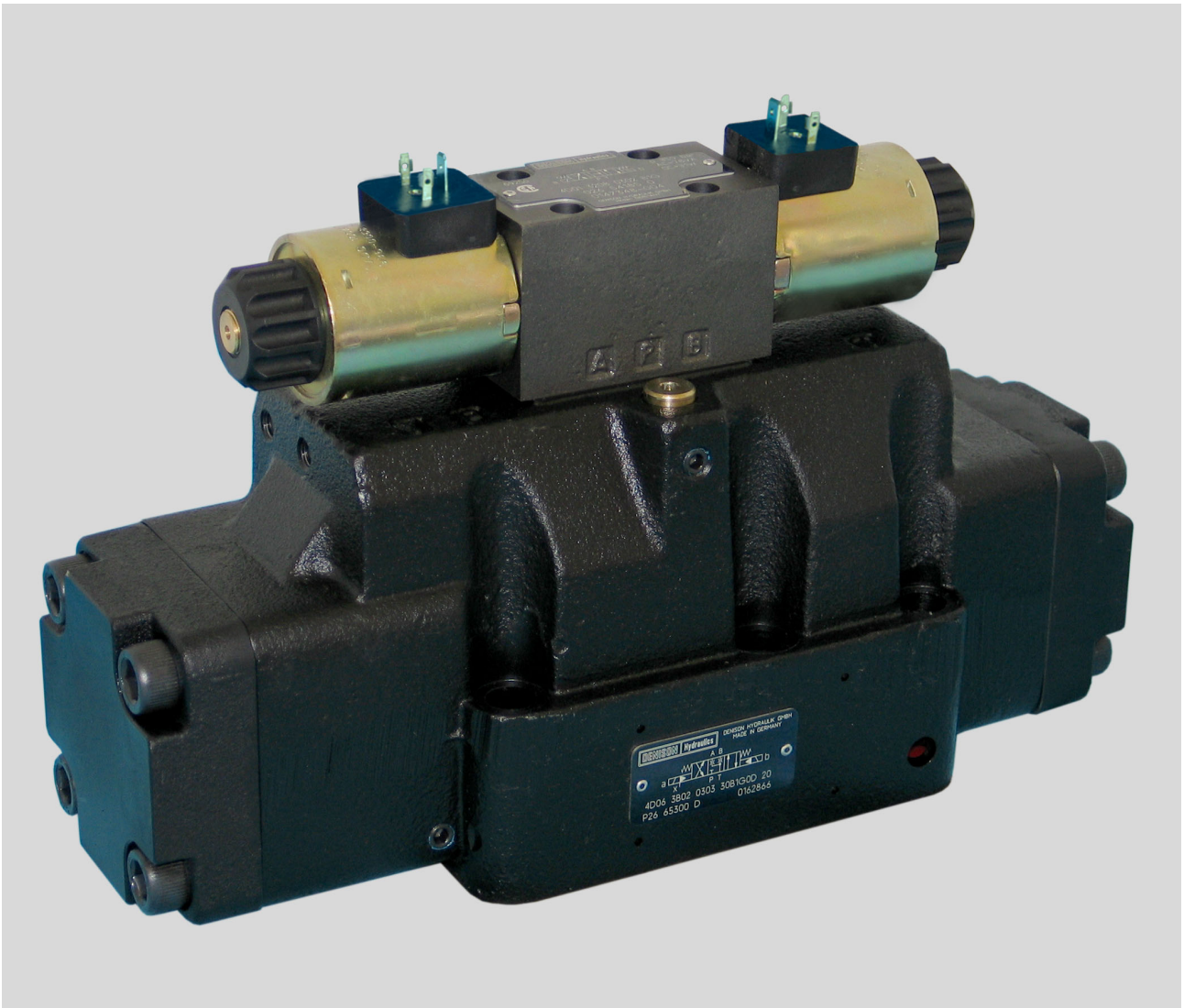




DENISON HYDRAULICS

Directional Control Valves

Series 4D06 – Design B, Cetop 08



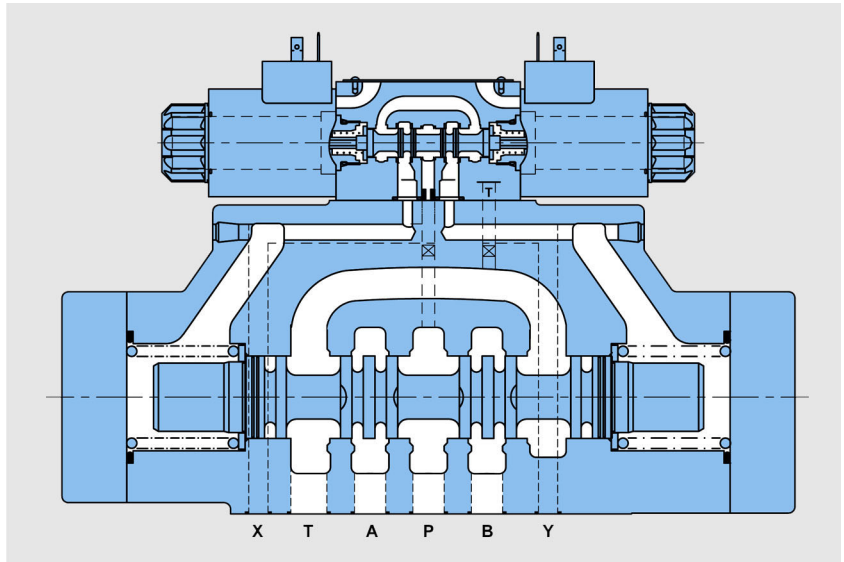
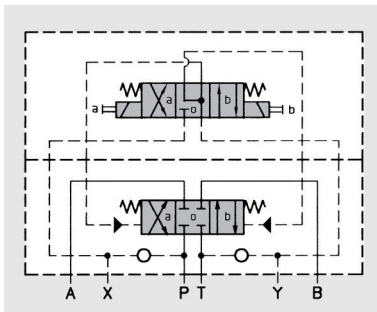
Publ. 4-EN 3710-C (dig.), replaces 4-EN 3710-B



FEATURES

- High functional limit up to 700 l/min at nominal pressure.
- Nominal operating pressure 350 bar.
- Permissible pressure in the tank port up to 350 bar with external drain, up to 210 bar/DC respectively 140 bar/AC with internal drain (see characteristics).
- Low pressure drop.
- Wide range of spool types available.
- Versions with shifting time adjustment, main valve with adjustable spool stop.
- Coils can be easily replaced without any oil leakage.
- Mounting configuration conform to ISO 4401.
- Every valve is factory tested prior to delivery.
- Worldwide DENISON Service.

SYMBOL



GENERAL

The DENISON 4D06 is a pilot operated directional control valve controlled by solenoids or hydraulic pressure.

The 4D06 valve controls the flow direction in a hydraulic circuit. It delivers the performance demanded of modern hydraulic systems. Streamlined internal channels ensure minimum pressure drop at maximum flow.

OPERATION

The electrically operated 4-way valve 4D06 consists of a main body and a solenoid operated pilot valve. The energized solenoid shifts the pilot control spool, thus directing fluid to one end of the main spool, and moving it to the desired position. Fluid can then flow e.g. from port P to either port A or B whilst the alternate port (B or A) is connected to the tank line. The necessary pilot pressure can be obtained internally from the system port P or from an external pressure supply connected to port X.

De-energizing the solenoid allows both the pilot control and the main spool to return to their neutral positions.

CHARACTERISTICS

• Design	Sliding spool valve
• Type of mounting	Subplate conform to ISO 4401
• Mounting position	Optional
• Ambient temperature range	-20...+ 50°C
• Operating pressure (A, B, P, X)	up to 350 bar
• Operating pressure (T, Y)	see page 8
• External pilot pressure (at 700 l/min)	
- min	5 bar
- max	350 bar
	> 250 bar...350 bar a pilot orifice dia. 1.5 mm in P-port is recommended (code 15 = Standard)
• Max. flow	700 l/min (see diagrams)
• Max. leakage	350...800 ml/min (depends on spool type)
• Fluid	Petroleum base anti-wear fluids (covered by DENISON HF-0 and HF-2 specification). Such as mineral oil according to DIN 51524/25. Maximum catalogue ratings and performance data are based on operation with these fluids.
• Viscosity range	10...650 cSt, optimum 30 cSt
• Fluid temperature range	-20... + 80°C
• Contamination level	Max. permissible contamination level according to NAS 1638 Class 8 (Class 9 for 15 Micron and smaller) or ISO 17/14.

Model No.: 4D06 - 3 . .. - B - 15

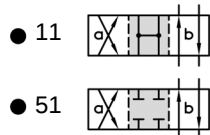
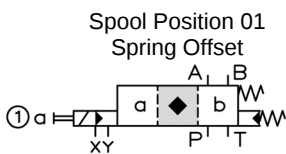
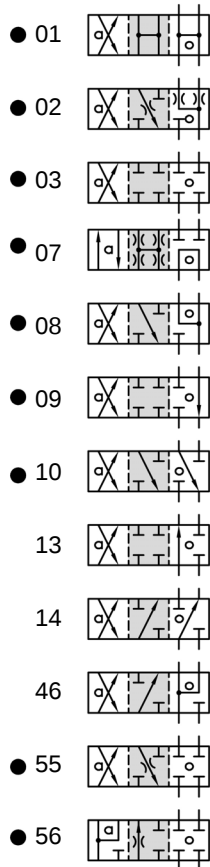
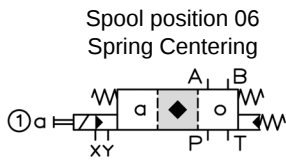
1	Series	1	2	3	4	5	6	7	8	9	10	11	12	13										
1	Series	06 = Cetop 08																						
2	Control	A = Pilot operated, 1 solenoid (4D01) B = Pilot operated, 2 solenoids (4D01) C = Pilot operated, 2 solenoids (4D01) pilot valve: 2 pos. detents 0 = hydraulic operation																						
3	Spool Type	refer to page 6																						
4	Spool Position	01 = 2 (a, b), Spring offset to pos. "b", energized to "a" 02 = 2 (a, b), Spring offset to pos. "a", energized to "b" 03 = 3 (a, o, b), Spring centred pos. "o" 04 = 2 (a, b), Spool is not centred, energized to "a" or "b" (pilot valve with detents) 05 = 2 (o, b), Spring centred pos. "o", energized to "b" 06 = 2 (o, a), Spring centred pos. "o", energized to "a"																						
5	End Cap	03 = for controls A, B, C, 0 09 = for controls A, B, C, 0 with adjust. spool stop on both sides																						
6	Pilot Connection	0 = External PP, external PD (for hydraulic operation) 1 = Internal PP, internal PD ¹⁾ 2 = Internal PP, external PD ¹⁾ 3 = External PP, internal PD 4 = External PP, external PD																						
7	Main Valve Accessories	0 = without 1 = Shifting time adjustment (meter-in control) 2 = Shifting time adjustment (meter-out control) 6 = Shifting time adjustment (meter-in control) & integral check in "P" ¹⁾ 8 = Shifting time adjustment (meter-out control) & integral check in "P" ¹⁾ 4 = Integral check in "P" ¹⁾																						
8	Design Letter																							
9	Seal Class	1 = NBR-seals (Standard) 5 = FPM-seals (Viton®)																						
10	Solenoid Voltage	<table border="0"> <tr> <td>W01 = 115 V / 60 Hz</td> <td rowspan="4">} AC</td> <td>G0R = 12 V</td> <td rowspan="4">} DC</td> </tr> <tr> <td>W02 = 230 V / 60 Hz</td> <td>G0Q = 24 V</td> </tr> <tr> <td>W06 = 115 V / 50 Hz</td> <td>G0D = 27 V</td> </tr> <tr> <td>W07 = 230 V / 50 Hz</td> <td></td> </tr> </table>													W01 = 115 V / 60 Hz	} AC	G0R = 12 V	} DC	W02 = 230 V / 60 Hz	G0Q = 24 V	W06 = 115 V / 50 Hz	G0D = 27 V	W07 = 230 V / 50 Hz	
W01 = 115 V / 60 Hz	} AC	G0R = 12 V	} DC																					
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W06 = 115 V / 50 Hz		G0D = 27 V																						
W07 = 230 V / 50 Hz																								
Order informationen for plug-in connectors see page 12.																								
1*	Pilot Accessories / Modifications	15 = 1.5 mm orifice in P-port as standard																						

Notes:

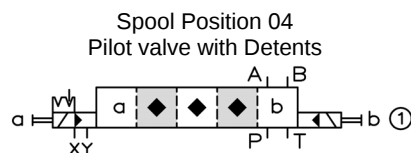
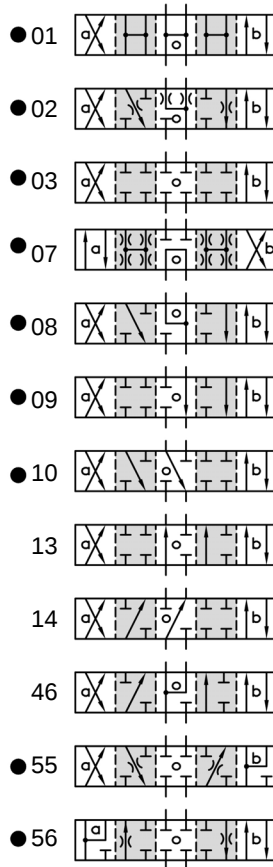
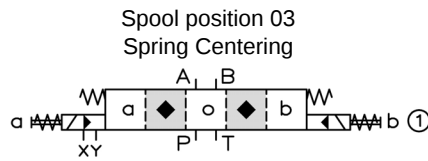
¹⁾ For valves with spools 01, 07, 11 and internal PP an integral check is recommended in P-port of the main body to obtain the minimum pilot pressure. The integral check is not provided for load pressure holding back to P-port.

SIMPLIFIED SYMBOLS & SPOOL TYPES

① 1-Solenoid operation (sol. B-side)

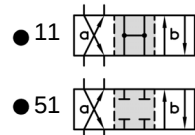
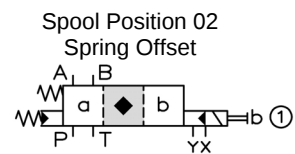
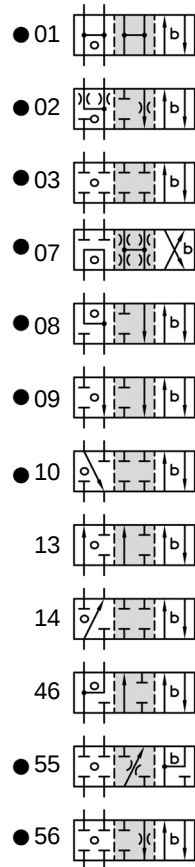
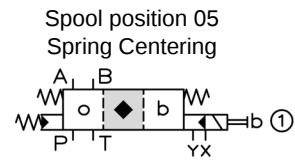


① 2-Solenoid operation



All spool types
As shown above!

① 1-Solenoid operation (sol. A-side)



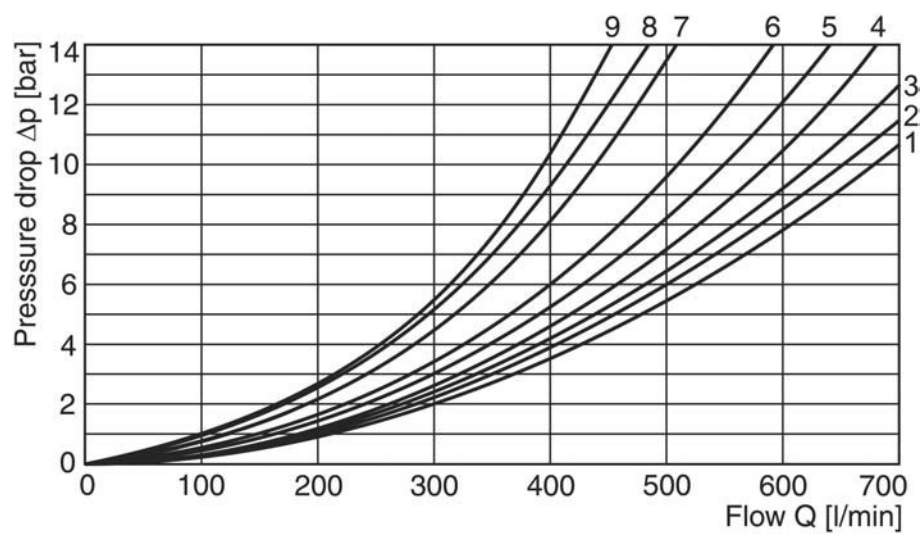
● Standard Spool

Transfer configuration only (not switched position)

PRESSURE DROP

Pressure Drop

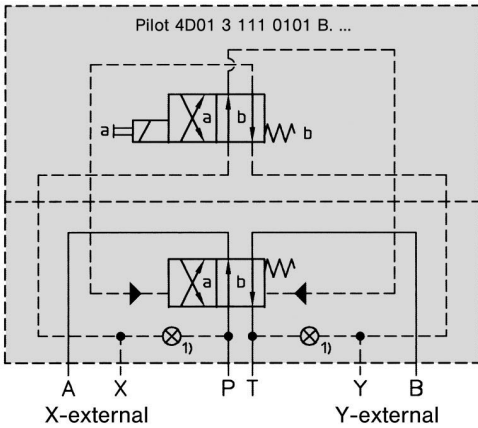
Spool Code	Curve number				
	P-A	P-B	P-T	A-T	B-T
01	2	1	1	3	5
02	3	2	-	3	5
03	3	2	-	3	5
07	4	7	8	4	9
08	4	3	-	3	5
09	3	3	-	4	5
10	4	2	-	3	6
11	3	2	-	3	5
13	1	2	-	4	5
14	3	3	-	4	5
46	2	2	-	4	6
51	6	5	-	6	7
55	5	9	-	3	-
56	9	5	-	-	5



4D06 3 A11 0103 40B. ...

Spool Position 01

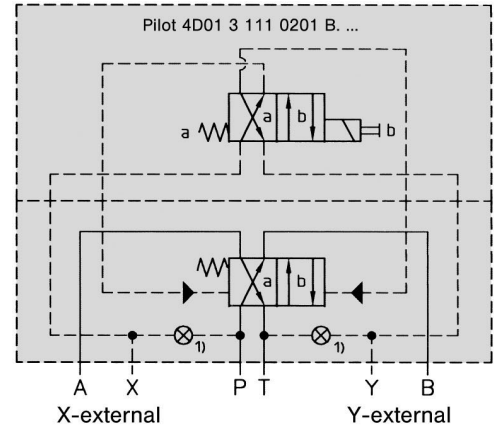
2 (a, b), Spring Offset



4D06 3 A11 0203 40B. ...

Spool Position 02

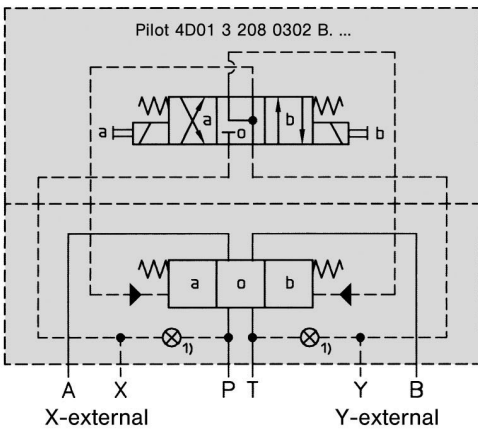
2 (a, b), Spring Offset



4D06 3 B.. 0303 40B. ...

Spool Position 03

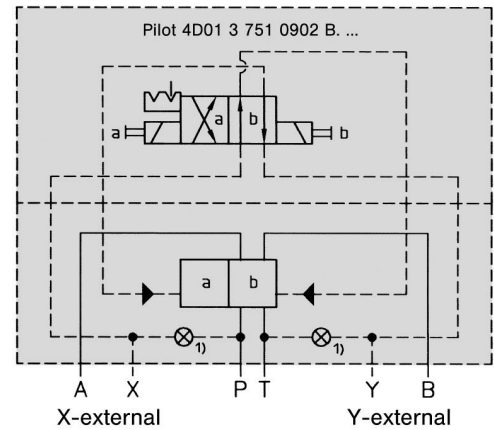
3 (a, o, b), Spring Centering



4D06 3 C.. 0403 40B. ...

Spool Position 04

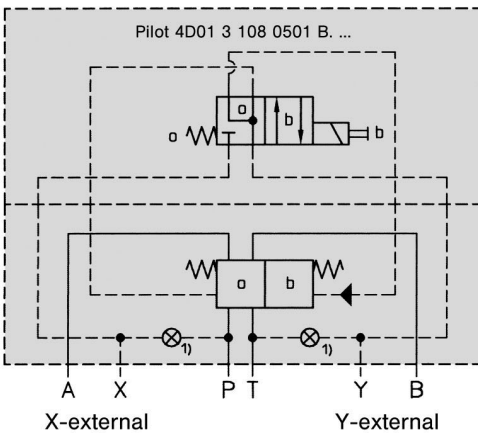
2 (a, b), Pilot Valve with detents



4D06 3 A.. 0503 40B. ...

Spool Position 05

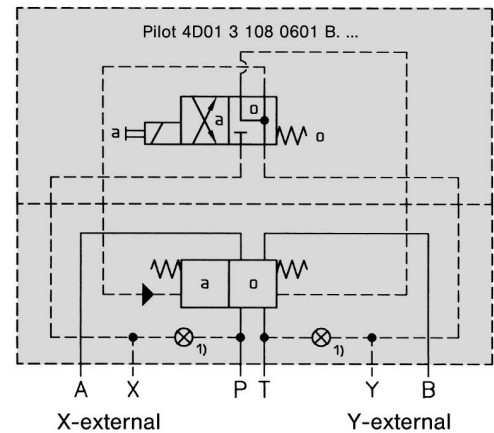
2 (o, b), Spring Centering



4D06 3 A.. 0603 40B. ...

Spool Position 06

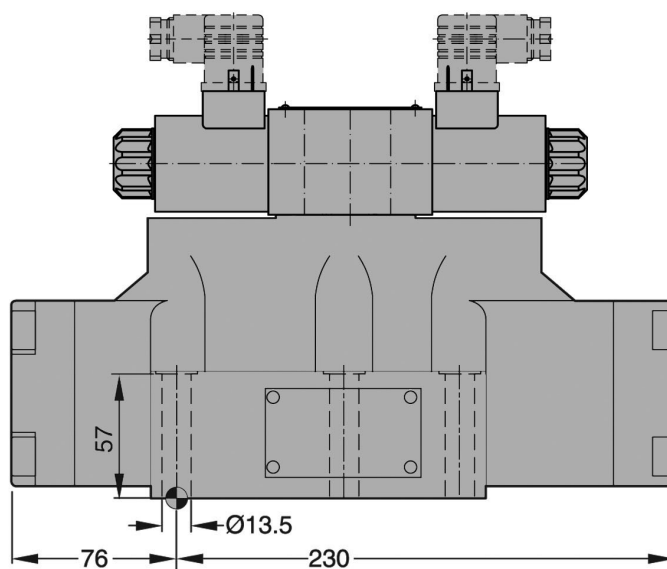
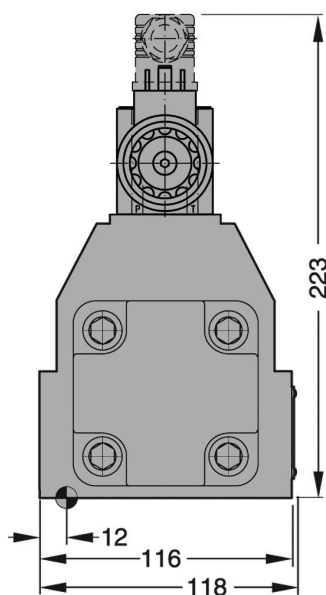
2 (o, a), Spring Centering



¹⁾ Plug mounted according to desired internal or external PP or PD.

1 AND 2 SOLENOID OPERATED VERSIONS

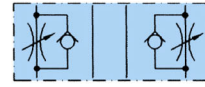
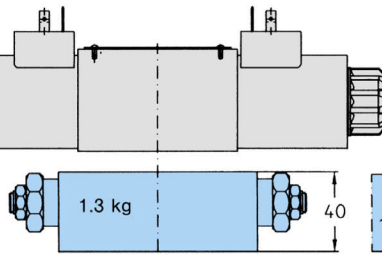
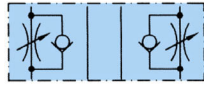
	DC	AC
• Nominal voltage	See ordering code on page 4	
• Power input	31 W	31 W
• Permissible tank pressure (T)		
- with internal drain	...210 bar	...140 bar
- with external drain	...350 bar	...350 bar
• Permissible drain pressure (Y)	...210 bar	...140 bar
• Holding	—	78 VA
• Inrush	—	264 VA
• Permissible voltage difference	+ 5%...- 10%	+ 5%...- 10%
• Max. coil temperature	+ 180°C	+ 180°C
• Temperature class	H	H
• Relative operating period	100%	100%
• Type of protection	IP 65	IP 65
• Weight 1 solenoid version	17.8 kg	17.8 kg
2 solenoid version	18.2 kg	18.2 kg



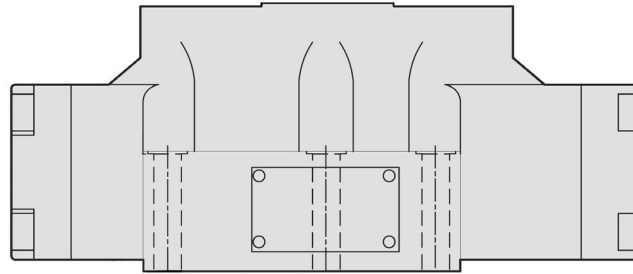
OPTIONS

Version with shifting time adjustment

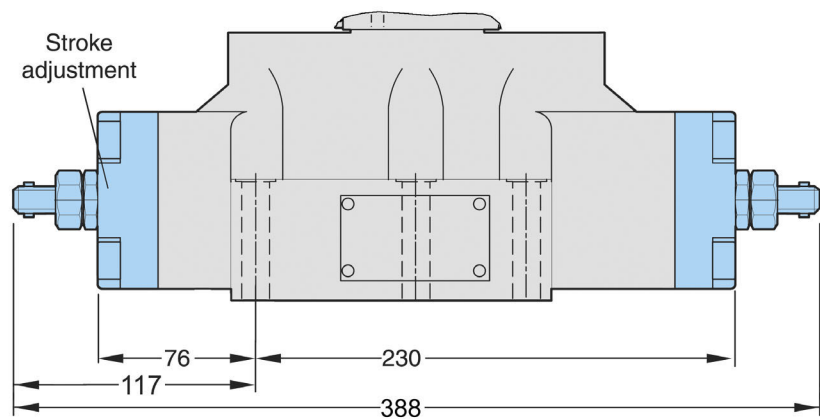
Meter-in control in A and B
ZRD-ABZ01-S0-D1 OPTZ
098-91396-0



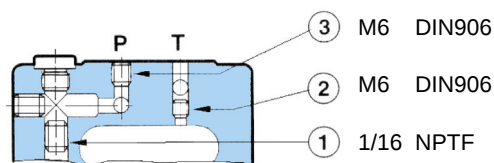
Meter-out control in A and B
ZRD-ABA01-S0-D1 OPTZ
098-91393-0



Adjustable spool stop (for controls A, B, C, O)



Pilot connections

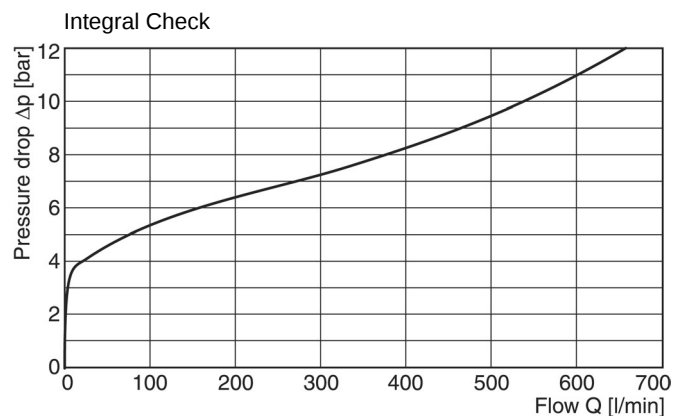
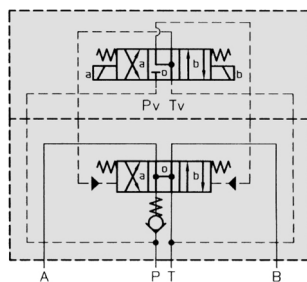


○ open, ● closed

Pilot oil				
Inlet	Outlet	1	2	3
internal	external	○	●	Orifice Ø1.5
external	external	●	●	Orifice Ø1.5
internal	internal	○	○	Orifice Ø1.5
external	internal	●	○	Orifice Ø1.5

Version with integral check

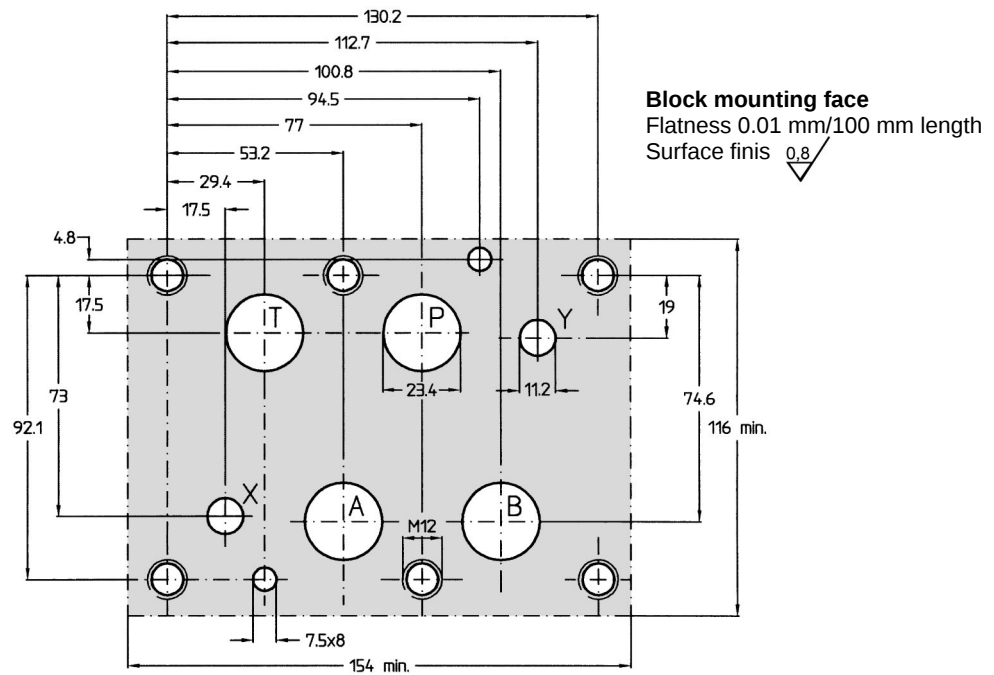
Symbol with integral check
(Example)



Note: For valves with spool 01, 07, 11 and internal PP an integral check is recommended in P-port of the main body to obtain the minimum pilot pressure. The integral check is not provided for load pressure holding back to P-port.

MOUNTING CONFIGURATION

Mounting configuration conform to ISO 4401



Portings

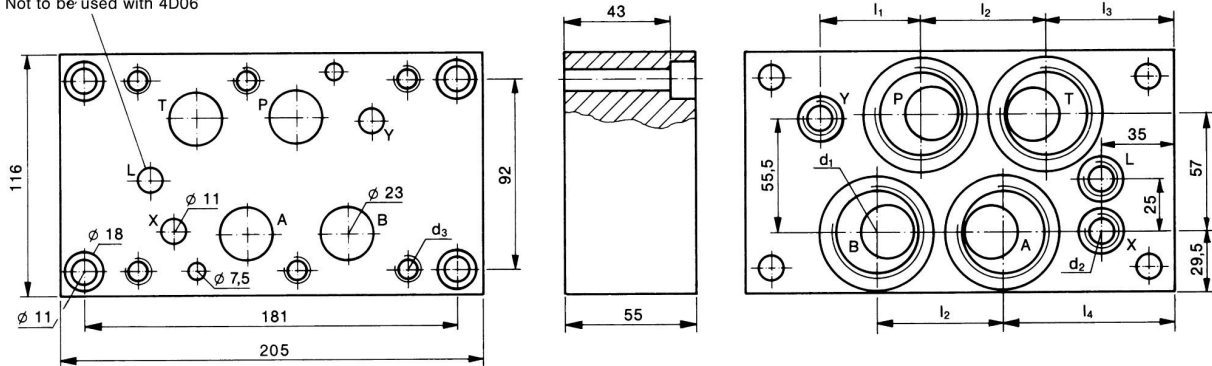
- P = Pressure port
- T = Tank port
- A & B = Actuator ports
- X = Pilot port for external PP: pilot operated valves
= Pilot port for hydr. operated valves
- Y = Drain port for external PD: pilot operated valves
and mechanical operation
= Pilot port for hydr. operated valves

SUBPLATES, PANEL OPENING

Subplate (mounting configuration conform to ISO 4401)

Weight: ≈ 8 kg

Not to be used with 4D06



Please note:

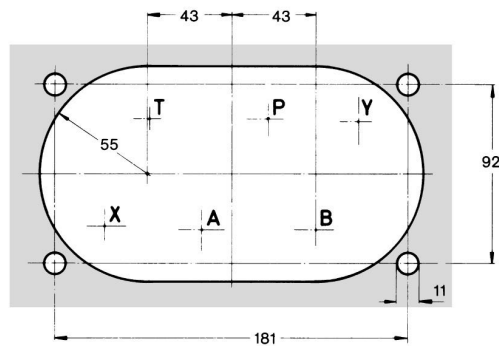
Mounting screws are included in subplate order.
For valves ordered without subplate, mounting screws must be ordered separately.

Qty.	Mounting screws	Order-No.
6	M 12 x 75, DIN 912; 10.9	361-12314-8

Torque 94Nm

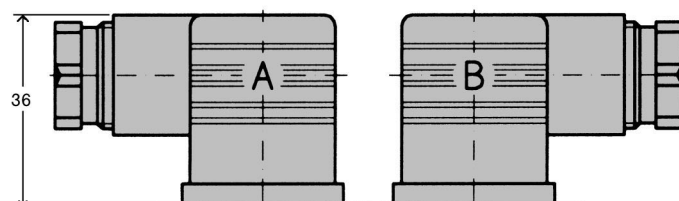
Model-No.	Order-No.	d ₁ (A, B, P, T)	d ₂ (X, Y, L)	d ₃	l ₁	l ₂	l ₃	l ₄
SS-B-12-G 130-L	S26-34487-0	G 3/4"	G 1/4"	M 12	55	49	66	90
SS-B-16-G-130-L	S26-34488-0	G 1"	G 1/4"	M 12	48.5	59.5	62	82

Panel opening



ACCESSORIES

PLUG-IN CONNECTORS CONFORM TO ISO 4400



Versions	A-Side (grey)	B-Side (black)
Standard <250 V PG 11	167-01007-8	167-01008-8
with LED (red) 15...30 V	167-01100-8	167-01101-8
with bridge rectifier 12...250 V	167-01076-8	167-01014-8

Note: Plug-in connectors to be ordered as separate items.

The product described is subject to continual development and the manufacturer reserves the right to change the specifications without notice.