

1676USM / 1676USMSN

DOUBLE U-SHAPED PRESS FITTING

FEMALE ATTACHMENT, WITH FIXING FLANGE

FOR "AL-COBRAPEX" MULTILAYER PIPE



DESCRIPTION

The steady increase in cases of Legionella, caused by systems that have been incorrectly designed and/or built, has led to the conception of these press fittings - **Art. 1676USM** and **1676USMSN** - which, thanks to their particular U-shape, **guarantee constant flow within the plumbing system**, avoiding phenomena of stagnation which provide the ideal habitat for the proliferation of Legionella pneumophila bacterium.

THE LEGIONELLA PROBLEM: The Legionella bacterium, discovered in the United States in 1976 following an epidemic that caused the death of more than 30 people, proliferates in stagnant water with a temperature of between 20 to 50°C.

These conditions can be found in sanitary installations with poor water circulation, so it is essential to design and construct the system correctly to avoid dangerous hot water stagnation.

Legionella is contracted by inhaling contaminated water particles that are dispersed into the environment via a principle similar to aerosol.

ADVANTAGES / STRENGTHS

- Guarantees a constant exchange of water inside the plumbing system to avoid stagnation.
- Anti-Legionella.
- Low pressure losses.
- Better flow compared to a terminal fitting of the same size.
- Series available with tin-plated finishing treatment to offer a neat look that resists corrosion in chased installations.

Advantages/strengths of press connections:

- Double gasket and anti-slip profile: guaranteeing perfect water tightness.
- Stainless steel pipe bushing: high corrosion resistance.
- Plastic ferrule with 4 viewing windows: making it possible to check correct insertion of the pipe.
- Multi-clamp fittings (TH customized Tiemme, TH, U, H, B, RF profile).
- Suitable for chased installation.
- Complete system with dedicated AL-COBRAPEX pipe and tools (shears, calibrators/deburrers, pressers, pliers ...).

PRODUCTION RANGE

| Art. | Code | Press fitting size for multilayer pipe | Connection size | Finishing treatment |
|-----------|----------|----------------------------------------|--------------------|---------------------|
| 1676USM | 165 1315 | Ø 16x2 | G 1/2" F (ISO 228) | Yellow |
| | 165 1317 | Ø 20x2 | G 1/2" F (ISO 228) | Yellow |
| 1676USMSN | 165 1399 | Ø 16x2 | G 1/2" F (ISO 228) | Tin-plated |
| | 165 1400 | Ø 20x2 | G 1/2" F (ISO 228) | Tin-plated |

CONSTRUCTION SPECIFICATIONS

Series 1676USM

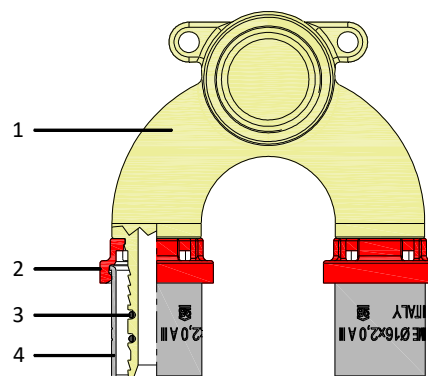
- (1) Body of the fitting:
- (2) Dielectric and viewing ring/ferrule:
- (3) O-ring seal:
- (4) Tightening bushing:
- Connecting thread:

CW617N Brass
PA
EPDM
AISI 304 Stainless steel
ISO 228

Series 1676USMSN (tin-plated version)

- (1) Body of the fitting:
- (2) Dielectric and viewing ring/ferrule:
- (3) O-ring seal:
- (4) Tightening bushing:
- Connecting thread:

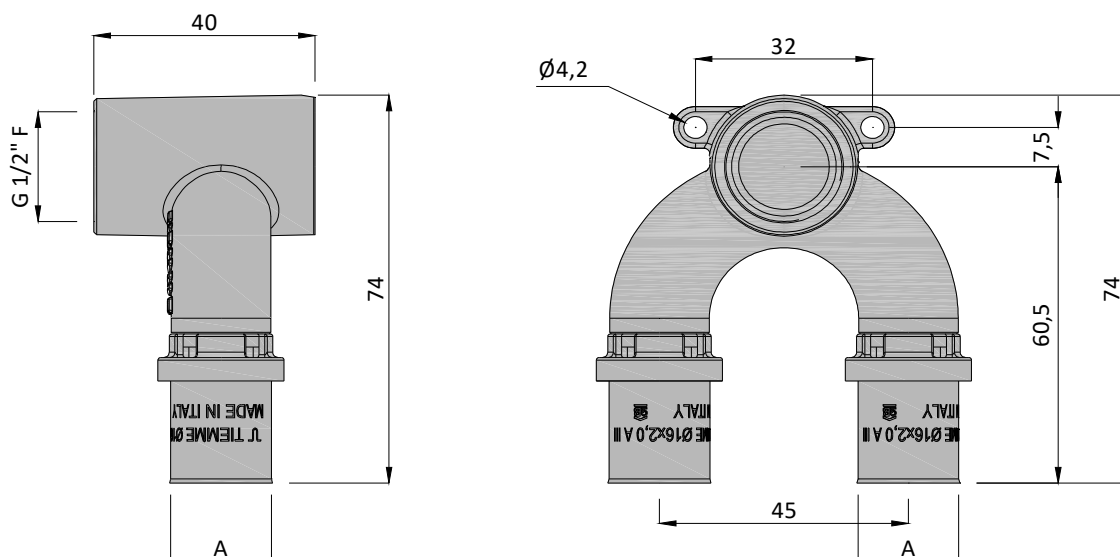
CW617N Tin-plated brass
PA
EPDM
AISI 304 Stainless steel
ISO 228



TECHNICAL SPECIFICATIONS

- Maximum working temperature: + 95 °C
- Minimum working temperature: - 20 °C (provided the fluid remains in liquid state)
- Max working pressure: 10 bar (relative to the AL-COBRAPEX multilayer pipe)

DIMENSIONAL CHARACTERISTICS



| Art. | Code | A |
|-----------|----------|--------|
| 1676USM | 165 1315 | Ø 16x2 |
| | 165 1317 | Ø 20x2 |
| 1676USMSN | 165 1399 | Ø 16x2 |
| | 165 1400 | Ø 20x2 |

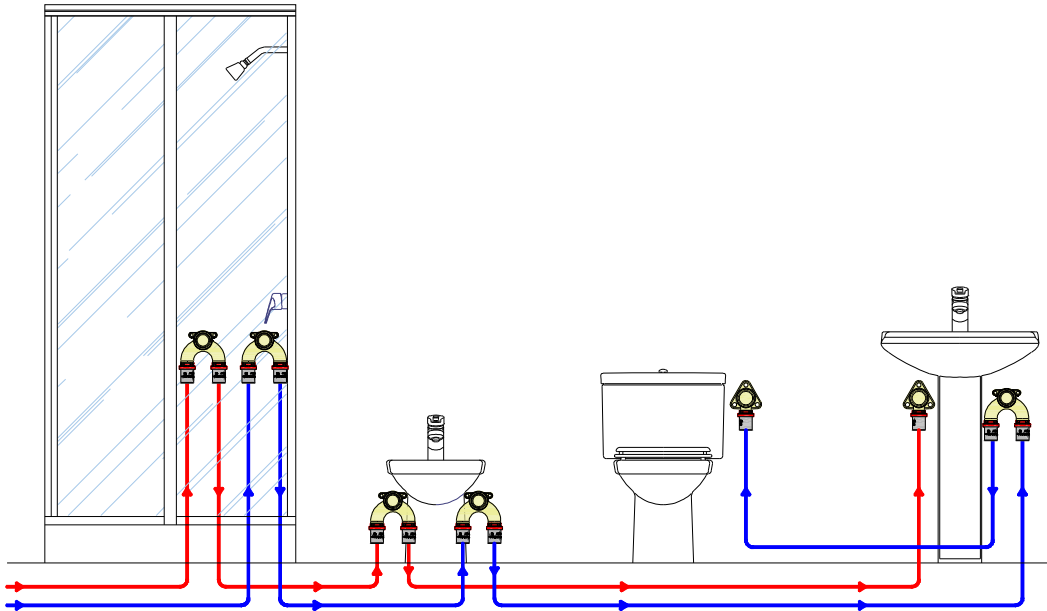
Dimensions in mm.

INSTALLATION

To minimise the risk of Legionella and guarantee a constant, high quality supply of water, the "blind branches" of the system must be kept to a minimum to avoid stagnation of water in the pipes.

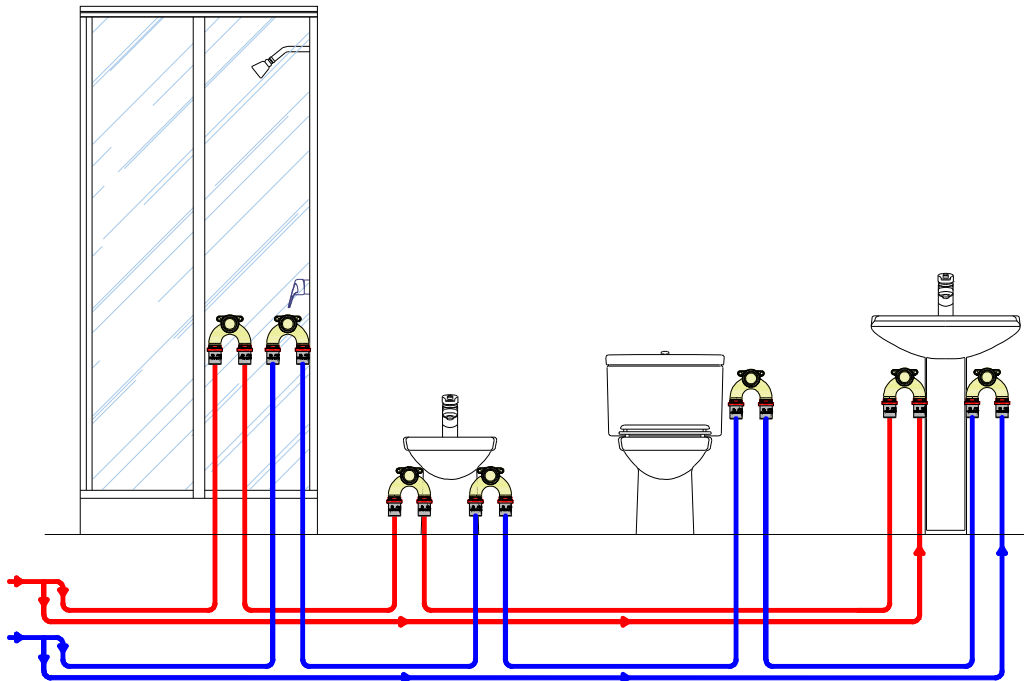
The very best installation solution is to use a double U-shaped press fitting - **Art. 1676USM / Art. 1676USMSN** - in the following configurations: connection "in a row" and "in a loop".

Connection "in a row" (fig. 1):



The connection shown in **fig. 1** is defined as "**in a row**" and has the characteristic of guaranteeing **constant water exchange and better temperature control**, to prevent the temperature from stabilising within values of high bacterial proliferation (temperatures between approximately 20 and 50 °C). To obtain the desired results it is essential that the last utility is the one that is used the most (for example, the sink for hot water and/or the toilet for cold water), so that the fluid is "forced" to pass through the entire system quite frequently.

Connection: "in a loop" (fig. 2):



A valid alternative to the "row" type connection is the "loop" connection shown in **fig. 2**.

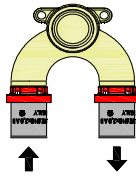
This makes it **irrelevant which utility is the most widely used**.

In fact, the opening of any outlet will generate an exchange of water in both branches of the ring to optimise the pressure drops in the entire system.

TIEMME RACCORDERIE S.p.A. will not be held responsible in the event of failures and/or accidents resulting from failure to comply with these instructions and from improper use of the system. The information given does not exempt the user from scrupulously following current regulations and good technical standards.

LOCALISED PRESSURE DROPS

Below are the values of the fitting pressure drops expressed in **equivalent metres of pipe (L_{eq})**, which means that the localised fitting pressure drops are expressed in a simulated length of the network (AL-COBRAPEX pipe) which determines the same resistance value.

| Pipe AL-COBRAPEX | FLUID SPEED (m/s) |  | |
|---------------------|-------------------|-----------------------------------------------------------------------------------|--|
| | | Values in equivalent metres of pipe (L_{eq}) | |
| Ø 16 | 0.5 | 0.78 | |
| | 0.8 | 0.87 | |
| | 1 | 0.83 | |
| | 2 | 1.06 | |
| Ø 20 | 0.5 | 0.88 | |
| | 0.8 | 1.02 | |
| | 1 | 1.05 | |
| | 2 | 1.25 | |

Alternatively, in the case of more complex sizing processes, it is possible to calculate pressure drop values using the following formula:

$$Z = \xi * 0,005 * \rho * v^2$$

where:

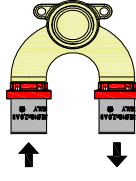
Z = Localised pressure drop

ξ = Loss factor

ρ = Fluid density (kg/m^3)

v = fluid speed (m/s)

The loss factor value ξ is shown below

| Pipe AL-COBRAPEX |  | |
|---------------------|-------------------------------------------------------------------------------------|--|
| | Loss factor ξ | |
| Ø 16 | 2.5 | |
| Ø 20 | 2.0 | |

ACCESSORIES



Art. 1481

Cod. 147 0005

Fixing bracket.

See the product catalogue for further details.

SPECIFICATION ITEM

Series 1676USM

Double U-shaped press fitting, female connection, with 2 hole fixing flange for "AL-COBRAPEX" multilayer pipe, made up of: CW617N brass body, PA dielectric and viewing ring/ferrule, O-ring in EPDM, tightening bushing in AISI 304 stainless steel, G 1/2" F (ISO 228) connection thread. Maximum working temperature: + 95 °C. Minimum working temperature: - 20 °C (provided the fluid remains in liquid state). Max working pressure: 10 bar (relative to the AL-COBRAPEX multilayer pipe).

Production range: Press connection measurements for multilayer pipe Ø 16x2 - Ø 20x2 mm

Series 1676USMSN

Double U-shaped press fitting, female connection, with 2 hole fixing flange for "AL-COBRAPEX" multilayer pipe, made up of: CW617N tin-plated brass body, PA dielectric and viewing ring/ferrule, O-ring in EPDM, tightening bushing in AISI 304 stainless steel, G 1/2" F (ISO 228) connection thread.

Maximum working temperature: + 95 °C. Minimum working temperature: - 20 °C (provided the fluid remains in liquid state). Max working pressure: 10 bar (relative to the AL-COBRAPEX multilayer pipe).

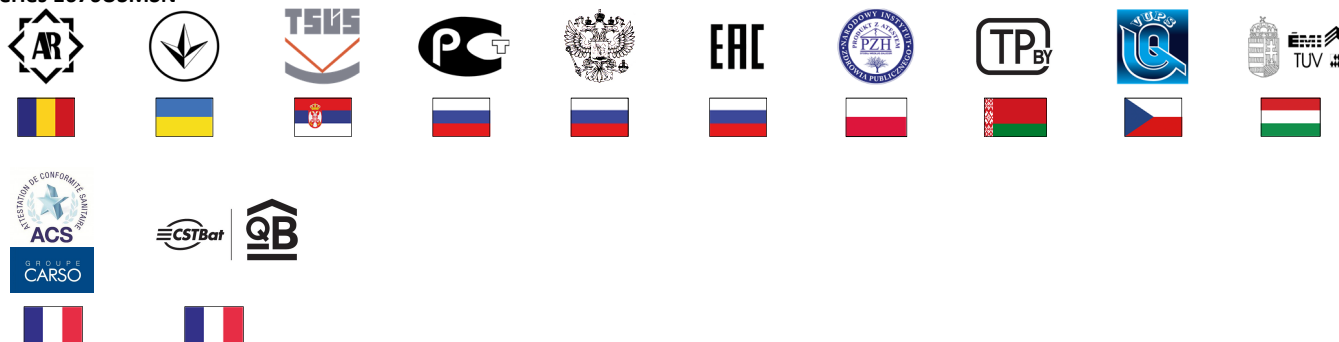
Production range: Press connection measurements for multilayer pipe Ø 16x2 - Ø 20x2 mm

CERTIFICATIONS

Series 1676USM



Series 1676USMSN



ADDITIONAL INFORMATION ABOUT THE PRODUCT

See the technical documentation mentioned below for further information about this product:

| Type of document | Document code | Useful information available |
|-------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technical details | 1650 | <ul style="list-style-type: none"> - Instructions for connecting the pipe onto the press fitting. - Detailed information on the multi-clamp press fitting |