


The D1VW with explosion proof solenoids is based on the standard D1VW series. The specific solenoid design allows the usage in hazardous environments. The explosion proof class is

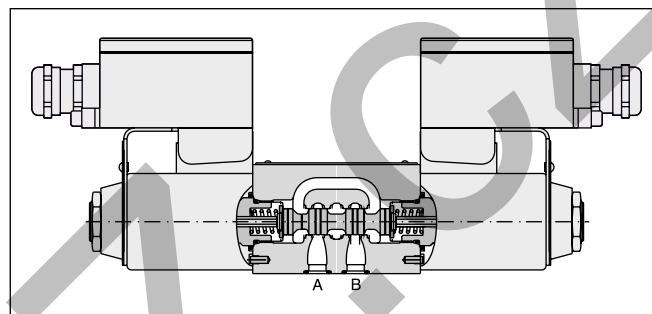
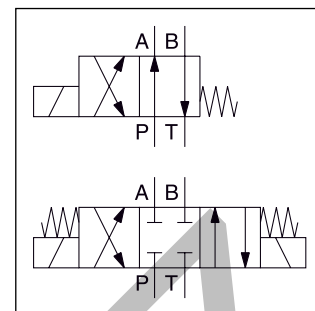
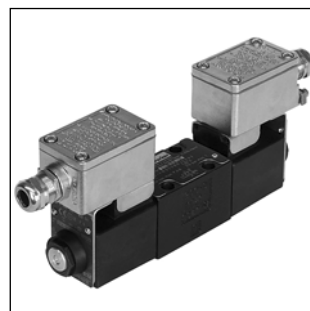
CE  II 2 G

Ex e mb IIC T4 Gb


for use in zone 1 and 2 (conform to ATEX).


Additionally the solenoids have IECEx conformity.

All explosion proof solenoids are DC design. The valves for AC operate with integrated rectifier.

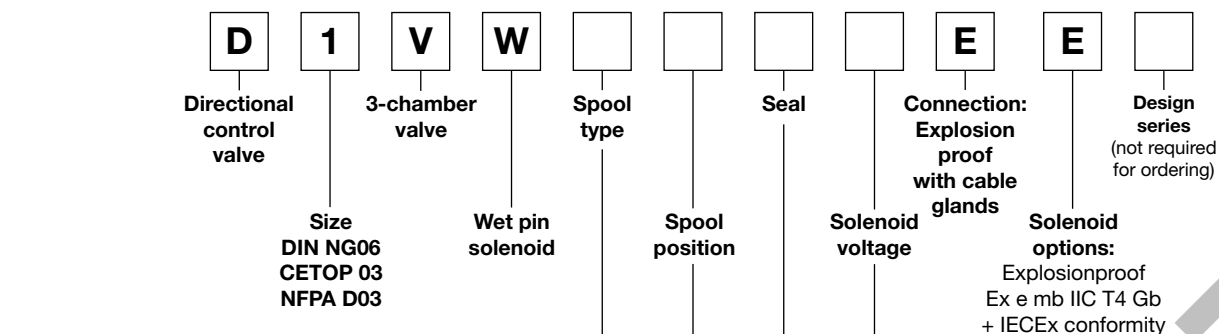


## Technical data

General	
Design	Directional spool valve
Actuation	Solenoid
Size	DIN NG06 / CETOP 03 / NFPA D03
Mounting interface	DIN 24340 A6 / ISO 4401 / CETOP RP 121-H / NFPA D03
Mounting position	unrestricted, preferably horizontal
Ambient temperature	[°C] -20...+60
MTTF <sub>D</sub>	[years] 150
Weight	[kg] 1.8 (1 solenoid), 2.7 (2 solenoids)
Hydraulic	
Max. operating pressure	[bar] P, A B: 350; T: 210
Fluid	Hydraulic oil in accordance with DIN 51524
Fluid temperature	[°C] -20 ... +60
Viscosity permitted	[cSt] / [mm²/s] 2.8...400
Viscosity recommended	[cSt] / [mm²/s] 30...80
Filtration	ISO 4406; 18/16/13
Flow max.	[l/min] 60
Leakage at 50 bar	[ml/min] Up to 10 per flow path, depending on spool
Static / Dynamic	
Step response at 95 %	[ms] Energized: 32 (DC), 40 (AC) / De-energized: 40 (DC), 75 (AC)
Electrical characteristics	
Duty ratio	100 % ED; CAUTION: coil temperature up to 135 °C possible
Max. switching frequency	[1/h] 15000 (DC), 7200 (AC)
Protection class	CE  II 2 G , Ex e mb IIC T4 Gb, IP66 (plugged and mounted correctly)
Code	<b>J</b> <b>N</b> <b>P</b>
Supply voltage / ripple	[V] 24 V = 230 V / 50 Hz 110 V / 50 Hz
Tolerance supply voltage	[%] ±10 ±10 ±10
Current consumption	[A] 1.0 0.12 0.25
Power consumption	[W] 24 24 24
Solenoid connection	Box with M20x1.5 entry for cable glands. Solenoid identification as per ISO 9461.
Wiring min.	[mm²] 3 x 1.5 recommended
Wiring length max.	[m] 50 recommended

With electrical connections the protective conductor (PE ) must be connected according to the relevant regulations.

## Ordering Code

Directional Control Valve  
Series D1VW Explosion Proof

3 position spools	
Code	Spool type
	a    0    b
001	
002	
003	
004	
005	
006	
007	
008 <sup>1)</sup>	
009 <sup>1)</sup>	
010	
011	
014	
015	
016	
021	
022	
081	
082	
102	

2 position spools	
Code	Spool type
	a    b
020	
026	
030	
101	

Code	Voltage
J	24 V=
P	110 V / 50 Hz
N	230 V / 50 Hz

Code	Seal
N	NBR
V	FPM

3 position spools		
Code	all 3 position spools	
C		3 positions. Spring offset in position "0". Operated in position "a" or "b".
	Standard	Spool type 008, 009
E	 Operated in position "a".	 Operated in position "b".
K	 Operated in position "b".	 Operated in position "a".

2 position spools		
Code	Spool position	
B		2 positions. Spring offset in position "b". Operated in position "a".
D		2 positions. Operated in position "a" or "b". No center or offset position.
H		2 positions. Spring offset in position "a". Operated in position "b".

Further spool types, styles and combinations on request.

<sup>1)</sup> Consider specific spool position.

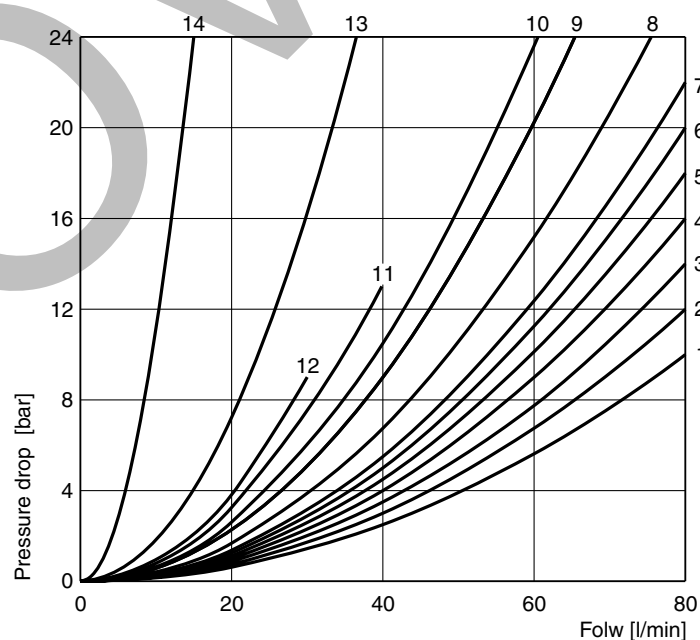
**Flow Curves**

The flow curve diagram shows the flow versus pressure drop curves for all spool types. The relevant curve number for each spool type, operating position and flow direction is given in the table below.

Spool	Position "b"			Position "a"			Position "0"				
	P-A	B-T	P-B	P-B	A-T	P-A	P-A	P-B	A-T	B-T	P-T
001	2	2		2	2						
002	1	4		1	4		1	1	5	5	2
003	3	4		3	6				7		
004	2	3		2	3				7	7	
005	2	2		2	2		12				
006	1	4		1	4		7	7			
007	3	2		2	2			3		2	7
010	3			3							
011	2	2		2	2				14	14	
014	3	2		2	2		3		2		7
015	3	6		3	4					7	
016	2	2		2	2			12			
020B	4	4		2	3						
026B	4			4							
030B	2	3		1	2						
081	13	13		13	13						
082	13	13		13	13				1)	1)	
101B	11	10		10	9						
102	1	4		1	4		5	5	8	8	6
	P-B	A-T		P-A	B-T		P-A	P-B	A-T	B-T	P-T
008	4	5		4	5						9
009	5	5		6	7						7

Spool	Position "b"			Position "a"		
	P-A	P-B	A-B	P-B	A-T	
021	2	4		4	2	
	P-A	B-T		P-A	P-B	A-B
022	6	2		5	2	

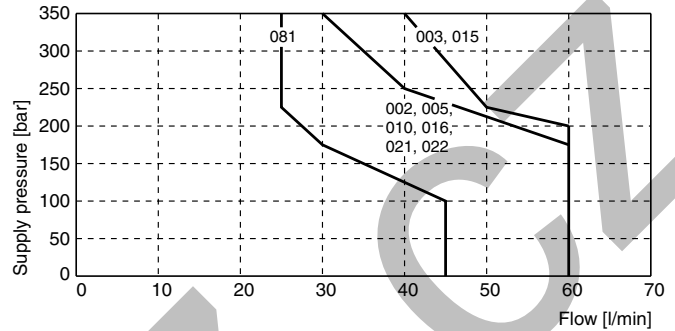
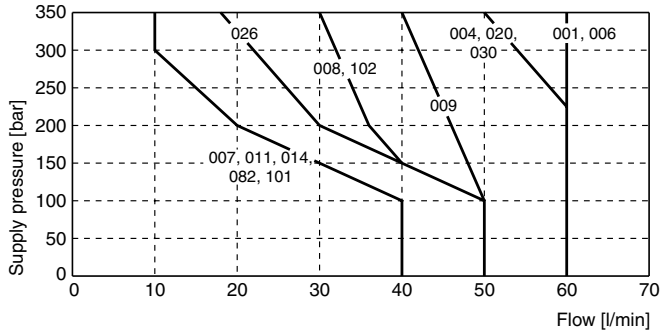
1) Only for pressure compensation, no high flow possible.

**Flow curve**

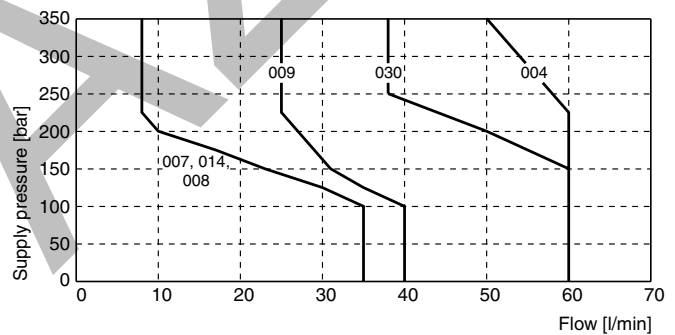
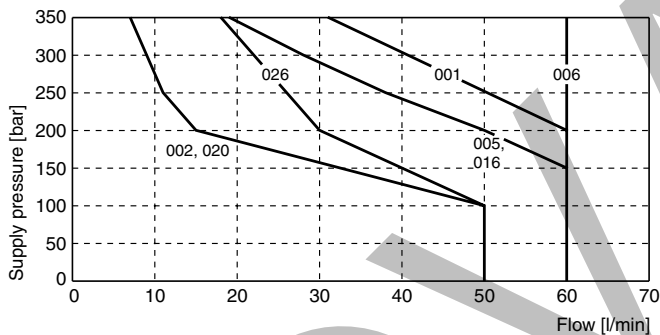
All characteristic curves measured with HLP46 at 50 °C.

**Shift Limits**

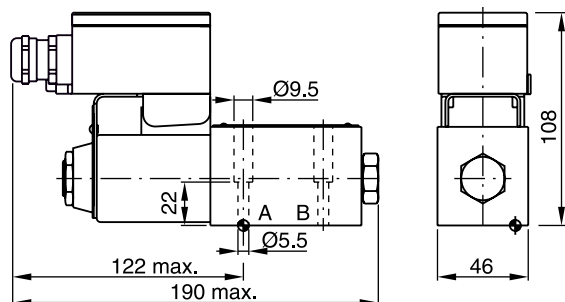
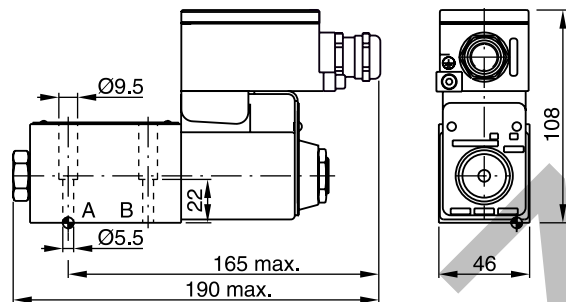
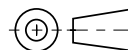
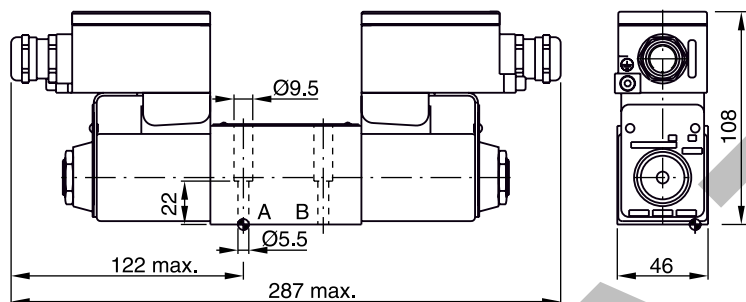
The diagram below specifies the shift limits for valves with AC and DC solenoids. The specifications apply to a viscosity of 40 mm<sup>2</sup>/s and balanced flow conditions. The shift limits can be considerably lower at unbalanced flow conditions. To avoid flow rates beyond the shift limits, a plug-in orifice can be inserted in the P port.






**Shift limit diagram with DC solenoid**

Measured with HLP46 at 50 °C, 90 %  $U_{nom}$  and warm solenoids

**Shift limit diagram with AC solenoid**

Measured with HLP46 at 50 °C, 95 %  $U_{nom}$  and warm solenoids

**Dimensions****Directional Control Valve  
Series D1VW Explosion Proof****B, E -style****H, K -style****C, D -style**

Surface finish	 Kit	 Kit	 Kit	 Kit
$\sqrt{R_{max} 6.3}$ 	BK375	4x M5x30 ISO 4762-12.9	7.6 Nm ±15 %	NBR: SK-D1VW-N-91 FPM: SK-D1VW-V-91