

## 4/2, 4/3 WAY DIRECTIONAL VALVE KV-5KL

- NG 6
- Up to 350 bar [5 076 PSI]
- Up to 80 L/min [21 GPM]
- Connection diagram and connecting dimensions ISO 4401
- 5-chamber model with good spool guidance
- Optimized flow paths for low losses of pressure
- Low internal leakage
- Wet pin solenoid with interchangeable coil
- Manual emergency control
- Fulfil EMC (89/336/EEC)
- Packaging in carton box



KV-4/3-5KL-6

### Operation

Directional valves type KV with direct solenoid operation control the direction of the hydraulic medium flow.

A valve basically consists of a housing (1), one or two solenoids (2a, 2b), control spool (3) and return spring (4).

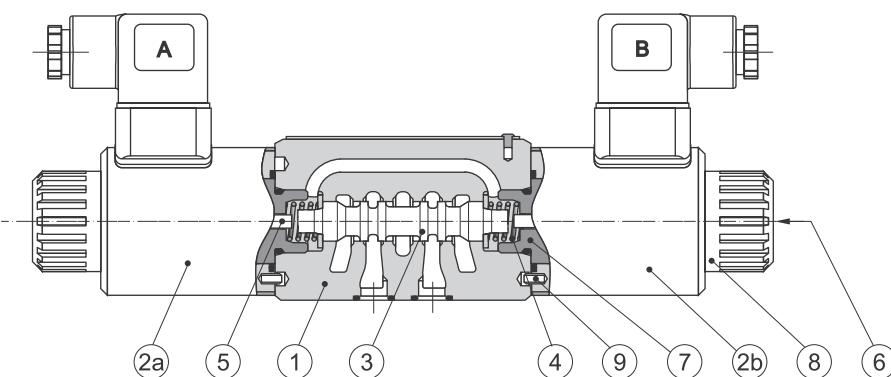
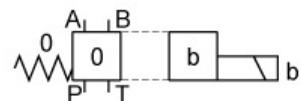
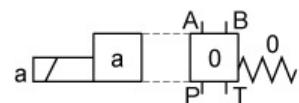
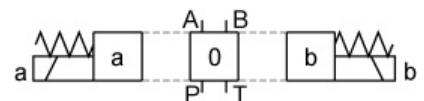
In 4/3 way directional valves the centre position of the spool is defined by 4 return springs which hold the spool in the neutral position. The change over to the operating position (a) or (b) is done by energizing the solenoids (2a/ 2b) respectively, whereby the solenoid plunger acts on the control spool (3) via the operating pin (5), thus clearing the corresponding flow ways and establishing relevant links between ports P, A, B and T. When the solenoid (2a/ 2b) is deenergized, the control spool (3) is returned to neutral position by the return spring (4). In 4/2 way directional valves the centre position of the spool is defined by return spring on the opposite side of the solenoid (2a or 2b).

Change-over of the control spool (3) can be done manually by pressing the pin (6) for emergency manual override in the solenoid core.

Solenoid coil is fastened to the solenoid core (7) by retaining nut (8). Position of the coil (orientation of the connector) is pre-defined by the positioning hole on the valve housing and by the fixation pin (9) on the coil.

### Hydraulic symbols

Spool types





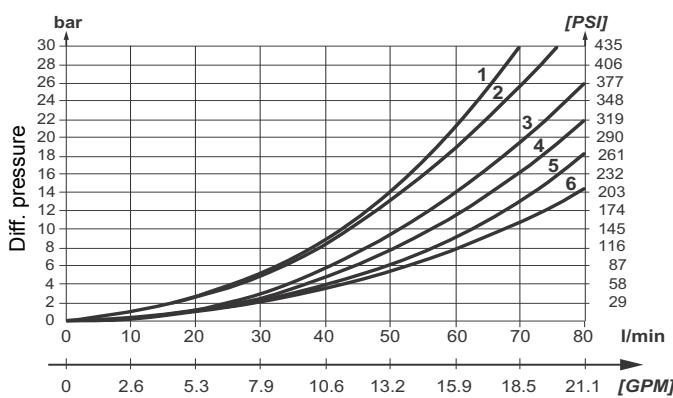
## Features

Hydraulic		
Size		
Flow rate	L/min [GPM]	see $\Delta P$ -Q curves
Operating pressure	Ports A, B, P Port T	bar [PSI] bar [PSI]
Viscosity range		mm <sup>2</sup> /s [SUS]
Oil temperature range		°C [°F]
Filtration	ISO 4406:1999	19/17/14
Mass	4/2 4/3	kg [lb] 1,6 [3.6] 2,2 [4.9]
Mounting position		Optional
Electrical		
Supply voltage	Direct Alternating	V 12, 24, 48 110, 230
Max. allowable voltage variation		+/- 10 %
Power	W	31
Switch-on time*	ms	200 to 260
Switch-off time*	ms	100 to 120
Switching frequency	1/h	15 000
Ambient temperature	°C [°F]	to 50 [122]
Coil temperature	°C [°F]	to 180 [356]
Duty cycle		Continuous
Protection class to EN 50529 / IEC 60529		
	- Connector EN 175301 - Connector AMP - Connector Deutsch	- IP65 - IP65 - IP69K

\* Measured on unloaded valve

## ΔP-Q Performance curves

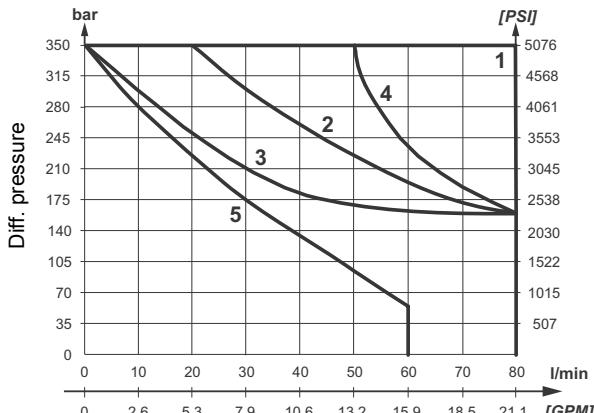
Measured at 50°C [122°F] and viscosity of 32 mm<sup>2</sup>/s [148 SUS].



Spool	Flow path				
	P-A	P-B	A-T	B-T	P-T
1	5	5	4	4	-
2	3	3	1	1	1
3	6	6	3	3	3
6	3	3	4	4	-
51A, 51B	4	4	2	2	-
41A, 41B	4	4	-	-	-

## ΔP-Q Operating limits

Measured at 50°C [122°F] and viscosity of 32 mm<sup>2</sup>/s [148 SUS].



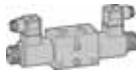
Spool	Curve
1	1
2	2
3	3
6	4
51A, 51B	1
41A, 41B	5

The operating limits of the valve are determined at a voltage 10% below the nominal rating. The curves refer to application with symmetrical flow throw the valve (P-A and B-T). In the case of asymmetric flow (e.g. one part not used) reduced values may result.

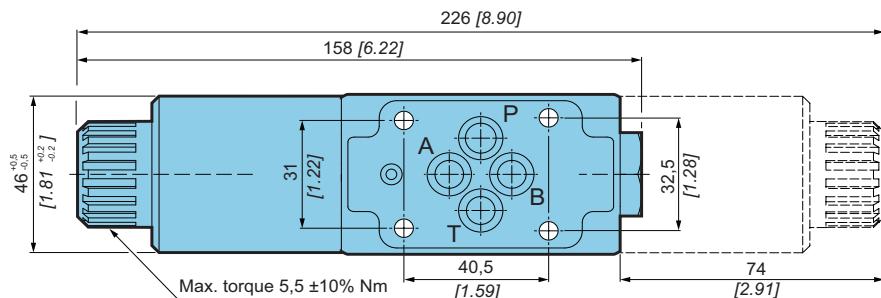
Mechanically operated

Hydraulically operated

Electrically operated

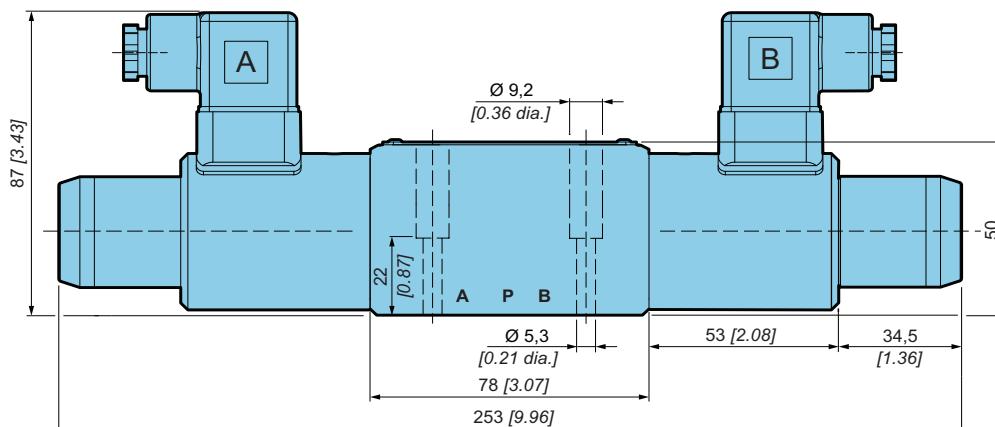


## Dimensions



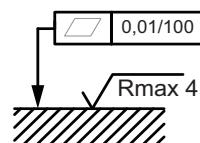
KV-4/2-5KL-6

Connection diagram and connecting dimensions to ISO 4401.



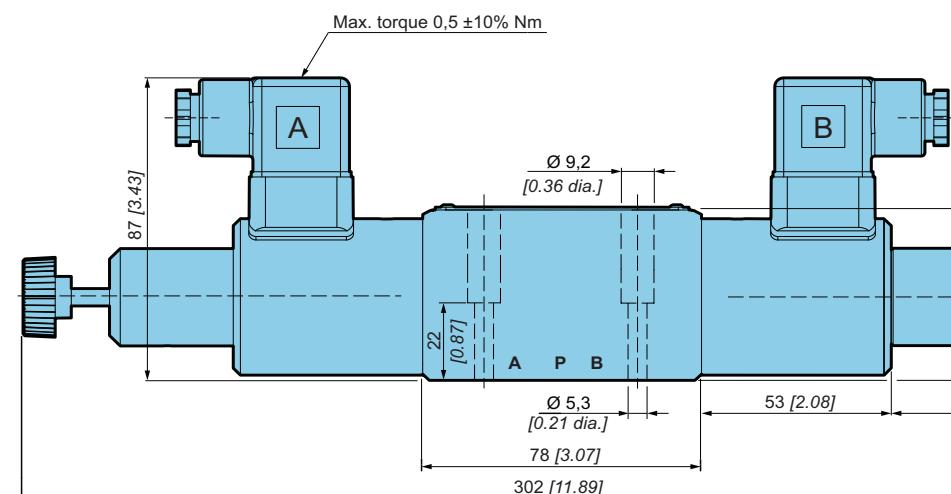
KV-4/3-5KL-6-G...

Manual override with rubber cover



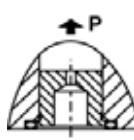
KV-4/3-5KL-6-C...

Lockable manual override



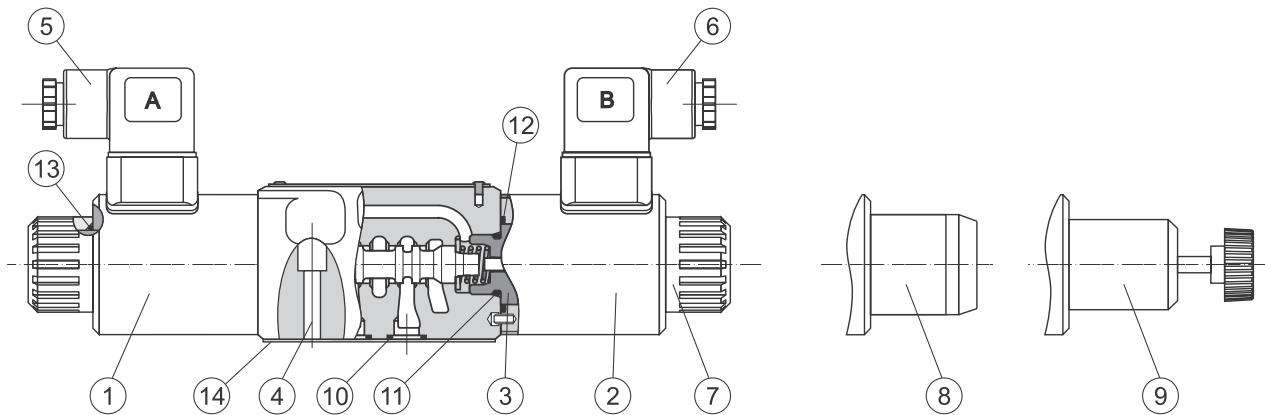
## Cartridge throttle

If flow rates greater than permissible occur during change-over, a cartridge throttle must be fitted into P-line of the directional valve. (option D08/D10/D12 in the model code)

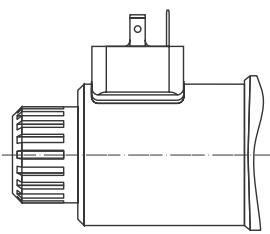




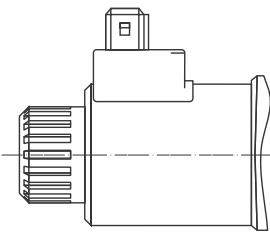
## Valve assembly- spare parts



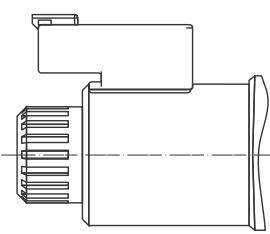
EN 175301-803 connector



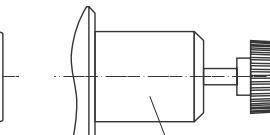
AMP Junior timer connector



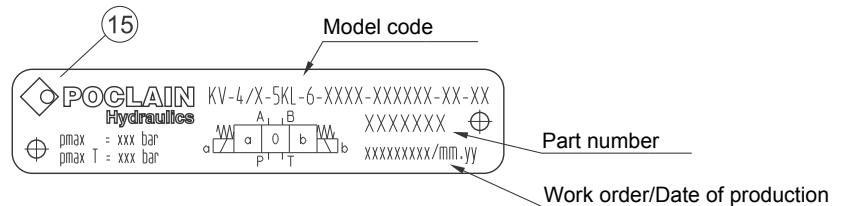
Deutsch connector



Without coil



Mechanically operated



Hydraulically operated

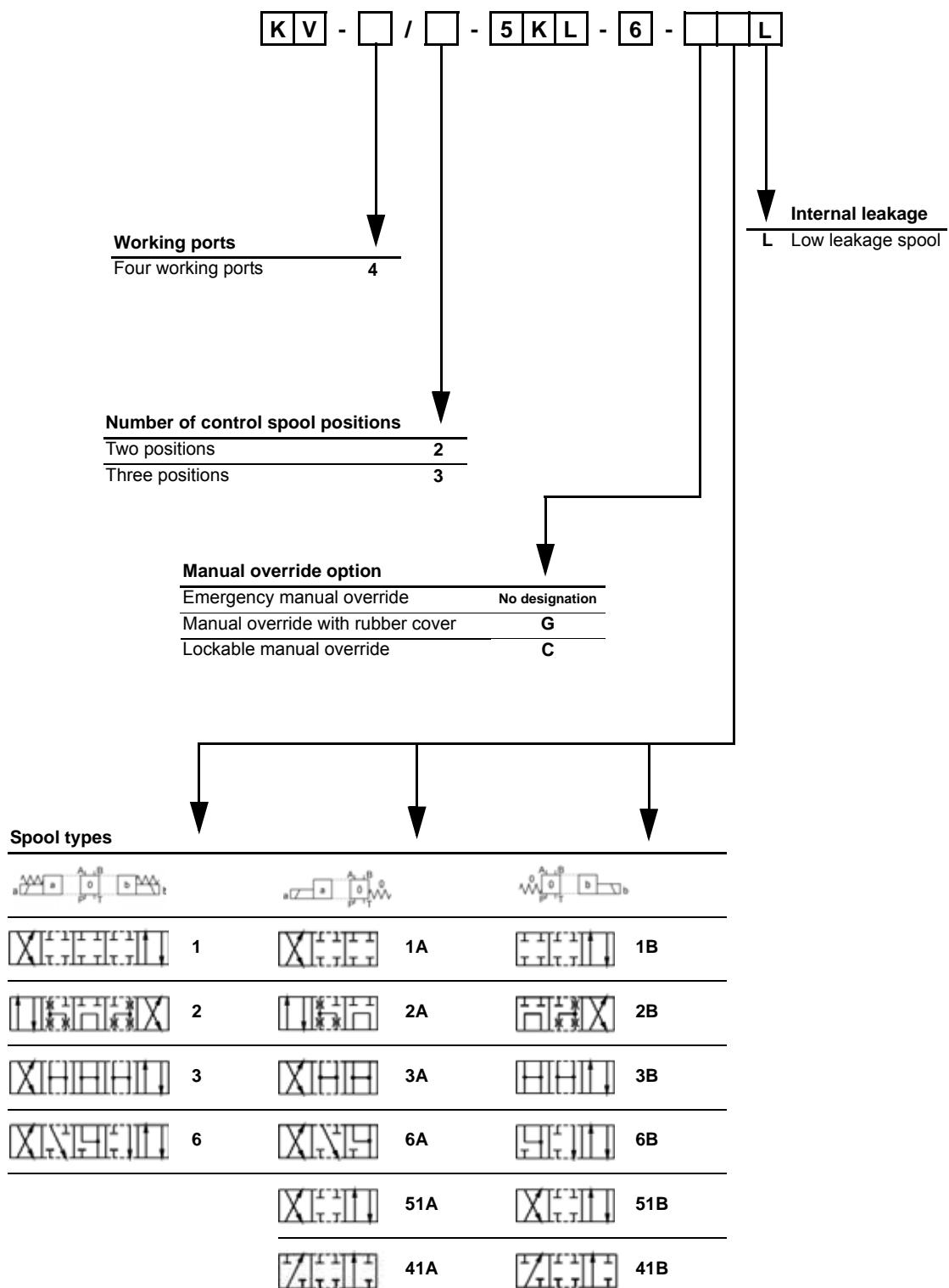
1. Solenoid coil "a" - Type **MR-045-O** (by default) or type **SR-045-O** (option S1 in model code)
2. Solenoid coil "b" - Type **MR-045-O** (by default) or type **SR-045-O** (option S1 in model code)
3. Solenoid core - Type **MR-045-O** (by default) or type **ACTUATOR SR-045** (option S1 in model code)
4. Fixing screws 4 pcs **M5x30 to ISO 476210.9**, not supplied with the valve; must be ordered separately  
Required tightening torque: 9°/° 10% Nm - steel tapped holes, 7°/° 10% Nm - aluminium tapped holes
5. Plug-in connector EN 175301-803 "a" - grey - Type **MR-K-A**
6. Plug-in connector EN 175301-803 "b" - black - Type **MR-K-B**
7. Retaining nut - Type **MR-045-M** (by default) or type **SR-045-M** (option S1 in model code)
8. Retaining nut for manual override with rubber cover - Type **MR-045-M-G** (by default) or type **SR-045-M-G** (option S1 in model code)
9. Retaining nut for lockable manual override - Type **MR-045-M-C** (by default) or type **SR-045-M-C** (option S1 in model code)
10. **O-ring FI 9,25x1,78**
11. **O-ring FI 17x2**
12. **O-ring FI 26x2**
13. **O-ring FI 22x1,5**
14. Protection plate
15. Nameplate

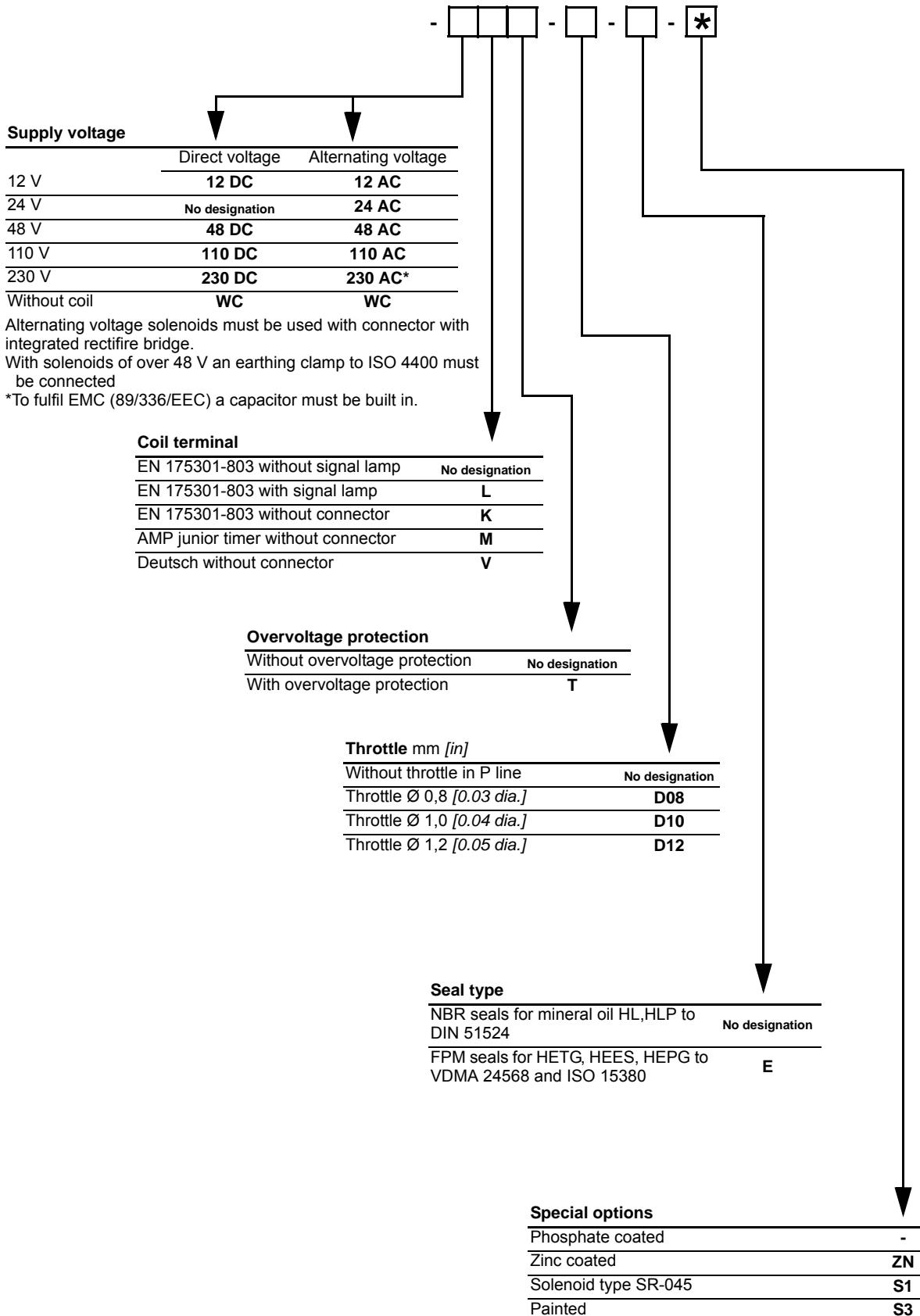
Detail technical data regarding the solenoids and Model codes for ordering are available in catalogue chapter SOLENOIDS.

Electrically operated



## Model code





Mechanically operated

Hydraulically operated

Electrically operated