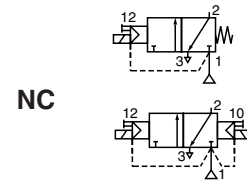


SOLENOID VALVES

pilot operated, spool type
single/dual solenoid (mono/bistable function)
stainless steel body, 1/4 - 1/2



3/2

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
- All the exhaust ports of this 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 valve offers environmental protection against the ingress of liquids, dusts or any other foreign matter (environmentally-protected construction)
- Can be externally piloted (external air pilot supply) to convert valve to zero minimum operation by flipping a gasket
- The solenoid valves satisfy all relevant EU Directives

GENERAL

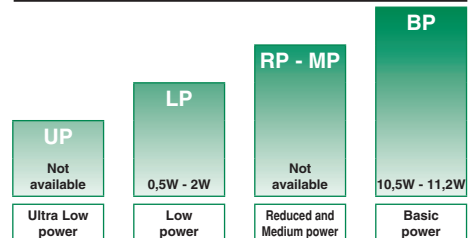
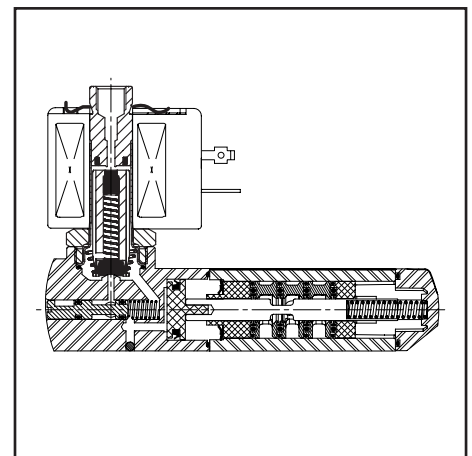
Differential pressure 2 - 10,4 bar [1 bar = 100 kPa]
Flow (Qv at 6 bar) 1/4 = 860 l/min (ANR)
1/2 = 3000 l/min

fluids (*)	temperature range (TS)	seal materials (*)
air, inert gas, filtered	551 : - 40°C to + 80°C	VMQ (silicone) + PUR (polyurethane)
	553 : - 40°C to + 60°C	

MATERIALS IN CONTACT WITH FLUID

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

Body, end covers	Stainless steel, AISI 316L
Spool valve internal parts	Stainless steel, POM
Core tube	Stainless steel
Core and plugnut	Stainless steel
Core spring	Stainless steel
Seals & discs	NBR
Top disc	FPM
Disc holder	POM
Cartridge (low power)	Welded, packless AISI 430
Seat	Stainless steel
Seat insert	POM
Shading coil	Silver
Rider rings (low power)	PTFE (NF/WSNF solenoids only)



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
				min. ⁽²⁾	max. (PS)		NEMA 7 & 9	ATEX / IECEx						IP65			
					air (*)			Ex d	Ex e mb	Ex mb	Ex ia	-					
(✧)	(mm)	(m³/h)	(l/min)		~	=	~/=	EF	LPKF	NF	EM	PV	LI	WSLI	-	SC	
Solenoid air pilot operated - spring return (monostable)																	
1/4	6	0,75	12,5	0 / 2	10	10	BP	-	-	●	●	●	-	-	-	●	❖551A413 ⁽¹⁾
1/4	6	0,75	12,5	0 / 2	10	10	BP	●	-	-	-	-	-	-	-	-	❖551G413 ⁽¹⁾
1/4	6	0,75	12,5	0 / 2	10	10	LP	-	●	●	●	○	○	○	-	●	❖551A313 ⁽¹⁾
1/4	6	0,75	12,5	0 / 2	10	10	LP	○	-	-	-	-	-	-	-	-	❖551G313 ⁽¹⁾
1/2	13	2,49	41,5	0 / 2	10	10	BP	-	-	●	●	●	-	-	-	●	❖553A413 ⁽¹⁾
1/2	13	2,49	41,5	0 / 2	10	10	BP	●	-	-	-	-	-	-	-	-	❖553G413 ⁽¹⁾
1/2	13	2,49	41,5	0 / 2	10	10	LP	-	●	●	●	○	○	○	-	●	❖553A313 ⁽¹⁾
1/2	13	2,49	41,5	0 / 2	10	10	LP	○	-	-	-	-	-	-	-	-	❖553G313 ⁽¹⁾
Solenoid air pilot operated and return (bistable)																	
1/4	6	0,75	12,5	0 / 2	10	10	BP	-	-	●	●	●	-	-	-	●	❖551A414
1/4	6	0,75	12,5	0 / 2	10	10	BP	●	-	-	-	-	-	-	-	-	❖551G414
1/4	6	0,75	12,5	0 / 2	10	10	LP	-	●	●	●	○	○	○	-	●	❖551A314
1/4	6	0,75	12,5	0 / 2	10	10	LP	○	-	-	-	-	-	-	-	-	❖551G314
1/2	13	2,49	41,5	0 / 2	10	10	BP	-	-	●	●	●	-	-	-	●	❖553A414
1/2	13	2,49	41,5	0 / 2	10	10	BP	●	-	-	-	-	-	-	-	-	❖553G414
1/2	13	2,49	41,5	0 / 2	10	10	LP	-	●	●	●	○	○	○	-	●	❖553A314
1/2	13	2,49	41,5	0 / 2	10	10	LP	○	-	-	-	-	-	-	-	-	❖553G314

❖ Select 8 for NPT ANSI 1.20.3 or select G for ISO G (228/1) ● Available feature ○ Available feature in DC only.

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

(2) Zero minimum is only achieved if external pressure is applied.

PREFIX TABLE

prefix							description	power level			
1	2	3	4	5	6	7		LP	RP	MP	BP
E	F						Explosionproof - NEMA 7, 9 - Zinc plated steel conduit	○	-	-	●
E	V						Explosionproof - NEMA 7, 9 - 316 SS conduit	○	-	-	●
E	M						Waterproof IP66/67 - Metal enclosure (EN/IEC 60079-7,-18, -31)*	●	-	-	●
		E	T				Threaded conduit/hole (M20 x 1,5)	●	-	-	●
L	P	K	F				Flameproof - Aluminium (EN/IEC 60079-1, 60079-31)*	●	-	-	-
N	F						Flameproof - Aluminium (EN/IEC 60079-1, 60079-31)*	●	-	-	-
P	V						Encapsulated epoxy moulded (EN/IEC 60079-18)*	○	-	-	●
S	C						Solenoid with spade plug connector (EN/IEC 60730)	●	-	-	●
W	P						Waterproof IP67 - Metal enclosure	●	-	-	●
L	I						I.S. with Aluminium IP67 enclosure (EN/IEC 60079-11, 60079-31)*	○	-	-	-
W	S						Waterproof IP67 - 316 SS enclosure	●	-	-	●
W	S	L	P	K	F		Flameproof - 316 SS (EN/IEC 60079-1, 60079-31)*	●	-	-	-
W	S	E	M				Waterproof IP66/67 - 316 SS enclosure (EN/IEC 60079-7,-18, -31)*	●	-	-	●
W	S			L	I		I.S. with 316L SS IP67 enclosure (EN/IEC 60079-11, 60079-31)*	○	-	-	-
W	S	N	F				Flameproof - 316 SS (EN/IEC 60079-1, 60079-31)*	●	-	-	●
		T					Threaded conduit (1/2" NPT)	●	-	-	●
			H	T			Class H - High temperature, +80°C ambient temp.	-	-	-	●
					X		Other special constructions	●	-	-	●

SUFFIX TABLE

suffix							description	power level			
1	2	3	4	5	6	7		LP	RP	MP	BP
			M	O			Push type manual operator	○/●	-	-	●
S	L						Certified IEC 61508 Functional Safety data ⁽²⁾	○/●	-	-	●

PRODUCT SELECTION GUIDE
STEP 1

Select the fluid temperature range and seal material from the general table on page 7. Select basic catalogue number, including pipe thread identification letter. Refer to the specifications table above.

Example: G551A413

STEP 2

Select prefix (combination). Select the appropriate operator from the specifications table on page 1 and the prefix table on page 2. Select for this operator in the electrical characteristics table on page 3: the power level (LP, BP), the type of electrical enclosure protection and the desired temperature class.

Warning: The ambient temperature range of your application may not exceed the temperature range of your operator.

Example: EM

STEP 3

Select suffix (combination) if required.

Example: MO

STEP 4

Select voltage. Refer to standard voltages on page 9.

Example: 230V / 50Hz

STEP 5

Final catalogue / ordering number.

Example:

EM G551A413MO 230 V / 50 Hz

OPTIONS & ACCESSORIES

series	pipe size	stainless steel exhaust protector		
		G	NPT	(M)
551-553	1/8	34600418 ⁽¹⁾	34600482 ⁽¹⁾	-
551	1/4	34600419 ⁽¹⁾	34600483 ⁽¹⁾	-
553	1/2	34600479 ⁽¹⁾	34600479 ⁽¹⁾	-
551	M5	-	-	34600484 ⁽¹⁾

● Available feature

○ Available feature in DC only

- Not available

* ATEX solenoids are also approved according to EN 13463-1 (non electrical valves)

⁽¹⁾ Provided with "SL" suffix

⁽²⁾ Not to use with MO suffix

ORDERING EXAMPLES:

SC	G	551	A	413	230V / 50 Hz
SC	G	553	A	413	230V / 50 Hz
SC	G	551	A	413	SL 230V / 50 Hz
SC	G	551	A	414	MO 230V / 50 Hz
SCHT	8	551	A	414	MO 230V / 50 Hz
LPKF	G	551	A	313	MO 24V / DC
WSLPKF	G	551	A	313	MO 230V / 50 Hz
LPKF	G	551	A	313	MO 24V / DC
WSLI	G	551	A	313	24V / DC
EM	8	551	A	413	MO 230V / 50 Hz
EF	G	551	G	413	MO 240V / 60 Hz

⁽³⁾ Prefixes EF and EV should always be used with the letter G in the basic number.

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
Electrical safety
Standard voltages

F
IEC 335
DC (=) 24V - 48V
AC (~) 24V - 48V - 115V - 230V⁽⁵⁾/50Hz; other voltages and 60Hz are available on request

prefix option	power ratings				operator ambient temperature range (TS) (C°) ⁽¹⁾	safety code	electrical enclosure protection (EN 60529)	replacement coil / kit		type (2)
	inrush ~ (VA)	holding ~ (VA)	hot/cold = (W)					~ 230 V/50 Hz	= 24V/DC	
Basic power (BP)										
SC	55	23	10,5	9/11,2	-40 to +75	EN 60730	IP65 moulded	400425-117	400425-142	01
WP/WS	55	23	10,5	9/11,2	-40 to +75	EN 60730	IP67 steel/SS	400405-117	400405-142	04
NF/WSNF	55	23	10,5	-	(-60) ⁽⁷⁾ -40 to +25/40/60	II2G Ex d IIC Gb T6/T5/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	400405-117	-	02
NF/WSNF	-	-	-	9/11,2	(-60) ⁽⁷⁾ -40 to +40/60/75	II2G Ex d IIC Gb T6/T5/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	-	400405-142	02
EM/WSEM	55	23	10,5	9/11,2	-40 to +40	II2G Ex e mb IIC Gb T3, II2D Ex tb IIIC Db	IP66/67, steel /SS	400909-117	400913-142	04
PV	55	23	10,5	9/11,2	-40 to +65	II2G Ex mb IIC Gb T3(-)/T4(-), II2D Ex mb IIIC Db	IP67 moulded	- ⁽⁴⁾	- ⁽⁴⁾	05
EF/EV	55	23	10,5	9/11,2	-40 to +54/40	NEMA type 7 and 9	NEMA 4X	238614-058	238714-006	06
Low power (LP)										
SC	1,5	1,5	1,5	1,7/1,7	-40 to +60	EN 60730	IP65 moulded	400925-097	400925-042	07
WP/WS	1,5	1,5	1,5	1,7/1,7	-40 to +60	EN 60730	IP67 steel/SS	400926-097	400926-042	09
LPKF/WSLPKF ⁽⁸⁾	2,4	2,4	2,4	-	-40 to +40/65/80	II2G Ex d IIB+H2 Gb T6/T5/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	- ⁽⁴⁾	- ⁽⁴⁾	13
LPKF/WSLPKF	-	-	-	0,5/0,5 ⁽⁸⁾	-40 to +60	II2G Ex d IIB+H2 Gb T6, II2D Ex tb IIIC Db	IP66/67, alu./SS	- ⁽⁴⁾	- ⁽⁴⁾	13
LPKF/WSLPKF	-	-	-	2,1 ⁽⁹⁾	-40 to +40/80	II2G Ex d IIB+H2 Gb T6/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	- ⁽⁴⁾	- ⁽⁴⁾	13
NF/WSNF	-	-	1,85	-1/8	(-60) ⁽⁷⁾ -40 to +75/80	II2G Ex d IIC Gb T6/T5, II2D Ex tb IIIC Db	IP66/67, alu./SS	- ⁽⁴⁾ (5)	- ⁽⁴⁾	08
EM/WSEM	1,5	1,5	1,5	1,7/1,7	-40 to +40/55	II2G Ex e mb IIC Gb T6/T5, II2D Ex tb IIIC Db	IP66/67, steel /SS	- ⁽⁴⁾	- ⁽⁴⁾	09
PV	-	-	-	1,7/1,7	-40 to +65	II2G Ex mb II T6 / II2D Ex mD 21	IP67 moulded	-	- ⁽⁴⁾	10
EF/EV	-	-	-	1,7/1,7	-40 to +60	NEMA type 7 and 9	NEMA 4X	-	- ⁽⁴⁾	11
LI ⁽³⁾ (6)	-	-	-	0,5/0,5	-40 to +60	II1G Ex ia IIC T6 Ga, II2D Ex t IIIC Db ⁽⁶⁾	IP66/67, alu.	-	- ⁽⁴⁾	14
WSLI ⁽³⁾ (6)	-	-	-	0,5/0,5	-40 to +60	II1G Ex ia IIC T6 Ga, II2D Ex t IIIC Db ⁽⁶⁾	IP66/67, SS	-	- ⁽⁴⁾	14

⁽¹⁾ Temperature range can be limited by sealings

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

⁽³⁾ LI/WSLI: Check the electrical characteristics in the corresponding catalogue pages

⁽⁴⁾ Multiple coil kits are available under ATEX/IECEX, contact us

⁽⁵⁾ (WS)NF: Low Power, 230 V AC does not exist. Maximum voltage in AC is 115 V

⁽⁶⁾ LI/WSLI: Low Power, 24 V DC only (LI: For use in zone 0 locations, see the installation conditions given in the I&M instructions)

⁽⁷⁾ The certified minimum temperature of this operator

⁽⁸⁾ LPKF/WSLPKF: 24 V DC, max. ambient temp. +80°C, contact us (48 V DC = 2,1 W)

⁽⁹⁾ Max. power ratings values: 115 V AC (2,4 W), 48 V DC (2,1 W)

- Not available

ELECTRICAL CONNECTIONS

prefix	connection
SC	Spade plug connector with cable gland EN175301-803A (ISO 4400) for cables with an outer diameter from 6 to 10 mm
WP, WS, EM, WSEM	M20 cable gland for cables with an outer diameter from 7 to 12 mm. With an internal and external facility for an earthing or bonding conductor
NF, WSNF, LPKF, WSLPKF	1/2" NPT threaded cable entry. Enclosures are supplied without cable gland
PV	Moulded-in cable, standard length 2 m
LI, WSLI	1/2" NPT cable gland for cables with an outer diameter from 7 to 12 mm. With an internal and external facility for an earthing or bonding conductor
EF, EV	1/2" NPT conduits, standard length 35 cm

ADDITIONAL OPTIONS

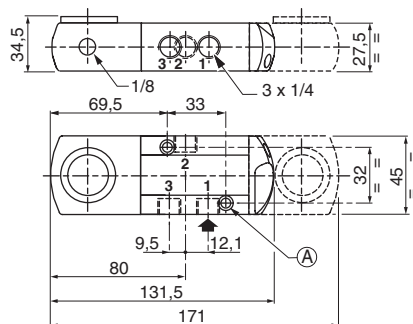
- Valves configured for external pilot air supply, TPL 20547
- Other pipe threads are available on request
- Ex mb (prefix "PV") solenoid can be supplied with various cable lengths
- Compliance with "UL", "CSA" and other local approvals available on request
- 1/2" NPT (prefix "T") and M20 x 1.5 (prefix "ET") conduits (aluminium or 316 SS) available for steel solenoid housing

INSTALLATION

- Multi language installation/maintenance instructions are included with each valve
- The solenoid valves can be mounted in any position without affecting operation
- Do not connect the pressure supply to the exhaust port 3. The "environmentally-protected" construction is not adapted for a "distributing" function or use in NO function. Contact us for functions available in specific versions
- IEC 61508 Functional Safety (suffix SL). Check temperature range of valve body and solenoid for suitability. For probability of failure, contact us
- 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.)
- Threaded pipe connection identifier is: 8 = NPT (ANSI 1.20.3); G = G (ISO 228/1)
- Prefix "NF/WSNF" enclosure is provided with a 1/2" NPT threaded entry hole, M20 x 1,5 (prefix "ET") is optional. Both are supplied without cable gland

DIMENSIONS (mm), WEIGHT (kg)

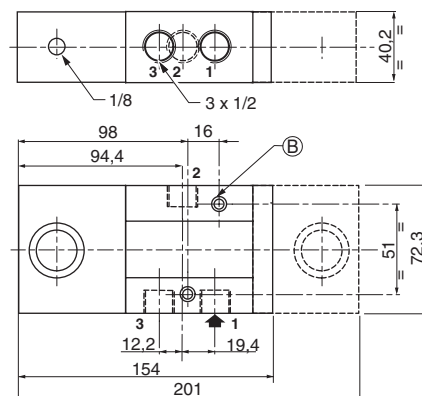
551 Series



2 mounting holes

- (A) 5.3 mm dia.; Spotfacing: 9 mm dia., depth 5 mm
- (B) 6.5 mm dia.; Spotfacing: 11 mm dia., depth 6 mm

553 Series



TYPE 01:

Epoxy moulded
SC: IEC 335 / ISO 4400

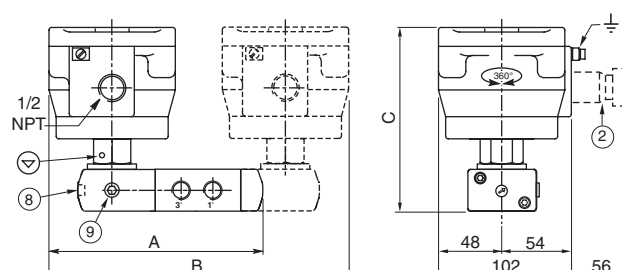
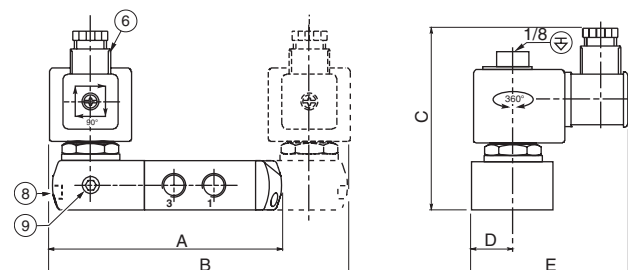
551A413 / 551A414 / 553A413 / 553A414



TYPE 02:

NF / WSNF
Aluminium; epoxy coated / AISI 316 SS
EN/IEC 60079-1 and EN/IEC 60079-31

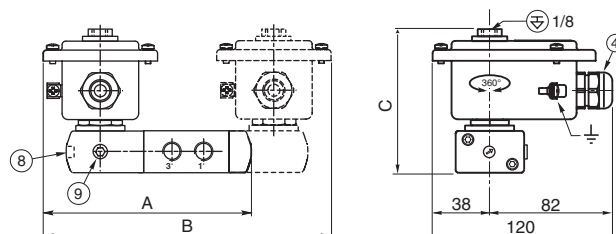
551A413 / 551A414 / 553A413 / 553A414



TYPE 04:

Metal; epoxy coated / AISI 316 SS
WP / WS: IEC 335
EM / WSEM: EN/IEC 60079-7 +18 + 31

551A413 / 551A414 / 553A413 / 553A414

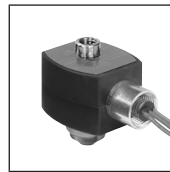
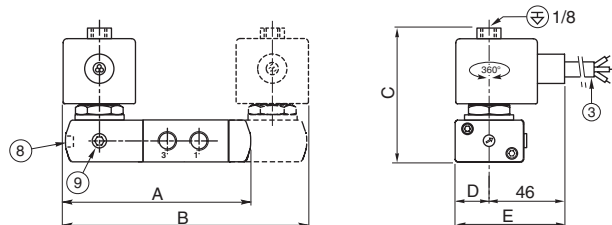


DIMENSIONS (mm), WEIGHT (kg)



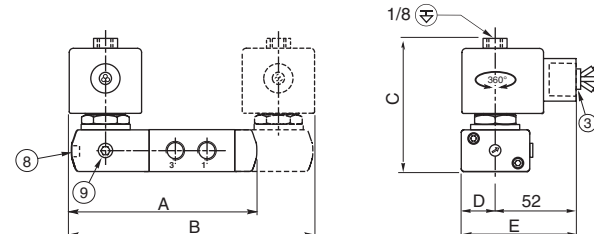
TYPE 05:
Epoxy encapsulated
PV: EN/IEC 60079-18

551A413 / 551A414 / 553A413 / 553A414



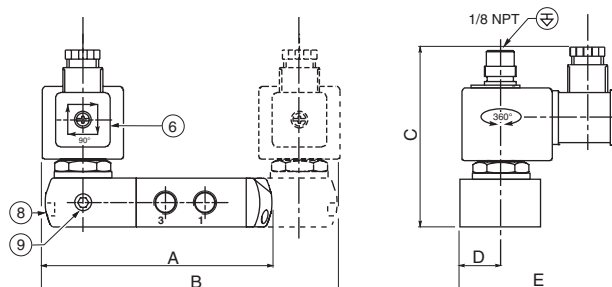
TYPE 06:
Epoxy encapsulated
EF/EV: NEMA type 7, 9 / ICS-6 ANSI
NOTE: applicable to solenoid only

551G413 / 551G414 / 553G413 / 553G414



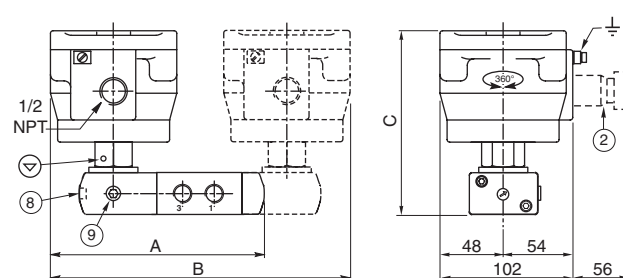
TYPE 07:
Epoxy moulded
SC: IEC 335 / ISO 4400

551A313 / 551A314 / 553A313 / 553A314



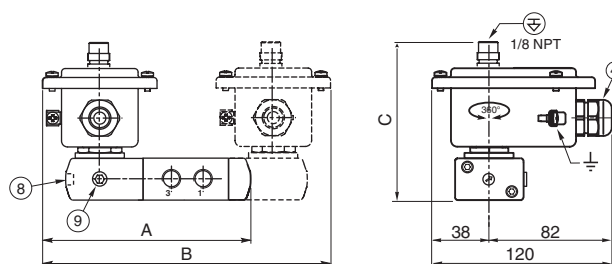
TYPE 08:
NF / WSNF
Aluminium; epoxy coated / AISI 316 SS
EN/IEC 60079-1 and EN/IEC 60079-31

551A313 / 551A314 / 553A313 / 553A314



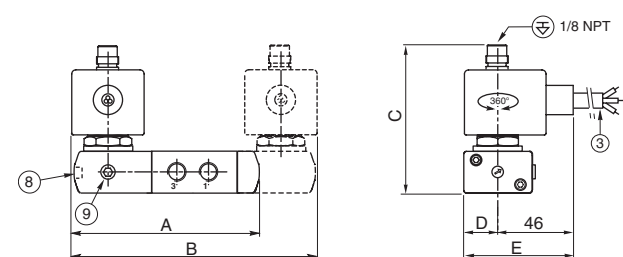
TYPE 09:
Metal; epoxy coated / AISI 316 SS
WP / WS: IEC 335
EM / WSEM: EN/IEC 60079-7 +18 + 31

551A313 / 551A314 / 553A313 / 553A314



TYPE 10:
Epoxy encapsulated
PV: EN/IEC 60079-18

551A313 / 551A314 / 553A313 / 553A314



DIMENSIONS (mm), WEIGHT (kg)



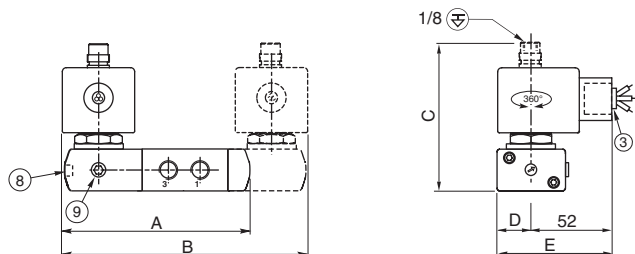
TYPE 11:

Epoxy encapsulated

EF/EV: NEMA type 7, 9 / ICS-6 ANSI

NOTE: applicable to solenoid only

551G313 / 551G314 / 553G313 / 553G314



TYPE 13:

Aluminium, cataphoresis black painting / AISI 316L SS

LPKF/WSLPKF: EN/IEC 60079-1, 60079-31

551A313 / 551A314 / 553A313 / 553A314

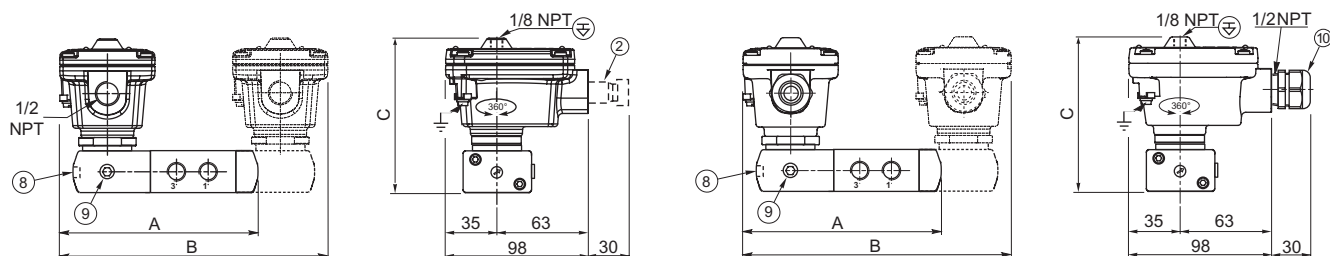


TYPE 14:

Aluminium, cataphoresis black painting / AISI 316L SS

LI / WSLI : EN/IEC 60079-11, 60079-31

551A313 / 551A314 / 553A313 / 553A314



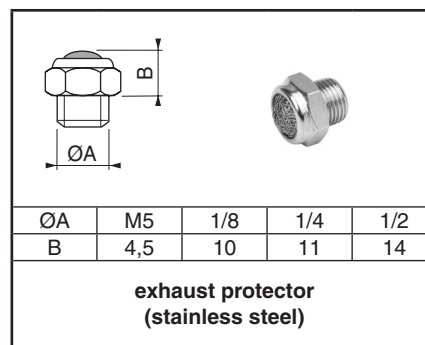
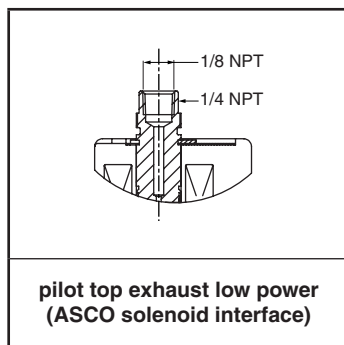
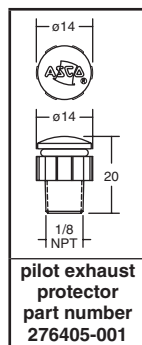
DIMENSIONS (mm), WEIGHT (kg)

type	prefix option	power level	551					553					weight ⁽¹⁾			
			A	B	C	D	E	A	B	C	D	E	monostable		bistable	
01	SC	basic power	132	172	103	22,5	86,5	154	201	108,4	36,5	101	1,19	2,68	1,95	4,01
02	NF	basic power	158	224	142	-	-	198,8	290,6	147,5	-	-	2,34	3,83	4,05	6,11
02	WSNF	basic power	158	224	142	-	-	198,8	290,6	147,5	-	-	3,64	5,14	6,65	8,71
04	WP / WS / EM / WSEM	basic power	148	204	103	-	-	170,7	234,3	108,7	-	-	1,62	3,12	2,61	4,66
05	PV	basic power	132	172	88	22,5	68,5	154	201	93,7	36,5	82,5	1,29	2,78	1,95	4,01
06	EF / EV	basic power	133	173	86	22,5	74,5	157,5	208	91,2	36,5	88,5	1,29	2,78	1,95	4,01
07	SC	low power	133	173	102	22,5	88,0	155	203	107,2	36,5	102	1,19	2,68	1,95	4,01
08	NF	low power	158	224	142	-	-	198,8	290,5	147,5	-	-	2,34	3,83	4,05	6,11
08	WSNF	low power	158	224	142	-	-	198,8	290,5	147,5	-	-	3,64	5,14	6,65	8,71
09	WP / WS / EM / WSEM	low power	148	204	102	-	-	170,7	234,3	107,9	-	-	1,62	3,12	2,61	4,66
10	PV	low power	132	172	101	22,5	68,5	154	201	106,2	36,5	82,5	1,29	2,78	1,95	4,01
11	EF / EV	low power	133	173	101	22,5	74,5	157,5	208	106,2	36,5	88,5	1,29	2,78	1,95	4,01
13	LPKF	low power	141	192	113	-	-	166	225	118,7	-	-	1,33	4,10	2,23	4,31
13	WSLPKF	low power	141	192	113	-	-	166	225	118,7	-	-	1,94	2,77	3,43	5,38
14	LI	low power	141	192	113	-	-	166	225	118,7	-	-	1,34	4,11	2,24	4,32
14	WSLI	low power	141	192	113	-	-	166	225	118,7	-	-	1,95	2,78	3,44	5,39

⁽¹⁾ Incl. coil(s) and connector(s)

- ② Ex d certified cable gland (on request)
- ③ Three-core cable, length 2 m)
- ④ Cable gland for unarmoured cable with 7 to 12 mm dia. sheath
- ⑥ Connector rotatable by 90° increments (cable Ø 6 - 10 mm)
- ⑧ Manual operator location, suffix MO
- ⑨ External pilot air supply, 1/8 pipe size
- ⑩ Cable gland for unarmoured cable with 7 to 12 mm dia. sheath
- ⊕ Connectable pilot exhaust port
- ⊖ Non-connectable pilot exhaust port

ACCESSORIES





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