DIVERTER VALVES

DF

DFE

DH

walvoil
HYDRAULIC CONTROL SYSTEMS

valvoilgroup

Additional information
This catalogue shows the product in the most usual configurations.
Please contact Sales Dpt. for more detailled 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.

9th edition April 2006:
This edition supercedes all prior documents.

General contents

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 movement sequence or control selection of different actuators is needed.

With mechanical control

DF series . . . . . *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

With ON/OFF solenoid control

Monoblock DFE series . . . . . *page 53*

- 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.

Sectional DFE series . . . . . *page 85*

- 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 series . . . . . *page 103*

- 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.

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DF25

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Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm^2/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	*Δp=100 bar 1450 psi with fuid 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°C to 80°C			
	with FPM seals	from –20°C 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 for working conditions	*with mechanical control*	from –40°C to 60°C			
	with hydraulic and pneumatic controls	from –30°C to 60°C			
	with electric controls	from –20°C to 50°C			

NOTE – *For different working conditions please contact Sales Dept.*

Standard threads

REFERENCE STANDARDS

		BSP	UN-UNF	NPTF	METRIC	
THREAD ACCORDING TO		ISO 228/1	ISO 263	ANSI B1.20.3	ISO 262	ISO 262
		BS 2779	ANSI B1.1 unified			
CAVITY ACCORDING TO	ISO	1179	11926		9974–1	6149
	SAE		J1926	J476a		J2244
	DIN	3852–2 shape X or Y			3852–1 shape X or Y	

PORTS THREAD

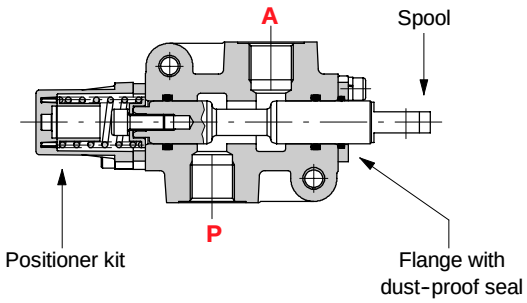
ALL PORTS	BSP	UN-UNF	METRIC (ISO 9974–1)	METRIC (ISO 6149)
DF5	G 3/8	3/4–16 (SAE 8)	M18x1.5	M18x1.5
DF10	G 1/2	7/8–14 (SAE 10)	M22x1.5	
DF20	G 3/4	1 1/16–12 (SAE 12)		
DF25	G 1	1 5/16–12 (SAE 16)		
PILOT PORTS				
Pneumatic	NPT 1/8–27	NPT 1/8–27	NPT 1/8–27	NPT 1/8–27
Hydraulic	G 1/4	9/16–18 (SAE 6)		

Optional threads: for availability contact Sales Department

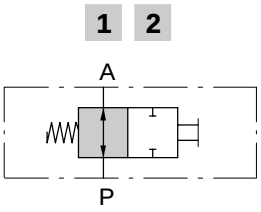
Hydraulic circuit

2-way

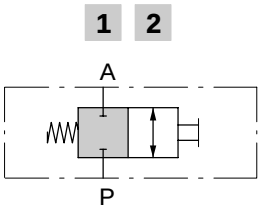
Available as body only in **DF5/2** execution**;** for other executions 3-way body is used.



Spool type **A**

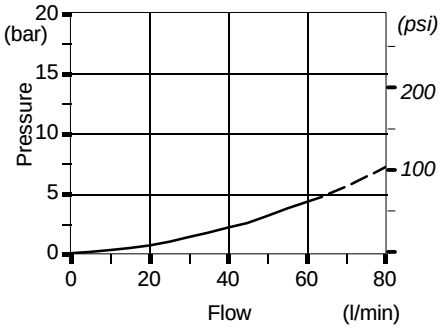


Spool type **B**



Performance data

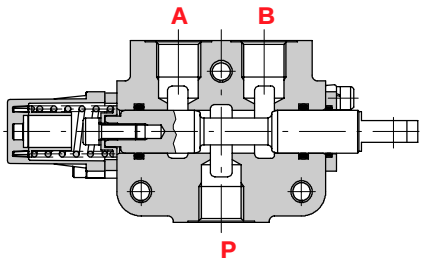
Pressure drop versus flow
P→A



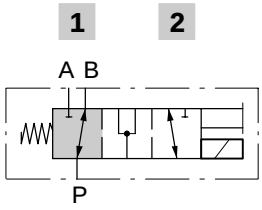
Hydraulic circuit

3-way

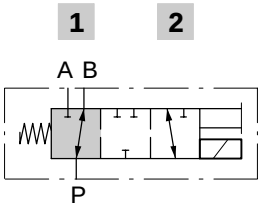
It's possible to obtain 2-way diverter valve plugging port A or B.



Spool type **A**



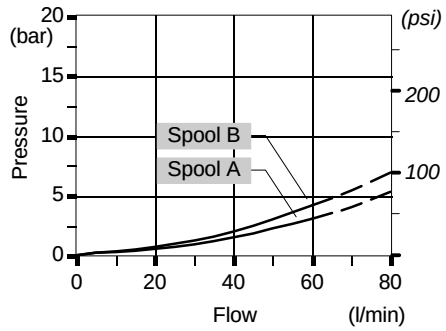
Spool type B **B**



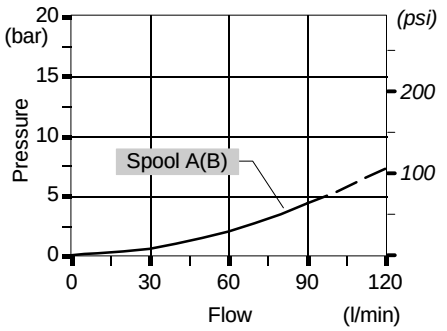
Performance data

Pressure drop versus flow: P→A(B)

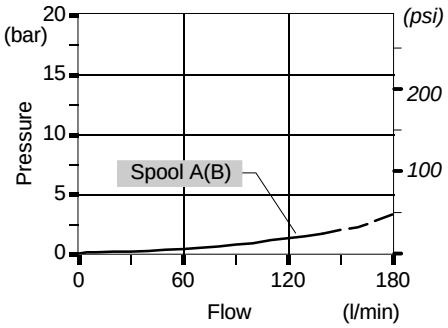
DF5/3



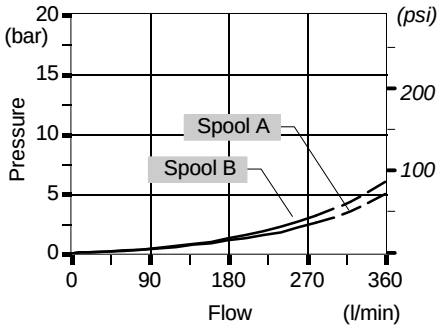
DF10/3



DF20/3

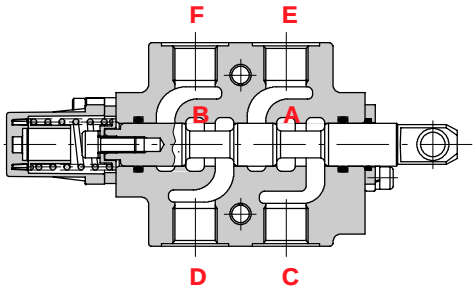


DF25/3

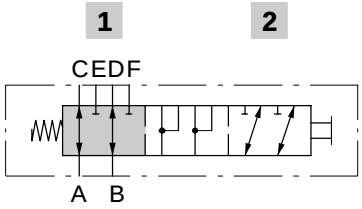


Hydraulic circuit

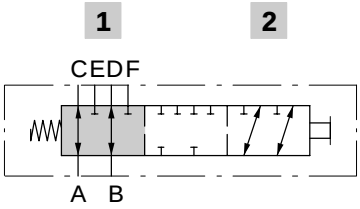
6-way



Spool type **A**



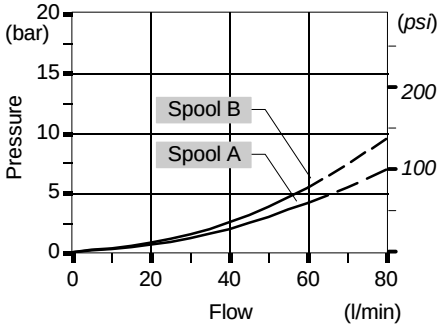
Spool type **B**



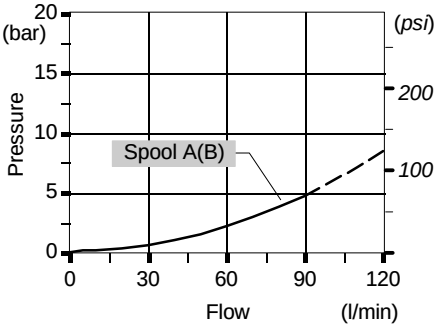
Performance data

Pressure drop versus flow: A→C(E).

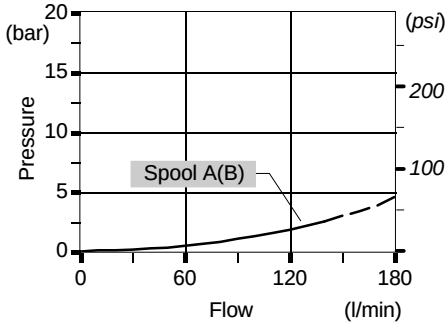
DF5/6



DF10/6

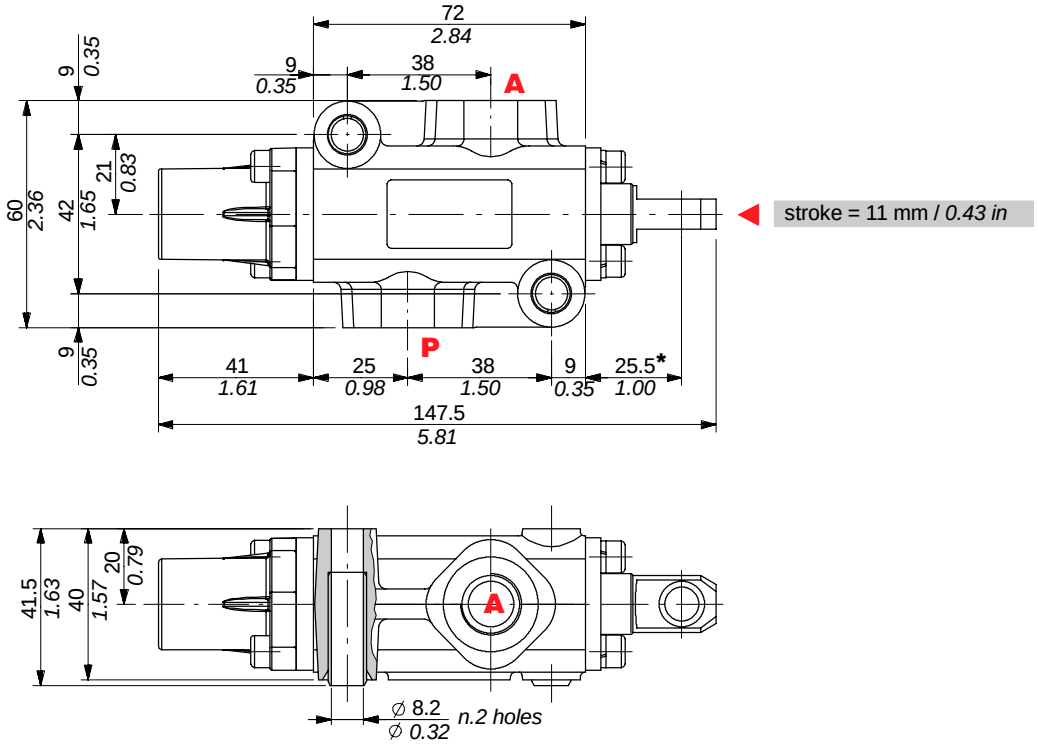


DF20/6

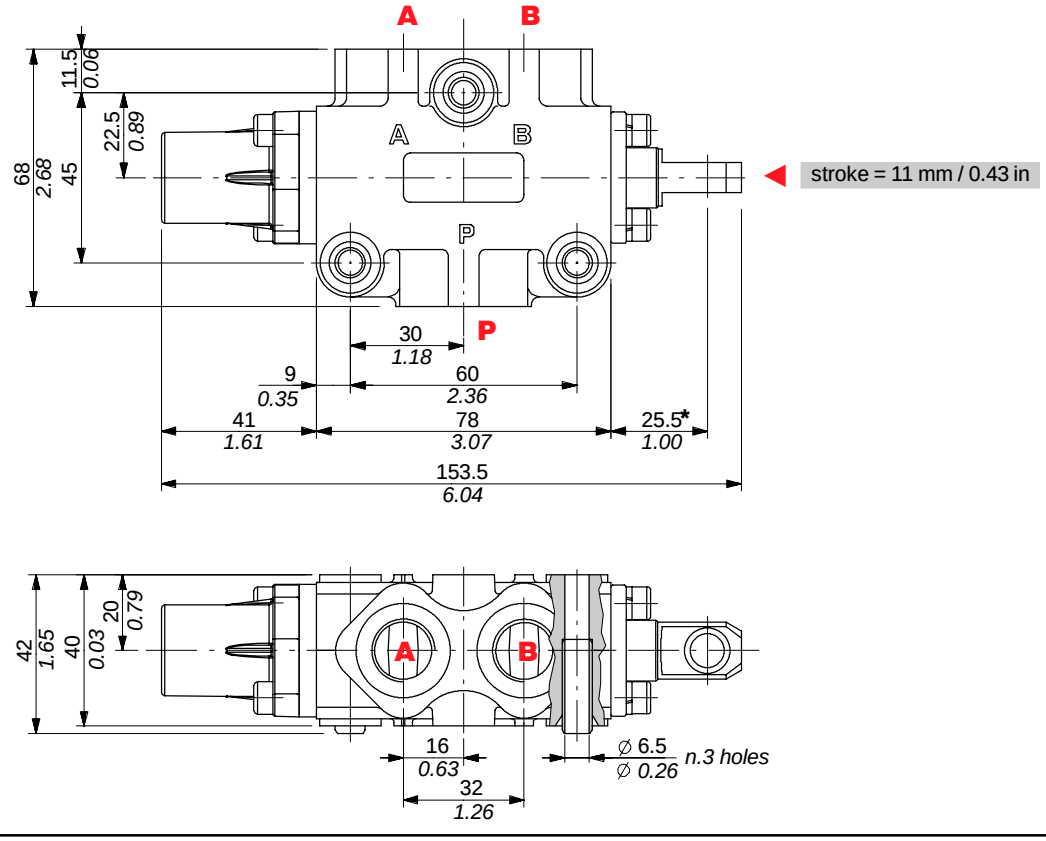


Dimensional data

2-way DF5/2 valve

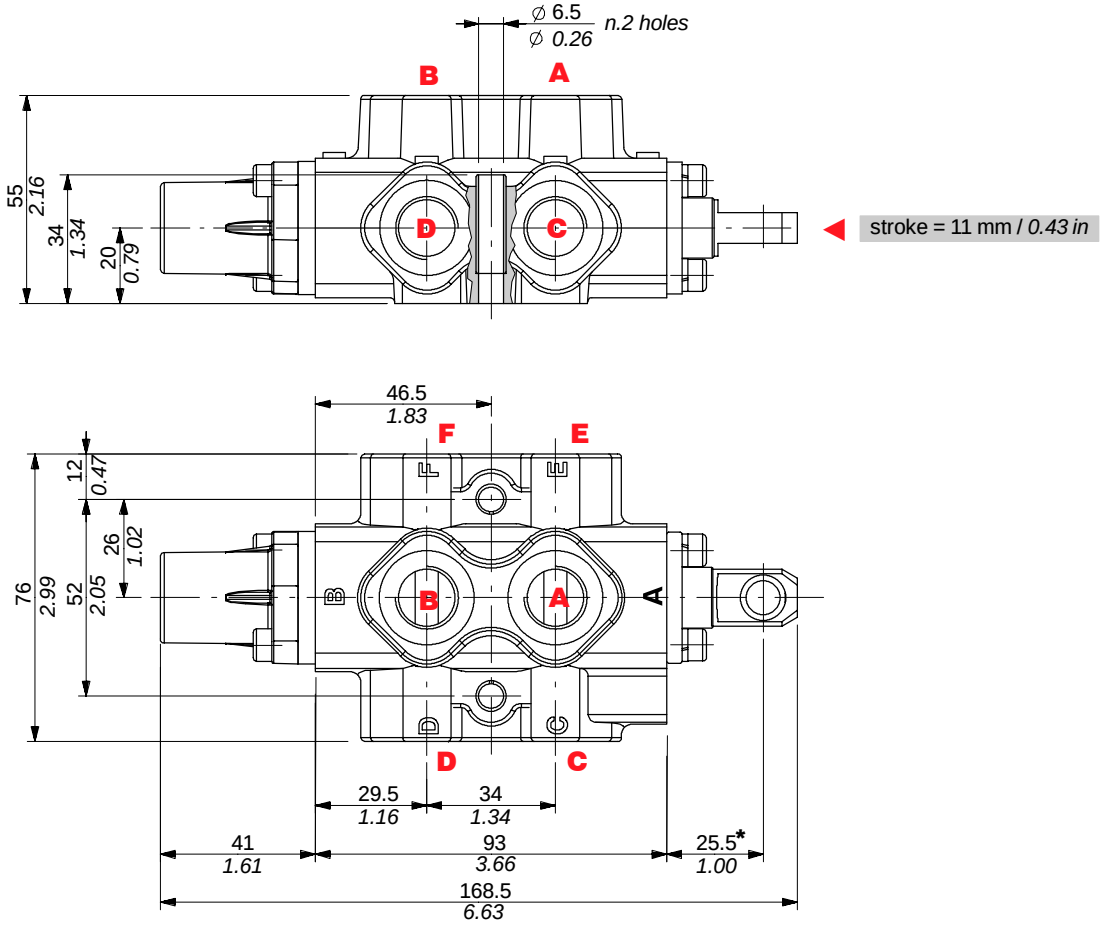


3-way DF5/3 valve



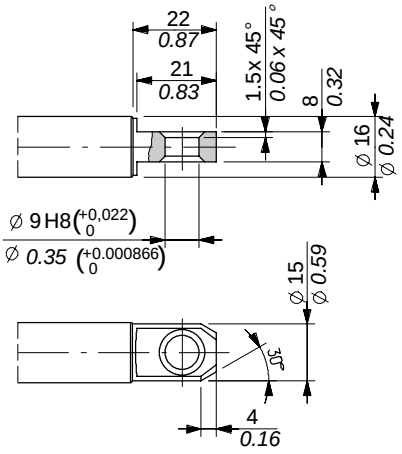
Dimensional data

6-way DF5/6 valve



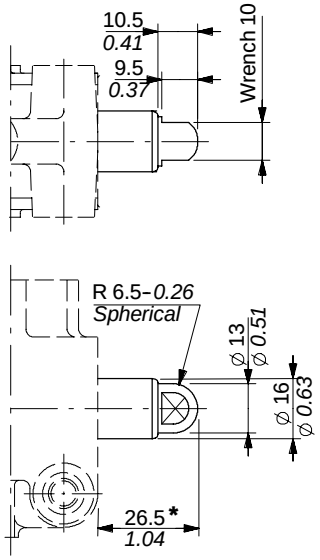
Spool end

Standard end

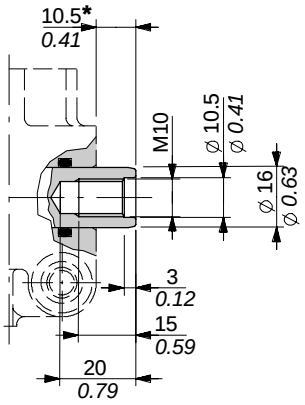


NOTE (*) - *With spool out (positioner kit type 17)*

Spherical end type T



Rotary cam prearrangement

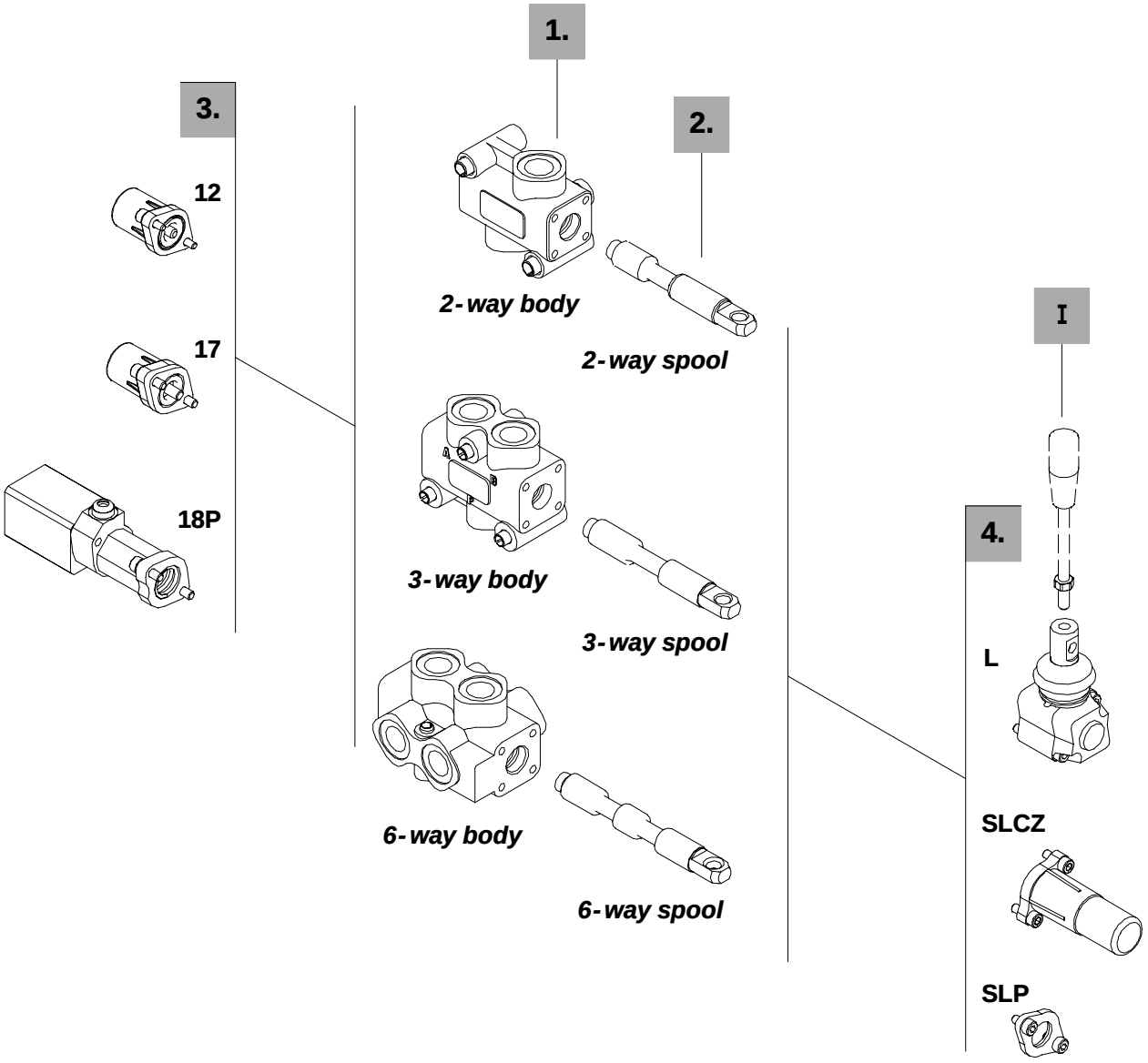


Ordering codes

Description example:

Diverter valve **DF5/3** **A** **17** **SLP**

1. **2.** **3.** **4.**



Ordering codes

2-way

1. Kit corpo *

TYPE	BODY	DESCRIPTION
DF5/2	5CO2220300	Standard body kit

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

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

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
18IB1N	5V18105811*	Comando idraulico a bassa pressione con ritorno a molla in posizione 2

4. Control kits *page 17*

TYPE	CODE	DESCRIPTION
SLP	5COP105000	Without lever box with dust-proof plate kit
SLCZ	5COP205030	Without lever box with endcap
TQ	5TEL105110	Flexible cable connection
L	5LEV105000	Standard kever box
CB	5CAM105020	Cam control
IA2	5IDR505000*	ON/OFF high pressure hydraulic control
IB2	5IDR705000*	ON/OFF low pressure hydraulic control

I Optional handlever

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

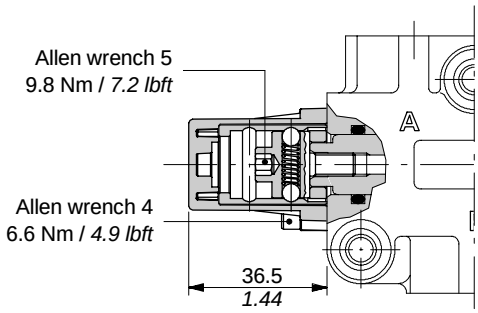
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioners kits

With detent

Kit 12

Detent in positions 1 and 2.

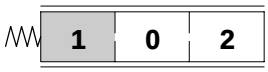


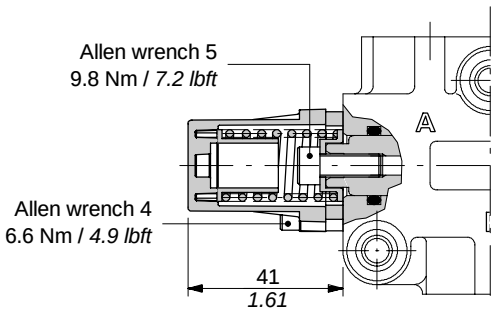
Operating features
Locking and unlocking force . . . . . : 100 N / *22.5 lbf* ±10%

With spring return

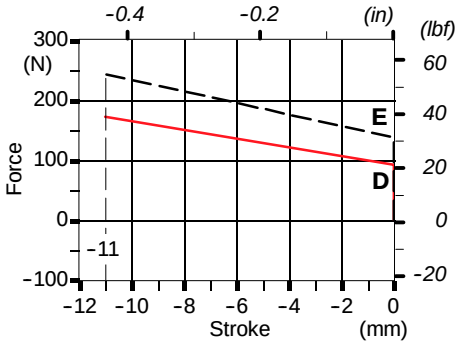
17 kit

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**).



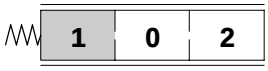


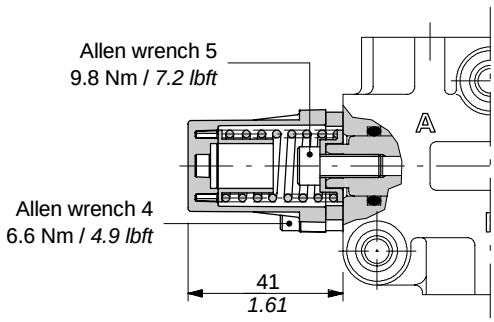
Force-Stroke diagram



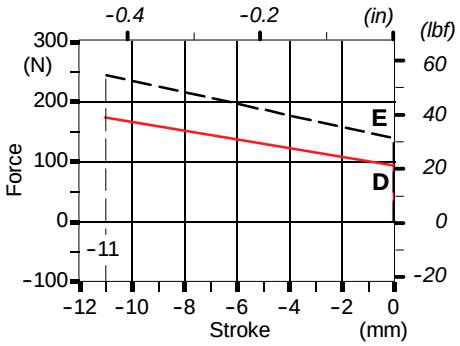
17Y kit

As kit 17, <u>it must be only coupled to IA2 control</u> on page 18.
It's available also with heavier spring type E (**17YME** code: **5V17305003**).





Force-Stroke diagram

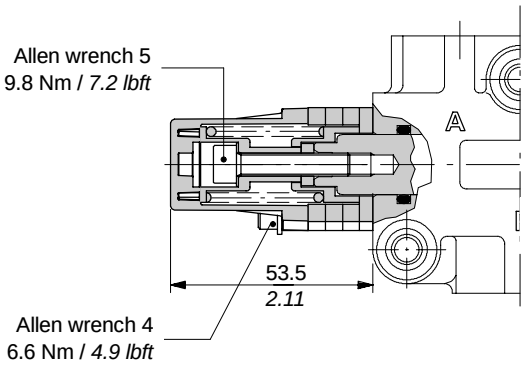


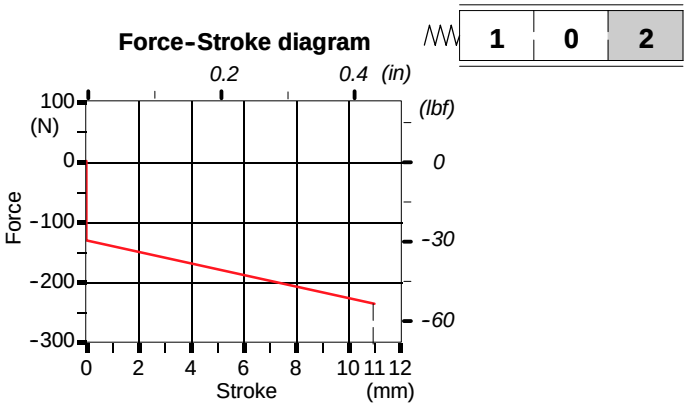
Positioner kits

With spring return

18ME kit

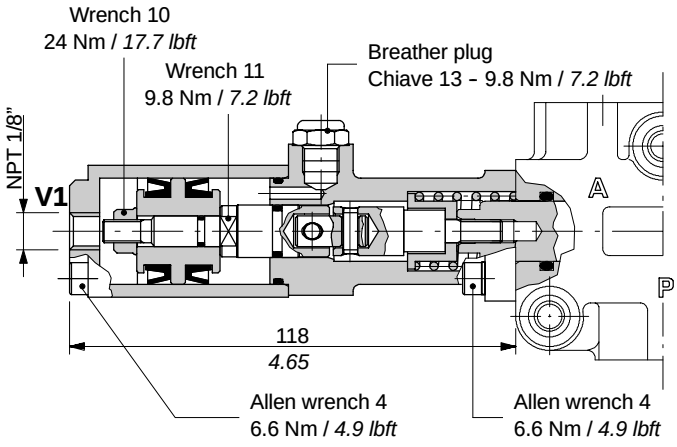
Spring return in position 2.

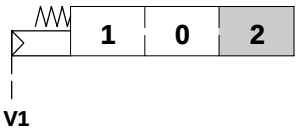




ON/OFF pneumatic kit type 18P

With spring return in position 2.





Operating features

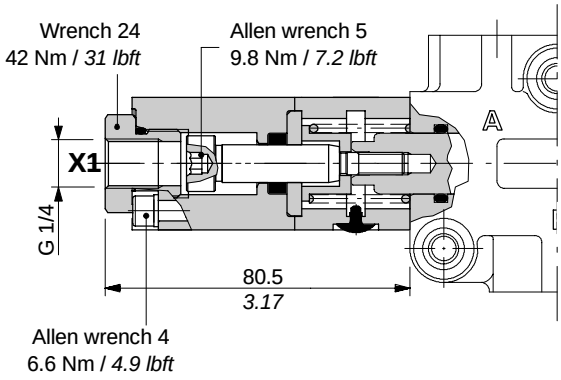
Pilot pressure . . . . . : min 6 bar / *87 psi*
max. 10 bar / *145 psi*

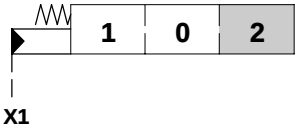
Positioner kits

With ON/OFF hydraulic control

18IA1 kit

With high pressure pilot and spring return to position 2.



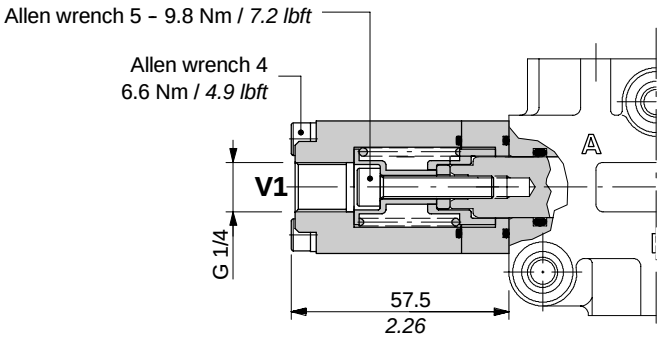


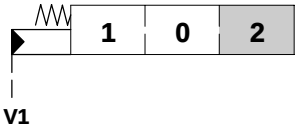
Operating features

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

18IB1N kit

With low pressure pilot and spring return to position 2.





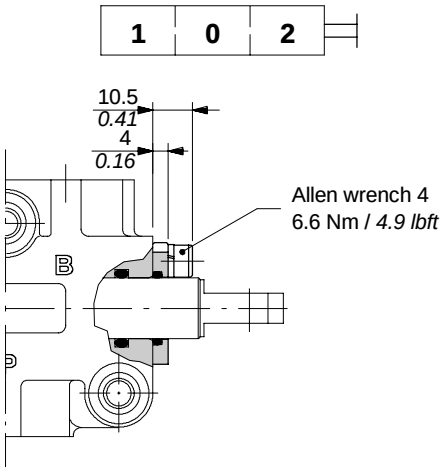
Operating features

Pilot pressure . . . . . : min. 15 bar / *220 psi*
max. 50 bar / *725 psi*

Controls prearrangemet

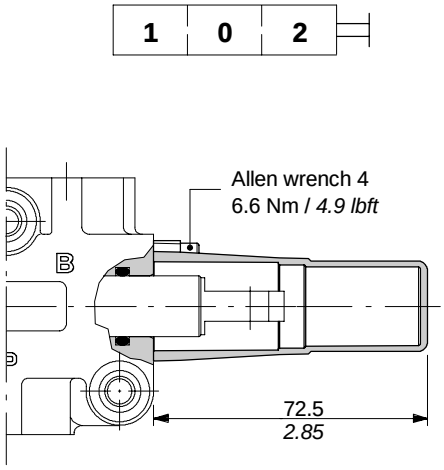
SLP kit

Mechanical control with dust-proof plate.



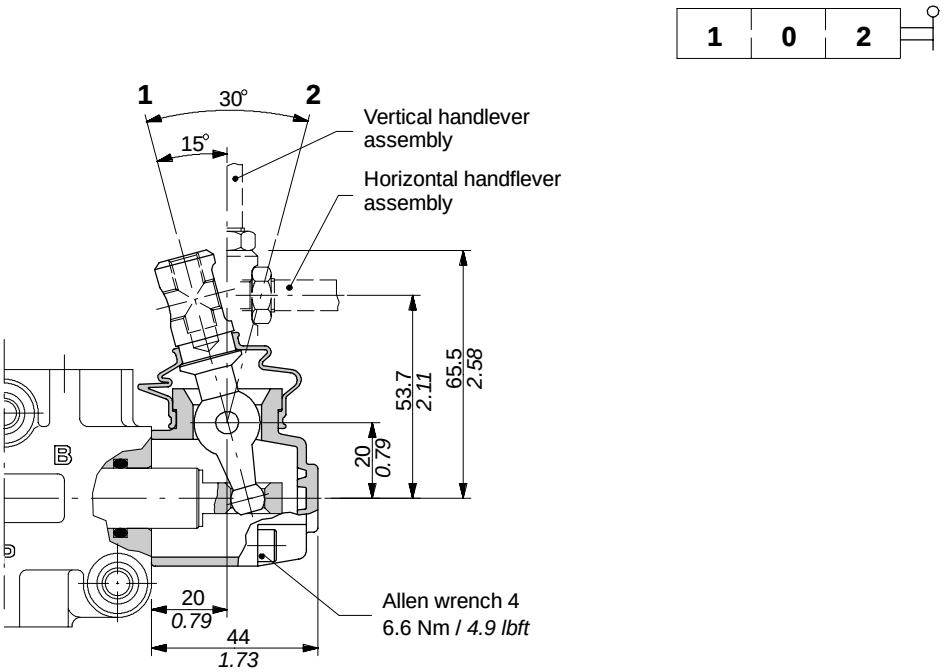
SLCZ kit

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**).

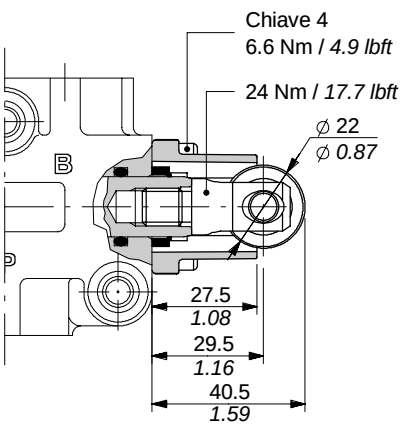


Control kits

CB cam control

With bronze bearing; it must be coupled to 17 kit (see page 14).

1	0	2



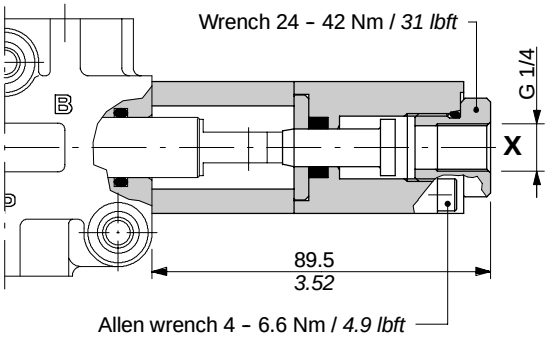
ON/OFF hydraulic controls

IA2 kit

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

1	0	2

X



Operating features

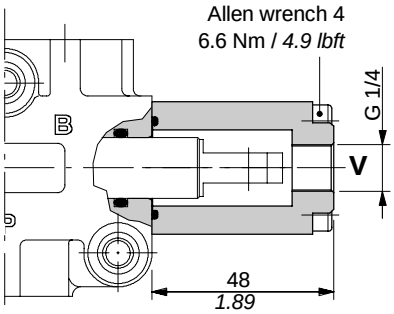
Pilot pressure . . . . . : min. 30 bar / *435 psi*
max. 250 bar / *3600 psi*

IB2 kit

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

1	0	2

V



Operating features

Pilot pressure . . . . . : min. 15 bar / *220 psi*
max. 50 bar / *725 psi*

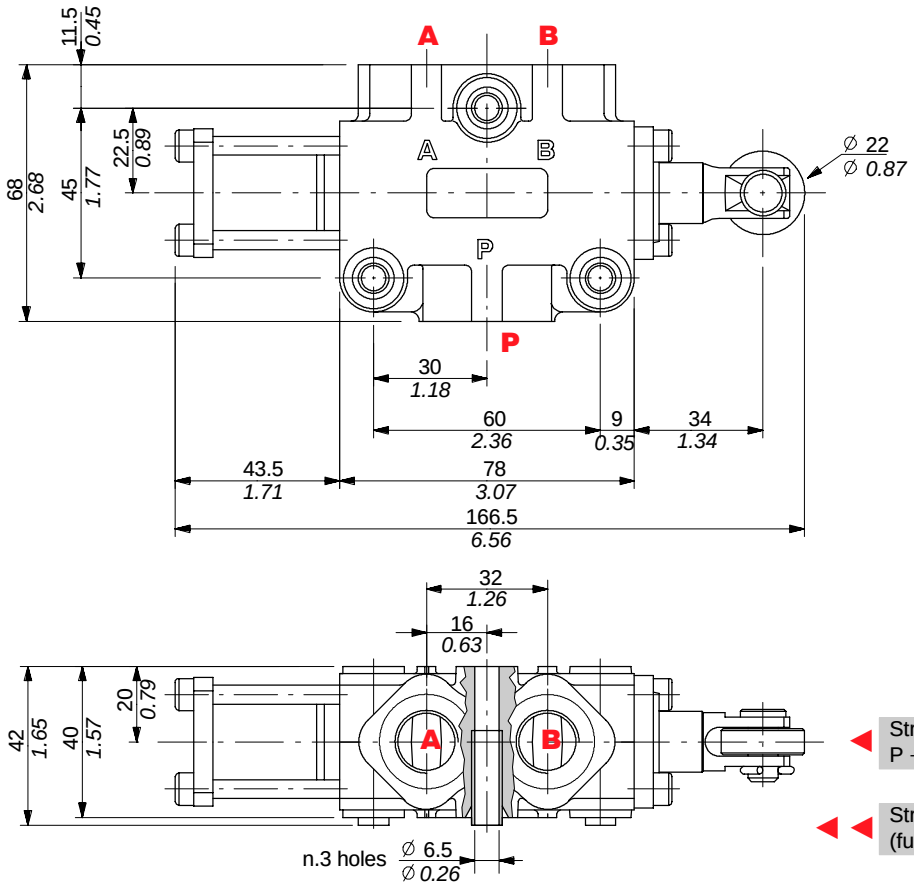
Other executions

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

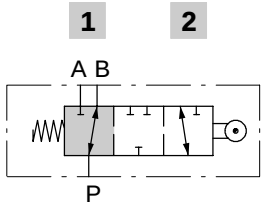
3-way DFC050/3 valve

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

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



Spool type **B**



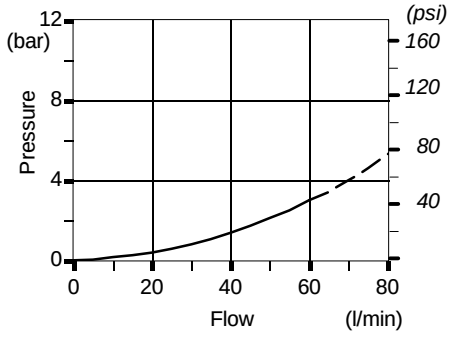
Spool in rest position
P → B

Stroke = 6.5 mm / *0.26 in*
P → A (start opening)

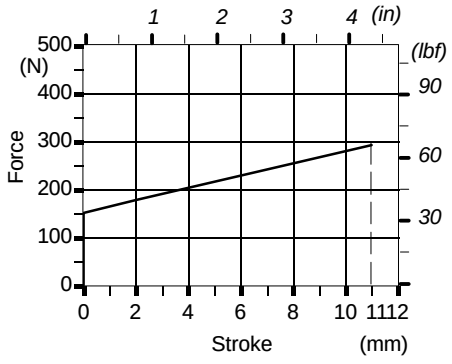
Stroke limit = 11 mm / *0.43 in*
(full opening)

Performance data

Pressure drop versus flow
P→A(B)



Operating force

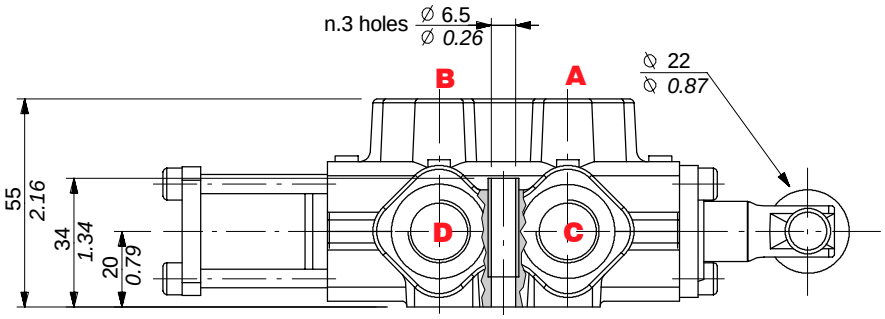


Other executions

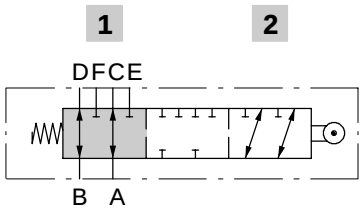
6-way DFC050/6 valve

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

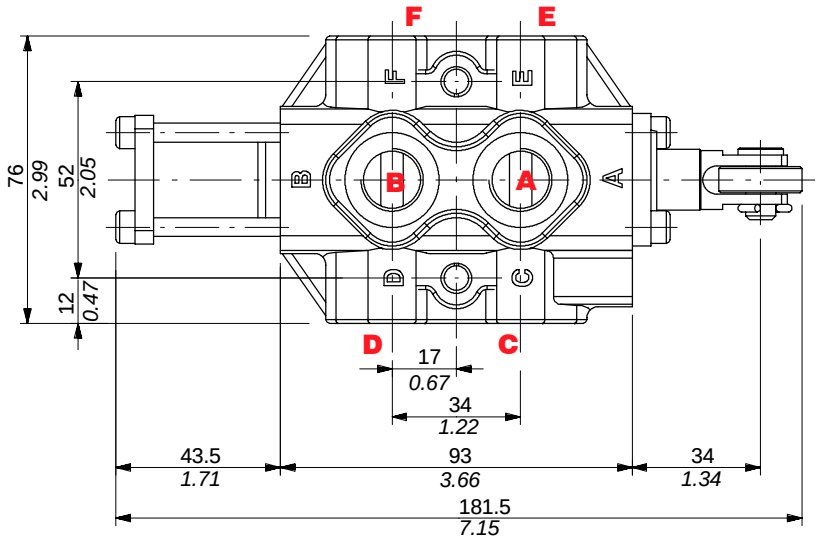
Valve is supplied painted as standard, with one coat of Primer black antirust paint



Spool type **B**



Spool in rest position
A → C / B → D

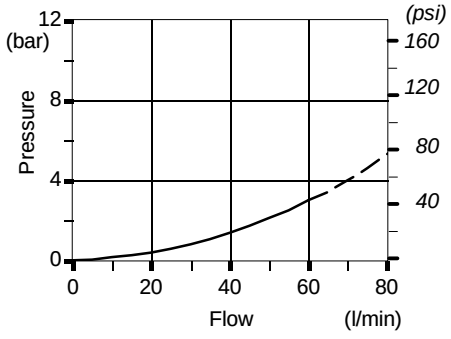


Stroke = 6.8 mm / *0.27 in*
A → E / B → F (start opening)

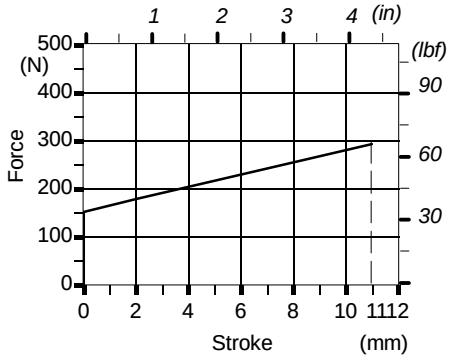
Stroke limit = 11 mm / *0.43 in*
(full opening)

Performance data

Pressure drop versus flow
P→A(B)

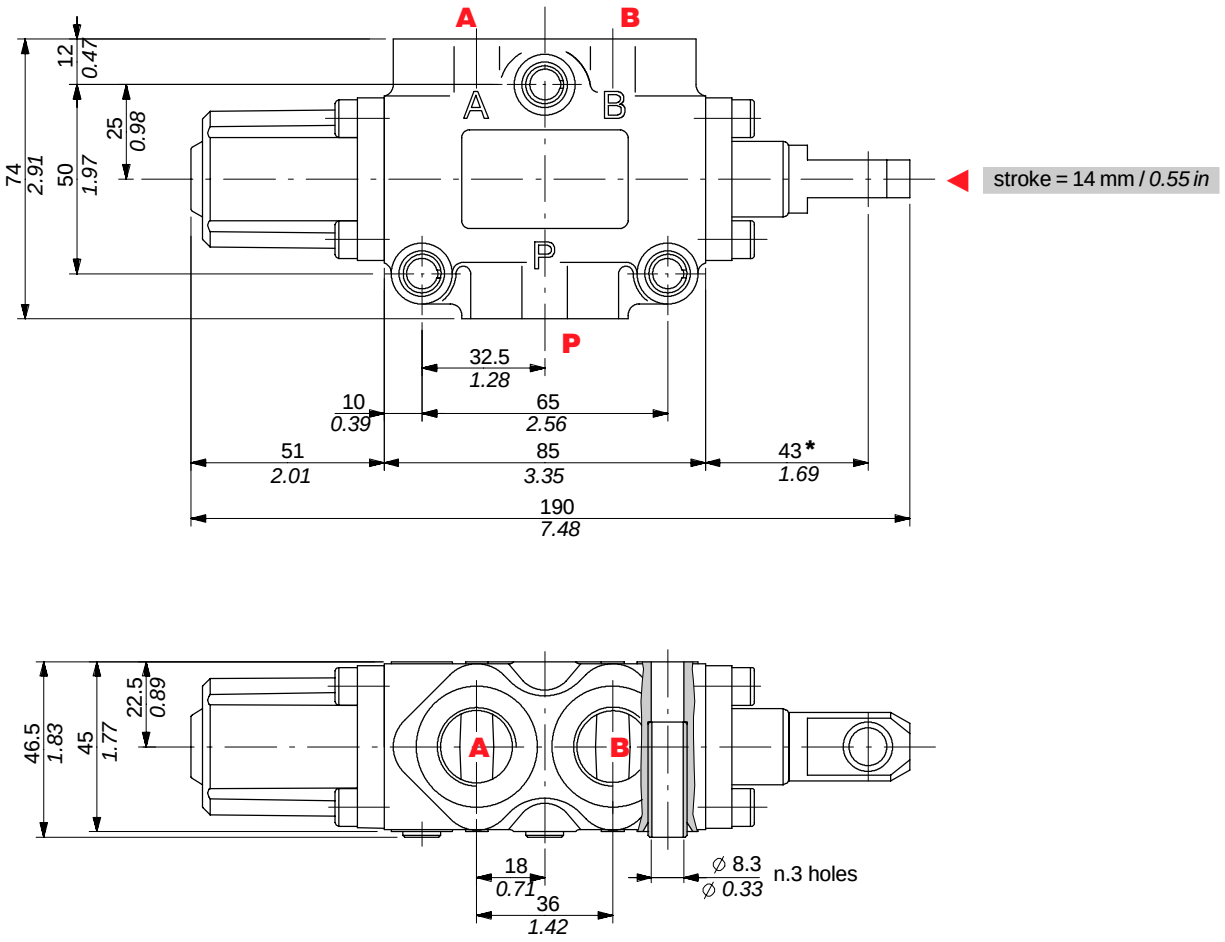


Operating force



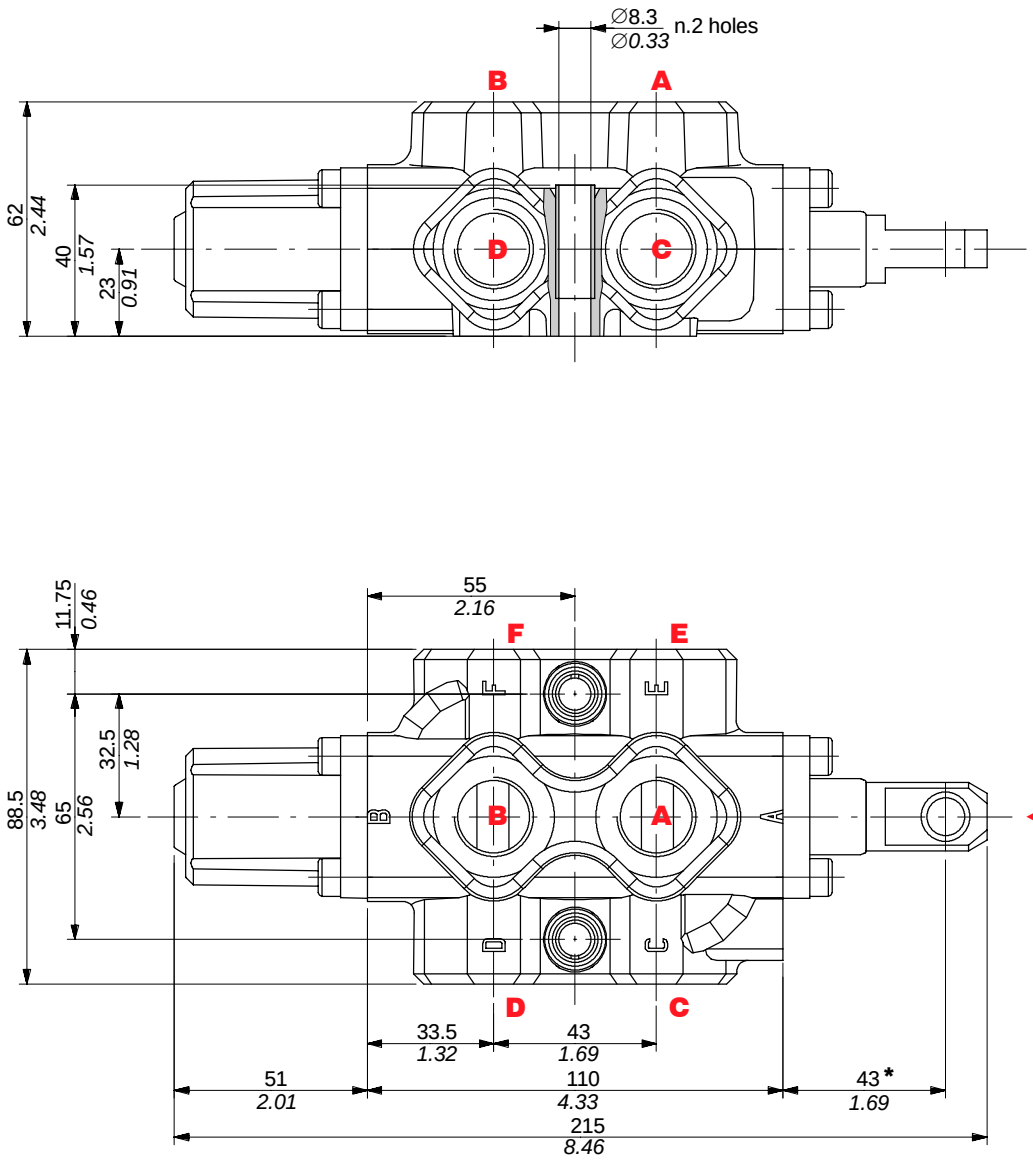
Dimensional data

3-way DF10/3 valve



Dimensional data

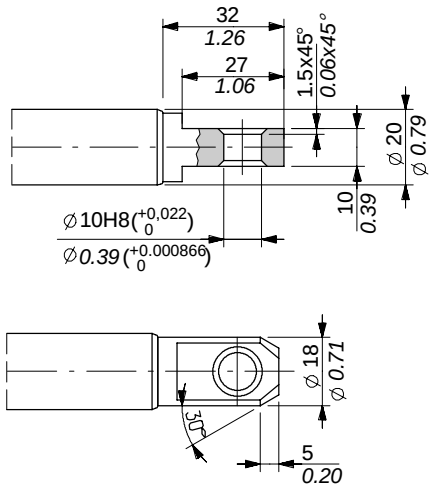
6-way DF10/6 valve



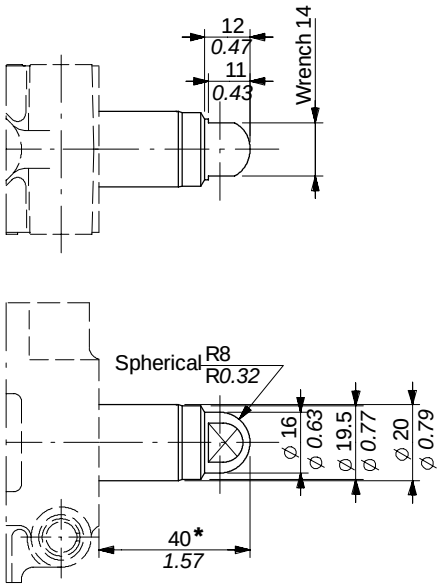
Dimensional data

Spool end

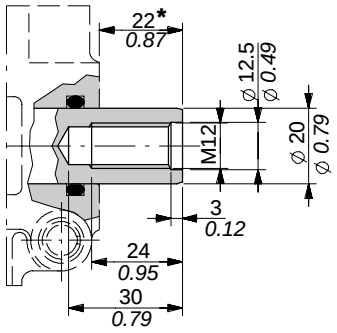
Standard end



Spherical end type T



Rotary cam prearragement



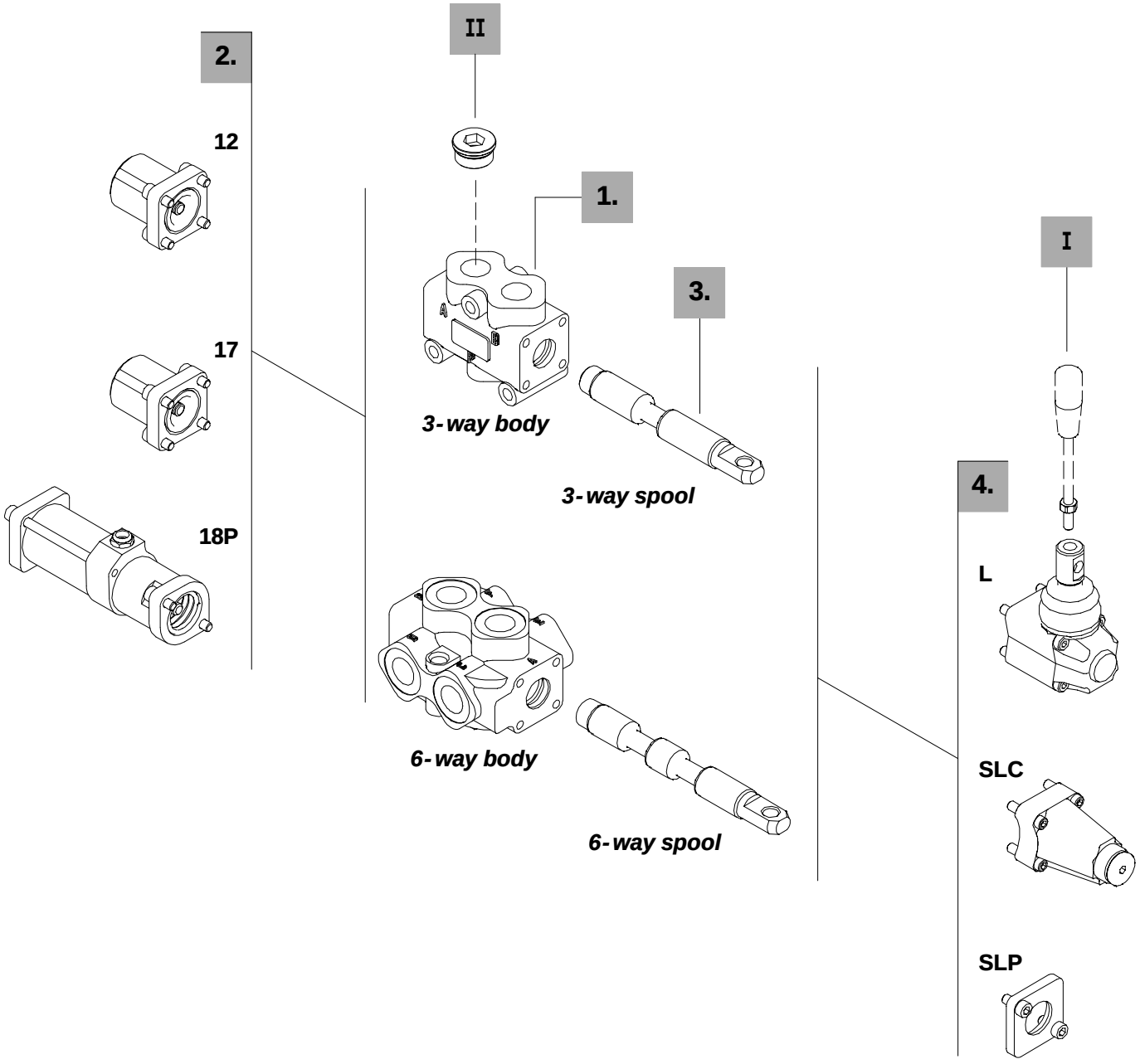
NOTE (*) - *With spool out (positioner kit type 17)*

Ordering codes

DEscription example

Diverter valve **DF10/3** **A** **17** **SLP**

1. **3.** **2.** **4.**



Ordering codes

3-way

1. Body kit *

TYPE	CODE	DESCRIPTION
DF10/3	5CO2241300	Standard body kit

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

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 colosed 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 26*

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
18IB1	5V18110810*	ON/OFF low pressure hydraulic kit with spring return in position 2

4. Control kits *page 28*

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
CB	5CAM110020	Cam control
IA2	5IDR510001*	ON/OFF high pressure hydraulic control
IB2	5IDR710000*	ON/OFF low pressure hydraulic control

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

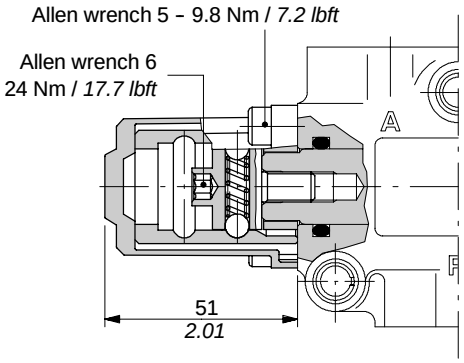
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioner kits

With detent

12 kit

Detent in positions 1 and 2.



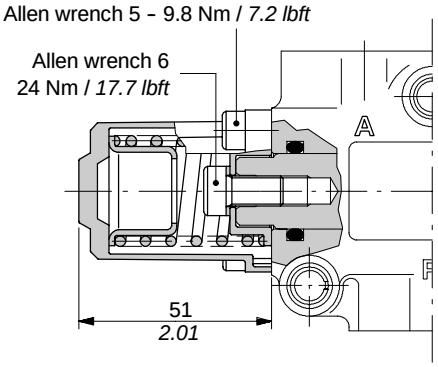
Operating features

Locking and unlocking force . . . . . : 280 N / *63 lbf* ±10%

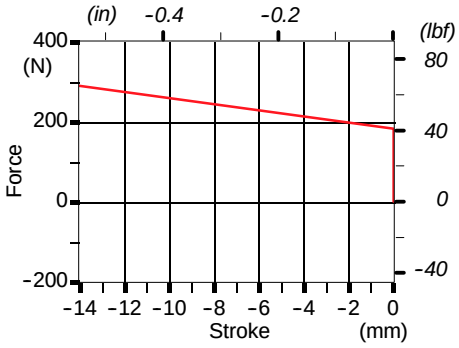
With spring return

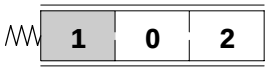
17 kit

Spring return in position 1.



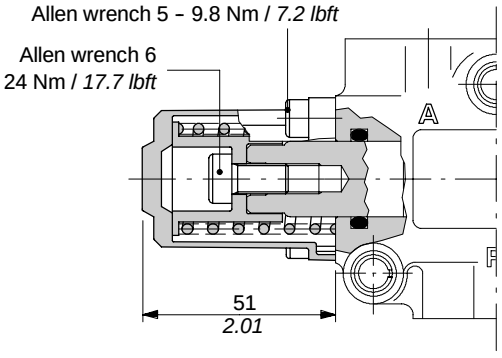
Force-Stroke diagram



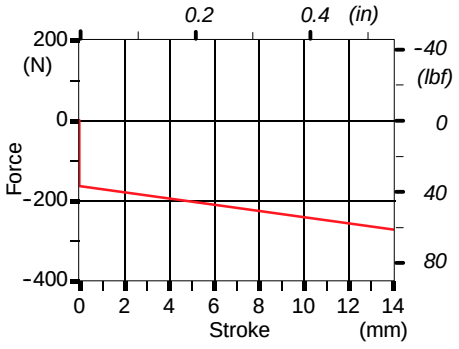


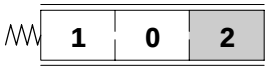
18 kit

Spring return in position 2.



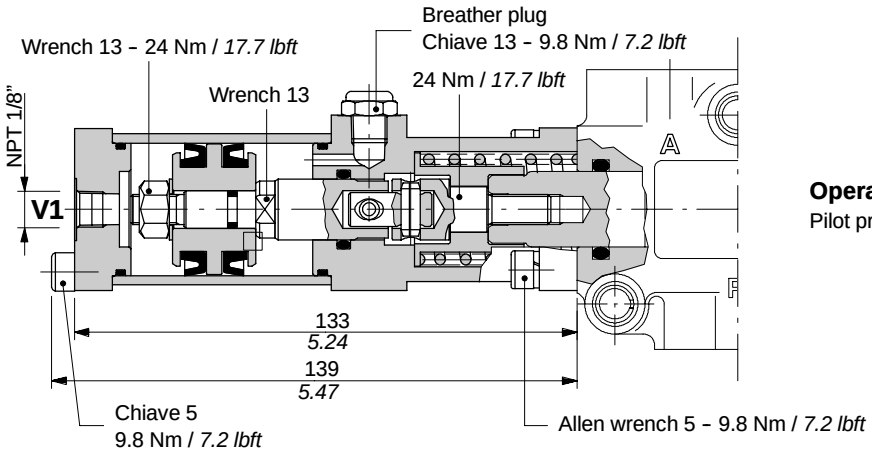
Force-Stroke diagram

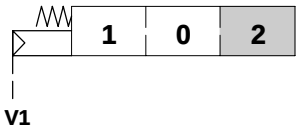




ON/OFF pneumatic kit type 18P

With spring return in position 2.





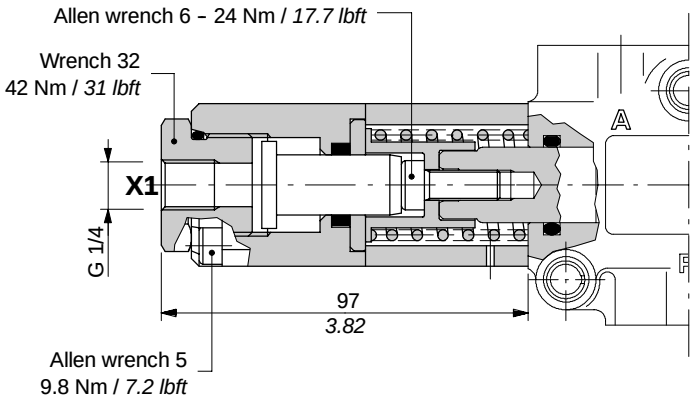
Operating features

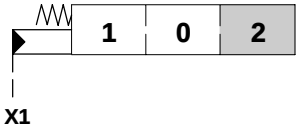
Pilot pressure . . . . . : min. 6 bar / *87 psi*
max. 10 bar / *145 psi*

With ON/OFF hydraulic control

18IA1 kit

With high pressure pilot and spring return to position 2.



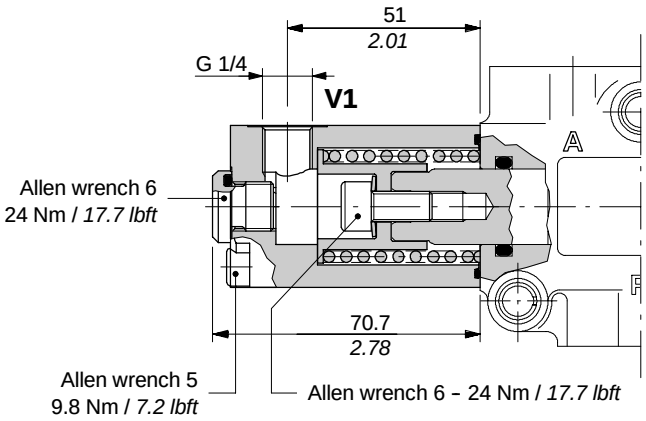


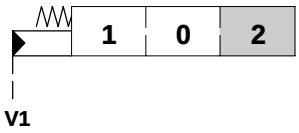
Operating features

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

18IB1 kit

With low pressure pilot and spring return to position 2.





Operating features

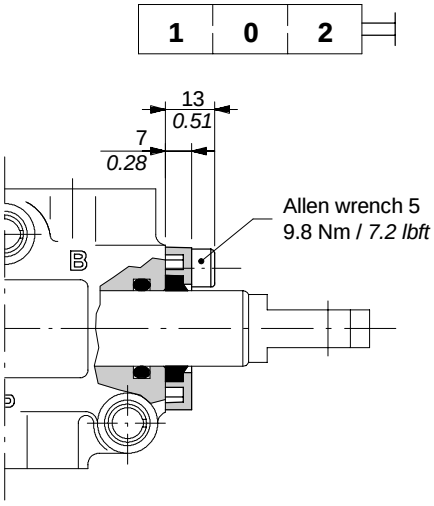
Pilot pressure . . . . . : min. 15 bar / *220 psi*
max. 50 bar / *725 psi*

Control kits

Controls prearrangement

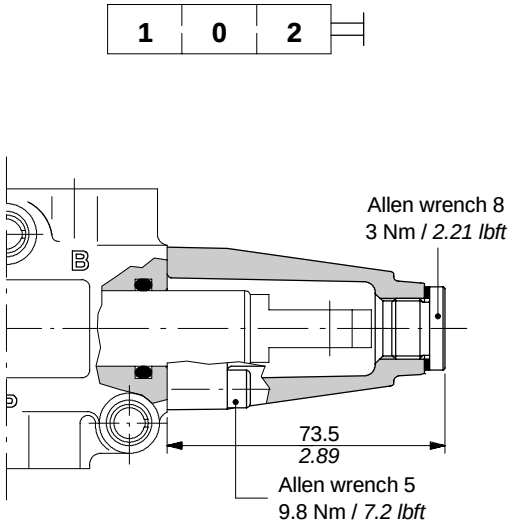
SLP kit

Mechanical control with dust-proof plate.



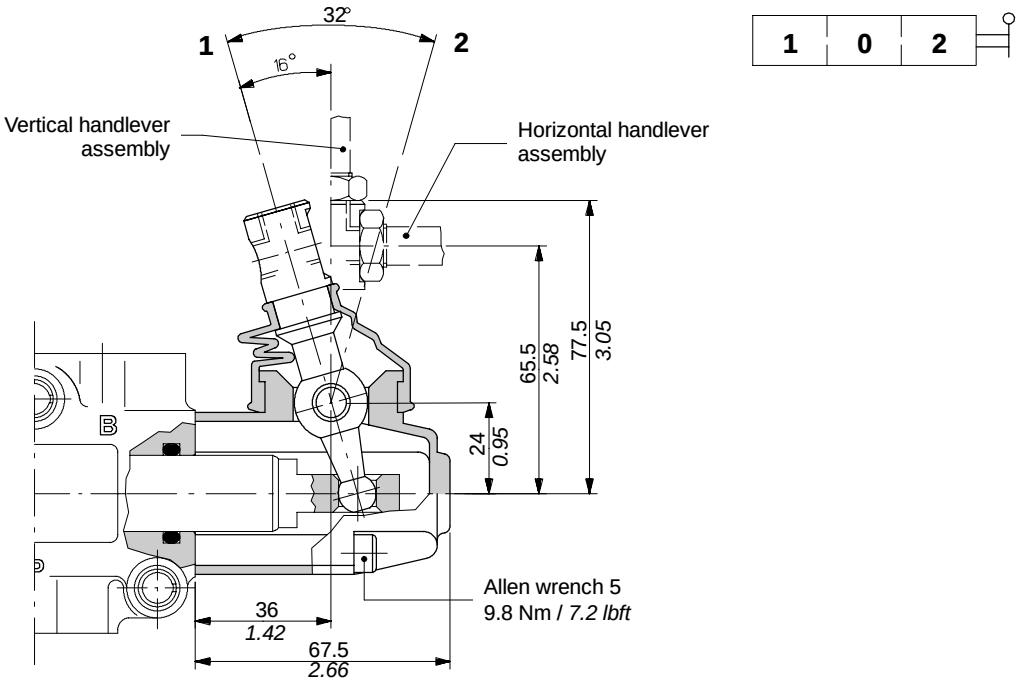
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



L lever control

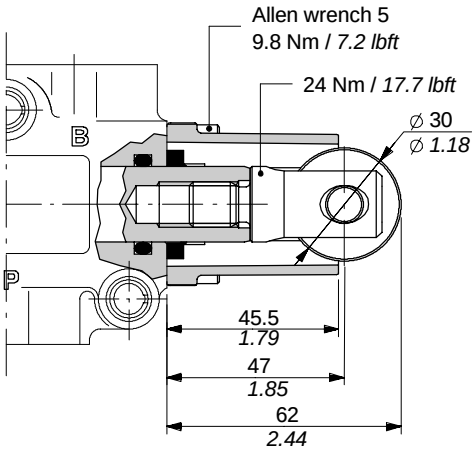
Alumium with protection boot lever pivot box; it can be rotated 180° (execution **L180**).



CB cam control

With bronze bearing; it must be coupled to 17 kit (see page 26).

1	0	2

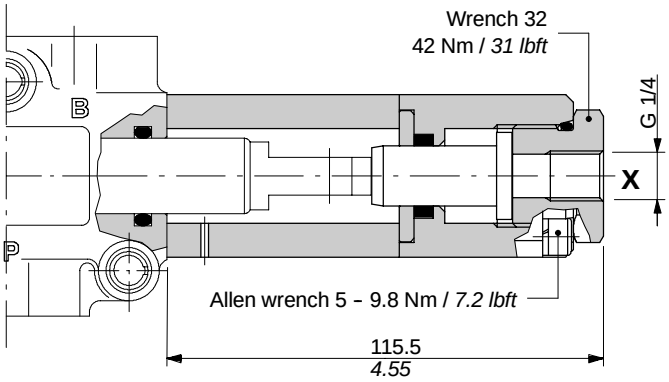


ON/OFF hydraulic controls

IA2 kit

With high pressure pilot; it must be coupled to 17 kit (see page 26).

1	0	2
		X



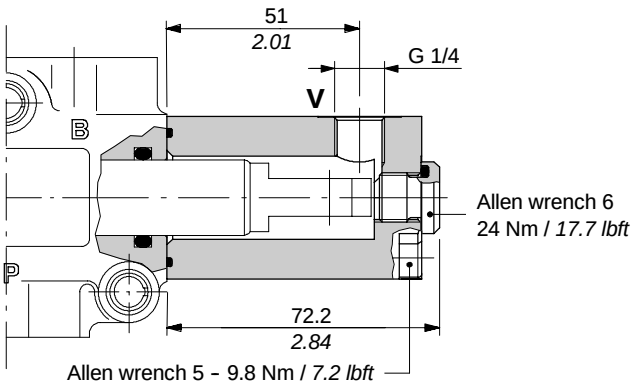
Operating features

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

IB2 kit

With low pressure pilot; it must be coupled to 17 kit (see page 26).

1	0	2
		V



Operating features

Pilot pressure . . . . . : min. 15 bar / *220 psi*
max. 50 bar / *725 psi*

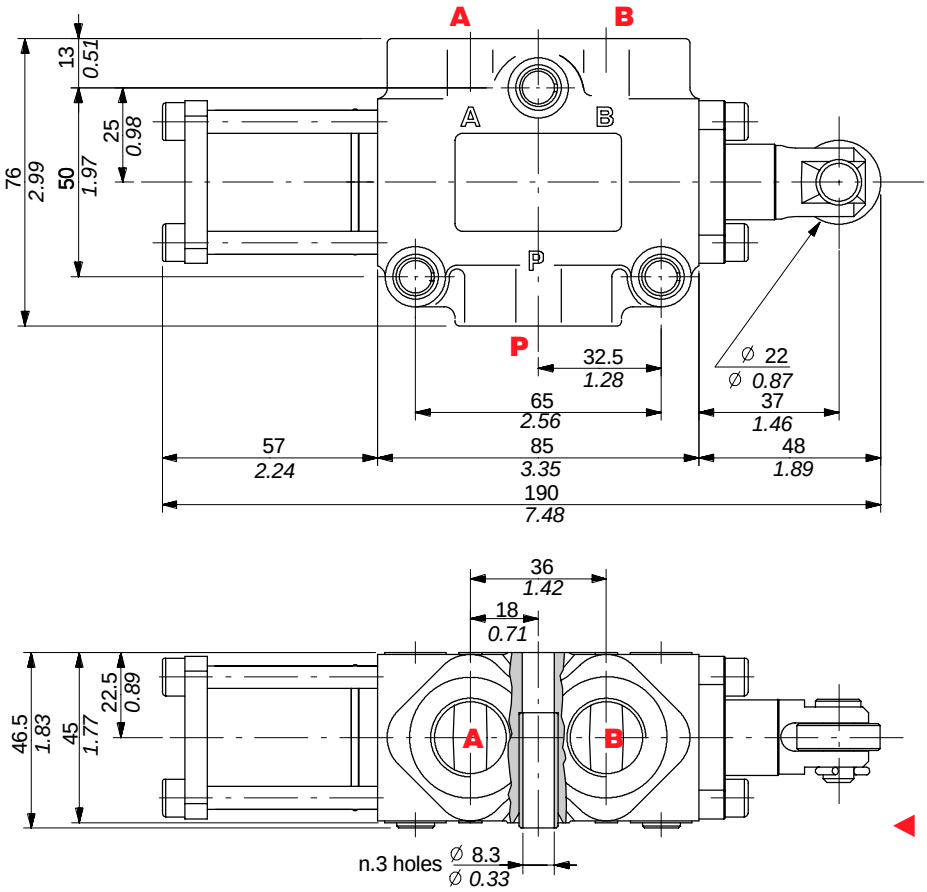
Other executions

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

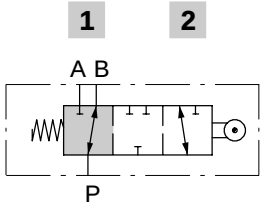
3-way DFC100/3 valve

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

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



Spool type **B**



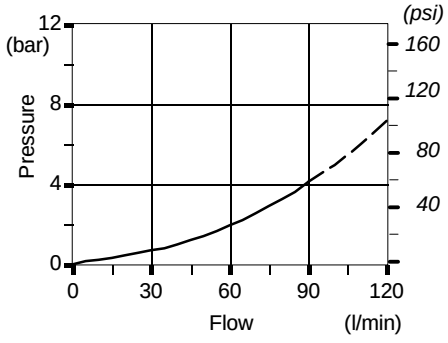
Spool in rest position
P → B

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

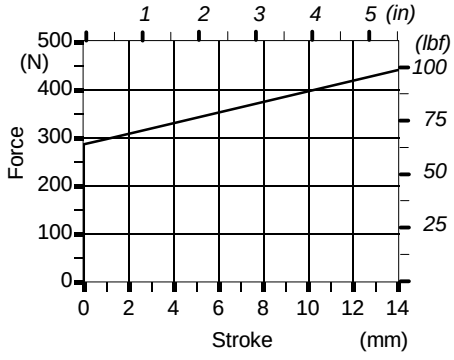
Stroke limit = 14 mm / *0.55 in*
(full opening)

Performance data

Pressure drop versus flow
P→A(B)



Operating force

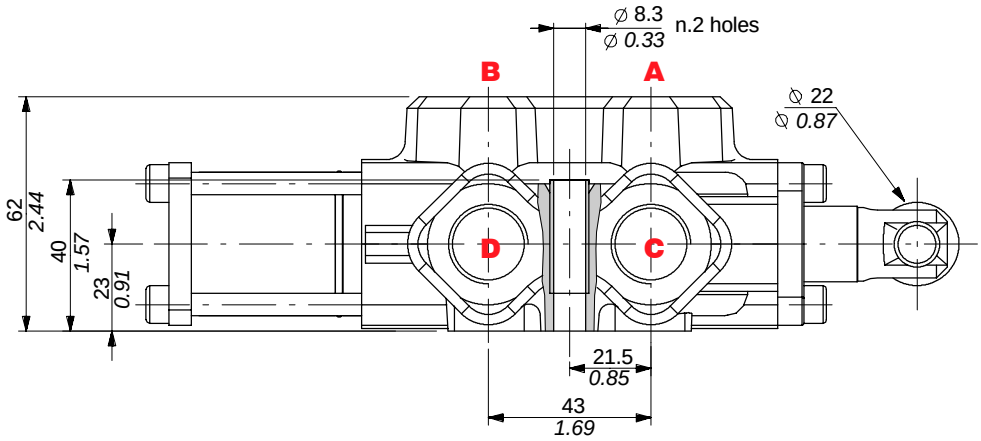


Other executions

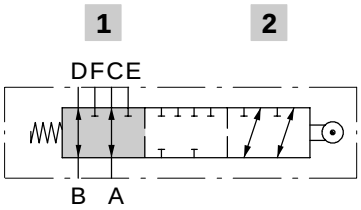
6-way DFC100/6 valve

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

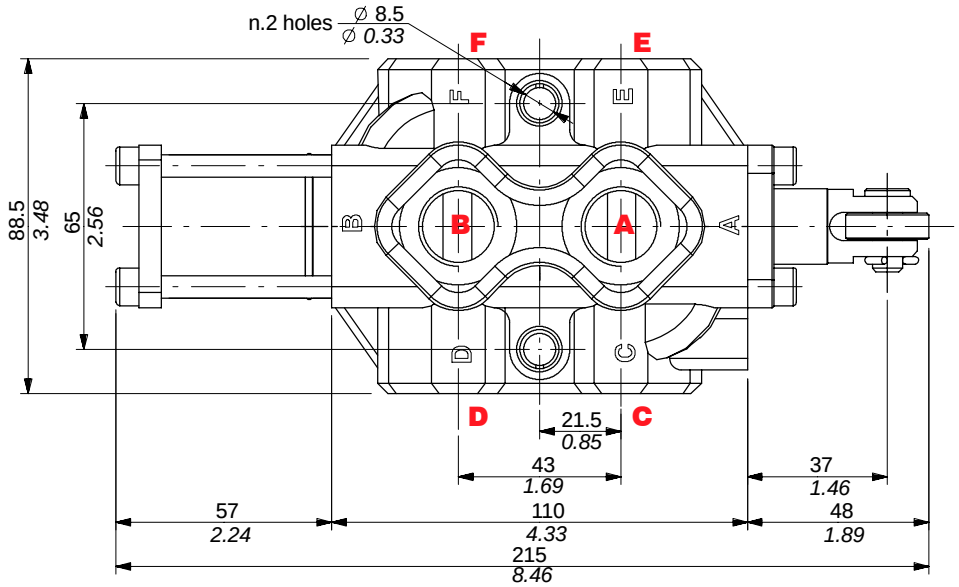
Valve is supplied painted as standard, with one coat of Primer black antirust paint



Spool type **B**



Spool in rest position
A → C / B → D

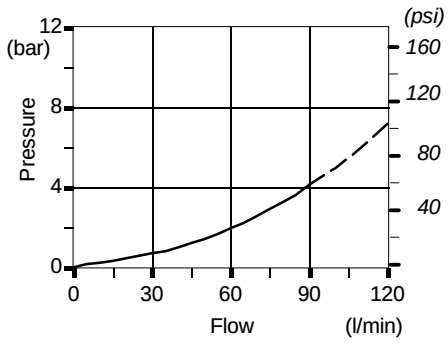


◀ Stroke = 8.5 mm / *0.33 in*
P → A (start opening)

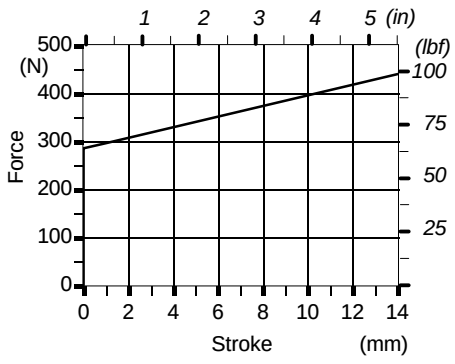
◀◀ Stroke limit = 14 mm / *0.55 in*
(full opening)

Performance data

Pressure drop versus flow
P→A(B)

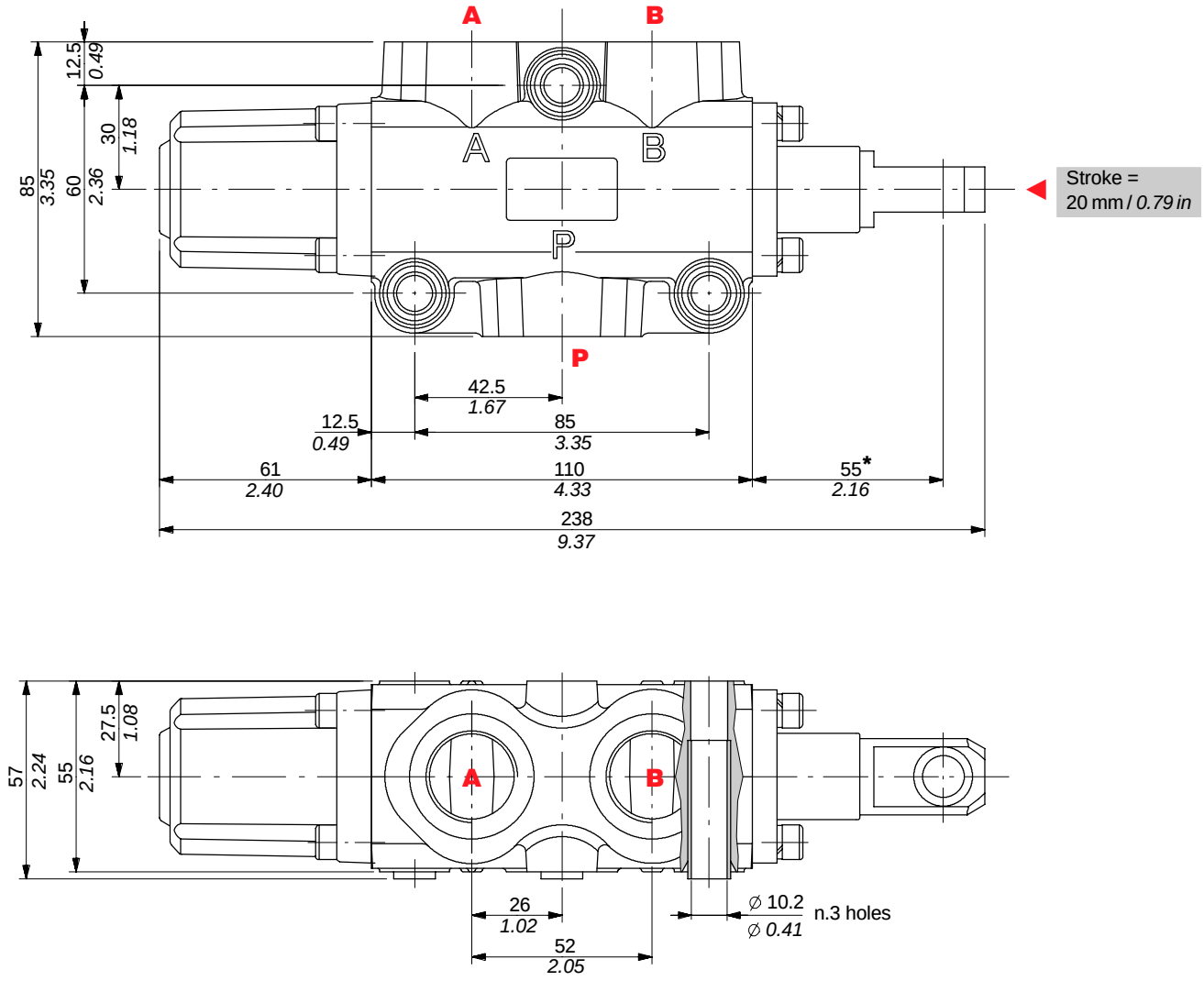


Operating force



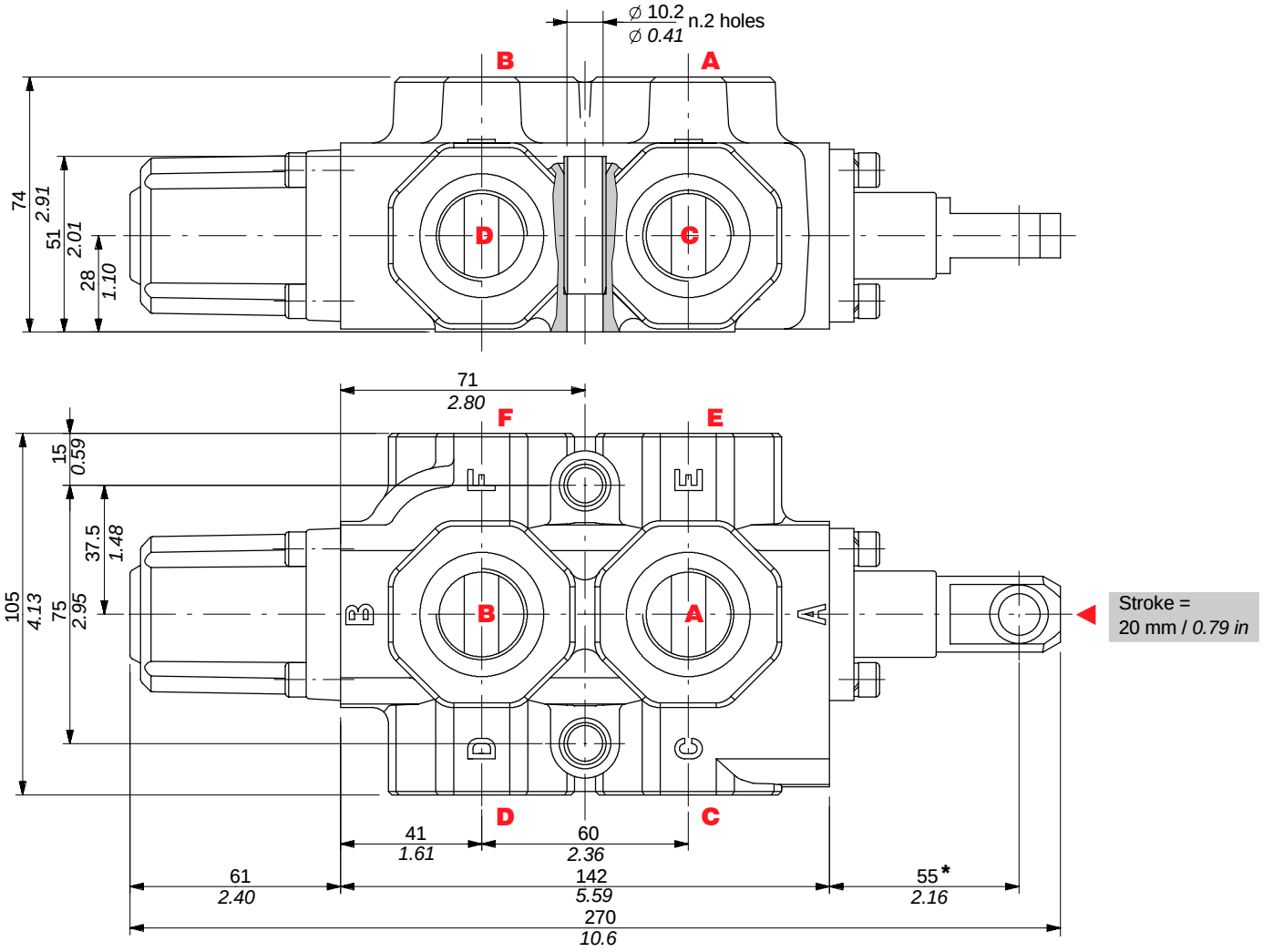
Dimensional data

3-way DF20/3 valve



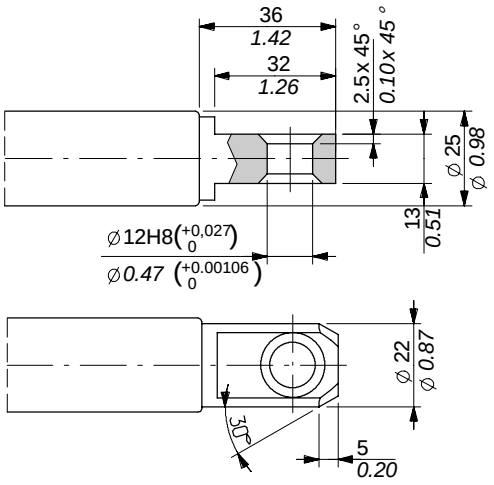
Dimensional data

6-way DF20/6 valve

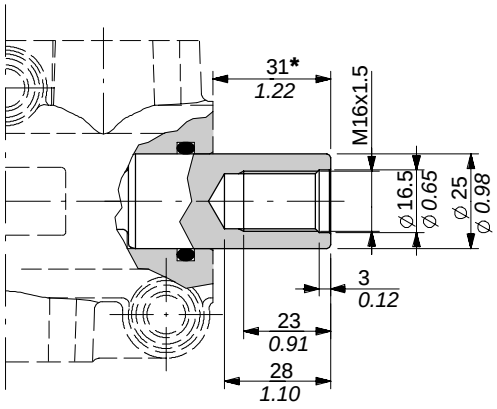


Spool end

Standard end



Rotary cam prearragement



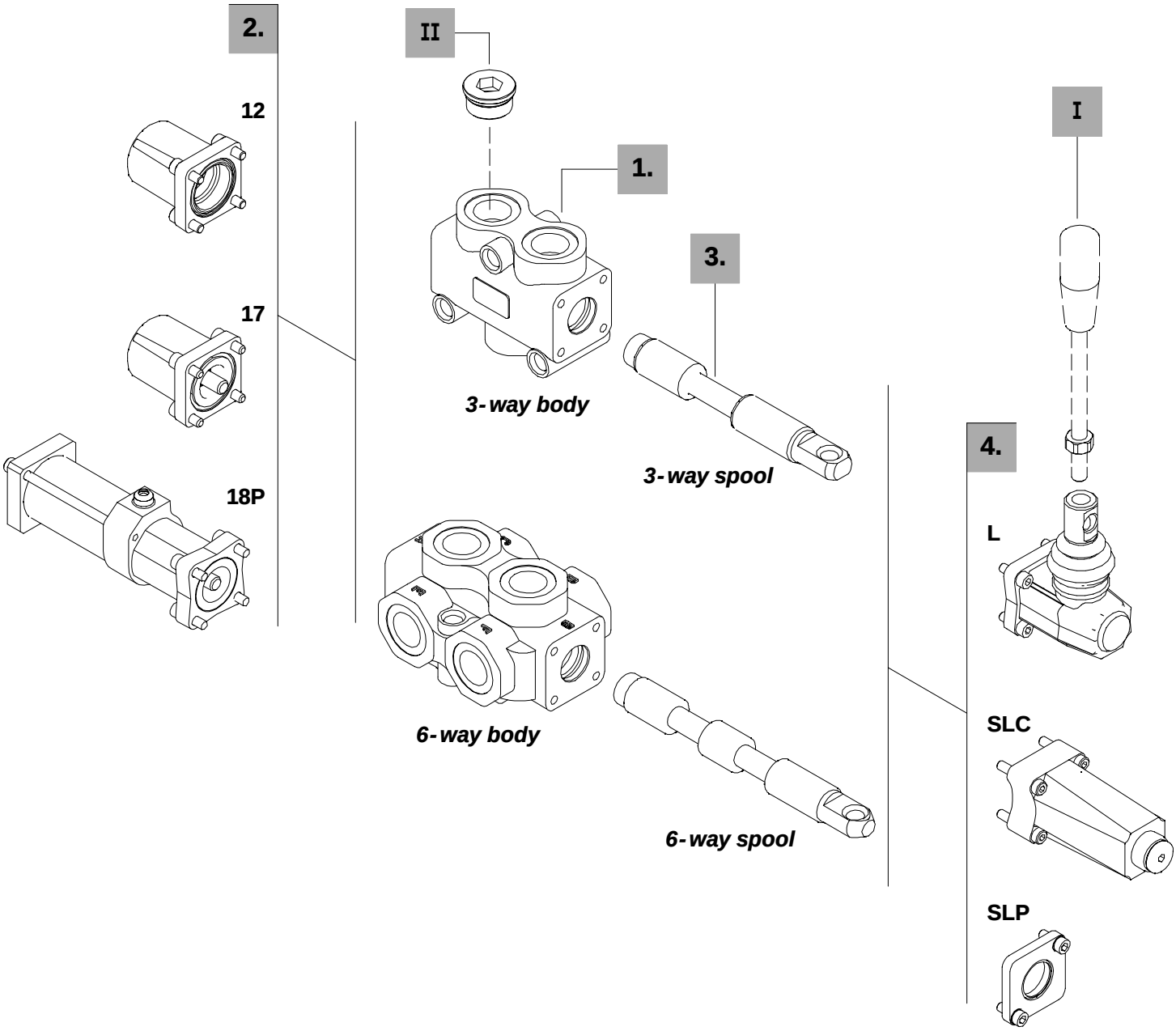
NOTA (*) - *With spool out (positioner kit type 17)*

Ordering codes

Description example

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

1. **3.** **2.** **4.**



Ordering codes

3-way

1. Body kit *

TYPE	CODE	DESCRIPTION
DF20/3	5CO2261300	Standard body kit

Include body and seals

3. 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

Include body and seals

3. 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

2. Positioner kits *page 36*

TYPE	CODE	DESCRIPTION
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
18IB1	5V18120810*	ON/OFF low pressure hydraulic kit with spring return in position 2
18EI1	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. Comandi di azionamento *page 40*

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
CB	5CAM120020	Cam control
IA2	5IDR520000*	ON/OFF high pressure hydraulic control
IB2	5IDR720000*	ON/OFF low pressure hydraulic control

I Optional handlever

TYPE	CODE	DESCRIPTION
AL01/M12x200	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

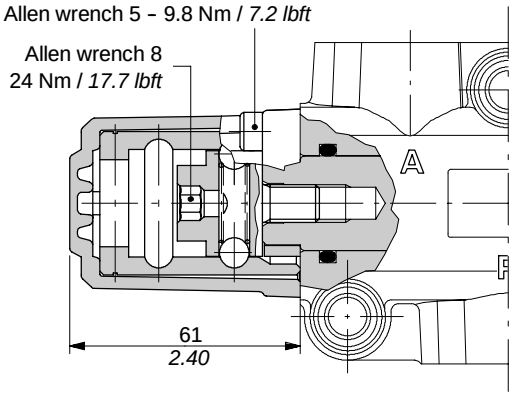
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioner kit

With detent

12 kit

Detent in positions 1 and 2.



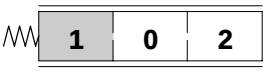
Operating features

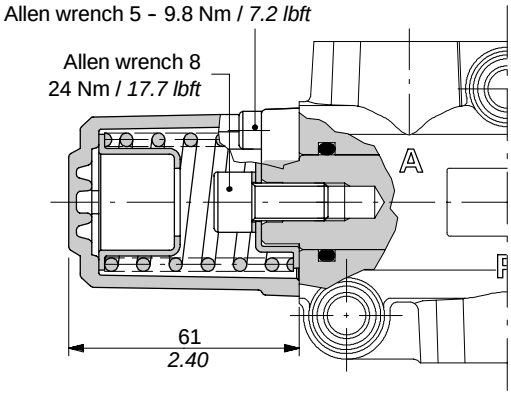
Locking and unlocking force . . . . . : 420 N / *94.4 lbf* ±10%

With spring return

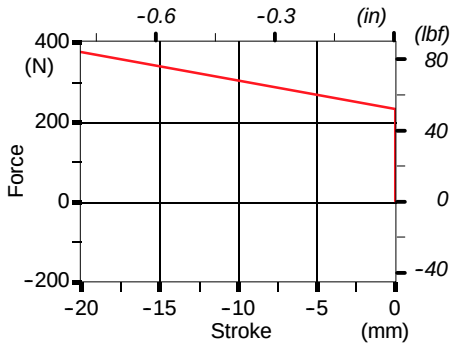
17 kit

Spring return in position 1.



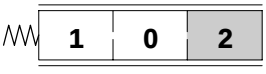


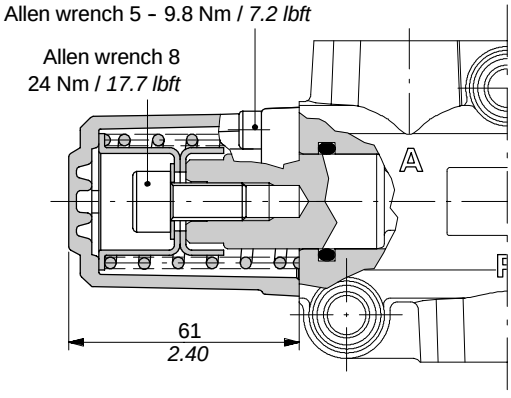
Force-Stroke diagram



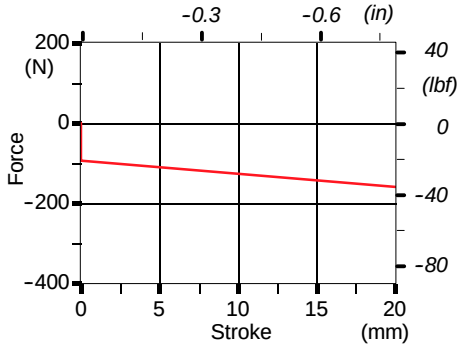
18MB kit

Spring return in position 2.



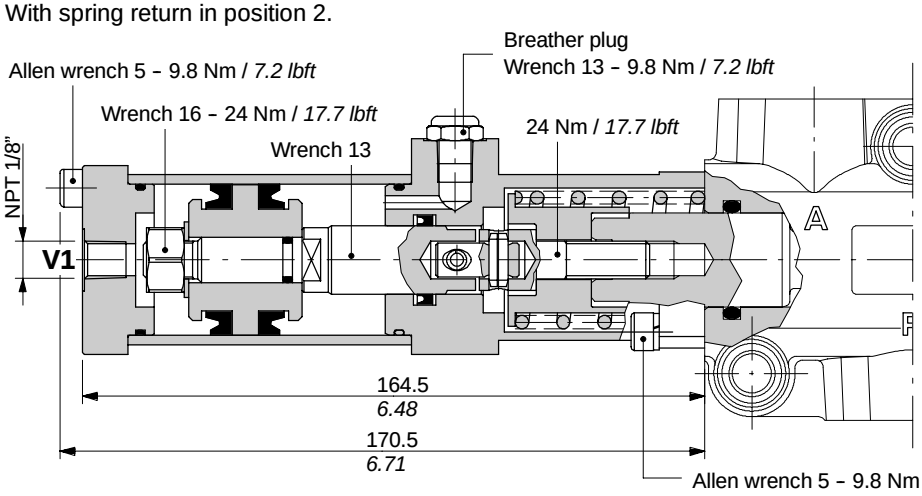


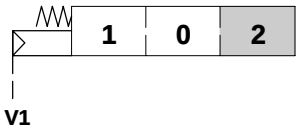
Force-stroke diagram



ON/OFF pneumatic kit type 18P

With spring return in position 2.



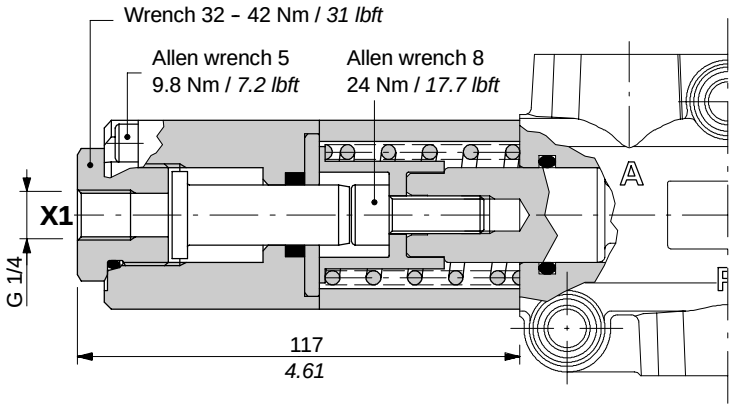


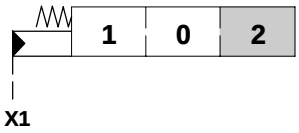
Operating features
Pilot pressure . . . . . : min. 6 bar / *87 psi*
max. 10 bar / *145 psi*

With ON/OFF hydraulic control

18IA1 kit

With high pressure pilot and spring return to position 2.

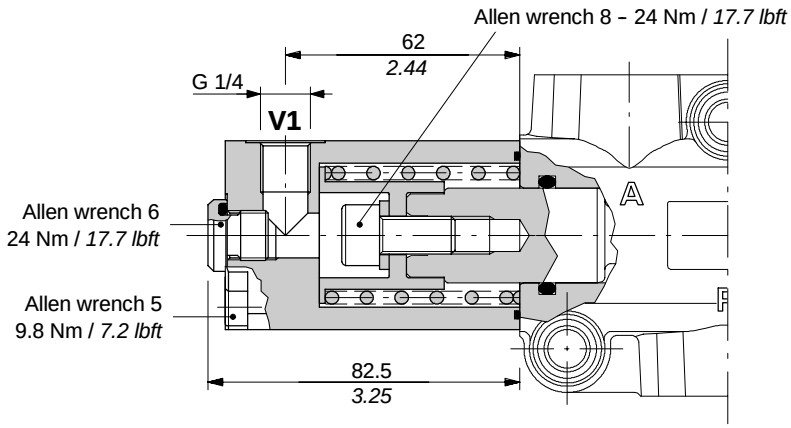


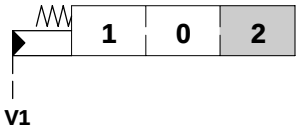


Operating features
Pilot pressure . . . . . : min. 30 bar / *435 psi*
max. 250 bar / *3600 psi*

18IB1 kit

With low pressure pilot and spring return to position 2.





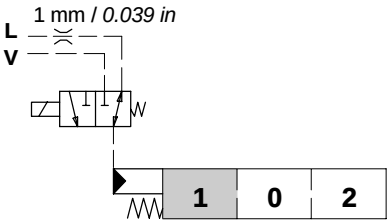
Operating features
Pilot pressure . . . . . : min. 15 bar / *220 psi*
max. 50 bar / *725 psi*

Positioner kits

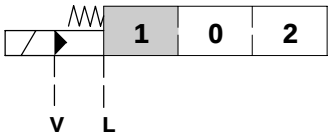
ON/OFF hydraulic kit type 18EI1

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

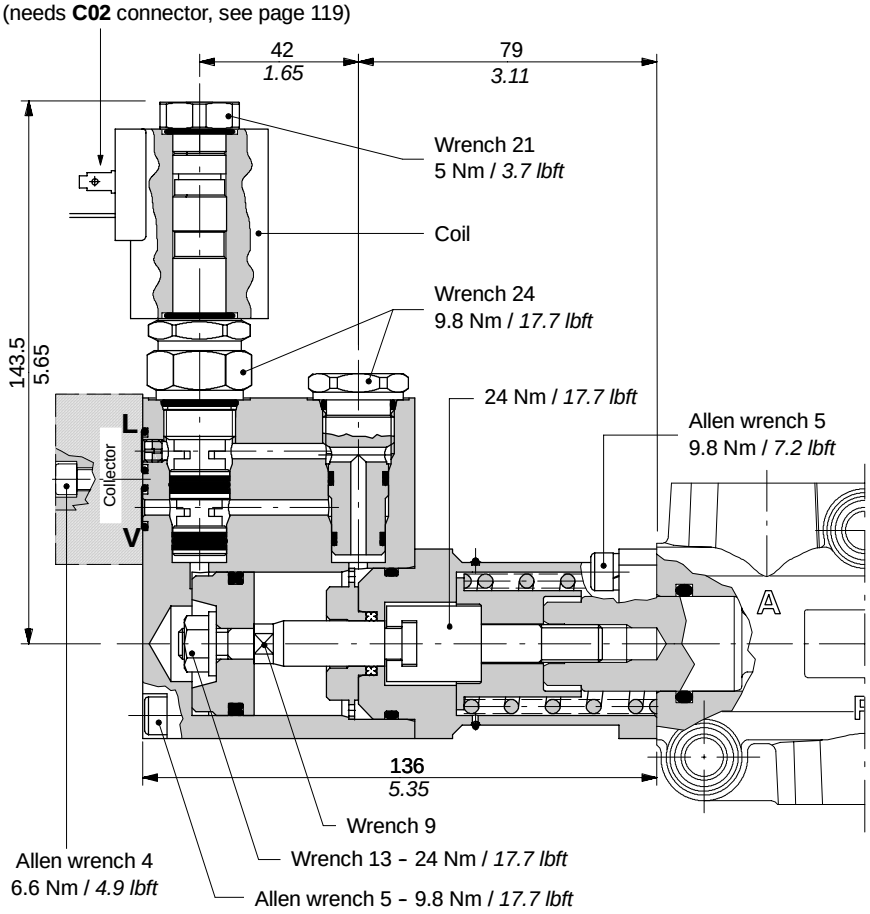
Scheme



Scheme ISO 1219



Connection ISO4400
(needs **C02** connector, see page 119)



Operating features

CONTROL

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

COIL

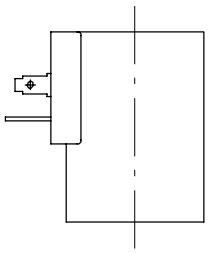
Nominal voltage tolerance	: ±10%
Power rating	: 21 W
Nominal current	: 1.75 A - 12 VDC / 0.87 A - 24VDC
Coil insulation	: Class F
Weather protection	: depending on coil model: see next page
Duty cycle	: 100%

ON/OFF hydraulic kit type 18EI1

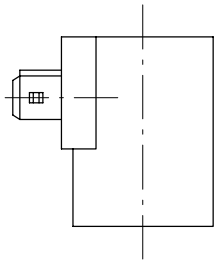
COIL CODES

Voltage	CONNECTION TYPE			
	ISO4400	AMP JPT		Deutsch DT
		without diode	with diode	
12 VDC	2XB1400121100	2XB1400121200	2XB1400121210	2XB1400120400
24 VDC	2XB1400241100	2XB1400241200	2XB1400241210	2XB1400240400
Need connector type (page 119)	C02	C08	C08	C19

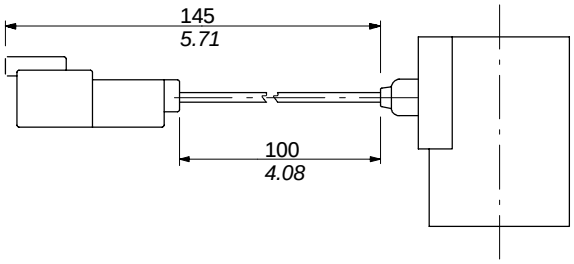
Coil with ISO4400 connection
(weather protection IP65)



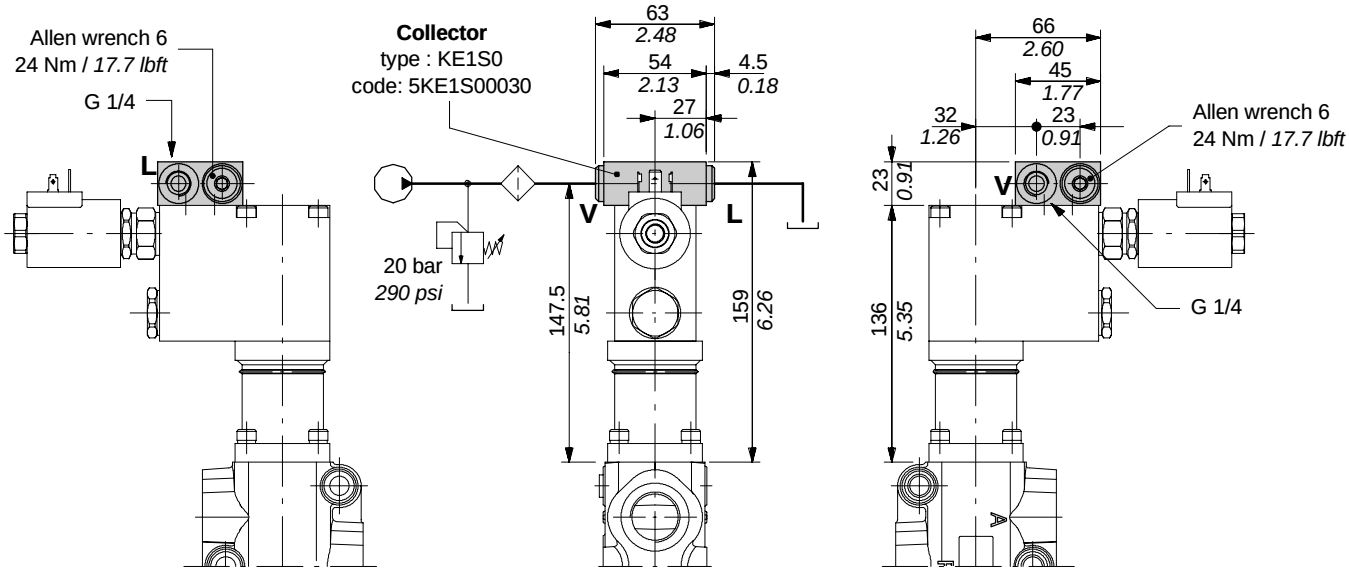
Coil with AMP JPT connection
(weather protection IP65)



Coil with Deutsch DT connection
(weather protection IP67)



Collector kit for external pilot and drain



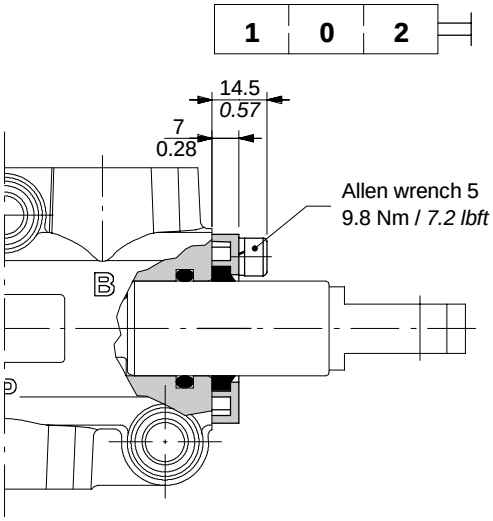
Description example:
DF20/3A18EI1SLC/**KE1S0-12VDC**

Control kits

Controls prearrangemet

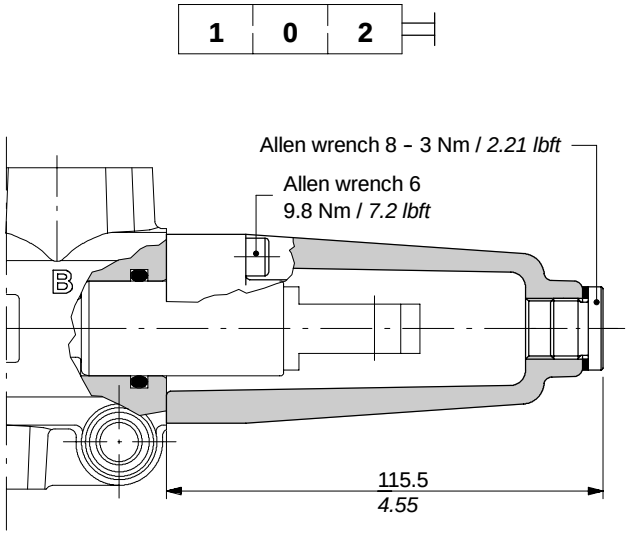
SLP kit

Mechanical control with dust-proof plate.



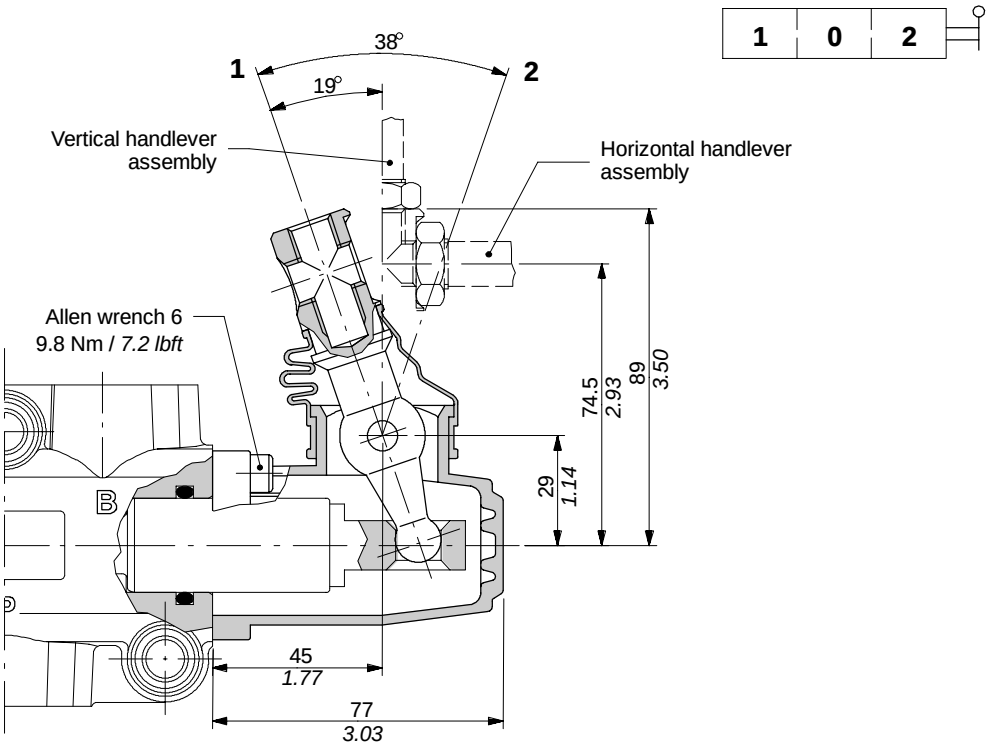
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



L lever control

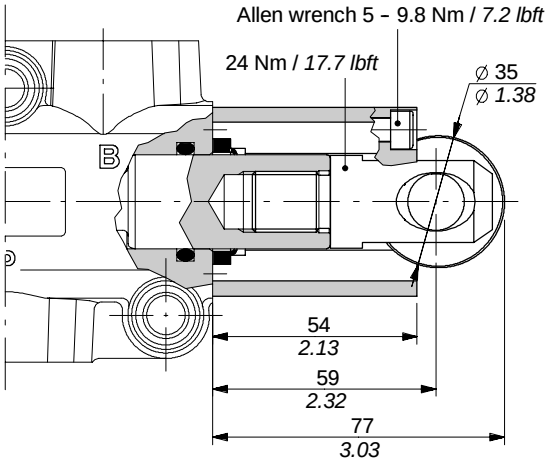
Alumium with protection boot lever pivot box; it can be rotated 180° (execution **L180**).



CB cam control

With bronze bearing; it must be coupled to 17 kit (see page 36).

1	0	2

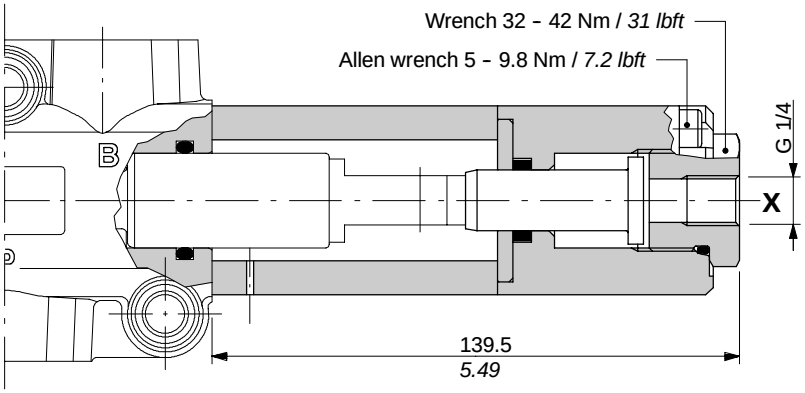


ON/OFF hydraulic controls

IA2 kit

With high pressure pilot; it must be coupled to 17 kit (see page 36).

1	0	2
		X

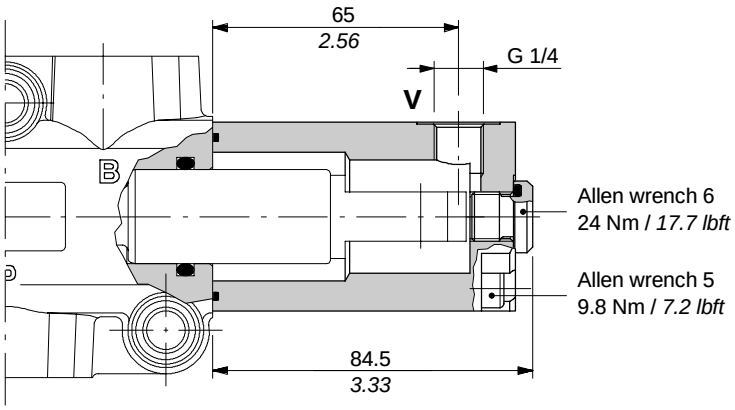


Operating features
Pilot pressure . . . . . : min. 30 bar / *435 psi*
max. 250 bar / *3600 psi*

IB2 kit

With low pressure pilot; it must be coupled to 17 kit (see page 36).

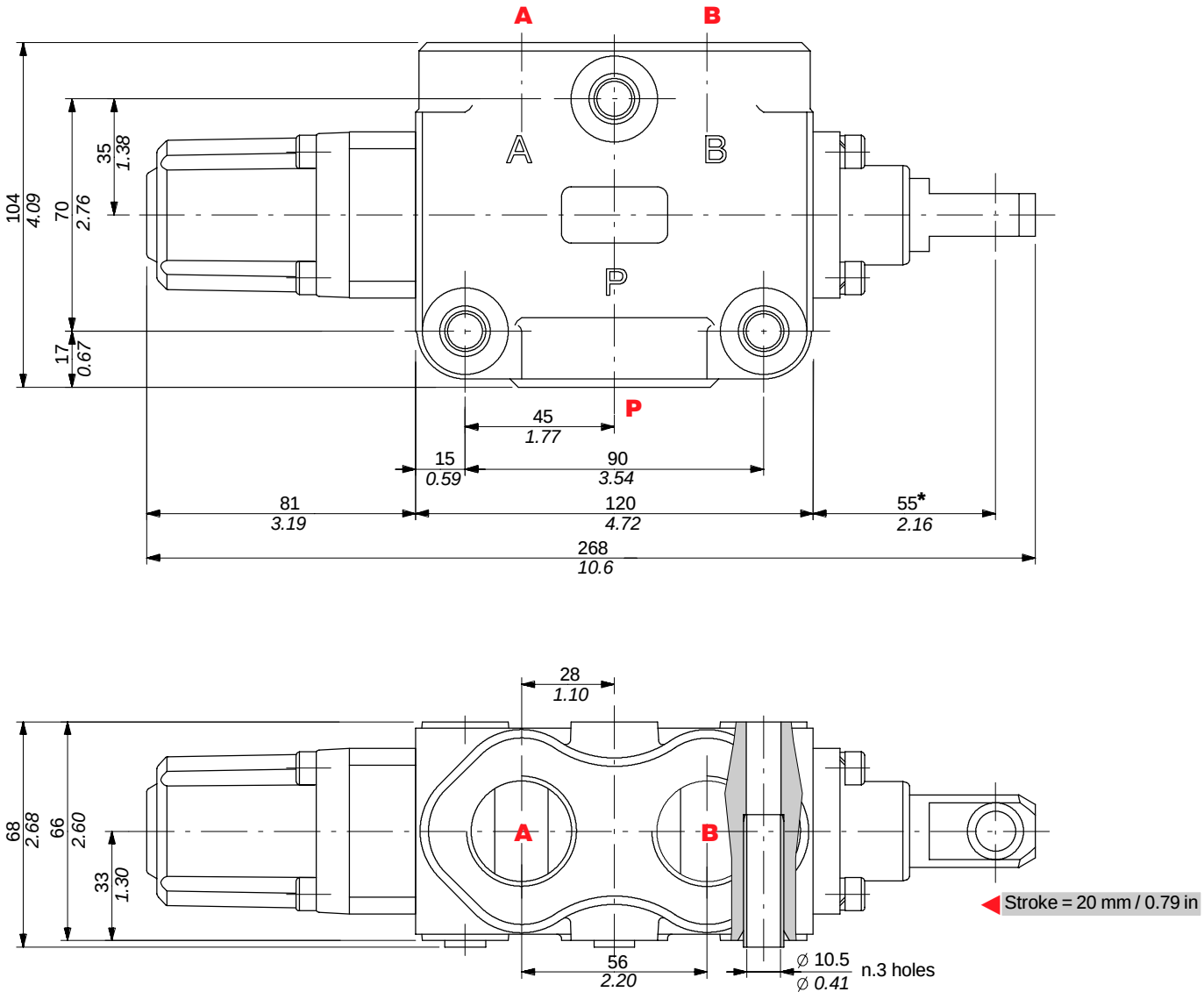
1	0	2
		V



Operating features
Pilot pressure . . . . . : min. 15 bar / *220 psi*
max. 50 bar / *725 psi*

Dimensional data

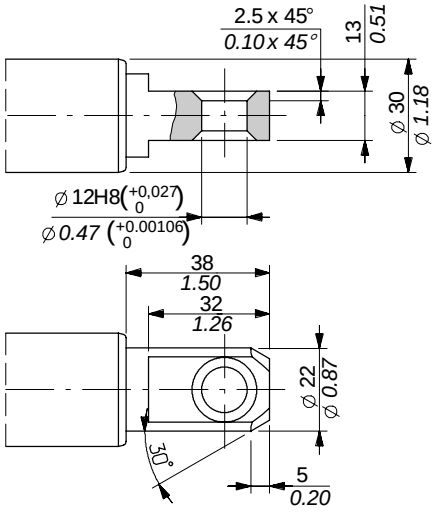
3-way DF25/3 valve



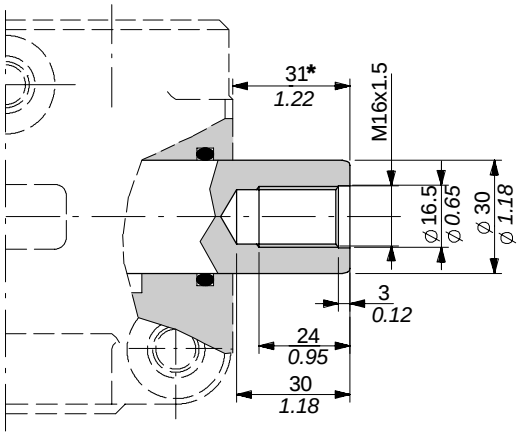
Dimensional data

Spool end

Standard end



Rotary cam prearragement



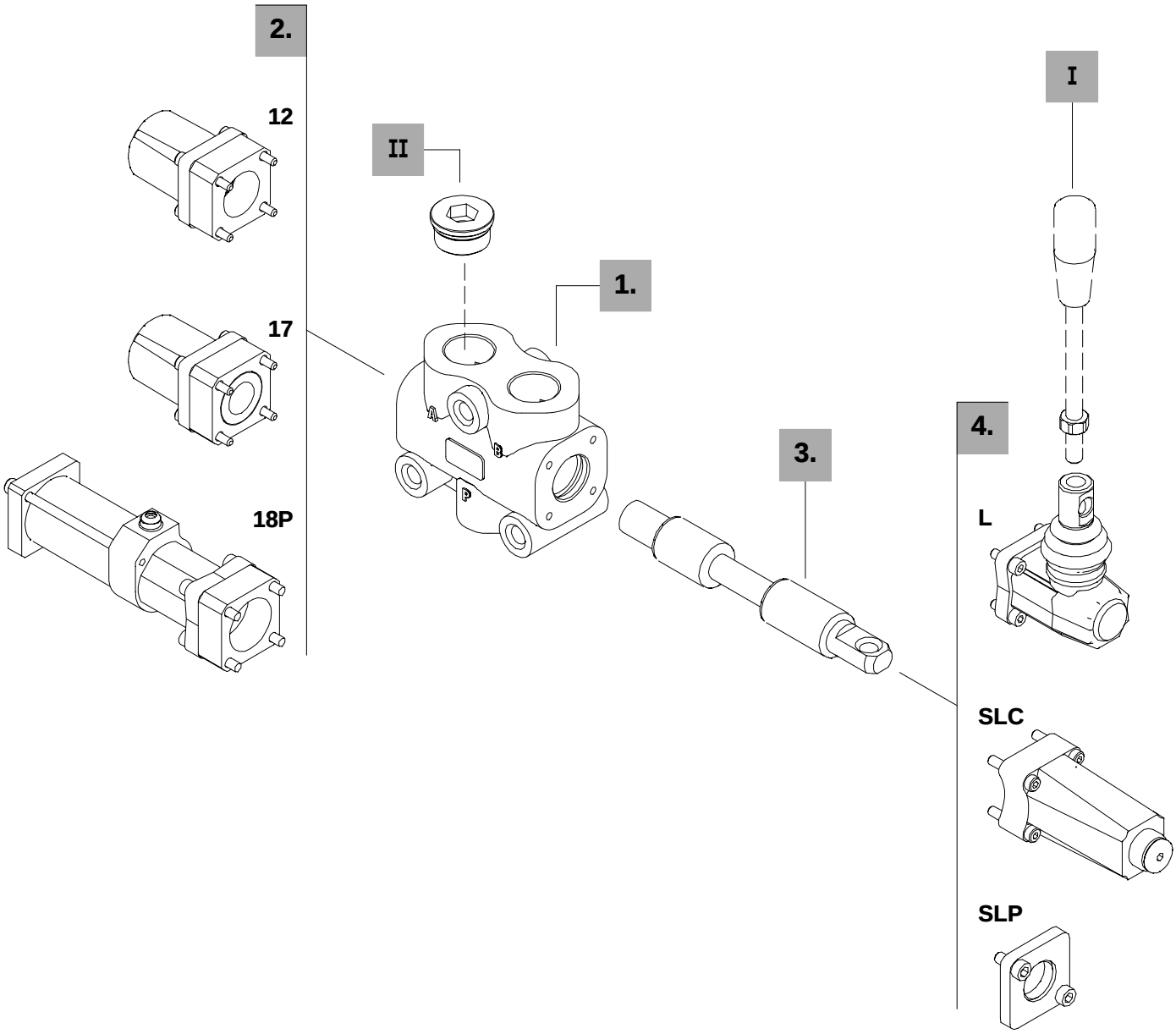
NOTA (*) - *With spool out (positioner kit type 17)*

Ordering codes

Description example :

Diverter valve DF25/3 A 17 SLP

1. 3. 2. 4.



Ordering codes

3-way

1. Body kit *

TYPE	CODE	DESCRIPTION
DF25/3	5CO2271300	Standard body kit

Include body and seals

3. 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

2. Positioner kits *page 46*

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
18EI1	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 50*

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
CB	5CAM125020	Cam control
IA2	5IDR520000*	ON/OFF high pressure hydraulic control
IB2	5IDR720000*	ON/OFF low pressure hydraulic control

I Optional handlever

TYPE	CODE	DESCRIPTION
AL01/M12x200	170013020	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

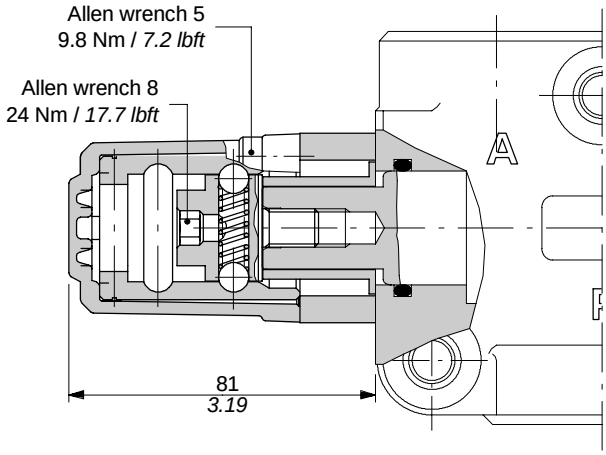
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioner kits

With detent

12 kit

Detent in positions 1 and 2.



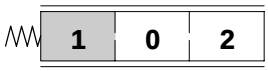
Operating features

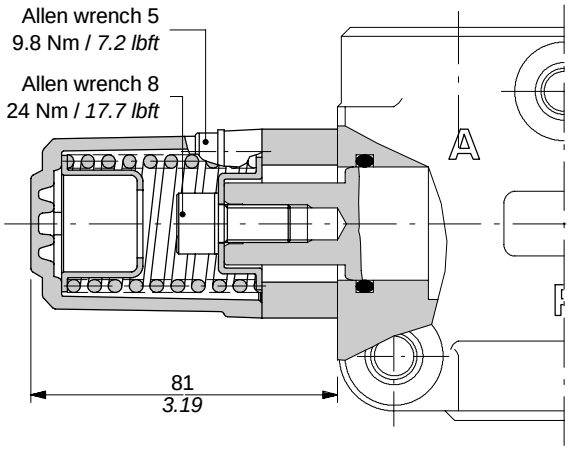
Locking and unlocking force . . . . . : 420 N / *94.4 lbf* ±10%

With spring return

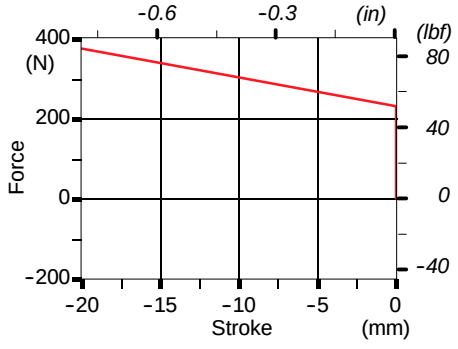
17 kit

Spring return in position 1.



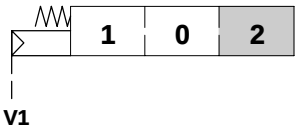


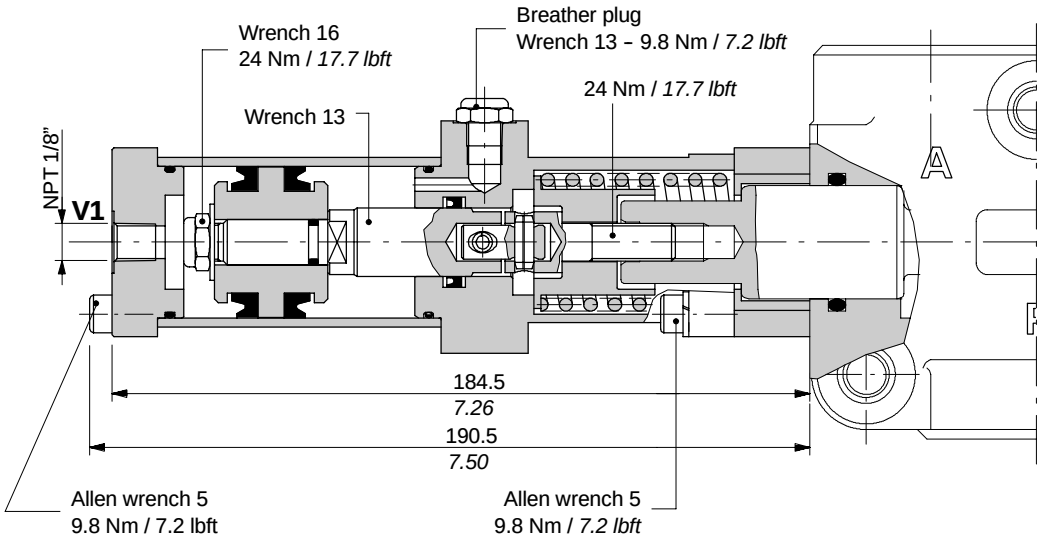
Force-Stroke diagram



ON/OFF pneumatic kit type 18P

With spring return in position 2.





Operating features

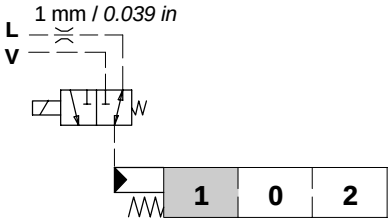
Pilot pressure . . . . . : min 7 bar / *102 psi*
max. 10 bar / *145 psi*

Positioner kits

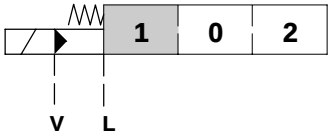
ON/OFF hydraulic kit type 18EI1

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

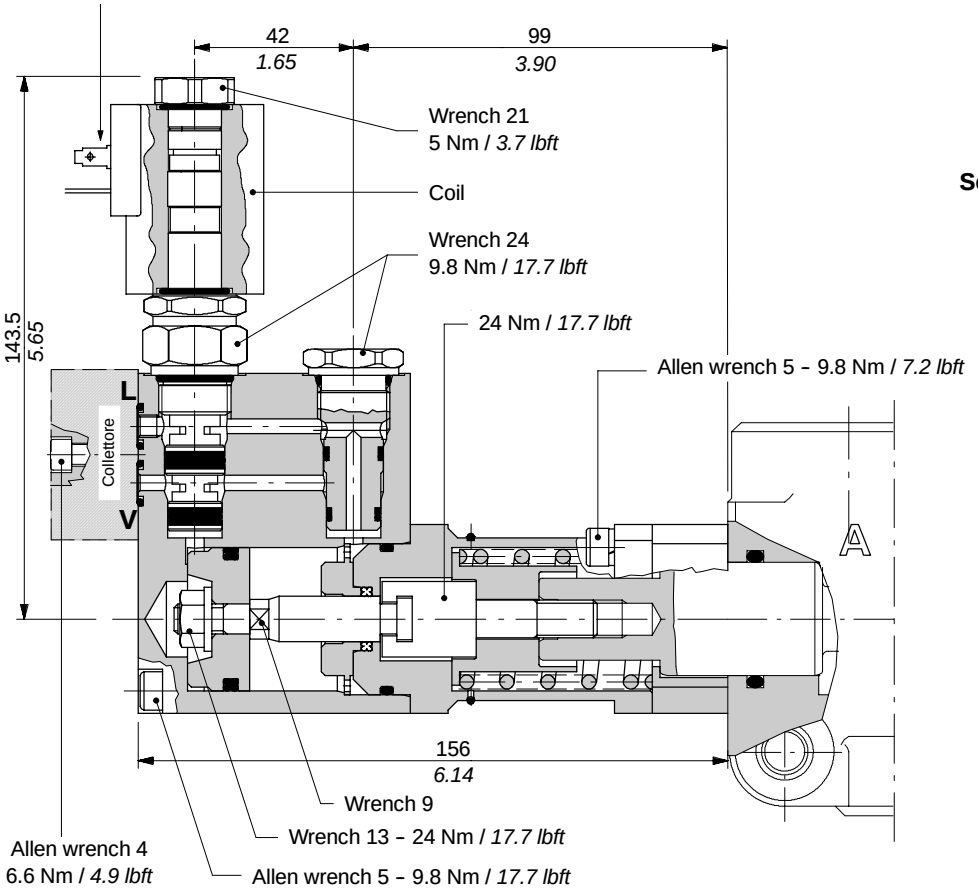
Scheme



Scheme ISO 1219



Connection ISO4400
(needs **C02** connector, see page 119)



Operating features

CONTROL

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

COIL

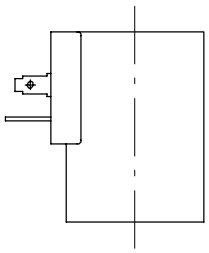
Nominal voltage tolerance	: ±10%
Power rating	: 21 W
Nominal current	: 1.75 A – 12 VDC / 0.87 A – 24VDC
Coil insulation	: Class F
Weather protection	: depending on coil model: see next page
Duty cycle	: 100%

ON/OFF hydraulic kit type 18EI1

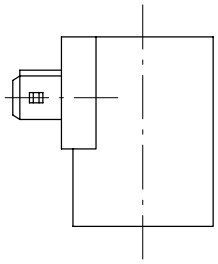
COIL CODES

Voltage	CONNECTION TYPE			
	ISO4400	AMP JPT		Deutsch DT
		without diode	with diode	
12 VDC	2XB1400121100	2XB1400121200	2XB1400121210	2XB1400120400
24 VDC	2XB1400241100	2XB1400241200	2XB1400241210	2XB1400240400
Need connector type (page 119)	C02	C08	C08	C19

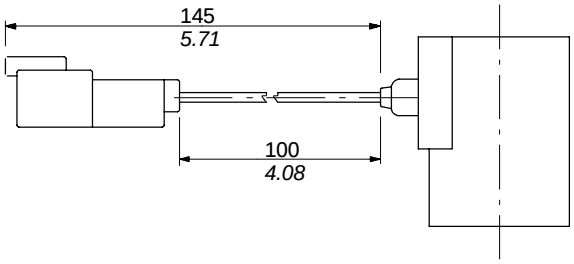
Coil with ISO4400 connection
(weather protection IP65)



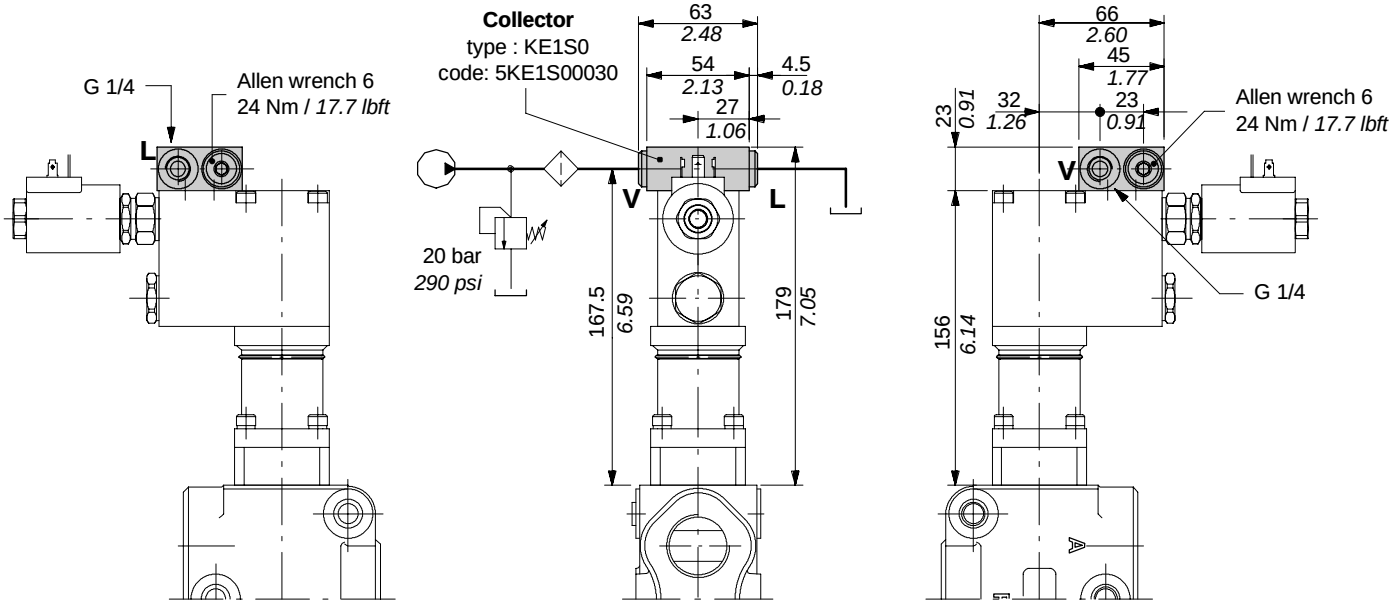
Coil with AMP JPT connection
(weather protection IP65)



Coil with Deutsch DT connection
(weather protection IP67)



Collector kit for external pilot and drain



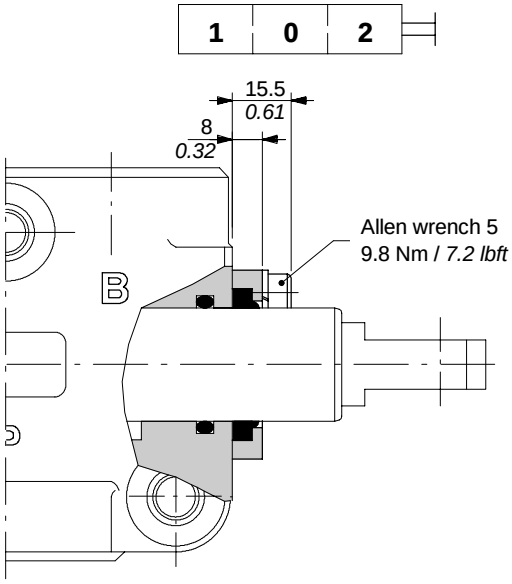
Description example:
DF25/3A18EI1SLC/**KE1S0-12VDC**

Control kits

Controls prearrangemet

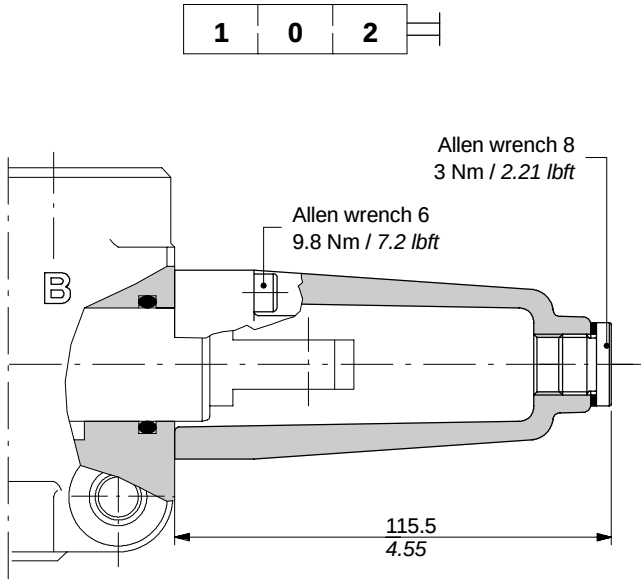
SLP kit

Mechanical control with dust-proof plate.



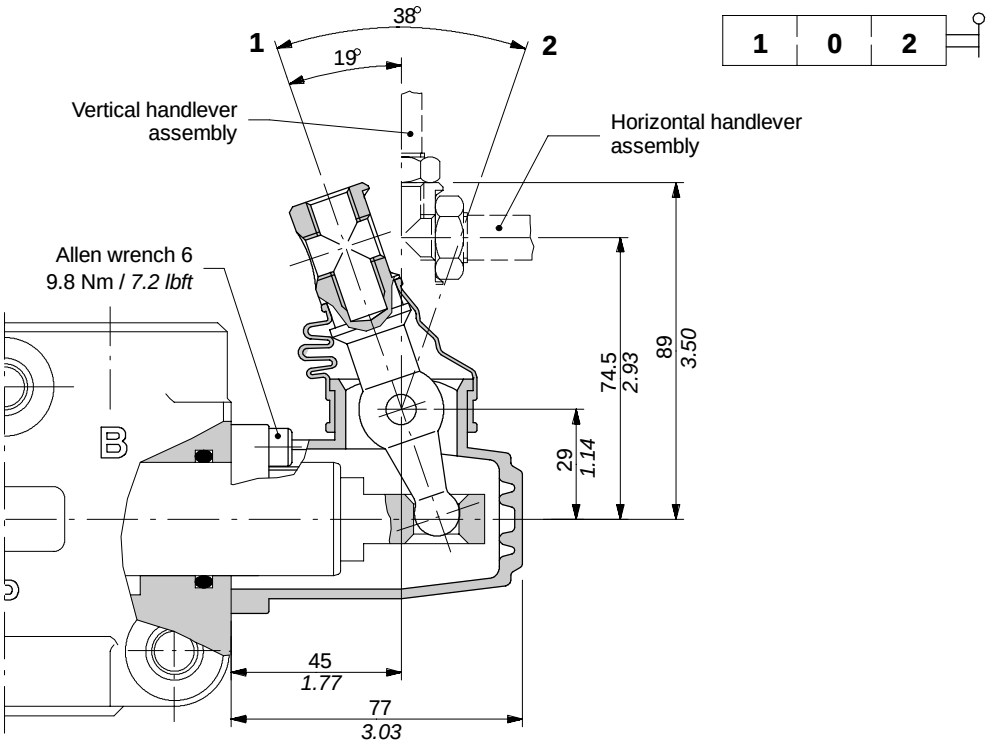
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



L lever control

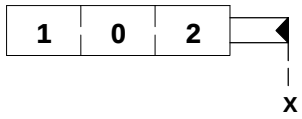
Alumium with protection boot lever pivot box; it can be rotated 180° (execution **L180**).

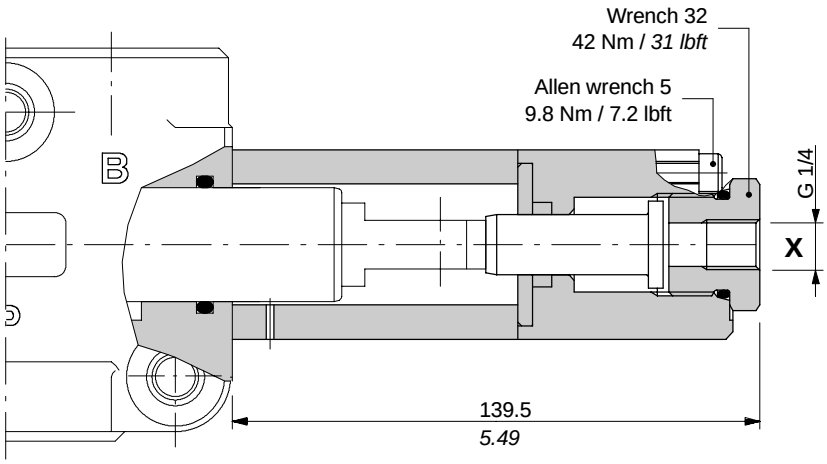


ON/OFF hydraulic controls

IA2 kit

With high pressure pilot; it must be coupled to 17 kit (see page 46).

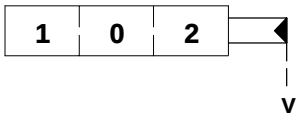


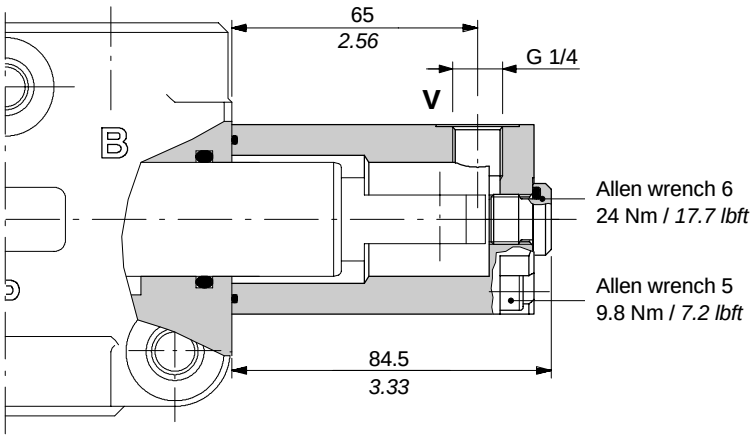


Operating features
Pilot pressure . . . . . : min. 30 bar / *435 psi*
max. 250 bar / *3600 psi*

IB2 kit

With low pressure pilot; it must be coupled to 17 kit (see page 46).





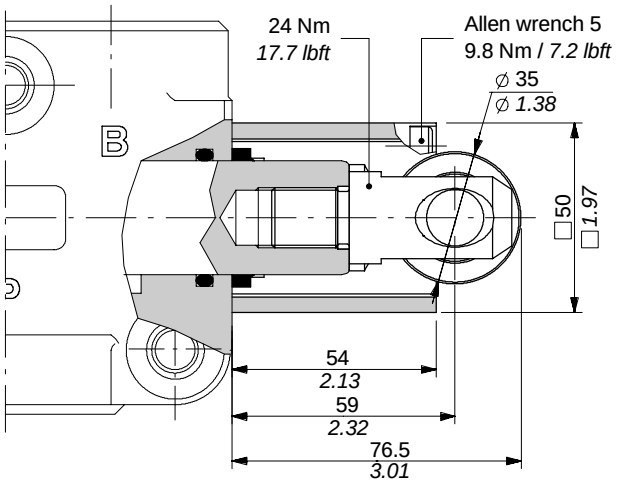
Operating features
Pilot pressure . . . . . : min. 15 bar / *220 psi*
max. 50 bar / *725 psi*

Positioner kits

CB cam control

With bronze bearing; it must be coupled to 17 kit (see page 46).

1	0	2



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DFE110

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Solenoid parts 83

Working conditions

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

		DFE052	DFE10	DFE20	DFE110
N. of available ways		2-3-6-8	3-6	3-6	12
Nominal flow rating	*in steady conditions*	60 l/min	90 l/min	140 l/min	90 l/min
Operating pressure (maximum) *	*without drain*	200 bar - 2900 *psi*			
	with drain	315 bar - *4600 psi*			
Available nominal voltage	*VDC*	12-24 48-110	12-24-48	12-24	12-24
	VAC 50Hz *(with C04 connector)*	24-110-220	110-220	24-110-220	24-110-220
Nominal power	*W*	38	60	60	60
Internal leakage A(B)→T	*Δp=100 bar 1450 psi* *with fuid and valve at 40°C*	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*	10 cm^3/min *0.61 in^3/min*
Hydraulic fluid		Mineral base oil			
Fluid temperature	*with NBR seals*	from -20°C to 80°C			
	with FPM seals	from -20°C 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 for working conditions		from -20°C to 50°C			

NOTE - *For different working conditions please contact Sales Dept.*

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

Standard threads

REFERENCE STANDARDS

		BSP	UN-UNF	METRIC	
THREAD ACCORDING TO		ISO 228/1	ISO 263	ISO 262	ISO 262
		BS 2779	ANSI B1.1 unified		
CAVITY ACCORDING TO	ISO	1179	11926	9974-1	6149
	SAE		J1926		J2244
	DIN	3852-2 shape X or Y		3852-1 shape X or Y	

PORTS THREAD

ALL PORTS	BSP	UN-UNF	METRIC (ISO 9974-1)	METRIC (ISO 6149)
DFE052	G 3/8	3/4-16 (SAE 8)	M18x1,5	
DFE10	G 1/2	7/8-14 (SAE 10)		
DFE20	G 3/4	1 1/16-12 (SAE 12)		
DF110	G 1/2	7/8-14 (SAE 10)	M22x1.5	M22x1.5
DRAIN PORT				
L	G 1/4	9/16-18 (SAE 6) 7/16-20 (SAE4)*	M12x1.5	M12x1.5

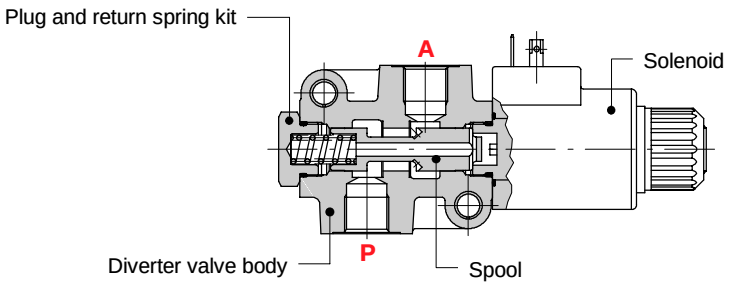
(*) For DFE052/8 and series DFE20 diverter valves

Optional threads: for availability contact Sales Department

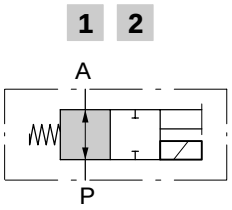
Hydraulic circuit

2-way

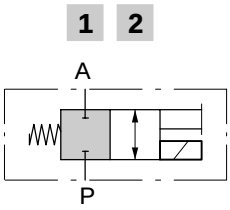
Available as body only in **DFE052/2** execution**;** for other executions 3-way body is used.



Spool type **A**

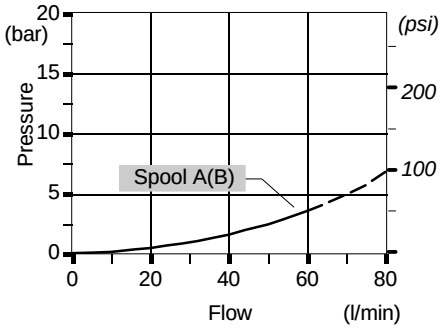


Spool type **B**

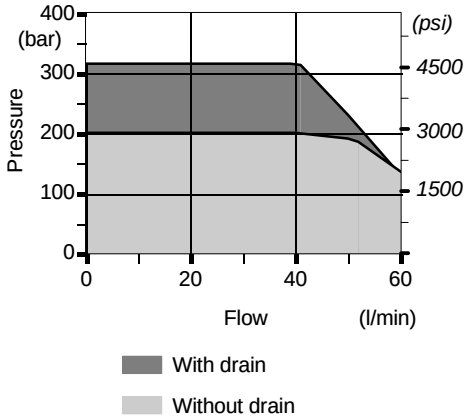


Performance data

Pressure drop versus flow
P→A



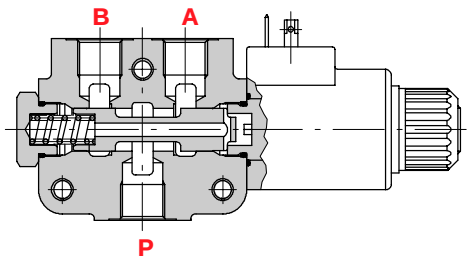
Minimum dynamic conditions
(supply = Vn-10%, coil at 70 °C)



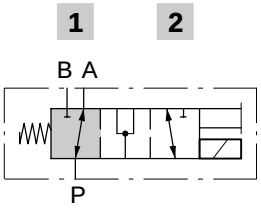
Hydraulic circuit

3-way

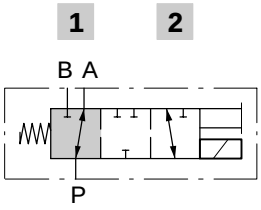
It's possible to obtain 2-way diverter valve plugging port A or B.



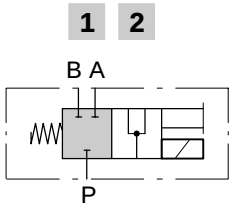
Spool type **A**



Spool type **B**



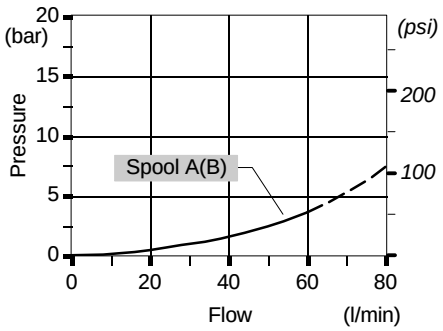
Spool type **D**



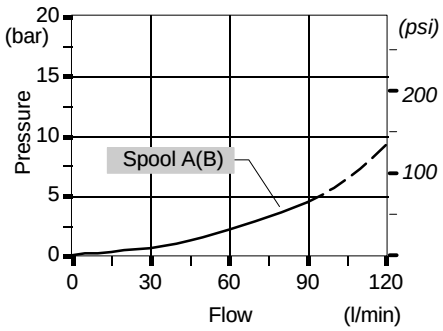
Performance data

Pressure drop versus flow: P→A(B)

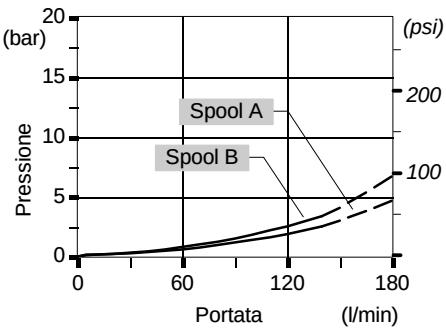
DFE052/3



DFE10/3

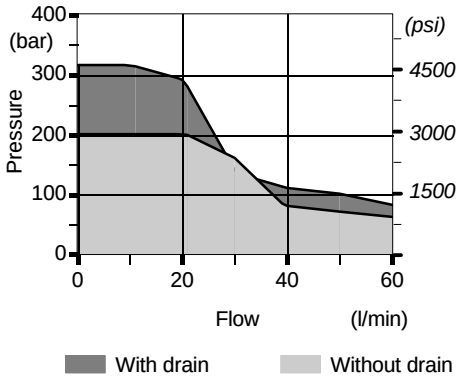


DFE20/3

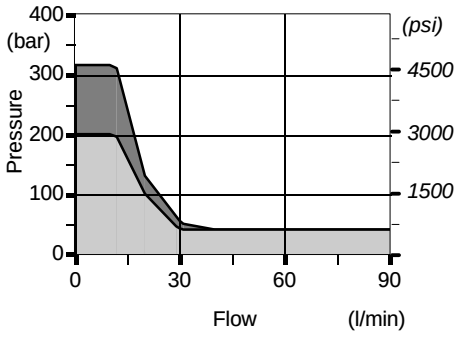


Minimum dynamic conditions: (supply = Vn-10%, coil at 70 °C)

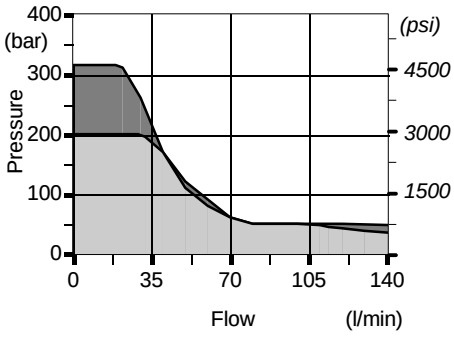
DFE052/3



DFE10/3

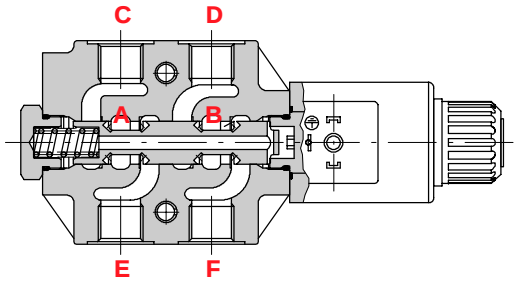


DFE20/3

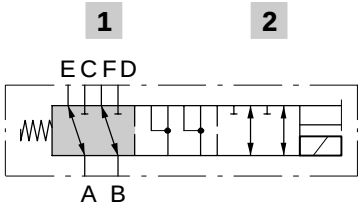


With drain Without drain

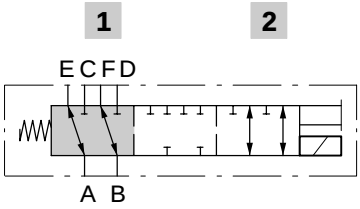
6-way



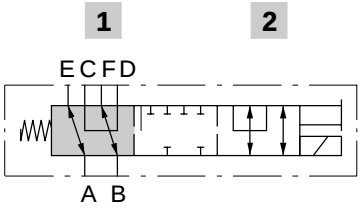
Spool type **A**



Spool type **B**



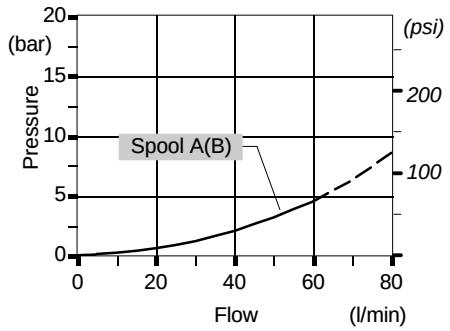
Spool type **H**



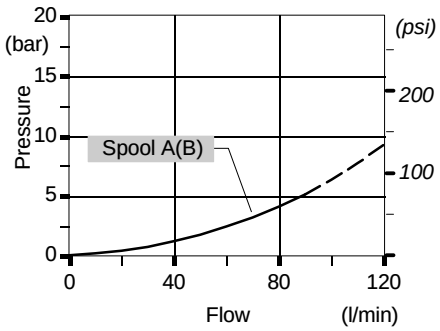
Performance data

Pressure drop versus flow: A→E(C).

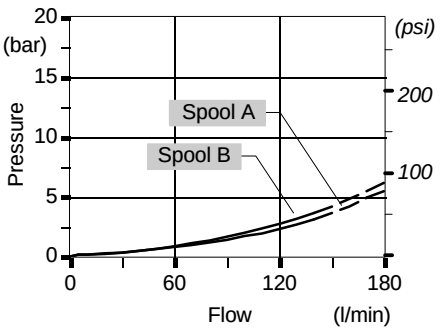
DFE052/6



DFE10/6

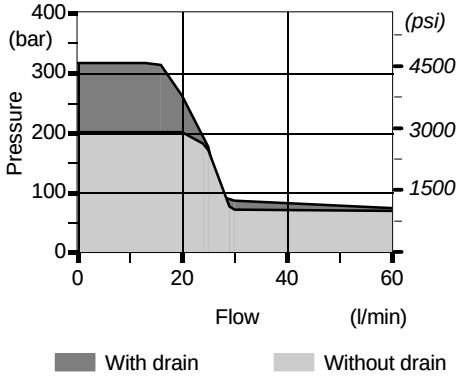


DFE20/6

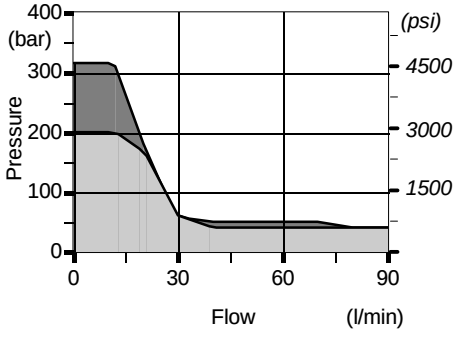


Minimum dynamic conditions: (supply = Vn−10%, coil at 70 °C)

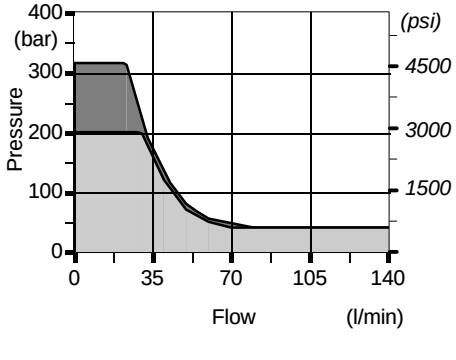
DFE052/6



DFE10/6



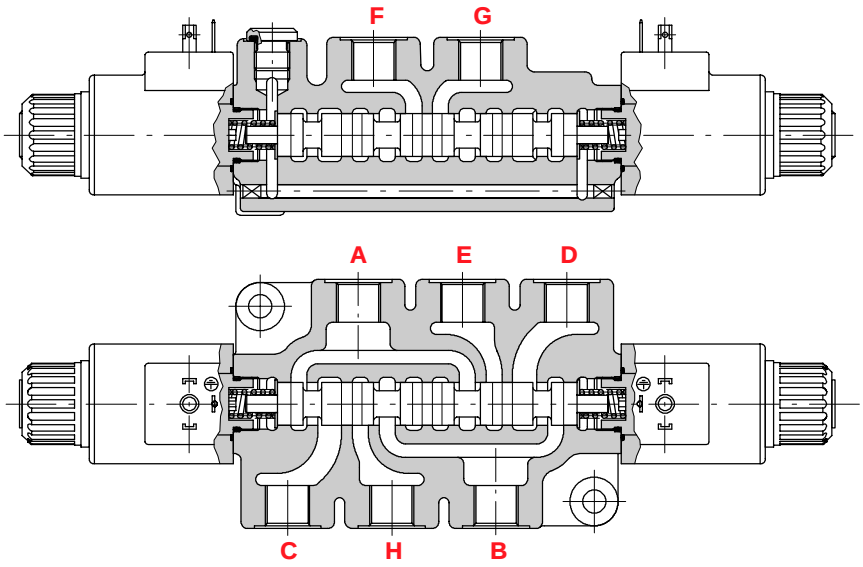
DFE20/6

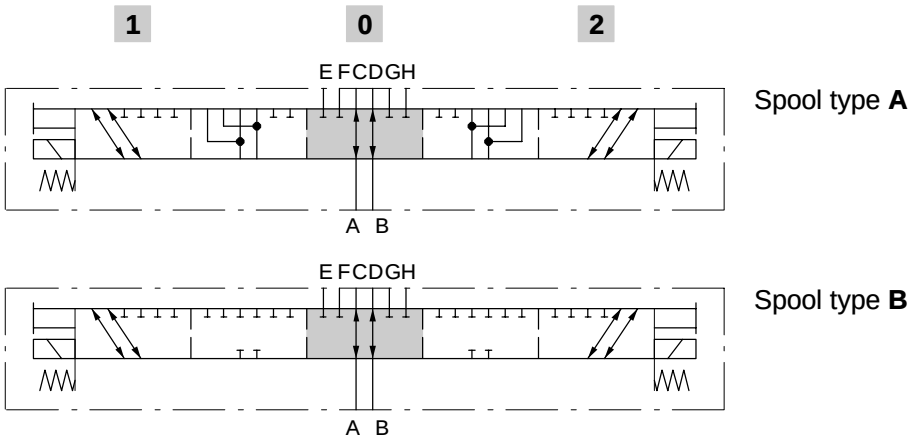


With drain Without drain

HYdraulic circuit

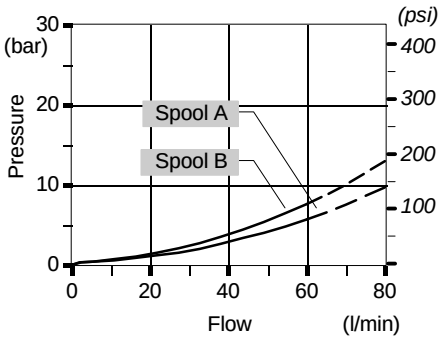
8-way



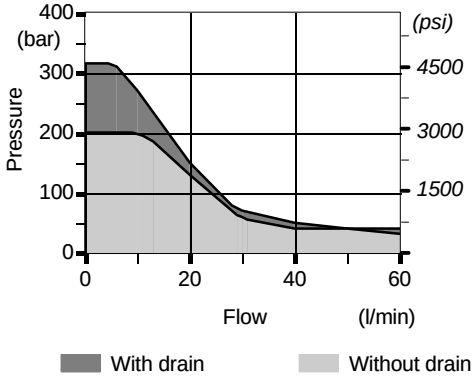


Performance data

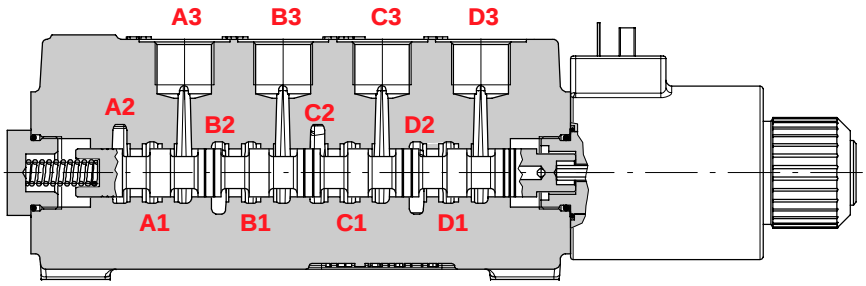
Pressure drop versus flow
A→C

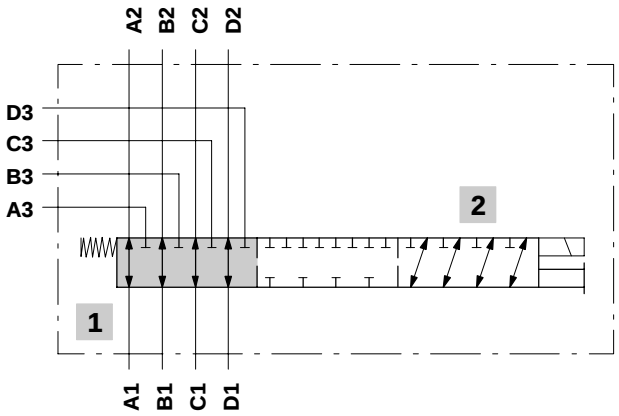


Minimum dynamic conditions
(supply = Vn−10%, coil at 70 °C)



12-way



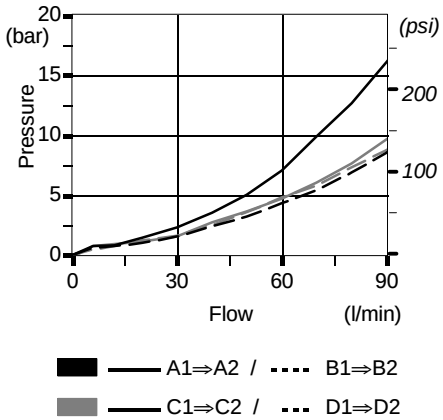


Spool type **B**

Performance data

Pressure drop versus flow

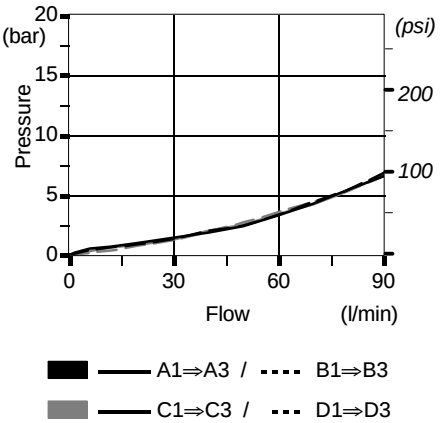
In position 1



A1⇒A2 / B1⇒B2

C1⇒C2 / D1⇒D2

In position 2

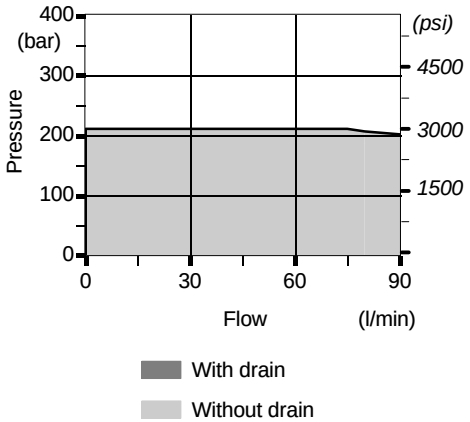


A1⇒A3 / B1⇒B3

C1⇒C3 / D1⇒D3

Minimum dynamic conditions

(supply = Vn−10%, coil at 70 °C)

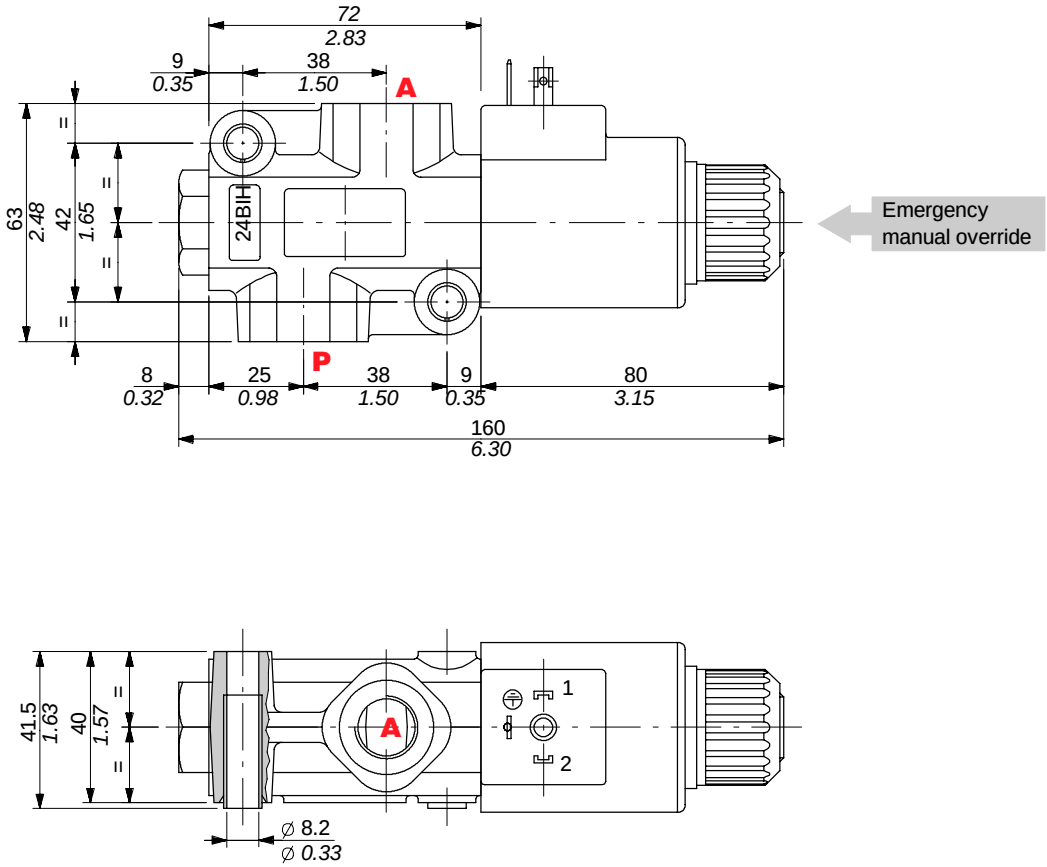


With drain

Without drain

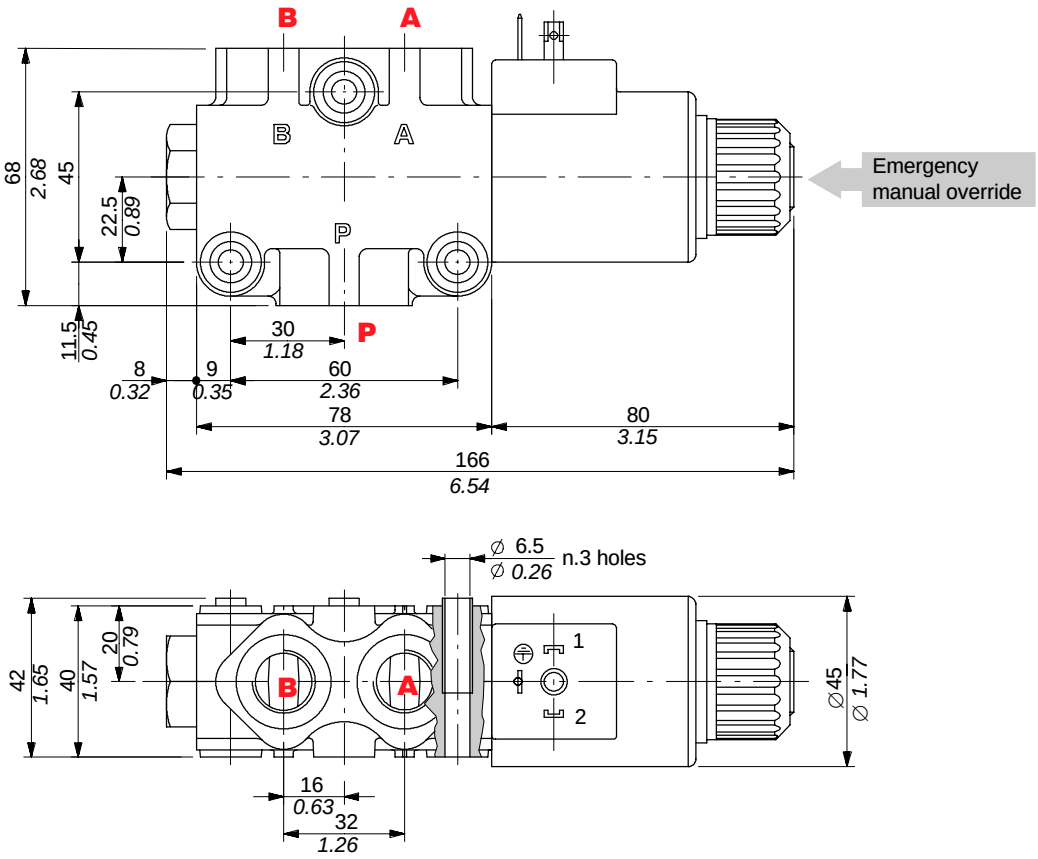
Dimensional data

2-way DFE052/2 valve



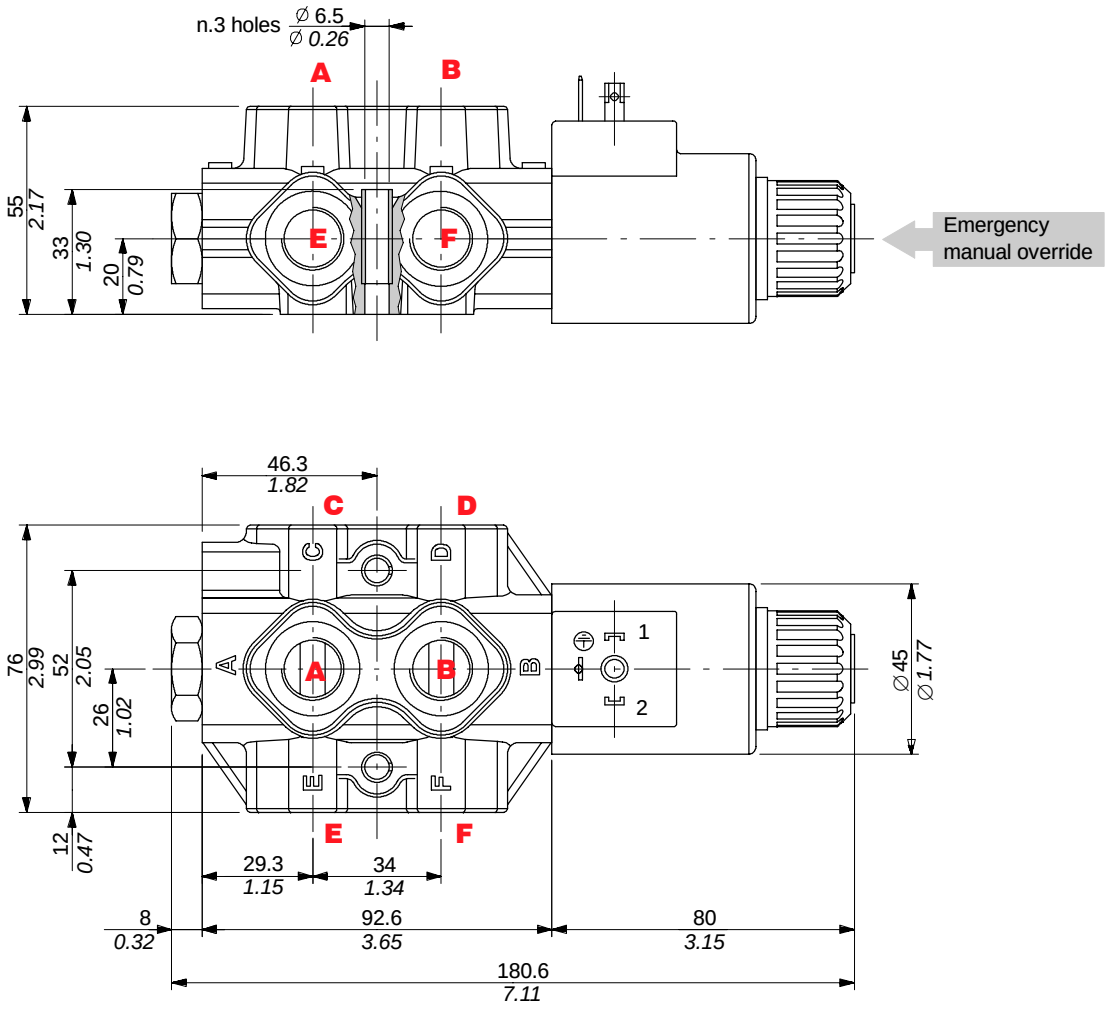
Dimensional data

3-way DFE052/3 valve



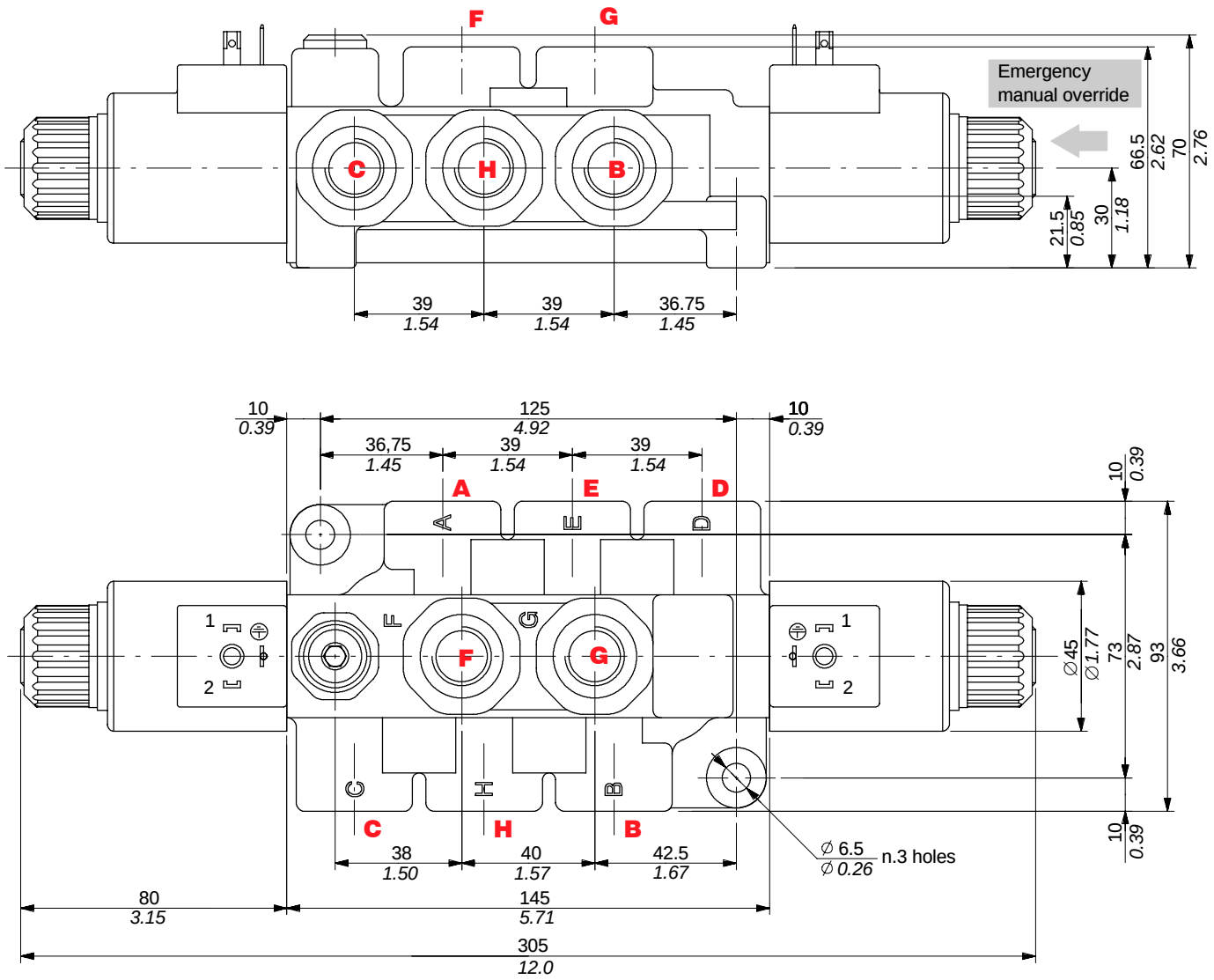
Dimensional data

6-way DFE052/6 valve



Dimensional data

8-way DFE52/8 valve



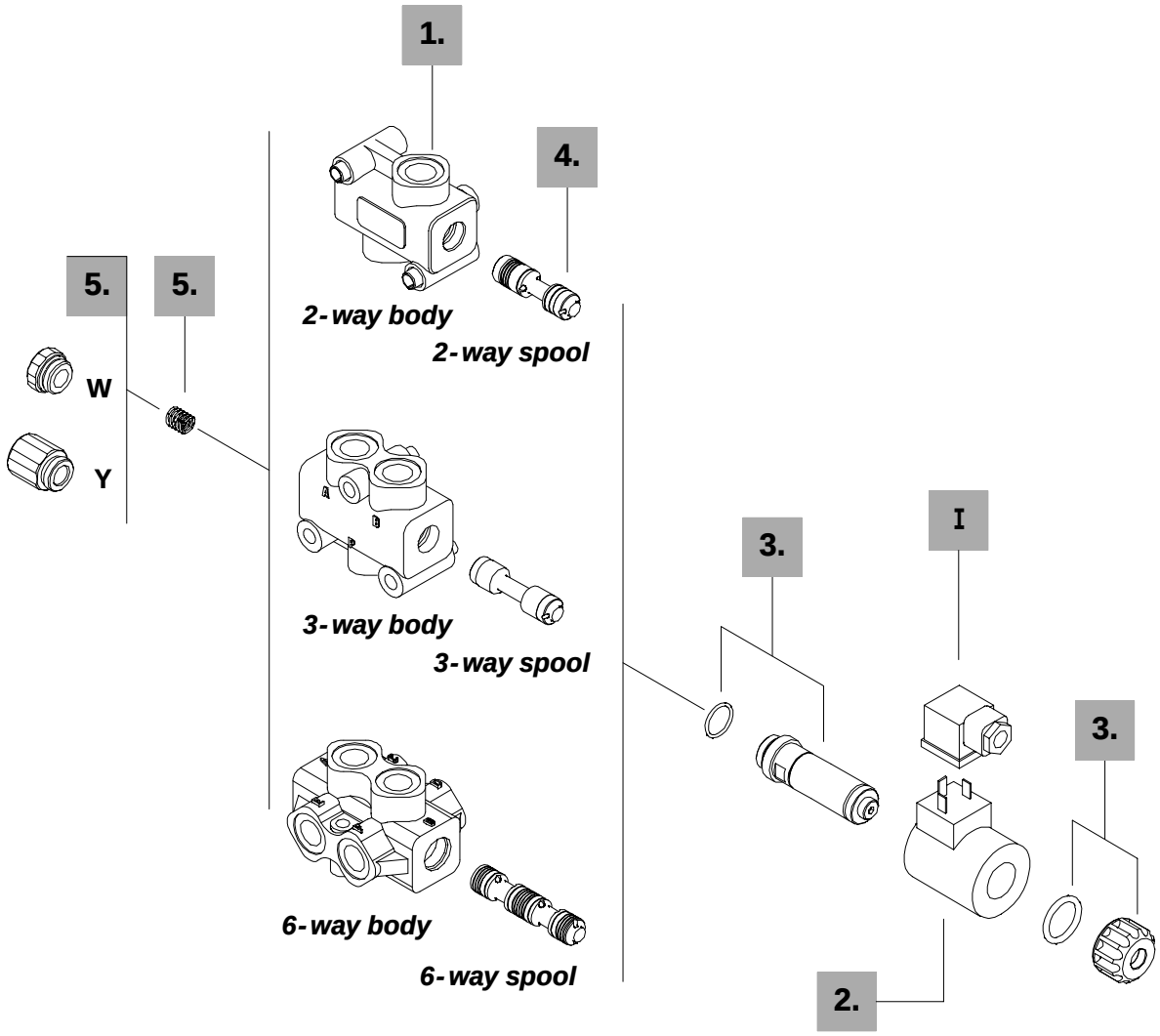
Ordering codes

DEscription example :

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

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

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



Ordering codes

2-way

1. Body *

TYPE	CODE	DESCRIPTION
DFE052/2	3CO2220321	Standard body

4. 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

4. 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

4. 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

5. Positioner kits *page 67*

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

3. Tube assembly *page 68*

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

2. Coil options *page 68*

TYPE	CODE	DESCRIPTION
101	-	Without coil (only with tube kit)
With ISO4400 connector		
201-12VDC	4SOL515012	Coil with 12VDC nominal voltage
201-24VDC	4SOL515024	Coil with 24VDC nominal voltage
With integrated DEUTSCH DT04 connector		
241-12VDC	4SOL515014	Coil with 12VDC nominal voltage
241-24VDC	4SOL515025	Coil with 24VDC nominal voltage

I Optional connectors *page 119*

TYPE	CODE	DESCRIPTION
C02	2X1001010	According to ISO4400
C19	5CON007	Type DEUTSCH DT06

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

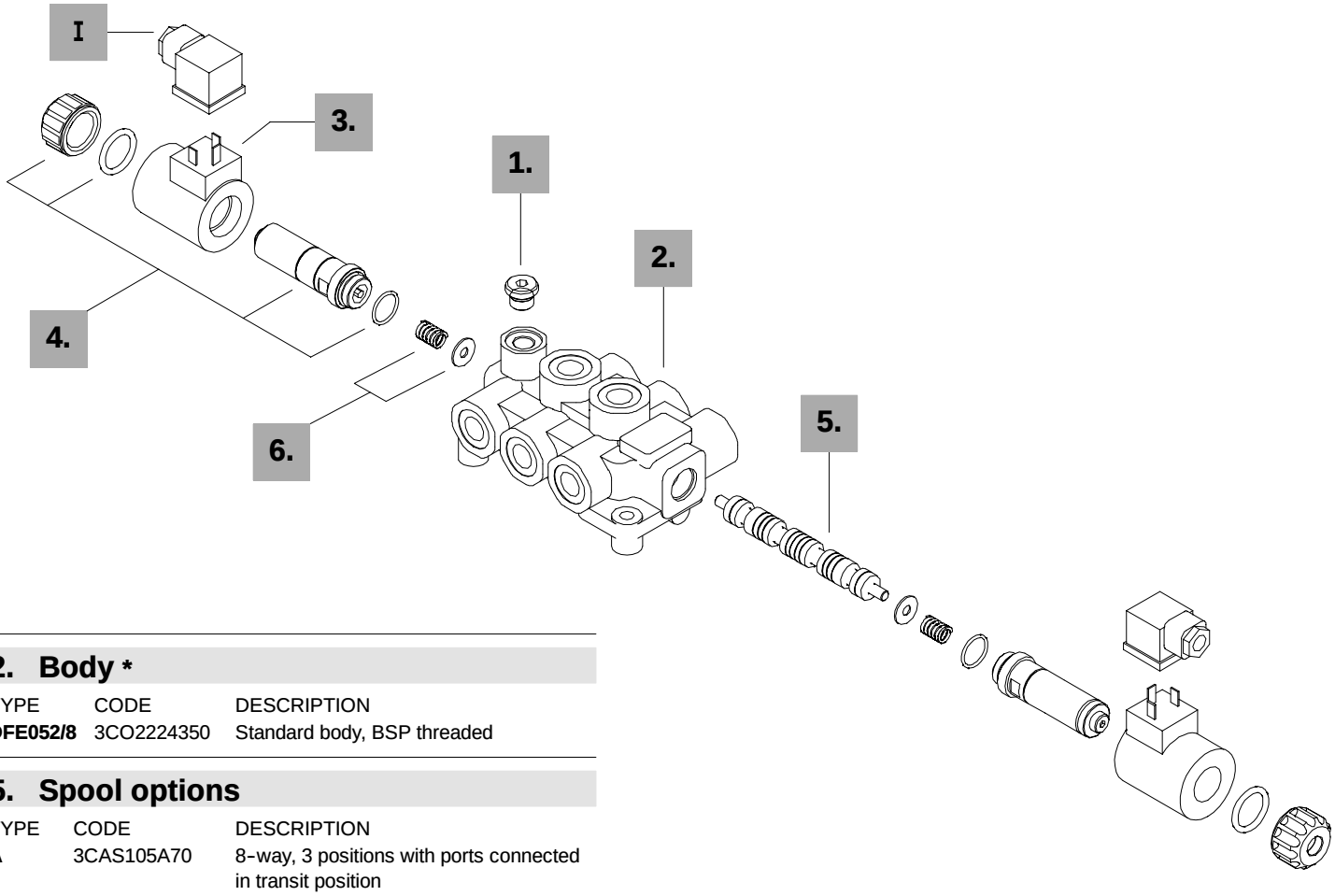
Ordering codes

DEscription example :

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

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

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



2. Body *

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

5. 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

6. Positioner kit *page 67*

TYPE	CODE	DESCRIPTION
8	5V08001	Spring return in neutral position

4. Tube assembly *page 68*

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

1. Drain options * *page 67*

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

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

3. Coil options *page 68*

TYPE	CODE	DESCRIPTION
101	-	Without coil (only with tube kit)
With ISO4400 connector		
201-12VDC	4SOL515012	Coil with 12VDC nominal voltage
201-24VDC	4SOL515024	Coil with 24VDC nominal voltage
With integrated DEUTSCH DT04 connector		
241-12VDC	4SOL515014	Coil with 12VDC nominal voltage
241-24VDC	4SOL515025	Coil with 24VDC nominal voltage

I Optional connectors *page 119*

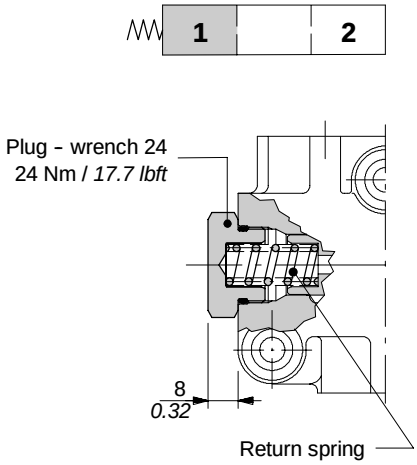
TYPE	CODE	DESCRIPTION
C02	2X1001010	According to ISO4400
C19	5CON007	Type DEUTSCH DT06

Positioner kits

DFE052/2 – /3 – /6

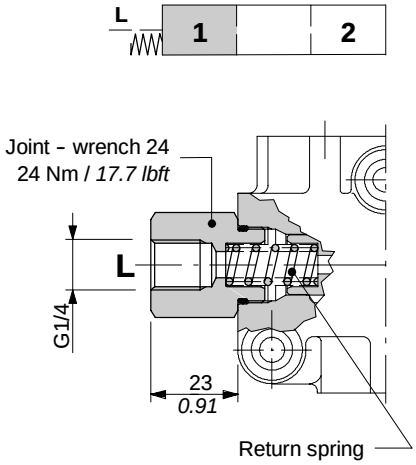
18W kit

Spring return in position 1 with plug.



18Y kit

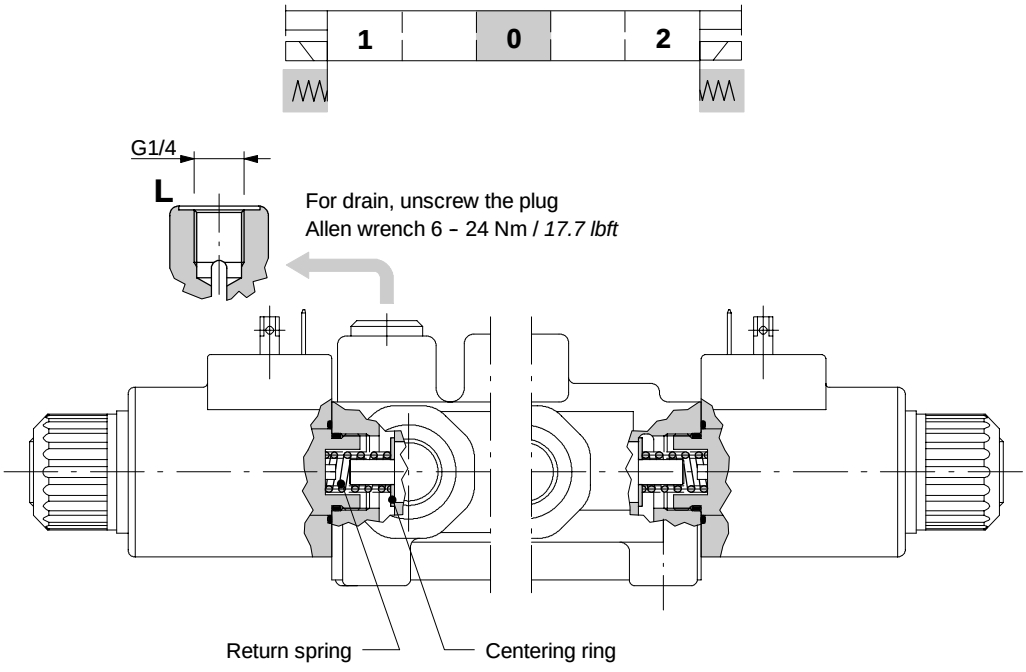
Spring return in position 1, with G1/4 joint for drain.



DFE052/8

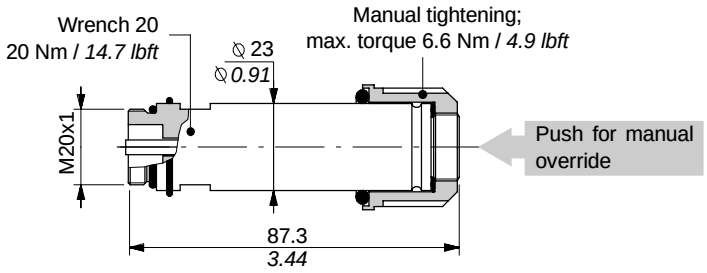
8 kit

Spring return in postion 0.



Solenoid parts

ES tube assembly



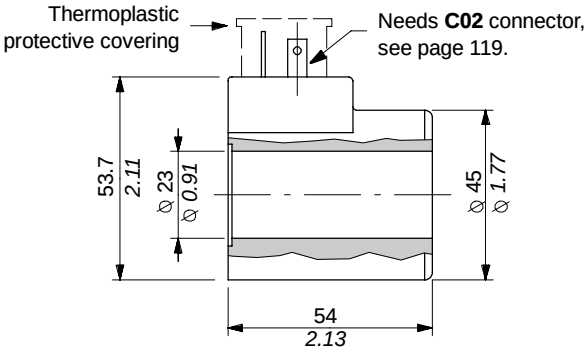
Operating features

Plunger stroke . . . . . : 7.1 mm / *0.28 in*

Coil options

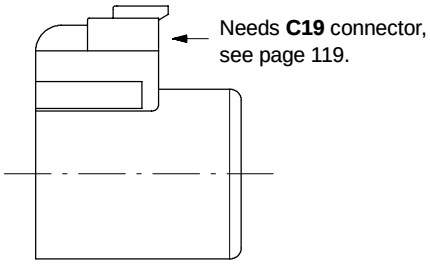
With ISO4400 connector

(weather protection IP65)



With integrated DEUTSCH 04 connector

(weather protection IP67)

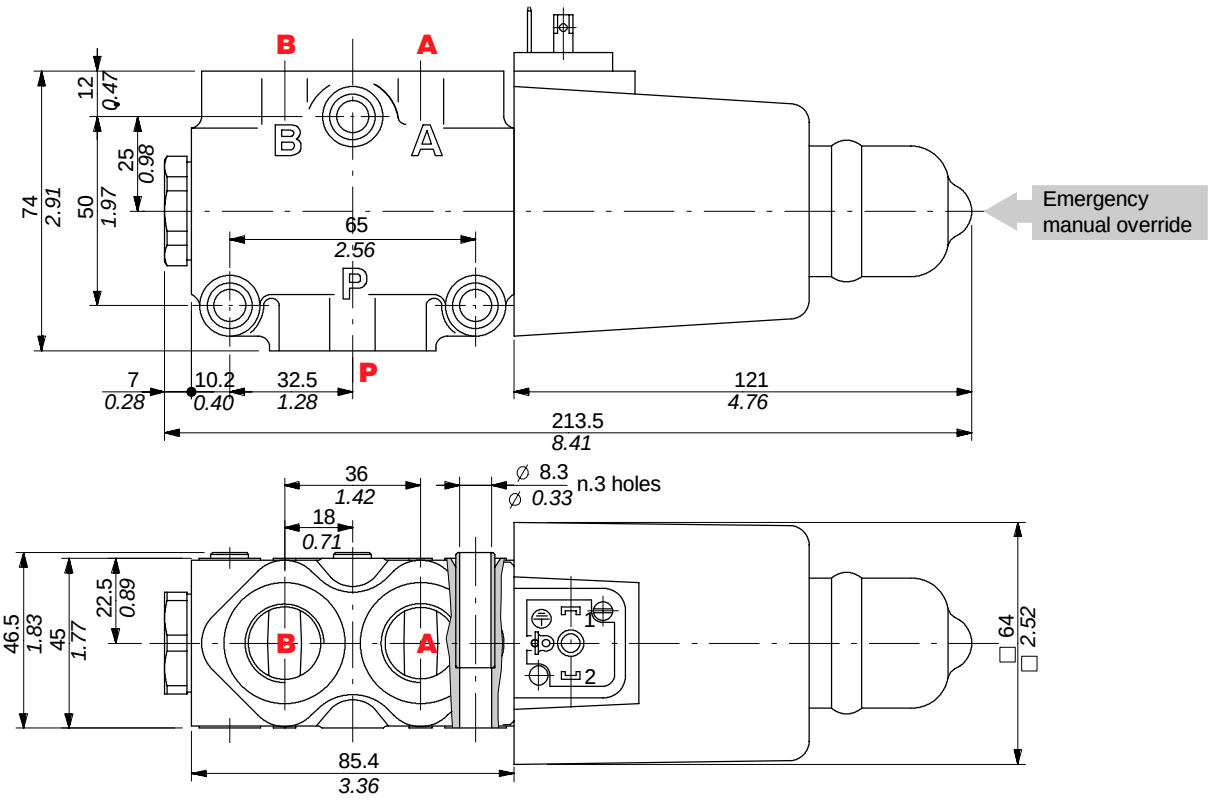


Operating features

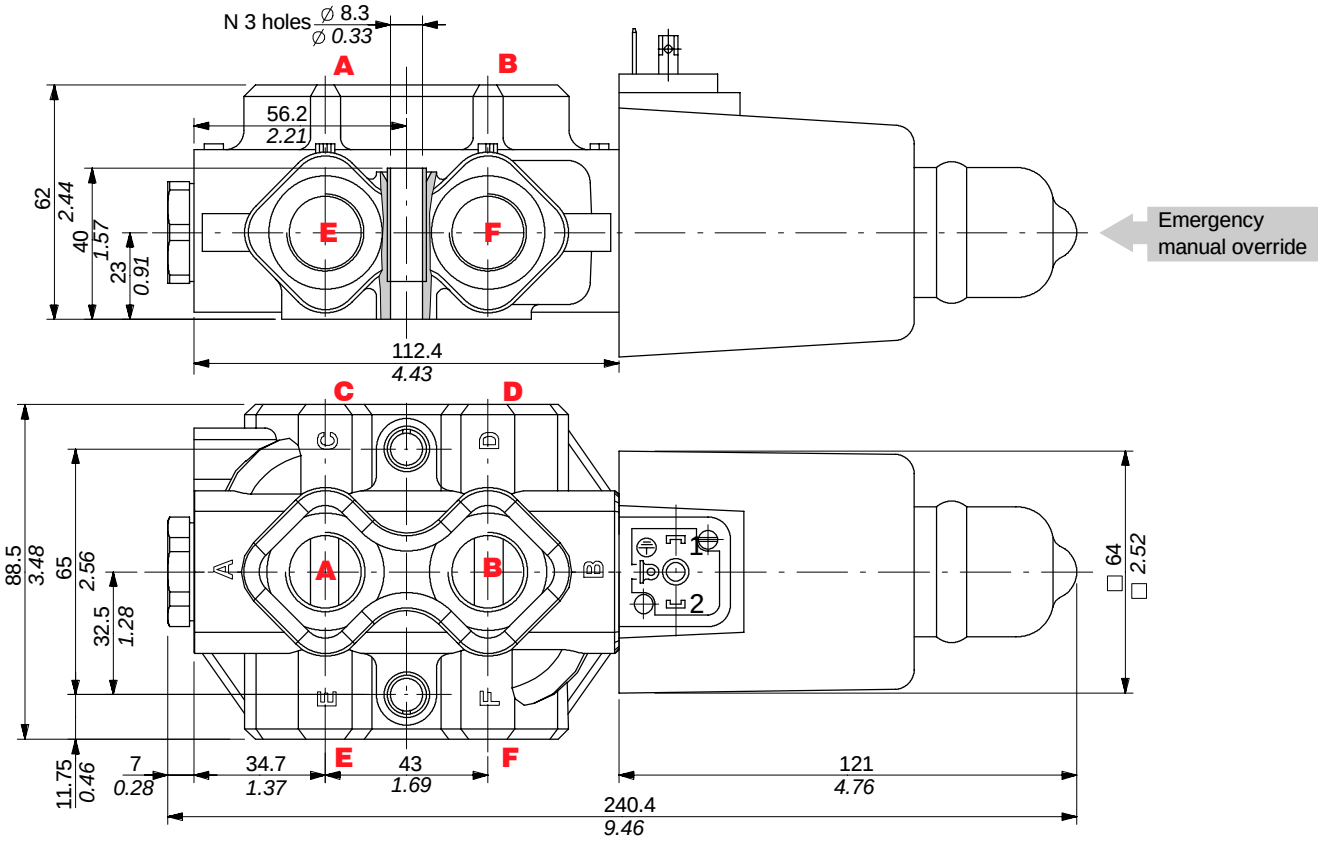
Nominal voltage . . . . . : 12VDC / 24VDC
Nominal voltage tolerance . . . : ±10%
Power rating . . . . . : 38 W
Duty cycle . . . . . : 100%
Weather protection . . . . . : Depending on connector type
Coil insulation . . . . . : Class H

Dimensional data

3-way DFE10/3 valve



6-way DFE10/6 valve



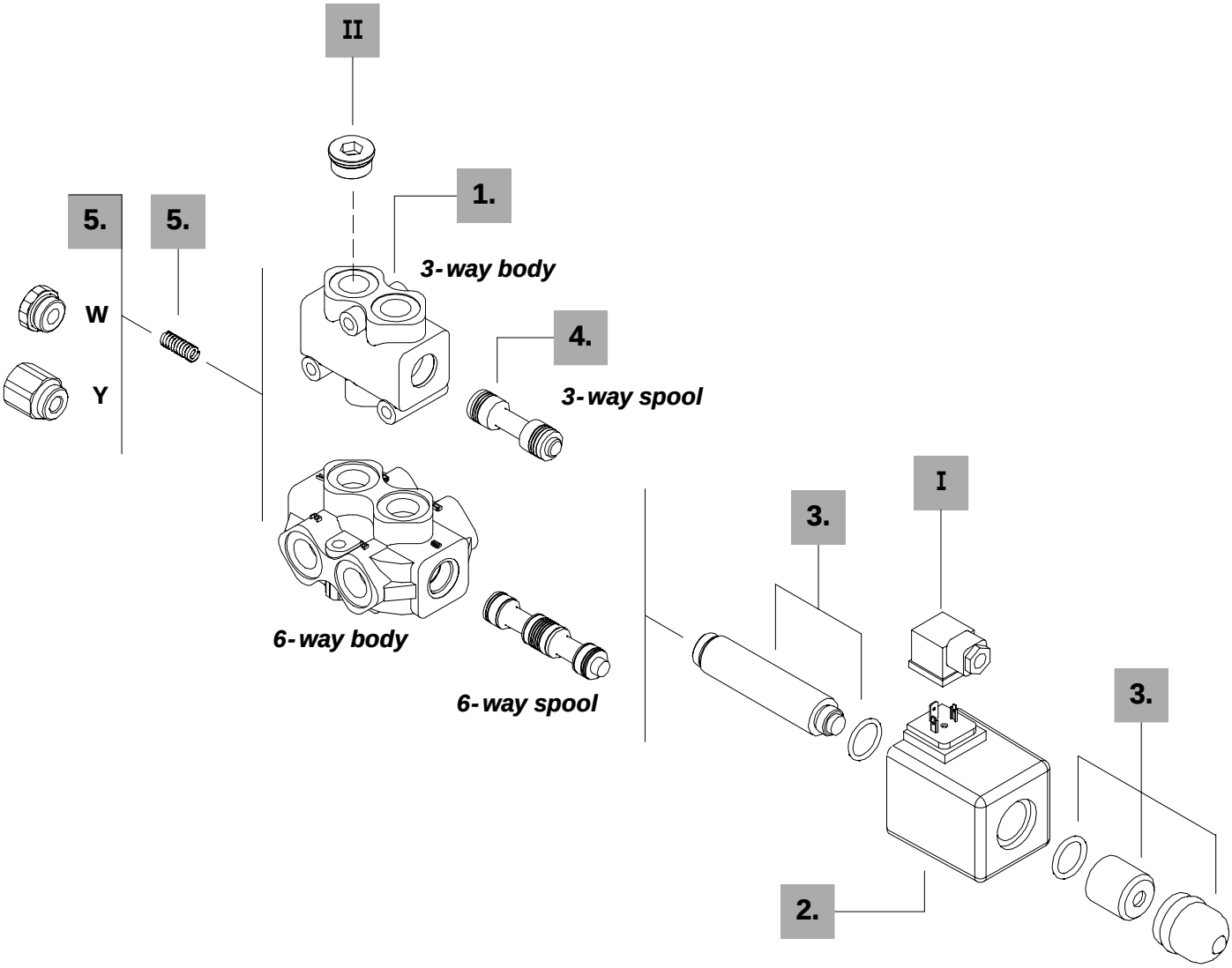
Ordering codes

Description example :

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

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

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



Ordering codes

3-way

1. Body *

TYPE	CODE	DESCRIPTION
DFE10/3	3CO2241320	Standard body

4. 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

4. 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

5. Positioner kits page 72

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

3. Tube assembly page 73

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

2. Coil options page 73

TYPE	CODE	DESCRIPTION
102	-	Without coil (only with tube kit)
With ISO4400 connector		
202-12VDC	4SOL516012	Coil with 12VDC nominal voltage
202-24VDC	4SOL516024	Coil with 24VDC nominal voltage
202-48VDC	4SOL516048	Coil with 48VDC nominal voltage
202-92VDC	4SOL516094	Coil with 92VDC nominal voltage (for 110VAC): need C04 connector
202-192VDC	4SOL516192	Coil with 192VDC nominal voltage (for 220VAC): need C04 connector
With flying leads and DEUTSCH DT04 connector		
241-12VDC	4SOL516412	Coil with 12VDC nominal voltage
241-24VDC	4SOL516424	Coil with 24VDC nominal voltage

I Optional connectors page 119

TYPE	CODE	DESCRIPTION
C02	2X1001010	According ISO4400
C04	2X1001040	According to ISO4400 with rectifier
C19	5CON007	Type DEUTSCH DT06

II Ports plug

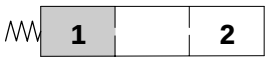
TYPE	CODE	DESCRIPTION
G1/2	3XTAP727180*	Body conversion from 3-way to 2-way circuit

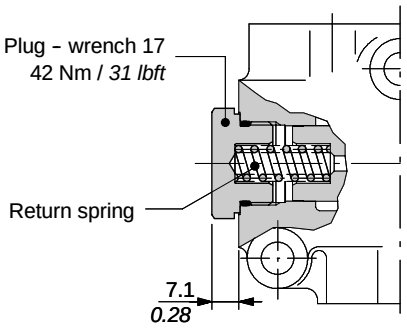
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioner kits

18W kit

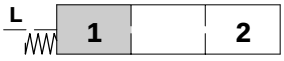
Spring return in position 1 with plug.

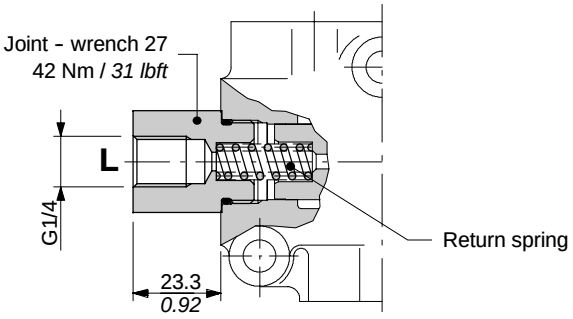




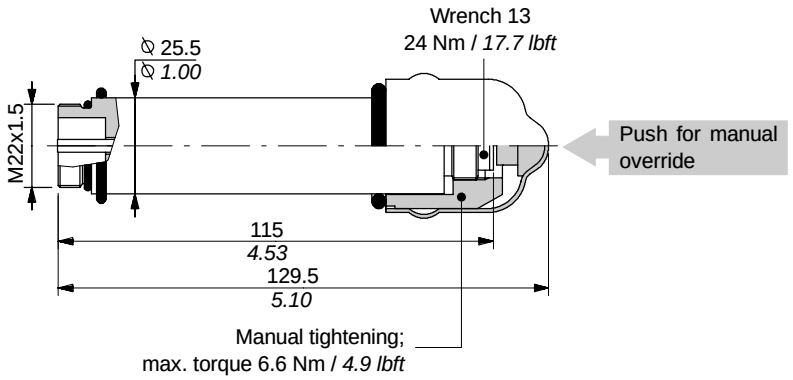
18Y kit

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





ES tube assembly

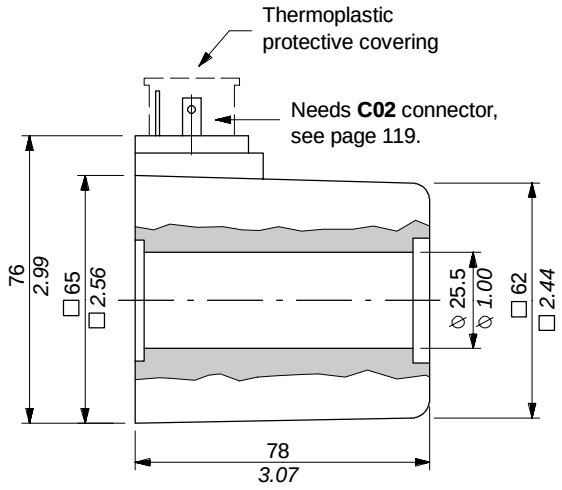


Operating features

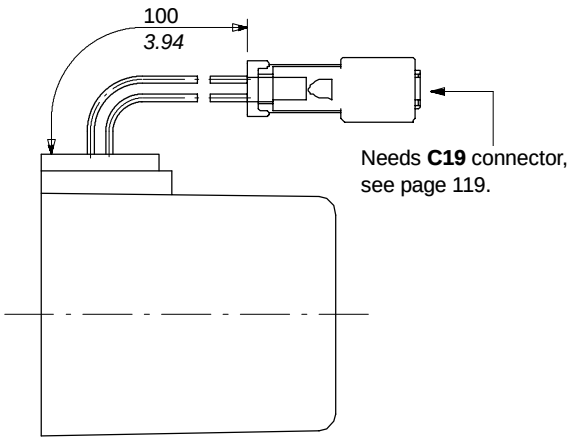
Plunger stroke . . . . . : 10.2 mm / *0.40 in*

Coil options

With ISO4400 connector
(weather protection IP65)



With flying leads and DEUTSCH DT04 connector
(weather protection IP67)

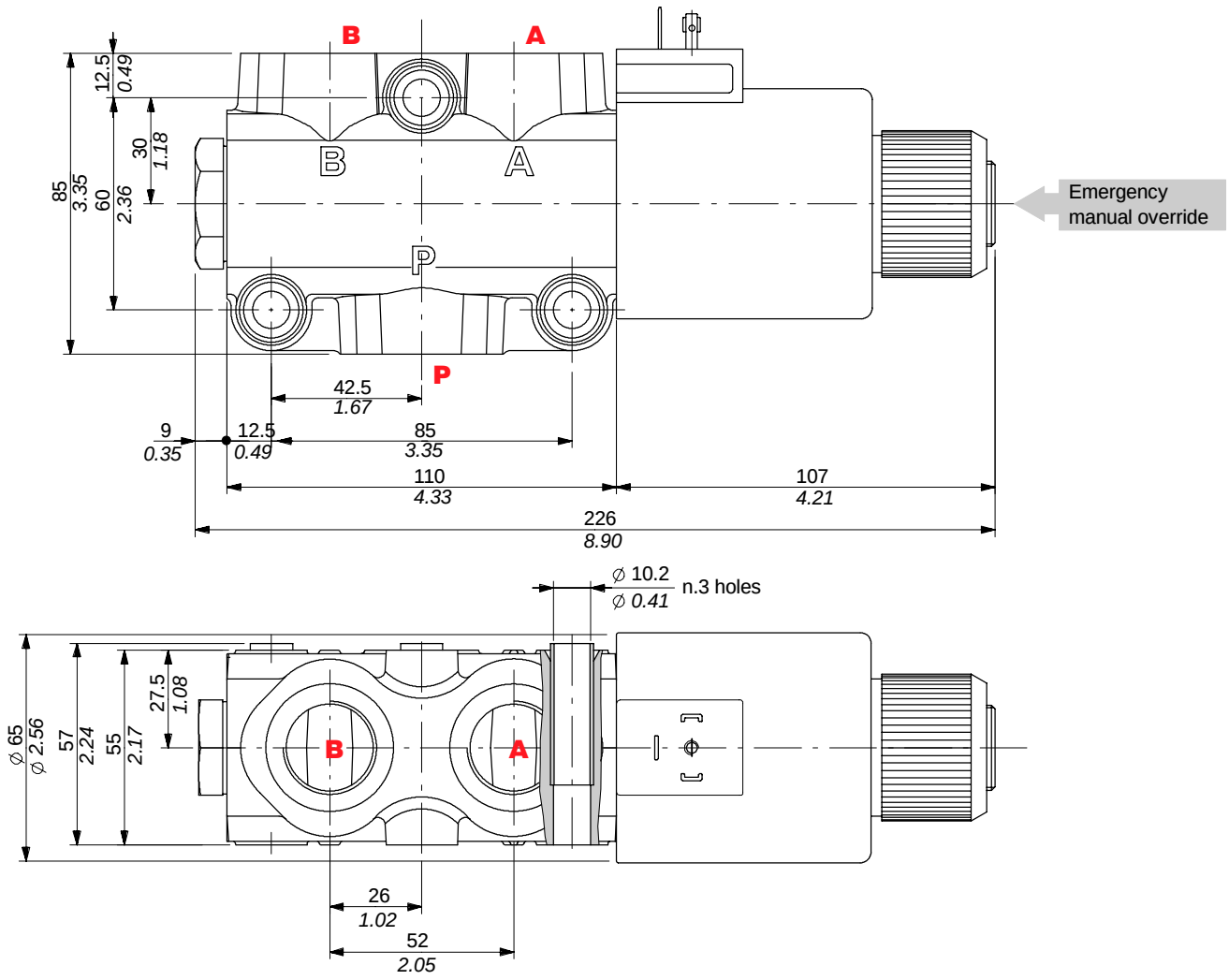


Operating features

Nominal voltage . . . . . : 12-24-48-92-192VDC
Nominal voltage tolerance . . . : ±10%
Power rating . . . . . : 60 W
Duty cycle . . . . . : 100%
Weather protection . . . . . : depending on connector type
Coil insulation . . . . . : Class H

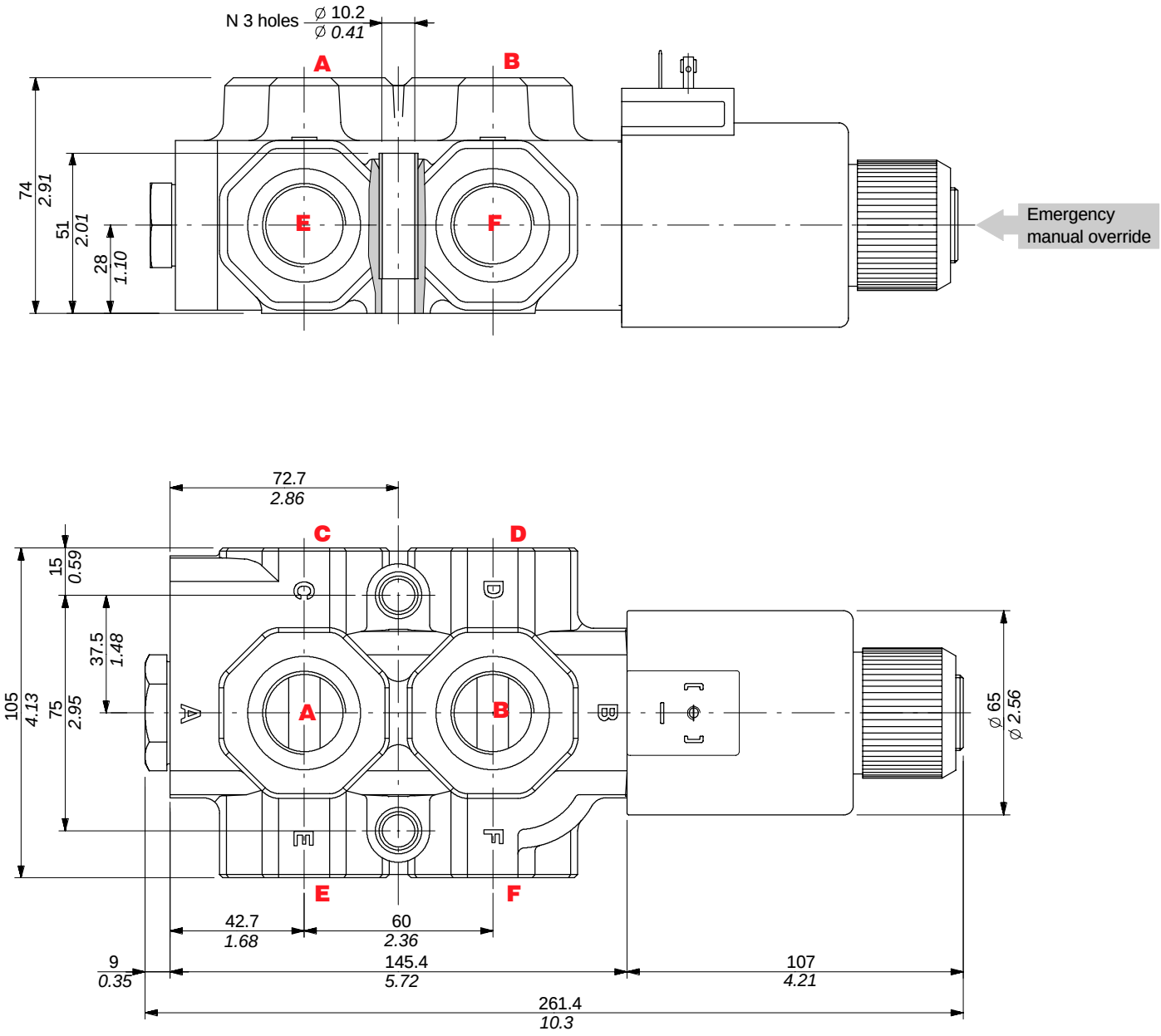
Dimensional data

3-way DFE20/3 valve



Dimensional data

6-way DFE20/6 valve



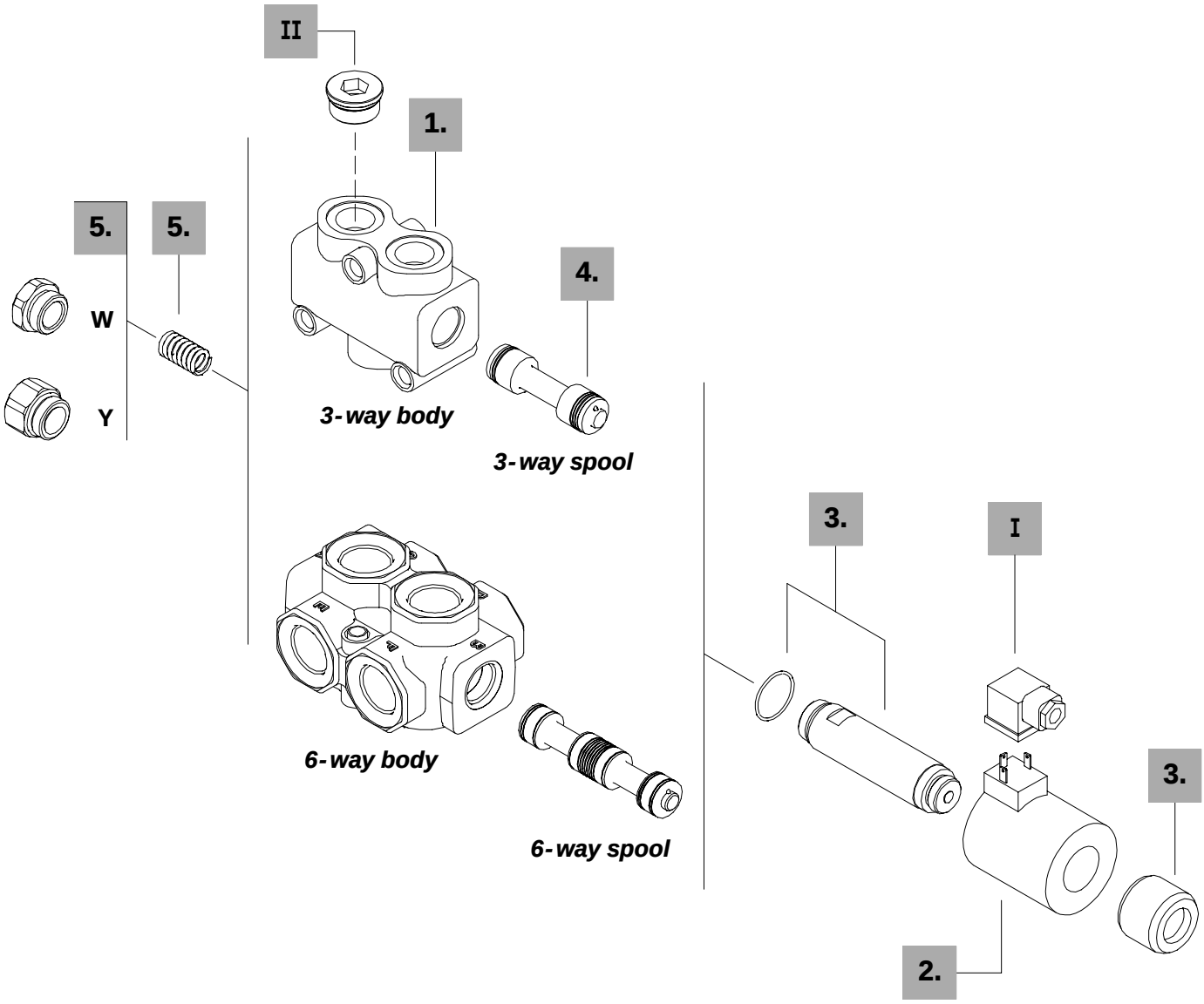
Ordering codes

Description example :

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

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

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



Ordering codes

3-way

1. Body *

TYPE	CODE	DESCRIPTION
DFE20/3	3CO2261320	Standard body

4. 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	3CO2263320	Standard body

4. 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

5. Positioner kits page 78

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

3. Tube assembly page 78

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

2. Coil options page 79

TYPE	CODE	DESCRIPTION
101		Without coil (only with tube kit)
With ISO4400 connector		
201-12VDC	4SOL519112	Coil with 12VDC nominal voltage
201-24VDC	4SOL519124	Coil with 24VDC nominal voltage
201-20VDC	4SOL519120	Coil with 20VDC nominal voltage (for 24VAC): need C04 connector
201-94VDC	4SOL519094	Coil with 94VDC nominal voltage (for 110VAC): need C04 connector
201-192VDC	4SOL519192	Coil with 192VDC nominal voltage (for 220VAC): need C04 connector
With flying leads and DEUTSCH DT04 connector		
241-12VDC	4SOL519412	Coil with 12VDC nominal voltage
241-24VDC	4SOL519424	Coil with 24VDC nominal voltage

I Optional connectors page 119

TYPE	CODE	DESCRIPTION
C02	2X1001010	According ISO4400
C04	2X1001040	According to ISO4400 with rectifier
C19	5CON007	Type DEUTSCH DT06

II Ports plug

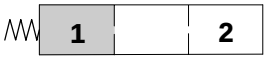
TYPE	CODE	DESCRIPTION
G3/4	3XTAP732200*	Body conversion from 3-way to 2-way circuit

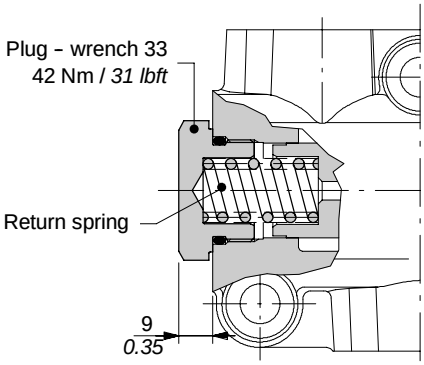
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioner kits

18W kit

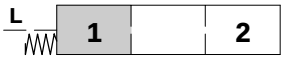
Spring return in position 1 with plug.

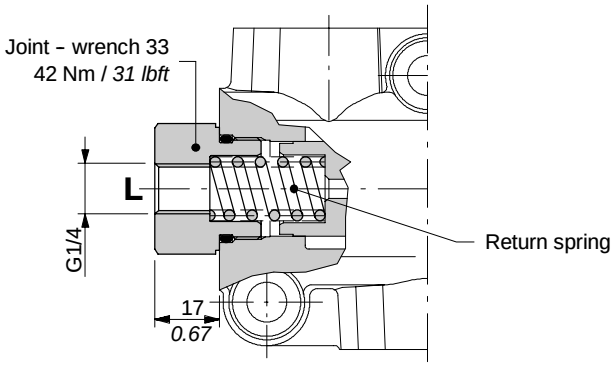




18Y kit

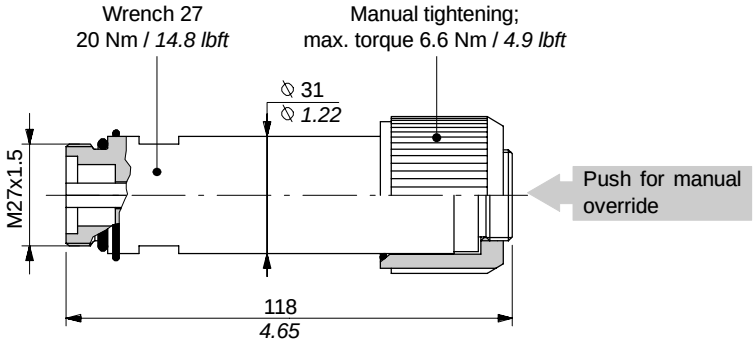
Spring return in position 1, with G1/4 joint for drain.





Solenoid parts

ES tube assembly

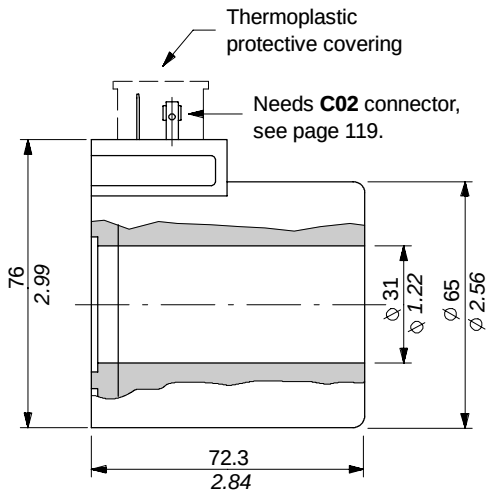


Operating features

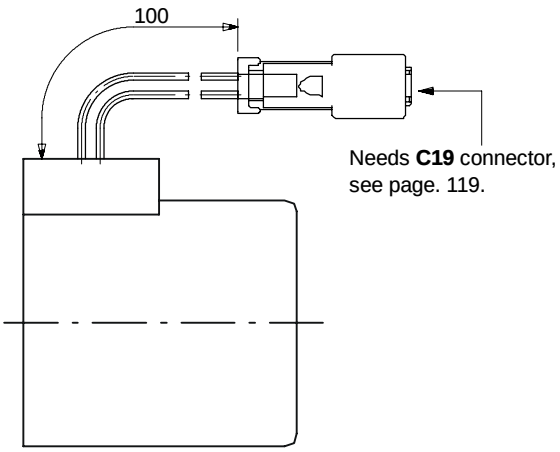
Plunger stroke . . . . . : 10.2 mm / *0.40 in*

Coil options

With ISO4400 connector
(weather protection IP65)



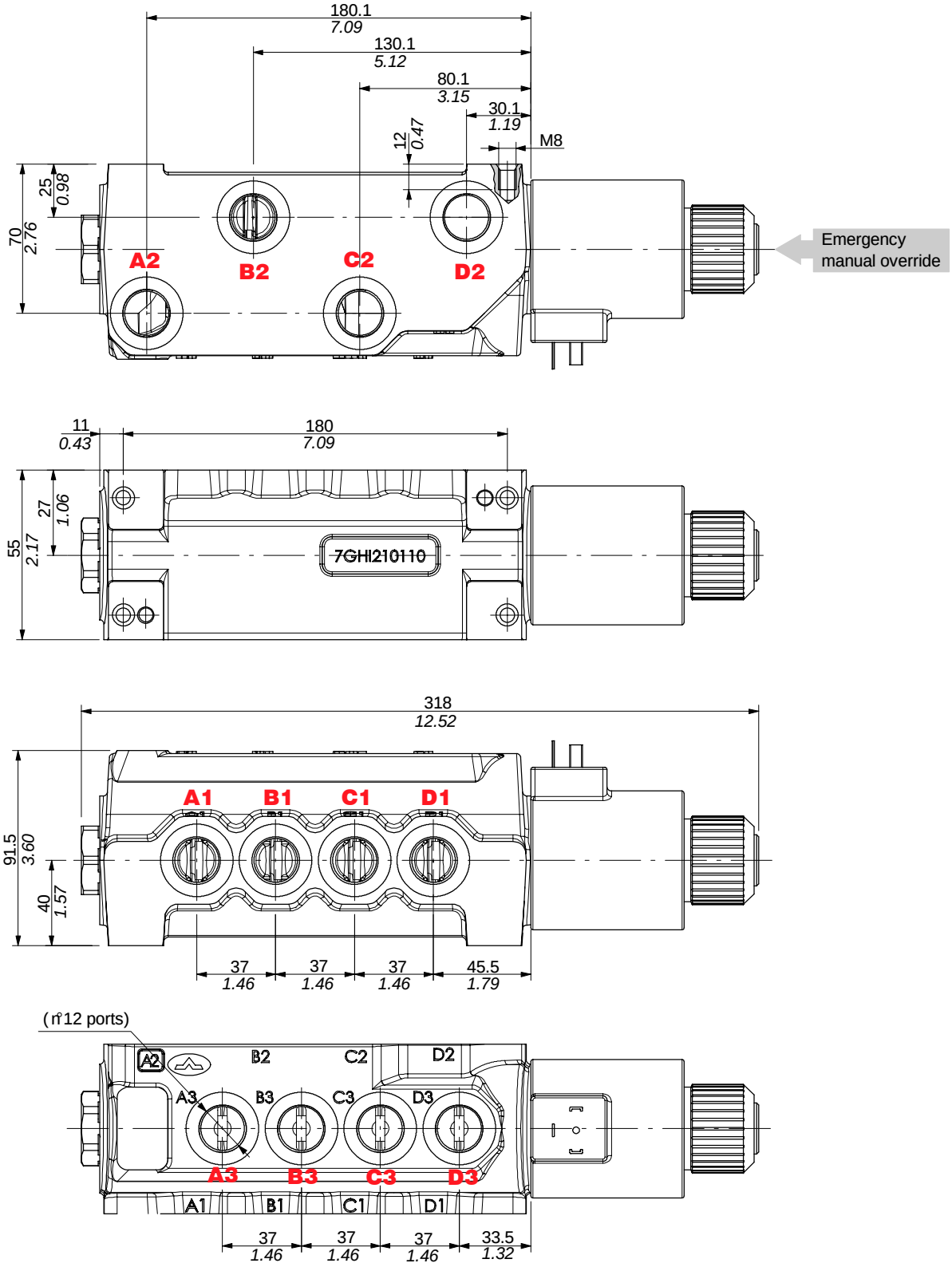
With flying leads and DEUTSCH DT04 connector
(weather protection IP67)



Operating features

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

Dimensional data



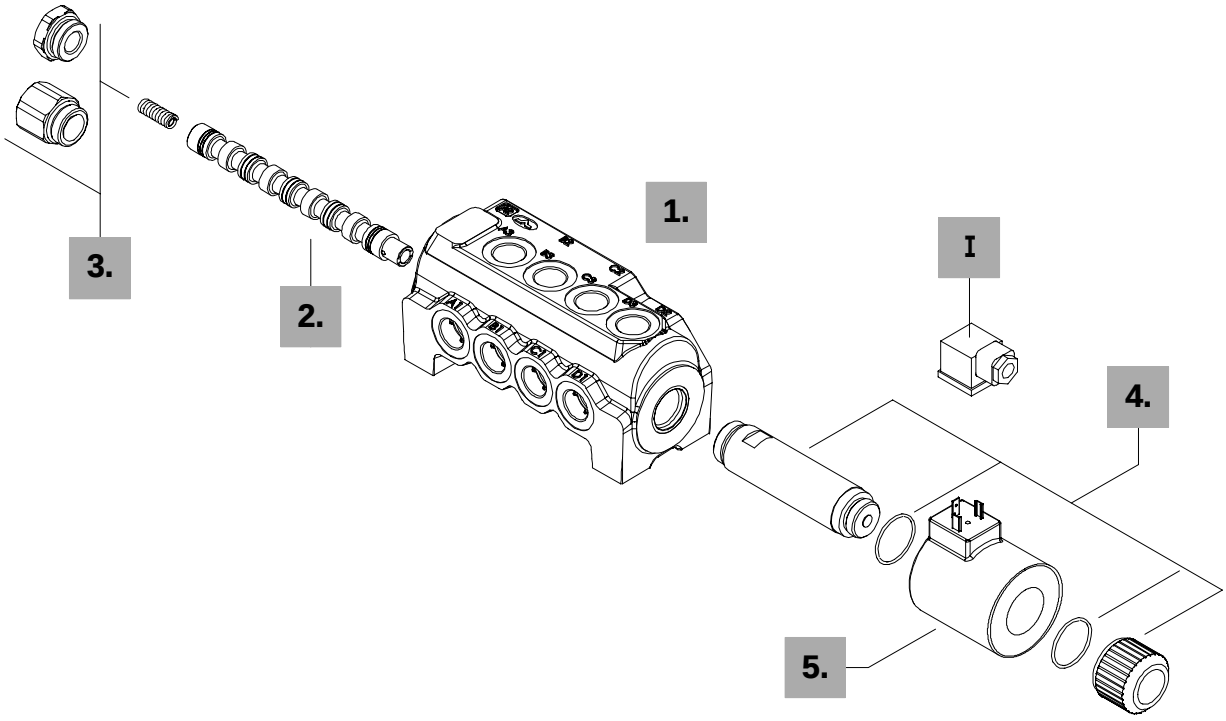
Ordering codes

Description example :

Diverter valve DFE110/12 B 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



1. Body *

TYPE	CODE	DESCRIPTION
110/12	3CO2243320	12-way standard body

2. Spool options

TYPE	CODE	DESCRIPTION
B	3CAS108H40	2 positions with ports closed in transit position

3. Positioner kits *page 82*

TYPE	CODE	DESCRIPTION
18...W	5TAP005	Spring return in position 1
18...Y	5GIU010*	Spring return in position 1, with G1/4 drain port

4. Tube assembly *page 82*

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

5. Coil options *page 83*

TYPE	CODE	DESCRIPTION
101		Without coil (only with tube kit)
With ISO4400 connector		
201-12VDC	4SOL519112	Coil with 12VDC nominal voltage
201-24VDC	4SOL519124	Coil with 24VDC nominal voltage
201-20VDC	4SOL519120	Coil with 20VDC nominal voltage (for 24VAC): need C04 connector
201-94VDC	4SOL519094	Coil with 94VDC nominal voltage (for 110VAC): need C04 connector
201-192VDC	4SOL519192	Coil with 192VDC nominal voltage (for 220VAC): need C04 connector
With flying leads and DEUTSCH DT04 connector		
241-12VDC	4SOL519412	Coil with 12VDC nominal voltage
241-24VDC	4SOL519424	Coil with 24VDC nominal voltage

I Optional connectors *page 119*

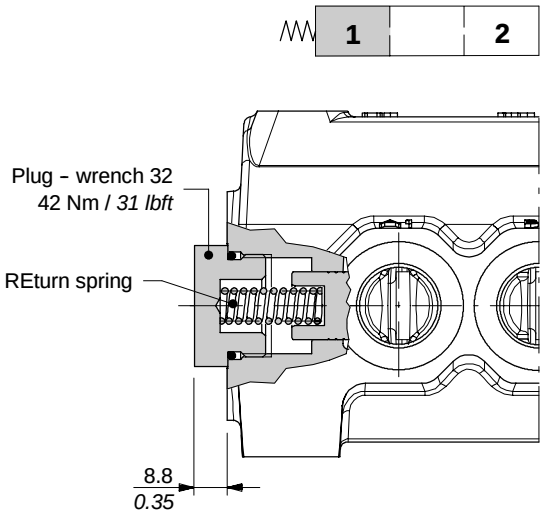
TYPE	CODE	DESCRIPTION
C02	2X1001010	According ISO4400
C04	2X1001040	According to ISO4400 with rectifier
C19	5CON007	Type DEUTSCH DT06

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

Positioner kits

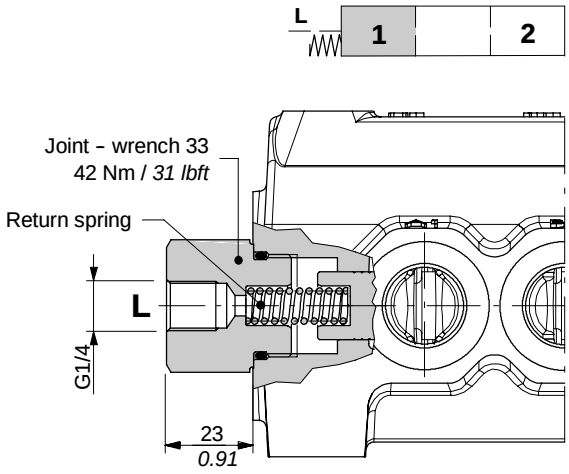
18W kit

Spring return in position 1 with plug.



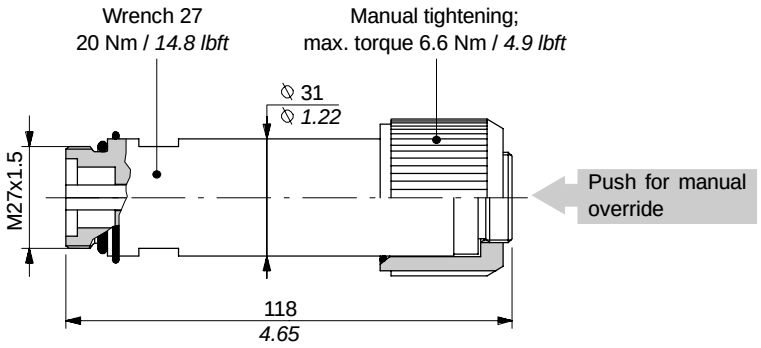
18Y kit

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



Solenoid parts

ES tube assembly



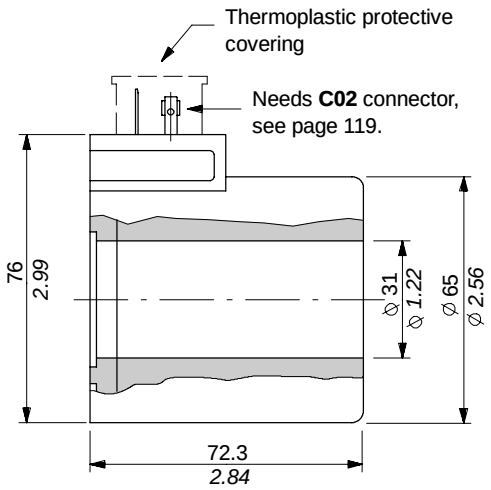
Operating features

Plunger stroke . . . . . : 10.2 mm / *0.40 in*

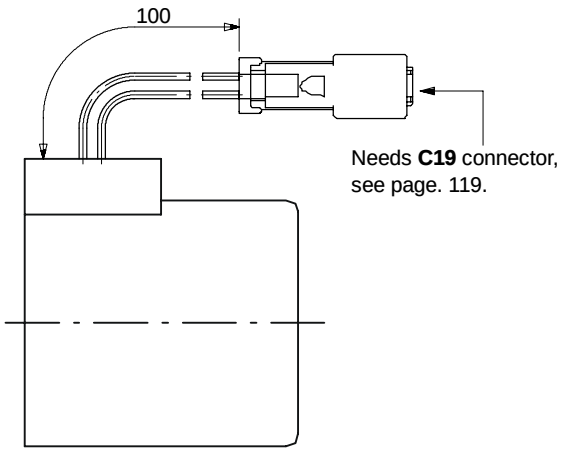
Solenoid parts

Coil options

With ISO4400 connector
(weather protection IP65)



With flying leads and DEUTSCH DT04 connector
(weather protection IP67)



Operating features

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

Content

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DFE140
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Valvole antiurto 102

Working conditions

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

		DFE080	DFE100	DFE140
N. of available ways		6-8-10	6-8-10	6-8-10
Nominal flow rating	*in steady conditions*	25 l/min	50 l/min	80 l/min
Operating pressure (maximum) *	*without drain*	200 bar - 2900 *psi*		
	with drain	315 bar - *4600 psi*		
Available nominal voltage	*VDC*	12-24	12-24	12-24
	VAC 50Hz (with C04 connector)	24-110-220	24-110-220	24-110-220
Nominal power	*W*	38	60	60
Internal leakage A(B)→T	*Δp=100 bar 1450 psi with fuid and valve at 40 °C*	7 cm^3/min *0.43 in^3/min*	10 cm^3/min *0.61 in^3/min*	10 cm^3/min *0.61 in^3/min*
Tie rods tightening torque		9.8 Nm *7.2 lbft*	18 Nm *13.3 lbft*	25 Nm *18.4 lbft*
Hydraulic fluid		Mineral base oil		
Fluid temperature	*with NBR seals*	from -20°C to 80°C		
	with FPM seals	from -20°C 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 for working conditions		from -20°C to 50°C		

NOTE - *For different working conditions please contact Sales Dept.*

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

Standard threads

REFERENCE STANDARDS

		BSP	UN-UNF	METRIC	
THREAD ACCORDING TO		ISO 228/1	ISO 263	ISO 262	ISO 262
		BS 2779	ANSI B1.1 unified		
CAVITY ACCORDING TO	ISO	1179	11926	9974-1	6149
	SAE		J1926		J2244
	DIN	3852-2 shape X or Y		3852-1 shape X or Y	

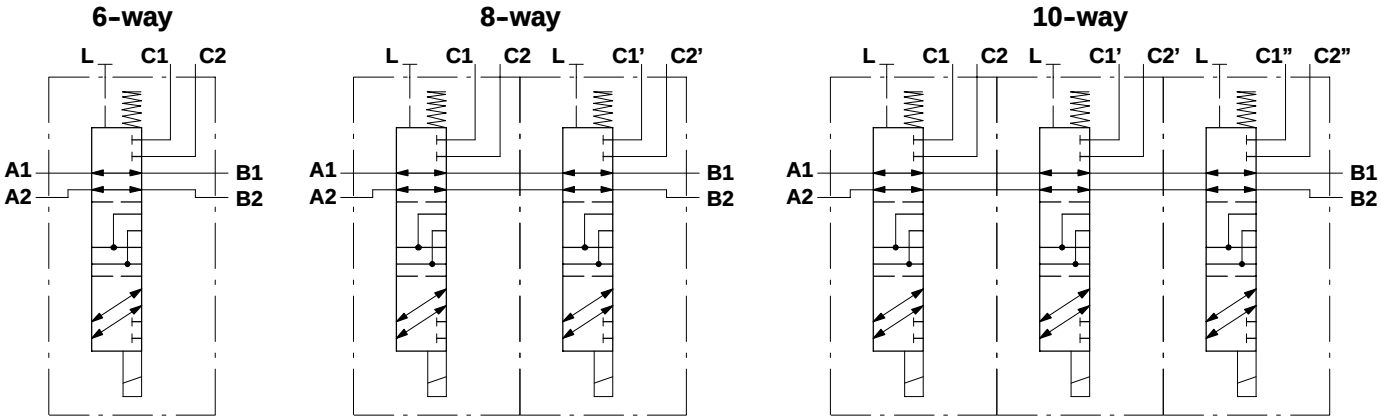
PORTS THREAD

ALL PORTS	BSP	UN-UNF	METRIC (ISO 9974-1)	METRIC (ISO 6149)
DFE080	G 1/4	7/16-20 (SAE 4)		
DFE100	G 3/8	3/4-16 (SAE 8)	M18x1.5	M18x1.5
DFE140	G 1/2	7/8-14 (SAE 10)		
DRAIN PORT				
L	G 1/4	7/16-20 (SAE 4)* 9/16-18 (SAE 6)	M12x1.5	M12x1.5

(*) For DFE080 diverter valve

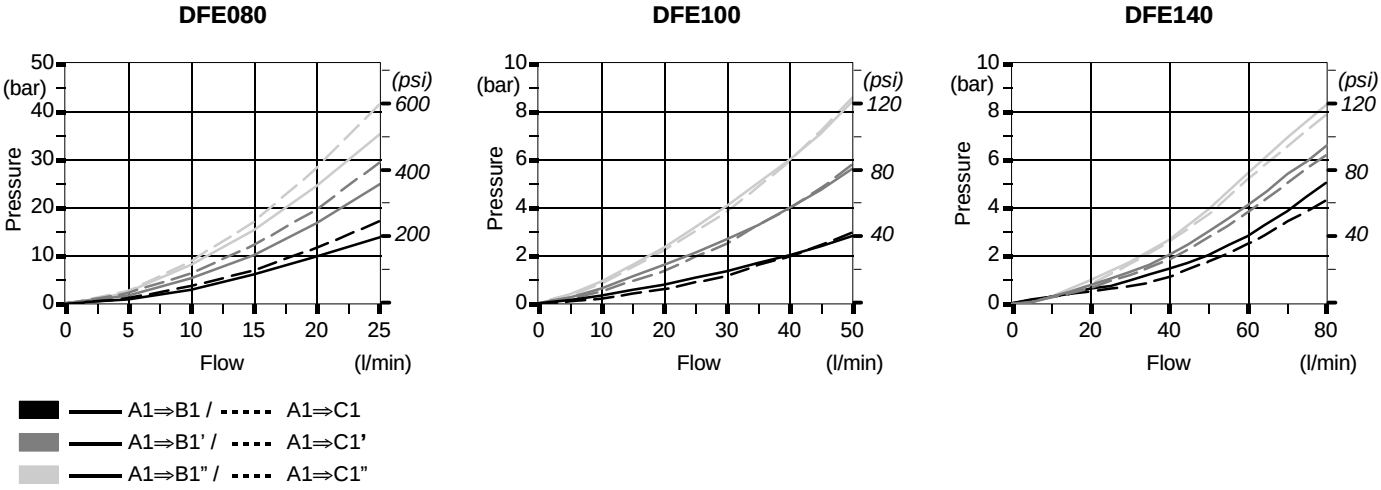
Optional threads: for availability contact Sales Department

Hydraulic circuit

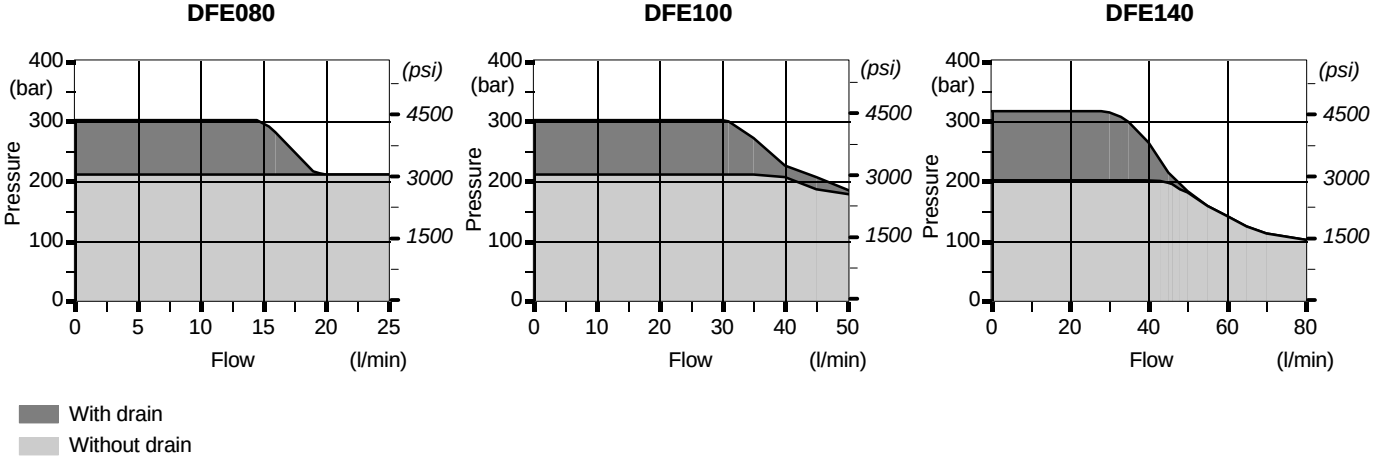


Performace data

Pressure drop versus flow



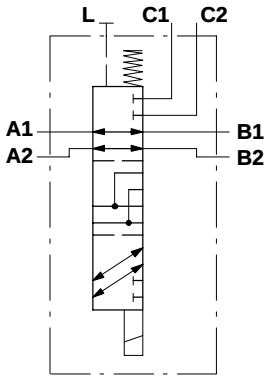
Minimum dynamic conditions: (supply = Vn-10%, coil at 70 °C)



Hydraulic circuit

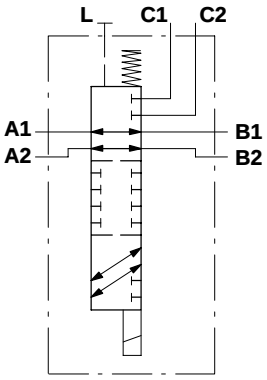
Spool circuits

Type A



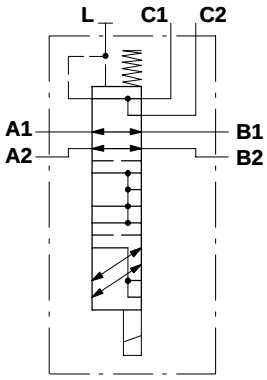
2 positions with ports connected in transit position

Type B



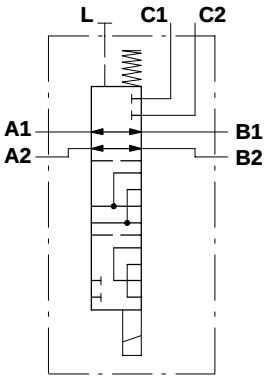
2 positions with ports closed in transit position

Type H



2 positions with ports connected to drain in transit position

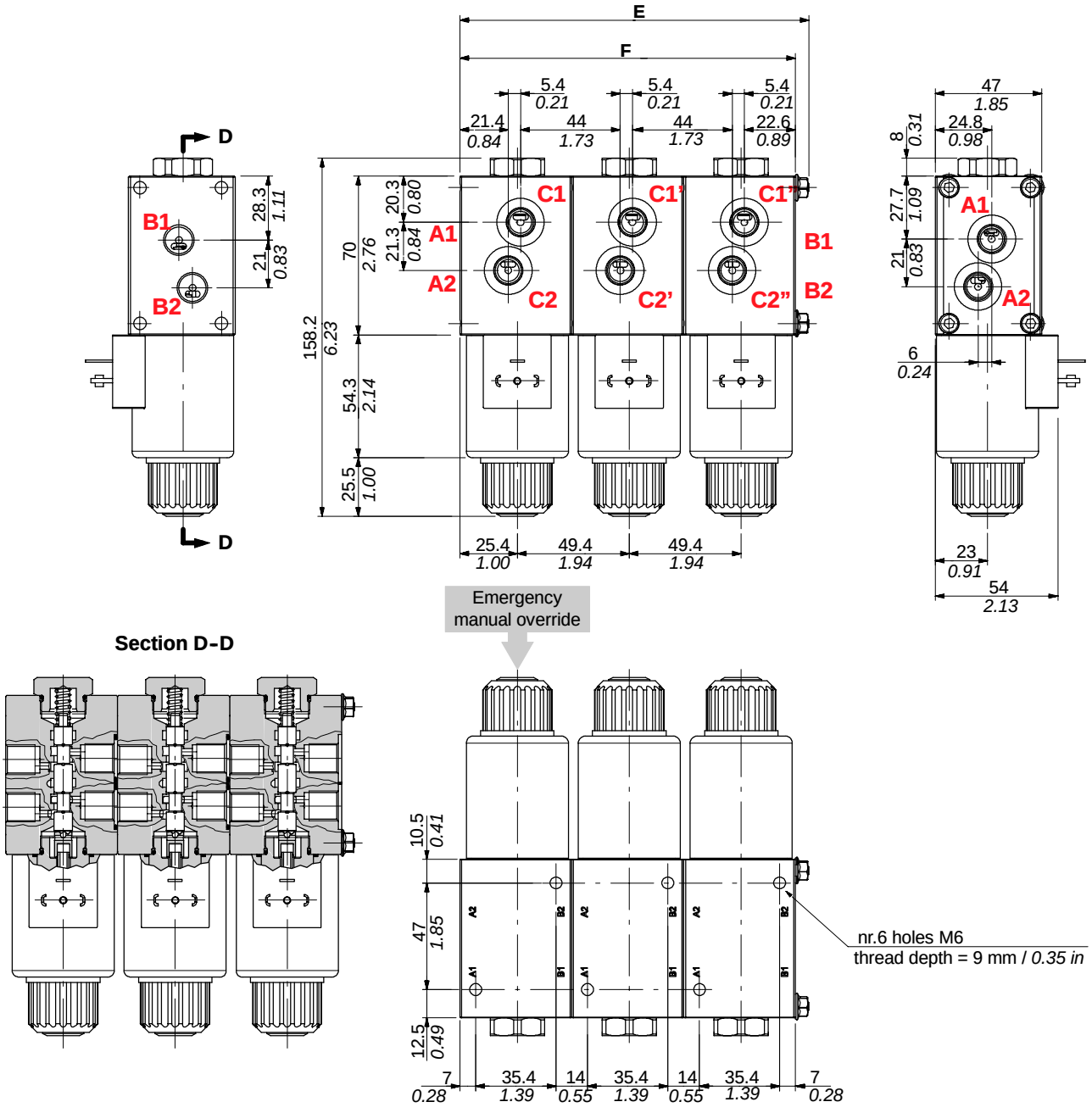
Type N



As type A, for right inlet

Dimensional data

The drawing below show diverter valve in 10-way configuration.



TYPE	E		F		Weight	
	mm	*in*	mm	*in*	kg	*lb*
DFE080/6	49.4	*1.94*	49.4	*1.94*	1.4	*3.1*
DFE080/8	105	*4.13*	98.8	*3.86*	2.8	*6.2*
DFE080/10	155	*6.10*	148.2	*5.84*	4.3	*9.5*

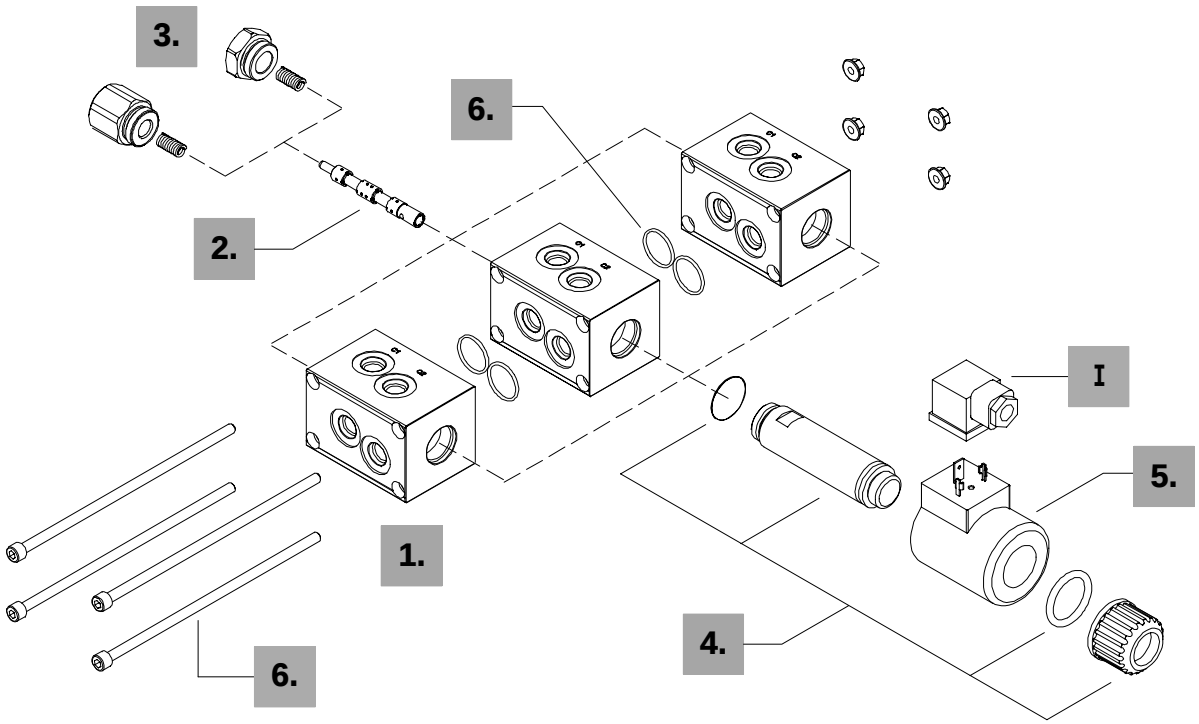
Ordering codes

Description example :

Diverter valve DFE080/10 A 18 ES - W 201-12VDC - CRZ

1. DFE080/10
2. A
3. 18
4. ES
3. W
5. 201-12VDC

Valve body is supplied galvanized



Ordering codes

1. Body *

TYPE	CODE	DESCRIPTION
080/6	3CO2208320	6-way body
080/8	"	Nr 2 of 6-way body for 8-way circuit
080/10	"	Nr 3 of 6-way body for 10-way circuit

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS108640	2 positions with ports connected in transit position
B	3CAS108740	2 positions with ports closed in transit position
H	3CAS108840	2 positions with ports connected to drain in transit position
N	3CAS108940	As type A, for right inlet

3. Positioner kits *page 92*

TYPE	CODE	DESCRIPTION
18...W	5TAP007	Spring return in position 1
18...Y	5GIU016 *	Spring return in position 1, with G1/4 drain port

4. Tube assembly *page 92*

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

5. Coil options *page 92*

TYPE	CODE	DESCRIPTION
101	-	Without coil (only with tube kit)
With ISO4400 connector		
201-12VDC	4SOL515012	Coil with 12VDC nominal voltage
201-24VDC	4SOL515024	Coil with 24VDC nominal voltage
With integrated DEUTSCH DT04 connector		
241-12VDC	4SOL515014	Coil with 12VDC nominal voltage
241-24VDC	4SOL515025	Coil with 24VDC nominal voltage

6. Tie rods kit and O-ring seals

CODE	MOUNTED ON
5TIR080008	DFE080/8 diverter valve
5TIR080010	DFE080/10 diverter valve

I Optional connectors *page 119*

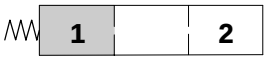
TYPE	CODE	DESCRIPTION
C02	2X1001010	According to ISO4400
C19	5CON007	Type DEUTSCH DT06

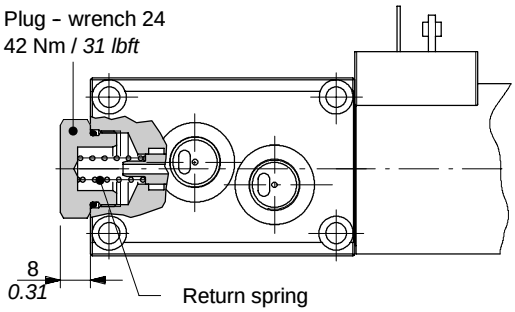
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioner kits

18W kit

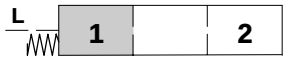
Spring return in position 1 with plug.

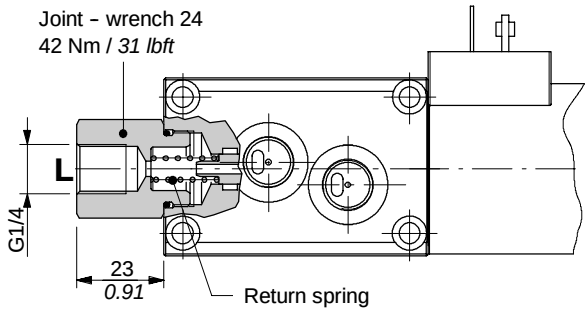




18Y kit

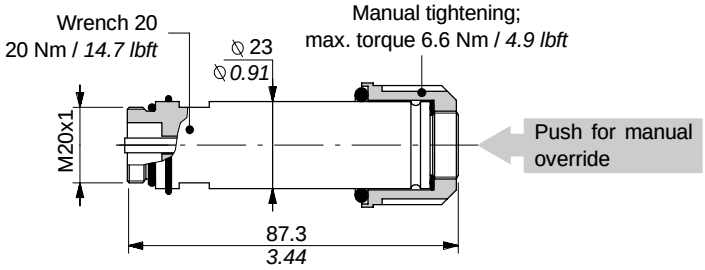
Spring return in position 1, with G1/4 joint for drain.





Solenoid parts

ES tube assemply

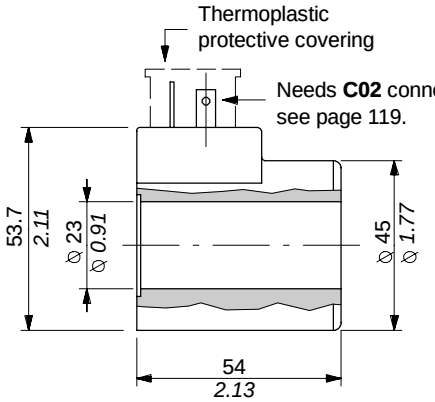


Operating features

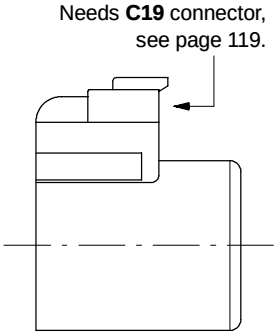
Plunger stroke . . . . . : 7.1 mm / *0.28 in*

Coil options

With ISO4400 connector
(weather protection IP65)



With integrated DEUTSCH 04 connector
(weather protection IP67)

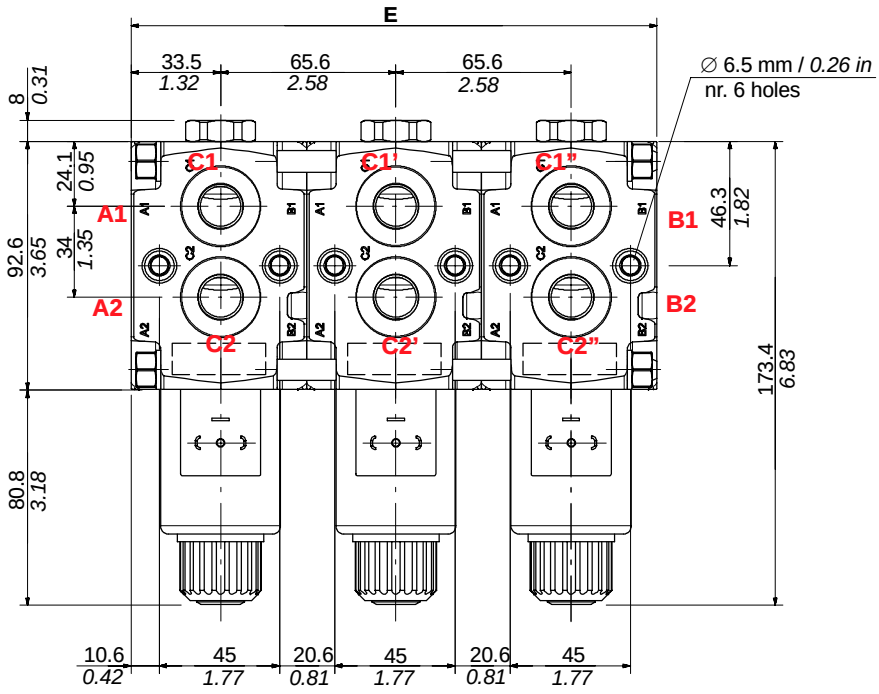


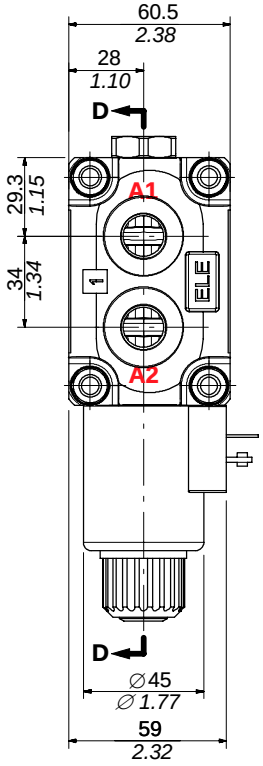
Operating features

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

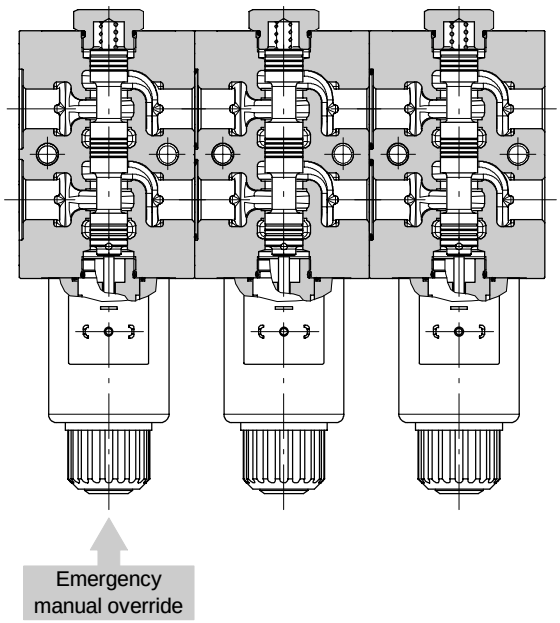
Dimensional data

The drawing below show diverter valve in 10-way configuration.





Section D-D



TYPE	E		Weight	
	mm	*in*	kg	*lb*
DFE100/6	65.6	*2.58*	2.4	*5.3*
DFE100/8	105	*4.13*	5.1	*11.2*
DFE100/10	196.8	*7.75*	8.4	*18.5*

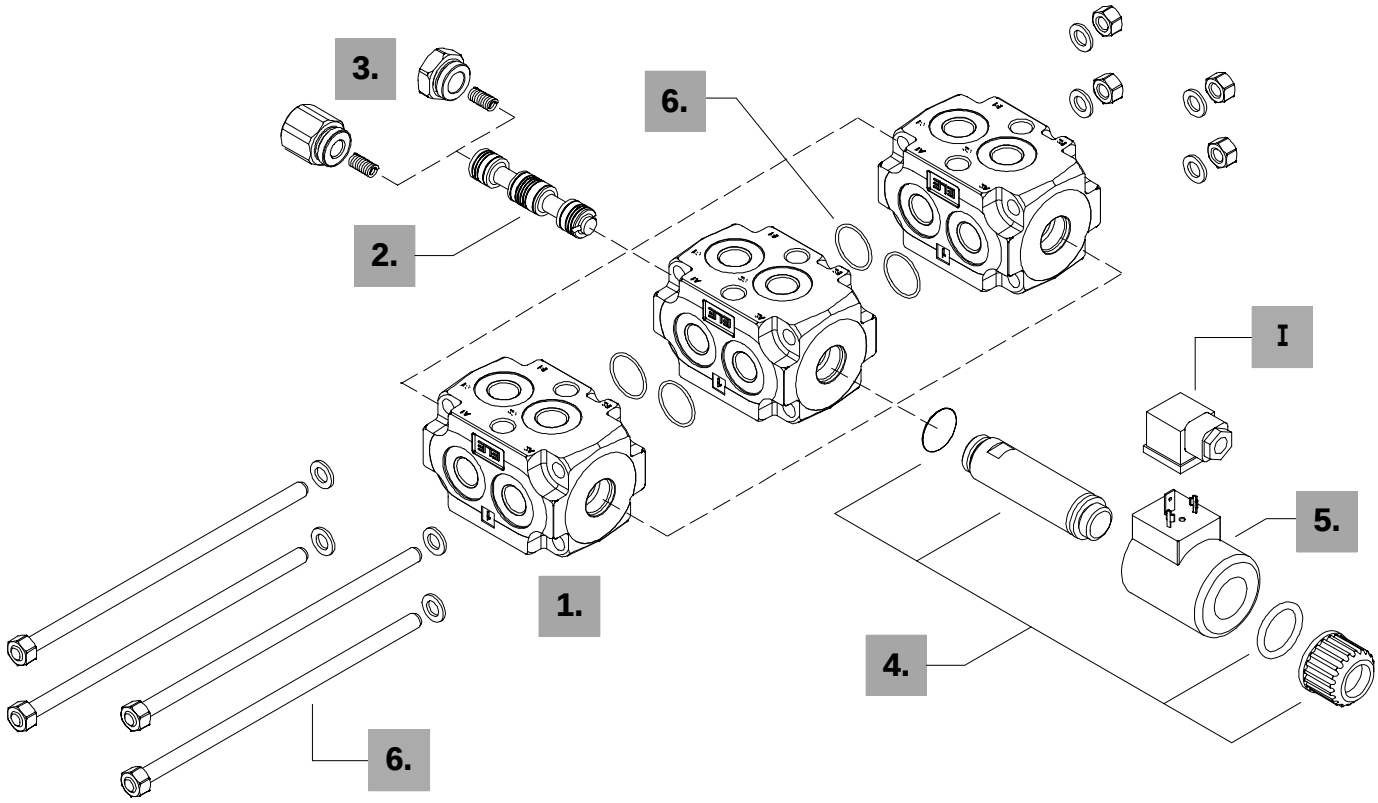
Ordering codes

Description example :

Diverter valve DFE100/10 A 18 ES - W 201-12VDC - CRZ

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

Valve body is supplied galvanized



Oedering codes

1. Body *

TYPE	CODE	DESCRIPTION
100/6	3CO2244321	6-way body
100/8	"	Nr 2 of 6-way body for 8-way circuit
100/10	"	Nr 3 of 6-way body for 10-way circuit

2. Spool options

TYPE	CODE	DESCRIPTION
A	3CAS110647	2 positions with ports connected in transit position
B	3CAS110747	2 positions with ports closed in transit position
H	3CAS110847	2 positions with ports connected to drain in transit position
N	3CAS110947	As type A, for right inlet

3. Positioner kits *page 96*

TYPE	CODE	DESCRIPTION
18...W	5TAP006	Spring return in position 1
18...Y	5GIU013 *	Spring return in position 1, with G1/4 drain port

4. Tube assembly *page 96*

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

5. Coil options *page 96*

TYPE	CODE	DESCRIPTION
101	-	Without coil (only with tube kit)
With ISO4400 connector		
201-12VDC	4SOL515012	Coil with 12VDC nominal voltage
201-24VDC	4SOL515024	Coil with 24VDC nominal voltage
With integrated DEUTSCH DT04 connector		
241-12VDC	4SOL515014	Coil with 12VDC nominal voltage
241-24VDC	4SOL515025	Coil with 24VDC nominal voltage

6. Tie rods kit and O-ring seals

CODE	MOUNTED ON
5TIR108132	DFE100/8 diverter valve
5TIR108205	DFE100/10 diverter valve

I Optional connectors *page 119*

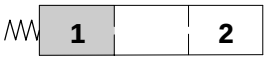
TYPE	CODE	DESCRIPTION
C02	2X1001010	According to ISO4400
C19	5CON007	Type DEUTSCH DT06

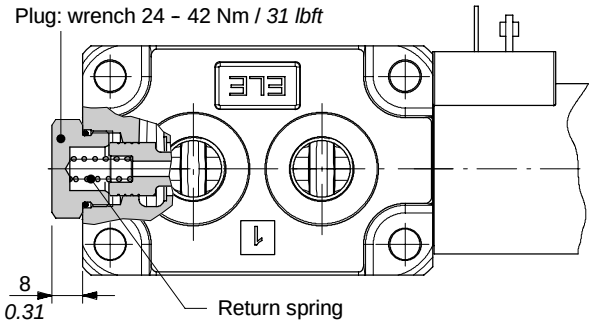
NOTE (*) - *Codes are referred to **BSP** thread.*

Positioner kits

18W kit

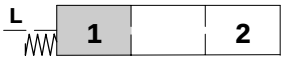
Spring return in position 1 with plug.

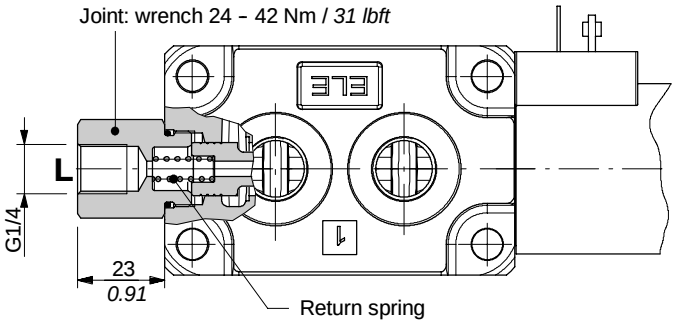




18Y kit

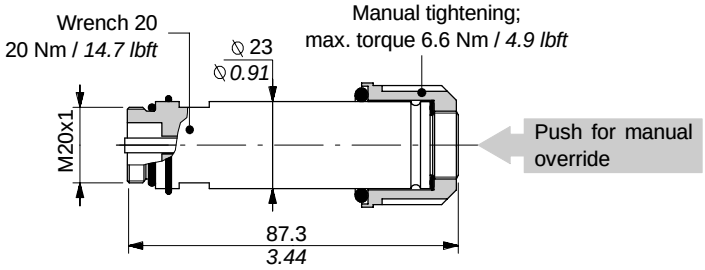
Spring return in position 1, with G1/4 joint for drain.





Solenoid parts

ES tube assemply

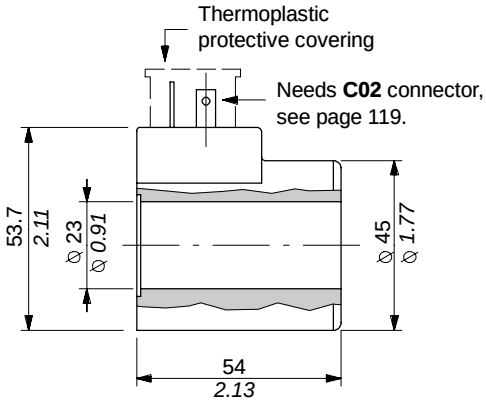


Operating features

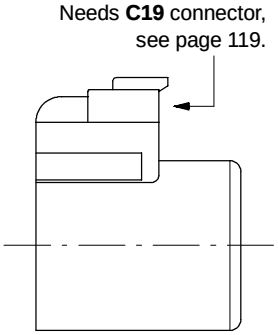
Plunger stroke . . . . . : 7.1 mm / *0.28 in*

Coil options

With ISO4400 connector
(weather protection IP65)



With integrated DEUTSCH 04 connector
(weather protection IP67)

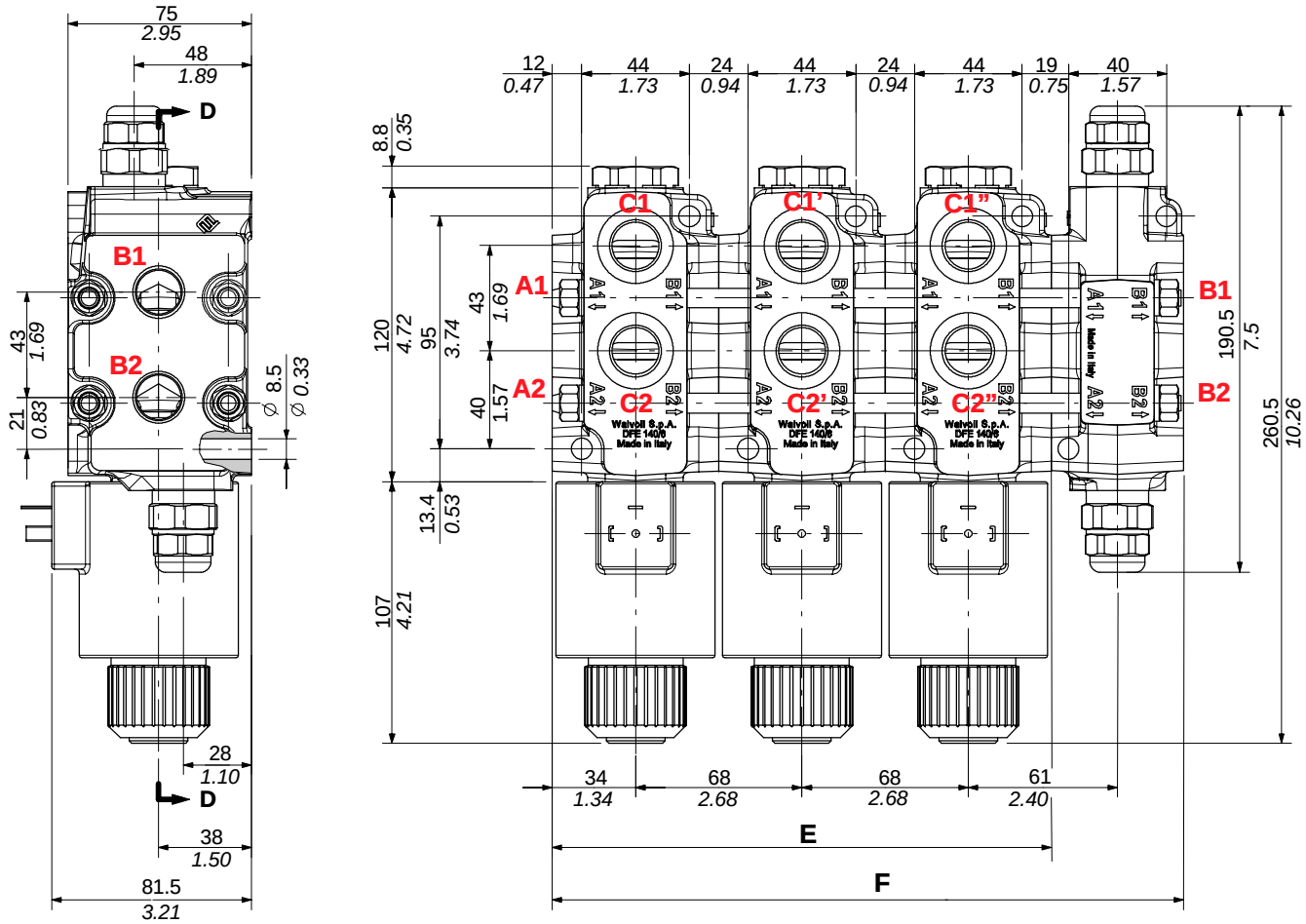


Operating features

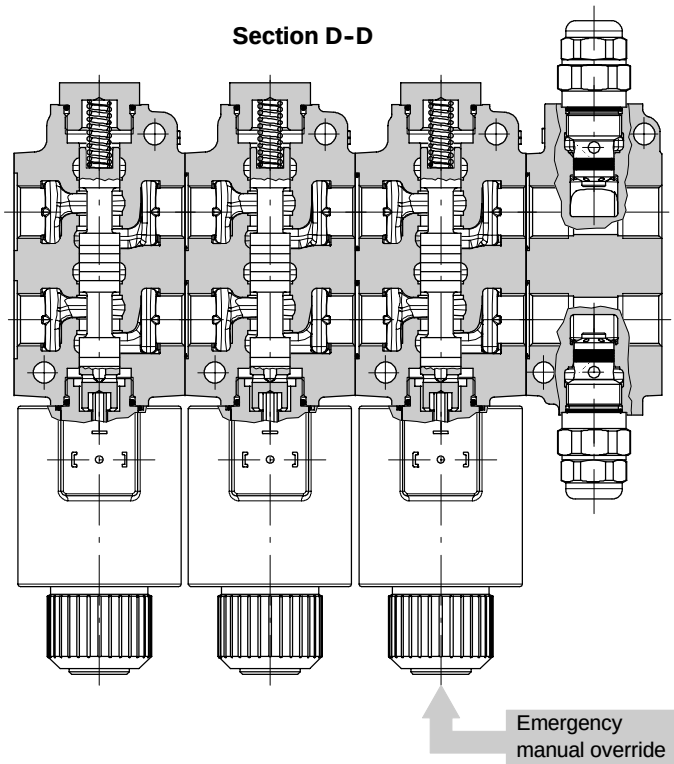
Nominal voltage . . . . . : 12VDC / 24VDC
Nominal voltage tolerance . . . : ±10%
Power rating . . . . . : 38 W
Duty cycle . . . . . : 100%
Weather protection . . . . . : Depending on connector type
Coil insulation . . . . . : Class H

Dimensional data

The drawing below show diverter valve in 10-way configuration with anti-shock valves block.



Section D-D



TYPE	E		Weight	
	mm	*in*	Kg	*lb*
DFE140/6	68	*2.68*	4.6	*10.1*
DFE140/8	136	*5.35*	9.5	*20.9*
DFE140/10	204	*8.03*	14.4	*31.7*
With valves block	**E**		Weight	
	mm	*in*	Kg	*lb*
DFE140/6	122	*4.80*	7.8	*17.2*
DFE140/8	190	*7.48*	12.5	*27.6*
DFE140/10	258	*10.16*	17.6	*38.8*

Ordering codes

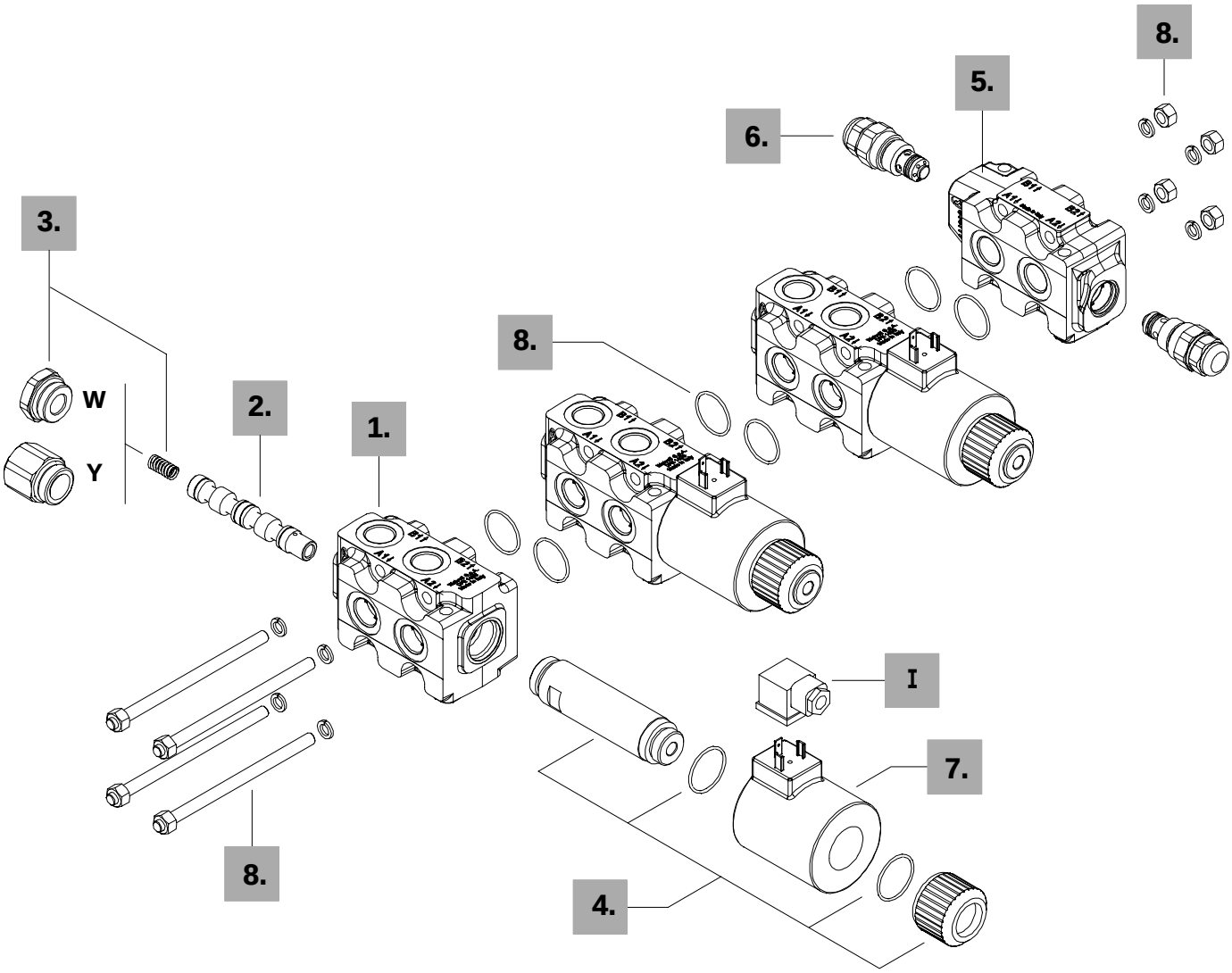
Description example :

Valve setting in bar

Diverter valve DFE 140 / 10 B 18 ES . P3 (D4-185) - W 201-12VDC - CRZ *

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

Valve body is supplied galvanized



Ordering codes

1. Body *

TYPE	CODE	DESCRIPTION
140/6	3CO2280302	6-way body
140/8	"	Nr 2 of 6-way body for 8-way circuit
140/10	"	Nr 3 of 6-way body for 10-way circuit

2. Spool option

TYPE	CODE	DESCRIPTION
B	3CAS110740	2 positions with ports closed in transit position

3. Positioner kits *page 100*

TYPE	CODE	DESCRIPTION
18...W	5TAP005	Spring return in position 1
18...Y	5GIU010*	Spring return in position 1, with G1/4 drain port

4. Tube assembly *page 100*

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

5. Valves block * *page 102*

TYPE	CODE	DESCRIPTION
P3	3CO2780301	Cross-over anti-shock valve body

6. Anti-shock valve *page 102*

With fixed setting: setting is referred to valve opening

TYPE	CODE	DESCRIPTION
(D2-80)	X005125095	Setting 80 bar / *1150 psi*
(D3-125)	X005125145	Setting 125 bar / *1800 psi*
(D3-140)	X005125155	Setting 140 bar / *2050 psi*
(D3-170)	X005125190	Setting 170 bar / *2450 psi*
(D4-185)	X005125216	Setting 185 bar / *2700 psi*
(D4-210)	X005125245	Setting 210 bar / *3050 psi*
(D4-240)	X005125270	Setting 240 bar / *3500 psi*

7. Coil options *page 101*

TYPE	CODE	DESCRIPTION
101		Without coil (only with tube kit)
With ISO4400 connector		
201-12VDC	4SOL519112	Coil with 12VDC nominal voltage
201-24VDC	4SOL519124	Coil with 24VDC nominal voltage
201-20VDC	4SOL519120	Coil with 20VDC nominal voltage (for 24VAC): need C04 connector
201-94VDC	4SOL519094	Coil with 94VDC nominal voltage (for 110VAC): need C04 connector
201-192VDC	4SOL519192	Coil with 192VDC nominal voltage (for 220VAC): need C04 connector
With flying leads and DEUTSCH DT04 connector		
241-12VDC	4SOL519412	Coil with 12VDC nominal voltage
241-24VDC	4SOL519424	Coil with 24VDC nominal voltage

8. Tie rods 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 119*

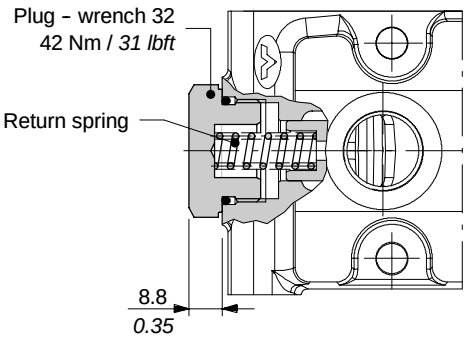
TYPE	CODE	DESCRIPTION
C02	2X1001010	According ISO4400
C04	2X1001040	According to ISO4400 with rectifier
C19	5CON007	Type DEUTSCH DT06

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

Positioner kits

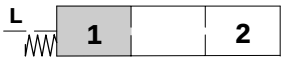
18W kit

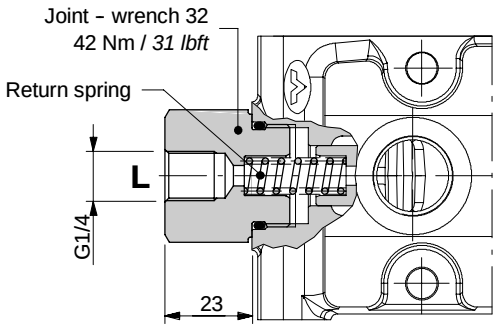
Spring return in position 1 with plug.



18Y kit

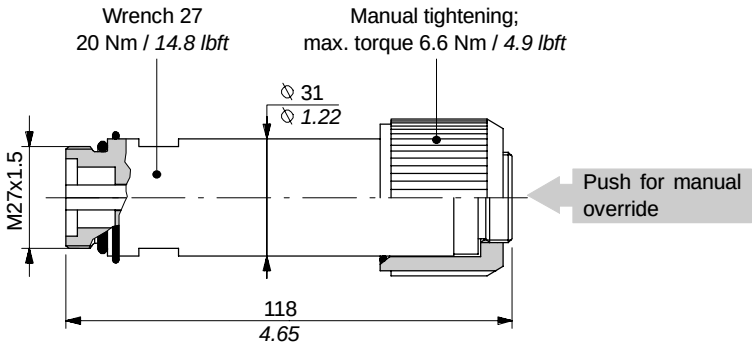
Spring return in position 1, with G1/4 joint for drain.





Solenoid parts

ES tube assembly

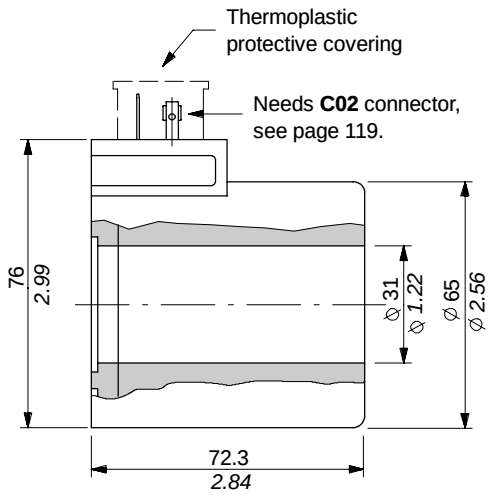


Operating features

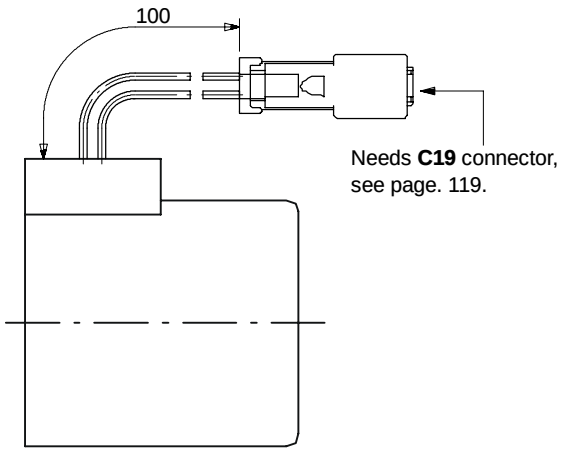
Plunger stroke . . . . . : 10.2 mm / *0.40 in*

Coil options

With ISO4400 connector
(weather protection IP65)



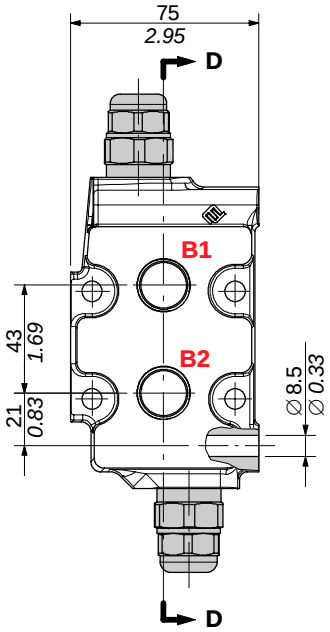
With flying leads and DEUTSCH DT04 connector
(weather protection IP67)

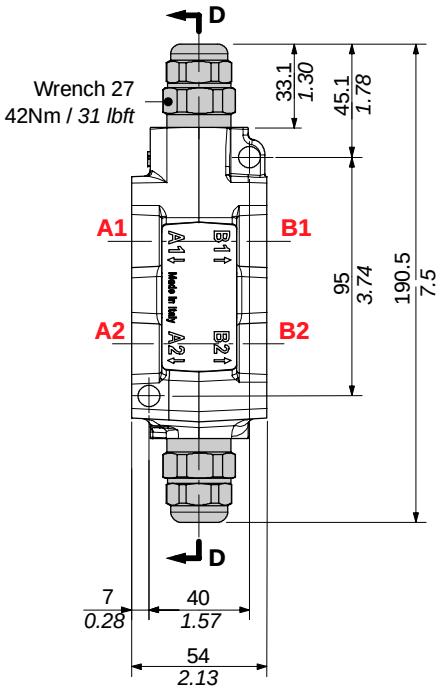


Operating features

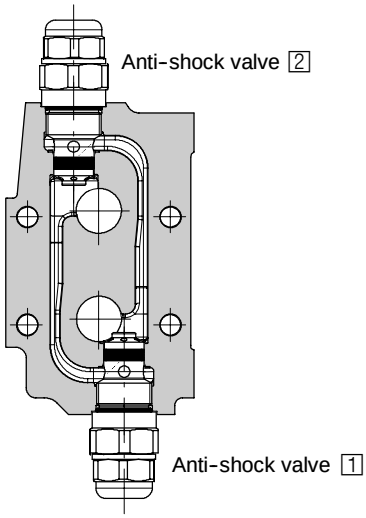
Nominal voltage . . . . . : 12-20-24-94-192VDC
Nominal voltage tolerance . . . : ±10%
Power rating . . . . . : 60 W
Duty cycle . . . . . : 100%
Weather protection . . . . . : depending on connector type
Coil insulation . . . . . : Class H

P3 block complete with anti-shock valves



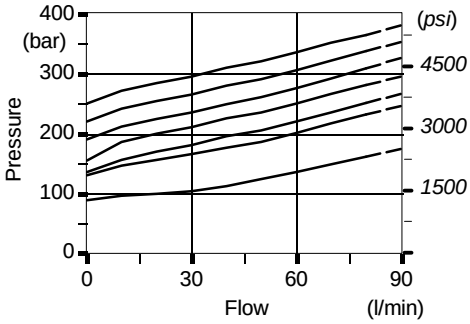


Section D-D

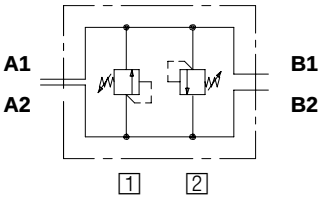


Anti-shock valves performance data

(setting: 80-125-140-170-185-210-240 bar / *1150-1800-2050-2450-2700-3050-3500 psi*)



Hydraulic circuit



Contents

Working conditions 104
Hydraulic circuit 105
DH5 106
DH10 107
DH20 108
DH25 109
DH30 111

Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm^2/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	*Δp=100 bar 1450 psi with fuid and valve at 40 °C*	3 cm^3/min *0.18 in^3/min*	3 cm^3/min *0.18 in^3/min*	3 cm^3/min *0.18 in^3/min*	3 cm^3/min *0.18 in^3/min*	3 cm^3/min *0.18 in^3/min*
Hydraulic fluid		Mineral base oil				
Fluid temperature	*with NBR seals*	from -20°C to 80°C				
	with FPM seals	from -20°C to 100°C				
Viscosity	*operating range*	from 15 to 75 mm^2/s - *from 15 to 75 cSt*				
	minima	12 mm^2/s - *12 cSt*				
	massima	400 mm^2/s - *400 cS*				
Max. level of contamination		-/19/16 - ISO 4406				
Ambient temperature for working conditions		from -40°C to 60°C				

NOTE - *For different working conditions please contact Sales Dept*

Standard threads

REFERENCE STANDARDS

		BSP	UN-UNF	METRIC	
THREAD ACCORDING TO		ISO 228/1	ISO 263	ISO 262	ISO 262
		BS 2779	ANSI B1.1 unified		
CAVITY ACCORDING TO	ISO	1179	11926	9974-1	6149
	SAE		J1926		J2244
	DIN	3852-2 shape X or Y		3852-1 shape X or Y	

PORTS THREAD

ALL PORTS	BSP	UN-UNF
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)

NOTE - For different thread contact Sales Department

Designation

Diverter valve DH10 / 3 A

- DH10 — Valve type
- 3 — Nr. of ways
- A — Circuit type

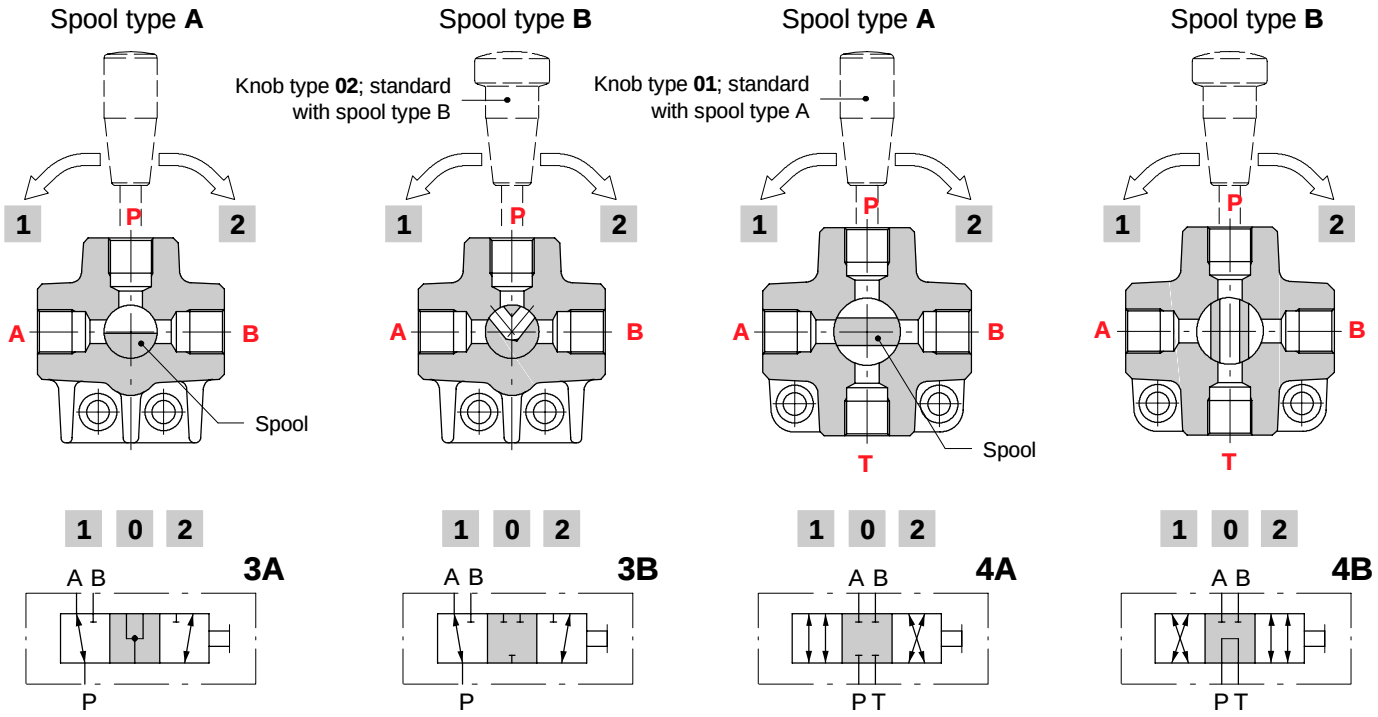
Hydraulic circuit

3-way and 6-way

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

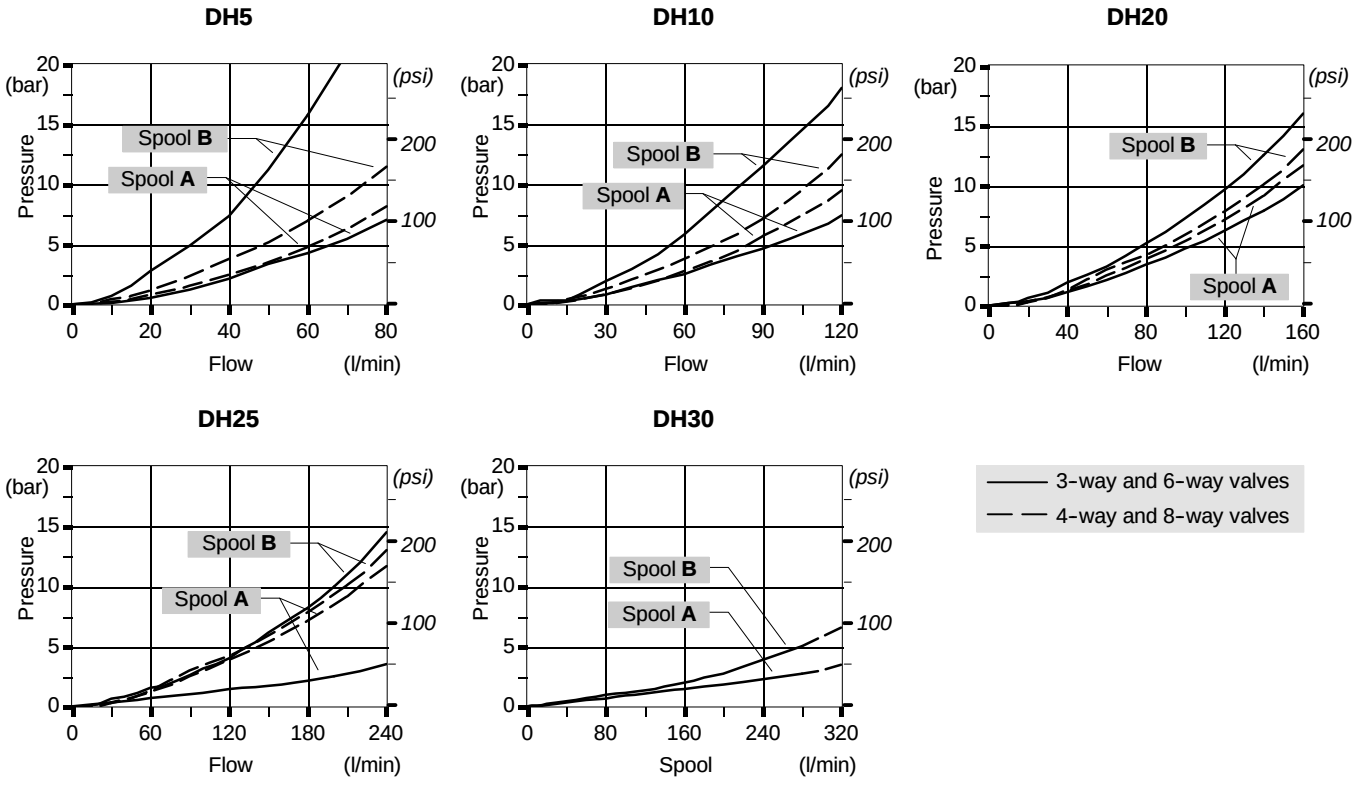
4-way and 8-way

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



Performance data

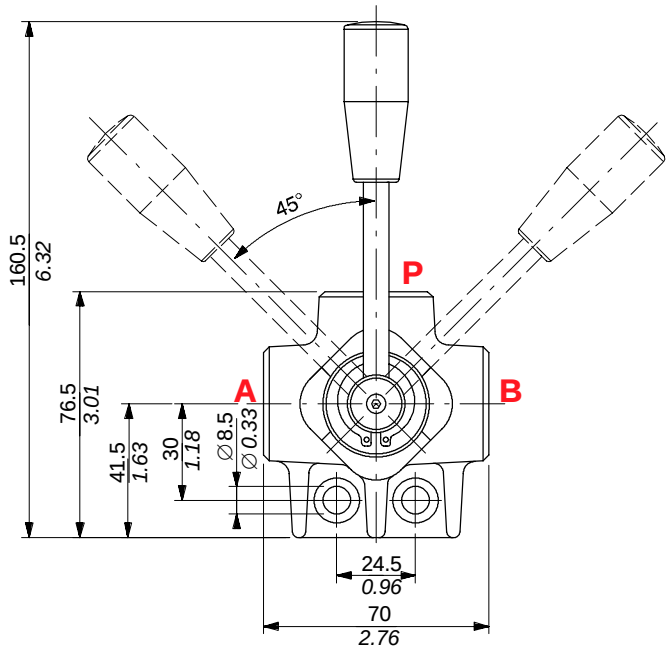
Pressure drop versus flow P→A(B): spool in position 1 (2)



Dimensional data

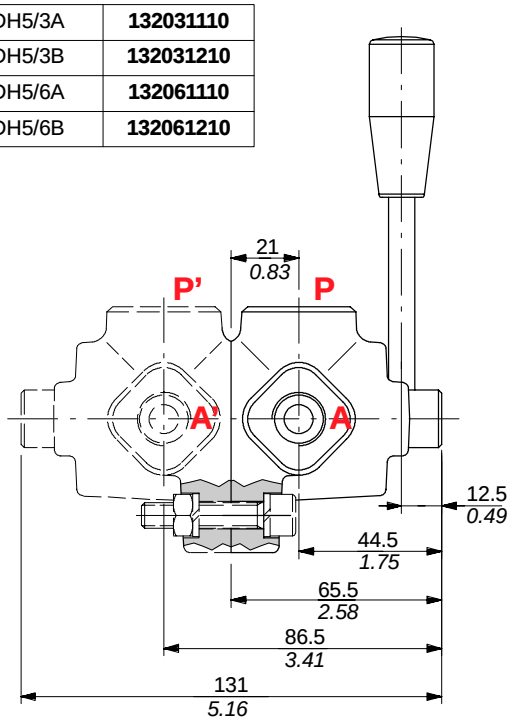
3-way DH5/3 and 6-way DH5/6 valves

Drawing is referred to valve with type A spool.



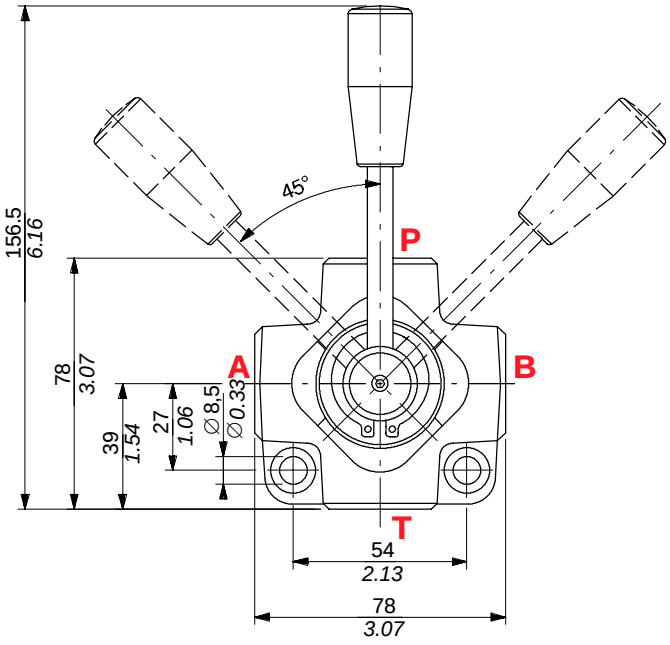
Ordering codes

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



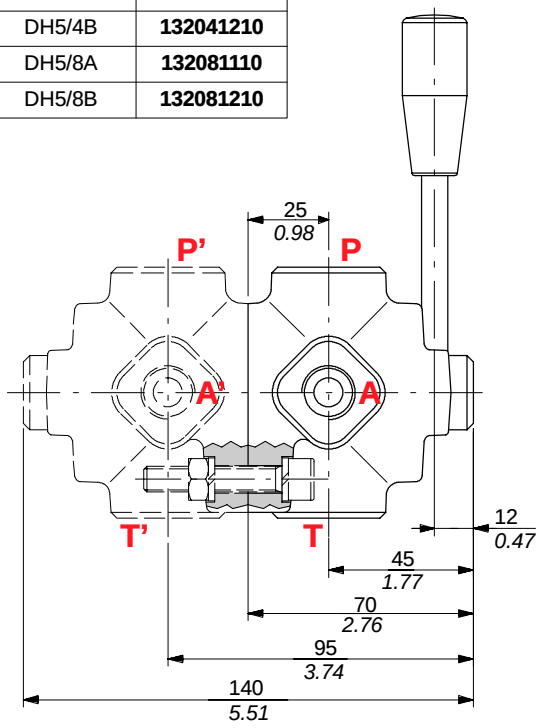
4-way DH5/4 and 8-way DH5/8 valves

Drawing is referred to valve with type A spool.



Ordering codes

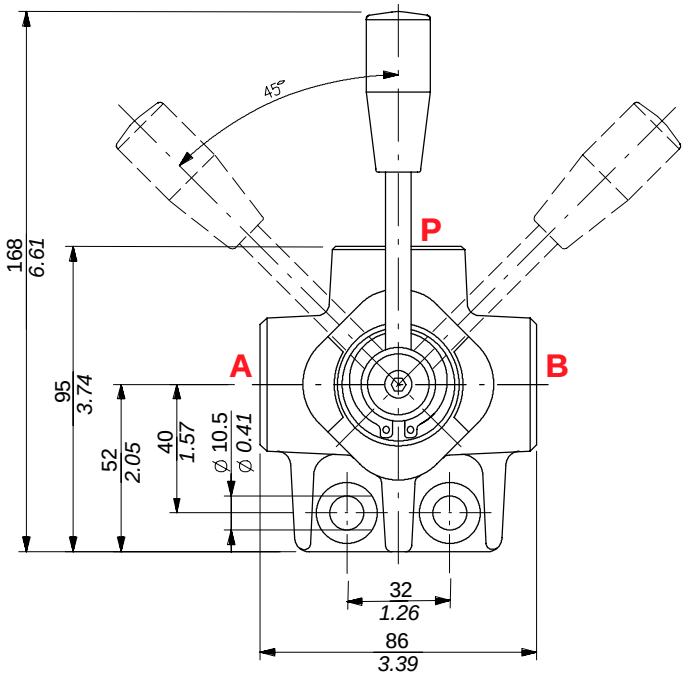
DH5/4A	**132041110**
DH5/4B	**132041210**
DH5/8A	**132081110**
DH5/8B	**132081210**



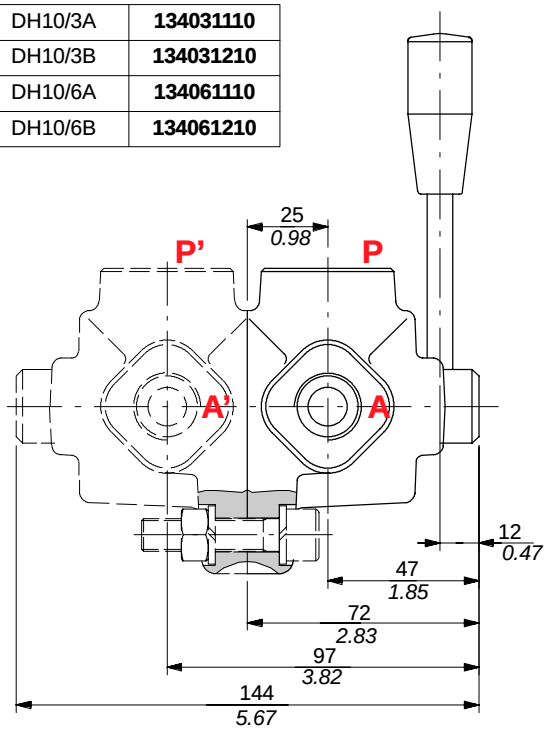
Dimensional data

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

Drawing is referred to valve with type A spool.

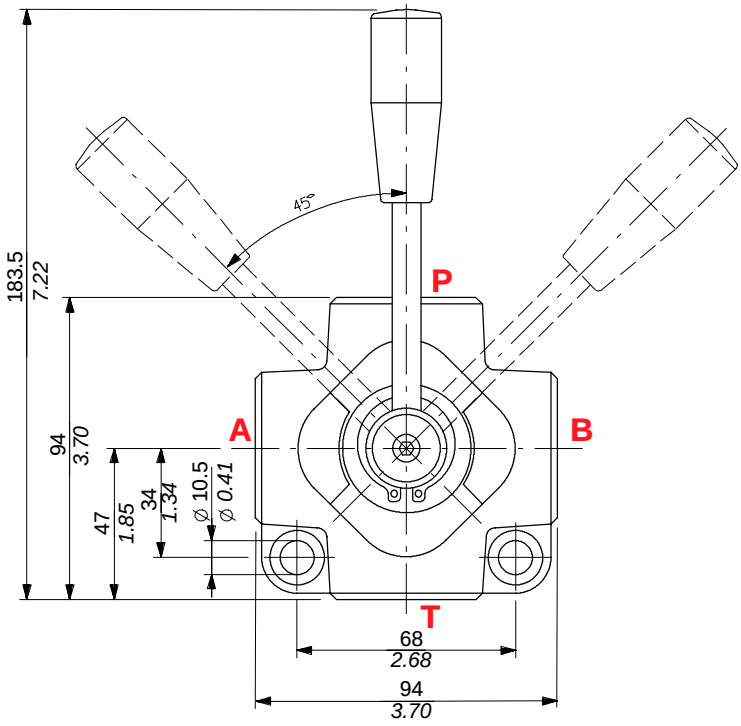


Ordering codes	
DH10/3A	**134031110**
DH10/3B	**134031210**
DH10/6A	**134061110**
DH10/6B	**134061210**

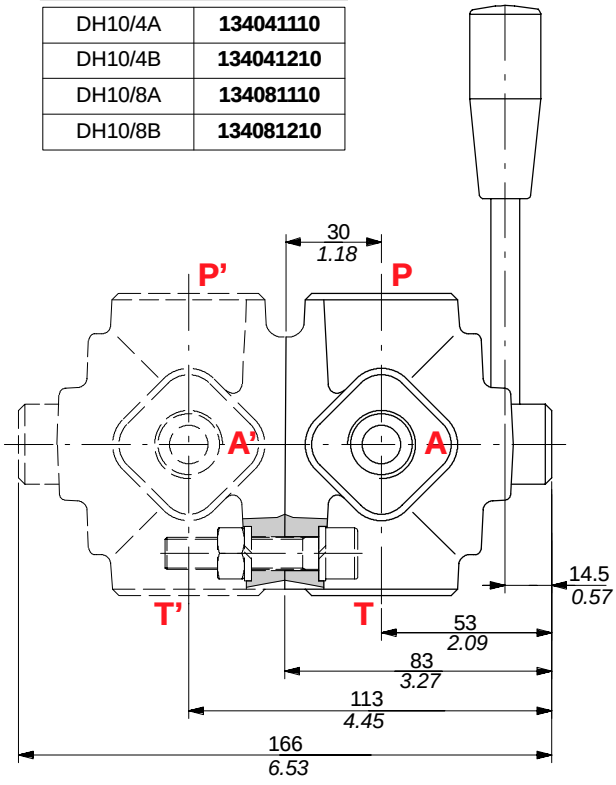


4-way DH10/4 and 8-way DH10/8 valves

Drawing is referred to valve with type A spool.



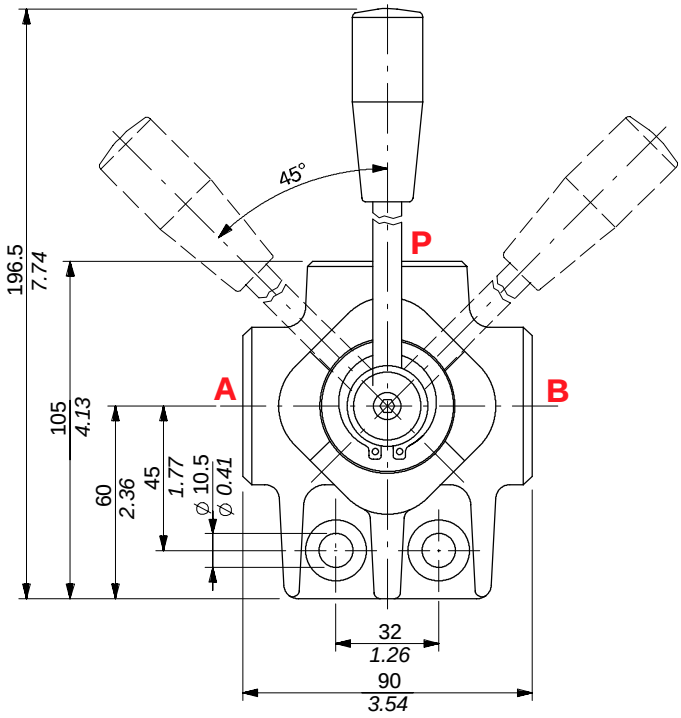
Ordering codes	
DH10/4A	**134041110**
DH10/4B	**134041210**
DH10/8A	**134081110**
DH10/8B	**134081210**



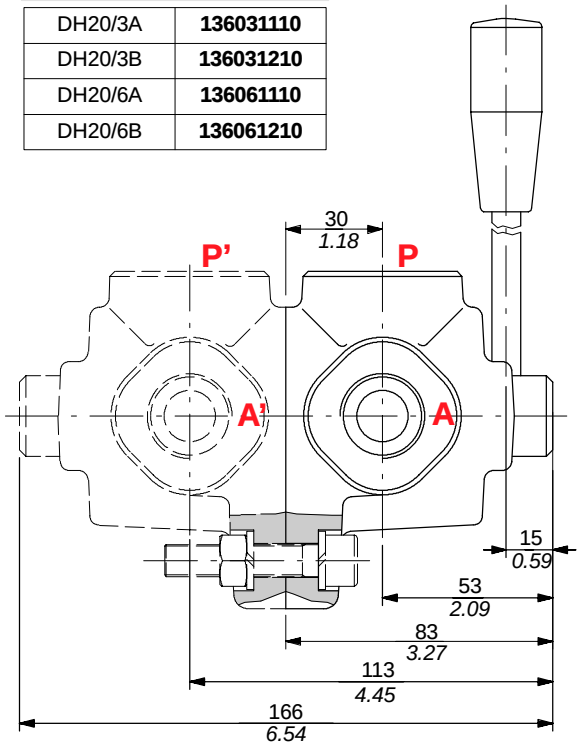
Dimensional data

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

Drawing is referred to valve with type A spool.

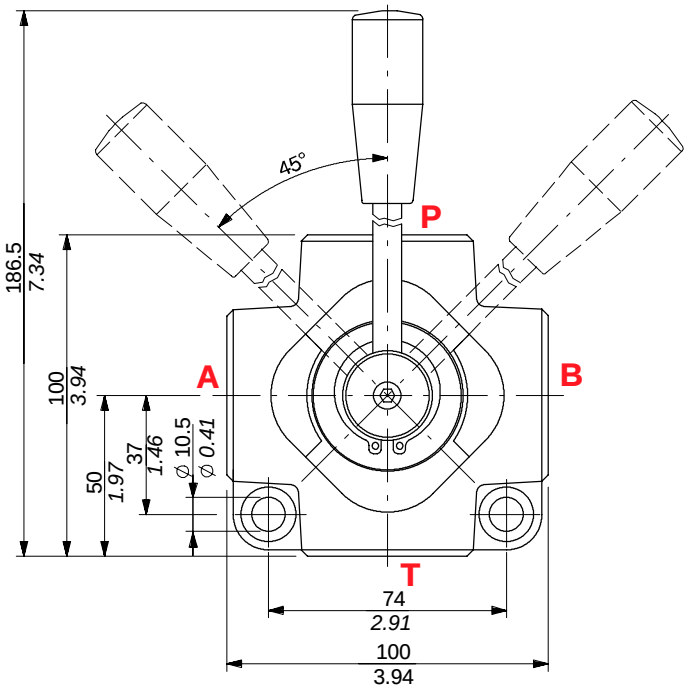


Ordering codes	
DH20/3A	**136031110**
DH20/3B	**136031210**
DH20/6A	**136061110**
DH20/6B	**136061210**

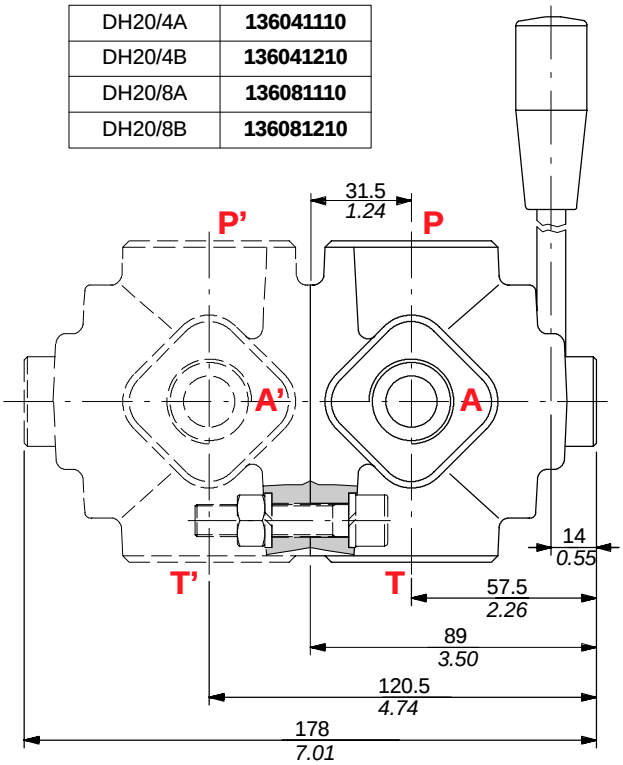


4-way DH20/4 and 8-way DH20/8 valves

Drawing is referred to valve with type A spool.



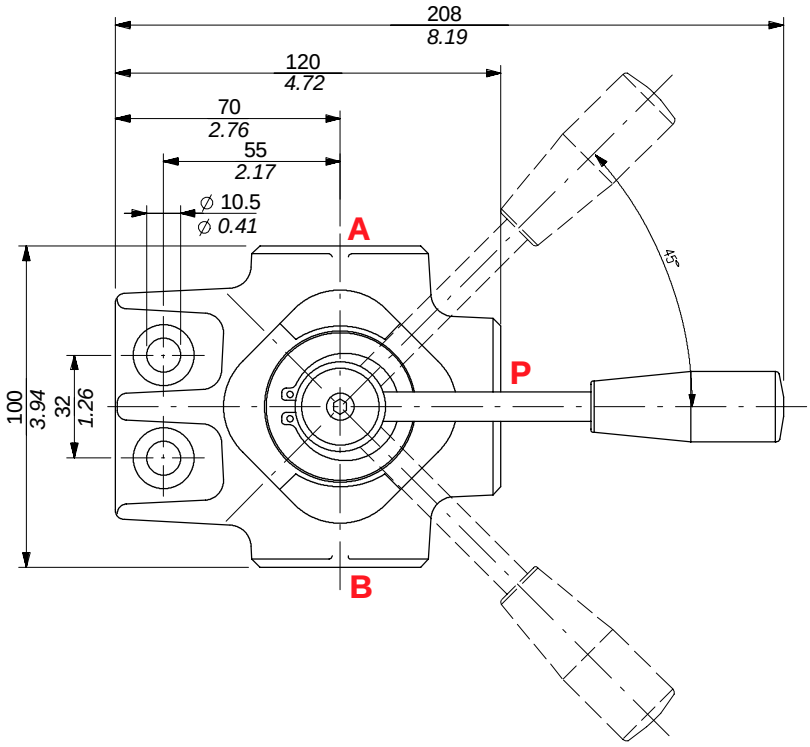
Ordering codes	
DH20/4A	**136041110**
DH20/4B	**136041210**
DH20/8A	**136081110**
DH20/8B	**136081210**

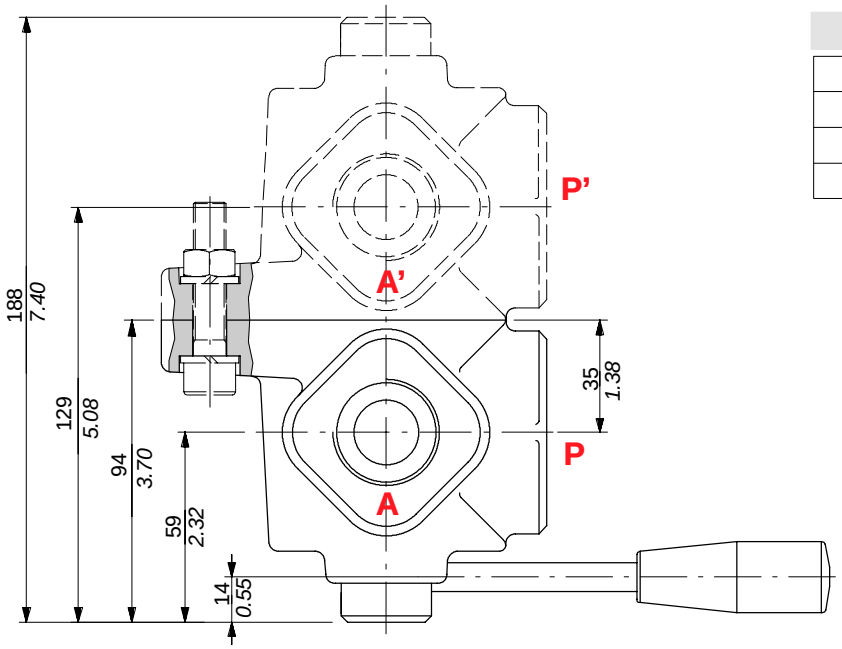


Dimensional data

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

Drawing is referred to valve with type A spool.





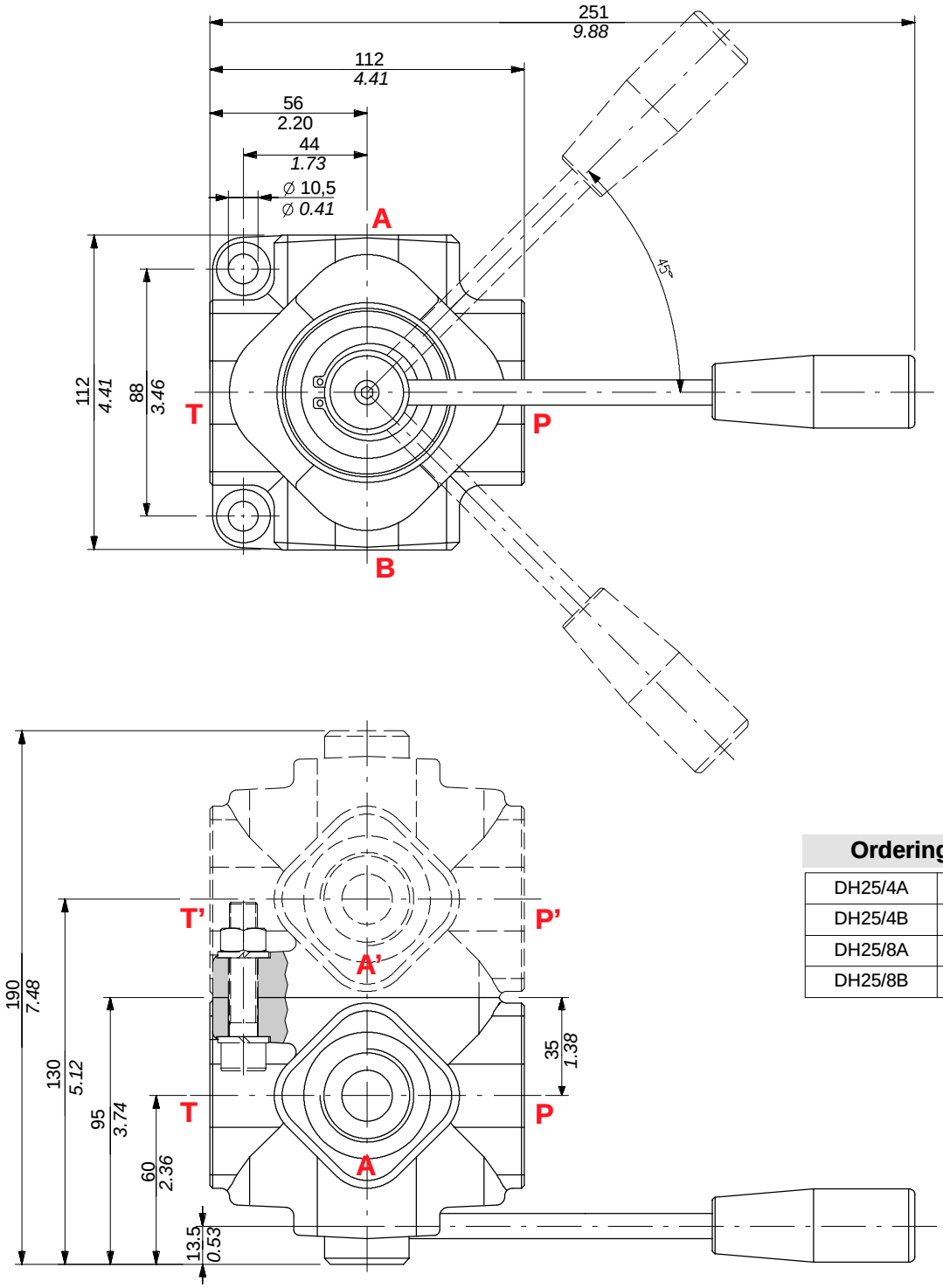
Ordering codes

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.



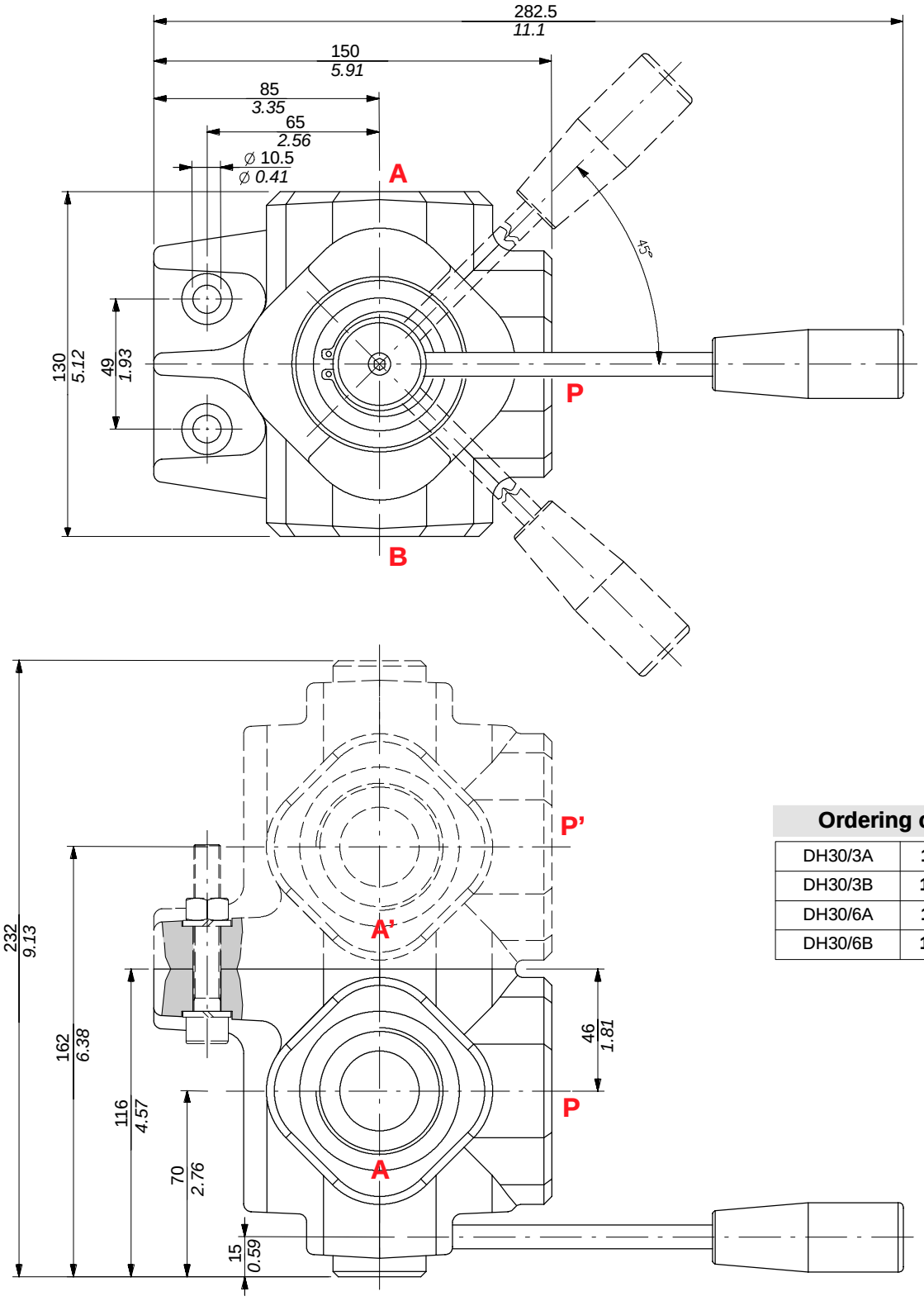
Ordering codes

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

Dimensional data

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

Drawing is referred to valve with type A spool.



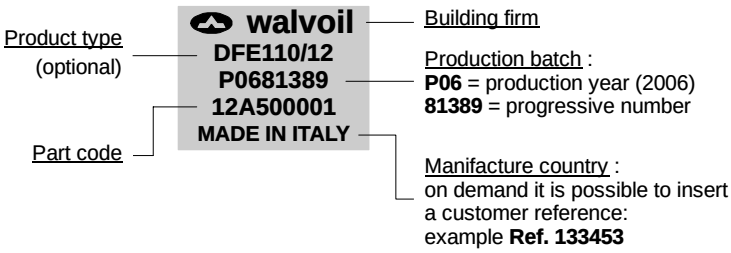
Ordering codes

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

Product marking

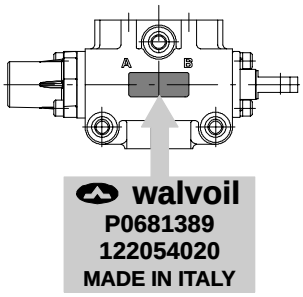
All Walvoil diverter valves are marked according to **EN 982** normative.
This marking includes: building firm, part code, production batch and manufacture country.

Marking example

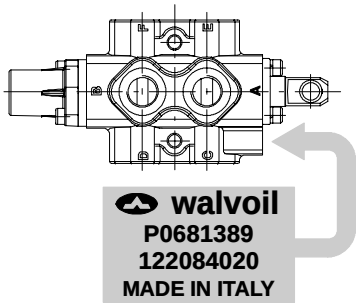


Marking zone depending on valve type, as indicate below.

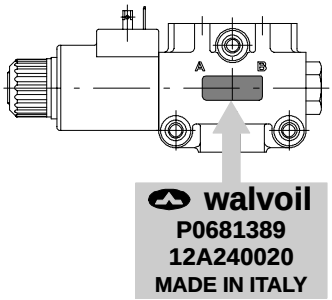
2-way and 3-way DF mechanical control type



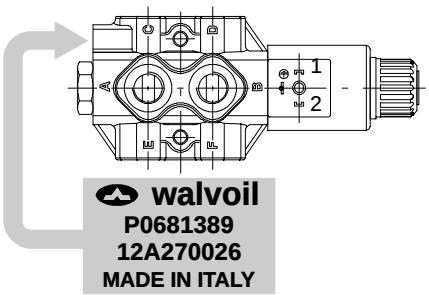
6-way DF mechanical control type



2-way and 3-way DFE solenoid control monoblock type

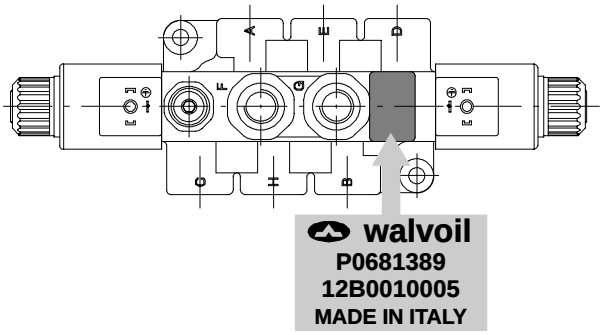


6-way DFE solenoid control monoblock type

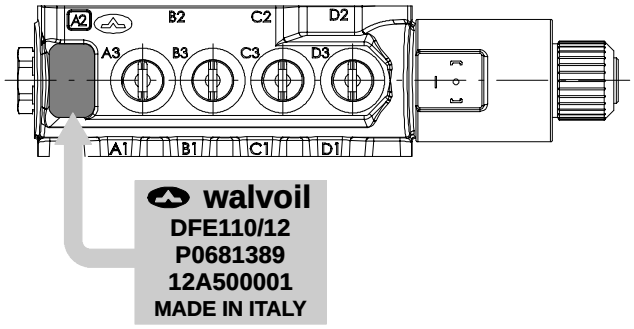


Product marking

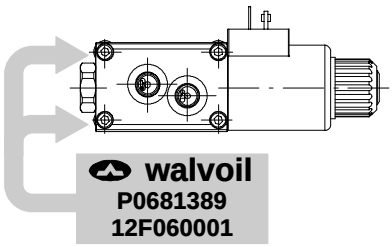
8-way DFE solenoid control monoblock type



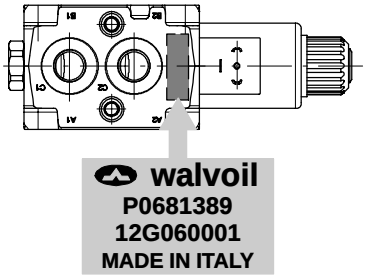
DFE110 solenoid control monoblock type



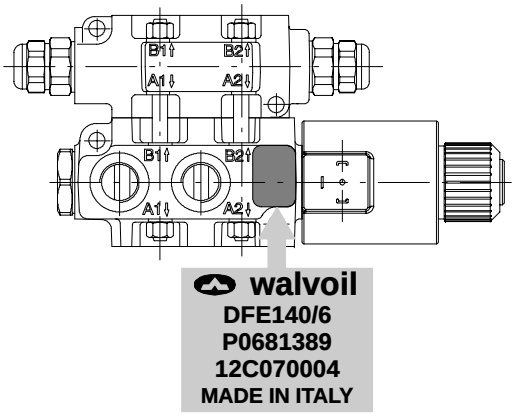
DFE080 solenoid control sectional type



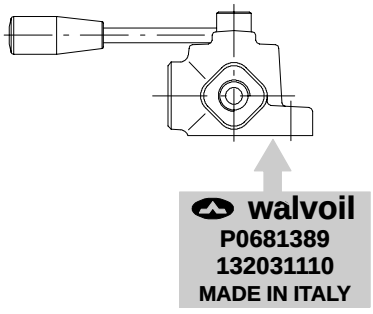
DFE100 solenoid control sectional type



DFE140 solenoid control sectional type



DH rotary control type

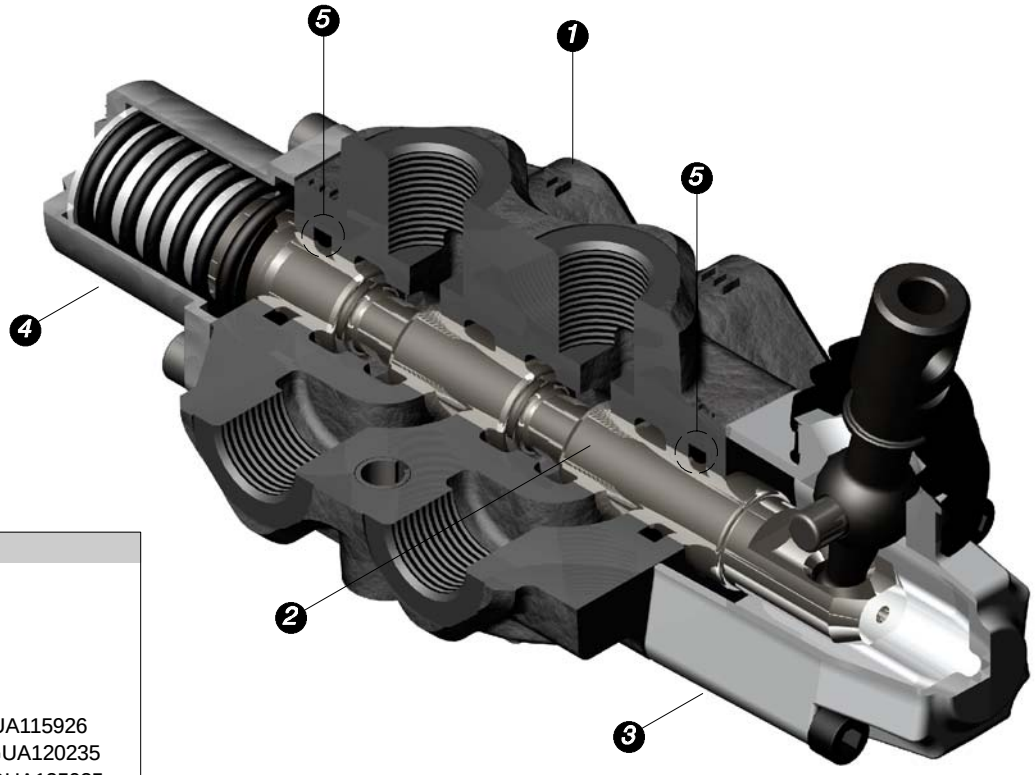


Installation and maintenance

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.

With mechanical control series DF

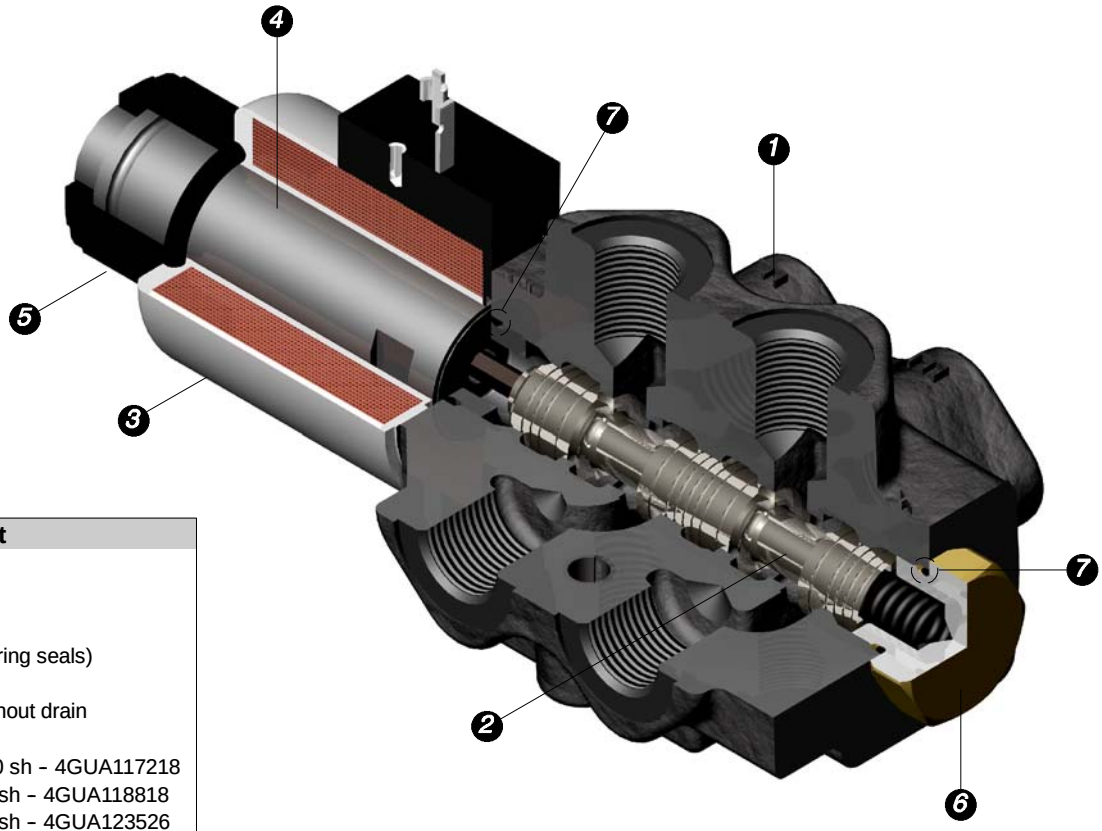


Item list
1) Diverter valve body
2) Spool
3) Control kit: lever box
4) Positioner kit
5) O-ring seals on spool
DF5: 15.88x2.62 NBR 70 sh - 4GUA115926
DF10: 20.22x3.53 NBR 70 sh - 4GUA120235
DF20: 24.99X3.53 NBR 70 sh - 4GUA125035
DF25: 29.75X3.53 NBR 70 sh - 4GUA129835

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.	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.
Diverter valve don't commute.	Spool blocked.	Remove the spool, clean it and check the oil contamination level.
	High pressure and/or flow.	Verify that pressure and flow values are within working conditions limits.

With ON/OFF solenoid control series DFE monoblock type



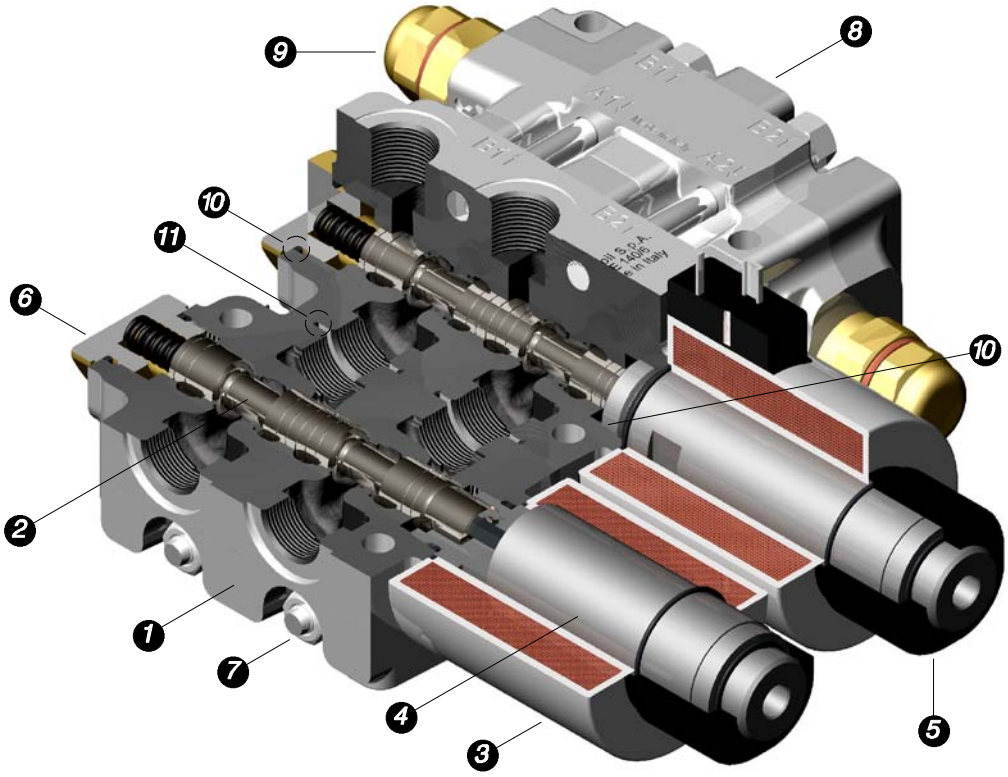
Item list

1) Diverter valve body
2) Spool
3) Coil
4) Tube assembly (with O-ring seals)
5) Lock ring
6) Positioner kit, with or without drain
7) O-ring seals on body
DFE052: 17.17x1.78 NBR 70 sh - 4GUA117218
DFE10: 18.77x1.78 NBR 70 sh - 4GUA118818
DFE20: 23.47x2.62 NBR 70 sh - 4GUA123526
DFE110: 23.47x2.62 NBR 70 sh - 4GUA123526

Malfunction	Cause	Remedy
External leakage.	Worn body seal due to mechanical actuation	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.
Diverter valve don't commute.	Spool blocked.	Remove the spool, clean it and check the oil contamination level.
	Coil winding burnt.	Replace the coil and check the supply voltage value.
	Uncorrected supply voltage.	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.

Installation and maintenance

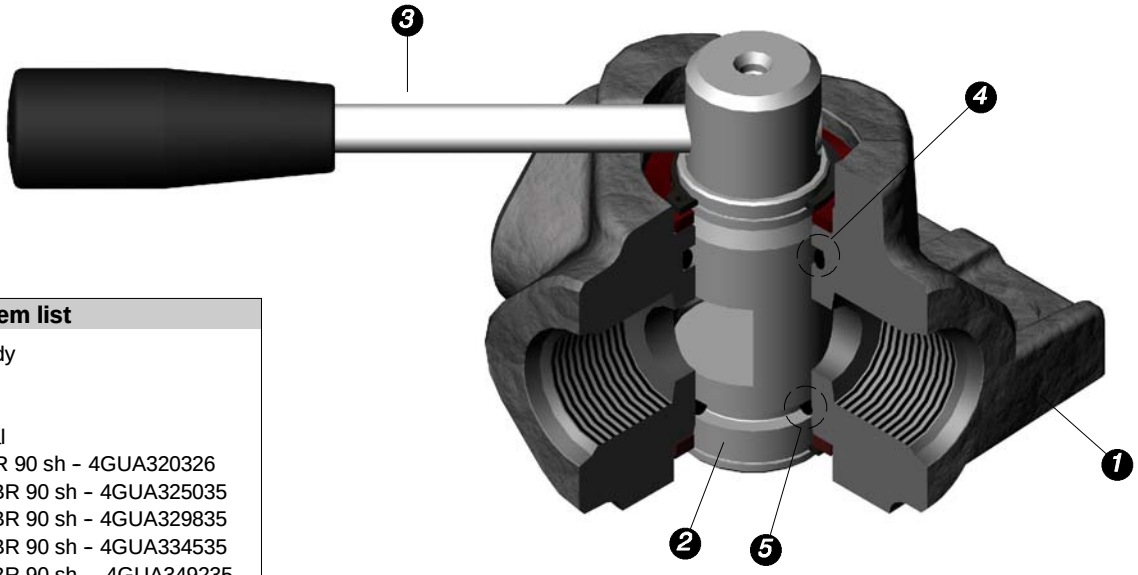
With ON/OFF solenoid control series DFE sectional type



Item list	
1) Diverter valve body	***10)*** O-ring seals on body
2) Spool	DFE080: 17.17x1.78 NBR 70 sh - 4GUA117218
3) Coil	DFE100: 17.17x1.78 NBR 70 sh - 4GUA117218
4) Tube assemply (with O-ring seals)	DFE140: 23.47x2.62 NBR 70 sh - 4GUA123526
5) Lock ring	***11)*** O-ring seals between sections
6) Positioner kit, with or without drain	DFE080: 18.77x1.78 NBR 90 sh - 4GUA318818
7) Tie rods kit	DFE100: 26.70x1.78 NBR 90 sh - 4GUA326718
8) Valves block (only for DFE140)	DFE140: 28.30x1.78 NBR 90 sh - 4GUA328318
9) Anti-shock valves (only for DFE140)	

Malfunction	Cause	Remedy
External leakage.	Worn body seal.	Locate the leakage and replace the seal.
	Worn section seal.	Locate the leakage and replace the seal. Be sure to tignten the tie rods to correct value.
Excessive internal leakage.	Increase clearance between spools and body due to high wear.	Replace the diverter valve and check the oil contamination level.
Diverter valve don't commute.	Spool blocked.	Remove the spool, clean it and check the oil contamination level.
	Coil winding burnt.	Replace the coil and check the supply voltage value.
	Uncorrected supply voltage.	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.

With rotary control series DH



Item list

1) Diverter valve body
2) Rotative spool
3) Handlever
4) Upper O-ring seal
DH5: 20.29X2.62 NBR 90 sh - 4GUA320326
DH10: 24.99X3.53 NBR 90 sh - 4GUA325035
DH20: 29.75X3.53 NBR 90 sh - 4GUA329835
DH25: 34.52X3.53 NBR 90 sh - 4GUA334535
DH30: 49.21X3.53 NBR 90 sh - 4GUA349235
5) Bottom O-ring seal
DH5: 15.08X2.62 NBR 90 sh - 4GUA315126
DH10: 18.64X3.53 NBR 90 sh - 4GUA318635
DH20: 23.39X3.53 NBR 90 sh - 4GUA323435
DH25: 28.17X3.53 NBR 90 sh - 4GUA328235
DH30: 42.86X3.53 NBR 90 sh - 4GUA342935

Malfunction	Cause	Remedy
External leakage.	Worn spool seal due to mechanical actuation.	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.
Diverter valve don't commute.	Spool blocked.	Remove the spool, clean it and check the oil contamination level.
	High pressure and/or flow.	Verify that pressure and flow values are within working conditions limits.

Installation and maintenance

Fittings tightening torque - Nm / *lbft*

These torque are recommended.

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

MECHANICAL CONTROL DIVERTER VALVE VALVES

THREADS TYPE	DF5	DF10	DF20	DF25
BSP	G 3/8	G 1/2	G 3/4	G 1
With O-Ring seal	35 / *25.8*	50 / *37*	90 / *66.4*	100 / *73.8*
With copper washer	40 / *29.5*	60 / *44.3*	60 / *44.3*	90 / *66.4*
With steel and rubber washer	30 / *22*	60 / *44.3*	70 / *51.6*	100 / *73.8*
UN-UNF	3/4-16 (SAE 8)	7/8-14 (SAE 10)	1 1/16-12 (SAE 12)	1 5/16-12 (SAE 16)
With O-Ring seal	50 / *37*	60 / *44.3*	95 / *70*	150 / *111*

SOLENOID CONTROL MONOBLOCK DIVERTER VALVES

	DFE052			DFE10		DFE110		DFE20	
THREADS TYPE	Ports	Drain	Drain *	Ports	Drain	Ports	Drain	Ports	Drain
BSP	G 3/8	G 1/4	G 1/4	G 1/2	G 1/4	G 1/2	G 1/4	G 3/4	G 1/4
With O-Ring seal	35 / *25.8*	20 / *14.8*	20 / *14.8*	50 / *37*	20 / *14.8*	50 / *37*	20 / *14.8*	90 / *66.4*	20 / *14.8*
With copper washer	40 / *29.5*	25 / *18.4*	25 / *18.4*	60 / *44.3*	25 / *18.4*	60 / *44.3*	25 / *18.4*	60 / *44.3*	25 / *18.4*
With steel and rubber washer	30 / *22*	16 / *11.8*	16 / *11.8*	60 / *44.3*	16 / *11.8*	60 / *44.3*	16 / *11.8*	70 / *51.6*	16 / *11.8*
UN-UNF	3/4-16 (SAE 8)	9/16-18 (SAE 6)	7/16-20 (SAE4)	7/8-14 (SAE 10)	9/16-18 (SAE 6)	7/8-14 (SAE 10)	9/16-18 (SAE 6)	1 1/16-12 (SAE 12)	7/16-20 (SAE4)
With O-Ring seal	50 / *37*	30 / *22.1*	15 / *11*	60 / *44.3*	30 / *22.1*	60 / *44.3*	30 / *22.1*	95 / *70*	15 / *11*

(*) drain only for DFE052/8

SOLENOID CONTROL SECTIONAL DIVERTER VALVES

	DFE080		DFE100		DFE140	
THREADS TYPE	Bocche	Drenaggio	Bocche	Drenaggio	Bocche	Drenaggio
BSP	G 1/4	G 1/4	G 3/8	G 1/4	G 1/2	G 1/4
With O-Ring seal	20 / *14.8*	20 / *14.8*	35 / *25.8*	20 / *14.8*	50 / *37*	20 / *14.8*
With copper washer	25 / *18.4*	25 / *18.4*	40 / *29.5*	25 / *18.4*	60 / *44.3*	25 / *18.4*
With steel and rubber washer	16 / *11.8*	16 / *11.8*	30 / *22*	16 / *11.8*	60 / *44.3*	16 / *11.8*
UN-UNF	7/16-20 (SAE 4)	7/16-20 (SAE 4)	7/8-14 (SAE 10)	9/16-18 (SAE 6)	7/8-14 (SAE 10)	9/16-18 (SAE 6)
With O-Ring seal	15 / *11*	15 / *11*	50 / *37*	30 / *22.1*	60 / *44.3*	30 / *22.1*

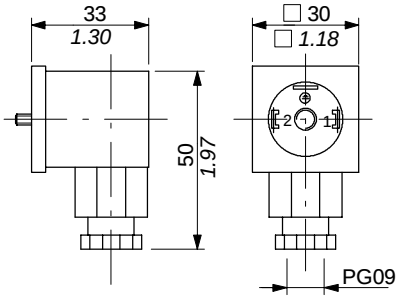
ROTARY CONTROL DIVERTER VALVES

THREADS TYPE	DH5	DH10	DH20	DH25	DH30
BSP	G 3/8	G 1/2	G 3/4	G 1	G 1 1/2
With O-Ring seal	35 / *25.8*	50 / *37*	90 / *66.4*	100 / *73.8*	120 / *44.3*
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*	60 / *44.3*	70 / *51.6*	100 / *73.8*	120 / *44.3*
UN-UNF	3/4-16 (SAE 8)	7/8-14 (SAE 10)	1 1/16-12 (SAE 12)	1 5/16-12 (SAE 16)	1 7/8-12 (SAE 24)
With O-Ring seal	50 / *37*	60 / *44.3*	95 / *70*	150 / *111*	210 / *155*

Optional connectors

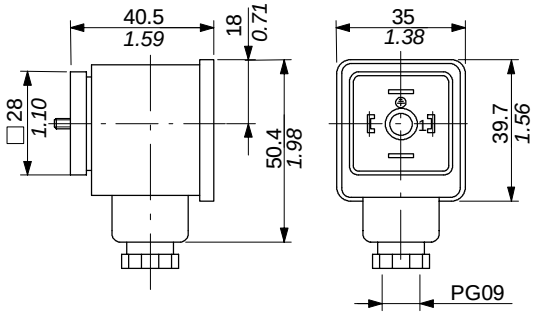
Type C02 code: 2X1001010

2P+T according to
ISO4400 / EN175301-803



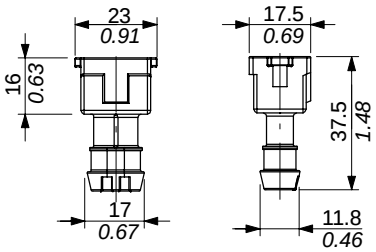
Type C04 code: 2X1001040

2P+T according to ISO4400 / EN175301-803
With bridge rectifier, to use with VAC supply.



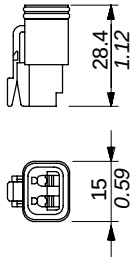
Type C08 code: 5CON003

2P female case with female end
type AMP "Junior-Power-Timer"



Type C19 code: 5CON007

2P male case with female end
type Deutsch DT06-2S



Type	Poles	Nominal voltage	Nominal current	Permitted conductor section range	Permitted cable diameter range	Weather protection
C02	2P + T	250 VAC / 300 VDC	10 A	max.1.5 mm^2 / *max.0.0023 in^2*	6-8 mm / *0.24-0.31 in*	IP65
C04	2P + T	/	10 A	max.1.5 mm^2 / *max.0.0023 in^2*	6-8 mm / *0.24-0.31 in*	IP65
C08	2P	250 VAC	12 A	0.5-1 mm^2 / *0.00077-0.00155 in^2*	1.4-1.6 mm / *0.055-0.063 in*	IP65
C19	2P	/	13 A	1-1.2 mm^2 / *0.00155-0.00186 in^2*	2.2-3.5 mm / *0.088-0.14 in*	IP67

HYDRAULIC CONTROL SYSTEMS

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