

Part number:

HYDROMA

HYDRAULICKÉ SYSTÉMY

**HIDROMA
SYSTEMS**

UKŁADY HYDRAULICZNE

HYDROMA

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

TR55



Applications

A big number of options and solutions make TR55 a very flexible product; it can be easily adapted to many different applications always fitting the specific needs (Mini-Wheel loaders, Agricultural machines, Mini-Backhoe loaders, Backhoes).

TR55 monoblock valve can house the following ports auxiliary valves:

Adjustable port relief valve, Anticavitation valve and Adjustable Antishock and anticavitation valve.

The check valve on every single section allows a perfect control even with simultaneous operations.

The valve is available with manual, cable, hydraulic remote, pneumatic, electrohydraulic and electropneumatic controls. On TR55/6 and /7 it is possible to house a clamping valve (backhoe application): this functions requires a special body execution. Floating function is possible by means of special spool and body.



QUICK REFERENCE GUIDE

GENERAL SPECIFICATION	M45	M50	TR55
Working sections number	1 - 6	1 - 7	1 - 7
CIRCUIT			
Parallel	•	•	•
Tandem		•	
Parallel circuit stroke (mm)	5	5,5	5
Float spool extra stroke (mm)	4	4,5	4,5
Spools pitch (mm)	35	35	36
RATED FLOW			
Max recommended flow rate (l/min)	45	50	50
Max recommended flow rate (GPM)	12	15	15
RATED PRESSURE			
Max working pressure (bar)	350	350	350
Max working pressure (PSI)	5000	5000	5000

OPTION CHART	M45	M50	TR55
Direct acting pressure relief valve	•	•	•
Clamping valve			(•)
Externally piloted valve	(•)	(•)	
Solenoid dump valve (12 Vdc)	(•)	(•)	
Solenoid dump valve (24 Vdc)	(•)	(•)	
SPOOL ACTUATION			
Manual control	•	•	•
Without lever	•	•	•
90° joystick control	•	•	•
Hydraulic control		•	•
Direct electric control (12-24 Vdc)		•	
SPOOL RETURN ACTION			
Return spring	•	•	•
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			
Valves on port		•	•

(•) = the application requires special machining in the body

GENERAL INDEX

4	General specifications Standard working conditions Fluid options
5	Order example Standard thread Painting Hydraulic circuit
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The specifications detailed in this catalogue show standard products. Special applications are available to order subject to contacting our Engineering Department for an estimate. The data and specifications indicated are to be considered a guide only and Hydrocontrol S.p.A. reserves the right to introduce improvements and modifications without prior notice. Hydrocontrol is not responsible for any damage caused by an incorrect use of the product.

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	$\beta_{10} > 75$ (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

TR55/1: IR 301 150 W001A H001 F001A 01 PA 120 05 PB MJ A G03

TYPE:

TR55: product type
/1: working section number

1) INLET ARRANGEMENT: page 10

IR 301 inlet side and valve type
150 setting (bar)

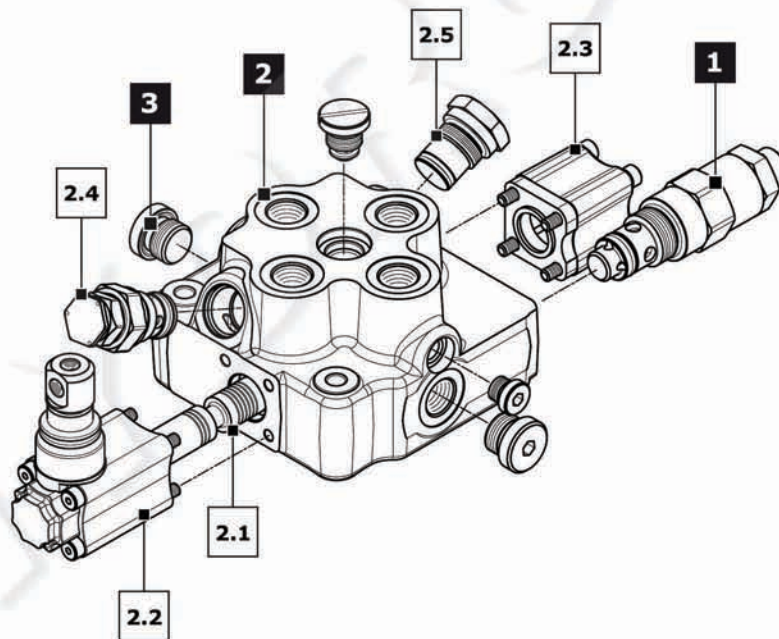
2) WORK SECTION ARRANGEMENT: page 11

2.1 W001A spool type
2.2 H001 spool actuation type
2.3 F001A spool return action type
2.4 01 PA 120 auxiliary valve on port A
2.5 05 PB auxiliary valve on port B

3) OUTLET ARRANGEMENT: page 20

MJ outlet type
A G03 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 Hydrocontrol products. Following table shows all available connections; for ordering code refer to table on page 28.

Ports	BSP (ISO - 228)	Code	UN-UNF (ISO - 725)	Code
Inlet Port (P)	G 3/8	G03	3/4" - 16 UNF	U03
Ports (A - B)	G 3/8	G03	3/4" - 16 UNF	U03
Outlet (T) - Carry over (HPCO)	G 3/8	G03	3/4" - 16 UNF	U03
Hydraulic Pilot	G 1/4	G02	9/16" - 18 UNF	U02
Pneumatic Pilot	G 1/8	-	NPTF 1/8-27	-

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

Order example of TR55/1 painted:

TR55/1
 IR 301 150
 W001A H001 F001A
 MJ A G03
P006/1 N10

The painting is indicated with the following value:

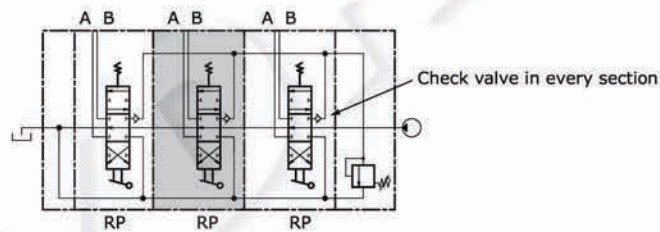
P006 - /1 - N10

Color black
 section number
 Painted

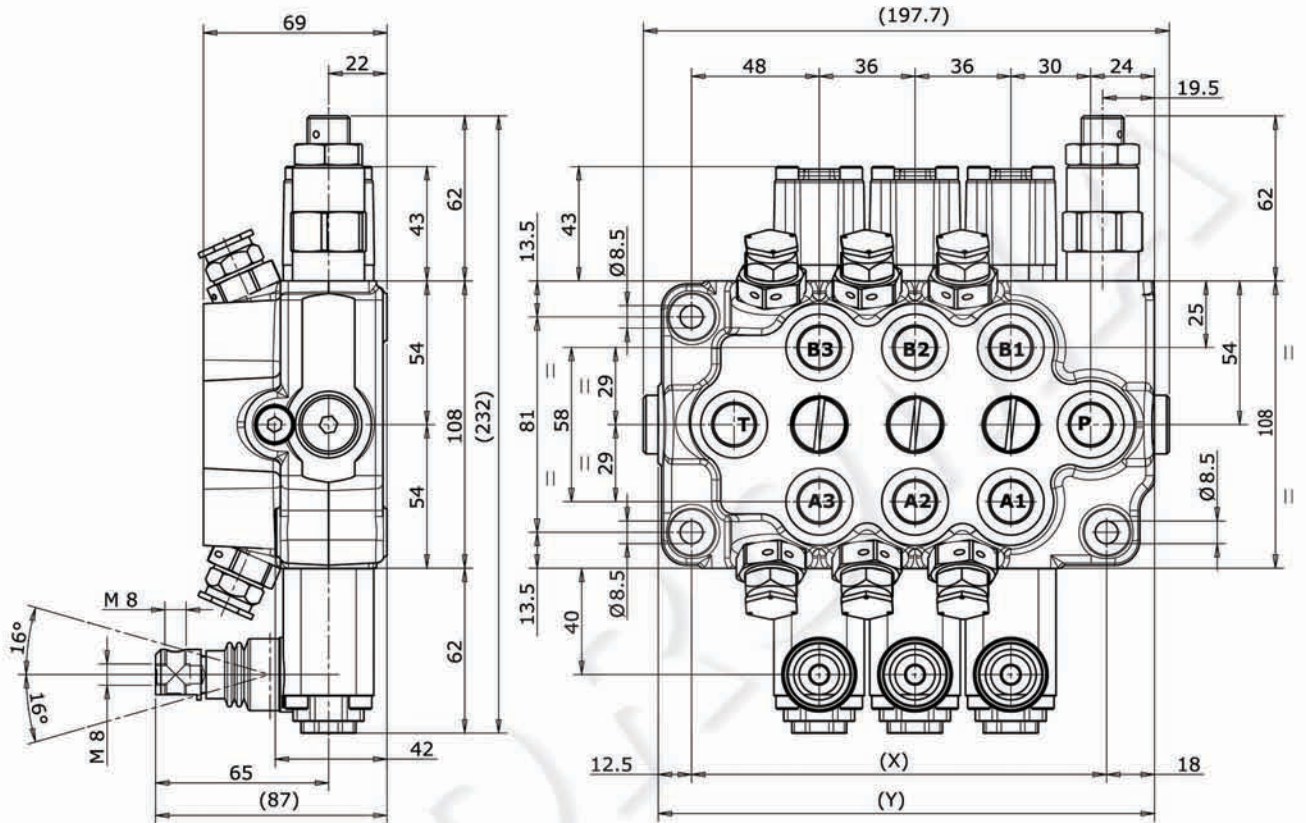
Hydraulic schematic

Parallel circuit

When the spool is operated it intercepts the switch 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 selecting the path with the least resistance; by throttling the spools, the flow of oil can be divided between two or more service ports.



DIMENSIONS

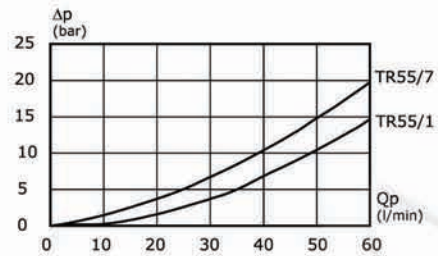
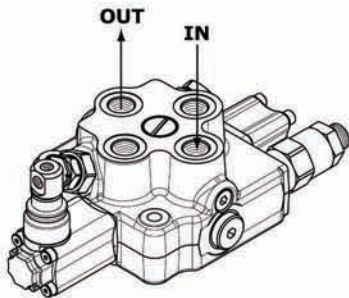


TYPE	TR55/1	TR55/2	TR55/3	TR55/4	TR55/5	TR55/6	TR55/7
X (mm)	84	120	156	192	228	264	300
Y (mm)	114,5	150,5	186,5	222,5	258,5	294,5	330,5
Weights (kg)	4	5,5	6,6	9,4	10,5	11,6	12,7

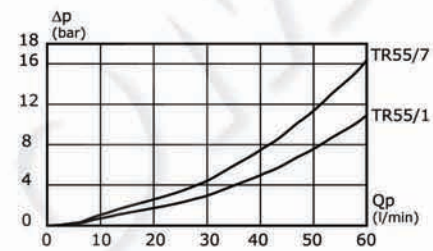
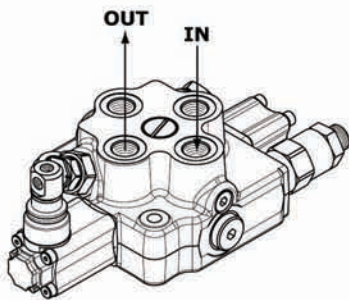
TYPICAL CURVES

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

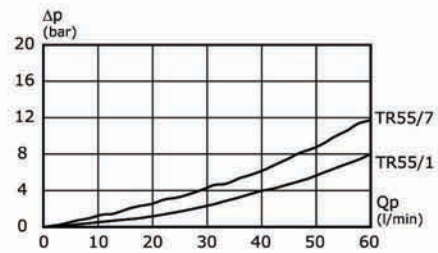
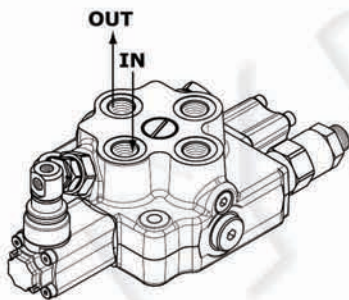
Pressure drop (P - T)



Pressure drop (P - A/B)

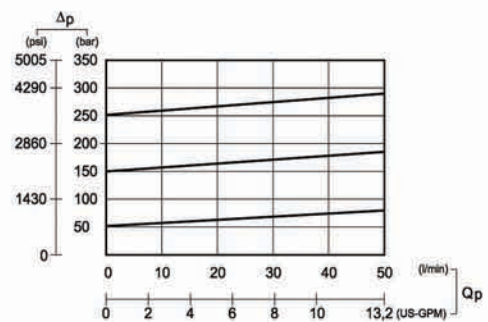


Pressure drop (A/B - T)



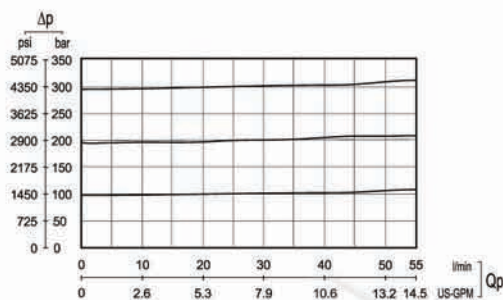
Direct relief valve curve

Setting ranges	
type	pressure (bar)
A	10 - 40
B	45 - 70
C	75 - 130
D	135 - 210
E	215 - 350

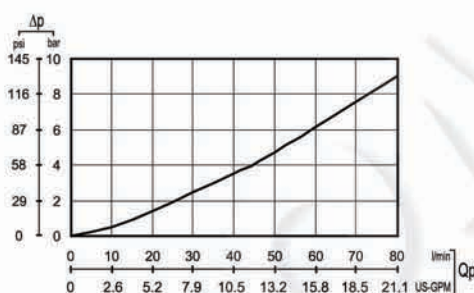


Antishock valve curve

Setting ranges		
type	pressure (bar)	
	at full flow	at min. flow
A	20 - 100	10-A / 80-A
B	101 - 220	81-A / 180-A
C	221 - 350	181-A / 350-A

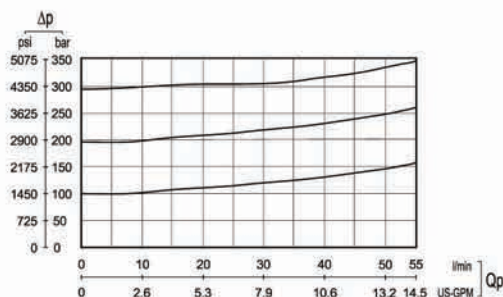


Anticavitation valve curve



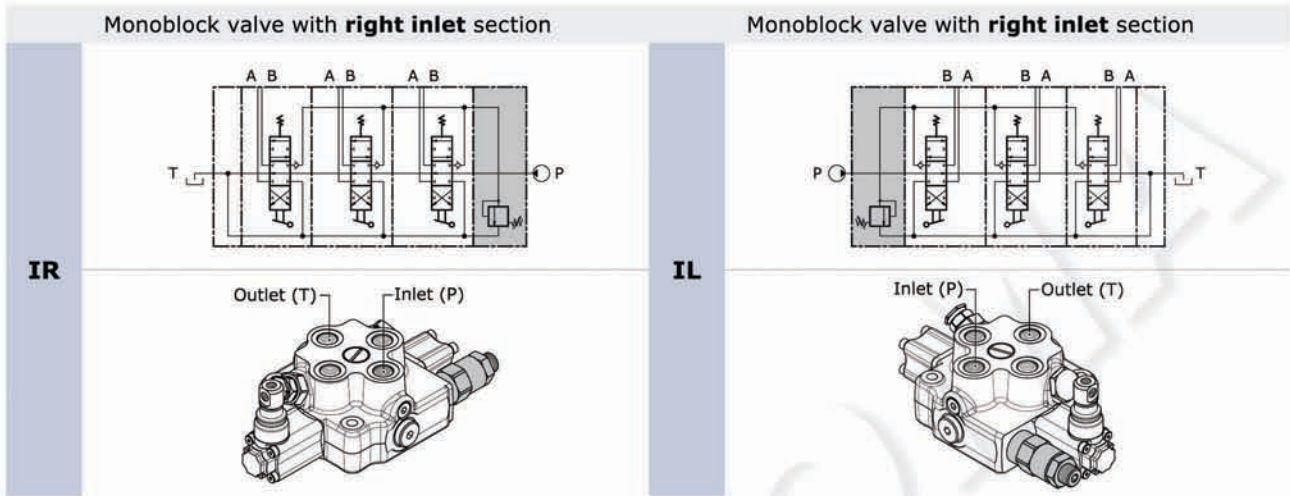
Combined relief valve curve

Setting ranges		
type	pressure (bar)	
	at full flow	at min. flow
A	20 - 60	10-A / 40-A
B	61 - 100	41-A / 80-A
C	101 - 220	81-A / 180-A
D	221 - 350	181-A / 350-A



INLET ARRANGEMENT

Inlet side classification



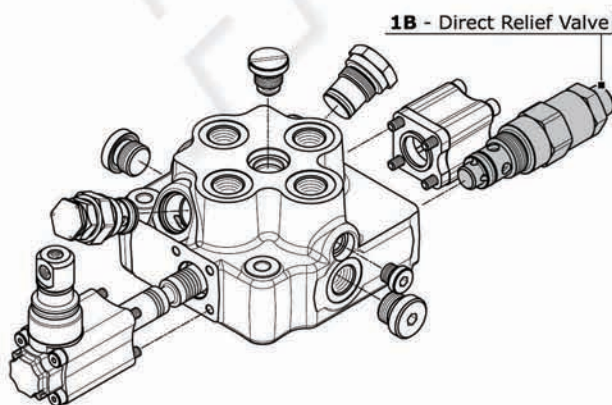
Valve identification

type	schema	layout	description	type	schema	layout	description
1			Direct acting pressure relief valve	3			Relief valve plugged

NOTE:

Monoblock valves can be equipped with externally piloted valve, solenoid dump valve (12-24 Vdc), clamping valve. These applications needs a special valve body. Ask our commercial dept. for further informations.

Valve arrangement



Combination valve example: 301 = 1B

- 301 Combination valve
- 1B Pressure relief valve 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 (example 150 bar).

valves combination	TR55 - IR	TR55 - IL
1A	201	•
3A	203	•
1B	301	•
3B	303	•

WORK SECTION ARRANGEMENT

Spool identification

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

- W001** spool schema 3 positions double-acting
- A** spool type spool with 45 l/min inlet flow
- 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	
W012	4 positions double-acting with float in the 4th position	

code	circuit	spools with restricted service ports		hydraulic schema
		restriction on diameter (mm)	section (mm ²)	
J10	A-B IN T	0,10	2,66	
K10	A IN T	0,10	2,66	
Y10	B IN T	0,10	2,66	

Depending on the inlet flow, it is possible to choose appropriate spool sizes.

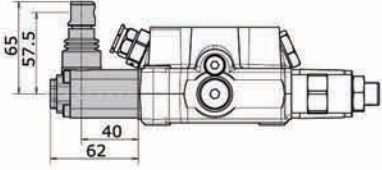
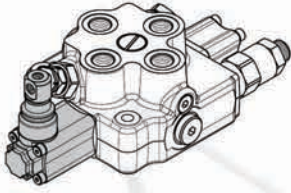
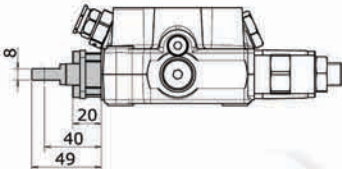
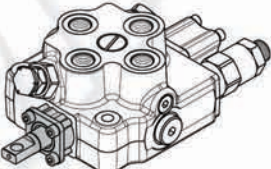
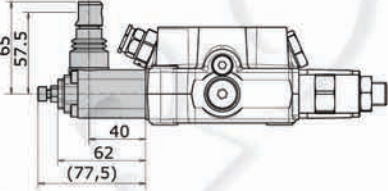
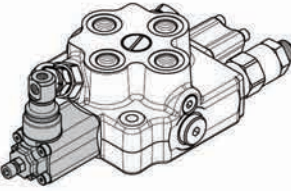
CODE	SPOOL TYPE AVAILABLE		
	spool 50 l/min inlet flow	spool 30 l/min inlet flow	spool 15 l/min inlet flow
	A	B	C
W001	W001A	W001B	W001C
W002	W002A	W002B	W002C
W003	W003A	W003B	
W004	W004A	W004B	
W005	W005A	W005B	
W006	W006A	W006B	
W012	W012A	W012B	

NOTE:

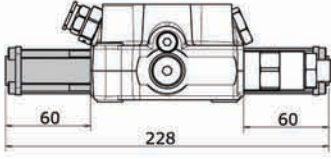
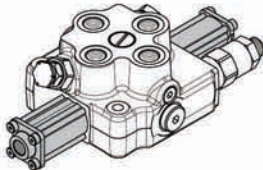
- W012 spool need a special machining on the valve body.
- Float spool (W012) need special detent kit (F005).
- Different spools are available on request.

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		
H019	Protected lever with stroke limiter		
H020	Protected lever rotated 180° with stroke limiter		

Spool actuation classification for Hydraulic control

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

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:

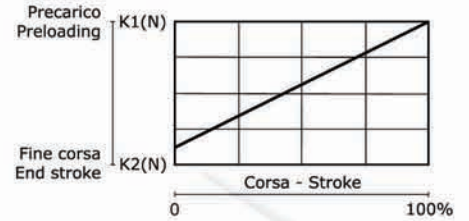
Fulcrum Inlet side	FULCRUM 1st section	FULCRUM 2nd section
RIGHT INLET	H009	H010
	Right side inlet fulcrum on 1 st section (compulsory code for second section: H120)	Right side inlet fulcrum on 2 nd section (compulsory code for first section: H120)
LEFT INLET	H011	H012
	Left side inlet fulcrum on 1 st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


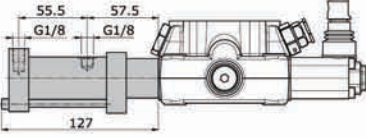
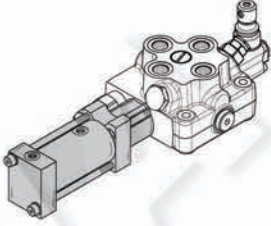



Spool return kits have three different spring types; following the codes depending on spring loads.

Spring type			
Type - Code	A (standard spring)	B (soft spring)	C (heavy spring)
Preloading	140 N	130 N	175 N
End of stroke	195 N	167 N	230 N
Spool return action identification example			
Type - Code	F001A	F001B	F001C



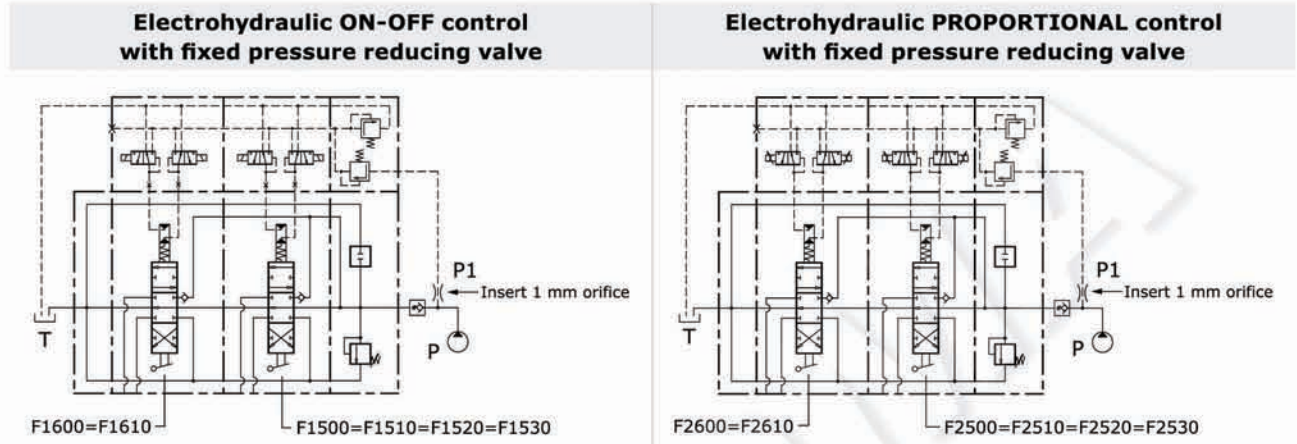
code	description	schema	dimensions	configuration
F001A F001B F001C	3 positions spring-centred spool			
F002A	3 positions spring-centred spool detent in A and B			
F003A	3 positions spring-centred spool detent in A			
F004A	3 positions spring-centred spool detent in B			
F005A	4 positions spring-centred spool detent in 4 th position (only for W012 spool)			
F014A	3 positions spring-centred spool with stroke limiter			
F149	3 positions detent without return spring			

Pneumatic control classification

code	description	schema	dimensions	configuration
F020A	Pneumatic control ON - OFF		 <p>Proportional control with port BSP: G 1/8</p>	
F021A	Pneumatic control ON - OFF rotated 180°			
F022A	Proportional Pneumatic control			
F023A	Proportional Pneumatic control rotated 180°			

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
Raccommended pilot pipe size	Ø 6 mm - G 1/4



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

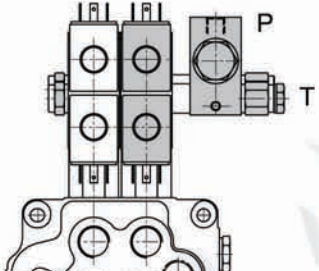
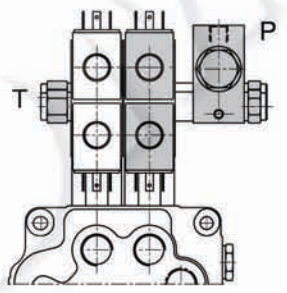
REGULATION CURRENTS			
Nominal voltage (V)	Resistance R ₂₀ (Ohm)	Current min (A)	Current max (A)
12 vdc	3,7	0,9	1,7
24 vdc	15,5	0,45	0,85

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.

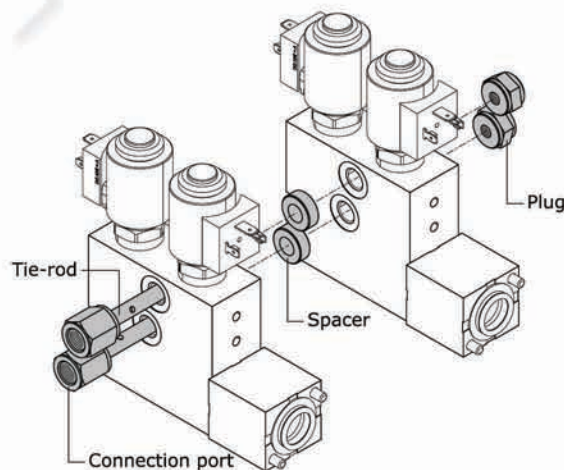
NOTE: the control tie rod kit has always to be ordered separately.

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
- 320102001** = control tie rod /2
- 320102002** = control tie rod /3
- 320102003** = control tie rod /4
- 320102004** = control tie rod /5
- 320102005** = control tie rod /6
- 320102006** = control tie rod /7

Order code for control tie rod (UNF):

- 320103026** = control tie rod /1
- 320103027** = control tie rod /2
- 320103028** = control tie rod /3
- 320103029** = control tie rod /4
- 320103030** = control tie rod /5
- 320103031** = control tie rod /6
- 320103032** = control tie rod /7

Auxiliary valve identification

code	description	schema	configuration	setting range (bar)			
				type	at full flow	type	at min. flow
01PA	Antishock valve (port A)			A	20 / 100	A	10-A / 80-A
				B	101 / 220	B	81-A / 180-A
				C	221 / 350	C	181-A / 350-A
02PA	Anticavitation valve (port A)						
03PA	Combined valve (port A)			A	20 / 60	A	10-A / 40-A
				B	61 / 100	B	41-A / 80-A
				C	101 / 220	C	81-A / 180-A
				D	221 / 350	D	181-A / 350-A
05PA	Prearrangement for auxiliary valve (port A)						

code	description	schema	configuration	setting range (bar)			
				type	at full flow	type	at min. flow
01PB	Antishock valve (port A)			A	20 / 100	A	10-A / 80-A
				B	101 / 220	B	81-A / 180-A
				C	221 / 350	C	181-A / 350-A
02PB	Anticavitation valve (port A)						
03PB	Combined valve (port A)			A	20 / 60	A	10-A / 40-A
				B	61 / 100	B	41-A / 80-A
				C	101 / 220	C	81-A / 180-A
				D	221 / 350	D	181-A / 350-A
05PB	Prearrangement for auxiliary valve (port A)						

Auxiliary valve - Setting range

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

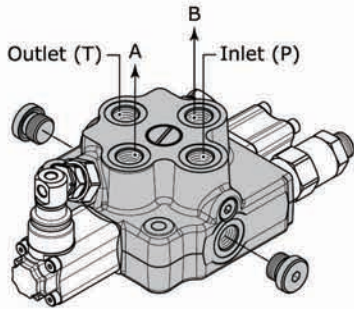
01 PA (120) = setting at full flow

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

OUTLET ARRANGEMENT

This code indicates characteristics for outlet section: ports position and thread, simple T port or HPCO connection. It is possible to have simple T port or two ports configuration for HPCO connection: HPCO allows to extend by-pass channel and connect to a second valve. T ports dimensions and threads depends on the valve size.

Order example - version 1 Outlet



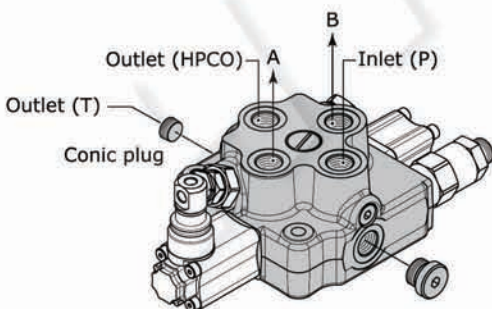
TR55/1: IR 301 150 W001A H001 F001A MJ A G03

OUTLET ARRANGEMENT:

1. **MJ** outlet type
2. **A G03** outlet position and available thread type

Rif.	Code	Description	Page
1	MJ	Monoblock valve with single outlet (T) right-side inlet (P)	
	MK	Monoblock valve with single outlet (T) left-side inlet (P)	
2	A G03	P - T on the top / top ports A - B (thread G 3/8)	22
	A U03	P - T on the top / top ports A - B (thread 3/4"-16 UNF)	
	C G03	P - T on sides / top ports A - B (thread G 3/8)	
	C U03	P - T on sides / top ports A - B (thread 3/4"-16 UNF)	

Order example - HPCO version Outlet



TR55/1: IR 301 150 W001A H001 F001A MM K G03

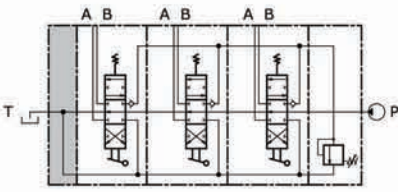
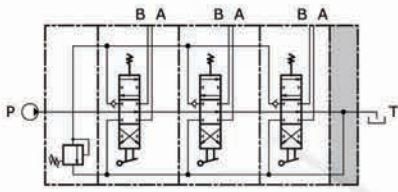
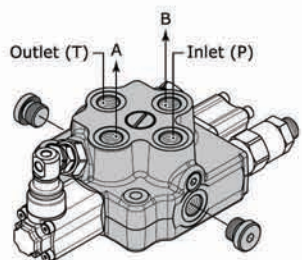
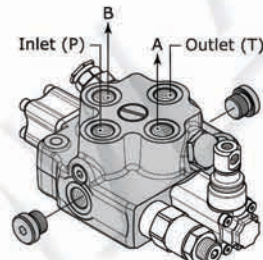
OUTLET ARRANGEMENT:

1. **MM** outlet type
2. **K G03** outlet position and available thread type

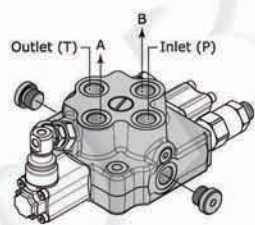
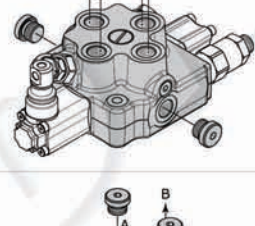
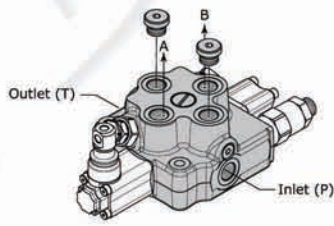
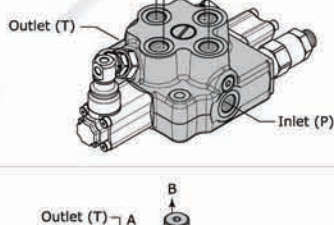
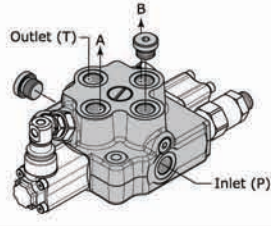
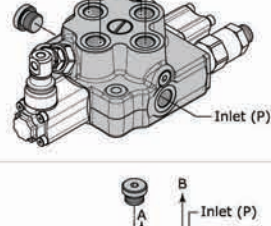
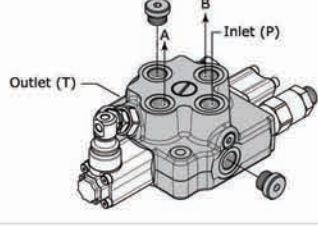
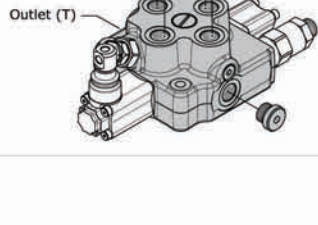
Rif.	Code	Description	Page
1	MM	Monoblock valve with two return (T - HPCO) right-side inlet (P)	
	MN	Monoblock valve with two return (T - HPCO) left-side inlet (P)	
2	A G03	HPCO on the top / P - T on sides / top ports A - B (thread G 3/8)	23
	A U03	HPCO on the top / P - T on sides / top ports A - B (thread 3/4"-16 UNF)	
	K G03	HPCO - P on the top / T on side / top ports A - B (thread G 3/8)	
	K U03	HPCO - P on the top / T on side / top ports A - B (thread 3/4"-16 UNF)	

Outlet with single tank classification

outlet identification

MJ	monoblock valve with single outlet (T) right-side inlet (P)	MK
		
		

Outlet position

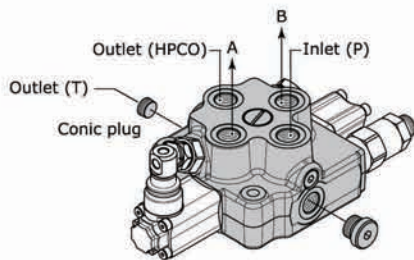
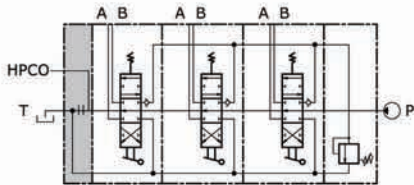
outlet combination and thread available		
A G03		P - T on the top top ports A - B (thread G 3/8)
A U03		P - T on the top top ports A - B (thread 3/4" - 16 UNF)
C G03		P - T on sides top ports A - B (thread G 3/8)
C U03		P - T on sides top ports A - B (thread 3/4" - 16 UNF)
K G03		P on side - T on the top top ports A - B (thread G 3/8)
K U03		P on side - T on the top top ports A - B (thread 3/4" - 16 UNF)
L G03		P on the top - T on side top ports A - B (thread G 3/8)
L U03		P on the top - T on side top ports A - B (thread 3/4" - 16 UNF)

Outlet with two tanks classification

outlet identification

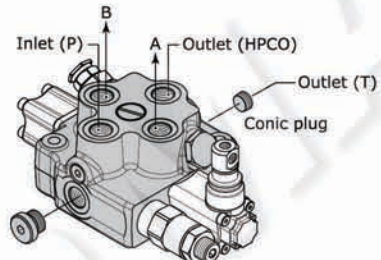
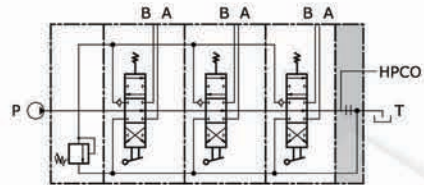
MM

monoblock valve with two return (T-HPCO)
right-side inlet (P)



MN

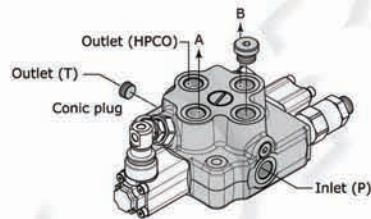
monoblock valve with two return (T-HPCO)
left-side inlet (P)



Outlet position

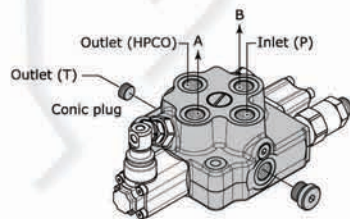
outlet combination and thread available

A G03



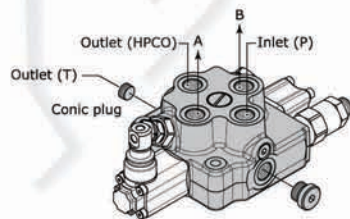
HPCO on the top
P - T on sides
top ports A - B
(thread G 3/8)

A U03



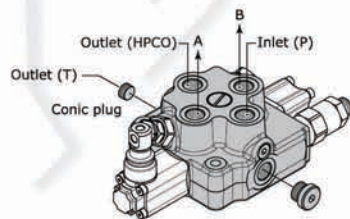
HPCO on the top
P - T on sides
top ports A - B
(thread 3/4" - 16 UNF)

K G03



HPCO - P on the top
T on side
top ports A - B
(thread G 3/8)

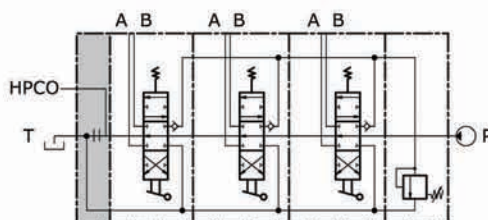
K U03



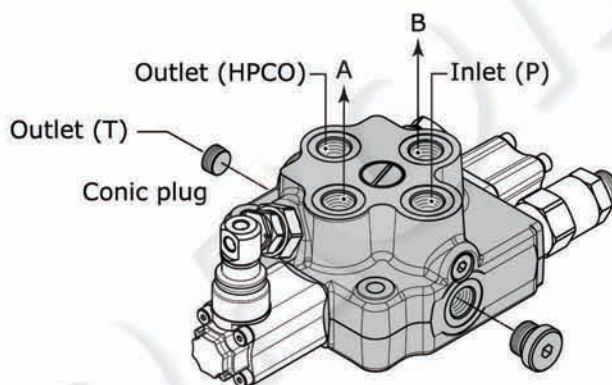
HPCO - P on the top
T on side
top ports A - B
(thread 3/4" - 16 UNF)

CARRY-OVER CONNECTION (HPCO)

This option, available on all M45, 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.

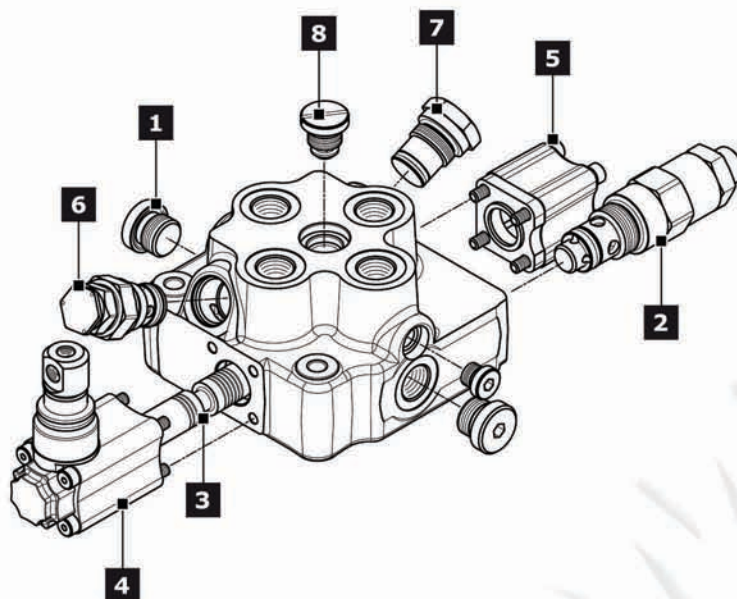


It is possible to transform monoblock valve from standard to HPCO version just by ordering the appropriate conic plug:



code (HPCO Plug identification)	description	q.ty
413010210	conic plug 1/4" x 6,5	1

TR55 SPARE PARTS LIST



Ref.	Description	Order code	Q.ty	Code	Note		
1	Plug kit (G 3/8)	430000018	1	G03			
	Plug kit (3/4" - 16 UNF)	300001006		U03			
2	Direct acting pressure relief valve (*)	57548	1		Setting: 100 bar		
		43151			Setting: 200 bar		
		47555			Setting: 300 bar		
	Relief valve plugged	430159001	1				
3	3 positions double-acting spool (50 l/min)	421265016	1	W001A	fo protected lever		
		421265018			for without lever		
		421265084			for hydraulic actuation		
		421265015			for protected lever		
		421265017			for without lever		
		421265053			fo protected lever		
		421265054			for without lever		
		421265030			for protected lever		
		421265036			for without lever		
		421265027			fo protected lever		
4	Protected lever	320365000	1	H001 = H002	only for W012 spool		
		320365005					
4	Control without lever	320365003	1	H004	only for W012 spool		
		320365004					
		320565007			2	H005	BSP version
		320365006			1	H019 = H020	
5	Joystick control	320665010	1	H009 = H012			
		320665011			H010 = H011		
		320765002			F001A		
		320865017			F002A		
5	3 position spring centred spool	320865006	1	F003A			
		320865020		F004A			
	Detent in A and B	320865014		F005A	only for W012 spool		
	Detent in A	320765004		F014A			
	Detent in B	321165001		F020A = F021A			
	Detent in 4 th position	321265002		F022A = F023A			
	3 position spring centred spool with stroke limiter						
	Pneumatic control ON-OFF						
Proportional pneumatic control			BSP ports				

Ref.	Description	Order code	Q.ty	Code	Note
6	3 position detent without return spring	320865015		F149	
	Electrohydraulic ON - OFF (12 vdc)	321465003		F1600	
	Electrohydraulic ON - OFF (24 vdc)	321465004		F1610	
	Electrohydraulic Proportional (12 vdc)	322065001		F2600	
	Electrohydraulic Proportional (24 vdc)	322065002	1	F2610	
	Electrohydraulic ON - OFF (12 vdc) with reducing valve	321465006		F1500 = F1520	BSP ports
	Electrohydraulic ON - OFF (24 vdc) with reducing valve	321465005		F1510 = F1530	
	Electrohydraulic ON - OFF (12 vdc) with reducing valve	321465007		F1500 = F1520	UNF ports
	Electrohydraulic ON - OFF (24 vdc) with reducing valve	321465008		F1510 = F1530	
	4044			setting: 100 bar	
Antishock valve on port A	6891		01 PA	setting: 200 bar	
	9778	1		setting: 300 bar	
Anticavitation valve on port A	915083001		02 PA		
Prerarrangement for auxiliary valve on porta A	430430001		05 PA		
	4044			setting: 100 bar	
Antishock valve on port B	6891		01 PB	setting: 200 bar	
	9778	1		setting: 300 bar	
Anticavitation valve on port B	915083001		02 PB		
Prerarrangement for auxiliary valve on porta B	430430001		05 PB		
Check valve	320265001	1			

INSTALLATION

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 monoblock valve, be careful not hold the pilot cover or return spring cap of the spool or accessory valves such as main 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)

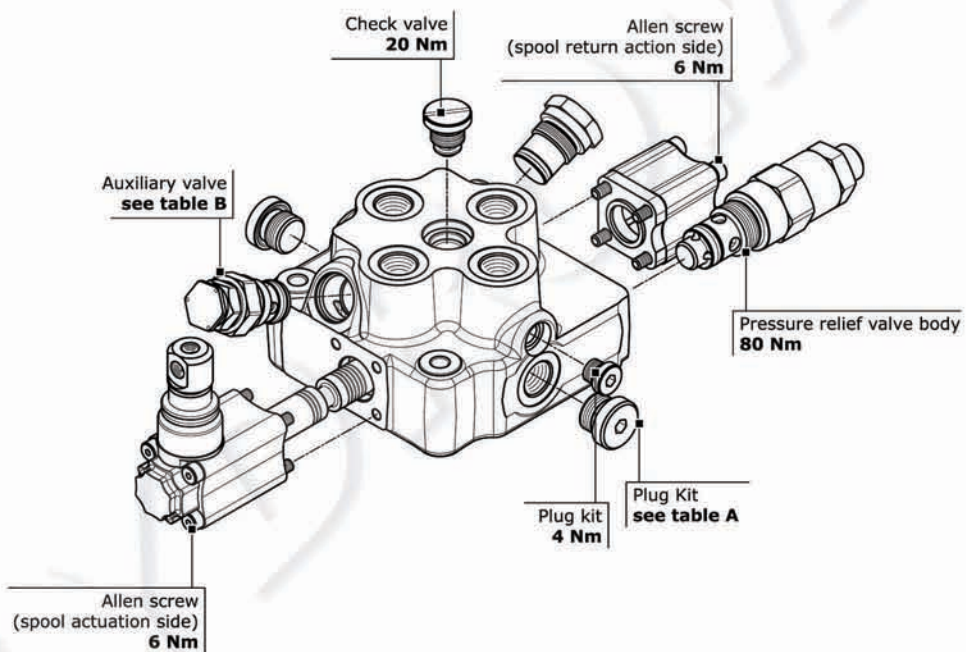
thread type	port P	Port A - B	Port T/HPCO
BSP (ISO - 228)	G 3/8	G 3/8	G 3/8
with rubber sealing (DIN 3869)	40	40	40
with copper or steel and rubber washer	40	40	40
UN-UNF (ISO - 725)	3/4" - 16 UNF	3/4" - 16 UNF	3/4" - 16 UNF
with O.R.	40	40	40

INSTALLATION

Fittings auxiliary valves (Nm)

Auxiliary valve type	
Antishock valve plug	20
Antishock valve body	60
Anticavitation valve plug	20
Anticavitation valve body	60
Plug replaces valve	60
Combined valve plug	20
Combined valve body	60

General Clamping torque (Nm)



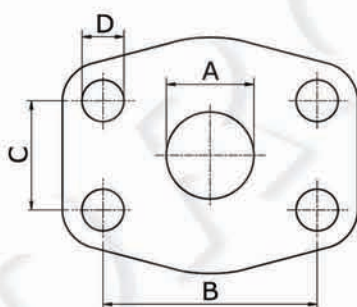
Dimensions - Thread codes

The connection ports size is indicated by an ordering code common for all Hydrocontrol 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