

## FEATURES

- Three way solenoid valves with orifice and pipe connections in valve body
- Valves are designed to handle relatively high pressure 3-way applications
- Valves do not require a minimum operating pressure
- The solenoid valves satisfy all relevant EC Directives

## GENERAL

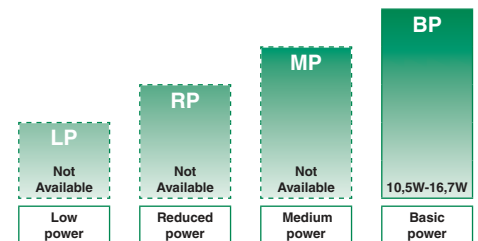
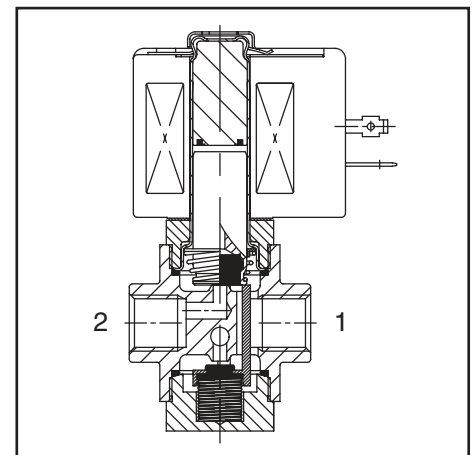
|                       |                             |
|-----------------------|-----------------------------|
| Differential pressure | 0 - 55 bar [1 bar = 100kPa] |
| Maximum viscosity     | 65cST (mm <sup>2</sup> /s)  |
| Response times        | 5 - 25 ms                   |

| fluids (*)                 | temperature range (TS)         | seal materials (*)             |
|----------------------------|--------------------------------|--------------------------------|
| air, inert gas, water, oil | -20 to + 90°C<br>-20 to + 40°C | NBR (nitrile)<br>UR (urethane) |

## MATERIALS IN CONTACT WITH FLUID

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

|                          | Brass body      | Stainless steel body |
|--------------------------|-----------------|----------------------|
| Body and seat            | Brass           | AISI 303 SS          |
| Core tube                | Stainless steel | Stainless steel      |
| Core and plugnut         | Stainless steel | Stainless steel      |
| Springs                  | Stainless steel | Stainless steel      |
| Sealings                 | NBR             | NBR                  |
| Discs                    | NBR or UR       | NBR                  |
| Disc holder & core guide | CA              | CA                   |
| Shading coil             | Copper          | Silver               |



POWER LEVELS - cold electrical holding values (watt)

## SPECIFICATIONS

| pipe size            | orifice size | flow coefficient Kv |       | operating pressure differential (bar) |              |    | power level BP | prefix optional solenoids |              |         |       |      | basic catalogue number  |               |
|----------------------|--------------|---------------------|-------|---------------------------------------|--------------|----|----------------|---------------------------|--------------|---------|-------|------|-------------------------|---------------|
|                      |              |                     |       | min.                                  | max. (PS)    |    |                | NEMA 7&9                  | ATEX / IECEx |         |       | IP65 |                         |               |
|                      |              |                     |       |                                       | air/water(*) |    |                |                           | Ex d         | Ex e mb | Ex mb |      |                         |               |
| NPT                  | (mm)         | (m³/h)              | (l/m) |                                       | ~            | =  | ~/=            | EF                        | NF           | EM      | PV    | SC   | brass                   | stainless st. |
| U - Universal        |              |                     |       |                                       |              |    |                |                           |              |         |       |      |                         |               |
| 1/4                  | 0,8          | 0,02                | 0,3   | 0                                     | 27           | 19 | 16,7/11,2      | ●                         | ●            | ○       | ●     | ●    | B320A170 <sup>(1)</sup> | -             |
|                      | 1,6          | 0,08                | 1,3   | 0                                     | 9            | 5  | 10,5/11,2      | ●                         | ●            | ●       | ●     | ●    | B320A172                | -             |
|                      | 2,4          | 0,10                | 1,7   | 0                                     | 7            | 4  | 16,7/11,2      | ●                         | ●            | ○       | ●     | ●    | B320B174                | B320A200      |
| NC - Normally closed |              |                     |       |                                       |              |    |                |                           |              |         |       |      |                         |               |
| 1/4                  | 0,8          | 0,02                | 0,3   | 0                                     | 50           | 35 | 16,7/11,2      | ●                         | ●            | ○       | ●     | ●    | B320A180 <sup>(1)</sup> | -             |
|                      | 1,6          | 0,08                | 1,3   | 0                                     | 15           | 11 | 16,7/11,2      | ●                         | ●            | ○       | ●     | ●    | B320A182                | -             |
|                      | 2,4          | 0,10                | 1,7   | 0                                     | 10           | 8  | 10,5/11,2      | ●                         | ●            | ●       | ●     | ●    | B320A184                | B320A202      |
|                      | 3,2          | 0,21                | 3,5   | 0                                     | 6            | 4  | 10,5/11,2      | ●                         | ●            | ●       | ●     | ●    | B320A186                | B320A203      |
| NO - Normally open   |              |                     |       |                                       |              |    |                |                           |              |         |       |      |                         |               |
| 1/4                  | 0,8          | 0,02                | 0,3   | 0                                     | 55           | 40 | 16,7/11,2      | ●                         | ●            | ○       | ●     | ●    | B320A190 <sup>(1)</sup> | -             |
|                      | 1,6          | 0,08                | 1,3   | 0                                     | 17           | 11 | 16,7/11,2      | ●                         | ●            | ○       | ●     | ●    | B320A192                | -             |
|                      | 2,4          | 0,10                | 1,7   | 0                                     | 10           | 7  | 10,5/11,2      | ●                         | ●            | ●       | ●     | ●    | B320A194                | B320A204      |
|                      | 3,2          | 0,21                | 3,5   | 0                                     | 5            | 4  | 10,5/11,2      | ●                         | ●            | ●       | ●     | ●    | B320A196                | B320A205      |

● Available feature ○ Available feature in DC only - Not available <sup>(1)</sup> UR discs

## 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+31)*  |  | -           | -  | -  | ●  |
|        |   | E | T |   |   |   | Threaded conduit/hole (M20 x 1,5)                          |  | -           | -  | -  | ●  |
| 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                          |  | -           | -  | -  | ●  |
| W      | S |   |   |   |   |   | Waterproof IP67 - 316 SS enclosure                         |  | -           | -  | -  | ●  |
| W      | S | E | M |   |   |   | Waterproof IP67 - 316 SS enclosure (EN/IEC 60079-7+18+31)* |  | -           | -  | -  | ●  |
| W      | S | N | F |   |   |   | Flameproof - 316L SS (EN/IEC 60079-1, 60079-31)*           |  | -           | -  | -  | ●  |
|        |   |   |   |   |   |   | Threaded conduit (1/2" NPT)                                |  | -           | -  | -  | ●  |
|        |   |   |   |   | H | C | Class H - Battery charging circuit                         |  | -           | -  | -  | ●  |
|        |   |   |   |   | H | T | Class H - High temperature                                 |  | -           | -  | -  | ●  |
|        |   |   |   |   |   | X | Other special constructions                                |  | -           | -  | -  | ●  |

## SUFFIX TABLE

| suffix |   |   |   |   | description                                                |  | power level |    |    |    |
|--------|---|---|---|---|------------------------------------------------------------|--|-------------|----|----|----|
| 1      | 2 | 3 | 4 | 5 |                                                            |  | LP          | RP | MP | BP |
| E      |   |   |   |   | EPDM (ethylene-propylene)                                  |  | -           | -  | -  | ●  |
| J      |   |   |   |   | CR (chloroprene)                                           |  | -           | -  | -  | ●  |
| N      |   |   |   |   | Oxygen service (CR (chloroprene))                          |  | -           | -  | -  | ●  |
| N      | V |   |   |   | FPM (fluoroelastomer) and parts cleaned for oxygen service |  | -           | -  | -  | ●  |
| T      |   |   |   |   | PTFE (polytetrafluoroethylene)                             |  | -           | -  | -  | ●  |
| V      |   |   |   |   | FPM (fluoroelastomer)                                      |  | -           | -  | -  | ●  |
| W      |   |   |   |   | UR (urethane)                                              |  | -           | -  | -  | ◆  |
|        | C | O |   |   | Epoxy coating on all external surfaces                     |  | -           | -  | -  | ●  |
|        | M | B |   |   | Mounting bracket                                           |  | -           | -  | -  | ●  |
|        |   | P |   |   | Dry gas, non-lubricated air construction                   |  | -           | -  | -  | ●  |
|        |   | Q |   |   | Long life, quiet operation construction                    |  | -           | -  | -  | ●  |
|        |   |   | M | O | Push type manual operator                                  |  | -           | -  | -  | ●  |
|        |   |   | M | S | Screw type manual operator                                 |  | -           | -  | -  | ●  |

● Available feature

◆ Standard feature for B320A170, B320A180 and B320A190

- Not available

\* ATEX/IECEx valves using these solenoids are approved according to EN 13463-1 (non electrical)

## PRODUCT SELECTION GUIDE

### STEP 1

Select basic catalogue number, including pipe thread identification letter. Refer to the specifications table on page 1.

**Example: B320A202**

### STEP 2

Select prefix (combination). Refer to the specifications table on page 1 and the prefix table on page 2, respect the indicated power level.

**Example: PV**

### STEP 3

Select suffix (combination) if required. Refer to the suffix table on page 2, respect the indicated power level.

**Example: T**

### STEP 4

Select voltage. Refer to standard voltages on page 3.

**Example: 24V / DC**

### STEP 5

Final catalogue / ordering number.

**Example:**

**PVB320A202 T 24V / DC**

## OPTIONS & ACCESSORIES

| catalogue number | spare parts kit no. <sup>(1)</sup> |         | mounting bracket no.      |
|------------------|------------------------------------|---------|---------------------------|
|                  | ~                                  | =       |                           |
| SC B 320A170     | C302112                            | C302200 | 160800 <sup>(2)</sup>     |
| SC B 320A172     | C302114                            | C302201 | 160800 <sup>(2)</sup>     |
| SC B 320B174     | C302116                            | C302201 | 160800 <sup>(2)</sup>     |
| SC B 320A180     | C302140                            | C302226 | 160800 <sup>(2)</sup>     |
| SC B 320A182     | C302141                            | C302227 | 160800 <sup>(2)</sup>     |
| SC B 320A184     | C302142                            | C302227 | 160800 <sup>(2)</sup>     |
| SC B 320A186     | C302143                            | C302228 | 160800 <sup>(2)</sup>     |
| SC B 320A190     | C302182                            | C302254 | 160800 <sup>(2)</sup>     |
| SC B 320A192     | C302183                            | C302255 | 160800 <sup>(2)</sup>     |
| SC B 320A194     | C302184                            | C302255 | 160800 <sup>(2)</sup>     |
| SC B 320A196     | C302184                            | C302255 | 160800 <sup>(2)</sup>     |
| SC B 320A200     | C312189                            | C312190 | 162950-001 <sup>(3)</sup> |
| SC B 320A202     | C312191                            | C312192 | 162950-001 <sup>(3)</sup> |
| SC B 320A203     | C312191                            | C312192 | 162950-001 <sup>(3)</sup> |
| SC B 320A204     | C312193                            | C312194 | 162950-001 <sup>(3)</sup> |
| SC B 320A205     | C312193                            | C312194 | 162950-001 <sup>(3)</sup> |

<sup>(1)</sup> Standard prefixes/suffixes are also applicable to kits

<sup>(2)</sup> Mounting holes in body

<sup>(3)</sup> Mounting bracket supplied standard with valve

## ORDERING EXAMPLES VALVES:

|      |   |         |                 |
|------|---|---------|-----------------|
| WST  | B | 320A192 | 230V / 50 Hz    |
| SCHT | B | 320A184 | V 230V / 50 Hz  |
| SC   | B | 320A194 | MB 24V / DC     |
| WP   | B | 320A170 | MS 24V / DC     |
| WS   | B | 320A182 | VP 24V / DC     |
|      | B | 320B174 | Q 230V / 50 Hz  |
|      | B | 320A190 | CO 230V / 50 Hz |
| EF   | B | 320G200 | MO 240V / 60 Hz |

prefix <sup>(4)</sup>      pipe thread      basic number <sup>(4)</sup>      voltage      suffix

## ORDERING EXAMPLES KITS:

|      |         |                   |
|------|---------|-------------------|
| WSEM | C302183 |                   |
|      | C302142 | V <sup>(5)</sup>  |
|      | C302255 | MO <sup>(5)</sup> |
| WP   | C302200 | MS                |

prefix      basic number      suffix

<sup>(4)</sup> Prefix EF and EV should always be used in conjunction with change letter G in the basic number

<sup>(5)</sup> Basic kit number applies to SC coil construction

## 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 | safety code                                    | electrical<br>enclosure<br>protection<br>(EN 60529) | replacement coil / kit |                  | type <sup>(2)</sup> |
|------------------|---------------|--------------|------|---------------|---------------------------------------------|------------------------------------------------|-----------------------------------------------------|------------------------|------------------|---------------------|
|                  | inrush<br>~   | holding<br>~ |      | hot/cold<br>= |                                             |                                                |                                                     | ~                      | =                |                     |
|                  | (VA)          | (VA)         | (W)  | (W)           |                                             |                                                |                                                     | (C°) <sup>(1)</sup>    | 230V/50 Hz       |                     |
| Basic power (BP) |               |              |      |               |                                             |                                                |                                                     |                        |                  |                     |
| SC               | 55,0          | 23,0         | 10,5 | 9,0/11,2      | -40 to +75                                  | EN 60730                                       | IP65, moulded                                       | 400425-117             | 400425-142       | 01-02               |
| SC               | 78,0          | 35,0         | 16,7 | -             | -40 to +50                                  | EN 60730                                       | IP65, moulded                                       | 400425-217             | -                | 01-02               |
| WP/WS            | 55,0          | 23,0         | 10,5 | 9,0/11,2      | -40 to +75                                  | EN 60730                                       | IP67, steel/SS                                      | 400405-117             | 400405-142       | 03-04               |
| WP/WS            | 78,0          | 35,0         | 16,7 | -             | -40 to +50                                  | EN 60730                                       | IP67, steel/SS                                      | 400405-217             | -                | 03-04               |
| NF/WSNF          | 55,0          | 23,0         | 10,5 | -             | -60 to +25/40/60                            | II2G Ex d IIC Gb T6/T5/T4, II2D Ex tb IIIC Db  | IP66/67, alu./SS                                    | 400405-117             | -                | 05-06               |
| NF/WSNF          | -             | -            | -    | 9,0/11,2      | -60 to +40/60/75                            | II2G Ex d IIC Gb T6/T5/T4, II2D Ex tb IIIC Db  | IP66/67, alu./SS                                    | -                      | 400405-142       | 05-06               |
| NF/WSNF          | 78,0          | 35,0         | 16,7 | -             | -60 to +40                                  | II2G Ex d IIC Gb T4, II2D Ex tb IIIC Db        | IP66/67, alu./SS                                    | 400405-217             | -                | 05-06               |
| EM/WSEM          | 55,0          | 23,0         | 10,5 | 9,0/11,2      | -40 to +40                                  | II2G Ex e mb IIC Gb T3, II2D Ex tb IIIC Db     | IP66/67, steel/SS                                   | 400909-117             | 400913-142       | 03-04               |
| PV               | 55,0          | 23,0         | 10,5 | 9,0/11,2      | -40 to +65                                  | II2G/D Ex mb IIC Gb T3(-)/T4(=), Ex mb IIIC Db | IP67, moulded                                       | - <sup>(3)</sup>       | - <sup>(3)</sup> | 07-08               |
| EF               | 50,0          | 25,0         | 10,1 | 9,0/11,6      | -40 to +52/40                               | NEMA type 7 and 9                              | NEMA 4X                                             | 238614-057D            | 238714-006D      | 09-10               |
| EF               | 70,0          | 40,0         | 17,1 | -             | -40 to +52                                  | NEMA type 7 and 9                              | NEMA 4X                                             | 238614-157D            | -                | 09-10               |

<sup>(1)</sup> Temperature range can be limited by sealings

<sup>(3)</sup> Multiple coil kits are available under ATEX/IECEX, contact us

<sup>(2)</sup> Refer to the dimensional drawings on pages 4 to 5

- 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 | M22 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         | 1/2" NPT threaded cable entry. Enclosures are supplied without cable gland.                                                                     |
| PV               | Moulded-in cable, standard length 2 m                                                                                                           |

## ADDITIONAL OPTIONS

- Ex mb (prefix "PV") execution can be supplied in 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
- Special moulded-in solid state components for peak voltage suppression and/or rectification (four diode bridge)
- Mounting brackets for brass body valves, suffix MB

## INSTALLATION

- Multi language installation/maintenance instructions are included with each valve
- The solenoid valves can be mounted in any position without affecting operation
- Stainless steel valves are standard supplied with mounting brackets
- Threaded pipe connection identifier is B = NPT (ANSI 1.20.3)
- Declarations of conformity are available on request

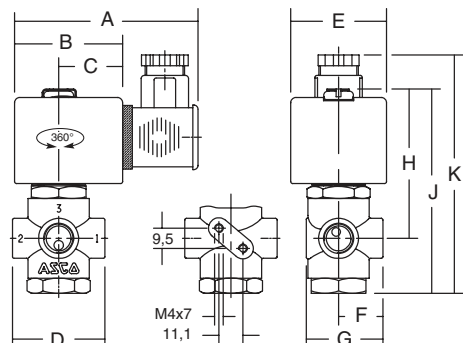
### DIMENSIONS (mm), WEIGHT (kg)



#### TYPE 01:

Epoxy moulded  
SC: IEC 335 / ISO 4400

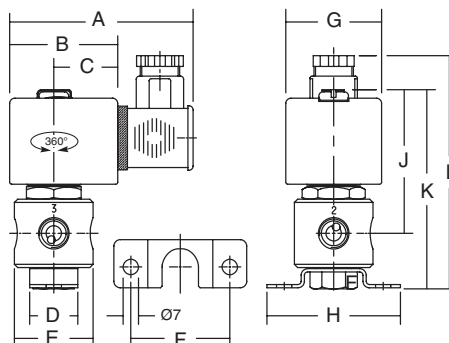
B320A170 / A172 / B174 / A180 / A182 / A184 /  
B320A186 / A190 / A192 / A194 / A196



#### TYPE 02:

Epoxy moulded  
SC: IEC 335 / ISO 4400

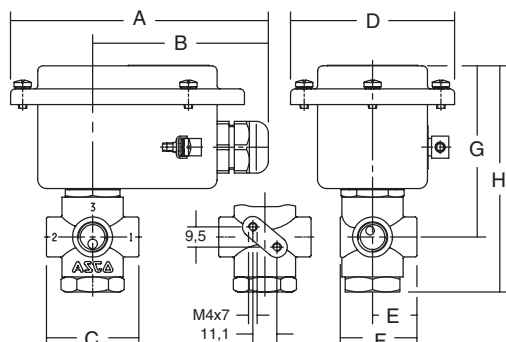
B320A200 / A202 / A203 / A204 / A205



#### TYPE 03:

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

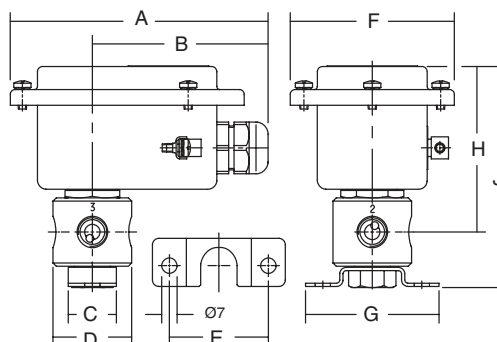
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B320A186 / A190 / A192 / A194 / A196



#### TYPE 04:

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

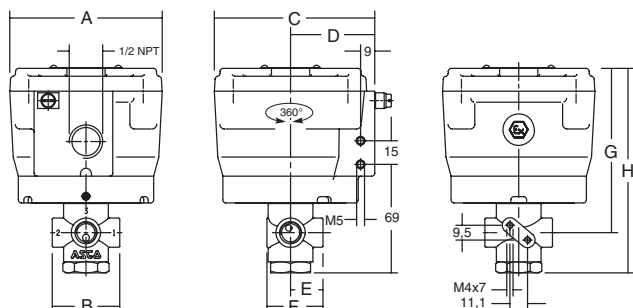
B320A200 / A202 / A203 / A204 / A205



#### TYPE 05:

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

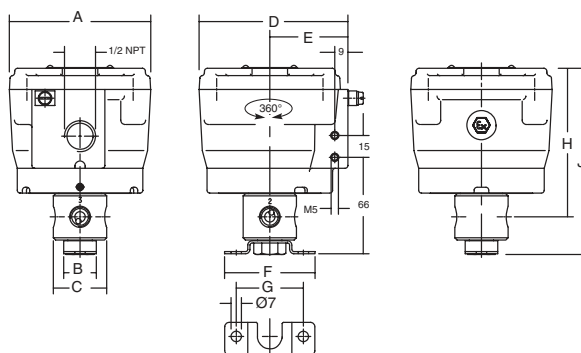
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B320A186 / A190 / A192 / A194 / A196



#### TYPE 06:

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

B320A200 / A202 / A203 / A204 / A205



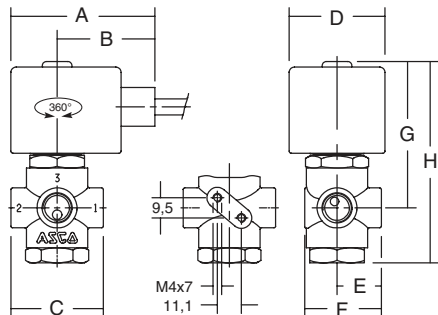
### DIMENSIONS (mm), WEIGHT (kg)



#### TYPE 07:

Epoxy encapsulated  
PV: EN/IEC 60079-18

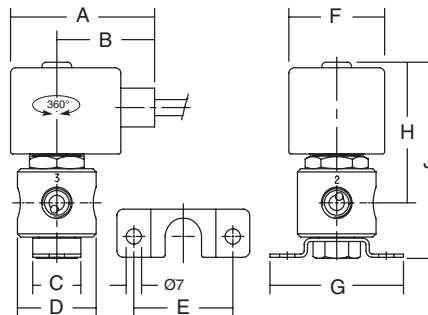
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B320A186 / A190 / A192 / A194 / A196



#### TYPE 08:

Epoxy encapsulated  
PV: EN/IEC 60079-18

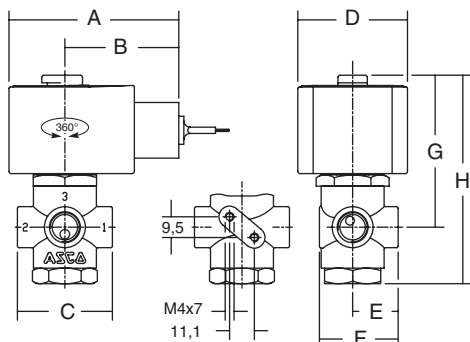
B320A200 / A202 / A203 / A204 / A205



#### TYPE 09:

Epoxy encapsulated  
EF: ICS-6 ANSI / NEMA Type 7 and 9  
NOTE: applicable to solenoid only

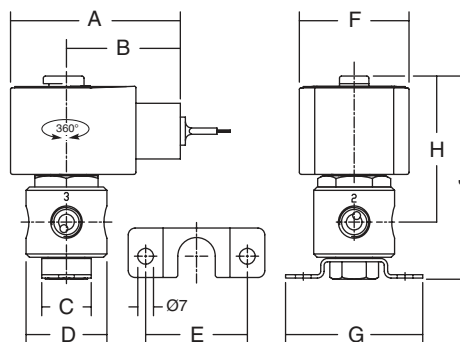
B320G170 / G172 / G174 / G180 / G182 / G184 /  
B320G186 / G190 / G192 / G194 / G196



#### TYPE 10:

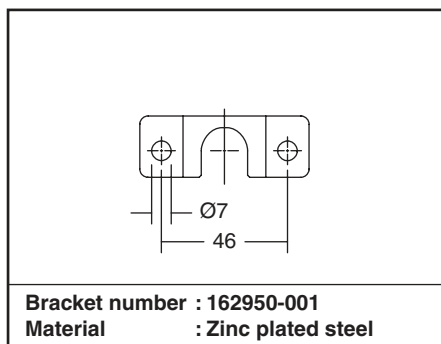
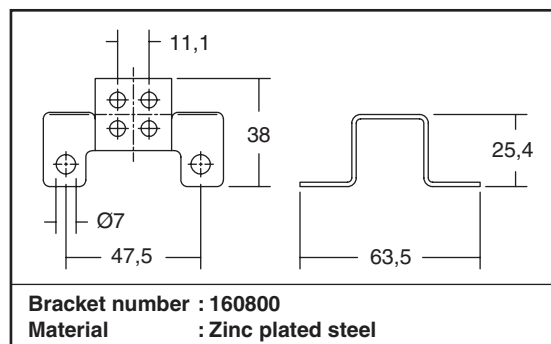
Epoxy encapsulated  
EF: ICS-6 ANSI / NEMA Type 7 and 9  
NOTE: applicable to solenoid only

B320G200 / G202 / G203 / G204 / G205



| type | prefix/option   | power level | A   | B  | C   | D   | E  | F  | G   | H   | J   | K   | L   | weight  |
|------|-----------------|-------------|-----|----|-----|-----|----|----|-----|-----|-----|-----|-----|---------|
| 01   | SC              | BP          | 80  | 50 | 30  | 43  | 45 | 21 | 36  | 70  | 95  | 108 | -   | 0,55 kg |
| 02   | SC              | BP          | 80  | 50 | 30  | 22  | 40 | 46 | 45  | 62  | 69  | 94  | 107 | 0,55 kg |
| 03   | WP, WS, EM/WSEM | BP          | 120 | 82 | 43  | 77  | 21 | 36 | 79  | 105 | -   | -   | -   | 0,60 kg |
| 04   | WP, WS, EM/WSEM | BP          | 120 | 82 | 22  | 36  | 46 | 77 | 62  | 77  | 103 | -   | -   | 0,70 kg |
| 05   | NF/WSNF         | BP          | 97  | 73 | 103 | 54  | 21 | 36 | 104 | 130 | -   | -   | -   | 1,60 kg |
| 06   | NF/WSNF         | BP          | 97  | 22 | 36  | 102 | 54 | 62 | 46  | 102 | 128 | -   | -   | 1,75 kg |
| 07   | PV              | BP          | 67  | 45 | 43  | 45  | 21 | 36 | 63  | 94  | -   | -   | -   | 0,60 kg |
| 08   | PV              | BP          | 67  | 45 | 22  | 36  | 46 | 45 | 62  | 65  | 91  | -   | -   | 0,70 kg |
| 09   | EF              | BP          | 77  | 51 | 43  | 50  | 21 | 36 | 69  | 94  | -   | -   | -   | 0,70 kg |
| 10   | EF              | BP          | 77  | 51 | 22  | 37  | 46 | 50 | 62  | 66  | 92  | -   | -   | 0,70 kg |

## MOUNTING BRACKETS



## SECTIONAL DRAWING

