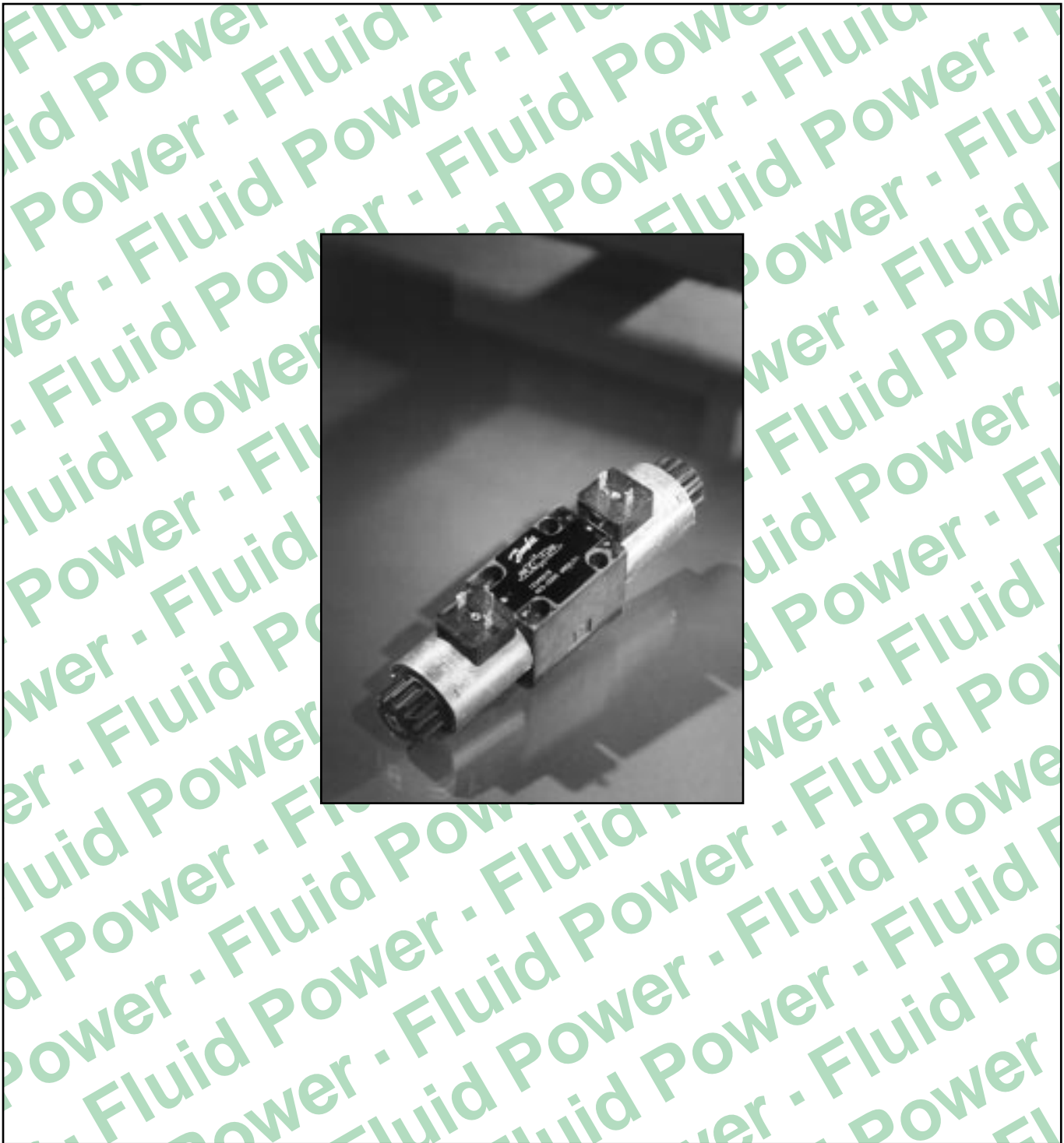
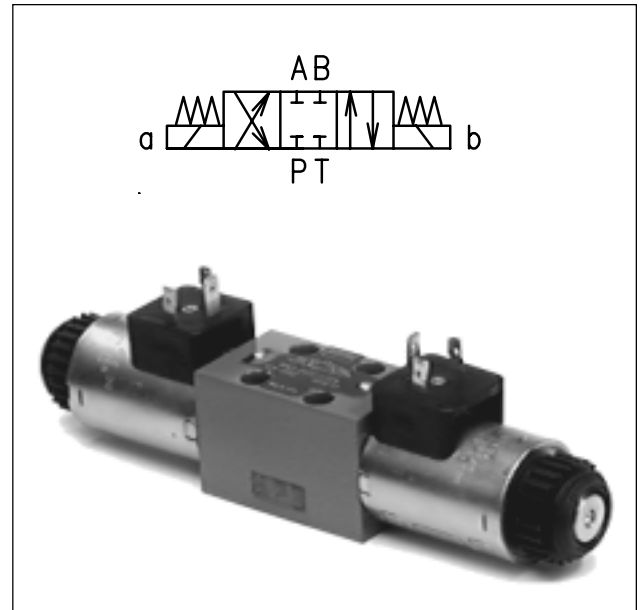


Directional Cetop Valves DCV 05



- 4/3-, 4/2- and 3/2-way directional valves
- Solenoids can be fixed in three positions 90° apart
- Push button manual override
- Installation dimensions to DIN 24340 and ISO 4401



Functional Description

The directional control valves DCV 05 consist of housing (1), control spool (5) centering springs (4) and operating solenoids (2, 3).

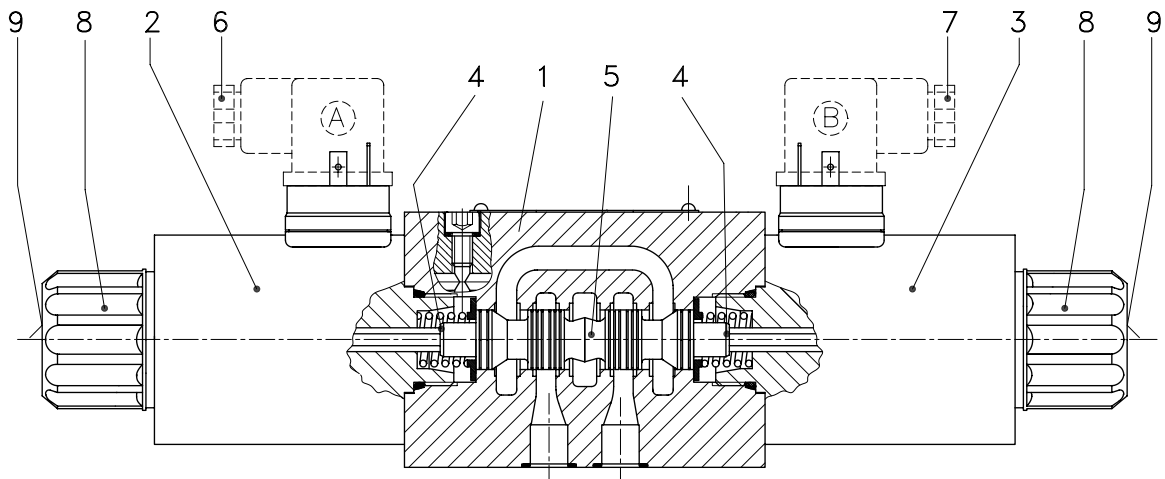
The three-position directional valves are fitted with two solenoids and two springs. The Two position directional valves have one solenoid and one return spring.

The operating solenoids are d.c.. solenoids and are supplied through connectors A, B (6, 7) without rectifiers. For a.c.. supply the solenoids are provided with rectifiers, which are integrated directly into the connectors A, B (6, 7).

The connectors do not belong to delivery and must be ordered separately. By loosening the fixing nut (8), the solenoid can be turned on its axis and fixed in three positions 90° apart.

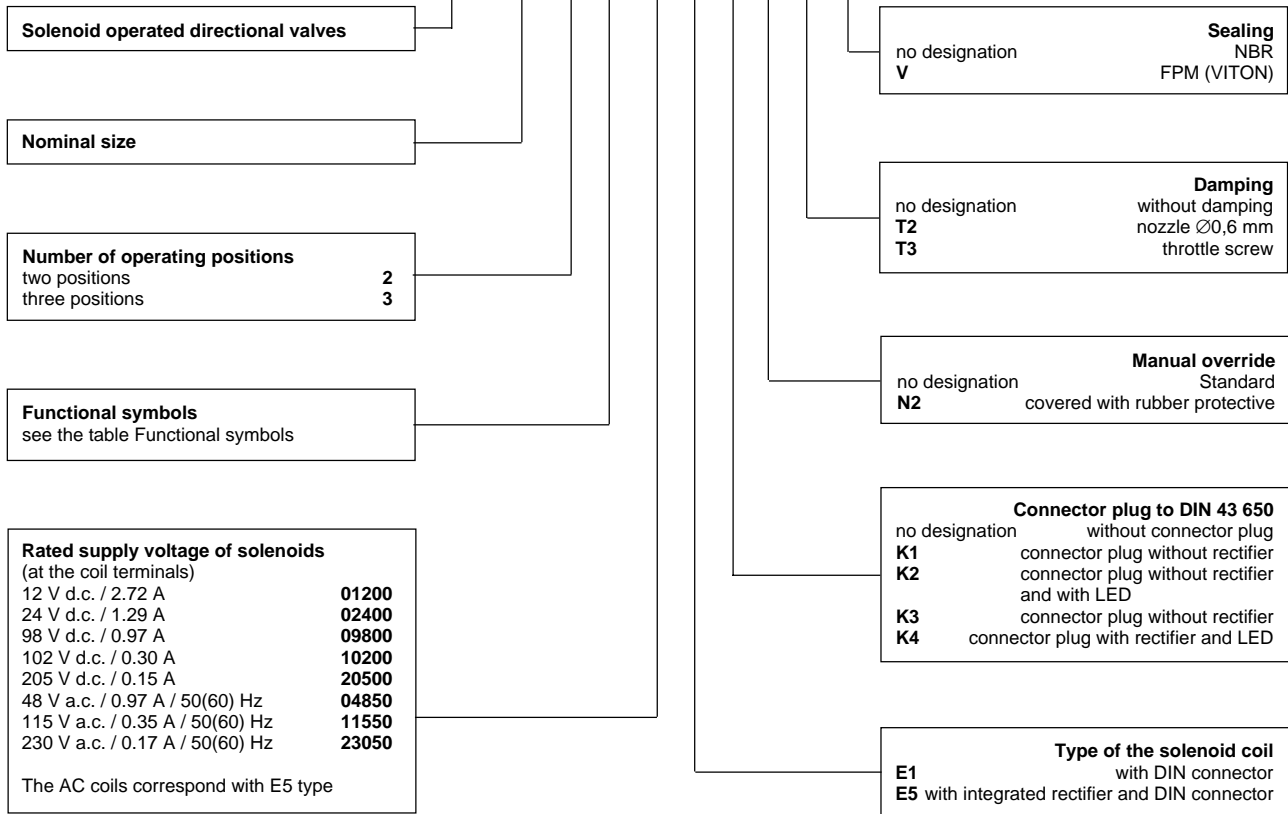
Provided that the pressure in T-port does not exceed 363 psi (25 bar), the spool of the valve can be repositioned by manual override (9).

The surface of the valve housing (1) is phosphate coated whereas the operating solenoids (2, 3) are zinc coated.



Ordering Code

DCV 05 □ □ / □ □ □ □ □ □ □ □



Recommended solenoid coils used with connector plugs with rectifiers – type designation K3, K4	
Rated supply source voltage (permissible rated voltage variation ±10%)	Type designation of the solenoid voltage
48 V a.c. / 0.97 A / 50 (60) Hz	04300
115 V a.c. / 0.35 A / 50 (60) Hz	10200
230 V a.c. / 0.14 A / 50 (60) Hz	20500

Technical Data

Nominal size	in. (mm)	10
Maximum flow	US GPM (l/min)	See p-Q characteristics
Max. operating pressure at ports P, A, B	psi (bar)	4641 (320)
Max. operating pressure at port T	psi (bar)	304.5 (210)
Pressure losses	(psi (bar))	see Δ p-Q characteristics
Hydraulic fluid		Hydraulic oils of power classes HM, HV to CETOP RP91 H in viscosity classes ISO VG 32, 48 and 68
Fluid temperature range	°F (°C)	-22... +158 (-30... +70)
Ambient temperature range	°F (°C)	-22... +122 (-30... +50)
Viscosity range	SUS (mm ² /s)	98... 1840 (20... 400)
Maximum degree of fluid contamination		Class 18/15 to ISO 4406. Therefore we recommend a filter with a retention rate $\beta_{10} \geq 75$
Permissible rated voltage variation	%	~ -15... +5 = -10... +6
Max. switching frequency	1/h	15,000
Switching time, on: at v = 166 SUS (35 mm ² /s)	ms	90... 160
Switching time, off: at v = 166 SUS (35 mm ² /s)	ms	70... 100
Duty cycle	%	100
Service life	cycles	10 ⁷
Enclosure type to DIN 40050		IP 65
Weight – valve with 1 solenoid valve with 2 solenoids	Lb (kg)	11.25 (5.1) 14.55 (6.6)
Mounting position		optional

Functional Symbols

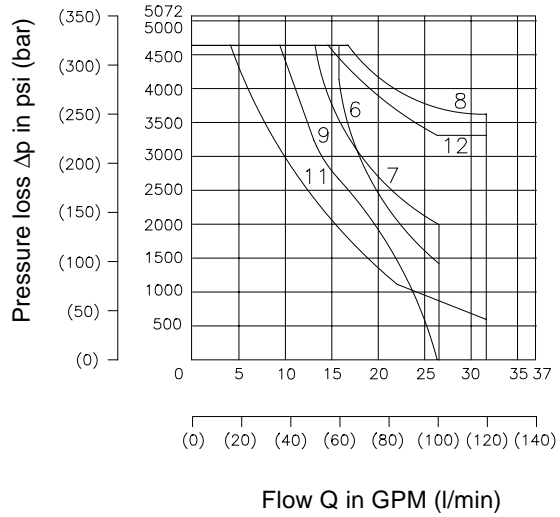
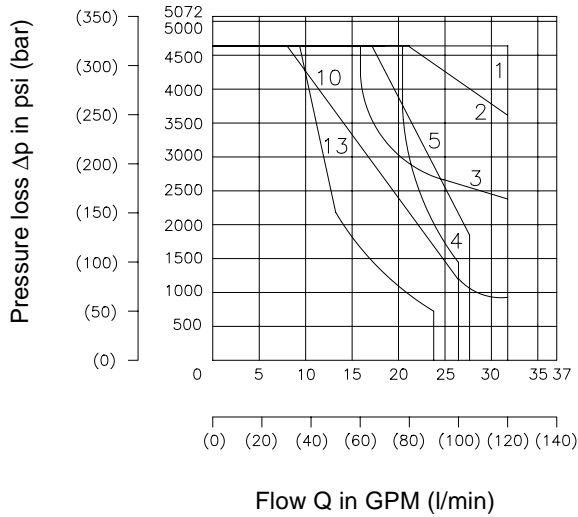
Designation	Symbol	Interposition	Designation	Symbol	Interposition
Z11			Y51		
C11			C51		
H11			B51		
P11			Z51		
Y11			H51		
L21			X11		
B11			C11		
C21			H11		
R11			J15		
R21			J75		
A51			X25		
P51			M21		

Characteristics

p-Q Characteristics

measurement at $v = 166 \text{ SUS (} 35 \text{ mm}^2/\text{s)}$ and $t = 104^\circ\text{F (} 40^\circ\text{C)}$

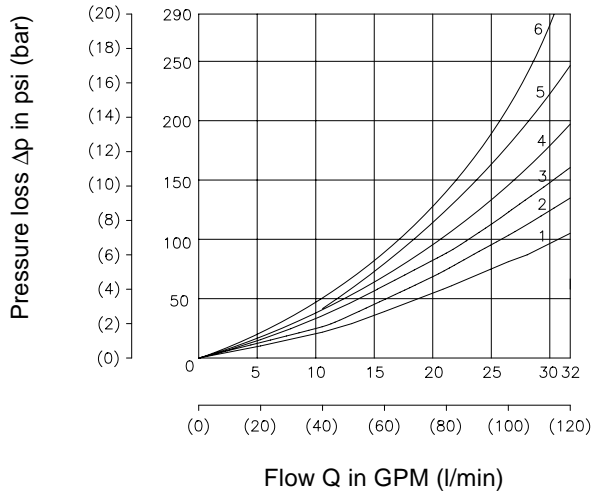
Operating limits for maximum hydraulic power transferred by the directional valve.
For respective spool type – see Functional Symbols



Z11	Z51	H11	H51	P11	P51	Y11	Y51	C11	C51	R11	X11	B11	B51	L21	R21	J15	J75	A51	M21	X25	C21
3	3	2	2	1	1	7	7	4	4	6	6	5	5	9	8	1	10	11	12	1	13

Δp-Q Characteristics

measurement at $v = 166 \text{ SUS (} 35 \text{ mm}^2/\text{s)}$ and $t = 104^\circ\text{F (} 40^\circ\text{C)}$

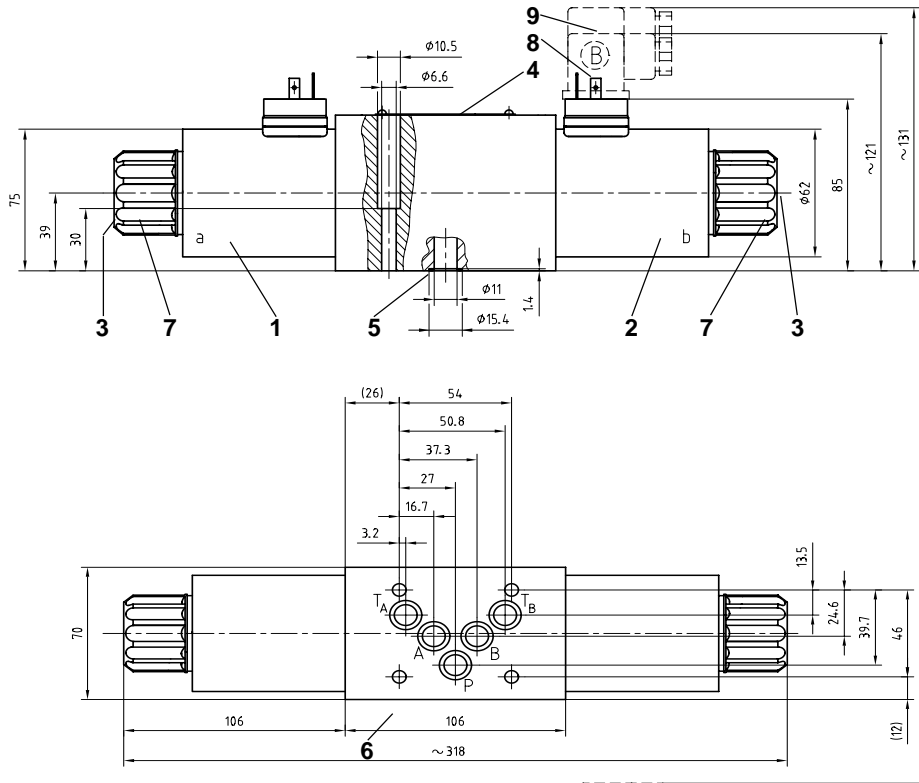


	Z11	Z51	H11	H51	P11	P51	Y11	Y51	C11	C51	R11	X11	B11	B51	L21	R21	J15	J75	A51	M21	X25	C21
P-A	1		1		1		1		4	4	2	2	1		1	1	1	1	1	1	1	6
P-B	1	1	1	1	1	1	1	1	3		1	1	1	1	1	1	4	1	1		2	6
A-T	2	2	2	2	2	2	1	1	4		2	2	2	2	1	2	2				1	6
B-T	2		2		2		1		5	5	3	3	2		2	3	3					6
P-T			1	1					1	1					2							4

Valve dimensions

Dimensions in millimeters

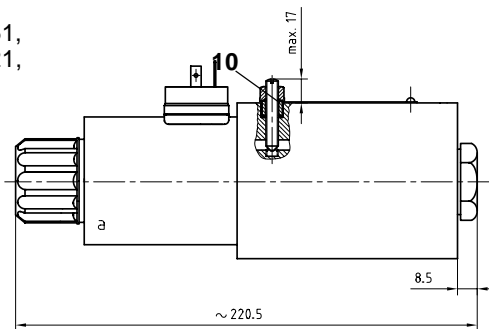
Valve with two solenoids



Valve with one solenoid – a

Functional symbols

R11, R21, A51, P51, Y51,
C51, Z51, H51, B51, N21,
X25, J15, J75

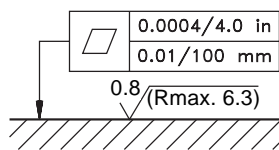
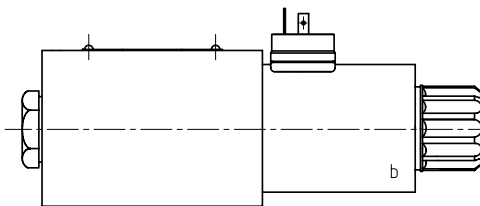


- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square ring 12.42 × 1.68 (5 pcs) supplied in delivery packet
- 6 4 mounting holes
- 7 Fixing nut of the solenoid.
- 8 Connector plug to DIN 43650
- 9 Distance required to remove plug
- 10 Throttle screw

Valve with one solenoid – b

Functional symbols

X11, C11, H11



Required surface finish of interface

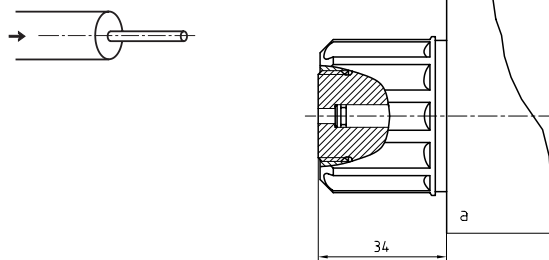
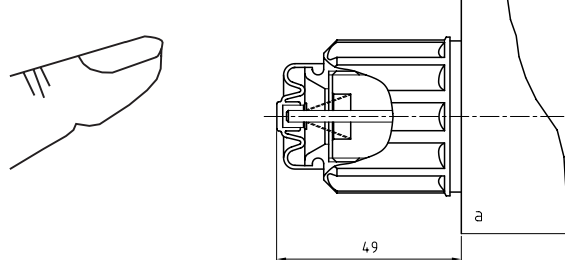
Type of the solenoid coil

Designation	Dimensional sketch	Description
E1		Solenoid coil with terminal for the connector plug to DIN 43 650.
E5		Solenoid coil with integrated rectifier and terminal for the connector plug to DIN 43 650.

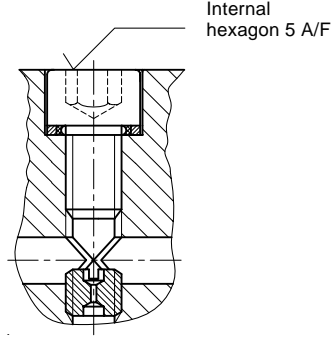
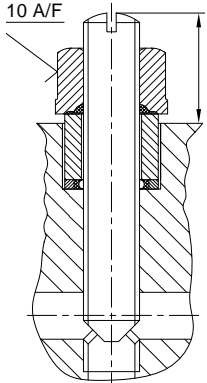
Connector plug to DIN 43650

	Designation	Type	Model	Max. input voltage
	K1	Plug B (black)		without rectifier
Plug A (grey)			without rectifier	250 V d.c. 230 V a.c.
K2	Plug B (black)		without rectifier and with LED	12... 30 V d.c. 230 V a.c.
	Plug A (grey)		without rectifier and with LED	12... 30 V d.c. 230 V a.c.
K3	Plug B (black)		with rectifier	250 V d.c.
	Plug A (grey)		with rectifier	250 V a.c.
K4	Plug B (black)		with rectifier and with LED	250 V d.c.
	Plug A (grey)		with rectifier and with LED	250 V a.c.

Manual override

Standard	Rubber cap
<p>Without designation Dimensional sketch</p>  <p>Description Standard model of the manual override. Standard fixing nut of the solenoid.</p>	<p>Designation N2 Dimensional sketch</p>  <p>Description Manual override protected by rubber cap.</p>

Cushioned spool shifting

Nozzle $\varnothing 0,6$	Throttle screw
<p>Designation T2 Dimensional sketch</p>  <p>Internal hexagon 5 A/F</p>	<p>Designation T3 Dimensional sketch</p>  <p>Internal hexagon 10 A/F</p>

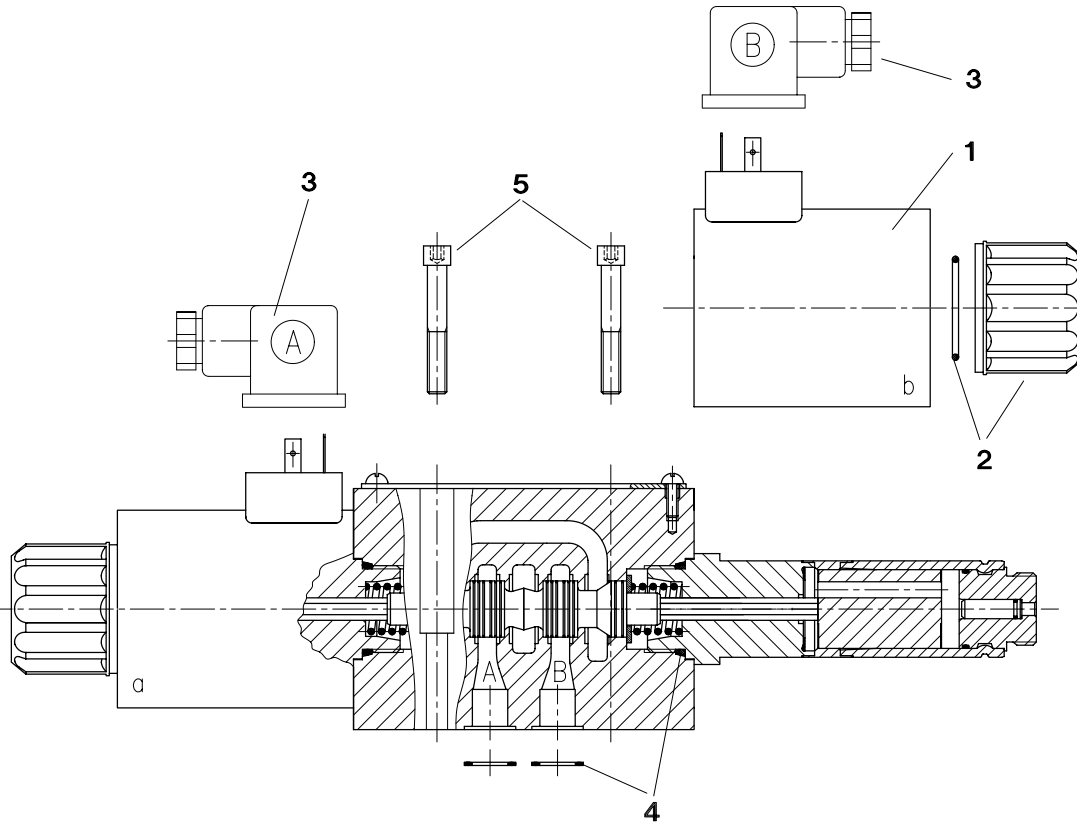
Delay time

T2	Total switching time, on Total switching time, off	ms	170 ... 200
T3	Total switching time, on Total switching time, off	ms	90 ... 2000

The switching times shown are valid for viscosity $\nu = 166$ SUS (35 mm²/s), valve temperature $t = 140^\circ\text{F}$ (40°C) and nominal voltage. They are dependent upon working pressure and flow rate of the directional valve.

Spare parts

- 1. Solenoid coil
- 2. Nut + sealing ring
- 3. Connector plug
- 4. Set of sealing
- 5. mounting bolts



Solenoid coil

Type designation of the coil voltage	Type of the coil	
	E1	E5
Ordering number		
01200	936-4610	
01400	936-4637	
09800	936-4675	
10200	936-4677	
20500	936-4685	
02450		936-2440
11550		936-2475
23050		936-2485

Solenoid fixing nut + sealing ring

Type of the nut	Sealing ring	Ordering number
Standard nut	22 × 2	485-9963
Nut with rubber cap		485-9966

Connector plug to DIN 43 650

Type designation	Model	Max. input voltage	Connector plug A grey	Connector plug B black
			Ordering number	
K1	without rectifier	0... 250 V DC	936-9902	936-9901
		0... 230 V AC		
K2	without rectifier and with	12... 30 V DC	936-9908	936-9907
		0... 230 V AC	936-9906	936-9905
K3	without rectifier	0... 250 V AC	936-9904	936-9903
K4	without rectifier and with LED	250 V AC	936-9910	936-9909

Set of the seal

Type	Dimensions, number		Ordering number
	Square ring	O-ring	
Standard - NBR 70	12.42 × 1.68 (5 pcs.)	23.81 × 2.62 (2 pcs.)	486-9960
	12.42 × 1.68 (5 pcs.)	23.47 × 2.62 (2 pcs.)	
Viton	12.42 × 1.68 (5 pcs.)	23.47 × 2.62 (2 pcs.)	486-9965

Mounting bolts – set

Dimensions, number	Tightening torque	Ordering number
M6 × 40 DIN 912 - 10.9 (4 pcs.)	15 Nm	485-9964

Danfoss Hydraulics

ISO 9001

Danfoss Mobile Hydraulics have been manufactured to meet the quality demands specified by ISO 9001

ISO
9001

INTERNATIONAL STANDARD



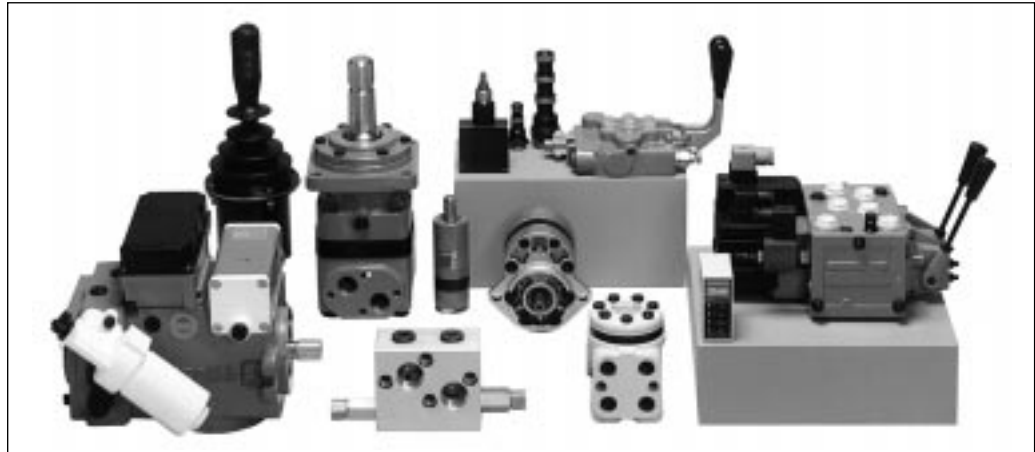
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Quality management and quality assurance standards

Catalogues and leaflets are available for detailed information on the following hydraulic components:

- Low speed high torque hydraulic motors
- Hydrostatic steering units
- Steering columns
- Valve blocks
- Flow-amplifiers
- Priority valves
- Torque amplifiers
- Proportional valves
- Remote control units
- Electronics for hydr. components
- Rotary actuators
- Gear wheel motors
- Gear wheel pumps
- Cartridge valves
- Directional control valves

Please contact the Danfoss Sales Organization for Hydraulics for further information.



Caution

- With functional symbols A51 and J75 for pressure exceeding 2331 psi (160 bar), the T-port should be connected directly to the tank.
- For directional valves with two solenoids, one solenoid must be without charge before the other solenoid can be charged. Switching time for directional valves with detent assembly (impulse control) should not be shorter than 60 ms.
- With directional valves with cushioned spool shifting the switching time must correspond with the shifting time.
- Other functional symbols on request.
- The packing foil is recyclable.
- The transport plate is to be returned to the supplier.
- Mounting bolts M5 × 45 must be ordered separately. Tightening torque of the screws is 6.5 lb-ft (9 Nm).

Danfoss can accept no responsibility for possible errors in catalogues, brochures and other printed material. Danfoss reserves the right to alter its products without notice. This also applies to products already on order provided that such alterations can be made without subsequential changes being necessary in specifications already agreed. All trademarks in this material are property of the respective companies. Danfoss and the Danfoss logotype are trademarks of Danfoss A/S. All rights reserved.

DK-6430 Nordborg
Denmark