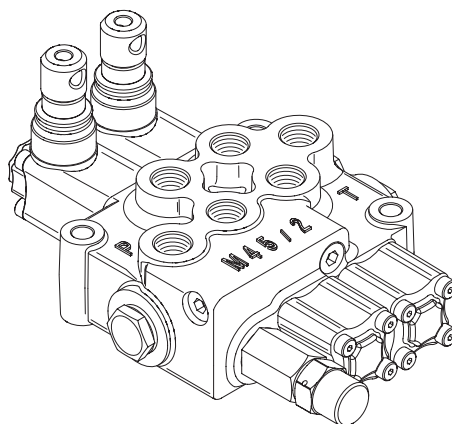


HCM45 Series

Mono-Block Directional Valve



The HCM45 Directional Valve Series provides a compact range of manually operated directional valves for low flow applications. Because of the physical size these valves are ideally suited for mounting on small machines where most other valves could be cumbersome and 'out of place'. The handle assembly is fully encapsulated inhibiting the likelihood of corrosion affecting the function of the handle mechanism. Both the handle bracket and spring end cover are aluminium.

Each valve can be easily adapted for either Power Beyond (H.P.C.) or Closed Centre operation (or vice versa) by the simple insertion of a small internal gallery plug.

GENERAL SPECIFICATIONS

Number of Spools	1 to 6
Maximum working pressure.....	350 bar (5000 psi)
Rated flow.....	45 ltrs/min (10 Imp. gpm)

MATERIAL SPECIFICATIONS

Body.....	High tensile strength cast iron
Spools.....	Hardened steel - chrome plated
Seals.....	Buna - N

STANDARD FEATURES

- Parallel circuits
 - Integral balanced poppet type relief valve, adjustable [Set at 175 bar (2530 psi)]
 - Aluminium handle bracket with booted handle
 - Aluminium spring end cover
 - Optional side/top inlet and outlet ports
 - 3/4" UN O-Ring inlet, outlet and work ports
-
- Open or closed centre positions, 3-way or 4-way operation, motoring spool and other spool options
 - Micro switch actuation on spool shift
 - 2 and 3 position detent on spool action
 - Float position

HCM45 Series

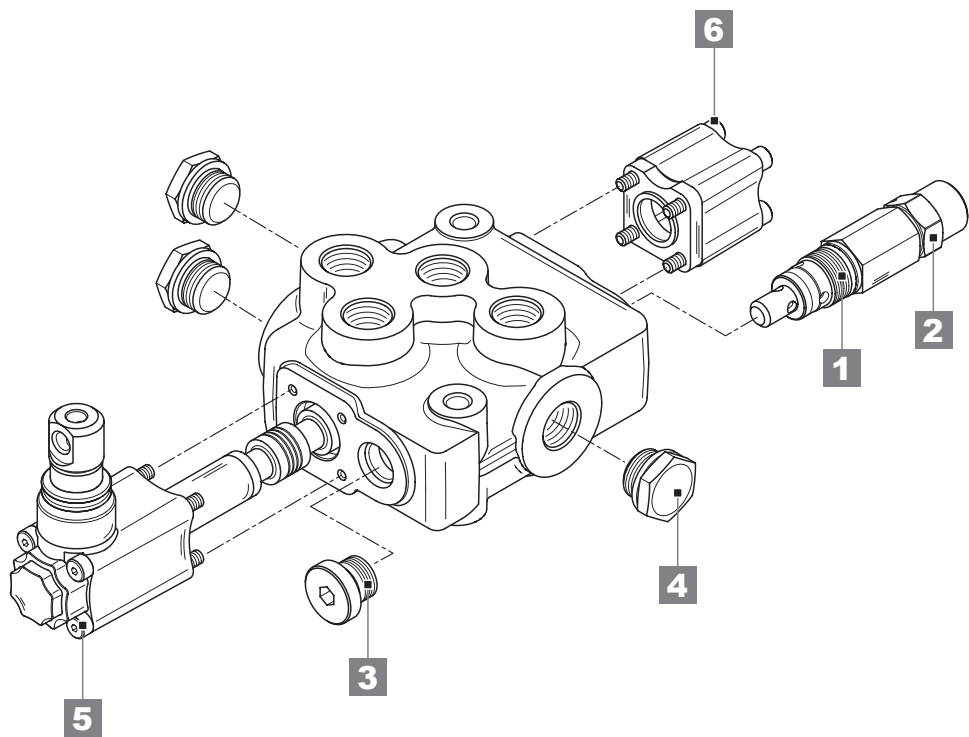
Mono-Block Directional Valve



Technical specifications

flow rate	45 l/min
pressure rate	350 bar
max pressure in (T)	20 bar
working section number	1 - 6
spool stroke	5 + 5 mm
spools pitch	35 mm

General clamping torque



1	Pressure relief valve body	80 Nm
2	Pressure relief valve cap	20 Nm
3	Check valve	80 Nm
4	Fittings in service ports P-A-B-T	see table A
5	Allen screw (spool actuation side)	6 Nm
6	Allen screw (spool return action side)	6 Nm

Table A

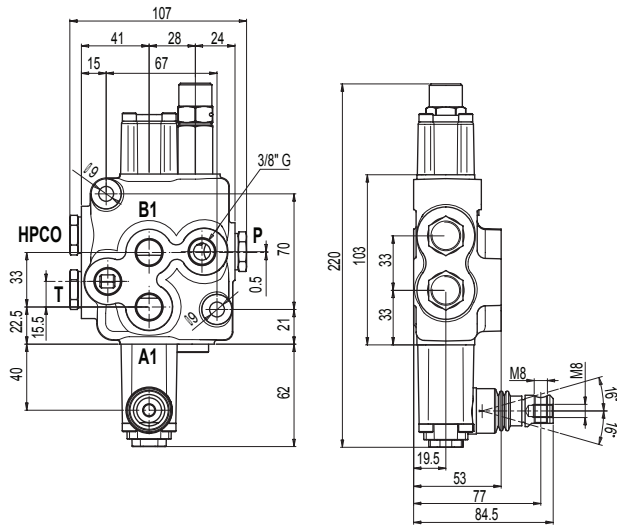
G03	3/8" BSP	40 Nm
U03	3/4"-16 UNF	40 Nm

HCM45 Series

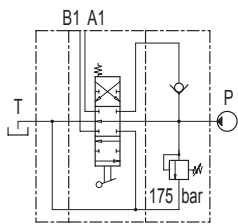
Mono-Block Directional Valve



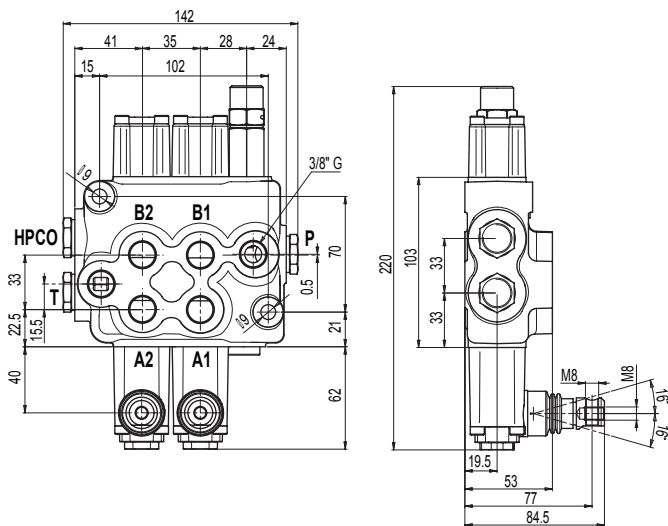
Dimensional drawing HCM-45/1



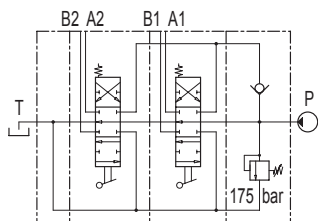
Hydraulic schematic



Dimensional drawing HCM-45/2



Hydraulic schematic

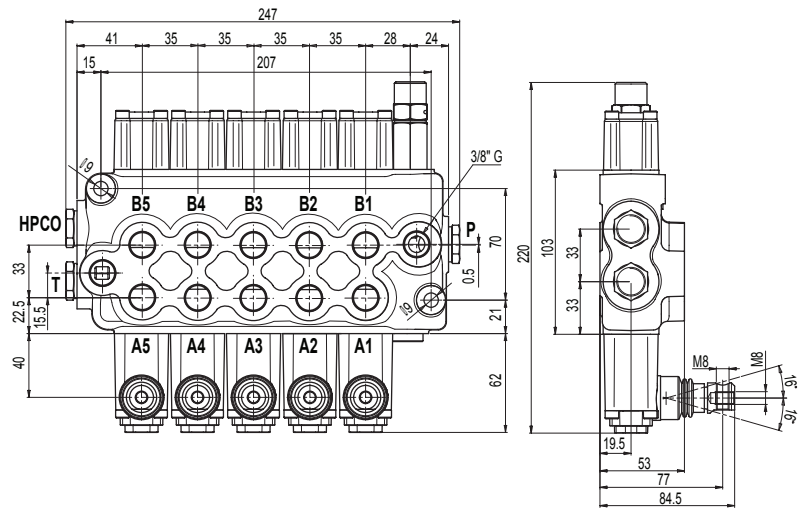


HCM45 Series

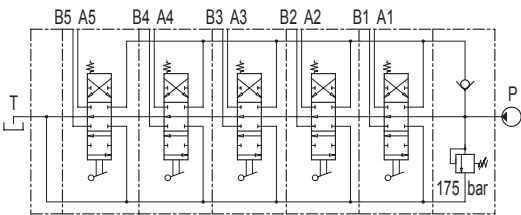
Mono-Block Directional Valve



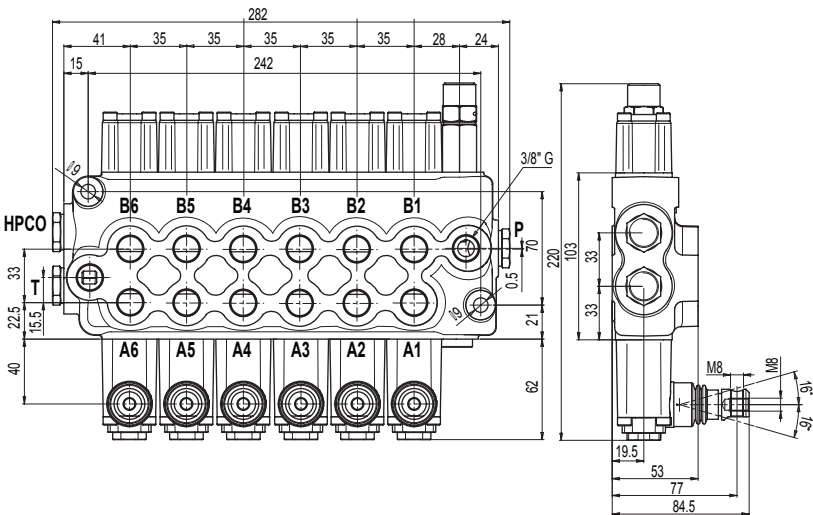
Dimensional drawing HCM-45/5



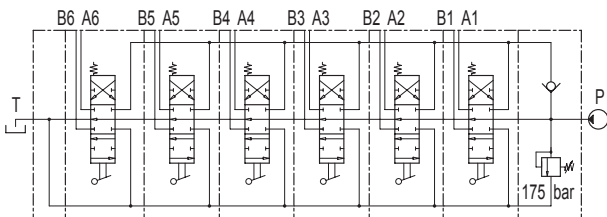
Hydraulic schematic



Dimensional drawing HCM-45/6



Hydraulic schematic

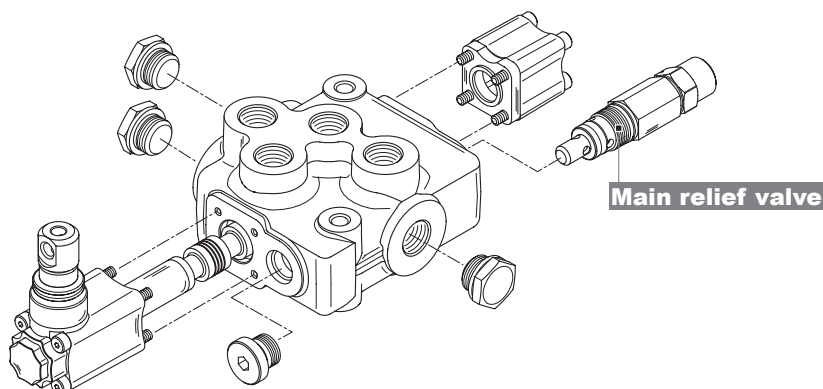


HCM45 Series

Mono-Block Directional Valve



Main relief valve



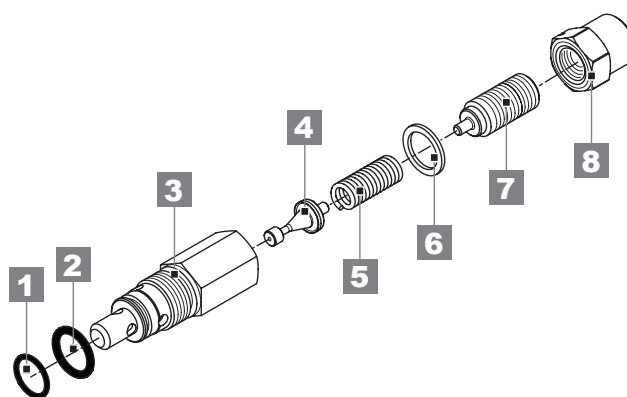
ordering code: **915027201** Setting (10/ 40 bar)

ordering code: **915027202** Setting (41/ 70 bar)

ordering code: **915027203** Setting (71/130 bar)

ordering code: **915027204** Setting (131/210 bar)

ordering code: **915027205** Setting (211/350 bar)



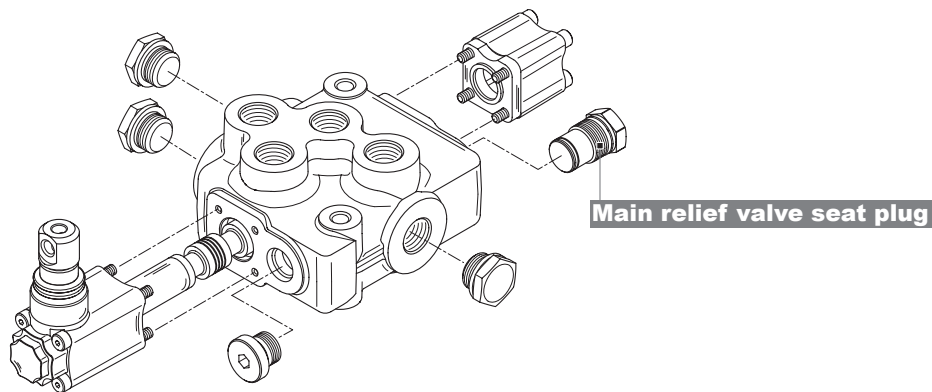
Pos.	Description	Qty	Dimensions	Ordering code
1	O-ring	1	V1-1284 P5008 (14 x 1,78)	412030108
2	O-ring	1	70 SH (15,10 x 2,70)	412010701
3	Relief valve body	1		
4	Piston	1		
5	Spring (10 / 40 bar)	1		421803017
	Spring (41 / 70 bar)	1		421803030
	Spring (71 / 130 bar)	1		421803090
	Spring (131 / 210 bar)	1		421803091
	Spring (211 / 350 bar)	1		421803092
6	Copper gasket	1	14 x 20 x 1,5	412041402
7	Register	1		
8	Plug	1		

HCM45 Series

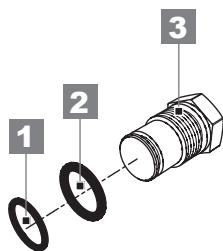
Mono-Block Directional Valve



Main relief valve seat plug



ordering code: **430172001**



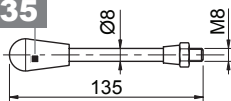
Pos.	Description	Qty	Dimensions	Ordering code
1	O-ring	1	V1-1284 P5008 (14 x 1,78)	412030108
2	O-ring	1	70 SH (15,10 x 2,70)	412010701
3	Plug	1		

Lever Identification

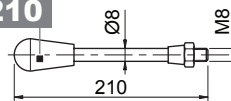
ordering code: **430503001**

ordering code: **430503002**

ZA M8 135



ZA M8 210

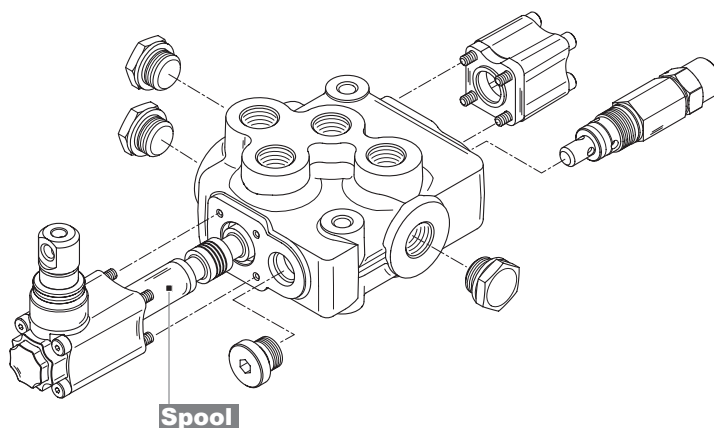


HCM45 Series

Mono-Block Directional Valve



Double acting spool



ordering code: **421272002**

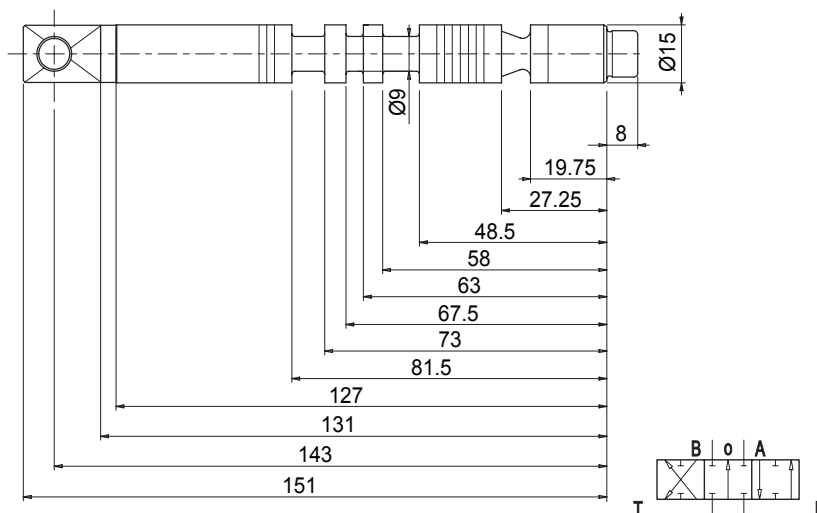
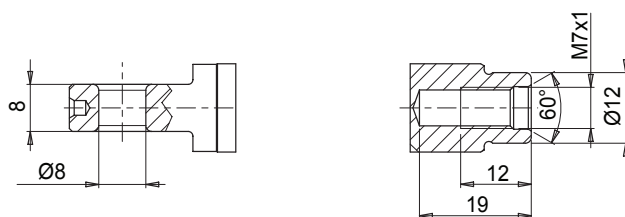
W001A = 3 positions double-acting (Q = 45 l/min)

ordering code: **421272001**

W001B = 3 positions double-acting (Q = 30 l/min)

ordering code: **421272003**

W001C = 3 positions double-acting (Q = 15 l/min)



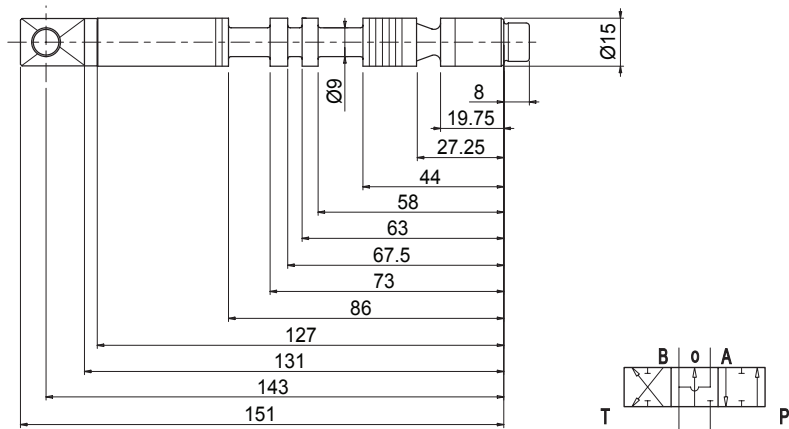
HCM45 Series

Mono-Block Directional Valve



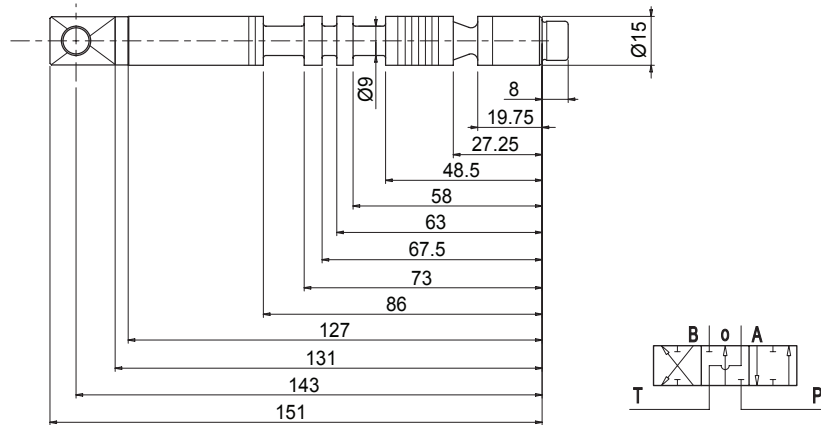
ordering code: **421272004**

W002A = 3 positions double-acting A and B to tank



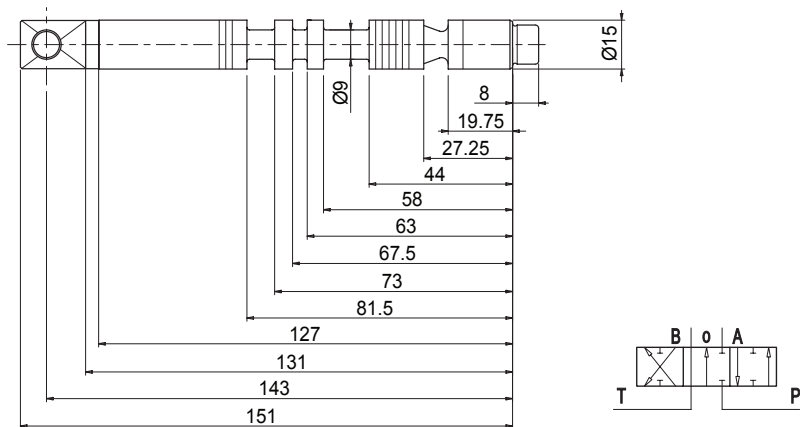
ordering code: **421272005**

W003A = 3 positions double-acting A to tank B blocked



ordering code: **421272006**

W004A = 3 positions double-acting A blocked B to tank



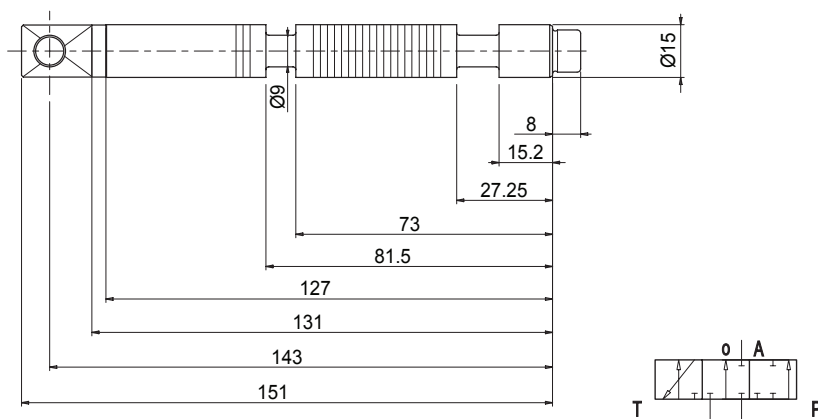
Mono-Block Directional Valve



Plug Kit 3/8" BSP = 300001001
Plug Kit 3/4"-16 UNF = 300001006

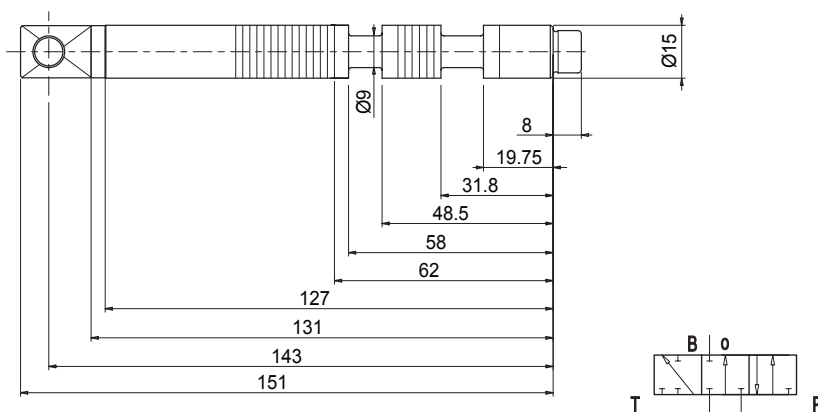
ordering code: **421272007**

W005A = 3 positions single-acting on A



ordering code: **421272008**

W006A = 3 positions single-acting on B

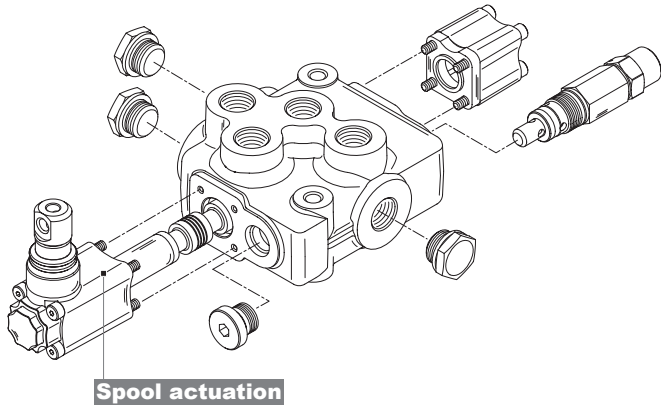


HCM45 Series

Mono-Block Directional Valve



Spool actuation type



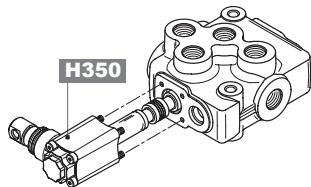
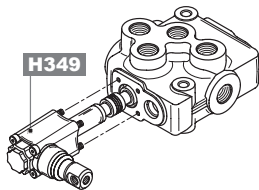
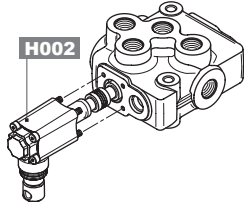
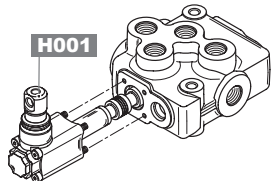
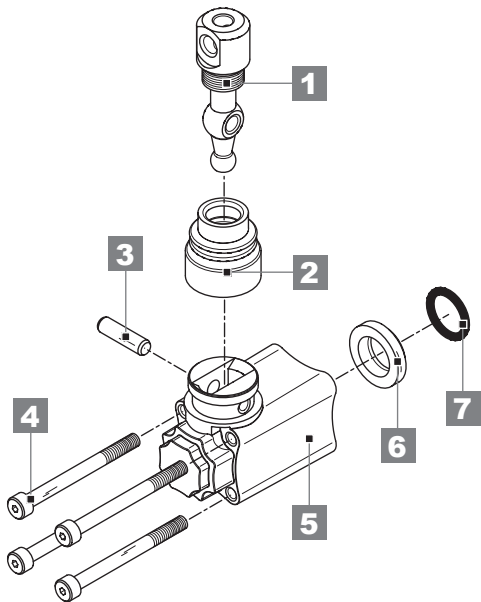
ordering code: **320372001**

H001 = Protected lever

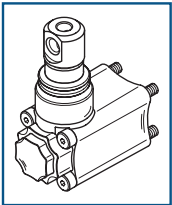
H002 = Protected lever rotated 180°

H349 = Protected lever rotated 90° inlet side

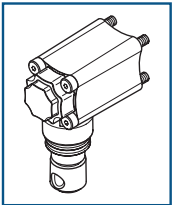
H350 = Protected lever rotated 90° outlet side



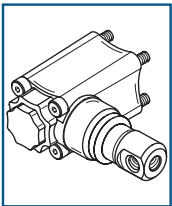
H001



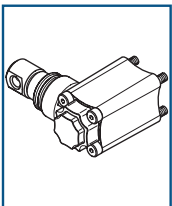
H002



H349



H350



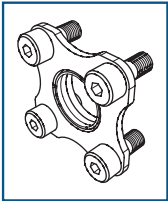
Pos.	Description	Qty	Dimensions	Ordering code
1	Lever	1		
2	Rubber bellows	1		423403006
3	Lever pin	1		
4	Screw	4	5 x 55 TC CE UNI5931	
5	Lever box	1		
6	Centering ring	1		420115002
7	O-ring	1	70 SH (15,10 x 2,70)	412010701

HCM45 Series

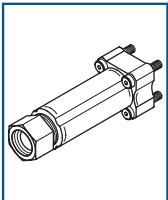
Mono-Block Directional Valve



H004

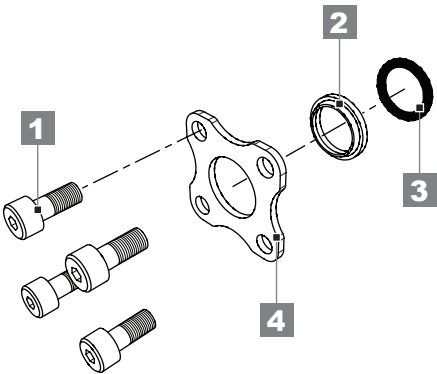


H128



ordering code: **320372002**

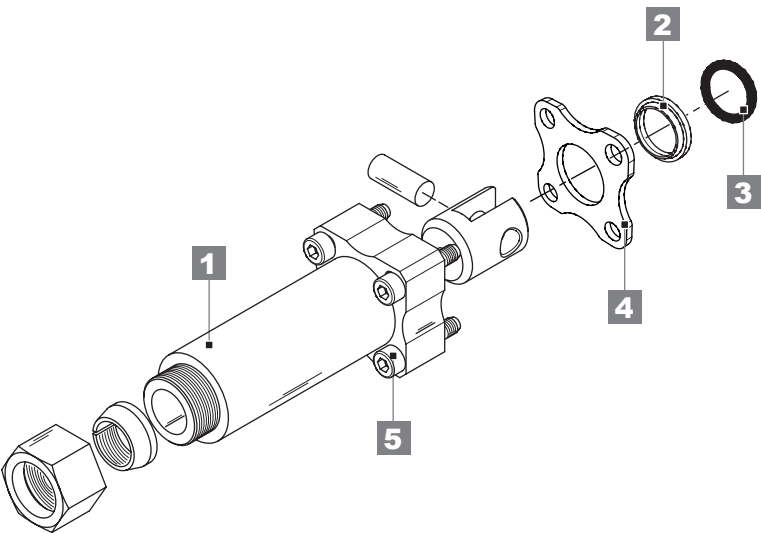
H004 = Without lever control



Pos.	Description	Qty	Dimensions	Ordering code
1	Screw	4	5 x 10 TC CE UNI5931	
2	Centering ring	1		420115014
3	O-ring	1	70 SH (15,10 x 2,70)	412010701
4	Flange	1		

ordering code: **321972001**

H128 = Prearrangement actuation cable



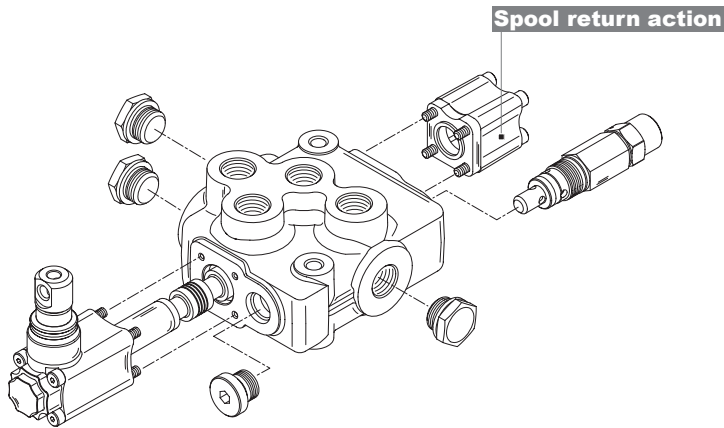
Pos.	Description	Qty	Dimensions	Ordering code
1	Actuation kit	1		
2	Centering ring	1		420115014
3	O-ring	1	70 SH (15,10 x 2,70)	
4	Flange	1		423404253
5	Screw	4	5 x 25 TC CE UNI5931	

HCM45 Series

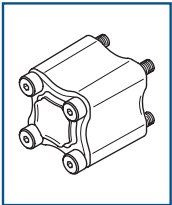
Mono-Block Directional Valve



Spool return action type

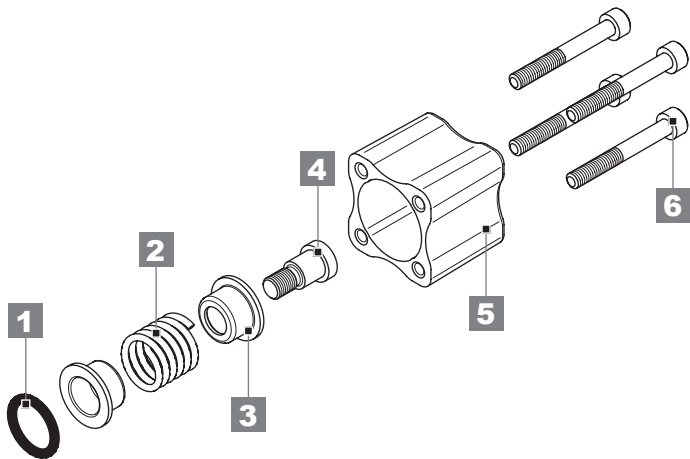


F001



ordering code: **320772001**

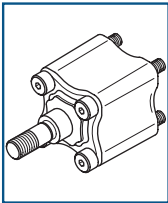
F001A = 3 positions spring-centred spool



Pos.	Description	Qty	Dimensions	Ordering code
1	O-ring	1	70 SH (15,10 x 2,70)	412010701
2	Spring	1		
3	Spacer	2		
4	Screw	1		
5	Cap	1		
6	Screw	4	5 x 40 TC CE UNI5931	

HCM45 Series

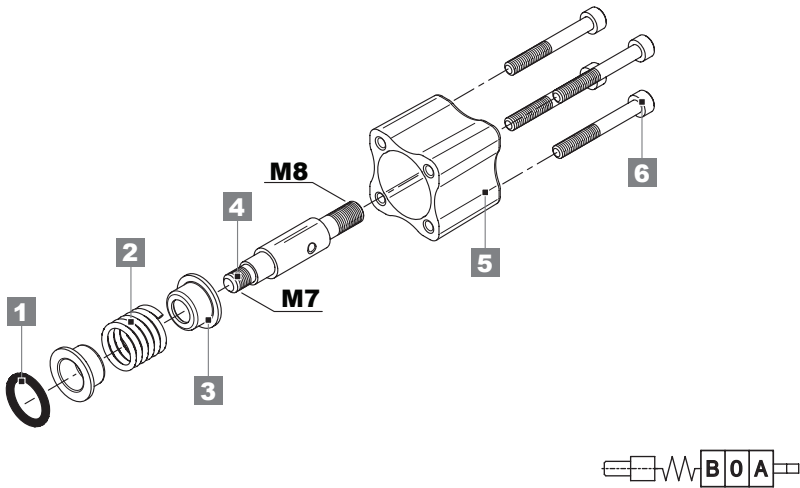
Mono-Block Directional Valve



F013

ordering code: **320772006**

F013A = 3 positions spring-centred spool prearrangement dual command



Pos.	Description	Qty	Dimensions	Ordering code
1	O-ring	1	70 SH (15,10 x 2,70)	412010701
2	Spring	1		
3	Spacer	2		
4	Shank	1		
5	Cap	1		
6	Screw	4	5 x 40 TC CE UNI5931	411020532

HCM45 Series

Mono-Block Directional Valve



ordering code: **320872007**

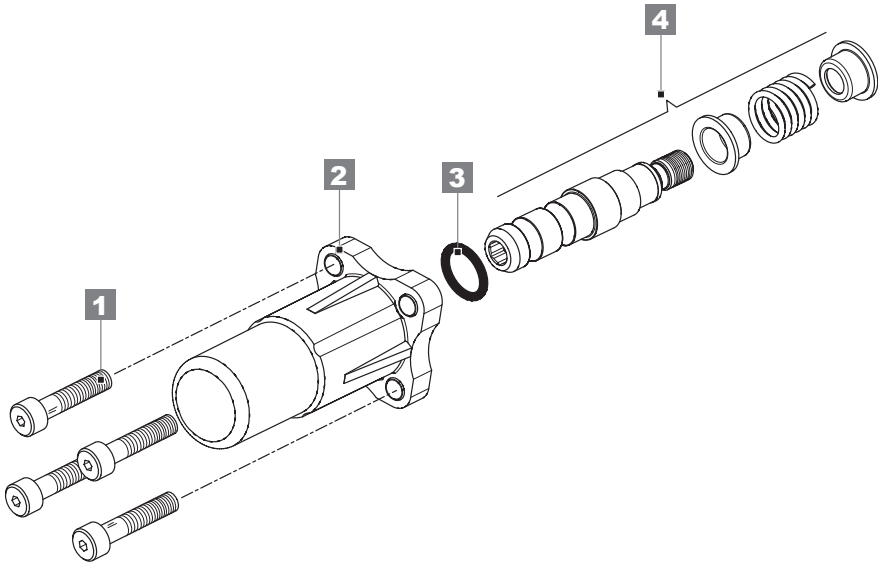
F002A = 3 positions spring-centred spool detent in A and B

ordering code: **320872008**

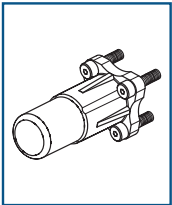
F003A = 3 positions spring-centred spool detent in A

ordering code: **320872009**

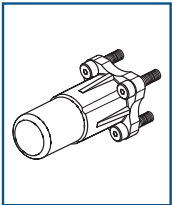
F004A = 3 positions spring-centred spool detent in B



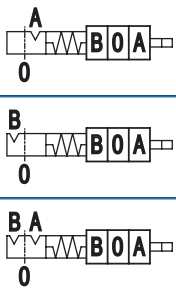
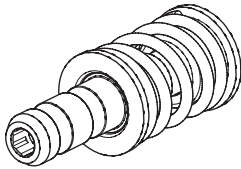
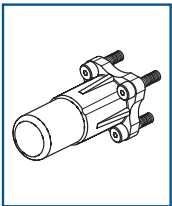
F002



F003



F004



ordering code: **430272002**
detent kit in A

ordering code: **430272003**
detent kit in B

ordering code: **430272004**
detent kit in A and B

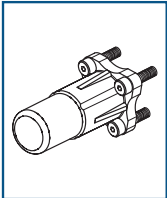
Pos.	Description	Qty	Dimensions	Ordering code
1	Screw	4	5 x 14 TC CE UNI5931	
2	Cap	1		
3	O-ring	1	70 SH (15,10 x 2,70)	412010701
4	Detent kit in A	1		430272002
	Detent kit in B	1		430272003
	Detent kit in A and B	1		430272004

HCM45 Series

Mono-Block Directional Valve

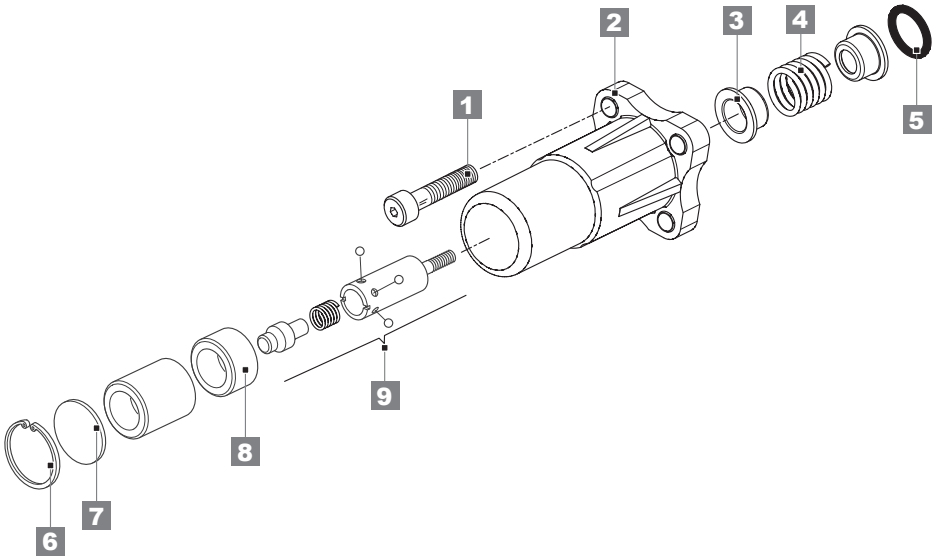


F073



ordering code: **320872013**

F073A = detent kit in 3 positions



Pos.	Description	Qty	Dimensions	Ordering code
1	Screw	1	5 x 14 TC CE UNI5931	
2	Cap	1		
3	Spacer	2		
4	Spring	1		
5	O-ring	1	70 SH (15,10 x 2,70)	412010701
6	Seeger	1	UNI7437 D.21I	411132101
7	Copper	1		
8	Spacer	1		
9	Prearrangement kit	1		430202006

HCM45 Series

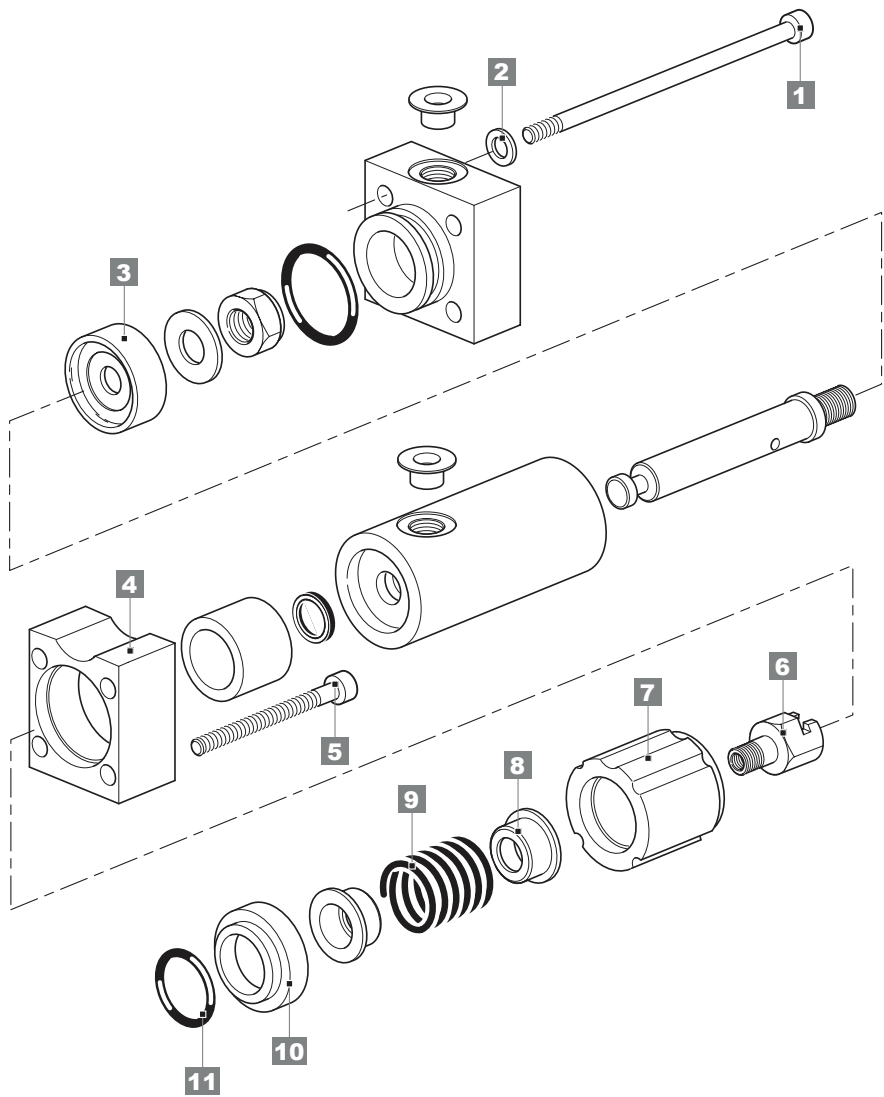
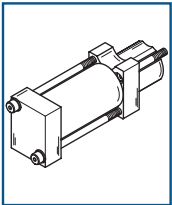
Mono-Block Directional Valve



ordering code: **321172001**

F020A = Pneumatic control ON-OFF
F021A = Pneumatic control ON-OFF rotated 180°

F020A
F021A



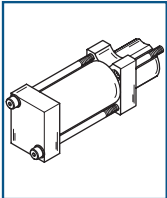
Pos.	Description	Qty	Dimensions	Ordering code
1	Screw	2	5 x 90 TC CE UNI5931	
2	Washer	2	D.5 DIN6798	
3	Prearrangement kit	1		430903001
4	Flange	1		
5	Screw	2	5 x 35 TC CE UNI5931	412010701
6	Joint	1		
7	Cylindre	1		
8	Spacer	2		
9	Spring	1		
10	Spacer	1		
11	O-ring	1	70 SH (15,10 x 2,70)	412010701

HCM45 Series

Mono-Block Directional Valve

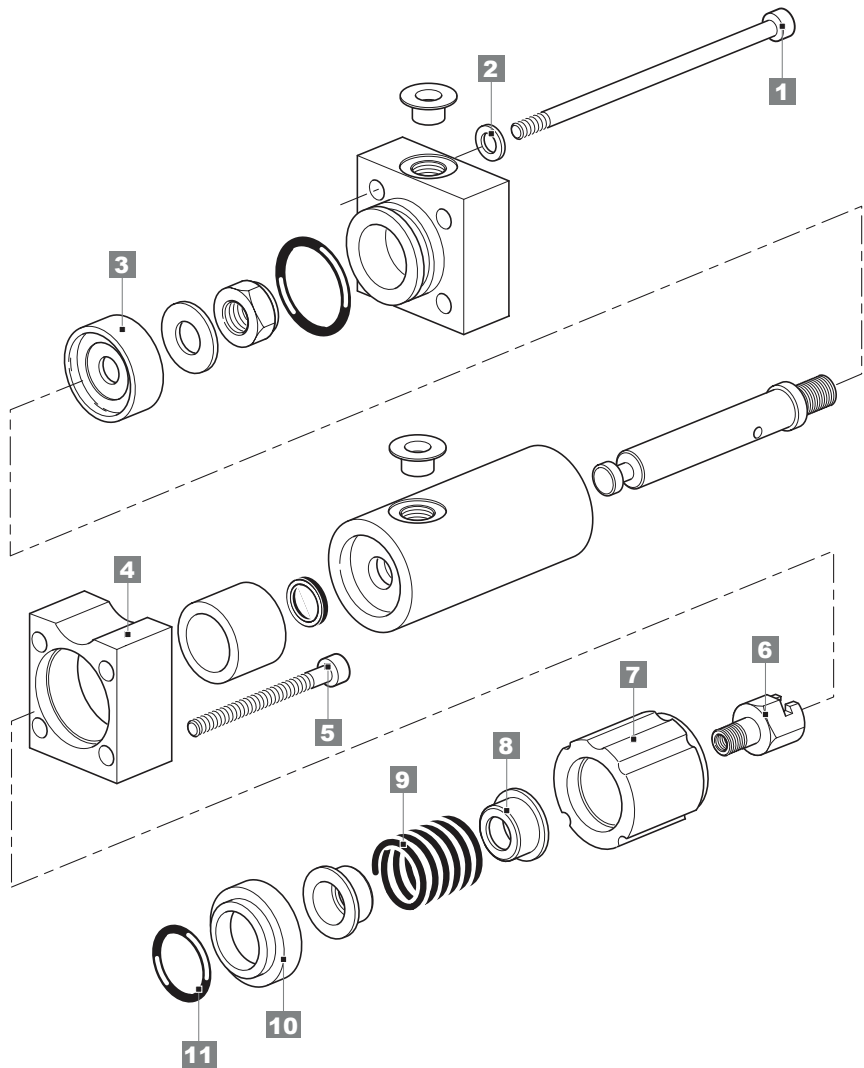


F022A
F023A



ordering code: **321272001**

F022A = Proportional pneumatic control
F023A = Proportional pneumatic control rotated 180°



Pos.	Description	Qty	Dimensions	Ordering code
1	Screw	1	5 x 14 TC CE UNI5931	
2	Cap	1		
3	Spacer	2		
4	Spring	1		
5	O-ring	1	70 SH (15,10 x 2,70)	412010701
6	Seeger	1	UNI7437 D.21I	411132101
7	Copper	1		
8	Spacer	1		
9	Prearrangement kit	1		430202006
10	Copper	1		
11	Spacer	1		

HCM45 Series

Mono-Block Directional Valve



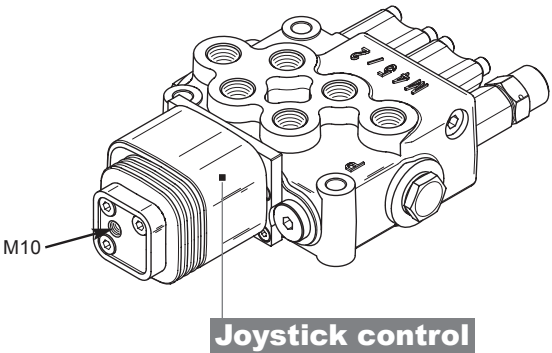
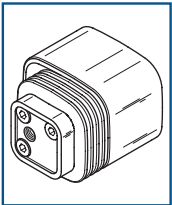
ordering code: **320672001**

H009 = joystick control

ordering code: **320672002**

H010 = joystick control

H009
H010



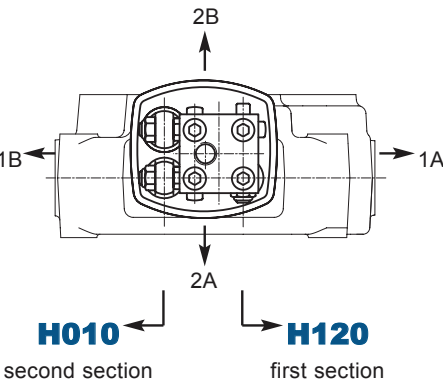
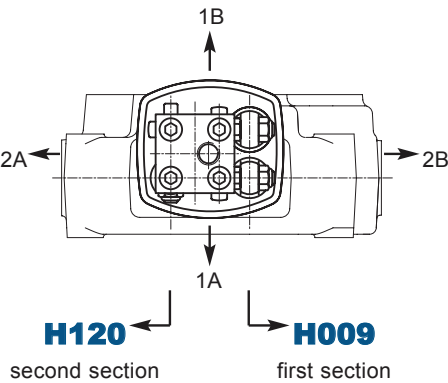
NOTE: lever has to be ordered separately

Fulcrum side

RIGHT SIDE INLET
FULCRUM ON 1ST SECTION
(compulsory code for second section: H120)

RIGHT SIDE INLET,
FULCRUM ON 2ND SECTION
(compulsory code for first section: H120)

ordering code



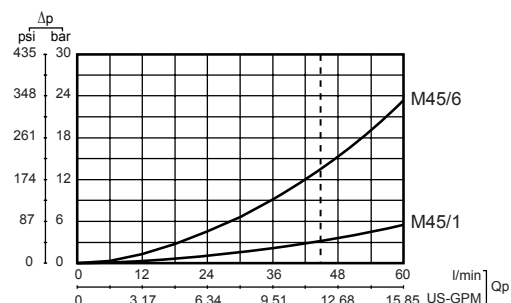
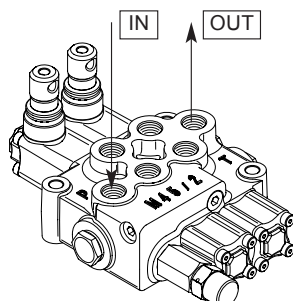
HCM45 Series

Mono-Block Directional Valve

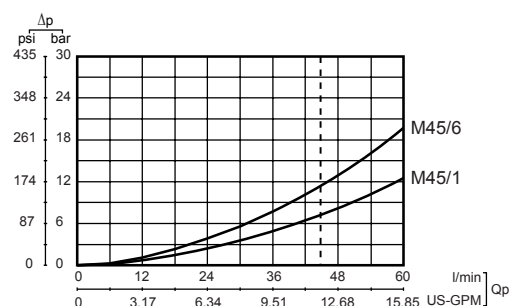
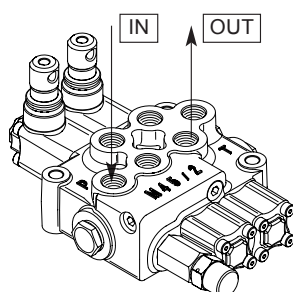


TYPICAL CURVES

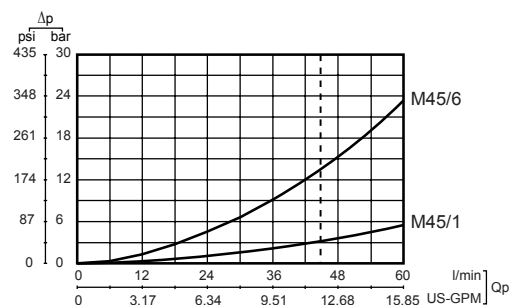
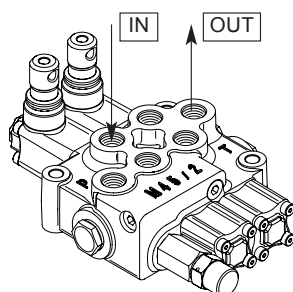
Pressure drop (P - T)



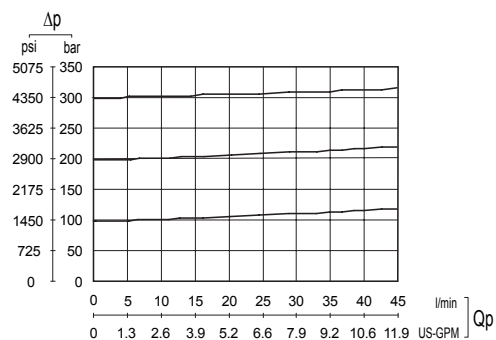
Pressure drop (P - A/B)



Pressure drop (A/B - T)



Direct relief valve curve



Setting ranges

- range (A) = 10/40 BAR
- range (B) = 41/70 BAR
- range (C) = 71/130 BAR
- range (D) = 131/210 BAR
- range (E) = 211/350 BAR

NOTE: indicated values have been tested with standard monoblock valve and W001A spools.

HCM45 Series

Mono-Block Directional Valve



DESCRIPTION AND USE OF OUTLET PORTS

Unless specified when ordering, HCM45 valves are shipped as 'open centre', i.e. Pressure flow to Tank in neutral. 'Closed Centre' is when pump flow through the valve is blocked when the valve is in neutral.

REFER TO THE SKETCH BELOW

There are three optional ports available; one top outlet (1) and two end outlets (2) & (3).

CONVERSION TO OPEN CENTRE WITH POWER BEYOND (H.C.P.O.)

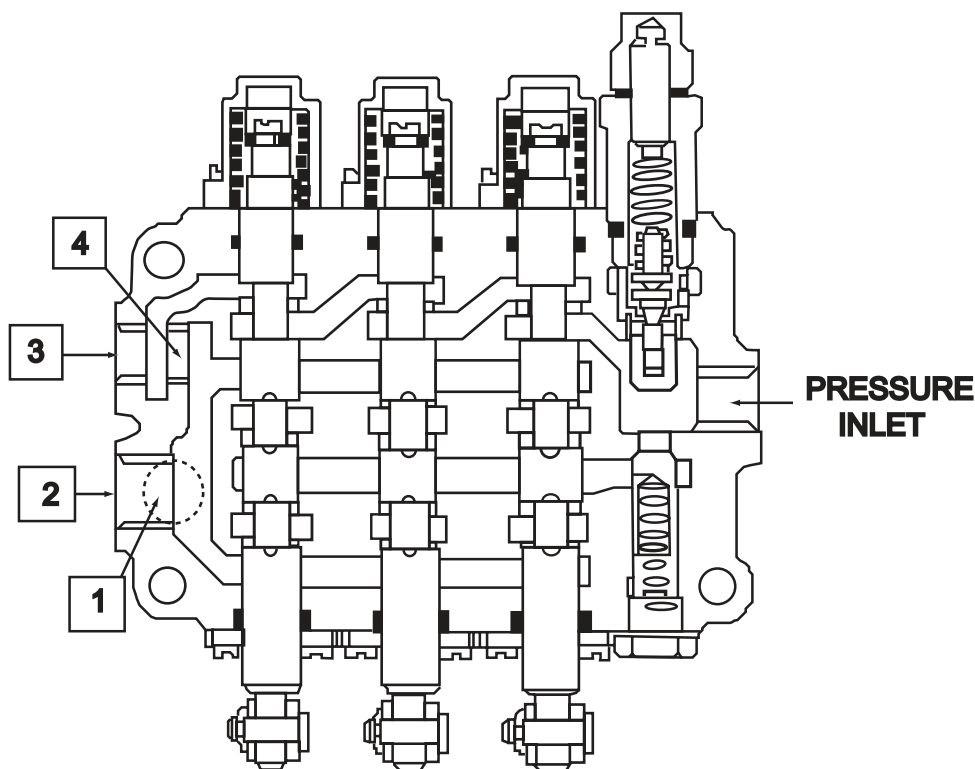
- Remove plug in port (3)
- Insert loose plug supplied into port (4) using a thread sealing compound such as Teflon paste or Loctite® hydraulic sealant and a 6mm hex key.
- Port (3) now becomes the Power Beyond pressure port taking high pressure oil to circuits beyond this valve.
- Port (1) or port (2) become the Tank Return ports for this valve and should be connected to tank.

CONVERSION TO CLOSED CENTRE OPERATION

- Remove plug in port (3)
- Insert loose plug supplied into port (4) using a thread sealing compound such as Teflon paste or Loctite® hydraulic sealant and a 6mm hex key.
- Refit the plug in port (3).
- Port (1) or port (2) become the Tank Return ports for this valve and should be connected to tank.

CAUTION

If a fitting is screwed into port (3) when the plug is installed in position (4) ensure that there is sufficient clearance between the fitting and plug to allow un-impeded oil flow. Blanking port (3) in this manner will render the relief valve in-operable and 'close centre' the valve.

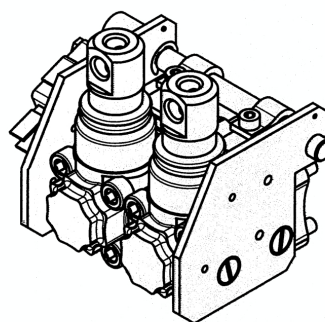
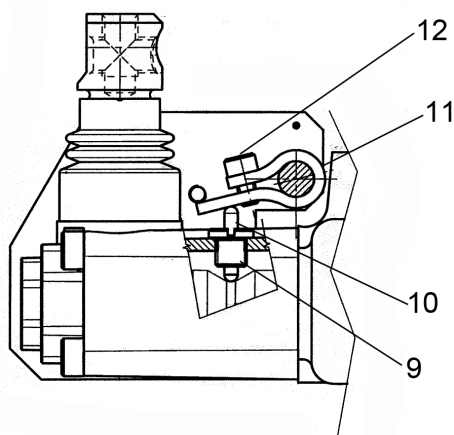
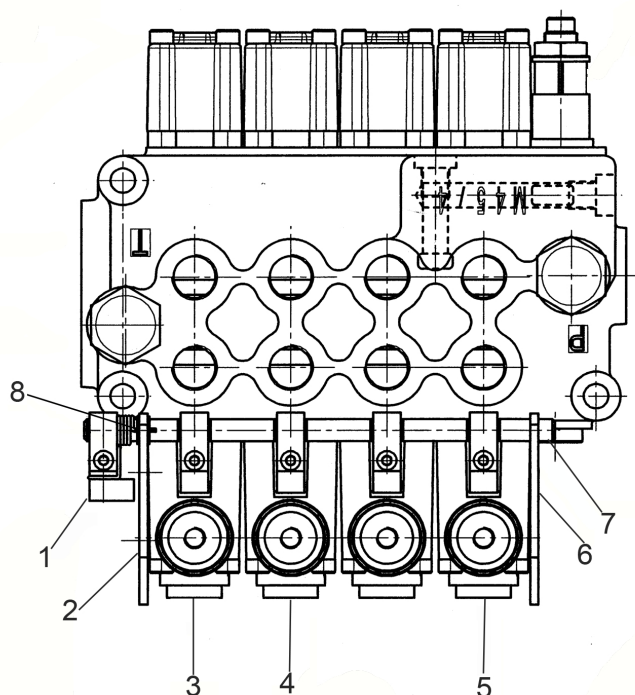
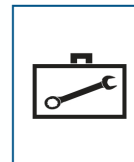


HCM45 Series

Mono-Block Directional Valve



Micro Switch



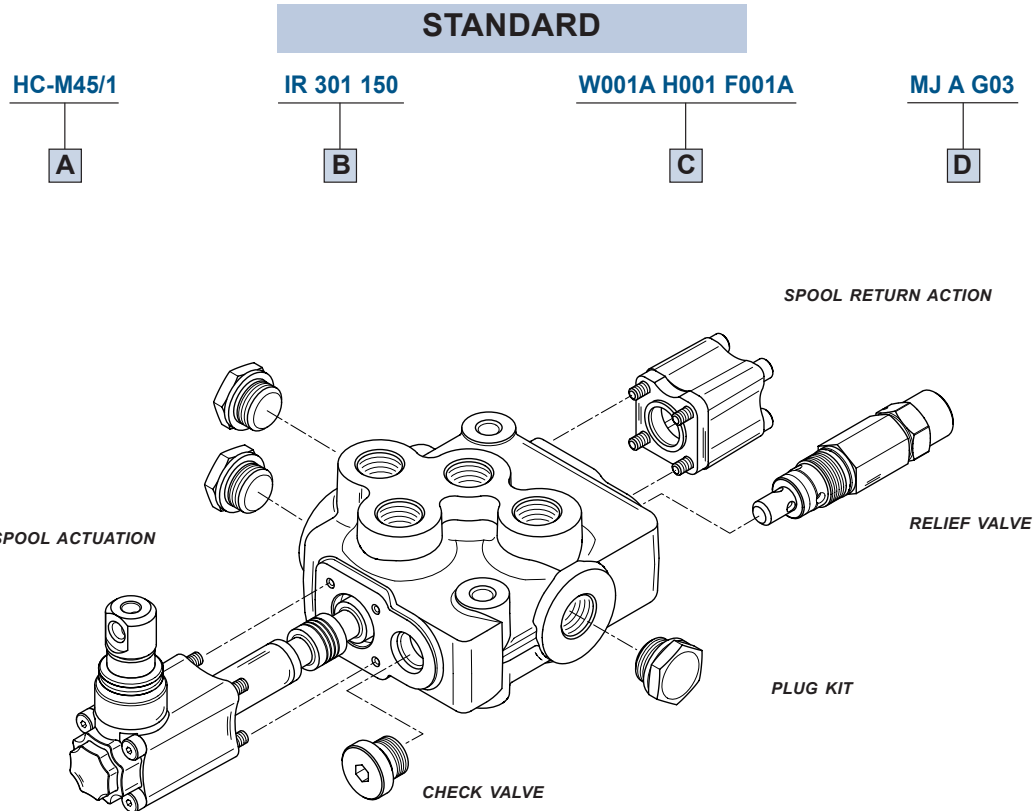
HCM45 Series

Mono-Block Directional Valve



HOW TO ORDER

Order example



A: MONOBLOCK VALVE TYPE

M45 = product type
/1 = number of sections

B: INLET ARRANGEMENT

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

C: WORK SECTION ARRANGEMENT

W001A = spool
H001 = spool actuation
F001A = spool return action

NOTE: ordering row C must be repeated for every work section.

D: OUTLET ARRANGEMENT

MJ = outlet type
A G03 = outlet and thread position

Note: If micro switch provision required please add MICRO to end of code.