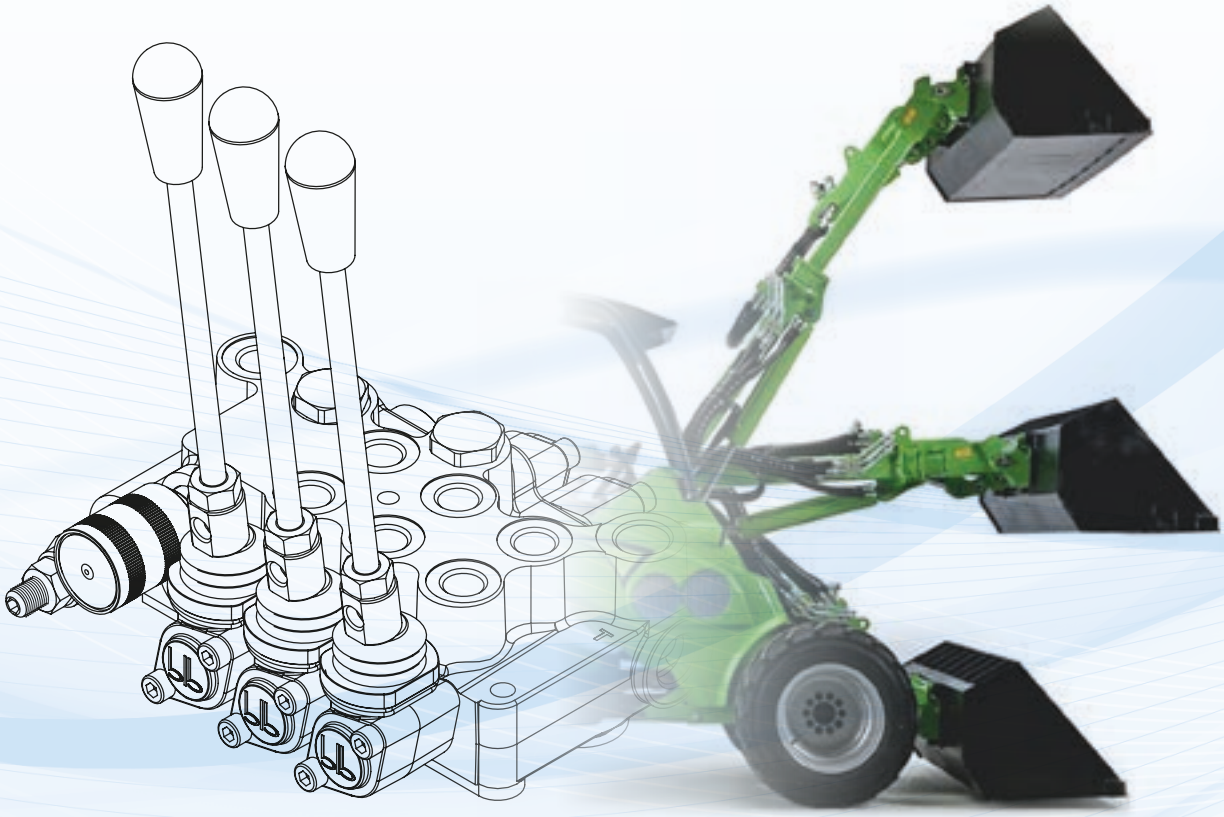
BM20 | BM25 | BM35 | BF201



35 anniversary

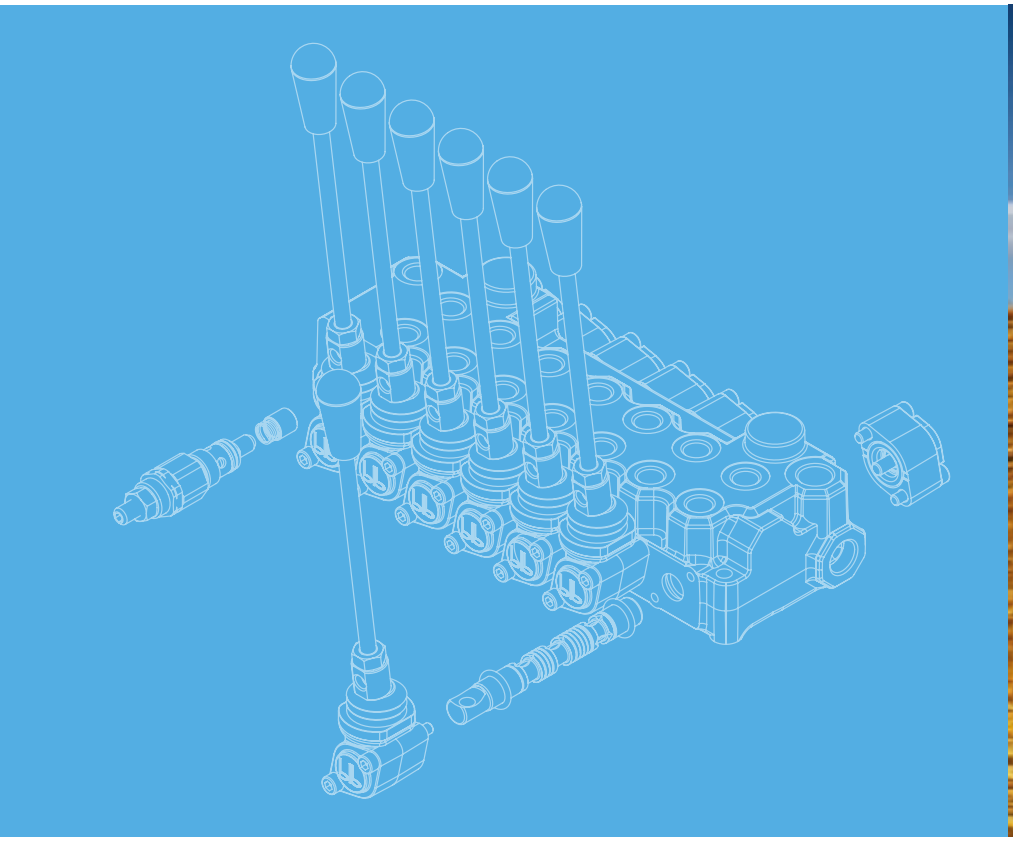
UPGRADE YOUR HYDRAULIC CONTROL

PRESENTATION

THIS CATALOGUE CONTAINS THE INFORMATION NEEDED FOR THE SELECTION AND PROPER USE OF HYDRAULIC DIRECTIONAL CONTROL VALVES BM20, BM25, BM35 AND BF201 SERIES. THE DESIGN, MANUFACTURING PROCESS AND CONTROLS MEET THE RELEVANT EU STANDARDS AND DIRECTIVES ON SAFETY AND QUALITY. DIRECTIONAL CONTROL VALVES ARE PRODUCED BY BLB.

Before using BM20, BM25, BM35 and BF201 directional control valves, carefully read this catalogue in all its parts; the proper operation of BLB products is strictly subjected to the compliance with the directions, instructions, and specifcations herein stated. Please contact our BLB technical department in all cases in which the correspondence of the product to the application requirements is uncertain. Operations and uses that require actions other than those herein described and/or approved in advance by BLB, may give rise to defects or failures that exempt BLB from all liabilities.

The proper operation of BM20, BM25, BM35 and BF201, is strictly subjected to the compliance with the directions, instructions, and specifcations stated in this catalogue. Operations and uses that require actions other than those herein described and/or approved in advance by BLB, may give rise to defects or failures that exempt BLB from all liabilities. To ensure the specifcations given in the catalogue, make sure that the maximum parameters are not exceeded during operation. BLB is not liable for any damage that may be caused to people or property resulting from misuse of the product. Therefore, consult with the utmost attention the chapter instructions. The catalogue shows the most common configurations. For more detailed information or special requests herein not provided, please contact BLB Sales Department. Specifcations, drawings and descriptions contained in this catalogue refer to the products at the date of publication of this catalogue. BLB, in a perspective of continuous product improvement, reserves the right to make changes at any time and without the obligation of any prior notifcation.



35 anniversary

For over 35 years at BLB we have been designing and manufacturing directional control valves with passion, supporting our customers with the study and creation of innovative solutions. BLB Team has always focused on the search for solutions that allow an easy and convenient update and improvement of our customers' applications and systems.

BLB products, all strictly Made in Italy, stand out for their compactness, lightness and for the high level of standardization and interchangeability of the components. Our management system is ISO 9001 certified.

Product personalization, quick deliveries, keeping to deadlines as well as the constant focus on improvement create the true added value of the service provided by BLB which today, thanks to an efficient network of dealers, is present all over the world.

Company with Certified Quality Management System
Certicate N° 50 100 11533

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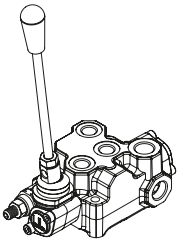
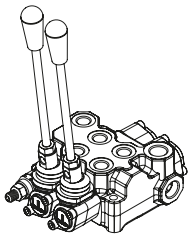
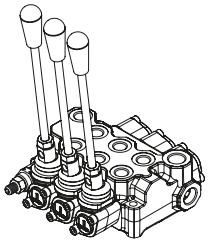
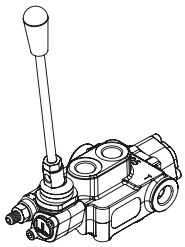
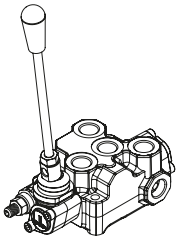
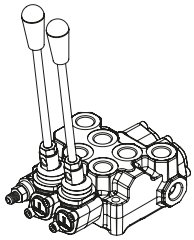
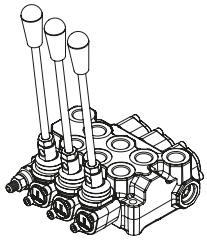
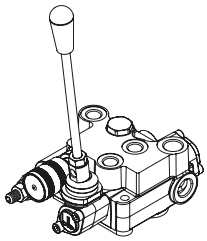
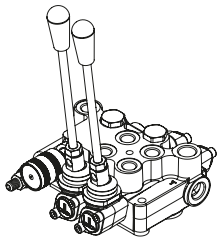
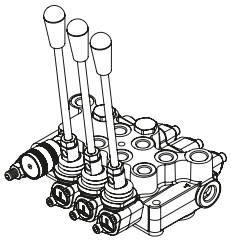
PRODUCTS RANGE

	/ 1	/ 2	/ 3
BM20 1 to 7 sections Flow 20 l/min Ports threads 1/4" BSP / SAE 6 2 Inlet and Outlet ports Prepared for High pressure Carry Over (Power Beyond)			
BM25 Single section valve Flow 25 l/min Ports threads 3/8" BSP / SAE 8			
BM35 1 to 7 sections Flow 35 l/min Ports threads 3/8" BSP / SAE 8 2 Inlet and Outlet ports Prepared for High pressure Carry Over (Power Beyond)			
BF201 1 to 5 sections Flow 20 l/min Ports threads 1/4" BSP / SAE 6 2 Inlet and Outlet ports Prepared for High pressure Carry Over (Power Beyond)			

SPECIAL PRODUCTS

BB20/3
Check valves on ports
3 sections
Max Flow 20 l/min

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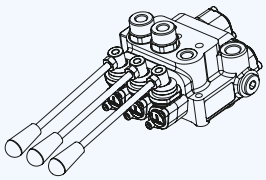

BM20/3
Double Inlet
3 sections
Max Flow 25 l/min

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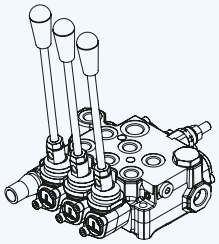

BM35/2
Ports antishock valves
2 sections
Max flow 35 l/min

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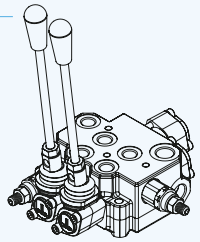
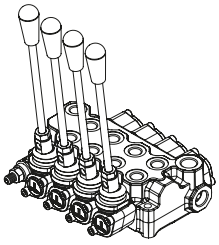
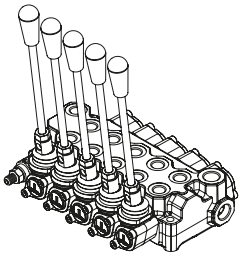
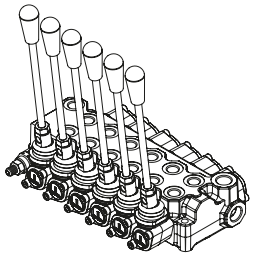
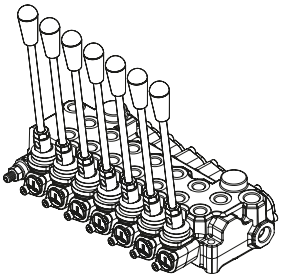
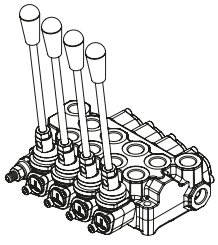
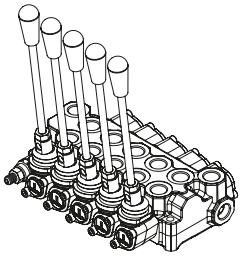
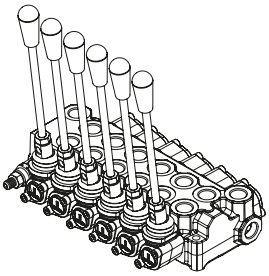
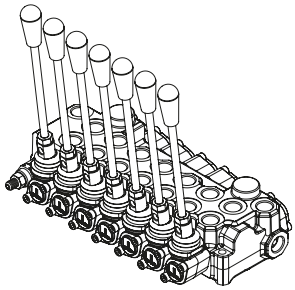
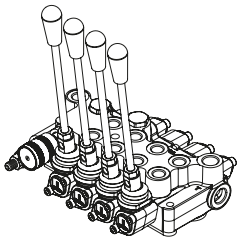
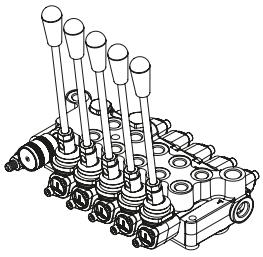


/ 4	/ 5	/ 6	/ 7

BM35/7

for backhoe, special RCT spool
7 sections
Max flow 35 l/min

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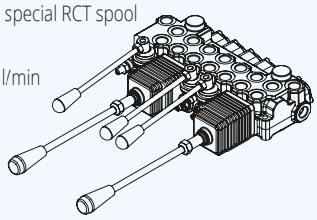

BM25

with electric + manual control
Max flow 25 l/min

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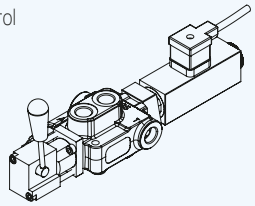

BM35

with electric + manual control
(one section only)
Max flow 25 l/min

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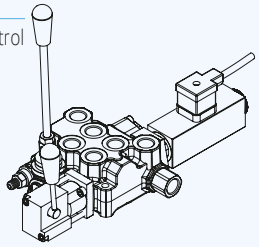
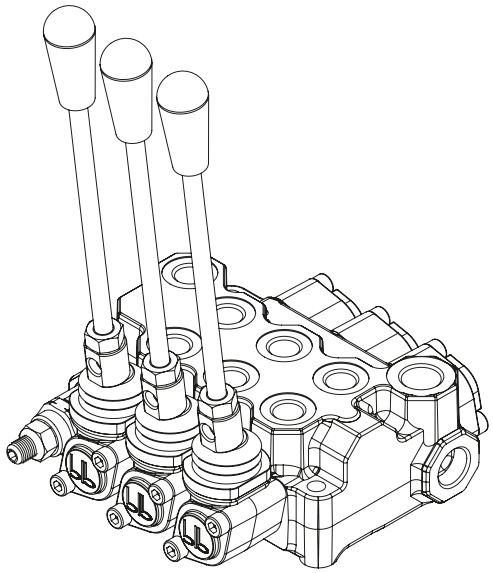


BM SERIES

GENERAL INFORMATION

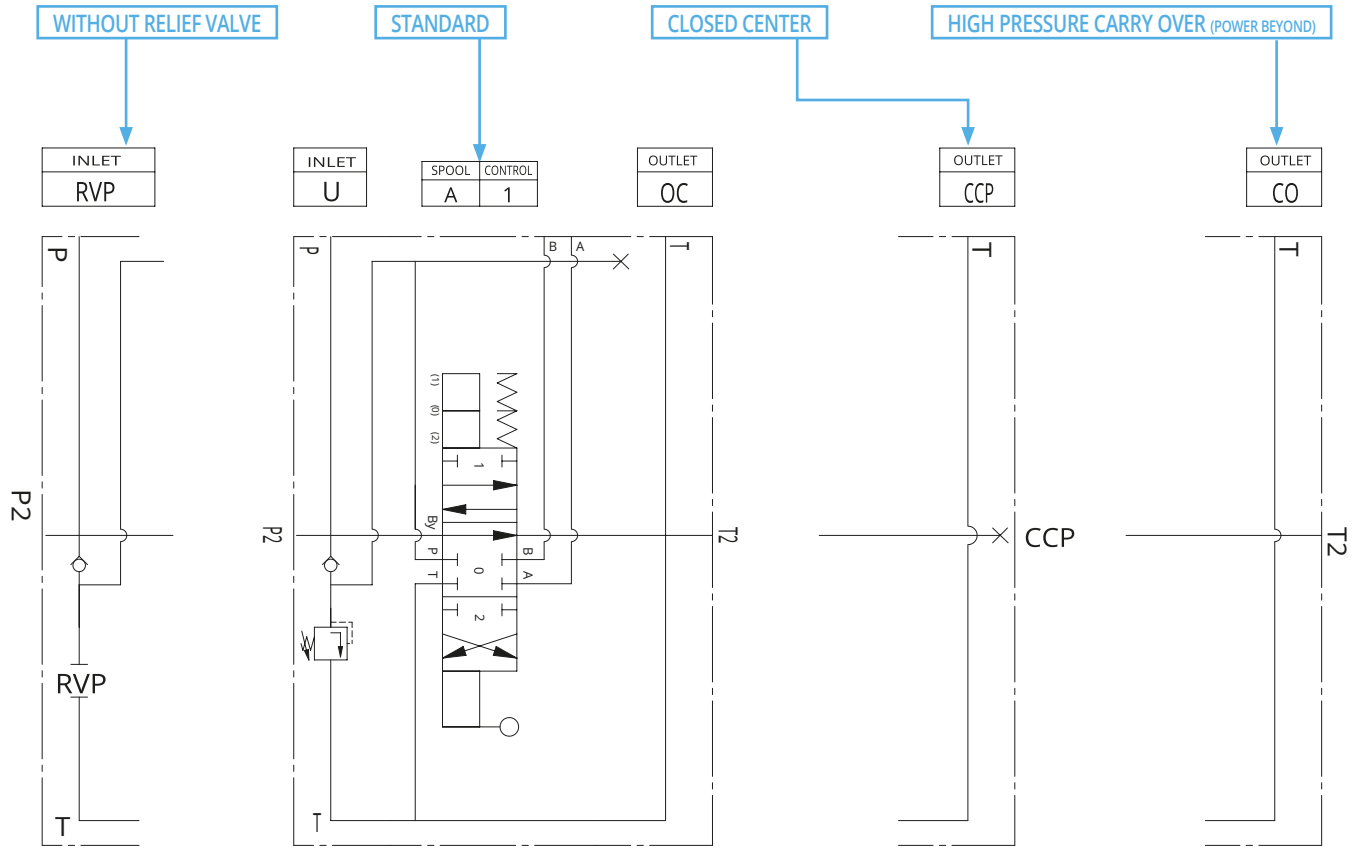
Made from a single block of cast iron, BM monoblock valves are sturdy, reliable, compact, lightweight and are characterized by a single body having following features:

- **Sound construction**
- **Compact size**
- **Reduced weight**

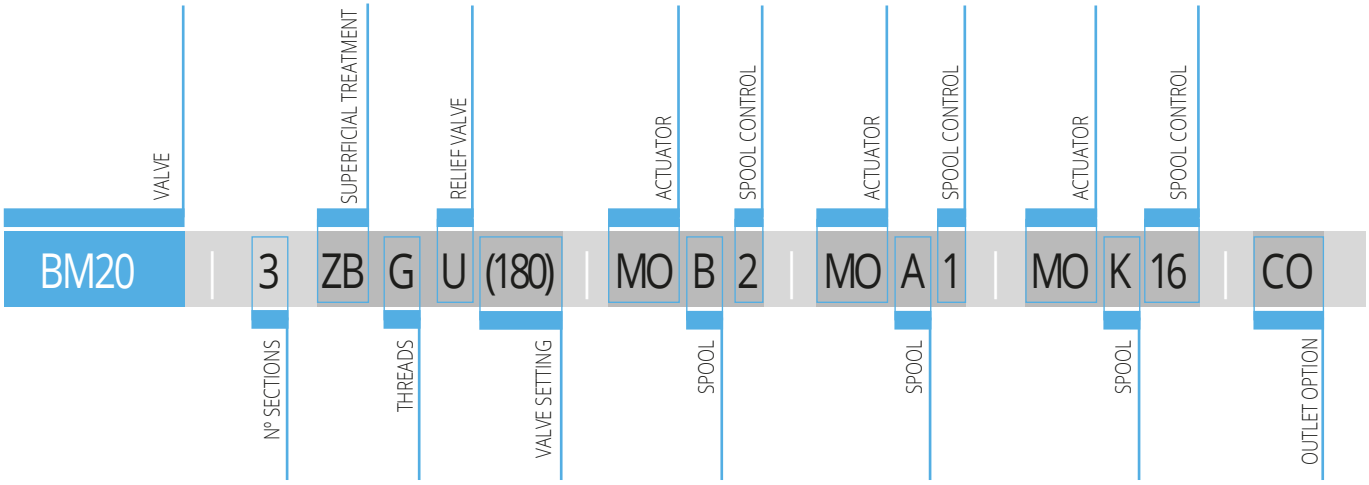


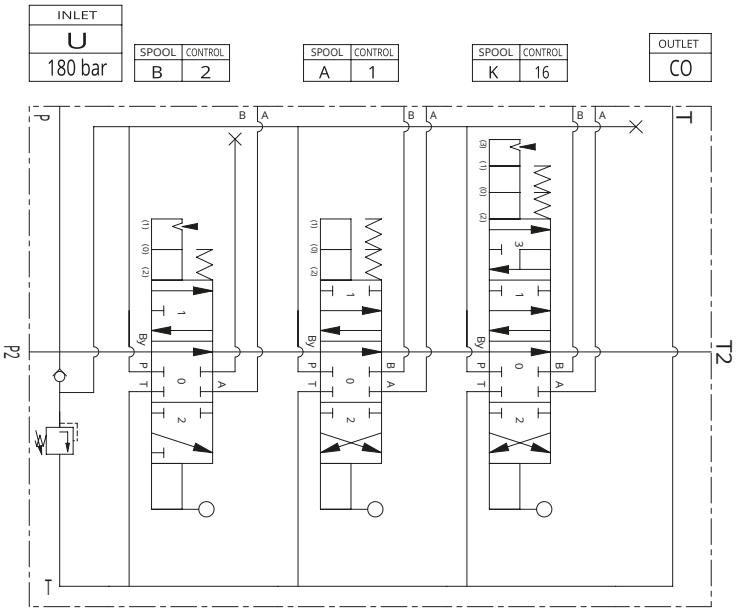
The absence of tie rods and intermediate seals allow monoblock valves to provide:

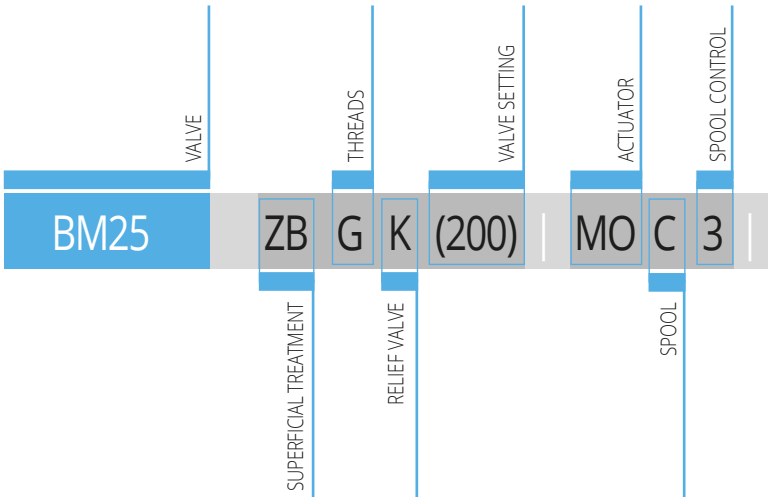
- **Improved dependability**
- **Sturdy valves body for fewer leak points**
- **Lower maintenance**

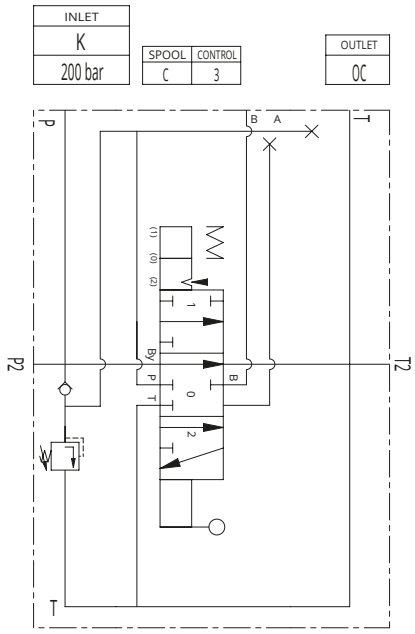


DESIGNATION EXAMPLES



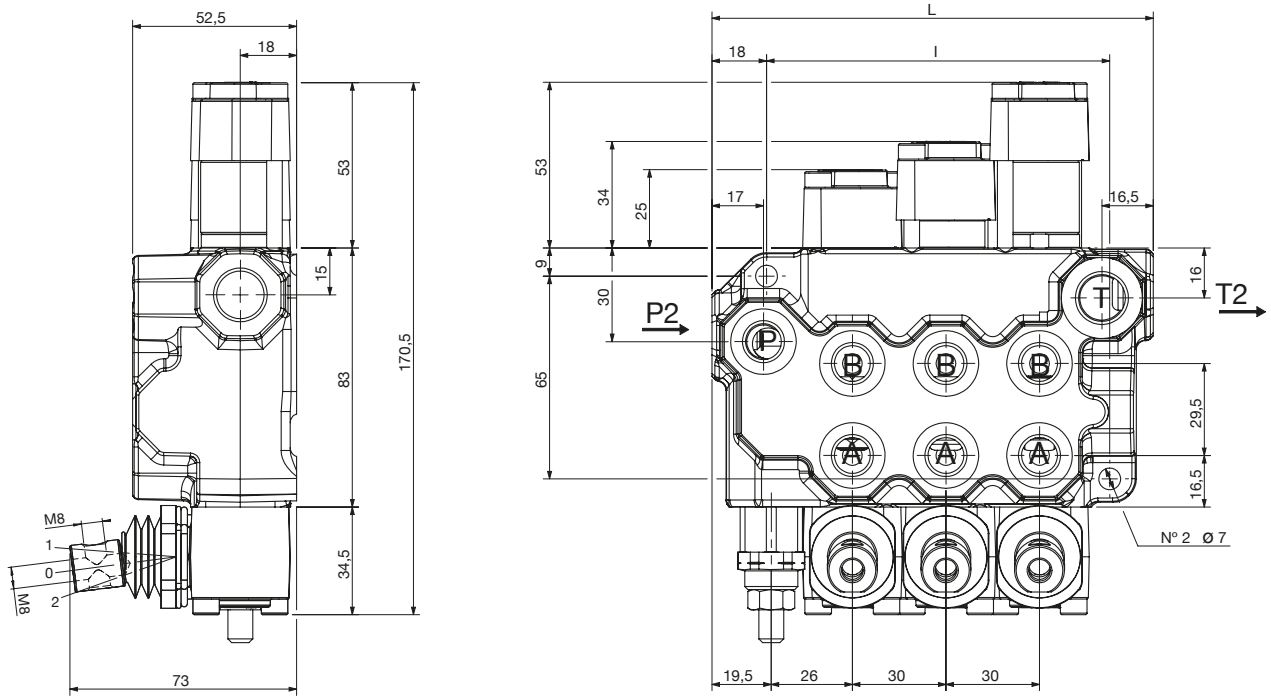






BM20

TECHNICAL SPECIFICATIONS



TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	17 l/min	4,5 GPM
MAX FLOW	25 l/min	6,6 GPM
MAX PRESSURE ON PORTS A-B	320 bar	4700 PSI
MAX PRESSURE ON TANK LINE	80 bar	1100 PSI

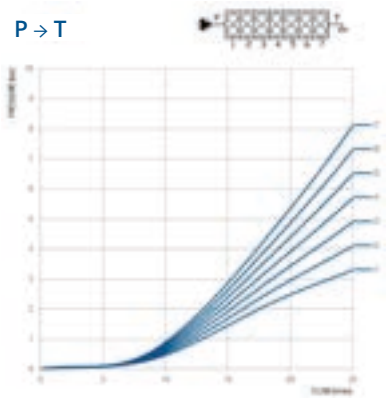
INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

STANDARD THREADS	A - B	P	T	P2	T2
G (BSP)	1/4"	1/4"	3/8"	3/8"	3/8"
F (UNF-SAE 6)	9/16"-18	9/16"-18	9/16"-18	3/4"-16	3/4"-16

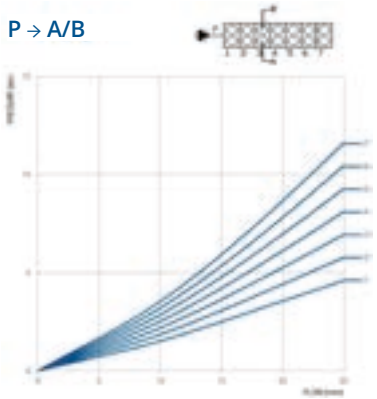
DIMENSION AND WEIGHT	L		I		WEIGHT	
Number of sections	mm	inch	mm	inch	kg	lb
BM20/1	81,50	32,09	50,00	1,97	1,83	4,03
BM20/2	111,50	43,90	80,00	3,15	2,67	5,90
BM20/3	141,50	55,71	110,00	4,33	3,51	7,73
BM20/4	171,50	67,52	140,00	5,51	4,38	9,65
BM20/5	201,50	79,33	170,00	6,69	5,60	12,34
BM20/6	231,50	91,14	200,00	7,87	6,71	14,79
BM20/7	261,50	102,95	230,00	9,06	7,97	7,57

PRESSURE DROP

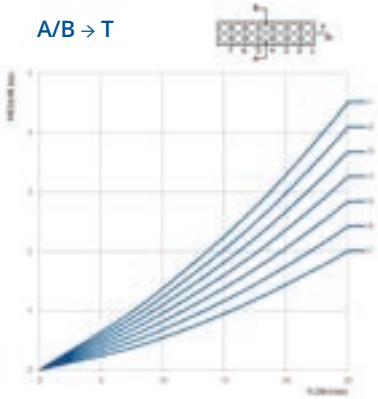
P → T



P → A/B

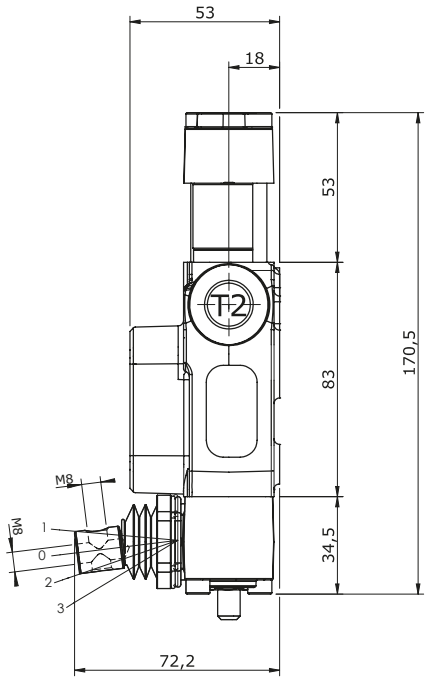


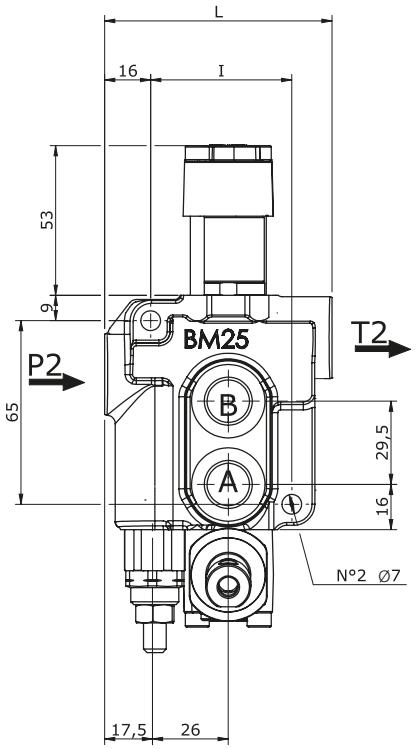
A/B → T



BM25

TECHNICAL SPECIFICATIONS





TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	25 l/min	6,6 GPM
MAX FLOW	35 l/min	9,2 GPM
MAX PRESSURE ON PORTS	320 bar	4700 PSI
MAX PRESSURE ON TANK LINE	80 bar	1100 PSI

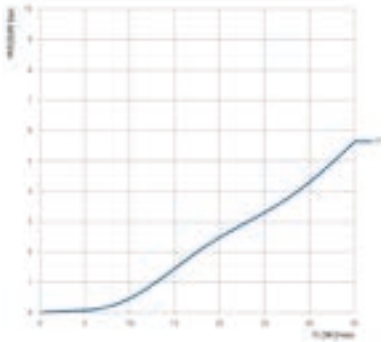
INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

STANDARD THREADS	A - B	P2	T2
G (BSP)	3/8"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16

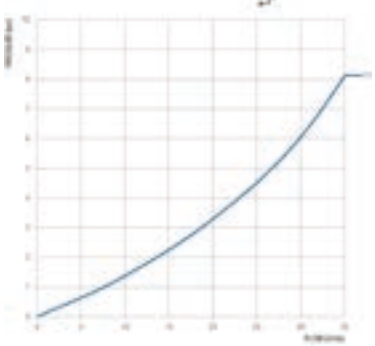
DIMENSION AND WEIGHT						
Number of sections	L		I		WEIGHT	
	mm	inch	mm	inch	kg	lb
BM25	80,00	3,15	50,00	1,97	1,52	3,35

PRESSURE DROP

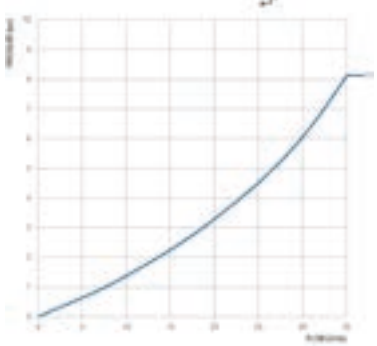
P → T



P → A/B

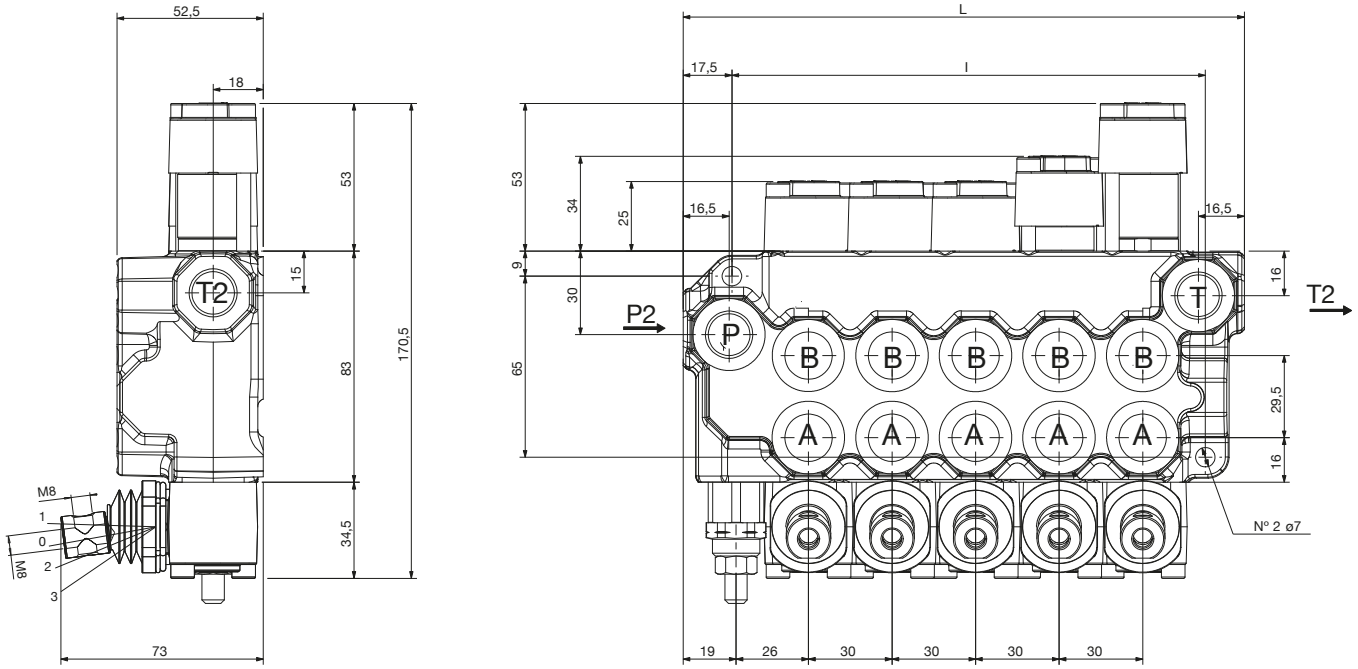


A/B → T



BM35

TECHNICAL SPECIFICATIONS



TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	25 l/min	6,6 GPM
MAX FLOW	35 l/min	9,2 GPM
MAX PRESSURE ON PORTS	320 bar	4700 PSI
MAX PRESSURE ON TANK LINE	80 bar	1100 PSI

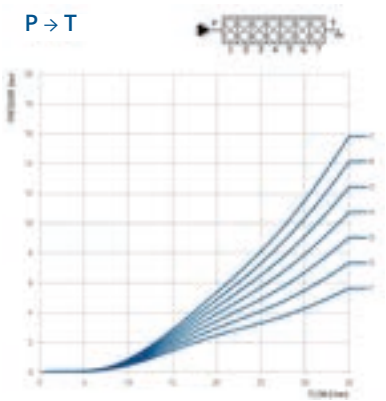
INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

STANDARD THREADS	A - B	P	T	P2	T2
G (BSP)	3/8"	3/8"	3/8"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16	3/4"-16	3/4"-16

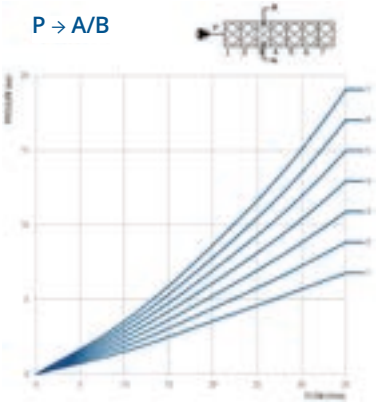
DIMENSION AND WEIGHT						
Number of sections	L		I		WEIGHT	
	mm	inch	mm	inch	kg	lb
BM35/1	81,50	32,09	50,00	1,97	1,83	4,03
BM35/2	111,50	43,90	80,00	3,15	2,67	5,90
BM35/3	141,50	55,71	110,00	4,33	3,51	7,73
BM35/4	171,50	67,52	140,00	5,51	4,38	9,65
BM35/5	201,50	79,33	170,00	6,69	5,60	12,34
BM35/6	231,50	91,14	200,00	7,87	6,71	14,79
BM35/7	261,50	102,95	230,00	9,06	7,97	7,57

PRESSURE DROP

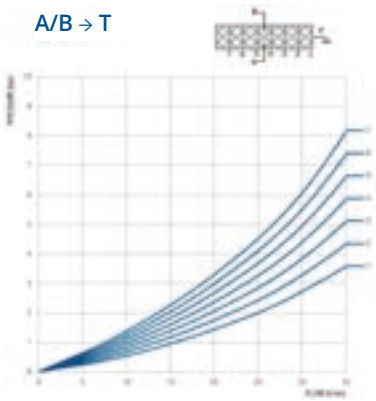
P → T



P → A/B



A/B → T



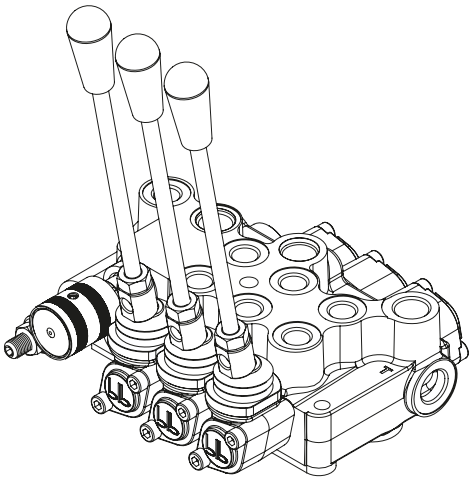
NOTES

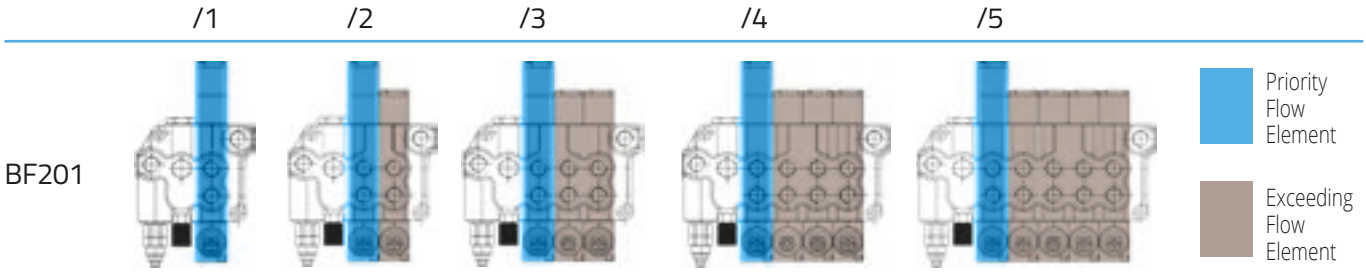
BF SERIES

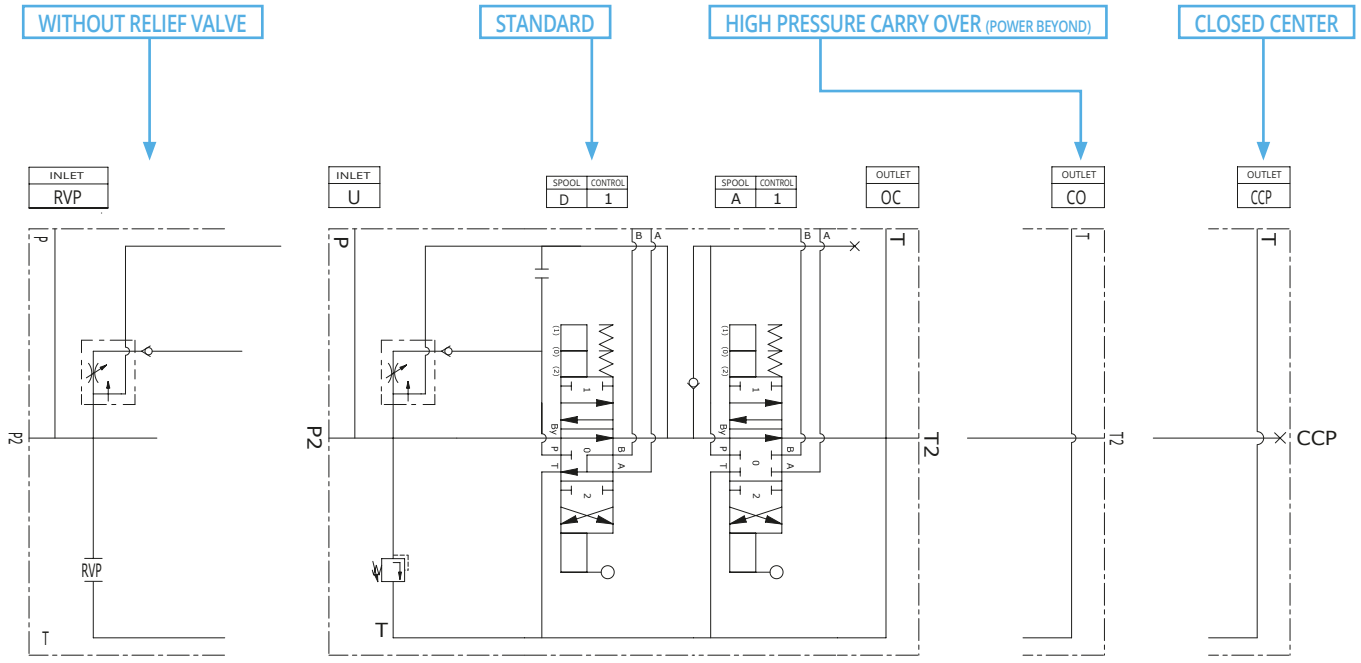
GENERAL INFORMATION

BF monoblock valves derive from BM series and differ from it for having integrated in the inlet a three ways adjustable pressure compensated flow control. The exceeding flow is recuperated into the system and allows the simultaneous use of two sections, the first fed by the priority (regulated) flow and the second fed by the exceeding flow. Non-priority sections get the whole flow when they are individually operated or just the exceeding flow when a priority section is operated.

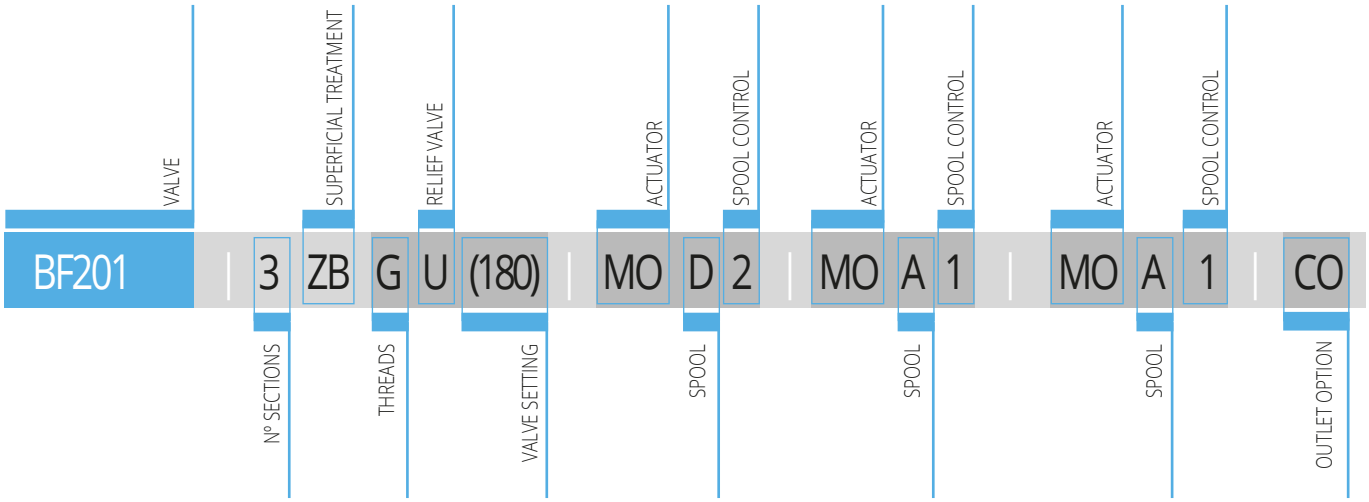
The flow control can be regulated from 0 to the maximum flow rate and starts working when the first section is operated.

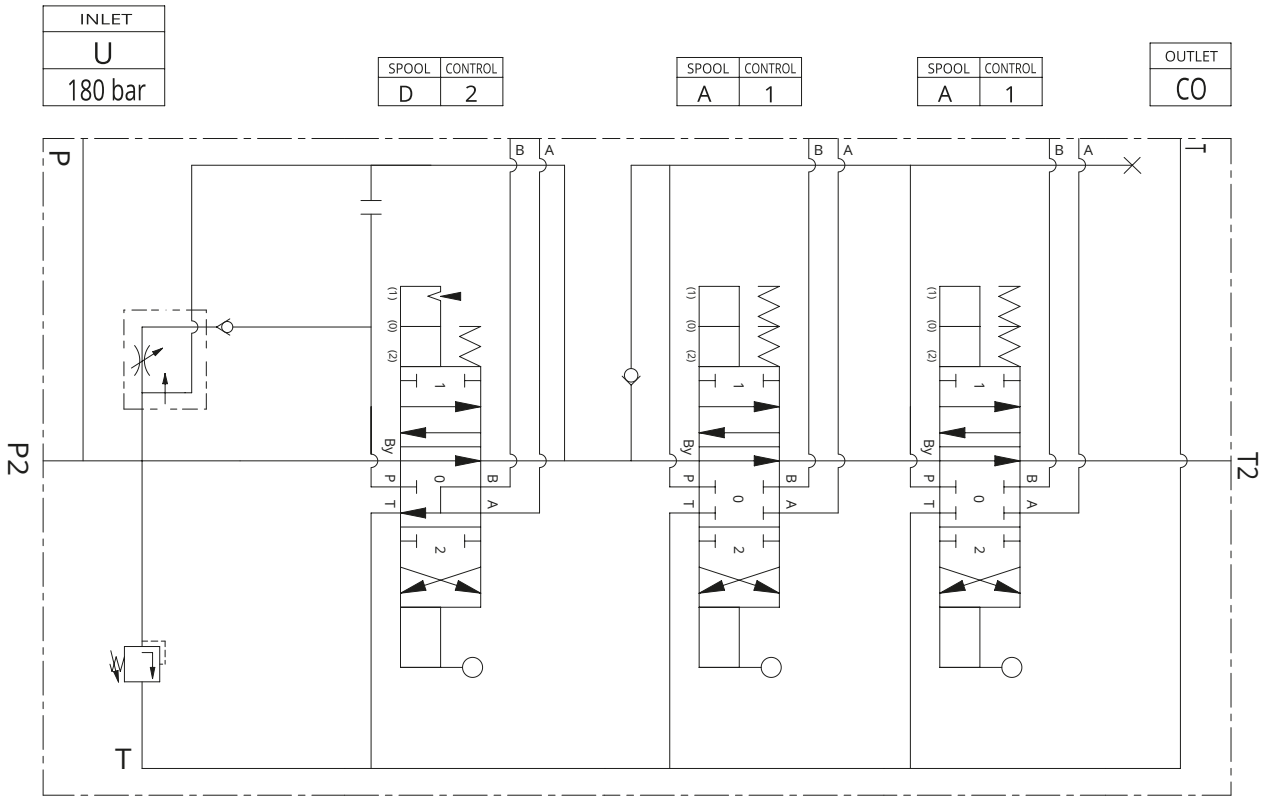






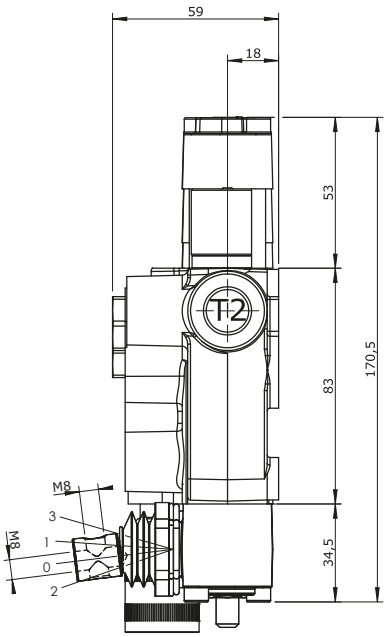
DESIGNATION EXAMPLES

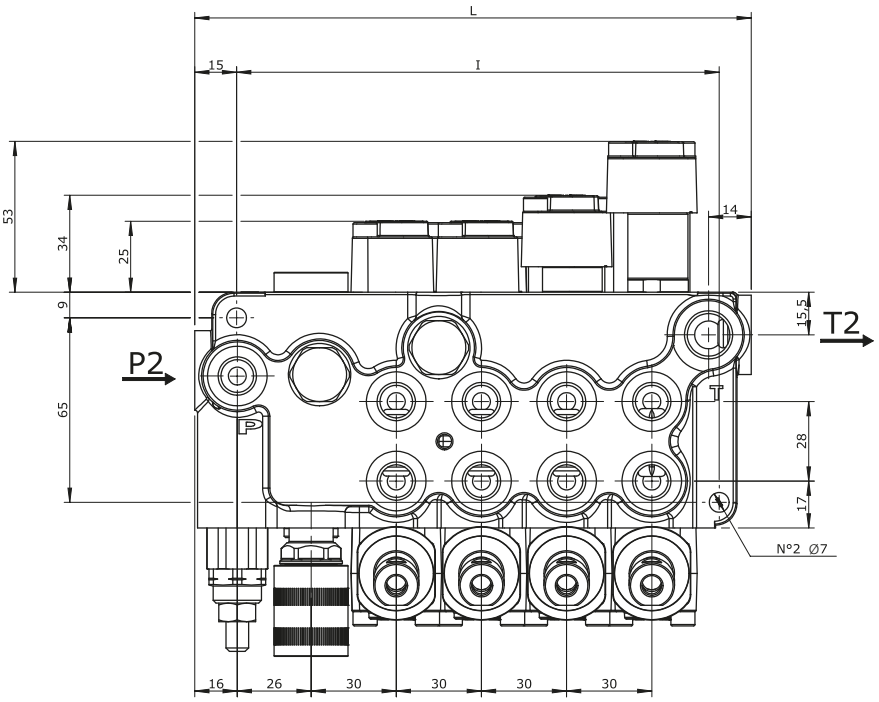




BF201 / BFV201

TECHNICAL SPECIFICATIONS





TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	17 l/min	4,5 GPM
MAX FLOW	25 l/min	6,6 GPM
MAX PRESSURE ON PORTS	320 bar	4700 PSI
MAX PRESSURE ON TANK LINE	80 bar	1100 PSI

INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min

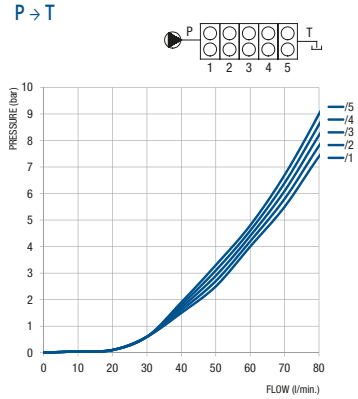
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

STANDARD THREADS	A - B	P	T	P2	T2
G (BSP)	1/4"	1/4"	3/8"	3/8"	3/8"
F (UNF – SAE 6)	9/16"-18	9/16"-18	3/4"-16	3/4"-16	3/4"-16

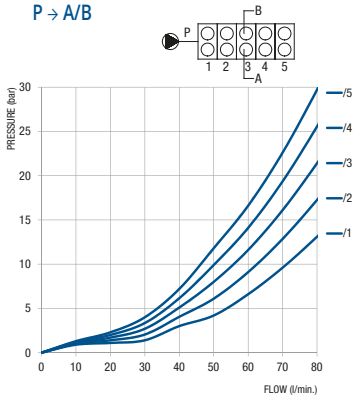
DIMENSION AND WEIGHT	L		I		WEIGHT	
Number of sections	mm	inch	mm	inch	kg	lb
BF201/1	107,00	4,21	80,00	3,15	2,49	5,49
BF201/2	136,00	5,35	110,00	4,33	3,35	7,38
BF201/3	166,00	6,54	140,00	5,51	4,45	9,81
BF201/4	196,00	7,72	170,00	6,69	7,60	16,75
BF201/5	226,00	8,90	200,00	7,87	8,30	18,30

PRESSURE DROP

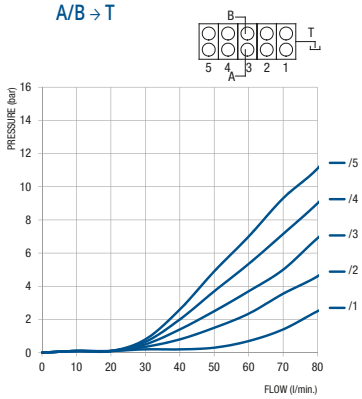
P → T



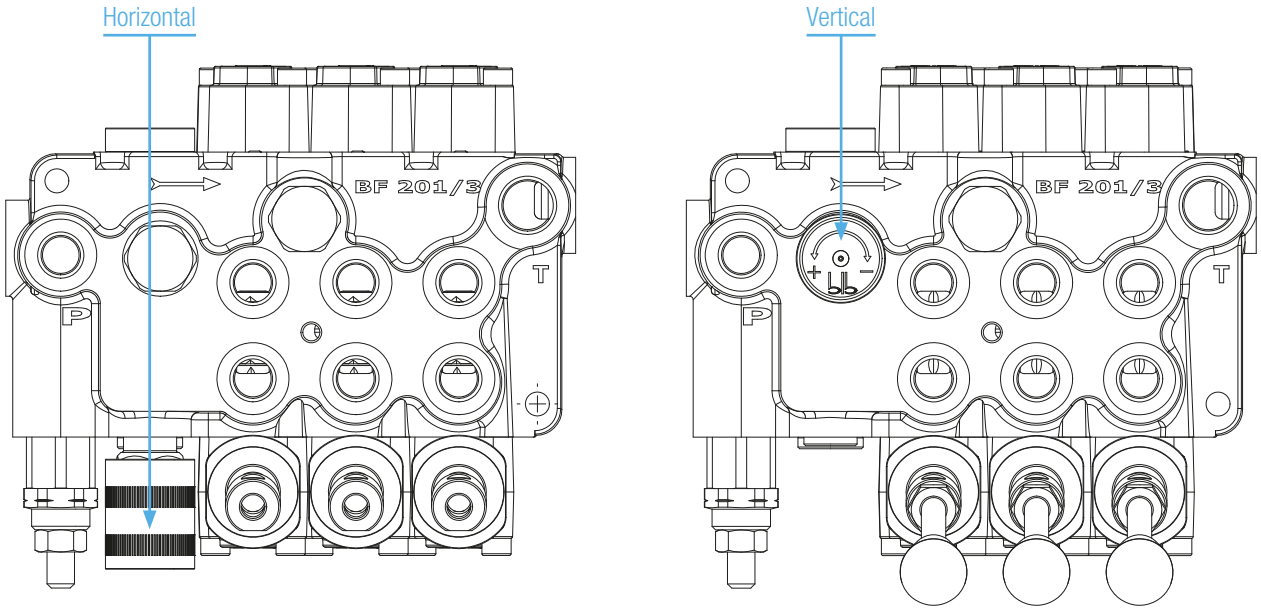
P → A/B

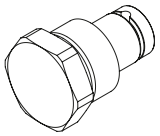


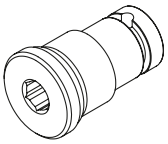
A/B → T

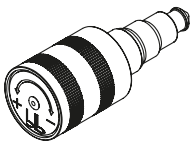


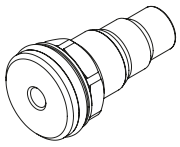
SPARE PARTS - FLOW CONTROLS AND ACCESSORIES

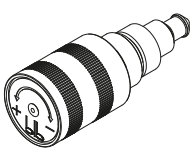


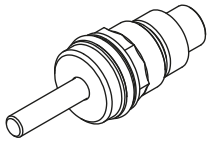
VNR - LOAD CHECK VALVE (BF)	CODE **560245**
 	Every BLB valve is provided with a load check valve; it prevents the cylinder fall when a spool is actuated and the backflow from ports to inlet.

VNR - LOAD CHECK VALVE (BFV)	CODE **560331**
 	Every BLB valve is provided with a load check valve; it prevents the cylinder fall when a spool is actuated and the back ow from ports to inlet.

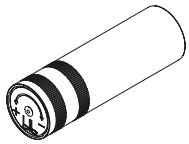
FLOW CONTROL CARTRIDGE (BF)	CODE **832061**
	Flow control cartridge complete with handle. Allows the regulation from 0 to maximum flow rate.

FLOW CONTROL CARTRIDGE WITHOUT KNOB (BF)	CODE **832074**
	

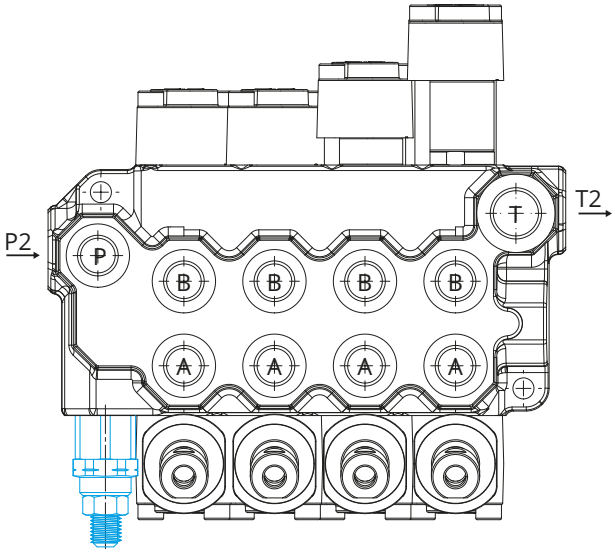
FLOW CONTROL CARTRIDGE (BFV)	CODE **832098**
	

FLOW CONTROL CARTRIDGE WITHOUT KNOB (BFV)		CODE **832057**
		

FLOW CONTROL STANDARD KNOB (BF+BFV)		CODE **560411**
		

LONG FLOW CONTROL KNOB (BF)		CODE **561370**
		

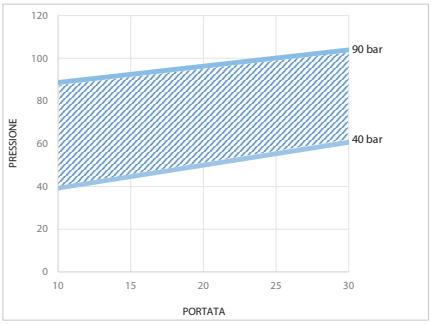
SPARE PARTS - RELIEF VALVES AND ACCESSORIES



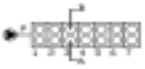
RELIEF VALVE **VL20** PRESSURE DROP

P → T

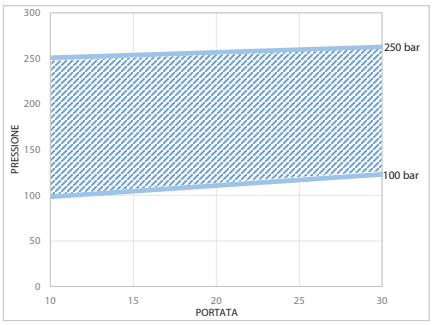
X



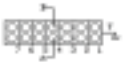
P → A/B



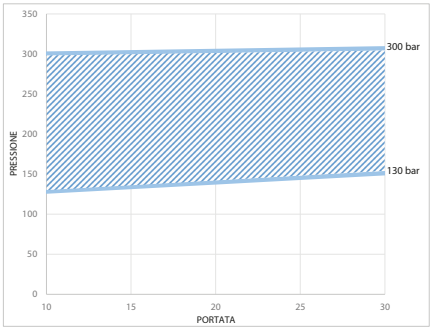
U



A/B → T



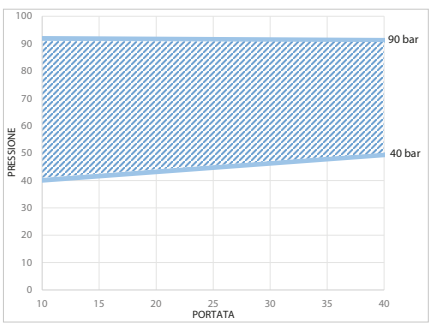
K



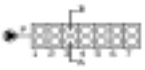
RELIEF VALVE **VL25** PRESSURE DROP

P → T

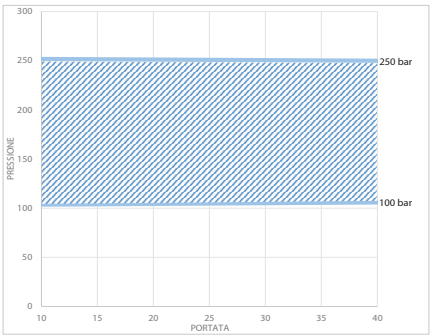
X



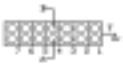
P → A/B



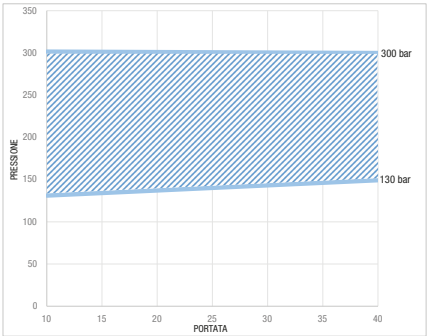
U



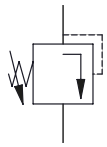
A/B → T

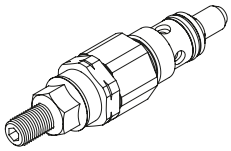


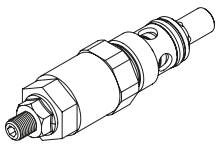
K



VL20 | VL25 - RELIEF VALVE







X: Pressure Range 30 ÷ 90 bar - STANDARD SETTING 70 bar
U: Pressure Range 80 ÷ 230 bar - STANDARD SETTING 140 bar
K: Pressure Range 150 ÷ 300 bar - STANDARD SETTING 180 bar

B: Prearranged for lock kit

Standard setting is based on a pre-set flow of 8 l/min

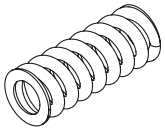
CODES

Main relief valve VL20 and VL25; control the maximum pressure in the equipment.
Both VL are adjustable and available with 3 fields of setting.

803033 - RELIEF VALVE "VL20 XB"
803108 - RELIEF VALVE "VL20 UB"
803035 - RELIEF VALVE "VL20 KB"

80311004 - RELIEF VALVE "VL25 XB"
803180 - RELIEF VALVE "VL25 UB"
80311009 - RELIEF VALVE "VL25 KB"

SPRINGS RELIEF VALVE **VL20 | VL25**



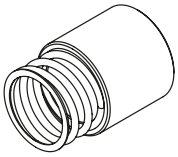
CODES

Springs for main relief valve VL20 and VL25 for the different fields of setting.

200041 - SPRING "X" VL20 (30 ÷ 90 BAR)
200068 - SPRING "U" VL20 (80 ÷ 230 BAR)
200069 - SPRING "K" VL20 (150 ÷ 300 BAR)

200167 - SPRING "X" VL25 (30 ÷ 90 BAR)
200168 - SPRING "U" VL25 (80 ÷ 230 BAR)
200169 - SPRING "K" VL25 (150 ÷ 300 BAR)

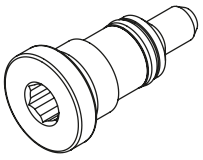
VNR - LOAD CHECK VALVE



CODE **560161**

Every BLB valve is provided with a load check valve. It prevents the cylinder fall when a spool is actuated and does not allow the back flow from ports to inlet.

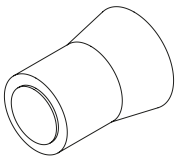
RVP - RELIEF VALVE PLUG



CODE **832018**

Replaces the relief valve in closed center systems (i.e. John Deere tractors), in circuits where an in-line relief valve is provided or in case of two valves connected downstream by means of a carry over (power beyond).

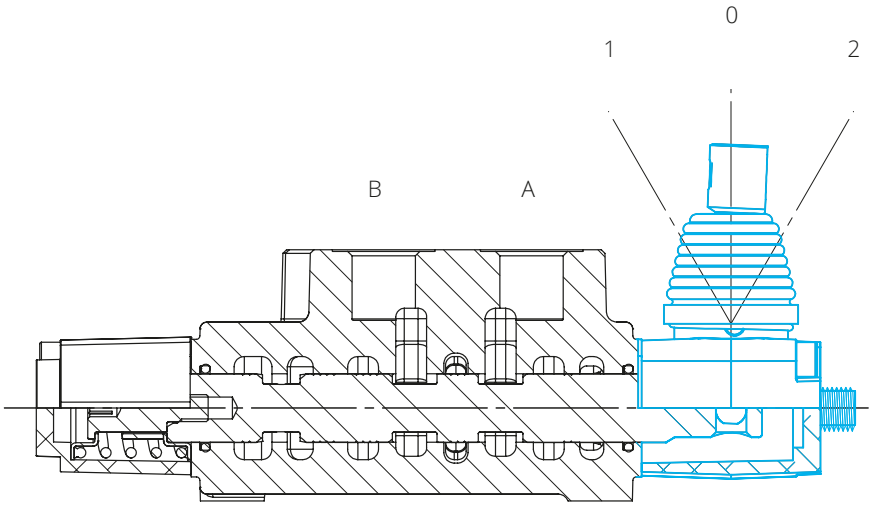
PB - RELIEF VALVE LOCK PLUG

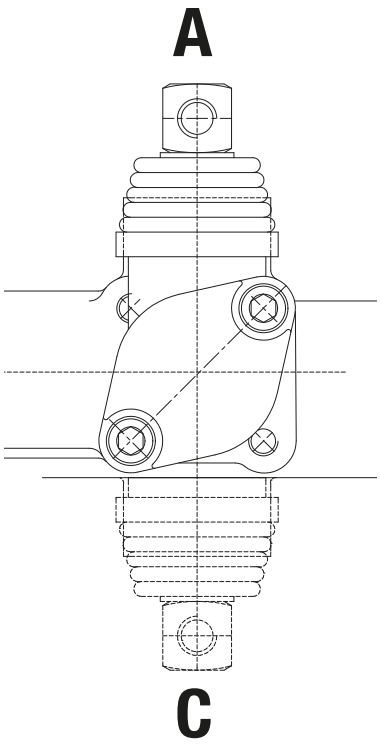


CODE **020027**

Applied to VL20 and VL25 predisposed (XB, UB, KB) prevents users alteration of the prearranged relief valve setting.

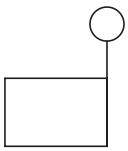
SPARE PARTS - ACTUATORS

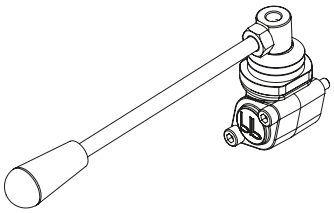




IN STANDARD CONFIGURATION THE ACTUATOR ORIENTATION IS "**A**" IF NOT DIFFERENTLY REQUESTED

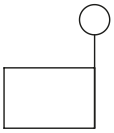
MO - MANUAL CONTROL WITH LEVER — CODE **801017**

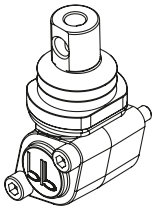




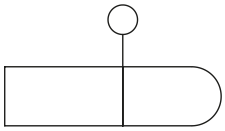
Possibility to assembly the lever in vertical or horizontal position. Possibility to assembly the entire manual control in position A (90°) or C (180°).

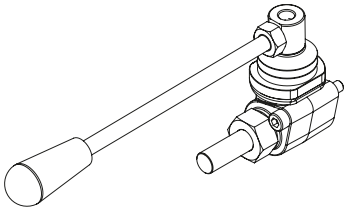
MW - MANUAL CONTROL WITHOUT LEVER — CODE **801025**





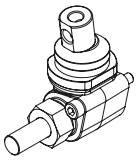
MC - MANUAL CONTROL WITH CAM — CODE **801029**



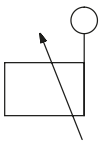


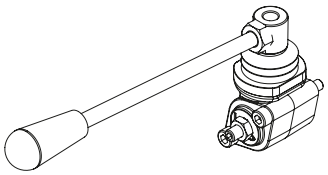
Manual control with the addition of a cam; generally used to mechanically bring the spool back in position 0 automatically.

MCW - MANUAL CONTROL WITH CAM WITHOUT LEVER — CODE **801073**



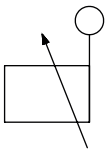
ML - MANUAL CONTROL WITH LIMITER — CODE **801167**

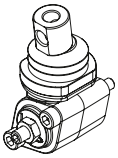




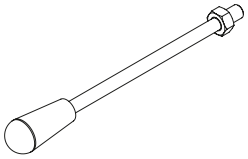
Manual control with the addition af a stroke limiter.

MLW - MANUAL CONTROL WITH LIMITER WITHOUT LEVER — CODE **801169**



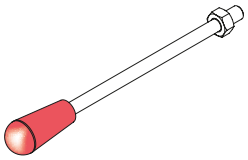


LEVERS FOR MANUAL CONTROL — CODES



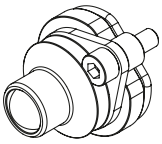
561028 - KIT LEVER M8X105
560570 - KIT LEVER M8X120
560025 - KIT LEVER M8X160 (STANDARD)
560537 - KIT LEVER M8X190

RED LEVERS FOR MANUAL CONTROL — CODES



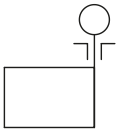
560682 - KIT RED LEVER M8X120
560688 - KIT RED LEVER M8X160 (STANDARD)
56111144 - KIT RED LEVER M8X190
561271 - KIT RED LEVER M8X210

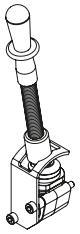
DO - CAM CONTROL — CODE **801155**



Cam mechanical control; used to mechanically operate the spool when pushed.

MX - MANUAL CONTROL WITH SAFETY LEVER - VERTICAL — CODE **801174**

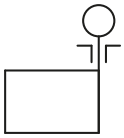


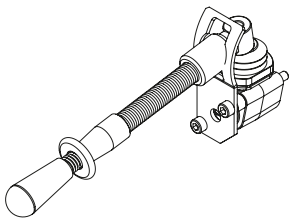


The lever can be actuated only after the mechanical security system is released. It can be combined with other actuators in other sections.

MXO - MANUAL CONTROL WITH SAFETY LEVER - HORIZONTAL

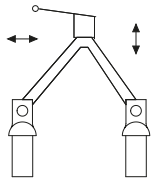
CODE **801201**

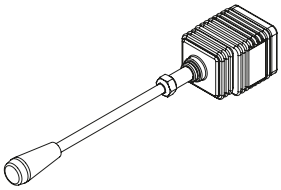


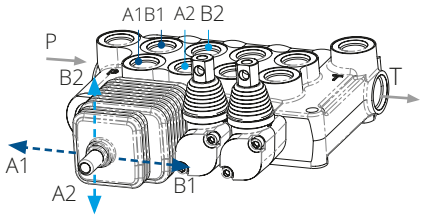


JS(1) - MECHANICAL JOYSTICK CONTROL WITH LEVER

CODE **801304**



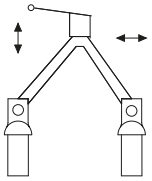


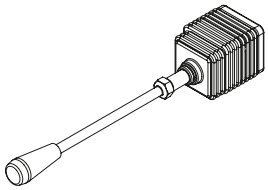


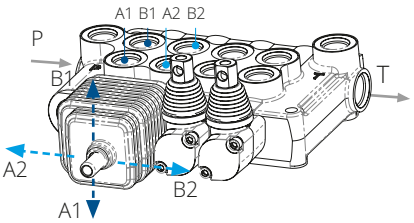
Operates two spools with one lever. Spools can be operated indipendently (with lever movments as per scheme) or simultaneously (with lever cross movement). Joystick requires to be assembled with spools without appendix.

JS(2) - MECHANICAL JOYSTICK CONTROL WITH LEVER

CODE **801306**



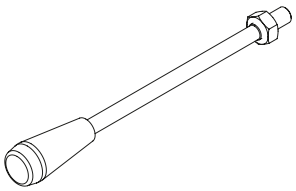




Operates two spools with one lever. Spools can be operated indipendently (with lever movments as per scheme) or simultaneously (with lever cross movement). Joystick requires to be assembled with spools without appendix.

LEVER FOR **JS** CONTROL

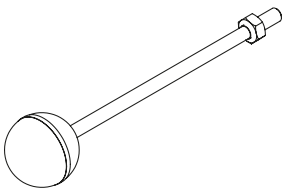
CODE **560027** (M10 X 213)



Standard lever for joystick.

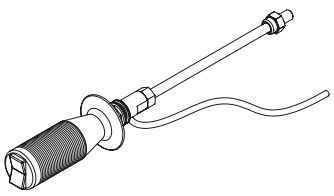
LEVER WITH SPHERICAL KNOB FOR **JS** CONTROL

CODE **56111092** (M10 X 220)



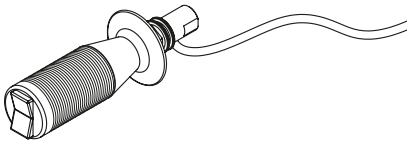
LEVER FOR **JS** WITH ELECTRIC HANDLE 2 SWITCHES

CODE **561113** (M10 X 346)



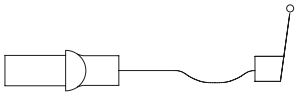
The switches on the handle allows the operation of external electric devices.

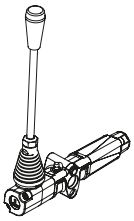
ELECTRIC HANDLE 2 SWITCHES — CODE **020047**



The switches on the handle allows the operation of external electric devices.

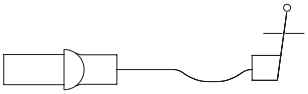
FO - MANUAL CONTROL FOR CABLE WITH LEVER — CODE **801329**

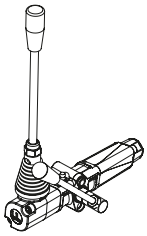




Modular single lever for cable remote control. To be assembled with flexible cables.

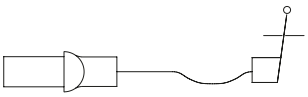
FA DX - MANUAL CONTROL FOR CABLE WITH ANTIREVERSE LOCK (RIGHT) WITH LEVER — CODE **801332**

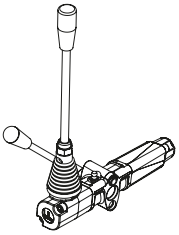




Modular single lever with antireverse lock. Allows to reverse the operation only when the lock system is released. To be assembled with flexible cables for the actuation of bidirectional motors.

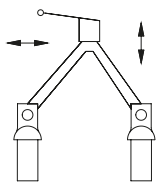
FA SX - MANUAL CONTROL FOR CABLE WITH ANTIREVERSE LOCK (LEFT) WITH LEVER — CODE **801336**

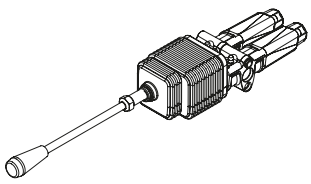


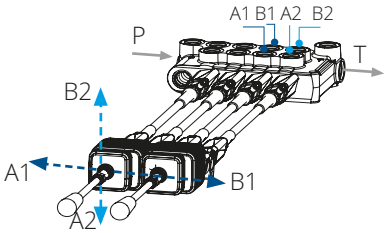


Modular single lever with antireverse lock. Allows to reverse the operation only when the lock system is released. To be assembled with flexible cables for the actuation of bidirectional motors.

FJ(1) - MECHANICAL JOYSTICK CONTROL FOR CABLES WITH LEVER — CODE **801297**

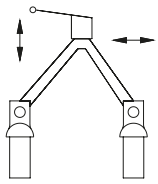


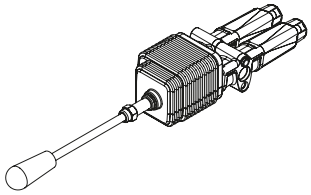


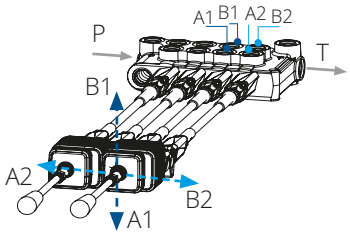


Operates 2 spools with one handle, through flexible cables. Spools can be operated indipendently (with lever movments as per scheme) or simultaneously (with lever cross movement). To be used with flexible cables.

FJ(2) - MECHANICAL JOYSTICK CONTROL FOR CABLES WITH LEVER — CODE **801298**



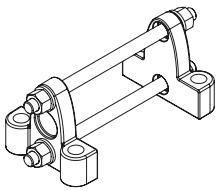




Operates 2 spools with one handle, through flexible cables. Spools can be operated indipendently (with lever movments as per scheme) or simultaneously (with lever cross movement). To be used with flexible cables.

BKO - BRACKETS FOR **FO** MANUAL CONTROL

CODE **560900**

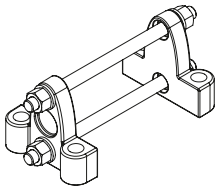


Allow to connect the **FO** remote control levers.

561144 - STAFFE BKO/1
561145 - STAFFE BKO/2
561146 - STAFFE BKO/3
561147 - STAFFE BKO/4
561148 - STAFFE BKO/5
561149 - STAFFE BKO/6
561150 - STAFFE BKO/7
561151 - STAFFE BKO/8

BKA - BRACKETS FOR **FA** MANUAL CONTROL

CODE **561153**

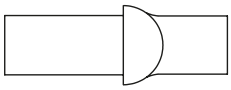


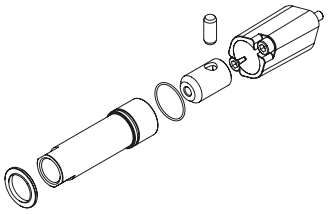
Used to put together **FO** and **FA** remote control levers.

561152 - BRACKET BKA/1
561153 - BRACKET BKA/2
561154 - BRACKET BKA/3
561143 - BRACKET BKA/4
561155 - BRACKET BKA/5
561156 - BRACKET BKA/6
561157 - BRACKET BKA/7
561158 - BRACKET BKA/8

FL - CABLE ADAPTER

CODE **801330**

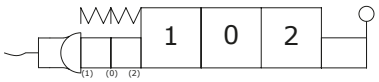


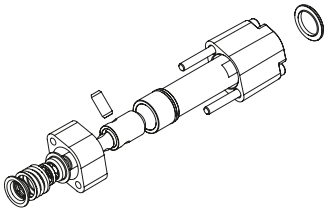


Allows the assembly of flexible cables on the valve (lever side).

SPOOL CONTROL **1F**

CODE **802132**

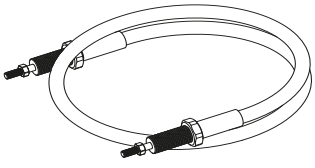




Allows the spool to move in position 1 and 2 by pushing and pulling the lever: spool goes back to position 0 when the handle is released (spring return). Integrates the connection kit to flexible cable remote control (spool control side).

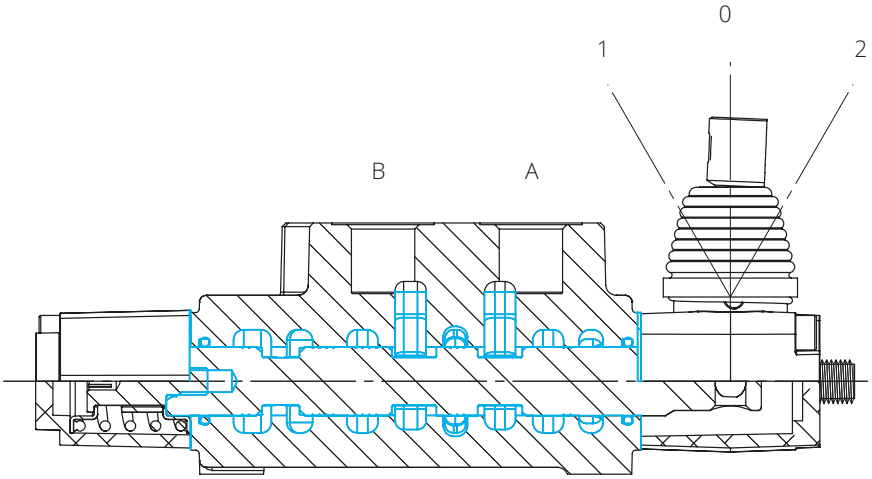
CA - CABLES FOR REMOTE CONTROL

CODES



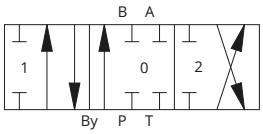
023038 - LENGTH = 0,5 m
023087 - LENGTH = 1,0 m
023088 - LENGTH = 1,5 m
023089 - LENGTH = 2,0 m
023090 - LENGTH = 2,5 m
023091 - LENGTH = 3,0 m
023092 - LENGTH = 3,5 m
023093 - LENGTH = 4,0 m

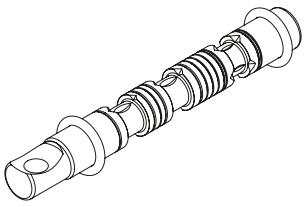
SPARE PARTS - SPOOLS



A/B = Ports
By = Bypass
P = Pressure
T = Tank

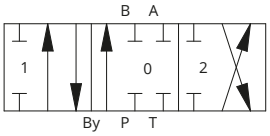
SPOOL **A** — CODE **560075**

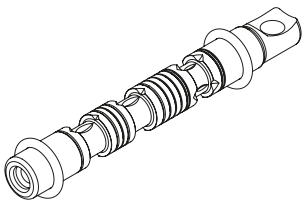




Double acting spool.
Used to control of double acting cylinders or bi-directional hydraulic motors. In position 0 work ports are blocked.

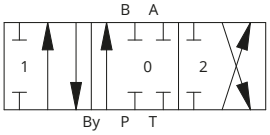
SPOOL **A DX** — CODE **560085**

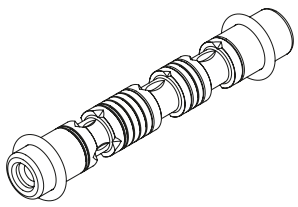




Same features as spool **A**; used in valves with right inlet configuration.

SPOOL **A WITHOUT APPENDIX** — CODE **560458**

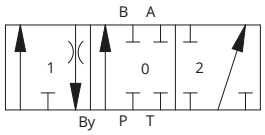


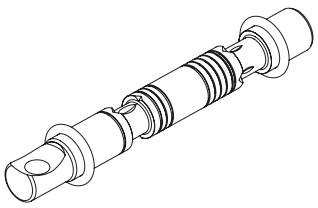


Same features as spool **A** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

SPOOL **B**

CODE **560076**

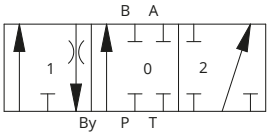


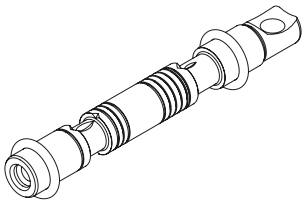


Single acting spool.
Used to control single-acting cylinders or start and stop of uni-directional hydraulic motors.
In position 0 work port A is blocked. B port is plugged.

SPOOL **B DX**

CODE **560086**

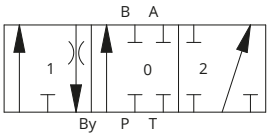


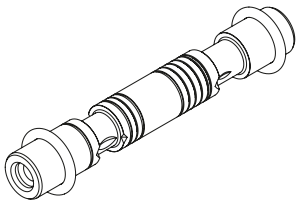


Same features as spool **B**; used in valves with right inlet configuration.

SPOOL **B WITHOUT APPENDIX**

CODE **560459**

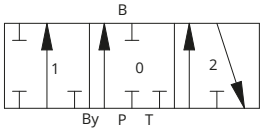


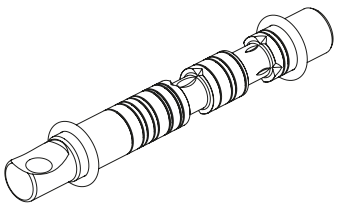


Same features as spool **B** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

SPOOL **C**

CODE **560077**

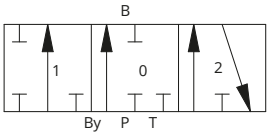


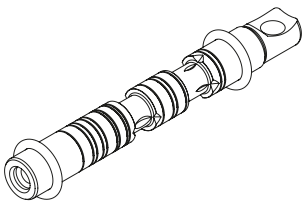


Single acting spool.
Used to control single-acting cylinders or start and stop of unidirectional hydraulic motors.
In position 0 work port B is blocked.
A port is plugged.

SPOOL **C DX**

CODE **561249**

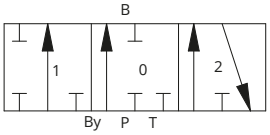


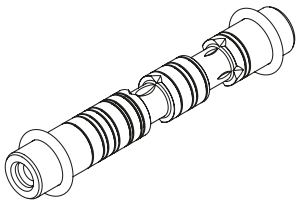


Same features as spool **C**; used in valves with right inlet configuration.

SPOOL **C WITHOUT APPENDIX**

CODE **560627**

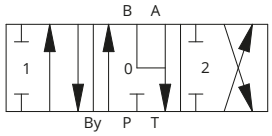


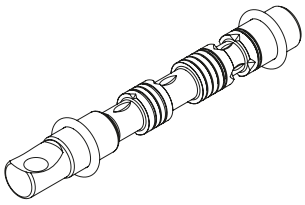


Same features as spool **C** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

SPOOL **D**

CODE **560078**

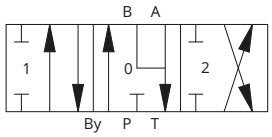


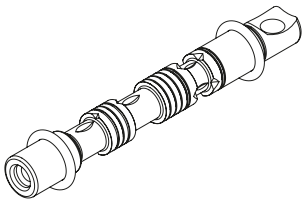


Open center motor spool.
Used to control double acting cylinders or bi-directional hydraulic motors. Allows a cylinder to float or a motor to wheel free when the spool is in position 0. When the spool is in position 0 work ports are open to the tank.

SPOOL **D DX**

CODE **560087**

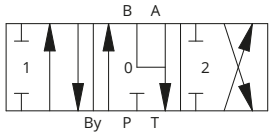


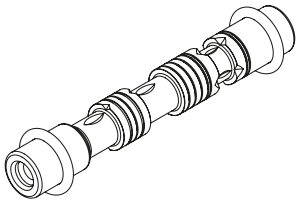


Same features as spool **D**; used in valves with right inlet configuration.

SPOOL **D WITHOUT APPENDIX**

CODE **560460**

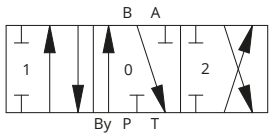


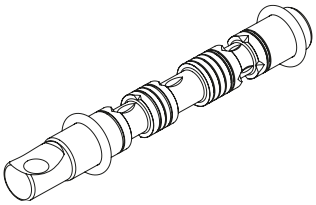


Same features as spool **D** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

SPOOL **E**

CODE **560079**

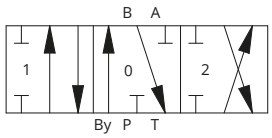


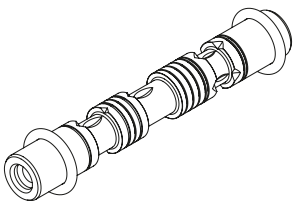


Double acting spool.
In position 0 work port B is connected to the tank.

SPOOL **E DX**

CODE **56111111**

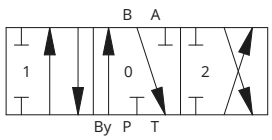


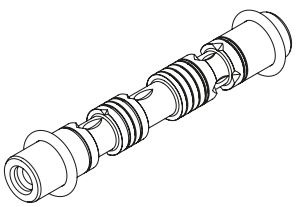


Same features as spool **E**; used in valves with right inlet configuration.

SPOOL **E WITHOUT APPENDIX**

CODE **561337**

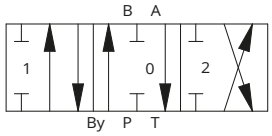


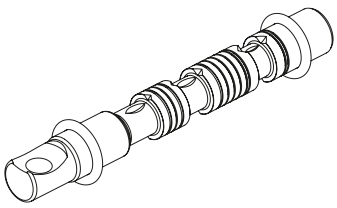


Same features as spool **E** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

SPOOL **F**

CODE **560080**

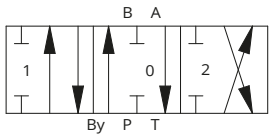


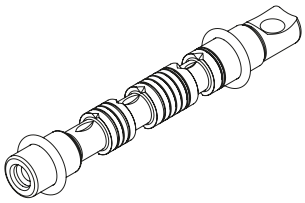


Double acting spool.
In position 0 work port A is connected to the tank.

SPOOL **F DX**

CODE **560089**

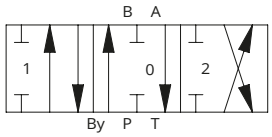


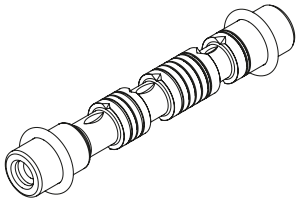


Same features as spool **F**; used in valves with right inlet configuration.

SPOOL **F WITHOUT APPENDIX**

CODE **561346**

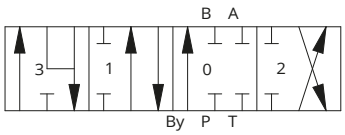


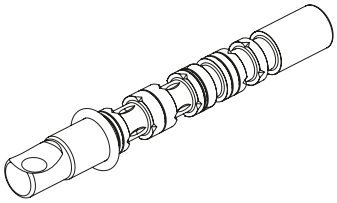


Same features as spool **F** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

SPOOL **K**

CODE **560081**

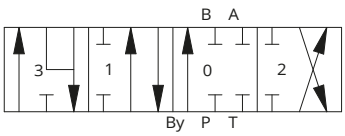


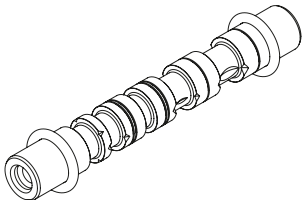


Double acting, floating spool.
Double acting spool with a fourth floating position. Allows a cylinder to float or a motor to wheel free when the spool is in position 3. To be combined only with spool controls **16** or **54**.
Special machining on the body is required.

SPOOL **K WITHOUT APPENDIX**

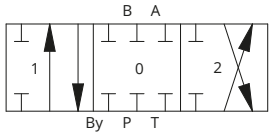
CODE **560420**

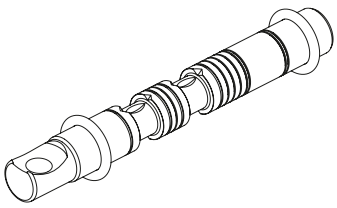




Same features as spool **K** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

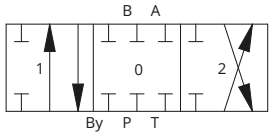
SPOOL **M** — CODE **560082**

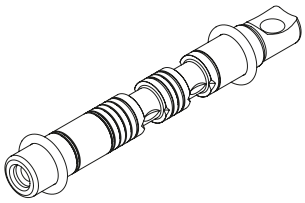




Double acting closed center spool.
Used in a closed center system (for example John Deere circuit).

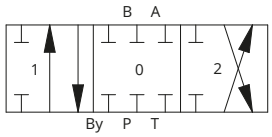
SPOOL **M DX** — CODE **560090**

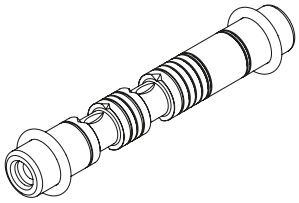




Same features as spool **M**; used in valves with right inlet configuration.

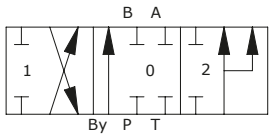
SPOOL **M WITHOUT APPENDIX** — CODE **560948**

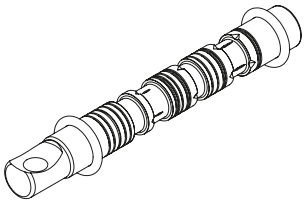




Same features as spool **M** with threaded spool end; required to assembly joysticks (**JS**) or for special applications.

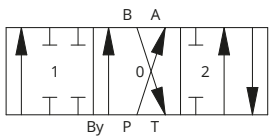
SPOOL **R** — CODE **560469**

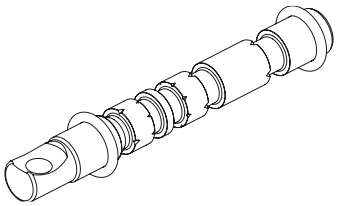




Double acting regenerative spool in position 2.
The regenerative circuit allows the double-acting cylinder to increase its speed, in one way only, adding to the pump flow the oil returning from the rod chamber of the cylinder. Special machining on the body is required.

SPOOL **Y** — CODE **560084**

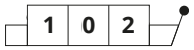




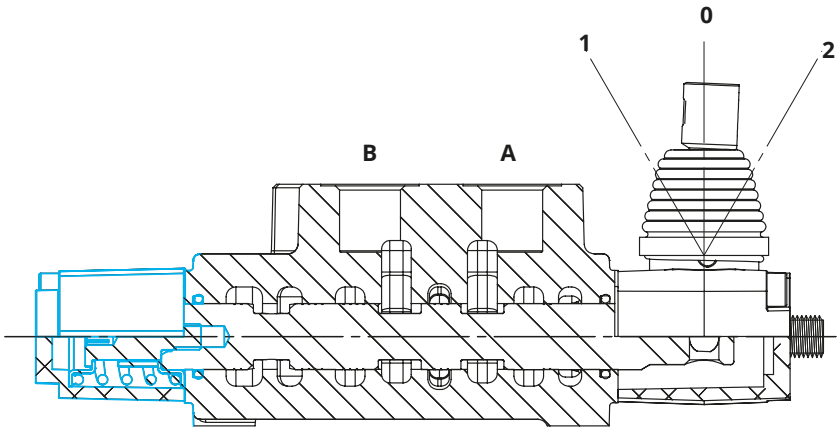
Double acting motor spool.
Used to control bi-directional motors. Neutral position is in position 1. Special machining on the body is required.

NOTES

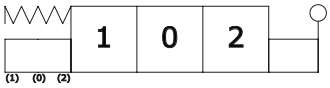
SPARE PARTS - SPOOL CONTROLS

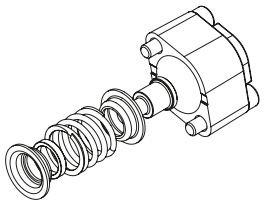


POSITION **0**: P → T
POSITION **1**: P → B
POSITION **2**: P → A



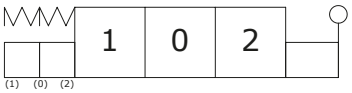
SPOOL CONTROL **1** — CODE **802049**

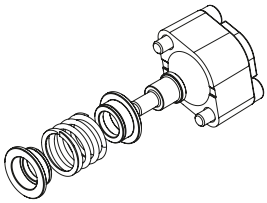




Spring return.
Allows the spool to move in position 1 and 2 by pushing or pulling the lever: spool goes back to position 0 when the handle is released.

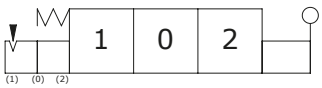
SPOOL CONTROL **55** — CODE **802101**

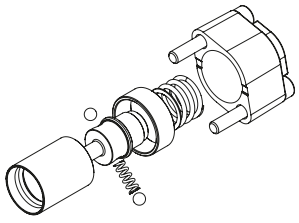




Same features of spool control **1**; to be combined only with spool **C**.

SPOOL CONTROL **2** — CODE **802051**

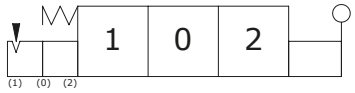


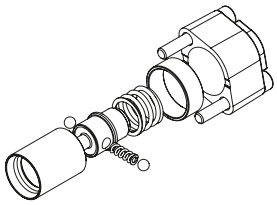


Detent in position 1.
When the lever is pushed in position 1 the spool is detented; from position 2 spool automatically goes back to position 0 when the lever is released (spring return).

SPOOL CONTROL **56**

CODE **802111**

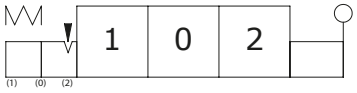


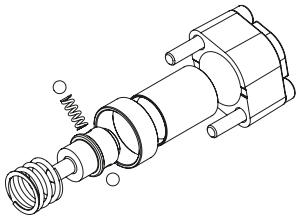


Same features of spool control **2**; to be combined only with spool C.

SPOOL CONTROL **3**

CODE **802052**

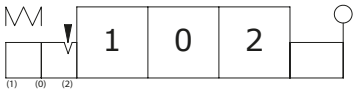


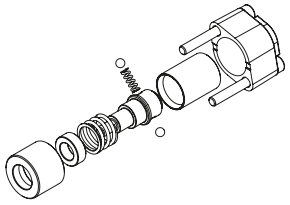


Detent in position 2.
When the lever is pulled in position 2 the spool is detented; from position 1 spool automatically goes back to position 0 when the lever is released (spring return).

SPOOL CONTROL **57**

CODE **802154**

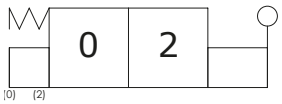


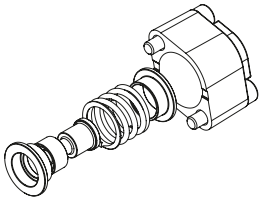


Same features of spool control **3**; to be combined only with spool **C**.

SPOOL CONTROL **4**

CODE **802057**

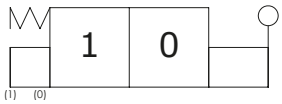


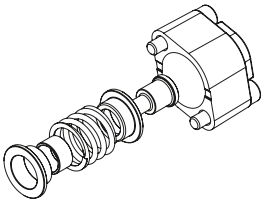


Spring return, two positions.
Allows the spool to move only in position 0 and 2: spool goes back to position 0 when the handle is released (spring return).

SPOOL CONTROL **5**

CODE **802058**

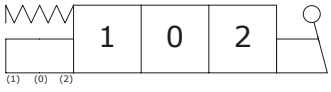


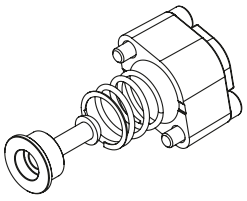


Spring return, two positions.
Allows the spool to move only in position 0 and 1: spool goes back to position 0 when the handle is released (spring return).

SPOOL CONTROL **6**

CODE **802059**

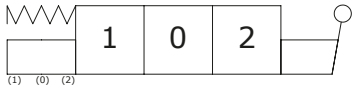


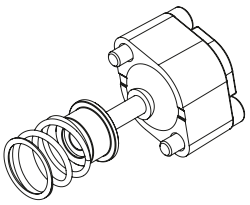


In starting position, spool is in position 1.
Pulling the lever spool passes through position 0 and gets to position 2.

SPOOL CONTROL **7**

CODE **802060**

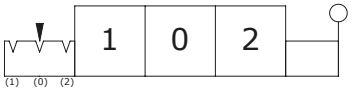


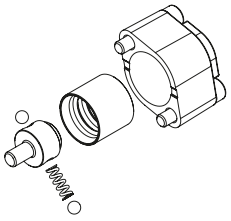


In starting position, spool is in position 2.
Pushing the lever spool passes through position 0 and gets to position 1.

SPOOL CONTROL **8**

CODE **802050**

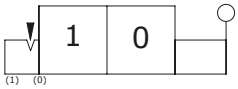


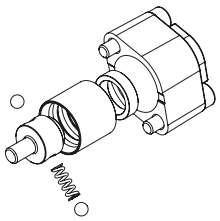


Three position detent.
Spool is detented in all positions: 0, 1 and 2.

SPOOL CONTROL **9**

CODE **802085**

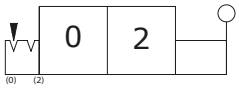


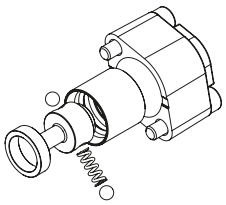


Two position detent.
Spool is detented in all positions: 0 and 1.

SPOOL CONTROL **10**

CODE **802086**

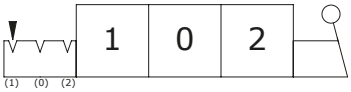


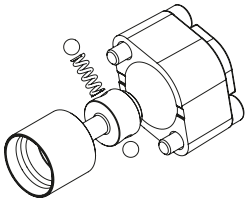


Two position detent.
Spool is detented in all positions: 0 and 2.

SPOOL CONTROL **11**

CODE **802089**

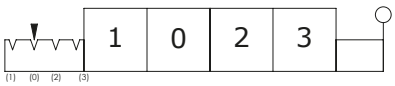


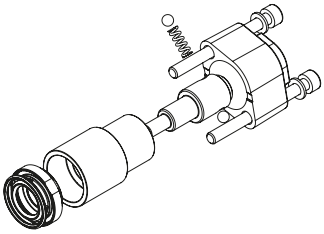


Spool is detented in positions 1 and 2.

SPOOL CONTROL **13**

CODE **802082**

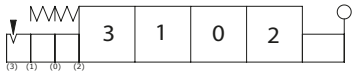


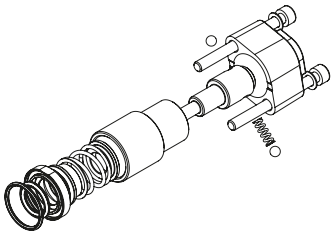


Four position detent.
The spool is detented in all positions: 0,1,2, and 3. To be combined only with spool **K** and special machining on the body.

SPOOL CONTROL **16**

CODE **802061**

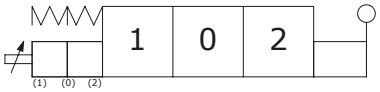


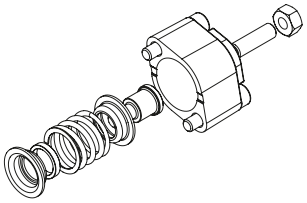


Four position, detent in position 3.
The spool returns to 0 from positions 1 and 2 when the handle is released. Position 3 is detented. To be combined only with spool K and special machining on the body.

SPOOL CONTROL **1L**

CODE **802261**

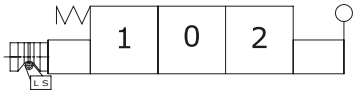


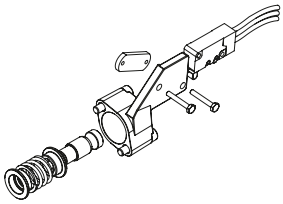


Spring return with limiter.
Spool control **1** with featuring a stoke limiter.

SPOOL CONTROL **1MS0-55MS0**

CODES





Spring return with microswitch.
Spool control 1 featuring waterproof microswitch operating in position 1 and 2.

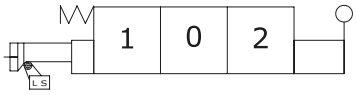
802173 - SPOOL CONTROL 1MS0

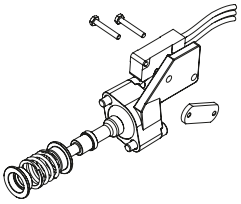
To be combined only with spool C

802294 - SPOOL CONTROL 55MS0

SPOOL CONTROL **1MS1-55MS1**

CODES





Spring return with microswitch.
Spool control 1 featuring waterproof microswitch operating in position 1.

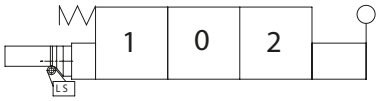
802174 - SPOOL CONTROL 1MS1

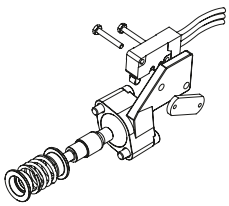
To be combined only with spool C

802303 - SPOOL CONTROL 55MS1

SPOOL CONTROL **1MS2**

CODE **802175**

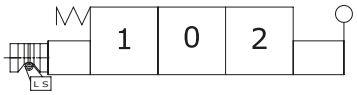


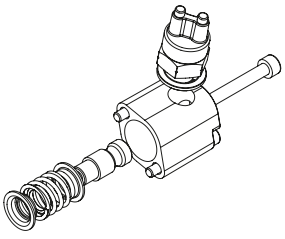


Spring return with microswitch.
Spool control **1** featuring a waterproof microswitch operating in positions 2.

SPOOL CONTROL **1MSP0**

CODE **802341**

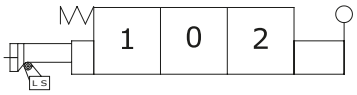


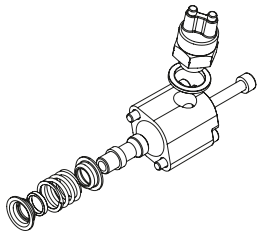


Spring return with microswitch.
Spool control **1** featuring a protective microswitch operating in positions 1 and 2.

SPOOL CONTROL **1MSP1**

CODE **802345**

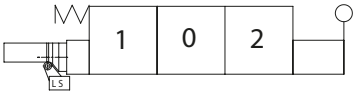


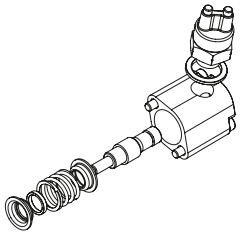


Spring return with microswitch.
Spool control **1** featuring a protective microswitch operating in positions 1.

SPOOL CONTROL **1MSP2**

CODE **802346**

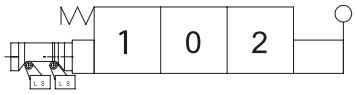


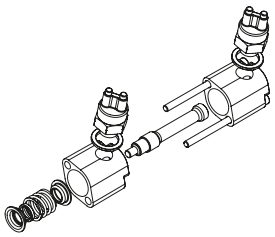


Spring return with microswitch.
Spool control **1** featuring a protective microswitch operating in positions 2.

SPOOL CONTROL **1MSP (1-2)**

CODE **802408**

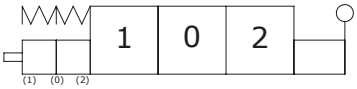


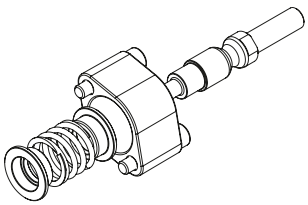


Spring return with microswitch.
Spool control **1** featuring **two** protective microswitches operating in positions 1 and 2.

SPOOL CONTROL **1DC**

CODE **802109**

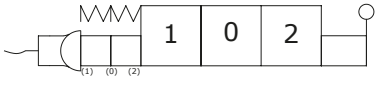


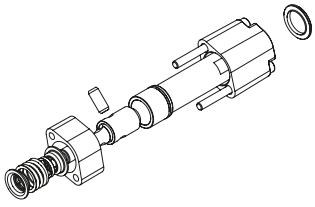


Spring return with pin.
Spool control **1** featuring a threaded pin end which allows, in addition to the actuator, the operation of the spool also from the spool control side.

SPOOL CONTROL **1F**

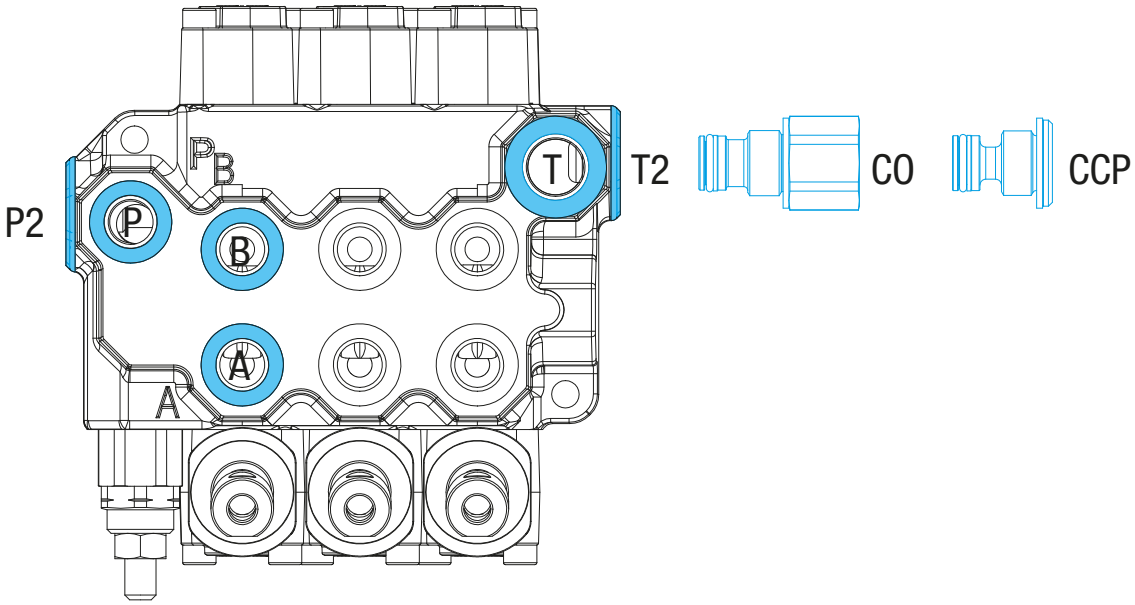
CODE **802132**

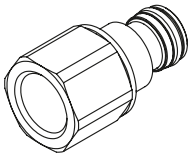


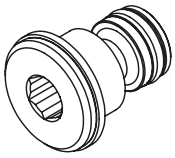


Spring return for cable control.
Spool control **1** featuring a connection kitto cable remote control. To be assembled with flexible cable **CA** and manual control **FO** and **FA**.

SPARE PARTS - INLET, OUTLET, PORTS OPTIONS



CO - CARRY OVER (POWER BEYOND)		CODES
		Allows the installation of another valve downstream the first. To be assembled on T2 port. **832019** - RACCORDO "CO" 20 **832032** - TAPPO "CO" 3/4"-16 UNF 20

CCP - CLOSED CENTER PLUG		CODES
		Turns an open center circuit into a closed center one. **832017** - CCP 3/8" GAS BM20 BC20 **832033** - TAPPO "CCP" 3/4"-16 UNF 20 It is necessary to substitute the main relief valve VL with an RVP plug.

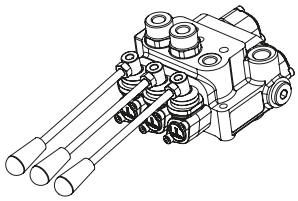
PLUGS		CODES
		**015008** - PLUG 3/8" BSP **015009** - PLUG 1/4" BSP **015002** - PLUG 9/16"-18 **015003** - PLUG 3/4"-16

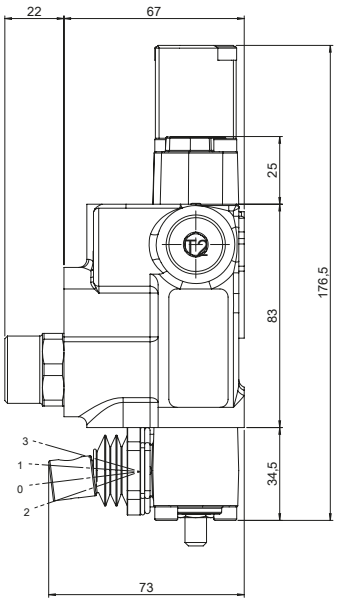
SPECIAL PRODUCTS

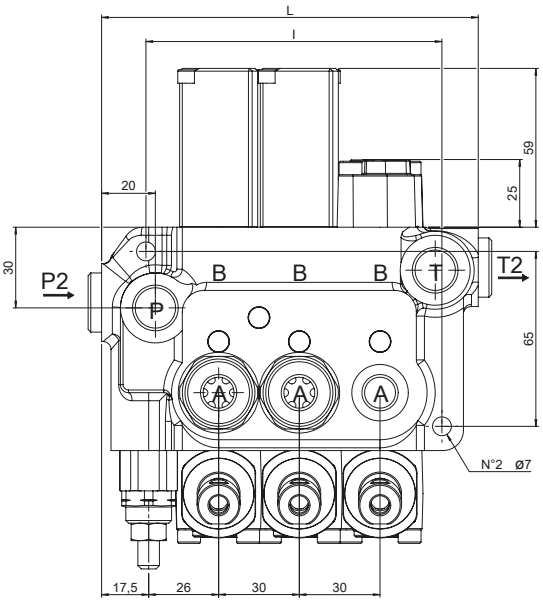
Studying and perfecting equipment solutions has always been the ideal testing ground for our Development Team and our projects. Over the years BLB has placed special emphasis on the improvement of performances, ergonomics and simplifying systems, all with regards to the environment and the resources savings. Here are a few examples special products and their application in the major fields.

BB20/3

Three section monoblock valve with possibility to integrate pilot operated check valves on A ports. Available spools: double acting, single acting and floating.





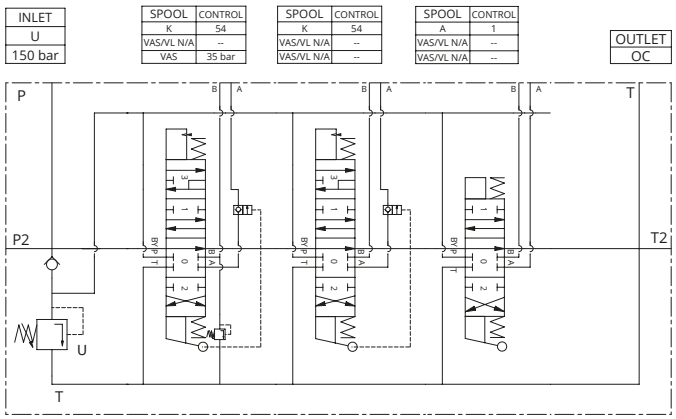


TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	17 l/min	4,5 GPM
MAX FLOW	25 l/min	6,6 GPM
MAX PRESSURE ON TANK LINE	80 bar	1000 PSI

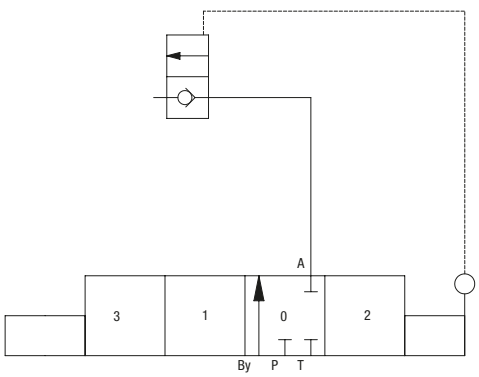
STANDARD THREADS	A - B	P	T	P2	T2
G (BSP)	1/4"	1/4"	1/4"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16	3/4"-16	3/4"-16

INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

DIMENSION AND WEIGHT	L		l		WEIGHT	
	mm	inch	mm	inch	kg	lb
	141,50	5,57	110,00	4,33	5,32	11,73

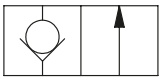
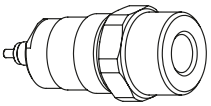


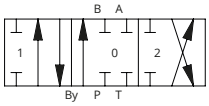
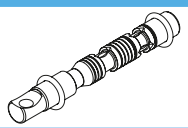
VBM - Pilot operated check valve for double acting section.

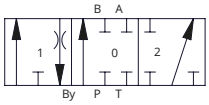
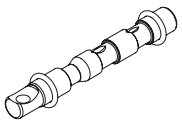


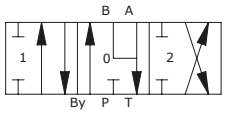
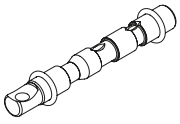
Ideal application: street sweepers and lawn mowers.

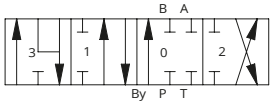
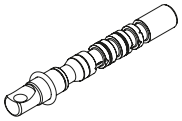
SPECIFIC SPARE PART LIST

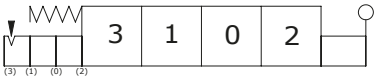
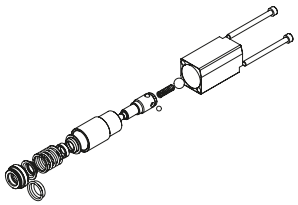
VBM - PILOT OPERATED CHECK VALVE		CODE **561205**
		Allows 0 leakage on port **A**.

SPOOL **AV**		CODE **560881**
		Double acting spool. Used to control of double acting cylinders or bi-directional hydraulic motors. In position 0 work ports are blocked.

SPOOL **BV**		CODE **560541**
		Single acting spool. Used to control single-acting cylinders or start and stop of uni-directional hydraulic motors. In position 0 work port A is blocked. B port is plugged.

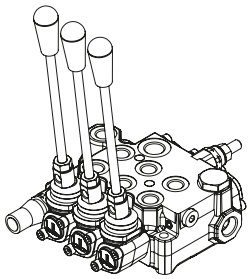
SPOOL **DV**		CODE **560540**
		Open center motor spool. Used to control double acting cylinders or bi-directional hydraulic motors. Allows a cylinder to float or a motor to wheel free when the spool is in position 0. When the spool is in position 0 work ports are open to the tank.

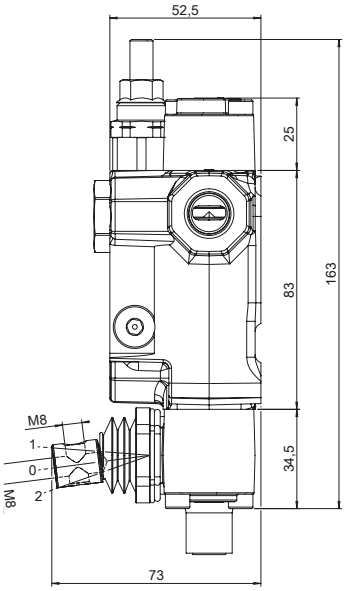
SPOOL **KV**		CODE **56111175**
		Double acting, floating spool. Double acting spool with a fourth floating position. Allows a cylinder to float or a motor to wheel free when the spool is in position 3. To be combined only with spool control **54**. Special machining on the body is required.

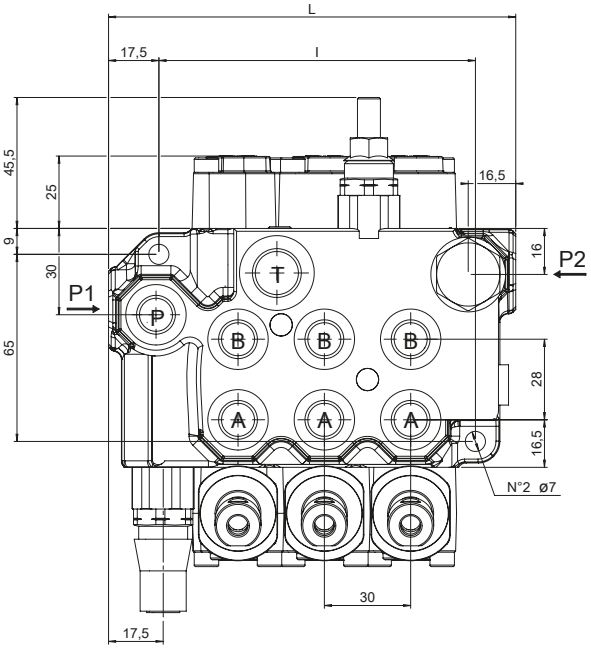
SPOOL CONTROL **54**		CODE **802437**
		Four position, detent in position 3. The spool returns to 0 from positions 1 and 2 when the handle is released. Position 3 is detented. To be combined only with spool K and special machining on the body.

BM20/3 DOUBLE INLET

Three section monoblock valve used to control two pumps for driving the tracks on mini transporter and a single-acting or double-acting cylinder.





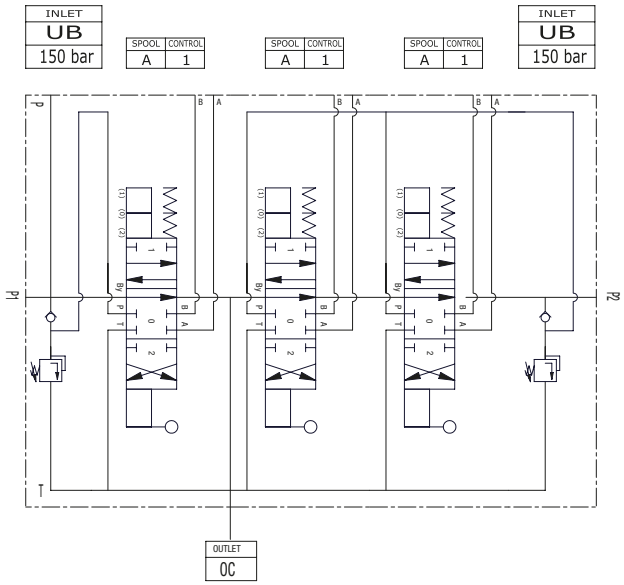


TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	17 l/min	4,5 GPM
MAX FLOW	25 l/min	6,6 GPM
MAX PRESSURE ON TANK LINE	25 bar	362 PSI

STANDARD THREADS					
	A - B	P	T	P2	T2
G (BSP)	1/4"	1/4"	1/4"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16	3/4"-16	3/4"-16

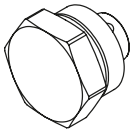
INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

DIMENSION AND WEIGHT					
L		I		WEIGHT	
mm	inch	mm	inch	kg	lb
140,00	5,52	110,00	4,33	5,32	11,73



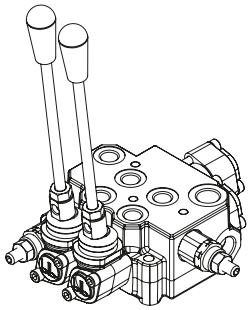
Ideal application: mini transporter with two tracks and tipper.

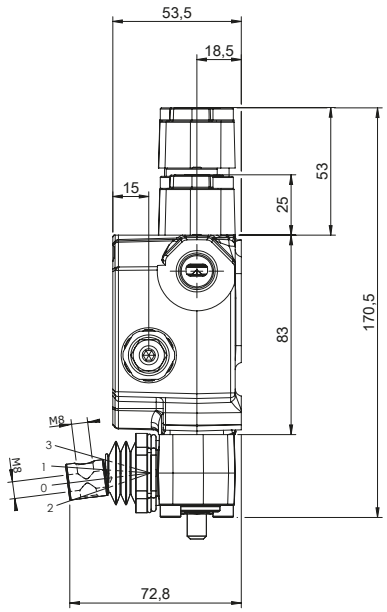
SPECIFIC SPARE PART LIST

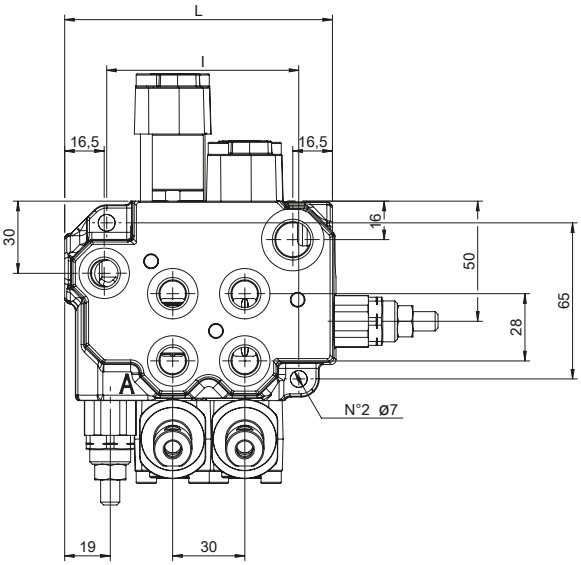
VNR - VERTICAL LOAD CHECK VALVE		CODE **560559**
		Every BLB valve is provided with a load check valve. It prevents the cylinder fall when a spool is actuated and does not allow the back flow from ports to inlet.

BM35/2 WITH PORTS ANTISHOCK VALVES

Two sections monoblock valve with floating section, main relief valve, check valves on each section and antishock valve on one port.
The integrated valves allow the simultaneous actuation of the cylinders.







TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	25 l/min	6,6 GPM
MAX FLOW	35 l/min	9,2 GPM
MAX PRESSURE ON PORTS	320 bar	4700 PSI
MAX PRESSURE ON TANK LINE	80 bar	1100 PSI

STANDARD THREADS					
	A - B	P	T	P2	T2
G (BSP)	3/8"	3/8"	3/8"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16	3/4"-16	3/4"-16

INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

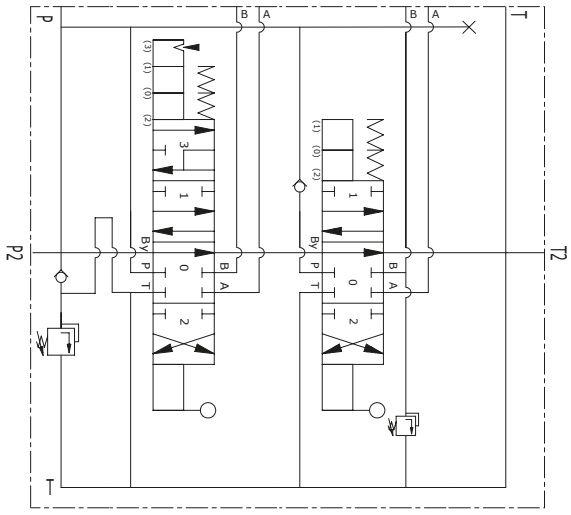
DIMENSION AND WEIGHT					
L		l		WEIGHT	
mm	inch	mm	inch	kg	lb
111,50	4,39	80,00	3,15	3,00	6,61

INLET
K
180 bar

SPOOL	CONTROL
K	16

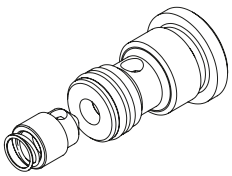
SPOOL	CONTROL
A	1

OUTLET
OC



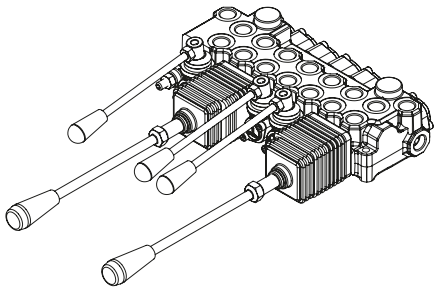
Ideal application: small front loaders.

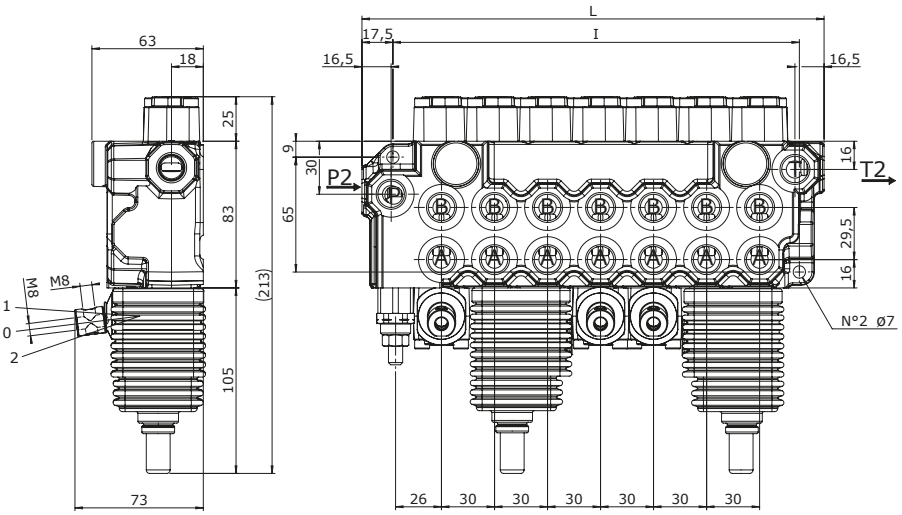
SPECIFIC SPARE PART LIST

VNR - LOAD CHECK VALVE		CODE **560761**
		Every BLB valve is provided with a load check valve. It prevents the cylinder fall when a spool is actuated and does not allow the back flow from ports to inlet.

BM35/7 FOR BACKHOE

Seven sections monoblock valve, complete with main relief valve, two mechanical joysticks to control four cylinders and two standard manual control for stabilizer cylinders. Featuring RCT spool for the side shift hydraulic control.



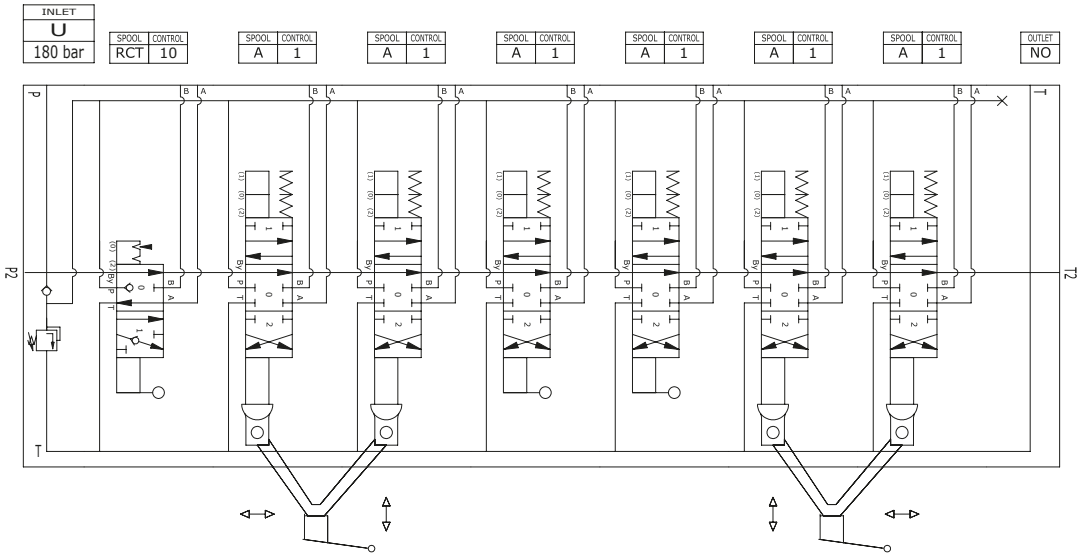


TECHNICAL SPECIFICATIONS		
NOMINAL FLOW	25 l/min	6,6 GPM
MAX FLOW	35 l/min	9,2 GPM
MAX PRESSURE ON PORTS	320 bar	4700 PSI
MAX PRESSURE ON TANK LINE	80 bar	1100 PSI

STANDARD THREADS					
	A - B	P	T	P2	T2
G (BSP)	3/8"	3/8"	3/8"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16	3/4"-16	3/4"-16

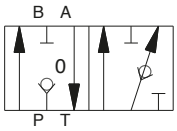
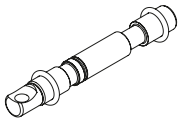
INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

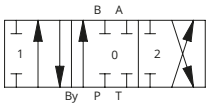
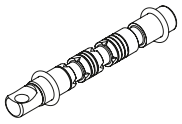
DIMENSION AND WEIGHT					
L		I		WEIGHT	
mm	inch	mm	inch	kg	lb
261,50	10,29	230,00	9,06	17,30	38,14

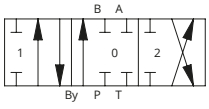
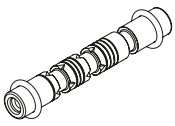


Ideal application: backhoe.

SPECIFIC SPARE PART LIST

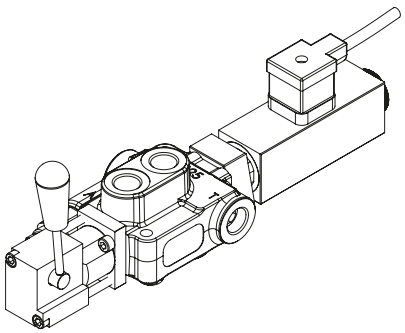
SPOOL **RCT**		CODE **561345**
		Specific spool for side shift hydraulic control.

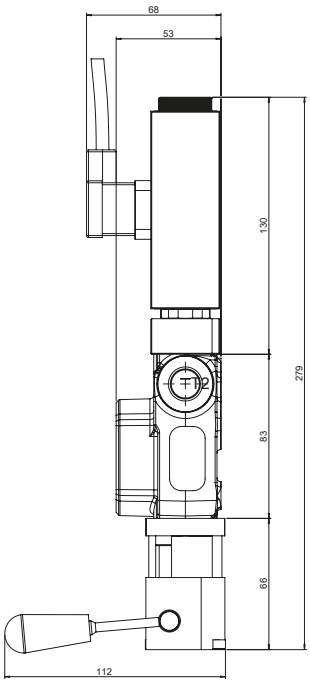
SPOOL **A(8)-(12)-(18)**		CODES
		Double acting spool for specific flow rates. Used to control of double acting cylinders or bi-directional hydraulic motors. In position 0 work ports are blocked. **561253** - SPOOL A(8) **561238** - SPOOL A(12) **561362** - SPOOL A(18)

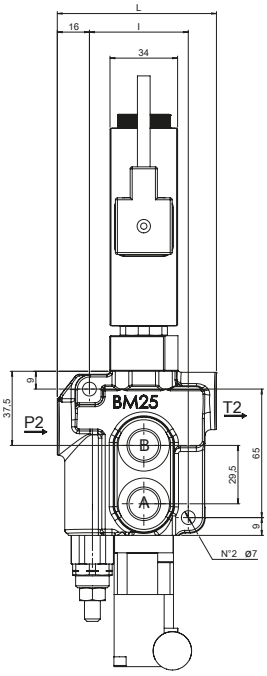
SPOOL **A(8)-(12)-(18) WITHOUT APPENDIX**		CODES
		Same features as spool **A** with threaded spool end; required to assembly joysticks (**JS**) or for special applications. **561251** - SPOOL A(8) WITHOUT APPENDIX **561239** - SPOOL A(12) WITHOUT APPENDIX **561263** - SPOOL A(18) WITHOUT APPENDIX

BM25 ELECTRIC + MANUAL CONTROL

Single section monoblock valve with electric + manual control. Useful in all those applications that need a remote electric operation and safety manual control.







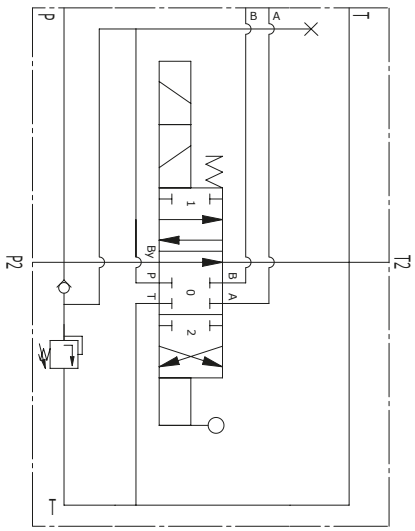
TECHNICAL SPECIFICATIONS		
MAX FLOW - Electrical control	25 l/min	6,6 PSI
MAX PRESSURE - Electrical control	200 bar	2900 PSI
MAX PRESSURE ON PORTS	200 bar	2900 PSI
MAX PRESSURE ON TANK LINE	25 bar	362 PSI

STANDARD THREADS	A - B	P	T	P2	T2
G (BSP)	3/8"	3/8"	3/8"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16	3/4"-16	3/4"-16

INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

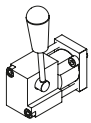
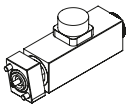
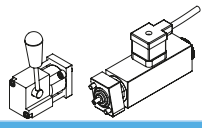
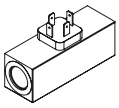
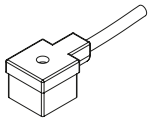
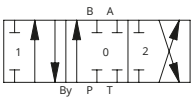
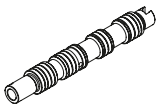
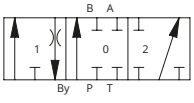
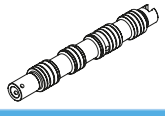
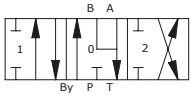
DIMENSION AND WEIGHT	L		I		WEIGHT	
	mm	inch	mm	inch	kg	lb
	81,00	3,18	50,00	1,97	1,61	3,55

INLET	SPOOL	CONTROL	OUTLET
U	AE	EDO	OC



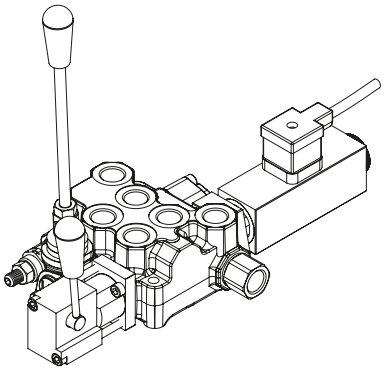
Ideal application: hydraulic winch.

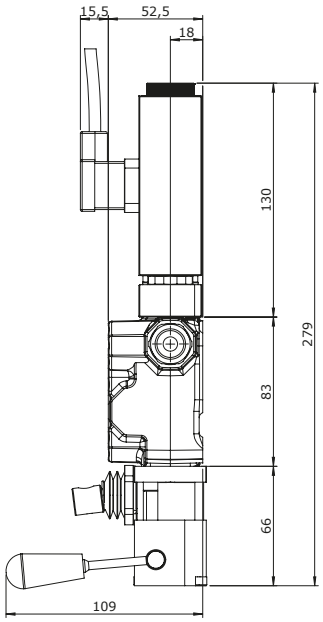
SPECIFIC SPARE PART LIST

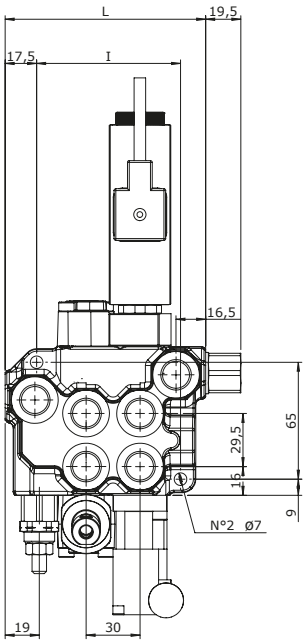
MANUAL CONTROL KIT		CODE **560985**
		Manual control with lever to be combined with electic control.
ELECTRIC CONTROL EDO 12/24 VOLT		CODES
		Electric actuator 12/24 Volt to be combined with specific manual control kit. Connector not included. **56111105** - ELECTRIC CONTROL EDO 12 VOLT **56111141** - ELECTRIC CONTROL EDO 24 VOLT
ELECTRIC + MANUAL CONTROL 12/24 C		CODES
		Complete kit electric + manual control. Connector included. **801521** - ELECTRIC + MANUAL CONTROL 12C **801527** - ELECTRIC + MANUAL CONTROL 24C
EDO SOLENOID - 12 /24 VOLT		CODES
		Connector not included. **025117** - EDO SOLENOID 12 VOLT **025119** - EDO SOLENOID 24 VOLT
CONNECTOR FOR ELECTRIC CONTROL		CODE **025045**
		
SPOOL **AE**		CODE **56111106**
		Double acting spool to be combined with electric control. Used to control of double acting cylinders or bi-directional hydraulic motors. In position 0 work ports are blocked.
SPOOL **BE**		CODE **56111107**
		Single acting spool to be combined with electric control. Used to control single-acting cylinders or start and stop of uni-directional hydraulic motors. In position 0 work port A is blocked. B port is plugged.
SPOOL **DE**		CODE **560307**
		Open center motor spool to be combined with electric control. Used to control double acting cylinders or bi-directional hydraulic motors. Allows a cylinder to float or a motor to wheel free when the spool is in position 0. When the spool is in position 0 work ports are open to the tank.

BM35 ELECTRIC + MANUAL CONTROL

One to seven sections monoblock valve with the possibility to have one section with electric + manual control.





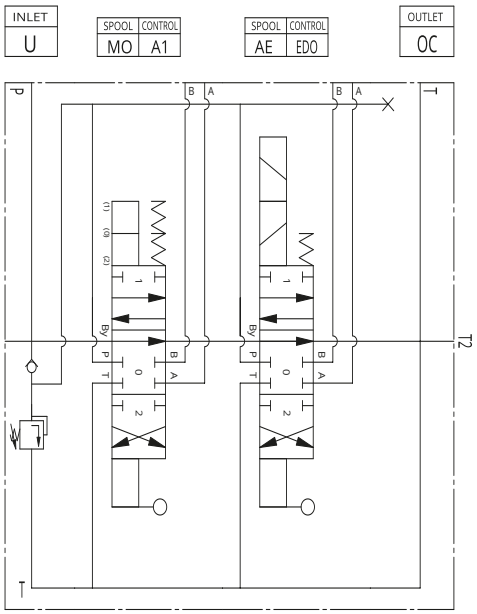


TECHNICAL SPECIFICATIONS		
MAX FLOW	35 l/min	9,2 GPM
MAX FLOW - Electrical control	25 l/min	6,6 GPM
MAX PRESSURE - Electrical control	200 bar	2900 PSI
MAX PRESSURE ON PORTS	200 bar	2900 PSI
MAX PRESSURE ON TANK LINE	25 bar	362 PSI

STANDARD THREADS	A - B	P	T	P2	T2
G (BSP)	3/8"	3/8"	3/8"	3/8"	3/8"
F (UNF-SAE 8)	3/4"-16	3/4"-16	3/4"-16	3/4"-16	3/4"-16

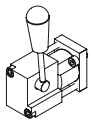
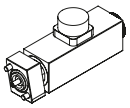
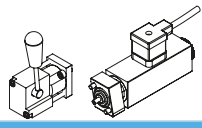
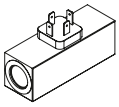
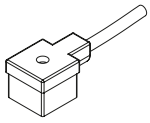
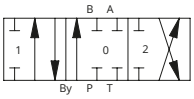
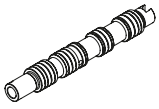
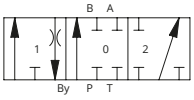
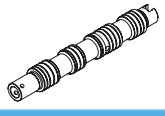
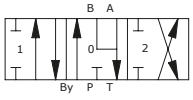
INTERNAL OIL LEAKAGE	
A - B → T	4 ÷ 8 cc/min
TESTING CONDITIONS	
Pressure	100 bar
Oil temperature	40° C
Oil viscosity	32 mm²/s

DIMENSION AND WEIGHT	L		I		WEIGHT	
	mm	inch	mm	inch	kg	lb
	112,00	4,41	80,00	3,15	2,85	6,30



Ideal application: in all application where a monoblock valve manual operated needs an electric operated section.

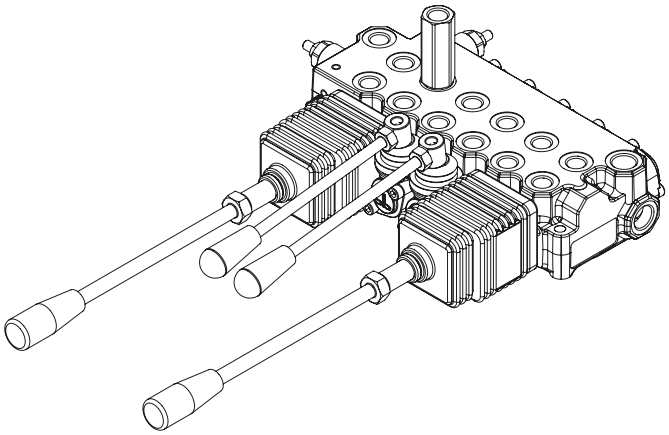
SPECIFIC SPARE PART LIST

MANUAL CONTROL KIT		CODE **560985**
		Manual control with lever to be combined with electic control.
ELECTRIC CONTROL EDO 12/24 VOLT		CODES
		Electric actuator 12/24 Volt to be combined with specific manual control kit. Connector not included. **56111105** - ELECTRIC CONTROL EDO 12 VOLT **56111141** - ELECTRIC CONTROL EDO 24 VOLT
ELECTRIC + MANUAL CONTROL 12/24 C		CODES
		Complete kit electric + manual control. Connector included. **801521** - ELECTRIC + MANUAL CONTROL 12C **801527** - ELECTRIC + MANUAL CONTROL 24C
EDO SOLENOID - 12 /24 VOLT		CODES
		Connector not included. **025117** - EDO SOLENOID 12 VOLT **025119** - EDO SOLENOID 24 VOLT
CONNECTOR FOR ELECTRIC CONTROL		CODE **025045**
		
SPOOL **AE**		CODE **56111106**
		Double acting spool to be combined with electric control. Used to control of double acting cylinders or bi-directional hydraulic motors. In position 0 work ports are blocked.
SPOOL **BE**		CODE **56111107**
		Single acting spool to be combined with electric control. Used to control single-acting cylinders or start and stop of uni-directional hydraulic motors. In position 0 work port A is blocked. B port is plugged.
SPOOL **DE**		CODE **560307**
		Open center motor spool to be combined with electric control. Used to control double acting cylinders or bi-directional hydraulic motors. Allows a cylinder to float or a motor to wheel free when the spool is in position 0. When the spool is in position 0 work ports are open to the tank.

APPLICATIONS

BACKHOE

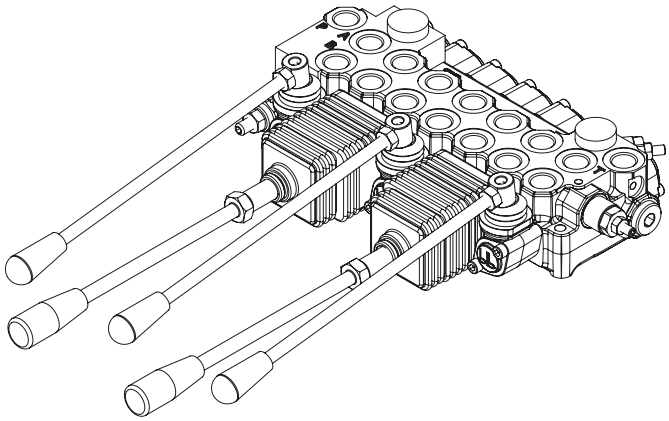
BM20



Equipment mounted on three point linkage of the tractor and used to excavate. Very compact monoblock valve that controls the cylinders movement through two mechanical joysticks that make the job easier to the operator and allow precise and secure excavation.

MICRO EXCAVATOR

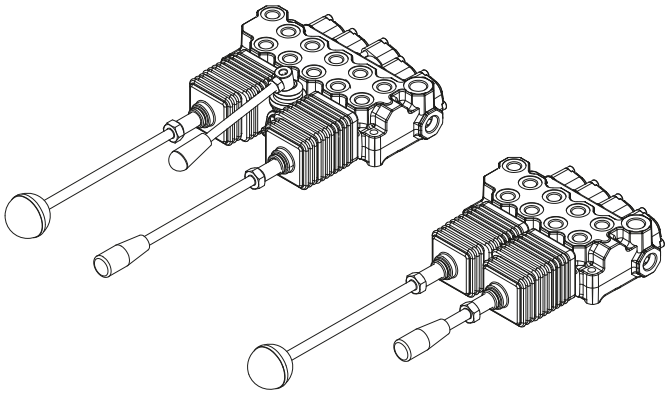
BM35



Machine used for small excavations in construction, gardening and agriculture. Monoblock valve with 7 double-acting functions and dedicated spools for simultaneous and precise movements on small excavators. The standard joysticks are protected with UV-resistant rubber for durability.

MICRO EXCAVATOR

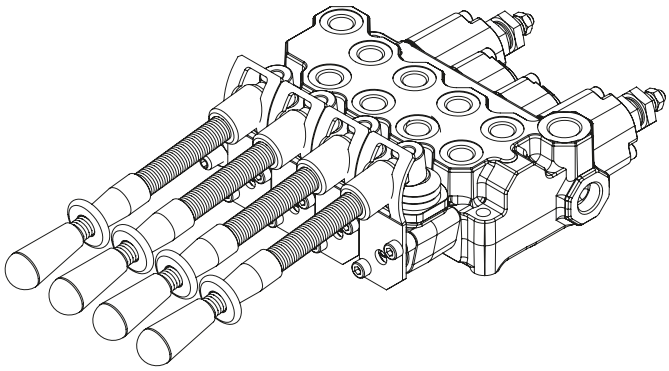
BM20



Machine used for small excavations in construction, gardening and agriculture. Monoblock valves with super-sensitive control and convenient joysticks. Special relief valves for very low flow offer full system protection. It can be used with carry-over over plugs (power beyond) to allow the usage of downstream implements such as hedge trimmers, mixing buckets, etc...

AERIAL PLATFORM

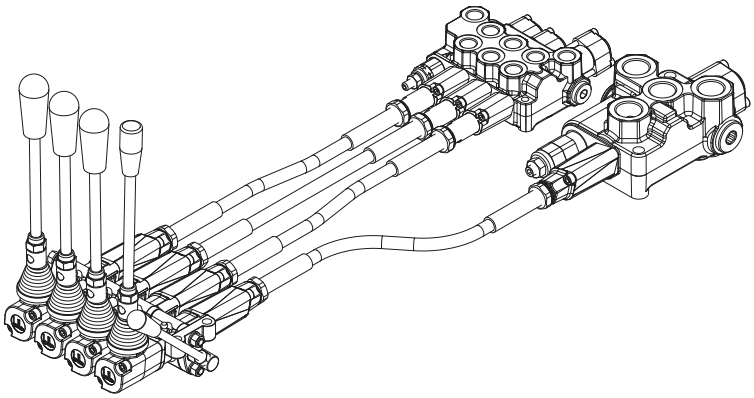
BM20



Machine used to reach extreme working positions in full comfort and safety. Valve with safety levers and speed control through the use of stroke limiters. A super-lightweight monoblock valve with a main relief valve for full system protection. Surface treatment against atmospheric agents provided.

HEDGE MOWER

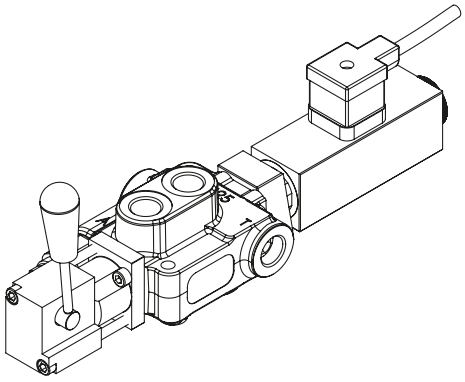
BM20



Machine used for shredding grass and bushes in ditches, on embankments and on roadsides. It is also used for cutting hedges in parks or windbreak hedges in animal farms. System equipped with two monoblock valves that are remotely controlled by flexible cables and can accommodate a significant bending angle. The control units are treated against atmospheric agents and have grease nipples as standard, for a longer system durability. The main feature is motion control sensitivity. A main relief valve offers full system protection and safeguards other components such as pumps and cylinders. As standard, the last element has a floating position for the shredder head control cylinder.

WOOD SPLITTER

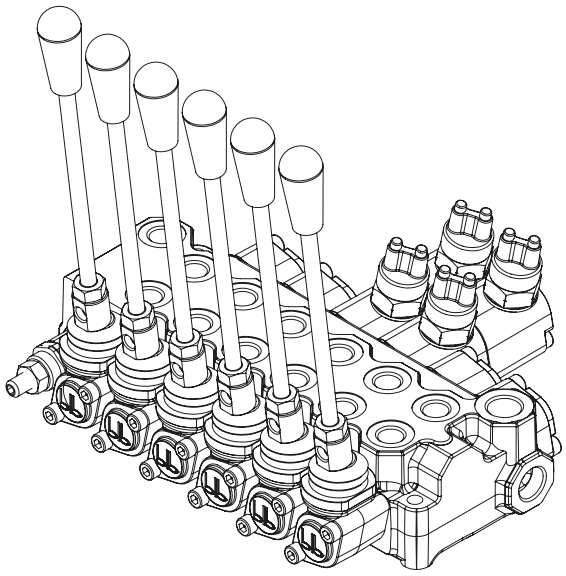
BM25



Machine used to split logs or trunks into several pieces to make firewood that burns easily. Monoblock valve with electric and manual control, equipped with main relief valve. Available with radio-control.

AERIAL PLATFORM

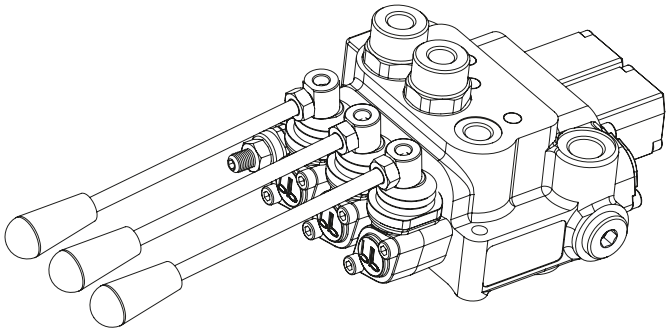
BM20



Machine used to reach extreme working positions in full comfort and safety. Lightweight valve with special circuits that offer the operator precise and safe manoeuvrability in accordance with the safety regulations in force.

STREET SWEEPER

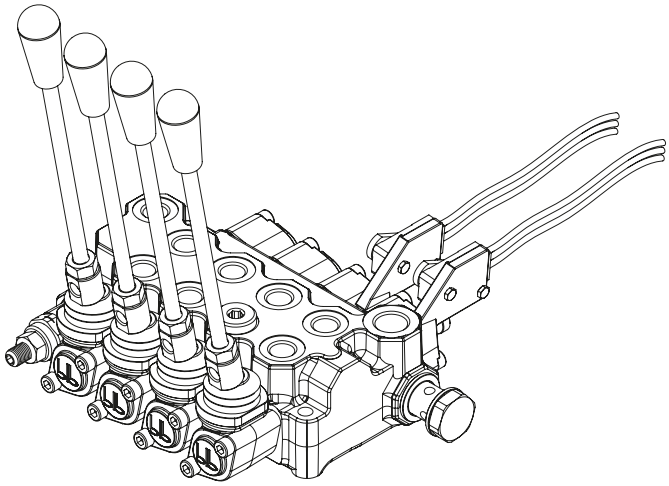
BB20



Machine used to clean roads, squares, cycle lanes and urban centres, with collection. Monoblock valve with integrated pilot operated check valves, relief valve and anti-shock valve. A circuit with floating elements can automatically level the brushes with the road surface.

STREET SWEEPER

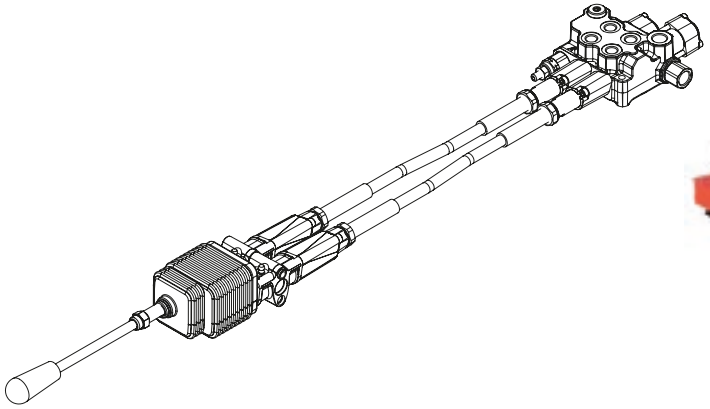
BM20



Machine used to clean roads, squares, cycle lanes and urban centres, with collection. Monoblock valve with microswitches and a relief valve for full system protection.

TELESCOPIC FRONT LOADER

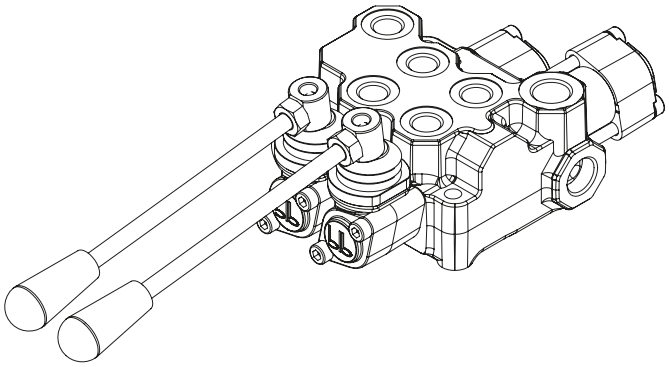
BM20



Machine used for moving and positioning loads in construction, agriculture, gardening and plant nurseries. Monoblock valve with pressure carry-over (power beyond) and surface protection for installation on tractors. As standard, flexible remote control cables which can accommodate a significant bending angle. The control units are treated against atmospheric agents and have grease nipples as standard, for a longer system durability. The main feature is motion control sensitivity. A main relief valve offers full system protection and safeguards other components such as pumps and cylinders. The floating circuit allows the loading bucket to follow the ground.

LAWN MOWER WITH GRASS COLLECTION AND GROUND DISCHARGE

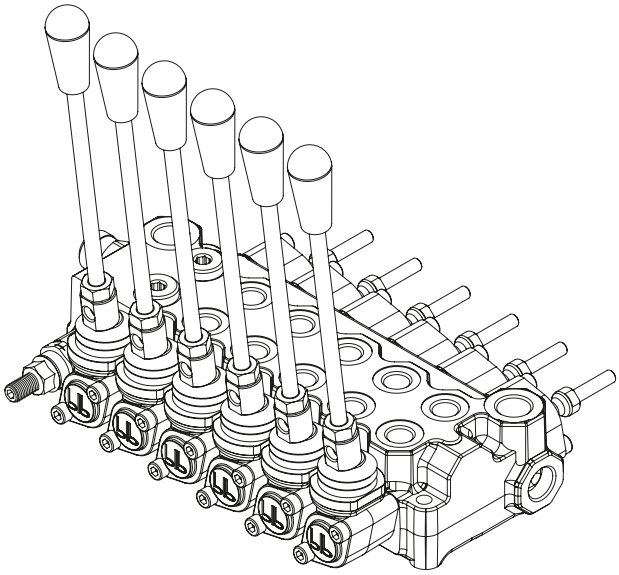
BM20



Professional ride-on lawn mowers with grass collection and ground discharge. Lightweight and compact monoblock valve with great sensitivity of movement control. Ideal for these professional mowers. Available with a floating circuit to follow the lawn surface.

TRUCK CRANE

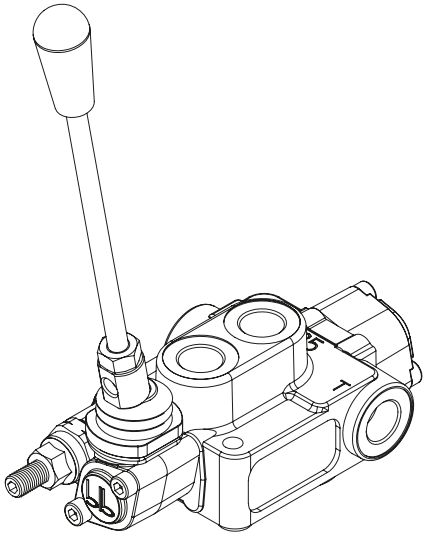
BM20



Crane installed on trucks to load and unload goods. Monoblock valve with six or seven sections, with an oil discharge lever as required by the safety standards in force. A very lightweight and compact valve that offers dual control so that it can be operated from both sides of the truck. Safety valves offer full system protection and fine meetering spools offer perfect cylinder control. Surface treatment to protect against atmospheric agents

WOOD SPLITTER

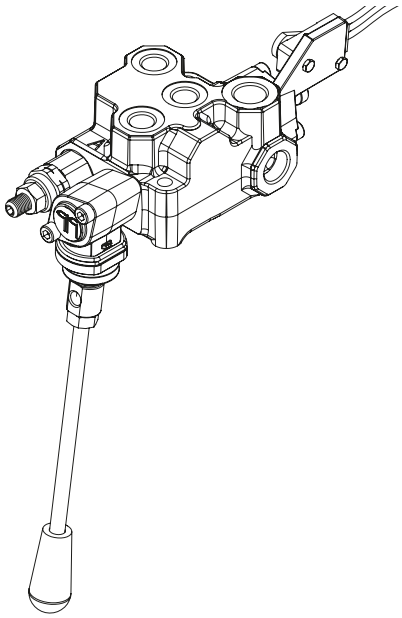
BM25



Machine used to split logs or trunks into several pieces to make firewood that burns easily. Lightweight and compact valve for basic wood splitter machines.

FRUIT HARVESTER

BM20



Machine used for harvesting in orchards. Monoblock valve with electric safety signal.

PRODUCTS CHOICE AND USE

DESCRIPTION

The purpose of directional control valves BM20, BM25, BM35 and BF201 is to direct the flow circulating in the hydraulic systems, towards the user chosen by the operator (directional spool valves). The function is obtained by moving the spool within a cavity in a controlled and sequential way and opening orifices that, connecting with each other, realize the functional circuits. Functional characteristics are specified in the initial part of this catalogue.

CHOICE AND USE

Before choosing the correct configuration of the directional control valves, it is necessary to identify:

- performances (pressure, flow rate, temperature)
- functional characteristics of each section (hydraulic scheme, actuator and control)
- equipment in which it will be built-in (installation, accessibility, hoses connection, tank, filter).

Choice must be made so that the directional control valves are used within the performance limits listed in this catalogue and used in compliance with the operating conditions shown in the table below:

HYDRAULIC FLUID: MINERAL OIL ACCORDING TO DIN 51524		
Viscosity	Field	10 ÷ 460 mm²/sec
	Optimal	12 ÷ 75 mm²/sec
Temperature	Excursion	-20 ÷ +80 °C
	Optimal	+30 ÷ +60 °C
Maximum contamination level (Filtro 25 µ ass. βx= 75)		NAS 1638: CLASS 9 ISO 4406: 20/19/16
Room temperature		-30 ÷ +60 °C
Pressure and flow		See catalogue
Pressure drop		See catalogue
Oil velocity in the tubes: inlet and ports		6 ÷ 8 m/sec
Oil velocity in the tubes: return		3 ÷ 4 m/sec

For all uses in which functional and performance conditions are not referable to this catalogue, please contact BLB technical department. In case of permitted use, kindly request a written answer and appropriate additional specifications to the use.

SPECIAL PRODUCTS

A high number of possible functional combinations characterize BLB directional control valves. It is possible that some products with high customization and combination might not be identifiable in this catalogue. For such products, BLB provides the necessary advice to identify the best functional composition and supplies the necessary documentation for their installation and proper use.

USE

Authorized use

All applications that comply with specifications described in "TECHNICAL SPECIFICATIONS" and "CHOICE AND USE" paragraphs.

Unauthorized use

- do not use directional control valves in systems without filtration
- do not use directional control valves with fluids other than those listed in the previous table
- do not use directional control valves to hold actuators in a fixed position for a time interval that is not compatible with the working pressure. It is strictly prohibited to use directional control valves as holding tools. In all cases in which 0 leakage is required, auxiliary valves (specific for this purpose), have to be installed directly on the actuators.

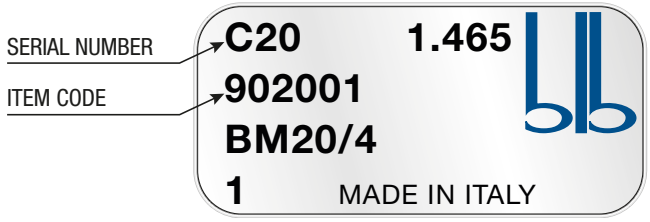
SAFETY STANDARDS

Valves surfaces have sharp edges and internal cavities with residual oil. Therefore, during handling operations (storage, control, installation, demolition, testing, maintenance and disposal) it is necessary to:

- handle the products with protective gloves
- wear appropriate work clothes and non-slip work footwear
- use suitable handling equipment
- review the handling methods (see paragraph "Handling and storage").

IDENTIFICATION AND PACKAGING

Directional control valves are all individually packed in oil-proof plastic bags and packed.
Individual packaging in cardboard boxes is available on request.
Each valve is identified by an adhesive label on which are reported the 6 or 8-digit code of the product and the production lot. In alternative, laser stamping reporting the same information is printed out directly on the body.



CHECKS UPON RECEIPT

Upon goods receipt, please check that:

- packaging and products have not been damaged during transport
- supply is in accordance with the order
- documents are complete and exhaustive

In case of non-conformities, please notify BLB within eight days from goods receipt.

WARNING: directional control valves are packed in oil-proof plastic bags. The internal cavities contain residual oil retained by the protective plastic plugs on ports.
NB: Remove the packaging before installation and remove the plugs only when the connection hoses have to be assembled.

HANDLING AND STORAGE

Handling must be carried out carefully and with adequate means for the size and weight of the package, whether it is a single pack or a multiple pack. It is necessary to take every precaution to avoid damages that could compromise the functional efficiency of the products and safety of anyone present in proximity of the areas in which you operate. All BLB products need to be stored in a dry place, protected from atmospheric agents and possible damages. If you remove the secondary packaging, BM20, BM25, BM35 and BF201 valves must be stored with the oil-proof protective plastic bags.

INSTRUCTIONS

VALVE INSTALLATION

Before installing the products, it is necessary to check that it has not been damaged during internal handling and storage operations. In case of long storage before usage, please check that the product is complete with all its parts. In particular, check that the protective plugs have not been removed. In all cases in which the proper operation of the valve is doubtful, make proper tests on bench and replace those parts found faulty (oxidized, damaged, etc...). In case of uncertainty, please contact an authorized BLB service center. Furthermore, make sure that the system characteristics are those foreseen in the original project (filtration, oil type and viscosity, temperature control, tank capacity, etc...).

IMPORTANT: the installation of BM20, BM25, BM35 and BF201 requires the tightening of screws, fittings and hoses. For each of these elements it is necessary to use the appropriate tools and wrenches that allow the control of the tightening torque. Excessive tightening causes deformations to the valve, compromising its regular operation. Weak tightening may affect the functionality and safety. Use the table below to determine the correct tightening torque for each element. Do not use provisional extensions and do not heat keys and wrenches.

PART	THREAD	Nm
Fixing screws	M5 x 0,8 8.8	8
Fittings/Plugs	1/4" BSP 9/16"-18 SAE 6	16
	3/8" BSP 3/4"-16 SAE 8	32
Main relief valves	3/8" BSP	32
	3/8" BSP	32

BM20, BM25, BM35 AND BF201 INSTALLATION PROCEDURES CONSISTS OF 3 STEPS:

STEP 1: fixing

Prepare the area where the valve will be placed, in order to make it easy to assemble, connect the hose and the adjustments during start-up and testing. Install the valve in shock and vibration-free areas. While moving the valve, do not cause accidental bumps or shocks and follow the instructions listed in the "HANDLING AND STORAGE" paragraph. The valve must be fixed with M6 screws through the holes provided. Apply thread-lock accessories. The mounting position is irrelevant as long as the directional control valve rests on a rigid and perfectly flat surface. This is necessary so that the tightening of the fixing screws does not cause harmful deformations.
This is necessary so that the tightening of the fixing screws does not cause harmful deformation.

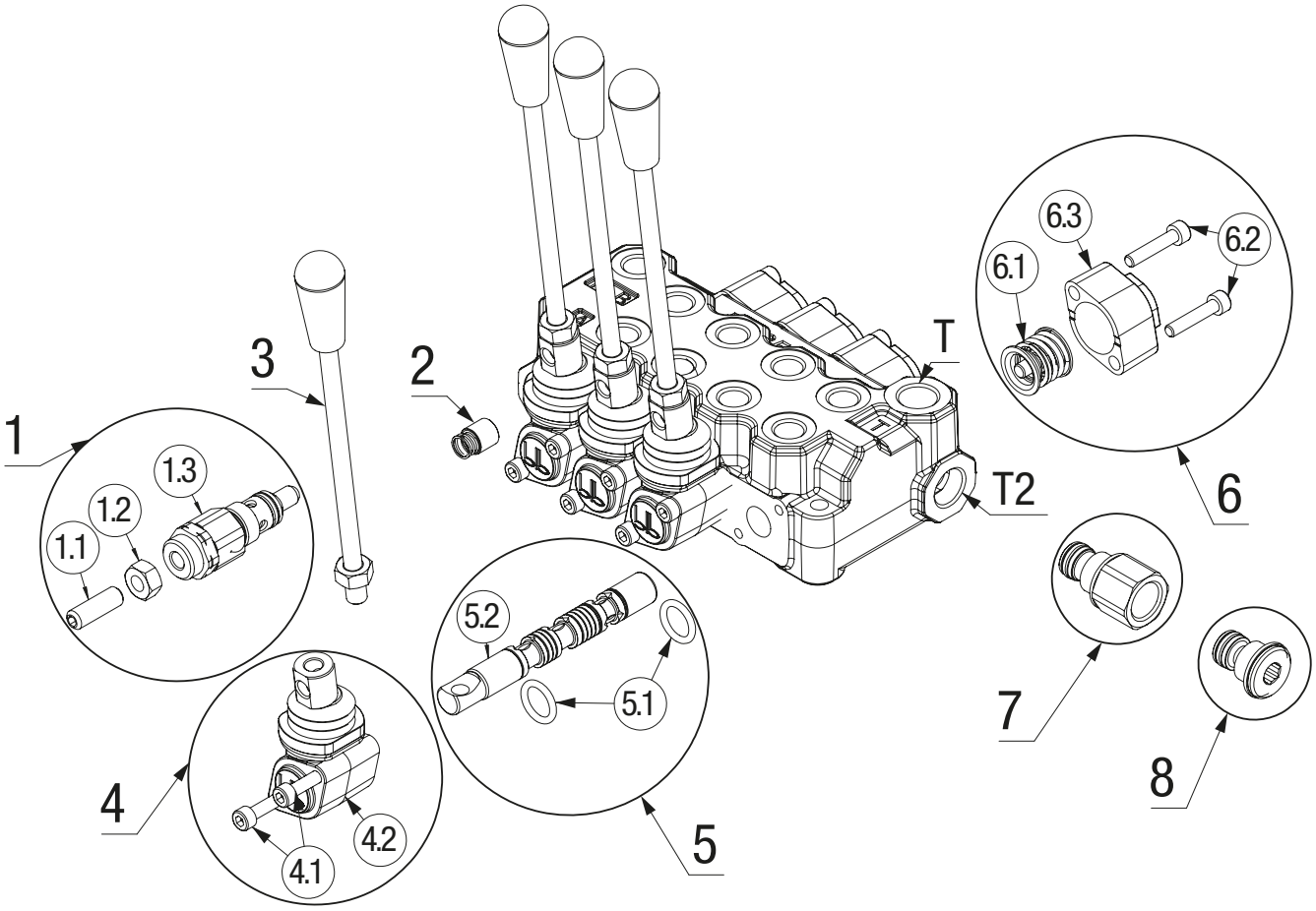
STEP 2: connecting the hydraulic hoses (inlet, uses, drain)

Use hoses and fittings suitable for the indicated maximum flow and pressure.
It is strictly prohibited the usage of conic fittings and the reversal of connections between inlet (P, P2) and tank lines (T, T2). In order to avoid any contamination, remove the protective plugs from the valve ports only when making hose connections. Do not use tapes on the threads to make the seal. Tighten the fittings with the tightening torque indicated in the previous table.

STEP 3: Sytem starting

Before starting, "wash the system" by flushing oil from an auxiliary system. Start the system and then slowly operate the actuators individually and not under load, until the system is filled with oil. Proceed with the calibration of the valves and complete testing of the system. If it is not possible to carry out the initial flushing, clean the filter at the end of the testing. Do not calibrate valves without first applying a pressure gauge on the inlet section of the valve and on line where deemed necessary.

CONFIGURATION CHANGE - SPARE PARTS INSTALLATION



Drawing 1

CHANGING SPOOLS AND SEALS (see drawing 1):

1. remove the screws (part 6.2) with a 4 mm hex key and remove the spool control cap (part 6.3)
2. remove the spool control (part 6.1) using a 4 mm hex key
3. remove the screws (part 4.1) with a 4 mm hex key and remove the manual actuator (part 4.2)
4. remove the spool (part 5.2) from its seat and remove the seals (part 5.1)
5. lightly oil the new spool with clean hydraulic fluid; insert the spool into the valve and gently move it back and forward to make sure there is very little resistance
6. starting from the actuator side:
   - slide the spool towards the spool control side until the O-ring seat (actuator side) is exposed and insert the seal
   - gently slide the spool towards the opposite side until the O-ring seat (spool control side) is exposed and insert the seal
   - making sure not to exceed the spool stroke (to avoid seals breaking), gently slide the spool to place it in the correct operating position
7. install the manual actuator (part 4.2) and tighten the screws (part 4.1) to 6 Nm
8. install the spool control (part 6.1) and tight it to 6 Nm
9. install the spool control cap (part 6.3) and tighten the screws (part 6.2) to 6 Nm

If the spool is not sticking, the installation is complete.

CHANGING THE SPOOL CONTROL (see drawing 1)

1. remove the screws (part 6.2) with a 4 mm hex key and remove the spool control cap (part 6.3)
2. remove the spool control (part 6.1) using a 4 mm hex key
3. install the new spool control (part 6.1) and tight it to 6 Nm
4. install the spool control cap (part 6.3) and tighten the screws (part 6.2) to 6 Nm.

SETTING THE RELIEF VALVE (see drawing 1)

An adjustable relief valve is standard on all BLB directional control valves. The relief pressure is adjusted by releasing the nut (part 1.2) with a 13 mm key (VL20) or a 10 mm key (VL25) and turning the adjusting screw (part 1.1) with a 4 mm hex key (VL20) or 3 mm hex key (VL25). Turning the adjusting screw clockwise will increase the pressure and counter-clockwise will decrease the pressure (a pressure gauge must be installed in the inlet line whenever the relief pressure is adjusted).

HOW TO INSTALL CARRY OVER ADAPTER (POWER BEYOND) - CO (see drawing 1)

Screw the carry over adapter (power beyond) (part 7) into the T2 port with a 22 mm hex wrench and tighten to 32 Nm. Connect the T port to the tank to avoid the system blow up.

HOW TO INSTALL CLOSE CENTER PLUG ADAPTER - CCP (see drawing 1)

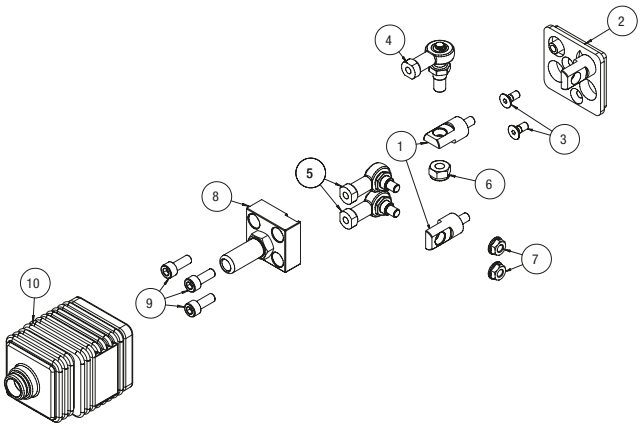
1. screw the CCP plug (part 8) into the T2 port with an 8 mm hex wrench and tighten to 32 Nm
2. in case relief valve VL is present, it has to be substituted with a relief valve plug RVP
3. connect the T port to the tank.

HOW TO INSTALL RELIEF VALVE PLUG (RVP) (see drawing 1)

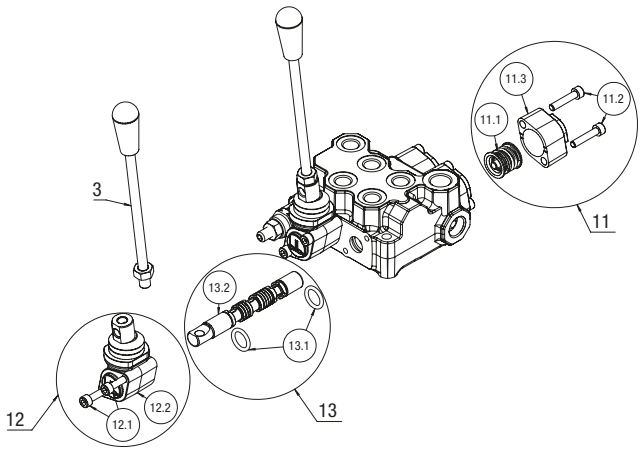
1. remove the relief valve (part 1) with a 20 mm wrench (VL20) or 19 mm wrench (VL25)
2. take out the non-return valve VNR (part 2) and install it on the relief valve plug RVP
3. screw the relief valve plug into the relief valve port with an 8 mm hex key and tighten to 32Nm

During this operation, pay attention to the correct positioning of the non-return valve VNR.

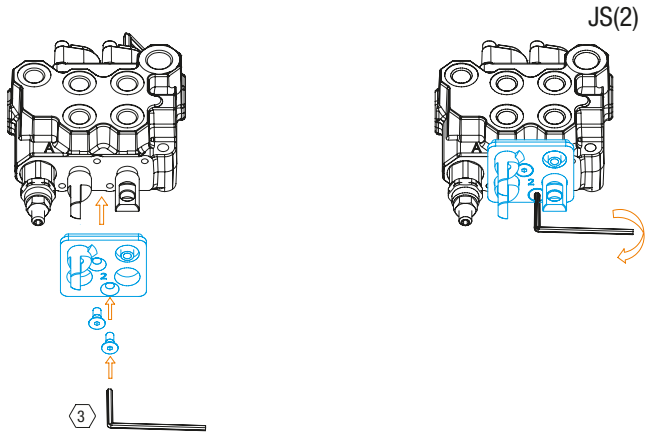
CHANGING MANUAL ACTUATOR INTO JOYSTICK ACTUATOR JS(1) OR JS(2) (see drawings 2, 3 and 4)



Drawing 2

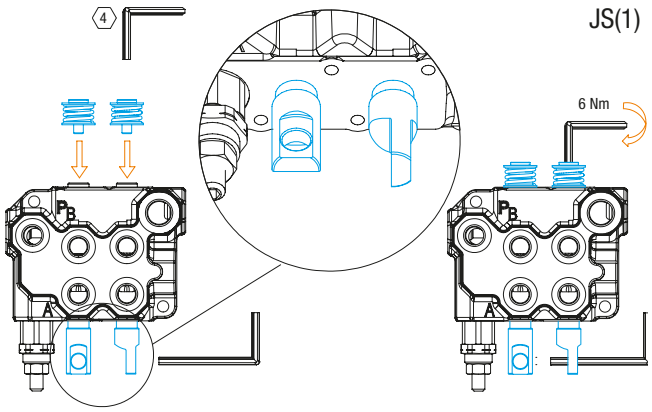


Drawing 3

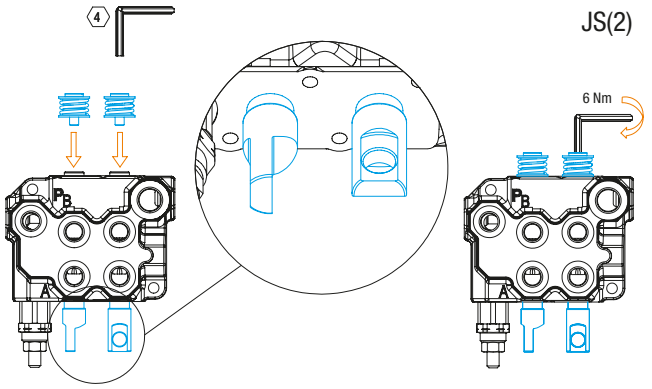


Drawing 4

1. remove the screws (drawing 3, part 11.2) with a 4 mm hex key and remove the spool control cap (drawing 3, part 11.3)
2. remove the spool control (drawing 3, part 11.1) with a 4 mm hex key
3. remove the screws (drawing 3, part 12.1) with a 4 mm hex key and remove the manual actuator
4. remove the spools (drawing 3, part 13.2) from their seats and remove the seals (drawing 3, part 13.1)
5. lightly oil the new spools without appendix (drawing 4, part 14.1) with clean hydraulic fluid; insert the spools into the valve and gently move them back and forward to make sure there is very little resistance
6. starting from the actuator side:
   - slide the spools towards the spool control side until the O-ring seat (actuator side) is exposed then insert the seals
   - gently slide the spools towards the opposite side until the O-ring seat (spool control side) is exposed then insert the seals
   - making sure not to exceed the spools stroke (to avoid seals breaking), gently slide the spools to place them in the correct operating position
7. apply thread locking liquid (Loctite) on the M6 appendix thread (drawing 2, part 1) and screw them into the spools (drawing 4, part 14.1), taking care to remove any excess liquid
8. install the spool controls (drawing 3, part 11.1) and tighten them with a 4 mm wrench to 6 Nm; position the spools appendix as shown in picture 1 for JS(1) and picture 2 for JS(2):



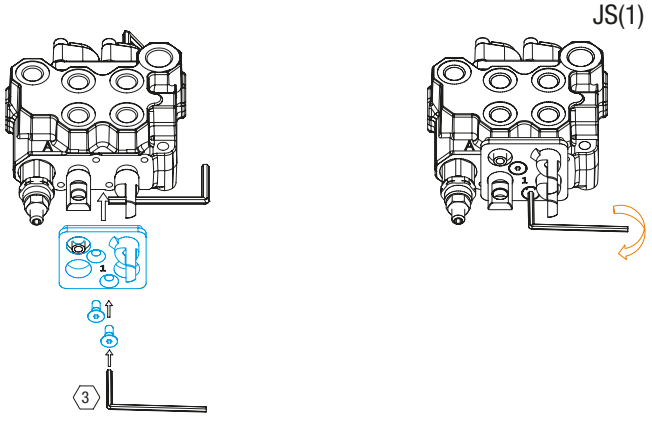
Picture 1



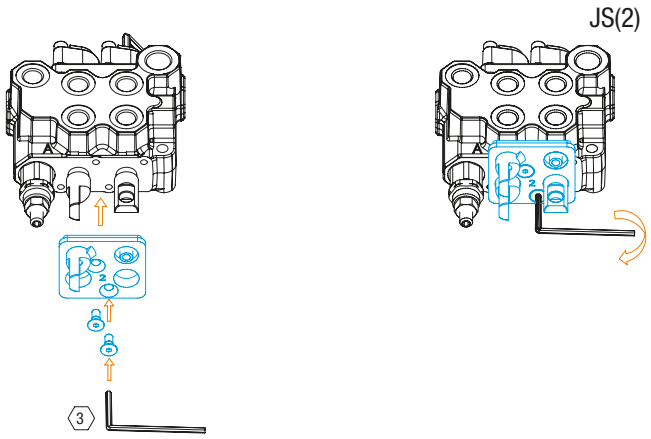
Picture 2

9. reassemble the spool control cap (drawing 4, part 11.3) and tighten the screws (drawing 4, part 11.2) to 6 Nm

10. insert the JS plate (drawing 2, part 2) and fix it to the valve body with the screws (drawing 2, part 3) using a 3 mm hex key as shown in picture 3 for JS(1) and picture 4 for JS(2):

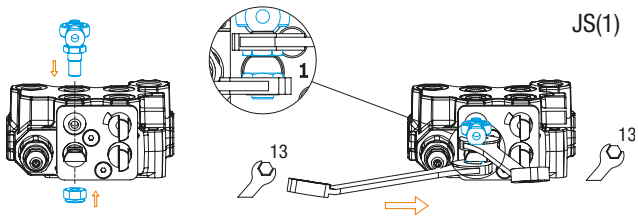


Picture 3

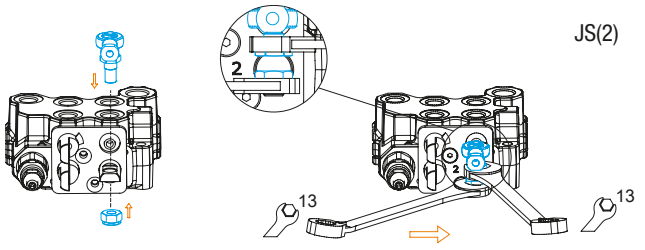


Picture 4

11. insert the ball joint (drawing 2, part 4) in the appendix of the first valve section for JS(1) or of the second valve section for JS(2) and fix it with the self-locking nut (drawing 2, part 6) using two 13 mm wrenches, one to hold the ball joint and the other one to screw the nut as shown in picture 5 for JS(1) and picture 6 (for JS (2):



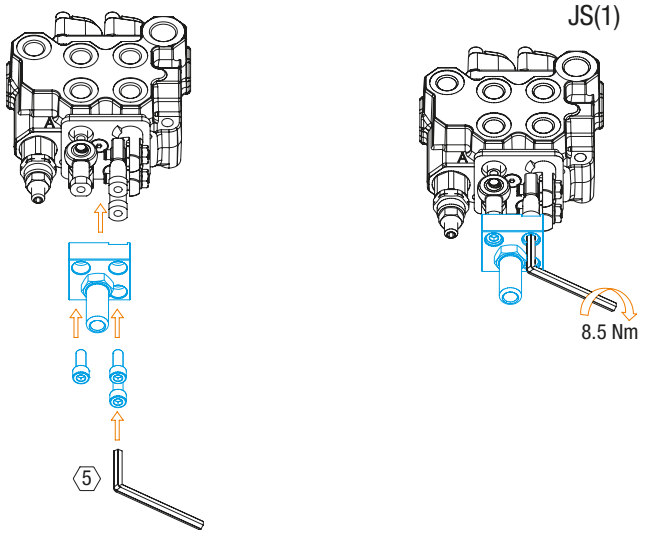
Picture 5



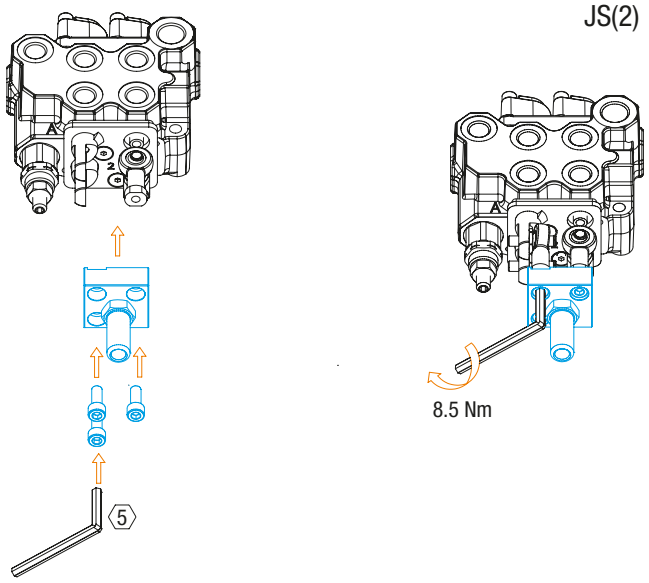
Picture 6

12. insert the ball joints (drawing 2, part 5) in the remaining appendix, fixing them with the self-locking nuts (drawing 2, part 7) using a 13 mm wrench on the ball joints to hold them and a 10 mm wrench to screw the nuts

13. assemble the base for ball joints (drawing 2, part 8) inserting the ball joints in the designated holes; insert the screws (drawing 2, part 9) and tighten them on the ball joints to 8.5 Nm using a 5 mm hex key, as shown in picture 7 for JS(1) and picture 8 for JS(2):



Picture 7

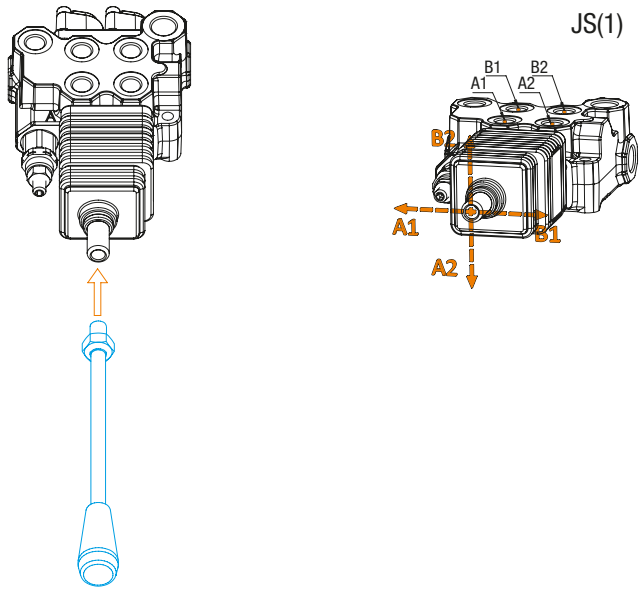


Picture 8

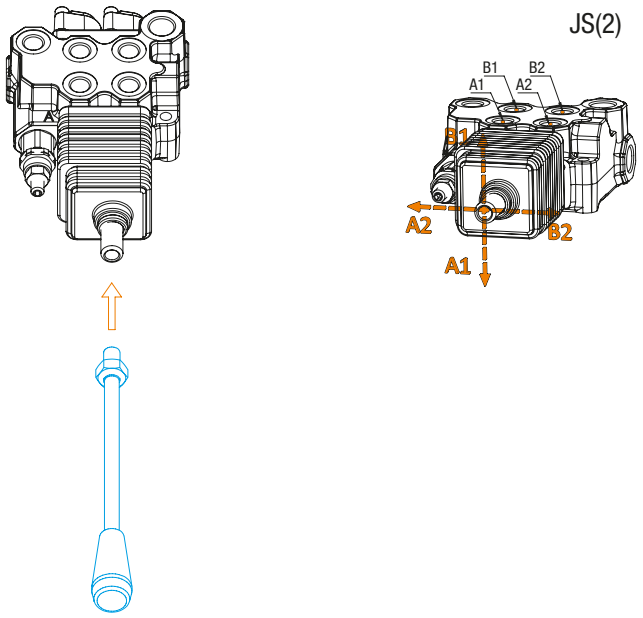
14. cover the entire actuator with the bellow (drawing 2, part 10)

15. assemble the joystick lever (drawing 4, part 15)

16. test the valve and check the joystick functionality as shown in picture 9 for JS(1) and picture 10 for JS(2):



Picture 9



Picture 10

MAINTENANCE

Ordinary and preventive maintenance

- using a pressure gauge, periodically check the functionality of the pressure relief valve VL20 / VL25 and verify its calibration. It is suggested to replace it if no longer reliable
- periodically clean the filters of the system; Excessive oil contamination causes irregular operation of the non-return valve VNR, the pressure relief valve VL20/VL25 and the spools.

DEFECTIVENESS AND DISMANTLING

DEFECTIVENESS

All BM20, BM25, BM35 and **BF201** directional control valves are delivered after passing the final acceptance tests. During the operating time of the directional control valves, it is possible to notice the following defectiveness:

Spool sticking

CAUSE	CORRECTIVE ACTION
Over-tightening of the fixing screws	Loosen the fixing screws and tighten again as indicated in the table on page 61
Support base with severe geometric errors (not flat)	Adopt additional brackets or elastic elements
Excessive working temperature	Check the valves setting and the pressure drop of the system
Excessive working pressure	Check the working pressure and the valves settings. Eliminate water hammer (pressure peaks)
Excessive oil contamination	Replace oil and filters. Wash the system with auxiliary fluxing. Carry out maintenance at shorter intervals
Valve not suitable for the application	Check and in case review the choice of the valve

Oil leakage at the spool

CAUSE	CORRECTIVE ACTION
Seals worn or broken	Replace the seals
Backpressure on tank line	Check for possible tight spots towards tank
Excessive flow for the valve	Loosen fittings and fastening screws
Excessive working temperature	Check the valves setting and the pressure drop of the system
Excessive oil pressure	Check the working pressure and the valves settings. Eliminate water hammer (pressure peaks)
Valve not suitable for the application	Check and in case review the choice of the valve

Excessive internal leakage

CAUSE	CORRECTIVE ACTION
Excessive fluidity of the oil	Improve oil cooling. Check or modify the calibration of the maximum pressure valve
Excessive working pressure	Check the working pressure and the valves settings. Eliminate water hammer (pressure peaks)
Valve seals worn or broken	Replace the seals.
Valve not suitable for the application	Check and in case review the choice of the valve

Spare parts

The spare parts available are shown in this catalogue. Use only original spare parts. To correctly perform any replacements comply with the relevant technical specifications (sheets, assemblies, bill of materials, procedures) provided by BLB.

DISMANTLING

BLB directional control valves no longer usable must be disassembled to split the parts constituting them. Separate the metal parts from those in synthetic material or rubber. Do not dispose part and the residual oil in them contained in the environment.

WARRANTY AND LIABILITY LIMITS

BLB products are exclusively appointed to professional operators and users. Therefore, in warranty topics, it is not applied the discipline of Decree-Law no. 24 of 02-02-2002 in performance of European Directive 1999/44/EC. All products are warranted for a period of **12 (twelve) months** from date of shipment from BLB to be free from defects in materials and workmanship under:

- correct use
- normal operating conditions
- proper application

BLB's obligation under this warranty is limited, at BLB's option, ex-factory, to the repair or exchange, of any BLB product or part, which proves to be defective as provided herein. All transport are ex-works. Any description of goods, including any reference to Buyer's specification and any description in catalogues, circulars and other written material published by BLB is for the sole purpose of identifying the products and does not create an express warranty that the goods conform to the sample or model. Buyer is the sole responsible for determining the suitability of goods sold hereunder for Buyer's use. BLB reserves the right to discontinue, modify or revise the specifications of the products described herein. All details and components may vary depending on the installation. Equipment manufactured by third parties and included in the supply together with the material produced by BLB are subjected to the warranty conditions of the parts producer. BLB is not subjected to warranty obligations on breakdowns, damages, malfunctions, failures, or inefficiency resulting from wrong installation, intentional or unintentional tampering, poor maintenance, negligence or incompetence of the end user. Modifications or repairs carried out by people not specifically authorized in writing by BLB will invalidate the warranty. Late or non-payment, even partial, of the supplies cancels the warranty. Warranty conditions do not confer to the customer the right to suspend or defer the payments which will have to be made in any case under the conditions agreed and specified in the BLB order confirmations. BLB reserves the right to cancel the warranty if:

- labels or tags with the producer mark, product code and serial number have been deleted or removed
- the product has been modified or machined without express authorization given by BLB
- the product has not been used in accordance with the instructions provided or for purposes other than those for which it has been designed.

Warranty is recognized only to BLB's direct customers. Anyone in possession of BLB products, which however have been bought through third parties (distributors, dealers, installers or manufacturers of any kind), will have to contact the direct supplier for any eventual warranty claim.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE SPECIFICALLY DESCRIBED HEREIN.

The Court of Justice of BLB's seat (Vicenza – Italy) is the only competent for any controversy.

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