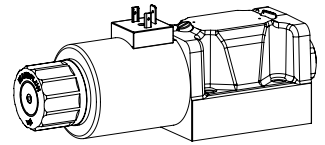


Solenoid operated spool valve with soft switching

Flange construction

- ◆ 4/3-way with spring centred mid position
- ◆ 4/2-way with spring reset
- ◆ $Q_{max} = 120 \text{ l/min}$
- ◆ $p_{max} = 350 \text{ bar}$

NG10
ISO 4401-05



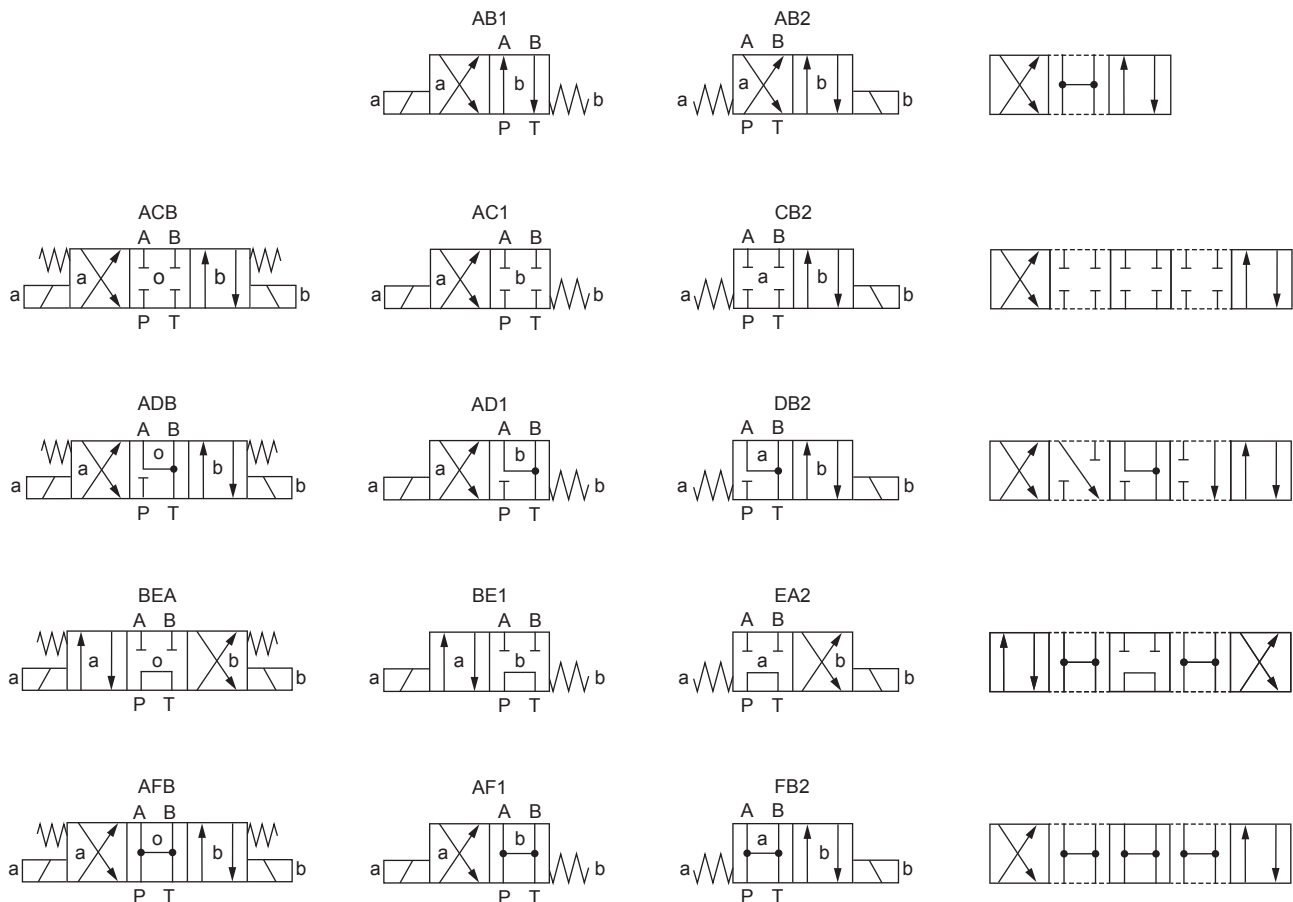
DESCRIPTION

Direct operated solenoid spool valve with 4 connections in 5 chamber design. With the solenoids deenergised, the spool is held in the center position by the spring (4/3), or switched back to the offset position (4/2). The soft switching of the valve is achieved by means of an optimum combination of the orifice and spool design. Precise spool fit, low leakage, long service life time. Spool made from hardened steel, valve body from high quality hydraulic cast steel. Wide range of standard and special voltages.

APPLICATION

Normal solenoid spool valves switch very quickly. This can lead to shocks in the hydraulic system which can cause mechanical wear and have a negative effect on operation. The soft switching valves slow down and dampen the switching movements which benefits the system. Optimum results can be achieved if all 4 connections are connected and the valve is properly vented.

SYMBOL



TYPE CODE

| | | | | | | | | | | | | | | | | | | | |
|--|---|-----------------------------------|---|------------------------------|---|-----|---|----------------------|---|----------------------|---|----------------------|----------------------|---|----------------------|----------------------|---|----------------------|--|
| | | W | W | M | F | A10 | - | <input type="text"/> | - | <input type="text"/> | / | <input type="text"/> | <input type="text"/> | - | <input type="text"/> | <input type="text"/> | # | <input type="text"/> | |
| Spool valve, soft switching | | | | | | | | | | | | | | | | | | | |
| Slip-on coil Medium | | | | | | | | | | | | | | | | | | | |
| Flange construction | | | | | | | | | | | | | | | | | | | |
| International standard interface ISO, NG10 | | | | | | | | | | | | | | | | | | | |
| Designation of symbols acc. to table | | | | | | | | | | | | | | | | | | | |
| Nominal voltage U_N | 12 VDC | <input type="text" value="G12"/> | | | | | | | | | | | | | | | | | |
| | 24 VDC | <input type="text" value="G24"/> | | | | | | | | | | | | | | | | | |
| | 115 VAC | <input type="text" value="R115"/> | | | | | | | | | | | | | | | | | |
| | 230 VAC | <input type="text" value="R230"/> | | | | | | | | | | | | | | | | | |
| | without coil | <input type="text" value="X5"/> | | | | | | | | | | | | | | | | | |
| Slip-on coil | Metal housing round | <input type="text" value="W"/> | | (only G12 and G24) | | | | | | | | | | | | | | | |
| | Metal housing square | <input type="text" value="M"/> | | | | | | | | | | | | | | | | | |
| Connection execution | Connector socket EN 175301-803 / ISO 4400 | <input type="text" value="D"/> | | | | | | | | | | | | | | | | | |
| | Connector socket AMP Junior-Timer | <input type="text" value="J"/> | | (only for $U_N \leq 75$ VDC) | | | | | | | | | | | | | | | |
| | Connector Deutsch DT04 - 2P | <input type="text" value="G"/> | | (only for $U_N \leq 75$ VDC) | | | | | | | | | | | | | | | |
| Sealing material | NBR | <input type="text"/> | | | | | | | | | | | | | | | | | |
| | FKM (Viton) | <input type="text" value="D1"/> | | | | | | | | | | | | | | | | | |
| Manual override | Integrated | <input type="text"/> | | | | | | | | | | | | | | | | | |
| | Push-button | <input type="text" value="HF1"/> | | | | | | | | | | | | | | | | | |
| | Spindle | <input type="text" value="HS1"/> | | | | | | | | | | | | | | | | | |
| Orifice diameter | \varnothing 0,3 mm | <input type="text" value="Q0,3"/> | | | | | | | | | | | | | | | | | |
| | \varnothing 0,5 mm (Standard) | <input type="text"/> | | | | | | | | | | | | | | | | | |
| | \varnothing 0,8 mm | <input type="text" value="Q0,8"/> | | | | | | | | | | | | | | | | | |
| | Spindle (adjustable soft switching) | <input type="text" value="S"/> | | | | | | | | | | | | | | | | | |
| Design index (subject to change) | | | | | | | | | | | | | | | | | | | |

1.4-42

GENERAL SPECIFICATIONS

| | |
|---------------------|---|
| Designation | 4/2-, 4/3-spool valve |
| Construction | Direct operated |
| Mounting | Flange construction |
| Nominal size | NG10 according to ISO 4401-05 |
| Actuation | Switching solenoid |
| Ambient temperature | -25...+70 °C if > +50 °C, then no undervoltage is admissible |
| Weight | 3,9 kg (1 solenoid) 5,4 kg (2 solenoids) |
| MTTFd | 150 years |

ACTUATION

| | |
|------------|--|
| Actuation | Switching solenoid, wet pin push type, pressure tight |
| Execution | W.E64/31x72 (Data sheet 1.1-190) W.S60/31x72 (Data sheet 1.1-193) |
| Connection | Connector socket EN 175301 – 803 Connector socket AMP Junior-Timer Connector Deutsch DT04 – 2P |

HYDRAULIC SPECIFICATIONS

| | |
|--------------------------|---|
| Working pressure | $p_{max} = 350$ bar |
| Tank pressure | $p_{Tmax} = 160$ bar |
| Maximum volume flow | $Q_{max} = 120$ l/min, see characteristics |
| Leakage oil | See characteristics |
| Fluid | Mineral oil, other fluid on request |
| Viscosity range | 12 mm ² /s...320 mm ² /s |
| Temperature range fluid | -25...+70 °C (NBR) -20...+70 °C (FKM) |
| Contamination efficiency | Class 20 / 18 / 14 |
| Filtration | Required filtration grade $\beta_{10...16} \geq 75$, see data sheet 1.0-50 |

ELECTRICAL SPECIFICATIONS

| | |
|--------------------------|--|
| Protection class | Connection execution D: IP65 Connection execution J: IP66 Connection execution G: IP67 and IP69K |
| Relative duty factor | 100 % DF |
| Switching frequency | Since switching is damped and slow, switching frequency is of secondary importance. |
| Service life time | 10 ⁷ (number of switching cycles, theoretically) |
| Voltage tolerance | ± 10 % with regard to nominal voltage |
| Standard nominal voltage | 12 VDC, 24VDC, 115 VAC, 230 VAC AC = 50 to 60 Hz, rectifier integrated in the connector socket |

Note! Other electrical specifications see data sheet 1.1-190 (slip-on coil W) and 1.1-193 (slip-on coil M)



COMMISSIONING

Attention! When commissioning, the valve must be vented under pressure (max. two rotations of screw E).



STANDARDS

| | |
|--------------------------|-----------------|
| Mounting interface | ISO 4401-05 |
| Solenoids | DIN VDE 0580 |
| Connection execution D | EN 175301 – 803 |
| Protection class | EN 60 529 |
| Contamination efficiency | ISO 4406 |

ACCESSORIES

| | |
|----------------------------|----------------------|
| Mating connector grey (A) | Article no. 219.2001 |
| Mating connector black (B) | Article no. 219.2002 |
| Fixing screws | Data sheet 1.0-60 |
| Threaded subplates | Data sheet 2.9-30 |
| Multi-station subplates | Data sheet 2.9-60 |
| Horizontal mounting blocks | Data sheet 2.9-100 |
| Technical explanations | Data sheet 1.0-100 |
| Filtration | Data sheet 1.0-50 |
| Relative duty factor | Data sheet 1.1-430 |

MANUAL OVERRIDE

- ◆ Integrated (–) Actuation pin integrated in the armature tube. Actuation by pressing the pin
- ◆ Push-button (HF1) Integrated in the knurled nut. Actuation by pressing the push-button
- ◆ Spindle (HS1) Integrated in the knurled nut. Actuation by turning the spindle (continuously variable valve actuation)

Attention! The actuation of the manual override is possible up to a tank pressure of:

- 20 bar Integrated (–)
- 20 bar Push-button (HF1)
- 80 bar Spindle (HS1)



SURFACE TREATMENT

- ◆ The valve body is painted with a two component paint
- ◆ The screw plug is zinc-nickel coated
- ◆ The slip-on coil and the armature tube are zinc-nickel coated

SEALING MATERIAL

NBR or FKM (Viton) as standard, choice in the type code

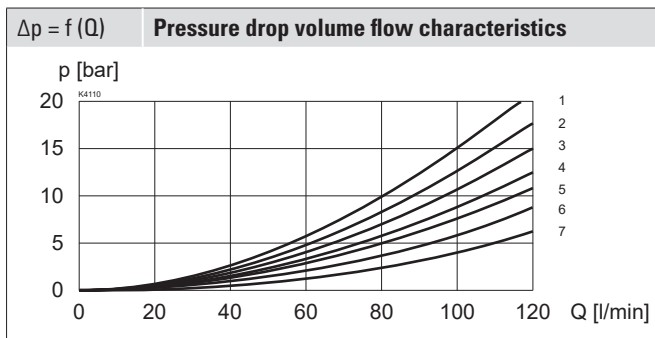
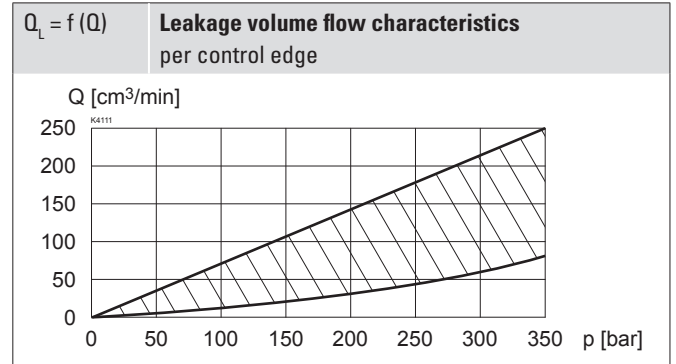
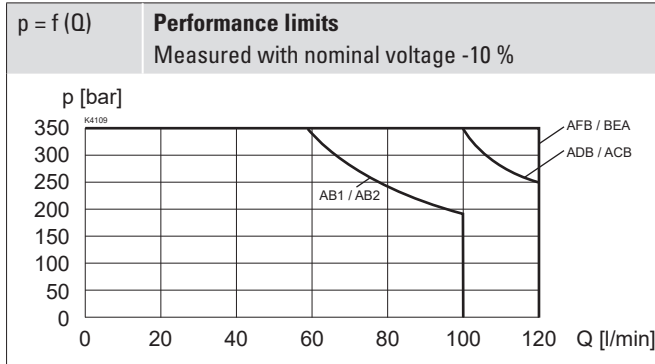
INSTALLATION NOTES

| | |
|-------------------|--|
| Mounting type | Flange mounting 4 fixing holes for socket head screws M6 x 40 |
| Mounting position | Any, preferably horizontal |
| Tightening torque | Fixing screw $M_D = 10,5 \text{ Nm} \pm 10 \%$ (screw quality 8.8, zinc coated) max. tank pressure 80 bar $M_D = 13,5 \text{ Nm} \pm 10 \%$ (screw quality 10.9, zinc coated) Knurled nut $M_D = 5 \text{ Nm}$ |

Note! The length of the fixing screw depends on the base material of the connection element.

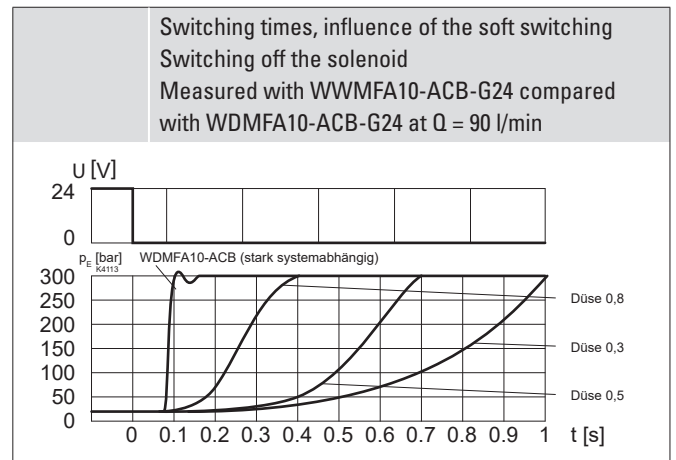
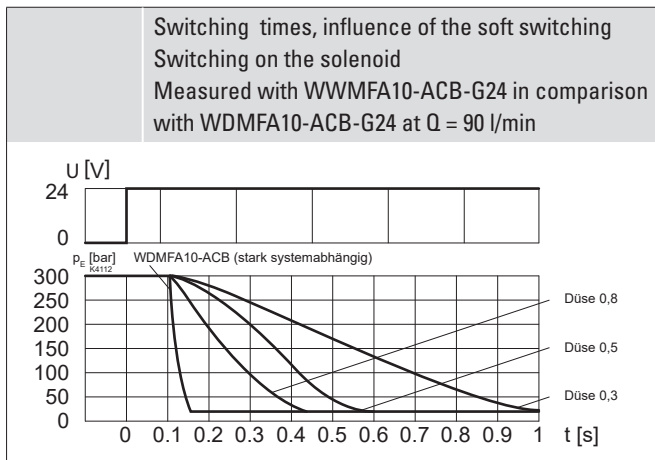


PERFORMANCE SPECIFICATIONS

 Oil viscosity $\nu = 30 \text{ mm}^2/\text{s}$


Volume flow direction

| Symbol | P - A | P - B | P - T | A - T | B - T |
|-----------|-------|-------|-------|-------|-------|
| AB1 / AB2 | 4 | 4 | - | 2 | 1 |
| ACB | 5 | 5 | - | 4 | 3 |
| ADB | 5 | 5 | - | 4 | 3 |
| BEA | 5 | 5 | 3 | 5 | 4 |
| AFB | 6 | 6 | 7 | 7 | 7 |

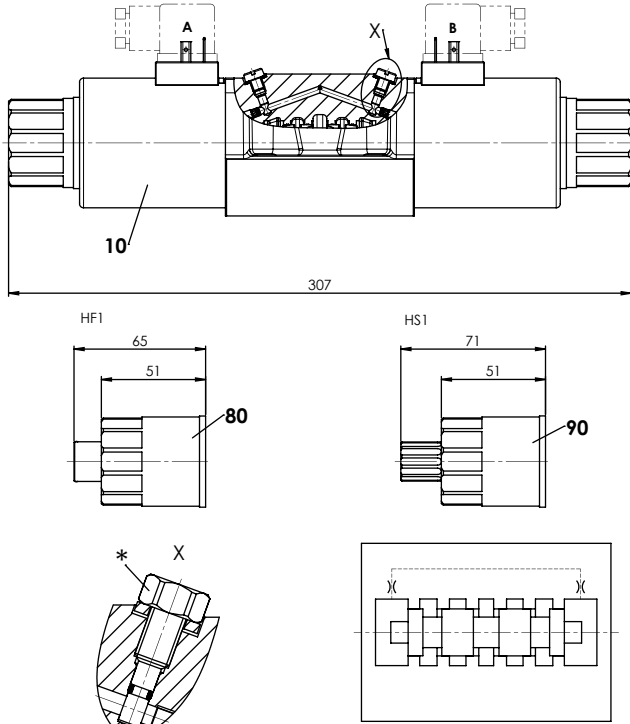


Note! With the option spindle «S», the switching time can be adjusted individually.



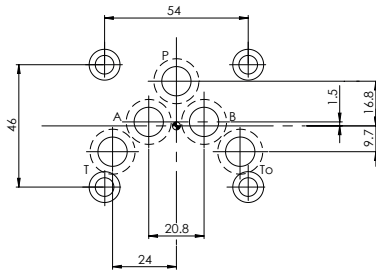
DIMENSIONS

4/3-way valve (spring centred)

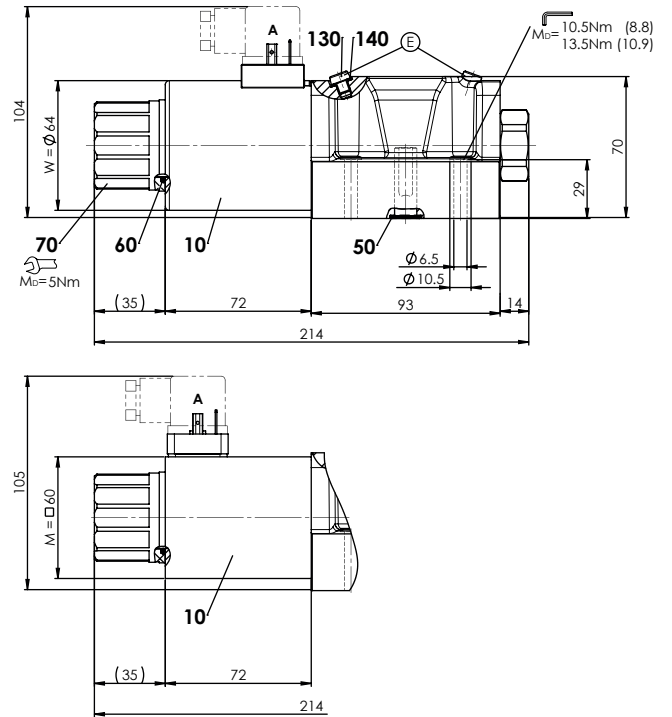


*optionally spindle

HYDRAULIC CONNECTION



4/2-way valve (spring reset)



E = Air bleed screw

Orifices in valve body influence the switching times

PARTS LIST

| Position | Article | Description |
|----------|----------|-----------------------------------|
| 10 | 206.3... | W.E64 / 31 x 72 |
| | 260.9... | M..60 / 31 x 72 |
| 50 | 160.2120 | O-ring ID 12,42 x 1,78 (NBR) |
| | 160.8124 | O-ring ID 12,42 x 1,78 (FKM) |
| 60 | 160.2282 | O-ring ID 28,24 x 2,62 (NBR) |
| 70 | 154.2706 | Knurled nut |
| 80 | 253.7006 | Push-button |
| 90 | 253.7005 | Spindle |
| 130 | 246.3006 | Socket head screw M6 x 20 DIN 912 |
| 140 | 049.2062 | Bonded seal ID 4,1 x 7,2 x 1 |