

ASCO™ Solenoid Valves

single/dual solenoid - pilot operated - stainless steel 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 solenoid operated spool valves have threaded port connections and "NAMUR" 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)
- 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 (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	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
Interface plates	Glass fibre filled PA
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 ring (Low power)	PTFE (NF/WSNF solenoids only)

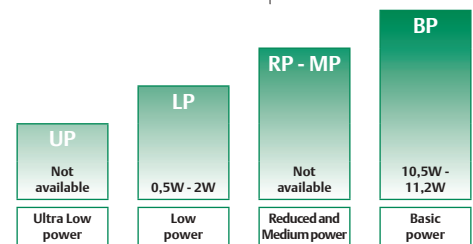
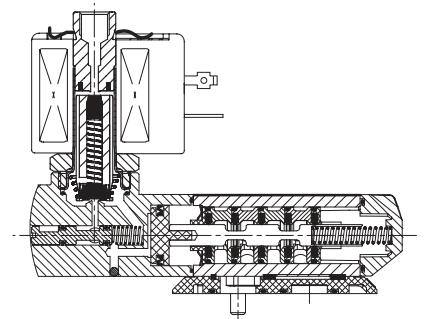
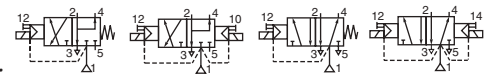
Specifications

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)			power level	prefix optional solenoids										basic catalogue number
				min. ⁽²⁾	max. (PS)			NEMA	ATEX / IECEx						IP65			
					air (★)				7 & 9	Ex db		Ex eb mb	Ex mb	Ex ia		-		
(✱)	(mm)	(m³/h)	(l/min)		~	=	~/=	EF	LPKF	NF	-	EM	PV	(WS)LI	-	SC		
3/2 NC - 5/2 - Solenoid air pilot operated - spring return (monostable)																		
1/4	6	0,60	10	0/2	10	10	BP	-	-	●	-	●	●	-	-	●	❖551A409 ⁽¹⁾	
1/4	6	0,60	10	0/2	10	10	BP	●	-	-	-	-	-	-	-	-	❖551G409 ⁽¹⁾	
1/4	6	0,60	10	0/2	10	10	LP	-	●	●	-	●	○	○	-	●	❖551A309 ⁽¹⁾	
1/4	6	0,60	10	0/2	10	10	LP	○	-	-	-	-	-	-	-	-	❖551G309 ⁽¹⁾	
1/2	13	2,49	41,5	0/2	10	10	BP	-	-	●	-	●	●	-	-	●	❖553A409 ⁽¹⁾	
1/2	13	2,49	41,5	0/2	10	10	BP	●	-	-	-	-	-	-	-	-	❖553G409 ⁽¹⁾	
1/2	13	2,49	41,5	0/2	10	10	LP	-	●	●	-	●	○	○	-	●	❖553A309 ⁽¹⁾	
1/2	13	2,49	41,5	0/2	10	10	LP	○	-	-	-	-	-	-	-	-	❖553G309 ⁽¹⁾	
3/2 NC - 5/2 - Solenoid air pilot operated and return (bistable)																		
1/4	6	0,60	10	0/2	10	10	BP	-	-	●	-	●	●	-	-	●	❖551A410	
1/4	6	0,60	10	0/2	10	10	BP	●	-	-	-	-	-	-	-	-	❖551G410	
1/4	6	0,60	10	0/2	10	10	LP	-	●	●	-	●	○	○	-	●	❖551A310	
1/4	6	0,60	10	0/2	10	10	LP	○	-	-	-	-	-	-	-	-	❖551G310	
1/2	13	2,49	41,5	0/2	10	10	BP	-	-	●	-	●	●	-	-	●	❖553A410	
1/2	13	2,49	41,5	0/2	10	10	BP	●	-	-	-	-	-	-	-	-	❖553G410	
1/2	13	2,49	41,5	0/2	10	10	LP	-	●	●	-	●	○	○	-	●	❖553A310	
1/2	13	2,49	41,5	0/2	10	10	LP	○	-	-	-	-	-	-	-	-	❖553G310	

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

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



POWER LEVELS - cold electrical holding values (watt)

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

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 and -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 IP66/IP67 enclosure (EN/IEC 60079-11+31)*	○	-	-	-
W	S						Waterproof IP67 - 316 SS enclosure	●	-	-	●
W	S	L	P	K	F		Flameproof 316L SS (EN/IEC 60079-1, 60079-31)*	●	-	-	-
W	S	E	M				Waterproof IP66/67 - 316 SS enclosure (EN/IEC 60079-0+7+18+31)*	●	-	-	●
W	S			L	I		I.S. with 316L SS IP66/IP67 enclosure (EN/IEC 60079-11+31)*	○	-	-	-
W	S	N	F				Flameproof 316L 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 basic catalogue number, including pipe thread identification letter. Refer to the specifications table on page: 1

Example: G551A409

STEP 2

Select prefix (combination). Refer to the specifications table and the prefix table, respect the indicated power level.

Example: EM

STEP 3

Select suffix (combination) if required. Refer to the suffix table, respect the indicated power level. **Example: MO**

STEP 4

Select voltage. Refer to standard voltages on page: 3

Example: 230V / 50Hz

STEP 5

Final catalogue / ordering number.

Example:

EM G551A409MO 230 V / 50 Hz

Options & Accessories

series	pipe size	exhaust protector (stainless steel)		
		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/IECEx valves using these solenoids are approved according to EN 13463-1 (non electrical)

⁽¹⁾ Provided with "SL" suffix

⁽²⁾ Not to use with MO suffix

Ordering examples valves:

SC	G	551 A 409	230V / 50 Hz
SC	G	553 A 409	230V / 50 Hz
SC	G	551 A 409 SL	230V / 50 Hz
SC	G	551 A 410 MO	230V / 50 Hz
SCHT	8	551 A 410 MO	230V / 50 Hz
SC	8	551 A 409	230V / 50 Hz
WSPKF	G	551 A 309 MO	24V / DC
LPKF	G	551 A 309 MO	24V / DC
WSLI	G	551 A 309	24V / DC
EM	8	551 A 409 MO	230V / 50 Hz
EF	G	551 H 409 MO	240V / 60 Hz

⁽³⁾ Prefix EF and EV should always be used in conjunction with change letter H 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

F

Electrical safety

IEC 335

Standard voltages

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 ~	holding ~		hot/cold =				~	=	
	(VA)	(VA)	(W)	(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 to +25/40/60	II2G Ex db IIC Gb T6/T5/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	400405-117	-	02
NF/WSNF	-	-	-	9/11,2	-60 to +40/60/75	II2G Ex db 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 eb 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 +52/40	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 ⁽⁷⁾	2,4	2,4	2,4 ⁽⁸⁾	-	-40 to +40/65/80	II2G Ex db IIB+H2 Gb T6/T5/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	- ⁽⁴⁾	- ⁽⁴⁾	13
LPKF/WSLPKF	-	-	-	0,5/0,5 ⁽⁷⁾	-40 to +60	II2G Ex db IIB+H2 Gb T6, II2D Ex tb IIIC Db	IP66/67, alu./SS	- ⁽⁴⁾	- ⁽⁴⁾	13
LPKF/WSLPKF	-	-	-	2,1 ⁽⁸⁾	-40 to +40/80	II2G Ex db IIB+H2 Gb T6/T4, II2D Ex tb IIIC Db	IP66/67, alu./SS	- ⁽⁴⁾	- ⁽⁴⁾	13
NF/WSNF	1,85	1,85	1,85	1,5/1,8	-60 to +75/80	II2G Ex db 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 eb 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 IIC Gb T6, II2D Ex mb IIIC Db	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 tb 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 tb IIIC Db ⁽⁶⁾	IP66/67, SS	-	- ⁽⁴⁾	14

prefix option	safety parameters				
	U _i (DC)	I _i	P _i	L _i	C _i
	(V)	(mA)	(W)	(H)	(μF)
Low Power (LP)					
LI/WSLI	32	500	1,5	0	0

⁽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⁾ Only available in 24, 48 and 110V/DC

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

⁽⁸⁾ 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 plastics cable gland for cables with an outer diameter from 7 to 12 mm.
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 threaded cable entry. Enclosures are supplied without cable gland
EF, EV	1/2" NPT conduits, standard length 35 cm

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

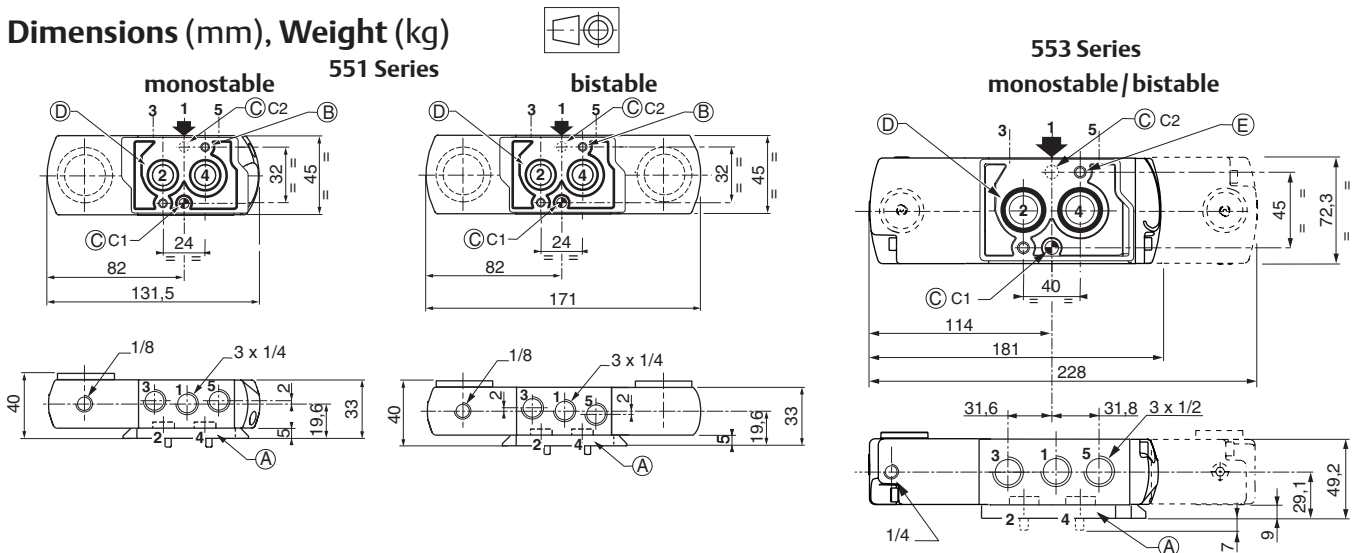
Additional options

- Valves configured for external pilot air supply, TPL 20547
- Other pipe threads are available on request
- Ex mb/mD (prefix "PV") solenoid can be supplied with various cable lengths
- Compliance with "UL", "CSA" and other local approvals 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 solenoid 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
- Do not connect the pressure supply to the exhaust port 3. The "environmentally-protected" construction is not adapted for NO function. Contact us for function available in specific version
- Dowel pin (if necessary), bolts and gaskets are standard supplied
- 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)
- Ex db Prefix "NF/WSNF" enclosure is provided with a 1/2" NPT threaded entry hole, M20 x 1,5 (prefix "ET") is optional. These are supplied without cable gland
- To comply with IEC 61508 (SIL) the valves must be provided with a specific exhaust protector (see following pages)

Dimensions (mm), Weight (kg)



- (A) Interface plate
- (B) 2 mounting holes: 5,3 mm dia. (Spot-facing: 9 mm dia., depth 5 mm); 2 screws (CHc M5 x 35), engaged length: 7 mm
- (C) One 5 mm dia. hole for dowel pin:
- in position C1: 3/2 NC function plate
- in position C2: 5/2 function plate
- (D) 2 O-ring seals (supplied)
- (E) 2 mounting holes:
6,5 mm dia. (Spot-facing: 11 mm dia., depth 6 mm);
2 screws (CHc M6 x 50), engaged length: 7



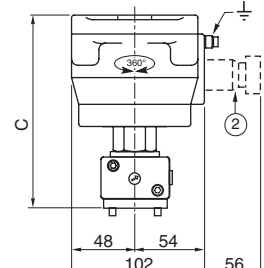
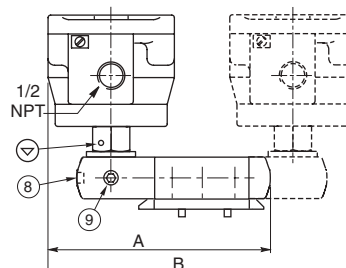
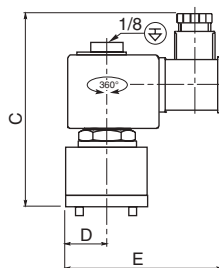
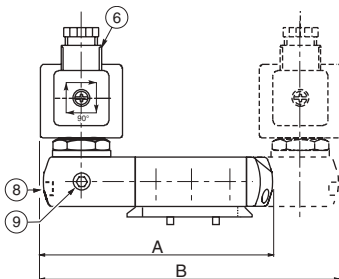
TYPE 01:
Epoxy moulded
SC: IEC 335 / ISO 4400

551A409 / 551A410 / 553A409 / 553A410



TYPE 02:
Aluminium, epoxy coated / AISI 316L SS
NF / WSNF: EN/IEC 60079-1, 60079-31

551A409 / 551A410 / 553A409 / 553A410

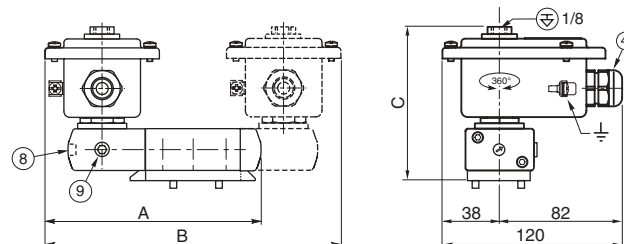


Dimensions (mm), Weight (kg)



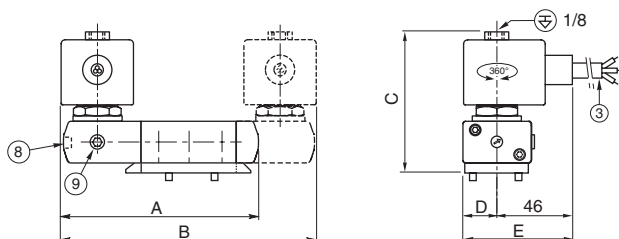
TYPE 04:
Metal, epoxy coated / AISI 316L SS
WP / WS: IEC 335
EM / WSEM: EN/IEC 60079-7+18+31

551A409 / 551A410 / 553A409 / 553A410



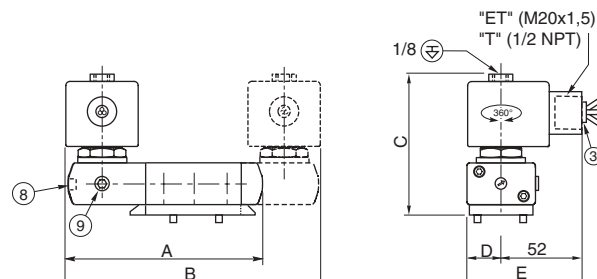
TYPE 05:
Epoxy encapsulated
PV: EN/IEC 60079-18

551A409 / 551A410 / 553A409 / 553A410



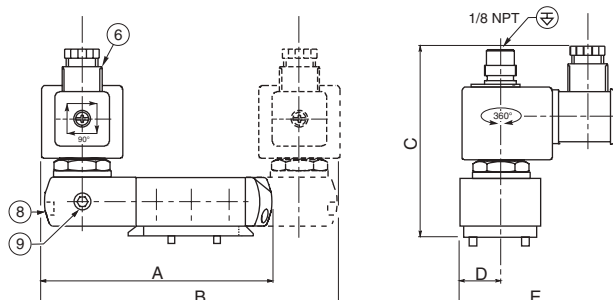
TYPE 06:
Epoxy encapsulated
EF and EV: NEMA type 7, 9 / ICS-6 ANSI

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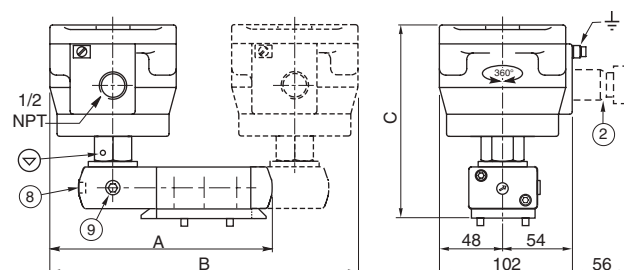
TYPE 07:
Epoxy moulded
SC: IEC 335 / ISO 4400

551A309 / 551A310 / 553A309 / 553A310



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

551A309 / 551A310 / 553A309 / 553A310



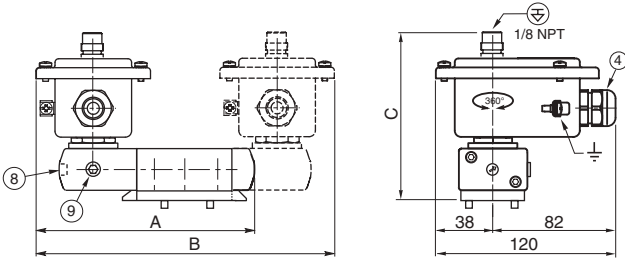
NAMUR - 3/2 NC - 5/2 SERIES 551 - 553

Dimensions (mm), Weight (kg)



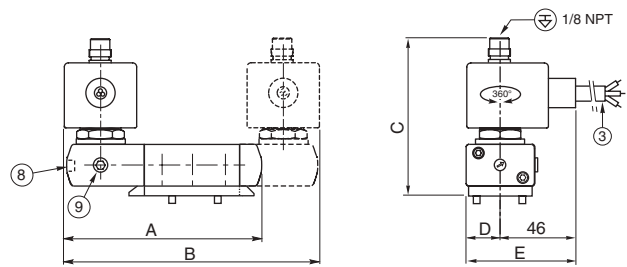
TYPE 09:
Metal, epoxy coated / AISI 316L SS
WP / WS: IEC 335
EM / WSEM: EN/IEC 60079-7+18+31

551A309 / 551A310 / 553A309 / 553A310



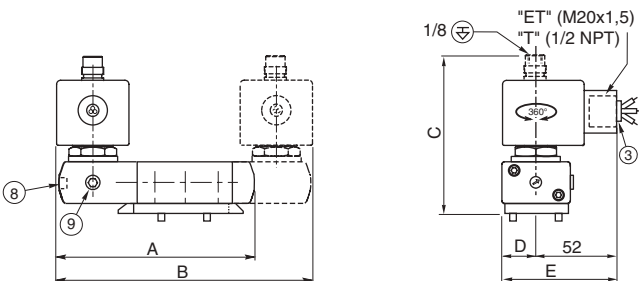
TYPE 10:
Epoxy encapsulated
PV: EN/IEC 60079-18

551A309 / 551A310 / 553A309 / 553A310



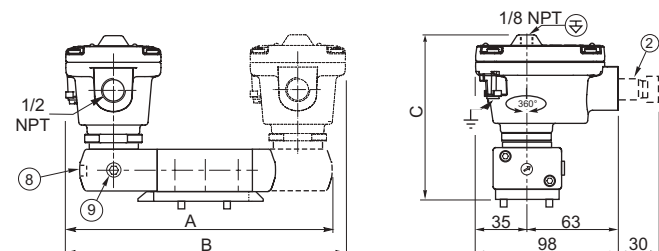
TYPE 11:
Epoxy encapsulated
EF and EV: NEMA type 7, 9 / ICS-6 ANSI

551G309 / 551G310 / 553G309 / 553G310



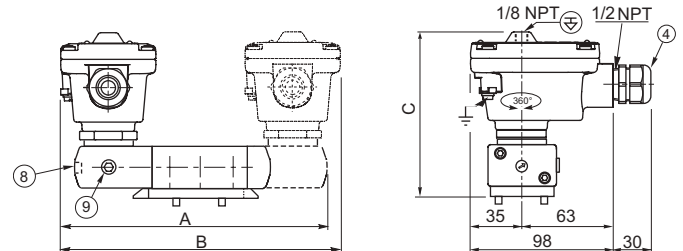
TYPE 13:
Aluminium, cataphoresis black painting / AISI 316L SS
LPKF/WSLPKF: EN/IEC 60079-1, 60079-31

551A309 / 551A310 / 553A309 / 553A310



TYPE 14:
Aluminium, cataphoresis black painting / AISI 316L SS
LI / WSLI: EN/IEC 60079-11, 60079-31

551A309 / 551A310 / 553A309 / 553A310



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	
													551	553	551	553
01	SC	BP	132	172	108	22,5	87	181	229	117	36,15	101	1,54	1,69	2,30	4,51
02	NF	BP	159	225	148	-	-	209	282	157	-	-	2,69	4,8	4,40	6,61
02	WSNF	BP	159	225	148	-	-	209	282	157	-	-	3,99	6,1	7,00	9,21
04	WP/WS/EM/WSEM	BP	148	205	108	-	-	198	262	117	-	-	1,97	2,12	2,90	5,16
05	PV	BP	132	172	93	22,5	69	181	229	102	36,15	83	1,64	1,79	2,30	4,51
06	EF / EV	BP	132	172	90,5	22,5	75	181	229	100	36,15	89	1,64	1,79	2,30	4,51
07	SC	LP	132	172	107	22,5	88	181	229	116	36,15	102	1,54	1,69	2,30	4,51
08	NF	LP	158	225	148	-	-	209	282	157	-	-	2,69	4,8	4,40	6,61
08	WSNF	LP	158	225	148	-	-	209	282	157	-	-	3,99	6,1	7,00	9,21
09	WP / WS / EM / WSEM	LP	148	205	108	-	-	198	262	117	-	-	1,97	2,12	2,96	5,16
10	PV	LP	132	172	106	22,5	69	181	229	115	36,15	83	1,64	1,79	2,30	4,51
11	EF / EV	LP	132	172	106	22,5	75	181	229	115	36,15	89	1,64	1,79	2,30	4,51
13	LPKF	LP	141	192	118	-	-	193	252	131,5	-	-	1,68	5,09	2,58	4,81
13	WSLPKF	LP	141	192	118	-	-	193	252	131,5	-	-	2,29	3,76	3,78	5,88
14	LI	LP	141	192	118	-	-	193	252	131,5	-	-	1,69	5,10	2,59	4,82
14	WSLI	LP	141	192	118	-	-	193	252	131,5	-	-	2,30	3,77	3,79	5,89

⁽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
- ⊕ Connectable pilot exhaust port
- ▽ Non-connectable pilot exhaust port

Accessories

