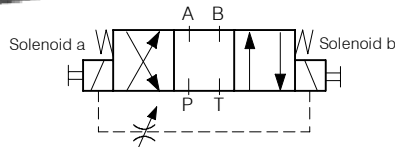
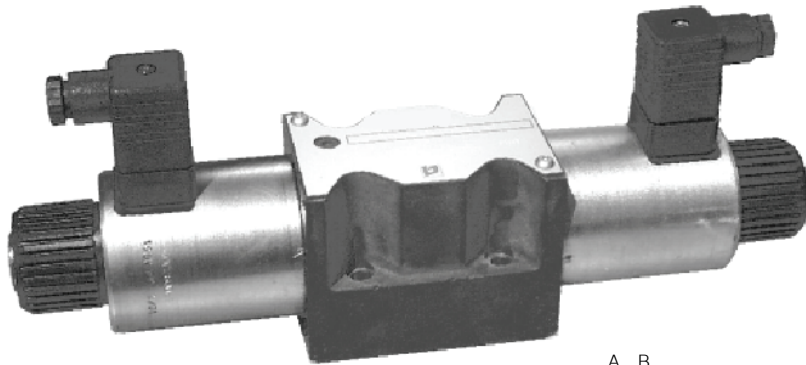


**Solenoid Operated Spool Valve, ISO size 5  
Direct Acting, Soft Switching  
Series WEDEU ...**



- 315 bar, 100 l/min
- Switching time is steplessly variable from outside the valve
- Full adjustment range is 150 ... 1500 ms
- Special opening geometry, high switching performance
- High flow rates
- Good  $\Delta p-Q$  values: no narrowing of flow paths in energised position
- Slip-on coils: coils can be changed without opening the hydraulic envelope
- Pressures to 315 bar in P, A and B
- Mounting interface to ISO 4401 / CETOP R35H size 5, NFPA D05, DIN 24 340 A10

**1. Description**

Series WEDEU ...-10 solenoid operated spool valves are direct acting units that provide smooth, shock-free acceleration, deceleration and reversal of hydraulic cylinders and motors. The design incorporates low-cost ramp controls that are entirely hydraulic in operation. The principal components of the valve are a cast body, a control spool with centering springs, and wet armature solenoids with high-pressure core tubes and slip-on coils (DC only). A coil can be replaced, or the voltage changed, without opening the hy-

draulic envelope. The valve switching time is adjusted by means of a flow-control screw that is accessible from the outside of the valve. The effect of the throttle is to reduce the rate of oil transfer between the two spring chambers. This, in turn, dictates the speed at which the spool shifts. To ensure that the spring chambers are purged of air and completely filled with oil when the valve is commissioned, it must be operated through 6 ... 12 complete cycles (spool stroked end-to-

fully open. After this has been done, the flow control needle can then be screwed in half a turn at a time (2 mm Allen key required) until the required switching time is attained. **Warning:** the flow control must never be screwed in fully i.e. until it "bottoms" - this would prevent any transfer of oil and the valve would no longer function. The system design must ensure that air cannot be sucked back through the tank line. To provide a reliable oil supply to the two spring chambers, the minimum tank line back pressure should be 1 bar.

**2. Symbols**

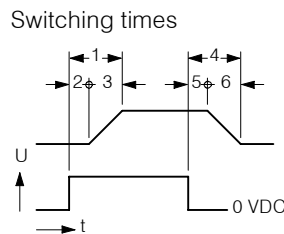
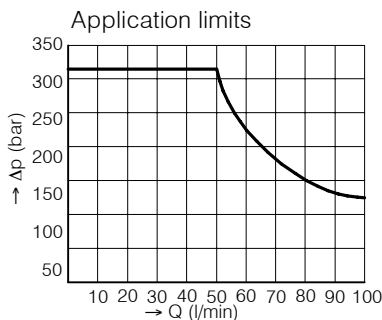
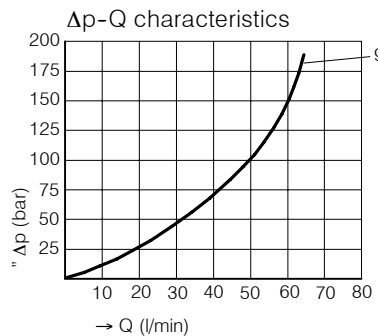
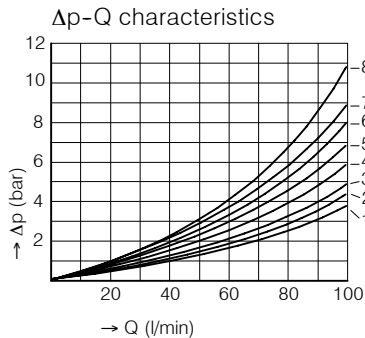
4/2 FUNCTIONS	4/2 FUNCTIONS WITH 4/3 SPOOLS	4/2 FUNCTIONS WITH 4/3 SPOOLS	4/3 FUNCTIONS
WEDEU-42-A-10 1	WEDEU-42-AD-10 7	WEDEU-42-BD-10 13	WEDEU-43-D-10 19
WEDEU-42-AN-10 2	WEDEU-42-AG-10 8	WEDEU-42-BG-10 14	WEDEU-43-G-10 20
WEDEU-42-B-10 3	WEDEU-42-AH-10 9	WEDEU-42-BH-10 15	WEDEU-43-H-10 21
WEDEU-42-B-10 4	WEDEU-42-AJ-10 10	WEDEU-42-BJ-10 16	WEDEU-43-J-10 22
Crossover transients 5	WEDEU-42-AGG-10 11	WEDEU-42-BGG-10 17	WEDEU-43-GG-10 23

### 3. Characteristics

Type		4/2 and 4/3 solenoid operated directional spool valves
Design		direct acting, soft-switching
Mounting method		manifold mounting
Size		nominal size 10 mm, ISO 4401 size 5 interface
Mass	kg	4,8 (1 solenoid), 6,3 (2 solenoids)
Mounting attitude		horizontal recommended (vertical mounting makes purging of air more difficult)
Flow direction		see symbols
Operating pressure	bar	max. 315 in P, A und B; max. 160 in T
Switching frequency	cycles/h	1200
Flow rate Q <sub>max</sub>	l/min	100, see Performance graphs
Fluids		Hydraulic oils HL and HLP to DIN 51 524
Fluid temperature range	°C	-25 ... + 80
Ambient temperature	°C	-25 ... + 50
Viscosity range	cSt	10 ... 500, recommended 15 ... 250
Minimum fluid cleanliness		18/14 to ISO 4406 /CETOP RP70H 8 ... 9 to NAS 1638
Solenoid type		high pressure, wet armature type (with slip-on coils)
Standard voltages	VDC	12 / 24 / 196 (with integral bridge rectifier in the connecting plugs) - for other voltages - contact BUCHER
Nom. voltage tolerance	%	±10
Nom. power consumption	W	39
Duty cycle	%	100
Enclosure protection		IP 65 to DIN 40 050
Electrical connection		3-pin square plug to DIN 43 650 / ISO 4400; can be turned 4 x 90°

### 4. Performance graphs

Oil viscosity 33 cSt



- 1 = total energising time
- 2 = time until flow paths begin to open
- 3 = time for solenoid to open spool fully
- 4 = total spring-return time
- 5 = time until flow paths begin to close
- 6 = time for spring to close spool fully

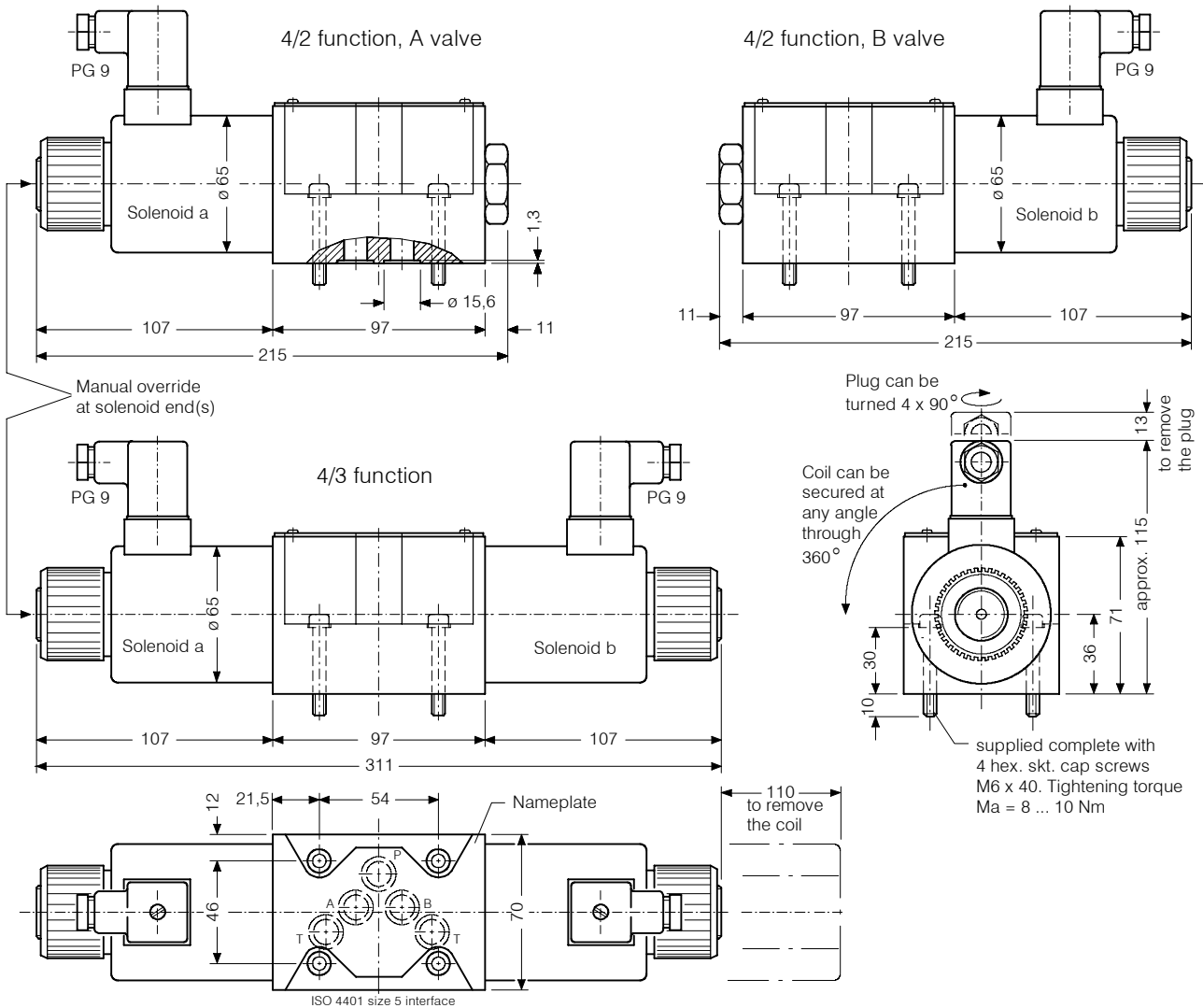
There are a large number of factors that cannot easily be pre-determined. This means that the flow control cannot be factory-set and adjustment on-site is therefore essential. This is simple in practice, thanks to the externally-accessible flow control.

	Solenoid	Solenoid				
		P → A	P → B	A → T	B → T	T → T
A- / B spools		3	3	5	6	--
AN- / BN spool		2	2	4	5	--
D spool		2	2	4	5	--
G spool	OFF	--	--	5	6	--
	ON	3	3	6	7	--
H spool	OFF	--	--	--	--	3
	ON	1	1	6	7	--
J spool		2	2	1	8	8
GG spool	OFF	--	--	9	9	--
	ON	2	2	5	6	--

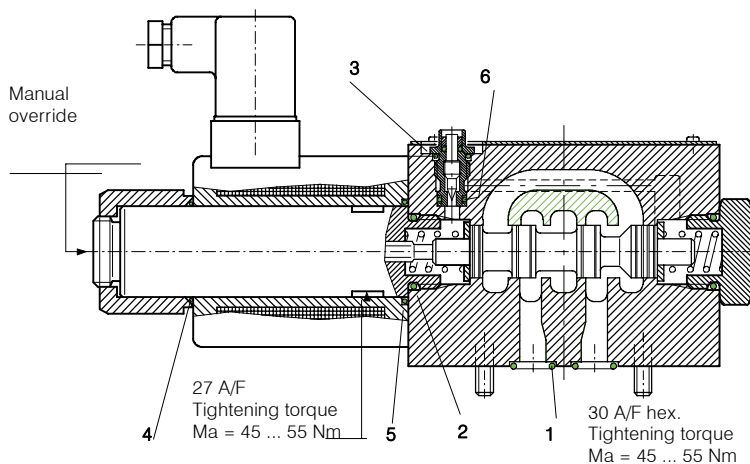
The values 1 and 4 are jointly controlled by the setting of the flow control, but it is usually the case that they are not equal. Both values normally fall in the range 150 ... 1,500 ms. The switching times are also strongly influenced by the following factors:

- Solenoid force: = ± 15 % voltage variation  
= ± 50 % switching time
- Cold / hot solenoid: = ± 20 % switching time
- Flow rate Q (l/min): = influences values 3 + 6  
(lower Q = shorter t)
- Pressure diff. Δp (bar): = ± 75 % change in Δp  
= ± 10 % switching time

## 5. Dimensions



## 6. Schematic section



Sealkit no. DS-122-V, comprising:

Itm.	Qty	Description	Size
1	5	O-ring no. 014	$\phi 12,42 \times 1,78 \text{ V}$
2	2	O-ring no. 118	$\phi 21,89 \times 2,62 \text{ V}$
3	1	O-ring no. 012	$\phi 9,25 \times 1,78 \text{ V}$
4	2	O-ring	$\phi 30,00 \times 2,00 \text{ N70}$
5	2	O-ring	$\phi 30,00 \times 2,00 \text{ N70}$
6	1	O-ring no. 010	$\phi 6,07 \times 1,78 \text{ V}$

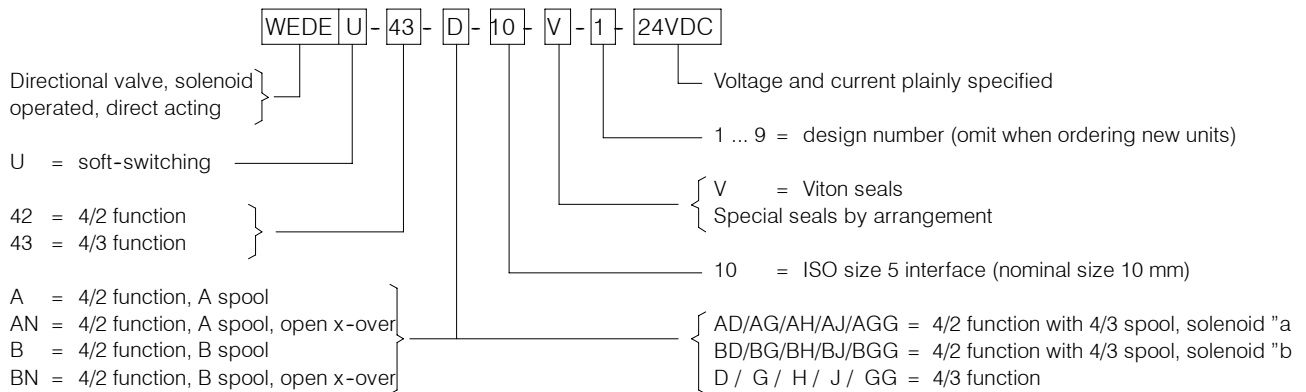
## 7. Installation and servicing

All installation and servicing must be carried out with care, and by qualified personnel only. The following points must be observed: "A" (and "B") spools must not be reversed, or the function  $P \Rightarrow A / B \Rightarrow T$  will become  $P \Rightarrow B / A \Rightarrow T$  (and vice versa for "B"). All other spools

are symmetrical, but should always be reassembled with their original orientation, in any case. When changing seals, the new seals must be thoroughly oiled or greased before they are fitted. Use the specified tightening

torques when fitting the spring cap, DC and the core tube. At installation, make sure that the valve interface aligns with the interface of the mating surface, and use the specified tightening torque when fitting the valve mounting bolts.

## 8. Model code key



## 9. Related data sheets

Old no.	New no.	
i-00	400-P-010101-E	Table of interface equivalents
i-41	400-P-050101-E	DIN 24 340 size A10 interface

info.ch@bucherhydraulics.com

www.bucherhydraulics.com

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