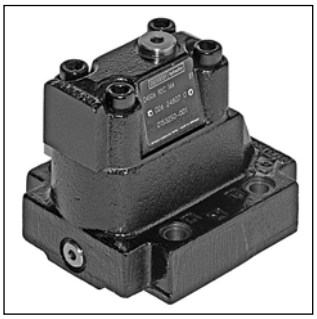
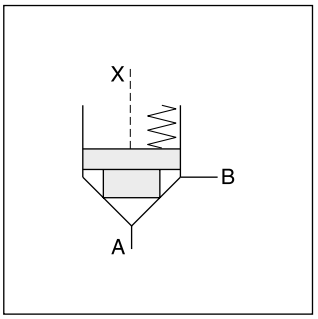
Seat valves series D4S are designed for directional control functions. A large variety of poppets, springs and covers – including shuttle valves, stroke limiters, solenoid valves (VV01) and position control – allow to design individual hydraulic solutions for nominal flow up to 600 l/min.

A complete program of 2/2-way seat valves is offered under Parker brand:

subplate mounted valves	series D4S	chapter 6
SAE flange valves	series D5S	chapter 9
slip-in cartridges	series CAR	on request

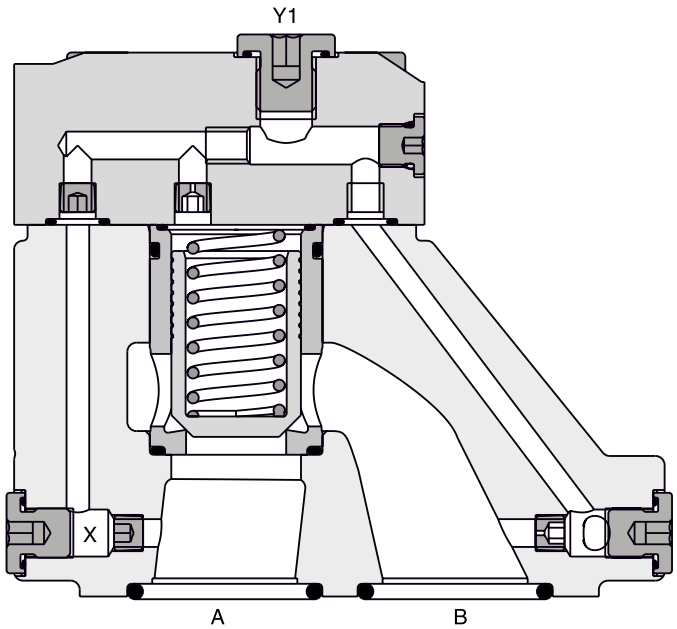




Features

- Subplate mounting according to ISO 5781
- Leak-free seat valve design
- Numerous pilot options
- 6 poppet types
- D4S03 - NG10
  D4S06 - NG25
  D4S10 - NG32

D4S10-9DC



Pilot oil Y = internal from B

D4S		–	9								B	
Seat valve	Nominal size		Subplate mounting ISO 5781, Y1 port G¼"	Pilot connection	Cap version	Sleeve	Spool type	Spring	Switching type	Solenoid voltage	Design series	Seals

Code	Nominal size
03	NG10
06	NG25
10	NG32

Code	Seals
1	NBR
5	FPM

Code	Pilot oil line in body	A-X	B-Y
1	internal from A	⊖	○
2	external from X	●	○
A [1]	internal from A	⊖	●
B	external from X	●	●
C	internal from A + B	⊖	⊖
D	internal from B	●	⊖
G	external from Y	●	●

Code	Solenoid voltage
omit	Standard w/o vent function
G0R	12 V=
G0Q	24 V=
GAR [4]	98 V=
GAG [4]	205 V=
W30	110 V / 50 Hz 120 V / 60 Hz
W31	230 V / 50 Hz 240 V / 60 Hz

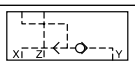
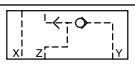
Code	Ports	X	Y	Z	X-Y	Y1	VV01
	Standard						
1	Pilot oil = pilot drain	○	●	⊖	○	●	—
C	Pilot oil = pilot drain	●	○	⊖	○	●	—
	With solenoid valve (VV01)						
2	Ext. PD from cap	○	○	⊖	●	○	●
5	Ext. to subplate	○	○	⊖	●	●	○
6	Internal pilot drain	○	○	⊖	●	●	○
	With stroke limiter (not for D4S03)						
3	Pilot oil = pilot drain	⊖	●	—	—	—	—
4	Pilot oil = pilot drain	●	⊖	—	—	—	—

○ open bore ● closed bore ⊖ orifice Ø 1.2

Code	Sleeve
1	AA = 95 %, AB = 5 %
3	AA = 60 %, AB = 40 %

Code	Size	Poppet type	Sleeve
1	03, 06,10	With closed bottom and 15° chamfer (pZ max. = pA +20 bar)	1
2	03	With 0.8 dia. orifice at the bottom and 15° chamfer	1
	06, 10	With 1.2 dia. orifice at the bottom and 15° chamfer	1
4	03, 06,10	With closed bottom and 45° chamfer	1, 3
A [2]	06, 10	Safety spool (for position control only)	3
B [2]	06, 10	Throttle spool, 10° chamfer	3
C [2]	06, 10	Throttle spool, 3° chamfer	3

Code	Spring (approx. cracking pressure [bar])					
	Sleeve Code 1		Sleeve Code 3			
	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	—

Code	Switching type	
omit	Standard w/o vent function	
09	VV01 with manual override	de-energized: power comp. open
10	VV01 without manual override	
11	VV01 with manual override	de-energized: power comp. 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 and shuttle valve code CA	
DB	VV01 code 09 and shuttle valve code DA	
DD	VV01 code 11 and shuttle valve code DA	
EH	VV01 code 10 and shuttle valve code CA and position control [3] with amplifier	
EK	VV01 code 12 and shuttle valve code CA and position control [3] with amplifier	
EN	VV01 code 10 and shuttle valve code DA and position control [3] with amplifier	
EQ	VV01 code 12 and shuttle valve code DA and position control [3] with amplifier	
EC	VV01 code 10 and position control [3] with amplifier	
EE	VV01 code 12 and position control [3] with amplifier	
EA	Position control [3] with amplifier	
EF	Position control [3] with amplifier and shuttle valve code CA	
EL	Position control [3] with amplifier and shuttle valve code DA	

[1] With VV01 only.

[2] Springs 2, 3 and 6 only.

[3] Position control for D4S06/10 only. Spring 2 or 4. Spool A and sleeve 3. Valve open: proximity switch damped.

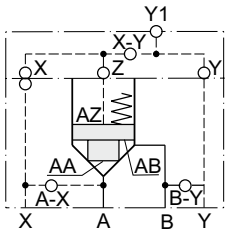
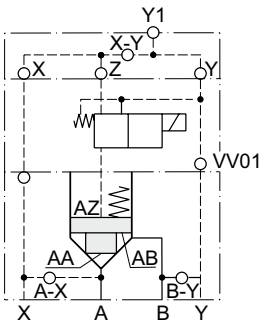
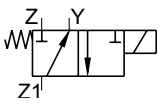
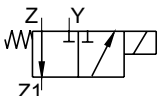
[4] To be used in combination with rectifier plugs at 120 VAC/230 VAC power supply.

Examples see end of chapter

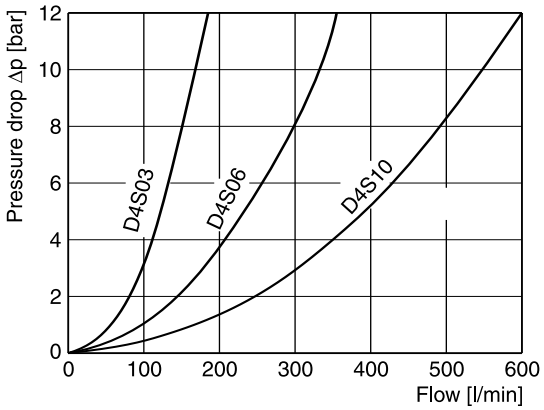
General							
Size			**NG10**		**NG25**		**NG32**
Mounting interface			Subplate mounting according to ISO 5781				
Mounting position			unrestricted				
Ambient temperature		[°C]	-20...+60				
$MTTF_D$ value		[years]	150				
Weight		[kg]	2.7		4.5		6.0
Hydraulic							
Operating pressure		[bar]	Ports A, B up to 350; Port Y 140 (with VV01)				
Nominal flow		[l/min]	180		360		600
Fluid			Hydraulic oil according to DIN 51524				
Fluid temperature		[°C]	-20...+70 (NBR: -25...+70)				
Viscosity,	permitted	[cSt] / [mm^2/s]	20...400				
	recommended	[cSt] / [mm^2/s]	30...80				
Filtration			ISO 4406; 18/16/13				
Electrical (solenoid)							
Duty ratio			100 % ED; CAUTION: coil temperature up to 150 °C possible				
Protection class			IP65 in accordance with EN 60529 (with correctly mounted plug-in connector)				
Code			G0R	G0Q	GAR	GAG	W30	W31
Supply voltage		[V]	12 V =	24 V =	98 V =	205 V =	110 at 50 Hz 120 at 60 Hz	230 at 50 Hz 240 at 60 Hz
Tolerance supply voltage		[%]	±10	±10	±10	±10	±5	±5
Current consumption	hold	[A]	2.72	1.29	0.33	0.13	0.6 / 0.55	0.3 / 0.27
	in rush	[A]	2.72	1.29	0.33	0.13	2.5 / 2.4	1.25 / 1.2
Power consumption	hold	[W]	32.7	31	31.9	28.2	70 / 70 VA	70 / 70 VA
	in rush	[W]	32.7	31	31.9	28.2	280 / 290 VA	280 / 290 VA
Solenoid connection			Connector as per EN175301-803, solenoid identification as per ISO 9461					
Wiring min.		[mm^2]	3 x 1.5 recommended					
Wiring length max.		[m]	50 recommended					

6

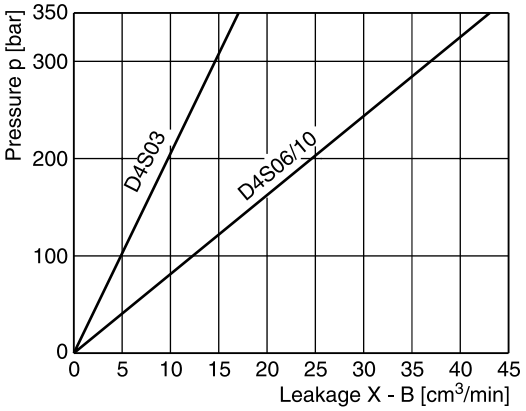
D4S pilot configuration

D4S direct operated	**D4S with vent valve VV01**	**VV01**
		de-energized open  de-energized closed 

Δp/Q performance curves



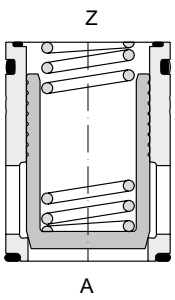
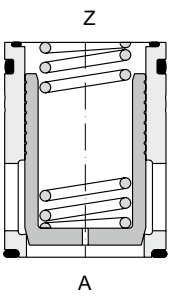
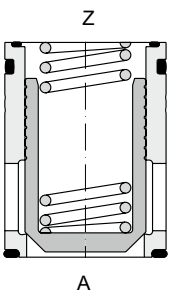
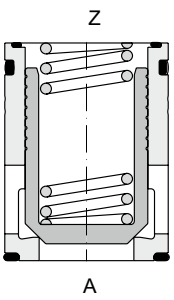
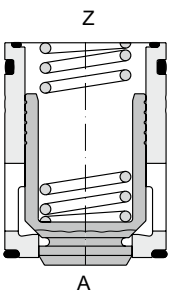
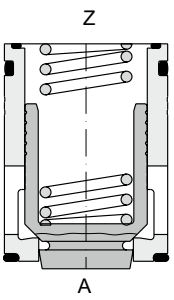
Leakage

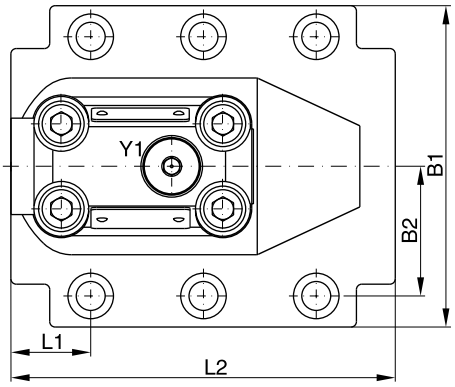


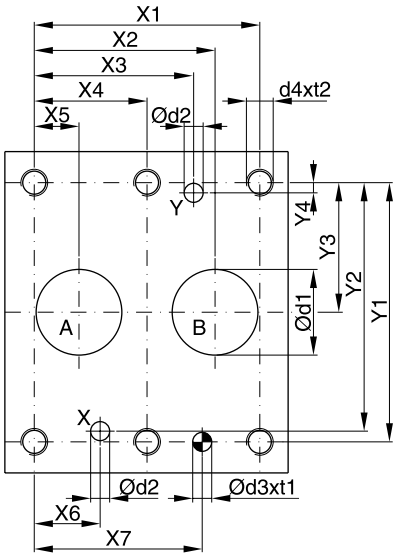
All characteristic curves measured with HLP46 at 50 °C.

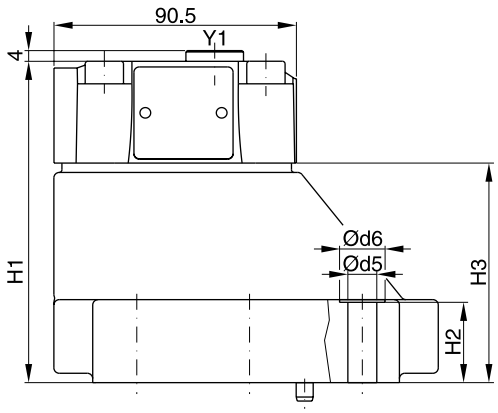
6

Selection of Cartridges

Sleeve 1, poppet 1	Sleeve 1, poppet 2	Sleeve 1, poppet 4	Sleeve 3, poppet 4	Sleeve 3, poppet A	Sleeve 3, poppet B/C
					
1 : 1.05 $A_A = 0.95\ A_C$ $A_B = 0.05\ A_C$ 15° chamfer	1 : 1.05 $A_A = 0.95\ A_C$ $A_B = 0.05\ A_C$ 15° chamfer orifice	1 : 1.05 $A_A = 0.95\ A_C$ $A_B = 0.05\ A_C$ 45° chamfer	1 : 1.67 $A_A = 0.6\ A_C$ $A_B = 0.4\ A_C$ 45° chamfer	1 : 1.67 $A_A = 0.6\ A_C$ $A_B = 0.4\ A_C$ 45° chamfer safety spool	1 : 1.67 $A_A = 0.6\ A_C$ $A_B = 0.4\ A_C$ 45° chamfer throttle spool







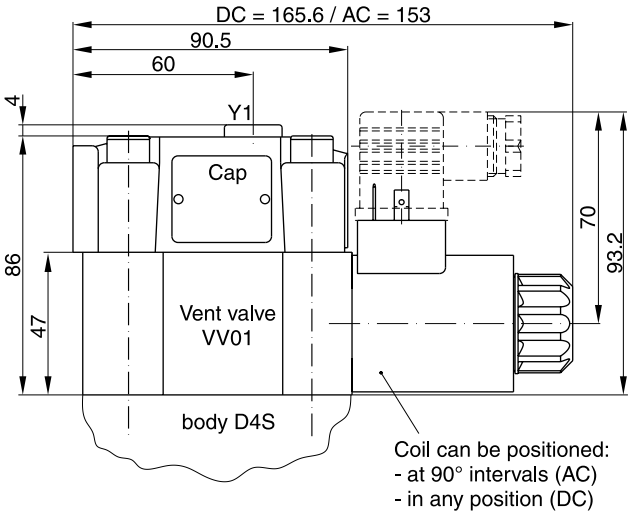
6

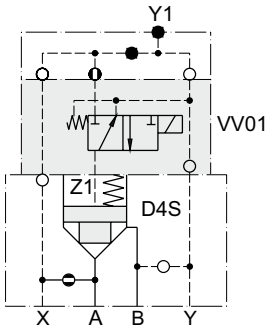
NG	ISO-code	X1	X2	X3	X4	X5	X6	X7	Y1	Y2	Y3	Y4
10	5781-06-07-0-00	42.9	35.8	21.5	–	7.2	21.5	31.8	66.7	58.8	33.4	7.9
25	5781-08-10-0-00	60.3	49.2	39.7	–	11.1	20.6	44.5	79.4	73	39.7	6.4
32	5781-10-13-0-00	84.2	67.5	59.5	42.1	16.7	24.6	62.7	96.8	92.8	48.4	3.8

NG	ISO-code	B1	B2	H1	H2	H3	L1	L2	D1	D2	D3	t1	D4	t2	D5	D6
10	5781-06-07-0-00	87.3	33.35	83	21	45	29	94.8	15	7	7.1	8	M10	16	10.8	17
25	5781-08-10-0-00	105	39.7	107.5	29	69.5	34.7	126.8	23.4	7.1	7.1	8	M10	18	10.8	17
32	5781-10-13-0-00	120	48.4	120	30	82	30.6	144.3	32	7.1	7.1	8	M10	20	10.8	17

NG	Kit	ISO 4762-12.9		Kit		Surface finish
				NBR	FPM	
10	BK505	4x M10x35	63 Nm ±15 %	S26-58507-0	S26-58507-5	R_{max}6.3 ▱ 0.01/100
25	BK485	4x M10x45	63 Nm ±15 %	S26-58475-0	S26-58475-5	
32	BK506	6x M10x45	63 Nm ±15 %	S26-58508-0	S26-58508-5	

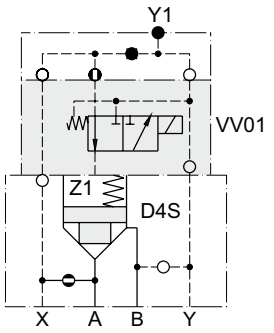
Dimensions D4S with VV01





with manual override / without manual override

D4S..-.....09/10
Solenoid energized:
D4S blocked
Solenoid de-energized:
Flow from A-B or B-A

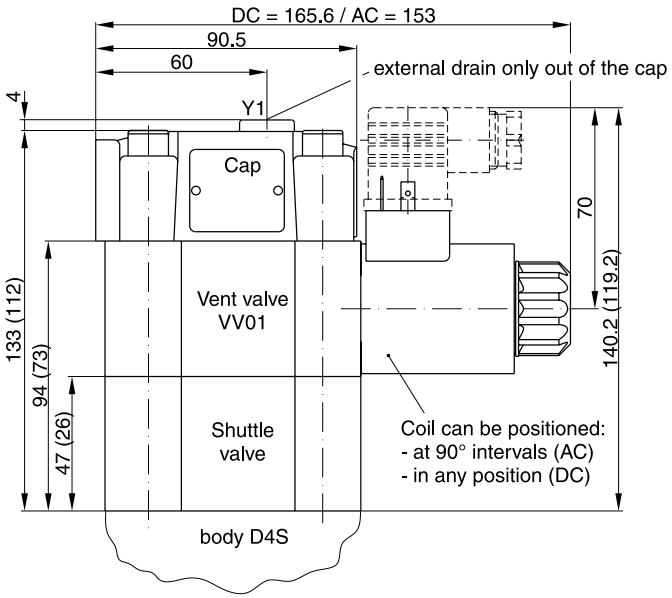


with manual override / without manual override

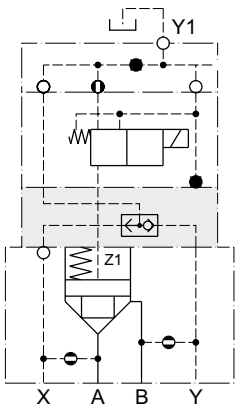
D4S..-.....11/12
Solenoid energized:
Flow from A-B or B-A
Solenoid de-energized:
D4S blocked

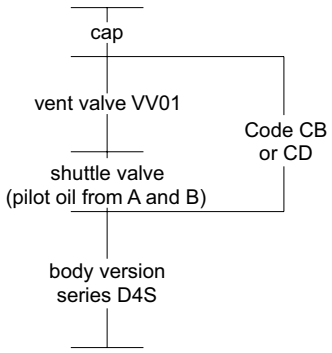
6

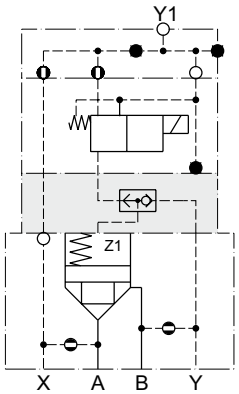
Dimensions D4S with shuttle valve

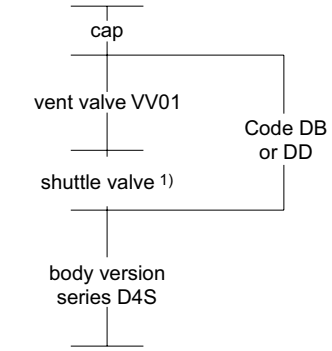


() Dimensions in brackets are for version VV01with shuttle valve code DB or DD.









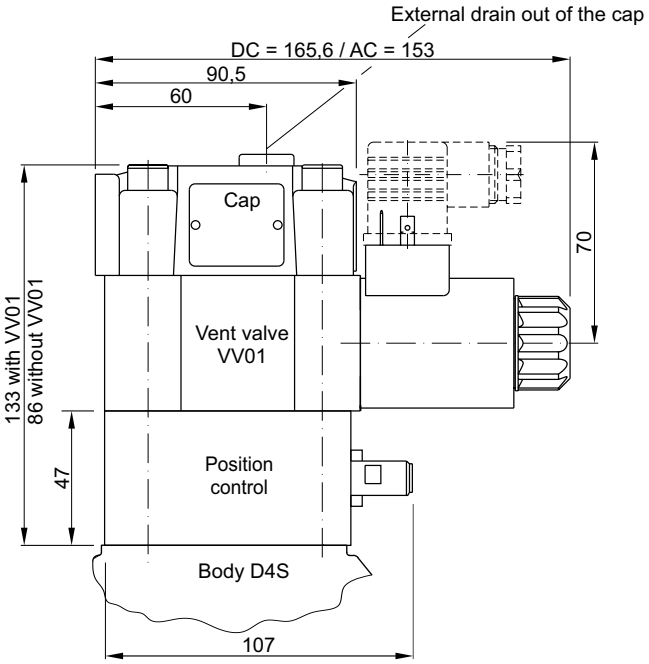
1) Pilot oil from A and B, from B to A check valve function.

Position control by proximity switch (incl. amplifier)

Valve open: proximity switch activated.This proximity switch is pressure proof and has no wearing parts.

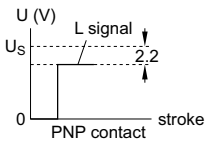
Note

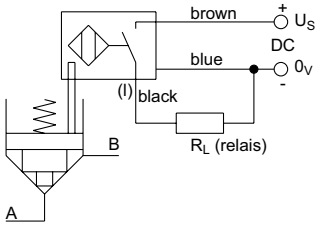
Position control for D4S06 and D4S10 only.



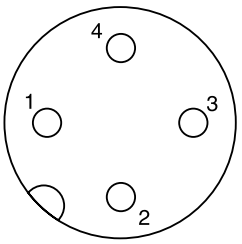
Position control as per IEC 61076-2-101 (M12x1)

Protection class		IP65 in accordance with EN 60529
Ambient temperature	[°C]	-20...+60
Supply voltage Us / ripple	[V]	10...30 / ±10 %
Current consumption without load	[mA]	≤ 10
Max. output current per channel, ohmic	[mA]	200
Min. output load per channel, ohmic	[kOhm]	100
Max. output drop at 0.2 A	[V]	≤ 2
EMC		EN61000-6-4 / EN61000-6-2
Min. distance to next AC solenoid	[m]	> 0.1
Interface		M12x1 acc. to IEC 61076-2-101
Wiring min.	[mm²]	3 x 0.14 brad shield recommended
Wiring length max.	[m]	50 recommended

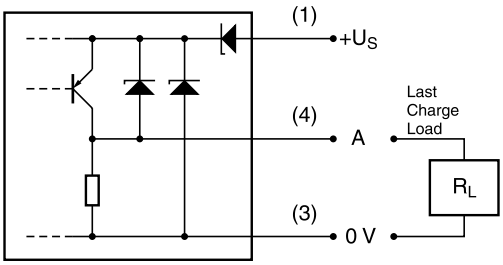




M12 pin assignment

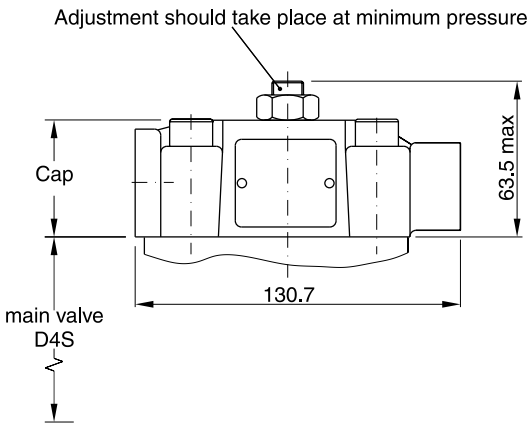


1 Us 10...30 V
2 not connected
3 0 V
4 Out A: normally open

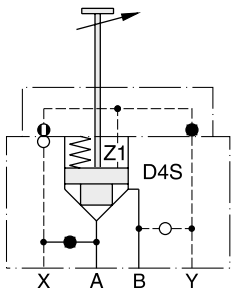


Please order plug M12 x 1 separately. Straight plug recommended – no defined position possible for angled plug.

Dimensions D4S stroke limiter



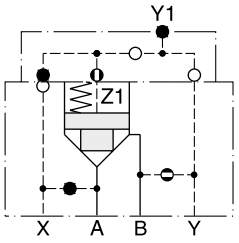
Example: D4S$^{06}_{10}$-.233B.



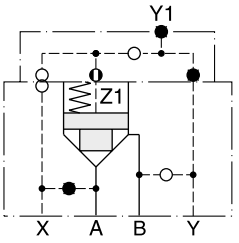
Note:

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

D4S direct operated

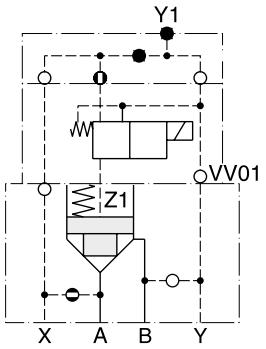


D4S..-.DC
Pilot oil Y = internal from B

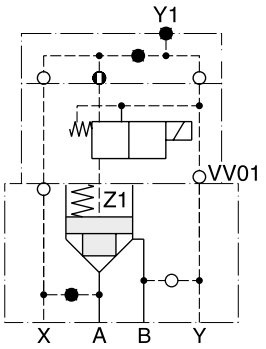


D4S..-.21
Pilot oil X = external

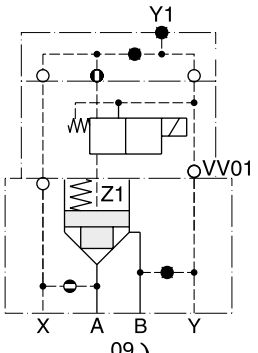
D4S with VV01



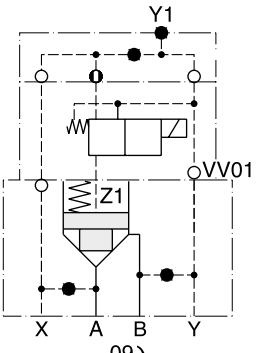
D4S..-.16... 09 10 11 12 } with VV01
Pilot oil X = internal from A
Drain Y = internal to B



D4S..-.26... 09 10 11 12 } with VV01
Pilot oil X = external
Drain Y = internal to B

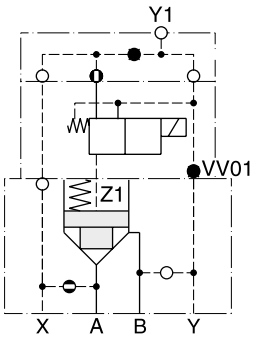


D4S..-.A5... 09 10 11 12 } with VV01
Pilot oil X = internal from A
Drain Y = external to subplate



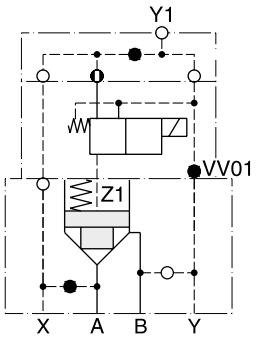
D4S..-.B5... 09 10 11 12 } with VV01
Pilot oil X = external
Drain Y = external to subplate

D4S with VV01



D4S..-.12... 09 / 10 / 11 / 12 } with VV01

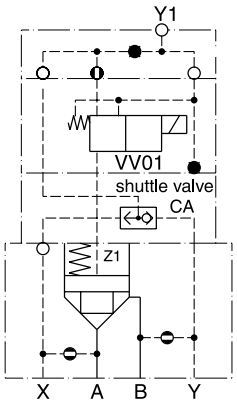
Pilot oil X = internal from A
Drain Y1 = external out of the cap



D4S..-.22... 09 / 10 / 11 / 12 } with VV01

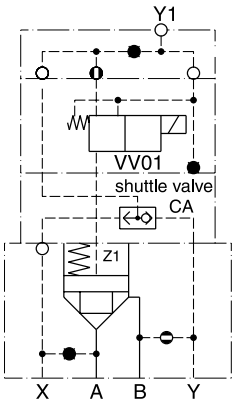
Pilot oil X = external
Drain Y1 = external out of the cap

D4S with shuttle valve



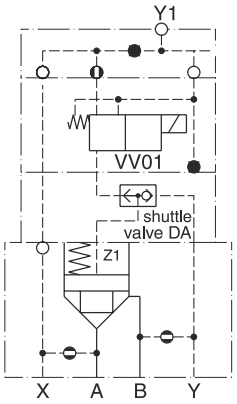
D4S..-.C2... CB / CD } with shuttle valve CA and VV01

Pilot oil = internal from A and B
Drain Y1 = external out of the cap



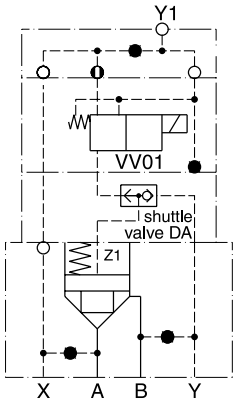
D4S..-.D2... CB / CD } with shuttle valve CA and VV01

Pilot oil = internal from B and external from X
Drain Y1 = external out of the cap



D4S..-.C2-...- DB / DD } with shuttle valve DA and VV01

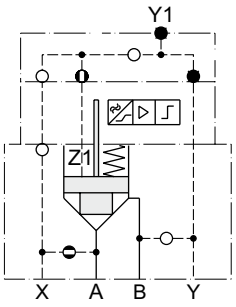
Pilot oil = internal from A and B
(B-A = check valve function)
Drain Y1 = external out of the cap



D4S..-.B2... DB / DD } with shuttle valve DA and VV01

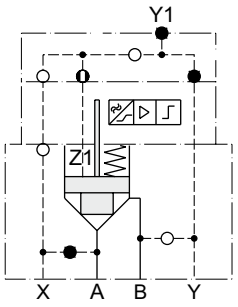
Pilot oil = external from X and Y
Drain Y1 = external out of the cap

D4S with position control



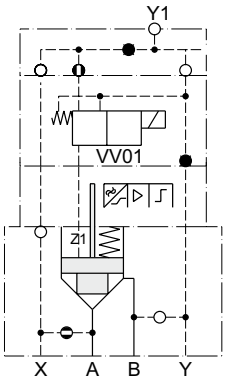
D4S..-.113A.EA
(with position control)

Pilot oil X = internal from A



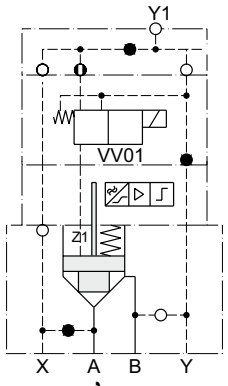
D4S..-.21-3A.-EA
(with position control)

Pilot oil X = external



D4S..-.12-3A.- EC / EE } with position control and VV01

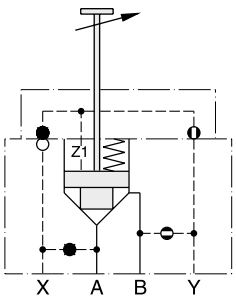
Pilot oil X = internal from A
Drain Y1 = external out of the cap



D4S..-.22-3A.- EC / EE } with position control and VV01

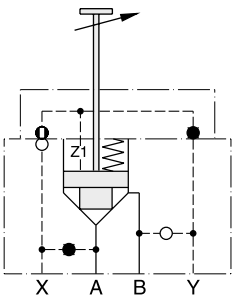
Pilot oil X = external
Drain Y1 = external out of the cap

D4S with stroke limiter



D4S..-.D434. with stroke limiter
Pilot oil Y = internal from B

Note: for D4S06 and D4S10 only



D4S..-.233B. with stroke limiter
Pilot oil X = external

Note: for D4S06 and D4S10 only