

ASCO™ Solenoid Valves

single/dual solenoid - pilot operated
brass body - "NAMUR" style - 1/4 tapped

3/2 NC - 5/2
SERIES
551

Features

- The monostable spool valves in conformity with IEC 61508 Standard (2010 route 2_{HL} version) have TÜV 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
Flow (Qv at 6 bar)

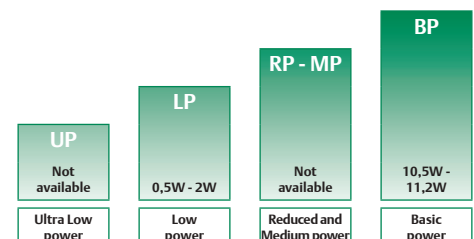
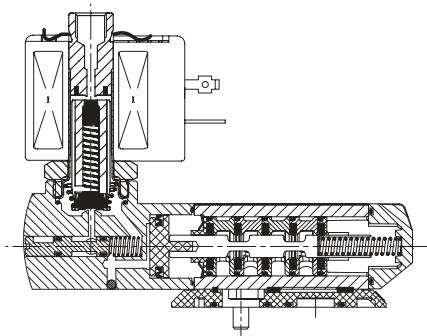
2 - 10,4 bar [1 bar = 100 kPa]
700 l/min (ANR)

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

Materials in contact with fluid

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

Body, end covers	Brass
Spool valve internal parts	Brass, stainless steel, POM
Interface plates	Glass fibre filled PA
Core tube	Stainless steel
Core and plugnut	Stainless steel
Core spring	Stainless steel
Seals & discs	NBR
Top disc	PA
Disc holder	POM
Cartridge (low power)	Welded, packless AISI 430
Seat	Brass
Seat insert	POM
Shading coil	Copper
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		ATEX / IECEx					IP65		
					air (★)			7 & 9	Ex db	Ex eb mb	Ex mb	Ex ia			
					~			=	~/=	EF	LPKF	NF		EM	
(✧)	(mm)	(m³/h)	(l/min)												
3/2 NC - 5/2 - Solenoid air pilot operated - spring return (monostable)															
1/4	6	0,75	12,5	0 / 2	10	10	BP	-	-	●	●	●	-	●	✧551A403 ⁽¹⁾
1/4	6	0,75	12,5	0 / 2	10	10	BP	●	-	-	-	-	-	-	✧551G403 ⁽¹⁾
1/4	6	0,75	12,5	0 / 2	10	10	LP	-	●	●	●	○	○	●	✧551A303 ⁽¹⁾
1/4	6	0,75	12,5	0 / 2	10	10	LP	○	-	-	-	-	-	-	✧551G303 ⁽¹⁾
3/2 NC - 5/2 - Solenoid air pilot operated and return (bistable)															
1/4	6	0,75	12,5	0 / 2	10	10	BP	-	-	●	●	●	-	●	✧551A404
1/4	6	0,75	12,5	0 / 2	10	10	BP	●	-	-	-	-	-	-	✧551G404
1/4	6	0,75	12,5	0 / 2	10	10	LP	-	●	●	●	○	○	●	✧551A304
1/4	6	0,75	12,5	0 / 2	10	10	LP	○	-	-	-	-	-	-	✧551G304

❖ 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.

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: G551A403

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 G551A403MO 230 V / 50 Hz

Options & Accessories

series	pipe size	exhaust protector (stainless steel)
551	G 1/8	34600418 ⁽¹⁾
	NPT 1/8	34600482 ⁽¹⁾
	M5	34600484 ⁽¹⁾

● 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⁾ Provided with "SL" suffix

⁽²⁾ Not to use with MO suffix

Ordering examples valves:

SC	G	551 A 403	230V / 50 Hz
SC	G	551 A 403 SL	230V / 50 Hz
SC	G	551 A 404 MO	230V / 50 Hz
SCHT	8	551 A 404 MO	230V / 50 Hz
WSLPKF	G	551 A 303 MO	24V / DC
LPKF	G	551 A 303 MO	24V / DC
LPKF	G	551 A 303 MO	230V / 50 Hz
LI	G	551 A 307	24V / DC
WSLI	G	551 A 308 MO	24V / DC
LPKF	G	551 A 303 MO	24V / DC
EM	8	551 A 403 MO	230V / 50 Hz
EF	G	551 H 403 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

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**

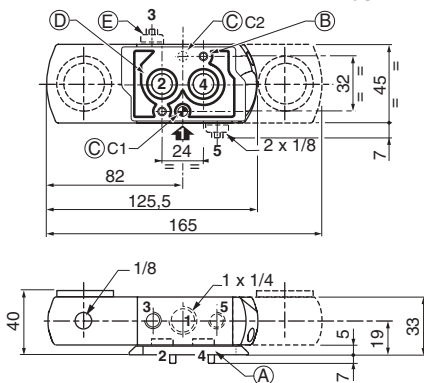
Installation

- 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 interface plate with NAMUR mating surface. Depending on function (3/2 NC or 5/2), position the plate 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)



All types



- (A) Interface plate
- (B) 2 mounting holes: 5,3 mm dia. (Spotfacing: 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)



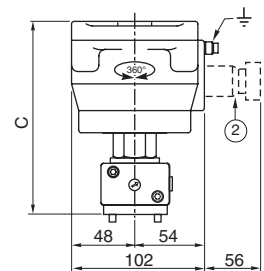
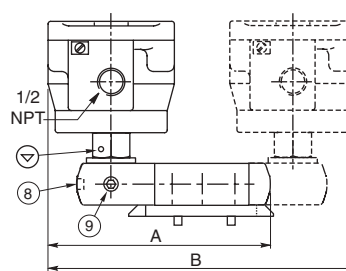
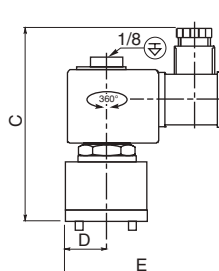
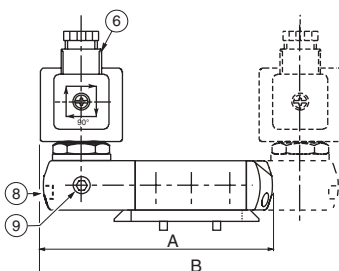
TYPE 01:
Epoxy moulded
SC: IEC 335 / ISO 4400

551A403 / 551A404



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

551A403 / 551A404

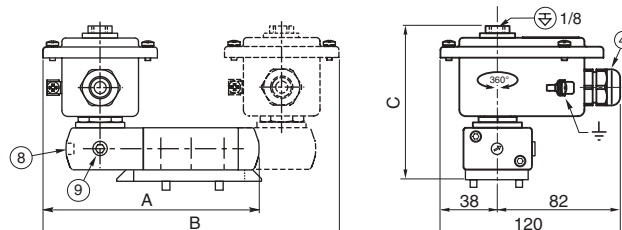


Dimensions (mm), Weight (kg)



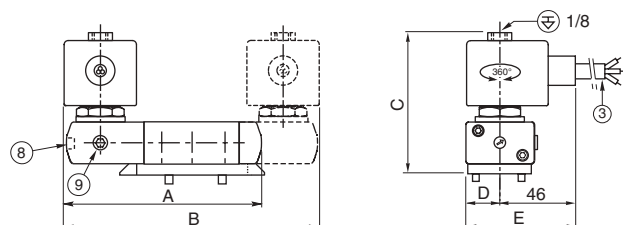
TYPE 04:
Metal, epoxy coated / AISI 316L SS
WP / WS: IEC 335
EM / WSEM: EN/IEC 60079-7+18+31

551A403 / 551A404



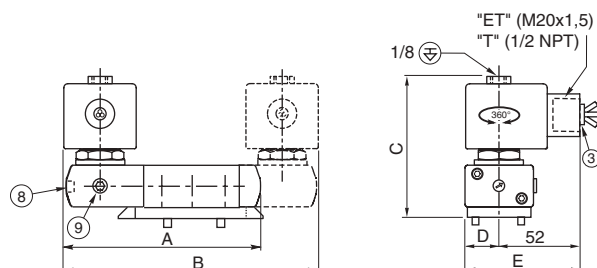
TYPE 05:
Epoxy encapsulated
PV: EN/IEC 60079-18

551A403 / 551A404



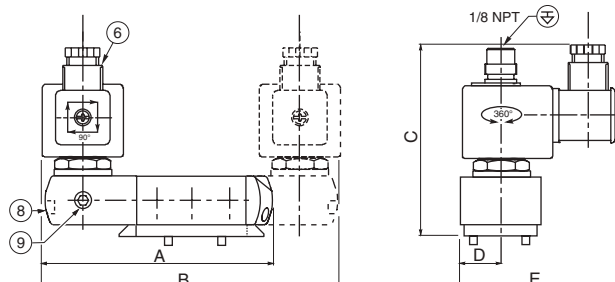
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Epoxy encapsulated
EF and EV: NEMA type 7, 9 / ICS-6 ANSI

551G403 / 551G404



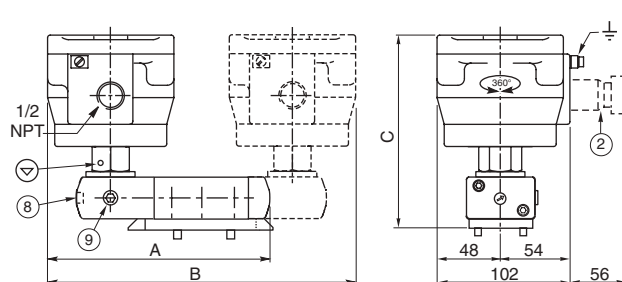
TYPE 07:
Epoxy moulded
SC: IEC 335 / ISO 4400

551A303 / 551A304



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

551A303 / 551A304



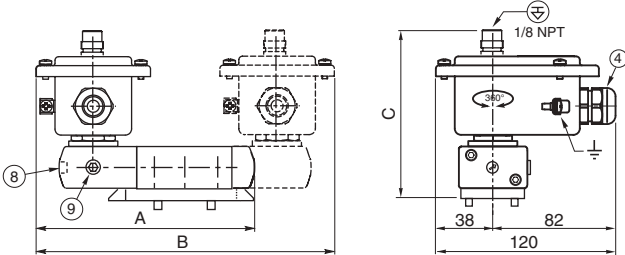
Dimensions (mm), Weight (kg)



551A303 / 551A304

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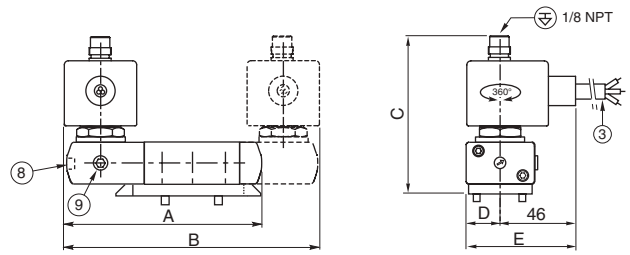
Metal, epoxy coated / AISI 316L SS
WP / WS: IEC 335
EM / WSEM: EN/IEC 60079-7+18+31



551A303 / 551A304

TYPE 10:

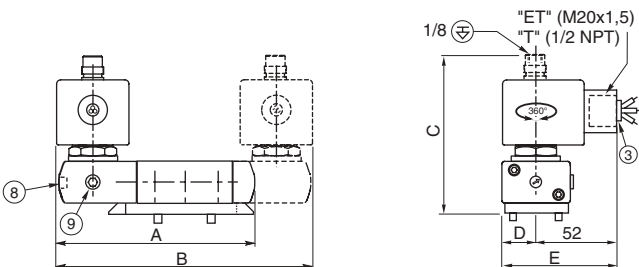
Epoxy encapsulated
PV: EN/IEC 60079-18



551G303 / 551G304

TYPE 11:

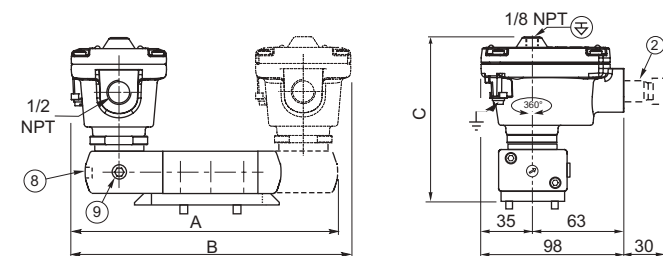
Epoxy encapsulated
EF and EV: NEMA type 7, 9 / ICS-6 ANSI



551A303 / 551A304

TYPE 13:

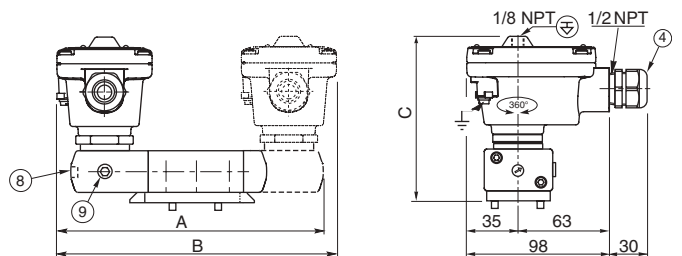
Aluminium, cataphoresis black painting / AISI 316L SS
LPKF/WSLPKF: EN/IEC 60079-1, 60079-31



551A303 / 551A304

TYPE 14:

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



Dimensions (mm), Weight (kg)

type	prefix/option	power level	A	B	C	D	E	weight ⁽¹⁾	
								monostable	bistable
01	SC	BP	144	182	107,7	22,5	86,5	1,45	1,96
02	NF	BP	170	236	146,8	-	-	2,49	4,25
02	WSNF	BP	170	236	146,8	-	-	3,79	5,55
04	WP/WS/EM/WSEM	BP	160	216	108	-	-	1,62	2,23
05	PV	BP	144	184	93	22,5	67,5	1,46	2,19
06	EF / EV	BP	144,5	185	90,5	22,5	74,5	1,47	2,20
07	SC	LP	144,5	185	106,5	22,5	87,5	1,45	2,41
08	NF	LP	170	236	146,8	-	-	2,49	4,25
08	WSNF	LP	170	236	146,8	-	-	3,79	5,55
09	WP / WS / EM / WSEM	LP	160	216	107,2	-	-	1,69	2,23
10	PV	LP	144	184	105,5	22,5	67,5	1,67	2,40
11	EF / EV	LP	144,5	185	105,5	22,5	74,5	1,66	2,39
13	LPKF	LP	135	186	118	-	-	1,00	1,65
13	WSLPKF	LP	135	186	118	-	-	1,61	2,85
14	LI	LP	135	186	118	-	-	1,01	1,66
14	WSLI	LP	135	186	118	-	-	1,62	2,86

⁽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

