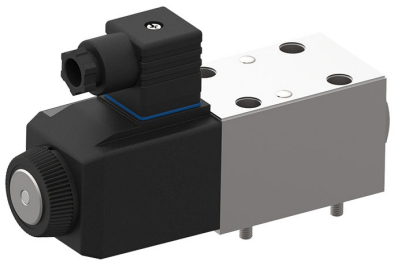
4/2 and 4/3 Directional Spool Valves, ISO Size 03

Q_{max} = 80 l/min, p_{max} = 350 bar
Direct acting, solenoid operated
Series WEDO…

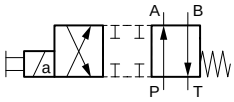
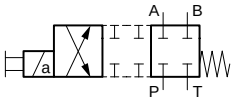
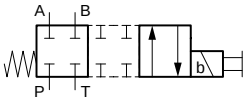
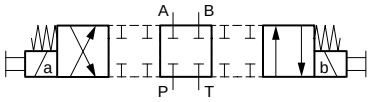
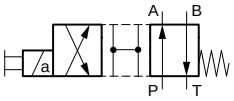
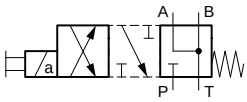
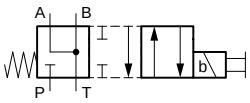
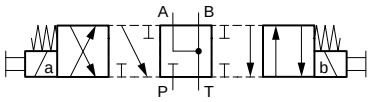
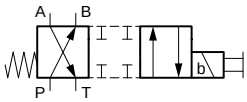
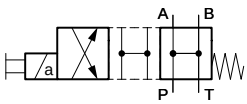
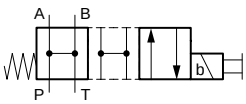
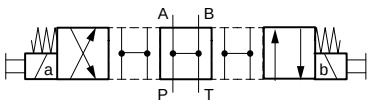
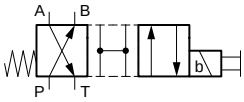


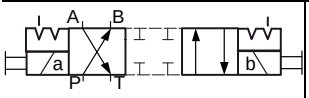
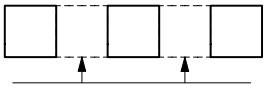
- For controlling the starting, stopping, and direction of a flow
- Manifold-mounting design, interface to ISO 4401-03-02
- Operated by DC or AC solenoids
- Very reliable functions and extremely stable
- With manual override
- Solenoid coils can be changed quickly and easily without leakage from hydraulics system.

1 Description

The WEDO-…-6… series of directional spool valves are solenoid operated, direct acting, manifold-mounting valves with a size 03 interface to ISO 4401-03-02. The main components of the valves are a steel body, either one or two solenoids, the control spool, and either one or two return springs. In the non-operated state, the return springs hold the control spool in the middle position or initial position. The control spool is operated by the DC or AC solenoids, which are of the oil-immersed type. The integral manual override can be used to move the spool without energizing the coil, for example during a power failure. These 4/3 and 4/2 directional valves are used in plant and machines to control the direction of a flow, and to stop the flow. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 4x90°. The version WEDO-42-C-6... is fitted with a mechanical detent setting.

2 Symbols / Spool types

4/2 functions	4/2 functions with 4/3 spool types	4/2 functions with 4/3 spool types	4/3 functions
 WEDO-42-A…	 WEDO-42-AD…	 WEDO-42-BD…	 WEDO-43-D…
 WEDO-42-AN…	 WEDO-42-AG…	 WEDO-42-BG…	 WEDO-43-G…
 WEDO-42-B…	 WEDO-42-AH…	 WEDO-42-BH…	 WEDO-43-H…
 WEDO-42-BN…			

4/2 functions	4/2 functions with 4/3 spool types	4/2 functions with 4/3 spool types	4/3 functions
 WEDO-42-C…			
 Crossover positions			

NOTE! Other spool types on request.

3 Technical data

General characteristics		Description, value, unit
Designation		4/3 and 4/2 directional spool valves
Design		flange design, direct acting, electrically operated
Mounting method		4 mounting holes for M5x30 mounting bolts (valve mounting bolts supplied with the valve)
Tightening torque		5.2 Nm ± 10 %
Size		size 03 interface to ISO 4401-03-02
Weight	- valve with one solenoid - valve with two solenoids	1.60 kg 2.10 kg
Mounting attitude		horizontal recommended (vertical mounting makes air bleeding difficult)
Ambient temperature range		-30 °C … +80 °C

Hydraulic characteristics		Description, value, unit
Maximum operating pressure	- ports A, B, P - port T	350 bar 210 bar
Maximum flow rate	DC AC	80 l/min 60 l/min
Flow direction		see table “Symbols / Spool types”
Hydraulic fluid		HL and HLP mineral oil to DIN 51 524; HEES biodegradable fluids; for other fluids, please consult BUCHER
Hydraulic fluid temperature range		-30 °C … +80 °C
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

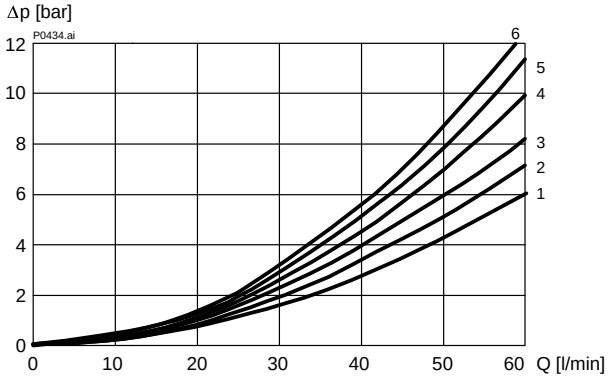
Electrical characteristics		Description, value, unit
Standard - Supply voltage		12 V DC, 24 V DC / 110 V AC, 220 V AC (50 … 60 Hz)
Supply voltage tolerance		± 10 %
Ambient temperature range		-20 °C … +50 °C
Nominal power consumption	DC AC	30/31 W energizing 225 VA (RMS) / holding 39 VA (RMS)

Electrical characteristics		Description, value, unit
Switching time bei 40 l/min, 175 bar	DC AC	45 ms (energizing) 28 ms (de-energizing) 15 ms (energizing) 23 ms (de-energizing) Depending on pressure, flow rate, pressure drop 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 ISO 20 653 / EN 60 529		IP65 (with appropriate mating connector and proper fitting and sealing)
Electrical connection		DIN EN 175301-803, 3-pin 2 P+E (standard) for other connectors, see “Ordering code”

4 Performance graphs

measured with oil viscosity 33 mm^2/s (cSt), coil at steady-state temperature and 10 % undervoltage

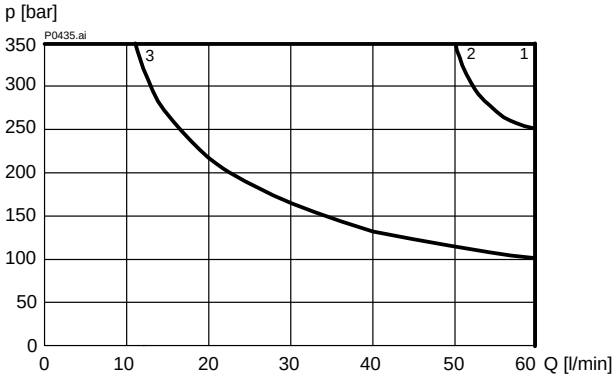
Δp = f (Q) Pressure drop - Flow rate characteristic
A, B, C, D, F, G, H and J spool



Spool type	Flow direction						
	P ⇒ A	P ⇒ B	P ⇒ T	A ⇒ T	B ⇒ T	A ⇒ B	B ⇒ A
A / B / C	6	6	–	5	5	–	–
AN / BN / CN	5	5	–	2	2	–	–
D	5	5	–	2	2	–	–
G	6	6	–	3* 1	3+ 1	–	–
H	4	4	4 +	2	2	–	–

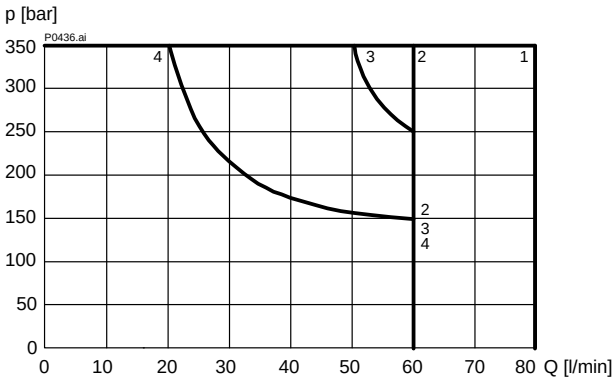
* in mid–position, B closed
** in mid–position, A closed
\+ in mid–position, A + B closed
++ in mid–position, P closed

p = f (Q) Performance limits with AC-solenoid coil operating at 50 Hz



Spool type	Flow direction
A	2
B	2
C	2
D	1
G	3
H	1

p = f (Q) Performance limits - wIth DC-solenoid coil



Spool type	Flow direction
A	3
B	3
C	3
D	1
G	4
H	2

IMPORTANT!

The indicated performance limits apply when symmetrical flows pass through the valve.
For non-symmetrical flows, the max. flows are substantially reduced, in worst cases to 33%.

5 Installation information

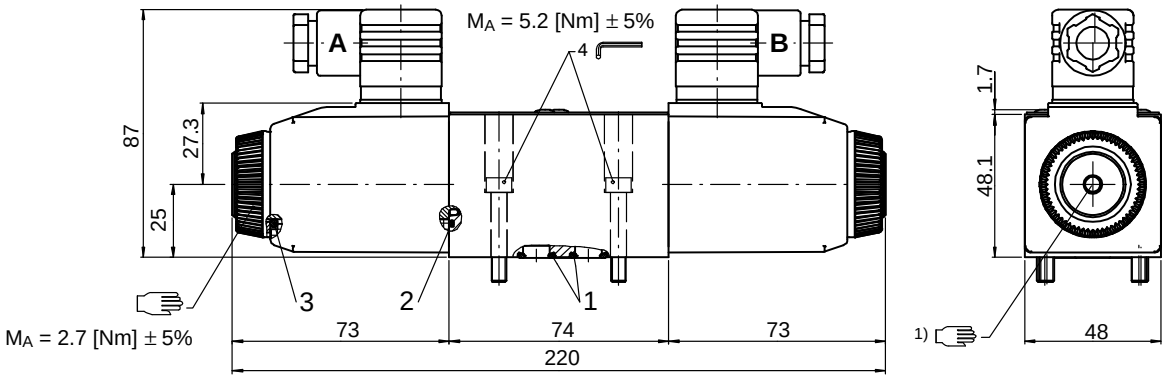
ATTENTION!
Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

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

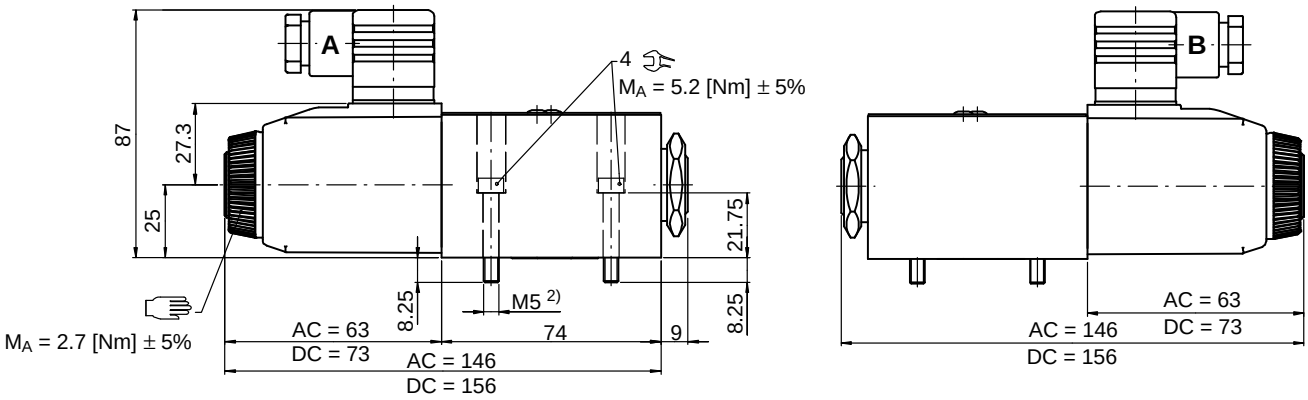
6 Dimensions & sectional view

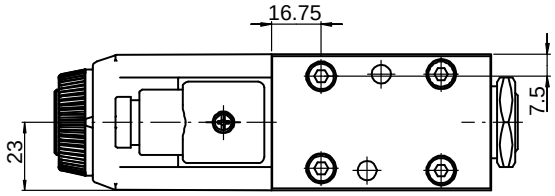
4/3 spool valve (spring centred)

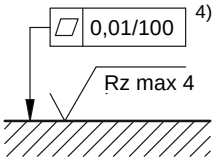
4/2 spool valve (pulse signal, detented)



4/2 spool valve (1-solenoid model, A or B side)







Seal kit NBR no. DS-150-V 3)

Item	Qty. 5)	Qty. 6)	Description
1	4	4	O-ring no. 012 ∅ 9,25 x 1,78 N90
2	1	2	O-ring no. 022 ∅25,12 x 1,78 N90
3	1	2	O-ring no. 213 ∅23,39 x 3,53 N90

IMPORTANT!

1) With manual override
2) Valve mounting bolts M5x30 (included in the delivery)
3) Seal kit with FKM (Viton) seals no. DS-150-V
4) Required surface finish on the mounting face (valve pad)
5) 4/2 valves (1 solenoid)
6) 4/3 valves (2 solenoid)

7 Ordering code

Ex. WEDO - 42 - G - 6 V - 1 24 D _

WEDO	=	directional valve, solenoid operated, direct acting
42	=	4/2 function (2 operating positions)
43	=	4/3 function (3 operating positions)
…	=	spool type / symbol see capture symbols / spool types
6	=	ISO size 03 interface
V	=	FKM (VITON) seals **(standard)** (special seals on request)
1 ... 9	=	design stage (omit when ordering new units)
...	=	voltage e.g. **24** (24 V)
D	=	current DC
A	=	current AC
(blank)	=	DIN EN 175301-803 connection with mating plug (**standard, IP 65**)
M100	=	DIN EN 175301-803 connection without mating plug Other additional plug-variants on request

8 Related data sheets

Reference	(Old no.)	Description
400-P-030501	(i-31)	Size 03 interface to ISO 4401-03-02

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

Classification: 430.300.-.315.305.300