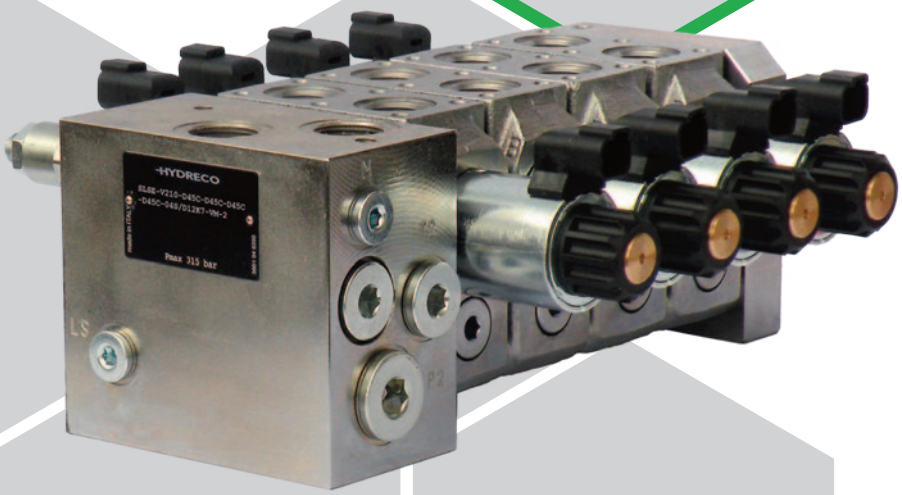
HYDRECO

SLSE

SECTIONAL PROPORTIONAL DIRECTIONAL VALVE FOR LOAD SENSING

315 bar 45 l/min



TECHNICAL CATALOGUE

INTRODUCTION

The SLSE is a sectional directional control valve with load sensing feature. It can be assembled with up to 8 working sections (proportional and solenoid valves together).

Each module is equipped with a meter-in compensator that keeps the flow costant, independently from load changes.

Sections equipped with pressure compensators are not affected by other operating functions, provided that sufficient pump capacity is available. For correct operation, the total simultaneous flow demand must not exceed 90% of the inlet flow rate.

BSPP- or SAE-threaded ports are available. Additional connections are available on the inlet sections for convenient connection.

The manual lever override is available as option.

FLUIDS

Use mineral oil-based hydraulic fluids HL or HM type, or fluids HFDR type (phosphate esters). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 80 °C (180 °F) causes the accelerated degradation of seals as well as the fluid physical and chemical properties.

OPERATING PARAMETERS

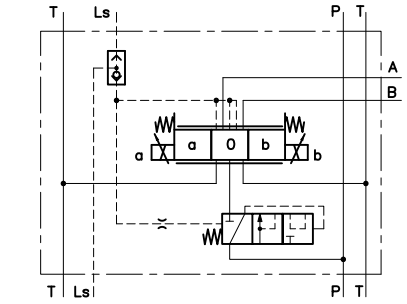
MAXIMUM OPERATING PRESSURE	P - A - B ports	315 bar	4570 psi
	T port	20 bar	290 psi
FLOW CAPACITY WITH Δp 10 BAR (145 PSI)	A - B ports	45 l/min	12 gpm
	P port	100 l/min	26 gpm
	T port	120 l/min	32 gpm

STEP RESPONSE	0 → 100%	50 ms	
	100 →0%	40 ms	
HYSTERESIS	% of Q max	< 6%	
REPEATABILITY	% of Q max	< ± 2%	
VOLTAGE		12V DC 24V DC	
COIL CONNECTION		DIN 43650	DT04-2P
WEIGHT	working section	4.5 kg	10 lbs

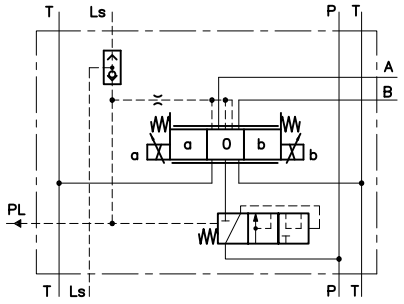
RANGE TEMPERATURES:	ambient	-20 to +60 °C	-4 to +140 °F
	fluid	-20 to +82 °C	-4 to +180 °F
FLUID VISCOSITY	range	10-400 cSt	60-1900 SUS
	recommended	25 cSt	120 SUS
FLUID CONTAMINATION		ISO 4406:1999 class 18/16/13	

HYDRAULIC SYMBOLS OF WORKING SECTIONS

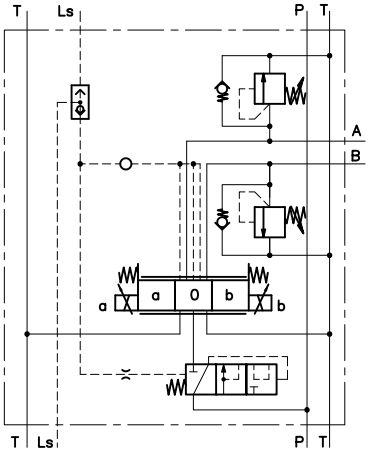
SLSE



SLSE*-*-PL

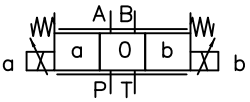
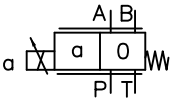
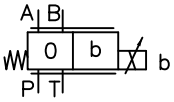


SLSE*-*-A***B***



SLSE - [ ][ ][ ][ ] - [ ][ ][ ] - [ ][ ] - [ ][ ] - 2 — design mark

PORTS SIZE	
B2	1/2" BSPP
S2	3/4"-16 UNF

FUNCTION	
D	 double solenoid 3 position - spring centred
A	 single solenoid at side A 2 position - spring return
B	 single solenoid at side B 2 position - spring return

NOMINAL FLOW with Δp P-T 4 bar (58 psi)	
05	5 l/min (1.3 gpm)
15	15 l/min (4 gpm)
30	30 l/min (7.9 gpm)
15-10	15/10 l/min asymmetrical
30-20	30/20 l/min asymmetrical

with Δp P-T 8 bar (116 psi)	
09	9 l/min (2.4 gpm)
25	25 l/min (6.5 gpm)
45	45 l/min (12 gpm)
25-15	25/15 l/min asymmetrical
45-30	45/30 l/min asymmetrical

ADDITIONAL FEATURES omit if not required

PRESSURE LIMITATION	
PL	pressure signal (AB) for remote valve

VOLTAGE	
D12	12 V DC
D24	24 V DC

SEAL	
V	Viton

MANUAL OVERRIDE	
M	built-in with the tube, pin (**standard**) (*)
B	built-in with the tube, boot protected
K	knob, turning
L	hand lever

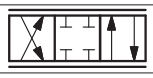
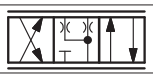
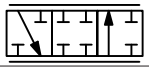
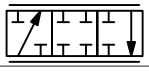
COILS	
K1	DIN 43650
K2	AMP Junior
K7	DT04-2P 'deutsch'
WK1	DIN 43650 zinc-nickel plated
WK7	DT04-2P 'deutsch' zinc-nickel plated

(*) This manual override is not available toghether with 'WK*' coil types.

AUXILIARY VALVE side A	
A..	anti-cavitation + antishock

AUXILIARY VALVE side B	
B..	anti-cavitation + antishock

A.. and **B..** add the desired set pressure value to the letter: available pressures: 100, 150, 190, 235, 280, 300, 350.

SPOOLS			
	SYMBOL	DESCRIPTION	APPLICATION
C		closed centre	proportional meter in / meter out
A		open centre	
PA		line A	proportional single flow function type D, flows 35 and 40 only
PB		line B	

CODE EXAMPLES:

SLSE-A25C-D12K7-VM-2
SLSE-D25C-A235B235-D12K7-VM-2
SLSE-D25C-PL-D12WK7-VB-2

BASIC INLET SECTIONS

SLSX - [ ] S - V - 1 ← design mark

PORTS SIZE	
B3	3/4" BSPP

MATERIAL	
S	steel

SEAL	
V	Viton

INLET SECTIONS WITH COMPENSATOR

SLSX- [ ] [ ] - [ ] S - V - 4 ← design mark

FUNCTION	
F	for fixed pump
V	for variable pump

RELIEF VALVE	
000	no relief valve
210	up to 210 bar
315	up to 315 bar

PORTS SIZE	
B3	3/4" BSPP
S25	7/8" -14 UNF

MATERIAL	
S	steel

SEAL	
V	Viton

OUTLET SECTION

SLSX - [ ] 04S - V - 1 ← design mark

PORTS SIZE	
B1	1/4" BSPP

BLANKING SECTION	
04	Blanking section with load sensing port

MATERIAL	
S	steel

SEAL	
V	Viton

FLANGEABLE TOP MODULE

SLSZ - PCD - A - V - 1 ← design mark

FUNCTION	
PC	pilot check valve

EFFECT	
D	double

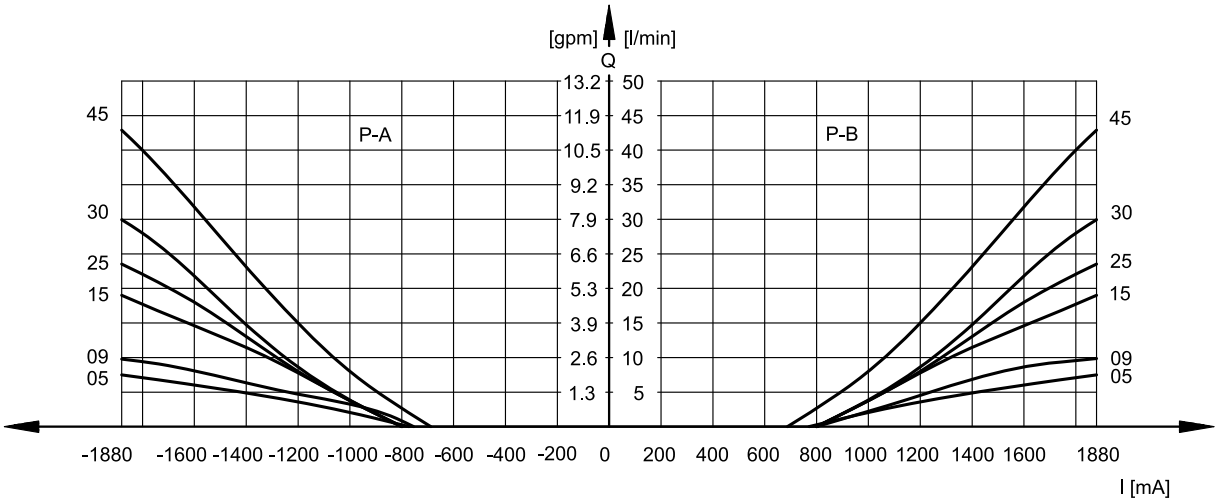
MATERIAL	
A	aluminium

SEAL	
V	Viton

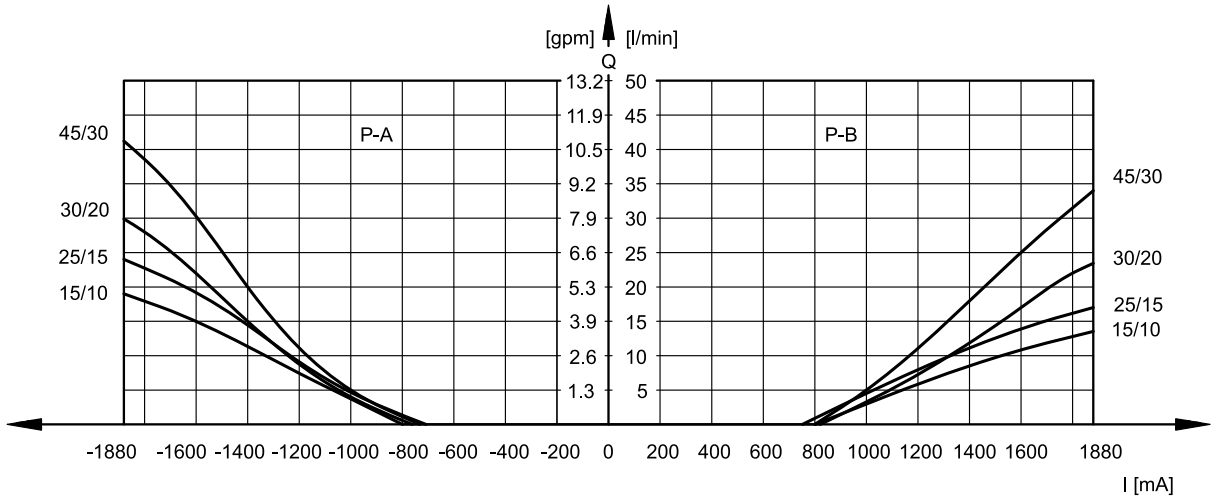
Aluminium
p max = 230 bar
Q max = 30 l/min

Typical constant flowrate obtained through the embedded compensator, and current with 12V solenoid type (for D24 version the maximum current is 860 mA).

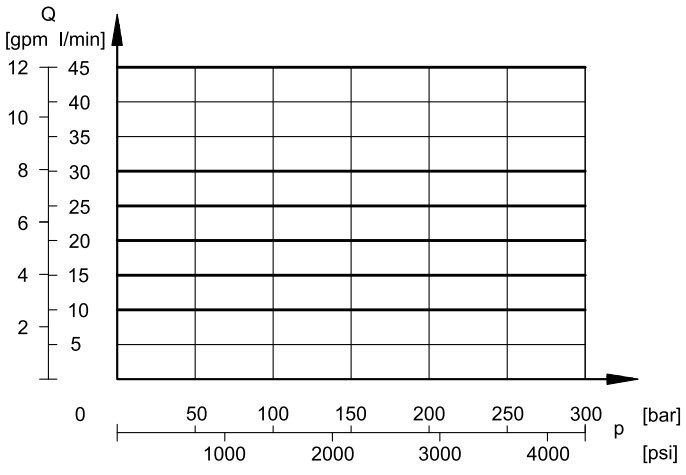
PRESSURE DROPS Δp-Q - SYMMETRICAL SPOOLS TYPE C, A



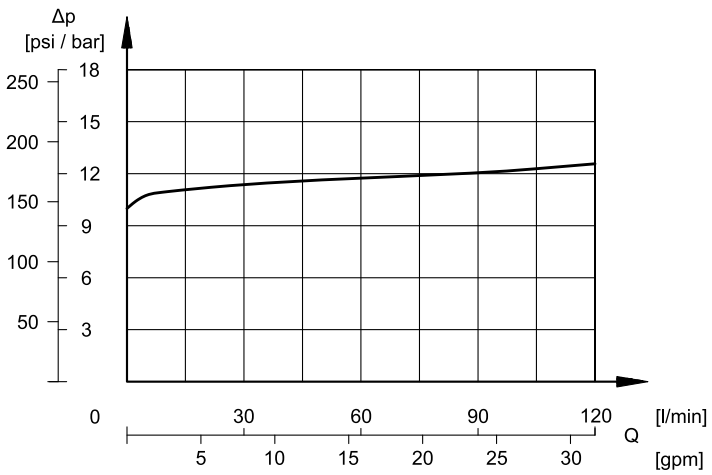
PRESSURE DROPS Δp-Q - ASYMMETRICAL SPOOLS TYPE C, A



FLOWRATE BY PRESSURE



PRESSURE DROPS Δp-Q OF INLET SECTIONS TYPE F, V



The proportional solenoid consists of tube and coil.
The coil is fit on the tube and fastened to it by a ring retainer.

The coils can be indexed to any position allowing for convenient location of the connector.

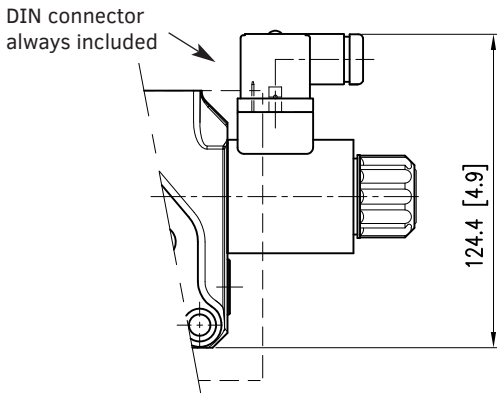
DUTY CYCLE		100%
ELECTROMAGNETIC COMPATIBILITY (EMC)		according to European directive 2014/30/EU
PROTECTION CLASS FOR INSULATION	copper wire	class H (180 °C)
	coil	class F (155 °C)

	Nominal voltage [V]	Resistance at 20 °C [Ω]	Current at 20 °C. [A]	Coil codes for spare parts				
				K1	**K2**	**K7**	**WK1**	**WK7**
D12	12	4.4	1.88	1903080	1903100	1902940	3984000001	3984000101
D24	24	18.6	0.86	1903081	1903101	1902941	3984000002	3984000102

The declared IP ratings are intended according to EMC 2014/30/EU, only for both valve and connectors of equivalent IP degree, installed properly.

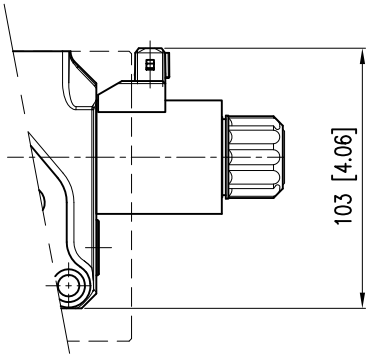
WK1 and WK7 coils reach a better IP rating than standard coils thanks to the zinc-nickel plating and a number of design precautions. The valves with these coils have a salt spray resistance up to 600 hours (test performed according to UNI EN ISO 9227 and assessment test performed according to UNI EN ISO 10289).

K1



DIN 43650 (EN 175301-803)
IP degree of electrical connection: IP65
IP degree of whole valve: IP 65

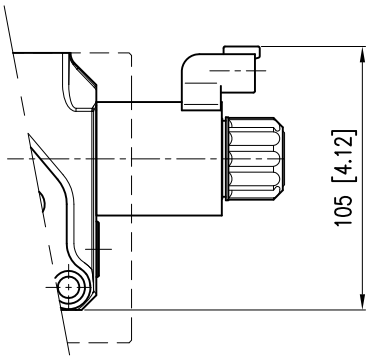
K2



AMP Junior

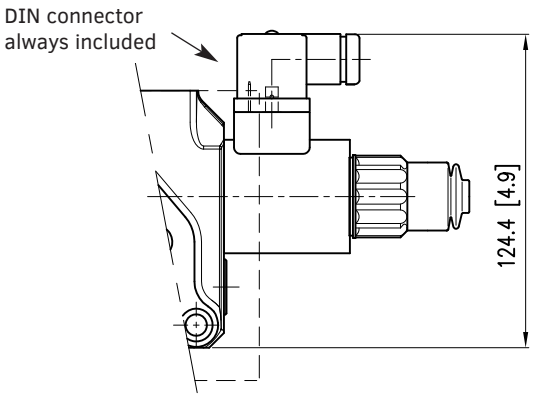
IP degree of electrical connection: IP65/IP67
IP degree of whole valve: IP 65

K7



DEUTSCH DT04 MALE
IP degree of electrical connection: IP65/IP67
IP degree of whole valve: IP 65

WK1

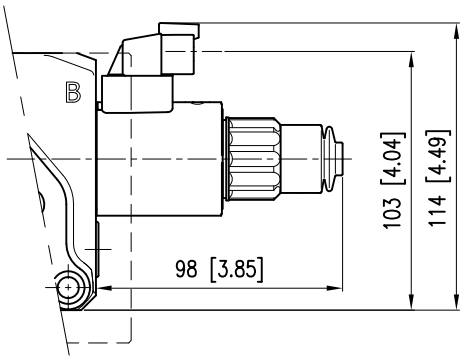


DIN 43650 (EN 175301-803)
Zinc-nickel plated coil.

IP degree of electrical connection: IP66
IP degree of whole valve: IP66

The pin for manual override is boot-protected (code B).

WK7



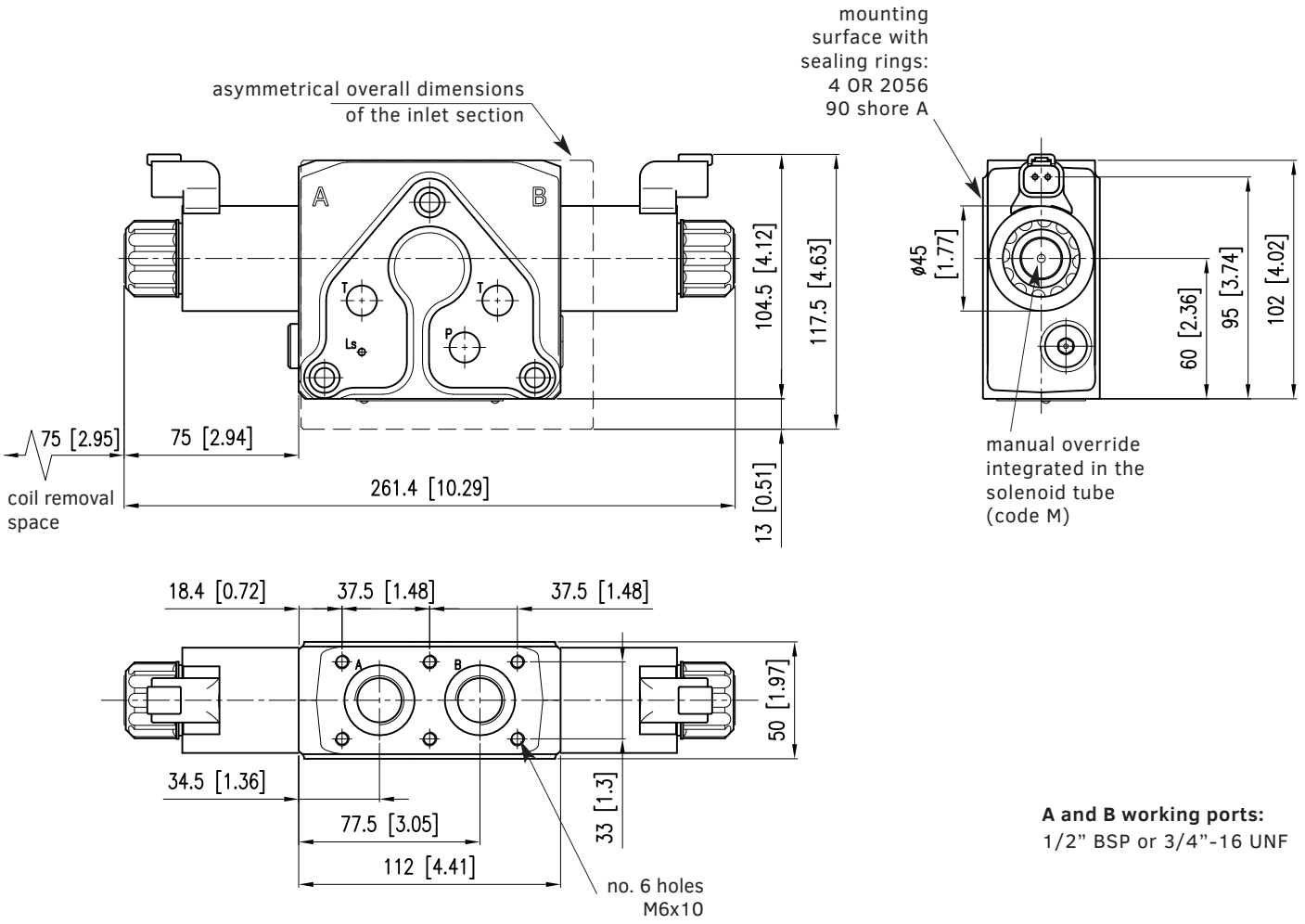
DEUTSCH DT04 MALE
Zinc-nickel plated coil.

IP degree of electrical connection: IP66/IP68/IP69
IP degree of whole valve: IP66/IP68/IP69
IP degree according to ISO 20653: IP69K

The pin for manual override is boot-protected (code B).

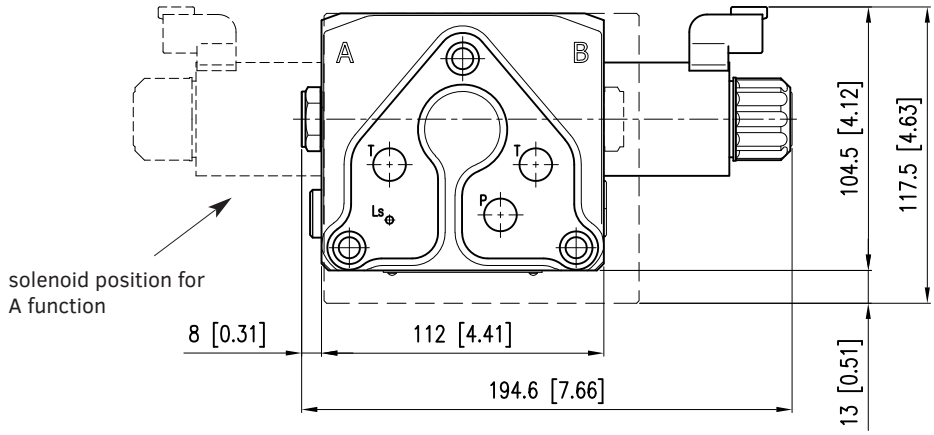
SLSE WORKING SECTION - DOUBLE SOLENOID (K7 COIL)

dimensions in mm [in]



A and B working ports:
1/2" BSP or 3/4"-16 UNF

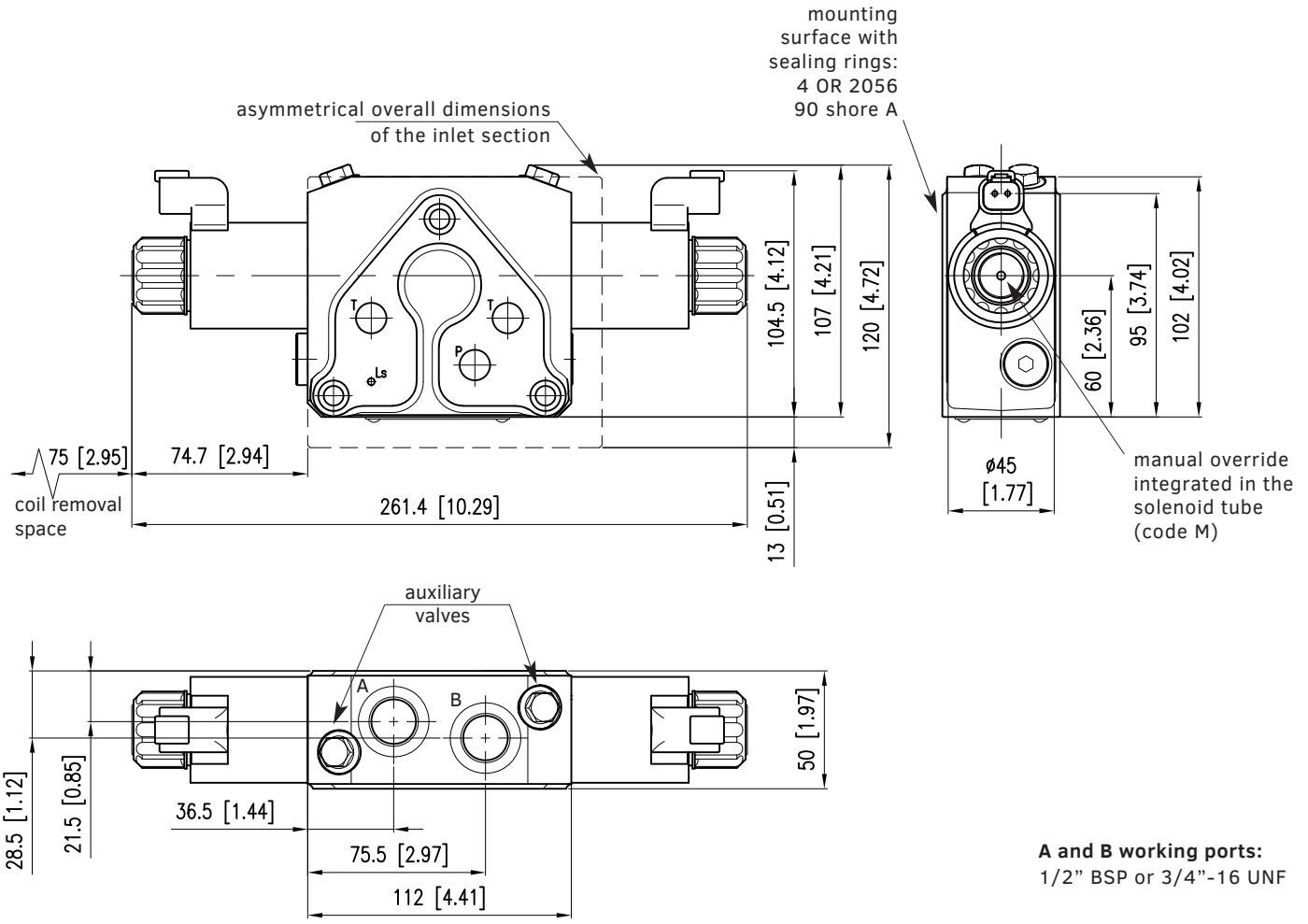
SLSE WORKING SECTION - SINGLE SOLENOID SIDE B (K7 COIL)



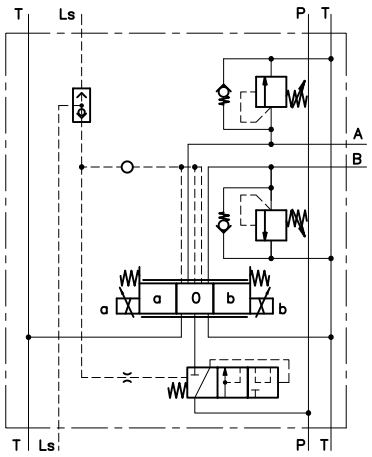
A and B working ports:
1/2" BSP or 3/4"-16 UNF

SLSE WORKING SECTION - WITH AUXILIARY VALVES (K7 COIL)

dimensions in mm [in]

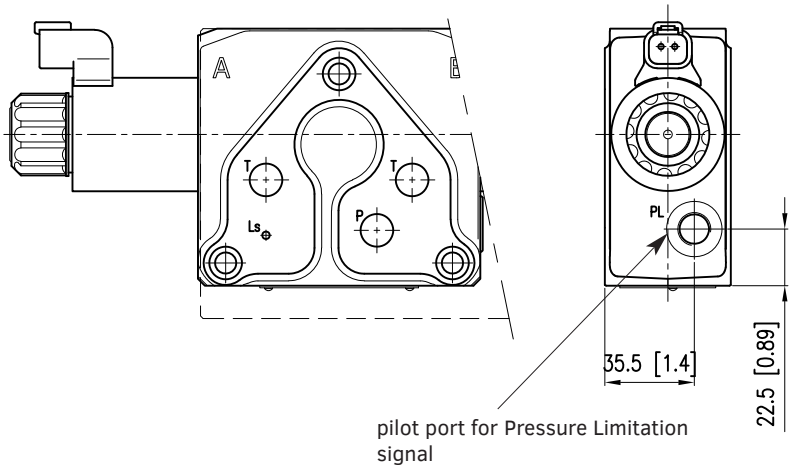


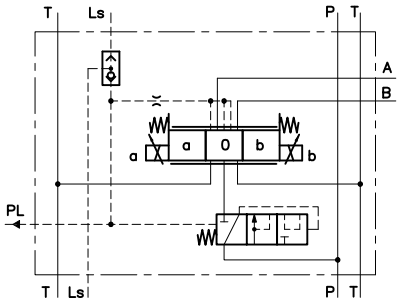
A and B working ports:
1/2" BSP or 3/4"-16 UNF



SLSE WORKING SECTION - WITH PILOT PORT FOR REMOTE PRESSURE LIMITATION (K7 COIL)

This special configuration has to be intended for use with a remote pressure control valve. The pilot signal coming from this port is from both the working ports, A and B.

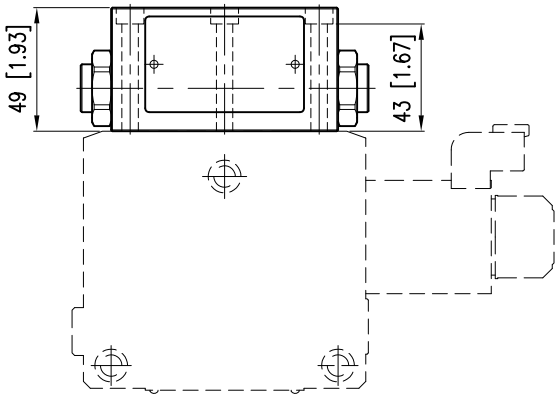


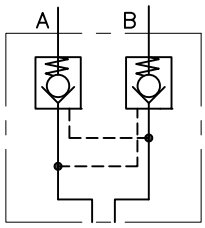


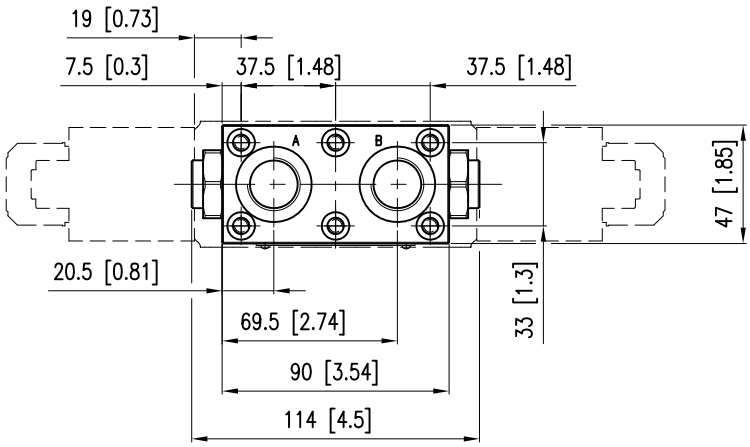
A and B working ports:
1/2" BSP or 3/4"-16 UNF

PL port:
1/4" BSP or
9/16-18 UNF -UN-2B

FLANGEABLE TOP ELEMENT SLSZ - PCD - A - V - 1







A and B working ports:
1/2" BSP

cracking pressure: 3 bar
fixing screws: M6x50

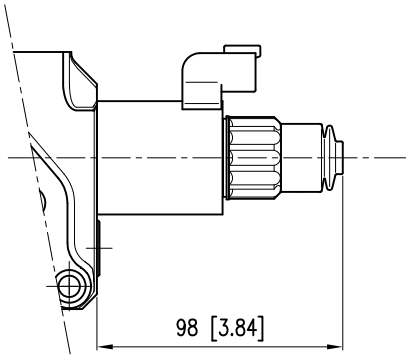
Aluminium
p max = 230 bar
Q max = 30 l/min

The standard valve has override pins integrated in the tube (code M). The operation of this control must be executed with a suitable tool, carefully so as not to damage the sliding surface.

Further manual overrides are available, entering the proper code in the model number.

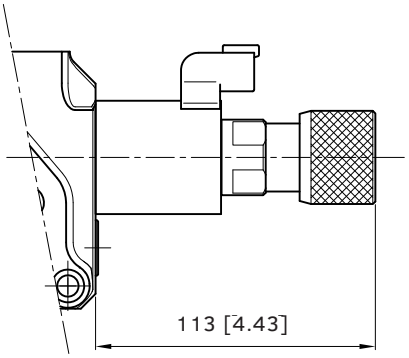
OVERRIDE PIN INTEGRATED IN THE TUBE, BOOT PROTECTED

Code B



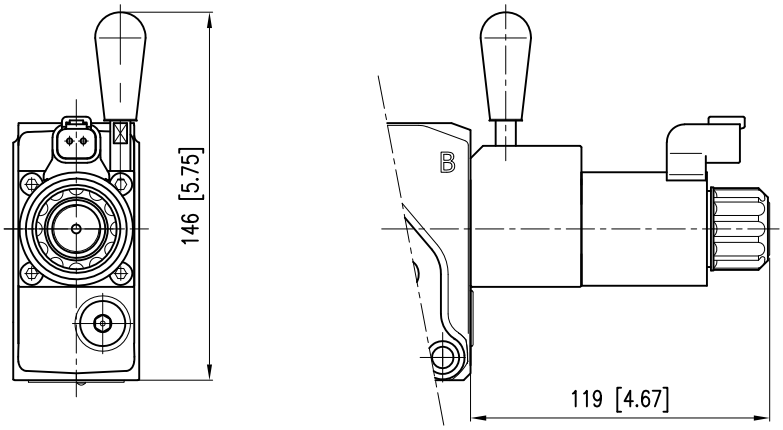
KNOB, TURNING

Code K



HAND LEVER:

Code L

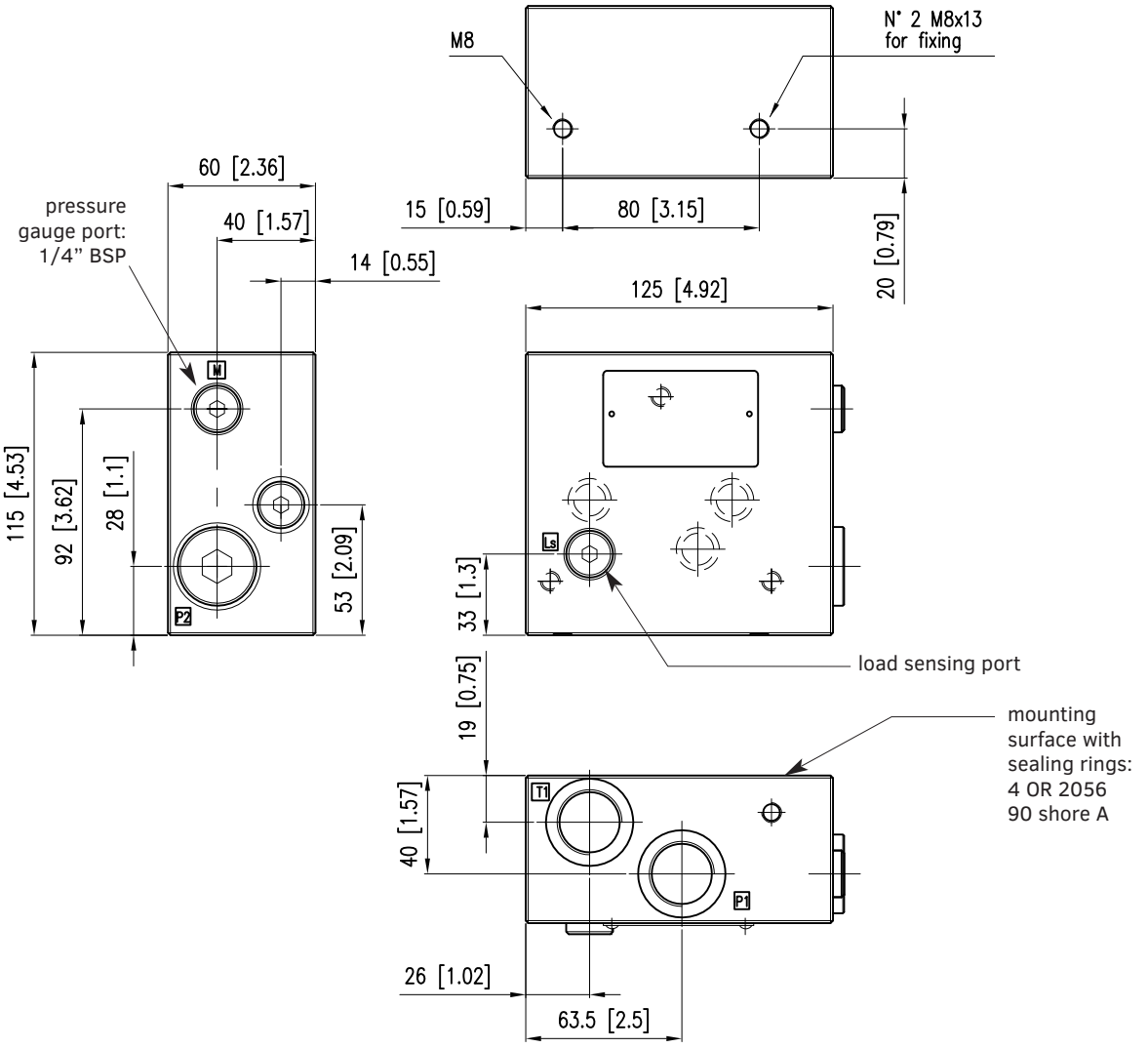


Valves with 'WK' coils are equipped with the boot for solenoid tube protection.

The lever device is placed on the B side.

BASIC INLET SECTION SLSX - B3S - V - 1

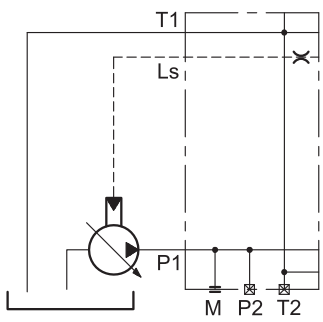
dimensions in mm [in]



P1, P2, T1 ports:
3/4" BSP

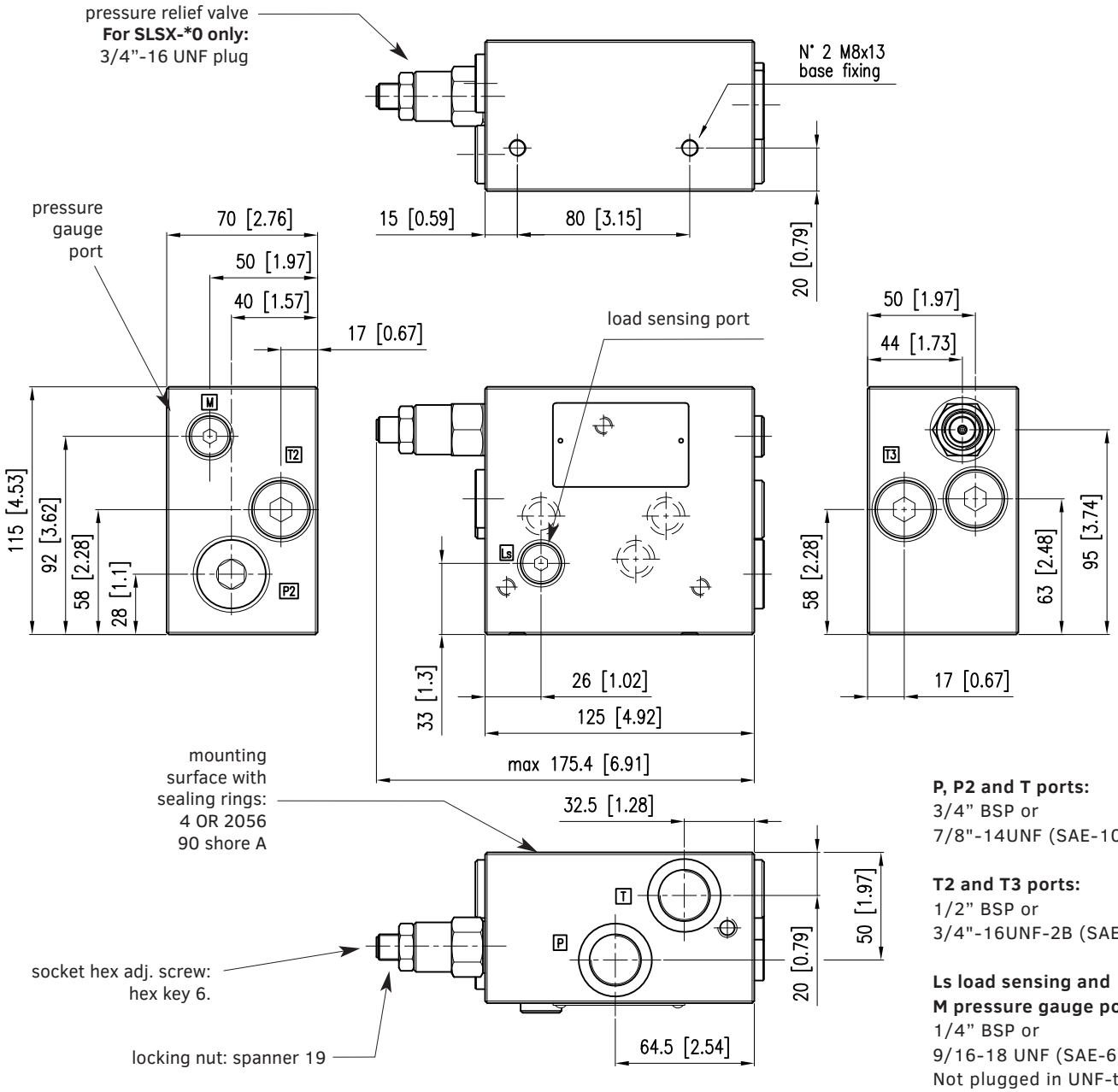
Ls load sensing port:
1/4" BSP

SLSX-B3S-V-1



INLET SECTIONS WITH COMPENSATOR (BSPP VERSION SHOWN)

dimensions in mm [in]

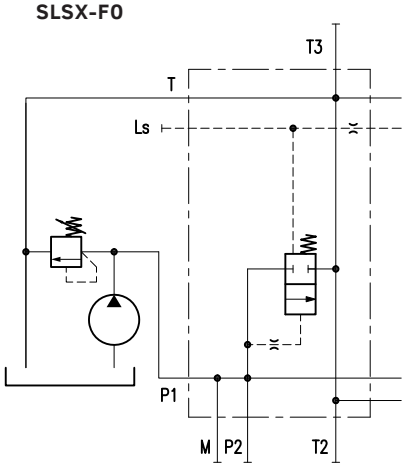


P, P2 and T ports:
3/4" BSP or
7/8"-14UNF (SAE-10)

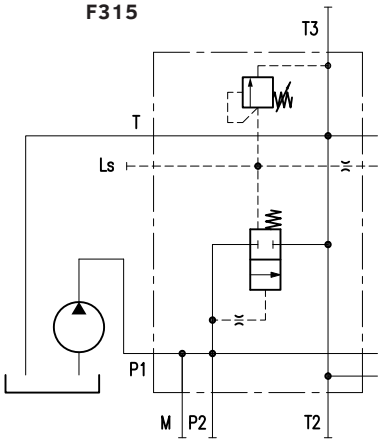
T2 and T3 ports:
1/2" BSP or
3/4"-16UNF-2B (SAE-8)

Ls load sensing and
M pressure gauge ports:
1/4" BSP or
9/16-18 UNF (SAE-6).
Not plugged in UNF-threaded versions

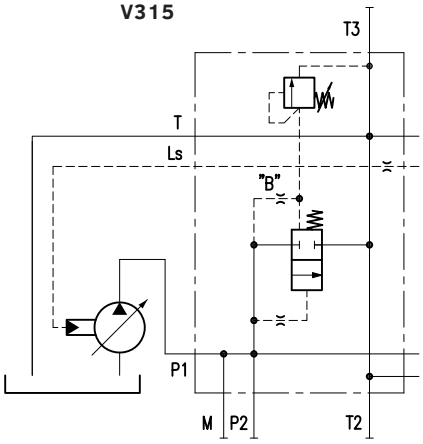
SLSX-F0



SLSX-F210
F315

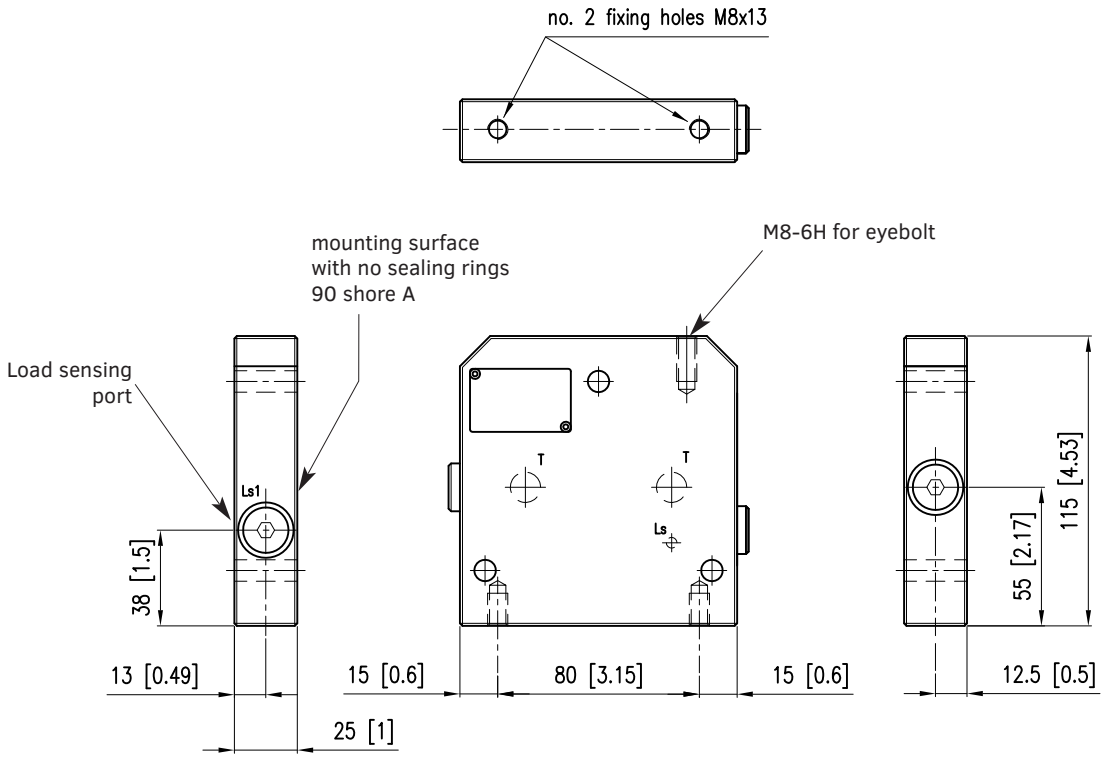


SLSX-V210
V315



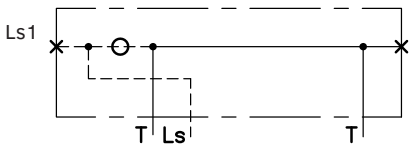
OUTLET SECTION SLSX - B1- 04S - V - 1

dimensions in mm [in]

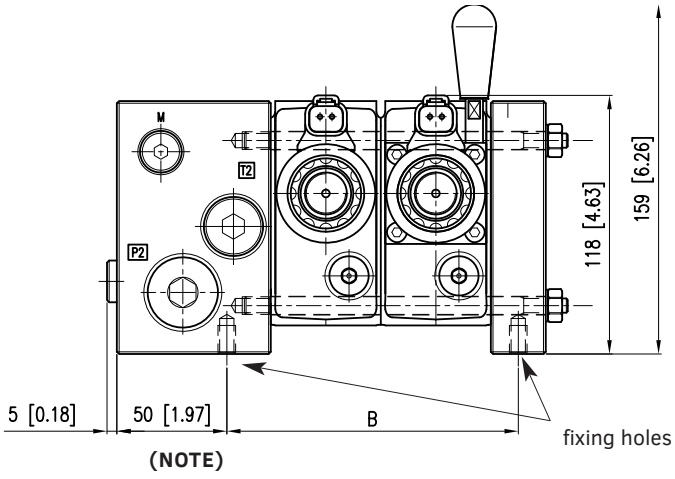


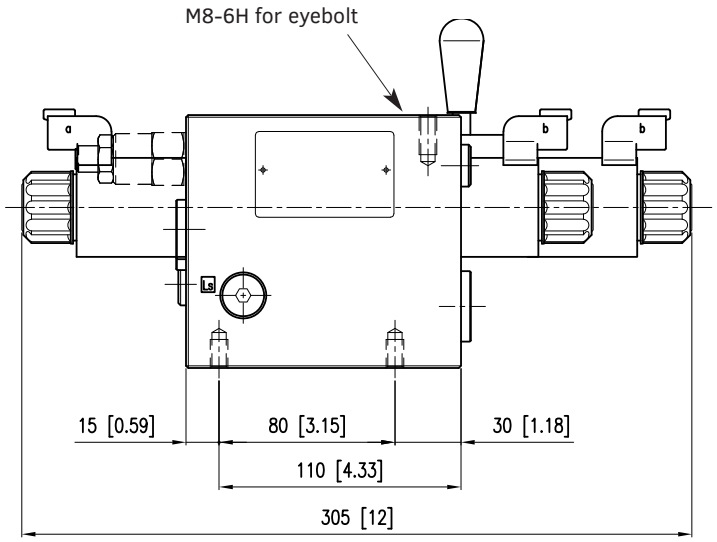
Ls load sensing port:
1/4" BSP

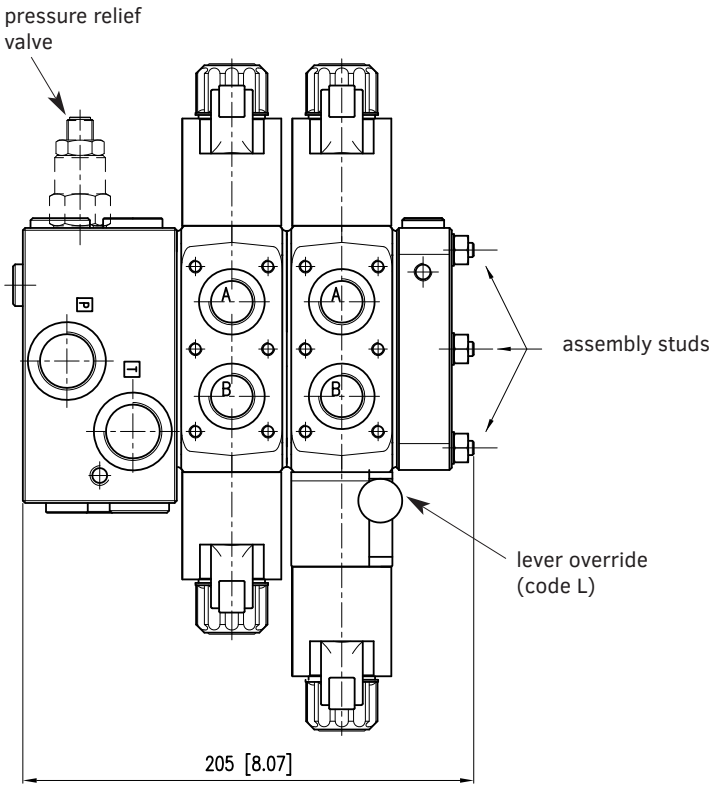
SLSX-B1-04S



dimensions in mm [in]







Sectional valves	A (**NOTE**)	B
2	212	132,5
3	262	182,5
4	312	232,5
5	362	282,5
6	412	332,5
7	462	382,5
8	512	432,5

NOTE: for the SLSX-B3S-V-1, this dimension is 10 mm shorter.

ASSEMBLY KIT
The assembly kit includes

no. 3 studs,
no. 3 self locking nuts
no. 3 washers

All parts zinc-coated.

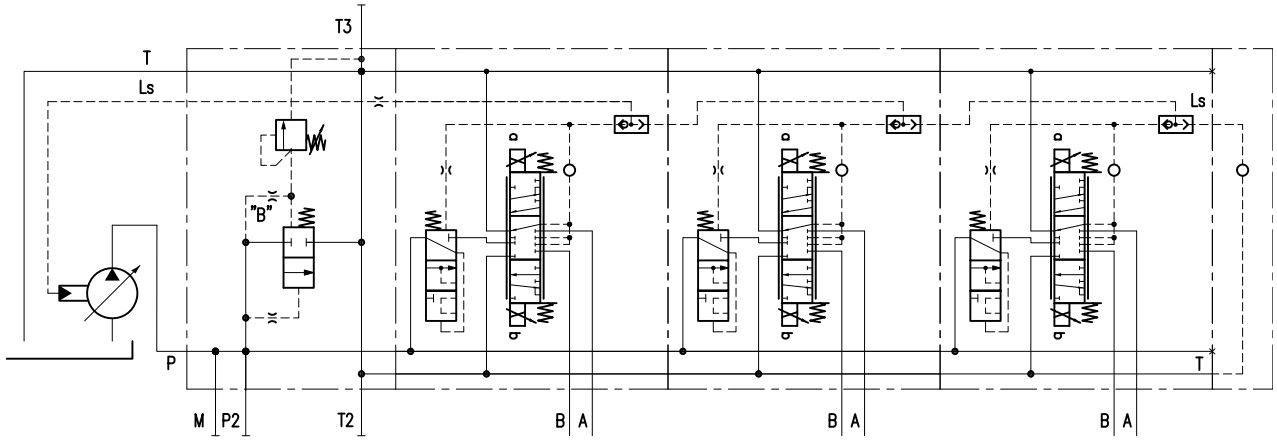
Please use these codes to order the kit:

Sectional valves	Code
2	3404150010
3	3404150011
4	3404150012
5	3404150013
6	3404150014
7	3404150015
8	3404150016

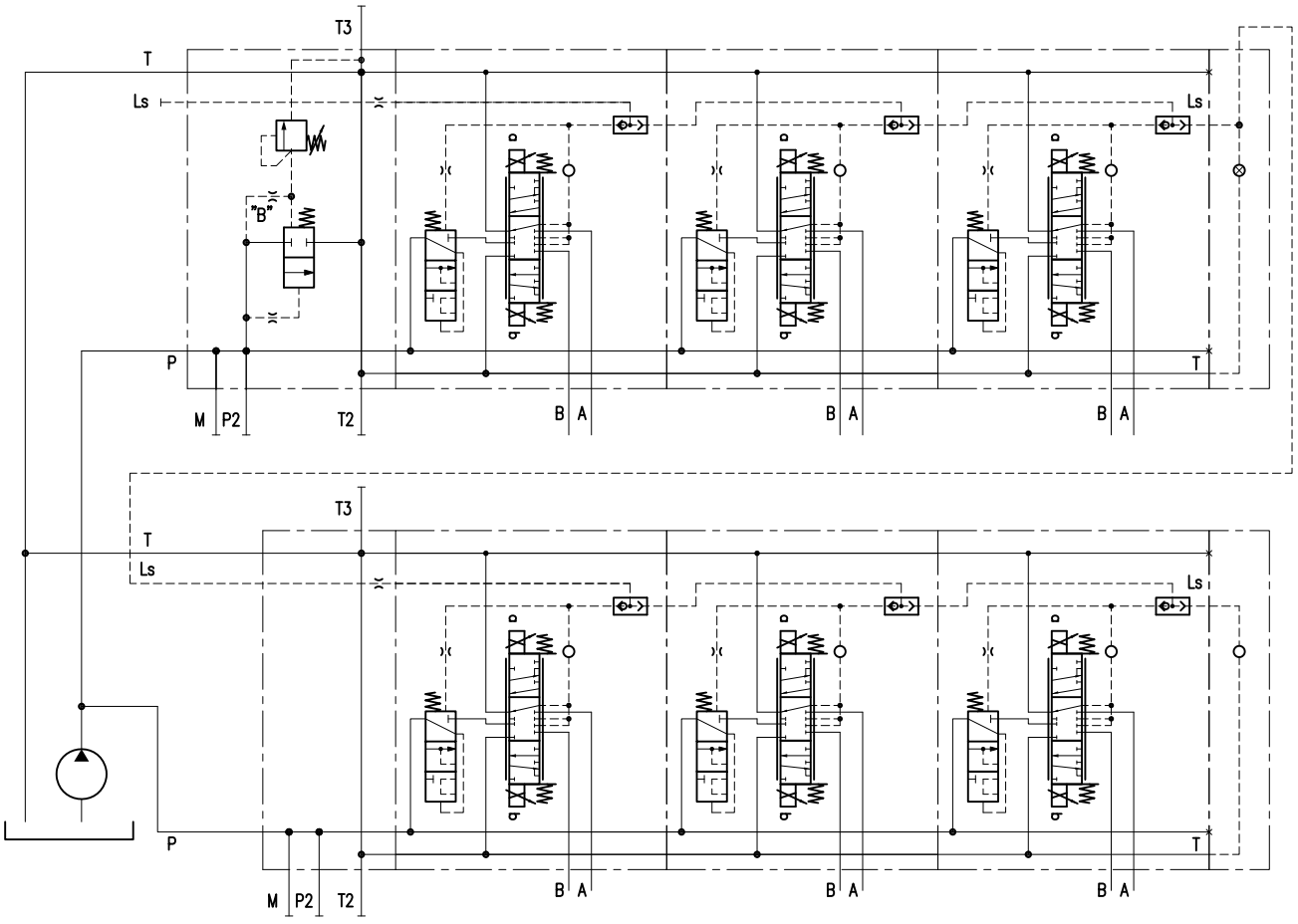
Tightening torque: 25 Nm

CIRCUIT EXAMPLES

SLSE sectional assembly with pressure relief valve for variable displacement pumps.



Two SLSE sectional valve assemblies connected in parallel for the pump line and in series for the LS (Load Sensing) line.



IP DEGREE TIPS

The technical reference standard for IP rating is IEC 60529, which classifies and defines the degree of protection provided by equipment and electrical enclosures against intrusion.

The first digit (6) concerns the protection from solid particles (body parts to dust).

The second digit refers to protection against liquid ingress. It indicates three different types of atmospheric agents from which protection is provided:

Values from 1 to 6 → water jets.
Values 7 and 8 → immersion.
Value 9 → high pressure, high temperature water jets.

This means IP66 includes all lower levels. IP68 includes IP67 but not IP66 or lower. IP69 does not include any of the previous levels. If a device meets multiple protection levels, both must be listed, separated by a slash. (E.g. equipment rated for both temporary immersion and water jets: IP66/IP68)

INSTALLATION

These valves can be installed in any position without impairing correct operation.

Ensure that there is no air in the hydraulic circuit.

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CONTACT INFORMATION

EMEA

GERMANY	Hydreco Hydraulics GmbH, Helmstedt (NI)	+49 535155860	info@hydreco.de
ITALY	Hydreco Hydraulics Italia Srl, Vignola (MO)	+39 059 7700411	sales-it@hydreco.com
ITALY	Hydreco Hydraulics Italia Srl, Parma (PR)	+39 0521 1830520	sales-it@hydreco.com
ITALY	Hydreco Srl, San Cesario S/P (MO)	+39 059 330091	cylinders@hydreco.com
NORWAY	Hydreco Hydraulics Norway AS, Nittedal	+47 22909410	post-no@hydreco.com
UK	Hydreco Hydraulics Ltd, Poole, Dorset	+44 (0) 1202 627500	info-uk@hydreco.com

AMERICAS

NORTH/LATIN	Hydreco Inc / Continental Hydraulics Inc, Shakopee (MN)	+1 952 895 6400	sales@conthyd.com

APAC

AUSTRALIA	Hydreco Hydraulics Pty Ltd, Seven Hills (NSW)	+61 2 9838 6800	sales-au@hydreco.com
AUSTRALIA	Hydreco Hydraulics Pty Ltd, Welshpool (WA)	+61 8 9377 2211	reception-wa@hydreco.com
INDIA	Hydreco Hydraulics India Private Ltd, Bangalore	+91 80 67656300	sales-in@hydreco.com

QUALITY SYSTEM CERTIFICATION DNV ISO 9001

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