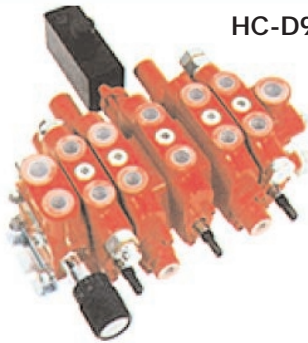
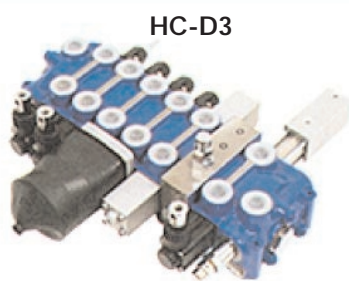




hydro control



HC-D9



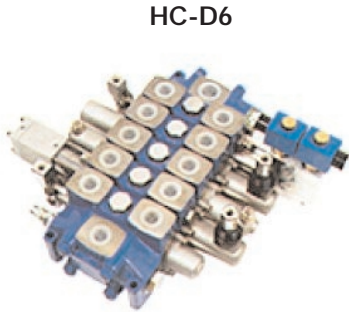
HC-D3



HC-D3M



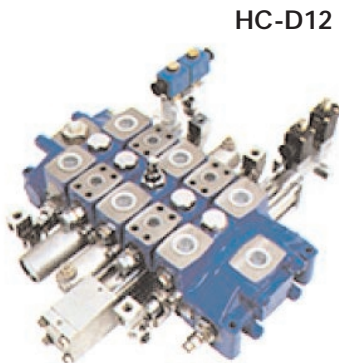
HC-D4



HC-D6



HC-D16



HC-D12



HC-D20



HC-D25

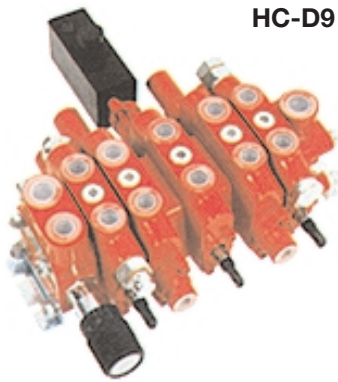


HC-D40

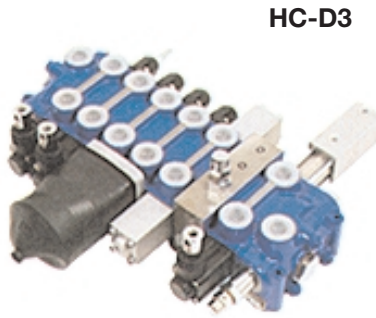


HC-D50

TECNICAL CATALOGUE FOR SECTIONAL VALVES



HC-D9



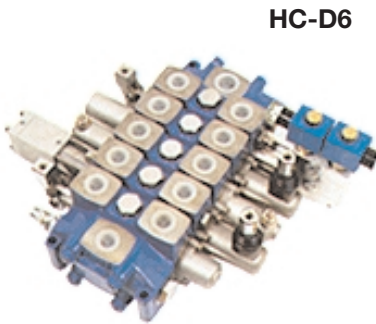
HC-D3



HC-D3M



HC-D4



HC-D6



HC-D16



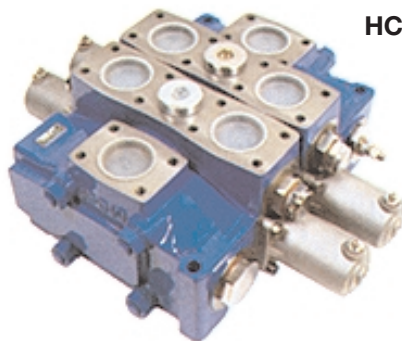
HC-D12



HC-D20



HC-D25



HC-D40



HC-D50

Standard catalogue DC.0297

The specifications detailed in this catalogue show standard products. Special applications are available to order subject to contacting our Engineering Department for an estimate. This catalogue is not open to interpretation and in case of doubt the customer is requested to contact the Hydrocontrol Technical Sales Office who will be pleased to supply detailed explanations. 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.

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FLOW DIVIDERS	Section C	Page 1-2
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CIRCUITS THAT MAY BE REALISED WITH OUR DIRECTIONAL CONTROL VALVES.

Parallel circuit (RP)

When the spool is operated it intercepts the switch gallery (o) by diverting the flow of oil to service ports 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.

Series circuit (RS)

When the spool is operated it intercepts the switch gallery (o) by diverting the flow of oil to service ports 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 from the series section is added to the pressure drop of the section itself.

Circuito tandem (RT)

When the spool is operated it intercepts the switch gallery (o) by diverting the flow of oil to work ports A or B;

The tandem circuit is powered by the switch gallery thus permitting the use of just one work section at a time.

The section downstream from the tandem section that has been actuated does not operate, the upstream section has priority.

Carryover connection (HPCO)

This option (standard on Hydrocontrol directional control valves) allows the switch gallery (o) to be extended outside in order to power a second directional control valve in series.

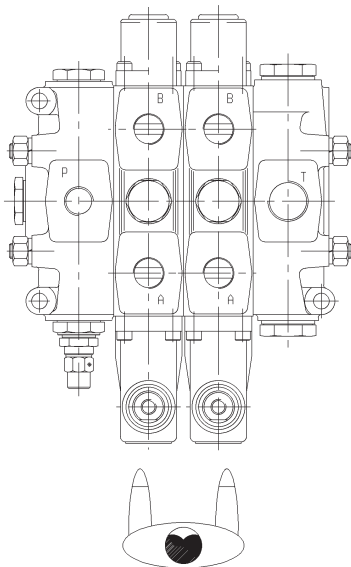
A directional control valve configured in this manner requires an unloading circuit (T) for the work ports.

ASSEMBLY INSTRUCTIONS.

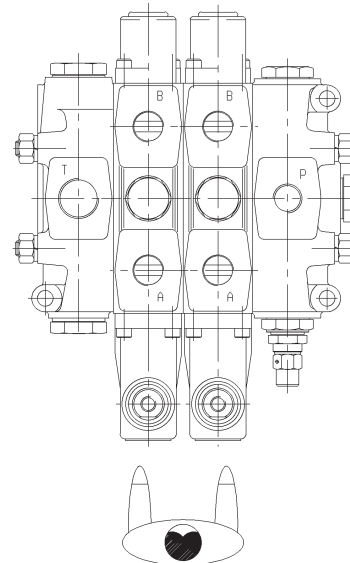
Since our directional control valve casings have symmetrical galleries, they can be converted from right-side inlet (R) to left-side inlet (L) simply by turning the spool and relative controls through 180°.

This operation is not possible when using spool types: 012 - 013 - 014.

Recommended curve for our standard directional control valves A01 (see remote controls catalogue).




Directional control valve with left inlet (L)



Directional control valve with right inlet (R)

Test conditions : Fluid viscosity 30 Cst
 Fluid temperature 50° C

 = Application standard

APPLICATION CONDITIONS

Operating temperature	:	from -25° to + 80° C
Kinematic viscosity	:	from 10 to 460 mm ² /s
Max. Pressure on port (T)	:	20 bar
Max. contamination level	:	NAS 1638 class 9 (19/16 ISO-4406)
Recommended filtration level	:	$\beta_{10} \geq 75$

FLUID COMPATIBILITY

TYPES OF FLUID	TEMPERATURE RANGE OF FLUID (°C)	GASKET MATERIAL	
		NBR	VITON
Mineral oil HLP (DIN 51524)	-25 +80	•	•
Oil in water emulsion HFA	+5 +55	•	•
Water in oil emulsion HFB	+5 +55	•	•
Polyglycol-based aqueous solution HFC	-25 +60	•	
Esters of phosphoric acid HCD (flameproof)	-20 +150		•

NBR Nitrile rubber compatible with mineral-based oils ASTM 1.

VITON Fluorinated elastomer for use at high temperatures, compatible with fluids ASTM 1 and ASTM 3.

Our directional control valves have NBR seals fitted as standard.

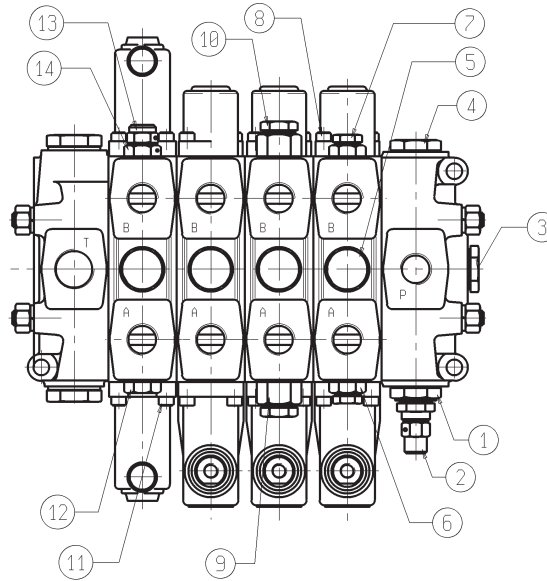
For directional control valves with VITON seals, please contact our Technical Sales Office.

UNITS OF MEASURE - CONVERSION FACTORS

Length	mm	in.		Flow rate	l	gal U.K.	gal U.S.	Mass	Kg	lb	
mm	1	0,0394		l	1	0,2200	0,2642	Kg	1	2,205	
in.	25,4	1		gal U.K.	4,546	1	1,2010	lb	0,4536	1	
				gal U.S.	3,785	0,8327	1				
Force Weight	Nm	Kgf		Pressure	bar	Pa	psi	<div style="display: inline-block; width: 30px; height: 20px; background-color: #ccc; border: 1px solid #000;"></div> = Units of measure standard			
Nm	1	0,1020		bar	1	100000	14,5				
Kgf	9,8067	1		Pa	0,0001	1	0,00014				
				psi	0,0689	6890	1				

SECTIONAL VALVES

STANDARD CLAMPING TORQUE



POS.	DESCRIPTION	(Nm)										
		D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
1	Pressure relief valve body	80	80	80	85	130	130	130	210	210	280	350
2	Pressure relief valve cap	19	19	19	19	19	19	19	19	19	19	19
3	Fittings in service ports P-A-B-T	see table (A)										
4	Plug to replace pressure relief valve	80	80	80	85	130	130	130	210	210	280	
5	Check valve plug	20	55	25	80	80	80	120	200	200	300	
6	Anticavitation valve body	30	30	50	55	50	120	120	180	180	220	
7	Anticavitation valve cap	22	22	22	22	22	55	55	70	70	170	
8	Allen screw	4,5	3,5	3,5	3,5	10,4	26	26	26	26	40	
9	Combined valve body	50		50	55	50	120	120	180	180	220	
10	Combined valve cap	22		22	22	22	55	55	70	70	170	
11	Allen screw	4,5	3,5	3,5	3,5	10,4	26	26	26	26	40	
12	Cap replaces shockproof valve	30	30	50	55	50	120	120	180	180	220	
13	Service line relief valve adjuster cap	22	22	22	22	22	55	55	70	70	170	
14	Service line relief valve body	50	30	50	55	50	120	120	180	180	220	

Table (A)	(Nm)														
	18 x 1,5 M	22 x 1,5 M	3/8" BSP	1/2" BSP	3/4" BSP	1" BSP	1 1/4" BSP	1 1/2" BSP	2" BSP	3/4" UNF	7/8" UNF	1 1/16" UN	1 5/16" UN	1 5/8" UN	
	55	85	50	85	150	240	288	320	350	63	93	170	285	300	

SECTIONAL VALVES

QUICK-REFERENCE GUIDE

TYPE	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
Number of working sections	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,12	1,6	
CIRCUITS												
Parallel	●	●	●	●	●	●	●	●	●	●	●	
Series	●		●	●	●	●	●	●	●			
Tandem	●		●	●								
Parallel circuit stroke (mm)	6+6	5+5	5+5	6+6	7+7	7+7	9,5+9,5	9,5+9,5	12+12	15+15	18+18	
Series circuit stroke (mm)	6+6		5+5	6+6	5+5	7+7	6,5+6,5	6,5+6,5	8,5+8,5			
Float spool extra stroke (mm)	5	5	5	5,5	6	7	7	7	9,5	10		
Maximum recommended flow rate (l/min)	35	45	55	80	100	150	180	250	380	700	1200	
PRESSURE												
Maximum working pressure (bar)	350	350	350	350	350	350	350	350	350	350	300	
PRESSURE RELIEF VALVE INLET SECTION												
Direct operating pressure relief valve	●	●	●	●								
Pilot operated pressure relief valve		●	●	●	●	●	●	●	●	●	●	
Pilot operated pressure relief valve with 2nd stage		●	●	●	●	●	●					
External piloted valve		●	●	●	●	●	●	●	●	●		
Solenoid operated dump valve 12 VDC	●	●	●	●	●	●	●					
Solenoid operated dump valve 24 VDC	●	●	●	●	●	●	●					
Main anticavitation valve		●	●	●	●	●	●	●	●	●		
Traverse or hydraulic brake lock valve		●	●	●								
AUXILIARY VALVES (work ports A-B)												
Service line relief valve	●	●	●	●	●	●	●	●	●	●		
Anticavitation valve	●	●	●	●	●	●	●	●	●	●		
Combined valve	●		●		●	●	●	●	●	●		
Pilot operated combined valve								●	●	●		
SPOOL ACTION												
Manual control	●	●	●	●	●	●	●	●	●	●	●	
Without lever	●	●	●	●	●	●	●	●	●	●		
Hydraulic control	●	●	●	●	●	●	●	●	●	●	●	
90° joystick control	●	●	●	●	●		●					
SPOOL RETURN ACTION												
Spring return	●	●	●	●	●	●	●	●	●	●	●	
Detent in A and B	●	●	●	●	●	●	●	●	●	●		
Detent in A	●	●	●	●	●	●	●	●	●	●		
Detent in B	●	●	●	●	●	●	●	●	●	●		
Detent in 4th position	●	●	●	●	●	●	●	●	●	●		
Arranged for dual control	●	●	●	●	●	●	●	●				
Pneumatic operation ON-OFF		●	●	●	●	●	●	●				
Proportional pneumatic operation		●	●	●	●	●	●	●				
Hydraulic load limit	●	●	●	●	●	●						
Hydraulic load limit with dual control	●	●	●	●	●	●						
Electrical load limit	●	●	●	●	●	●						
Electrical load limit with dual control	●	●	●	●	●	●						
Direct push-pull solenoid 12 - 24 VDC	●	●	●									
Electrohydraulic ON-OFF 12 - 24 VDC		●	●	●	●	●	●	●				
Electropneumatic ON-OFF 12 - 24 VDC		●	●	●	●		●					
Electrohydraulic control for pressure relief valve		●	●	●	●	●	●	●				

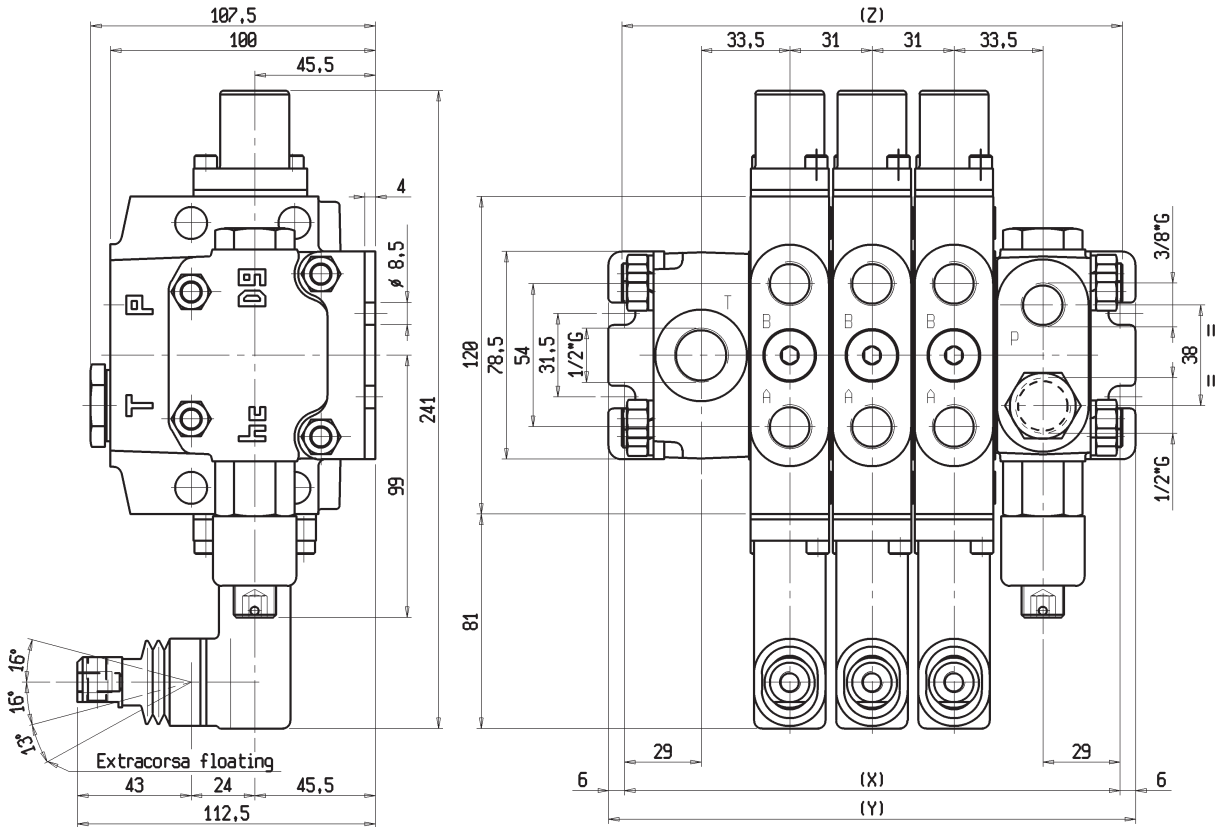
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DIMENSIONS

TYPICAL CURVES

CIRCUITS

DIMENSIONS



Flow rate 35 l/min

Standard lever code : **ZA - M8 - 210**

Max. Pressure 350 bar

(to be ordered separately)

Spool stroke 6 + 6 mm

N° of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	125	156	187	218	249	280	311	342	373	404	435	466
	Y	137	168	199	230	261	292	323	354	385	416	447	478
	Z	136	157	188	219	250	281	312	343	374	405	436	467
Weight (Kg)		4,5	6,2	7,9	9,6	11,3	13	14,7	16,4	18,1	19,8	21,5	23,2
Tie-rod clamping torque	Nm	24,5											

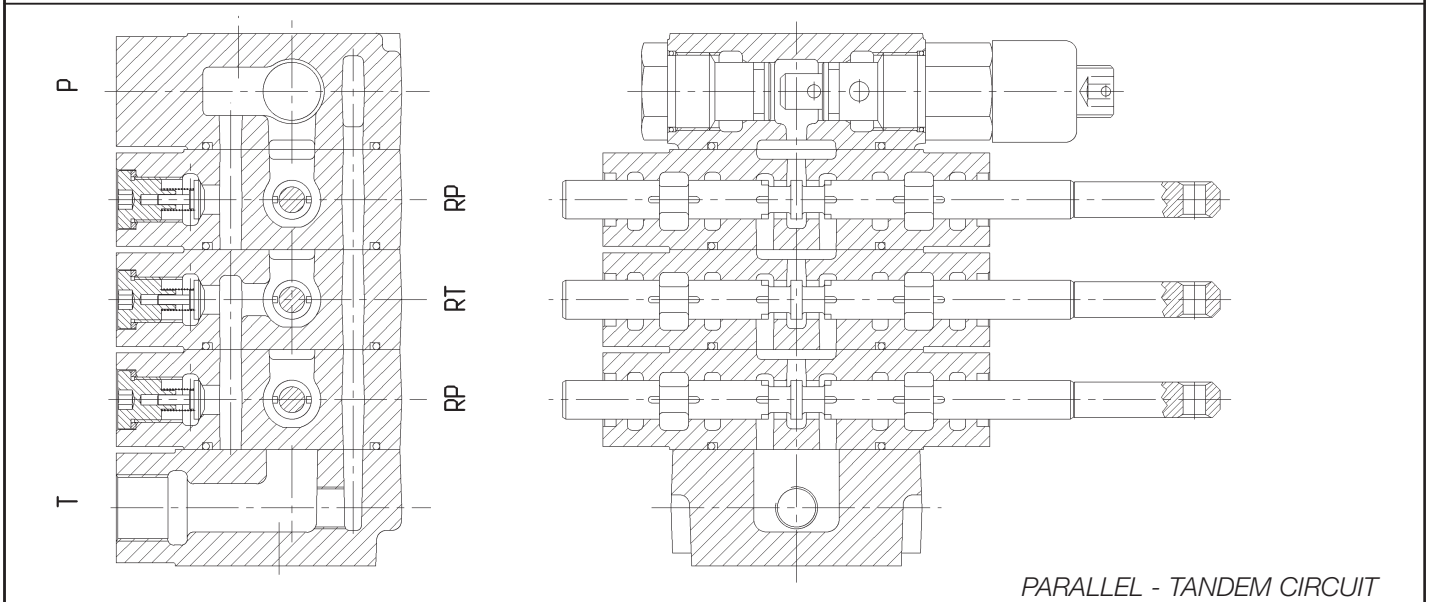
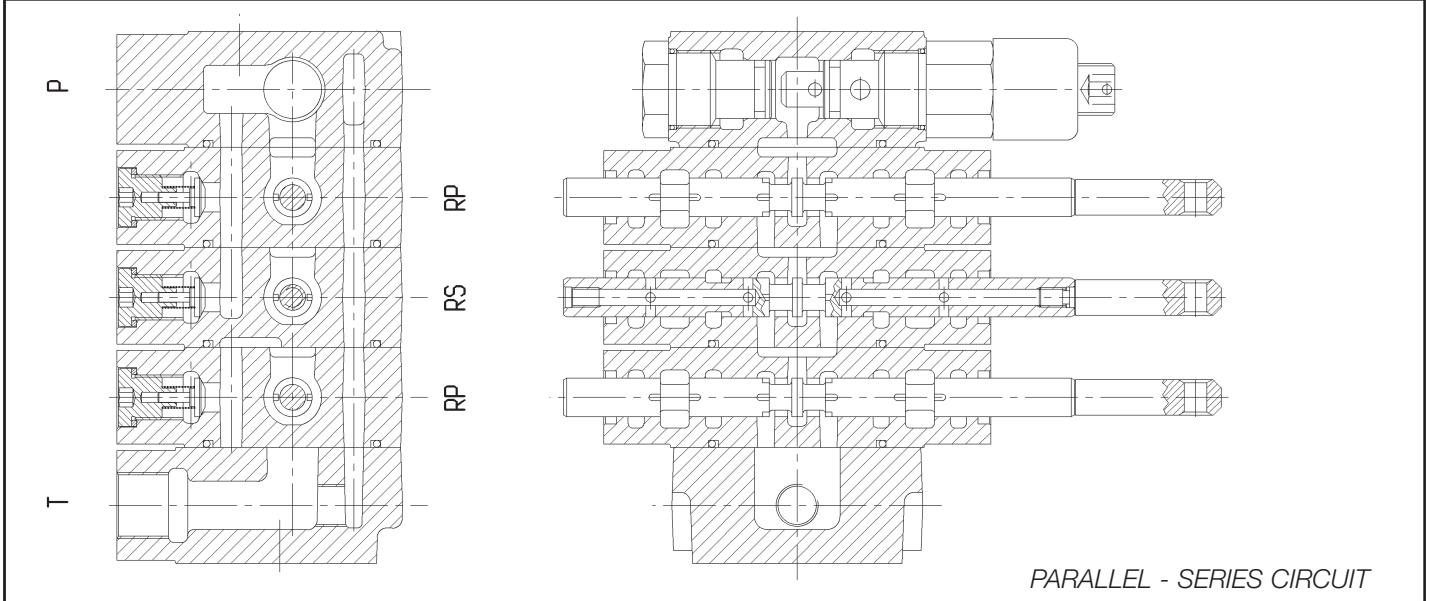
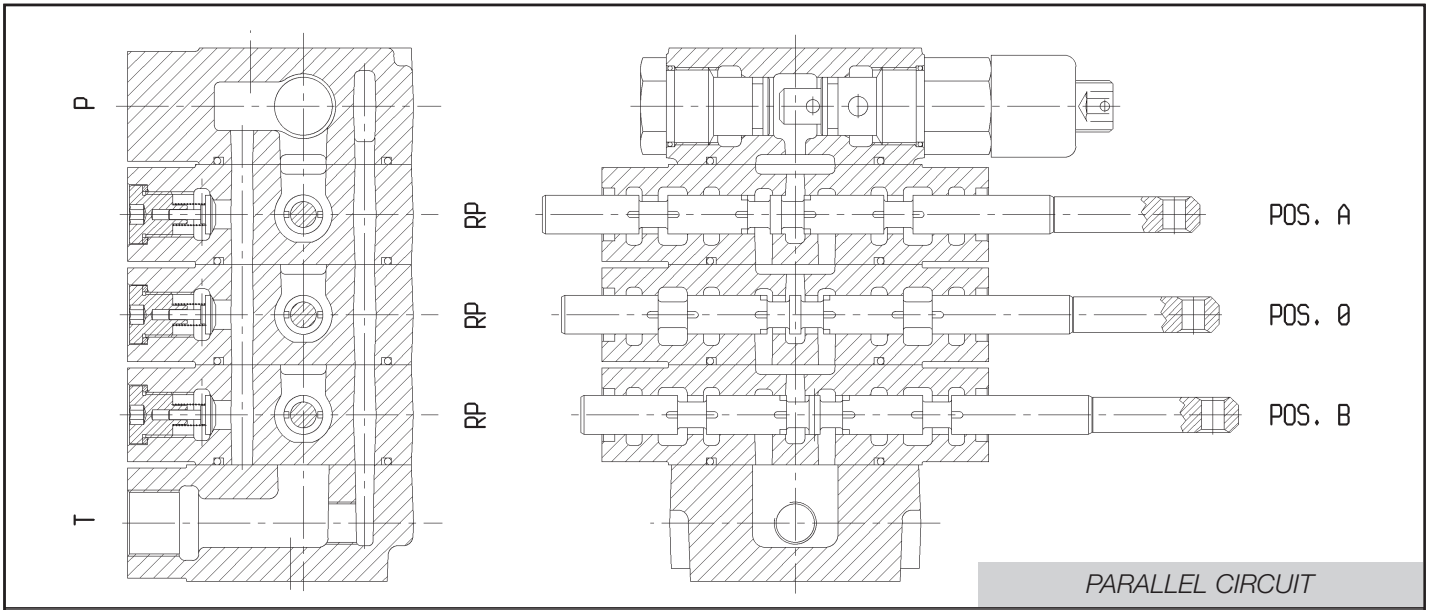
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Direct acting pressure relief valve curve setting ranges (bar)</p> <ul style="list-style-type: none"> 30 - 110 111 - 220 221 - 350

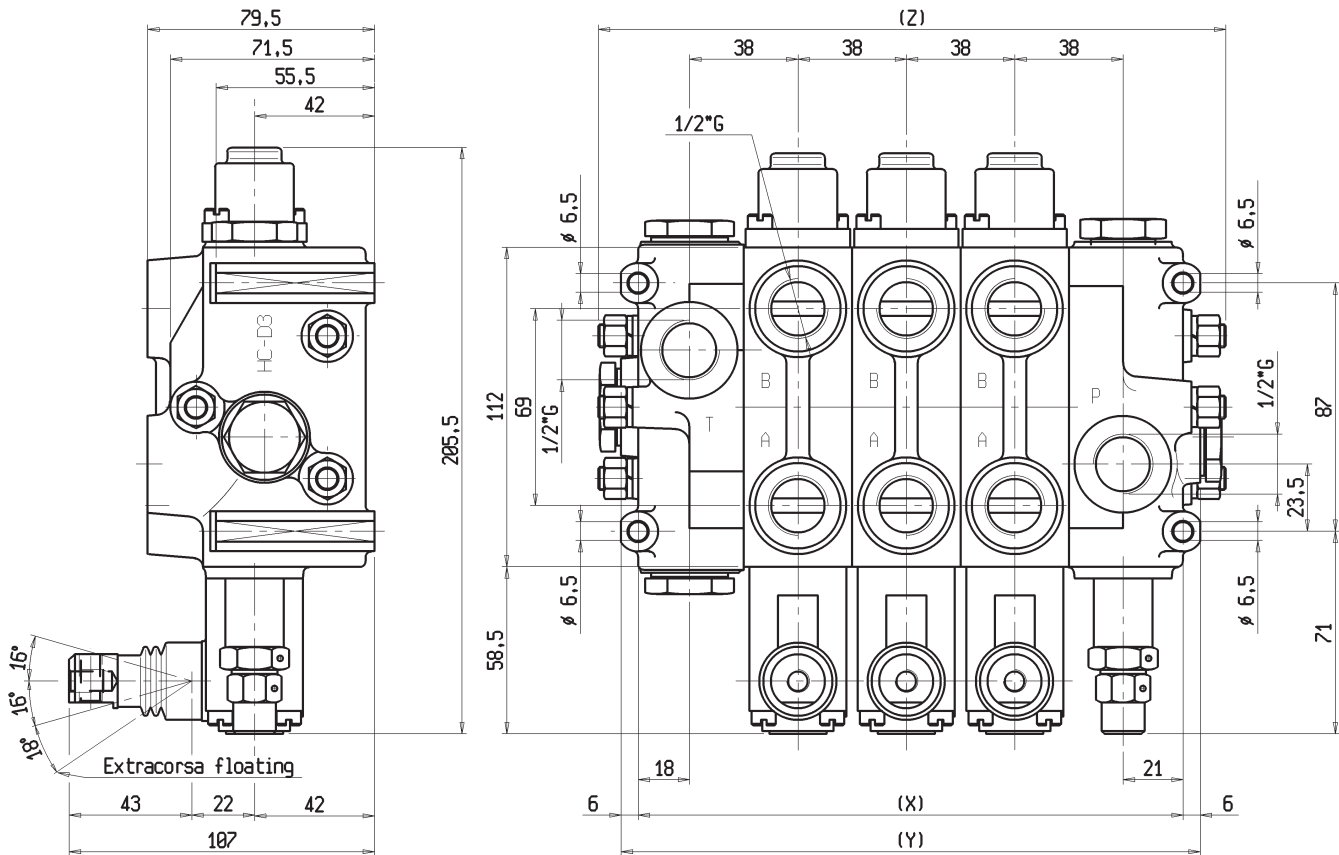
TYPICAL CURVES

	<p>Service line relief valve setting ranges full flow pressure (bar) 20 - 100 101 - 220 221 - 350</p>
	<p>Combined valve curve setting ranges full flow pressure (bar) 20 - 60 61 - 100 101 - 220 221 - 350</p>
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



DIMENSIONS



Flow rate 45 l/min

Standard lever code : **ZA - M8 - 210**

Max. Pressure 350 bar

(to be ordered separately)

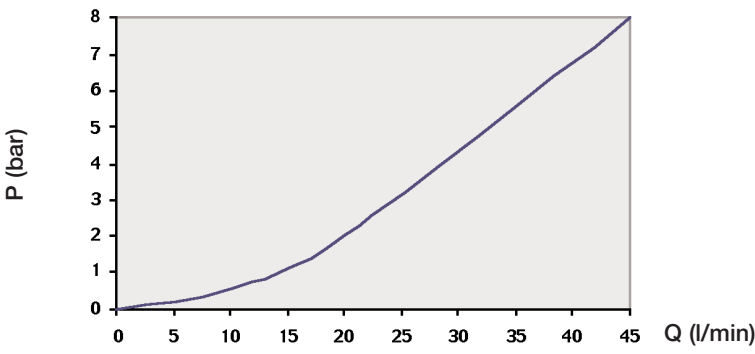
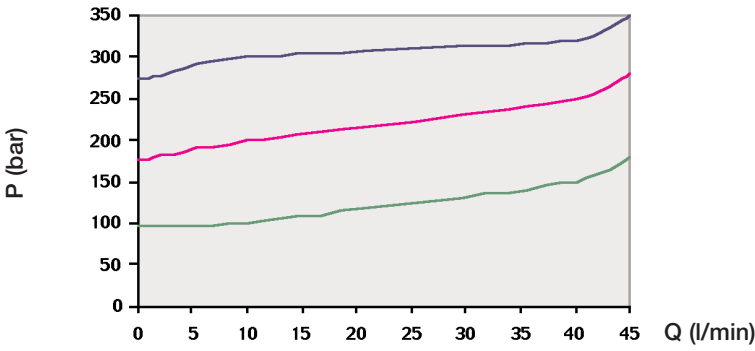

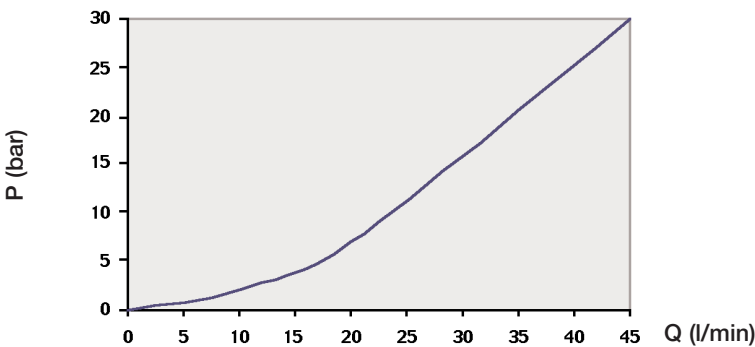
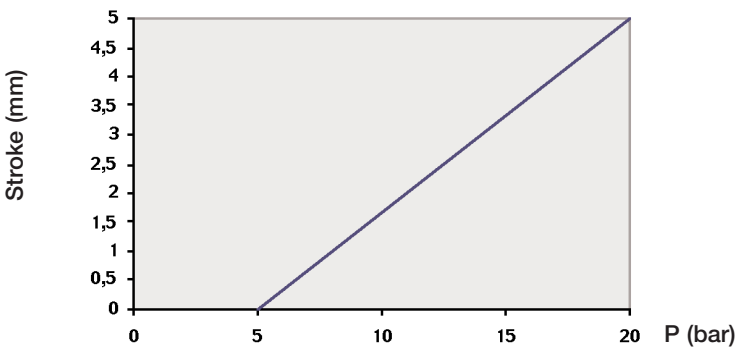
Spool stroke 5 + 5 mm

N°of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	115	153	191	229	267	305	343	381	419	457	495	533
	Y	127	165	203	241	279	317	355	393	431	469	507	545
	Z	142	180	218	256	294	332	370	408	446	484	522	560
Weight (Kg)		5,6	7,8	9,9	12,1	14,3	16,5	18,6	20,8	22,9	25,1	27,2	29,4
Tie-rod clamping torque	Nm	35											

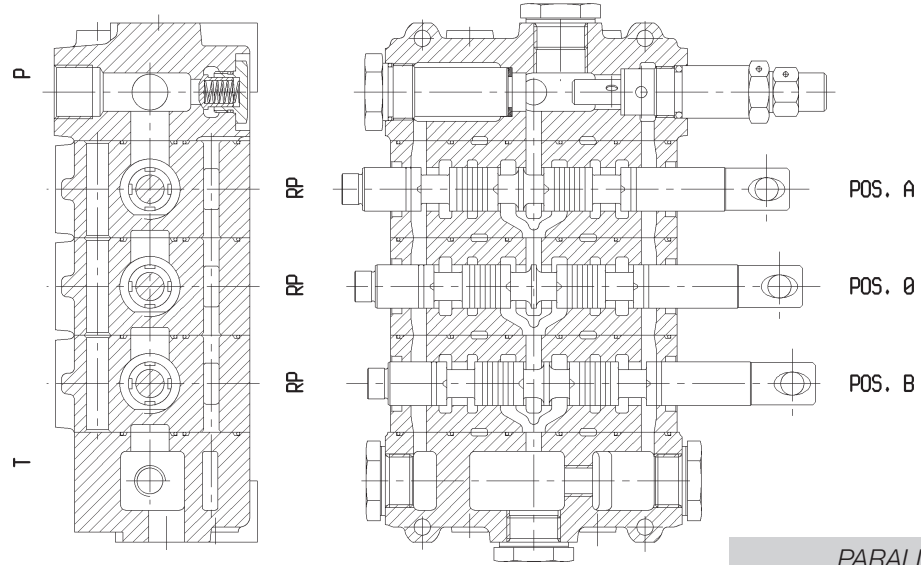
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Direct acting pressure relief valve curve setting ranges (bar) 10 - 40 41 - 70 71 - 130 131 - 210 211 - 350</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar) 30 - 350</p>

TYPICAL CURVES

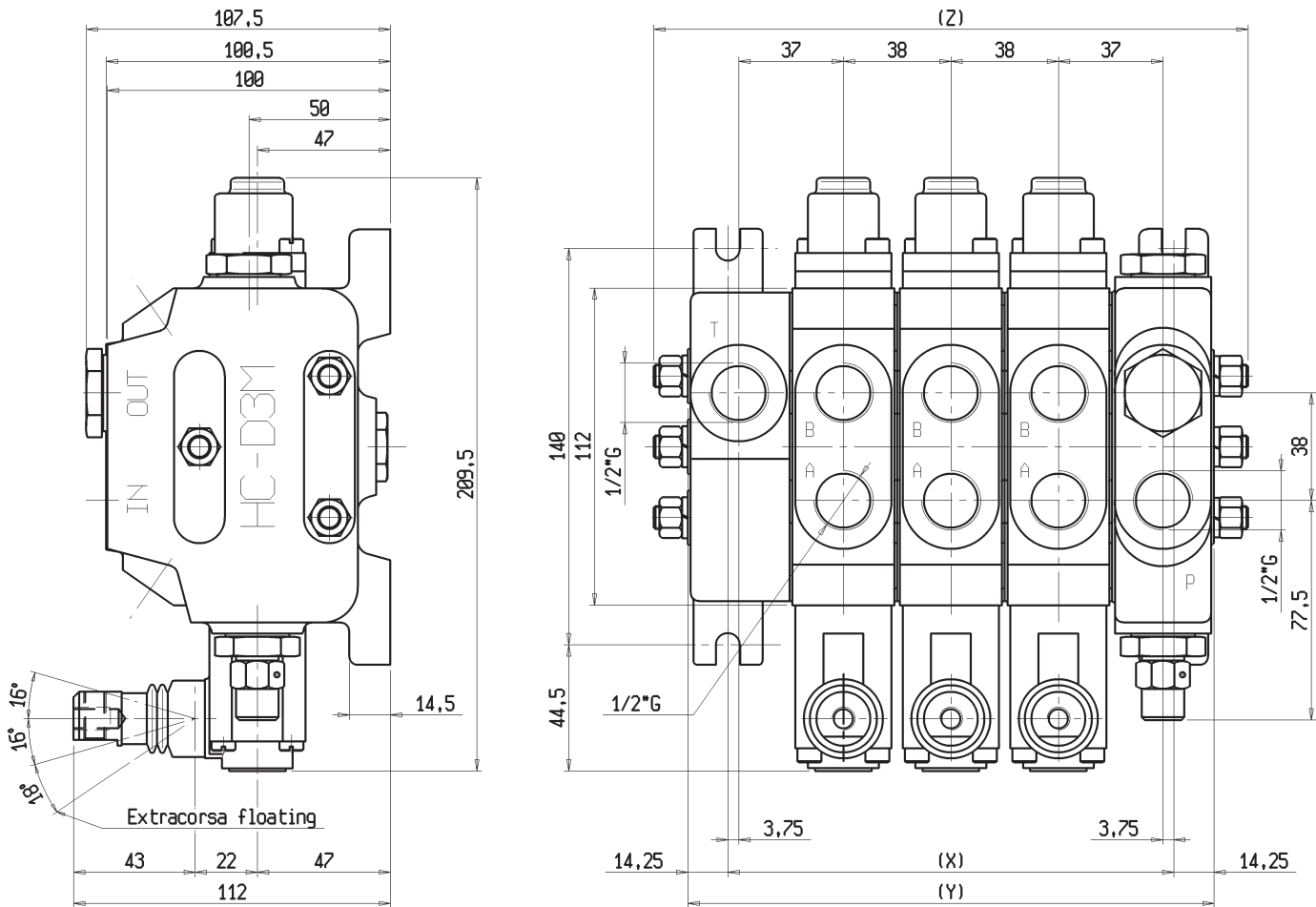
	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 20 - 60 61 - 100 101 - 220 221 - 350
	
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



PARALLEL CIRCUIT

DIMENSIONS



Flow rate 55 l/min

Max. Pressure 350 bar

Spool stroke 5 + 5 mm

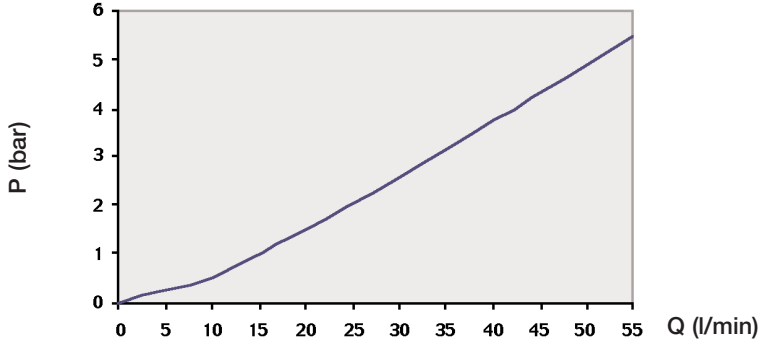
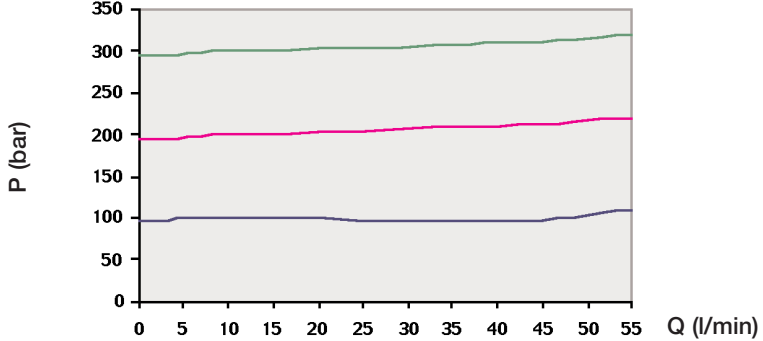
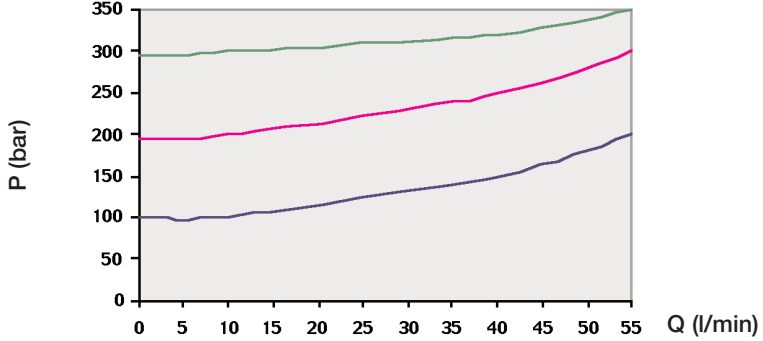
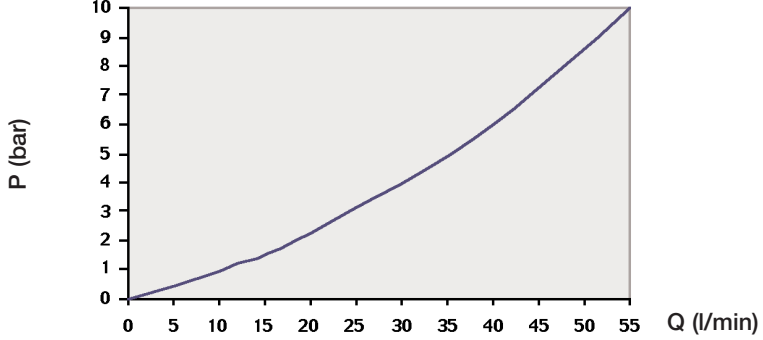
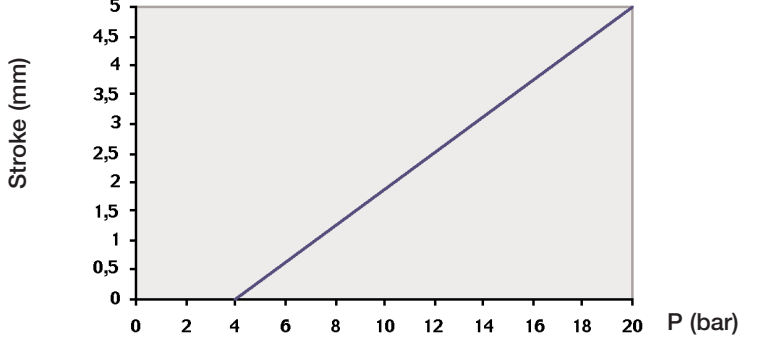
Standard lever code : **ZA - M8 - 210**
(to be ordered separately)

N°of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	81,5	119,5	157,5	195,5	233,5	271,5	309,5	347,5	385,5	423,5	461,5	499,5
	Y	110	148	186	224	262	300	338	376	414	452	490	528
	Z	132	170	208	246	284	322	360	398	436	474	512	550
Weight (Kg)		6,3	8,8	11,2	13,7	16,2	18,6	21	23,5	26	28,5	31	33,3
Tie-rod clamping torque	Nm	35											

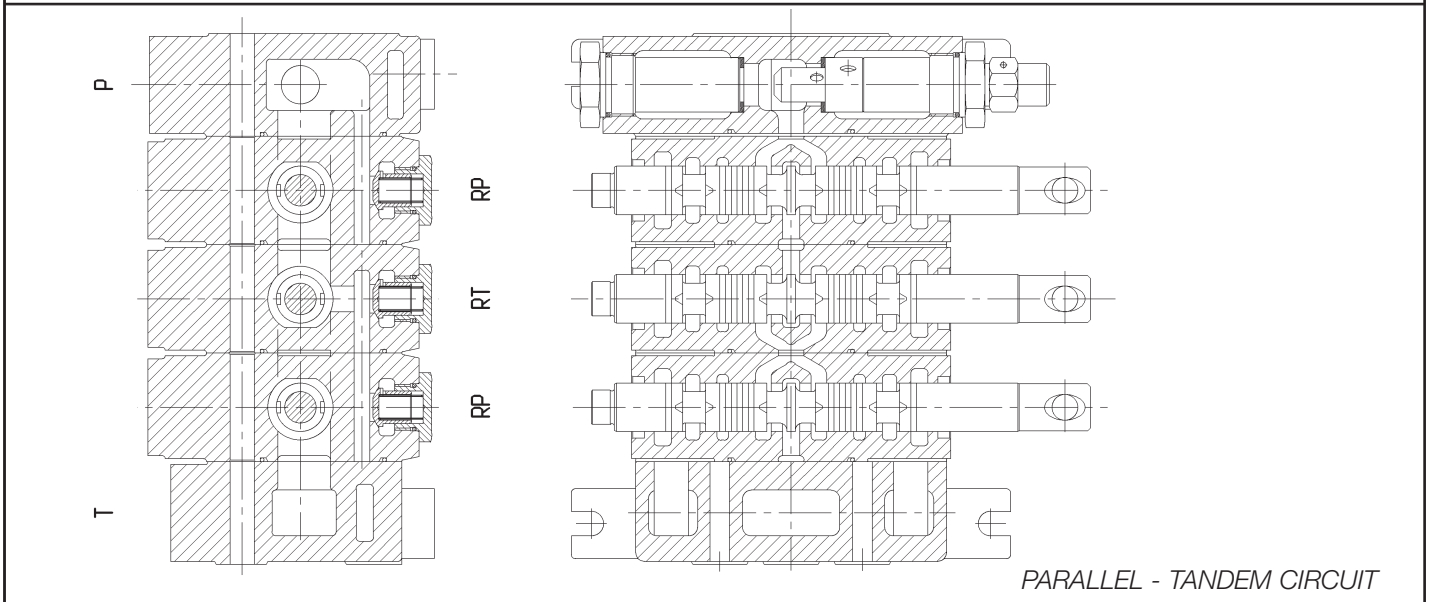
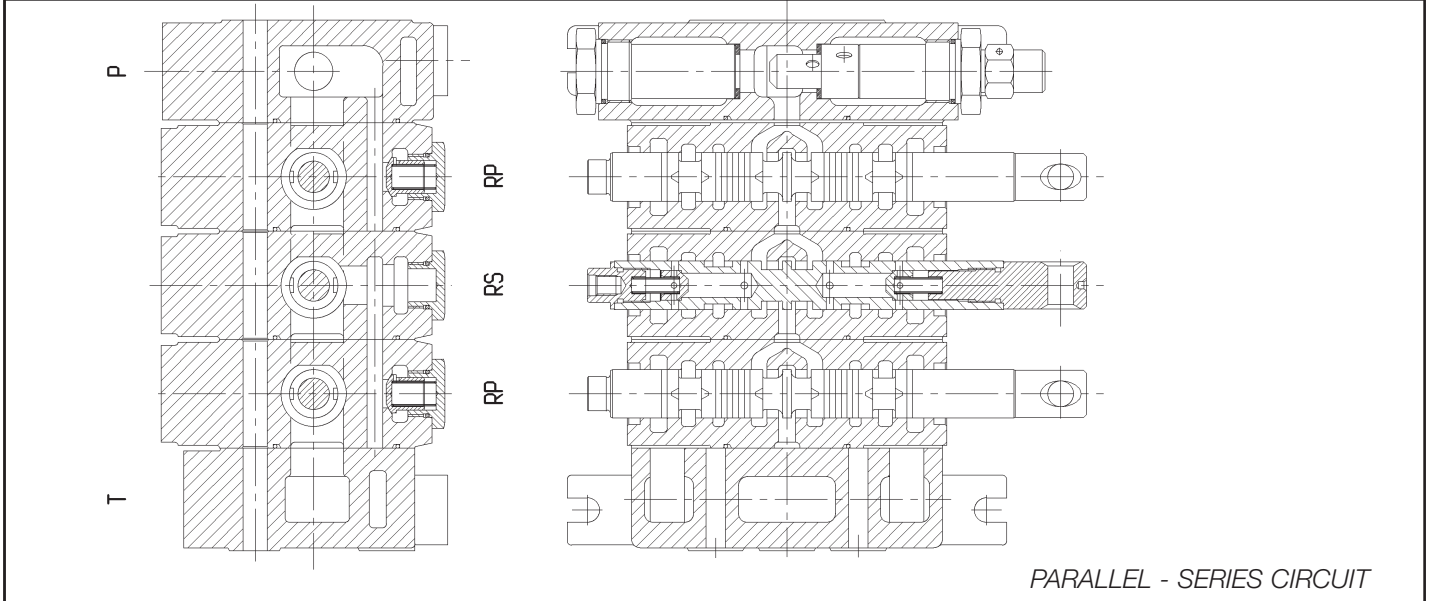
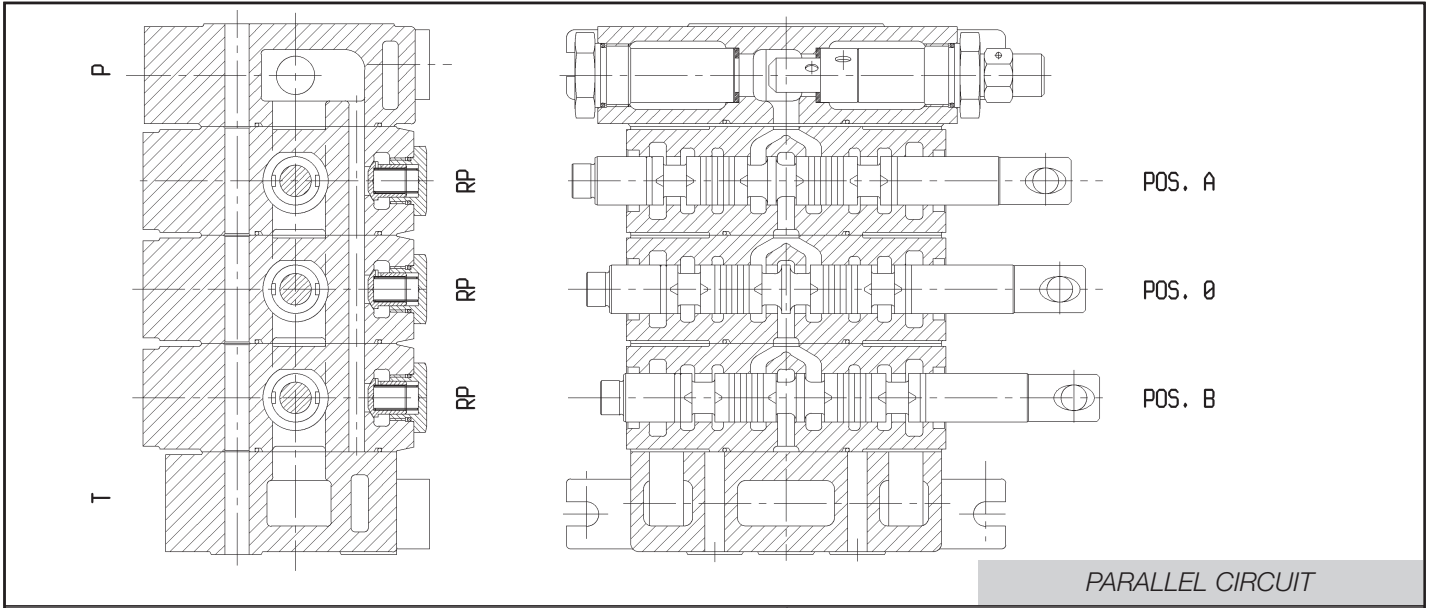
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Direct acting pressure relief valve curve setting ranges (bar) 30 - 110 111 - 150 151 - 200 201 - 250 251 - 350</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar) 30 - 350</p>

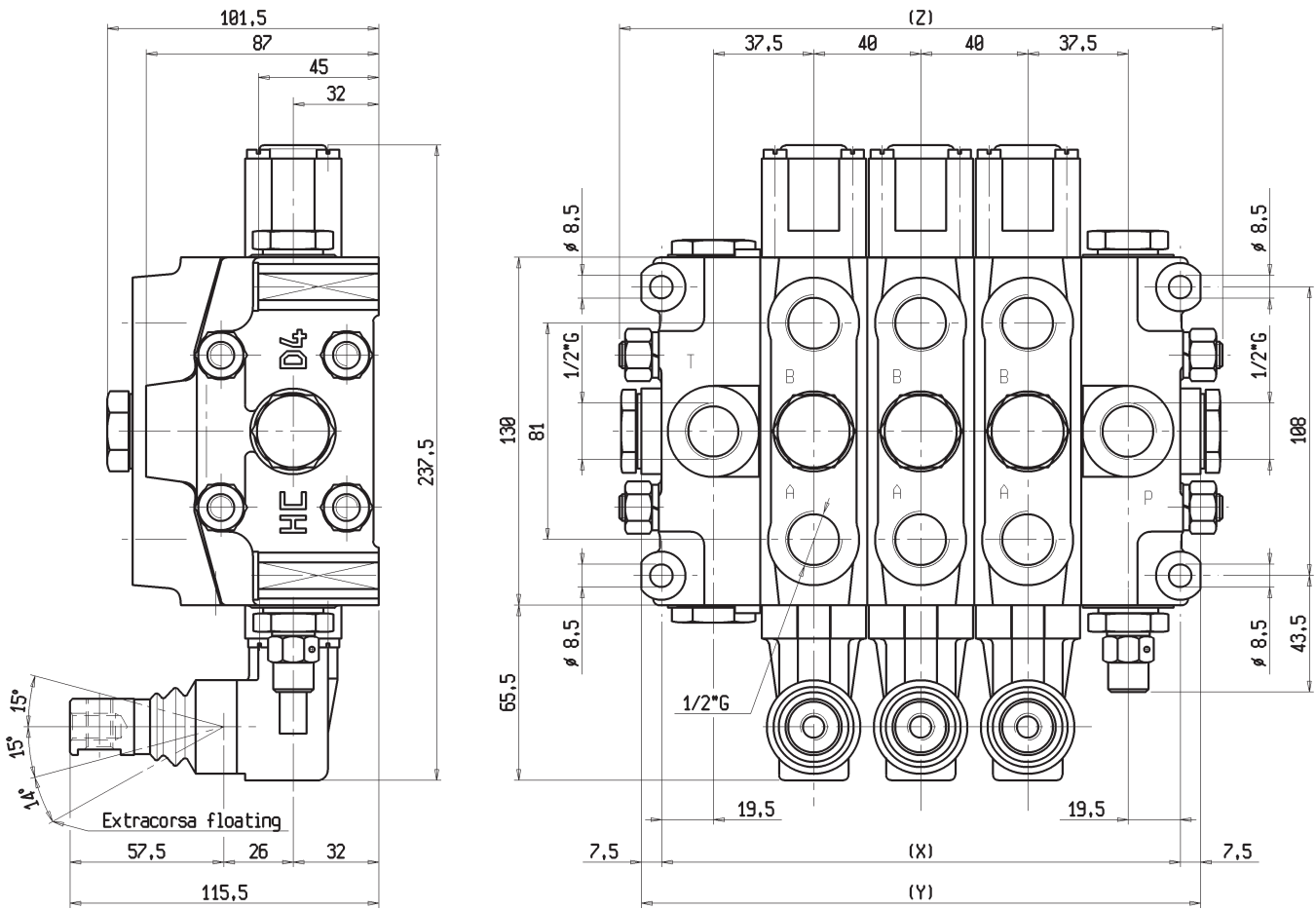
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar) 20 - 100 100 - 220 221 - 350</p>
	<p>Combined valve curve setting ranges full flow pressure (bar) 20 - 60 61 - 100 101 - 220 221 - 350</p>
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



DIMENSIONS



Flow rate 80 l/min

Standard lever code : **ZA - M10 - 190**

Max. Pressure 350 bar

(to be ordered separately)

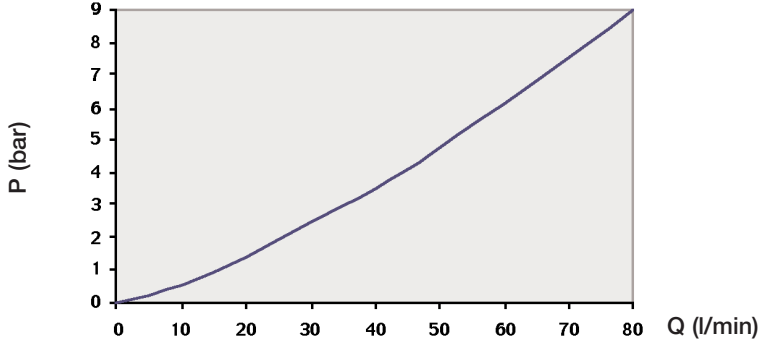
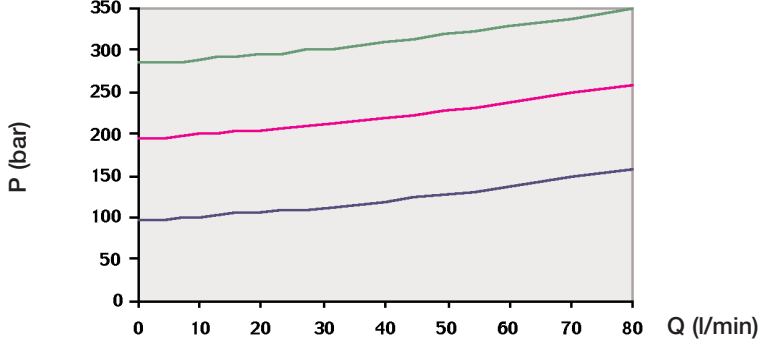
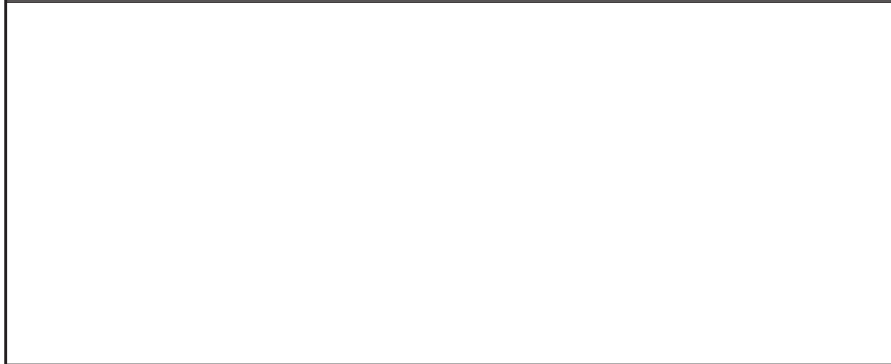
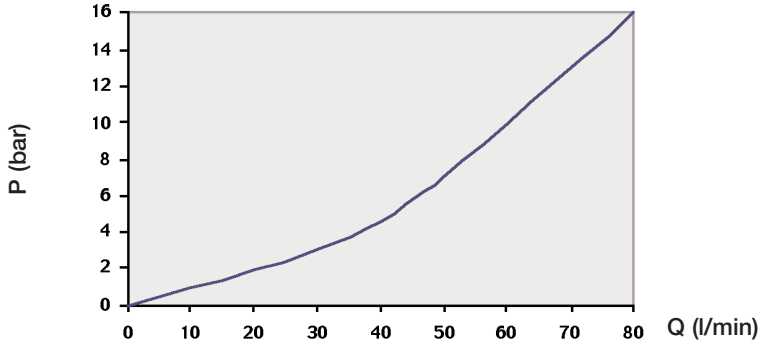
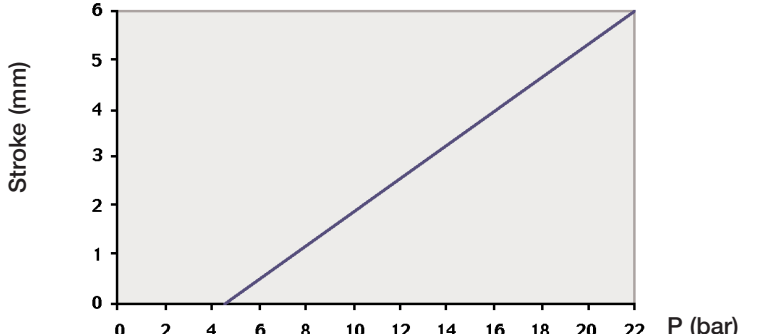
Spool stroke 6 + 6 mm

N° of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	114	154	194	234	274	314	354	394	434	474	514	554
	Y	129	169	209	249	289	329	369	409	449	489	529	569
	Z	140	180	220	260	300	340	380	420	460	500	540	580
Weight (Kg)		8	10,8	13,7	16,5	19,4	22,3	25,2	28	30,8	33,7	36,6	39,5
Tie-rod clamping torque	Nm	35											

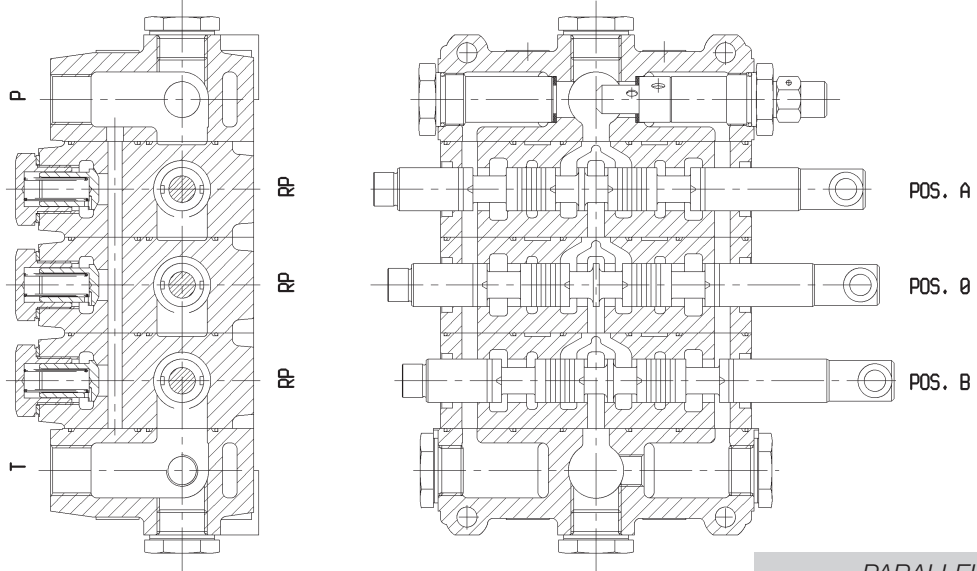
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Direct acting pressure relief valve curve setting ranges (bar) 30 - 110 111 - 150 151 - 200 201 - 250 251 - 350</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar) 30 - 350</p>

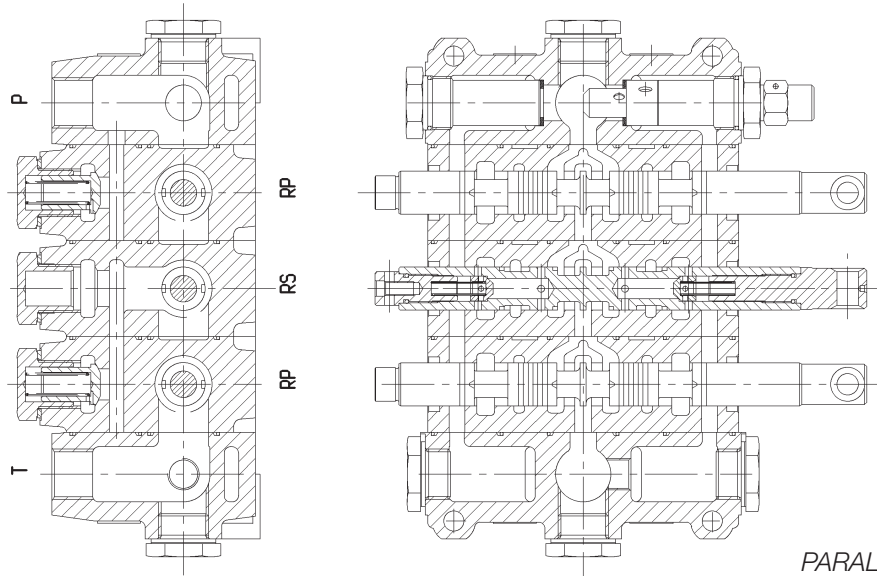
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 40 - 120 121 - 150 151 - 250 251 - 350
	
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

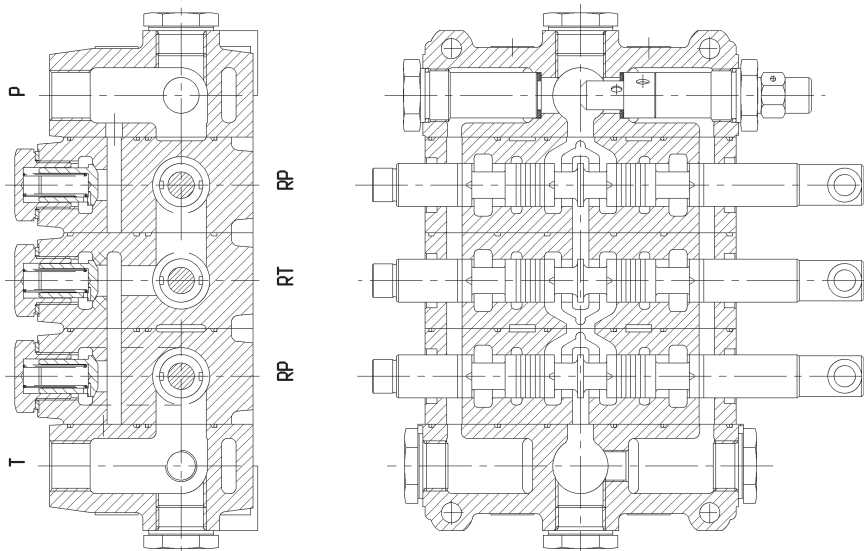
CIRCUITS



PARALLEL CIRCUIT

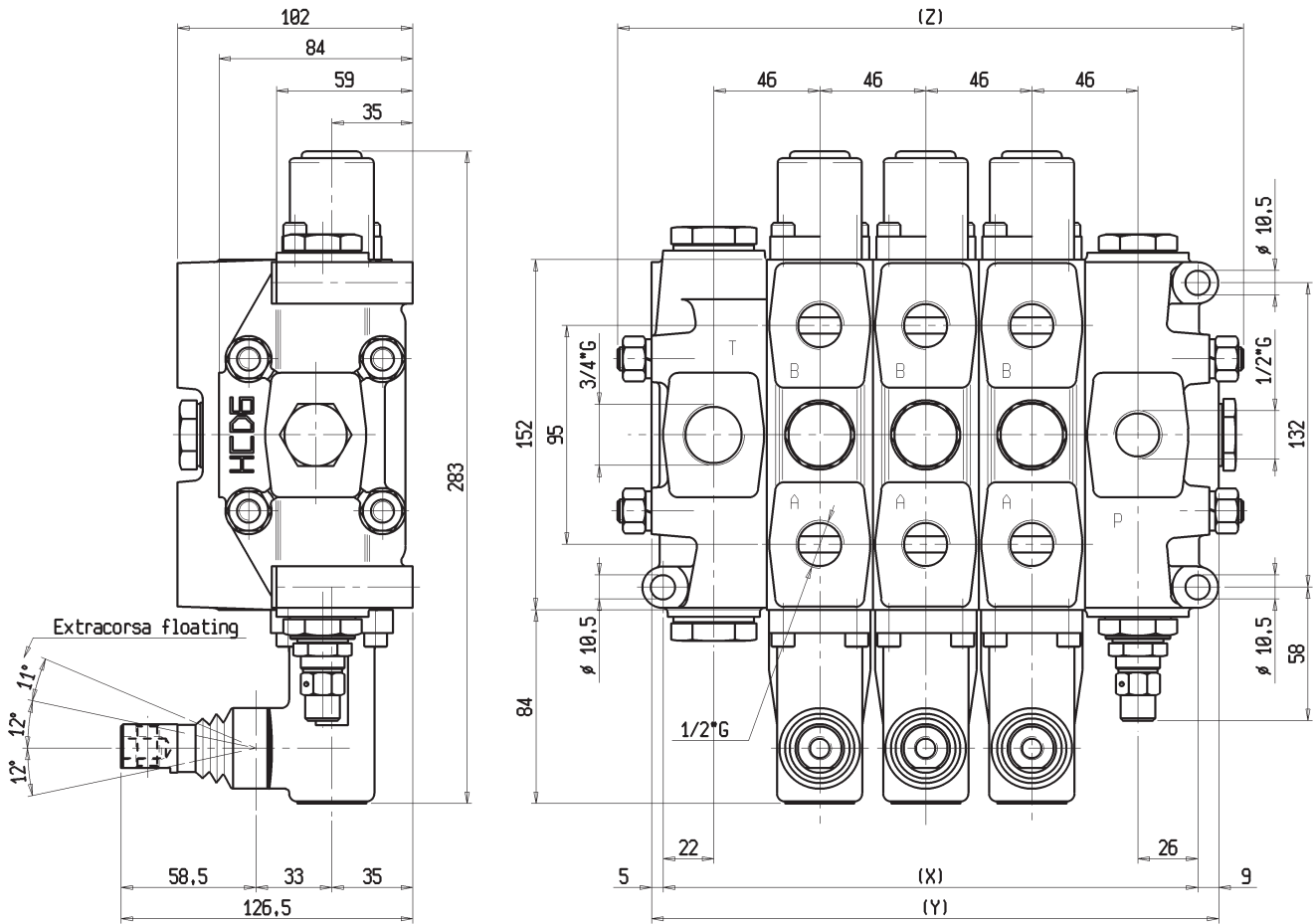


PARALLEL - SERIES CIRCUIT



PARALLEL - TANDEM CIRCUIT

DIMENSIONS



Flow rate 100 l/min

Max. Pressure 350 bar

Spool stroke 7 + 7 (mm)

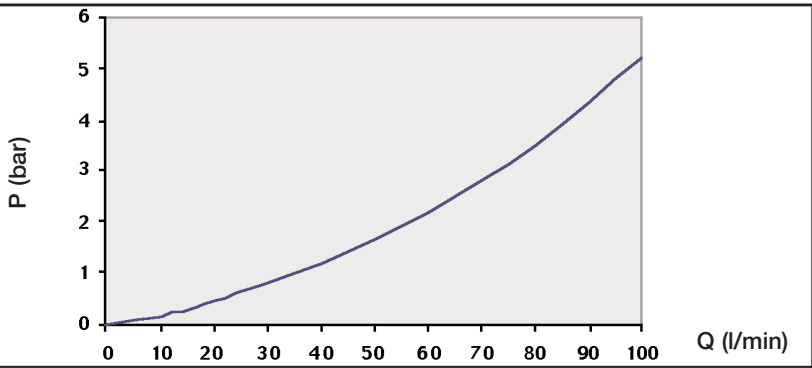
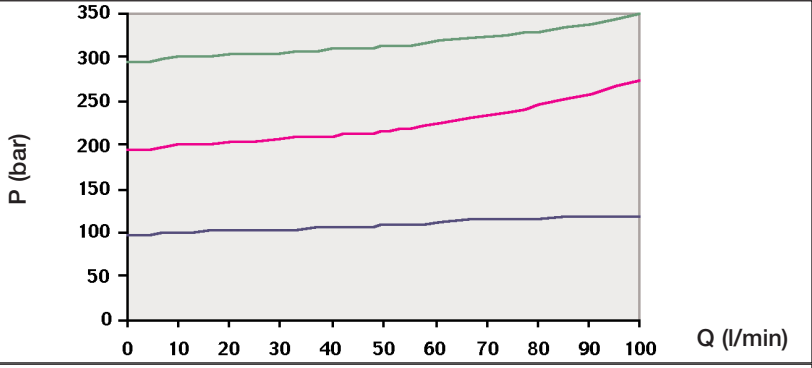
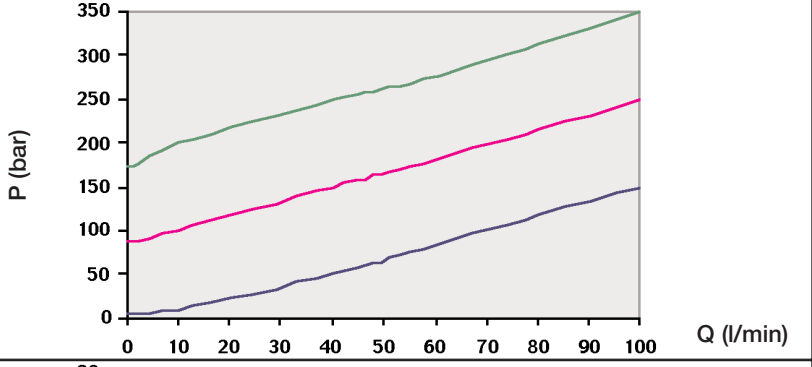
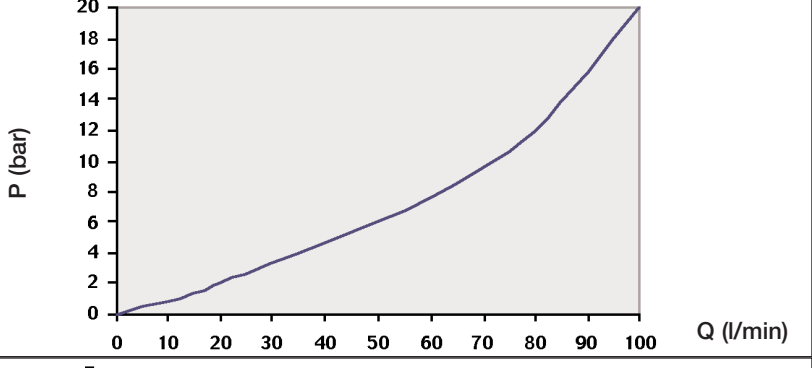
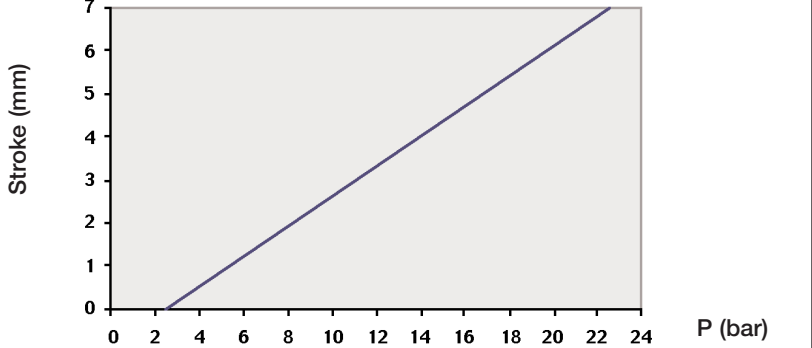
Standard lever code : **ZA - M10 - 240**
 (to be ordered separately)

N°of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	140	186	232	278	324	370	416	462	508	554	600	646
	Y	156	202	248	294	340	386	432	478	524	570	616	662
	Z	180	226	272	318	364	410	456	502	548	594	640	686
Weight (Kg)		11,6	16,1	20,5	25	29,4	33,9	38,3	42,8	47,2	51,7	56,1	60,6
Tie-rod clamping torque	Nm	50											

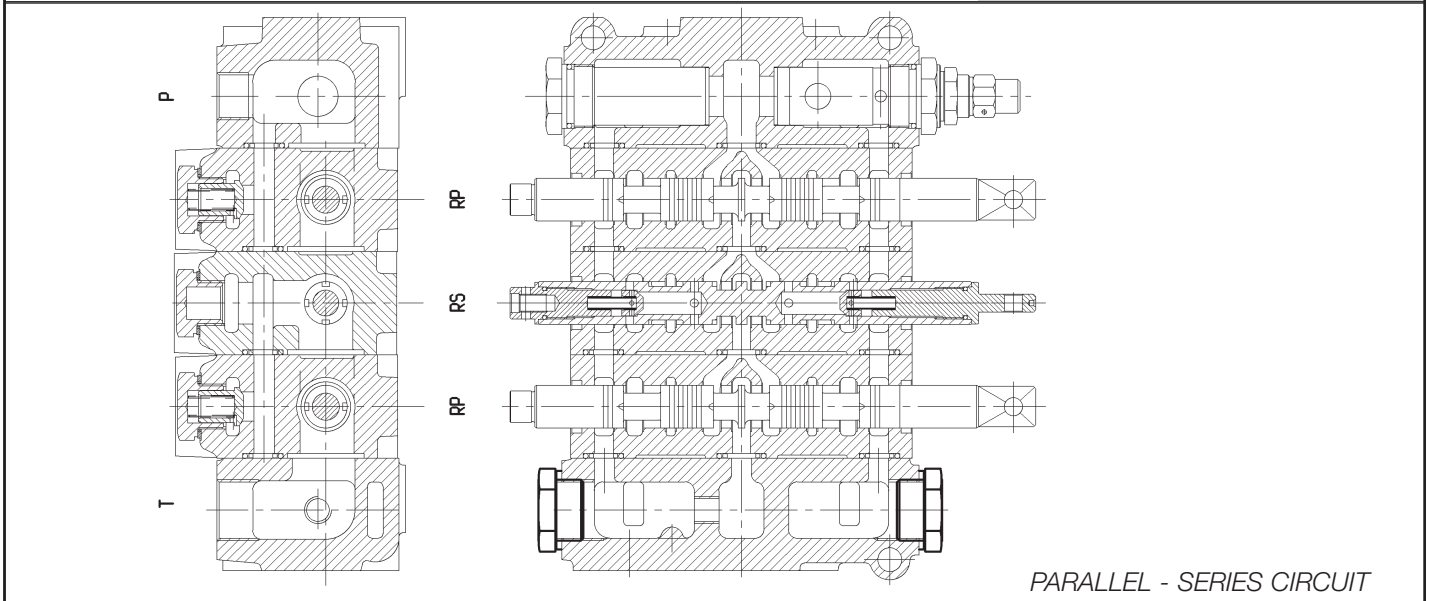
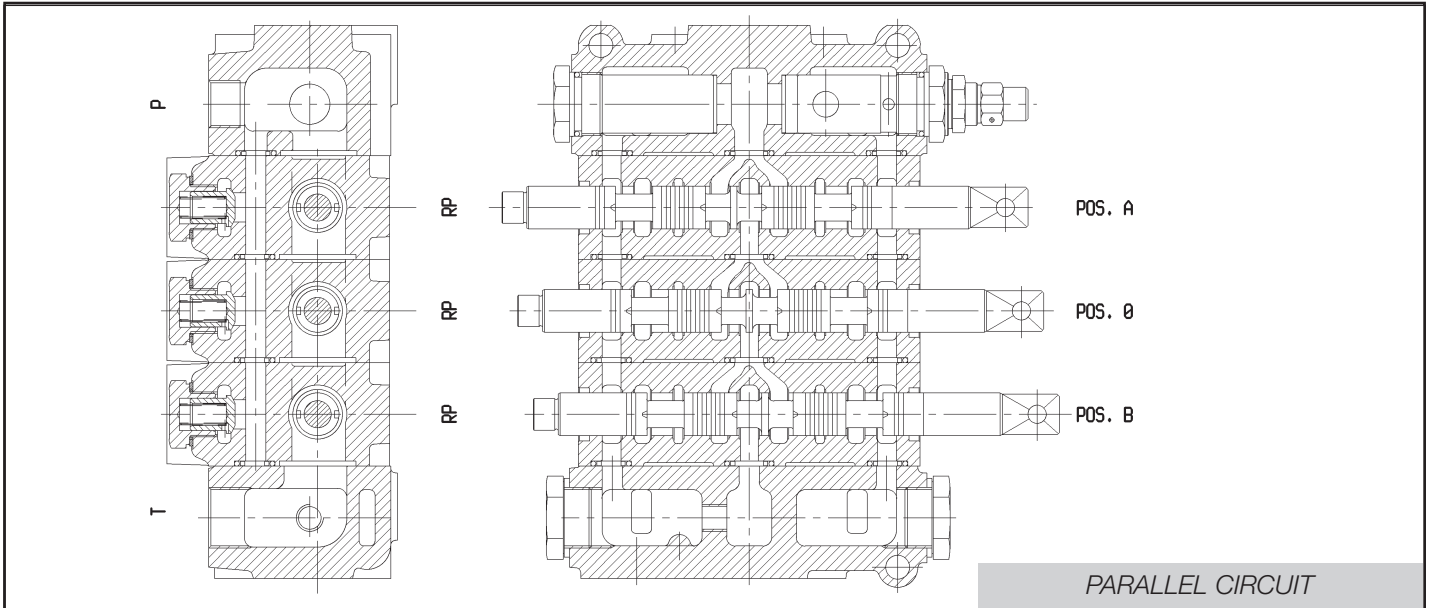
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar)</p> <ul style="list-style-type: none"> 3 - 40 41 - 180 181 - 250 251 - 350

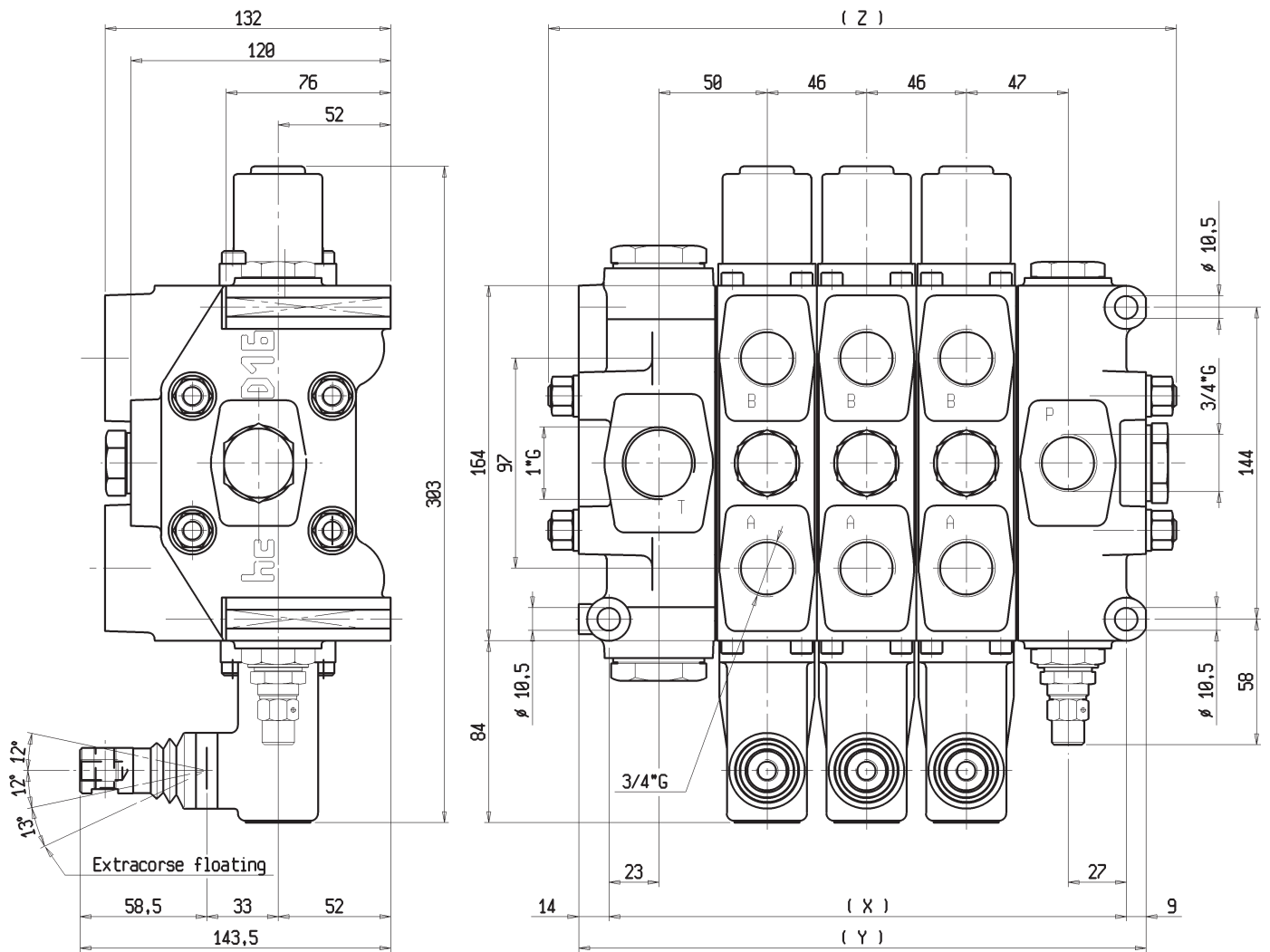
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar) 30 - 110 111 - 180 181 - 290 291 - 350</p>
	<p>Combined valve curve setting ranges full flow pressure (bar) 100 - 200 201 - 280 281 - 350</p>
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



DIMENSIONS



Flow rate 150 l/min

Max. Pressure 350 bar

Spool stroke 7 + 7 mm

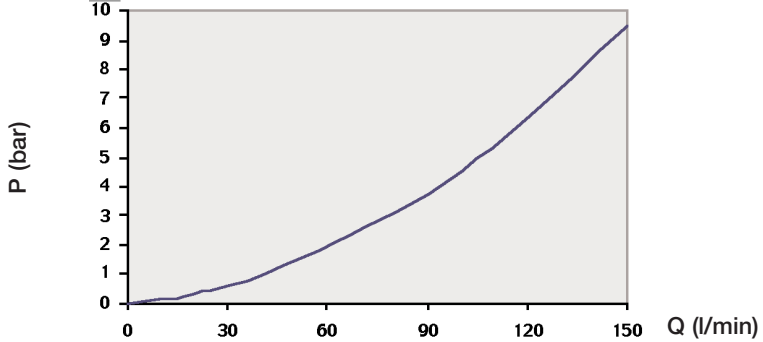
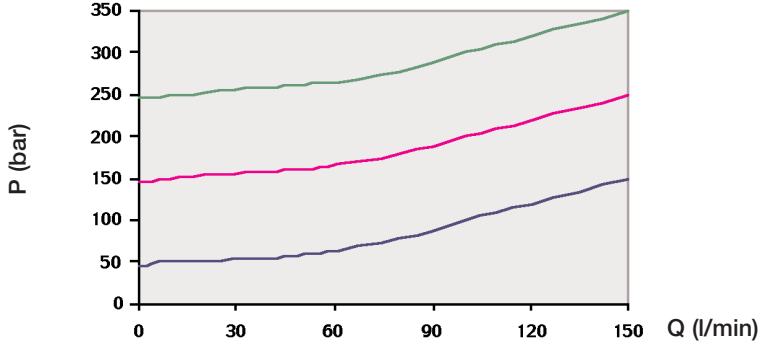
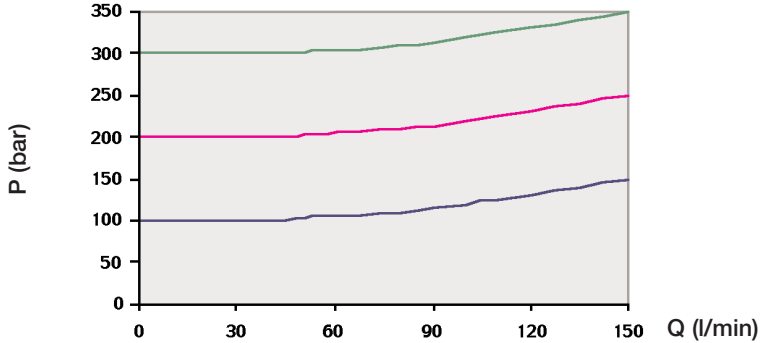
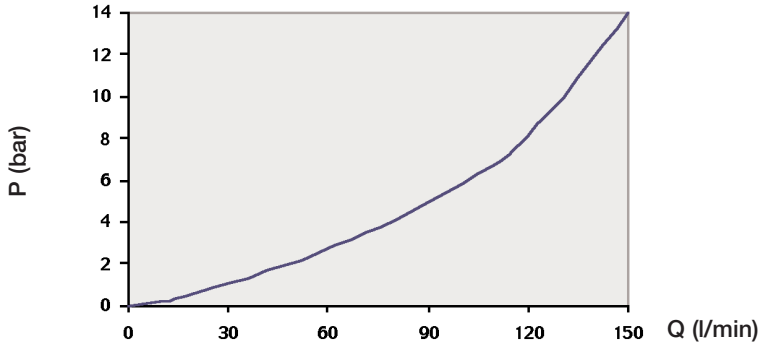
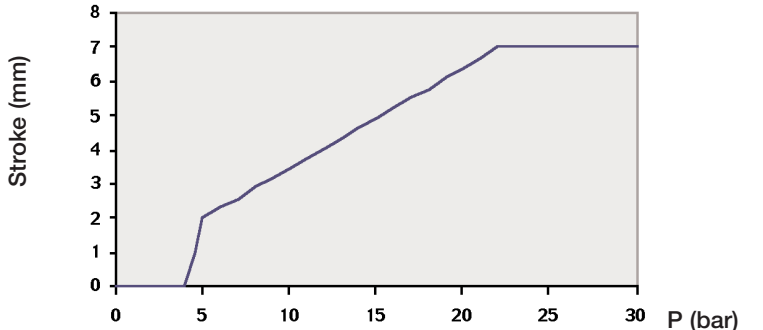
Standard lever code : **ZA - M10 - 240**
(to be ordered separately)

N°of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	147	193	239	285	331	377	423	469	515	561	607	653
	Y	170	216	262	308	354	400	446	492	538	584	630	676
	Z	200	246	292	338	384	430	476	522	568	614	660	706
Weight (Kg)		19,1	24,1	29,2	34,3	39,5	44,5	49,6	54,7	59,8	64	70	75,1
Tie-rod clamping torque	Nm	50											

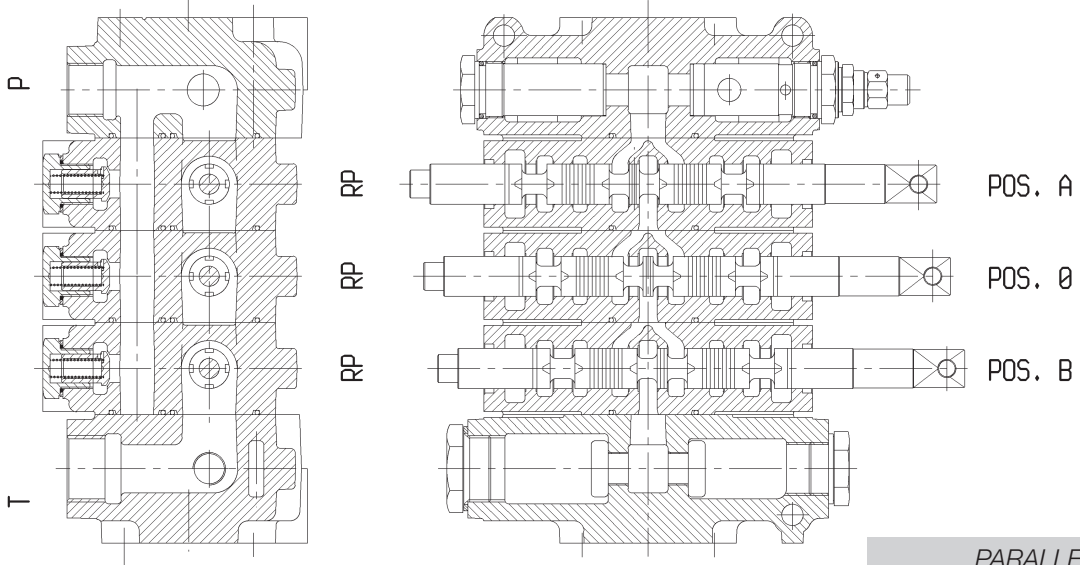
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar)</p> <ul style="list-style-type: none"> 3 - 40 41 - 180 181 - 250 251 - 350

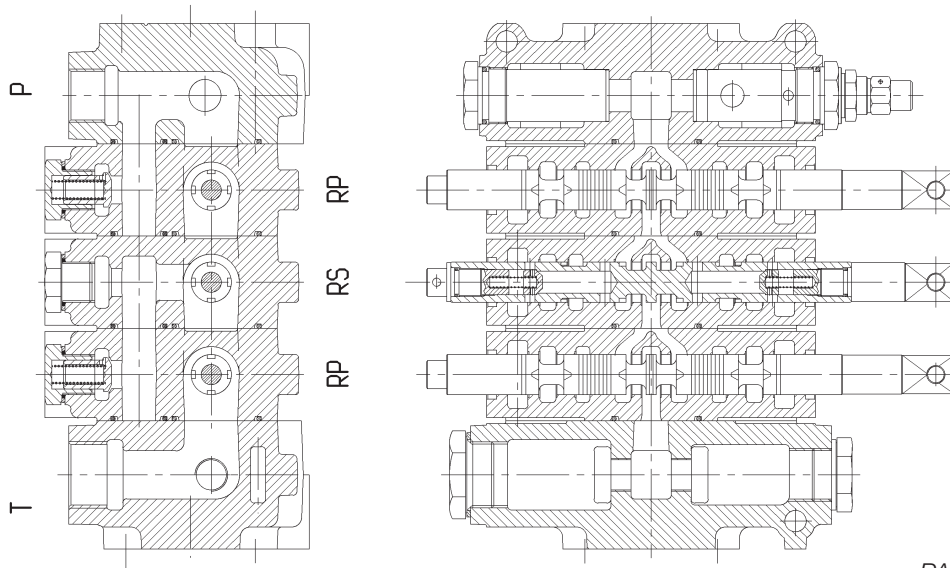
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 0 - 150 151 - 230 231 - 280 281 - 350
	<p>Combined valve curve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 30 - 95 96 - 150 151 - 260 261 - 350
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS

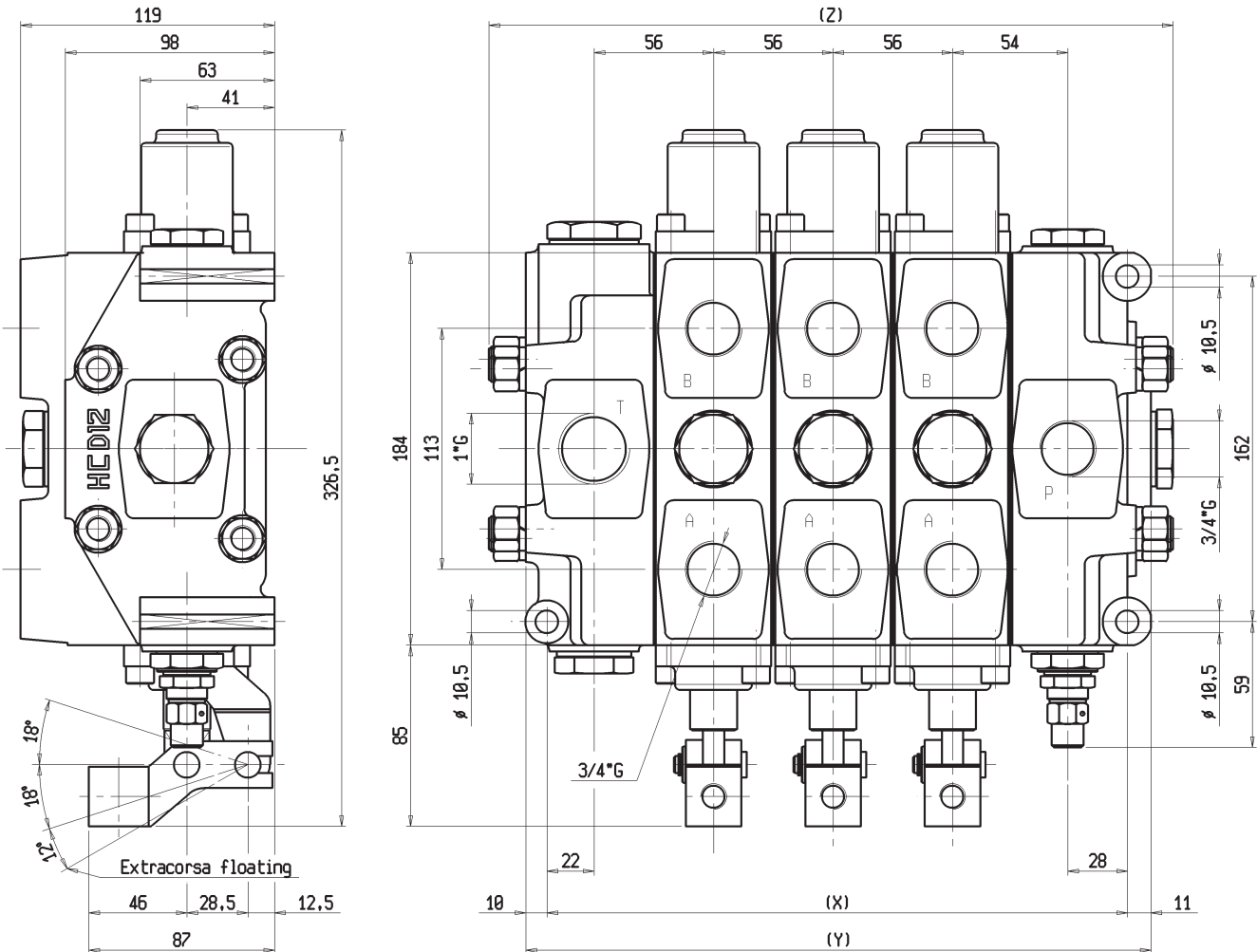


PARALLEL CIRCUIT



PARALLEL - SERIES CIRCUIT

DIMENSIONS



Flow rate 180 l/min Standard lever code : **ZA - M12 - 290**
 (to be ordered separately)

Max. Pressure 350 bar

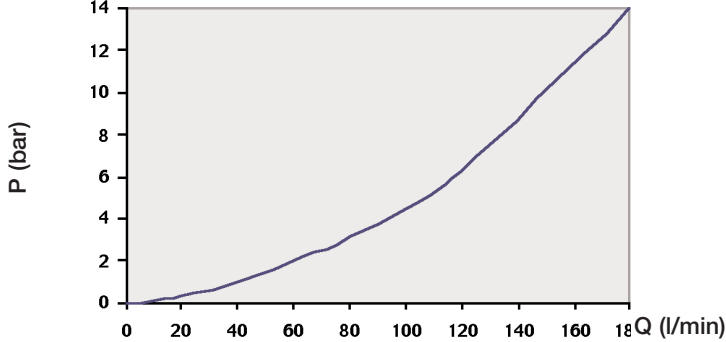
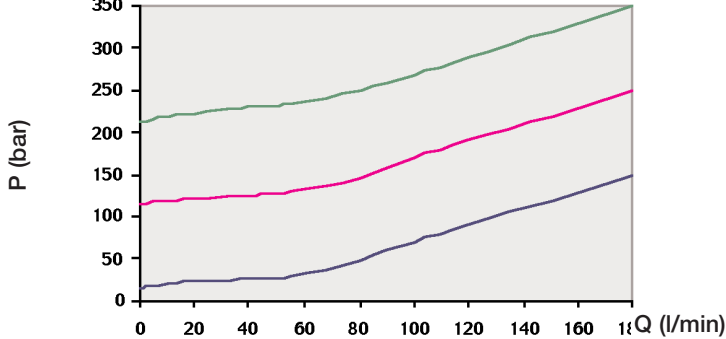
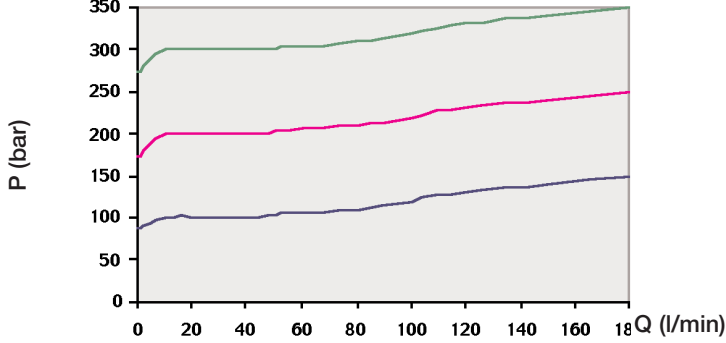
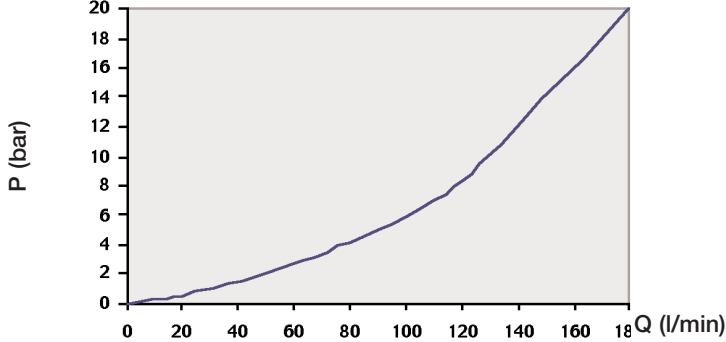
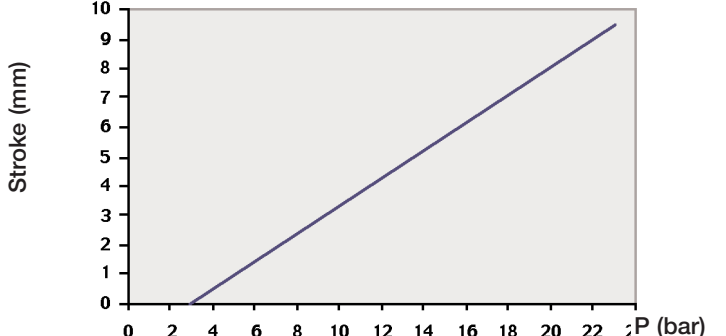
Spool stroke 9,5 + 9,5 mm

N° of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	162	218	274	330	386	442	498	554	610	666	722	778
	Y	183	239	295	351	407	463	519	575	631	687	743	799
	Z	208	264	320	376	432	488	544	600	656	712	768	824
Weight (Kg)		18,4	26	33,6	41,2	48,8	56,4	64	71,6	79,2	86,7	94,3	102
Tie-rod clamping torque		Nm		70									

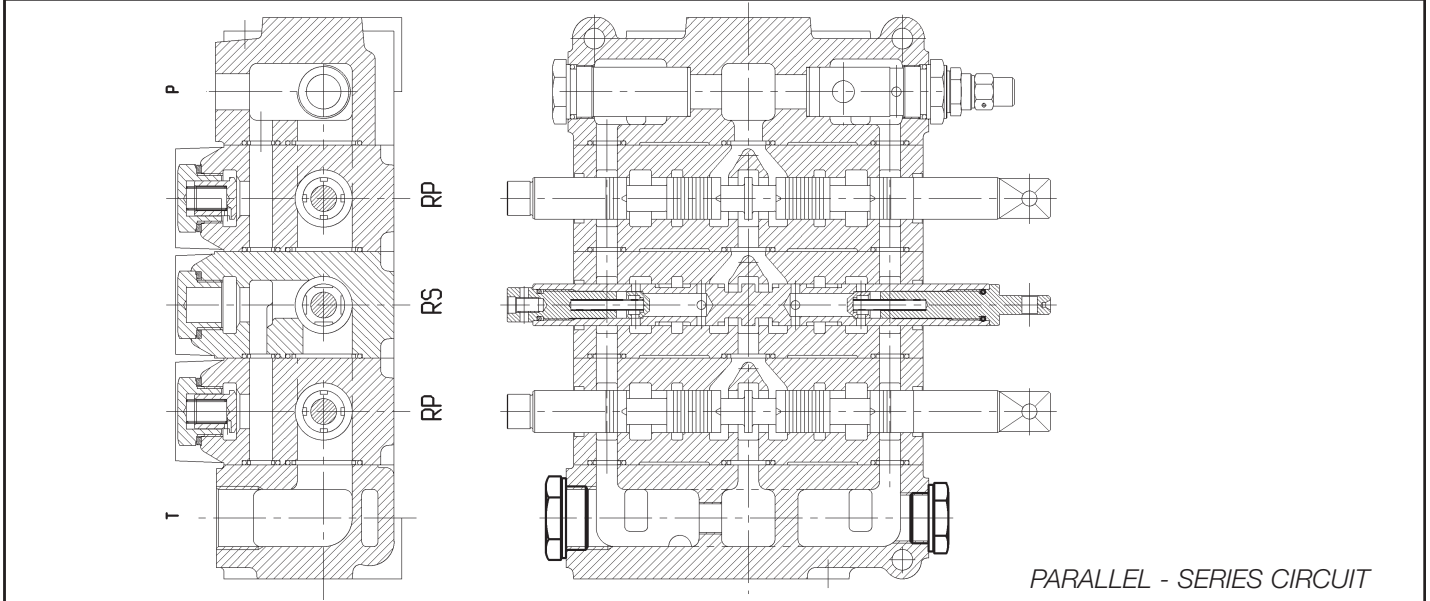
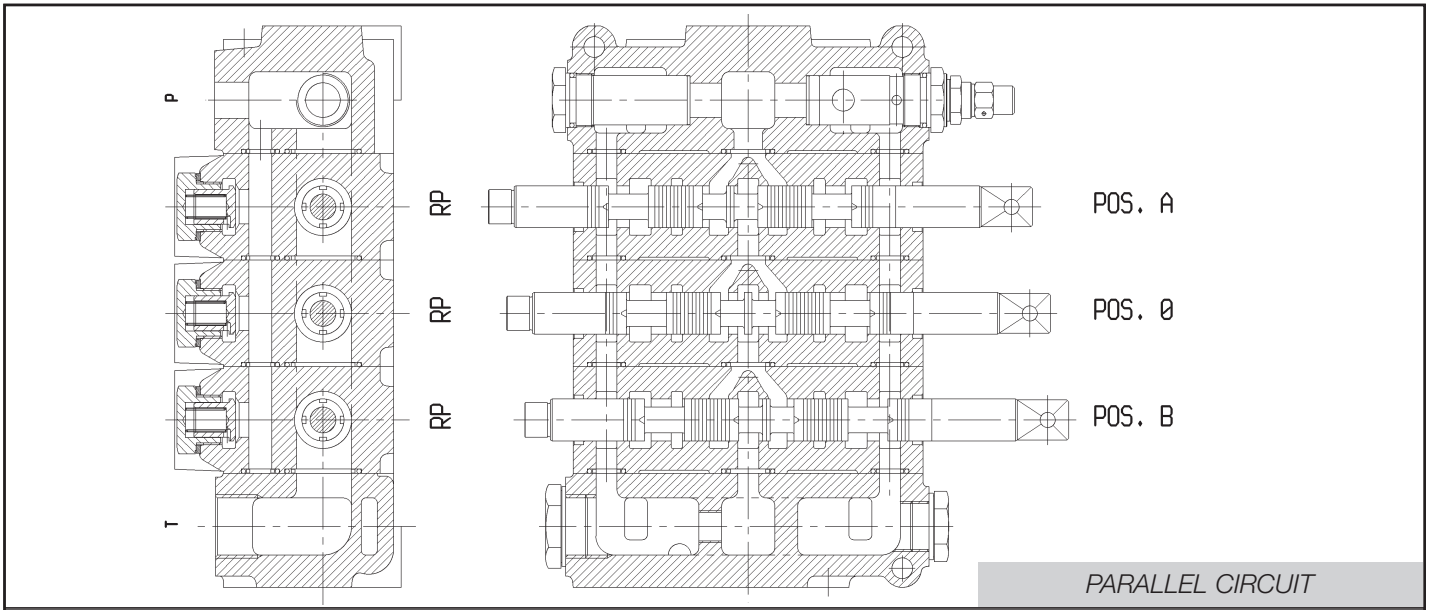
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar)</p> <ul style="list-style-type: none"> 3 - 40 41 - 180 181 - 250 251 - 350

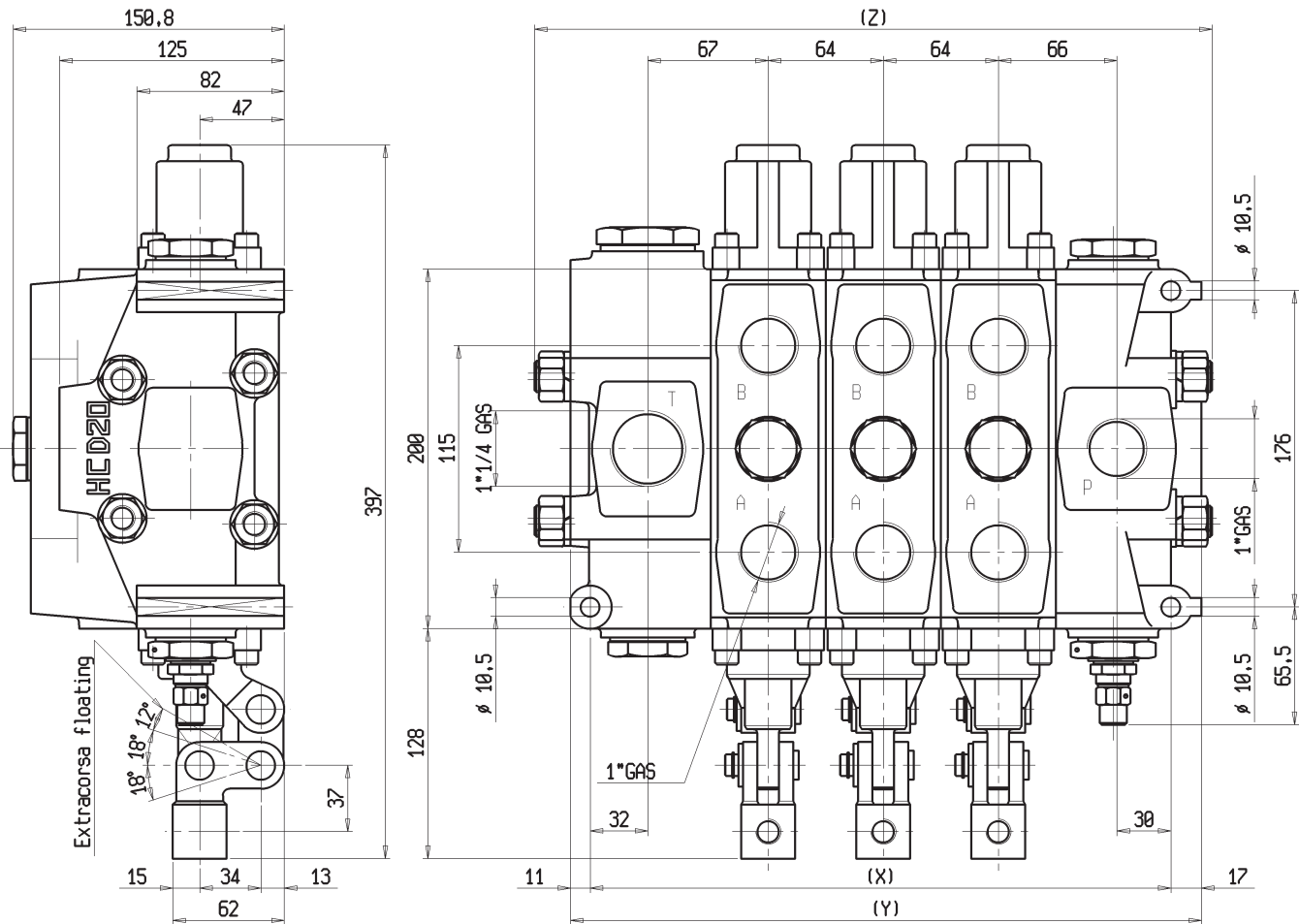
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 0 - 150 151 - 230 231 - 280 281 - 350
	<p>Combined valve curve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 30 - 95 96 - 150 151 - 260 261 - 350
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



DIMENSIONS



Flow rate 250 l/min

Max. Pressure 350 bar

Spool stroke 9,5 + 9,5 mm

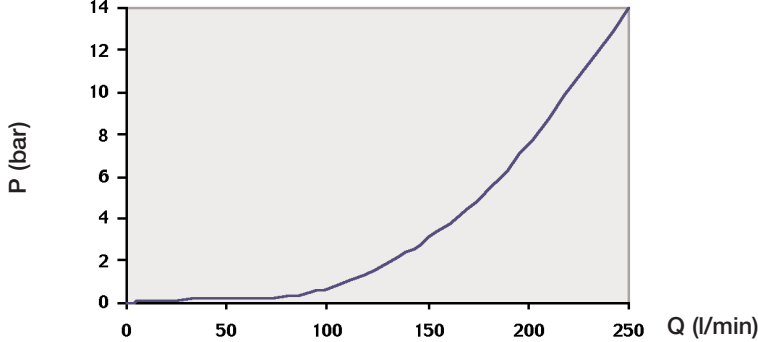
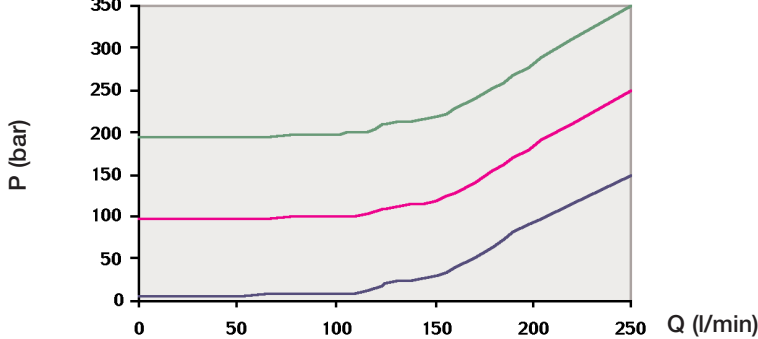
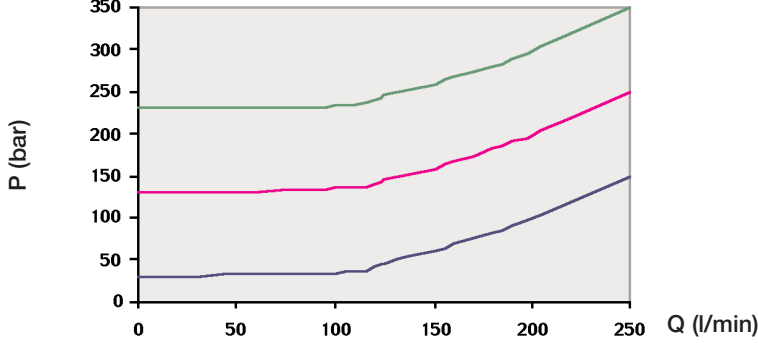
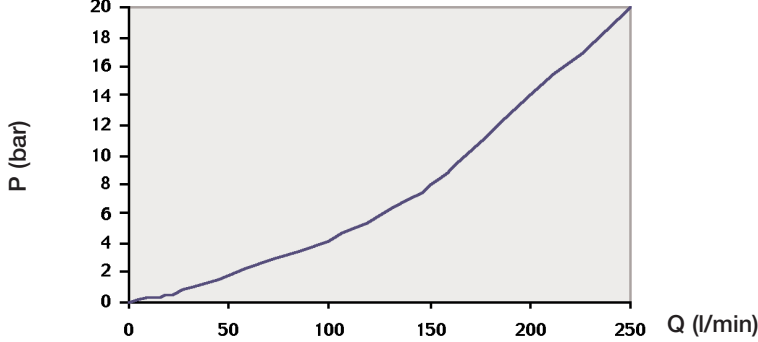
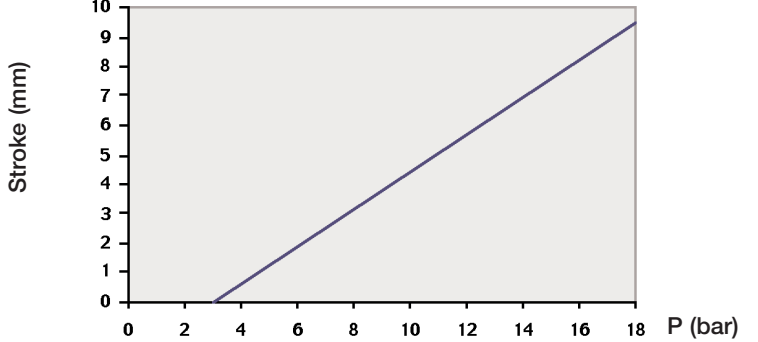
Standard lever code : **ZA- M14 - 350**
(to be ordered separately)

N° of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	195	259	323	387	451	515	579	643	707	771	835	899
	Y	223	287	351	415	479	543	607	671	735	799	863	927
	Z	248	312	376	440	504	568	632	696	760	824	888	952
Weight (Kg)		28,7	39,6	50,6	61,6	72,6	83,5	94,5	105,5	116,4	127,4	138,4	149,4
Tie-rod clamping torque	Nm	110											

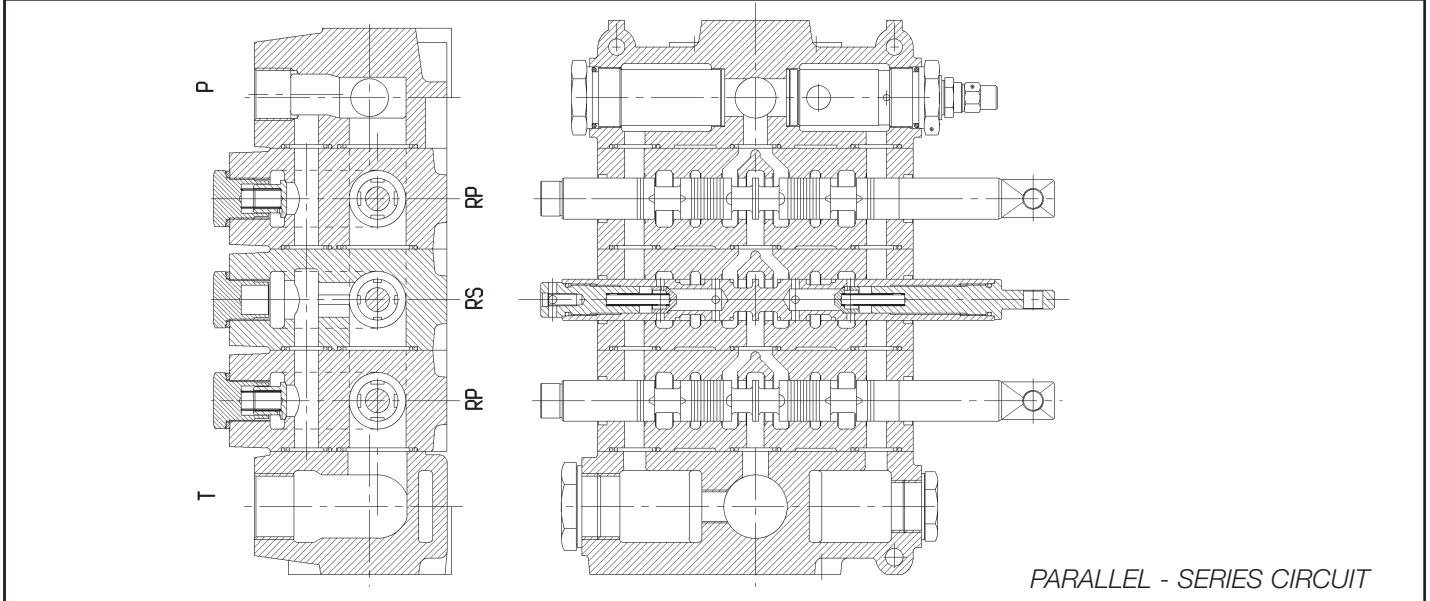
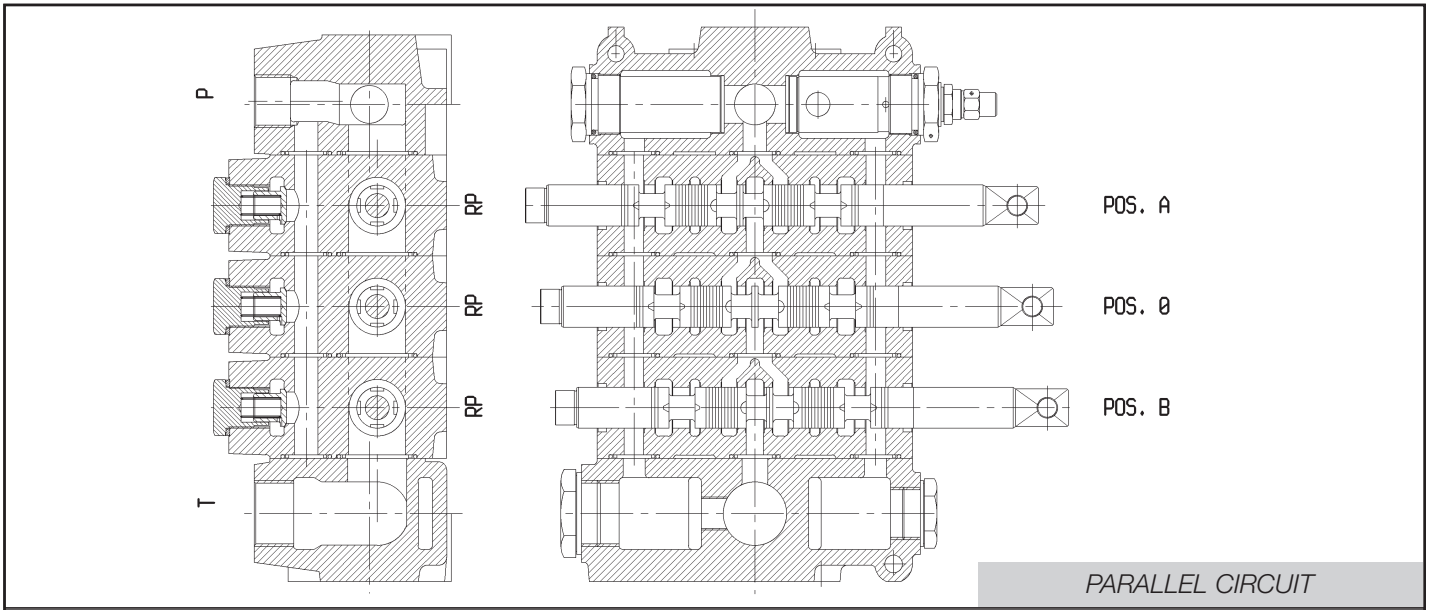
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar) 0 - 350</p>

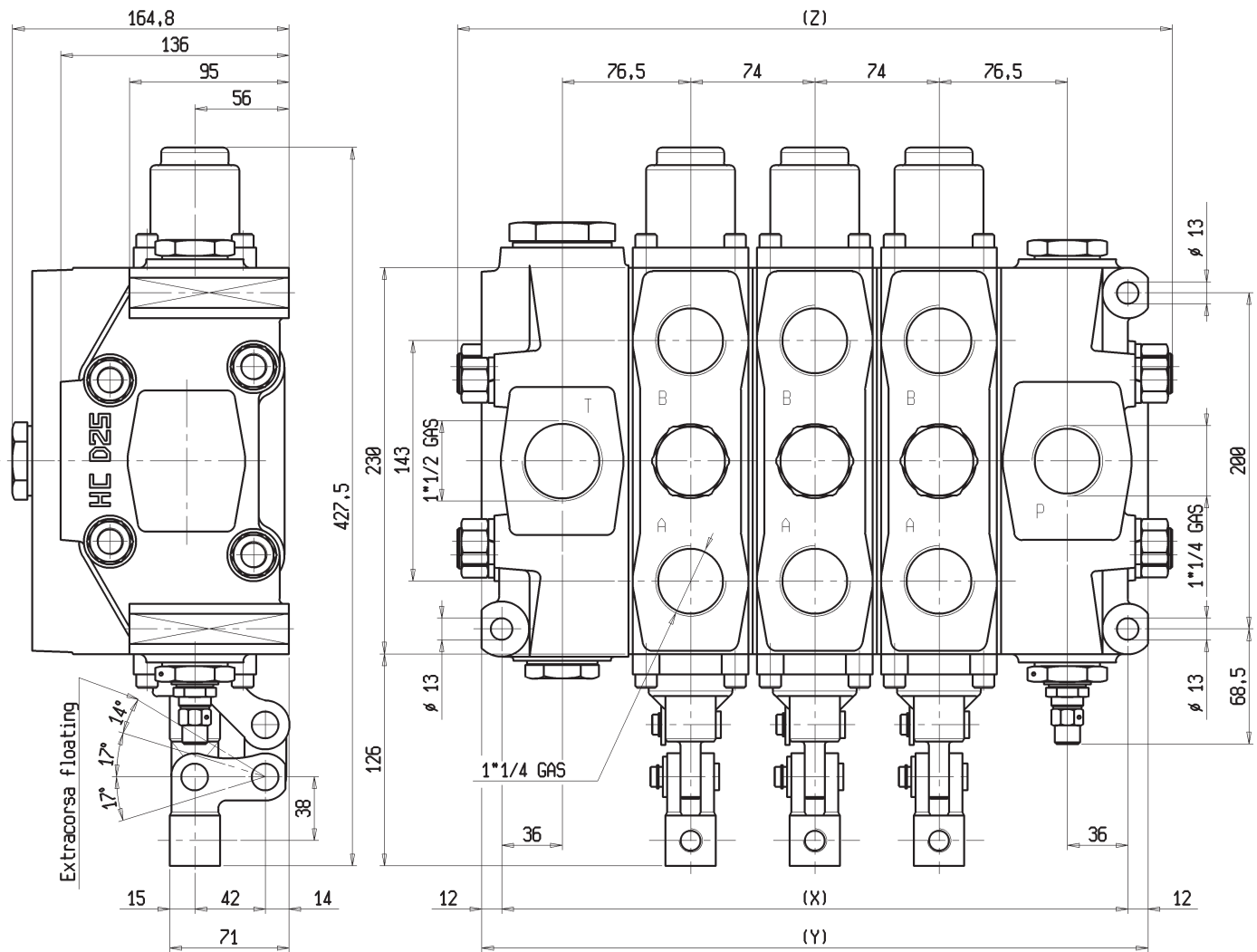
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 0 - 70 71 - 120 121 - 150 151 - 300 301 - 350
	<p>Combined valve curve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 50 - 130 131 - 220 221 - 350
	<p>CAnticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



DIMENSIONS



Flow rate 380 l/min Standard lever code : ZA- M14 - 350

(to be ordered separately)

Max. Pressure 350 bar

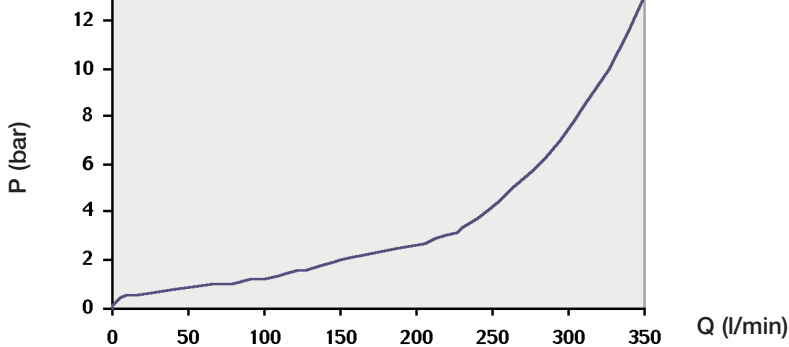
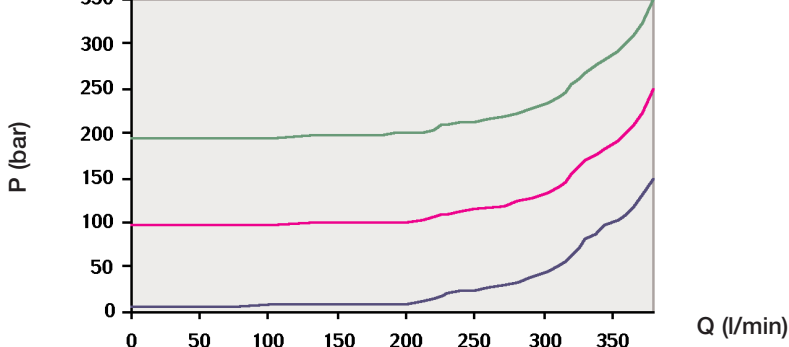
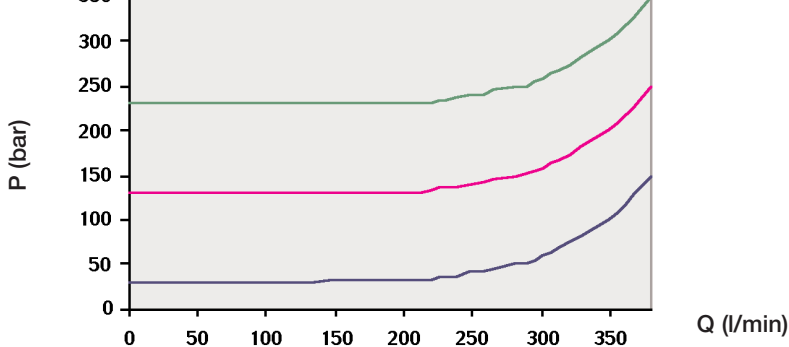
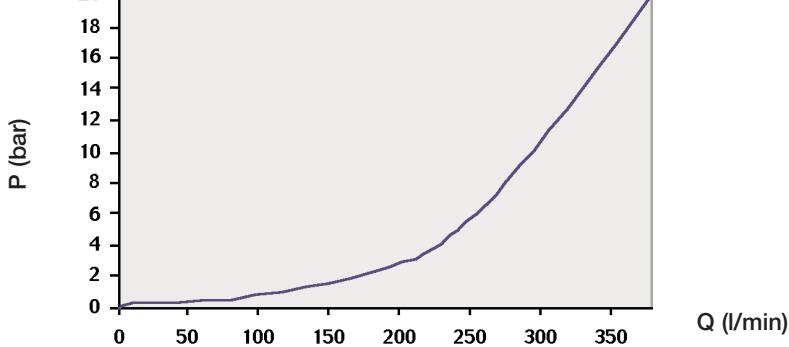
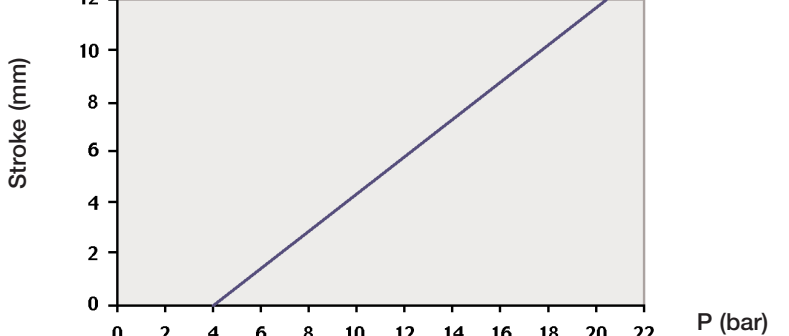
Spool stroke 12 + 12 mm

N° of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	225	299	373	447	521	595	669	743	817	891	965	1039
	Y	249	323	397	471	545	619	693	767	841	915	989	1063
	Z	276	350	424	498	572	646	720	794	868	942	1016	1090
Weight (Kg)		41,3	56,8	72,3	87,8	103,4	119	134,4	150	165,5	181	196,5	212
Tie-rod clamping torque	Nm	110											

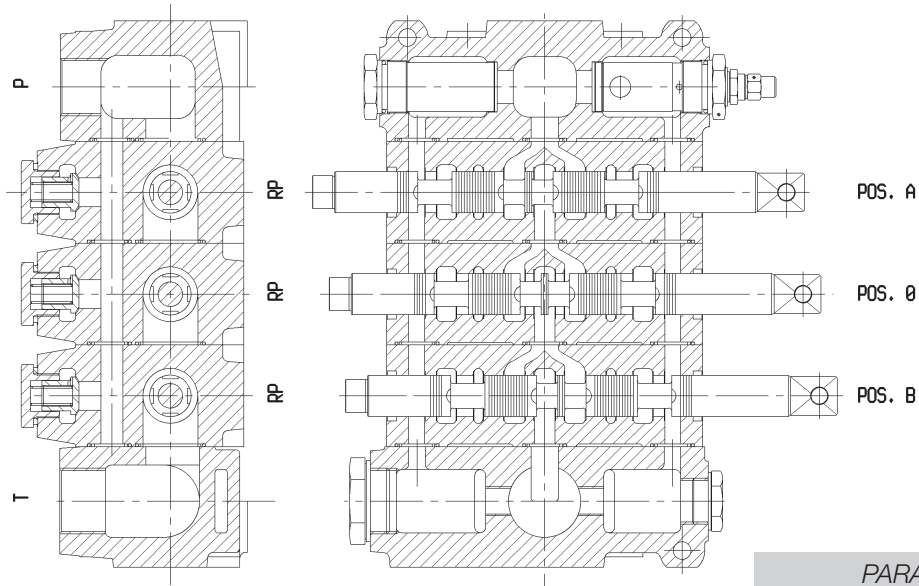
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar) 0 - 350</p>

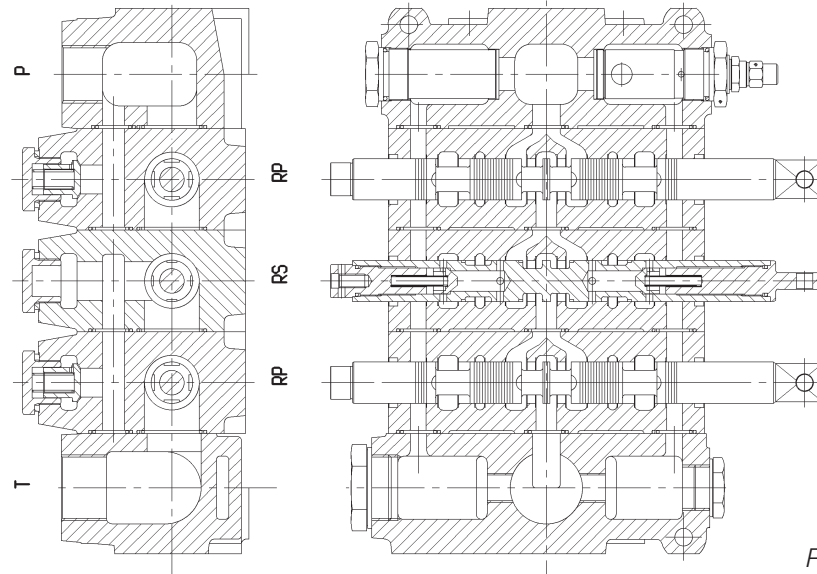
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 0 - 70 71 - 120 121 - 150 151 - 300 301 - 350
	<p>Combined valve curve setting ranges full flow pressure (bar)</p> <ul style="list-style-type: none"> 50 - 130 131 - 220 221 - 350
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS

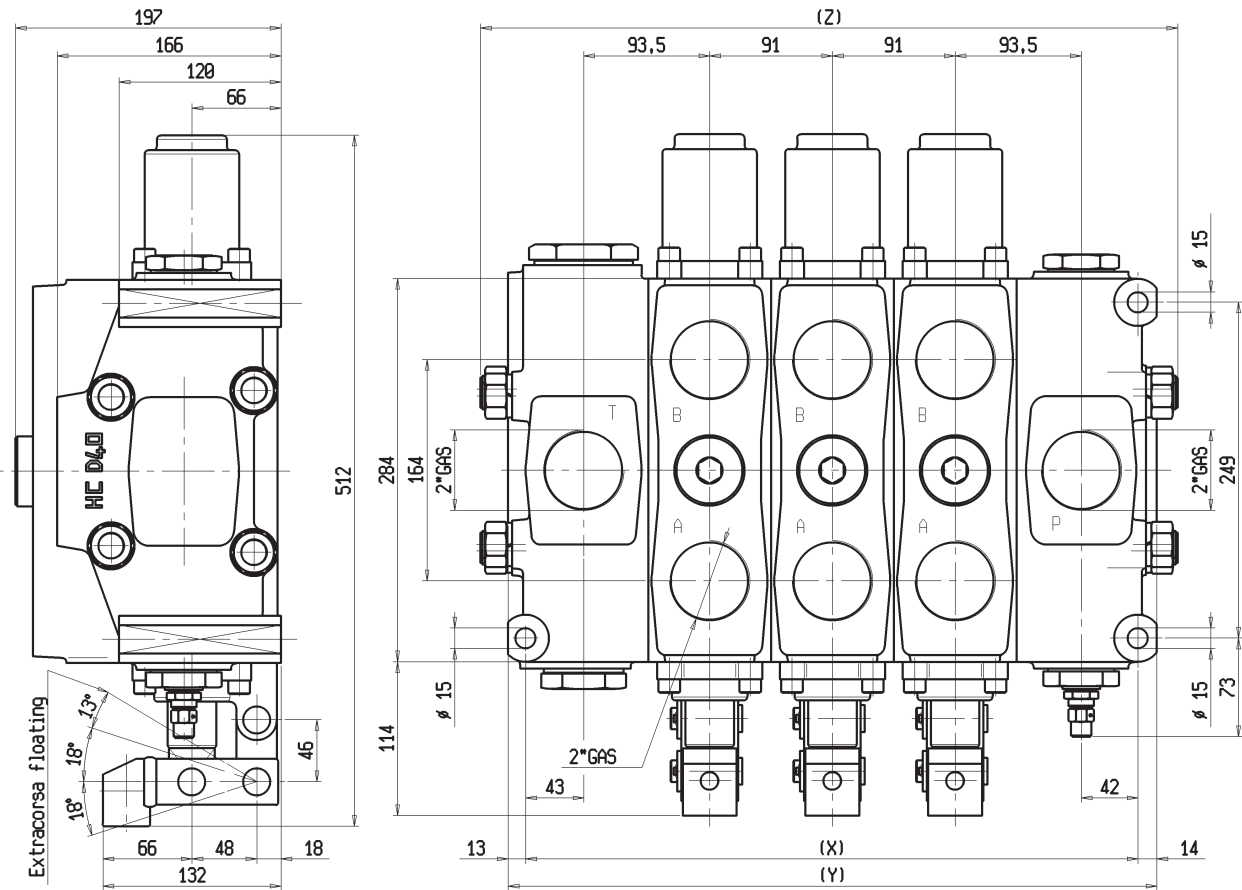


PARALLEL CIRCUIT



PARALLEL - SERIES CIRCUIT

DIMENSIONS



Flow rate

700 l/min

Standard lever code :

ZA- M14 - 350

Max. Pressure

350 bar

(to be ordered separately)

Spool stroke

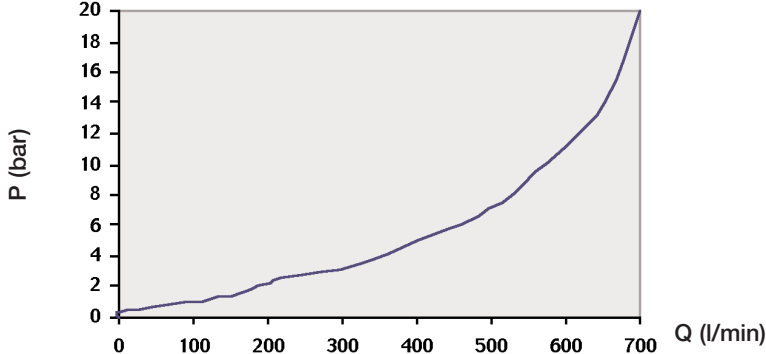
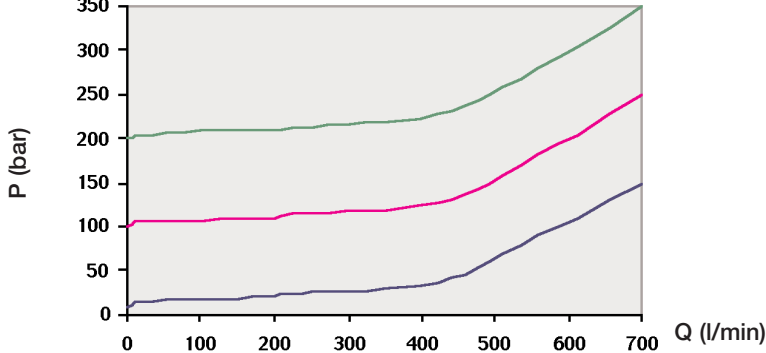
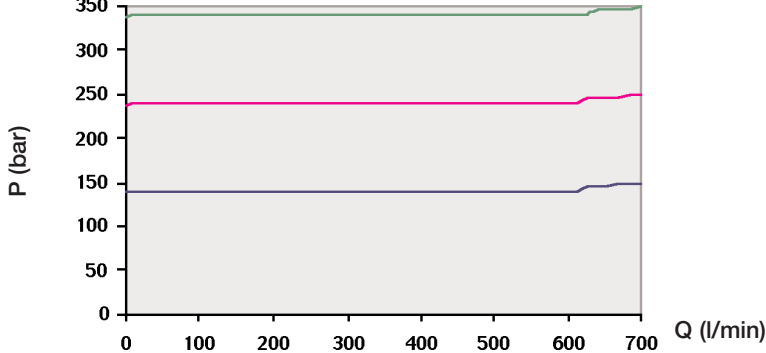
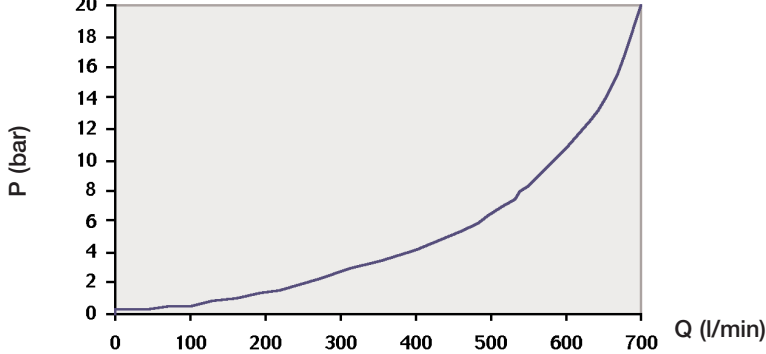
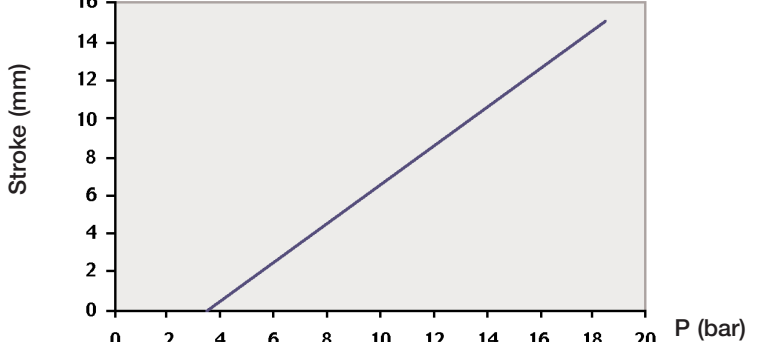
15 + 15 mm

N°of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	272	363	454	545	636	727	818	909	1000	1091	1182	1273
	Y	299	390	481	572	663	754	845	936	1027	1118	1209	1300
	Z	334	425	516	607	698	789	880	971	1062	1153	1244	1335
Weight (Kg)		75	104	133	162	191	220	249	278	307	336	365	394
Tie-rod clamping torque	Nm	150											

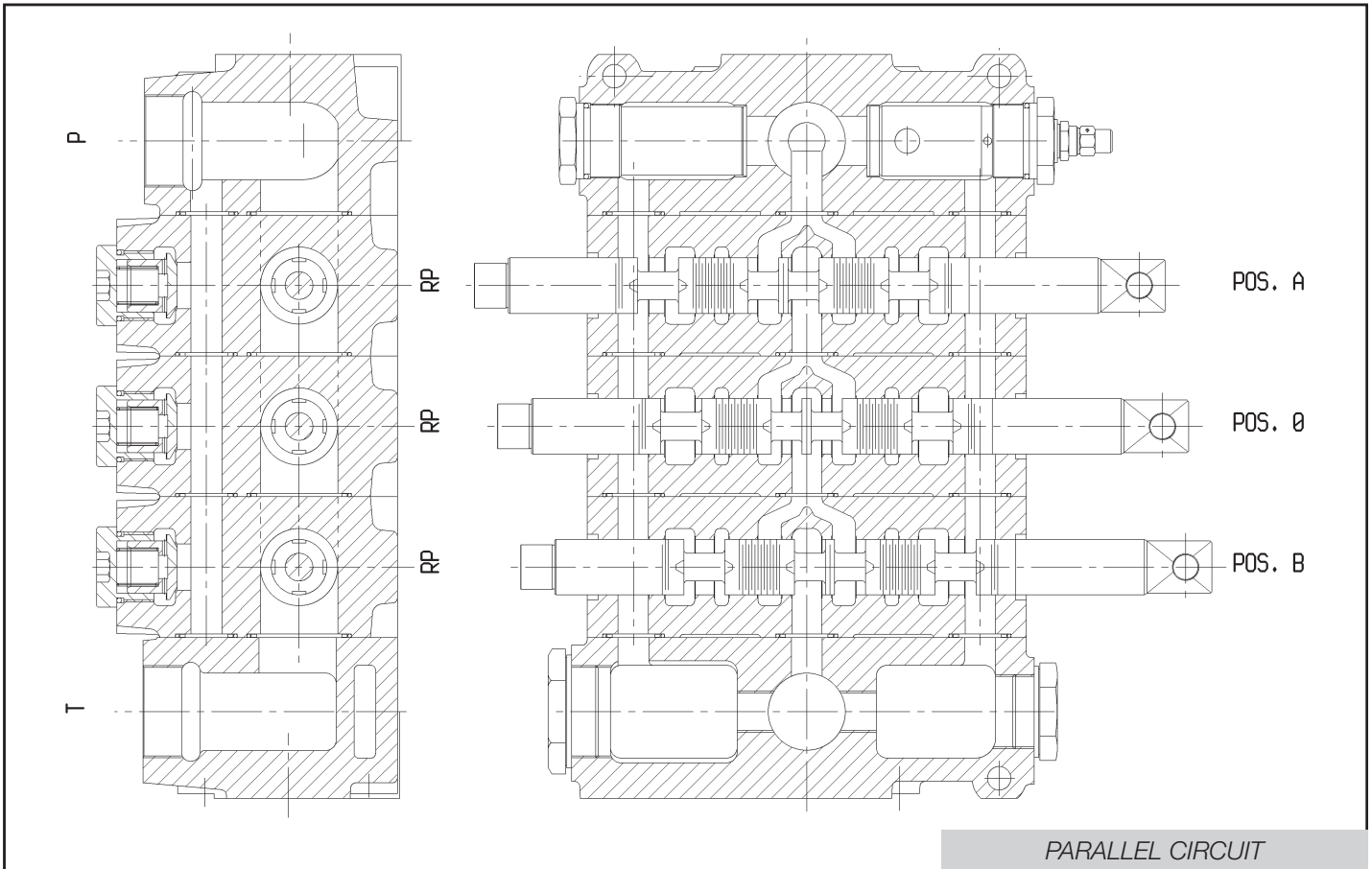
TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar) 0 - 350</p>

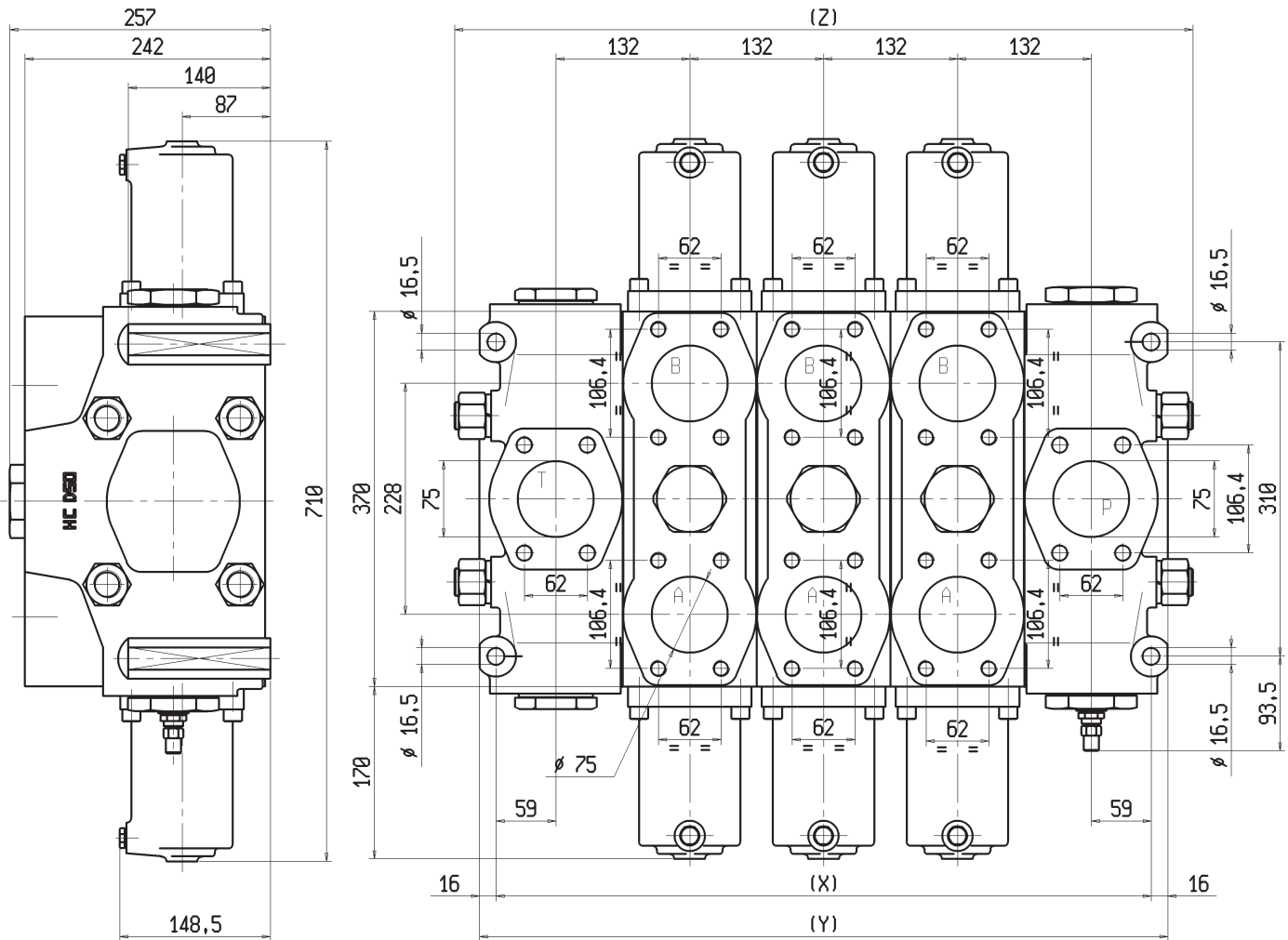
TYPICAL CURVES

	<p>Main anticavitation valve curve</p>
	<p>Service line relief valve setting ranges full flow pressure (bar) 0 - 150 151 - 200 201 - 350</p>
	<p>Combined valve curve setting ranges full flow pressure (bar) 30 - 110 111 - 350</p>
	<p>Anticavitation check valve curve</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



DIMENSIONS



Flow rate 1200 l/min

Max. Pressure 300 bar

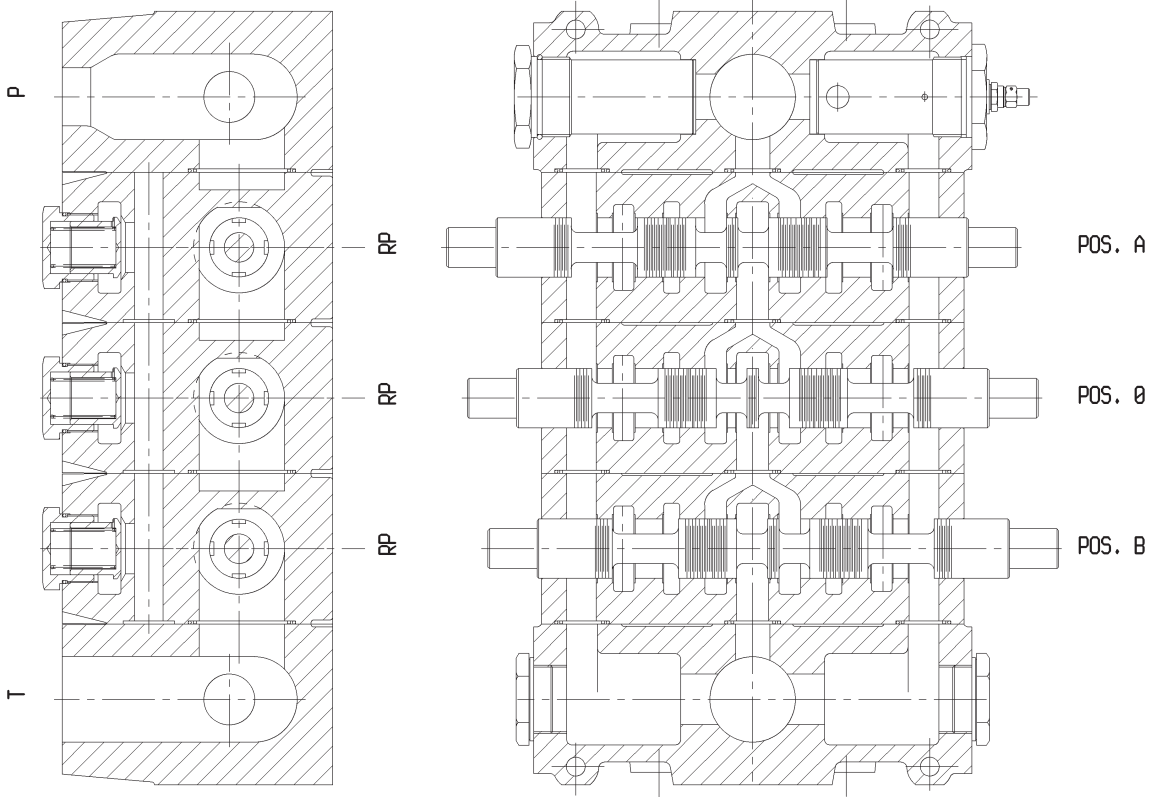
Spool stroke 18 + 18 mm

N° of working sections		1	2	3	4	5	6	7	8	9	10	11	12
Variable dimensions (mm)	X	382	514	646	778	910	1042						
	Y	414	546	678	810	942	1074						
	Z	460	592	724	856	988	1120						
Weight (Kg)		186	274	362	450	538	626						
Tie-rod clamping torque	Nm	300											

TYPICAL CURVES

	<p>Internal pressure drop from P → T</p>
	<p>Internal pressure drop P → A / P → B</p>
	<p>Internal pressure drop A → T / B → T</p>
	<p>Pilot operated pressure relief valve curve setting ranges (bar) 0 - 350</p>
	<p>Hydraulic pilot control curve</p>

CIRCUITS



PARALLEL CIRCUIT

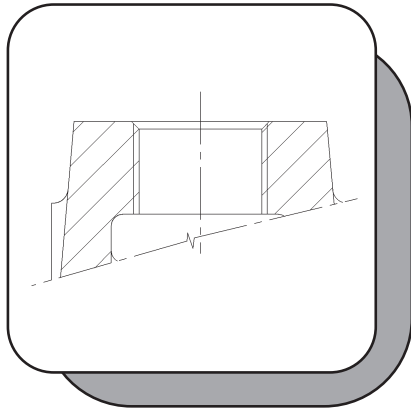
***HOW TO DETERMINE THE
CODES FOR ORDERING OUR
PRODUCTS.***



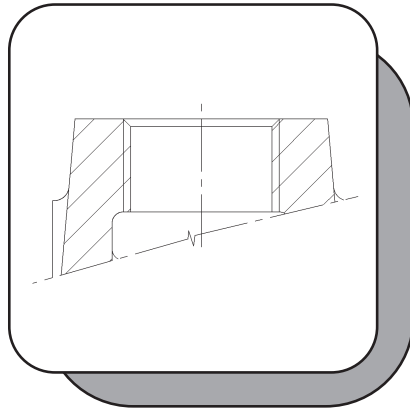
= Application standard

SECTIONAL VALVES

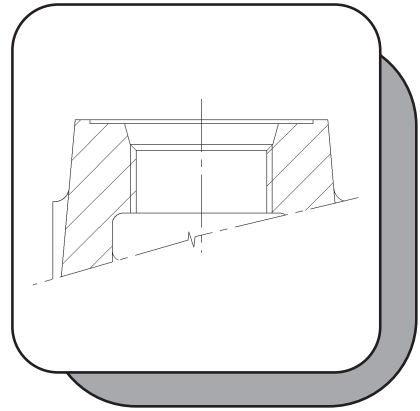
THREAD - FLANGE



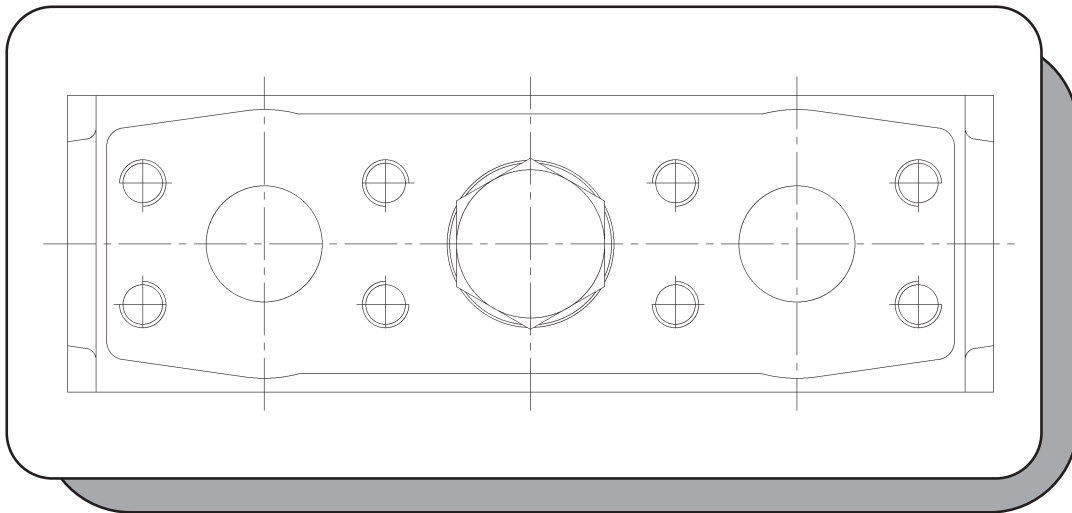
Metric thread
(ISO - 262)



BSP thread
(ISO - 228)



SAE UN-UNF thread
(ISO - 725)



SAE flange
(SAE 3000 code 61)
(SAE 6000 code 62)

METRIC THREAD (ISO-262)

Type	M18x1,5	M22x1,5										
Code	M01	M02										

BSP THREAD (ISO-228)

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

UN-UNF THREAD (ISO-725)

Type	3/4"-16 UNF	7/8"-14 UNF	1"1/16-12 UN	1"5/16-12 UN	1"5/8-12 UN							
Code	U03	U04	U05	U06	U07							

SAE FLANGE 3000 (Code 61)

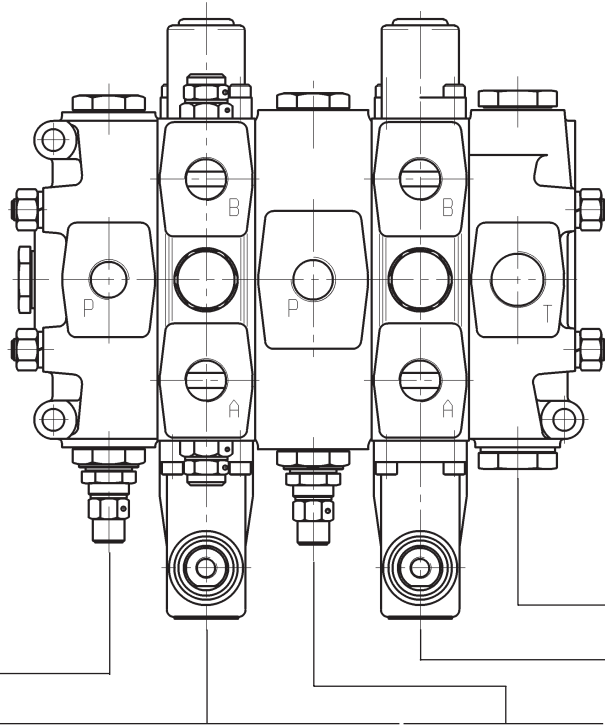
Type	3/4" (MA)	3/4" (UNC)	1" (MA)	1" (UNC)	1"1/4 (MA)	1"1/4 (UNC)	1"1/2 (MA)	1"1/2 (UNC)	2" (MA)	2" (UNC)	3" (MA)	3" (UNC)
Code	S03	S04	S05	S06	S07	S08	S09	S10	S11	S12	S15	S16

SAE FLANGE 6000 (Code 62)

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				

SECTIONAL VALVES

IN EXAMPLE OF AN ORDER



HC-D6 /2 - I L 009 (150)-A G04 / W 001A-H001-F001A-RP G04-01PA(120)-01PB(120) / B E 009(150)-A G04 / W 001A-H001-F001A-RP G04 T K-A G05

HC-D6
/2

Model
Number of sections

I Inlet section
L Left-handed pressure inlet
009 Valve type and arrangement on the inlet section
(150) Relief setting
A Inlet position
G04 Type of thread

SECTION I

W Working section
001A Type of spool
H001 Spool action
F001A Spool return action
RP Type of circuit
G04 Type of thread
01 Type of auxiliary valve
PA Service port "A" auxiliary valve
(120) Setting
01 Type of auxiliary valve
PB Service port "B" auxiliary valve
(120) Setting

SECTION W

B Intermediate sections
E Intermediate inlet section
009 Valve type and arrangement
(150) Setting
A Inlet position
G04 Type of thread

SECTION B

W Working section
001A Type of spool
H001 Spool action
F001A Spool return action
RP Type of circuit
G04 Type of thread

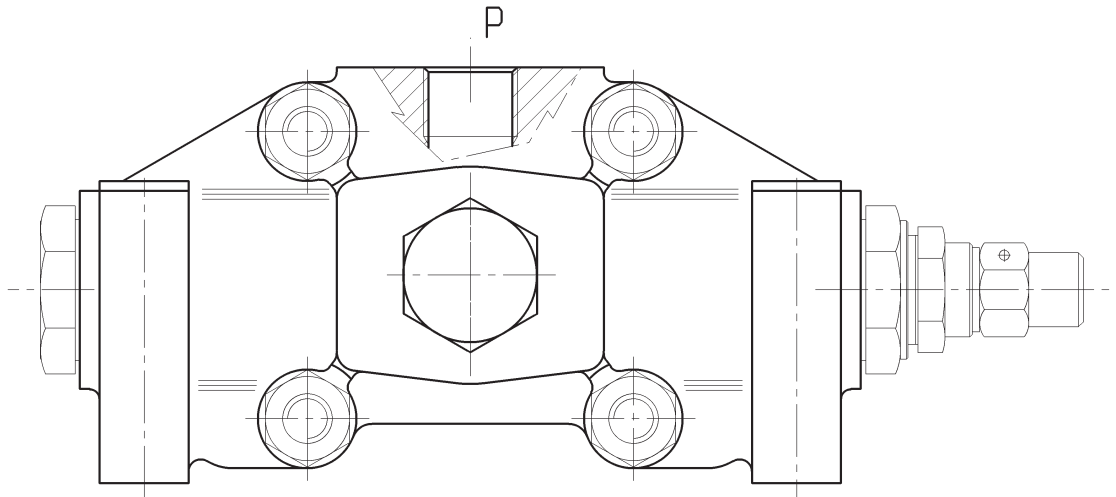
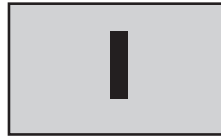
SECTION W

T Outlet section
K Outlet section with 1 tank return and P port in the left hand side
A Position of the tank return in section K
G05 Type of thread

SECTION T



INLET SECTION



ORDERING CODES

I L 009 (150) - A G04

I	Inlet section	Page 1
L	Left handed pressure inlet	Page 2
009	Valve type and arrangement	Page 3-4
(150)	Setting (must always be specified when a pressure relief valve is used)	
A	Inlet position	Page 5
G03	Type of thread	Page 5



Hydraulic diagram	Layout	Description	Code
		Right inlet section	R
		Left inlet section	L

VALVES

Type	Design	Circuit	Description	Type	Design	Circuit	Description
1			Direct acting pressure relief valve	7			Solenoid dump valve (12 VDC)
2			Pilot operated pressure relief valve	8			Solenoid dump valve (24 VDC)
3			Relief valve plugged	9			Solenoid dump valve (26 VDC)
4			Main anticavitation check valve	10			Hydraulic lock or brake valve
5			2 stage pilot operated relief valve	11			Plug with pressure gauge connection
6			Externally piloted valve				

VALVE TYPE AND ARRANGEMENT ON THE INLET SECTION

Example

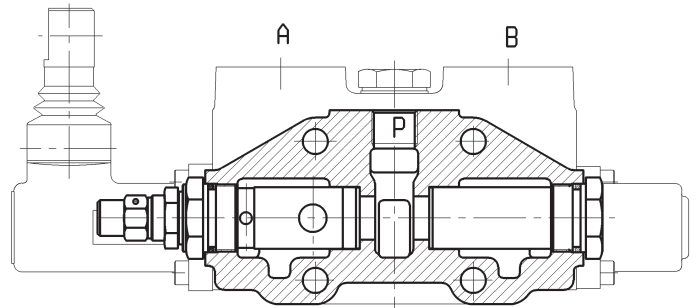
CODE : 009 = 2A-3B

Pressure relief valve in port A side
 Plug replaces pressure relief valve in port B side

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



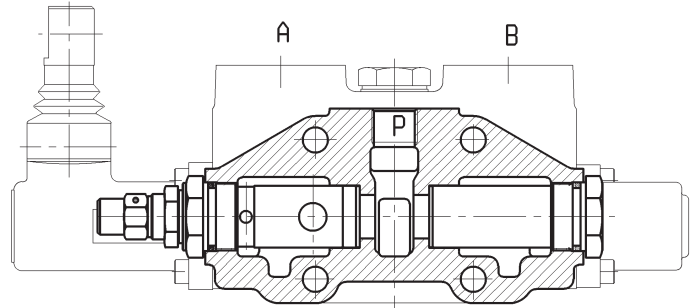
Combina tion	Code	D9		D3		D3M		D4		D6		D16		D12		D20		D25		D40		D50	
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
1A-3B	001	.	.	.	.	.	.	.	.						
1A-4B	002			.		.	.	.	.								
1A-6B	003			.		.	.	.	.								
1A-7B	004	.	.	.		.	.	.	.						
1A-8B	005	.	.	.		.	.	.	.						
1A-9B	006	.	.	.		.	.	.	.						
1A-10B	007			.		.	.	.	.								
1A-11B	008	.	.	.	.	.	.	.	.						
2A-3B	009			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-4B	010			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-6B	011			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-7B	012			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-8B	013			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-9B	014			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-10B	015			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-11B	016			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-1B	017	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-2B	018			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-3B	019	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-4B	020			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-5B	021			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-6B	022			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-7B	023	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-8B	024	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-9B	025	.	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-10B	026			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-11B	027	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-1B	028			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-2B	029			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-3B	030			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-5B	031			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-6B	032			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-7B	033			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-8B	034			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-9B	035			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-10B	036			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-11B	037			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-3B	038			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-4B	039			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-6B	040			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-7B	041			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-8B	042			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-9B	043			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-10B	044			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5A-11B	045			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6A-1B	046			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6A-2B	047			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6A-3B	048			.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

VALVE TYPE AND ARRANGEMENT ON THE INLET SECTION

Example CODE : 009 = 2A-3B

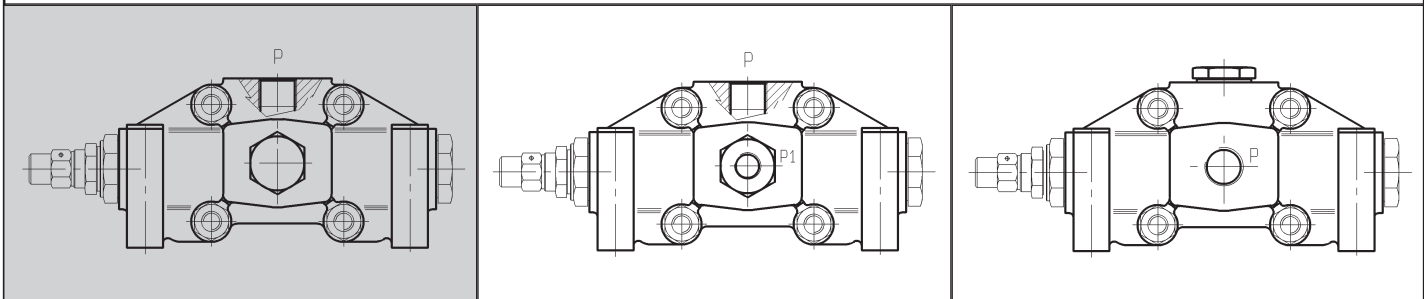
Pressure relief valve in port A side
 Plug replaces pressure relief valve in port B side

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

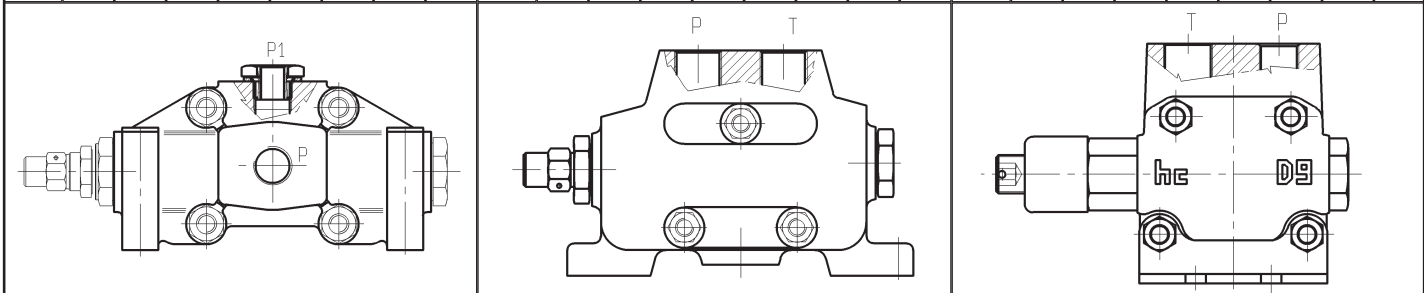


Combinazione	Sigla	D9		D3		D3M		D4		D6		D16		D12		D20		D25		D40		D50	
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
6A-4B	049					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6A-5B	050					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6A-10B	051					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6A-11B	052				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7A-1B	053	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7A-2B	054				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7A-3B	055	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7A-4B	056				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7A-5B	057				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7A-10B	058				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7A-11B	059	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A-1B	060	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A-2B	061				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A-3B	062	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A-4B	063				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A-5B	064				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A-10B	065				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8A-11B	066	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9A-1B	067	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9A-2B	068				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9A-3B	069	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9A-4B	070				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9A-5B	071				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9A-10B	072				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9A-11B	073	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-1B	074				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-2B	075				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-3B	076				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-4B	077				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-5B	078				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-6B	079				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-7B	080				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-8B	081				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-9B	082				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10A-11B	083				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-1B	084	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-2B	085				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-3B	086	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-4B	087				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-5B	088				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-6B	089				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-7B	090	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-8B	091	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-9B	092	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-10B	093				.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

INLET POSITION AND TYPE OF THREAD



Code	Description								Code	Description								Code	Description									
A	Upper inlet								B	Upper inlet-P1 with pressure-gauge connection 1/4" BSP								C	Central side inlet									
Type	CODE								Type	CODE								Type	CODE									
D9	G03	U03							D9										D9									
D3	M01	G04	U03						D3	M01	G04	U03						D3	M01	G04	U03							
D3M	M01	G04	U03						D3M									D3M										
D4	M01	G04	U03	U04					D4	M01	G04	U03	U04				D4	M01	G04	U03	U04							
D6	G04	G05	U04						D6	G04	G05	U04				D6	G04	G05	U04									
D16	G05	U05							D16	G05	U05					D16	G05	U05										
D12	G05	G06	U05	S03	S04				D12	G05	G06	U05	S03	S04		D12	G05	G06	U05	S03	S04							
D20	G06	G07	U06	S05	S06	S33	S34		D20	G06	G07	U06	S05	S06	S33	S34	D20	G06	G07	U06	S05	S06	S33	S34				
D25	G07	G08	U07	S07	S08	S35	S36		D25	G07	G08	U07	S07	S08	S35	S36	D25	G07	G08	U07	S07	S08	S35	S36				
D40	G09	S09	S10	S11	S12	S39	S40		D40	G09	S09	S10	S11	S12	S39	S40	D40	G09	S09	S10	S11	S12	S39	S40				
D50	S15	S16							D50	S15	S16						D50	S15	S16									

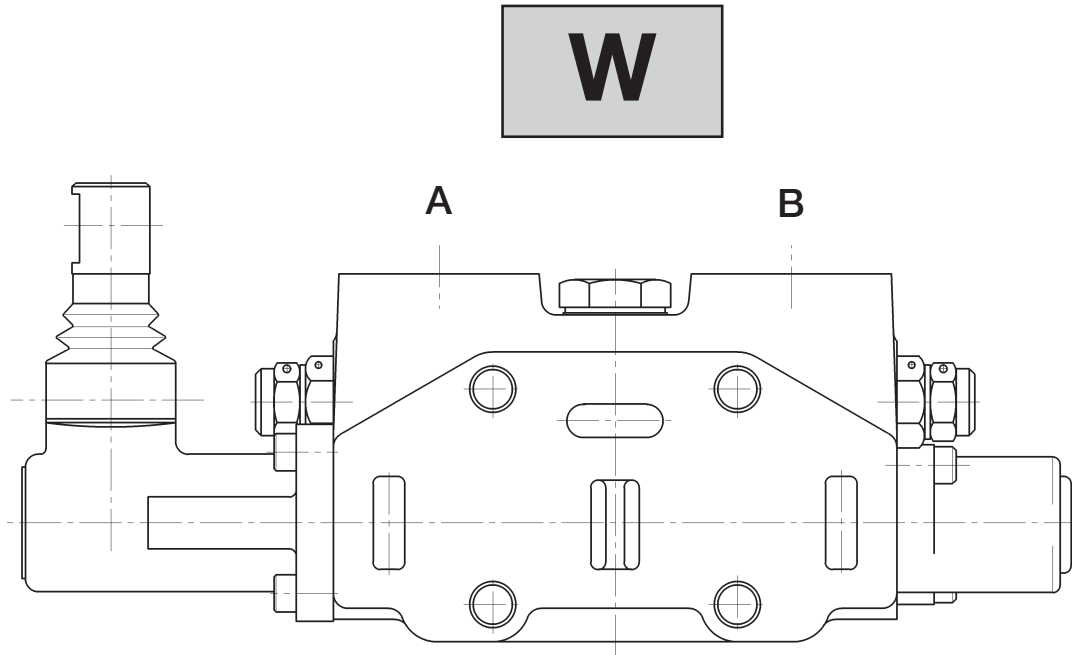


Code	Description								Code	Description								Code	Description							
D	Central side inlet - P1 with pressure gauge connection 1/4" BSP								E	Upper inlet (inlet-outlet) HC-D3M								E	Upper inlet (inlet-outlet) HC-D9							
Type	CODE								Type	CODE								Type	CODE							
D9									D9									D9	G03	U03						
D3	M01	G04	U03						D3									D3								
D3M									D3M	M01	G04	U03					D3M									
D4	M01	G04	U03	U04					D4								D4									
D6	G04	G05	U04						D6								D6									
D16	G05	U05							D16								D16									
D12	G05	G06	U05	S03	S04				D12								D12									
D20	G06	G07	U06	S05	S06	S33	S34		D20								D20									
D25	G07	G08	U07	S07	S08	S35	S36		D25								D25									
D40	G09	S09	S10	S11	S12	S39	S40		D40								D40									
D50	S15	S16							D50								D50									

NOTES

Area with horizontal lines for taking notes.

WORKING SECTION



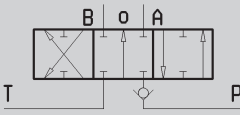
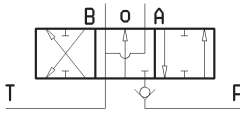
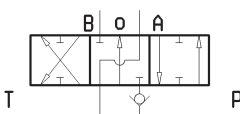
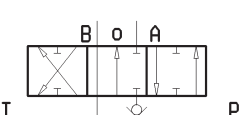
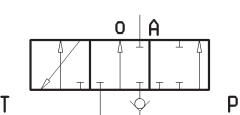
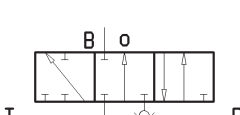
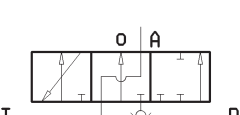
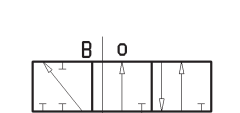
EXAMPLE OF HOW TO PLACE AN ORDER

W 001A - H001 - F001A - RP G04 - 01 PA (120)- 01 PB (120) - (R/L)**

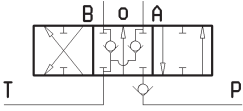
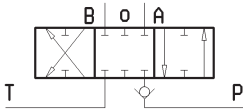
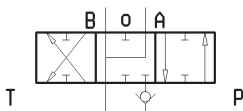
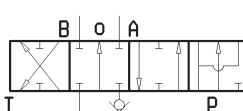
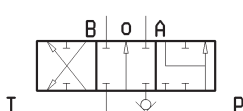
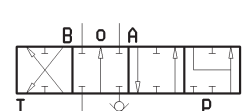
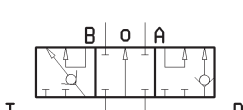
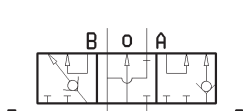
W	Working section	Page 1
001A	Type of spool	Page 2-3-4
H001	Spool action	Page 5-6-7-8-9-10-11
F001A	Spool return action	Page 12-13-14-15-16-17-18-19-20-21-22
RP	Type of circuit	Page 23
G04	Type of thread	Page 23
01	Type of auxiliary valve	Page 24
PA	Auxiliary valve service port "A"	Page 24
(120)	Setting	
01	Type of auxiliary valve	Page 24
PB	Auxiliary valve service port "B"	Page 24
(120)	Setting	

Elements designed to house auxiliary-valve option require double choice on work ports A-B.

** Should you order the working section only , please specify the entry side (R=right / L=left).

SPOOLS																
Circuit	Description	Spool type	Code	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50		
	3 position double-acting	Standard	001A	•	•	•	•	•	•	•	•	•	•	•		
		Metered	001B		•	•	•	•	•	•	•	•	•	•		
		Solenoid operated	001E	•	•	•										
	3 position double-acting A and B to tank	Standard	002A	•	•	•	•	•	•	•	•	•	•	•		
		Metered	002B		•	•	•	•	•	•	•	•	•	•		
		Solenoid operated	002E	•	•	•										
	3 position double-acting A to tank B blocked	Standard	003A	•	•	•	•	•	•	•	•	•	•	•		
		Metered	003B		•	•	•	•	•	•	•	•	•	•		
		Solenoid operated	003E	•	•	•										
	3 position double-acting A blocked B to tank	Standard	004A	•	•	•	•	•	•	•	•	•	•	•		
		Metered	004B		•	•	•	•	•	•	•	•	•	•		
		Solenoid operated	004E	•	•	•										
	3 position single-acting on A	Standard	005A	•	•	•	•	•	•	•	•	•	•	•		
		Metered	005B		•	•	•	•			•					
		Solenoid operated	005E	•	•	•										
	3 position single-acting on B	Standard	006A	•	•	•	•	•	•	•	•	•	•	•		
		Metered	006B		•	•	•	•			•					
		Solenoid operated	006E	•	•	•										
	3 position single-acting on A A to tank	Standard	007A	•	•	•	•	•		•	•	•	•			
	3 position single-acting on B B to tank	Standard	008A	•	•	•	•	•		•	•	•	•			

SPOOLS

Circuit	Description	Spool type	Code	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
	3 position double-acting with anticavitation valves	Standard	009A		•	•	•	•	•	•	•	•	•	
		Metered	009B		•	•	•	•						
	3 position double-acting switch port closed A and B blocked	Standard	010A		•	•	•	•	•	•	•	•	•	•
	3 position double-acting switch port closed A and B to tank	Standard	011A		•	•	•	•	•	•	•	•	•	•
	4 position double-acting with float in the 4th position (working section requires machining)	Standard	012A	•	•	•	•	•	•	•	•	•	•	
	3 position double-acting regenerative (working section requires machining)	Standard	013A	•	•	•	•	•	•	•	•	•	•	
	4 position double-acting regenerative in 4th position (working section requires machining)	Standard	014A		•	•	•	•						
	3 position double-acting series	Standard	015A	•		•	•	•	•	•	•	•		
		Metered	015B						•					
	3 position double-acting series A and B to tank	Standard	016A	•		•	•	•	•	•	•	•		
		Metered	016B						•					

SPOOLS

Circuit	Description	Spool type	Code	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
	3 position double-acting series A to tank B blocked	Standard	017A	•		•	•	•	•	•	•	•		
		Metered	017B						•					
	3 position double-acting series B to tank A blocked	Standard	018A	•		•	•	•	•	•	•	•		
		Metered	018B						•					

SPOOLS WITH RESTRICTED SERVICE PORTS ARE AVAILABLE ON REQUEST

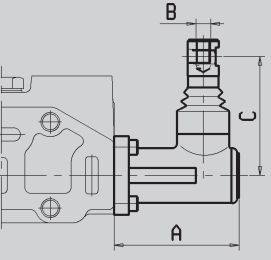
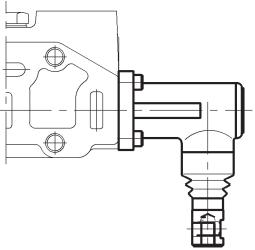
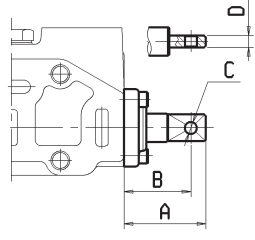
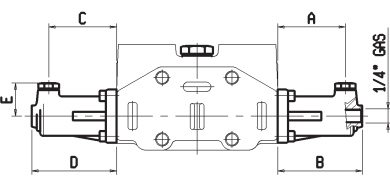
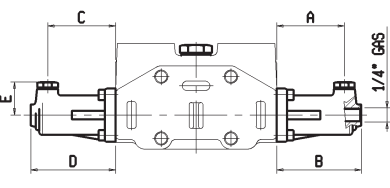
Example : CODE 001A J10
 type of spool _____ reduction of 0,1 mm on A and B (-)

(-) to be added to the spool code

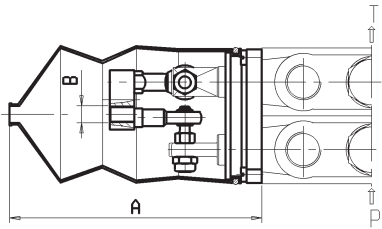
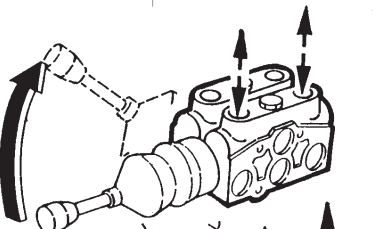
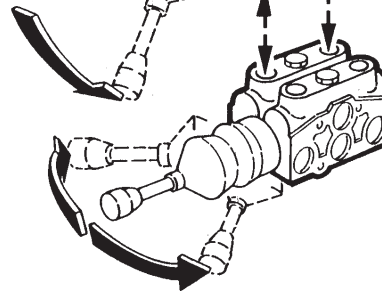
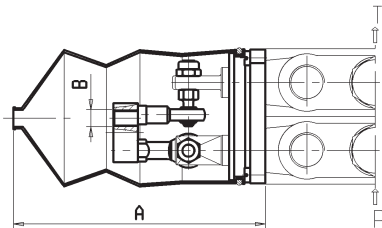
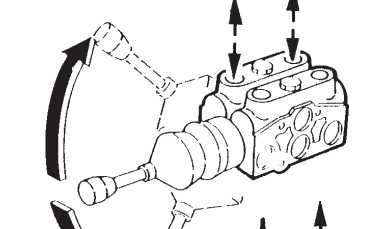
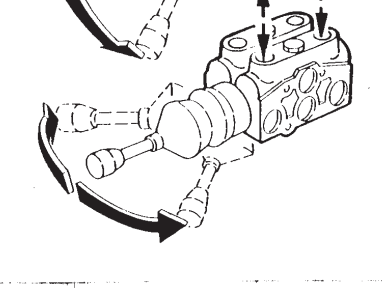
≡ Area mm²

Circuit	Description	Diameter (mm)	Code	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
	A-B to T	0,1	J10	1,88	2,66	2,66	2,82	2,98	3,13	3,45	4,08	4,71	5,65	8,16
		0,15	J15	2,81	3,99	3,99	4,22	4,46	4,70	5,17	6,11	7,05	8,47	12,24
		0,2	J20	3,74	5,31	5,31	5,62	5,94	6,25	6,88	8,14	9,39	11,28	16,31
	A to T	0,1	K10	1,88	2,66	2,66	2,82	2,98	3,13	3,45	4,08	4,71	5,65	8,16
		0,15	K15	2,81	3,99	3,99	4,22	4,46	4,70	5,17	6,11	7,05	8,47	12,24
		0,2	K20	3,74	5,31	5,31	5,62	5,94	6,25	6,88	8,14	9,39	11,28	16,31
	B to T	0,1	Y10	1,88	2,66	2,66	2,82	2,98	3,13	3,45	4,08	4,71	5,65	8,16
		0,15	Y15	2,81	3,99	3,99	4,22	4,46	4,70	5,17	6,11	7,05	8,47	12,24
		0,2	Y20	3,74	5,31	5,31	5,62	5,94	6,25	6,88	8,14	9,39	11,28	16,31

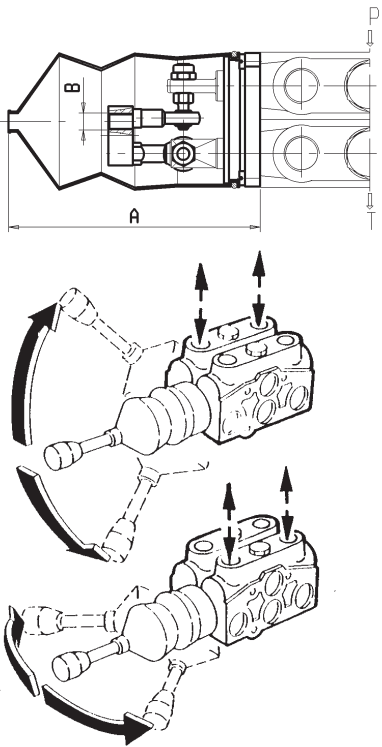
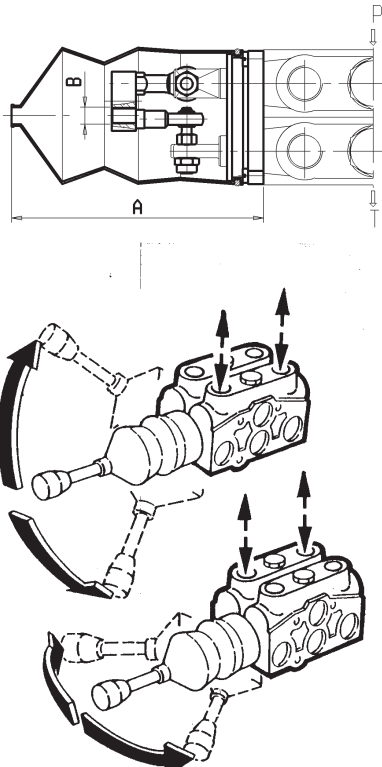
SPOOL ACTION

Dimensions	Description Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Protected lever H001	A	81	58,5	58,5	65,5	83	83						
		B	M8	M8	M8	M10	M10	M10						
	Protected lever rotated 180° H002	C	59,5	57,5	57,5	70	80	80						
		D												
	Control without lever H004	A	44	49	49	53,5	55	55	67	89,5	86	105		
		B	38,5	40	40	45,5	45	45	56	76	73	88		
		C	5	6	6	8	8	8	8	12	12	16		
		D	5	8	8	8	8	8	10	12	12	20		
	Hydraulic pilot H005 (leave out the spool return action code)	A					64		76	86	96	100		
		B		60	60	75	80		90	100	110	118		
		C						64		76	86	96	100	
		D		60	60	75	80		90	100	110	118		
		E						31		34	34	36,5	42,5	
	Hydraulic pilot with cast-iron end caps H006 (leave out the spool return action code)	A						69	76	86			147	
		B	79						88	90	100			170
		C							55	76	86			147
		D	55						74	90	100			170
		E							34,5	34	34			61,5

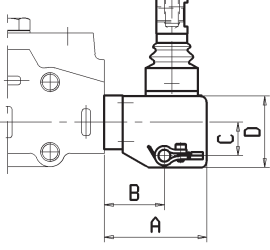
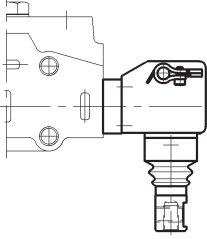
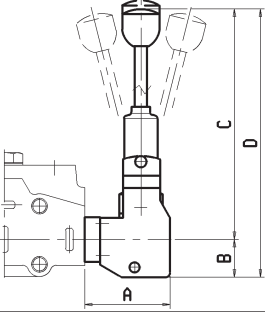
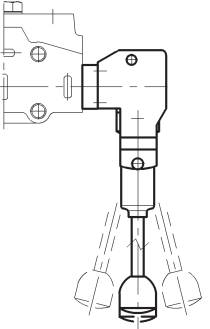
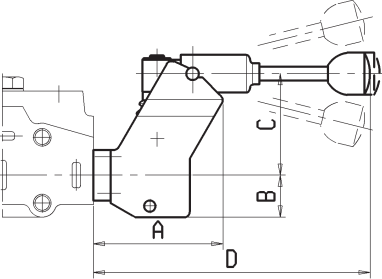
SPOOL ACTION

Dimensions	Description Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
  	<p>90° Joystick control with fulcrum on the upstream element (right-side inlet R)</p> <p>H009</p> <p>Compulsory code for the downstream section drive</p> <p>H120</p> <p>(*) without cover</p>	A	120,5	144	144	142	152		104 (*)				
  	<p>Compulsory code for the upstream section drive</p> <p>H120</p> <p>90° Joystick control with fulcrum on the downstream element (right-sided inlet R)</p> <p>H010</p> <p>(*) without cover</p>	A	120,5	144	144	142	152		104 (*)				
		B	M10	M10	M10	M10	M10		M14				

SPOOL ACTION

Dimensions	Description Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
	<p>90° Joystick control with fulcrum on the upstream element (left-side inlet L)</p> <p>H011</p> <p>Compulsory code for the downstream section drive</p> <p>H120</p> <p>(*) without cover</p>	A	120,5	144	144	142	152		104 (*)				
	<p>Compulsory code for the upstream section drive</p> <p>H120</p> <p>90° Joystick control with fulcrum on the downstream element (left-sided inlet L)</p> <p>H012</p> <p>(*) without cover</p>	A	120,5	144	144	142	152		104 (*)				
		B	M10	M10	M10	M10	M10		M14				

SPOOL ACTION

Dimensions	Description Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Protected lever designed to house optional microswitch H013	A		31,5	31,5	40								
		B		69,5	69,5	68,5								
	Protected lever rotated 180° designed to house optional microswitch H014	C		21,5	21,5	20,5								
		D		42,5	42,5	40								
	Protected vertical safety lever H015	A		58,5	58,5	69								
		B		17	17	30								
	Protected vertical safety lever rotated 180° H016	C		256	256	267								
		D		273	273	297								
	Protected horizontal safety lever H017	A		81	81	92								
		B		17	17	30								
		C		57	57	72,5								
		D		270	270	274								

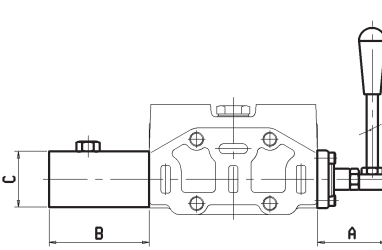
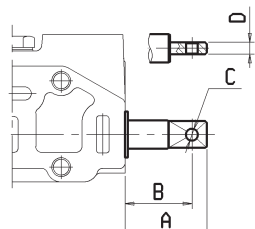
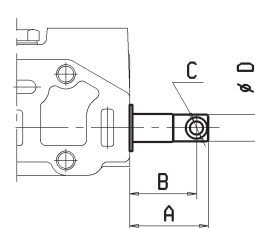
SPOOL ACTION

Dimensions	Description Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Protected horizontal safety lever rotated 180° H018	A		81	81	92								
		B		17	17	30								
		C		57	57	72,5								
		D		270	270	274								
	Protected lever with stroke limiter H019	A	81	58,5	58,5									
		B	M8	M8	M8									
	Protected lever rotated 180° with stroke limiter H020	C	59,5	57,5	57,5									
		A	81	58,5	58,5									
	Protected lever for solenoid control H021 for spool return only F0150-F0160	B	M8	M8	M8									
		C	59,5	57,5	57,5									
	Protected lever for solenoid control rotated 180° H022 for spool return only F0150-F0160	B	M8	M8	M8									
		C	59,5	57,5	57,5									

SPOOL ACTION

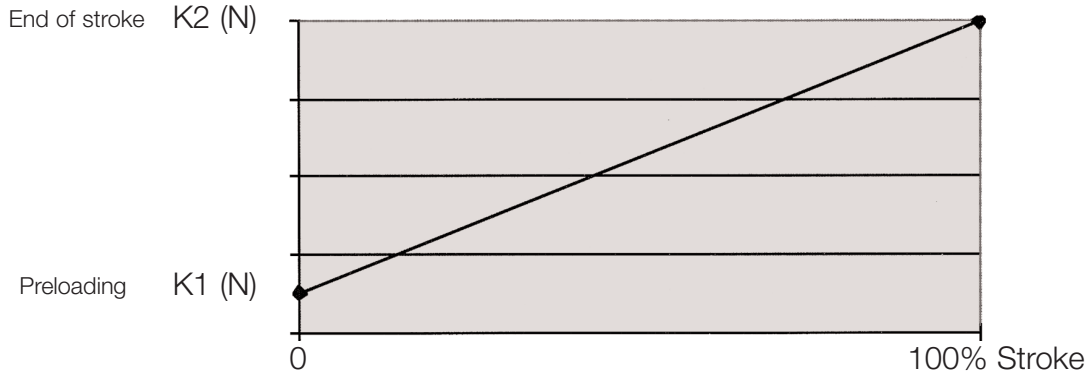
Dimensions	Description Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	D50	
	Solenoid control without lever H024 for spool return only F0150-F0160	A	44	49	49										
		B	38,5	40	40										
		C	5	6	6										
		D	5	8	8										
	Unprotected lever H101	A					69		85	95	95	75	87	87	
		B					M10		M12	M14	M14	M14	M14	M14	
		C					45		56	45	42	42	54	54	
	Unprotected lever rotated 180° H102	D					24		28,5	34	42	48	48	48	
		E					29		32	37	38	48,5	48,5	48,5	
		F					11		14	13	15	17,5	17,5	17,5	
	Unprotected vertical safety lever H105	A					82								
		B					62								
		C					45								
		D					35								
		E					57								
		F					295								
	Unprotected horizontal safety lever H107	A					289								
		B					35								
		C					29								

SPOOL ACTION

Dimensions	Description Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
	180° rotary control	A				56	63				115		
	H114	B				83	90				125		
	(leave out the spool return action code)	C				40	50				53		
	Male clevis end	A	44	49	49	53,5	55	55	67	89,5	86	105	
	H117	B	38,5	40	40	45,5	45	45	56	76	73	88	
		C	5	6	6	8	8	8	8	12	12	16	
		D	5	8	8	8	8	8	10	12	12	20	
	Pin hole end	A	71,5	49	49	53,5							
	H118	B	63,5	40	40	45,5							
		C	7	9	9	9							
		D	11	16,5	16,5	17							

SPOOL RETURN ACTION

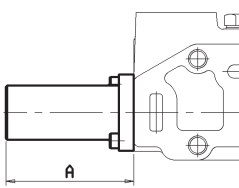
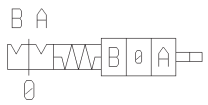
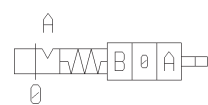
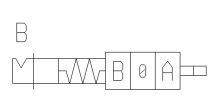
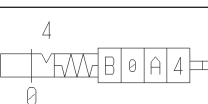
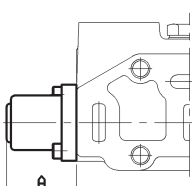

Spring loading



Type	Standard spring		A	Type	Soft spring		B	Type	Heavy spring		C
	K1 (N)	K2 (N)			K1 (N)	K2 (N)			K1 (N)	K2 (N)	
D9	100	150		D9	80	130		D9	120	180	
D3	121,6	203		D3	88,3	147,1		D3	149,1	206	
D3M	121,6	203		D3M	88,3	147,1		D3M	149,1	206	
D4	117,7	145,2		D4	101	117,7		D4	172,6	246,2	
D6	137,3	176,6		D6	109,8	141,2		D6	168,7	259	
D16	137,3	176,6		D16	98,1	137,3		D16	196,2	255	
D12	151	186,4		D12	112,8	141,2		D12	253	430,6	
D20	196,2	245,2		D20	145,1	176,6		D20	313,9	412	
D25	155	373,7		D25	116,7	152		D25	188,3	454,2	
D40	275,6	593,5		D40				D40			
D50	392,4	686,7		D50				D50			

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	3 position spring-centred spool	F001A	A	35	39	39	42	47	55	57,5	69	71,5	107	172	
		F001B		35	39	39	42	47	55	57,5	69	71,5			
		F001C		35	39	39	42	47	55	57,5	69	71,5			

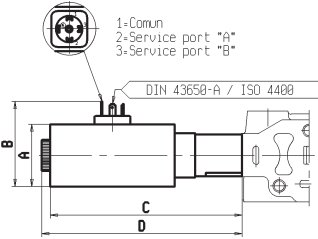
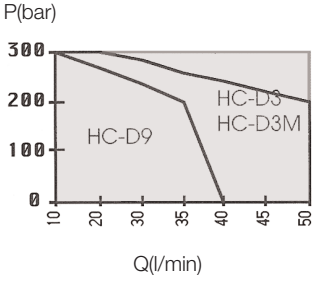
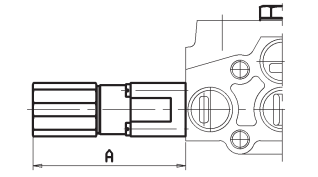
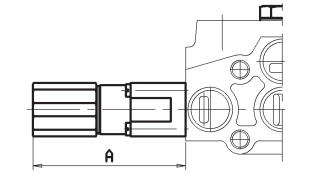
SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	3 position spring-centred spool detent in A and B	F002A	A	70	63,5	63,5	70	86	92	102	110	A	A		
															
	3 position spring-centred spool detent in A	F003A	A	70	63,5	63,5	70	86	92	102	110	124,5	170		
															
	3 position spring-centred spool detent in B	F004A	A	70	63,5	63,5	70	86	92	102	110	124,5	170		
															
	4 position spring-centred spool detent in 4th position	F005A	A	70	63,5	63,5	70	86	92	102	110	124,5	170		
4 position spring-centred spool detent in 4th position (only for spool type 014)	F006A			63,5	63,5	70	86								
															
	2 position in A spring-centred spool	F009A	A		39	39	42	47	55						
		F009B			39	39	42	47	55						
		F009C			39	39	42	47	55						

SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	2 position in B spring-centred spool	F010A	A		39	39	42	47	55						
		F010B			39	39	42	47	55						
		F010C				39	39	42	47	55					
	2 position detent in A spring-centred spool	F011A	A		63,5	63,5	70	86	92						
		F011B			63,5	63,5	70	86	92						
		F011C				63,5	63,5	70	86	92					
	2 position detent in B spring-centred spool	F012A	A		63,5	63,5	70	86	92						
		F012B			63,5	63,5	70	86	92						
		F012C				63,5	63,5	70	86	92					
	3 position spring-centred spool designed to house optional dual com- mand	F013A	A	62,5	67,5	67,5	75	81	89	100	100		163		
			B	M8	M8	M8	M8	M8	M8	M8	M8	M10	M10		
		F013B	A	62,5	67,5	67,5	75	81	89	100	100				
			B	M8	M8	M8	M8	M8	M8	M8	M8	M10			
		F013C	A	62,5	67,5	67,5	75	81	89	100	100				
			B	M8	M8	M8	M8	M8	M8	M8	M8	M10			
	3 position spring-centred spool with stroke limiter	F014A	A		39	39	42								
		F014B			39	39	42								
		F014C				39	39	42							

SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
 <p>1-Common 2-Service port "A" 3-Service port "B"</p> <p>DIN 43650-A / ISO 4400</p> <p>Diagram of operational limit</p>  <p>P(bar)</p> <p>300 200 100 0</p> <p>10 20 30 40 45 50</p> <p>Q(l/min)</p> <p>HC-D9 HC-D3 HC-D3M</p>	3 position direct solenoid operated Push-Pull V=12 VDC I=5A P=60W	F0150	A	52	52	52								
				B	72,5	72,5	72,5							
 <p>Specify working pressure Range setting (bar) 50 - 350</p>	3 position direct solenoid operated Push-Pull V=24 VDC I=2,5 A P=60W	F0160	C	161	161	161								
				D	168	168	168							
 <p>Specify working pressure Range setting (bar) 50 - 350</p>	Detent in A-B kick-out for centre return	F0170	A				62							
	Detent in A kick-out for centre return	F0180	A				62							
	Detent in B kick-out for centre return	F0190	A				62							

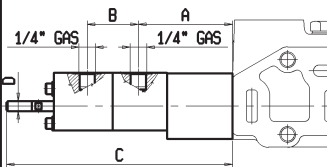
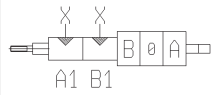
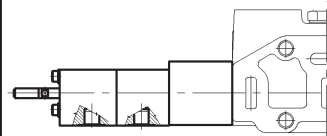
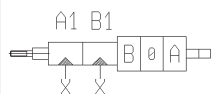
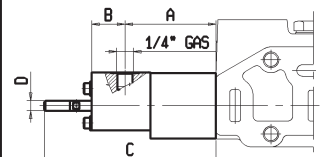
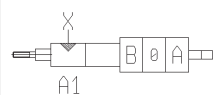
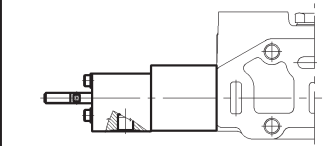
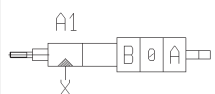
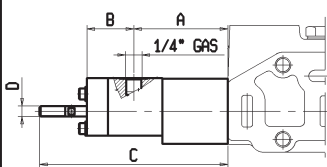
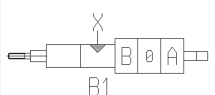
SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Pneumatic control ON-OFF Operating pressure 2-3,5 bar 	F020A	A		57,5	57,5	61,5	73	73	79	87				
			B		55,5	55,5	53,5	67	68	69	67				
	Pneumatic control ON-OFF rotated 180° Operating pressure 2-3,5 bar 	F021A	C		127	127	128,5	155,7	156,7	167	171				
			 	F022A	A		57,5	57,5	61,5	73	73	79	87		
B		55,5			55,5	53,5	67	68	69	67					
 	Proportional pneumatic control rotated 180° 	F023 A	C		127	127	128,5	155,7	156,7	167	171				
				Load limit in A-B "X" in A1=A in o "X" in B1=B in o Max. pressure on "X" 350 bar 	F024A	A	60,5	61,5	61,5	62,5	73,5	80,5			
B	40	40				40	40	40	40						
C	133	134				134	135	146	153						
F024C	A					61,5	62,5	73,5	80,5						
	B					40	40	40	40						
	C					134	135	146	153						

SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Load limit in A-B rotated 180° "X" in A1=A in o "X" in B1=B in o Max. pressure on "X" 350 bar 	F025A	A	60,5	61,5	61,5	62,5	73,5	80,5						
			B	40	40	40	40	40	40						
			C	133	134	134	135	146	153						
		F025C	A		61,5	61,5	62,5	73,5	80,5						
			B		40	40	40	40	40						
			C		134	134	135	146	153						
	Load limit in A "X" in A1=A in o Max. pressure on "X" 350 bar 	F026A	A	58	59	59	60	71	78						
			B	26	26	26	26	26	26						
			C	90,5	91	91	92	103	110						
		F026C	A		59	59	60	71	78						
			B		26	26	26	26	26						
			C		91	91	92	103	110						
	Load limit in A rotated 180° "X" in A1=A in o Max. pressure on "X" 350 bar 	F027A	A	60,5	61,5	61,5	62,5	73,5	80,5						
			B	40	40	40	40	40	40						
			C	133	134	134	135	146	153						
		F027C	A		61,5	61,5	62,5	73,5	80,5						
			B		40	40	40	40	40						
			C		134	134	135	146	153						
	Load limit in B "X" in B1=B in o Max. pressure on "X" 350 bar 	F028A	A	60,5	61,5	61,5	62,5	73,5	80,5						
			B	36,5	36,5	36,5	36,5	36,5	36,5						
			C	103,5	104	104	105	116	123						
		F028C	A		61,5	61,5	62,5	73,5	80,5						
			B		36,5	36,5	36,5	36,5	36,5						
			C		104	104	105	116	123						
	Load limit in B rotated 180° "X" in B1=B in o Max. pressure on "X" 350 bar 	F029A	A	60,5	61,5	61,5	62,5	73,5	80,5						
			B	36,5	36,5	36,5	36,5	36,5	36,5						
			C	103,5	104	104	105	116	123						
		F029C	A		61,5	61,5	62,5	73,5	80,5						
			B		36,5	36,5	36,5	36,5	36,5						
			C		104	104	105	116	123						

SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	<p>Load limit in A-B dual control</p> <p>"X" in A1=A in o "X" in B1=B in o Max. pressure on "X" 350 bar</p> 	F030C	A	60,5	61,5	61,5	62	73,5	80,5						
			B	40	40	40	40	40	40						
	<p>Load limit in A-B dual control rotated 180°</p> <p>"X" in A1=A in o "X" in B1=B in o Max. pressure on "X" 350 bar</p> 	F031C	C	165	164,5	164,5	165	176	183						
			D	M8	M8	M8	M8	M8	M8						
	<p>Load limit in A dual control</p> <p>"X" in A1=A in o Max. pressure on "X" 350 bar</p> 	F032C	A	58	59	59	60	71	78						
			B	26	26	26	26	26	26						
	<p>Load limit in A dual control rotated 180°</p> <p>"X" in A1=A in o Max. pressure on "X" 350 bar</p> 	F033C	C	165	164	164	165	176,5	183,5						
			D	M8	M8	M8	M8	M8	M8						
	<p>Load limit in B dual control</p> <p>"X" in B1=B in o Max. pressure on "X" 350 bar</p> 	F034C	A	60,5	61,5	61,5	62,5	73,5	80,5						
			B	36,5	36,5	36,5	36,5	36,5	36,5						
			C	165	164	164	165	176	183						
			D	M8	M8	M8	M8	M8	M8						

SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Load limit in B dual control rotated 180° "X" in B1=B in 0 Max. pressure on "X" 350 bar	F035C	A	60,5	61,5	61,5	62,5	73,5	80,5						
			B	36,5	36,5	36,5	36,5	36,5	36,5						
			C	165	164	164	165	176	183						
			D	M8	M8	M8	M8	M8	M8						

GENERAL SPECIFICATIONS OF ELECTRICAL LOAD LIMIT

Power supply	Current-carrying capacity of contacts	Degree of protection	Temperature range
12 VDC	3 A	IP 65	from -25° C to + 90° C
24 VDC	1,5 A		

In neutral position (o) the contacts are normally closed.

A HIRSCHMANN female connector, type G4 W 1F , code 413000045 (*) is available upon request .

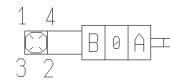
(*) to be ordered separately

OPERATIONAL DIAGRAM

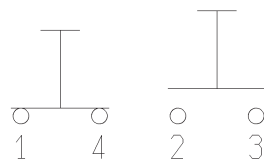
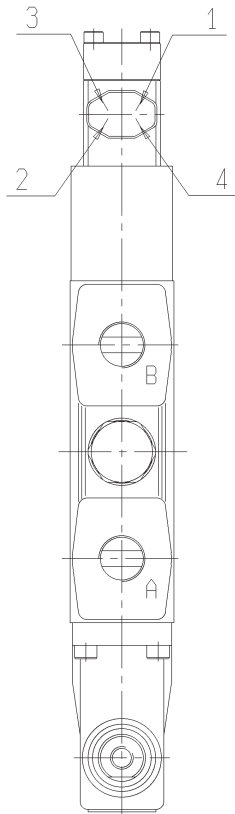
Control in A and B : connect PIN 4-1 and 3-2

Control in A : connect PIN 3-2

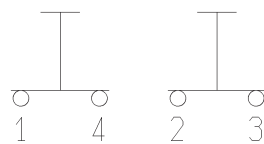
Control in B : connect PIN 4-1



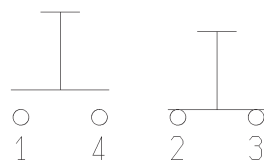
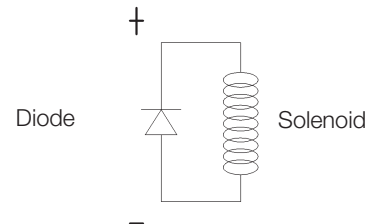
WIRING DIAGRAM



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



Neutral in 0



B

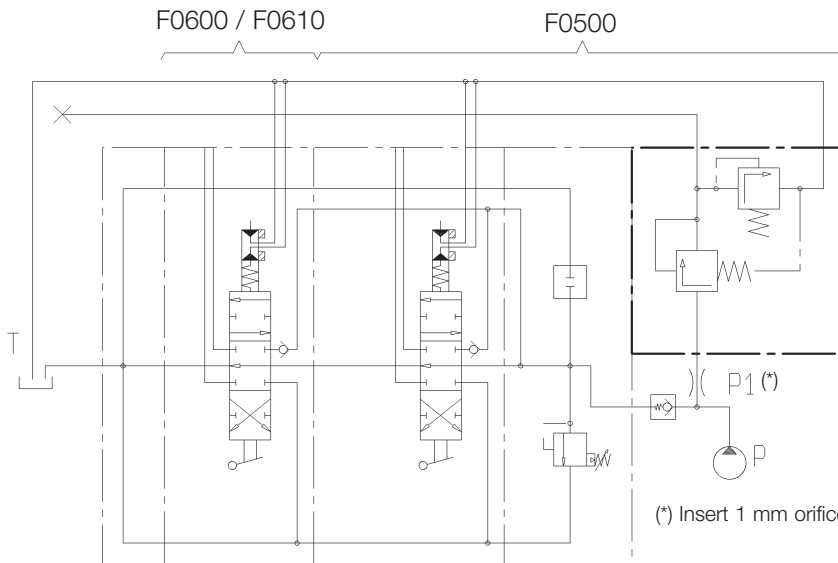
SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Electrical load limit	F0360	A		62	62	63	74	81						
			B		99	99	100	111	118						
	Electrical load limit rotated 180°	F0370	C		27,5	27,5	27,5	27,5	27,5						
			A		62	62	63	74	81						
	Electrical load limit dual control	F0380	B		117	117	118	129	136						
			C		27,5	27,5	27,5	27,5	27,5						
			D		32	32	32	32	32						
	Electrical load limit dual control rotated 180°	F0390	E		M8	M8	M8	M8	M8						
			A		62	62	63	74	81						

SPOOL RETURN ACTION

HYDRAULIC DIAGRAM

HYDRAULIC SPECIFICATIONS



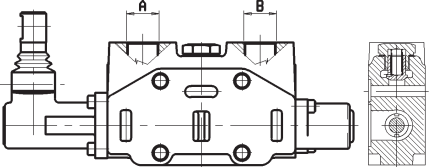
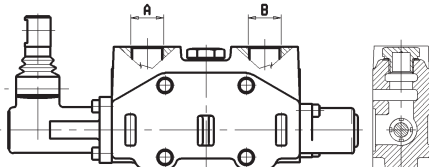
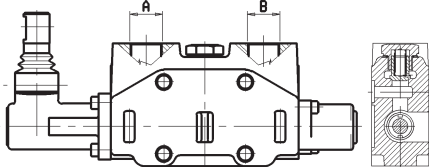
Max. input pressure	350 bar
Reduced pressure	16 bar
Back pressure on T	3 bar
Back pressure on P	10 bar
Min. pressure on P1	10 bar
Max. pressure on P1	350 bar
Degree of filtering	25 μ absolute
Recommended pilot pipe size	∅ 6 mm
	1/4" BSP
Temperature Range	-20 +80 °C

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50	
	Electrohydraulic control ON-OFF 12 VDC - 7.5 Ω 19 W - 1.58 A with fixed pressure relief valve P1-T inlet side	F0500	A		43,5	43,5	43,5	43,5	43,5	43,5	43,5				
			B		28,5	28,5	28,5	28,5	28,5	28,5	28,5				
	Electrohydraulic control ON-OFF 24 VDC - 29.5 Ω 19 W - 0.81 A with fixed pressure relief valve P1-T inlet side	F0510	A		43,5	43,5	43,5	43,5	43,5	43,5	43,5				
			B		28,5	28,5	28,5	28,5	28,5	28,5	28,5				
	Electrohydraulic control ON-OFF 12 VDC - 7.5 Ω 19 W - 1.58 A with fixed pressure relief valve P1 inlet-T outlet	F0520	A		43,5	43,5	43,5	43,5	43,5	43,5	43,5				
			B		13	13	13	13	13	13	13				
	Electrohydraulic control ON-OFF 24 VDC - 29.5 Ω 19 W - 0.81 A with fixed pressure relief valve P1 inlet-T outlet	F0530	A		43,5	43,5	43,5	43,5	43,5	43,5	43,5				
			B		13	13	13	13	13	13	13				

SPOOL RETURN ACTION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50		
	3 position electrohydraulic control ON-OFF 12 VDC - 7,5 Ω 19 W - 1,58 A Max.pressure 16 bar 	F0600	A	116	116	117	128	135	134	142						
			B	78	78	79	90	97	96	104						
			C	26,5	26,5	26,5	26,5	26,5	26,5	26,5						
			D	72	72	73	84	91	90	98						
			E	49,5	49,5	49,5	49,5	49,5	49,5	49,5						
			F	149,5	149,5	149,5	149,5	149,5	149,5	149,5						
	3 position electrohydraulic control ON-OFF 24 VDC - 29,5 Ω 19 W - 0,81 A Max.pressure 16 bar 	F0610	A	116	116	117	128	135	134	142						
			B	78	78	79	90	97	96	104						
			C	26,5	26,5	26,5	26,5	26,5	26,5	26,5						
			D	72	72	73	84	91	90	98						
			E	49,5	49,5	49,5	49,5	49,5	49,5	49,5						
			F	149,5	149,5	149,5	149,5	149,5	149,5	149,5						
	3 position control electropneumatic ON-OFF 12 VDC 7 W 0,58 A 	F0620	A	128	128	138	156	173,5	182							
			B	75,5	75,5	86,5	100,5	115	118,5							
			C	37,5	37,5	47	53,5	58	62,5							
			D	128,5	128,5	137	142	147	152							
	3 position control electropneumatic ON-OFF 24 VDC 7 W 0,29 A 	F0630	A	128	128	138	156	173,5	182							
			B	75,5	75,5	86,5	100,5	115	118,5							
			C	37,5	37,5	47	53,5	58	62,5							
			D	128,5	128,5	137	142	147	152							

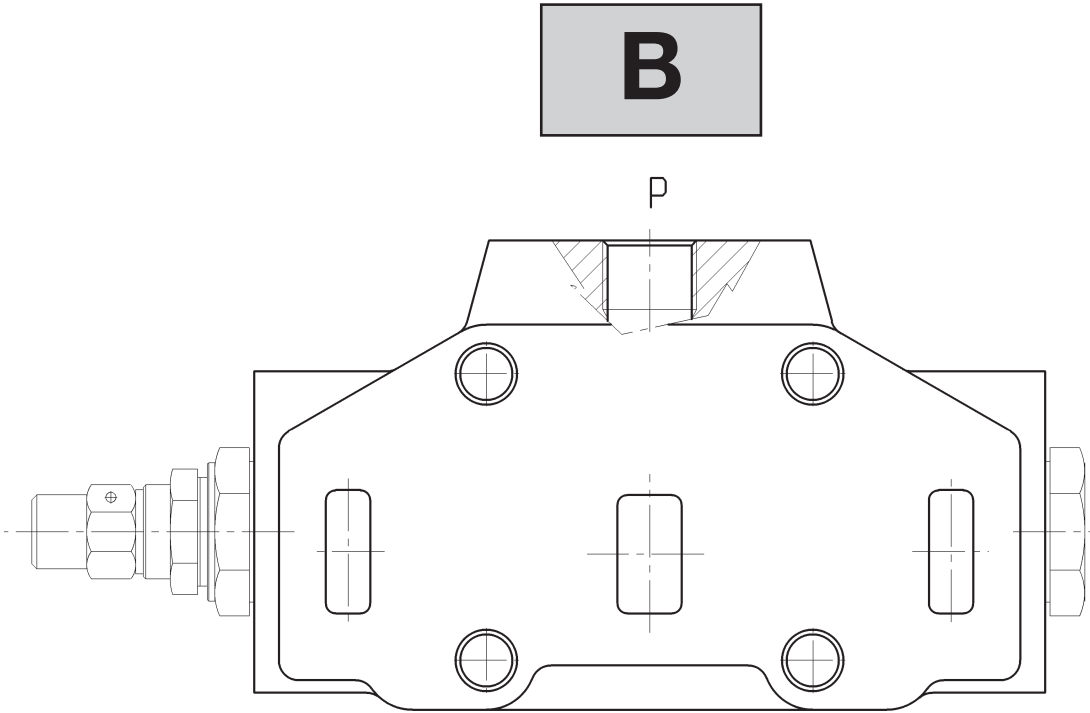
SERVICE PORT THREAD TYPES A - B

		TYPE	THREAD CODE						
		D9	G03	U03					
		D3	M01	G04	U03				
		D3M	M01	G04	U03				
		D4	M01	G04	U03	U04			
		D6	G04	G05	U04				
		D16	G05	U05					
		D12	G05	G06	U05	S03	S04		
		D20	G06	G07	U06	S05	S06	S33	S34
Code	Description	D25	G07	G08	U07	S07	S08	S35	S36
RP	Service ports A-B parallel circuit section	D40	G09	S09	S10	S11	S12	S39	S40
		D50	S15	S16					
		TYPE	THREAD CODE						
		D9	G03	U03					
		D3							
		D3M	M01	G04	U03				
		D4	M01	G04	U03	U04			
		D6	G04	G05	U04				
		D16	G05	U05					
		D12	G05	G06	U05	S03	S04		
D20	G06	G07	U06	S05	S06	S33	S34		
Code	Description	D25	G07	G08	U07	S07	S08	S35	S36
RS	Service ports A-B series circuit section	D40							
		D50							
		TYPE	THREAD CODE						
		D9	G03	U03					
		D3							
		D3M	M01	G04	U03				
		D4	M01	G04	U03	U04			
		D6							
		D16							
		D12							
D20									
Code	Description	D25							
RT	Service ports A-B tandem circuit section	D40							
		D50							

AUXILIARY VALVE

Design	Circuit	Description	Code	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
		Service line relief valve Service port A	01PA	•	•	•	•	•	•	•	•	•	•	
		Service line relief valve Service port B	01PB	•	•	•	•	•	•	•	•	•	•	•
		Anticavitation valve Service port A	02PA	•	•	•	•	•	•	•	•	•	•	
		Anticavitation valve Service port B	02PB	•	•	•	•	•	•	•	•	•	•	•
		Combination valve Service port A	03PA	•		•		•	•	•	•	•		
		Combination valve Service port B	03PB	•		•		•	•	•	•	•	•	
		Pilot operated combination valve Service port A	04PA								•	•	•	
		Pilot operated combination valve Service port B	04PB									•	•	•
		Valve plug Service port A	05PA	•	•	•	•	•	•	•	•	•	•	
		Valve plug Service port B	05PB	•	•	•	•	•	•	•	•	•	•	•

INTERMEDIATE SECTIONS



ORDERING CODES

B E 009 (150) - A G04

B	Intermediate section	Page 1
E	Intermediate inlet section	Page 2
009	Valve type and arrangement	Page 3
(150)	Setting (must always be specified when a pressure relief valve is used)	
A	Inlet position	Page 3
G04	Type of thread	Page 3

Hydraulic diagram	Layout	Description	Code
		Intermediate inlet section	E
		Intermediate section with pressure relief valve	V (*)

VALVES				HYDRAULIC SPECIFICATIONS	
Type	Design	Circuit	Description		
1			Direct acting pressure relief valve	<p style="text-align: center;"><u>Operation of Intermediate inlet section type E.</u></p> <p>The intermediate inlet section is driven by two pumps (P+P1). The downstream elements can be set to a lower pressure than those the upstream one by adjusting the pressure relief valve of the intermediate section in question.</p> <p style="text-align: center;"><u>Operation of Intermediate inlet section type V.</u></p> <p>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 those the upstream one by adjusting the pressure relief valve of the intermediate section in question.</p>	
2			Pilot operated pressure relief valve		
3			Relief valve plugged		
4			Main anticavitation check valve		
11			Plug with pressure gauge connection		

(*) Omit the code for inlet positioning and type of thread

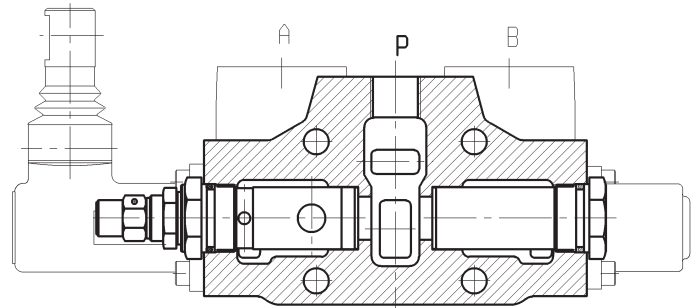
VALVE TYPE AND ARRANGEMENT ON THE INTERMEDIATE INLET SECTION

Example CODE : 009 = 2A-3B

Pressure relief valve in port A side
Plug replaces pressure relief valve in port B side

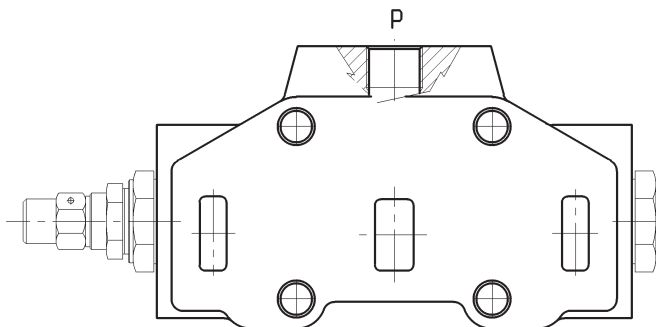
The code identifies : with a number, the type of valve; with a letter, its position on the inlet section.
(A)= spool action side
(B)= spool return action side

(R)=Right inlet (L)=Left inlet



Combina- tion	Code	D9		D3		D3M		D4		D6		D16		D12		D20		D25		D40		D50	
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
1A-3B	001	.	.			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1A-4B	002					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1A-11B	008	.	.			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-3B	009					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-4B	010					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
2A-11B	016					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-1B	017	.	.			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-2B	018					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-3B	019	.	.			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-4B	020					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3A-11B	027	.	.			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-1B	028					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-2B	029					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-3B	030					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4A-11B	037					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-1B	084	.	.			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-2B	085					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-3B	086	.	.			.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11A-4B	087					.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1A	201			.																			
3A	203			.																			
4A	204			.																			
11A	211			.																			

INLET POSITION AND TYPE OF THREAD

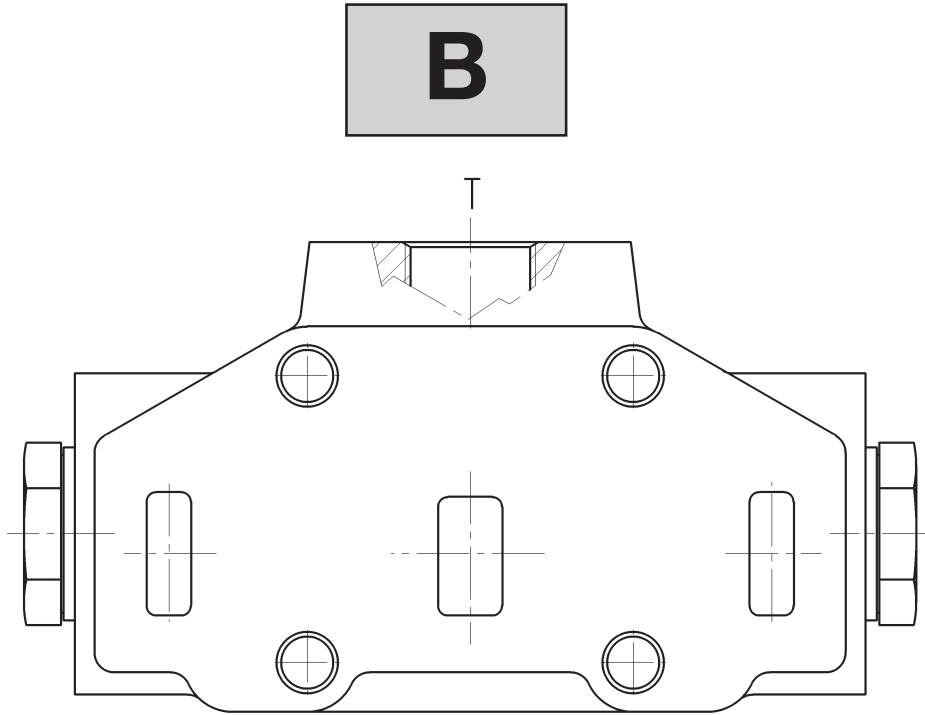


Type	CODE						
D9	G03	U03					
D3	M01	G04	U03				
D3M	M01	G04	U03				
D4	M01	G04	U03	U04			
D6	G04	G05	U04				
D16	G05	U05					
D12	G05	G06	U05	S03	S04		
D20	G06	G07	U06	S05	S06	S33	S34
D25	G07	G08	U07	S07	S08	S35	S36
D40	G09	S09	S10	S11	S12	S39	S40
D50	S15	S16					

Code Description

A Upper inlet

INTERMEDIATE SECTIONS

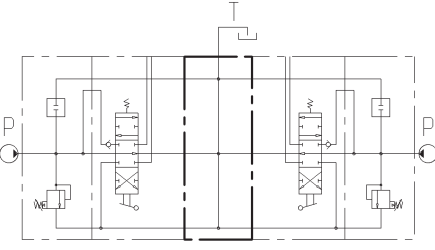
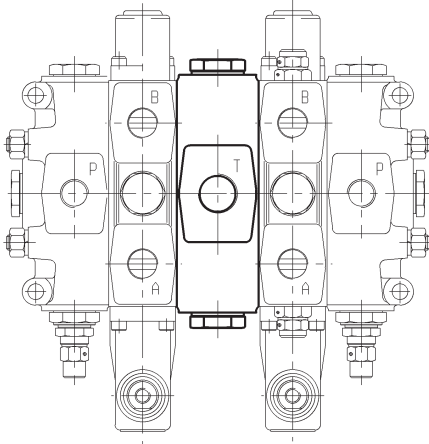


ORDERING CODES

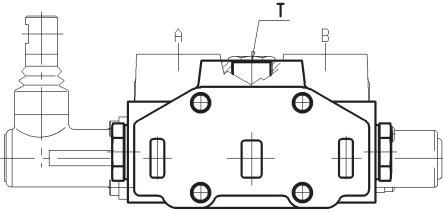
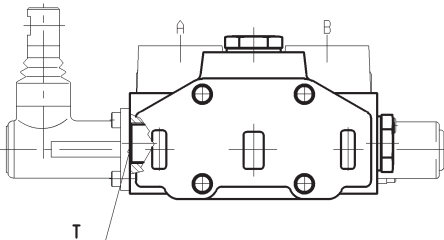
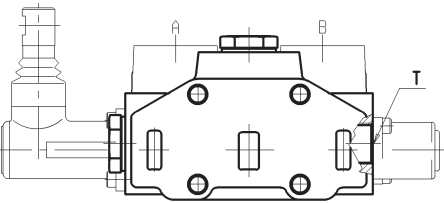
B F - A G05

B	Intermediate section	Page 4
F	Intermediate outlet with single tank return	Page 5-6
A	Outlet position	Page 5-6
G05	Type of thread	Page 5-6

INTERMEDIATE OUTLET SECTION

Hydraulic diagram	Layout	Description	Code
		<p>Intermediate outlet section with single tank return</p>	<p>F</p>

INTERMEDIATE OUTLET WITH SINGLE TANK RETURN OUTLET POSITION **F**

		
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Code	Description	Code	Description	Code	Description
A	Upper outlet	G	Front outlet side A	H	Rear outlet side B
Type	CODE	Type	CODE	Type	CODE
D9	G04 U03	D9		D9	
D3	M02 G04 U03	D3	M02 G04 U03	D3	M02 G04 U03
D3M	M02 G04 U03	D3M	M02 G04 U03	D3M	M02 G04 U03
D4	M02 G04 U03 U04	D4	M02 G04 U03 U04	D4	M02 G04 U03 U04
D6	G05 G06 U05	D6	G05 G06 U05	D6	G05 G06 U05
D16	G06 U06	D16	G06 U06	D16	G06 U06
D12	G06 U06 S03 S04	D12	G06 U06 S03 S04	D12	G06 U06 S03 S04
D20	G07 U07 S07 S08	D20	G07 U07 S07 S08	D20	G07 U07 S07 S08
D25	G08 U07 S09 S10	D25	G08 U07 S09 S10	D25	G08 U07 S09 S10
D40	G09 S11 S12	D40	G09 S11 S12	D40	G09 S11 S12
D50		D50		D50	

INTERMEDIATE OUTLET SECTION

Hydraulic diagram	Layout	Description	Code
		Intermediate outlet section with two tank returns	G

INTERMEDIATE OUTLET WITH TWO TANK RETURN OUTLET POSITION G

Code	Description	Type	CODE			
		D9				
		D3	M02	G04	U03	
		D3M				
		D4	M02	G04	U03	U04
		D6	G05	G06	U05	
		D16	G06	U06		
		D12	G06	U06	S03	S04
		D20	G07	U07	S35	S36
		D25	G08	U07	S35	S36
		D40	G09	S39	S40	
		D50				

Code	Description	Type	CODE		Code	Description	Type	CODE	
		D3M	G04				D9	G03	U03

HYDRAULIC SPECIFICATIONS
Operation of intermediate outlet section type "F"

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.

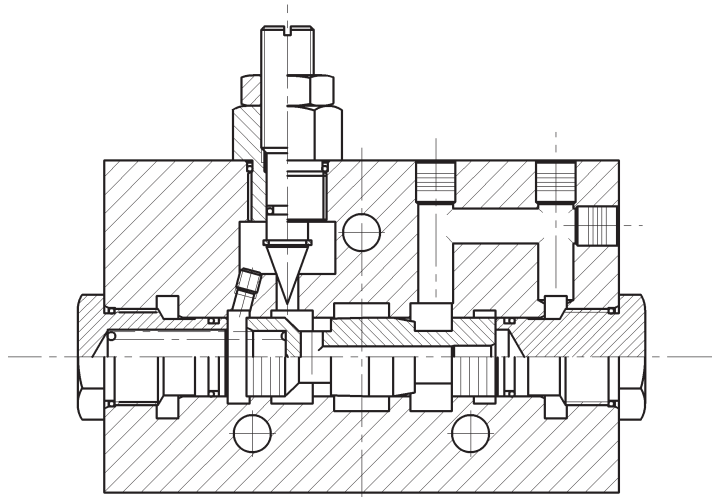
Operation of intermediate outlet section type "G"

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.

INTERMEDIATE FLOW DIVIDERS



ORDERING CODES

C 001

- C** Intermediate Flow Dividers Page 1
- 001** Type of control Page 2

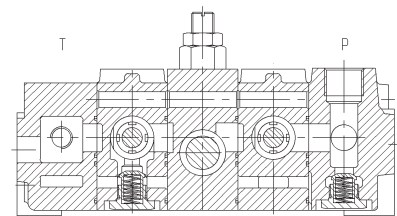
FLOW ADJUSTMENT RANGE (Q=l/min)		
Type	Minimum Q	Maximum Q
D3	2 l/min	35 l/min
D4	3 l/min	40 l/min
D6	5 l/min	60 l/min

PREPARATION

Layout	Description	Code	D9	D3	D3M	D4	D6	D16	D12	D20	D25	D40	D50
	Intermediate with screw-adjustable flow divider 	001		•		•	•						
	Intermediate with hand wheel-adjustable flow divider 	002		•		•							
	Intermediate with screw-adjustable flow divider and external excess flow port 	003		•		•							
	Intermediate with hand wheel-adjustable flow divider and external excess flow port 	004		•		•							

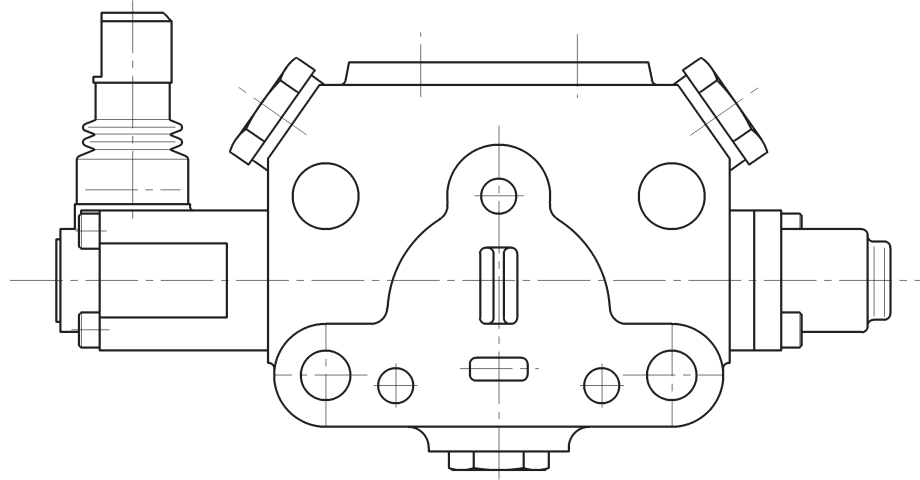
SPECIFICATIONS OF INTRMEDIATE FLOW DIVIDER

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 direct to tank. In the HC-D3 directional control valve, the section downstream of the flow divider may be fitted with a check valve.
Code for above section : RV.



Assembly diagram for HC-D3 directional control valve

INTERMEDIATE SPECIAL SECTIONS



EXAMPLE OF HOW TO PLACE AN ORDER

D 020

- | | | |
|------------|---|--------------|
| D | Intermediate special sections | Page 1 |
| 020 | Intermediate section HPCO protected control lever
2 position in A spring-centred spool | Page 2-3-4-5 |

PREPARATION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20	
	<p>Intermediate section HPCO protected control lever 2 position in A spring-centred spool</p>	<p>020</p>	A		58,5	58,5						
			B		39	39						
			C		M8	M8						
			D		38	38						
			F		1/2" BSP	1/2" BSP						
			G		37	38						
			H		242	235						
	<p>Intermediate section HPCO protected control lever 2 position in B spring-centred spool</p>	<p>021</p>	A		58,5	58,5						
			B		39	39						
			C		M8	M8						
			D		38	38						
			F		1/2" BSP	1/2" BSP						
			G		37	38						
			H		242	235						
	<p>Intermediate section HPCO control without lever male clevis end 2 position in A spring-centred spool</p>	<p>022</p>	A		40	40						
			B		39	39						
			C		6	6						
			D		38	38						
			E		8	8						
			F		1/2" BSP	1/2" BSP						
			G		37	38						
H		242	235									
	<p>Intermediate section HPCO control without lever male clevis end 2 position in B spring-centred spool</p>	<p>023</p>	A		40	40						
			B		39	39						
			C		6	6						
			D		38	38						
			E		8	8						
			F		1/2" BSP	1/2" BSP						
			G		37	38						
H		242	235									

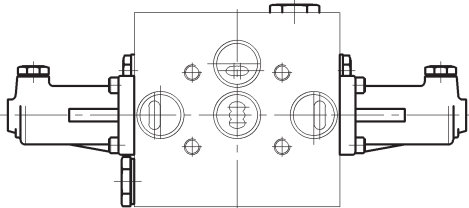
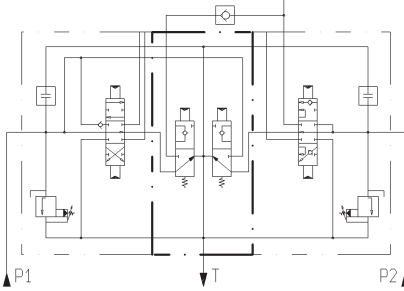
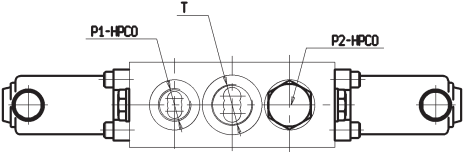
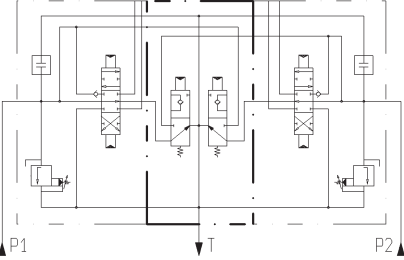
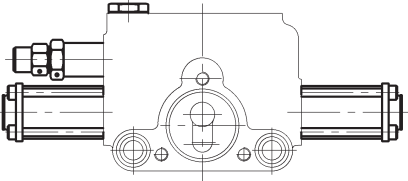
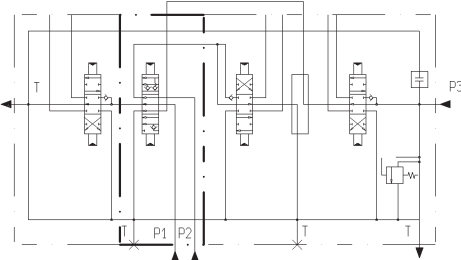
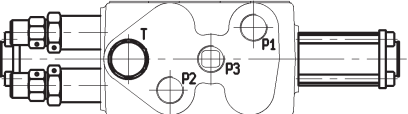
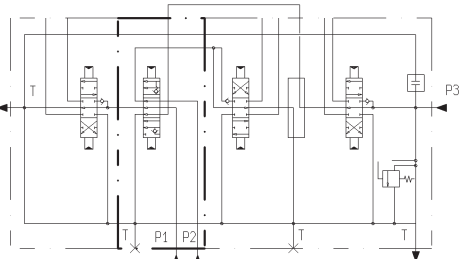
PREPARATION

Dimensions		Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20		
	<p>Intermediate section HPCO protected control lever 2 position spring-centred spool detent in A</p>	<p>024</p>	A			58,5	58,5							
			B			63,5	63,5							
			C			M8	M8							
			D			38	38							
			F			1/2" BSP	1/2" BSP							
			G			37	38							
			H			242	235							
	<p>Intermediate section HPCO protected control lever 2 position spring-centred spool detent in B</p>	<p>025</p>	A			58,5	58,5							
			B			63,5	63,5							
			C			M8	M8							
			D			38	38							
			F			1/2" BSP	1/2" BSP							
			G			37	38							
			H			242	235							

PREPARATION

Dimensions	Description	Code	Dim.	D9	D3	D3M	D4	D6	D16	D12	D20		
	<p>Intermediate section HPCO control without lever male clevis end 2 position spring-centred spool detent in A</p>	<p>026</p>	A		40	40							
			B		63,5	63,5							
			C		6	6							
			D		38	38							
			E		8	8							
			F		1/2" BSP	1/2" BSP							
			G		37	38							
			H		242	235							
	<p>Intermediate section HPCO control without lever male clevis end 2 position spring-centred spool detent in B</p>	<p>027</p>	A		40	40							
			B		63,5	63,5							
			C		6	6							
			D		38	38							
			E		8	8							
			F		1/2" BSP	1/2" BSP							
			G		37	38							
			H		242	235							

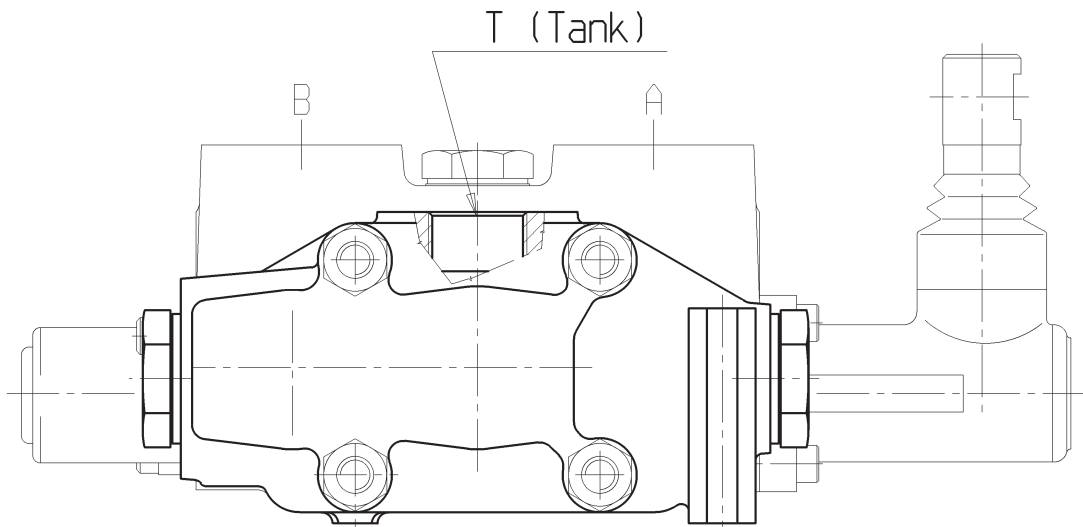
SPECIAL PREPARATION

Layout	Hydraulic diagram	Description	Code
		<p>Intermediate section for external doubling 2 pumps hydraulic pilot control (available for D4-D12)</p> <p>Please contact our technical and sales department</p>	<p>040</p>
		<p>Intermediate section for internal doubling 2 pumps hydraulic pilot control (available for D4-D12)</p> <p>Please contact our technical and sales department</p>	<p>041</p>
		<p>Intermediate section for external doubling 3 pumps hydraulic pilot control P1+P3 P1+P3 P2+P3 (available for D3M)</p> <p>Please contact our technical and sales department</p>	<p>042</p>
		<p>Intermediate section for external doubling 3 pumps hydraulic pilot control P1+P3 P2+P3 (available for D3M)</p> <p>Please contact our technical and sales department</p>	<p>043</p>

NOTES

Lined area for notes, containing 23 horizontal lines.

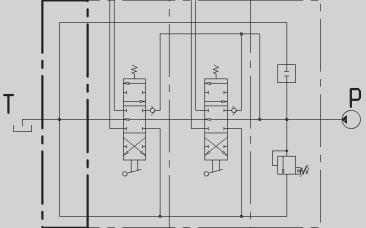
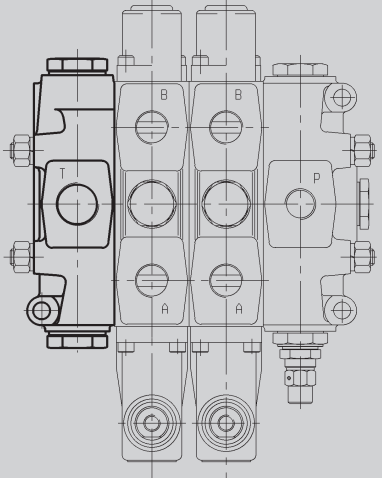
OUTLET SECTION



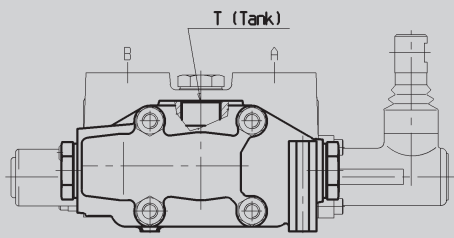
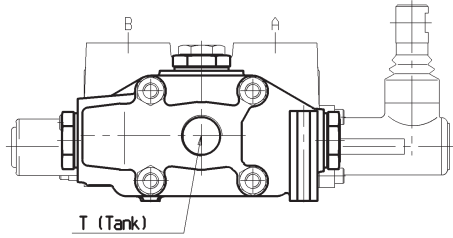
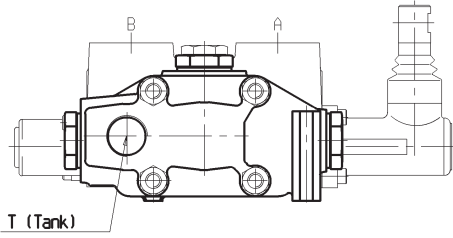
ORDERING CODES

T K - A G05

T	Outlet section	Page 1
K	Outlet section with single return right-side inlet (P)	Page 2-4-6-8
A	Outlet position	Page 2-3-4-5-6-7-8-9
G05	Type of thread	Page 2-3-4-5-6-7-8-9

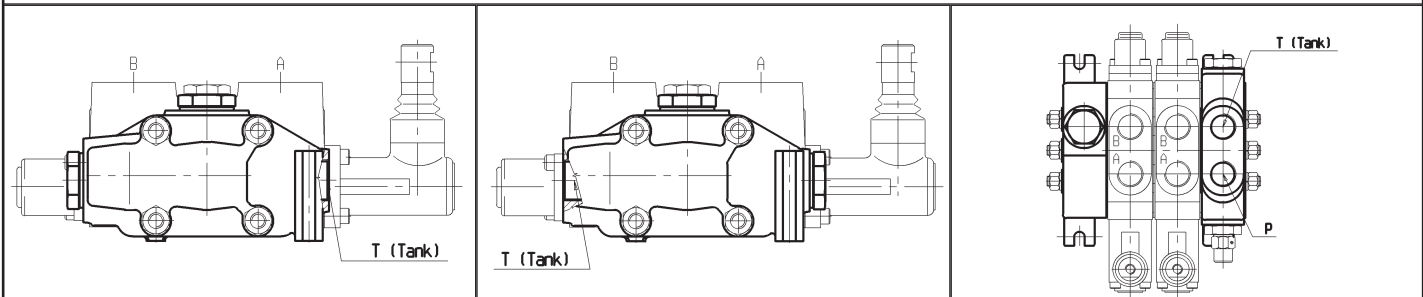
Hydraulic diagram	Layout	Description	Code
		<p>Outlet section with single return right-side inlet (P)</p>	<p>J</p>

OUTLET SECTION WITH SINGLE TANK RETURN OUTLET POSITION J

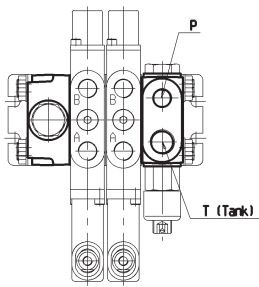
		
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Code	Description	Code	Description	Code	Description
A	Upper outlet	C	Central outlet	F	Side outlet B
Type	CODE	Type	CODE	Type	CODE
D9	G04 U04	D9		D9	
D3	M02 G04 U03	D3	M02 G04 U03	D3	
D3M	M02 G04 U03	D3M		D3M	
D4	M02 G04 U03 U04	D4	M02 G04 U03 U04	D4	
D6	G05 G06 U05	D6	G05 G06 U05	D6	G05 G06 U05
D16	G06 U06	D16	G06 U06	D16	
D12	G06 U06 S03 S04	D12	G06 U06 S03 S04	D12	G06 U06
D20	G07 U07 S07 S08	D20	G07 U07 S07 S08	D20	G07 U07
D25	G08 U07 S09 S10	D25	G08 U07 S09 S10	D25	
D40	G09 S11 S12	D40	G09 S11 S12	D40	
D50	S15 S16	D50	S15 S16	D50	

OUTLET SECTION WITH SINGLE TANK RETURN OUTLET POSITION J



Code	Description				Code	Description				Code	Description			
G	Front outlet side A				H	Rear outlet side B				E	Upper outlet (inlet-outlet) HC-D3M			
Type	CODE				Type	CODE				Type	CODE			
D9					D9					D9				
D3	M02	G04	U03		D3	M02	G04	U03		D3				
D3M					D3M					D3M	M02	G04	U03	
D4	M02	G04	U03	U04	D4	M02	G04	U03	U04	D4				
D6	G05	U05			D6	G05	G06	U05		D6				
D16					D16	G06	U06			D16				
D12					D12	G06	U06	S03	S04	D12				
D20					D20	G07	U07	S07	S08	D20				
D25					D25	G08	U07	S09	S10	D25				
D40					D40	G09	S11	S12		D40				
D50	S15	S16			D50	S15	S16			D50				



N.B. All outlet sections with single return ,type "J",can be converted to type "M"with two returns (see page 7), mounting one or two conic plugs as per the table mentioned below.

Type of conic plugs to convert single outlet into double one

Code	Description				Type	Conic plug code	Dimensions	Quantity
E	Upper outlet (inlet-outlet) HC-D9				D9	413010203	1/4" x 13	1
Type	CODE				D3	413010203	1/4" x 13	1
D9	G04	U04			D3M	413010203	1/4" x 13	1
D3					D4	413010203	1/4" x 13	1
D3M					D6	413010203	1/4" x 13	1
D4					D16	413010207	3/8" x 15	2
D6					D12	413010207	3/8" x 15	1
D16					D20	413010201	1/2" x 17	1
D12					D25	413010201	1/2" x 17	2
D20					D40	413010208	1" x 25,6	1
D25					D40	413010205	3/4" x 20,5	1
D40					D50	413010212	1"1/2 x 32	2
D50								

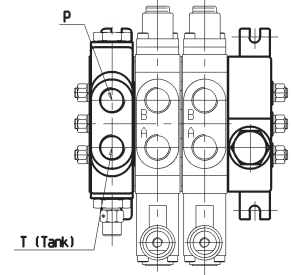
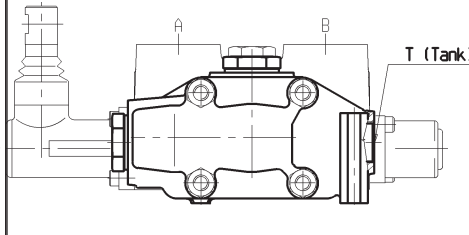
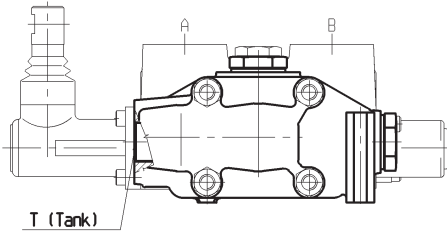
Hydraulic diagram	Layout	Description	Code
		<p>Outlet section with single return left-side inlet (P)</p>	<p>K</p>

OUTLET SECTION WITH SINGLE TANK RETURN OUTLET POSITION K

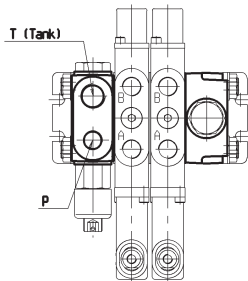
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Code	Description				Code	Description				Code	Description			
A	Upper outlet				C	Central outlet				F	Front outlet side A			
Type	CODE				Type	CODE				Type	CODE			
D9	G04	U04			D9					D9				
D3	M02	G04	U03		D3	M02	G04	U03		D3				
D3M	M02	G04	U03		D3M					D3M				
D4	M02	G04	U03	U04	D4	M02	G04	U03	U04	D4				
D6	G05	G06	U05		D6	G05	G06	U05		D6	G05	G06	U05	
D16	G06	U06			D16	G06	U06			D16				
D12	G06	U06	S03	S04	D12	G06	U06	S03	S04	D12	G06	U06		
D20	G07	U07	S07	S08	D20	G07	U07	S07	S08	D20	G07	U07		
D25	G08	U07	S09	S10	D25	G08	U07	S09	S10	D25				
D40	G09	S11	S12		D40	G09	S11	S12		D40	G09			
D50	S15	S16			D50	S15	S16			D50				

OUTLET SECTION WITH SINGLE TANK RETURN OUTLET POSITION K



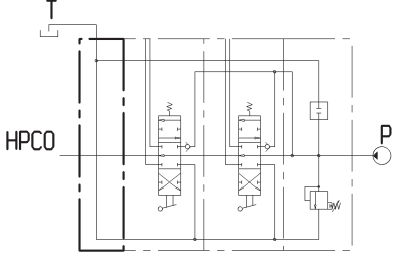
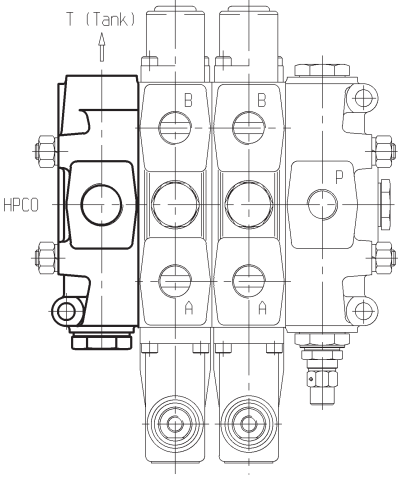
Code	Description				Code	Description				Code	Description			
G	Front outlet side A				H	Rear outlet side B				E	Upper outlet (inlet-outlet) HC-D3M			
Type	CODE				Type	CODE				Type	CODE			
D9					D9					D9				
D3	M02	G04	U03		D3	M02	G04	U03		D3				
D3M					D3M					D3M	M02	G04	U03	
D4	M02	G04	U03	U04	D4	M02	G04	U03	U04	D4				
D6	G05	G06	U05		D6	G05	G06	U05		D6				
D16	G06	U06			D16					D16				
D12	G06	U06	S03	S04	D12					D12				
D20	G07	U07	S07	S08	D20					D20				
D25	G08	U07	S09	S10	D25					D25				
D40	G09	S11	S12		D40					D40				
D50	S15	S16			D50	S15	S16			D50				
										D50				



N.B. All outlet sections with a single return , type "K", can be converted to type "N" with two returns (see page 9), mounting one or two conic plugs as per the table mentioned below.

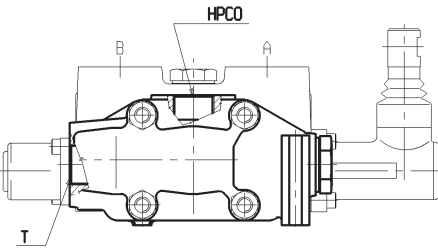
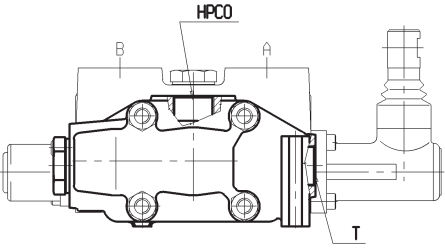
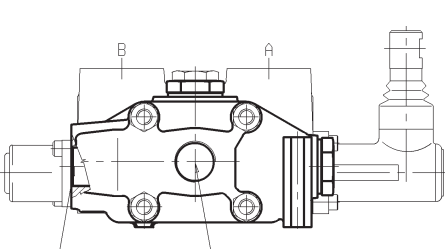
Type of conic plugs to convert single outlet into double one

Code	Description				Type	Conic plug code	Dimensions	Quantity
E	Upper outlet (inlet-outlet) HC-D9				D9	413010203	1/4" x 13	1
Type	CODE				D3	413010203	1/4" x 13	1
D9	G04	U04			D3M	413010203	1/4" x 13	1
D3					D4	413010203	1/4" x 13	1
D3M					D6	413010203	1/4" x 13	1
D4					D16	413010207	3/8" x 15	2
D6					D12	413010207	3/8" x 15	1
D16					D20	413010201	1/2" x 17	1
D12					D25	413010201	1/2" x 17	2
D20					D40	413010208	1" x 25,6	1
D25					D40	413010205	3/4" x 20,5	1
D40					D50	413010212	1"1/2 x 32	2
D50								

Hydraulic diagram	Layout	Description	Code
		<p>Outlet section with two returns right-sided inlet (P)</p>	<p>M</p>

HPCO POSITION ON OUTLET SECTION WITH TWO TANKS **M** AND THREADS (*)

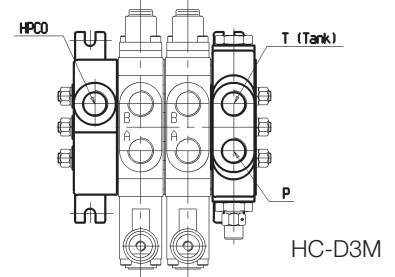
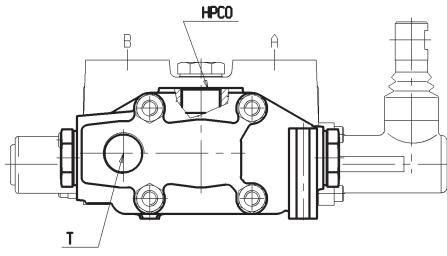
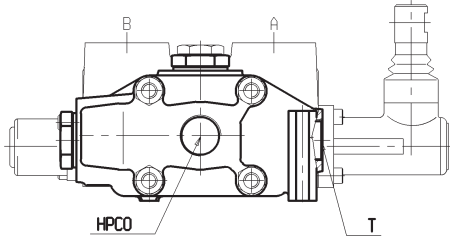
(* The threads under mentioned refer to HPCO only. For T see outlet section with single return type J)

		
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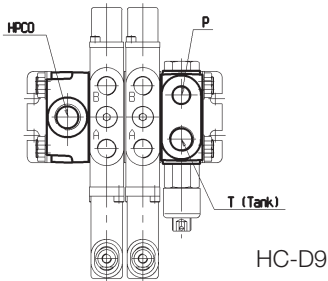
Code	Description						Code	Description						Code	Description					
M	HPCO upper outlet T (TANK) side outlet B						N	HPCO upper outlet T (TANK) front outlet side A						P	HPCO central outlet T (TANK) side outlet B					
Type	CODE						Type	CODE						Type	CODE					
D9							D9							D9						
D3	M02	G04	U03				D3	M02	G04	U03				D3	M02	G04	U03			
D3M							D3M							D3M						
D4	M02	G04	U03	U04			D4	M02	G04	U03	U04			D4	M02	G04	U03	U04		
D6	G05	G06	U05				D6	G05	G06	U05				D6	G05	U05				
D16	G06	U06					D16	G06	U06					D16	G06	U06				
D12	G06	U06	S03	S04			D12	G06	U06	S03	S04			D12	G06	U06	S03	S04		
D20	G07	U07	S07	S08	S35	S36	D20	G07	U07	S07	S08	S35	S36	D20	G07	U07	S07	S08	S35	S36
D25	G08	U07	S09	S10	S37	S38	D25	G08	U07	S09	S10	S37	S38	D25	G08	U07	S09	S10	S37	S38
D40	G09	S11	S12	S39	S40		D40	G09	S11	S12	S39	S40		D40	G09	S11	S12	S39	S40	
D50	S15	S16					D50	S15	S16					D50	S15	S16				

HPCO POSITION ON OUTLET SECTION WITH TWO TANKS M AND THREADS (*)

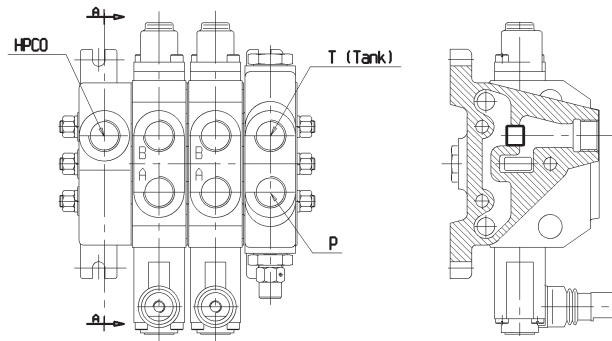
(* The threads under mentioned refer to HPCO only. For T see outlet section with single return type J)



Code	Description	Code	Description	Code	Description
Q	HPCO central outlet T (TANK) front outlet side A	R	HPCO upper outlet T (TANK) side outlet B	W	HPCO upper inlet-outlet T (TANK) upper outlet section
Type	CODE	Type	CODE	Type	CODE
D9		D9		D9	
D3	M02 G04 U03	D3		D3	
D3M		D3M		D3M	M02 G04 U03
D4	M02 G04 U03 U04	D4		D4	
D6	G05 U05	D6	G05 G06 U05	D6	
D16		D16		D16	
D12		D12	G06 U06	D12	
D20		D20	G07 U07	D20	
D25		D25		D25	
D40		D40	G09	D40	
D50	S15 S16	D50		D50	



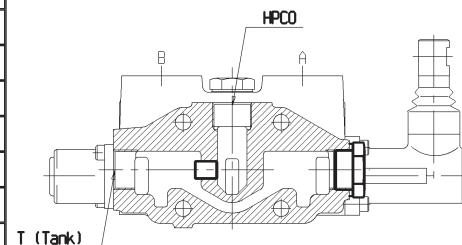
Conversion of a discharge section with a single outlet (J) into one with two outlets (M).



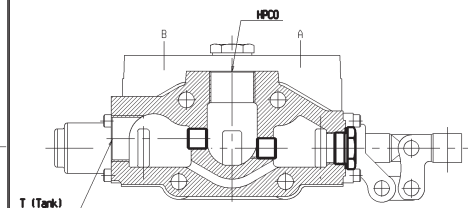
SEZ. A-A

HC-D9 / HC-D3M

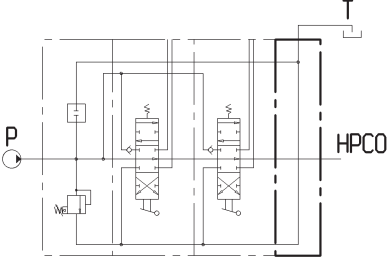
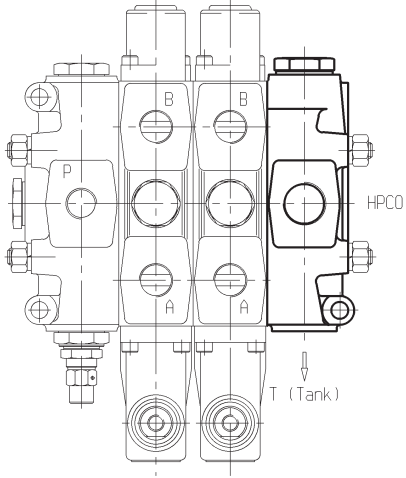
Code	Description
W	HPCO upper inlet-outlet T (TANK) upper outlet section
Type	CODE
D9	G04 U04
D3	
D3M	
D4	
D6	
D16	
D12	
D20	
D25	
D40	
D50	



HC-D3 / HC-D4 / HC-D6
HC-D12 / HC-D20

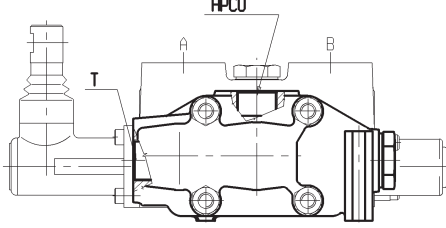
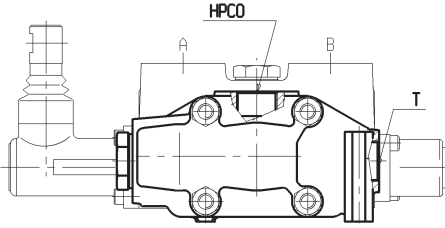
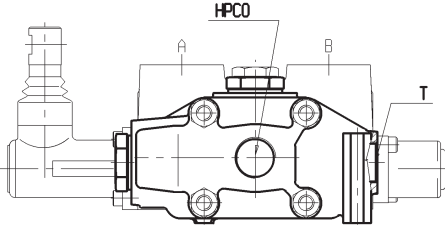


HC-D16 / HC-D25
HC-D40 / HC-D50

Hydraulic diagram	Layout	Description	Code
		<p>Outlet section with two outlets left-sided inlet (P)</p>	<p>N</p>

HPCO POSITION ON OUTLET SECTION WITH TWO TANKS **N** AND THREADS (*)

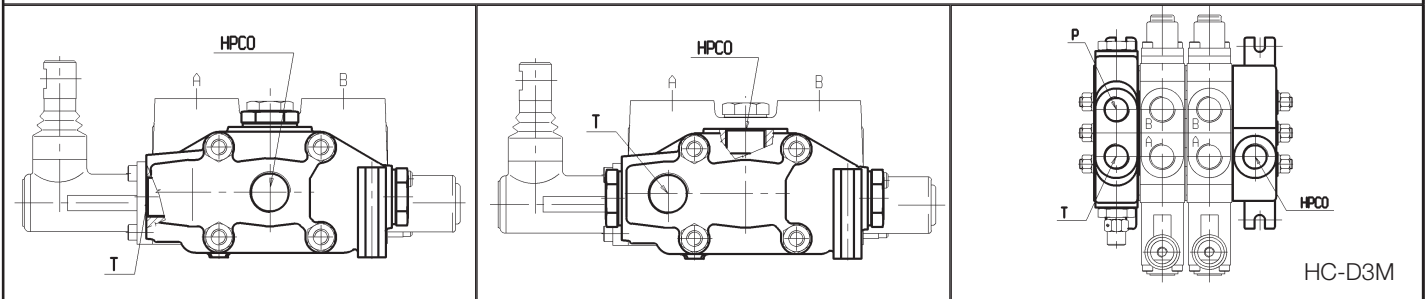
(* The threads under mentioned refer to HPCO only. For T see outlet section with single return type K)

		
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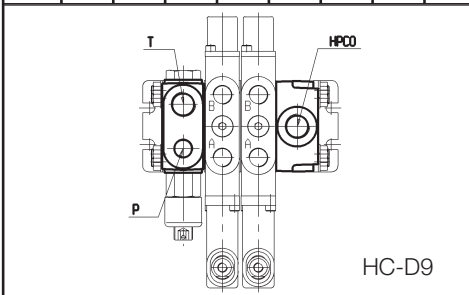
Code	Description	Code	Description	Code	Description
N	HPCO upper outlet T (TANK) front outlet side A	M	HPCO upper outlet T (TANK) side outlet B	P	HPCO central outlet T (TANK) side outlet B
Type	CODE	Type	CODE	Type	CODE
D9		D9		D9	
D3	M02 G04 U03	D3	M02 G04 U03	D3	M02 G04 U03
D3M		D3M		D3M	
D4	M02 G04 U03 U04	D4	M02 G04 U03 U04	D4	M02 G04 U03 U04
D6	G05 G06 U05	D6	G05 G06 U05	D6	G05 G06 U05
D16	G06 U06	D16		D16	
D12	G06 U06 S03 S04	D12		D12	
D20	G07 U07 S07 S08 S35 S36	D20		D20	
D25	G08 U07 S09 S10 S37 S38	D25		D25	
D40	G09 S11 S12 S39 S40	D40		D40	
D50	S15 S16	D50	S15 S16	D50	S15 S16

HPCO POSITION ON OUTLET SECTION WITH TWO TANKS N AND THREADS (*)

(* The threads under mentioned refer to HPCO only. For T see outlet section with single return type K)

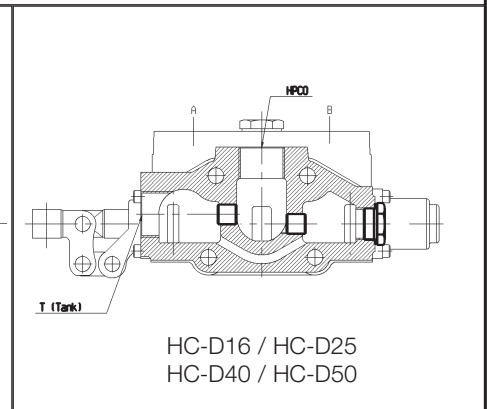
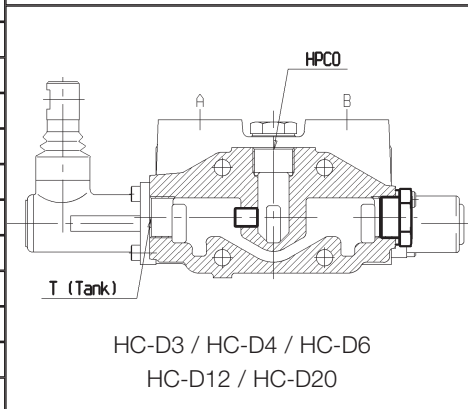
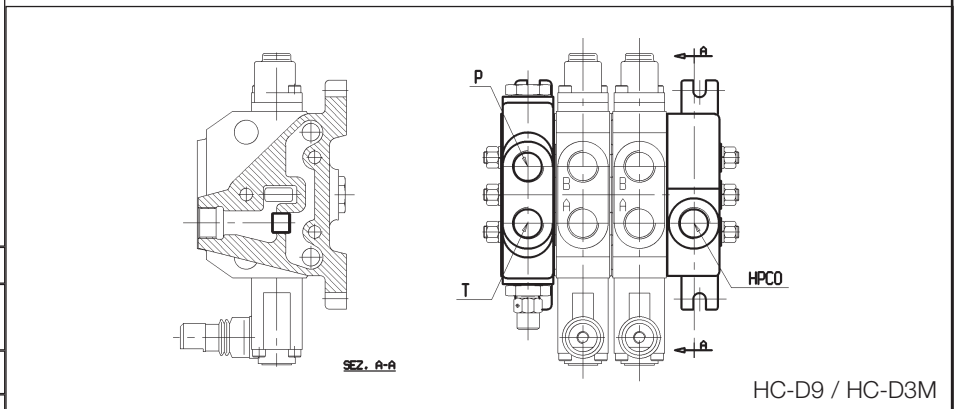


Code	Description					Code	Description					Code	Description				
Q	HPCO central outlet T (TANK) front outlet side A					S	HPCO upper outlet T (TANK) side outlet A					W	HPCO upper inlet-outlet T (TANK) upper outlet section				
Type	CODE					Type	CODE					Type	CODE				
D9						D9						D9					
D3	M02	G04	U03			D3						D3					
D3M						D3M						D3M	M02	G04	U03		
D4	M02	G04	U03	U04		D4						D4					
D6	G05	U05				D6	G05	G06	U05			D6					
D16	G06	U06				D16						D16					
D12	G06	U06	S03	S04		D12	G06	U06				D12					
D20	G07	U07	S07	S08	S35 S36	D20	G07	U07				D20					
D25	G08	U07	S09	S10	S37 S38	D25						D25					
D40	G09	S11	S12	S39	S40	D40	G09					D40					
D50	S15	S16				D50						D50					

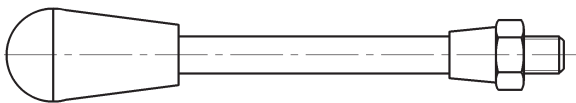


Conversion of a discharge section with a single outlet (K) into one with two outlets (N).

Code	Description				
W	HPCO upper inlet-outlet T (TANK) upper outlet section				
Type	CODE				
D9	G04	U04			
D3					
D3M					
D4					
D6					
D16					
D12					
D20					
D25					
D40					
D50					



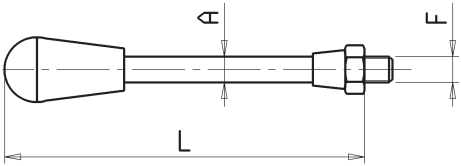
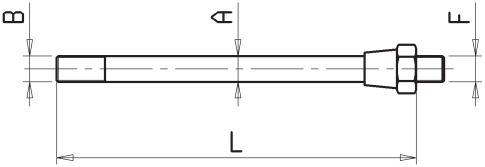
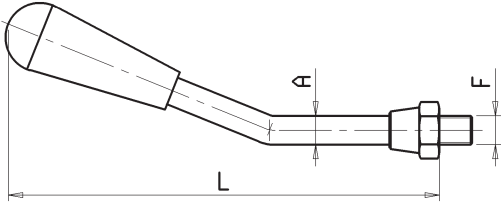
LEVER



ORDERING CODES

Z A - M10 - 190

Z	Lever	Page 1
A	Type of lever	Page 2
M10	Lever thread	Page 2
190	Overall length	Page 2

Dimensions	Description	Code	Dimensions							
	Lever with knob	A	A	F	L (mm)					
	Lever without knob		B	A	B	F	L (mm)			
	Lever with knob for joystick control H009-H010 H011-H012			C	A	F	L (mm)			
			8		M8	135	210	295	395	
			10		M10	140	190	240	415	
		12	M12	215	290	390				
		14	M14	350						
		10	M10	M10	180	230				
		10	M10	250						

COMPATIBILITY
TABLE

