

DENISON HYDRAULICS

Seat Valves

Series D4S



Publ. 7-EN 510-C, replaces 7-EN 510-B

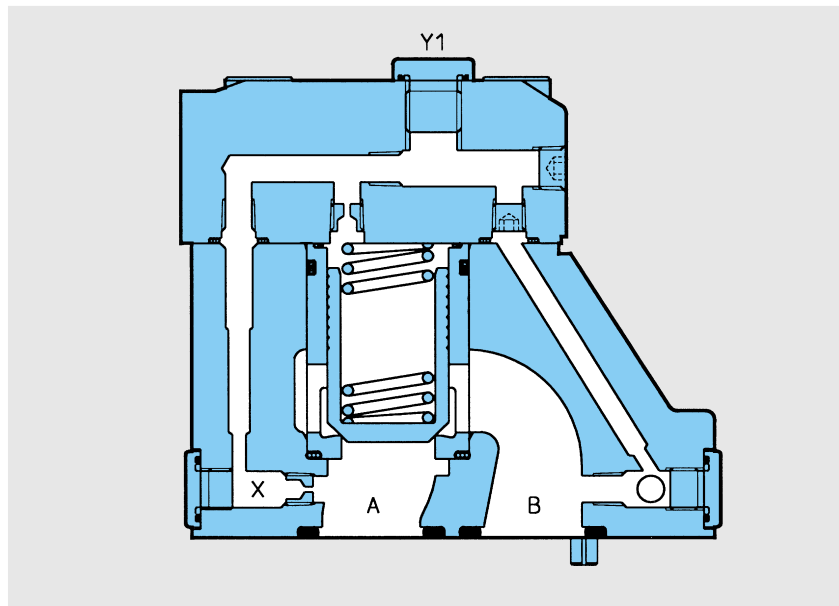
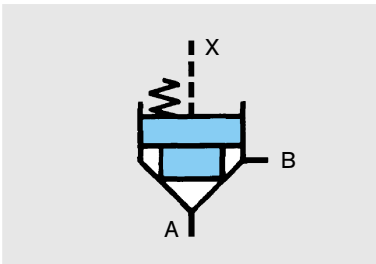
DENISON Hydraulics

FEATURES, SYMBOL

FEATURES

- The same modular design is used in all valve sizes and the valve are used for a variety of functions:
 - as a leak proof directional control
 - as a pressure control for the adjustment or limitation of pressure
 - as a check valve to obtain unidirectional flow
 - as a throttle valve to control and limit the rate of flow.
- A variety of standard combinations of internal components are provided as well as additional options to suit special circuitry. Typical of more than sixty options/ additions are: Stroke limiters, vent valve sandwich, shuttle valves, end position control and sleeves with different seat areas.
- The interface porting on the subplate body versions follows CETOP; ISO and DIN standards and is identical with the DENISON pressure controls and can be conveniently used in combined circuitry.
- Seat valves series D4S are designed for 350 bars operation. Whilst providing extremely fast response they also offer sensitive control without system pressure peaks.
- DENISON seat valves series D4S are provided in a full range of body mounted units to supplement the cartridge designs series CAR. Internal components are interchangeable with poppets and sleeves selected to give the desired function.
- Worldwide DENISON service.

SYMBOL



DESCRIPTION

DESCRIPTION

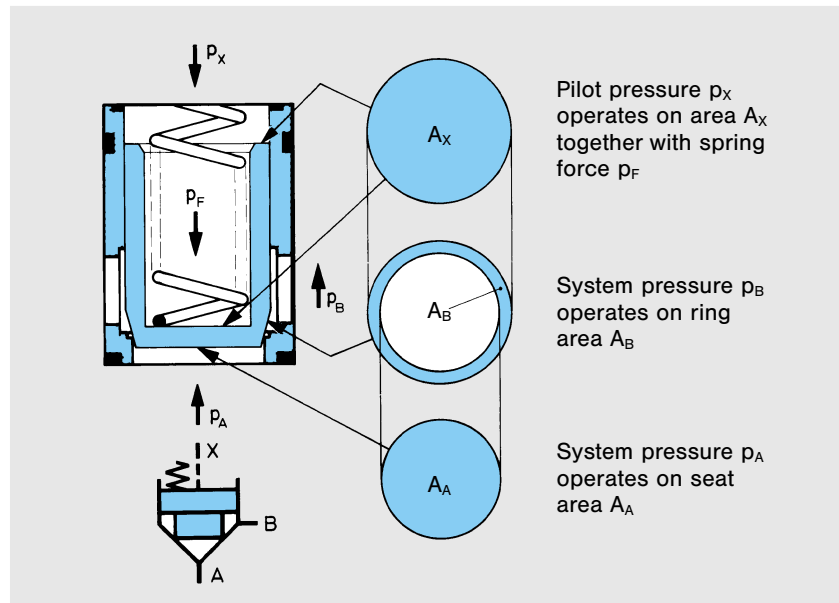
DENISON Seat valves are hydraulically operated poppet type cartridges design to control flow direction either from Port A to Port B or vice versa depending upon the control circuit.

The cracking pressure is proportional to the ratio of control area to seat or ring area.

Pilot pressure at Port X acting on the control area closes the seat valve thus forces generated by cylinders or hydraulic motors can be decelerated to zero by controlling the differential pressure. Acceleration or deceleration of the fluid which the seat valve is controlling will take place whilst the valve is opening or closing and the time normally necessary to overcome overlap in conventional spool valves is eliminated. In addition to this improved response time the action also ensures that the seat valve functions without introducing system pressure peaks or shock and therefore machine cycle times may be reduced without detriment. Various seat valve combinations are manufactured in quantity to suit a wide variety of specialised industrial applications.

CRACKING PRESSURE

Cracking Pressure depends on the area ratio of individual combination of spool and sleeve.



EXAMPLE

With a ratio of 95% seat area to 5% ring area and a spring pressure = 2.2 bars then the following cracking pressures apply.

Direction of flow		supposed pilot pressure p_x (bar)						
		0	9	15	30	100	250	330
p_A	A→B	2.2	11.7	18	34	108	265	350
p_B	B→A	42	222	342	>350 646	>350 2052	>350 5035	>350 6650

It is obvious that with flow direction B to A and a control (pilot pressure) at X of 15 bars, pressure in excess of maximum valve rating would be exceeded before the valve would open. Under static conditions the valve would still remain leakproof even at substantially higher pressures.

TECHNICAL DATA

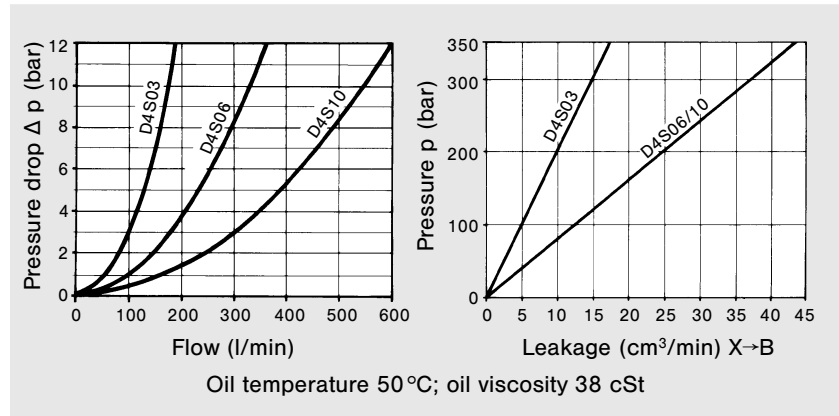
GENERAL

- | | |
|---|--|
| <ul style="list-style-type: none"> • Type of unit • Design • Type of mounting • Port sizes • Mounting position • Direction of flow • Ambient temperature range • Suitability for special working conditions | <ul style="list-style-type: none"> Seat valve Poppet type Threaded and subplate mounted $\frac{3}{8}$" , $\frac{3}{4}$" , $1\frac{1}{2}$" Optional A-B or B-A -20...+60°C Consult DENISON |
|---|--|

HYDRAULIC CHARACTERISTICS

- | | |
|--|--|
| <ul style="list-style-type: none"> • Operating pressure range <ul style="list-style-type: none"> - port A, B and X - port Y • Fluid temperature range • Viscosity range • Recommended operating viscosity | <ul style="list-style-type: none"> 0...350 bar without pressure to tank -18...+80°C 10...650 cSt 30 cSt |
|--|--|
-
- | | | | | | | | | | | |
|---|---|----------------------------|---------------------------|----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| <ul style="list-style-type: none"> • Nominal flow • Max. flow | <table border="0"> <tr> <td>D4S03 ($\frac{3}{8}$")</td> <td>D4S06 ($\frac{3}{4}$")</td> <td>D4S10 ($1\frac{1}{2}$")</td> </tr> <tr> <td>150 l/min</td> <td>270 l/min</td> <td>450 l/min</td> </tr> <tr> <td>180 l/min</td> <td>360 l/min</td> <td>600 l/min</td> </tr> </table> | D4S03 ($\frac{3}{8}$ ") | D4S06 ($\frac{3}{4}$ ") | D4S10 ($1\frac{1}{2}$ ") | 150 l/min | 270 l/min | 450 l/min | 180 l/min | 360 l/min | 600 l/min |
| D4S03 ($\frac{3}{8}$ ") | D4S06 ($\frac{3}{4}$ ") | D4S10 ($1\frac{1}{2}$ ") | | | | | | | | |
| 150 l/min | 270 l/min | 450 l/min | | | | | | | | |
| 180 l/min | 360 l/min | 600 l/min | | | | | | | | |
-
- | | | | | | | | | | |
|---|--|-------|----------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <ul style="list-style-type: none"> • Pilot volume <ul style="list-style-type: none"> - sleeve 95% seat area, spool 15° chamfer - sleeve 95% seat area, spool 45° chamfer - sleeve 60% seat area, spool 45° chamfer | <table border="0"> <tr> <td>D4S03</td> <td>D4S06/10</td> </tr> <tr> <td>1.00 cm³</td> <td>4.75 cm³</td> </tr> <tr> <td>1.11 cm³</td> <td>5.60 cm³</td> </tr> <tr> <td>0.77 cm³</td> <td>3.75 cm³</td> </tr> </table> | D4S03 | D4S06/10 | 1.00 cm ³ | 4.75 cm ³ | 1.11 cm ³ | 5.60 cm ³ | 0.77 cm ³ | 3.75 cm ³ |
| D4S03 | D4S06/10 | | | | | | | | |
| 1.00 cm ³ | 4.75 cm ³ | | | | | | | | |
| 1.11 cm ³ | 5.60 cm ³ | | | | | | | | |
| 0.77 cm ³ | 3.75 cm ³ | | | | | | | | |

• Diagrams



TYPE OF ADJUSTMENT

- | | |
|---|---|
| <ul style="list-style-type: none"> • Electric (Vent valve VV01) • Nominal voltage • Permissible voltage difference • Max. coil temperature • Type of current | <ul style="list-style-type: none"> by solenoid Refer to ordering code page 6 +5...-10% +180°C, class H Alternating current (AC) Direct current (DC) |
| <ul style="list-style-type: none"> • Input power • Holding • Inrush • Relative operating period • Type of protection | <ul style="list-style-type: none"> 31 W 78 VA 264 VA 100% IP 65 |

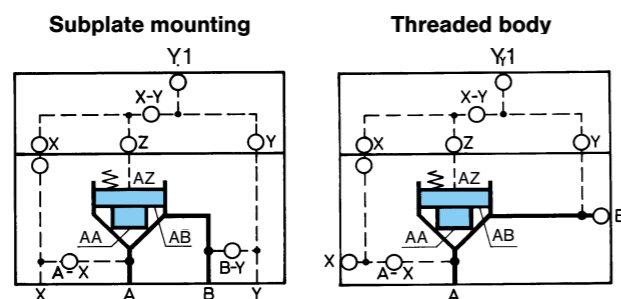
ORDERING CODE

ORDERING CODE

Model Number:

- 1 Series** D4S 1 2 3 4 5 6 7 8 9 10 11 12 13
- 2 Size**
 03 = 3/8" (CAR4 built in)
 06 = 3/4" (CAR2 built in)
 10 = 1 1/2" (CAR2 built in)
- 3 Body Mounting**
 Subplate mounting:
 7 = Y1 port = SAE-4 (7/16"-20 UNF)
 9 = Y1 port = G 1/4"
 Threaded body:
 6 = D4S03 = G 1/2" T-body
 = D4S06 = G 1" T-body
 D = D4S06 = G 3/4" L-body
 = D4S10 = G 1 1/4" L-body
 4 = D4S03 = SAE-8 T-body
 = D4S06 = SAE-16 T-body
 B = D4S06 = SAE-12 L-body
 = D4S10 = SAE-20 L-body
- 4 Pilot Oil Line in the Body**
 1 = internal from A (A-X = ● 1.2; B-Y = ○)
 2 = external from X (A-X = ●; B-Y = ○)
 1 A = internal from A (A-X = ● 1.2; B-Y = ●)
 1 B = external from X (A-X = ●; B-Y = ●)
 2 C = internal from A and B (A-X = ● 1.2; B-Y = ● 1.2)
 2 D = internal from B (A-X = ●; B-Y = ● 1.2)
 2 G = external from Y (A-X = ●; B-Y = ●)
 Note: specified pilot oil input preferred.
- 5 Cap Version, Pilot Oil Line in the Cap**
 1 = PP = PD (Z = ● 1.2; X-Y = ○; Y1 = ●; Y = ●)
 3 2 = external PD from cap (Z = ● 1.2; X-Y = ●; Y + Y1 = ○; VV01 = ●)
 3 3 = PP = PD (X = ● 1.2; Y = ●) } for stroke limiter and D4S06 & D4S10 only
 4 = PP = PD (X = ●; Y = ● 1.2)
 1 5 = external PD to subplate (Z = ● 1.2; X-Y = ●; Y1 = ●; Y = ○)
 3 6 = internal PD (Z = ● 1.2; X-Y = ●; Y1 = ●; Y = ○)
 C = PP = PD (Z = ● 1.2; X-Y = ○; Y1 = ●; Y = ○; X = ●)
- 6 Sleeve**
 1 = AA = 95%, AB = 5%
 3 = AA = 60%, AB = 40%

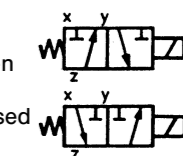
- Legend:**
 ○ open bore
 ● closed bore
 ● orifice ϕ 1.2
- ¹ subplate mounting & VV01 only
² subplate mounting only
³ with VV01 only
⁴ end position control with spring 2 or 4, spool A and sleeve 3 only and for D4S06 & D4S10 only. Valve open: proximity switch damped.



Ordering code explanation see page 7-9.

omit for version without accessories

- 13 Modifications**
 0013 = Cover for end position control (see page 19)
- 12 Seal Class**
 1 = NBR-seals (Standard), 4 = EPDM-seals, 5 = FPM-seals (Viton®)
- 11 Design Letter**
- 10 Solenoid Voltage and Current (for VV01)**
 W01 = 115 V / 60 Hz } AC
 W02 = 230 V / 60 Hz } G0R = 12 V
 W06 = 115 V / 50 Hz } G0Q = 24 V } DC
 W07 = 230 V / 50 Hz } G0H = 48 V }
- 9 Accessories**
 09 = VV01 with manual override } de-energized: power component open
 10 = VV01 without manual override }
 11 = VV01 with manual override } de-energized: power component closed
 12 = VV01 without manual override }
- CA = Shuttle valve
- DA = Shuttle valve
- CB = VV01 code 09 } and shuttle valve code CA
 CD = VV01 code 11 }
 DB = VV01 code 09 } and shuttle valve code DA
 DD = VV01 code 11 }
 BH = VV01 code 10 } and shuttle valve code CA and end position control⁴ with amplifier
 BK = VV01 code 12 }
 BN = VV01 code 10 } and shuttle valve code DA and end position control⁴ with amplifier
 BQ = VV01 code 12 }
 BC = VV01 code 10 and end position control⁴ with amplifier
 BE = VV01 code 12 and end position control⁴ with amplifier
 BA = End position control⁴ with amplifier
 BF = End position control⁴ with amplifier and shuttle valve code CA
 BL = End position control⁴ with amplifier and shuttle valve code DA



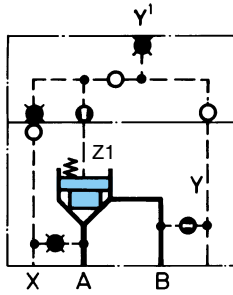
8 Spring (approx. cracking pressure, bar)

	Sleeve 1 (AA = 95%, AB = 5%)		Sleeve 3 (AA = 60%, AB = 40%)			
	A→B		A→B		B→A	
	D4S03	D4S06/10	D4S03	D4S06/10	D4S03	D4S06/10
1 =	2.8	3.5	6.5	6.5	9.5	11.0
2 =	0.5	0.5	1.0	1.0	1.5	1.7
3 =	0.3	0.3	0.6	0.6	0.9	1.0
4 =	2.2	2.2	4.0	3.5	5.5	6.0
5 =	-	9.0	-	16.0	-	28.0
6 =	1.2	1.2	2.0	2.2	3.0	3.8
7 =	3.0	-	8.0	-	12.0	-

- 7 Spool**
 1 = with closed bottom and 15° chamfer (p_Z max = p_A + 20 bar)
 2 = with 0.8 mm dia. orifice at the bottom and 15° chamfer (only D4S03)
 with 1.2 mm dia. orifice at the bottom and 15° chamfer (only D4S06 & D4S10) } with sleeve 1 only
 4 = with closed bottom and 45° chamfer
 A = Safety spool (for end position control only)
 B = Throttle spool (10° chamfer)
 C = Throttle spool (3° chamfer) } D4S06, D4S10 & sleeve 3 and springs 2, 3, 6 only

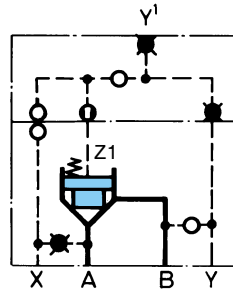
ORDERING CODE EXPLANATION (EXAMPLES)

Subplate mounting



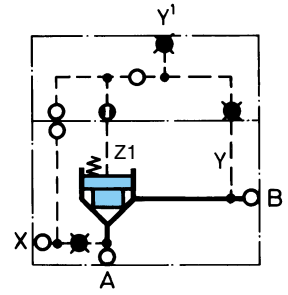
D4S...-DC
Pilot oil Y = internal from B

Subplate mounting

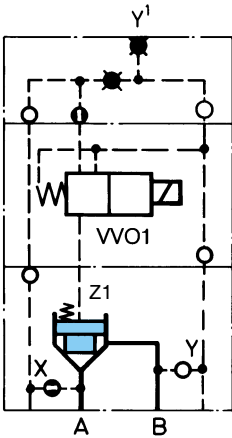


D4S...-21
Pilot oil X = external

Threaded body



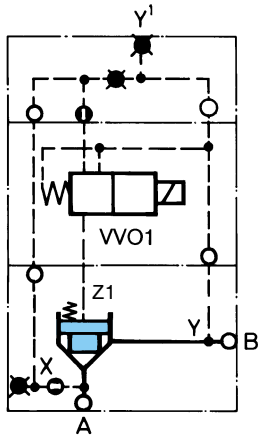
Subplate mounting



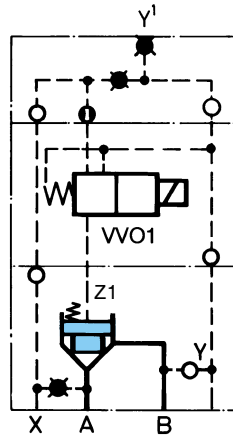
D4S...-16-...- $\left. \begin{matrix} 09 \\ 10 \\ 11 \\ 12 \end{matrix} \right\}$ with vent valve VV01

Pilot oil X = internal from A
Drain Y = internal to B

Threaded body



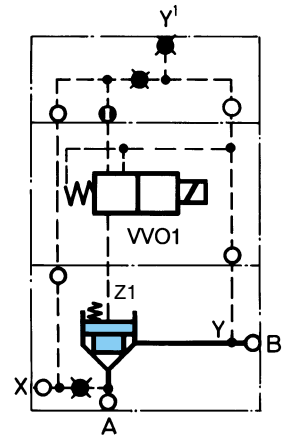
Subplate mounting



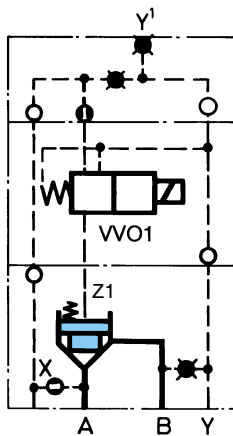
D4S...-26-...- $\left. \begin{matrix} 09 \\ 10 \\ 11 \\ 12 \end{matrix} \right\}$ with vent valve VV01

Pilot oil X = external
Drain Y = internal to B

Threaded body



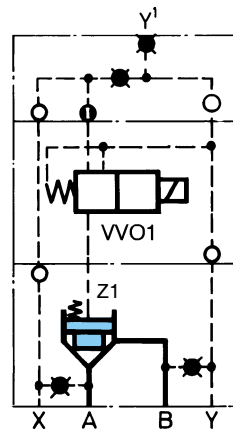
Subplate mounting



D4S...-A5-...- $\left. \begin{matrix} 09 \\ 10 \\ 11 \\ 12 \end{matrix} \right\}$ with vent valve VV01

Pilot oil X = internal from A
Drain Y = external to subplate

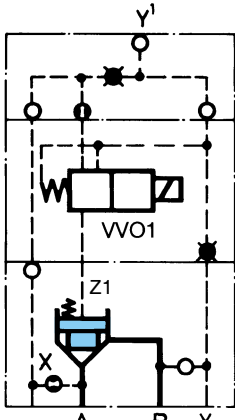
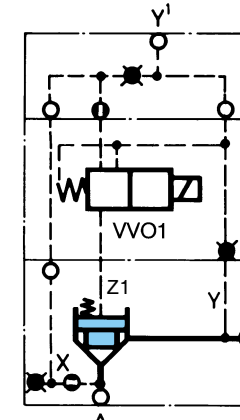
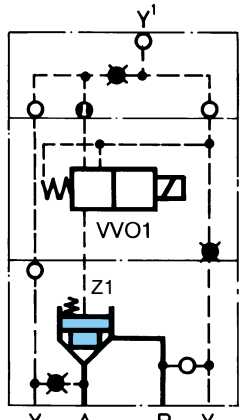
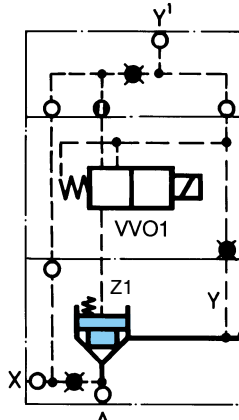
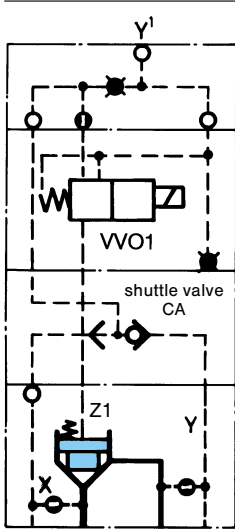
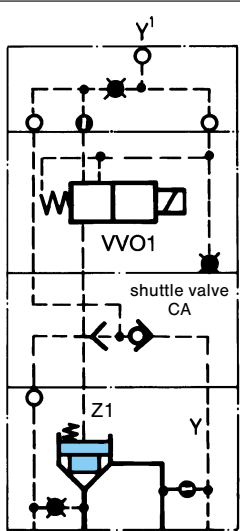
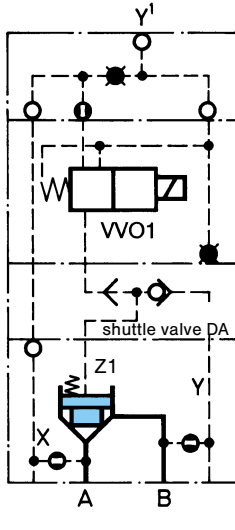
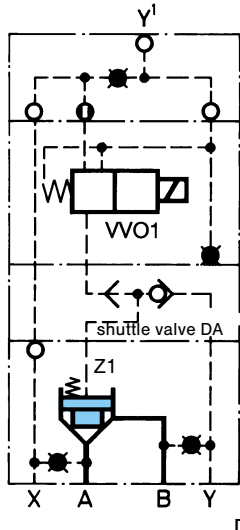
Subplate mounting



D4S...-B5-...- $\left. \begin{matrix} 09 \\ 10 \\ 11 \\ 12 \end{matrix} \right\}$ with vent valve VV01

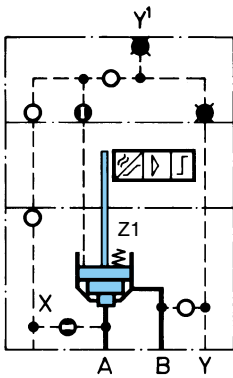
Pilot oil X = external
Drain Y = external to subplate

ORDERING CODE EXPLANATION (EXAMPLES)

Subplate mounting	Threaded body	Subplate mounting	Threaded body
			
<p>D4S...12... } with vent valve VV01 09 10 11 12</p> <p>Pilot oil X = internal from A Drain Y' = external out of the cap</p>		<p>D4S...22... } with vent valve VV01 09 10 11 12</p> <p>Pilot oil X = external Drain Y' = external out of the cap</p>	
	<p>Subplate mounting</p> <p>Pilot oil = internal from A and B</p> <p>Drain Y' = external out of the cap</p>		<p>Subplate mounting</p> <p>Pilot oil = internal from B and external from X</p> <p>Drain Y' = external out of the cap</p>
<p>D4S...C2... } with shuttle valve CA CB CD and vent valve VV01</p>		<p>D4S...D2... } with shuttle valve CA CB CD and vent valve VV01</p>	
	<p>Subplate mounting</p> <p>Pilot oil = internal from A and B (B→A = Check valve function)</p> <p>Drain Y' = external out of the cap</p>		<p>Subplate mounting</p> <p>Pilot oil = external from X and Y</p> <p>Drain Y' = external out of the cap</p>
<p>D4S...C2... } with shuttle valve DA DB DD and vent valve VV01</p>		<p>D4S...B2... } with shuttle valve DA DB DD and vent valve VV01</p>	

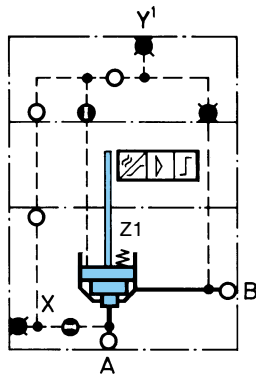
ORDERING CODE EXPLANATION (EXAMPLES)

Subplate mounting

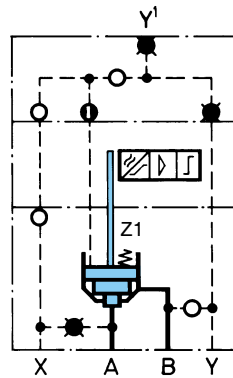


D4S...-11-3A.-BA (with end position control)
Pilot oil X = internal from A

Threaded body

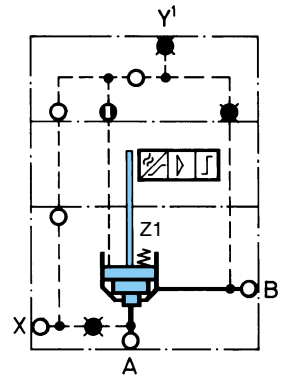


Subplate mounting

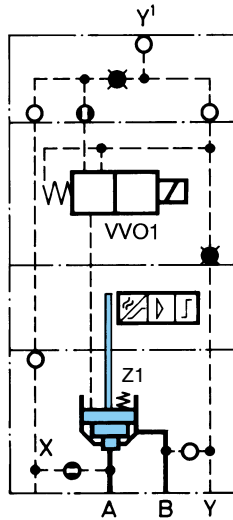


D4S...-21-3A.-BA (with end position control)
Pilot oil X = external

Threaded body

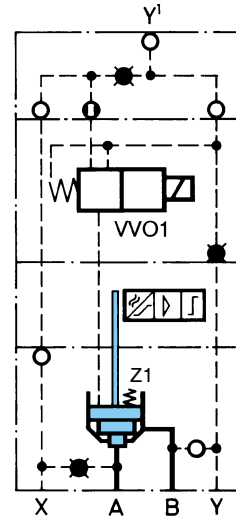


**Subplate mounting
and threaded body**



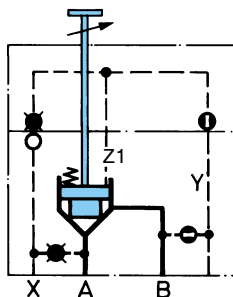
D4S...-12-3A.-BC } with end position control
BE } and vent valve VV01
Pilot oil X = internal from A
Drain Y1 = external out of the cap

**Subplate mounting
and threaded body**



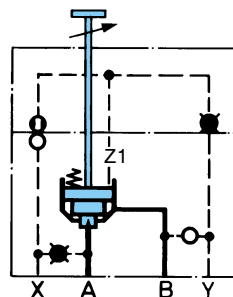
D4S...-22-3A.-BC } with end position control
BE } and vent valve VV01
Pilot oil X = external
Drain Y1 = external out of the cap

Subplate mounting



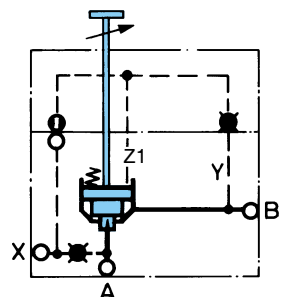
D4S...-D4-34. with stroke limiter
Pilot oil Y = internal from B
Note: for D4S06 & D4S10 only

Subplate mounting



D4S...-23-3B. with stroke limiter
Pilot oil X = external

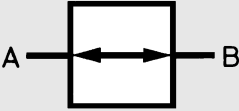
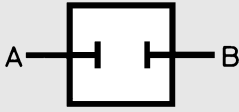

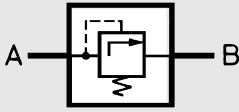
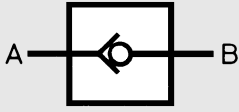
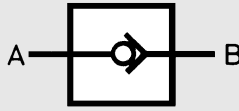
Threaded body



Note: for D4S06 & D4S10 only

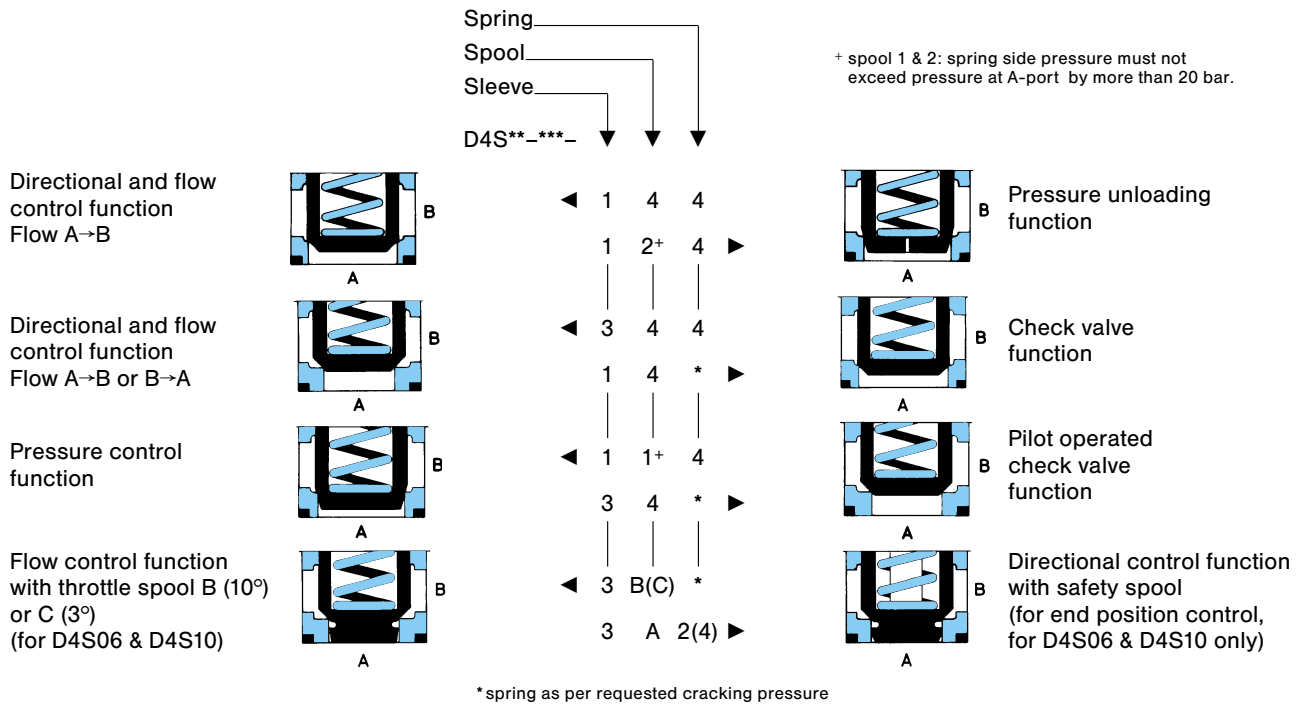
CONTROL FUNCTIONS AVAILABLE

The following are typical of the functions which can be achieved in a circuit incorporating single or multiple seat valves.

	Pilot pressure p_x	Direction of flow	Notes
 <p style="text-align: center;">Way function</p>	vented	= 0 A-B B-A	Area Z1 may be vented via X1 or a DENISON VV01 three way vent valve. When vented, the cracking pressure equals the spring force.
 <p style="text-align: center;">Way function</p>	connected with port A and B	= p_A or = p_B A & B blocked	Area Z1 may be connected via a shuttle valve to ports A and B. The holding pressure on Z1 will be supplied from port A or Port B, depending upon which is the greater.
 <p style="text-align: center;">Flow function</p>	vented	= 0 A-B B-A	An adjustable stroke limiter can be selected to limit the spool aperture, which produces flow restriction in either direction.
 <p style="text-align: center;">Pressure function</p>	external pilot pressure	> 0 A-B	Pressure is limited by application of external pilot pressure p_x to port X1.
 <p style="text-align: center;">Check function</p>	connected with port B	= p_B A-B free, blocked to A	Plug may be fitted between A and X leaving X connected to B (leakproof check valve function from B-A).
 <p style="text-align: center;">Check funktion</p>	connected with port A	= p_A B-A free, blocked to B	Plug may be fitted between B and X leaving X connected to A (check valve function from A-B, not leakproof).

Further control functions on request

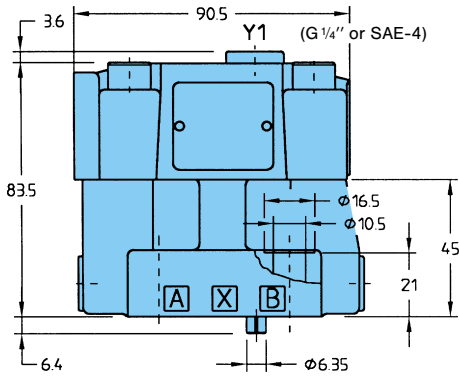
RECOMMENDED SPRING, SPOOL, SLEEVE COMBINATIONS



D4S03 (3/8") SUBPLATE MOUNTING

Mounting configuration according to ISO

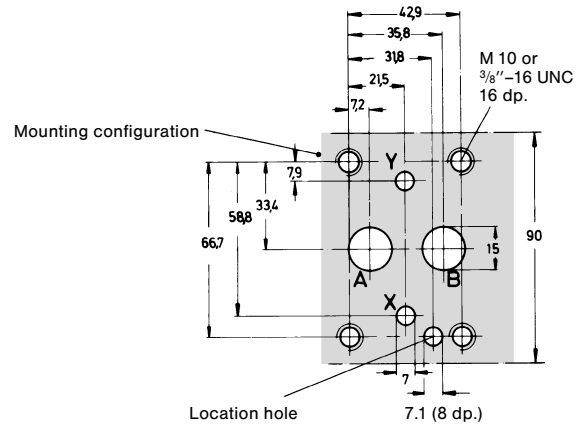
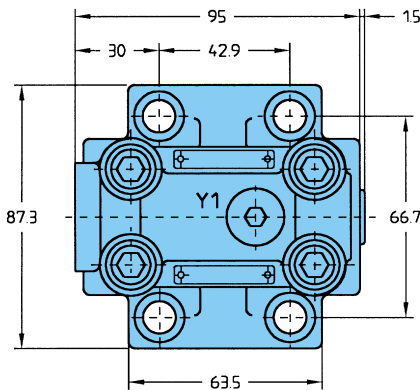
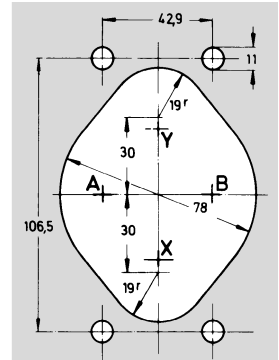
Weight: 2.7 kg



Ports	Function
A	Inlet or Outlet
B	Outlet or Inlet
X	external pilot port
Y (Y')	external drain *

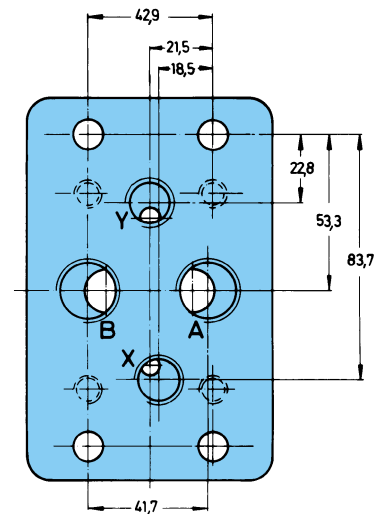
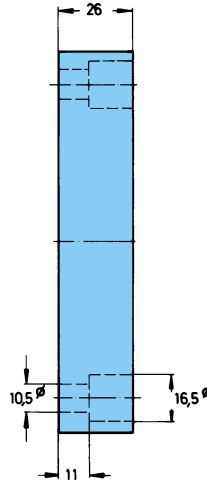
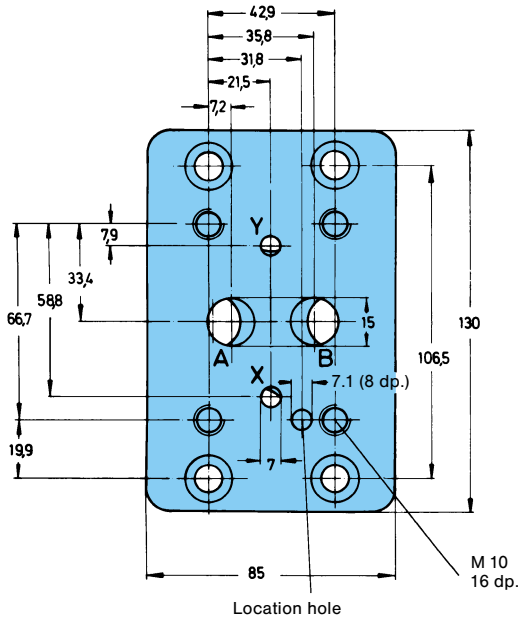
* only in connection with VV01 optional from cap (Y') or subplate (Y)

Block mounting face
Flatness 0,01 mm/100 mm length
Surface finish $\sqrt{0.8}$



SUBPLATES

Weight: 2 kg



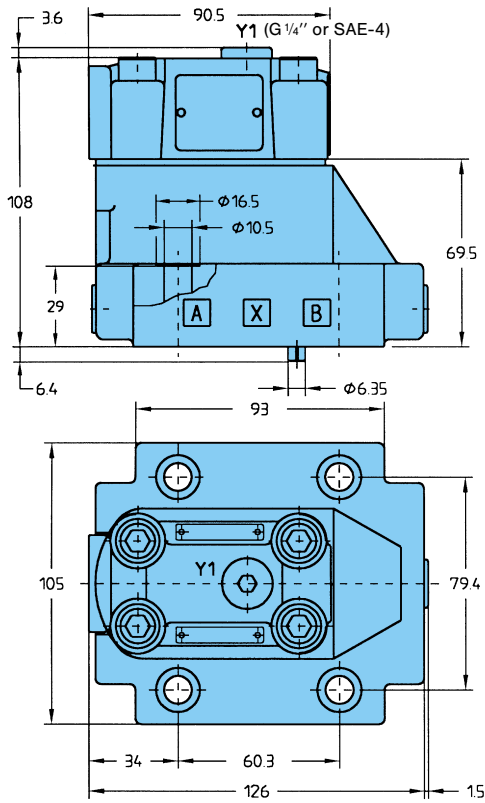
Model No.	Order No.	Port sizes		4 Mounting screws *		
		A + B	X + Y	Dimension	Order No.	min. tensile strength
SS-B-08-G 113	S16-63124-0	G 1/2"	G 1/4"	M 10 x 35 DIN 912-12.9	700-70039-8	at p ≤ 210 bar = 100 daN/mm ² at p > 210 bar = 120 daN/mm ²

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

D4S06 (3/4") SUBPLATE MOUNTING

Mounting configuration according to ISO

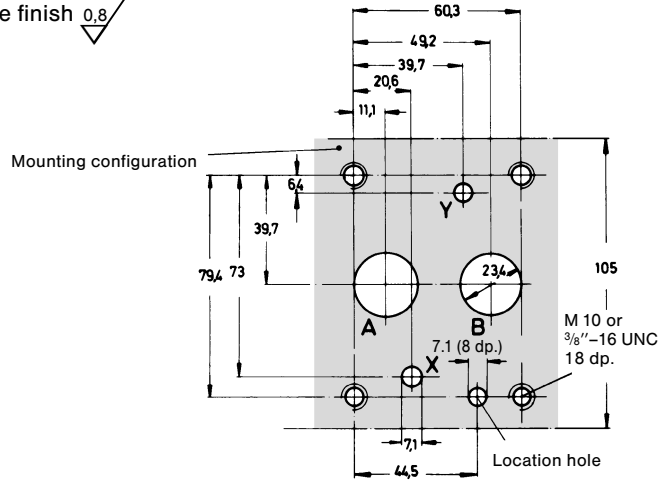
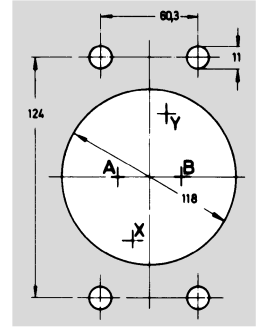
Weight: 4.5 kg



Ports	Function
A	Inlet or Outlet
B	Outlet or Inlet
X	external pilot port
Y (Y ¹)	external drain *

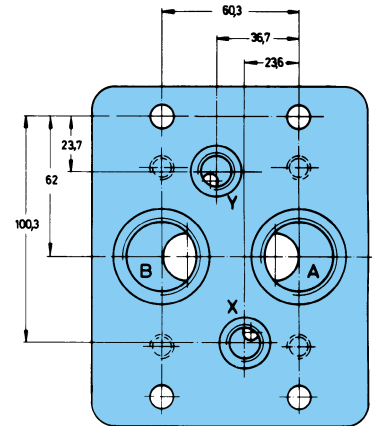
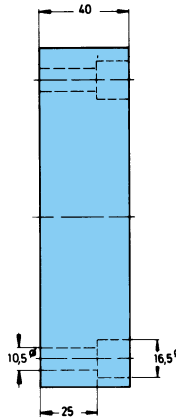
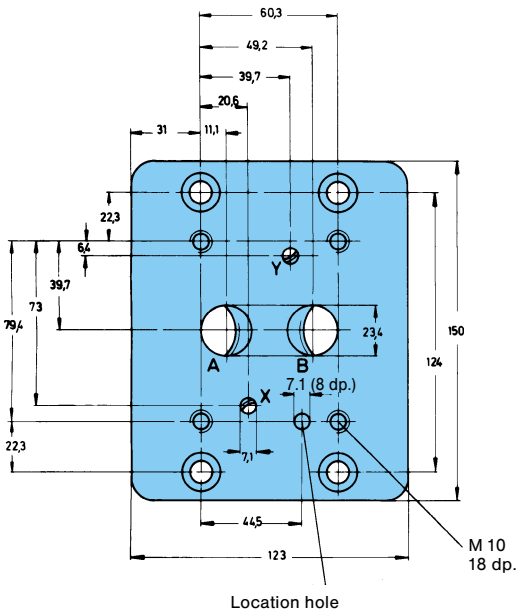
*only in connection with VV01 optional from cap (Y¹) or subplate (Y)

Block mounting face
Flatness 0,01 mm/100 mm length
Surface finish 0,8



SUBPLATES

Weight: 4.8 kg



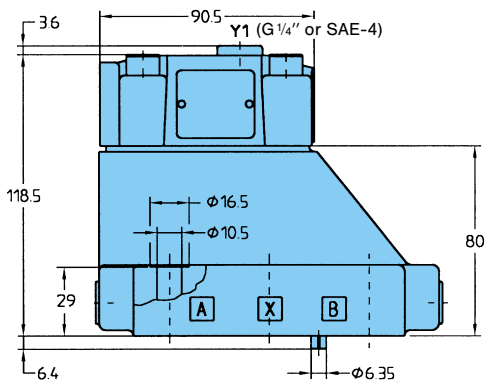
Model No.	Order No.	Port sizes		4 Mounting screws *		
		A + B	X + Y	Dimension	Order No.	min. tensile strength
SS-B-16-G 115	S16-39168-0	G 1"	G 1/4"	M 10 x 45 DIN 912-12.9	700-71602-8	at p ≤ 210 bar = 100 daN/mm ² at p > 210 bar = 120 daN/mm ²

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

D4S10 (1 1/2") SUBPLATE MOUNTING

Mounting configuration according to ISO

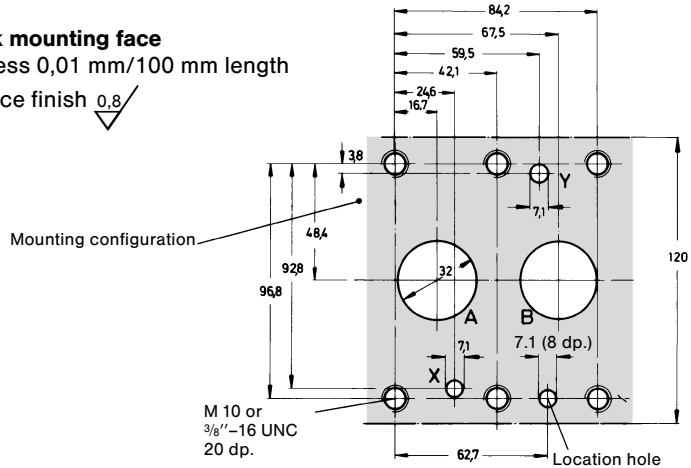
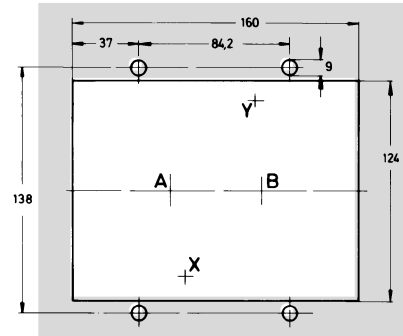
Weight: 6.0 kg



Ports	Function
A	Inlet or Outlet
B	Outlet or Inlet
X	external pilot port
Y (Y')	external drain *

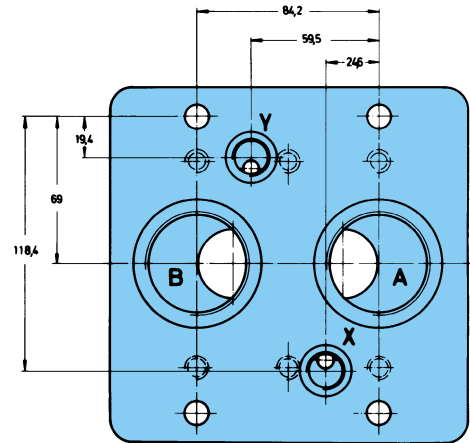
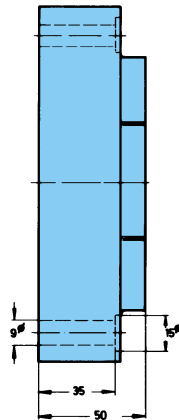
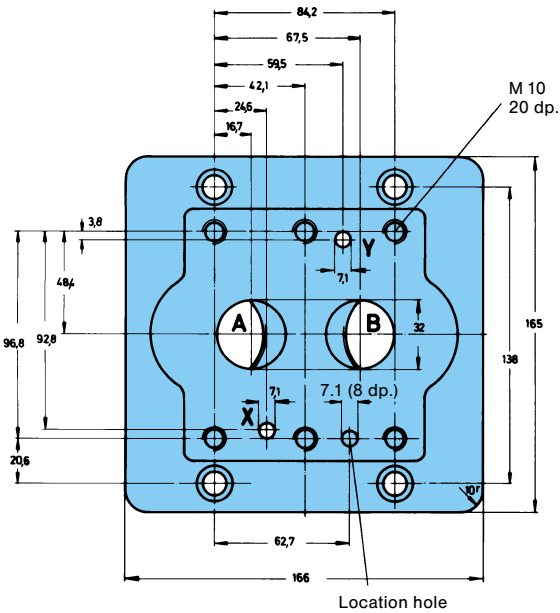
* only in connection with VV01
optional from cap (Y')
or subplate (Y)

Block mounting face
Flatness 0,01 mm/100 mm length
Surface finish $0,8 \sqrt{\text{mm}}$



SUBPLATES

Weight: 8.5 kg

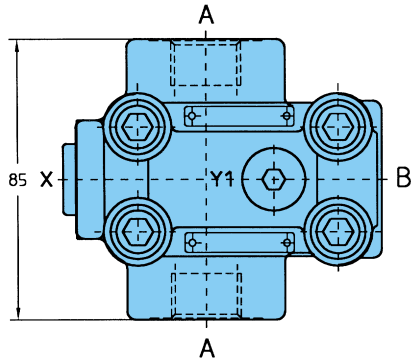
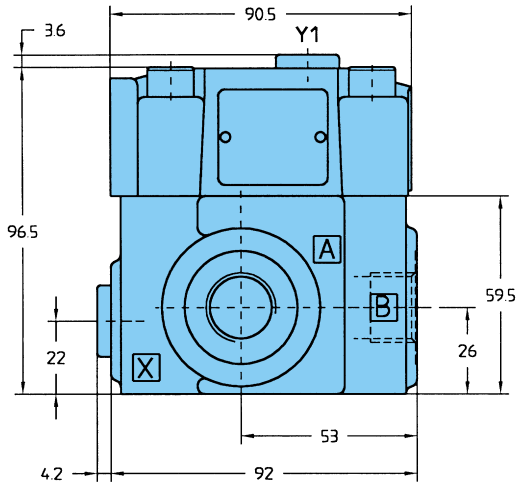


Model No.	Order No.	Port sizes		6 Mounting screws *		
		A + B	X + Y	Dimension	Order No.	min. tensile strength
SS-B-24-G 117	S16-39197-0	G 1 1/2"	G 1/4"	M 10 x 45 DIN 912-12.9	700-71602-8	at p ≤ 210 bar = 100 daN/mm ² at p > 210 bar = 120 daN/mm ²

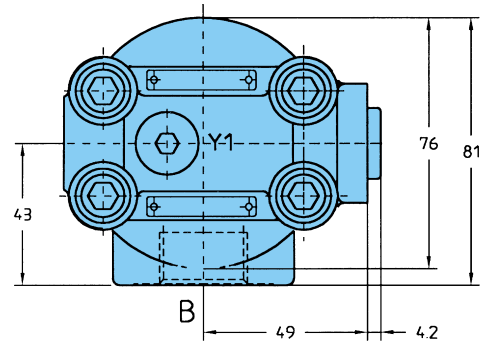
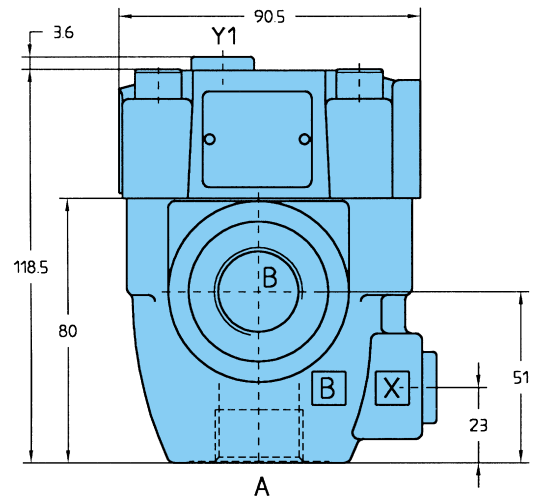
* Mounting screws are included in subplate order.
For valves ordered without subplate, mounting screws must be ordered separately.

D4S03 (3/8") & D4S06 (3/4") THREADED BODY

D4S03
Weight: 3.2 kg



D4S06
Weight: 3.3 kg

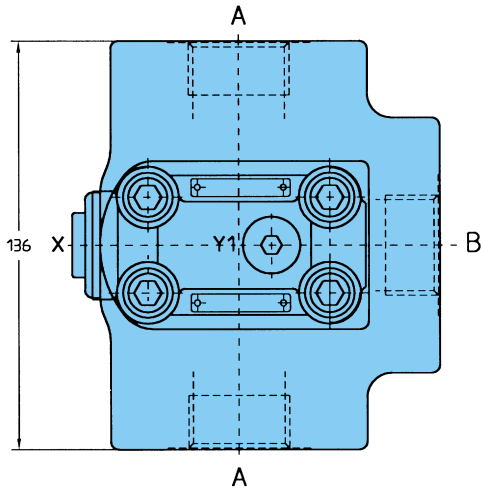
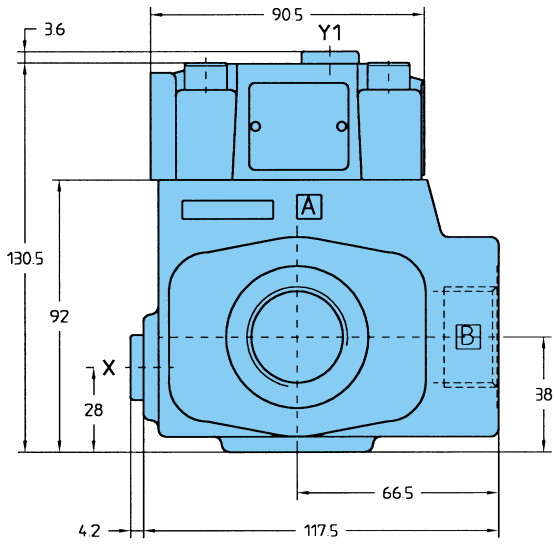


Ports	Function	Port sizes D4S03	Port sizes D4S06
A	Inlet or Outlet	G 1/2" or SAE-8 (3/4"-16 UNF)	G 3/4" or SAE-12 (1 1/16"-12 UN)
B	Outlet or Inlet	G 1/2" or SAE-8 (3/4"-16 UNF)	G 3/4" or SAE-12 (1 1/16"-12 UN)
X	external pilot port	G 1/4" or SAE-4 (7/16"-20 UNF)	G 1/4" or SAE-4 (7/16"-20 UNF)
Y1	external drain*	G 1/4" or SAE-4 (7/16"-20 UNF)	G 1/4" or SAE-4 (7/16"-20 UNF)

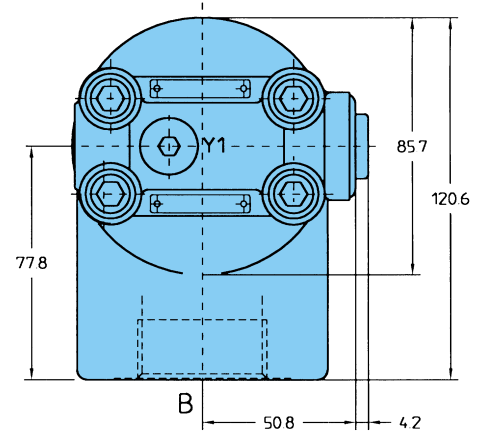
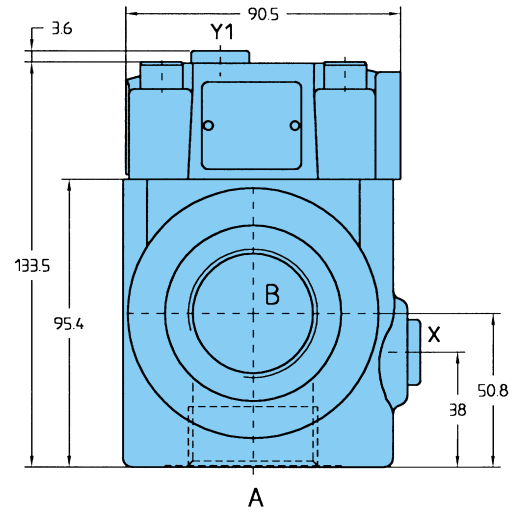
* only in connection with VV01

D4S06 (3/4") & D4S10 (1 1/2") THREADED BODY

D4S06
Weight: 6.6 kg



D4S10
Weight: 5.6 kg

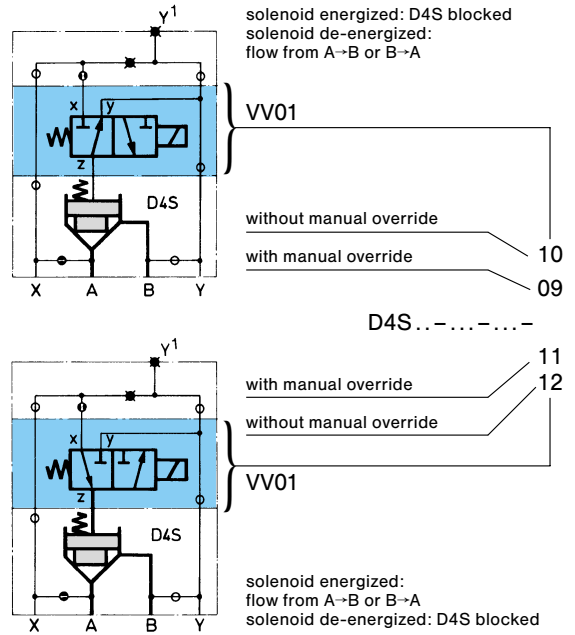
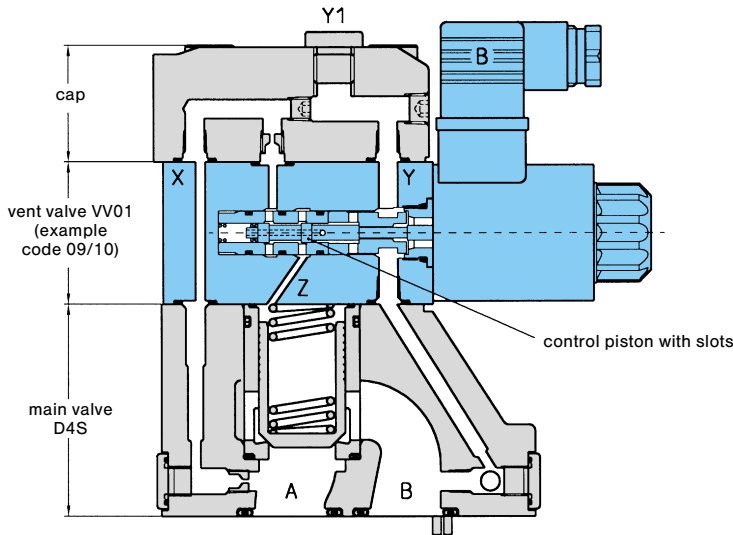


Ports	Function	Port sizes D4S06	Port sizes D4S10
A	Inlet or Outlet	G 1" or SAE-16 (1 5/16"-12 UN)	G 1 1/4" or SAE-20 (1 5/8"-12 UN)
B	Outlet or Inlet	G 1" or SAE-16 (1 5/16"-12 UN)	G 1 1/4" or SAE-20 (1 5/8"-12 UN)
X	external pilot port	G 1/4" or SAE-4 (7/16"-20 UNF)	G 1/4" or SAE-4 (7/16"-20 UNF)
Y1	external drain*	G 1/4" or SAE-4 (7/16"-20 UNF)	G 1/4" or SAE-4 (7/16"-20 UNF)

* only in connection with VV01

D4S VALVE WITH VENT VALVE VV01

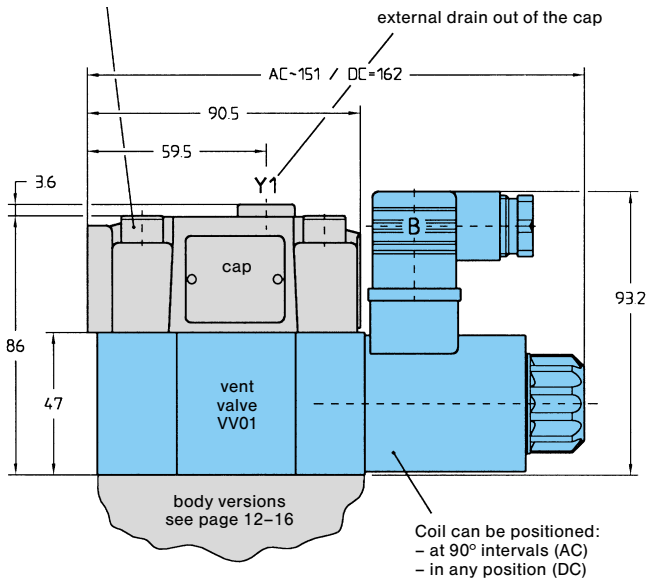
Weight (VV01): 1.5 kg



Function:

Pilot pressure from X→Z blocks the 2/2-way valve D4S.
 Drain from Z→Y effects free flow from A→B or B→A.
 Ports X and Y can be connected internally or externally
 (refer to pilot oil line).
 When port B is pressurised, cap code 2 must be ordered.
 Port Y in VV01 then must be plugged.

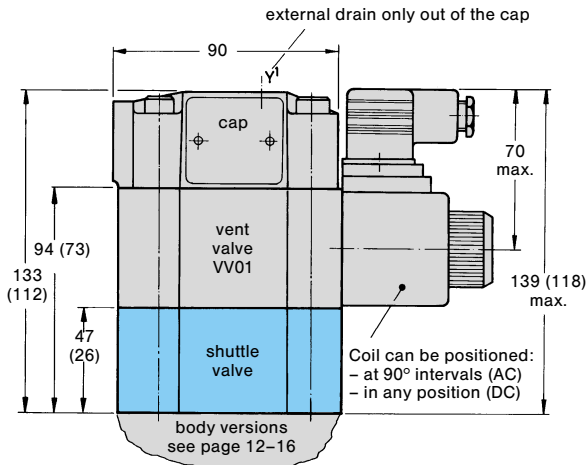
Screws for additional installation:
 4 x 3/8"-24 UNF x 3 1/2"
 Order-no. 359-15340-0



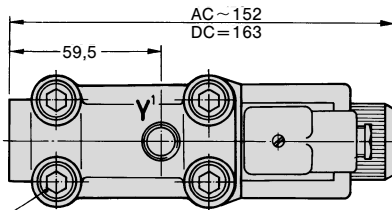
Note:
 Further details for vent valve VV01
 see publication 3-EN 215.

SHUTTLE VALVES FOR SERIES D4S

Weight: 1.2 / 0.7 kg

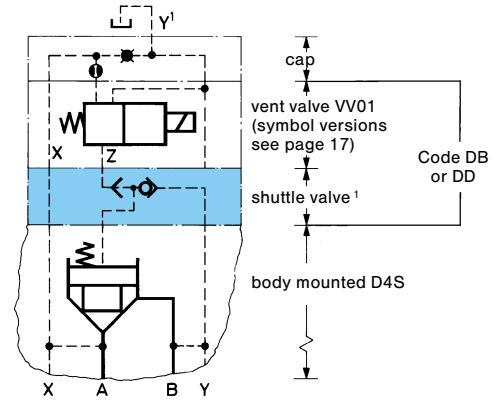
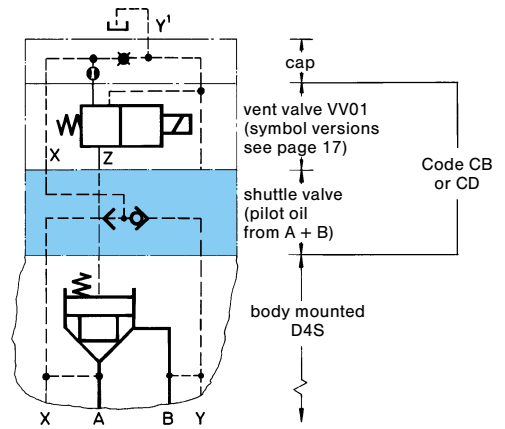


() Dimensions in brackets are for version VV01 with shuttle valve Code DB or DD.



Screws for additional installation:
4 x 3/8"-24 UNF x 5 1/2" lg. = Code CB or CD
Order-no. 359-15420-8
4 x 3/8"-24 UNF x 4 1/2" lg. = Code DB or DD
Order-no. 359-15380-8

Note:
Shuttle valves only use in connection with vent valve VV01.



¹Pilot oil from A + B.
From B→A check valve function.

END POSITION CONTROL FOR SERIES D4S

Weight: 1.4 kg

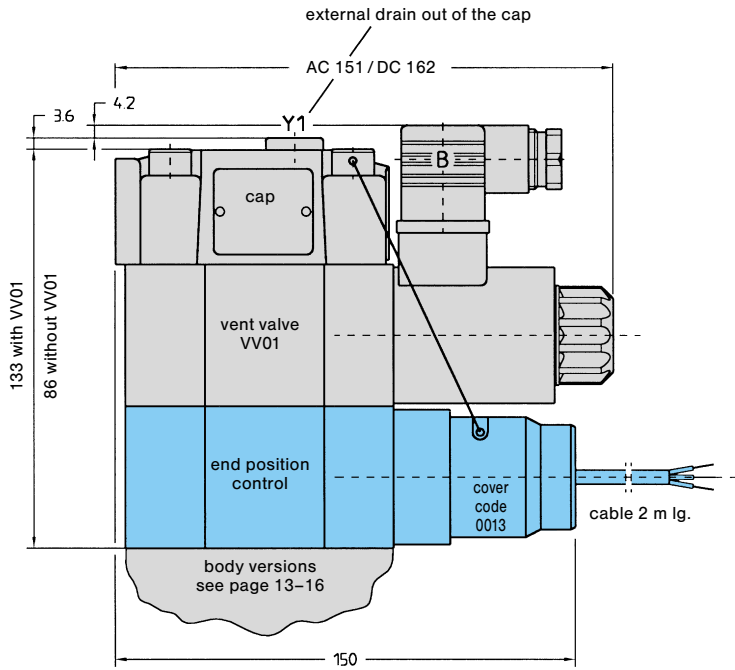
End position control by proximity switch (incl. amplifier).

Valve open: proximity switch damped.

This proximity switch is pressure proof and has no wearing parts.

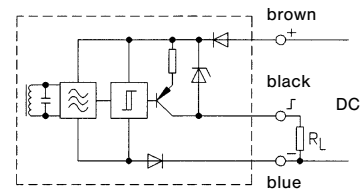
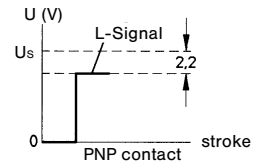
Note:

End position control for D4S06 & D4S10 only.



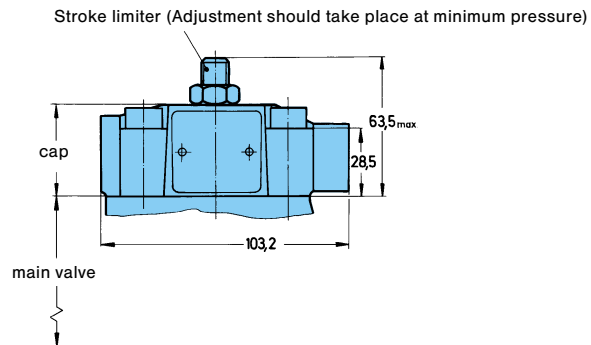
Technical Data (Proximity switch):

Function:	PNP, Contact
Supply voltage (U _s):	10...30 VDC
Supply voltage ripple:	≤ 10 %
Current consumption:	max. 8 mA
Residual voltage L-Signal:	U _s - 2.2 V at I _{max}
Output current (I):	≤ 200 mA
Type of protection:	IP 67
Ambient temperature:	-25 ... +70 °C
Wire cross-sectional area:	3 x 0.5 mm ²



STROKE LIMITER

Weight: 1 kg



Note:

Stroke limiter not for use with D4S03, vent valve VV01, shuttle valve and end position control.

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