

# Parker Series D5S Directional Seat Valve with SAE Flange Service Manual

Seat valves series D5S are designed for directional control functions. They enable individual hydraulic solutions for nominal flow up to 800 l/min due to a large variety of poppets, springs and covers, including shuttle valves, stroke limiters, solenoid valves (VV01) and position control.

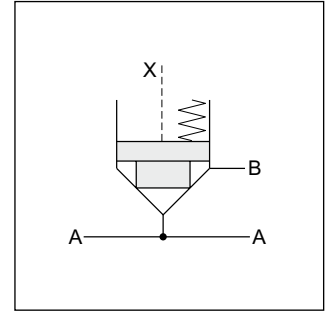
A complete program is offered under the Parker brand:

Subplate mounted valves (Series D4S - chapter 6)

SAE flange valves (Series D5S - chapter 9)

Pipe mounted valves (Series D4S - chapter 10)

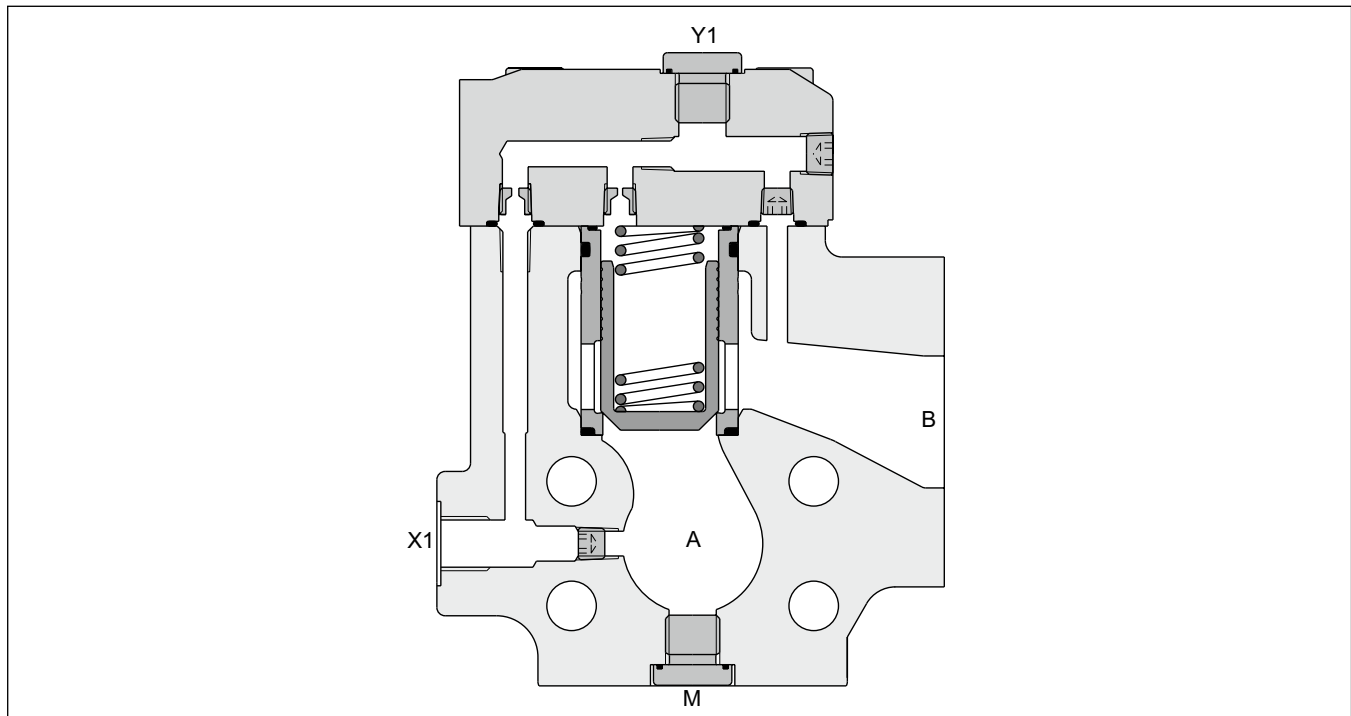
Slip-in cartridges (Series CAR - on request)

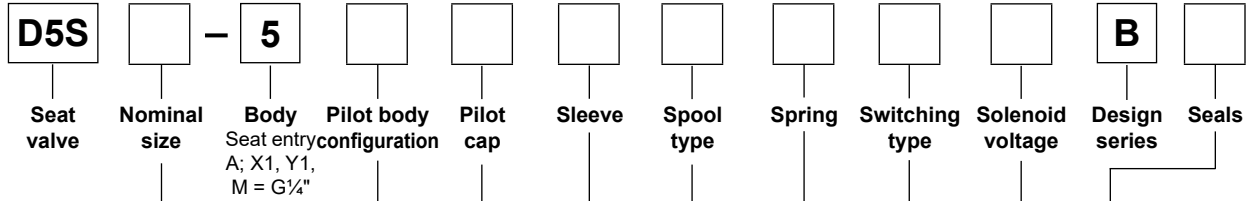


## Features

- Leak-free seat valve design
- SAE61 flange with 3-port body
- Numerous pilot options
- 4 sizes, SAE 3/4", 1", 1 1/4", 1 1/2"
- 6 poppet types

## D5S





Code	Port size
06	SAE 3/4"
08	SAE 1"
10	SAE 1 1/4"
12	SAE 1 1/2"

Code	Pilot oil line in body
1	internal from A
2	internal from B
3	internal from A and B
4	external from X1
5	internal from B, external from X1

Code	Ports	X	Y	Z	X-Y	X1	Y1	VV01
Standard								
1	Pilot oil = pilot drain	●	●	●	○	—	●	—
2	Pilot oil = pilot drain	●	●	●	○	—	●	—
With solenoid valve (VV01)								
4	Internal to B	●	○	●	●	—	●	○
6	Ext. out of cap	●	○	●	●	—	○	●
With stroke limiter (not for D5S06)								
A	Pilot oil = pilot drain	●	●	●	—	●	—	—
B	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	06, 08,10,12	With closed bottom and 15° chamfer (pz max. = pA +20 bar)	1
2	06	With 0.8 dia. orifice at the bottom and 15° chamfer	1
	08, 10	With 1.2 dia. orifice at the bottom and 15° chamfer	1
4	06, 08,10,12	With closed bottom and 45° chamfer	1, 3
A <sup>1)</sup>	08, 10, 12	Safety spool (for end position control only)	3
B <sup>1)</sup>	08, 10, 12	Throttle spool, 10° chamfer	3
C <sup>1)</sup>	08, 10, 12	Throttle spool, 3° chamfer	3

Code	Spring (approx. cracking pressure [bar])					
	Sleeve Code 1		Sleeve Code 3			
	A -> B		A -> B		B -> A	
	D5S06	D5S08/12	D5S06	D5S08/12	D5S06	D5S08/12
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	Seals
1	NBR
5	FPM

Code	Solenoid voltage
omit	Standard w/o vent function
G0R	12 V=
G0Q	24 V=
GAR <sup>3)</sup>	98 V=
GAG <sup>3)</sup>	205 V=
W30	110 V / 50 Hz ; 120 V / 60 Hz
W31	230 V / 50 Hz ; 240 V / 60 Hz

Code	Switching type	
omit	Standard w/o vent function	
09	VV01 with manual override	de-energized: open
10	VV01 without manual override	de-energized: open
11	VV01 with manual override	de-energized: closed
12	VV01 without manual override	de-energized: closed
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 <sup>2)</sup> with amplifier	
EK	VV01 code 12 and shuttle valve code CA and position control <sup>2)</sup> with amplifier	
EN	VV01 code 10 and shuttle valve code DA and position control <sup>2)</sup> with amplifier	
EQ	VV01 code 12 and shuttle valve code DA and position control <sup>2)</sup> with amplifier	
EC	VV01 code 10 and position control <sup>2)</sup> with amplifier	
EE	VV01 code 12 and position control <sup>2)</sup> with amplifier	
EA	Position control <sup>2)</sup> with amplifier	
EF	Position control <sup>2)</sup> with amplifier and shuttle valve code CA	
EL	Position control <sup>2)</sup> with amplifier and shuttle valve code DA	

Examples see end of chapter.

<sup>1)</sup> Springs 2, 3 and 6 only.  
<sup>2)</sup> Position control for D5S08/10 only. Spring 2 or 4. Spool A and sleeve 3.  
<sup>3)</sup> To be used in combination with rectifier plugs at 120 VAC / 230 VAC power supply.

# Technical Data / Pilot Configuration

## Technical data

General					
Size		<b>06 (¾")</b>	<b>08 (1")</b>	<b>10 (1¼")</b>	<b>12 (1½")</b>
Mounting	Flanged according to SAE61				
Mounting position	unrestricted				
Ambient temperature	[°C]	-20...+60			
MTTF <sub>D</sub> value	[years]	150			
Weight	[kg]	3.4	4.4	5.0	7.8
Hydraulic					
Max. operating pressure	[bar]				
SAE61 Ports A, B		350	350	280	210
Port Y1		30	30	30	30
Nominal flow	[l/min]	180	360	600	800
Fluid	Hydraulic oil according to DIN 51524				
Fluid temperature	[°C]	-20...+70 (NBR: -25...+70)			
Viscosity	permitted [cSt] / [mm <sup>2</sup> /s]	20...400			
	recommended [cSt] / [mm <sup>2</sup> /s]	30...80			
Filtration		ISO 4406; 18/16/13			

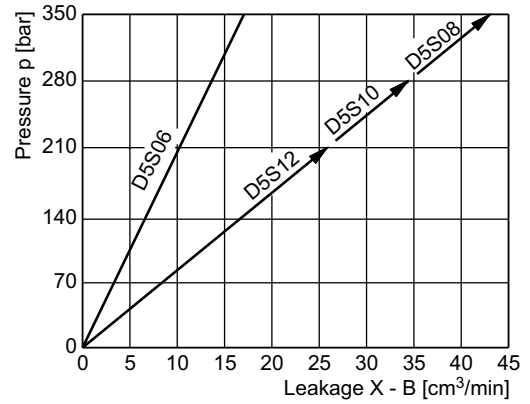
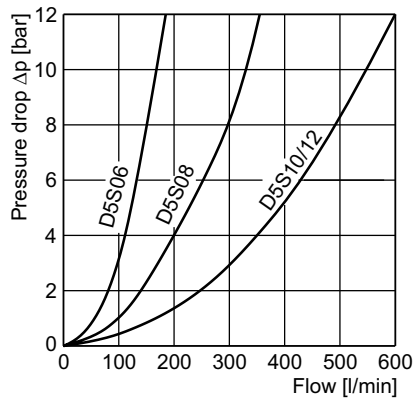
Electrical (solenoid)							
Duty ratio	100 % ED; CAUTION: coil temperature up to 150 °C possible						
Protection class	IP65 in accordance with EN 60529 (with correctly mounted plug-in connector)						
Code	G0R	G0Q	GAR	GAG	W30	W31	
Supply voltage	[V]	12 V =	24 V =	98 V =	205 V =	110 at 50 Hz 120 at 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 <sup>2</sup> ]	3 x 1.5 recommended					
Wiring length max.	[m]	50 recommended					

## D5S pilot configuration

standard	with vent valve VV01	VV01
		<p>de-energized: open</p> <p>de-energized: closed</p>

**D5S**

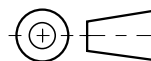
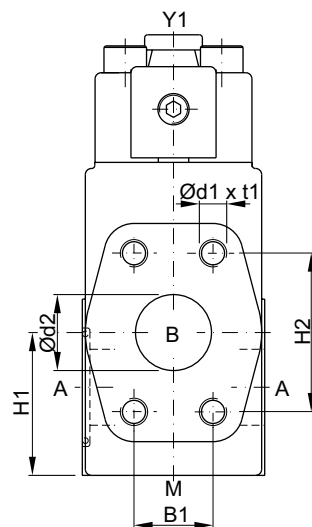
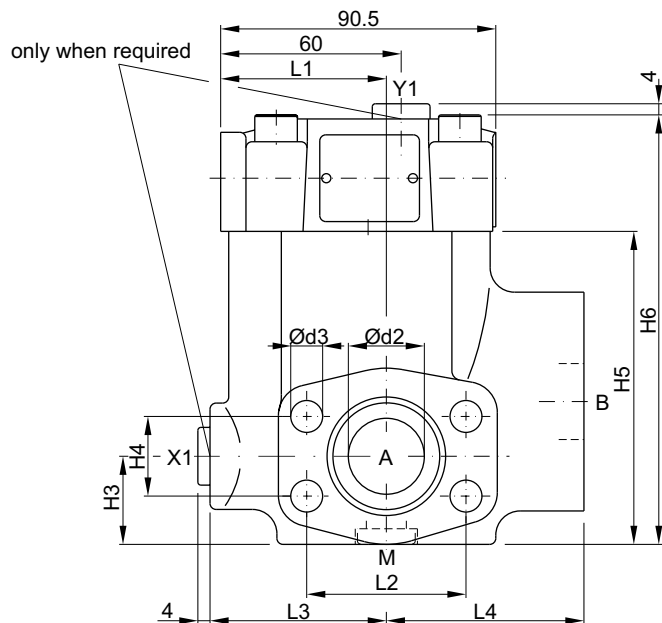
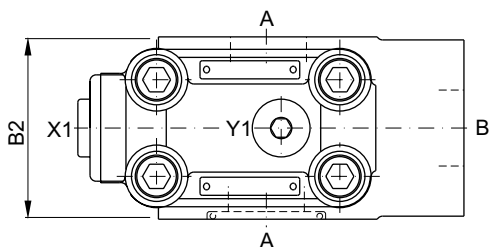
**Leakage**



All characteristic curves measured with HLP46 at 50 °C.

**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



9

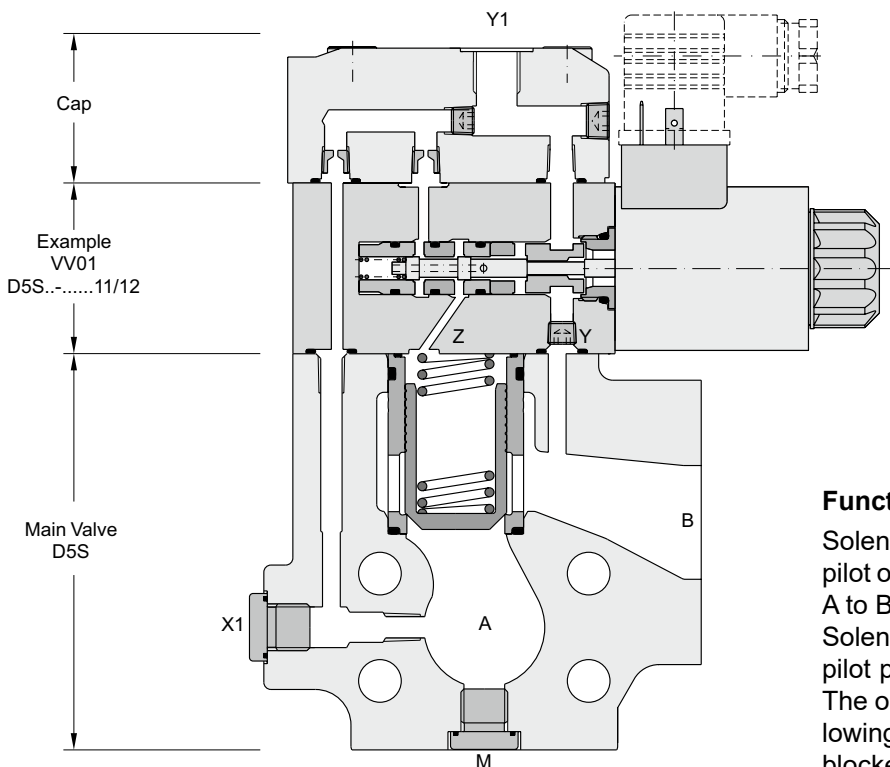
Seal kits		
NG	NBR	FPM
06	S16-91850-0	S16-91850-5
08	S16-91851-0	S16-91851-5
10	S16-91852-0	S16-91852-5
12	S26-27421-0	S26-27421-5

NG	I1	I2	I3	I4	b1	b2	h1	h2	h3	h4	h5	h6	d1	t1	d2	d3
06	49	47.6	56	63	22.2	60	41	47.6	29.5	22.2	82	119	3/8" UNC	20	19	10.5
08	55	52.4	58	65	26.2	60	47	52.4	30.5	26.2	103	141	3/8" UNC	23	25	10.5
10	57	58.7	64	61	30.2	75	65	58.7	37.5	30.2	113	150	7/16" UNC	22	30	12.5
12	37	69.8	55	93	35.7	80	73	69.8	72	35.7	140	178	1/2" UNC	27	38	13.5

Ports	Function	Port size			
		D5S06	D5S08	D5S10	D5S12
A (2x)	Inlet or outlet	3/4" SAE61	1" SAE61	1 1/4" SAE61	1 1/2" SAE61
B	Outlet or inlet	3/4" SAE61	1" SAE61	1 1/4" SAE61	1 1/2" SAE61
X1 <sup>1)</sup>	External pilot port	G 1/4"	G 1/4"	G 1/4"	G 1/4"
Y1	External pilot drain	G 1/4"	G 1/4"	G 1/4"	G 1/4"
M	Pressure gauge	G 1/4"	G 1/4"	G 1/4"	G 1/4"

<sup>1)</sup> Closed when supplied.

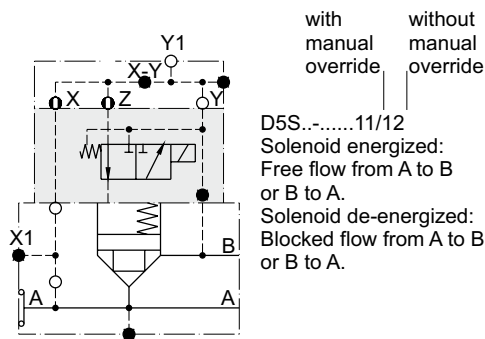
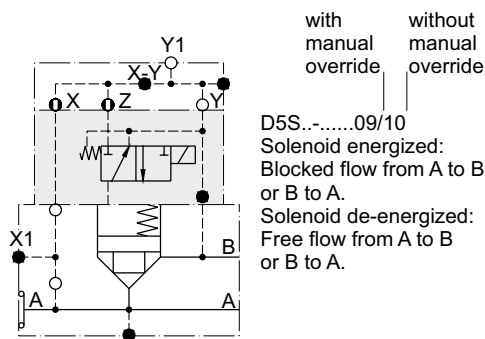
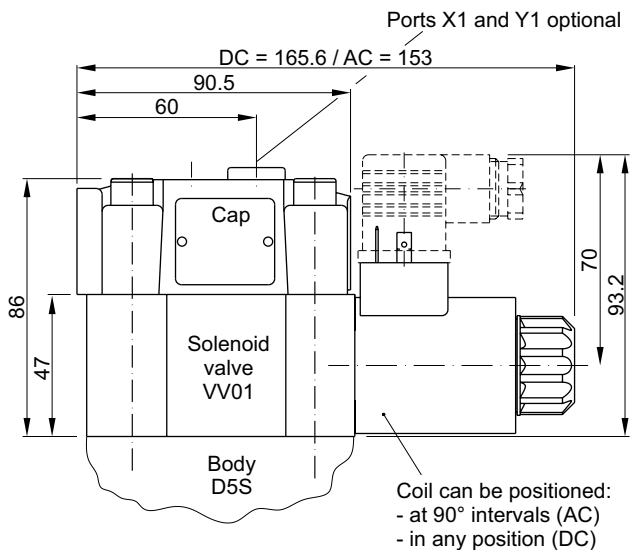
**Example: pilot oil external from A, pilot drain internal out of Y1**



**Function**

**Solenoid de-energized:**  
 pilot oil from A to Z blocks the connection from A to B or B to A.  
**Solenoid energized:**  
 pilot pressure from A is blocked in the VV01. The oil in Z is internally drained to port Y1. Allowing flow from A to B, while B to A remains blocked.

**D5S with VV01 dimensions**

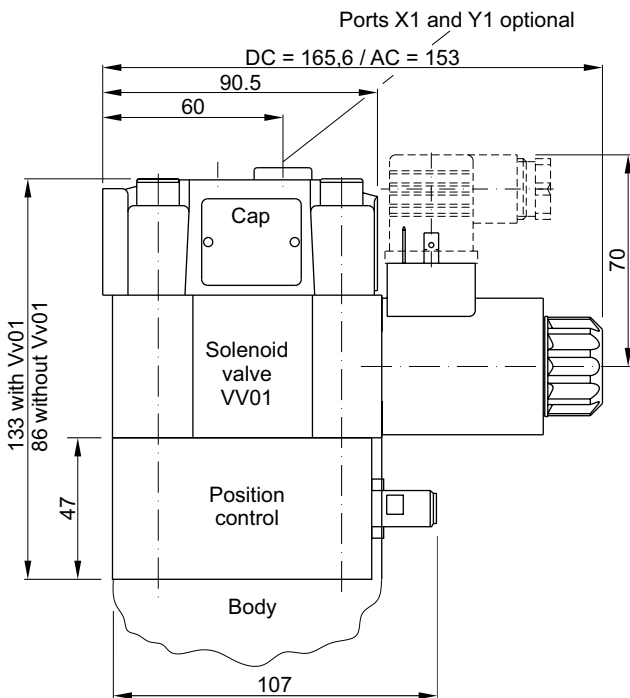


Seal kits	
NBR	FPM
<b>DC solenoid</b>	
S56-40609-0	S56-40609-5
<b>AC solenoid</b>	
S26-35237-0	S26-35237-5

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

Protection class		IP65 in accordance with EN 60529
Ambient temperature	[°C]	-20...+60
Supply voltage $U_s$ / ripple	[V]	10...30 / $\pm 10\%$
Current consumption without load	[mA]	$\leq 10$
Max. output current per channel, ohmic	[mA]	200
Min. output load per channel, ohmic	[kOhm]	100
Max. output drop at 0.2 A	[V]	$\leq 2$
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.	[mm <sup>2</sup> ]	3 x 0.14 brad shield recommended
Wiring length max.	[m]	50 recommended

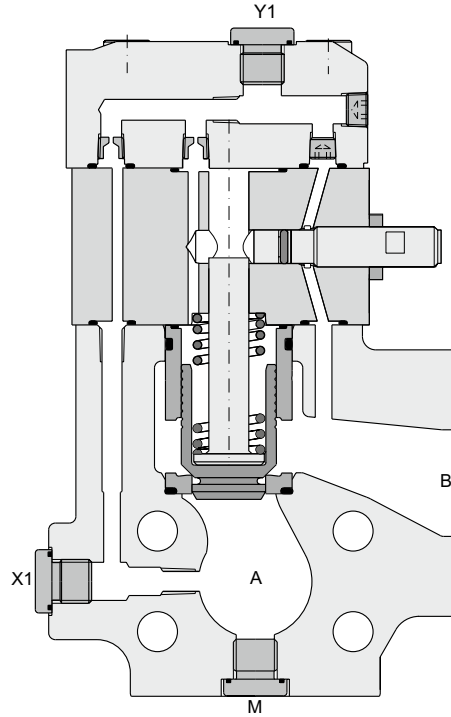
**D5S with position control dimensions**



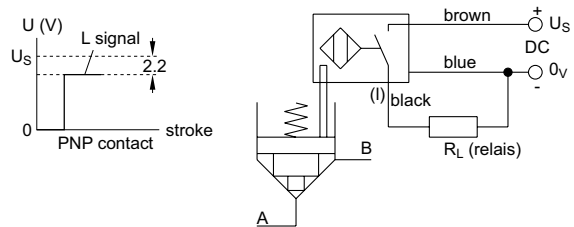
**D5S with position control**

Position control by proximity switch (incl. amplifier). Valve open: proximity switch activated. This proximity switch is pressure proof and has no wearing parts.

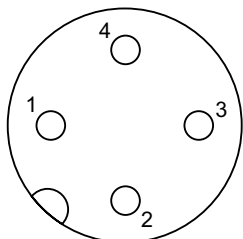
Note: Position control for D5S08 and D5S10 only.



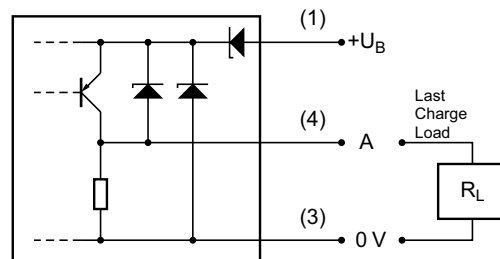
Example D5S 2 port



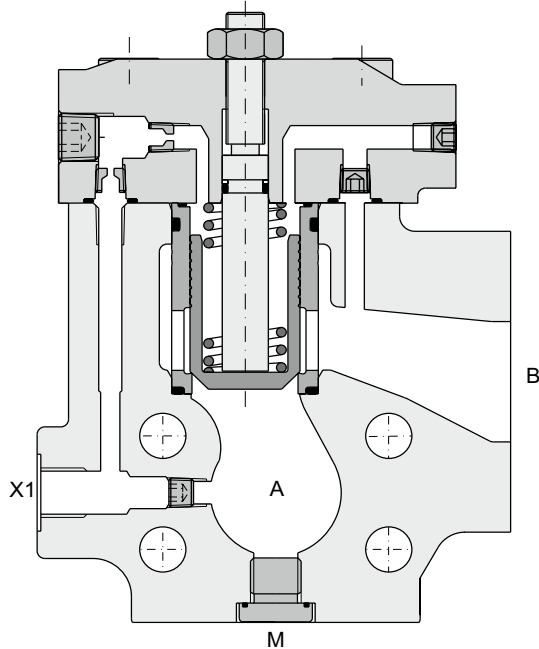
**M12 pin assignment**



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



**D5S stroke limiter**

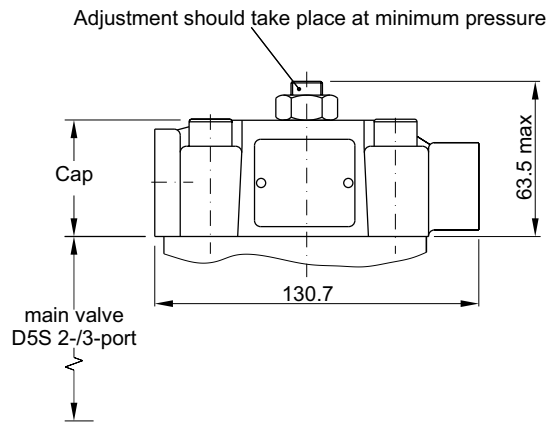


X1 = external pilot-oil (optional)

Note:

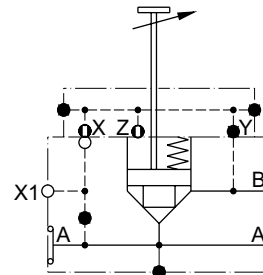
Stroke limiter not for use with D5S06, solenoid valve VV01, shuttle valve and position control.

**Stroke limiter dimensions**



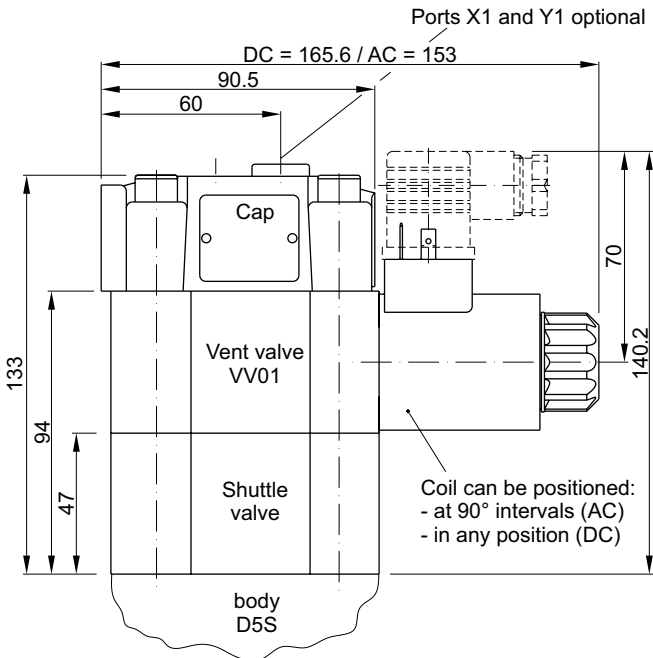
**Example**

- D5S08-54A...
- D5S10-54A...
- D5S12-54A...

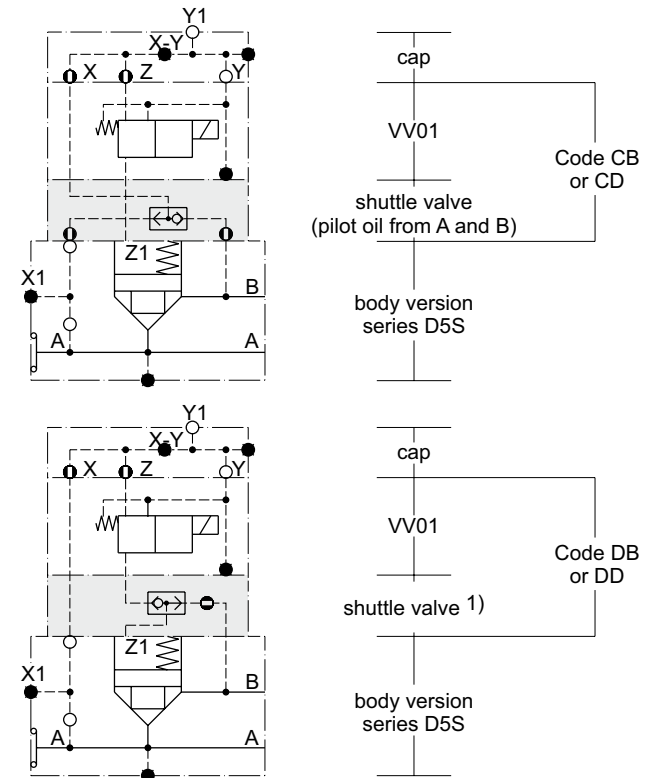


**D5S with shuttle valve**

**Dimensions**



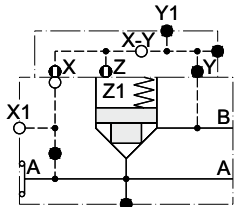
Shuttle valve only in connection with vent valve VV01.



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

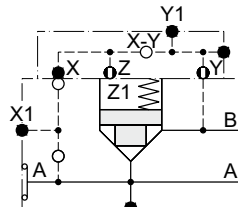


**D5S**



D5S ...-541

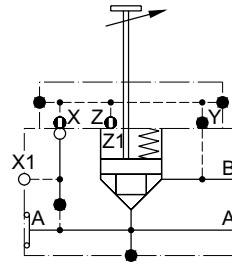
Pilot oil: external from X1



D5S ...-522

Pilot oil: internal from B

**Stroke limiter D5S**

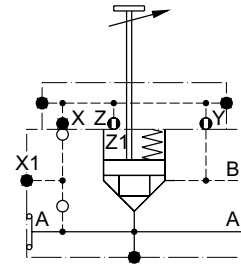


D5S08-54A

10

12

Pilot oil: external from X1



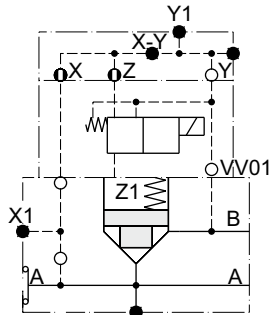
D5S08-52B

10

12

Pilot oil: internal from B

**D5S with solenoid valve VV01**



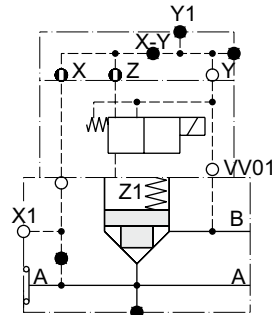
D5S ...-514...09

10

11

12

Pilot oil: internal from A  
Pilot drain: internal to B



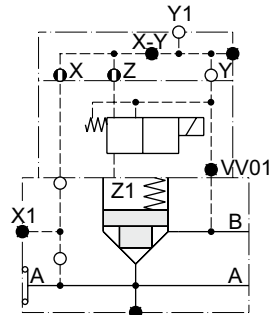
D5S ...-544...09

10

11

12

Pilot oil: external from X1  
Pilot drain: internal to B



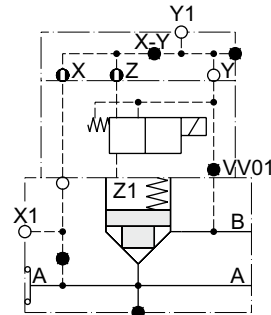
D5S ...-516...09

10

11

12

Pilot oil: internal from A  
Pilot drain: external out of Y1



D5S ...-546...09

10

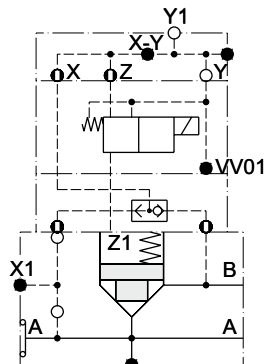
11

12

Pilot oil: external from X1  
Pilot drain: external out of Y1

9

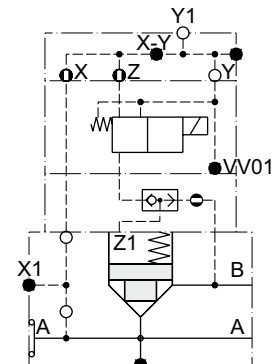
**D5S with with solenoid valve VV01 and shuttle valve**



D5S ...-536...CB

CD

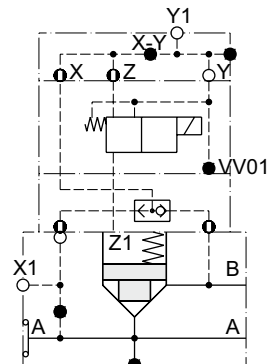
Pilot oil: internal from A +  
internal from B  
Pilot drain: external out of Y1



D5S ...-536...DB

DD

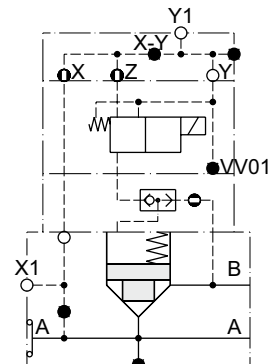
Pilot oil: internal from A +  
internal from B  
Pilot drain: external out of Y1



D5S ...-556...CB

CD

Pilot oil: internal from X1 +  
internal from B  
Pilot drain: external out of Y1



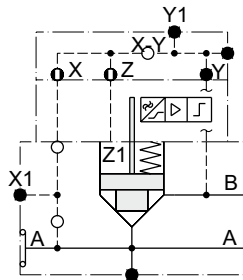
D5S ...-556...DB

DD

Pilot oil: external from X1 +  
internal from B  
Pilot drain: external out of Y1

**D5S position control**

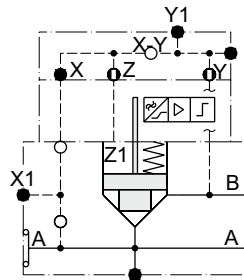
**Seat entry**



D5S08-5113A.EA

10  
12

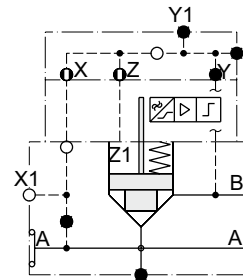
Pilot oil: internal from A



D5S08-5223A.EA

10  
12

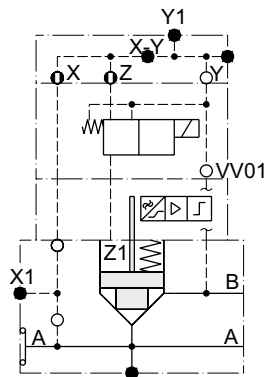
Pilot oil: internal from B



D5S08-5213A.EA

10  
12

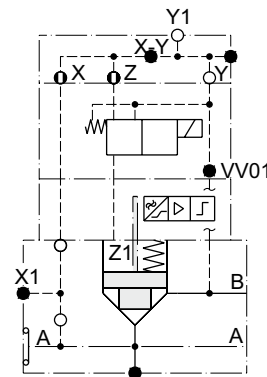
Pilot oil: internal from X1



D5S08-5143A.EC

10 EE  
12

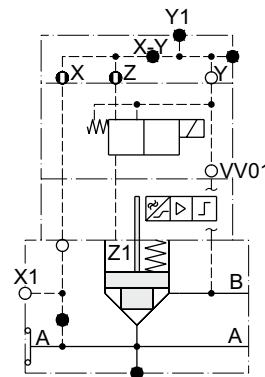
Pilot oil: internal from A  
Pilot drain: internal to B



D5S08-5163A.EC

10 EE  
12

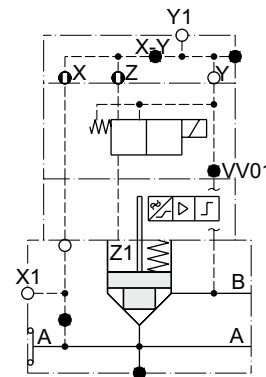
Pilot oil: internal from A  
Pilot drain: external out of Y1



D5S08-5443A.EC

10 EE  
12

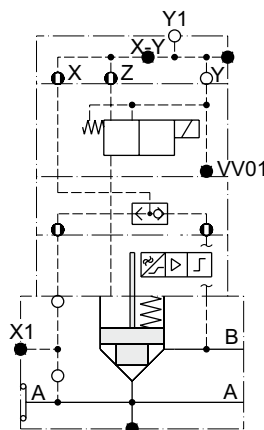
Pilot oil: external from X1  
Pilot drain: internal to B



D5S08-5463A.EC

10 EE  
12

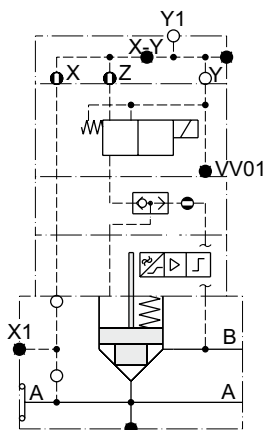
Pilot oil: external from X1  
Pilot drain: external out of Y1



D5S08-5363A.EH

10 K  
12

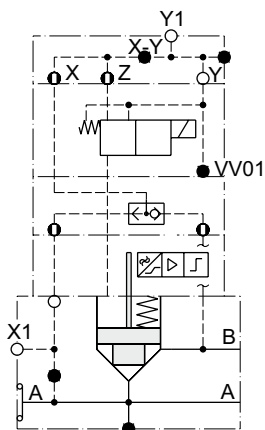
Pilot oil: internal from A +  
internal from B  
Pilot drain: external out of Y1



D5S08-5363A.EN

10 EQ  
12

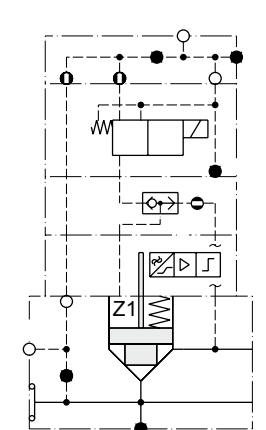
Pilot oil: internal from A +  
internal from B  
Pilot drain: external out of Y1



D5S08-5563A.EH

10 EK  
12

Pilot oil: external from X1 +  
internal from B  
Pilot drain: external out of Y1



D5S08-5563A.EN

10 EQ  
12

Pilot oil: external from X1 +  
internal from B  
Pilot drain: external out of Y1