



DPX Series

Full Flow Sharing Sectional Valves

Additional information

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

WARNING!

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

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

3rd edition January 2012

The DPX Series

The DPX Series is a family of open/closed center post-pressure compensated sectional valves designed specifically for Mobile Applications. The DPX series provides exceptional controllability, efficiency and flexibility for applications requiring up to 160 l/min (42 US gpm) flow rates. DPX Series is available in three different sizes: DPX050, DPX100 and DPX160, also available in High Pressure configuration.



DPX050



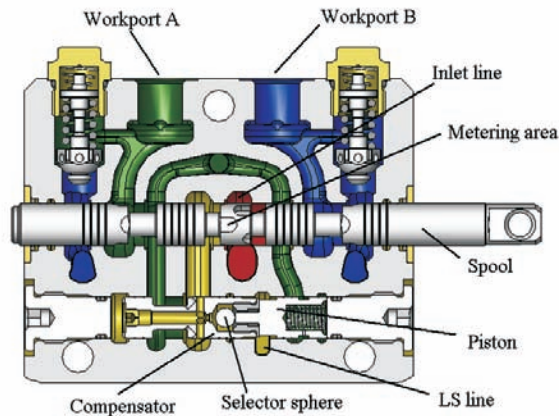
DPX100



DPX160

The Flow Sharing technology

The DPX Series control valves adds to the standard Load Sensing valve the benefit of Flow Sharing technology. The DPX Series patented compensator maintains the margin pressure as a constant pressure drop across the spool metering area. The result is a flow to the workport dependent only on spool position. In case of flow saturation, the effective pressure drop across all spools is reduced equally. This results in proportional flow reduction at each section.



In case of flow saturation, the flow demand is higher than the maximum pump flow therefore the margin pressure is reduced according to the formula (dimensionless indication):

$$Q \propto A \sqrt{\frac{\Delta P}{\rho}}$$

Q = flow to workports
ΔP = pressure drop across metering area
A = metering area
ρ = oil density

Since all spools have the same pressure drop across the metering area, then all flows are reduced proportionally. This allows the operator to maintain control of all function, though at reduced speed of active functions.

Advantages and options

- Energy saving on closed center system, is produced only required flow and pressure by the actuators.
- The flow sharing technology permits multiple movements even with flow saturation.
- Flow passage design allows high P and T flow rate in a standard valve dimension.
- Inlet section with unidirectional restrictor option suitable for dumping the pressure peaks from the LS line to the compensator and vice versa.
- High Pressure version (HP) stackable with standard one.
- Working section option with priority features in saturation conditions.
- Dedicated spools for special functions (customized flows, back pressures, pressure control).

For special options contact Sales Dept.

Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm²/s - 46 cSt viscosity at 40°C - 104°F temperature.

		DPX050		DPX100		DPX160	
				Std.	HP	Std.	HP
Nominal flow rating	inlet port with compensator, stand-by (margin pressure) 14 bar - 200 psi	80 l/min - 21 US gpm	120 l/min - 32 US gpm	230 l/min - 61 US gpm			
	working ports, stand-by (margin pressure) 14 bar - 200 psi	50 l/min - 13 US gpm	90 l/min - 24 US gpm	160 l/min - 42 US gpm			
Max. pressure	inlet port P	300 bar 4350 psi	300 bar 4350 psi	380 bar ⁽¹⁾ 5550 psi ⁽¹⁾	300 bar 4350 psi	380 bar ⁽²⁾ 5550 psi ⁽²⁾	
	working ports A and B	350 bar 5100 psi	300 bar 4350 psi	420 bar ⁽¹⁾ 6000 psi ⁽¹⁾	300 bar 4350 psi	420 bar ⁽²⁾ 6000 psi ⁽²⁾	
Back pressure (max.) on outlet port T	with mechanical devices			10 bar - 145 psi			
	with hydr./pneum./electric devices			30 bar - 435 psi			
	with electrohydraulic devices			see related pages			
Standard internal leakage A(B)->T	Δp=100 bar - 1450 psi	max. 6.5 cm ³ /min max. 0.40 in ³ /min	max. 9 cm ³ /min max. 0.55 in ³ /min	max. 12 cm ³ /min max. 0.73 in ³ /min			
	with port valves Δp=100 bar - 1450 psi	max. 11.5 cm ³ /min max. 0.70 in ³ /min	max. 14 cm ³ /min max. 0.85 in ³ /min	max. 17 cm ³ /min max. 1.04 in ³ /min			
Fluid		Mineral oil					
Fluid temperature range	with seals NBR (BUNA-N)	from -20°C to 80°C - from -4°F to 176°F					
	with seals FPM (VITON)	from -20°C to 100°C - from -4°F to 212°F					
Viscosity	operating range	from 15 to 75 mm ² /s - from 15 to 75 cSt					
	min.	12 mm ² /s - 12 cSt					
	max.	400 mm ² /s - 400 cSt					
Contamination level	max.	-/18/15 - ISO 4406 - NAS 1638 class 9					
Environmental temperature for working conditions	with mechanical devices	from -40°C to 60°C - from -40°F to 140°F					
	with hydraulic/pneumatic devices	from -30°C to 60°C - from -22°F to 140°F					
	with electric/electrohydraulic devices	from -20°C to 50°C - from -4°F to 122°F					

NOTES: ⁽¹⁾ According to NFPA T 2.6.1., fatigue rating verified for 1 million cycles on 6 sample valves with test Pressure = 1.23 x Max. pressure indicated - ⁽²⁾ Fatigue rating verified for 1 million cycles on 6 sample valves with Test Pressure = 1.10 x Max. pressure indicated

Standard threads

REFERENCE STANDARD						
	BSP	UN-UNF	METRIC ⁽³⁾	METRIC ISO ⁽³⁾	NPTF	
THREAD	ISO 228/1	ISO 263				
ACCORDING TO	BS 2779	ANSI B1.1 unified	ISO 262	ISO 262	ANSI B1.20.3	
CAVITY	ISO 1179	11926	9974-1	6149		
DIMENSION	SAE	J1926		J2244	J476a	
ACCORDING TO	DIN 3852-2 shape X or Y		3852-1 shape X or Y			

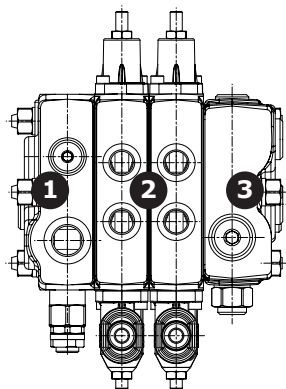
NOTE ⁽³⁾: Metric threading is available on request

PORTS THREADING	DPX050		DPX100		DPX160	
	BSP	UN-UNF	BSP	UN-UNF	BSP	UN-UNF
Inlet P	G 1/2	3/4-16 (SAE 8)	G 1/2 - G 3/4 ⁽⁴⁾	7/8-14 (SAE10)	G 3/4	1 1/16-12 (SAE12)
Ports A and B	G 3/8	9/16-18 (SAE 6)	G 3/8 - G 1/2 ⁽⁴⁾	3/4-16 (SAE8)	G 3/4	1 1/16-12 (SAE12)
Outlet T	G 1/2	3/4-16 (SAE 8)	G 1/2 - G 3/4 ⁽⁴⁾	7/8-14 (SAE10)	G 1	1 5/16-12 (SAE16)
Pilot V and drain L	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE6)	G 1/4	9/16-18 (SAE6)
Hydraulic control ports	G 1/4	7/16-20 (SAE 4)	G 1/4	7/16-20 (SAE 4)	G 1/4	9/16-18 (SAE 6)
Pneumatic control ports			NPTF 1/8-27	NPTF 1/8-27		

NOTE ⁽⁴⁾ - Optional threading

Configuration with mechanical, hydraulic or electric controls

This configuration needs standard inlet sections, working sections without pilot lines and standard outlet sections.

**DPX050**

- 1: AM or AN inlet sections
- 2: P or Q working sections
- 3: RP or RQ working sections with outlet

DPX100

- 1: AM or AN inlet sections
- 2: P or Q working sections
- 3: RF outlet sections

DPX160

- 1: AM or AN inlet sections
- 2: P or Q working sections
- 3: RC outlet sections

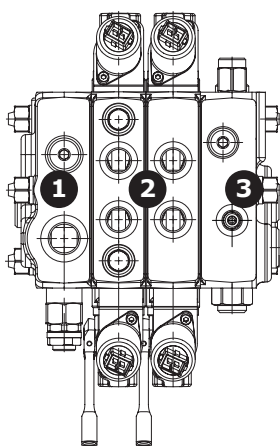
Configuration with only electrohydraulic or mixed controls

Electrohydraulic configuration (pic. 1) needs standard inlet sections, working and outlet sections with pilot lines.

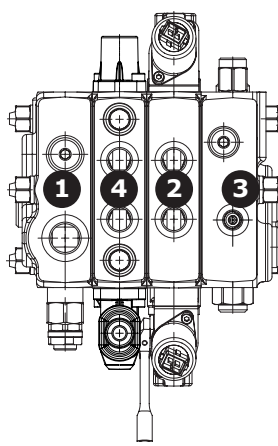
In a valve configured with electrohydraulic mixed sections (two-sides and one side type controls), the two-sides control section have to be positioned after (on the right) one-side control section, close to the outlet one.

In a mixed control configuration valve (pic. 2) electrohydraulic control sections have to be positioned after (on the right) manual/hydraulic/electric control sections, close to the outlet section.

In case of need to include manual/hydraulic/electric control sections between 2 electro-hydraulic control sections, or between one of these and outlet section, it is necessary to require specific kits able to cross pilot line.



(pic. 1)



(pic. 2)

DPX050

- 1: AM or AN inlet sections
- 2: PZ, QZ, PE or QE working sections
- 3: RPZ, RQZ, RPE or RQE working sections with outlet
- 4: P or Q working sections

DPX100

- 1: AM or AN inlet sections
- 2: PE, QE, PZ or QZ working sections
- 3: RDN or RDR outlet sections
- 4: P or Q working sections

DPX160

- 1: AM or AN inlet sections
- 2: PE or QE working sections
- 3: RCR or RCN outlet sections
- 4: P or Q working sections

Guide to configuration

High pressure (HP) valve configuration

DPX flow sharing series is available both for Standard and High pressure (HP) configuration also.

The main difference between the two configurations is the max. reachable pressures.

In details:

DPX100-DPX160

- Max. pressure on inlet port P and on working ports A/B = 300 bar - 4350 psi

DPX100HP-DPX160HP

- Max. pressure on inlet port P = 380 bar - 5550 psi
- Max. pressure on working ports A/B = 420 bar - 6000 psi

In addition to valve entirely configured for Standard pressure or HP, a mixed configuration – Standard/HP – is available by combining only the sections needed.

Closed center type inlet cover: one single solution for Standard and HP pressures.

Open center type inlet cover: separate solutions for Standard and HP pressure.

Priority inlet cover (only for DPX160): configuration available only for Standard pressure.

Working sections: separate solutions for Standard and HP pressures.

Outlet covers: one single solution for Standard and HP pressures.

Example of entirely Standard pressure valve configuration

DPX100/2/AM1(TGW3-175/ELN)/P-101(80/80)-8IMN.U3T/Q-101(80/80)-8IMN/RF-12VDC

Std pressure open center inlet section
Std pressure closed center inlet section

Std pressure working sections

Standard pressure outlet section

Example of entirely HP valve configuration

DPX100^{HP}/2/AM1(TGW5-300/ELN)/P-101(80/80)-8IMN.U3T/Q-101(80/80)-8IMN/RF-12VDC

HP open center inlet section
Std pressure closed center inlet section

HP working sections

Standard pressure outlet section

Example of mixed - Standard/HP - valve configuration

DPX100/2/AM1(TGW3-175/ELN)/P-101(80/80)-8IMN.U3T/^{HP}Q-101(80/80).U3(360)-8IMN/RF-12VDC

Std pressure open center inlet section
Std pressure closed center inlet section

Std pressure working section

HP working section

Standard pressure outlet section

Pressure peaks reduction

Pressure peaks may occur in a port during normal machine operation, causing signal L.S. swings. If those pressure swings reach the inlet section or the pump compensators, they could cause an harsh and not comfortable regulation, especially if they occur with high frequency.

The DPX Series directional valves, open and closed center ones, are available with inlet sections equipped with devices for L.S. signal peaks reduction.

Standard configuration

Bidirectional restrictor on L.S. signal; it dampens the pressure peaks from L.S. line to inlet section compensator and vice versa.

SU option

Unidirectional restrictor on L.S. signal; it dampens the pressure peaks from L.S. line (and then from users) to inlet section compensator. It's recommended for applications that need soft start.

SO options

Unidirectional restrictor on L.S. signal; it dampens the pressure peaks from inlet section compensator to L.S. line. It's recommended for swings reduction occurred during normal operation.

Contents

- **DPX050**
 - Dimensional data and performance page 8
 - Hydraulic circuit 9
 - Complete sections ordering codes 10
 - Inlet section 12
 - Working and outlet section 16

- **DPX100**
 - Dimensional data and performance page 36
 - Hydraulic circuit 37
 - Complete sections ordering codes 38
 - Inlet section 40
 - Working section 44
 - Outlet section 68

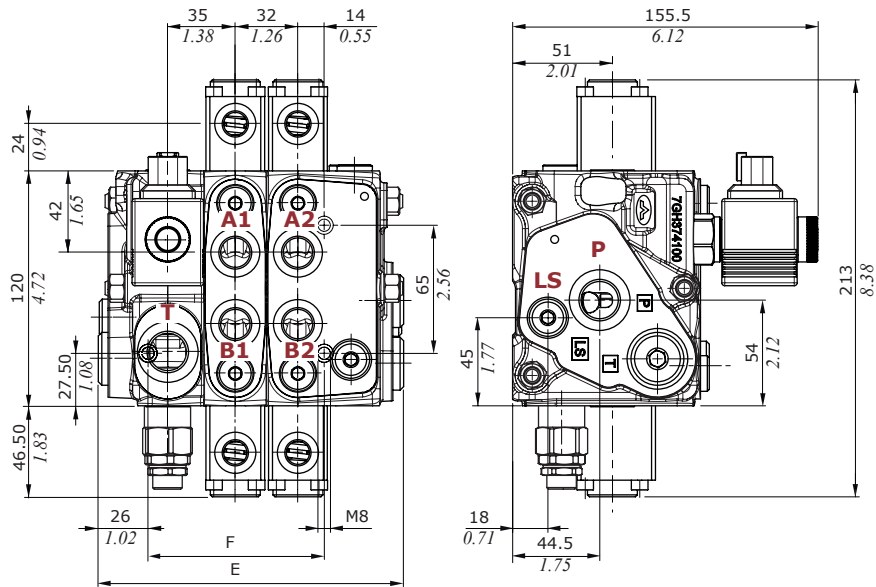
- **DPX160**
 - Dimensional data and performance page 72
 - Hydraulic circuit 73
 - Complete sections ordering codes 74
 - Inlet section 76
 - Working section 84
 - Outlet section 101

- **Accessories**
 - Coils and connector page 104

- **Installation and maintenance** page 107

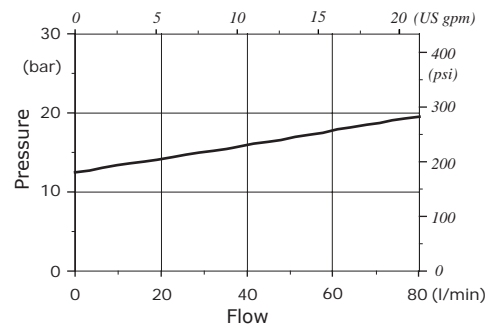
- **Appendix A** page 110

Dimensional data and performance

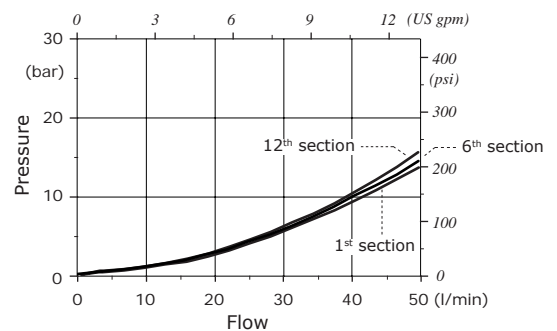


Type	E		F	
	mm	in	mm	in
DPX050/1	119	4.69	57.5	2.26
DPX050/2	151	5.95	89.5	3.52
DPX050/3	183	7.20	121.5	4.78
DPX050/4	215	8.46	153.5	6.04
DPX050/5	247	9.72	185.5	7.30
DPX050/6	279	10.98	217.5	8.56
DPX050/7	311	12.24	249.5	9.82
DPX050/8	343	13.50	281.5	11.08
DPX050/9	375	14.76	313.5	12.34
DPX050/10	407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

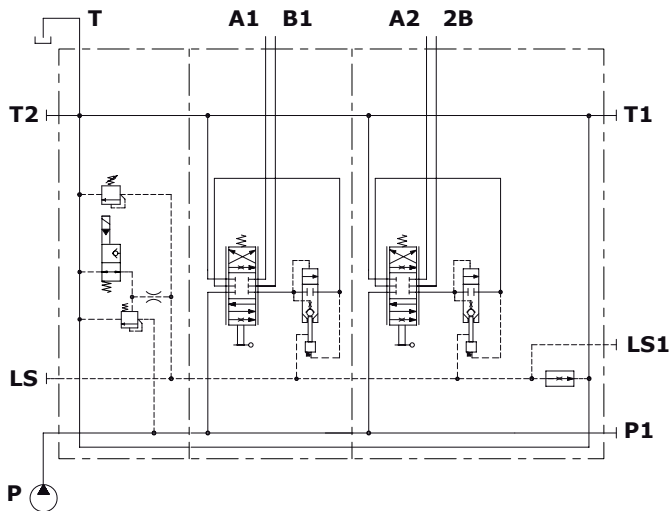
P→T Pressure drop inlet compensator (margin pressure)



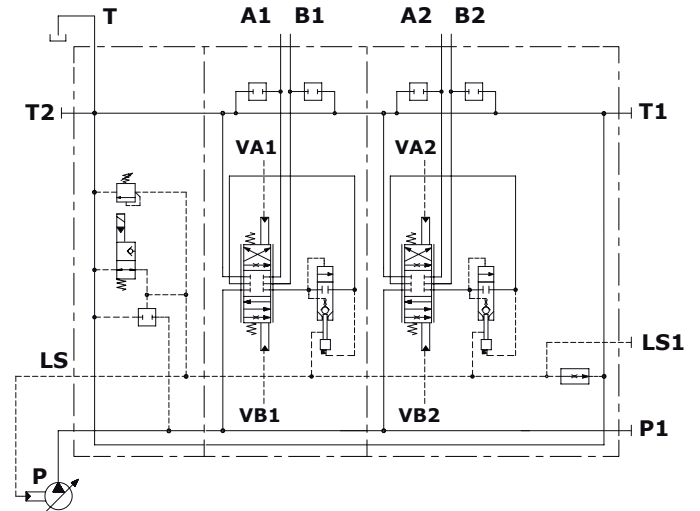
A(B)→T pressure drop (standard spool @ max.stroke)



Configuration example with mechanical and hydraulic controls

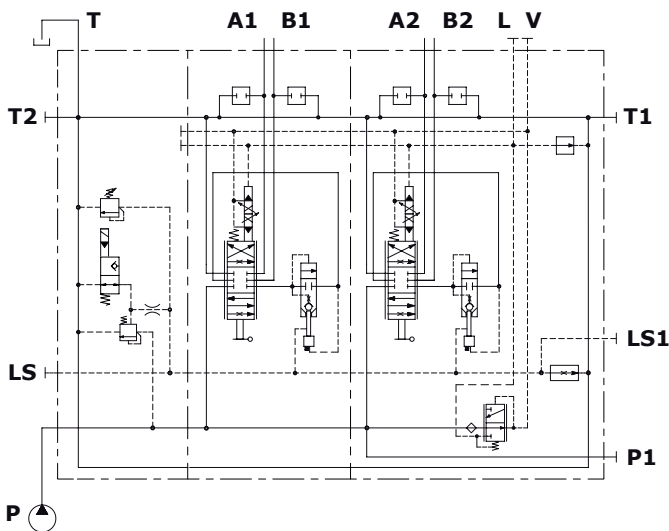


Open center circuit and lever control, with unloader valve, without port valves arrangement

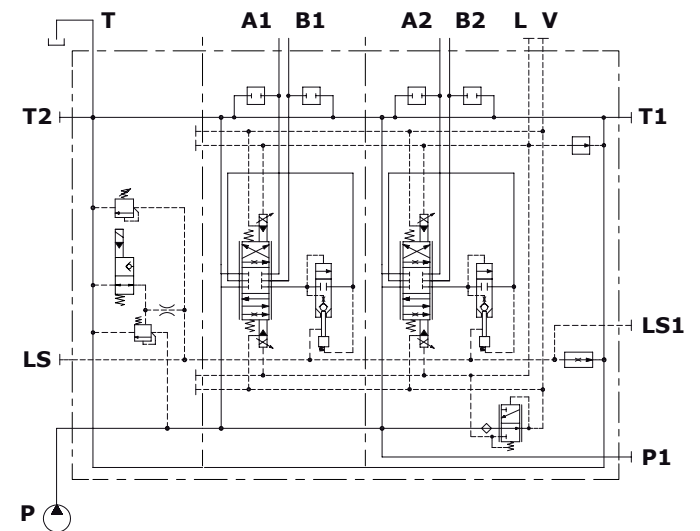


Closed center circuit and proportional hydraulic control, with unloader valve and port valves arrangement

Configuration example with electrohydraulic controls



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

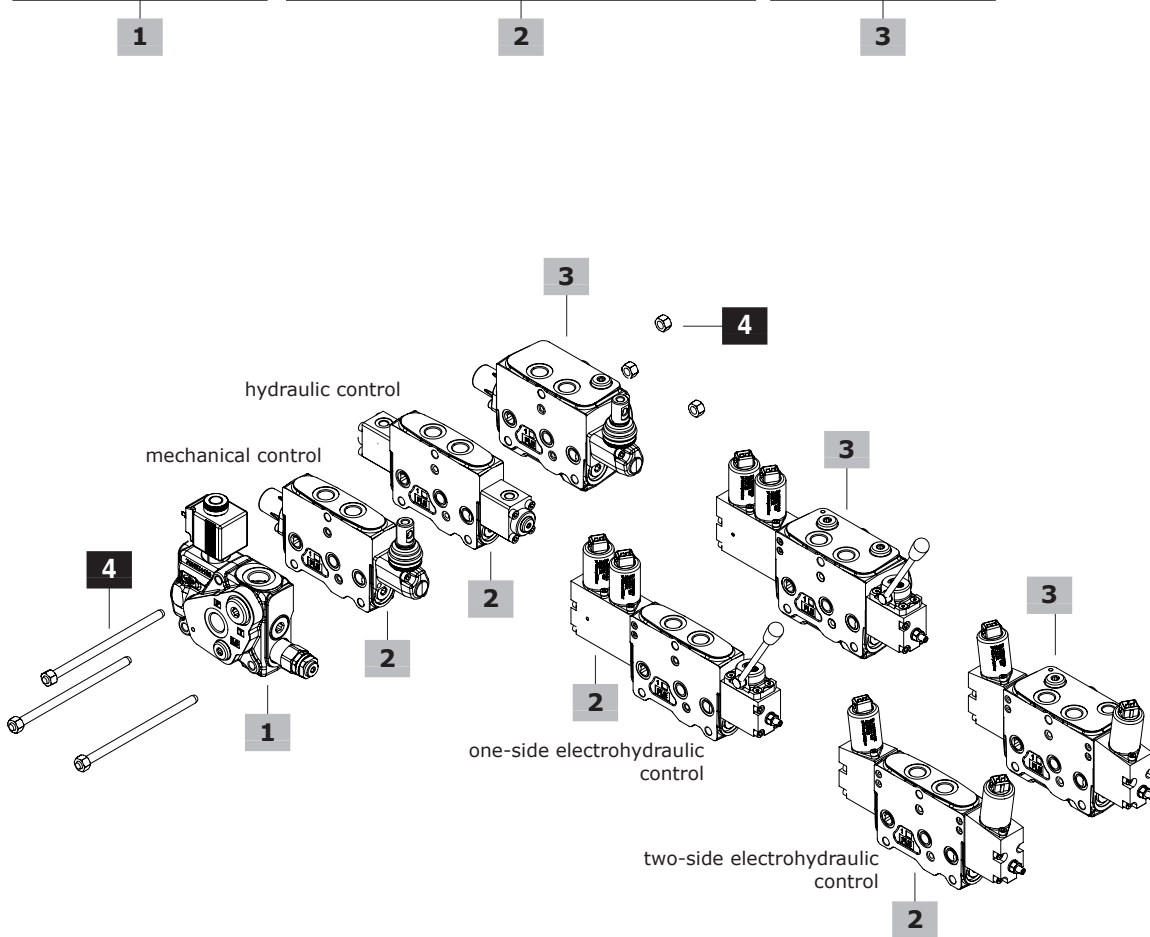


Open center circuit and two-side proportional electrohydraulic control, with unloader valve and port valves arrangement and pressure reducing valve, internal pilot and drain

Complete sections ordering codes

Nr. of working sections

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



Complete sections ordering codes

1 Inlet section ***Open Center circuit**TYPE: **DPX050/AM2(TGW3-175/ELN)-12VDC**

CODE: 660203001

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**

CODE: 660203003

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**

CODE: 660203002

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

Closed Center circuitTYPE: **DPX050/AN2(TGW3-175/ELN)-12VDC**

CODE: 660203004

DESCRIPTION: Without compensator, with press. relief valve and unloader valve, with P-T-T2-LS ports (T2 plugged)

TYPE: **DPX050/AN2(SO/TGW3-175/ELN)-12VDC**

CODE: 660203006

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**

CODE: 660203005

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

2 Working section ***Mechanical control**TYPE: **DPX050/Q-104(40/40)-8L**

CODE: 660113001

DESCRIPTION: Lever control without port valves arrangement

TYPE: **DPX050/P-104(40/40)-8L.U3T**

CODE: 660103001

DESCRIPTION: As previous with port valves arrangement

Proportional hydraulic controlTYPE: **DPX050/Q-I104(40/40)-8IM**

CODE: 660113002

DESCRIPTION: Without port valves arrangement

TYPE: **DPX050/P-I104(40/40)-8IM.U3T**

CODE: 660103002

DESCRIPTION: With port valves arrangement

Two-side proportional electrohydraulic controlTYPE: **DPX050/QE-I104(40/40)-8EB3F3-12VDC**

CODE: 660115003

DESCRIPTION: With spool stroke limiter, without port valves arrangement

TYPE: **DPX050/PE-I104(40/40)-8EB3F3.U3T-12VDC**

CODE: 660105003

DESCRIPTION: As previous with port valves arrangement

One-side proportional electrohydraulic controlTYPE: **DPX050/QZ-I104(40/40)-8EZ3F2LHCIF1-12VDC**

CODE: 660113004

DESCRIPTION: With lever and spool stroke limiter, without port valves arrangement

TYPE: **DPX050/PZ-I104(40/40)-8EZ3F2LHCIF1.U3T-12VDC**

CODE: 660103004

DESCRIPTION: As previous with port valves arrangement

3 Working section with outlet ***Mechanical control**TYPE: **DPX050/RQ-104(40/40)-8L**

CODE: 660303001

DESCRIPTION: Lever control, with Bleed valve and side P1-T1-LS1 ports (plugged), without port valves arrangement

TYPE: **DPX050/RP-104(40/40)-8L.U3T**

CODE: 660303003

DESCRIPTION: As previous with port valves arrangement

Hydraulic controlTYPE: **DPX050/RQ-I104(40/40)-8IM**

CODE: 660303011

DESCRIPTION: With Bleed valve and side P1-T1-LS1 ports (plugged), without port valves arrangement

TYPE: **DPX050/RP-I104(40/40)-8IM.U3T**

CODE: 660303012

DESCRIPTION: As previous with port valves arrangement

Two-side proportional electrohydraulic controlTYPE: **DPX050/RQE-I104(40/40)-8EB3F3-12VDC**

CODE: 660303005

DESCRIPTION: With spool stroke limiter, Bleed valve, pressure reducing valve and side P1-T1-LS1 ports (plugged), pilot V and drain L ports plugged, without port valves arrangement

TYPE: **DPX050/RPER-I104(40/40)-8EB3F3.U3T-12VDC**

CODE: 660303006

DESCRIPTION: As previous with port valves arrangement

One-side proportional electrohydraulic controlTYPE: **DPX050/RQZ-I104(40/40)-8EZ3F2LHCIF1-12VDC**

CODE: 660303002

DESCRIPTION: With lever and spool stroke limiter, Bleed valve, pressure reducing valve and side P1-T1-LS1 ports (plugged), pilot V and drain L ports plugged, without port valves arrangement

TYPE: **DPX050/RPZ-I104(40/40)-8EZ3F2LHCIF1.U3T-12VDC**

CODE: 660303004

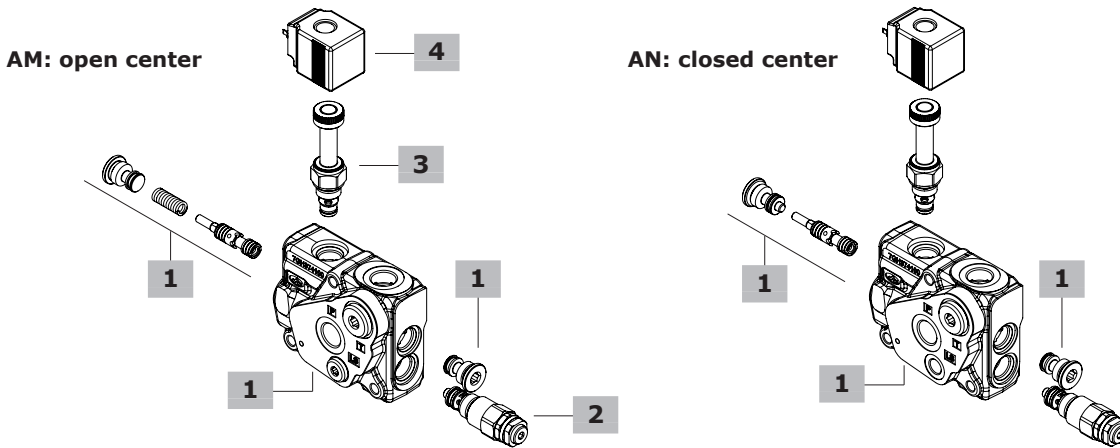
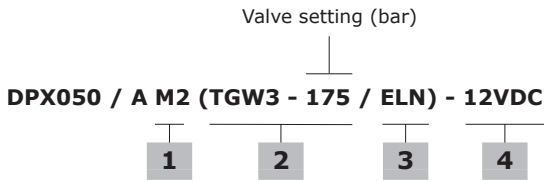
DESCRIPTION: As previous with port valves arrangement

4 Assembling kit

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

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

Inlet section parts ordering codes



1 Inlet section kit* page 13

Open Center circuit

TYPE: **DPX050/M2/EL** CODE: 5FIA150340
 DESCRIPTION: With P-T-T2-LS ports (T2-LS plugged) arranged for unloader valve

TYPE: **DPX050/M2(SU)/EL** CODE: 5FIA150330
 DESCRIPTION: As previous with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX050/M2(SO)/EL** CODE: 5FIA150331
 DESCRIPTION: As previous with non return flow limiter from inlet section to working section and by-pass valve

Closed Center circuit

TYPE: **DPX050/N2/EL** CODE: 5FIA150341
 DESCRIPTION: With P-T-T2-LS ports, arranged for unloader valve (T2 plugged)

TYPE: **DPX050/N2(SU)/EL** CODE: 5FIA150332
 DESCRIPTION: As previous with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX050/N2(SO)/EL** CODE: 5FIA150333
 DESCRIPTION: As previous with non return flow limiter from inlet section to working section and by-pass valve

2 Main pressure relief valve page 15

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

TYPE	CODE	DESCRIPTION
(TGW2-80)	OMC09002000	Range 10-120 bar / 145-1750 psi std setting 80 bar / 1160 psi
(TGW3-175)	OMC09002001	Range 40-220 bar / 580-3200 psi std setting 175 bar / 2550 psi
(TGW4-250)	OMC09002002	Range 200-350 bar / 2900-5100 psi std setting 250 bar / 3600 psi
SV	XTAP524340	Relief valve blanking plug

3 Solenoid operated unloading valve page 15

TYPE	CODE	DESCRIPTION
ELN	0EF08002000	Without emergency override
ELV	0EF08002003	With screw type emergency override
ELP	0EF08002002	With push-button emergency override
ELT	0EF08002004	With "twist & push" emergency override
LT	3XTP3533700	Unloading valve blanking plug

4 Coil

TYPE	CODE	DESCRIPTION
12VDC	4SL2000121	Coil type BER , ISO4400 conn., 12VDC

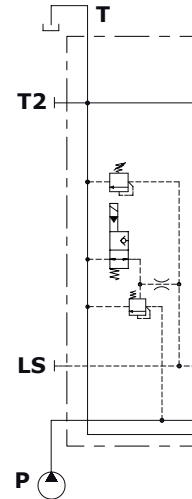
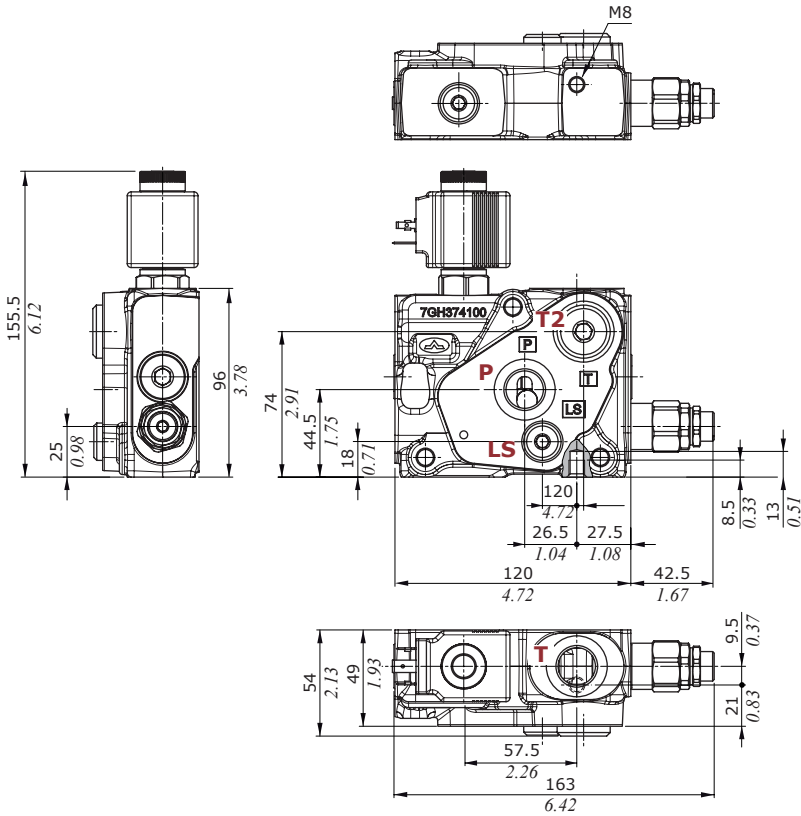
For complete available coils list see page 104.

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

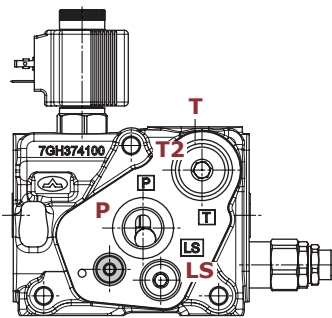
Dimensions and hydraulic circuit

Type M Open Center section

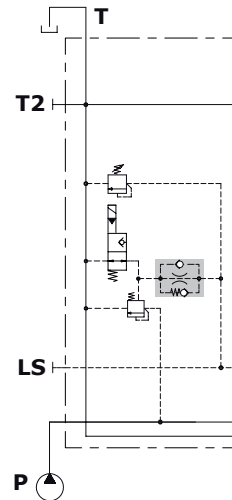
M2 type



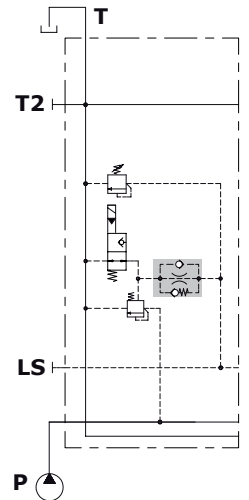
M2(SO) or M2(SU) type



M2(SU) type



M2(SO) type

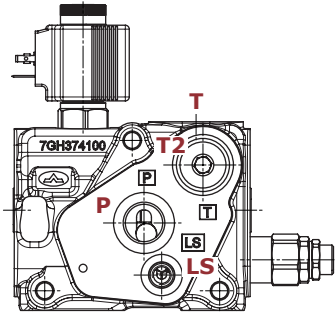


Inlet section

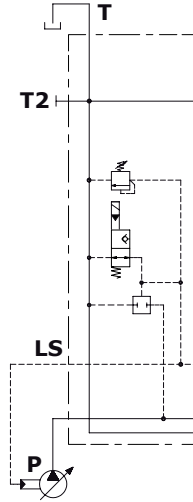
Dimensions and hydraulic circuit

Example of N Closed Center section

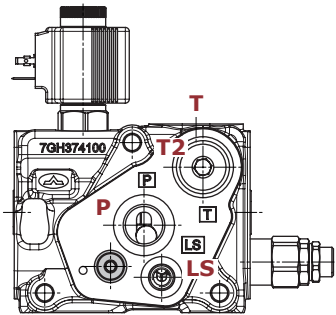
N2 type



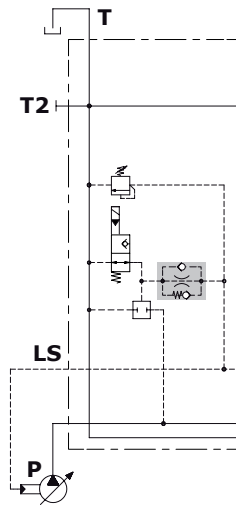
N2 type



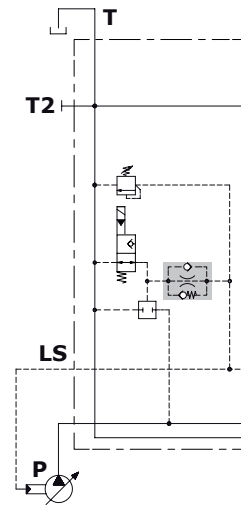
N2(SO) or N2(SU) type



N2(SU) type

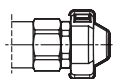
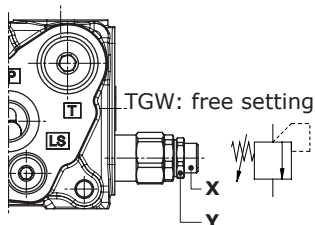


N2(SO) type



Main pressure relief valve

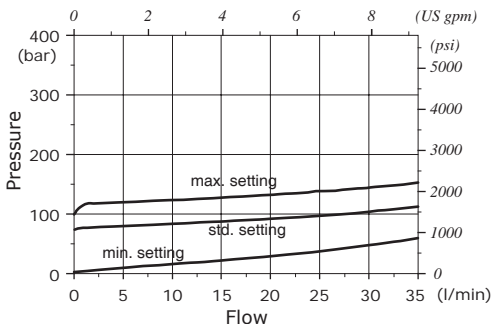
Setting types



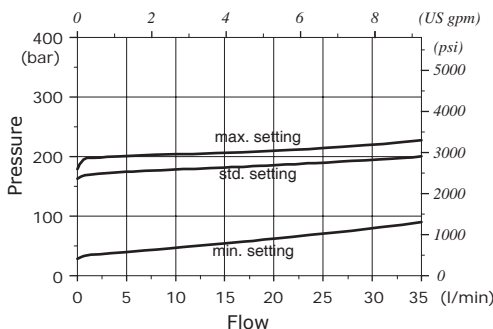
X = allen wrench 5
Y = wrench 19
20 Nm - 14.7 lbf

TZW: valve set and locked
(cap code 4COP126301, n.2 pcs)
RAL3003 pigmented

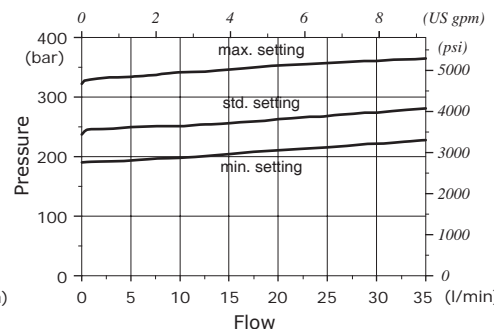
Setting range: type TGW2



Setting range: type TGW3



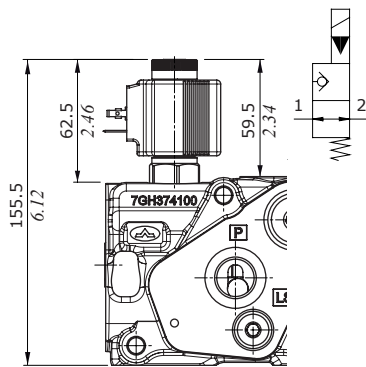
Setting range: type TGW4



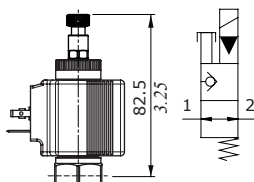
Solenoid operated unloading valve

Manual emergency types

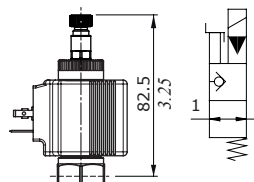
ELN: without emergency



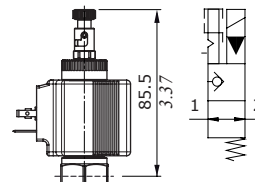
ELP: push button type



ELV: screw type



ELT: "push & twist" type



Features

- Max. flow: 40 l/min - 10.6 US gpm
- Max. pressure.: 350 bar - 5100 psi
- Internal leakage: 0.25 cm³/min @ 210 bar
0.015 in³/min @ 3050 psi

For coil features and options see coil **BER** at page 104.

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

2.1 Bleed valve

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

Both options need cavity plug:
3XTAP822150 SAE8 plug, nr.1

2.2 Parts*

TYPE	CODE	DESCRIPTION
<u>Ports P1-T1-LS1 plugged</u>		
-	3XTAP727180	G1/2 plug, nr.2
	3XTAP719150	G1/4 plug, nr.1
<u>Ports P1-T1 plugged, LS1 open</u>		
F1	3XTAP727180	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 positioner type 13RZ (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: need G3/8 plug

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 control type 13IMP

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: need G3/8 plug

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

8 Plug for single acting spool *

CODE	DESCRIPTION
3XTA722160	G3/8 plug

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

4 "A" side spool positioners page 25

TYPE	CODE	DESCRIPTION
8	5V08102000	3 positions with spring return to neutral position
8F2	5V0810A001	Spool stroke limiter on port B
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 positions, detent in 4 th position with spool in, spring return to neutral position
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5 "B" side spool control kit page 27

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

6 Proportional hydraulic control* page 28

TYPE	CODE	DESCRIPTION
8IM	5IDR20A300	Range 8-27 bar (116-392 psi)
8IMX	5IDR20A301	Range 3.5-20 bar (51-290 psi)
8IMF3	5IDR20A302	Range 8-27 bar (116-392 psi), with spool stroke limiter on ports A and B
8IMXF3	5IDR20A303	Range 3.5-20 bar (51-290 psi), with spool stroke limiter on ports A and B

For floating circuit (standard spool)

13IMP	5IDR20A310	Range 4-16.5-28 bar (58-239-406 psi)
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7 Port valves page 35

TYPE	CODE	DESCRIPTION
UT	XTAP518370	Valve blanking plug
C	5KIT411000	Anticavitation valve

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

U040	5KIT308040	Setting: 40 bar (580 psi)
U050	5KIT308050	Setting: 50 bar (725 psi)
U060	5KIT308060	Setting: 63 bar (870 psi)
U080	5KIT308080	Setting: 80 bar (1150 psi)
U100	5KIT308100	Setting: 100 bar (1450 psi)
U120	5KIT308120	Setting: 120 bar (1750 psi)
U130	5KIT308130	Setting: 130 bar (1900 psi)
U140	5KIT308140	Setting: 140 bar (2050 psi)
U150	5KIT308150	Setting: 150 bar (2150 psi)
U165	5KIT308165	Setting: 165 bar (2400 psi)
U175	5KIT308175	Setting: 175 bar (2550 psi)
U185	5KIT308185	Setting: 185 bar (2700 psi)
U200	5KIT308200	Setting: 200 bar (2900 psi)
U210	5KIT308210	Setting: 210 bar (3050 psi)
U220	5KIT308220	Setting: 220 bar (3200 psi)
U235	5KIT308235	Setting: 235 bar (3400 psi)
U250	5KIT308250	Setting: 250 bar (2600 psi)
U270	5KIT308270	Setting: 270 bar (3900 psi)
U340	5KIT308340	Setting: 340 bar (360 psi)

Working and outlet section parts ordering codes (electrohydraulic)

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

DPX050 / PZ - I104(40/40) - 8EZ3F2 LHCIF1 . U1(100) U2(120) - 12VDC

1 3 4 5 7 4

DPX050 / RQZ - I104(40/40) - 8EZ3F2LHCIF1 - (VBT / RT) - F1 - NOTAP(VL) - 12VDC

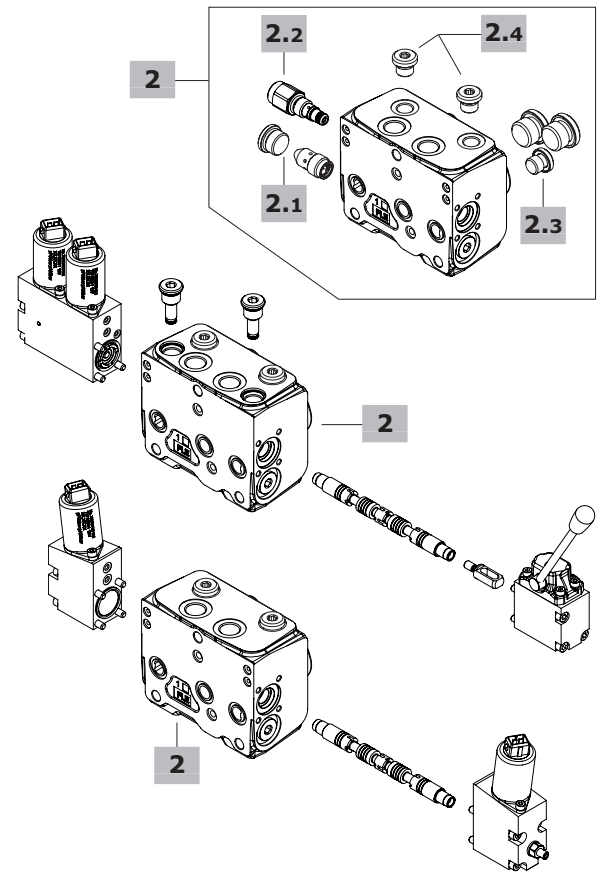
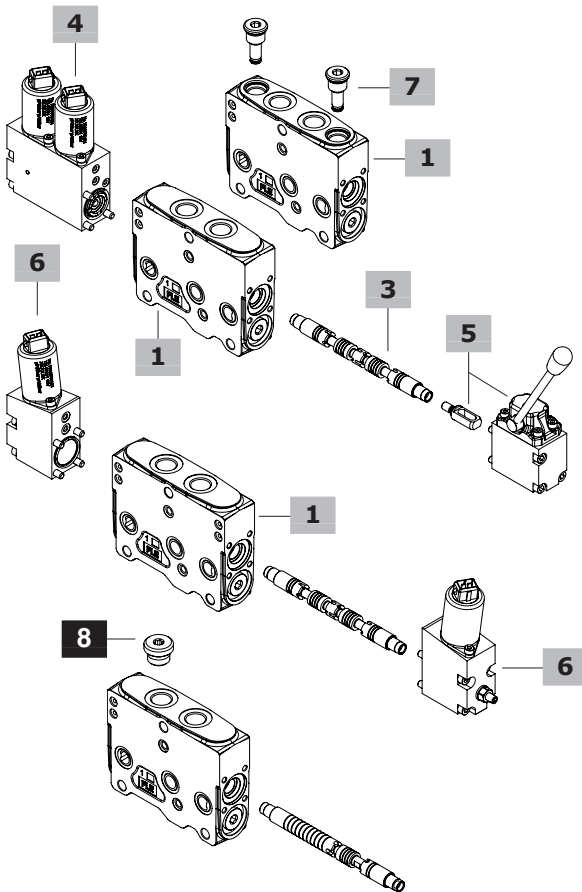
2 2.1 2.2 2.3 2.4

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

2 6 6

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

2



1 Working section kit* page 20

For two-side electrohydraulic control

TYPE: **DPX050/QE** CODE: 5EL10A3012
 DESCRIPTION: Without port valves arrangement
 TYPE: **DPX050/PE** CODE: 5EL10A3002
 DESCRIPTION: With port valves arrangement

For one-side electrohydraulic control

TYPE: **DPX050/QZ** CODE: 5EL10A3210
 DESCRIPTION: Without port valves arrangement
 TYPE: **DPX050/PZ** CODE: 5EL10A3200
 DESCRIPTION: With port valves arrangement

2 Working section kit with outlet* page 21

For two-side electrohydraulic control

TYPE: **DPX050/RQE** CODE: 5FIA20A313
 DESCRIPTION: With Bleed valve, with port P1-T1-LS1 plugged, without port valves arrangement
 TYPE: **DPX050/RPE** CODE: 5FIA20A301
 DESCRIPTION: As previous with port valves arrangement

For one-side electrohydraulic control

TYPE: **DPX050/RQZ** CODE: 5FIA20A326
 DESCRIPTION: With Bleed valve, with port P1-T1-LS1 plugged, without port valves arrangement
 TYPE: **DPX050/RPZ** CODE: 5FIA20A325
 DESCRIPTION: As previous with port valves arrangement

Working and outlet section parts ordering codes (electrohydraulic)

2.1 Bleed valve

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

Both options need cavity plug:
3XTAP822150 SAE8 plug, nr.1

2.2 Pressure reducing valve

TYPE	CODE	DESCRIPTION
(-)	X219740033	Press. reducing valve, 32 bar (464 psi)
(RT)	XTAP418350	Valve blanking plug

2.3 Parts*

TYPE	CODE	DESCRIPTION
Ports P1-T1-LS1 plugged		
-	3XTAP727180	G1/2 plug, nr.2
	3XTAP719150	G1/4 plug, nr.1
Ports P1-T1 plugged, LS1 open		
F1	3XTAP727180	G1/2 plug, nr.2

2.4 Pilot and drain*

TYPE	CODE	DESCRIPTION
(-)	3XTAP719150	G1/4 plug, nr.2 for internal pilot and drain
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
Double acting with A and B closed in neutral position, floating circuit with 4 positions controls (type 13..)		
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: need G3/8 plug		
I305-I405(50)	3CUA331005	50 l/min (13 US gpm) flow
I302-I402(20)	3CUA331002	20 l/min (5.3 US gpm) flow

8 Plug for single acting spool*

CODE	DESCRIPTION
3XTAP722160	G3/8 plug

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

4 One-side electrohydr. control page 33

TYPE	CODE	DESCRIPTION
8EZ3-12VDC	5V0810A780	With AMP connector
8EZ3-24VDC	5V0810A785	With AMP connector
8EZ3F2-12VDC	5V0810A781	With AMP connector and spool stroke limiter
8EZ3F2-24VDC	5V0810A782	As previous
8EZ34-12VDC	5V0810A786	With Deutsch connector
8EZ34-24VDC	5V0810A787	With Deutsch connector
8EZ34F2-12VDC	5V0810A783	With Deutsch connector and spool stroke limiter
8EZ34F2-24VDC	5V0810A784	As previous
For floating circuit (standard spool)		
13EZ3-12VDC	5V1310A784	Without Step, with AMP connector
13EZ3-24VDC	5V1310A785	As previous
13EZ34-12VDC	5V1310A786	Without Step, with Deutsch connector
13EZ34-24VDC	5V1310A787	As previous
13EZ3P-12VDC	5V1310A780	With Step, with AMP connector
13EZ3P-24VDC	5V1310A781	As previous
13EZ34P-12VDC	5V1310A782	With Step, with Deutsch connector
13EZ34P-24VDC	5V1310A783	As previous

5 "B" side options page 34

TYPE	CODE	DESCRIPTION
For one-side electrohydraulic control		
LHCI	5LEV1A0401	Lever control with kinematic kit engaged
LHCIF1	5LEV1A0402	As previous with spool stroke limiter
SLC	5COP150010	Endcap
SLCF1	5COP150011	Endcap with spool stroke limiter

6 Two-side electrohydr. control page 32

TYPE	CODE	DESCRIPTION
8EB3-12VDC	5IDR90A200	With AMP connector
8EB3-24VDC	5IDR90A201	With AMP connector
8EB34-12VDC	5IDR90A202	With Deutsch connector
8EB34-24VDC	5IDR90A203	With Deutsch connector
8EB3F3-12VDC	5IDR90A204	With AMP connector with spool stroke limiter
8EB3F3-24VDC	5IDR90A205	As previous
8EB34F3-12VDC	5IDR90A206	With Deutsch connector with spool stroke limiter
8EB34F3-24VDC	5IDR90A207	As previous
For floating circuit (standard spool)		
13EB3-12VDC	5IDR91A204	Without Step, with AMP connector
13EB3-24VDC	5IDR91A205	As previous
13EB34-12VDC	5IDR91A206	Without Step, with Deutsch connector
13EB34-24VDC	5IDR91A207	As previous
13EB3P-12VDC	5IDR91A200	With Step, with AMP connector
13EB3P-24VDC	5IDR91A201	As previous
13EB34P-12VDC	5IDR91A202	With Step, with Deutsch connector
13EB34P-24VDC	5IDR91A203	As previous

7 Port valves page 35

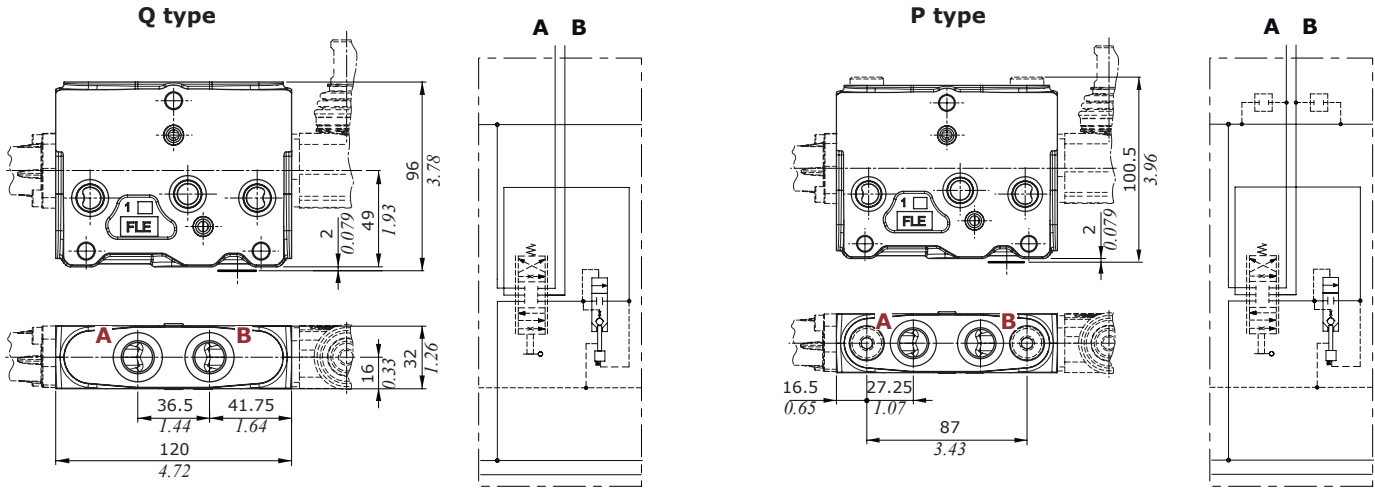
TYPE	CODE	DESCRIPTION
U040	5KIT308040	Setting: 40 bar (580 psi)

For complete list see previous pages.

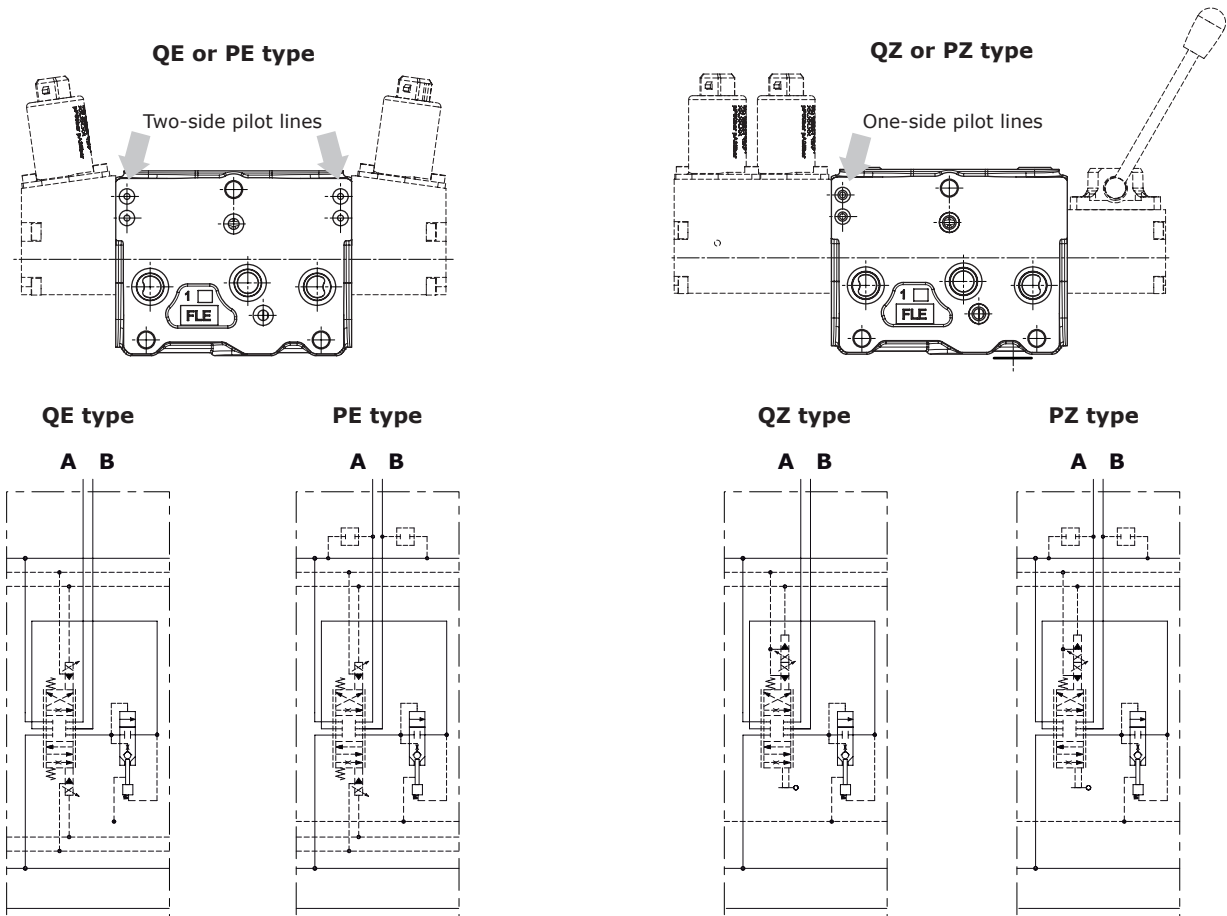
Working and outlet section

Dimensions and hydraulic circuit

Section for mechanical and hydraulic controls

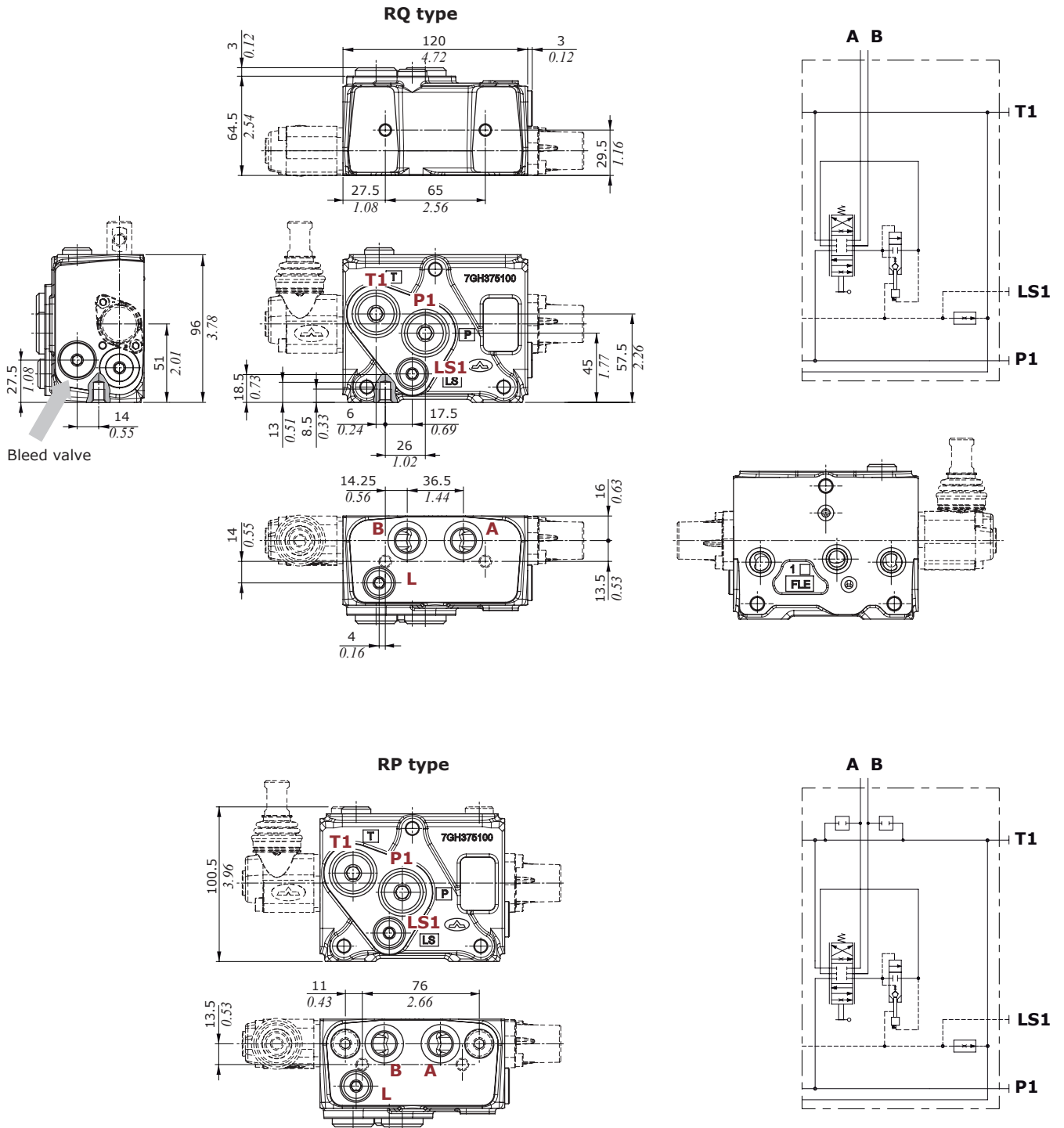


Section for electrohydraulic controls



Dimensions and hydraulic circuit

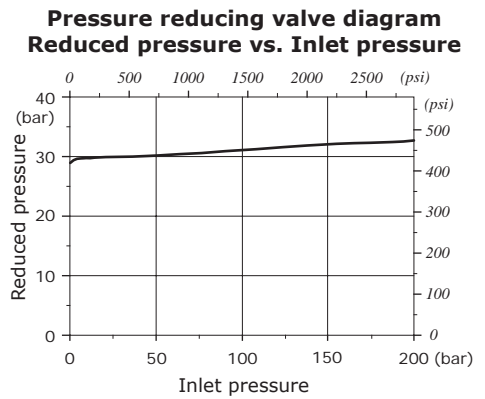
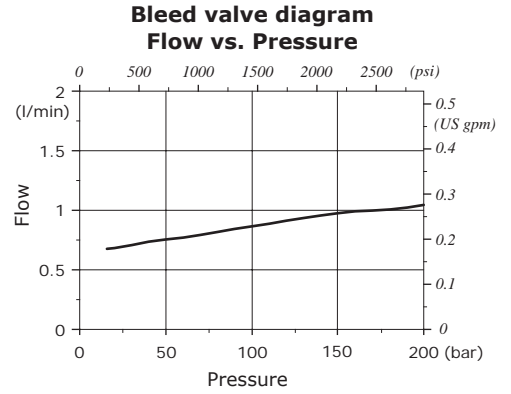
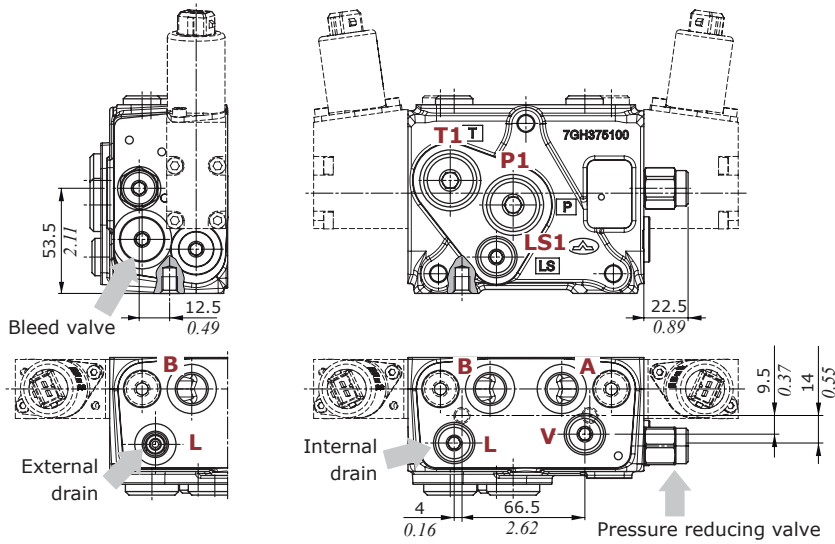
Section with outlet for mechanical and hydraulic controls



Working and outlet section

Dimensions and hydraulic circuit

Section with outlet for electrohydraulic controls

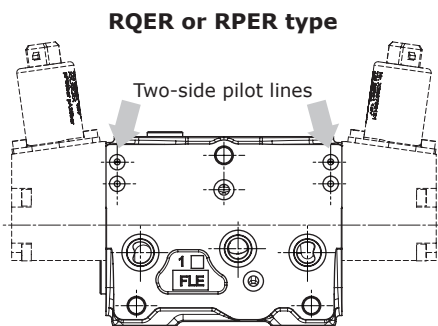


Bleed valve features

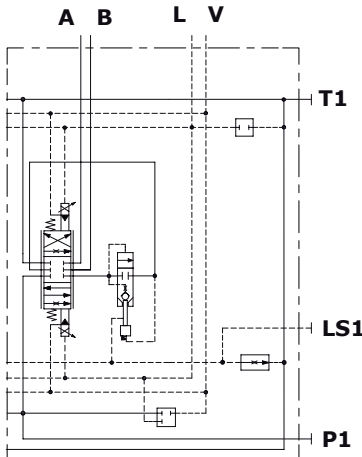
- Max. inlet pressure : 300 bar - 4350 psi
- Max. back pressure : 25 bar - 363 psi

Pressure reducing valve features

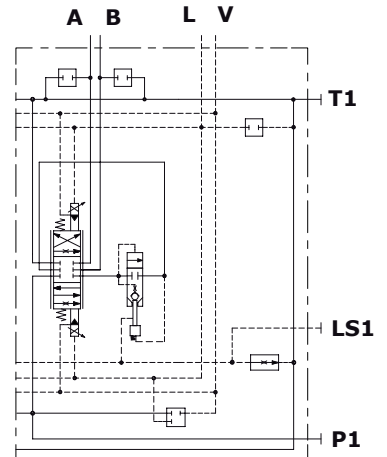
- Max. inlet pressure : 380 bar - 5500 psi
- Max. back pressure : 25 bar - 363 psi



RQER type
(Without pressure reducing valve)

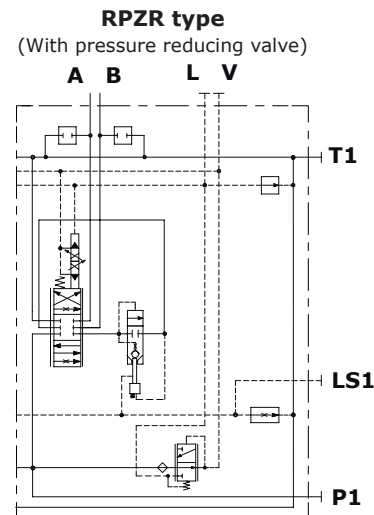
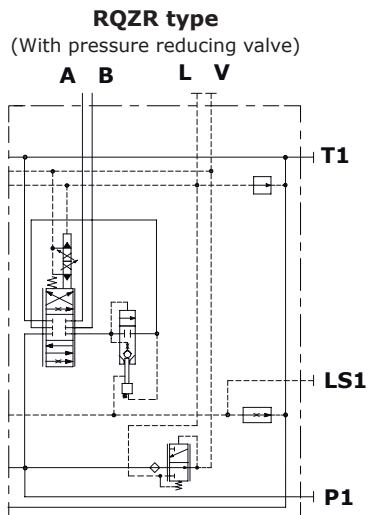
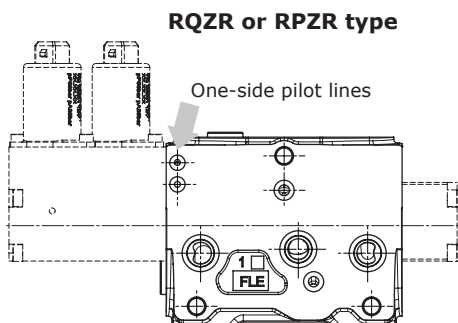


RPER type
(Without pressure reducing valve)



Working and outlet section

Dimensions and hydraulic circuit



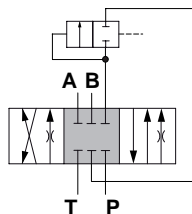
Spool

Spool type 1 (1../I1..)

A, B closed in neutral position

with 3 positions control

1 0 2

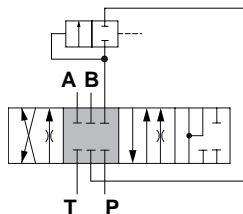


Spool stroke

position 1: + 5.5 mm (- 0.22 in)
position 2: - 5.5 mm (+ 0.22 in)

with 4 positions control

1 0 2 3



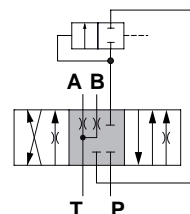
Spool stroke

position 1: + 5.5 mm (- 0.22 in)
position 2: - 5.5 mm (+ 0.22 in)
position 3: - 10 mm (- 0.39 in)

Spool type 2H(2H../I2H..)

A, B partially to tank in neutral pos.

1 0 2



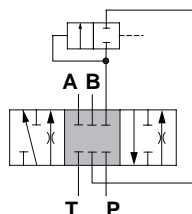
Spool stroke

position 1: + 5.5 mm (- 0.22 in)
position 2: - 5.5 mm (+ 0.22 in)

Spool type 3 (3../I3..)

single acting on A

1 0 2



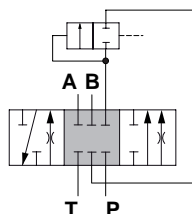
Spool stroke

position 1: + 5.5 mm (- 0.22 in)
position 2: - 5.5 mm (+ 0.22 in)

Spool type 4 (4../I4..)

single acting on B

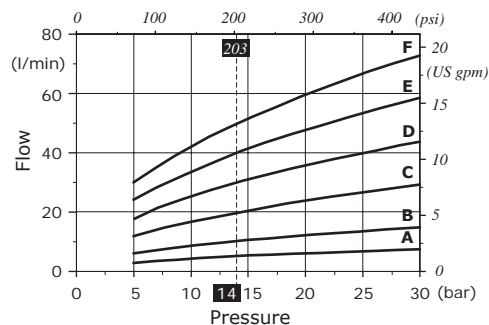
1 0 2



Spool stroke

position 1: + 5.5 mm (- 0.22 in)
position 2: - 5.5 mm (+ 0.22 in)

Spool flow vs. Stand-by pressure (margin pressure)



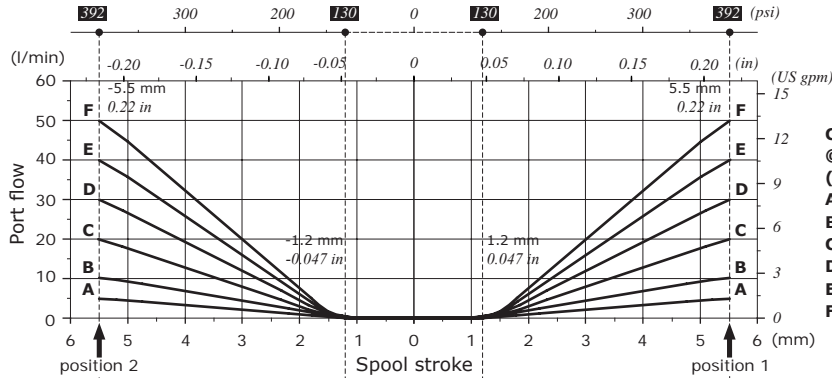
Working and outlet section

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.

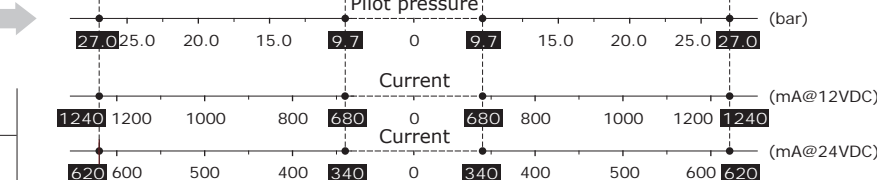
3 positions spools metering curve

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)

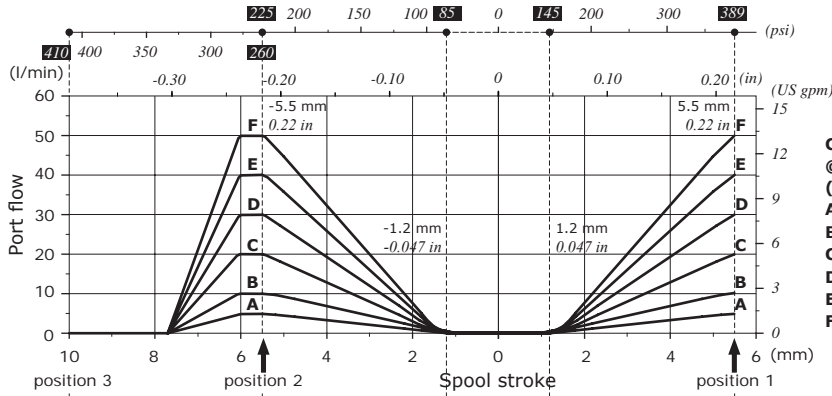
With 8IM control kit



With 8EB3 or 8EZ3 control kit

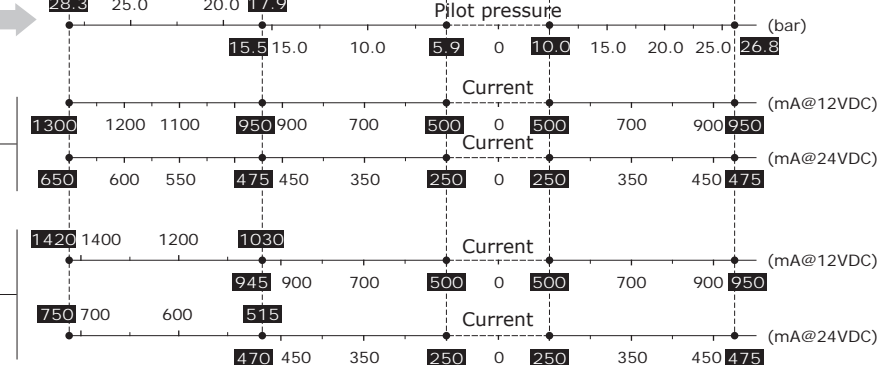
Floating spool metering curve

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)

With 13IMP control kit



With 13EB3 or 13EZ3 control kit, without STEP

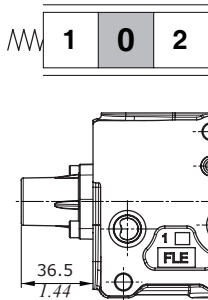
With 13EB3P or 13EZ3P control kit, with STEP

Working and outlet section

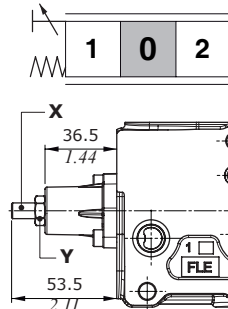
"A" side spool positioners

With spring return to neutral position

Type 8

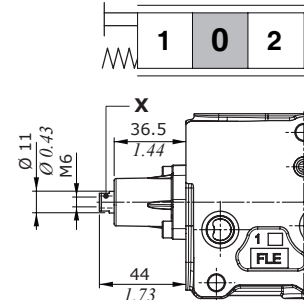


Type 8F2
Spool stroke limiter on Port B



X = allen wrench 4
Y = wrench 13 / 24 Nm - 17.7 lbf

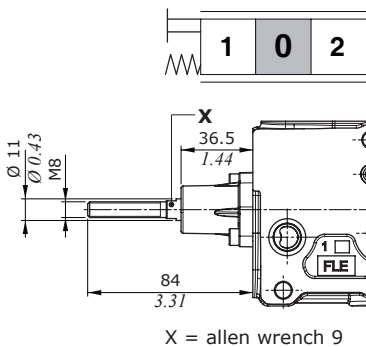
Type 8D
External pin with M6 female thread



X = allen wrench 9

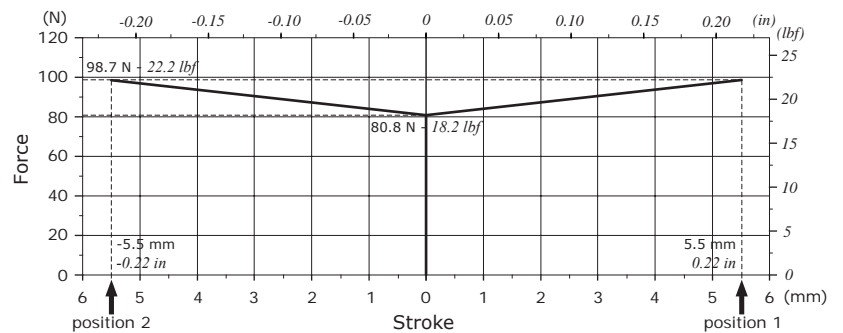
Type 8D2

External pin with M8 male thread



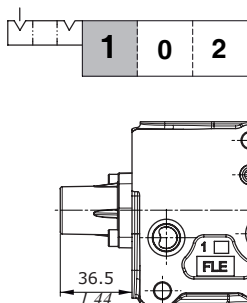
X = allen wrench 9

Force vs. Stroke diagram



2 positions, with detent in position 1 and 2

Type 12



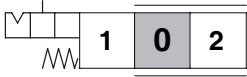
Release force 230 N ± 10 N
(51.7 lbf ± 2.2 lbf)

Working and outlet section

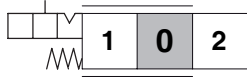
"A" side spool positioners

With detent and spring return to neutral position from either directions

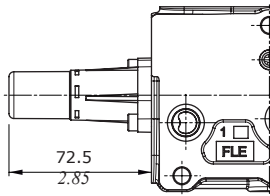
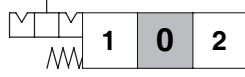
Type 9BZ
detent in position 1
(see curve A)



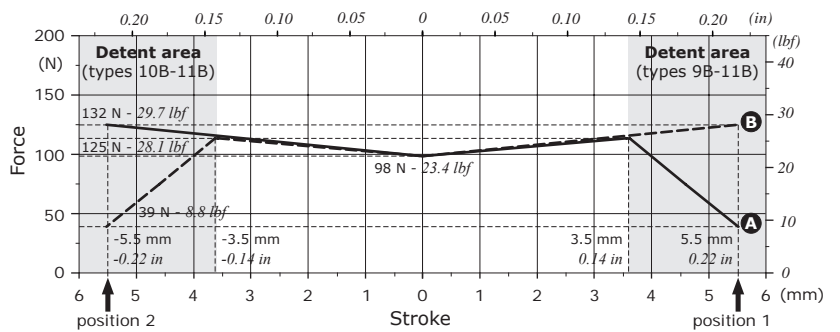
Type 10BZ
detent in position 2
(see curve B)



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

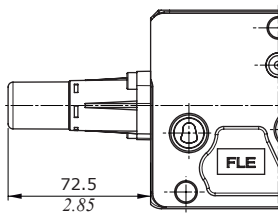
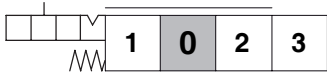


Force vs. Stroke diagram

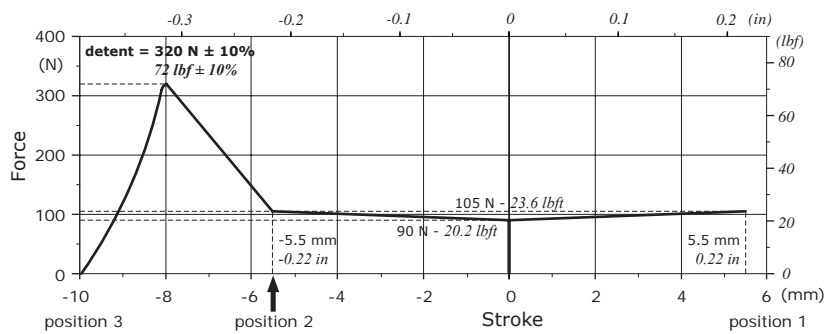


Release force 230 N ± 10% (51.7 lbf ± 10%)

For floating circuit, type 13RZ



Force vs. Stroke diagram



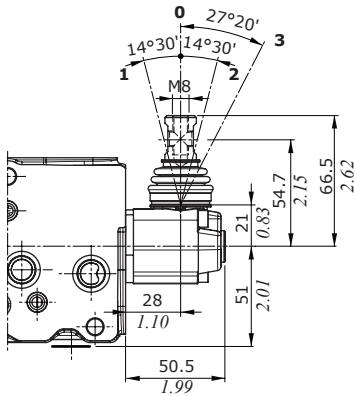
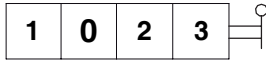
Release force from pos.3: 315 N ± 10% (71 lbf ± 10%)

Working and outlet section

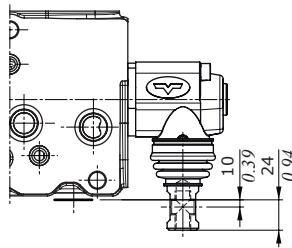
"B" side spool control kit

Lever boxes

Type L

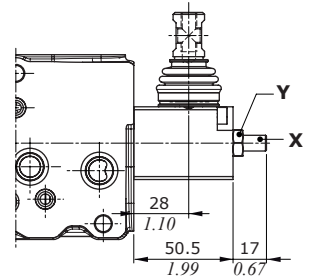
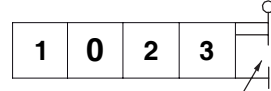


Type L180



Type LF1

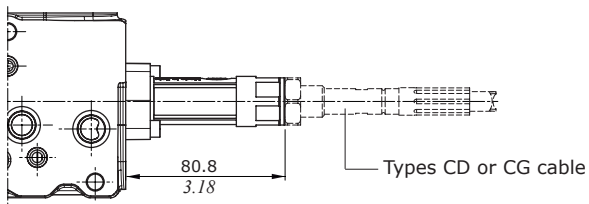
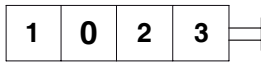
Spool stroke limiter on ports A



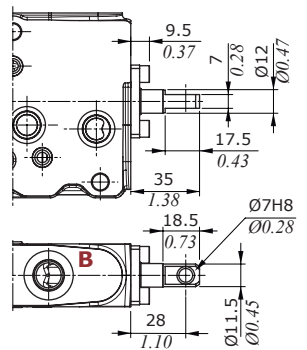
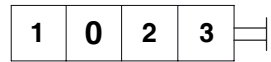
X = allen wrench 4

Y = wrench 13 / 24 Nm - 14.7 lbf

Flexible cable connection, type TQ



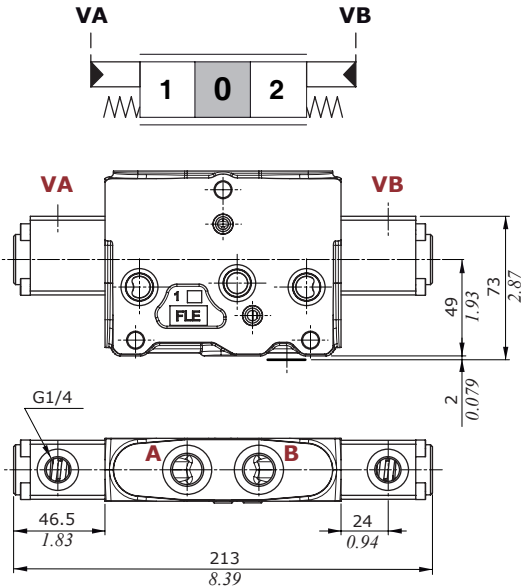
Dust-proof plate, type SLP



Working and outlet section

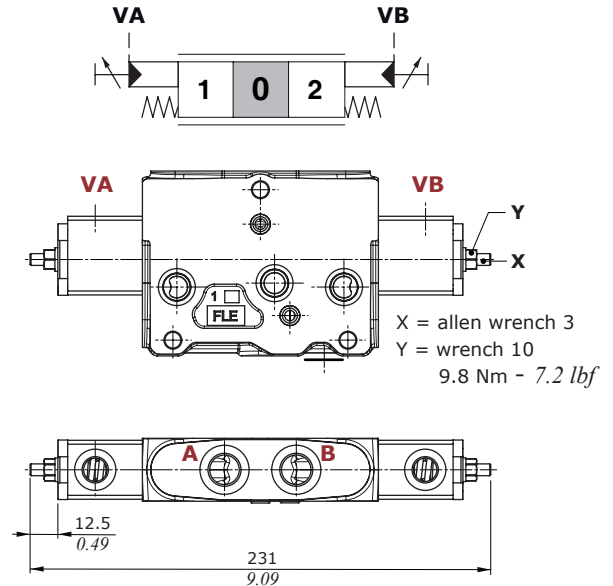
Proportional hydraulic control

Types 8IM - 8IMX



Types 8IMF3 - 8IMXF3

With spool stroke limiter on ports A and B

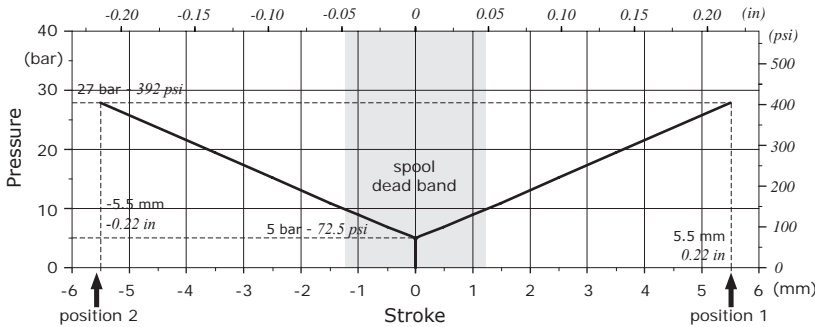


X = allen wrench 3
Y = wrench 10
9.8 Nm - 7.2 lbf

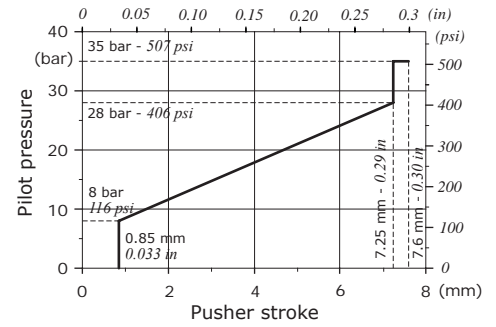
Features (all types)

Max. pressure. : 70 bar - 1010 psi

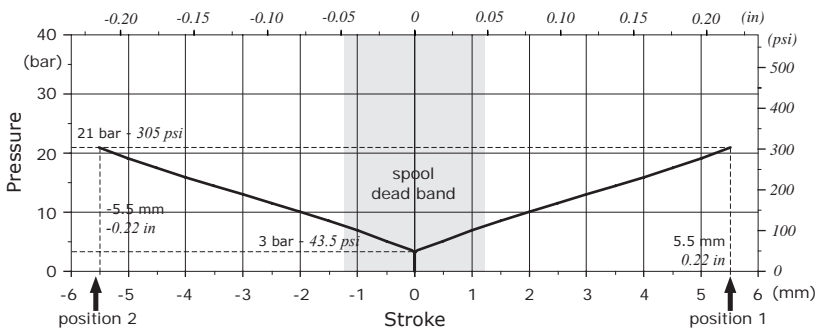
Types 8IM-8IMF3: Stroke vs. Pressure diagram



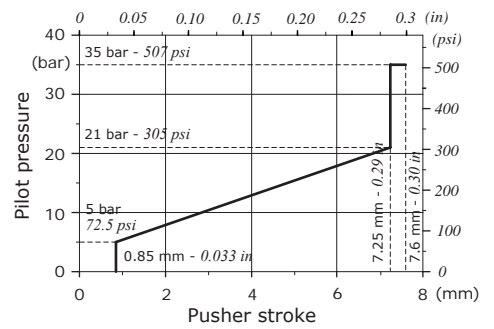
Suggested pressure control curve: 089



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



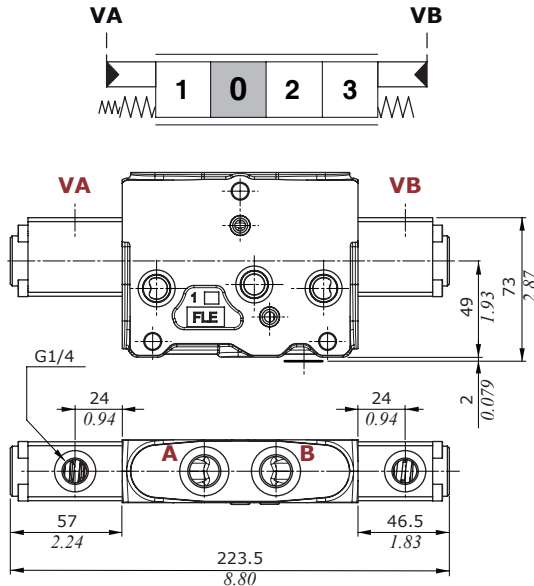
Suggested pressure control curve: 028



Working and outlet section

Proportional hydraulic control

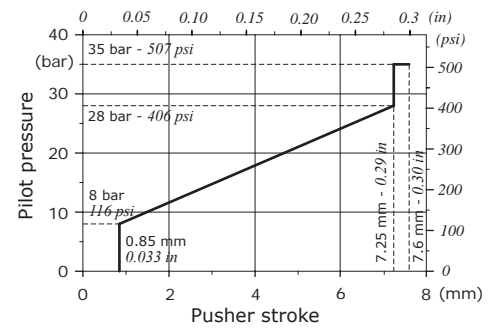
For floating circuit, type 13IMP



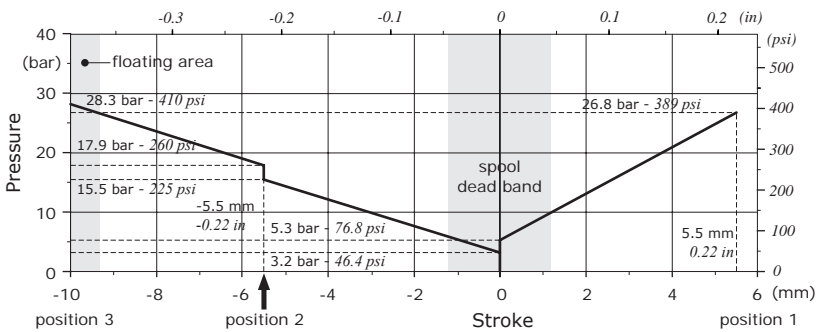
Features

Max. pressure. : 70 bar - 1010 psi

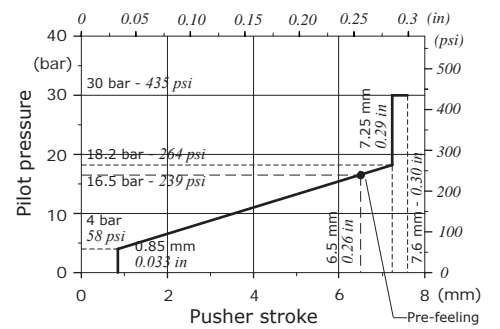
Suggested pressure control curve on port VA: type 089



Stroke vs. Pressure diagram



Suggested pressure control curve on port VB: type 086



Working and outlet section

Electrohydraulic controls 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 tolerance ± 10%.

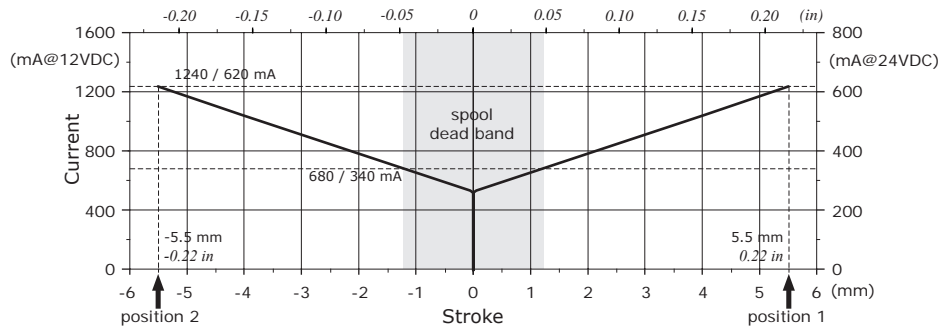
Following electrohydraulic controls need CED100X or CED400X electronic unit; for information contact Sales Department.

Specifications		Spool control type					
		8EB3	13EB3	13EB3P	8EZ3	13EZ3	13EZ3P
Electric specifications							
Coil impedance	12 VDC	4.72 Ω	4.72 Ω	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	20.8 Ω	20.8 Ω
Max. operating current	12 VDC	1.5 A	1.5 A	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	0.75 A	0.75 A
No load current consumption		0	0	0	0	0	0
		<u>Controls configured with lever box</u>					
Hysteresis max. ⁽¹⁾	external drain	< 4%	< 4%	< 4%	< 6%	< 6%	< 6%
	internal drain	< 5%	< 5%	< 5%	< 7%	< 7%	< 7%
Time response	from 0 ⇒ 100% and from 100% ⇒ 0 of stroke	< 60 ms	< 85 ms	< 85 ms	< 75 ms	< 85 ms	< 85 ms
Min. flow control signal	12 VDC	680 mA	500 mA	500 mA	680 mA	500 mA	500 mA
	24 VDC	340 mA	250 mA	250 mA	340 mA	250 mA	250 mA
Max. flow control signal	12 VDC	1240 mA	950 mA	P⇒A: 950 mA P⇒B: 945 mA 1030 mA	1240 mA	950 mA	P⇒A: 950 mA P⇒B: 945 mA 1030 mA
	24 VDC	620 mA	475 mA	P⇒A: 475 mA P⇒B: 470 mA 515 mA	620 mA	475 mA	P⇒A: 475 mA P⇒B: 470 mA 515 mA
Float flow control signal	12 VDC		1300 mA	1420 mA		1300 mA	1420 mA
	24 VDC		650 mA	710 mA		650 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 (type JPT) - IP69K (type DT)			IP65 (type JPT) - IP69K (type DT)	
Hydraulic specifications							
Max. pressure			40 bar (580 psi)			40 bar (580 psi)	
Max. back pressure			10 bar (145 psi)			10 bar (145 psi)	

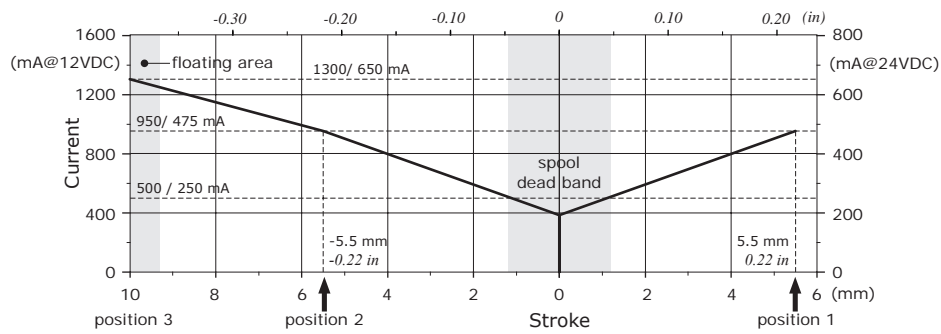
Note (1) hysteresis is indicated at nominal supply voltage and f = 0.008 Hz for one cycle (one cycle = neutral ⇒ full A ⇒ neutral ⇒ full B ⇒ neutral). For the calculation rules see "Appendix A" on page 110.

Electrohydraulic controls performance data

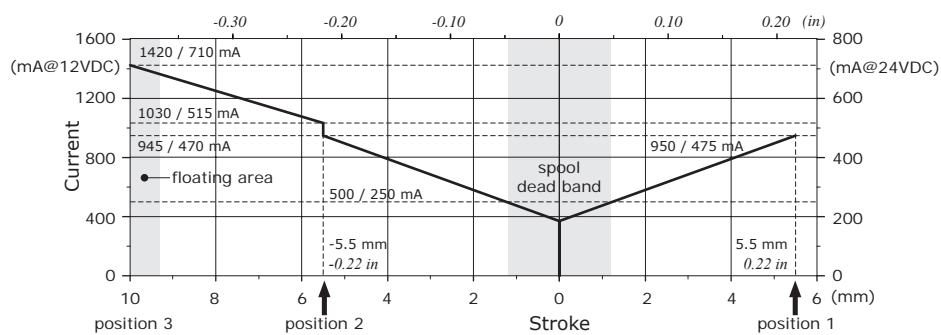
Types 8EB3/8EZ3: Stroke vs. Current diagram



Types 13EB3/13EZ3: Stroke vs. Current diagram



Types 13EB3P/13EZ3P: Stroke vs. Current diagram



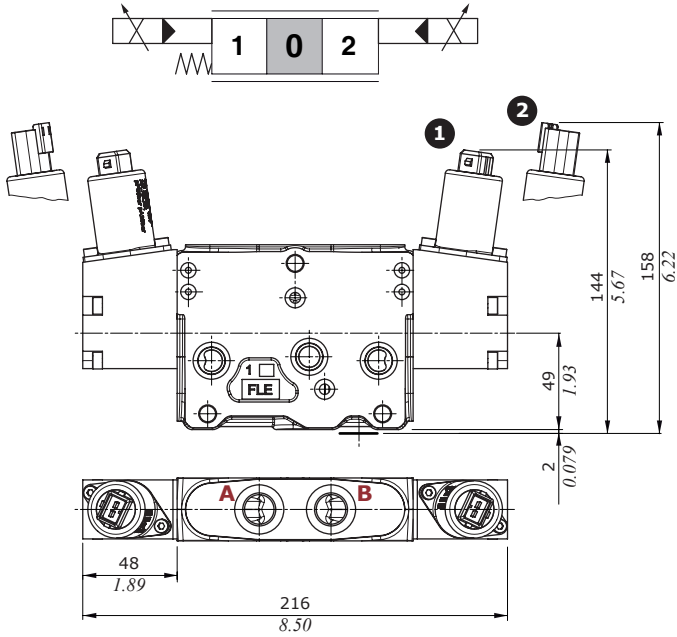
Working and outlet section

Two-side electrohydraulic control

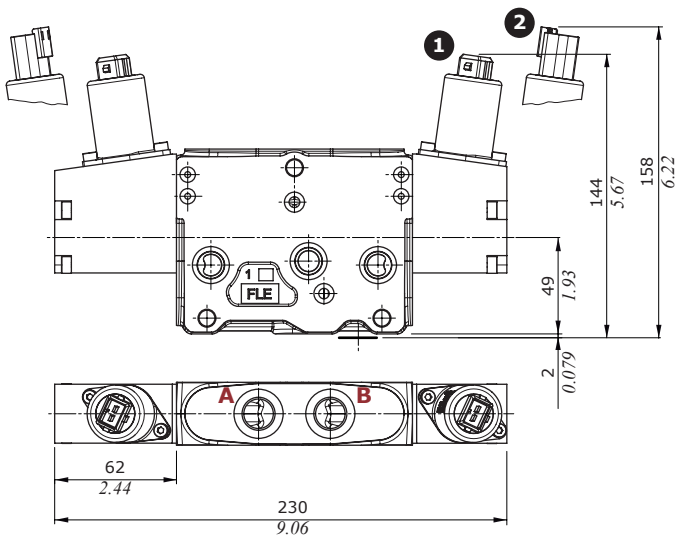
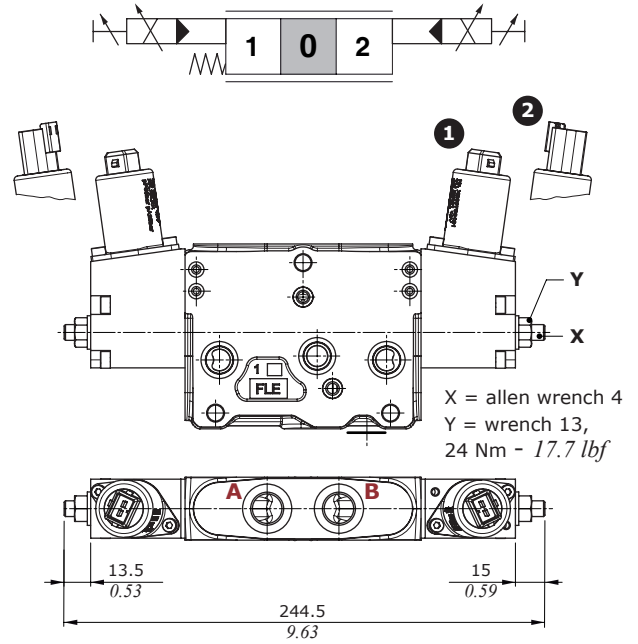
Control Types

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

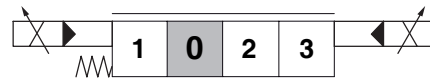
Types
8EB3 - 8EB34



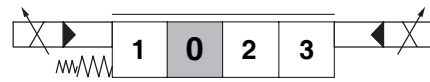
Types
8EB3F3 - 8EB34F3



Types
13EB3 - 13EB34



Types
13EB3P - 13EB34P

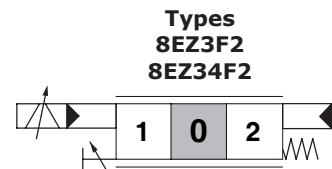
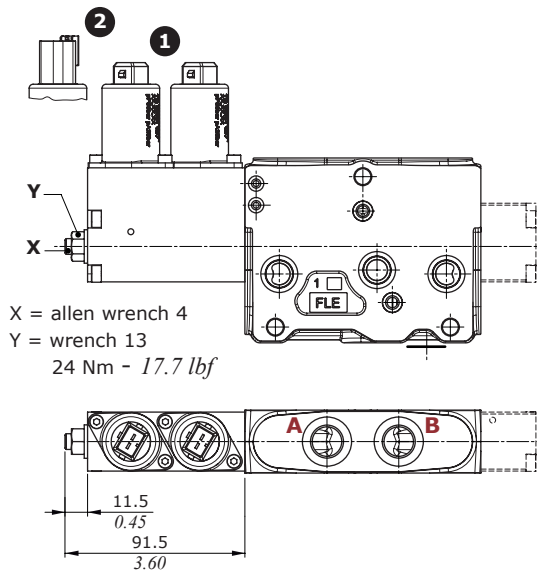
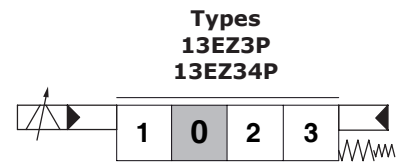
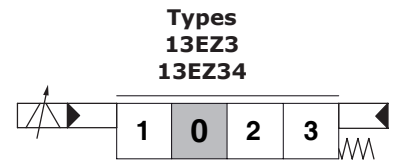
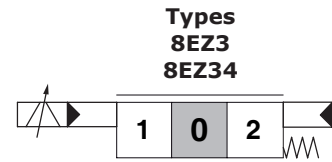
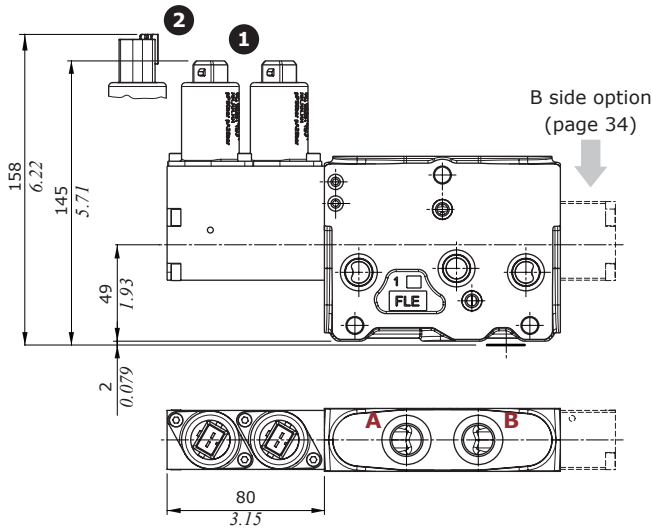


Working and outlet section

One-side electrohydraulic control

Control Types

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



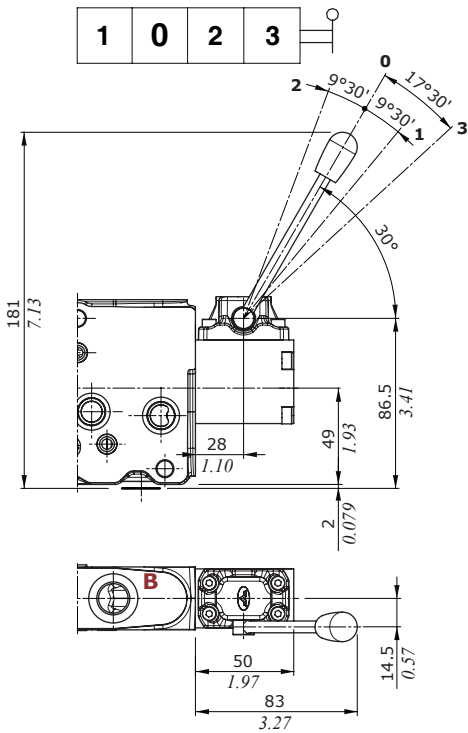
Working and outlet section

"B" side options

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

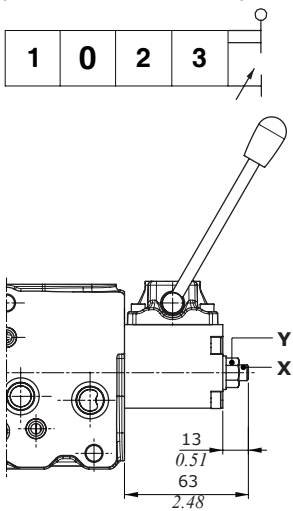
Lever boxes

Type LCHI



Type LCHIF1

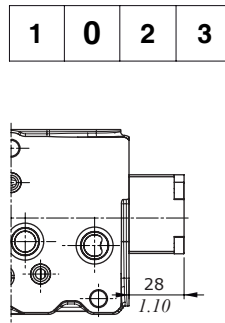
Spool stroke limiter on ports A



X = allen wrench 4
Y = wrench 13 / 24 Nm - 17.7 lbf

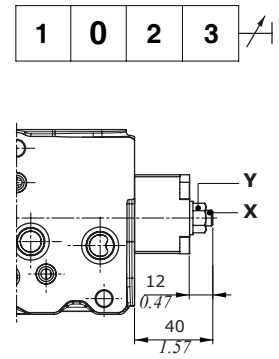
Encaps

Type SLC



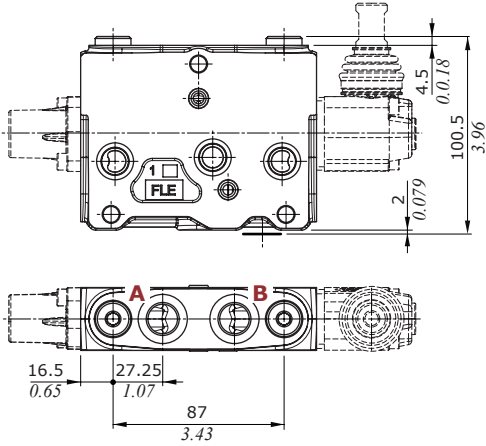
Type SLCF1

spool stroke limiter on ports A



X = allen wrench 4
Y = wrench 13 / 24 Nm - 17.7 lbf

Port valves



Type U

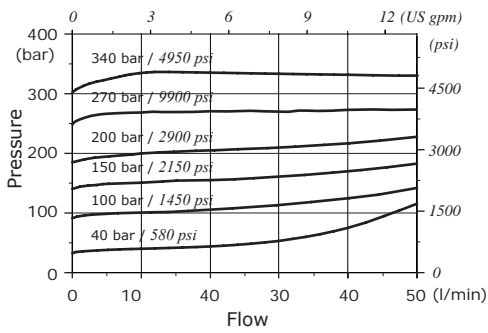


Type C



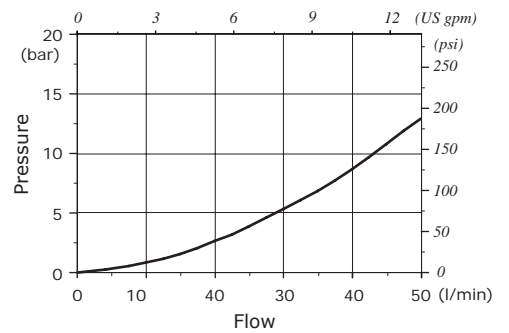
Type U: antishock valves with prefill

Setting example
(10 l/min - 2.6 US gpm)

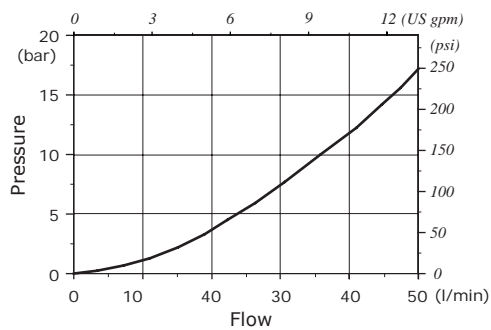


Type C: anticavitation valves

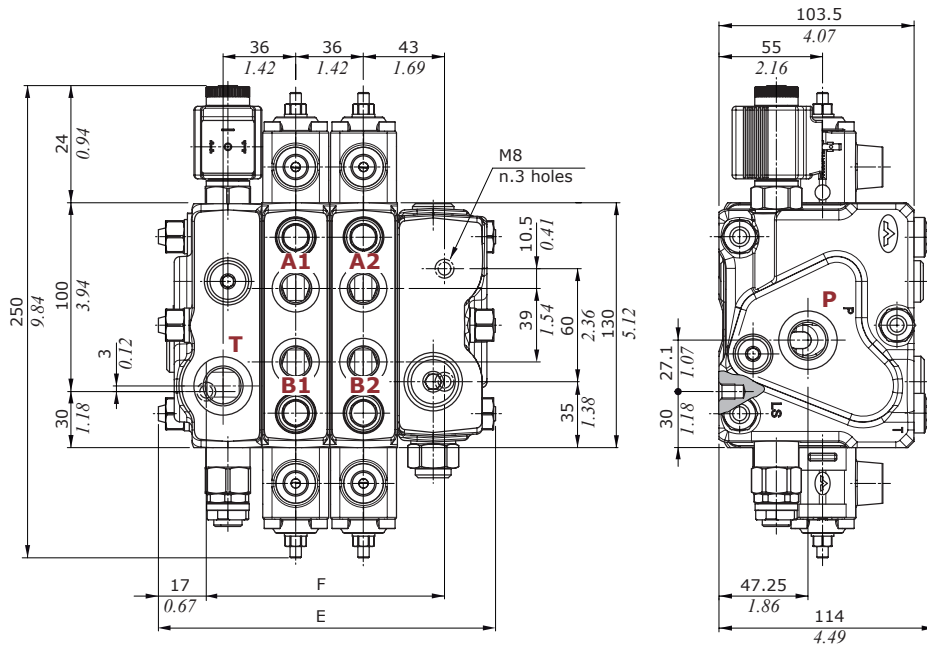
Pressure drop



Pressure drop
(in anticavitation)

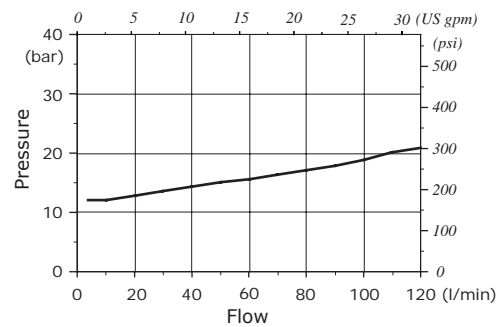


Dimensional data and performance

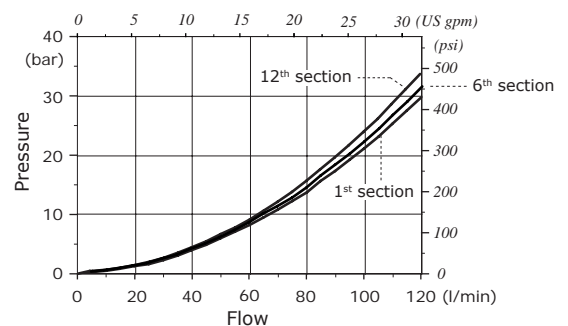


TYPE	E		F	
	mm	in	mm	in
DPX100/1	144	5.67	93.5	3.68
DPX100/2	180	7.09	129.5	5.10
DPX100/3	216	8.50	165.5	6.51
DPX100/4	252	9.92	201.5	7.93
DPX100/5	288	11.34	237.5	9.35
DPX100/6	324	12.76	273.5	10.77
DPX100/7	360	14.17	309.5	12.18
DPX100/8	396	15.59	345.5	13.60
DPX100/9	432	17.01	381.5	15.02
DPX100/10	468	18.43	417.5	16.44
DPX100/11	504	18.43	453.5	17.85
DPX100/12	540	18.43	489.5	19.27

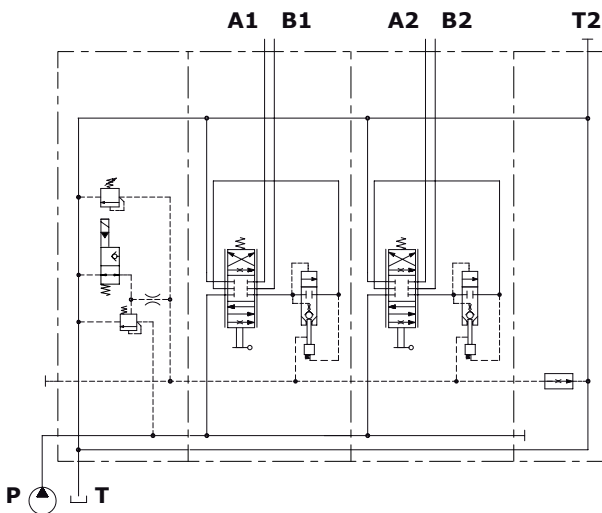
P⇒T Pressure drop inlet compensator (margin pressure)



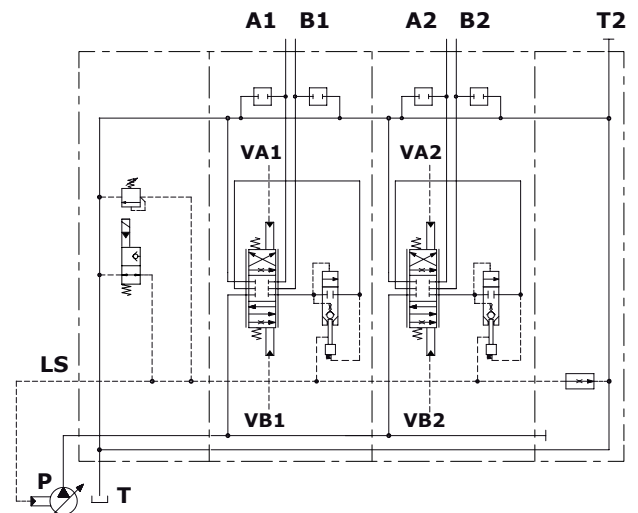
A(B)⇒T pressure drop (standard spool @ max.stroke)



Configuration example with mechanical and hydraulic controls

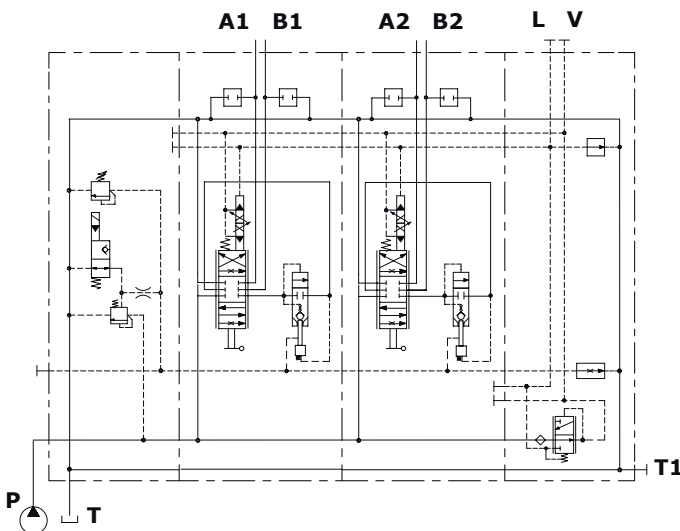


Open center circuit and lever control, with unloader valve, without port valves arrangement

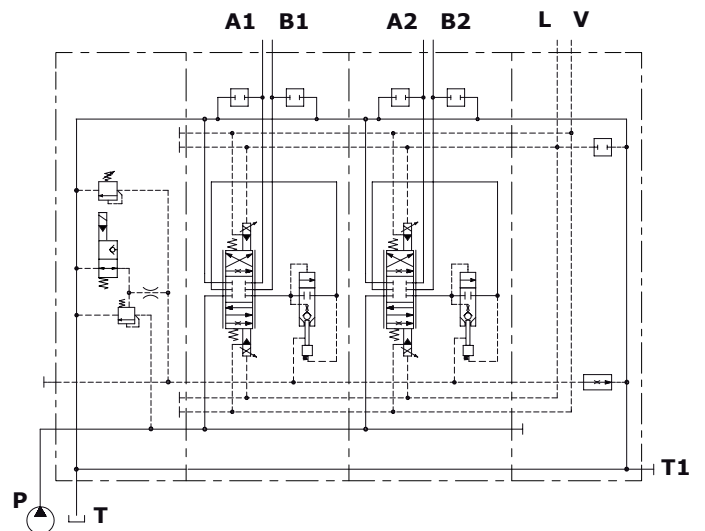


Closed center circuit and proportional hydraulic control, with unloader valve and port valves arrangement

Configuration example with electrohydraulic controls



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

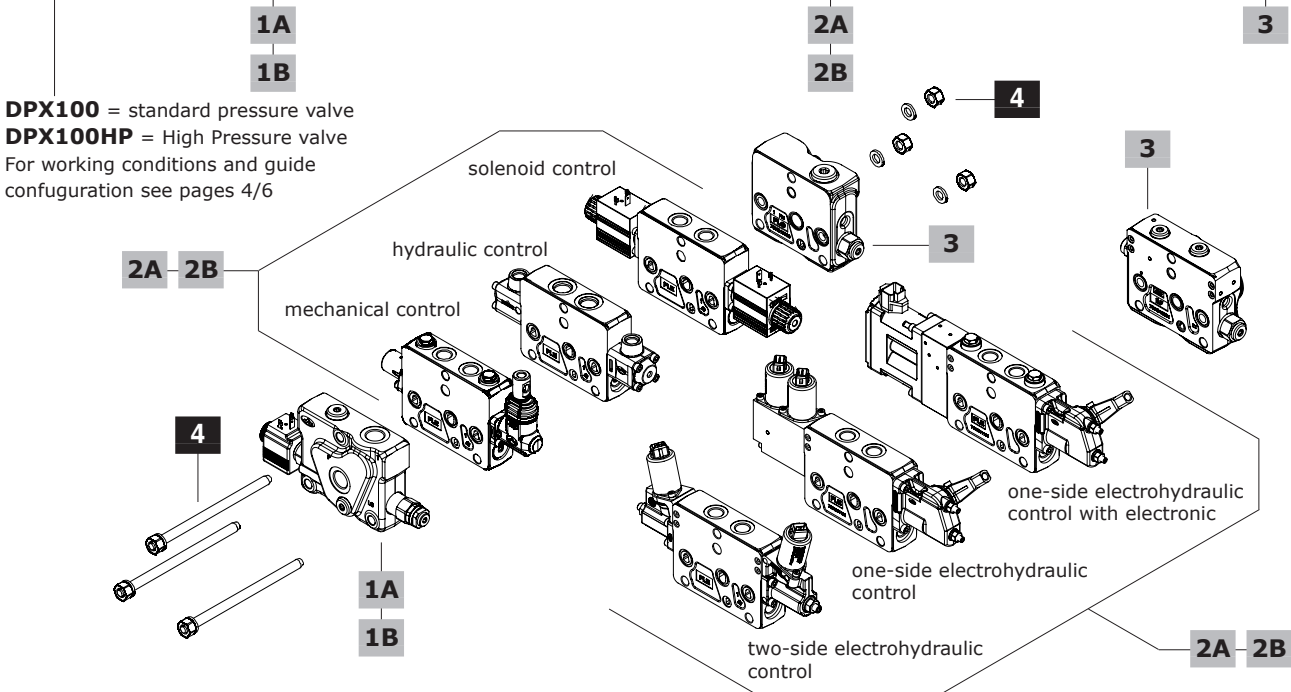


Open center circuit and two-side proportional electrohydraulic control, with unloader valve and port valves arrangement, without pressure reducing valve, external pilot and drain

Complete sections ordering codes

Nr. of working sections

DPX100/3/AM1(TGW3-175/ELN)/P-101(80/80)-8L.U3T/Q-E101(80/80)-8IMN/Q-S102(60/60)-8ES3/RF-12VDC



DPX100 = standard pressure valve
DPX100HP = High Pressure valve
 For working conditions and guide configuration see pages 4/6

1 Std pressure inlet section *

Open Center circuit

TYPE: **DPX100/AM1(TGW3-175/ELN)-12VDC**

CODE: 640203033

DESCRIPTION: With compensator, press. relief valve and unloader valve, with P-T-LS ports (LS plugged)

TYPE: **DPX100/AM1(TGW3-175/ELN)-BSP34-12VDC**

CODE: 640204007

DESCRIPTION: As previous with G3/4 P and T ports

TYPE: **DPX100/AM1(SO/TGW3-175/ELN)-12VDC**

CODE: 640203007

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

TYPE: **DPX100/AM1(SU/TGW3-175/ELN)-12VDC**

CODE: 640203029

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

Closed Center circuit

TYPE: **DPX100/AN1(TGW3-175/ELN)-12VDC**

CODE: 640203030

DESCRIPTION: Without compensator, with press. relief valve and unloader valve, with P-T-LS ports

TYPE: **DPX100/AN1(TGW3-175/ELN)-BSP34-12VDC**

CODE: 640204008

DESCRIPTION: As previous with G3/4 P and T ports

TYPE: **DPX100/AN1(SO/TGW3-175/ELN)-12VDC**

CODE: 640203009

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

TYPE: **DPX100/AN1(SU/TGW3-175/ELN)-12VDC**

CODE: 640203031

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

1 High pressure inlet section *

Open Center circuit

TYPE: **DPX100HP/AM1(TGW5-350/ELN)-12VDC**

CODE: 640203036

DESCRIPTION: With compensator, press. relief valve and unloader valve, with P-T-LS ports (LS plugged)

TYPE: **DPX100HP/AM1(TGW5-350/ELN)-BSP34-12VDC**

CODE: 640204011

DESCRIPTION: As previous with G3/4 P and T ports

TYPE: **DPX100HP/AM1(SO/TGW5-350/ELN)-12VDC**

CODE: 640203037

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

TYPE: **DPX100HP/AM1(SU/TGW5-350/ELN)-12VDC**

Co CODE de: 640203038

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

Closed Center circuit

Refer to "Std pressure" inlet sections

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

Complete sections ordering codes

2A Std pressure working section ***Mechanical control**TYPE: **DPX100/Q-101(80/80)-8L**

CODE: 640113001

DESCRIPTION: Lever control without port valves arrangement

TYPE: **DPX100/P-101(80/80)-8L.U3T**

CODE: 640103001

DESCRIPTION: As previous with port valves arrangement

Proportional hydraulic controlTYPE: **DPX100/Q-E101(80/80)-8IMN**

CODE: 640113600

DESCRIPTION: Without port valves arrangement

TYPE: **DPX100/P-E101(80/80)-8IMN.U3(100)**

CODE: 640103012

DESCRIPTION: With antishock port valves

On/off solenoid controlTYPE: **DPX100/Q-S102(60/60)-8ES3-12VDC**

CODE: 640113018

DESCRIPTION: Without port valves arrangement

TYPE: **DPX100/P-S102(60/60)-8ES3.U3(100)-12VDC**

CODE: 640103024

DESCRIPTION: With antishock port valves

Two-side proportional electrohydraulic controlTYPE: **DPX100/QE-E101(80/80)-8EB3TF3-12VDC**

CODE: 640113007

DESCRIPTION: With spool stroke limiter, without port valves arrang.

TYPE: **DPX100/PE-E101(80/80)-8EB3TF3.U3T-12VDC**

CODE: 640103009

DESCRIPTION: As previous with port valves arrangement

One-side proportional electrohydraulic controlTYPE: **DPX100/QZ-E101(80/80)-8EZ3LQF3-12VDC**

CODE: 640113019

DESCRIPTION: With spool stroke limiter, without port valves arrang.

TYPE: **DPX100/PZ-E101(80/80)-8EZ3LQF3.U3T-12VDC**

CODE: 640103028

DESCRIPTION: As previous with port valves arrangement

One-side prop. electrohydraulic control with electronicTYPE: **DPX100/QZ-E101(80/80)-8ZR3T1LQF3-S12VDC**

CODE: 640113020

DESCRIPTION: With spool stroke limiter, without port valves arrang.

TYPE: **DPX100/PZ-E101(80/80)-8ZR3T1LQF3.U3T-12VDC**

CODE: 640103029

DESCRIPTION: As previous with port valves arrangement

3 Outlet section *

Outlet section is the same type for standard and High Pressure valve

For mechanical, hydraulic or solenoid configurationTYPE: **DPX100/RF** CODE: 640303003

DESCRIPTION: With Bleed valve and upper T2 port (plugged)

TYPE: **DPX100/RF-BSP34** CODE: 640303003

DESCRIPTION: As previous with G3/4 T2 port (plugged)

TYPE: **DPX100/RF(04)** CODE: 640303011

DESCRIPTION: Bleed valve, upper T2, side P1-T1-LS1-M1 (plugged)

For electrohydraulic or mixed configurationTYPE: **DPX100/RDN-NOTAP(VL)** CODE: 640303002

DESCRIPTION: Without pressure reducing valve, external pilot and drain (V-L ports), with Bleed valve and side T1 port (plugged)

Type: **DPX100/RDN-NOTAP(VL)-BSP34** CODE: 640303002

DESCRIPTION: As previous with G3/4 T1 port

Type: **DPX100/RDR(03)** CODE: 640303007

DESCRIPTION: With pressure reducing valve and Bleed valve, internal pilot and drain (V-L ports plugged), side T1-P1-LS1 (plugged)

Type: **DPX100/RDR(03)-BSP34** CODE: 640304005

DESCRIPTION: As previous with G3/4 P1 and T1 ports

Note: for sections with different port arrangement contact Sales Dpt.**2B High pressure working section *****Mechanical control**TYPE: **DPX100HP/Q-101(80/80)-8L**

CODE: 640113009

DESCRIPTION: Lever control without port valves arrangement

TYPE: **DPX100HP/P-101(80/80)-8L.U3T**

CODE: 640103011

DESCRIPTION: As previous with port valves arrangement

Proportional hydraulic controlTYPE: **DPX100HP/Q-E101(80/80)-8IMN**

CODE: 640113021

DESCRIPTION: Without port valves arrangement

TYPE: **DPX100HP/P-E101(80/80)-8IMN.U3(100)**

CODE: 640103030

DESCRIPTION: With antishock port valves

On-off solenoid controlTYPE: **DPX100HP/Q-S102(60/60)-8ES3-12VDC**

CODE: 640113022

DESCRIPTION: Without port valves arrangement

TYPE: **DPX100HP/P-S102(60/60)-8ES3.U3(100)-12VDC**

CODE: 640103031

DESCRIPTION: With antishock port valves

Two-side proportional electrohydraulic controlTYPE: **DPX100HP/QE-E101(80/80)-8EB3TF3-12VDC**

CODE: 640113023

DESCRIPTION: With spool stroke limiter, without port valves arrangement

TYPE: **DPX100HP/PE-E101(80/80)-8EB3TF3.U3T-12VDC**

CODE: 640103037

DESCRIPTION: As previous with port valves arrangement

One-side proportional electrohydraulic controlTYPE: **DPX100HP/QZ-E101(80/80)-8EZ3LQF3-12VDC**

CODE: 640113024

DESCRIPTION: With spool stroke limiter, without port valves arrangement

TYPE: **DPX100HP/PZ-E101(80/80)-8EZ3LQF3.U3T-12VDC**

CODE: 640103023

DESCRIPTION: As previous with port valves arrangement

One-side prop. electrohydraulic control with electronicTYPE: **DPX100HP/QZ-E101(80/80)-8ZR3T1LQF3-12VDC**

CODE: 640113025

DESCRIPTION: With spool stroke limiter, without port valves arrangement

TYPE: **DPX100HP/PZ-E101(80/80)-8ZR3T1LQF3.U3T-12VDC**

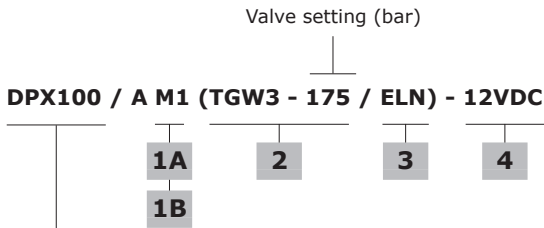
CODE: 640103035

DESCRIPTION: As previous with port valves arrangement

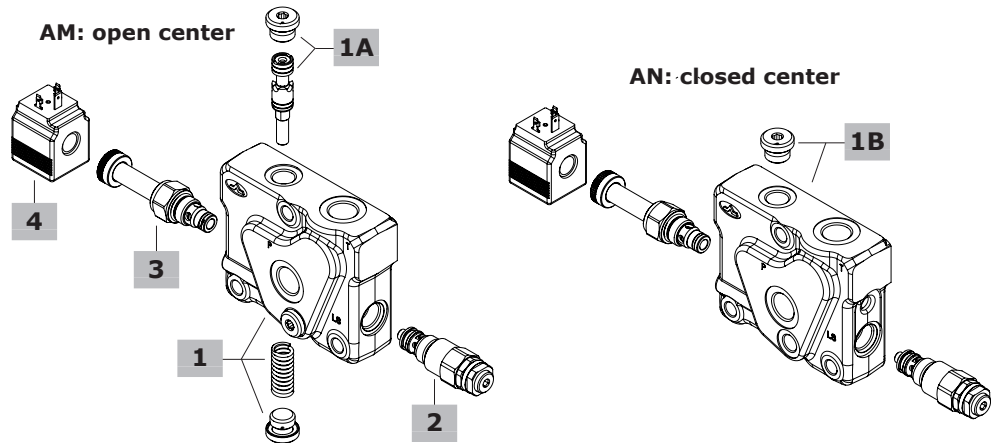
4 Assembling kit

CODE	DESCRIPTION
5TIR110145	Tie rod kit for 1 working section directional valve
5TIR110179	Tie rod kit for 2 working sections directional valve
5TIR110215	Tie rod kit for 3 working sections directional valve
5TIR110252	Tie rod kit for 4 working sections directional valve
5TIR110289	Tie rod kit for 5 working sections directional valve
5TIR110323	Tie rod kit for 6 working sections directional valve
5TIR110359	Tie rod kit for 7 working sections directional valve
5TIR110397	Tie rod kit for 8 working sections directional valve
5TIR110431	Tie rod kit for 9 working sections directional valve
5TIR110467	Tie rod kit for 10 working sections directional valve
5TIR110503	Tie rod kit for 11 working sections directional valve
5TIR110541	Tie rod kit for 12 working sections directional valve

Inlet section parts ordering codes



DPX100 = standard pressure valve
DPX100HP = High Pressure valve
 For working conditions and guide configuration see pages 4/6



1A Std pressure inlet section kit* page 41

Open Center circuit

TYPE: **DPX100/M1/EL** CODE: YFIA104310
 DESCRIPTION: With compensator, P-T-LS ports (LS plugged), arranged for unloader valve

TYPE: **DPX100/M1-BSP34/EL** CODE: YFIA104406
 DESCRIPTION: As previous with G3/4 P and T ports

TYPE: **DPX100/M1(SU)/EL** CODE: YFIA104311
 DESCRIPTION: As FIRST with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX100/M1(SO)/EL** CODE: YFIA104312
 DESCRIPTION: As previous with non return flow limiter from inlet section to working section and by-pass valve

Closed Center circuit

TYPE: **DPX100/N1/EL** CODE: YFIA104313
 DESCRIPTION: Without compensator, with P-T-LS ports, arranged for unloader valve

TYPE: **DPX100/N1-BSP34/EL** CODE: YFIA104401
 DESCRIPTION: As previous with G3/4 P and T ports

TYPE: **DPX100/N1(SU)/EL** CODE: YFIA104314
 DESCRIPTION: As first with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX100/N1(SO)/EL** CODE: YFIA104315
 DESCRIPTION: As previous with non return flow limiter from inlet section to working section and by-pass valve

2 Main pressure relief valve page 43

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

TYPE	CODE	DESCRIPTION
(TGW2-80)	OMC09002000	Range 10-120 bar / 145-1750 psi std setting 80 bar / 1160 psi
(TGW3-175)	OMC09002001	Range 40-220 bar / 580-3200 psi std setting 175 bar / 2550 psi
(TGW4-250)	OMC09002002	Range 200-350 bar / 2900-5100 psi std setting 250 bar / 3600 psi
(TGW5-300)	OMC09002003	Range 290-385 bar / 4200-5600 psi std setting 300 bar / 4350 psi
SV	XTAP524340	Relief valve blanking plug

1B High pressure inlet section kit* page 41

Open Center circuit

Ty TYPE pe: **DPX100HP/M1/EL** CODE: YFIA104316
 DESCRIPTION: With compensator, P-T-LS ports (LS plugged) arranged for unloader valve

TYPE: **DPX100HP/M1-BSP34/EL** CODE: YFIA104402
 DESCRIPTION: As previous with G3/4 P and T ports

TYPE: **DPX100HP/M1(SU)/EL** CODE: YFIA104317
 DESCRIPTION: As first with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX100HP/M1(SO)/EL** CODE: YFIA104318
 DESCRIPTION: As previous with non return flow limiter from inlet section to working section and by-pass valve

Closed Center circuit

Refer to "Std pressure" inlet sections

3 Solenoid operated unloading valve page 43

TYPE	CODE	DESCRIPTION
ELN	0EF08002000	Without emergency override
ELV	0EF08002003	With screw type emergency override
ELP	0EF08002002	With push-button emergency override
ELT	0EF08002004	With "twist & push" emergency override
LT	3XTP3533700	Unloading valve blanking plug

4 Coil

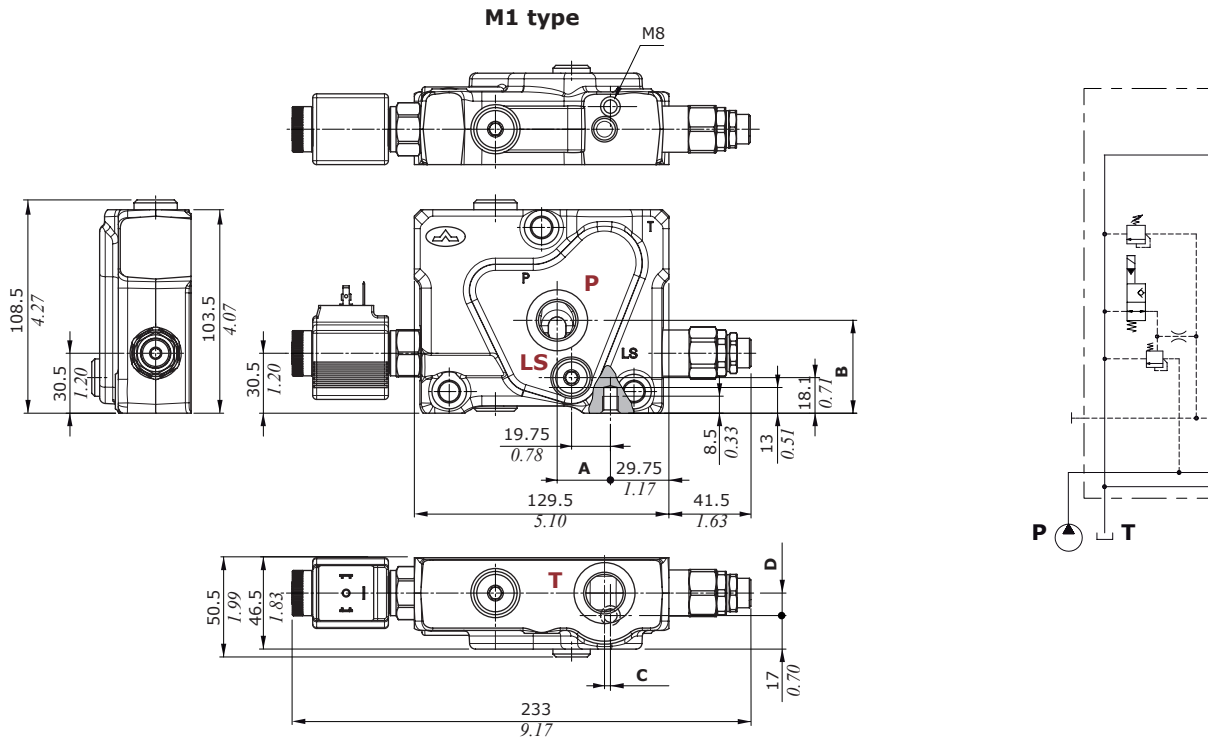
TYPE	CODE	DESCRIPTION
12VDC	4SL2000121	Coil type BER , ISO4400 conn., 12VDC

For complete available coils list see page 104.

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

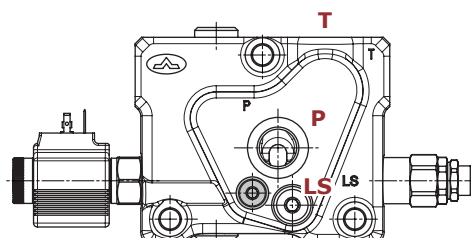
Dimensions and hydraulic circuit

Example of M Open Center section, standard pressure type

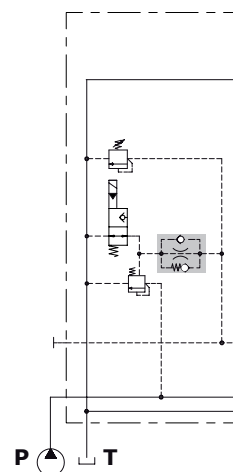


INLET SECTION TYPE	Inlet port P				Outlet port T				
	A		B		C		D		
	mm	in	mm	in	mm	in	mm	in	
Standard pressure	Standard thread	27.1	1.07	45.75	1.80	3	0.118	11.5	0.45
	G3/4 thread	27.1	1.07	45.75	1.80	3	0.118	9	0.35
High pressure (HP)	Standard thread	27.1	1.07	50	1.97	3	0.118	11.5	0.45
	G3/4 thread	27.1	1.07	47.25	1.86	3	0.118	9	0.35

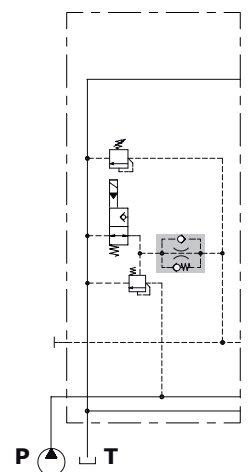
M1(SO) or M1(SU) type



M1(SU) type



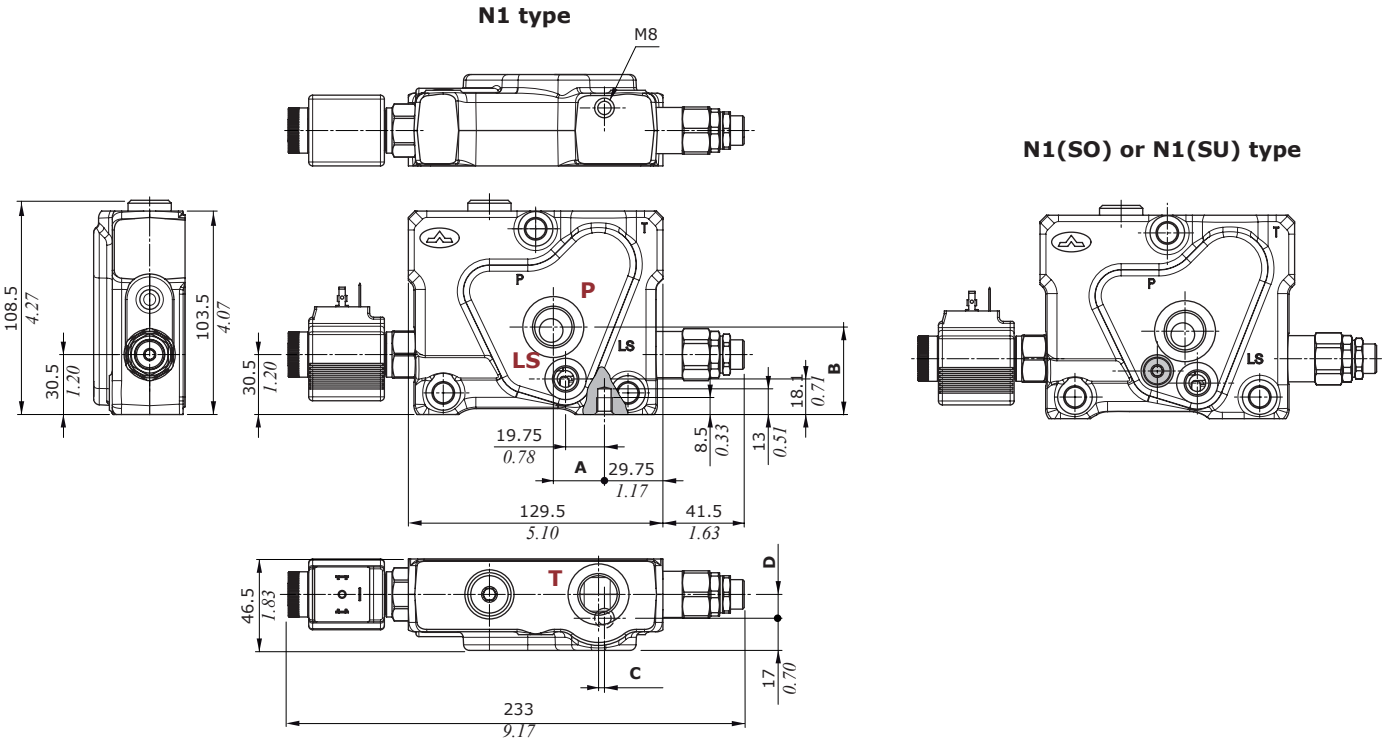
M1(SO) type



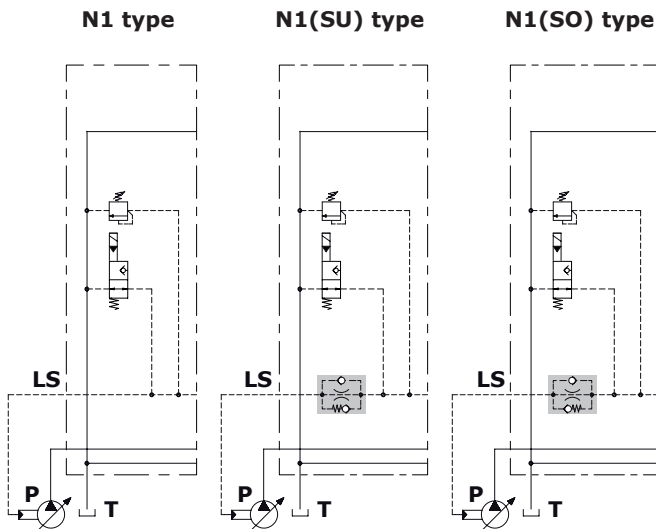
Inlet section

Dimensions and hydraulic circuit

Example of N Closed Center section

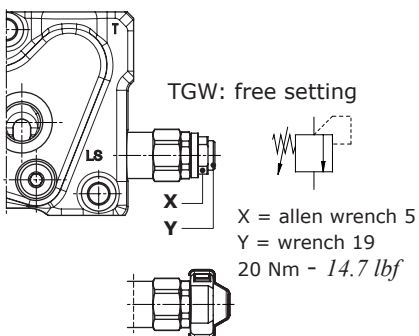


INLET SECTION TYPE	Inlet port P				Outlet port T			
	A		B		C		D	
	mm	in	mm	in	mm	in	mm	in
Standard thread	26	1.02	43	1.69	3	0.118	11.5	0.45
G3/4 thread	27.1	1.07	45.75	1.80	3	0.118	9	0.35



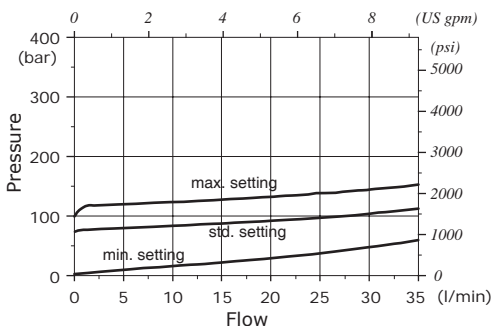
Main pressure relief valve

Setting types

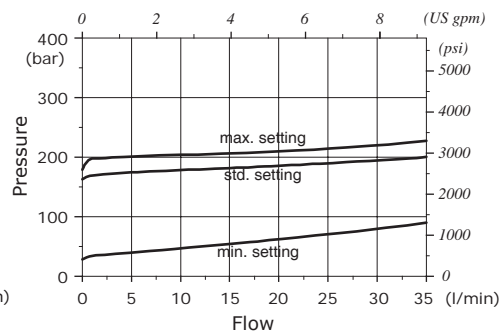


TZW: valve set and locked
 (cap code 4COP126301, n.2 pcs)
 RAL3003 pigmented

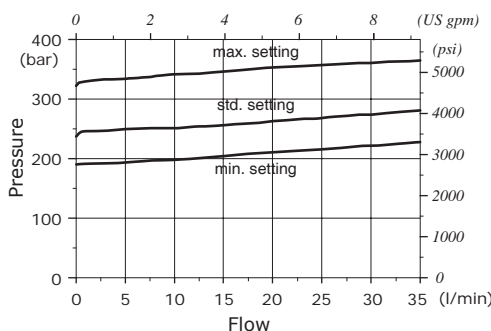
Setting range: type TGW2



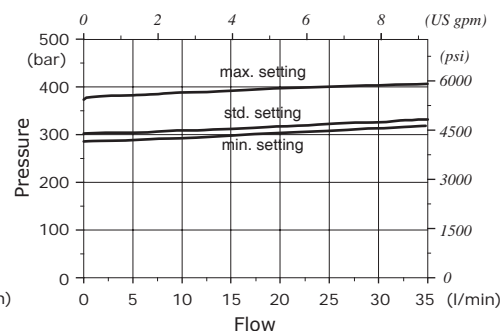
Setting range: type TGW3



Setting range: type TGW4

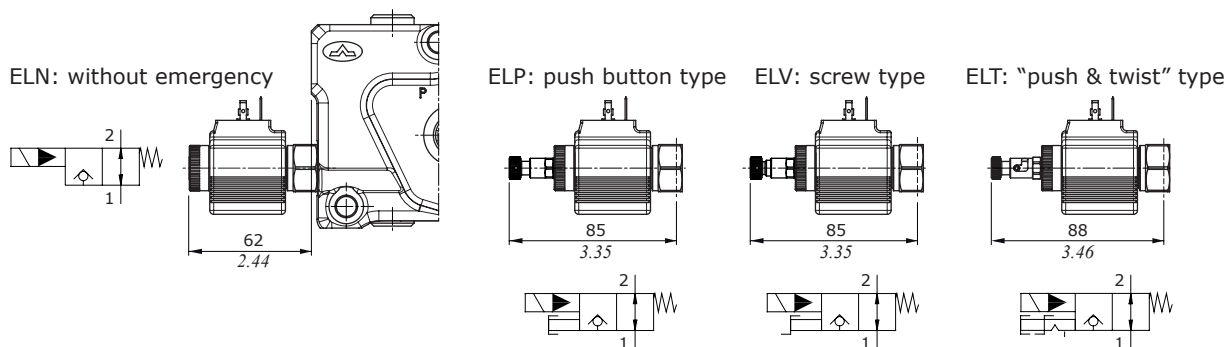


Setting range: type TGW5



Solenoid operated unloading valve

Manual emergency types

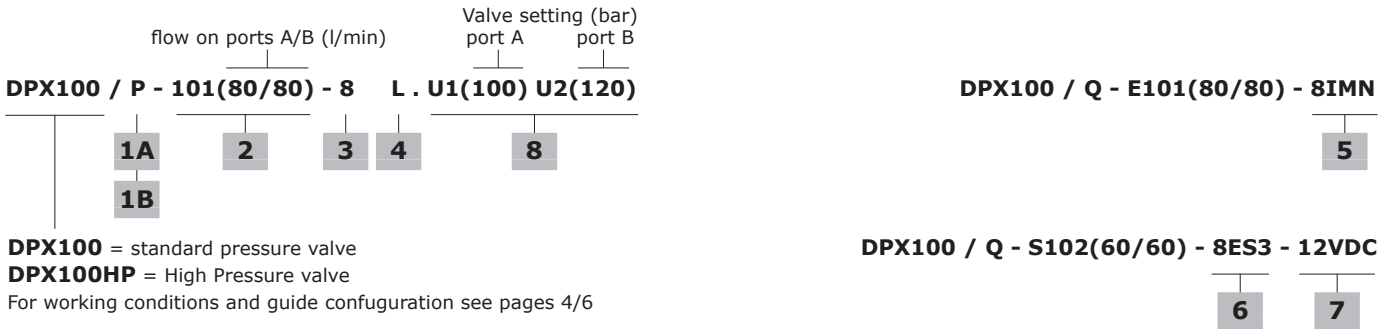


Features

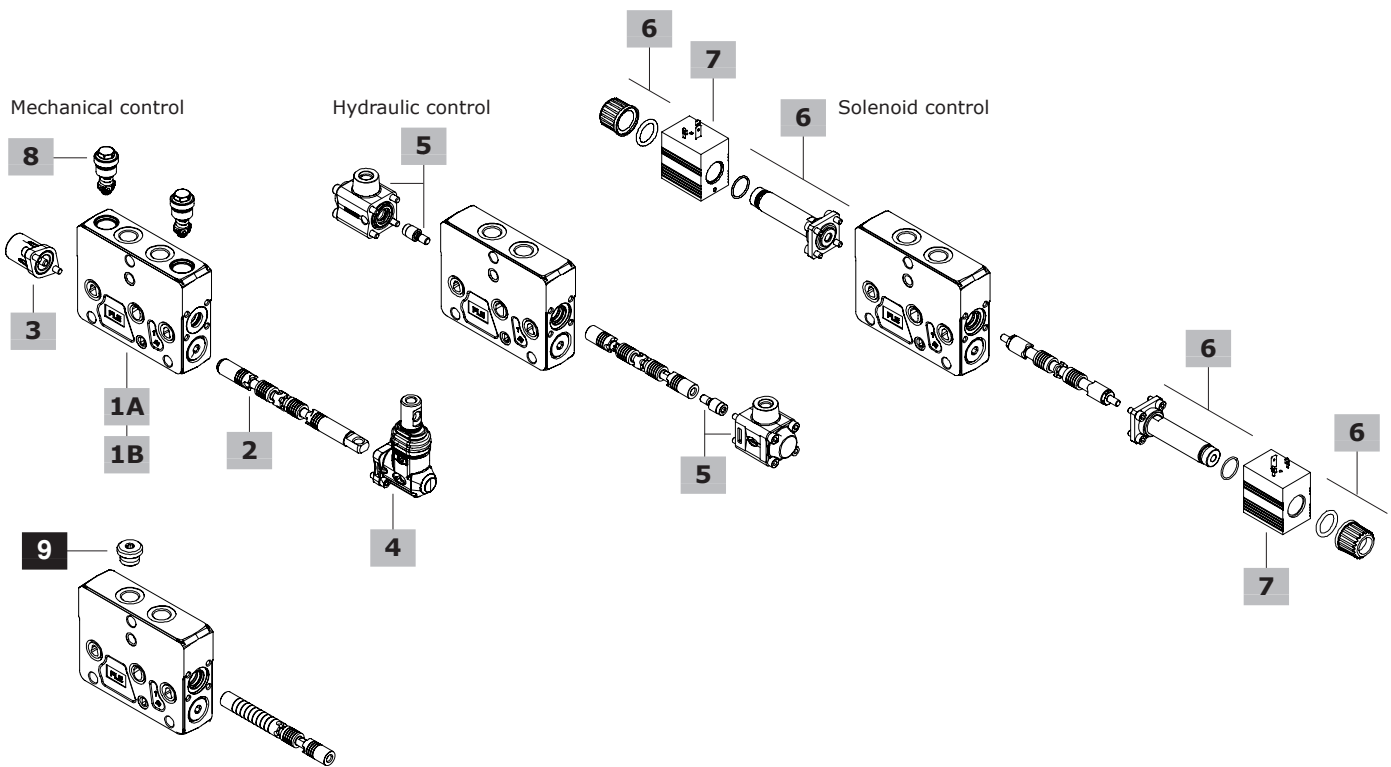
- Max. flow : 40 l/min - 10.6 US gpm
- Max. pressure : 350 bar - 5100 psi
- Internal leakage : 0.25 cm³/min @ 210 bar
 0.015 in³/min @ 3050 psi

For coil features and options see coil **BER** at page 104.

Working section parts ordering codes (mechanical, hydraulic, solenoid)



DPX100 = standard pressure valve
 DPX100HP = High Pressure valve
 For working conditions and guide configuration see pages 4/6



1A Std press. working section kit* page 48

For mechanical control	
TYPE: DPX100/Q	CODE: 5EL1043010
DESCRIPTION: Without port valves arrangement	
TYPE: DPX100/Q-BSP12	CODE: 5EL1044010
DESCRIPTION: As previous with G1/2 ports	
TYPE: DPX100/P	CODE: 5EL1043000
DESCRIPTION: With port valves arrangement	
TYPE: DPX100/P-BSP12	CODE: 5EL1044000
DESCRIPTION: As previous with G1/2 ports	
For hydraulic and solenoid control	
TYPE: DPX100/Q-IM	CODE: 5EL1043010A
DESCRIPTION: Without port valves arrangement	
TYPE: DPX100/Q-IM-BSP12	CODE: 5EL1044010A
DESCRIPTION: As previous with G1/2 ports	
TYPE: DPX100/P-IM	CODE: 5EL1043000A
DESCRIPTION: With port valves arrangement	
TYPE: DPX100/P-IM-BSP12	CODE: 5EL1044000A
DESCRIPTION: As previous with G1/2 ports	

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

1B High press. working section kit* page 48

For mechanical control	
TYPE: DPX100HP/Q	CODE: 5EL1043011
DESCRIPTION: Without port valves arrangement	
TYPE: DPX100HP/Q-BSP12	CODE: 5EL1044011
DESCRIPTION: As previous with G1/2 ports	
TYPE: DPX100HP/P	CODE: 5EL1043004
DESCRIPTION: With port valves arrangement	
TYPE: DPX100HP/P-BSP12	CODE: 5EL1044008
DESCRIPTION: As previous with G1/2 ports	
For hydraulic and solenoid control	
TYPE: DPX100HP/Q-IM	CODE: 5EL1040310B
DESCRIPTION: Without port valves arrangement	
TYPE: DPX100HP/Q-IM-BSP12	CODE: 5EL1044010E
DESCRIPTION: As previous with G1/2 ports	
TYPE: DPX100HP/P-IM	CODE: 5EL1043000B
DESCRIPTION: With port valves arrangement	
TYPE: DPX100HP/P-IM-BSP12	CODE: 5EL1044007A
DESCRIPTION: As previous with G1/2 ports	

Working section parts ordering codes (mechanical, hydraulic, solenoid)

2 Spool page 49

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

101(80)	3CU7110101	80 l/min (21 US gpm) flow
102(60)	3CU7110102	60 l/min (16 US gpm) flow
103(40)	3CU7110103	40 l/min (10.5 US gpm) flow
104(20)	3CU7110104	20 l/min (5.3 US gpm) flow
113(10)	3CU7110113	10 l/min (2.6 US gpm) flow

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

2H01(80)	3CU7110202	80 l/min (21 US gpm) flow
2H06(60)	3CU7124213	60 l/min (16 US gpm) flow
2H05(40)	3CU7124212	40 l/min (10.5 US gpm) flow
2H04(20)	3CU7124211	20 l/min (5.3 US gpm) flow
2H07(10)	3CU7124214	10 l/min (2.6 US gpm) flow

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

301(80)	3CU7110301	80 l/min (21 US gpm) flow
304(60)	3CU7131304	60 l/min (16 US gpm) flow
303(40)	3CU7131303	40 l/min (10.5 US gpm) flow
302(20)	3CU7131302	20 l/min (5.3 US gpm) flow

Double acting with A and B closed in neutral pos., 4 positions, floating in 4th pos. with spool in: needs positioner type 13 and 13F

501(70)	3CU7110501	70 l/min (18.5 US gpm) flow
504(60)	3CU7142504	60 l/min (16 US gpm) flow
503(20)	3CU7142503	20 l/min (5.3 US gpm) flow

For solenoid control

Double acting with A and B closed in neutral position

S102(60)	3CU7410102	60 l/min (16 US gpm) flow
S108(40)	3CU7410108	40 l/min (10.5 US gpm) flow
S105(20)	3CU7410105	20 l/min (5.3 US gpm) flow
S106(10)	3CU7410106	10 l/min (2.6 US gpm) flow

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

S2H01(60)	3CU7410202	60 l/min (16 US gpm) flow
------------------	------------	---------------------------

For hydraulic control

Double acting with A and B closed in neutral position

E101(80)	3CU7710101	80 l/min (21 US gpm) flow
E108(60)	3CU7710108	60 l/min (16 US gpm) flow
E105(40)	3CU7710105	40 l/min (10.5 US gpm) flow
E106(20)	3CU7710106	20 l/min (5.3 US gpm) flow
E110(10)	3CU7710110	10 l/min (2.6 US gpm) flow

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

E2H01(80)	3CU7710202	80 l/min (21 US gpm) flow
E2H05(60)	3CU7724004	60 l/min (16 US gpm) flow
E2H04(40)	3CU7724003	40 l/min (10.5 US gpm) flow
E2H06(20)	3CU7724005	20 l/min (5.3 US gpm) flow
E2H03(10)	3CU7724002	10 l/min (2.6 US gpm) flow

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

E301-E401(80)	3CU7710301	80 l/min (21 US gpm) flow
E305-E405(60)	3CU7731305	60 l/min (16 US gpm) flow
E304-E404(40)	3CU7731304	40 l/min (10.5 US gpm) flow
E303-E403(20)	3CU7731303	20 l/min (5.3 US gpm) flow

Double acting with A and B closed in neutral pos., 4 positions, floating in 4th pos. with spool in: needs control kit type 13IMS

I504(60)	YCU7742504	60 l/min (16 US gpm) flow
I503(20)	YCU7742503	20 l/min (5.3 US gpm) flow

9 Plug for single acting spool*

CODE	DESCRIPTION
3XTAP722160	G3/8 plug
3XTAP727180	G1/2 plug

3 "A" side spool positioners page 51

TYPE	CODE	DESCRIPTION
7FT	5V07407000	With friction and neutral pos. notch
8	5V08107000	3 pos., spring return to neutral pos.
8F2	5V08107100	Spool stroke limiter on port B
8D	5V08107200	External pin with M6 female thread
8TL	5V08107310	Arrangement for double control
8RM2-12VDC	5V08107590	Electromagnetic detent in pos.2
8MG3(NO)	5V08107660	With micro in positions 1 and 2
8PP	5V08107700	Proportional pneumatic control
8PNB	5V08107718	On/off waterproof pneumatic control
8EPNB3-12VDC	5V08107742	On/off electropneumatic control
8EPNB3-24VDC	5V08107743	On/off electropneumatic control
8K-12VDC	5V08707112	Solenoid detent in neutral position
8K-24VDC	5V08707124	Solenoid detent in neutral position
9B	5V09207000	Detent in position 1
10B	5V10207000	Detent in position 2
11B	5V11207000	Detent in positions 1 and 2
<u>For floating circuit (spool 5)</u>		
13	5V13307000	4 positions, detent in 4 th position with spring return to neutral position
13F	5V13507000	4 positions, with spring return to neutral position

4 "B" side spool control kit page 56

TYPE	CODE	DESCRIPTION
L	5LEV107000	Standard lever box
LSG	5LEV107000S	As previous, water-proof type
LF1	5LEV107100	Lever box with spool stroke limiter on port A
LSGF1	5LEV107100S	As previous, water-proof type
SLC	5COP207000	Without lever with endcap
SLP	5COP107010	Without lever with dust-proof plate
LCA1-4	5CLO207010	Joystick for 2 sections operation: configurations type 1 and 4
LCA2-3	5CLO207011	Joystick for 2 sections operation: configurations type 2 and 3

5 Proportional hydraulic control* page 58

TYPE	CODE	DESCRIPTION
8IMN	5IDR204304	Range 8-27 bar (116-392 psi)
8IMF3N	5IDR204314	As previous with spool stroke limiter
8IMXN	5IDR204303	Range 7.5-24 bar (109-348 psi)
8IMXF3N	5IDR204313	As previous with spool stroke limiter
<u>For floating circuit (spool 15)</u>		
13IMS	5IDR207350	Range 6.5-15.5 / 8-22.5 bar (94-225 / 116-326 psi)

6 On/off solenoid control page 60

TYPE	CODE	DESCRIPTION
8ES1-8ES2	5CAN08028	Single acting on A or B port
8ES3	5CAN08029	Double acting

7 Coil

TYPE	CODE	DESCRIPTION
12VDC	4SOL412012	Coil type D12 , ISO4400 conn, 12VDC

For complete available coils list see page 104.

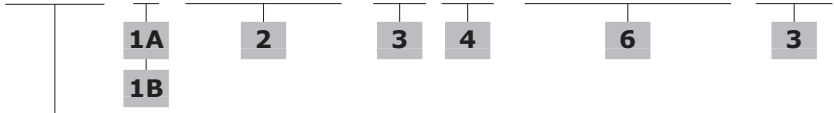
8 Port valves

TYPE	CODE	DESCRIPTION
UW025	5KIT332025	Setting: 25 bar (360 psi)

For complete list see following pages.

Working section parts ordering codes (electrohydraulic)

flow on ports A/B (l/min) Valve setting (bar)
 port A port A port B
DPX100 / PZ - E101(80/80) - 8EZ3 LQF3 . U1(100) U2(120) - 12VDC



DPX100 = standard pressure valve

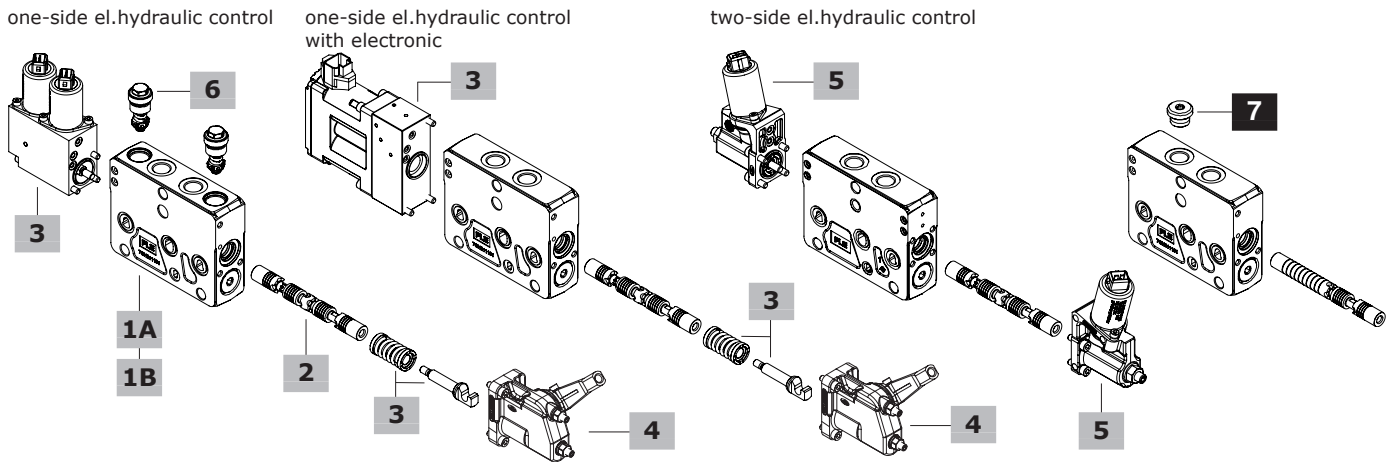
DPX100HP = High Pressure valve

For working conditions and guide configuration see pages 4/6

DPX100 / QZ - E101(80/80) - 8ZR3T1 LQF3 - 12VDC



DPX100 / QE - E101(80/80) - 8EB3TF3-12VDC



1A Std press. working section kit* page 48

For two-side electrohydraulic control

TYPE: **DPX100/QE** CODE: 5EL1043012

DESCRIPTION: Without port valves arrangement

TYPE: **DPX100/QE-BSP12** CODE: 5EL1044012

DESCRIPTION: As previous with G1/2 ports

TYPE: **DPX100/PE** CODE: 5EL1043002

DESCRIPTION: With port valves arrangement

TYPE: **DPX100/PE-BSP12** CODE: 5EL1044002

DESCRIPTION: As previous with G1/2 ports

For one-side electrohydraulic control

TYPE: **DPX100/QZ** CODE: 5EL1043022

DESCRIPTION: Without port valves arrangement

Type: **DPX100/QZ-BSP12** CODE: 5EL1044013

DESCRIPTION: As previous with G1/2 ports

TYPE: **DPX100/PZ** CODE: 5EL1043006

DESCRIPTION: With port valves arrangement

TYPE: **DPX100/PZ-BSP12** CODE: 5EL1044004

DESCRIPTION: As previous with G1/2 ports

1B High press. working section kit* page 48

For two-side electrohydraulic control

TYPE: **DPX100HP/QE** CODE: 5EL1043015

DESCRIPTION: Without port valves arrangement

TYPE: **DPX100HP/QE-BSP12** CODE: 5EL1044014

DESCRIPTION: As previous with G1/2 ports

TYPE: **DPX100HP/PE** CODE: 5EL1043005

DESCRIPTION: With port valves arrangement

TYPE: **DPX100HP/PE-BSP12** CODE: 5EL1044005

DESCRIPTION: As previous with G1/2 ports

For one-side electrohydraulic control

TYPE: **DPX100HP/QZ** CODE: 5EL1043024

DESCRIPTION: Without port valves arrangement

TYPE: **DPX100HP/QZ-BSP12** CODE: 5EL1044022

DESCRIPTION: As previous with G1/2 ports

TYPE: **DPX100HP/PZ** CODE: 5EL1043023

DESCRIPTION: With port valves arrangement

TYPE: **DPX100HP/PZ-BSP12** CODE: 5EL1044015

DESCRIPTION: As previous with G1/2 ports

Working section parts ordering codes (electrohydraulic)

2 Spool page 49

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</u>		
E101(80)	3CU7710101	80 l/min (21 US gpm) flow
E108(60)	3CU7710108	60 l/min (16 US gpm) flow
E105(40)	3CU7710105	40 l/min (10.5 US gpm) flow
E106(20)	3CU7710106	20 l/min (5.3 US gpm) flow
E110(10)	3CU7710110	10 l/min (2.6 US gpm) flow
<u>Double acting with A and B partially to tank in neutral position</u>		
E2H01(80)	3CU7710202	80 l/min (21 US gpm) flow
E2H05(60)	3CU7724004	60 l/min (16 US gpm) flow
E2H04(40)	3CU7724003	40 l/min (10.5 US gpm) flow
E2H06(20)	3CU7724005	20 l/min (5.3 US gpm) flow
E2H03(10)	3CU7724002	10 l/min (2.6 US gpm) flow
<u>Single acting on A or B, other port plugged: need G3/8 plug</u>		
E301-E401(80)	3CU7710301	80 l/min (21 US gpm) flow
E305-E405(60)	3CU7731305	60 l/min (16 US gpm) flow
E304-E404(40)	3CU7731304	40 l/min (10.5 US gpm) flow
E303-E403(20)	3CU7731303	20 l/min (5.3 US gpm) flow
<u>Double acting with A and B closed in neutral pos., 4 pos., floating in 4th pos. with spool in: needs control kit type 13EB3 or 13EZ3</u>		
E504(60)	3CU7742504	60 l/min (16 US gpm) flow
E503(20)	3CU7742503	20 l/min (5.3 US gpm) flow.

6 Port valves page 68

TYPE	CODE	DESCRIPTION
UT	XTAP522442	Valve blanking plug
C	5KIT410000	Anticavitation valve
<u>Fixed setting antishock valves with prefill: setting is referred to 10 l/min (2.6 US gpm)</u>		
U025	5KIT332025	Setting: 25 bar (360 psi)
U030	5KIT332030	Setting: 30 bar (435 psi)
U040	5KIT332040	Setting: 40 bar (580 psi)
U050	5KIT332050	Setting: 50 bar (725 psi)
U063	5KIT332063	Setting: 63 bar (914 psi)
U080	5KIT332080	Setting: 80 bar (1150 psi)
U100	5KIT332100	Setting: 100 bar (1450 psi)
U110	5KIT332110	Setting: 110 bar (1590 psi)
U125	5KIT332125	Setting: 125 bar (1800 psi)
U140	5KIT332140	Setting: 140 bar (2050 psi)
U150	5KIT332150	Setting: 150 bar (2150 psi)
U160	5KIT332160	Setting: 160 bar (2300 psi)
U175	5KIT332175	Setting: 175 bar (2550 psi)
U190	5KIT332190	Setting: 190 bar (2750 psi)
U200	5KIT332200	Setting: 200 bar (2900 psi)
U210	5KIT332210	Setting: 210 bar (3050 psi)
U230	5KIT332230	Setting: 230 bar (3350 psi)
U240	5KIT332240	Setting: 240 bar (3500 psi)
U250	5KIT332250	Setting: 250 bar (2600 psi)
U260	5KIT332260	Setting: 260 bar (3750 psi)
U270	5KIT332270	Setting: 270 bar (3900 psi)
U280	5KIT332280	Setting: 280 bar (4050 psi)
U290	5KIT332290	Setting: 290 bar (4200 psi)
U300	5KIT332300	Setting: 300 bar (4350 psi)
U310	5KIT332310	Setting: 310 bar (4500 psi)
U320	5KIT332320	Setting: 320 bar (4650 psi)
U340	5KIT332340	Setting: 340 bar (4950 psi)
U360	5KIT332360	Setting: 360 bar (5200 psi)
U400	5KIT332400	Setting: 400 bar (5800 psi)
U420	5KIT332420	Setting: 420 bar (6100 psi)

7 Plug for single acting spool*

CODE	DESCRIPTION	CODE	DESCRIPTION
3XTAP722160	G3/8 plug	3XTAP727180	G1/2 plug

5 Two-side electrohydr. control page 64

TYPE	CODE	DESCRIPTION
<u>Without lever control</u>		
8EB3T-12VDC	5IDR904214	With AMP connector
8EB3T-24VDC	5IDR904222	With AMP connector
8EB34T-12VDC	5IDR904236	With Deutsch connector
8EB34T-24VDC	5IDR904237	With Deutsch connector
8EB3TF3-12VDC	5IDR904217	With AMP, spool stroke limiter
8EB3TF3-24VDC	5IDR904224	As previous
8EB34TF3-12VDC	5IDR904235	With Deutsch connector with spool stroke limiter
8EB34TF3-24VDC	5IDR904238	As previous
<u>Without lever control: for floating circuit (spool E5)</u>		
13EB3T-12VDC	5IDR914201	With AMP connector
13EB3T-24VDC	5IDR914202	With AMP connector
13EB34T-12VDC	5IDR914214	With Deutsch connector
13EB34T-24VDC	5IDR914215	With Deutsch connector
<u>With lever control</u>		
8EB3TLH-12VDC	5IDR904215	With AMP connector
8EB3TLH-24VDC	5IDR904228	With AMP connector
8EB34TLH-12VDC	5IDR904219	With Deutsch connector
8EB34TLH-24VDC	5IDR904239	With Deutsch connector
8EB3TLHF3-12VDC	5IDR904229	With AMP, spool stroke limiter
8EB3TLHF3-24VDC	5IDR904218	As previous
8EB34TLHF3-12VDC	5IDR904240	With Deutsch connector with spool stroke limiter
8EB34TLHF3-24VDC	5IDR904241	As previous
<u>With lever control: for floating circuit (spool E5)</u>		
13EB3TLH-12VDC	5IDR914212	With AMP connector
13EB3TLH-24VDC	5IDR914211	With AMP connector
13EB34TLH-12VDC	5IDR914216	With Deutsch connector
13EB34TLH-24VDC	5IDR914217	With Deutsch connector
13EB3TLHF3-12VDC	5IDR914213	With AMP, spool stroke limiter
13EB3TLHF3-24VDC	5IDR914210	As previous
13EB34TLHF3-12VDC	5IDR914218	With Deutsch connector with spool stroke limiter
13EB34TLHF3-24VDC	5IDR914219	As previous

3 One-side electrohydr. control page 66

TYPE	CODE	DESCRIPTION
<u>Without on-board electronic</u>		
8EZ3-12VDC	5IDR604300	With AMP connector
8EZ3-24VDC	5IDR604301	With AMP connector
8EZ34-12VDC	5IDR604302	With Deutsch connector
8EZ34-24VDC	5IDR604303	With Deutsch connector
<u>Without on-board electronic: for floating circuit (spool E5)</u>		
13EZ3-12VDC	5IDR604300	With AMP connector
13EZ3-24VDC	5IDR604301	With AMP connector
13EZ34-12VDC	5IDR604302	With Deutsch connector
13EZ34-24VDC	5IDR604303	With Deutsch connector
<u>With on-board electronic</u>		
8ZR3T1	5IDR604900	Voltage signal 0-5 V
8ZR3T2	5IDR604901	Can-bus type
<u>With on-board electronic: for floating circuit (spool E5)</u>		
13ZR3T1	5IDR614900	Voltage signal 0-5 V
13ZR3T2	5IDR614901	Can-bus type

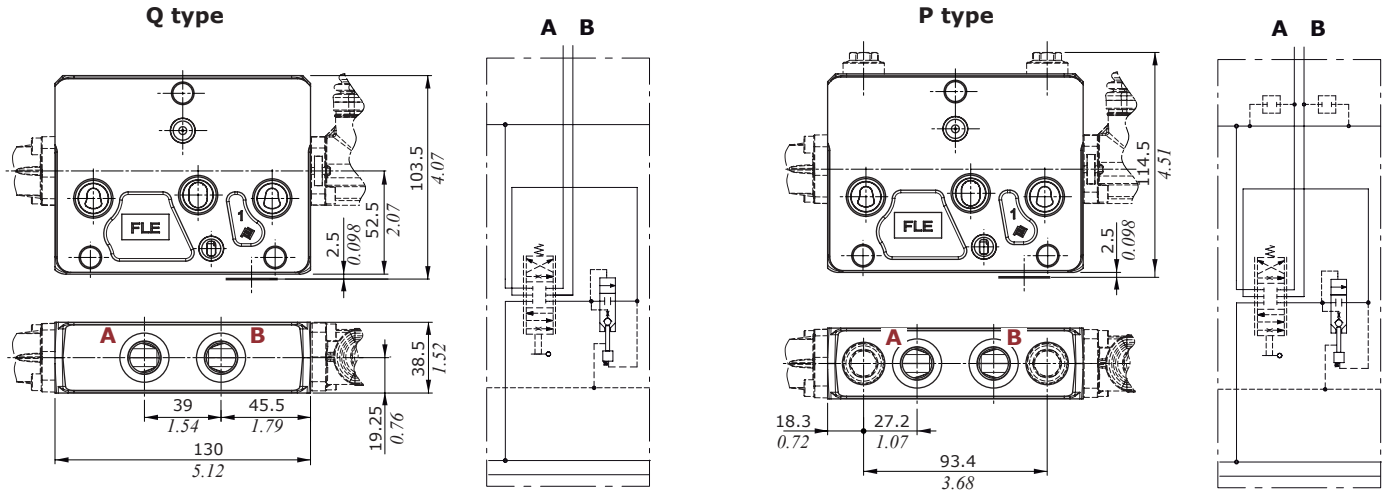
4 "B" side options page 67

TYPE	CODE	DESCRIPTION
<u>For one-side electrohydraulic control</u>		
LQ	5LEV100700	Lever box
LQF3	5LEV100701	Lever box with spool stroke limiter
SLCQ	5COP204000	Endcap

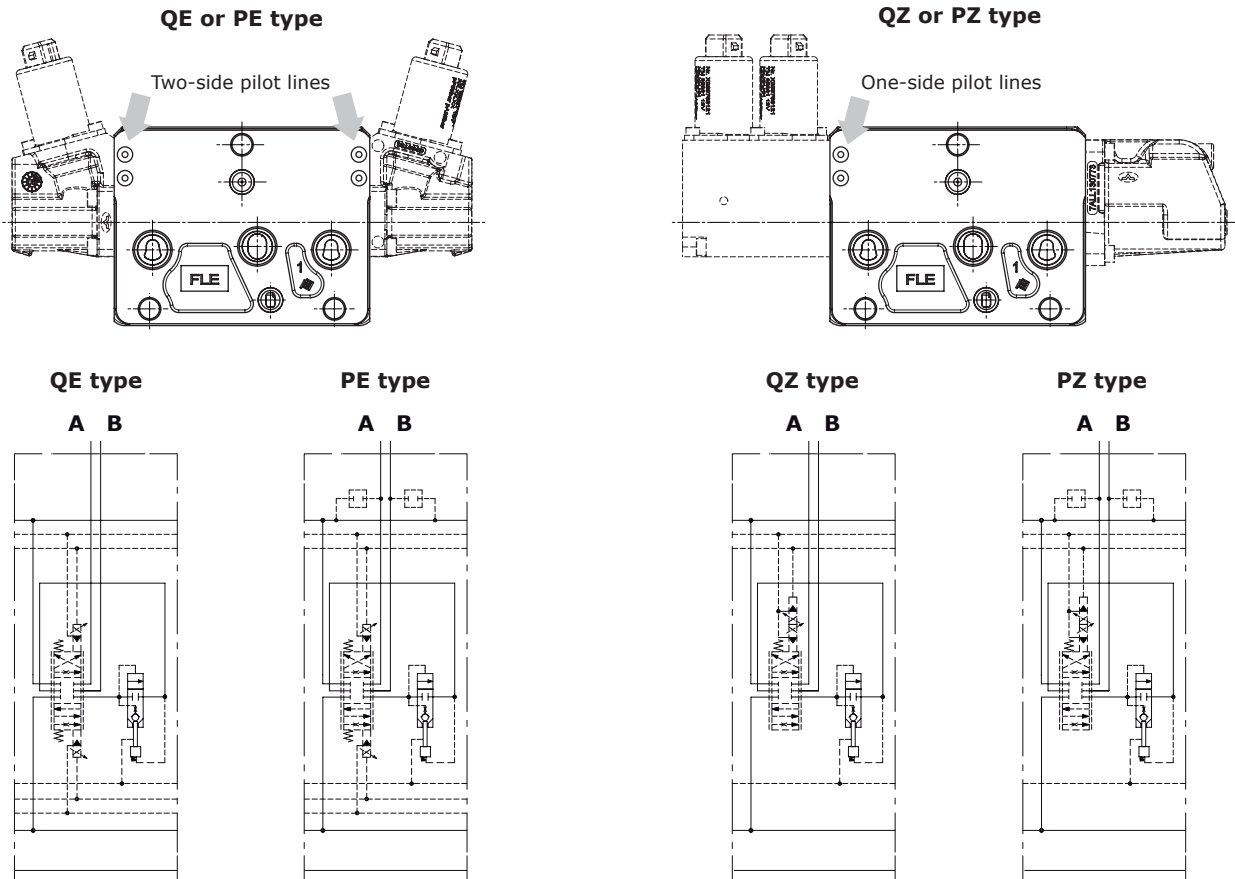
Working section

Dimensions and hydraulic circuit

For mechanical, hydraulic and solenoid controls



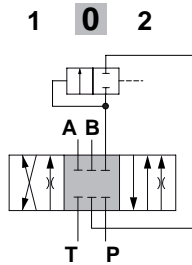
For electrohydraulic controls



Spools

Spool type 1 (1../E1../S1..)

A, B closed in neutral position

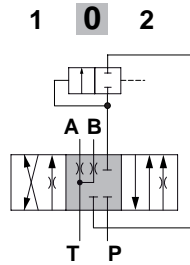


Spool stroke

position 1: + 6.5 mm (- 0.26 in)
position 2: - 6.5 mm (+ 0.26 in)

Spool type 2H(2H../E2H../S2H..)

A, B partially to tank in neutral pos.

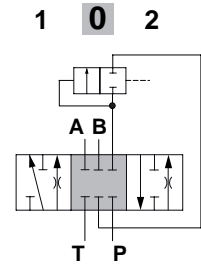


Spool stroke

position 1: + 6.5 mm (- 0.26 in)
position 2: - 6.5 mm (+ 0.26 in)

Spool type 3 (3../E3..)

single acting on A

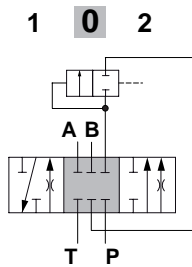


Spool stroke

position 1: + 6.5 mm (- 0.26 in)
position 2: - 6.5 mm (+ 0.26 in)

Spool type 4 (4../E4..)

single acting on B

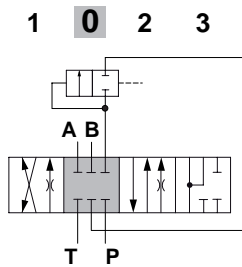


Spool stroke

position 1: + 6.5 mm (- 0.26 in)
position 2: - 6.5 mm (+ 0.26 in)

Spool type 5 (5../E5../I5..)

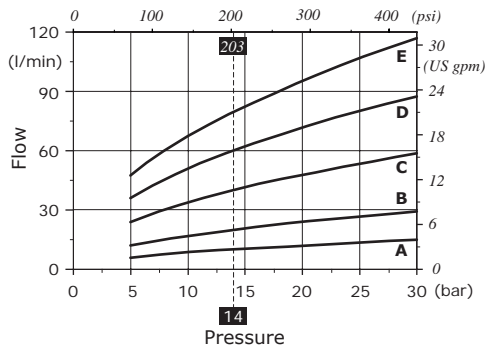
floating in 4th position (pos.3)



Spool stroke

position 1: + 6 mm (- 0.24 in)
position 2: - 6 mm (+ 0.24 in)
position 3: - 10.5 mm (- 0.41 in)

Spool flow vs. Stand-by pressure (margin pressure)



Curves with spool nominal flow @ 14 bar (200 psi) stand-by (margin pressure)

- A = 10 l/min (2.6 US gpm)
- B = 20 l/min (5.3 US gpm)
- C = 40 l/min (10.6 US gpm)
- D = 60 l/min (16 US gpm)
- E = 80 l/min (21 US gpm)

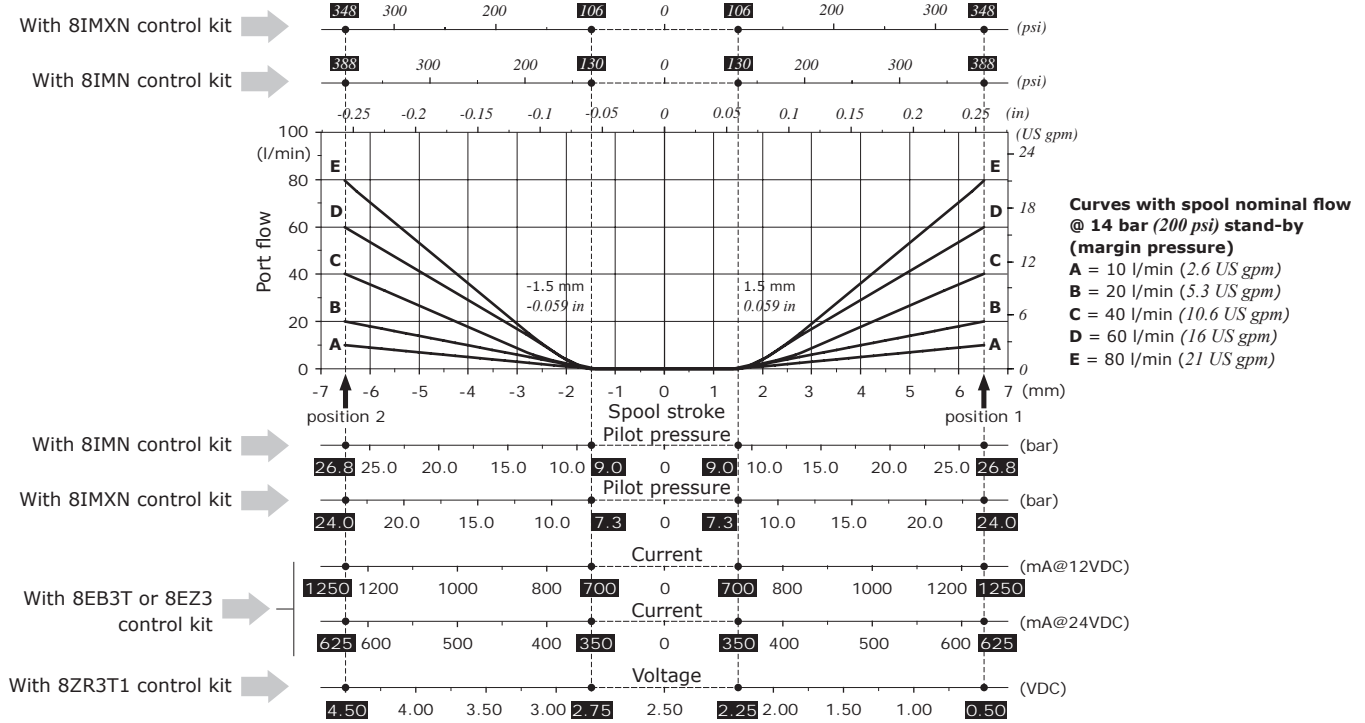
Working section

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.

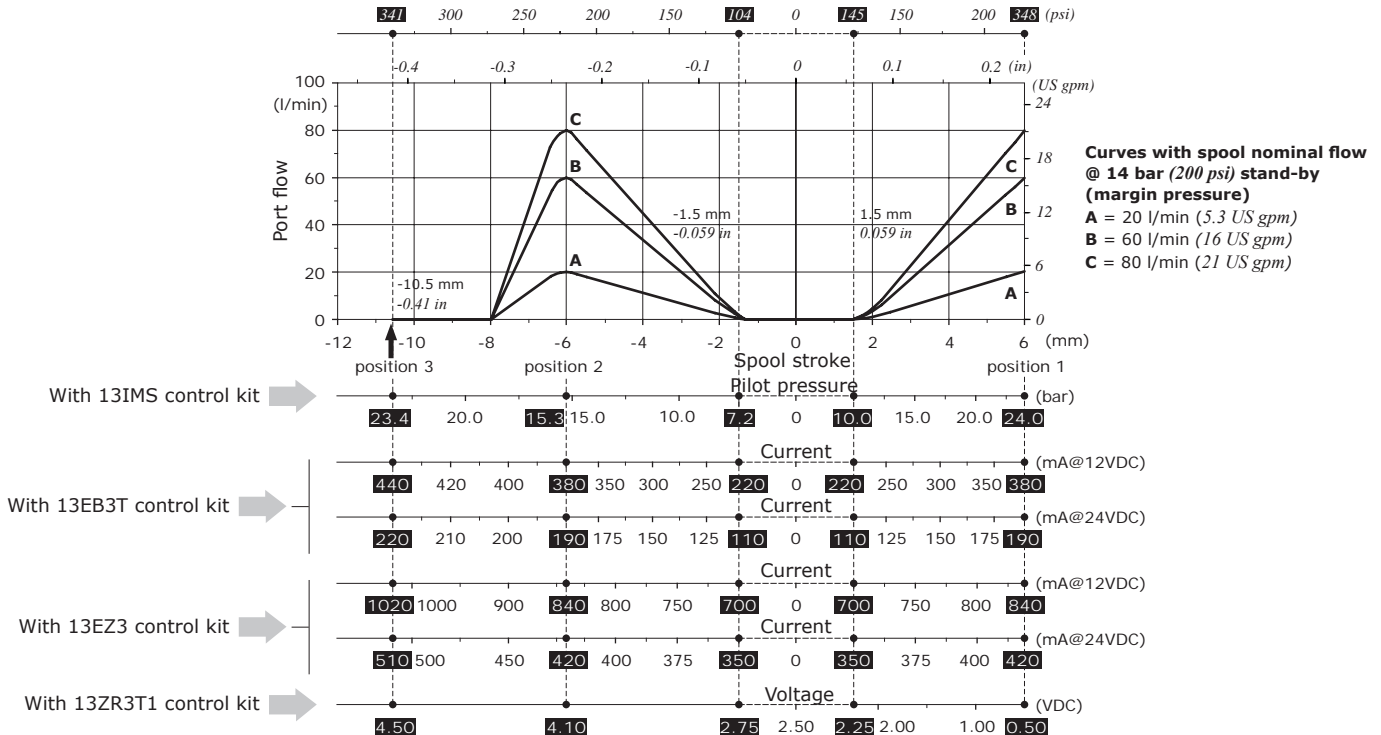
3 positions spools metering curve

Q_{in} = 90 l/min (24 US gpm) - Open center circuit



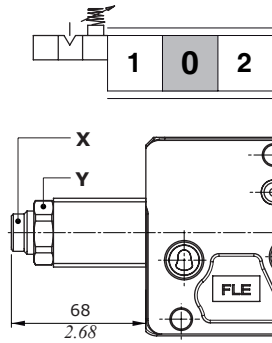
Floating spool metering curve

Q_{in} = 90 l/min (24 US gpm) - Open center circuit



"A" side spool positioners

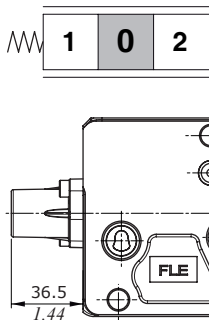
With friction, type 7FT



X = allen wrench 6
Y = wrench 30, manual tightening

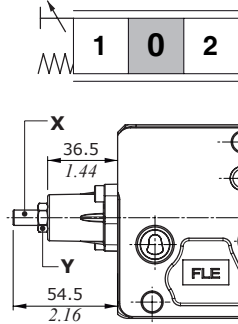
With spring return to neutral position

Type 8



Type 8F2

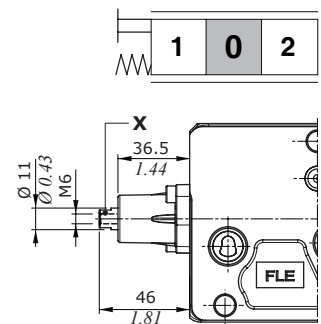
Spool stroke limiter on Port B



X = allen wrench 4
Y = wrench 13 / 24 Nm - 17.7 lbf

Type 8D

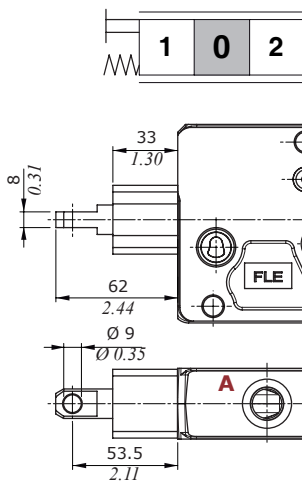
External pin with M6 female thread



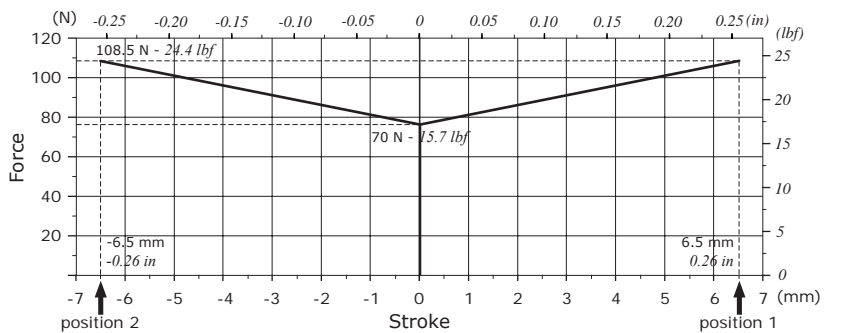
X = allen wrench 9

Type 8TL

Arrangement for double mechanical control



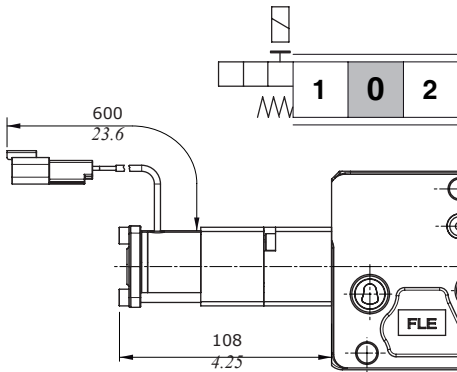
Force vs. Stroke diagram



Working section

"A" side spool positioners

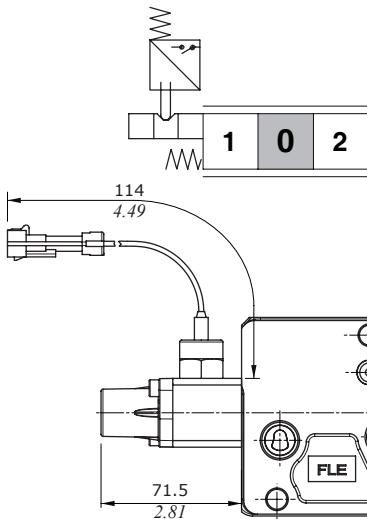
With electromagnetic detent in position 2, type 8RM2



Features

- Nominal voltage : 12 VDC ± 10%
- Power rating : 5.5 W
- Min. detent release : 200 N (45 lbf)
- Coil resistance (@ 20°C - 68°F) : 26.2 Ohm
- Coil insulation : Class H (180°C - 356°F)
- Insertion : 100%
- Connector : Deutsch DT04-2P
- Mating connector : Deutsch DT06-2S, code 5CON140046

With microswitch for spool check in positions 1 and 2, type 8MG3



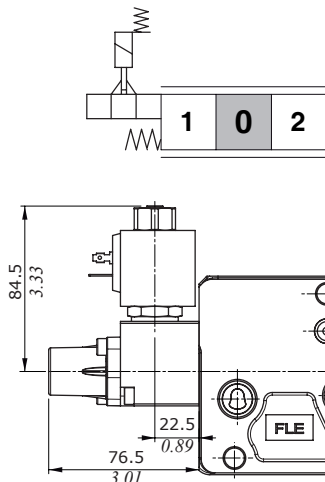
Features

- Switch mechanical life : 5x10⁵ cycles
- Switch electric life : 10⁵ cycles @ 7 A - 13.5 VDC, resistive load
5x10⁴ cycles @ 10 A - 12 VDC, resistive load
5x10⁴ cycles @ 3 A - 28 VDC, resistive load
- Connector : Packard Weather-Pack
- Mating connector : Packard Weather-Pack, code 5CON001

Complete controls			
Circuit	Microswitch operation		
	position 1 8MG1	position 2 8MG2	positions 1, 2 8MG3
(NO)	5V08107670	5V08107680	5V08107660
(NC)	/	/	5V08107662 (*)

Note (*): with integrated connector

With solenoid lock device in neutral position, type 8K



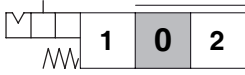
Complete controls			
Voltage	Coils connector		
	ISO 4400	Packard M-Mack	Deutsch DT04
12 VDC	5V08707112	5V08707613	5V08707412
24 VDC	5V08707124	5V08707624	5V08707424

For coil features and options see coil **BE** at page 104.

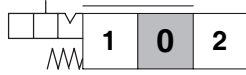
"A" side spool positioners

With detent and spring return to neutral position from either directions

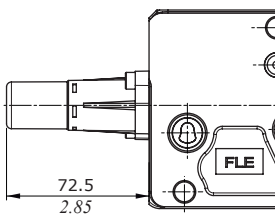
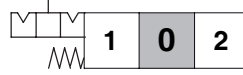
Type 9BZ
detent in position 1
(see curve A)



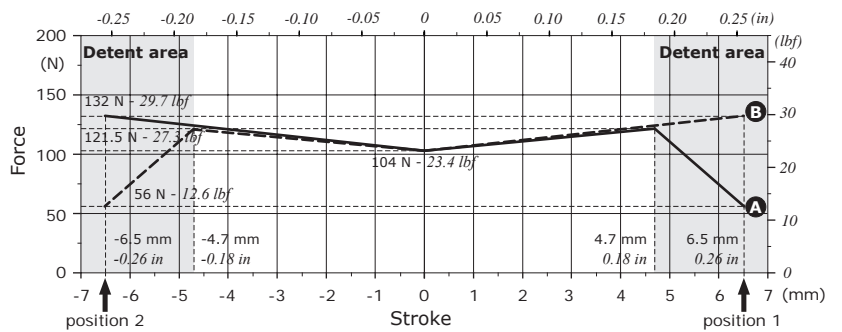
Type 10BZ
detent in position 2
(see curve B)



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

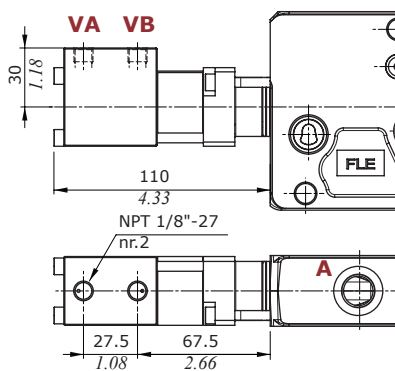
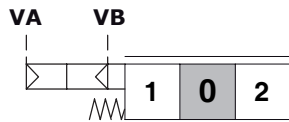


Force vs. Stroke diagram

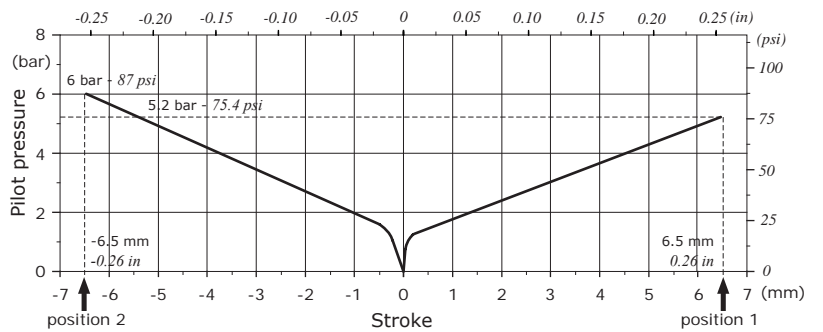


Release force 160 N ± 10 N (36 lbf ± 2.2 lbf)

Proportional pneumatic control, type 8PP



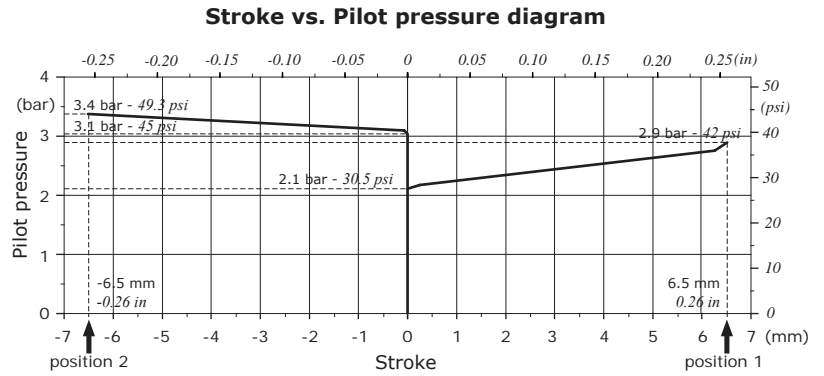
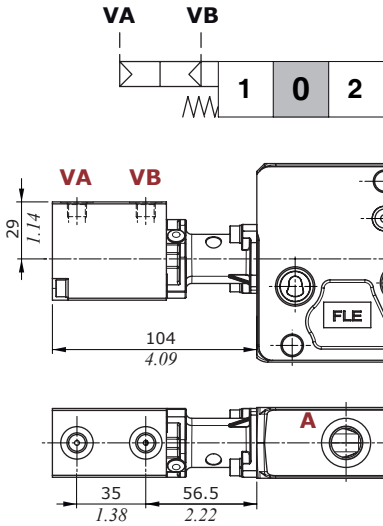
Stroke vs. Pilot pressure diagram



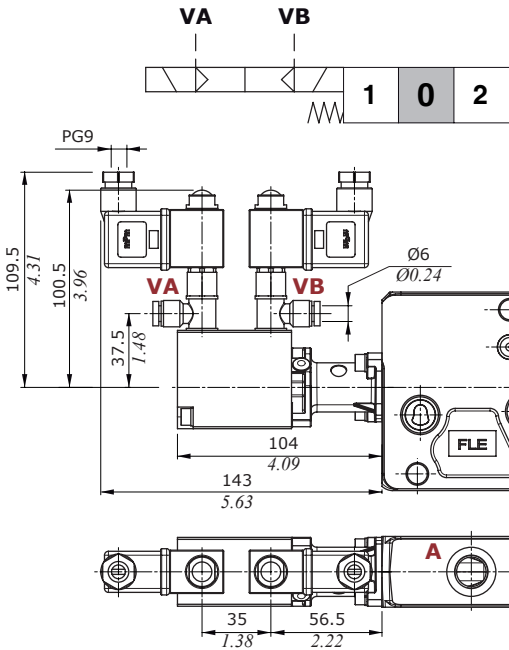
Working section

"A" side spool positioners

On/off pneumatic control, type 8PNB



On/off electropneumatic control, type 8EPNB3



Features

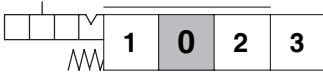
Pilot pressure : 6 bar (max.15 bar)
 87 psi (max. 218 psi)

For coil features and options see coil **BPV** at page 104.

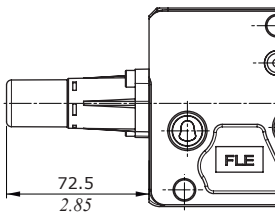
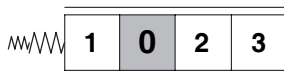
"A" side spool positioners

For floating circuit

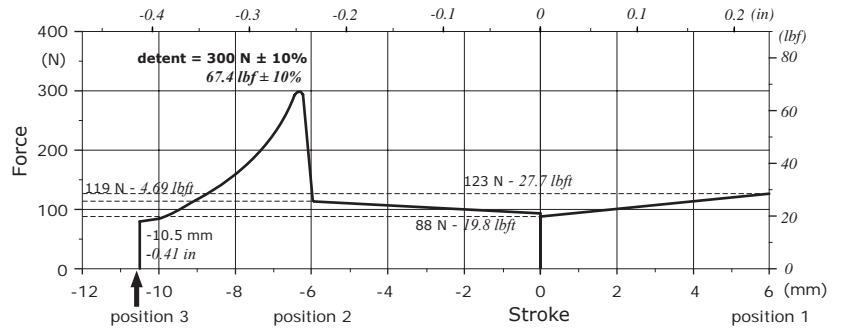
Type 13
detent in position 3



Type 13F
additional spring in position 3

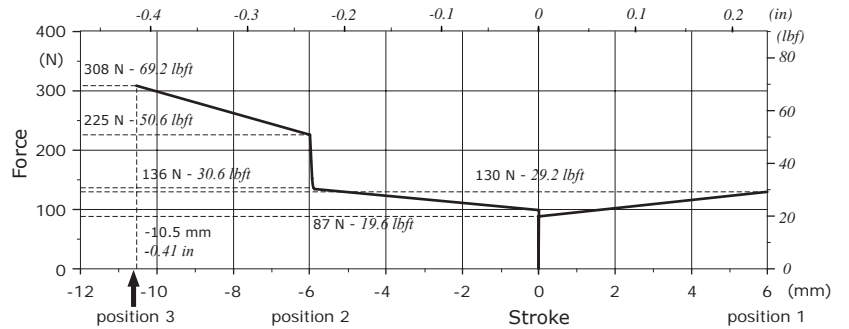


Type 13: Force vs. Stroke diagram



Release force from pos.3: 250 N ± 10% (56.2 lbf ± 10%)

Type 13F: Force vs. Stroke diagram

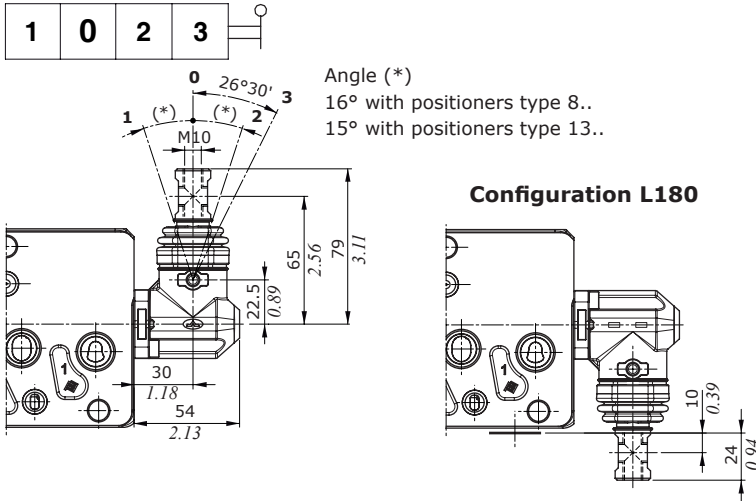


Working section

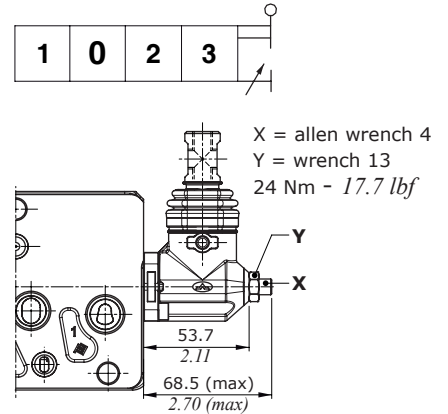
"B" side spool control kit

Standard lever boxes

Type L

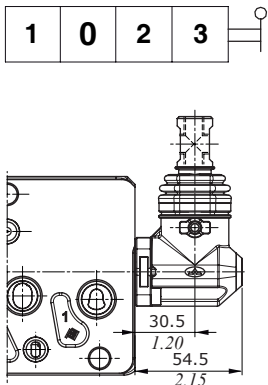


Type LF1
Spool stroke limiter on port A

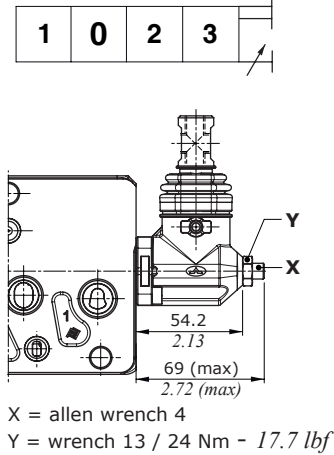


Waterproof lever boxes

Type LSG

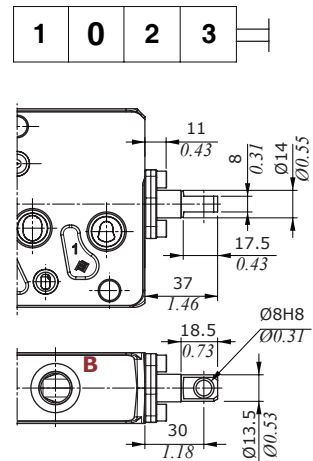


Type LSGF1
Spool stroke limiter on port A

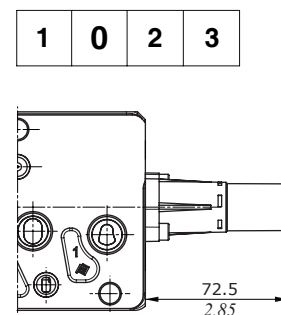


Without lever boxes

Type SLP
With dust-proof plate

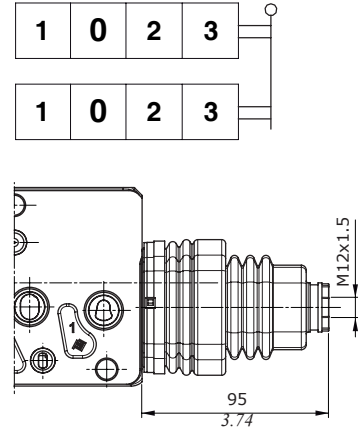
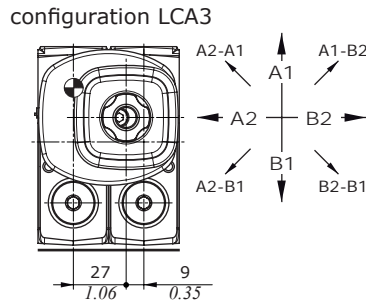
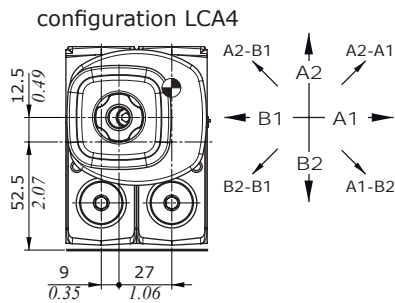
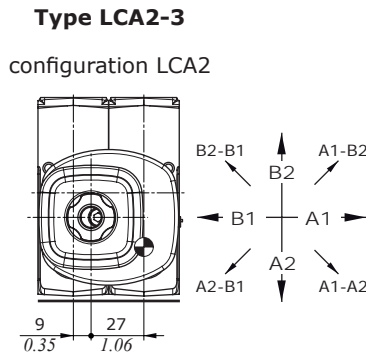
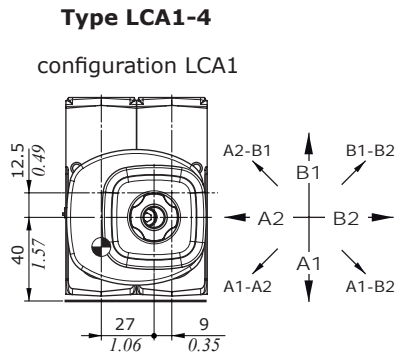


Type SLC
With endcap

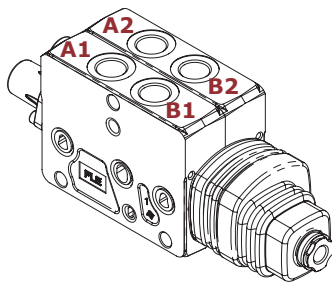


"B" side spool control kit

Joysticks for two sections operation



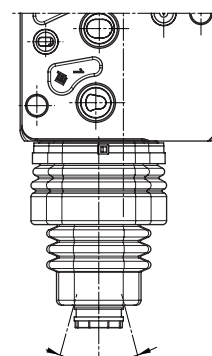
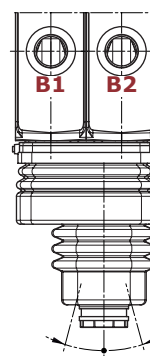
LCA2 configuration example



Working angles

Horizontal axis

Vertical axis

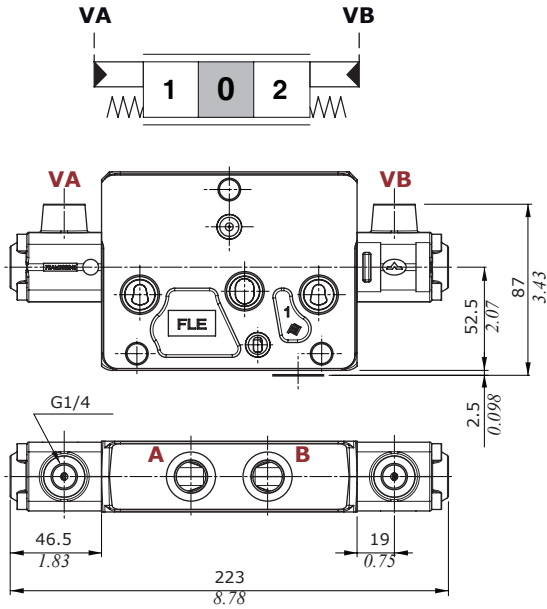


Max. working angles	Horizontal axis	Vertical axis
Single action operation	15°4'	15°4'
Single action operation with floating	25°2'	25°2'
Two section operation	15°52'	15°52'
Two section operation with floating	18°3'	18°3'

Working section

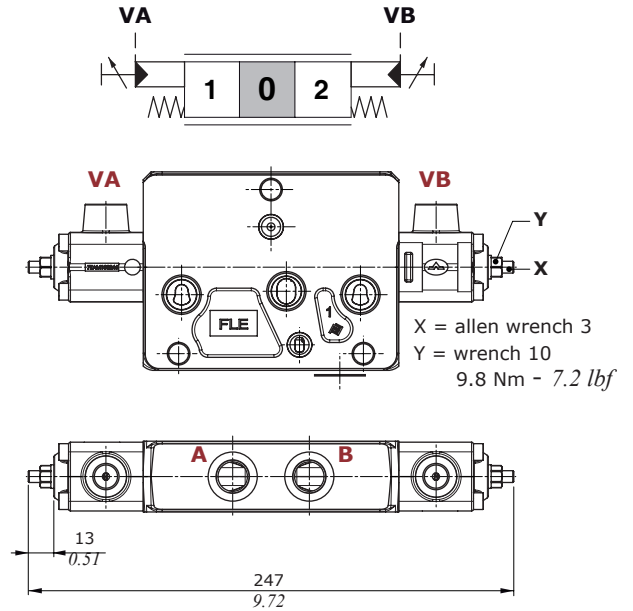
Proportional hydraulic control

Types 8IMN - 8IMXN



Types 8IMF3N - 8IMXF3N

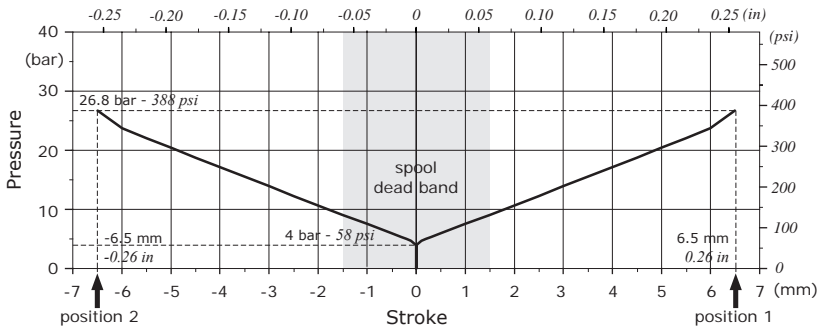
With spool stroke limiter on Ports A and B



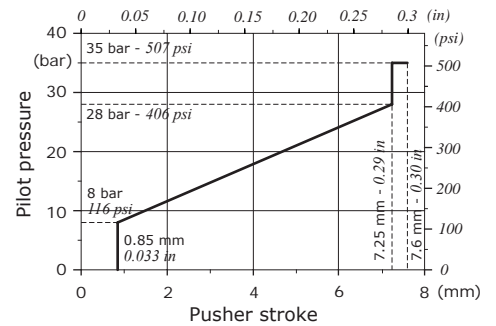
Features (all types)

Max. pressure. : 70 bar - 1015 psi

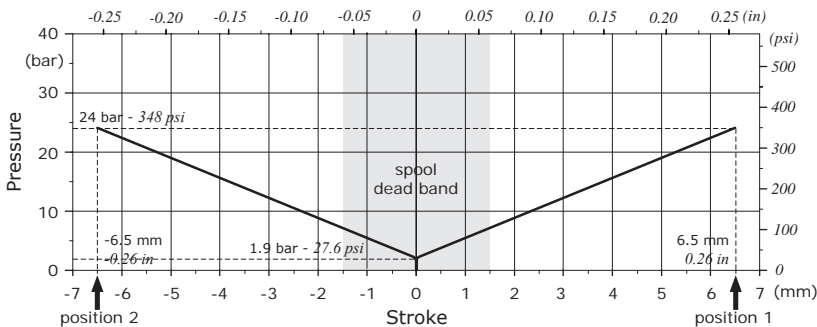
Types 8IMN-8IMF3N: Pressure vs. Stroke diagram



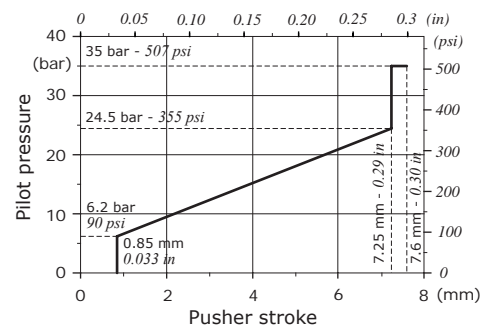
Suggested pressure control curve: 089



Types 8IMXN-8IMXF3N: Pressure vs. Stroke diagram

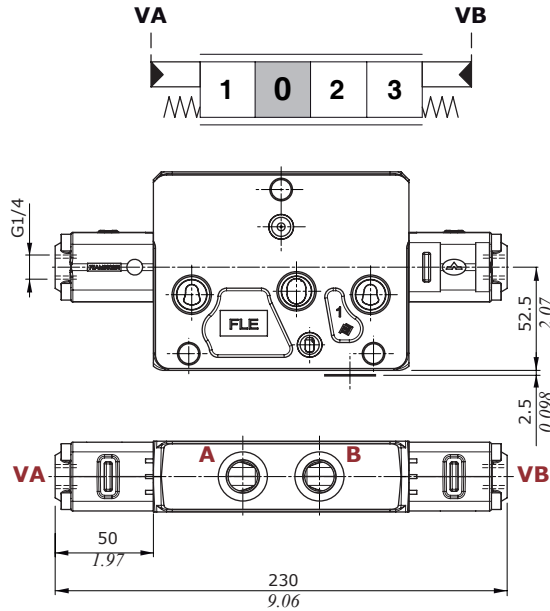


Suggested pressure control curve: 054



Proportional hydraulic control

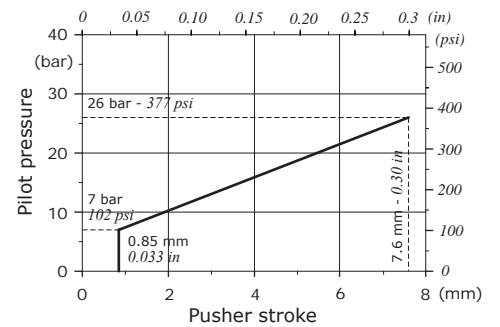
For floating circuit, type 13IMS



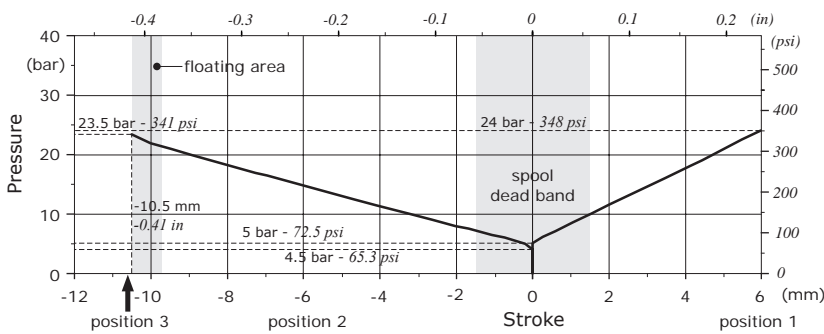
Features

Max. pressure. : 70 bar - 1015 psi

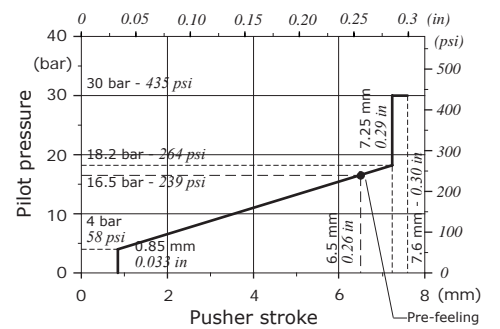
Suggested pressure control curve on port VA: type 098



Stroke vs. Pressure diagram



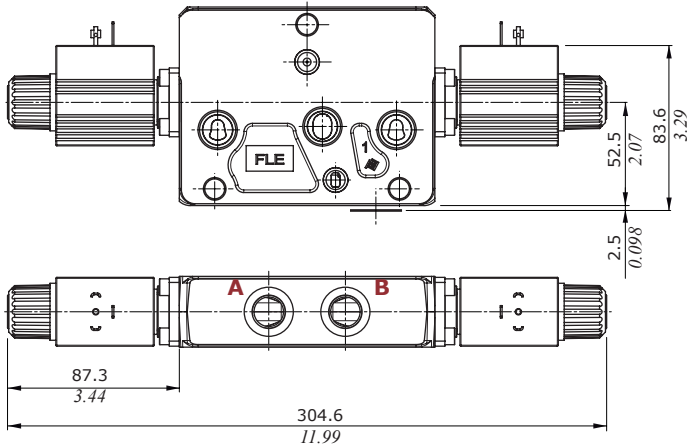
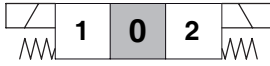
Suggested pressure control curve on port VB: type 086



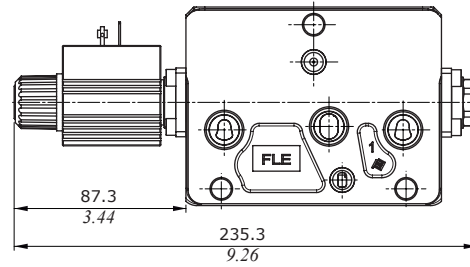
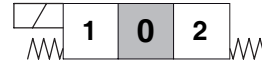
Working section

On/off solenoid control

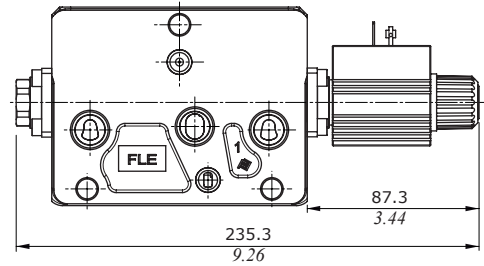
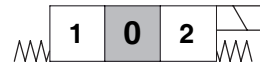
Type 8ES3
Double acting



Type 8ES1
Single acting in A



Type 8ES2
Single acting in A



Features

Internal leakage A(B)⇒T . . . : 10 cm³/min @ 100 bar and 20°C)
0.61 in³/min @ 1450 psi and 68°F

For coil features and options see coil **D12** at page 104.

Electrohydraulic controls 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 tolerance ± 10%.

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

Specifications		Spool control type			
		8EB3	13EB3	8EZ3	13EZ3
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
<u>Controls configured with lever box</u>					
Hysteresis max. ⁽¹⁾	external drain	3% 5% with lever	4% 7% with lever	7%	7%
	internal drain	4% 6% with lever	6% 9% with lever	9%	9%
Time response	from 0 ⇒ 100% and from 100% ⇒ 0 of stroke	< 50 ms	< 55 ms	< 50 ms	< 55 ms
Min. flow control signal	12 VDC	700 mA	220 mA	700 mA	700 mA
	24 VDC	350 mA	110 mA	350 mA	350 mA
Flow control signal	12 VDC	1250 mA	380 mA	1250 mA	840 mA
	24 VDC	625 mA	190 mA	625 mA	420 mA
Max. float flow control signal	12 VDC		440 mA		1020 mA
	24 VDC		220 mA		510 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 (type JPT) - IP69K (type DT)		IP65 (type JPT) - IP69K (type DT)	
Hydraulic specifications					
Max. pressure		40 bar (580 psi)		40 bar (580 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 110.

Working section

Electrohydraulic controls 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,
- nominal voltage from 8.5 to 30 VDC, with tolerance ± 10%.

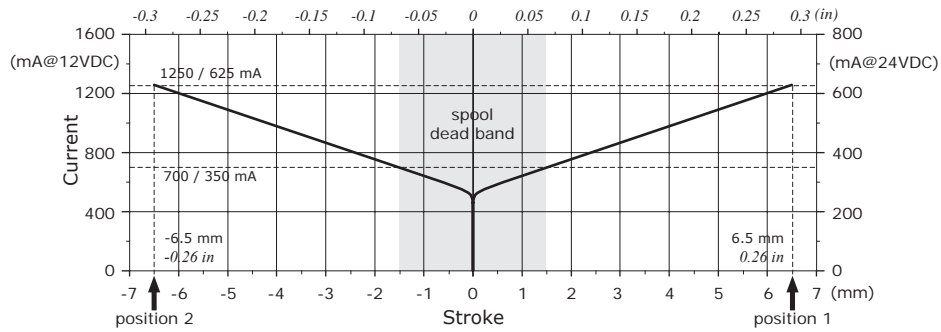
Specifications	Spool control type			
	8ZR3T1	13ZR3T1	8ZR3T2	13ZR3T2
Electric specifications				
Coil impedance	> 40 KΩ	> 40 KΩ	> 40 KΩ	> 40 KΩ
Max. operating current	750 mA	750 mA	750 mA	750 mA
No load current consumption	400 mA	400 mA	400 mA	400 mA
Hysteresis max. ⁽¹⁾	~ 0%	~ 0%	~ 0%	~ 0%
Time response	from 0 ⇒ 100% of stroke	< 95 ms	< 100 ms	< 95 ms
	from 100% ⇒ 0 of stroke	< 65 ms	< 70 ms	< 65 ms
Min. flow control signal ⁽²⁾	P⇒A: 0.50 V P⇒B: 2.75 V	P⇒A: 0.50 V P⇒B: 2.75 V	CAN2.0B (SAEJ1939) Please refer to the document: "ZR3T2 CAN bus protocol"	
Max. flow control signal ⁽²⁾	P⇒A: 2.25 V P⇒B: 4.50 V	P⇒A: 2.25 V P⇒B: 4.10 V		
Float flow control signal ⁽²⁾	4.50 V			
Insertion	100%		100%	
Coil insulation	Class H (180°C - 356°F)		Class H (180°C - 356°F)	
Connector type	Deutsch DT		Deutsch DT	
Weather protection (connector)	IP69K (type DT)		IP69K (type DT)	
Hydraulic specifications				
Max. pressure	35 bar (508 psi)		35 bar (508 psi)	
Max. back pressure	5 bar (73 psi)		5 bar (73 psi)	
General specifications				
Mechanical strenght according to	EN60068-2-29		EN60068-2-29	
EMC according to	ISO 7637		ISO 7637	

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 110.

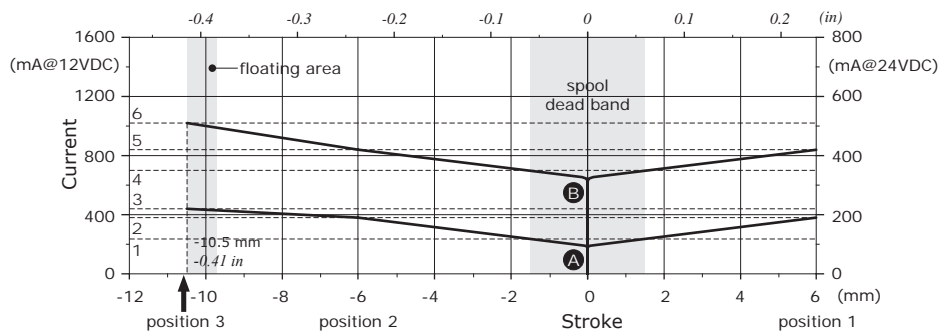
Note (2) if control signal exceeds 4,5 V or is less then 0,25 V, the control will enter into error mode and the spool will be moved in neutral posiztion.

Electrohydraulic controls performance data

Types 8EB3T/8EZ3: Stroke vs. Current diagram



Types 13EB3T/13EZ3: Stroke vs. Current diagram



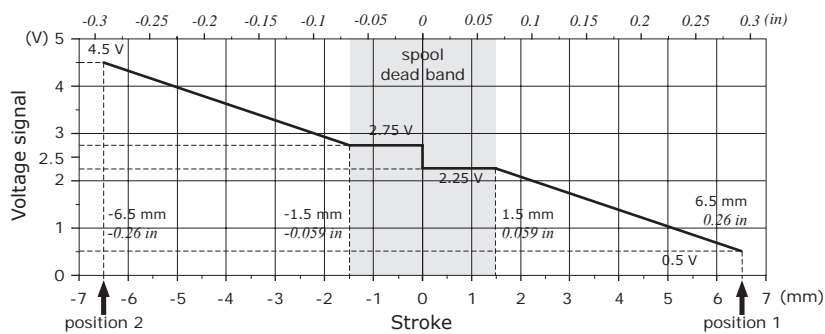
Curve A = 13EB3T control

- 1 = 220 mA @ 12 VDC - 110 mA @ 24 VDC
- 2 = 380 mA @ 12 VDC - 190 mA @ 24 VDC
- 3 = 440 mA @ 12 VDC - 220 mA @ 24 VDC

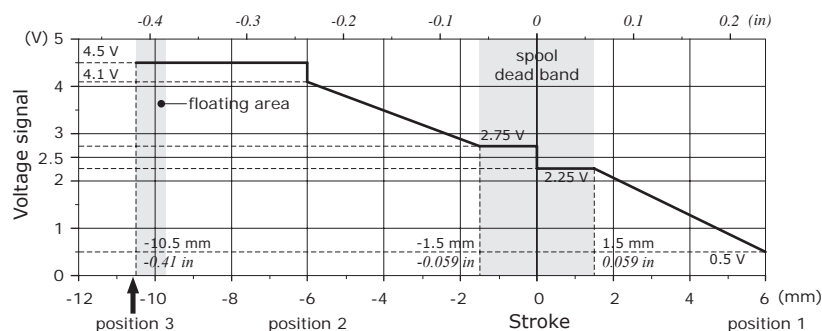
Curve B = 13EZ3 control

- 4 = 700 mA @ 12 VDC - 350 mA @ 24 VDC
- 5 = 840 mA @ 12 VDC - 420 mA @ 24 VDC
- 6 = 1020 mA @ 12 VDC - 510 mA @ 24 VDC

Type 8ZR3T1: Stroke vs. Voltage diagram



Type 13ZR3T1: Stroke vs. Voltage diagram



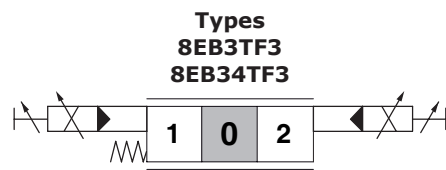
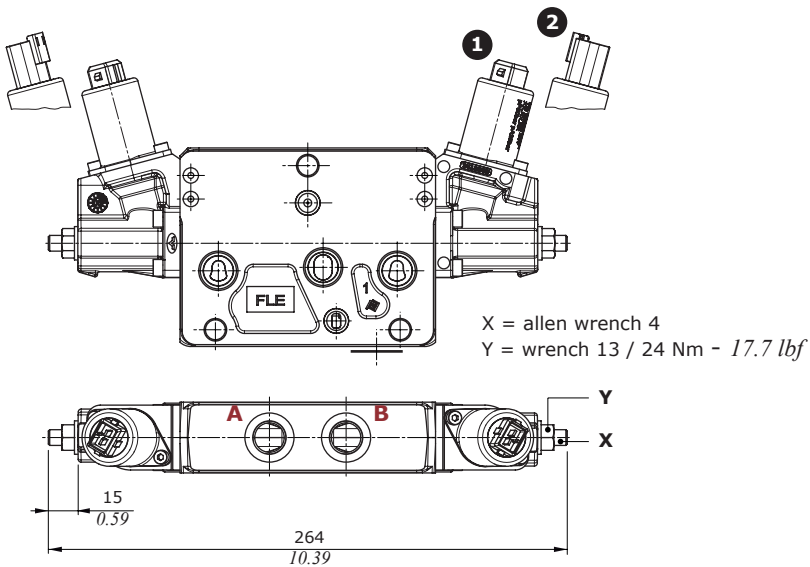
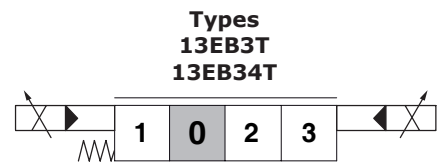
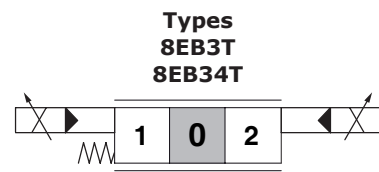
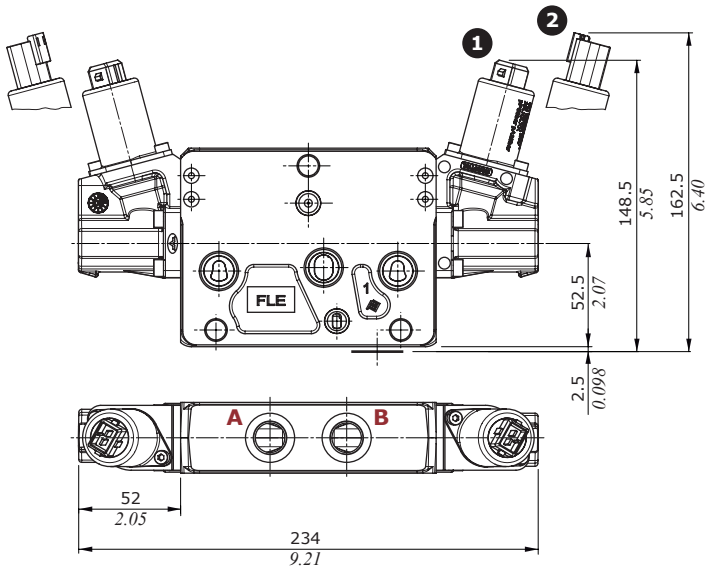
Working section

Two-side electrohydraulic control

Without lever control

Control Types

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

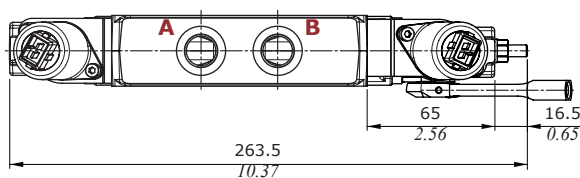
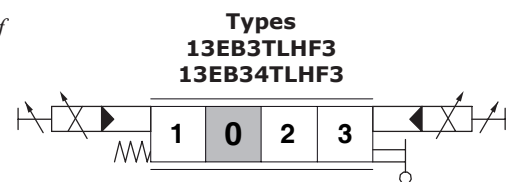
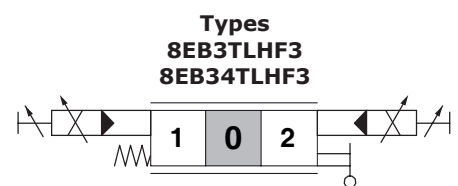
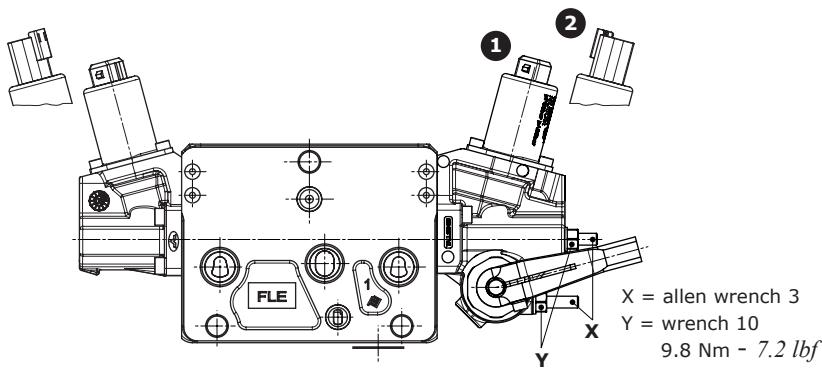
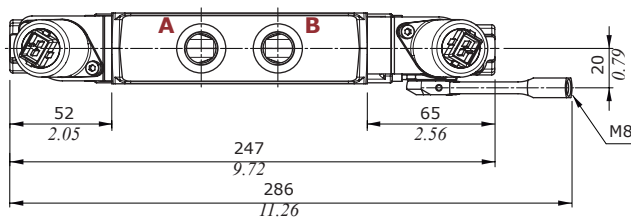
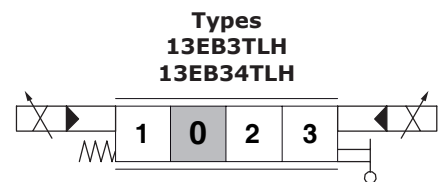
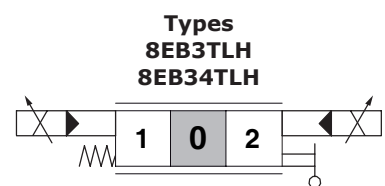
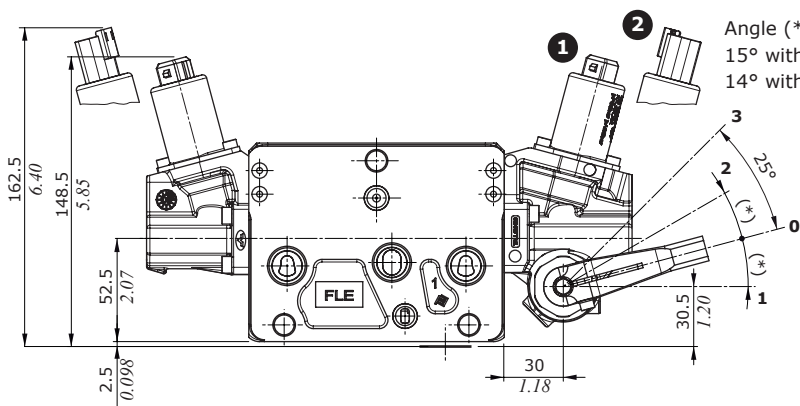


Two-side electrohydraulic control

With lever control

Control Types

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

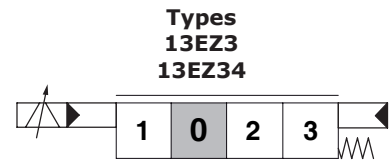
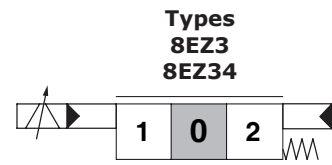
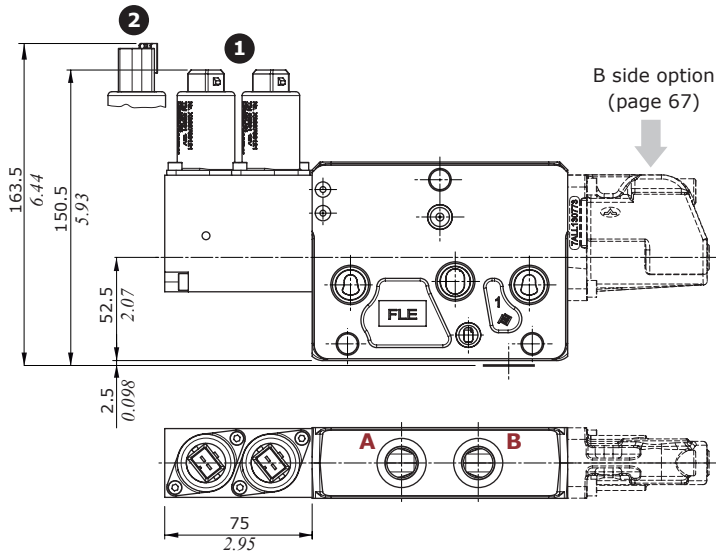


Working section

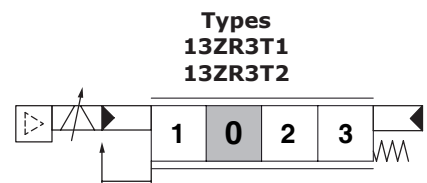
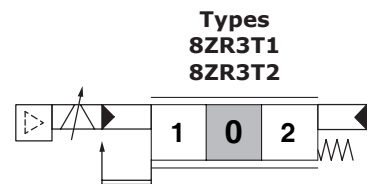
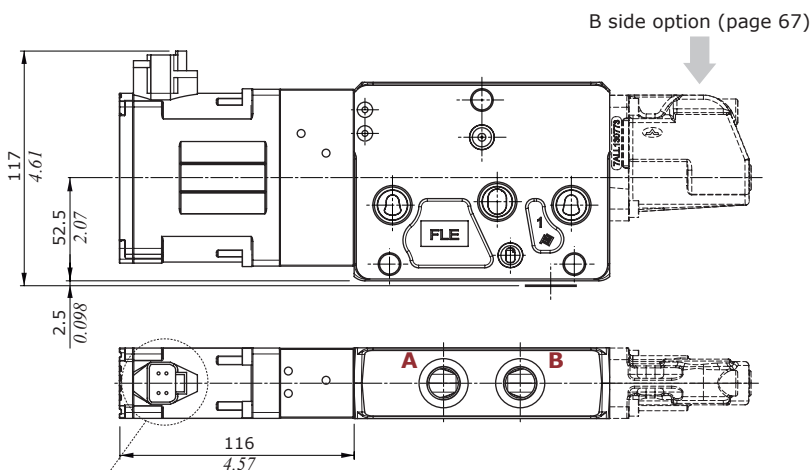
One-side electrohydraulic control without electronic

Control Types

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



One-side electrohydraulic control with on-board electronic



Pin	8ZR3T1-13ZR3T1 Analog input	8ZR3T2-13ZR3T2 CAN bus interface
1	power supply (+)	power supply (+)
2	not connected	CAN_Lo
3	control signal	CAN_Hi
4	power supply GND (-)	power supply GND (-)

Mating connector Deutsch DT06-4S, code 5CON140051

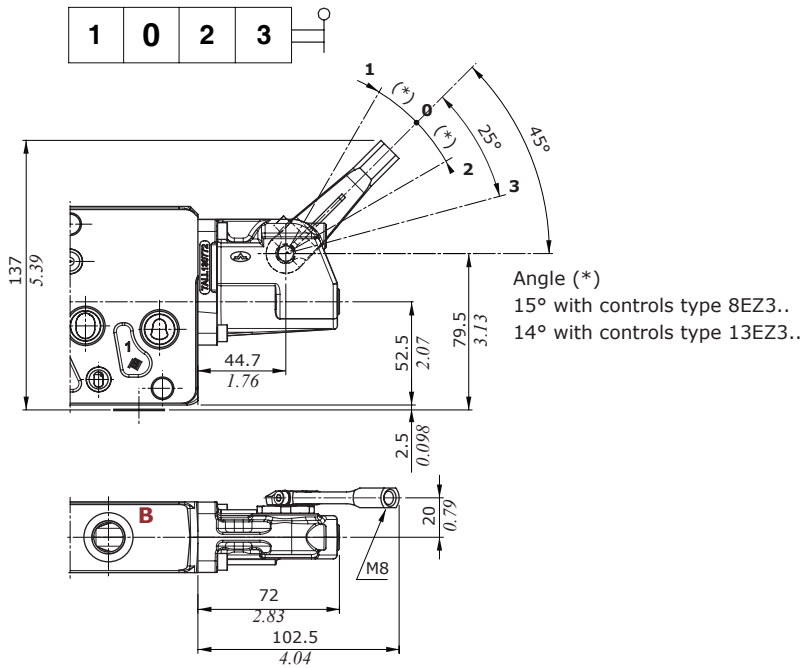
Deutsch DT04-4P connector

"B" side options

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

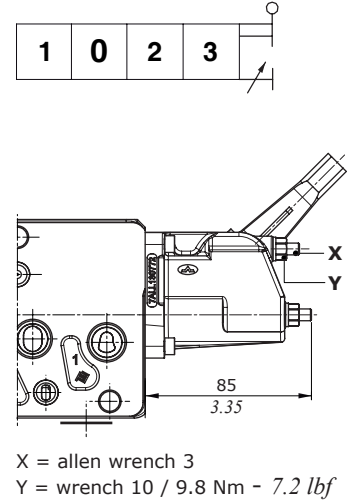
Lever boxes

Type LQ

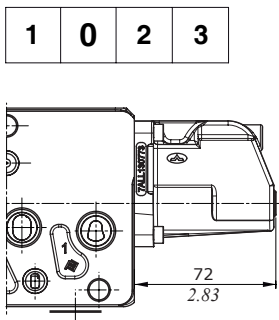


Type LQF3

Spool stroke limiter on ports A and B

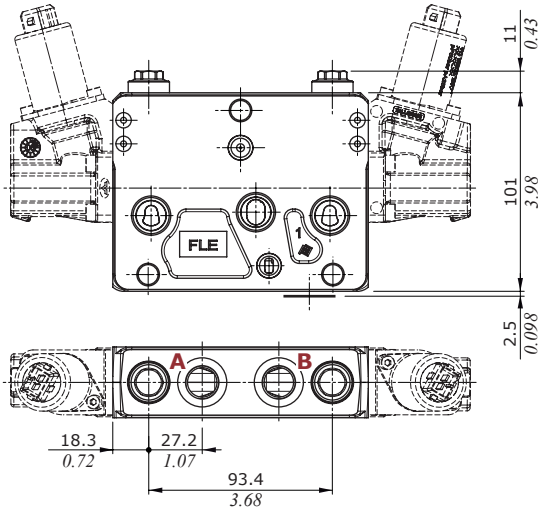


Endcap, type SLCQ



Working section

Port valves



Type U

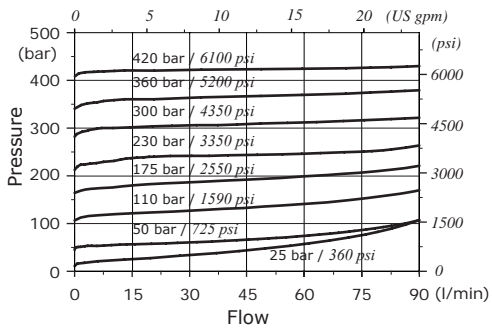


Type C



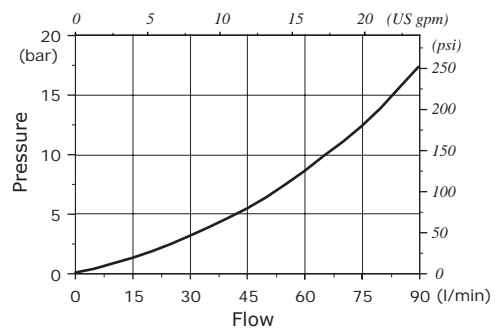
Type U: antishock valves with prefill

Setting example
(10 l/min - 2.6 US gpm)

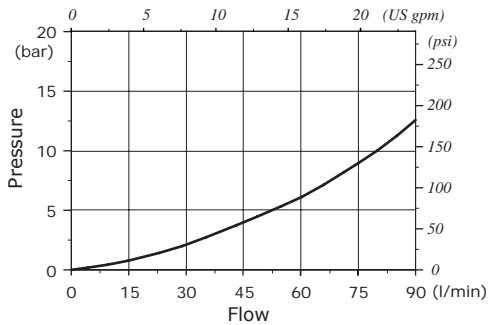


Type C: anticavitation valves

Pressure drop

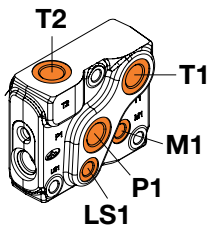
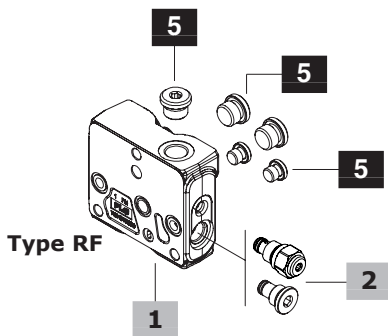


Pressure drop
(in anticavitation)

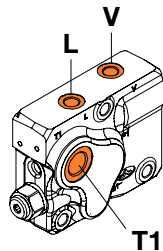
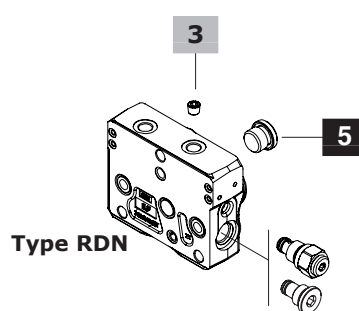


Outlet section parts ordering codes

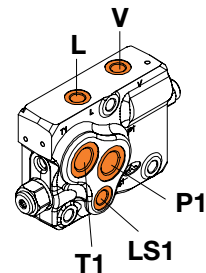
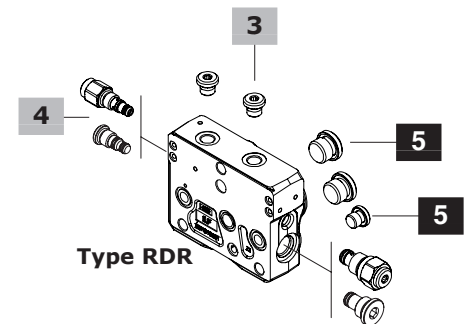
DPX100 / RF (04)



DPX100 / RDN (VBT) - NOTAP(VL)



DPX100 / RDR (VBT / 03 / RT) - TAP(VL)



1 Outlet section kit* page 69

Outlet section is the same type for standard and High Pressure valve
For mechanical, hydraulic and solenoid controls

TYPE: **DPX100/RF** CODE: YFIA204300

DESCRIPTION: With upper port T2 port

TYPE: **DPX100/RF-BSP34** CODE: YFIA204400

DESCRIPTION: As previous with G3/4 port

TYPE: **DPX100/RF(04)** CODE: YFIA204305

DESCRIPTION: With upper port T2 and side ports P1, T1, LS1, M1

For electrohydraulic controls

TYPE: **DPX100/RDN** CODE: YFIA204391

DESCRIPTION: Without pressure reducing valve arrangement, side T1 and upper V and L ports

TYPE: **DPX100/RDN-BSP34** CODE: YFIA204491

Description: As previous with G3/4 T1 port

TYPE: **DPX100/RDR(03)** CODE: YFIA204302

DESCRIPTION: With pressure reducing valve arrangement, upper V and L ports, side P1, T1, LS1 ports

TYPE: **DPX100/RDR(03)-BSP34** CODE

: YFIA204403 DESCRIPTION: As

previous with G3/4 P and T ports

Note: for outlet sections with different port arrangement contact Sales Dpt.

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

NOTE (-): "TYPE" omitted in outlet section description

2 Bleed valve

TYPE	CODE	DESCRIPTION
(-)	X138810000	Bleed valve
(VBT)	XTAP525320	Valve blanking plug

3 Pilot and drain *

TYPE	CODE	DESCRIPTION
NOTAP(VL)	4TAP310007	M10x1 DIN906 plug, for external drain
(-)	3XTAP719150	G1/4 plug, nr.2 for internal pilot and drain

4 Pressure reducing valve

TYPE	CODE	DESCRIPTION
(-)	X219740033	Press. reducing valve, 32 bar / 464 psi
(RT)	XTAP418350	Valve blanking plug

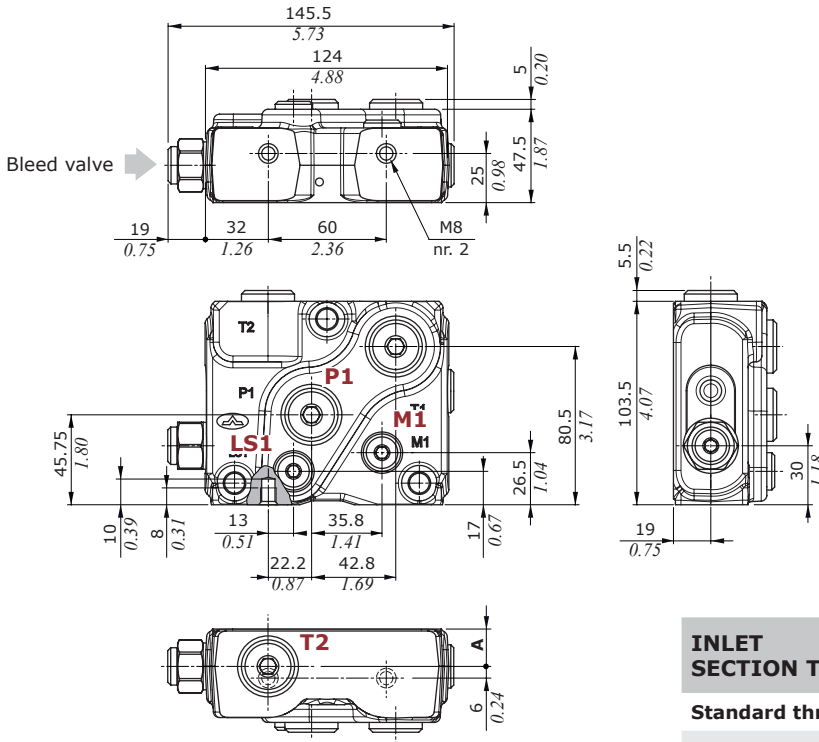
5 Parts *

CODE	DESCRIPTION
3XTAP727180	G1/2 plug, nr.1 for RF and RDN section, nr.2 for RDN(03) section, nr.3 for RF(04) section
3XTAP719150	G1/4 plug, nr.1 for RDR(03) section, nr.2 for RF(04) section

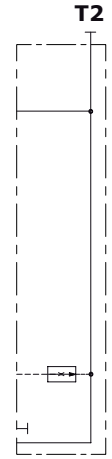
Outlet section

Dimensions and hydraulic circuit

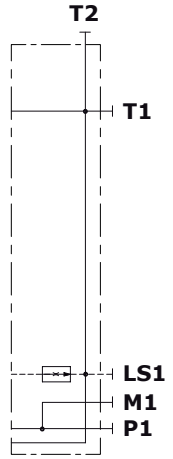
Example of RF(04) outlet section



Type RF

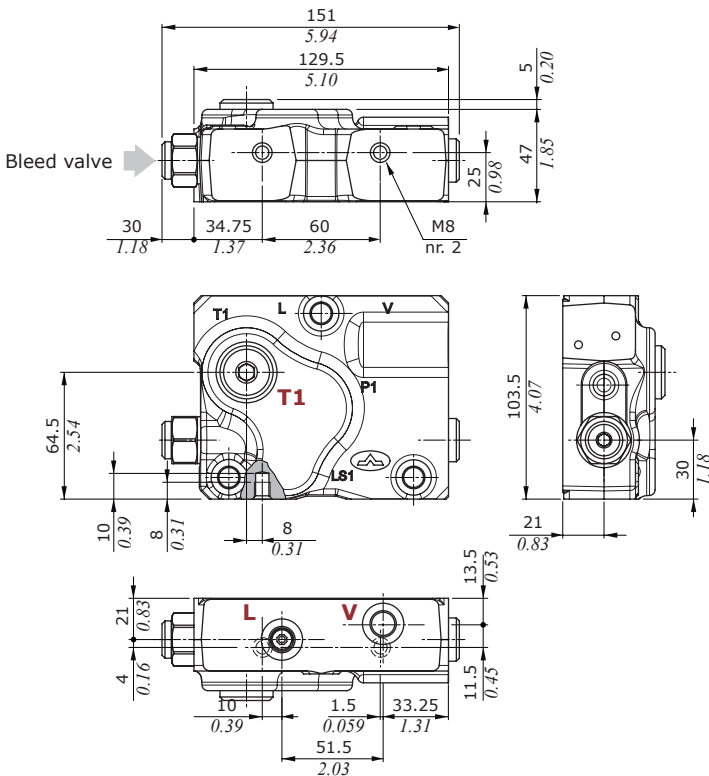


Type RF(04)

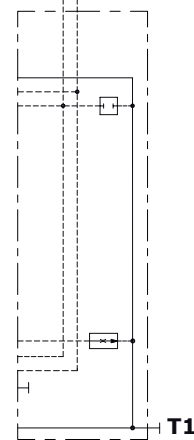


INLET SECTION TYPE	A	
	mm	in
Standard thread	19	0.75
G3/4 thread	23	0.91

Example of RDN outlet section

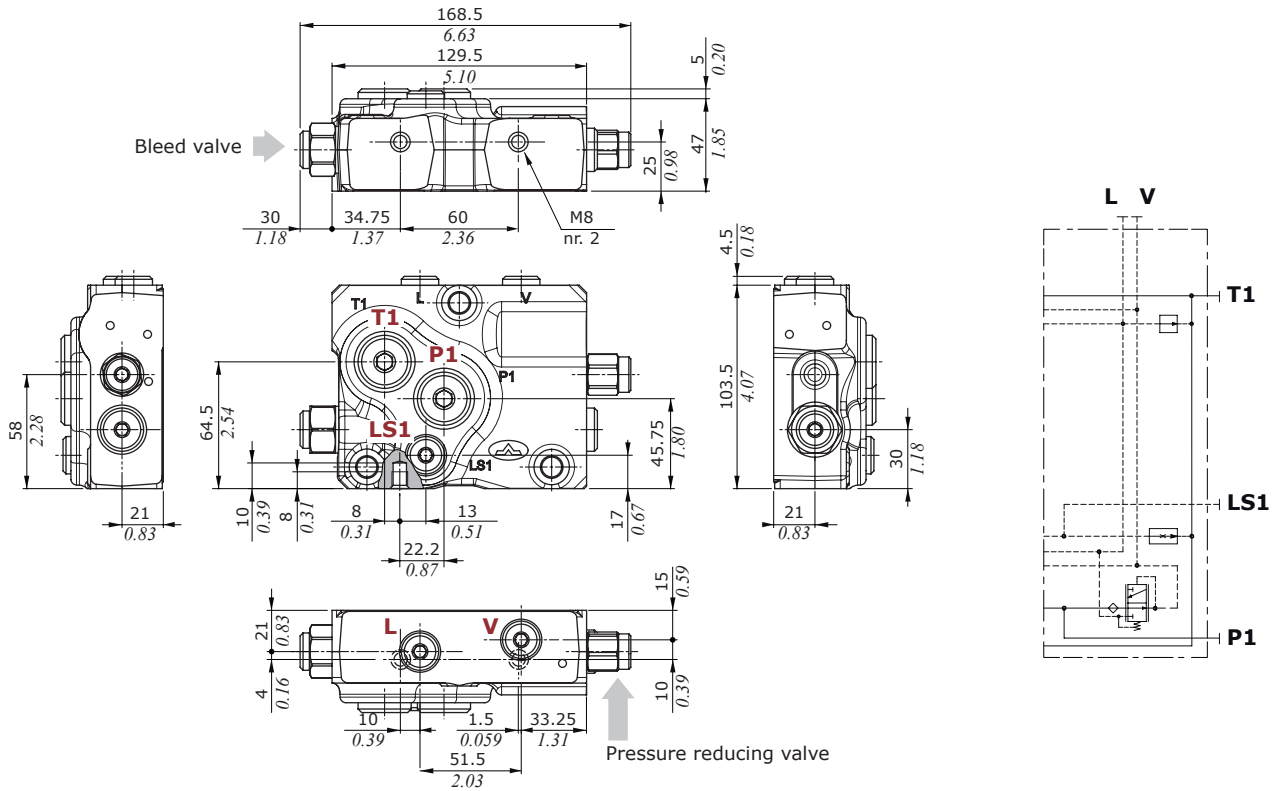


L V



Dimensions and hydraulic circuit

Example of RDR(04) outlet section



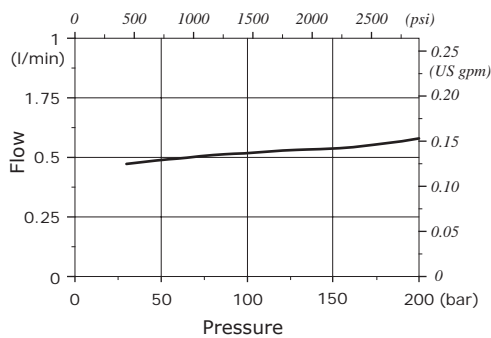
Bleed valve features

Max. inlet pressure : 350 bar - 5100 psi
 Max. back pressure : 25 bar - 363 psi

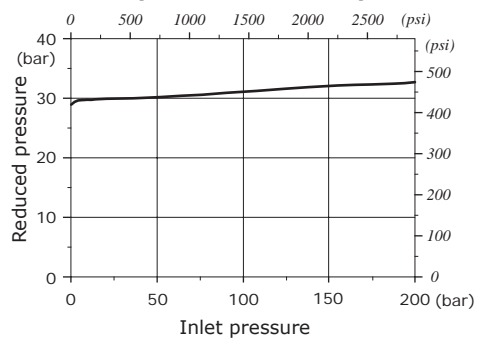
Pressure reducing valve features

Max. inlet pressure : 380 bar - 5500 psi
 Max. back pressure : 25 bar - 363 psi

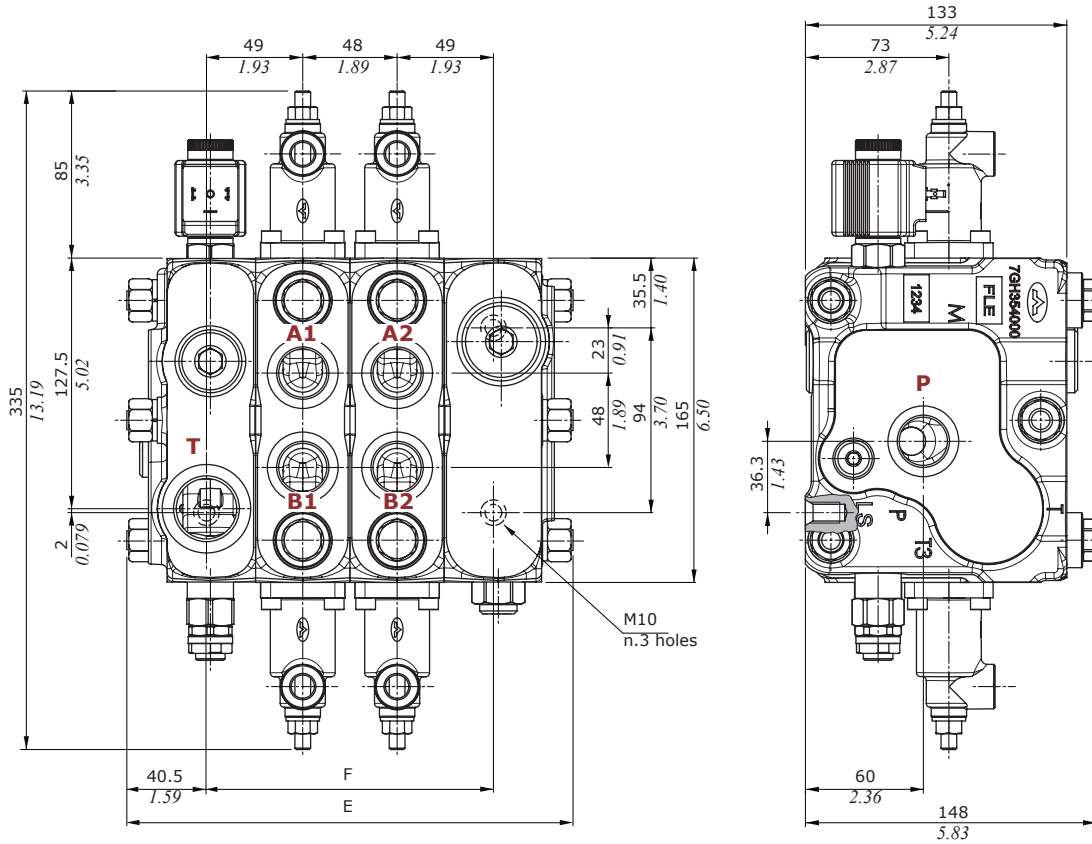
**Bleed valve diagram
 Flow vs. Pressure**



**Pressure reducing valve diagram
 Reduced pressure vs. Inlet pressure**

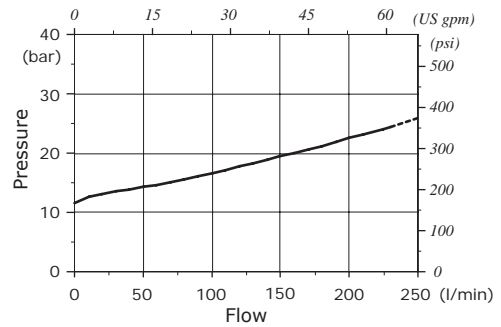


Dimensional data and performance

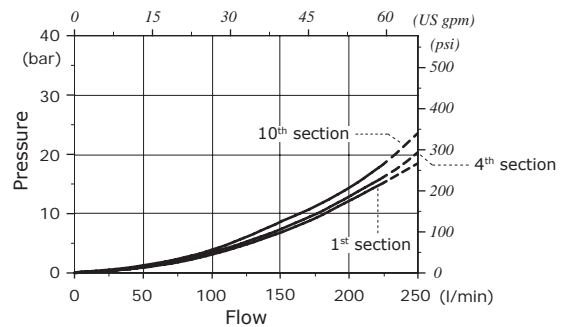


TYPE	E		F	
	mm	in	mm	in
DPX160/1	179	7.05	98	3.86
DPX160/2	227	8.94	146	5.75
DPX160/3	275	10.83	194	7.64
DPX160/4	323	12.72	242	9.53
DPX160/5	371	14.61	290	11.42
DPX160/6	419	16.50	338	13.31
DPX160/7	467	18.39	386	15.20
DPX160/8	515	20.28	434	17.09
DPX160/9	563	22.17	482	18.98
DPX160/10	611	24.06	530	20.87

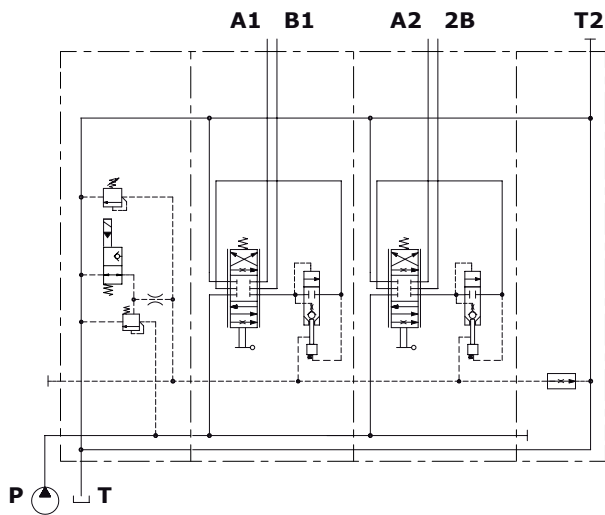
P→T Pressure drop inlet compensator (margin pressure)



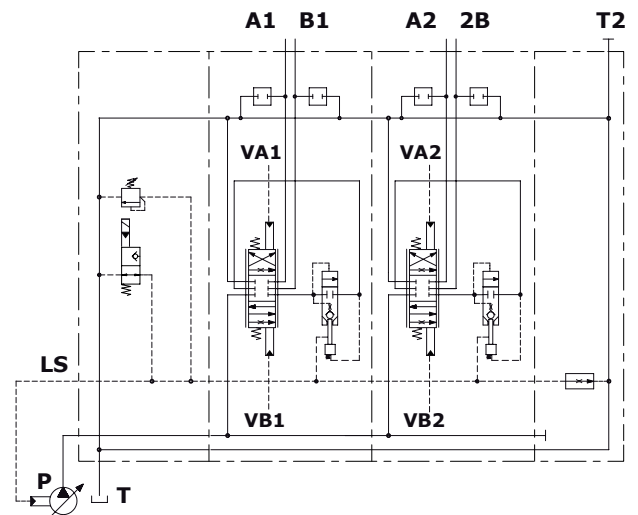
A(B)→T pressure drop (standard spool @ max.stroke)



Configuration example with mechanical and hydraulic controls

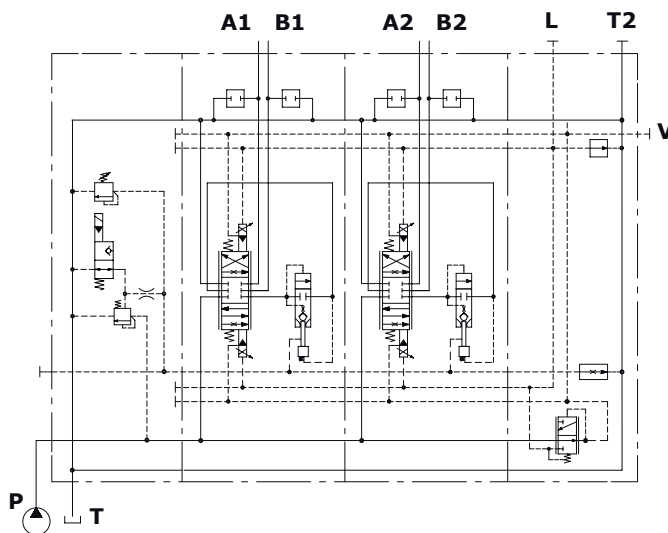


Open center circuit and lever control, with unloader valve, without port valves arrangement

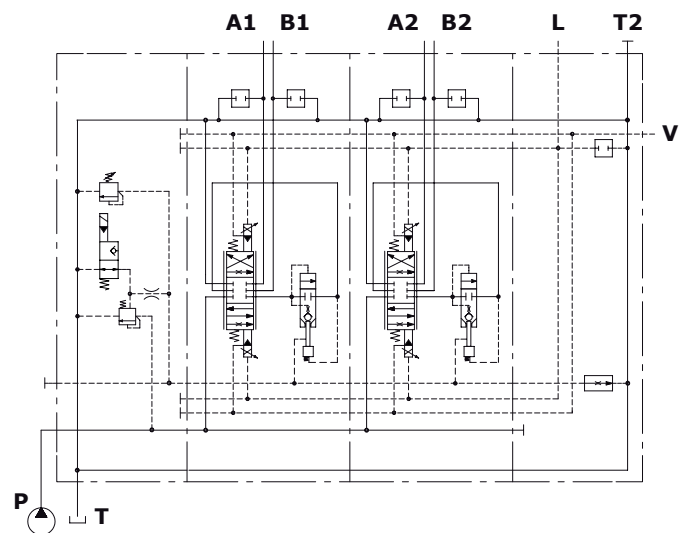


Closed center circuit and proportional hydraulic control, with unloader valve and port valves arrangement

Configuration example with electrohydraulic controls



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

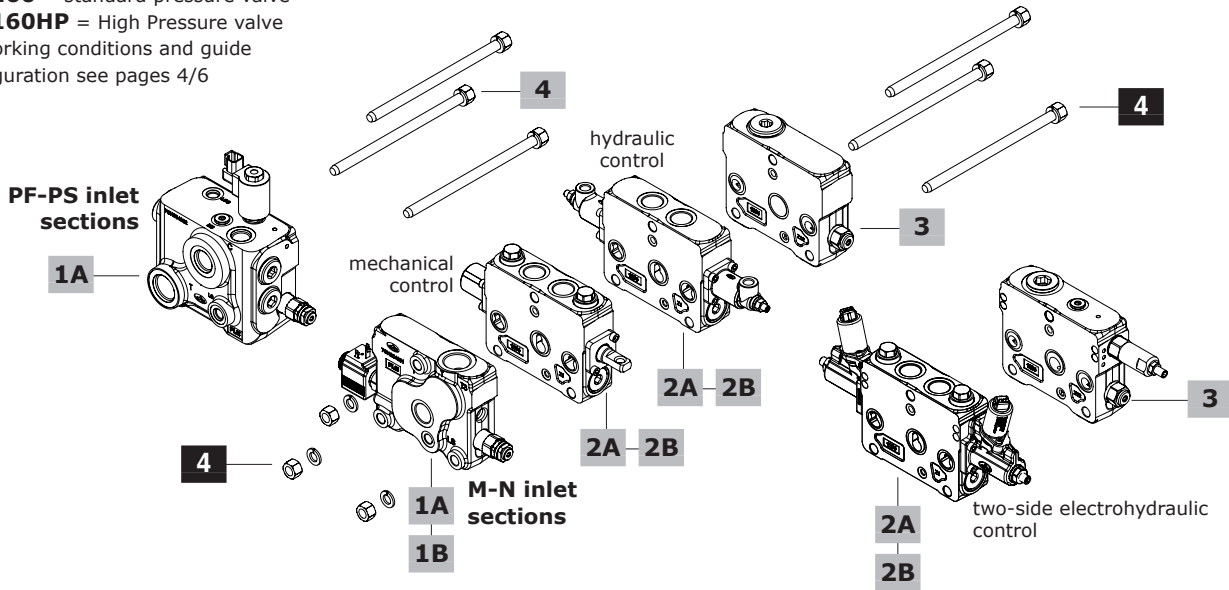


Open center circuit and two-side proportional electrohydraulic control, with unloader valve and port valves arrangement, without pressure reducing valve, external pilot and drain

Complete sections ordering codes



DPX160 = standard pressure valve
DPX160HP = High Pressure valve
 For working conditions and guide configuration see pages 4/6



1A Std pressure inlet section *

Open Center circuit

TYPE: **DPX160/M3B(TGW3-175/ELN)-12VDC**

CODE: 650203023

DESCRIPTION: With compensator, press. relief valve and unloader valve, with P-T-LS-M ports (LS-M plugged)

TYPE: **DPX160/M3B(SO/TGW3-175/ELN)-12VDC**

CODE: 650205019

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

TYPE: **DPX160/M3B(SU/TGW3-175/ELN)-12VDC**

CODE: 650203025

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX160/M4B(TGW3-175/ELN)-12VDC**

CODE: 650203026

DESCRIPTION: As type M3, with side T3 outlet port (plugged)

TYPE: **DPX160/PF1A(TGW3-175\VP-D(1)-SB10-Q40\CF(1)-SB14**

CODE: 650203301

DESCRIPTION: **Designed for steering**, with compensator, priority valve and press. relief valve, with ports P-T-LS-M3-C-LSC (M3-LS plugged). Needs special tie rods

Closed Center circuit

TYPE: **DPX160/N1A(TGW3-175/ELN)-12VDC**

CODE: 650203019

DESCRIPTION: Without compensator, with pressure relief valve and unloader valve, with P-T-LS ports

TYPE: **DPX160/N1A(SO/TGW3-175/ELN)-12VDC**

CODE: 650203021

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

TYPE: **DPX160/N1A(SU/TGW3-175/ELN)-SAE-12VDC**

CODE: 650203020

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX160/N2A(TGW3-175/ELN)-SAE-12VDC**

CODE: 650203022

DESCRIPTION: As type N1, with side T3 outlet port (plugged)

TYPE: **DPX160/PS1A(TGW3-175\VP-D(1)-SB10-Q40\ES032N-12VDC**

CODE: 650203300

DESCRIPTION: **Designed for steering**, without compensator, with priority valve and pressure relief valve, with port P-T-LS-M3-C-LSC (M3-LS plugged). Need special tie rods

1B High pressure inlet section *

Open Center circuit

TYPE: **DPX160HP/M3B(TGW5-350/ELN)-12VDC**

CODE: 650203021

DESCRIPTION: With compensator, press. relief valve and unloader valve, with P-T-LS-M ports (LS-M plugged)

TYPE: **DPX160HP/M3B(SO/TGW5-350/ELN)-12VDC**

CODE: 650203033

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

TYPE: **DPX160HP/M3B(SU/TGW5-350/ELN)-12VDC**

CODE: 650203032

DESCRIPTION: With non-return flow limiter from working section to inlet section and by-pass valve

Closed Center circuit

Refer to "Std pressure" inlet sections (except PS section)

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

Complete sections ordering codes

2A Std pressure working section *

Mechanical control

TYPE: **DPX160/Q-108(150/150)-8SLP**

CODE: 650113002

DESCRIPTION: With dust-proof plate, without port valves arrangement

TYPE: **DPX160/P-108(150/150)-8SLP.UL3T**

CODE: 650103002

DESCRIPTION: As previous with port pressure relief valves arrang.

TYPE: **DPX160/P-108(150/150)-8SLP.US3T**

CODE: 650103003

DESCRIPTION: With port antishock valves arrangement

Proportional hydraulic control

TYPE: **DPX160/Q-E108(150/150)-8IMF3N**

CODE: 650113006

DESCRIPTION: With spool stroke limiter, without port valves arrang.

TYPE: **DPX160/P-E108(150/150)-8IMF3N.UL3T**

CODE: 650103017

DESCRIPTION: As previous with port pressure relief valves arrang.

TYPE: **DPX160/P-E108(150/150)-8IMF3N.US3T**

CODE: 650103018

DESCRIPTION: With port antishock valves arrangement

Two-side proportional electrohydraulic control

TYPE: **DPX160/QE-E108(150/150)-8EB3F3-12VDC**

CODE: 650113004

DESCRIPTION: With spool stroke limiter, without port valves arrang.

TYPE: **DPX160/PE-E108(150/150)-8EB3F3.UL3T-12VDC**

CODE: 650103025

DESCRIPTION: As previous with port pressure relief valves arrang.

TYPE: **DPX160/PE-E108(150/150)-8EB3F3.US3T-12VDC**

CODE: 650103026

DESCRIPTION: With port antishock valves arrangement

2B High pressure working section *

Mechanical control

TYPE: **DPX160HP/Q-108(150/150)-8SLP**

CODE: 650113010

DESCRIPTION: With dust-proof plate, without port valves arrang.

TYPE: **DPX160HP/P-108(150/150)-8SLP.US3T**

CODE: 650103027

DESCRIPTION: As previous with port antishock valves arrangement

Proportional hydraulic control

TYPE: **DPX160HP/Q-E108(150/150)-8IMF3N**

CODE: 650113011

DESCRIPTION: With spool stroke limiter, without port valves arrang.

TYPE: **DPX160HP/P-E108(150/150)-8IMF3N.US3T**

CODE: 650103028

DESCRIPTION: As previous with port antishock valves arrangement

Two-side proportional electrohydraulic control

TYPE: **DPX160HP/QE-E108(150/150)-8EB3F3-12VDC**

Code: 650113012

DESCRIPTION: With spool stroke limiter, without port valves arrang.

TYPE: **DPX160HP/PE-E108(150/150)-8EB3F3.US3T-12VDC**

Code: 650103029

DESCRIPTION: As previous with port antishock valves arrangement

3 Outlet section *

Outlet section is the same type for standard and High Pressure valve

For mechanical or hydraulic configuration

TYPE: **DPX160/RC1A** CODE: 650303002

DESCRIPTION: With Bleed valve and upper T2 port (plugged)

TYPE: **DPX160/RC3A** CODE: 650303004

DESCRIPTION: With Bleed valve and T2, side P1-T1-LS1 ports (plugged)

TYPE: **DPX160/RC3A-CL-12VDC** CODE: 650303020

DESCRIPTION: As previous, with clamp release function

For electrohydraulic or mixed configuration

TYPE: **DPX160/RCN1A** CODE: 650303014

DESCRIPTION: Without pressure reducing valve, external pilot and drain (V-L ports), with Bleed valve and upper T2 port (plugged)

TYPE: **DPX160/RCN3A** CODE: 650303016

DESCRIPTION: As previous, with side P1-T1-LS1 ports (plugged)

TYPE: **DPX160/RCN3A-CL-12VDC** CODE: 650303021

DESCRIPTION: As previous, with clamp release function

TYPE: **DPX160/RCR1A(VLT)** CODE: 650303005

DESCRIPTION: With pressure reducing valve and Bleed valve, internal pilot and drain (V-L ports plugged), with upper T2 port (plugged)

TYPE: **DPX160/RCR3A(VLT)** CODE: 650303017

DESCRIPTION: As previous, with side P1-T1-LS1 ports (plugged)

TYPE: **DPX160/RCN3A(VLT)-CL-12VDC** CODE: 650303022

DESCRIPTION: As previous, with clamp release function

Note: for outlet sections with different port arrangement contact Sales Dpt.

4 Assembling kit

CODE DESCRIPTION

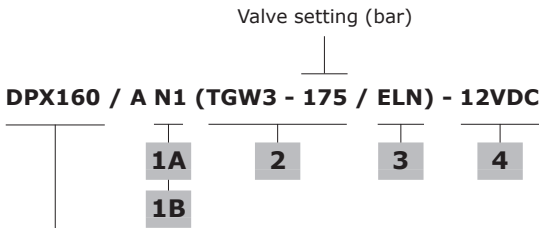
Standard tie rods: for M and N inlet sections

5TIR112179	Tie rod kit for 1 working section directional valve
5TIR112227	Tie rod kit for 2 working sections directional valve
5TIR112275	Tie rod kit for 3 working sections directional valve
5TIR112323	Tie rod kit for 4 working sections directional valve
5TIR112371	Tie rod kit for 5 working sections directional valve
5TIR112419	Tie rod kit for 6 working sections directional valve
5TIR112467	Tie rod kit for 7 working sections directional valve
5TIR112515	Tie rod kit for 8 working sections directional valve
5TIR112563	Tie rod kit for 9 working sections directional valve
5TIR112611	Tie rod kit for 10 working sections directional valve

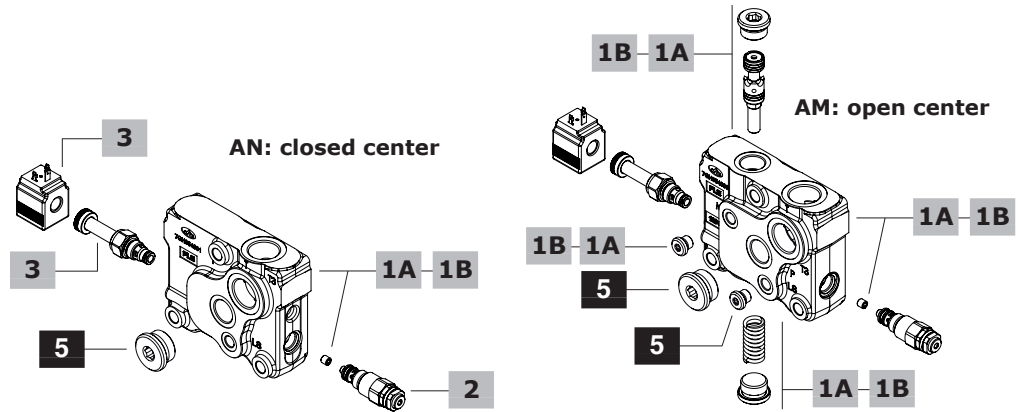
Special tie rods: for PF and PS inlet sections

5TIR112141	Tie rod kit for 1 working section directional valve
5TIR112189	Tie rod kit for 2 working sections directional valve
5TIR112237	Tie rod kit for 3 working sections directional valve
5TIR112285	Tie rod kit for 4 working sections directional valve
5TIR112333	Tie rod kit for 5 working sections directional valve
5TIR112381	Tie rod kit for 6 working sections directional valve
5TIR112429	Tie rod kit for 7 working sections directional valve
5TIR112477	Tie rod kit for 8 working sections directional valve
5TIR112525	Tie rod kit for 9 working sections directional valve
5TIR112573	Tie rod kit for 10 working sections directional valve

Inlet section parts ordering codes



DPX160 = standard pressure valve
DPX160HP = High Pressure valve
 For working conditions and guide configuration see pages 4/6



1A Std pressure inlet section kit* page 78

Open Center circuit

TYPE: **DPX160/M3-EL** CODE: YFIA105309
 DESCRIPTION: With compensator, P-T-LS-M ports (M plugged), arranged for unloader valve

TYPE: **DPX160/M3(SU)-EL** CODE: YFIA105310
 DESCRIPTION: As previous with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX160/M3(SO)-EL** CODE: YFIA105311
 DESCRIPTION: With non return flow limiter from inlet section to working section and by-pass valve

TYPE: **DPX160/M4-EL** CODE: YFIA105308
 DESCRIPTION: As type M3, with side T3 outlet port

Closed Center circuit

TYPE: **DPX160/N1-EL** CODE: YFIA105320
 DESCRIPTION: Without compensator, with P-T-LS ports, arranged for unloader valve

TYPE: **DPX160/N1(SU)-EL** CODE: YFIA105327
 DESCRIPTION: As previous with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX160/N1(SO)-EL** CODE: YFIA105328
 DESCRIPTION: With non return flow limiter from inlet section to working section and by-pass valve

TYPE: **DPX160/N2-EL** CODE: YFIA105326
 DESCRIPTION: As type N1, with side T3 outlet port

1B High pressure inlet section kit* page 78

Open Center circuit

TYPE: **DPX160HP/M3-EL** CODE: YFIA105329
 DESCRIPTION: With compensator, P-T-LS-M ports (M plugged), arranged for unloader valve

TYPE: **DPX160HP/M3(SU)-EL** CODE: YFIA105330
 DESCRIPTION: As previous with non return flow limiter from working section to inlet section and by-pass valve

TYPE: **DPX160HP/M3(SO)-EL** CODE: YFIA105331
 DESCRIPTION: With non return flow limiter from inlet section to working section and by-pass valve

Closed Center circuit

Refer to "Std pressure" inlet sections

2 Main pressure relief valve page 82

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

TYPE	CODE	DESCRIPTION
(TGW2-80)	OMC09002000	Range 10-120 bar / 145-1750 psi std setting 80 bar / 1160 psi
(TGW3-175)	OMC09002001	Range 40-220 bar / 580-3200 psi std setting 175 bar / 2550 psi
(TGW4-250)	OMC09002002	Range 200-350 bar / 2900-5100 psi std setting 250 bar / 3600 psi
(TGW5-300)	OMC09002003	Range 290-385 bar / 4200-5600 psi std setting 300 bar / 4350 psi
SV	XTAP524340	Relief valve blanking plug

3 Solenoid operated unloading valve page 48

TYPE	CODE	DESCRIPTION
ELN	0EF08002000	Without emergency override
ELV	0EF08002003	With screw type emergency override
ELP	0EF08002002	With push-button emergency override
ELT	0EF08002004	With "twist & push" emergency override
LT	3XTP3533700	Unloading valve blanking plug

4 Coil

TYPE	CODE	DESCRIPTION
12VDC	4SL2000121	Coil type BER , ISO4400 conn., 12VDC

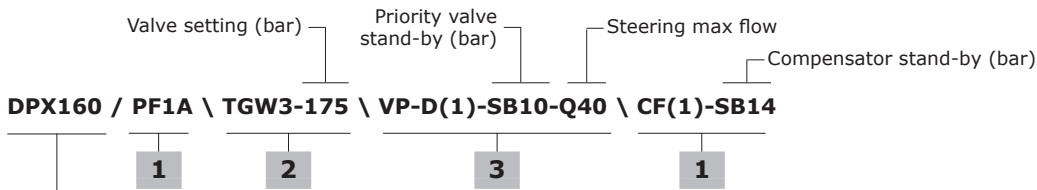
For complete available coils list see page 104.

5 Plugs*

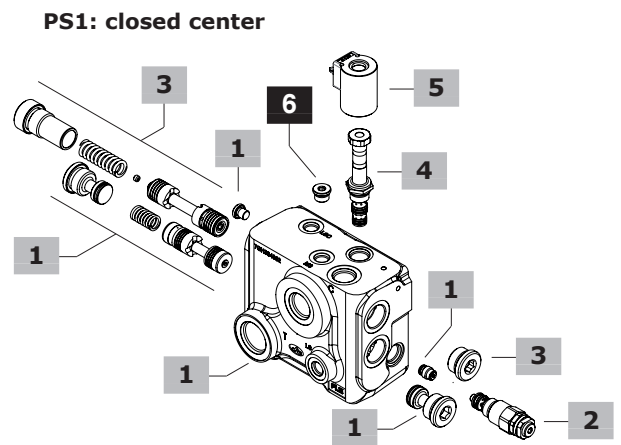
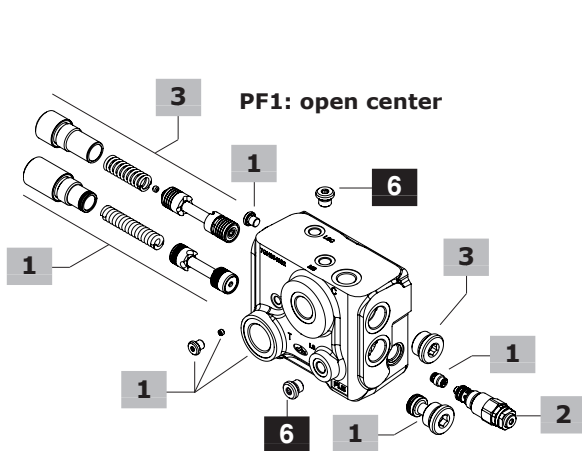
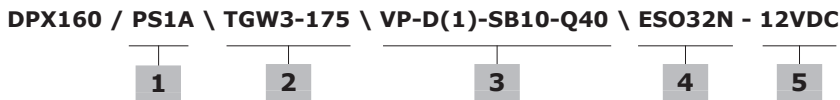
CODE	DESCRIPTION
3XTAP740210	G1 plug, nr.1 for M4 and N2 section
3XTAP719150	G1/4 plug, nr.1 for Open Center sections

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

Inlet section parts ordering codes



DPX160 = standard pressure valve



1 Inlet section kit* page 80

Following sections are suitable only for standard pressure valve

Open Center circuit

TYPE: **DPX160/PF1** CODE: YFIA105350

DESCRIPTION: With compensator, ports P-T-LS-M3-C-LSC

Closed Center circuit

TYPE: **DPX160/PS1** CODE: YFIA105351

DESCRIPTION: With shut-off spool, ports P-T-LS-M3-C-LSC

TYPE: **DPX160/PST1** CODE: YFIA105352

DESCRIPTION: With shut-off blanking kit, ports P-T-LS-M3-C-LSC

2 Main relief valve page 82

See previous page

3 Priority valve kit page 83

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

Regulated flow = 40 l/min (10.5 US gpm)

D(1)-SB10-Q40 5CAS322100A Stand-by (margin pressure)
10 bar (145 psi)

D(1)-SB07-Q40 5CAS322100B Stand-by (margin pressure)
7 bar (100 psi)

D(1)-SB04-Q40 5CAS322100C Stand-by (margin pressure)
4 bar (58 psi)

Regulated flow = 20 l/min (5.3 US gpm)

D(1)-SB10-Q20 5CAS323099A Stand-by (margin pressure)
10 bar (145 psi)

D(1)-SB07-Q20 5CAS323099B Stand-by (margin pressure)
7 bar (100 psi)

D(1)-SB04-Q20 5CAS323099C Stand-by (margin pressure)
4 bar (58 psi)

4 Solenoid operated shut-off valve page 83

TYPE	CODE	DESCRIPTION
ESO32A	0EJ08002035	Without emergency override
ESO32V	0EJ08002042	With screw type emergency override
EST	3XTP3534800	Valve blanking plug< only for PST inlet section

5 Coil

TYPE	CODE	DESCRIPTION
12VDC	4SL3000120	Coil type BT , ISO4400 connector, 12VDC

For complete available coils list see page 104.

6 Plugs*

CODE	DESCRIPTION
3XTAP719150	G1/4 plug, nr.1 for PS section, nr.2 for PF section

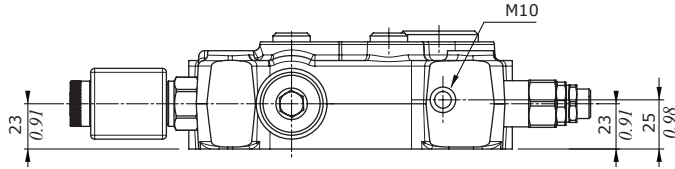
NOTE (*): Codes are referred to **BSP** thread.

Inlet section

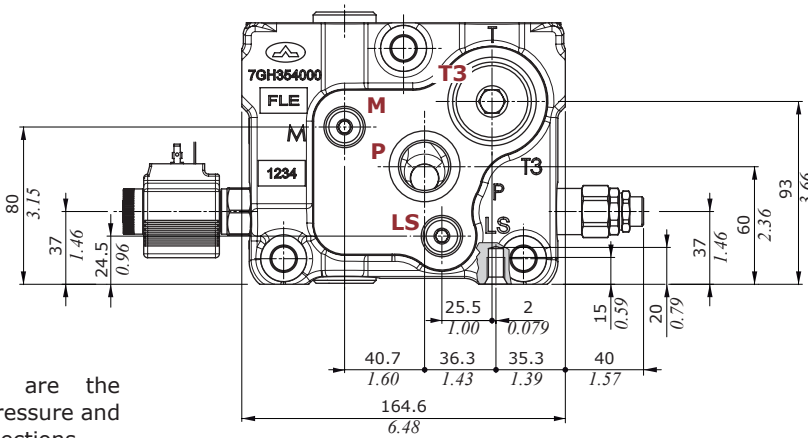
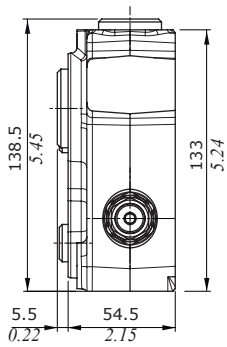
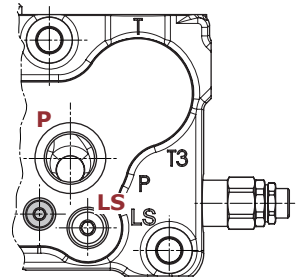
Dimensions and hydraulic circuit

Example of M Open Center section

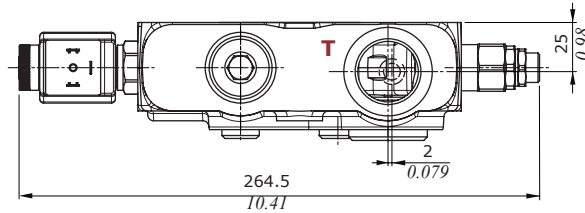
M4 type



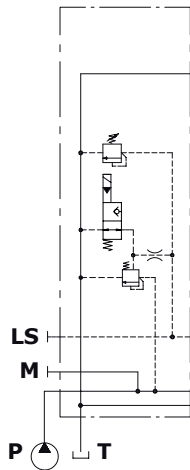
M3(SO) or M3(SU) type



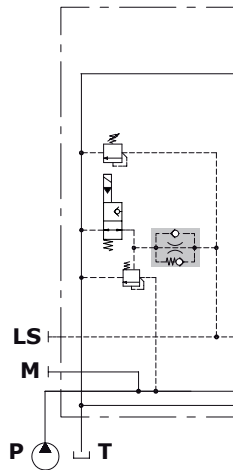
NOTE: Dimensions are the same for standard pressure and High Pressure inlet sections



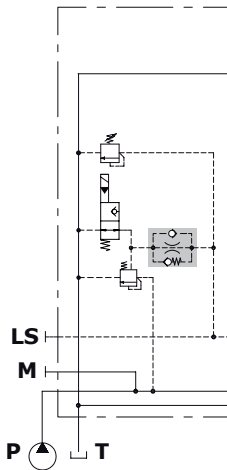
M3 type



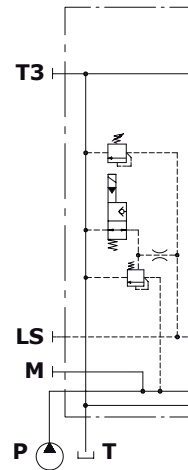
M3(SU) type



M3(SO) type



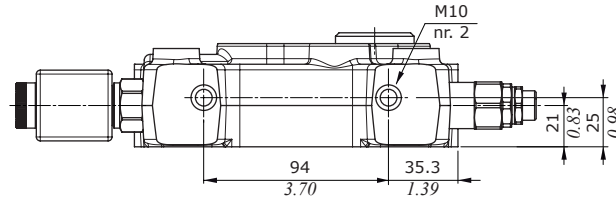
M4 type



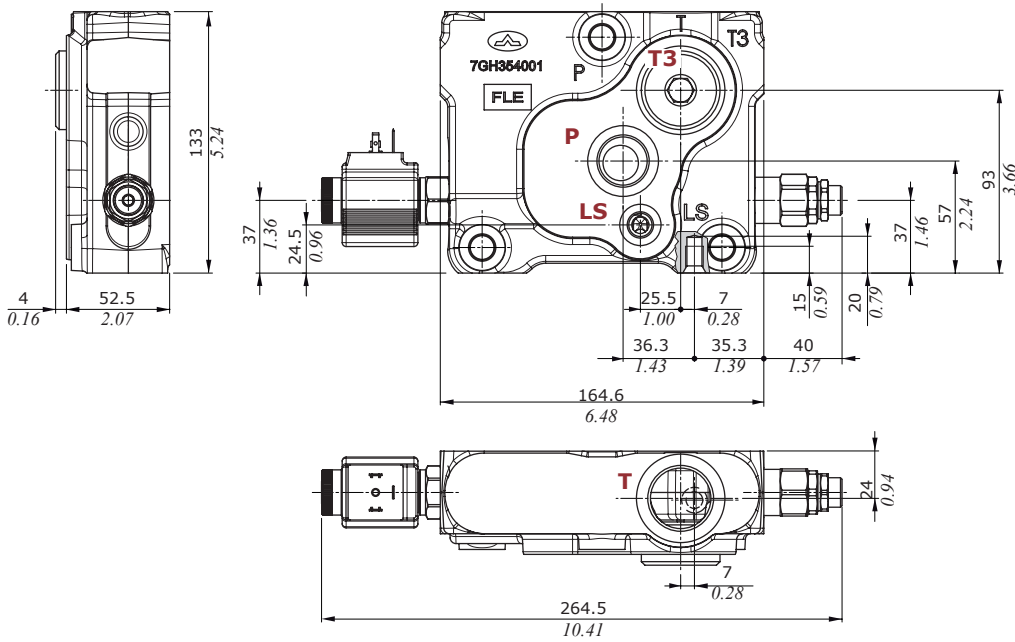
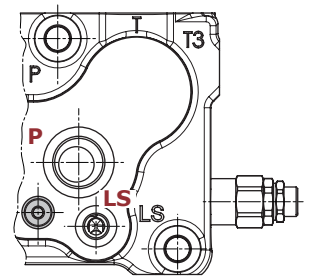
Dimensions and hydraulic circuit

Example of N Closed Center section

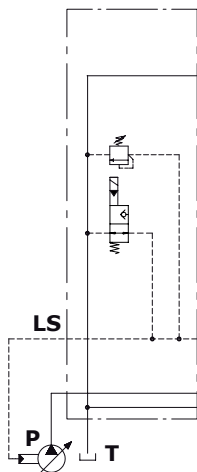
N2 type



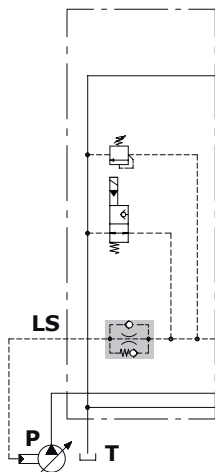
N1(SO) or N1(SU) type



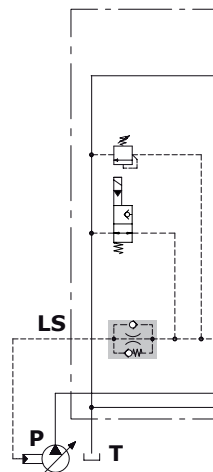
N1 type



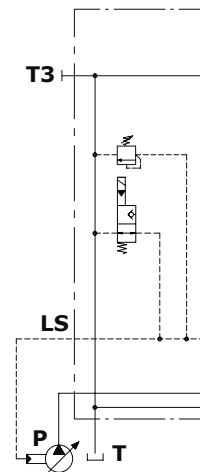
N1(SU) type



N1(SO) type



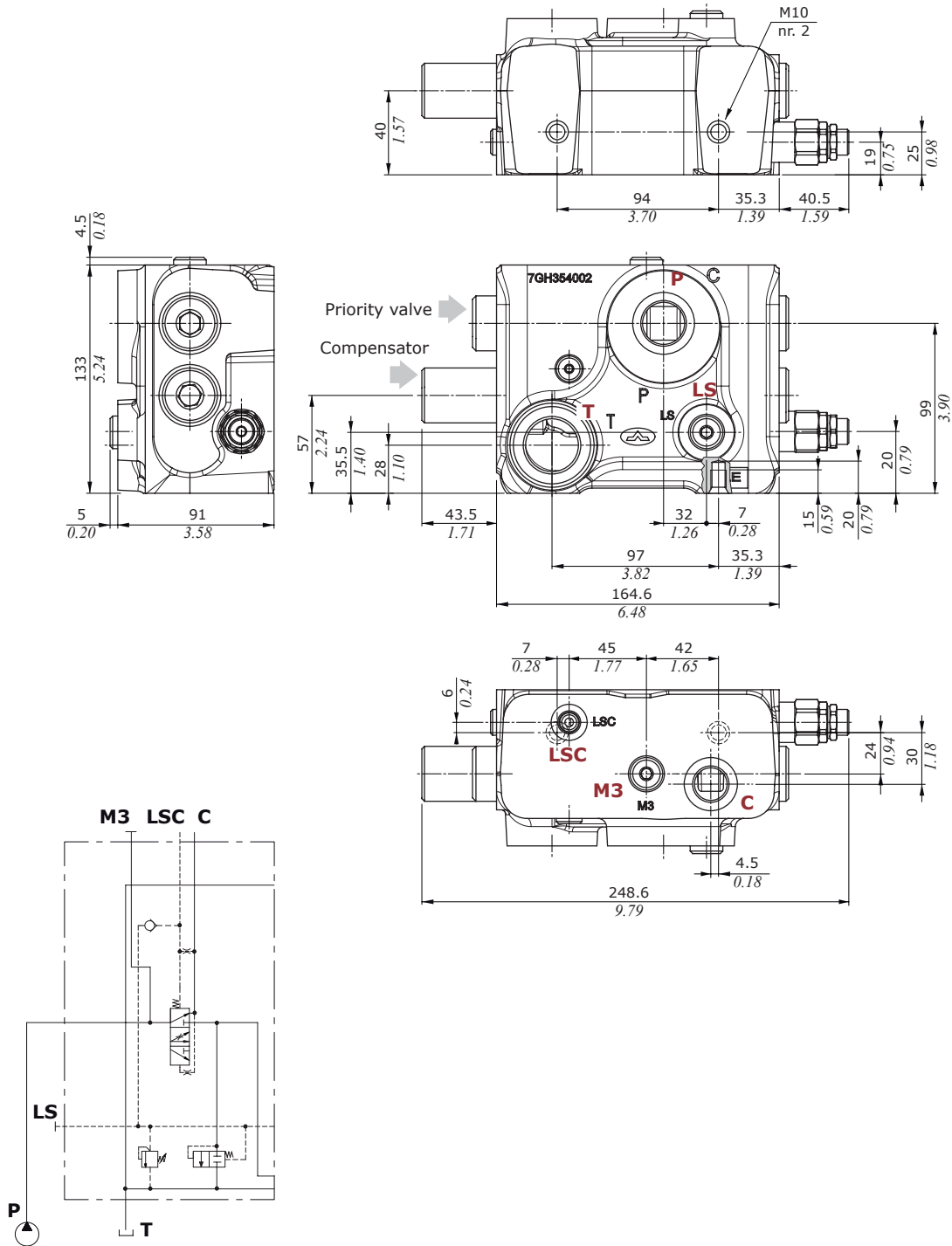
N2 type



Inlet section

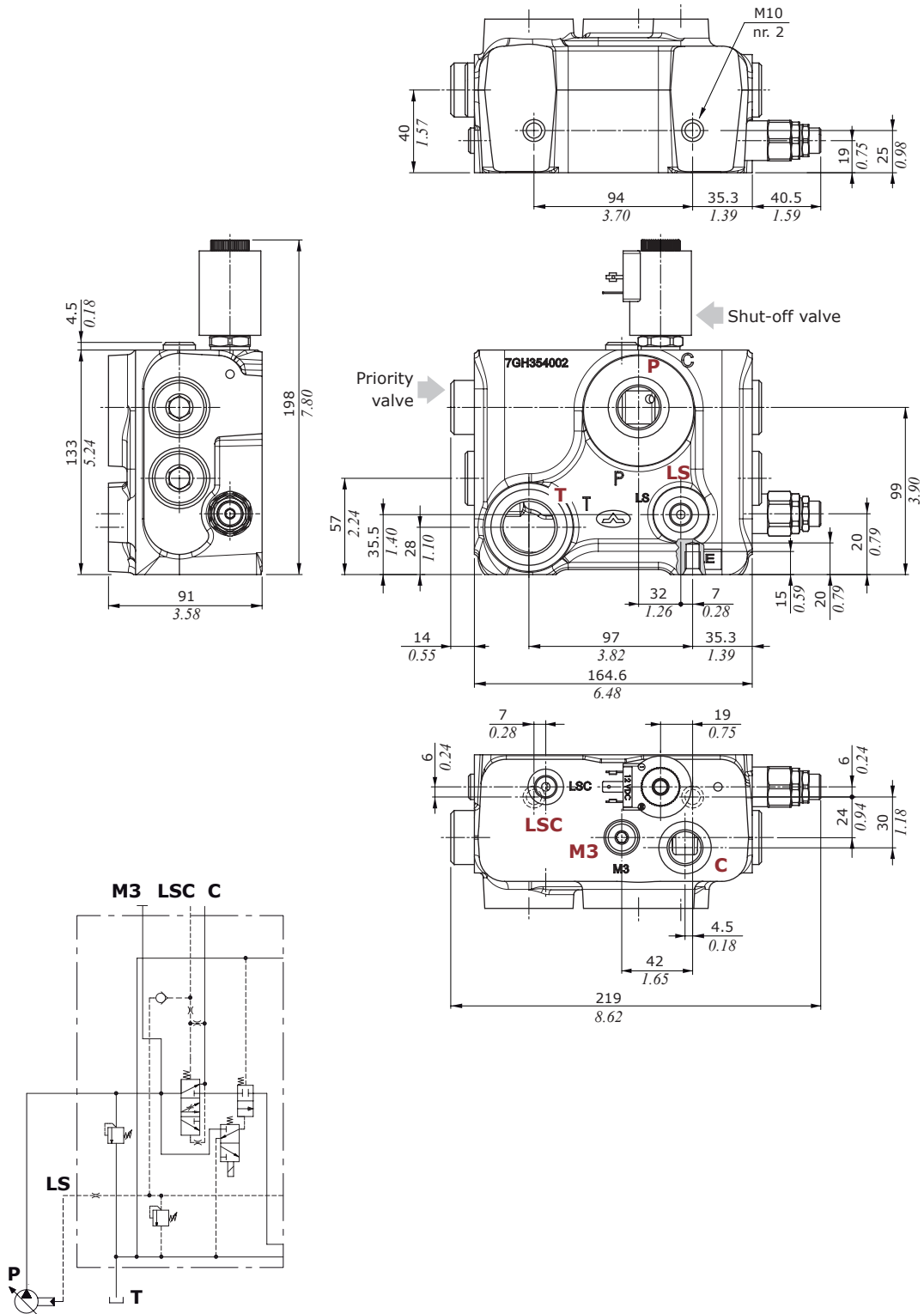
Dimensions and hydraulic circuit

PF1 Open Center section with priority valve



Dimensions and hydraulic circuit

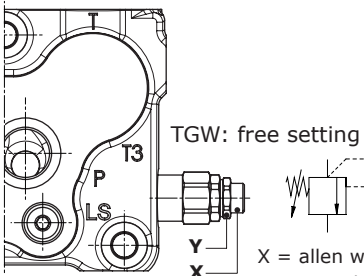
PS1 Closed Center section with priority valve and shut-off



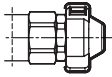
Inlet section

Main pressure relief valve

Setting types

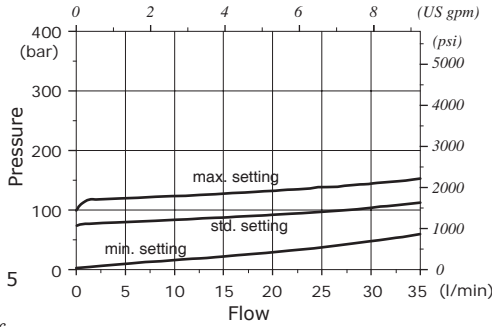


X = allen wrench 5
Y = wrench 19
20 Nm - 14.7 lbf

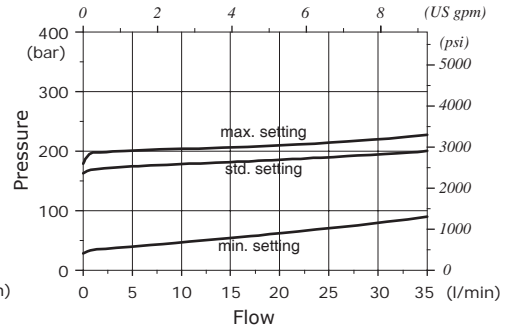


TZW: valve set and locked
(cap code 4COP126301, n.2 pcs)
RAL3003 pigmented

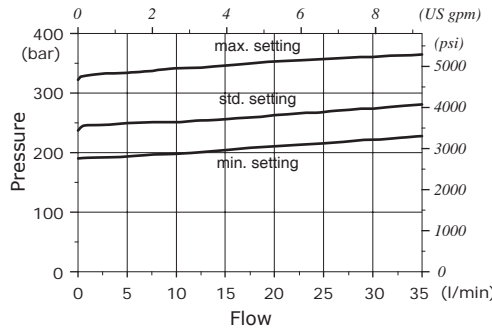
Setting range: type TGW2



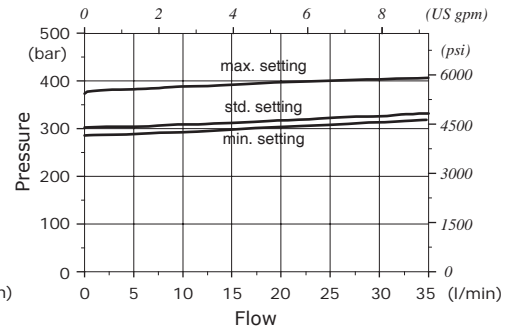
Setting range: type TGW3



Setting range: type TGW4

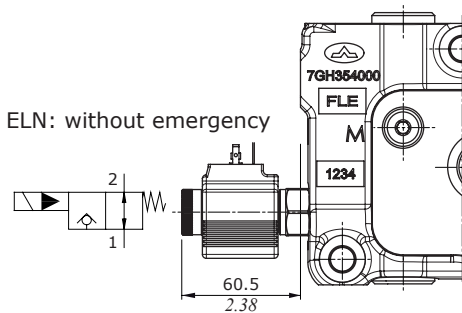


Setting range: type TGW5

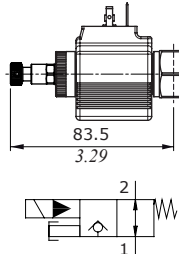


Solenoid operated unloading valve

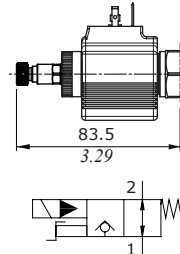
Manual emergency types



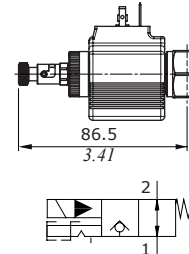
ELP: push button type



ELV: screw type



ELT: "push & twist" type

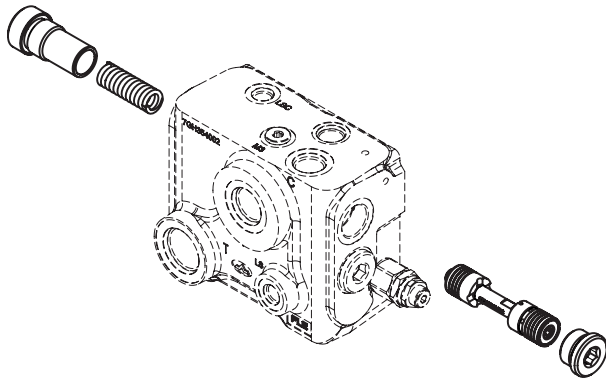


Features

- Max. flow: 40 l/min - 10.6 US gpm
- Max. pressure: 350 bar - 5100 psi
- Internal leakage: 0.25 cm³/min @ 210 bar
0.015 in³/min @ 3050 psi

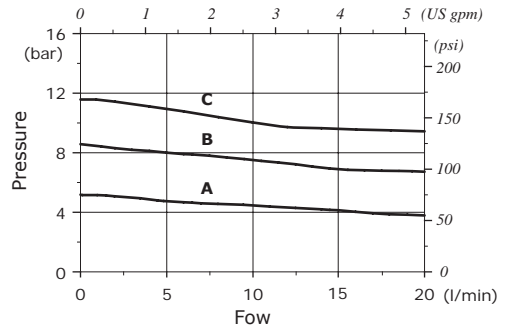
For coil features and options see coil **BERR** at page 104.

Priority valve kit



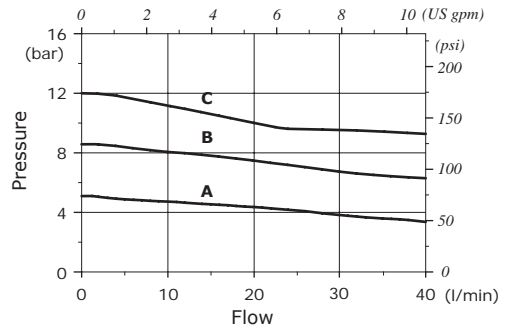
Stand-by (margin pressure) vs. regulated flow

Regulate flow = 20 l/min (5.3 US gpm)



Stand-by (margin pressure) vs. regulated flow

Regulate flow = 40 l/min (10.6 US gpm)



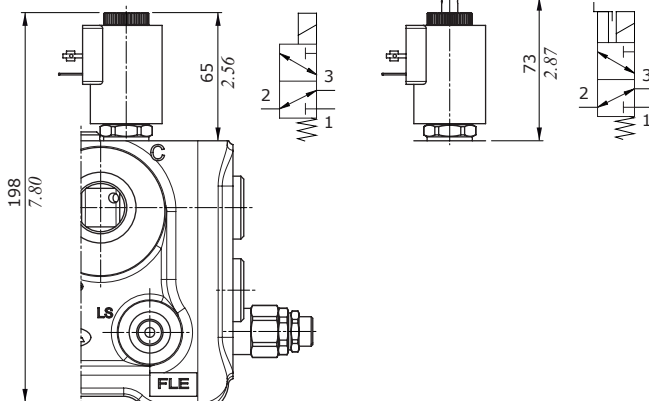
- A = spring for 4 bar / 58 psi
- B = spring for 7 bar / 102 psi
- C = spring for 10 bar / 145 psi

Shut-off solenoid valve

Manual emergency types

ELSN: without emergency

ELSV: screw type

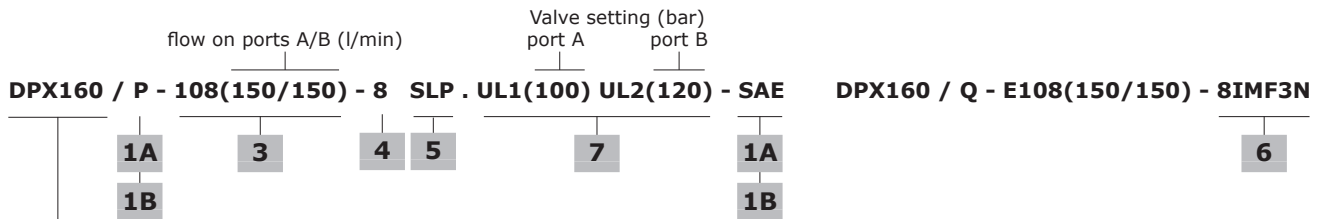


Features

- Max. flow: 3 l/min - 0.796 US gpm
- Max. pressure.: 350 bar - 5100 psi
- Internal leakage: 10 cm³/min @ 210 bar
0.61 in³/min @ 3050 psi

For coil features and options see coil **BT** at page 104.

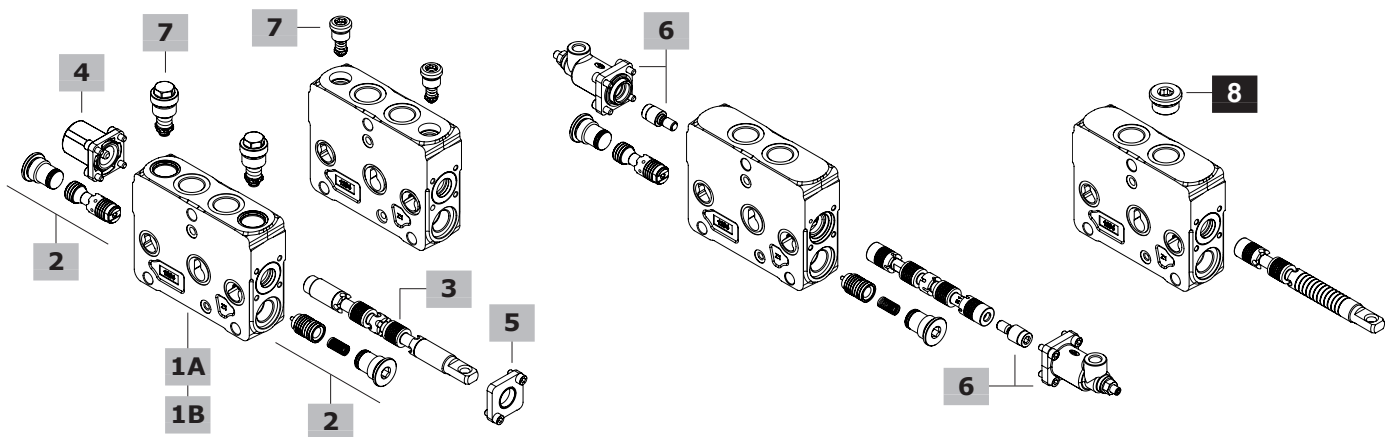
Working section parts ordering codes (mechanical, hydraulic)



DPX160 = standard pressure valve

DPX160HP = High Pressure valve

For working conditions and guide configuration see pages 4/6



1A Std press. working section kit* page 88

For mechanical control

TYPE: **DPX160/Q** CODE: 5EL1053011

DESCRIPTION: Without port valves arrangement

TYPE: **DPX160/P(UL)** CODE: 5EL1053000

DESCRIPTION: With port pressure relief valves arrangement

TYPE: **DPX160/P(US)** CODE: 5EL1053001

DESCRIPTION: With port antishock valves arrangement

For hydraulic control

TYPE: **DPX160/Q-IM** CODE: 5EL1053011A

DESCRIPTION: Without port valves arrangement

TYPE: **DPX160/P(UL)-IM** CODE: 5EL1053000A

DESCRIPTION: With port pressure relief valves arrangement

TYPE: **DPX160/P(US)-IM** CODE: 5EL1053001A

DESCRIPTION: With port antishock valves arrangement

1B High press. working section kit* page 88

For mechanical control

TYPE: **DPX160HP/Q** CODE: 5EL1053015

DESCRIPTION: Without port valves arrangement

TYPE: **DPX160HP/P(US)** CODE: 5EL1053008

DESCRIPTION: With port antishock valves arrangement

For hydraulic and solenoid control

TYPE: **DPX160HP/Q-IM** CODE: 5EL1053015A

DESCRIPTION: Without port valves arrangement

TYPE: **DPX160HP/P(US)-IM** CODE: 5EL1053008A

DESCRIPTION: With port antishock valves arrangement

2 Compensator kit

CODE	DESCRIPTION
5CAS321061	Compensator

Working section parts ordering codes (mechanical, hydraulic)

3 Spool **page 89**

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

TYPE	CODE	DESCRIPTION
For mechanical control		
<u>Double acting with A and B closed in neutral position</u>		
108(150)	3CU8110108	150 l/min (39.5 US gpm) flow
107(130)	3CU8110107	130 l/min (34.3 US gpm) flow
106(110)	3CU8110106	110 l/min (29 US gpm) flow
105(90)	3CU8110105	90 l/min (23.8 US gpm) flow
104(70)	3CU8110104	70 l/min (18.5 US gpm) flow
103(50)	3CU8110103	50 l/min (13.2 US gpm) flow
102(30)	3CU8110102	30 l/min (7.9 US gpm) flow
109(20)	3CU8110109	20 l/min (5.3 US gpm) flow
101(10)	3CU8110101	10 l/min (2.6 US gpm) flow

<u>Double acting with A and B partially to tank in neutral position</u>		
2H08(150)	3CU8110209	150 l/min (39.5 US gpm) flow
2H07(130)	3CU8110223	130 l/min (34.3 US gpm) flow
2H06(110)	3CU8110222	110 l/min (29 US gpm) flow
2H05(90)	3CU8110224	90 l/min (23.8 US gpm) flow
2H04(70)	3CU8110221	70 l/min (18.5 US gpm) flow
2H03(50)	3CU8110220	50 l/min (13.2 US gpm) flow
2H02(30)	3CU8110219	30 l/min (7.9 US gpm) flow
2H09(20)	3CU8110218	20 l/min (5.3 US gpm) flow
2H01(10)	3CU8110217	10 l/min (2.6 US gpm) flow

<u>Single acting on A, B plugged: needs G3/4 plug</u>		
308(150)	3CU8110308	150 l/min (39.5 US gpm) flow
306(110)	3CU8110306	110 l/min (29 US gpm) flow
303(50)	3CU8110303	50 l/min (13.2 US gpm) flow
309(20)	3CU8110309	20 l/min (5.3 US gpm) flow

<u>Single acting on B, A plugged: needs G3/4 plug</u>		
408(150)	3CU8110408	150 l/min (39.5 US gpm) flow
406(110)	3CU8110406	110 l/min (29 US gpm) flow
403(50)	3CU8110403	50 l/min (13.2 US gpm) flow
409(20)	3CU8110409	20 l/min (5.3 US gpm) flow

<u>Double acting with A and B closed in neutral pos., 4 positions, floating in 4th position with spool in: needs positioner type 13</u>		
508(150)	3CU8110508	150 l/min (39.5 US gpm) flow
504(70)	3CU8110504	70 l/min (18.5 US gpm) flow

For hydraulic control		
<u>Double acting with A and B closed in neutral position</u>		
E108(150)	3CU871E108	150 l/min (39.5 US gpm) flow
E107(130)	3CU871E107	130 l/min (34.3 US gpm) flow
E106(110)	3CU871E106	110 l/min (29 US gpm) flow
E105(90)	3CU871E105	90 l/min (23.8 US gpm) flow
E104(70)	3CU871E104	70 l/min (18.5 US gpm) flow
E103(50)	3CU871E103	50 l/min (13.2 US gpm) flow
E102(30)	3CU871E102	30 l/min (7.9 US gpm) flow
E113(20)	3CU871E113	20 l/min (5.3 US gpm) flow
E101(10)	3CU871E101	10 l/min (2.6 US gpm) flow

<u>Double acting with A and B partially to tank in neutral position</u>		
E2H08(150)	3CU871E209	150 l/min (39.5 US gpm) flow
E2H07(130)	3CU871E223	130 l/min (34.3 US gpm) flow
E2H06(110)	3CU871E222	110 l/min (29 US gpm) flow
E2H05(90)	3CU871E215	90 l/min (23.8 US gpm) flow
E2H04(70)	3CU871E221	70 l/min (18.5 US gpm) flow
E2H03(50)	3CU871E220	50 l/min (13.2 US gpm) flow
E2H02(30)	3CU871E219	30 l/min (7.9 US gpm) flow
E2H13(20)	3CU871E218	20 l/min (5.3 US gpm) flow
E2H01(10)	3CU871E217	10 l/min (2.6 US gpm) flow

<u>Single acting on A or B, other port plugged: needs G3/4 plug</u>		
E308-E408(150)	3CU871E308	150 l/min (39.5 US gpm) flow
E306-E406(110)	3CU871E306	110 l/min (29 US gpm) flow
E303-E403(50)	3CU871E303	50 l/min (13.2 US gpm) flow
E309-E409(20)	3CU871E313	20 l/min (5.3 US gpm) flow

Double acting with A and B closed in neutral pos., 4 positions, floating in 4th pos. with spool in: needs control type 13IM
1508(150) YCU871E508 150 l/min (39.5 US gpm) flow

4 "A" side spool positioners **page 91**

TYPE	CODE	DESCRIPTION
8MD	5V08109000	3 positions with spring return to neutral position

For floating circuit (spool 5)
13 5V13109000 4 positions, detent in 4th position with spring return to neutral position

5 "B" side spool control kit **page 92**

TYPE	CODE	DESCRIPTION
L	5LEV110000	Standard lever box
LFG	5LEV110700	Lever box with spool stroke limiter on both ports
SLP	5COP110000	Without lever with dust-proof plate
LCB	5CLO216100	Joystick for 2 sections operation

6 Proportional hydraulic control* **page 94**

TYPE	CODE	DESCRIPTION
8IMN	5IDR209304	Range 8-28 bar (116-406 psi)
8IMF3N	5IDR209305	As previous with spool stroke limiter
<u>For floating circuit (spool 15)</u>		
13IM	5IDR209303	Range 3.1-25.6 / 0-30 bar (45-371 / 0-435 psi)
13IMP	5IDR209014	Range 2-17 / 2-30 bar (29-247 / 29-435 psi)

7 Port valves **page 100**

TYPE	CODE	DESCRIPTION
Pressure relief valves		
UL(50)	5KIT340050L	Setting: 50 bar (725 psi)
Antishock valves		
US(25)	5KIT328025	Setting: 25 bar (360 psi)

For complete list see following page.

8 Plug for single acting spool*

CODE	DESCRIPTION
3XTAP732200	G3/4 plug

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

Working section parts ordering codes (electrohydraulic)

4 Two-side electrohydr. control page 98

TYPE	CODE	DESCRIPTION
<u>Without lever control</u>		
8EB3-12VDC	5IDR909312	With AMP connector
8EB3-24VDC	5IDR909325	With AMP connector
8EB34-12VDC	5IDR909329	With Deutsch connector
8EB34-24VDC	5IDR909330	With Deutsch connector
8EB3F3-12VDC	5IDR909313	With AMP connector with spool stroke limiter
8EB3F3-24VDC	5IDR909317	As previous
8EB34F3-12VDC	5IDR909314	With Deutsch connector with spool stroke limiter
8EB34F3-24VDC	5IDR909331	As previous
<u>Without lever control: for floating circuit (spool E5)</u>		
13EB3-12VDC	5IDR919312	With AMP connector
13EB3-24VDC	5IDR919324	With AMP connector
13EB34-12VDC	5IDR919317	With Deutsch connector
13EB34-24VDC	5IDR919318	With Deutsch connector
<u>With lever control</u>		
8EB3LH-12VDC	5IDR909315	With AMP connector
8EB3LH-24VDC	5IDR909326	With AMP connector
8EB34LH-12VDC	5IDR909332	With Deutsch connector
8EB34LH-24VDC	5IDR909333	With Deutsch connector
8EB3LHF3-12VDC	5IDR909316	With AMP connector with spool stroke limiter
8EB3LHF3-24VDC	5IDR909327	As previous
8EB34LHF3-12VDC	5IDR909334	With Deutsch connector with spool stroke limiter
8EB34LHF3-24VDC	5IDR909335	As previous
<u>With lever control: for floating circuit (spool E5)</u>		
13EB3LH-12VDC	5IDR919313	With AMP connector
13EB3LH-24VDC	5IDR919325	With AMP connector
13EB34LH-12VDC	5IDR919319	With Deutsch connector
13EB34LH-24VDC	5IDR919320	With Deutsch connector
13EB3LHF3-12VDC	5IDR919314	With AMP connector with spool stroke limiter
13EB3LHF3-24VDC	5IDR919326	As previous
13EB34LHF3-12VDC	5IDR919321	With Deutsch connector with spool stroke limiter
13EB34LHF3-24VDC	5IDR919322	As previous

6 Plug for single acting spool*

CODE	DESCRIPTION
3XTAP732200	G3/4 plug

5 Port pressure relief valves page 100

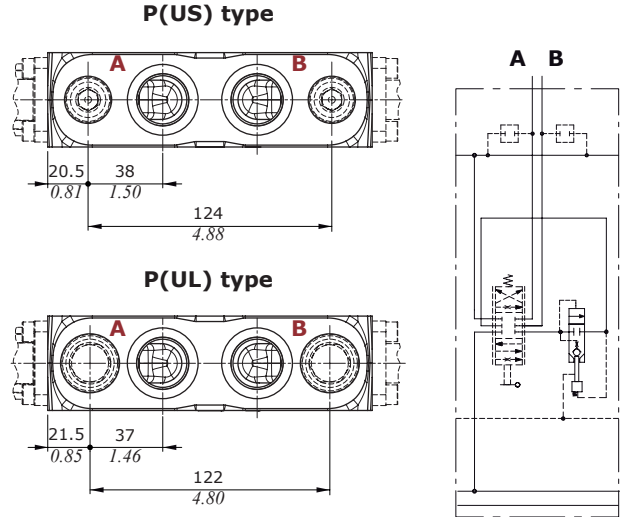
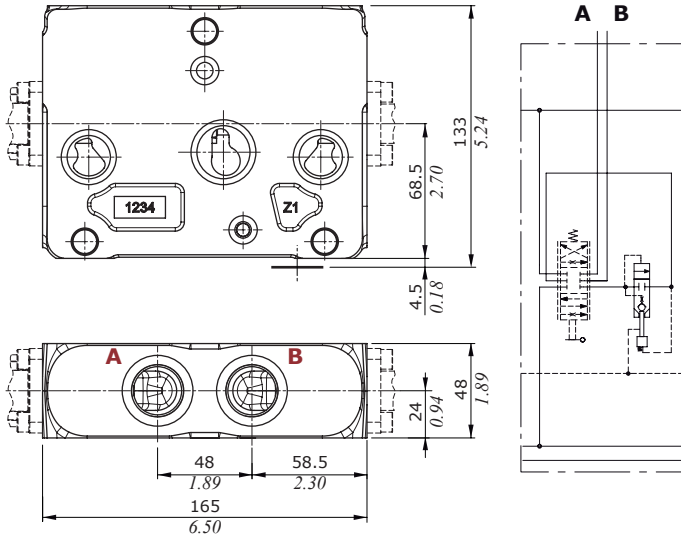
<u>Pressure relief valves</u>		
TYPE	CODE	DESCRIPTION
UT	XTAP528520	Valve blanking plug
CL	5KIT410000	Anticavitation valve (for UL cavity)
<u>Fixed setting valves: setting is referred to 5 l/min (1.3 US gpm)</u>		
UL(50)	5KIT340050L	Setting: 50 bar (725 psi)
UL(70)	5KIT340070L	Setting: 70 bar (1010 psi)
UL(80)	5KIT340080L	Setting: 80 bar (1150 psi)
UL(100)	5KIT340100L	Setting: 100 bar (1450 psi)
UL(120)	5KIT340120L	Setting: 120 bar (1750 psi)
UL(130)	5KIT340130L	Setting: 130 bar (1900 psi)
UL(140)	5KIT340140L	Setting: 140 bar (2050 psi)
UL(150)	5KIT340150L	Setting: 150 bar (2150 psi)
UL(160)	5KIT340160L	Setting: 160 bar (2300 psi)
UL(170)	5KIT340170L	Setting: 170 bar (2450 psi)
UL(180)	5KIT340180L	Setting: 180 bar (2600 psi)
UL(190)	5KIT340190L	Setting: 190 bar (2750 psi)
UL(200)	5KIT340200L	Setting: 200 bar (2900 psi)
UL(210)	5KIT340210L	Setting: 210 bar (3050 psi)
UL(220)	5KIT340220L	Setting: 220 bar (3200 psi)
UL(250)	5KIT340250L	Setting: 250 bar (3600 psi)
UL(270)	5KIT340270L	Setting: 270 bar (3900 psi)
UL(300)	5KIT340300L	Setting: 300 bar (4350 psi)
UL(320)	5KIT340170L	Setting: 320 bar (4650 psi)
UL(350)	5KIT340170L	Setting: 350 bar (5050 psi)
UL(370)	5KIT340170L	Setting: 370 bar (5350 psi)
UL(380)	5KIT340170L	Setting: 380 bar (5500 psi)
<u>Antishock valves</u>		
TYPE	CODE	DESCRIPTION
UT	XTAP221340	Valve blanking plug
CS	5KIT426270	Anticavitation valve (for US cavity)
<u>Fixed setting antishock valves with prefill: setting is referred to 10 l/min (2.6 US gpm)</u>		
US(25)	5KIT328025	Setting: 25 bar (360 psi)
US(45)	5KIT328045	Setting: 45 bar (650 psi)
US(50)	5KIT328050	Setting: 50 bar (725 psi)
US(60)	5KIT328060	Setting: 60 bar (870 psi)
US(70)	5KIT328070	Setting: 70 bar (1010 psi)
US(80)	5KIT328080	Setting: 80 bar (1150 psi)
US(90)	5KIT328090	Setting: 90 bar (1300 psi)
US(100)	5KIT328100	Setting: 100 bar (1450 psi)
US(125)	5KIT328125	Setting: 125 bar (1800 psi)
US(140)	5KIT328140	Setting: 140 bar (2050 psi)
US(160)	5KIT328160	Setting: 160 bar (2300 psi)
US(175)	5KIT328175	Setting: 175 bar (2550 psi)
US(190)	5KIT328190	Setting: 190 bar (2750 psi)
US(210)	5KIT328210	Setting: 210 bar (3050 psi)
US(230)	5KIT328230	Setting: 230 bar (3350 psi)
US(240)	5KIT328240	Setting: 240 bar (3500 psi)
US(250)	5KIT328250	Setting: 250 bar (3600 psi)
US(260)	5KIT328260	Setting: 260 bar (3750 psi)
US(300)	5KIT328300	Setting: 300 bar (4350 psi)
US(320)	5KIT328320	Setting: 320 bar (4650 psi)
US(340)	5KIT328340	Setting: 340 bar (4950 psi)
US(360)	5KIT328360	Setting: 360 bar (5200 psi)
US(380)	5KIT328380	Setting: 380 bar (5500 psi)
US(400)	5KIT328400	Setting: 400 bar (5800 psi)
US(420)	5KIT328420	Setting: 420 bar (6100 psi)

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

Working section

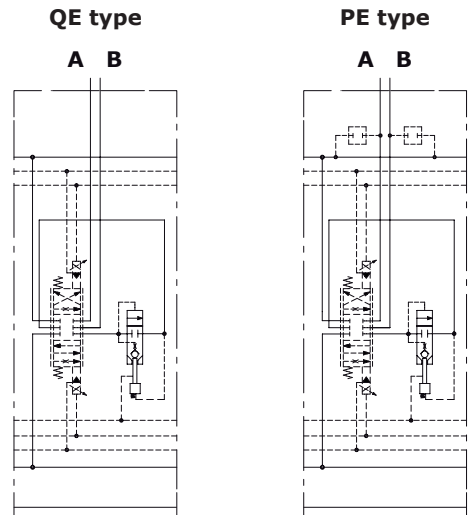
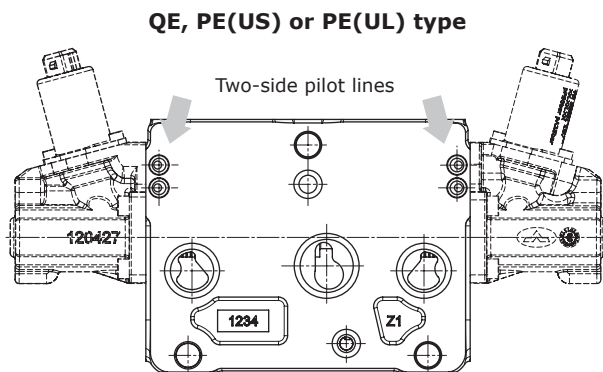
Dimensions and hydraulic circuit

For mechanical and hydraulic controls



NOTE: US and UL auxiliary valves are not interchangeable: they need dedicate working sections

For electrohydraulic controls

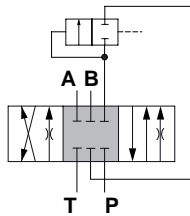


Spools

Spool type 1 (1../E1..)

A, B closed in neutral position

1 0 2



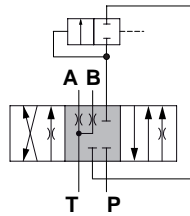
Spool stroke

position 1: + 8 mm (- 0.31 in)
position 2: - 8 mm (+ 0.31 in)

Spool type 2H(2H../E2H..)

A, B partially to tank in neutral pos.

1 0 2



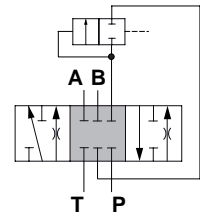
Spool stroke

position 1: + 8 mm (- 0.31 in)
position 2: - 8 mm (+ 0.31 in)

Spool type 3 (3../E3..)

single acting on A

1 0 2



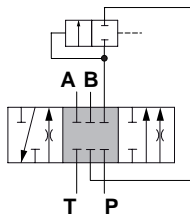
Spool stroke

position 1: + 8 mm (- 0.31 in)
position 2: - 8 mm (+ 0.31 in)

Spool type 4 (4../E4..)

single acting on B

1 0 2



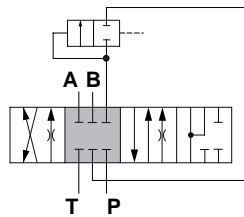
Spool stroke

position 1: + 8 mm (- 0.31 in)
position 2: - 8 mm (+ 0.31 in)

Spool type 5 (5../E5../I5..)

floating in 4th position (pos.3)

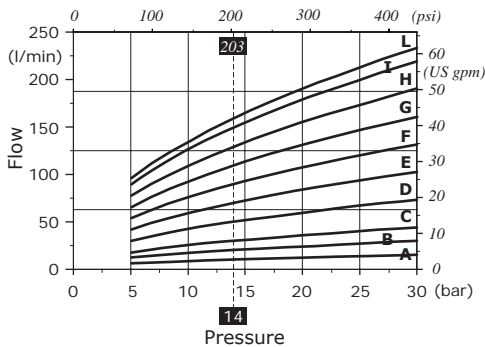
1 0 2 3



Spool stroke

position 1: + 8 mm (- 0.31 in)
position 2: - 8 mm (- 0.31 in)
position 3: - 13 mm (- 0.51 in)

Spool flow vs. Stand-by pressure (margin pressure)



Curves with spool nominal flow

@ 14 bar (200 psi) stand-by (margin pressure)

- A = 10 l/min (2.6 US gpm)
- B = 20 l/min (5.3 US gpm)
- C = 30 l/min (7.9 US gpm)
- D = 50 l/min (13.2 US gpm)
- E = 70 l/min (18.5 US gpm)
- F = 90 l/min (23.8 US gpm)
- G = 110 l/min (29.0 US gpm)
- H = 130 l/min (34.3 US gpm)
- I = 150 l/min (39.5 US gpm)
- L = 160 l/min (42.3 US gpm)

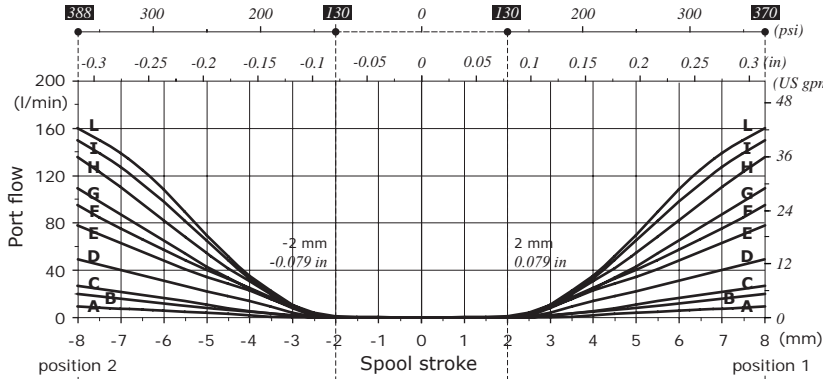
Working section

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 positions spools metering curve

Q_{in} = 160 l/min (42.3 US gpm) - Open center circuit



Curves with spool nom. flow @ 14 bar (200 psi) stand-by (margin pressure)

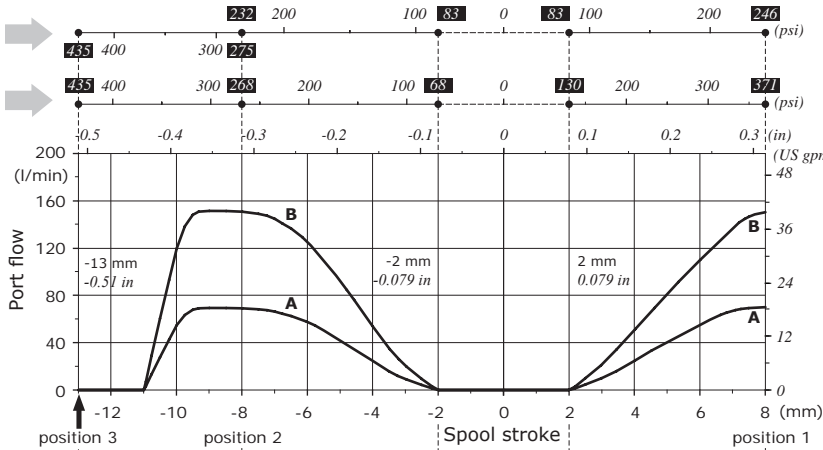
- A = 10 l/min (2.6 US gpm)
- B = 20 l/min (5.3 US gpm)
- C = 30 l/min (7.9 US gpm)
- D = 50 l/min (13.2 US gpm)
- E = 70 l/min (18.5 US gpm)
- F = 90 l/min (23.8 US gpm)
- G = 110 l/min (29.0 US gpm)
- H = 130 l/min (34.3 US gpm)
- I = 150 l/min (39.5 US gpm)
- L = 160 l/min (42.3 US gpm)

With 8IMN control kit

With 8EB3 control kit

Floating spool metering curve

Q_{in} = 160 l/min (42.3 US gpm) - Open center circuit



Curves with spool nom. flow @ 14 bar (200 psi) stand-by (margin pressure)

- A = 70 l/min (18.5 US gpm)
- B = 150 l/min (39.5 US gpm)

With 13IMP control kit

With 13IM control kit

With 13IM control kit

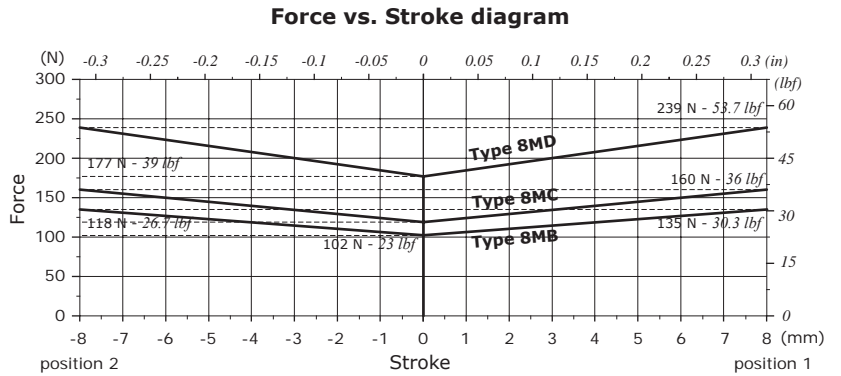
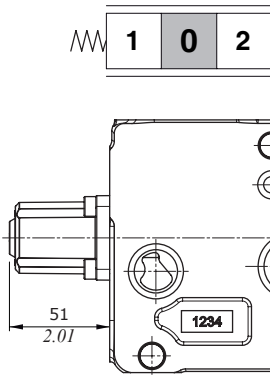
With 13IMP control kit

With 13EB3 control kit

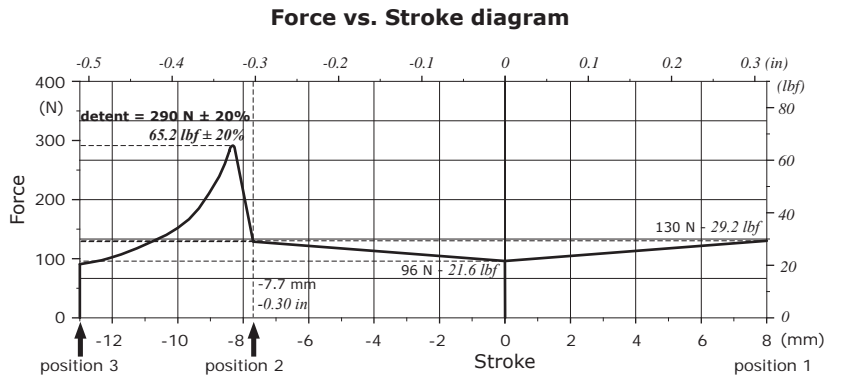
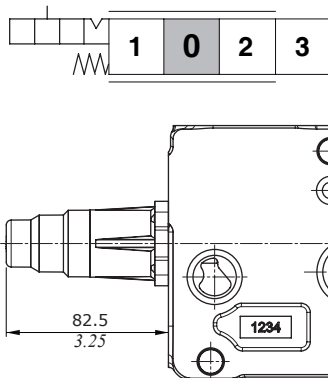
"A" side spool positioners

With spring return to neutral position, type 8MD

It's configured with spring type D, as standard (see diagram); it's also available with lighter springs type C (8MC code: 5V08109002) or type B (8MB code 5V08109003).



For floating circuit, type 13



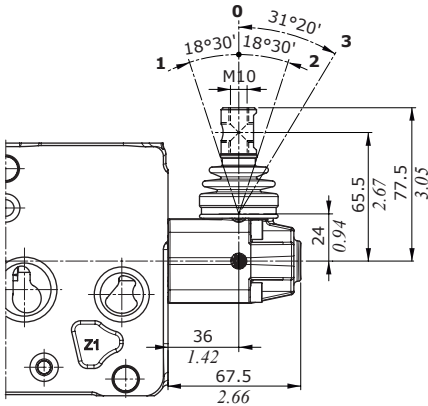
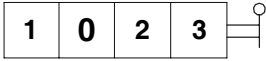
Release force from pos.3: 260 N ± 20% (58.5 lbf ± 20%)

Working section

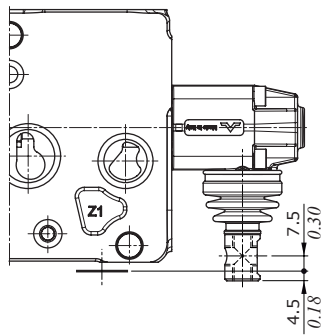
"B" side spool control kit

Lever boxes

Type L

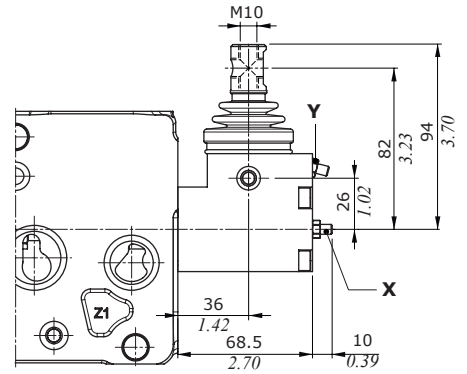
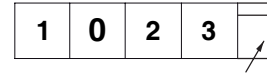


Type L180



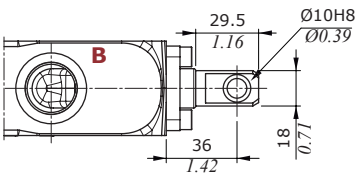
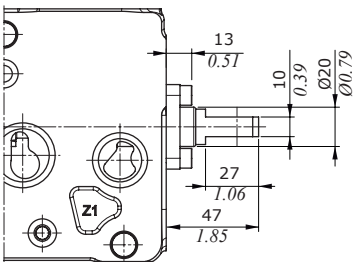
Type LFG

Spool stroke limiter on both ports



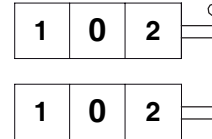
X = allen wrench 2.5
Y = wrench 8 / 6.6 Nm - 4.9 lbf

Dust-proof plate, type SLP

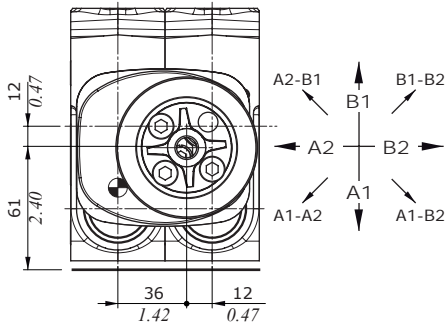


"B" side spool control kit

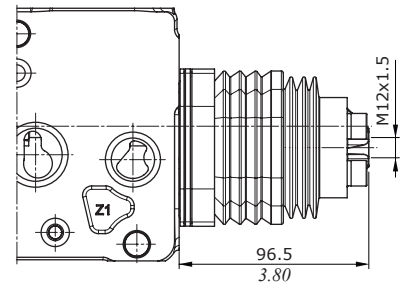
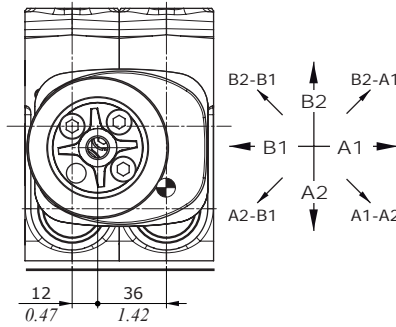
Joysticks for two sections operation



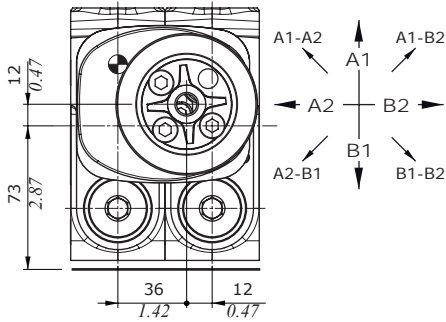
configuration LCB1



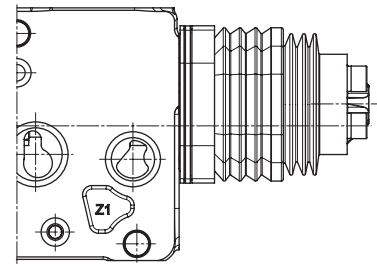
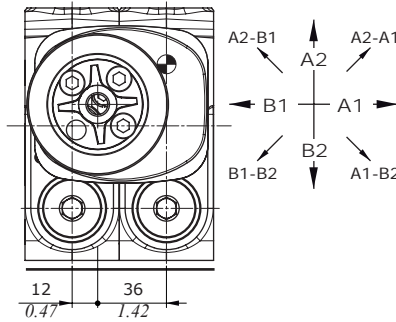
configuration LCB2



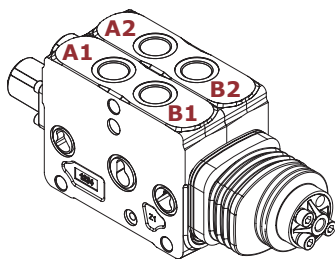
configuration LCB3



configuration LCB4

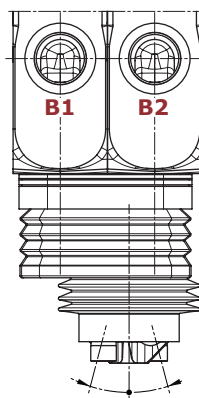


LCB1 configuration example

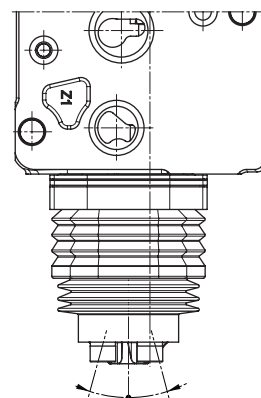


Working angles

Horizontal axis



vertical axis

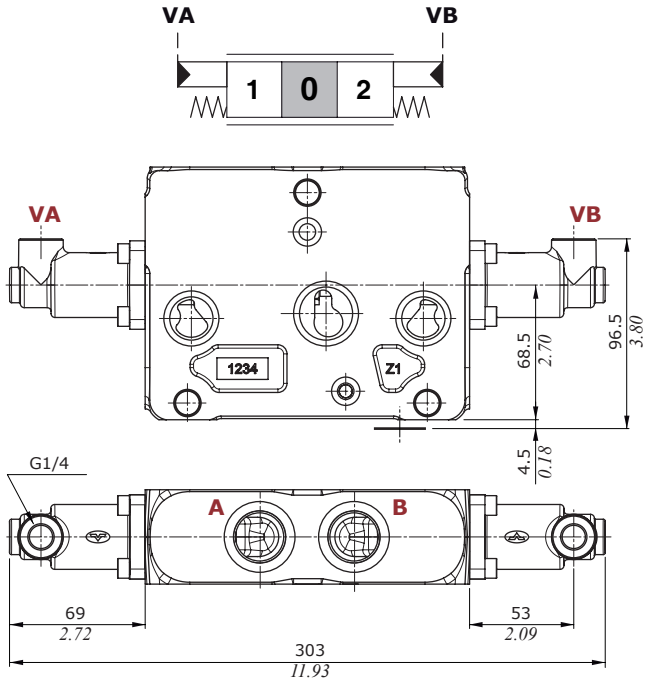


Max. working angles	Horizontal axis	Vertical axis
Single action operation	19°42'	19°41'
Single action operation with floating	operation not available	operation not available
Two section operation	21°22'	19°41'
Two section operation with floating	operation not available	operation not available

Working section

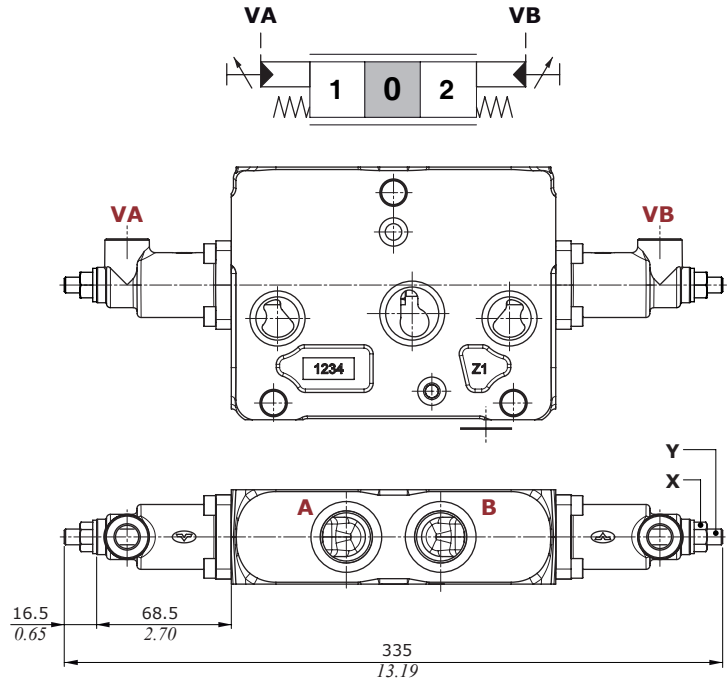
Proportional hydraulic control

Type 81MN



Type 81MF3N

With spool stroke limiter on ports A and B



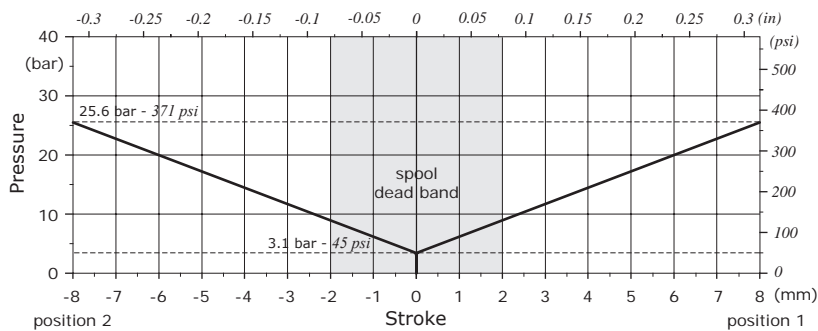
Features (all types)

Max. pressure.: 50 bar - 725 psi

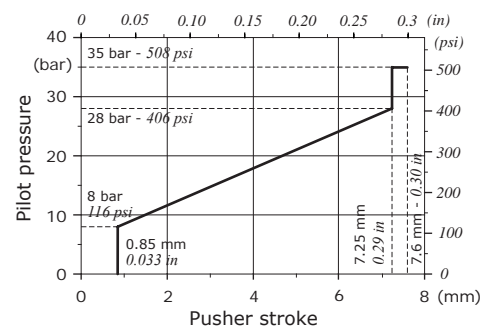
X = allen wrench 4

Y = wrench 13 / 24 Nm - 17.7 lbf

Stroke vs. Pressure diagram

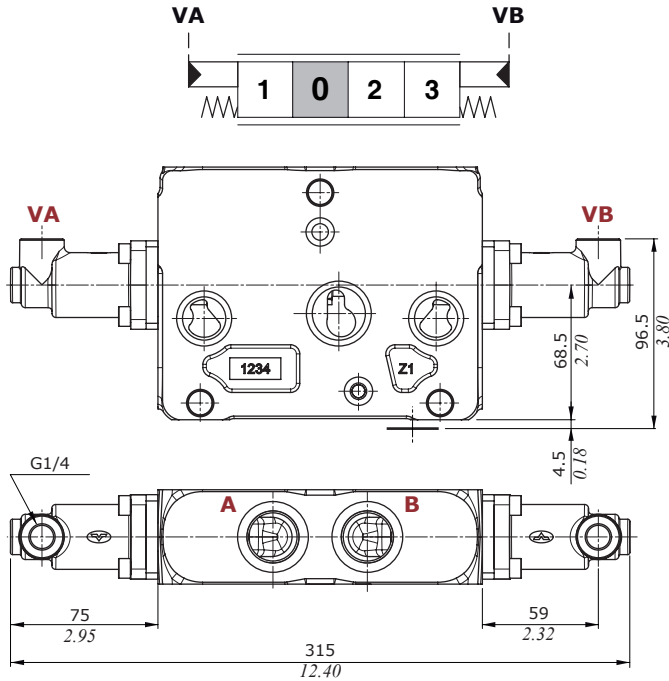


Suggested pressure control curve: 089



Proportional hydraulic control

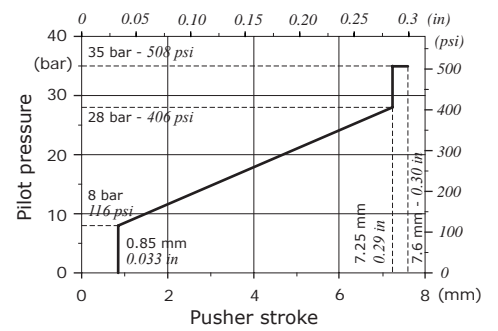
For floating circuit, types 13IM - 13IMP



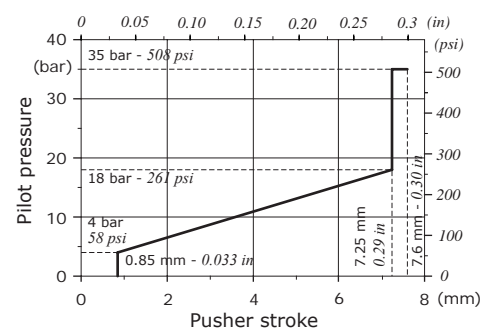
Features

Max. pressure. : 50 bar - 725 psi

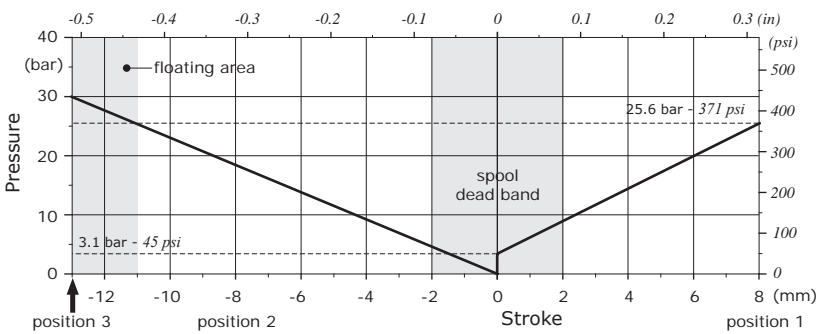
Type 13IM: suggested pressure control curve on port VA: type 089



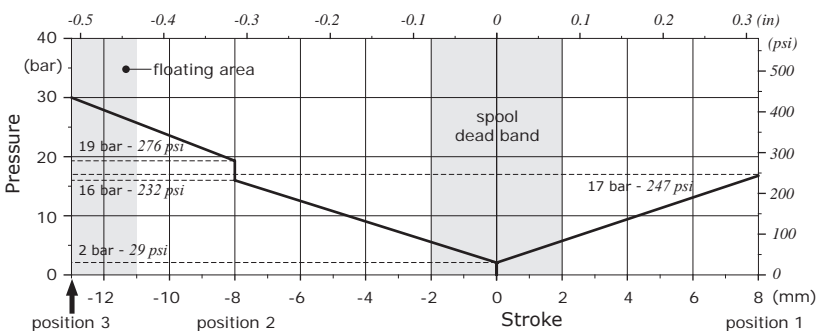
Type 13IMP: suggested pressure control curve on port VA: type 073



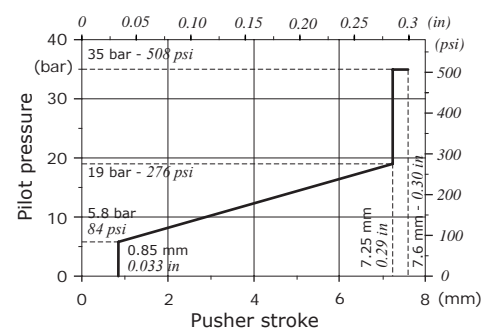
Type 13IM: Stroke vs. Pressure diagram



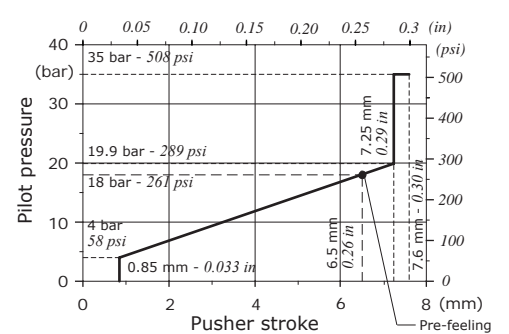
Type 13IMP: Stroke vs. Pressure diagram



Type 13IM: suggested pressure control curve on port VB: type 033



Type 13IMP: suggested pressure control curve on port VB: type E073



Working section

Electrohydraulic controls 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 tolerance ± 10%.

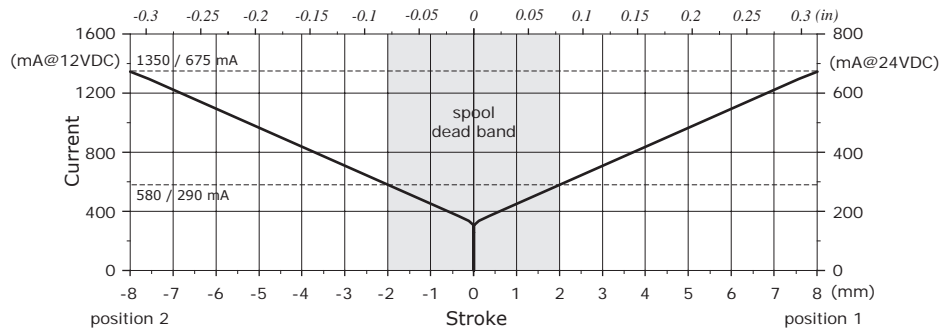
Following electrohydraulic controls need CED100X or CED400X electronic unit; for information contact Sales Department.

Specifications	Spool control type		
	8EB3	13EB3	
Electric specifications			
Coil impedance	12 VDC	4.72 Ω	4.72 Ω
	24 VDC	20.8 Ω	20.8 Ω
Max. operating current	12 VDC	1.5 A	1.5 A
	24 VDC	0.75 A	0.75 A
No load current consumption		0	0
Hysteresis max. ⁽¹⁾	external drain	3% 4% with lever	6% 8% with lever
	internal drain	4% 5% with lever	7% 10% with lever
Time response	from 0 ⇒ 100% of stroke	< 80 ms	< 100 ms
	from 100% ⇒ 0 of stroke	< 60 ms	< 80 ms
Min. flow control signal	12 VDC	580 mA	400 mA
	24 VDC	290 mA	200 mA
Max. flow control signal	12 VDC	1350 mA	P⇒A: 1050 mA P⇒B: 900 mA
	24 VDC	675 mA	P⇒A: 525 mA P⇒B: 450 mA
Float flow control signal	12 VDC		1350 mA
	24 VDC		675 mA
Dither frequency	low frequency	150 Hz	150 Hz
	high frequency	180 Hz - 350 mA	180 Hz - 350 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 (type JPT) - IP69K (type DT)	IP65 (type JPT) - IP69K (type DT)
Hydraulic specifications			
Max. pressure		50 bar (725 psi)	50 bar (725 psi)
Max. back pressure		20 bar (290 psi)	20 bar (290 psi)

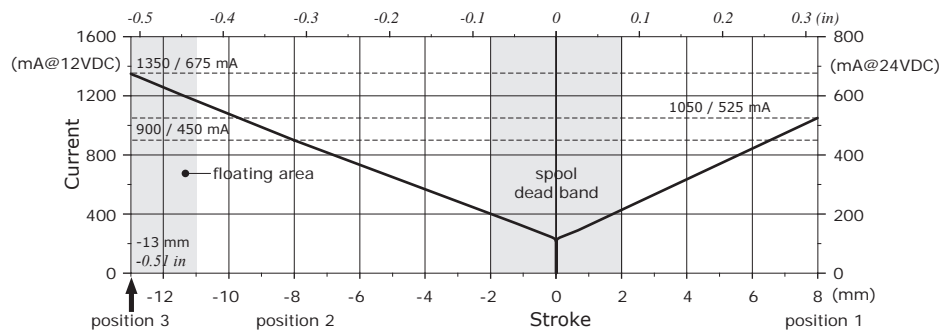
Note (1) hysteresis is indicated at nominal supply voltage and f = 0.008 Hz for one cycle (one cycle = neutral ⇒ full A ⇒ neutral ⇒ full B ⇒ neutral). For the calculation rules see "Appendix A" on page 110.

Electrohydraulic controls performance data

Types 8EB3: Stroke vs. Current diagram



Types 13EB3: Stroke vs. Current diagram



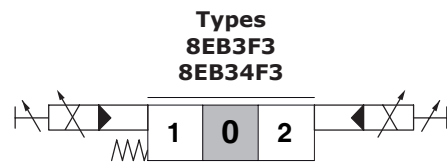
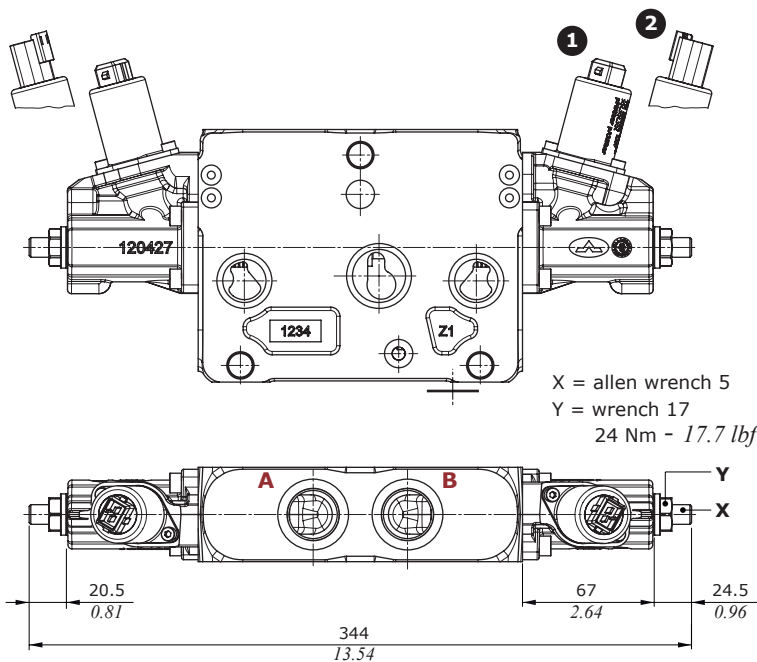
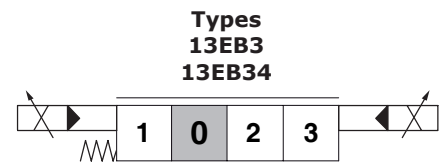
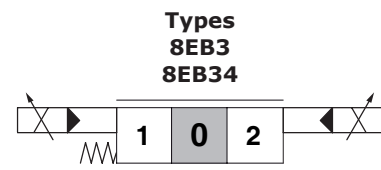
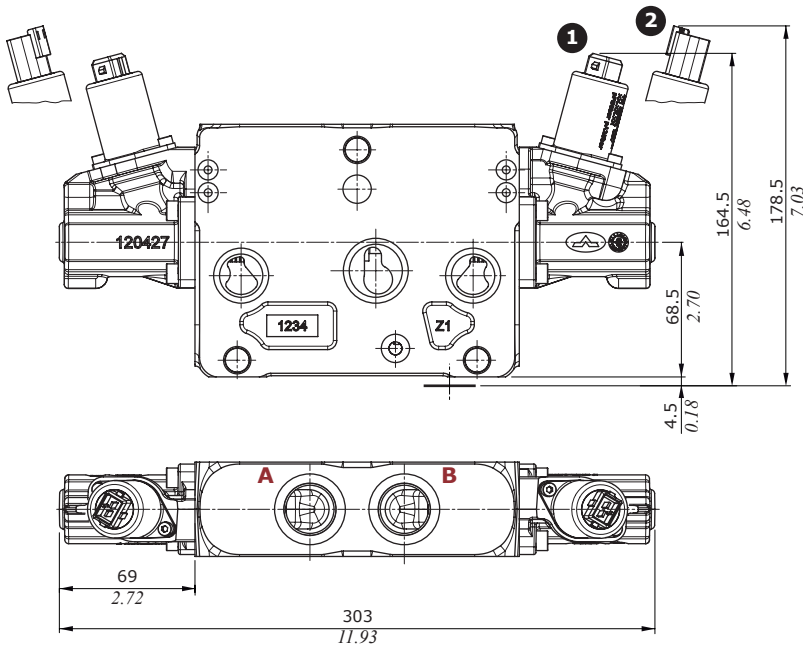
Working section

Two-side electrohydraulic control

Without lever control

Control Types

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

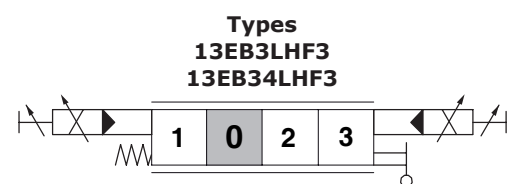
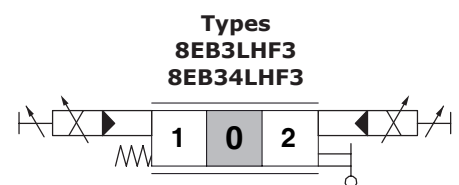
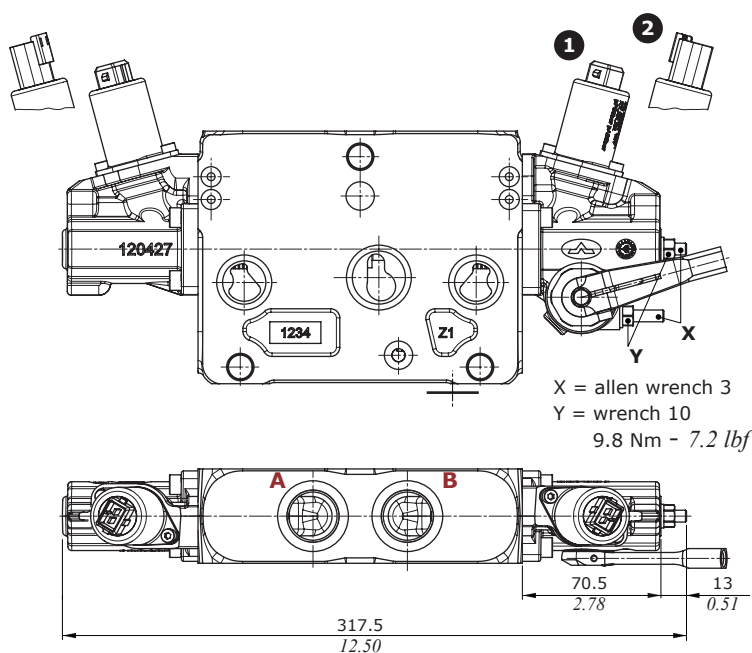
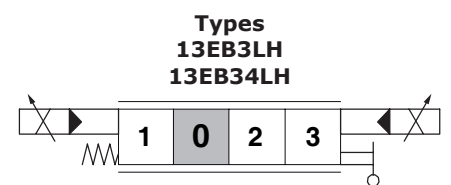
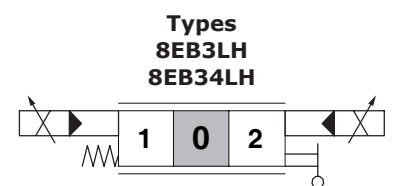
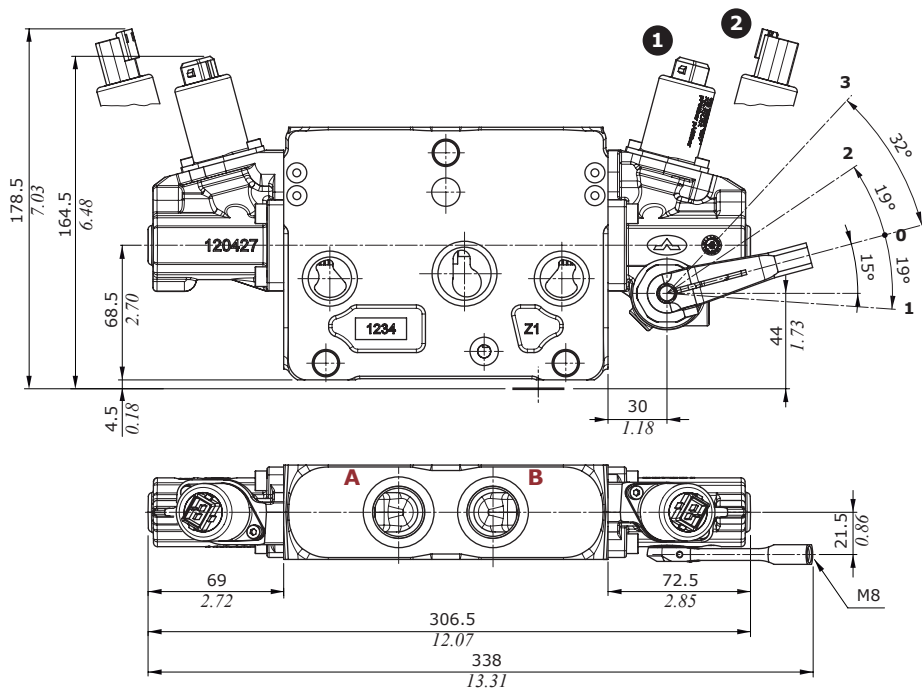


Two-side electrohydraulic control

With lever control

Control Types

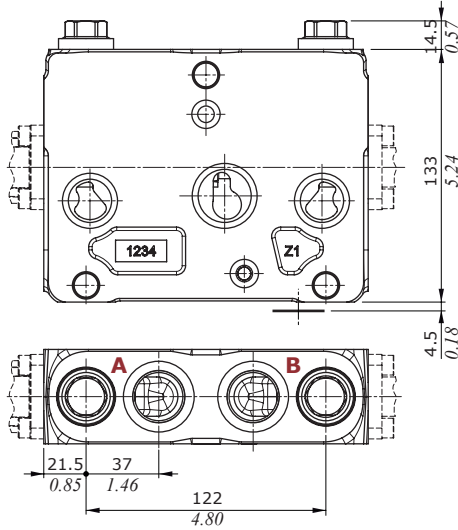
- 1 : With AMP JPT connector - mating connector AMP JPT, code: 5CON003
- 2 : With Deutsch DT04 connector - mating connector Deutsch DT06-2S code: 5CON140031



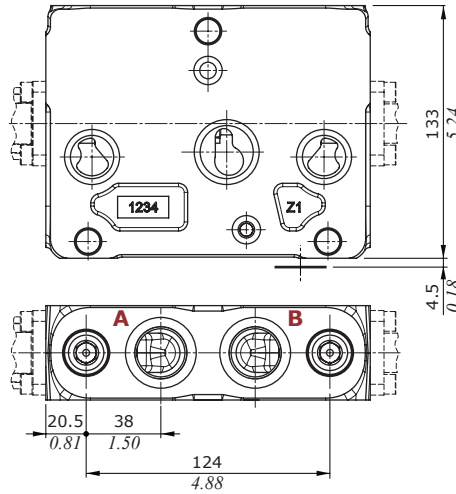
Working section

Port valves

Pressure relief valves, type UL
Anticavitation valve, type CL



Antishock valves, type US
Anticavitation valve, type CS



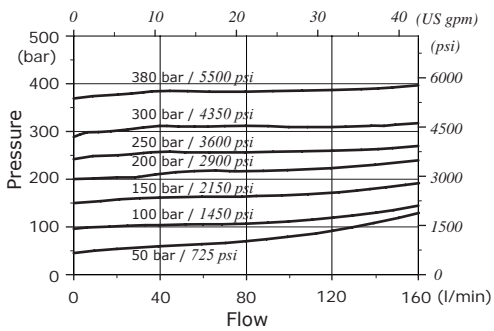
Types UL-US



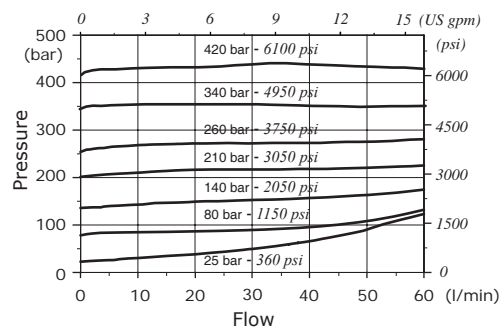
Types CL-CS



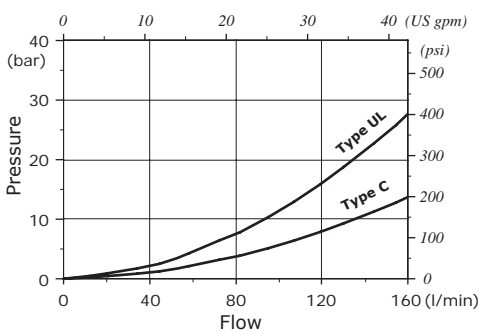
Type UL, setting example
(5 l/min - 1.3 US gpm)



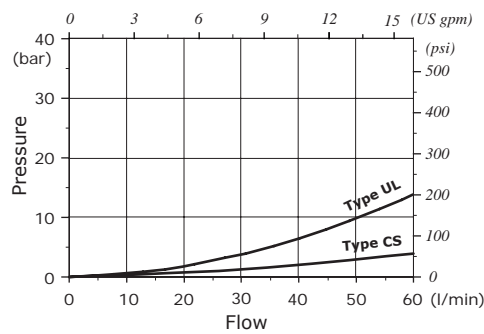
Type US, setting example
(10 l/min - 2.6 US gpm)



Types UL-CL, pressure drop
(in anticavitation)

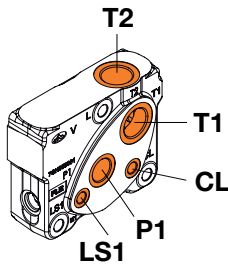
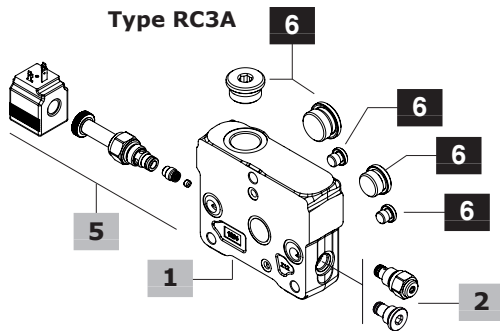


Types US-CS, pressure drop
(in anticavitation)

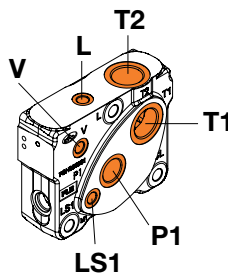
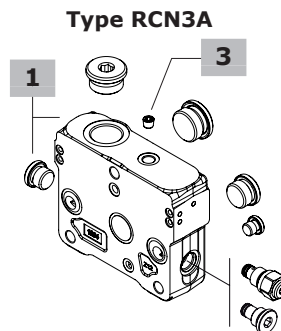


Outlet section parts ordering codes

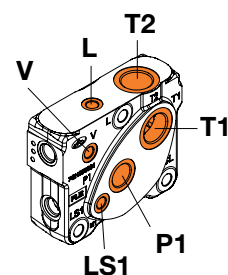
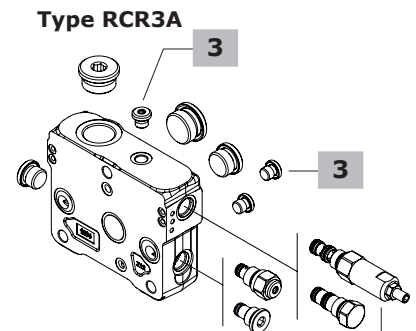
DPX160 / RC3A - CL - 12VDC



DPX160 / RCN3A (VBT)



DPX160 / RCR3A (RT) (VLT) (VBT)



1 Outlet section kit* page 102

Outlet section is the same type for standard and High Pressure valve
For mechanical and hydraulic controls

TYPE: **DPX160/RC1** CODE: YFIA205300
 DESCRIPTION: With upper port T2 port

TYPE: **DPX160/RC3** CODE: YFIA205302
 DESCRIPTION: With upper port T2 and side ports P1, T1, LS1

TYPE: **DPX160/RC3-CL** CODE: YFIA205314
 DESCRIPTION: As previous with clamps release arrang.and port CL

For electrohydraulic controls
 TYPE: **DPX160/RCN1** CODE: YFIA205306
 DESCRIPTION: Without pressure reducing valve arrangement, upper

L and side V ports, upper T2 port

TYPE: **DPX160/RCN3** CODE: YFIA205313
 DESCRIPTION: As previous with side ports P1, T1, LS1

TYPE: **DPX160/RCN3-CL** CODE: YFIA205315
 DESCRIPTION: As previous with clamps release arrang. and port CL

TYPE: **DPX160/RCR1** CODE: YFIA205303
 DESCRIPTION: With pressure reducing valve arrangement, upper L

and side V ports, upper T2 port

TYPE: **DPX160/RCR3** CODE: YFIA205307
 DESCRIPTION: As previous with side ports P1, T1, LS1

TYPE: **DPX160/RCR3-CL** CODE: YFIA205316
 DESCRIPTION: As previous with clamps release arrang. and port CL

Note: for outlet sections with different port arrangement contact Sales Dpt.

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

2 Bleed valve

TYPE	CODE	DESCRIPTION
(-)	X138810000	Bleed valve
(VBT)	XTAP525320	Valve blanking plug

3 Pilot and drain *

TYPE	CODE	DESCRIPTION
(-)	4TAP306006	M6-DIN906 plug, for external drain
(VLT)	3XTAP719150	G1/4 plug, nr.2 for int. pilot and drain

4 Pressure reducing valve

TYPE	CODE	DESCRIPTION
(-)	4AC9539900	Press. reducing valve, 32 bar / 464 psi
(RT)	3XTP3535100	Valve blanking plug (SAE 08/3)

5 Clamps release kit page 103

TYPE	CODE	DESCRIPTION
CL	5KIT409010	Clamp release kit - 12VDC

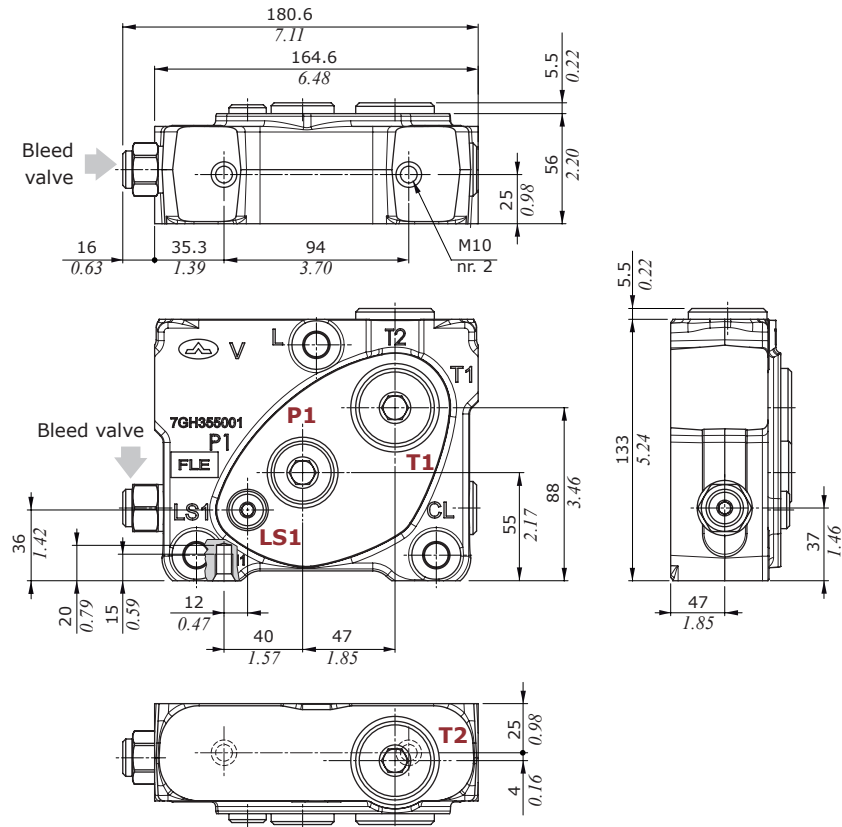
6 Parts*

CODE	DESCRIPTION
3XTAP740210	G1 plug; for RC1/RCN1/RCR1 = nr. 1 for RC3/RCN3/RCR3 = 2
3XTAP732200	G3/4 plug, for RC1/RCN1/RCR1 = nr. 0 for RC3/RCN3/RCR3 = 1
3XTAP719150	G1/4 plug, for RC1/RCN1/RCR1 = nr. 0 for RC3/RCN3/RCR3 = 1 for RC3-CL/RCN3-CL/RCR3-CL = 2

Outlet section

Dimensions and hydraulic circuit

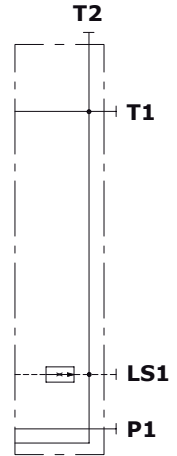
Example of RC3A outlet section



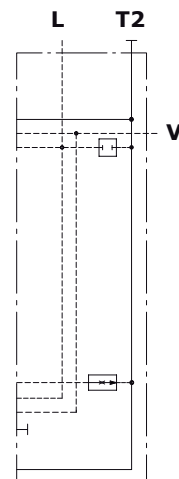
Type RC1A



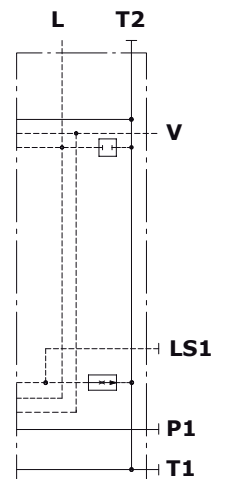
Type RC3A



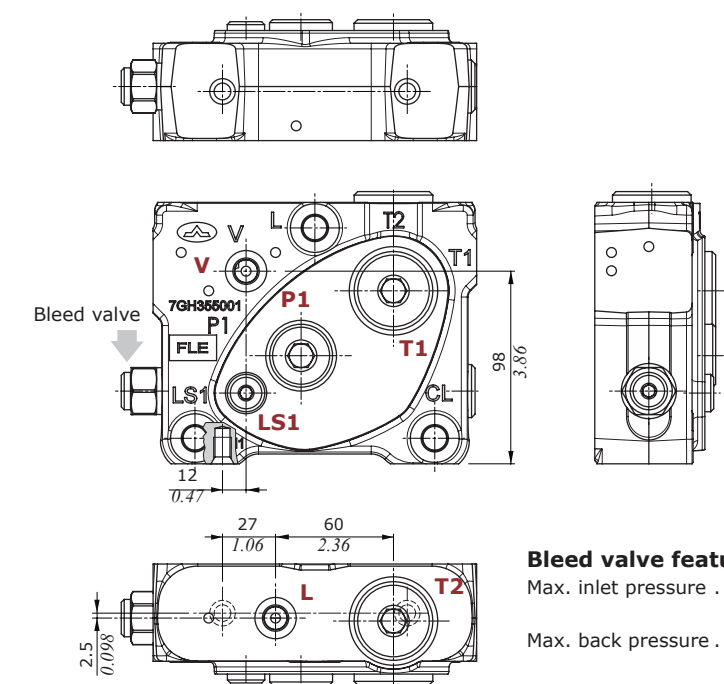
Type RCN1A



Type RCN3A



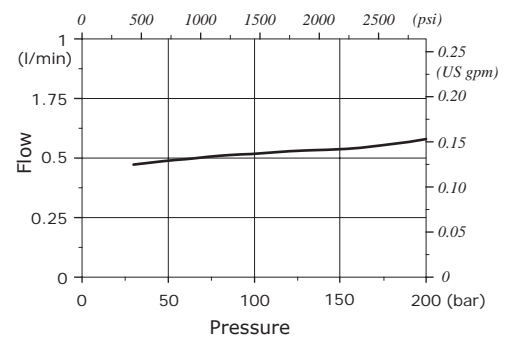
Example of RCN3A outlet section



Bleed valve features

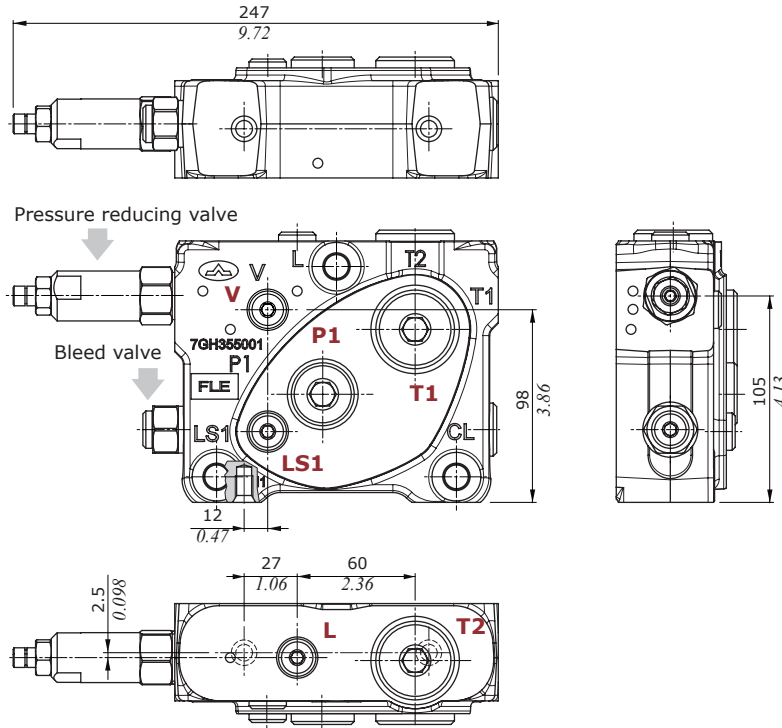
- Max. inlet pressure . . . : 350 bar
5100 psi
- Max. back pressure . . . : 25 bar
363 psi

Bleed valve diagram
Flow vs. Pressure



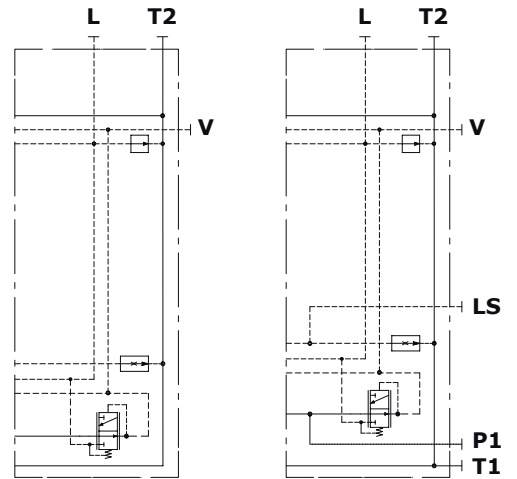
Dimensions and hydraulic circuit

Example of RCR3A outlet section

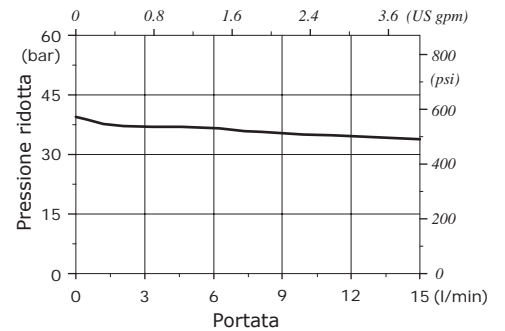


Type RCR1A

Type RCR3A



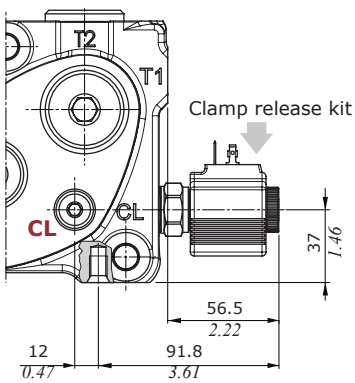
Pressure reducing valve diagram
Reduced pressure vs. Flow



Pressure reducing valve features

Reduced press. range . . : from 3.5 to 35 bar
 : from 50 to 500 psi
 Max. inlet pressure . . . : 420 bar - 5500 psi
 Nominal flow : 15 l/min - 4 US gpm

Outlet sections with clamp release kit



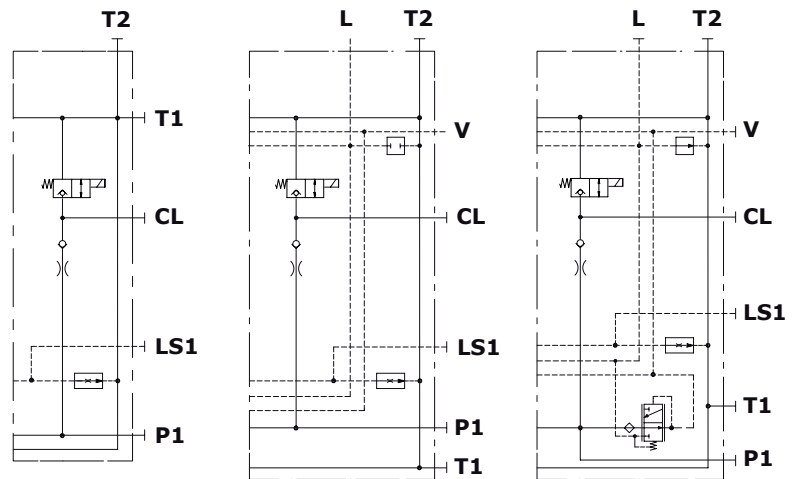
Features

Max. flow : 45 l/min - 12 US gpm
 Max. pressure : 315 bar - 4600 psi
 Internal leakage : max. 3 cm³/min @ 100 bar
 : max. 0.018 in³/min @ 1450 psi

Type RC3A-CL

Type RCN3A-CL

Type RCR3A-CL



For coil features and options see coil **BER** at page 104.

Coils and connectors

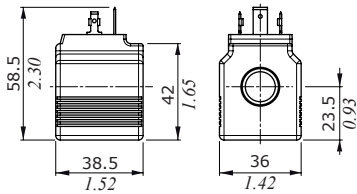
Coil type	Voltage	Connectors					
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	Flying leads (without conn.)
BER	12VDC	4SL2000121	4SL2000128 4SL2001200 ⁽⁵⁾	4SL2000127	-	-	-
	24VDC	4SL2000241 4SL2030240 ⁽¹⁾	4SL2000245 4SL2002400 ⁽⁵⁾	4SL2000244	-	-	-
	48VDC	4SL2030480 ⁽¹⁾	-	-	-	-	-
	110VDC	4SL2031100 ⁽¹⁾	-	-	-	-	-
	220VDC	4SL2032200 ⁽¹⁾	-	-	-	-	-
BT	12VDC	4SL3000120	4SL3000128 ⁽²⁾ 4SL3000130 4SL3000132 ⁽⁴⁾	4SL3000122	4SL3000124 ⁽²⁾	4SL3000127 ⁽²⁾	-
	24VDC	4SL3000240 4SL3030240 ⁽¹⁾	4SL3000249 4SL3000247 ⁽⁴⁾	4SL3000248	-	-	-
	26VDC	4SL3000260	-	-	-	-	-
	48VDC	4SL3000480 4SL3030480 ⁽¹⁾	-	-	-	-	-
	110VDC	4SL3001100 4SL3031100 ⁽¹⁾	-	-	-	-	-
BPV	220VDC	4SL3032200 ⁽¹⁾	-	-	-	-	-
	12VDC	4SLA001200	-	-	-	-	4SLA001201
BE	24VDC	4SLA002400	-	-	-	-	4SLA002401
	12VDC	4SL1000120	4SL1000123	-	-	-	-
	24VDC	4SL1000240 4SL1030240 ⁽¹⁾	-	-	-	-	-
	48VDC	4SL1000480 4SL1030480 ⁽¹⁾	-	-	-	-	-
	110VDC	4SL1001100 4SL1031100 ⁽¹⁾	-	-	-	-	-
D12	220VDC	4SL1032200 ⁽¹⁾	-	-	-	-	-
	10.5VDC	4SOL412011	4SOL412111 ⁽²⁾	-	-	-	-
	12VDC	4SOL412012	4SOL412013 4SOL412112 ⁽²⁾ 4SOL412015 ⁽³⁾	-	-	-	-
Mating connectors (For connector with rectifier sse following table)	24VDC	4SOL412024	4SOL412025 4SOL412124 ⁽²⁾ 4SOL412027 ⁽³⁾	4SOL412224 ⁽²⁾	-	-	-
	4CN1009995	5CON140031	5CON003	5CON001	5CON017	-	

Notes: ⁽¹⁾ to use only with rectifier connector - ⁽²⁾ with flying leads - ⁽³⁾ with bidirectional diode - ⁽⁵⁾ with unidirectional diode ⁽⁵⁾ perpendicular type

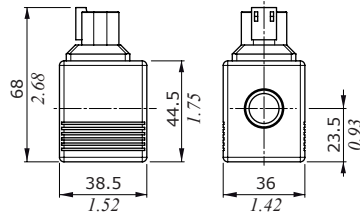
Voltage	ISO 4400 mating connector with rectifier				
	coil type BER	coil type BT	coil type BPV	coil type BE	coil type D12
12VDC	-	-	-	-	-
24VDC	4CN3010240	4CN3010240	-	4CN1010240	-
48VDC	4CN3010480	4CN3010480	-	4CN1010480	-
110VDC	4CN3011100	4CN3011100	-	4CN1011100	-
220VDC	4CN3012200	4CN3012200	-	4CN1012200	-

Type BER

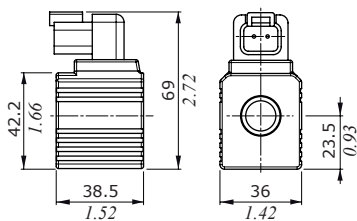
ISO4400 connector



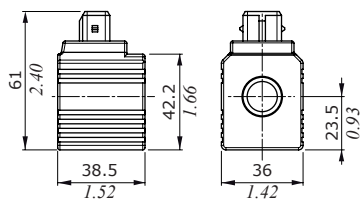
DEUTSCH DT04 connector (perpendicular type)



DEUTSCH DT04 connector (parallel type)



AMP JPT connector

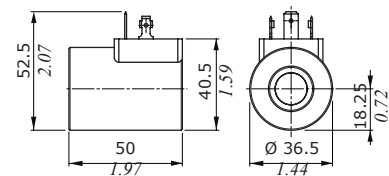


Features

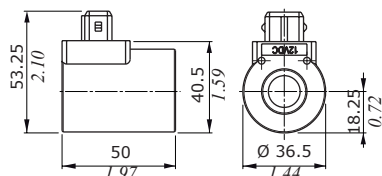
- Nominal voltage tolerance : ±10%
- Power rating : 19.3 W - 12VDC
: 19.2 W - 24VDC
: 19.2 - 48VDC
: 19.2 - 110VDC
: 19.3 - 220VDC
- Max. operating current . . . : 1.61 A - 12VDC
: 0.80 A - 24VDC
: 0.40 A - 48VDC
: 0.17 A - 110VDC
: 0.09 A - 220VDC
- Coil insulation : Class H
(180°C - 356°F)
- Weather protection : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
- Insertion : 100%

Type BT

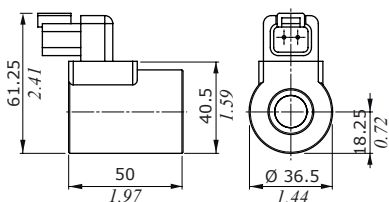
ISO4400 connector



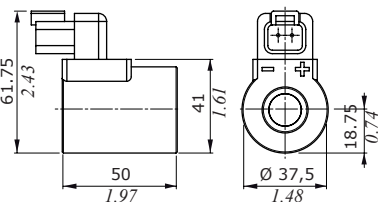
AMP JPT connector



DEUTSCH DT04 connector



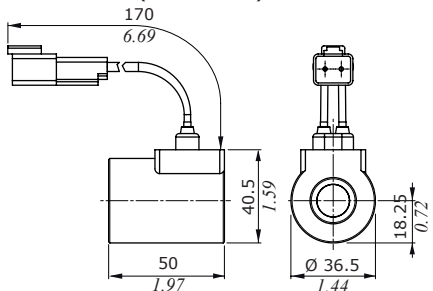
DEUTSCH DT04 connector (with unidirectional diode)



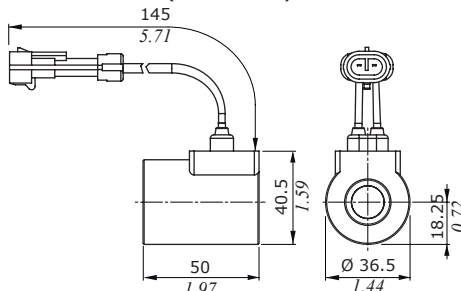
Features

- Nominal voltage tolerance : ±10%
- Power rating : 21 W - 12 VDC
: 21 W - 24 VDC
: 21 W - 26 VDC
: 20.3 W - 48 VDC
: 15,7 W - 110 VDC
: 21.7 W - 220 VDC
- Max. operating current . . . : 1.77 A - 12 VDC
: 0.89 A - 24VDC
: 0.84 A - 26 VDC
: 0.43 A - 48 VDC
: 0.15 A - 110 VDC
: 0.1 A - 220 VDC
- Coil insulation : Class F
(155°C - 311°F)
- Weather protection : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack
- Insertion : 100%

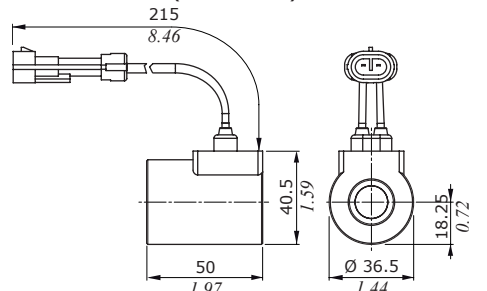
DEUTSCH DT04 connector (with cable)



PACKARD METRI-PACK connector (with cable)



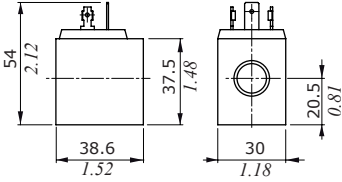
PACKARD WEATHER-PACK connector (with cable)



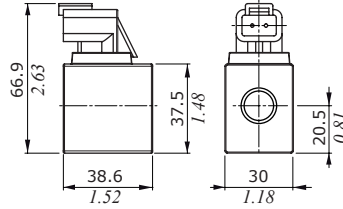
Coils and connectors

Type BE

ISO4400 connector



DEUTSCH DT04 connector

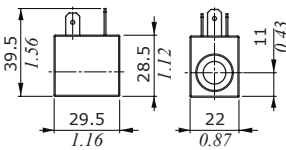


Features

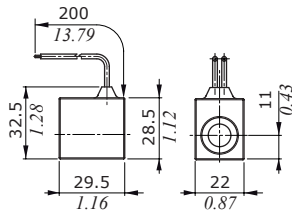
- Nominal voltage tolerance : $\pm 10\%$
- Power rating : 18.7 W - 12VDC
: 18.6 W - 24 VDC
: 19.8 W - 48VDC
: 17.3 W - 110VDC
: 15.7 W - 220VDC
- Max. operating current . . . : 1.56 A - 12 VDC
: 0.77 A - 24VDC
: 0.41 A - 48VDC
: 0.157 A - 110VDC
: 0.08 A - 220VDC
- Coil insulation : Class F
(155°C - 311°F)
- Weather protection : IP65 - ISO4400
: IP69K - Deutsch DT
- Insertion : 100%

Type BPV

ISO4400 connector



With flying leads

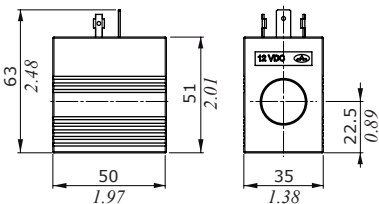


Features

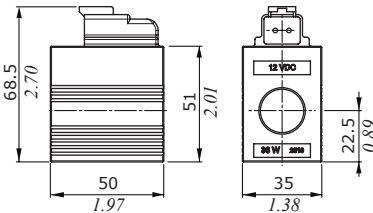
- Nominal voltage tolerance : $\pm 10\%$
- Power rating : 8 W - 12/24 VDC
- Max. operating current . . . : 0,67 A - 12 VDC
: 0,33 A - 24VDC
- Coil Insulation : Class H
(180°C - 356°F)
- Weather protection : IP65 - ISO4400
- Insertion : 100%

Type D12

ISO4400 connector



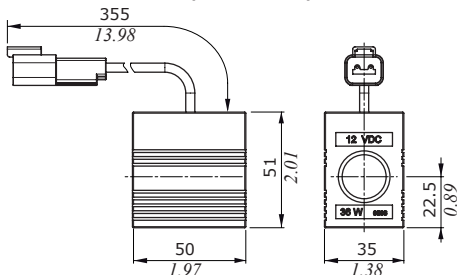
DEUTSCH DT04 connector
(with or without bidirectional diode)



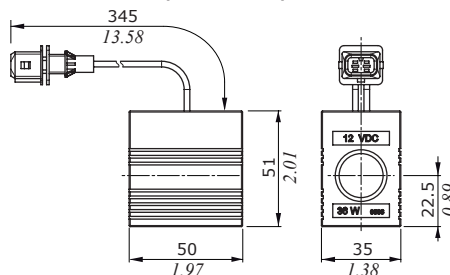
Features

- Nominal voltage tolerance : $\pm 10\%$
- Power rating : 36 W - 12 VDC
: 36 W - 24 VDC
- Max. operating current . . . : 3 A - 12 VDC
: 1.5 A - 24VDC
- Coil insulation : Class H
(180°C - 356°F)
- Weather protection : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
- Insertion : 100%

DEUTSCH DT04 connector
(with cable)



AMP JPT connector
(with cable)

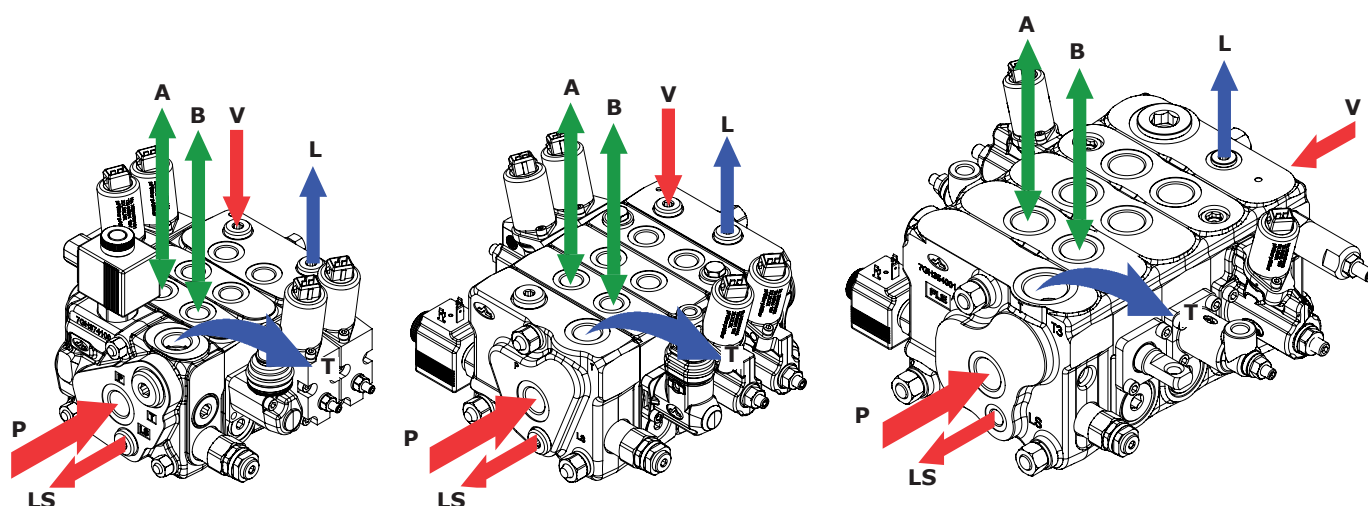


Installation and maintenance

The valves of DPX series are assembled and tested as per the technical specification of this catalogue.

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

- the valve 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 spool control kit, do not use high pressure wash down directly on the valve;
- prior to painting, ensure plugs on normally open ports are tightly in place.



FITTINGS TIGHTENING TORQUE - Nm / lbft									
THREAD TYPE	P inlet port		A and B workports		T outlet port	LS signal port	V and L ports		
DPX050	BSP	G 1/2	G 3/8		G 1/2	G 1/4	G 1/4		
	With O-Ring seal	50 / 36.9	35 / 35.8		50 / 36.9	25 / 18.4	25 / 18.4		
	With copper washer	60 / 44.3	40 / 29.5		60 / 44.3	30 / 22.1	30 / 22.1		
	With steel and rubber washer	60 / 44.3	30 / 22.1		60 / 44.3	16 / 11.8	16 / 11.8		
	UN-UNF	3/4-16 (SAE 8)	6/16-18 (SAE 6)		3/4-16 (SAE 8)	9/16-18 (SAE 6)	9/16-18 (SAE 6)		
With O-Ring seal	35 / 25.8	30 / 22.1		35 / 25.8	30 / 22.1	30 / 22.1			
DPX100	BSP	G 1/2	G 3/4	G 3/8	G 1/2	G 1/2	G 3/4	G 1/4	G 1/4
	With O-Ring seal	50 / 36.9	90 / 66.4	50 / 36.9	50 / 36.9	50 / 36.9	90 / 66.4	25 / 18.4	25 / 18.4
	With copper washer	60 / 44.3	90 / 66.4	60 / 44.3	60 / 44.3	60 / 44.3	90 / 66.4	30 / 22.1	30 / 22.1
	With steel and rubber washer	60 / 44.3	70 / 51.6	60 / 44.3	60 / 44.3	60 / 44.3	70 / 51.6	16 / 11.8	16 / 11.8
	UN-UNF	7/8-14 (SAE 10)	3/4-16 (SAE 8)		7/8-14 (SAE 10)	9/16-18 (SAE 6)	9/16-18 (SAE 6)	9/16-18 (SAE 6)	
With O-Ring seal	90 / 66.4	35 / 25.8		90 / 66.4	30 / 22.1	30 / 22.1	30 / 22.1		
DPX160	BSP	G 3/4		G 3/4		G 1	G 1/4	G 1/4	
	With O-Ring seal	90 / 66.4		90 / 66.4		100 / 73.8	25 / 18.4	25 / 18.4	
	With copper washer	90 / 66.4		90 / 66.4		90 / 66.4	30 / 22.1	30 / 22.1	
	With steel and rubber washer	70 / 51.6		70 / 51.6		100 / 73.8	16 / 11.8	16 / 11.8	
	UN-UNF	1 1/16-12 (SAE 12)	1 1/16-12 (SAE 12)		1 5/16-12 (SAE 16)	9/16-18 (SAE 6)	9/16-18 (SAE 6)		
With O-Ring seal	95 / 70.1	95 / 70.1		150 / 100.6	30 / 22.1	30 / 22.1			

NOTE – These torque are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish.

Installation and maintenance

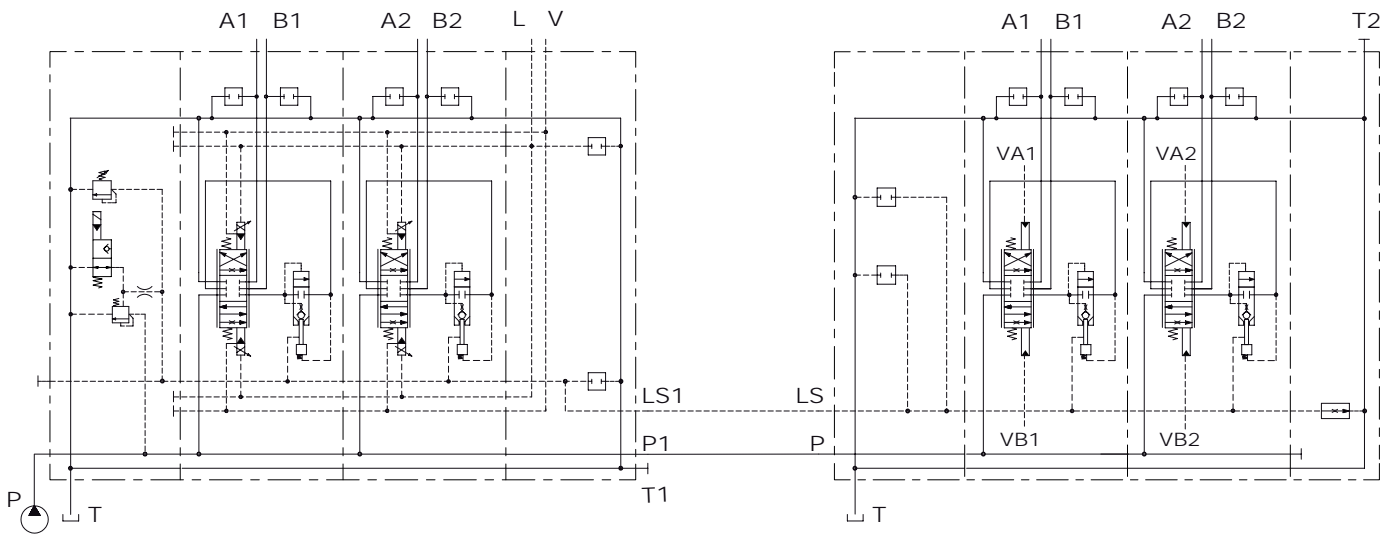
Connection between two directional valves

All the examples shown allow contemporary operations of workports.

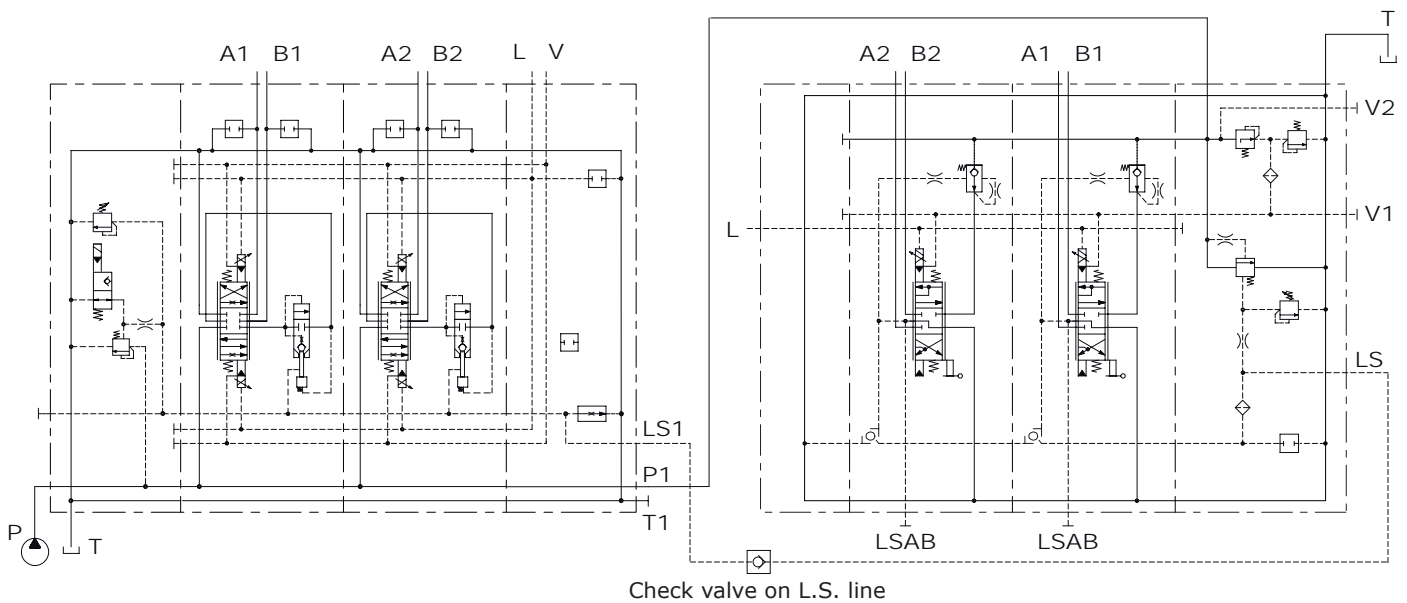
With two or more DPX Series valves connected as shown, only one Bleed valve is needed, placed on the last DPX and blanking plugs on the others.

However if DPX valves are far from each other or configured with many sections, the Bleed valve may be required on each directional valve.

Example 1: connection between DPX series valves, Open Center circuit

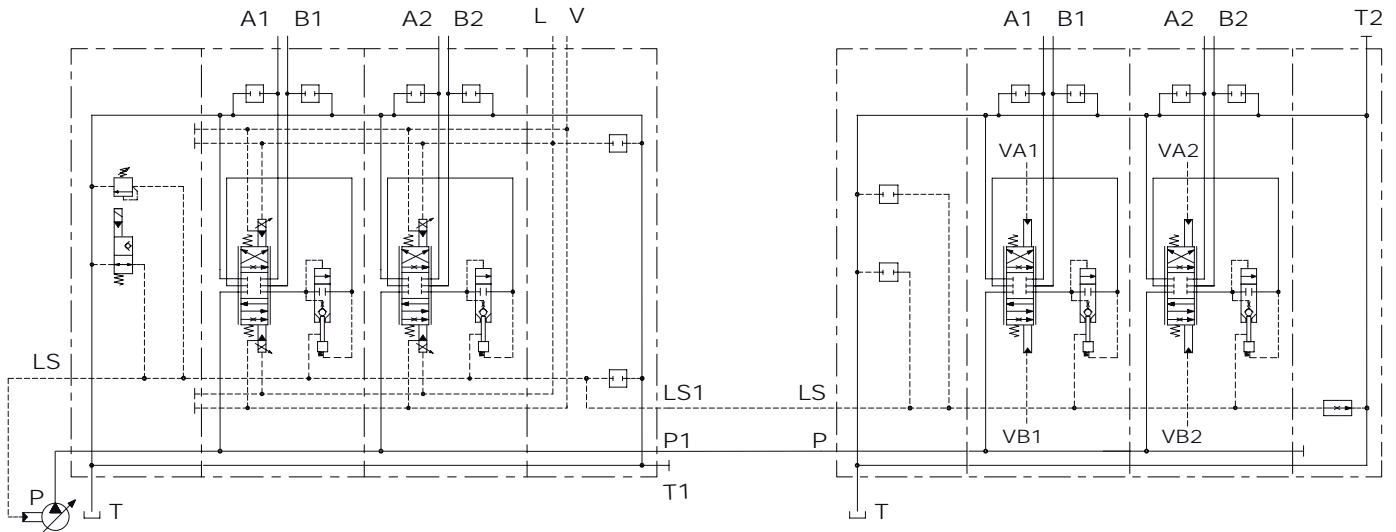


Example 2: connection between DPX series and DPC series valves, Open Center circuit

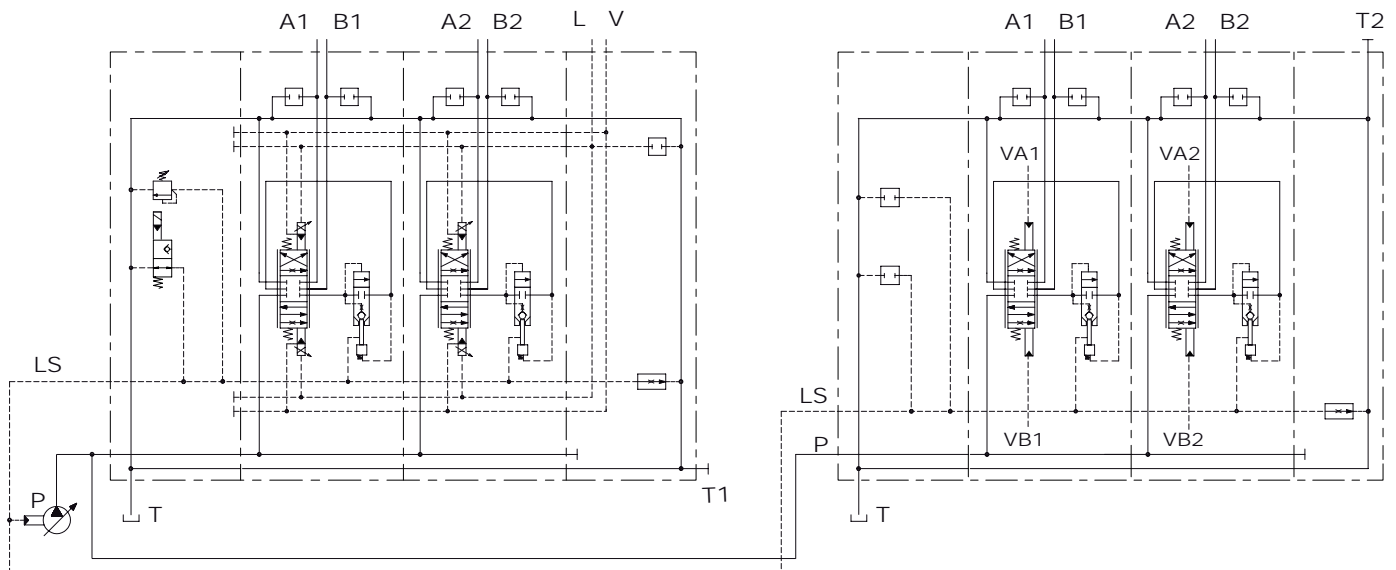


Connection between two directional valves

Example 3: connection between DPX series valves, Closed Center circuit



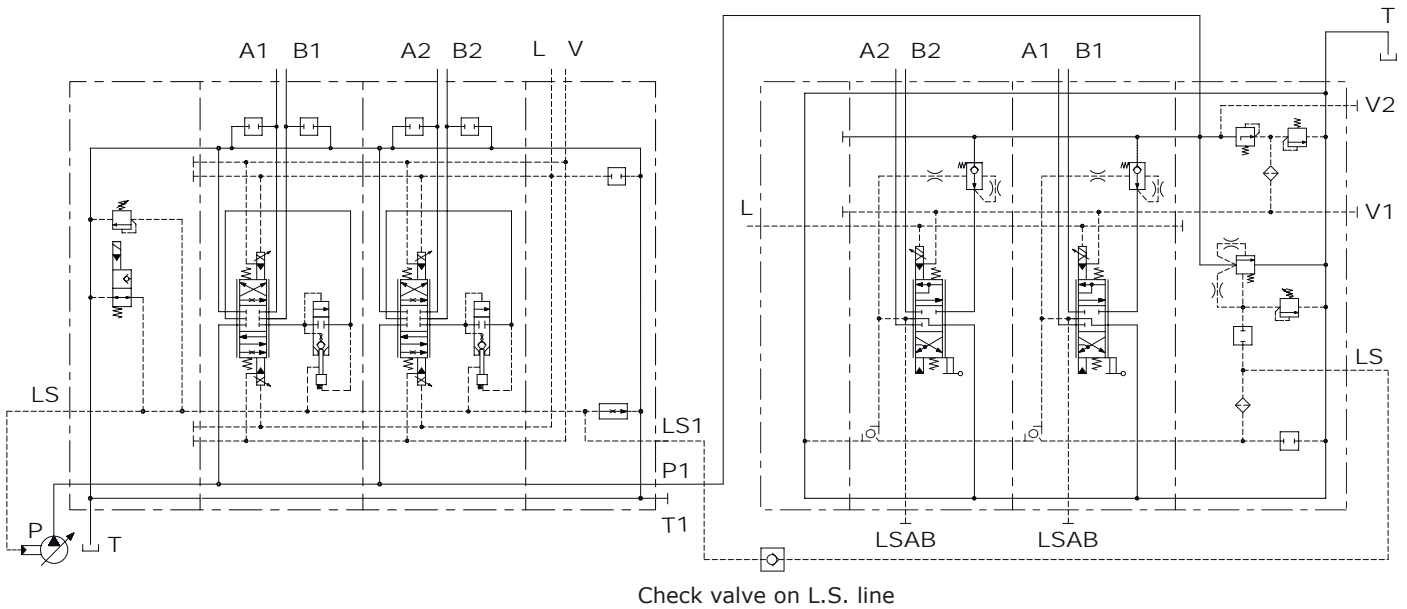
NOTE: if distance between the valves is great, it's advisable the following circuit.



Installation and maintenance

Connection between two directional valves

Example 4: connection between DPX series and DPC series valves, Closed Center circuit



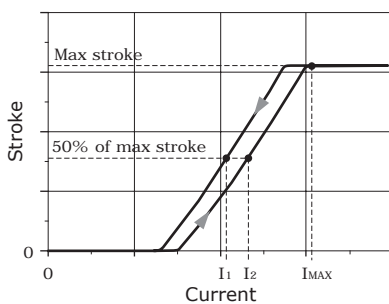
Appendix A

Electrohydraulic controls: hysteresis calculation rule

Hysteresis is calculated as difference between control currents ($I_2 - I_1$), needed to reach 50% of nominal spool stroke, referred to maximum control current I_{MAX} , needed to reach 100% of spool stroke.

I_2 is determined on spool stroke increase line, I_1 is determined on spool stroke decrease line.

Example diagram for data detection



$$\text{Hysteresis \%} = \frac{I_2 - I_1}{I_{MAX}} \times 100$$

3rd edition January 2012

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