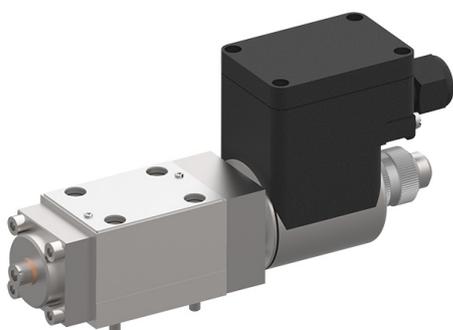


## 4/2 and 4/3 Solenoid Directional Valve, ISO Size 03

$Q_{\max} = 60 \text{ l/min}$ ,  $p_{\max} = 315 \text{ bar}$   
 Two-stage design, with EX-safty solenoid coil  
 Series EEX-WEV...



Valve:

- Slip-on coil design, coils can be changed without opening hydraulic envelope
- With manual override
- Interface to ISO 4401-03-02

Solenoid coil:

- To IEC/EN 60079-0, IEC/EN 60079-7, EN 60079-18  
To EN 60079-31
- For equipment in Category 2

gas:  $\text{Ex}$  II 2 G Ex eb mb IIC T4 Gb

dust:  $\text{Ex}$  II 2 D Ex tb IIIC T120°C Db

### 1 Description

Series EEX-WEV...-6 high performance spool valves are two-stage units which use the follower spool principle. The main valve components are a steel body, a spring-centered follower spool assembly 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 aluminium with spray painted finish. The solenoid armature is of the oil-immersed type. The coil winding is vacuum encapsulated and as a result has a high operational reliability. The terminal box on the coil is provided with a cable gland for cable diameter of 6 ... 12 mm. Valves are supplied complete with cable entry gland but without cable. The valves provide reliable service even under the severest operating conditions such as high flow rates, high operating pressures, long periods without switching and large temperature fluctuations. The highly effective spool actuation method combines the advantages of both direct acting and two-stage solenoid valves, without incurring the well known disadvantages of either type. The main spool is offset by both the solenoid force and the P - T \*) pressure difference inside the valve. The greater the P - T pressure difference, the greater the offsetting force. It is brought back to its deenergised position in the same way, using the P - T

pressure difference and without the need for heavy centering springs.

\*) The pressure in P must exceed that in T and the valve must be connected in the conventional manner i.e. pressure to P, T to tank.

**Ex:** solenoid conforms to the European standards IEC/EN 60079-0, IEC/EN 60079-7, EN 60079-18 EN 60079-31

**Gas:**

**e:** increased security

**m:** encapsulation

**Group II:** for use in the potentially explosive area

**T4:** temperature class for gas

**Dust:**

**t:** protection by enclosure

**Group IIIC:** use in areas with combustible dust

**T120 °C:** temperature class for dust

**Verification certificates:**

Europe: BVS 16 ATEX 036 X

others on request

### 2 Technical data

General characteristics	Description, value, unit
Designation	4/2 and 4/3 solenoid directional valve
Design	manifold-mounting, two-stage
Mounting method	4 x $\varnothing 5,5$ holes for M5x45 cap screws
Tightening torque	5.2 Nm $\pm 10 \%$
Size	size 03 interface to ISO 4401-03-02 / DIN 24 340 A6

Reference: 400-P-190110-EN-03

General characteristics		Description, value, unit
Weight		2.2 kg (1 solenoid) 3.0 kg (2 solenoid)
Mounting attitude		horizontal recommended (vertical mounting makes air bleeding difficult)
Ambient temperature range		see hydraulic and electrical characteristics
Hydraulic characteristics		Description, value, unit
Maximum operating pressure	port A,B and P port T	315 bar 15 bar
Maximum flow rate		60 l/min
Flow direction		see symbols
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER
Ambient temperature range <sup>1)</sup>		-25 °C ... +80 °C
Hydraulic fluid temperature range <sup>1)</sup>		-25 °C ... +80 °C <sup>2)</sup>
Viscosity range		10...500 mm <sup>2</sup> /s (cSt), recommended 15...250 mm <sup>2</sup> /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, 230 V DC/AC alternating voltage 50 ... 60 Hz ±2% direct or undulating voltage
Supply voltage tolerance		-15 % / +10 %
Ambient temperature range <sup>1)</sup> operation as T4 / T120 °C		-20 °C ... +40 °C
Temperature class to IEC/EN 60079-0		T1 ... T4
EX-protection marking	Gas: Dust:	II 2 G, Ex eb mb IIC T4 Gb II 2 D, Ex tb IIIC T120°C Db
Nominal power consumption		12 W at 20 °C
Relative duty cycle		100 %
Protection class to ISO 20 653 / EN 60 529		IP 65 (with properly fitted cable gland and properly made cable connection)
Electrical connection		shipped with cable inlet thread M20 x 1.5, without cable
Fuse connected in series as per IEC 60127		24 V DC / AC      1250 mA 230 V DC / AC      125 mA



### IMPORTANT!:

<sup>1)</sup> The less favourable values from the hydraulic and electrical characteristics determine the temperature range of the whole valve.



### IMPORTANT!:

<sup>2)</sup> The maximum fluid temperature must not exceed the permissible ambient temperature for the whole valve.

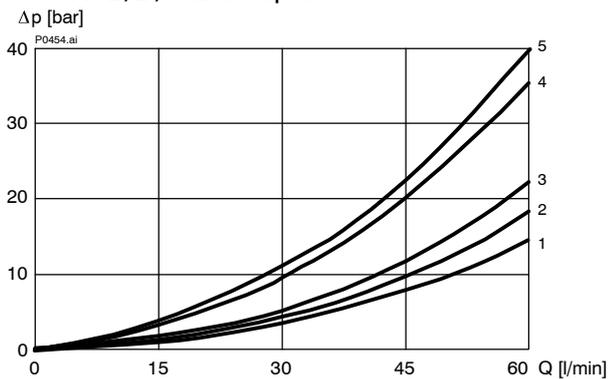
### 3 Symbols / Spool types

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

### 4 Performance graphs

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

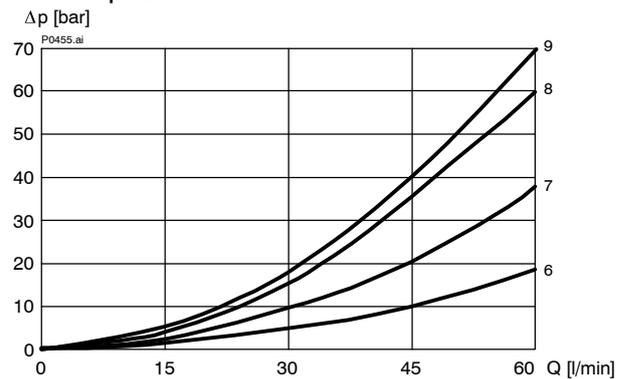
$\Delta p = f(Q)$  Pressure drop - Flow rate characteristic  
A / B, D, G and H spool



**IMPORTANT!**

The quoted max. flow rates apply when symmetrical flows pass through the valve.

$\Delta p = f(Q)$  Pressure drop - Flow rate characteristic  
J spool



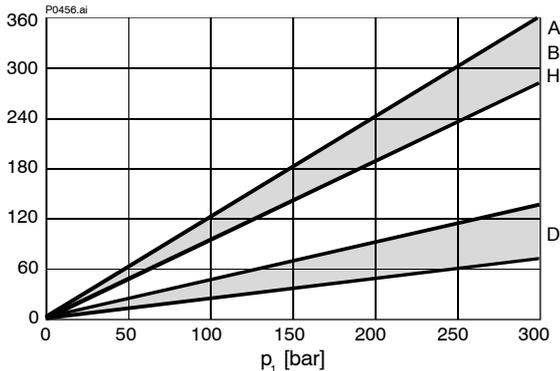
**IMPORTANT!**

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	2	5	2	5	--	--
D	3	5	3	5	--	--
G	3	4	3	4	--	--
H	1	4	1	4	--	2
J	7	9	7	8	6	--

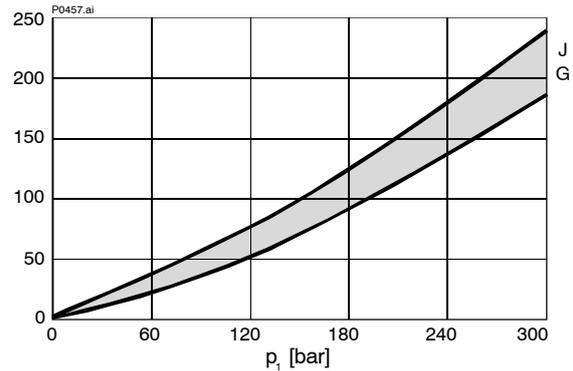
$Q_{ST}$  = Pilot-oil consumption

$Q_L$  [cm<sup>3</sup>/min]



$Q_{ST}$  = Pilot-oil consumption

$Q_{ST}$  [cm<sup>3</sup>/min]



## 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.

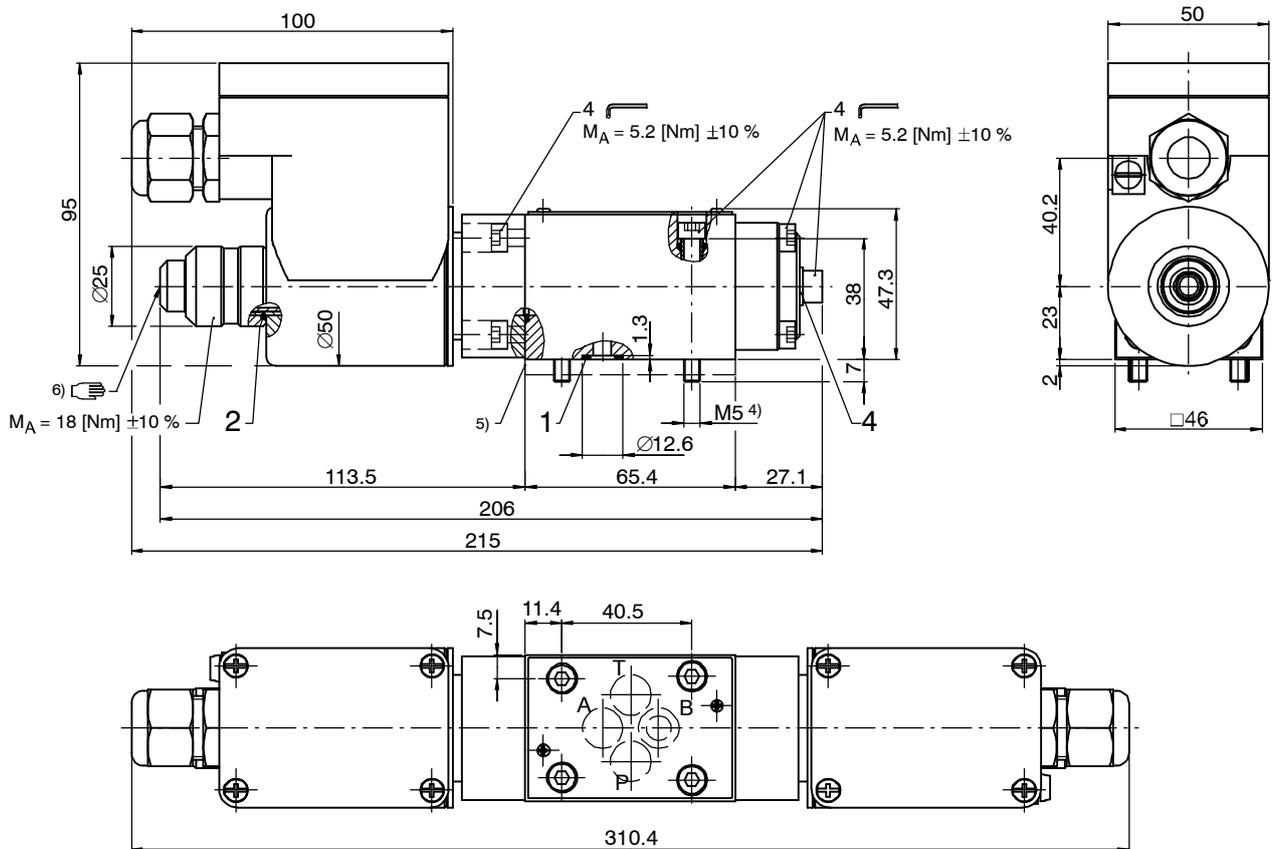


#### ATTENTION!

##### 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-083-N <sup>3)</sup>

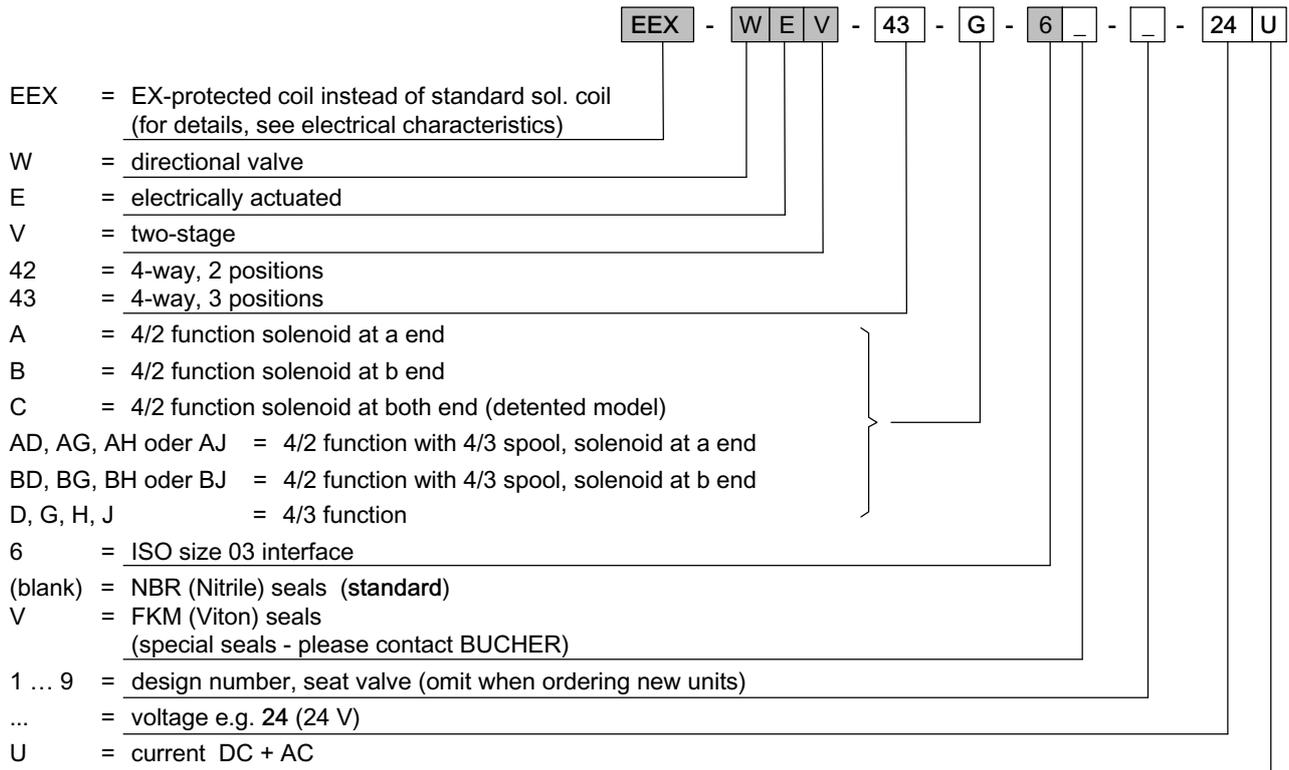
Item	Qty. 7)	Qty. 8)	Description
1	4	4	O-ring no. 012 $\varnothing$ 9,25 x 1,78 N90
2	1	2	O-ring no. 017 $\varnothing$ 17,17 x 1,78 N90
4	1	-	Copper ring DIN7603A 6 / 10 x 1



### IMPORTANT!:

- 3) Seal kit with Viton seals, no. DS-083-V
- 4) Valve mounting bolts M5X45 (included in the delivery)
- 5) stack mounting spacer plate SZ-6-1 and if required, longer fastening screws must be ordered separately
- 6) Manual overid (on each solenoid)
- 7) 4/2 valves (1 solenoid)
- 8) 4/3 valves (2 solenoids)

### 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...EX4ME

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