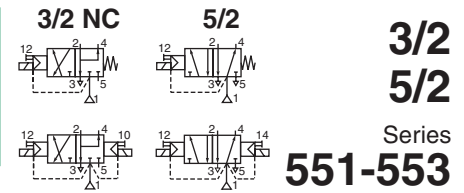




SOLENOID VALVES

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



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 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 EC Directives



GENERAL

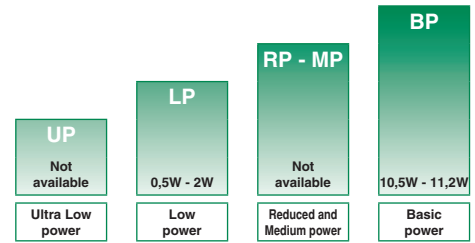
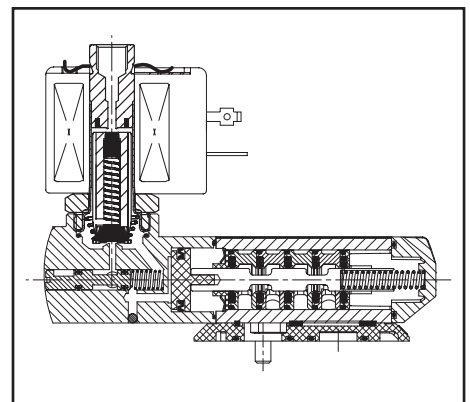
Differential pressure 2 - 10,4 bar [1 bar = 100 kPa]
Flow (Qv at 6 bar) 1/4 = 700 l/min (ANR)
1/2 = 3000 l/min

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-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)



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 (*)	~			=	~/=	EF	LPKF	NF		-	EM	PV	
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 **B** 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 IP67 - Metal enclosure (EN/IEC 60079-7+18, 61241-1)*	●	-	-	●
		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, 61241-18)*	○	-	-	●
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 IP67 - 316 SS enclosure (EN/IEC 60079-7+18, 61241-1)*	●	-	-	●
W	S			L	I		I.S., 316L SS, IP67 ATEX-IECEX (EN/IEC 60079-11 / 60079-31) *	○	-	-	-
W	S	N	F				Flameproof - 316L SS (EN/IEC 60079-1, 60079-31)*	●	-	-	●
							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⁾	○/●	-	-	●

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	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
WSLPKF	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	G	409	MO 240V / 60 Hz

prefix ⁽³⁾ — pipe thread — basic number ⁽³⁾ — voltage — suffix

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

80114GB-2014/R02

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⁽⁶⁾/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)	
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 T6/T5/T4, II2D Ex t	IP67 alu./SS	400405-117	-	02
NF/WSNF	-	-	-	9/11,2	(-60) ⁽⁷⁾ -40 to +40/60/75	II2G Ex d IIC T6/T5/T4, II2D Ex t	IP67 alu./SS	-	400405-142	02
EM/WSEM	55	23	10,5	9/11,2	-40 to +40	II2G Ex e mb II T3, II2D Ex tD	IP67 steel/SS	400909-117	400913-142	04
PV	55	23	10,5	9/11,2	-40 to +65	II2G Ex mb II T3(-)/T4(=), II2D Ex mD 21	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	0,5/0,5 ⁽⁸⁾	-40 to +60	II2G Ex d IIB+H2 Gb T4/T6, II2D Ex t Db	IP67 alu./SS	- ⁽⁴⁾	- ⁽⁴⁾	13
NF/WSNF	-	-	1,85	- /1,8	(-60) ⁽⁷⁾ -40 to +75/80	II2G Ex d IIC T6/T5, II2D Ex t	IP67 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 II T6/T5, II2D Ex tD	IP67 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⁾	IP67 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⁾	IP67 SS	-	- ⁽⁴⁾	14

prefix option	safety parameters				
	U _i = (DC) (V)	I _i (mA)	P _i (W)	L _i (H)	C _i (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⁾ (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)
- 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

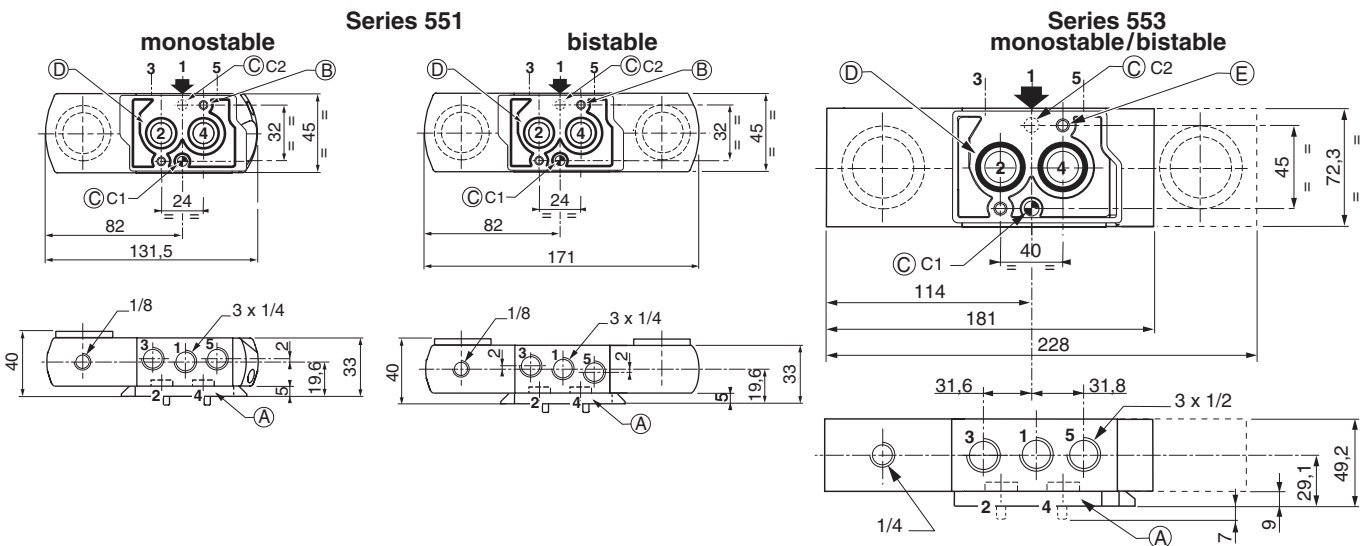
ADDITIONAL OPTIONS

- Valves configured for external pilot air supply, TPL 20547
- Other pipe threads are available on request
- Ex mb/mD (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
- Set of stainless steel mounting screws, catalogue number: **97802212** (series 551)
- Set of two exhaust reducers, G1/8, catalogue number: **88100344** (series 551)

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)
- 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
- To comply with IEC 61508 (SIL) the valves must be provided with a specific exhaust protector (see following pages)

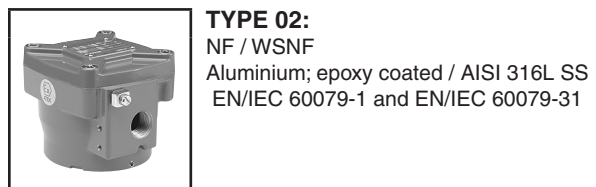
DIMENSIONS (mm), WEIGHT (kg)



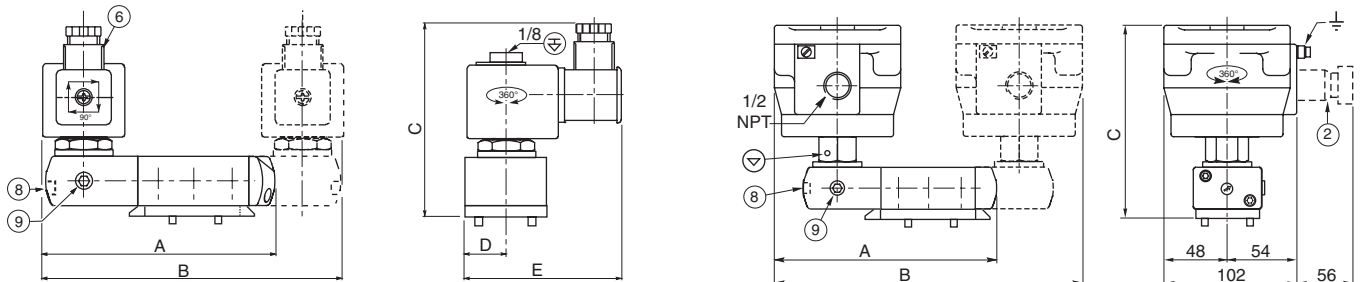
- (A) Interface plates
- (B) 2 mounting holes: 5,3 mm dia. (Spot-facing: 9 mm dia., depth 5 mm); 2 screws (CHc M5 x 35), engaged length: 7 mm
- (C) One 5 mm dia. hole for dowel pin:
 - in position C1: 3/2 NC function plate
 - in position C2: 5/2 function plate
- (D) 2 O-ring seals (supplied)
- (E) 2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



551A409 / 551A410 / 553A409 / 553A410



551A409 / 551A410 / 553A409 / 553A410

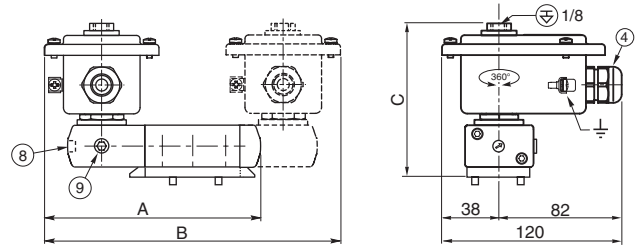


DIMENSIONS (mm), WEIGHT (kg)



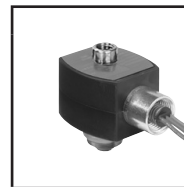
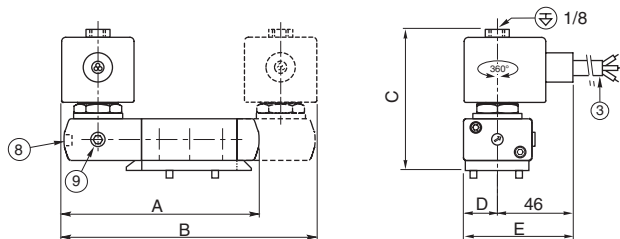
TYPE 04:
 WP / WS
 EM / WSEM
 Steel; epoxy coated / AISI 316 SS
 IEC 335 / EN 60079-7/18 and EN 61241-1

551A409 / 551A410 / 553A409 / 553A410



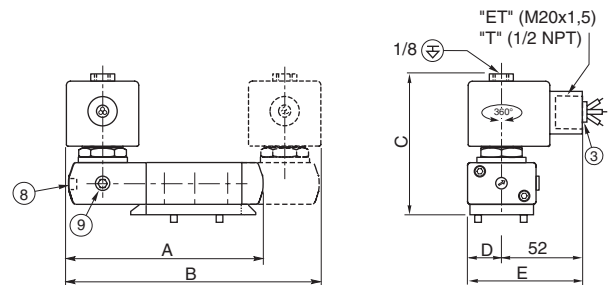
TYPE 05:
 PV
 Epoxy encapsulated
 EN/IEC 60079-18 and EN/IEC 61241-18

551A409 / 551A410 / 553A409 / 553A410



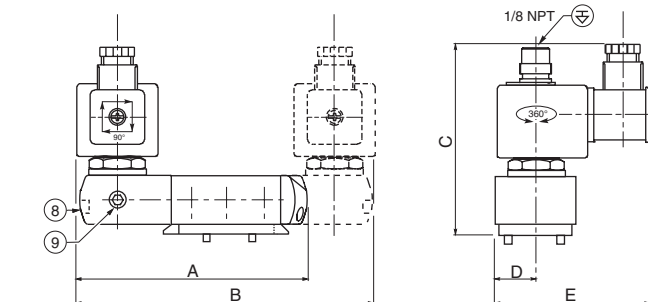
TYPE 06:
 EF and EV: NEMA type 7 and 9
 Epoxy encapsulated
 ICS-6 ANSI
 NOTE: applicable to solenoid only

551G409 / 551G410 / 553G409 / 553G410



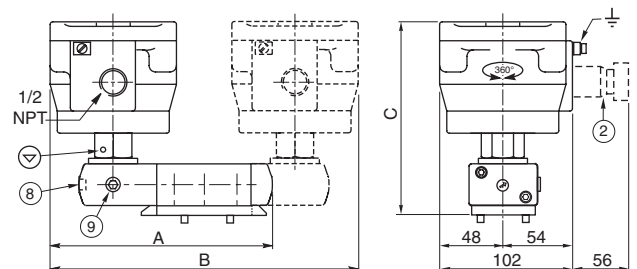
TYPE 07:
 SC
 Epoxy moulded
 IEC 335 / ISO 4400

551A309 / 551A310 / 553A309 / 553A310



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

551A309 / 551A310 / 553A309 / 553A310

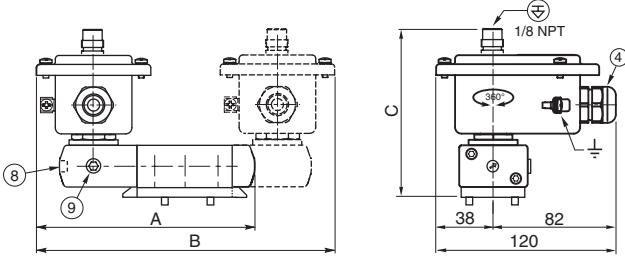


DIMENSIONS (mm), WEIGHT (kg)



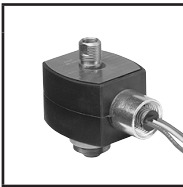
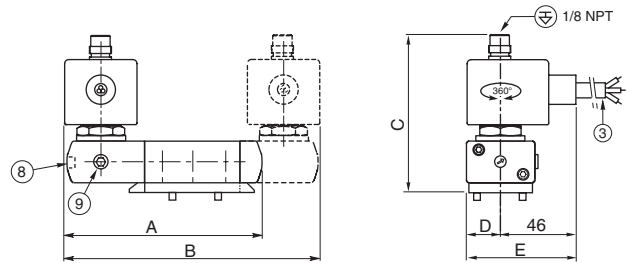
TYPE 09:
 WP / WS
 EM / WSEM
 Steel; epoxy coated / AISI 316 SS
 IEC 335/EN 60079-7/18 and EN 61241-1

551A309 / 551A310 / 553A309 / 553A310



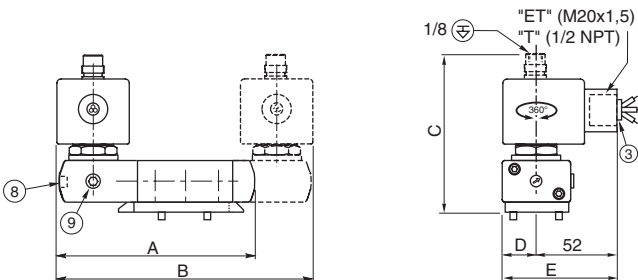
TYPE 10:
 PV
 Epoxy encapsulated
 EN/IEC 60079-18 and EN/IEC 61241-18

551A309 / 551A310 / 553A309 / 553A310



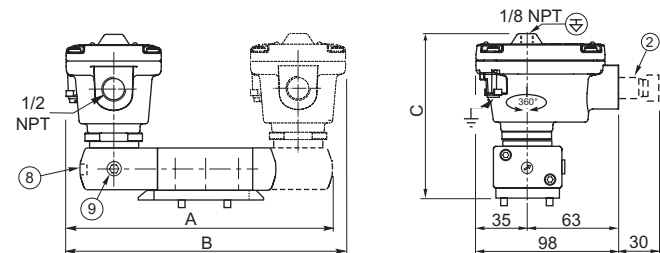
TYPE 11:
 EF and EV: NEMA type 7 and 9
 Epoxy encapsulated
 ICS-6 ANSI
 NOTE: applicable to solenoid only

551G309 / 551G310 / 553G309 / 553G310



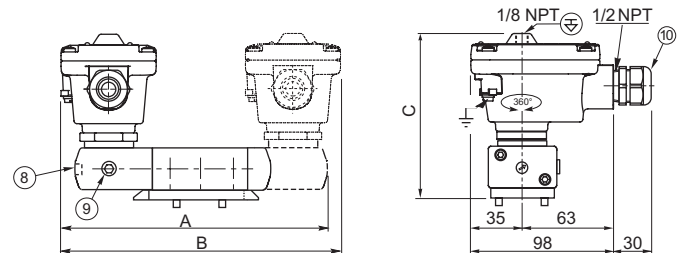
TYPE 13:
 LPKF / WSLPKF
 Aluminium, cataphoresis black painting / AISI 316L SS
 EN/IEC 60079-1 and EN/IEC 60079-31

551A309 / 551A310 / 553A309 / 553A310



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

551A309 / 551A310 / 553A309 / 553A310



DIMENSIONS (mm), WEIGHT (kg)

type	prefix option	power level	Serie 551					Serie 553					weight ⁽¹⁾			
			A	B	C	D	E	A	B	C	D	E	monostable		bistable	
			551	553	551	553	551	553	551	553	551	553				
01	SC	basic power	132	172	108	22,5	87	182	229	117	36,5	101	1,54	1,69	2,30	4,51
02	NF	basic power	159	225	148	-	-	209	282	157	-	-	2,69	4,8	4,40	6,61
02	WSNF	basic power	159	225	148	-	-	209	282	157	-	-	3,99	6,1	7,00	9,21
04	WP/WS/EM/WSEM	basic power	148	205	108	-	-	198	262	117	-	-	1,97	2,12	2,90	5,16
05	PV	basic power	132	172	93	22,5	69	182	229	102	36,5	83	1,64	1,79	2,30	4,51
06	EF / EV	basic power	132	172	90,5	22,5	75	182	229	100	36,5	89	1,64	1,79	2,30	4,51
07	SC	low power	132	172	107	22,5	88	182	229	116	36,5	102	1,54	1,69	2,30	4,51
08	NF	low power	158	225	148	-	-	209	282	157	-	-	2,69	4,8	4,40	6,61
08	WSNF	low power	158	225	148	-	-	209	282	157	-	-	3,99	6,1	7,00	9,21
09	WP / WS / EM / WSEM	low power	148	205	108	-	-	198	262	117	-	-	1,97	2,12	2,96	5,16
10	PV	low power	132	172	106	22,5	69	182	229	115	36,5	83	1,64	1,79	2,30	4,51
11	EF / EV	low power	132	172	106	22,5	75	182	229	115	36,5	89	1,64	1,79	2,30	4,51
13	LPKF	low power	141	192	118	-	-	193	252	131,5	-	-	1,68	5,09	2,58	4,81
13	WSLPKF	low power	141	192	118	-	-	193	252	131,5	-	-	2,29	3,76	3,78	5,88
14	LI	low power	141	192	118	-	-	193	252	131,5	-	-	1,69	5,10	2,59	4,82
14	WSLI	low power	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
- ⑩ Cable gland for unarmoured cable with 7 to 12 mm dia. sheath
- ⊕ Connectable pilot exhaust port
- ⊖ Non-connectable pilot exhaust port

ACCESSORIES

