# cmatic®

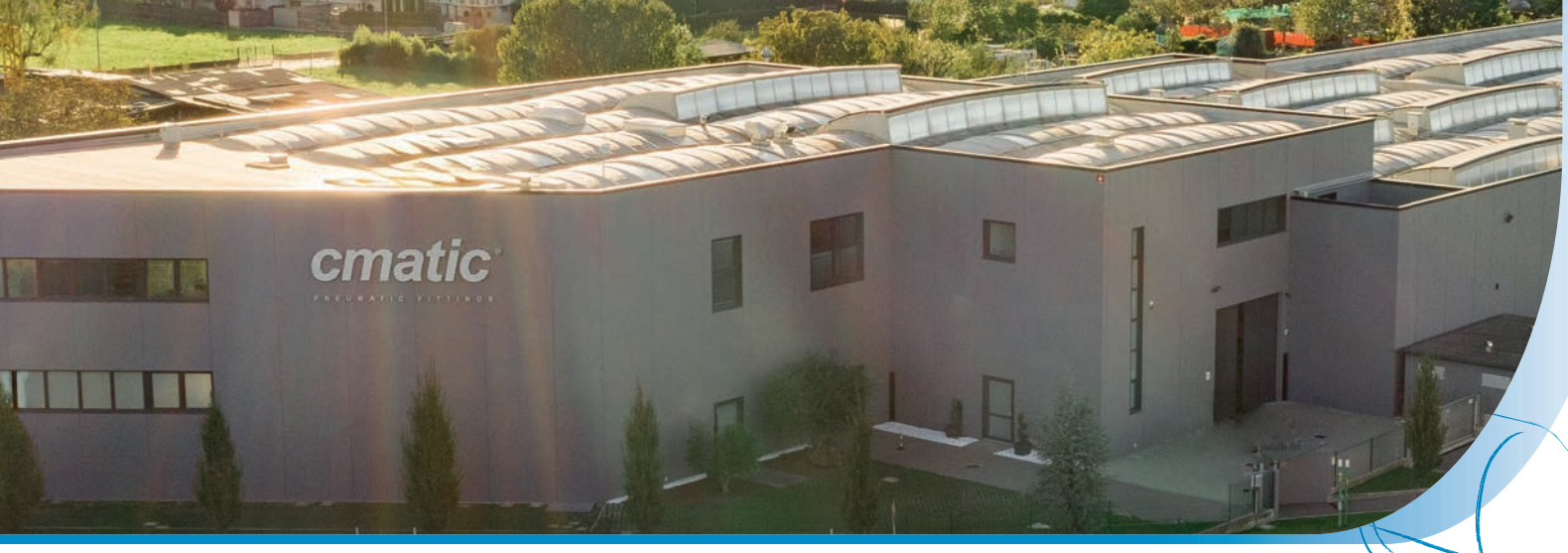
PNEUMATIC FITTINGS

TECHNICAL CATALOG

**2026**

# WE BUILD FITTINGS

cmatic®
PNEUMATIC FITTINGS




1970 1980 1990 2000 2020

Cmatic was founded in the early 1970s as a contract supplier of precision metal parts. In a short time, the company expanded and evolved from a small business into a full-fledged industrial concern. Despite its increased size, Cmatic never loses sight of the changing demands of the market and focuses its attention on researching new materials and developing new products. The company's core business therefore finds its definitive dimension in the Design, Development and Production of Fittings for Industrial Automation. This has led Cmatic to offer an extensive, complete range of products, both in terms of the variety of materials used and of functionality in every pneumatic application, all without neglecting our willingness to develop custom solutions in collaboration with our clients.
Cmatic has been an ISO 9001 certified company since 1994. In 2018, thanks to the continuous development of its Management System, it also achieved ISO 14001 Environmental Management System certification and ISO45001 Occupational Health and Safety certification. The production plant in Giussano, located in the Brianza region of Italy's industrial heartland, covers more than 8500 square metres and produces 20 million fittings divided into more than 40 product lines and over 5000 configurations*.

* 2024 Data


Quality made of design, innovation and development. And, above all, of continuous improvement. In our lab, we carry out stringent product quality tests and constant R&D activities to offer the highest standard on the market to our customers.

01
**QUALITY TESTS**

02
**SEARCH FOR NEW APPLICATIONS**

03
**NEW FUNCTIONS DEVELOPMENT**

04
**FOCUS ON INDUSTRY INNOVATION**

# Certifications

## Product Certifications and Compliance*

TÜV SÜD

NSF

MOCA

ROHS

REACH

## Company Certifications

IQNET 9001:2015

IQNET 14001:2015 & 45001:2015

IQNET

Building trust together

Certificate

SQS has issued an IQNET recognized certificate that the organization:

**C. Matic S.p.A.**
**Via Matteotti, 32**
**IT-20833 Giussano Italy**

has implemented and maintains a
**Quality Management System**

for the following scope:
**Design and Manufacturing of fittings and accessories for pneumatic automation.**
**Procedures on how to carry out the weighing activities meant to determine the «Verified Gross Mass of the Container» (VGM), according to Method 2 as set forth by the amendments in Chapter VI, Rule 2, of SOLAS 74 Convention, as amended (IAF Scope 17, IAF Scope 31)**

which fulfils the requirements of the following Standard:

**ISO 9001:2015**

Issued on: **2024-03-17**
Expires on: **2027-03-16**

Registration Number: **CH-11318**

**Alex Stoichitoiu**
President of IQNet

**F. Müller**
CEO SQS

SQS

SQS

Certificato

La SQS attesta che l'organizzazione di seguito indicata dispone di un sistema di gestione conforme ai requisiti della base normativa menzionata.

cmatic

**C. Matic S.p.A.**
**Via Matteotti, 32**
**20833 Giussano (MB)**
**Italia**

Campo di applicazione

Progettazione e Produzione di raccorderia ed accessori per l'automazione pneumatica.
Procedura per lo svolgimento delle attività di pesatura per la determinazione della "Massa Lorda Verificata del Contenitore" (VGM) secondo il Metodo 2 previsto dagli emendamenti al capitolo VI Regola 2 dalla convenzione SOLAS 74 come emendata (IAF Scope 17, IAF Scope 31)

Base normativa

ISO 9001:2015

Sistema di gestione per la qualità

No. di reg. 11318
Pagina 1 di 1

Validità 17.03.2024 – 16.03.2027
Emissione 17.03.2024

IAF

A.Grisard, Presidente SQS

F. Müller, CEO SQS

Associazione Svizzera per Sistemi di Qualità e di Management (SQS)
Bernstrasse 103, 3052 Zollikofen, Svizzera

Swiss Made

IQNET

**Download** the always up-to-date certificates here

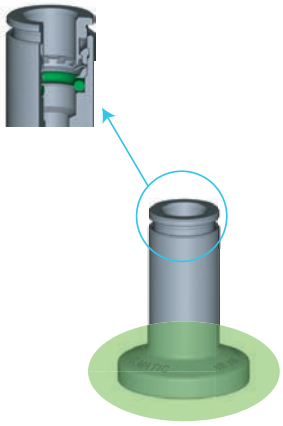
* Certifications related to specific product lines or individual units.

# XT clamp solution

## Clamp Solutions for Sanitary Applications

The Clamp connection style fitting is a perfect solution for all applications requiring the Cleaning in Place (C.I.P) sanitation procedure. The assembly and disassembly of a Clamp fitting is very easy and does not require the use of any tool.
The fitting is made of Stainless steel only and guarantees a secure, smooth, uniform connection between two surfaces.
Cmatic boasts a long experience in the production of Stainless Steel fittings and couplings suitable for harsh aggressive environments and today is proud to expand the product offer to a new range, the XT Clamp line for Pharma, Biotech, Cosmetics, Food & Beverage, Chemical applications and in general all those market segments, where a high degree of hygiene is requested.
The dimension of the XT Clamp is compliant with the ASME BPE norm.

Push-in Fitting



Type A: 25
Type B: 50,4


PX11 XT


PX15 XT

The Clamp surface finishing matches SF1 class

## 1 GENERAL WARNINGS:

1.1 Choosing a suitable product and checking its compatibility with the intended application is the sole responsibility of the system designer/user or whoever defines the specifications/technical features of the said system. Responsibility for the operation and safety of the system lies with the designer who has established compatibility with the product. It is the designer who is obliged to check for any changes in product specifications in order to prevent any possible malfunctions or failures in the system. To be sure to consult the latest state-of-the-art data, it is advisable to refer to the data in the catalogue published online at www.cmatic.com.
1.2 Avoid use in environments with corrosive gases, chemicals, salt water, water or steam. In the case of installation in "critical" environments or in contact with potentially aggressive liquids, please refer to the Chemical Compatibility Table on page 10 of this volume. This table contains a list of all the materials used in our fittings. To identify the specific items for each product line, the introductory page of each series should be consulted.
The information in the table is purely indicative and the actual behaviour of the materials must in any case be tested under the actual conditions of use, as factors such as temperature, pressure and concentrations of substances can lead to significant variations in compatibility assessments. The information contained in the Chemical Compatibility Table should not be regarded as a contractual obligation and any liability is expressly disclaimed. The Customer is not released from the obligation to check the suitability of the products and their suitability for the intended application.
C.matic reserves the right to update and modify the information in the Chemical Compatibility Table at any time and without prior notice.
1.3 Do not expose the product to direct sunlight for prolonged periods during its operation;
1.4 Do not use in places subject to strong vibrations or shocks;
1.5 Do not assemble the product in areas exposed to heat sources;
1.6 Do not use fluids other than those listed in the Catalogue specifications of each product series;
1.7 The pressure and temperature values given in the Catalogue for each product series must be strictly adhered to. If the products are used under pressure and/or temperature conditions outside the indicated range, this may lead to damage or malfunctions.
1.8 It is absolutely forbidden to disassemble the product or to perform modifications and/or reworkings on it. Any such actions, in addition to invalidating any product guarantee, may adversely affect operation and expose the system and users to possible risks.
1.9 The products in the Catalogue are potentially dangerous if used improperly. Assembly, commissioning, and maintenance of machines or equipment in which Cmatic fittings are installed must only be carried out by an experienced and trained operator. Do not service or attempt to remove the product until the system has been made safe.
1.10 If it is necessary to remove the product, ensure that the power supply to the system from any source (pneumatic, electric, etc.) has been cut off beforehand, and that the above safety measures have been implemented.

## 2 WARNINGS AND INSTRUCTIONS FOR THE CORRECT INSTALLATION OF THE PRODUCT:

### 2.1 Male threads

In case of a male threaded fitting assembly, please follow the instructions below:

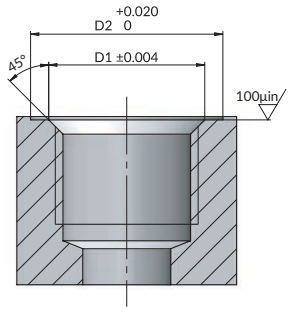
- screw at least the first few pitches of the thread by hand to secure it in the female housing.
- to tighten, use a wrench/tool consistent in size with the hexagonal part on the fitting. In the case of an internal hex , when using an allenkey pay attention to avoid contact with internal components that could be damaged;
- excessive tightening torque or gripping in an area other than the one indicated may result in damage to the product; therefore, the following tightening torques must be strictly adhered to, depending on the type of thread:

A) Tightening forces (Nm)

| Filetto<br>Thread | Norma<br>Stadard | M3x0,5 | M5x0,8 | M6x1 | M7x1 | M8x1 | M10x1 | M12x1,25 | M12x1,5 | 10-32 | 1/8 | 1/4 | 3/8 | 1/2 | 3/4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gas conica con PTFE<br>Taper gas with PTFE | UNI EN<br>10226-1 | | | | | | | | | | 2,5 | 3,5 | 6 | 18 | |
| NPTF con PTFE<br>NPTF with PTFE | ANSI/ASME<br>B12 03 | | | | | | | | | | 11 | 12 | 13 | 18 | 24 |
| Gas cilindrica con O-Ring<br>Parallel gas with O-ring | UNI EN ISO<br>228-1 | | | | | | | | | | 1,2 | 1,5 | 2,5 | 3,5 | |
| Easy thread | CMATIC | | | | | | | | | | 1,2 | 1,5 | 2,5 | 3,5 | |
| Gas cilindrica in resina acetalica con O-Ring<br>Parallel gas in acetal resin with O-ring | UNI EN ISO<br>228-1 | | | | | | | | | | 1,2 | 1,5 | 2,5 | | |
| Gas cilindrica con rondella in plastica<br>Parallel gas with plastic washer | UNI EN ISO<br>228-1 | | | | | | | | | | 2 | 3 | 4 | 8 | |
| UNF con O-Ring<br>UNF with O-ring | ANSI/ASME<br>B11 | | | | | | | | | 0,8 | | | | | |
| Metrica con O-Ring<br>Metric with O-ring | UNI EN ISO<br>965-1 | 0,5 | 0,5 | 0,8 | 0,8 | | | 1,5 | 1,5 | | | | | | |
| Metrica conica con PTFE<br>Taper metric with PTFE | UNI 7707 | | | 2,5 | | 2,5 | 2,5 | | | | | | | | |

**WARNING: Parallel threads with oring**

Before assemb y, make sure that the female part is properly machined to allow perfect sealing with the oring of the male thread. Below a diagram with the dimensional and roughness specifications required for the female part:




| Thread | Ø D1 | Ø D2 |
|---|---|---|
| G 1/8 – EASY 1/8* | 4 06 | 5 31 |
| G 1/4 – EASY 1/4* | 5 39 | 6 49 |
| G 3/8 – EASY 3/8* | 6 77 | 8 07 |
| G 1/2 – EASY 1/2* | 8 50 | 10 04 |
| G 3/4 | 10 79 | 12 79 |
| 10-32 UNF | 1 26 | 2 36 |
| M3x0,5 | 1 26 | 2 36 |
| M5x0,8 | 2 05 | 3 35 |

| Thread | Ø D1 | Ø D2 |
|---|---|---|
| M6x1 | 2 56 | 3 74 |
| M7x1 | 2 95 | 3 74 |
| M10x1 | 4 53 | 5 71 |
| M12x1,25 | 5 08 | 6 10 |
| M12x1,5 | 5 08 | 6 10 |
| M14x1,5 | 5 87 | 6 89 |
| M16x1,5 | 6 65 | 8 07 |
| M22x1,5 | 9 02 | 10 83 |

*The EASY thread is the universal thread designed by Cmatic according to its own construction standards.

## 2.2 Pre teflon-coated taper thread

In the case of pre-Teflon-coated taper thread, it should be noted that the thread may have the first few pitches uncoated without this affecting the sealing capability of the thread. The tightness of the pre-Teflon-coated thread is always determined by the manufacturing quality of the female thread; therefore, it is essential to ensure the conformity of the latter before assembling the male thread. The pre-Teflon-coated thread can be reused up to 5 times. After each assembly-disassembly, before re-using the product, check the condition of the coating to ensure its integrity. Please note that the maximum number of 5 possible reuses of the pre-Teflon-coated thread is closely linked to the actual quality of the female thread and to the strict adherence to the recommended tightening torques. Failure to observe these factors can significantly reduce the service life and number of reuses.

**The system's designer/user is responsible to verify the compatibility of the PTFE coating with the system and its operating conditions.**

## 2.3 Tubing assembly

Once the fitting is connected to a tubing, a certain degree of orientation may be needed after installation for this reason we recommend making the most suitable choice from the various types of fittings in the catalogue:

- ORIENTABLE fitting: allows the tubing to be oriented in the desired direction only until the fitting is tightened in place. Thereafter, it will no longer be possible to change the position of the tubing except by loosening the fitting and repositioning the tubing in the desired direction.
- SWIVEL fitting: The tubing always has the possibility to move a few degrees along its axis. Wide rotations are not recommended, especially if they are associated with high cyclicality, which could significantly reduce the service life of the fitting.
- ROTATING fitting: The tubing can rotate even at high rpm.

This classification is given in the description of each product in the catalogue, and it is essential to adhere to it in order to make a suitable choice for the intended use. No liability is accepted for damage or premature degradation due to fittings subjected to conditions of use that do not comply with the above provisions.

## 2.4 Loads, vibrations or shocks

To avoid possible damage to the system due to a broken fitting and/or disconnection of the hose, ensure that no loads are applied to the fittings and that they are not subject to vibration or shock. Also ensure that no tensile or torsional forces are exerted on the fitting and/or tubing.

## 2.5 Removal of foreign bodies

If the product has not been stored in its original sealed packaging, check before use that the fitting inside is clean and, if necessary, remove any traces of dirt that may have fallen inside of the fitting, by blowing air into it. Please note that in most cases, the inner O-rings are lubricated. Any element deposited on the surface of the O-ring is difficult to remove and could compromise the pneumatic seal of the fitting.

## 2.6 Specific warnings

Each section on the individual fitting series may contain specific warnings and instructions for use marked with a symbol ⚠

## 3 PRODUCT STORAGE:

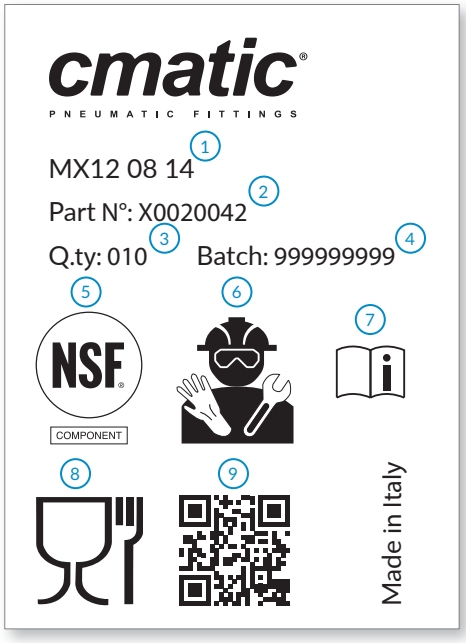
Products must be stored in their original packaging in order to keep all the information necessary for traceability over time.
In any case, the product must always b stored away from dust and moisture, and storage with direct exposure to sunlight must b avoided at all costs, as this would lead to rapid ageing, especially of plastic and rubber parts, affecting thereby their function and durability.
Please note that fittings made of brass and not subject to any galvanic surface protection treatment may change in colour over time. However, this should not b regarded as a product defect or lead to product replacement req ests.

## 4 PRODUCT PACKAGING AND LABELLING:

See detailed information on page 8.

# Product packaging and labelling


Before using the product, make sure that the packaging is intact and that the fittings contained in the bag have not been damaged during transport.
Each package has a label with different graphic and alphanumeric contents. The installer/user must have understood their meaning. For this purpose, a specimen packaging label is provided below in which the above-mentioned data and related meanings are shown. It is essential for the user to understand these contents for conscious and safe use of the product.




1 • Description of the item contained in the package.

2 • Uniq e alphanumeric part numb r of the item contained in the package.

3 • Number of fittings in the package.

4 • Production batch: a key element for the product traceab - lity throughout the production chain. In the event of prob ems with the product, it is essential that the customer provides this information.

5 • NSF certification: this logo is only present if the item in the package is NSF certified.

6 • Experienced user: the presence of this logo is a reminder that the product is only for professional use by trained and experienced persons. It is emphasised that all necessary personal protective equipment must be worn during the installation to avoid in the event of accidents, health hazards.

7 • The presence of this logo recalls the need to consult the technical documentation, instructions and warnings relating to the product b fore proceeding with its installation and use.

8 • (EC)1935/2004: this logo, if present, identifies the article as compliant for food contact according to the relevant European regulation.

9 • QR code containing a series of useful information for traceability of the product and its movement in the warehouse. If scanned, it returns the following information string: part numb r|b gs tq y+b tch numb r.

# Conversion Tables and icons legend

## Conversion tables

Pressure

| | Pa | kPa | Mpa | bar | mbar | atm | p.s.i. | mmHg |
|---|---|---|---|---|---|---|---|---|
| 1 Pa = | 1 | 0,001 | 0,000001 | 0,00001 | 0,01 | 0,0000099 | 0.000145 | 0,00750 |
| 1 kPa = | 1000 | 1 | 0,001 | 0,01 | 10 | 0,00987 | 0.14504 | 7,50062 |
| 1 Mpa = | 1000000 | 1000 | 1 | 10 | 10000 | 9,86923 | 145.03774 | 7500,61505 |
| 1 bar = | 100000 | 100 | 0,10000 | 1 | 1000 | 0,98692 | 14.50377 | 750,06151 |
| 1 mbar = | 100 | 0,1 | 0,0001 | 0,001 | 1 | 0,0009869 | 0.01450 | 0,75006 |
| 1 atm = | 101325 | 101,32500 | 0,10133 | 1,01325 | 1013,25000 | 1 | 14.69595 | 759,99982 |
| 1 p.s.i. = | 6894,75729 | 6,89476 | 0,00689 | 0,06895 | 68,94760 | 0,06805 | 1 | 51,71492 |
| 1 mmHg = | 133,32240 | 0,13332 | 0,00013 | 0,00133 | 1,33320 | 0,00132 | 0.01934 | 1 |

Length

| | m | mm | in | ft |
|---|---|---|---|---|
| 1 m = | 1 | 1000 | 39.37008 | 3.28084 |
| 1 mm = | 0,001 | 1 | 0.03937 | 0.00328 |
| 1 in = | 0,02540 | 25,4 | 1 | 0,08333 |
| 1 ft = | 0,30480 | 304,8 | 12 | 1 |

Weight

| | N | Kg | g | lb | oz |
|---|---|---|---|---|---|
| 1 N = | 1 | 0,10197 | 101,97160 | 0.22481 | 3.59694 |
| 1 Kg = | 9,80665 | 1 | 1000 | 2.20462 | 35.27396 |
| 1 g = | 0,00981 | 0,001 | 1 | 0.00220 | 0.03527 |
| 1 lb = | 4,44822 | 0,45359 | 453,59234 | 1 | 16 |
| 1 oz = | 0,27801 | 0,02835 | 28,34952 | 0.06250 | 1 |

Temperature

| | |
|---|---|
| °K = | °C + 273,15 |
| °C = | (°F - 32) * 5/9 |
| °F = | (9/5 * °C) + 32 |

## Legend Icons

Working Temperature

Flow Rate

Silicone Free Product

In compliance with ISO4414 norm

Working Pressure

Nominal Diameter

Patent/Registered Design

Food Contact Product (EC 1935/2004)

Vacuum

Thread

In compliance with the EU REACH Regulation

NSF Certified Product

Opening Pressure

PTFE-coated thread

In compliance with the RoHS Directive

TÜV Certified Product

# Chemical compatibility chart

The information given on this chart have to be used as a guide only and the actual materials' reaction has to be tested in the real working conditions considering that temperature, pressure and different substances concentration can affect the mentioned chemical compatibility. The information is not to be considered a contractual obligation and any liability whatsoever is expressly declined. The customer is not released from his obligation to investigate the products fitness and the suitability for the intended application. We reserve the right to change the information at any time and without prior notice.

**LEGEND**

| Very Good | Good | Limited resistence | Not recommended | Information not available |
|---|---|---|---|---|

## Chemical compatibility chart

| MEDIUM | FITTINGS | | | | | | | | | SEALS | | | HOSES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINIUM | CARBON STEEL | BRASS | INOX AISI316L | POM | PEI | PARA | PBT | PPSU | NBR | FPM/FKM | EPDM | PA 11-12 | PA6 | PA6.6 | LDPE | PU Ether base | PTFE |
| Acetaldehyde | 🟡 | 🔴 | 🔴 | 🟢 | 🟡 | – | – | – | – | 🔴 | 🔴 | 🟢 | 🟠 | 🟠 | 🟠 | 🟠 | – | 🟡 |
| Acetic Acid (20%) | 🟡 | 🔴 | 🔴 | 🟡 | 🟠 | 🟢 | – | 🟠 | 🟢 | 🟠 | 🟡 | 🟢 | 🟠 | 🔴 | 🔴 | 🟢 | – | 🟡 |
| Acetic Acid (5%) | 🟡 | 🔴 | 🔴 | 🟡 | 🟡 | 🟢 | – | 🟠 | 🟢 | 🟡 | 🟡 | 🟢 | 🟠 | 🔴 | 🔴 | 🟢 | 🔴 | 🟡 |
| Acetic Acid (50%) | 🔴 | – | 🔴 | – | 🔴 | 🟢 | – | 🟠 | 🟢 | 🔴 | 🟡 | 🟢 | 🔴 | 🔴 | 🔴 | 🟠 | – | 🟡 |
| Acetone | 🟡 | 🟢 | 🟡 | 🟢 | 🟡 | 🔴 | 🔴 | 🟡 | 🔴 | 🔴 | 🔴 | 🟢 | 🟠 | 🟡 | 🟡 | 🟠 | – | 🟡 |
| Acetylene | 🟢 | 🟢 | 🔴 | 🟢 | 🟡 | – | – | 🟡 | – | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | – | – | 🟡 |
| Ammonia (10%) | 🟢 | 🟢 | 🔴 | 🟢 | 🔴 | 🔴 | – | – | – | 🟡 | 🟡 | 🟢 | 🟡 | 🟡 | 🟡 | 🟠 | – | – |
| Ammonia Anhydrous | 🟢 | 🟢 | 🔴 | 🟢 | 🔴 | – | – | – | – | 🟡 | 🟡 | 🟢 | 🟡 | 🟡 | 🟡 | 🟢 | – | 🟡 |
| Ammonia Aqueous | – | – | – | – | 🟡 | – | – | 🟡 | – | 🟠 | 🔴 | – | 🟡 | 🟡 | 🟡 | 🟢 | – | 🟡 |
| Ammonia Gas - Cold | – | – | – | – | – | – | – | – | – | 🟡 | 🔴 | 🟢 | – | – | – | – | – | – |
| Ammonia Gas - Hot | – | – | – | – | – | – | – | – | – | 🔴 | 🔴 | 🟡 | – | – | – | – | – | – |
| Ammonium Acetate | 🟡 | – | 🟠 | 🟢 | 🟠 | – | – | – | – | 🟠 | 🟢 | 🟢 | 🟠 | – | – | 🟢 | – | 🟡 |
| Ammonium Bicarbonate | 🟡 | – | – | – | – | – | – | – | – | 🟠 | 🟠 | 🟢 | – | – | – | – | – | – |
| Ammonium Carbonate | 🟠 | 🟡 | 🔴 | 🟡 | 🟡 | – | – | – | – | 🔴 | 🟢 | 🟢 | 🟠 | – | – | 🟢 | – | 🟡 |
| Ammonium Chloride | 🔴 | 🔴 | 🔴 | 🟠 | 🔴 | – | – | – | – | 🟡 | 🟢 | 🟢 | 🟡 | – | – | 🟢 | 🟠 | 🟡 |
| Ammonium Fluoride | 🔴 | 🟢 | – | 🟢 | – | – | – | – | – | 🟢 | 🟡 | 🟢 | – | – | – | 🟢 | – | 🟡 |
| Ammonium Hydroxide | 🟠 | 🔴 | 🔴 | 🟢 | 🔴 | 🟢 | – | – | – | 🔴 | 🟡 | 🟢 | 🟡 | – | – | 🟢 | – | 🟡 |
| Ammonium Nitrate | 🟡 | 🟡 | 🔴 | 🟢 | 🟡 | – | – | – | – | 🟢 | 🟢 | 🟢 | 🟡 | – | – | 🟢 | – | 🟡 |
| Ammonium Phosphate | 🟡 | – | 🔴 | 🟢 | 🟡 | – | – | – | – | 🟡 | 🟡 | 🟡 | 🟠 | – | – | 🟢 | – | 🟡 |
| Ammonium Sulfamate | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Ammonium Sulfate | 🔴 | 🔴 | 🔴 | 🟡 | 🔴 | – | – | – | – | 🟢 | 🟢 | 🟢 | 🟠 | – | – | 🟢 | – | 🟡 |
| Ammonium Sulfide | 🟡 | – | – | – | – | – | – | – | – | 🟡 | 🔴 | 🟢 | 🟠 | – | – | 🟢 | – | 🟡 |
| Aniline | 🟠 | 🟠 | 🔴 | 🟡 | 🟠 | – | – | 🟢 | – | 🔴 | 🟢 | 🟡 | 🟠 | 🟠 | 🟠 | 🔴 | – | 🟡 |
| Animal Fats | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟡 | – | – | – | – | – | – |
| Anti-Freeze (Alchohol Base) | 🟢 | 🟢 | 🟢 | 🟢 | 🔴 | – | – | – | – | – | – | 🟢 | – | – | – | – | – | – |
| Anti-Freeze (Glycol Base) | 🟢 | 🟢 | 🟢 | 🟢 | 🟡 | – | – | – | – | – | – | 🟢 | – | – | – | – | – | – |
| Aqua Regia | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 | – | – | 🔴 | – | 🔴 | 🟡 | 🟠 | 🔴 | 🔴 | 🔴 | 🔴 | – | 🟡 |
| Argon | – | – | – | – | – | – | – | – | – | 🟠 | – | – | – | – | – | – | – | – |
| Aromatic Hydrocarbons | 🟢 | 🟢 | – | 🟠 | 🟢 | – | – | 🟡 | 🔴 | 🔴 | 🟢 | 🔴 | – | – | – | 🔴 | – | – |
| Aromatic Solvents (Benzene etc.) | 🟢 | – | – | – | – | – | – | – | – | 🔴 | 🟢 | 🔴 | – | – | – | – | – | – |
| Arsenic Acid | 🔴 | 🔴 | 🔴 | 🟢 | 🔴 | – | – | – | – | 🟡 | 🟡 | 🟡 | – | – | – | 🟢 | – | 🟡 |
| Arsenic Salts | – | – | – | – | – | – | – | – | – | – | 🟢 | – | – | – | – | – | – | – |
| Ascorbic Acid | 🟢 | – | – | 🔴 | – | – | – | – | – | 🟡 | – | – | – | – | – | – | – | – |
| Benzene | 🟡 | 🟢 | 🟡 | 🟡 | 🟡 | 🔴 | 🟢 | 🟢 | 🔴 | 🔴 | 🟢 | 🟡 | 🟠 | 🟡 | 🟡 | 🔴 | – | 🟡 |
| Boric Acid | 🔴 | 🔴 | 🔴 | 🟡 | 🔴 | – | – | 🟢 | – | 🟢 | 🟢 | 🟢 | 🟠 | 🟠 | 🟠 | 🟢 | – | 🟡 |
| Brake Fluid | 🟢 | 🟢 | 🟢 | 🟢 | 🟡 | – | 🟢 | – | 🔴 | 🔴 | – | 🟢 | – | 🟡 | 🟡 | 🟠 | 🔴 | – |
| Butadiene | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | – | – | 🟢 | – | 🔴 | 🟡 | 🟠 | 🟠 | 🟠 | 🟠 | – | – | 🟡 |
| Butane | 🟢 | 🟢 | 🟡 | 🟢 | 🟡 | – | – | 🟢 | – | 🟢 | 🟢 | 🔴 | 🟡 | 🟡 | 🟡 | – | – | 🟡 |
| Butanol (Butyl Alcohol) | 🟡 | – | 🟡 | 🟡 | 🟡 | – | – | 🟢 | 🟢 | 🟠 | 🟢 | 🟡 | 🟠 | 🟠 | 🟠 | 🟠 | – | – |
| Butylene | 🟢 | – | 🟡 | 🟢 | 🟢 | – | – | – | – | 🟢 | 🟢 | 🔴 | – | – | – | – | – | 🟡 |
| Calcium Bisulfate | – | 🔴 | 🟡 | 🟢 | – | – | – | – | – | – | – | 🟢 | – | – | – | – | – | 🟡 |
| Calcium Bisulfide | 🟠 | – | – | 🟡 | 🔴 | – | – | – | – | 🟠 | 🟢 | 🟢 | – | – | – | – | – | – |
| Calcium Bisulfite | 🔴 | – | 🔴 | 🟢 | 🔴 | – | – | – | – | 🟡 | 🟢 | 🔴 | 🟠 | – | – | 🟢 | – | – |
| Calcium Chlorate | 🟡 | – | – | – | 🟢 | – | – | – | – | 🟠 | 🟡 | 🟡 | – | – | – | 🟢 | – | – |
| Calcium Chloride (10%) | 🔴 | 🟡 | 🟡 | 🟡 | 🟡 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | 🟢 | – | 🟡 |
| Calcium Hydroxide | 🟠 | 🟢 | 🟡 | 🟡 | 🟡 | 🟡 | – | 🟢 | – | 🟡 | 🟡 | 🟡 | 🟠 | – | – | 🟢 | – | 🟡 |
| Calcium Hypochlorite (10%) | 🔴 | 🔴 | 🔴 | 🟡 | 🔴 | – | – | 🟠 | – | 🟠 | 🟢 | 🟡 | 🔴 | – | – | 🟢 | – | 🟡 |
| Calcium Nitrate | 🟡 | 🟡 | 🟠 | 🟡 | 🔴 | – | – | – | – | 🟢 | 🟢 | 🟢 | 🟠 | – | – | 🟢 | – | – |
| Calcium Nitrite | – | – | – | 🟢 | 🔴 | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Calcium Oxide | 🟠 | 🟠 | – | 🟢 | 🟢 | – | – | – | – | 🟢 | 🟡 | 🟢 | – | – | – | 🟢 | – | – |
| Calcium Silicate | 🟢 | – | – | – | – | – | – | – | – | 🟢 | 🟢 | 🟢 | – | – | – | – | – | – |
| Calcium Sulfate | 🟠 | 🟢 | – | 🟡 | 🔴 | – | – | – | – | 🟢 | 🟢 | 🟢 | 🔴 | – | – | 🟢 | – | – |
| Calcium Sulfide | 🟢 | – | – | 🟡 | 🟡 | – | – | – | – | 🟢 | 🟢 | 🟢 | – | – | – | – | – | – |
| Carbon Bisulfide | 🟡 | – | 🔴 | 🟡 | 🟡 | – | – | – | – | 🔴 | 🟢 | 🔴 | – | – | – | – | – | – |
| Carbon Dioxide | 🟢 | 🟢 | 🟡 | 🟢 | 🟠 | – | – | – | – | 🟢 | 🟢 | 🟡 | 🟡 | – | – | – | – | 🟡 |
| Carbon Dioxide (dry) | 🟡 | 🔴 | 🟢 | 🟢 | 🟡 | – | – | – | – | – | 🟡 | 🟡 | – | – | – | – | – | – |
| Carbon Dioxide (wet) | 🟢 | 🔴 | 🔴 | 🟢 | 🟡 | – | – | 🟢 | – | – | 🟡 | 🟡 | – | – | – | – | – | – |
| Carbon Monoxide | 🟢 | 🟢 | 🟢 | 🟢 | 🟡 | – | – | – | – | 🟡 | 🟢 | 🟢 | – | – | – | 🟢 | – | – |
| Carbon Tetrachloride | 🔴 | 🔴 | 🟠 | 🟡 | 🟡 | 🟢 | – | – | 🟡 | 🟠 | 🟢 | 🔴 | 🔴 | 🟡 | 🟡 | 🔴 | – | 🟡 |
| Carbonated Beverages | 🟠 | – | – | 🟢 | – | – | – | – | – | – | 🟢 | – | – | – | – | – | – | – |
| Carbonated Water | 🟠 | 🔴 | 🔴 | 🟢 | 🟢 | – | – | – | – | 🟢 | 🟢 | – | – | – | – | – | – | – |
| Carbonic Acid | 🔴 | 🔴 | 🔴 | 🟡 | 🟡 | – | – | – | – | 🔴 | 🟢 | 🟡 | 🟠 | – | – | 🟢 | – | 🟡 |
| Chloric Acid | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 | – | – | – | – | 🔴 | 🟡 | 🟡 | 🔴 | – | – | 🟢 | – | – |
| Chlorinated Water | 🔴 | – | 🔴 | – | 🔴 | – | – | 🟠 | – | 🔴 | 🟢 | – | – | – | – | – | – | – |
| Chlorine (dry) | 🔴 | 🔴 | 🟡 | 🟡 | 🔴 | – | – | – | – | 🟡 | 🟢 | 🔴 | 🔴 | 🔴 | 🔴 | 🔴 | – | 🟡 |
| Chlorine (wet) | 🔴 | – | – | 🔴 | 🔴 | – | – | – | – | – | 🟢 | – | 🔴 | 🔴 | 🔴 | 🔴 | – | 🟡 |

## Chemical compatibility chart

| MEDIUM | FITTINGS | | | | | | | | | SEALS | | | HOSES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINIUM | CARBON STEEL | BRASS | INOX AISI316L | POM | PEI | PARA | PBT | PPSU | NBR | FPM/FKM | EPDM | PA 11-12 | PA 6 | PA6.6 | LDPE | PU Ether base | PTFE |
| Chlorine Dioxide | ● | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Chlorine Gas | – | – | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Chlorine Water | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Chlorine, Anhydrous liquid | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Chloroacetic Acid | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Chlorobenzene | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Chloroethanol | ● | – | – | ● | ● | – | – | – | – | – | – | – | – | – | – | ● | – | – |
| Chloroform | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Chromic Acid (10%) | ● | – | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Citric Acid | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | – | – | ● | ● | ● |
| Coffee | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | – | ● | ● | – | – | – |
| Copper Nitrate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | – |
| Copper Nitrite | ● | – | – | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Copper Sulfate (10%) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Copper Sulfide | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Cyanic Acid | – | ● | – | ● | ● | – | – | – | – | ● | ● | – | – | – | – | – | – | – |
| Cyclohexane | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Cyclohexanol | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| D.D.T. (Dichlorodiphenyltrichloroethane) | – | – | – | – | ● | – | – | – | – | ● | – | ● | ● | – | – | ● | – | – |
| Deionized Water | ● | ● | ● | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Denatured Alcohol | ● | – | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Detergent Solutions | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | – |
| Dibutyl Phthalate | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Dichloroethane | – | – | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Diesel Fuel | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Dimethyl Phthalate | ● | – | – | ● | ● | – | – | – | – | ● | ● | ● | – | ● | ● | – | – | ● |
| Dioxane | ● | – | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | – | – | ● |
| Dioxolane | – | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Diphenil | ● | ● | ● | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Diphenil Ether | ● | – | – | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Diphenil Oxide | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Distilled Water | ● | ● | ● | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Ethane | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Ethanol (Ethyl Alcohol) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – |
| Ether | ● | ● | ● | ● | ● | – | – | – | ● | ● | ● | ● | – | – | – | – | – | – |
| Ether Sulfate | – | ● | – | ● | – | – | – | – | – | – | – | – | – | – | – | ● | – | ● |
| Ethyl Acetate | ● | ● | – | ● | ● | ● | – | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● |
| Ethyl Benzene | ● | ● | – | ● | ● | – | – | – | – | ● | – | – | – | ● | ● | ● | – | ● |
| Ethyl Chloride | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Ethyl Chloride Wet | ● | – | – | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Ethyl Ether | ● | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | – | – | ● | – | ● |
| Ethyl Sulfate | – | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Ethylene Chloride | ● | – | – | ● | ● | ● | – | – | – | ● | ● | ● | – | ● | ● | – | – | – |
| Ethylene Glycol | ● | ● | ● | ● | ● | ● | – | ● | – | ● | ● | ● | ● | – | – | ● | ● | ● |
| Ethylene Oxide | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | – | – | ● |
| Fatty Acids | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | – |
| Ferric Chloride | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Ferric Hydroxide | – | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Ferric Nitrate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Ferric Sulfate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Fluorine | ● | ● | – | ● | ● | – | – | ● | – | – | ● | ● | ● | – | – | ● | – | ● |
| Fluorine (Anydrous) | ● | – | – | – | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Fluorine (Liquid) | ● | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Fluorine Gas Dry | ● | – | – | ● | ● | – | – | – | – | – | – | – | ● | – | – | ● | – | ● |
| Fluorine Gas Wet | ● | – | – | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Fluorobenzene | ● | – | – | – | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Fluorocarbon Oils | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Food Oils (vegetable) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | – | ● | – | – | ● | ● | ● |
| Formaldehyde (37%) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | – | ● | – | ● |
| Formic Acid | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | – | – | ● | ● | ● |
| Freon 11 | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 112 | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 113 | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 114 | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 114B2 | ● | ● | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 115 | ● | ● | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |

## Chemical compatibility chart

| MEDIUM | FITTINGS | | | | | | | | | SEALS | | | HOSES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINIUM | CARBON STEEL | BRASS | INOX AISI316L | POM | PEI | PARA | PBT | PPSU | NBR | FPM/FKM | EPDM | PA 11-12 | PA6 | PA6.6 | LDPE | PU Ether base | PTFE |
| Freon 12 | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Freon 13 | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 13B1 | ● | ● | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 14 | ● | ● | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 142B | ● | – | – | – | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 15 | ● | – | – | – | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Freon 152A | ● | – | – | – | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 21 | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 218 | ● | – | – | – | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 21B | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Freon 22 | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | – |
| Freon 31 | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 32 | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Freon 502 | ● | – | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Fresh Water | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | ● | – |
| Fruit Juice | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● | – | – | ● | – | ● |
| Fuel Oils | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | – | – | ● | – | ● |
| Gasoline | ● | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | – | – | – | – | ● |
| Glucose | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Glycerine | ● | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Glycolic Acid | – | – | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Glycols | ● | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Grease (Ester Base) | ● | ● | ● | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| Grease (Petroleum Base) | ● | ● | ● | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| Grease (Silicon Base) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Helium | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Heptane | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Hexane | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Hexanol | ● | ● | – | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Hydraulic Oil (Petroleum Base) | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | ● | ● | – | – | – |
| Hydraulic Oil (Synthetic Base) | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | ● | ● | – | – | – |
| Hydrazine | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | ● |
| Hydrochloric Acid (10%) | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Hydrocyanic Acid | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Hydrofluoric Acid (10%) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Hydrogen (gas) | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | – | – | ● |
| Hydrogen Peroxide (1%) | – | – | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Hydrogen Peroxide (30%) | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | – | – | ● |
| Hydrogen Sulfide | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Ink (Printers) | ● | ● | – | ● | ● | – | – | ● | – | ● | ● | – | – | ● | ● | – | – | – |
| Iodine | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | – | ● | ● | ● | – | ● |
| Iodoform | ● | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Iso Butane | – | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Isooctane | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | – | – | ● | – | ● |
| Isopentane | – | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Isopropyl Acetate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Isopropyl Alcohol | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | – | – | ● |
| Isopropyl Ether | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Isotane | ● | – | – | – | – | – | – | – | – | ● | ● | – | – | – | – | – | – | – |
| Jet Fuel/Kerosene | ● | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Ketones | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | – | – | – | – | – | – |
| Lactic Acid (20 °C) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Lead Acetate | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | ● | – | ● |
| Lead Chloride | ● | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Lead Nitrate | ● | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Lead Sulfamate | ● | – | – | ● | ● | – | – | – | – | – | ● | ● | – | – | – | – | – | – |
| Linoleic Acid | ● | ● | ● | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Lithium Bromide | – | – | – | – | – | – | – | ● | – | ● | ● | ● | – | – | – | ● | – | – |
| Lithium Chloride | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | ● |
| Lithium Hydroxide | ● | – | – | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Lubricants | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Lubricants (Petroleum) | ● | – | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| Lubricating Oil | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Methane | ● | – | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | – | – | ● |
| Methyl Acetate | ● | ● | ● | ● | ● | – | ● | ● | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Methyl Acetone | ● | ● | ● | ● | ● | – | – | – | – | – | ● | ● | – | – | – | – | – | – |

## Chemical compatibility chart

| MEDIUM | FITTINGS | | | | | | | | | SEALS | | | HOSES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINIUM | CARBON STEEL | BRASS | INOX AISI316L | POM | PEI | PARA | PBT | PPSU | NBR | FPM/FKM | EPDM | PA 11-12 | PA 6 | PA6.6 | LDPE | PU Ether base | PTFE |
| Methyl Acrylic Acid | – | – | – | – | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Methyl Alcohol (Methanol) | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | – |
| Methyl Amine | ● | ● | ● | ● | ● | – | – | – | – | ● | – | – | – | – | – | – | – | – |
| Methyl Bromide | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | – |
| Methyl Butyl Ketone | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Methyl Chloride | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | – |
| Methyl Ethyl Ketone | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Methylene Bromide | ● | – | – | – | ● | – | – | – | – | – | ● | ● | – | – | – | – | – | – |
| Methylene Chloride | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | – | – | ● | – | ● |
| Mineral Oil | ● | ● | ● | ● | ● | ● | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Motor Oil | ● | ● | ● | ● | ● | – | – | – | ● | ● | ● | ● | ● | – | – | ● | – | – |
| Muriatic Acid | ● | ● | ● | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Naphtha | ● | ● | ● | ● | ● | ● | – | ● | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Naphthalene | ● | ● | ● | ● | ● | ● | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Natural Gas | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Neohexane | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Nickel Acetate | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | – | – |
| Nickel Chloride | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Nickel Nitrate | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Nickel Sulfate (10%) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Nitric Acid (10%) | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Nitrogen | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | – | – | ● |
| Nitromethane | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | ● | ● | ● | – | ● |
| Nitropropane | ● | – | ● | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Nitrous Acid | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Nitrous Gases | – | ● | ● | ● | ● | – | – | – | – | ● | ● | – | – | – | – | – | – | – |
| Nitrous Oxide | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Oleic Acid | ● | ● | ● | ● | ● | – | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Olive Oil | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Oxigen (Cold) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Ozone | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Palm Oil | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Palmitic Acid | ● | – | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | ● | – | ● |
| Paraffin | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | – | ● | ● | ● | – | ● |
| Paraformaldehyde | ● | ● | – | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Pentane | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Perchloric Acid (10%) | – | – | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Perchloroethylene | ● | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | – | – | ● | – | ● |
| Petroleum Oil | ● | – | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Phenol | ● | – | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Phenyl Acetate | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Phenyl Ethyl Ether | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Phenyl Hydrazine | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Phenyl Sulfonic Acid | ● | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Phenylbenzene | – | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | – | – |
| Phosphoric Acid (30%) | ● | – | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Phosphorus | ● | ● | ● | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Phthalic Acid | ● | – | – | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | ● | – | – |
| Potassium Acetate | ● | ● | ● | ● | ● | – | – | – | – | ● | – | – | – | – | – | ● | – | – |
| Potassium Bicarbonate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Potassium Bisulfate | ● | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Potassium Bisulfite | ● | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Potassium Bromide | ● | ● | – | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | – |
| Potassium Chloride | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Potassium Chromate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Potassium Cyanide | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Potassium Hydroxide | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Potassium Hypochlorite | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Potassium Nitrate | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | – |
| Potassium Nitrite | ● | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Potassium Permanganate (10%) | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Potassium Phosphate | ● | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Potassium Silicate | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Potassium Sulfate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Potassium Sulfide | ● | ● | ● | ● | – | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Potassium Sulfite | ● | ● | ● | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |

## Chemical compatibility chart

| MEDIUM | FITTINGS | | | | | | | | | SEALS | | | HOSES | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINIUM | CARBON STEEL | BRASS | INOX AISI316L | POM | PEI | PARA | PBT | PPSU | NBR | FPM/FKM | EPDM | PA 11-12 | PA6 | PA6.6 | LDPE | PU Ether base | PTFE |
| Propane (liquefied) | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | – | – | ● |
| Salicylic Acid | ● | ● | – | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Sea Water | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Silicone Oil | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Silver Bromide | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Silver Chloride | ● | ● | ● | ● | – | – | – | – | – | ● | – | – | – | – | – | – | – | – |
| Silver Cyanide | ● | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Silver Nitrate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Sodium Acetate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | – | ● | – | – | ● | – | ● |
| Sodium Acid Sulfate | ● | – | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Sodium Bicarbonate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Sodium Bisulfate | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | ● | ● |
| Sodium Bisulfite | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | – | – | ● | – | ● |
| Sodium Borate (Borax) | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Sodium Carbonate | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Sodium Chlorate | ● | – | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Sodium Chloride (10%) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Sodium Chromate | ● | ● | – | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Sodium Citrate | – | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Sodium Fluoride | ● | ● | – | ● | – | – | – | – | – | ● | ● | ● | – | – | – | ● | – | – |
| Sodium Hydroxide (10%) - Caustic Soda | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | – | – | ● | – | ● |
| Sodium Hypochlorite (5%) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | – |
| Sodium Hyposulfate | ● | ● | ● | ● | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Sodium Hyposulfite | ● | ● | ● | ● | – | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Sodium Nitrate | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | ● | ● |
| Sodium Nitrite | ● | – | – | – | – | – | – | – | – | – | – | – | ● | ● | ● | ● | – | – |
| Sodium Perborate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | ● | ● | – | – | – |
| Sodium Peroxide | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Sodium Phosphate | ● | – | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | – |
| Sodium Sulfide | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | – | ● | – |
| Steam (< 150 °C) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Steam (> 150 °C) | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Stearic Acid | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Styrene | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Sulfamic Acid (10% - 20°C) | ● | – | – | – | ● | – | – | – | ● | ● | ● | ● | – | – | – | – | – | – |
| Sulfur Chloride | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | – | – | ● |
| Sulfur Dioxide | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | – |
| Sulfuric Acid (30%) | ● | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Sulfurous Acid | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Tannic Acid | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Tartaric Acid | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Tetrachloroethane | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |
| Tetrachloroethylene | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | ● | ● | – | – | – |
| Tetrahydrofuran | ● | – | – | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Toluene (Toulol) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Tomato Jiuce | ● | – | – | ● | ● | – | – | – | – | ● | ● | ● | ● | – | – | ● | – | ● |
| Transformer Oil | ● | – | ● | ● | ● | – | – | ● | ● | ● | ● | ● | – | ● | ● | – | – | – |
| Transmission Fluid (Type A) | ● | ● | ● | ● | ● | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Triacetin | ● | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Trichloroacetic Acid | ● | ● | ● | ● | ● | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Trichlorobenzenes | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | – | – |
| Trichloroethane | ● | ● | – | ● | ● | – | – | – | ● | ● | ● | ● | ● | ● | ● | ● | – | – |
| Trichloroethylene | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Trichloropropane | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | – | – | – | – | – | – | – |
| Turpentine | ● | – | ● | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Urea (5%) | ● | ● | ● | ● | ● | – | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Uric Acid | ● | ● | – | ● | ● | – | – | ● | – | ● | ● | ● | ● | ● | ● | ● | – | – |
| Valeric Acid | ● | – | – | – | – | – | – | – | – | ● | ● | ● | – | – | – | – | – | – |
| Vinegar | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | ● | ● | ● | ● | – | – |
| Wine | ● | ● | ● | ● | ● | – | – | – | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Xylene | ● | ● | ● | ● | ● | ● | – | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Zinc Acetate | ● | – | – | – | – | – | – | – | – | ● | – | – | – | – | – | – | – | – |
| Zinc Carbonate | ● | – | – | ● | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Zinc Chloride | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | – | ● |
| Zinc Hydrosulfite | ● | ● | – | ● | ● | – | – | – | – | – | – | ● | – | – | – | – | – | – |
| Zinc Nitrate | – | – | – | ● | – | – | – | ● | – | ● | ● | ● | – | – | – | – | – | – |
| Zinc Sulfate | ● | ● | ● | ● | ● | – | – | – | – | ● | ● | ● | – | – | – | ● | – | ● |

# Index by application

## GENERAL PNEUMATIC

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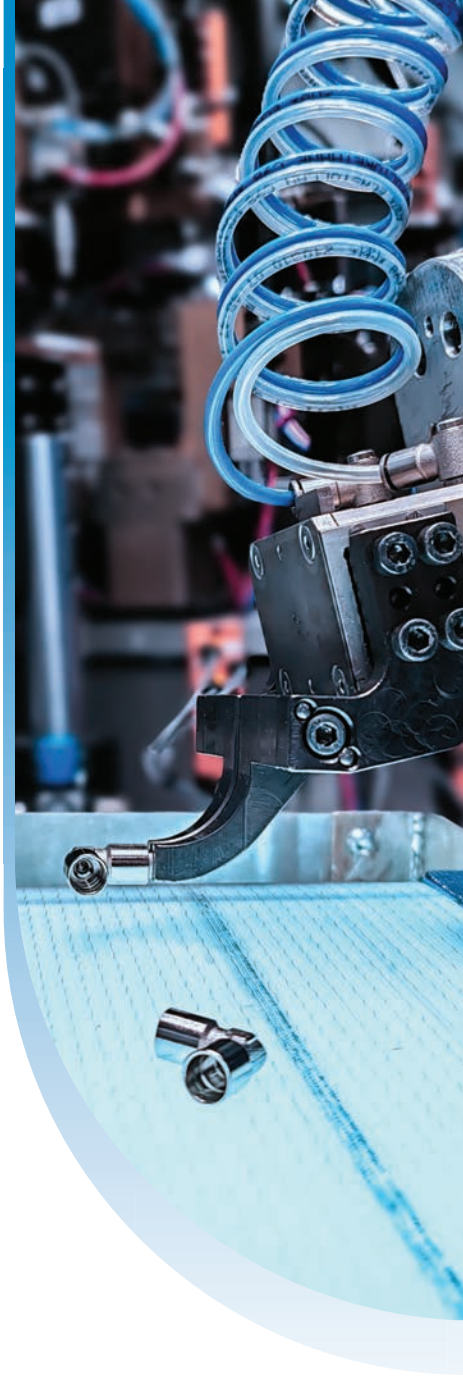
cmatic®
PNEUMATIC FITTINGS



# PN LINE

## Push-in Fittings, Inch/NPTF

The push-in fittings of the PN line are manufactured according to the American standards (Inch tubings and NPTF Threads). They are suitable for quick connections in different industrial applications; they are robust, compact and guarantee high performances in time.
All PN fittings are electrolytic nickel-plated.

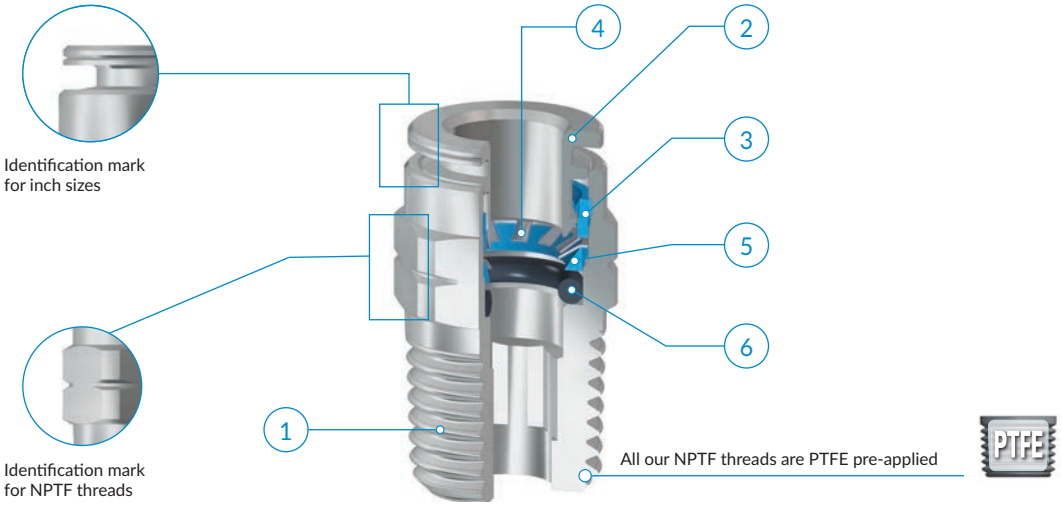
# PN Line

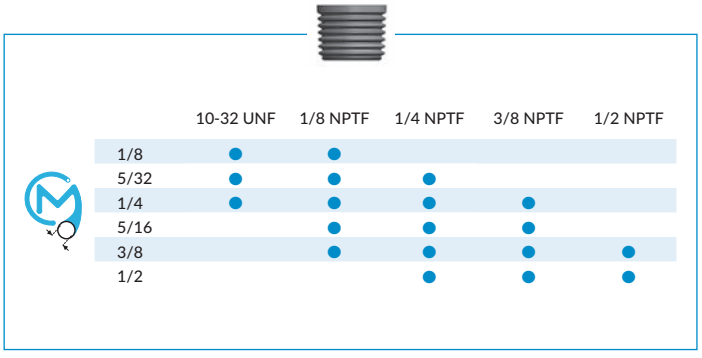
| | | | | | |
|---|---|---|---|---|---|
| 1 Body | 2 Release ring | 3 Holding ring | 4 Gripping ring | 5 Protection ring | 6 Seals |
| Brass UNI EN 12164 CW614N - UNI EN 12165 CW617N, nickel plated | | Acetal resin (POM) | Stainless steel AISI 301 | Acetal resin (POM) | NBR |

-4° ÷ 176°F

Max 290 PSI

-29″ H



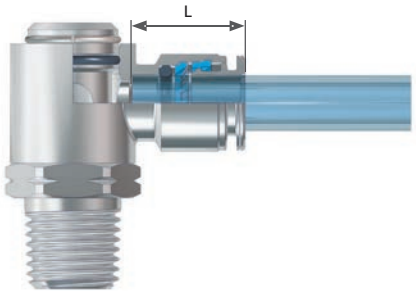
| | 10-32 UNF | 1/8 NPTF | 1/4 NPTF | 3/8 NPTF | 1/2 NPTF |
|---|---|---|---|---|---|
| 1/8 | ● | ● | | | |
| 5/32 | ● | ● | ● | | |
| 1/4 | ● | ● | ● | ● | |
| 5/16 | | ● | ● | ● | |
| 3/8 | | ● | ● | ● | ● |
| 1/2 | | | ● | ● | ● |

**Recommended tubings:**
PA11, PA12, PA6, Polyethylene PE, Polyurethane PU (98 Shore A)

**Acceptable Tolerances on the tubings:**
+/– .003 up to Ø 3/8″
+/– .004 Ø 1/2″

**Application fields:**
Pneumatic circuits

## Tubing insertion depth




| OD | L |
|---|---|
| 1/8 | .386 |
| 5/32 | .520 |
| 1/4 | .634 |
| 5/16 | .637 |
| 3/8 | .720 |
| 1/2 | .767 |

## ASSEMBLY INSTRUCTIONS

**1**

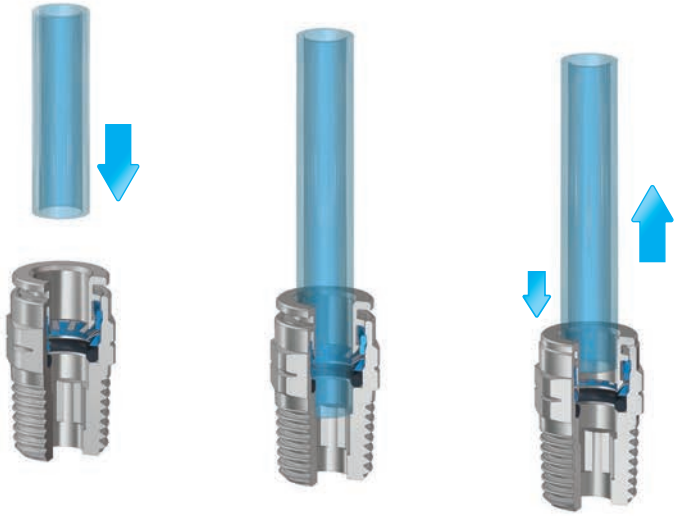
Cut the tube square (by means of a hose cutter i.e. our TCUT) making sure that no burrs are left and that the tube is not oval.
In case of use with metal hoses, make a groove all around the tube diameter with a suitable tool (TINC).The groove must be made according to the tube diameter so that the fitting collect can better grip onto it.

**2**

Insert the tube into the fitting until it bottoms.

**Tube release**

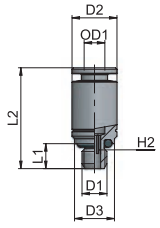
While pressing on the release ring, pull out the tube from the fitting.

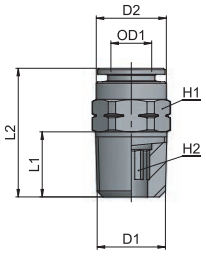


Once the tubing is connected to the fitting, make sure that the tubing is not subject to any tensile strength and that the min. recommended bending radius stated in the tubing section of this catalogue is complied with (see page 136).
To prevent any accidental tube release, no components have to come in touch with the release ring and exercise any unwanted pressure on the same. Indeed however lateral, any load on the release ring may cause the tube disconnection.
To tighten threads, please check out our tightening torque chart illustrated at page 6.

## PN 11

Taper straight, male



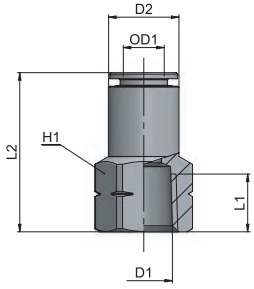

PTFE

| Type | OD1 | D1 | D2 | D3 | L1 | L2 | H2 | oz |
|---|---|---|---|---|---|---|---|---|
| 11 1/8 10-32 | 1/8" | 10-32 UNF | .276 | .315 | .197 | .689 | 3/32 | .089 |
| 11 5/32 10-32 | 5/32" | 10-32 UNF | .374 | .315 | .197 | .787 | 3/32 | .159 |
| 11 1/4 10-32 | 1/4" | 10-32 UNF | .472 | .315 | .197 | .925 | 3/32 | .300 |

| Type | OD1 | D1 | D2 | L1 | L2 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|
| 11 1/8 1/8 | 1/8 | 1/8 NPTF | .276 | .335 | .748 | 7/16 | 3/32 | .336 |
| 11 5/32 1/8 | 5/32 | 1/8 NPTF | .374 | .335 | .768 | 7/16 | 1/8 | .318 |
| 11 5/32 1/4 | 5/32 | 1/4 NPTF | .374 | .512 | .945 | 9/16 | 1/8 | .706 |
| 11 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .866 | 1/2 | 5/32 | .371 |
| 11 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | .965 | 9/16 | 5/32 | .653 |
| 11 1/4 3/8 | 1/4 | 3/8 NPTF | .472 | .512 | 1.004 | 11/16 | 5/32 | 1.126 |
| 11 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | 1.043 | 9/16 | 3/16 | .530 |
| 11 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.004 | 9/16 | 1/4 | .565 |
| 11 5/16 3/8 | 5/16 | 3/8 NPTF | .551 | .512 | .984 | 11/16 | 1/4 | .988 |
| 11 3/8 1/8 | 3/8 | 1/8 NPTF | .630 | .335 | 1.122 | 11/16 | 3/16 | .794 |
| 11 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.260 | 11/16 | 1/4 | .953 |
| 11 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.004 | 11/16 | 5/16 | .900 |
| 11 3/8 1/2 | 3/8 | 1/2 NPTF | .630 | .669 | 1.201 | 7/8 | 5/16 | 1.976 |
| 11 1/2 1/4 | 1/2 | 1/4 NPTF | .787 | .512 | 1.358 | 13/16 | 5/16 | 1.253 |
| 11 1/2 3/8 | 1/2 | 3/8 NPTF | .787 | .512 | 1.161 | 13/16 | 3/8 | .971 |
| 11 1/2 1/2 | 1/2 | 1/2 NPTF | .787 | .669 | 1.201 | 7/8 | 3/8 | 1.694 |

## PN 13

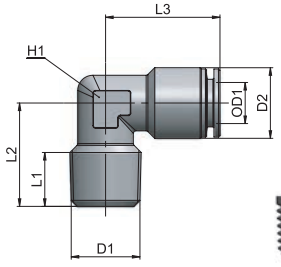
Female straight




| Type | OD1 | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|---|
| 13 5/32 1/8 | 5/32 | 1/8NPTF | .374 | .335 | .984 | 1/2 | .406 |
| 13 1/4 1/8 | 1/4 | 1/8NPTF | .472 | .335 | 1.063 | 1/2 | .494 |
| 13 1/4 1/4 | 1/4 | 1/4NPTF | .472 | .472 | 1.240 | 11/16 | .935 |
| 13 5/16 1/8 | 5/16 | 1/8NPTF | .551 | .335 | 1.063 | 9/16 | .706 |
| 13 5/16 1/4 | 5/16 | 1/4NPTF | .551 | .472 | 1.240 | 11/16 | 1.006 |
| 13 3/8 1/4 | 3/8 | 1/4NPTF | .630 | .472 | 1.339 | 11/16 | 1.147 |
| 13 3/8 3/8 | 3/8 | 3/8NPTF | .630 | .492 | 1.339 | 13/16 | 1.323 |
| 13 3/8 1/2 | 3/8 | 1/2NPTF | .630 | .531 | 1.476 | 1 | 2.085 |
| 13 1/2 1/4 | 1/2 | 1/4NPTF | .787 | .453 | 1.339 | 13/16 | 1.823 |
| 13 1/2 3/8 | 1/2 | 3/8NPTF | .787 | .472 | 1.398 | 13/16 | 1.656 |
| 13 1/2 1/2 | 1/2 | 1/2NPTF | .787 | .531 | 1.496 | 1 | 2.263 |

## PN 14

Taper elbow fitting, male




PTFE

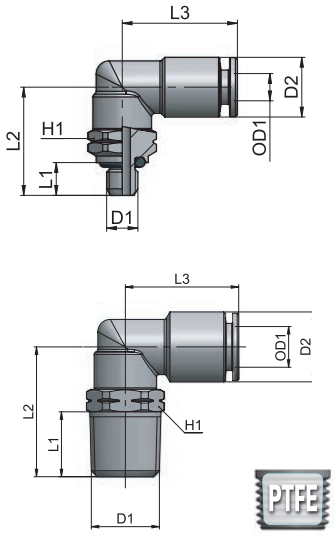
| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 14 5/32 1/8 | 5/32 | 1/8 NPTF | .374 | .331 | .630 | .689 | 10 | .318 |
| 14 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .331 | .630 | .807 | 10 | .459 |
| 14 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .429 | .787 | .807 | 10 | .600 |
| 14 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | .748 | .886 | 12 | .724 |
| 14 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .421 | .807 | .886 | 12 | .794 |
| 14 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .480 | .886 | .984 | 14 | 1.041 |
| 14 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .425 | .886 | .984 | 14 | 1.182 |

## PN 15

Taper swivelling elbow fitting, male

| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 15 1/8 10-32 | 1/8 | 10-32 UNF | .276 | .197 | .637 | .551 | 5/16 | .283 |
| 15 5/32 10-32 | 5/32 | 10-32 UNF | .358 | .197 | .650 | .689 | 3/8 | .353 |

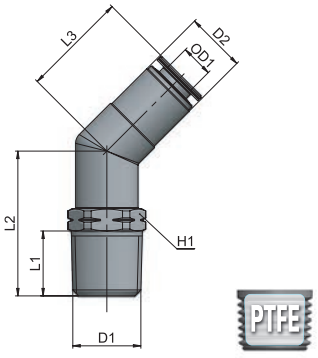
| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 15 1/8 1/8 | 1/8 | 1/8 NPTF | .276 | .335 | .716 | .551 | 7/16 | .371 |
| 15 5/32 1/8 | 5/32 | 1/8 NPTF | .358 | .335 | .728 | .689 | 7/16 | .441 |
| 15 5/32 1/4 | 5/32 | 1/4 NPTF | .358 | .512 | 1.024 | .748 | 9/16 | .794 |
| 15 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .835 | .866 | 1/2 | .688 |
| 15 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | 1.031 | .866 | 9/16 | .865 |
| 15 1/4 3/8 | 1/4 | 3/8 NPTF | .472 | .512 | 1.051 | .866 | 11/16 | 1.094 |
| 15 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | .835 | .886 | 1/2 | .812 |
| 15 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.031 | .886 | 9/16 | .971 |
| 15 5/16 3/8 | 5/16 | 3/8 NPTF | .551 | .512 | 1.122 | .906 | 11/16 | 1.411 |
| 15 3/8 1/8 | 3/8 | 1/8 NPTF | .630 | .335 | .945 | 1.024 | 11/16 | 1.376 |
| 15 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.122 | 1.024 | 11/16 | 1.500 |
| 15 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.122 | 1.024 | 11/16 | 1.535 |
| 15 3/8 1/2 | 3/8 | 1/2 NPTF | .630 | .669 | 1.339 | 1.024 | 7/8 | 2.187 |
| 15 1/2 1/4 | 1/2 | 1/4 NPTF | .787 | .512 | 1.260 | 1.122 | 13/16 | 2.381 |
| 15 1/2 3/8 | 1/2 | 3/8 NPTF | .787 | .512 | 1.260 | 1.122 | 13/16 | 2.258 |
| 15 1/2 1/2 | 1/2 | 1/2 NPTF | .787 | .669 | 1.437 | 1.122 | 7/8 | 2.699 |




## PN 15-45°

Swivelling elbow fitting, male 45°

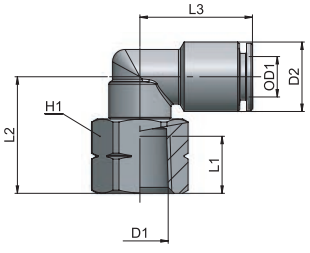
| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 15 1/4 1/8 45° | 1/4 | 1/8 NPTF | .472 | .335 | .945 | .827 | 1/2 | .889 |
| 15 1/4 1/4 45° | 1/4 | 1/4 NPTF | .472 | .512 | 1.142 | .827 | 9/16 | 1.074 |
| 15 3/8 1/4 45° | 3/8 | 1/4 NPTF | .630 | .512 | 1.161 | .984 | 11/16 | 1.724 |
| 15 3/8 3/8 45° | 3/8 | 3/8 NPTF | .630 | .512 | 1.161 | .984 | 11/16 | 1.759 |
| 15 3/8 1/2 45° | 3/8 | 1/2 NPTF | .630 | .669 | 1.378 | .984 | 7/8 | 2.438 |
| 15 1/2 3/8 45° | 1/2 | 3/8 NPTF | .787 | .512 | 1.260 | 1.083 | 13/16 | 2.568 |
| 15 1/2 1/2 45° | 1/2 | 1/2 NPTF | .787 | .669 | 1.437 | 1.083 | 7/8 | 3.001 |




## PN 17

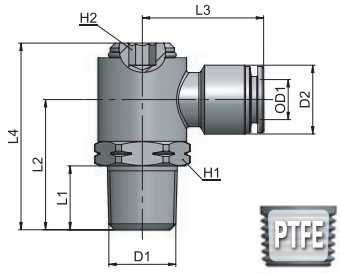
Swivelling elbow fitting, female

| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 17 5/32 1/8 | 5/32 | 1/8 NPTF | .358 | .335 | .768 | .748 | 9/16 | .741 |
| 17 5/32 1/4 | 5/32 | 1/4 NPTF | .358 | .453 | .933 | .767 | 11/16 | .741 |
| 17 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .776 | .866 | 9/16 | .794 |
| 17 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .453 | .933 | .866 | 11/16 | 1.129 |
| 17 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | .776 | .886 | 9/16 | .935 |
| 17 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .453 | .933 | .886 | 11/16 | 1.288 |
| 17 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .472 | 1.004 | 1.024 | 11/16 | 1.570 |
| 17 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .472 | 1.004 | 1.024 | 13/16 | 1.711 |
| 17 1/2 3/8 | 1/2 | 3/8 NPTF | .787 | .472 | 1.102 | 1.122 | 13/16 | 2.255 |
| 17 1/2 1/2 | 1/2 | 1/2 NPTF | .787 | .531 | 1.220 | 1.122 | 1 | 2.910 |



## PN 18

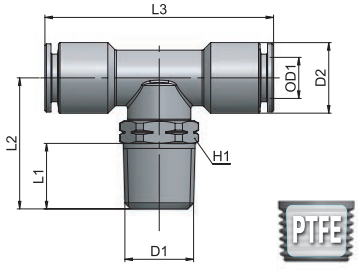
Swivelling fitting with banjo ring




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | L4 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|---|---|
| 18 5/32 1/8 | 5/32 | 1/8 NPTF | .358 | .335 | .807 | .807 | 1.220 | 9/16 | 1/8 | 1.006 |
| 18 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .807 | .886 | 1.220 | 9/16 | 1/8 | 1.059 |
| 18 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | 1.043 | .945 | 1.496 | 11/16 | 3/16 | 1.711 |
| 18 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | .807 | .906 | 1.220 | 9/16 | 1/8 | 1.076 |
| 18 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.043 | .965 | 1.496 | 11/16 | 3/16 | 1.747 |
| 18 5/16 3/8 | 5/16 | 3/8 NPTF | .551 | .512 | 1.142 | 1.043 | 1.654 | 13/16 | 1/4 | 2.681 |
| 18 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.043 | 1.043 | 1.496 | 11/16 | 3/16 | 1.835 |
| 18 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.142 | 1.142 | 1.654 | 13/16 | 1/4 | 2.964 |

## PN 20

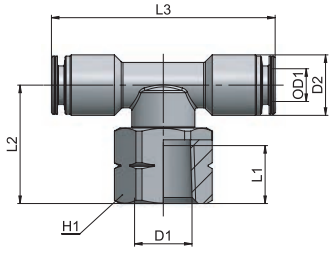
Swivelling T fitting, taper




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 20 1/8 1/8 | 1/8 | 1/8 NPTF | .276 | .335 | .716 | 1.102 | 7/16 | .671 |
| 20 5/32 1/8 | 5/32 | 1/8 nPTF | .358 | .335 | .827 | 1.535 | 1/2 | .777 |
| 20 5/32 1/4 | 5/32 | 1/4 NPTF | .358 | .512 | 1.024 | 1.535 | 9/16 | .953 |
| 20 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .827 | 1.732 | 1/2 | .900 |
| 20 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | 1.024 | 1.732 | 9/16 | 1.076 |
| 20 1/4 3/8 | 1/4 | 3/8 NPTF | .472 | .512 | 1.043 | 1.732 | 11/16 | 1.328 |
| 20 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | .827 | 1.772 | 1/2 | 1.112 |
| 20 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.024 | 1.772 | 9/16 | 1.306 |
| 20 3/8 1/8 | 3/8 | 1/8 NPTF | .630 | .335 | .945 | 2.047 | 11/16 | 1.769 |
| 20 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.122 | 2.047 | 11/16 | 1.905 |
| 20 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.122 | 2.047 | 11/16 | 1.941 |
| 20 3/8 1/2 | 3/8 | 1/2 NPTF | .630 | .669 | 1.339 | 2.047 | 7/8 | 2.611 |
| 20 1/2 1/4 | 1/2 | 1/4 NPTF | .787 | .512 | 1.260 | 2.244 | 13/16 | 3.029 |
| 20 1/2 3/8 | 1/2 | 3/8 NPTF | .787 | .512 | 1.260 | 2.244 | 13/16 | 2.752 |
| 20 1/2 1/2 | 1/2 | 1/2 NPTF | .787 | .669 | 1.437 | 2.244 | 7/8 | 3.299 |

## PN 20-F

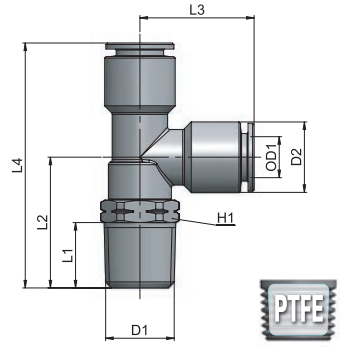
Swivelling T fitting, female




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 20 1/4 1/4 F | 1/4 | 1/4 NPTF | .472 | .453 | .925 | 1.732 | 11/16 | 1.371 |
| 20 3/8 1/4 F | 3/8 | 1/4 NPTF | .630 | .453 | 1.004 | 2.047 | 11/16 | 1.996 |
| 20 3/8 3/8 F | 3/8 | 3/8 NPTF | .630 | .472 | 1.004 | 2.047 | 13/16 | - |
| 20 1/2 3/8 F | 1/2 | 3/8 NPTF | .787 | .472 | 1.102 | 2.244 | 13/16 | 2.897 |
| 20 1/2 1/2 F | 1/2 | 1/2 NPTF | .787 | .531 | 1.220 | 2.244 | 1 | 3.551 |

## PN 23

Lateral run T fitting, taper

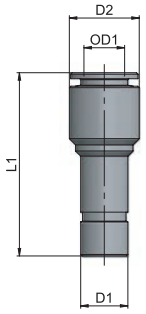



| Type | OD1 | D1 | D2 | L1 | L2 | L3 | L4 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 23 1/8 1/8 | 1/8 | 1/8 NPTF | .276 | .335 | .716 | .551 | 1.267 | 7/16 | .671 |
| 23 5/32 1/8 | 5/32 | 1/8 NPTF | .358 | .335 | .827 | .768 | 1.594 | 1/2 | .812 |
| 23 5/32 1/4 | 5/32 | 1/4 NPTF | .358 | .512 | 1.024 | .768 | 1.791 | 9/16 | .953 |
| 23 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .827 | .866 | 1.693 | 1/2 | .900 |
| 23 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | 1.024 | .866 | 1.890 | 9/16 | 1.076 |
| 23 1/4 3/8 | 1/4 | 3/8 NPTF | .472 | .512 | 1.043 | .866 | 1.909 | 11/16 | 1.322 |
| 23 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | .827 | .886 | 1.713 | 1/2 | 1.112 |
| 23 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.024 | .886 | 1.909 | 9/16 | 1.323 |
| 23 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.122 | 1.024 | 2.146 | 11/16 | 1.914 |
| 23 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.122 | 1.024 | 2.146 | 11/16 | 1.941 |
| 23 3/8 1/2 | 3/8 | 1/2 NPTF | .630 | .669 | 1.339 | 1.024 | 2.362 | 7/8 | 2.618 |
| 23 1/2 1/4 | 1/2 | 1/4 NPTF | .787 | .512 | 1.260 | 1.122 | 2.382 | 13/16 | 3.052 |
| 23 1/2 3/8 | 1/2 | 3/8 NPTF | .787 | .512 | 1.260 | 1.122 | 2.382 | 13/16 | 2.734 |
| 23 1/2 1/2 | 1/2 | 1/2 NPTF | .787 | .669 | 1.437 | 1.122 | 2.559 | 7/8 | 3.175 |

## PN 25

Reducer

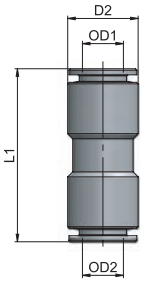
| Type | OD1 | D1 | D2 | L1 | oz |
|---|---|---|---|---|---|
| 25 1/8 5/32 | 1/8 | 5/32 | .276 | 1.094 | .089 |
| 25 5/32 1/4 | 5/32 | 1/4 | .374 | 1.240 | .265 |
| 25 1/4 5/16 | 1/4 | 5/16 | .472 | 1.358 | .406 |
| 25 1/4 3/8 | 1/4 | 3/8 | .472 | 1.358 | .477 |
| 25 1/4 1/2 | 1/4 | 1/2 | .512 | 1.358 | .882 |
| 25 5/16 3/8 | 5/16 | 3/8 | .551 | 1.437 | .547 |
| 25 3/8 1/2 | 3/8 | 1/2 | .630 | 1.575 | .865 |




## PN 26

Union

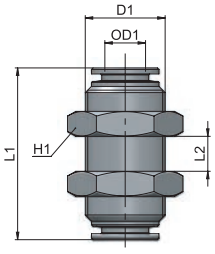
| Type | OD1 | OD2 | D2 | L1 | oz |
|---|---|---|---|---|---|
| 26 1/8 1/8 | 1/8 | 1/8 | .276 | .889 | .121 |
| 26 5/32 5/32 | 5/32 | 5/32 | .354 | 1.102 | .265 |
| 26 1/4 1/4 | 1/4 | 1/4 | .472 | 1.323 | .454 |
| 26 5/16 5/16 | 5/16 | 5/16 | .551 | 1.339 | .635 |
| 26 3/8 1/4 | 3/8 | 1/4 | .630 | 1.441 | .721 |
| 26 3/8 3/8 | 3/8 | 3/8 | .630 | 1.520 | .882 |
| 26 1/2 3/8 | 1/2 | 3/8 | .787 | 1.586 | 1.211 |
| 26 1/2 1/2 | 1/2 | 1/2 | .787 | 1.614 | 1.443 |




## PN 27

Bulkhead union

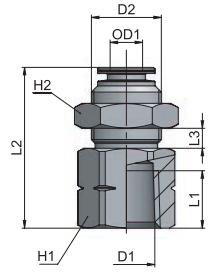
| Type | OD1 | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 27 1/8 1/8 | 1/8 | M8x0,75 | .886 | .295 | 12 | .477 |
| 27 5/32 5/32 | 5/32 | M12x1 | 1.102 | .374 | 16 | .812 |
| 27 1/4 1/4 | 1/4 | M14x1 | 1.339 | .571 | 18 | 1.147 |
| 27 5/16 5/16 | 5/16 | M16x1 | 1.339 | .610 | 20 | 1.376 |
| 27 3/8 3/8 | 3/8 | M18x1 | 1.535 | .689 | 22 | 1.888 |
| 27 1/2 1/2 | 1/2 | M22x1,5 | 1.614 | .728 | 26 | 2.607 |




## PN 27-F

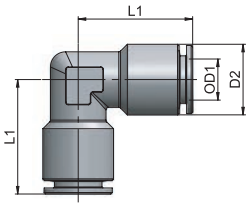
Bulkhead union female

| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 27 5/32 1/4 F | 5/32 | 1/4 NPTF | M12x1 | .453 | 1.161 | .276 | 11/16 | 16 | .630 |
| 27 1/4 1/8 F | 1/4 | 1/8 NPTF | M14x1 | .315 | 1.063 | .335 | 11/16 | 18 | .709 |
| 27 1/4 1/4 F | 1/4 | 1/4 NPTF | M14x1 | .453 | 1.260 | .335 | 11/16 | 18 | .709 |
| 27 3/8 1/4 F | 3/8 | 1/4 NPTF | M18x1 | .453 | 1.339 | .413 | 7/8 | 22 | .866 |
| 27 3/8 3/8 F | 3/8 | 3/8 NPTF | M18x1 | .472 | 1.378 | .413 | 7/8 | 22 | .866 |
| 27 3/8 1/2 F | 3/8 | 1/2 NPTF | M18x1 | .531 | 1.496 | .413 | 1 | 22 | .866 |
| 27 1/2 3/8 F | 1/2 | 3/8 NPTF | M22x1,5 | .472 | 1.417 | .472 | 1 | 26 | 1.023 |
| 27 1/2 1/2 F | 1/2 | 1/2 NPTF | M22x1,5 | .531 | 1.535 | .472 | 1 | 26 | 1.023 |



## PN 28

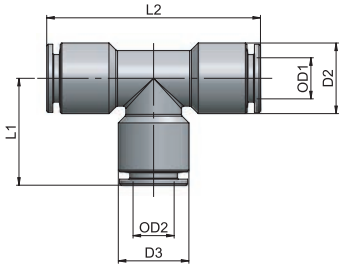
Union elbow




| Type | OD1 | D2 | L1 | oz |
|---|---|---|---|---|
| 28 1/8 1/8 | 1/8 | .276 | .504 | .159 |
| 28 5/32 5/32 | 5/32 | .354 | .689 | .336 |
| 28 1/4 1/4 | 1/4 | .472 | .807 | .547 |
| 28 5/16 5/16 | 5/16 | .551 | .886 | .829 |
| 28 3/8 3/8 | 3/8 | .630 | .984 | 1.129 |
| 28 1/2 1/2 | 1/2 | .787 | 1.063 | 1.817 |

## PN 29

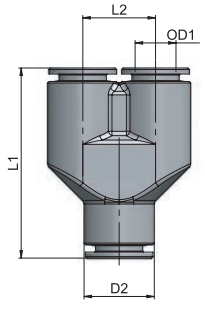
Union T




| Type | OD1 | OD2 | D2 | D3 | L1 | L2 | oz |
|---|---|---|---|---|---|---|---|
| 29 1/8 1/8 | 1/8 | 1/8 | .276 | .276 | .504 | 1.008 | .195 |
| 29 5/32 5/32 | 5/32 | 5/32 | .354 | .354 | .689 | 1.378 | .441 |
| 29 1/4 1/4 | 1/4 | 1/4 | .472 | .472 | .787 | 1.575 | .706 |
| 29 5/16 5/16 | 5/16 | 5/16 | .551 | .551 | .827 | 1.654 | .988 |
| 29 3/8 3/8 | 3/8 | 3/8 | .630 | .630 | .965 | 1.929 | 1.500 |
| 29 3/8 1/4 | 3/8 | 1/4 | .630 | .472 | .886 | 1.929 | 1.411 |
| 29 1/2 1/2 | 1/2 | 1/2 | .787 | .787 | 1.063 | 2.126 | 2.420 |
| 29 1/2 1/4 | 1/2 | 1/4 | .787 | .472 | .965 | 2.126 | 2.216 |
| 29 1/2 3/8 | 1/2 | 3/8 | .787 | .630 | 1.063 | 2.126 | 2.383 |

## PN 37

Y fitting

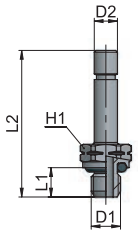



| Type | OD1 | D2 | L1 | L2 | oz |
|---|---|---|---|---|---|
| 37 1/8 1/8 | 1/8 | .268 | .984 | .295 | .671 |
| 37 5/32 5/32 | 5/32 | .354 | 1.161 | .374 | .477 |
| 37 1/4 1/4 | 1/4 | .472 | 1.437 | .492 | 1.076 |
| 37 5/16 5/16 | 5/16 | .551 | 1.476 | .571 | 1.482 |
| 37 3/8 3/8 | 3/8 | .630 | 1.752 | .650 | 2.419 |

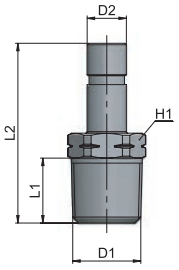
## PN 38

Stem adaptor

| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 38 5/32 10-32 | 10-32 UNF | 5/32 | .197 | .984 | 5/16 | .089 |




| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 38 5/32 1/8 | 1/8 NPTF | 5/32 | .335 | 1.142 | 7/16 | .247 |
| 38 5/32 1/4 | 1/4 NPTF | 5/32 | .512 | 1.339 | 9/16 | .494 |
| 38 1/4 1/8 | 1/8 NPTF | 1/4 | .335 | 1.220 | 7/16 | .300 |
| 38 1/4 1/4 | 1/4 NPTF | 1/4 | .512 | 1.417 | 9/16 | .530 |
| 38 5/16 1/8 | 1/8 NPTF | 5/16 | .335 | 1.220 | 7/16 | .318 |
| 38 5/16 1/4 | 1/4 NPTF | 5/16 | .512 | 1.417 | 9/16 | .547 |
| 38 3/8 1/4 | 1/4 NPTF | 3/8 | .512 | 1.496 | 9/16 | .583 |
| 38 3/8 3/8 | 3/8 NPTF | 3/8 | .512 | 1.516 | 11/16 | .812 |
| 38 1/2 3/8 | 3/8 NPTF | 1/2 | .512 | 1.634 | 11/16 | .900 |
| 38 1/2 1/2 | 1/2 NPTF | 1/2 | .669 | 1.831 | 7/8 | 1.517 |

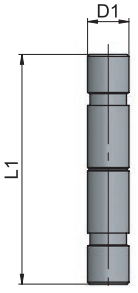




## PN 39

Extention piece

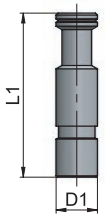
| Type | D1 | L1 | oz |
|---|---|---|---|
| 39 5/32 5/32 | 5/32 | 1.181 | .099 |
| 39 1/4 1/4 | 1/4 | 1.378 | .177 |
| 39 5/16 5/16 | 5/16 | 1.378 | .195 |
| 39 3/8 3/8 | 3/8 | 1.575 | .300 |
| 39 1/2 1/2 | 1/2 | 1.732 | .494 |




## PN 40

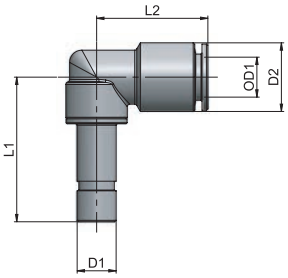
Plug

| Type | D1 | L1 | oz |
|---|---|---|---|
| 40 1/8 1/8 | 1/8 | .787 | .046 |
| 40 5/32 5/32 | 5/32 | .984 | .089 |
| 40 1/4 1/4 | 1/4 | .984 | .159 |
| 40 5/16 5/16 | 5/16 | 1.181 | .441 |
| 40 3/8 3/8 | 3/8 | 1.378 | .397 |
| 40 1/2 1/2 | 1/2 NPTF | 1.575 | 1.482 |



## PN 43

Plug-in elbow

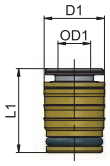



| Type | OD1 | D1 | D2 | L1 | L2 | oz |
|---|---|---|---|---|---|---|
| 43 5/32 00 | 5/32 | 5/32 | .358 | 1.012 | .768 | .491 |
| 43 1/4 00 | 1/4 | 1/4 | .472 | 1.169 | .866 | .621 |
| 43 5/16 00 | 5/16 | 5/16 | .551 | 1.161 | .886 | .724 |
| 43 3/8 00 | 3/8 | 3/8 | .630 | 1.319 | 1.024 | 1.076 |

# PN 10

## Press-in cartridge

The new construction features of the cartridge PN10 allow for one single cartridge version to be assembled in plastic, aluminium as well as brass bodies.




| Type | OD1 | D1 | L1 | oz |
|---|---|---|---|---|
| 10 5/32 00 | 5/32 | .366 | .571 | .127 |
| 10 1/4 00 | 1/4 | .472 | .650 | .212 |
| 10 5/16 00 | 5/16 | .539 | .669 | .279 |
| 10 3/8 00 | 3/8 | .602 | .748 | .364 |

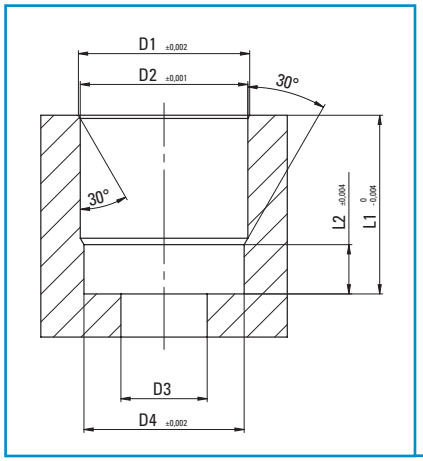
## Cartridge seat drilling plan

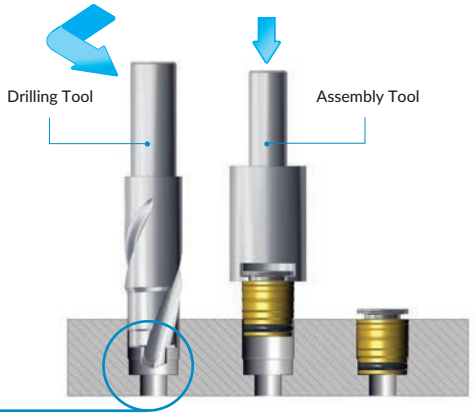
1
Drill the cartridge seat, following the instructions given.

2
Manually press the cartridge into the seat and by means of the Assembly tool push it all the way down until it bottoms; this will guarantee the proper cartridge assembly.

"Drilling and Assembly Tool" available upon request.

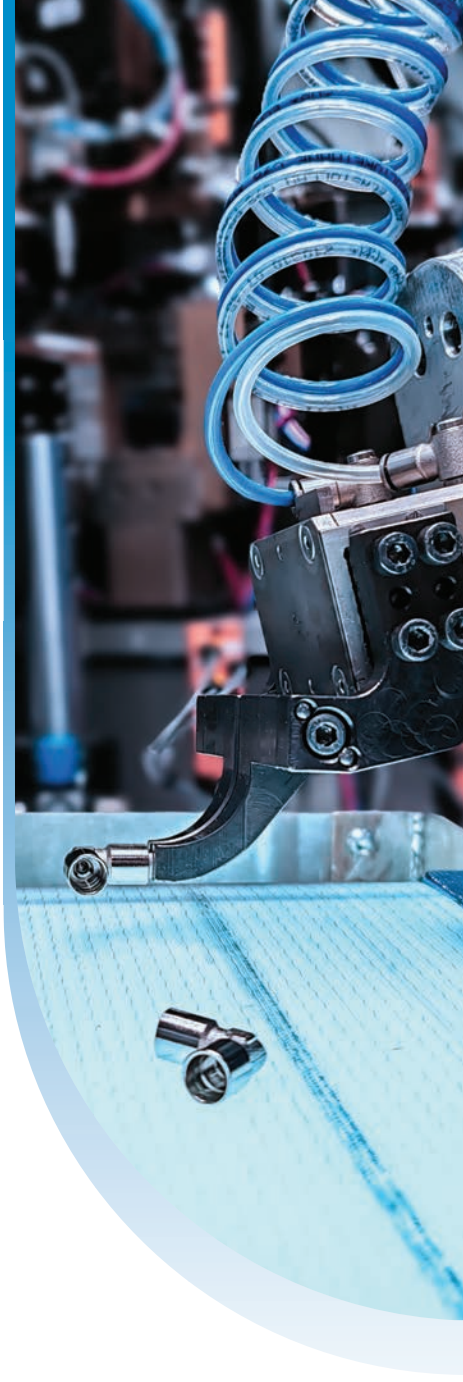
| Tube OD | D1 | D2 | D3 | D4 | L1 | L2 |
|---|---|---|---|---|---|---|
| 5/32 | .374 | .362 | .118 | .339 | .472 | .126 |
| 1/4 | .480 | .469 | .217 | .445 | .551 | .157 |
| 5/16 | .547 | .535 | .276 | .512 | .571 | .157 |
| 3/8 | .610 | .597 | .335 | .575 | .630 | .157 |




cmatic

cmatic®
PNEUMATIC FITTINGS



# MA LINE

## Push-in Fittings

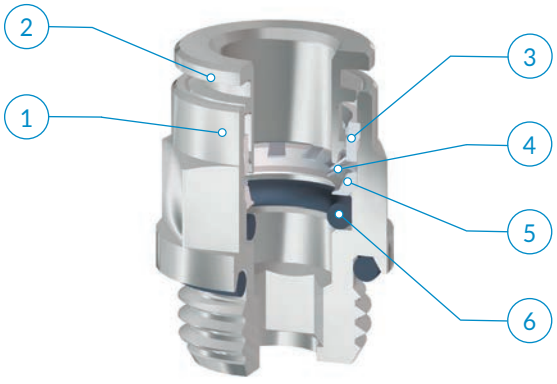
The push-in fittings of the MA line are completely made of brass and they are suitable for quick connections in different industrial applications; they are robust, compact and guarantee high performances in time.
All MA fittings are electrolytic nickel-plated.

# MA Line

All size are in millimeters

| | | | | | |
|---|---|---|---|---|---|
| 1 Body | 2 Release ring | 3 Holding ring | 4 Gripping ring | 5 Protection ring | 6 Seals |
| Brass UNI EN 12164 CW614N - UNI EN 12165 CW617N, nickel plated | | Acetal resin (POM) | Stainless steel AISI 301 | Acetal resin (POM) | NBR |

-4° ÷ 176°F | Max 290 PSI | -29″ Hg




PTFE for "R" threads

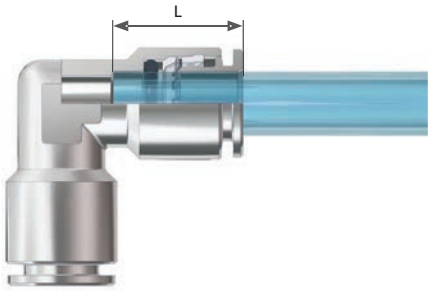
| | M3x0,5 | M5x0,8 | M6x1 | M7x1 | M12x1,25 | M12x1,5 | G1/8 | G1/4 | G3/8 | G1/2 | G3/4 | R1/8 | R1/4 | R3/8 | R1/2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | ● | ● | | | | | | | | | | | | | |
| 4 | | ● | ● | ● | | | ● | ● | | | | ● | ● | | |
| 6 | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | |
| 8 | | | | | | | ● | ● | ● | ● | | ● | ● | ● | ● |
| 10 | | | | | | | ● | ● | ● | ● | | ● | ● | ● | ● |
| 12 | | | | | | | | ● | ● | ● | | | ● | ● | ● |
| 14 | | | | | | | | | ● | ● | | | | ● | ● |
| 16 | | | | | | | | | | ● | ● | | | | |

**Recommended tubings:**
PA11, PA12, PA6, Polyethylene PE, Polyurethane PU (98 Shore A)

**Acceptable Tolerances on the tubings:**
+/– 0,07 mm up to Ø 10 mm
+/– 0,1 mm from Ø 12 up to Ø 16 mm

**Application fields:**
Pneumatic circuits

## Tubing insertion depth




| OD | L |
|---|---|
| 3 | 9,8 |
| 4 | 13,2 |
| 6 | 16,1 |
| 8 | 16,2 |
| 10 | 18,3 |
| 12 | 19,5 |
| 14 | 22,5 |
| 16 | 22,5 |

## ASSEMBLY INSTRUCTIONS

**1**

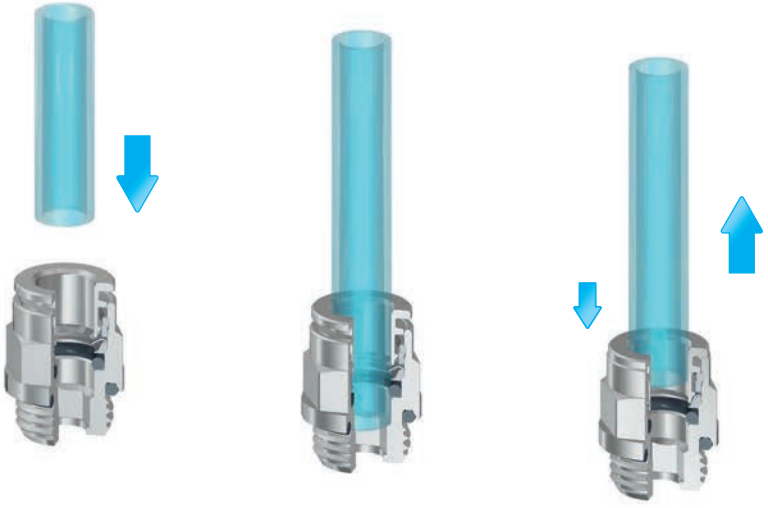
Cut the tube square (by means of a hose cutter i.e. our TCUT) making sure that no burrs are left and that the tube is not oval.
In case of use with metal hoses, make a groove all around the tube diameter with a suitable tool (TINC). The groove must be made according to the tube diameter so that the fitting collect can better grip onto it.

**2**

Insert the tube into the fitting until it bottoms.

**Tube release**

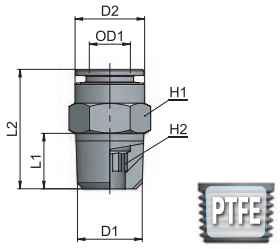
While pressing on the release ring, pull out the tube from the fitting.



Once the tubing is connected to the fitting, make sure that the tubing is not subject to any tensile strength and that the min. Recommended bending radius stated in the tubing section of this catalogue is complied with (see page 136).
To prevent any accidental tube release, no components have to come in touch with the release ring and exercise any unwanted pressure on the same. Indeed however lateral, any load on the release ring may cause the tube disconnection.
To tighten threads, please check out our tightening torque chart illustrated at page 6.

## MA 11

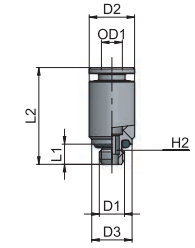
Taper straight, male



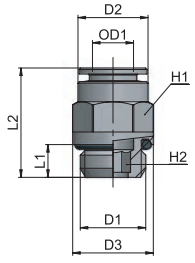

| Type | OD1 | D1 | D2 | L1 | L2 | H1 | H2 | g |
|---|---|---|---|---|---|---|---|---|
| 11 04 18 | 4 | R1/8 | 9 | 7,5 | 16 | 10 | 3 | 6,0 |
| 11 04 14 | 4 | R1/4 | 9 | 11 | 20,5 | 14 | 3 | 16,1 |
| 11 06 18 | 6 | R1/8 | 11,9 | 7,5 | 21 | 12 | 4 | 9,3 |
| 11 06 14 | 6 | R1/4 | 11,9 | 11 | 20,5 | 14 | 4 | 14,1 |
| 11 06 38 | 6 | R3/8 | 11,9 | 11,5 | 21 | 17 | 4 | 25,5 |
| 11 08 18 | 8 | R1/8 | 13,9 | 7,5 | 25 | 14 | 6 | 13,6 |
| 11 08 14 | 8 | R1/4 | 13,9 | 11 | 23,5 | 14 | 6 | 14,3 |
| 11 08 38 | 8 | R3/8 | 13,9 | 11,5 | 22,5 | 17 | 6 | 24,0 |
| 11 08 12 | 8 | R1/2 | 13,9 | 14 | 25 | 22 | 6 | 50,3 |
| 11 10 18 | 10 | R1/8 | 15,9 | 7,5 | 28 | 16 | 6 | 19,2 |
| 11 10 14 | 10 | R1/4 | 15,9 | 11 | 30,5 | 16 | 8 | 20,2 |
| 11 10 38 | 10 | R3/8 | 15,9 | 11,5 | 24 | 17 | 8 | 20,0 |
| 11 10 12 | 10 | R1/2 | 15,9 | 14 | 27 | 22 | 8 | 47,5 |
| 11 12 14 | 12 | R1/4 | 18,9 | 11 | 32 | 19 | 8 | 28,5 |
| 11 12 38 | 12 | R3/8 | 18,9 | 11,5 | 27,5 | 19 | 10 | 24,8 |
| 11 12 12 | 12 | R1/2 | 18,9 | 14 | 27,5 | 22 | 10 | 42,3 |
| 11 14 38 | 14 | R3/8 | 21,9 | 11,5 | 35,5 | 22 | 10 | 40,1 |
| 11 14 12 | 14 | R1/2 | 21,9 | 14 | 32,5 | 22 | 12 | 39,5 |

## MA 12

Parallel straight, male



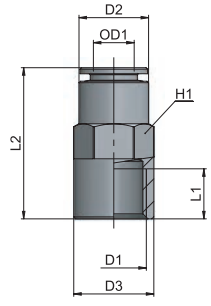

| Type | OD1 | D1 | D2 | D3 | L1 | L2 | H1 | H2 | g |
|---|---|---|---|---|---|---|---|---|---|
| 12 03 M3 | 3 | M3x0,5 | 6,5 | 5,6 | 3 | 15,5 | - | 1,5 | 1,4 |
| 12 03 M5 | 3 | M5x0,8 | 6,5 | 7 | 4 | 15,8 | - | 2 | 2,1 |
| 12 04 M5 | 4 | M5x0,8 | 9 | 8 | 4 | 19 | - | 2,5 | 4,4 |
| 12 04 M6 | 4 | M6x1 | 9 | 9 | 4,5 | 19,5 | - | 3 | 4,3 |
| 12 04 M7 | 4 | M7x1 | 9 | 9 | 5 | 20 | - | 3 | 5,0 |
| 12 06 M5 | 6 | M5x0,8 | 12 | 8 | 4 | 22,2 | - | 2,5 | 8,6 |
| 12 06 M6 | 6 | M6x1 | 12 | 9 | 4,5 | 22,8 | - | 3 | 8,9 |
| 12 06 M7 | 6 | M7x1 | 12 | 9,1 | 5 | 23 | - | 3 | 9,4 |




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | H1 | H2 | g |
|---|---|---|---|---|---|---|---|---|---|
| 12 04 18 | 4 | G 1/8 | 9 | 13 | 5 | 16,5 | 9 | 3 | 6,3 |
| 12 04 14 | 4 | G 1/4 | 9 | 16 | 6,5 | 18,5 | 9 | 3 | 12,0 |
| 12 06 M12x12,5 | 6 | M12x12,5 | 11,9 | 15 | 6,5 | 21 | 12 | 4 | 11,5 |
| 12 06 M12x15 | 6 | M12x15 | 11,9 | 15 | 6,5 | 21 | 12 | 4 | 11,5 |
| 12 06 18 | 6 | G 1/8 | 11,9 | 13,5 | 5 | 19,5 | 12 | 4 | 9,2 |
| 12 06 14 | 6 | G 1/4 | 11,9 | 16 | 6,5 | 19,5 | 12 | 4 | 12,3 |
| 12 06 38 | 6 | G 1/8 | 11,9 | 20 | 7 | 20,5 | 12 | 4 | 20,6 |
| 12 06 12 | 6 | G 1/2 | 11,9 | 25 | 8,5 | 22,5 | 12 | 4 | 35,0 |
| 12 08 18 | 8 | G 1/8 | 13,9 | 14,5 | 5 | 23,5 | 13 | 6 | 11,5 |
| 12 08 14 | 8 | G 1/4 | 13,9 | 16 | 6,5 | 21,5 | 14 | 6 | 13,8 |
| 12 08 38 | 8 | G 1/8 | 13,9 | 20 | 7 | 21 | 14 | 6 | 20,1 |
| 12 08 12 | 8 | G 1/2 | 13,9 | 25 | 8,5 | 23 | 14 | 6 | 34,3 |
| 12 10 18 | 10 | G 1/8 | 15,9 | 13 | 5 | 26,5 | 15 | 8 | 16,8 |
| 12 10 14 | 10 | G 1/4 | 15,9 | 16,5 | 6,5 | 27,5 | 15 | 8 | 16,8 |
| 12 10 38 | 10 | G 1/8 | 15,9 | 20 | 7 | 25 | 16 | 8 | 22,0 |
| 12 10 12 | 10 | G 1/2 | 15,9 | 25 | 8,5 | 25,5 | 16 | 8 | 34,5 |
| 12 12 14 | 12 | G 1/4 | 18,9 | 21 | 6,5 | 28,5 | 19 | 8 | 25,8 |
| 12 12 38 | 12 | G 1/8 | 18,9 | 21 | 7 | 28,5 | 19 | 10 | 29,0 |
| 12 12 12 | 12 | G 1/2 | 18,9 | 25 | 8,5 | 26,5 | 19 | 10 | 36,1 |
| 12 14 38 | 14 | G 1/8 | 21,9 | 25 | 7 | 32 | 22 | 10 | 37,0 |
| 12 14 12 | 14 | G 1/2 | 21,9 | 25 | 8,5 | 32 | 22 | 12 | 42,4 |
| 12 16 12 | 16 | G 1/2 | 23,7 | 28 | 8,5 | 34,5 | 25 | 13 | 51,1 |
| 12 16 34 | 16 | G 1/4 | 23,7 | 32 | 9,5 | 32 | 24 | 13 | 68,2 |

## MA 13

Female straight

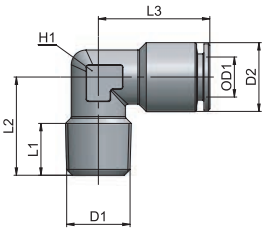



| Type | OD1 | D1 | D2 | D3 | L1 | L2 | H1 | g |
|---|---|---|---|---|---|---|---|---|
| 13 04 18 | 4 | G 1/8 | 9 | 13 | 7 | 23,5 | 9 | 10,0 |
| 13 06 18 | 6 | G 1/8 | 11,9 | 14 | 7 | 26 | 12 | 15,0 |
| 13 06 14 | 6 | G 1/4 | 11,9 | 16 | 10 | 30 | 12 | 18,5 |
| 13 08 18 | 8 | G 1/8 | 13,7 | 16,2 | 7 | 26 | 14 | 17,5 |
| 13 08 14 | 8 | G 1/4 | 13,9 | 16 | 10 | 30 | 14 | 20,2 |
| 13 08 38 | 8 | G 1/8 | 13,9 | 20 | 11 | 31 | 14 | 25,9 |
| 13 10 14 | 10 | G 1/4 | 15,9 | 18,5 | 10 | 32 | 16 | 24,4 |
| 13 10 38 | 10 | G 1/8 | 15,9 | 20 | 11 | 33,5 | 16 | 30,3 |
| 13 10 12 | 10 | G 1/2 | 15,9 | 25 | 11 | 36,5 | 16 | 45,0 |
| 13 12 38 | 12 | G 1/8 | 19 | 23,1 | 11 | 34 | 20 | 38,3 |
| 13 12 12 | 12 | G 1/2 | 18,8 | 25 | 11 | 37 | 19 | 50,9 |

## MA 14

Taper elbow fitting, male

| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|
| 14 04 18 | 4 | R1/8 | 9 | 7,8 | 15 | 17,5 | 8 | 8,1 |
| 14 04 14 | 4 | R1/4 | 9,1 | 10 | 19 | 17,5 | 10 | 13,9 |
| 14 06 18 | 6 | R1/8 | 12 | 8,2 | 15,5 | 20,5 | 10 | 13,2 |
| 14 06 14 | 6 | R1/4 | 12 | 10 | 19 | 20,5 | 10 | 16,7 |
| 14 08 18 | 8 | R1/8 | 14 | 7,5 | 19 | 22,5 | 12 | 19,6 |
| 14 08 14 | 8 | R1/4 | 14 | 10,5 | 20 | 22,5 | 12 | 22,6 |
| 14 10 14 | 10 | R1/4 | 16 | 9,5 | 22 | 25 | 14 | 27,4 |
| 14 10 38 | 10 | R3/8 | 16 | 10,8 | 22,5 | 25 | 14 | 31,5 |

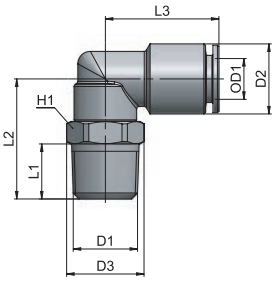




## MA 15

Taper swivelling elbow fitting, male

| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|
| 15 04 18 | 4 | R1/8 | 9,1 | 11,2 | 7,5 | 17,85 | 19,5 | 10 | 10,8 |
| 15 04 14 | 4 | R1/4 | 9,1 | 15,5 | 11 | 24,2 | 19,5 | 14 | 20,9 |
| 15 06 18 | 6 | R1/8 | 12 | 14,5 | 7,5 | 20,2 | 22 | 13 | 20,0 |
| 15 06 14 | 6 | R1/4 | 12 | 15,5 | 11 | 24,2 | 22 | 14 | 24,0 |
| 15 06 38 | 6 | R3/8 | 12 | 20 | 11,5 | 25,2 | 22 | 18 | 31,0 |
| 15 08 18 | 8 | R1/8 | 14 | 14,5 | 7,5 | 20 | 22,5 | 13 | 23,0 |
| 15 08 14 | 8 | R1/4 | 14 | 15,5 | 11 | 24 | 22,5 | 14 | 26,4 |
| 15 08 38 | 8 | R3/8 | 14 | 20 | 11,5 | 27 | 23 | 18 | 39,2 |
| 15 08 12 | 8 | R1/2 | 14 | 24,5 | 14 | 31 | 23 | 22 | 54,4 |
| 15 10 18 | 10 | R1/8 | 16 | 20 | 7,5 | 26,5 | 23 | 16 | 33,2 |
| 15 10 14 | 10 | R1/4 | 16 | 20 | 11 | 26,5 | 26 | 18 | 37,5 |
| 15 10 38 | 10 | R3/8 | 16 | 20 | 11,5 | 27 | 26 | 18 | 41,0 |
| 15 10 12 | 10 | R1/2 | 16 | 24,5 | 14 | 31 | 26 | 22 | 55,7 |
| 15 12 14 | 12 | R1/4 | 19 | 22,5 | 11 | 30 | 28,5 | 20 | 62,3 |
| 15 12 38 | 12 | R3/8 | 19 | 22,5 | 11,5 | 30,5 | 28,5 | 20 | 62,8 |
| 15 12 12 | 12 | R1/2 | 19 | 24,5 | 14 | 33,5 | 28,5 | 22 | 71,5 |
| 15 14 38 | 14 | R3/8 | 22 | 22,5 | 11,5 | 30,5 | 32 | 20 | 66,2 |
| 15 14 12 | 14 | R1/2 | 22 | 24,5 | 14 | 33,5 | 32 | 22 | 74,6 |

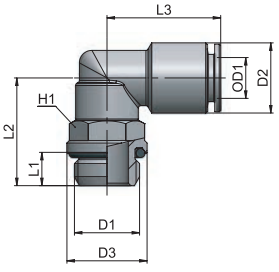




## MA 16

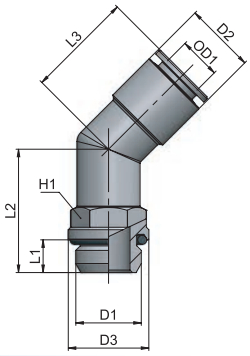
Parallel swivelling elbow fitting, male

| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|
| 16 03 M3 | 3 | M3x05 | 7 | 7,9 | 3 | 13,2 | 14 | 7 | 5,5 |
| 16 03 M5 | 3 | M5x08 | 7 | 7,9 | 4 | 13,7 | 14 | 7 | 7,1 |
| 16 04 M5 | 4 | M5x08 | 9,1 | 10 | 4 | 14 | 17,5 | 9 | 8,8 |
| 16 04 M6 | 4 | M6x1 | 9,1 | 10 | 4,5 | 14,5 | 17,5 | 9 | 8,7 |
| 16 04 18 | 4 | G 1/8 | 9,1 | 14,5 | 5 | 18,2 | 19,5 | 13 | 15,7 |
| 16 04 14 | 4 | G 1/4 | 9,1 | 16 | 6,5 | 21,7 | 19,5 | 13 | 19,0 |
| 16 06 M5 | 6 | M5x08 | 12 | 10 | 4 | 14 | 20,5 | 9 | 12,3 |
| 16 06 M6 | 6 | M6x1 | 12 | 10 | 4,5 | 14,5 | 20,5 | 9 | 12,0 |
| 16 06 M12x12 5 | 6 | M12x12 5 | 12 | 15 | 6,5 | 21,7 | 22 | 13 | 22,0 |
| 16 06 M12x15 | 6 | M12x15 | 12 | 15 | 6,5 | 21,7 | 22 | 13 | 21,5 |
| 16 06 18 | 6 | G 1/8 | 12 | 14,5 | 5 | 18,2 | 22 | 13 | 18,5 |
| 16 06 14 | 6 | G 1/4 | 12 | 16 | 6,5 | 21,7 | 22 | 13 | 22,0 |
| 16 06 38 | 6 | G 3/8 | 12 | 20 | 7 | 22,2 | 22 | 13 | 27,7 |
| 16 06 12 | 6 | G 1/2 | 12 | 25 | 8,5 | 24,2 | 22 | 13 | 37,2 |
| 16 08 18 | 8 | G 1/8 | 14 | 14,5 | 5 | 18 | 22,5 | 13 | 22,0 |
| 16 08 14 | 8 | G 1/4 | 14 | 16 | 6,5 | 21,5 | 22,5 | 13 | 25,5 |
| 16 08 38 | 8 | G 3/8 | 14 | 20 | 7 | 25,5 | 23 | 16 | 36,0 |
| 16 08 12 | 8 | G 1/2 | 14 | 25 | 8,5 | 27,5 | 23 | 16 | 41,0 |
| 16 10 18 | 10 | G 1/8 | 16 | 18 | 5 | 20,5 | 26 | 16 | 30,8 |
| 16 10 14 | 10 | G 1/4 | 16 | 18 | 6,5 | 22 | 26 | 16 | 32,5 |
| 16 10 38 | 10 | G 3/8 | 16 | 20 | 7 | 25,5 | 26 | 16 | 39,5 |
| 16 10 12 | 10 | G 1/2 | 16 | 25 | 8,5 | 27,5 | 26 | 16 | 43,2 |
| 16 12 14 | 12 | G 1/4 | 19 | 22,5 | 6,5 | 25,5 | 28,5 | 20 | 58,5 |
| 16 12 38 | 12 | G 3/8 | 19 | 22,5 | 7 | 26 | 28,5 | 20 | 56,0 |
| 16 12 12 | 12 | G 1/2 | 19 | 25 | 8,5 | 30,5 | 28,5 | 20 | 65,1 |
| 16 14 38 | 14 | G 3/8 | 22 | 22,5 | 7 | 26 | 32 | 20 | 59,0 |
| 16 14 12 | 14 | G 1/2 | 22 | 25 | 8,5 | 30,5 | 32 | 20 | 68,5 |
| 16 16 12 | 16 | G 1/2 | 24 | 27 | 8,5 | 33 | 36,5 | 25 | 105,2 |
| 16 16 34 | 16 | G 1/4 | 24 | 32 | 9,5 | 35 | 36,5 | 25 | 113,8 |



## MA 16-45

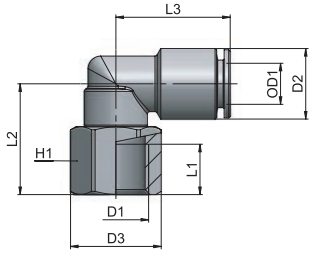
Parallel Swivelling Elbow Fitting, male 45°




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|
| 16 06 18 45° | 6 | G /8 | 12 | 12,8 | 5 | 21 | 21 | 13 | 24,1 |
| 16 06 14 45° | 6 | G /4 | 12 | 16 | 6,5 | 24,5 | 21 | 13 | 27,9 |
| 16 08 18 45° | 8 | G /8 | 14 | 12,8 | 5 | 21 | 21 | 13 | 24,6 |
| 16 08 14 45° | 8 | G /4 | 14 | 16 | 6,5 | 24,5 | 21 | 13 | 28,3 |
| 16 10 14 45° | 10 | G /4 | 16 | 16 | 6,5 | 23 | 25 | 13 | 40,5 |
| 16 10 38 45° | 10 | G /8 | 16 | 20 | 7 | 26,5 | 25 | 16 | 45,3 |
| 16 12 38 45° | 12 | G /8 | 20 | 20 | 7 | 26 | 25 | 16 | 68,2 |
| 16 12 12 45° | 12 | G /2 | 20 | 25 | 8,5 | 30,5 | 25 | 20 | 76,3 |

## MA 17

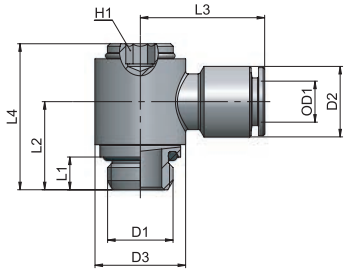
Swivelling elbow fitting, female




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|
| 17 04 18 | 4 | G /8 | 9,1 | 14,5 | 6,5 | 17,9 | 19,5 | 13 | 17,3 |
| 17 06 18 | 6 | G /8 | 12 | 14,5 | 6,5 | 17,9 | 22 | 13 | 19,7 |
| 17 06 14 | 6 | G /4 | 12 | 18 | 10 | 22,2 | 22 | 16 | 25,4 |
| 17 08 18 | 8 | G /8 | 14 | 14,5 | 6,5 | 17,7 | 22,5 | 13 | 23,1 |
| 17 08 14 | 8 | G /4 | 14 | 18 | 10 | 22 | 22,5 | 16 | 29,1 |
| 17 10 14 | 10 | G /4 | 16 | 18 | 10 | 23 | 26 | 16 | 35,6 |
| 17 10 38 | 10 | G /8 | 16 | 22,5 | 10,5 | 25 | 26 | 20 | 43,5 |

## MA 18

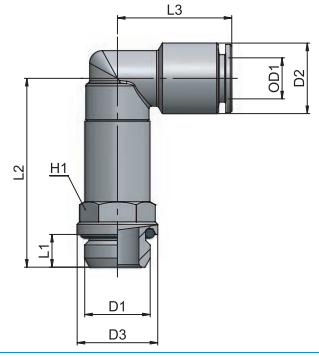
Swivelling fitting with banjo ring




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | L4 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|---|
| 18 03 M3 | 3 | M3x05 | 6,8 | 7 | 3 | 8,5 | 14 | 14 | 2 | 4,6 |
| 18 03 M5 | 3 | M5x08 | 6,8 | 7 | 4 | 9,5 | 14 | 15 | 2 | 8,1 |
| 18 04 M5 | 4 | M5x08 | 9 | 10 | 4 | 11 | 18,5 | 19,1 | 3 | 10,1 |
| 18 04 18 | 4 | G /8 | 9,1 | 14 | 5 | 15 | 20,5 | 25,5 | 4 | 22,2 |
| 18 06 M5 | 6 | M5x08 | 12 | 10 | 4 | 11 | 21,5 | 19,1 | 3 | 13,3 |
| 18 06 18 | 6 | G /8 | 12 | 14 | 5 | 15 | 22,5 | 25,5 | 4 | 24,4 |
| 18 06 14 | 6 | G /4 | 12 | 18 | 6,5 | 17,5 | 24 | 29 | 5 | 39,3 |
| 18 08 18 | 8 | G /8 | 14 | 14 | 5 | 15 | 23,5 | 25,5 | 4 | 25,7 |
| 18 08 14 | 8 | G /4 | 14 | 18 | 6,5 | 17,5 | 24,5 | 29 | 5 | 39,1 |
| 18 10 14 | 10 | G /4 | 16 | 18 | 6,5 | 17,5 | 27 | 29 | 5 | 43,6 |
| 18 10 38 | 10 | G /8 | 16 | 22 | 7 | 19,5 | 29 | 32,5 | 6 | 62,2 |
| 18 12 38 | 12 | G /8 | 19 | 22 | 7 | 19,5 | 29,5 | 32,5 | 6 | 69,0 |
| 18 12 12 | 12 | G /2 | 19 | 26 | 8,5 | 24 | 31,5 | 39,6 | 8 | 114,8 |

## MA 19

Swivelling extended elbow fitting, male, parallel

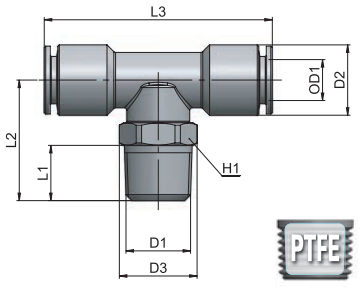



| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|
| 19 04 18 | 4 | G /8 | 9,1 | 14,5 | 5 | 29,2 | 19,5 | 13 | 25,6 |
| 19 06 18 | 6 | G /8 | 12 | 14,5 | 5 | 32,2 | 22 | 13 | 30,5 |
| 19 06 14 | 6 | G /4 | 12 | 16 | 6,5 | 35,7 | 22 | 13 | 30,9 |
| 19 08 18 | 8 | G /8 | 14 | 14,5 | 5 | 34 | 22,5 | 13 | 35,7 |
| 19 08 14 | 8 | G /4 | 14 | 16 | 6,5 | 37,5 | 22,5 | 13 | 36,0 |

## MA 20

Swivelling T fitting, taper

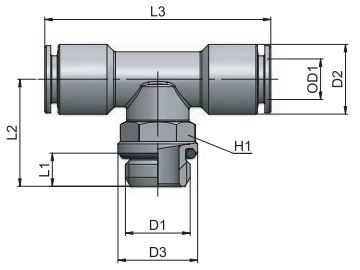
| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|
| 20 04 18 | 4 | R1/8 | 9,1 | 14,5 | 7,5 | 20,2 | 39 | 13 | 21,5 |
| 20 04 14 | 4 | R1/4 | 9,1 | 15,5 | 11 | 24,2 | 39 | 14 | 25,6 |
| 20 06 18 | 6 | R1/8 | 12 | 14,5 | 7,5 | 20 | 44 | 13 | 26,3 |
| 20 06 14 | 6 | R1/4 | 12 | 15,5 | 11 | 24 | 44 | 14 | 30,4 |
| 20 08 18 | 8 | R1/8 | 14 | 14,5 | 7,5 | 20 | 45 | 13 | 31,3 |
| 20 08 14 | 8 | R1/4 | 14 | 15,5 | 11 | 24 | 45 | 14 | 35,5 |
| 20 08 38 | 8 | R3/8 | 14 | 20 | 11,5 | 27 | 46 | 18 | 49,1 |
| 20 10 14 | 10 | R1/4 | 16 | 20 | 11 | 26,5 | 52 | 18 | 50,0 |
| 20 10 38 | 10 | R3/8 | 16 | 20 | 11,5 | 27 | 52 | 18 | 51,6 |
| 20 12 38 | 12 | R3/8 | 19 | 22,5 | 11,5 | 30,5 | 57 | 20 | 80,0 |
| 20 12 12 | 12 | R1/2 | 19 | 24,5 | 14 | 33,5 | 57 | 22 | 83,5 |




## MA 21

Swivelling T fitting, parallel

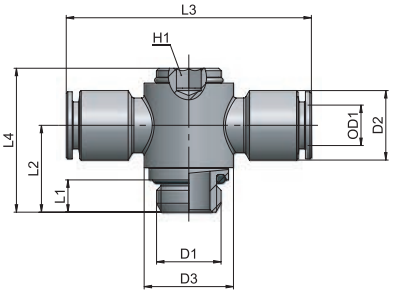
| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|
| 21 04 18 | 4 | G 1/8 | 9,1 | 14,5 | 5 | 18,2 | 39 | 13 | 20,2 |
| 21 04 14 | 4 | G1/4 | 9,1 | 16 | 6,5 | 21,7 | 39 | 13 | 23,9 |
| 21 06 18 | 6 | G1/8 | 12 | 14,5 | 5 | 18 | 44 | 13 | 25,2 |
| 21 06 14 | 6 | G1/4 | 12 | 16 | 6,5 | 21,5 | 44 | 13 | 29,1 |
| 21 08 18 | 8 | G1/8 | 14 | 14,5 | 5 | 18 | 45 | 13 | 30,7 |
| 21 08 14 | 8 | G1/4 | 14 | 16 | 6,5 | 21,5 | 45 | 13 | 34,1 |
| 21 08 38 | 8 | G3/8 | 14 | 20 | 7 | 25,5 | 46 | 16 | 46,4 |
| 21 10 14 | 10 | G1/4 | 16 | 18 | 6,5 | 22 | 52 | 16 | 44,4 |
| 21 10 38 | 10 | G3/8 | 16 | 20 | 7 | 25,5 | 52 | 16 | 48,7 |
| 21 12 38 | 12 | G3/8 | 19 | 22,5 | 7 | 26 | 57 | 20 | 75,3 |
| 21 12 12 | 12 | G1/2 | 19 | 25 | 8,5 | 30,5 | 57 | 20 | 82,0 |




## MA 22

Swivelling fitting with double banjo ring

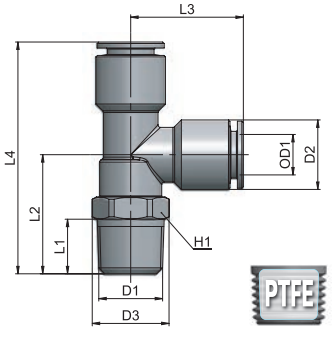
| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | L4 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|---|
| 22 04 M5 | 4 | M5x0,8 | 9 | 10 | 4 | 11 | 38 | 19,1 | 3 | 13,8 |
| 22 04 18 | 4 | G1/8 | 9 | 14 | 5 | 15 | 41 | 25,5 | 4 | 27,4 |
| 22 06 M5 | 6 | M5x0,8 | 12 | 10 | 4 | 11 | 43 | 19,1 | 3 | 19,9 |
| 22 06 18 | 6 | G1/8 | 12 | 14 | 5 | 15 | 45 | 25,5 | 4 | 32,1 |
| 22 06 14 | 6 | G1/4 | 12 | 18 | 6,5 | 17,5 | 48 | 29 | 5 | 45,8 |
| 22 08 18 | 8 | G1/8 | 14 | 14 | 5 | 15 | 47 | 25,5 | 4 | 34,1 |
| 22 08 14 | 8 | G1/4 | 14 | 18 | 6,5 | 17,5 | 49 | 29 | 5 | 46,5 |
| 22 10 14 | 10 | G1/4 | 16 | 18 | 6,5 | 17,5 | 54 | 29 | 5 | 55,2 |
| 22 10 38 | 10 | G3/8 | 16 | 22 | 7 | 19,5 | 58 | 32,5 | 6 | 72,4 |
| 22 12 38 | 12 | G3/8 | 19 | 22 | 7 | 19,5 | 59 | 32,5 | 6 | 79,0 |
| 22 12 12 | 12 | G1/2 | 19 | 27 | 8,5 | 24 | 63 | 39,6 | 8 | 124,7 |




## MA 23

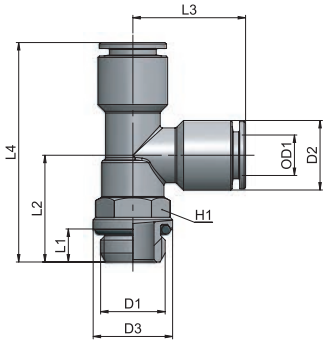
Lateral run T fitting, taper

| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | L4 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 04 18 | 4 | R1/8 | 9,1 | 14,5 | 7,5 | 20,2 | 19,5 | 39,7 | 13 | 22,0 |
| 23 04 14 | 4 | R1/4 | 9,1 | 15,5 | 11 | 24,2 | 19,5 | 43,7 | 14 | 25,5 |
| 23 06 18 | 6 | R1/8 | 12 | 14,5 | 7,5 | 20,2 | 22 | 42,2 | 13 | 27,5 |
| 23 06 14 | 6 | R1/4 | 12 | 15,5 | 11 | 24,2 | 22 | 46,2 | 14 | 31,0 |
| 23 08 18 | 8 | R1/8 | 14 | 14,5 | 7,5 | 20 | 22,5 | 42,5 | 13 | 31,0 |
| 23 08 14 | 8 | R1/4 | 14 | 15,5 | 11 | 24 | 22,5 | 46,5 | 14 | 35,0 |
| 23 10 14 | 10 | R1/4 | 16 | 20 | 11 | 26,5 | 26 | 52,5 | 18 | 50,0 |
| 23 10 38 | 10 | R3/8 | 16 | 20 | 11,5 | 27 | 26 | 53 | 18 | 51,0 |
| 23 12 38 | 12 | R3/8 | 19 | 22,5 | 11,5 | 30,5 | 28,5 | 59 | 20 | 75,0 |
| 23 12 12 | 12 | R1/2 | 19 | 24,5 | 14 | 33,5 | 28,5 | 62 | 22 | 83,5 |



## MA 24

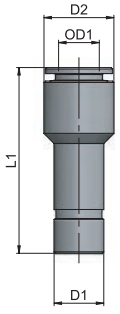
Lateral run T fitting, parallel




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | L4 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|---|
| 24 04 18 | 4 | G /8 | 9,1 | 14,5 | 5 | 18,2 | 19,5 | 37,7 | 13 | 20,5 |
| 24 04 14 | 4 | G /4 | 9,1 | 16 | 6,5 | 21,7 | 19,5 | 41,2 | 13 | 24,0 |
| 24 06 18 | 6 | G /8 | 12 | 14,5 | 5 | 18,2 | 22 | 40,2 | 13 | 26,0 |
| 24 06 14 | 6 | G /4 | 12 | 16 | 6,5 | 21,7 | 22 | 43,7 | 13 | 29,5 |
| 24 08 18 | 8 | G /8 | 14 | 14,5 | 5 | 18 | 22,5 | 40,5 | 13 | 30,0 |
| 24 08 14 | 8 | G /4 | 14 | 16 | 6,5 | 21,5 | 22,5 | 44 | 13 | 33,5 |
| 24 10 14 | 10 | G /4 | 16 | 18 | 6,5 | 22 | 26 | 48 | 16 | 44,0 |
| 24 10 38 | 10 | G /8 | 16 | 20 | 7 | 25,5 | 26 | 51,5 | 16 | 49,0 |
| 24 12 38 | 12 | G /8 | 19 | 22,5 | 7 | 26 | 28,5 | 54,5 | 20 | 73,0 |
| 24 12 12 | 12 | G /2 | 19 | 25 | 8,5 | 30,5 | 28,5 | 59 | 20 | 77,0 |

## MA 25

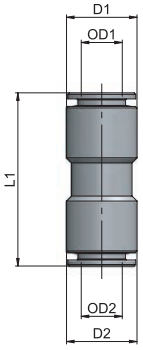
Reducer




| Type | OD1 | D1 | D2 | L1 | g |
|---|---|---|---|---|---|
| 25 03 04 | 3 | 4 | 6,5 | 27,5 | 2,5 |
| 25 04 06 | 4 | 6 | 9 | 33,5 | 7,0 |
| 25 04 08 | 4 | 8 | 9 | 33,5 | 10,0 |
| 25 04 10 | 4 | 10 | 10 | 31,5 | 15,0 |
| 25 04 12 | 4 | 12 | 12 | 32,5 | 24,5 |
| 25 06 04 | 6 | 4 | 12 | 35,5 | 10,0 |
| 25 06 08 | 6 | 8 | 12 | 35 | 11,5 |
| 25 06 10 | 6 | 10 | 12 | 36,5 | 16,5 |
| 25 06 12 | 6 | 12 | 12 | 35,5 | 22,2 |
| 25 06 14 | 6 | 14 | 14 | 37,5 | 25,0 |
| 25 08 06 | 8 | 6 | 14 | 39,5 | 13,5 |
| 25 08 10 | 8 | 10 | 14 | 37 | 15,0 |
| 25 08 12 | 8 | 12 | 14 | 39 | 23,0 |
| 25 08 14 | 8 | 14 | 14 | 38,5 | 31,5 |
| 25 10 12 | 10 | 12 | 16 | 42 | 20,0 |
| 25 10 14 | 10 | 14 | 16 | 42 | 29,5 |
| 25 12 14 | 12 | 14 | 19 | 43 | 24,0 |
| 25 14 16 | 14 | 16 | 22 | 49,5 | 45,0 |

## MA 26

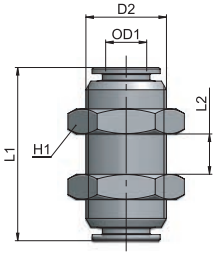
Union




| Type | OD1 | OD2 | D1 | D2 | L1 | g |
|---|---|---|---|---|---|---|
| 26 03 03 | 3 | 3 | 6,5 | 6,5 | 22,5 | 2,7 |
| 26 04 04 | 4 | 4 | 9 | 9 | 28 | 6,8 |
| 26 06 06 | 6 | 6 | 12 | 12 | 33,6 | 14,2 |
| 26 06 04 | 6 | 4 | 12 | 12 | 31 | 14,7 |
| 26 08 08 | 8 | 8 | 14 | 14 | 34 | 17,6 |
| 26 08 06 | 8 | 6 | 14 | 14 | 34 | 21,0 |
| 26 10 10 | 10 | 10 | 16 | 16 | 38,6 | 22,5 |
| 26 10 08 | 10 | 8 | 16 | 16 | 36,5 | 25,2 |
| 26 12 12 | 12 | 12 | 19 | 19 | 41 | 37,0 |
| 26 12 08 | 12 | 8 | 19 | 14 | 39 | 31,4 |
| 26 12 10 | 12 | 10 | 19 | 16 | 40,5 | 33,9 |
| 26 14 14 | 14 | 14 | 22 | 22 | 47 | 47,2 |
| 26 14 12 | 14 | 12 | 22 | 19 | 44,5 | 44,0 |
| 26 16 16 | 16 | 16 | 24 | 24 | 47 | 63,2 |
| 26 16 12 | 16 | 12 | 24 | 19 | 44,5 | 52,0 |
| 26 16 14 | 16 | 14 | 24 | 22 | 47 | 60,0 |

## MA 27

Bulkhead union

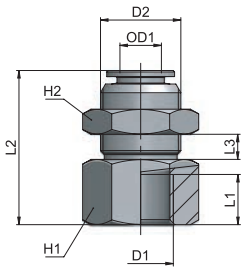



| Type | OD1 | D2 | L1 | L2 | H1 | g |
|---|---|---|---|---|---|---|
| 27 03 03 | 3 | M8x0,75 | 21 | 8 | 12 | 14,5 |
| 27 04 04 | 4 | M12x1 | 28 | 11 | 16 | 23,5 |
| 27 06 06 | 6 | M14x1 | 34 | 16 | 18 | 33,0 |
| 27 08 08 | 8 | M16x1 | 34 | 16 | 20 | 39,5 |
| 27 10 10 | 10 | M18x1 | 39 | 19 | 22 | 51,5 |
| 27 12 12 | 12 | M20x1 | 41 | 20 | 24 | 60,0 |

## MA 27-F

Bulkhead union, female

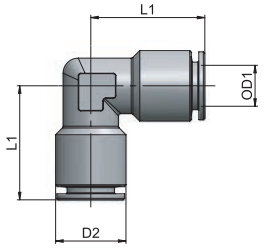
| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | H2 | g |
|---|---|---|---|---|---|---|---|---|---|
| 27 06 18 F | 6 | G /8 | M14x1 | 7 | 26,5 | 9 | 18 | 18 | 33,6 |
| 27 06 14 F | 6 | G /4 | M14x1 | 10 | 30,5 | 9 | 18 | 18 | 35,2 |
| 27 08 18 F | 8 | G /8 | M16x1 | 7 | 26,5 | 9 | 20 | 20 | 41,5 |
| 27 08 14 F | 8 | G /4 | M16x1 | 10 | 30,5 | 9 | 20 | 20 | 45,3 |
| 27 10 38 F | 10 | G /8 | M18x1 | 11 | 33 | 10 | 22 | 22 | 51,8 |




## MA 28

Union elbow

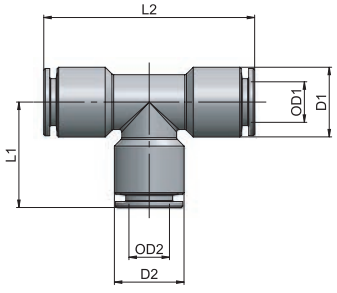
| Type | OD1 | D2 | L1 | g |
|---|---|---|---|---|
| 28 03 03 | 3 | 7 | 12,8 | 4,5 |
| 28 04 04 | 4 | 9 | 17,5 | 9,0 |
| 28 06 06 | 6 | 12 | 20,5 | 16,5 |
| 28 08 08 | 8 | 14 | 22,5 | 22,0 |
| 28 10 10 | 10 | 16 | 25 | 29,5 |
| 28 12 12 | 12 | 19 | 26,5 | 48,5 |
| 28 14 14 | 14 | 22 | 31,5 | 58,0 |
| 28 16 16 | 16 | 24 | 36,5 | 90,6 |




## MA 29

Union T

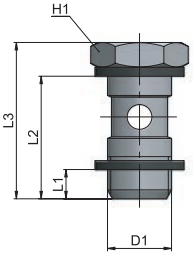
| Type | OD1 | OD2 | D1 | D2 | L1 | L2 | g |
|---|---|---|---|---|---|---|---|
| 29 03 03 | 3 | 3 | 7 | 7 | 12,8 | 25,6 | 5,6 |
| 29 04 04 | 4 | 4 | 9 | 9 | 17,5 | 35 | 12,5 |
| 29 06 06 | 6 | 6 | 12 | 12 | 20 | 40 | 22,3 |
| 29 06 04 | 6 | 4 | 12 | 9 | 18 | 40 | 19,9 |
| 29 08 08 | 8 | 8 | 14 | 14 | 21 | 42 | 28,0 |
| 29 08 06 | 8 | 6 | 14 | 12 | 20,5 | 42 | 27,5 |
| 29 10 10 | 10 | 10 | 16 | 16 | 24,5 | 49 | 39,2 |
| 29 10 08 | 10 | 8 | 16 | 14 | 23 | 49 | 38,4 |
| 29 12 12 | 12 | 12 | 19 | 19 | 26 | 52 | 61,3 |
| 29 12 10 | 12 | 10 | 19 | 16 | 26 | 52 | 60,3 |
| 29 14 14 | 14 | 14 | 22 | 22 | 30,5 | 61 | 77,1 |
| 29 16 16 | 16 | 16 | 24 | 24 | 34,5 | 69 | 124,0 |




## MA 31

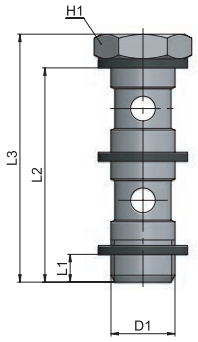
Simple screw

| Type | D1 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|
| 31 00 M5 | M5x08 | 4,1 | 14,3 | 18,5 | 8 | 2,5 |
| 31 00 18 | G /8 | 4,4 | 21,2 | 27 | 14 | 13,4 |
| 31 00 14 | G /4 | 5,9 | 24,7 | 31,5 | 17 | 27,8 |
| 31 00 38 | G /8 | 6,4 | 28,2 | 36 | 20 | 43,0 |
| 31 00 12 | G /2 | 7,5 | 33,5 | 41,5 | 26 | 81,1 |



## MA 32

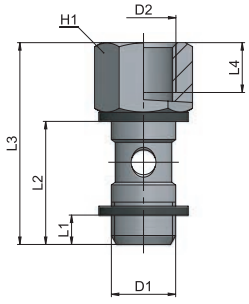
Double screw




| Type | D1 | L1 | L2 | L3 | H1 | g |
|---|---|---|---|---|---|---|
| 32 00 18 | G /8 | 4,1 | 37,7 | 43,5 | 14 | 19,5 |
| 32 00 14 | G /4 | 5,6 | 43,2 | 50 | 17 | 38,5 |
| 32 00 38 | G /8 | 6,1 | 49,7 | 57,5 | 20 | 63,5 |
| 32 00 12 | G /2 | 7 | 59 | 67 | 26 | 117,0 |

## MA 33

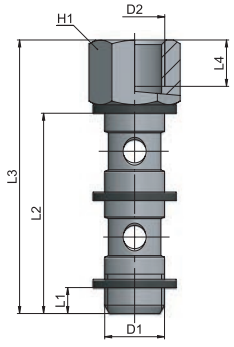
Screw, male female




| Type | D1 | D2 | L1 | L2 | L3 | L4 | H1 | g |
|---|---|---|---|---|---|---|---|---|
| 33 00 18 | G /8 | G /8 | 4,4 | 21,2 | 35 | 6,2 | 14 | 19,5 |
| 33 00 14 | G /4 | G /4 | 5,9 | 24,7 | 40,5 | 10 | 17 | 32,5 |
| 33 00 38 | G /8 | G /8 | 6,4 | 28,2 | 45 | 10 | 20 | 47,0 |

## MA 34

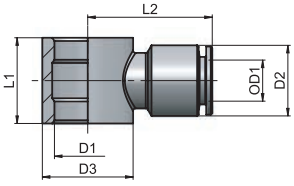
Double screw, male female




| Type | D1 | D2 | L1 | L2 | L3 | L4 | H1 | g |
|---|---|---|---|---|---|---|---|---|
| 34 00 18 | G /8 | G /8 | 4,1 | 37,7 | 51,5 | 6,2 | 14 | 26,0 |
| 34 00 14 | G /4 | G /4 | 5,6 | 43,2 | 59 | 10 | 17 | 44,0 |
| 34 00 38 | G /8 | G /8 | 6,1 | 49,7 | 66,5 | 10 | 20 | 66,0 |

## MA 35

Single banjo ring



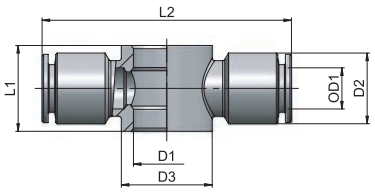

| Type | OD1 | D1 | D2 | D3 | L1 | L2 | g |
|---|---|---|---|---|---|---|---|
| 35 04 M5 | 4 | M5 | 9,1 | 10 | 9 | 18,5 | 7,7 |
| 35 04 M5 /R | 4 | 7 | 9,1 | 10 | 10 | 18,5 | 6,6 |
| 35 04 18 | 4 | 10 | 9,1 | 14 | 15 | 20,5 | 13,5 |
| 35 06 M5 | 6 | M5 | 12 | 10 | 9 | 21,5 | 10,9 |
| 35 06 M5 /R | 6 | 7 | 12 | 10 | 10 | 21,5 | 10,1 |
| 35 06 18 | 6 | 10 | 12 | 14 | 15 | 22,5 | 15,5 |
| 35 06 14 | 6 | 132 | 12 | 18 | 17 | 24 | 21,6 |
| 35 08 18 | 8 | 10 | 14 | 14 | 15 | 23,5 | 16,7 |
| 35 08 14 | 8 | 132 | 14 | 18 | 17 | 24,5 | 22,8 |
| 35 08 38 | 8 | 17 | 14 | 22 | 20 | 26,5 | 32,7 |
| 35 10 14 | 10 | 132 | 16 | 18 | 17 | 27 | 27,2 |
| 35 10 38 | 10 | 17 | 16 | 22 | 20 | 29 | 34,5 |
| 35 12 38 | 12 | 17 | 19 | 22 | 20 | 29,5 | 38,8 |
| 35 12 12 | 12 | 21 | 19 | 26 | 24 | 31,5 | 56,9 |

/R = For flow controls only

## MA 36

Double banjo ring

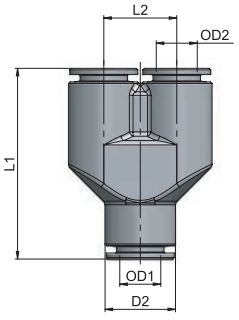
| Type | OD1 | D1 | D2 | D3 | L1 | L2 | g |
|---|---|---|---|---|---|---|---|
| 36 04 M5 | 4 | M5 | 9 | 10 | 9 | 37 | 10,9 |
| 36 04 18 | 4 | 10 | 9 | 14 | 15 | 41 | 18,0 |
| 36 06 18 | 6 | 10 | 12 | 14 | 15 | 45 | 23,0 |
| 36 06 14 | 6 | 132 | 12 | 18 | 17 | 48 | 28,7 |
| 36 08 18 | 8 | 10 | 14 | 14 | 15 | 47 | 25,3 |
| 36 08 14 | 8 | 132 | 14 | 18 | 17 | 49 | 29,7 |
| 36 08 38 | 8 | 17 | 14 | 22 | 20 | 53 | 42,5 |
| 36 10 14 | 10 | 132 | 16 | 18 | 17 | 54 | 37,9 |
| 36 10 38 | 10 | 17 | 16 | 22 | 20 | 58 | 44,5 |
| 36 12 38 | 12 | 17 | 19 | 22 | 20 | 59 | 51,3 |
| 36 12 12 | 12 | 21 | 19 | 27 | 24 | 63 | 67,2 |




## MA 37

Y fitting

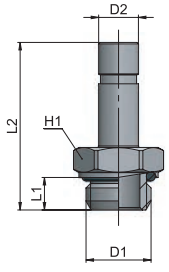
| Type | OD1 | OD2 | D2 | L1 | L2 | g |
|---|---|---|---|---|---|---|
| 37 03 03 | 3 | 3 | 6,8 | 25 | 7,5 | 7,9 |
| 37 04 04 | 4 | 4 | 9 | 29,5 | 9,5 | 14,3 |
| 37 06 06 | 6 | 6 | 12 | 36,5 | 12,5 | 33,3 |
| 37 06 04 | 6 | 4 | 12 | 34,1 | 11 | 36,1 |
| 37 08 08 | 8 | 8 | 14 | 37,5 | 14,5 | 44,1 |
| 37 08 06 | 8 | 6 | 14 | 37,5 | 14,5 | 51,1 |
| 37 10 10 | 10 | 10 | 16 | 44,5 | 16,5 | 62,7 |
| 37 10 08 | 10 | 8 | 16 | 44 | 16,5 | 74,9 |
| 37 12 12 | 12 | 12 | 19 | 49 | 19,5 | 95,8 |




## MA 38

Stem adaptor

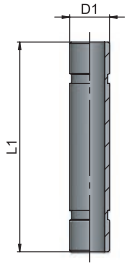
| Type | D1 | D2 | L1 | L2 | H1 | g |
|---|---|---|---|---|---|---|
| 38 04 M5 | M5x08 | 4 | 4 | 26 | 9 | 3,2 |
| 38 04 18 | G /8 | 4 | 5 | 28 | 13 | 7,3 |
| 38 04 14 | G /4 | 4 | 6,5 | 29,5 | 16 | 12,4 |
| 38 06 M5 | M5x08 | 6 | 4 | 28 | 9 | 5,9 |
| 38 06 18 | G /8 | 6 | 5 | 30 | 13 | 8,5 |
| 38 06 14 | G /4 | 6 | 6,5 | 32,5 | 16 | 13,7 |
| 38 08 18 | G /8 | 8 | 5 | 31 | 13 | 9,4 |
| 38 08 14 | G /4 | 8 | 6,5 | 33,5 | 16 | 14,5 |
| 38 10 14 | G /4 | 10 | 6,5 | 34,5 | 16 | 15,5 |
| 38 10 38 | G /8 | 10 | 7 | 35 | 20 | 22,0 |
| 38 12 38 | G /8 | 12 | 7 | 38 | 20 | 23,6 |
| 38 12 12 | G /2 | 12 | 8,5 | 39,5 | 25 | 38,0 |




## MA 39

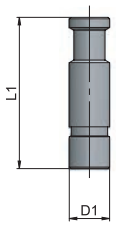
Extention piece

| Type | D1 | L1 | g |
|---|---|---|---|
| 39 00 04 | 4 | 35 | 2,7 |
| 39 00 06 | 6 | 40 | 5,1 |
| 39 00 08 | 8 | 42 | 8,0 |
| 39 00 10 | 10 | 50 | 11,8 |
| 39 00 12 | 12 | 53 | 15,3 |
| 39 00 14 | 14 | 54 | 18,8 |



## MA 40

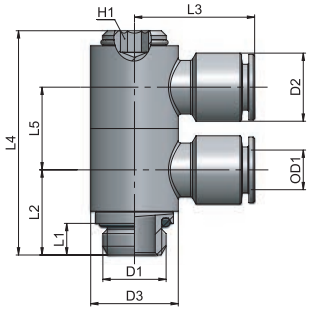
Plug




| Type | D1 | L1 | g |
|---|---|---|---|
| 40 00 03 | 3 | 20 | 1,0 |
| 40 00 04 | 4 | 25 | 2,3 |
| 40 00 06 | 6 | 25 | 3,7 |
| 40 00 08 | 8 | 30 | 7,2 |
| 40 00 10 | 10 | 35 | 11,8 |
| 40 00 12 | 12 | 40 | 18,2 |
| 40 00 14 | 14 | 40 | 26,2 |
| 40 00 16 | 16 | 40 | 32,5 |

## MA 41

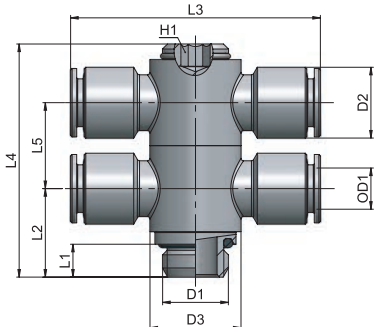
Swivelling fitting with two banjo rings




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | L4 | L5 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 41 04 M5 | 4 | M5x0,8 | 9 | 10 | 4 | 11 | 18,5 | 29,2 | 10 | 3 | 18,5 |
| 41 04 18 | 4 | G 1/8 | 9,1 | 14 | 5 | 15 | 20,5 | 40,4 | 15 | 4 | 40,0 |
| 41 06 18 | 6 | G 1/8 | 12 | 14 | 5 | 15 | 22,5 | 40,4 | 15 | 4 | 46,0 |
| 41 06 14 | 6 | G 1/4 | 12 | 18 | 6,5 | 17,5 | 24 | 46,1 | 17 | 5 | 69,5 |
| 41 08 18 | 8 | G 1/8 | 14 | 14 | 5 | 15 | 23,5 | 40,4 | 15 | 4 | 50,0 |
| 41 08 14 | 8 | G 1/4 | 14 | 18 | 6,5 | 17,5 | 24,5 | 46,1 | 17 | 5 | 69,5 |

## MA 42

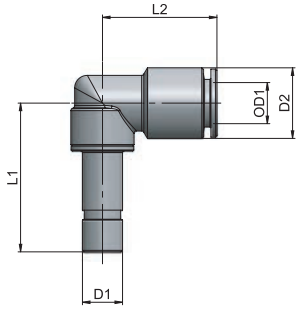
Swivelling fitting with two double banjo rings




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | L3 | L4 | L5 | H1 | g |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 04 M5 | 4 | M5x0,8 | 9 | 10 | 4 | 11 | 38 | 29,2 | 10 | 3 | 25,0 |
| 42 04 18 | 4 | G1/8 | 9 | 14 | 5 | 15 | 41 | 40,4 | 15 | 4 | 50,0 |
| 42 06 18 | 6 | G1/8 | 12 | 14 | 5 | 15 | 45 | 40,4 | 15 | 4 | 59,0 |
| 42 06 14 | 6 | G1/4 | 12 | 18 | 6,5 | 17,5 | 48 | 46,1 | 17 | 5 | 82,0 |
| 42 08 18 | 8 | G1/8 | 14 | 14 | 5 | 15 | 47 | 40,4 | 15 | 4 | 61,0 |
| 42 08 14 | 8 | G1/4 | 14 | 18 | 6,5 | 17,5 | 49 | 46,1 | 17 | 5 | 83,5 |

## MA 43

Plug-in elbow

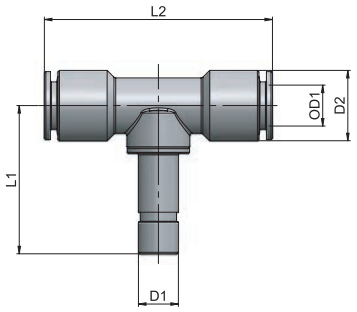



| Type | OD1 | D1 | D2 | L1 | L2 | g |
|---|---|---|---|---|---|---|
| 43 04 04 | 4 | 4 | 9,1 | 25,7 | 19,5 | 14,0 |
| 43 04 06 | 4 | 6 | 9,1 | 29,7 | 19,5 | 15,0 |
| 43 06 04 | 6 | 4 | 12 | 25,7 | 22 | 17,0 |
| 43 06 06 | 6 | 6 | 12 | 29,7 | 22 | 17,0 |
| 43 06 08 | 6 | 8 | 12 | 29,7 | 22 | 17,5 |
| 43 08 06 | 8 | 6 | 14 | 29,5 | 22,5 | 20,5 |
| 43 08 08 | 8 | 8 | 14 | 29,5 | 22,5 | 20,5 |
| 43 10 10 | 10 | 10 | 16 | 33,5 | 26 | 30,0 |

## MA 44

Plug-in T

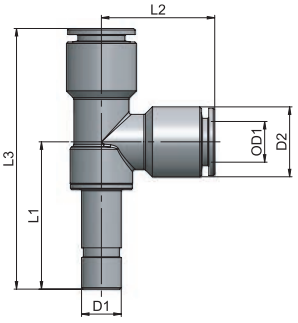
| Type | OD1 | D1 | D2 | L1 | L2 | g |
|---|---|---|---|---|---|---|
| 44 04 04 | 4 | 4 | 9,1 | 25,7 | 39 | 18,5 |
| 44 04 06 | 4 | 6 | 9,1 | 29,7 | 39 | 19,5 |
| 44 06 06 | 6 | 6 | 12 | 29,5 | 44 | 24,5 |
| 44 06 08 | 6 | 8 | 12 | 29,5 | 44 | 24,5 |
| 44 08 08 | 8 | 8 | 14 | 29,5 | 45 | 29,0 |
| 44 08 10 | 8 | 10 | 14 | 33,5 | 46 | 38,5 |
| 44 10 10 | 10 | 10 | 16 | 33,5 | 52 | 41,0 |




## MA 45

Plug-in run T

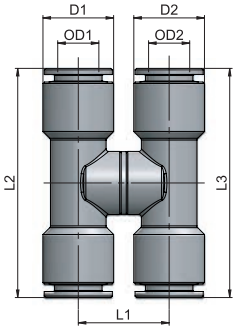
| Type | OD1 | D1 | D2 | L1 | L2 | L3 | g |
|---|---|---|---|---|---|---|---|
| 45 04 04 | 4 | 4 | 9,1 | 25,7 | 19,5 | 45,2 | 18,5 |
| 45 04 06 | 4 | 6 | 9,1 | 29,7 | 19,5 | 49,2 | 20,0 |
| 45 06 06 | 6 | 6 | 12 | 29,7 | 22 | 51,7 | 25,0 |
| 45 06 08 | 6 | 8 | 12 | 29,7 | 22 | 51,7 | 25,5 |
| 45 08 08 | 8 | 8 | 14 | 29,5 | 22,5 | 52 | 30,0 |
| 45 10 10 | 10 | 10 | 16 | 33,5 | 26 | 59,5 | 41,0 |




## MA 46

Swivelling cross fitting

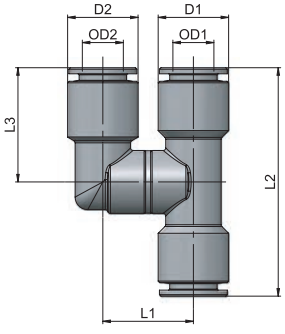
| Type | OD1 | OD2 | D1 | D2 | L1 | L2 | L3 | g |
|---|---|---|---|---|---|---|---|---|
| 46 04 04 | 4 | 4 | 9,1 | 9,1 | 18,4 | 39 | 39 | 31,0 |
| 46 04 06 | 4 | 6 | 9,1 | 12 | 18,4 | 39 | 44 | 36,0 |
| 46 06 06 | 6 | 6 | 12 | 12 | 18 | 44 | 44 | 41,0 |
| 46 06 08 | 6 | 8 | 12 | 14 | 18 | 44 | 45 | 46,5 |
| 46 08 08 | 8 | 8 | 14 | 14 | 18 | 45 | 45 | 50,0 |




## MA 47

Swivelling Y fitting

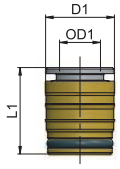
| Type | OD1 | OD2 | D1 | D2 | L1 | L2 | L3 | g |
|---|---|---|---|---|---|---|---|---|
| 47 04 04 | 4 | 4 | 9,1 | 9,1 | 18,4 | 39 | 19,5 | 27,0 |
| 47 04 06 | 4 | 6 | 9,1 | 12 | 18,4 | 39 | 22 | 29,5 |
| 47 06 06 | 6 | 6 | 12 | 12 | 18,2 | 44 | 22 | 34,5 |
| 47 06 08 | 6 | 8 | 12 | 14 | 18 | 44 | 22,5 | 37,5 |
| 47 08 08 | 8 | 8 | 14 | 14 | 18 | 45 | 22,5 | 42,0 |



# MA 10

## Press-in cartridge

The new construction features of the cartridge MA10 allow for one single cartridge version to be assembled in plastic, aluminium as well as brass bodies.




| Type | OD1 | D1 | L1 | g |
|---|---|---|---|---|
| 10 04 00 | 4 | 9,3 | 14,5 | 3,6 |
| 10 06 00 | 6 | 11,5 | 16,5 | 5,7 |
| 10 08 00 | 8 | 13,7 | 17 | 7,9 |
| 10 10 00 | 10 | 15,8 | 19 | 10,3 |

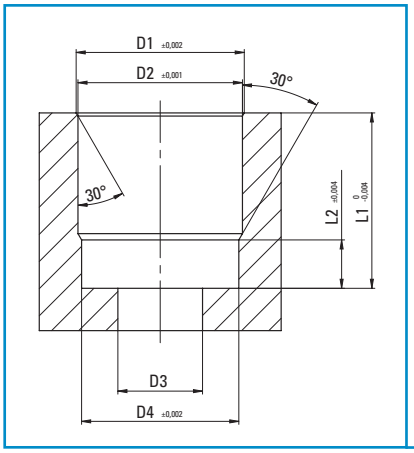
## Cartridge seat drilling plan

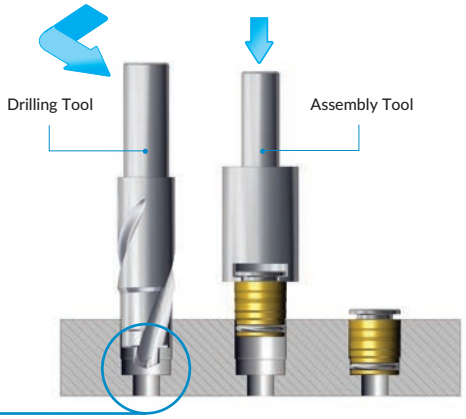
1 Drill the cartridge seat, following the instructions given.

2 Manually press the cartridge into the seat and by means of the Assembly tool push it all the way down until it bottoms; this will guarantee the proper cartridge assembly.

"Drilling and Assembly Tool" available upon request.

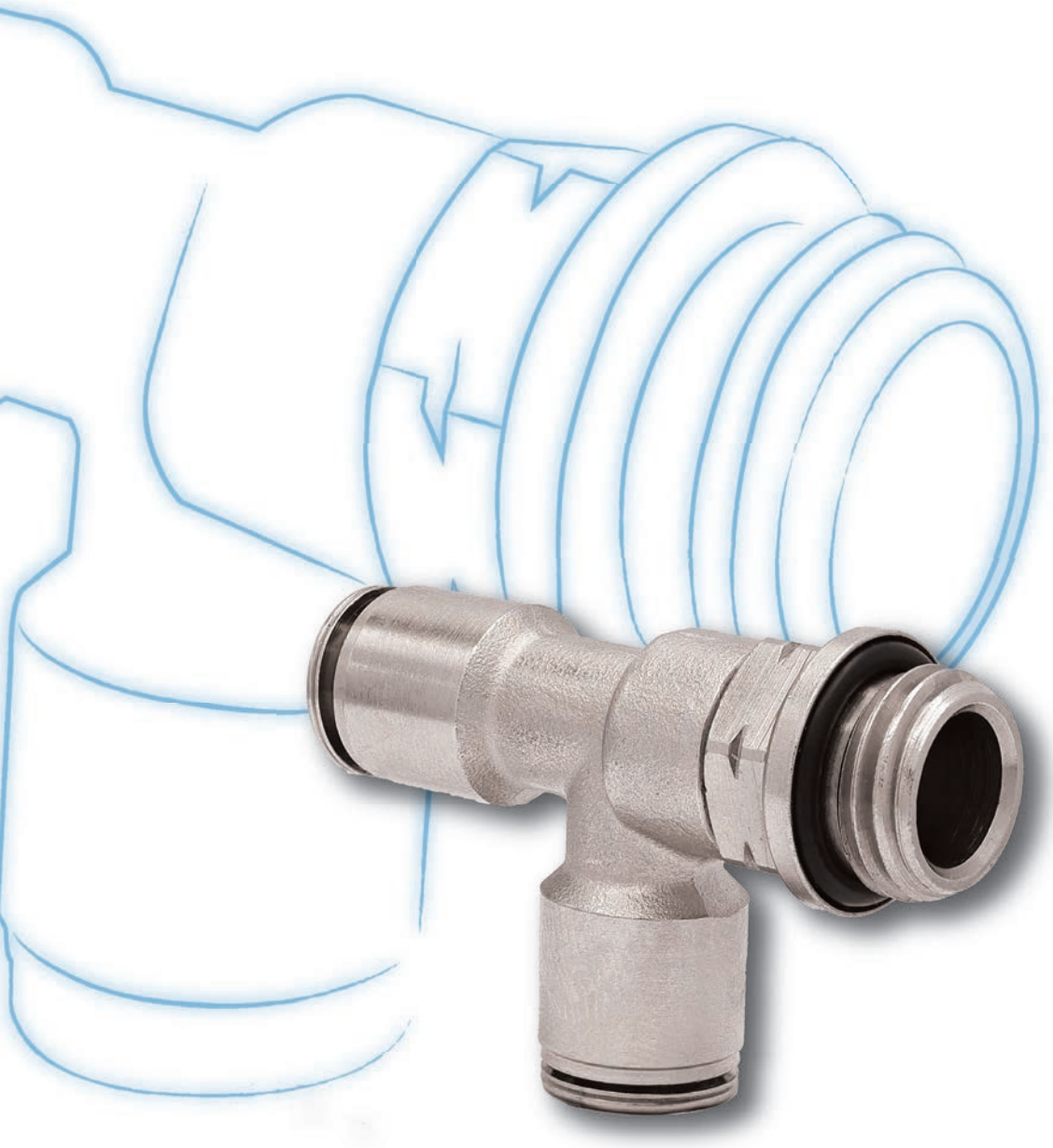
| Type | D1 | D2 | D3 | D4 | L1 | L2 |
|---|---|---|---|---|---|---|
| 4 | 9,5 | 9,2 | 3 | 8,6 | 12 | 3,2 |
| 6 | 11,7 | 11,4 | 5 | 10,8 | 14 | 4 |
| 8 | 13,9 | 13,6 | 7 | 13 | 14,5 | 4 |
| 10 | 16 | 15,7 | 9 | 15,1 | 16 | 4 |

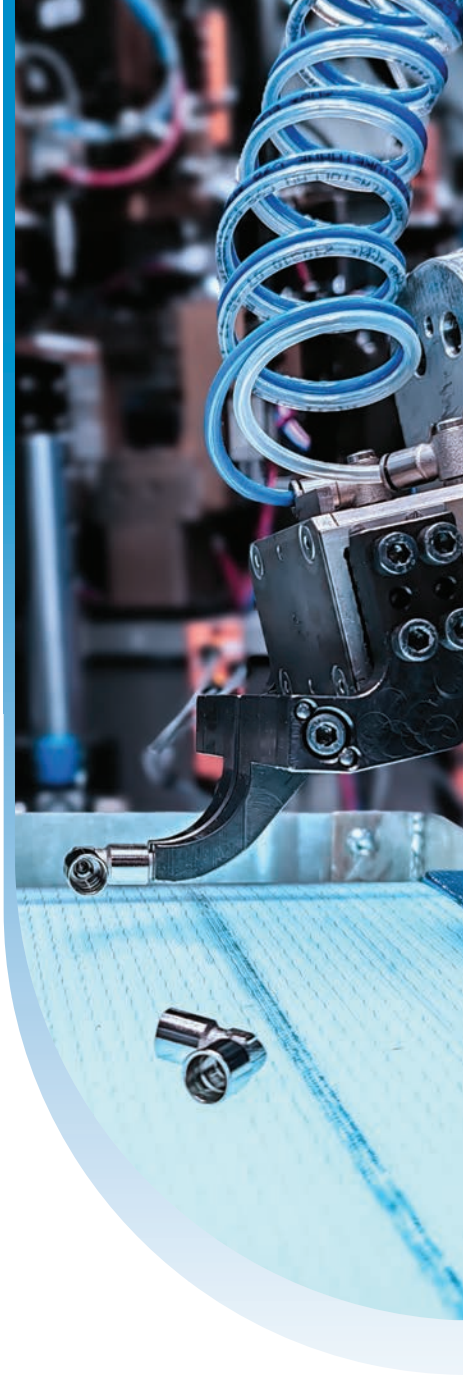



1 2

cmatic®
PNEUMATIC FITTINGS





# PE LINE

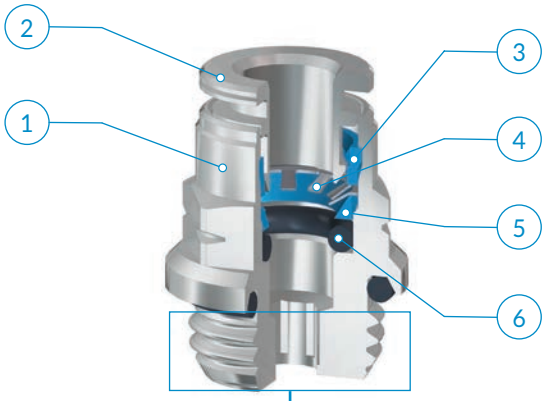
## Easythread Push-in Fittings,"Uni" thread

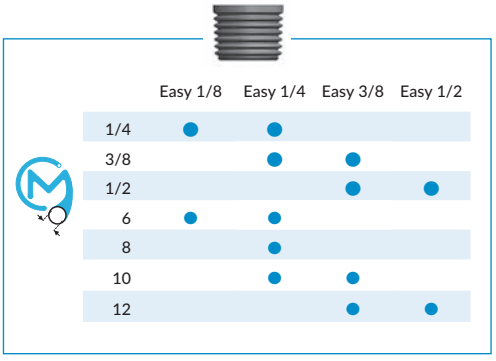
Push-in fittings featured by the so called "easyThread" and made according to Cmatic Standards. This thread feature allows for connections with different threads standards (NPTF, BSPP, BSPT) and leads to greater operational flexibility and inventory cost reduction.

# PE Line

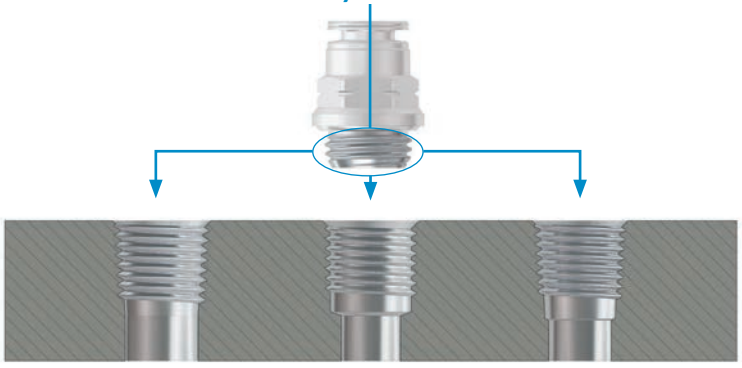
| | | | | | |
|---|---|---|---|---|---|
| 1 Body | 2 Release ring | 3 Holding ring | 4 Gripping ring | 5 Protection ring | 6 Seals |
| Brass UNI EN 12164 CW614N - UNI EN 12165 CW617N, nickel Plated | | Acetal resin (POM) | Stainless steel AISI 301 | Acetal resin (POM) | NBR |

-4° ÷ 176°F | Max 290 PSI | -29″ Hg



| | Easy 1/8 | Easy 1/4 | Easy 3/8 | Easy 1/2 |
|---|---|---|---|---|
| 1/4 | ● | ● | | |
| 3/8 | | ● | ● | |
| 1/2 | | | ● | ● |
| 6 | ● | ● | | |
| 8 | | ● | | |
| 10 | | ● | ● | |
| 12 | | | ● | ● |

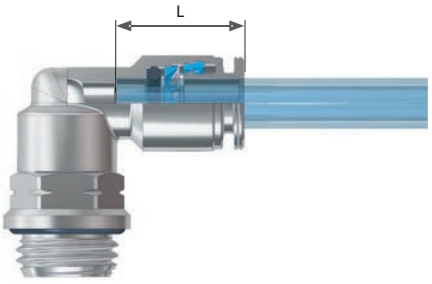



**Recommended tubings:**
PA11, PA12, PA6, Polyethylene PE, Polyurethane PU (98 Shore A).

**Acceptable Tolerances on the tubings:**
+/– .003”-0,07 mm up to Ø 3/8” - 10 mm
+/– .004”-0,1 mm Ø 1/2” - 12 mm.

**Application fields:**
Pneumatic circuits.

## Tubing insertion depth




| OD | L |
|---|---|
| 1/4 | .634 |
| 3/8 | .720 |
| 1/2 | .767 |
| 6 | .236 |
| 8 | .315 |
| 10 | .395 |
| 12 | .472 |

## ASSEMBLY INSTRUCTIONS

1

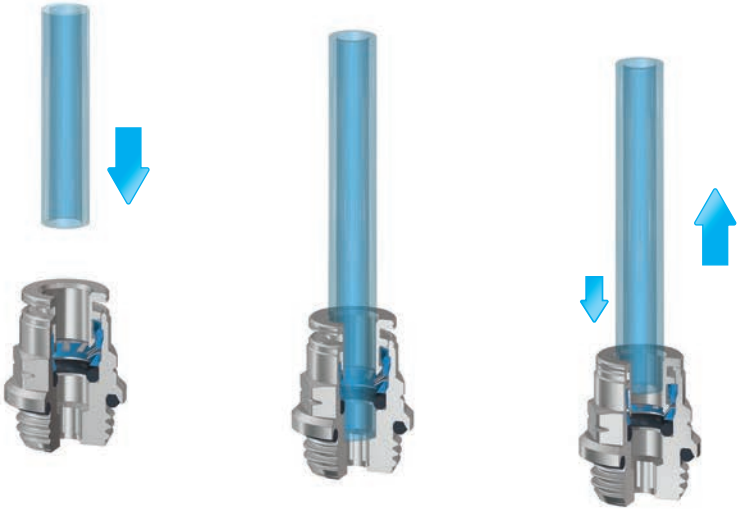
Cut the tube square (by means of a hose cutter i.e. our TCUT) making sure that no burrs are left and that the tube is not oval.
In case of use with metal hoses, make a groove all around the tube diameter with a suitable tool (TINC).The groove must be made according to the tube diameter so that the fitting collect can better grip onto it.

2

Insert the tube into the fitting until it bottoms.

**Tube release**

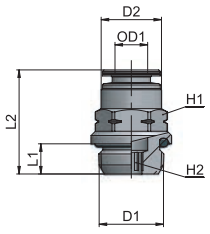
While pressing on the release ring, pull out the tube from the fitting.



Once the tubing is connected to the fitting, make sure that the tubing is not subject to any tensile strength and that the min. recommended bending radius stated in the tubing section of this catalogue is complied with (see page 136).
To prevent any accidental tube release, no components have to come in touch with the release ring and exercise any unwanted pressure on the same. Indeed however lateral, any load on the release ring may cause the tube disconnection.
To tighten threads, please check out our tightening torque chart illustrated at page 6.

## PE 12

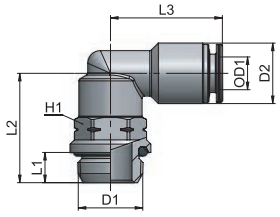
"EasyThread" straight, male




| Type | OD1 | D1 | D2 | L1 | L2 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|
| 12 1/4 1/8 | 1/4 | Easy 1/8 | .472 | .177 | .807 | 1/2 | 5/32 | .331 |
| 12 1/4 1/4 | 1/4 | Easy 1/4 | .472 | .236 | .807 | 1/2 | 5/32 | .452 |
| 12 3/8 1/4 | 3/8 | Easy 1/4 | .618 | .236 | 1.043 | 5/8 | 1/4 | .695 |
| 12 3/8 3/8 | 3/8 | Easy 3/8 | .618 | .236 | .984 | 5/8 | 1/4 | .851 |
| 12 1/2 3/8 | 1/2 | Easy 3/8 | .787 | .236 | 1.102 | 13/16 | 13/32 | 1.135 |
| 12 1/2 1/2 | 1/2 | Easy 1/2 | .787 | .335 | 1.043 | 13/16 | 13/32 | 1.256 |
| 12 06 1/8 | 6 | Easy 1/8 | .461 | .177 | .768 | .472 | .157 | .327 |
| 12 06 1/4 | 6 | Easy 1/4 | .461 | .236 | .768 | .472 | .157 | .426 |
| 12 08 1/4 | 8 | Easy 1/4 | .539 | .236 | .846 | .551 | .236 | .495 |
| 12 10 1/4 | 10 | Easy 1/4 | .622 | .236 | 1.063 | .591 | .315 | .568 |
| 12 10 3/8 | 10 | Easy 3/8 | .622 | .236 | .945 | .630 | .315 | .717 |
| 12 12 3/8 | 12 | Easy 3/8 | .740 | .236 | 1.083 | .748 | .394 | .985 |
| 12 12 1/2 | 12 | Easy 1/2 | .740 | .335 | 1.043 | .748 | .394 | 1.242 |

## PE 16

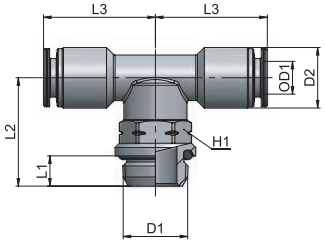
"EasyThread" swivelling elbow fitting, male




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 16 1/4 1/8 | 1/4 | Easy 1/8 | .472 | .177 | .717 | .866 | 1/2 | .638 |
| 16 1/4 1/4 | 1/4 | Easy 1/4 | .472 | .236 | .854 | .866 | 1/2 | .739 |
| 16 3/8 1/4 | 3/8 | Easy 1/4 | .630 | .236 | .866 | 1.024 | 5/8 | 1.180 |
| 16 3/8 3/8 | 3/8 | Easy 3/8 | .630 | .236 | .984 | 1.024 | 5/8 | 1.356 |
| 16 1/2 3/8 | 1/2 | Easy 3/8 | .787 | .236 | 1.004 | 1.122 | 13/16 | 2.038 |
| 16 1/2 1/2 | 1/2 | Easy 1/2 | .787 | .335 | 1.280 | 1.122 | 13/16 | 2.452 |
| 16 06 1/8 | 6 | Easy 1/8 | .472 | .177 | .717 | .866 | 1/2 | .646 |
| 16 06 1/4 | 6 | Easy 1/4 | .472 | .236 | .854 | .866 | 1/2 | .762 |
| 16 08 1/4 | 8 | Easy 1/4 | .551 | .236 | .846 | .886 | 1/2 | .875 |
| 16 10 1/4 | 10 | Easy 1/4 | .630 | .236 | .866 | 1.024 | 5/8 | 1.119 |
| 16 10 3/8 | 10 | Easy 3/8 | .630 | .236 | .984 | 1.024 | 5/8 | 1.295 |
| 16 12 3/8 | 12 | Easy 3/8 | .748 | .236 | 1.004 | 1.122 | 13/16 | 1.976 |
| 16 12 1/2 | 12 | Easy 1/2 | .748 | .335 | 1.280 | 1.122 | 13/16 | 2.434 |

## PE 21

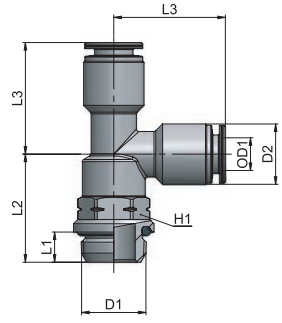
"EasyThread" swivelling T fitting




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 21 1/4 1/8 | 1/4 | Easy 1/8 | .472 | .177 | .709 | .866 | 1/2 | .858 |
| 21 1/4 1/4 | 1/4 | Easy 1/4 | .472 | .236 | .846 | .866 | 1/2 | .960 |
| 21 3/8 1/4 | 3/8 | Easy 1/4 | .630 | .236 | .866 | 1.024 | 5/8 | 1.621 |
| 21 3/8 3/8 | 3/8 | Easy 3/8 | .630 | .236 | .984 | 1.024 | 5/8 | 1.785 |
| 21 1/2 3/8 | 1/2 | Easy 3/8 | .787 | .236 | 1.004 | 1.122 | 13/16 | 2.648 |
| 21 1/2 1/2 | 1/2 | Easy 1/2 | .787 | .335 | 1.280 | 1.122 | 13/16 | 3.067 |
| 21 06 1/8 | 6 | Easy 1/8 | .472 | .177 | .709 | .866 | 1/2 | .878 |
| 21 06 1/4 | 6 | Easy 1/4 | .472 | .236 | .846 | .866 | 1/2 | .983 |
| 21 08 1/4 | 8 | Easy 1/4 | .551 | .236 | .846 | .886 | 1/2 | 1.177 |
| 21 10 1/4 | 10 | Easy 1/4 | .630 | .236 | .866 | 1.024 | 5/8 | 1.526 |
| 21 10 3/8 | 10 | Easy 3/8 | .630 | .236 | .984 | 1.024 | 5/8 | 1.714 |
| 21 12 3/8 | 12 | Easy 3/8 | .748 | .236 | 1.004 | 1.122 | 13/16 | 2.611 |
| 21 12 1/2 | 12 | Easy 1/2 | .748 | .335 | 1.280 | 1.122 | 13/16 | 3.060 |

## PE 24

"EasyThread" lateral run T fitting




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 24 1/4 1/8 | 1/4 | Easy 1/8 | .472 | .177 | .717 | .866 | 1/2 | .881 |
| 24 1/4 1/4 | 1/4 | Easy 1/4 | .472 | .236 | .854 | .866 | 1/2 | .981 |
| 24 3/8 1/4 | 3/8 | Easy 1/4 | .630 | .236 | .866 | 1.024 | 5/8 | 1.593 |
| 24 3/8 3/8 | 3/8 | Easy 3/8 | .630 | .236 | .984 | 1.024 | 5/8 | 1.791 |
| 24 1/2 3/8 | 1/2 | Easy 3/8 | .787 | .236 | 1.004 | 1.122 | 13/16 | 2.581 |
| 24 1/2 1/2 | 1/2 | Easy 1/2 | .787 | .335 | 1.280 | 1.122 | 13/16 | 2.100 |
| 24 06 1/8 | 6 | Easy 1/8 | .472 | .177 | .709 | .866 | 1/2 | .923 |
| 24 06 1/4 | 6 | Easy 1/4 | .472 | .236 | .846 | .866 | 1/2 | 1.030 |
| 24 08 1/4 | 8 | Easy 1/4 | .551 | .236 | .846 | .886 | 1/2 | 1.168 |
| 24 10 1/4 | 10 | Easy 1/4 | .630 | .236 | .866 | 1.024 | 5/8 | 1.534 |
| 24 10 3/8 | 10 | Easy 3/8 | .630 | .236 | .984 | 1.024 | 5/8 | 1.711 |
| 24 12 3/8 | 12 | Easy 3/8 | .748 | .236 | 1.004 | 1.122 | 13/16 | 2.225 |
| 24 12 1/2 | 12 | Easy 1/2 | .748 | .335 | 1.280 | 1.122 | 13/16 | 2.680 |

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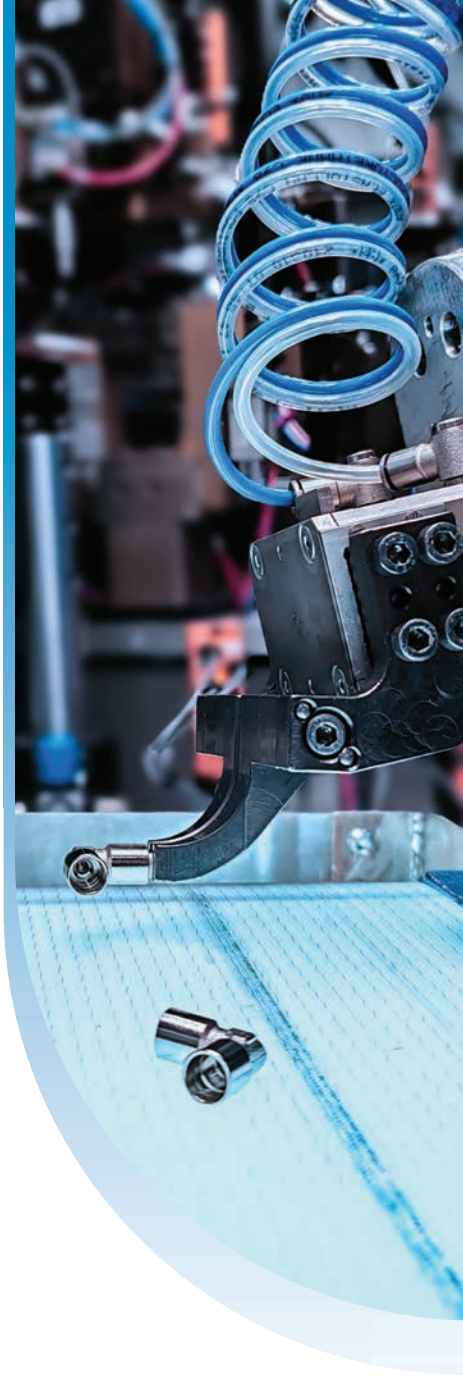


# PA LINE

## Brass Nickel-Plated Standard Fittings, NPTF

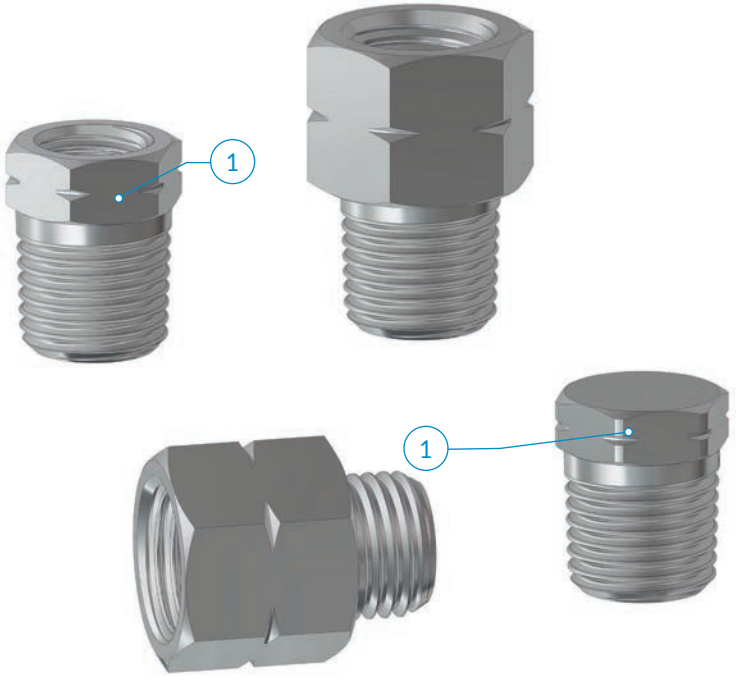
The PA line, also known as the “Accessories line” or the “Standard fittings line” consists of a wide variety of components, such as Nipples, Reduction pieces, Connections, Plugs, Hose connections, L-T and Cross fittings. Due to the multiple auxiliary functions of this line, the PA fittings are the right complement of different ranges. All components are in inch sizes and NPTF threads and are electrolytic nickel plated.

1 Body

Brass UNI EN 12164 CW614N - UNI EN 12165 CW617N, nickel Plated

-40° ÷ 302°F

Max 870 PSI



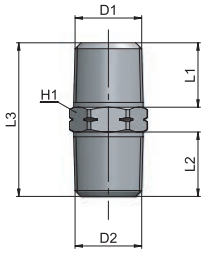

| 10-32 UNF | G1/8 | G1/4 | G3/8 | G1/2 | 1/8 NPTF | 1/4 NPTF | 3/8 NPTF | 1/2 NPTF |
|---|---|---|---|---|---|---|---|---|
| ● | ● | ● | ● | ● | ● | ● | ● | ● |

**Application fields:**
Pneumatic, hydraulic and oleodynamic circuits

## PA 11

Nipple, taper

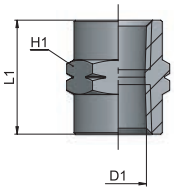
| Type | D1 | D2 | L1 | L2 | L3 | H1 | oz ⚖ |
|---|---|---|---|---|---|---|---|
| 11 1/8 1/8 | 1/8 NPTF | 1/8 NPTF | 3 35 | 3 35 | .827 | 4 72 | .330 |
| 11 1/4 1/4 | 1/4 NPTF | 1/4 NPTF | 5 12 | 5 12 | 1.220 | 5 51 | .684 |
| 11 3/8 3/8 | 3/8 NPTF | 3/8 NPTF | 5 12 | 5 12 | 1.260 | 7 09 | 12 06 |
| 11 1/2 1/2 | 1/2 NPTF | 1/2 NPTF | 6 69 | 6 69 | 1.614 | 8 66 | 21 05 |




## PA 13

Joint Piece

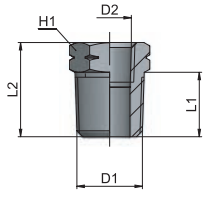
| Type | D1 | L1 | H1 | oz ⚖ |
|---|---|---|---|---|
| 13 1/8 1/8 | 1/8 NPTF | .709 | .551 | .472 |
| 13 1/4 1/4 | 1/4 NPTF | .906 | .709 | .976 |
| 13 3/8 3/8 | 3/8 NPTF | .984 | .866 | 1.450 |
| 13 1/2 1/2 | 1/2 NPTF | 1.260 | 1.024 | 2.338 |




## PA 14

Taper female-male reducing connector

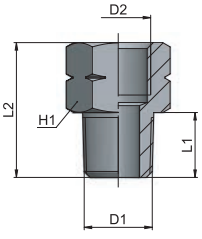
| Type | D1 | D2 | L1 | L2 | H1 | oz ⚖ |
|---|---|---|---|---|---|---|
| 14 1/8 10-32 | 1/8 NPTF | 10-32 UNF | 3 35 | 4 92 | 4 72 | - |
| 14 1/4 1/8 | 1/4 NPTF | 1/8 NPTF | 5 12 | 7 48 | 5 51 | 4 34 |
| 14 3/8 1/8 | 3/8 NPTF | 1/8 NPTF | 5 12 | 7 48 | 7 09 | 9 26 |
| 14 3/8 1/4 | 3/8 NPTF | 1/4 NPTF | 5 12 | 7 48 | 7 09 | 6 44 |
| 14 1/2 1/4 | 1/2 NPTF | 1/4 NPTF | 6 69 | 9 45 | 8 66 | 16 59 |
| 14 1/2 3/8 | 1/2 NPTF | 3/8 NPTF | 6 69 | 9 45 | 8 66 | 11 60 |




## PA 16

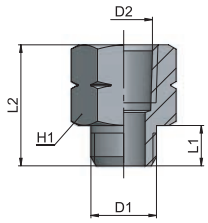
Adaptor male-female, taper

| Type | D1 | D2 | L1 | L2 | H1 | oz ⚖ |
|---|---|---|---|---|---|---|
| 16 1/0-32 M5 | 10-32 UNF | M5x0,8 | .197 | .472 | .315 | .424 |
| 16 1/8 1/8 | 1/8 NPTF | G1/8 BSP | .335 | .748 | .551 | .424 |
| 16 1/4 1/4 | 1/4 NPTF | G1/4 BSP | .512 | 1.063 | .709 | .921 |
| 16 3/8 3/8 | 3/8 NPTF | G3/8 BSP | .512 | 1.063 | .866 | 1.359 |
| 16 1/2 1/2 | 1/2 NPTF | G1/2 BSP | .669 | 1.339 | 1.063 | 2.311 |



## PA 17

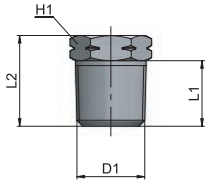
Adaptor male-female, parallel




| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 17 1/8 1/8 | G1/8 BSP | 1/8 NPTF | 2 36 | .709 | .551 | 4 41 |
| 17 1/4 1/4 | G1/4 BSP | 1/4 NPTF | 3 15 | .945 | .709 | 9 53 |
| 17 3/8 3/8 | G3/8 BSP | 3/8 NPTF | 3 54 | .984 | .866 | 1.747 |
| 17 1/2 1/2 | G1/2 BSP | 1/2 NPTF | 3 94 | 11 81 | .945 | 1.764 |

## PA 19

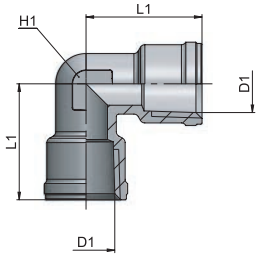
Male plug




| Type | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|
| 19 00 1/8 | 1/8 NPTF | .335 | .492 | .472 | .230 |
| 19 00 1/4 | 1/4 NPTF | .512 | .709 | .551 | .512 |
| 19 00 3/8 | 3/8 NPTF | .512 | .748 | .709 | .865 |
| 19 00 1/2 | 1/2 NPTF | .669 | .945 | .866 | 1.465 |

## PA 21

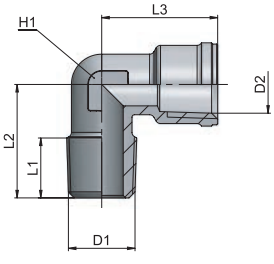
Female elbow




| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 21 1/8 1/8 | 1/8 NPTF | .748 | .394 | 5 37 |
| 21 1/4 1/4 | 1/4 NPTF | .906 | .472 | 1.359 |
| 21 3/8 3/8 | 3/8 NPTF | 10 24 | .591 | 1.634 |
| 21 1/2 1/2 | 1/2 NPTF | 13 39 | .748 | 3.072 |

## PA 22

Male-Female elbow

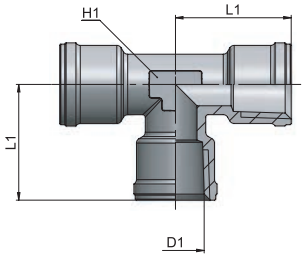


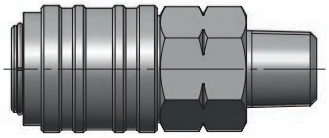
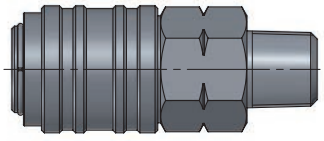

| Type | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|
| 22 1/8 1/8 | 1/8 NPTF | 1/8 NPTF | .335 | .689 | .748 | .394 | .466 |
| 22 1/4 1/4 | 1/4 NPTF | 1/4 NPTF | .472 | .886 | .906 | .472 | 1.235 |
| 22 3/8 3/8 | 3/8 NPTF | 3/8 NPTF | .472 | 1.004 | 1.024 | .591 | 1.487 |
| 22 1/2 1/2 | 1/2 NPTF | 1/2 NPTF | .630 | 1.220 | 1.339 | .748 | 2.784 |

## PA 23

Female T

| Type | D1 | L1 | H1 | oz ⚖ |
|---|---|---|---|---|
| 23 1/8 1/8 | 1/8 NPTF | .748 | .394 | .758 |
| 23 1/4 1/4 | 1/4 NPTF | .906 | .472 | 1.354 |
| 23 3/8 3/8 | 3/8 NPTF | 1.220 | .669 | 2.310 |
| 23 1/2 1/2 | 1/2 NPTF | 1.319 | .827 | 5.045 |



| Type | Profiles | | | | Pag. ref. |
|---|---|---|---|---|---|
| PU10 | Multi | 1/4″ |  | NPTF | 56 |
| PUX10 Stainless Steel | Multi | 1/4″ |  | NPTF | 102 |

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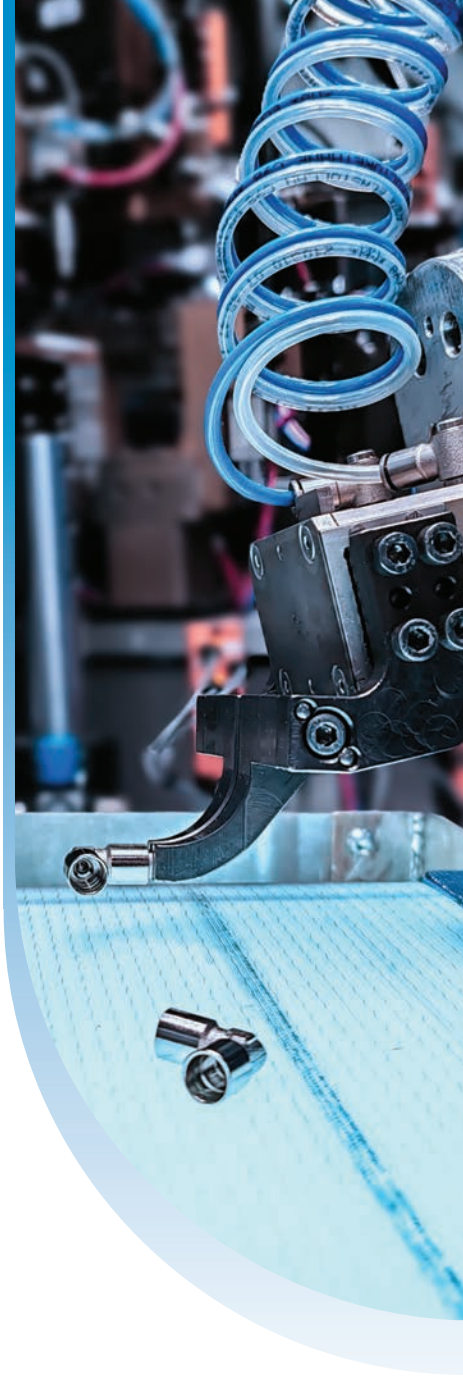
PNEUMATIC FITTINGS



# PU LINE

## NPTF Couplings

Electrolitic Nickel-plated brass quick couplings available with NPTF threads.

# PU 10

Multi socket quick coupling

1 Body

Brass UNI EN 12164 CW614N, nickel plated

2 Balls

Stainless steel AISI 420

3 Seals

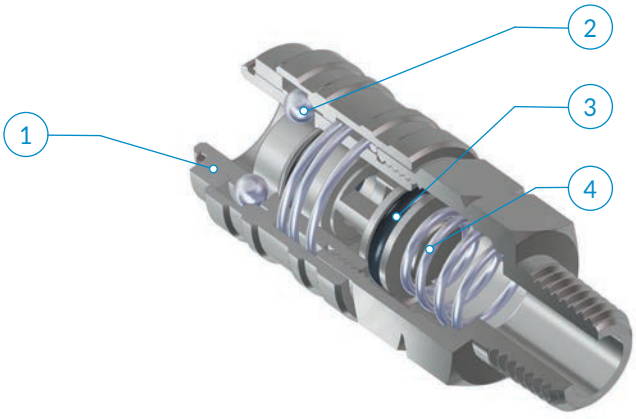
NBR

4 Springs

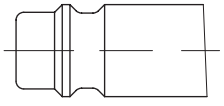
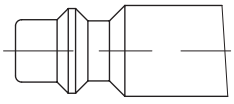
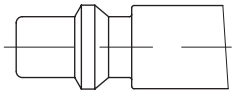
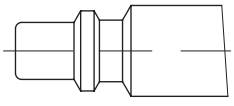
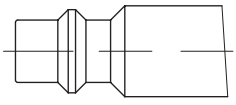
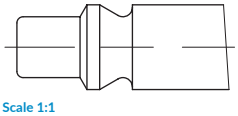
Stainless steel AISI 302

-4° ÷ 176°F

0 ÷ 218 PSI




**Application fields:**
Pneumatic circuits

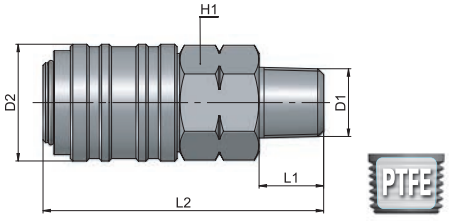
| Suitable with following plugs profiles | | Flow rate at 87 PSI Δp = 14.5 |
|---|---|---|
|  | European Profile | 29 CFM |
|  | ISO 6150 B Profile | 25 CFM |
|  | Standard Swedisch Profile | 26 CFM |
|  | Standard Italian Profile | 24 CFM |
|  | MIL C4109 Profile | 25 CFM |
|  | ARO 210 Profile | 25 CFM |

Scale 1:1

## PU 10-11

Male coupling

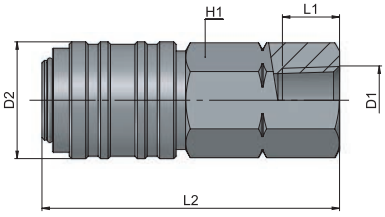
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 11 00 1/4 | 1/4 NPTF | .925 | .512 | 2.224 | .787 | 3.208 |
| 11 00 3/8 | 3/8 NPTF | .925 | .512 | 2.224 | .787 | 3.501 |
| 11 00 1/2 | 1/2 NPTF | .925 | .669 | 2.343 | .945 | 4.557 |

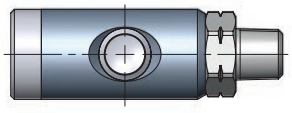
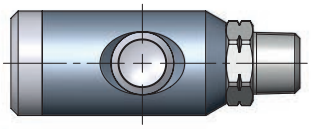
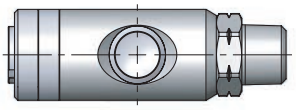



## PU 10-12

Female coupling

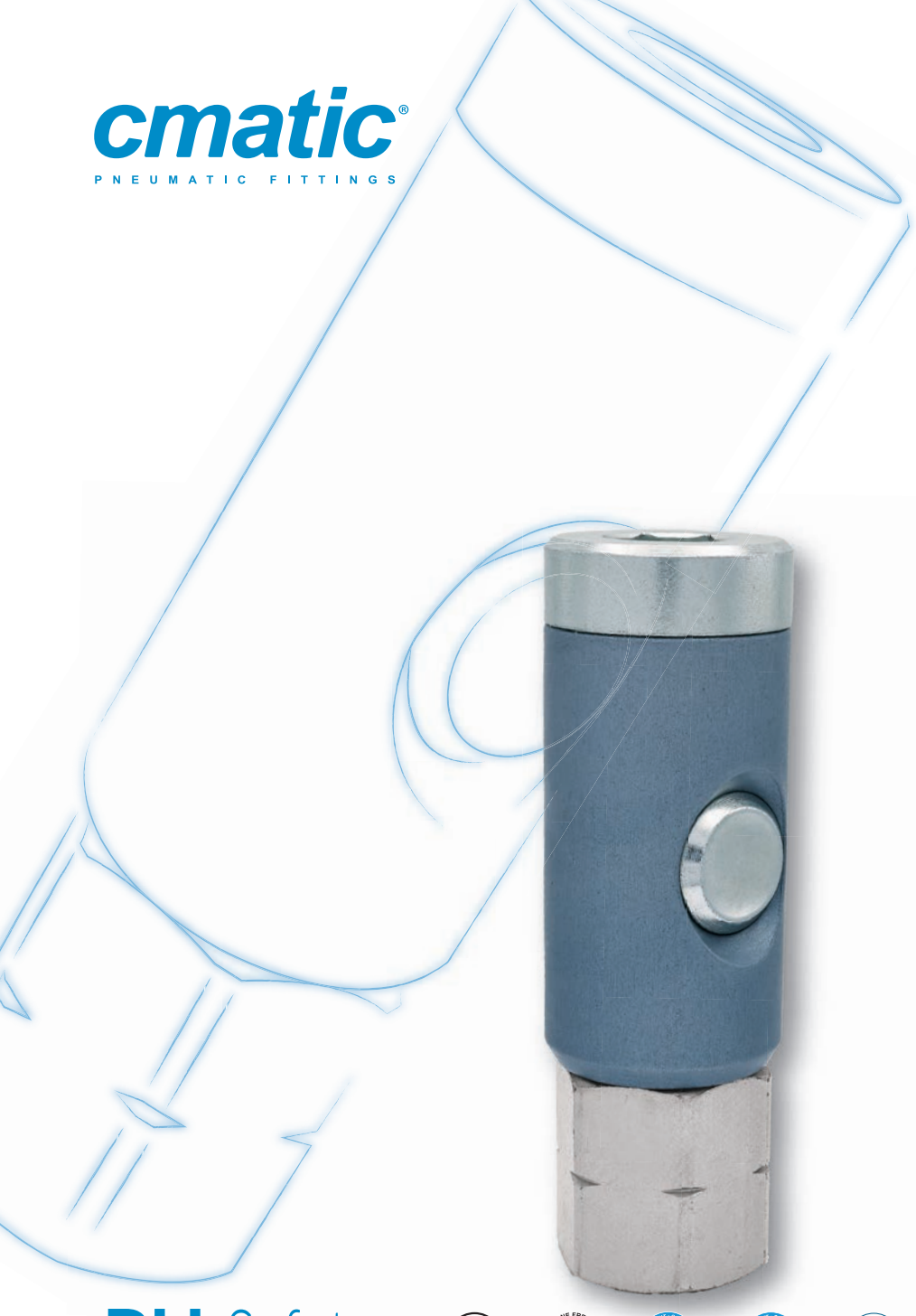
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 12 00 1/4 | 1/4 NPTF | .925 | 4 92 | 23 03 | 7 87 | 39 86 |
| 12 00 3/8 | 3/8 NPTF | .925 | 4 92 | 23 03 | 7 87 | 36 69 |
| 12 00 1/2 | 1/2 NPTF | .925 | 5 31 | 24 41 | 9 45 | 49 56 |

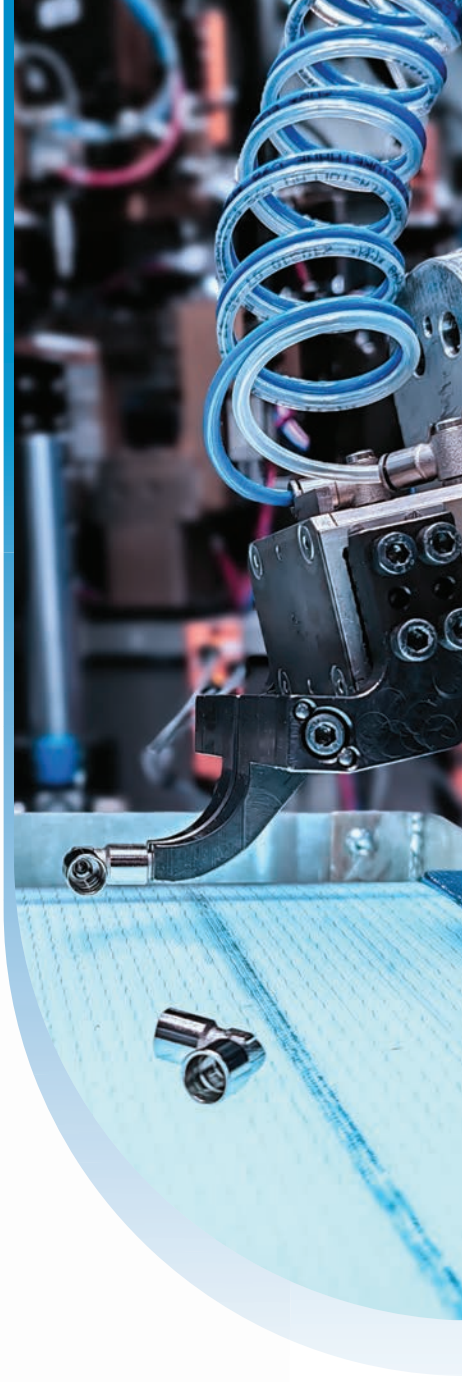


| Type | Profiles | | | | Pag ref. |
|---|---|---|---|---|---|
| PU42 | Industrial 1/4″<br>ISO 6150 B-12<br>US MIL4109 | 1/4″ |  | NPTF | 60 |
| PU44 | Industrial 3/8″<br>ISO 6150 B-15 | 3/8″ |  | NPTF | 62 |
| PU45 | 1/4″ ARO 210<br>Interchange | 1/4″ |  | NPTF | 64 |

cmatic®

PNEUMATIC FITTINGS





# PU Safety

## Safety Couplings, NPTF

Safety quick couplings compatible with ISO 4414-C available with NPTF threads.

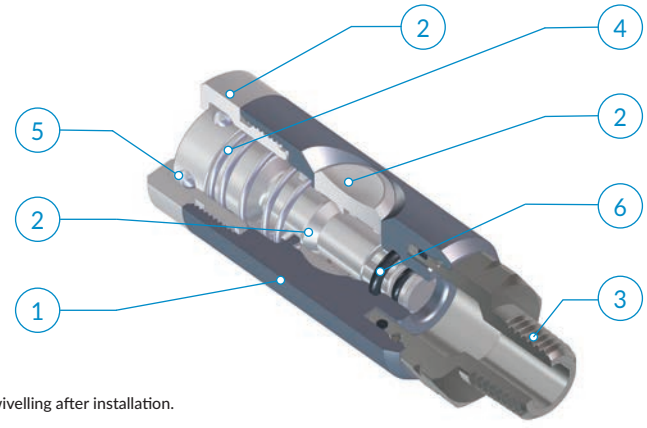
# PU 42

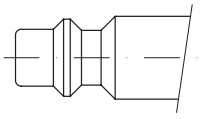
Push-button safety coupling
o ding to ISO 6150 B-12

| | | | | | |
|---|---|---|---|---|---|
| 1 Bd y<br>Anodized aluminium Al2011 | 2 Button, valve and venting ring<br>Hardened, zinc plated steel 11SMnPb37 | 3 Ti red<br>Brass UNI EN 12164 CW614N nickel plated | 4 Springs<br>Stainless steel AISI 302 | 5 Balls<br>Stainless steel AISI 420 | 6 Seals<br>NBR |

Plugs
Hardened, zinc plated steel 11SMnPb37

-4° ÷ 176°F | 0 ÷ 232 PSI | 1/4˝ | 28 CFM (P=87 psi - Δp = 14.5 psi)



INDUSTRIAL Profile
MIL C4109 Profile
ISO 6150 B-12 Profile

The Coupling will remain swivelling after installation.

**Application fields:**
Pneumatic circuits

## CONNECT ON - RE A E

Insert the þ ug into the Co þ ing.

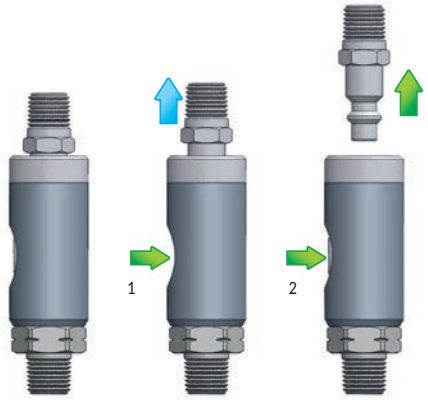
1

To disconnect the plug follow instructions below:
Plug inserted in Coupling.

2

Press the button once to vent the downstream air from the circuit; at this time the plug is still captive in the Coupling.

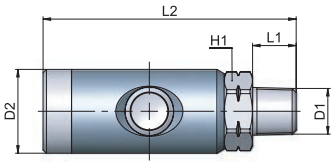
Press the button one more time to release the plug.



## PU 42-11

Male coupling

| Type | D1 | D2 | L1 | L2 | H | oz |
|---|---|---|---|---|---|---|
| 11 00 14 | 1/4 NPTF | .984 | 5 12 | 29 72 | 8 27 | 38 84 |
| 11 00 38 | 3/8 NPTF | .984 | 5 12 | 29 33 | 8 27 | 42 45 |
| 11 00 12 | 1/2 NPTF | .984 | 6 69 | 30 91 | 8 66 | 49 95 |

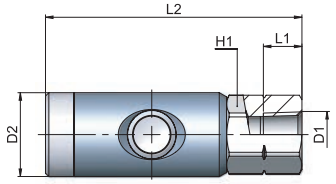



PTFE

## PU 42-12

Female coupling

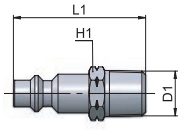
| Type | D1 | D2 | L1 | L2 | H | oz |
|---|---|---|---|---|---|---|
| 12 00 14 | 1/4 NPTF | .984 | 4 72 | 30 12 | 8 27 | 45 01 |
| 12 00 38 | 3/8 NPTF | .984 | 4 92 | 30 31 | 8 27 | 41 63 |
| 12 00 12 | 1/2 NPTF | .984 | 5 31 | 31 10 | 9 45 | 49 39 |




## PU 42-20

Male plug

| Type | D1 | L1 | H | oz |
|---|---|---|---|---|
| 20 00 14 | 1/4 NPTF | 16 54 | 5 51 | 7 98 |
| 20 00 38 | 3/8 NPTF | 16 54 | 7 09 | 10 20 |
| 20 00 12 | 1/2 NPTF | 18 50 | 8 66 | 15 21 |

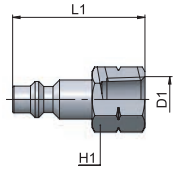



PTFE

## PU 42-21

Female plug

| Type | D1 | L1 | H | oz |
|---|---|---|---|---|
| 21 00 14 | 1/4 NPTF | 15 75 | 6 69 | 9 92 |
| 21 00 38 | 3/8 NPTF | 15 75 | 7 87 | 11 15 |
| 21 00 12 | 1/2 NPTF | 17 32 | 9 45 | 17 64 |



# PU 44

Push-Button safety coupling
o ding to ISO 6150 B-15

1 Bd y
Anodized aluminium Al2011

2 Button, valve and venting ring
Hardened, zinc plated steel 11SMnPb37

3 Ti red
Brass UNI EN 12164 CW614N, nickel plated

4 Springs
Stainless steel AISI 302

5 Balls
Stainless steel AISI 420

6 Seals
NBR

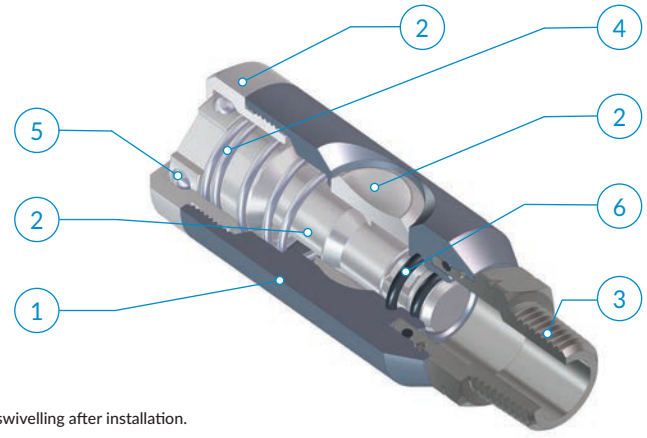
Plugs
Hardened, zinc plated steel 11SMnPb37

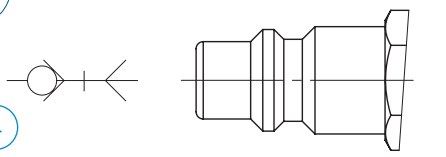
-4° ÷ 176°F

0 ÷ 174 PSI

3/8"

58 CFM
(P=87 psi - Δp = 14.5 psi)



3/8 INDUSTRIAL Profile ISO 6150 B-15

The Coupling will remain swivelling after installation.

**Application fields:**
Pneumatic circuits

## CONNECT ON - RE A E

Insert the þ ug into the Co þ ing.

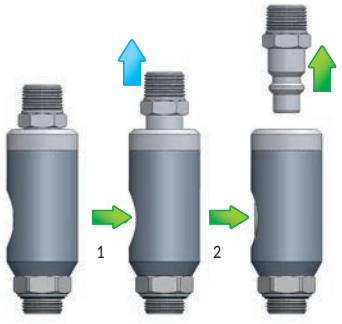
1

To disconnect the plug follow instructions below:
Plug inserted in Coupling.

2

Press the button once to vent the downstream air from the circuit; at this time the plug is still captive in the Coupling.

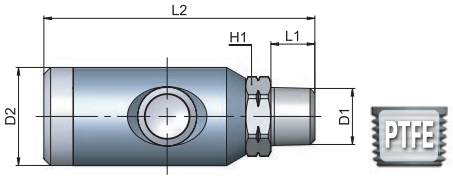
Press the button one more time to release the plug.



## PU 44-11

Male coupling

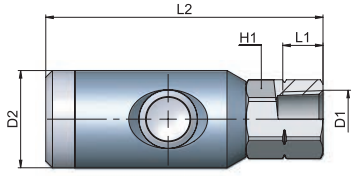
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 11 00 38 | 3/8 NPTF | 1.142 | 5 12 | 31 57 | 8 27 | 53 97 |
| 11 00 12 | 1/2 NPTF | 1.142 | 6 69 | 33 15 | 8 66 | - |




## PU 44-12

Female coupling

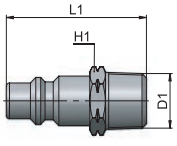
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 12 00 38 | 3/8 NPTF | 1.142 | 4 92 | 32 56 | 8 27 | 59 44 |
| 12 00 12 | 1/2 NPTF | 1.142 | 5 31 | 33 35 | 9 45 | - |




## PU 44-20

Male plug

| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 20 00 38 | 3/8 NPTF | 17 52 | 7 09 | 12 42 |
| 20 00 12 | 1/2 NPTF | 19 49 | 8 66 | 17 85 |

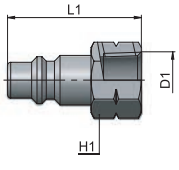




## PU 44-21

Female plug

| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 21 00 38 | 3/8 NPTF | 16 73 | 7 87 | 13 22 |
| 21 00 12 | 1/2 NPTF | 18 31 | 8 66 | 19 50 |



# PU 45

Push-button safety coupling

o ding to R O 210

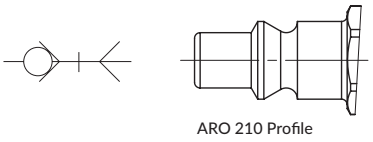
| | | | | | | |
|---|---|---|---|---|---|---|
| 1 Body | 2 Button, valve and venting ring | 3 Thread | 4 Springs | 5 Balls | 6 Seals | Plugs |
| Anodized aluminium Al2011 | Hardened, zinc plated steel 11SMnPb37 | Brass UNI EN 12164 CW614N nickel plated | Stainless steel AISI 302 | Stainless steel AISI 420 | NBR | Nickel plated steel 11SMnPb37 |

-4° ÷ 176°F

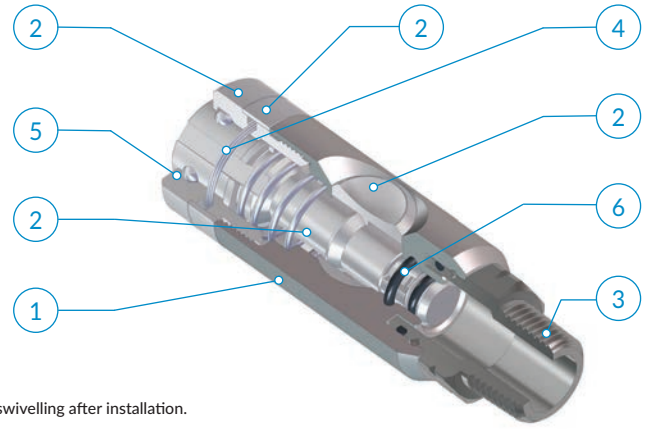
0 ÷ 174 PSI

1/4"

38 CFM
(P=87 psi - Δp = 14.5 psi)



ARO 210 Profile




The Coupling will remain swivelling after installation.

**Application fields:**
Pneumatic circuits

## CONNECT ON - RE A E

Insert the þ ug into the Co þ ing.

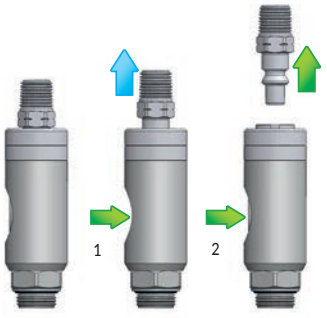
1

To disconnect the plug follow instructions below:
Plug inserted in Coupling.

2

Press the button once to vent the downstream air from the circuit; at this time the plug is still captive in the Coupling.

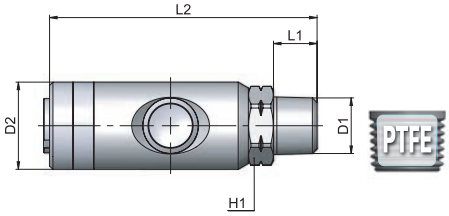
Press the button one more time to release the plug.



## PU 45-11

Male O-ring

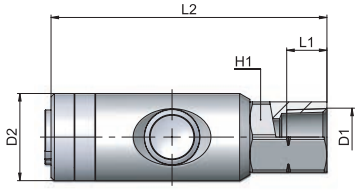
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 11 00 14 | 1/4 NPTF | 1.024 | .512 | 3.181 | .827 | 5.148 |
| 11 00 38 | 3/8 NPTF | 1.024 | .512 | 3.142 | .827 | 5.164 |
| 11 00 12 | 1/2 NPTF | 1.024 | .669 | 3.299 | .866 | 5.904 |




## PU 45-12

Female O-ring

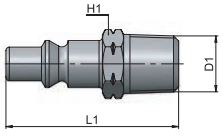
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 12 00 14 | 1/4 NPTF | 1.024 | .354 | 3.220 | .827 | 5.967 |
| 12 00 38 | 3/8 NPTF | 1.024 | .394 | 3.240 | .827 | 5.675 |
| 12 00 12 | 1/2 NPTF | 1.024 | .433 | 3.319 | .945 | 6.104 |




## PU 45-20

Male plug

| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 20 00 14 | 1/4 NPTF | 1.606 | .551 | .707 |
| 20 00 38 | 3/8 NPTF | 1.606 | .709 | .942 |
| 20 00 12 | 1/2 NPTF | 1.803 | .866 | 1.488 |

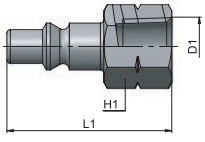


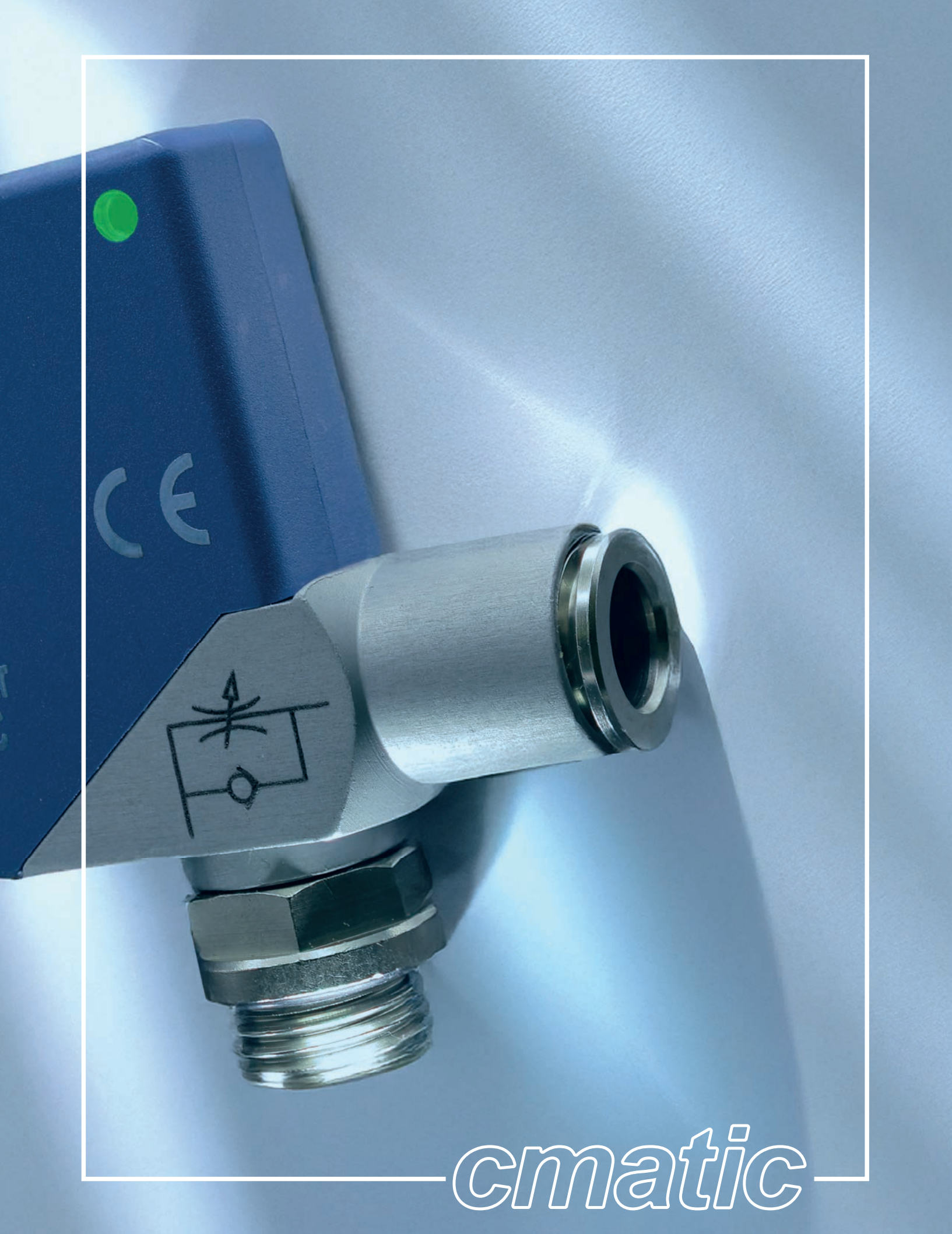


## PU 45-21

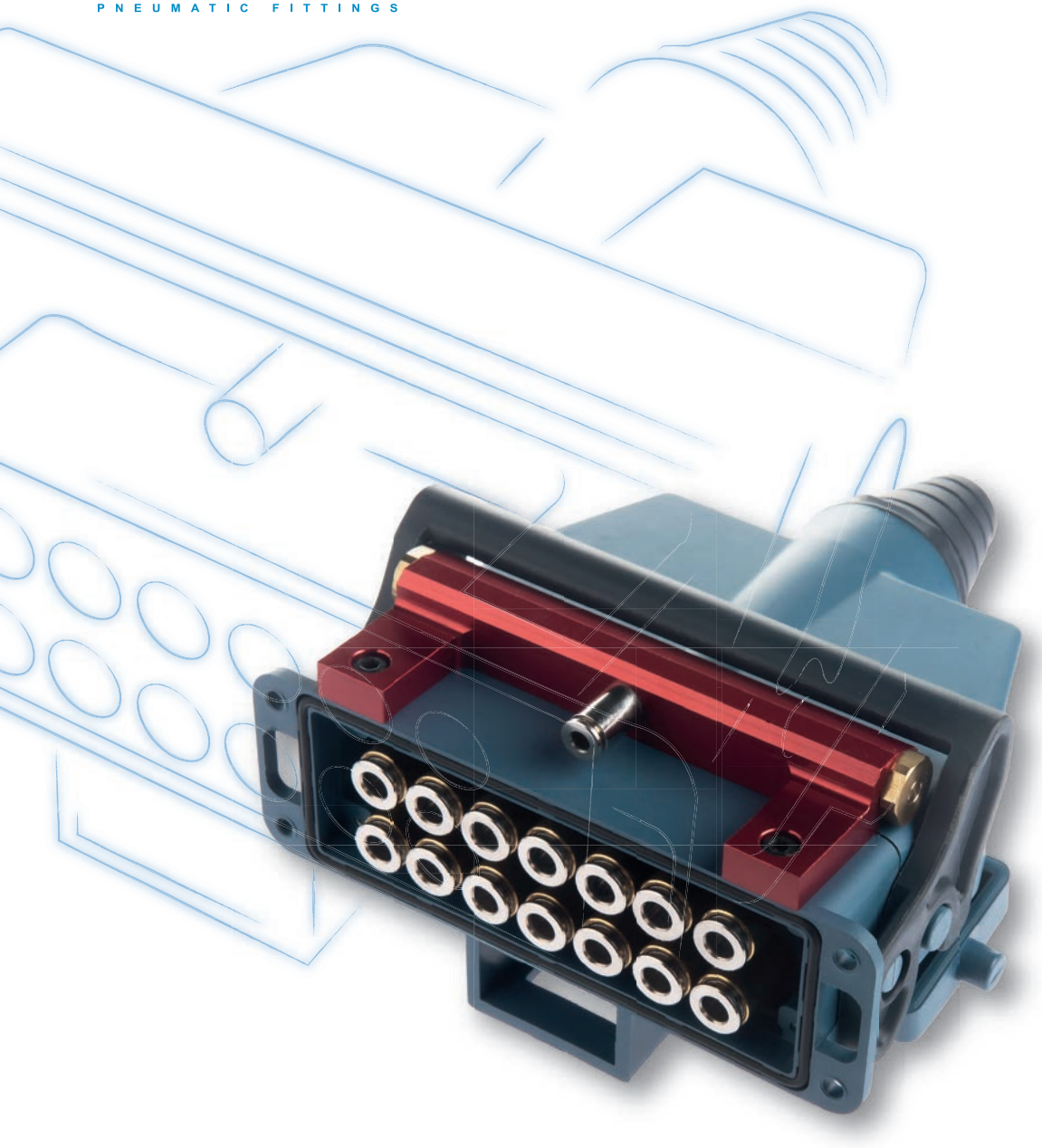
Female plug

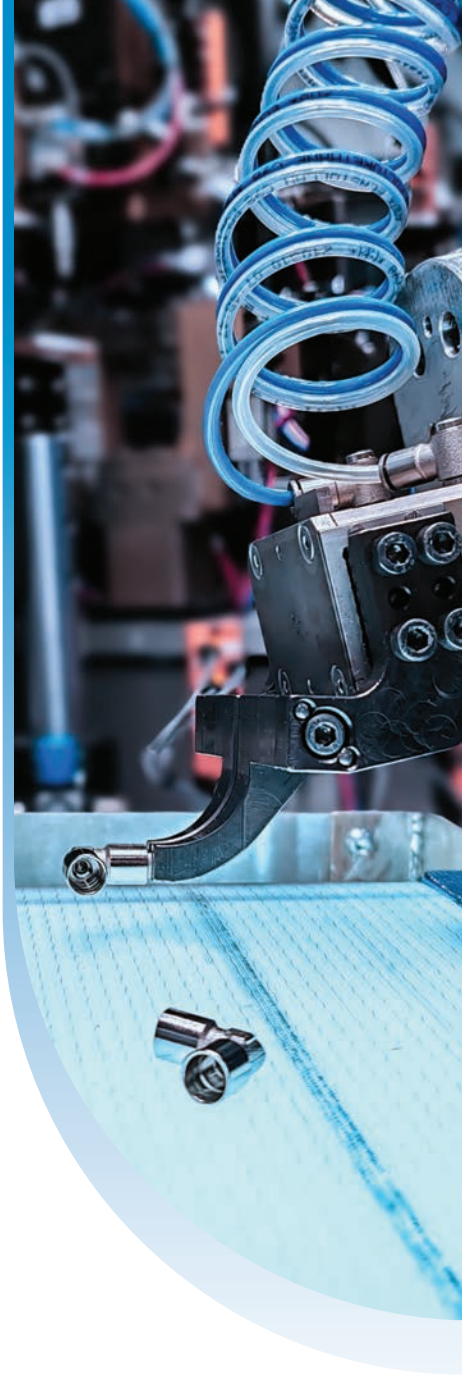
| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 21 00 14 | 1/4 NPTF | 15 28 | 6 69 | 9 25 |
| 21 00 38 | 3/8 NPTF | 15 28 | 7 87 | 10 36 |
| 21 00 12 | 1/2 NPTF | 16 85 | 9 45 | 16 24 |




cmatic

cmatic®
PNEUMATIC FITTINGS





# CO LINE

## Multiple Connectors

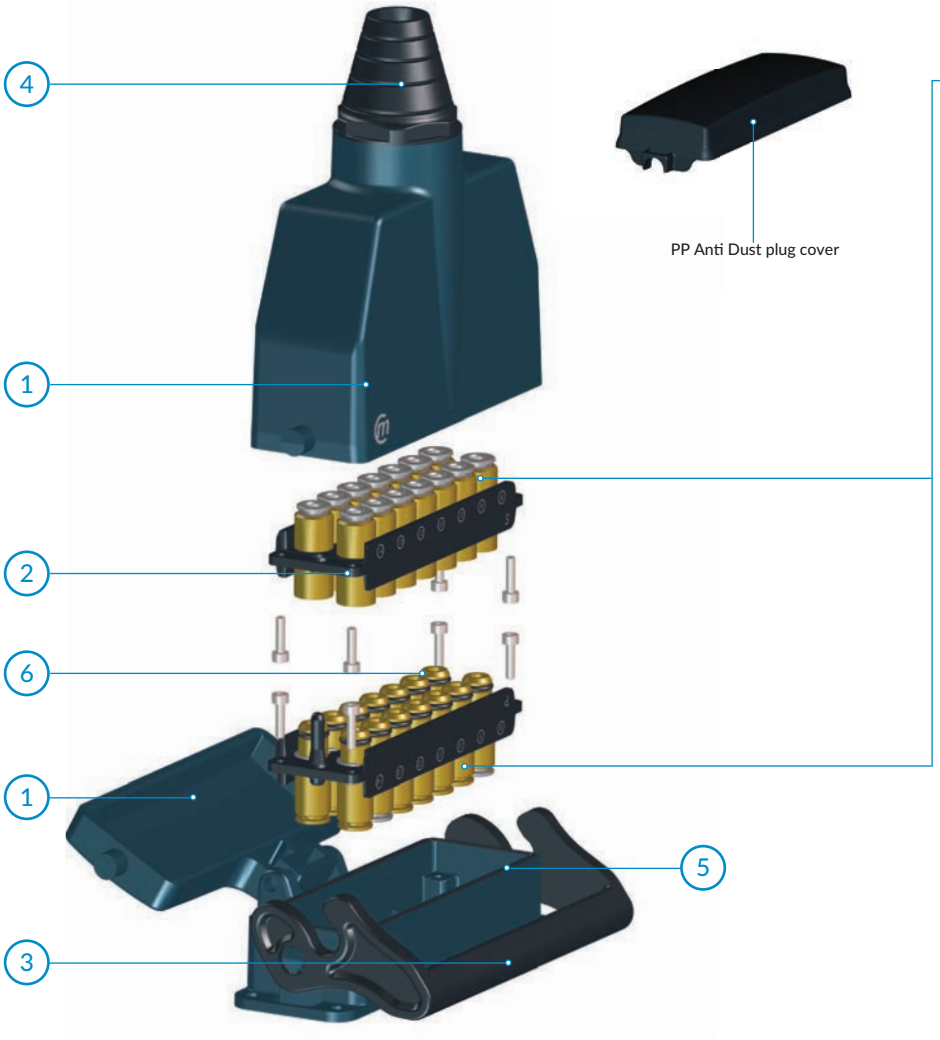
The multiple connector is a device made of a fixed part connected to the control device of pneumatic powered machines and a mobile part, assembled to the air distribution equipment. The big advantage offered by the multiple connector is that a bundle of hoses, varying from min 4 to max 24 tubes, can be rapidly and safely connected and disconnected. Our multiple connector is manufactured in such a way that the reverse assembly of the two parts is not possible. This range offers two options: one with rigid shell (CO-A), available in different sizes and the one as a bulkhead connection (CO-B).

# CO A

Multiple connectors,rigid shell

1. Multiple connector sheath — PARA (Ixef® 1022)
2. Couplings support — PARA (Ixef® 1023)
3. Lever — PARA (Ixef® 1022)
4. Tubing guide — PA6
5. Seals — NBR
6. Push-in fittings — MA push-in fittings

| | A013 | A113 ÷ A313 | | | | |
|---|---|---|---|---|---|---|
| -4° ÷ 158°F | Max 101 PSI | Max 218 PSI | -29 Hg | | | |






PP Anti Dust plug cover

**STANDARD SYSTEM:**

The Multiple connector is available for each Shell Size with a predetermined number of connections; this solution is created to maximize the number of possible outlets with the same tube diameter.

**Recommended tubings:**
PA11, PA12, PA6, Polyethylene PE, Polyurethane PU (98 Shore A)

**Application fields:**
Pneumatic circuits

# CO A - STANDARD

## STANDARD SYSTEM

### SIZE 0

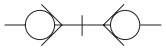


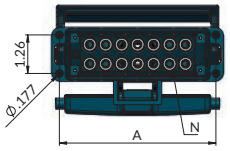


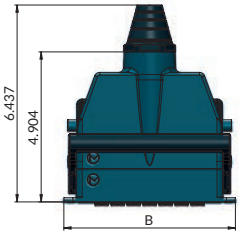
## A013

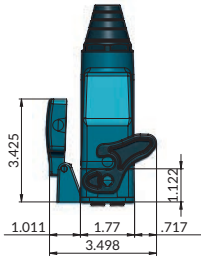
Multiple connector, complete

| Type | OD1 | A | B | N | oz |
|---|---|---|---|---|---|
| A013 06 06 Completo | 6 | 32 48 | 37 40 | 6 | 227 52 |
| A013 08 04 Completo | 8 | 32 48 | 37 40 | 4 | 209 53 |





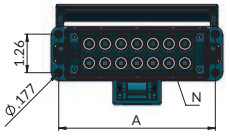



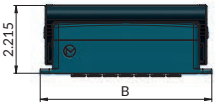



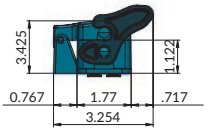

## A013

Socket with cover

| Type | OD1 | A | B | N | oz |
|---|---|---|---|---|---|
| A013 06 06 Presa+coperchio | 6 | 32 48 | 37 40 | 6 | 100 54 |
| A013 08 04 Presa+coperchio | 8 | 32 48 | 37 40 | 4 | 95 95 |



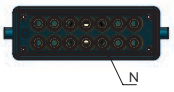



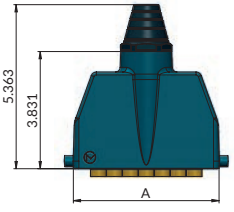




## A013

Plug

| Type | OD1 | A | N | oz |
|---|---|---|---|---|
| A013 06 06 Spina | 6 | 28 74 | 6 | 12.840 |
| A013 08 04 Spina | 8 | 28 74 | 4 | 11.641 |



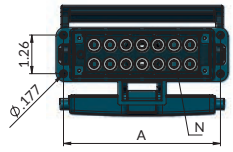

# CO A - STANDARD

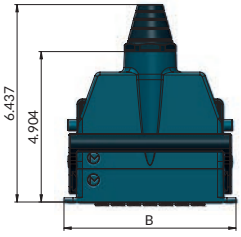
## STANDARD SYSTEM

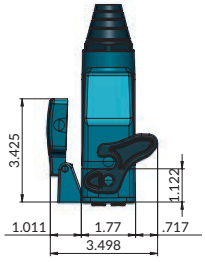
### SIZE 1

## A113

Multiple connector, complete



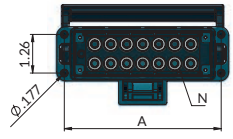



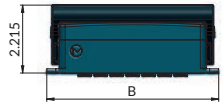



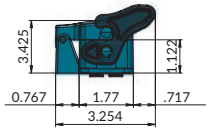

| Type | OD1 | A | B | N | oz |
|---|---|---|---|---|---|
| A113 04 12 Completo | 4 | 40 55 | 45 47 | 12 | 215 88 |
| A113 06 10 Completo | 6 | 40 55 | 45 47 | 10 | 253 45 |
| A113 08 08 Completo | 8 | 40 55 | 45 47 | 8 | 231 40 |

## A113

Socket with cover



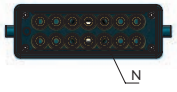



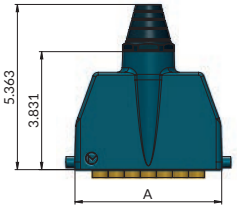




| Type | OD1 | A | B | N | oz |
|---|---|---|---|---|---|
| A113 04 12 Presa+coperchio | 4 | 40 55 | 45 47 | 12 | 106 53 |
| A113 06 10 Presa+coperchio | 6 | 40 55 | 45 47 | 10 | 120 64 |
| A113 08 08 Presa+coperchio | 8 | 40 55 | 45 47 | 8 | 109 00 |

## A113

Plug





| Type | OD1 | A | N° | oz |
|---|---|---|---|---|
| A113 04 12 Spina | 4 | 37 01 | 12 | 112 18 |
| A113 06 10 Spina | 6 | 37 01 | 10 | 119 58 |
| A113 08 08 Spina | 8 | 37 01 | 8 | 125 23 |

# CO A - STANDARD

## STANDARD SYSTEM

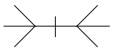
### SIZE 2

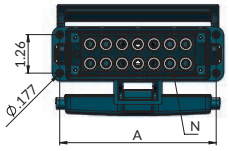


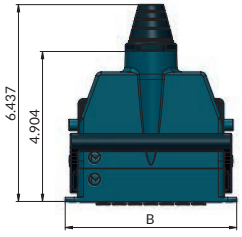
## A213

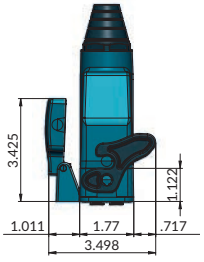
Multiple connector, complete

| Type | OD1 | A | B | N | oz ⚖ |
|---|---|---|---|---|---|
| A213 04 20 Completo | 4 | 51 18 | 56 10 | 20 | 292 07 |
| A213 06 14 Completo | 6 | 51 18 | 56 10 | 14 | 325 58 |
| A213 08 10 Completo | 8 | 51 18 | 56 10 | 10 | 282 55 |





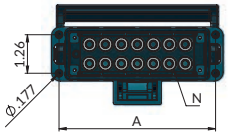



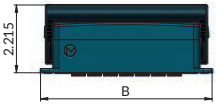



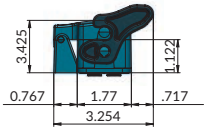

## A213

Socket with cover

| Type | OD1 | A | B | N | oz ⚖ |
|---|---|---|---|---|---|
| A213 04 20 Presa+coperchio | 4 | 51 18 | 56 10 | 20 | 144 98 |
| A213 06 14 Presa+coperchio | 6 | 51 18 | 56 10 | 14 | 153 80 |
| A213 08 10 Presa+coperchio | 8 | 51 18 | 56 10 | 10 | 130 17 |



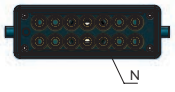



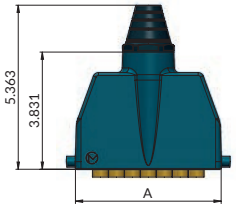




## A213

Plug

| Type | OD1 | A | N | oz ⚖ |
|---|---|---|---|---|
| A213 04 20 Spina | 4 | 47 64 | 20 | 149 92 |
| A213 06 14 Spina | 6 | 47 64 | 14 | 174 61 |
| A213 08 10 Spina | 8 | 47 64 | 10 | 152 39 |



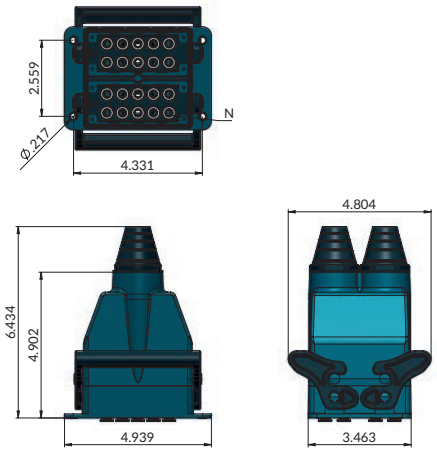

# CO A - STANDARD

## STANDARD SYSTEM

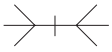
### SIZE 3

## A313

Multiple connector, complete

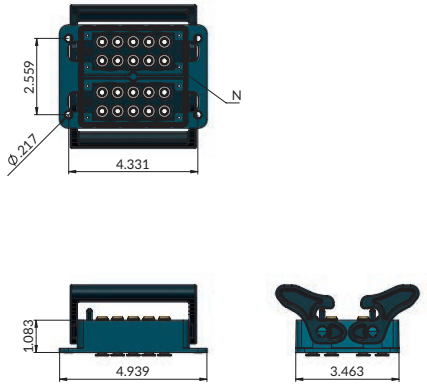



| Type | OD1 | N | oz ⚖ |
|---|---|---|---|
| A313 04 24 Completo | 4 | 24 | 389 08 |
| A313 06 20 Completo | 6 | 20 | 465 41 |
| A313 08 16 Completo | 8 | 16 | 392 08 |



## A313

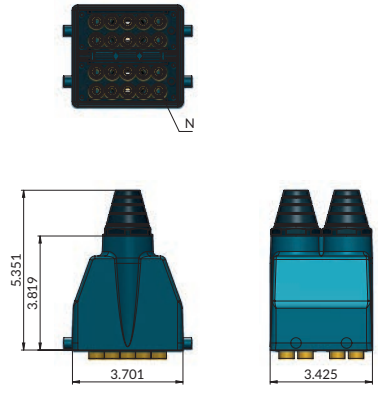
Socket




| Type | OD1 | N | oz ⚖ |
|---|---|---|---|
| A313 04 24 Presa | 4 | 24 | 18.598 |
| A313 06 20 Presa | 6 | 20 | 21.377 |
| A313 08 16 Presa | 8 | 16 | 19.084 |

## A313

Plug



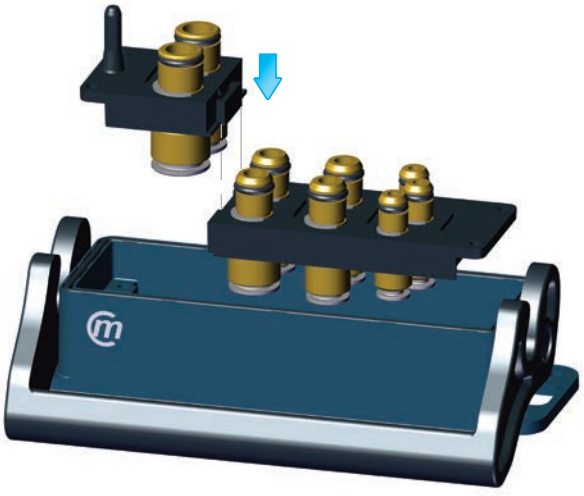

| Type | OD1 | N | oz ⚖ |
|---|---|---|---|
| A313 04 24 Spina | 4 | 24 | 203 96 |
| A313 06 20 Spina | 6 | 20 | 252 43 |
| A313 08 16 Spina | 8 | 16 | 227 70 |

# CO A - MOD

## MODULAR SYSTEM

This solution is offering the user the opportunity to configure the multiple connector such as the tube diameter, the number of outlets and the layout of the same according to his needs.
The user can choose the following number of modules based on the size of the multiple connector shell.

| Size 1 | Size 2 | Size 3 |
|---|---|---|
| 3 Modules + End plate | 4 Mondules + End Plate | 6 Modules + End Plate |

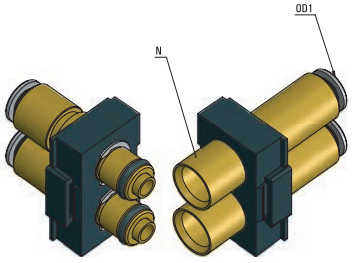


# CO A - MOD

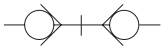
## MODULAR SYSTEM

### MOD 2

Push-in fittings module

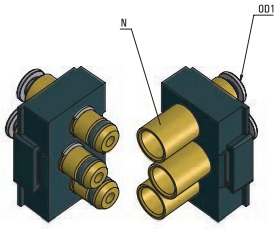



| Type | OD1 | N | oz |
|---|---|---|---|
| 6 | 6 | 2 | 3.951 |
| 8 | 8 | 2 | 4.868 |

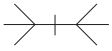


### MOD 1

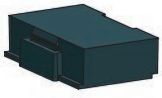
Push-in fittings module




| Type | OD1 | OD2 | N | oz |
|---|---|---|---|---|
| 4 | 4 | - | 3 | 2.209 |
| 6 | 6 | - | 2 | 2.593 |
| 6-8 | 6 | 8 | 2 | 2.604 |
| 8 | 8 | - | 2 | 2.600 |
| 10 | 10 | - | 2 | 2.914 |

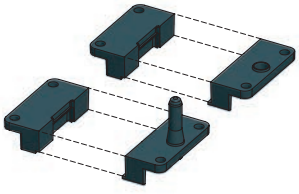


Blind module



| Type | oz |
|---|---|
| Tappo | 1 73 |

End plate



| Type | oz |
|---|---|
| Size 1 | 6 71 |
| Size 2 | 4 94 |
| Size 3 | 8 12 |

# CO A - MOD

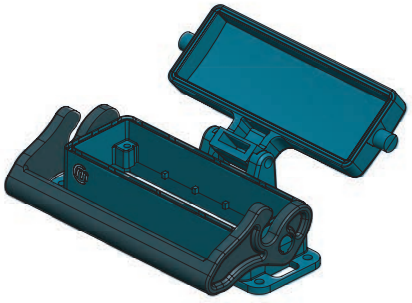
## MODULAR SYSTEM





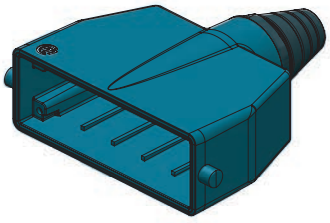
### Socket shell

| Type | oz ⚖ |
|---|---|
| **Size 1** | 54 57 |
| **Size 2** | 63 50 |
| **Size 3** | 83 95 |



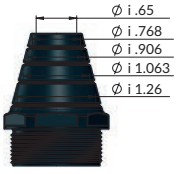
### Plug shell

| Type | oz ⚖ |
|---|---|
| **Size 1** | 6.921 |
| **Size 2** | 7.972 |
| **Size 3** | 12.135 |



### Tubing guide

| Type | oz ⚖ |
|---|---|
| **GUIDATUBO Øi 32÷16,5mm** | 5 15 |

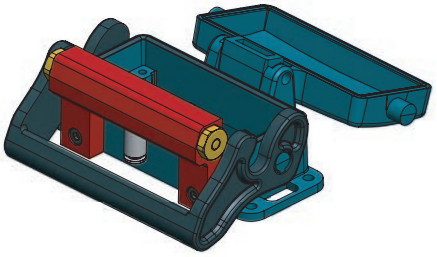



### Anti dust plug cover

| Type | L1 | L2 | L3 | oz ⚖ |
|---|---|---|---|---|
| **A013 Coperchio x spina** | 29 92 | 18 50 | 6 89 | 3 53 |
| **A113 Coperchio x spina** | 38 19 | 18 50 | 6 89 | 4 24 |
| **A213 Coperchio x spina** | 48 82 | 18 50 | 6 89 | 5 30 |
| **A313 Coperchio x spina** | 38 19 | 34 65 | 6 89 | 7 39 |

## A113 / A213

Push-in fittings module



| Type | oz ⚖ |
|---|---|
| A113 04 12 Presa+coperchio+blocco | - |
| A113 06 10 Presa+coperchio+blocco | 150 62 |
| A113 08 08 Presa+coperchio+blocco | - |
| A213 04 20 Presa+coperchio+blocco | - |
| A213 06 14 Presa+coperchio+blocco | - |
| A213 08 10 Presa+coperchio+blocco | 166 29 |

The Anti-release body is made of Anodized Aluminium Al6082

Fig. 1

**P > 29 PSI**

Fig. 2

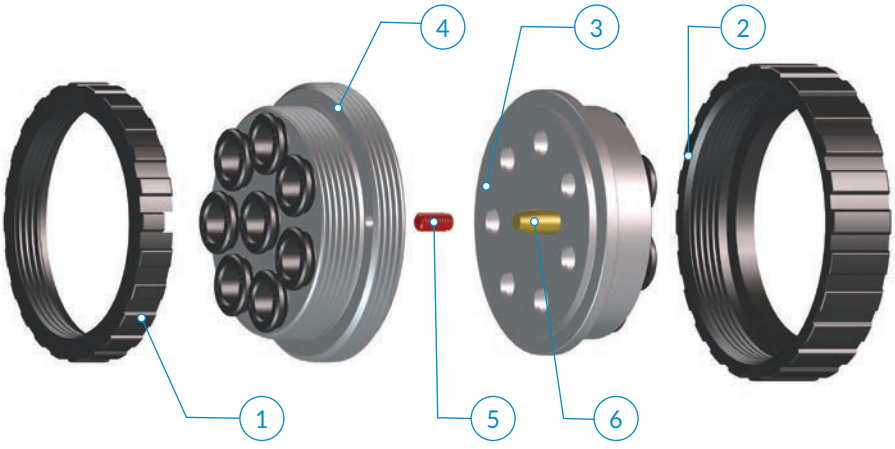
The Multiple connector socket equipped with the anti-release accessory prevents accidental disconnections of the connector if still pressurized.
To operate the anti-release safety device (Fig. 1), it is necessary to power the safety device from the main line once the plug has been connected to the socket.
Before disconnecting the plug from the socket (Fig. 2) turn off the power supply of the safety device.

# CO B

Bulkhead/in line multiple connectors

| | | | | | |
|---|---|---|---|---|---|
| 1 Counternut | 2 Sleeve | 3 Plug | 4 Socket | 5 Screw | 6 Pin |
| POM | POM | Anodized aluminium Al2011 | Anodized aluminium Al2011 | Steel | Brass UNI EN12164 CW614N |

-4° ÷ 158°F | 0 ÷ 145 PSI | -29 Hg




The screw (**5**) shown in red is for demonstration purposes only – the actual part is black.

**Recommended tubings:**
PA11, PA12, PA6, Polyethylene PE, Polyurethane PU (98 Shore A)

**Application fields:**
Pneumatic circuits

## PANEL MOUNTING

Loosen counter nut (**1**) from the multiple connector socket; tighten the screw (**2**) to let it sticks out as much as the wall thickness (**Fig.2**). Place the socket in the wall hole and allow for the screw to fit into the seat drilled through in the wall (**Fig.1**). Tighten the counter nut 1 on socket body until bottoms (**Fig.3**).

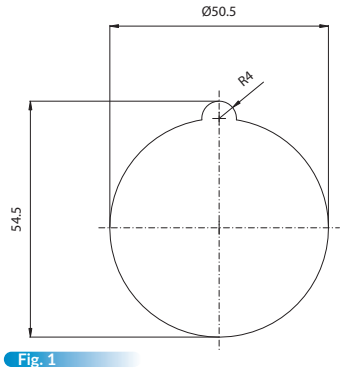


Fig. 1

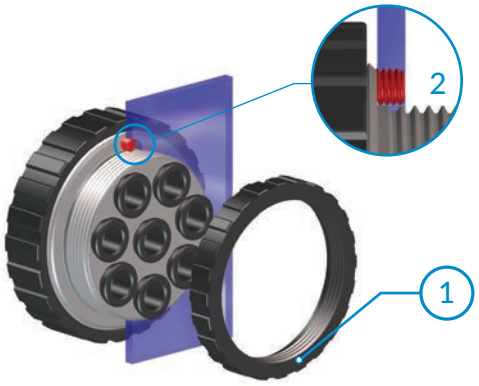


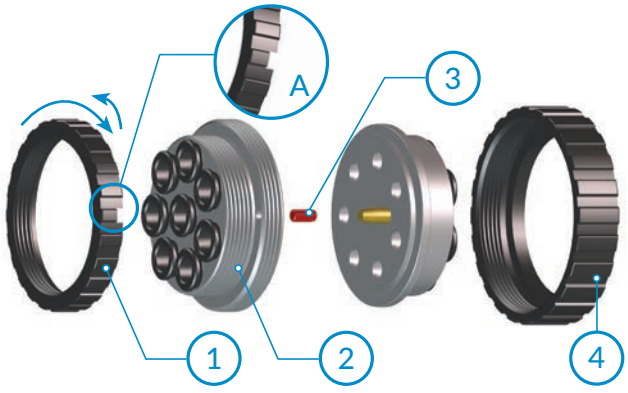
Fig. 2


Fig 3

## USO "VOLANTE" DEL CONNETTORE — FLOOR MOUNTING — MONTAGE VOLANT — BODENMONTAGE

**1**

Tighten counter nut (**1**) onto the socket (**2**) until it bottoms , then loosen it a bit to align the seat (A) with the securing screw (**3**). Tighten the screw (**3**) all the way into its seat (**A**) in the counter nut (**1**). At this stage the counter nut (**1**) can no longer rotate and it will help to tighten or to loose the sleeve (**4**).

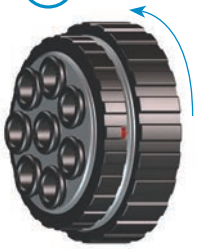



**2**

Assemble the connector plug (**5**) with the socket (**2**) making sure that the pin (**6**) fits into the related housing (**B**).


**3**

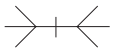
Tighten the sleeve (**4**) until it bottoms.

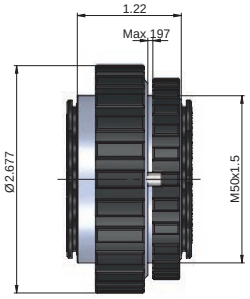


## B113

Multiple connector, complete

| Type | OD1 | N | oz ⚖ |
|---|---|---|---|
| **B113 04 12 Completo** | 4 | 12 | 71 03 |
| **B113 06 10 Completo** | 6 | 10 | 64 93 |
| **B113 08 08 Completo** | 8 | 8 | 61 60 |

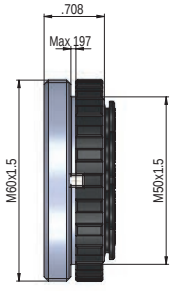





## B113

Socket

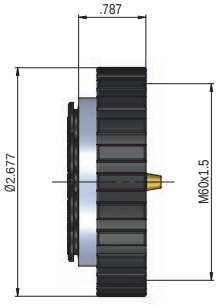
| Type | OD1 | N | oz ⚖ |
|---|---|---|---|
| **B113 04 12 Presa** | 4 | 12 | 36 34 |
| **B113 06 10 Presa** | 6 | 10 | 33 34 |
| **B113 08 08 Presa** | 8 | 8 | 31 71 |




## B113

Plug

| Type | OD1 | N | oz ⚖ |
|---|---|---|---|
| **B113 04 12 Spina** | 4 | 12 | 35 91 |
| **B113 06 10 Spina** | 6 | 10 | 32 91 |
| **B113 08 08 Spina** | 4 | 8 | 31 43 |




cmatic

cmatic®

PNEUMATIC FITTINGS

# PV LINE

## INCH/NPTF Function Fittings

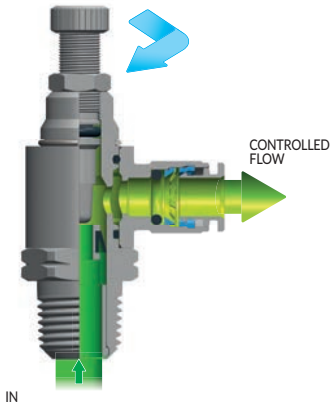
Function fittings are fittings that, in addition to the usual tube connection, they offer a variety of pneumatic functions. Function fittings include flow regulators, one-way valves, pneumatic switches, pressure regulators and silencers, just to name a few. The PV line is available in inch sizes and NPTF threads.

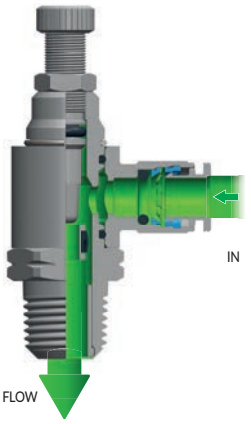
INCH/NPT Function Fittings

They can adjust the flow in a pneumatic circuit. Depending on the flow control used, the setting can be made both ways (Bidirectional Flow Control), or just one way (Unidirectional Flow Control). The Unidirectional Flow Control is particularly used to adjust the speed of pneumatic cylinders.

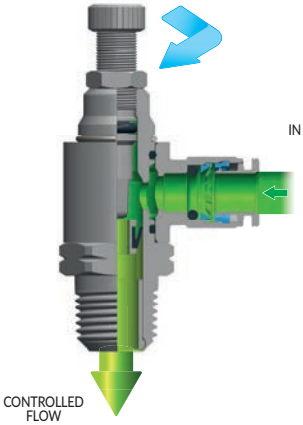
Possible Flow Adjustments

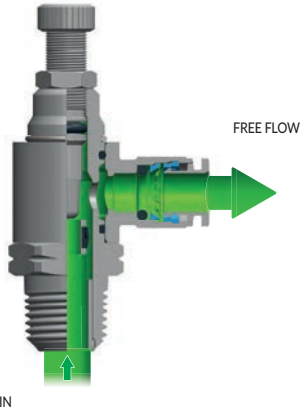
**.../O** = Meter out flow control



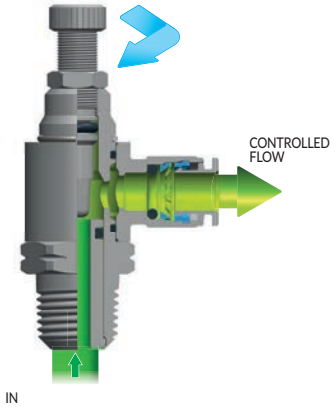



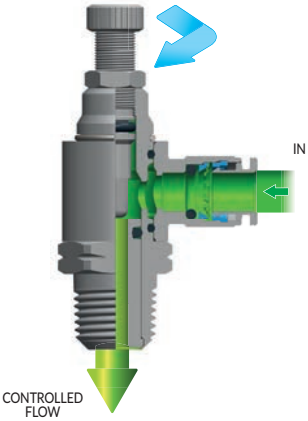

**.../I** = Meter in flow control




**.../B** = Bidirectional flow control



# PV 18

Flow control with swivel push-in fitting



1 Body — Brass UNI EN 12164 CW614N, nickel plated

2 Needle

3 Cartridge

4 Knob and screwdriver slot

5 Seals — NBR

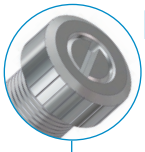
6 Push-in fittings — PN line push-in fittings

-4° ÷ 176°F

0 ÷ 145 PSI

RoHS · REACH · SILICONE FREE

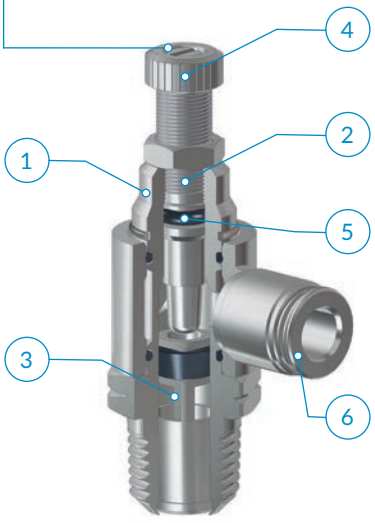
## PLUS



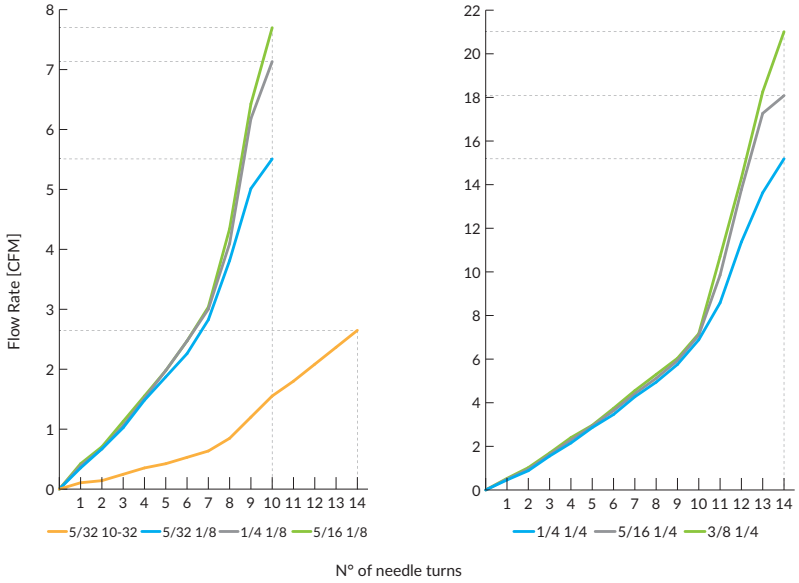
Improved ergonomics: +14% (on average) knob gripping surface.

Screwdriver guide: the slot housed in the knob keeps the screwdriver in place.

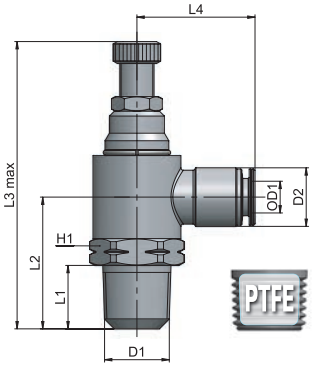
Reliable adjustment: the locking counter-nut protects the setting from vibrations and accidental changes.




P = 87 PSI - Δp = 14.5 PSI

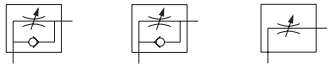



| Type | OD1 | D1 | D2 | L1 | L2 | L3 max | L4 | H1 | oz ⚖ |
|---|---|---|---|---|---|---|---|---|---|
| 18 5/32 10-32 | 5/32 | 10-32 UNF | .358 | .197 | .531 | 1.630 | .736 | 6 | - |
| 18 5/32 1/8 | 5/32 | 1/8 NPTF | .358 | .335 | .846 | 2.016 | .811 | 9/16 | 1.253 |
| 18 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .846 | 2.016 | .894 | 9/16 | 1.235 |
| 18 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | 1.063 | 2.319 | .953 | 11/16 | 1.764 |
| 18 5/16 1/8 | 5/16 | 1/8 NPTF | .551 | .335 | .846 | 2.016 | .933 | 9/16 | 1.341 |
| 18 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.063 | 2.319 | .972 | 11/16 | 2.152 |
| 18 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.063 | 2.319 | 1.035 | 11/16 | 2.311 |




Available as:

.../O .../I .../B



The banjo ring swivels also after flow control installation.

**Recommended tubings:**
According to the fitting connected to the flow control.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

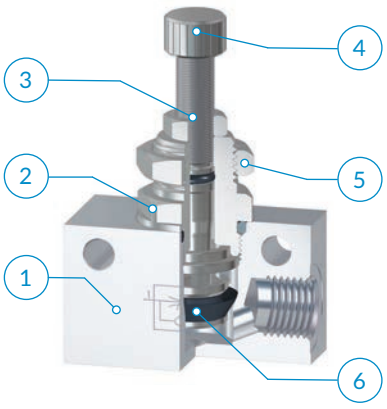
# PV 21

In-line flow control

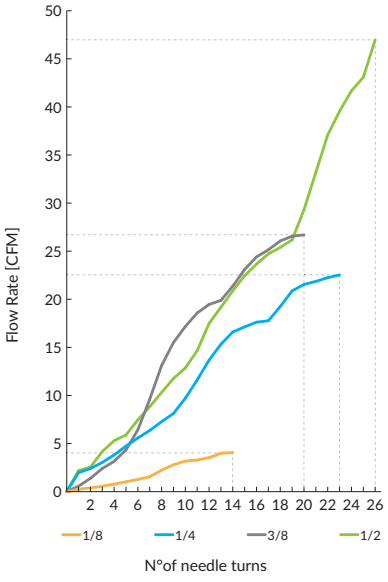
| | | | | | |
|---|---|---|---|---|---|
| 1 Body | 2 Valve | 3 Needle | 4 Handwheel | 5 Nut | 6 Seals |
| Anodized aluminium Al2011 | Brass UNI EN 12164 CW614N, nickel plated | | | | NBR |

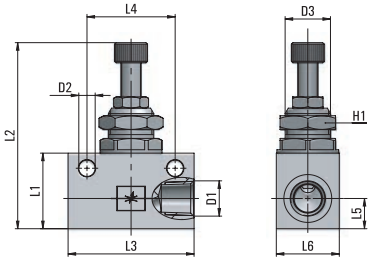
-4° ÷ 176°F

0 ÷ 145 PSI




P = 87 PSI - Δp = 14.5 PSI




| Type | D1 | D2 | D3 | L1 | L2 max | L3 | L4 | L5 | L6 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 00 1/8 | 1/8 NPTF | .177 | M12x0,75 | .827 | 1.945 | 1.339 | .945 | .315 | .630 | .591 | 1.747 |
| 21 00 1/4 | 1/4 NPTF | .256 | M18x1,5 | 1.181 | 2.961 | 1.969 | 1.378 | .472 | .984 | .866 | 5.733 |
| 21 00 3/8 | 3/8 NPTF | .256 | M18x1,5 | 1.181 | 2.961 | 2.283 | 1.575 | .472 | .984 | .866 | 5.965 |
| 21 00 1/2 | 1/2 NPTF | .256 | M22x1,5 | 1.575 | 3.665 | 2.559 | 1.969 | .669 | 1.181 | 1.024 | 10.618 |

Available as:



**Recommended tubings:**
According to the fitting connected to the flow control.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

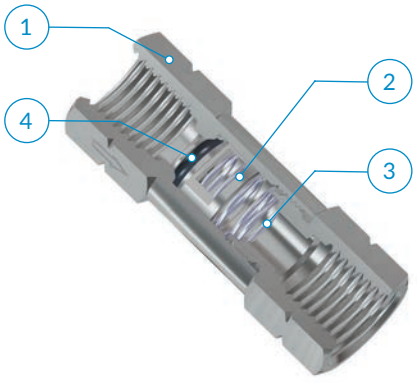
# PV 23

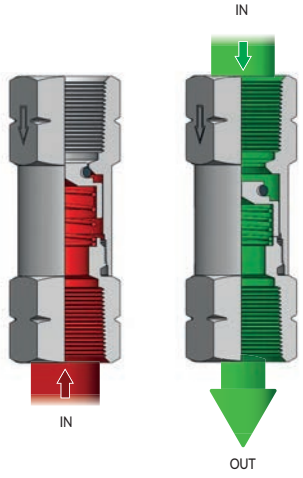


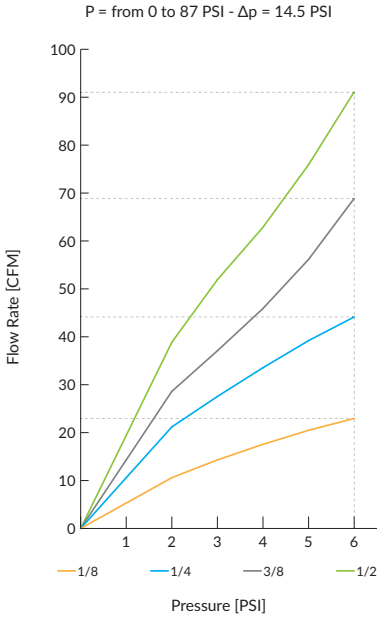
Check valve

| | | | |
|---|---|---|---|
| 1 Body | 2 Valve | 3 Spring | 4 Seals |
| Brass UNI EN 12164 CW614N, nickel plated | | Stainless steel AISI 302 | NBR |

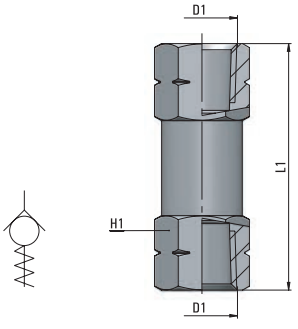
-4° ÷ 176°F | 29 ÷ 145 PSI | 2.9 PSI




| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 23 00 1/8 | 1/8 NPTF | 1.555 | .512 | .956 |
| 23 00 1/4 | 1/4 NPTF | 1.890 | .630 | 1.514 |
| 23 00 3/8 | 3/8 NPTF | 2.047 | .787 | 2.625 |
| 23 00 1/2 | 1/2 NPTF | 2.441 | .945 | 4.290 |




The flow is allowed only in one way (the arrow direction engraved on the body) and stopped in the reverse way.

**Recommended tubings:**
According to the fitting connected to the valve.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

# PV 26

Slide valve

1 Body

Brass UNI EN 12164 CW614N, chrome plated

2 Sleeve

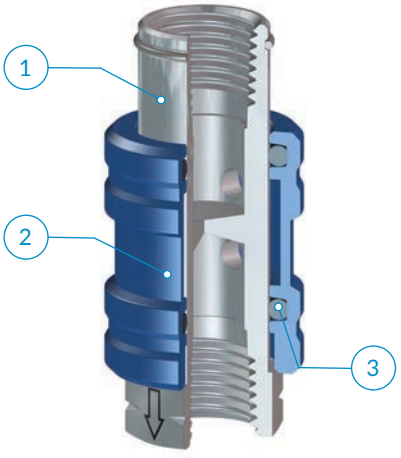
Anodized aluminium Al6060

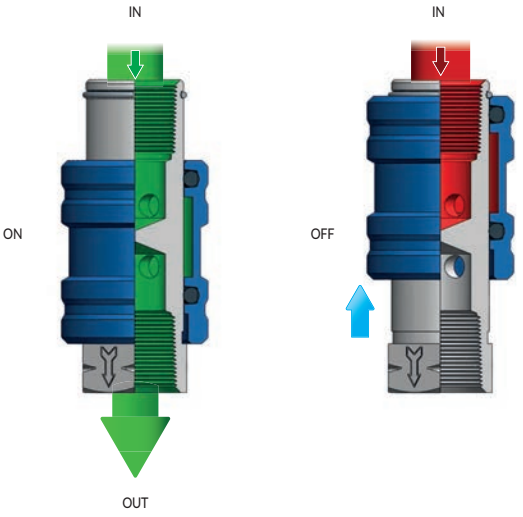
3 Seals

NBR

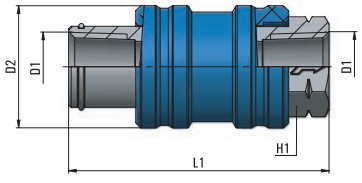
-4° ÷ 176°F

0 ÷ 145 PSI

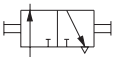



| Flow rate (87 PSI - Δp = 14,5) | IN OUT 1→2 |
|---|---|
| PV 26 00 18 | 22 CFM |
| PV 26 00 14 | 32 CFM |
| PV 26 00 38 | 54 CFM |
| PV 26 00 12 | 96 CFM |




| Type | D1 | D2 | L1 | H1 | oz |
|---|---|---|---|---|---|
| 26 1/8 1/8 | 1/8 NPTF | .827 | 1.811 | .551 | 1.764 |
| 26 1/4 1/4 | 1/4 NPTF | .945 | 2.016 | .669 | 2.166 |
| 26 3/8 3/8 | 3/8 NPTF | 1.220 | 2.319 | .866 | 4.110 |
| 26 1/2 1/2 | 1/2 NPTF | 1.366 | 2.854 | 1.024 | - |



The valve is used to section a pneumatic installation. Sliding the sleeve on the rod, both ON and OFF positions can be achieved. When the sleeve is against the rod hexagon, the flow goes in the arrow direction (ON); pushing it backwards the air supply is cut off and the installation is vented (OFF).

**Recommended tubings:**
According to the fitting connected to the valve.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

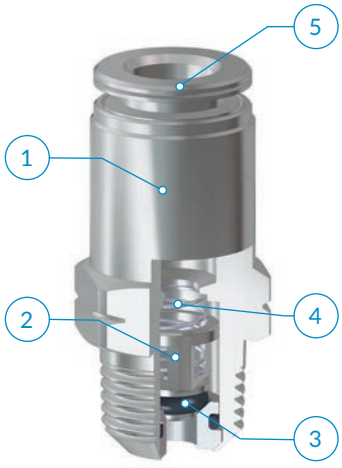
# PV 33

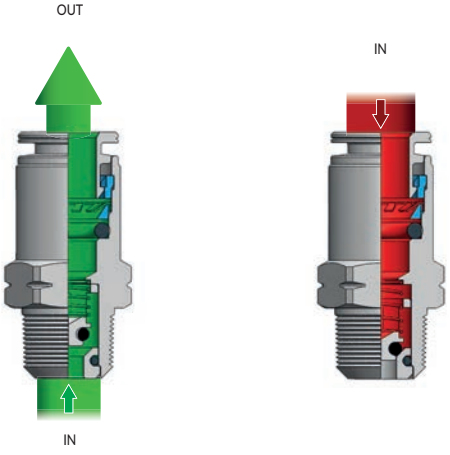


Straight connection with check valve

| | | | | |
|---|---|---|---|---|
| 1 Body | 2 Valve | 3 Seals | 4 Spring | 5 Push-in fittings |
| Brass UNI EN 12164 CW614N, nickel plated | | NBR | Stainless steel AISI 302 | PN line push-in fittings |

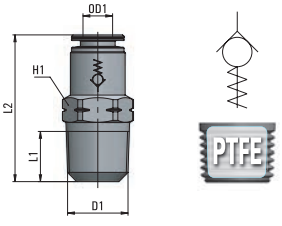
-4° ÷ 176°F | 29 ÷ 145 PSI | 2.9 PSI




Meter Out Version

| Type | OD1 | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 33 1/4 1/8 | 1/4 | 1/8 NPT | .323 | 1.110 | .512 | .519 |
| 33 1/4 1/4 | 1/4 | 1/4 NPT | .512 | 1.260 | .551 | .734 |




Meter Out Version

The flow is allowed only in one way (the arrow direction engraved on the body) and stopped in the reverse way.

**Recommended tubings:**
According to the fitting connected to the valve.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

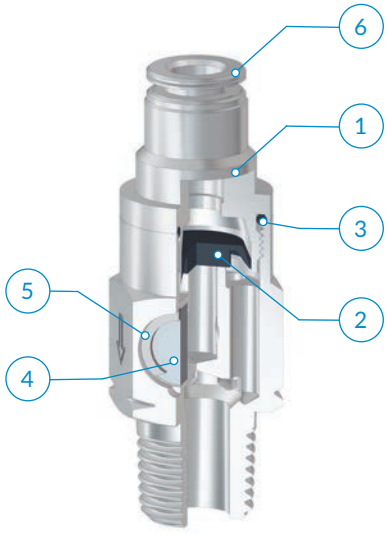
# PV 22

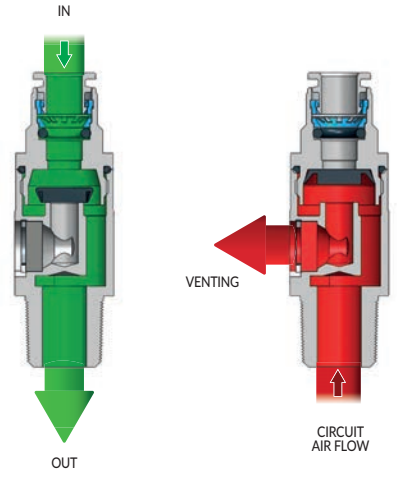
In line quick exhaust valve

| | | | | | |
|---|---|---|---|---|---|
| 1 Body | 2 Lip ring | 3 Seals | 4 Muffler | 5 Seeger | 6 Push-in fittings |
| Anodized aluminium Al2011 | PU - NBR only for 1/4 | NBR | Stainless steel AISI 316 | Stainless steel AISI 302 | PN line push-in fittings |

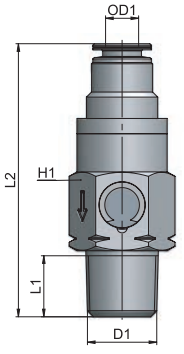
-4° ÷ 176°F

29 ÷ 145 PSI

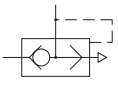



| Flow rate (at 87 PSI) | IN OUT 1→2 | OUT VENT 2→3 |
|---|---|---|
| 1/4 | 37 CFM | 23 CFM |
| 3/8 | 106 CFM | 67 CFM |
| 1/2 | 121 CFM | 81 CFM |




| Type | OD1 | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 22 1/4 1/4 | 1/4 | 1/4 NPTF | .512 | 2.106 | .709 | .695 |
| 22 3/8 3/8 | 3/8 | 3/8 NPTF | .512 | 2.598 | 1.063 | - |
| 22 1/2 1/2 | 1/2 | 1/2 NPTF | .669 | 3.110 | 1.339 | - |



This valve can easily vent the circuit in case of an air supply failure. If assembled on the cylinder port, it increases the cylinder speed.

**Recommended tubings:**
According to the fitting connected to the valve.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

# PV 27

Quick exhaust valve

1 Body

Brass UNI EN 12165 CW617N, nickel plated

2 Lip ring

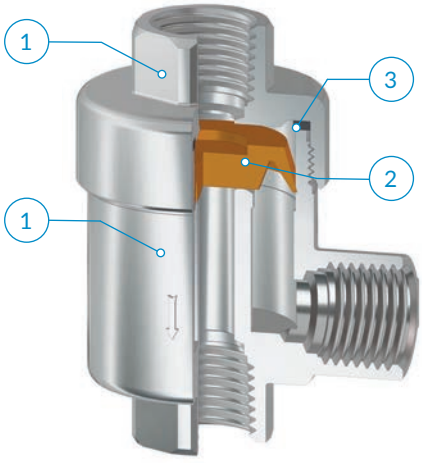
PU - NBR only for M5

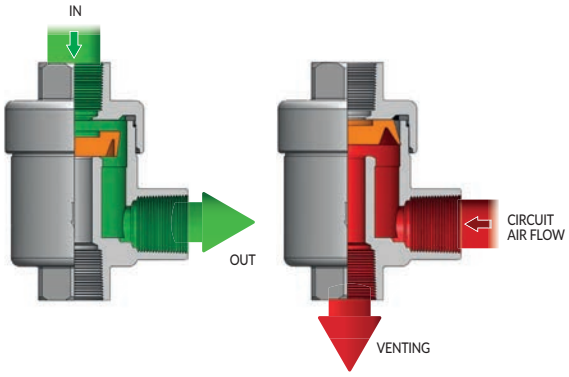
3 Gasket

PA6

-4° ÷ 176°F

29 ÷ 145 PSI

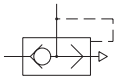


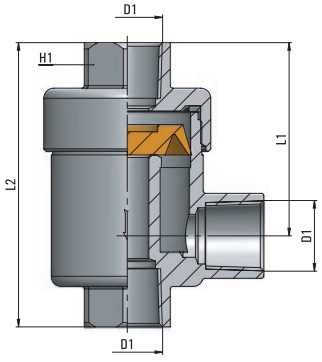




| Flow rate (at 87 PSI) | IN OUT 1→2 | OUT VENT 2→3 |
|---|---|---|
| 1/8 | 16 CFM | 27 CFM |
| 1/4 | 28 CFM | 65 CFM |
| 3/8 | 41 CFM | 92 CFM |
| 1/2 | 44 CFM | 187 CFM |
| 3/4* | 54 CFM | 117 CFM |

*Flow rate at 43.5 PSI

| Type | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|
| 27 00 1/8 | 1/8 NPT | 1.102 | 1.654 | .551 | 2.970 |
| 27 00 1/4 | 1/4 NPT | 1.358 | 2.087 | .748 | 5.210 |
| 27 00 3/8 | 3/8 NPT | 1.417 | 2.165 | .827 | 5.775 |
| 27 00 1/2 | 1/2 NPT | 1.732 | 2.795 | 1.024 | 11.108 |
| 27 00 3/4 | 3/4 NPT | 2.165 | 3.543 | 1.260 | 18.025 |






This valve can easily vent the circuit in case of an air supply failure. If assembled on the cylinder port, it increases the cylinder speed.

**Recommended tubings:**
According to the fitting connected to the valve.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

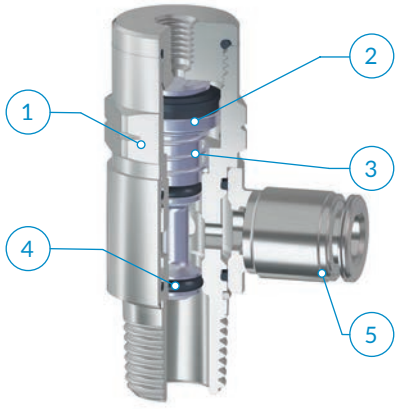
# PV 45

Pilot operated check valve

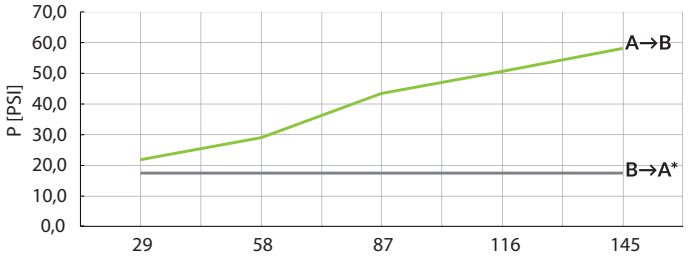
| | | | | |
|---|---|---|---|---|
| 1 Body | 2 Piston | 3 Spring | 4 Seals | 5 Push-in fittings |
| Brass UNI EN 12164 CW614N, nickel plated | Stainless steel AISI 304 | Stainless steel AISI 302 | NBR-PU | PN line push-in fittings |

-4° ÷ 176°F

MAX 145 PSI

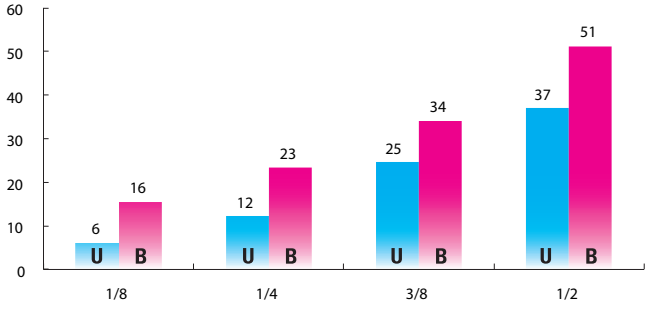



Cracking pressure P [PSI]




Inlet pressure [PSI]
*Only for /B

Flow capacity [CFM] 87 PSI - Δp 14.5

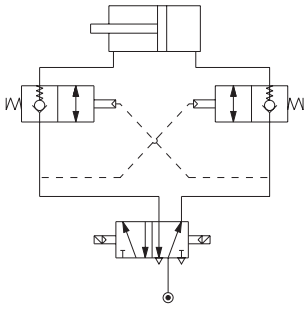



Should a sudden pressure failure happen, if the stop valves are assembled in pairs on the cylinder, the stop valves make sure, that the cylinder piston rapidily stops. By operating the override device, it is possible to reset manually the piston stroke, which is particularly important during a set-up phase or in case of air shortage.

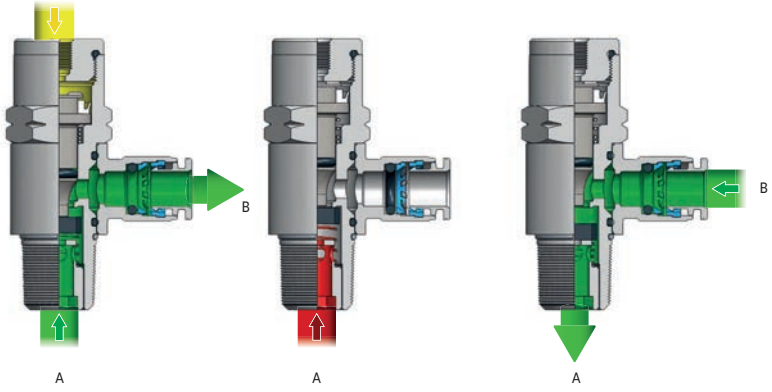
**Recommended tubings:**
According to the fitting connected to the valve.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

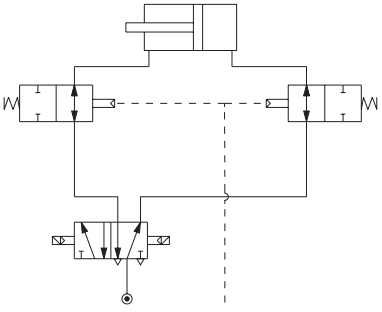
/U = One Way



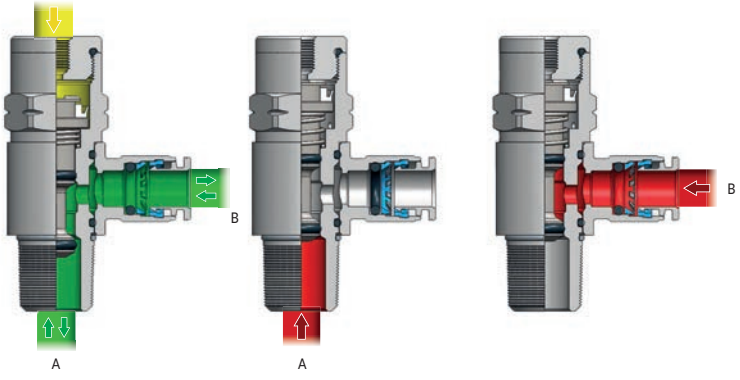
PILOT PRESSURE (P)



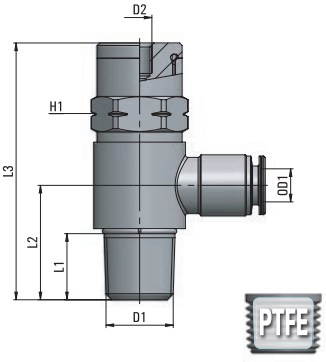

/B = Bidirectional



PILOT PRESSURE (P)



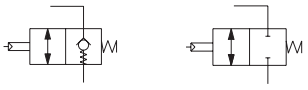

| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| PV45 1/4 1/8 /B | 1/4 | 1/8NPTF | 10-32UNF | .374 | .669 | 1.744 | .512 | 1.415 |
| PV45 1/4 1/4 /B | 1/4 | 1/4NPTF | 10-32UNF | .551 | .886 | 1.988 | .669 | 2.463 |
| PV45 3/8 3/8 /B | 3/8 | 3/8NPTF | 1/8NPTF | .551 | .945 | 2.303 | .787 | 4.149 |
| PV45 1/2 1/2 /B | 1/2 | 1/2NPTF | 1/8NPTF | .717 | 1.189 | 2.665 | .984 | 6.837 |
| PV45 1/4 1/8 /U | 1/4 | 1/8NPTF | 10-32UNF | .331 | .669 | 1.685 | .512 | 1.436 |
| PV45 1/4 1/4 /U | 1/4 | 1/4NPTF | 10-32UNF | .512 | .846 | 1.988 | .669 | 2.530 |
| PV45 3/8 3/8 /U | 3/8 | 3/8NPTF | 1/8NPTF | .512 | .984 | 2.244 | .787 | 4.184 |
| PV45 1/2 1/2 /U | 1/2 | 1/2NPTF | 1/8NPTF | .669 | 1.209 | 2.665 | .984 | 6.999 |




.../U = One way

.../B = Bidirectional

Available as:



# PV 46

Pneumatic switch

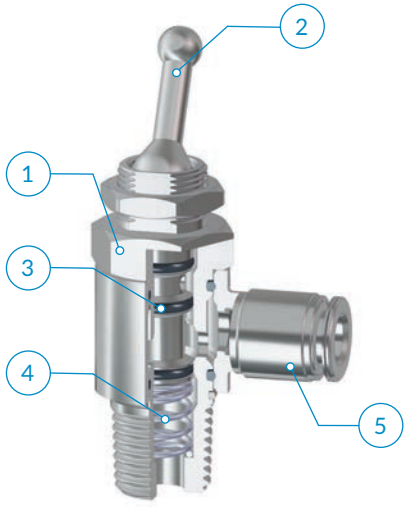
| | | | | |
|---|---|---|---|---|
| 1 Body | 2 Handle | 3 Seals | 4 Spring | 5 Push-in fittings |
| Brass UNI EN 12164 CW614N, nickel plated | | NBR | Stainless steel AISI 302 | PN line push-in fittings |

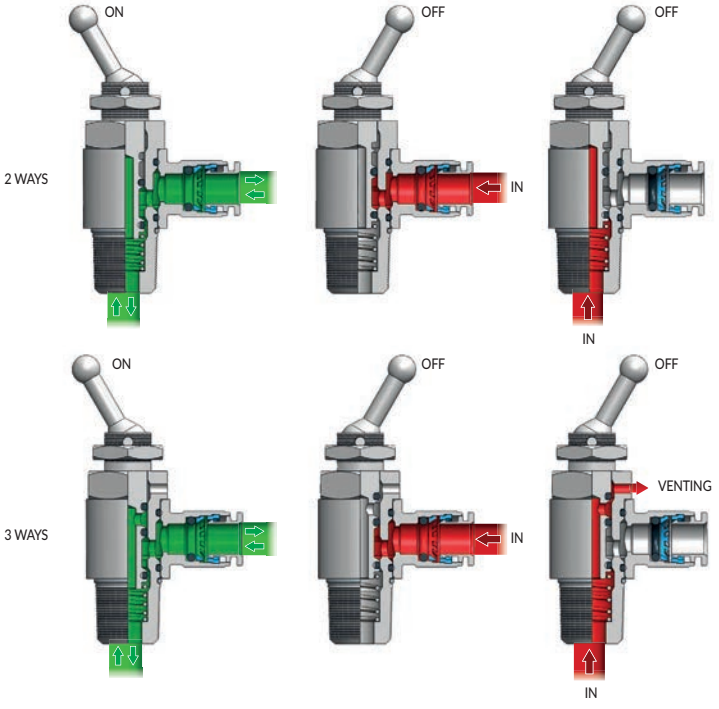
-4° ÷ 176°F

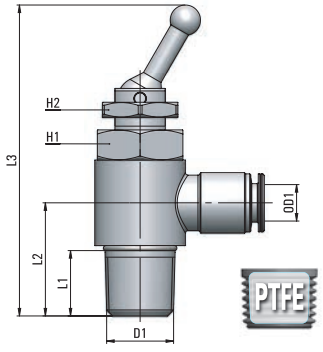
MAX 218 PSI

Flow rate
(87 PSI - Δp = 14,5)

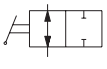
| | |
|---|---|
| 1/8 | 8 CFM |
| 1/4 | 9 CFM |

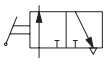



| Type | OD1 | D1 | L1 | L2 | L3 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|
| 46 1/4 1/8 | 1/4 | 1/8 NPTF | .374 | .669 | 2.138 | .551 | .591 | 1.404 |
| 46 1/4 1/4 | 1/4 | 1/4 NPTF | .551 | .886 | 2.433 | .551 | .591 | 2.233 |


2 WAYS


3 WAYS

The PV 46 is a pneumatic switch. It is available in a 2/2 and 3/2-way version. The goal of the 2/2 way switch is to cut off the flow in the circuit whenever needed by simply operating the lever. The 3/2 way valve cuts off the flow and vents to atmosphere the terminal part of the circuit.

**Recommended tubings:**
According to the fitting connected to the valve.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

# PV 11



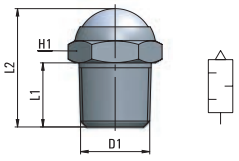
Air mufflers

| | Body | Muffler | | |
|---|---|---|---|---|
| PV11-FE | Brass UNI EN 12164 CW614N nickel plated | Stainless steel AISI 304 | 0 ÷ 174 PSI | 14° ÷ 160°F |
| PV11-BE | Brass UNI EN 12164 CW614N | Sintered bronze 89/11 | 0 ÷ 174 PSI | 14° ÷ 160°F |

## PV 11-FE

Air muffler with stainless steel wire

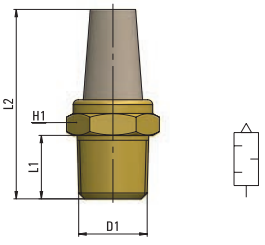
| Type | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|
| 11 00 1/8-FE | 1/8 NPTF | .236 | .591 | .512 | .219 |
| 11 00 1/4-FE | 1/4 NPTF | .433 | .866 | .630 | .438 |
| 11 00 3/8-FE | 3/8 NPTF | .433 | .906 | .748 | .671 |
| 11 00 1/2-FE | 1/2 NPTF | .512 | .984 | .945 | .978 |

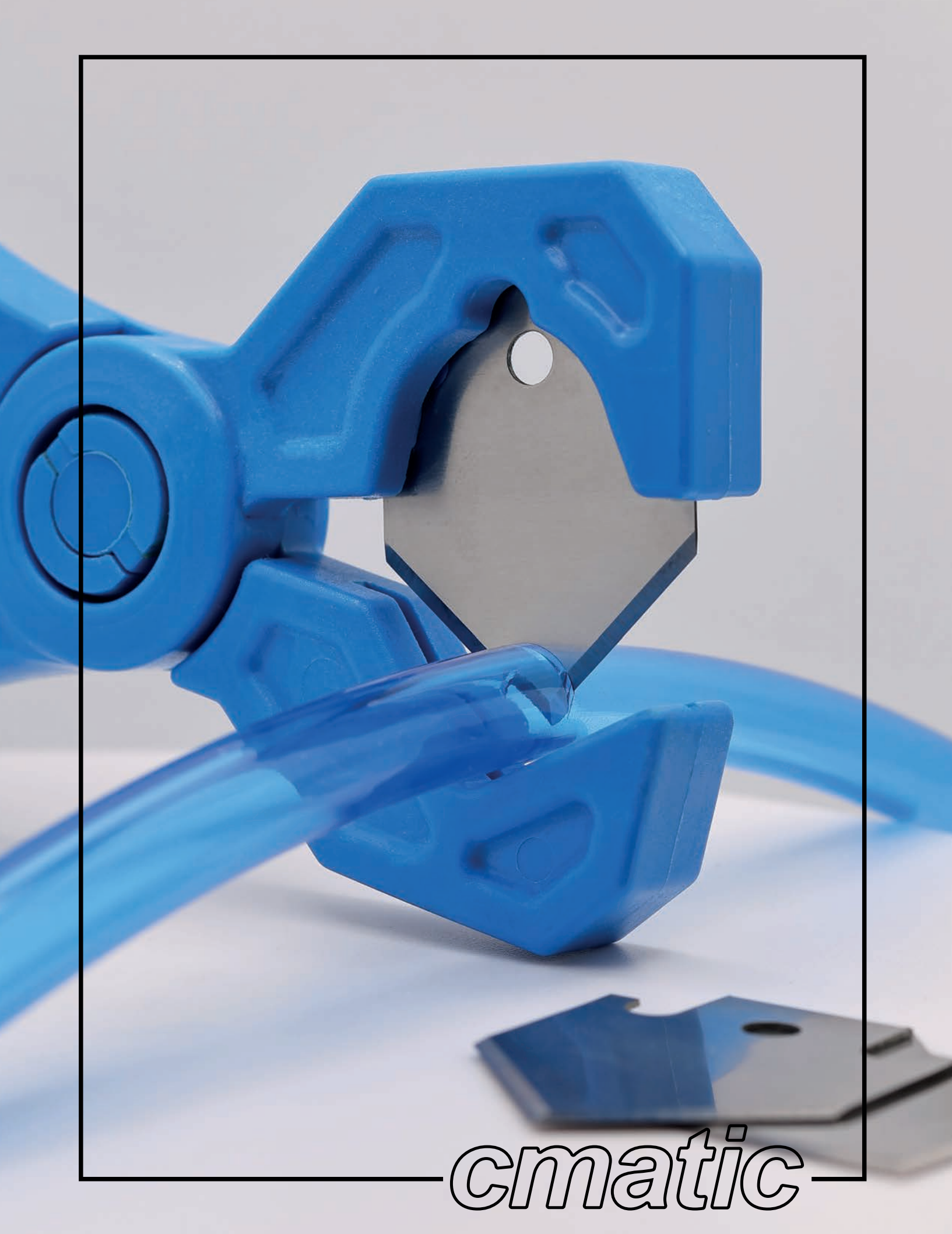



## PV 11-BE

Sintered bronze air muffler

| Type | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|
| 11 00 1/8-BE | 1/8 NPTF | .236 | 1.142 | .512 | .318 |
| 11 00 1/4-BE | 1/4 NPTF | .433 | 1.417 | .630 | .600 |
| 11 00 3/8-BE | 3/8 NPTF | .433 | 1.693 | .748 | 1.023 |
| 11 00 1/2-BE | 1/2 NPTF | .512 | 1.929 | .945 | 1.623 |




cmatic

cmatic®
PNEUMATIC FITTINGS

# PX LINE

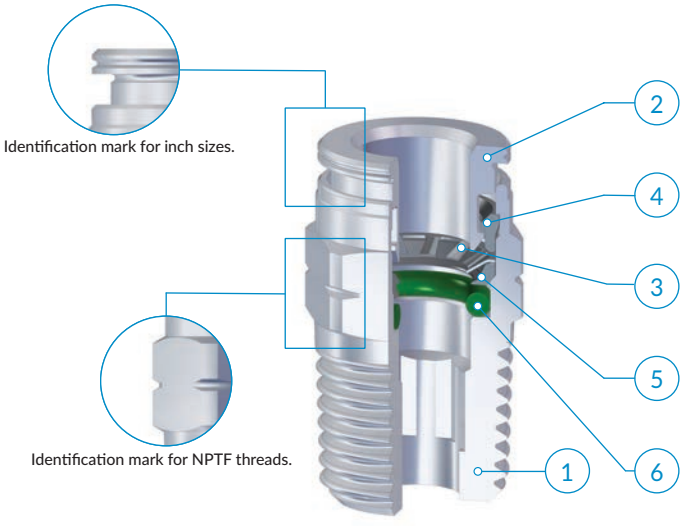
## 316L Stainless Steel Push-in Fittings, Inch/NPTF

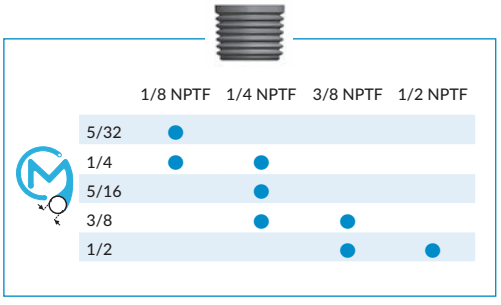
The push-in fittings of the PX line, available in inch sizes and NPTF threads, are entirely made of AISI 316L (1,4404) and they are the perfect solution for highly aggressive environments and high temperature rated applications.

# PX Line

| | | | | | |
|---|---|---|---|---|---|
| 1 Body<br>2 Release ring<br>Stainless steel AISI 316L (1.4404) | 3 Gripping ring<br>Stainless steel AISI 301 | 4 Holding ring<br>Stainless steel AISI 316L (1.4404) | 5 Protection ring<br>Stainless steel AISI 316L (1.4404) | 6 Seals<br>FPM, FDA compliant |

-4° ÷ 356°F | Max 290 PSI | -29″ Hg



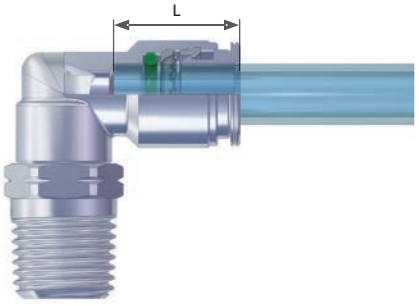
| | 1/8 NPTF | 1/4 NPTF | 3/8 NPTF | 1/2 NPTF |
|---|---|---|---|---|
| 5/32 | ● | | | |
| 1/4 | ● | ● | | |
| 5/16 | | ● | | |
| 3/8 | | ● | ● | |
| 1/2 | | | ● | ● |

**Recommended tubings:**
PVDF, PTFE and Stainless steel tubes (for rigid hose assembly see the instructions above)

**Acceptable Tolerances on the tubings:**
+/– .003 up to Ø 3/8”
+/– .004 Ø 1/2”

**Application fields:**
Pneumatics, Food Industry, Chemical, Medical and Pharmaceutical Industry

## Tubing insertion depth

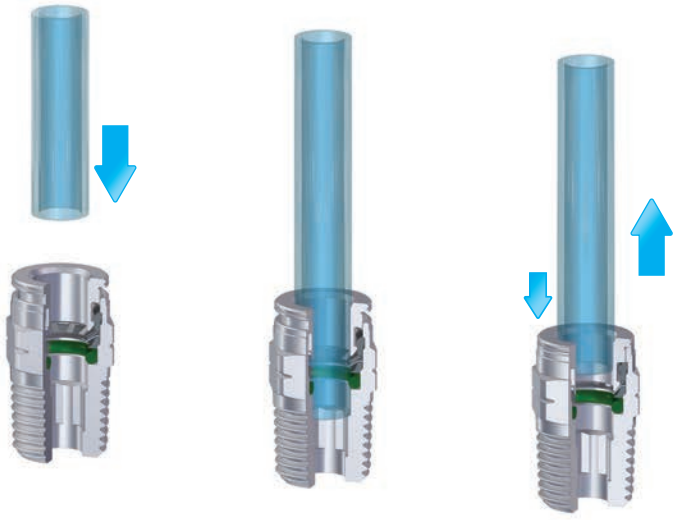



| OD | L |
|---|---|
| 5/32 | .520 |
| 1/4 | .634 |
| 5/16 | .637 |
| 3/8 | .720 |
| 1/2 | .767 |

## ASSEMBLY INSTRUCTIONS

1. Cut the tube square (by means of a hose cutter i.e. our TCUT) making sure that no burrs are left and that the tube is not oval.
2. Insert the tube into the fitting until it bottoms.

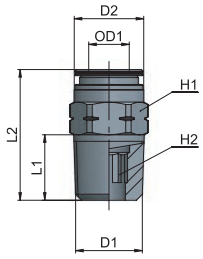
**Tube release**
While pressing on the release ring, pull out the tube from the fitting.



Once the tubing is connected to the fitting, make sure that the tubing is not subject to any tensile strength and that the min. recommended bending radius stated in the tubing section of this catalogue is complied with (see page 136).
To prevent any accidental tube release, no components have to come in touch with the release ring and exercise any unwanted pressure on the same. Indeed however lateral, any load on the release ring may cause the tube disconnection.
To tighten threads, please check out our tightening torque chart illustrated at page 6.

## PX 11

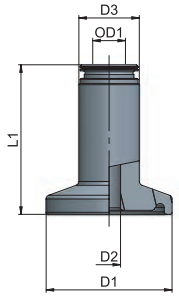
Taper straight, male




| Type | OD1 | D1 | D2 | L1 | L2 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|
| 11 5/32 1/8 | 5/32 | 1/8 NPTF | .374 | .335 | .768 | .472 | 1/8 | .346 |
| 11 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .866 | .512 | 5/32 | .385 |
| 11 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | .965 | .551 | 5/32 | .642 |
| 11 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.004 | .551 | 1/4 | .572 |
| 11 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.260 | .669 | 1/4 | .925 |
| 11 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.004 | .709 | 5/16 | .914 |
| 11 1/2 3/8 | 1/2 | 3/8 NPTF | .787 | .512 | 1.161 | .827 | 3/8 | 1.126 |
| 11 1/2 1/2 | 1/2 | 1/2 NPTF | .787 | .669 | 1.201 | .866 | 3/8 | 1.641 |

## PX 11 XT

Clamp to push-in fitting

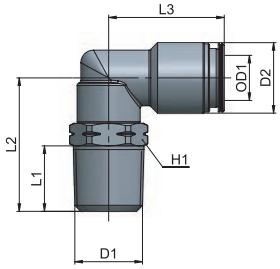



| Type | OD1 | D1 | D2 | D3 | L1 | oz |
|---|---|---|---|---|---|---|
| 11 1/4 XT D25 | 1/4 | .984 | .179 | .472 | 1.161 | 1.002 |
| 11 1/4 XT D50,4 | 1/4 | 1.984 | .179 | .472 | 1.161 | - |
| 11 3/8 XT D25 | 3/8 | .984 | .305 | .630 | 1.181 | 1.265 |
| 11 3/8 XT D50,4 | 3/8 | 1.984 | .305 | .630 | 1.181 | 3.564 |

Surface finishing of the Clamp side: **SF1 Class**

## PX 15

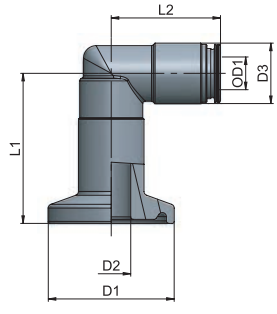
Taper swivelling elbow fitting, male




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 15 5/32 1/8 | 5/32 | 1/8 NPTF | .354 | .335 | .748 | .689 | .472 | .445 |
| 15 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .827 | .846 | .512 | .741 |
| 15 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | 1.024 | .846 | .551 | .893 |
| 15 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.043 | .886 | .551 | .963 |
| 15 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.157 | 1.004 | .669 | 1.454 |
| 15 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.157 | 1.004 | .709 | 1.517 |
| 15 1/2 3/8 | 1/2 | 3/8 NPTF | .787 | .512 | 1.280 | 1.102 | .827 | 2.385 |
| 15 1/2 1/2 | 1/2 | 1/2 NPTF | .787 | .669 | 1.457 | 1.102 | .866 | 2.720 |

## PX 15 XT

Clamp to push-in 90° fitting



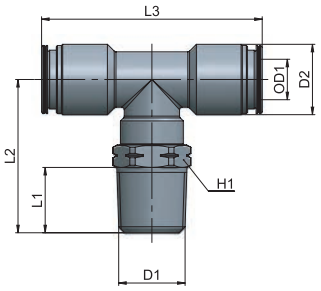

| Type | OD1 | D1 | D2 | D3 | L1 | L2 | oz |
|---|---|---|---|---|---|---|---|
| 15 1/4 XT D25 | 1/4 | .984 | .305 | .472 | 1.173 | .846 | - |
| 15 1/4 XT D50,4 | 1/4 | 1.984 | .305 | .472 | 1.173 | .846 | - |
| 15 3/8 XT D25 | 3/8 | .984 | .305 | .630 | 1.252 | 1.024 | - |
| 15 3/8 XT D50,4 | 3/8 | 1.984 | .305 | .630 | 1.252 | 1.024 | - |

Surface finishing of the Clamp side: **SF1 Class**

## PX 20

Swivelling T fitting, taper

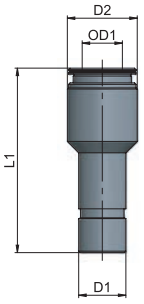
| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 20 5/32 1/8 | 5/32 | 1/8 NPTF | .374 | .335 | .886 | 1.378 | .472 | .657 |
| 20 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .335 | .846 | 1.693 | .512 | 1.034 |
| 20 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | 1.043 | 1.693 | .551 | 1.193 |
| 20 5/16 1/4 | 5/16 | 1/4 NPTF | .551 | .512 | 1.201 | 1.693 | .551 | 1.313 |
| 20 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .512 | 1.260 | 2.008 | .669 | 2.272 |
| 20 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.260 | 2.008 | .709 | 2.350 |




## PX 25

Reducer

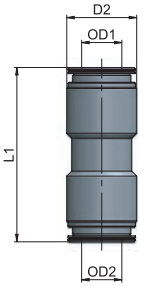
| Type | OD1 | D1 | D2 | L1 | oz |
|---|---|---|---|---|---|
| 25 5/32 1/4 | 5/32 | 1/4 | .374 | 1.240 | .272 |
| 25 1/4 5/16 | 1/4 | 5/16 | .472 | 1.358 | .413 |
| 25 1/4 3/8 | 1/4 | 3/8 | .472 | 1.358 | .487 |
| 25 5/16 3/8 | 5/16 | 3/8 | .551 | 1.437 | .544 |




## PX 26

Union

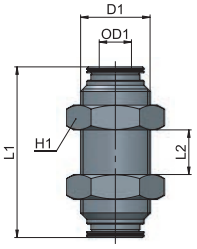
| Type | OD1 | OD2 | D2 | L1 | oz |
|---|---|---|---|---|---|
| 26 5/32 5/32 | 5/32 | 5/32 | .374 | 1.102 | .311 |
| 26 1/4 1/4 | 1/4 | 1/4 | .472 | 1.323 | .519 |
| 26 5/16 5/16 | 5/16 | 5/16 | .551 | 1.339 | .695 |
| 26 3/8 3/8 | 3/8 | 3/8 | .630 | 1.520 | .946 |
| 26 1/2 1/2 | 1/2 | 1/2 | .787 | 1.614 | 1.553 |




## PX 27

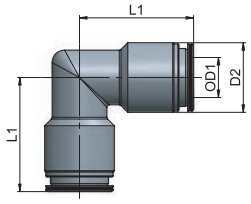
Bulkhead union

| Type | OD1 | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 27 5/32 5/32 | 5/32 | M12x1 | 1.102 | .453 | .630 | .699 |
| 27 1/4 1/4 | 1/4 | M14x1 | 1.339 | .571 | .669 | 1.045 |
| 27 5/16 5/16 | 5/16 | M 6x | 1.339 | .610 | .748 | 1.277 |
| 27 3/8 3/8 | 3/8 | M18x1 | 1.535 | .689 | .827 | 1.766 |
| 27 1/2 1/2 | 1/2 | M22x1,5 | 1.614 | .728 | 1.024 | 2.638 |



## PX 28

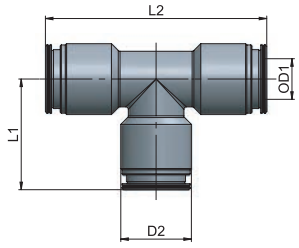
Union elbow




| Type | OD1 | D2 | L1 | oz |
|---|---|---|---|---|
| 28 5/32 5/32 | 5/32 | .374 | .689 | .448 |
| 28 1/4 1/4 | 1/4 | .472 | .827 | .597 |
| 28 5/16 5/16 | 5/16 | .551 | .886 | .872 |
| 28 3/8 3/8 | 3/8 | .630 | 1.004 | 1.535 |
| 28 1/2 1/2 | 1/2 | .787 | 1.083 | 1.799 |

## PX 29

Union T




| Type | OD1 | D2 | L1 | L2 | oz |
|---|---|---|---|---|---|
| 29 5/32 5/32 | 5/32 | .374 | .689 | 1.378 | .565 |
| 29 1/4 1/4 | 1/4 | .472 | .827 | 1.654 | .992 |
| 29 5/16 5/16 | 5/16 | .551 | .846 | 1.693 | 1.165 |
| 29 3/8 3/8 | 3/8 | .630 | .984 | 1.969 | 2.039 |
| 29 1/2 1/2 | 1/2 | .787 | 1.083 | 2.165 | 2.470 |

cmatic®
PNEUMATIC FITTINGS

# PUX LINE

## 316L Stainless Steel Couplings, NPTF

Stainless steel quick couplings available with NPTF threads.

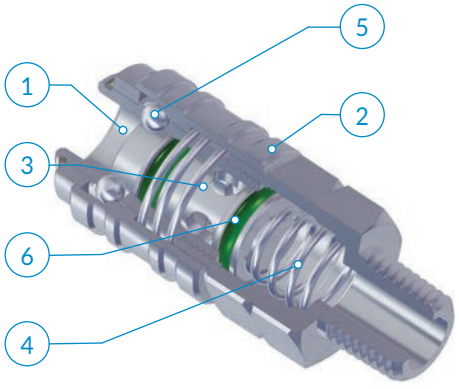
# PUX 10

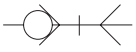
Stainless steel multi socket quick coupling

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Body | 2 | Command sleeve | 3 | Valve | 4 | Springs | 5 | Balls | 6 | Seals | i | Plugs |
| Stainless steel AISI 316L (1.4404) | | | | | | Stainless steel AISI 302 | | Stainless steel AISI 420 | | FPM | | Stainless steel AISI 316L (1.4404) | |

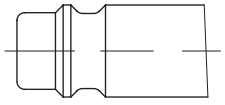
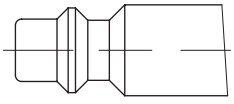
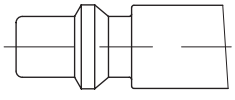
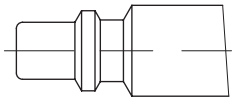
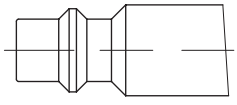
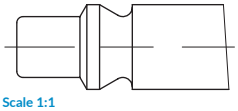
-4° ÷ 302°F

0 ÷ 218 PSI



**Application fields:**
Pneumatic circuits

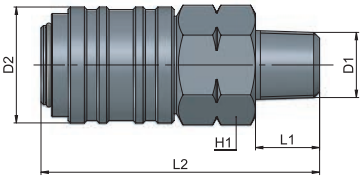
| Suitable with following plugs profiles | | Flow rate at 87 PSI Δp = 14.5 |
|---|---|---|
|  | European Profile | 29 CFM |
|  | ISO 6150 B Profile | 25 CFM |
|  | Standard Swedisch Profile | 26 CFM |
|  | Standard Italian Profile | 24 CFM |
|  | MIL C4109 Profile | 25 CFM |
|  | ARO 210 Profile | 25 CFM |

Scale 1:1

## PUX 10-11

Male plug according to ISO6150 B-12 profile

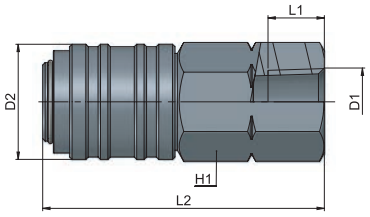
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 11 00 1/4 | 1/4 NPTF | 9 25 | 5 12 | 22 24 | 8 27 | 31 87 |
| 11 00 3/8 | 3/8 NPTF | 9 25 | 5 12 | 21 85 | 8 27 | 32 40 |




## PUX 10-12

Female plug according to ISO6150 B-12 profile

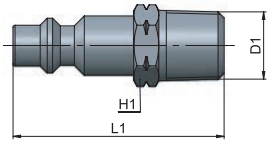
| Type | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|
| 12 00 1/4 | 1/4 NPTF | 9 25 | 4 92 | 22 64 | 8 27 | - |
| 12 00 3/8 | 3/8 NPTF | 9 25 | 4 92 | 23 03 | 8 27 | - |




## PUX 10-20

Male plug according to ISO6150 B-12 profile

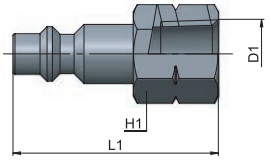
| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 20 00 1/4 | 1/4 NPTF | 16 54 | 5 51 | 8 22 |
| 20 00 3/8 | 3/8 NPTF | 16 54 | 7 09 | - |




## PUX 10-21

Female plug according to ISO6150 B-12 profile

| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 21 00 1/4 | 1/4 NPTF | 16 14 | 6 69 | - |
| 21 00 3/8 | 3/8 NPTF | 16 54 | 8 27 | 14 48 |

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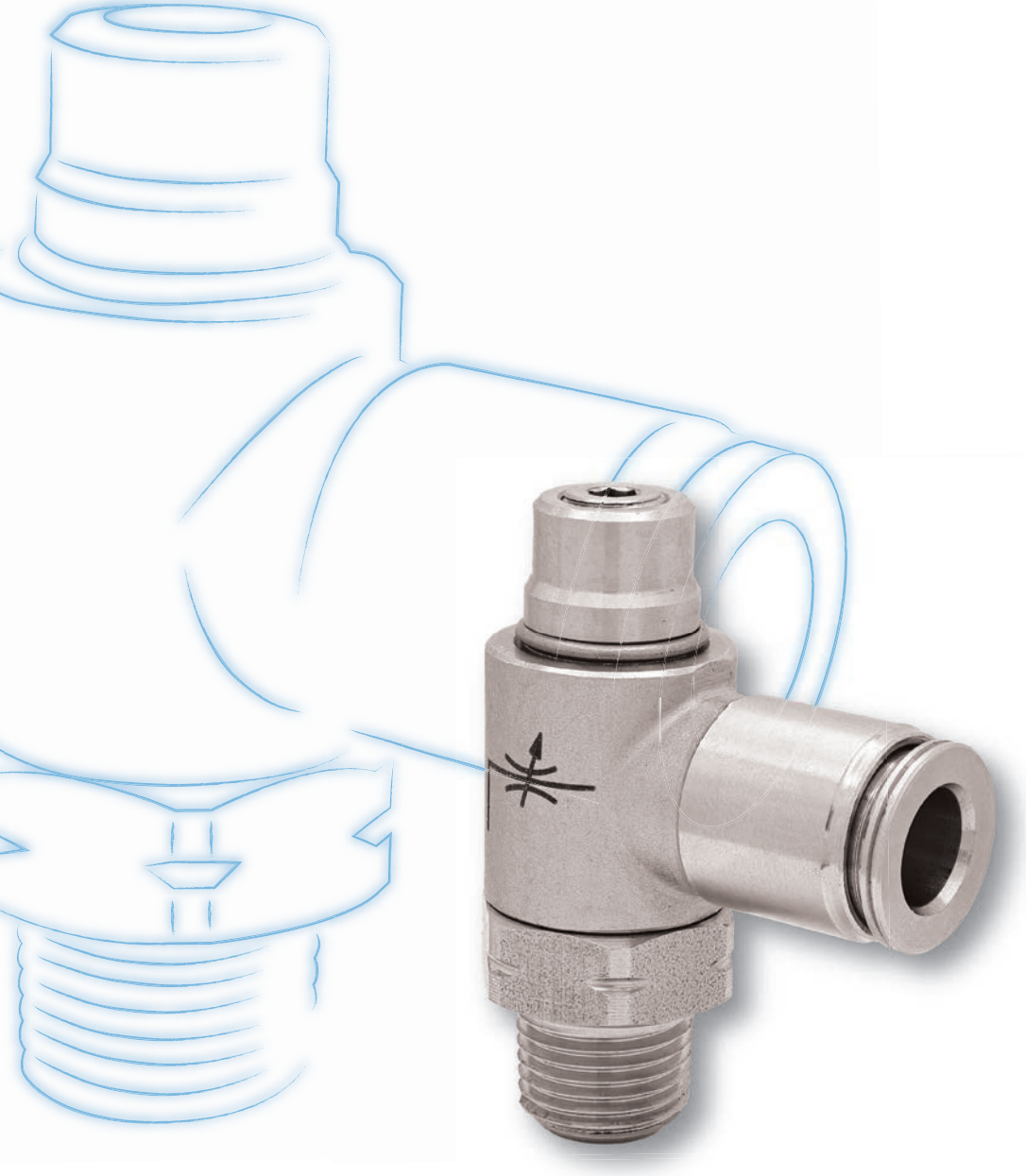


# PVX LINE

## 316L Stainless Steel Function Fittings, Inch/NPTF

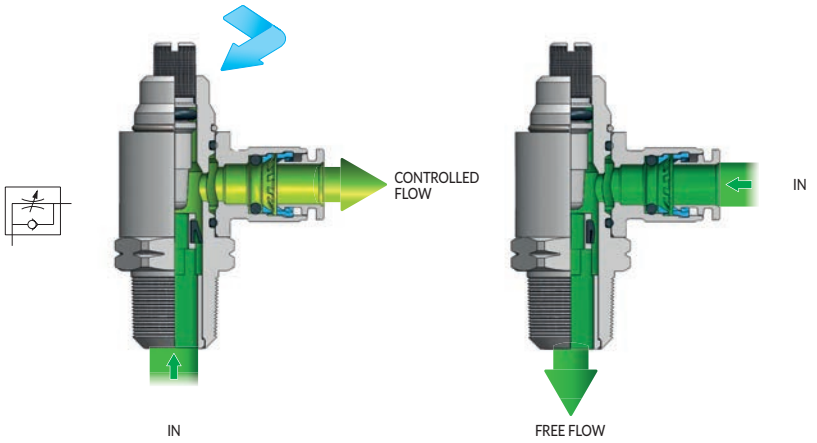
Cmatic's line of function fittings is completed by the PVX series, which offers a wide choice of valves and flow regulators made entirely of AISI 316L stainless steel in compliance with US standards.

INCH/NPT Function Fittings

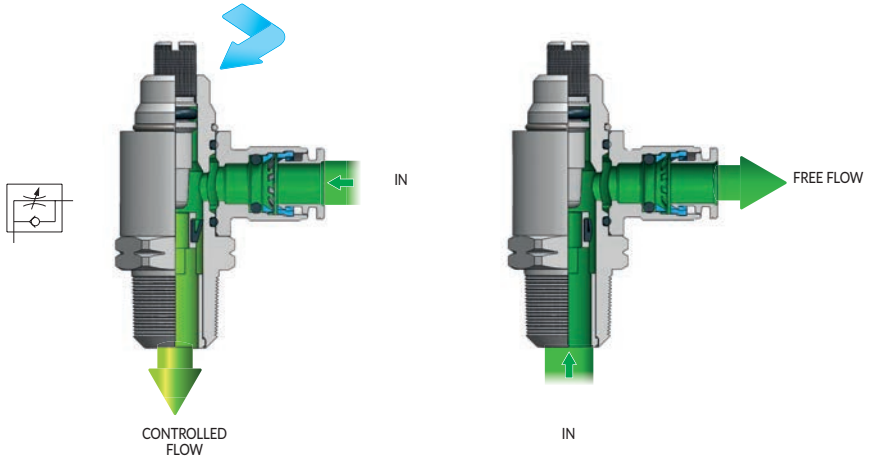
They can adjust the flow in a pneumatic circuit. Depending on the flow control used, the setting can be made both ways (Bidirectional Flow Control), or just one way (Unidirectional Flow Control). The Unidirectional Flow Control is particularly used to adjust the speed of pneumatic cylinders.

## Possible Flow Adjustments

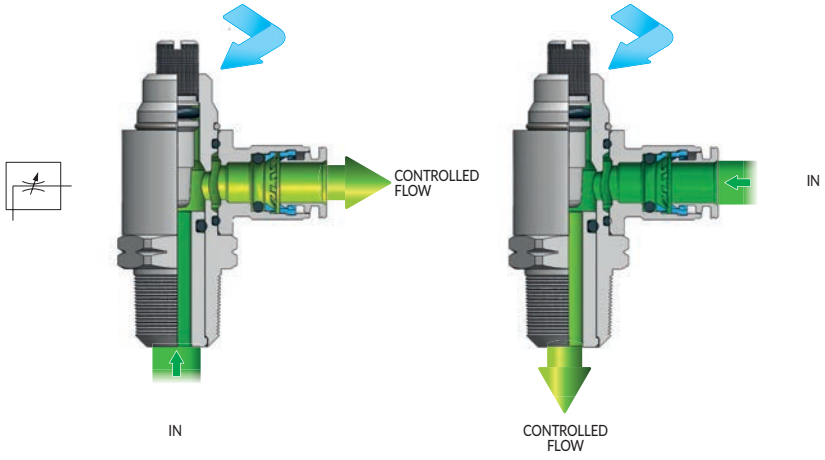
**.../O** = Meter out flow control




**.../I** = Meter in flow control




**.../B** = Bidirectional flow control



# PVX 18

Flow control with swivelling push-in fitting

1 Body — Stainless steel AISI 316L (1.4404)

2 Needle

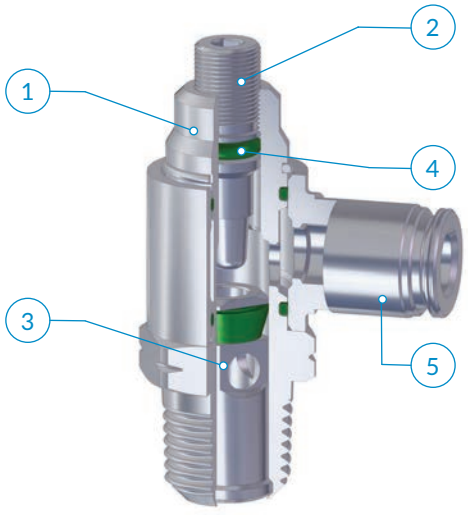
3 Cartridge

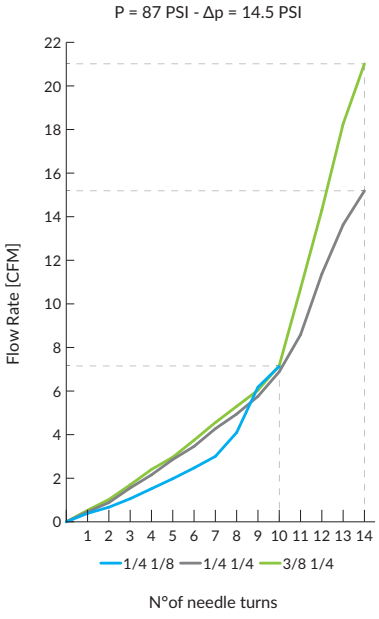
4 Seals — FPM

5 Push-in fittings — PX line push-in fittings

-4° ÷ 302°F

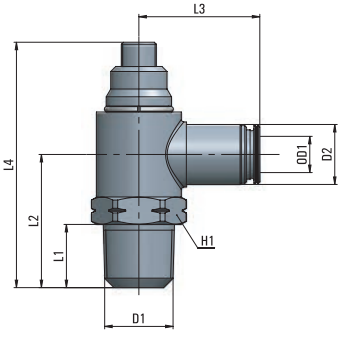
0 ÷ 145 PSI




The banjo ring swivels also after flow control installation.

| Type | OD1 | D1 | D2 | L1 | L2 | L3 | L4 max | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 18 1/4 1/8 | 1/4 | 1/8 NPTF | .472 | .319 | .831 | .886 | 1.610 | 9/16 | 1.235 |
| 18 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .500 | 1.051 | .945 | 1.933 | 11/16 | - |
| 18 3/8 1/4 | 3/8 | 1/4 NPTF | .630 | .500 | 1.051 | 1.063 | 1.933 | 11/16 | - |




Available as:

.../O = Meter Out

.../I = Meter In

.../B = Bidirectional

**Recommended tubings:**
PVDF and PTFE tub ngs.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

# PVX 23

Check valve

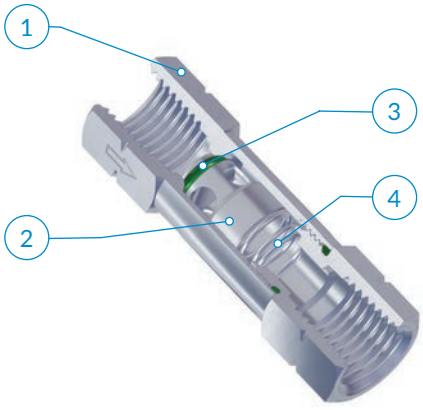
1 Body — Stainless steel AISI 316L (1.4404)

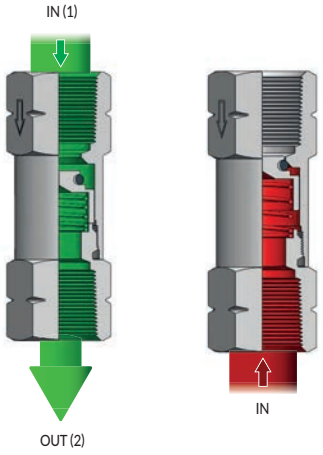
2 Valve

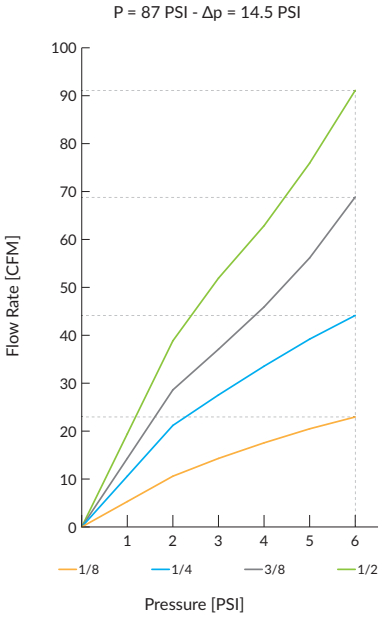
3 Seals — FPM

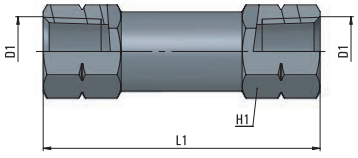
4 Spring — Stainless steel AISI 302

-4° ÷ 302°F | 29 ÷ 145 PSI | 2.9 PSI




| Type | D1 | L1 | H1 | oz |
|---|---|---|---|---|
| 23 00 1/8 | 1/8 NPTF | 1.681 | .512 | - |
| 23 00 1/4 | 1/4 NPTF | 2.165 | .630 | - |
| 23 00 3/8 | 3/8 NPTF | 2.244 | .787 | - |
| 23 00 1/2 | 1/2 NPTF | 2.559 | .945 | 3.930 |

The flow is allowed only in one way (the arrow direction engraved on the body) and stopped in the reverse way.

**Recommended tubings:**
According to the fitting connected to the flow control.

**Application field:**
Pneumatic installations fed with filtered, lubricated air.

# PVX 11



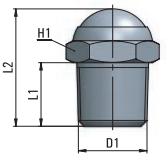
Air mufflers

| | Body | Muffler | | |
|---|---|---|---|---|
| PVX11-FE | Stainless Steel AISI 304 | Stainless Steel AISI 304 | 0 ÷ 174 PSI | 14° ÷ 302°F |

## PVX 11

Air muffler with stainless steel wire

| Type | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|
| 11 00 1/8-FE | 1/8 NPT | .295 | .650 | .512 | .212 |
| 11 00 1/4-FE | 1/4 NPT | .394 | .807 | .630 | .420 |
| 11 00 3/8-FE | 3/8 NPT | .433 | .866 | .748 | .706 |
| 11 00 12-FE | 1/2 NPT | .512 | 1.024 | .945 | .953 |

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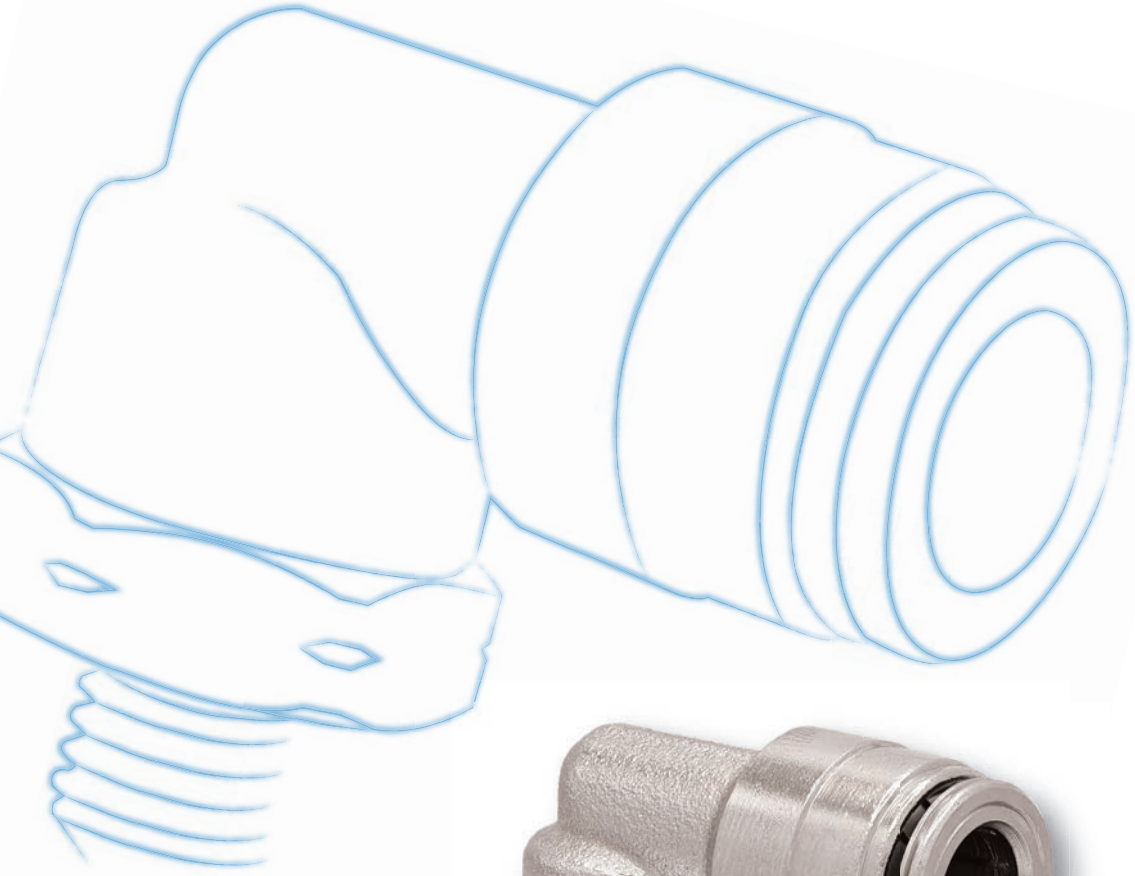
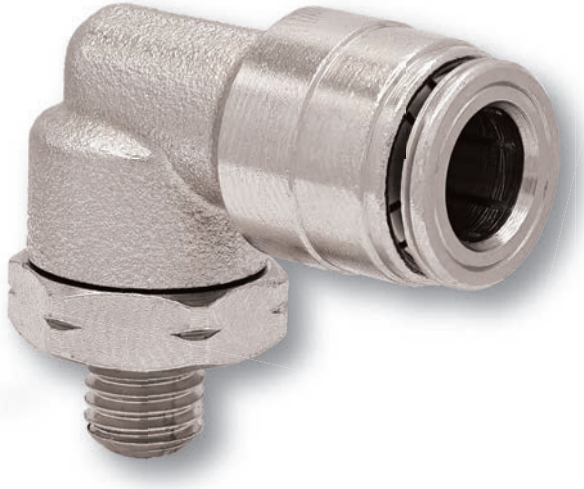
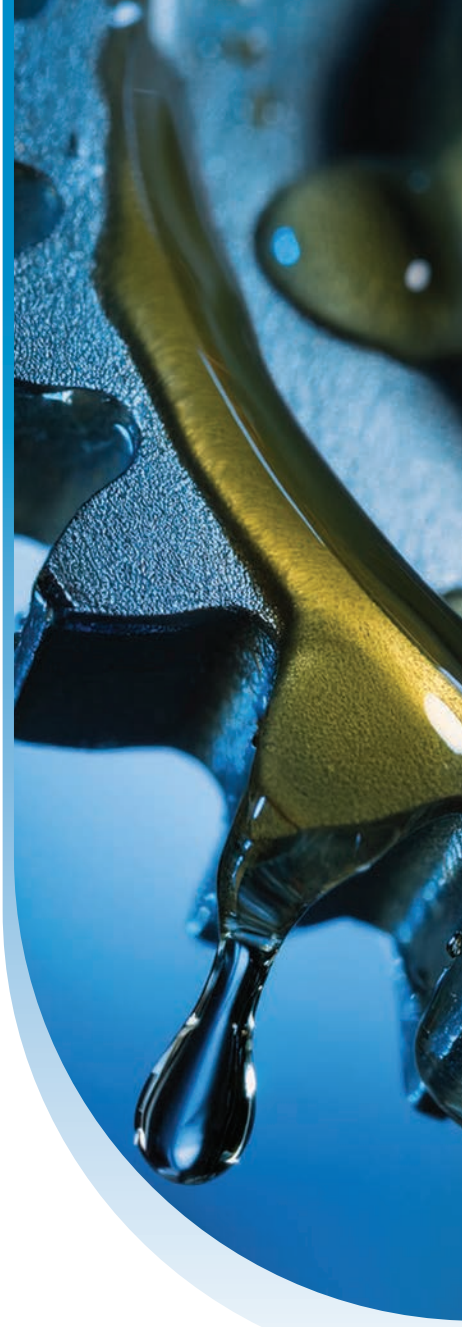






# PM LINE

## Medium Pressure Push-in Fittings, 1,160 PSI Inch/NPTF

The push-in fittings of the PM line are available in inch sizes and NPTF threads. They are conceived for high pressure rated in central grease applications up to 1,160 PSI.

# PM Line

1 Body

Brass UNI EN 12164 CW614N - UNI EN 12165 CW617N, nickel plated

2 Gripping collet

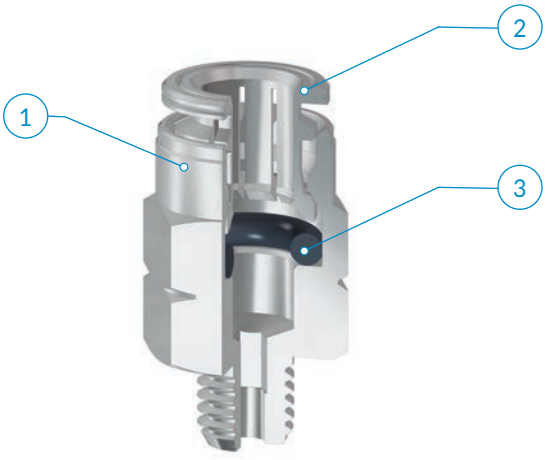
Brass UNI EN 12164 CW614N, nickel plated

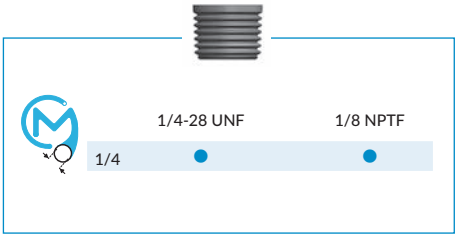
3 Seals

NBR

-4° ÷ 176°F

Max 1,160 PSI



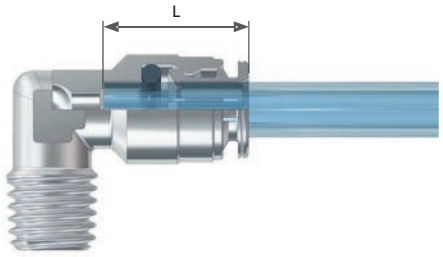

**Recommended tubings:**
PA66, PA12 HR

**Acceptable Tolerances on the tubings:**
+/– .003 up to Ø 1/4

**Application fields:**
Lubrication installations

The max pressure rate achievable can vary depending on the tubing used and on the room temperature. These two factors may in fact lower the tube bursting pressure.

## Tubing insertion depth



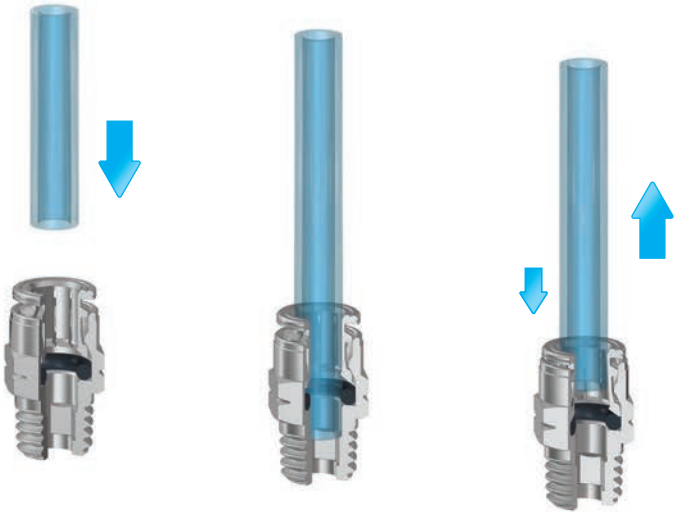

| OD | L |
|---|---|
| 1/4 | .669 |

## ASSEMBLY INSTRUCTIONS

1
Cut the tube square (by means of a hose cutter i.e. our TCUT) making sure that no burrs are left and that the tube is not oval.

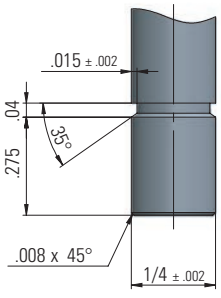
2
Insert the tube into the fitting until it bottoms.

**Tube release**
While pressing on the release ring, pull out the tube from the fitting.



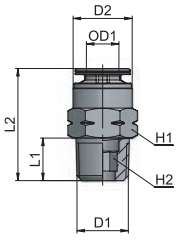
Once the tubing is connected to the fitting, make sure that the tubing is not subject to any tensile strength and that the min. recommended bending radius stated in the tubing section of this catalogue is complied with (see page 136).
To prevent any accidental tube release, no components have to come in touch with the release ring and exercise any unwanted pressure on the same. Indeed however lateral, any load on the release ring may cause the tube disconnection.
To tighten threads, please check out our tightening torque chart illustrated at page 6.

If a metal stem is connected to the fitting, the stem has to be manufactured according to the profile and sizes as set forth below. Should the fitting be connected to a metal stem not complying to the technical features recommended, the fitting may get irreversibly damaged and its function would no longer be guaranteed.



## PM 11

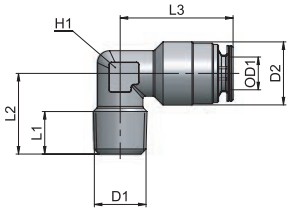
Taper straight, male




| Type | OD1 | D1 | D2 | L1 | L2 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|
| **11 1/4 1/8** | **1/4** | **1/8** NPTF | .465 | .335 | .866 | 12 | 5 | .330 |
| **11 1/4 1/4-28** | **1/4** | **1/4-28** UNF | .465 | .236 | .945 | 12 | 2,5 | .385 |

## PM 14

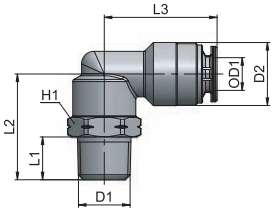
Taper elbow fitting, male




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| **14 1/4 1/8** | **1/4** | **1/8** NPTF | .492 | .331 | .630 | .866 | 10 | .532 |
| **14 1/4 1/4-28** | **1/4** | **1/4-28** UNF | .492 | .276 | .591 | .591 | 10 | .527 |

## PM 15

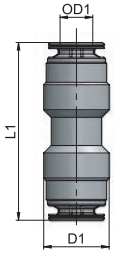
Taper swivelling elbow fitting, male




| Type | OD1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| **15 1/4 1/8** | **1/4** | **1/8** NPTF | .492 | .335 | .827 | .866 | 13 | .860 |
| **15 1/4 1/4-28** | **1/4** | **1/4-28** UNF | .492 | .236 | .728 | .866 | 13 | .754 |

## PM 26

Union




| Type | OD1 | D1 | L1 | oz |
|---|---|---|---|---|
| **26 1/4 1/4** | **1/4** | .512 | 1.358 | .596 |

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# MM LINE

## Misting Push-in Fittings, 1,160 PSI Inch/NPTF

MM is a misting fittings line.
Cmatic are now using all their know-how and experience in high pressure connections for a completely new purpose. To create “Misting”.
Water at 1,160 PSI pressure is channelled through hoses and sprayed by nozzles as millions of very fine mist drops, creating a refreshing effect all around a specific area.
Misting, as a cost effective, energy saving and non polluting technique is used both in industrial and commercial fields to control odours and humidity, to set dusts, to cool down indoor and outdoor temperatures.

# MM Line

1 Body

Brass UNI EN 12164 CW614N - UNI EN 12165 CW617N, nickel plated

2 Gripping ring

Brass UNI EN 12164 CW614N, nickel plated

3 Seals

NBR

-4° ÷ 176°F

Max 1,160 PSI

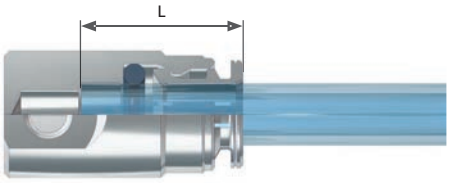

| | 1/4 NPTF | 3/8 NPTF | 1/2 NPTF | G1/4 |
|---|---|---|---|---|
| 1/4 | ● | | | ● |
| 3/8 | ● | ● | | ● |
| 1/2 | | | ● | |

**Recommended tubings:**
PA12 HR

**Acceptable Tolerances on the tubings:**
+/– .003 up to Ø 3/8”
+/– .004 up to Ø 1/2”

**Application fields:**
Misting circuits

## Tubing insertion depth




| OD | L |
|---|---|
| 1/4 | .669 |
| 3/8 | .728 |
| 1/2 | .803 |

## ASSEMBLY INSTRUCTIONS

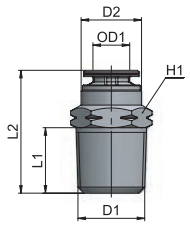
1. Cut the tube square (by means of a hose cutter i.e. our TCUT) making sure that no burrs are left and that the tube is not oval.
2. Insert the tube into the fitting until it bottoms.

**Tube release**
While pressing on the release ring, pull out the tube from the fitting.

Once the tubing is connected to the fitting, make sure that the tubing is not subject to any tensile strength and that the min. recommended bending radius stated in the tubing section of this catalogue is complied with (see page 136).
To prevent any accidental tube release, no components have to come in touch with the release ring and exercise any unwanted pressure on the same. Indeed however lateral, any load on the release ring may cause the tube disconnection.
To tighten threads, please check out our tightening torque chart illustrated at page 6.

## MM 11

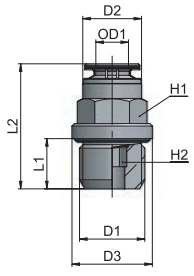
Taper straight, male




| Type | OD1 | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|---|
| 11 1/4 1/4 | 1/4 | 1/4 NPTF | .472 | .512 | .965 | 14 | .586 |
| 11 3/8 1/4 | 3/8 | 1/4 NPTF | .622 | .512 | 1.142 | 16 | .688 |
| 11 3/8 3/8 | 3/8 | 3/8 NPTF | .630 | .512 | 1.102 | 18 | 1.063 |
| 11 1/2 1/2 | 1/2 | 1/2 NPTF | .748 | .669 | 1.299 | 22 | 1.863 |

## MM 12

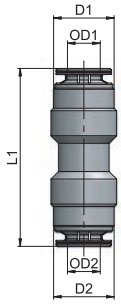
Parallel straight, male




| Type | OD1 | D1 | D2 | D3 | L1 | L2 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 12 1/4 G1/4 | 1/4 | G1/4 | .461 | .630 | .394 | .980 | 12 | 5 | .558 |
| 12 3/8 G1/4 | 3/8 | G1/4 | .622 | .650 | .394 | 1.228 | 15 | 7 | .766 |

## MM 26

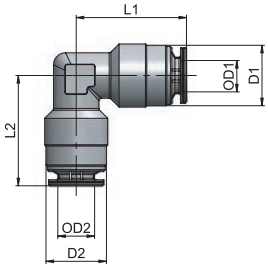
Union




| Type | OD1 | OD2 | D1 | D2 | L1 | oz |
|---|---|---|---|---|---|---|
| 26 1/4 1/4 | 1/4 | 1/4 | .472 | .472 | 1.398 | .600 |
| 26 1/4 3/8 | 1/4 | 3/8 | .472 | .630 | 1.476 | .851 |
| 26 3/8 3/8 | 3/8 | 3/8 | .630 | .630 | 1.520 | .946 |
| 26 3/8 1/2 | 3/8 | 1/2 | .669 | .768 | 1.626 | 1.351 |
| 26 1/2 1/2 | 1/2 | 1/2 | .768 | .768 | 1.693 | 1.408 |

## MM 28

Union elbow

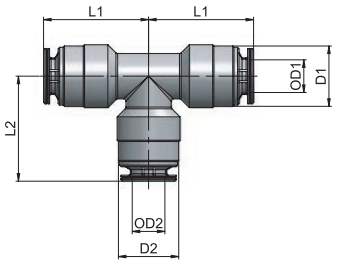



| Type | OD1 | OD2 | D1 | D2 | L1 | L2 | oz |
|---|---|---|---|---|---|---|---|
| 28 1/4 1/4 | 1/4 | 1/4 | .472 | .472 | .866 | .866 | .635 |
| 28 3/8 3/8 | 3/8 | 3/8 | .630 | .630 | 1.004 | 1.004 | 1.239 |
| 28 1/2 1/2 | 1/2 | 1/2 | .768 | .768 | 1.161 | 1.161 | 2.043 |

## MM 29

Union T

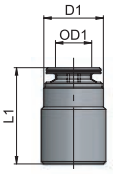
| Type | OD1 | OD2 | D1 | D2 | L1 | L2 | oz |
|---|---|---|---|---|---|---|---|
| 29 1/4 1/4 | 1/4 | 1/4 | .472 | .472 | .827 | .827 | .822 |
| 29 3/8 3/8 | 3/8 | 3/8 | .630 | .630 | .984 | .984 | 1.674 |
| 29 1/2 3/8 | 1/2 | 3/8 | .768 | .630 | 1.122 | 1.063 | 2.561 |
| 29 1/2 1/2 | 1/2 | 1/2 | .768 | .768 | 1.122 | 1.122 | 2.579 |




## MM 40

Terminal

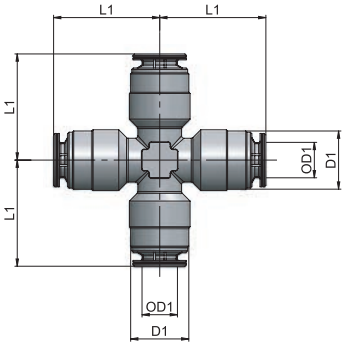
| Type | OD1 | D1 | L1 | oz |
|---|---|---|---|---|
| 40 00 1/4 | 1/4 | .472 | .768 | .420 |
| 40 00 3/8 | 3/8 | .630 | .846 | .699 |
| 40 00 1/2 | 1/2 | .768 | .965 | 1.034 |




## MM 46

Cross fitting

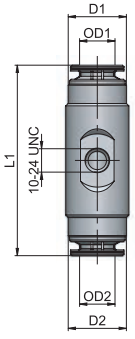
| Type | OD1 | D1 | L1 | oz |
|---|---|---|---|---|
| 46 1/4 1/4 | 1/4 | .472 | .866 | 1.468 |
| 46 3/8 3/8 | 3/8 | .630 | 1.004 | 2.152 |




## MM 60

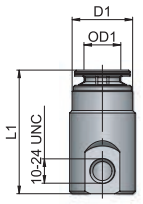
Union with nozzle port

| Type | OD1 | OD2 | D1 | D2 | L1 | oz |
|---|---|---|---|---|---|---|
| 60 1/4 1/4 | 1/4 | 1/4 | .472 | .472 | 1.555 | .819 |
| 60 3/8 3/8 | 3/8 | 3/8 | .630 | .630 | 1.732 | 1.457 |



## MM 61

Terminal with nozzle port




| Type | OD1 | D1 | L1 | oz |
|---|---|---|---|---|
| 61 00 1/4 | 1/4 | .472 | .965 | .562 |
| 61 00 3/8 | 3/8 | .630 | 1.043 | .896 |

## MM 99

Nozzle

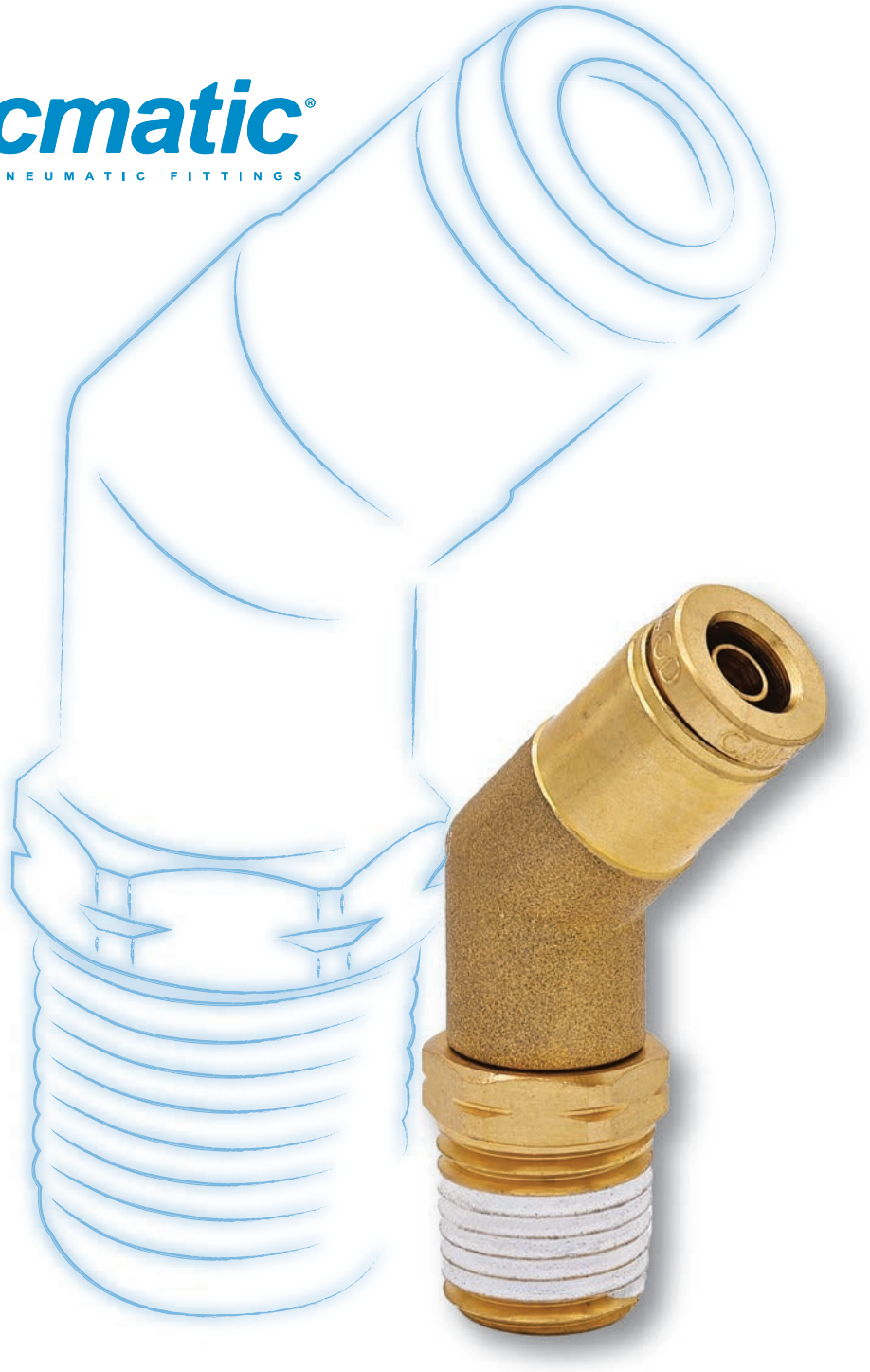

| Type | D1 | D2 | oz |
|---|---|---|---|
| 99 10-24 ø0,15 | 10-24 UNF | .006 | .350 |
| 99 10-24 ø0,20 | 10-24 UNF | .008 | .350 |
| 99 10-24 ø0,30 | 10-24 UNF | .012 | .350 |
| 99 10-24 ø0,40 | 10-24 UNF | .016 | .350 |

The nozzles with hole 0.15 and 0.20 are generally used for cooling purposes (both in civil and in animal applications), while 0.30 and 0.40 are used primarily for dust, odors suppression and for moisturizing.

Water flow rate per nozzle size and water pressure

| orifice size in mm | 35 bar 500 psi | 45 bar 640 psi | **70 bar 1000 psi** | 84 bar 1200 psi | |
|---|---|---|---|---|---|
| .006 | 0,0330<br>0,0087 | 0,0380<br>0,0100 | **0,0460<br>0,0122** | 0,0510<br>0,0133 | l/min<br>USGpm |
| .008 | 0,0568<br>0,0153 | 0,0643<br>0,0175 | **0,0787<br>0,0208** | 0,0980<br>0,0258 | l/min<br>USGpm |
| .012 | 0,0790<br>0,0205 | 0,0867<br>0,0235 | **0,1080<br>0,0290** | 0,1590<br>0,0420 | l/min<br>USGpm |
| .0160 | 0,1048<br>0,0282 | 0,1190<br>0,0322 | **0,1483<br>0,0398** | 0,1950<br>0,0515 | l/min<br>USGpm |

cmatic®
PNEUMATIC FITTINGS



# PT LINE

## DOT Push-in Fittings, Inch/NPTF

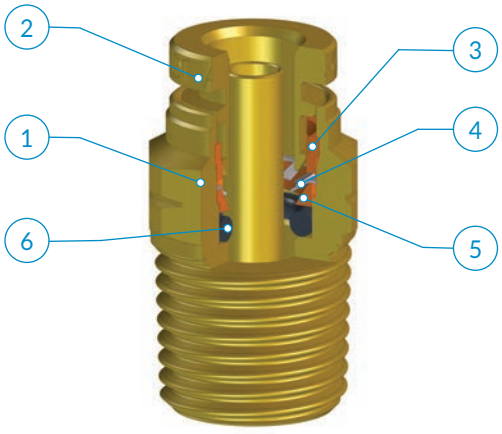
Push in fittings for Vehicles applications complying with SAE J2494-4 and SAE J1131 specs.
Cmatic PT Line is designed for use on all pneumatic circuits and assemblies except between the frame and axle, or between a towed and towing vehicle. PT also complies with DOT FMVSS §517.106 standard.

# PT Line

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Body | 2 | Release ring | 3 | Holding ring | | 4 | Gripping ring | 5 | Protection ring | | 6 | Seals |
| | Brass UNI EN 12164 CW614N - UNI EN 12165 CW617N | | | | Resin | (PEI) | | Stainless steel AISI 301 | | Resin | (PEI) | | NBR (Low temperature) |

OD1 5/8; OD1 3/4

-55° ÷ 212°F | Max 290 PSI | Max 200 PSI | -29″ Hg

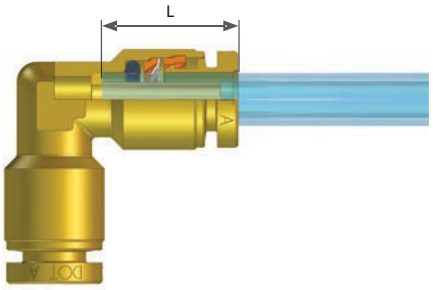



| | 1/8 NPTF | 1/4 NPTF | 3/8 NPTF | 1/2 NPTF | 3/4 NPTF |
|---|---|---|---|---|---|
| 5/32 | ● | ● | | | |
| 1/4 | ● | ● | ● | | |
| 3/8 | ● | ● | ● | ● | |
| 1/2 | | ● | ● | ● | |
| 5/8 | | | ● | ● | ● |
| 3/4 | | | ● | ● | ● |

**Recommended tubings:**
PA Tubings complying with SAE (DOT).

**Application fields:**
Application Fields: Pneumatic circuits for truck and Trailers: Air Suspension, Braking Systems, Transmissions, locking doors and windows, Seat adjustment, Instrumentation, Air conditioning systems, horn, wiper motors, valves, cylinders and accessories.
PT line is suitable for all air assisted applications except those designed for use between frame and axle or between towed and towing vehicles.

## Tubing insertion depth

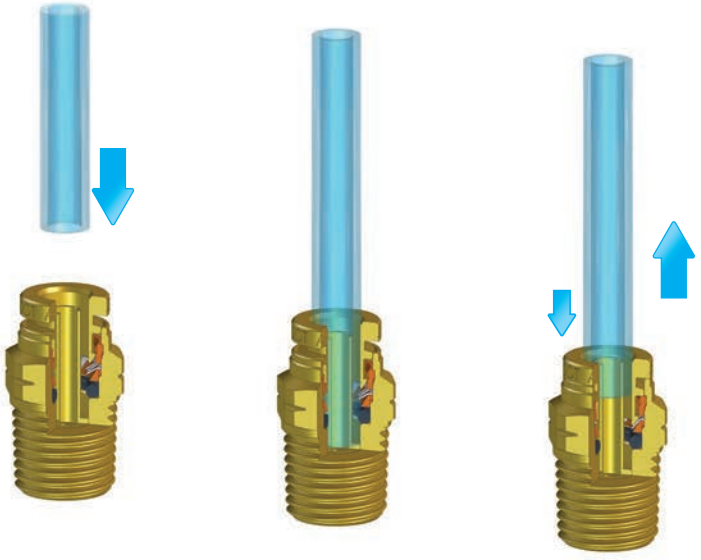



| OD | L |
|---|---|
| 5/32 | .547 |
| 1/4 | .641 |
| 3/8 | .720 |
| 1/2 | .775 |
| 5/8 | .917 |
| 3/4 | .988 |

## ASSEMBLY INSTRUCTIONS

1. Cut the tube square (by means of a hose cutter i.e. our TCUT) making sure that no burrs are left and that the tube is not oval.
2. Insert the tube into the fitting until it bottoms.

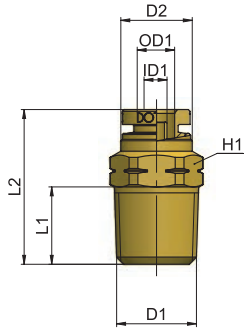
**Tube release**
While pressing on the release ring, pull out the tube from the fitting.



Once the tubing is connected to the fitting, make sure that the tubing is not subject to any tensile strength and that the min. recommended bending radius stated in the tubing section of this catalogue is complied with (see page 136).
To prevent any accidental tube release, no components have to come in touch with the release ring and exercise any unwanted pressure on the same. Indeed however lateral, any load on the release ring may cause the tube disconnection.
To tighten threads, please check out our tightening torque chart illustrated at page 6.

## PT 11

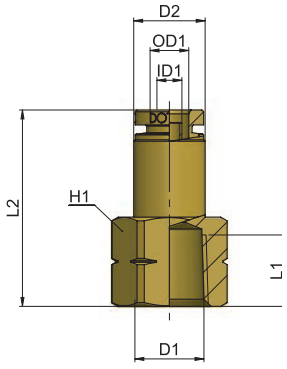
Taper straight, male




| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 11 5/32 1/8 | 5/32 | .087 | 1/8 NPTF | .374 | .335 | .827 | 7/16 | .347 |
| 11 5/32 1/4 | 5/32 | .087 | 1/4 NPTF | .374 | .512 | 1.004 | 9/16 | .745 |
| 11 1/4 1/8 | 1/4 | .165 | 1/8 NPTF | .472 | .335 | .925 | 1/2 | .415 |
| 11 1/4 1/4 | 1/4 | .165 | 1/4 NPTF | .472 | .512 | 1.024 | 9/16 | .700 |
| 11 1/4 3/8 | 1/4 | .165 | 3/8 NPTF | .472 | .512 | 1.063 | 11/16 | 1.179 |
| 11 3/8 1/8 | 3/8 | .244 | 1/8 NPTF | .630 | .335 | 1.161 | 11/16 | .847 |
| 11 3/8 1/4 | 3/8 | .244 | 1/4 NPTF | .630 | .512 | 1.299 | 11/16 | 1.076 |
| 11 3/8 3/8 | 3/8 | .244 | 3/8 NPTF | .630 | .512 | 1.043 | 11/16 | 1.003 |
| 11 3/8 1/2 | 3/8 | .244 | 1/2 NPTF | .630 | .669 | 1.240 | 7/8 | 2.128 |
| 11 1/2 1/4 | 1/2 | .362 | 1/4 NPTF | .787 | .512 | 1.406 | 13/16 | 1.424 |
| 11 1/2 3/8 | 1/2 | .362 | 3/8 NPTF | .787 | .512 | 1.209 | 13/16 | 1.229 |
| 11 1/2 1/2 | 1/2 | .362 | 1/2 NPTF | .787 | .669 | 1.248 | 7/8 | 1.794 |
| 11 5/8 3/8 | 5/8 | .433 | 3/8 NPTF | .925 | .512 | 1.555 | 1 | 2.417 |
| 11 5/8 1/2 | 5/8 | .433 | 1/2 NPTF | .925 | .669 | 1.496 | 1 | 2.223 |
| 11 3/4 3/8 | 3/4 | .559 | 3/8 NPTF | 1.043 | .512 | 1.713 | 1 1/16 | 2.577 |
| 11 3/4 1/2 | 3/4 | .559 | 1/2 NPTF | 1.043 | .669 | 1.791 | 1 1/16 | 3.029 |
| 11 3/4 3/4 | 3/4 | .559 | 3/4 NPTF | 1.043 | .669 | 1.535 | 1 1/16 | 3.112 |

## PT 13

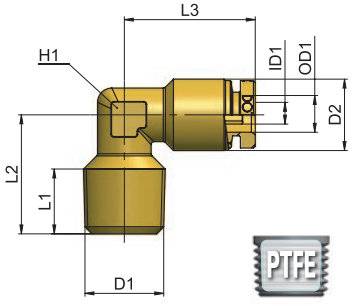
Female straight




| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|---|---|
| 13 5/32 1/8 | 5/32 | .087 | 1/8 NPTF | .374 | .335 | 1.043 | 1/2 | .425 |
| 13 1/4 1/8 | 1/4 | .165 | 1/8 NPTF | .472 | .335 | 1.122 | 1/2 | .565 |
| 13 1/4 1/4 | 1/4 | .165 | 1/4 NPTF | .472 | .472 | 1.299 | 11/16 | 1.006 |
| 13 3/8 1/4 | 3/8 | .165 | 1/4 NPTF | .630 | .472 | 1.378 | 11/16 | .775 |
| 13 3/8 3/8 | 3/8 | .244 | 3/8 NPTF | .630 | .492 | 1.378 | 13/16 | 1.422 |
| 13 3/8 1/2 | 3/8 | .244 | 1/2 NPTF | .630 | .531 | 1.516 | 1 | 2.191 |
| 13 1/2 1/4 | 1/2 | .362 | 1/4 NPTF | .787 | .472 | 1.386 | 13/16 | 1.998 |
| 13 1/2 3/8 | 1/2 | .362 | 3/8 NPTF | .787 | .492 | 1.445 | 13/16 | 1.826 |
| 13 1/2 1/2 | 1/2 | .362 | 1/2 NPTF | .787 | .531 | 1.543 | 1 | 2.435 |

## PT 14

Taper elbow fitting, male




| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 14 5/32 1/8 | 5/32 | .087 | 1/8 NPTF | .374 | .331 | .630 | .748 | 10 | .425 |
| 14 1/4 1/8 | 1/4 | .165 | 1/8 NPTF | .472 | .331 | .630 | .866 | 10 | .517 |
| 14 1/4 1/4 | 1/4 | .165 | 1/4 NPTF | .472 | .433 | .787 | .866 | 10 | .658 |
| 14 3/8 1/4 | 3/8 | .244 | 1/4 NPTF | .630 | .472 | .886 | 1.024 | 14 | 1.147 |
| 14 3/8 3/8 | 3/8 | .244 | 3/8 NPTF | .630 | .433 | .886 | 1.024 | 14 | 1.259 |

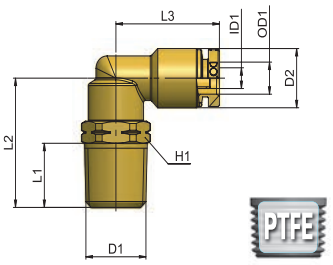
COMING SOON

| |
|---|
| 14 5/8 3/8 |
| 14 5/8 1/2 |
| 14 3/8 1/2 |
| 14 1/2 1/4 |
| 14 1/2 1/2 |
| 14 1/2 3/8 |

## PT 15

Taper swivelling elbow fitting, male

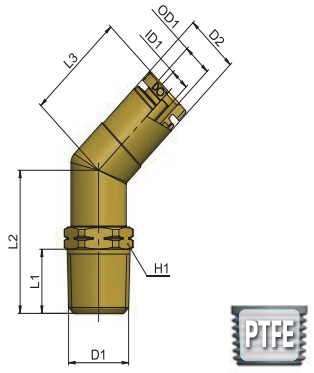
| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 15 5/32 1/8 | 5/32 | .087 | 1/8 NPTF | .354 | .335 | .728 | .748 | 7/16 | .653 |
| 15 5/32 1/4 | 5/32 | .087 | 1/4 NPTF | .354 | .512 | 1.031 | .827 | 9/16 | .854 |
| 15 1/4 1/8 | 1/4 | .165 | 1/8 NPTF | .472 | .335 | .835 | .925 | 1/2 | .741 |
| 15 1/4 1/4 | 1/4 | .165 | 1/4 NPTF | .472 | .512 | 1.031 | .925 | 9/16 | .918 |
| 15 1/4 3/8 | 1/4 | .165 | 3/8 NPTF | .472 | .512 | 1.051 | .925 | 11/16 | 1.142 |
| 15 3/8 1/8 | 3/8 | .244 | 1/8 NPTF | .630 | .335 | .945 | 1.063 | 11/16 | 1.462 |
| 15 3/8 1/4 | 3/8 | .244 | 1/4 NPTF | .630 | .512 | 1.122 | 1.063 | 11/16 | 1.562 |
| 15 3/8 3/8 | 3/8 | .244 | 3/8 NPTF | .630 | .512 | 1.122 | 1.063 | 11/16 | 1.614 |
| 15 3/8 1/2 | 3/8 | .244 | 1/2 NPTF | .630 | .669 | 1.339 | 1.063 | 7/8 | 2.257 |
| 15 1/2 1/4 | 1/2 | .362 | 1/4 NPTF | .787 | .512 | 1.260 | 1.169 | 13/16 | 2.593 |
| 15 1/2 3/8 | 1/2 | .362 | 3/8 NPTF | .787 | .512 | 1.260 | 1.169 | 13/16 | 2.410 |
| 15 1/2 1/2 | 1/2 | .362 | 1/2 NPTF | .787 | .669 | 1.437 | 1.169 | 7/8 | 2.880 |
| 15 5/8 3/8 | 5/8 | .433 | 3/8 NPTF | .945 | .512 | 1.398 | 1.417 | 7/8 | 3.626 |
| 15 5/8 1/2 | 5/8 | .433 | 1/2 NPTF | .945 | .669 | 1.555 | 1.417 | 7/8 | 3.824 |
| 15 5/8 3/4 | 5/8 | .433 | 3/4 NPTF | .945 | .669 | 1.555 | 1.417 | 1 1/16 | 4.406 |
| 15 3/4 3/8 | 3/4 | .559 | 3/8 NPTF | 1.063 | .512 | 1.398 | 1.496 | 7/8 | 4.384 |
| 15 3/4 1/2 | 3/4 | .559 | 1/2 NPTF | 1.063 | .669 | 1.555 | 1.496 | 7/8 | 4.585 |
| 15 3/4 3/4 | 3/4 | .559 | 3/4 NPTF | 1.063 | .669 | 1.555 | 1.496 | 1 1/16 | 5.181 |




## PT 15-45

Swivelling elbow fitting, male 45°

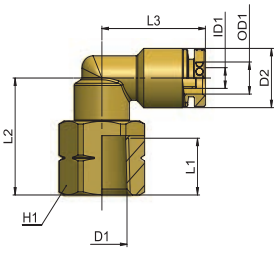
| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 15 1/4 1/8 45° | 1/4 | .165 | 1/8 NPTF | .472 | .335 | .906 | .886 | 1/2 | .943 |
| 15 1/4 1/4 45° | 1/4 | .165 | 1/4 NPTF | .472 | .512 | 1.102 | .886 | 9/16 | 1.132 |
| 15 3/8 1/4 45° | 3/8 | .244 | 1/4 NPTF | .630 | .512 | 1.142 | 1.024 | 11/16 | 1.881 |
| 15 3/8 3/8 45° | 3/8 | .244 | 3/8 NPTF | .630 | .512 | 1.161 | 1.024 | 11/16 | 1.869 |
| 15 3/8 1/2 45° | 3/8 | .244 | 1/2 NPTF | .630 | .669 | 1.378 | 1.024 | 7/8 | 2.545 |
| 15 1/2 3/8 45° | 1/2 | .362 | 3/8 NPTF | .787 | .512 | 1.260 | 1.130 | 13/16 | 2.749 |
| 15 1/2 1/2 45° | 1/2 | .362 | 1/2 NPTF | .787 | .669 | 1.437 | 1.130 | 7/8 | 3.202 |




## PT 17

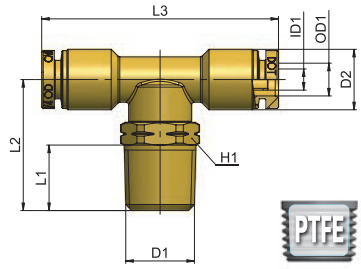
Swivelling elbow fitting, female

| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 17 5/32 1/8 | 5/32 | .087 | 1/8 NPTF | .354 | .295 | .776 | .748 | 9/16 | .795 |
| 17 5/32 1/4 | 5/32 | .087 | 1/4 NPTF | .354 | .453 | .933 | .827 | 11/16 | 1.112 |
| 17 1/4 1/8 | 1/4 | .165 | 1/8 NPTF | .472 | .295 | .776 | .925 | 9/16 | .882 |
| 17 1/4 1/4 | 1/4 | .165 | 1/4 NPTF | .472 | .453 | .933 | .925 | 11/16 | 1.202 |
| 17 3/8 1/4 | 3/8 | .244 | 1/4 NPTF | .630 | .453 | 1.004 | 1.063 | 11/16 | 1.673 |
| 17 3/8 3/8 | 3/8 | .244 | 3/8 NPTF | .630 | .453 | 1.004 | 1.063 | 13/16 | 1.804 |
| 17 1/2 3/8 | 1/2 | .362 | 3/8 NPTF | .787 | .453 | 1.102 | 1.169 | 13/16 | 2.437 |
| 17 1/2 1/2 | 1/2 | .362 | 1/2 NPTF | .787 | .531 | 1.220 | 1.169 | 1 | 3.113 |



## PT 20

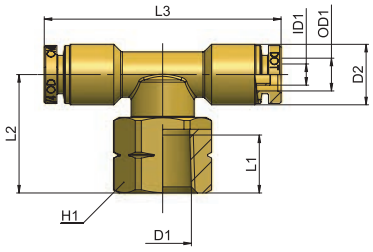
Swivelling T fitting, taper




| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 20 5/32 1/8 | 5/32 | .087 | 1/8 NPTF | .354 | .335 | .835 | 1.654 | 1/2 | .836 |
| 20 5/32 1/4 | 5/32 | .087 | 1/4 NPTF | .354 | .512 | 1.031 | 1.654 | 9/16 | 1.025 |
| 20 1/4 1/8 | 1/4 | .165 | 1/8 NPTF | .472 | .335 | .835 | 1.850 | 1/2 | 1.015 |
| 20 1/4 1/4 | 1/4 | .165 | 1/4 NPTF | .472 | .512 | 1.031 | 1.850 | 9/16 | 1.185 |
| 20 1/4 3/8 | 1/4 | .165 | 3/8 NPTF | .472 | .512 | 1.051 | 1.850 | 11/16 | 1.420 |
| 20 3/8 1/8 | 3/8 | .244 | 1/8 NPTF | .630 | .335 | .945 | 2.126 | 11/16 | 2.024 |
| 20 3/8 1/4 | 3/8 | .244 | 1/4 NPTF | .630 | .512 | 1.122 | 2.126 | 11/16 | 2.111 |
| 20 3/8 3/8 | 3/8 | .244 | 3/8 NPTF | .630 | .512 | 1.122 | 2.126 | 11/16 | 2.159 |
| 20 3/8 1/2 | 3/8 | .244 | 1/2 NPTF | .630 | .669 | 1.339 | 2.126 | 7/8 | 2.159 |
| 20 1/2 1/4 | 1/2 | .362 | 1/4 NPTF | .787 | .512 | 1.260 | 2.339 | 13/16 | 3.372 |
| 20 1/2 3/8 | 1/2 | .362 | 3/8 NPTF | .787 | .512 | 1.260 | 2.339 | 13/16 | 3.184 |
| 20 1/2 1/2 | 1/2 | .362 | 1/2 NPTF | .787 | .669 | 1.437 | 2.339 | 7/8 | 3.635 |

## PT 20-F

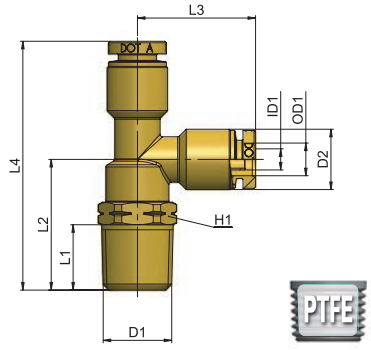
Swivelling T fitting, female




| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 20 1/4 1/4 F | 1/4 | .165 | 1/4 NPTF | .472 | .453 | .933 | 1.850 | 11/16 | 1.475 |
| 20 3/8 1/4 F | 3/8 | .244 | 1/4 NPTF | .630 | .453 | 1.004 | 2.126 | 11/16 | 2.218 |
| 20 3/8 3/8 F | 3/8 | .244 | 3/8 NPTF | .630 | .453 | 1.004 | 2.126 | 13/16 | 2.352 |
| 20 1/2 3/8 F | 1/2 | .362 | 3/8 NPTF | .787 | .453 | 1.102 | 2.339 | 13/16 | 3.240 |
| 20 1/2 1/2 F | 1/2 | .362 | 1/2 NPTF | .787 | .531 | 1.220 | 2.339 | 1 | 3.899 |

## PT 23

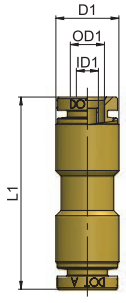
Lateral run T fitting, taper




| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | L4 | H1 | oz |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 5/32 1/8 | 5/32 | .087 | 1/8 NPTF | .354 | .335 | .835 | .827 | 1.654 | 1/2 | .851 |
| 23 5/32 1/4 | 5/32 | .087 | 1/4 NPTF | .354 | .512 | 1.031 | .827 | 1.850 | 9/16 | 1.041 |
| 23 1/4 1/8 | 1/4 | .165 | 1/8 NPTF | .472 | .335 | .835 | .925 | 1.752 | 1/2 | 1.027 |
| 23 1/4 1/4 | 1/4 | .165 | 1/4 NPTF | .472 | .512 | 1.031 | .925 | 1.949 | 9/16 | 1.192 |
| 23 1/4 3/8 | 1/4 | .165 | 3/8 NPTF | .472 | .512 | 1.051 | .925 | 1.969 | 11/16 | 1.434 |
| 23 3/8 1/4 | 3/8 | .244 | 1/4 NPTF | .630 | .512 | 1.122 | 1.063 | 2.185 | 11/16 | 1.923 |
| 23 3/8 3/8 | 3/8 | .244 | 3/8 NPTF | .630 | .512 | 1.122 | 1.063 | 2.185 | 11/16 | 2.152 |
| 23 3/8 1/2 | 3/8 | .244 | 1/2 NPTF | .630 | .669 | 1.339 | 1.063 | 2.402 | 7/8 | 2.841 |
| 23 1/2 1/4 | 1/2 | .362 | 1/4 NPTF | .787 | .512 | 1.260 | 1.169 | 2.429 | 13/16 | 3.366 |
| 23 1/2 3/8 | 1/2 | .362 | 3/8 NPTF | .787 | .512 | 1.260 | 1.169 | 2.429 | 13/16 | 3.215 |
| 23 1/2 1/2 | 1/2 | .362 | 1/2 NPTF | .787 | .669 | 1.437 | 1.169 | 2.606 | 7/8 | 3.651 |

## PT 26

Union

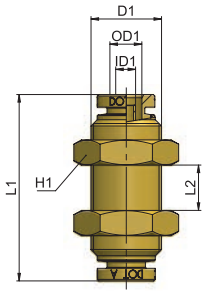



| Type | OD1 | ID1 | D1 | L1 | oz |
|---|---|---|---|---|---|
| 26 5/32 5/32 | 5/32 | .087 | .354 | 1.220 | .299 |
| 26 1/4 1/4 | 1/4 | .165 | .472 | 1.323 | .561 |
| 26 3/8 3/8 | 3/8 | .244 | .630 | 1.520 | 1.112 |
| 26 1/2 1/2 | 1/2 | .362 | .787 | 1.709 | 3.215 |
| 26 5/8 5/8 | 5/8 | .433 | .945 | 2.047 | 2.731 |
| 26 3/4 3/4 | 3/4 | .559 | 1.102 | 2.244 | 3.562 |

## PT 27

Bulkhead union

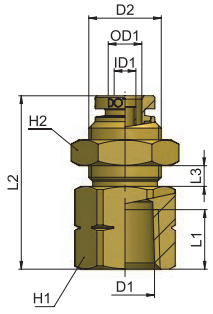
| Type | OD1 | ID1 | D1 | L1 | L2 | H1 | oz |
|---|---|---|---|---|---|---|---|
| 27 5/32 5/32 | 5/32 | .087 | M12x1 | 1.220 | .571 | 18 | .882 |
| 27 1/4 1/4 | 1/4 | .165 | M14x1 | 1.457 | .571 | 18 | 1.217 |
| 27 3/8 3/8 | 3/8 | .244 | M18x1 | 1.614 | .689 | 22 | 2.120 |
| 27 1/2 1/2 | 1/2 | .362 | M22x1,5 | 1.709 | .728 | 26 | 2.970 |
| 27 5/8 5/8 | 5/8 | .433 | M26x1,5 | 2.047 | .866 | 32 | 5.344 |




## PT 27-F

Bulkhead union female

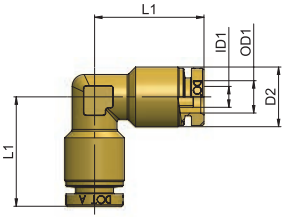
| Type | OD1 | ID1 | D1 | D2 | L1 | L2 | L3 | H1 | H2 | oz |
|---|---|---|---|---|---|---|---|---|---|---|
| 27 5/32 1/4 F | 5/32 | .087 | 1/4 NPTF | M12x1 | .453 | 1.220 | .276 | 11/16 | 16 | 1.135 |
| 27 1/4 1/8 F | 1/4 | .165 | 1/8 NPTF | M14x1 | .295 | 1.122 | .315 | 11/16 | 18 | 1.226 |
| 27 1/4 1/4 F | 1/4 | .165 | 1/4 NPTF | M14x1 | .453 | 1.319 | .315 | 11/16 | 18 | 1.330 |
| 27 3/8 1/4 F | 3/8 | .244 | 1/4 NPTF | M18x1 | .453 | 1.378 | .394 | 7/8 | 22 | 2.397 |
| 27 3/8 3/8 F | 3/8 | .244 | 3/8 NPTF | M18x1 | .453 | 1.417 | .394 | 7/8 | 22 | 2.180 |
| 27 3/8 1/2 F | 3/8 | .244 | 1/2 NPTF | M18x1 | .531 | 1.535 | .394 | 1 | 22 | 2.650 |
| 27 1/2 3/8 F | 1/2 | .362 | 3/8 NPTF | M22x1,5 | .453 | 1.465 | .472 | 1 | 24 | 3.138 |
| 27 1/2 1/2 F | 1/2 | .362 | 1/2 NPTF | M22x1,5 | .531 | 1.583 | .472 | 1 | 24 | 3.006 |




## PT 28

Union elbow

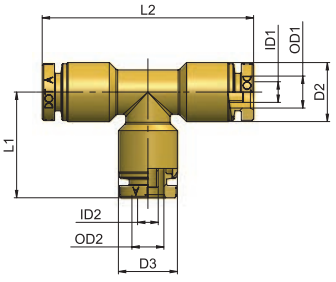
| Type | OD1 | ID1 | D2 | L1 | oz |
|---|---|---|---|---|---|
| 28 5/32 5/32 | 5/32 | .087 | .354 | .748 | .366 |
| 28 1/4 1/4 | 1/4 | .165 | .472 | .866 | .640 |
| 28 3/8 3/8 | 3/8 | .244 | .630 | 1.024 | 1.348 |
| 28 1/2 1/2 | 1/2 | .362 | .787 | 1.110 | 2.162 |
| 28 5/8 5/8 | 5/8 | .433 | .945 | 1.398 | 3.642 |




## PT 29

Union T

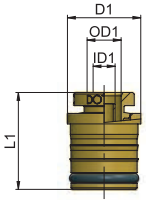
| Type | OD1 | ID1 | OD2 | ID2 | D2 | D3 | L1 | L2 | oz |
|---|---|---|---|---|---|---|---|---|---|
| 29 5/32 5/32 | 5/32 | .087 | 5/32 | .087 | .354 | .354 | .748 | 1.496 | .527 |
| 29 1/4 1/4 | 1/4 | .165 | 1/4 | .165 | .472 | .472 | .846 | 1.693 | .883 |
| 29 3/8 3/8 | 3/8 | .244 | 3/8 | .244 | .630 | .630 | 1.004 | 2.008 | 1.852 |
| 29 3/8 1/4 | 3/8 | .244 | 1/4 | .165 | .630 | .472 | .945 | 2.008 | 1.661 |
| 29 1/2 1/2 | 1/2 | .362 | 1/2 | .362 | .787 | .787 | 1.063 | 2.220 | 2.948 |
| 29 1/2 1/4 | 1/2 | .362 | 1/4 | .165 | .787 | .472 | 1.024 | 2.220 | 2.625 |
| 29 1/2 3/8 | 1/2 | .362 | 3/8 | .244 | .787 | .630 | 1.102 | 2.220 | 2.823 |
| 29 5/8 5/8 | 5/8 | .433 | 5/8 | .433 | .945 | .945 | 1.398 | 2.795 | 5.113 |



# PT 10

## Press-in cartridge

PT10 is Cmatic push in cartridge solution developed for applications where compactness is required and designed to be installed into Aluminum T6061 cavities according to SAE J2494-4 Standard. Cavities made from materials other than T6061 T6 SHALL be adjusted dimensionally so that when installed the tube/cartridge/cavity assembly will pass the applicable tests in SAE J1131 and SAE J2494-3.



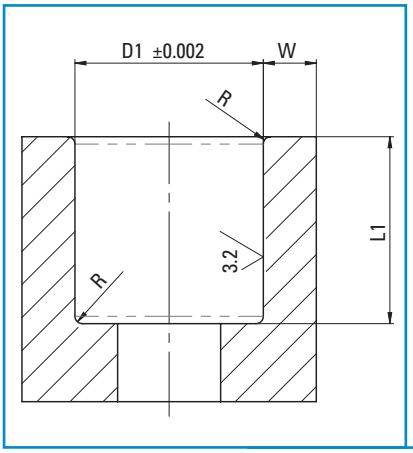

| Type | OD1 | ID1 | D1 | L1 | oz ⚖ |
|---|---|---|---|---|---|
| 10 5/32 00 | 5/32 | .087 | .394 | .677 | .175 |
| 10 1/4 00 | 1/4 | .165 | .551 | .728 | .392 |
| 10 3/8 00 | 3/8 | .244 | .701 | .878 | .772 |

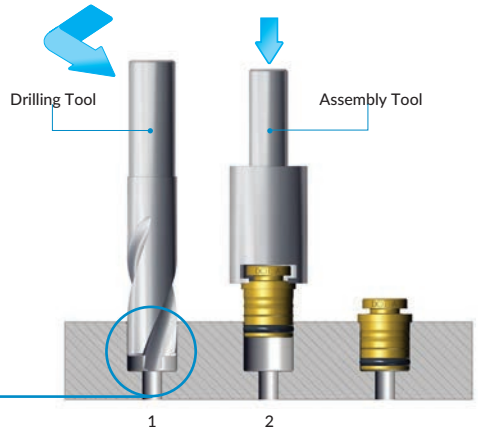
## Cartridge cavity size according to SAE J2494-4

1. Drill the cartridge seat, following the instructions given.
2. Before insert the cartridge into the cavity please apply some lubricant on the external cartridge O-ring.
3. Manually press the cartridge into the seat and by means of the Assembly tool push it all the way down until it bottoms; this will guarantee the proper cartridge assembly.

Drilling and Assembly Tool available upon request.

| Tube OD | D1 | L1 | W | R |
|---|---|---|---|---|
| 5/32 | .346 | .449 | .079 | .020 |
| 1/4 | .504 | .500 | .079 | .020 |
| 3/8 | .650 | .650 | .079 | .020 |



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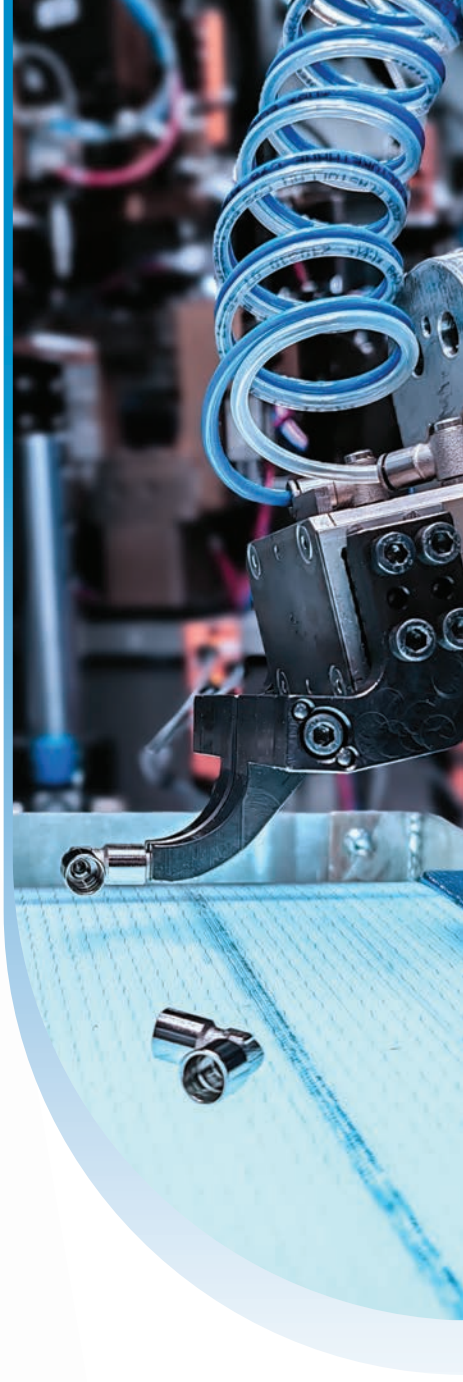


# TOOLS

# TCUT

Hose cutter

1 Body

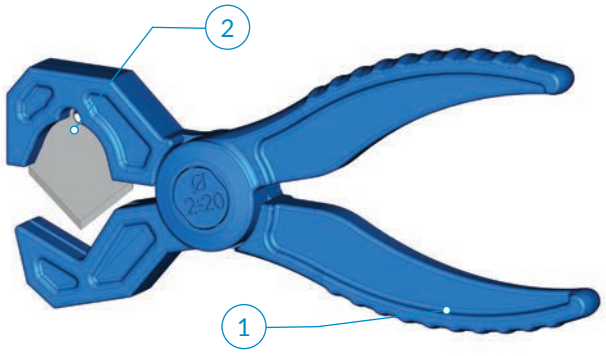
PA 6 - 50% FV

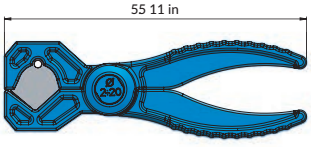
2 Blade

Carbon steel C125

-4 ÷ 122°F

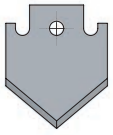
From Ø 1/8″ to Ø 3/4″ max




| Type | Øext Tube | oz |
|---|---|---|
| TCUT0001 | From Ø 1/8″ to Ø 3/4″ | .141 |

Spare Blades



| Type | Øext Tube | oz |
|---|---|---|
| TCUT0101 | From Ø 1/8″ to Ø 3/4″ | .071 |

# TGUN

Ä r blw gun

1 Bd y
POM

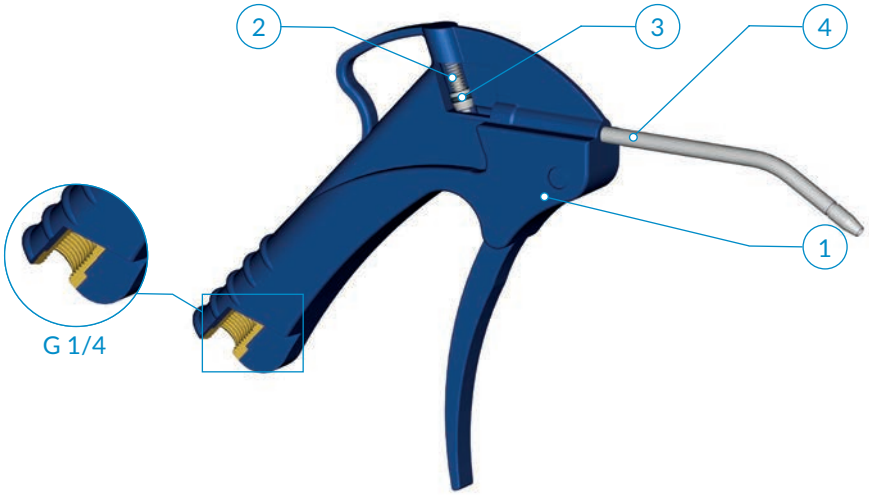
2 Sp ing
Sta nless steel A SI 302

3 Seals
NBR

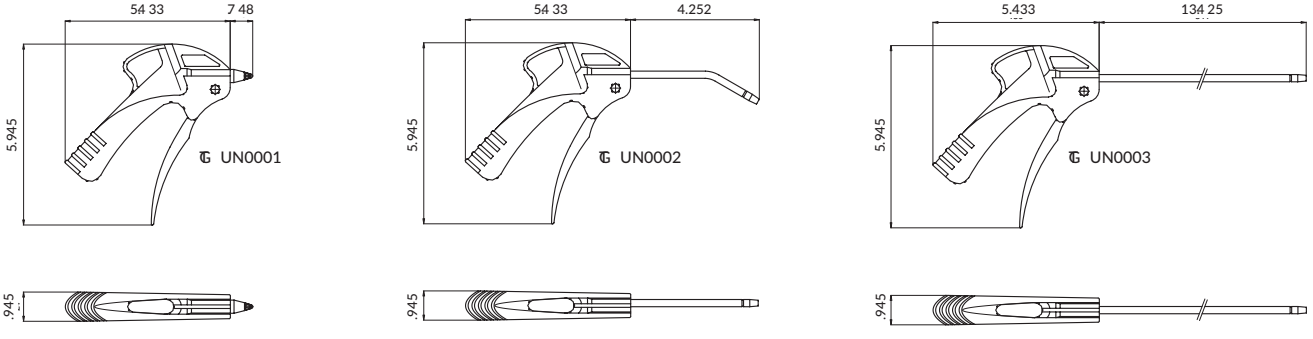
4 Tube
Stainless steel A SI 304

14° ÷ 158°F

Ma 87 PSI




| Type | dB (87 psi) | oz ⚖ |
|---|---|---|
| TGUN0001 | 75,1 | 3.227 |
| TGUN0002 | 79,5 | 4.038 |
| TGUN0003 | 79,2 | 5.467 |



# TINC

Grooving tool for metal tubings

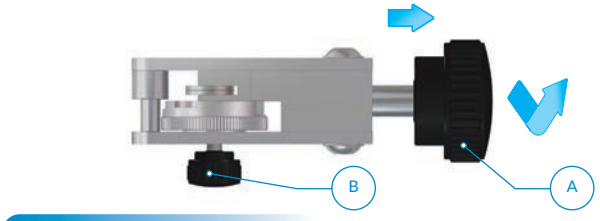
## INSTRUCTIONS FOR USE

1
Pull back the tool blade by loosening the knob (A).

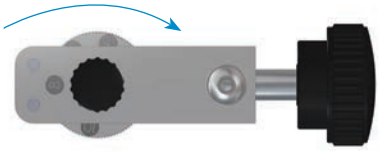
2
Untighten the knob (B) and turn the numbered wheel to select the desired tube size. Once the tube size is selected, firmly tighten the knob (B) until the desired tubing size is blocked.

3
Insert the tubing into the hole, all the way down through the internal wheels, until it bottoms; tighten the knob (A) until the blade is against the tubing and keep turning the knob firmly in order to groove the surface of the tubing.

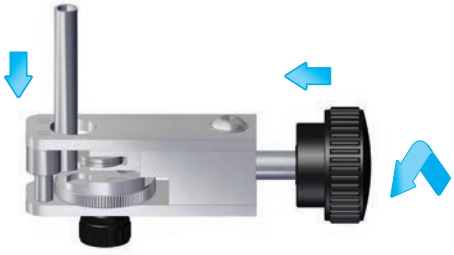
4
Hold the tubing tight and make the tool turn all around the tubing as many times as the desired groove on the tubing is achieved.




1



2



3

4

# TOOLS



## DRILLING TOOL

Drilling tb

| Type | Lie | Ø Tub | oz ⚖ |
|---|---|---|---|
| TOOL0001 | MA-MB | 4 - 5/32 | 32 39 |
| TOOL0002 | MA-MB | 6 | 38 81 |
| TOOL0003 | MA-MB | 8 - 5/16 | 40 46 |
| TOOL0004 | MA-MB | 10 | 47 17 |
| TOOL0005 | PN | 1/4 | 36 87 |
| TOOL0006 | PN | 3/8 | 42 69 |
| TOOL0011 | PT | 5/32 | - |
| TOOL0012 | PT | 1/4 | - |
| TOOL0013 | PT | 3/8 | - |

## ASSEMBLY TOOL

A seb n ly tb

| Type | Lie | Ø Tub | oz ⚖ |
|---|---|---|---|
| TOOL007 | MA-PN | 4 - 5/32 | 18 44 |
| TOOL008 | MA-PN | 6 - 1/4 | 24 23 |
| TOOL009 | MA-PN | 8 - 5/16 | 28 64 |
| TOOL010 | MA-PN | 10 - 3/8 | 32 98 |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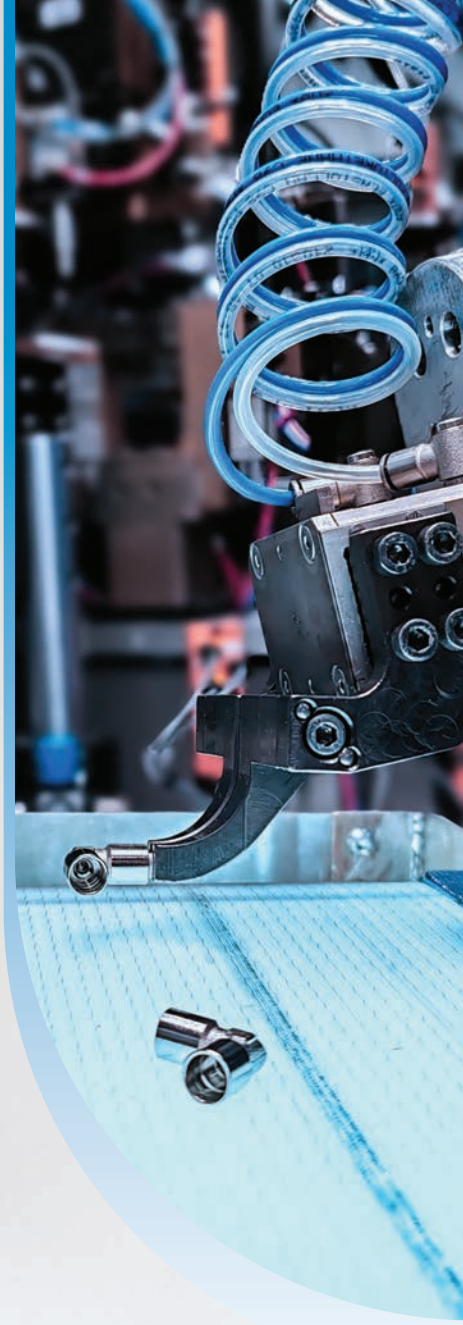

# TUBINGS

Tubings

# TUBINGS

PA 12- PA 12 HR-POLYURETHAN 95 DUROMETER Tubings available upon request.

## SUGGESTED TUBINGS BEND RADIUS

### POLYAMIDE 12

| Diameter | | |
|---|---|---|
| OD (in) | ID (in) | Bend Radius (in) |
| 1/8 | .093 | .375 |
| 5/32 | .106 | .500 |
| 1/4 | .180 | .875 |
| 5/16 | .232 | 1.250 |
| 3/8 | .275 | 1.500 |
| 1/2 | .375 | 2.000 |

### POLYAMIDE 12 HR (PA12 HR)

| Diameter | | |
|---|---|---|
| OD (in) | ID (in) | Bend Radius (in) |
| 1/4 | .142 | 1.969 |
| 3/8 | .197 | 3.150 |

### POLYURETHAN 95 DUROMETER

| Diameter | | |
|---|---|---|
| OD (in) | ID (in) | Bend Radius (in) |
| 1/8 | .0625 | 1/4 |
| 5/32 | 3/32 | 3/8 |
| 1/4 | .160 | 1/2 |
| 5/16 | .216 | 3/4 |
| 3/8 | .245 | 7/8 |
| 1/2 | .320 | 1 1/8 |

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