



Directional Valve Size 10 WL 4.10

Installation dimensions ISO 4401/DIN 24340 A10

Functional Description

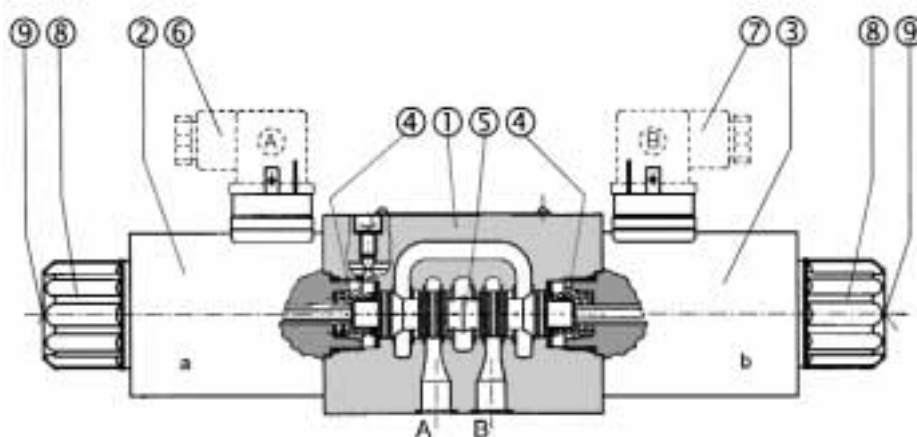
The directional control valves WL 4/10 consist of housing (1), control spool (5), centering springs (4) and operating solenoids (2, 3).

The three-position directional valves are fitted with two solenoids and two springs. The two-position directional valves have one solenoid and one return spring.

The operating solenoids are DC solenoids and are supplied through connectors A, B (6, 7) without rectifiers. For AC supply the solenoids are provided with rectifiers, which are integrated directly into the connectors A, B (6, 7). The connectors do not belong to delivery and must be ordered

separately. By loosening the fixing nut (8), the solenoid can be turned on its axis and fixed in three positions 90° apart. Provided that the pressure in T-port does not exceed 363 psi (25 bar), the spool of the valve can be repositioned by manual override (9).

The basic surface treatment of the valve housing (1) is phosphate coated, whereas the operating solenoids (2, 3) are zinc coated.

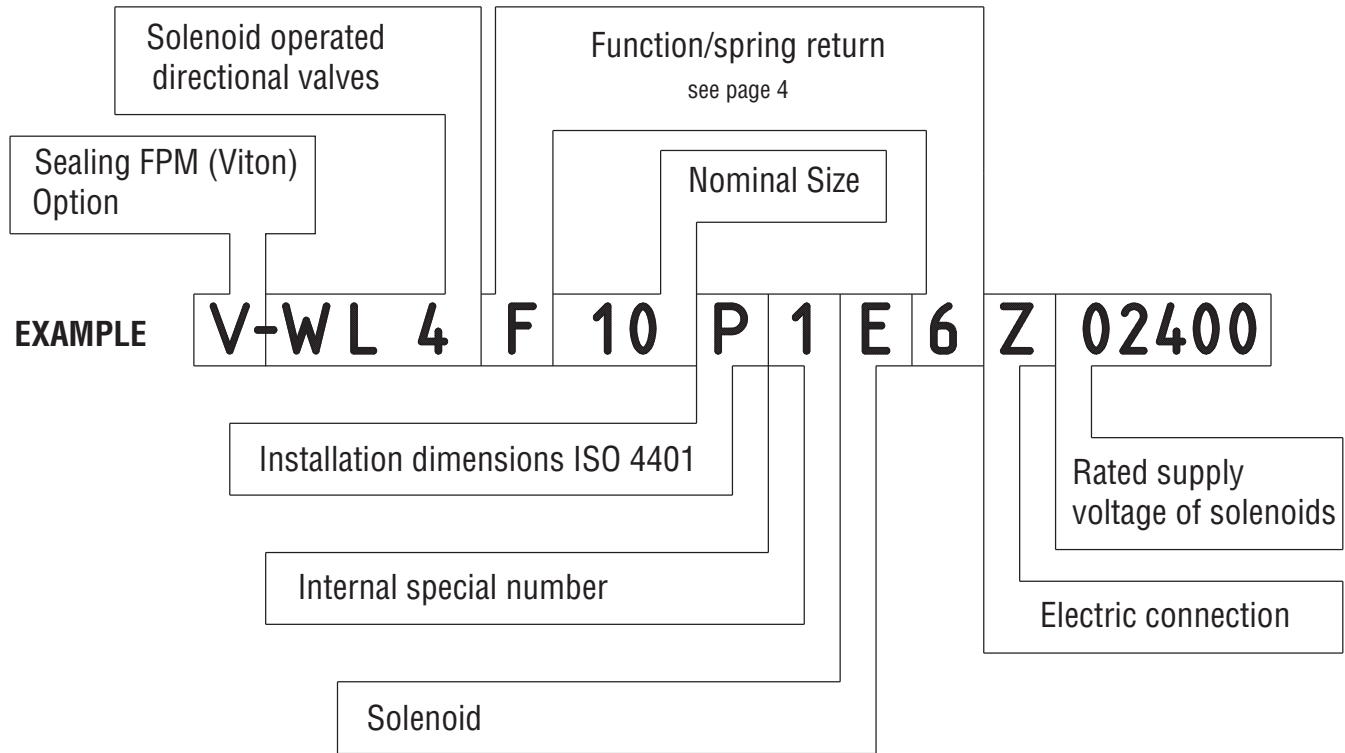


Technical Data

Nominal size	10	Permissible rated voltage variation	AC: -15 ... +5% DC: -10 ... +6%
Maximum flow	see p-Q characteristics	Max. switching frequency	15000 1/h
Max. operating pressure at ports P, A, B	4641 psi (320 bar)	Switching time, on; at v = 166 SUS (35 mm ² /s)	90 ... 160 ms
Max. operating pressure at port T	3045 psi (210 bar)	Switching time, off; at v = 166 SUS (35 mm ² /s)	70 ... 100 ms
Pressure losses	see Δp-Q characteristics	Duty cycle	100 %
Hydraulic fluid	Hydraulic oils of DIN 51254/25 other Hydraulic fluids on request	Service life	10 ⁷ cycles
Fluid temperature range (NBR)	-22 ... +176 °F (-30 ... +80 °C)	Enclosure type to DIN 40 050	IP 65
Ambient temperature max.	... +122 °F (... +50 °C)	Weight-valve with 1 Solenoid valve with 2 Solenoids	11.25 lb (5.1 kg) 14.55 lb (6.6 kg)
Viscosity range	98 ... 1840 SUS (20 ... 400 mm ² /s)	Mounting position	optional
Maximum degree of fluid contamination	Class 18/15 to ISO 4406. Therefore we recommend a filter with a retention rate β ₁₀ ≥ 75.		

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Ordering code



Solenoid	
E	Coil of solenoid equipped with standard plug-in electrical connector DIN 43 650
EG	Coil of solenoid with integrated rectifier equipped with standard plug-in electrical connector DIN 43 650

Rated supply voltage of solenoids	
01200	12V DC / 3,17 A
02400	24V DC / 1,73 A
11550	115V AC / 0,41 A / 50(60) Hz
23050	230V AC / 0,20 A / 50(60) Hz
other voltages on request	

Electric connection		DIN 43 650, Protection IP 65, (DIN 40 050)
Y	without electrical plug	
Z	with electrical plug (Pg 11)	
L	with electrical plug and signal lights in conduit adapter (Pg 11)	

Directional valves with damping on request: T2 = nozzle Ø 0,6
T3 = throttle screw

Directional valves with manual override on request: N2 = covered with rubber protective.

Symbols

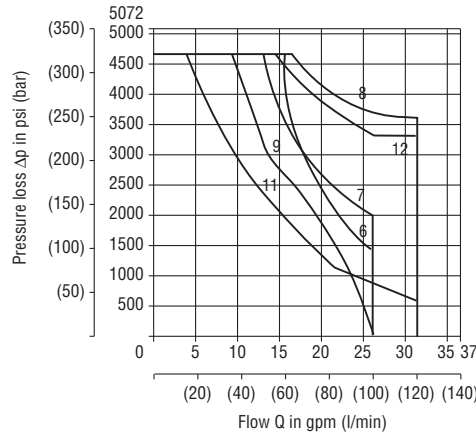
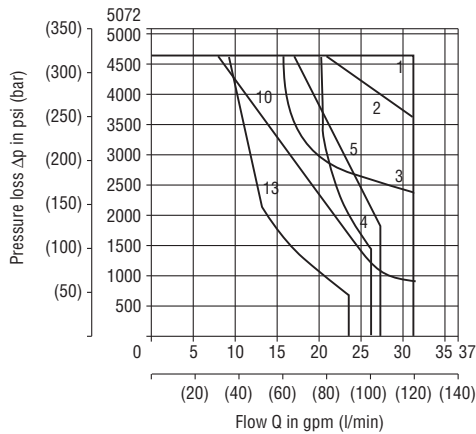
Function	Spring return	Symbol	Function	Spring return	Symbol	Function	Spring return	Symbol
F ...6			AP...0*			F ...1		
EN...6 **			AN...0**			BP...1 *		
SE...6			U ...0			BN...1 **		
KF...6			KF...0			EN...1 **		
SF...6			SF...0			SE...1		
AE...6			EN...0**			F ...4		
HF...6			F ...0			AF...1		
FV...6			F ...8			HE...1		
HE...6			SE...0			F ...31		
AF...6			AF...0			AE...1		
			AE...0			HF...1		
			HF...0			SF...1		

* P ≙ Overlap (positive)
 ** N ≙ Overlap (negative)

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p-Q Characteristics Measured at $v = 166 \text{ SUS (35 mm}^2/\text{s)}$ und $t = 104 \text{ }^\circ\text{F (40 }^\circ\text{C)}$

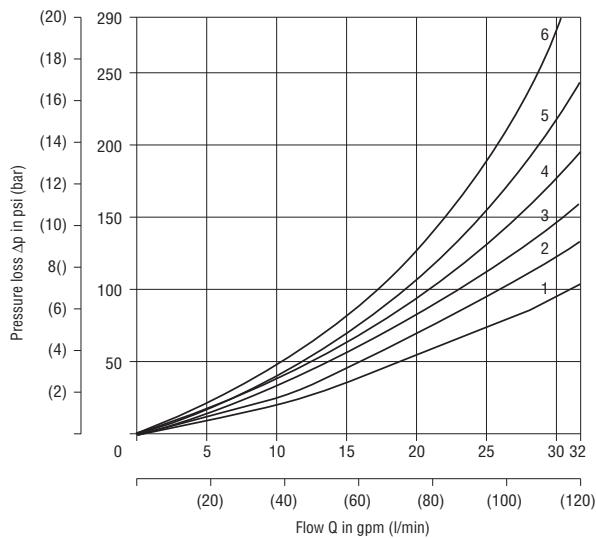
Operating limits for maximum hydraulic power transferred by the directional valve. For respective spool type – see Functional Symbols



F ...6	3	F ...8	1
EN ...6	4	SE ...0	2
SE ...6	2	AF ...0	5
KF ...6	1	AE ...0	9
SF ...6	7	HF ...0	5
AE ...6	9	F ...1	3
HF ...6	5	BP ...1	6
FV ...6	7	BN ...1	8
HE ...6	9	EN ...1	4
AF ...6	5	SE ...1	2
AP ...0	6	F ...4	1
AN ...0	8	AF ...1	5
U ...0	11	HE ...1	9
KF ...0	1	F ...31	1
SF ...0	7	AE ...1	9
EN ...0	4	HF ...1	5
F ...0	3	SF ...1	7

Δp-Q Characteristics Measured at $v = 166 \text{ SUS (35 mm}^2/\text{s}^{-1})$ und $t = 104 \text{ }^\circ\text{F (40 }^\circ\text{C)}$

Pressure loss Δp related to flow rate.

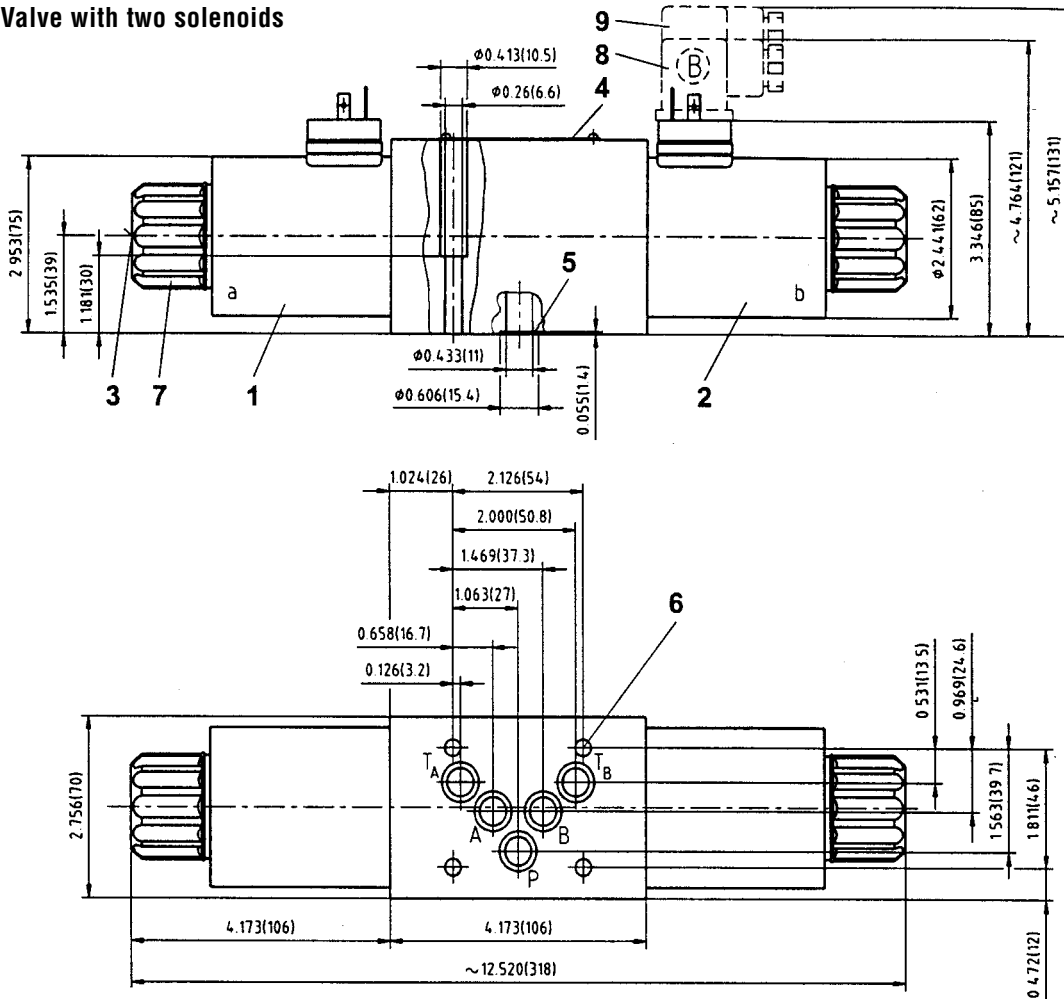


	P-A	P-B	A-T	B-T	P-T
F ...6	1	1	2	2	-
EN ...6	4	3	4	5	3
SE ...6	1	1	2	2	1
KF ...6	1	1	2	2	-
SF ...6	1	1	1	1	-
AE ...6	1	1	1	2	2
HF ...6	1	1	2	2	-
FV ...6	1	6	2	-	-
HE ...6	1	1	1	2	2
AF ...6	1	1	2	2	-
AP ...0	2	1	2	3	-
AN ...0	1	1	2	3	-
U ...0	1	1	-	-	-
KF ...0	-	1	2	-	-
SF ...0	-	1	1	-	-
EN ...0	4	-	-	5	1
F ...0	-	1	2	-	-
F ...8	1	-	-	2	-
SE ...0	-	1	2	-	1
AF ...0	-	1	2	-	-
AE ...0	1	1	1	-	2
HF ...0	-	1	2	2	-
F ...1	1	-	-	2	-
BP ...1	2	1	2	3	-
BN ...1	1	1	2	3	-
EN ...1	-	4	5	-	1
SE ...1	1	-	-	2	1
F ...4	-	1	2	-	-
AF ...1	1	-	2	2	-
HE ...1	1	-	-	2	2
F ...31	1	4	2	3	-
AE ...1	1	-	-	2	2
HF ...1	1	-	-	2	-
SF ...1	1	-	1	1	-

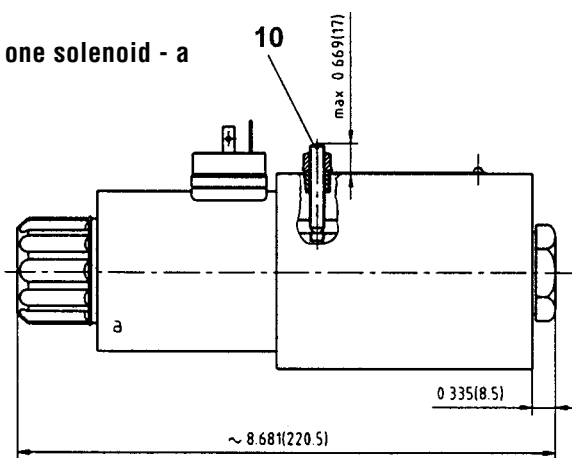
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Valve dimensions Dimensions in inches and milimetres (in brackets)

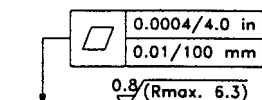
Valve with two solenoids



Valve with one solenoid - a



- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square Ring 12,42 x 1,68 mm (5 pcs) supplied in delivery packet
- 6 4 mounting holes
- 7 Fixing nut of the solenoid
- 8 Connector plug to DIN 43 650
- 9 Distance required to remove plug
- 10 Throttle screw

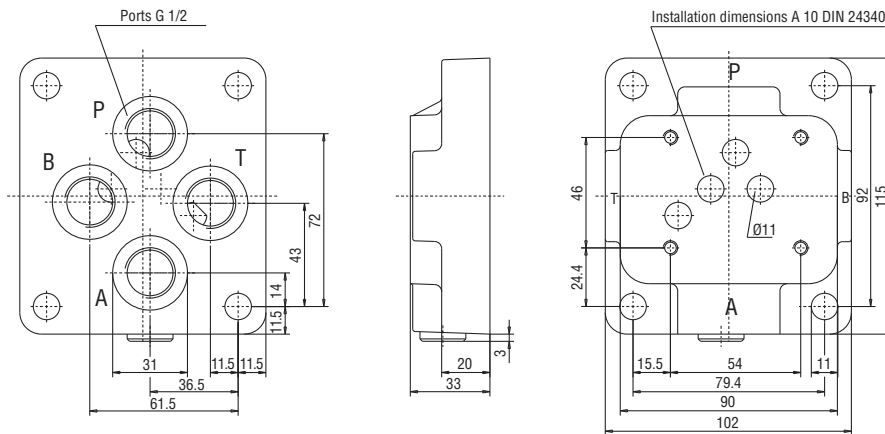


Required surface finish to interface.

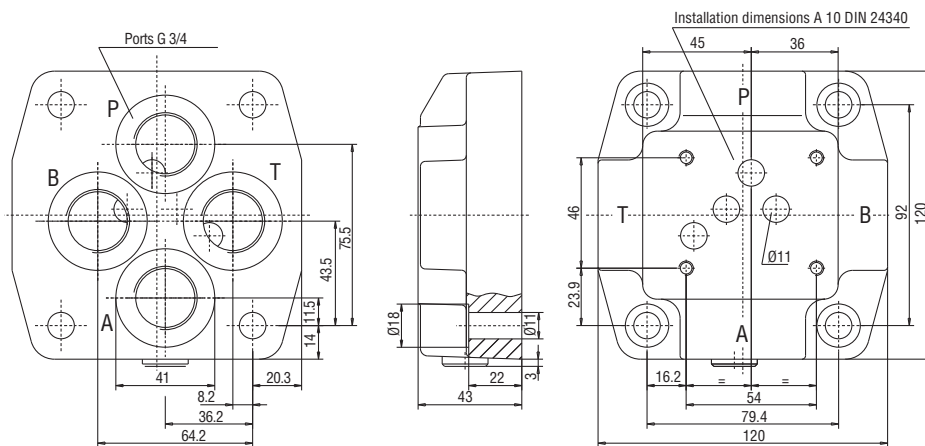
Single-subplates for WL 4/10 installation dimensions DIN 24340 A10

Ordering code

Size		internal special number	
MWL 4	.	R	.
10	.	3	.
Ports G 1/2	10	3	Code no.
Ports G 3/4	12	4	0 All 4 ports open
			1 Port A closed
			2 Port B closed
			3 Port P closed
			4 Ports A+B closed
			5 Ports B+P closed
			6 Ports A+P closed
			7 Ports A+T closed
			8 Ports B+T closed
			9 Port T closed



Ordering code: **MWL 4 10 R3A .**



Ordering code: **MWL 4 12 R4A .**

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WL4.10.e.05.2000