

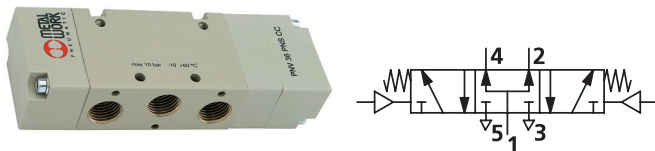
## 5/3-way valve

pneumatic, series 70

**PLUS** ||

Art. No. 106510

Type No. 516.403



Exemplary illustration

Traditional way valves of series 70 in pneumatic version. These valves have a wide range of applications as bushing valves, direct mounting on the cylinder with special adapters or as series valves with multi-base plates and individual interlinking plates (supply strips).

### Technical data

|                                                   |                                                                                      |
|---------------------------------------------------|--------------------------------------------------------------------------------------|
| Function                                          | 5/3                                                                                  |
| Operation                                         | mid-position pressurised                                                             |
| Connection                                        | G 1/8                                                                                |
| DN                                                | 5 mm                                                                                 |
| Flow rate measurement 1                           | flow rate at 6 bar and $\Delta p$ 0.5 bar                                            |
| Flow rate 1                                       | 400 NI/min                                                                           |
| Flow rate measurement 2                           | flow rate at 6 bar and $\Delta p$ 1 bar                                              |
| Flow rate 2                                       | 550 NI/min                                                                           |
| Medium                                            | filtered compressed air with or without lubrication. If lubricated, then continuous. |
| Required purity class in accordance w. ISO 8573-1 | 4.7.3                                                                                |
| Operating pressure                                | -0.99 - 10 bar                                                                       |
| Pilot pressure                                    | 2.5 - 10 bar                                                                         |
| Pilot pressure at -40 to -10 °C                   | max. 10 bar                                                                          |
| Operating pressure at -10 to 60 °C                | max. 10 bar                                                                          |
| Temperature range                                 | -10 to 60 °C                                                                         |
| Sealant                                           | NBR                                                                                  |

## Commercial data

|                         |                  |
|-------------------------|------------------|
| Customs tariff number   | 84818079         |
| Country of origin       | IT               |
| eCl@ss 5.1.4            | 27291501         |
| eCl@ss 9.0              | 27291390         |
| UNSPSC_Code_v190501     | 40141603         |
| UNSPSC_CodeDesc_v190501 | Pneumatic valves |

## Material informations

|                            |                         |
|----------------------------|-------------------------|
| REACH SVHC1 substance name | lead                    |
| CAS no. SVHC 1             | 7439-92-1               |
| RoHS materials notice      | RoHS compliant          |
| REACH Info                 | contains SVHC substance |

## VALVES SERIES 70

The Series 70 forms part of Metal Work's full range of traditional valves.  
They are available in sizes 1/8", 1/4", 3/8" and 1/2", versions 3/2, 5/2, 5/3 and double 3/2, with mechanical, manual, pneumatic and electric drives.  
They can be installed in line, onto a wall, on the cylinder (using a special bracket) or in series (on a multiple or modular base) to suit all possible applications.

A range of valves (Series 70 LT) designed using components for specific low-temperature applications is now available for the most commonly used types and sizes.

These highly reliable valves comply with the main applicable standards, including Atex, ISO 13489 and SIL, as stated in the documents and certificates available online.



| TECHNICAL DATA                                             |                    | 1/8"                                                                                                                   | 1/4"   | 3/8"   | 1/2"   |
|------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|
| Thread on the valve ports                                  |                    | 1/8"                                                                                                                   | 1/4"   | 3/8"   | 1/2"   |
| Operating pressure series 70 versions                      | bar                | 2.5 to 10                                                                                                              |        |        |        |
| monostable and bistable differential                       |                    | 1 to 10                                                                                                                |        |        |        |
| bistable                                                   |                    | vacuum to 10                                                                                                           |        |        |        |
| asserved                                                   |                    |                                                                                                                        |        |        |        |
| Operating pressure series 70 LT (low temperature) versions | bar                | vacuum to 10                                                                                                           |        |        |        |
| hand operated                                              |                    | 5 to 10                                                                                                                |        |        |        |
| pneumatic and solenoid/pneumatic                           | t = -40°C to -10°C | 3 to 10                                                                                                                |        |        |        |
|                                                            | t = -10°C to +60°C |                                                                                                                        |        |        |        |
| Minimum pilot pressure                                     | bar                | 2.5                                                                                                                    |        |        |        |
| Operating temperature range                                | °C                 |                                                                                                                        |        |        |        |
| series 70 versions                                         |                    | -10 to +60                                                                                                             |        |        |        |
| series 70 LT (low temperature) versions                    |                    | -40 to +60                                                                                                             |        |        |        |
| Nominal diameter                                           | mm                 | 5                                                                                                                      | 7.5    | 13.3   | 15     |
| Conductance C                                              | Nl/min - bar       | 121.43                                                                                                                 | 264.26 | 505.52 | 971.43 |
| Critical ratio b                                           | bar/bar            | 0.32                                                                                                                   | 0.27   | 0.32   | 0.43   |
| Flow rate at 6 bar ΔP 0.5 bar                              | Nl/min             | 400                                                                                                                    | 750    | 1560   | 3200   |
| Flow rate at 6 bar ΔP 1 bar                                | Nl/min             | 550                                                                                                                    | 1100   | 2150   | 4600   |
| Installation                                               |                    | In any position (vertical assembly is not recommended for bistable valves subjected to vibration)                      |        |        |        |
| Fluid                                                      |                    | Filtered air without lubrication; lubrication, if used, must be continuous.                                            |        |        |        |
| Recommended lubricant                                      |                    | For series 70 LT (low-temperature) versions, it is recommended to use of perfettamente dried air.<br>ISO and UNI FD 22 |        |        |        |
| Maximum coil nut torque                                    | Nm                 | For series 70 LT (low-temperature) it is not expected to be used with lubricated air.<br>1                             |        |        |        |
| Compatibility with oils                                    |                    | See chapter Z1                                                                                                         |        |        |        |

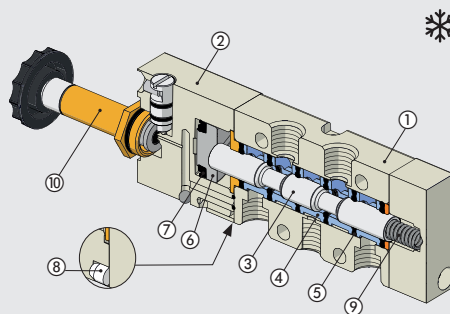
### COMPONENTS SERIES 70

- ① VALVE BODY: Aluminium
- ② CONTROL/END CAP: plastic
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: NBR
- ⑥ PISTONS: Hostaform®
- ⑦ PISTON GASKET: NBR
- ⑧ FILTER: plastic
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: Brass pipe - Stainless steel core



## COMPONENTS SERIES 70 LT (LOW TEMPERATURE)

- ① ALVE BODY: aluminium
- ② CONTROL/END CAP: aluminium
- ③ SPOOL: chemically nickel-plated aluminium
- ④ DISTANCE PLATES: plastic
- ⑤ GASKETS: HNBR
- ⑥ PISTONS: aluminium
- ⑦ PISTON GASKET: HNBR
- ⑧ FILTER: plastic
- ⑨ SPRINGS: special steel
- ⑩ OPERATOR: brass pipe - Stainless steel core  
(version specific for low-temperature applications)



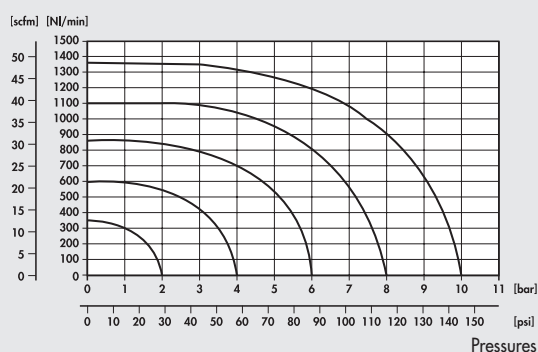
VALVES

VALVES SERIES 70

## FLOW CHARTS

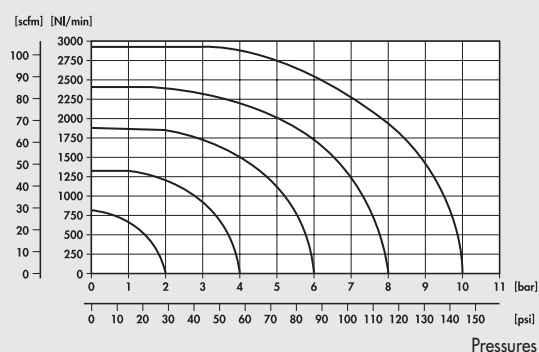
### VALVES SERIES 70 1/8"

Flow rates



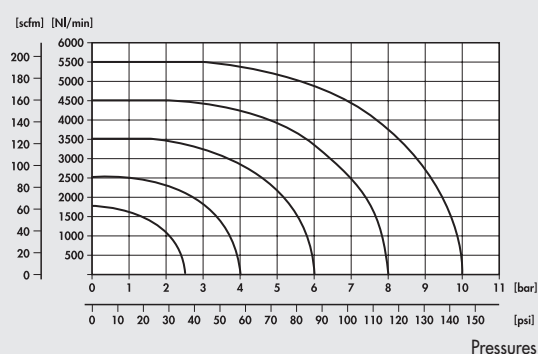
### VALVES SERIES 70 1/4"

Flow rates



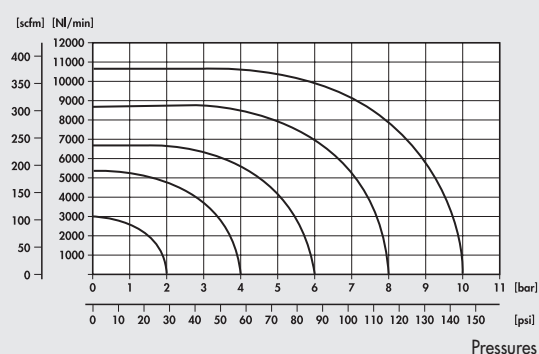
### VALVES SERIES 70 3/8"

Flow rates



### VALVES SERIES 70 1/2"

Flow rates




**VALVES SERIES 70, PNEUMATIC**

| TECHNICAL DATA                         |              | 1/8"         | 1/4"   | 3/8"   | 1/2"   |
|----------------------------------------|--------------|--------------|--------|--------|--------|
| Operating pressure                     | bar          | Vacuum to 10 |        |        |        |
| Minimum pilot pressure                 |              |              |        |        |        |
| • monostable and bistable differential | bar          | 2.5          |        |        |        |
| • bistable                             | bar          | 1            |        |        |        |
| Operating temperature range            | °C           | -10 to +60   |        |        |        |
| Nominal diameter                       | mm           | 5            | 7.5    | 13.3   | 15     |
| Conductance C                          | NI/min · bar | 121.43       | 264.26 | 505.52 | 971.43 |
| Critical ratio b                       | bar/bar      | 0.32         | 0.27   | 0.32   | 0.43   |
| Flow rate at 6 bar ΔP 0.5 bar          | NI/min       | 400          | 750    | 1560   | 3200   |
| Flow rate at 6 bar ΔP 1 bar            | NI/min       | 550          | 1100   | 2150   | 4600   |
| TRA / TRR monostable at 6 bar          | ms           | 6/15         | 7/15   | 5/28   | 16/80  |
| TRA / TRR bistable at 6 bar            | ms           | 7/7          | 7/7    | 13/13  | 25/25  |

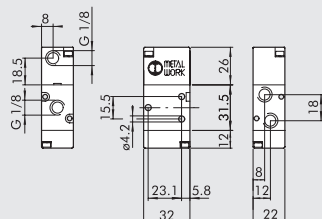
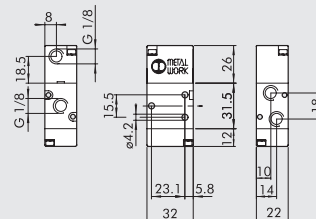

**VALVES**

VALVES SERIES 70, PNEUMATIC

**SYNOPTIC, SIZES AND VERSIONS**

| PNV FAMILY           | 2 DIMENSIONS | 3 FUNCTION | PN OPERATORS 14 | S RESETTING (12)                | NC FURTHER DETAILS                      |
|----------------------|--------------|------------|-----------------|---------------------------------|-----------------------------------------|
| PNV pneumatic valves | 2 1/8"       | 3 3/2      | PN pneumatic    | S mechanical springs            | OO no indication                        |
|                      | 3 1/4"       | 5 5/2      |                 | B bistable                      | NC normally closed                      |
|                      | C 3/8"       | 6 5/3      |                 | D differential                  | NO normally open                        |
|                      | 4 1/2"       | ■ 8 2-3/2  |                 | O stable for 5/3                | CC closed centres                       |
|                      |              |            |                 | ◆ A pneumatic/mechanical spring | OC open centres                         |
|                      |              |            |                 |                                 | PC pressure centres                     |
|                      |              |            |                 |                                 | ▲ NC-NO normally closed - normally open |

- Only available for size 1/8" and 1/4"
- ◆ On demand
- ▲ Only available for function 2-3/2

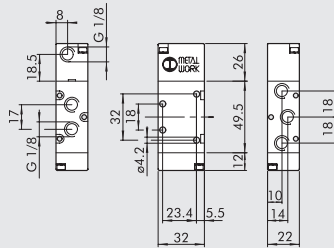
**VALVES SERIES 70, PNEUMATIC, 1/8"**
**MONOSTABLE 3/2 NO, 1/8"**

**MONOSTABLE 3/2 NC, 1/8"**


| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7010010400 | PNV 23 PNS NO | 82         |

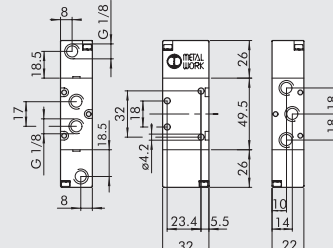
| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7010010200 | PNV 23 PNS NC | 82         |

**B1**
**VALVES**

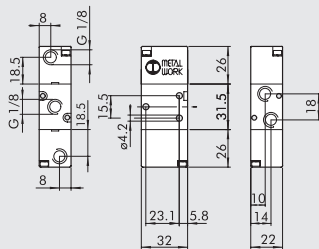
VALVES SERIES 70, PNEUMATIC

**MONOSTABLE 5/2, 1/8"**


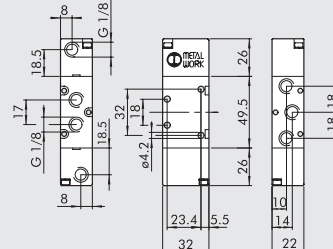
| Symbol                                                                                      | Code       | Abbrev.       | Weight [g] |
|---------------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7010011100 | PNV 25 PNS OO | 108        |

**BISTABLE 5/2, 1/8"**


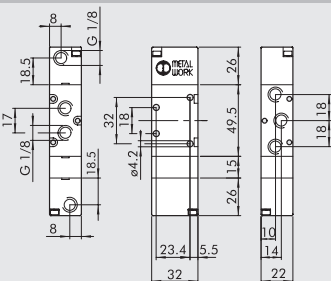
| Symbol                                                                                      | Code       | Abbrev.       | Weight [g] |
|---------------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7010011200 | PNV 25 PNB OO | 122        |
|  | 7010011300 | PNV 25 PND OO | 128        |

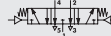
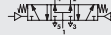
**BISTABLE 3/2, 1/8"**


| Symbol                                                                                        | Code       | Abbrev.       | Weight [g] |
|-----------------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7010010100 | PNV 23 PNB OO | 96         |

**DOUBLE 3/2 1/8"**


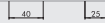
| Symbol                                                                                        | Code       | Abbrev.          | Weight [g] |
|-----------------------------------------------------------------------------------------------|------------|------------------|------------|
|  | 7010013100 | PNV 28 PNS NC    | 136        |
|  | 7010013200 | PNV 28 PNS NO    | 136        |
|  | 7010013300 | PNV 28 PNS NC-NO | 136        |

**MONOSTABLE 5/3, 1/8"**


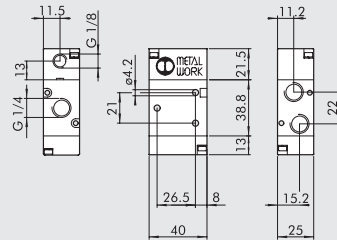
| Symbol                                                                                        | Code       | Abbrev.       | Weight [g] |
|-----------------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7010012100 | PNV 26 PNS CC | 150        |
|  | 7010012200 | PNV 26 PNS OC | 150        |
|  | 7010012300 | PNV 26 PNS PC | 150        |

**NOTES**

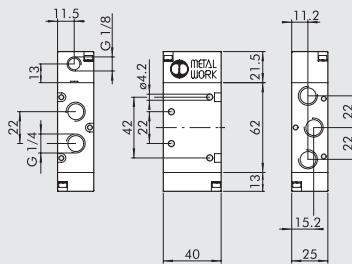
B1.24


**VALVES SERIES 70, PNEUMATIC, 1/4"**
**MONOSTABLE 3/2 NO, 1/4"**


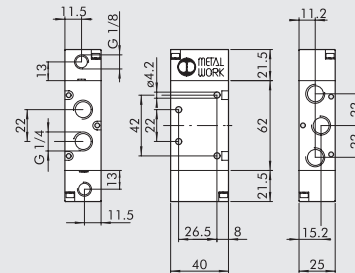
| Symbol                                                                            | Code       | Abbrev.       | Weight [g] |
|-----------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7020010400 | PNV 33 PNS NO | 124        |

**MONOSTABLE 3/2 NC, 1/4"**


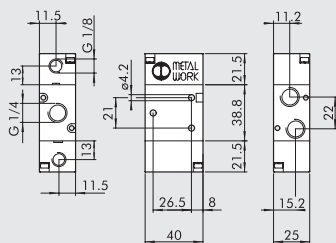
| Symbol                                                                            | Code       | Abbrev.       | Weight [g] |
|-----------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7020010200 | PNV 33 PNS NC | 122        |

**MONOSTABLE 5/2, 1/4"**


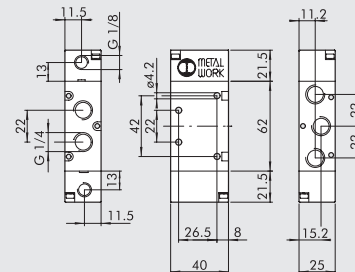
| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7020011100 | PNV 35 PNS OO | 174        |

**BISTABLE 5/2, 1/4"**


| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7020011200 | PNV 35 PNB OO | 174        |
|  | 7020011300 | PNV 35 PND OO | 198        |

**BISTABLE 3/2, 1/4"**


| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7020010100 | PNV 33 PNB OO | 134        |

**DOUBLE 3/2, 1/4"**


| Symbol                                                                              | Code       | Abbrev.          | Weight [g] |
|-------------------------------------------------------------------------------------|------------|------------------|------------|
|  | 7020013100 | PNV 38 PNS NC    | 223        |
|  | 7020013200 | PNV 38 PNS NO    | 223        |
|  | 7020013300 | PNV 38 PNS NC-NO | 223        |

**VALVES**

VALVES SERIES 70, PNEUMATIC

Technical drawing of a metal workpiece showing three views: front, top, and side. The front view shows a rectangular block with a central slot and two circular holes. The top view shows the block's width and depth. The side view shows the block's height and the position of the slot and holes. Dimensions are given in millimeters.

Dimensions (mm):

- Front View:
  - Overall width: 11.5
  - Slot width: 13
  - Slot depth: 11.5
  - Distance from left edge to first hole center: 22
  - Distance between hole centers: 13
  - Distance from right edge to second hole center: 11.5
  - Overall height: 42
  - Slot height: 22
  - Distance from top edge to slot: 13
  - Distance from bottom edge to slot: 11.5
- Top View:
  - Overall width: 11.5
  - Slot width: 13
  - Slot depth: 11.5
  - Distance from left edge to first hole center: 22
  - Distance between hole centers: 13
  - Distance from right edge to second hole center: 11.5
- Side View:
  - Overall width: 11.2
  - Slot width: 13
  - Slot depth: 11.5
  - Distance from left edge to first hole center: 22
  - Distance between hole centers: 13
  - Distance from right edge to second hole center: 11.5
  - Overall height: 42
  - Slot height: 22
  - Distance from top edge to slot: 13
  - Distance from bottom edge to slot: 11.5

## NOTES

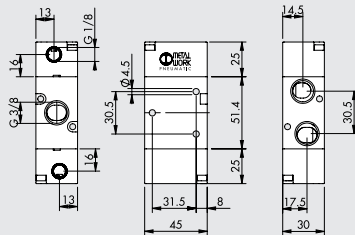
Technical drawing showing three mechanical components with dimensions in millimeters (mm):

- Fig. 1 (Bracket):** Dimensions include 13, 6, 14, 30.5, 60, 30, 4.5, 89.4, 25, 20, 31.5, 8, 45, 14.5, 30.5, 30.5, 30, 17.5, and 30. Surface finish symbols are present.
- Fig. 2 (Plate):** Dimensions include 13, 6, 14, 30.5, 60, 30, 4.5, 89.4, 25, 20, 31.5, 8, 45, 14.5, 30.5, 30.5, 30, 17.5, and 30. Surface finish symbols are present.
- Fig. 3 (Plate):** Dimensions include 13, 6, 14, 30.5, 60, 30, 4.5, 89.4, 25, 20, 31.5, 8, 45, 14.5, 30.5, 30.5, 30, 17.5, and 30. Surface finish symbols are present.

Technical drawing of the 1000 Series Hydraulic Hose Assembly showing three views: front, side, and end view. The front view shows a 1/8 inch G thread, 1.4 inch diameter, 30.5 inch length, and 13 inch width. The side view shows a 60 inch length, 30 inch diameter, 83.4 inch length, 25 inch width, and 45 inch width. The end view shows a 14.5 inch diameter, 30.5 inch length, 17.5 inch width, and 30 inch width. The drawing includes a "1000 SERIES HYDRAULIC" logo.

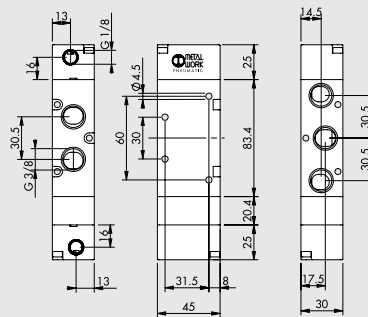
B1.26

**BISTABLE 3/2, 3/8"**



| Symbol                                                                            | Code       | Abbrev.       | Weight [g] |
|-----------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7040010100 | PNV C3 PNB OO | 230        |
|                                                                                   |            |               |            |
|                                                                                   |            |               |            |

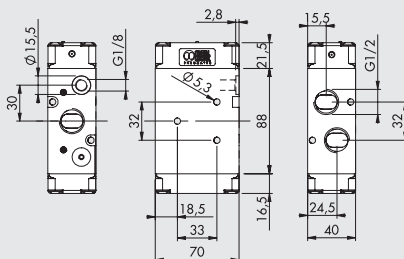
**MONOSTABLE 5/3, 3/8"**



| Symbol | Code       | Abbrev.       | Weight [g] |
|--------|------------|---------------|------------|
|        | 7040012100 | PNV C6 PNS CC | 411        |
|        | 7040012200 | PNV C6 PNS OC | 409        |
|        | 7040012300 | PNV C6 PNS PC | 409        |

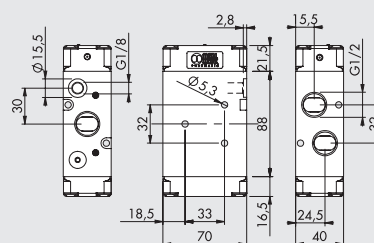
## VALVES SERIES 70, PNEUMATIC, 1/2"

**MONOSTABLE 3/2 NO, 1/2"**



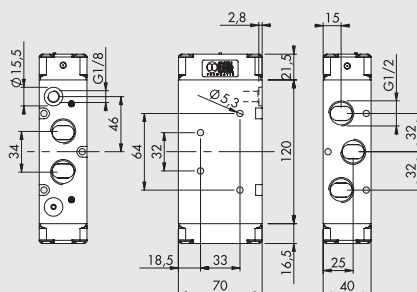
| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7030010400 | PNV 43 PNS NO | 640        |

**MONOSTABLE 3/2 NC, 1/2"**



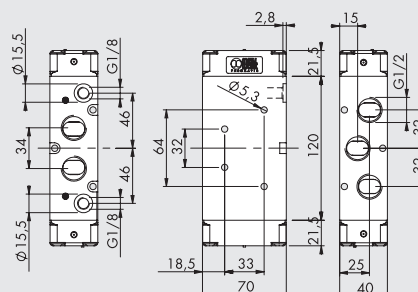
| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7030010200 | PNV 43 PNS NC | 640        |

**MONOSTABLE 5/2, 1/2"**



| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7030011100 | PNV 45 PNS OO | 812        |

**BISTABLE 5/2, 1/2"**

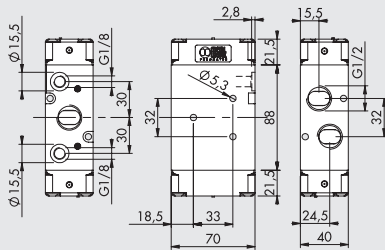


| Symbol                                                                              | Code       | Abbrev.       | Weight [g] |
|-------------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7030011200 | PNV 45 PNB OO | 816        |
|  | 7030011300 | PNV 45 PND OO | 828        |

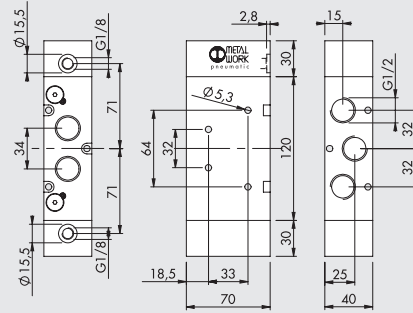
## VALVES

**VALVES SERIES 70, PNEUMATIC**

**MONOSTABLE 5/3, 1/2"**



| Symbol                                                                            | Code       | Abbrev.       | Weight [g] |
|-----------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7030010100 | PNV 43 PNB OO | 650        |
|                                                                                   |            |               |            |
|                                                                                   |            |               |            |
|                                                                                   |            |               |            |
|                                                                                   |            |               |            |



| Symbol                                                                            | Code       | Abbrev.       | Weight [g] |
|-----------------------------------------------------------------------------------|------------|---------------|------------|
|  | 7030012100 | PNV 46 PNS CC | 1200       |
|  | 7030012200 | PNV 46 PNS OC | 1194       |
|  | 7030012300 | PNV 46 PNS PC | 1196       |

## NOTES

## Accessories

|                                                                                                                                    | Art. No. | Type No.   |
|------------------------------------------------------------------------------------------------------------------------------------|----------|------------|
| Supply strip for the way valves, mounting bracket set, height 120 mm, for valves connection G 1/8, exhaust/supply connection G 1/4 | 106604   | 518.120-18 |
| Supply strip for the way valves, mounting bracket set, height 60 mm, for valves connection G 1/8, exhaust/supply connection G 1/4  | 106605   | 518.60-18  |
| Supply strip for the way valves, mounting bracket set, height 30 mm, for valves connection G 1/8, exhaust/supply connection G 1/4  | 106606   | 518.30-18  |
| Supply strip for the way valves, supply strip with 2 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4 | 106610   | 518.02-18  |
| Supply strip for the way valves, supply strip with 3 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4 | 106611   | 518.03-18  |
| Supply strip for the way valves, supply strip with 4 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4 | 106612   | 518.04-18  |
| Supply strip for the way valves, supply strip with 5 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4 | 106613   | 518.05-18  |
| Supply strip for the way valves, supply strip with 6 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4 | 106614   | 518.06-18  |
| Supply strip for the way valves, supply strip with 7 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4 | 106615   | 518.07-18  |
| Multi-base plate for the way valves, with 2 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106622   | 520.02-18  |
| Multi-base plate for the way valves, with 3 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106623   | 520.03-18  |
| Multi-base plate for the way valves, with 4 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106624   | 520.04-18  |
| Multi-base plate for the way valves, with 5 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106625   | 520.05-18  |
| Multi-base plate for the way valves, with 6 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106626   | 520.06-18  |
| Multi-base plate for the way valves, with 7 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106627   | 520.07-18  |
| Multi-base plate for the way valves, with 8 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106628   | 520.08-18  |
| Multi-base plate for the way valves, with 9 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4          | 106629   | 520.09-18  |
| Multi-base plate for the way valves, with 10 valve positions, for valves connection G 1/8, exhaust/supply connection G 1/4         | 106630   | 520.10-18  |
| Modular base, for valves connection G 1/8, manifold base system for valves series 70/basic                                         | 146733   | 0226004150 |
| Terminal outlet w/o seals, for valves G 1/8, exhaust/supply G 1/4, manifold base system for valves series 70/basic                 | 146734   | 0226004201 |
| Terminal inlet with seals, for valves G 1/8, exhaust/supply G 1/4, manifold base system for valves series 70/basic                 | 146735   | 0226004200 |
| Terminal intermediate/upper supply, for valves G 1/8, exhaust/supply G 1/4, manifold base system for valves series 70/basic        | 146736   | 0226004300 |