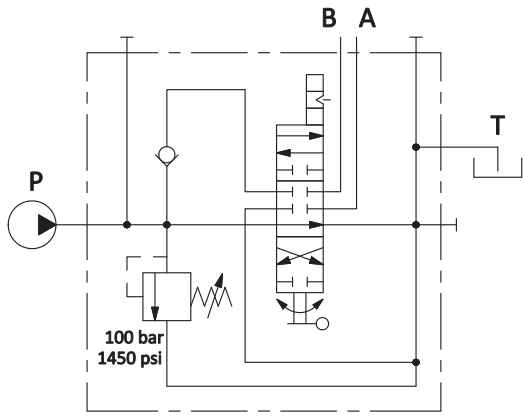
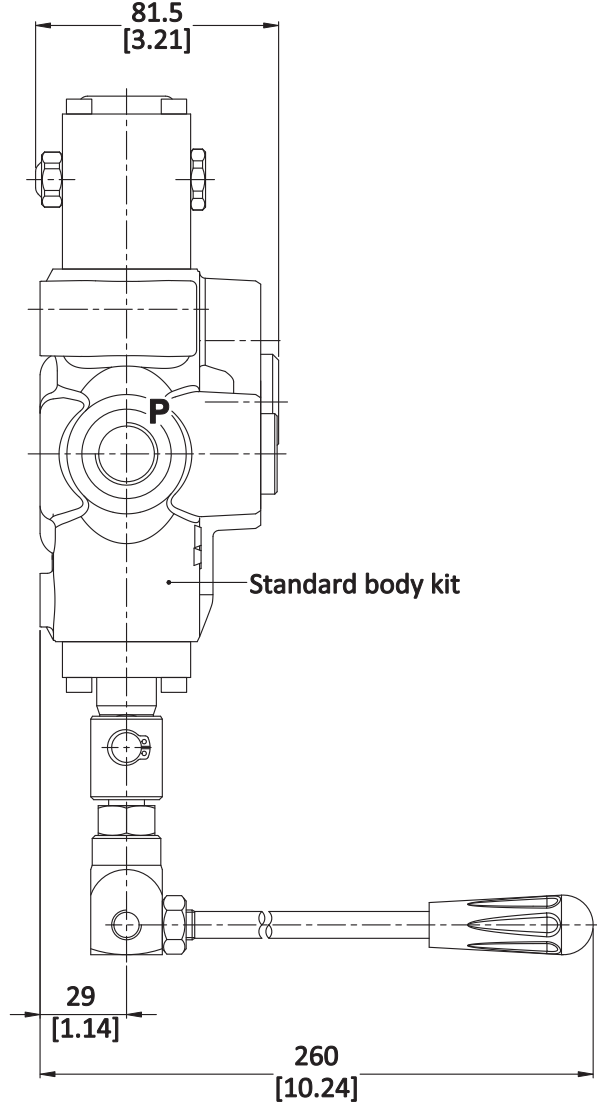
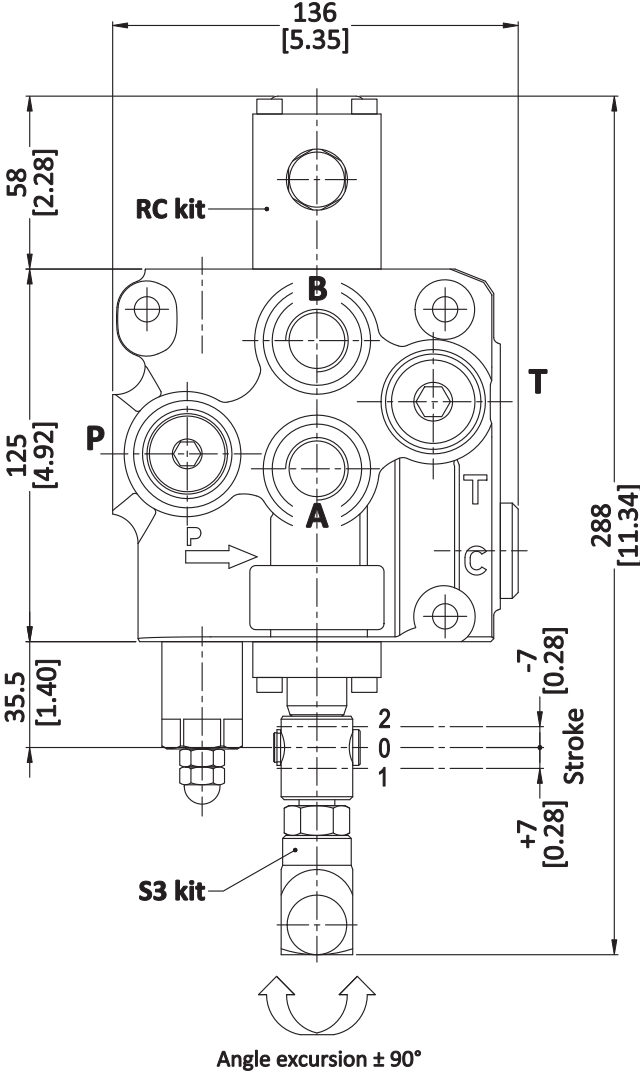
Type ZTB

For Y3 kit

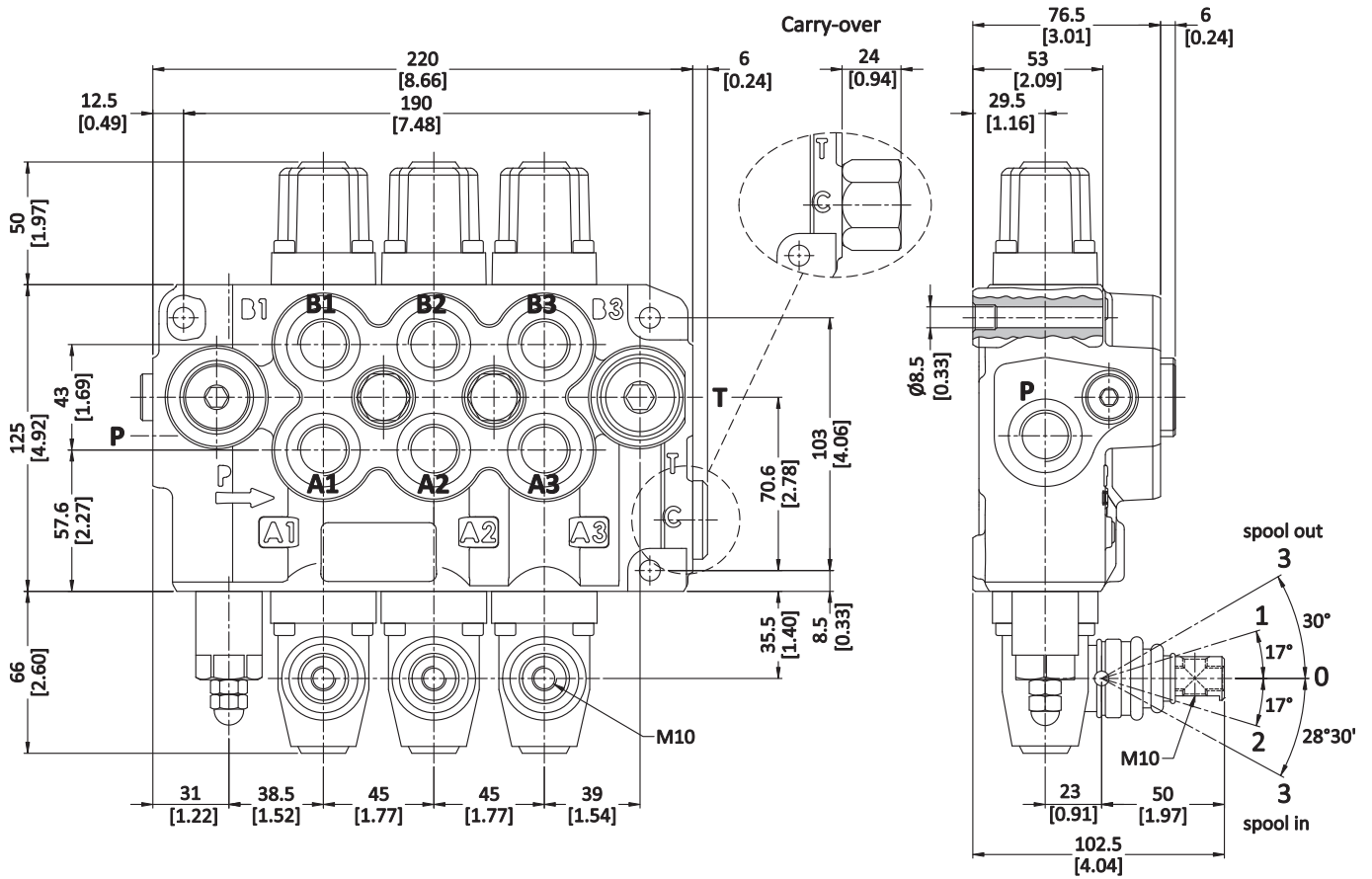


Special configurations

Directional valve with rotary control kit

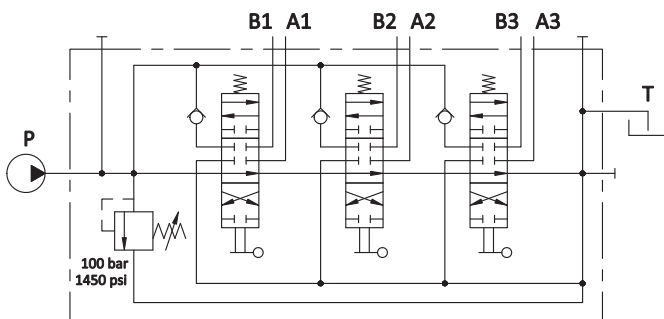


Description example
90L GM10/1/RCS3D-X



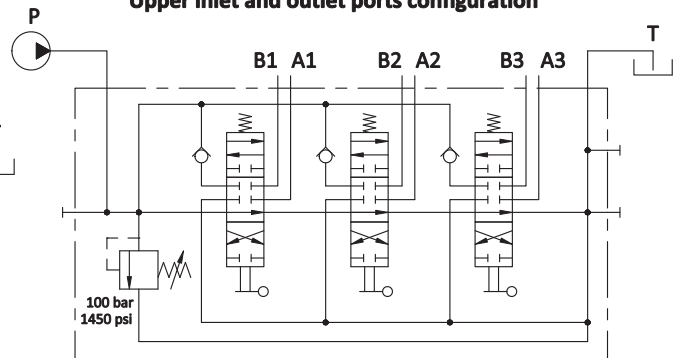
GMS HYDRAULIC	
Valve type	90L GMC10/3 / YSD-X
Production batch	TR / XXX / XX
Valve code	
Production year	

Standard configuration



Description example
90L GMC10/3/YSD-YSD-YSD-X

Upper inlet and outlet ports configuration



Description example
90L GMC10/3/YSD-YSD-YSD-X-UC