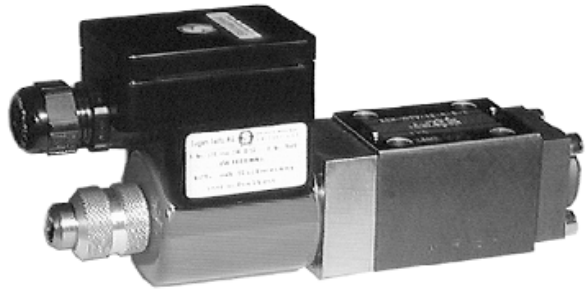
4/2 and 4/3 Solenoid Directional Valve, ISO Size 03

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



Valve:

- High switching reliablility thanks to two-stage follower spool design
- Slip-on coil design, coils can be changed without opening hydraulic envelope
- With manual override
- Interface to ISO 4401-03-02

Solenoid coil:

- To EN 60079-0, EN 60079-7, EN 60079-18
  To EN 61241-0, EN 61241-1
- Certificate of conformity:
  PTB 00 ATEX 2211 X

gas: Ex II 2 G Ex emb II T4

dust: Ex II 2 D Ex tD A21 (P65 T130°C)

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 coil terminal box is threaded PG 13,5 for a cable entry gland. 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 grea-ter 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.
Certificate of conformity:
PTB 00 ATEX 2211 X

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 ∅ 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	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

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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 [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 115 / 230 V AC In AC solenoids, rectifier is integrated.
Supply voltage tolerance		+ 10 % / - 5 %
Ambient temperature range [1)]		-20 °C … +40 °C (operation as T4)
Temperatue class		T1 … T4
EX-protection marking	Gas: Dust:	II 2 G, Ex emb II T4 II 2 D, Ex tD A21 IP65 T130°C
Nominal power consumption		12 W = 24 V DC 15 W = 115 / 230 V AC
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 gland (PG 13.5) but without cable (Ø 6 / max. Ø 12.3 x 1.5 mm^2). Cable-entry temperature may exceed 70 °C

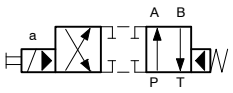
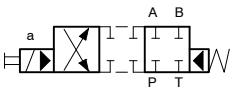
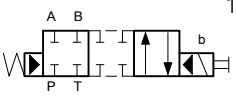
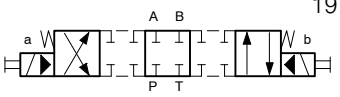
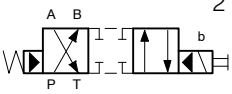
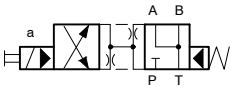
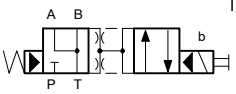
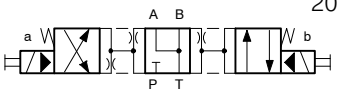
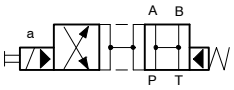
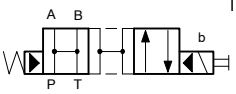
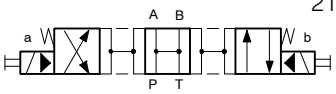
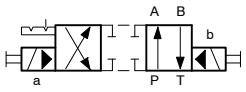
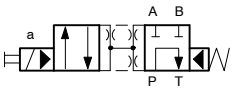
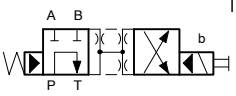
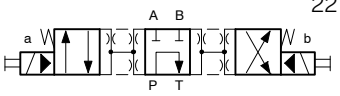
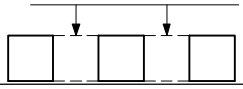
IMPORTANT!:

[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.

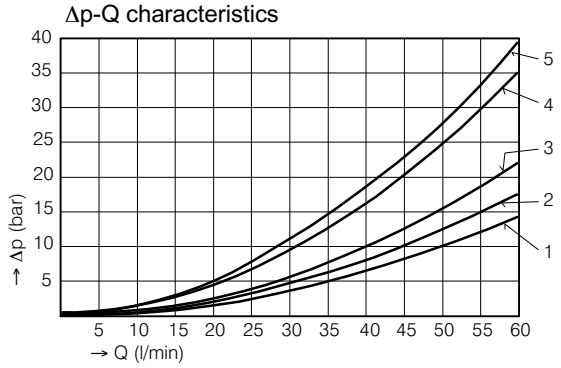
3 Symbol

4/2 FUNCTIONS	4/2 FUNCTIONS WITH 4/3 SPOOLS	4/2 FUNCTIONS WITH 4/3 SPOOLS	4/3 FUNCTIONS
EEX-WEV-42-A-6 1 	EEX-WEV-42-AD-6 7 	EEX-WEV-42-BD-6 13 	EEX-WEV-43-D-6 19 
EEX-WEV-42-B-6 2 	EEX-WEV-42-AG-6 8 	EEX-WEV-42-BG-6 14 	EEX-WEV-43-G-6 20 
3	EEX-WEV-42-AH-6 9 	EEX-WEV-42-BH-6 15 	EEX-WEV-43-H-6 21 
EEX-WEV-42-C-6 4 	EEX-WEV-42-AJ-6 10 	EEX-WEV-42-BJ-6 16 	EEX-WEV-43-J-6 22 
Crossover transients 5 	11	17	For other spools please consult BUCHER 23

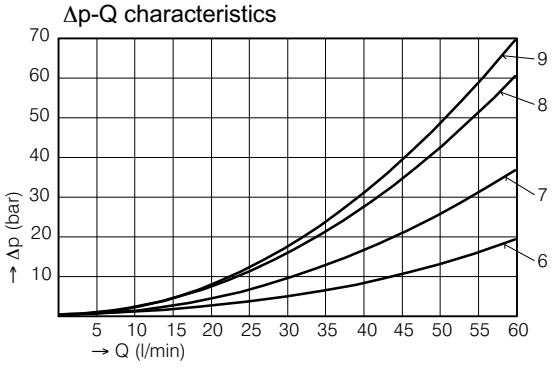
4 Performance graphs

measured with oil viscosity 33 mm²/s (cSt), coil at steady-state temperature and 5 % undervoltage

Δp-Q characteristics



Δp-Q characteristics



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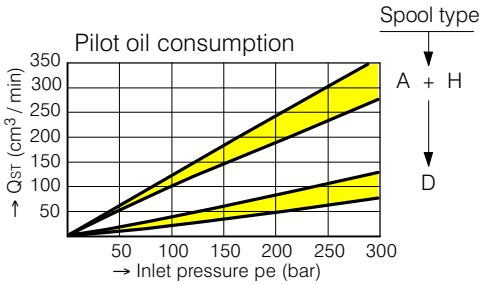
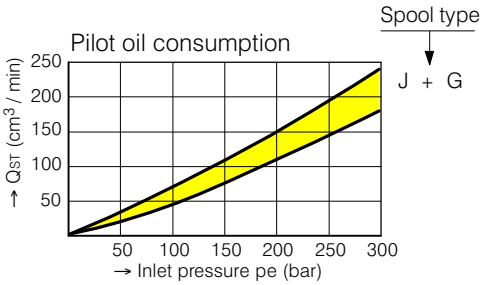
	P ⇒ A	B ⇒ T	P ⇒ B	A ⇒ T	P ⇒ T	P,A+B ⇒ T
A spool	2	5	2	5	--	--
D spool	3	5	3	5	--	--
G spool	3	4	3	4	--	--
H spool	1	4	1	4	--	2
J spool	7	9	7	8	6	--

Switching times	
Solenoid ON	80 ms
Solenoid OFF	40 ms

These are guideline values only, and can be significantly affected by flow rate, pressure and oil viscosity.





5 Installation information

COMMISSIONING

- For short-circuit protection, each solenoid must be preceded by a fuse conforming to IEC 60127 with a maximum rating of three times the rated current of the solenoid coil (see nameplate).
- 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! If in doubt, the ratings in the operating instructions apply.

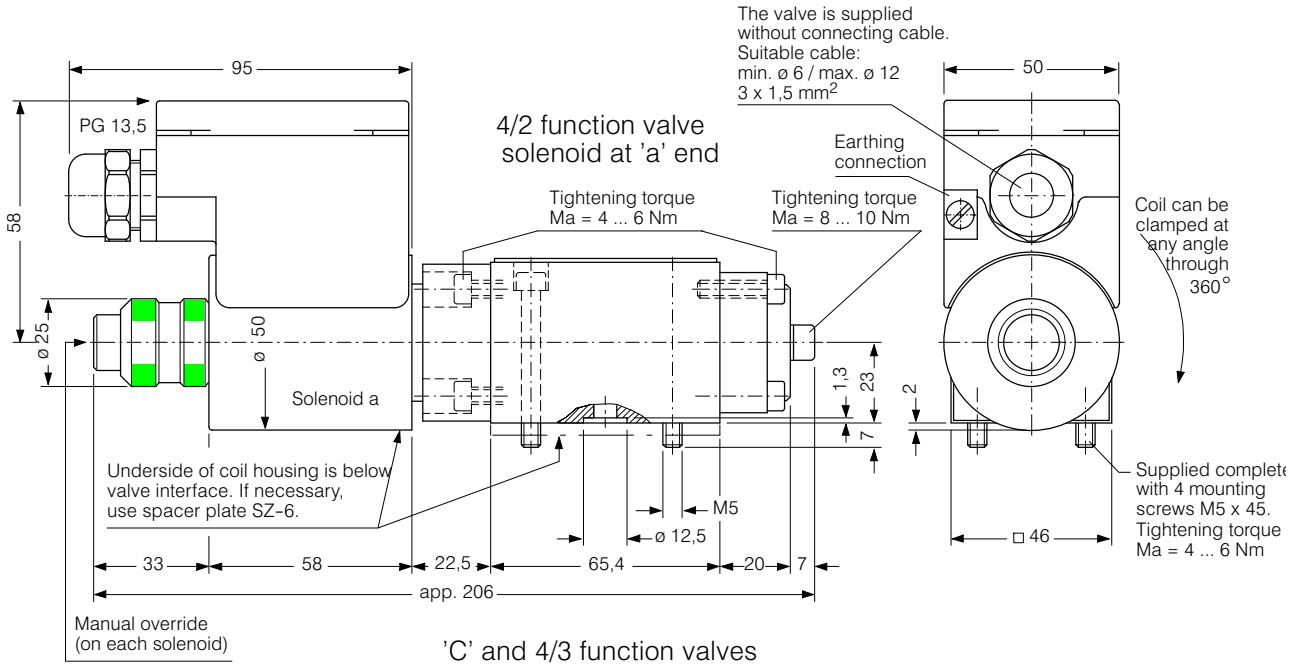
ATTENTION!
Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

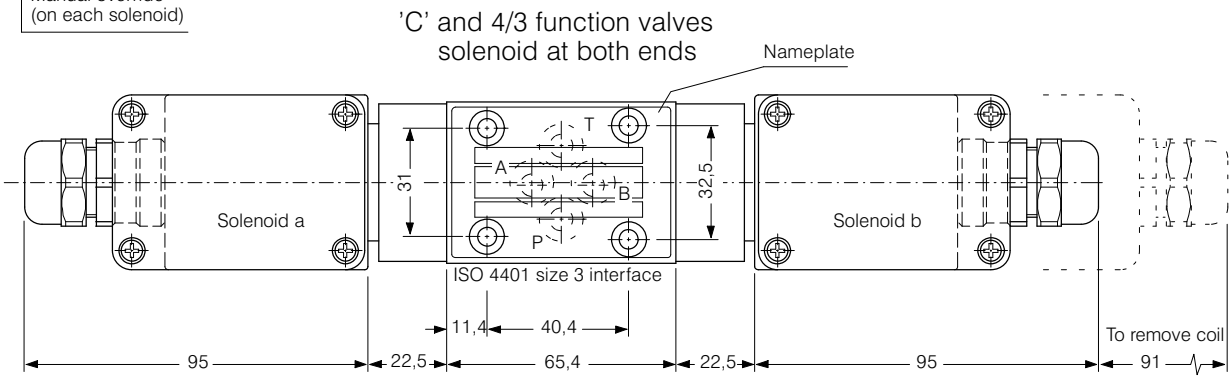
ATTENTION!

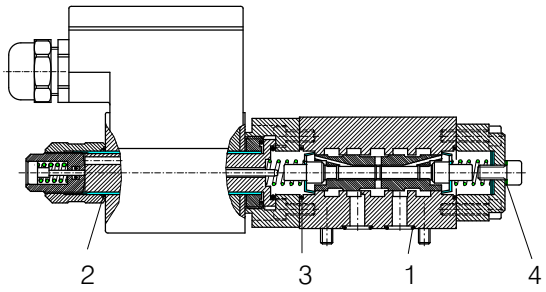
Authorised persons
The tasks described here may only be carried out by authorised personnel. Authorised personnel are those who have electro-technical training (EN 60204-1).

IMPORTANT!
When fitting the cartridges, use the specified tightening torque for the mounting bolts. No adjustments are necessary, since the cartridges are set in the factory.

6 Dimensions & sectional view







Seal kit no. DS-083-N 3)

Item	Qty. 4)	Qty. 5)	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	2	2	O-ring no. 018 ∅ 18,77 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) 4/2 valves (1 solenoid)

5) 4/3 valves (2 solenoids)

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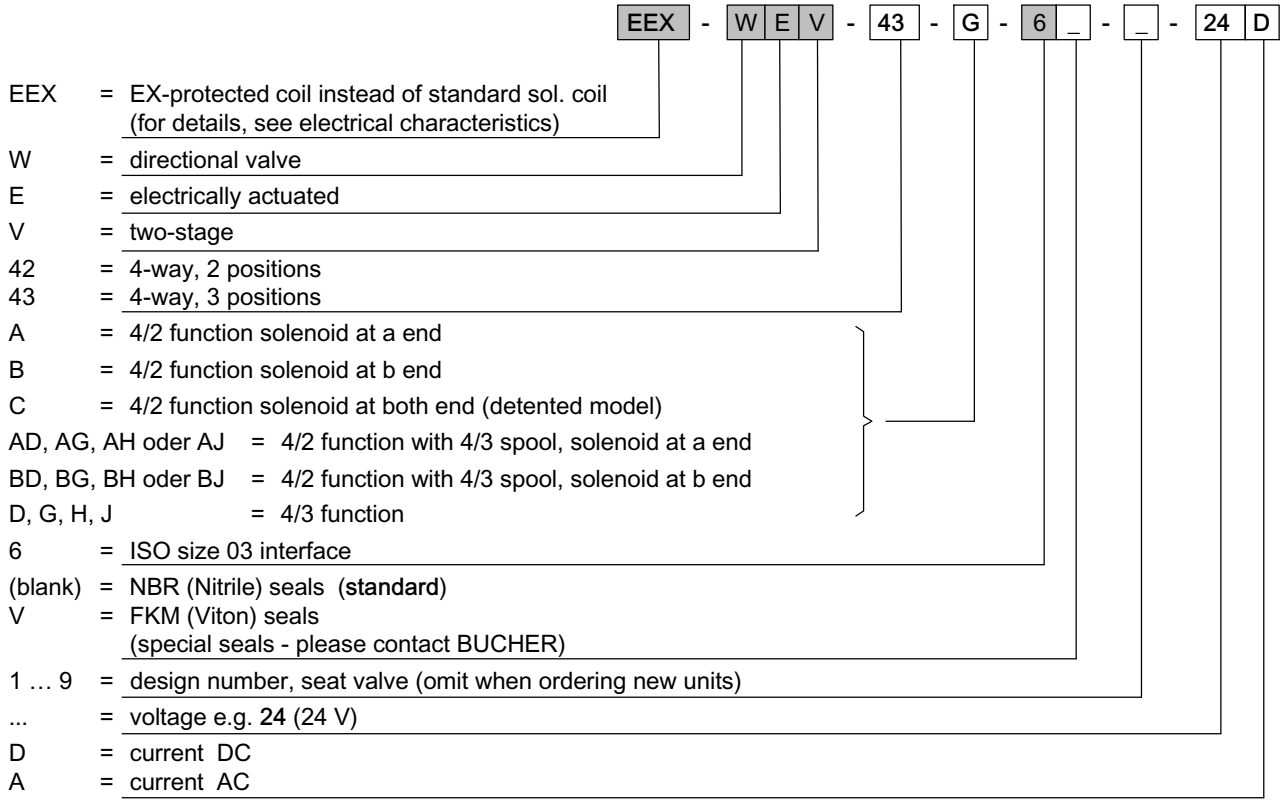
7 Ordering code



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 Seitz (FESTO)

info.ch@bucherhydraulics.com www.bucherhydraulics.com

Classification: 430.300.-.305.310.300