

D6

SECTIONAL VALVE



 **walvoil**
MOTION BY PEOPLE

TECHNICAL CATALOGUE



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Additional information

*This catalogue shows the product in the most standard configurations.
Please contact Sales Dpt. for more detailed information or special request.*

WARNING!

*All specifications of this catalogue refer to the standard product at this date.
Walvoil, oriented to a continuous improvement, reserves the right to
discontinue, modify or revise the specifications, without notice.*

**WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN
INCORRECT USE OF THE PRODUCT.**



Applications

The valve is available with manual, hydraulic remote, pneumatic, electrohydraulic and electropneumatic controls. Numerous configurations and solutions are possible. Working sections have auxiliary valves and a broad range of interchangeable spools. Special versions for LS variable pumps can be realised on request. Suitable for applications including Backhoe loaders, Wheel loaders, Backhoes, Compactor, Hook and Skip loaders, Drilling machines.

D6 has available:

Special inlet section for parallel valves connection (suitable for forest applications).





QUICK REFERENCE GUIDE

GENERAL SPECIFICATION	D9	D3M	DVS10	D4	D6	D16	D12	DVS20	D20	D25	D40
Working sections number	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-12	1-10
CIRCUIT											
Parallel	•	•	•	•	•	•	•	•	•	•	•
Series	•	•	•	•	•	•	•		•	•	
Tandem	•	•	•	•	•	•		•	•		
Parallel circuit stroke (mm)	6	5	6	6	7	7	9,5	9,5	9,5	12	15
Series circuit stroke (mm)	6	5	6	6	5	7	6,5		6,5	8,5	
Float spool extra stroke (mm)	5	5	5	5,5	6	7	7	7	7	9,5	10
Spools pitch (mm)	31	38	35	40	46	46	56	56	64	75	91
RATED FLOW											
Max recommended flow rate (l/min)	35	55	45	80	100	150	180	250	250	380	700
Max recommended flow rate (GPM)	10	15	12	22	27	40	48	67	67	100	185
RATED PRESSURE											
Max working pressure (bar)*	315	350	350	350	315	350	350	250	350	350	350
Max working pressure (PSI)*	4500	5000	5000	5000	4500	5000	5000	4000	5000	5000	5000

NOTE (*): Intermittent pressure at max. 1 million cycles with specific internal testing.

OPTION CHART	D9	D3M	DVS10	D4	D6	D16	D12	DVS20	D20	D25	D40
Direct acting pressure relief valve	•	•	•	•							
Pilot operated pressure relief valve		•		•	•	•	•	•	•	•	•
2 stage pilot operated relief valve		•		•	•	•			•	•	•
Externally piloted valve	•	•	•	•	•	•			•	•	•
Solenoid dump valve (12 Vdc)	•	•	•	•	•	•					
Solenoid dump valve (24 Vdc)	•	•	•	•	•	•					
Main anticavitation check valve		•		•	•	•	•	•	•	•	•
Clamping valve		•	•	•							
SPOOL ACTUATION											
Manual control	•	•	•	•	•	•	•	•	•	•	•
Without lever	•	•	•	•	•	•	•	•	•	•	•
90° joystick control		•	•	•	•	•					
Hydraulic control	•	•	•	•	•	•	•	•	•	•	•
Direct electric control (12-24 Vdc)		•		•							
SPOOL RETURN ACTION											
Spring return	•	•	•	•	•	•	•	•	•	•	•
Detent in A - in B - in A/B	•	•	•	•	•	•	•	•	•	•	•
Detent in 4 th position	•	•	•	•	•	•	•	•	•	•	•
Arrangement for dual control	•	•		•	•	•	•		•		
Hydraulic load limit	•	•		•	•	•					
Pneumatic control ON - OFF		•	•	•	•	•	•	•	•		
Proportional pneumatic control		•	•	•	•	•	•	•	•		
Electrical load limit	•	•		•	•	•					
Electrohydraulic control ON-OFF (12-24 Vdc)		•	•	•	•	•	•	•	•		
Electrohydraulic control PROP. (12-24 Vdc)		•	•	•	•	•	•	•	•		
Electropneumatic control (12-24 Vdc)		•	•	•	•	•	•		•		
AUXILIARY VALVES											
Antishock valve	•	•	•	•	•	•	•	•	•	•	•
Anticavitation valve	•	•	•	•	•	•	•	•	•	•	•
Combined valve	•	•	•		•	•	•		•	•	•
Pilot combined valve						•		•	•	•	•



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GENERAL SPECIFICATIONS

Standard working conditions

Description	Value
Ambient operating temperature range	-40°C / +60°C
Kinematic viscosity range	10 ÷ 300 cSt
Max contamination level	9 (NAS 1638) - 20/18/15 (ISO 4406:1999)
Recommended filtration level	b10 > 75 (ISO 16889:2008)
Internal filter (on electroproportional valves pilot line)	30 µm

All information and diagrams in this catalogue refer to a mineral base oil VG46 at 50°C temperature (32 cSt kinematic viscosity)

Fluid options

Types of fluid (according to ISO 6743/4) Oil and Solutions	Temperature (°C)		Compatible gasket
	min	max	
Mineral Oil HL, HM (or HLP acc. to DIN 51524)	-25	+80	NBR
Oil in water emulsions HFA	+5	+55	NBR
Water in oil emulsions HFB	+5	+55	NBR
Polyglycol-based aqueous solution HFC	-10	+60	NBR

For special applications and different fluids, please call our Technical Department.



ORDER EXAMPLE

D6/1: **IR 009 150 A G05 W001A H001 F001A RP G05 01 PA 100 05 PB TJ A G05**

TYPE:

D6: product type
/1: working section number

1) INLET ARRANGEMENT: (page 10)

IR 009 inlet side and valve type
150 setting (bar)
A G05 inlet position and available thread type

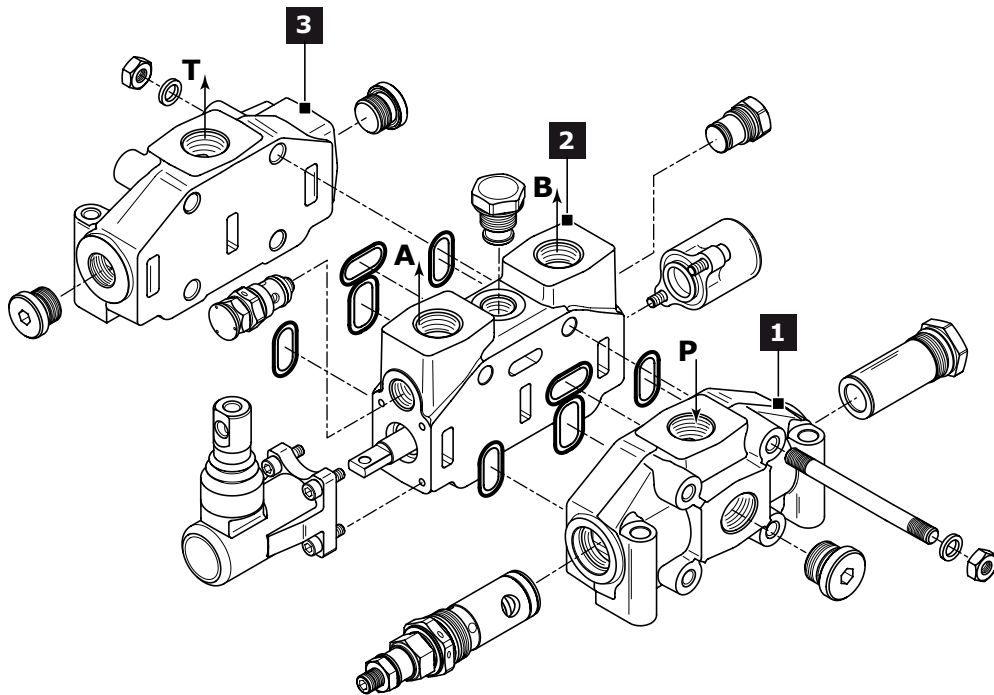
2) WORK SECTION ARRANGEMENT: (page 13)

W001A spool type
H001 spool actuation type
F001A spool return action type
RP G05 type and thread section
01 PA 100 auxiliary valve (port A)
05 PB auxiliary valve (port B)

3) OUTLET ARRANGEMENT: (page 35)

TJ outlet type
A G05 outlet position and available thread type

Ordering row 2 must be repeated for every work section



Standard thread

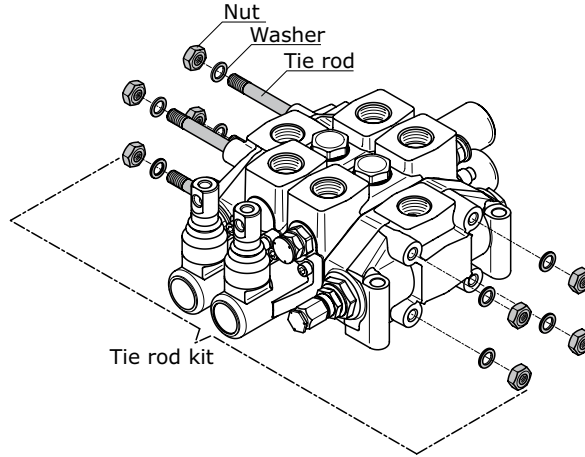
The connection ports size is indicated by an ordering code common for all Walvoil products. Following table shows all available connections; for ordering code refer to table on page 44.

Ports	BSP (ISO - 228)	Code	UN-UNF (ISO - 725)	Code
Inlet Port (P)	G 1/2 - G 3/4	G04 - G05	7/8" - 14UNF	U04
Ports (A - B)	G 1/2 - G 3/4	G04 - G05	7/8" - 14UNF	U04
Outlet (T) - Carry over (HPCO)	G 3/4 - G 1	G05 - G06	1 1/16" - 12 UNF	U05
Hydraulic Pilot	G 1/4	G02	9/16" - 18 UNF	U02
Pneumatic Pilot	G 1/8	-	NPTF 1/8-27	



Tie-rod kit classification (appendix "A")

Tie rod kit allows the correct assembly of sectional valves. Tie rod's length depends on the number of sections; each valve is assembled with tie rod kits including a tie rod, two nuts and two washers. D6 requires 4 tie-rod kits.



Tie rod kit	Order Code	Lenght (mm)	Clamping Torque (Nm)	Quantity
D6/1	300105001	180		
D6/2	300105002	226		
D6/3	300105003	272		
D6/4	300105004	318		
D6/5	300105005	364		
D6/6	300105006	410		
D6/7	300105007	456	50	4
D6/8	300105008	502		
D6/9	300105009	548		
D6/10	300105010	594		
D6/11	300105011	640		
D6/12	300105012	686		

Painting

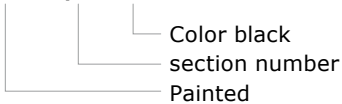
On request, all Walvoil valves can be delivered painted (RAL 9005 black primer).

Order example of D6/1 painted:

D6/1
 IR 009 150 A G05
 W001A H001 F001A RP G05 01 PA 100 05 PB
 TJ A G05
P006/1 N10

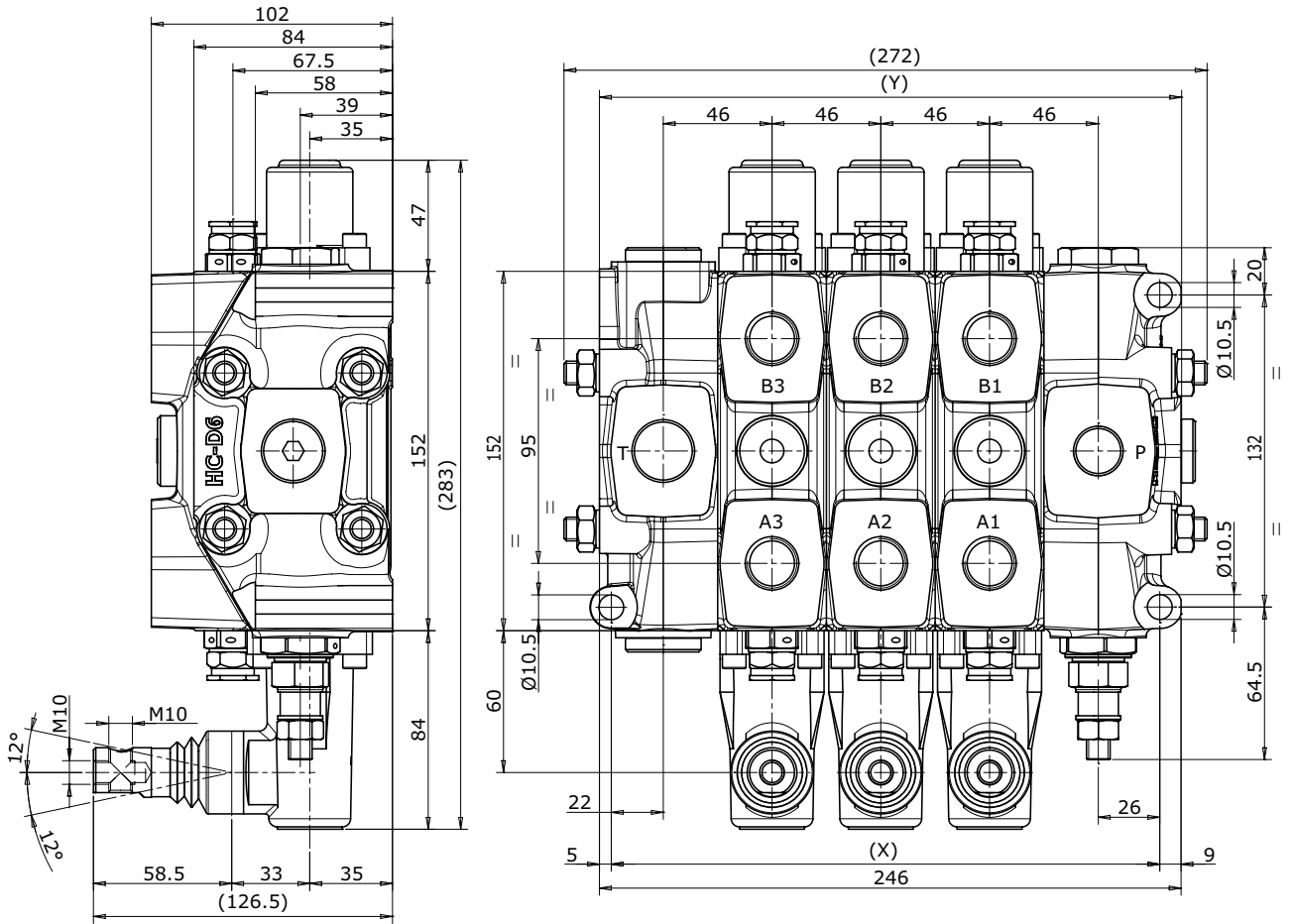
The painting is indicated with the following value:

P006 - /1 - N10





DIMENSIONS



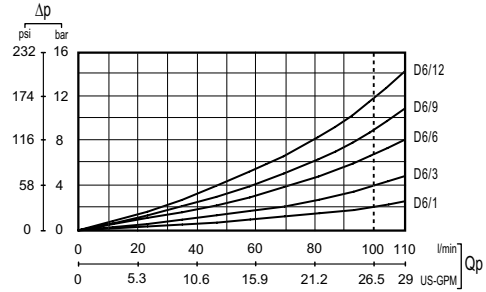
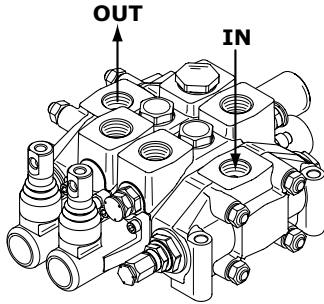
TYPE	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10	/11	/12
X (mm)	140	186	232	278	324	370	416	462	508	554	600	646
Y (mm)	156	202	248	294	340	386	432	478	524	570	616	662
Weights (kg)	11,6	16,1	20,5	25	29,4	33,9	38,3	42,8	47,2	51,7	56,1	60,6



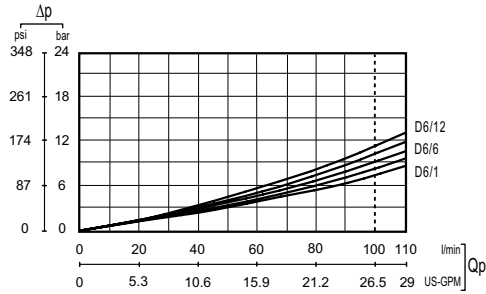
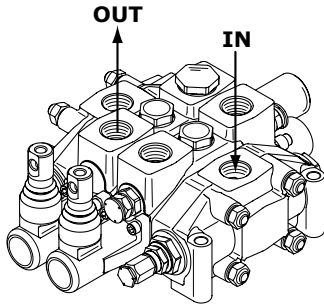
TYPICAL CURVES

Indicated values have been tested with standard sectional valve and W001A spool.

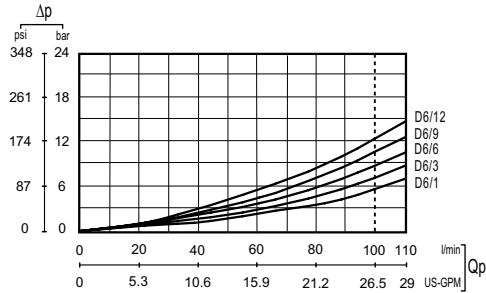
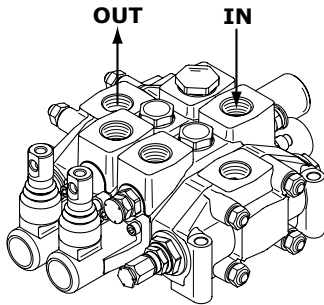
Pressure drop (P - T)



Pressure drop (P - A/B)

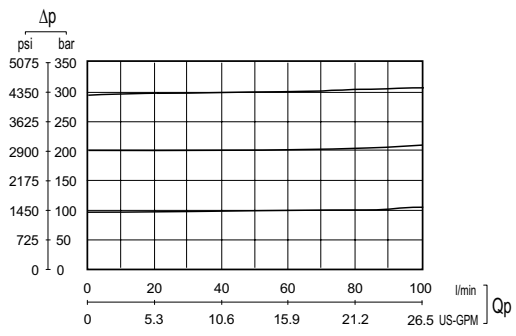


Pressure drop (A/B - T)



Pilot operated relief valve curve

Setting ranges	
type	pressure (bar)
A	0 - 40
B	41 - 180
C	181 - 250
D	251 - 350



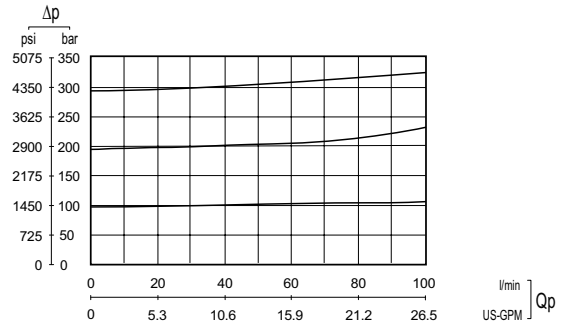


TYPICAL CURVES

Indicated values have been tested with standard sectional valve and W001A spool.

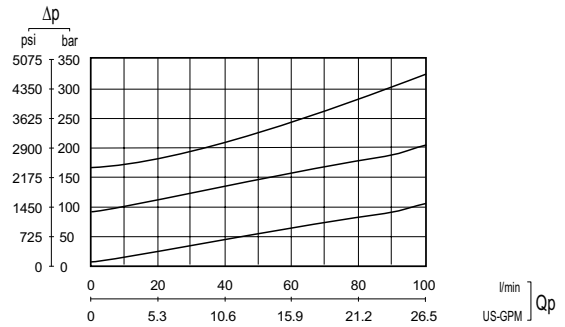
Antishock valve curve

Setting ranges		
type	pressure (bar)	
	at full flow	at min. flow
A	30 - 110	20-A / 70-A
B	111 - 180	71-A / 150-A
C	181 - 290	151-A / 270-A
D	291 - 350	271-A / 350-A

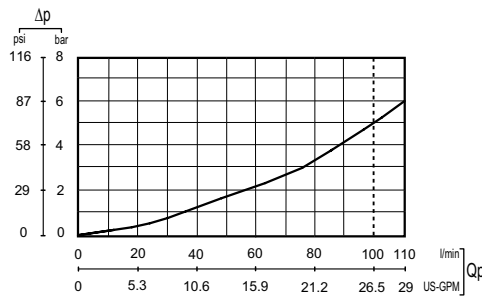


Combined valve curve

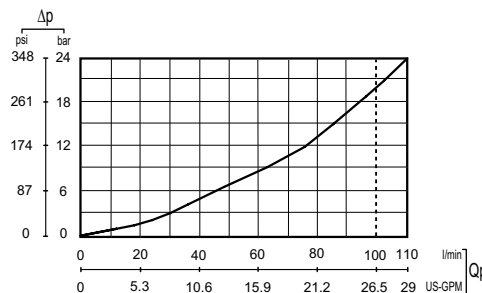
Setting ranges		
type	pressure (bar)	
	at full flow	at min. flow
A	100 - 200	20-A / 80-A
B	201 - 280	81-A / 250-A
C	281 - 350	251-A / 350-A



Main anticavitation check valve curve



Anticavitation check valve curve



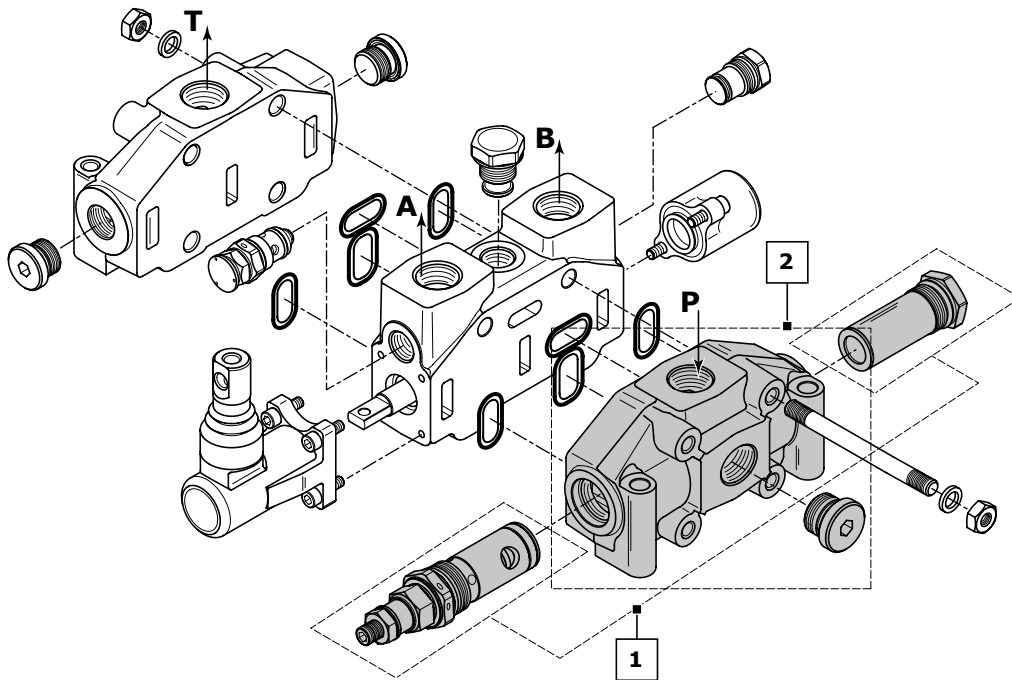


INLET SECTION

Order example

IR	009	150	A G05
----	-----	-----	-------

1. **IR** inlet side classification _____
- 009** valve arrangement _____
- 150** setting (bar) _____
2. **A G05** inlet position and available thread type _____

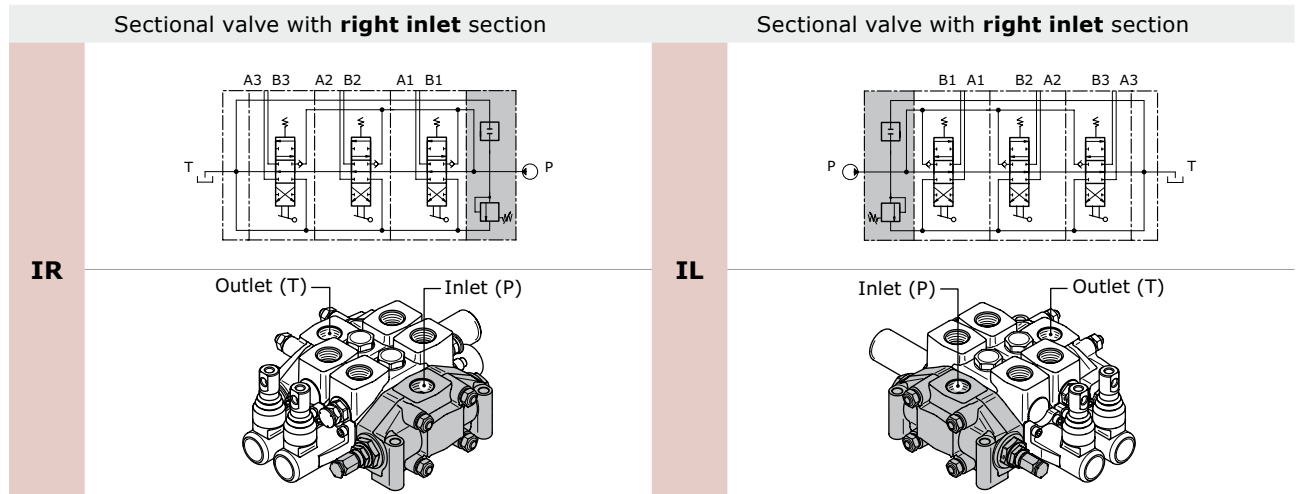


Rif.	Code	Description	Page
-	IR	Sectional valve with right inlet section	11
	IL	Sectional valve with left inlet section	
1	009	Pilot operated pressure relief valve	12
	010	Pilot operated pressure relief valve and Main anticavitation check valve	
	012	Pilot operated pressure relief valve and Solenoid dump valve 12 Vdc	
	013	Pilot operated pressure relief valve and Solenoid dump valve 24 Vdc	
	019	Without valves	
	020	Main anticavitation check valve	
2	A G05	Upper inlet (thread G 3/4)	
	C G05	Central side inlet (thread G 3/4)	
	A U04	Upper inlet (thread 7/8" - 14 UNF)	
	C U04	Central side inlet (thread 7/8" - 14 UNF)	

NOTE: when ordering a relief valve it is necessary to specify factory setting (example 150).



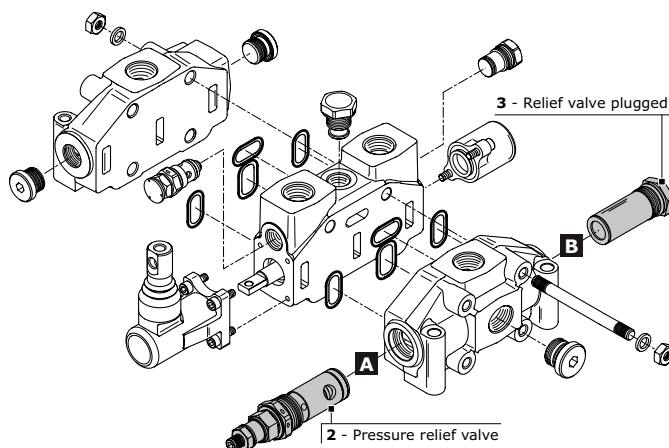
Inlet side classifications



Valve identification

type	schema	layout	description	type	schema	layout	description
2			Pilot operated pressure relief valve	6			Externally piloted valve
3			Relief valve plugged	7			Solenoid dump valve 12 Vdc
4			Main anticavitation check valve	8			Solenoid dump valve 24 Vdc
5			2 stage pilot operated relief valve	11			Plug with pressure-gauge connection

Valve arrangement



Combination valve example: 009 = 2A - 3B

















- 009** Combination valve
- 2A** Pressure relief valve in port A
- 3B** Relief valve plugged in port B

The code identifies:
with a number, the type of valve; with a letter its position on the inlet section.

- (A) = spool action side
- (B) = spool return action side

NOTE: when ordering a main relief valve it is necessary to specify setting



VALVE COMBINATION INLET SECTION		Valve type on port B								
										
		2	3	4	5	6	7	8	11	
Valve type on port A		2		009	010		011	012	013	016
		3	018	019	020	021	022	023	024	027
		4	029	030		031	032	033	034	037
		5		038						
		6	047	048						
		7	054	055						
		8	061	062						
		11	085							

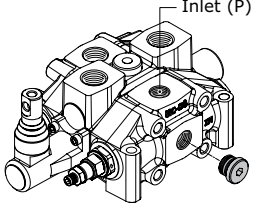
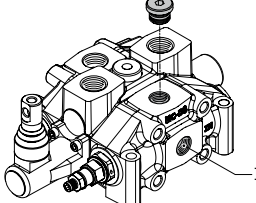
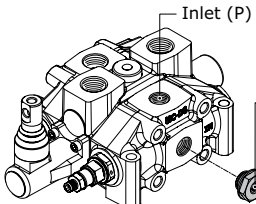
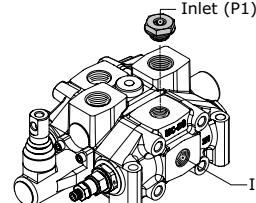
NOTE: Valve combinations 021, and 038 requires double setting (see example).

Order example for inlet section: IR **038 200*280** A G05

038
200*380

valve combination _____
double range setting (bar) _____

Inlet position and available thread type

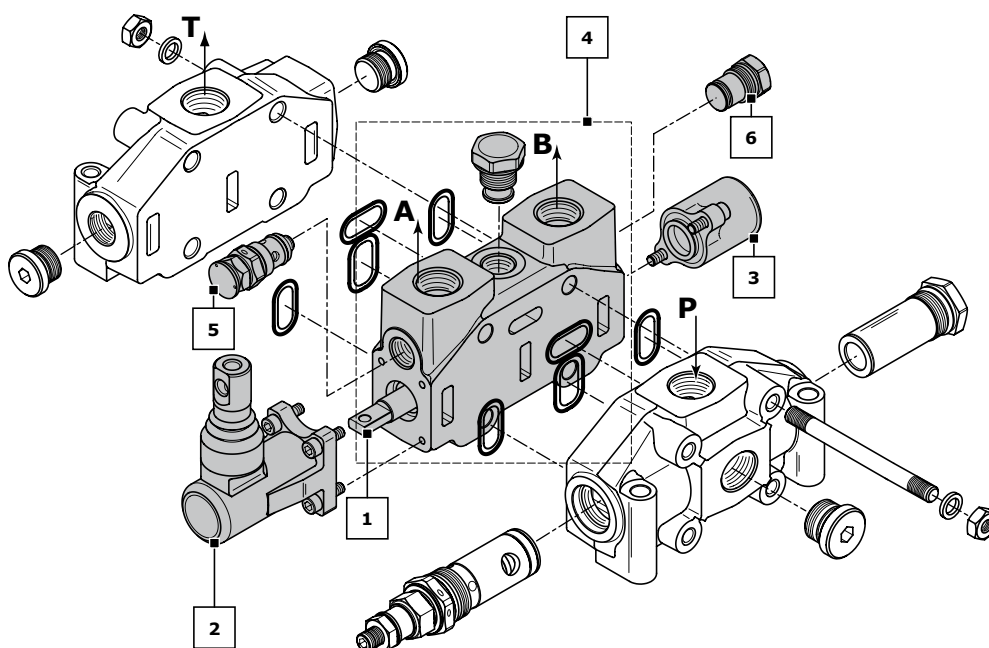
Inlet combination and thread available	
A G04	 <p>Inlet (P)</p> <p>Upper inlet (P)</p>
A G05	
A U04	
C G04	 <p>Inlet (P)</p> <p>Central side inlet (P)</p>
C G05	
C U04	
B G04	 <p>Inlet (P)</p> <p>Inlet (P1)</p> <p>Upper inlet (P) (P1) with pressure-gauge connection G 1/4</p>
B G05	
B U04	
D G04	 <p>Inlet (P1)</p> <p>Inlet (P)</p> <p>Central side inlet (P) (P1) with pressure-gauge connection G 1/4</p>
D G05	
D U04	



WORKING SECTION

Order example:

	W001A	H001	F001A	RP G05	01 PA 100	05 PB
1. W001A	spool type					
2. H001	spool actuation type					
3. F001A	spool return action type					
4. RP G05	section and thread type					
5. 01 PA 100	auxiliary valve (port A - handle side)					
6. 05 PB	auxiliary valve (port B - cap side)					



Rif.	Code	Description	Page
1	W001	3 positions double-acting	14
	W002	3 positions double-acting A-B to tank	
2	H001	Protected lever	16
	H005	hydraulic actuation	
3	F001A	3 positions spring-centred spool (spring A)	18
	F002A	3 positions spring-centred spool detent in A and B (spring A)	
4	RP G05	Parallel circuit (G 3/4)	26
	RP U04	Parallel circuit (7/8"-14 UNF)	
	RS G05	Series circuit (G 3/4)	
	RS U04	Series circuit (7/8"-14 UNF)	
5	01 PA 100	Antishock valve (port A)	27
	05 PA	Prearrangement for auxiliary valve (port A)	
6	01 PB 100	Antishock valve (port B)	27
	05 PB	Prearrangement for auxiliary valve (port B)	

NOTE: (*) Leave out the spool return action code when choosing H005.
 Sections designed to house auxiliary valve option require double choice on work ports A and B.
 Always indicate setting value when using antishock and combined valve: **01 PA (100) - 03 PA (100)**



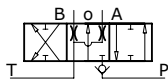
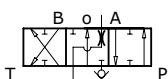
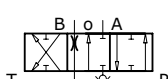
Spool identification

order example of spool: **W001 A J10**

W001	spool schema	3 positions double-acting	_____
A	spool type	standard spool	_____
J10	restricted service ports	restriction on diameter (0,10 mm in A and B)	_____

W001	3 positions double-acting	
W002	3 positions double-acting A and B to tank	
W003	3 positions double-acting A to tank B blocked	
W004	3 positions double-acting A blocked B to tank	
W005	3 positions single - acting on A	
W006	3 positions single - acting on B	
W009	3 positions double-acting with anticavitation valves	
W010	3 positions double-acting switch port closed (A - B blocked)	
W011	3 positions double-acting switch port closed (A - B to tank)	
W012	4 positions double-acting with float in the 4th position	
W013	3 positions double-acting regenerative	
W015	3 positions double-acting series	
W016	3 positions double-acting series A and B to tank	



spools with restricted service ports				
code	circuit	restriction on diameter (mm)	section (mm ²)	hydraulic schema
J10	A-B IN T	0,10	2,98	
K10	A IN T	0,10	2,98	
Y10	B IN T	0,10	2,98	

CODE	spool type available	
	STANDARD	METERED
	A	B
W001	W001A	W001B
W002	W002A	W002B
W003	W003A	W003B
W004	W004A	W004B
W005	W005A	W005B
W006	W006A	W006B
W009	W009A	W009B
W010	W010A	
W011	W011A	
W012	W012A	
W013	W013A	
W015	W015A	
W016	W016A	

NOTE:

- W012, W013, spools need a special machining on the valve body.
- W015, W016, spools need RS type body.
- Float spool (W012) need special detent kit (F005).
- Regenerative spool (W013) need special return spring kits.
- Different spools are available on request.

Plaese contact our Sales department for more information.



Spool actuation classification for manual control

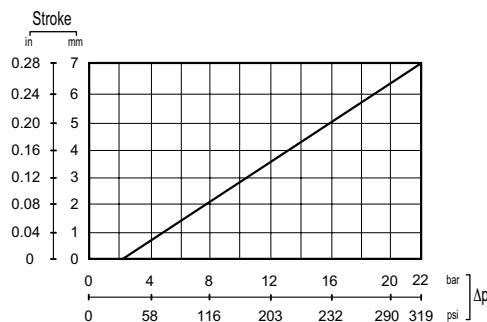
code	description	dimensions	configuration
H001	Protected lever		
H002	Protected lever rotated 180°		
H004	Control without lever		
H101	Unprotected lever		
H102	Unprotected lever rotated 180°		

Spool actuation classification for Hydraulic control

code	description	dimensions	configuration
H005	Hydraulic actuation with side ports leave out the spool return action code BSP ports = G 1/4 UNF ports = 9/16-18 UNF		

Hydraulic pilot control curve

The diagram shows the spool stroke as a function of the pressure operating.





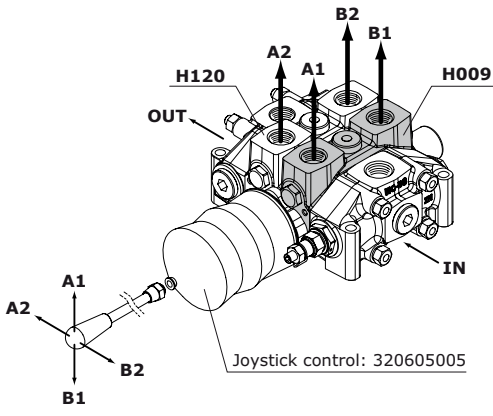
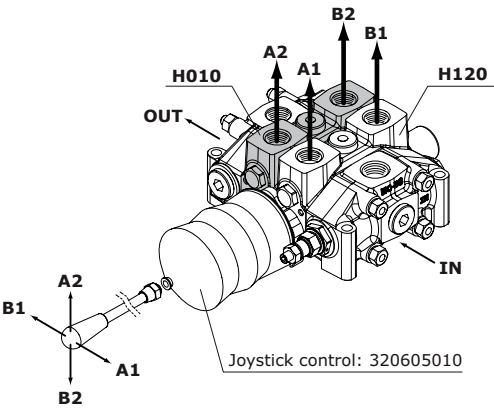
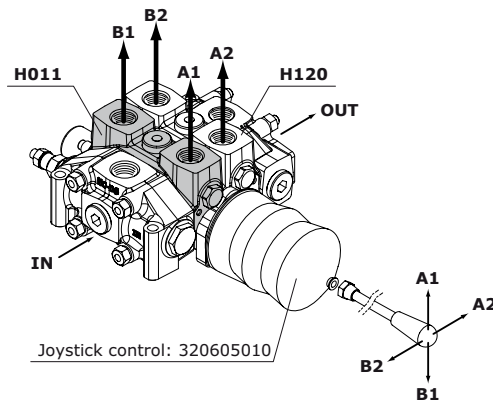
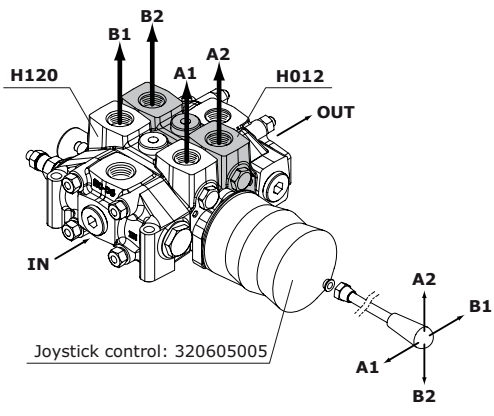
Joystick control classification

The configuration of joystick control interests always two working sections with relative four ports: **A1 – B1 – A2 – B2.**

For convention:

- section 1 is the first invested from the flow of the oil: it depends from the right or left inlet of the control valve
- Port A = spool action side
- Port B = spool return action side

The position of the fulcrum is identified by a code and stands in four configurations as shown in the following table:

Fulcrum Inlet side	FULCRUM 1st section	FULCRUM 2nd section
RIGHT INLET	H009	H010
	Right side inlet fulcrum on 1 st section (compulsory code for second section: H120)	Right side inlet fulcrum on 2 nd section (compulsory code for first section: H120)
RIGHT INLET		
	H011	H012
LEFT INLET	Left side inlet fulcrum on 1 st section (compulsory code for second section: H120)	Left side inlet fulcrum on 2 nd section (compulsory code for first section: H120)
		

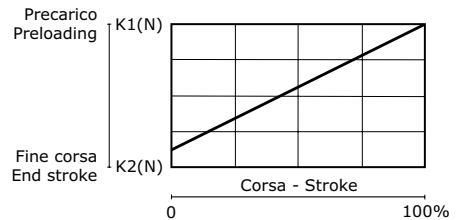
The second section concerned the configuration of the joystick control is always identified with code H120. Lever has to be ordered separately.



Spool return action classification - Springs load values

Spool return kits have three different spring types; following the codes depending on spring loads.

Spring type			
Code	A (standard spring)	B (soft spring)	C (heavy spring)
Preloading	137.3 N	109.8 N	168.7 N
End of stroke	176.6 N	141.2 N	259 N
Spool return action identification example			
Code	F001A	F001B	F001C



Spool return action classification

code	description	schema	dimensions	configuration
F001A F001B F001C	3 positions spring-centred spool			
F002A	3 positions spring-centred spool detent in A and B			
F003A	3 positions spring-centred spool detent in A			
F004A	3 positions spring-centred spool detent in B			
F005A	4 positions spring-centred spool detent in 4 th position (only for W012 spool)			



code	description	schema	dimensions	configuration
F009A F009B F009C	2 positions in A spring-centred spool			
F010A F010B F010C	2 positions in B spring-centred spool			
F011A F011B F011C	2 positions detent in A spring-centred spool			
F012A F012B F012C	2 positions detent in B spring-centred spool			
F013A F013B F013C	3 positions spring-centred spool prearrangement dual command			

Load limit classification

code	description	schema	dimensions	configuration
F024A F024C	Load limit in A and B			
F025A F025C	Load limit in A and B rotated 180°			
F026A F026C	Load limit in A			
F027A F027C	Load limit in A rotated 180°			
F028A F028C	Load limit in B			
F029A F029C	Load limit in B rotated 180°			

NOTE: on request is available the load limit with dual control; for more informations please contact our Commercial Dept.

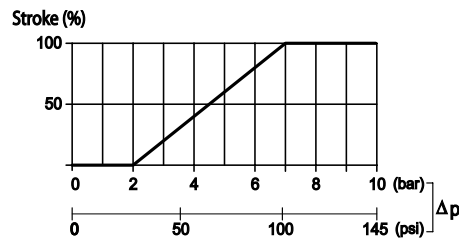


Pneumatic control classification

code	description	schema	dimensions	configuration
F020A	Pneumatic control ON-OFF			
F021A	Pneumatic control ON-OFF rotated 180°			
F022A	Proportional Pneumatic control		Proportional control with port BSP: G 1/8	
F023A	Proportional Pneumatic control rotated 180°			
F135A	Pneumatic control ON-OFF			
F136A	Pneumatic control ON-OFF rotated 180°			
F126A	Proportional Pneumatic control		Proportional control with port NPTF: 1/8-27	
F127A	Proportional Pneumatic control rotated 180°			

Proportional pneumatic control curve

The diagram shows the spool stroke as a function of the pneumatic pressure operating.



Electropneumatic control classification

code	description	dimensions	configuration
F0620	3 positions electropneumatic control ON-OFF (12 vdc) 7 W - 0,58 A		
F0630	3 positions electropneumatic control ON-OFF (24 vdc) 7 W - 0,29 A		



Control tie rod assembly for electropneumatic control

The length of the control tie rod, will change depending on the section numbers; in this way it will be easy to install in the right way the sections and avoid any misassembly. Each kit is composed by 1 tie rod and 2 plugs.

NOTE: the control tie rod kit has always to be ordered separately.

Order code for control tie rod (BSP):

- 320105013 = control tie rod /1
- 320105014 = control tie rod /2
- 320105015 = control tie rod /3
- 320105016 = control tie rod /4
- 320105017 = control tie rod /5
- 320105018 = control tie rod /6
- 320105019 = control tie rod /7
- 320105020 = control tie rod /8

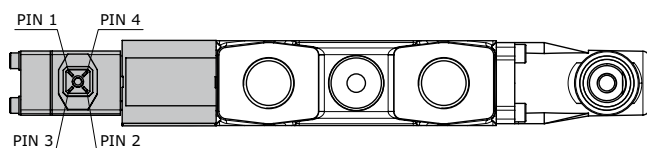
Order code for control tie rod (UNF):

- 320105037 = control tie rod /1
- 320105038 = control tie rod /2
- 320105039 = control tie rod /3
- 320105040 = control tie rod /4
- 320105041 = control tie rod /5
- 320105042 = control tie rod /6
- 320105043 = control tie rod /7
- 320105044 = control tie rod /8

Electrical load limit classification

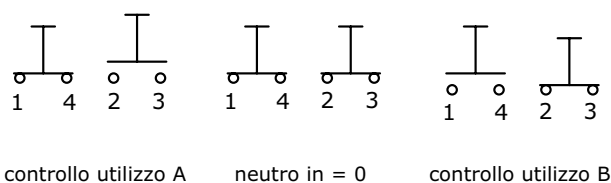
Spool position sensor			
Power supply	Contacts capacity	Protection degree	temperature range
12 vdc	3 A	IP 65	da -25°C a +90°C
24 vdc	1,5 A		

Operational diagram



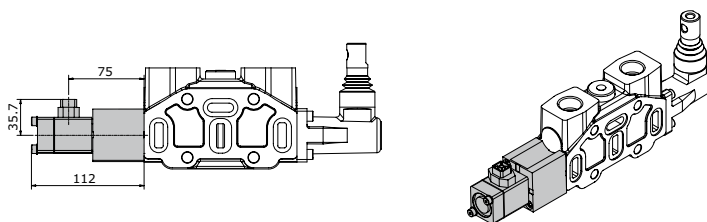
- CONTROL in A e B** = connect PIN 1 - 4 and 2 - 3
- CONTROL in A** = connect PIN 2 - 3
- CONTROL in B** = connect PIN 1 - 4

Wiring diagram



In case of inductive loads it is advisable to connect the terminals of the workport (solenoid) to a 200 VDC - 3A diode.

code	description	dimensions	configuration
F0360	Electrical load limit (normally closed contacts)		
F0370	Electrical load limit rotated 180° (normally closed contacts)		
F0450	Electrical load limit (normally open contacts)		
F0460	Electrical load limit rotated 180° (normally open contacts)		



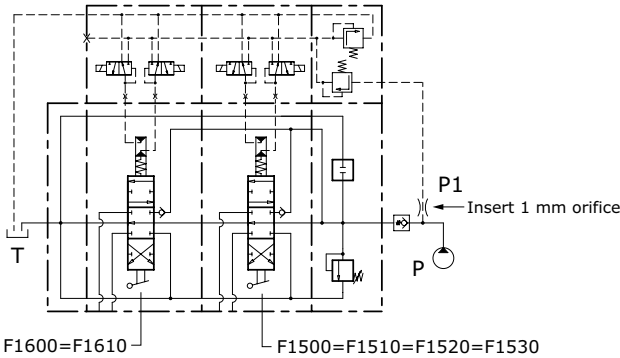
NOTE: a HIRSCHMANN female connector, type G4 W1F, is available on request (code 413000045, to be ordered separately).



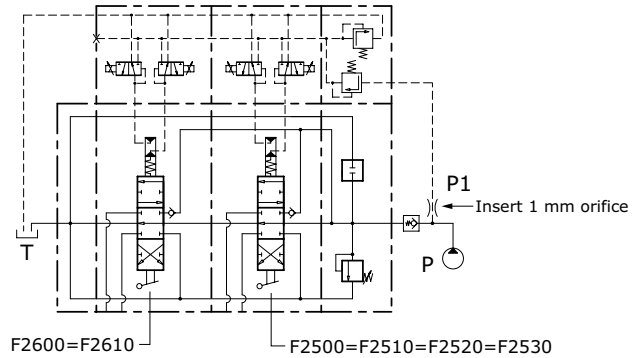
Electrohydraulic control specifications

Operating temperature range	-20°C / +80°C
Max inlet pressure	350 bar
Reduced pressure	16 bar
Back pressure on (T)	3 bar
Filtering degree	25 μ assoluti
Raccomanded pilot pipe size	Ø 6 mm - G 1/4

Electrohydraulic ON-OFF control with fixed pressure reducing valve



Electrohydraulic PROPORTIONAL control with fixed pressure reducing valve



Proportional control kit, mechanically retrooperated, allows the maximum precision of positioning, limiting the hysteresis. The control is operated with PWM control of the current. PWM frequency suggest: 60-80 Hz

regulation currents			
Nominal voltage (V)	Resistance R ₂₀ (Ohm)	Current min (A)	Current max (A)
12 vdc	3,7	0,9	1,7
24 vdc	15,5	0,45	0,85

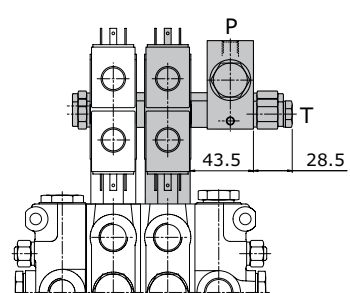
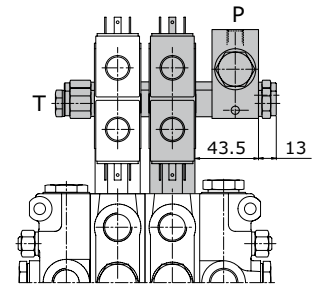
Electrohydraulic control classification

code	description	dimensions	configuration
F1600	3 positions electrohydraulic control ON - OFF 12 Vdc		
F1610	3 positions electrohydraulic control ON - OFF 24 Vdc		
F2600	3 positions electrohydraulic control PROPORTIONAL 12 Vdc		
F2610	3 positions electrohydraulic control PROPORTIONAL 24 Vdc		

Electrohydraulic ON-OFF control is stackable with electrohydraulic PROPORTIONAL control (F2600 = F2610). Control kit already includes orifice to make spool displacement more gradual.



Electrohydraulic control with fixed pressure reducing valve classification

code	description	configuration
F1500	Electrohydraulic control ON - OFF (fixed pressure reducing valve) P - T inlet side (12 vdc)	 <p>Port BSP (P - T) = G 1/4 Port UNF (P - T) = 9/16"18 UNF</p>
F1510	Electrohydraulic control ON - OFF (fixed pressure reducing valve) P - T inlet side (24 vdc)	
F2500	Electrohydraulic control PROPORTIONAL (fixed pressure reducing valve) P - T inlet side (12 vdc)	
F2510	Electrohydraulic control PROPORTIONAL (fixed pressure reducing valve) P - T inlet side (24 vdc)	
F1520	Electrohydraulic control ON - OFF (fixed pressure reducing valve) P inlet - T outlet (12 vdc)	 <p>Port BSP (P - T) = G 1/4 Port UNF (P - T) = 9/16"18 UNF</p>
F1530	Electrohydraulic control ON - OFF (fixed pressure reducing valve) P inlet - T outlet (24 vdc)	
F2520	Electrohydraulic control PROPORTIONAL (fixed pressure reducing valve) P inlet - T outlet (12 vdc)	
F2530	Electrohydraulic control PROPORTIONAL (fixed pressure reducing valve) P inlet - T outlet (24 vdc)	



Control tie rod assembly

The length of the control tie rod, will change depending on the section numbers; in this way it will be easy to install in the right way the sections and avoid any misassembly. Each kit is composed by 2 tie rods, 2 plugs, 2 connection ports and spacers according to the section number.

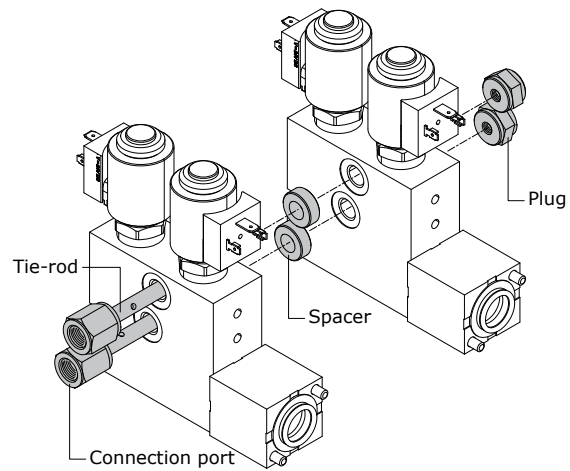
NOTE: the control tie rod kit has always to be ordered separately.

Reducing valve, combined with electrohydraulic control kit has to be calculated as a normal working section.

ORDER EXAMPLE:

Complete valves with 3 sections F1600 requires a complete tie-rod kit /3.

Complete valves with 2 sections F1600 and 1 section with F1500 (reducing valve) requires a complete tie-rod kit /4.



Order code fixed pressure reducing valve:

- 915000303** = reducing valve for BSP ports
- 915000312** = reducing valve for UNF ports

Order code for control tie rod (BSP):

- 320103001** = control tie rod /1
- 320105001** = control tie rod /2
- 320105002** = control tie rod /3
- 320105003** = control tie rod /4
- 320105004** = control tie rod /5
- 320105005** = control tie rod /6
- 320105006** = control tie rod /7
- 320105007** = control tie rod /8
- 320105008** = control tie rod /9

Order code for control tie rod (UNF):

- 320103026** = control tie rod /1
- 320105026** = control tie rod /2
- 320105027** = control tie rod /3
- 320105028** = control tie rod /4
- 320105029** = control tie rod /5
- 320105030** = control tie rod /6
- 320105031** = control tie rod /7
- 320105032** = control tie rod /8
- 320105033** = control tie rod /9

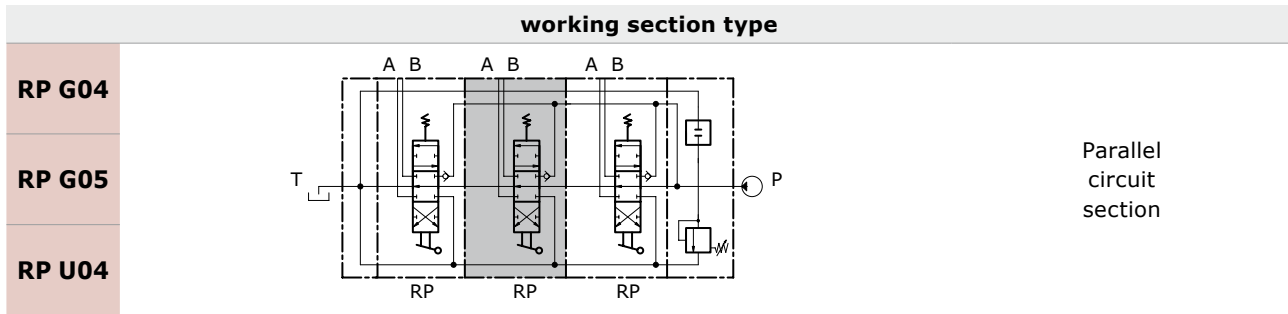


Compatibility table

SPOOL ACTION TYPE	SPOOL TYPE																				
	W001A	W001B	W002A	W002B	W003A	W003B	W004A	W004B	W005A	W005B	W006A	W006B	W009A	W009B	W010A	W011A	W012A	W013A	W015A	W016A	
H001	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
H002	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
H004	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
H005	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
H009	•	•	•	•	•	•	•	•					•	•			•	•	•	•	•
H010	•	•	•	•	•	•	•	•					•	•			•	•	•	•	•
H011	•	•	•	•	•	•	•	•					•	•			•	•	•	•	•
H012	•	•	•	•	•	•	•	•					•	•			•	•	•	•	•
H120	•	•	•	•	•	•	•	•					•	•			•	•	•	•	•
H101	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
H102	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
SPOOL RETURN ACTION TYPE	SPOOL TYPE																				
	W001A	W001B	W002A	W002B	W003A	W003B	W004A	W004B	W005A	W005B	W006A	W006B	W009A	W009B	W010A	W011A	W012A	W013A	W015A	W016A	
F001	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F002	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•
F003	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•
F004	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•
F005																	•				
F009	•	•	•	•	•	•	•	•					•	•	•	•			•	•	•
F010	•	•	•	•	•	•	•	•					•	•	•	•			•	•	•
F011	•	•	•	•	•	•	•	•					•	•	•	•			•	•	•
F012	•	•	•	•	•	•	•	•					•	•	•	•			•	•	•
F013	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F020=F021	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F022=F023	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F135=F136	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F126=F127	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F024=F025	•	•	•	•	•	•	•	•					•	•	•	•			•	•	•
F026=F027	•	•	•	•	•	•	•	•					•	•	•	•			•	•	•
F028=F029	•	•	•	•	•	•	•	•					•	•	•	•			•	•	•
F0360=F0370	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•
F0450=F0460	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•
F0620=F0630	•	•	•	•	•	•	•	•					•	•	•	•		•	•	•	•
F1500=F1510	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F1520=F1530	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F2500=F2510	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F2520=F2530	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F1600=F1610	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
F2600=F2610	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•

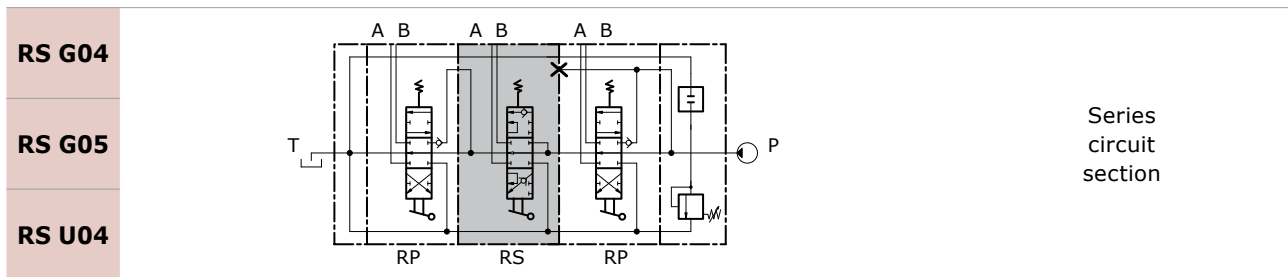


Work section identification



Parallel circuit section

When the spool is operated it intercepts the by-pass gallery by diverting the flow of oil to service port A or B. If two or more spools are actuated at the same time, the oil will power the service port that has the lower load; by throttling the spools, the flow of oil can be divided between two or more service ports.



When the spool is operated it intercepts the switch gallery by diverting the flow of oil to service port A or B. The oil that flows back from the actuator is carried to the switch gallery thus making it available to the service ports downstream from the series section. The pressure drop downstream is added to the pressure drop of the section itself.



Auxiliary valve identification

code	description	schema	sonfiguration	setting range (bar)			
				type	at full flow	type	at min. flow
01 PA	Antishock valve (port A)			A	30 / 110	A	20-A / 70-A
				B	111 / 180	B	71-A / 150-A
				C	181 / 290	C	151-A / 270-A
				D	291 / 350	D	271-A / 350-A
02 PA	Anticavitation valve (port A)						
03 PA	Combined valve (port A)			A	100 / 200	A	20-A / 80-A
				B	201 / 280	B	81-A / 250-A
				C	281 / 350	C	251-A / 350-A
04 PA	Pilot combined valve (port A)			A	50 / 420		
05 PA	Prearrangement for auxiliary valve (port A)						

code	description	schema	sonfiguration	setting range (bar)			
				type	at full flow	type	at min. flow
01 PB	Antishock valve (port B)			A	30 / 110	A	20-A / 70-A
				B	111 / 180	B	71-A / 150-A
				C	181 / 290	C	151-A / 270-A
				D	291 / 350	D	271-A / 350-A
02 PB	Anticavitation valve (port B)						
03 PB	Combined valve (port B)			A	100 / 200	A	20-A / 80-A
				B	201 / 280	B	81-A / 250-A
				C	281 / 350	C	251-A / 350-A
04 PB	Pilot combined valve (port B)			A	50 / 420		
05 PB	Prearrangement for auxiliary valve (port B)						

Auxiliary valve - Setting range

Sections designed to house auxiliary valve option require double choise on work ports A and B. Always indicate setting value when using antishock valve:

01 PA (120) = setting at full flow

01 PA (120-A) = setting at min. flow

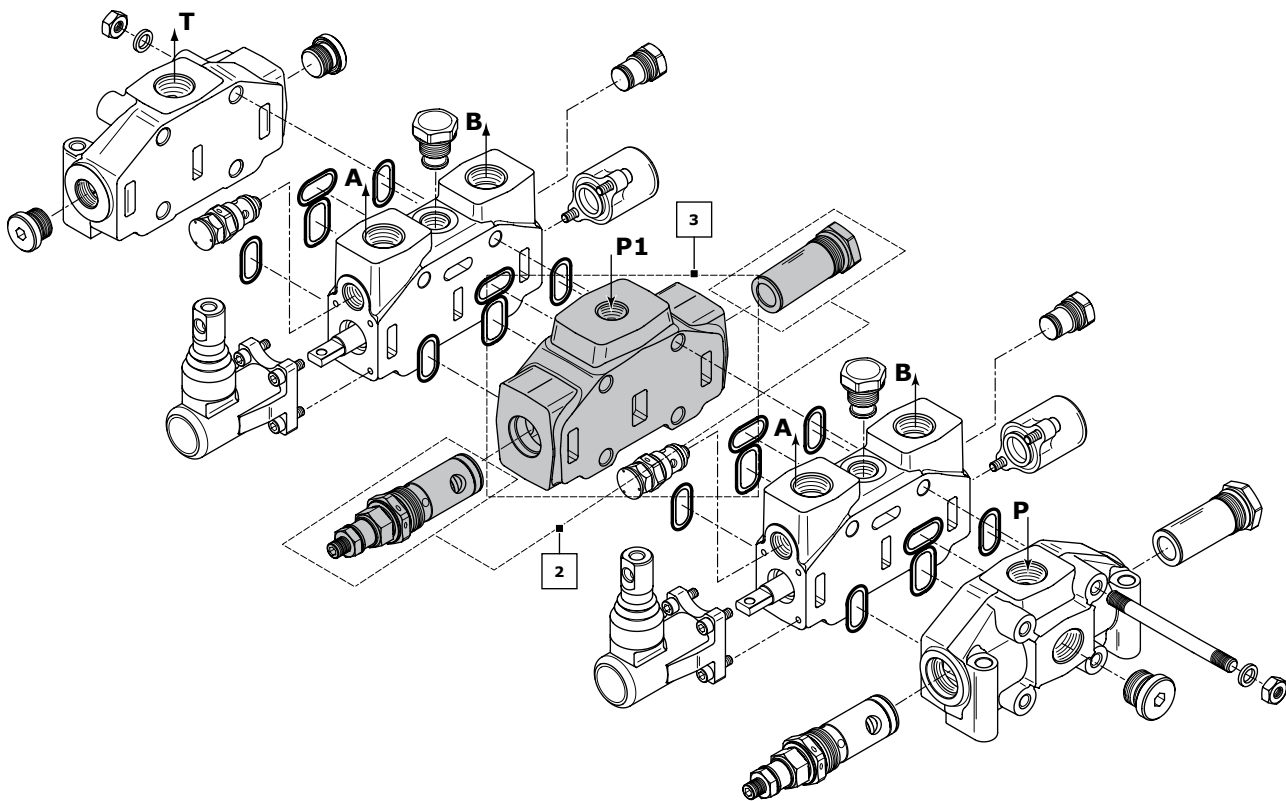


INTERMEDIATE INLET SECTION

Order example

BE	009	150	A G05
----	-----	-----	-------

1. **BE** inlet side
2. **009** valve arrangement
- 150** setting (bar); when ordering a main relief valve it is necessary to specify setting
3. **A G05** inlet position and available thread type



Rif.	Code	Description	Page
-	BE	Intermediate inlet section	29
	BV*	Intermediate inlet section with pressure relief valve	
1	009	Pilot operated pressure relief valve	30
	002	Pilot operated pressure relief valve and Main anticavitation check valve	
	019	Without valves	
	020	Main anticavitation check valve	
2	A G04	Upper inlet (thread G 1/2)	
	A G05	Upper inlet (thread G 3/4)	
	A U04	Upper inlet (thread 7/8" - 14 UNF)	

NOTE: when ordering a relief valve it is necessary to specify factory setting (example 150).

* = omit the code for inlet positioning and thread



Intermediate inlet section classifications

intermediate inlet type

BE			Intermediate inlet section
-----------	--	--	----------------------------

The intermediate inlet section is driven by two pumps (P + P1). The downstream elements can be set to a lower pressure than the upstream ones by adjusting the pressure relief valve of the intermediate section in question.

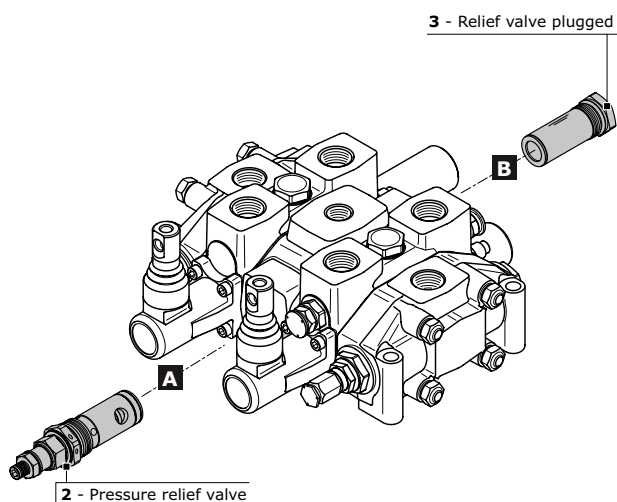
BV			Intermediate inlet section with pressure relief valve
-----------	--	--	---

The intermediate inlet section and the elements are driven by a single pump (P). The downstream elements can be set to a lower pressure than the upstream ones by adjusting the pressure relief valve of the intermediate section in question.

Valve identification on intermediate inlet section

type	schema	layout	description	type	schema	configurazione	descrizione
2			Pilot operated pressure relief valve	4			Externally piloted valve
3			Relief valve plugged	11			Plug with pressure-gauge connection

Valve arrangement on intermediate inlet section











Combination valve example: 009 = 2A - 3B

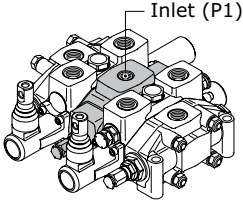
- 009** Combination valve
- 2A** Pressure relief valve in port A
- 3B** Relief valve plugged in port B

The code identifies:
 with a number, the type of valve; with a letter its position on the inlet section.
 (A) = spool action side
 (B) = spool return action side
NOTE: when ordering a main relief valve it is necessary to specify setting



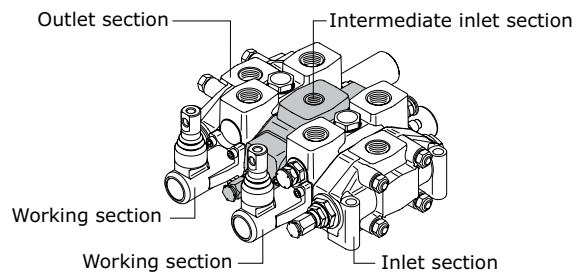
VALVE COMBINATION INLET SECTION		Valve type on port B			
					
		2	3	4	11
Valve type on port A		2	009	010	016
		3	018	019	027
		4	029	030	
		11	085	086	

Inlet position and available thread type

Inlet combination and thread available	
A G04	 <p>Inlet (P1)</p> <p>Upper inlet (P1)</p>
A G05	
A U04	

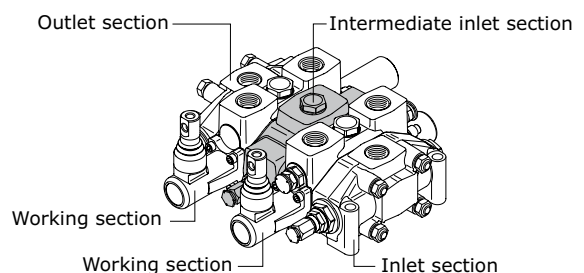
Complete configuration samples for D6/2 with intermediate inlet section (BE)

- IR 009 150 A G05..... Right inlet section
- W001A H001 F001A RP G05 Working section
- BE 009 150 A G05Intermediate inlet section**
- W001A H001 F001A RP G05 Working section
- TJ A G05 Outlet section



Complete configuration samples for D6/2 with intermediate inlet section (BV)

- IR 009 150 A G05..... Right inlet section
- W001A H001 F001A RP G05 Working section
- BV 009 150Intermediate inlet section**
- W001A H001 F001A RP G05 Working section
- TJ A G05 Outlet section



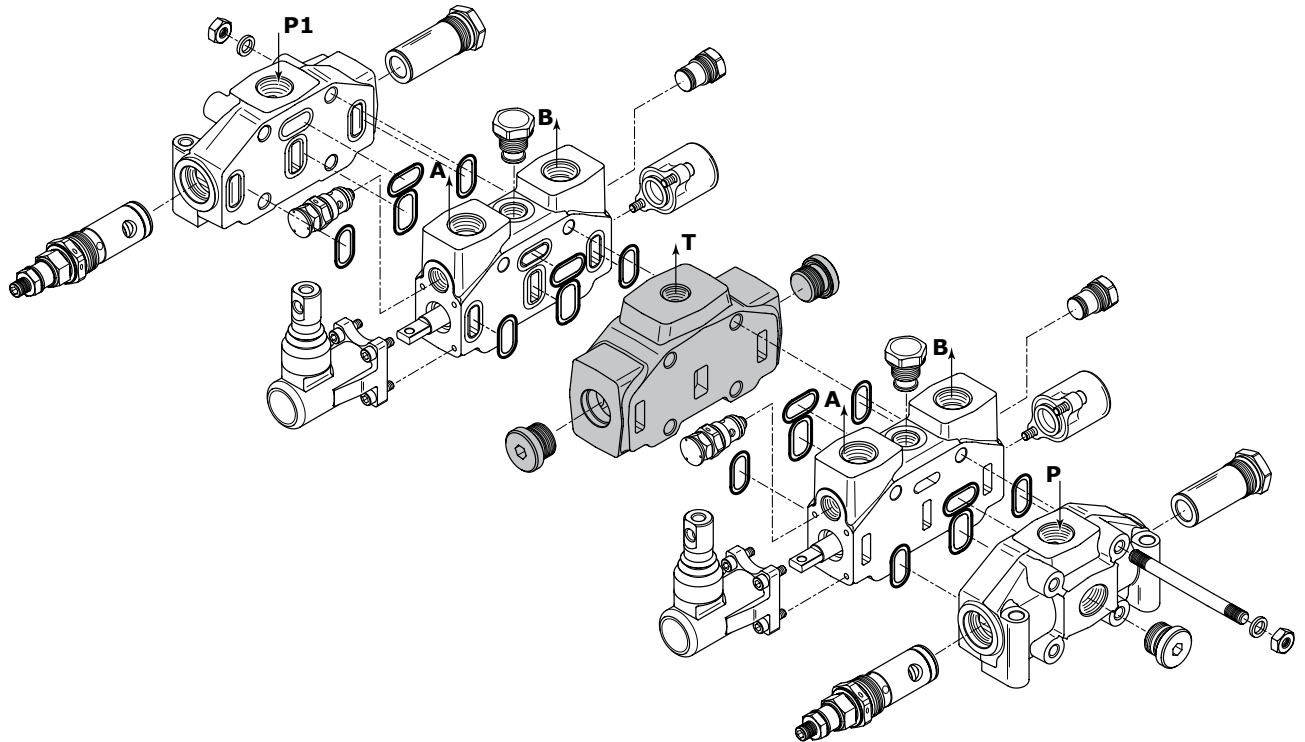


INTERMEDIATE OUTLET SECTION

Order example

BF | **A G05**

1. **BF** inlet side _____
A G05 inlet position and available thread type _____



Rif.	Code	Type	Description	Page
-	BF		Intermediate outlet section with single tank return	
	BG		Intermediate outlet section with two tank returns	
1	A G05		Upper outlet (thread G 3/4)	32
	A U05		Upper outlet (thread 1"1/16-12 UNF)	
	G G05	for	Front outlet side A (thread G 3/4)	
	G U05	BF	Front outlet side A (thread 1"1/16-12 UNF)	
	H G05		Rear outlet side B (thread G 3/4)	
	H U05		Rear outlet side B (thread 1"1/16-12 UNF)	
	J G05	for	Upper outlet HPCO - front side A and rear side B to T (thread G 3/4)	
	J U05	BG	Upper outlet HPCO-front side A and rear side B to T (thread 1"1/16-12 UNF)	



Intermediate outlet section classifications

intermediate outlet type		
BF		<p>Intermediate outlet section with single tank return</p>

The above outlet section allows the flow of oil of the two pumps and the tank ports to be piped to a single outlet T.

BG		<p>Intermediate outlet section with two tank returns</p>
-----------	--	---

The section in question allows the flow of oil of the two pumps to be piped in two outlets: HPCO for powering another directional control valve, T for discharge of the work ports. In order to obtain this, the two T need to be linked.

Outlet combination and thread available			
A G05		available only for BF	Upper outlet (T)
A G06			
A U05			
G G05		available only for BF	Front outlet side A (T)
G G06			
G U05			
H G05		available only for BF	Rear outlet side B (T)
H G06			
H U05			
J G05		available only for BG	Upper outlet HPCO front side A and rear side B to T
J G06			
J U05			



Complete configuration samples for D6/2 with intermediate outlet section (BF)

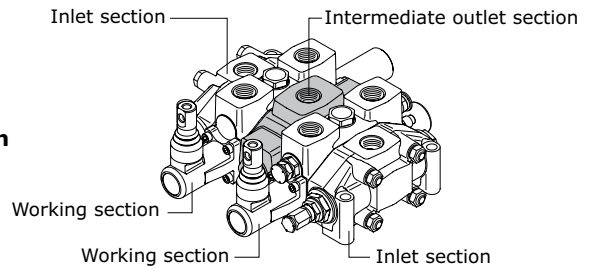
IR 009 150 A G05..... Right inlet section

W001A H001 F001A RP G05 Working section

BF A G05Intermediate outlet section

W001A H001 F001A RP G05 Working section

IL 009 150 A G05..... Left inlet section



Complete configuration samples for D6/2 with intermediate outlet section (BG)

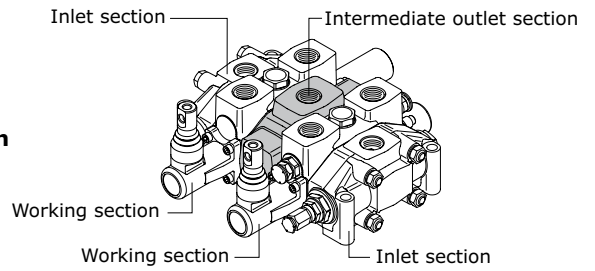
IR 009 150 A G05..... Right inlet section

W001A H001 F001A RP G05 Working section

BG J G05Intermediate outlet section

W001A H001 F001A RP G05 Working section

IL 009 150 A G05..... Left inlet section





INTERMEDIATE FLOW DIVIDERS

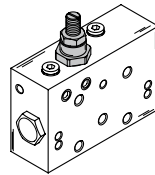
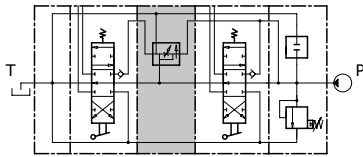
Operating principle

The intermediate section of the flow divider allows sections of the divider itself to be powered, with a flow rate set by the user and independent of the downstream load. The excess flow may power another directional control valve or be returned directly to tank. The flow adjustment range (Q = l/min) change between:

- Minimum Q = 3 l/min
- Maximum Q = 40 l/min

intermediate flow dividers type

C001



Intermediate with screw-adjustable flow divider

Complete configuration samples for D6/2 with intermediate flow divider

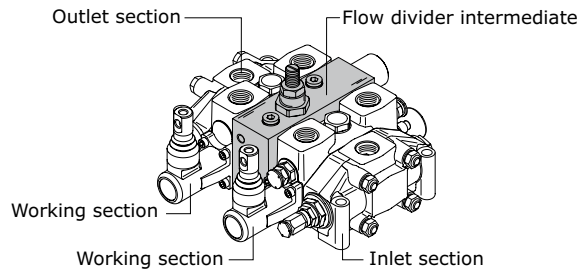
IR 009 150 A G05..... Right inlet section

W001A H001 F001A RP G05 Working section

C001.....Intermediate flow divider

W001A H001 F001A RP G05 Working section

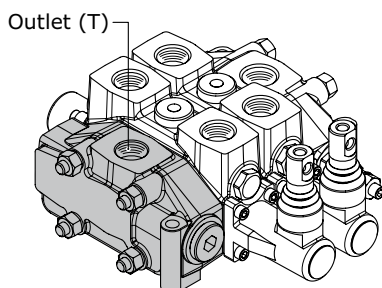
TJ A G05 Outlet section





OUTLET SECTION (VERSION 1 OUTLET)

Order example



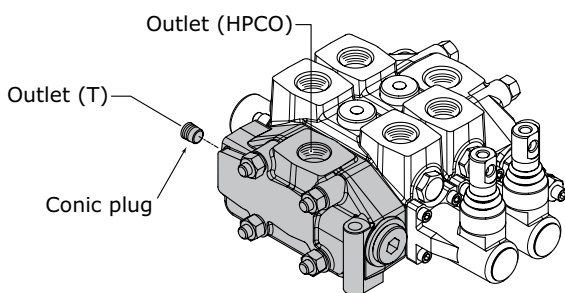
TJ | **A G06**

1. **TJ** outlet section type
2. **A G06** outlet position and available thread type

Rif.	Code	Description	Page
1	TJ	Outlet section with single return (T) right-side inlet (P)	
	TK	Outlet section with single return (T) left-side inlet (P)	
2	A G05	Upper outlet (thread G 1/2)	36
	C G05	Central outlet (thread G 1/2)	
	A G06	Front outlet side A (thread G 1/2)	
	C G06	Rear outlet side B (thread G 1/2)	
	A U05	Upper outlet (thread 3/4" - 16 UNF)	
	C U05	Central outlet (thread 3/4" - 16 UNF)	

OUTLET SECTION (HPCO VERSION OUTLET)

Order example - HPCO version Outlet



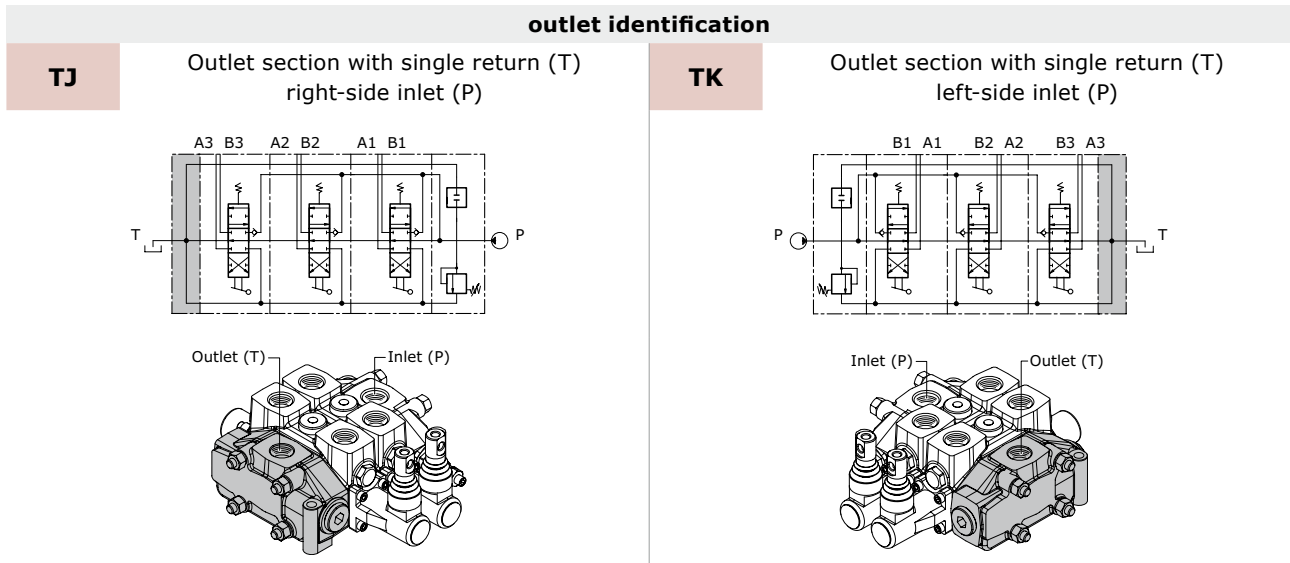
TM | **M G06**

1. **TM** outlet section type
2. **M G06** outlet position and available thread type

Rif.	Code	Description	Page
1	TM	Outlet section with two return (T-HPCO) right-side inlet (P)	
	TN	Outlet section with two return (T-HPCO) left-side inlet (P)	
2	M G05	HPCO upper outlet T (tank) rear side outlet B (thread G 3/4)	37
	N G05	HPCO upper outlet T (tank) front outlet side A (thread G 3/4)	
	M G06	HPCO upper outlet T (tank) rear side outlet B (thread G 1)	
	N G06	HPCO upper outlet T (tank) front outlet side A (thread G 1)	
	M U05	HPCO upper outlet T (tank) rear side outlet B (thread 1"1/16-12 UNF)	
	N U05	HPCO upper outlet T (tank) front outlet side A (thread 1"1/16-12 UNF)	



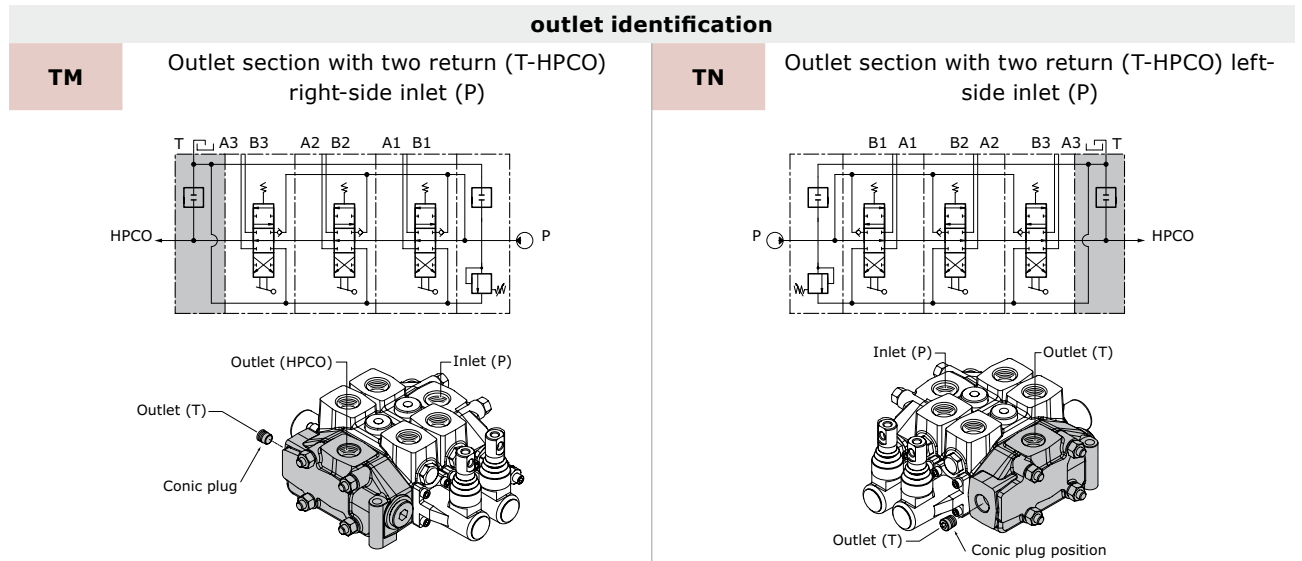
Outlet with single tank classification



outlet combination and thread available		
A G05		Upper outlet (thread G 3/4)
A G06		Upper outlet (thread G 1)
A U05		Upper outlet (thread 1"1/16-12 UNF)
C G05		Central outlet (thread G 3/4)
C G06		Central outlet (thread G 1)
C U05		Central outlet (thread 1"1/16-12 UNF)
F G05		Lateral outlet side A (thread G 3/4)
F G06		Lateral outlet side A (thread G 1)
F U05		Lateral outlet side A (thread 1"1/16-12 UNF)
G G05		Front outlet side A (thread G 3/4)
G G06		Front outlet side A (thread G 1)
G U05		Front outlet side A (thread 1"1/16-12 UNF)
H G05		Rear outlet side B (thread G 3/4)
H G06		Rear outlet side B (thread G 1)
H U05		Rear outlet side B (thread 1"1/16-12 UNF)



Outlet with two tanks classification



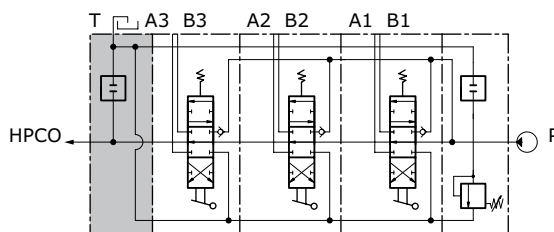
outlet combination and thread available

M G05		HPCO Upper outlet T side outlet B (thread G 3/4)	Q G05		HPCO Central outlet T front outlet side A (thread G 3/4)
M G06		HPCO Upper outlet T side outlet B (thread G 1)	Q U05		HPCO Central outlet T front outlet side A (thread 1"1/16-12 UNF)
M U05		HPCO Upper outlet T side outlet B (thread 1"1/16-12 UNF)	P G05		HPCO Central outlet T rear outlet side B (thread G 3/4)
N G05		HPCO Upper outlet T front outlet side A (thread G 3/4)	P G06		HPCO Central outlet T rear outlet side B (thread G 1)
N G06		HPCO Upper outlet T front outlet side A (thread G 1)	P U05		HPCO Central outlet T rear outlet side B (thread 1"1/16-12 UNF)
N U05		HPCO Upper outlet T front outlet side A (thread 1"1/16-12 UNF)			

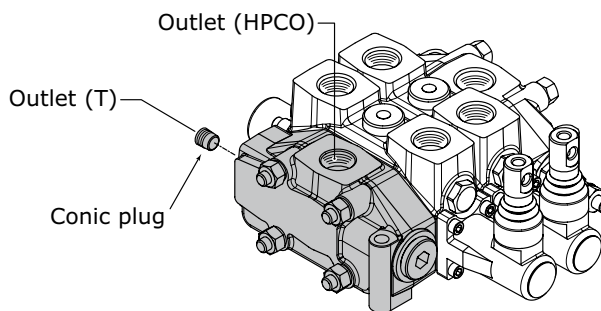


CARRY-OVER CONNECTION (HPCO)

This option, available on all D6, allows the sectional valve to feed a second valve, by extending the free flow channel. In this configuration, the valve need a separated port for connection to tank.



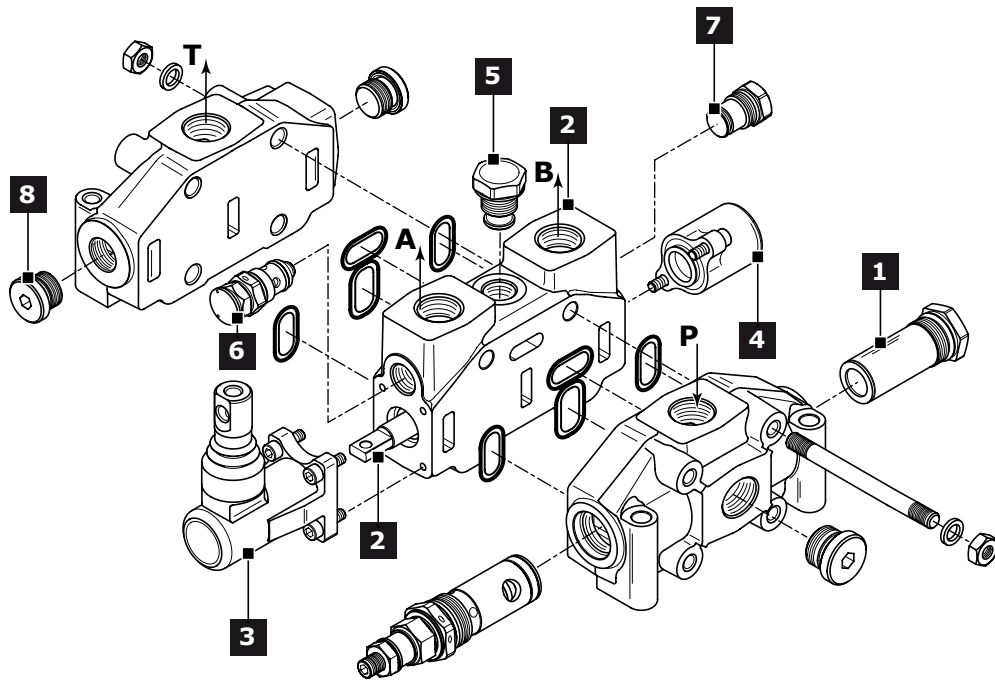
It is possible to transform sectional valve from standard to HPCO version just by ordering the appropriate conic plug:



code (HPCO Plug identification)	description	q.ty
413010203	conic plug G 1/4 x 13	1



D6 SPARE PARTS LIST



Ref.	Description	Order code	Q.ty	Code	Note
1	Pilot operated pressure relief valve (*)	6364			Setting: 100 bar
		2608	1		Setting: 200 bar
		2744			Setting: 300 bar
	Relief valve plugged	430107001	1		
	Main Anticavitation check valve	915050701	1	-	
	External piloted valve	915040701	1		
	Solenoid dump valve (12 vdc (**))	915040702	1		
Solenoid dump valve (24 vdc (**))	915040703	1			
Plug with pressure-gauge connection	430107003	1			
2	3 positions double-acting spool	421205014		W001A	for protected lever
		421205017	1	W001B	for protected lever
		421205005		W001A	for hydraulic actuation
	3 positions double-acting A and B to tank spool	421205008		W002A	for protected lever
		421205022	1	W002B	for protected lever
	3 positions single-acting on A	421205006		W002A	for hydraulic actuation
	3 positions single-acting on B	421205028	1	W005A	for protected lever
4 positions double-acting with float in the 4 th pos.	421205030	1	W006A	for protected lever	
	421205024		W012A	for protected lever	
	421205068	1		for hydraulic actuation	
3	Protected lever	320305008		H001 = H002	
		320305010	1		only for W012 spool
	Control without lever	320305002		H004	
		320305003	1		only for W012 spool
	Protected vertical safety lever	320305001		H101 = H102	
		320305004	1		only for W012 spool
Hydraulic actuation with side ports	320505001	2			
	320505011	1	H005	only for W012 spool	



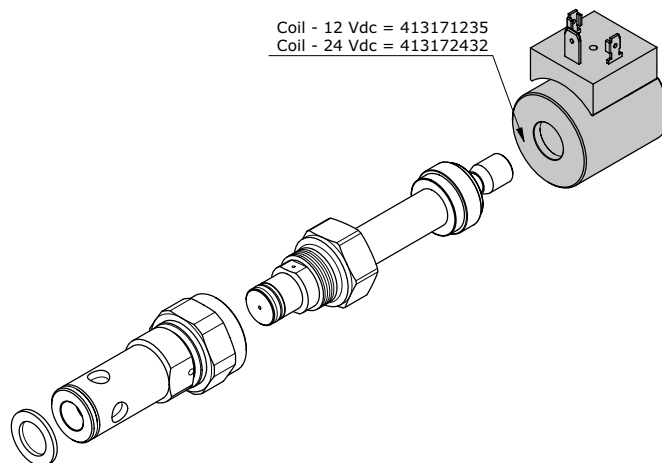
Ref.	Description	Order code	Q.ty	Code	Note
4	3 position spring centred spool	320705009	1	F001A	
	Detent in A and B	320805022	1	F002A	
	Detent in A	320805021	1	F003A	
	Detent in B	320805024	1	F004A	
	Detent in 4 th position	320805004	1	F005A	only for W012 spool
	Prearrangement dual command	320705023	1	F013A	
	Pneumatic control ON-OFF	321105004	1	F020A=F021A	BSP ports
	Proportional Pneumatic control	321205004	1	F022A=F023A	BSP ports
	Electropneumatic control ON-OFF (12 vdc)	321605001	1	F0620	
	Electropneumatic control ON-OFF (24 vdc)	321605002	1	F0630	
	Load limit in A and B	320005011	1	F024A=F025A	BSP ports
	Load limit in A	320005009	1	F026A=F027A	BSP ports
	Load limit in B	320005010	1	F028A=F029A	BSP ports
	Electrical load limit (normally closed contacts)	320005007	1	F0360=F0370	
	Electrical load limit (normally open contacts)	320005020	1	F0450=F0460	
	Electrohydraulic ON-OFF (12 vdc)	321405021	1	F1600	
	Electrohydraulic ON-OFF (24 vdc)	321404022	1	F1610	
	Electrohydraulic Proportional (12 vdc)	322005001	1	F2600	
	Electrohydraulic Proportional (24 vdc)	322005002	1	F2610	
	Electrohydraulic ON-OFF (12 vdc) with reducing valve	321405023	1	F1500=F1520	BSP ports
	Electrohydraulic ON-OFF (24 vdc) with reducing valve	321405024	1	F1510=F1530	BSP ports
	Electrohydraulic Proportional (12 vdc) with reducing valve	322005003	1	F2500=F2520	BSP ports
	Electrohydraulic Proportional (24 vdc) with reducing valve	322005004	1	F2510=F2530	BSP ports
	Electrohydraulic ON-OFF (12 vdc) with reducing valve	321405031	1	F1500=F1520	UNF ports
	Electrohydraulic ON-OFF (24 vdc) with reducing valve	321405032	1	F1510=F1530	UNF ports
	Electrohydraulic Proportional (12 vdc) with reducing valve	322005005	1	F2500=F2520	UNF ports
	Electrohydraulic Proportional (24 vdc) with reducing valve	322005006	1	F2510=F2530	UNF ports
5 Check valve on the work section	320205005	1	-	only for RP and RT section	
6		4205			Setting: 100 bar
	Antishock valve on port A	2643		01 PA	Setting: 200 bar
		3623	1		Setting: 300 bar
	Anticavitation valve on port A	915080501		02 PA	
Prearrangement for auxiliary valve on port A	430405001		05 PP		
7		4205			Setting: 100 bar
	Antishock valve on port B	2643		01 PB	Setting: 200 bar
		3623	1		Setting: 300 bar
	Anticavitation valve on port B	915080501		02 PB	
Prearrangement for auxiliary valve on port B	430405001		05 PB		
8	Plug kit (G 3/4)	430000020		G05	
	Plug kit (G 1)	430000021	1	G06	
	Plug kit (1"1/12"-16 UNF)	300007002		U05	

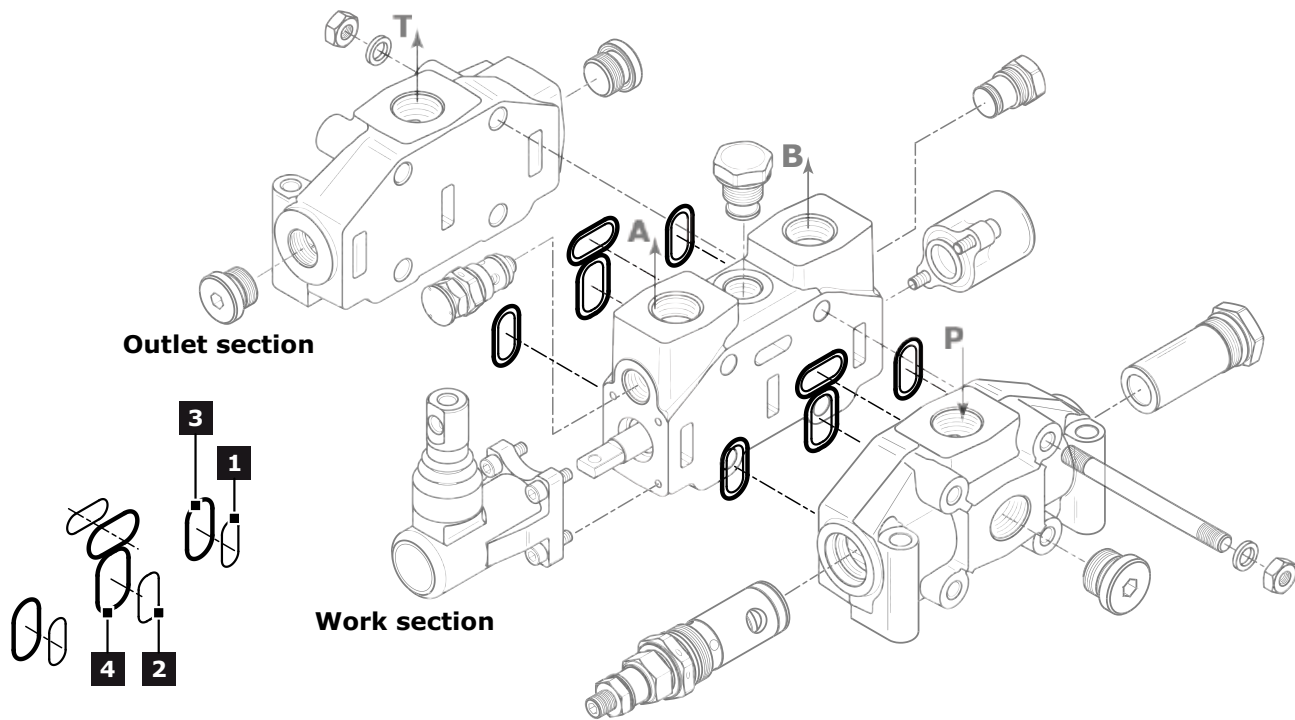


Note

- (*) = for different settings please contact our Sales Dpt.
- (**) = electric dump valve coil can be ordered separately as spare part: (see drawing "A")
Ordering code Coil 12 vdc: 413171235
Ordering code Coil 24 vdc: 413172432
- (#) = Detent in A and B Kick-out is available only with special spool assembly

Coil - 12 Vdc = 413171235
Coil - 24 Vdc = 413172432





Outlet and work section			
Rif.	Order code	Description	Q.ty
1	423401019	Ring	3
2	423401020	Ring	1
3	412010609	O.R. 70SH 23,47 x 2,62 (2-119)	3
4	412010611	O.R. 70SH 26,65 x 2,62 (2-121)	1

Complete Gasket kit: order code - 350905001



INSTALLATION AND MAINTENANCE

Guidelines

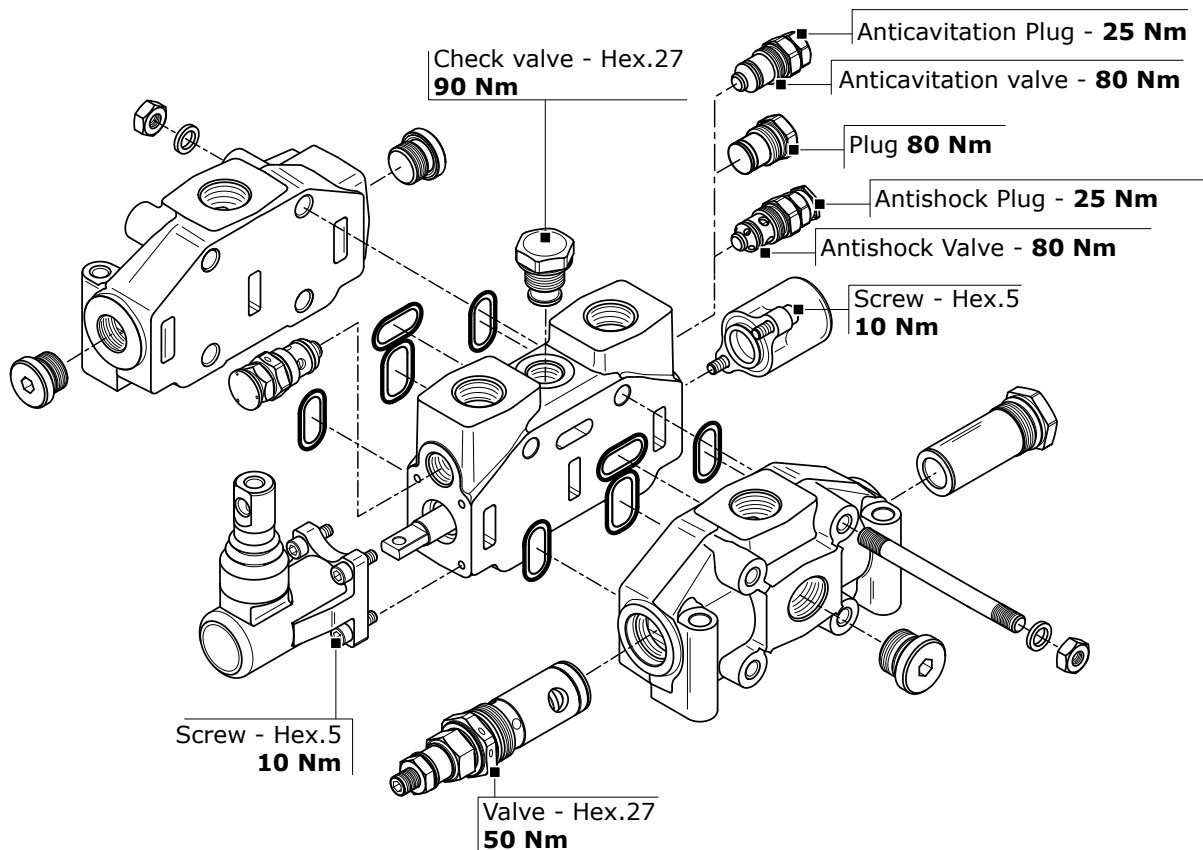
- Mount the control valve securely to a flat surface (recommended 3 point fixing); at the time do not use a hammer to positioning by hitting.
- When handling the control valve, be careful not hold the pilot cover or return spring cap of the spool or accessory valves such as main relief valves and anti-shock relief valves.
- Clean piping materials sufficiently before use.
- Make sure to prevent the port openings from being entered with dust or foreign matters.
- Tighten the port connectors surely with the recommended fastening torques.
- Do not direct the jet of a pressure washing unit directly to the valve.

Fittings tightening torque (Nm)

thread type	port P	Port A - B	Port T
BSP (ISO - 228)	G 1/2	G 1/2	G 1/2
with rubber sealing (DIN 3869)	70	70	70
with copper or steel and rubber washer	70	70	70
BSP (ISO - 228)	G 3/4	G 3/4	G 3/4
with rubber sealing (DIN 3869)	90	90	90
with copper or steel and rubber washer	90	90	90
UN-UNF (ISO - 725)	1"1/16 12 UNF	1"1/16 12 UNF	1"1/16 12 UNF
with O.R.	90	90	90

General clamping torque

The following table provides the main tightening torques of the distributor D6:





Dimensions - Thread codes

The connection ports size is indicated by an ordering code common for all Walvoil products. Following table shows all available connections.

METRIC THREAD (ISO 9974-1)

Type	M18x1,5	M22x1,5	M27x2
Code	M01	M02	M03

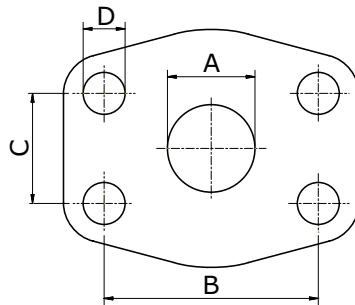
BSP THREAD (ISO 1179-1)

Type	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Code	G02	G03	G04	G05	G06	G07	G08	G09

UN / UNF THREAD (ISO 11926-1)

Type	9/16" 18 UNF SAE6	3/4" 16 UNF SAE8	7/8" 14 UNF SAE10	1 1/16" 12 UNF SAE12	1 5/16" 12 UNF SAE16	1 5/8" 12 UNF SAE20
Code	U02	U03	U04	U05	U06	U07

Dimensions - SAE Flange codes



SAE / 3000 FLANGE (ISO 6162-1)

Type	3/4" (MA)	3/4" (UNC)	1" (MA)	1" (UNC)	1 1/4" (MA)	1 1/4" (UNC)	1 1/2" (MA)	1 1/2" (UNC)	2" (MA)	2" (UNC)	3" (MA)	3" (UNC)
Code	S03	S04	S05	S06	S07	S08	S09	S10	S11	S12	S15	S16
A	19	19	25	25	32	32	38	38	51	51	76	76
B	47,6	47,6	52,4	52,4	58,7	58,7	69,9	69,9	77,8	77,8	106,4	106,4
C	22,3	22,3	26,2	26,2	30,2	30,2	35,7	35,7	42,9	42,9	61,9	61,9
D	M10	3/8-16	M10	3/8-16	M10	7/16-14	M12	1/2-13	M12	1/2-13	M16	5/8-11

SAE / 6000 FLANGE (ISO 6162-2)

Type	3/4" (MA)	3/4" (UNC)	1" (MA)	1" (UNC)	1 1/4" (MA)	1 1/4" (UNC)	1 1/2" (MA)	1 1/2" (UNC)
Code	S33	S34	S35	S36	S37	S38	S39	S40
A	19	19	25	25	32	32	38	38
B	50,8	50,8	57,2	57,2	66,6	66,6	79,3	79,3
C	23,8	23,8	27,8	27,8	31,8	31,8	36,5	36,5
D	M10	3/8-16	M12	7/16-14	M14	1/2-13	M16	5/8-11



GENERAL CONDITIONS AND PATENTS

Introduction

These general conditions apply to all general supplies from Walvoil s.p.a., after receiving orders from the Customer. Should commercial terms such as EXW, DDP, etc be mentioned, of course the Incoterms of the International Chamber of Commerce must be referred to, according to the test existing when the general supply conditions are agreed on.

Management of orders

No Customer's order is binding to Walvoil s.p.a. if Walvoil s.p.a. has not confirmed the order in writing. Walvoil s.p.a. commits to supplying the orders in compliance with the order confirmation that has been issued. Any disagreement with the content of the order confirmation must be communicated in writing to Walvoil s.p.a. within and no later than 5 days from the delivery of the order confirmation. The Customer commits to paying for the goods supplied by Walvoil s.p.a., according to the prices indicated on the order confirmation.

Payment conditions

The Parties agree on the payment terms at the beginning of the supply. The terms will be indicated on the order confirmation. Should the Customer be late with the payments, Walvoil S.p.a. will be entitled to require the payment of interests on arrears based on the exiting Prime Rate increased by 2%. Should there be any payment delay, Walvoil s.p.a. will be entitled not to process the Customer's purchase order, even if it has already been confirmed.

Delivery and shipment

The goods are always supplied Ex Works, even when Walvoil s.p.a. agrees with the Customer that the shipment, or a part of it, will be arranged by Walvoil s.p.a. It is agreed that the Customer will bear the risk of goods deterioration or damaging from the moment the goods are handed by Walvoil s.p.a. to the first carrier.

Product characteristics

Walvoil s.p.a. commits to supplying good quality products, compliant with the technical specifications declared on the technical tables and on the catalogue. Walvoil s.p.a, even without notice, at its own discretion, reserves the right to modify the products as necessary, without these changes altering the main characteristics of the products.

Claims

Any claims about defects on delivered products (just as an example: claims about the packaging, the number, the quantity or the external product characteristics) will have to be notified to Walvoil s.p.a. in writing, within and no later than 7 days from reception of the goods, otherwise the claims will be considered as null and void. Occult defects (the defects of the goods that cannot be spotted with a careful control of the goods received by the Customer), will have to be notified in writing to Walvoil s.p.a. within 7 days from the discovery of the defect, and anyhow no later than 12 months from the delivery of the goods, otherwise the claim will be considered as null and void. Even in case of claim or objection, the Customer will never be entitled to suspend or delay the payments to Walvoil s.p.a. for the products subject to claim or objection nor for any other supply.



GENERAL CONDITIONS AND PATENTS

Warranty

Should the products supplied by Walvoil not be compliant or have the required quality and should this defect be due to Walvoil, Walvoil s.p.a. commits, at its choice, to replace or repair the faulty products, as long as the defect or lack of compliance is notified to Walvoil s.p.a. in writing, as specified at point 6, within and no later than 18 months from product delivery. On the products that have been fixed or replaced in accordance with what specified above, the above-mentioned warranty applies. The 12 month duration starts from the date of repair or replacement. In case of defects, lack of quality or in case of lack of compliance for the supplied products, with the exception of fraud or serious offence, Walvoil s.p.a. only commits to repairing or replacing the faulty products, according to what specified above. This warranty replaces any other Supplier's warranty or liability established by the law. This warranty excludes any other liability contractual or extra-contractual by Walvoil s.p.a. on the products supplied by Walvoil (as a mere example: damage refund, loss of profit, product recall campaign, etc). Walvoil s.p.a. has signed a product civil liability police, with a suitable maximum coverage.

Ownership retention

The products supplied by Walvoil s.p.a. will be owned by the latter until Walvoil receives the complete payment for the supplied goods.

Obligation confidentiality

Walvoil s.p.a. commits to not disclosing the technical and commercial information it receives from the Customer, unless this information has already been publicly disclosed.

Patents

The Customer is not allowed to use the provided Products, or a part of them, their descriptions or drawings protected or not protected by Patent or registered trademark in order to design or make similar products, unless Walvoil s.p.a. previously issues its written authorization. Should Walvoil s.p.a. give its written authorization, all patents, trademarks, registered designs, copyrights and intellectual property rights related or connected to the Products provided by Walvoil s.p.a. will stay Walvoil's property. The Customer commits to respecting the highest confidentiality.

Applicable law and court of jurisdiction

Walvoil s.p.a.'s supplies are regulated by these General Supply Conditions and, for anything not defined here, by the Italian law. Any controversy related, generated or connected to the supply of Products by Walvoil s.p.a., where Walvoil s.p.a. is involved, will be exclusively dealt with by the Court of Bologna.



Walvoil worldwide

WALVOIL S.P.A.

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