

ASCO™ Solenoid Valves

single/dual solenoid - pilot operated - CNOMO 15/CNOMO 30
aluminium body - "NAMUR" style - 1/4 and 1/2 tapped

3/2 NC - 5/2
SERIES
551 - 553

Features

- The monostable spool valves in conformity with IEC 61508 Standard (2010 route 2_H version) have TÜV (551 series) and EXIDA (551-553 series) certified with integrity levels: SIL 2 for HFT = 0 / SIL 3 for HFT = 1
- The spool valves have threaded port connections and "NAMUR" style interface
- The same spool valve can be adapted for 3/2 NC or 5/2 functions for controlling double-acting and single-acting actuators
- All the exhaust ports of the spool valve are connectable, providing better environmental protection. Particularly recommended for sensitive areas, such as clean rooms, and applications in the pharmaceutical and food processing sectors
- The valves offer environmental protection against the ingress of liquids, dusts or other foreign matter (environmentally-protected construction)
- Ultra low power level for inside application, suitable to connect to process fieldbus remote I/O or valve couplers
- The solenoid valves satisfy all relevant EU directives

General

Differential pressure 2 - 10,4 bar [1 bar = 100 kPa]
Flow (Q_v at 6 bar) 1/4 = 700 l/min (ANR)
1/2 = 3000 l/min

fluids (*)	temperature range (TS)	seal materials (*)
air, inert gas, filtered	-25°C to +40°C ^(a)	NBR (nitrile) + PUR (polyurethane)
	-25°C to +60°C	

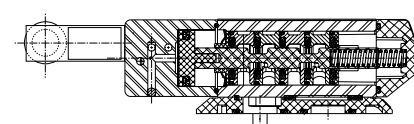
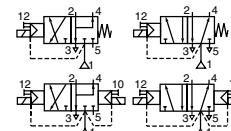
^(a) With series 302 pilots, prefixes CFSC/CFVT/CFSCIS/CFSCZN.

Materials in contact with fluid

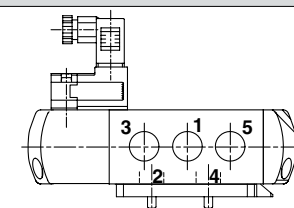
(*) Ensure that the compatibility of the fluids in contact with the materials is verified

Body	Aluminium, black anodised
End cover (spring return)	Glass-filled PA
Interface plates	Glass fibre filled PA
Spool valve internal parts	Zamak, stainless steel, POM, aluminium
Pilot internal parts	Size 30 (E06.05.80), refer to specific catalogue pages: 314/LPKF (contact us) - 195 (LISC) Pilots Size 15 (E06.36.120N), refer to specific catalogue pages: 302 (CFSC/CFVT/CFSCIS/CFSCZN) - 630 piezotronic (PISC-PISCIS) Aluminium

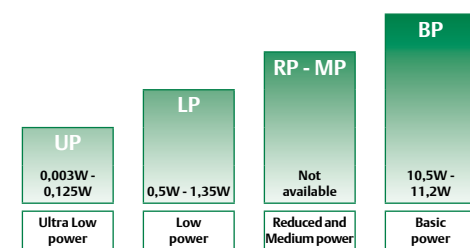
Pilot end covers



551 (CFSC prefix)



553 (CFSC prefix)



POWER LEVELS - cold electrical holding values (watt)

Specifications

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)			power level	prefix optional solenoids							basic catalogue number				
								ATEX / IECEx				IP65			CNOMO size 30	CNOMO size 15			
				min.	max. (PS)			Ex db	Ex ia		Ex nA	CFSC	CFVT	PISC					
(*)	(mm)	(m ³ /h)	(l/min)		air (*)	~	=		~/=	(1)					LISC	CFSCIS	PISCIS	CFSCZN	CFSC
3/2 NC - 5/2 - Solenoid air pilot operated - spring return (monostable)																			
1/4	6	0,6	10	2	10	10	LP	-	-	-	-	●	○	○	-	-	-	-	❖551C501 ⁽²⁾
1/4	6	0,6	10	2	-	8	LP	-	-	○	-	-	-	-	-	-	-	-	❖551C501 ⁽²⁾
1/4	6	0,6	10	2	10	10	BP	●	-	-	-	-	-	-	-	-	-	-	❖551A201 ⁽²⁾
1/4	6	0,6	10	2	-	8	LP	-	○	-	-	-	-	-	-	-	-	-	❖551B201 ⁽²⁾
1/4	6	0,6	10	2	8	8	UP	-	-	-	○	-	-	-	-	-	-	-	❖551C501 ⁽²⁾
1/2	13	2,49	41,5	2	10	10	LP	-	-	-	-	●	○	○	-	-	-	-	❖553A501 ⁽²⁾
1/2	13	2,49	41,5	2	-	8	LP	-	-	○	-	-	-	-	-	-	-	-	❖553A501 ⁽²⁾
1/2	13	2,49	41,5	2	10	10	BP	●	-	-	-	-	-	-	-	-	-	-	❖553A201 ⁽²⁾
1/2	13	2,49	41,5	2	-	8	LP	-	○	-	-	-	-	-	-	-	-	-	❖553A201 ⁽²⁾
1/2	13	2,49	41,5	2	8	8	UP	-	-	-	○	-	-	-	-	-	-	-	❖553A501 ⁽²⁾

❖ Select 8 for NPT ANSI 1.20.3 or select G for ISO G (228/1) ● Available feature ○ Available feature in DC only. - Not available

(1) 314/LPKF: Contact us

(2) Certified IEC 61508 Functional Safety data, use suffix "SL".

Specifications

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)			power level	prefix optional solenoids							basic catalogue number		
				min.	max. (PS)			ATEX / IECEx			IP65				CNOMO size 30	CNOMO size 15	
					air (*)			Ex db	Ex ia	Ex nA	CFSC	CFVT	PISC				
(*)	(mm)	(m³/h)	(l/min)	~	=	~/=	(1)	LISC	CFSCIS	PISCIS	CFSCZN	CFSC	CFVT	PISC	-	-	
3/2 NC - 5/2 - Solenoid air pilot operated and return (bistable)																	
1/4	6	0,6	10	2	10	10	LP	-	-	-	-	●	○	○	-	-	❖551C502
1/4	6	0,6	10	2	-	8	LP	-	-	○	-	-	-	-	-	-	❖551C502
1/4	6	0,6	10	2	10	10	BP	●	-	-	-	-	-	-	-	-	❖551A202
1/4	6	0,6	10	2	-	8	LP	-	○	-	-	-	-	-	-	-	❖551B202
1/4	6	0,6	10	2	8	8	UP	-	-	-	○	-	-	-	●	-	❖551C502
1/2	13	2,49	41,5	2	10	10	LP	-	-	-	-	●	○	○	-	-	❖553A502
1/2	13	2,49	41,5	2	-	8	LP	-	-	○	-	-	-	-	-	-	❖553A502
1/2	13	2,49	41,5	2	10	10	BP	●	-	-	-	-	-	-	-	-	❖553A202
1/2	13	2,49	41,5	2	-	8	LP	-	○	-	-	-	-	-	-	-	❖553A202
1/2	13	2,49	41,5	2	8	8	UP	-	-	-	○	-	-	-	●	-	❖553A502

❖ Select 8 for NPT ANSI 1.20.3 or select G for ISO G (228/1) ● Available feature ○ Available feature in DC only. - Not available

Prefix table

prefix								description	power level			
1	2	3	4	5	6	7	8		UP	LP	RP	BP
CNOMO solenoid (pilot) interface size 30												
L	I	S	C					Intrinsically safe - 195 pilot (EN/IEC 60079-11)*	-	○	-	-
								(1) Flameproof - Aluminium - 314/LPKF pilot (EN/IEC 60079-1, 60079-31)*	-	-	-	●
CNOMO solenoid (pilot) interface size 15												
C	F	S	C					Solenoid + spade plug AMP 2,5x0,5, 9,4 mm, (EN 60730), 302 pilot	-	●	-	-
C	F	V	T					Solenoid with M12 connection, LED + protection (EN 60730), 302 pilot	-	○	-	-
C	F	S	C	I	S			Intrinsically safe, 9,4 mm, pilot 302; ATEX (EN/IEC 60079-11, -26)*	-	○	-	-
C	F	S	C	Z	N			Non sparking, connector 9,4 mm cable 2 m, pilot 302 (EN 60079-15, -31)*	-	○	-	-
P	I	S	C					Solenoid with spade plug connector (EN 60730), 630 piezotronic pilot	●	-	-	-
P	I	S	C	I	S			Intrinsically safe, piezotronic 630 pilot, ATEX (EN/IEC 60079-11, -26)*	○	-	-	-

Suffix table

suffix								description	power level			
1	2	3	4	5	6	7	8		UP	LP	RP	BP
CNOMO solenoid (pilot) interface size 30												
					M	S		Screw type manual operator (2) (3)	-	-	-	●
					S	L		Exhaust reducer (series 551 only)	○	●	-	●
								Certified IEC 61508 Functional Safety data (4)	-	○	-	●
CNOMO solenoid (pilot) interface size 15												
					M	S		Screw type manual operator (2)	-	●	-	-
					M	O		Push type manual operator	○/●	○/●	-	-
					S	L		Exhaust reducer (series 551 only)	○/●	●	-	●
								Certified IEC 61508 Functional Safety data (4)	○/●	○/●	-	-

Options & Accessories

series	pipe size	exhaust protector (stainless steel)		
		(G)	(NPT)	(M)
551	1/8	34600418 (4)	34600482 (4)	-
553	1/2	34600479 (4)	34600481 (4)	-
551/553	M5	-	-	34600484 (4)

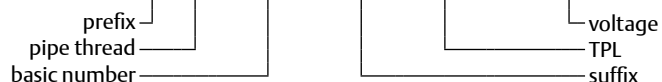
- Available feature
- Available feature in DC only
- Not available

* ATEX/IECEx valves using these solenoids are approved according to EN ISO 80079-36 (2016) and EN ISO 80079-37 (2016) [non electrical]

- (1) 314/LPK: Contact us
- (2) Not to use with SL suffix
- (3) Not to use with LISC prefix
- (4) Not to use with MS suffix
- (5) Provided with "SL" suffix

Ordering examples valves:

LISC	G	551 B 201	12..24V / DC
CFSC	G	553 C 502	230V / 50 Hz
CFSC	8	553 C 501 MO	230V / 50 Hz
CFSC	G	553 C 501 SLMO	230V / 50 Hz
CFVTZN	G	551 C 501	24V / DC
PISCIS	G	551 C 502 MO	6V / DC
PISCIS	G	551 C 501 SLMO	6V / DC
PISCIS X	G	551 C 501 MO	TPL20666 24HV / DC



Explanation of temperature ranges of solenoid valves

Valve temperature range	The valve temperature range (TS) is determined by the selected seal material, the temperature range for proper operation of the valve and sometimes by the fluid (e.g. steam)
Operator ambient temperature range	The operator ambient temperature range is determined by the selected power level and the safety code
Total temperature range	The temperature range of the complete solenoid valve is determined by the limitations of both temperature ranges above

Electrical characteristics

Coil insulation class	F
Electrical safety	IEC 335
Standard voltages	DC (=) ⁽⁸⁾ : 24V - 48V; CFSC/CFSCZN/CFVT: 24V CFSCIS: 12V - 24V; LISC: 12..24V, PISC: 24V to 70V; PISCIS: 6V, 8V, 12V, 24V AC (~) ⁽⁸⁾ : 24V - 48V - 115V - 230V/50Hz; CFSC: 24V - 115V - 230V/50Hz; PISC: 24V to 70V - other voltages and 60Hz are available on request

prefix option	power ratings			operator ambient temperature range (TS) (C°)	safety code	electrical enclosure protection (EN 60529)	replacement coil		type ⁽²⁾	
	inrush ~ (VA)	holding ~ (VA) (W)	hot/cold = (W)				~	=		
Basic power (BP)										
⁽⁸⁾	8,6	1,6	7,4	6/7,6	-25 to +80	II2G Ex db IIB+H2 Gb T4, II2D Ex tb IIIC Db	IP66/67, alu.	-	-	01
Low Power (LP)										
CFSC	1,4	1,2	1,1	1/1,2	-25 to +60	EN 60730	IP65, moulded	-	-	03
CFSC	2,1 ⁽⁷⁾	1,6 ⁽⁷⁾	1,5 ⁽⁷⁾	-	-25 to +60	EN 60730	IP65, moulded	-	-	03
CFVT ⁽⁶⁾	-	-	-	1,15/1,35	-25 to +60	EN 60730	IP65, moulded	-	-	04
CFSCZN	-	-	-	1/1,2	-25 to +40/55/60	II 3G Ex nA IIC T6/T5/T4 Gc, II 3D Extc IIIC Dc	IP65, moulded	-	-	06
CFSCIS ⁽⁴⁾⁽⁵⁾	-	-	-	0,5	-10 to +40/60	II 2G Ex ia IIC T6/T4 Ga, II 2D Ex ia IIIC Da	IP65, moulded	-	-	07
LISC ⁽³⁾⁽⁴⁾	-	-	-	0,5	-40 to +65	II 2G Ex ia IIC T6 Ga, II 2D Ex ib IIIC Db ⁽³⁾	IP65, moulded	-	-	02
Ultra low power (UP)										
PISC	-	-	-	0,007	0 to +60	-	IP65, moulded	-	-	05
PISCIS ⁽¹⁾⁽⁴⁾ 6V	-	-	-	0,003	-20 to +50	II 2G Ex ia IIC T6 Ga, II 2D Ex ia IIIC Da	IP65, moulded	-	-	05
PISCIS ⁽¹⁾⁽⁴⁾ 8V	-	-	-	0,022	-20 to +50	II 2G Ex ia IIC T6 Ga, II 2D Ex ia IIIC Da	IP65, moulded	-	-	05
PISCIS ⁽¹⁾⁽⁴⁾ 12LV	-	-	-	0,012	-20 to +50	II 2G Ex ia IIC T6 Ga, II 2D Ex ia IIIC Da	IP65, moulded	-	-	05
PISCIS ⁽¹⁾⁽⁴⁾ 12HV	-	-	-	0,032	-20 to +50	II 2G Ex ia IIC T6 Ga, II 2D Ex ia IIIC Da	IP65, moulded	-	-	05
PISCIS ⁽¹⁾⁽⁴⁾ 24LV	-	-	-	0,046	-20 to +50	II 2G Ex ia IIC T6 Ga, II 2D Ex ia IIIC Da	IP65, moulded	-	-	05
PISCIS ⁽¹⁾⁽⁴⁾ 24HV	-	-	-	0,125	-20 to +50	II 2G Ex ia IIC T6 Ga, II 2D Ex ia IIIC Da	IP65, moulded	-	-	05

⁽¹⁾ Piezotronic standard voltages:

PISC prefix, 24 V to 70 V AC/DC, peak current max.: 80 mA, holding current max.: 1 mA

PISCIS prefix:	6 V DC / 3 mW	8 V DC / 22 mW	12 L V DC / 12 mW	12 H V DC / 32 mW	24 L V DC / 46 mW	24 H V DC / 125 mW
Turn ON voltage U _{ON}	6 .. 9 V	7,2 .. 12 V	10,8 .. 16 V	10,8 .. 16 V	21,6 .. 28 V	21,6 .. 28 V
Turn OFF voltage U _{OFF}	3 V	3,2 V	3,3 V	3,3 V	5 V	5 V
Peak current	6 mA	10 mA	6,8 mA	8,1 mA	10 mA	14 mA
Holding current	0,5 mA	2,8 mA	1 mA	2,7 mA	1,9 mA	5,2 mA
Cable + max. barrier resistances (R _s + R _c)	1200 Ω max.	300 Ω max.	1200 Ω max.	470 Ω max.	1200 Ω max.	470 Ω max.

prefix option	safety parameters				
	U _I (DC) (V)	I _I (mA)	P _I (W)	L _I (H)	C _I (µF)
Low Power (LP)					
CFSCIS	28	300	1,6	0	0
LISC	30	300	1,6	0	0
Ultra low power (UP)					
PISCIS	30	200	0,9	0	0

⁽²⁾ Refer to the dimensional drawings on pages: 4 to 7

⁽³⁾ Min. operating current (I_{(ON) min.}): 0,036 A / U_{(ON) min.} = 12,8 V (For use in zone 0 locations, see the installation conditions given in the I&M instructions)

⁽⁴⁾ Intrinsically safe pilots: Check the electrical characteristics in the corresponding catalogue pages (CFSCIS/LISC/PISCIS: 302/19500036/630 pilots).

⁽⁵⁾ CFSCIS (302 pilots):

12 V: I_{(ON) min.}, with LED = 33 mA; U_{(ON) min.} = 11,9 V; U_{(max) recommended} = 23 V; U_{(OFF) = 3,3 V; I_{(OFF) = 10 mA}}

24 V: I_{(ON) min.}, with LED = 25 mA; U_{(ON) min.} = 16,4 V; U_{(max) recommended} = 28 V; U_{(OFF) = 5,7 V; I_{(OFF) = 7 mA}}

⁽⁶⁾ Values for LED + protection.

⁽⁷⁾ AC: 230V

⁽⁸⁾ 314/LPK: Contact us

- Not available

Electrical connections

prefix	connection
⁽⁸⁾	1/2" NPT threaded cable entry. Enclosures are supplied without cable gland
LISC	Spade plug connector with cable gland EN175301-803A (ISO 4400) for cables with an outer diameter from 6 to 8 mm
CFSC, CFSCIS, PISC, PISCIS	Spade plug connector with cable gland DIN 43650, 9,4 mm, form C, for cables with an outer diameter from 4 to 6 mm
CFSCZN	Spade plug connector, DIN 43650, 9,4 mm, form C, pre-wired connector length 2 m
CFVT	M12 connection for M12 connector
CFL	Moulded-in flying lead, standard length 0,3 m

Additional options

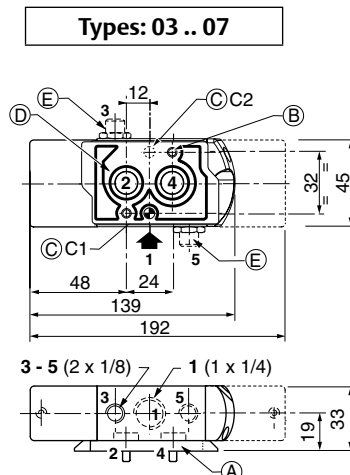
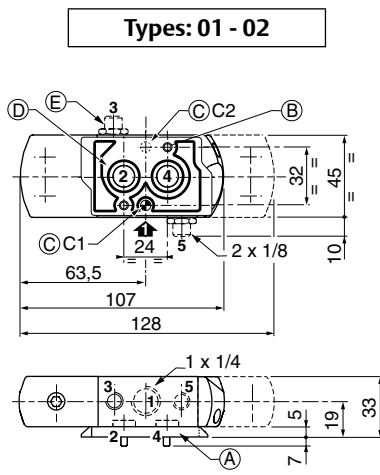
- TPL numbers: TPL **20665**: Piezotronic, PISCIS prefix, 12 HV (32 mW)
TPL **20666**: Piezotronic, PISCIS prefix, 24 HV (125 mW)
- TPL numbers: TPL **20674**: LED and protection, CFSC prefix, only available in 24 V AC/DC and 115 V AC -
Add 0,15 W (DC) and 0,4 W/VA (AC)
- Other pipe threads are available on request
- Set of stainless steel mounting screws (series 551), catalogue number: **97802212**
- Set of two G 1/8 exhaust reducers (series 551), catalogue number: **88100344**

Installation

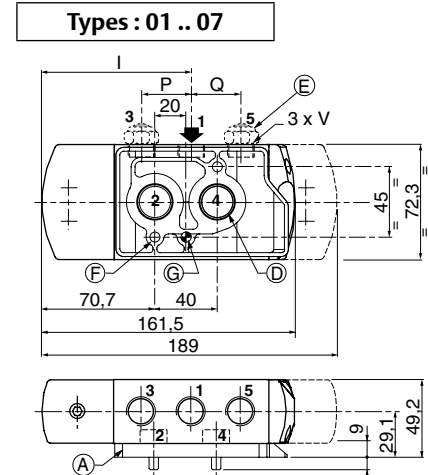
- Multi language installation/maintenance instructions are included with each valve
- The valves can be mounted in any position without affecting operation
- 3/2 NC-5/2 spool valve supplied with one or two interface plates with NAMUR mating surfaces. Depending on function (3/2 NC or 5/2), position the plate (series 551) or one of the two plates (series 553) on the spool valve body before installing on actuator
- It is necessary to connect pipes or fittings to the exhaust ports to protect the internal parts of the spool valve and its pneumatic operator if used outside or in harsh environments (dusts, liquids etc.)
- Dowel pin (if necessary), bolts and gaskets are standard supplied
- Threaded pipe connection identifier is 8 = NPT (ANSI 1.20.3); G = G (ISO 228/1)
- Valves with suffix "SL" are provided with specific exhaust protectors

Dimensions (mm), Weight (kg)

551 Series



553 Series



	I	P	Q	V
553	94,3	31,6	31,8	1/2

- (A) Interface plate
- (B) 2 mounting holes: 5,3 mm dia. (Spotfacing: 9 mm dia., depth 5 mm)
- (C) One 5 mm dia. hole for dowel pin (551 Series)
 - in position C1: 3/2 NC function plate
 - in position C2: 5/2 function plate
- (D) 2 O-ring seals (supplied)
- (E) Exhaust reducers G 1/8 (series 551) or protectors adaptable on orifices 3 and 5
- (F) 2 mounting holes: 6,5 mm dia. (Spotfacing: 11 mm dia., depth 6 mm)
- (G) 1 dia. 6,5 mm hole for dowel pin (series 553). Same position for interface plate 3/2 NC or 5/2

Dimensions (mm), Weight (kg)



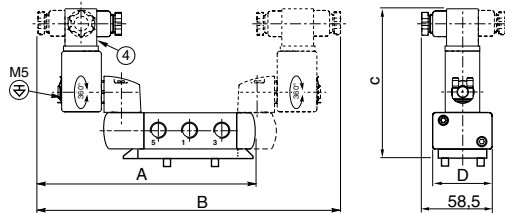
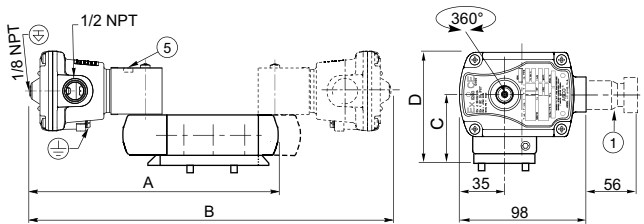
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314 pilot/LPKF operator
EN/IEC 60079-1, 60079-31

551/553: Contact us



TYPE 02:
Aluminium
195/LISC: EN 60079-11

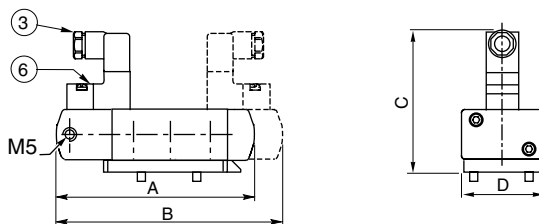
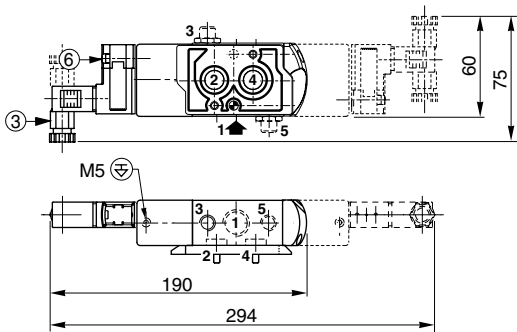
551B201 / B202
553A201 / A202



TYPE 03:
Polyarylamide
302 pilot
CFSC: IEC 335 / DIN 43650

551C501 / 551C502
551C501MS / 551C501MO / C502MS / C502MO

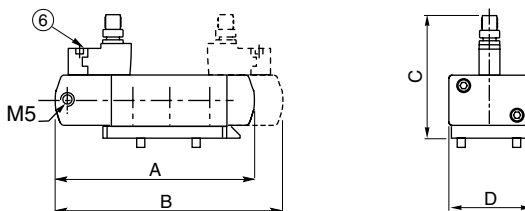
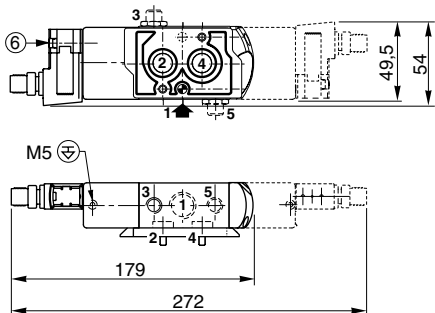
553A501 / A501MS / A501MO / A502 / A502MS / A502MO



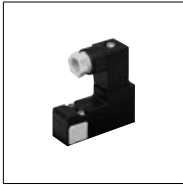
TYPE 04:
Polyarylamide
302 pilot
CFVT: IEC 335 / M12 connection +
LED and protection

551C501 / 551C502
551C501MS / 551C501MO / C502MS / C502MO

553A501 / A501MS / A501MO / A502 / A502MS / A502MO



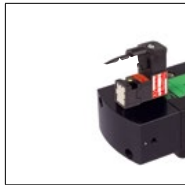
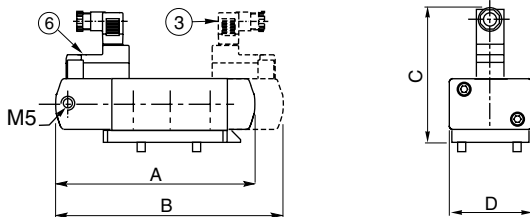
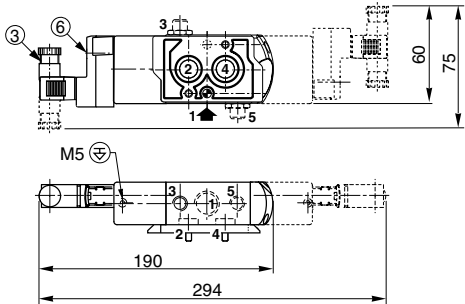
Dimensions (mm), Weight (kg)



TYPE 05:
Polyamide
Piezotronic pilot
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PISCIS: EN/IEC 60079-11, 60079-26

551C501MO / 551C502MO

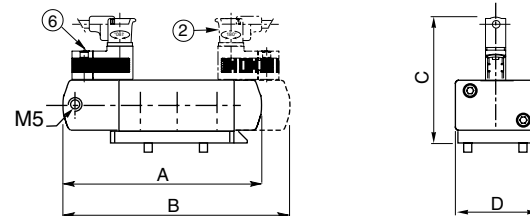
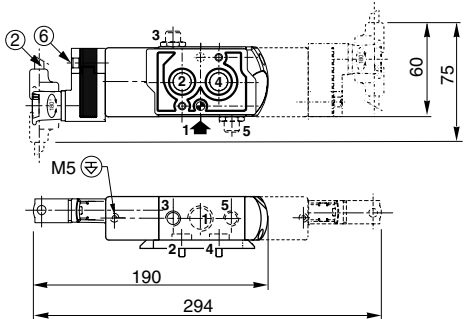
553A501MO / A502MO



TYPE 06:
Polyarylamide
302 pilot
CFSCZN: EN 60079-15, 60079-31

551C501MO / 551C502MO

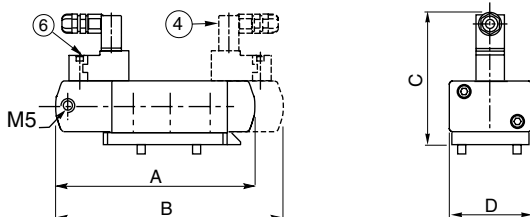
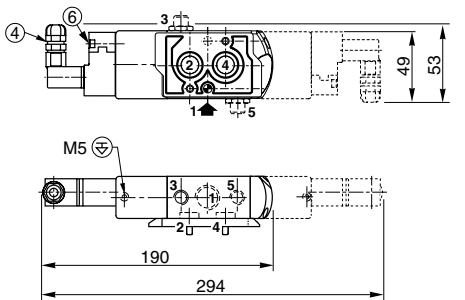
553A501MO / A502MO



TYPE 07:
Polyarylamide
302 pilot
CFSCIS: EN/IEC 60079-11, 60079-26

551C501MO / 551C502MO

553A501MO / A502MO



Dimensions (mm), Weight (kg)

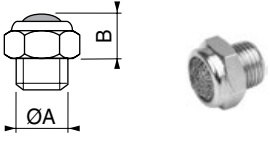
- ① Ex d certified cable gland (on request)
- ② Three-core cable, length 2 m
- ③ Connector rotatable by 90° increments, cable Ø 4 - 6 mm
- ④ Connector rotatable by 90° increments, cable Ø 6 - 8 mm
- ⑤ Screw type manual operator, suffix MS
- ⑥ Push type manual operator, suffix MO
- ⊕ Connectable pilot exhaust port

type	prefix/option	power level	A		B		C		D		E		weight ⁽¹⁾			
			monostable		bistable											
			551	553	551	553	551	553	551	553	551	552/ 553	551	553	551	553
01	⁽²⁾	BP	179	246	272	357	48	64,7	74	94,7	1,19	2,04	1,94	3,12	3,02	2,95
02	LISC	LP	158	231,5	216	311	112	125,5	45	72,3	-	-	0,59	1,34	0,80	2,42
03	CFSC	LP	-	161,5	-	189	-	99,2	-	72,3	-	-	0,33	1,00	0,38	2,08
04	CFVT	LP	-	161,5	-	189	-	90,2	-	72,3	-	-	0,33	1,02	0,38	2,12
05	PISC / PISCIS	UP	-	161,5	-	189	-	99,2	-	72,3	-	-	0,31	1,00	0,32	2,08
06	CFSCZN	LP	-	161,5	-	189	-	99,2	-	72,3	-	-	0,41	1,08	0,54	2,24
07	CFSCIS	LP	-	161,5	-	189	-	100,2	-	72,3	-	-	0,34	1,02	0,4	2,12

⁽¹⁾ Incl. coil(s) and connector(s).

⁽²⁾ 314/LPK: Contact us

Accessories



ØA	M5	1/8	1/4	3/8	1/2
B	4,5	-	11	11	14

**exhaust protector
(stainless steel)**