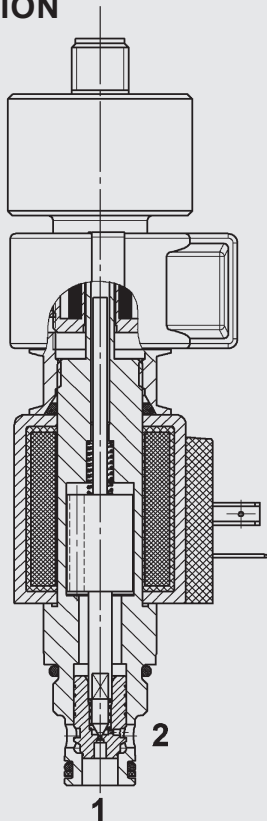


FUNCTION



The directional valve is a pilot operated poppet valve with electronic switch position monitoring.

If the solenoid coil is de-energised the valve is blocked from port 2 to port 1 – this switch position is recorded inductively. In the reverse direction there is free flow through the valve. The valve poppet opens at a differential pressure of approx. 1.8 bar (check function). When the solenoid coil is energised, there is free flow through the valve from 2 to 1. The valve piston opens at a pressure difference of approx. 1.6 bar from 2 to 1. Reverse flow from 1 to 2 must be prevented.

Hint: switching characteristics and switching times are strongly dependent on the pressure difference and the flow rate during the switching process. This is especially the case for valves with poppet seal and/or position sensor.

2/2 Solenoid Directional Valve poppet type, pilot-operated normally closed, with electronic switch position monitoring Metric Cartridge Valve – 350 bar WSM06020Z-01E

GENERAL

- With electronic switch position monitoring
- Excellent switching performance by high power HYDAC solenoid
- Coil seals protect the solenoid system
- Wide variety of connectors available
- Exposed surfaces zinc-nickel plated for increased corrosion protection (1,000 hr salt spray test)

TECHNICAL DATA*

| | |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating pressure: | max. 350 bar |
| Nominal flow: | max. 40 l/min |
| Internal leakage: | leak-free, max. 5 drops/min (0.25 cm ³ /min) at P ₂ = 350 bar and P ₁ = 0 bar, v = 34 mm ² /s |
| Temperature range of operating fluid: | min. -20 °C to max. +100 °C |
| Ambient temperature range: | Min. -20 °C to max. + 60 °C |
| Operating fluid: | Hydraulic oil to DIN 51524 Part 1, 2 and 3 |
| Viscosity range: | Min. 7.4 mm ² /s to max. 420 mm ² /s |
| Filtration of operating fluid: (in acc. with ISO 4406) | p ≤ 210 bar: min. 20/18/15 recommended for extended service life 17/15/12 p > 210 bar: min. 18/16/13 recommended for extended service life 16/14/11 |
| MTTF _a : | 150–1200 years, according to DIN EN ISO 13849 - 1 |
| Installation position: | No orientation restrictions |
| Materials: | Valve body: steel Piston: hardened and ground steel Seals: NBR (standard) FKM (optional, temperature range of operating fluid -20 °C to +120 °C) Back-up rings: PTFE Solenoid coil: steel/ polyamide |
| Cavity: | Metric 06020 |
| Weight: | 0.5 kg |

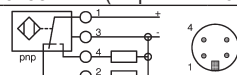
Electrical data

| | |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Type of voltage: | DC: DC solenoid AC: AC solenoid with rectifier integrated into the coil |
| Current draw at 20 °C: | 1.5 A at 12 V DC 0.8 A at 24 V DC |
| Voltage tolerance: | ± 15% of rated voltage |
| Coil duty rating: | Continuous up to max. 115 % of rated voltage at 60 °C ambient temperature |
| Reaction time: (at p _{max} , Q _{max} , v = 34 mm ² /s) | Energised: approx. 20 ms; de-energised: approx. 60 ms Greatly increased reaction times are possible for other operating conditions |
| Coil type: | Coil...-40-1836 |

Sensor data

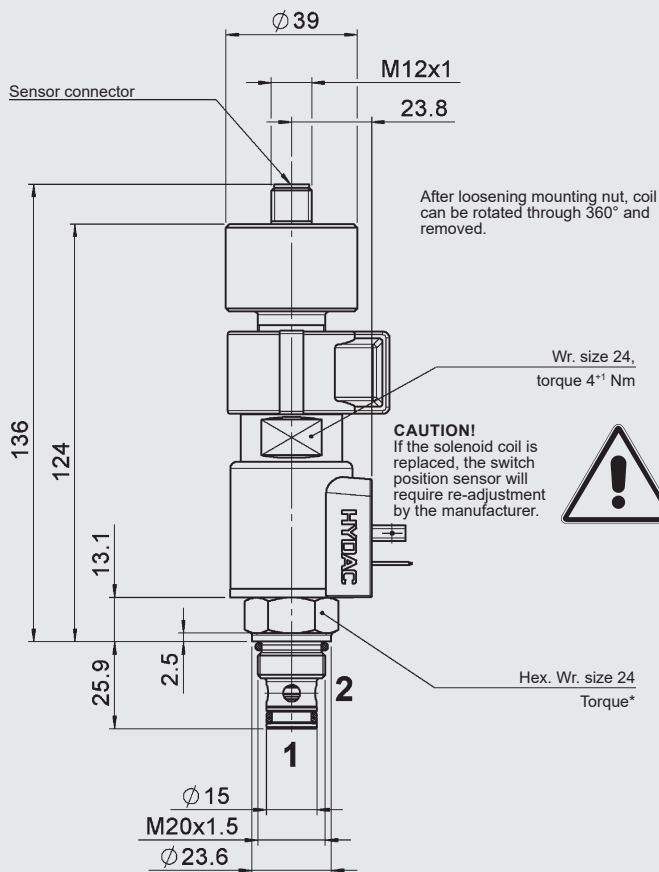
| | |
|----------------------------------------|------------------------------------------------------|
| Supply voltage: | 24 V: 20 to 32 V DC 12 V: 10.5 to 16 V DC |
| Reverse polarity protection of supply: | yes |
| Outputs: | 2 with change-over function, PNP, positive switching |
| Output load: | ≤ 400 mA, 100% continuous |
| Short circuit protection: | Resistant to short circuits |
| Connector: | Round connector M12x1 (4-pin) |
| Protection class: | IP65 as per DIN 40050 |
| CE conformity: | 93/68/EEC 2014/30/EU |
| EMC: | DIN EN 61000-6-1-2-3-4 |
| Humidity requirements: | 0–95% rel. (as per DIN 40040) |

Diagram:



*see "Conditions and Instructions for Valves" in brochure 53.000

DIMENSIONS



*Torque:
Steel housing (ultimate tensile strength > 360 N/mm²) 50 Nm
Aluminium housing (ultimate tensile strength < 330 N/mm²): 35 Nm
(Torque tool in acc. with DIN EN ISO 6789, tool type II, class A or B)
For more information see "Operating conditions and instructions for valves" in brochure 53.000

Millimetres
Subject to technical modifications

MODEL CODE

WSM06020Z - 01E - C - N - 24 DG - 12

Basic model
Directional poppet valve, metric

Type
01E = with electronic switch position monitoring

Connection type
C = cartridge only

Sealing material
N = NBR (standard)
V = FKM

Coil voltage
DC voltages
12 = 12 V DC
24 = 24 V DC

AC voltage (rectifier built into the coil)
115 = 115 V AC
230 = 230 V AC

Other voltages on request

Coil connectors (type 40-1836)
DC: DG = DIN connector, design A to EN175301-803
DK = Kostal threaded connection M27 x 1
DL = two flying leads, 457 mm long, 0.75 mm²
DN = Deutsch connector DT04-2P, 2-pole, axial
DT = AMP Junior Timer, 2-pole, radial
AC: AG = DIN connector, design A to EN175301-803

Other connectors on request

Supply voltage for sensor
No specification = 24 V DC
12 = 12 V DC

Standard models

| Model code | Part no. |
|-------------------------|----------|
| WSM06020Z-01E-C-N-12DG | 3980685 |
| WSM06020Z-01E-C-N-24DG | 3869158 |
| Other models on request | |

Standard in-line bodies

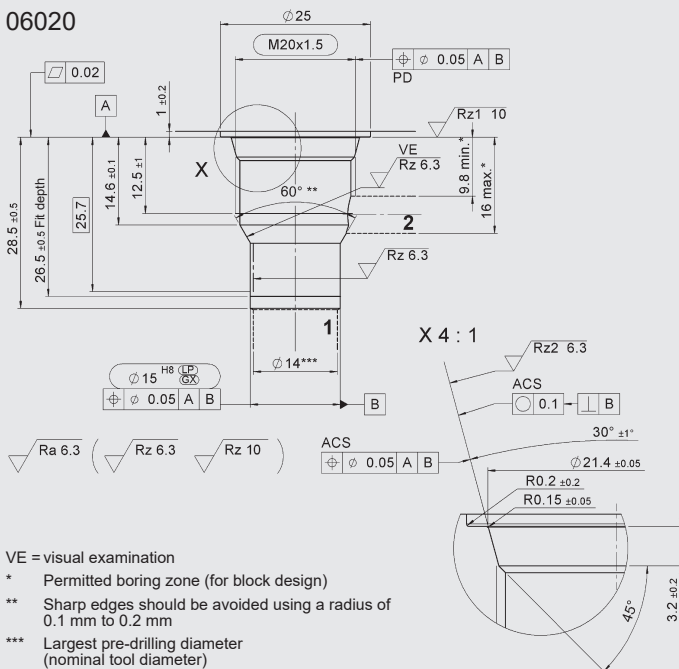
| Code | Part no. | Material | Ports | Pressure |
|----------------------------------------------------------|----------|--------------------|-------|--------------|
| R06020-01X-01 | 275266 | Steel, zinc-plated | G3/8" | max. 350 bar |
| For other connection housings, see brochure no. D 5.252. | | | | |

Seal kits

| Code | Material | Part no. |
|--------------------|----------|----------|
| SEAL KIT 06020-NBR | NBR | 3119017 |
| SEAL KIT 06020-FKM | FKM | 3262477 |

CAVITY

06020



VE = visual examination
* Permitted boring zone (for block design)
** Sharp edges should be avoided using a radius of 0.1 mm to 0.2 mm
*** Largest pre-drilling diameter (nominal tool diameter)

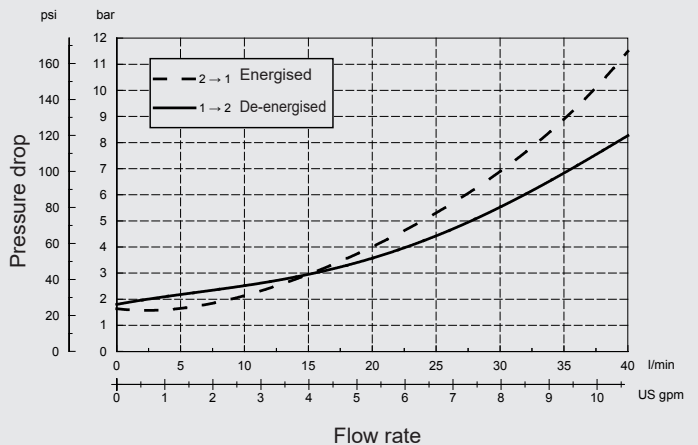
Form tools

| Designation | Part no. |
|-------------------------|----------|
| Countersink (shank MK3) | 170033 |
| Reamer (shank MK2) | 1000768 |
| Tap | 1002648 |
| Plug gauge | 168840 |

Millimetres
Subject to technical modifications

TYPICAL PERFORMANCE

measured at $v = 34 \text{ mm}^2/\text{s}$, $T_{\text{oil}} = 46^\circ \text{C}$



Note

The information in this brochure relates to the operating conditions and applications described. For applications not described, please contact the relevant technical department.
Subject to technical modifications.

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