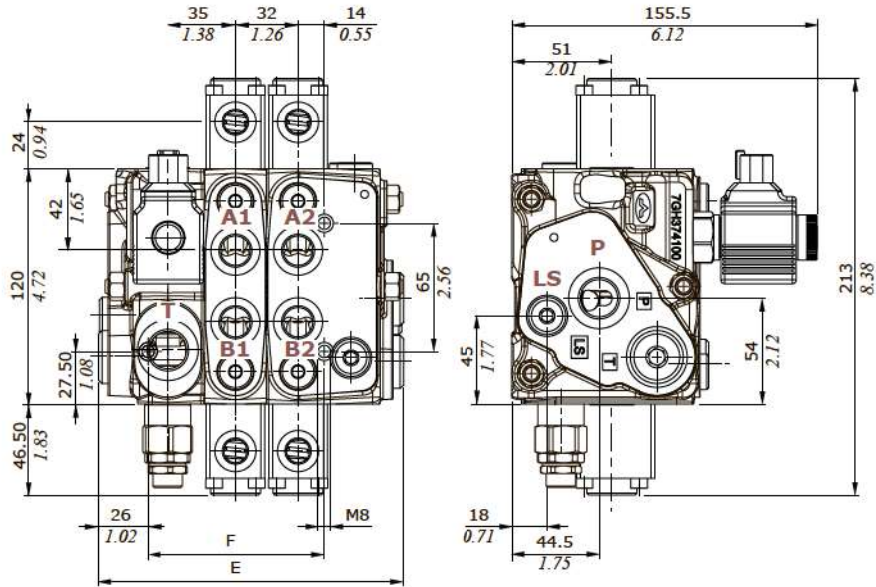
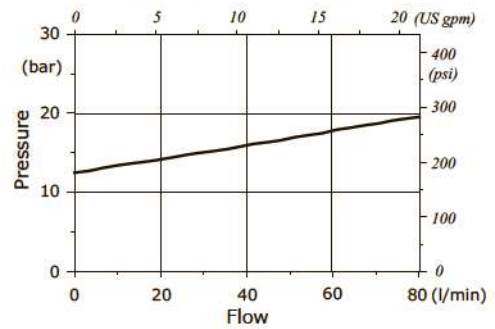


Dimensional data and performance

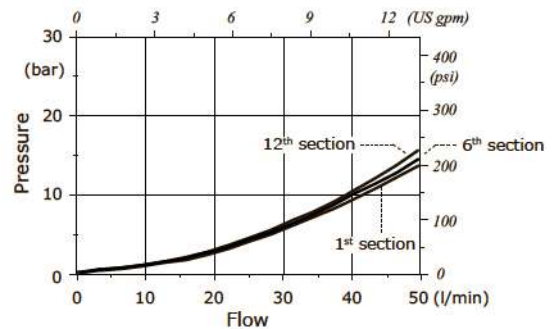


| Type | E | | F | |
|-----------|-----|-------|-------|-------|
| | mm | in | mm | in |
| DPX050/1 | 119 | 4.69 | 57.5 | 2.26 |
| DPX050/2 | 151 | 5.95 | 89.5 | 3.52 |
| DPX050/3 | 183 | 7.20 | 121.5 | 4.78 |
| DPX050/4 | 215 | 8.46 | 153.5 | 6.04 |
| DPX050/5 | 247 | 9.72 | 185.5 | 7.30 |
| DPX050/6 | 279 | 10.98 | 217.5 | 8.56 |
| DPX050/7 | 311 | 12.24 | 249.5 | 9.82 |
| DPX050/8 | 343 | 13.50 | 281.5 | 11.08 |
| DPX050/9 | 375 | 14.76 | 313.5 | 12.34 |
| DPX050/10 | 407 | 16.02 | 345.5 | 13.60 |
| DPX050/11 | 439 | 17.28 | 377.5 | 14.86 |
| DPX050/12 | 471 | 18.54 | 409.5 | 16.12 |

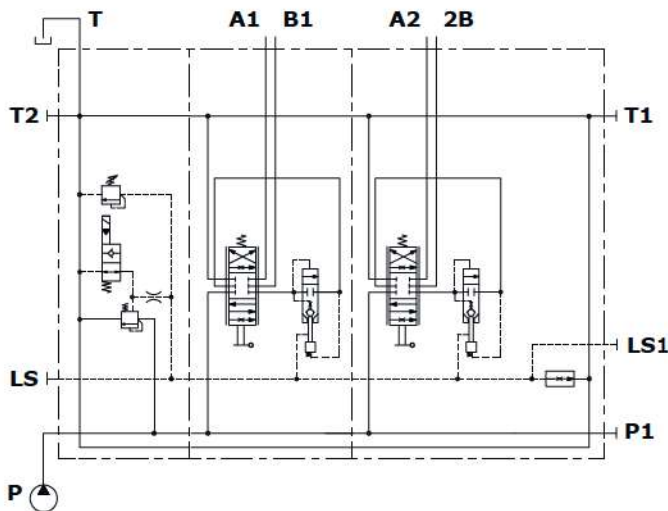
P→T Pressure drop inlet compensator (margin pressure)



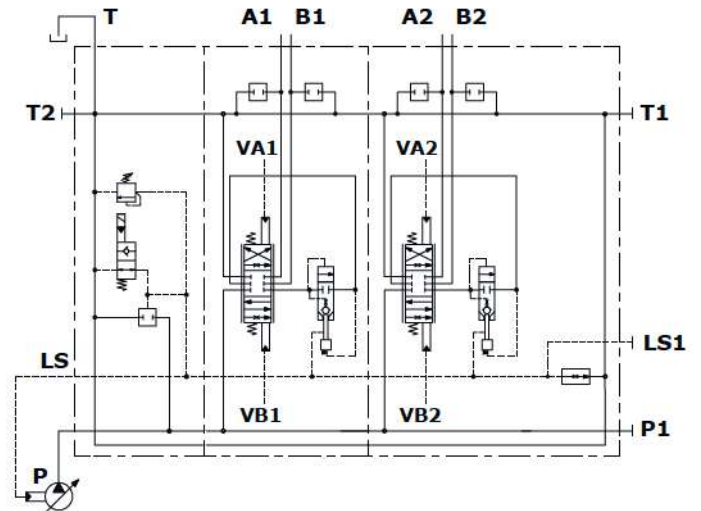
A(B)→T pressure drop (standard spool @ max.stroke)



Configuration example with mechanical and hydraulic controls

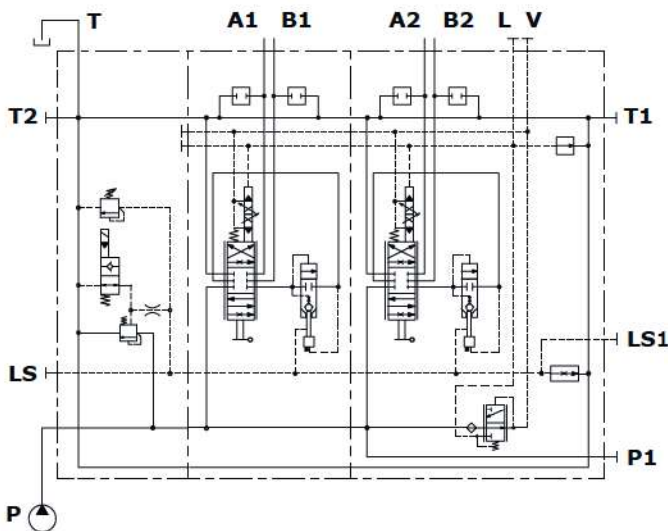


Open center circuit and lever control, with unloader valve, without port valve arrangement

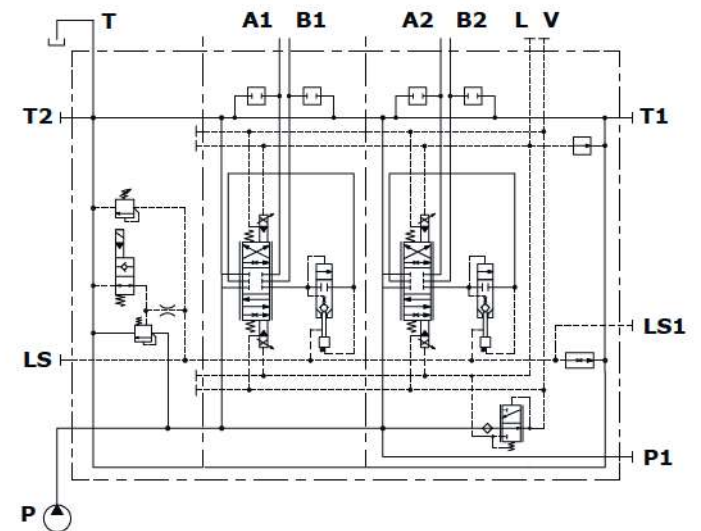


Closed center circuit and proportional hydraulic control, with unloader valve and port valve arrangement

Configuration example with electrohydraulic controls



Open center circuit and one-side proportional electrohydraulic control with lever, unloader valve, port valve arrangement and pressure reducing valve, internal pilot and drain



Open center circuit and two-side proportional electrohydraulic control, with unloader valve and port valve arrangement and pressure reducing valve, internal pilot and drain

Complete section ordering codes

DPX050/3/AM2(TGW3-175\ELN)/Q-104(40\40)-8L/Q-I104(40\40)-8IM/RQ-104(40\40)-8L-.....-12VDC - FPM

Nr. of working sections

1

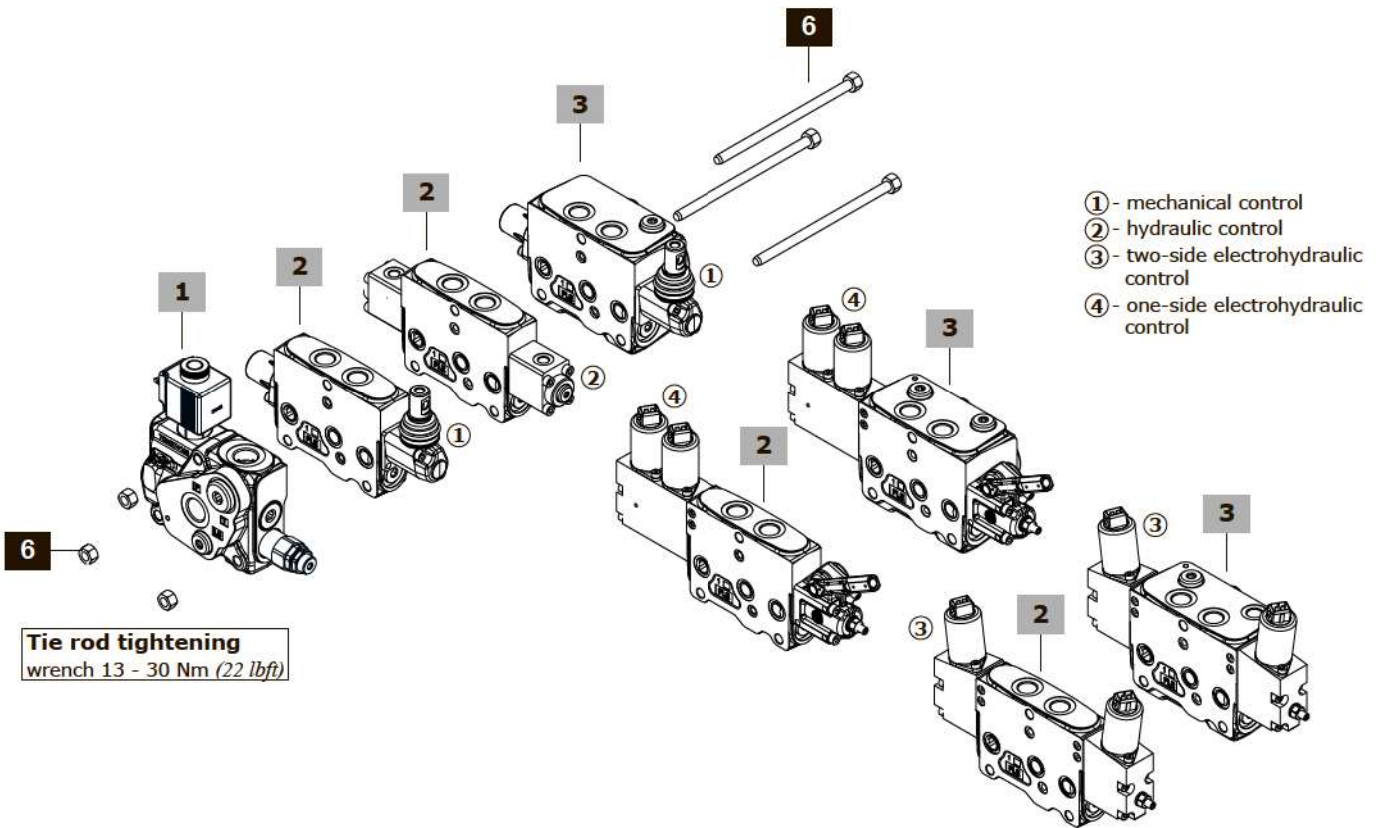
2

3

4

5

6



Complete section ordering codes

1 Complete inlet section *

The codes are referred to sections with FPM o-ring seals

Open Center circuit
 TYPE: **DPX050/AM2(TGW3-175/ELN)-12VDC-FPM**
 CODE: 660203001V
 DESCRIPTION: With compensator, pressure relief valve and unloader valve, with P-T-T2-LS ports (T2-LS plugged)
 TYPE: **DPX050/AM2(SO/TGW3-175/ELN)-12VDC-FPM**
 CODE: 660203003V
 DESCRIPTION: As previous with non-return flow limiter from inlet section to working section and by-pass valve
 TYPE: **DPX050/AM2(SU/TGW3-175/ELN)-12VDC-FPM**
 CODE: 660203002V
 DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

Closed Center circuit
 TYPE: **DPX050/AN2(TGW3-175/ELN)-12VDC-FPM**
 CODE: 660203004V
 DESCRIPTION: Without compensator, with pressure relief valve and unloader valve, with P-T-T2-LS ports (T2 plugged)
 TYPE: **DPX050/AN2(SO/TGW3-175/ELN)-12VDC-FPM**
 CODE: 660203006V
 DESCRIPTION: As previous with non-return flow limiter from inlet section to working section and by-pass valve
 TYPE: **DPX050/AN2(SU/TGW3-175/ELN)-12VDC-FPM**
 CODE: 660203005V
 DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

2 Complete working section *

The codes are referred to sections with FPM o-ring seals

Mechanical control
 TYPE: **DPX050/Q-104(40/40)-8L-FPM**
 CODE: 660113001V
 DESCRIPTION: Lever control without port valve arrangement
 TYPE: **DPX050/P-104(40/40)-8L.U3T-FPM**
 CODE: 660103001V
 DESCRIPTION: As previous with port valve arrangement

Proportional hydraulic control
 TYPE: **DPX050/Q-I104(40/40)-8IM-FPM**
 CODE: 660113002V
 DESCRIPTION: Without port valve arrangement
 TYPE: **DPX050/P-I104(40/40)-8IM.U3T-FPM**
 CODE: 660103002V
 DESCRIPTION: With port valve arrangement

Two-side proportional electrohydraulic control
 TYPE: **DPX050/QE-I104(40/40)-8EB3F3-12VDC-FPM**
 CODE: 660113003V
 DESCRIPTION: With spool stroke limiter, without port valve arrangement
 TYPE: **DPX050/PE-I104(40/40)-8EB3F3.U3T-12VDC-FPM**
 CODE: 660103003V
 DESCRIPTION: As previous with port valve arrangement

One-side proportional electrohydraulic control
 TYPE: **DPX050/QZ-I104(40/40)-8EZ3LQF3-12VDC-FPM**
 CODE: 660113005V
 DESCRIPTION: With lever and spool stroke limiter, without port valve arrangement
 TYPE: **DPX050/PZ-I104(40/40)-8EZ3LQF3.U3T-12VDC-FPM**
 CODE: 660113006V
 DESCRIPTION: As previous with port valve arrangement

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

3 Complete working section with outlet *

The codes are referred to sections with FPM o-ring seals

Mechanical control
 TYPE: **DPX050/RQ-104(40/40)-8L-FPM**
 CODE: 660303001V
 DESCRIPTION: Lever control, with bleed valve and P1-T1-LS1 side ports (plugged), without port valves arrangement
 TYPE: **DPX050/RP-104(40/40)-8L.U3T-FPM**
 CODE: 660303003V
 DESCRIPTION: As previous with port valve arrangement

Hydraulic control
 TYPE: **DPX050/RQ-I104(40/40)-8IM-FPM**
 CODE: 660303011V
 DESCRIPTION: With bleed valve and P1-T1-LS1 side ports (plugged), without port valve arrangement
 TYPE: **DPX050/RP-I104(40/40)-8IM.U3T-FPM**
 CODE: 660303012V
 DESCRIPTION: As previous with port valve arrangement

Two-side proportional electrohydraulic control
 TYPE: **DPX050/RQE-I104(40/40)-8EB3F3-12VDC-FPM**
 CODE: 660303005V
 DESCRIPTION: With spool stroke limiter, bleed valve, pressure reducing valve and P1-T1-LS1 side ports (plugged), V pilot and L drain ports plugged, without port valve arrangement
 TYPE: **DPX050/RPER-I104(40/40)-8EB3F3.U3T-12VDC-FPM**
 CODE: 660303006V
 DESCRIPTION: As previous with port valve arrangement

One-side proportional electrohydraulic control
 TYPE: **DPX050/RQZ-I104(40/40)-8EZ3LQF3-12VDC-FPM**
 CODE: 660303018V
 DESCRIPTION: With lever and spool stroke limiter, bleed valve, pressure reducing valve and P1-T1-LS1 side ports (plugged), V pilot and L drain ports plugged, without port valve arrangement
 TYPE: **DPX050/RPZ-I104(40/40)-8EZ3LQF3.U3T-12VDC-FPM**
 CODE: 660303019V
 DESCRIPTION: As previous with port valves arrangement

4 Valve threading

Only specify if it is different from BSP standard (see page 6).

5 Voltage

Specify the voltage of electric devices.

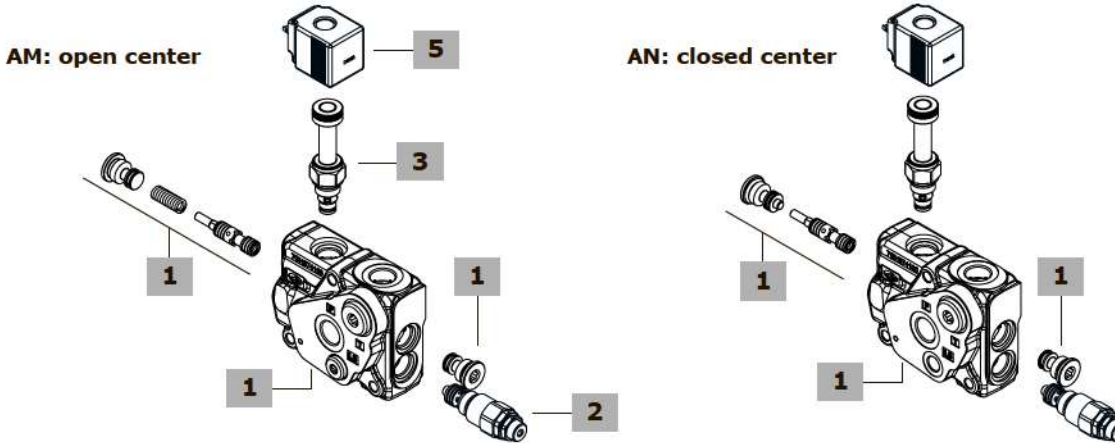
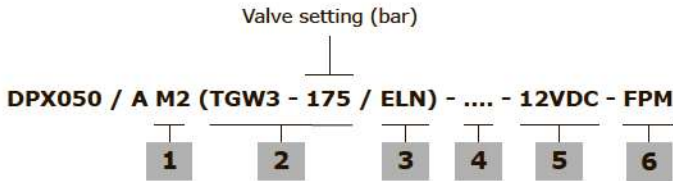
6 Seals

| TYPE | DESCRIPTION |
|------------|----------------------------|
| FPM | FPM o-ring seals; standard |
| NBR | NBR o-ring seals |

7 Assembling kit

| CODE | DESCRIPTION |
|------------|--|
| 5TIR108125 | Tie rod kit for 1 working section directional valve |
| 5TIR108157 | Tie rod kit for 2 working section directional valve |
| 5TIR108192 | Tie rod kit for 3 working section directional valve |
| 5TIR108222 | Tie rod kit for 4 working section directional valve |
| 5TIR108253 | Tie rod kit for 5 working section directional valve |
| 5TIR108285 | Tie rod kit for 6 working section directional valve |
| 5TIR108320 | Tie rod kit for 7 working section directional valve |
| 5TIR108349 | Tie rod kit for 8 working section directional valve |
| 5TIR108381 | Tie rod kit for 9 working section directional valve |
| 5TIR108413 | Tie rod kit for 10 working section directional valve |
| 5TIR108446 | Tie rod kit for 11 working section directional valve |
| 5TIR108477 | Tie rod kit for 12 working section directional valve |

Inlet section part ordering codes



1 Inlet section kit* page 13

The codes are referred to sections with FPM o-ring seals

Open Center circuit

TYPE: **DPX050/M2/EL-FPM** CODE: 5FIA150340V

DESCRIPTION: With P-T-T2-LS ports (T2-LS plugged) arranged for unloader valve

TYPE: **DPX050/M2(SU)/EL-FPM** CODE: 5FIA150330V

DESCRIPTION: As previous one with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX050/M2(SO)/EL-FPM** CODE: 5FIA150331V

DESCRIPTION: As previous one with non return flow limiter from inlet section to working section and by-pass valve

Closed Center circuit

TYPE: **DPX050/N2/EL-FPM** CODE: 5FIA150341V

DESCRIPTION: With P-T-T2-LS ports, arranged for unloader valve (T2 plugged)

TYPE: **DPX050/N2(SU)/EL-FPM** CODE: 5FIA150332V

DESCRIPTION: As previous one with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX050/N2(SO)/EL-FPM** CODE: 5FIA150333V

DESCRIPTION: As previous one with non return flow limiter from inlet section to working section and by-pass valve

2 Main pressure relief valve page 15

The codes are referred to parts with FPM o-ring seals

Valves standard setting is referred to 5 l/min (1.3 US gpm) flow.

| TYPE | CODE | DESCRIPTION |
|------------|-------------|---|
| (TGW2-80) | OMC09002009 | Range 10-120 bar (145-1750 psi) std setting 80 bar (1160 psi) |
| (TGW3-175) | OMC09002007 | Range 40-220 bar (580-3200 psi) std setting 175 bar (2550 psi) |
| (TGW4-250) | OMC09002005 | Range 200-350 bar (2900-5100 psi) std setting 250 bar (3600 psi) |
| SV | XTAP524340V | Relief valve blanking plug |

3 Solenoid operated unloading valve page 15

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|------|-------------|--|
| ELN | 0EF08002015 | Without emergency override |
| ELV | 0EF08002017 | With screw type emergency override |
| ELP | 0EF08002010 | With push-button emergency override |
| ELT | 0EF08002016 | With "twist & push" emergency override |
| LT | XTAP510320V | Unloading valve blanking plug |

4 Section threading

Only specify if it is different from BSP standard (see page 6).

5 Coil

| TYPE | CODE | DESCRIPTION |
|-------|-------------|---|
| 12VDC | 4SLE001200A | Coil type BER , ISO4400 conn., 12VDC |

For complete available coil list see page 125.

6 Seals

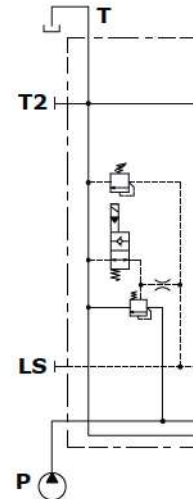
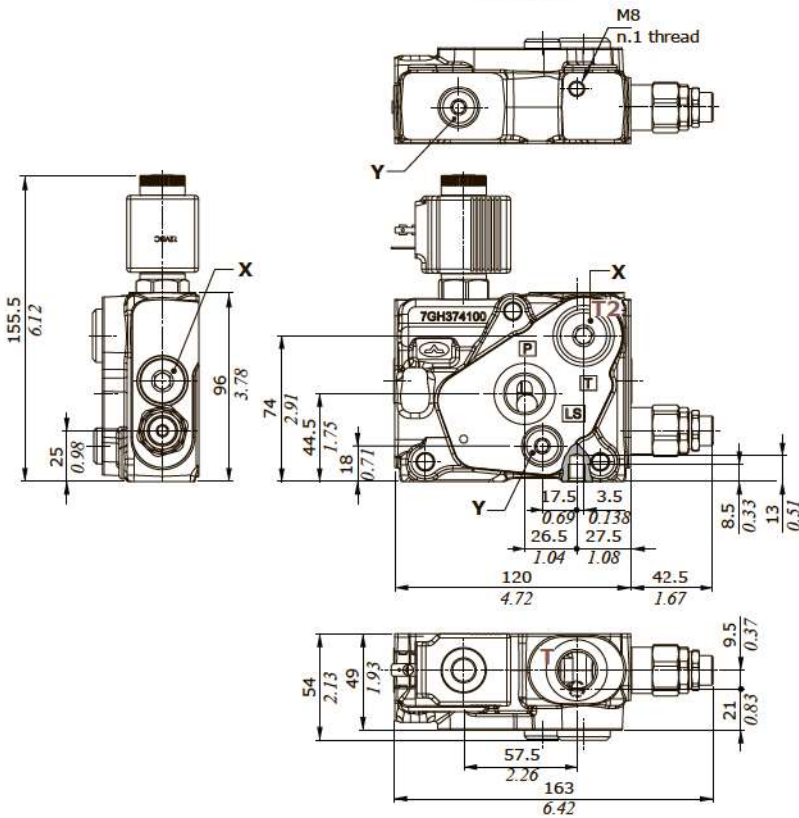
| TYPE | DESCRIPTION |
|------|----------------------------|
| FPM | FPM o-ring seals; standard |
| NBR | NBR o-ring seals |

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

Dimensions and hydraulic circuit

Example of M type Open Center section

M2 type



Wrenches and tightening torques

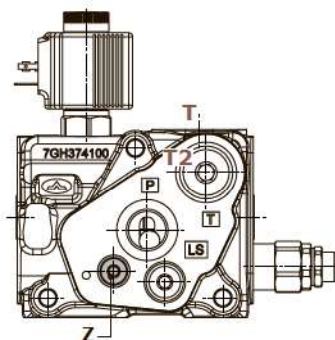
X = allen wrench 8 - 24 Nm (17.7 lbft)

Y = allen wrench 6 - 24 Nm (17.7 lbft)

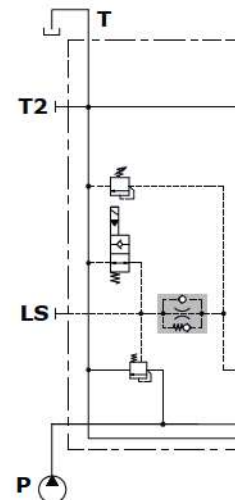
Z = allen wrench 4 - 9.8 Nm (7.2 lbft)

NOTE: for valves wrench and torque see related pages

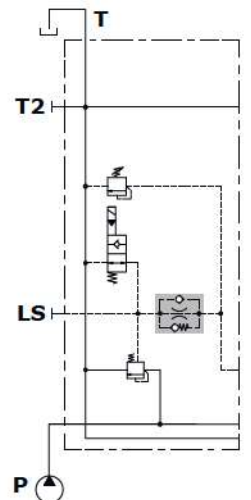
M2(SO) or M2(SU) type



M2(SU) type



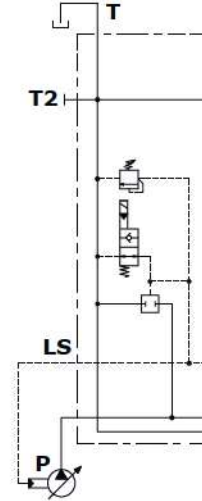
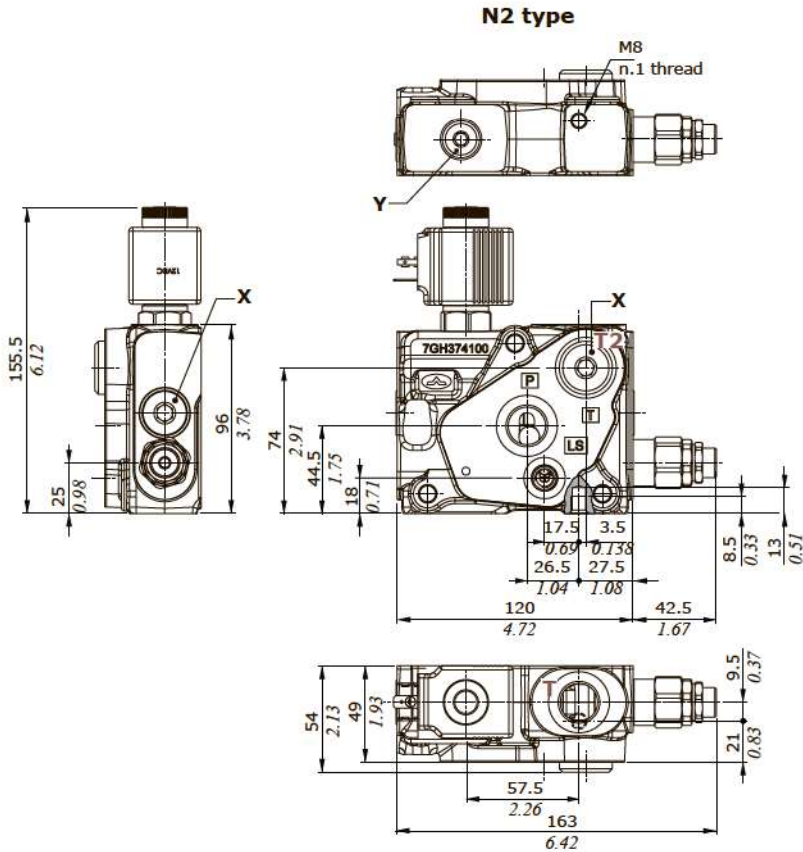
M2(SO) type



Inlet section

Dimensions and hydraulic circuit

Example of N type Closed Center section



Wrenches and tightening torques

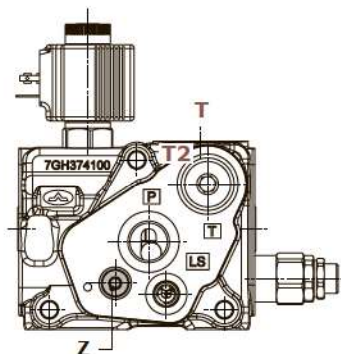
X = allen wrench 8 - 24 Nm (17.7 lbft)

Y = allen wrench 6 - 24 Nm (17.7 lbft)

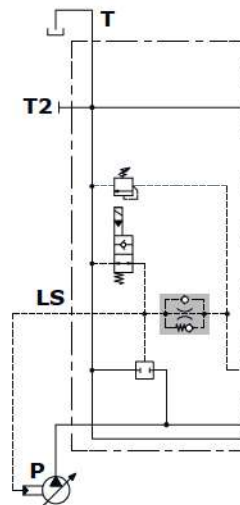
Z = allen wrench 4 - 9.8 Nm (7.2 lbft)

NOTE: for valves wrench and torque see related pages

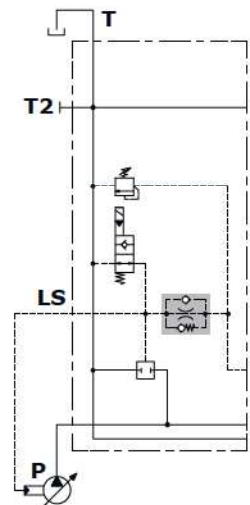
N2(SO) or N2(SU) type



N2(SU) type

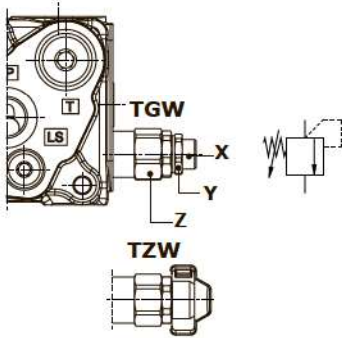


N2(SO) type

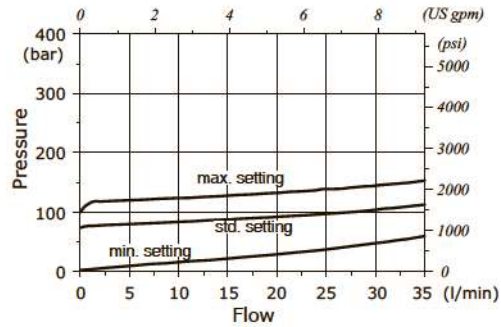


Main pressure relief valve

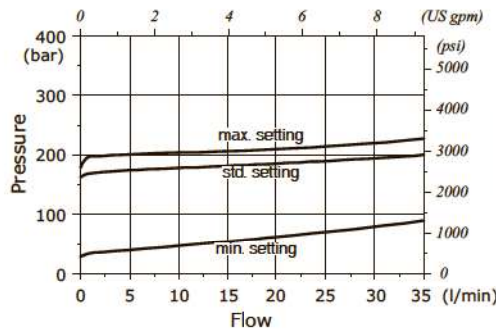
Setting types



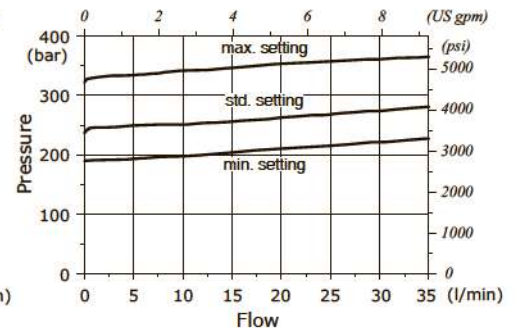
Setting range: TGW2 type



Setting range: TGW3 type



Setting range: TGW4 type

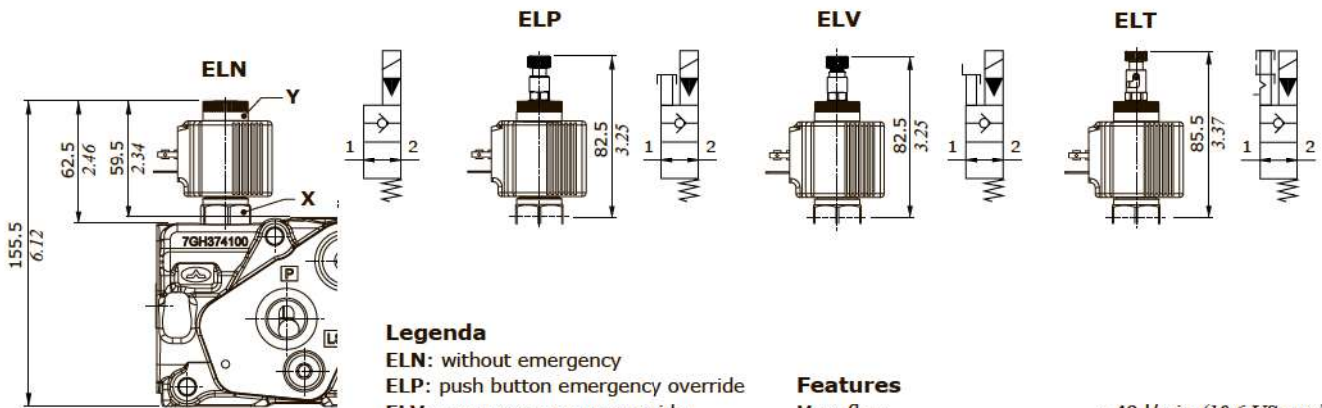


Legenda

- TGW: free setting
- TZW: valve set and locked (cap code 4COP126301, n.2 pcs) RAL3003 pigmented
- Wrenches and tightening torques**
- X = allen wrench 5
- Y = wrench 19 - 20 Nm (14.7 lbf)
- Z = wrench 24 - 42 Nm (31 lbf)

Solenoid operated unloading valve

Manual emergency types



Legenda

- ELN: without emergency
- ELP: push button emergency override
- ELV: screw emergency override
- ELT: "push&twist" emergency override

Wrenches and tightening torques

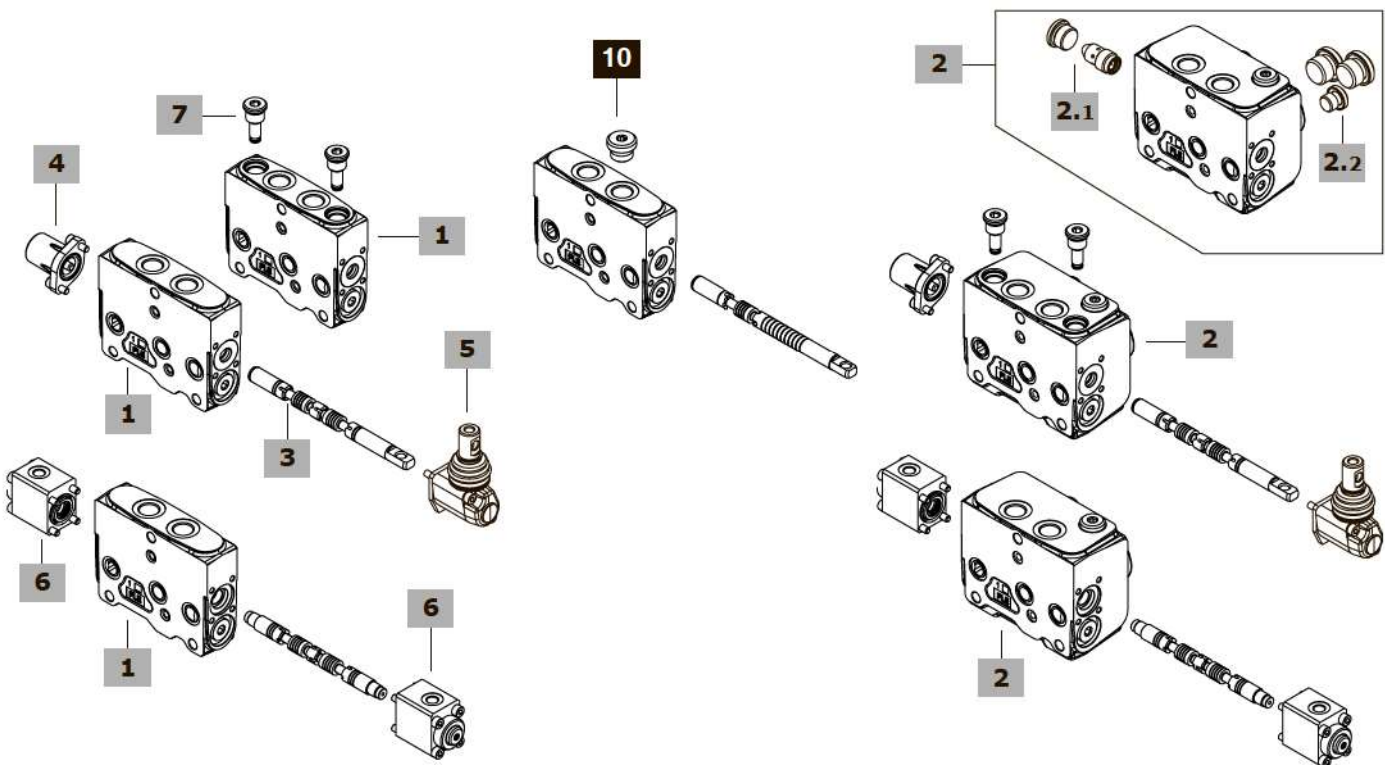
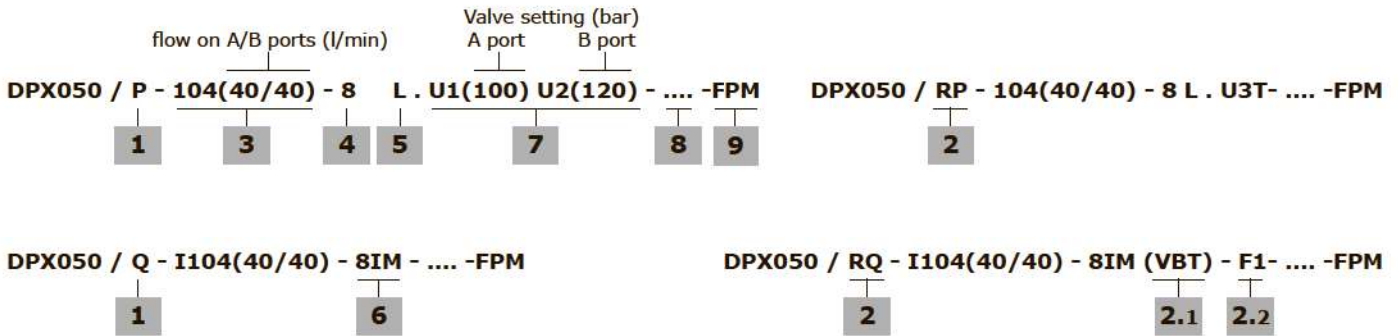
- X = wrench 24 - 30 Nm (22 lbf)
- Y = manual tightening

Features

- Max. flow 40 l/min (10.6 US gpm)
- Max. pressure 380 bar (5500 psi)
- Internal leakage 0.25 cm³/min @ 210 bar (0.015 in³/min @ 3050 psi)

For coil features and options see BER type coil at page 125.

Working and outlet section part ordering codes (mechanical and hydraulic)



1 Working section kit* page 20

The codes are referred to sections with FPM o-ring seals

For mechanical control

TYPE: DPX050/Q-FPM CODE: 5EL10A3010V

DESCRIPTION: Without port valve arrangement

TYPE: DPX050/P-FPM CODE: 5EL10A3000V

DESCRIPTION: With port valve arrangement

For hydraulic control

TYPE: DPX050/Q-IM-FPM CODE: 5EL10A3010AV

DESCRIPTION: Without port valve arrangement

TYPE: DPX050/P-IM-FPM CODE: 5EL10A3000AV

DESCRIPTION: With port valve arrangement

2 Working section kit with outlet* page 21

The codes are referred to sections with FPM o-ring seals

For mechanical control

TYPE: DPX050/RQ-FPM CODE: 5FIA20A310V

DESCRIPTION: With bleed valve, with P1-T1-LS1 plugged port, without port valve arrangement

TYPE: DPX050/RP-FPM CODE: 5FIA20A300V

DESCRIPTION: As previous one with port valve arrangement

For hydraulic control

TYPE: DPX050/RQ-IM-FPM CODE: 5FIA20A310AV

DESCRIPTION: With bleed valve, with P1-T1-LS1 plugged port, without port valve arrangement

TYPE: DPX050/RP-IM-FPM CODE: 5FIA20A300AV

DESCRIPTION: As previous one with port valve arrangement

Working and outlet section part ordering codes (mechanical and hydraulic)

2.1 Bleed valve page 22

| TYPE | CODE | DESCRIPTION |
|-------|------------|---------------------|
| (-) | X138850000 | Bleed valve |
| (VBT) | 4TAP416810 | Valve blanking plug |

Both options need cavity plug:
3XTAP822151 SAE8 plug, nr.1, FPM o-ring seals

2.2 Parts*

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|--------------------------------|------------|-----------------|
| <u>P1-T1-LS1 plugged ports</u> | | |
| - | XTAP727200 | G1/2 plug, nr.2 |
| | XTAP719160 | G1/4 plug, nr.1 |

P1-T1 plugged ports, LS1 open

| | | |
|----|------------|-----------------|
| F1 | XTAP727200 | G1/2 plug, nr.2 |
|----|------------|-----------------|

3 Spool page 23

Flow is referred to 14 bar (200 psi) stand-by (margin pressure)

| TYPE | CODE | DESCRIPTION |
|------|------|-------------|
|------|------|-------------|

For mechanical control

Double acting with A and B closed in neutral position, floating circuit with 13RZ type positioner (4 position)

| | | |
|---------|------------|-----------------------------|
| 105(50) | 3CUA110005 | 50 l/min (13 US gpm) flow |
| 104(40) | 3CUA110004 | 40 l/min (10.5 US gpm) flow |
| 103(30) | 3CUA110003 | 30 l/min (7.9 US gpm) flow |
| 102(20) | 3CUA110002 | 20 l/min (5.3 US gpm) flow |
| 101(10) | 3CUA110001 | 10 l/min (2.6 US gpm) flow |
| 106(5) | 3CUA110006 | 5 l/min (1.3 US gpm) flow |

Double acting with A and B partially to tank in neutral position

| | | |
|----------|------------|-----------------------------|
| 2H05(50) | 3CUA124005 | 50 l/min (13 US gpm) flow |
| 2H04(40) | 3CUA124004 | 40 l/min (10.5 US gpm) flow |
| 2H03(30) | 3CUA124003 | 30 l/min (7.9 US gpm) flow |
| 2H02(20) | 3CUA124002 | 20 l/min (5.3 US gpm) flow |
| 2H01(10) | 3CUA124001 | 10 l/min (2.6 US gpm) flow |
| 2H06(5) | 3CUA124006 | 5 l/min (1.3 US gpm) flow |

Single acting on A, B plugged: G3/8 plug is required

| | | |
|---------|------------|----------------------------|
| 305(50) | 3CUA131005 | 50 l/min (13 US gpm) flow |
| 302(20) | 3CUA131002 | 20 l/min (5.3 US gpm) flow |

For hydraulic control

Double acting with A and B closed in neutral position, floating circuit with 4 positions 13IMP type control

| | | |
|----------|------------|-----------------------------|
| I105(50) | 3CUA310005 | 50 l/min (13 US gpm) flow |
| I104(40) | 3CUA310004 | 40 l/min (10.5 US gpm) flow |
| I103(30) | 3CUA310003 | 30 l/min (7.9 US gpm) flow |
| I102(20) | 3CUA310002 | 20 l/min (5.3 US gpm) flow |
| I101(10) | 3CUA310001 | 10 l/min (2.6 US gpm) flow |
| I106(5) | 3CUA310006 | 5 l/min (1.3 US gpm) flow |

Double acting with A and B partially to tank in neutral position

| | | |
|-----------|------------|-----------------------------|
| I2H05(50) | 3CUA324005 | 50 l/min (13 US gpm) flow |
| I2H04(40) | 3CUA324004 | 40 l/min (10.5 US gpm) flow |
| I2H08(30) | 3CUA324008 | 30 l/min (7.9 US gpm) flow |
| I2H07(20) | 3CUA324007 | 20 l/min (5.3 US gpm) flow |
| I2H01(10) | 3CUA324001 | 10 l/min (2.6 US gpm) flow |
| I2H06(5) | 3CUA324006 | 5 l/min (1.3 US gpm) flow |

Single acting on A or B, other port plugged: G3/8 plug is required

| | | |
|---------------|------------|----------------------------|
| I305-I405(50) | 3CUA331005 | 50 l/min (13 US gpm) flow |
| I302-I402(20) | 3CUA331002 | 20 l/min (5.3 US gpm) flow |

10 Plug for single acting spool *

| CODE | DESCRIPTION |
|------------|-----------------------------|
| XTAP722160 | G3/8 plug, FPM o-ring seals |

4 "A" side spool positioners page 25

| TYPE | CODE | DESCRIPTION |
|------|------------|---|
| 7FT | 5V0710A001 | With friction and neutral position notch |
| 8 | 5V08102000 | 3 pos. with spring return to neutral position |
| 8F2 | 5V0810A001 | Spool stroke limiter on B port |
| 8D | 5V08102200 | External pin with M6 female thread |
| 8D2 | 5V08102220 | External pin with M8 male thread |
| 9BZ | 5V09202010 | Detent in position 1 |
| 10BZ | 5V10202010 | Detent in position 2 |
| 11BZ | 5V11202010 | Detent in positions 1 and 2 |
| 12 | 5V12102000 | 2 positions, detent in pos. 1 and 2 |

For floating circuit (standard spool)

| | | |
|------|------------|---|
| 13RZ | 5V13306020 | 4 pos., detent in 4 th position with spool in, spring return to neutral position |
|------|------------|---|

5 "B" side spool control kit page 27

| TYPE | CODE | DESCRIPTION |
|------|------------|---|
| L | 5LEV10A000 | Standard lever box |
| LF1 | 5LEV10A001 | As L, with spool stroke limiter on A port |
| SLP | 5COP150000 | Without lever with dust-proof plate |
| TQ | 5TEL10A100 | Flexible cable connection |

6 Proportional hydraulic control* page 28

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|--------|-------------|---|
| 8IM | 5IDR20A300V | Range 8-27 bar (116-392 psi) |
| 8IMX | 5IDR20A301V | Range 3.5-20 bar (51-290 psi) |
| 8IMF3 | 5IDR20A302V | Range 8-27 bar (116-392 psi), with spool stroke limiter on A and B ports |
| 8IMXF3 | 5IDR20A303V | Range 3.5-20 bar (51-290 psi), with spool stroke limiter on A and B ports |

For floating circuit (standard spool)

| | | |
|-------|-------------|--------------------------------------|
| 13IMP | 5IDR20A310V | Range 4-16.5-28 bar (58-239-406 psi) |
|-------|-------------|--------------------------------------|

7 Port valves page 36

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|------|-------------|----------------------|
| UT | XTAP518370V | Valve blanking plug |
| C | 5KIT411000V | Anticavitation valve |

Fixed setting antishock and anticavitation valves: setting is referred to 10 l/min (2.6 US gpm)

| | | |
|------------------|---------------|------------------|
| TYPE: U 100 | CODE: 5KIT308 | 100 V |
| └─ setting (bar) | | └─ setting (bar) |

SETTING:

| | | |
|--------------------|--------------------|--------------------|
| 40 bar (580 psi) | 50 bar (725 psi) | 63 bar (870 psi) |
| 80 bar (1150 psi) | 100 bar (1450 psi) | 120 bar (1750 psi) |
| 130 bar (1900 psi) | 140 bar (2050 psi) | 150 bar (2150 psi) |
| 165 bar (2400 psi) | 175 bar (2550 psi) | 185 bar (2700 psi) |
| 200 bar (2900 psi) | 210 bar (3050 psi) | 220 bar (3200 psi) |
| 235 bar (3400 psi) | 250 bar (3600 psi) | 270 bar (3900 psi) |
| 300 bar (4350 psi) | 340 bar (4950 psi) | |

8 Section threading

Only specify if it is different from BSP standard (see page 6).

9 Seals

| TYPE | DESCRIPTION |
|------|----------------------------|
| FPM | FPM o-ring seals; standard |
| NBR | NBR o-ring seals |

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

NOTE (-): "Type" omitted in section description

Working and outlet section part ordering codes (electrohydraulic)

DPX050 / PZ - I104(40/40) - 8EZ3 LQF3 . U1(100) U2(120) - - 12VDC - FPM

flow on A/B ports (l/min) Valve setting (bar)
A port B port

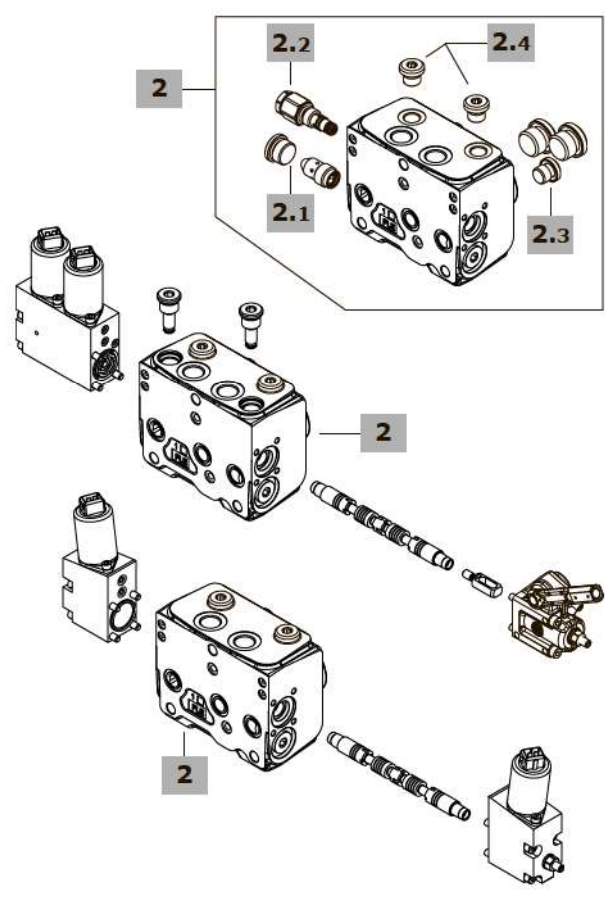
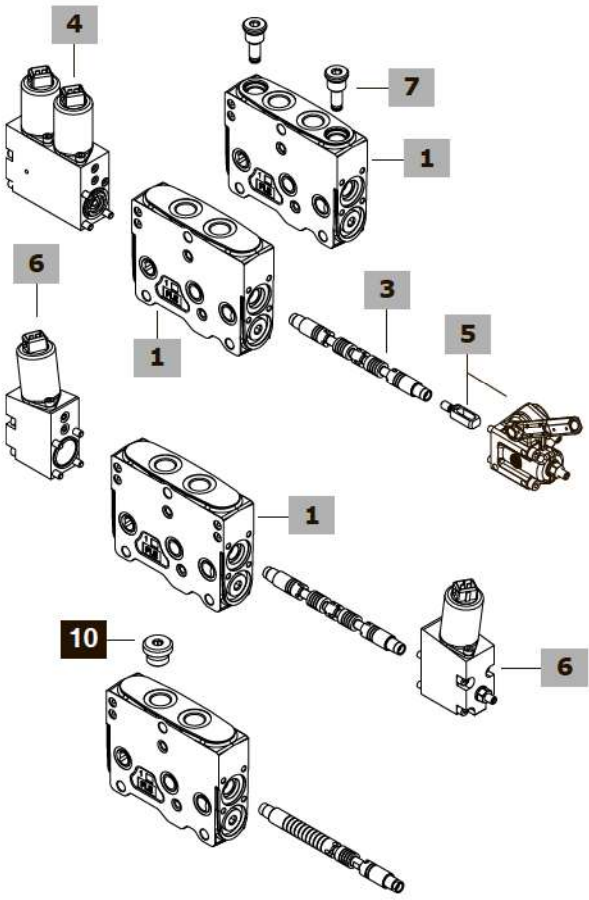
1 3 4 5 7 8 4 9

DPX050 / RQZ - I104(40/40) - 8EZ3LQF3 - (VBT / RT) - F1 - NOTAP(VL) - - 12VDC-FPM

2 2.1 2.2 2.3 2.4

DPX050 / QE - I104(40/40) - 8EB3F3 - - 12VDC -FPM DPX050 / RQE - I104(40/40)-8EB3F3-....-12VDC-FPM

1 6 6 2



1 Working section kit* page 20

The codes are referred to sections with FPM o-ring seals

For two-side electrohydraulic control

TYPE: DPX050/QE-FPM CODE: 5EL10A3012V
DESCRIPTION: Without port valve arrangement

TYPE: DPX050/PE-FPM CODE: 5EL10A3002V
DESCRIPTION: With port valve arrangement

For one-side electrohydraulic control

TYPE: DPX050/QZ-FPM CODE: 5EL10A3210V
DESCRIPTION: Without port valve arrangement

TYPE: DPX050/PZ-FPM CODE: 5EL10A3200V
DESCRIPTION: With port valve arrangement

NOTE (*): Codes are referred to **BSP** thread.
NOTE (-): "Type" omitted in section description

2 Working section kit with outlet* page 21

The codes are referred to sections with FPM o-ring seals

For two-side electrohydraulic control

TYPE: DPX050/RQE-FPM CODE: 5FIA20A313V
DESCRIPTION: With bleed valve, with P1-T1-LS1 plugged port, without port valve arrangement

TYPE: DPX050/RPE-FPM CODE: 5FIA20A301V
DESCRIPTION: As previous one with port valve arrangement

For one-side electrohydraulic control

TYPE: DPX050/RQZ-FPM CODE: 5FIA20A326V
DESCRIPTION: With bleed valve, with P1-T1-LS1 plugged port, without port valve arrangement

TYPE: DPX050/RPZ-FPM CODE: 5FIA20A325V
DESCRIPTION: As previous one with port valve arrangement

Working and outlet section part ordering codes (electrohydraulic)

2.1 Bleed valve page 22

| TYPE | CODE | DESCRIPTION |
|-------|------------|---------------------|
| (-) | X138850000 | Bleed valve |
| (VBT) | 4TAP416810 | Valve blanking plug |

Both options need cavity plug:
3XTAP822151 SAE8 plug, nr.1, FPM o-ring seals

2.2 Pressure reducing valve page 22

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|------|-------------|--|
| (-) | X219740035V | Pressure reducing valve, 30-45 bar (43.5-650 psi) |
| (RT) | XTAP418350V | Valve blanking plug |

2.3 Parts*

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|--------------------------------------|------------|-----------------|
| <u>P1-T1-LS1 plugged ports</u> | | |
| - | XTAP727200 | G1/2 plug, nr.2 |
| - | XTAP719160 | G1/4 plug, nr.1 |
| <u>P1-T1 plugged Ports, LS1 open</u> | | |
| F1 | XTAP727200 | G1/2 plug, nr.2 |

2.4 Pilot and drain*

| TYPE | CODE | DESCRIPTION |
|-----------|------------|--|
| (-) | XTAP719160 | G1/4 plug, nr.2 for internal pilot and drain, FPM o-ring seals |
| NOTAP(VL) | 4TAP310007 | M10x1 DIN906 plug, for external drain |

3 Spool page 23

Flow is referred to 14 bar (200 psi) stand-by (margin pressure)

| TYPE | CODE | DESCRIPTION |
|---|------------|-----------------------------|
| <u>Double acting with A and B closed in neutral position, floating circuit with 4 positions controls (13... type)</u> | | |
| I105(50) | 3CUA310005 | 50 l/min (13 US gpm) flow |
| I104(40) | 3CUA310004 | 40 l/min (10.5 US gpm) flow |
| I103(30) | 3CUA310003 | 30 l/min (7.9 US gpm) flow |
| I102(20) | 3CUA310002 | 20 l/min (5.3 US gpm) flow |
| I101(10) | 3CUA310001 | 10 l/min (2.6 US gpm) flow |
| I106(5) | 3CUA310006 | 5 l/min (1.3 US gpm) flow |
| <u>Double acting with A and B partially to tank in neutral position</u> | | |
| I2H05(50) | 3CUA324005 | 50 l/min (13 US gpm) flow |
| I2H04(40) | 3CUA324004 | 40 l/min (10.5 US gpm) flow |
| I2H08(30) | 3CUA324008 | 30 l/min (7.9 US gpm) flow |
| I2H07(20) | 3CUA324007 | 20 l/min (5.3 US gpm) flow |
| I2H01(10) | 3CUA324001 | 10 l/min (2.6 US gpm) flow |
| I2H06(5) | 3CUA324006 | 5 l/min (1.3 US gpm) flow |
| Single acting on A or B, other port plugged: G3/8 plug is required | | |
| I305-I405(50) | 3CUA331005 | 50 l/min (13 US gpm) flow |
| I302-I402(20) | 3CUA331002 | 20 l/min (5.3 US gpm) flow |

9 Seals

| TYPE | DESCRIPTION | TYPE | DESCRIPTION |
|------|----------------------------|------|------------------|
| FPM | FPM o-ring seals; standard | NBR | NBR o-ring seals |

10 Plug for single acting spool*

| CODE | DESCRIPTION |
|------------|-----------------------------|
| XTAP722160 | G3/8 plug, FPM o-ring seals |

4 One-side electrohydr. control page 34

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|--|-------------|-------------------------------------|
| 8EZ3-12VDC | 5V0810A780V | AMP connector |
| 8EZ3-24VDC | 5V0810A785V | AMP connector |
| 8EZ3F2-12VDC | 5V0810A781V | AMP conn., spool stroke limiter |
| 8EZ3F2-24VDC | 5V0810A782V | As previous one |
| 8EZ34-12VDC | 5V0810A786V | Deutsch connector |
| 8EZ34-24VDC | 5V0810A787V | Deutsch connector |
| 8EZ34F2-12VDC | 5V0810A783V | Deutsch conn., spool stroke limiter |
| 8EZ34F2-24VDC | 5V0810A784V | As previous one |
| <u>For floating circuit (standard spool)</u> | | |
| 13EZ3P-12VDC | 5V1310A780V | With Step, with AMP connector |
| 13EZ3P-24VDC | 5V1310A781V | As previous one |
| 13EZ34P-12VDC | 5V1310A782V | With Step, with Deutsch conn. |
| 13EZ34P-24VDC | 5V1310A783V | As previous one |
| <u>With spool position sensor</u> | | |
| 8EZ3SPSD-12VDC | 5V0810A790V | AMP connector and digital sensor |
| 8EZ3SPSD-24VDC | 5V0810A791V | As previous one |

5 "B" side options page 35

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|--|-------------|---|
| <u>For one-side electrohydraulic control</u> | | |
| LQ | 5LEV10A005V | Lever control |
| LQ180 | 5LEV10A006V | As previous one, turned of 180° |
| LQF3 | 5LEV10A004V | As LQ, spool stroke limiter on A, B ports |
| LQF3180 | 5LEV10A003V | As previous one, turned of 180° |
| SLC | 5COP150010V | Endcap |
| SLCF1 | 5COP150011V | Endcap with spool stroke limiter |

6 Two-side electrohydr. control page 33

The codes are referred to parts with FPM o-ring seals

| TYPE | CODE | DESCRIPTION |
|--|-------------|-------------------------------------|
| 8EB3-12VDC | 5IDR90A200V | AMP connector |
| 8EB3-24VDC | 5IDR90A201V | AMP connector |
| 8EB34-12VDC | 5IDR90A202V | Deutsch connector |
| 8EB34-24VDC | 5IDR90A203V | Deutsch connector |
| 8EB3F3-12VDC | 5IDR90A204V | AMP conn., spool stroke limiter |
| 8EB3F3-24VDC | 5IDR90A205V | As previous one |
| 8EB34F3-12VDC | 5IDR90A206V | Deutsch conn., spool stroke limiter |
| 8EB34F3-24VDC | 5IDR90A207V | As previous one |
| <u>For floating circuit (standard spool)</u> | | |
| 13EB3P-12VDC | 5IDR91A200V | With Step, AMP connector |
| 13EB3P-24VDC | 5IDR91A201V | As previous one |
| 13EB34P-12VDC | 5IDR91A202V | With Step, Deutsch connector |
| 13EB34P-24VDC | 5IDR91A203V | As previous one |

7 Port valves page 36

| TYPE | CODE | DESCRIPTION |
|------|-------------|---------------------------|
| U040 | 5KIT308040V | Setting: 40 bar (580 psi) |

For complete list see previous pages.

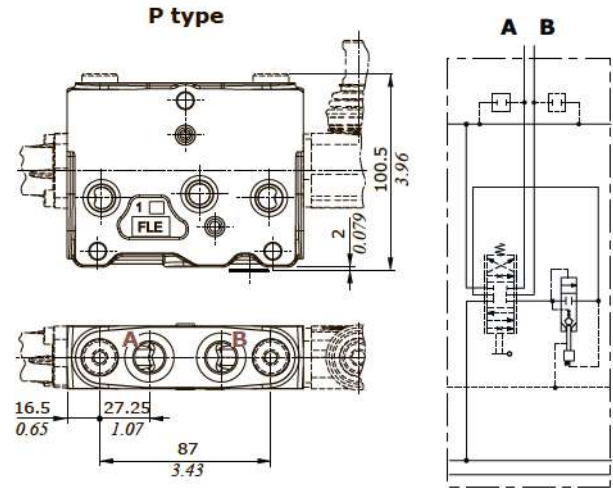
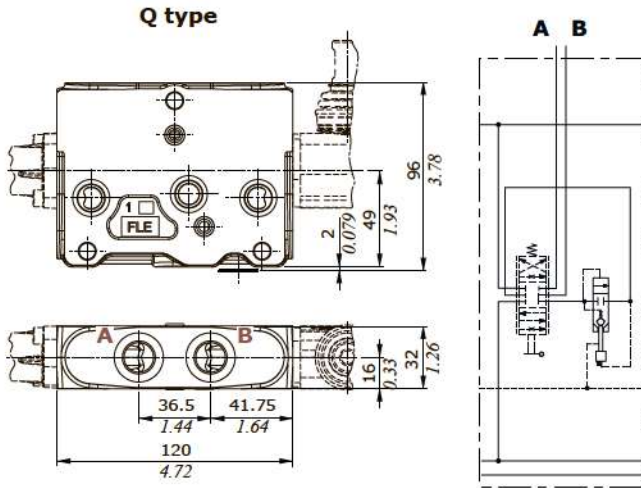
8 Section threading

Only specify if it is different from BSP standard (see page 4).

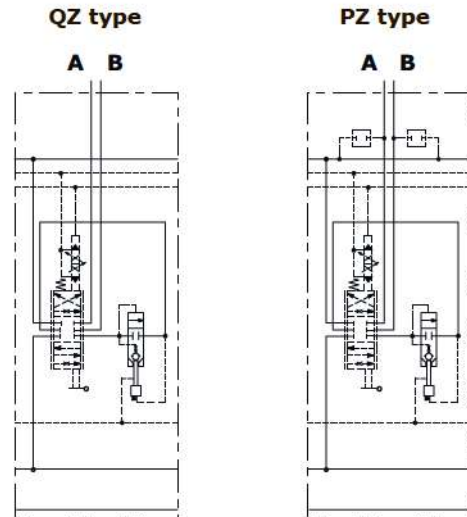
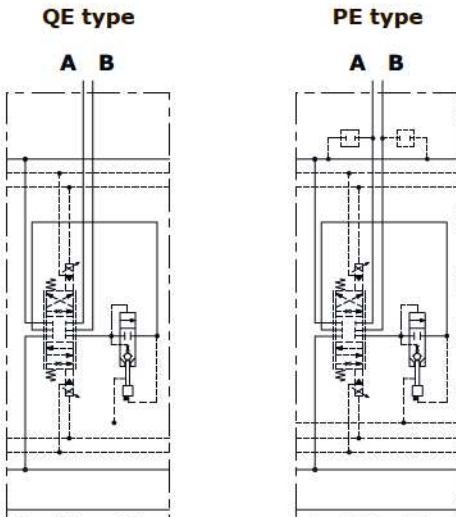
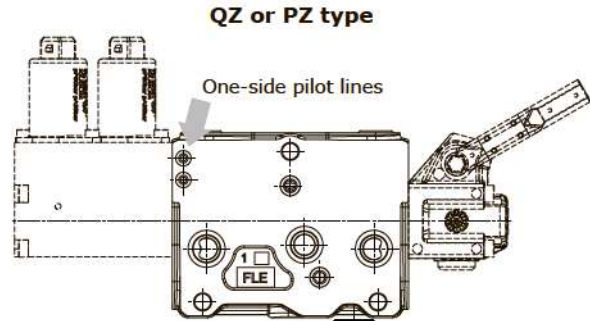
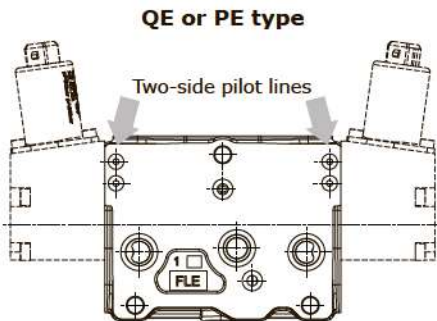
Working and outlet section

Dimensions and hydraulic circuit

Section for mechanical and hydraulic controls



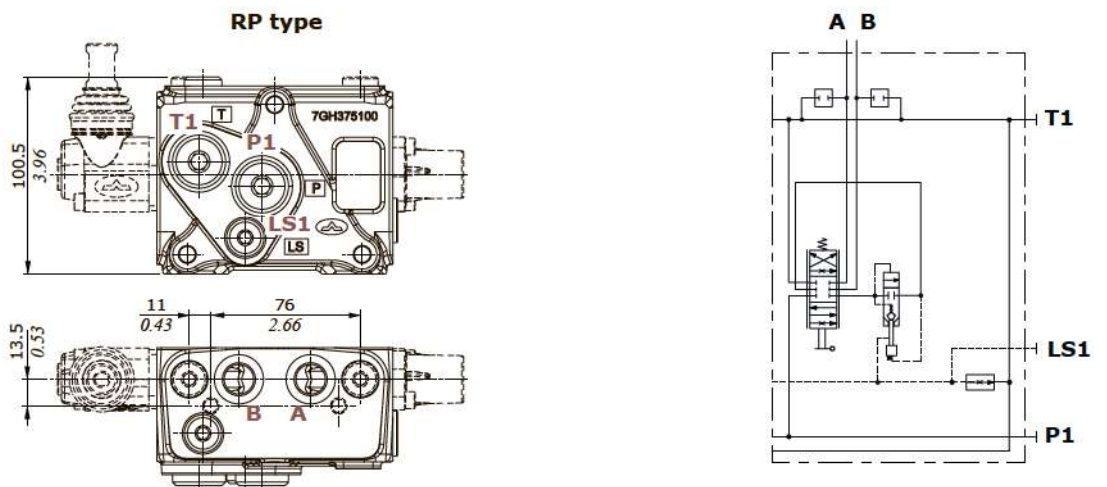
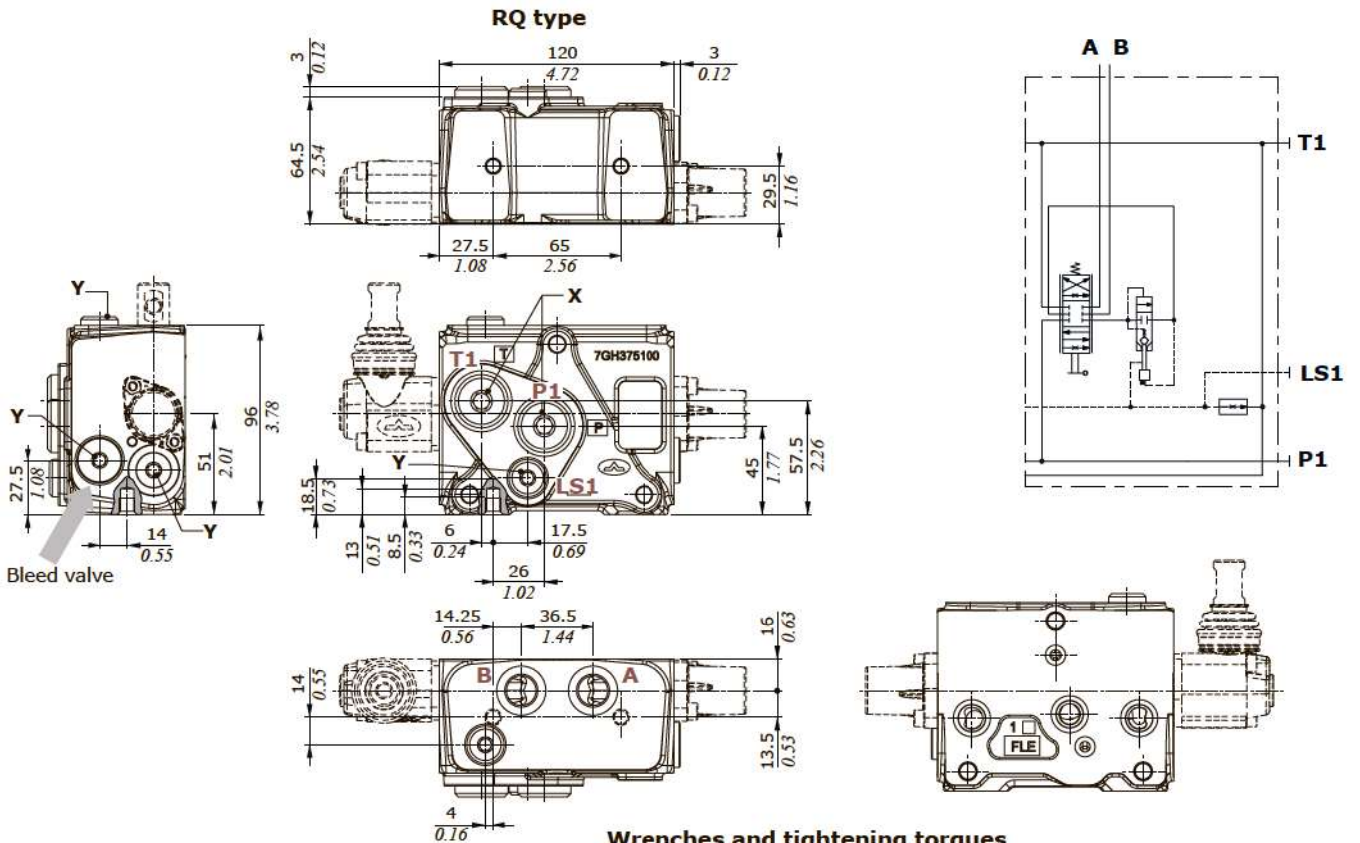
Section for electrohydraulic controls



Working and outlet section

Dimensions and hydraulic circuit

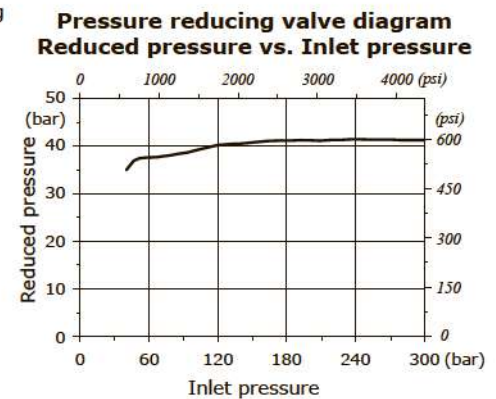
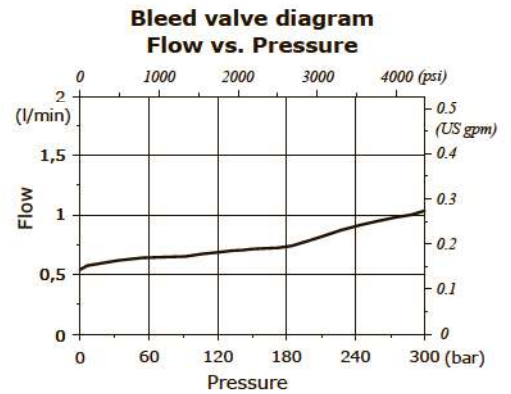
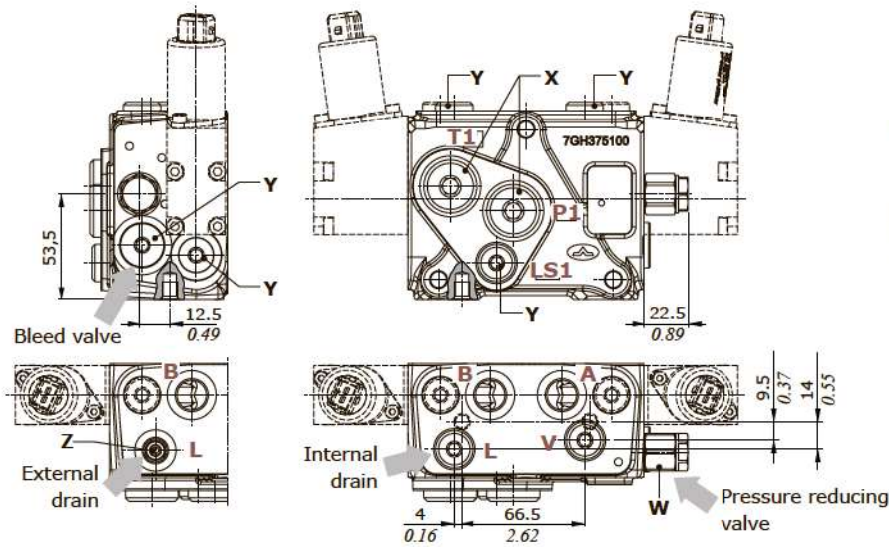
Section with outlet for mechanical and hydraulic controls



Working and outlet section

Dimensions and hydraulic circuit

Section with outlet for electrohydraulic controls



Wrenches and tightening torques

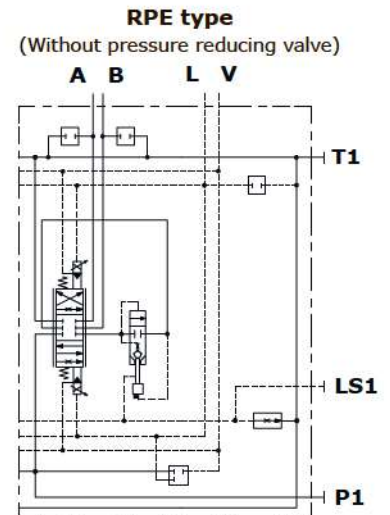
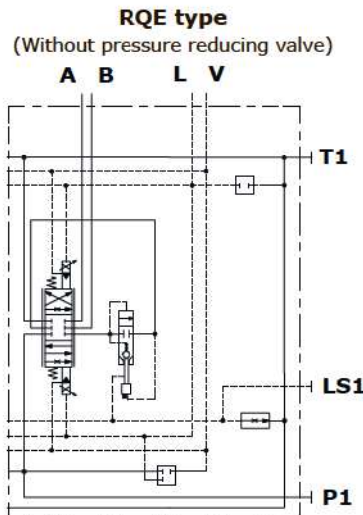
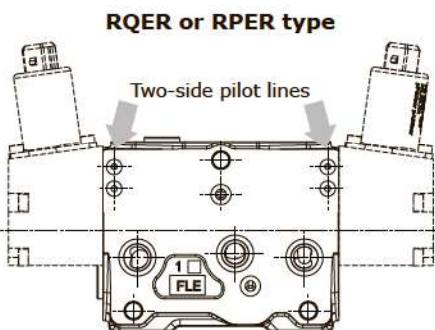
- X = allen wrench 8 - 24 Nm (17.7 lbf)
- Y = allen wrench 6 - 24 Nm (17.7 lbf)
- Z = allen wrench 5 - 9.8 Nm (7.2 lbf)
- W = wrench 19 - 24 Nm (17.7 lbf)

Bleed valve features

- Max. inlet pressure . . . : 300 bar (4350 psi)
- Max. back pressure . . . : 25 bar (363 psi)

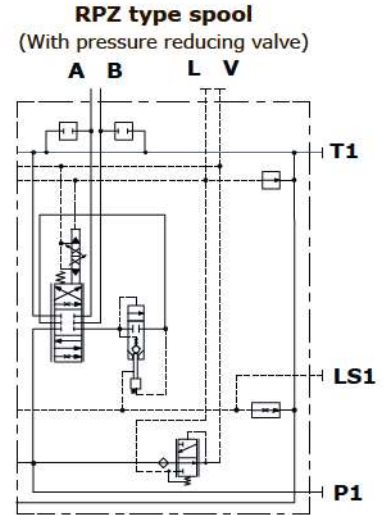
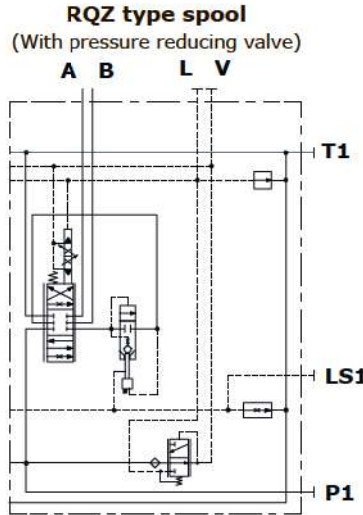
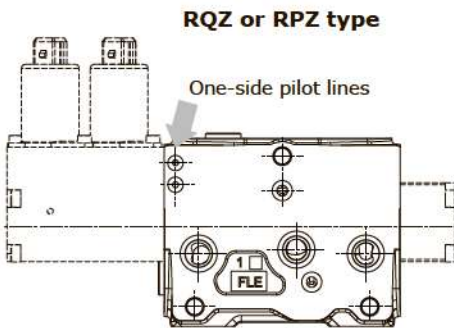
Pressure reducing valve features

- Max. inlet pressure . . . : 380 bar (5500 psi)
- Reduced pressure . . . : 30-45 bar (435-650 psi)
- Max. back pressure . . . : 25 bar (363 psi)

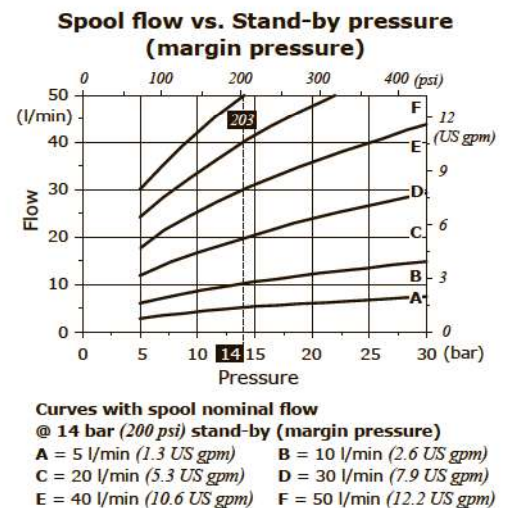
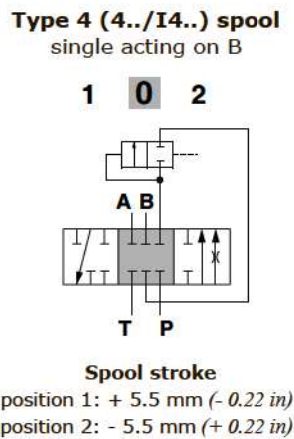
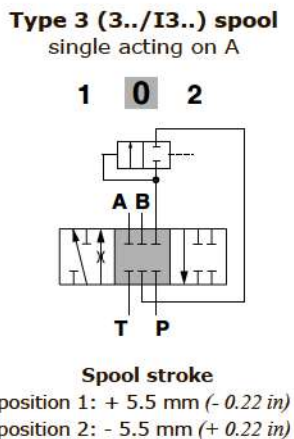
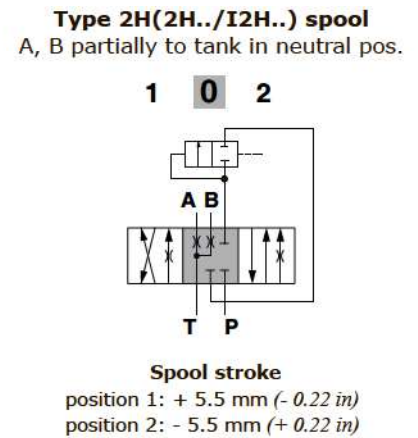
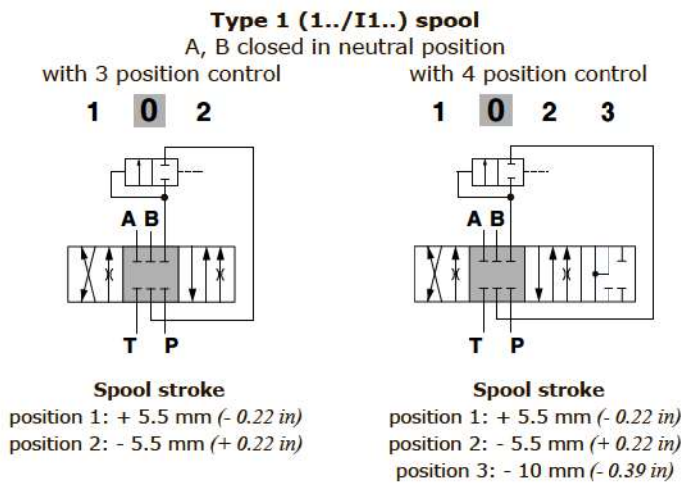


Working and outlet section

Dimensions and hydraulic circuit



Spool



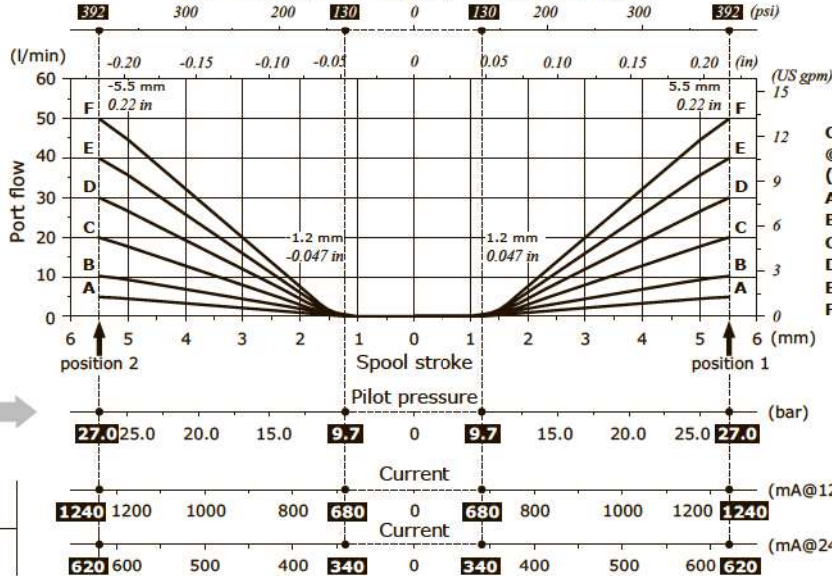
Working and outlet section

Spools

Following curves are detected with standard spools, connecting P⇒A⇒B⇒T and P⇒B⇒A⇒T ports without flow multiplication. Customized spools with backpressure or flow multiplication may require different force, pressure and pilot current for operation.

3 position spools metering curve

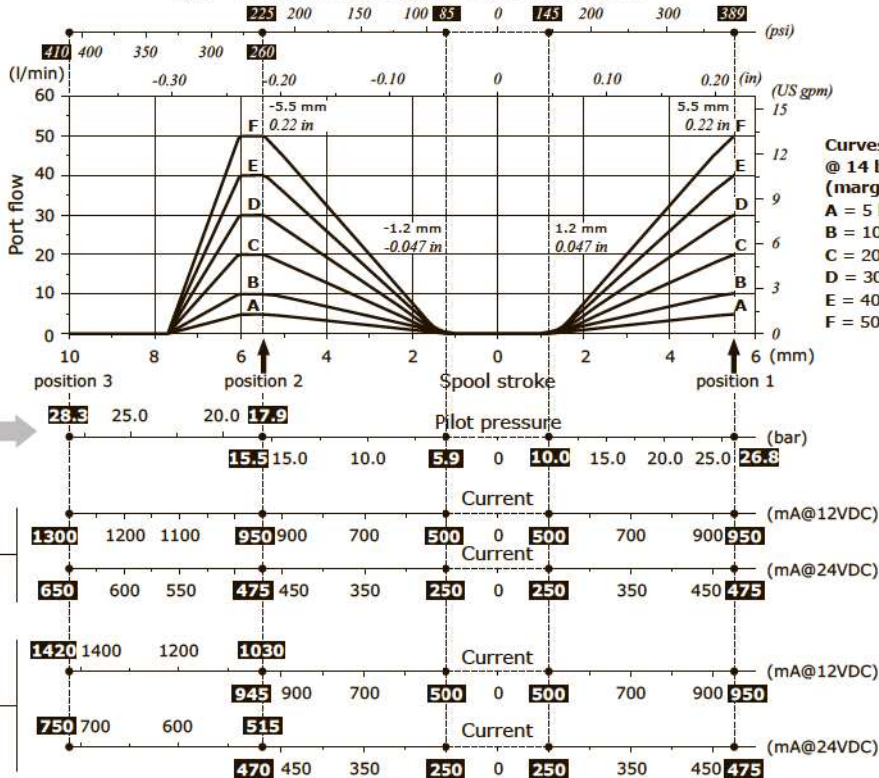
Q_{in} = 50 l/min (13.2 US gpm) - Open center circuit



Curves with spool nominal flow @ 14 bar (200 psi) stand-by (margin pressure)
 A = 5 l/min (1.3 US gpm)
 B = 10 l/min (2.6 US gpm)
 C = 20 l/min (5.3 US gpm)
 D = 30 l/min (7.9 US gpm)
 E = 40 l/min (10.6 US gpm)
 F = 50 l/min (12.2 US gpm)

Floating spool metering curve

Q_{in} = 50 l/min (13.2 US gpm) - Open center circuit



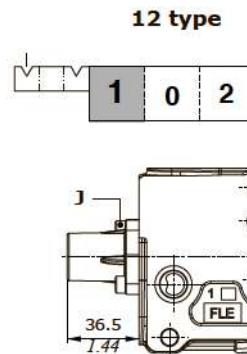
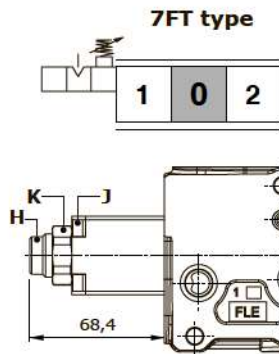
Curves with spool nominal flow @ 14 bar (200 psi) stand-by (margin pressure)
 A = 5 l/min (1.3 US gpm)
 B = 10 l/min (2.6 US gpm)
 C = 20 l/min (5.3 US gpm)
 D = 30 l/min (7.9 US gpm)
 E = 40 l/min (10.6 US gpm)
 F = 50 l/min (12.2 US gpm)

Working and outlet section

"A" side spool positioners

With friction and neutral position notch

2 positions, with detent in position 1 and 2

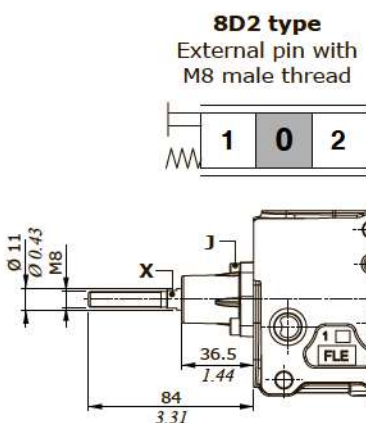
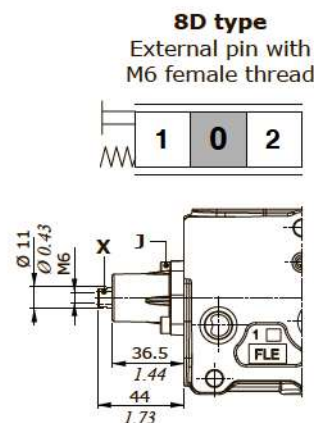
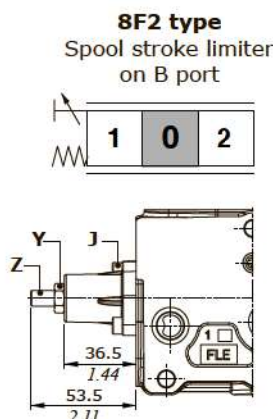
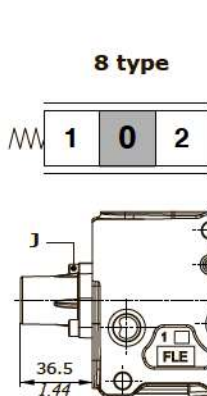


Release force 230 N ± 10 N
(51.7 lbf ± 2.2 lbf)

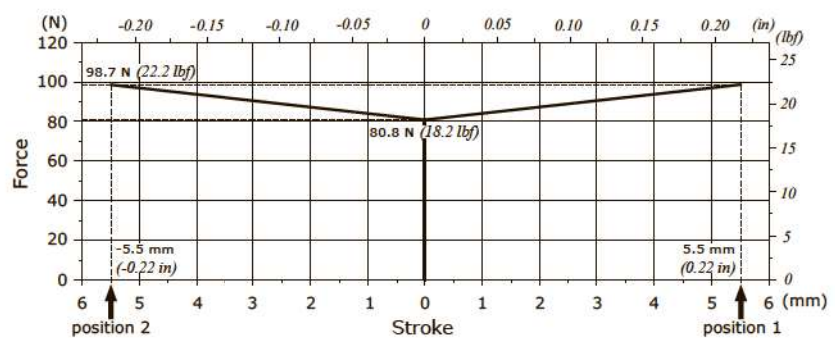
Wrenches and tightening torques

- J = allen wrench 4 - 6,6 Nm (4.9 lbf)
- H = allen wrench 4
- K = wrench 28 - manual tightening
- X = wrench 9
- Y = wrench 13 - 24 Nm (17.7 lbf)
- Z = allen wrench 4

With spring return to neutral position



Force vs. Stroke diagram

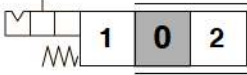


Working and outlet section

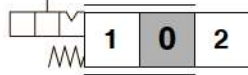
"A" side spool positioners

With detent and spring return to neutral position from either directions

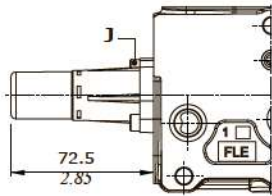
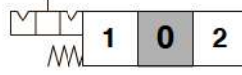
9BZ type
detent in position 1
(see A curve)



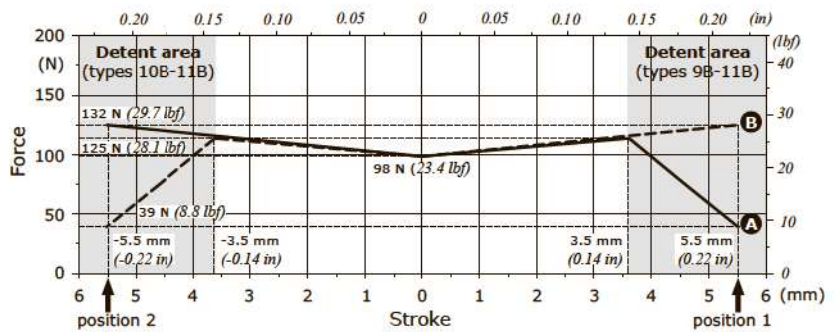
10BZ type
detent in position 2
(see B curve)



11BZ type
detent in positions 1
(A curve) and 2 (B curve)

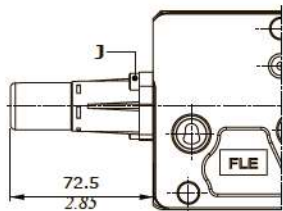
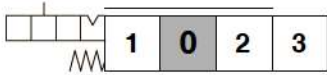


Force vs. Stroke diagram

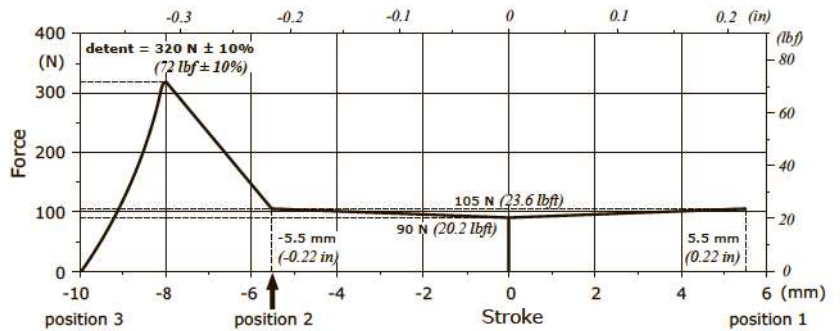


Release force 230 N ± 10% (51.7 lbf ± 10%)

For floating circuit, 13RZ type



Force vs. Stroke diagram



Release force from pos.3: 315 N ± 10% (71 lbf ± 10%)

Wrenches and tightening torques

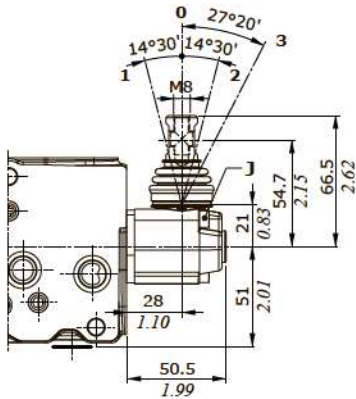
J = allen wrench 4 - 6,6 Nm (4.9 lbf)

Working and outlet section

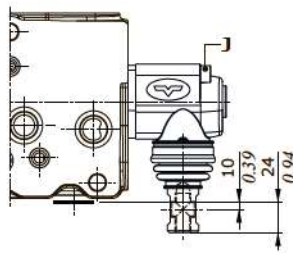
"B" side spool control kit

Lever boxes

L type

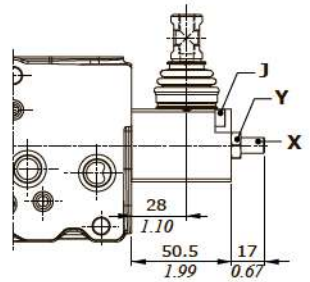
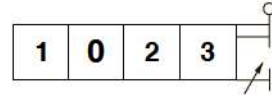


L180 type



LF1 type

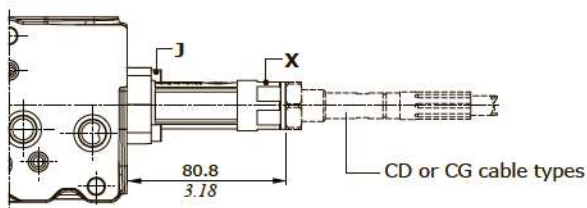
Spool stroke limiter on A port



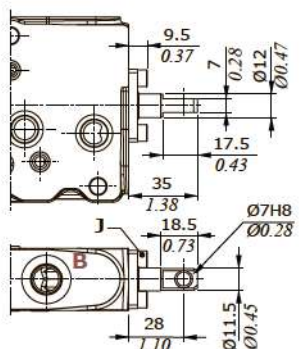
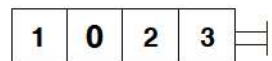
Wrenches and tightening torques

- K = wrench 24 (17.7 lbf)
- J = allen wrench 4 - 6.6 Nm (4.9 lbf)
- X = allen wrench 4
- Y = wrench 13 - 24 Nm (17.7 lbf)

Flexible cable connection, TQ type



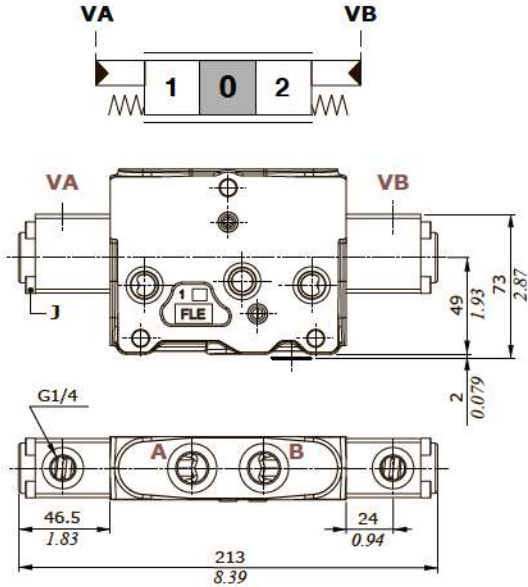
Dust-proof plate, SLP type



Working and outlet section

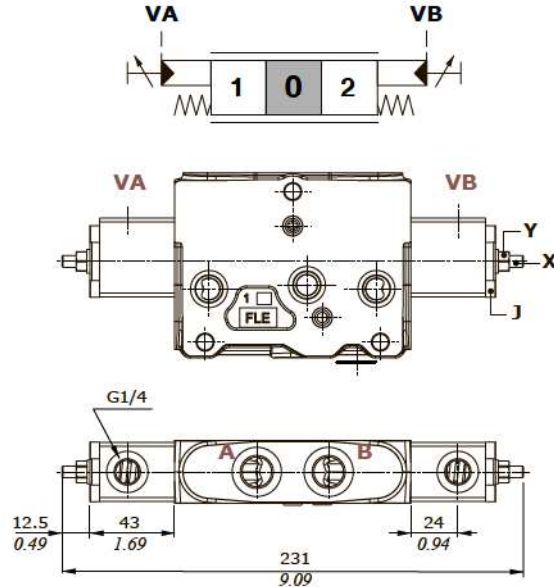
Proportional hydraulic control

8IM - 8IMX types



8IMF3 - 8IMXF3 types

With spool stroke limiter on A and B ports



Features (all types)

Max. pressure. : 70 bar (1010 psi)

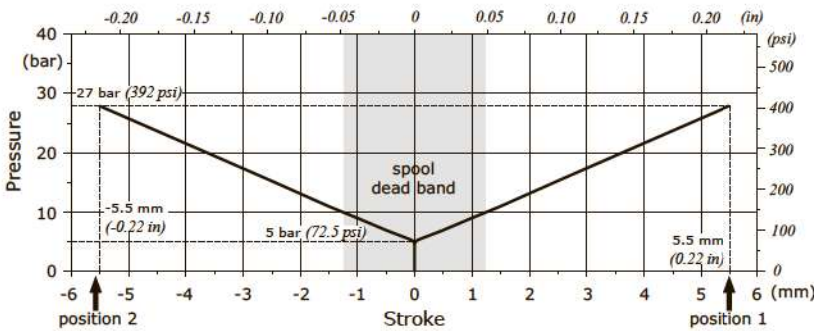
Wrenches and tightening torques

J = allen wrench 4 - 6.6 Nm (4.9 lbf)

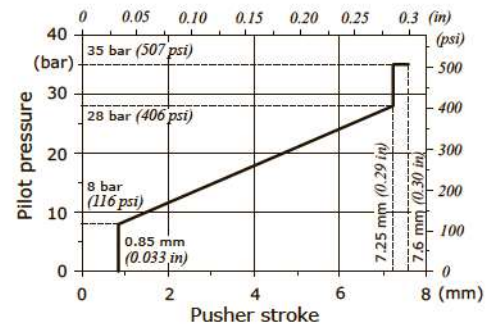
X = allen wrench 3

Y = wrench 10 - 9.8 Nm (7.2 lbf)

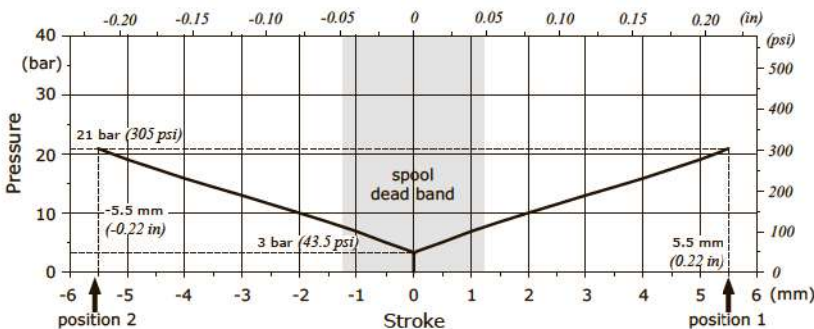
8IM-8IMF3 types: Stroke vs. Pressure diagram



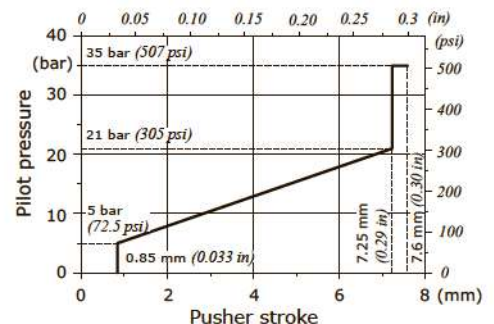
Suggested pressure control curve: 089 type



8IMX-8IMXF3 types: Stroke vs. Pressure diagram



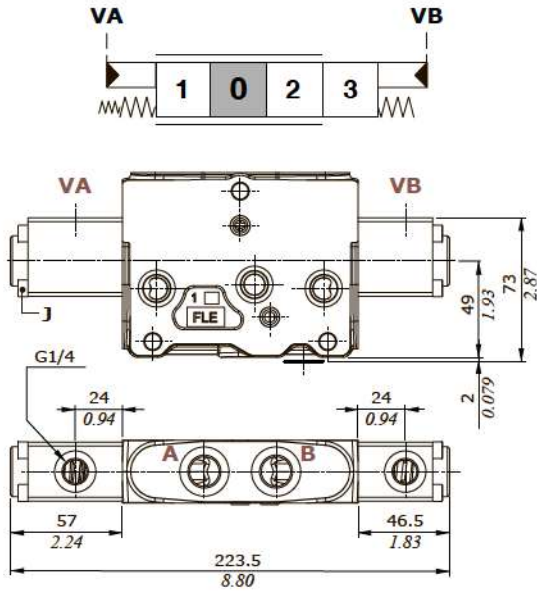
Suggested pressure control curve: 028 type



Working and outlet section

Proportional hydraulic control

For floating circuit, 13IMP type



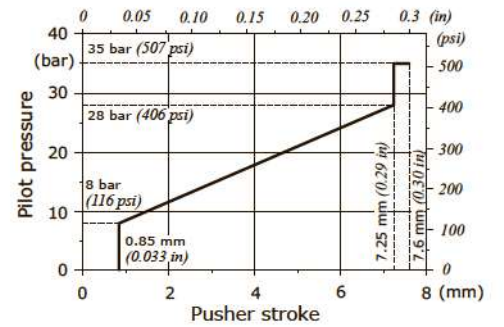
Wrenches and tightening torques

J = allen wrench 4 - 6.6 Nm (4.9 lbf)

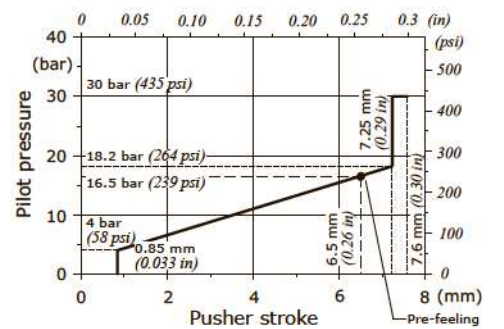
Features

Max. pressure. : 70 bar (1010 psi)

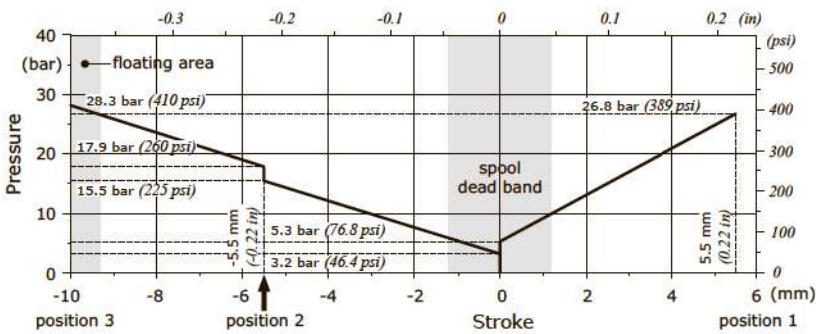
Suggested pressure control curve on VA port: 089 type



Suggested pressure control curve on VB port: 086 type



Stroke vs. Pressure diagram



Working and outlet section

Electrohydraulic control performance data

Following specifications are measured with:

- mineral oil of 46 mm²/s - 46 cSt viscosity at 40°C - 104°F temperature,
- standard spools, connecting P⇒A⇒B⇒T ports without flow multiplication,
- 12 VDC and 24 VDC nominal voltage with ± 10% tolerance.

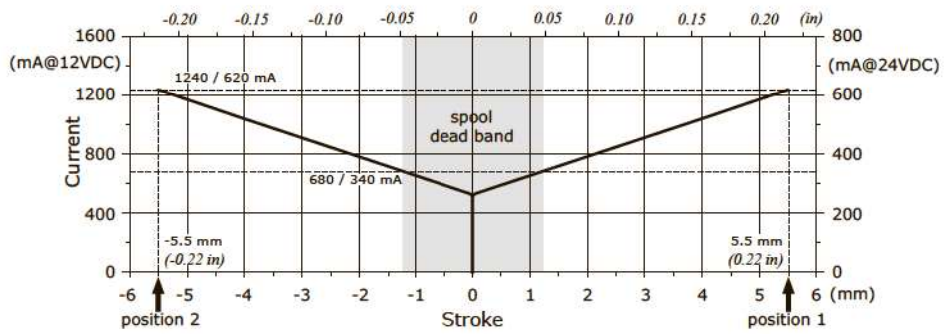
Following electrohydraulic controls need CED100X or CED400X electronic unit; for information please contact Sales Department.

| Specifications | | Spool control type | | | |
|---------------------------------|---|-----------------------------------|---------------------------------------|------------------------------------|---------------------------------------|
| | | 8EB3 | 13EB3P | 8EZ3 | 13EZ3P |
| Electric specifications | | | | | |
| Coil impedance | 12 VDC | 4.72 Ω | 4.72 Ω | 4.72 Ω | 4.72 Ω |
| | 24 VDC | 20.8 Ω | 20.8 Ω | 20.8 Ω | 20.8 Ω |
| Max. operating current | 12 VDC | 1.5 A | 1.5 A | 1.5 A | 1.5 A |
| | 24 VDC | 0.75 A | 0.75 A | 0.75 A | 0.75 A |
| No load current consumption | | 0 | 0 | 0 | 0 |
| Hysteresis max. ⁽¹⁾ | external drain | 4% | 4% | With lever box configured controls | |
| | internal drain | 5% | 5% | 6% | 6% |
| Time response | from 0 ⇒ 100% and from 100% ⇒ 0 of stroke | < 60 ms | < 85 ms | < 75 ms | < 85 ms |
| | Min. flow control signal | 12 VDC | 680 mA | 500 mA | 680 mA |
| Max. flow control signal | 12 VDC | 1240 mA | P⇒A: 950 mA P⇒B: 945 mA 1030 mA | 1240 mA | P⇒A: 950 mA P⇒B: 945 mA 1030 mA |
| | 24 VDC | 620 mA | P⇒A: 475 mA P⇒B: 470 mA 515 mA | 620 mA | P⇒A: 475 mA P⇒B: 470 mA 515 mA |
| Float flow control signal | 12 VDC | | 1420 mA | | 1420 mA |
| | 24 VDC | | 710 mA | | 710 mA |
| Dither frequency | low frequency | 150 Hz | | 150 Hz | |
| | high frequency | 180 Hz - 200 mA | | 180 Hz - 200 mA | |
| Insertion | | 100% | | 100% | |
| Coil insulation | | Class H (180°C - 356°F) | | Class H (180°C - 356°F) | |
| Connector type | | AMP JPT - Deutsch DT | | AMP JPT - Deutsch DT | |
| Weather protection (connector) | | IP65 (JPT type) - IP69K (DT type) | | IP65 (JPT type) - IP69K (DT type) | |
| Hydraulic specifications | | | | | |
| Max. pressure | | 40 bar (580 psi) | | 50 bar (725 psi) | |
| Max. back pressure | | 10 bar (145 psi) | | 10 bar (145 psi) | |

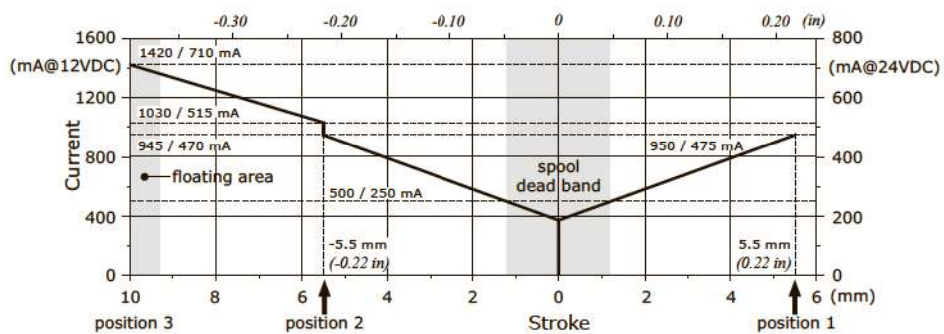
Note (1) hysteresis is indicated at nominal supply voltage and f = 0.008 Hz for one cycle (one cycle = neutral ⇒ full A ⇒ neutral ⇒ full B ⇒ neutral). For the calculation rules see "Appendix A" on page 134.

Electrohydraulic control performance data

8EB3-8EZ3 types: Stroke vs. Current diagram



13EB3P-13EZ3P types: Stroke vs. Current diagram



Working and outlet section

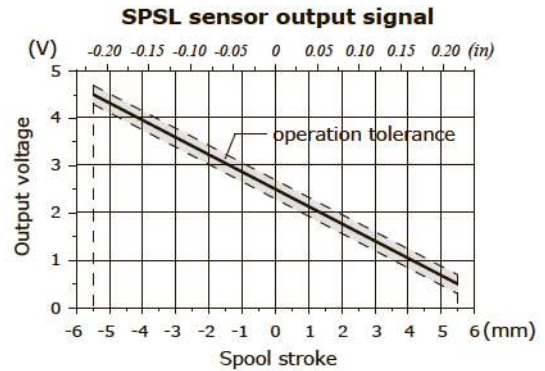
Electrohydraulic controls: spool position sensor

The sensor can be ordered exclusively through the EB and EZ type electrohydraulic controls; see pages 53 and 57 for available control list.

SPSL sensor

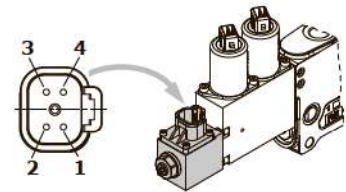
The SPSL position sensor converts the spool movements into a voltage linear signal.

| Working conditions | | |
|-------------------------------------|------------------|--|
| Voltage supply | | 5 VDC |
| Current absorption | | < 10 mA (no load) |
| Mechanical life | | 3x10 ⁶ |
| Connector type | | DT04-4P Deutsch |
| Weather protection | | IP67 / IP69K |
| Working temperature | | from -40°C to 105°C (from -40°F to 221°F) |
| Working pressure | | 350 bar (5100 psi) |
| Max. electrical stroke | | ±10 mm (±0.39 in) |
| Max. mechanical stroke | | ±10 mm (±0.39 in) |
| Output signal | range | from 0.5 to 4.5 V |
| | linearity | ± 5% |
| | spool in neutral | 2.5 ± 0.2 V |
| | max. current | 1 mA |
| EMC compatibility | | ISO 13766 / ISO 14982 |
| Mechanical vibrations, shock, bumps | | IEC 68-2-6,-27,-29 |



Deutsch DT04-4P connector

| Pin | Function |
|-----|---------------|
| 1 | + 5V |
| 2 | not connected |
| 3 | GND |
| 4 | signal OUT |

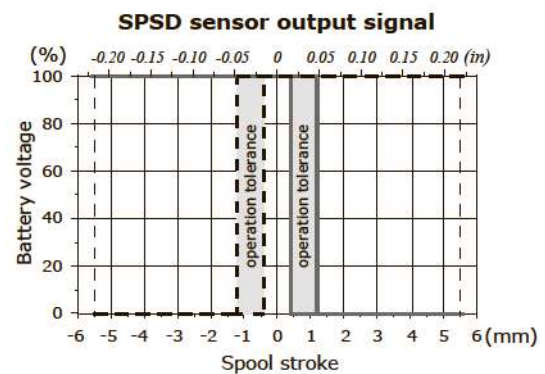


Deutsch DT06-4S mating connector, code 5CON140072

SPSD sensor

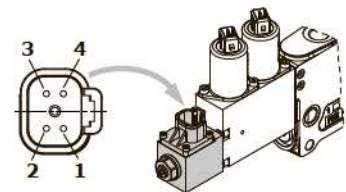
The SPSD position sensor converts the spool movements into an electric digital signal.

| Working conditions | | |
|-------------------------------------|--------------|--|
| Voltage supply | | from 9 to 32 VDC |
| Current absorption | | < 10 mA (no load) |
| Mechanical life | | 3x10 ⁶ |
| Connector type | | DT04-4P Deutsch |
| Weather protection | | IP67 / IP69K |
| Working temperature | | from -40°C to 105°C (from -40°F to 221°F) |
| Working pressure | | 350 bar (5100 psi) |
| Max. electrical stroke | | ±10 mm (±0.39 in) |
| Max. mechanical stroke | | ±10 mm (±0.39 in) |
| Output signal | type | PNP |
| | max. current | 6 mA |
| EMC compatibility | | ISO 13766 / ISO 14982 |
| Mechanical vibrations, shock, bumps | | IEC 68-2-6,-27,-29 |



Deutsch DT04-4P connector

| Pin | Function |
|-----|----------|
| 1 | Out A |
| 2 | GND |
| 3 | VB + |
| 4 | Out B |



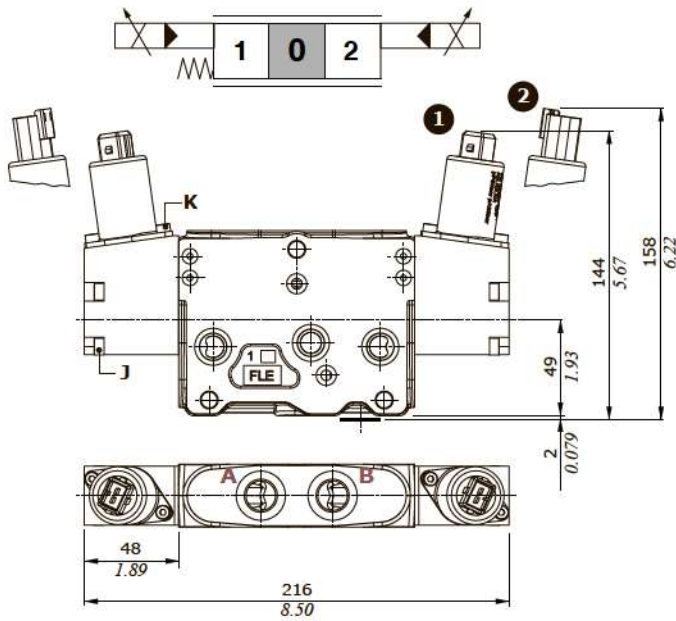
Deutsch DT06-4S mating connector, code 5CON140072

Two-side electrohydraulic control

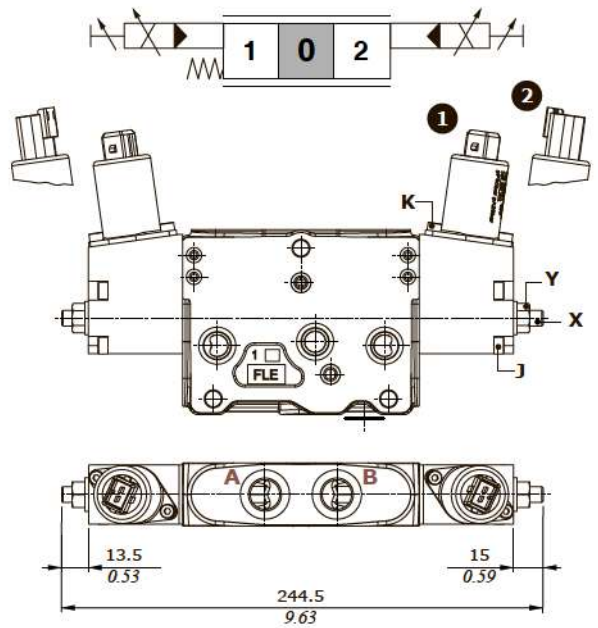
Control Types

- ① : With AMP JPT connector - AMP JPT mating connector, code: 5CON003
- ② : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

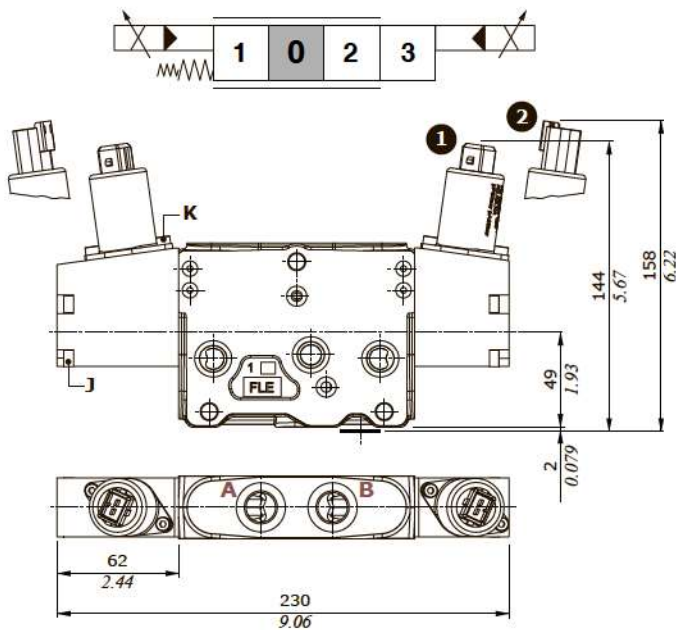
8EB3 - 8EB34 types



8EB3F3 - 8EB34F3 types



13EB3P - 13EB34P types



Wrenches and tightening torques

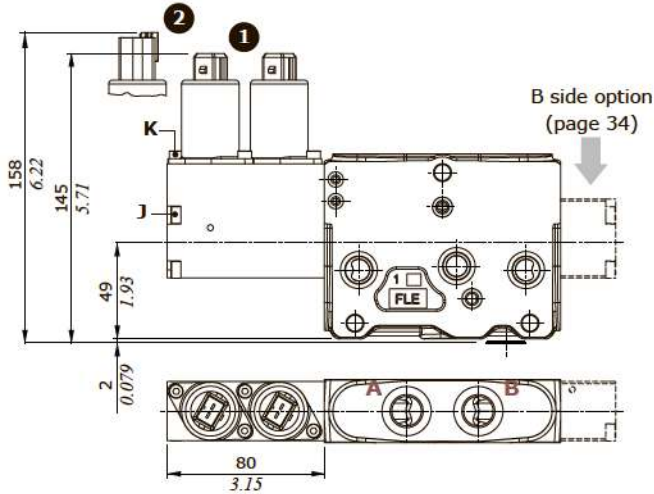
- J = allen wrench 4 - 6.6 Nm (4.9 lbf)
- K = allen wrench 3 - 5 Nm (3.7 lbf)
- X = allen wrench 4
- Y = wrench 13 - 24 Nm (17.7 lbf)

Working and outlet section

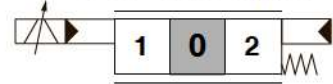
One-side electrohydraulic control

Control Types

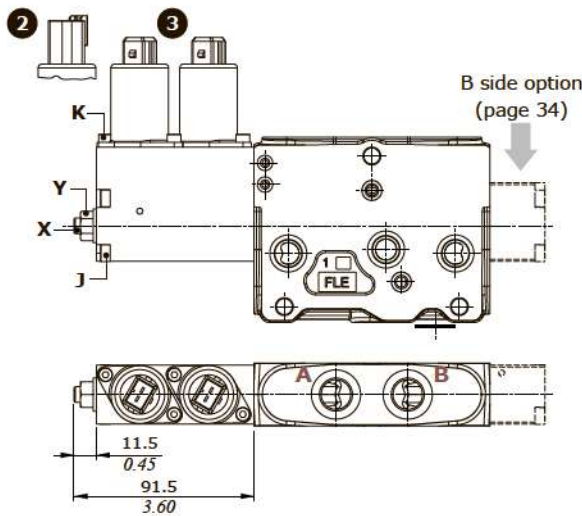
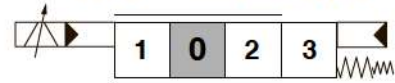
- 1 : With AMP JPT connector - AMP JPT mating connector, code: 5CON003
- 2 : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031



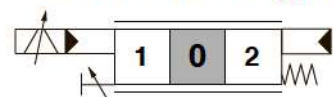
8EZ3 - 8EZ34 types



13EZ3P - 13EZ34P types



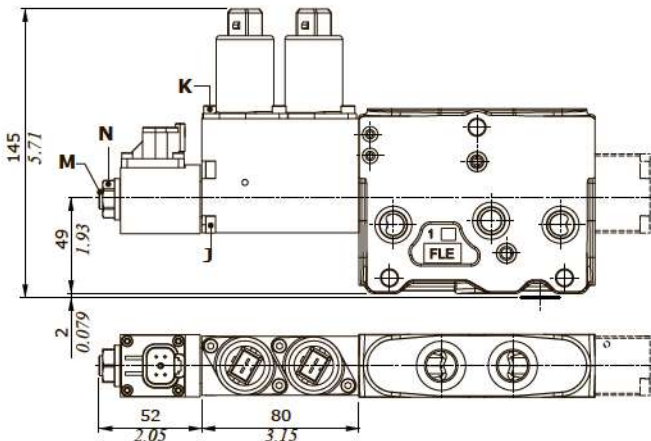
8EZ3F2 - 8EZ34F2 types



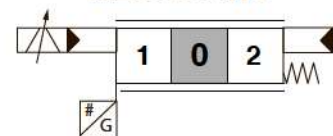
Wrenches and tightening torques

- J = allen wrench 4 - 6.6 Nm (4.9 lbf)
- K = allen wrench 3 - 5 Nm (3.7 lbf)
- X = allen wrench 4
- Y = wrench 13 - 24 Nm (17.7 lbf)
- M = allen wrench 4 - 9.8 Nm (7.2 lbf)
- N = wrench 17 - 9.8 Nm (7.2 lbf)

With SPSD spool position sensor



8EZ3SPSD type

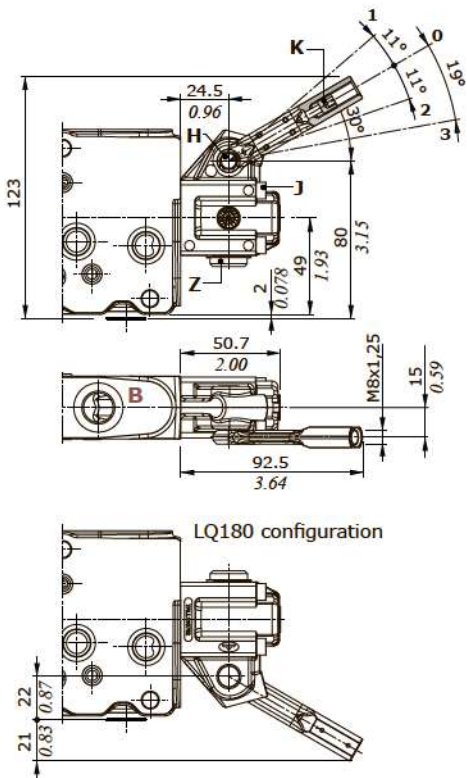
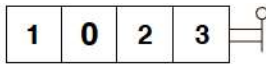


"B" side options

These options are available for one-side electrohydraulic controls only.

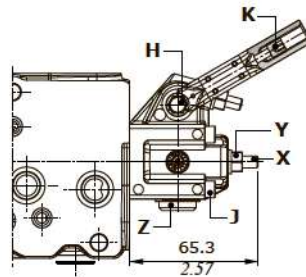
Lever boxes

LQ - LQ180 types

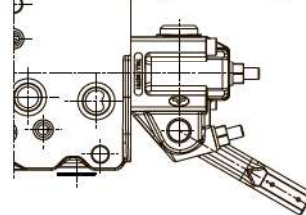


LQF3 - LQF3180 types

With stroke limiters on A and B ports



LQF3180 configuration

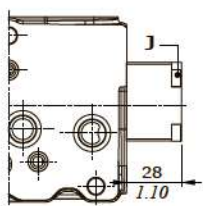


Wrenches and tightening torques

- H = wrench 8
- J = allen wrench 4 - 6.6 Nm (4.9 lbf)
- K = allen wrench 4 - 9.8 Nm (7.2 lbf)
- M = allen wrench 4
- N = wrench 13 - 24 Nm (17.7 lbf)
- X = allen wrench 3
- Y = wrench 10 - 9.8 Nm (7.2 lbf)
- Z = allen wrench 6 - 24 Nm (17.7 lbf)

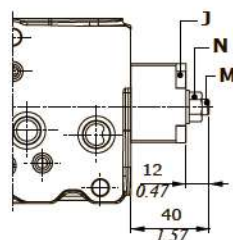
Endcaps

SLC type



SLCF1 type

spool stroke limiter on A port

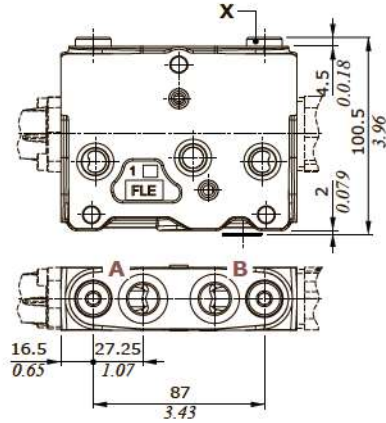


Working and outlet section

Port valves

Wrenches and tightening torques

X = allen wrench 6 - 24 Nm (17.7 lbf)



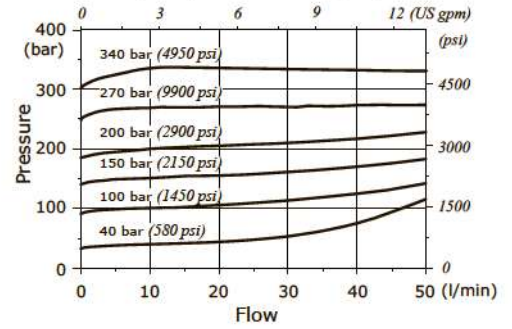
**U type valve:
antishock valves with prefill**



**C type valve:
anticavitation**



U type: setting example (10 l/min - 2.6 US gpm)



U and C types: pressure drops

