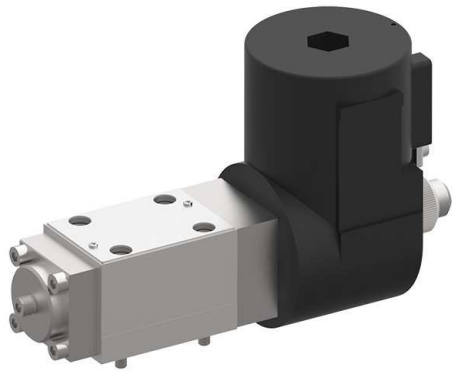
4/2 and 4/3 Solenoid Directional Valve, ISO Size 03

Q_{max} = 18 l/min, p_{max} = 160 bar
direct acting, with EX-safty solenoid coil
Series EEXD-WED…



Valve:

- Slip-on coil design, coils can be changed without opening hydraulic envelope
- With manual override
- Interface to ISO 440103-02

Solenoid coil:

- To EN 60079-0, EN 60079-1, EN 60079-31
- For equipment in Category 2

gas: Ⓔx II 2 G Ex d IIC T6, T4 Gb

dust: Ⓔx II 2 D Ex tb IIIC T85 °C, T130° C Db

1 Description

Series EEXD-WED...-6 spool valves are direct acting units. The main valve components are a steel body, a spring-centered spool and wet armature solenoids with pressure-tight core tube and a slip-on coil which is certified for use in explosion-hazard areas. The coil slips over the core tube and is retained by a knurled nut. The solenoid housing is made of cast iron with spray painted finish. The solenoid housing is threaded M20 x 1,5 for a cable entry gland. The cable entry gland (which also must be certified to IEC/EN 60079-1) is not supplied with the valve and, if required, must be ordered as a separate item: Cable entry gland type AGRO 1820. 16.26 M20 x 1,5 (for cable ø11...13). The spool is offset by the solenoid force and brought back to its de-energised position by return or centering springs. For the detended model EExd-WED-42-C-6, the maximum flow rate is limited to 10 l/min.

Ex: Solenoid conforms to the European standards IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-18
Gas:
d: Flameproof enclosures
Group IIC: For use in the potentially explosive area
T6, T4: Temperature class for gas
Gb: For use in Zone 1 (Zone 2) with foreseeable faults

Dust:
tb: protection by enclosure
Group IIIC: For use in flammable dust atmospheres
T85 °C, T130 °C: Temperature class for dust
Db: For use in Zone 21 (Zone 22) with foreseeable faults

Verification certificates:
Europe BVS 15 ATEX E135 (ATEX)
others on request

2 Technical data

General characteristics	Description, value, unit
Designation	4/2 and 4/3 solenoid directional valve
Design	manifold-mounting, direct acting
Mounting method	4 x ∅ 5,5 holes for M5x45 cap screws
Tightening torque	5.2 Nm ± 10 %
Size	size 03 interface to ISO 4401-03-02 / DIN 24 340 A6
Weight	3.4 kg (1 solenoid) 5.4 kg (2 solenoid)
Mounting attitude	horizontal recommended (vertical mounting makes air bleeding difficult)
Ambient temperature range	see hydraulic and electrical characteristics

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Hydraulic characteristics		Description, value, unit
Maximum operating pressure	port A, B and P port T	160 bar 15 bar
Maximum flow rate		18 l/min (see modification by supply voltage tolerance) 10 l/min for detented model
Flow direction		see symbols
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Ambient temperature range [1]		-25 °C … +80 °C
Hydraulic fluid temperature range [1]		-25 °C … +80 °C [2]
Viscosity range		10…500 mm^2/s (cSt), recommended 15...250 mm^2/s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999		class 20/18/15

Electrical characteristics		Description, value, unit
Supply voltage		24 V DC/AC, 120 V DC/AC, 230 V DC/AC alternating voltage 40 … 65 Hz ± 2 % direct or undulating voltage
Supply voltage tolerance [1]		by max. ambient temperature [1] / max. flow - 5 % / +10 % — 40 °C — 18 l/min -15 % / +10 % — 40 °C — 12 l/min - 5 % / +10 % — 55 °C — 14 l/min -15 % / +10 % — 55 °C — 10 l/min - 5 % / +10 % — 90 °C — 10 l/min dedented model „C“ - 15 % / +10 % — 90 °C — 10 l/min
Ambient temperature range [1]		NEPSI / INMETRO operation as T4 / T130 °C: -50 °C … +90 °C / -20 °C … +90 °C operation as T5 / T95 °C: -50 °C … +55 °C / -20 °C … +55 °C operation as T6 / T80 °C: -50 °C … +40 °C / -20 °C … +40 °C
Temperatue class to EN 60079-0		T1 … T6
EX-protection marking	Gas: Dust:	II 2 G, Ex d IIC (T6, T4 Gb) II 2 D, Ex tb IIIC (T85 °C, T130 °C Db)
Nominal power consumption		7 W at 20 °C
Switching time		90 ms (energising) 40 ms (de-energising) Depending on pressure, flow rate and viscosity as well as dwell time under pressure, the switching times may vary from the the stated values.
Relative duty cycle		100 %
Protection class to EN 942017-2		IP 65 / 67 (with properly fitted cable gland and properly made cable connection)
Electrical connection		shipped **without** cable entry gland (M20 x 1.5) and **without** cable screwed fittings have to be tested and are certified as per EN 60079-1 and EN 60079-31. [3]
Fuse connected in series as per IEC 60127		24 V DC/AC 800 mA 120 V DC/AC 160 mA 230 V DC/AC 80 mA

IMPORTANT!:

[1] The less favourable values from the hydraulic and electrical characteristics determine the temperature range of the whole valve.

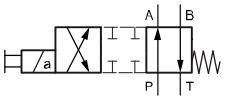
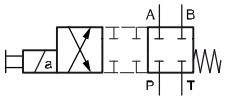
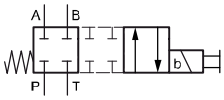
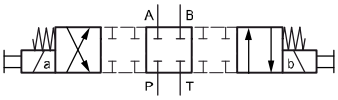
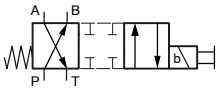
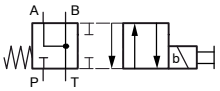
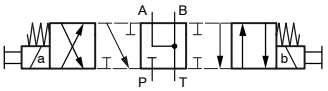
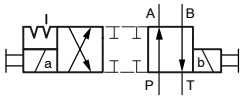
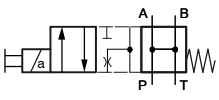
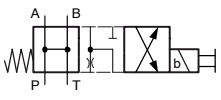
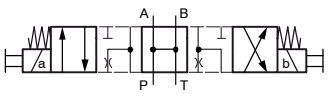
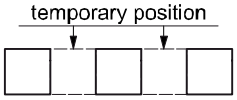
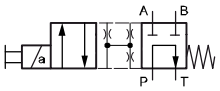
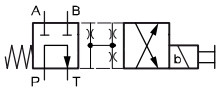
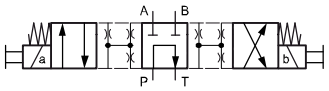
IMPORTANT!:

[2] The maximum fluid temperature must not exceed the permissible ambient temperature for the whole valve.

IMPORTANT!:

3) At ambienttemperatures ≥ 50 °C, the temperature at the cable entry increases by 20 °C.

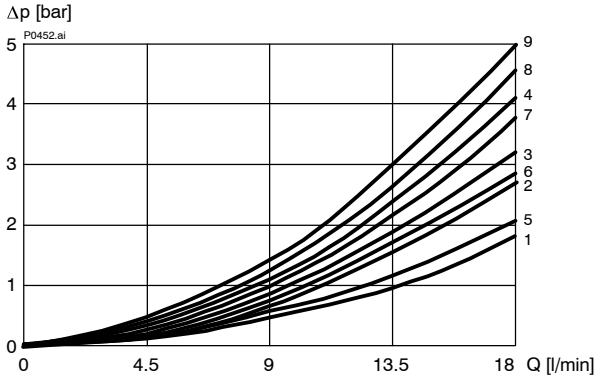
3 Symbols / Spool types

4/2 functions	4/2 functions with A-solenoid	4/2 functions with B-solenoid	4/3 functions
EEXD-WED-42-A-6... 	EEXD-WED-42-AD-6... 	EEXD-WED-42-BD-6... 	EEXD-WED-43-D-6... 
EEXD-WED-42-B-6... 	EEXD-WED-42-AG-6... 	EEXD-WED-42-BG-6... 	EEXD-WED-43-G-6... 
EEXD-WED-42-C-6... 	EEXD-WED-42-AH-6... 	EEXD-WED-42-BH-6... 	EEXD-WED-43-H-6... 
Uebergangsstellung temporary position 	EEXD-WED-42-AJ-6... 	EEXD-WED-42-BJ-6... 	EEXD-WED-43-J-6... 

4 Performance graphs

measured with oil viscosity 33 mm^2/s (cSt), coil at steady-state temperature and 5 % undervoltage

Δp = f (Q) Pressure drop - Flow rate characteristic
A / B, D, G, H and J spool



IMPORTANT!
The quored max. flow rates apply when symmetrical flows pass through the valve.
For non-symmetrical flows, the max. flows are substantially reduced, in worst cases to only 25 % of the above valves.

Spool type	Flow direction					
	P ⇒ A	B ⇒ T	P ⇒ B	A ⇒ T	P ⇒ T	P, A + B ⇒ T
A / B	1	2	3	4	--	--
D	2	7	3	8	--	--
G	3	1	2	5	--	--
H	4	4	4	8	--	2
J	8	9	8	9	6	--

5 Installation information

COMMISSIONING

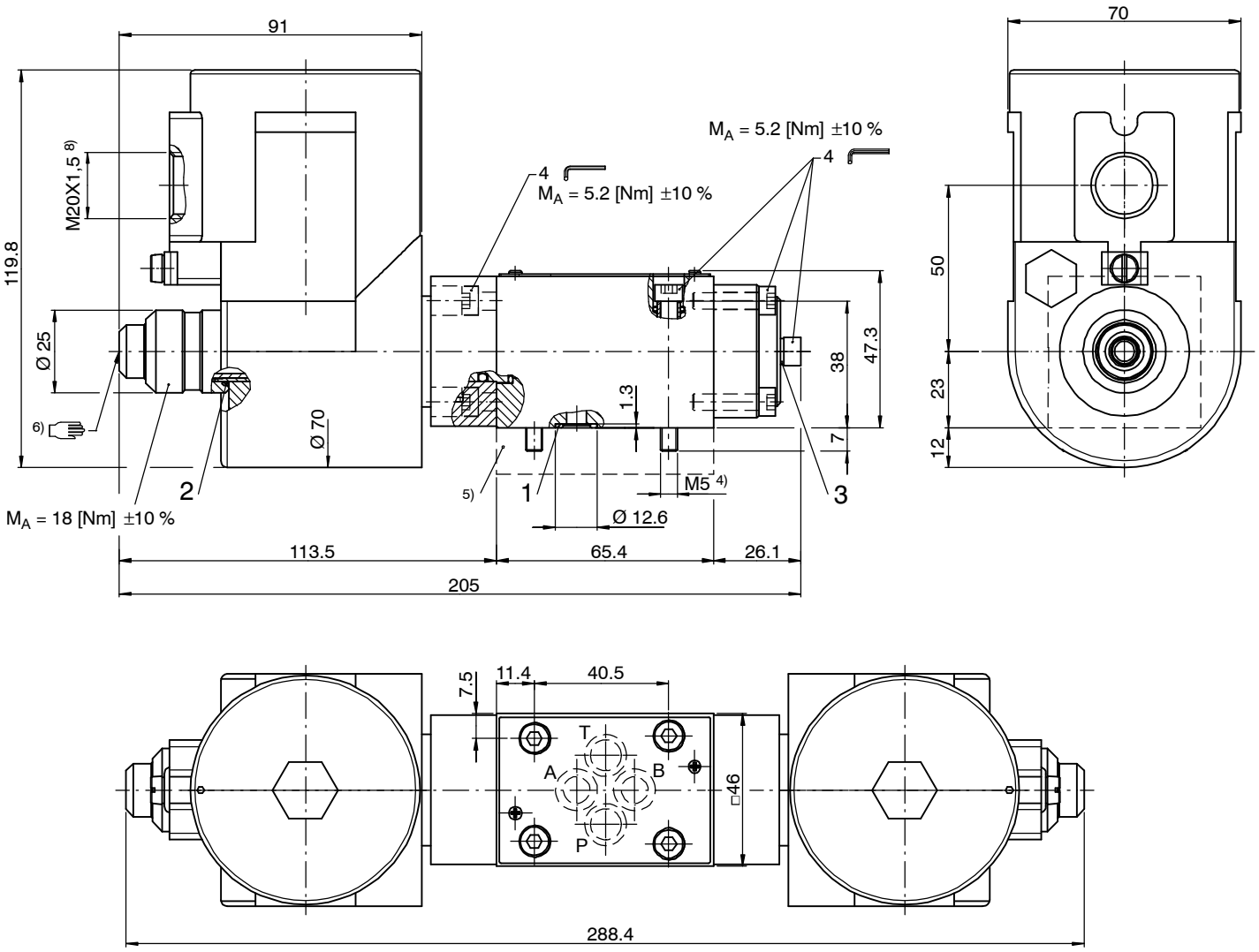
- The solenoid coils must only be operated when they are fitted on the associated valve. For more information on installation and commissioning, please refer to the operating instructions supplied with the solenoid coil.

ATTENTION!
Ratings given in the operating instructions
Pay attention to the relevant operating instructions from the solenoid coil! If in doubt, the less favourable values apply.

ATTENTION!
Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

ATTENTION!
Authorised persons
The tasks described here may only be carried out by authorised personnel. Authorised personnel are those who have electro-technical training (EN 60204-1).

6 Dimensions & sectional view



Seal kit no. DS-156-N 7)

Item	Qty. 9)	Qty. 10)	Description
1	4	4	O-ring no. 012 ∅ 9,25 x 1,78 N90
2	1	2	O-ring no. 017 ∅ 17,17 x 1,78 N90
3	1	-	Copper ring DIN7603A 5 / 9 x 1

IMPORTANT!:

4) Valve mounting bolts M5X45 (included in the delivery)

5) stack mounting spacer plate SZ-16-6 must be ordered separately.

6) Manual overid (on each solenoid)

7) Seal kit with Viton seals, no. DS-156-V

8) Cable entry gland, type AGRO 1820.16.26 M20 x 1,5 must be ordered separately.

9) 4/2 valves (1 solenoid)

10) 4/3 valves + 4/2 valves detent (2 solenoids)

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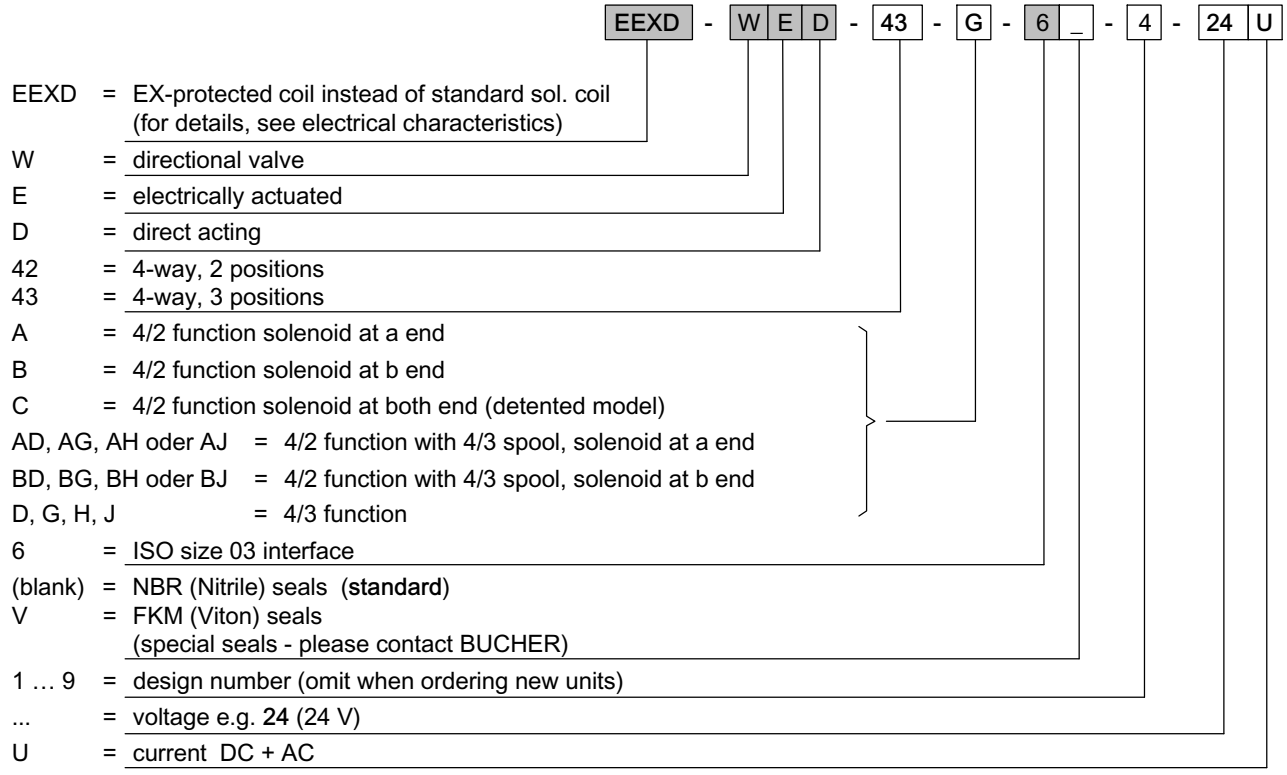
7 Ordering code



8 Related data sheets

Reference	(Old no.)	Description
400-P-030501	(i-31)	Size 03 interface to ISO 4401-03-02
…		Operating instructions for solenoid coil VACC-S18…EX4D