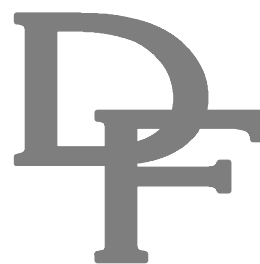




DIVERTER VALVES



 **walvoil**
HYDRAULIC CONTROL SYSTEMS

valvoilgroup

Working conditions

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

| | | DF5 | DF10 | DF20 | DF25 |
|--|--|--|---|---|---|
| N. of available ways | | 2-3-6 | 2-3-6 | 2-3-6 | 3 |
| Nominal flow rating | | 60 l/min | 90 l/min | 140 l/min | 280 l/min |
| Operating pressure (maximum) | | 315 bar 4600 psi | 315 bar 4600 psi | 315 bar 4600 psi | 315 bar 4600 psi |
| Internal leakage A(B)→T | $\Delta p = 100 \text{ bar } 1450 \text{ psi}$ with fluid and valve at 40°C | 5 cm ³ /min 0.31 in ³ /min | 5 cm ³ /min 0.31 in ³ /min | 8 cm ³ /min 0.49 in ³ /min | 8 cm ³ /min 0.49 in ³ /min |
| Hydraulic fluid | | Mineral base oil | | | |
| Fluid temperature | with NBR seals | from -20°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 | | | |
| | with mechanical control | from -40°C to 60°C | | | |
| Ambient temperature for working conditions | 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 | |

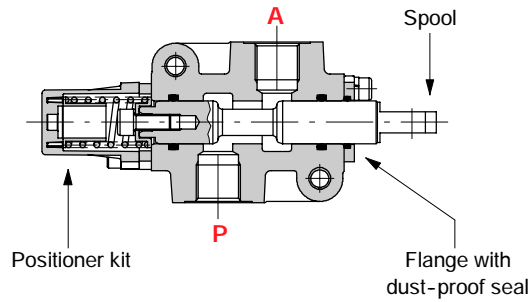
PORTS THREAD

| 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) | | |

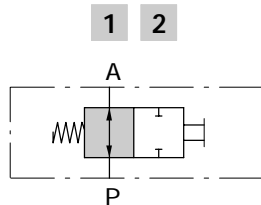
Optional threads: for availability contact Sales Department

2-way

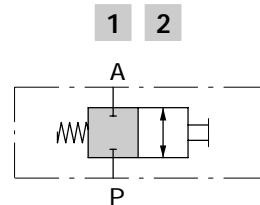
Available as body only in DF5/2 execution; for other executions 3-way body is used.



Spool type A

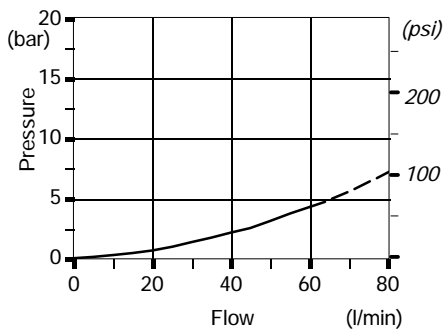


Spool type B



Performance data

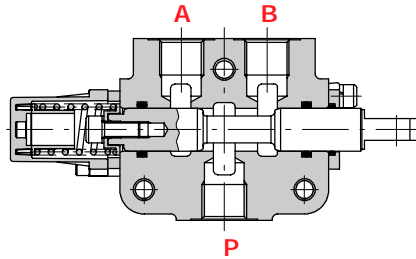
Pressure drop versus flow
P→A



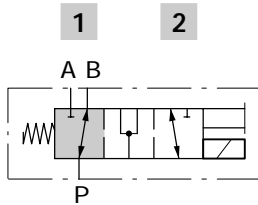
Hydraulic circuit

3-way

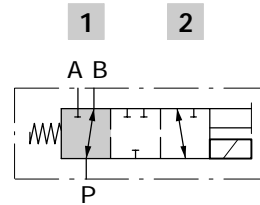
It's possible to obtain 2-way diverter valve plugging port A or B.



Spool type A



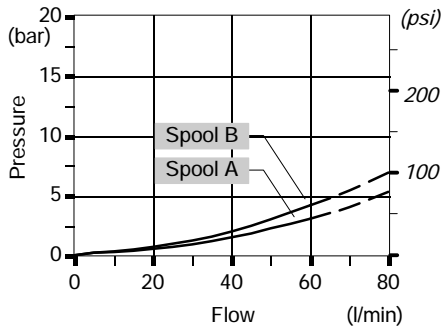
Spool type B B



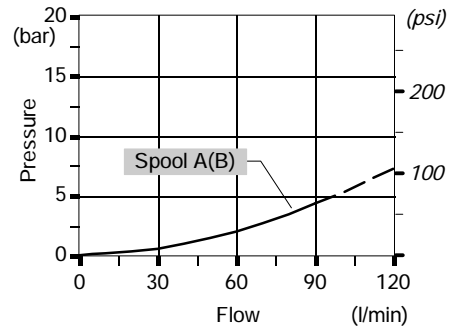
Performance data

Pressure drop versus flow: P→A(B)

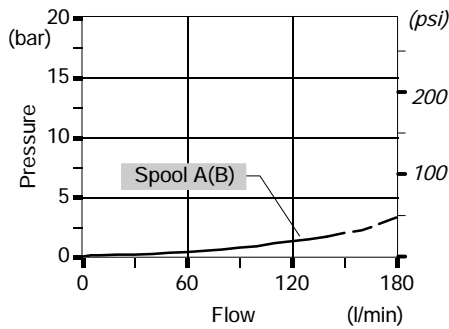
DF5/3



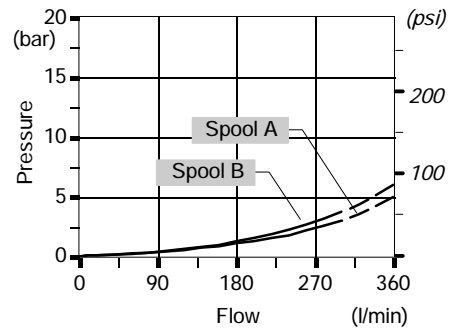
DF10/3



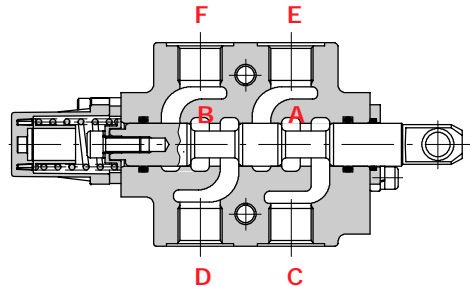
DF20/3



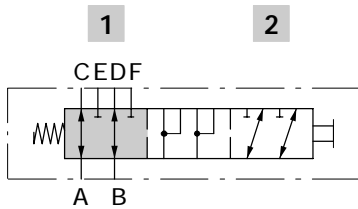
DF25/3



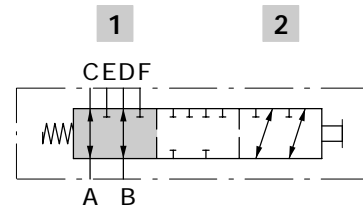
6-way



Spool type A



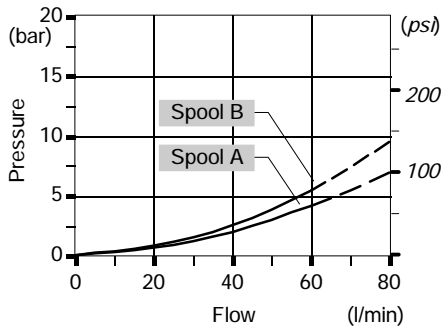
Spool type B



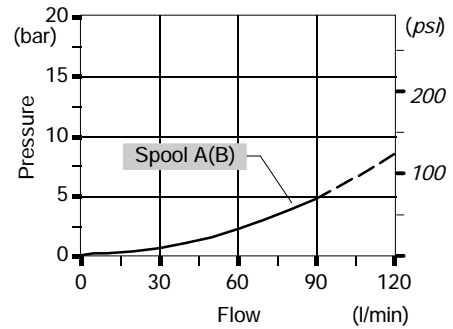
Performance data

Pressure drop versus flow: A→C(E).

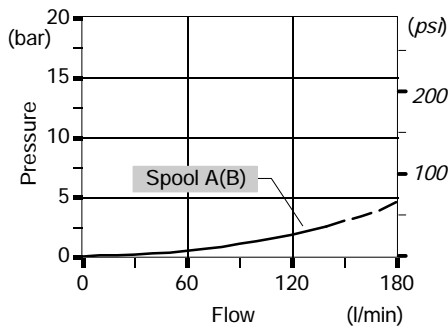
DF5/6



DF10/6

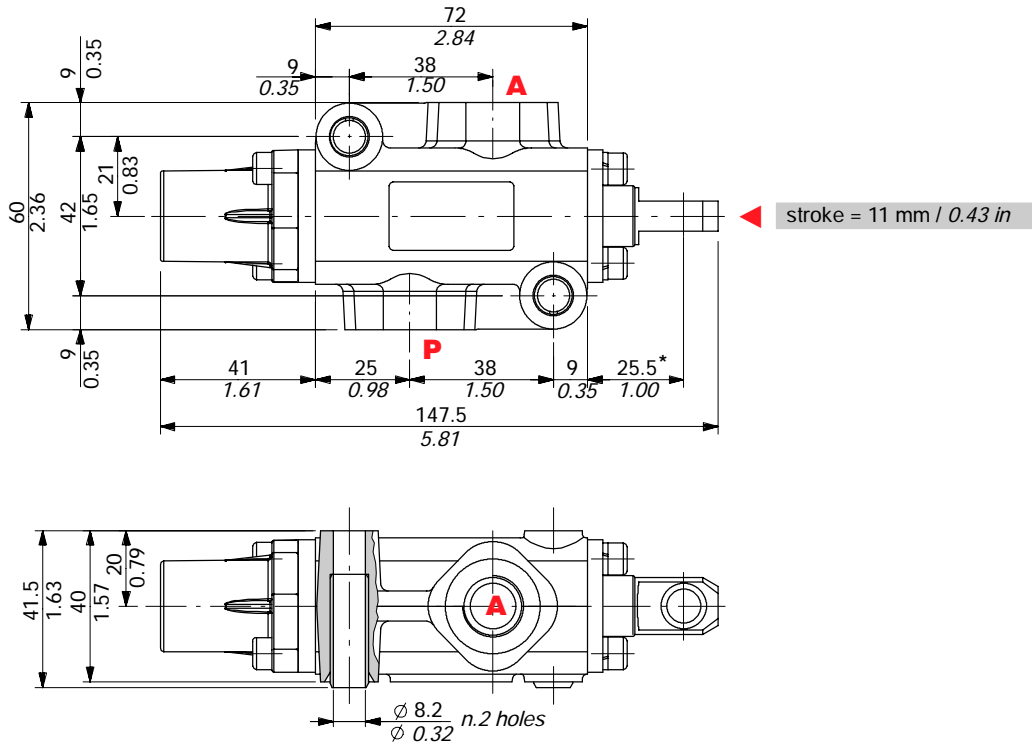


DF20/6

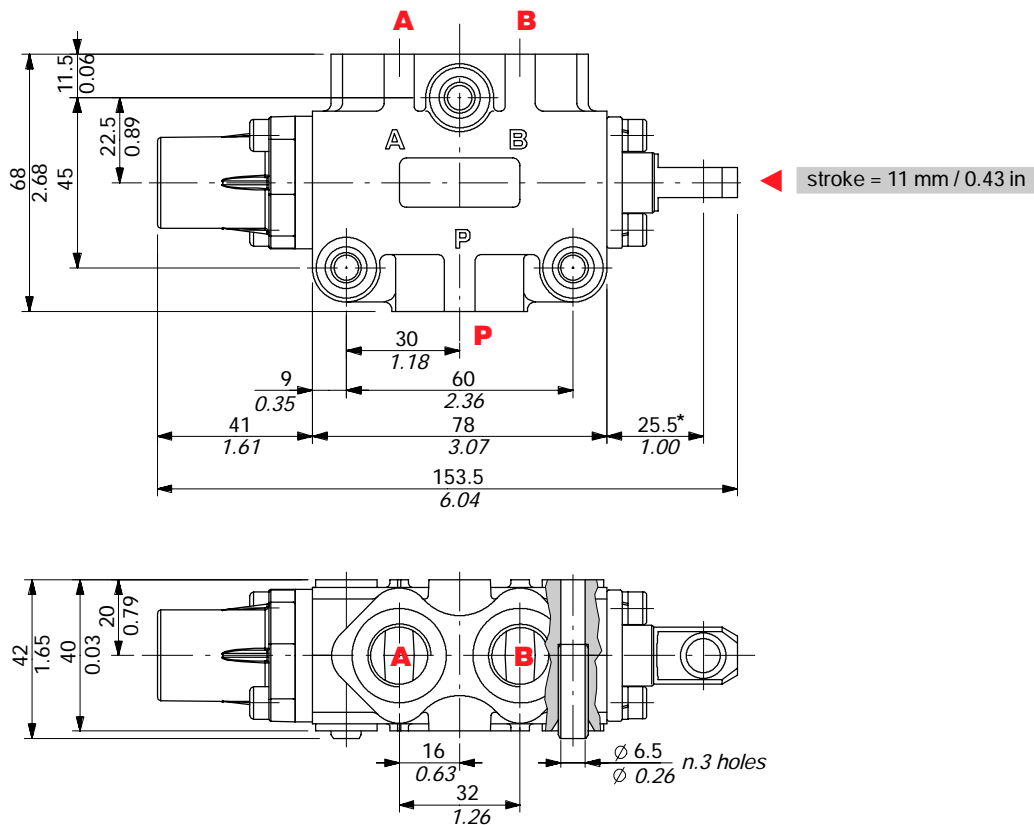


Dimensional data

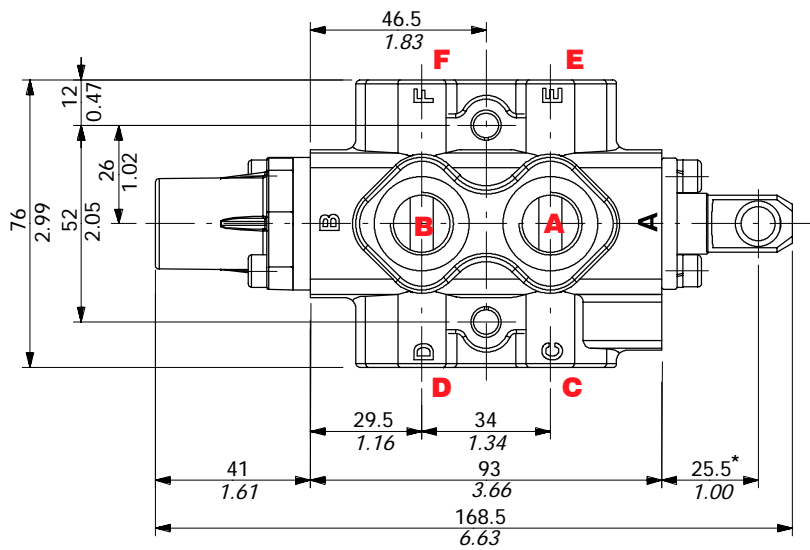
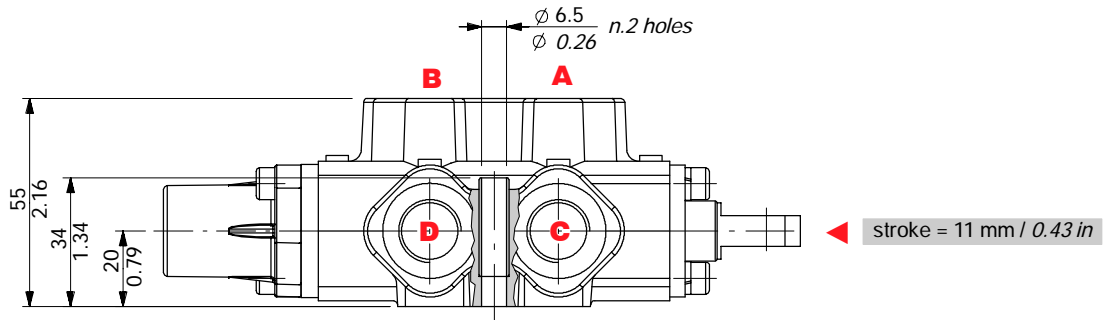
2-way DF5/2 valve



3-way DF5/3 valve

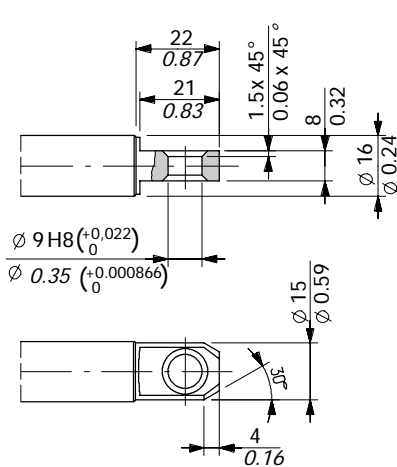


6-way DF5/6 valve



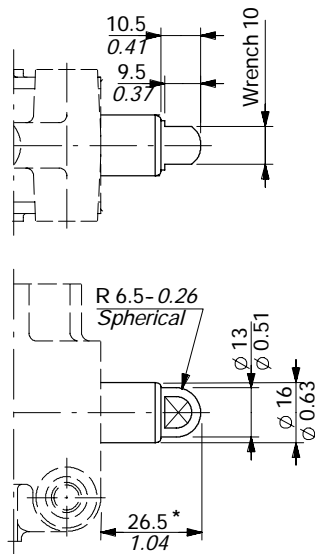
Spool end

Standard end

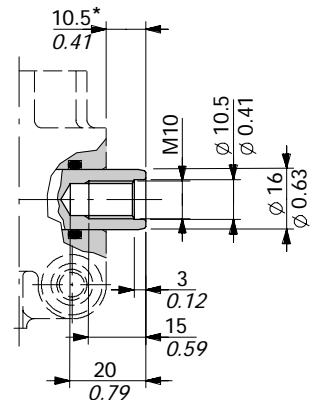


NOTE (*) - With spool out
(positioner kit type 17)

Spherical end type T



Rotary cam prearrangement

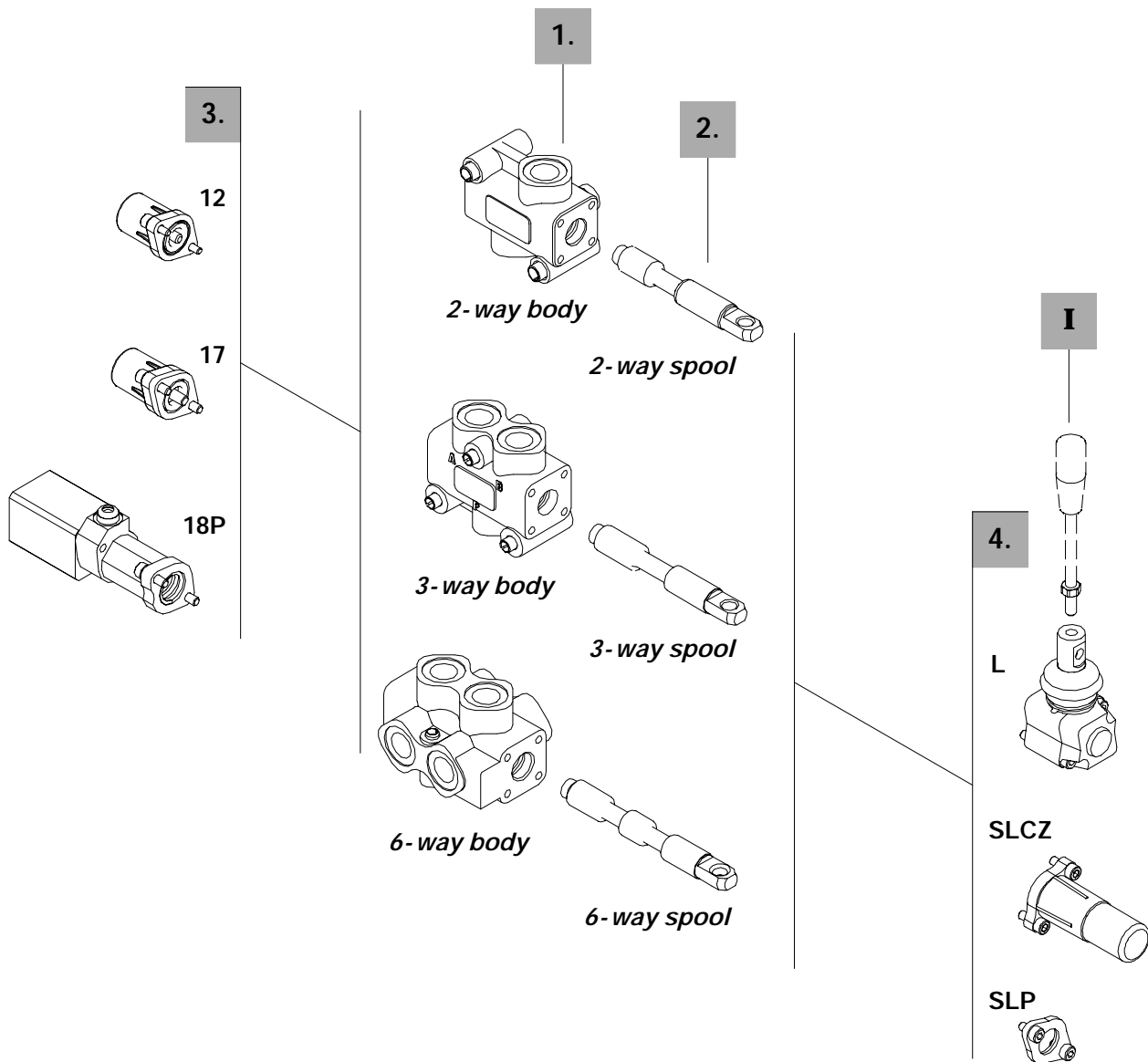


Ordering codes

Description example:

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

1. 2. 3. 4.



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 |

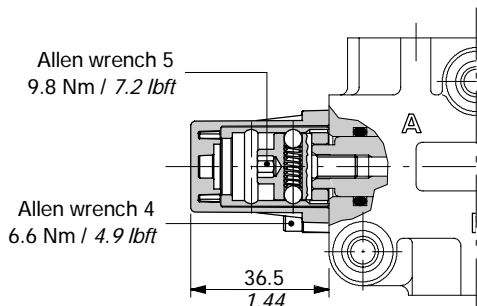
NOTE (*) - Codes are referred to **BSP** thread.

Positioners kits

With detent

Kit 12

Detent in positions 1 and 2.



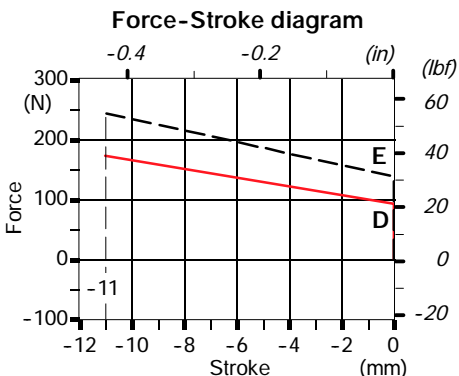
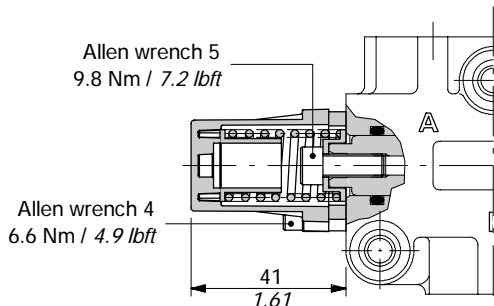
Operating features

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

With spring return

17 kit

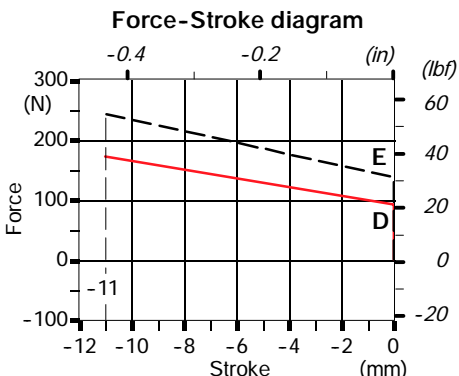
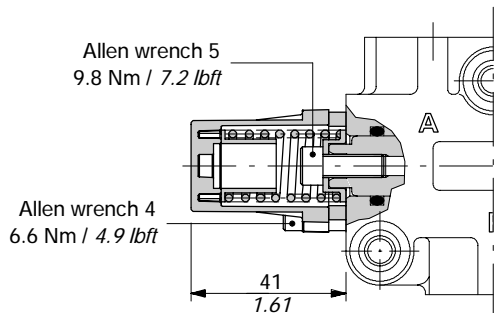
Spring return in position 1; it's supplied with standard spring type D (see force-stroke diagram). Available also with heavier spring type E (17ME code 5V17305000).



17Y kit

As kit 17, it must be only coupled to IA2 control on page 18.

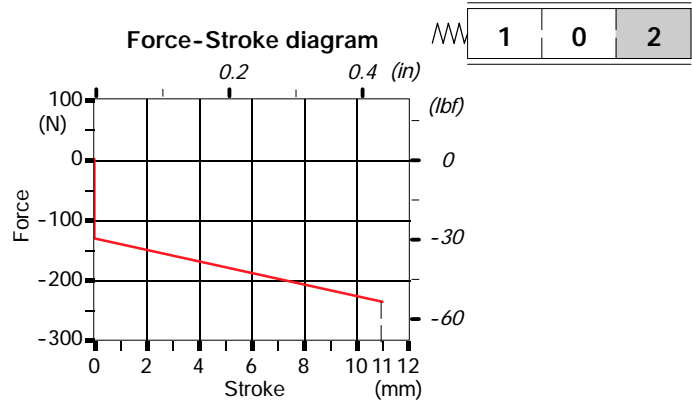
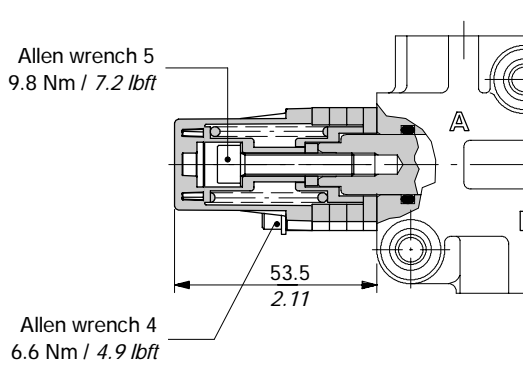
It's available also with heavier spring type E (17YME code: 5V17305003).



With spring return

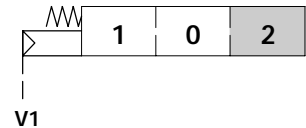
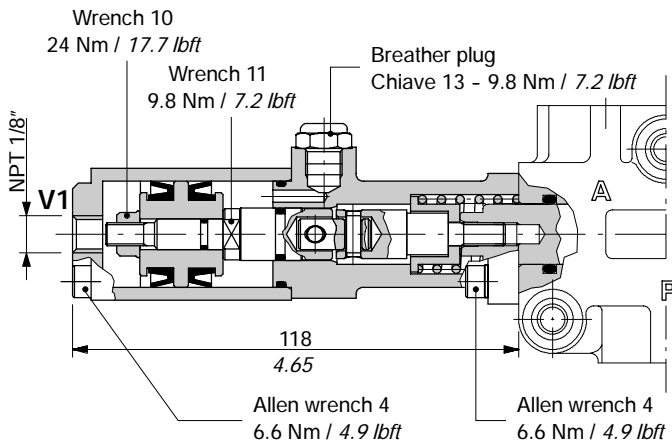
18ME kit

Spring return in position 2.



ON/OFF pneumatic kit type 18P

With spring return in position 2.



Operating features

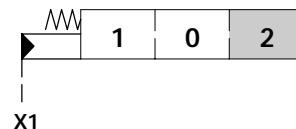
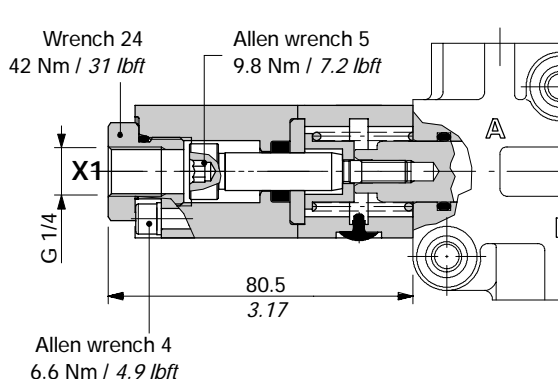
Pilot pressure : min 6 bar / 87 psi
max. 10 bar / 145 psi

Positioner kits

With ON/OFF hydraulic control

18IA1 kit

With high pressure pilot and spring return to position 2.

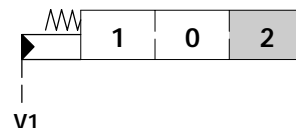
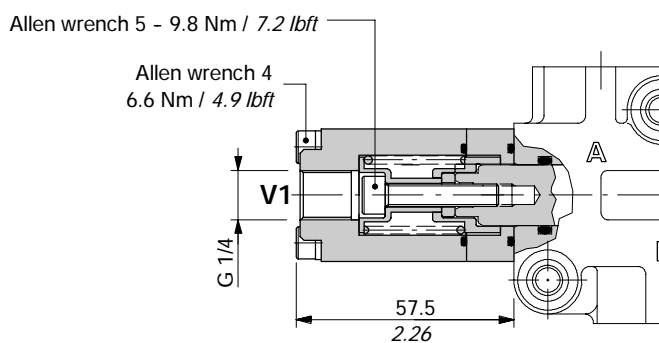


Operating features

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

18IB1N kit

With low pressure pilot and spring return to position 2.



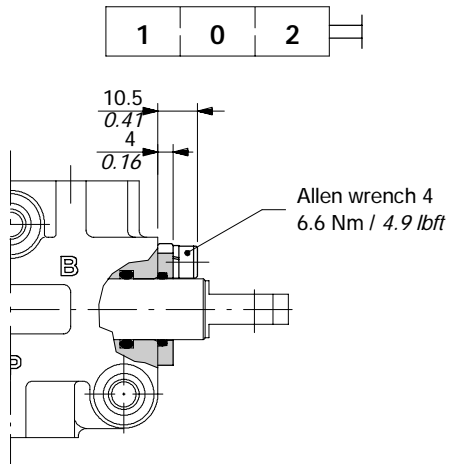
Operating features

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

Controls prearrangement

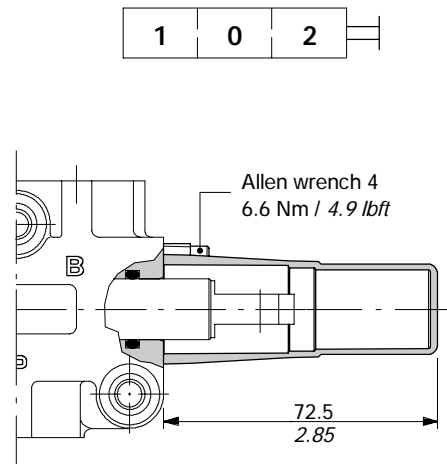
SLP kit

Mechanical control with dust-proof plate.



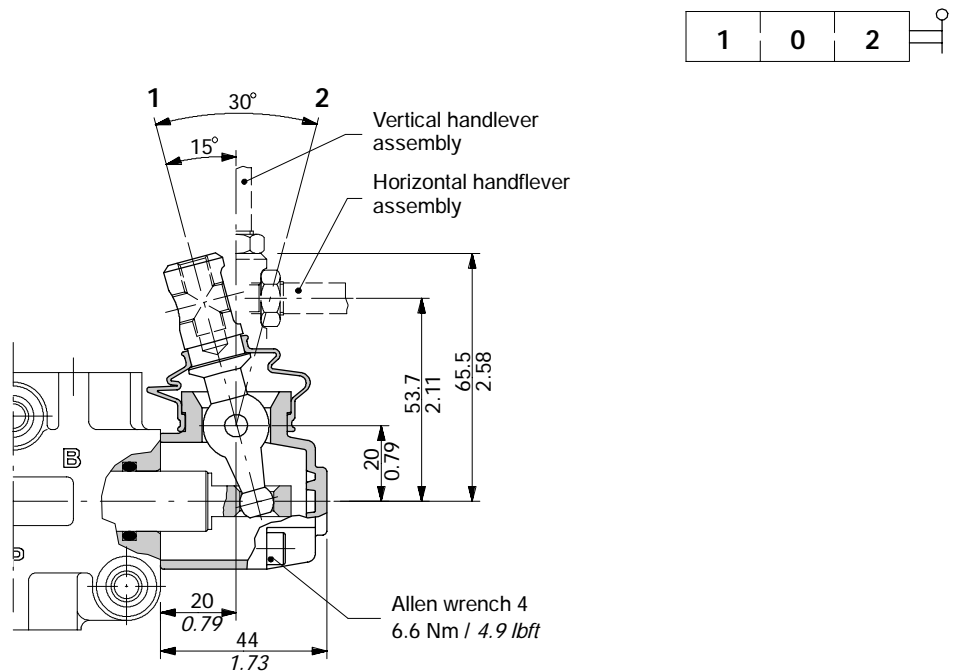
SLCZ kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



L lever control

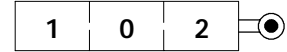
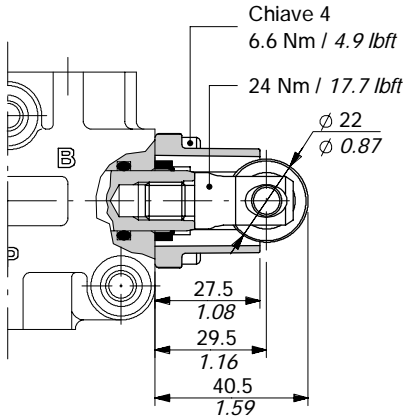
Aluminum with protection boot lever pivot box; it can be rotated 180° (execution L180).



Control kits

CB cam control

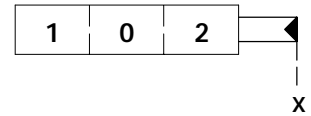
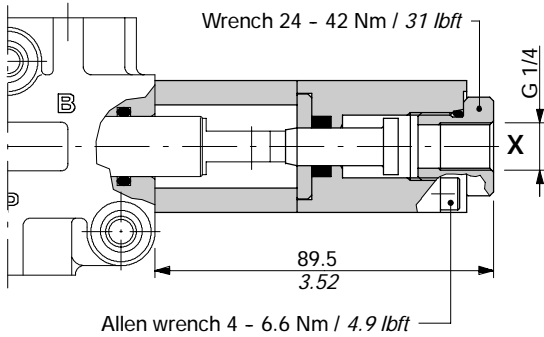
With bronze bearing; it must be coupled to 17 kit (see page 14).



ON/OFF hydraulic controls

IA2 kit

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

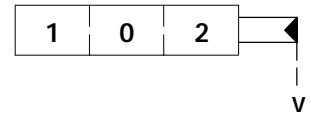
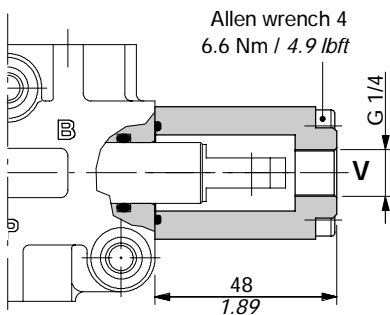


Operating features

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

IB2 kit

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



Operating features

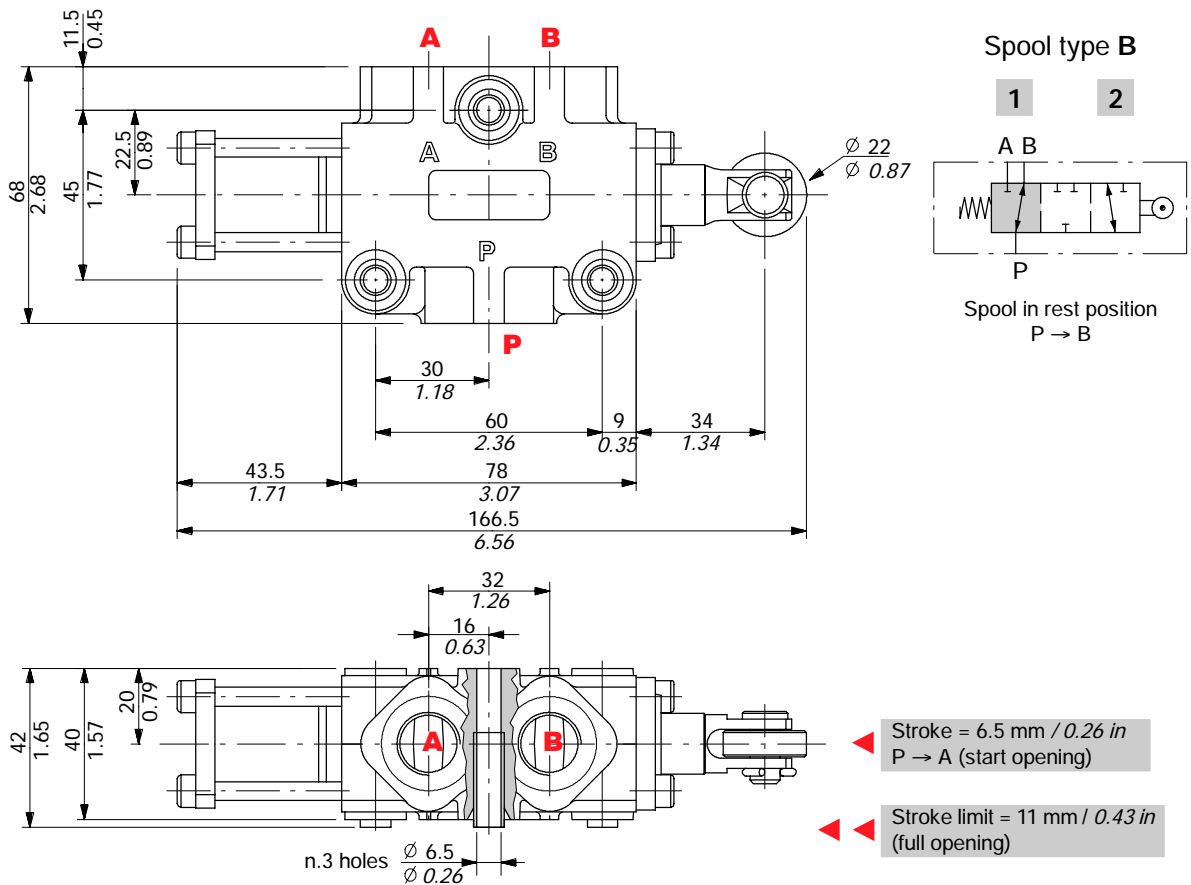
Pilot pressure : min. 15 bar / 220 psi
max. 50 bar / 725 psi

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

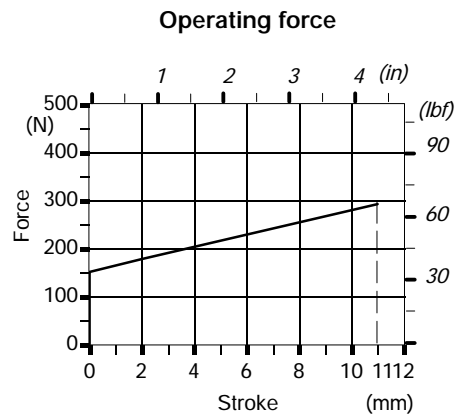
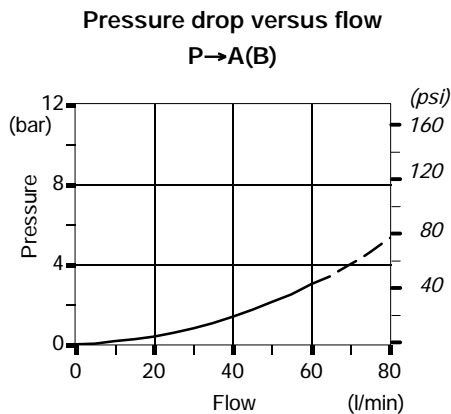
3-way DFC050/3 valve

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

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



Performance data

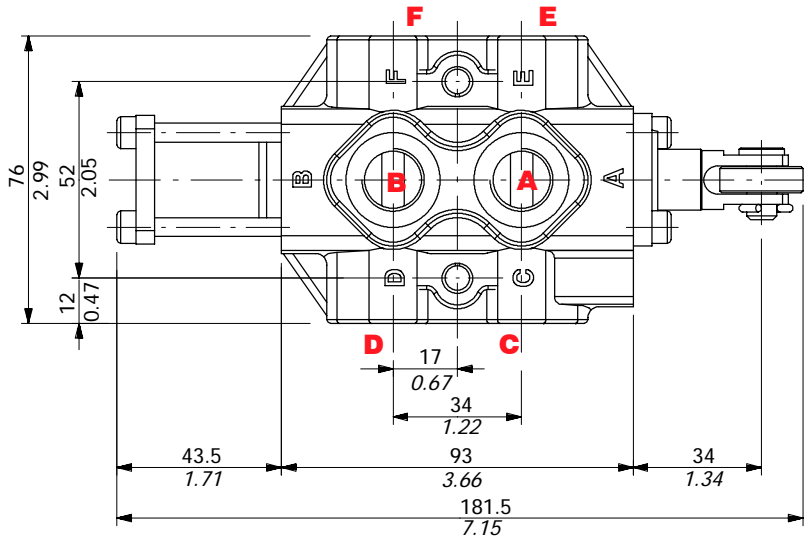
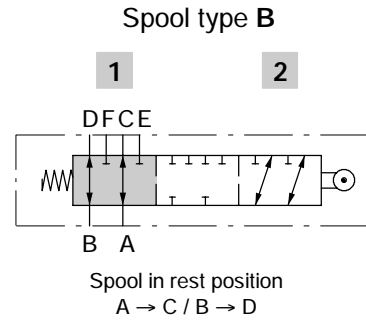
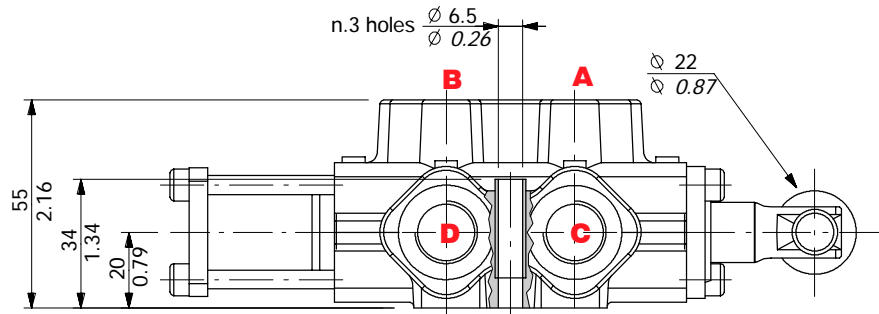


Other executions

6-way DFC050/6 valve

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

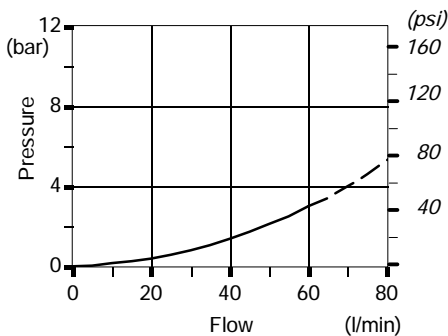
Valve is supplied painted as standard, with one coat of Primer black antirust paint



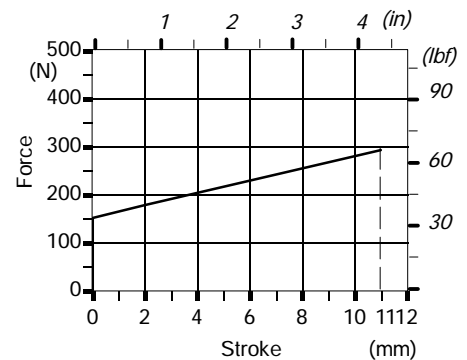
- ◀ Stroke = 6.8 mm / 0.27 in
A → E / B → F (start opening)
- ◀◀ Stroke limit = 11 mm / 0.43 in
(full opening)

Performance data

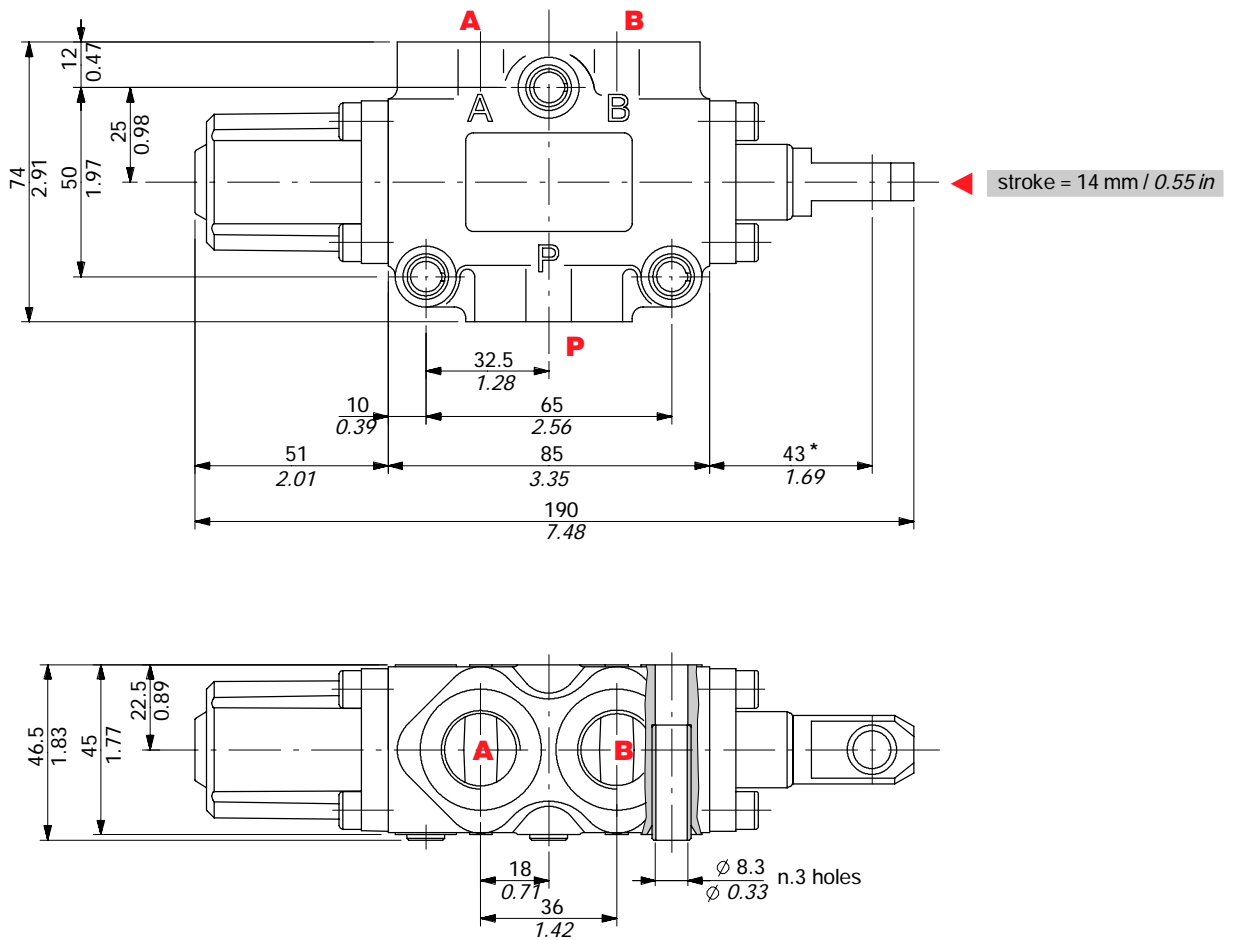
Pressure drop versus flow
P → A(B)



Operating force

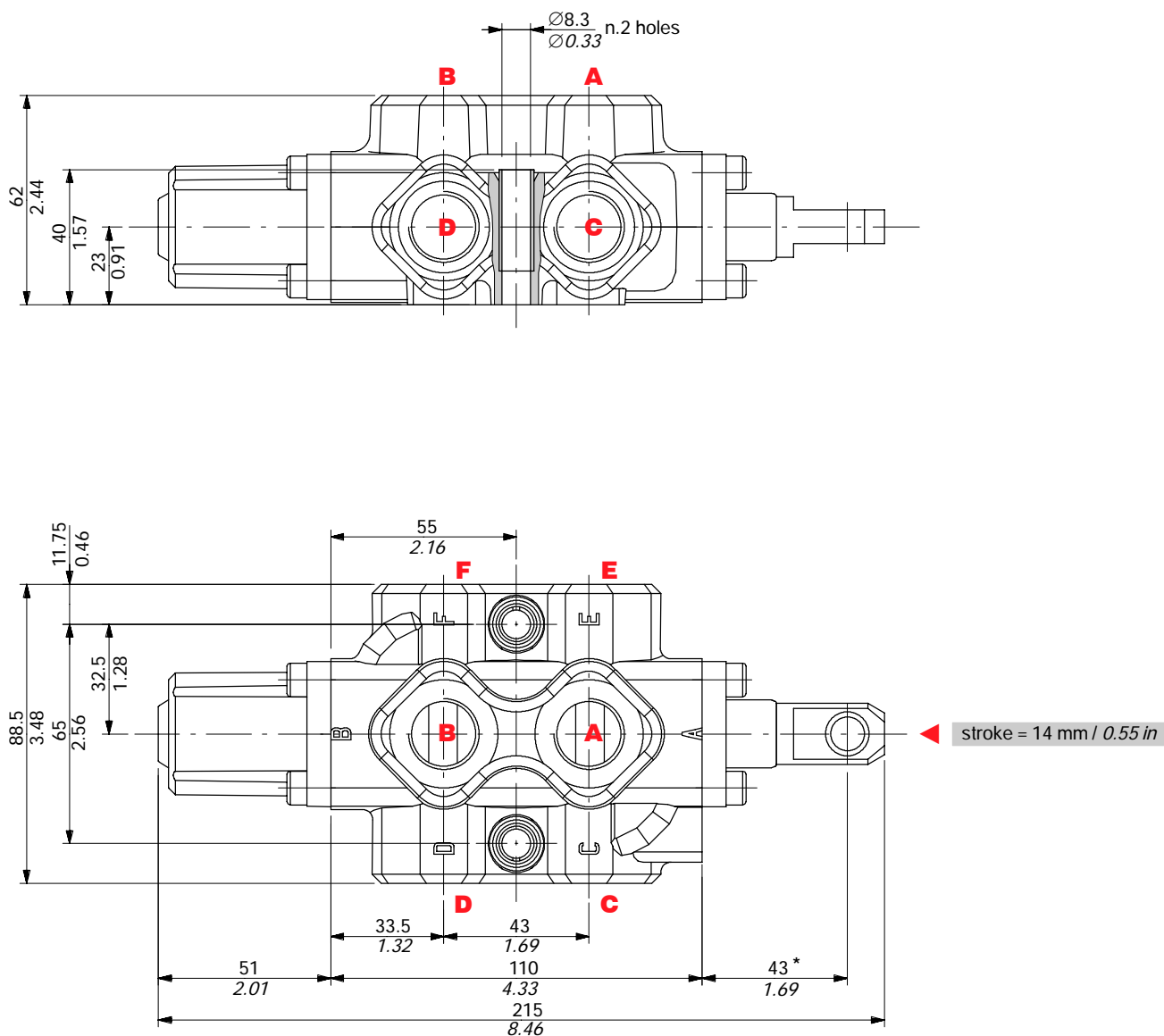


3-way DF10/3 valve



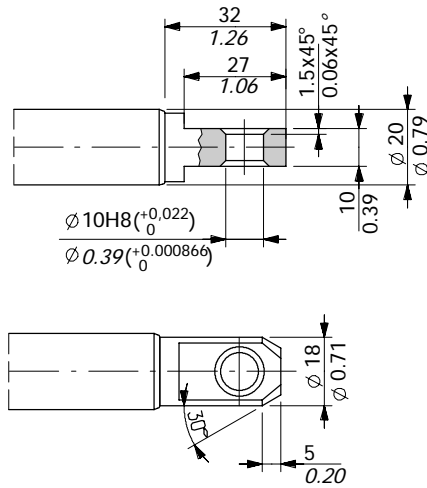
Dimensional data

6-way DF10/6 valve

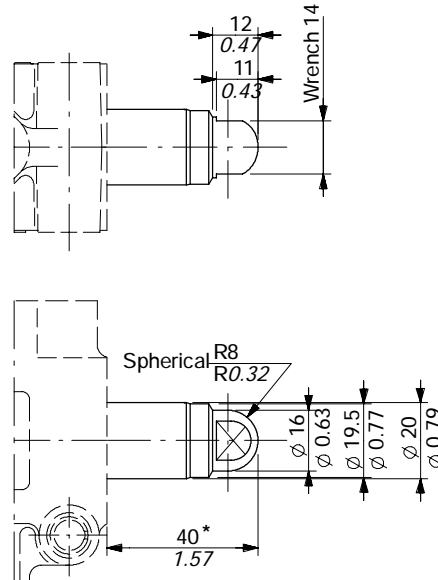


Spool end

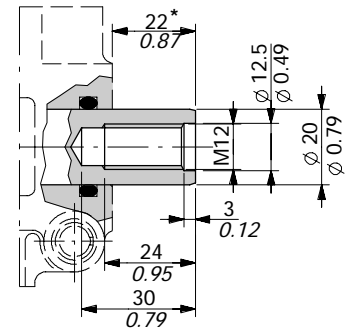
Standard end



Spherical end type T



Rotary cam prearrangement

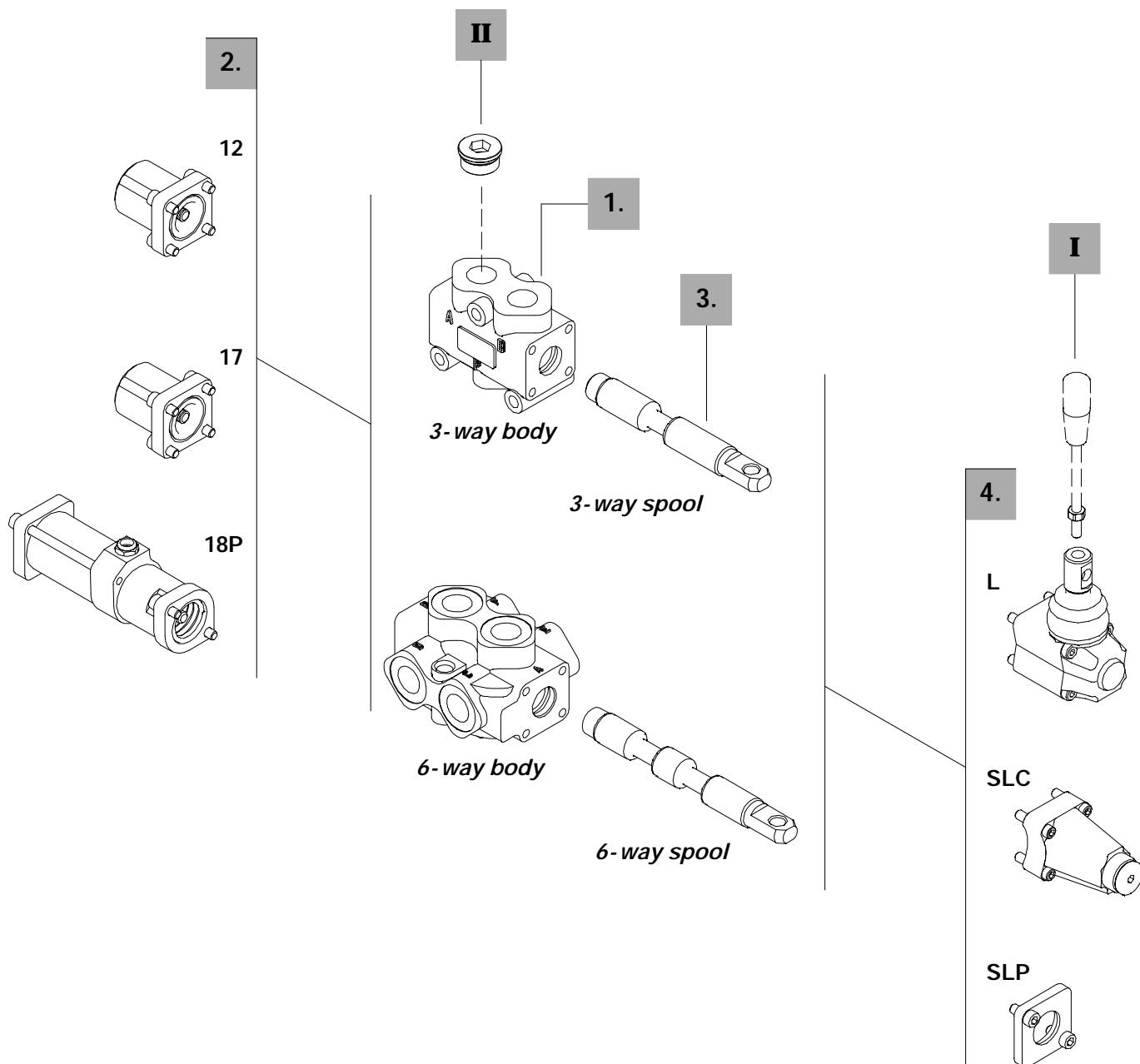


NOTE (*) - With spool out (positioner kit type 17)

Ordering codes

DEscription example

| | | | | |
|----------------|---------------|----------|-----------|------------|
| Diverter valve | <u>DF10/3</u> | <u>A</u> | <u>17</u> | <u>SLP</u> |
| | 1. | 3. | 2. | 4. |



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 closed in transit positions |
| AC | 3CAS110620 | As type A prearranged for cam control |
| BC | 3CAS110720 | As type B prearranged for cam control |

2. Positioner kits
page 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 |

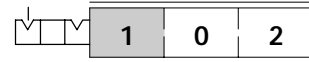
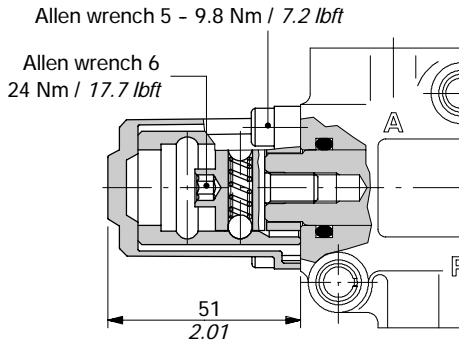
NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

With detent

12 kit

Detent in positions 1 and 2.



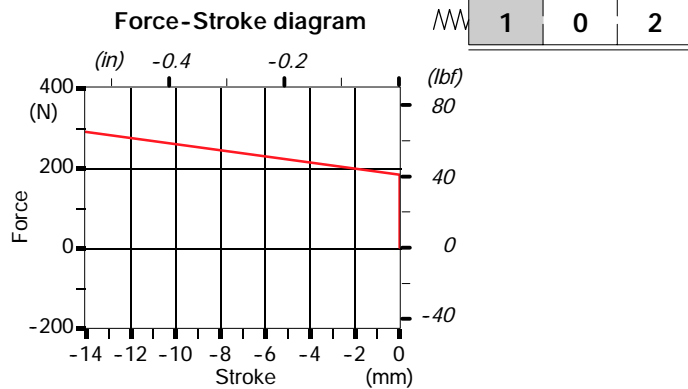
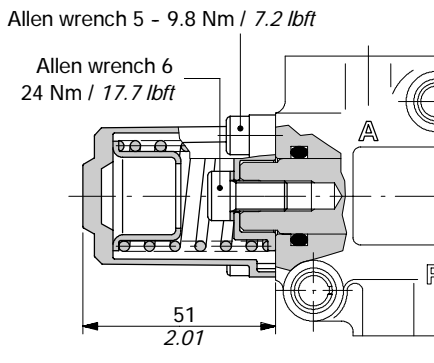
Operating features

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

With spring return

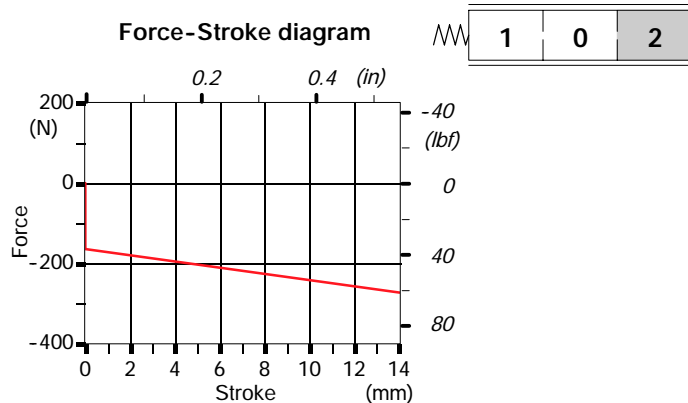
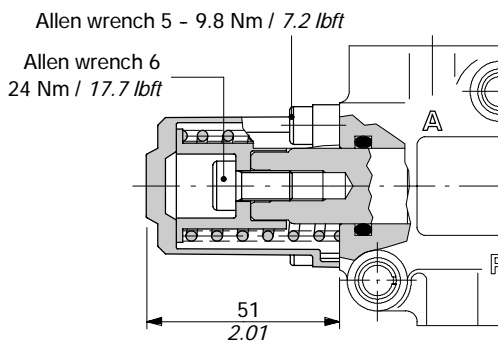
17 kit

Spring return in position 1.



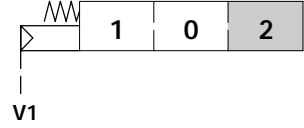
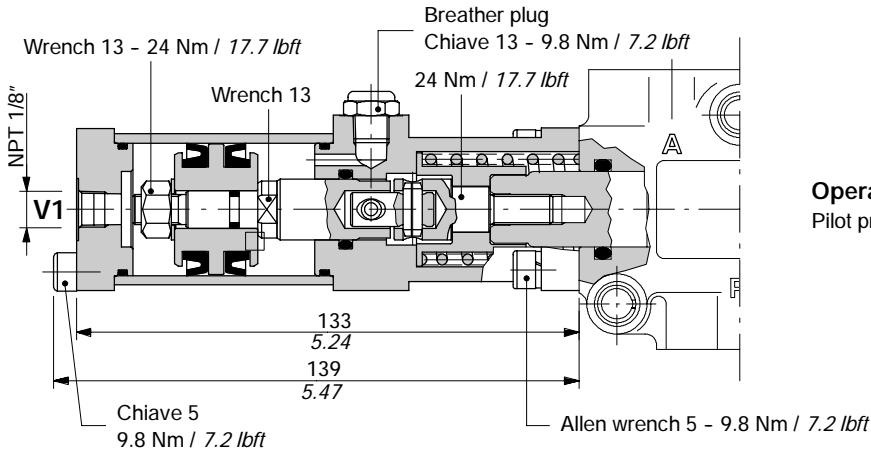
18 kit

Spring return in position 2.



ON/OFF pneumatic kit type 18P

With spring return in position 2.



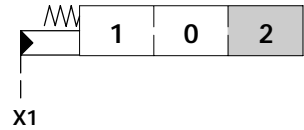
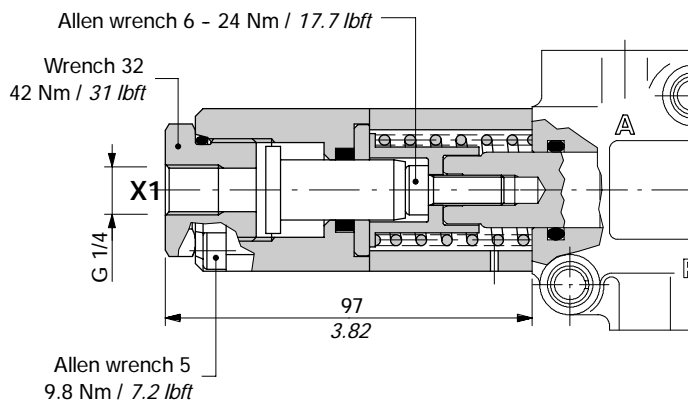
Operating features

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

With ON/OFF hydraulic control

18IA1 kit

With high pressure pilot and spring return to position 2.

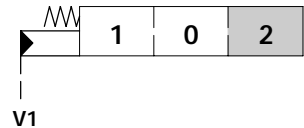
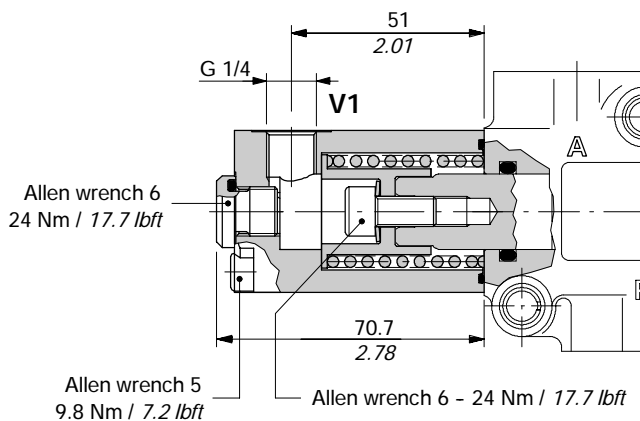


Operating features

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

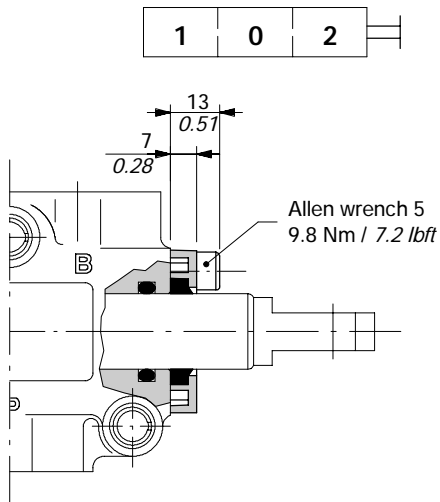
Pilot pressure : min. 15 bar / 220 psi
max. 50 bar / 725 psi

Control kits

Controls prearrangement

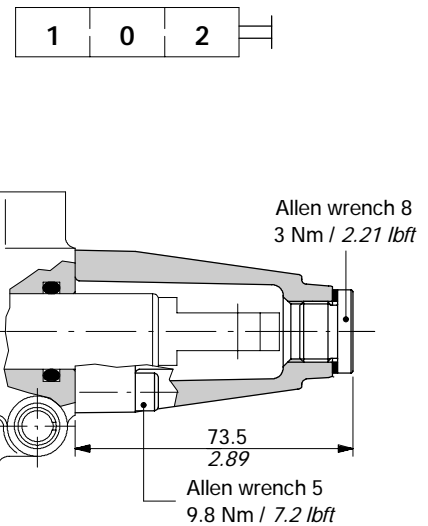
SLP kit

Mechanical control with dust-proof plate.



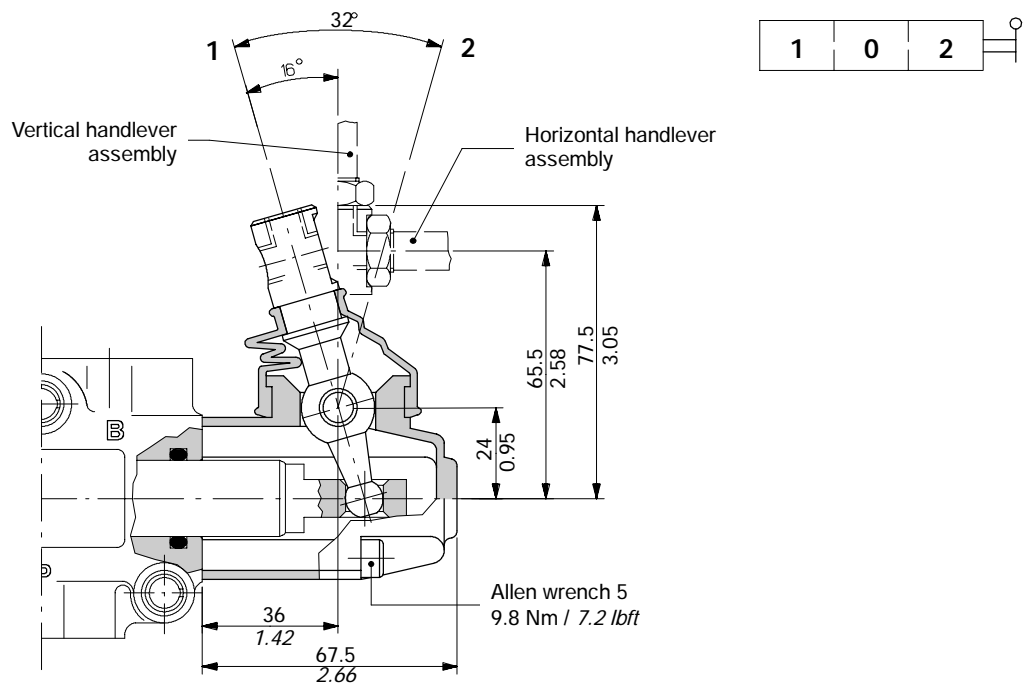
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



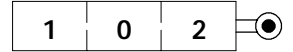
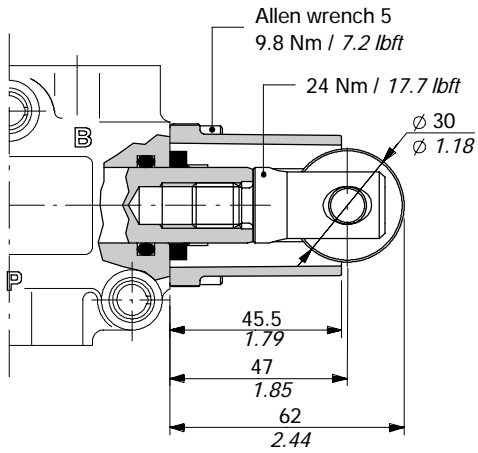
L lever control

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



CB cam control

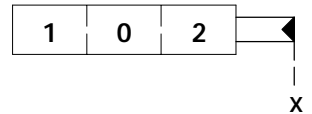
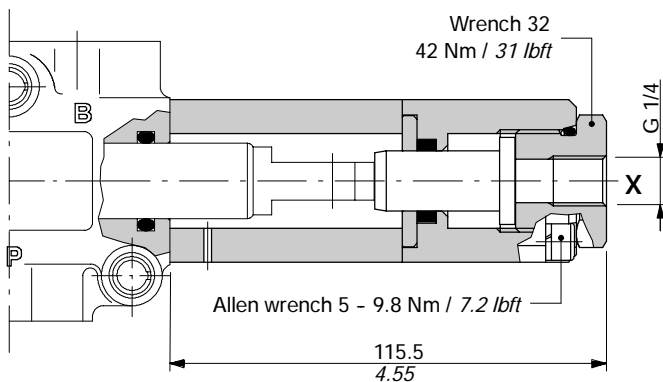
With bronze bearing; it must be coupled to 17 kit (see page 26).



ON/OFF hydraulic controls

IA2 kit

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

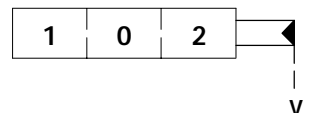
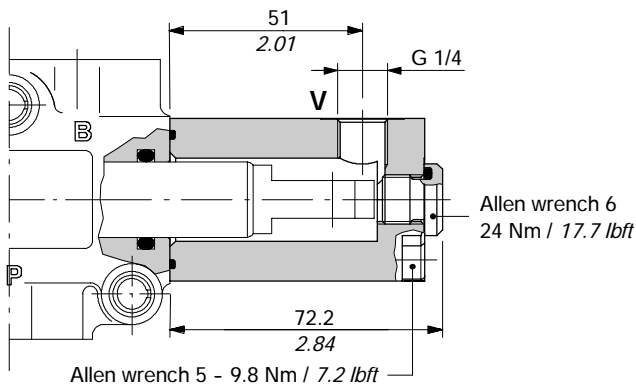


Operating features

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).



Operating features

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

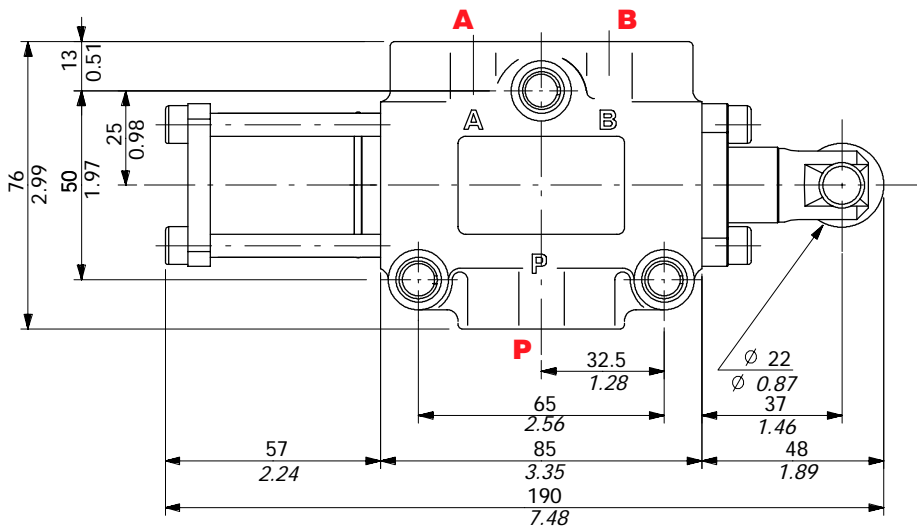
Other executions

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

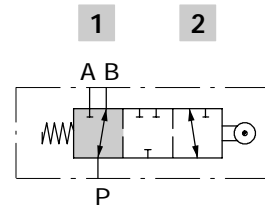
3-way DFC100/3 valve

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

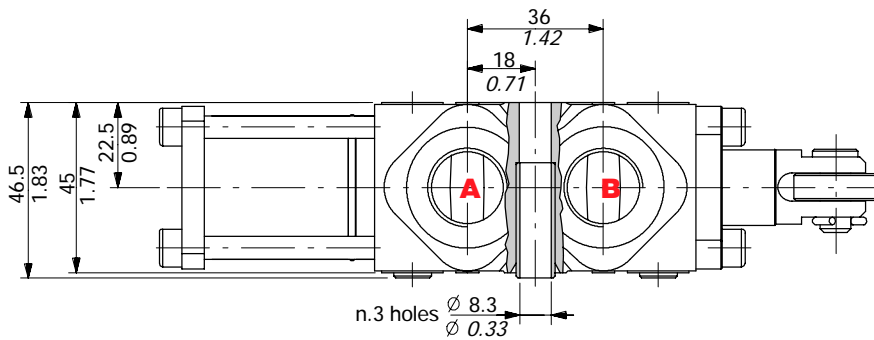
Valve is supplied painted as standard, with one coat of Primer black antirust paint



Spool type B



Spool in rest position
P → B

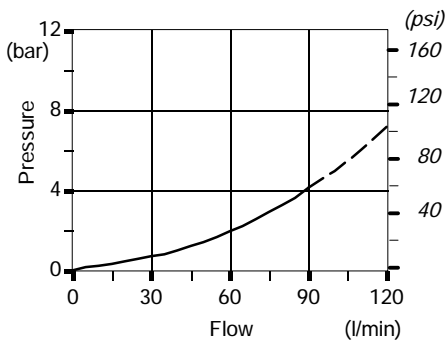


Stroke = 8.5 mm / 0.33 in
P → A (start opening)

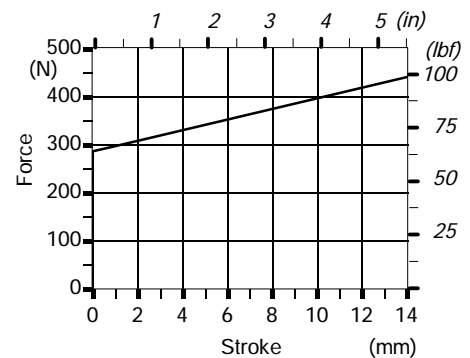
Stroke limit = 14 mm / 0.55 in
(full opening)

Performance data

Pressure drop versus flow
P → A(B)



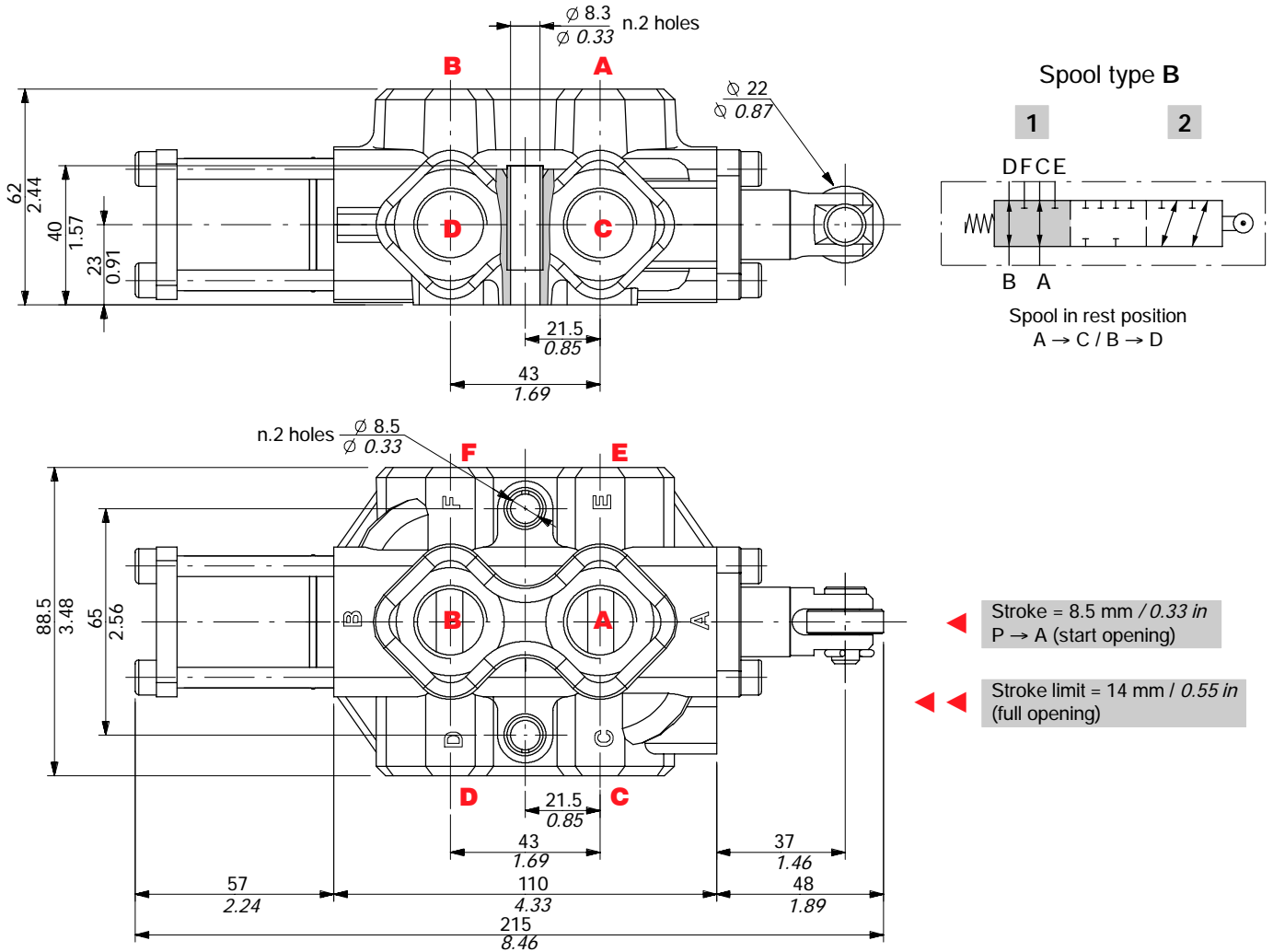
Operating force



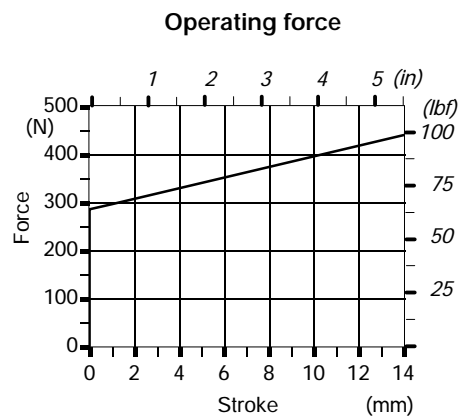
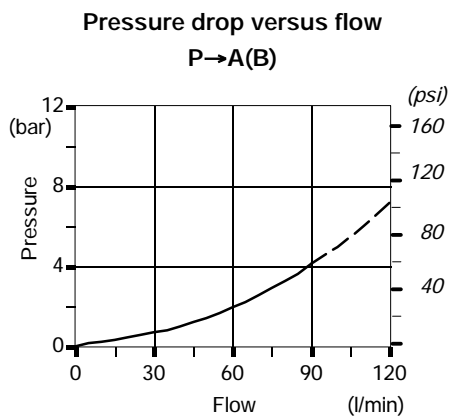
6-way DFC100/6 valve

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

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

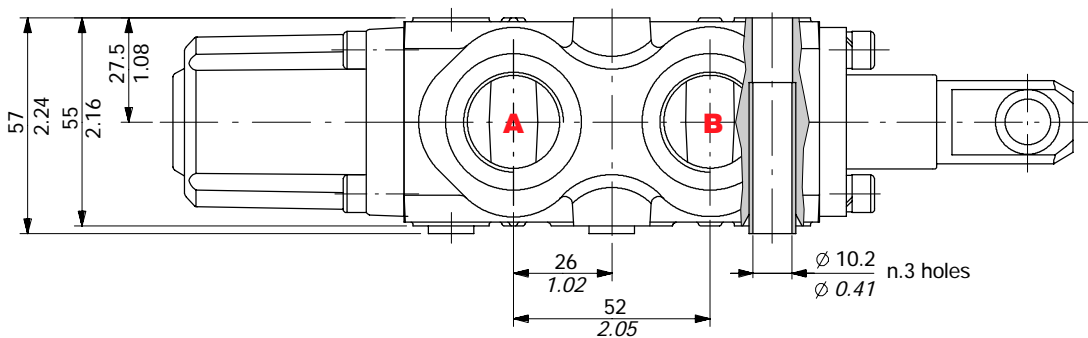
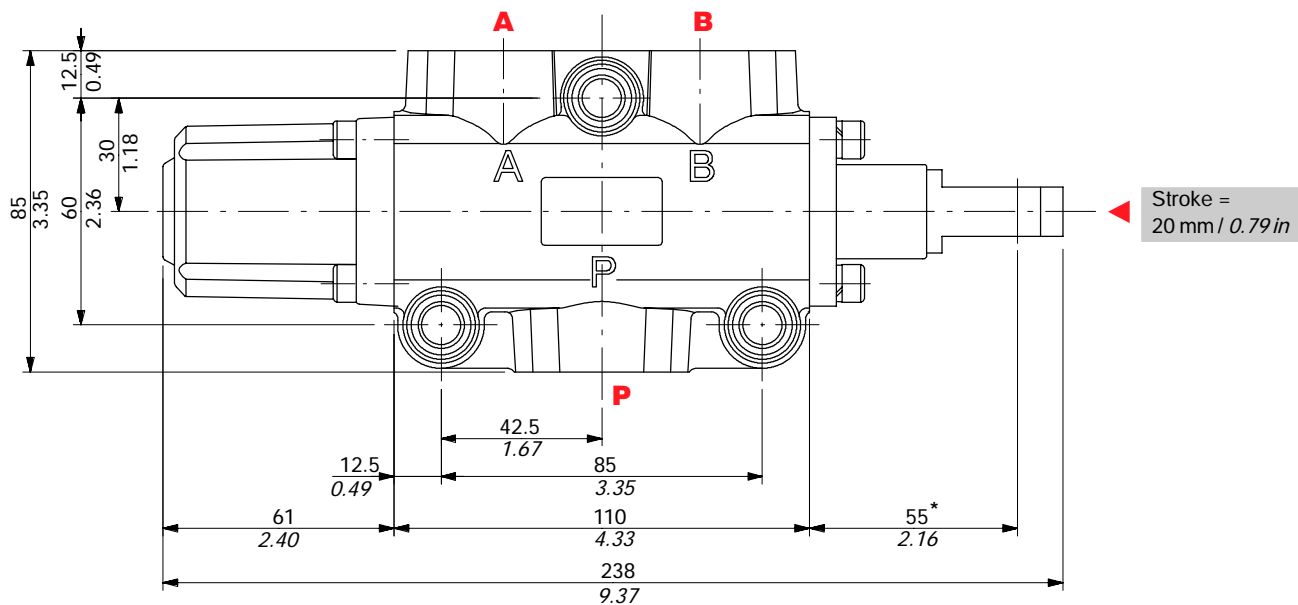


Performance data

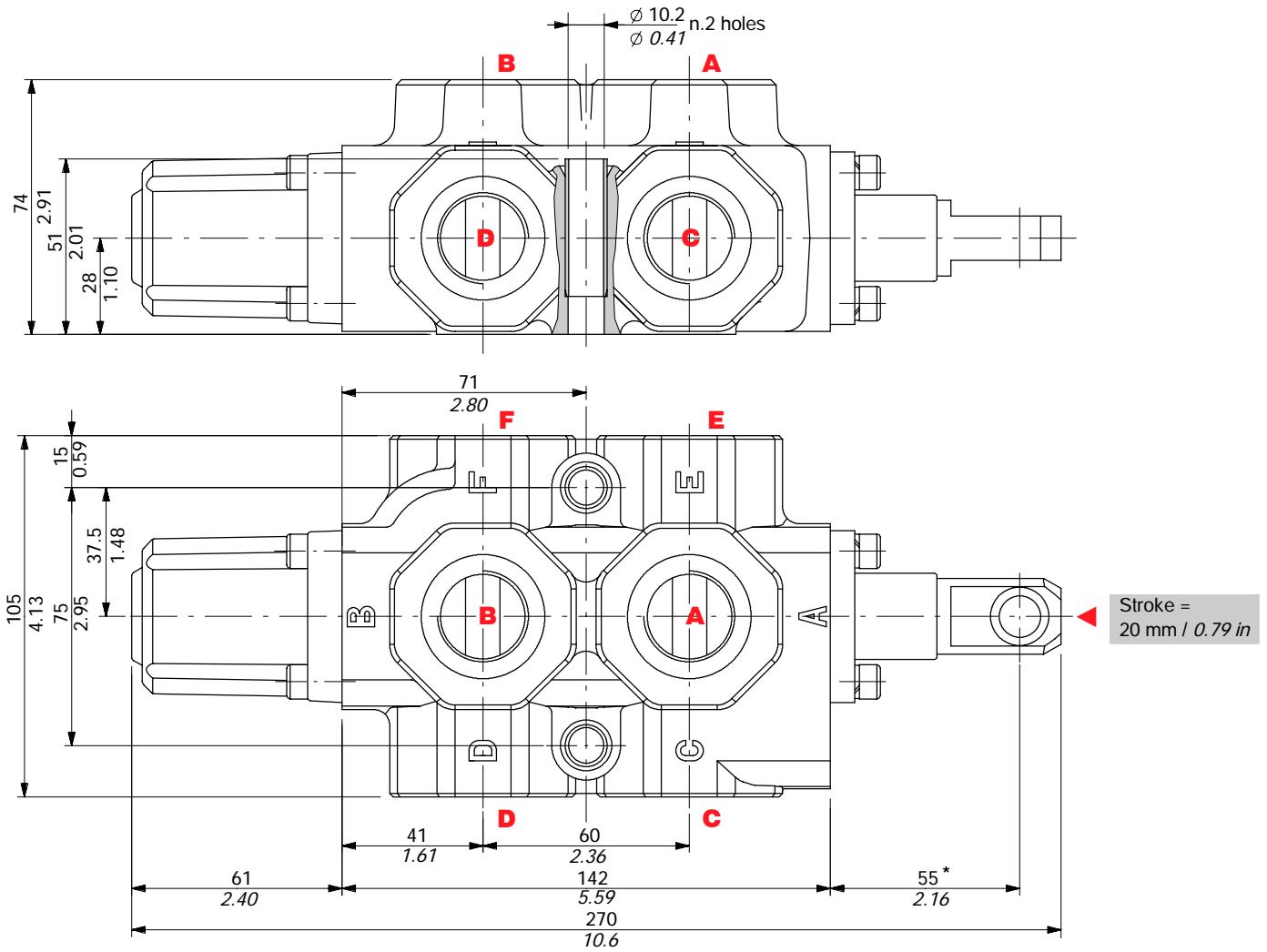


Dimensional data

3-way DF20/3 valve

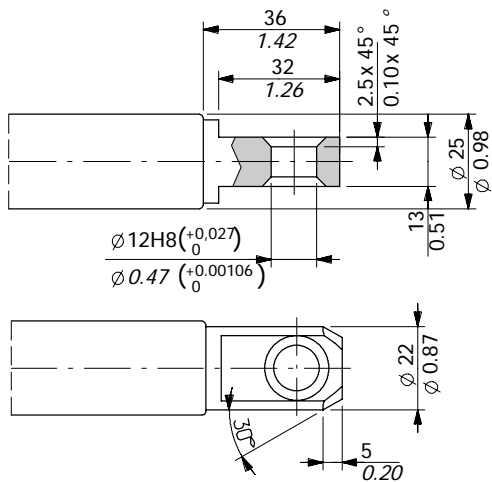


6-way DF20/6 valve

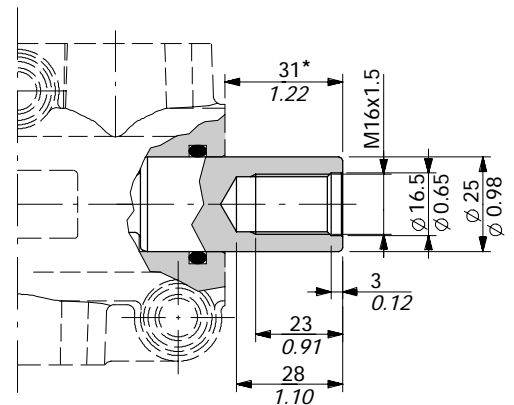


Spool end

Standard end



Rotary cam prearrangement

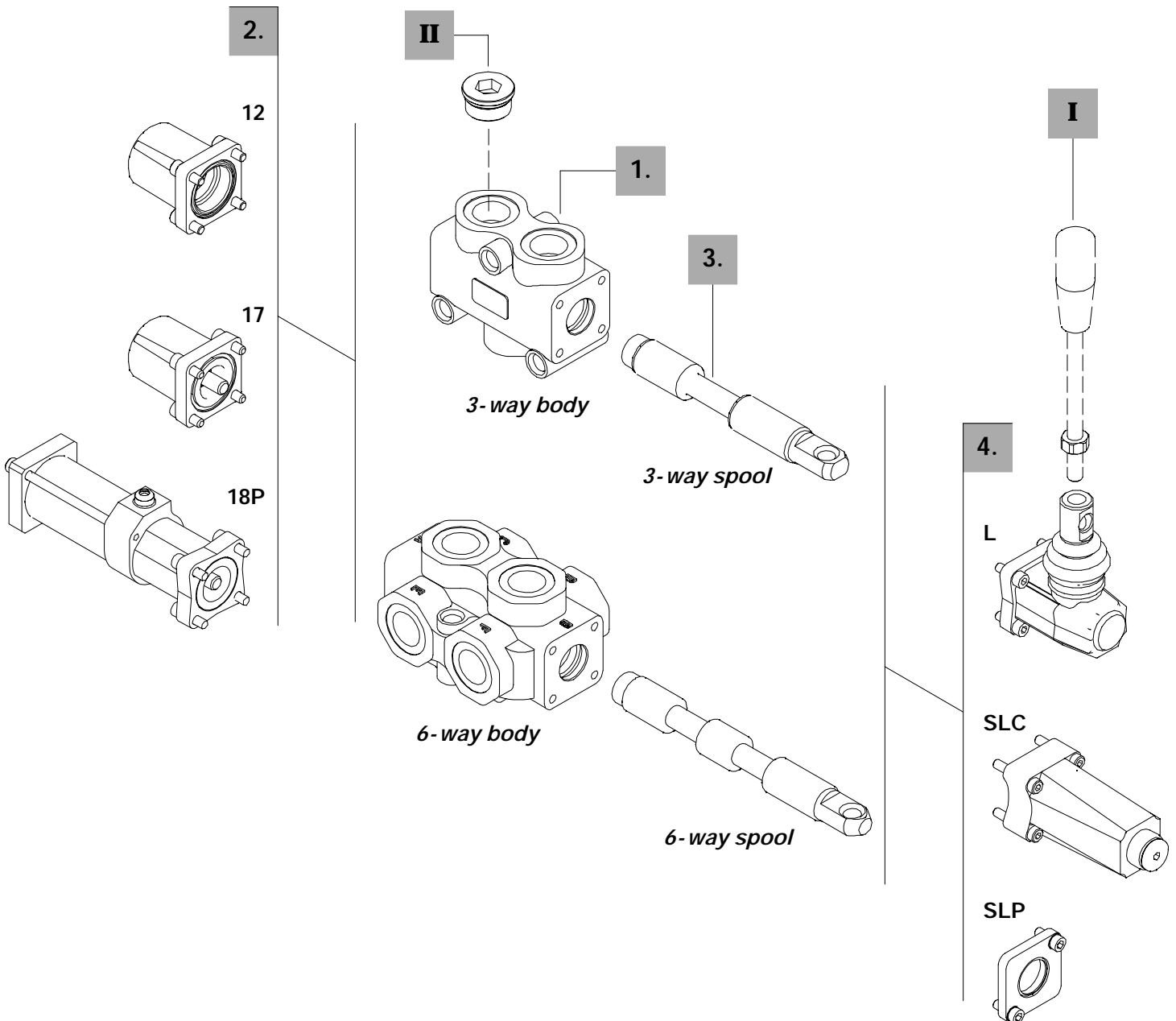


NOTA (*) - With spool out (positioner kit type 17)

Ordering codes

Description example

| | | | | |
|----------------|--------|----|----|-----|
| Diverter valve | DF20/3 | A | 17 | SLP |
| | 1. | 3. | 2. | 4. |



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 |
| 18E11 | 5V18120350 | 12VDC ON/OFF electro-hydraulic kit with spring return in position 2 |
| | 5V18120351 | 24VDC ON/OFF electro-hydraulic kit with spring return in position 2 |

4. 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

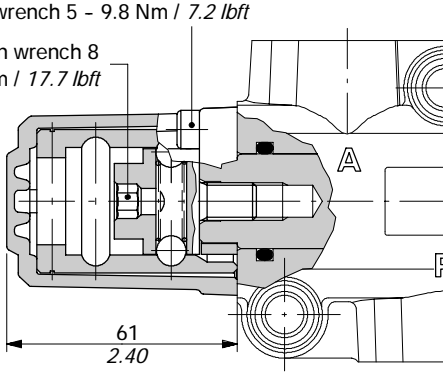
With detent

12 kit

Detent in positions 1 and 2.

Allen wrench 5 - 9.8 Nm / 7.2 lbf

Allen wrench 8
24 Nm / 17.7 lbf



Operating features

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

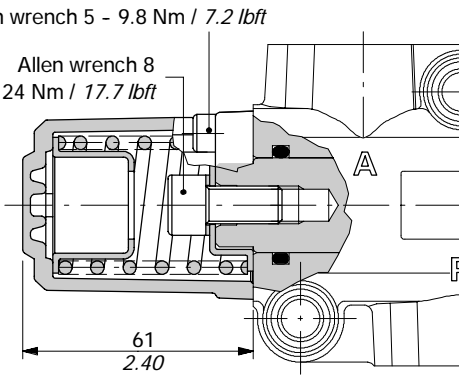
With spring return

17 kit

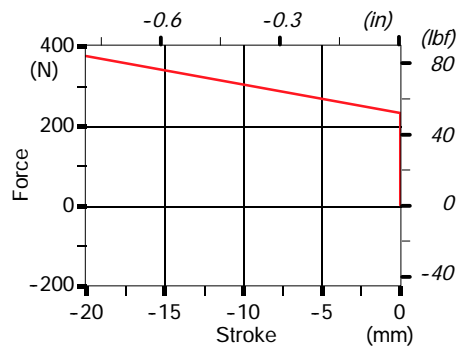
Spring return in position 1.

Allen wrench 5 - 9.8 Nm / 7.2 lbf

Allen wrench 8
24 Nm / 17.7 lbf



Force-Stroke diagram

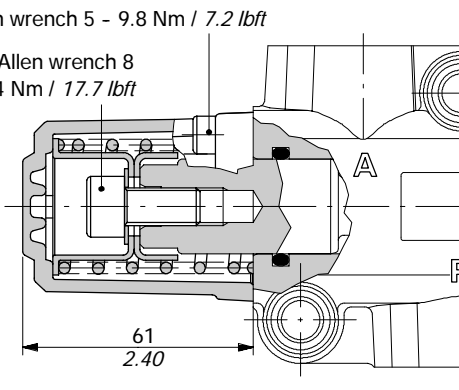


18MB kit

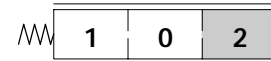
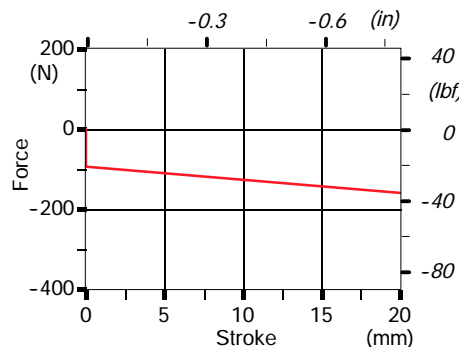
Spring return in position 2.

Allen wrench 5 - 9.8 Nm / 7.2 lbf

Allen wrench 8
24 Nm / 17.7 lbf

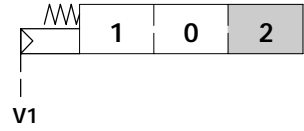
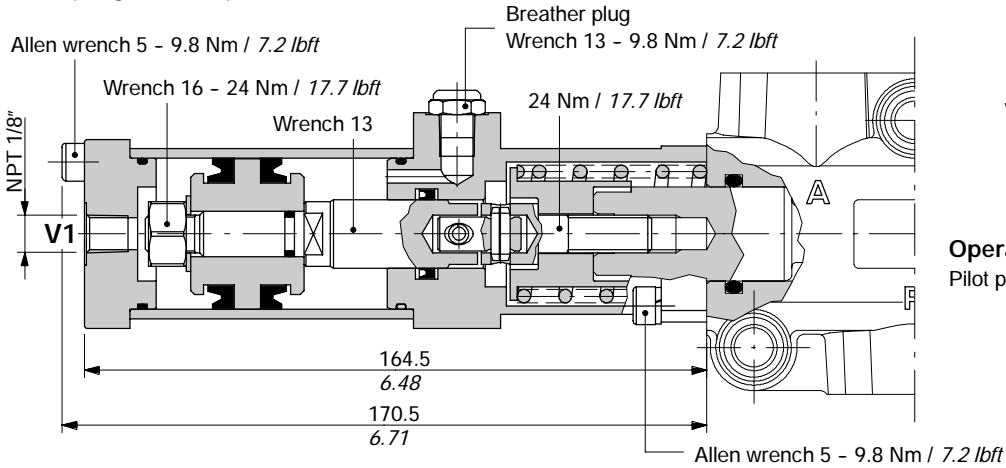


Force-stroke diagram



ON/OFF pneumatic kit type 18P

With spring return in position 2.



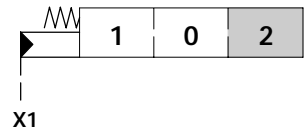
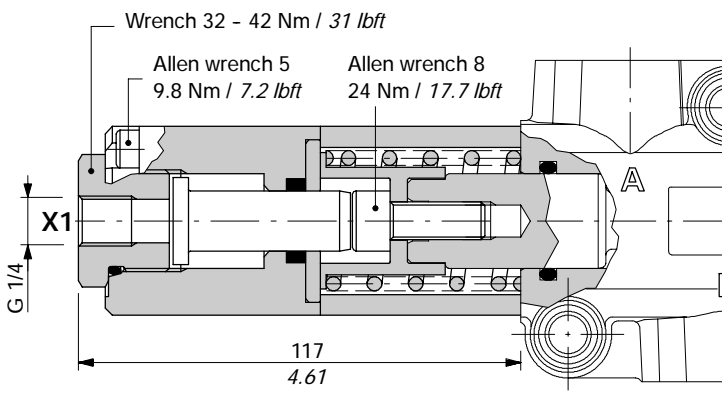
Operating features

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.

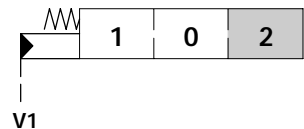
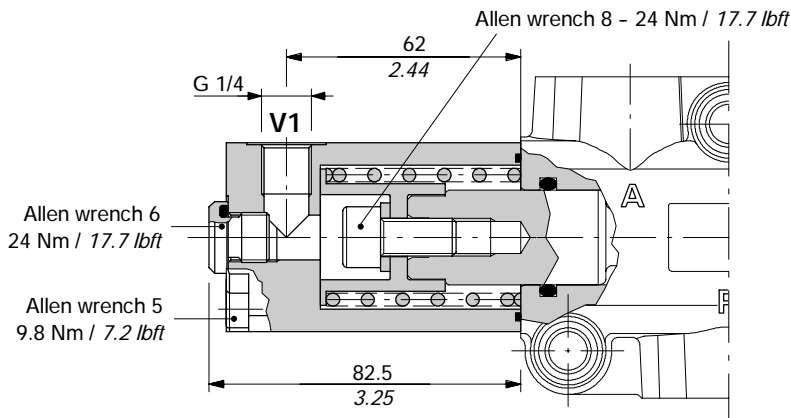


Operating features

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

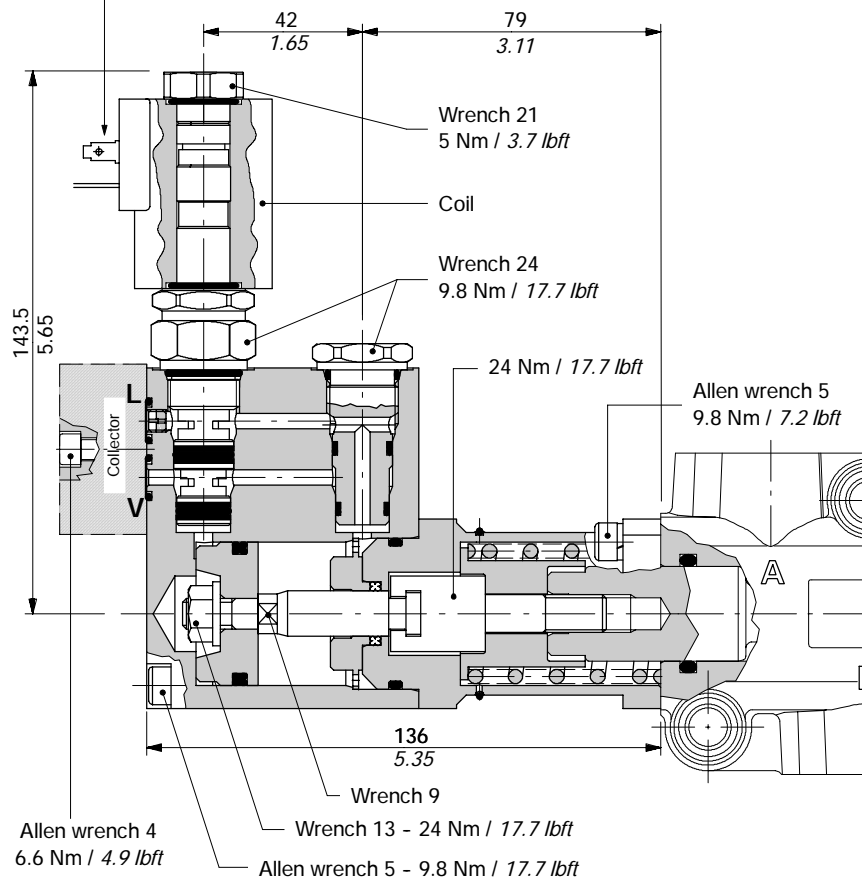
Positioner kits

ON/OFF hydraulic kit type 18E11

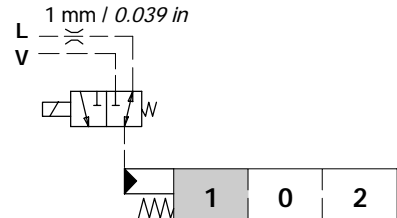
External pilot and drain, with spring return in position 2.

Connection ISO4400

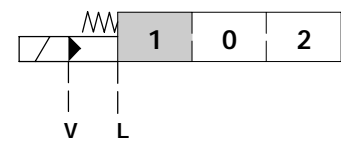
(needs C02 connector, see page 119)



Scheme



Scheme ISO 1219



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

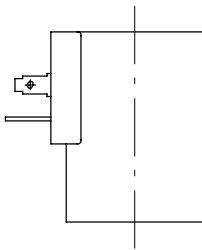
Weather protection : depending on coil model: see next page

Duty cycle : 100%

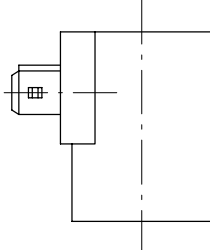
ON/OFF hydraulic kit type 18E11

| 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 |

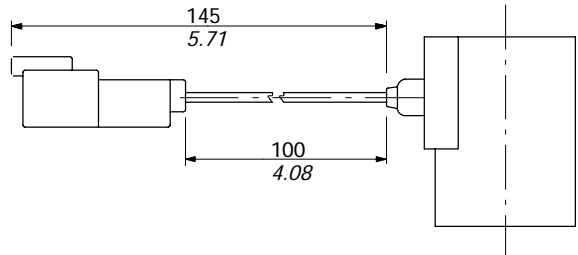
Coil with ISO4400 connection (weather protection IP65)



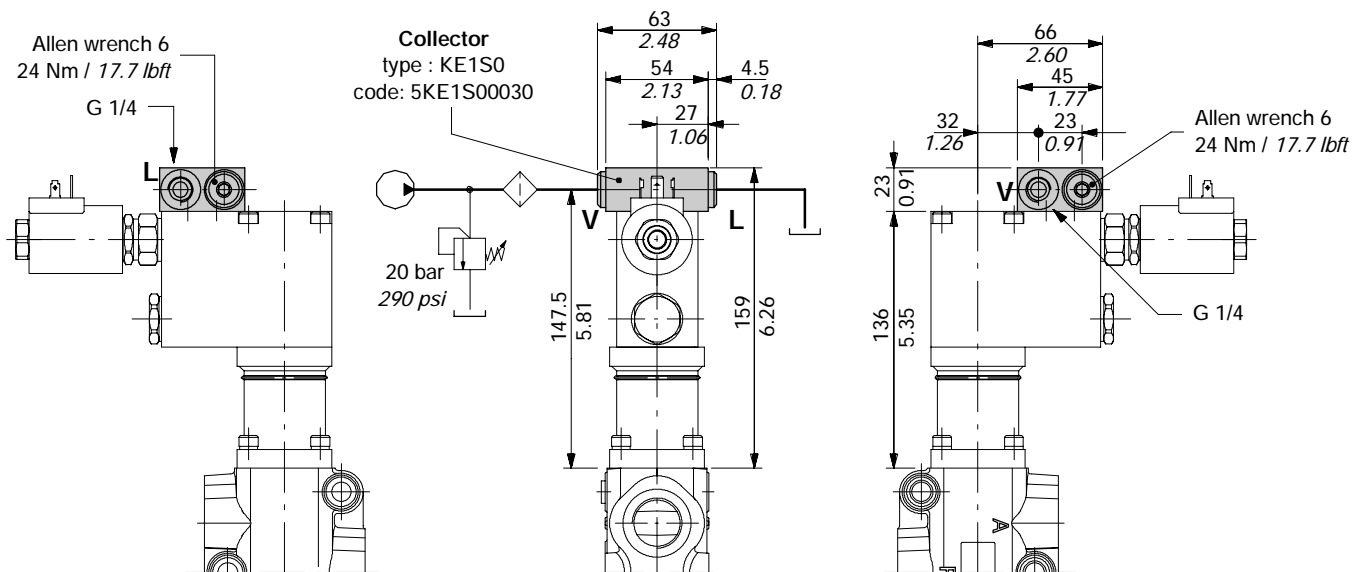
Coil with AMP JPT connection (weather protection IP65)



Coil with Deutsch DT connection (weather protection IP67)



Collector kit for external pilot and drain



Description example:
DF20/3A18E11SLC/KE1S0-12VDC

Control kits

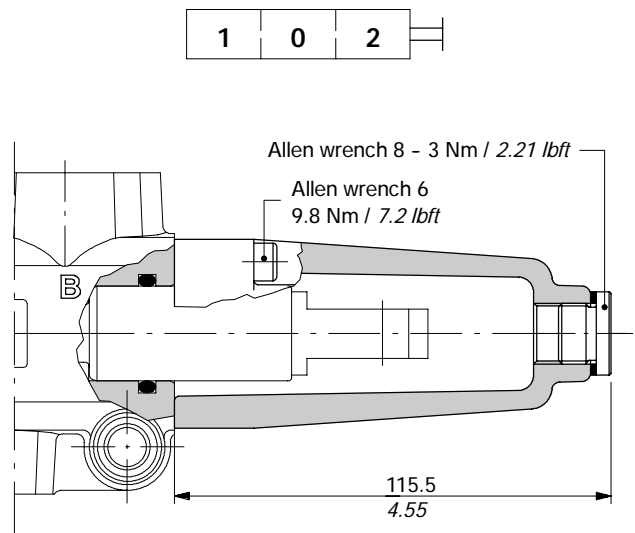
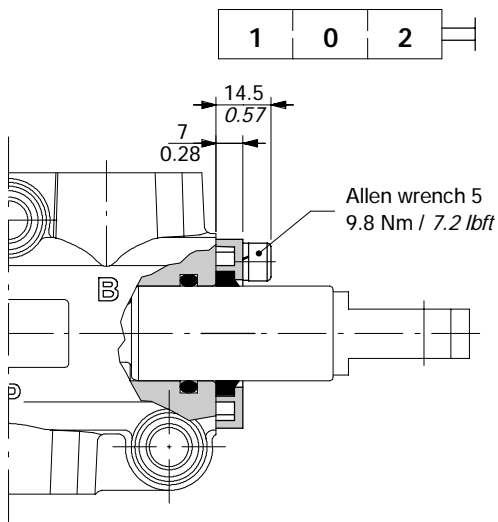
Controls prearrangement

SLP kit

Mechanical control with dust-proof plate.

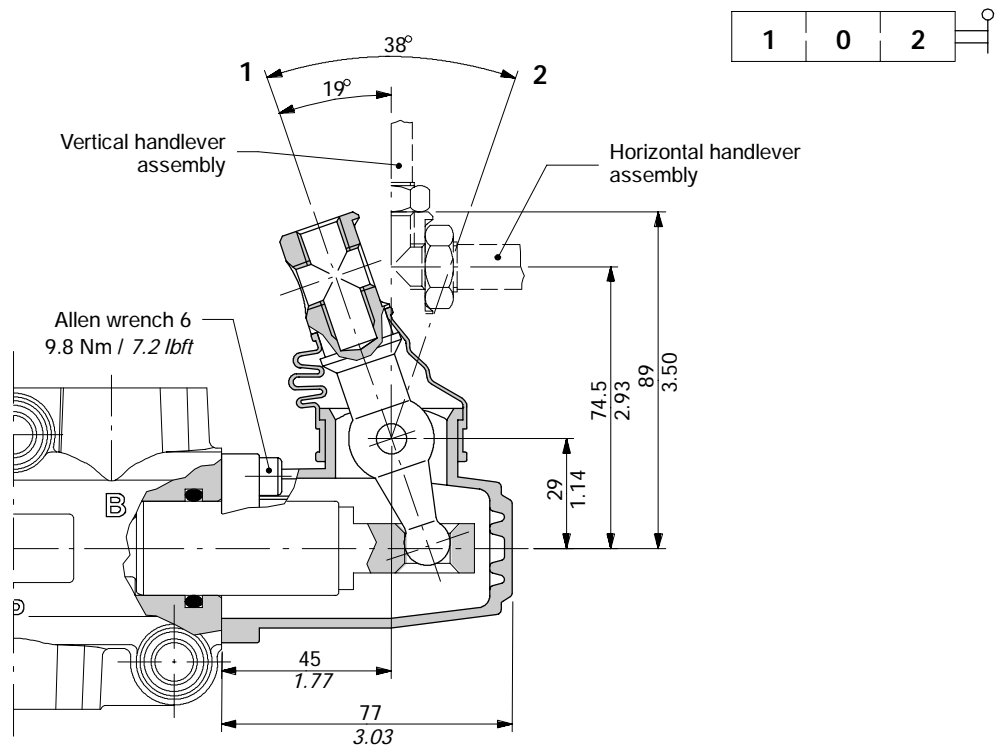
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



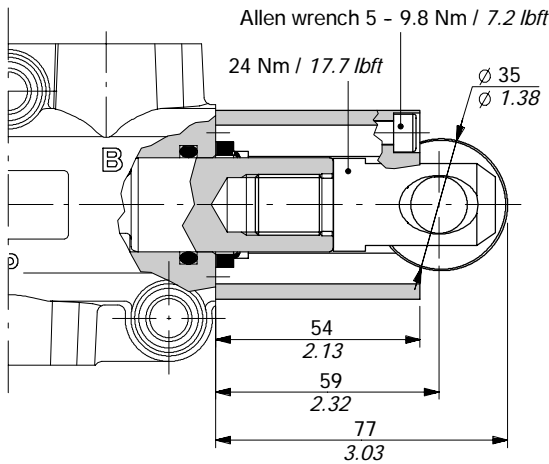
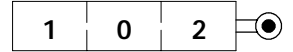
L lever control

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



CB cam control

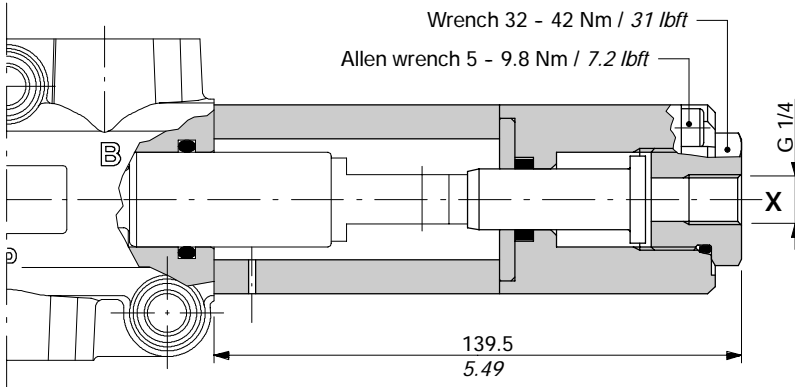
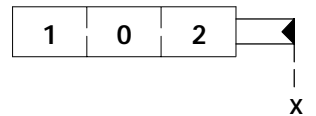
With bronze bearing; it must be coupled to 17 kit (see page 36).



ON/OFF hydraulic controls

IA2 kit

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

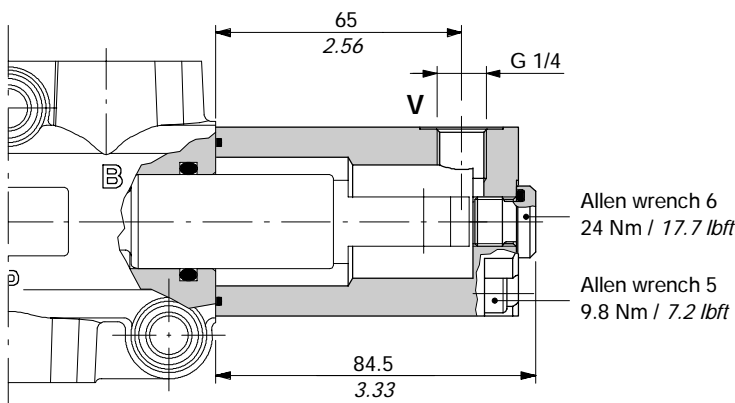
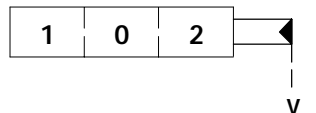


Operating features

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).

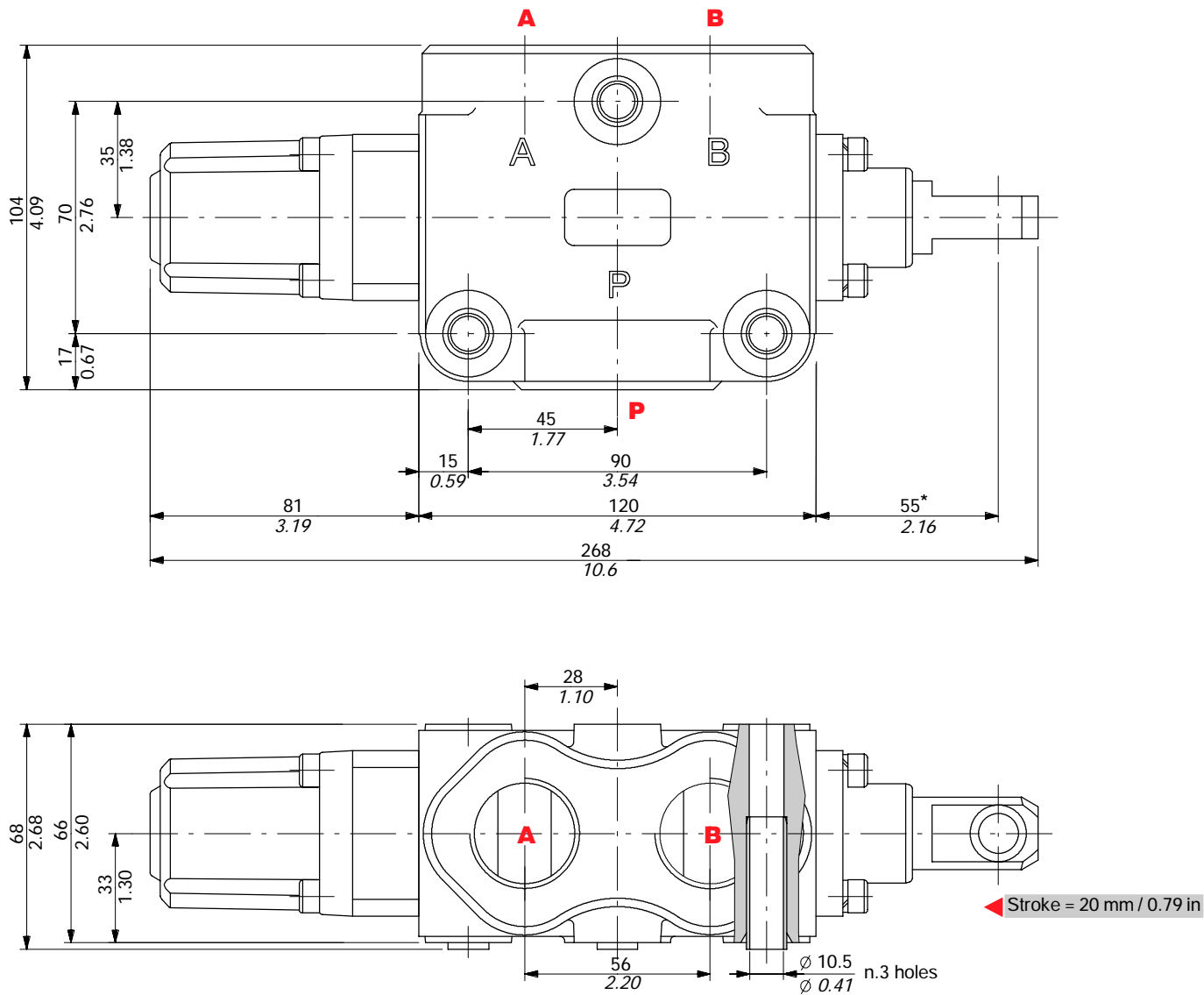


Operating features

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

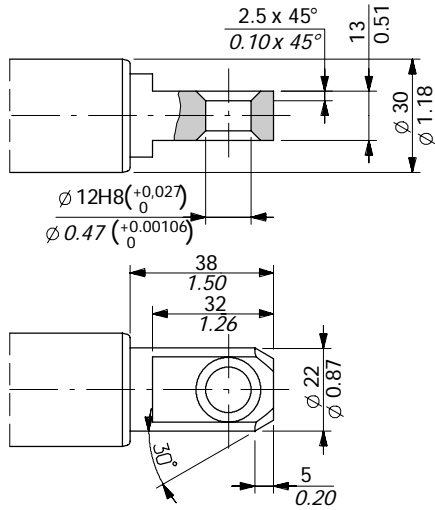
Dimensional data

3-way DF25/3 valve

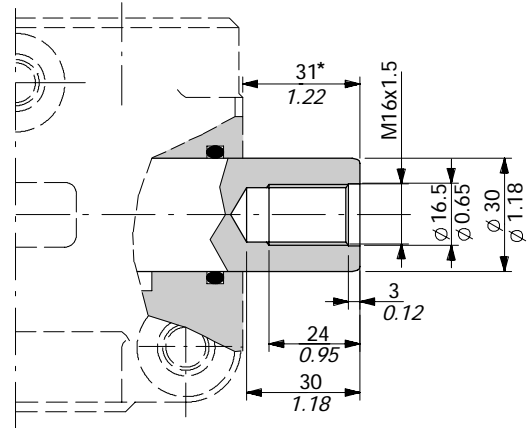


Spool end

Standard end



Rotary cam prearrangement

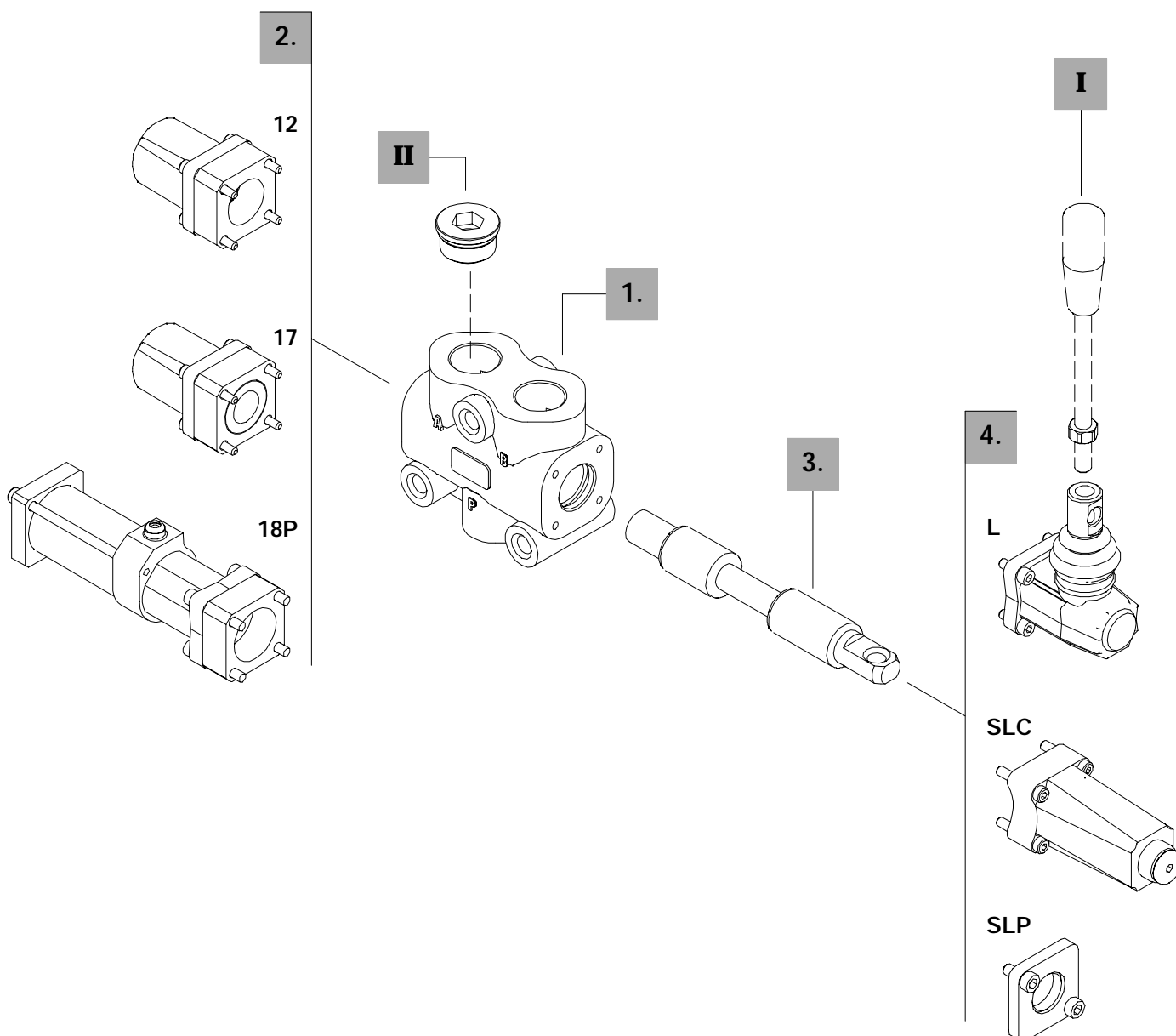


NOTA (*) - With spool out (positioner kit type 17)

Ordering codes

Description example :

| | | | | |
|----------------|---------------|----------|-----------|------------|
| Diverter valve | <u>DF25/3</u> | <u>A</u> | <u>17</u> | <u>SLP</u> |
| | 1. | 3. | 2. | 4. |



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 |
| 18E11 | 5V18125350 | 12VDC ON/OFF electro-hydraulic kit with spring return in position 2 |
| | 5V18125351 | 24VDC ON/OFF electro-hydraulic kit with spring return in position 2 |

4. Control kits

page 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 |

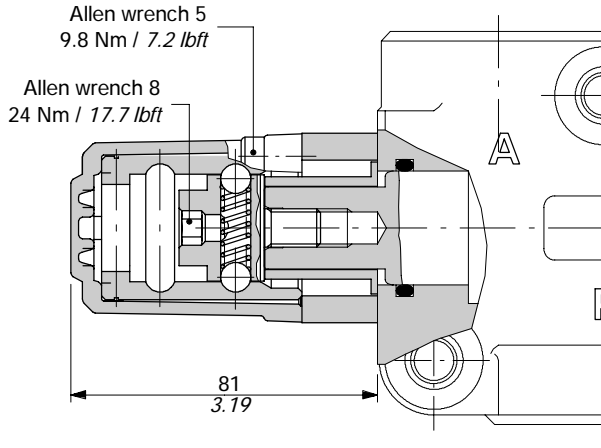
NOTE (*) - Codes are referred to **BSP** thread.

Positioner kits

With detent

12 kit

Detent in positions 1 and 2.



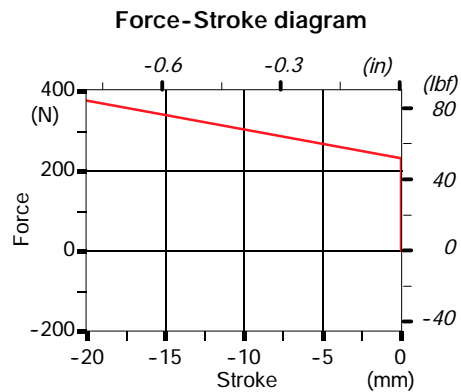
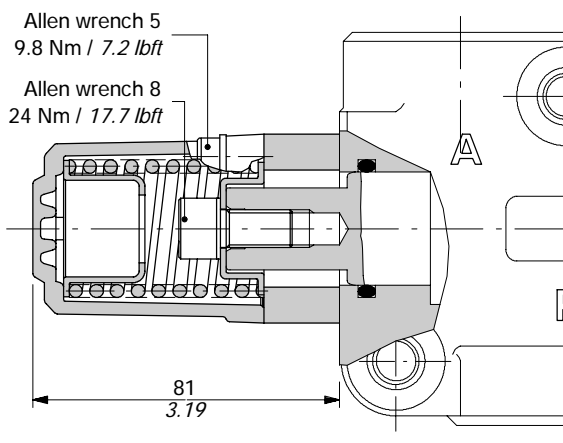
Operating features

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

With spring return

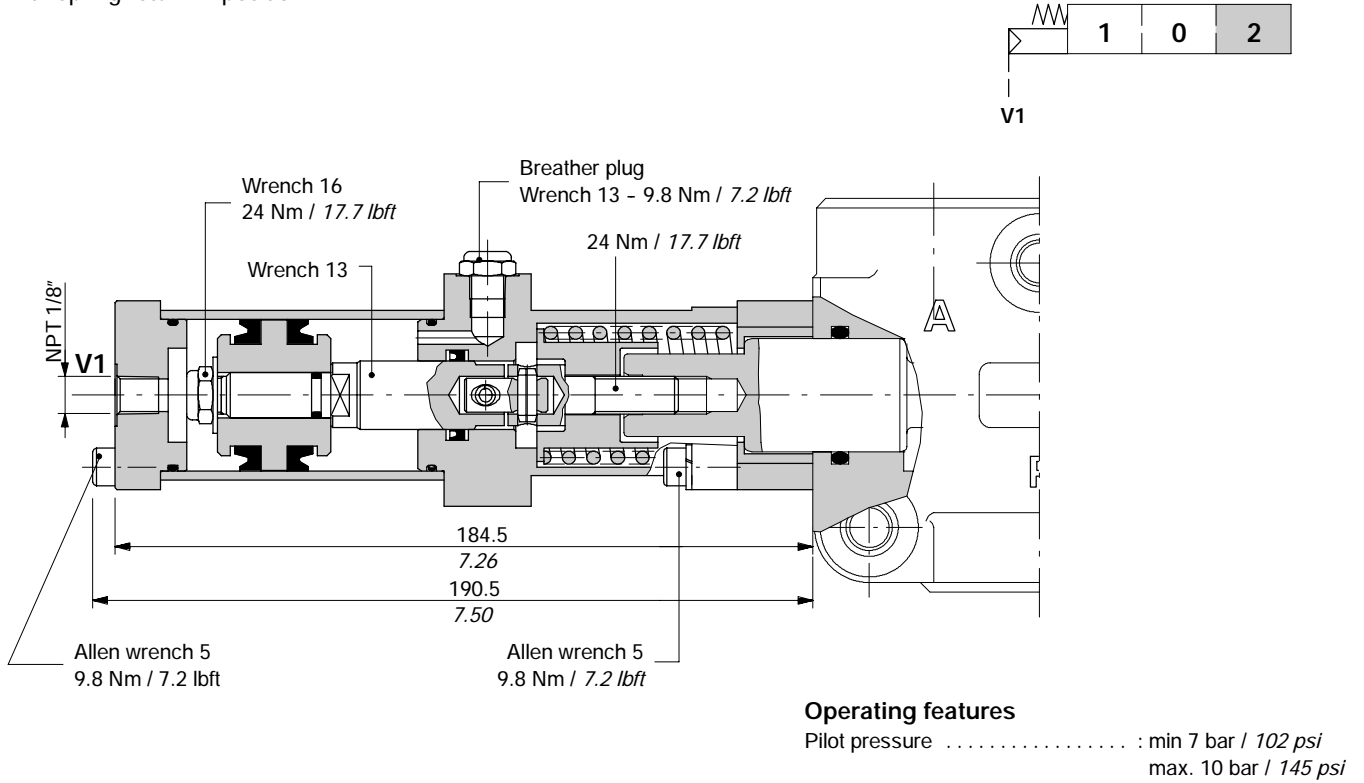
17 kit

Spring return in position 1.



ON/OFF pneumatic kit type 18P

With spring return in position 2.



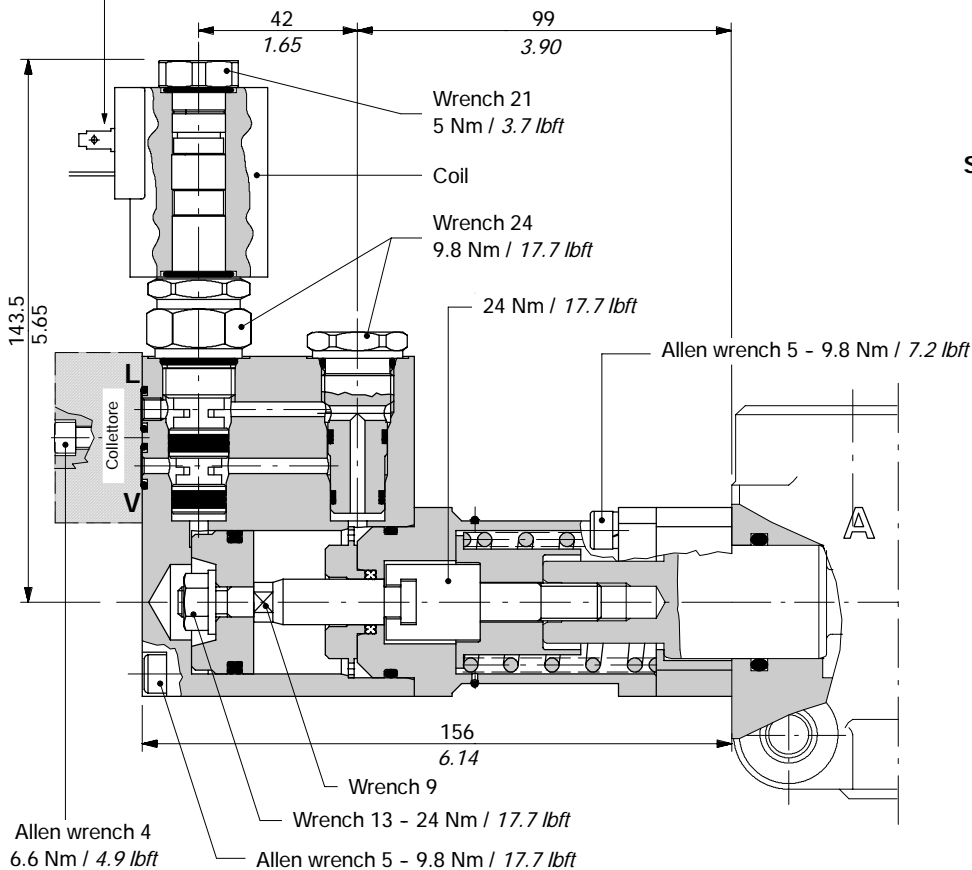
Positioner kits

ON/OFF hydraulic kit type 18E11

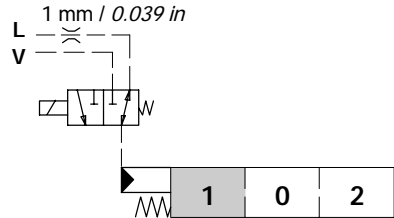
External pilot and drain, with spring return in position 2.

Connection ISO4400

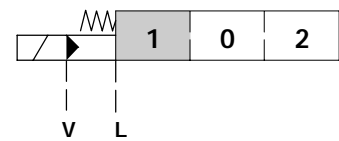
(needs C02 connector, see page 119)



Scheme



Scheme ISO 1219



Operating features

CONTROL

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

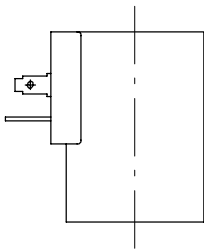
COIL

- 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%

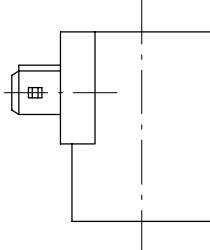
ON/OFF hydraulic kit type 18E11

| 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 |

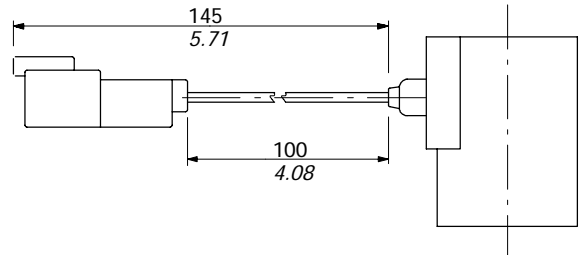
Coil with ISO4400 connection (weather protection IP65)



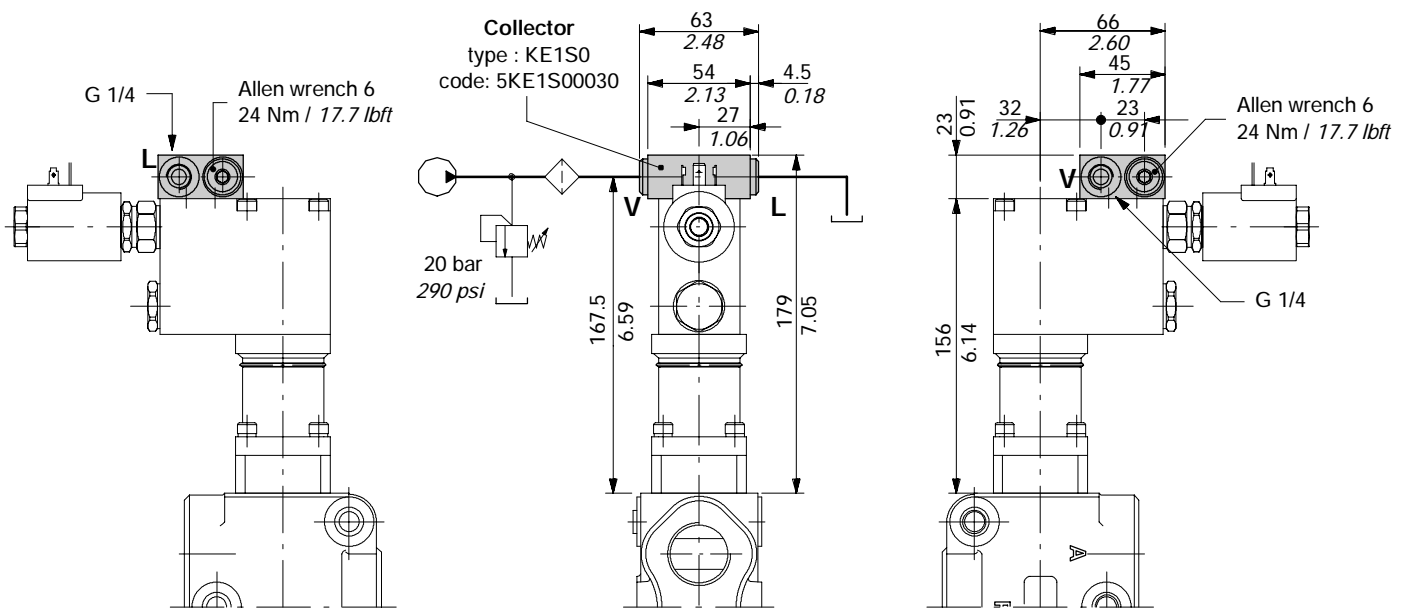
Coil with AMP JPT connection (weather protection IP65)



Coil with Deutsch DT connection (weather protection IP67)



Collector kit for external pilot and drain



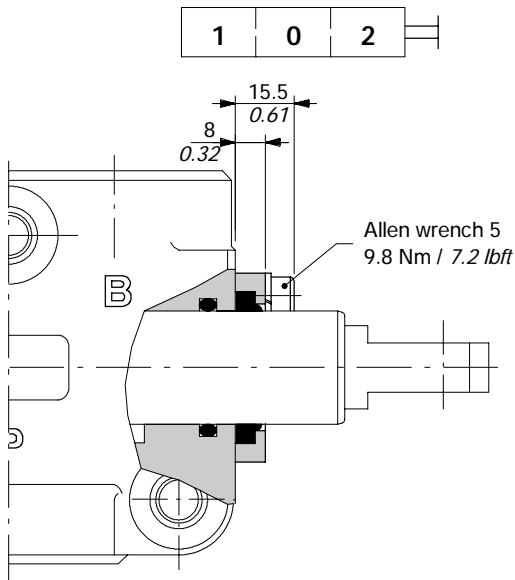
Description example:
DF25/3A18E11SLC/KE1S0-12VDC

Control kits

Controls prearrangement

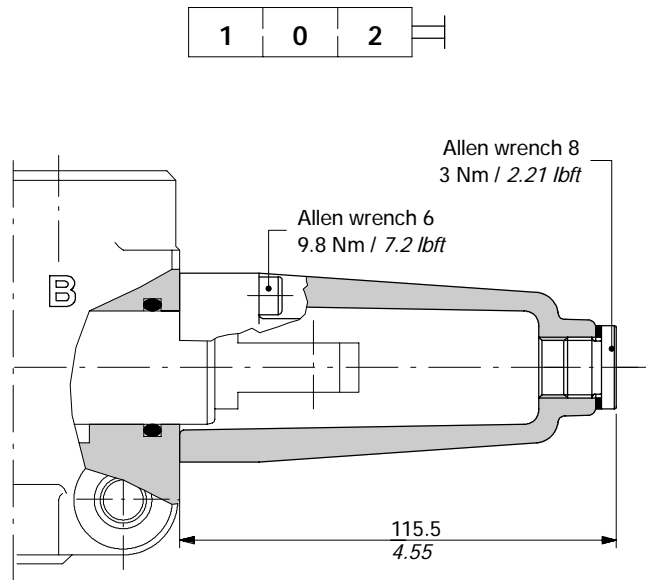
SLP kit

Mechanical control with dust-proof plate.



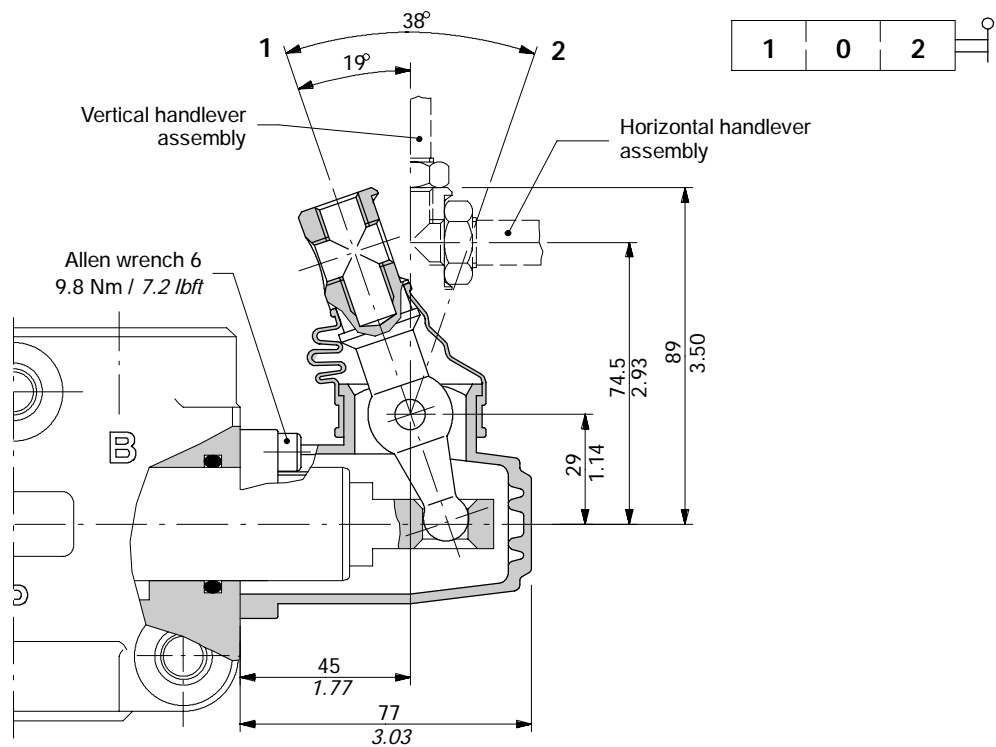
SLC kit

Protection cap usable with pneumatic and hydraulic spool positioner kits.



L lever control

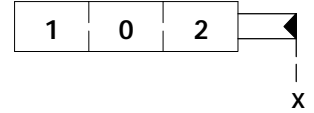
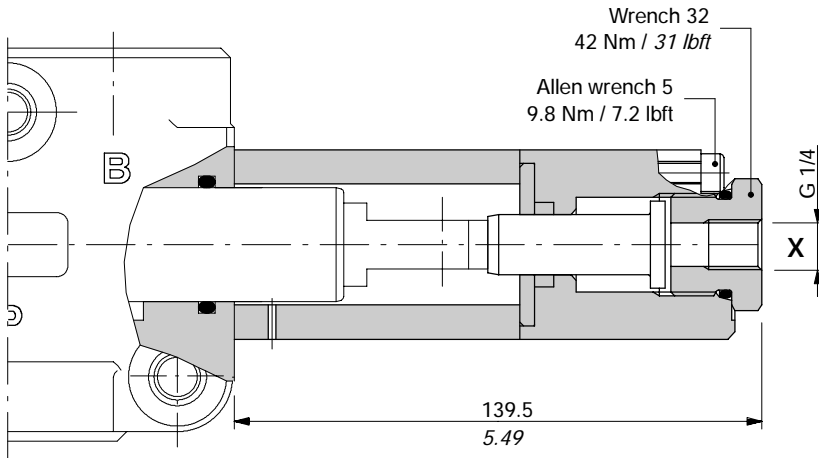
Alumium with protection boot lever pivot box; it can be rotated 180° (execution L180).



ON/OFF hydraulic controls

IA2 kit

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

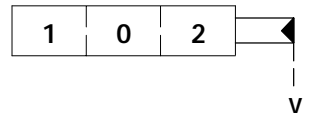
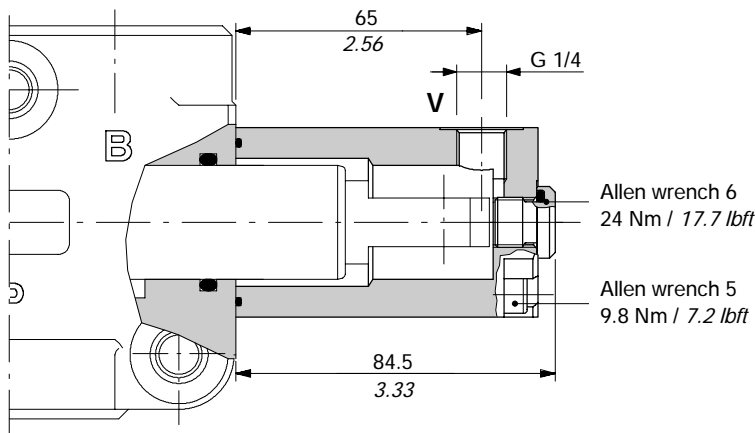


Operating features

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).



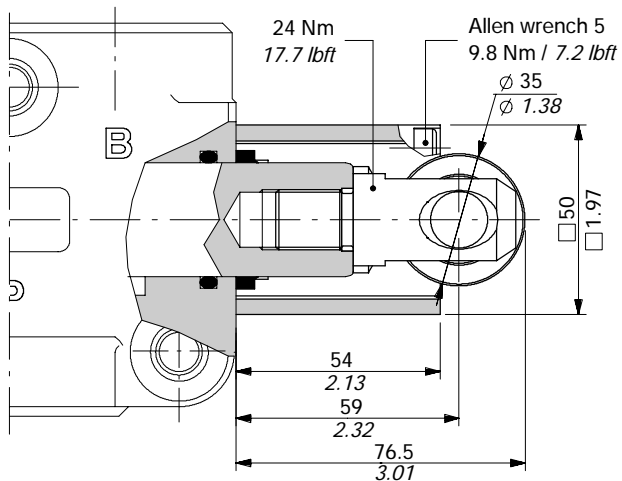
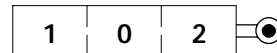
Operating features

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).

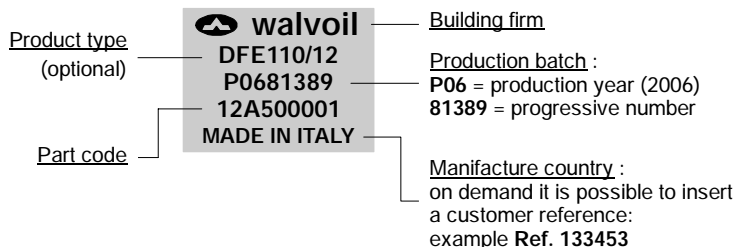


Product marking

All Walvoil diverter valves are marked according to EN 982 normative.

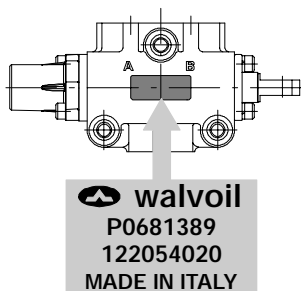
This marking includes: building firm, part code, production batch and manufacture country.

Marking example

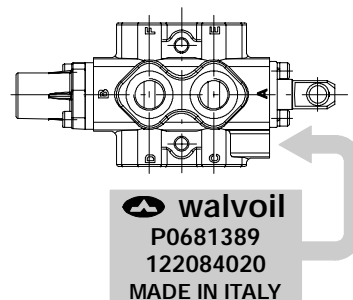


Marking zone depending on valve type, as indicate below.

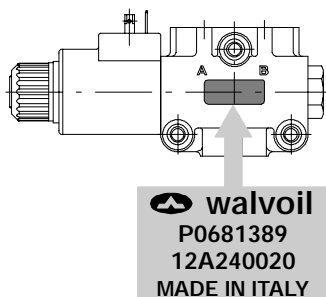
2-way and 3-way DF mechanical control type



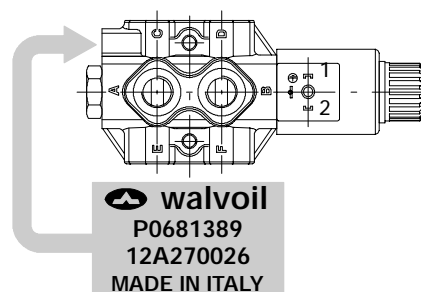
6-way DF mechanical control type



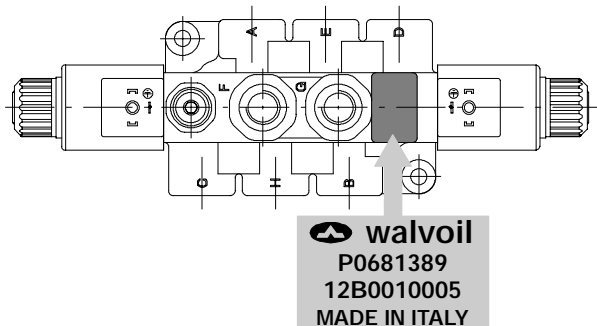
2-way and 3-way DFE solenoid control monoblock type



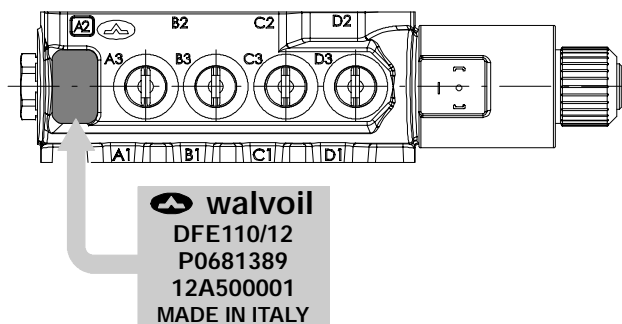
6-way DFE solenoid control monoblock type



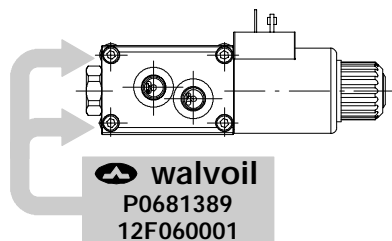
8-way DFE solenoid control monoblock type



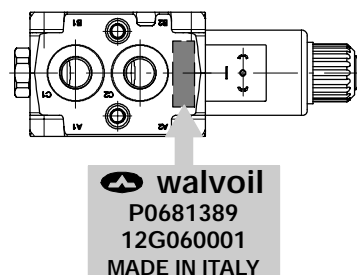
DFE110 solenoid control monoblock type



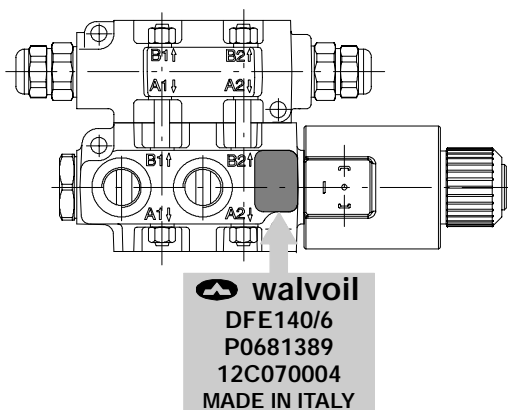
DFE080 solenoid control sectional type



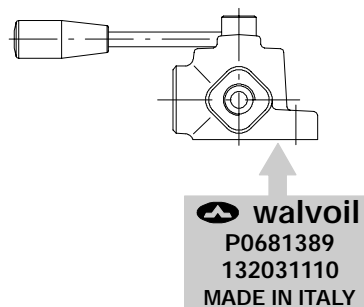
DFE100 solenoid control sectional type



DFE140 solenoid control sectional type



DH rotary control type



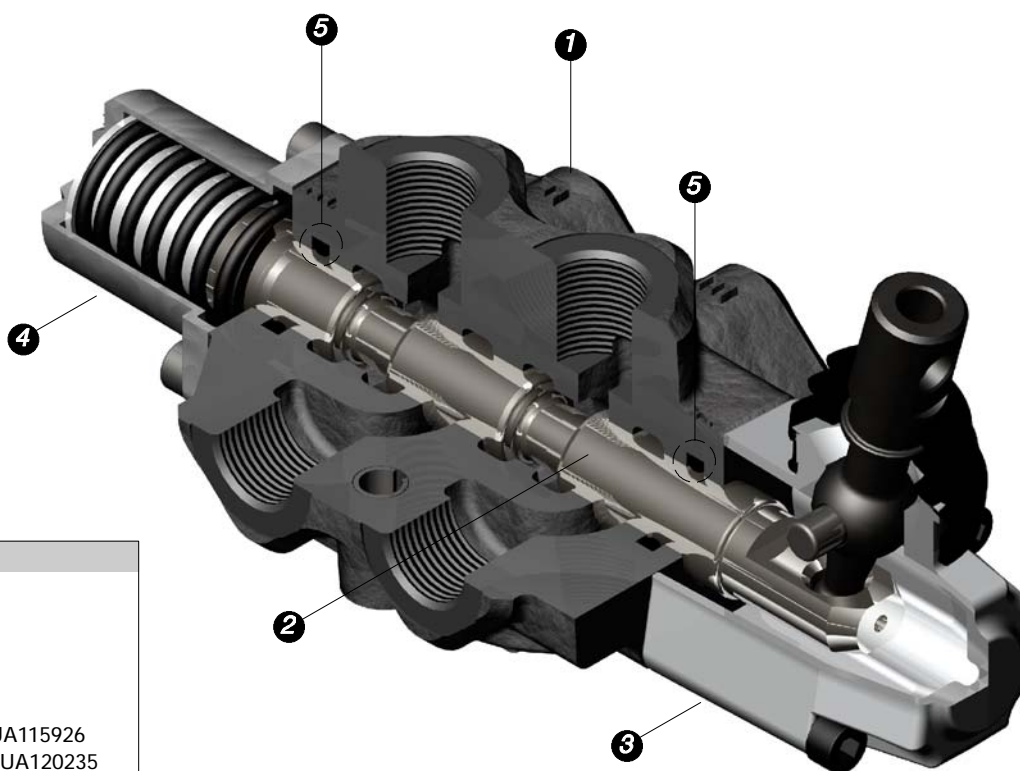
Installation and maintenance

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

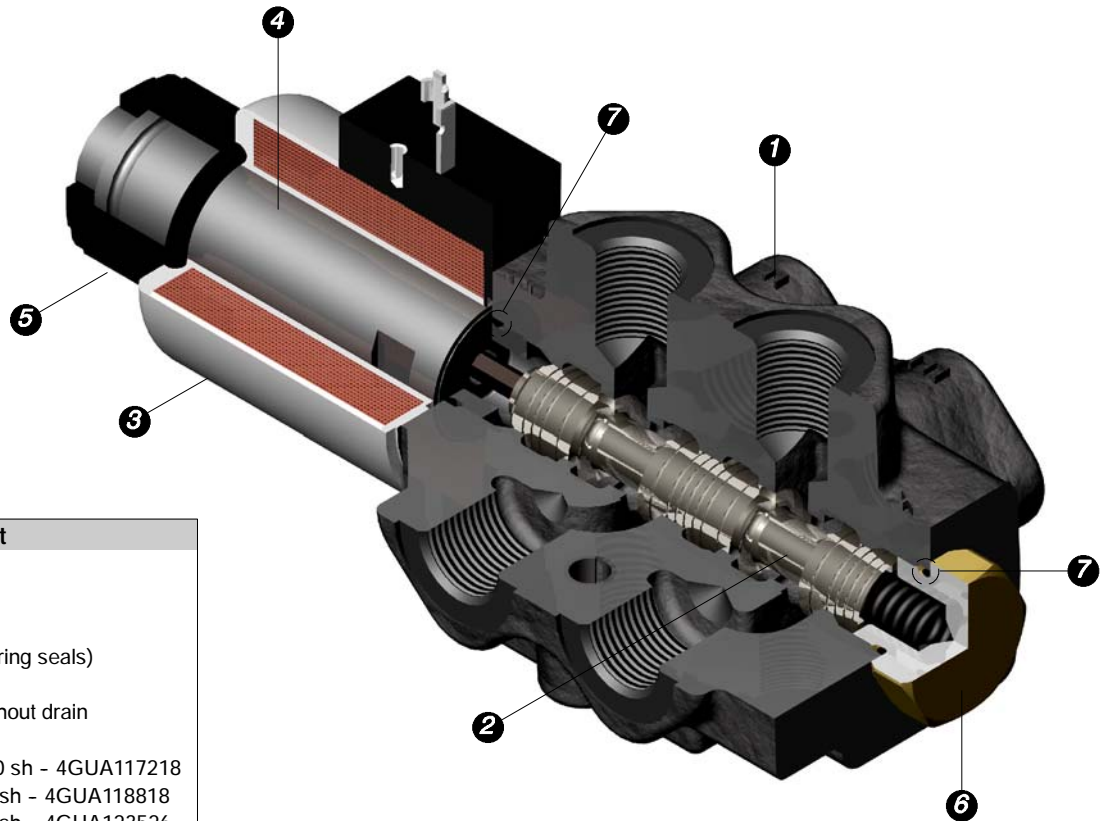
- 1) Diverter valve body
- 2) Spool
- 3) Control kit: lever box
- 4) Positioner kit
- 5) O-ring seals on spool

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

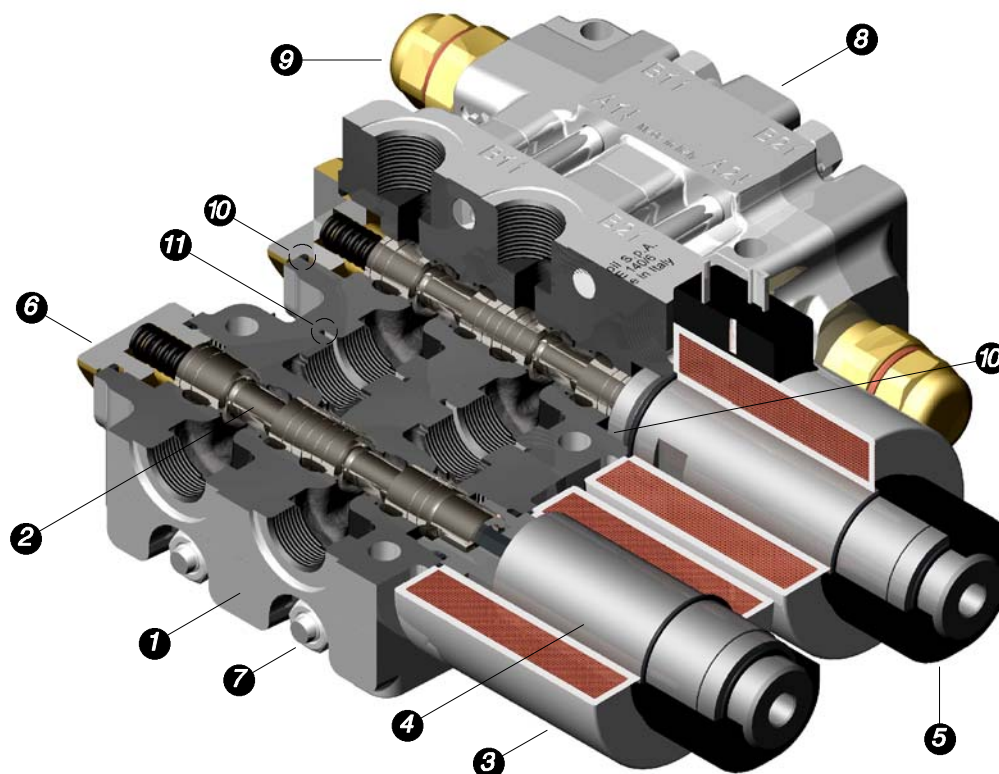


| Item list |
|---|
| 1) Diverter valve body |
| 2) Spool |
| 3) Coil |
| 4) Tube assembly (with O-ring seals) |
| 5) Lock ring |
| 6) Positioner kit, with or without drain |
| 7) O-ring seals on body |
| DFE052: 17.17x1.78 NBR 70 sh - 4GUA117218 |
| DFE10: 18.77x1.78 NBR 70 sh - 4GUA118818 |
| DFE20: 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. |
| | Spool blocked. | Remove the spool, clean it and check the oil contamination level. |
| Diverter valve don't commute. | 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

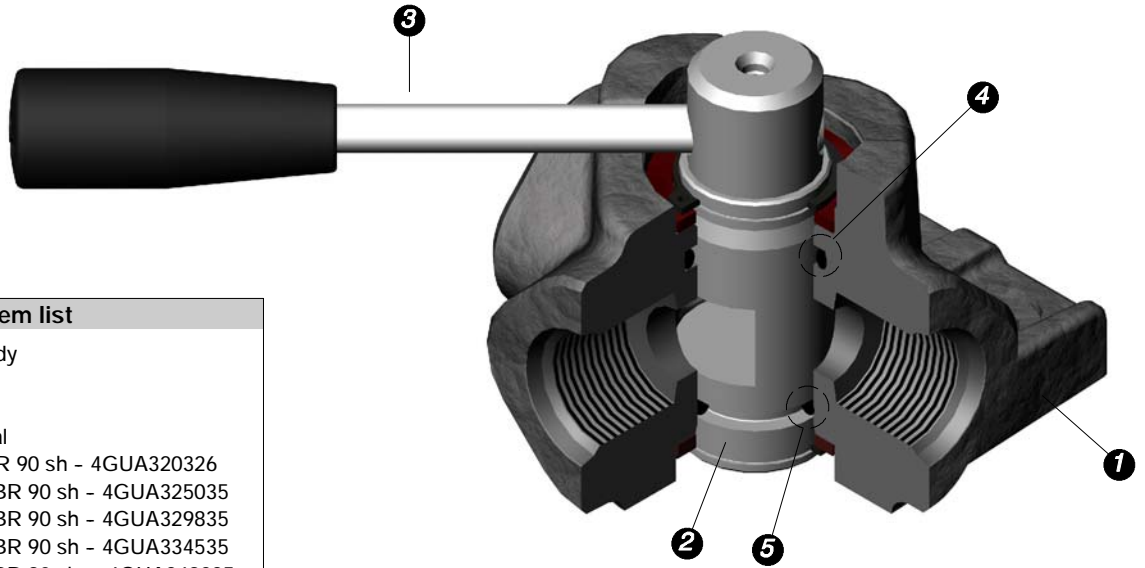
With ON/OFF solenoid control series DFE sectional type



| 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 assembly (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 tighten 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. |
| | Spool blocked. | Remove the spool, clean it and check the oil contamination level. |
| Diverter valve don't commute. | 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

| THREADS TYPE | DFE052 | | | DFE10 | | DFE110 | | DFE20 | |
|------------------------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------------|-----------------|
| | 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 (SAE 4) | 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 (SAE 4) |
| 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

| THREADS TYPE | DFE080 | | DFE100 | | DFE140 | |
|------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | 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 |

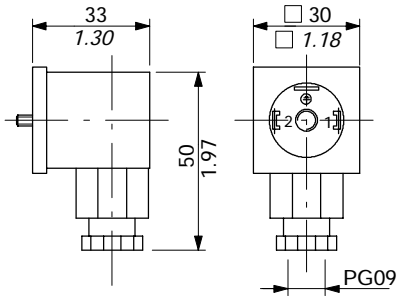
ROTARY CONTROL DIVERTER VALVES

| 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

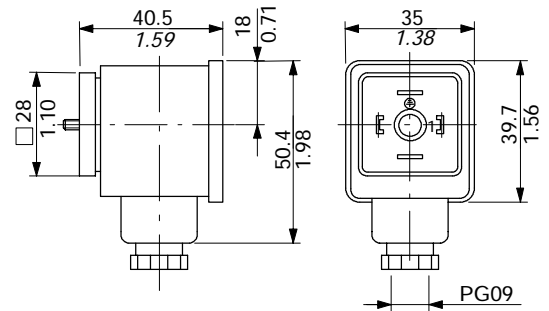
Type C02 code: 2X1001010

2P+T according to
ISO4400 / EN175301-803



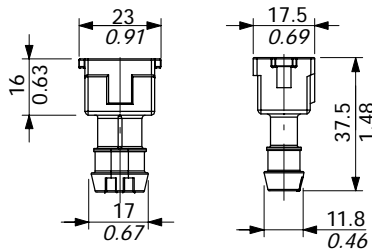
Type C04 code: 2X1001040

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



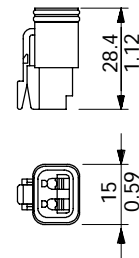
Type C08 code: 5CON003

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 |



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