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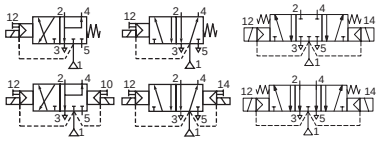
ASCO™ Spool Valves

single/dual solenoid (mono/bistable function) - pilot operated or air operated aluminium body - "NAMUR" style - 1/4 and 1/2 tapped

3/2 NC - 5/2 - 5/3
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)*
- *Epoxy moulded coil for general service applications*
- *The solenoid valves satisfy all relevant EU Directives*

General

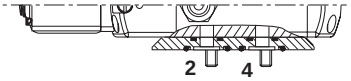
Differential pressure	2 - 10,4 bar [1 bar =100 kPa]
Flow (Qv at 6 bar)	1/4 = 700 l/min (ANR)
	1/2 = 3000 l/min (5/2, 5/3)

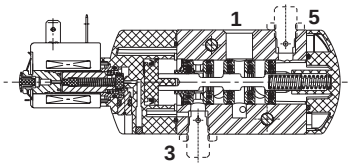
fluids (✶)	temperature range (TS)	seal materials (✶)
air, inert gas, filtered	-25°C to +60°C	NBR (nitrile) + PUR (polyurethane)

Materials in contact with fluid

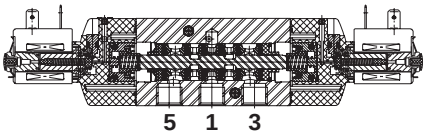
(✶) Ensure that the compatibility of the fluids in contact with the materials is verified

Body, end cover	Aluminium, black anodized
End cover (spring return)	Glass fibre filled PA
Interface plates	Glass fibre filled PA
Spool valve internal parts	Zamak, stainless steel, POM, aluminium
Seals	NBR + PUR
Core tube	Brass
Core and plugnut	Stainless steel
Shading coil	Copper





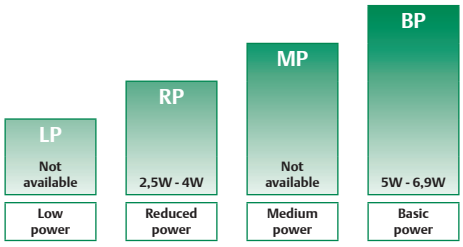
3/2 NC - 5/2 function



5/3 function

Air operated specifications

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar) min..	operating pressure differential (bar) max. (PS) air (✶)	prefix optional	basic catalogue number
(❖)	(mm)	(m^3/h)	(l/min)		-		
3/2 NC - 5/2 - Air pilot operated - spring return (monostable)							
1/4	6	0,75	12,5	2	10	-	❖551A101 (1)
1/2	13	3,15	52,5	2	10	-	❖553A101 (1)
3/2 NC - 5/2 - Air pilot operated and return (bistable)							
1/4	6	0,75	12,5	2	10	-	❖551A102
1/2	13	3,15	52,5	2	10	-	❖553A102



POWER LEVELS - cold electrical holding values (watt)

Pilot operated specifications

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar) min.	operating pressure differential (bar) max. (PS) air (✶)		power level	prefix optional solenoids NEMA 7 & 9	prefix optional solenoids ATEX / IECEx Ex e mb	prefix optional solenoids ATEX / IECEx Ex mb	prefix optional solenoids IP65	basic catalogue number
(❖)	(mm)	(m^3/h)	(l/min)		~	=	~/=	EF (2)	WBLP	PV	SC	
3/2 NC - 5/2 - Solenoid air pilot operated - spring return (monostable)												
1/4	6	0,6	10	2	10	10	RP	-	●	-	●	❖551A001 (1)
							BP	●	-	-	-	❖551G001 (1)
							RP	-	-	●	-	X❖551A001 20787 (1)
1/2	13	2,49	41,5	2	10	10	RP-BP	-	●	●	●	❖553A001 (1)
							BP	●	-	-	-	❖553G001 (1)

❖ Select 8 for NPT ANSI 1.20.3 or select G for ISO G (228/1) ● Available feature - Not available
(1) Certified IEC 61508 Functional Safety data, use suffix "SL".
(2) UL CSA

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Pilot operated specifications

pipe size	orifice size	flow coefficient Kv		operating pressure differential (bar)			power level	prefix optional solenoids				basic catalogue number
				min.	max. (PS)			NEMA	ATEX / IECEx		IP65	
					air (✶)			7 & 9	Ex e mb	Ex mb		
(❖)	(mm)	(m^3/h)	(l/min)		~	=	~/=	EF [1]	WBLP	PV	SC	
3/2 NC - 5/2 - Solenoid air pilot operated and return (bistable)												
1/4	6	0,6	10	2	10	10	RP	-	●	-	●	❖551A002
							BP	●	-	-	-	❖551G002
							RP	-	-	●	-	X❖551A002 20787
1/2	13	2,49	41,5	2	10	10	RP-BP	-	●	●	●	❖553A002
							BP	●	-	-	-	❖553G002
5/3 - W1 - pressure held, solenoid air pilot operated and return												
1/4	6	0,6	10	2	10	10	RP	-	●	-	●	❖551A065
							RP	-	-	●	-	X❖551A065 20787
1/2	13	2,49	41,5	2	10	10	RP-BP	-	●	●	●	❖553A065
5/3 - W3 - pressure release, solenoid air pilot operated and return												
1/4	6	0,6	10	2	10	10	RP	-	●	-	●	❖551A066
							RP	-	-	●	-	X❖551A066 20787
1/2	13	2,49	41,5	2	10	10	RP-BP	-	●	●	●	❖553A066

❖ Select 8 for NPT ANSI 1.20.3 or select G for ISO G (228/1) ● Available feature - Not available
[1] UL CSA

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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 (18" continuous leads)	-	-	-	●
E	F	H	T				EF (18" continuous leads) + high temperature	-	-	-	●
E	F	H	T	L			EF + high temperature + 72" continuous leads	-	-	-	●
E	F	L					EF + 72" continuous leads	-	-	-	●
J	B	E	F				EF + Junction box (conduit in 1/2" NPT)	-	-	-	●
J	B	E	F	M	F		EF + Junction box (conduit in 1/2" NPT) + surge suppression coils	-	-	-	●
J	C	E	F				EF + Junction box (conduit in 3/4" NPT)	-	-	-	●
J	C	E	F	H	T		EF + Junction box (conduit in 3/4" NPT) + high temperature	-	-	-	●
P	V						Encapsulated epoxy moulded (EN/IEC 60079-18)*	-	●	-	●
W	B	L	P				I.S./encapsulation with PBT IP67 enclosure (EN/IEC 60079-7, -18, -31)*	-	●	-	-
S	C						Solenoid with spade plug connector (EN/IEC 60730)	-	●	-	●
						X	Other special constructions	-	●	-	●

Suffix table

suffix							description	power level			
1	2	3	4	5				LP	RP	MP	BP
	G	D					Non-electrical, 2 GD, construction safety, gas/dust (EN ISO 80079-36/37)	-	-	-	-
			M	S			Screw type manual operator	-	●	-	●
	S	L					Certified IEC 61508 Functional Safety data (1)	-	●	-	●

Product selection guide

STEP 1
Select basic catalogue number, including pipe thread indentification letter. Refer to the specifications table on page: 1 or 2
Example: G551A001

STEP 2
Select prefix (combination). Refer to the specifications table and the prefix table, respect the indicated power level.
Air operated version, does not use prefix.
Example: SC

STEP 3
Select suffix (combination) if required. Refer to the suffix table, respect the indicated power level.
GD suffix available for air operated version only (do not use manual operator suffix).
Example: MS

STEP 4
Select voltage. Refer to standard voltages on page: 4
Example: 230V / 50Hz

STEP 5
Final catalogue / ordering number
Example:
SCG551A001MS 230 V / 50 Hz

Options & Accessories

series	pipe size	exhaust protector (stainless steel)		
		(G)	(NPT)	(M)
551	1/8	**34600418** (2)	**34600482** (2)	-
551 (+ W1/W3)	1/4	**34600419** (2)	**34600483** (2)	-
553	1/2	**34600479** (2)	**34600481** (2)	-
551/553	M5	-	-	**34600484** (2)

● Available feature
- 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) Not to use with MS suffix
(2) Provided with "SL" suffix

Ordering examples valves:

SC	G	551 **A** 001	**MS**	230V / 50 Hz
SC	G	551 **A** 001	**MMS**	230V / 50 Hz
PV	**X8**	551 **A** 002	**20787**	115V / 50 Hz
WBLP	G	551 **A** 001	**MS**	24V / DC
	G	553 **A** 102		
	G	551 **A** 102	**GD**	
	G	551 **A** 101	**GD SL**	
SC	G	551 **A** 001	**SL**	230V / 50 Hz

prefix
pipe thread
basic number
voltage
suffix

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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/50Hz; other voltages and 60Hz are available on request

prefix option	power ratings				operator ambient temperature range (TS)	safety code	electrical enclosure protection (EN 60529)	replacement coil		type (1)
	inrush ~	holding ~		hot/cold =				~	=	
	(VA)	(VA)	(W)	(W)	(C°)			230 V/50 Hz	24V/DC	
Basic power (BP)										
SC	15	7	5	4/5	-25 to +60	EN 60730	IP65, moulded	400727-117	400727-185	02
PV	-	-	6,3	-	-40 to +65	II2G Ex mb IIC T3 Gb,II2D Ex mb IIIC Db	IP67 moulded	- (2)	- (2)	04
PV	-	-	-	6,9	-40 to +40	II2G Ex mb IIC T3 Gb,II2D Ex mb IIIC Db	IP67 moulded	- (2)	- (2)	04
EF	55	23	10,5	9/11,2	-40 to +52/40	NEMA type 7 and 9	NEMA 4X	-	-	07
EFHT	55	23	10,5	9/11,2	-40 to +52/40	NEMA type 7 and 9	NEMA 4X	-	-	06
JBEF	55	23	10,5	9/11,2	-40 to +52/40	NEMA type 7 and 9	NEMA 4X	-	-	12
JBEFHT	55	23	10,5	9/11,2	-40 to +52/40	NEMA type 7 and 9	NEMA 4X	-	-	12
Reduced power (RP)										
SC	6	3,5	2,5	2,5/3	-25 to +60	EN 60730	IP65, moulded	400127-097	400904-542	01
PV	-	-	4	-	-40 to +60/65	II2G Ex mb IIC T4-T3 Gb,II2D Ex mb IIIC Db	IP67 moulded	- (2)	- (2)	03
PV	-	-	-	3	-40 to +40/60/60	II2G Ex mb IIC T5-T4-T3 Gb,II2D Ex mb IIIC Db	IP67 moulded	- (2)	- (2)	03
WBLP	-	-	3,5	-/4	-40 to +65	II2G Ex e mb IIC T4 Gb, II2D Ex tb IIIC Db	IP67 PBT	- (2)	- (2)	05-06

(1) Refer to the dimensional drawings on pages: 5 to 7 (Air operated versions: Refer to the dimensional drawings on pages: 7).
(2) Multiple coil kits are available under ATEX/IECEx, contact us

Electrical connections

prefix	connection
SC	Type 01: Spade plug connector with cable gland DIN 43650, 11 mm, industry standard B, for cables with an outer diameter from 6 to 8 mm Type 02: Spade plug connector with cable gland EN175301-803A (ISO 4400) for cables with an outer diameter from 6 to 10 mm
PV	Moulded-in cable, standard length 2 m
WBLP	M20 cable gland for cables with an outer diameter from 7 to 8,5 mm
EF	1/2" NPT conduits
JBEF	EF + Junction box

Additional options

- Other pipe threads are available on request
- Coil type CM25 with connector size 30 ISO 4400 (Pg 11P) (551 Series)
- Polyamide coil
- Ex mb (prefix "PV") solenoid can be supplied with various cable lengths
- 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
- 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
- IEC 61508 Functional Safety (suffix SL). Check temperature range of valve body and solenoid for suitability. For probability of failure, contact us
- 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)

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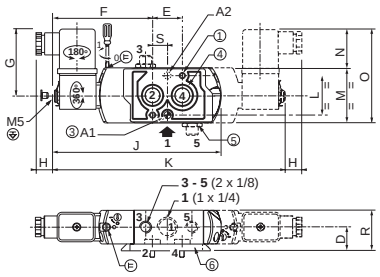
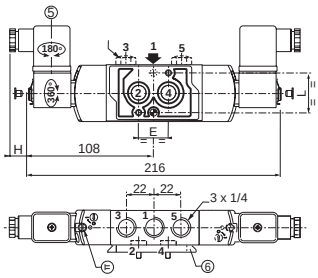
Dimensions (mm), Weight (kg)

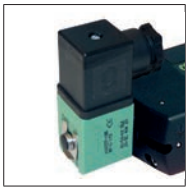
TYPE 01:
Epoxy moulded
SC: IEC 335 / ISO 4400

551A001/A001MS/A002/A002MS



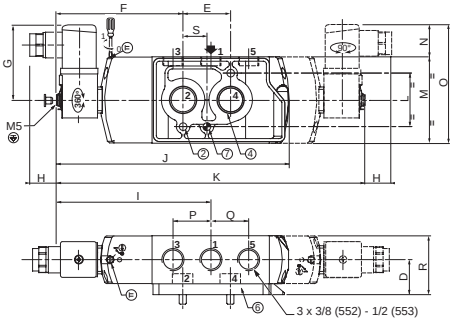
551A065/A065MS/A066/A066MS (W1 - W3)





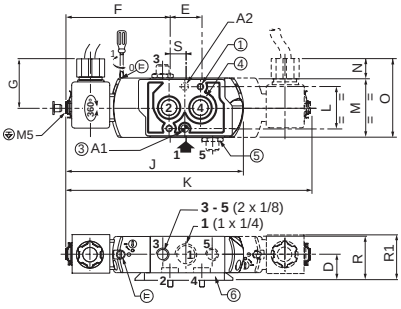
TYPE 02:
Epoxy moulded
SC: IEC 335 / ISO 4400

553A001/A001MS/A002/A002MS
553A065/A065MS/A066/A066MS

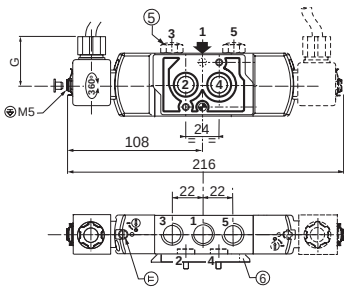


TYPE 03:
Epoxy encapsulated
PV: EN/IEC 60079-18

551A001 20787/A001MS 20787
551A002 20787/A002MS 20787

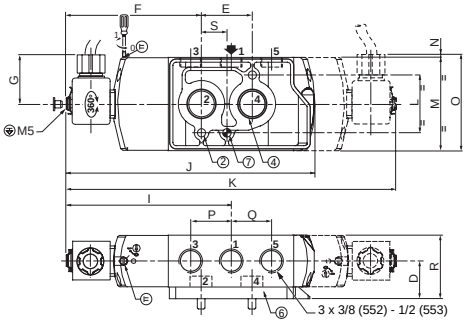


551A065 20787/A065MS 20787
551A066 20787/A066MS 20787



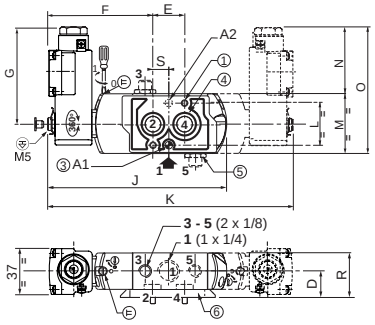
TYPE 04:
Epoxy encapsulated
PV: EN/IEC 60079-18

553A001/A001MS/A002/A002MS - 553A065/A065MS/A066/A066MS

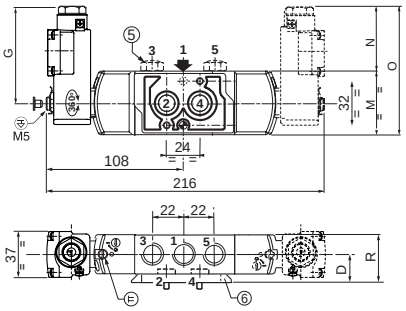


TYPE 05:
PBT
WBLP: EN/IEC 60079-7 +18 + 31

551A001/A001MS/A002/A002MS

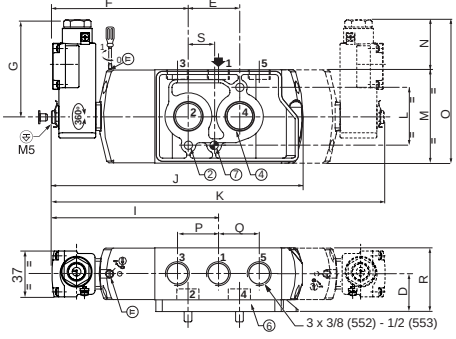


551A065/A065MS/A066/A066MS (W1 - W3)



TYPE 06:
PBT
WBLP: EN/IEC 60079-7 +18 + 31

553A001/A001MS/A002/A002MS
553A065/A065MS/A066/A066MS



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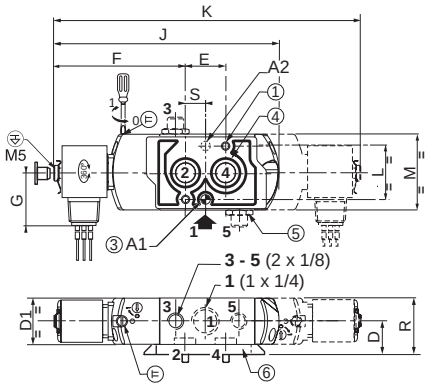
Dimensions (mm), Weight (kg)

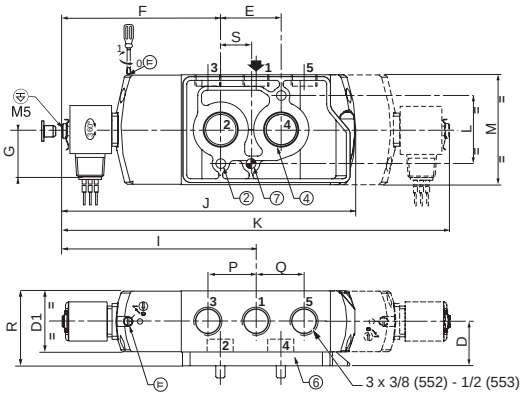
TYPE 07:
Epoxy encapsulated
EF: NEMA type 7, 9 / ICS-6 ANSI

551G001 / G001MS / G002 / G002MS



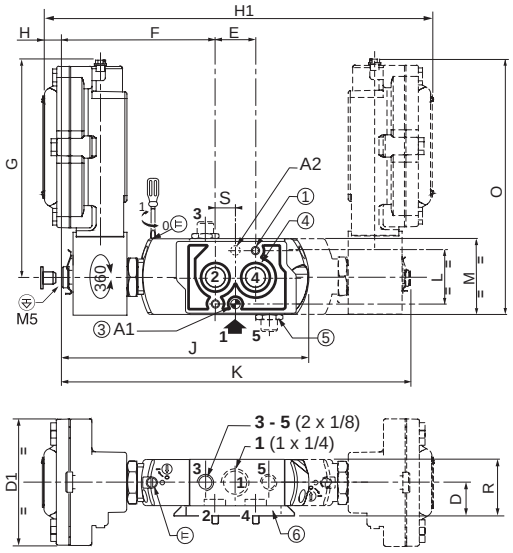
TYPE 08:
Epoxy encapsulated
EF: NEMA type 7, 9 / ICS-6 ANSI

553G001 / G001MS / G002 / G002MS



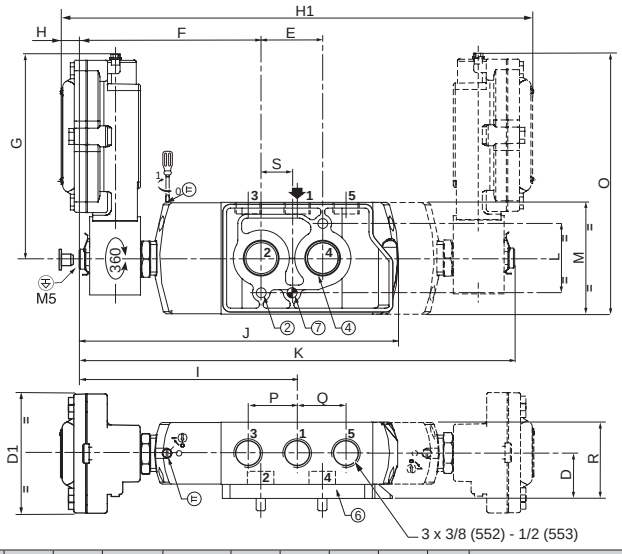
TYPE 09:
Epoxy encapsulated
JBEF: NEMA type 7, 9

551G001 / G001MS / G002 / G002MS



TYPE 10:
Epoxy encapsulated
JBEF: NEMA type 7, 9

553G001 / G001MS / G002 / G002MS



type	prefix/ option	power level	D	D1	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	R1	S	weight (1)	
																					monostable	bistable
01 (551)	SC	RP	19	-	24	83	52	13	-	139	192	32	45	27	72	-	-	33	-	12	0,34	0,46
02 (553)	SC	BP	29,1	-	40	106,7	59,2	21,8	130,3	197,5	261	45	72,3	20	92,3	31,6	31,8	49,2	-	20	0,90	1,20
03 (551)	PV	RP	19	-	24	83	36,5	-	-	139	192	32	45	13	58	-	-	33	36,5	12	0,38	0,50
04 (553)	PV	BP	29,1	-	40	106,7	36,5	-	130,3	197,5	261	45	72,3	0,3	72,6	31,6	31,8	49,2	-	20	0,93	1,23
05 (551)	WBLP	RP	19	-	24	83	81,5	-	-	139	192	32	45	59	104	-	-	33	36,5	12	0,38	0,50
06 (553)	WBLP	RP	29,1	-	40	106,7	81,5	-	130,3	197,5	261	45	72,3	45,35	117,65	31,6	31,8	49,2	-	20	0,93	1,23
07 (551)	EF	BP	19	40,2	24	83	53	-	-	139	192	32	45	-	-	-	-	33	-	12	0,44	2,54
08 (553)	EF	BP	29,1	87	40	106,7	53	-	130,3	197,5	261	45	72,3	-	-	31,6	31,8	49,2	-	20	1,00	3,24
09 (551)	JBEF	BP	19	27,5	24	83	151	13,5	-	139	192	32	45	-	187,15	-	-	33	-	12	1,35	2,49
10 (553)	JBEF	BP	29,1	87	40	106,7	151	13,5	130,3	197,5	261	45	72,3	-	187,15	31,6	31,8	49,2	-	20	1,89	3,19

(1) Incl. coil(s) and connector(s).

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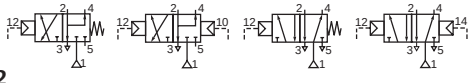
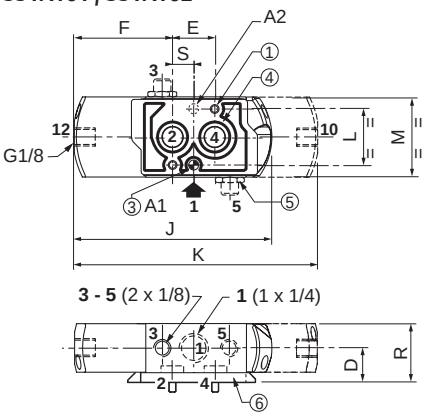
Dimensions (mm), Weight (kg)

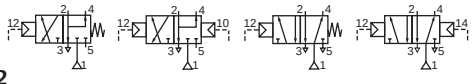
TYPE 11:
No prefix, IP65
Suffixes: GD (II 2 GD) ; SL (SIL) ;
GDSL (SIL, II 2 GD)]
Air operated version



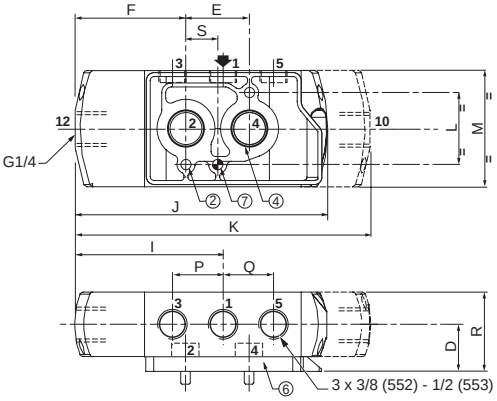
551A101 / 551A102



TYPE 12:
No prefix, IP65
Suffixes: GD (II 2 GD) ; SL (SIL) ;
GDSL (SIL, II 2 GD)]
Air operated version



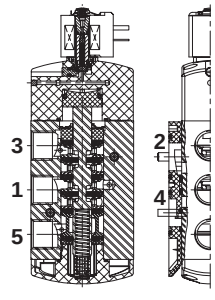
553A101 / 553A102



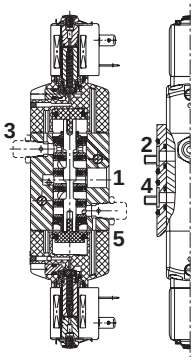
(1) 2 mounting holes: 5,3 mm dia.; Spotfacing: 9 mm dia., depth 5 mm
(2) 2 mounting holes: 6,5 mm dia.; Spotfacing: 11 mm dia., depth 6 mm
(3) One 5 mm dia. hole for dowel pin (551 Series)
- in position A1: 3/2 NC function plate
- in position A2: 5/2 function plate
(4) 2 O-ring seals (supplied)
(5) Exhaust reducers G 1/8 (series 551) or protectors adaptable on orifices 3 and 5
(6) Interface plate
(7) 1 dia. 6,5 mm hole for dowel pin (series 553). Same position for interface plate 3/2 NC or 5/2
Connectable pilot exhaust port

type	prefix/ option	power level	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	R1	S	weight	
																				monostable	bistable
11 (551)	-	-	19	24	-	-	-	-	107	128	32	45	-	-	-	-	33	-	12	0,31	0,41
12 (553)	-	-	29,1	40	70,7	-	-	130,3	161,5	189	45	72,3	-	-	31,6	31,8	49,2	-	20	0,85	1,11

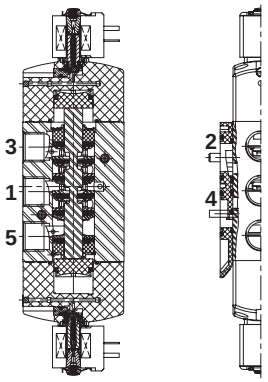
Sectional drawings



monostable (553 Series)



bistable (551 Series)



bistable (553 Series)

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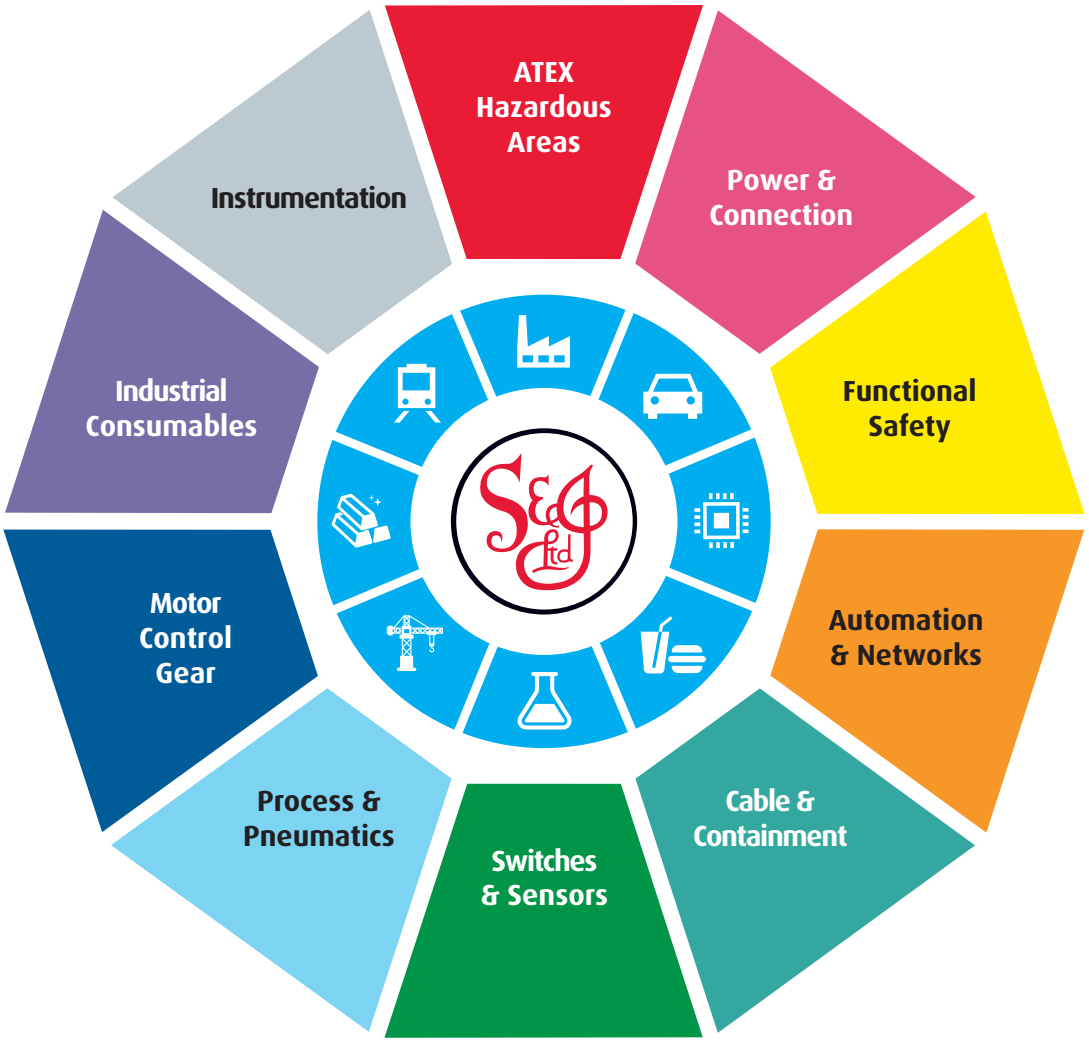

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