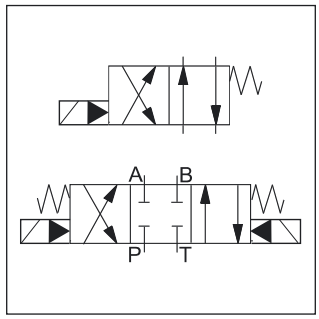
The pilot operated directional valves 4D02V (NG10), 4D03 (NG16) and 4D06 (NG25) are offered under Denison brand name. The 4D02V is a high flow version with a maximum flow up to 170 l/min.

4D03 and 4D06 are based on the Parker D41 and D81 main stage with Denison 4D01 pilot valve.

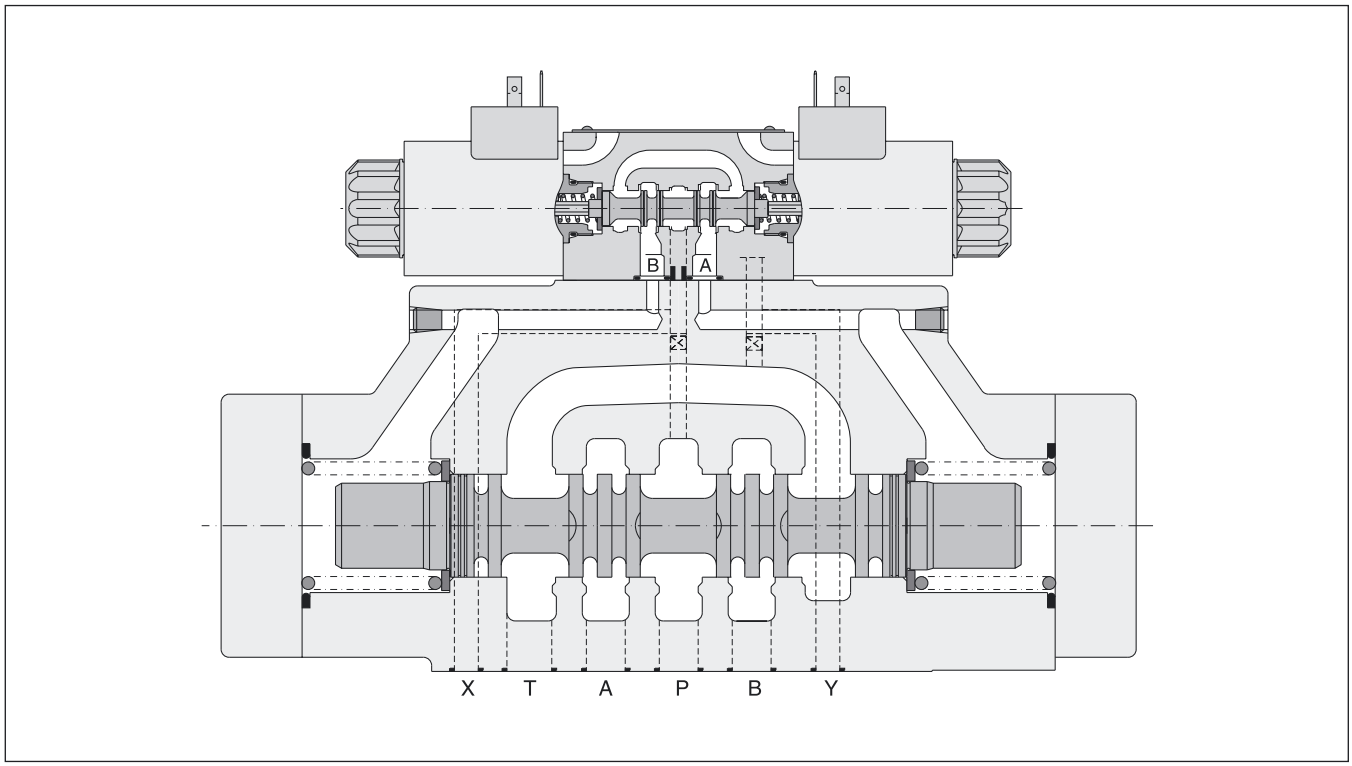


4D02V

4D03

4D06

4D06



2

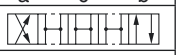
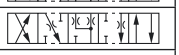
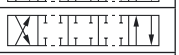
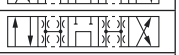
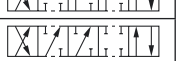
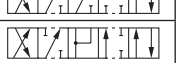
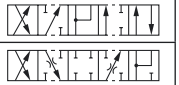
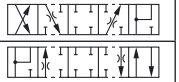
4D □ – □ □ □ – □ □

Directional control valve | **Size** | **Body** | **Control** | **Spool type** | **Spool position** | **End cap**

Code	Size
02	NG10
03	NG16
06	NG25

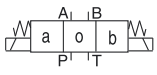
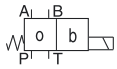
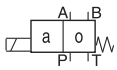
Code	Body
V	for 4D02
3	for 4D03/06

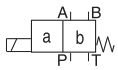
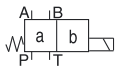
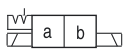
Code	Control
A	1 solenoid
B	2 solenoids
C	2 solenoids and 2 pos. detent pilot valve

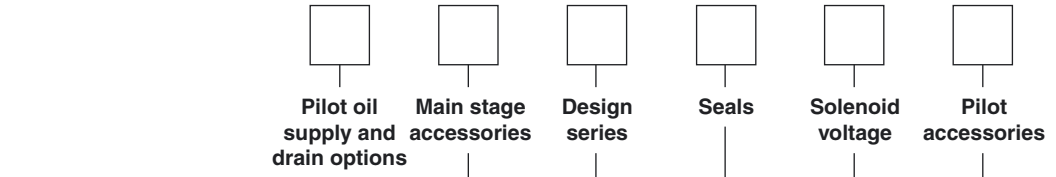
3 position spools		
Code	Spool type	
	a 0 b	
01		
02		
03		
07		
08		
09		
10		
13		
14		
46		
55		
56		

2 position spools	
Code	Spool type
	a b
11	
51	

End cap	
Code	End cap
03	Standard
09	With stroke adjustment on both sides

3 position spools		
Code	Spool position	
03		3 positions. Spring centered to “0“.
05		2 positions. Spring centered to “0“. Energized to “b“.
06		2 positions. Spring centered to “0“. Energized to “a“.

2 position spools		
Code	Spool position	
01		2 positions. Spring offset to “b“. Energized to “a“.
02		2 positions. Spring offset to “a“. Energized to “b“.
04		2 positions detent. Operated in “a“ or “b“. No centre or spring offset position.



Code	Inlet	Outlet
1	Internal	Internal
2	Internal	External
3	External	Internal
4	External	External

Code	Accessories
0	Without
1	Shifting time adjustment (meter-in)
2	Shifting time adjustment (meter-out)
4	Integral check valve in P
5	Shifting time adjustment (meter-in) integral check valve in P
8	Shifting time adjustment (meter-out) integral check valve in P

Code	Pilot accessories
10 *	1.0 mm orifice (Standard for 4D02V)
15 *	1.5 mm orifice (Standard for 4D03/06)

* in P port of pilot valve

Code	Solenoid voltage
G0R	12V =
G0Q	24V =
GAR	98V =
GAG	205 =
W06	115V / 50Hz
W07	230V / 50Hz

Code	Seals
1	NBR
5	FPM

Code	Design series
A	4D02V
B	4D03, 4D06

Further spool types, solenoid voltages, position control, hydraulic and mechanical operation on request.

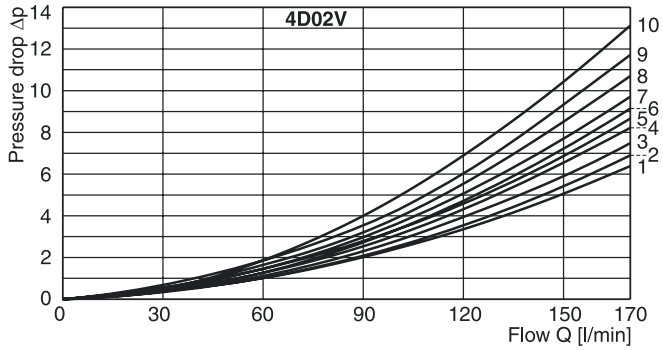
2

General								
Design			Directional spool valve					
Actuation			Solenoid					
Series			**4D02V**		**4D03**		**4D06**	
Size			NG10		NG16		NG25	
Weight (1/ 2 solenoids)		[kg]	7.6 / 8.1		9.6 / 9.9		17.8 / 18.2	
Mounting interface			DIN 24340 A10		DIN 24340 A16		DIN 24340 A25	
			ISO 4401		ISO 4401		ISO 4401	
			NFPA D05		NFPA D07		NFPA D08	
			CETOP RP 121-H					
Mounting position			Unrestricted, preferably horizontal					
Ambient temperature		[°C]	-20...+50					
Hydraulic								
Max. operating pressure		[bar]	Pilot drain internal: P, A B, X: 350; T, Y: 105 (4D02V: P, A, B, X: 315; T, Y: 140)					
			Pilot drain external: P, A B, T, X: 350; Y: 105 (4D02V: P, A, B: 315; T, X: 315; Y: 140)					
Fluid			Hydraulic oil in accordance with DIN 51524 / 51525					
Fluid temperature		[°C]	-20 ... +80					
Viscosity permitted		[cSt] / [mm²/s]	10...650					
Viscosity recommended		[cSt] / [mm²/s]	30					
Filtration			ISO 4406 (1999); 18/16/13 (meet NAS 1638: 7)					
Flow max.		[l/min]	170		300		700	
Leakage at 350 bar (per flow path)		[ml/min]	72...422		up to 200*		350...800	
*depending on spool								
Opening pressure integral check valve		[bar]	n.a.		see p/Q diagram		see p/Q diagram	
Minimum pilot supply pressure		[bar]	12 for spool with open centre position 13 for spool with closed centre position		5		5	
Static / Dynamic								
Step response at 95%		[ms]	Energized / De-energized					
DC solenoids	Pilot pressure	50 bar	50 / 60		95 / 65		150 / 170	
		100 bar	(150 bar) 50 / 60		75 / 65		110 / 170	
		250 bar	50 / 50		60 / 65		90 / 170	
AC solenoids	Pilot pressure	50 bar	30 / 50		75 / 55		130 / 155	
		100 bar	(150 bar) 30 / 50		65 / 55		90 / 155	
		250 bar	30 / 50		40 / 55		65 / 155	
Electrical characteristics								
Duty ratio			100% ED; CAUTION: coil temperature up to 180 °C possible					
Protection class			IP 65 in accordance with EN 60529 (plugged and mounted)					
		Code	G0R	G0Q	GAR	GAG	W06	W07
Supply voltage / ripple		[V]	12 V =	24 V =	98 V =	205 V =	115V at 50Hz	230V at 50Hz/
Tolerance supply voltage		[%]	+5...-10	±10	+5...-10	+5...-10	±5	±5
Power consumption	hold	[W]	31	31	31	31	264 VA	264 VA
Power consumption	in rush	[W]	31	31	31	31	264 VA	264 VA
Solenoid connection			Connector as per EN 175301-803, solenoid identification as per ISO 9461.					
Wiring min.		[mm²]	3 x 1.5 recommended					
Wiring length max.		[m]	50 recommended					

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.

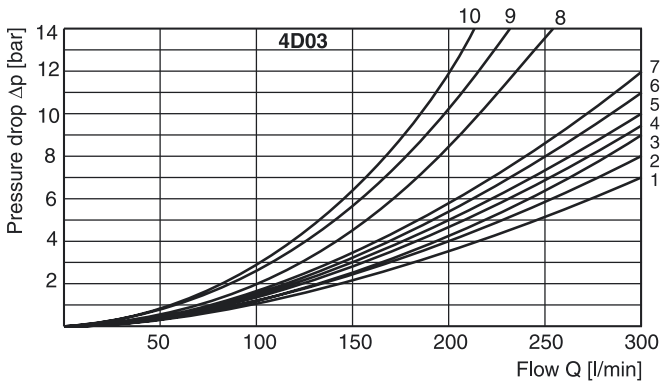
4D02V

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



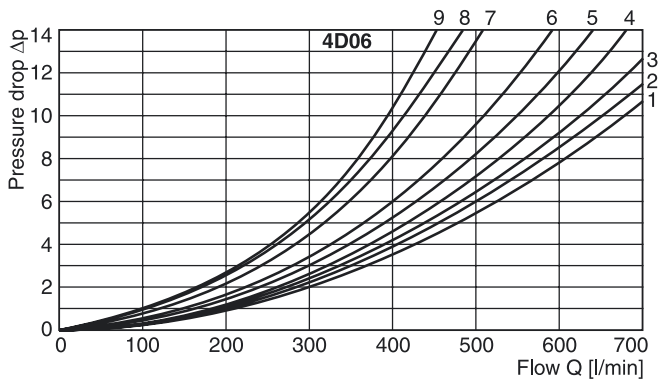
4D03

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



4D06

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	8	9	4	10
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	8
55	5	10	–	3	–
56	10	5	–	–	5

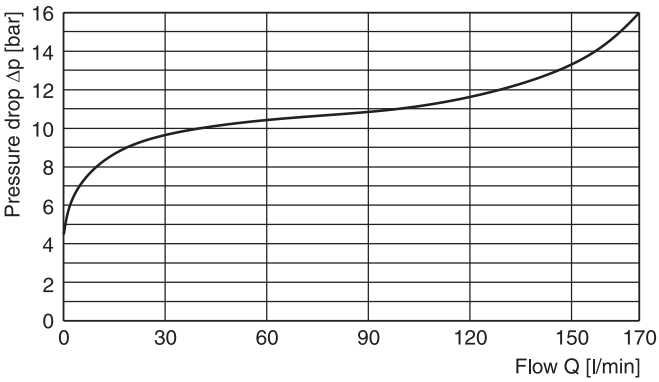


2

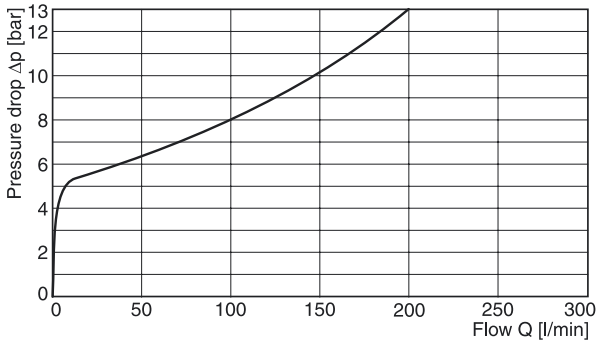
Integral check valve in the P port

Mounting an integral check valve in the P port is necessary to build up pilot pressure for valves with P to T connection and internal pilot oil supply. The pressure difference at the integral check valve (see performance curves) is to be added to all flow curves of the P port of the main valve. Directional valves with an integral check valve are available for the series 4D02V, 4D03 and 4D06.

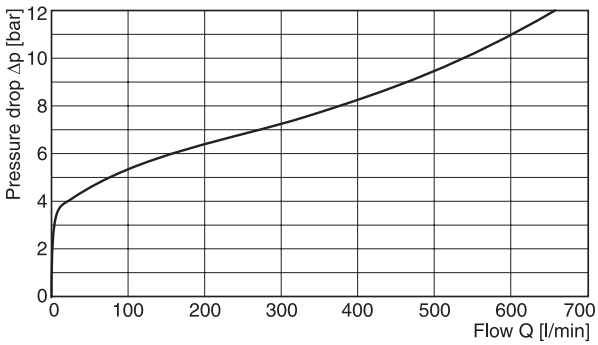
Flow curve 4D02V



Flow curve 4D03

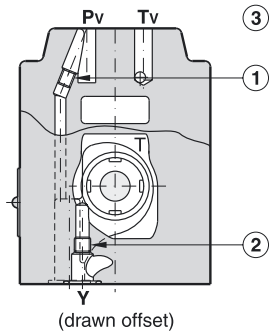


Flow curve 4D06



Pilot oil inlet (supply) and outlet (drain)

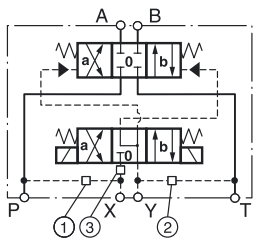
Series 4D02V



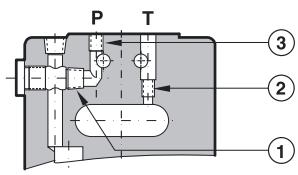
③ Slip-in orifice in pilot p-port
① M6 DIN906
② M6 DIN906

○ open, ● closed

Pilot oil Inlet	Pilot oil Outlet	1	2	3
internal	external	○	●	Orifice Ø1.0
external	external	●	●	Orifice Ø1.0
internal	internal	○	○	Orifice Ø1.0
external	internal	●	○	Orifice Ø1.0



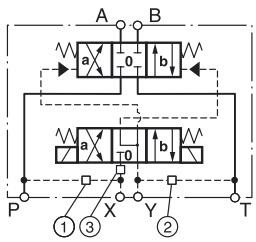
Series 4D03



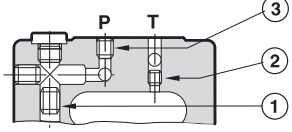
③ M6 DIN906
② M6 DIN906
① 1/16 NPTF

○ open, ● closed

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



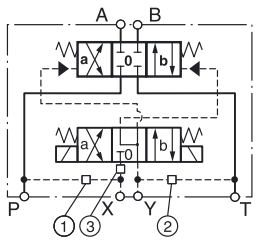
Series 4D06



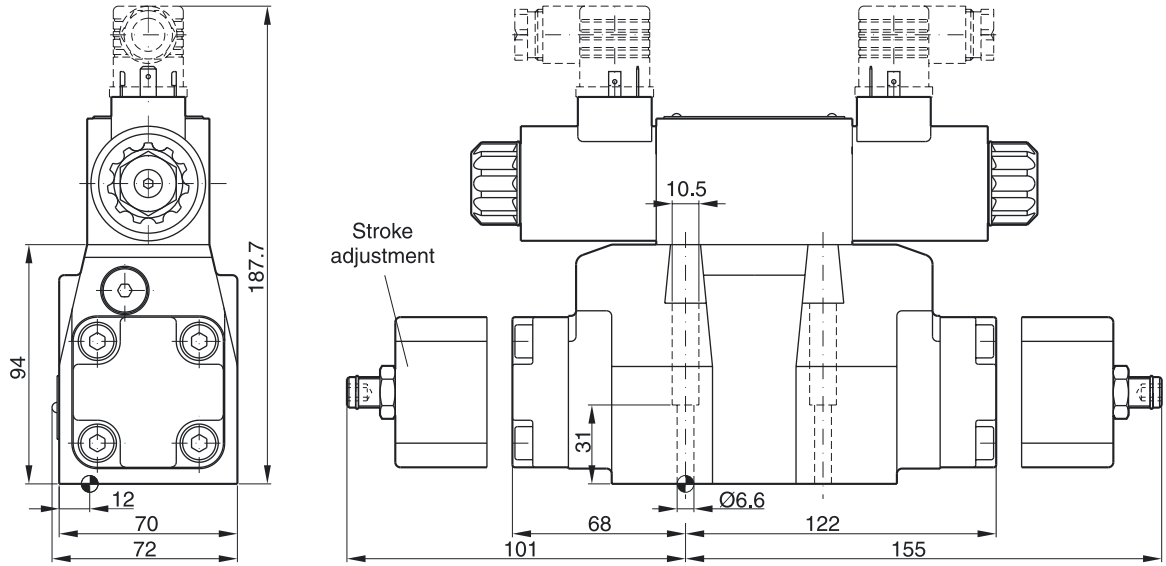
③ M6 DIN906
② M6 DIN906
① 1/16 NPTF

○ open, ● closed

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

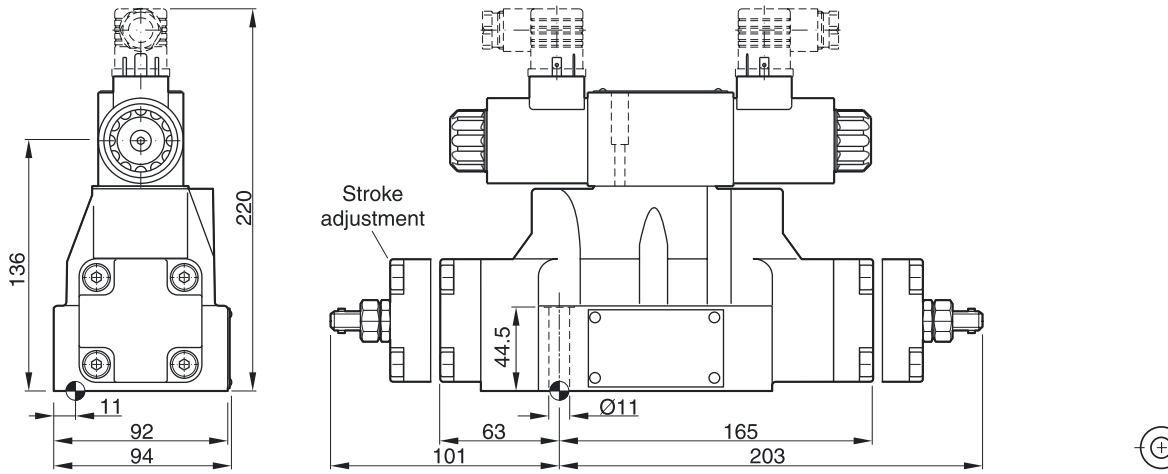


4D02V



Surface finish	Kit			Kit
$\sqrt{R_{max}6.3}$ 0.01/100	BK385	4x M6x40 DIN 912 12.9	13.2 Nm	on request

4D03

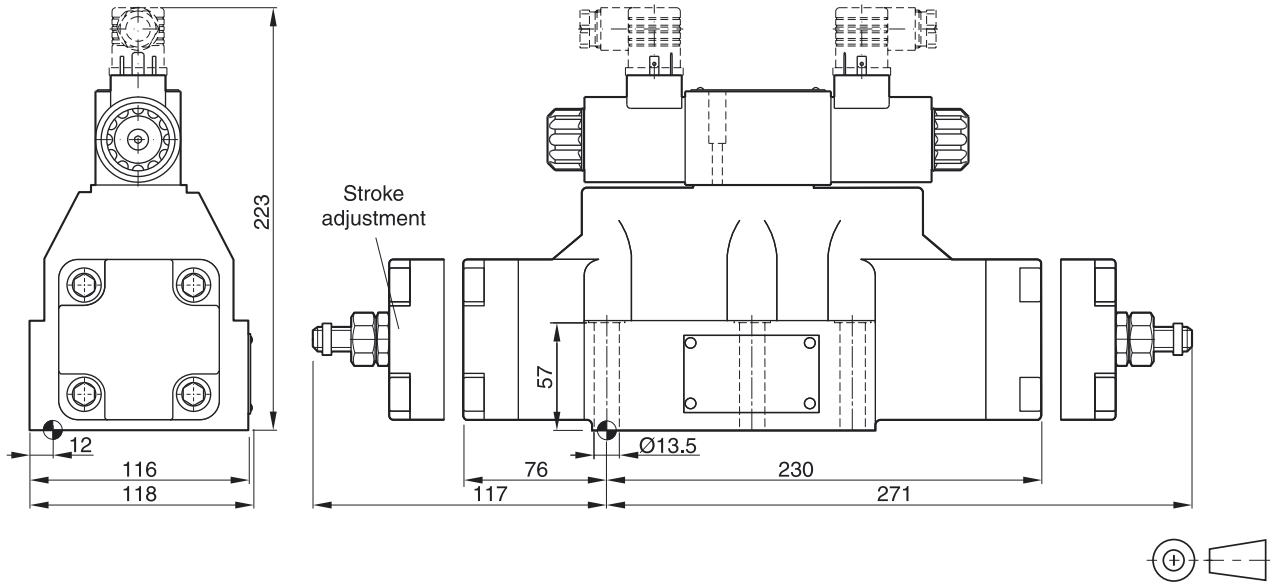


Surface finish	Kit			Kit
$\sqrt{R_{max}6.3}$ 0.01/100	BK320	4x M10x50 2x M6x55 DIN 912 12.9	63 Nm ±15% 13.2 Nm ±15%	on request

The space necessary to remove the plug as per EN 175301-803, design type AF is at least 15 mm.
The torque for the screw M3 of the plug has to be 0.5 to 0.6 Nm.

2

4D06



Surface finish	Kit			Kit
R_{max}6.3 ⏥ 0.01/100	BK360	6x M12x75 DIN 912 12.9	108 Nm ±15%	on request

The space necessary to remove the plug as per EN 175301-803, design type AF is at least 15 mm.
The torque for the screw M3 of the plug has to be 0.5 to 0.6 Nm.