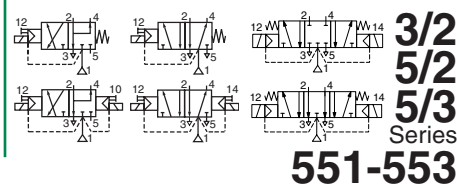




# SPOOL VALVES

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



Series  
**551-553**

## FEATURES

- The monostable spool valves in conformity with IEC 61508 Standard (2010 route 2<sub>H</sub> 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 function 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)
- 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

Aluminium, black anodized

End covers + interface plates

Glass-filled PA

Internal parts

Zamak, stainless steel, (POM), aluminium

Seals

NBR + PUR

Core tube

Brass

Core and plugnut

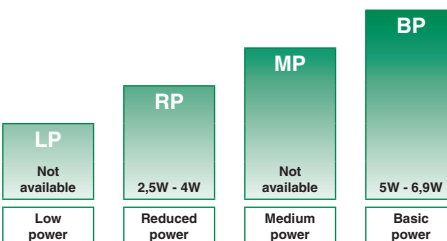
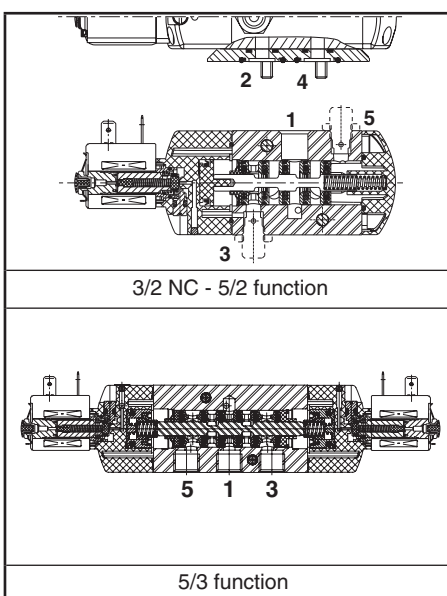
Stainless steel

Shading coil

Copper

## AIR OPERATED SPECIFICATIONS

| pipe size                                                      | orifice size | flow coefficient kv |         | operating pressure differential (bar) |           |    |   | prefix option           | basic catalogue number |
|----------------------------------------------------------------|--------------|---------------------|---------|---------------------------------------|-----------|----|---|-------------------------|------------------------|
|                                                                |              |                     |         | min.                                  | max. (PS) |    |   |                         |                        |
|                                                                |              |                     |         |                                       | air (★)   |    |   |                         |                        |
| (❖)                                                            | (mm)         | (m³/h)              | (l/min) |                                       | ~         | =  |   |                         |                        |
| 3/2 NC - 5/2 - Air pilot operated - spring return (monostable) |              |                     |         |                                       |           |    |   |                         |                        |
| 1/4                                                            | 6            | 0,75                | 12,5    | 2                                     | 10        | 10 | - | ❖551A101 <sup>(2)</sup> |                        |
| 1/2                                                            | 13           | 3,15                | 52,5    | 2                                     | 10        | 10 | - | ❖553A101 <sup>(2)</sup> |                        |
| 3/2 NC - 5/2 - Air pilot operated and return (bistable)        |              |                     |         |                                       |           |    |   |                         |                        |
| 1/4                                                            | 6            | 0,75                | 12,5    | 2                                     | 10        | 10 | - | ❖551A102                |                        |
| 1/2                                                            | 13           | 3,15                | 52,5    | 2                                     | 10        | 10 | - | ❖553A102                |                        |



POWER LEVELS - cold electrical holding values (watt)

## PILOT OPERATED SPECIFICATIONS 5/2

| pipe size                                                               | orifice size | flow coefficient kv |         | operating pressure differential (bar) |           |    | power level | prefix optional solenoids |         |       |   |      | basic catalogue number         |
|-------------------------------------------------------------------------|--------------|---------------------|---------|---------------------------------------|-----------|----|-------------|---------------------------|---------|-------|---|------|--------------------------------|
|                                                                         |              |                     |         | min.                                  | max. (PS) |    |             | ATEX / IECEx              |         |       |   | IP65 |                                |
|                                                                         |              |                     |         |                                       | air (★)   |    |             | -                         | Ex e mb | Ex mb | - |      |                                |
|                                                                         |              |                     |         |                                       | ~         | =  |             |                           |         |       |   |      |                                |
| (✱)                                                                     | (mm)         | (m³/h)              | (l/min) |                                       |           |    | ~/=         | -                         | 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 <sup>(2)</sup>        |
| 1/4                                                                     | 6            | 0,6                 | 10      | 2                                     | 10        | 10 | RP          | -                         | -       | ●     | - | -    | X✱551A001 20787 <sup>(2)</sup> |
| 1/2                                                                     | 13           | 2,49                | 41,5    | 2                                     | 10        | 10 | RP-BP       | -                         | ●       | ●     | - | ●    | ✱553A001 <sup>(2)</sup>        |
| 3/2 NC - 5/2 - Solenoid air pilot operated and return (bistable)        |              |                     |         |                                       |           |    |             |                           |         |       |   |      |                                |
| 1/4                                                                     | 6            | 0,6                 | 10      | 2                                     | 10        | 10 | RP          | -                         | ●       | -     | - | ●    | ✱551A002                       |
| 1/4                                                                     | 6            | 0,6                 | 10      | 2                                     | 10        | 10 | RP          | -                         | -       | ●     | - | -    | X✱551A002 20787                |
| 1/2                                                                     | 13           | 2,49                | 41,5    | 2                                     | 10        | 10 | RP-BP       | -                         | ●       | ●     | - | ●    | ✱553A002                       |

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

## PILOT OPERATED SPECIFICATIONS 5/3

| pipe size                                                           | orifice size | flow coefficient kv |         | operating pressure differential (bar) |           |    | power level | prefix optional solenoids |         |       |   |      | basic catalogue number |
|---------------------------------------------------------------------|--------------|---------------------|---------|---------------------------------------|-----------|----|-------------|---------------------------|---------|-------|---|------|------------------------|
|                                                                     |              |                     |         | min.                                  | max. (PS) |    |             | ATEX / IECEx              |         |       |   | IP65 |                        |
|                                                                     |              |                     |         |                                       | air (★)   |    |             | -                         | Ex e mb | Ex mb | - |      |                        |
|                                                                     |              |                     |         |                                       | ~         | =  |             |                           |         |       |   |      |                        |
| (✧)                                                                 | (mm)         | (m³/h)              | (l/min) |                                       |           |    |             |                           |         |       |   |      |                        |
| 5/3 - W1 - pressure held, solenoid air pilot operated and return    |              |                     |         |                                       |           |    |             |                           |         |       |   |      |                        |
| 1/4                                                                 | 6            | 0,6                 | 10      | 2                                     | 10        | 10 | RP          | -                         | ●       | -     | - | ●    | ✧551A065               |
| 1/4                                                                 | 6            | 0,6                 | 10      | 2                                     | 10        | 10 | 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               |
| 1/4                                                                 | 6            | 0,6                 | 10      | 2                                     | 10        | 10 | 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

## PREFIX TABLE

| prefix |   |   |   |   |   |   |   | description                                                            | power level |    |    |    |
|--------|---|---|---|---|---|---|---|------------------------------------------------------------------------|-------------|----|----|----|
| 1      | 2 | 3 | 4 | 5 | 6 | 7 | 8 |                                                                        | LP          | RP | MP | BP |
| 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 | 6 | 7 | 8 |                                                                    | LP          | RP | MP | BP |
|        | G | D |   |   |   |   |   | Non-electrical, 2 GD c, construction safety, gas/dust (EN 13463-5) | -           | -  | -  | -  |
|        |   | M |   |   |   |   |   | Exhaust reducer (series 551 only)                                  | -           | ●  | -  | -  |
|        |   |   |   |   |   | M | S | Screw type manual operator                                         | -           | ●  | -  | ●  |
|        | S | L |   |   |   |   |   | Certified IEC 61508 Functional Safety data <sup>(1)</sup>          | -           | ●  | -  | ●  |

● Available feature

- Not available

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

<sup>(1)</sup> Not to use with MS suffix

## PRODUCT SELECTION GUIDE

### STEP 1

Select the fluid temperature range and seal material from the general table on page 1. Select basic catalogue number, including pipe thread identification letter. Refer to the specifications table on pages 1 and 2.

**Example : G551A001**

### 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 (RP, MP, BP), the type of electrical enclosure protection and the desired temperature class. The air operated version is without prefix.

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

Do not use prefixes for air operated versions.

**Example : SC**

### STEP 3

Select suffix (combination) if required. Suffix GD only applies for the air operated versions, do not use suffix MS.

**Example : MS**

### STEP 4

Select voltage. Refer to standard voltages on page 3.

**Example : 230V / 50Hz**

### STEP 5

Final catalogue / ordering number.

**Example :**

**SC G551A001MS 230 V / 50 Hz**

## OPTIONS & ACCESSORIES

| series      | pipe size | exhaust protector (stainless steel) |                         |                         |
|-------------|-----------|-------------------------------------|-------------------------|-------------------------|
|             |           | (G)                                 | (NPT)                   | (M)                     |
| 551         | 1/8       | 34600418 <sup>(3)</sup>             | 34600482 <sup>(3)</sup> | -                       |
| 551 (W1/W3) | 1/4       | 34600419 <sup>(3)</sup>             | 34600483 <sup>(3)</sup> | -                       |
| 553         | 1/2       | 34600479 <sup>(3)</sup>             | 34600481 <sup>(3)</sup> | -                       |
| 551/553     | M5        | -                                   | -                       | 34600484 <sup>(3)</sup> |

<sup>(3)</sup> Provided with "SL" suffix.

## ORDERING EXAMPLES:

|      |    |     |     |     |       |              |
|------|----|-----|-----|-----|-------|--------------|
| 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        |
|      |    | G   | 551 | A   | 001   | SL           |
|      |    |     |     |     |       | 230V / 50 Hz |

prefix  
pipe thread  
basic number  
voltage  
suffix

## 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<br>AC (~) 24V - 48V - 115V - 230V/50Hz; other voltages and 60Hz are available on request |

| prefix<br>option   | power ratings |              |     |                   | operator<br>ambient<br>temperature<br>range (TS) | safety code                                | electrical<br>enclosure<br>protection<br>(EN 60529) | replacement coil |                  | type <sup>(1)</sup> |
|--------------------|---------------|--------------|-----|-------------------|--------------------------------------------------|--------------------------------------------|-----------------------------------------------------|------------------|------------------|---------------------|
|                    | inrush<br>~   | holding<br>~ |     | hot/<br>cold<br>= |                                                  |                                            |                                                     | ~                | =                |                     |
|                    | (VA)          | (VA)         | (W) | (W)               |                                                  |                                            |                                                     | (C°)             | 230 V / 50 Hz    |                     |
| 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,II2D Ex mb IIIC Db       | IP67 moulded                                        | - <sup>(4)</sup> | - <sup>(4)</sup> | 04                  |
| PV                 | -             | -            | -   | 6,9               | -40 to +40                                       | II2G Ex mb IIC T3,II2D Ex mb IIIC Db       | IP67 moulded                                        | - <sup>(4)</sup> | - <sup>(4)</sup> | 04                  |
| Reduced power (RP) |               |              |     |                   |                                                  |                                            |                                                     |                  |                  |                     |
| SC                 | 6             | 3,5          | 2,5 | 2,5/3,0           | -25 to +60                                       | EN 60730                                   | IP65 moulded                                        | 400127-097       | 400904-542       | 01                  |
| PV                 | -             | -            | 4   | -                 | -40 to +60/65                                    | II2G Ex mb IIC T4-T3,II2D Ex mb IIIC Db    | IP67 moulded                                        | - <sup>(4)</sup> | - <sup>(4)</sup> | 03                  |
| PV                 | -             | -            | -   | 3                 | -40 to +40/60/60                                 | II2G Ex mb IIC T5-T4-T3,II2D Ex mb IIIC Db | IP67 moulded                                        | - <sup>(4)</sup> | - <sup>(4)</sup> | 03                  |
| WBLP               | -             | -            | 3,5 | -/4               | -40 to +65                                       | II2G Ex e mb IIC T4, II2D Ex tb IIIC Db    | IP67 PBT                                            | - <sup>(4)</sup> | - <sup>(4)</sup> | 05-06               |

<sup>(1)</sup> Refer to the dimensional drawings on page 4 (Air operated versions, see page 5 for types 7 and 8).

<sup>(4)</sup> Multiple coil kits available under ATEX, contact us

## ELECTRICAL CONNECTIONS

| prefix | connection                                                                                                                                                                                                                       |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SC     | 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 01) or EN175301-803A (ISO 4400) for cables with an outer diameter from 6 to 10 mm (type 02). |
| PV     | Moulded-in cable, standard length 2 m                                                                                                                                                                                            |
| WBLP   | M20 cable gland for cables with an outer diameter from 7 to 8,5 mm. With an internal and external facility for an earthing or bonding conductor                                                                                  |

## ADDITIONAL OPTIONS

- Other pipe threads are available on request
- Coil type CM25 with connector size 30 ISO 4400 (Pg 11P) (series 551)
- Polyamide coil
- Ex mb (prefix "PV") solenoid can be supplied with various cable lengths
- Compliance with "UL" standard is available on request (553 ranges)
- Set of stainless steel mounting screws, catalogue number **97802212** (series 551)
- Set of two exhaust reducers, G1/8, catalogue number **88100344** (series 551)

## INSTALLATION

- 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)

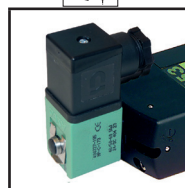
## DIMENSIONS (mm), WEIGHT (kg) (PILOT OPERATED VERSION)



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

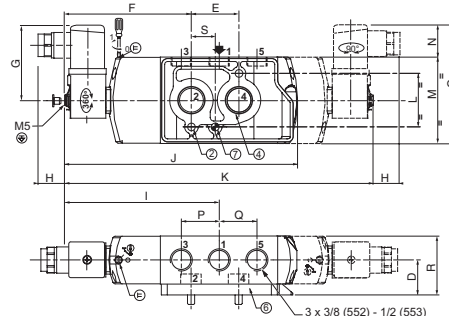
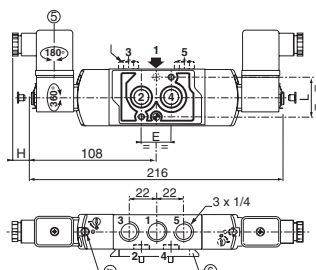
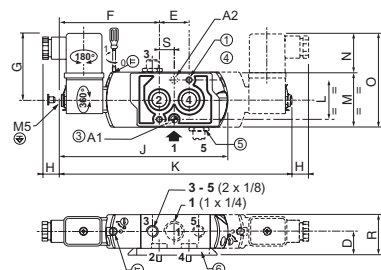
551A001/A001MS/A002/A002MS

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

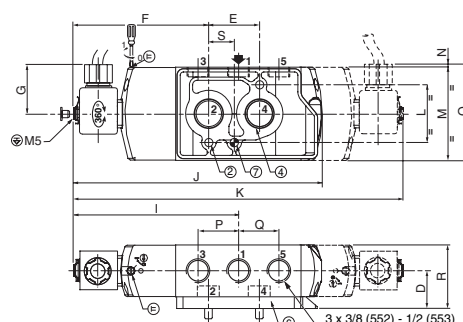
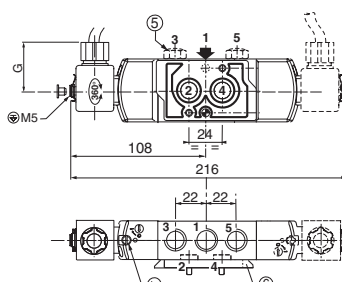
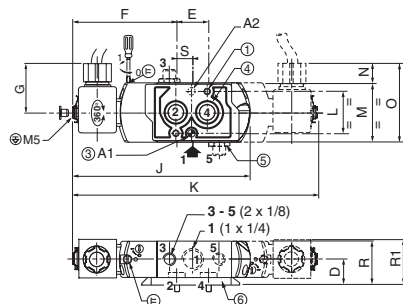
551A001 20787/A001MS 20787  
551A002 20787/A002MS 20787

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

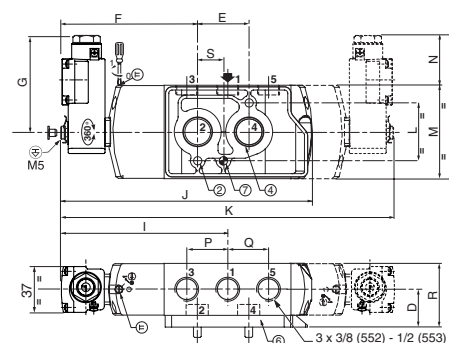
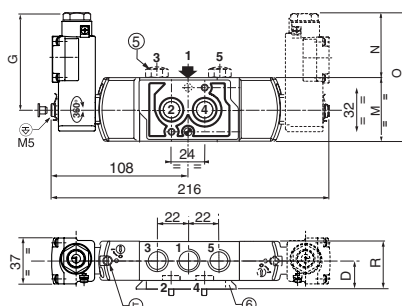
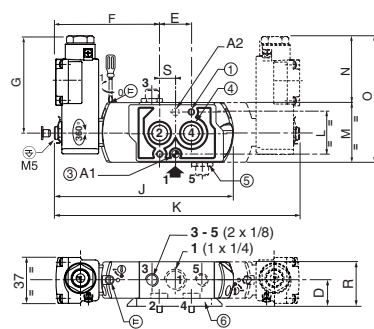
551A001/A001MS/A002/A002MS

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

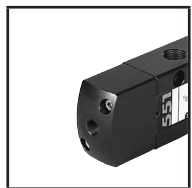


**TYPE 06:**  
PBT  
WBLP: EN/IEC 60079-7 +18 + 31

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



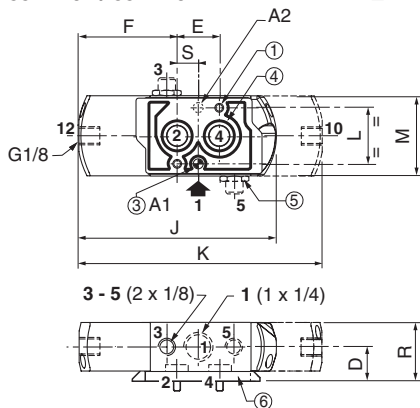
### DIMENSIONS (mm), WEIGHT (kg) (AIR OPERATED VERSION)



#### TYPE 07:

No prefix, IP65  
(suffixes, GD: II 2 GD c, SL: SIL  
or GDSL: SIL, II 2 GD c)  
Air operated version

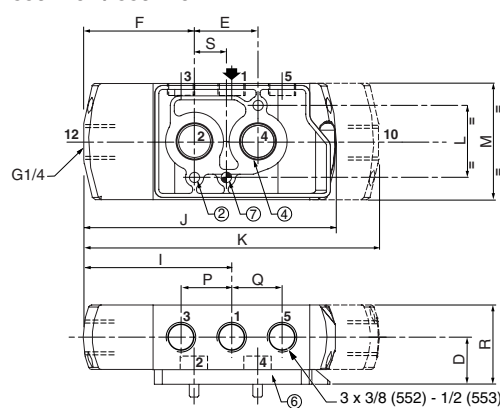
551A101 / 551A102



#### TYPE 08:

No prefix, IP65  
(suffixes, GD: II 2 GD c, SL: SIL  
or GDSL: SIL, II 2 GD c)  
Air operated version

553A101 / 553A102



- ① 2 mounting holes dia. 5,3; Spotfacing: dia. 9, depth 5 mm
- ② 2 mounting holes dia. 6,5; Spotfacing: dia. 11, depth 6 mm
- ③ 1 dia. 5 mm hole for dowel pin (series 551)  
- 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 plates
- 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

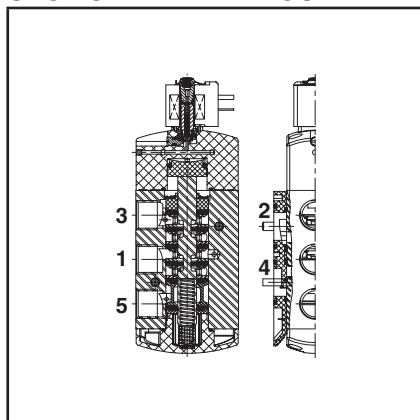
| type     | prefix option | power level | D    | E  | F     | G    | H    | I     | J     | K   | L  | M    | N     | O      | P    | Q    | R    | R1   | S  | weight <sup>(1)</sup><br>(2) (3) |
|----------|---------------|-------------|------|----|-------|------|------|-------|-------|-----|----|------|-------|--------|------|------|------|------|----|----------------------------------|
| 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) | -             | -           | 19   | 24 | -     | -    | -    | -     | 107   | 128 | 32 | 45   | -     | -      | -    | -    | 33   | -    | 12 | 0,31 0,41                        |
| 08 (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                        |

<sup>(1)</sup> Types 1 to 4 : Including coil(s) and connector(s)

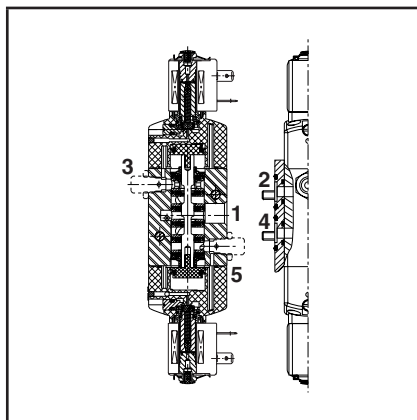
<sup>(2)</sup> monostable

<sup>(3)</sup> bistable

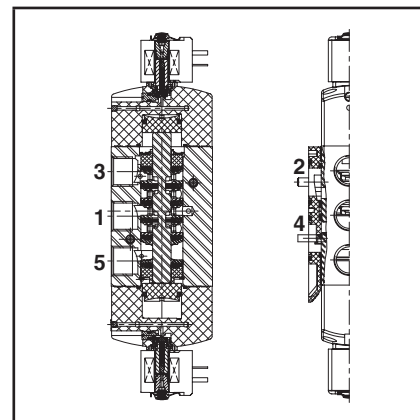
### SECTIONAL DRAWINGS



monostable 553 series



bistable 551 series



bistable 553 series