

MULTILAYER SYSTEM "TIEMME GAS"

MULTILAYER PIPE AND FITTINGS FOR METHANE AND LPG GAS DISTRIBUTION



DESCRIPTION

The Tiemme multi-layer gas system can be used for the construction of internal systems suitable for the transport of city gas (I family), natural gas (II family) and LPG (III family) at a maximum pressure of 0.5 bar and temperatures between -20 °C and + 70 °C.

The system involves the combined use of AL-COBRAPEX "TIEMME GAS" multilayer pipe and 2650 series press fittings according to the installation criteria specified by UNI 7129.

PRESS FITTINGS:

By means of the 2650 series fittings, irreversible joints are realized and therefore **they can be installed under track as required by current regulations.**

These press fittings are characterised by their sealing mechanism which is created by mechanical deformation of the external stainless-steel bush.

This deformation is carried out using a specific tool equipped with suitable steel crimpers; this ensures that the clamping pressure is always the same and is at an optimal level for all the fittings, thus increasing the reliability of the joint.

Tiemme press fittings are also characterised by the presence of a polymer ring which performs three very important functions:

- The first, since it is a plastic material, is its dielectric function, i.e. it prevents the internal aluminium layer of the pipe from coming into contact with the body of the fitting (in brass) and triggering the **galvanic corrosion** process, caused by stray currents (to learn more see the "INFORMATION FROM TIEMME" section of this technical data sheet).
- The second function, also of fundamental importance, is that which allows the installer to visually and easily check that the pipe is correctly inserted into the fitting.
- The third function facilitates the correct positioning of the fitting to be pressed inside the "TH" profile crimping tool.

This quickly and easily verifiable possibility, guarantees a peace of mind during installation that is rare in other types of fittings.

ADVANTAGES / STRENGTHS

PRESS FITTINGS:

- Double gasket and anti-slip profile: to guarantee perfect sealing.
- Stainless-steel pipe clamping bush: high resistance to corrosion.
- Plastic ring nut with 4 viewing windows: makes it possible to check the correct insertion of the pipe.
- System complete with dedicated multilayer pipe and tools (shears, calibrating/deburring tools, pressers, crimpers...).

MULTILAYER PIPE:

- Yellow color as required by the standard UNI 7129.
- Quick and easy installation system: flexible, light and stable (thanks to the aluminium core).
- Impermeable to oxygen and UV rays. *
- Resistant to corrosion and chemicals.
- Low pressure drops.
- Reduced thermal expansion

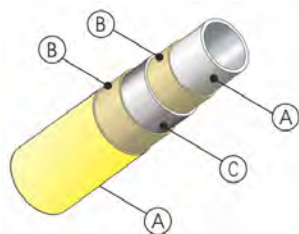
** The pipe is supplied duly packed for storage to guarantee complete protection from UV rays.*

The material should not be exposed to direct sunlight.

MULTILAYER PIPE:

AL-COBRAPEX "TIEMME GAS" are multilayer type pipes, with an aluminium core and are a valid alternative to metal pipes and also to some of the plastic pipes normally used in common plant engineering systems.

The technology of these pipes consists of inserting a metal layer (aluminium) between two layers of plastic material (polyethylene) that are glued together as shown in the picture:



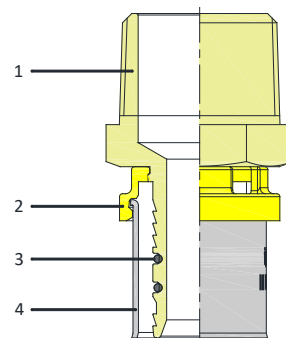
- A: Layer in PE-Xb polyethylene cross-linked using silanes.
 B: Adhesive layer.
 C: Intermediate layer in aluminium welded with a head-head technique.

The multilayer pipes have the characteristic of combining the advantages of plastic materials (resistance to abrasion, to corrosion and to chemicals, lightness and ease of installation), with those of aluminium (high pressures resistance, dimensional stability and reduced thermal expansion).

CONSTRUCTION SPECIFICATIONS

PRESS FITTINGS:

- | | |
|---|---|
| ▪ (1) Fitting body: | CW617N Brass |
| ▪ (2) Ring nut / dielectric and viewing ring: | PA |
| ▪ (3) O-ring seal: | HNBR |
| ▪ (4) Clamping bush: | AISI 304 stainless steel |
| ▪ Threads: | F ISO 7/1 (EN 10226) Rp cylindrical
M ISO 7/1 (EN 10226) R conical |



MULTILAYER PIPE: (Art. 0600G – 0600GB – 0640G)

External diameter	(mm)	16	20	26	32
Thickness	(mm)	2.0	2.0	3.0	3.0
Aluminium thickness	(mm)	0.30	0.40	0.60	0.75
Weight	(kg/m)	0.110	0.150	0.300	0.410
Thermal expansion coefficient	(mm/m °C)	0.026			
Internal roughness	(mm)	0.007			
Oxygen diffusion	(mg/l)	0			
Thermal conductivity	(W/mk)	0.47			

TECHNICAL SPECIFICATIONS (REFER TO THE PIPE/ PIPELINE SYSTEM)

- | | |
|--------------------------------|---|
| ▪ Maximum working temperature: | + 70 °C |
| ▪ Minimum working temperature: | - 20 °C |
| ▪ Maximum working pressure: | 0,5 bar |
| ▪ Compatibility: | Compatibility: City gas (I family) - Natural gas (II family) - LPG (III family) * |

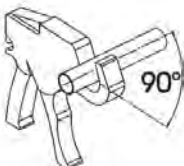
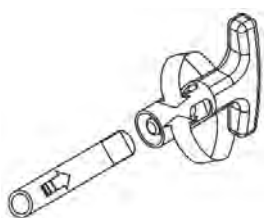
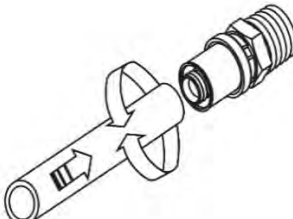
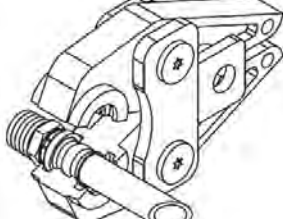
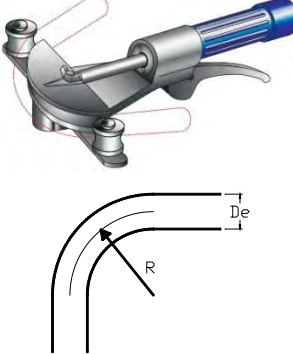
* To check compatibility with fluids or other substances not listed, contact the Tiemme Technical Dept.

REFERENCE STANDARDS

- **UNI/TS 11344:** Plastic metal multilayer piping systems and fittings for the transport of gaseous fuels for internal systems.
- **UNI 7129:** Gas systems for domestic and similar use fed from the distribution network - Design, installation and commissioning.

INSTRUCTIONS FOR CORRECT ASSEMBLY

To obtain a perfect join between fitting/pipe, some simple but important operations must be carried out:

	Cutting the pipe: The pipe must be cut perpendicular to its axis. The use of hacksaws or angle grinders must be avoided as they could deform the pipe. Recommended tools: Art. 1495																													
	Pipe calibration and flaring: Restore the shape of the pipe using the appropriate calibrator. Take care when carrying out pipe calibration and deburring; the proper tools must be used. Any burr residue could damage the O-rings. The calibrating/deburring tool should be inserted into the pipe and then turned clockwise. Recommended tools: Complete case Art. 1498SET																													
	Connecting the pipe to the fitting: Insert the pipe into the fitting until it encounters the stop (check through the 4 "windows" on the ring); take care not to move the O-ring seals out of their seat. Connection will be easier if the pipe is lubricated with silicone oil or water. For domestic water distribution applications, make sure that the silicone oil used is suitable for food application. The use of a different lubricant could damage the fitting's seals. Make sure that the oil used is compatible with the construction materials of the fitting.																													
	Pressing: Before pressing the fitting, check that the ring nut/bushing is correctly assembled in the specific seat made in the brass fitting, if not, the ring nut/bushing should be repositioned. It is also advisable to check that the pipe is placed correctly in contact with the plastic ring nut to ensure that the internal aluminium layer does not encounter the covering material. Position the fitting correctly onto the crimper of the specific tool (pressing tool). Ensure that the jaws are not particularly worn. Press the fitting. Make sure that the crimper fully closes. Use tongs with TH profile.																													
	Bending: The pipe can be bent by hand or using the specific tools, depending on the radius required. The table below provides an indication of the minimum bending radii permitted: <table><tr><th rowspan="2">Ø external pipe (mm)</th><th colspan="4">Bending radius R (mm)</th></tr><tr><th>Manual</th><th>Manual with internal spring</th><th>Manual with external spring</th><th>Mechanical</th></tr><tr><td>16</td><td>80</td><td>64</td><td>64</td><td>49</td></tr><tr><td>20</td><td>100</td><td>80</td><td>80</td><td>80</td></tr><tr><td>26</td><td>130</td><td>100</td><td>100</td><td>90</td></tr><tr><td>32</td><td>160</td><td>-</td><td>-</td><td>120</td></tr></table> Recommended tools: Pipe bending spring Art. 1497 – Art 1497EST/ Pipe-bender Art 1684.	Ø external pipe (mm)	Bending radius R (mm)				Manual	Manual with internal spring	Manual with external spring	Mechanical	16	80	64	64	49	20	100	80	80	80	26	130	100	100	90	32	160	-	-	120
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20	100	80	80	80																										
26	130	100	100	90																										
32	160	-	-	120																										

IMPORTANT: Carrying out the following operations incorrectly, may compromise the tightness of the joint.

TIEMME RACCORDERIE S.p.A. will accept no responsibility for breakages and/or accidents resulting from failure to comply with these indications and from improper use of the system. The information shown does not exempt the user from scrupulously following current regulations and good technical standards.

NEVER:

- Use incompatible or harmful substances.
- The use of the product for purposes other than specified.
- Installation of the "visible" multilayer system.

SOME POSSIBLE CAUSES OF LEAKS:

- Pressing performed with excessively worn crimpers.
- Failure to fully close the crimper.
- Incorrect positioning of the fitting on the crimper at the time of pressing.
- Breakage or leakage of the O-rings due to pipes not being properly cut, calibrated and deburred.
- Connection with incompatible products.
- Incompatible fluids.
- Excessive use of sealants (e.g. hemp, PTFE tape etc...) on male/female threads could generate tension in the fittings.
- Excessive internal pressures.
- Storage of materials in unsuitable environments.
- Unpredictable external causes, such as accidental impacts or inappropriate movements.

PRECAUTIONS FOR INSTALLATION:

- All installation operations of the multi-layer gas system must be carried out by qualified and authorized personnel who have read and received all the indications and warnings given in the Italian Standard UNI 7129.
- Pipes should preferably be laid outside the building, limiting as far as possible the route inside the premises.
- The pipes installed in the external parts of the building must be adequately protected against the action of UV rays, from possible damage and/or tampering and above all must be adequately protected from fire risks.
- **As regards the detailed requirements for laying criteria (choice of supports/fixings, choice of hydraulic and/or thermal protection conduits, location of pipes, crossing of structures, ...) it is recommended to refer to the Technical Standard UNI 7129-1.**

WARNINGS/WARRANTY:

Tiemme offers a **complete and guaranteed System***, consisting of:

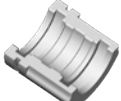
- Multilayer pipe PE-Xb/Al/PE-Xb (Ø 16, 20, 26, 32 mm) **AL-COBRAPEX "TIEMME GAS"**
- Press fittings with HNBR O-ring and **2650 series** stainless steel bushing.

* The system involves the combined use of the AL-COBRAPEX "TIEMME GAS" multilayer pipe and Tiemme 2650 series press fittings according to the installation criteria specified by UNI 7129.

MAINTENANCE:

The check must be carried out periodically in accordance with the procedures provided for in **UNI 11137-1** (guidelines for the verification and restoration of the tightness of internal systems in operation).

MAIN ACCESSORIES OF THE SYSTEM

 Art. 0600G Multilayer gas pipe in rolls.	 Art. 0600GB Multilayer gas pipe in bars.	 Art. 0640G Multilayer gas pipe with yellow corrugated sheath in rolls.	 Art. 0900G Yellow corrugated sheath to protect the pipe.
 Art. 4530 Pipe decoiler.	 Art. 1689 Pipe straightener.	 Art. 1699 Stainless-steel bush assembly tool.	 Art. 0625 Transparent PVC cup with CL1 sealing.
 Art. 1497 / 1497EST Pipe bending spring.	 Art. 1684 Pipe bender.	 Art. 1495 Pipe cutting shears.	 Art. 1683 Pipe cutting shears + deburrer.
 Art. 1498SET Case with calibrating/deburring set.	 Art. 1498UM Calibrators/deburrers with fixed handle.	 Art. 1498MT Interchangeable T-handle.	 Art. 1498US Interchangeable calibrating/deburring tools.
 Art. 1695TM01 - 1695TM03 Battery operated pressing tool.	 Art. 1685M Manual pressing tool.	 Art. 1681 - 1681 MINI Profile crimping tool	 Art. 1685US Insert for manual pressing tool.

See the product catalogue for order codes / further details.

INFORMATION FROM TIEMME

GALVANIC CORROSION OR "BATTERY EFFECT":

The phenomenon of galvanic corrosion occurs when two materials, with a different noble value, are placed in direct contact.

A flow of electrons is generated from the less noble material, which oxidises, towards the more noble material which has greater potential.

Less noble materials tend to corrode compared to the more noble materials, so putting a less noble metal into direct contact with a more noble metal will lead to the less noble metal corroding (acting as an anode) and corrosion will be accelerated.

The use of Tiemme press fittings guarantees that this phenomenon will not occur.

In fact, the internal aluminium layer of the pipe does not encounter the fitting (made of brass), as it is separated from the dielectric cap of the actual fitting.

ITEM SPECIFICATIONS

Series 2650

Press fitting for gas multilayer pipe, made of: brass body CW617N, ferrule / viewer and dielectric ring in PA, HNBR sealing o-ring, AISI 304 stainless steel tightening bushing, ISO 7/1 threads (EN 10226).

Maximum operating temperature: + 70 °C. Minimum operating temperature: - 20 °C. Maximum operating pressure: 0.5 bar (relative to the pipe/connection system - application range according to UNI 11344). Compatibility: City gas (I family) - Natural gas (II family) - LPG (III family).

Production range: from Ø 16 to Ø 32 mm, different configurations (straight, curved, T etc...) and with different types of connections (Female threaded connections, Male threaded connections, intermediate press connections).

Art. 0600G

Multilayer gas pipe. Composition PE-Xb/Al/PE-Xb. Made in accordance with the technical specification UNI/TS 11344

Maximum operating temperature: + 70 °C. Minimum operating temperature: - 20 °C. Maximum operating pressure: 0.5 bar (relative to the pipe/connection system - application range according to UNI 11344). Compatibility: City gas (I family) - Natural gas (II family) - LPG (III family).

Supplied in rolls. Yellow outer layer color. Available sizes 16x2 - 20x2 - 26x3 - 32x3.

Art. 0600GB

Multilayer gas pipe. Composition PE-Xb/Al/PE-Xb. Made in accordance with the technical specification UNI/TS 11344

Maximum operating temperature: + 70 °C. Minimum operating temperature: - 20 °C. Maximum operating pressure: 0.5 bar (relative to the pipe/connection system - application range according to UNI 11344). Compatibility: City gas (I family) - Natural gas (II family) - LPG (III family).

Supplied in bars. Yellow outer layer color. Available sizes 16x2 - 20x2 - 26x3 - 32x3.

Art. 0640G

Multilayer gas pipe with yellow corrugated sheath. Composition PE-Xb/Al/PE-Xb. Made in accordance with the technical specification UNI/TS 11344

Maximum operating temperature: + 70 °C. Minimum operating temperature: - 20 °C. Maximum operating pressure: 0.5 bar (relative to the pipe/connection system - application range according to UNI 11344). Compatibility: City gas (I family) - Natural gas (II family) - LPG (III family).

Supplied in rolls. Yellow outer layer color. Available sizes 16x2 - 20x2 - 26x3.

CERTIFICATIONS

