

5/2 and 5/3 Directional Control Valves ISO Sizes 1, 2, 3 and 4



Nom. sizes 7, 10, 15 and 21, with interface to DIN ISO 5599

Solenoid pilot operated soft seal spool valve

Flanged design

Operating pressure: 16 bar max.

Catalog Register

P11

Publication 7503043.06.07.97



Description

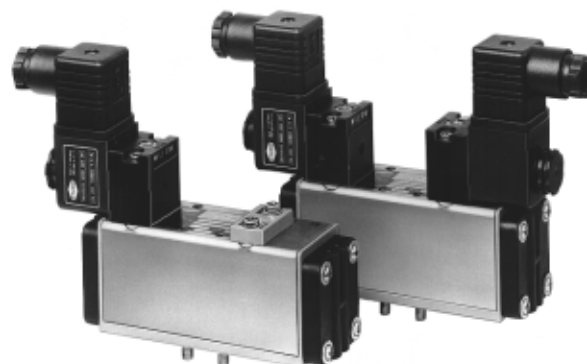
Solenoid valves for filtered, lubricated¹⁾ or non-lubricated air

Flow direction: Fixed

Temperature range: -10 to +50 °C

Features

- LABS-free ²⁾
- Manual override
 - without detent
 - with detent
- Without manual override
- From vacuum up to 16 bar (external control air)
- Non-overlapping
- Maintenance-free
- Different functions
- High sealing properties
- Low power consumption 4.5 watt and 2.7 watt



ISO size 1



ISO sizes 2, 3 and 4

Further versions available on request

- Europe-Ex-solenoid EEx...
- Further switching symbols / functions

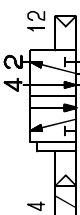
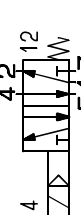
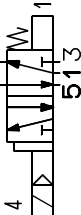
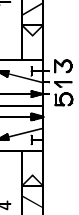
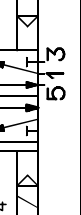
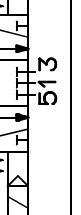
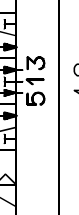
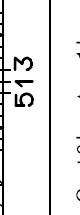
¹⁾ Oil recommendation: Shell Hydrol DO 32, ESSO Febis K 32 (as of July 1992) or comparable oils with DVI values < 8 (DIN 53521) and ISO viscosity class 32-46 (DIN 51519).

²⁾ Valve does not contain any surface-active agents which could cause a reaction in paintwork applications.

Parameters - internal fluid

4.5 watt

2 to 16 bar

Symbol	ISO No.	ISO size	Nominal size	Flow rate ¹⁾ Q _N	Switching time ²⁾ approx.		Weight	Operating pressure [bar]		Cat. No. with manual override		Operating pressure [bar]		Cat. No. with manual override	
					[ms]	ON	OFF			Detent without	with			Detent without	with
	_51	1	7	1300	33	33	27	2	12	2381130	2381107	2	16	2381133	2381108
		2	10	1700	35	35	56	2	12	2532133	2532107	2	16	2532130	2532108
		3	15	3200	55	55	106	2	12	2533133	2533107	2	16	2533130	2533108
		4	21	5450	85	85	156	2	12	2534133	2534107	2	16	2534130	2534108
	_52	1	7	1300	21	21	38	2.5	12	2381230	2381207	2.5	16	2381233	2381208
		2	10	1700	27	27	73	3	12	2532233	2532207	3	16	2532230	2532208
		3	15	3200	47	47	158	3	12	2533233	2533207	3	16	2533230	2533208
		4	21	5450	47	47	308	2	12	2534233	2534207	2	16	2534230	2534208
	_53	1	7	1300	35	35	28	2.5	12	2381330	2381307	2.5	16	2381333	2381308
		2	10	1700	45	45	42	3.5	12	2532333	2532307	3.5	16	2532330	2532308
		3	15	3200	75	75	80	3.5	12	2533333	2533307	3.5	16	2533330	2533308
		4	21	5450	96	96	130	2	12	2534333	2534307	2	16	2534330	2534308
	_55	1	7	1300	19	19	19	1.5	12	2381530	2381507	1.5	16	2381533	2381508
		2	10	1700	26	26	26	2	12	2532533	2532507	2	16	2532530	2532508
		3	15	3200	36	36	36	2	12	2533533	2533507	2	16	2533530	2533508
		4	21	5450	96	96	96	2	12	2534533	2534507	2	16	2534530	2534508
	-	1	7	1300	19	19	19	1.5	12	2381930	2381907	1.5	16	2381933	2381908
		2	10	1700	26	26	26	2	12	2532933	2532907	2	16	2532930	2532908
		3	15	3200	36	36	36	2	12	2533933	2533907	2	16	2533930	2533908
		4	21	5450	96	96	96	2	12	2534933	2534907	2	16	2534930	2534908
	_56	1	7	1200	23	23	23	2.5	12	2381630	2381607	2.5	16	2381633	2381608
		2	10	1700	36	36	36	3	12	2532633	2532607	3	16	2532630	2532608
		3	15	3200	46	46	46	2.5	12	2533633	2533607	2.5	16	2533630	2533608
		4	21	5450	41	41	56	2.5	12	2534633	2534607	2.5	16	2534630	2534608
	_57	1	7	1200	23	23	23	2.5	12	2381730	2381707	2.5	16	2381733	2381708
		2	10	1700	36	36	36	4	12	2532733	2532707	4	16	2532730	2532708
		3	15	3200	46	46	46	4	12	2533733	2533707	4	16	2533730	2533708
		4	21	5450	46	46	46	4	12	2534733	2534707	4	16	2534730	2534708
	_58	1	7	1200	23	23	23	2.5	12	2381830	2381807	2.5	16	2381833	2381808
		2	10	1700	36	36	36	3	12	2532833	2532807	3	16	2532830	2532808
		3	15	3200	46	46	46	3	12	2533833	2533807	3	16	2533830	2533808
		4	21	5450	46	46	46	2.5	12	2534833	2534807	2.5	16	2534830	2534808

¹⁾ Q_N at 6 bar; Δp = 1 bar

²⁾ Switching time to 6 bar; U_N

Parameters - internal fluid

2.7 watt

2 to 10 bar

Symbol	ISO No.	ISO size	Nominal size	Flow rate ¹⁾ Q _N	Switching time ²⁾ approx. [ms]	Weight	Operating pressure [bar]	Cat.No. with manual override
				[l/min]	ON OFF	[kg]	min. max.	Detent without with
	_51	1	7	1300	33	0.5	2	2381134 2381104
		2	10	1700	35	0.8	2	2532134 2532104
		3	15	3200	55	1.1	2	2533134 2533104
		4	21	5450	85	1.4	2	2534134 2534104
	_52	1	7	1300	21	0.5	2.5	2381234 2381204
		2	10	1700	27	0.8	3	2532234 2532204
		3	15	3200	47	1.1	3	2533234 2533204
		4	21	5450	47	1.4	2	2534234 2534204
	_53	1	7	1300	35	0.5	2.5	2381334 2381304
		2	10	1700	45	0.8	3.5	2532334 2532304
		3	15	3200	75	1.1	3.5	2533334 2533304
		4	21	5450	96	1.4	2	2534334 2534304
	_55	1	7	1300	19	0.7	1.5	2381534 2381504
		2	10	1700	26	1.0	2	2532534 2532504
		3	15	3200	36	1.3	2	2533534 2533504
		4	21	5450	96	1.6	2	2534534 2534504
	-	1	7	1300	19	0.7	1.5	2381934 2381904
		2	10	1700	26	1.0	2	2532934 2532904
		3	15	3200	36	1.3	2	2533934 2533904
		4	21	5450	96	1.6	2	2534934 2534904
	_56	1	7	1200	23	0.8	2.5	2381634 2381604
		2	10	1700	36	1.0	3	2532634 2532604
		3	15	3200	46	1.3	2.5	2533634 2533604
		4	21	5450	41	1.6	2.5	2534634 2534604
	_57	1	7	1200	23	0.8	2.5	2381734 2381704
		2	10	1700	36	1.0	4	2532734 2532704
		3	15	3200	46	1.3	4	2533734 2533704
		4	21	5450	46	1.6	4	2534734 2534704
	_58	1	7	1200	23	0.8	2.5	2381834 2381804
		2	10	1700	36	1.0	3	2532834 2532804
		3	15	3200	46	1.3	3	2533834 2533804
		4	21	5450	46	1.6	2.5	2534834 2534804

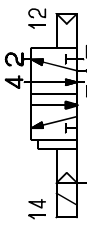
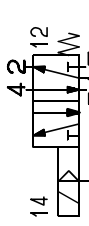
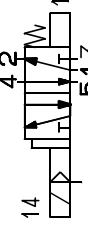
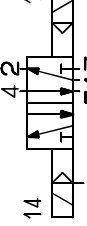
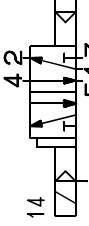
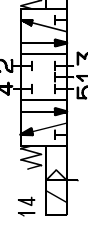
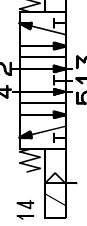
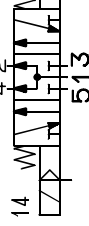
¹⁾ Q_N at 6 bar; Δp = 1 bar

²⁾ Switching time to 6 bar; U_N

Parameters - external fluid

4.5 watt

Vacuum to 16 bar

Symbol	ISO No.	ISO size	Nom. size	Flow rate ¹⁾ Q _N	Switching time ²⁾ approx.		Weight [kg]	Control pressure [bar]		Operating pressure [bar]		Cat. No. with manual override Detent	Operating pressure [bar]		Cat. No. with manual override Detent
					[ms]	ON	OFF	min.	max.	min.	max.		min.	max.	
	_51	1	7	1300	33	27	0.5	2	12	-1	16	2381183	2	16	2381172
		2	10	1700	35	56	0.8	2	12	-1	16	2532183	2	16	2532172
		3	15	3200	55	106	1.1	2	12	-1	16	2533183	2	16	2533172
		4	21	5450	85	156	1.4	2	12	-1	16	2534183	2	16	2534172
	_52	1	7	1300	21	38	0.5	2.5	12	-1	16	2381283	2.5	16	2381272
		2	10	1700	27	73	0.8	3	12	-1	16	2532283	3	16	2532272
		3	15	3200	47	158	1.1	3	12	-1	16	2533283	3	16	2533272
		4	21	5450	47	308	1.4	2	12	-1	16	2534283	2	16	2534272
	_53	1	7	1300	35	28	0.5	2.5	12	-1	16	2381383	2.5	16	2381372
		2	10	1700	45	42	0.8	3.5	12	-1	16	2532383	3.5	16	2532372
		3	15	3200	75	80	1.1	3.5	12	-1	16	2533383	3.5	16	2533372
		4	21	5450	96	130	1.4	2	12	-1	16	2534383	2	16	2534372
	_55	1	7	1300	19	19	0.7	1.5	12	-1	16	2381583	1.5	16	2381572
		2	10	1700	26	26	1.0	2	12	-1	16	2532583	2	16	2532572
		3	15	3200	36	36	1.3	2	12	-1	16	2533583	2	16	2533572
		4	21	5450	96	96	1.6	2	12	-1	16	2534583	2	16	2534572
	-	1	7	1300	19	19	0.7	1.5	12	-1	16	2381983	1.5	16	2381972
		2	10	1700	26	26	1.0	2	12	-1	16	2532983	2	16	2532972
		3	15	3200	36	36	1.3	2	12	-1	16	2533983	2	16	2533972
		4	21	5450	96	96	1.6	2	12	-1	16	2534983	2	16	2534972
	_56	1	7	1200	23	23	0.8	2.5	12	-1	16	2381683	2.5	16	2381672
		2	10	1700	36	36	1.0	3	12	-1	16	2532683	3	16	2532672
		3	15	3200	46	46	1.3	2.5	12	-1	16	2533683	2.5	16	2533672
		4	21	5450	41	56	1.6	2.5	12	-1	16	2534683	2.5	16	2534672
	_57	1	7	1200	23	23	0.8	2.5	12	-1	16	2381783	2.5	16	2381772
		2	10	1700	36	36	1.0	4	12	-1	16	2532783	4	16	2532772
		3	15	3200	46	46	1.3	4	12	-1	16	2533783	4	16	2533772
		4	21	5450	46	46	1.6	4	12	-1	16	2534783	4	16	2534772
	_58	1	7	1200	23	23	0.8	2.5	12	-1	16	2381883	2.5	16	2381872
		2	10	1700	36	36	1.0	3	12	-1	16	2532883	3	16	2532872
		3	15	3200	46	46	1.3	3	12	-1	16	2533883	3	16	2533872
		4	21	5450	46	46	1.6	2.5	12	-1	16	2534883	2.5	16	2534872

¹⁾ Q_N at 6 bar; Δp = 1 bar²⁾ Switching time to 6 bar; U_N

Parameters - external fluid

2.7 watt

Vacuum to 16 bar

Symbol	ISO No.	ISO size	Nominal size	Flow rate ¹⁾ Q _N	Switching time ²⁾ approx.		Weight	Control pressure		Operating pressure		Cat. No. with manual override
					[l/min]	[ms]		min.	max.	min.	max.	
	_51	1	7	1300	ON	OFF	0.5	2	10	-1	16	2381189
		2	10	1700	35	56	0.8	2	10	-1	16	2532189
		3	15	3200	55	106	1.1	2	10	-1	16	2533189
		4	21	5450	85	156	1.4	2	10	-1	16	2534189
	_52	1	7	1300	21	38	0.5	2.5	10	-1	16	2381289
		2	10	1700	27	73	0.8	3	10	-1	16	2532289
		3	15	3200	47	158	1.1	3	10	-1	16	2533289
		4	21	5450	47	308	1.4	2	10	-1	16	2534289
	_53	1	7	1300	35	28	0.5	2.5	10	-1	16	2381389
		2	10	1700	45	42	0.8	3.5	10	-1	16	2532389
		3	15	3200	75	80	1.1	3.5	10	-1	16	2533389
		4	21	5450	96	130	1.4	2	10	-1	16	2534389
	_55	1	7	1300	19	19	0.7	1.5	10	-1	16	2381589
		2	10	1700	26	26	1.0	2	10	-1	16	2532589
		3	15	3200	36	36	1.3	2	10	-1	16	2533589
		4	21	5450	96	96	1.6	2	10	-1	16	2534589
	-	1	7	1300	19	19	0.7	1.5	10	-1	16	2381989
		2	10	1700	26	26	1.0	2	10	-1	16	2532989
		3	15	3200	36	36	1.3	2	10	-1	16	2533989
		4	21	5450	96	96	1.6	2	10	-1	16	2534989
	_56	1	7	1200	23	23	0.8	2.5	10	-1	16	2381689
		2	10	1700	36	36	1.0	3	10	-1	16	2532689
		3	15	3200	46	46	1.3	2.5	10	-1	16	2533689
		4	21	5450	41	56	1.6	2.5	10	-1	16	2534689
	_57	1	7	1200	23	23	0.8	2.5	10	-1	16	2381789
		2	10	1700	36	36	1.0	4	10	-1	16	2532789
		3	15	3200	46	46	1.3	4	10	-1	16	2533789
		4	21	5450	46	46	1.6	4	10	-1	16	2534789
	_58	1	7	1200	23	23	0.8	2.5	10	-1	16	2381889
		2	10	1700	36	36	1.0	3	10	-1	16	2532889
		3	15	3200	46	46	1.3	3	10	-1	16	2533889
		4	21	5450	46	46	1.6	2.5	10	-1	16	2534889

¹⁾ Q_N at 6 bar; Δp = 1 bar
²⁾ Switching time to 6 bar; U_N

Solenoids with / without connectors

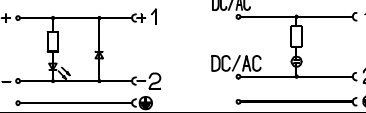
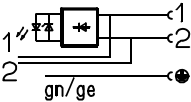
Acc. to DIN 43650, Form A

Standard voltages: 24 VDC, 230 VAC. Further voltages available on request.

Design acc. to VDE 0580. 100% duty cycle

Picture	Connector interface to DIN 43650	Degree of protection to DIN 40050	Rated power		Temperatures ¹⁾ [°C]			Cat. No.
			DC [W]	AC [VA]	Fluid max.	Ambience	Max. sum	
	Form A	IP 00	4.5	8	50	-15 to +50	100	3030
		IP 00	2.7	4.9	50	-15 to +50	100	3032
	Form A	IP 65	4.5	8	50	-15 to +50	100	3031
		IP 65	2.7	4.9	50	-15 to +50	100	3033
	EEx m II T6 With cable 3 m	IP 65	5.2		50	-15 to +50	100	3040
		IP 65		5.5	50	-15 to +50	100	3041

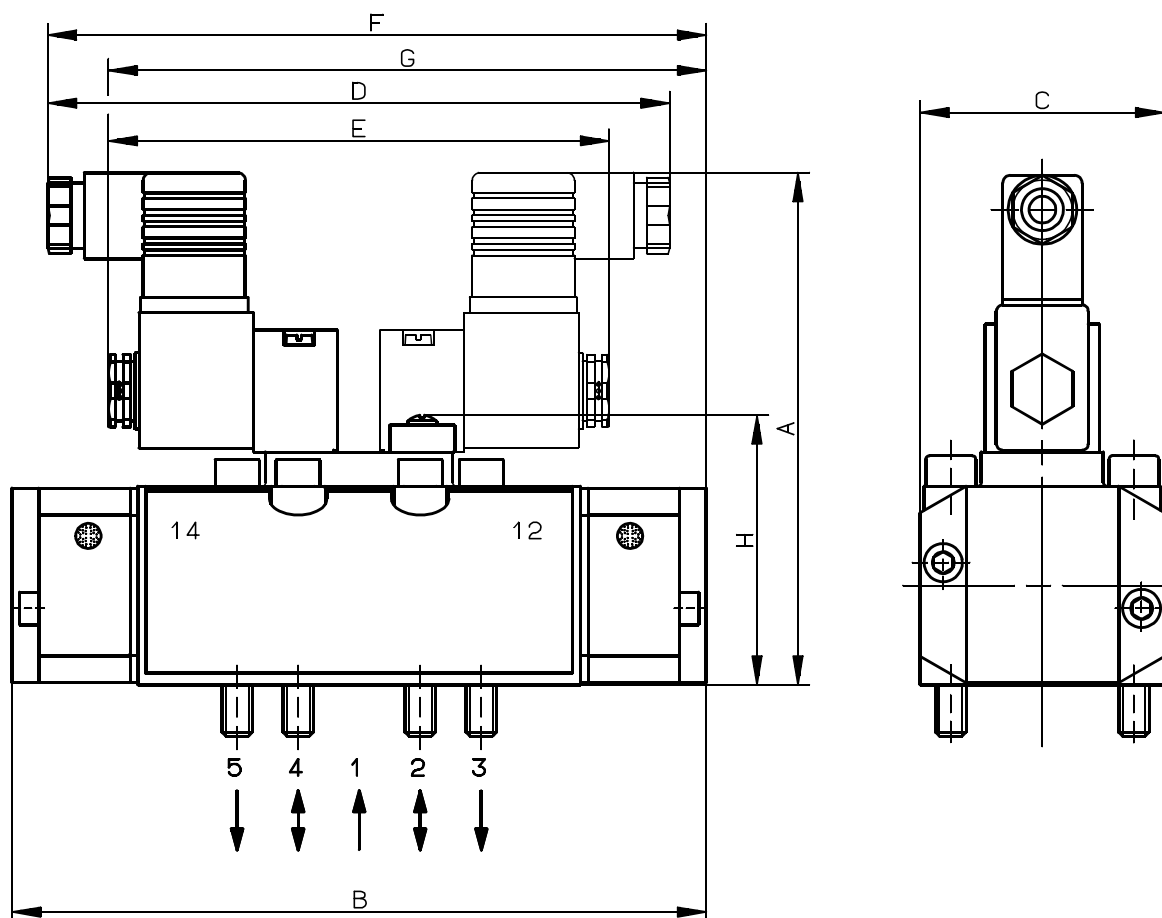
Solenoid connectors - Degree of protection acc. to DIN 40050, IP 65

Picture	Designation	Electrical diagram	Operating temperature [°C]	Operating voltage [V]	Cat. No.
	Connector acc. to DIN 43650, Form A. Without cable and without LED		-40 ... +125	12 ... 250 DC/AC	0570275
	Connector acc. to DIN 43650, Form A. Without cable. With LED and quenching diode or fluorescent lamp		-40 ... +100	15 ... 30 DC	0663035
			-40 ... +100	150 ... 250 DC/AC	0663034
	Connector acc. to DIN 43650, Form A. With cable 3 m and with LED		-40 ... +90	12 ... 250 DC/AC	0681493
	Connector acc. to DIN 43650, Form A. With cable 3 m and with LED or Zener diode		-20 ... +80	24 DC/AC	0664363

Cat. No. (example): Valve Solenoid Indicate voltage [V] and frequency [Hz]
2381130. 3030

¹⁾ Temperatures refer to the respective solenoid. The permissible temperatures for the valve have not been considered here. The max. temperature sum composed of fluid and ambient temperature, must not be exceeded.

Dimensional drawing [mm]



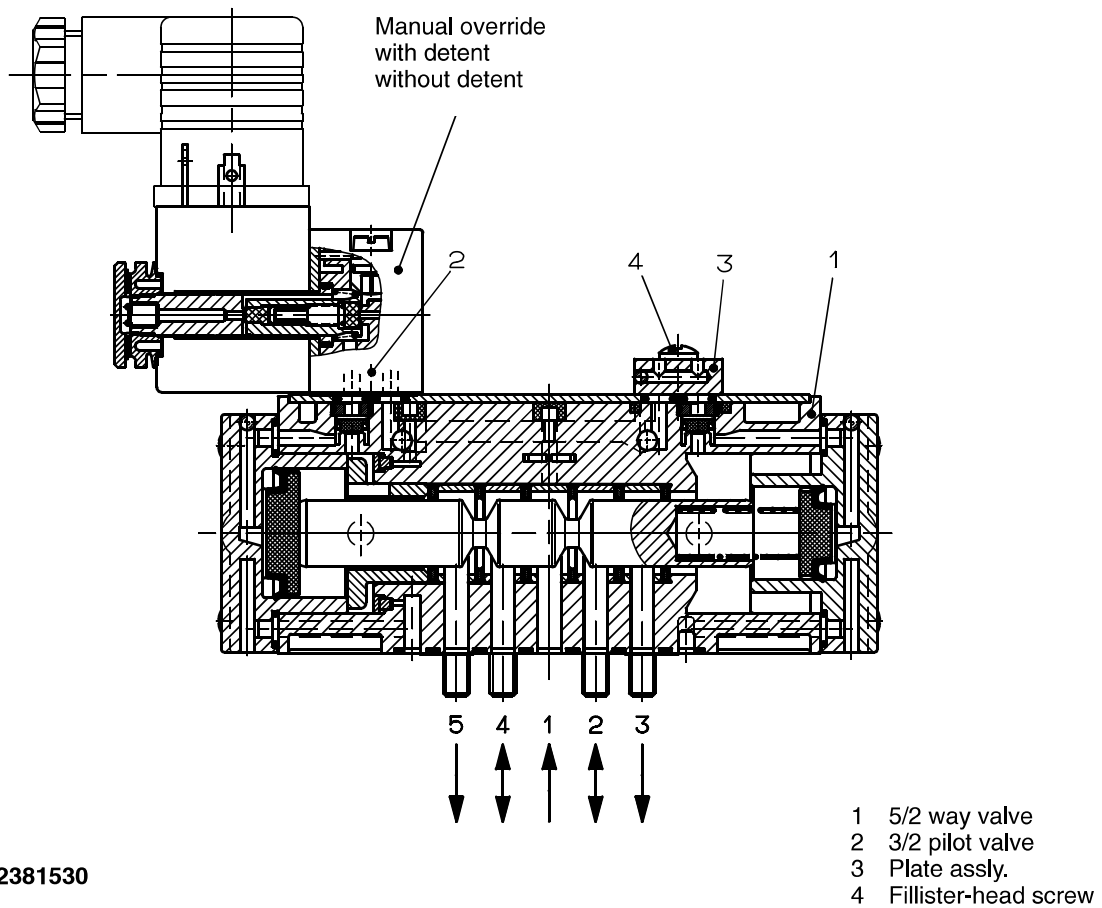
Dimensional table [mm]

ISO size	Cat. No.	A	B	C	F	G	H
1	2381130 / 2381230 / 2381330 / 2381530 / 2381930	122.5	128	41	165	148.5	60
2	2532133 / 2532233 / 2532333 / 2532533 / 2532933	130.5	146	52	156	146.6	67.6
3	2533133 / 2533233 / 2533333 / 2533533 / 2533933	133.5	182	64	173.6	164.6	70.7
4	2534133 / 2534233 / 2534333 / 2534533 / 2534933	143.5	190	74	177.6	168.6	81.1

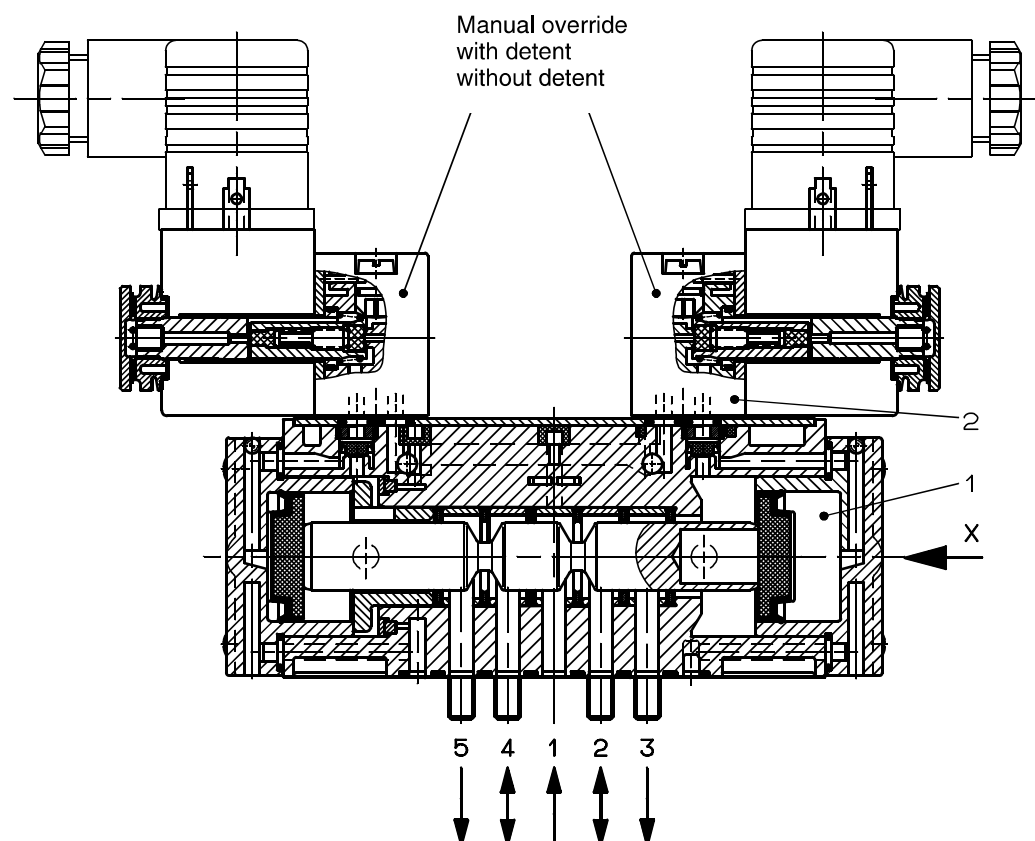
ISO size	Cat. No.	A	B	C	D	E	F	G
1	2381630 / 2381730 / 2381830	122.5	152	41	192	160	165	148.5
2	2532633 / 2532733 / 2532833	130.5	146	52	165	147	156	146.6
3	2533633 / 2533733 / 2533833	133.5	182	64	165	147	173.6	164.6
4	2534633 / 2534733 / 2534833	143.5	190	74	165	147	177.6	168.6

Sectional drawings

Cat. No. 2381230

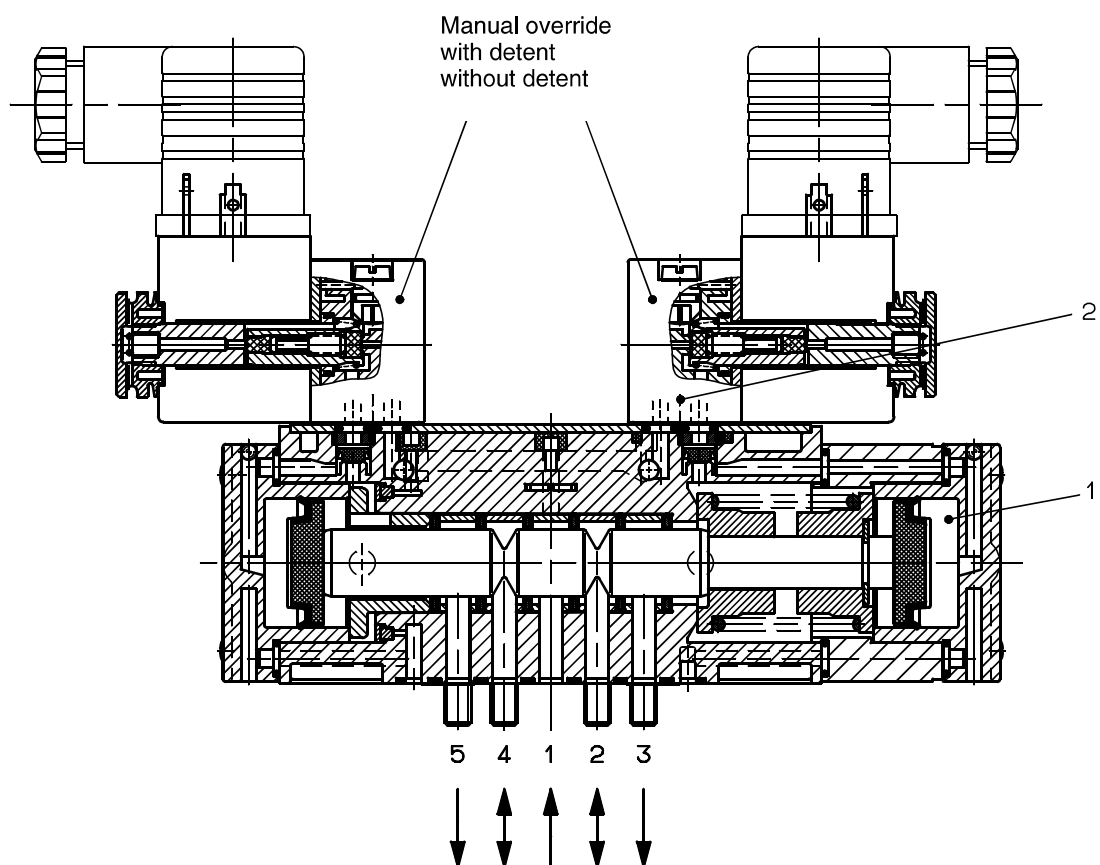


Cat. No. 2381530



Sectional drawing

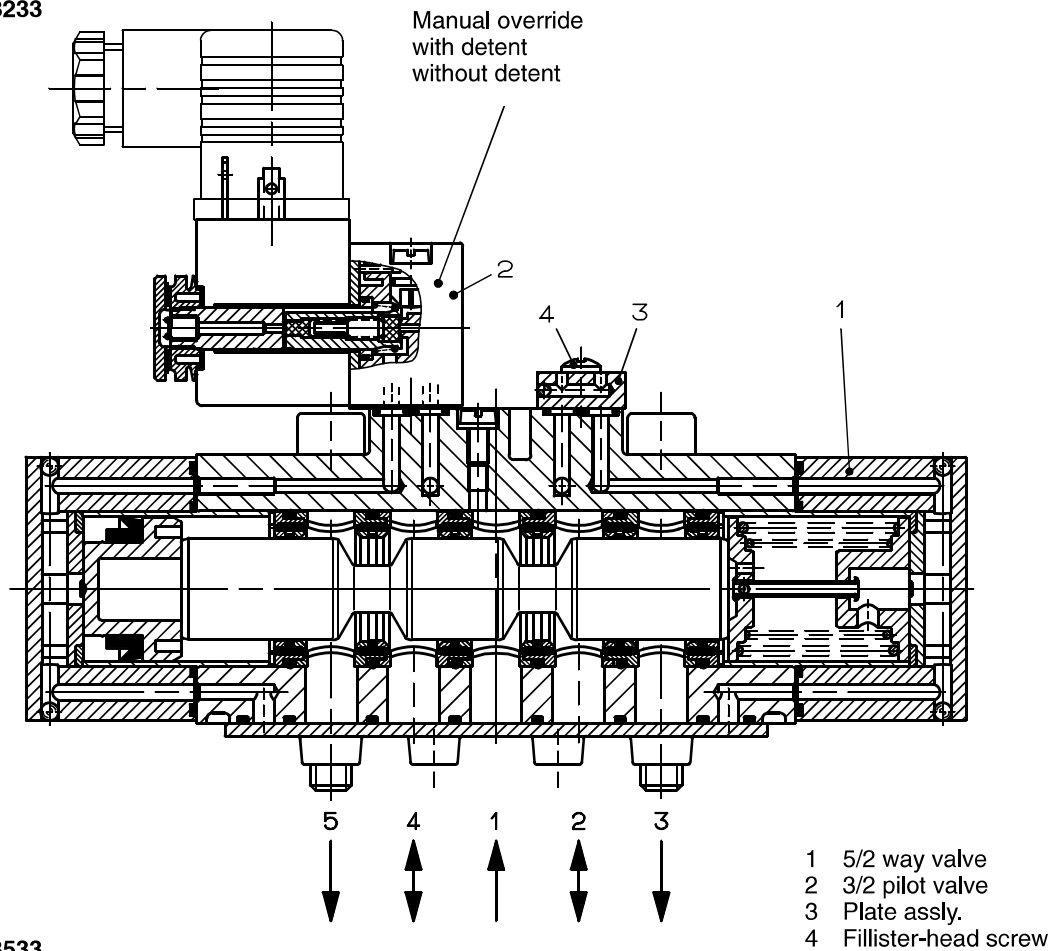
Cat. No. 2381630



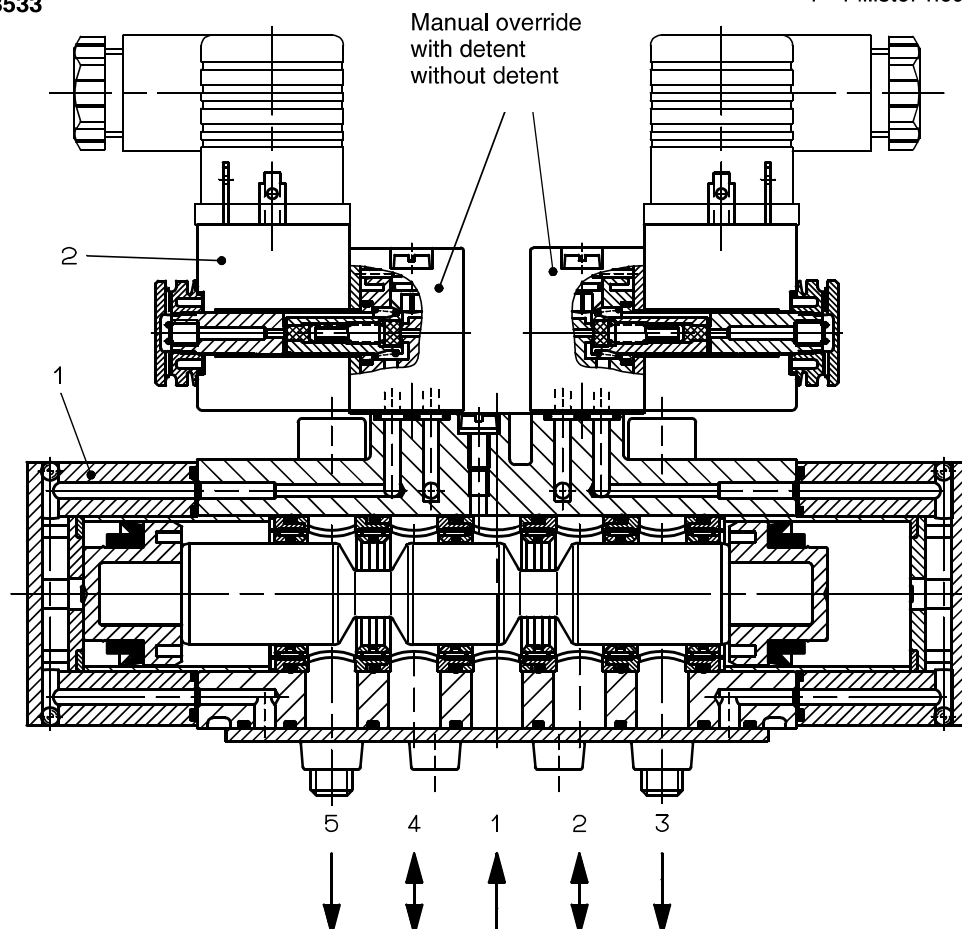
- 1 5/2 way valve
- 2 3/2 pilot valve

Sectional drawings

Cat. No. 2533233

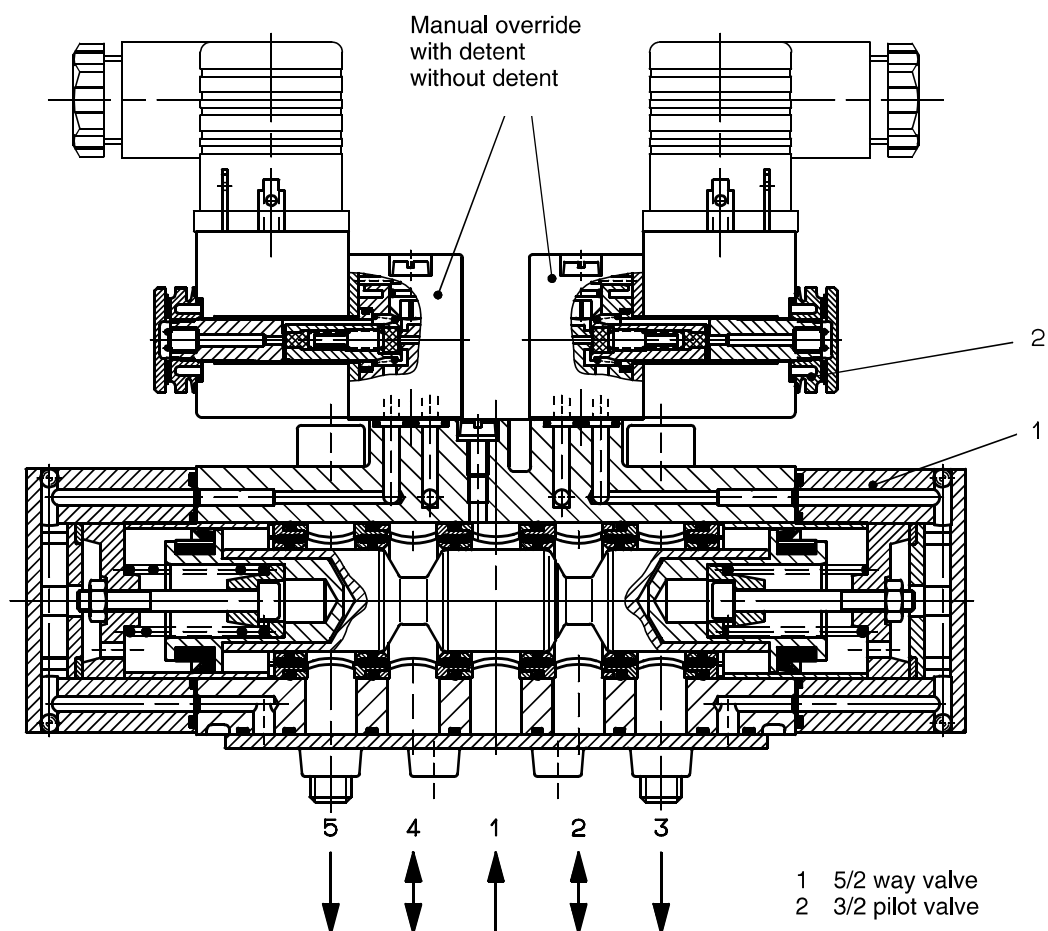


Cat. No. 2533533



Sectional drawing

Cat. No. 2533633



Further information on ISO-type directional control valves and accessories

Model	ISO size	Nominal size	Register	Publication
5/2 and 5/3 directional control valves pneumatically actuated	1, 2, 3 and 4	7, 10, 15 and 21	8	7503097
Manifold bases and accessories	1, 2, 3 and 4	7, 10, 15 and 21	13	7501636
ISO valve terminal with bus interface or multi-pin plug connection	1 and 2	7 and 10	6	7502947

Subplate Form A

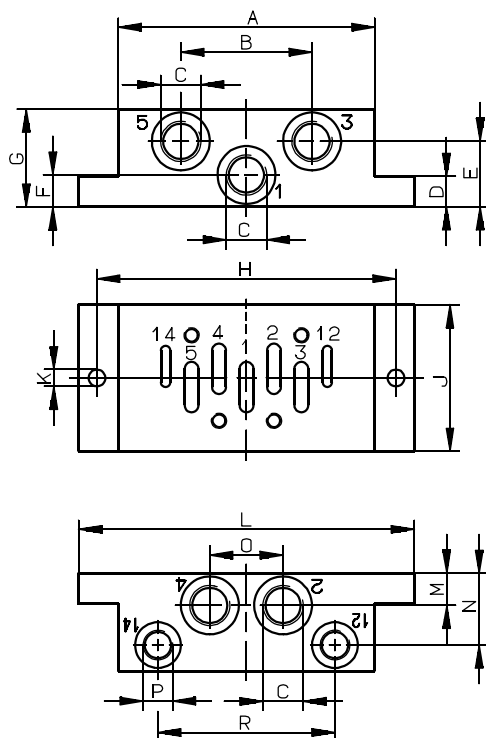
ISO size 1, 2, 3 and 4

Lateral porting

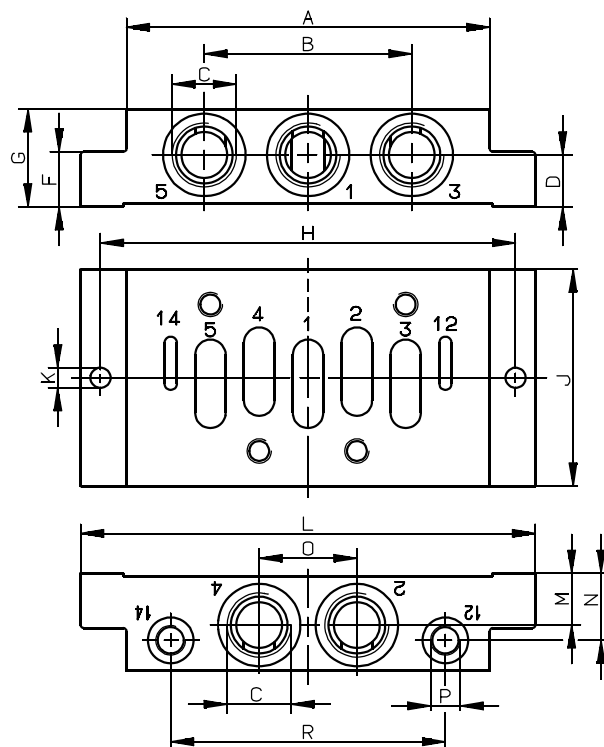
Design corresponds to VDMA 24345

Dimensional drawings [mm]

01



02



Dimensional table [mm]

ISO size	Cat. No.	Dimensional drawing	A	B	C	D	E	F	G	H
1	2538115	01	84	43	G 1/4	10	21.5	10.5	32	98
2	2538215	01	95	56	G 3/8	14	26.0	13.0	40	112
3	2538315	02	119	68	G 1/2	17	—	18.0	32	136
4	2538415	02	148	90	G 3/4	22	—	19.0	42	170

ISO size	Cat. No.	Dimensional drawing	J	K	L	M	N	O	P	R
1	2538115	01	48	5.5	110	10.5	23.5	24	G 1/8	58
2	2538215	01	57	6.6	124	14.0	30.0	30	G 1/8	74
3	2538315	02	71	6.6	149	17.0	22.0	32	G 1/8	90
4	2538415	02	85	9.0	186	22.0	30.0	42	G 1/8	111