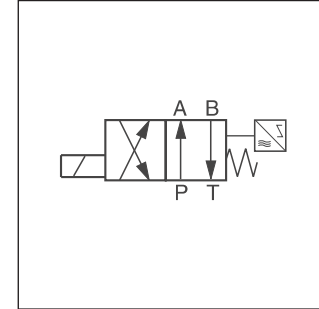
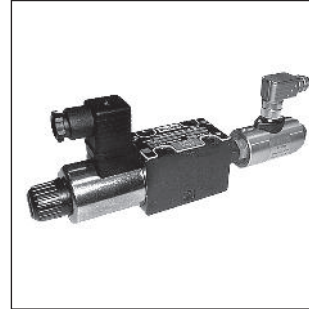
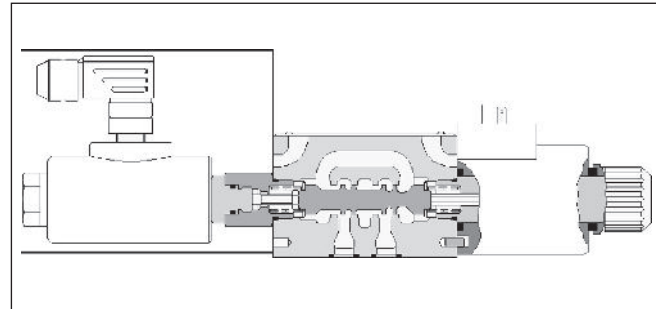


The 4/2 directional valves operated directly by solenoids with inductive position control are used as monitoring valves. The start or end position can be monitored. The position control is only available for single solenoid valves. The fail-safe position of the directional valve during power failure is the spring offset position.



Attention

The switch must be adjusted by the valve manufacturer only. The exchange of individual modules is not permitted.

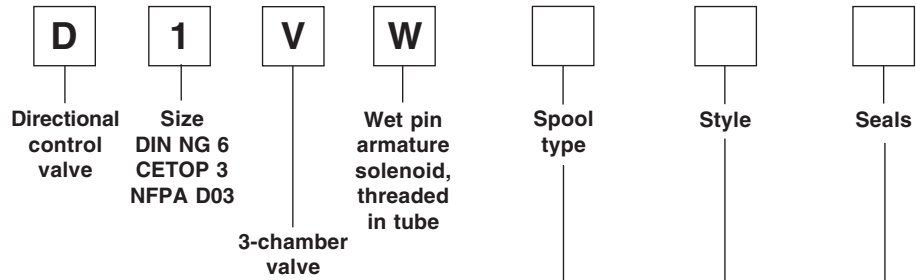


2

Technical data

| | | | | | |
|-----------------------------------|----------------------|--------------------------------------------------------------------------|--------|--------|---------|
| General | | | | | |
| Design | | Directional spool valve | | | |
| Actuation | | Solenoid | | | |
| Size | | DIN NG6 / CETOP 03 / NFPA D03 | | | |
| Mounting interface | | DIN 24340 A6 / ISO 4401 / CETOP RP 121-H / NFPA D03 | | | |
| Mounting position | | Unrestricted, preferably horizontal | | | |
| Ambient temperature | [°C] | -25...+50 | | | |
| Weight | [kg] | 1.5 (1 solenoid), 2.1 (2 solenoids) | | | |
| Hydraulic | | | | | |
| Max. operating pressure | [bar] | P, A B: 350 ; T: 210 | | | |
| Fluid | | Hydraulic oil in accordance with DIN 51524 / 51525 | | | |
| Fluid temperature | [°C] | -25 ... +70 | | | |
| Viscosity permitted | [mm ² /s] | 2.8...400 (2.8...400 cSt) | | | |
| Viscosity recommended | [mm ² /s] | 30...80 | | | |
| Filtration | | ISO 4406 (1999); 18/16/13 (meet NAS 1638: 7) | | | |
| Flow max. | [l/min] | 80 | | | |
| Leakage at 50 bar | [ml/min] | Up to 10 per flow path, depending on spool | | | |
| Static / Dynamic | | | | | |
| Step response at 95% | [ms] | Energized: 32; De-energized: 40 | | | |
| Electrical characteristics | | | | | |
| Duty ratio | | 100% ED; CAUTION: coil temperature up to 150 °C possible | | | |
| Max. switching frequency | [1/h] | 15000 | | | |
| Protection class | | IP 65 in accordance with DIN 40050 (plugged and mounted) | | | |
| | Code | K | J | U | G |
| Supply voltage | [V] | 12 VDC | 24 VDC | 98 VDC | 205 VDC |
| Tolerance supply voltage | [%] | ±10 | ±10 | ±10 | ±10 |
| Current consumption hold | [A] | 2.5 | 1.25 | 0.31 | 0.15 |
| Power consumption hold | [W] | 30 | 30 | 30 | 30 |
| Solenoid connection | | Connector as per EN 175301-803, solenoid identification as per ISO 9461. | | | |
| Wiring min. | [mm ²] | 3 x 1.5 recommended | | | |
| Wiring length max. | [m] | 50 recommended | | | |

With electrical connections the protective conductor (PE ⚡) must be connected according to the relevant regulations.



2

| 3 position spools | |
|-------------------|------------|
| Code | Spool type |
| 1 | |
| 2 | |
| 3 ¹⁾ | |
| 4 | |
| 5 | |
| 15 ²⁾ | |
| 16 | |
| 76 | |
| 78 | |

| 2 position spools | |
|-------------------|------------|
| Code | Spool type |
| 20 | |
| 26 | |
| 30 | |

¹⁾ Only available for styles "E" and "F"
²⁾ Only available for styles "K" and "M"

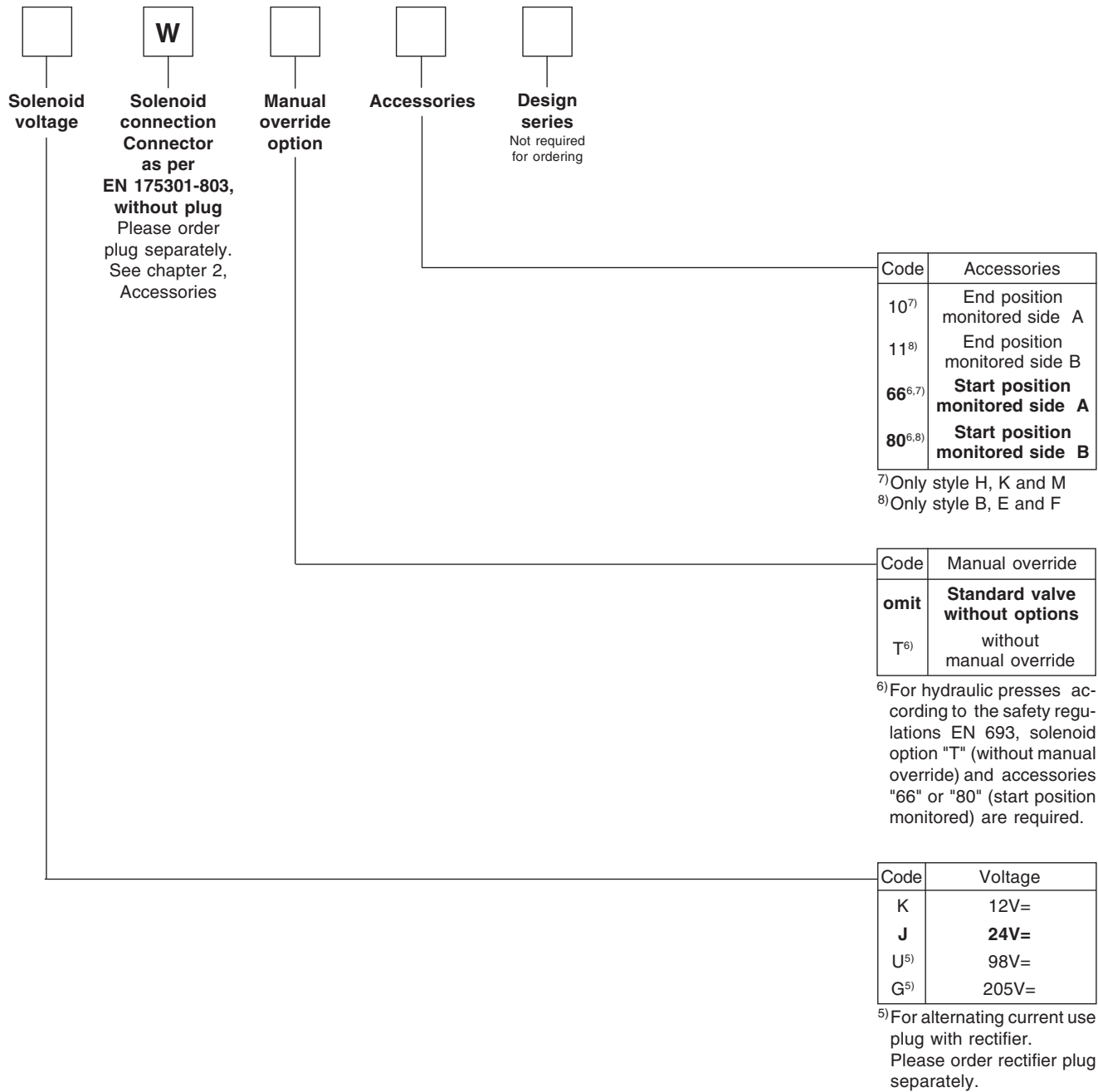
| 3 position spools (except spool 8 and 9) | |
|------------------------------------------|------------------------------------------------------------------------------|
| Code | Description |
| E ³⁾ | 2 positions. Spring offset in position "0". Operated in position "a". |
| F ³⁾ | 2 positions. Spring offset in position "b". Operated in position "0". |
| K ⁴⁾ | 2 positions. Spring offset in position "0". Operated in position "b". |
| M ⁴⁾ | 2 positions. Spring offset in position "a". Operated in position "0". |

| 2 position spools | |
|------------------------|------------------------------------------------------------------------------|
| Code | Description |
| B ³⁾ | 2 positions. Spring offset in position "b". Operated in position "a". |
| H ⁴⁾ | 2 positions. Spring offset in position "a". Operated in position "b". |

³⁾ Only accessories code 11 or 80
⁴⁾ Only accessories code 10 or 66

| Code | Seals |
|----------|------------|
| N | NBR |
| V | FPM |

Bold letters =
Short-term availability



2

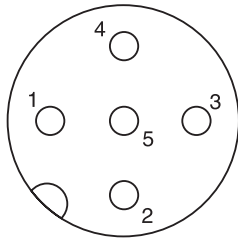
Further spool types and voltages on request.

Electrical characteristics of position control M12x1

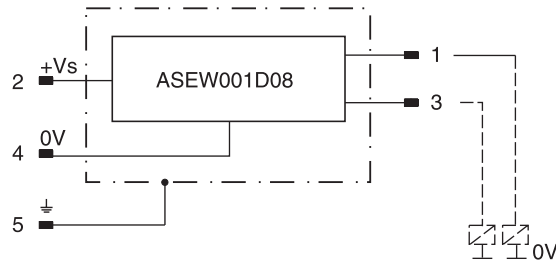
2

| | | |
|----------------------------------------|--------------------|----------------------------------------------------------|
| Protection class | | IP 65 in accordance with DIN 40050 (plugged and mounted) |
| Ambient temperature | [°C] | 0...+50 |
| Supply voltage / ripple | [V] | 18...42 / 10% |
| Current consumption without load | [A] | ≤ 30 |
| Max. output current per channel, ohmic | [mA] | 400 |
| Min. output load per channel, ohmic | [kOhm] | 100 |
| Max. output drop at 0.2A | [V] | ≤ 1.1 |
| Max. output drop at 0.4A | [V] | ≤ 1.6 |
| EMC | | EN50081-1 / EN50082-2 |
| Max. tolerance ambient field strength | [A/m] | <1200 |
| Min. distance to next AC solenoid | [m] | >0.1 |
| Interface | | M12x1 |
| Wiring min. | [mm ²] | 5 x 0.25 braided shield recommended |
| Wiring length max. | [m] | 50 recommended |

M12 pin assignment



- 1 Normally open
- 2 + Supply 18...42V
- 3 Normally closed
- 4 0V
- 5 Earth ground



Definitions

Start position monitored:

The valve is de-energized. The inductive switch gives a signal at the moment (below 15% spool stroke) when the spool leaves the spring offset position.

End position monitored:

The inductive switch gives a signal before ending the stroke (above 85% spool stroke).

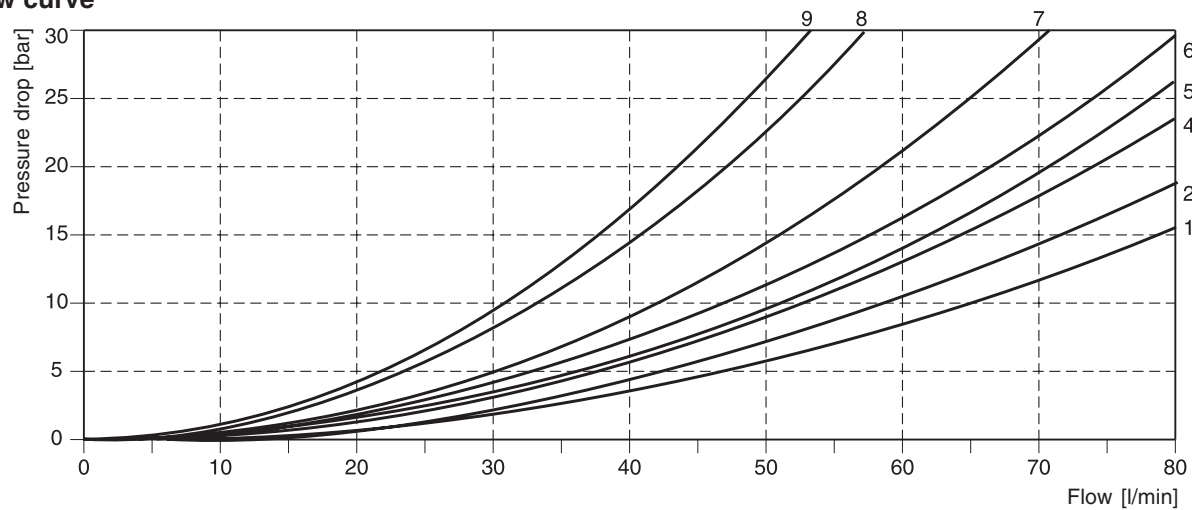
The switch can only be located opposite the solenoid for direct-controlled valves. This means, if the solenoid is located on the A side of the valve, the switch can only take place on the B side.

The flow curve diagram shows the flow versus pressure drop curves for all spools. To read the values in the diagram, the curve number for the selected spool and desired operating position must first be determined from the table below.

| Spool | Position "b" | | Position "a" | | Position "0" | | | | | |
|-------|--------------|------|--------------|------|--------------|------|------|------|------|------|
| | P->A | B->T | P->B | A->T | P->A | P->B | A->T | B->T | P->T | A->B |
| 1 | 4 | 1 | 4 | 1 | - | - | - | - | - | - |
| 2 | 5 | 2 | 5 | 2 | 4 | 4 | 1 | 1 | 6 | 1 |
| 3 | - | - | 4 | 2 | - | - | 8 | - | - | - |
| 4 | 4 | 2 | 4 | 2 | - | - | 7 | 7 | - | 9 |
| 5 | 4 | 1 | 5 | 1 | 9 | - | - | - | - | - |
| 15 | 4 | 2 | - | - | - | - | - | 8 | - | - |
| 16 | 5 | 1 | 4 | 1 | - | 9 | - | - | - | - |
| 20 | 5 | 1 | 5 | 1 | - | - | - | - | - | - |
| 26 | 6 | - | 6 | - | - | - | - | - | - | - |
| 30 | 5 | 1 | 5 | 1 | - | - | - | - | - | - |
| 76 | - | 2 | - | - | - | - | 3 | - | - | - |
| 78 | - | - | - | 2 | - | - | - | 3 | - | - |

2

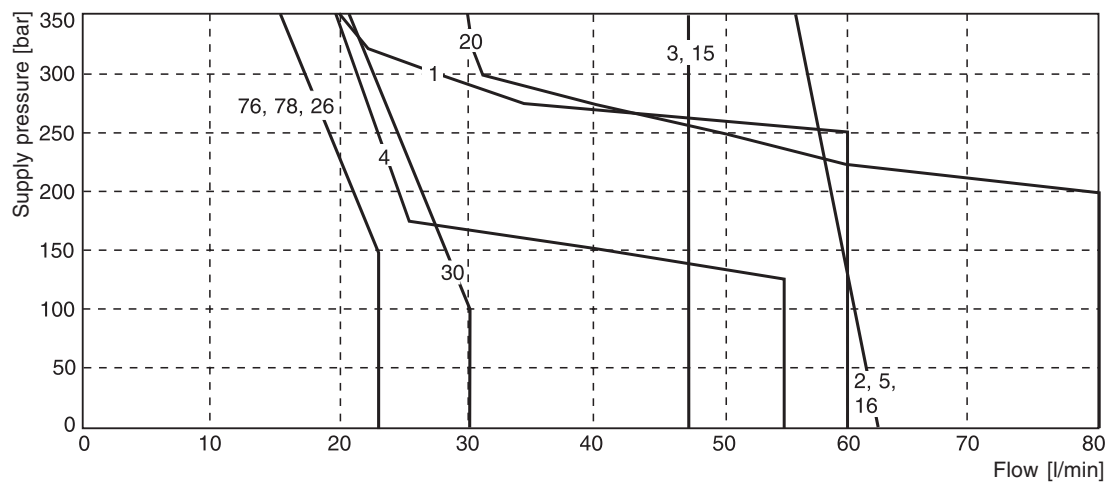
Flow curve



Shift limits

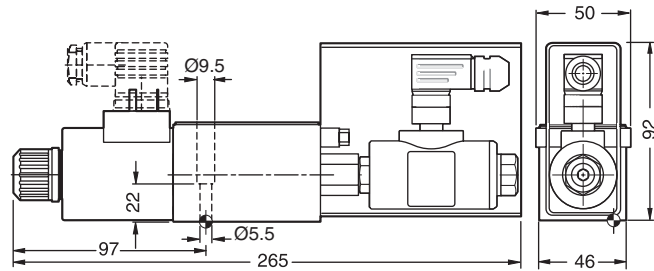
The diagram below specifies the shift limits for valves with DC solenoids. Valves of style "F" and "M" may only be loaded at 70% of the value. The specifications apply to a viscosity of 35 mm²/s and equal flow at A and B port.

These values can be considerably lower than the represented ones by unequal flow at A and B port. To avoid flow rates above the shift limits of the valve, a plug-in orifice can be inserted in the P port.

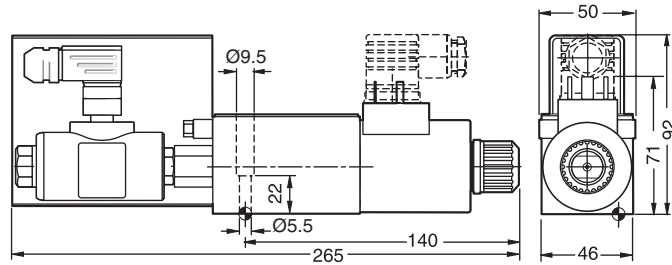


Interface EN 175301-803, DC solenoid, with plug M12x1*
B, E, F -style

2

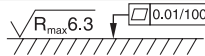


H, K, M -style



* Delivery includes plug M12 x 1 (see accessories, plug M12x1; order no.: 5004109).



| Surface finish | Kit | Kit | Kit | Kit |
|-------------------------------------------------------------------------------------|-------|--------------------------|--------------|-------------------------------------|
|  | BK375 | 4x M5x30 DIN 912 12.9 | 6.8 Nm ± 15% | NBR: SK-D1VW-70 FPM: SK-D1VW-V70 |

The space necessary to remove the plug per EN 175301-803, design type AF is at least 15 mm.
 The torque for the screw M3 of the plug has to be 0.5 to 0.6 Nm.

Test certificate:

The trade association has awarded the test certificate 98139 for the following directional valves with monitor switch (accessories code 66/80):

D1VW (1 E/K; 20 B/H; 26 B/H; 30 B/H)

Attention

The switch must be adjusted by the valve manufacturer only. The exchange of individual modules is not permitted.