



# MONOBLOCK VALVES

## 90LS



## Features

HYDRA Part compact and heavy duty designed Monoblock valves from 1 to 6 sections for open and closed centre hydraulic systems.

- Fitted with a main pressure relief valve and a load check valve.
- Available with parallel, series or tandem circuit.
- Optional carry-over port (only for parallel or tandem circuit).
- Diameter 20 mm -- 0.79 in interchangeable spools.
- Actuation is manual, pneumatic, electro-pneumatic, hydraulic, electro-hydraulic, with solenoid and remote with flexible cables spool control kits.

### Additional information

This catalogue shows the product in the most standard configurations.  
Please contact Sales Dpt. for more detailed information or special request  
All specifications of this catalogue refer to the standard product at this date.

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## Working Conditions

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

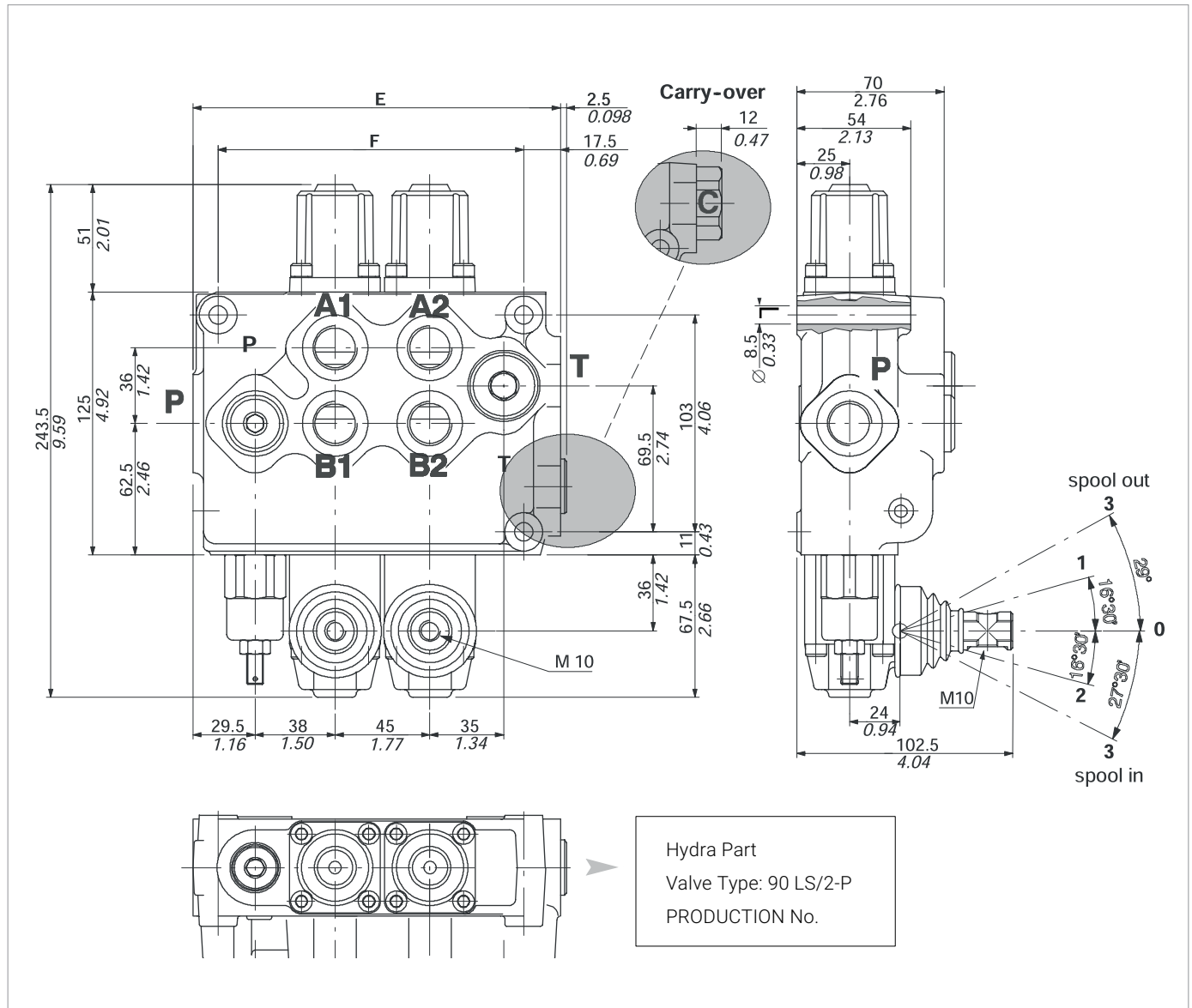
<b>Nominal flow rating</b>		90 l/min	24 USgpm
<b>Max. flow</b>		100 l	26 USgpm
<b>Operating pressure (max.)</b>		315 bar	4600 psi
<b>Back pressure (max.)</b>	T outlet port	20 bar	290 psi
<b>Internal leakage (standard) A(B) T</b>	p= 100 bar (1450 psi)	3 cm <sup>3</sup> /min	0.18 in <sup>3</sup> /min
<b>Hydraulic fluid</b>		Mineral base oil	
<b>Fluid temperature</b>	with NBR seals	from - 20° to 80°C	from -4°F to 176°F
	with FPM (VITON) seals	from - 20° to 100° c	from -4°F to 212°F
<b>Viscosity</b>	operating range	from 15 to 75 mm <sup>2</sup> /s	from 15 to 75 cSt
	minimum	12 mm <sup>2</sup> /s	12 cSt
	maximum	400 mm <sup>2</sup> /s	400 cSt
<b>Max. level of contamination</b>		-/19/16 - ISO 4406	NAS 1638 - class 10
<b>Ambient temperature for working conditions</b>	with mechanical devices	from -40° to 60°C	from -40°F to 140°F
	with pneumatic and hydraulic devices	from -30°C to 80°C	from -22°F to 140°F
	with electric devices	from -20°C to 50°C	from -4°F to 122°F

## Standard threads

Reference Standards				
		BSP	UN- UNF	METRIC
<b>Thread according to</b>		ISO 228/1	ISO 263	ISO 262
		BS 2779	ANSI B1.1 unified	
<b>Cavity dimension according to</b>	<b>ISO</b>	1179	11926	9974-1
	<b>SAE</b>		J1926	J2244
	<b>DIN</b>	3852-2 shape X or Y		3852-1 shape X or Y

Ports Threading				
Main ports	BSP	Optional	UN- UNF	METRICA
<b>P</b> Inlet and <b>C</b> carry-over	G 1/2	G 3/4	7/8-14 (SAE 10)	M18x1.5
<b>A</b> and <b>B</b> Ports	G 1/2	G 3/4	3/4-16 (SAE 8)	M18x1.5
<b>T</b> Outlet	G 3/4	G 3/4	7/8-14 (SAE 10)	M22x1.5
<b>Pilot ports</b>				
<b>Hydraulics</b>	G 1/4	-	-	-
<b>Pneumatics</b>	G 1/8	-	-	-

## Dimensional Data

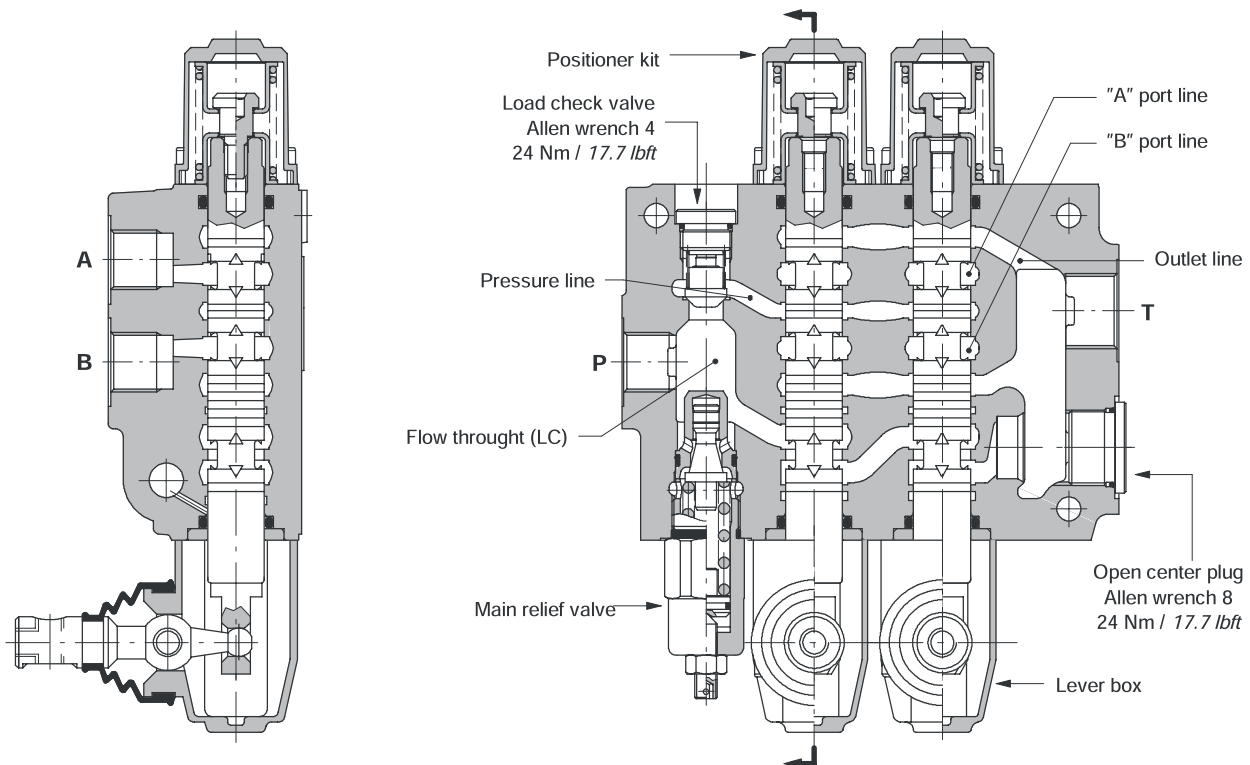


Type	E		F		Weight	
	mm	in	mm	in	kg	lb
90LS/1-P	130	5.12	100	3.94	6.1	13.4
90LS/2-P	174.5	6.87	145	5.71	8.8	19.4
90LS/3-P	219.5	8.64	190	7.48	11.4	25.1

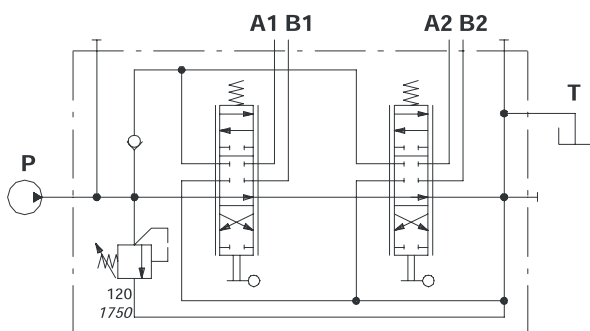
Type	E		F		Weight	
	mm	in	mm	in	kg	lb
90LS/4-P	264.5	10.41	235	9.25	14.2	31.3
90LS/5-P	309.5	12.19	280	11.02	16.7	36.8
90LS/6-P	354.5	13.96	325	12.80	19.4	42.8

## Parallel Circuit

Standard configuration with side inlet and open center circuit (AET configuration).

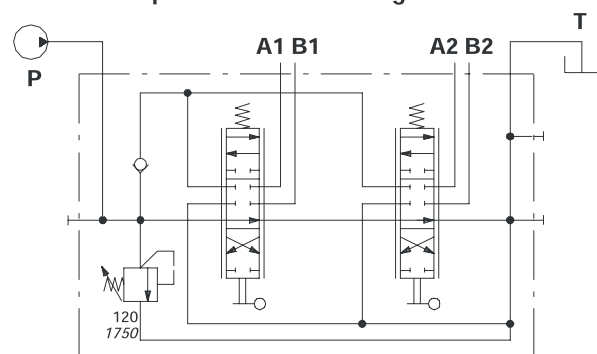


Standard configuration



Description example  
90LS/2-P(YG3--120)/18L/18L/AET

Top inlet and outlet configuration



Description example:  
90LS /2--P(YG3--120)/18L/18L/AET-PSA

# 90LS Monoblock Control Valves Coding

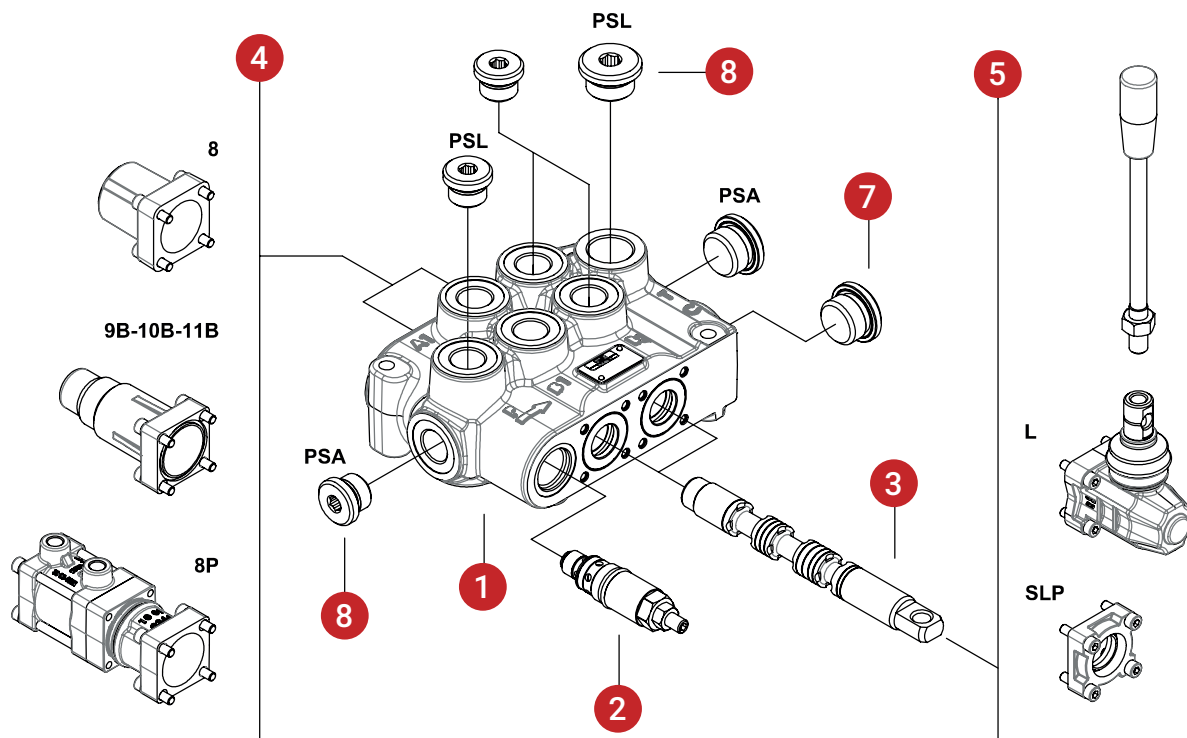
Description example:

Valve setting (bar)

90LS / 2-P (YG3-160) / 1 8 L / 2 8P L / AE-38 / PSA

1 2 3 4 5 3 4 5 7 8

first section following section



## 1 Body kits - Ordering codes

Type	Description
1-P	Parallel, 1 section
2-P	Parallel, 2 sections
3-P	Parallel, 3 sections
4-P	Parallel, 4 sections
5-P	Parallel, 5 sections
6-P	Parallel, 6 sections

## 2 Inlet relief options

Type	Description
YG2	Range 40 – 80 Bar / 580 to 1160 Bar
YG3	Range 63 – 200 Bar / 915 to 2900 Bar
YG4	Range 160 to 315 bar / 2300 to 4600 psi
SV	Relief valve blanking plug

## 90LS Monoblock Control Valves Coding *(continued)*

<b>3 Spools</b>		
Type	Code	Description
<b>1</b>	P0101011634	90LS - Double acting, 3 positions, with A and B closed in neutral position Type 1
<b>1A</b>	**	90SL - Double acting, 3 positions, with A open to Tank in neutral position.
<b>1B</b>	**	90SL - Double acting, 3 positions, with B open to Tank in neutral position.
<b>2</b>	P0101011320	90LS - Motor spool D/Acting, 3 positions, with A and B open to tank in neutral position Type 2
<b>3</b>	P0101011319	90LS - Single acting on A, 3 positions, B plugged requires G1/2 plug Type 3
<b>4</b>	P0101011321	90LS - Single acting on B, 3 positions, A plugged requires G1/2 plug Type 4
<b>5</b>	**	90SL - Double acting, 4 positions, floating circuit in 4th position with spool in.
<b>5VR</b>	**	90SL - Double acting, 4 positions, floating circuit in 4th position with spool out, with check valve
<b>7</b>	P0101011734	90LS - Single acting on A open to Tank in neutral position, 3 positions, B plugged. Type 7
<b>9</b>	**	90SL - Double acting, 3 positions, with P T A B close in neutral position. (Closed centre)

<b>4 Spool 'A' Side Positioners</b>		
Type	Code	Description
<b>8</b>	P0101011636	90LS- 120LS - 3 Position Spring kit type 8
<b>8D</b>	P0101011724	90LS - 120LS spring return in neutral position and pin with M6 female thread for dual control 8D
<b>8D2</b>	**	90LS - 120LS Control Valve Dual control connector Kit with 8mm Male Kit 8D2
<b>19</b>	**	90LS - 120LS 2 positions, with spring return in neutral position from position 1
<b>20</b>	**	90LS - 120LS 2 positions, with spring return in neutral position from position 2
<b>11</b>	P0101011589	90LS -120LS - 3 position detent in Position Neutral - 1 and 2 - Kit type 11
<b>12</b>	**	90LS - 120LS Detent in positions 1 and 2
<b>15</b>	P0101011679	90LS -120LS - 2 positions, detent in positions 1 and neutral Kit type 15
<b>16</b>	P0101011678	90LS - 120LS - 2 positions, detent in positions 2 and neutral Kit type 16
<b>9B</b>	P0101011632	90LS - 120LS detent in position 1 and spring return in neutral position - Kit type 9B
<b>10B</b>	P0101011633	90LS - 120LS - detent in position 2 and spring return in neutral position - Kit type 10B
<b>11B</b>	P0101011723	90LS - 120LS - Detent in positions 1 and 2 and spring return in neutral position Kit type 11B
<b>8P</b>	P0101011677	90LS - 120LS - ON/OFF pneumatic kit 8P
<b>8EP3(12V)</b>	P0101011722	90LS - 120LS -ON/OFF 12 VDC electro--pneumatic kit 12VDC 8EP3
<b>8EP4(24V)</b>	P0101011315	90LS - 120LS -ON/OFF 12 VDC electro--pneumatic kit 24VDC 8EP4
<b>8ED3</b>	**	90LS- 120LS - ON/OFF 12 VDC electro--hydraulic kit 12V
<b>8ED4</b>	**	90LS- 120LS - ON/OFF 24 VDC electro--hydraulic kit 24V
<b>13B</b>	**	4 pos. with spring return in neutral pos. and detent in 4th pos.: for spool 5
<b>13C</b>	**	4 pos. with spring return in neutral pos. and detent in 4th pos.: for spool 5VR 4



## 90LS Monoblock Control Valves Coding *(continued)*

5 'B' Side Positioners Options		
Type	Code	Description
<b>L</b>	P0101011713	90LS - 120LS - Standard lever box (L)
<b>R</b>	P0101011713	90LS - 120LS - Standard lever box (L) 180 degrees
<b>SL</b>	**	Without any cover
<b>SLP</b>	P0101011712	90LS - 120LS Without lever, with dust proof plate (SLP)
<b>LR</b>	P0101011711	90LS - Rotary Lever Kit (LR)
<b>TQ</b>	P0101011745	90LS - 120LS - Cable connection kit (TQ)
<b>LCB</b>	P0101011744	90LS - Joystick control kit (LCB)

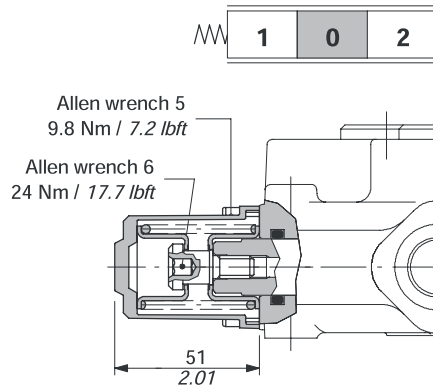
6 Complete controls		
Type	Code	Description
<b>8IM</b>	P0101011630	90LS- 120LS - Propotional hydraulic control 8IM

7 Outlet Port Options		
Type	Code	Description
<b>AET</b>	P0101011701	Open centre plug
<b>AEK</b>	P0101011700	90LS - Closed centre plug
<b>AE</b>	**	Carry over plug 1/2"
<b>AE</b>	P0101011635	90LS - Carry over plug 3/4" (AE)

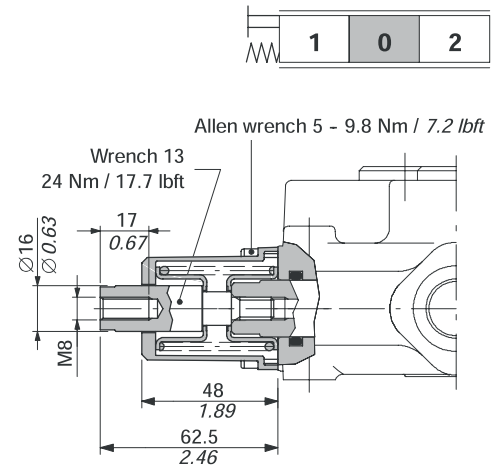
8 Inlet & Outlet Selection	
Type	Description
<b>PSL</b>	Upper ports need 1 x G ½" and 1 x G3/4" (Standard configuration)
<b>PSA</b>	Side ports need 1 x G ½" and 1 x G3/4"

# 'A' Side Spool Positioners

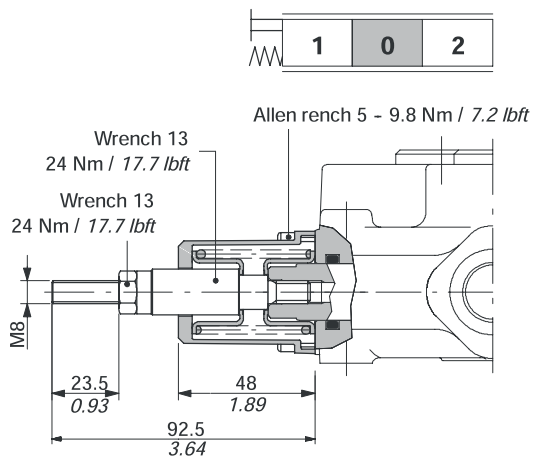
## 8 Kit



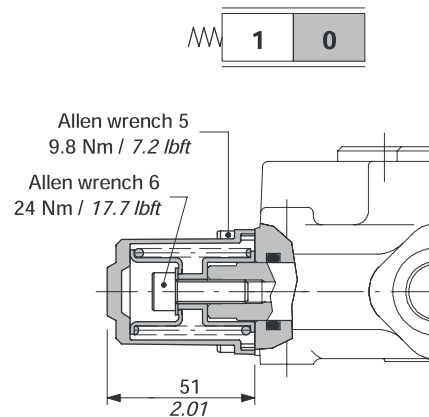
## 8D Kit



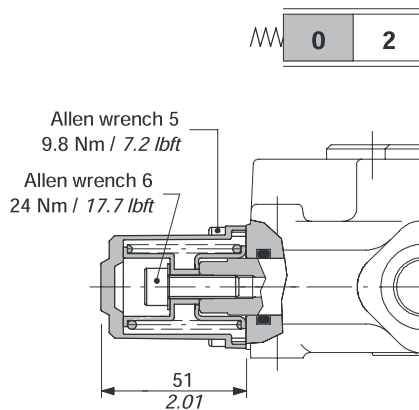
## 8D2 Kit



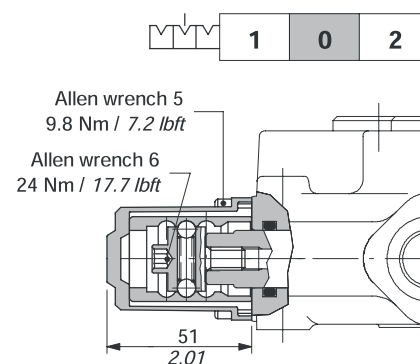
## 19 Kit



## 20 Kit

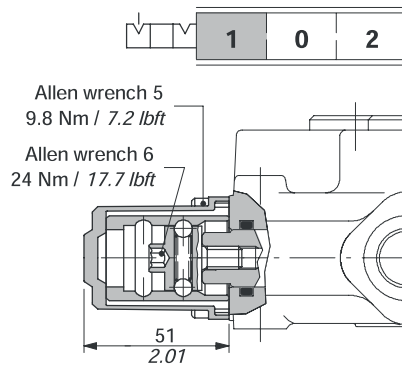


## 11 Kit

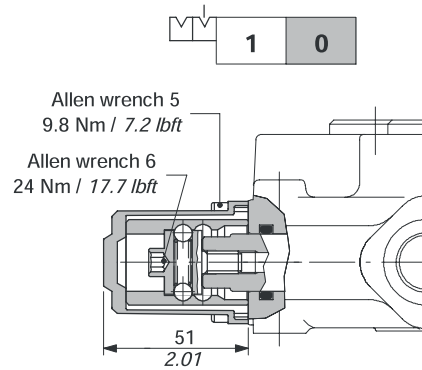


## 'A' Side Spool Positioners (continued)

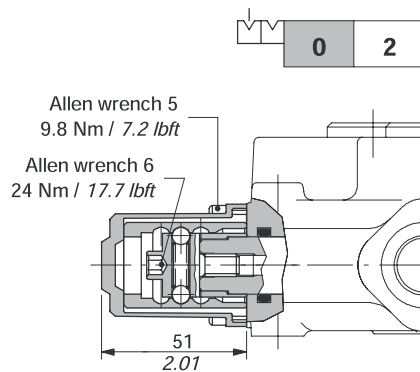
### 12 Kit



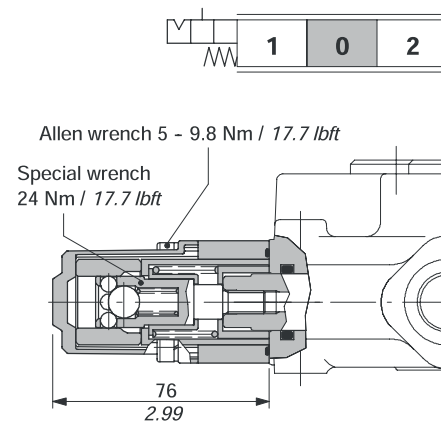
### 15 Kit



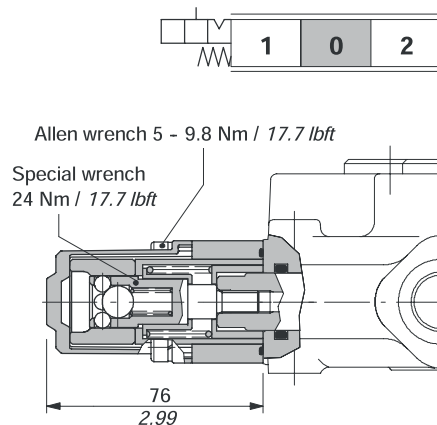
### 16 Kit



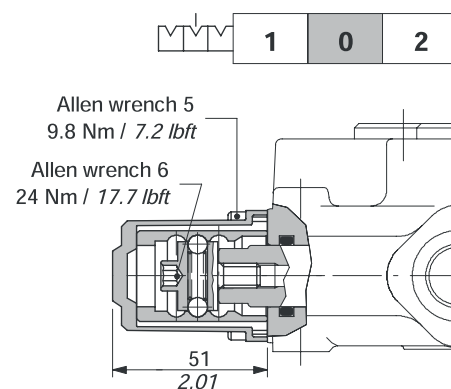
### 9B Kit



### 10B Kit

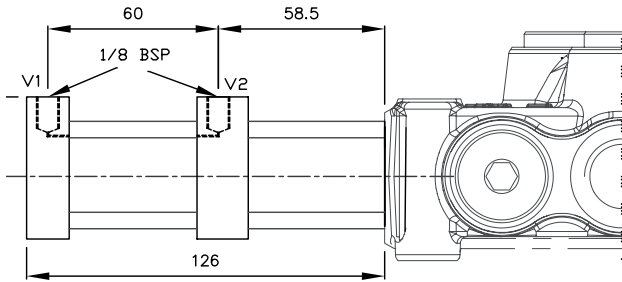


### 11B Kit

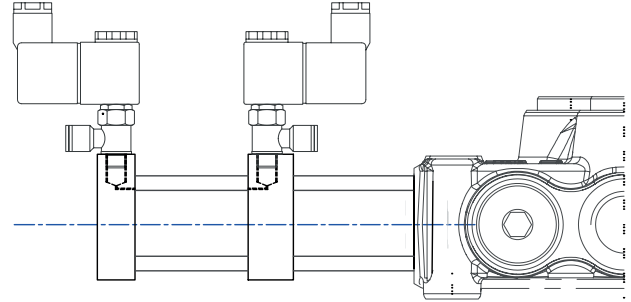


## 'A' Side Spool Positioners (continued)

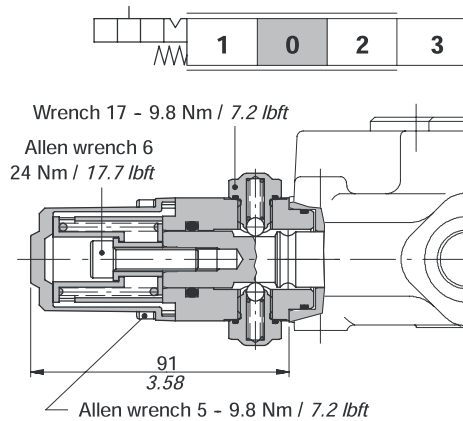
8P



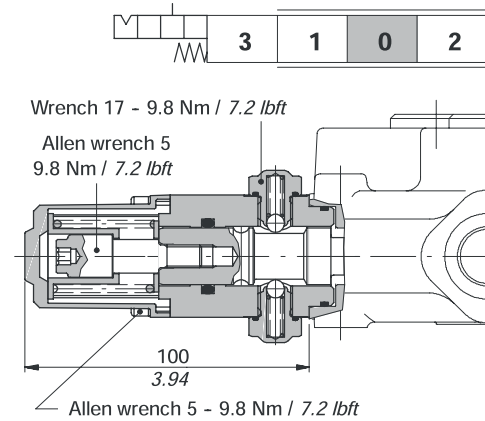
8EP3



13B

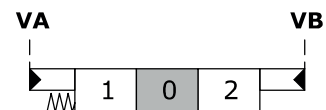
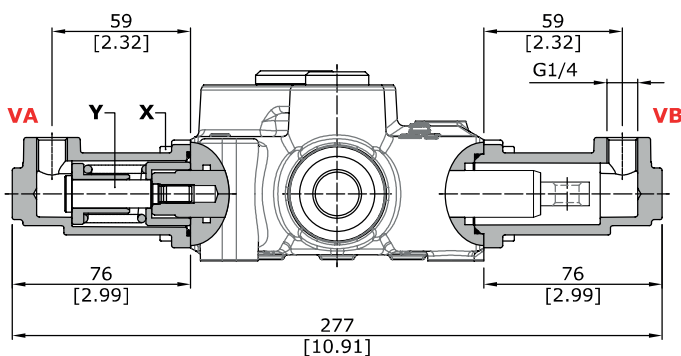


13C



## 6. Complete Controls

8IM Kit



### Wrenches and tightening torques

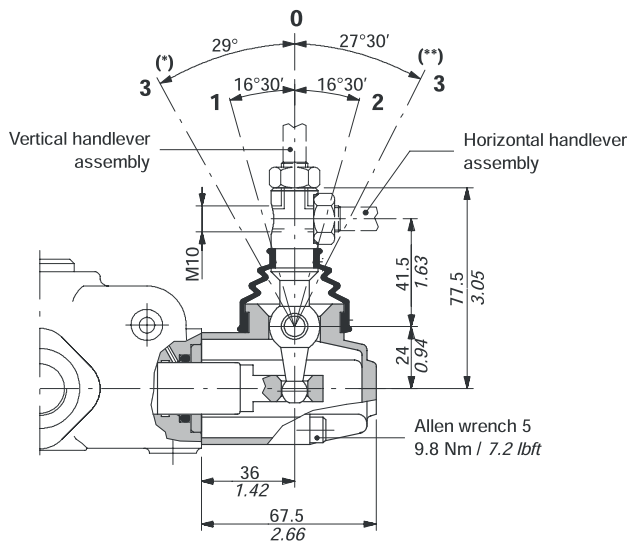
X = allen wrench 4 - 6 Nm (4.4 lbft)  
Y = allen wrench 6 - 9 Nm (6.6 lbft)

### Operating features

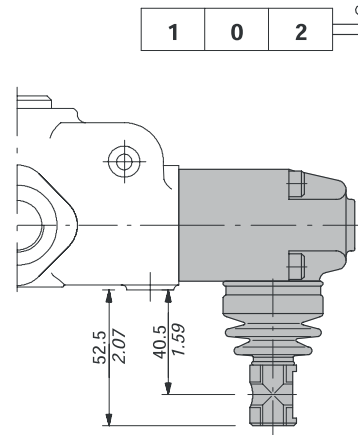
Pilot pressure : max. 50 bar (725 psi)  
Internal leakage A(B) → T (Δ = 100 bar - (1450 psi)  
/ T = 40°C)  
..... : max. 6cm<sup>3</sup>/min - 0.37 in<sup>3</sup>/min

## 'B' Side Positioners Options

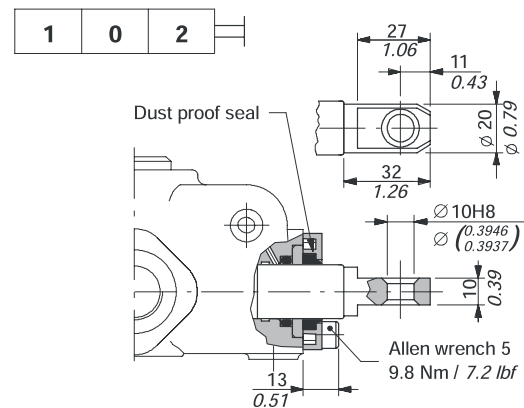
### Type L Standard Lever Box



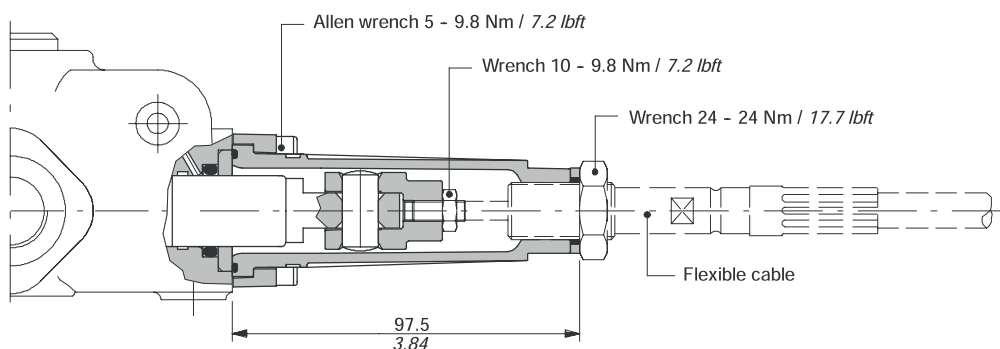
### Type R = 180 degrees inverted



### Type SLP (Mec control with dust proof plate)

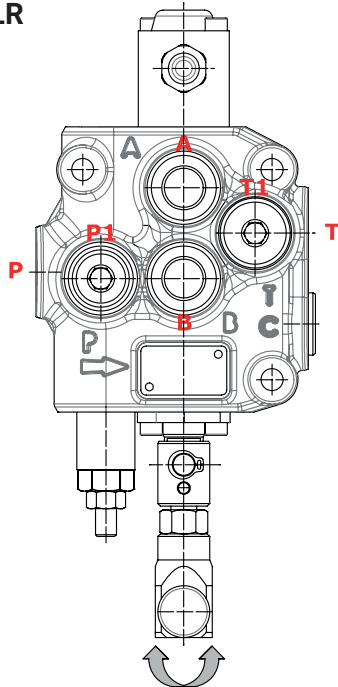


### Type TQ



## 'B' Side Positioners Options *(continued)*

### Type LR



Angle rotation  $\pm 90^\circ$

#### Wrenches and tightening torques

X = allen wrench 4 - 6 Nm (4.4 lbft)

Y = wrench 19 - 9.8 Nm (7.23 lbft)

W = wrench 17 - 9.8 Nm (7.23 lbft)

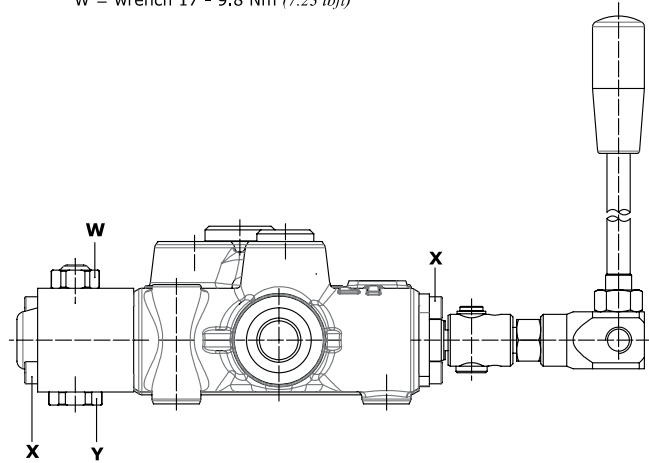
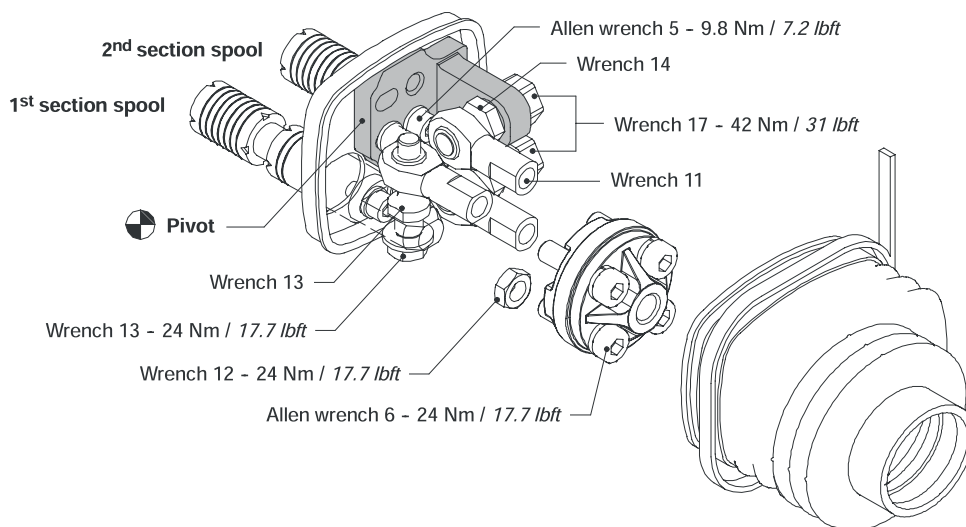


Image for illustrative purposes only. Actual part may differ.

### Type LCB (2 Axis Joystick control)

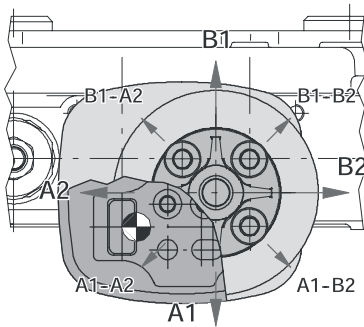


1	0	2
1	0	2

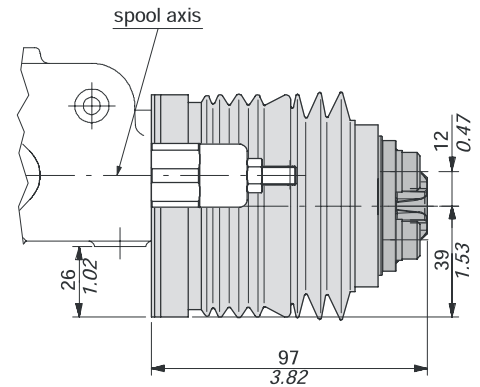
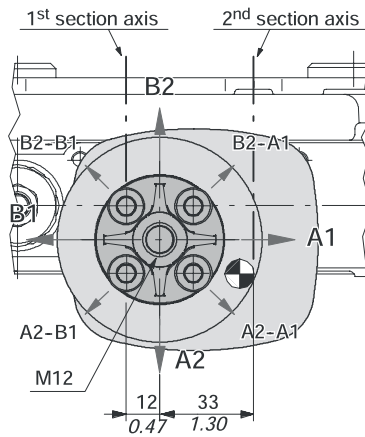
Configuration LCB4

# Joystick Configuration Options

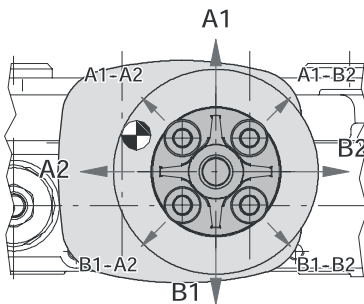
**Configuration LCB1**  
*pivot placed down on the left*



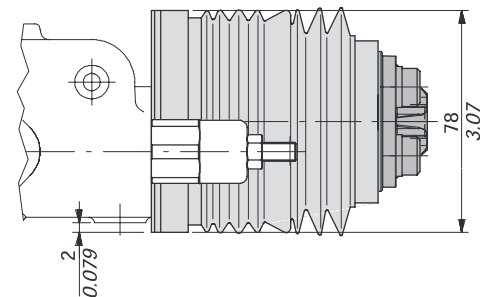
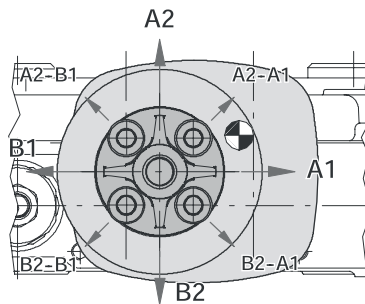
**Configuration LCB2**  
*pivot placed down on the right*



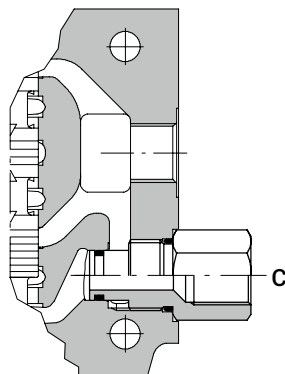
**Configuration LCB3**  
*pivot placed above on the left*



**Configuration LCB4**  
*pivot placed above on the right*

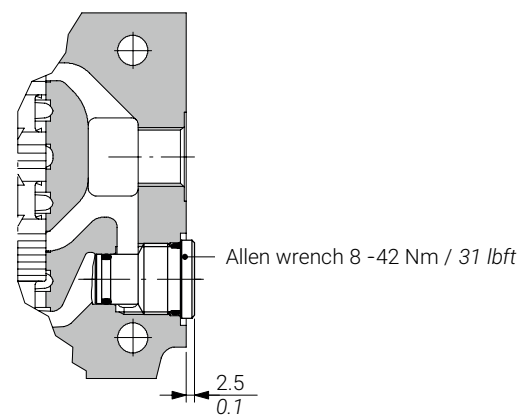


**AE: with carry-over**



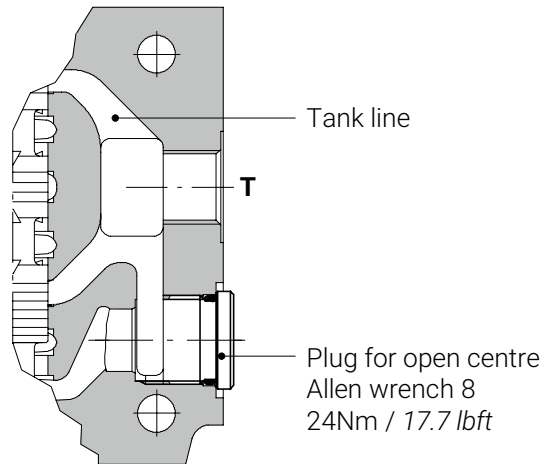
90LS - Carry over plug 3/4" (AE)

**AEK: Closed centre plug**



## Joystick Configuration Options *(continued)*

### AET Open Centre







Your local dealer is