



DIVERTER VALVES

DF

DPE

DH



Additional information

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

WARNING!

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

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

8th edition April 2004:

This edition supercedes all prior documents.

They're simple, compact and heavy duty designed, with cast iron body and steel spool.

Available from 2-way to 10-way, diverter valves are suitable to intercept and divert the flow on hydraulic systems, wherever a movement sequence, a safety device or a control selection of different actuators is needed.

With mechanical control



DF page 5

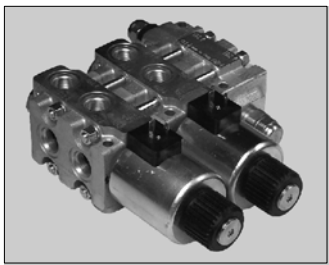
- 2-3-6-way with alternating spool.
- It's available in several sizes for flow up to 220 l/min.
- Lever, pneumatic, hydraulic, cam and ON/OFF electro-hydraulic controls

Electrical ON/OFF with solenoid control



DFE page 47

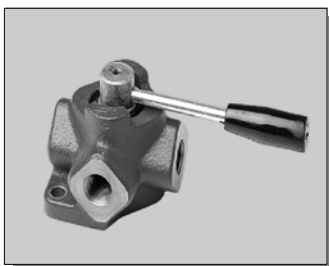
- 2-3-6-8-way with alternating spool.
- It's available in several sizes for flow up to 120 l/min.
- Coils with several feeding voltage are available.



DFE 140 page 71

- 6-way with alternating spool; it's sectional type to obtain 8-way or 10-way circuit.
- It's possible to flange mounting a block with cross return anti-shock valves.
- Coils with several feeding voltage are available.

With rotary control



DH page 81

- 3-4-way with rotary spool, that can be coupled to obtain 6-way or 8-way circuit.
- It's available in several sizes for flow up to 280 l/min.

Installation and maintenance page 90

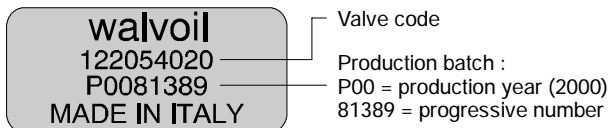
Diverter valves

Marking

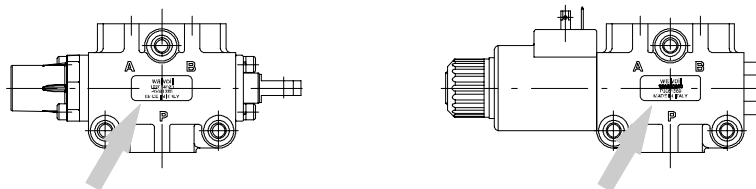
All Walvoil diverter valves are marked according to EN982 norm.

This marking includes: building firm, part code, production batch and manufacture country.

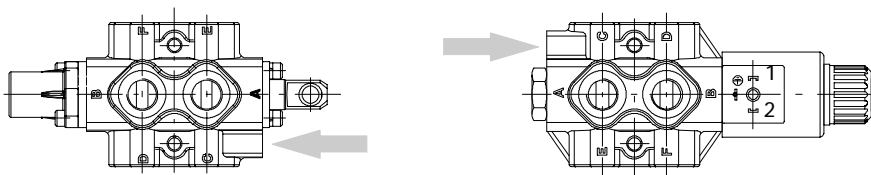
Marking zone depending on valve type, as indicate below.



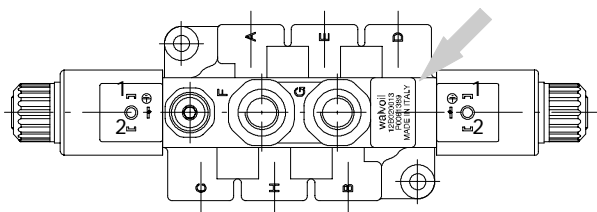
2-way and 3-way, types DF and DFE



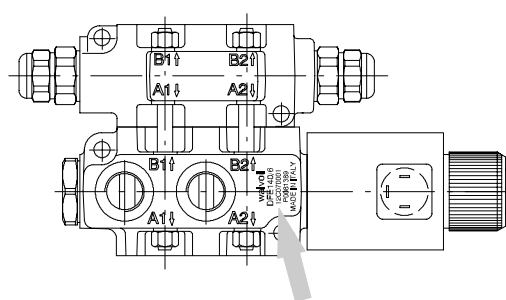
6-way, types DF and DFE



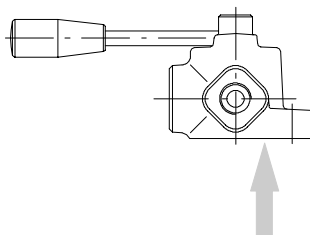
8-way, type DFE type



Type DFE140



Type DH





Contents

Working conditions	6
Hydraulic circuit	7
DF5	
Dimensional data	10
Ordering codes	12
Positioner kits	14
Control kits	16
Other executions	18
DF10	
Dimensional data	20
Ordering codes	22
Positioner kits	24
Control kits	26
Other executions	28
DF20	
Dimensional data	30
Ordering codes	32
Positioner kits	34
Control kits	37
DF25	
Dimensional data	39
Ordering codes	40
Positioner kits	42
Control kits	45

Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm²/s – 46 cSt viscosity at 40°C temperature.

		DF5	DF10	DF20	DF25
N. of available ways		2-3-6	2-3-6	2-3-6	3
Nominal flow rating		60 l/min	90 l/min	140 l/min	280 l/min
Operating pressure (maximum)		315 bar 4600 psi	315 bar 4600 psi	315 bar 4600 psi	315 bar 4600 psi
Internal leakage A(B)→T	$\Delta p=100 \text{ bar } 1450 \text{ psi}$ with fluid and valve at 40°C	5 cm ³ /min 0.31 in ³ /min	5 cm ³ /min 0.31 in ³ /min	8 cm ³ /min 0.49 in ³ /min	8 cm ³ /min 0.49 in ³ /min
Hydraulic fluid		Mineral base oil			
Fluid temperature	with NBR seals	from -20° to 80°C			
	with FPM seals	from -20° to 100°C			
Viscosity	operating range	from 15 to 75 mm ² /s – from 15 to 75 cSt			
	minimum	12 mm ² /s – 12 cSt			
	maximum	400 mm ² /s – 400 cSt			
Max. level of contamination		19/16 – ISO 4406			
Ambient temperature		from -40° to 60°C			

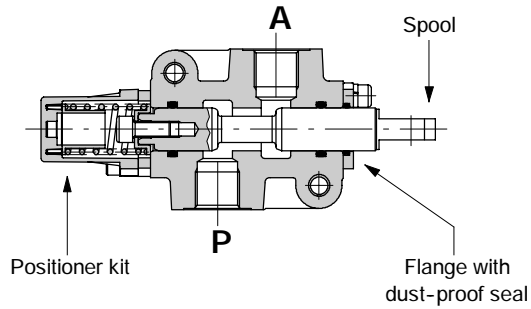
NOTE - For different working conditions please contact Sales Dept.

Standard threads

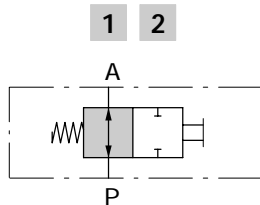
ALL PORTS	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)
DF5	G 3/8	3/4-16 (SAE 8)
DF10	G 1/2	7/8-14 (SAE 10)
DF20	G 3/4	1 1/16-12 (SAE 12)
DF25	G 1	1 5/16-12 (SAE 16)
PILOT PORTS		
Pneumatic	NPT 1/8-27	NPT 1/8-27
Hydraulic	G 1/4	9/16-18 (SAE 6)

2-way

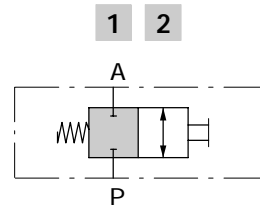
Available as body only in DF5/2 execution; for other executions 3-way body is used.



Spool type A

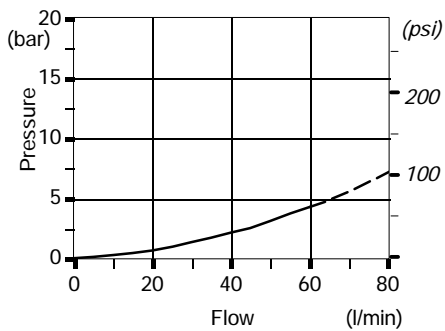


Spool type B



Performance data

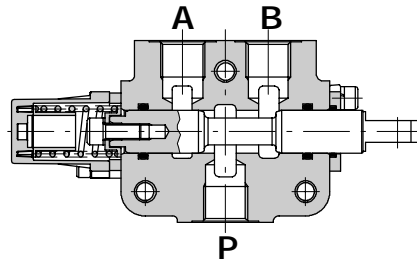
Pressure drop versus flow
P→A



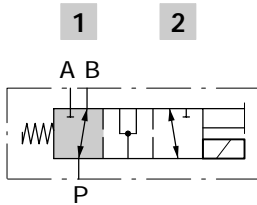
Hydraulic circuit

3-way

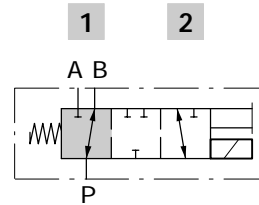
It's possible to obtain 2-way diverter valve plugging port A or B.



Spool type A



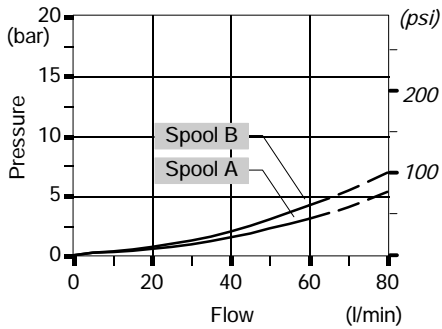
Spool type B B



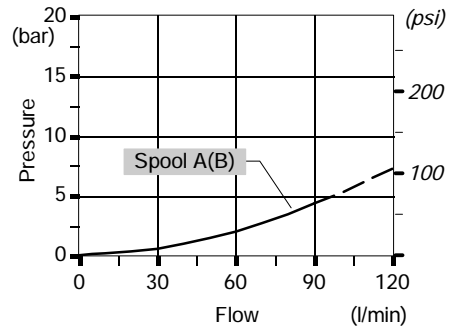
Performance data

Pressure drop versus flow: P→A(B)

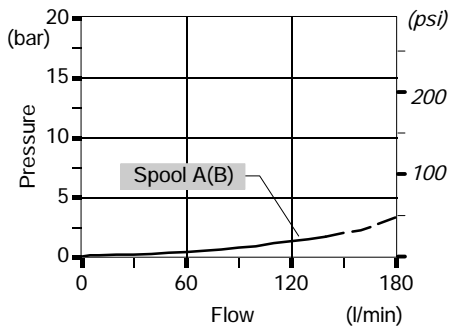
DF5/3



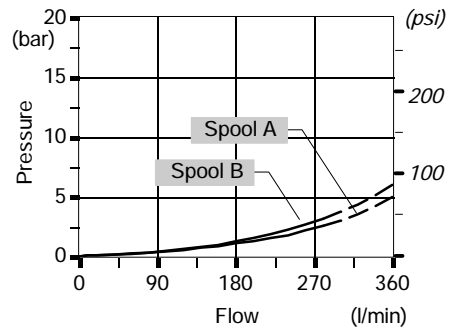
DF10/3



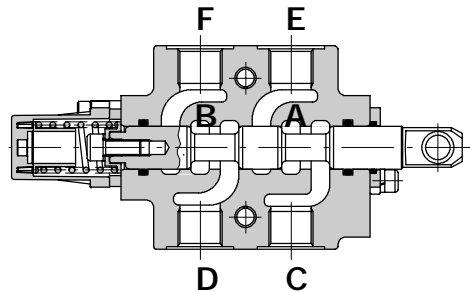
DF20/3



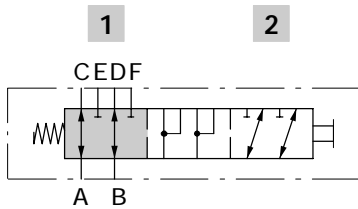
DF25/3



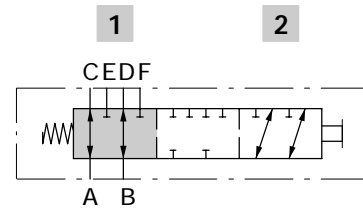
6-way



Spool type A



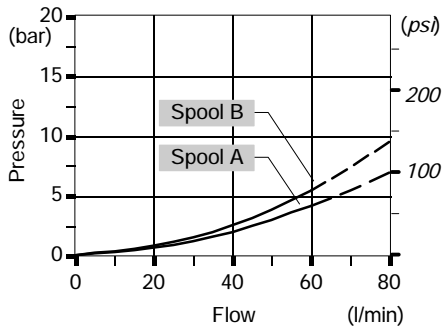
Spool type B



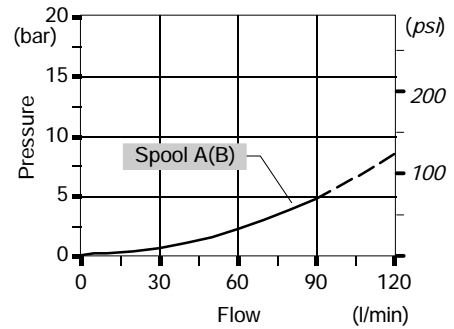
Performance data

Pressure drop versus flow: A→C(E).

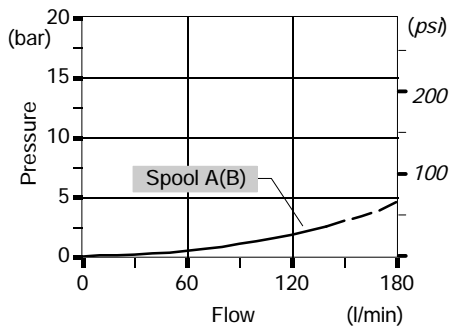
DF5/6



DF10/6

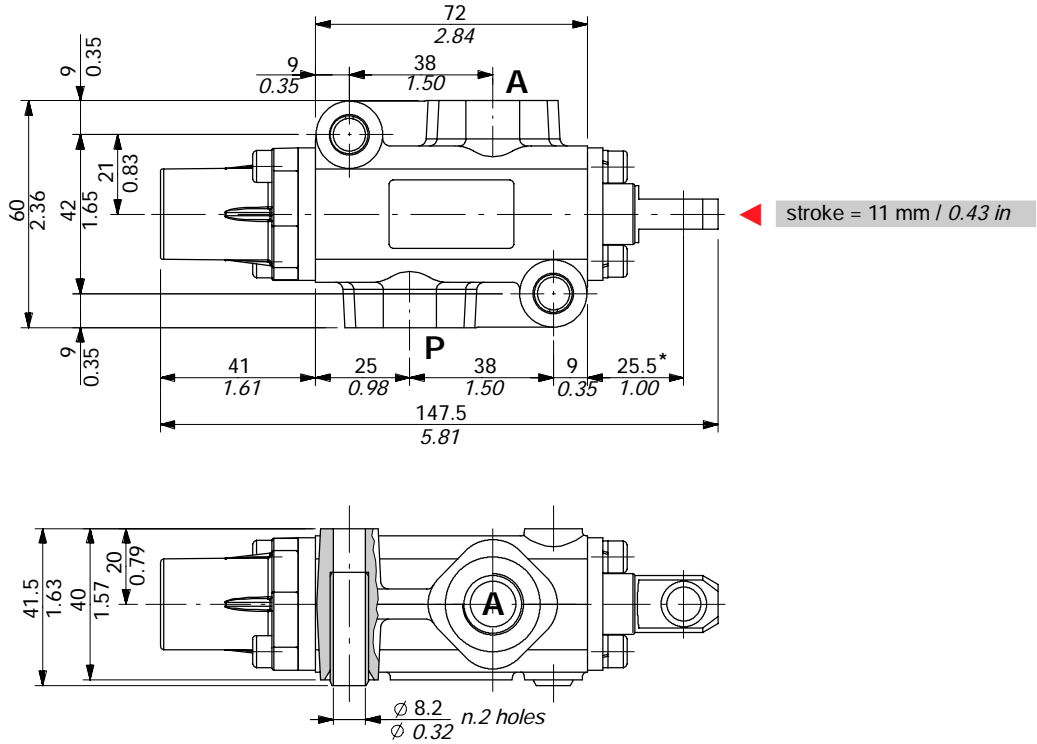


DF20/6

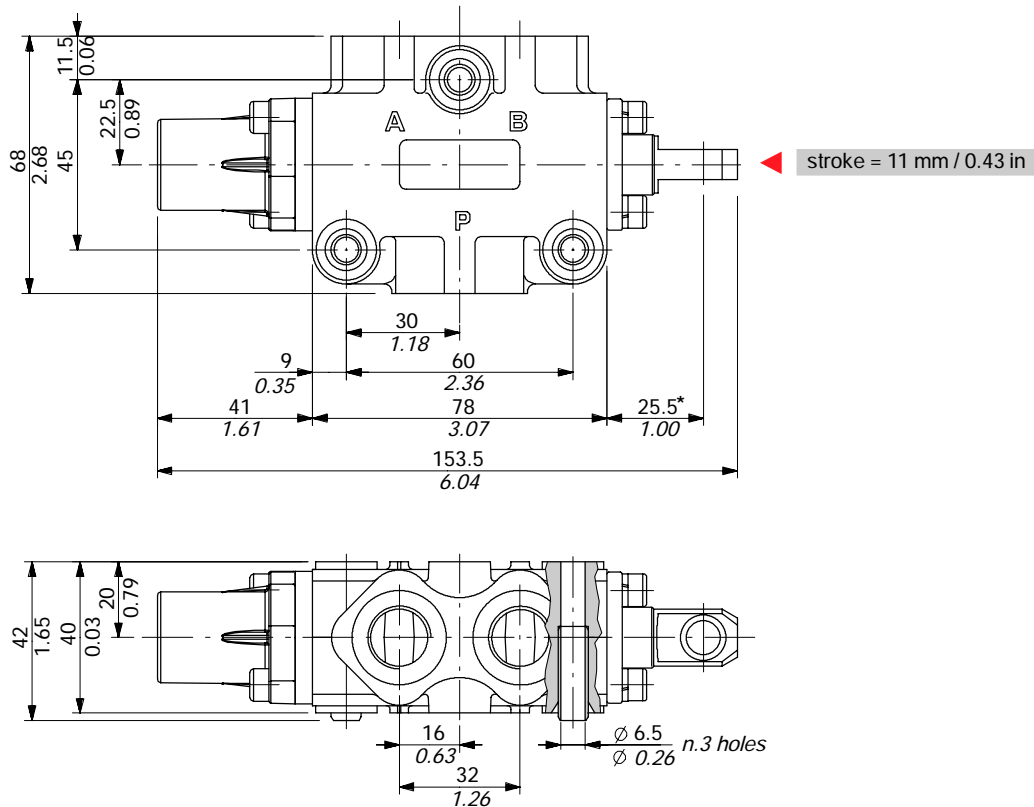


Dimensional data

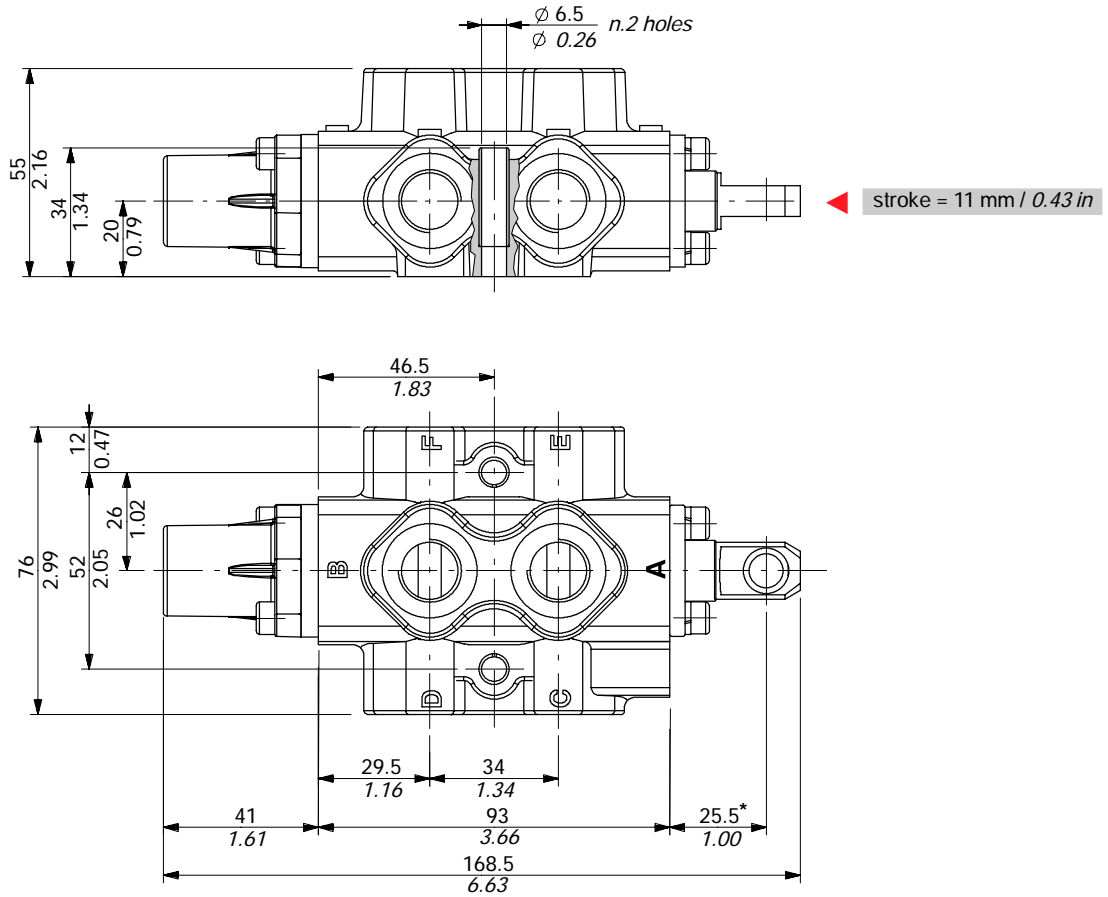
2-way DF5/2 valve



3-way DF5/3 valve

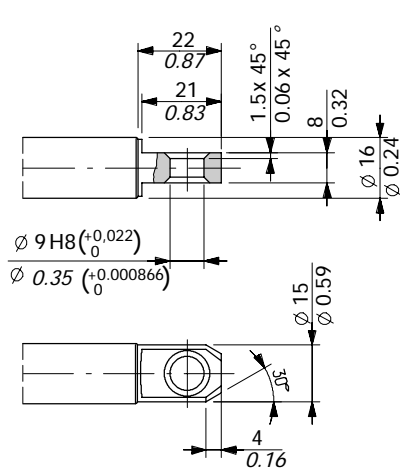


6-way DF5/6 valve



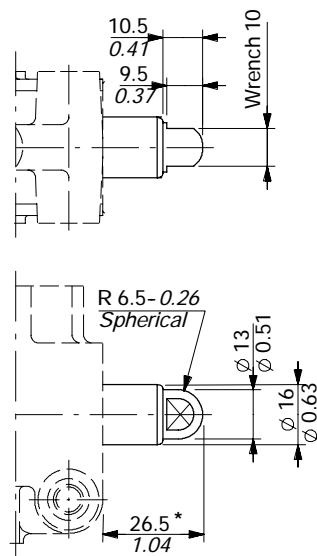
Spool end

Standard end

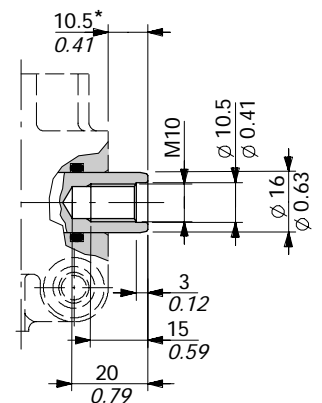


NOTE (*) - With spool out
(positioner kit type 17)

Spherical end type T

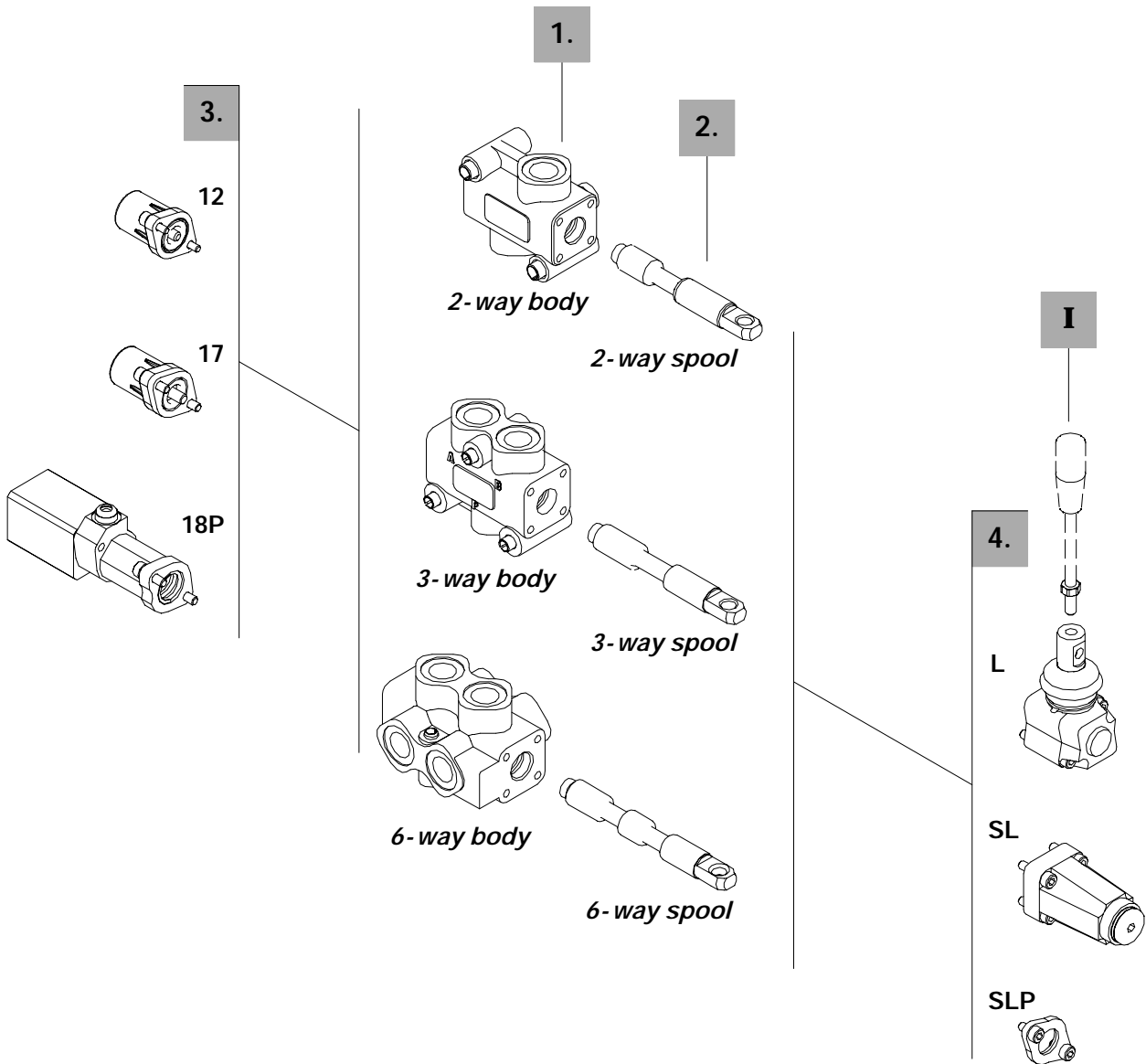


Rotary cam prearrangement



Ordering codes

Description example:



2-way

1. Body kit *

TYPE	BODY	DESCRIPTION
DF5/2	5CO2220300	Standard body kit, BSP threaded

Include body and seals

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS105210	2 positions with open centre in neutral
B	3CAS105110	2 positions with closed centre in neutral
AT	3CAS105230	As type A with spherical end
BT	3CAS105130	As type B with spherical end
AC	3CAS105220	As type A prearranged for cam control
BC	3CAS105120	As type B prearranged for cam control

3-way

1. Body kit *

TYPE	CODE	DESCRIPTION
DF5/3	5CO2221300	Standard body kit, BSP threaded

Include body and seal

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS105310	3-way, 2 positions with ports connected in transit position
B	3CAS105410	3-way, 2 positions with ports closed in transit position
AT	3CAS105330	As type A with spherical end
AC	3CAS105320	As type A prearranged for cam control
BC	3CAS105420	As type B prearranged for cam control

6-way

1. Body kit *

TYPE	CODE	DESCRIPTION
DF5/6	5CO2222300	Standard body kit, BSP threaded

Include body and seals

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS105610	6-way, 2 positions with ports connected in transit position
B	3CAS105710	6-way, 2 positions with ports closed in transit position
AC	3CAS105620	As type A prearranged for cam control
BC	3CAS105720	As type B prearranged for cam control

3. Positioner kits

page 14

TYPE	CODE	DESCRIPTION
12	5V12105000	Detent in positions 1 and 2
17	5V17105000	Spring return in position 1
17Y	5V17105010	As type 17, it must be coupled to IA2 control
18ME	5V18405110	Spring return in position 2
18P	5V18105700	ON/OFF pneumatic kit with spring return in position 2
18IA1	5V18105820*	ON/OFF high pressure hydraulic kit with spring return in position 2

4. Control kits

page 16

TYPE	CODE	DESCRIPTION
SLP	5COP105000	Without lever box with dust-proof plate kit
SLC	5COP205000	Without lever box with endcap
TQ	5TEL105110	Flexible cable connection
L	5LEV105000	Standard kever box
IA2	5IDR505000*	ON/OFF high pressure kit
CB	5CAM105020	Cam kit

I Optional handlever

TYPE	CODE	DESCRIPTION
AL01/M8x120	170011012	For lever L: height 120 mm / 4.72 in

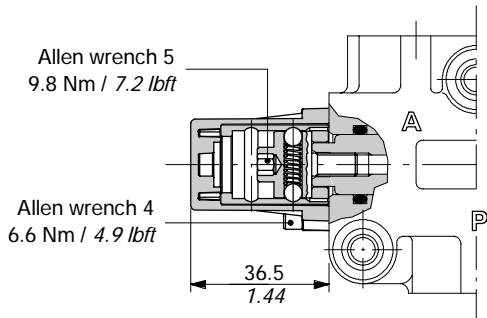
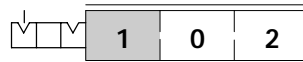
NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

With detent

12 kit

Detent in positions 1 and 2.



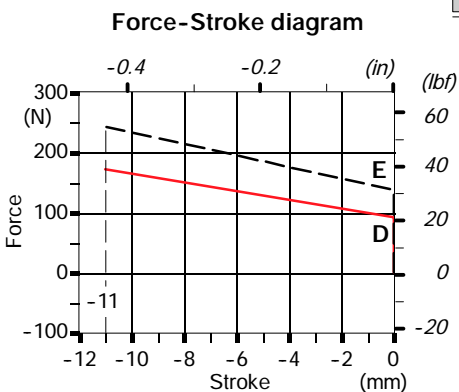
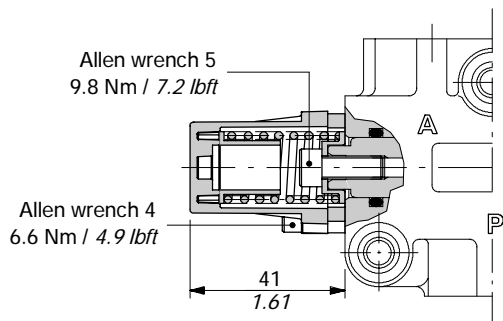
Operating features

Locking and unlocking force : 100 N / 22.5 lbf ±10%

With spring return

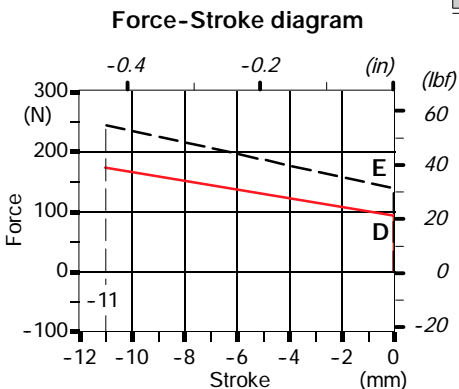
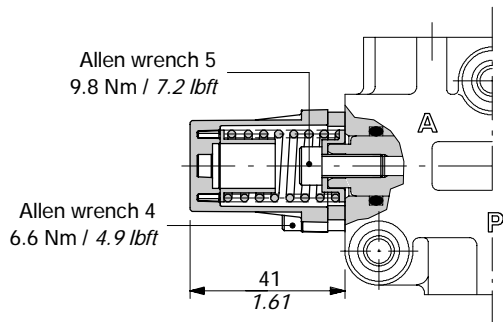
17 kit

Spring return in position 1; it's supplied with standard spring type D (see force-stroke diagram). Available also with heavier spring type E (17ME code 5V17305000)



Kit 17Y

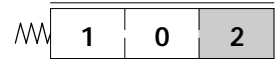
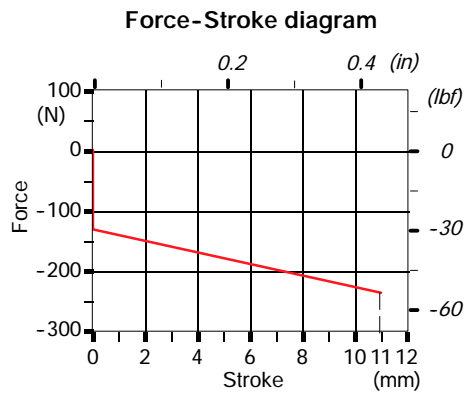
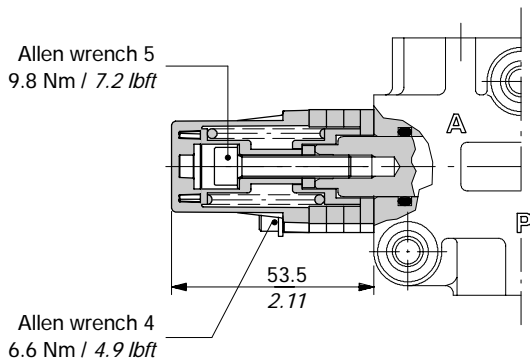
As kit 17, it must be coupled to IA2 control on page 17. It's available also with heavier spring type E (17YME code: 5V17305003).



With spring return

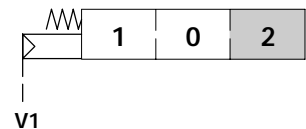
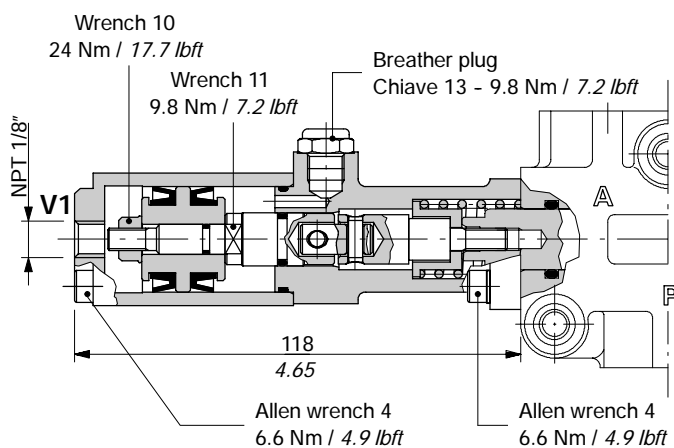
18ME kit

Spring return in position 2.



18P: ON/OFF pneumatic kit

With spring return in position 2.

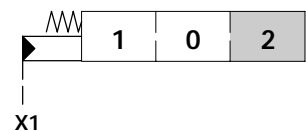
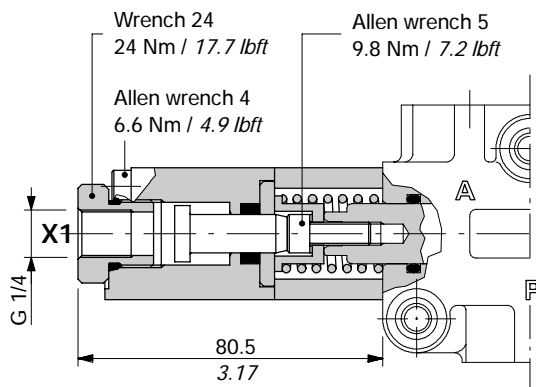


Operating features

Pilot pressure : min 6 bar / 87 psi
max. 10 bar / 145 psi

18IA1: ON/OFF hydraulic kit

With high pressure pilot and spring return to position 2.



Operating features

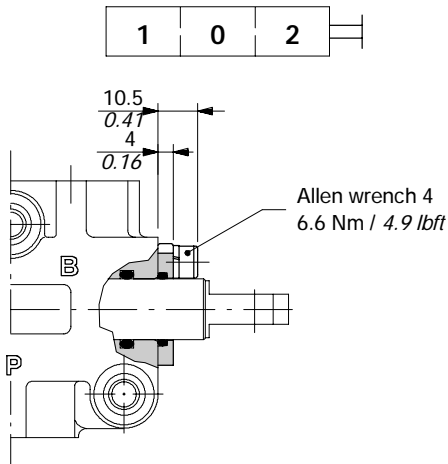
Pilot pressure : min. 30 bar / 435 psi
max. 250 bar / 3600 psi

Control kits

Controls prearrangement

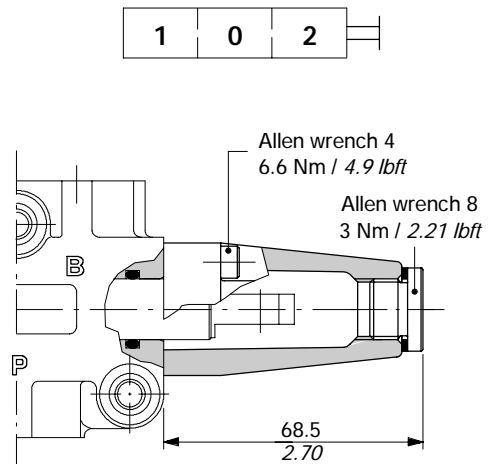
SLP kit

Mechanical control with dust-proof plate.



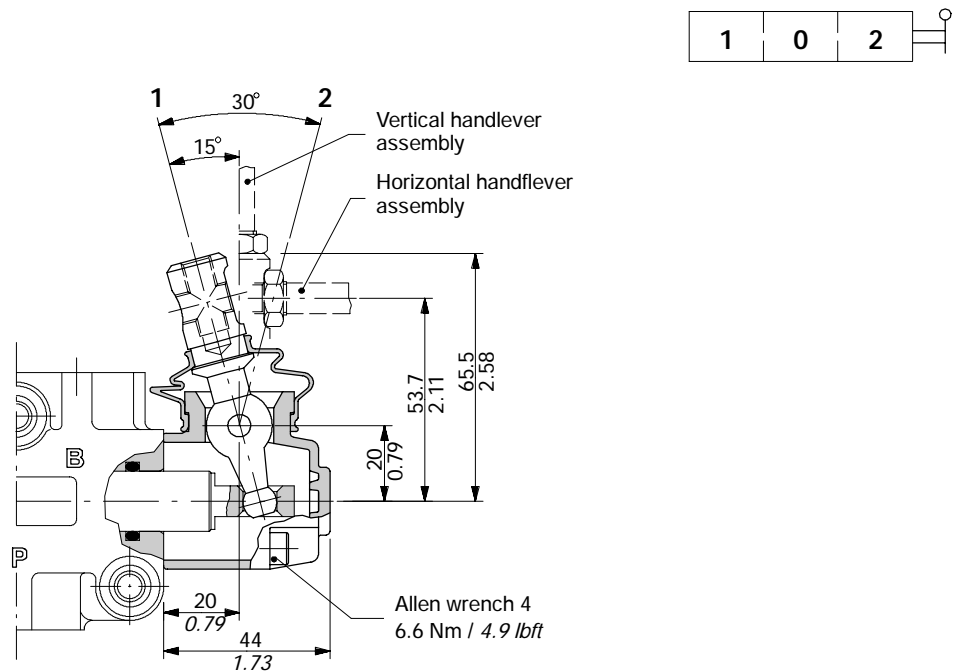
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



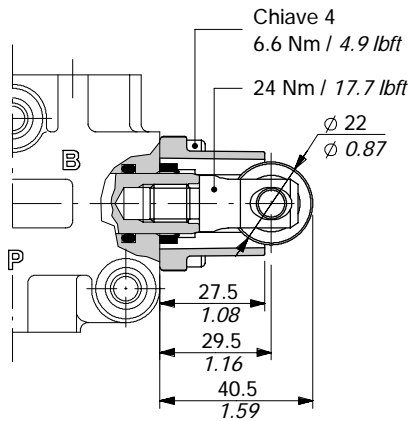
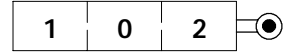
L lever control

Aluminum with protection boot lever pivot box; it can be rotated 180° (execution L180).



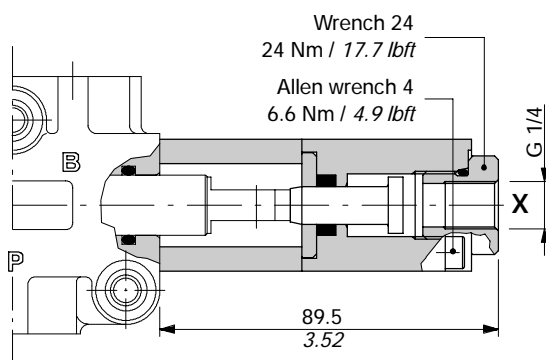
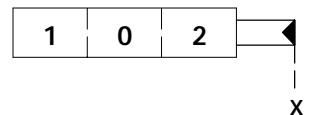
CB cam control

With bronze bearing; it must be coupled to 17 kit.



IA2: ON/OFF hydraulic control

With high pressure pilot; it must be coupled to 17Y kit (see page 14).



Operating features

Pilot pressure : min. 30 bar / 435 psi
 max. 250 bar / 3600 psi

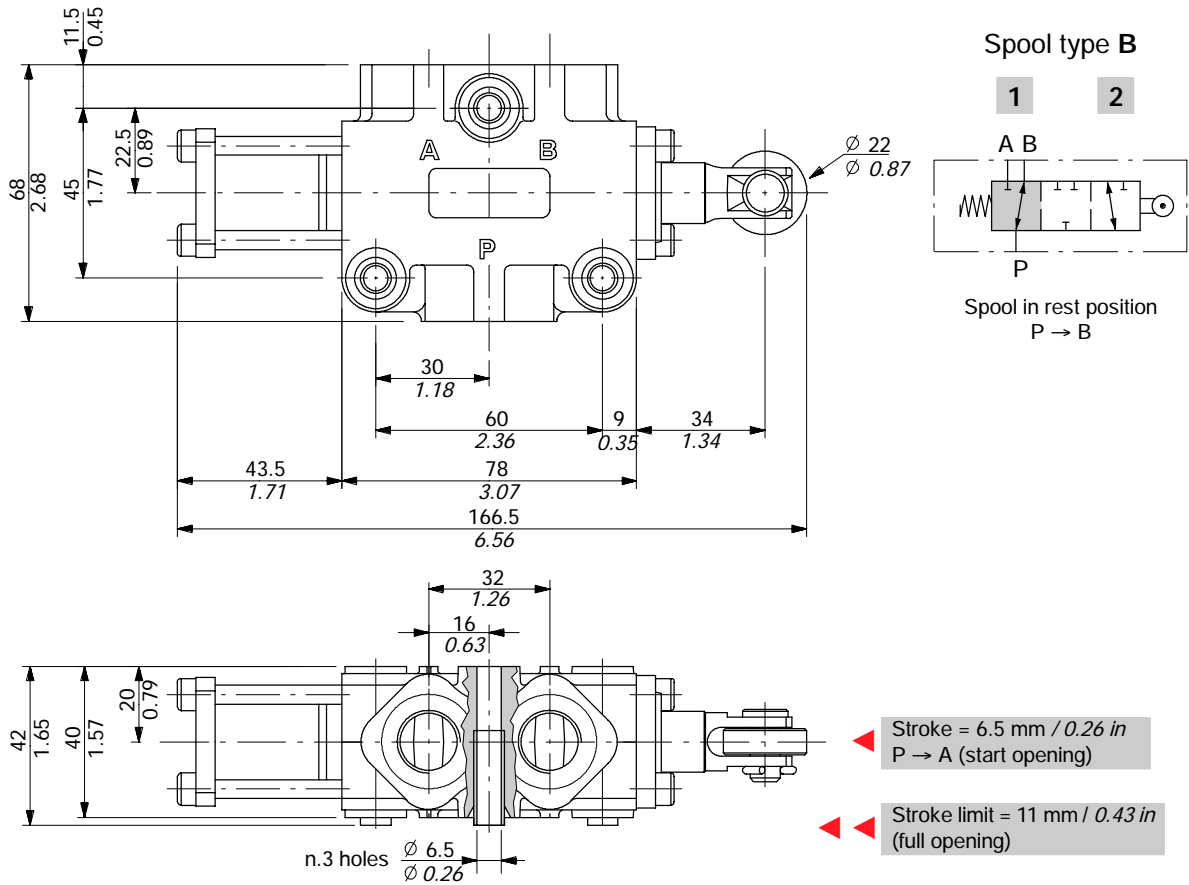
Other executions

Cam spool control suggested for severe applications; it requires a special body, spool and control kit.

3-way DFC050/3 valve

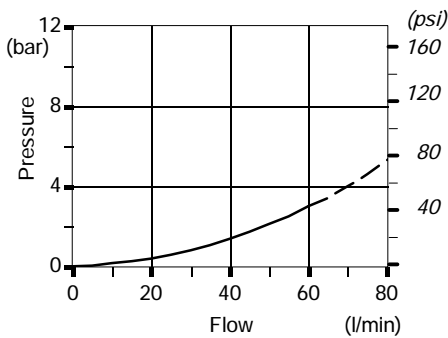
Complete description: DFC050/3B17GSLP-<CVN> code: 122050023

Valve is supplied painted as standard, with one coat of Primer black antirust paint

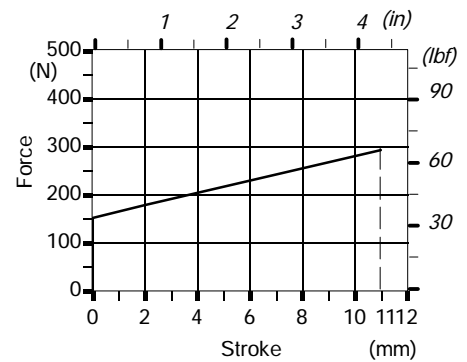


Performance data

Pressure drop versus flow
P→A(B)



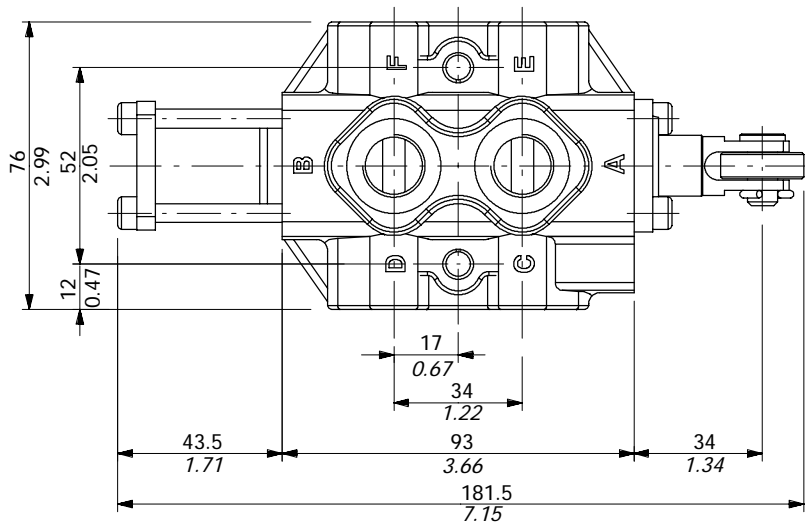
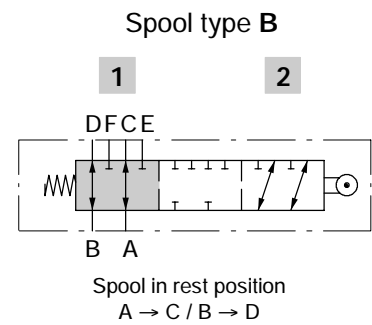
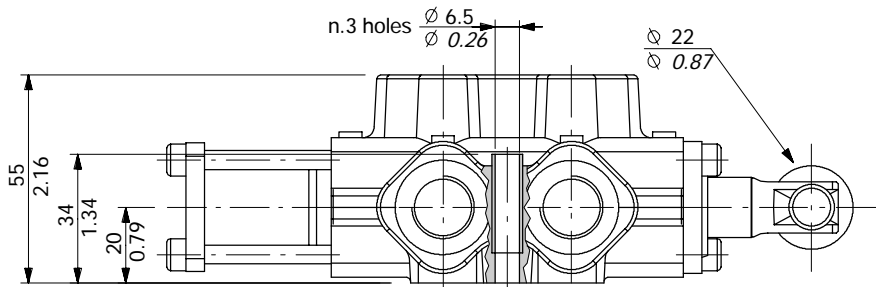
Operating force



6-way DFC050/6 valve

Complete description: DFC050/6B17GSLP-<CVN> code: 122080018

Valve is supplied painted as standard, with one coat of Primer black antirust paint

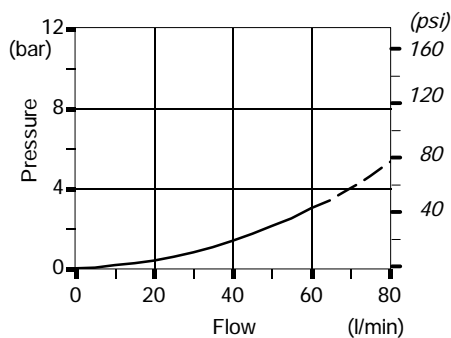


- ◀ Stroke = 6.8 mm / 0.27 in
A → E / B → F (start opening)
- ◀◀ Stroke limit = 11 mm / 0.43 in
(full opening)

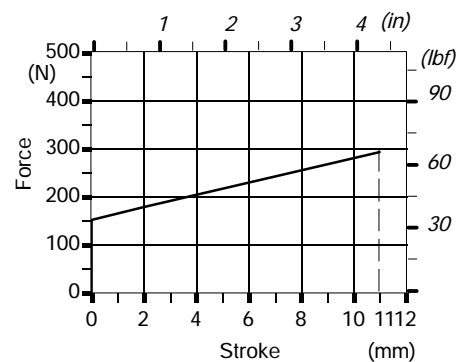
Performance data

Pressure drop versus flow

P→A(B)

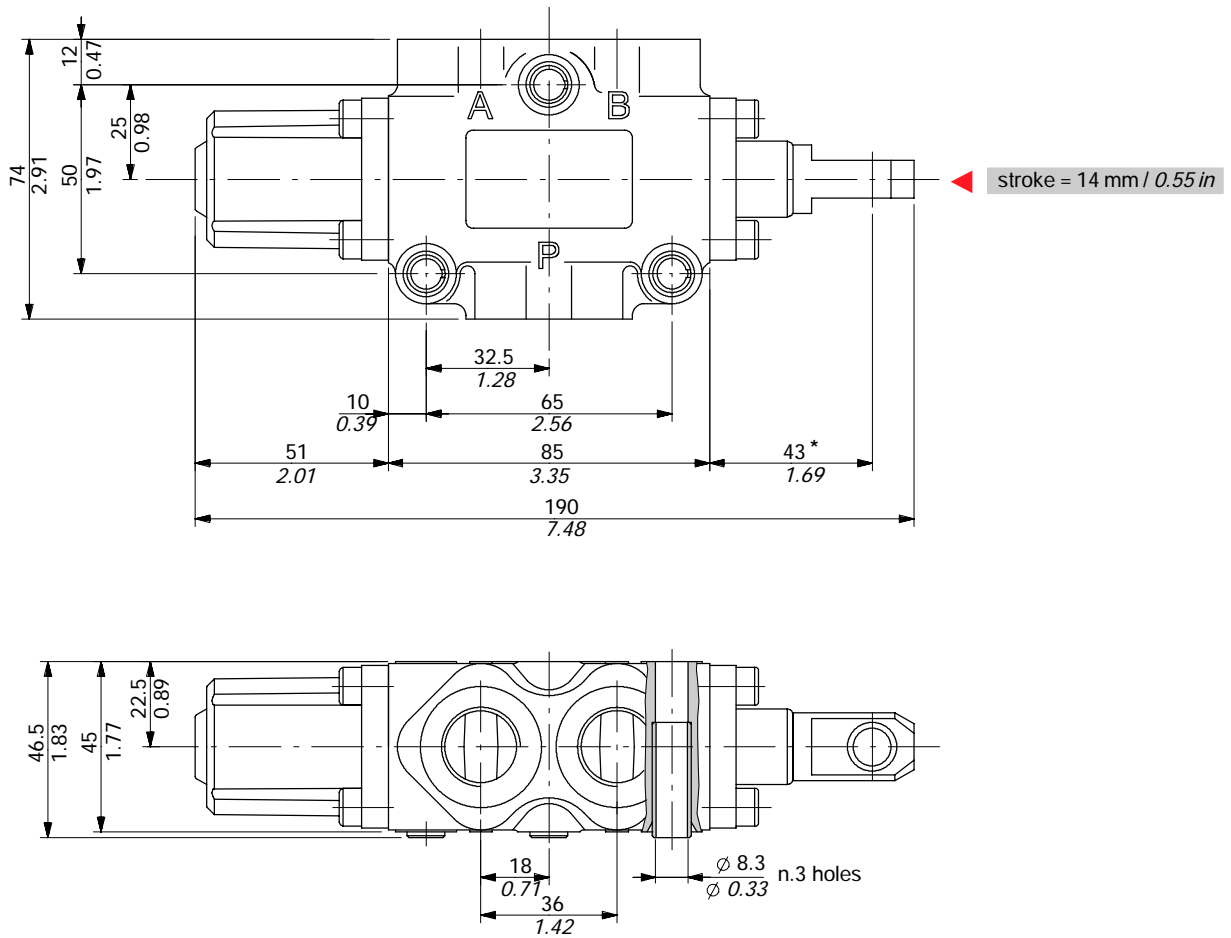


Operating force

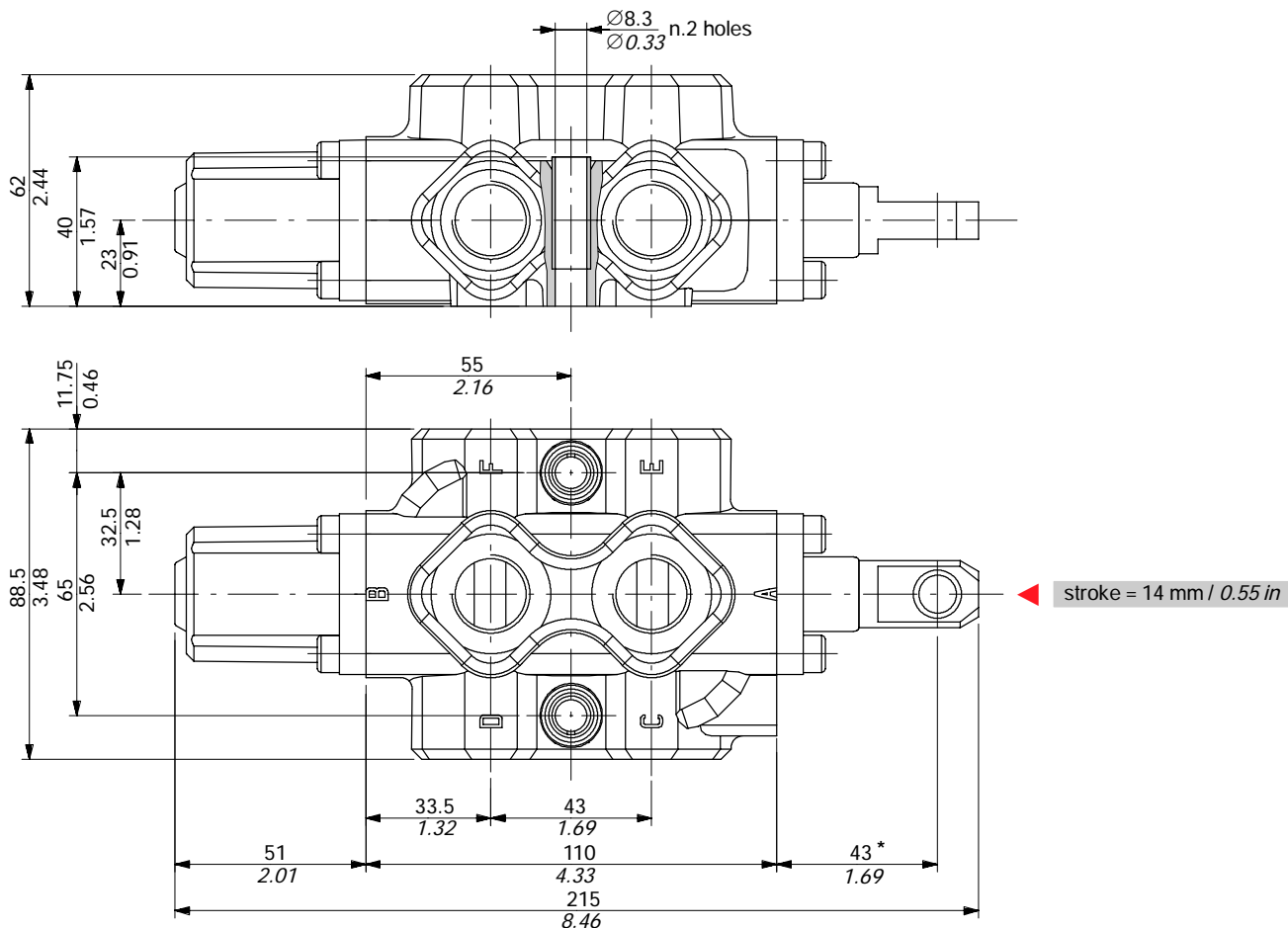


Dimensional data

3-way DF10/3 valve

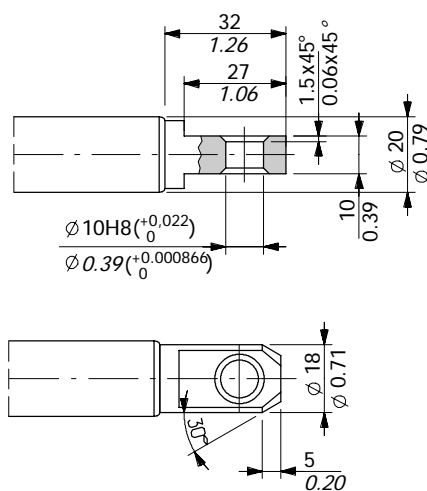


6-way DF10/6 valve



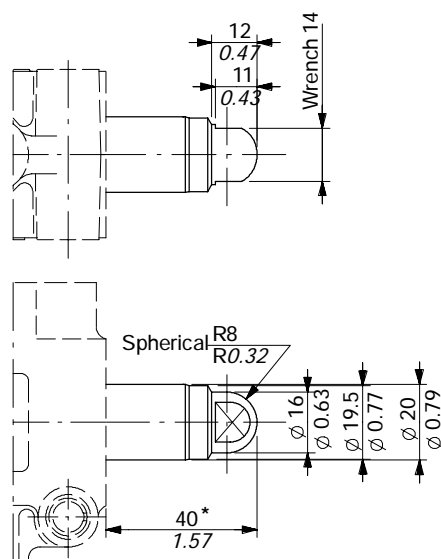
Spool end

Standard end

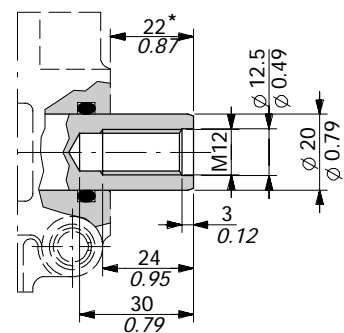


NOTE (*) - With spool out
(positioner kit type 17)

Spherical end type T



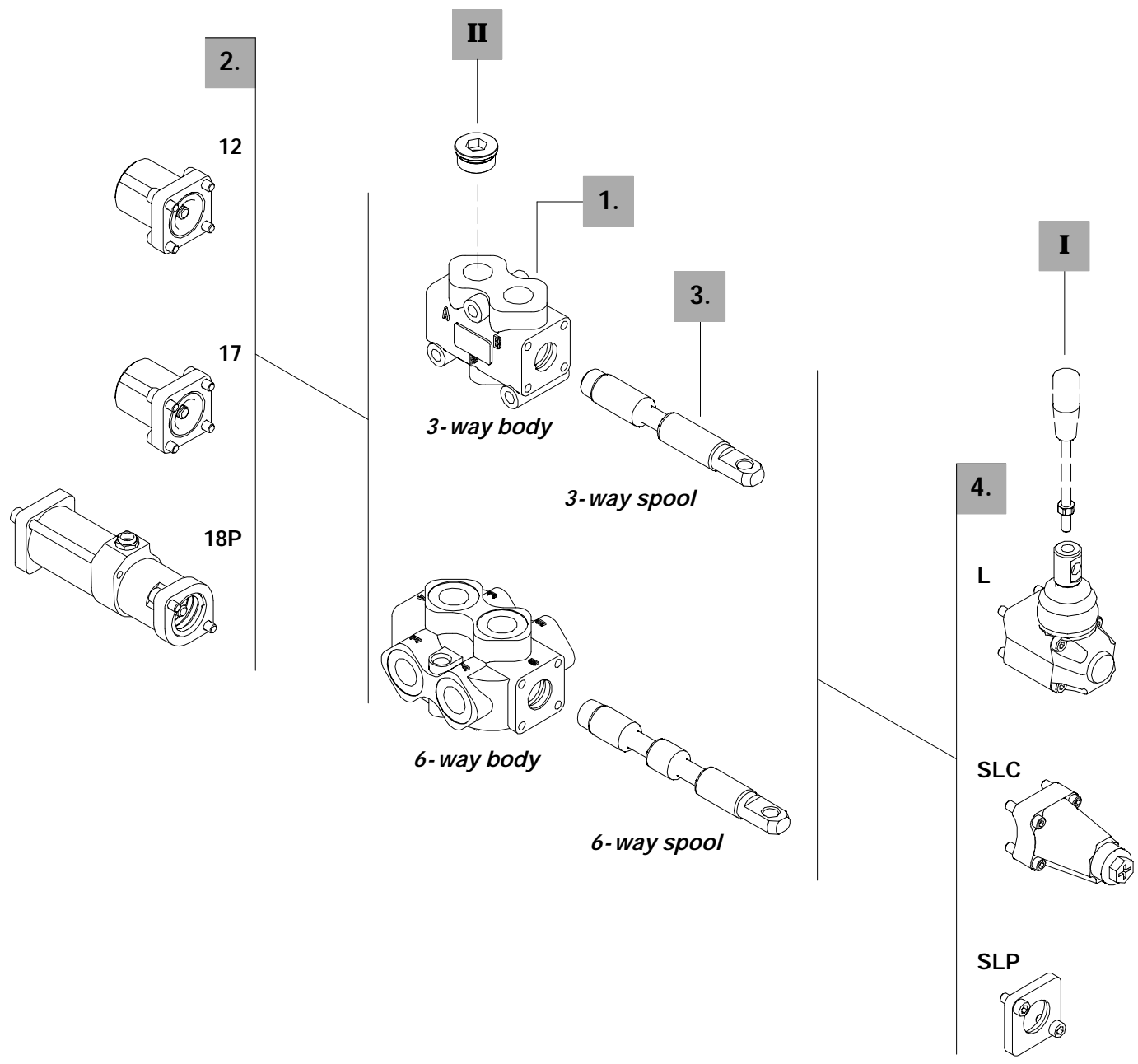
Rotary cam prearrangement



Ordering codes

Description example:

Diverter valve DF10/3 A 17 SLP
 1. 3. 2. 4.



3-way**1. body kit ***

TYPE	CODE	DESCRIPTION
DF10/3	5CO2241300	Standard body kit, BSP threaded

Include body and seals

3. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS110310	3-way, 2 positions with ports connected in transit position
B	3CAS110410	3-way, 2 positions with ports closed in transit position
AT	3CAS110330	As type A with spherical end
AC	3CAS110320	As type A prearranged for cam control
BC	3CAS110420	As type B prearranged for cam control

6-way**1. Body kit ***

TYPE	CODE	DESCRIPTION
DF10/6	5CO2242300	Standard body kit, BSP threaded

Include body and seals

3. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS110610	6-way, 2 positions with ports connected in transit positions
B	3CAS110710	6-way, 2 positions with ports closed in transit positions
AC	3CAS110620	As type A prearranged for cam control
BC	3CAS110720	As type B prearranged for cam control

2. Positioner kits*page 24*

TYPE	CODE	DESCRIPTION
12	5V12110000	Detent in positions 1 and 2
17	5V17110000	Spring return in position 1
18	5V18110000	Spring return in position 2
18P	5V18110710	ON/OFF pneumatic kit with spring return in position 2
18IA1	5V18110821*	ON/OFF high pressure hydraulic kit with spring return in position 2

4. Control kits*page 26*

TYPE	CODE	DESCRIPTION
SLP	5COP110000	Without lever box with dust-proof plate kit
SLC	5COP210000	Without lever box with endcap
L	5LEV110000	Standard lever box
IA2	5IDR510001*	ON/OFF high pressure kit
CB	5CAM110020	Cam kit

I Optional handlever

TYPE	CODE	DESCRIPTION
AL01/M10x200	170012020	For lever L, height 200 mm / 7.87 in

II Ports plug

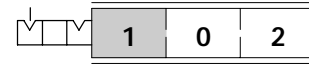
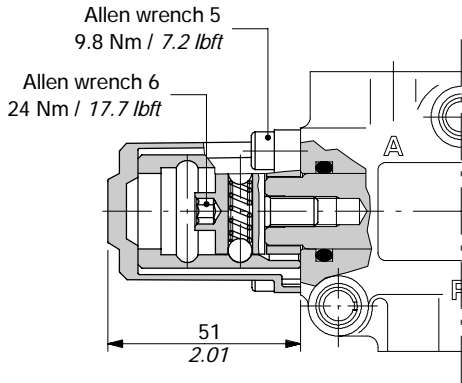
TYPE	CODE	DESCRIPTION
G1/2	3XTAP727180*	Body conversion from 3-way to 2-way circuit

NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

12 kit: with detent

Detent in positions 1 and 2.



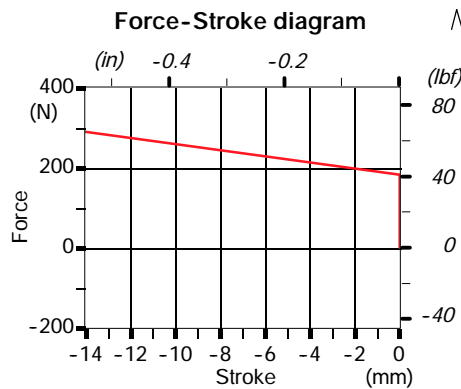
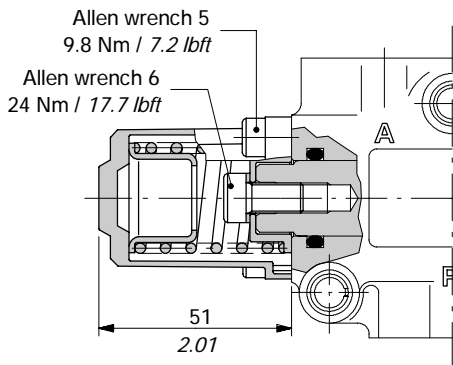
Operating features

Locking and unlocking force : ±10%

With spring return

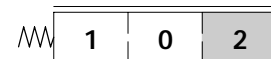
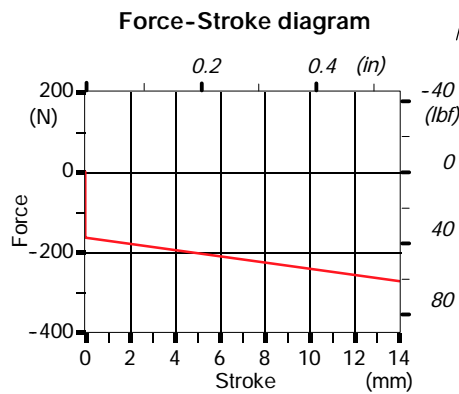
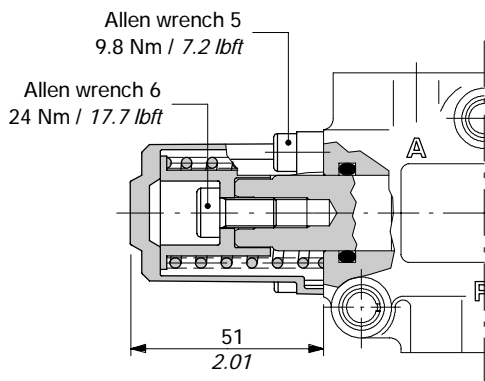
17 kit

Spring return in position 1.



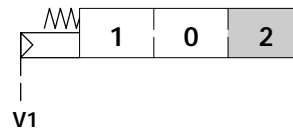
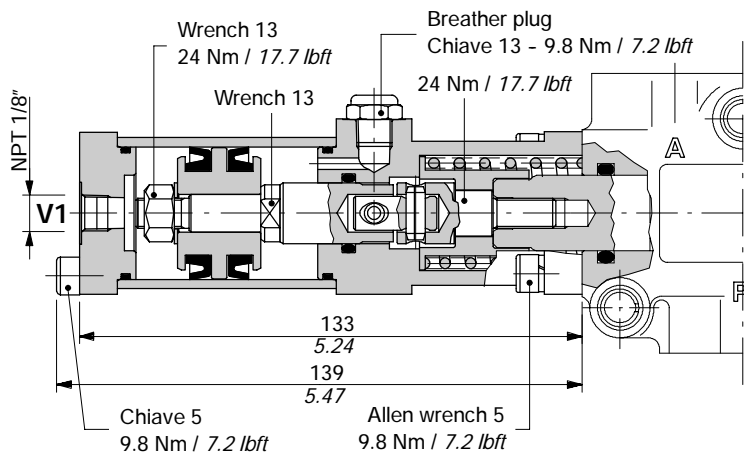
18 kit

Spring return in position 2.



18P: ON/OFF pneumatic kit

With spring return in position 2.

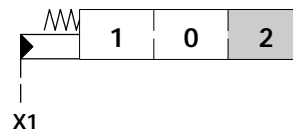
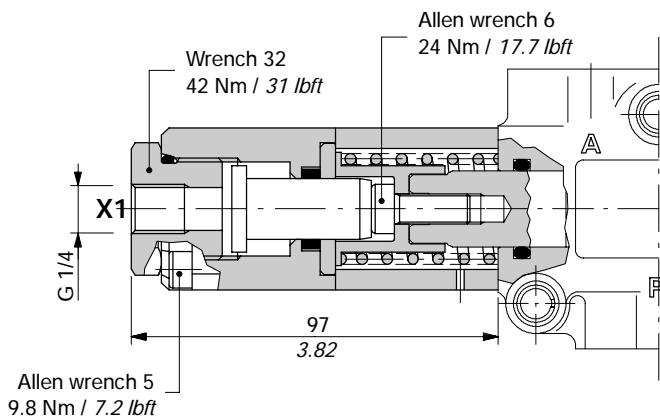


Operating features

Pilot pressure : min. 6 bar / 87 psi
 max. 10 bar / 145 psi

18IA1: ON/OFF hydraulic kit

With high pressure pilot and spring return to position 2.



Operating features

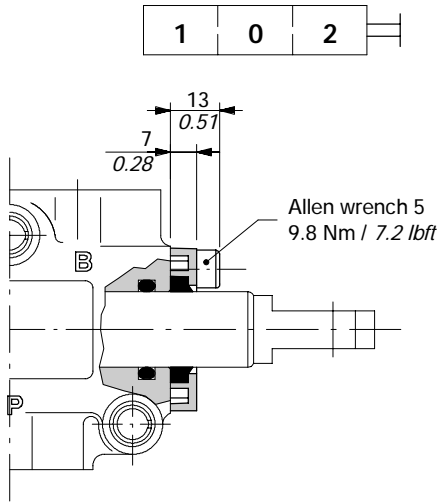
Pilot pressure : min. 30 bar / 435 psi
 max. 250 bar / 3600 psi

Control kits

Controls prearrangement

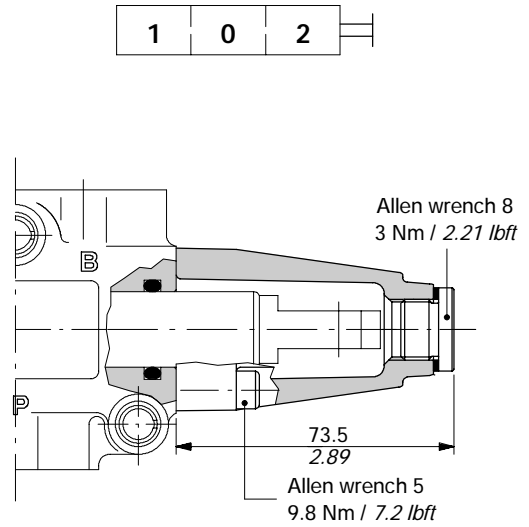
SLP kit

Mechanical control with dust-proof plate.



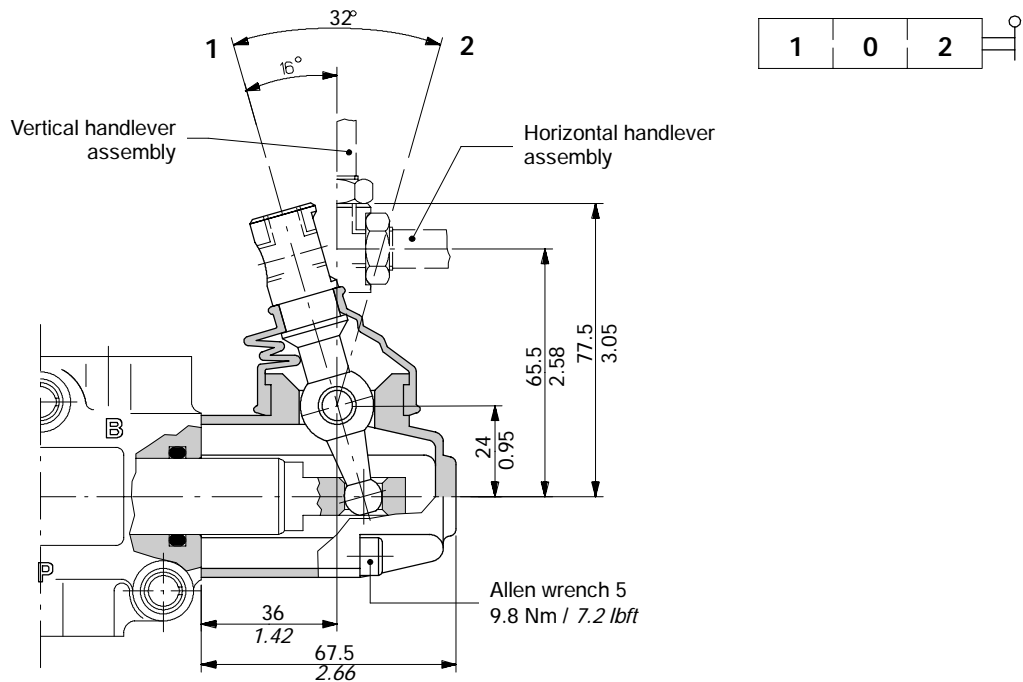
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



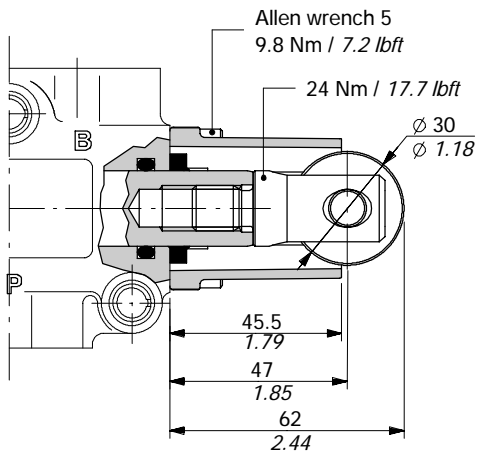
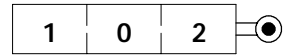
L lever control

Alumium with protection boot lever pivot box; it can be rotated 180° (execution L180).



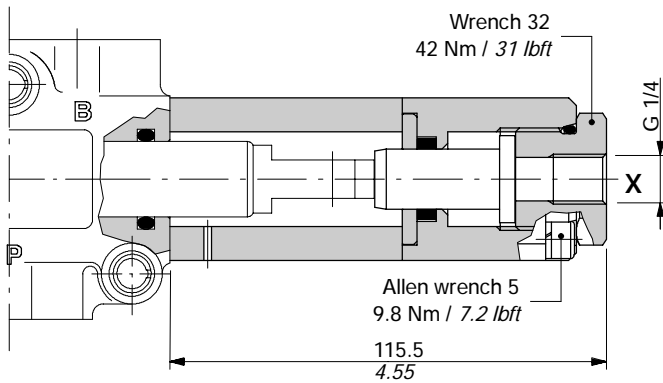
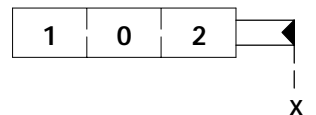
CB cam control

With bronze bearing; it must be coupled to 17 kit.



IA2: ON/OFF hydraulic control

With high pressure pilot; it must be coupled to 17 kit.



Operating features

Pilot pressure : min. 30 bar / 435 psi
max. 250 bar / 3600 psi

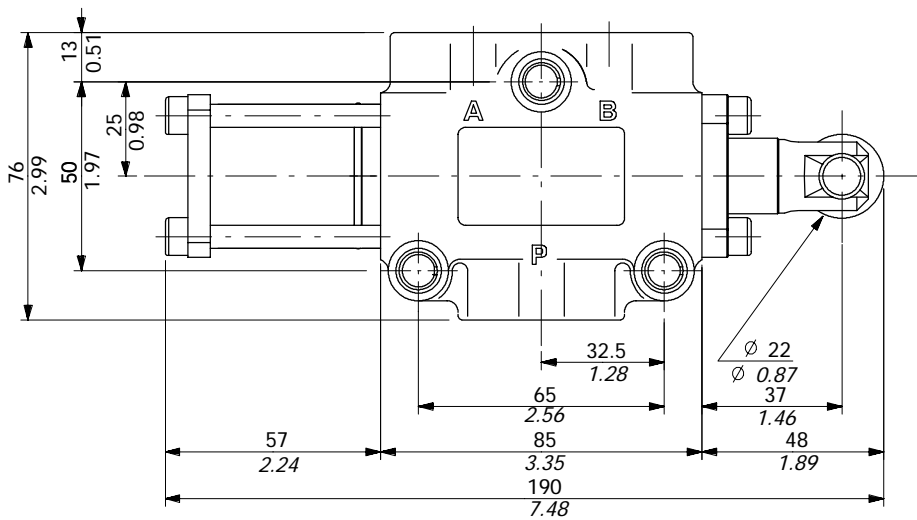
Other executions

Cam spool control suggested for severe applications; it requires a special body, spool and control kit.

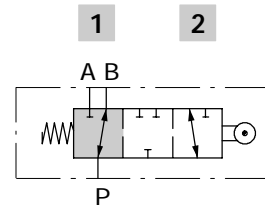
3-way DFC100/3 valve

Complete description: DFC100/3B17GSLP-<CVN> code: 124050016

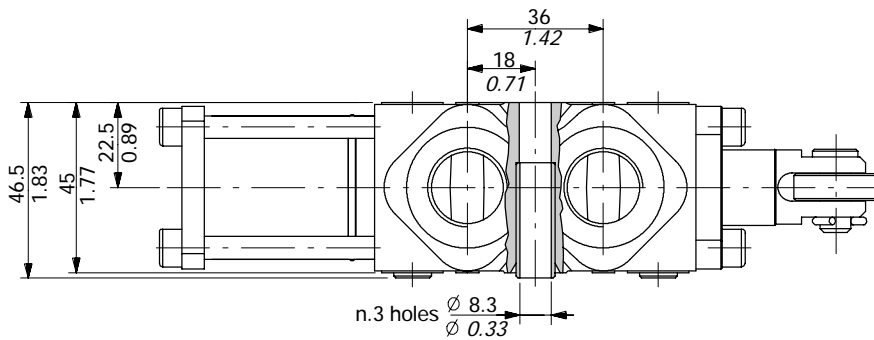
Valve is supplied painted as standard, with one coat of Primer black antirust paint



Spool type B



Spool in rest position
P → B

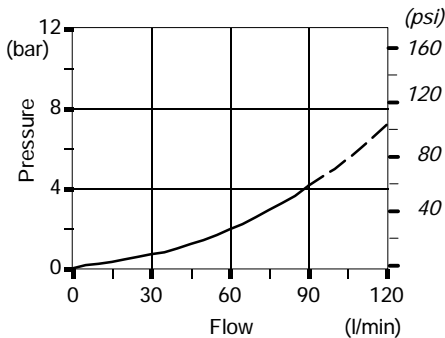


Stroke = 8.5 mm / 0.33 in
P → A (start opening)

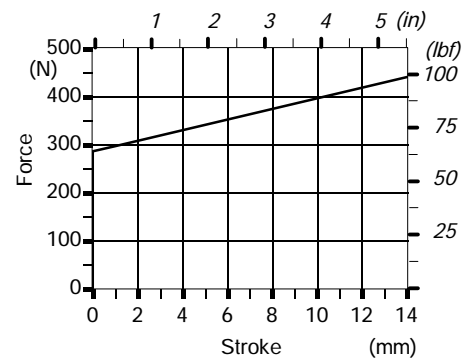
Stroke limit = 14 mm / 0.55 in
(full opening)

Performance data

Pressure drop versus flow
P → A(B)



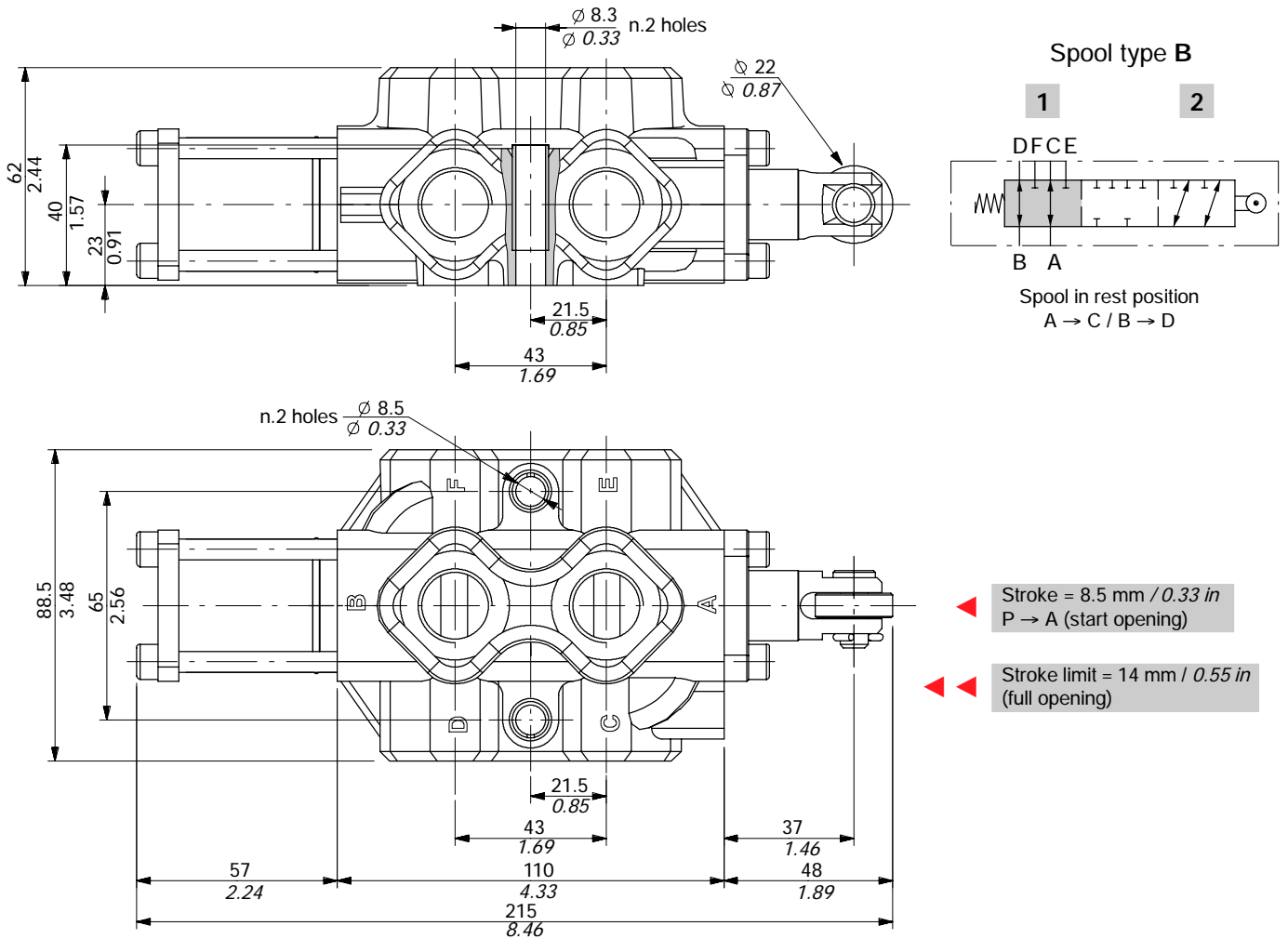
Operating force



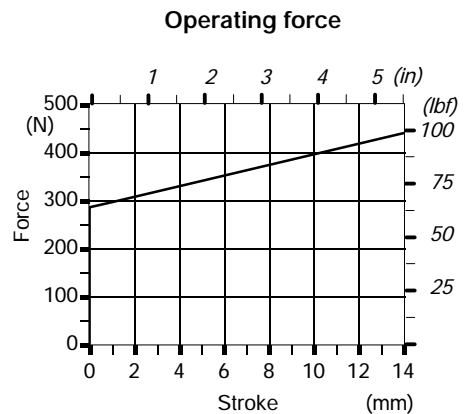
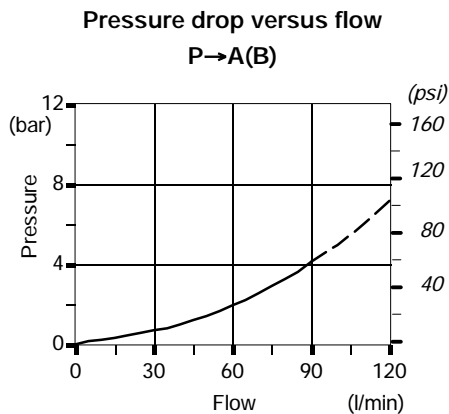
6-way DFC100/6 valve

Complete description: DFC100/6B17GSLP-<CVN> code: 124080013

Valve is supplied painted as standard, with one coat of Primer black antirust paint

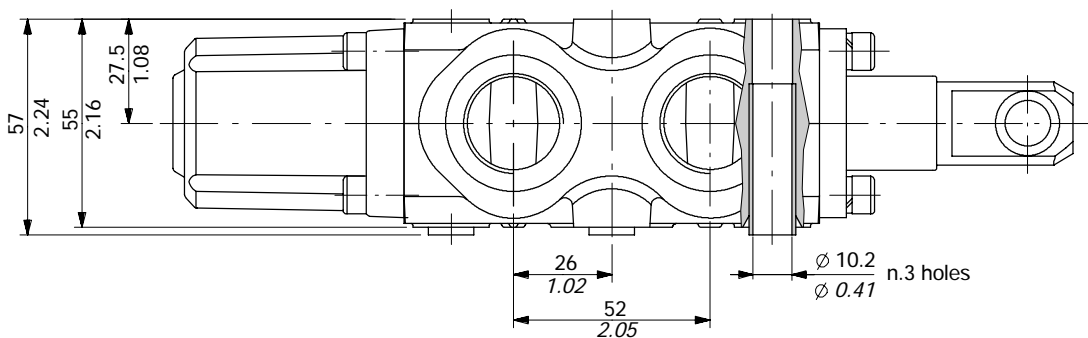
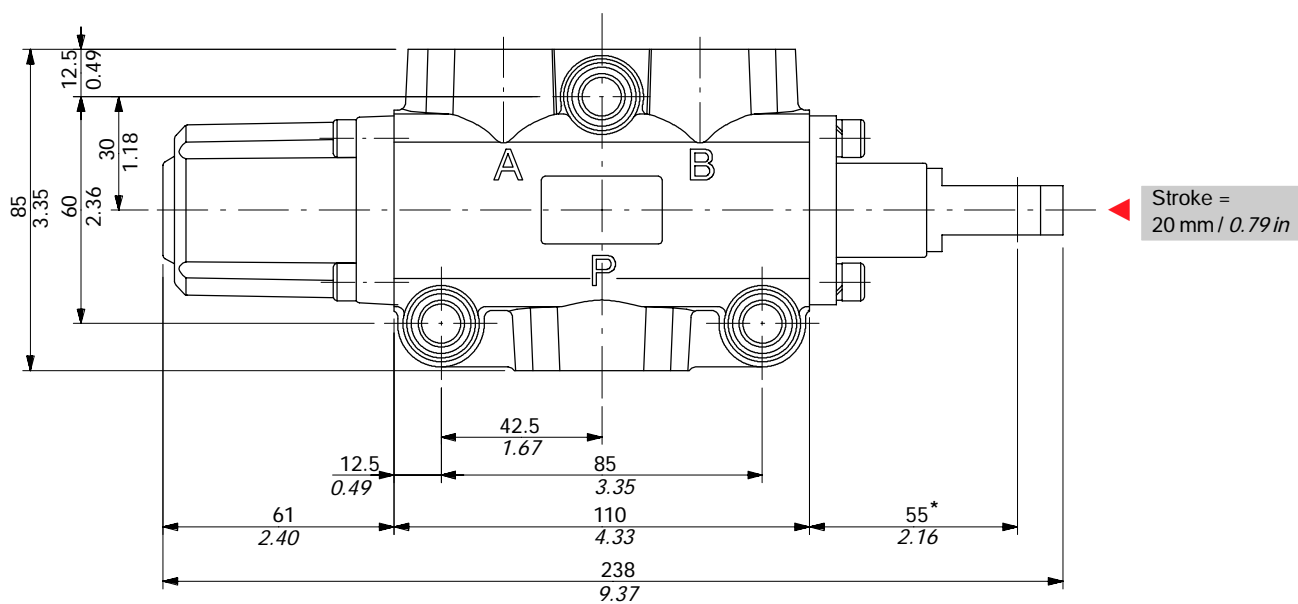


Performance data

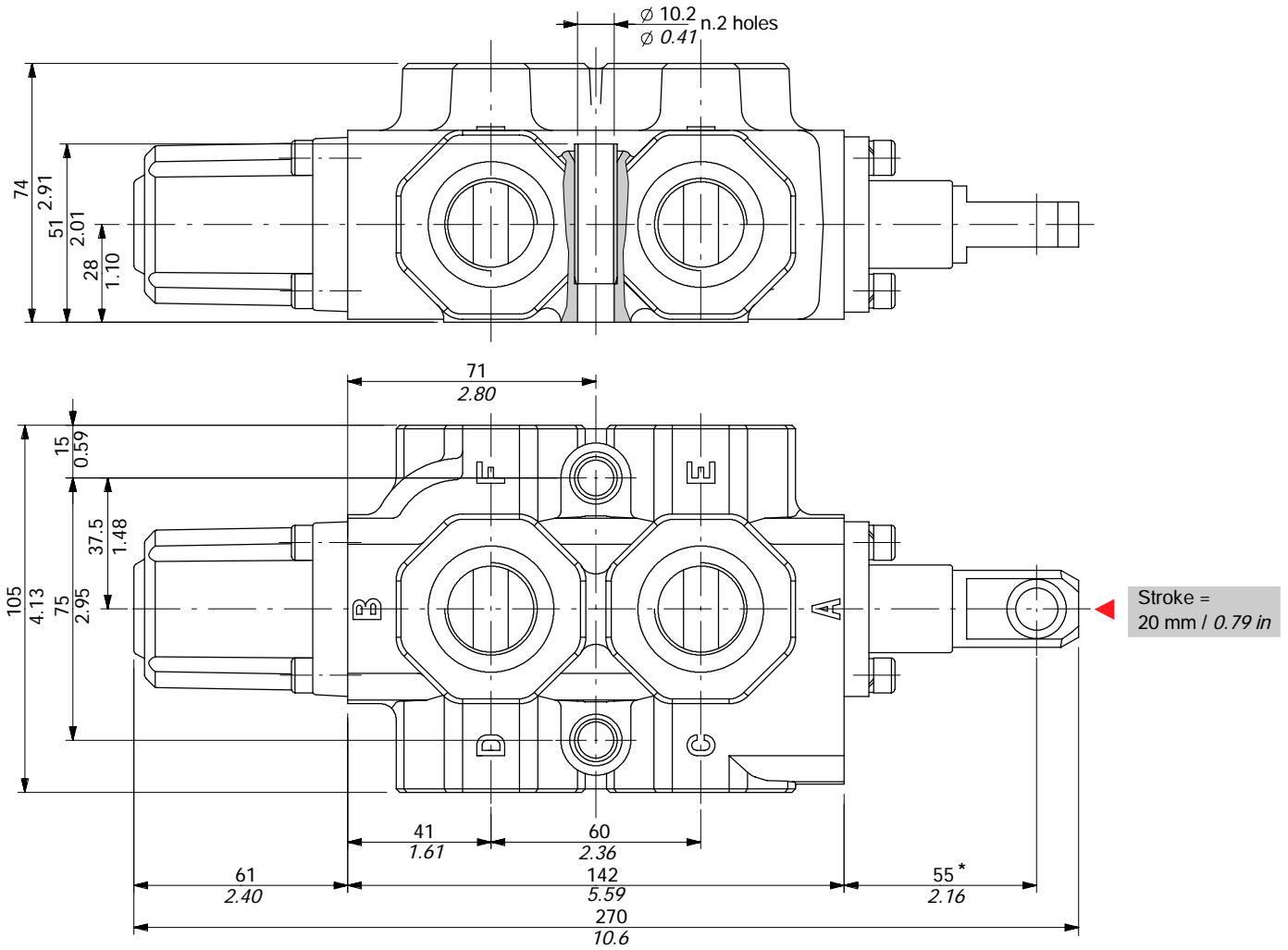


Dimensional data

3-way DF20/3 valve

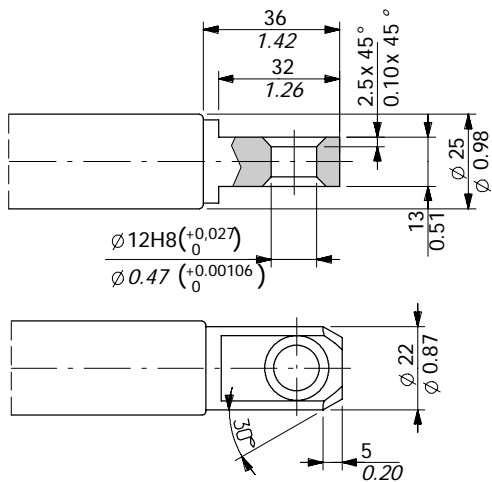


6-way DF20/6 valve

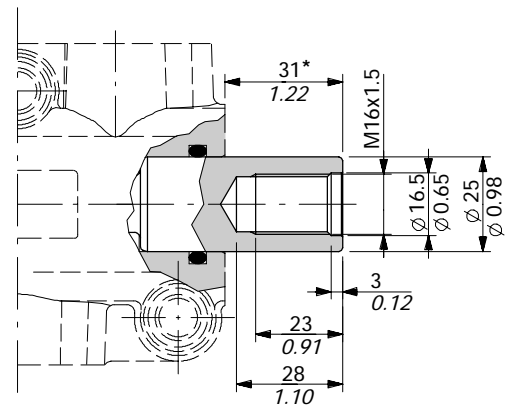


Spool end

Standard end



Rotary cam prearrangement



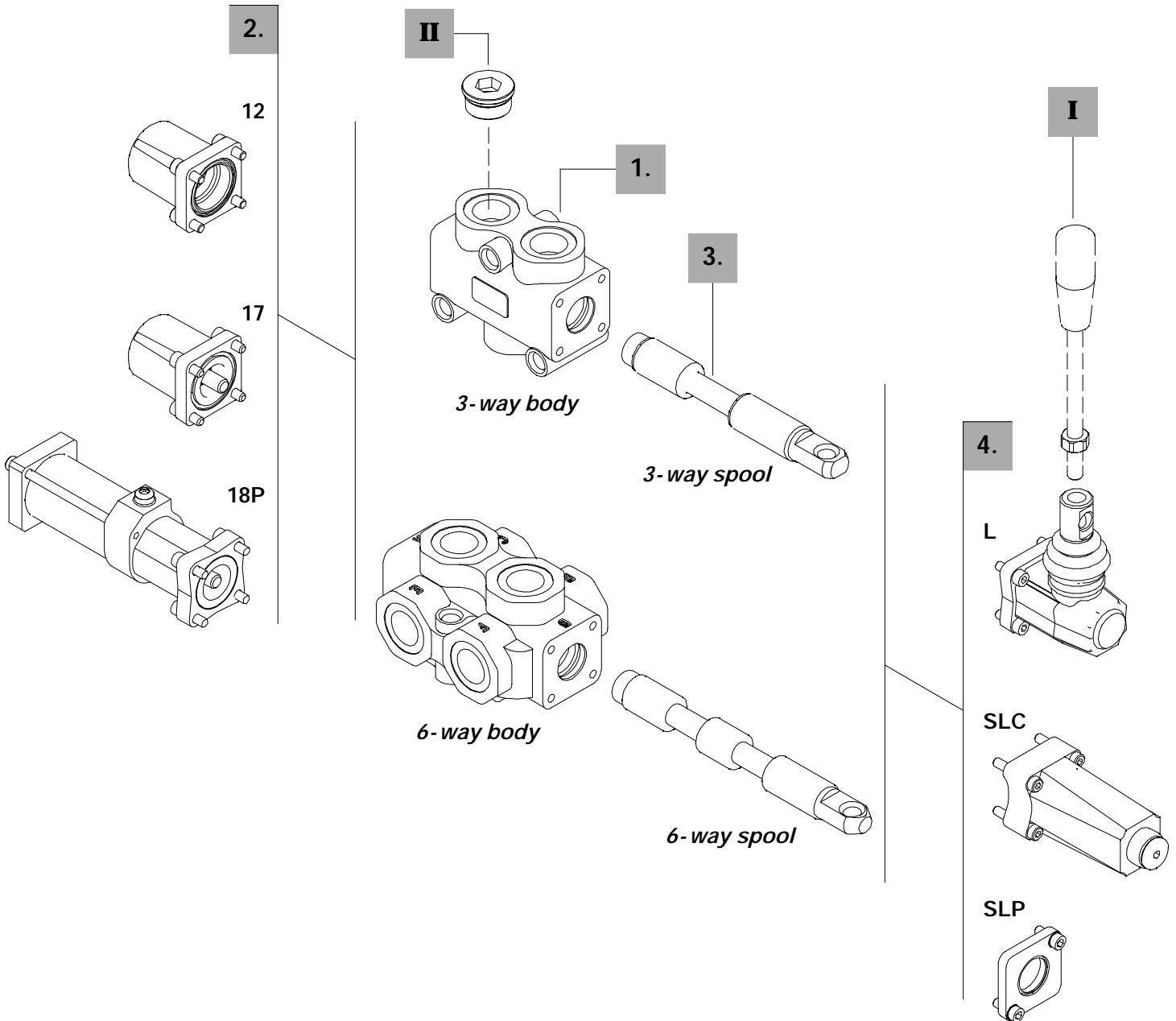
NOTA (*) - With spool out (positioner kit type 17)

Ordering codes

Description example:

Diverter valve **DF20/3** **A** **17** **SLP**

1. 2. 3. 4.



3-way**1. Body kit ***

TYPE	CODE	DESCRIPTION
DF20/3	5CO2261300	Standard body kit, BSP threaded

Include body and seals

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS120310	3-way, 2 positions with ports connected in transit position
B	3CAS120410	3-way, 2 positions with ports closed in transit position
AC	3CAS120320	As type A prearranged for cam control
BC	3CAS120420	As type B prearranged for cam control

6-way**1. Body kit ***

TYPE	CODE	DESCRIPTION
DF20/6	5CO2262300	Standard body kit, BSP threaded

Include body and seals

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS120610	6-way, 2 positions with ports connected in transit position
B	3CAS120710	6-way, 2 positions with ports closed in transit position
AC	3CAS120620	As type A prearranged for cam control
BC	3CAS120720	As type B prearranged for cam control

3. Positioner kits *page 34*

TIPO	CODICE	DESCRIZIONE
12	5V12120000	Detent in positions 1 and 2
17	5V17120000	Spring return in position 1
18MB	5V18120000	Spring return in position 2
18P	5V18120700	ON/OFF pneumatic kit with spring return in position 2
18IA1	5V18120820*	ON/OFF high pressure hydraulic kit with spring return in position 2
18E11	5V18120350	12VDC ON/OFF electro-hydraulic kit with spring return in position 2
	5V18120351	24VDC ON/OFF electro-hydraulic kit with spring return in position 2

4. Control kits *page 37*

TYPE	CODE	DESCRIPTION
SLP	5COP120000	Without lever box with dust-proof plate kit
SLC	5COP220000	Without lever box with endcap
L	5LEV120000	Standard lever box
IA2	5IDR520000*	ON/OFF high pressure kit
CB	5CAM120020	Cam kit

I Optional handlever

TYPE	CODE	DESCRIPTION
AL01/M10x200	170013020	For lever L, height 200 mm / 7.87 in

II Ports plug

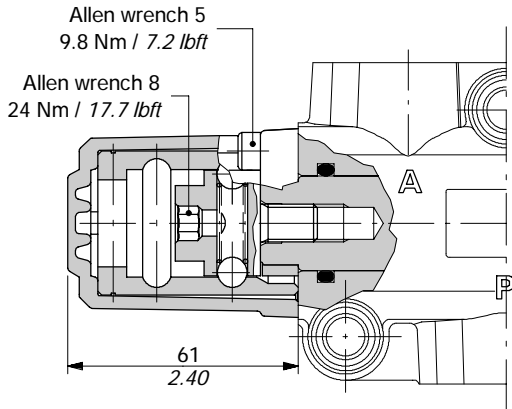
TYPE	CODE	DESCRIPTION
G3/4	3XTAP732200*	Body conversion from 3-way to 2-way circuit

NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

12 kit: with detent

Detent in positions 1 and 2.



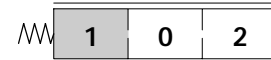
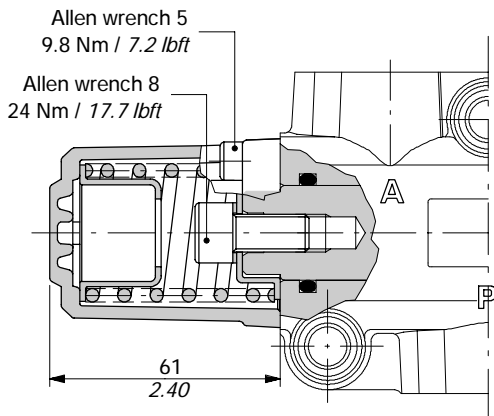
Operating features

Locking and unlocking force : ±10%

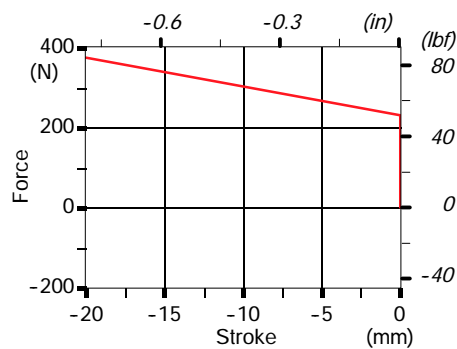
With spring return

17 kit

Spring return in position 1.

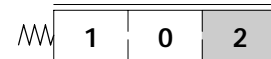
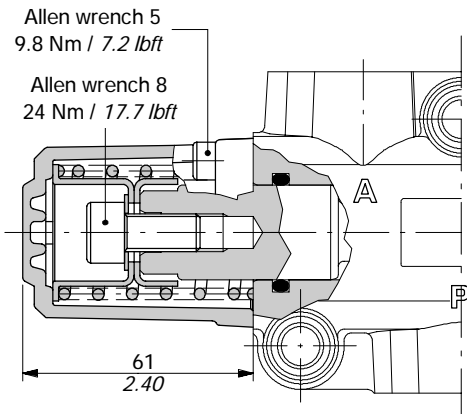


Force-Stroke diagram

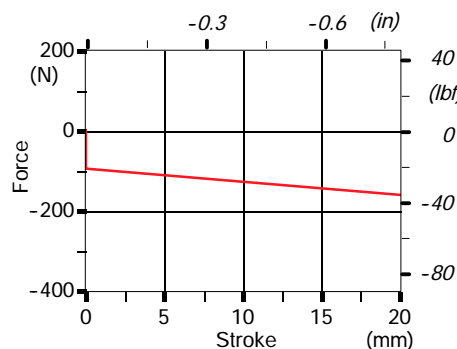


18MB kit

Spring return in position 2.

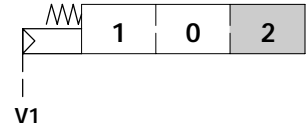
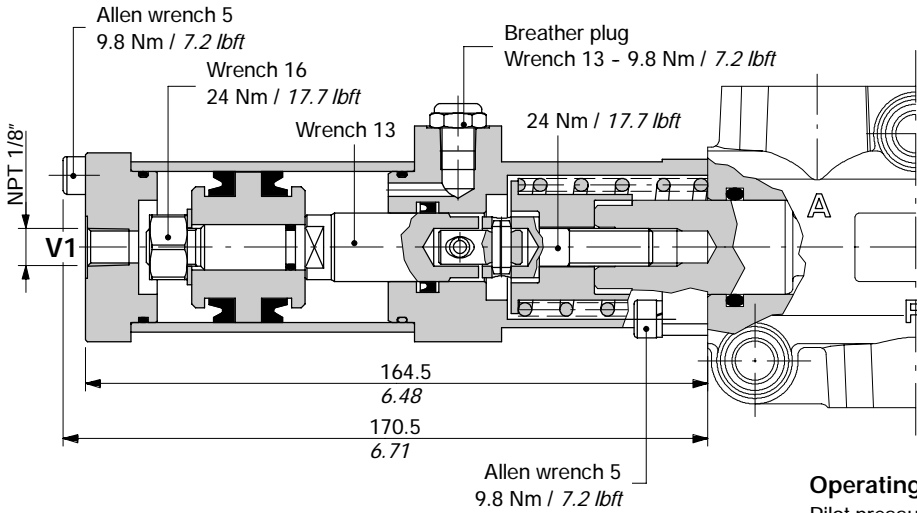


Force-stroke diagram



18P: ON/OFF pneumatic kit

With spring return in position 2.

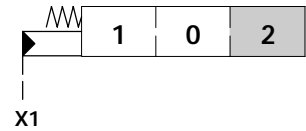
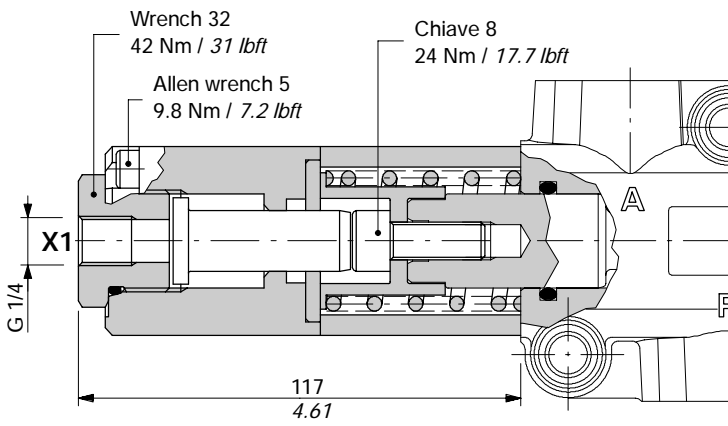


Operating features

Pilot pressure : min. 6 bar / 87 psi
max. 10 bar / 145 psi

18IA1: ON/OFF hydraulic kit

With high pressure pilot and spring return to position 2.



Operating features

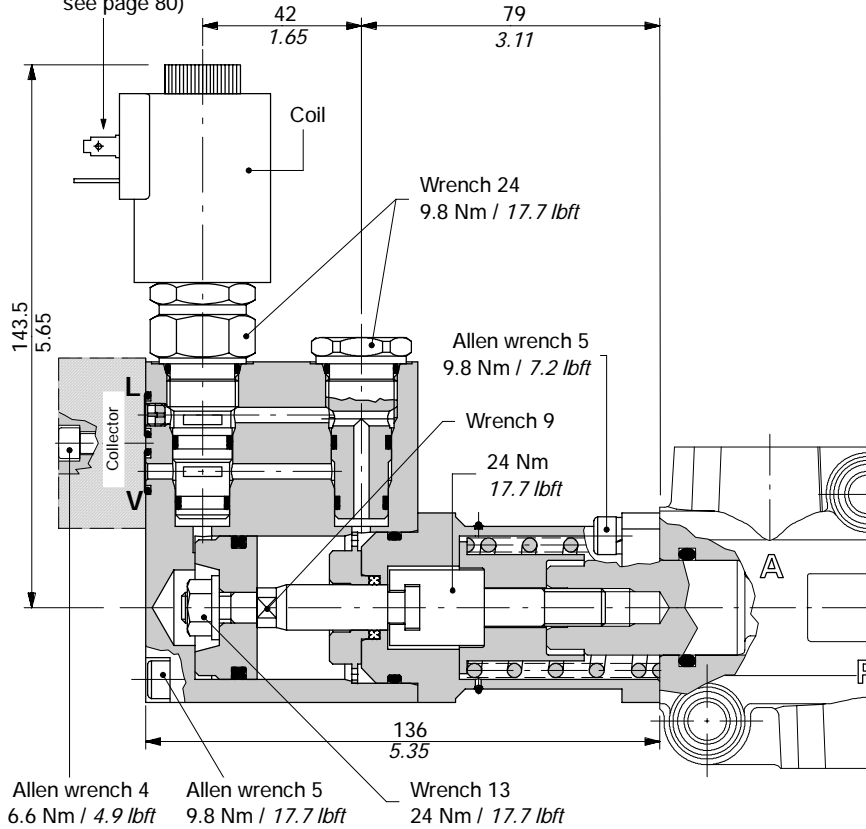
Pilot pressure : min. 30 bar / 435 psi
max. 250 bar / 3600 psi

Positioner kits

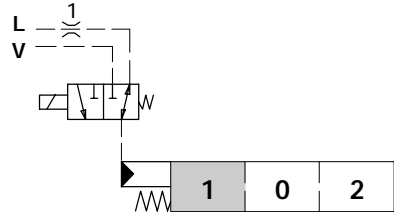
18E11: ON/OFF electro-hydraulic control

External pilot and drain, with spring return in position 2.

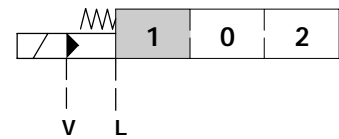
Connection ISO4400
(needs C02 connector,
see page 80)



Scheme



Scheme ISO 1219



Operating features

Pilot pressure : min.10 bar / 145 psi
 : max.50 bar / 725 psi
 Max. backpressure on
 drain port L : 4 bar / 58 psi

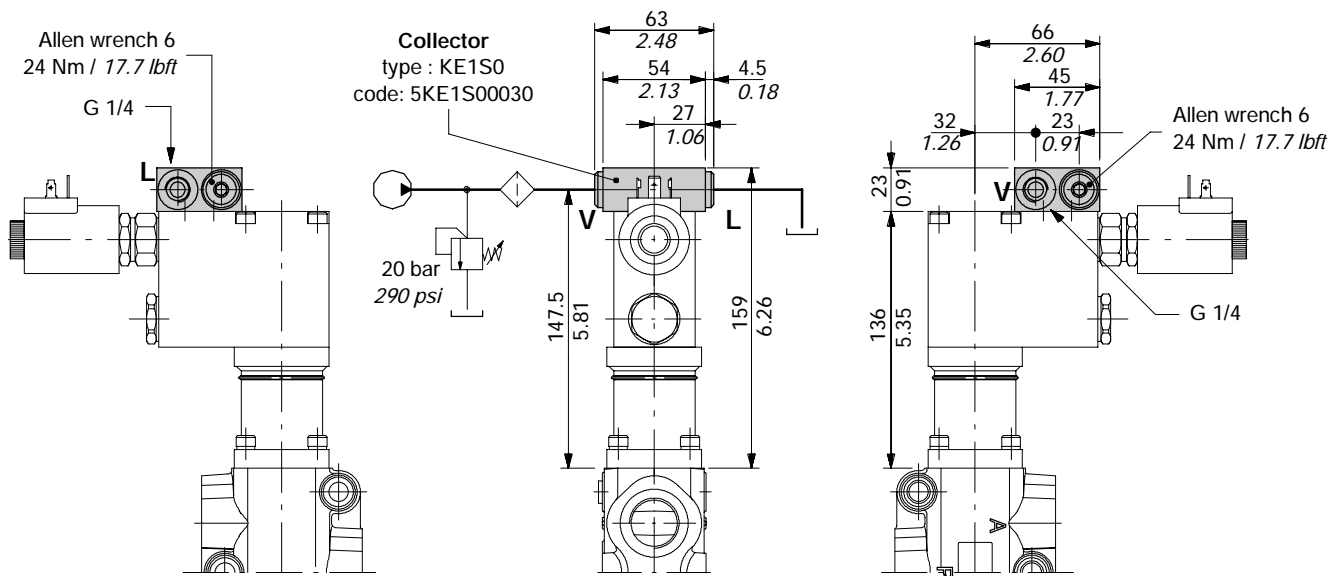
Solenoid operating features

Voltage tolerance : ±10%
 Power rating : 21 W
 Duty cycle : 100%

Ordering codes

CODE	DESCRIPTION
2S0EJ08002013	3-way solenoid valve
2X4350012	12VDC coil
2X4350024	24VDC coil

Collector kit for external pilot and drain

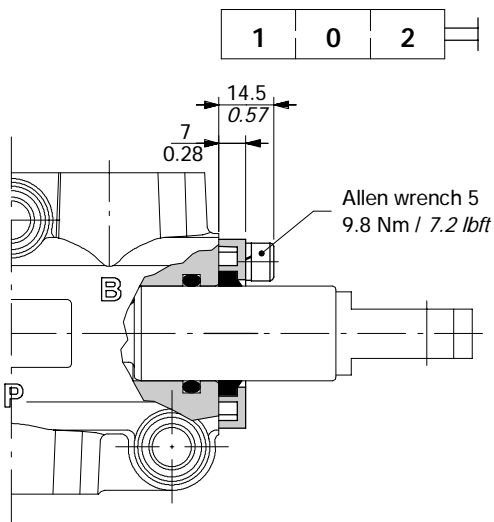


Ex: DF20/3A18E11SLC/KE1S0-12VDC

Controls prearrangement

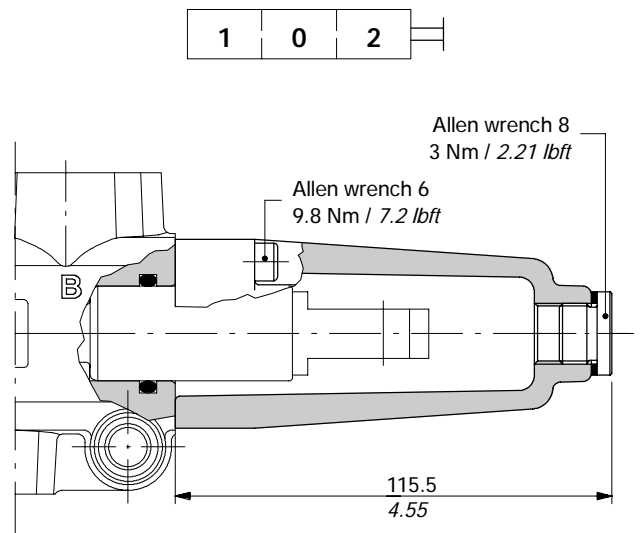
SLP kit

Mechanical control with dust-proof plate.



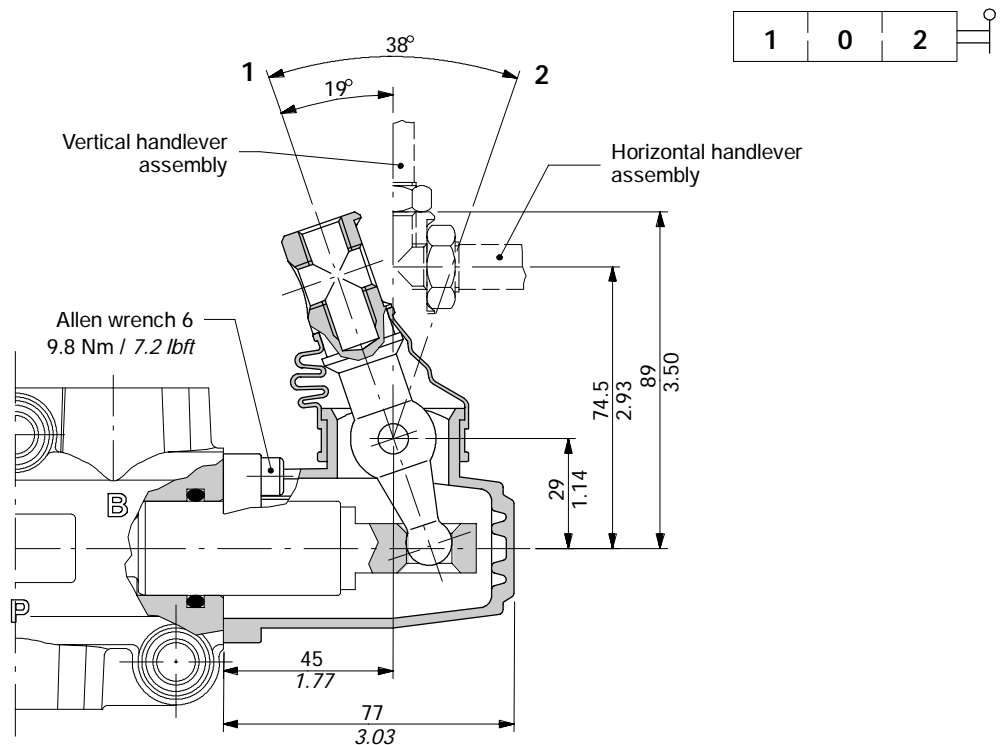
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



L lever control

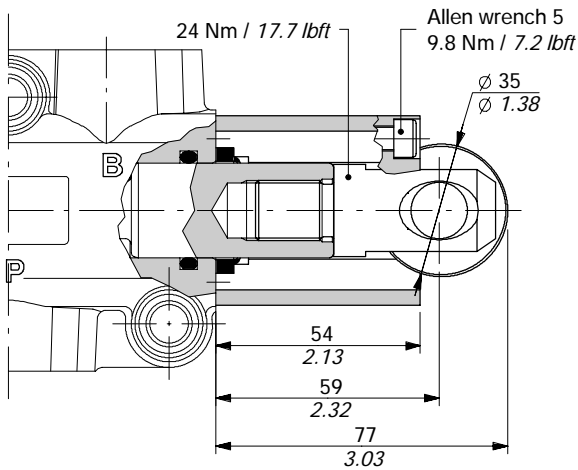
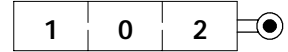
Aluminum with protection boot lever pivot box; it can be rotated 180° (execution L180).



Control kits

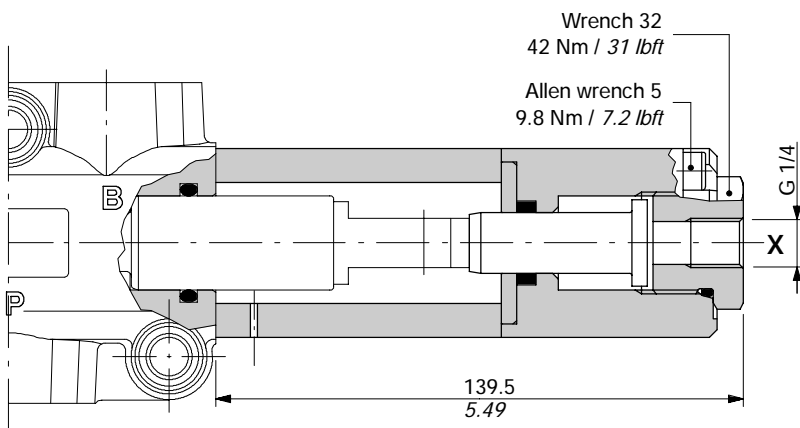
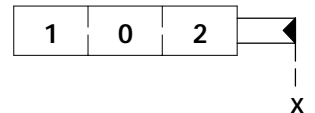
CB cam control

With bronze bearing; it must be coupled to 17 kit.



IA2: ON/OFF hydraulic control

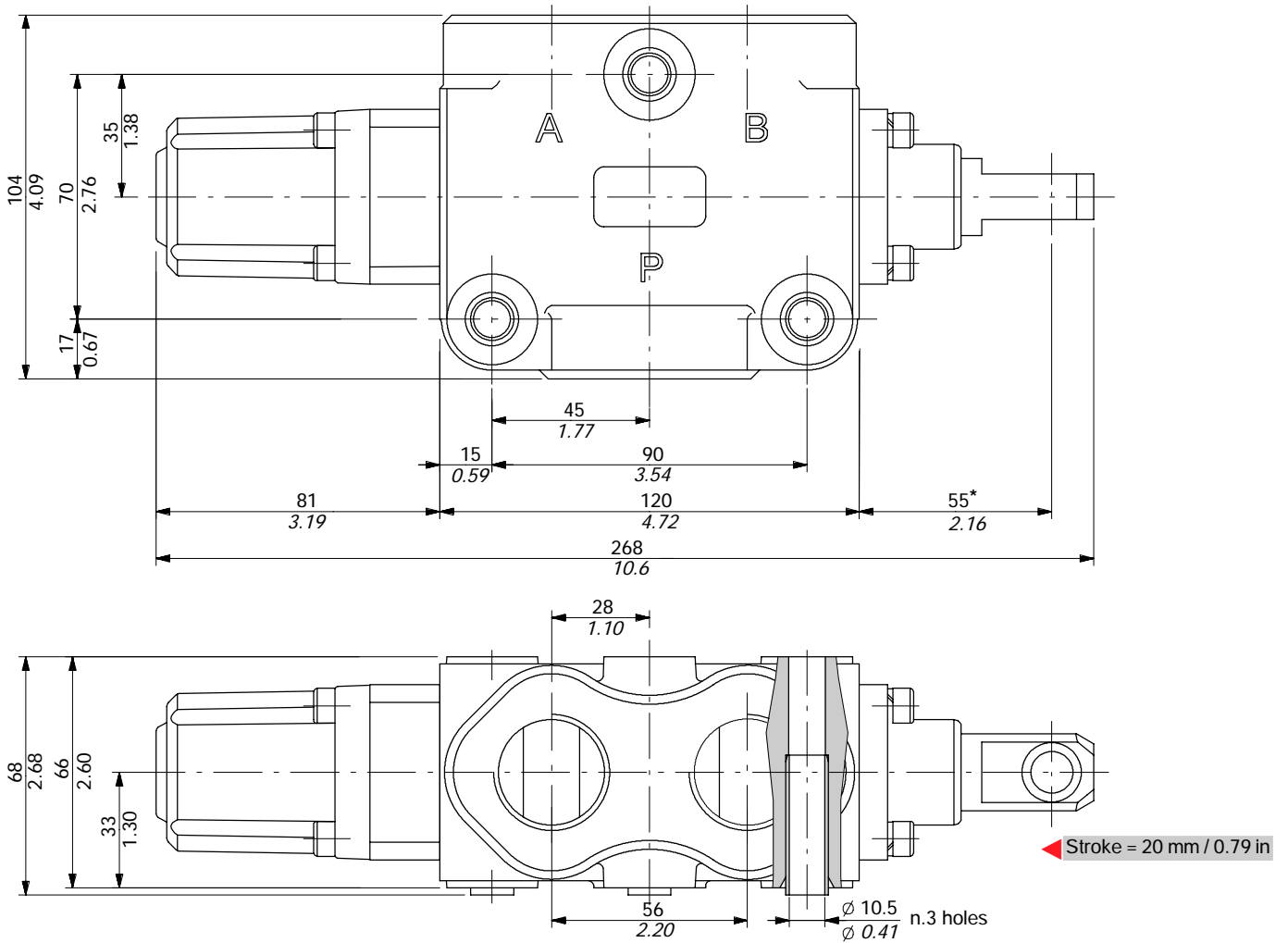
With high pressure pilot; it must be coupled to 17 kit.



Operating features

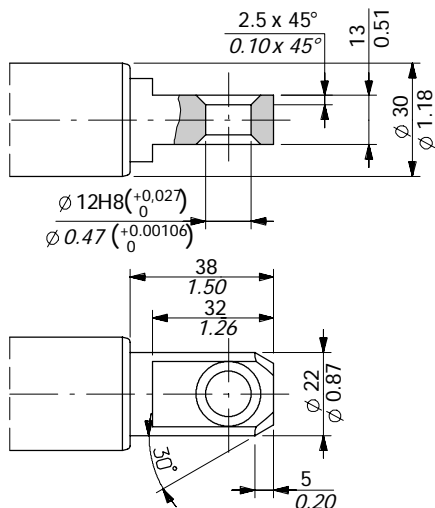
Pilot pressure : min. 30 bar / 435 psi
 max. 250 bar / 3600 psi

3-way DF25/3 valve

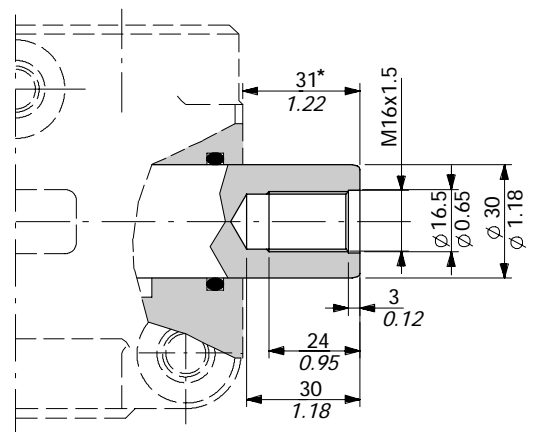


Spool end

Standard end



Rotary cam prearrangement

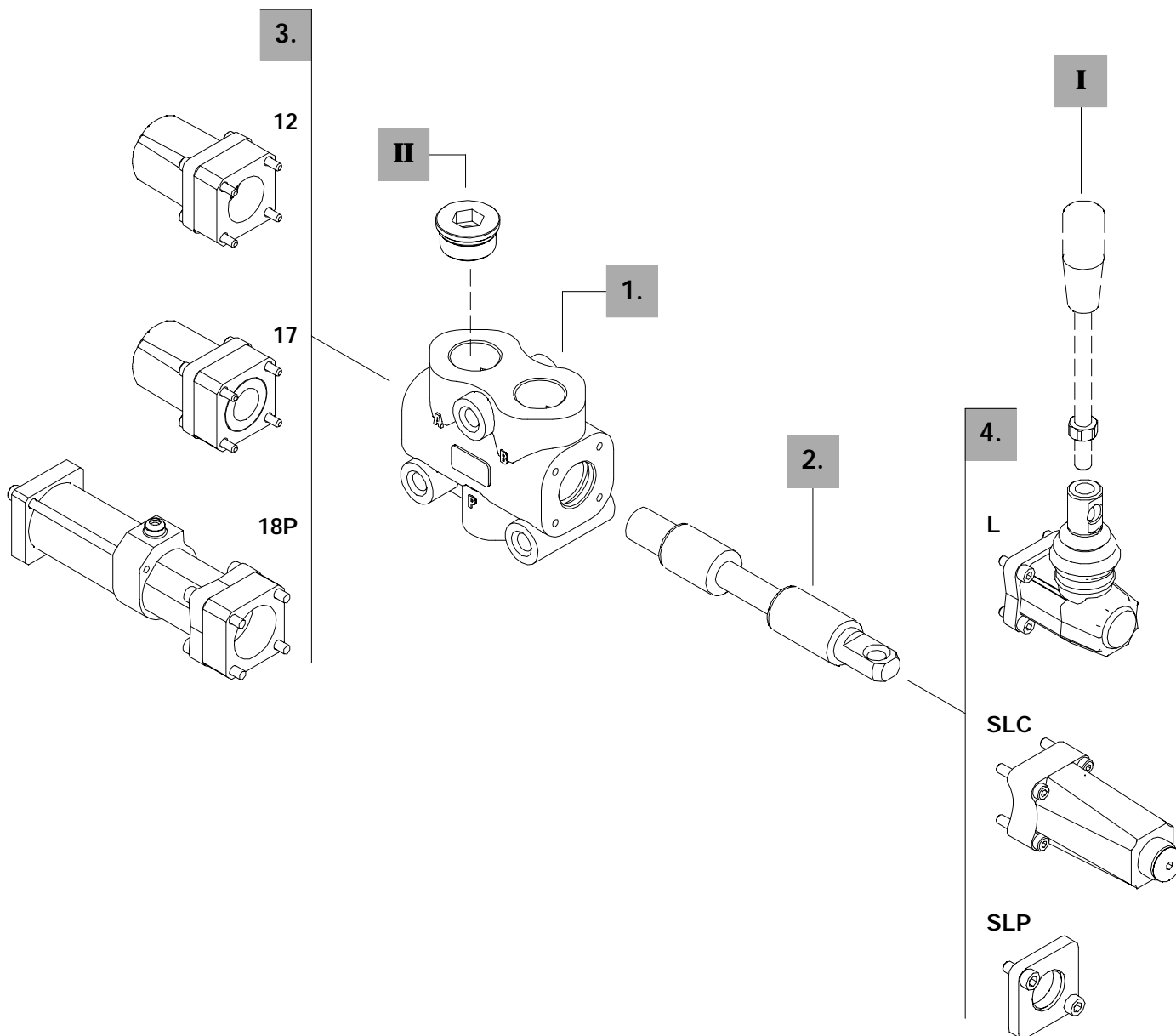


NOTA (*) - With spool out (positioner kit type 17)

Ordering codes

Description example :

Diverter valve DF25/3 A 17 SLP
 1. 2. 3. 4.



3-way**1. Body kit ***

TYPE	CODE	DESCRIPTION
DF25/3	5CO2271300	Standard body kit, BSP threaded

Include body and seals

2. Spool options

TIPO	CODICE	DESCRIZIONE
A	3CAS125310	3-way, 2 positions with ports connected in transit position
B	3CAS125410	3-way, 2 positions with ports closed in transit position
AC	3CAS125320	As type A prearranged for cam control
BC	3CAS125420	As type B prearranged for cam control

3. Positioner kits *page 42*

TYPE	CODE	DESCRIPTION
12	5V12125000	Detent in positions 1 and 2
17	5V17125000	Spring return in position 1
18P	5V18125700	ON/OFF pneumatic kit with spring return in position 2
18E11	5V18125350	12VDC ON/OFF electro-hydraulic kit with spring return in position 2
	5V18125351	24VDC ON/OFF electro-hydraulic kit with spring return in position 2

4. Control kits *page 45*

TYPE	CODE	DESCRIPTION
SLP	5COP125000	Without lever box with dust-proof plate kit
SLC	5COP220000	Without lever box with endcap
L	5LEV120000	Standard lever box
IA2	5IDR520000*	ON/OFF high pressure kit
CB	5CAM125020	Cam kit

I Optional handlever

TYPE	CODE	DESCRIPTION
AL01/M10x200	170012020	For lever L, height 200 mm / 7.87 in

II Ports plug

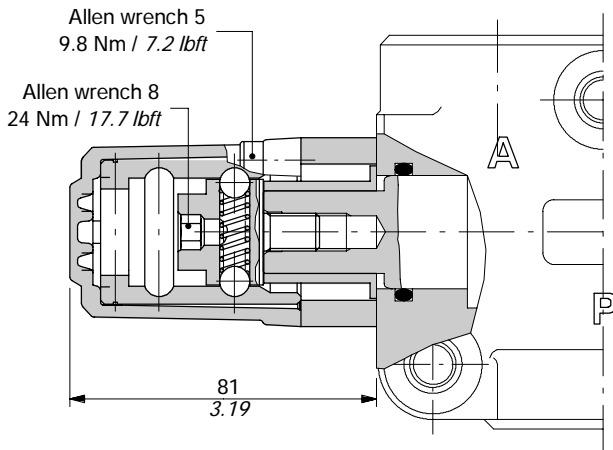
TYPE	CODE	DESCRIPTION
G1	3XTAP740210*	Body conversion from 3-way to 2-way circuit

NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

12 kit: with detent

Detent in positions 1 and 2.

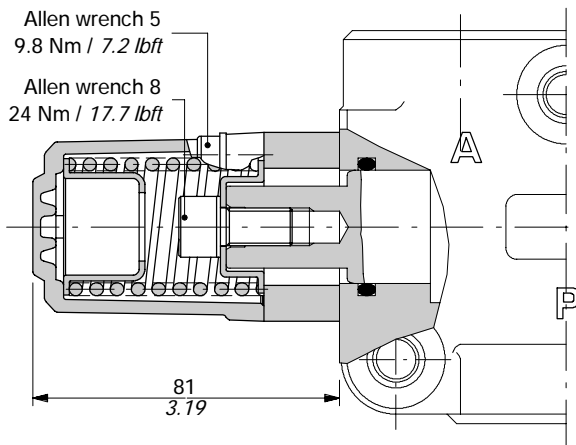


Operating features

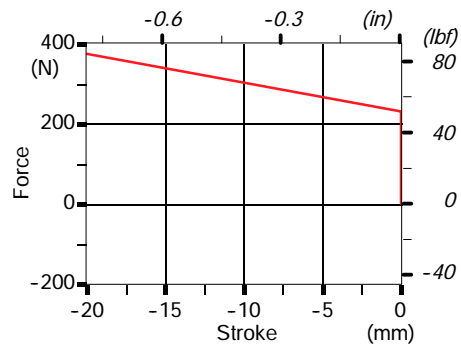
Locking and unlocking force : ±10%

17 kit: with spring return

Spring return in position 1.

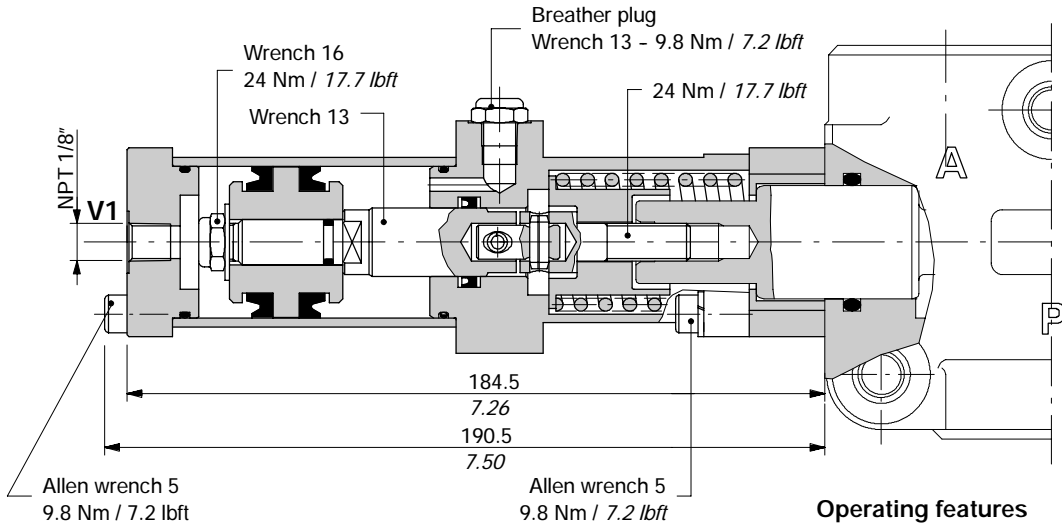
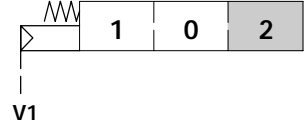


Force-Stroke diagram



18P: ON/OFF pneumatic kit

With spring return in position 2.



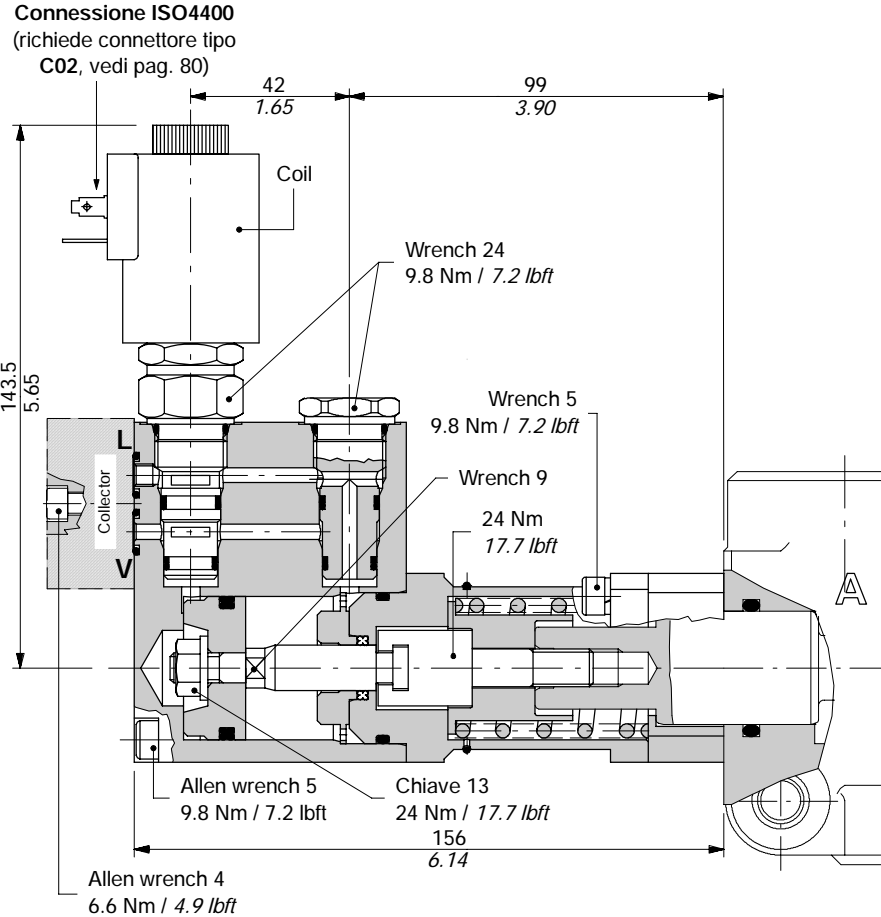
Operating features

Pilot pressure : min. 7 / 102 psi
 max. 10 bar / 145 psi

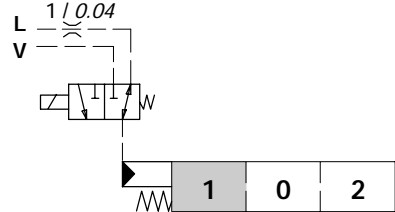
Positioner kits

18E11: ON/OFF electro-hydraulic control

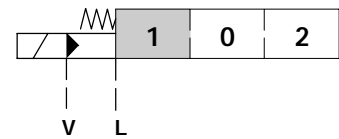
External pilot and drain, with spring return in position 2.



Scheme



Scheme ISO 1219



Operating features

Pilot pressure : min.10 bar / 145 psi
: max.50 bar / 725 psi
Max. backpressure on drain port L : 4 bar / 58 psi

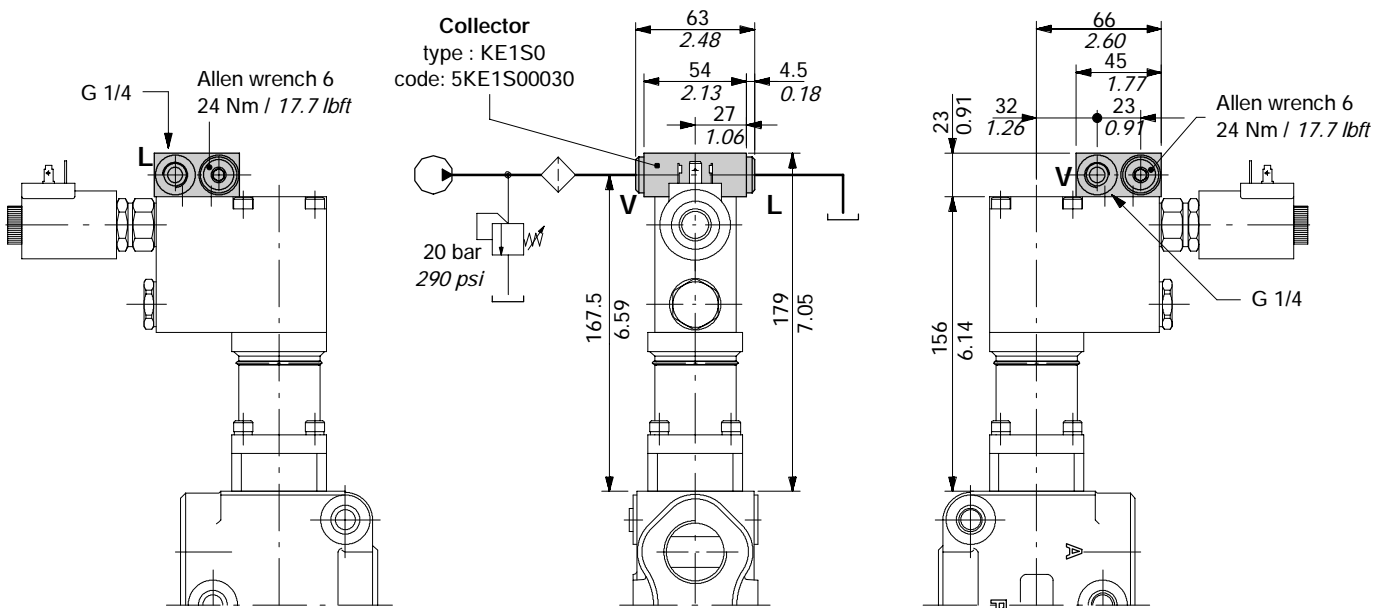
Solenoid operating features

Voltage tolerance : ±10%
Power rating : 21 W
Duty cycle : 100%

Ordering codes

CODE	DESCRIPTION
2S0EJ08002013	3-way solenoid valve
2X4350012	12VDC coil
2X4350024	24VDC coil

Collector kit for external pilot and drain

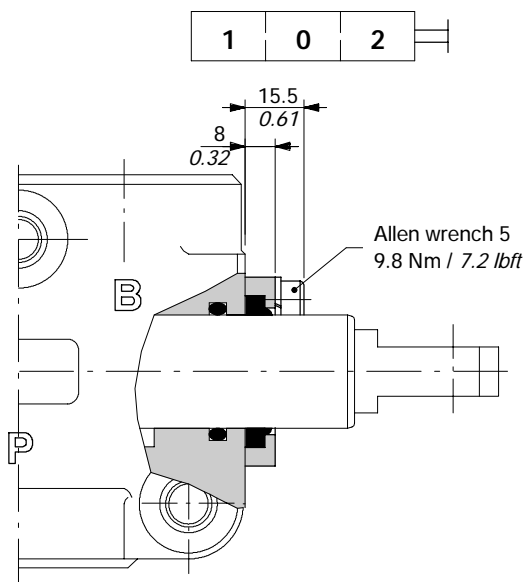


Ex: DF25/3A18E11SLC/KE1S0-12VDC

Controls prearrangement

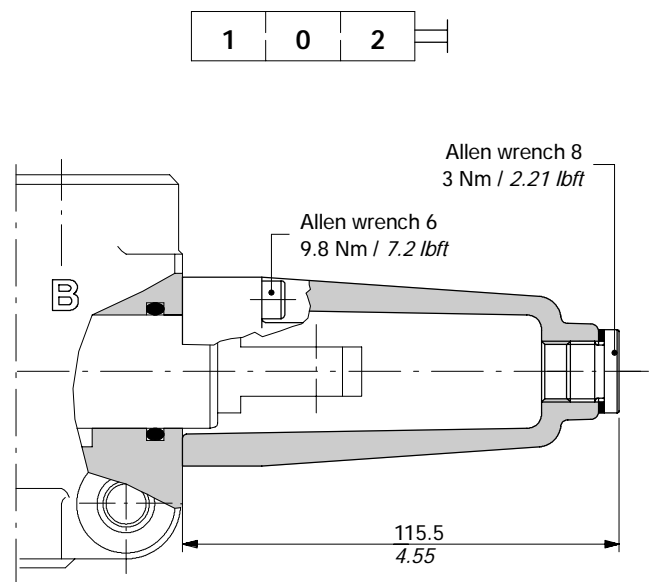
SLP kit

Mechanical control with dust-proof plate.



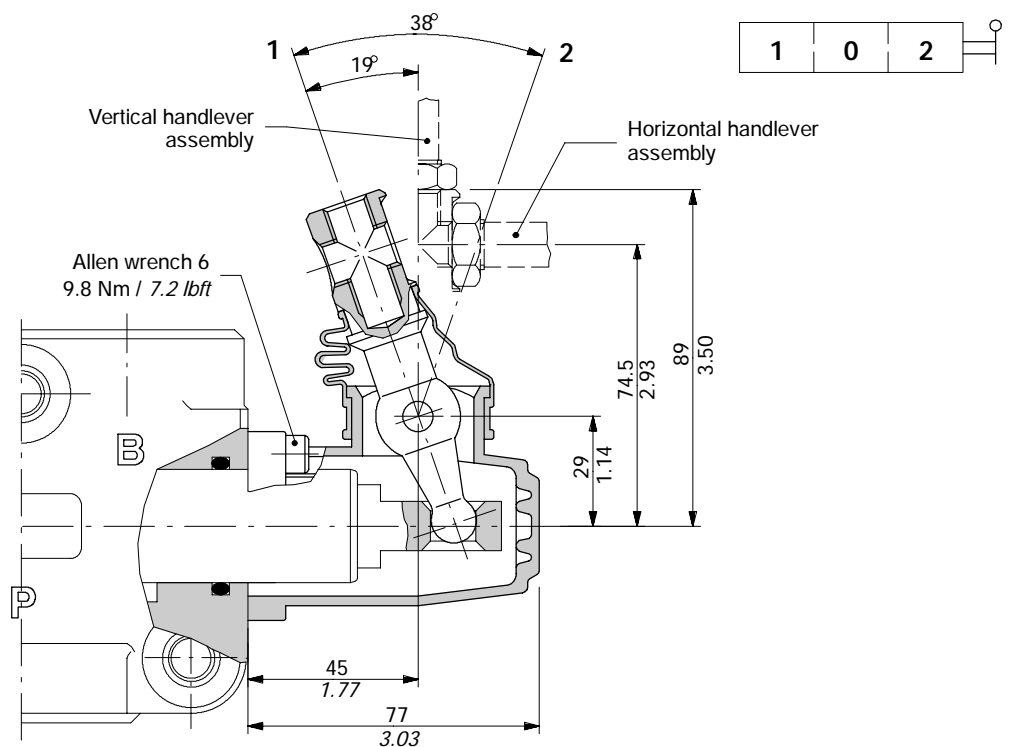
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



L lever control

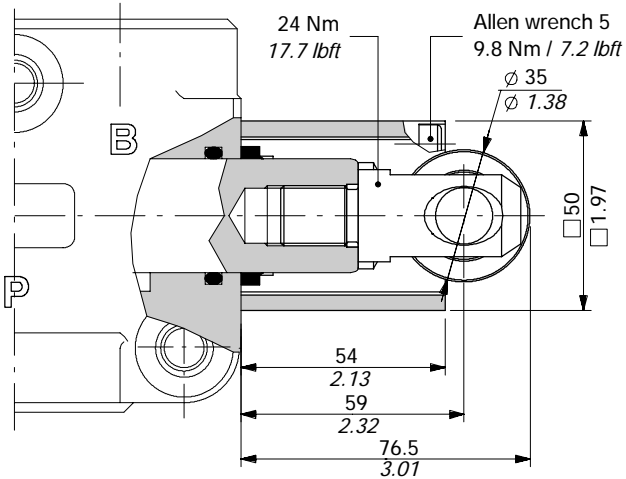
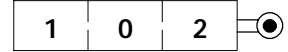
Aluminum with protection boot lever pivot box; it can be rotated 180° (execution L180).



Control kits

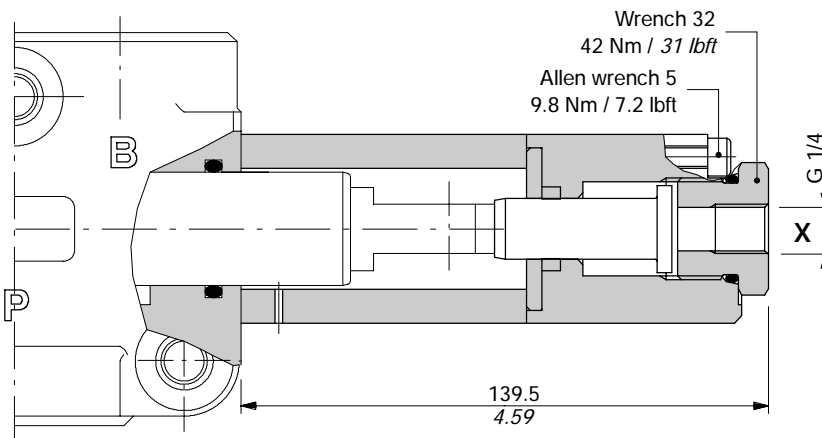
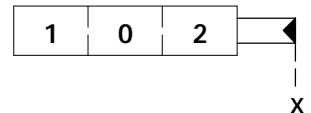
CB cam control

With bronze bearing; it must be coupled to 17 kit.



IA2: ON/OFF hydraulic control

With high pressure pilot; it must be coupled to 17 kit.



Operating features

Pilot pressure : min. 30 bar / 435 psi
 max. 250 bar / 3600 psi



Contents

Working conditions 48

Hydraulic circuit 49

DFE052

Dimensional data 53

Ordering codes 56

Positioner kits 59

Solenoid parts 60

DFE10

Dimensional data 61

Ordering codes 62

Positioner kits 64

Solenoid parts 64

DFE20

Dimensional data 66

Ordering codes 68

Positioner kits 70

Solenoid parts 70

Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of $46 \text{ mm}^2/\text{s}$ - 46 cSt viscosity at 40°C temperature.

		DFE052	DFE10	DFE20
N. of available ways		2-3-6-8	3-6	3-6
Nominal flow rating	<i>in steady conditions</i>	60 l/min	90 l/min	140 l/min
Operating pressure (maximum)*	<i>without drain</i>	200 bar 2900 psi	200 bar 2900 psi	200 bar 2900 psi
	<i>with drain</i>	315 bar 4600 psi	315 bar 4600 psi	315 bar 4600 psi
Available nominal voltage	VDC	12-24 48-110	12-24-48	12-24
	VAC 50Hz (with C04 connector)	24-110-220	110-220	24-110-220
Potenza nominale	W	38	60	60
Internal leakage A(B)→T	$\Delta p=100 \text{ bar } 1450 \text{ psi}$ <i>with fluid and valve at 40°C</i>	7 cm ³ /min 0.43 in ³ /min	10 cm ³ /min 0.61 in ³ /min	15 cm ³ /min 0.92 in ³ /min
Fluid		Mineral base oil		
Fluid temperature	<i>with NBR seals</i>	da -20° a 80°C		
	<i>with FPM seals</i>	da -20° a 100°C		
Viscosity	<i>operating range</i>	da 15 a $75 \text{ mm}^2/\text{s}$ - <i>from 15 to 75 cSt</i>		
	<i>minimum</i>	$12 \text{ mm}^2/\text{s}$ - 12 cSt		
	<i>maximum</i>	$400 \text{ mm}^2/\text{s}$ - 400 cSt		
Max. level of contamination		19/16 - ISO 4406		
Ambient temperature		da -40° a 60°C		

NOTE - For different working conditions please contact Sales Dept.

(*) - This value is reachable only in steady conditions; for dynamic working conditions see the pages from 49 to 52.

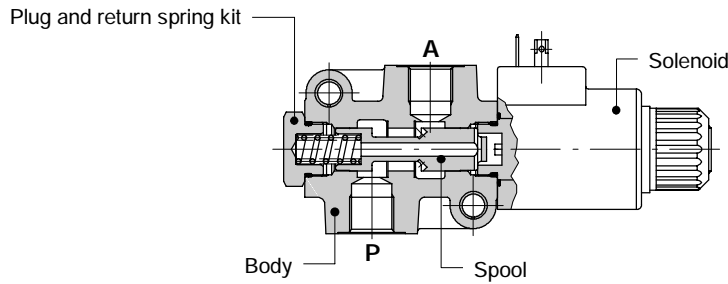
Standard threads

ALL PORTS	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)
DFE052	G 3/8	3/4-16 (SAE 8)
DFE10	G 1/2	7/8-14 (SAE 10)
DFE20	G 3/4	1 1/16-12 (SAE 12)
DRAIN PORT		
L	G 1/4	9/16-18 (SAE 6) 7/16-20 (SAE4)*

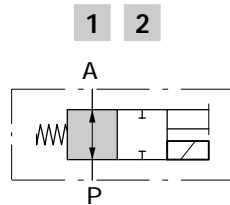
(*) For DFE052/8, DFE20 valves

2-way

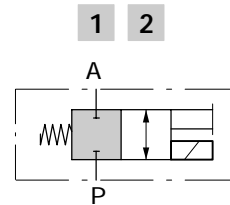
Available as body only in DFE052/2 execution; for other executions 3-way body is used.



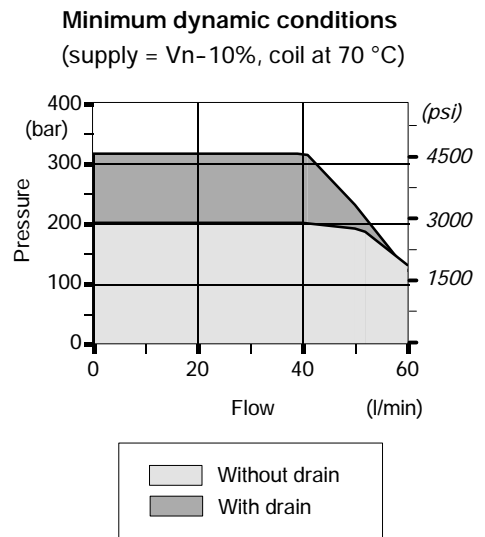
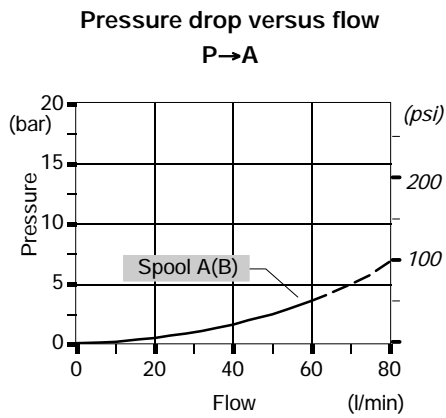
Spool type A



Spool type B



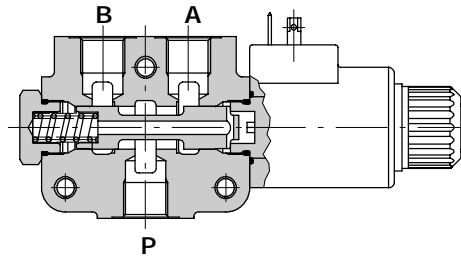
Performance data



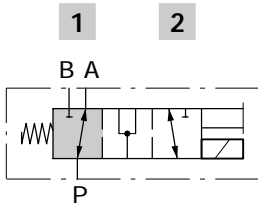
Hydraulic circuit

3-way

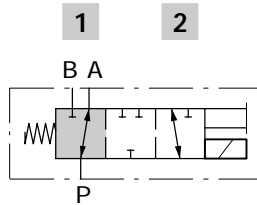
It's possible to obtain 2-way diverter valve plugging port A or B.



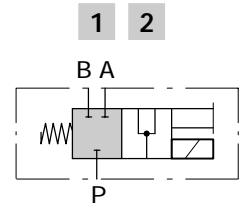
Spool type A



Spool type B



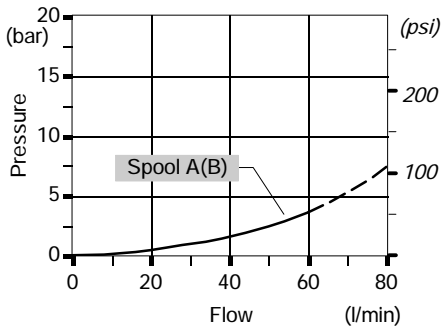
Spool type D



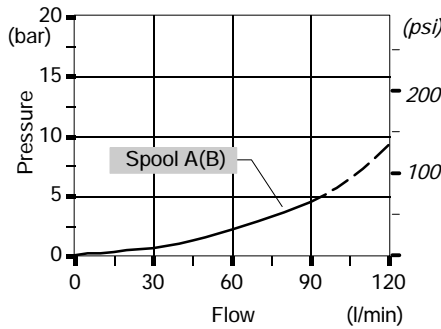
Performance data

Pressure drop versus flow: P→A(B)

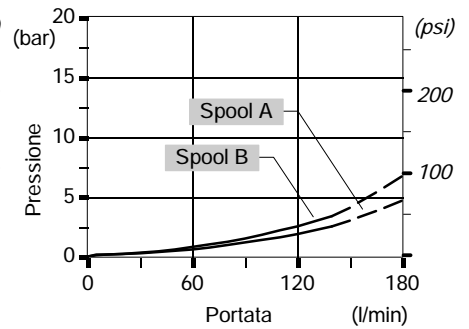
DFE052/3



DFE10/3

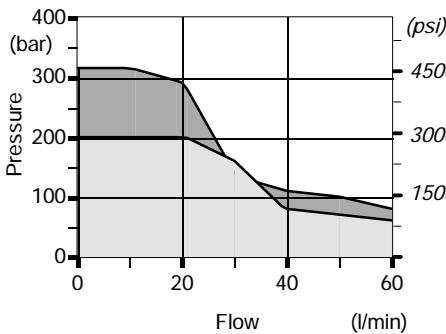


DFE20/3

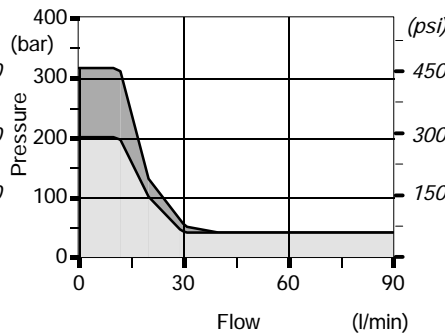


Minimum dynamic conditions: (supply = Vn-10%, coil at 70 °C)

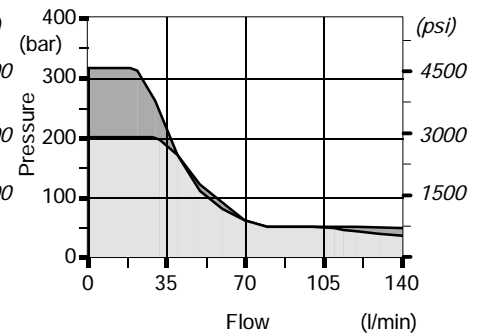
DFE052/3



DFE10/3

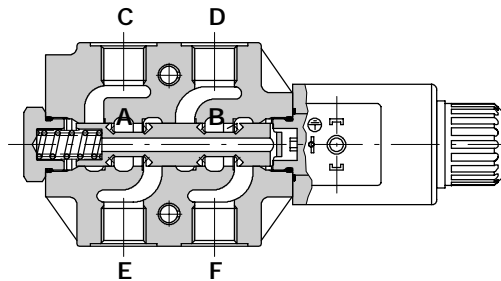


DFE20/3



Legend: With drain Without drain

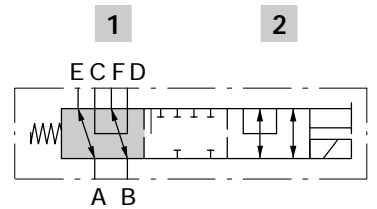
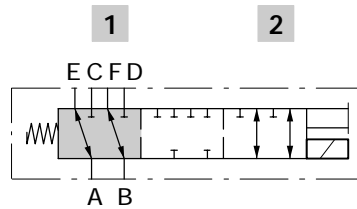
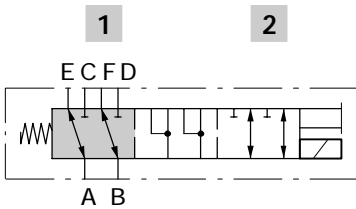
6-way



Spool type A

Spool type B

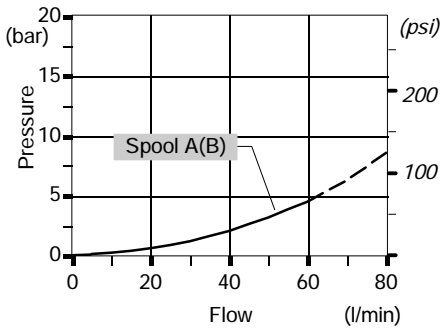
Spool type H



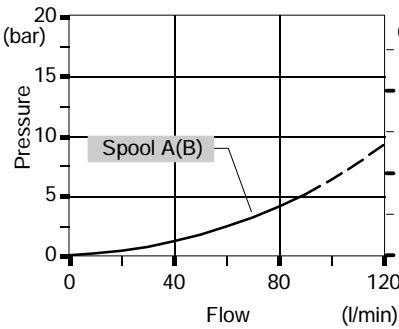
Performance data

Pressure drop versus flow: A→E(C).

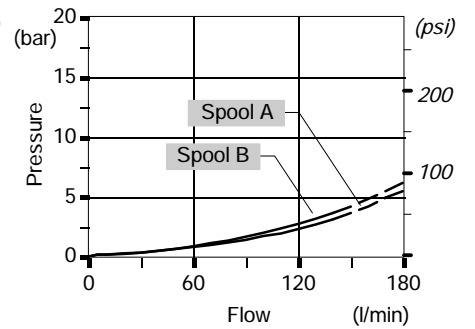
DFE052/6



DFE10/6

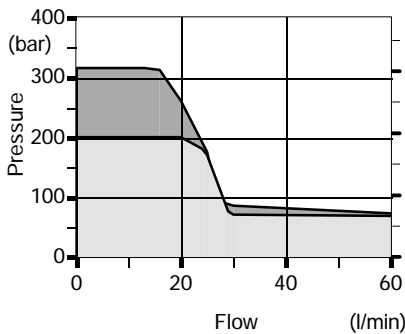


DFE20/6

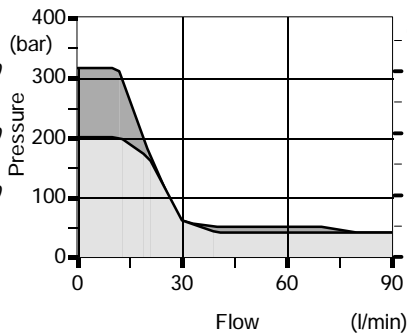


Minimum dynamic conditions: (supply = Vn-10%, coil at 70 °C)

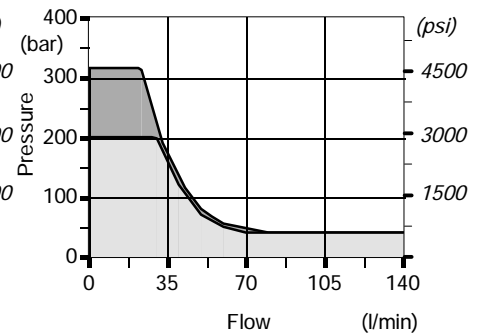
DFE052/6



DFE10/6



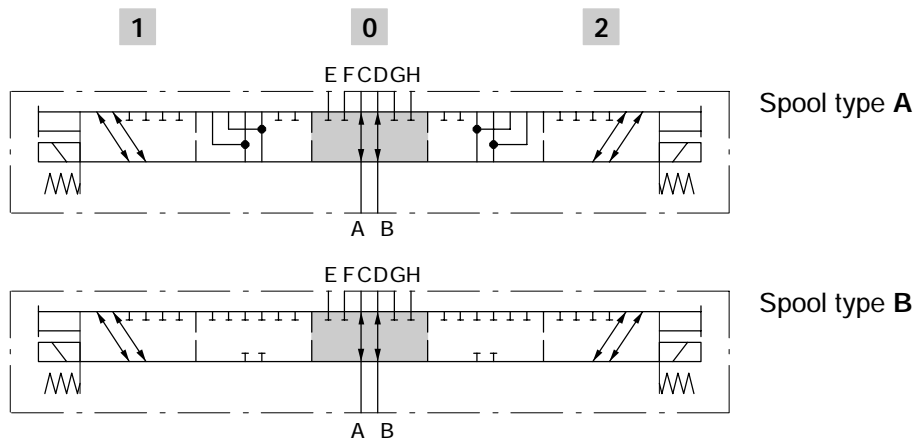
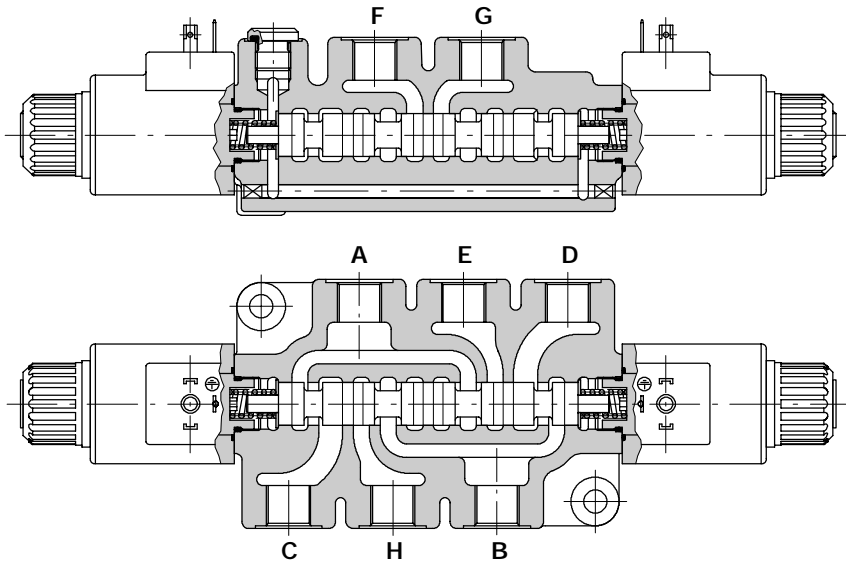
DFE20/6



■ With drain □ Without drain

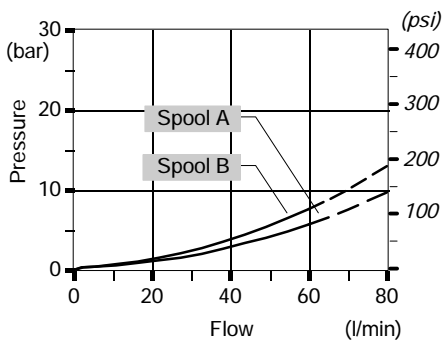
Hydraulic circuit

8-way

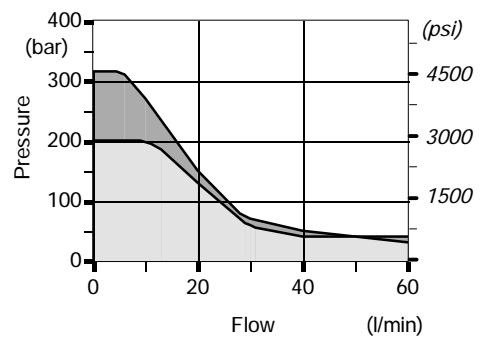


Performance data

Pressure drop versus flow
A→C

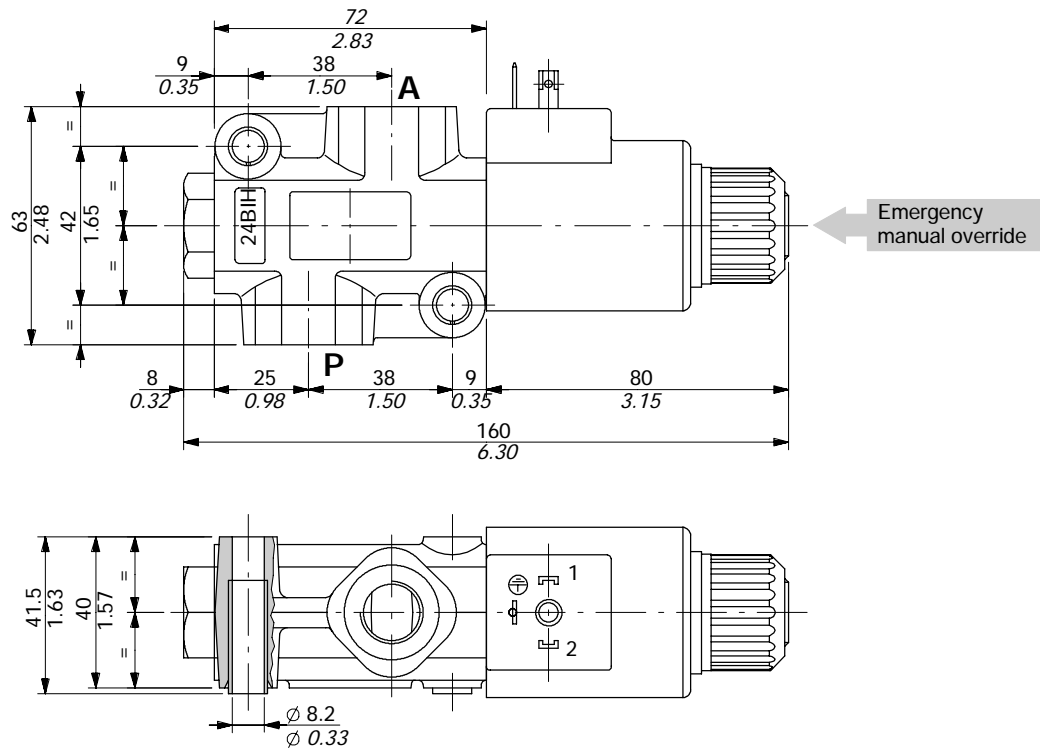


Minimum dynamic conditions
(supply = Vn-10%, coil at 70 °C)

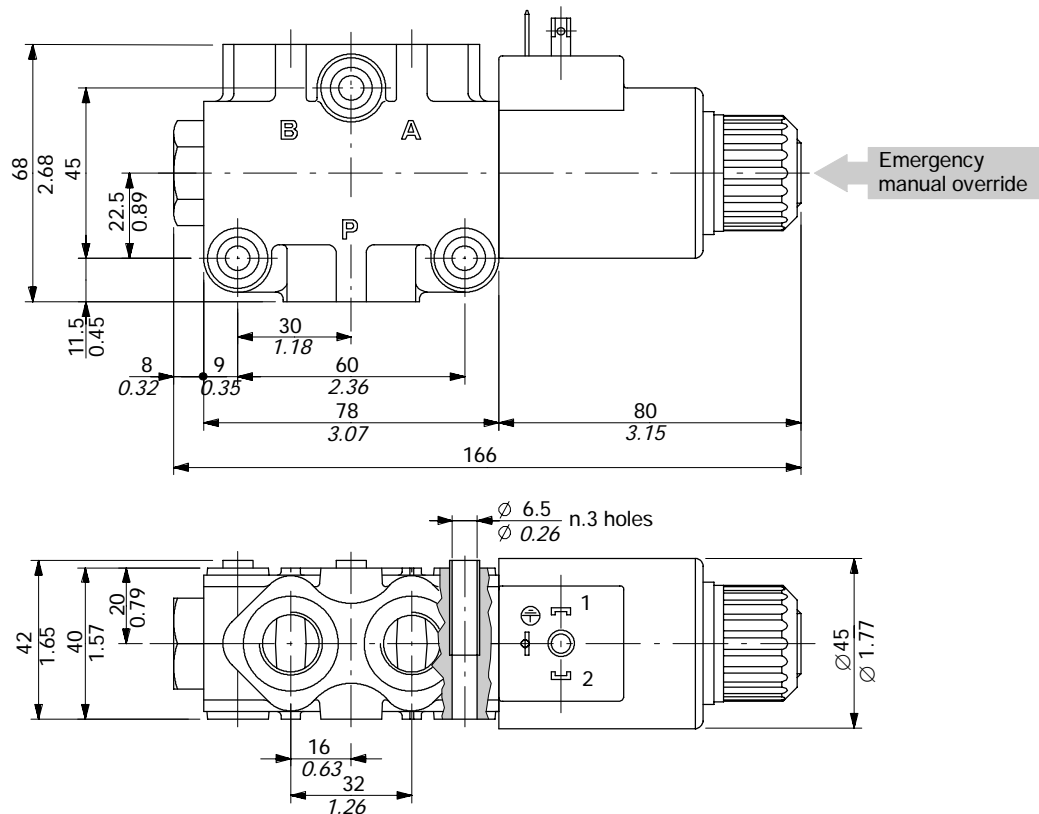


With drain Without drain

2-way DFE052/2 valve

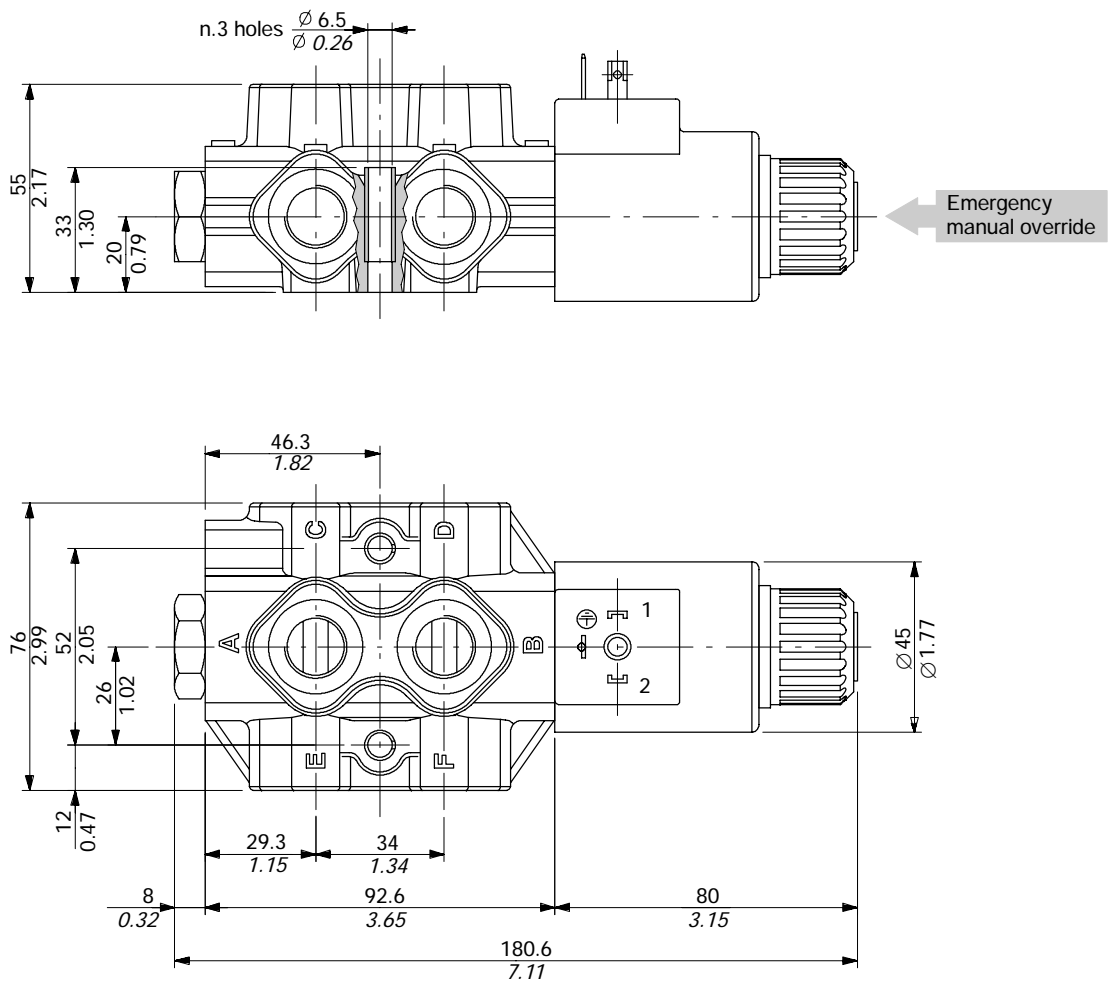


3-way DFE052/3 valve

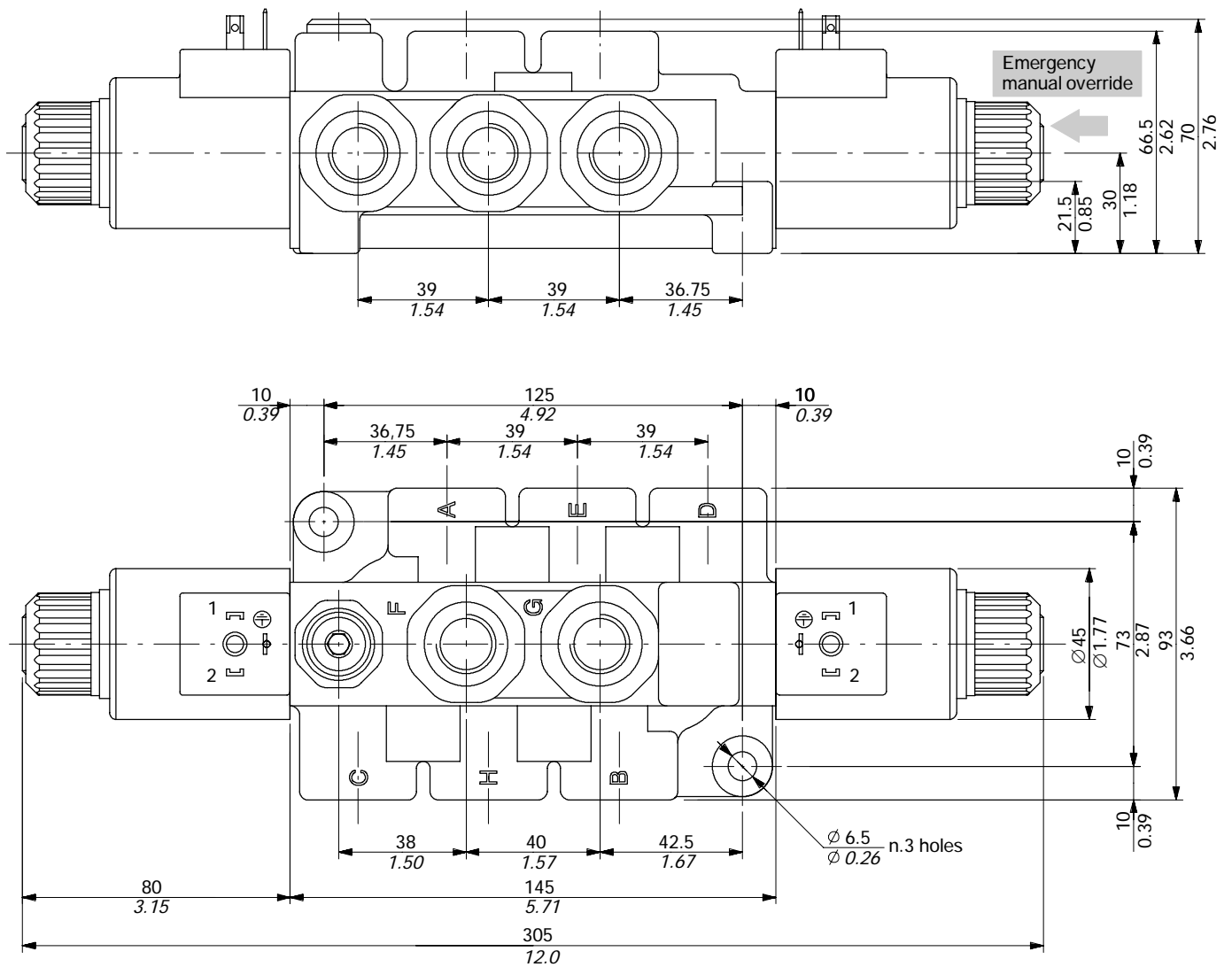


Dimensional data

6-way DFE052/6 valve



8-way DFE52/8 valve



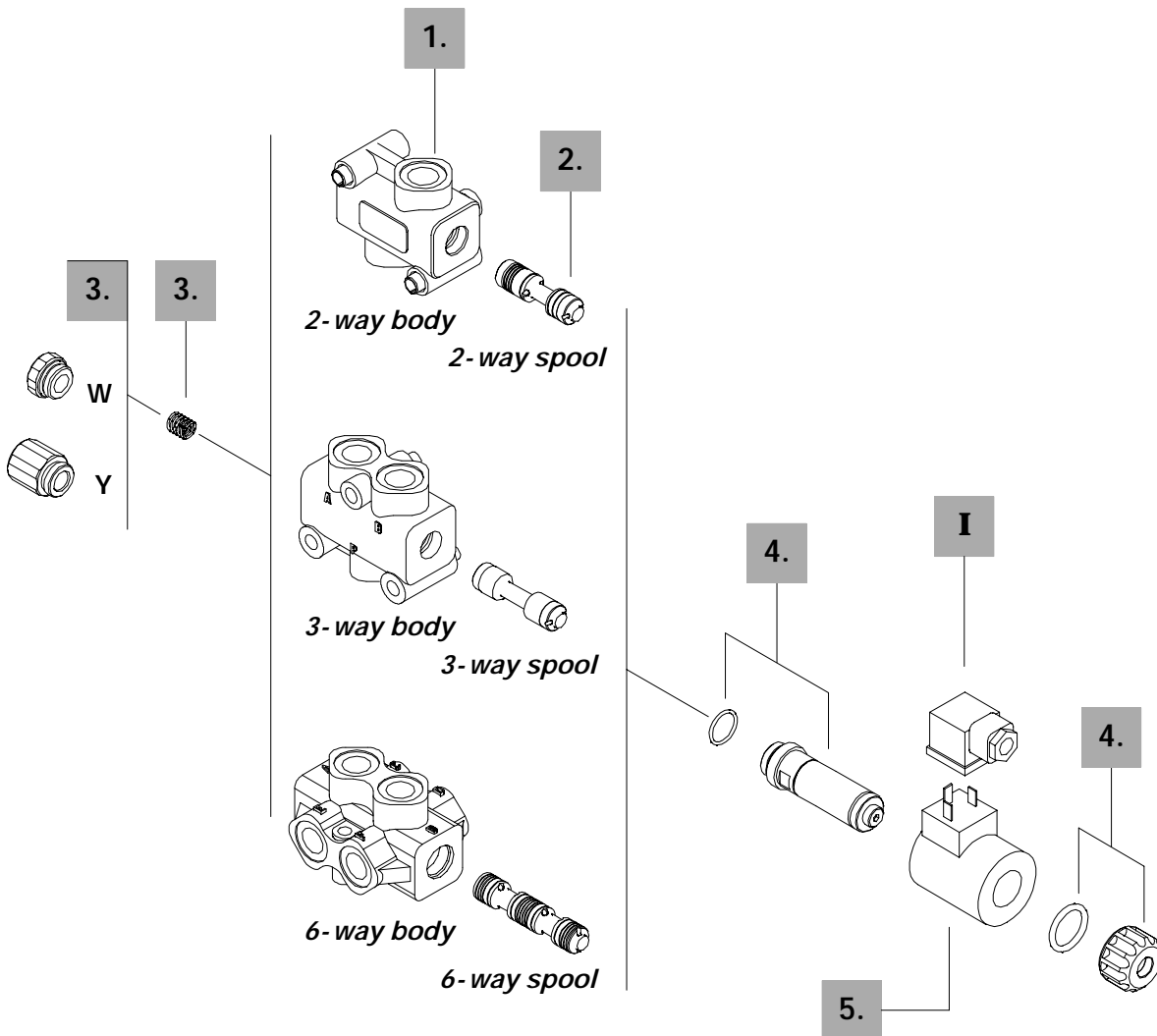
Ordering codes

Description example :

Diverter valve DFE052/2 A 18 ES - W 201-12VDC - <CVN>

1.
 2.
 3.
 4.
 3.
 5.

Valve is supplied painted as standard, with one coat of Primer black antirust paint



2-way**1. Body ***

TYPE	CODE	DESCRIPTION
DFE052/2	3CO2220321	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS105245	2 positions with open centre in neutral
B	3CAS105145	2 positions with closed centre in neutral

3-way**1. Body ***

TYPE	CODE	DESCRIPTION
DFE052/3	3CO2221325	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS105345	3-way, 2 positions with ports connected in transit position
B	3CAS105445	3-way, 2 positions with ports closed in transit position
D	3CAS105546	3-way, 2 positions, without transit position, with ports closed in rest position

6-way**1. Body ***

TYPE	CODE	DESCRIPTION
DFE052/6	3CO2222326	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS105645	6-way, 2 positions with ports connected in transit position
B	3CAS105746	6-way, 2 positions with ports closed in transit position
H	3CAS105845	6-way, 2 positions, D↔C in position 1, F↔E in position 2, ports closed in transit position

NOTE (*) - Codes are referred to **BSP** thread.**3. Positioner kits** *page 59*

TYPE	CODE	DESCRIPTION
18...W	5TAP001	Spring return in position 1
18...Y	5GIU001 *	Spring return in position 1, with G1/4 drain port

4. Tube assembly *page 60*

TYPE	CODE	DESCRIPTION
ES	5SOL515000	Spring return in position 1 (without coil)

5. Coil options *page 60*

TYPE	CODE	DESCRIPTION
101	-	Without coil (only with tube kit)
201-12VDC	4SOL515012	Coil with 12VDC nominal voltage
201-24VDC	4SOL515024	Coil with 24VDC nominal voltage
231-12VDC	4SOL515011	Coil with 12VDC nominal voltage and "DEUTSCH DT06-2S" connection

I Optional connectors *page 80*

TYPE	CODE	DESCRIPTION
C02	2X1001010	According to ISO4400
C09	5CON130020	Type DEUTSCH "DT04-2P"

Ordering codes

Description example :

Diverter valve **DFE052/8 B 8 ES3 - W 201-12VDC - <CVN>**

1.

2.

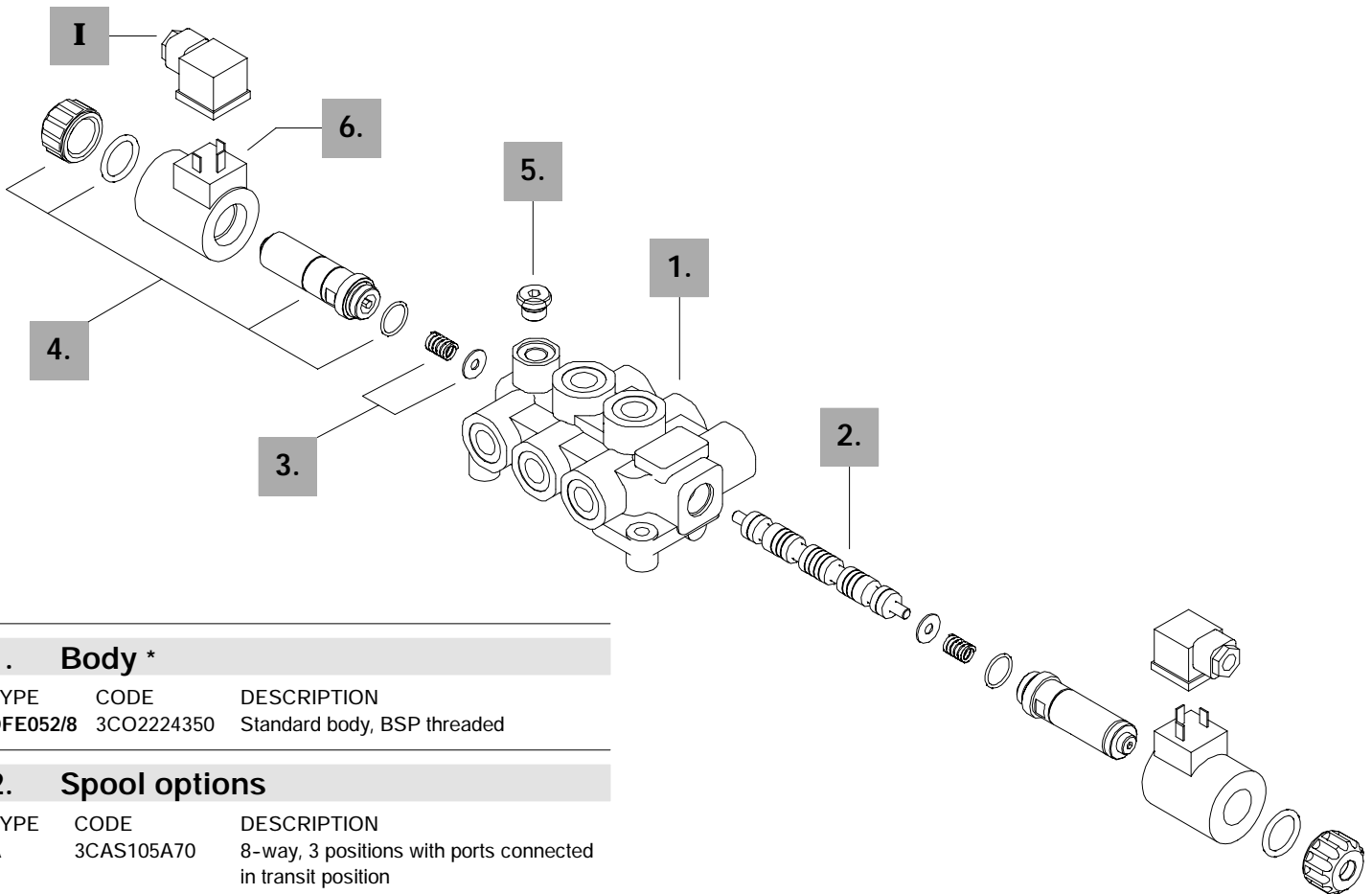
3.

4.

5.

6.

Valve is supplied painted as standard, with one coat of Primer black antirust paint



1. Body *

TYPE	CODE	DESCRIPTION
DFE052/8	3CO2224350	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS105A70	8-way, 3 positions with ports connected in transit position
B	3CAS105B70	8-way, 3 positions with ports closed in transit position

3. Positioner kit page 59

TYPE	CODE	DESCRIPTION
8	5V08001	Spring return in neutral position

4. Tube assembly page 60

TYPE	CODE	DESCRIPTION
ES3	5SOL515000	With spring return in neutral position (without coil)

5. Drain options * page 59

TYPE	CODE	DESCRIPTION
W	3XTAP719150	With drain plugged
Y	-	With G 1/4 drain port

NOTE (*) - Code are referred to **BSP** thread.

6. Coil options page 60

TIPO	CODICE	DESCRIZIONE
101	-	Without coil (only with tube kit)
201-12VDC	4SOL515012	Without coil (only with tube kit)
201-24VDC	4SOL515024	Coil with 24VDC nominal voltage
231-12VDC	4SOL515011	Coil with 12VDC nominal voltage and "DEUTSCH DT06-2S" connection

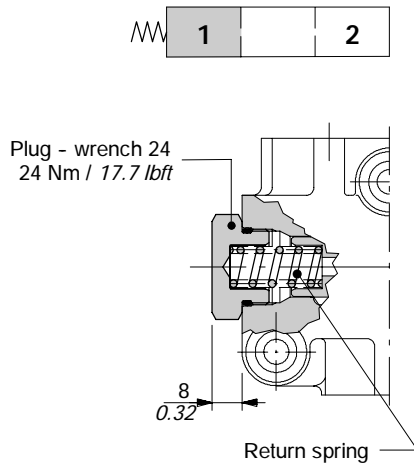
I Optional connectors page 80

TYPE	CODE	DESCRIPTION
C02	2X1001010	According to ISO4400
C09	5CON130020	Type DEUTSCH "DT04-2P"

DFE052/2 - /3 - /6

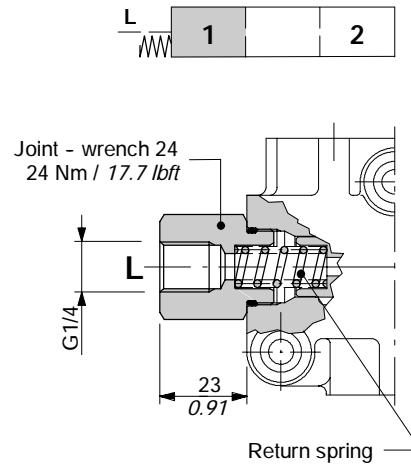
18W kit

Spring return in position 1 with plug.



18Y kit

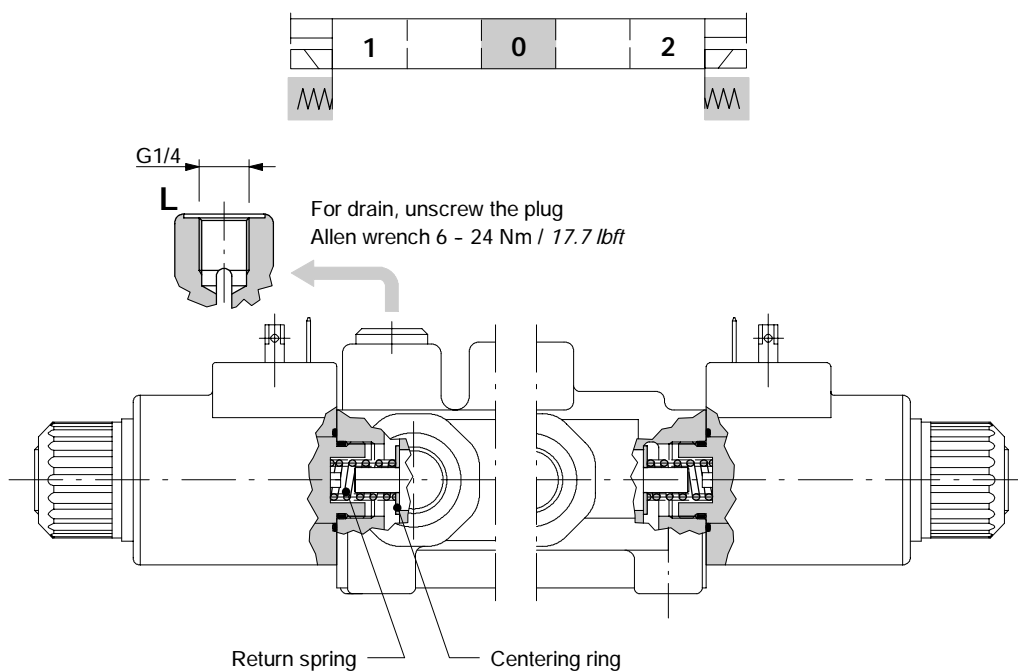
Spring return in position 1, with G1/4 joint for drain.



DFE052/8

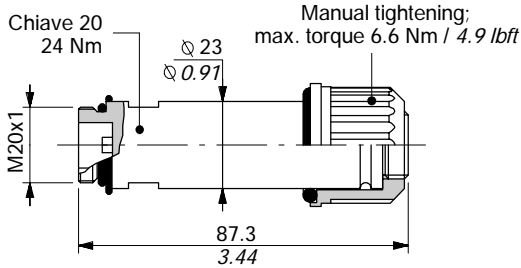
8 kit

Spring return in position 0.



Solenoid parts

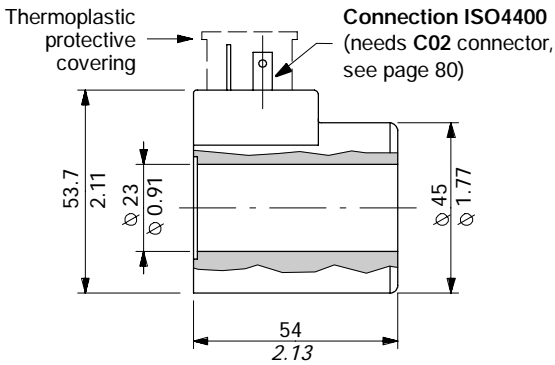
ES tube assembly



Operating features

Plunger stroke : 7.1 mm / 0.28 in

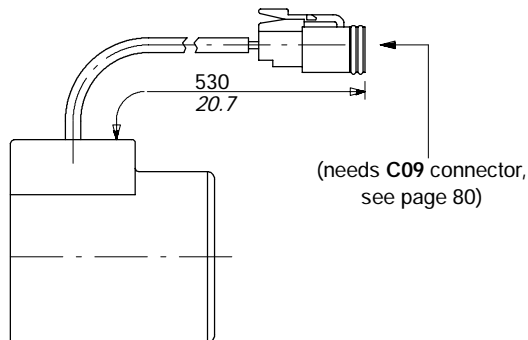
Coil options



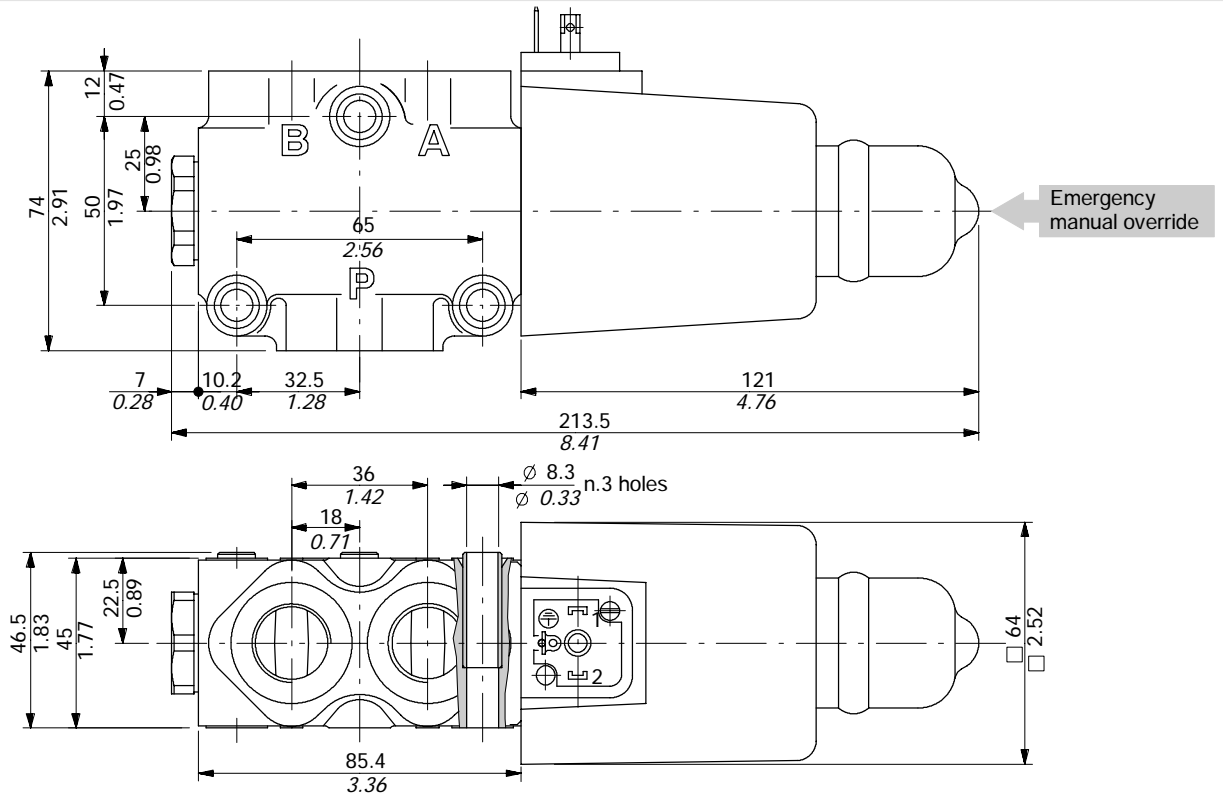
Operating features

Nominal voltage : 12VDC / 24VDC
 Nominal voltage tolerance ... : ±10%
 Power rating : 38 W
 Duty cycle : 100%
 Weather protection : IP66
 Coil insulation : Class H

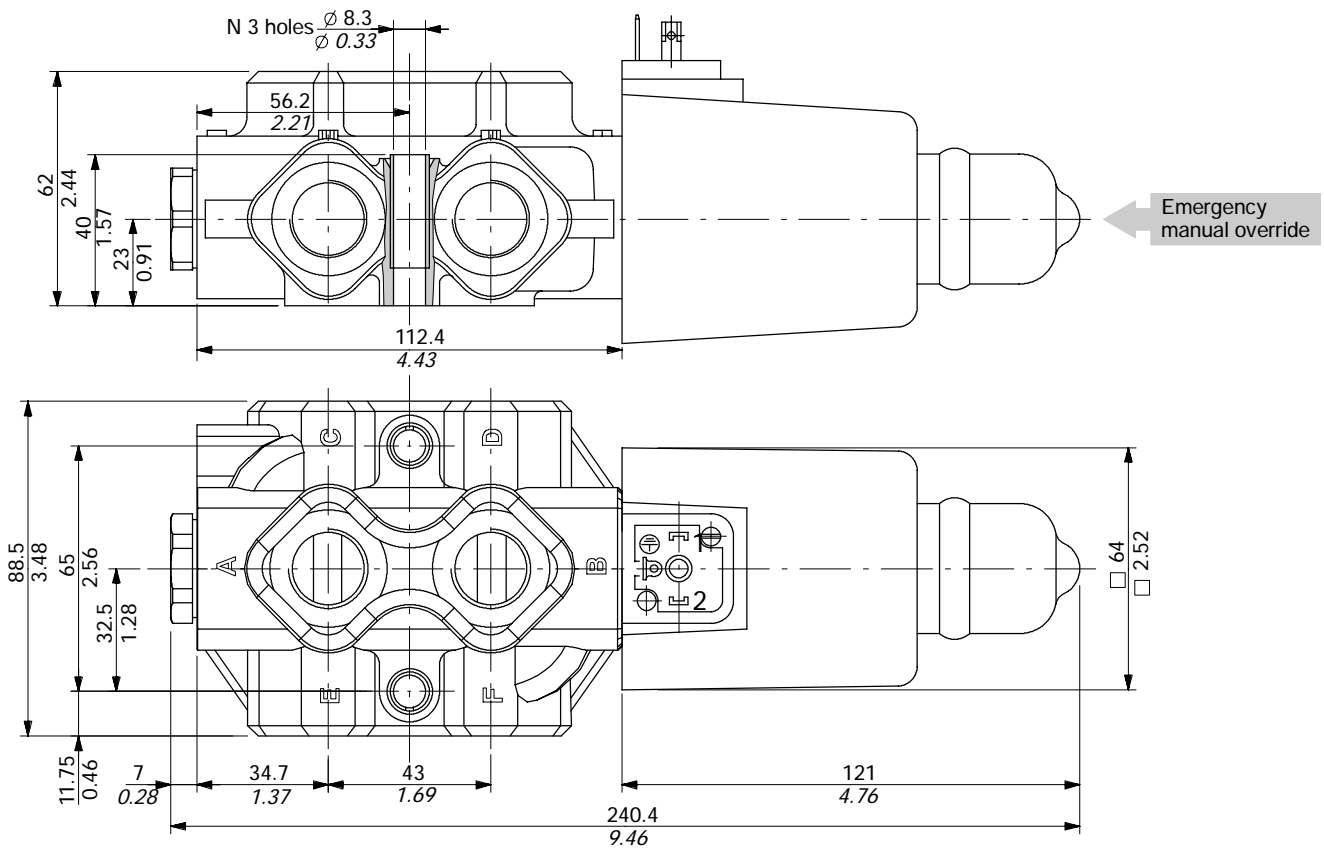
Optional coil with connector type
DEUTSCH "DT06-2S"



3-way DFE10/3 valve



6-way DFE10/6 valve



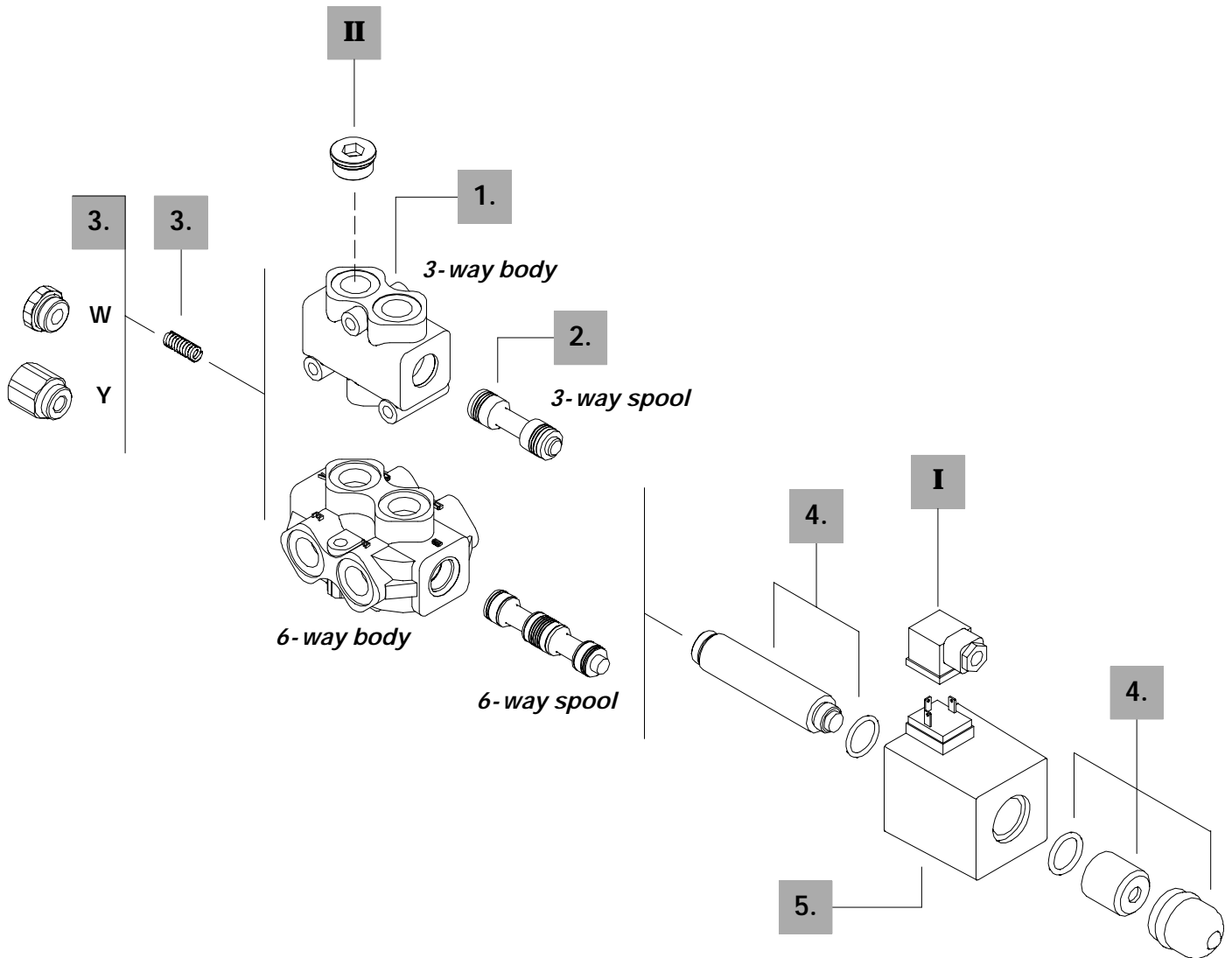
Ordering codes

Description example :

Diverter valve DFE10/3 A 18 ES - W 202-12VDC - <CVN>

1.
 2.
 3.
 4.
 3.
 5.

Valve is supplied painted as standard, with one coat of Primer black antirust paint



3-way**1. Body ***

TYPE	CODE	DESCRIPTION
DFE10/3	3CO2241320	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS110341	3-way, 2 positions with ports connected in transit position
B	3CAS110441	3-way, 2 positions with ports closed in transit position
D	3CAS110540	3-way, 2 positions, without transit position, with ports closed in rest position

6-way**1. Body ***

TYPE	CODE	DESCRIPTION
DFE10/6	3CO2242322	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS110641	6-way, 2 positions with ports connected in transit position
B	3CAS110741	6-way, 2 positions with ports closed in transit position
H	3CAS110840	6-way, 2 positions, D↔C in position 1, F↔E in position 2, ports closed in transit position
N	3CAS110952	6-way, 2 positions with ports closed in transit position, with check valve

3. Positioner kits *page 64*

TYPE	CODE	DESCRIPTION
18..W	5TAP002	Spring return in position 1
18..Y	5GIU004 *	Spring return in position 1, with G1/4 drain port

4. Tube assembly *page 64*

TYPE	CODE	DESCRIPTION
ES	5SOL516000	Spring return in position 1 (without coil)

5. Coil options *page 64*

TYPE	CODE	DESCRIPTION
102	-	Without coil (only with tube kit)
<u>VDC supply (connector C02)</u>		
202-12VDC	4SOL516012	Coil with 12VDC nominal voltage
202-24VDC	4SOL516024	Coil with 24VDC nominal voltage
202-48VDC	4SOL516048	Coil with 48VDC nominal voltage
<u>VAC supply (connector C04)</u>		
202-92VDC	4SOL516094	Coil with 92VDC nominal voltage (for 110VAC)
202-192VDC	4SOL516192	Coil with 192VDC nominal voltage (for 220VAC)

I Optional connectors *page 80*

TYPE	CODE	DESCRIPTION
C02	2X1001010	According ISO4400
C04	2X1001040	According to ISO4400 with rectifier

II Ports plug

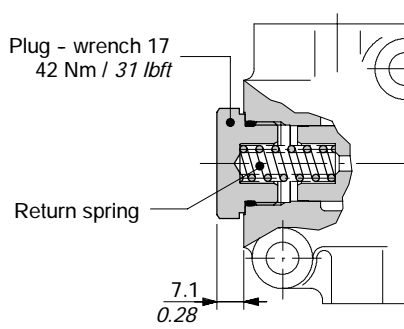
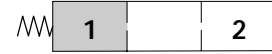
TYPE	CODE	DESCRIPTION
G1/2	3XTAP727180*	Body conversion from 3-way to 2-way circuit

NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

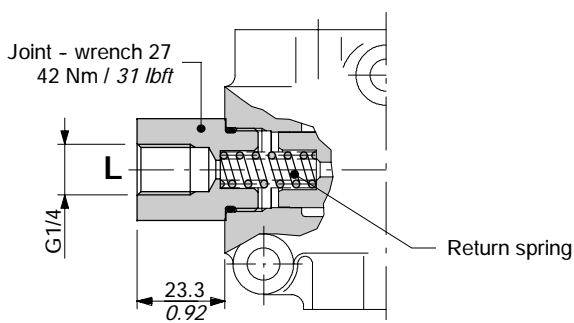
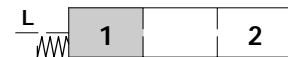
18W kit

Spring return in position 1 with plug.

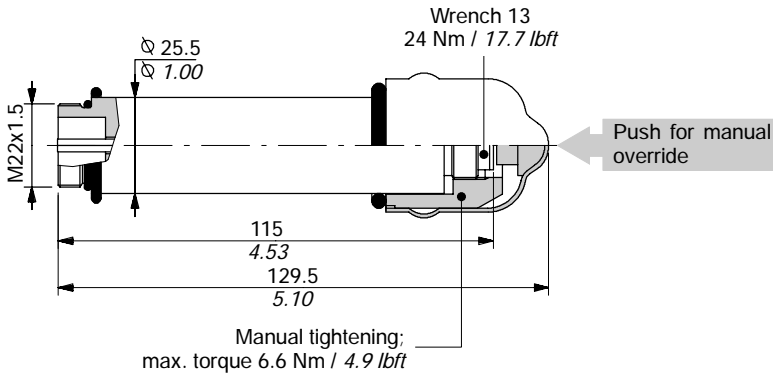


18Y kit

Spring return in position 1, with G1/4 joint for drain.



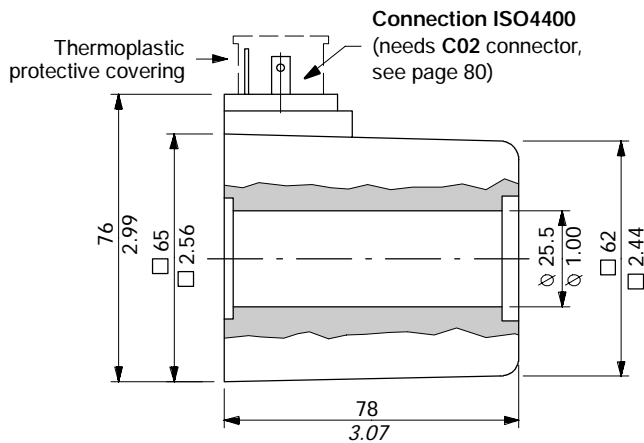
ES tube assembly



Operating features

Plunger stroke : 10.2 mm / 0.40 in

Coil options

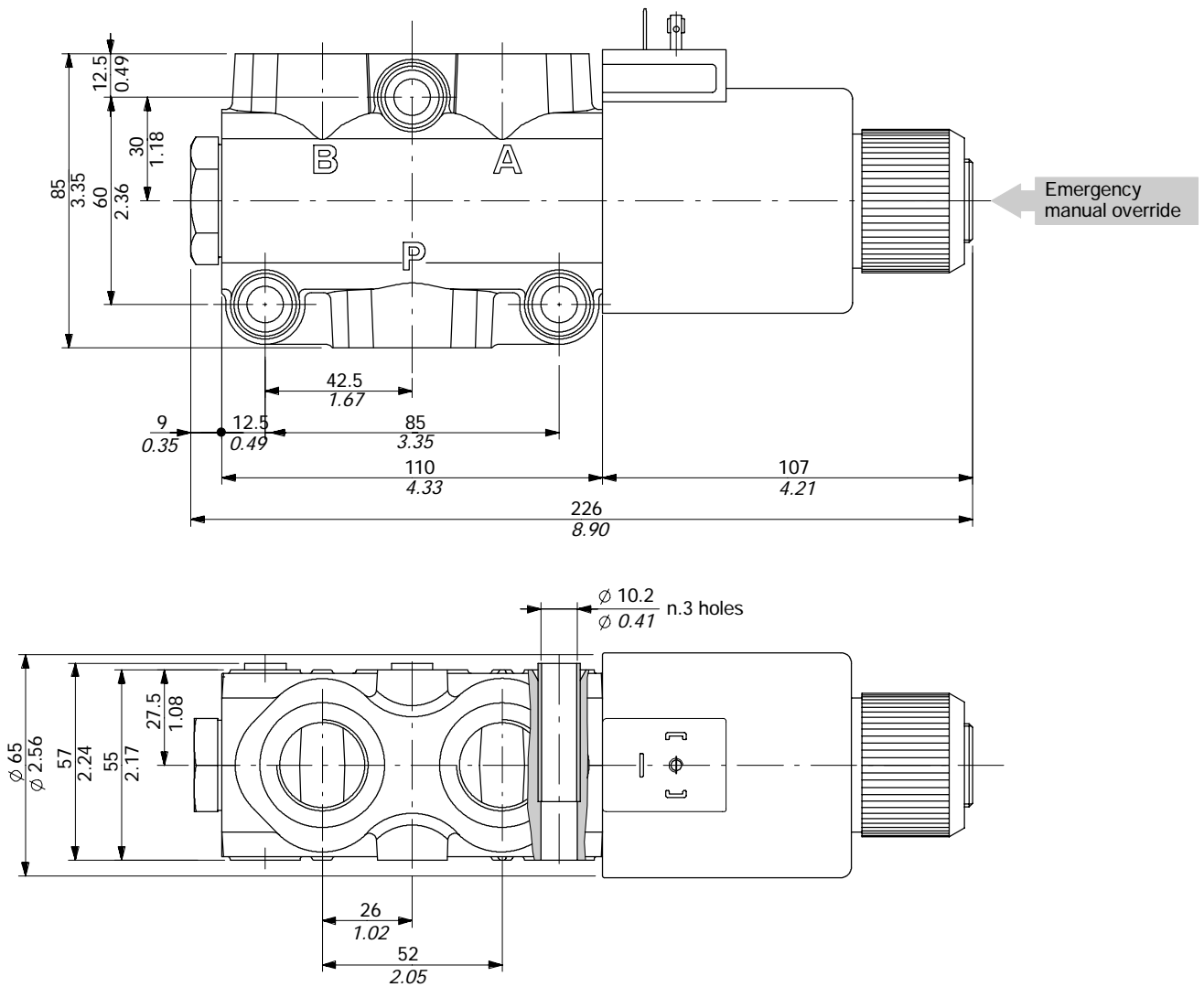


Operating features

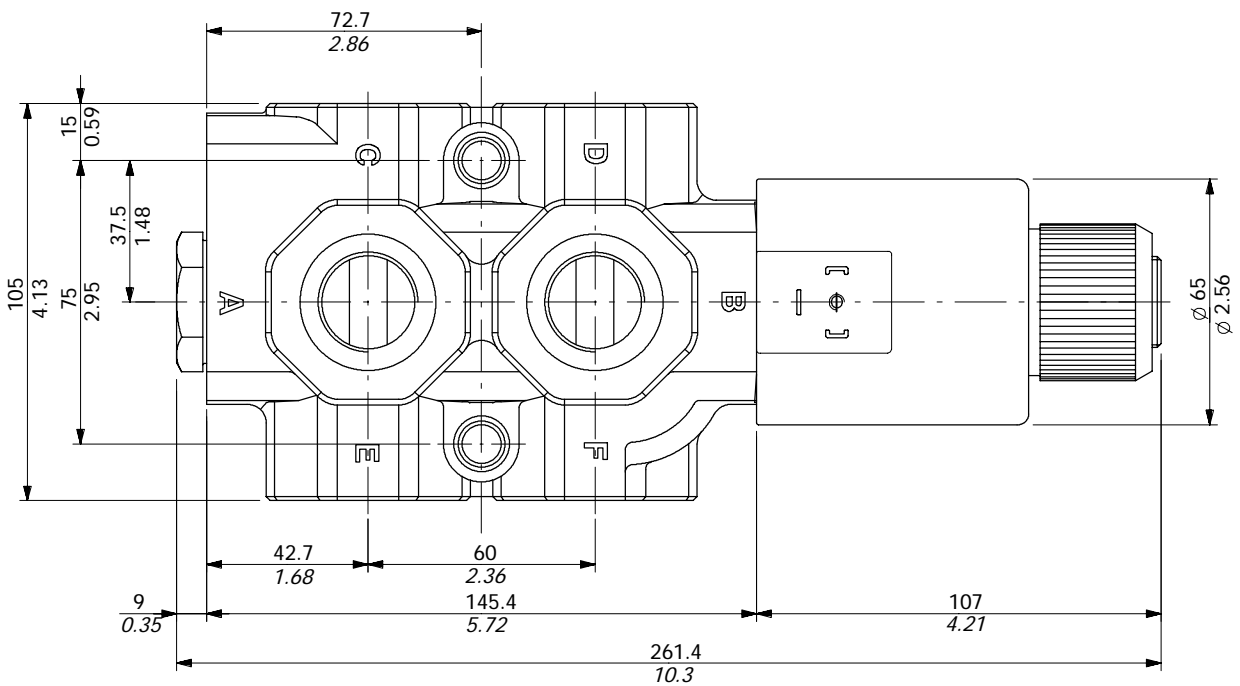
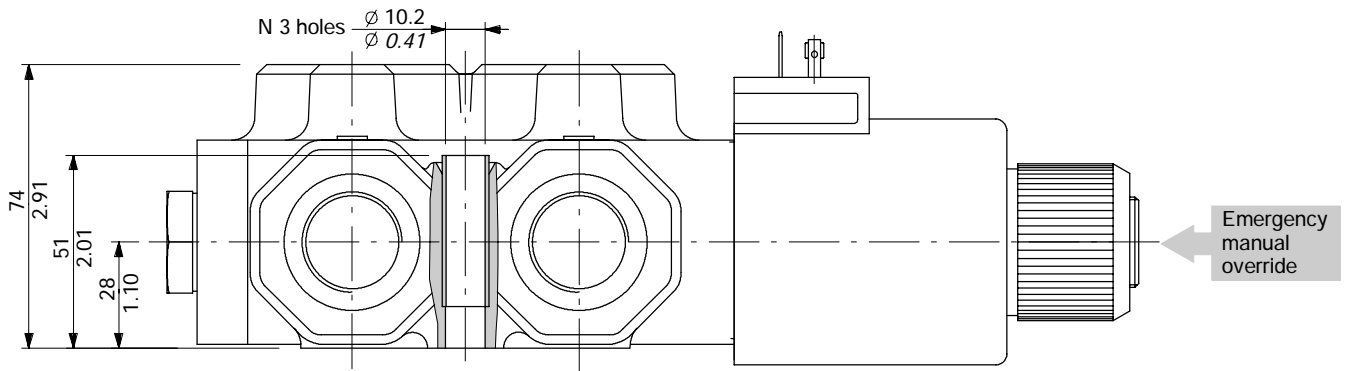
Nominal voltage : 12-24-48-92-192VDC
 Nominal voltage tolerance . . . : $\pm 10\%$
 Power rating : 60 W
 Duty cycle : 100%
 Weather protection : IP66
 Coil insulation : Class H

Dimensional data

3-way DFE20/3 valve



6-way DFE20/6 valve



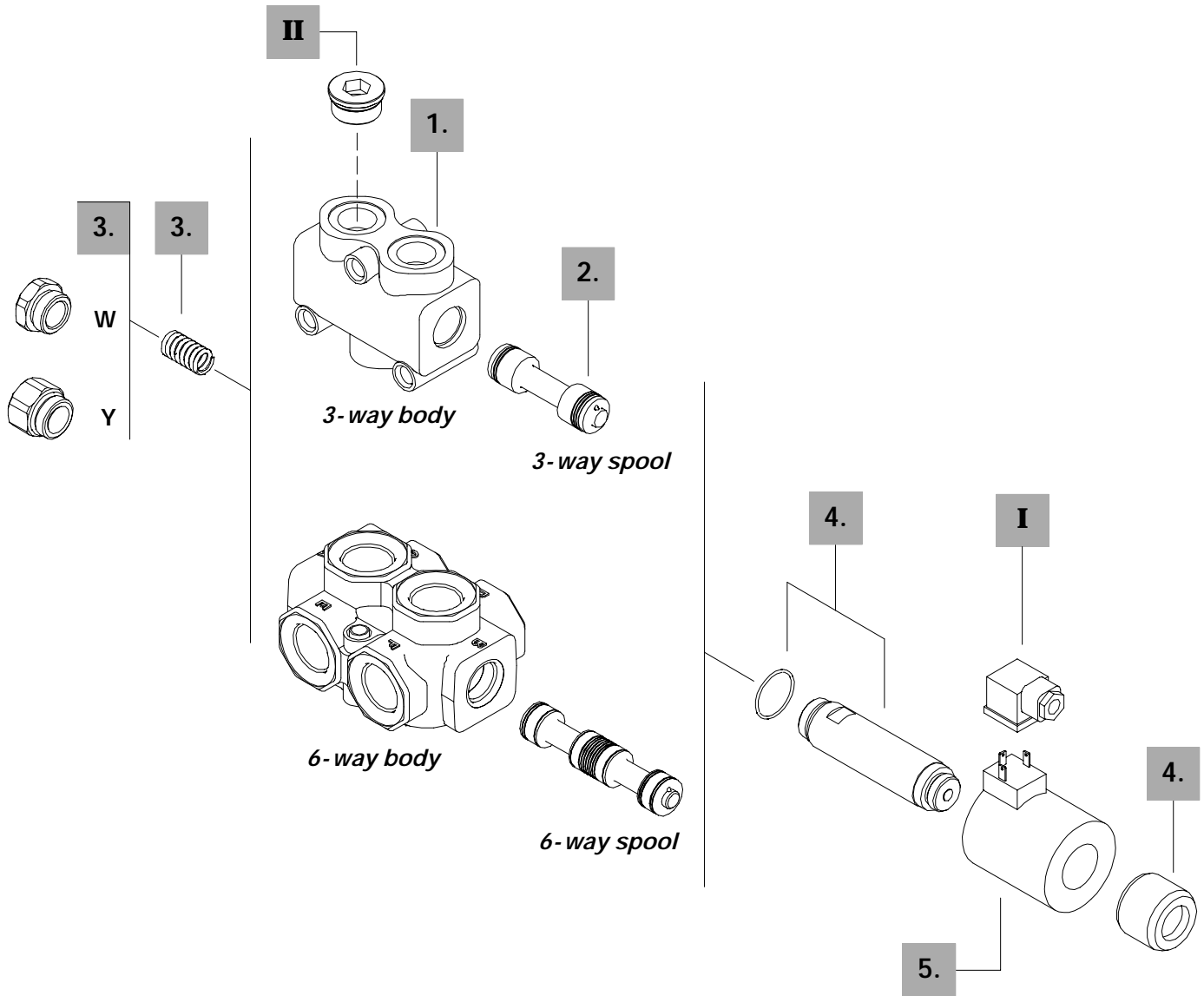
Ordering codes

Description example :

Diverter valve DFE20/3 A 18 ES - W 201-12VDC - <CVN>



Valve is supplied painted as standard, with one coat of Primer black antirust paint



3-way**1. Body ***

TYPE	CODE	DESCRIPTION
DFE20/3	3CO2261320	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS120341	3-way, 2 positions with ports connected in transit position
B	3CAS120441	3-way, 2 positions with ports closed in transit position

6-way**1. Body ***

TYPE	CODE	DESCRIPTION
DFE20/6	3CO2263820	Standard body, BSP threaded

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS120641	6-way, 2 positions with ports connected in transit position
B	3CAS120741	6-way, 2 positions with ports closed in transit position
H	3CAS120841	6-way, 2 positions, D↔C in position 1, F↔E in position 2, ports closed in transit position

3. Positioner kits *page 70*

TYPE	CODE	DESCRIPTION
18...W	5TAP003	Spring return in position 1
18...Y	5GIU007 *	Spring return in position 1, with G1/4 drain port

4. Tube assembly *page 70*

TYPE	CODE	DESCRIPTION
ES	5SOL519001	Spring return in position 1 (without coil)

5. Coil options *page 70*

TYPE	CODE	DESCRIPTION
101		Without coil (only with tube kit)
<u>VDC supply (connector C02)</u>		
201-12VDC	4SOL519112	Coil with 12VDC nominal voltage
201-24VDC	4SOL519124	Coil with 24VDC nominal voltage
<u>VAC supply (connector C04)</u>		
201-20VDC	4SOL519020	Coil with 20VDC nominal voltage (for 24VAC)
201-94VDC	4SOL519094	Coil with 94VDC nominal voltage (for 110VAC)
201-192VDC	4SOL519192	Coil with 192VDC nominal voltage (for 220VAC)

I Optional connectors *page 80*

TYPE	CODE	DESCRIPTION
C02	2X1001010	According ISO4400
C04	2X1001040	According to ISO4400 with rectifier

II Ports plug

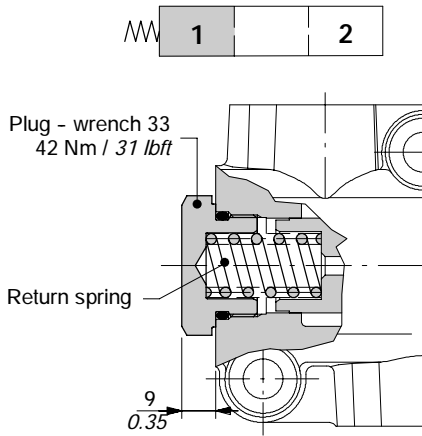
TYPE	CODE	DESCRIPTION
G3/4	3XTAP732200*	Body conversion from 3-way to 2-way circuit

NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

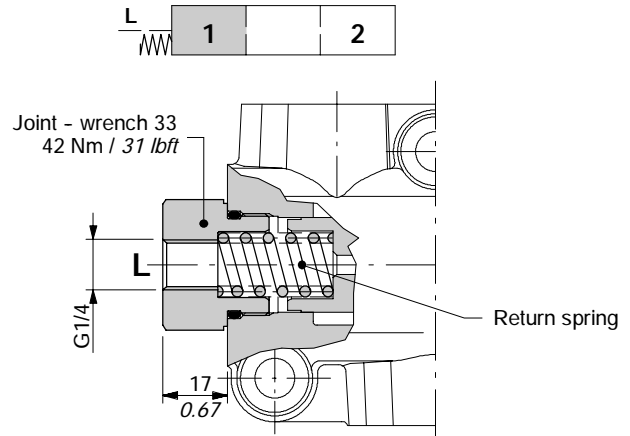
18W kit

Spring return in position 1 with plug.



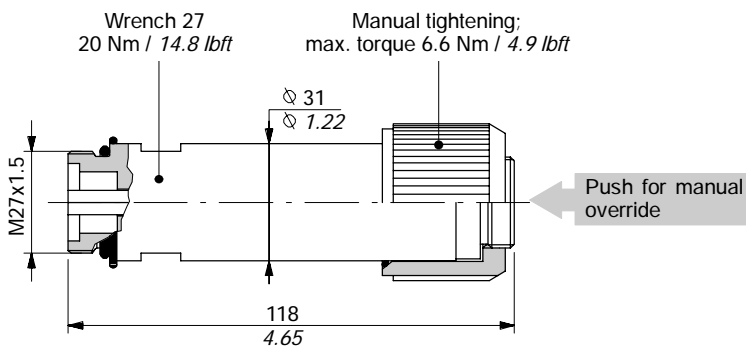
18Y kit

Spring return in position 1, with G1/4 joint for drain.



Solenoid parts

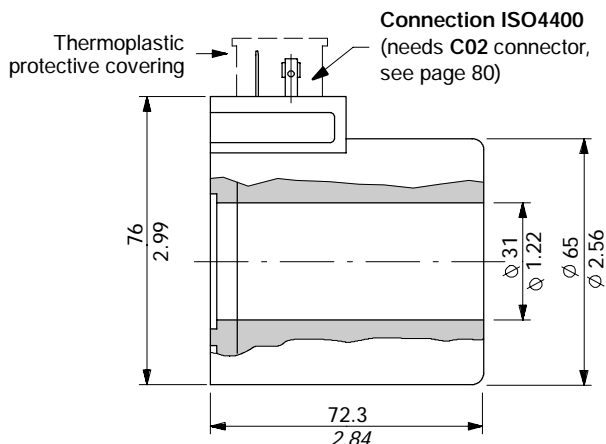
ES tube assembly



Operating features

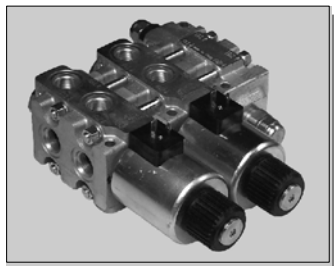
Plunger stroke : 10.2 mm / 0.40 in

Coil options



Operating features

Nominal voltage : 12-20-24-94-192VDC
 Nominal voltage tolerance . . . : ±10%
 Power rating : 60 W
 Duty cycle : 100%
 Weather protection : IP66
 Coil insulation : Class H



Content

Working conditions	72
Hydraulic circuit	73
Dimensional data	75
Ordering codes	76
Positioner kits	78
Solenoid parts	78
Anti-shock valves	79

Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm²/s – 46 cSt viscosity at 40°C temperature.

Maximum flow rating	<i>in steady state conditions</i>	80 l/min *	
Operating pressure (maximim)	<i>without drain</i>	200 bar	2900 psi
	<i>with drain</i>	315 bar	4600 psi
Internal leakage A(B)→T	<i>Δp=100 bar - 1450 psi fluid and valve at 40°C</i>	5 cm ³ /min	0.31 in ³ /min
Available voltage	VDC	12V - 24V	
	VAC - 50Hz / 60Hz	24V - 110V - 220V with connector C04 (see page 80)	
Power rating		60W	
Fluid		Mineral base oil	
Fluid temperature	<i>with NBR (BUNA-N) seals</i>	from -20° to 80°C	
	<i>with FPM (VITON) seals</i>	from -20° to 100°C	
Viscosity	<i>operating range</i>	from 15 to 75 mm ² /s	from 15 to 75 cSt
	<i>min.</i>	12 mm ² /s	12 cSt
	<i>max.</i>	400 mm ² /s	400 cSt
Max level of contamination		19/16 - ISO 4406	
Ambient temperature		da -40° a 60°C	
Tie rod tightening torque	<i>8 - 10 - way</i>	25 Nm	18.5 lbf ^t

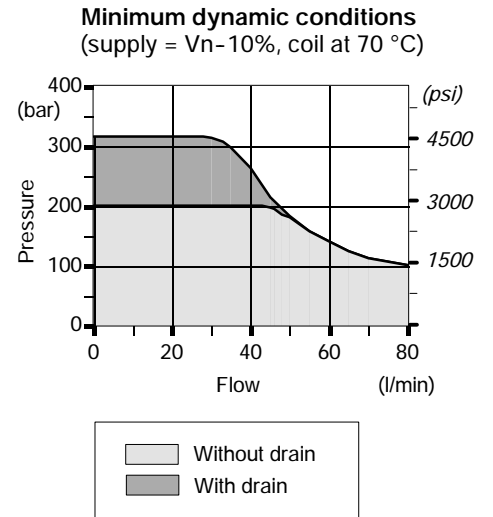
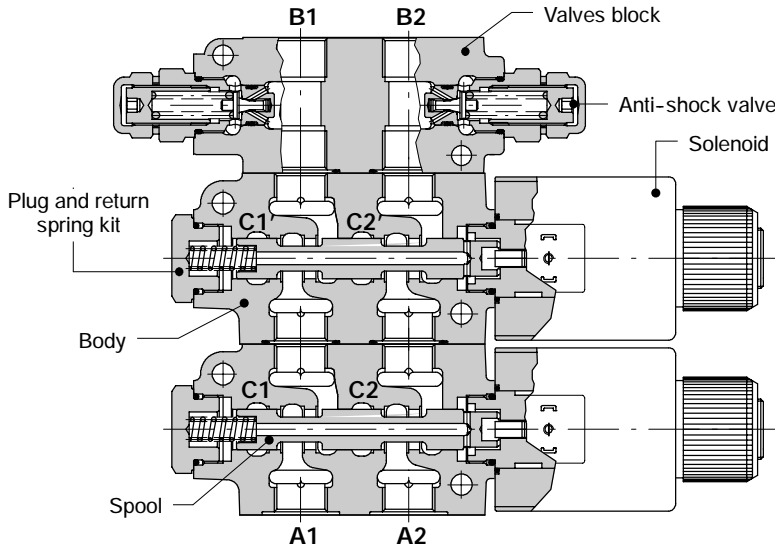
OTE - For different conditions please contact Sales Dept.

(*) - For operating conditions see page 73.

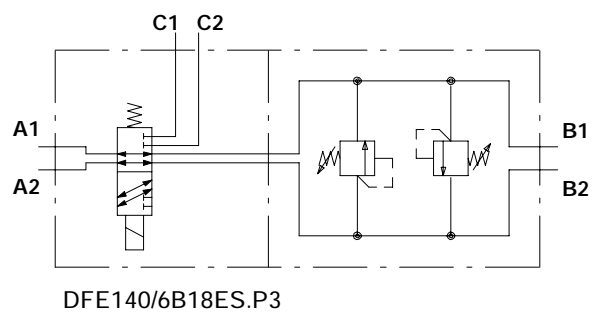
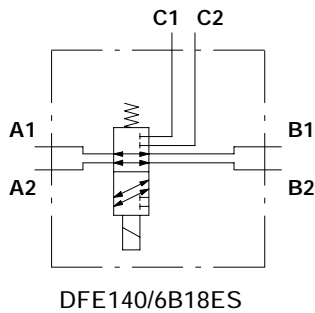
Standard thread

ALL PORTS	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)
DFE140	G 1/2	7/8-14 (SAE 10)
DRAIN PORT		
L	G 1/4	9/16-18 (SAE 6)

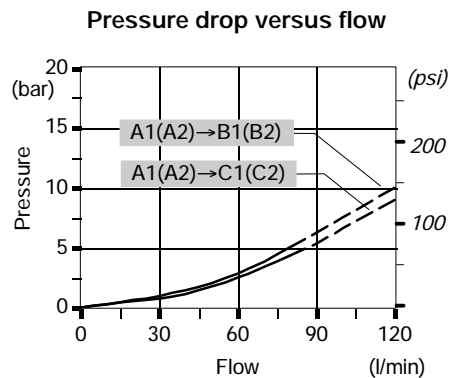
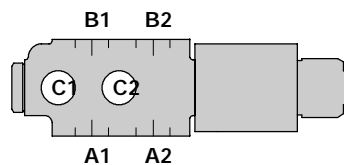
The drawing shows diverter valve section with 8-way configuration and anti-shock valves block.



6-way circuit

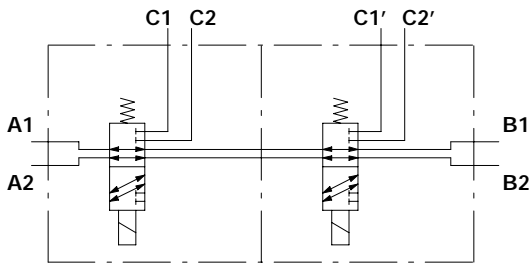


Performance data

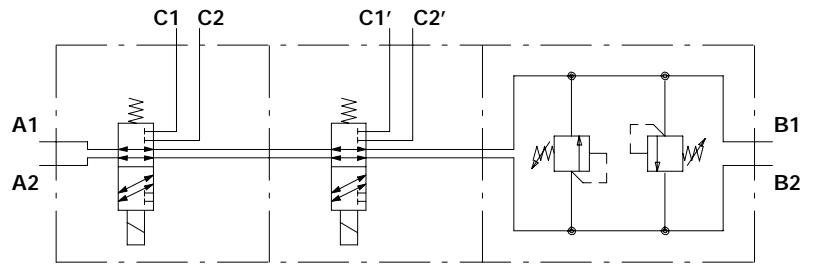


Hydraulic circuit

8-way circuit

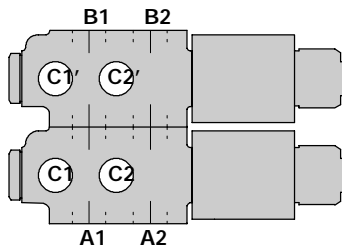


DFE140/8B18ES

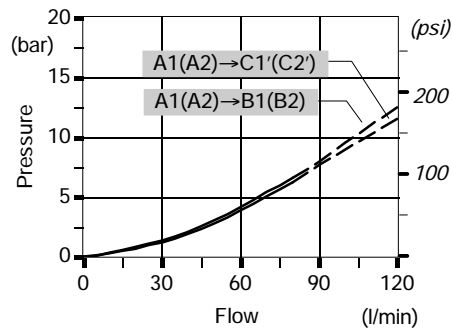


DFE140/8B18ES.P3

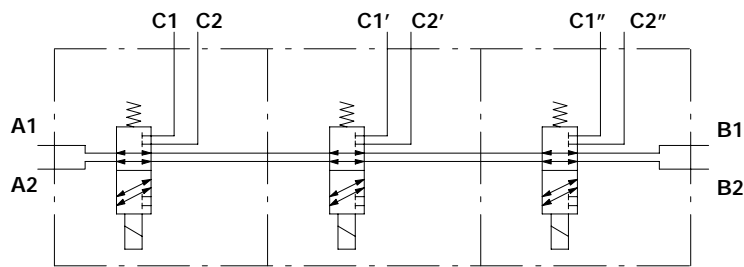
Performance data



Pressure drop versus flow

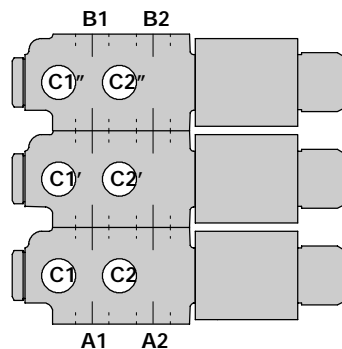


10-way circuit

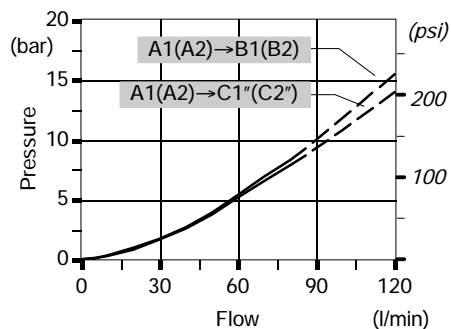


DFE140/10B18ES

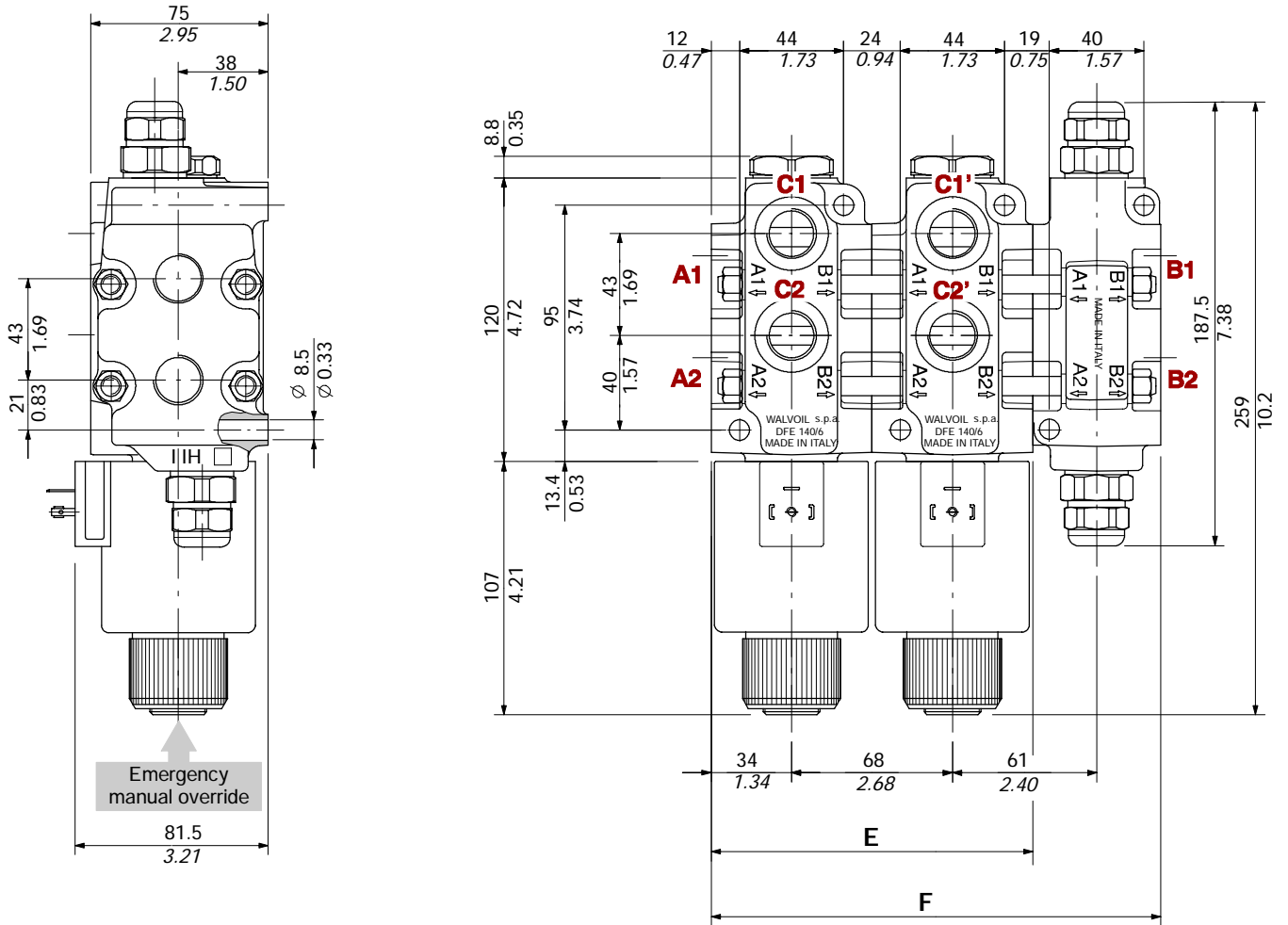
Performance data



Pressure drop versus flow



The drawing shows diverter valve with 8-way configuration and anti-shock valves block



TYPE	E		Weight	
	mm	in	kg	lb
DFE140/6	68	2.68	4.6	2.09
DFE140/8	136	5.35	9.5	4.31
DFE140/10	204	8.03	14.4	31.7

TYPE	F		Weight	
	mm	in	kg	lb
With valves block	122	4.80	7.8	17.2
With valves block	190	7.48	12.5	27.6
With valves block	258	10.2	17.6	38.8

Ordering codes

Description example :

Diverter valve DFE 140 / 8 B 18 ES . P3 (D4-185) - W 2 0 1 - 12VDC - CRZ *

1.
2.
3.
4.
5.
6.
3.
7.

Valve setting in bar

Body is supplied galvanized

1. Body *

TYPE	CODE	DESCRIPTION
140/6	3CO2280302	6-way body
140/8	"	No 2 of 6-way body for 8-way circuit
140/10	"	No 3 of 6-way body for 10-way circuit

2. Spool option

TYPE	CODE	DESCRIPTION
B	3CAS110740	Double acting, 2 positions with A to B in neutral position

3. Positioner kits page 78

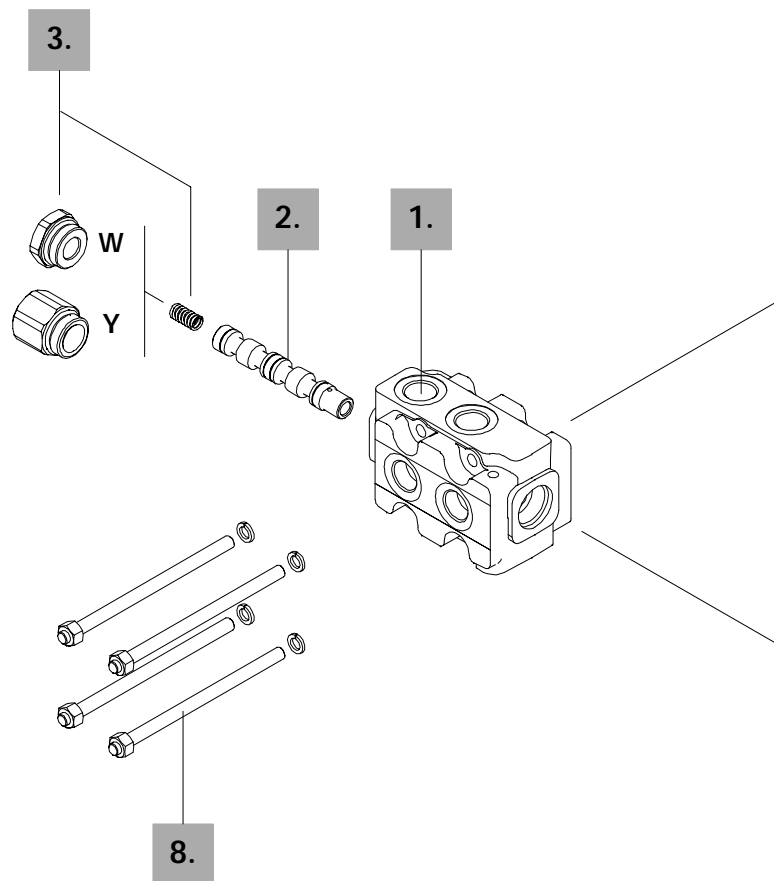
TYPE	CODE	DESCRIPTION
18...W	5TAP005	Spring return in position 0
18...Y	5GIU010*	Spring return in position 0, with G1/4 drain port

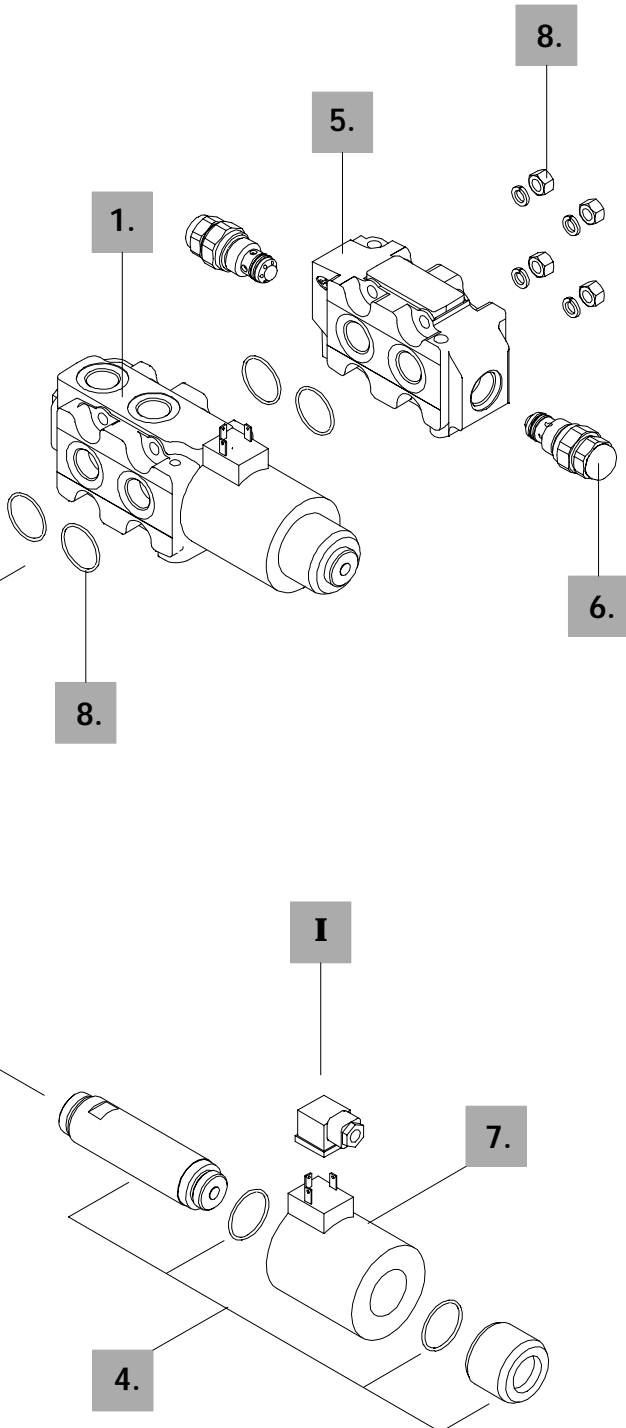
4. Tube assembly page 78

TYPE	CODE	DESCRIPTION
ES	5SOL519001	Tube assembly with spring return to neutral (without coil)

5. Valves block * page 79

TYPE	CODE	DESCRIPTION
P3	3CO2780301	Cross-over antishock valve body





6. Anti-shock valve *page 79*

TYPE	CODE	DESCRIPTION
(D4-185)	X005125216	Valve setting to 185 bar / 2680 psi
(D4-210)	X005125245	Valve setting to 210 bar / 3050 psi
(D4-240)	X005125270	Valve setting to 240 bar / 3480 psi

Setting is referred to valve opening.

7. Coil options *page 78*

TYPE	CODE	DESCRIPTION
101		Without coil (only with tube kit)
<u>VDC supply (connector C02)</u>		
201-12VDC	4SOL519112	Coil with 12VDC nominal voltage
201-24VDC	4SOL519124	Coil with 24VDC nominal voltage
<u>VAC supply (connector C04)</u>		
201-20VDC	4SOL519020	Coil with 20VDC nominal voltage (for 24VAC)
201-94VDC	4SOL519094	Coil with 94VDC nominal voltage (for 110VAC)
201-192VDC	4SOL519192	Coil with 192VDC nominal voltage (for 220VAC)

8. Tie bolts kit and O-ring seals

CODE	MOUNTED ON
5TIR108121	DFE140/6 with P3 valves block
5TIR108134	DFE140/8
5TIR108189	DFE140/8 with P3 valves block
5TIR108202	DFE140/10

I. Optional connectors *page 80*

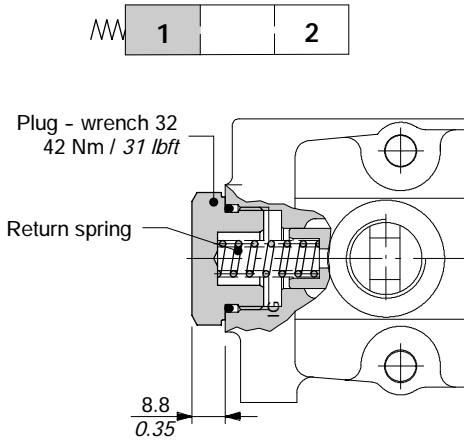
TYPE	CODE	DESCRIPTION
C02	2X1001010	According to ISO4400
C04	2X1001040	According to ISO4400 with rectifier

NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

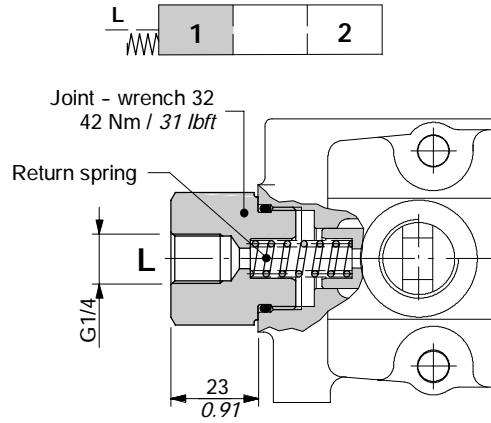
18W kit

Spring return in position 1 with plug.



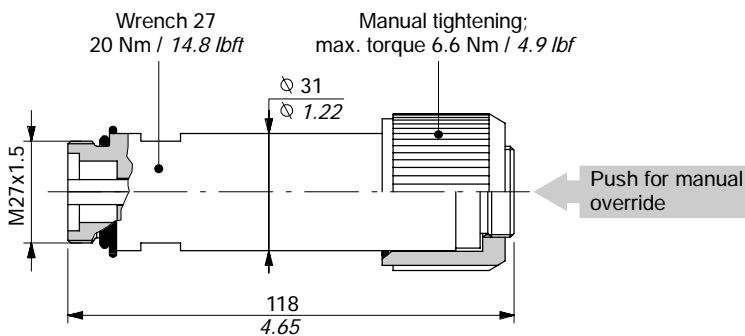
18Y kit

Spring return in position 1, with G1/4 joint for drain.



Solenoid parts

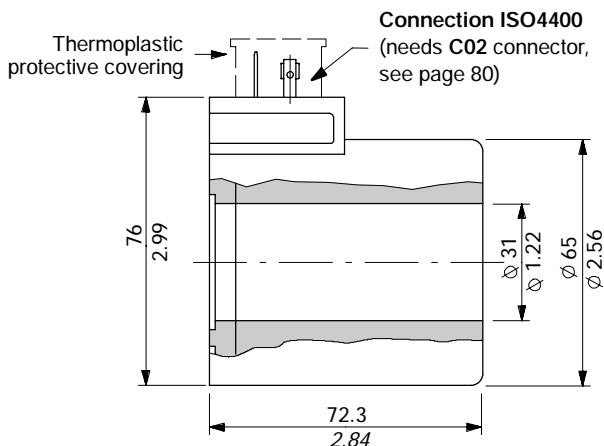
ES tube assembly



Operating features

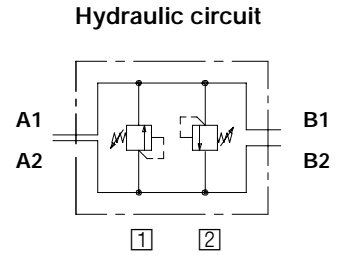
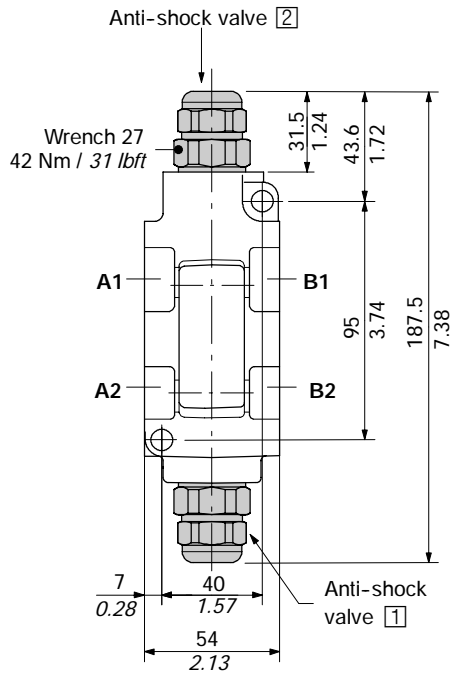
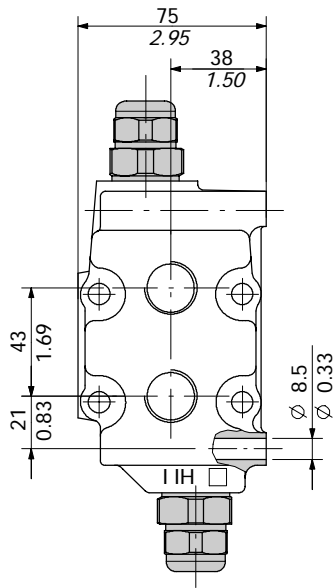
Plunger stroke : 10.2 mm / 259 psi

Coil options

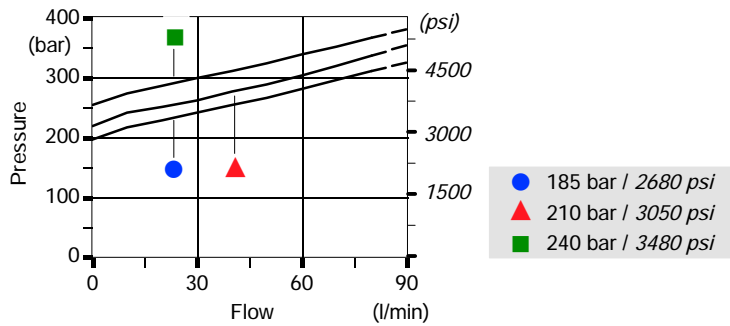


Operating features

Nominal voltage : 12-20-24-94-192VDC
 Nominal voltage tolerance ... : ±10%
 Power rating : 60 W
 Duty cycle : 100%
 Weather protection : IP66
 Coil insulation : Class H



Anti-shock valves performance data
(setting are referred to 10 l/min flow)

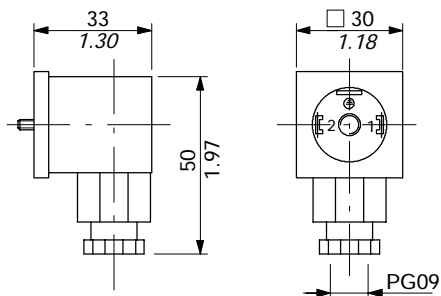


Accessories

Optional connectors

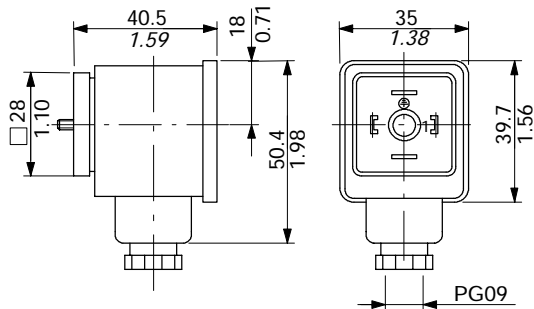
Type C02 code: 2X1001010

2P+T according to ISO4400 / DIN43650-A



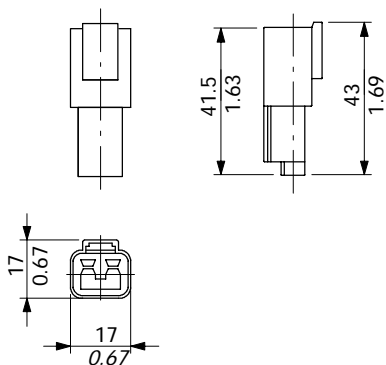
Type C04 code: 2X1001040

2P+T according to ISO4400 / DIN43650-A.
With bridge rectifier, to use with VAC supply.

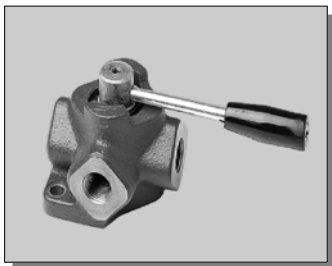


Type C09 code: 5CON130020

2P male type DEUTSCH "DT04-2P"



TYPE	Poles	Nominal voltage	Nominal current	Permitted cable section	Weather protection
C02	2P + T	250 VAC / 300 VDC	10 A	1.5 mm ² / 23x10 ⁻⁴ in ²	IP65
C04	2P + T	230 VAC	10 A	1.5 mm ² / 23x10 ⁻⁴ in ²	IP65
C09	2P	250 VAC	13 A	2 mm ² / 31x10 ⁻⁴ in ²	IP67



Content

Working conditions	82
Designation	82
Hydraulic circuit	83
DH5	84
DH10	85
DH20	86
DH25	87
DH30	89

Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm²/s – 46 cSt viscosity at 40°C temperature.

DH rotary spool diverter valve position cannot be changed when valve is pressurized.

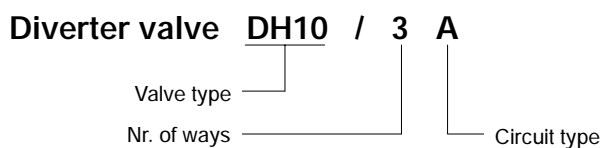
	DH5	DH10	DH20	DH25	DH30
N. of available ways	3-4-6-8	3-4-6-8	3-4-6-8	3-4-6-8	3-6
Nominal flow rating	60 l/min	90 l/min	140 l/min	200 l/min	280 l/min
Operating pressure (maximum)	315 bar 4600 psi	315 bar 4600 psi	315 bar 4600 psi	250 bar 3600 psi	210 bar 3050 psi
Internal leakage A(B)→T	$\Delta p = 100 \text{ bar } 1450 \text{ psi}$ with fluid and valve at 40°C		1 cm ³ /min 0.06 in ³ /min	1 cm ³ /min 0.06 in ³ /min	1 cm ³ /min 0.06 in ³ /min
Fluid	Mineral base oil				
Fluid temperature	With NBR with FPM seals		from -20° to 80°C		
Viscosity	operating range		da 15 a 75 mm ² /s – from 15 to 75 cSt		
	min.		12 mm ² /s – 12 cSt		
	max.		400 mm ² /s – 400 cSt		
Max. level of contamination	19/16 – ISO 4406				
Ambient temperature	from -40° to 60°C				

NOTE - For different working conditions please contact Sales Dept.

Standard thread

ALL PORTS	BSP (ISO228/1)	UN-UNF (ISO 11926-1)
DH5	G 3/8	3/4-16 (SAE 8)
DH10	G 1/2	7/8-14 (SAE 10)
DH20	G 3/4	1 1/16-12 (SAE 12)
DH25	G 1	1 5/16-12 (SAE 16)
DH30	G 1 1/2	1 7/8-12 (SAE 24)

Designation

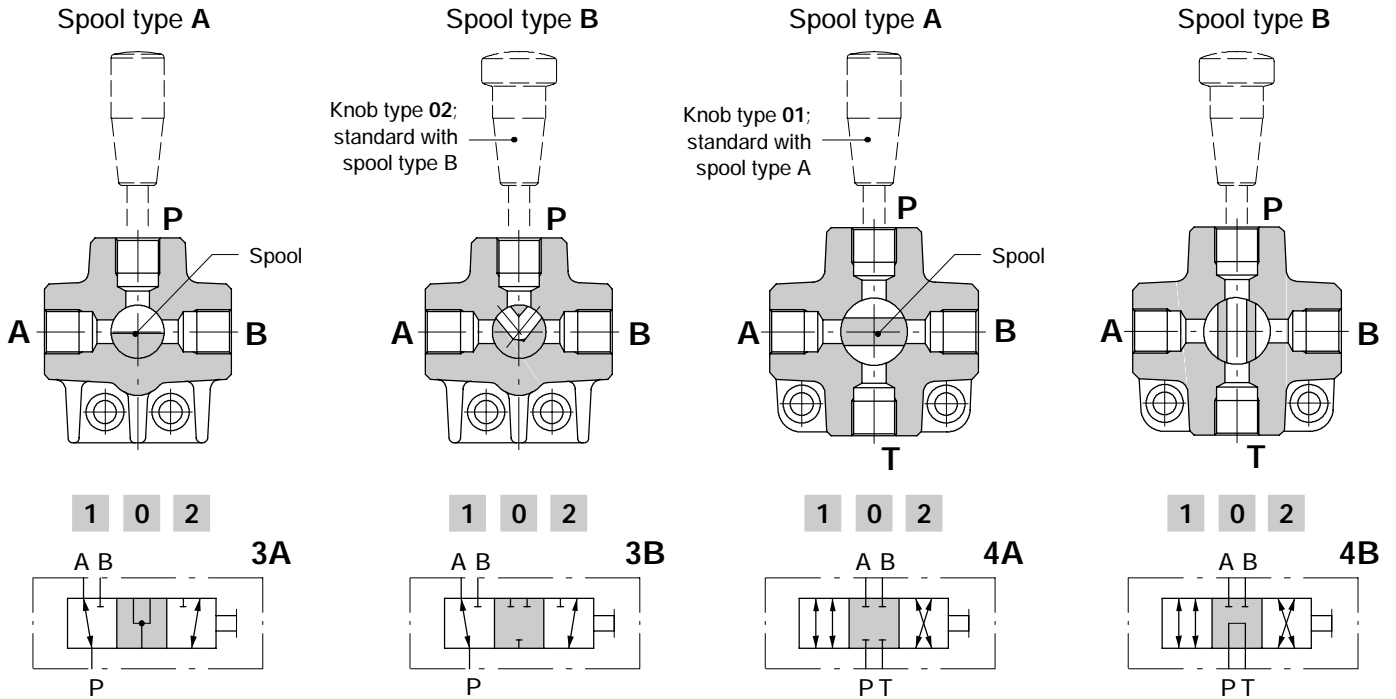


3-way and 6-way

6-way diverter valve is obtained by coupling two 3-way bodies using assembling kit.

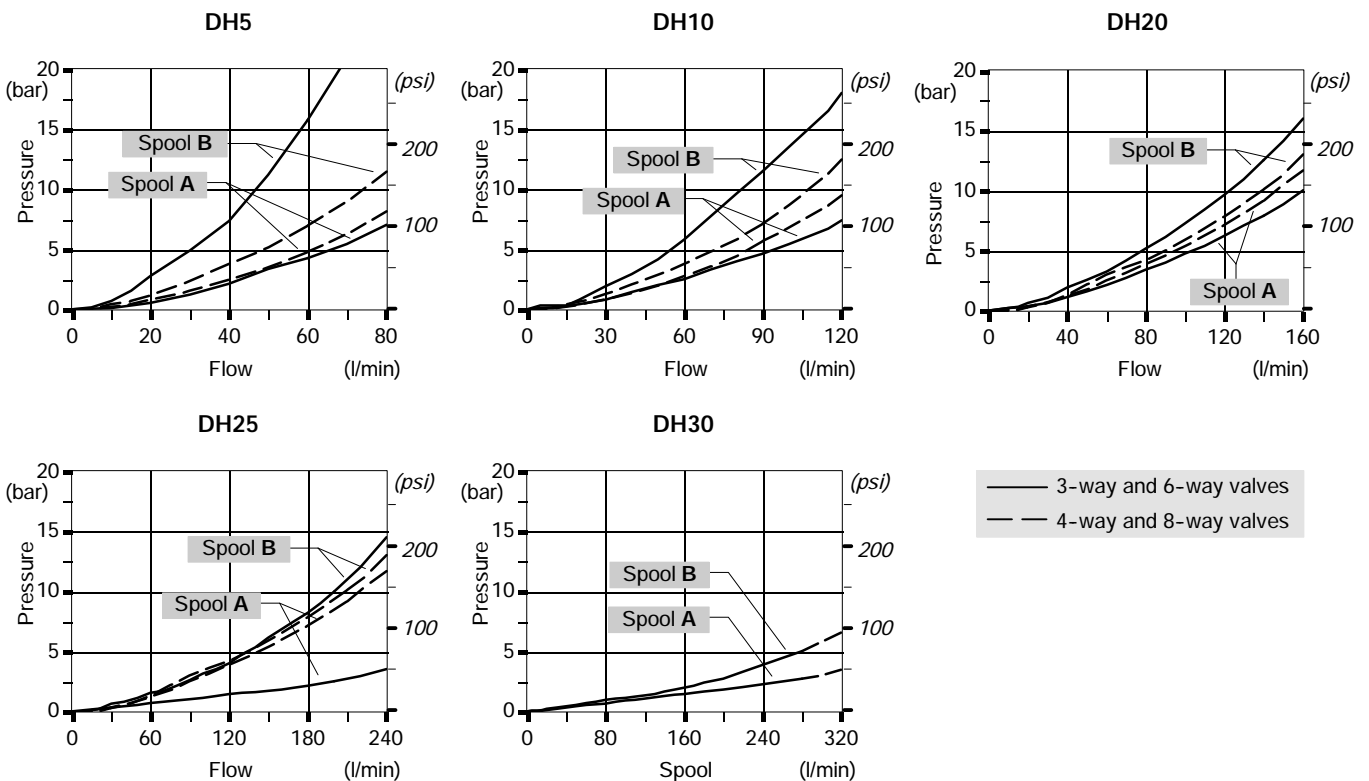
4-way and 8-way

8-way diverter valve is obtained by coupling two 4-way bodies using assembling kit.



Performance data

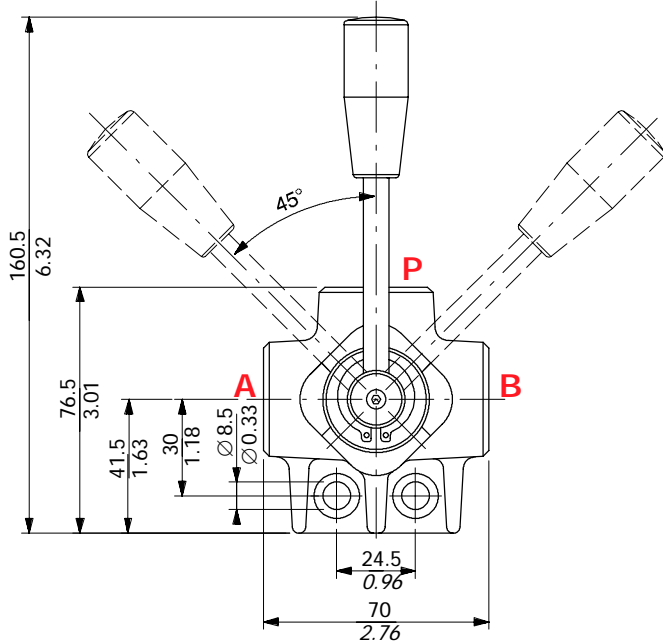
Pressure drop versus flow P→A(B): spool in position 1 (2)



Dimensional data

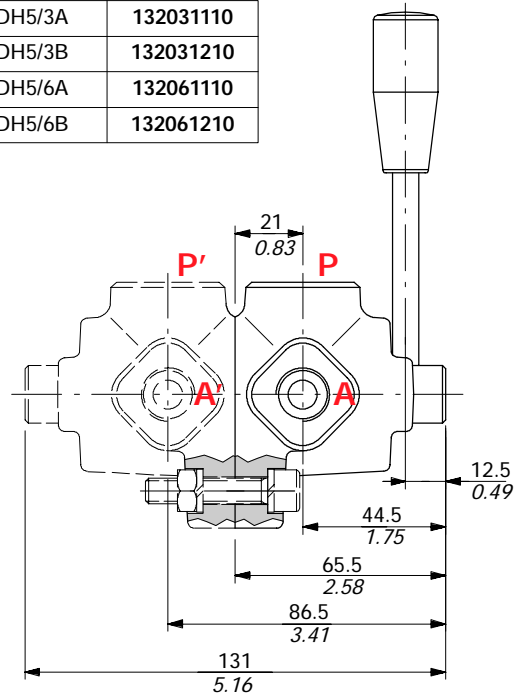
3-way DH5/3 and 6-way DH5/6 valves

Drawing is referred to valve with type A spool.



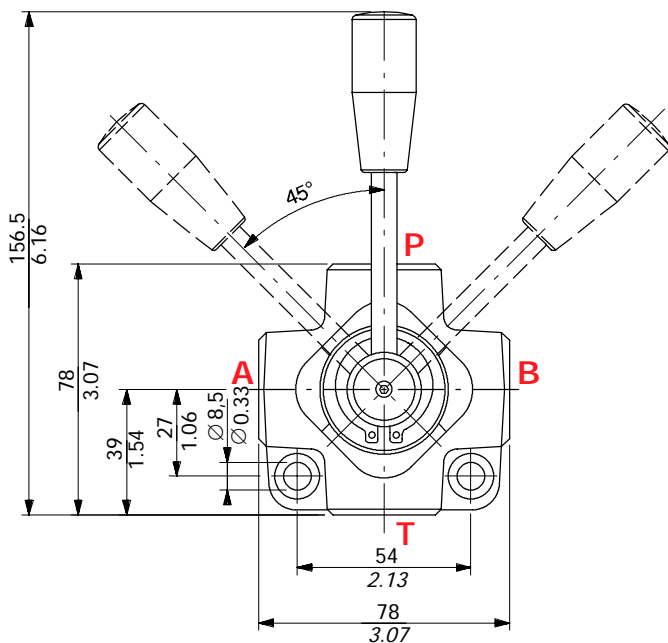
Ordering codes

DH5/3A	132031110
DH5/3B	132031210
DH5/6A	132061110
DH5/6B	132061210



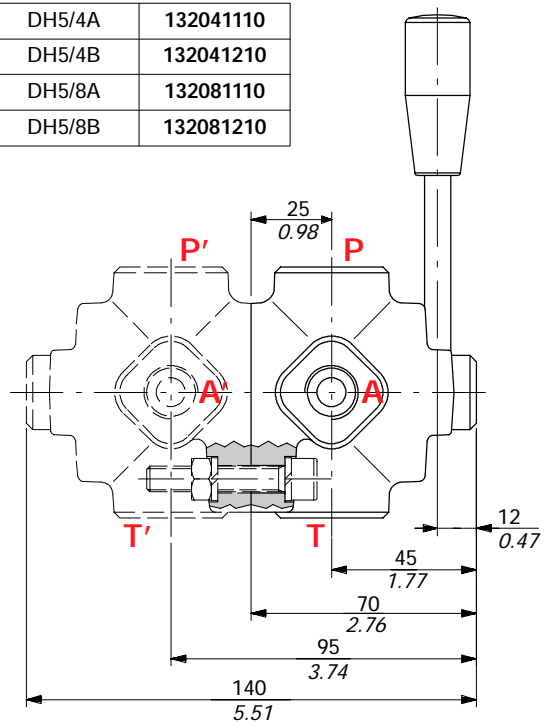
4-way DH5/4 and 8-way DH5/8 valves

Drawing is referred to valve with type A spool.



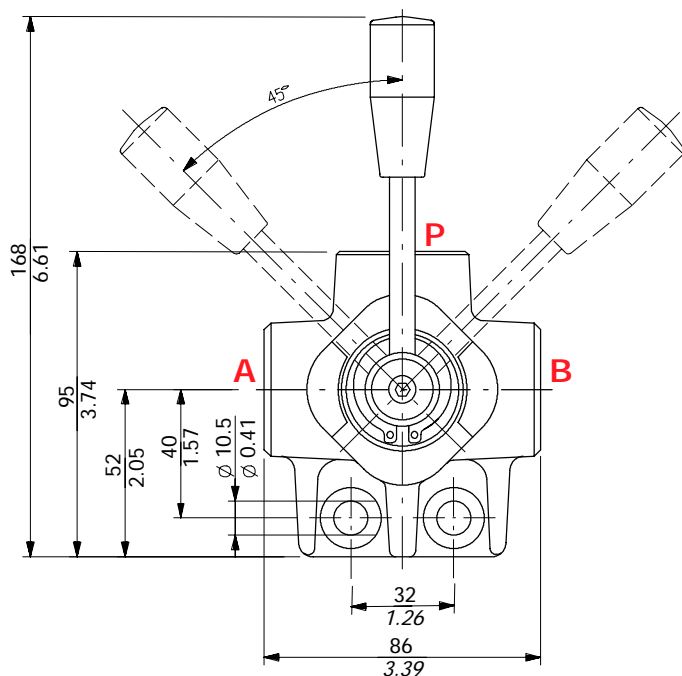
Ordering codes

DH5/4A	132041110
DH5/4B	132041210
DH5/8A	132081110
DH5/8B	132081210



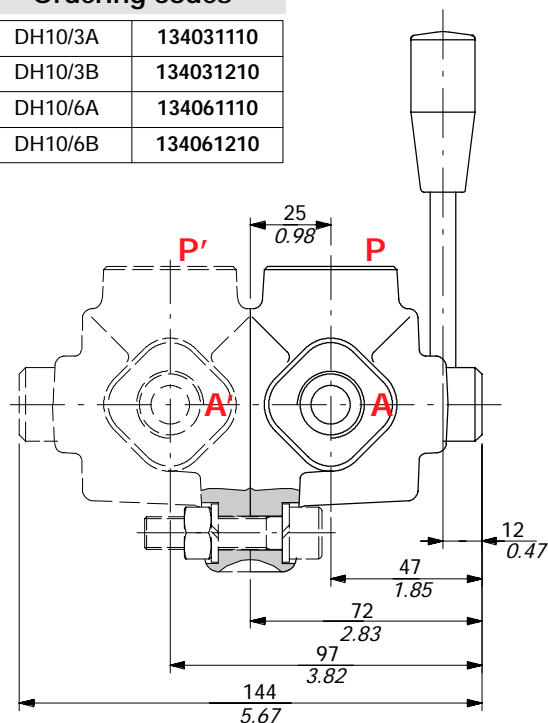
3-way DH10/3 and 6-way DH10/6 valves

Drawing is referred to valve with type A spool.



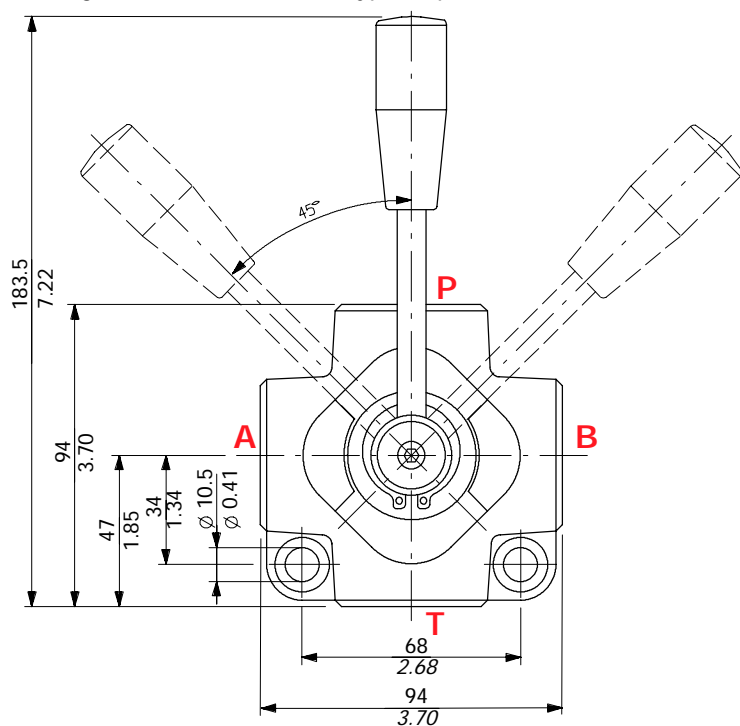
Ordering codes

DH10/3A	134031110
DH10/3B	134031210
DH10/6A	134061110
DH10/6B	134061210



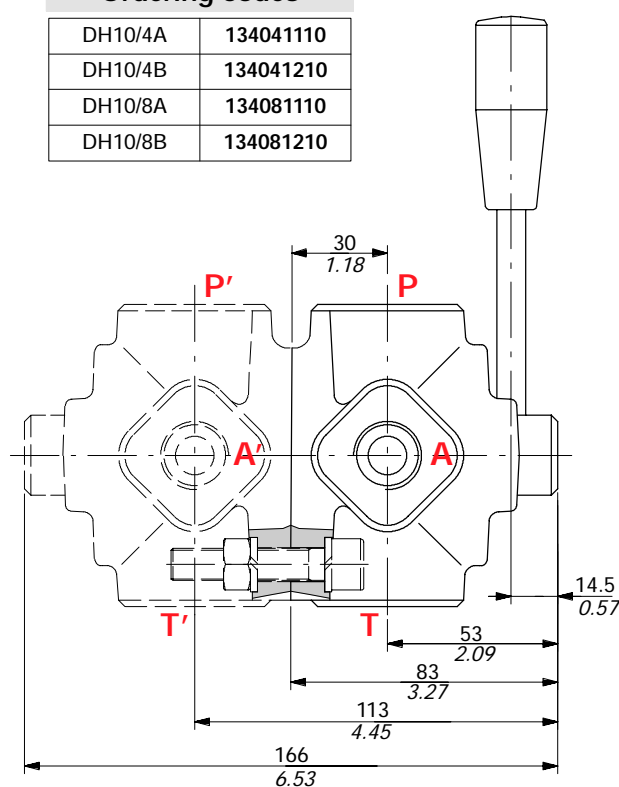
4-way DH10/4 and 8-way DH10/8 valves

Drawing is referred to valve with type A spool.



Ordering codes

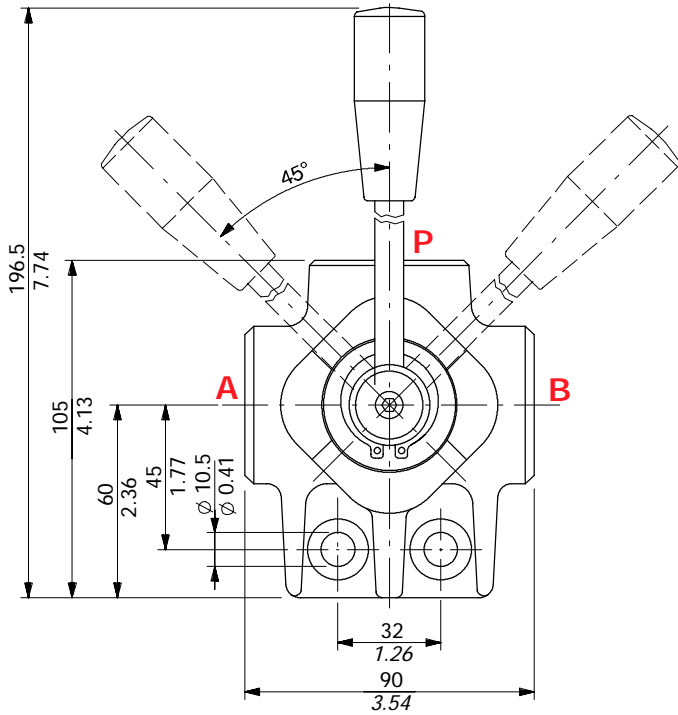
DH10/4A	134041110
DH10/4B	134041210
DH10/8A	134081110
DH10/8B	134081210



Dimensional data

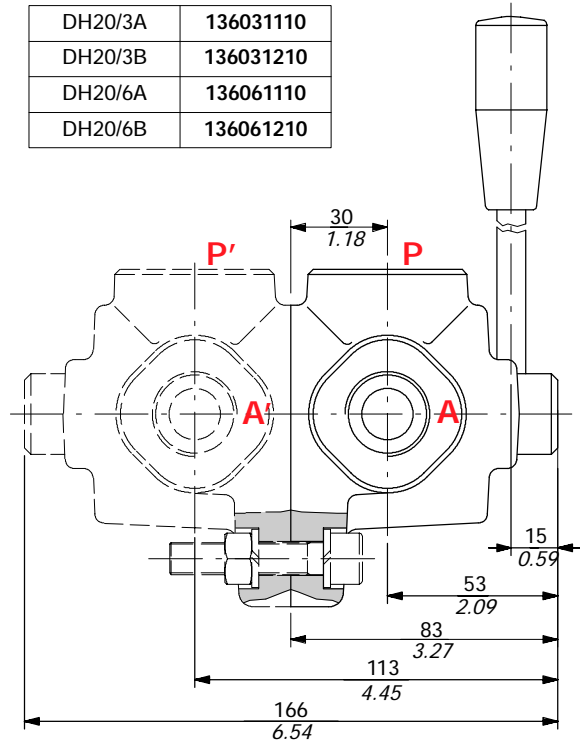
3-way DH20/3 and 6-way DH20/6 valves

Drawing is referred to valve with type A spool.



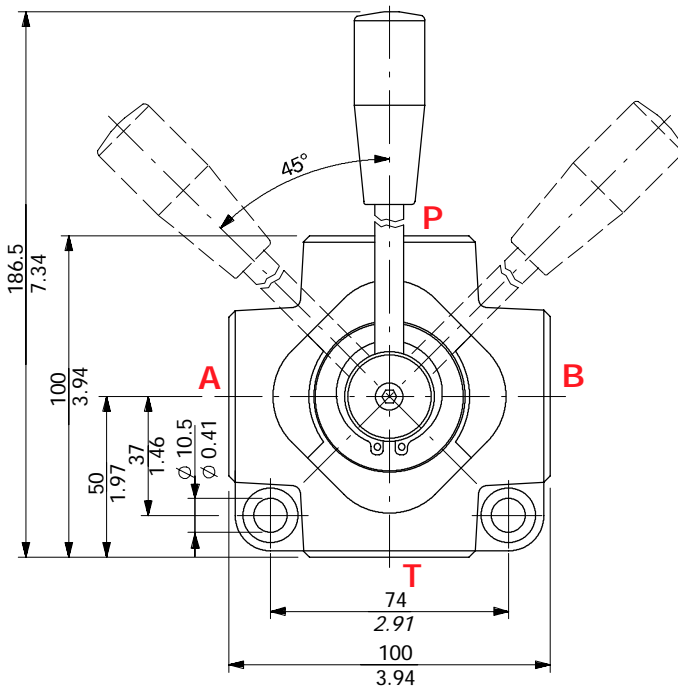
Ordering codes

DH20/3A	136031110
DH20/3B	136031210
DH20/6A	136061110
DH20/6B	136061210



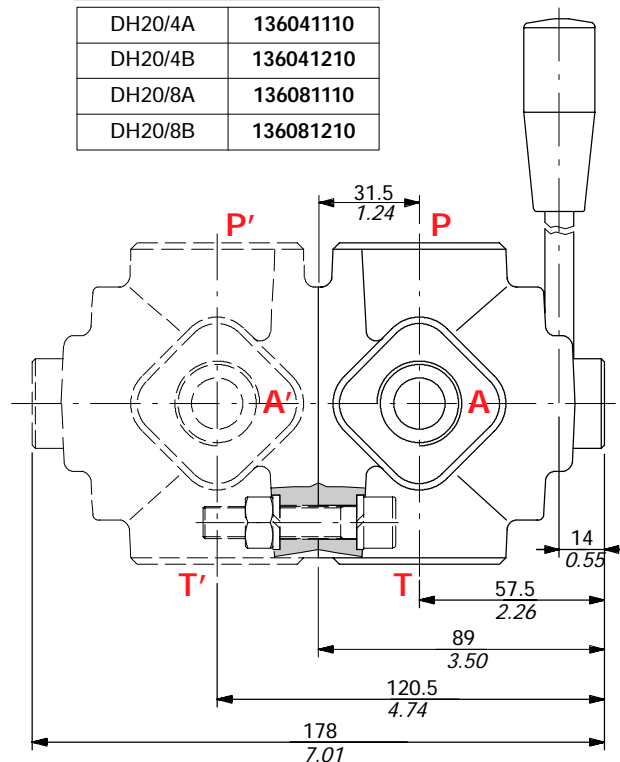
4-way DH20/4 and 8-way DH20/8 valves

Drawing is referred to valve with type A spool.



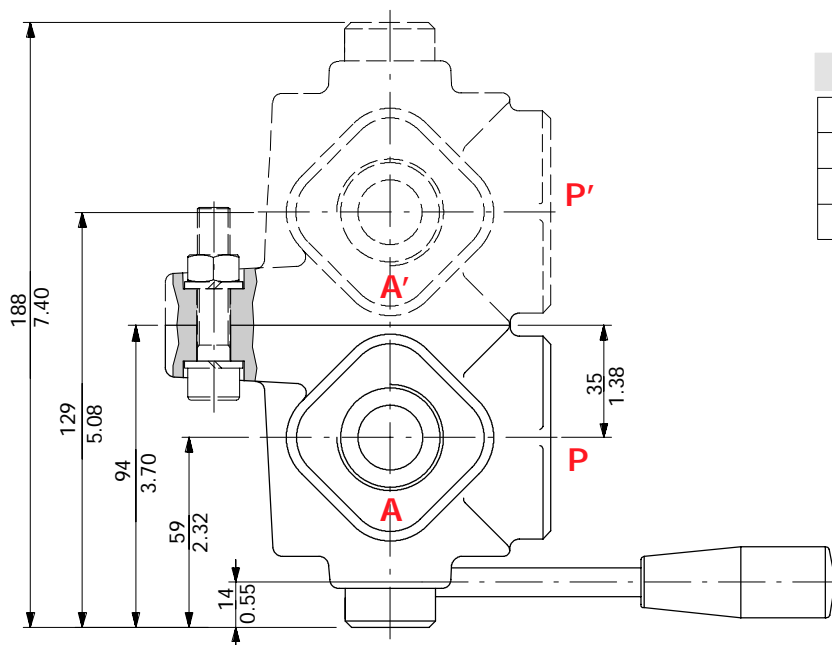
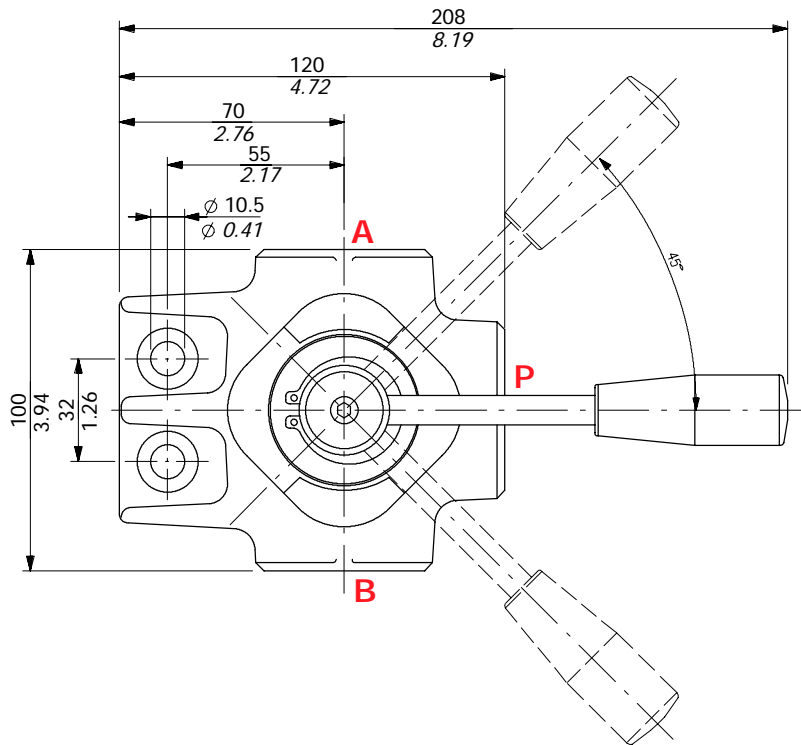
Ordering codes

DH20/4A	136041110
DH20/4B	136041210
DH20/8A	136081110
DH20/8B	136081210



3-way DH25/3 and 6-way DH25/6 valves

Drawing is referred to valve with type A spool.



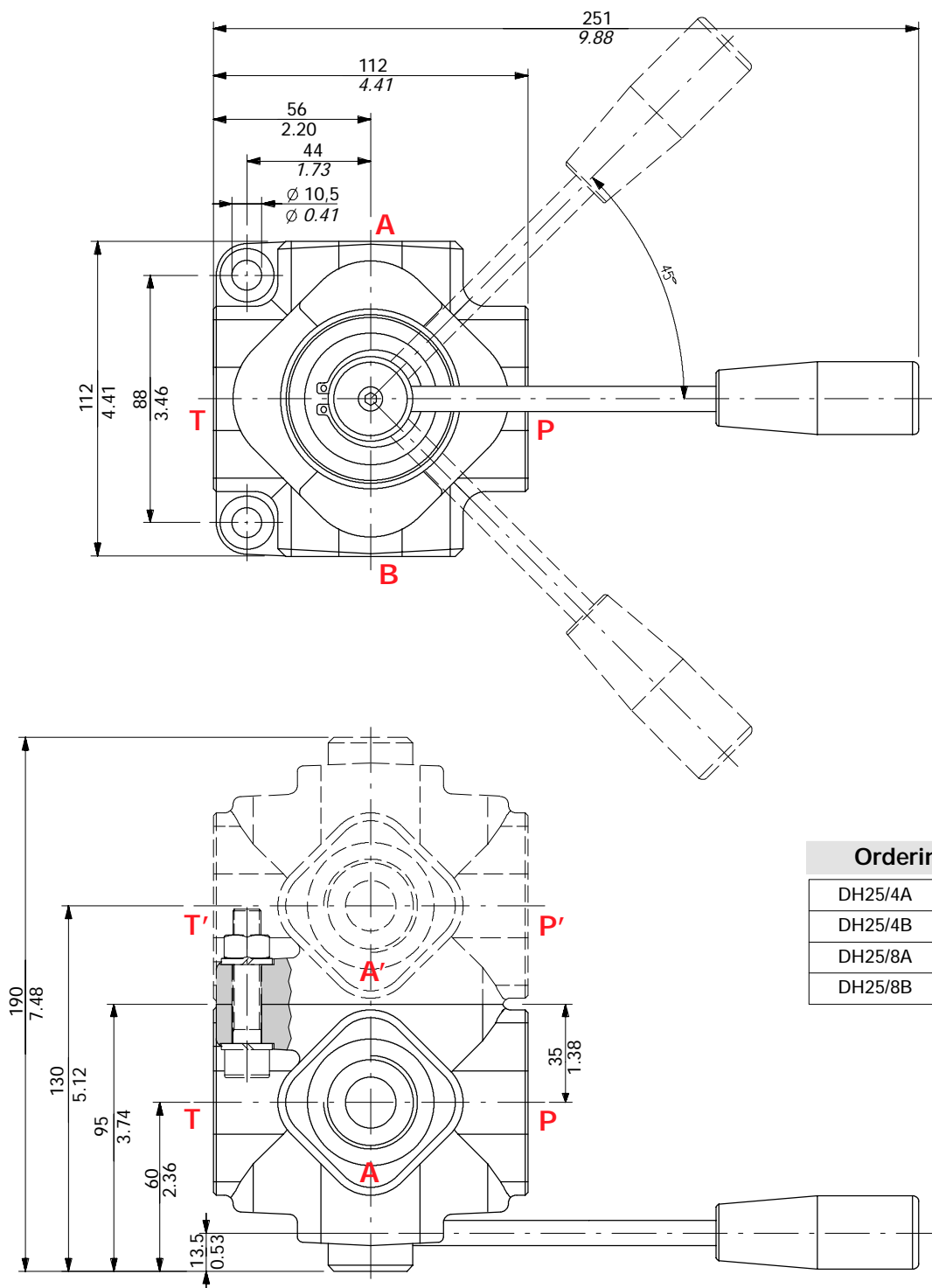
Ordering codes

DH25/3A	137031110
DH25/3B	137031210
DH25/6A	137061110
DH25/6B	137061210

Dimensional data

4-way DH25/4 and 8-way DH25/8 valves

Drawing is referred to valve with type A spool.

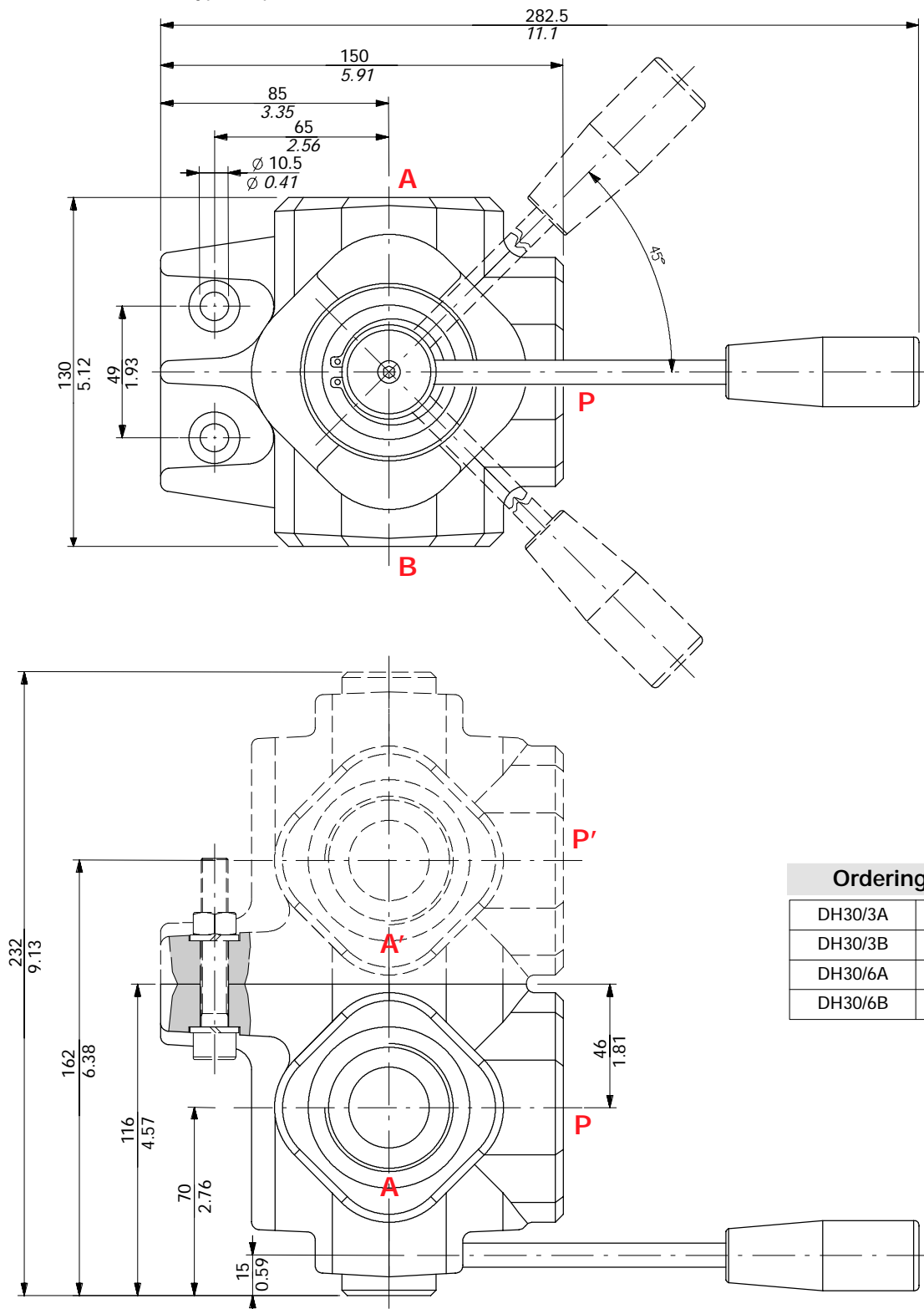


Ordering codes

DH25/4A	137041110
DH25/4B	137041210
DH25/8A	137081110
DH25/8B	137081210

3-way DH30/3 and 6-way DH30/6 valves

Drawing is referred to valve with type A spool.



Ordering codes

DH30/3A	139031110
DH30/3B	139031210
DH30/6A	139061110
DH30/6B	139061210

Diverter valves

Installation and maintenance

The DF-DFE-DH diverter valves are assembled and tested as per the technical specification of this catalogue.

Before the final installation on your equipment, follow the below recommendations:

- the diverter valves can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- in order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the diverter valves;
- prior to painting, ensure plastic port plugs are tightly in place.

NOTE - All articulated parts inside cap, lever box and mechanical joystick are lubricated with synthetic base grease grade NLGI2.

Malfunction	Cause	Remedy
External leakage.	Worn spool seal due to mechanical actuation (DF-DH).	Locate the leakage and replace the seal.
Excessive internal leakage.	Increase clearance between spools and body due to high wear.	Replace the diverter valve and check the oil contamination level.
	Spool blocked.	Remove the spool, clean it and check the oil contamination level.
Diverter valve don't commute.	Coil winding burnt (DFE).	Replace the coil and check the supply voltage value.
	Uncorrected supply voltage (DFE).	Test the electric circuit and check the supply voltage value.
	High pressure and/or flow	Verify that pressure and flow values are within working conditions limits

Fitting tightening torque - Nm / lbf

THREADS TYPE	DIVERTER VALVE TYPE				
	DF5-DFE052 DH5	DF10-DFE10 DFE140-DH10	DF20-DFE20 DH20	DF25-DH25	DH30
BSP (ISO 228/1)	G 3/8	G 1/2	G 3/4	G 1	G 1 1/2
With O-Ring seal	35 / 25.8	50 / 36.9	90 / 66.4	100 / 73.8	120 / 88.5
With copper washer	40 / 29.5	60 / 44.3	60 / 44.3	90 / 66.4	100 / 73.8
With steel and rubber washer	30 / 22.1	60 / 44.3	70 / 51.6	100 / 73.8	120 / 88.5
UN-UNF (ISO 11926-1)	3/4-16 UNF-2B (SAE 8)	7/8-14 UNF-2B (SAE 10)	1 1/16-12 UN-2B (SAE 12)	1 5/16-12 UN-2B (SAE 16)	1 7/8-12 UN-2B (SAE 24)
With O-Ring seal	50 / 36.9	60 / 44.3	95 / 70.1	150 / 111	210 / 155

NOTE - These torque are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish. The manufacturer shall be consulted.



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