

ATTESTATION DE CONFORMITE SANITAIRE

Certificate of sanitary conformity

Conformément à l'arrêté du 29 mai 1997 modifié et à la circulaire du Ministère de la Santé
Direction Générale de la Santé DGS/SD7A N° 571 du 25 Novembre 2002

**Coordonnées du demandeur d'ACS /
Contact details of the ACS owner :**

TECNOVIELLE S.p.A.
Via Caduti, 2
25065 LUMEZZANE PIEVE (BS)
Italie

Nom de l'accessoire représentatif / Reference of the representative accessory :

Raccord laiton droit mâle pour tuyaux en PE - VERSION LONGUE - 4001L - Ø25

N° de dossier attribué par le laboratoire habilité / File reference : **17 ACC NY 262**

Date de réalisation des essais d'inertie selon la norme XP P41-280 / Tests date (according to the standard
XP P 41-280) : /

Commentaires / Comments : Aucun essai n'est nécessaire à l'émission de cette ACS / No testing is required
to issue this ACS.

Famille d'accessoires couverte par l'ACS / Accessories' family covered by this certificate :

Références / References :

Références couvertes : voir annexe / Covered references : see annex

Cette ACS comporte une annexe de 1 page et couvre 38 références.
This ACS includes an annex of 1 sheet and covers 38 references.

Attestation délivrée par / Certificate issue by :

Clémence Tafforeau
Chef de Service / Materials Department Manager

Signature :

Date de délivrance / Date of issue : 01 août 2017

Date d'expiration / Expiry date : 01 août 2022

Commentaires / Comments : /

ANNEXE à l'ACS 17 ACC NY 262 (Annex of ACS 17 ACC NY 262)

Références couvertes / Covered references

Raccords laiton pour tuyaux en PE :

4001 - de Ø20 à Ø63	4007 - de Ø20 à Ø63
4001L - de Ø25 à Ø63	4008 - de Ø20 à Ø63
4002 - de Ø20 à Ø63	4009 - de Ø20 à Ø63
4003 - de Ø25 à Ø50	4010 - de Ø20 à Ø63
4004 - de Ø25 à Ø50	4011 - de Ø25 et Ø32
4005 - de Ø20 à Ø63	4021 - Ø75 et Ø90
4006 - de Ø20 à Ø63	4022 - Ø75 et Ø90

Raccords laiton pour tuyaux en PE bague en laiton :

4201 - de Ø20 à Ø63	4206 - de Ø20 à Ø63
4201L - de Ø25 à Ø63	4207 - de Ø20 à Ø63
4202 - de Ø20 à Ø63	4208 - de Ø20 à Ø63
4203 - de Ø25 à Ø50	4209 - de Ø20 à Ø63
4204 - de Ø25 à Ø50	4210 - de Ø20 à Ø63
4205 - de Ø20 à Ø63	4211 - de Ø25 et Ø32

Raccords laiton pour tuyaux en PE rapides brevets :

4301 - de Ø20 à Ø63	4306 - de Ø20 à Ø63
4301L - de Ø25 à Ø63	4307 - de Ø20 à Ø63
4302 - de Ø20 à Ø63	4308 - de Ø20 à Ø63
4303 - de Ø25 à Ø50	4309 - de Ø20 à Ø63
4304 - de Ø25 à Ø50	4310 - de Ø20 à Ø63
4305 - de Ø20 à Ø63	4311 - de Ø25 et Ø32

Date de délivrance / Date of issue : 01 août 2017

Date d'expiration / Expiry date : 01 août 2022

Clémence Tafforeau

Chef de Service / Materials Department Manager

Signature :



Eurofins Expertises Environnementales

SAS au capital de 71676 € RCS Nancy 751 056 102 TVA FR 35 751 056 102

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BUREAU VERITAS
Certification



Certificato di Conformità

Rilasciato a:

TECNOVIELLE SPA

Sede Legale ed Operativa:

Via Caduti, 2 – 25065 LUMEZZANE (BS)

Bureau Veritas Italia S.p.A. certifica che i seguenti prodotti:

Raccordi per tubazioni di plastica con terminali a compressione

Tipo Ottone	Modalità produzione	Classe materiale tubo in PE	Gruppo di pressione PN	Tipo Terminale	Serraggio	DN	Serie articoli (*)
CW617N	stampaggio	40,63,80,100	25	A	dado	20	1,2,3
CW617N	stampaggio	40,63,80,100	25	A	dado	25	1,2,3
CW617N	stampaggio	40,63,80,100	25	A	dado	32	1,2,3
CW617N	stampaggio	40,63,80,100	25	A	dado	40	1,2,3
CW617N	stampaggio	40,63,80,100	25	A	dado	50	1,2,3
CW617N	stampaggio	40,63,80,100	25	A	dado	63	1,2,3
CW617N	stampaggio	40,63,80,100	25	A	flangia	75	1,2
CW617N	stampaggio	40,63,80,100	25	A	flangia	90	1,2

(*): 1=serie 4000; 2=serie 4200; 3=serie 4300.

Nome Commerciale:

TVL

Sono stati valutati e giudicati conformi ai requisiti della normativa:

UNI EN 1254-3:2000

Rame e leghe di rame – Raccorderia idraulica – Raccordi per tubazioni di plastica con terminali a compressione.

Certificato rilasciato in conformità a: TQR-REG-02 Bureau Veritas Rev. 05 - Regolamento per la certificazione di prodotto / processo / servizio.

Data di prima emissione: 24/11/2017
Data di emissione corrente: 24/11/2017
Data di scadenza: 23/11/2020

La validità del presente certificato è subordinata a sorveglianza periodica ed è consultabile sul sito web: www.bureauveritas.it - Ulteriori chiarimenti riguardanti l'oggetto di questo certificato possono essere acquisiti contattando l'intestatario del presente certificato.


(Ing. Francesco Suteri – Direttore Tecnico)

Certificato N°: **1059/001**

**Report of tests of Plastic piping systems acc. Test method for
leaktightness under negative pressure – DIN EN ISO 3459 (06/2015)**

Client: Tecnovielle S.p.A.
Via Caduti, 2
25065 Lumezzane Pieve (BS)
Italy

Contractor: DBI - Gastechnologisches Institut gGmbH Freiberg
Halsbrücker Str. 34
D-09599 Freiberg

Editor: Dipl.-Ing. (BA) Stefan Wiesner

Period of inspection: 04.2017

File reference: B 17/04/2331

Freiberg, 28.04.2017



Structure

Cover sheet

1. General
2. Description of test setup
3. Test pieces
4. Procedure A: Pressure outside
- 5 Summary

Annex 1: Test Report B 14/02/1720



Report B 17/04/2331 from 28.04.2017
Report of tests of Plastic piping systems acc. Test method for leaktightness under negative pressure – DIN EN ISO 3459 (06/2015)

Testing base: Plastic piping systems – Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping – Test method for leaktightness under negative pressure – DIN EN ISO 3459 (06/2015)

Client: Tecnovielle S.p.A.
Via Caduti, 2
25065 Lumezzane Pieve (BS)
Italy

Purpose of the test: Test of one type and diameter range (d 20 - d 63) according the named test base

Manufacturer: Tecnovielle S.p.A.
Via Caduti, 2
25065 Lumezzane Pieve (BS)
Italy

Product: Plastics piping systems, Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping

Type: fittings for installation system acc. EN 1254-3:2000 (Copper and copper alloys – Plumbing fittings – Fittings with compression ends for use with plastic pipes) and UNI EN 1555-3:2013 (plastic piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 3: Fittings)

Series 4300 and 4000 TVL

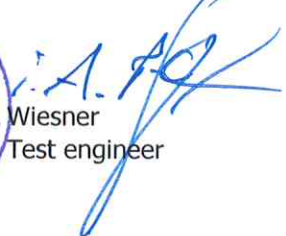
Nominal diameter: d 20 up to d 63

Material sealing: NBR

The test report consists of 6 pages and must be duplicated and distributed in its entirety.


Aßmann
Head of testing department




Wiesner
Test engineer



1. General

This International Standard specifies two methods of testing for checking the leaktightness of assembled joints between mechanical fittings and plastic pressure pipes up to and including 63 mm. The test applies regardless of the design and material of the fitting used for jointing plastics pipe. This test method is not applicable to fusion-welded joints.

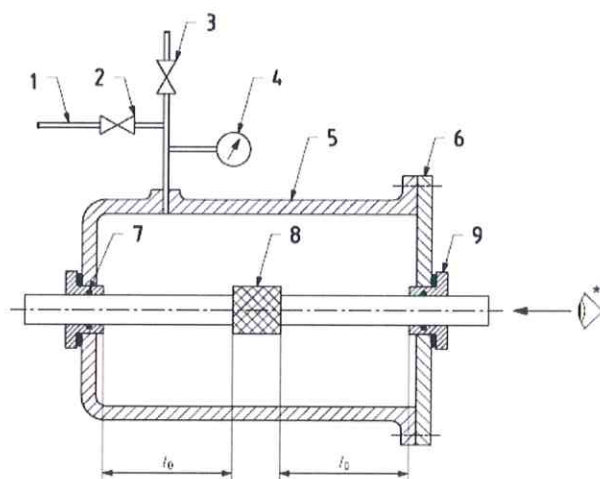
In order by company Tecnovielle S.p.A., the DBI- Gastechnologisches Institut gGmbH Freiberg executed tests of Plastic piping systems according Test method for leaktightness under negative pressure – DIN EN ISO 3459 (06/2016). The fittings, coupling, in diameter range d 20 up to d 63. The used sealing part was NBR.

This report is an update of the report B 14/02/1720 dated 04.02.2014. All details regarding the measurements are given in the test report B 14/02/1720, to see in Annex 1. This report does not include the requirements for the vacuum test (method B) because it is not contain in the DIN EN 911.

2. Description of the test and setup

Checking of the leaktightness of an assembled joint when submitted to external pressure greater than the pressure within the pipe. For measurements where the external hydraulic pressure is greater than the atmospheric pressure within the pipe, procedure A shall be used. For measurements with vacuum inside the pipe segment and an atmospheric pressure outside the pipe, procedure B shall be used.

A suitable apparatus for procedure A is shown in Figure 1.



Key

1	connection to hydraulic pump	6	cover flange
2	valve	7	annular seal
3	air release valve	8	fitting to be tested
4	pressure measuring device	9	sealing collar
5	enclosed tank	l_0	pipe free length
* The apparatus shall permit a clear view through the test piece			

Figure 1 — Typical apparatus

Enclosed tank, capable of being used at the appropriate test pressure and receiving the test specimen. The ends of the test specimen shall pass through the walls of the tank, so that the inside of the pipe is open to the atmosphere and the connecting pipes are in axial alignment. The assembly shall be arranged so as to enable any leakage to be detected within the test specimen.

Pressure source, connected to the tank and capable of raising and maintaining the specified water pressure with an accuracy of $\pm 0,05$ bar.



Pressure measuring device, capable of checking conformity of the test pressure.

Temperature control system, capable of maintaining the temperature of the pressurized water in the tank at the specified temperature, T , with an accuracy of $\pm 2\text{ °C}$.

3. Test pieces

The test specimen shall consist of one or more fittings and two or more pieces of plastic pressure pipe of the size and quality for which the fitting is designed. The fittings and pipes shall not be tested until 24 h after their production. For practical reasons, the manufacturer may wait for a shorter period of time before testing. In case of dispute, a duration of 24 h shall apply. The assembly of the joint should be carried out in accordance with the manufacturer's instructions. The mean outside diameter, d_{em} , of the pipe should preferably conform to the minimum specified value, and the fitting dimensions (mean inside diameter, d_{im}) should preferably conform to the maximum values stated by the manufacturer, in order to have dimensions as close as possible to the extreme limits of their relevant tolerances.

4. Procedure A: Pressure outside

Secure the test specimen in the water tank. Fill the tank with water at the specified temperature and that variations in the test temperature do not exceed $\pm 2\text{ °C}$. Minimum conditioning times are given in Table 1.

Table 1 — Conditioning periods

Nominal wall thickness of the pipe mm	Minimum conditioning period min
$e \leq 10$	20
$10 < e \leq 20$	60
$20 < e$	120

Remove any condensation from the inside of the test specimen. Wait for 10 min and ensure that the inside of the test specimen is completely dry.

After conditioning, progressively and smoothly apply a first test pressure, p_1 , in the shortest time practicable for at least 1 h and then smoothly increase the pressure without shock to the second level, p_2 . Maintain the test pressure, p_2 , for a further period of at least 1 h. The test starts on achieving the required test pressures.

Maintain a constant reading on the pressure measuring device. Inspect the inside surface of the test piece for leakage and record any signs of leakage observed, and the pressure at which leakage occurs, while the joint is subjected to external pressure.



DBI–Gastechnologisches Institut gGmbH Freiberg
DVGW – Prüflaboratorium Energie
Halsbrücker Straße 34; D-09599 Freiberg



Report B 17/04/2331
Date: 28.04.2017
Page 6 of 6

5. Summary

This report is an update of the report B 14/02/1720 dated 04.02.2014. According to the measurements, documented in the report B 14/02/1720, all test items fulfill the requirements of DIN EN ISO 3459 (06/2015) (method A) and are leaktight. This report does not include the requirements for the vacuum test (method B) because it is not contain in the DIN EN 911.

The test results relate only to the test items and test documents submitted by the manufacturer.

Annex 1

Test Report B 14/02/1720 from 04.02.2014 (DBI)

DBI—Gastechnologisches Institut gGmbH Freiberg

DVGW-Prüflaboratorium Energie

Halsbrücker Straße 34; D-09599 Freiberg

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Report

**Report of tests of Plastic piping systems acc. Test method for
leak tightness under external hydrostatic pressure – DIN EN 911 (09/1995)
acc. DBI offer No.: 2-89-2013-1162**

Client: Tecnovielle S.p.A.
Via Caduti, 2
25065 Lumezzane Pieve (BS)
Italy

Contractor: DBI - Gastechnologisches Institut gGmbH Freiberg
Halsbrücker Str. 34
D-09599 Freiberg

Editor: Dipl.-Ing. (BA) Stefan Wiesner

Tester: Markus Gottschald

Period of inspection: 12.2013 - 01.2014

File reference: B 14/02/1720

Freiberg, 04.02.2014



Structure

Cover sheet

1. General
2. Description of test setup
 - 2.1 Tests
 - 2.2 Measurements
3. Photographs
4. Used measuring instruments

Annex

none



Report B 14/02/1720 from 04.02.2014
Report of tests of Plastic piping systems acc. Test method for leak tightness under external hydrostatic pressure – DIN EN 911 (09/1995)

Testing base:	Plastic piping systems – Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping – Test method for leaktightness under external hydrostatic pressure – DIN EN 911 (09/1995)
Client:	Tecnovielle S.p.A. Via Caduti, 2 25065 Lumezzane Pieve (BS) Italy
Purpose of the test:	Test of one type and diameter range (d 20 - d 63) according the named test base
Manufacturer:	Tecnovielle S.p.A. Via Caduti, 2 25065 Lumezzane Pieve (BS) Italy
Product:	Plastics piping systems, Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping
Type:	fittings for installation system acc. EN 1254-3:2000 (Copper and copper alloys – Plumbing fittings – Fittings with compression ends for use with plastic pipes) and UNI EN 1555-3:2013 (plastic piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 3: Fittings) Series 4300 and 4000 TVL
Nominal diameter:	d 20 up to d 63
Material sealing:	NBR

The test report consists of 9 pages and must be duplicated and distributed in its entirety.


ABmann

Head of testing department





Wiesner
Test engineer

1. General

In order by company Tecnovielle S.p.A., the DBI- Gastechnologisches Institut gGmbH Freiberg executed tests of Plastic piping systems according Test method for leak tightness under external hydrostatic pressure – DIN EN 911 (09/1995). The fittings, coupling, in diameter range d 20 up to d 63. The used sealing part was NBR.

2. Description of the test and setup

It is the sealing of a composite compound tested which is filled with air at atmospheric pressure, while the connection is placed under external hydrostatic pressure that is greater than atmospheric pressure within the test specimen.

NOTE: It's assumed that the following test parameters are the standard that refers to this standard, indicated:

- a) Test temperature, T
- b) Temperature conditioning the test specimen and / or time required for temperature compensation
- c) The two different pressures, P_1 and P_2 and also tested with an additional test pressure P

Test appliance

Closed container or pressure vessel to Use in the corresponding test pressures and is recording the test specimen suitable. The ends of the specimen must be through the walls of the container as are guided, that the inside of the tube to the Atmosphere is open and the connecting tubes axially are aligned. The assembly must be arranged so be that any leaks are detected in the specimen, as shown in the following picture 1.

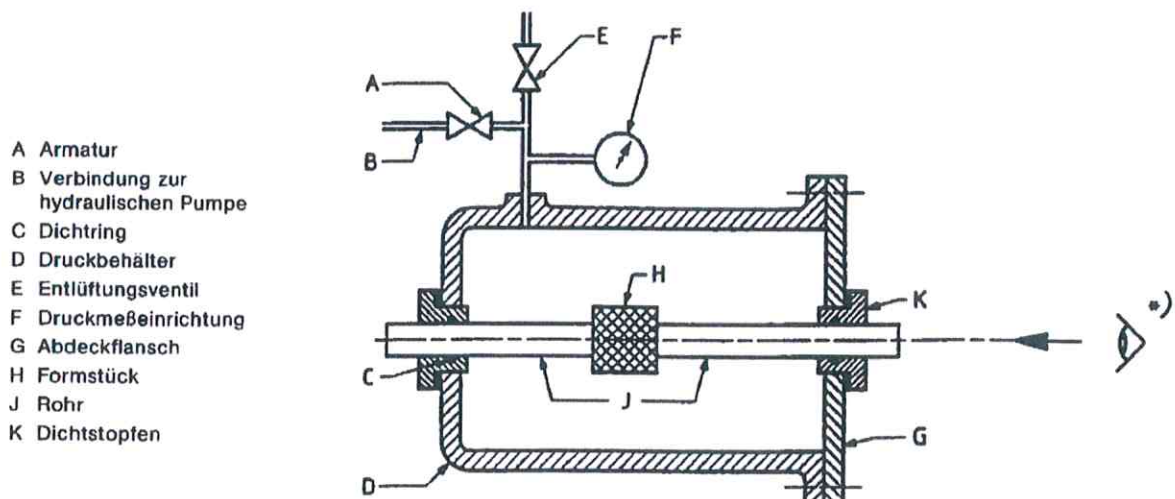


Bild 1: Darstellung eines geeigneten Prüfgerätes

Picture 1: illustration of a suitable test instrument



2.1 Tests

The test results relate only to the test items and test documents submitted by the manufacturer.

Chapter	Requirements acc. to DIN EN 911 (09/1995)	Requirement fulfilled?	Remark
4	specimens		
4.1	General The specimen must be composed of (a) Tube section (s) and / or fitting (s) are made, and at least one of the corresponding compounds to be tested and the appropriate type size included. The compounds are to be produced according to the specifications of the manufacturer.	yes	
4.2	Relations with elastomeric sealing rings The dimensions of the spigot and the spigot and socket must be as close to the boundaries of each applicable tolerances, a shank having a minimum diameter, a plug-in socket with the greatest possible Diameter in the region of the sealing ring and a bead seal with minimum cross-section. The length (s) to be connected to tube portions (s) must be such that the free length of the tube, L, between the plug socket and a plug socket and the Test equipment (or terminal seal) at least equal to the nominal outer diameter of the associated tube, and at least equal to 250 mm.	yes	
4.3	Mechanical connections For an unfavorable possible combination must Dimensions of the male end of the fitting and in the field the seal as close as possible to the limits of accordance with applicable tolerances. The free length of each assembled for the connection test Tube must be the three times the nominal diameter at least equal to, but not less than 250 mm.	yes	Samples were pre-assembled by the manufacturer
5	Implementation The specimen is to be secured in a closed container or pressure vessel. The container is provided with water from the fixed temperature T, $\pm 2^{\circ}\text{C}$ to complete. To ensure a temperature approximation, are 20 minutes to wait, unless temperature conditioning of the test specimen and / or a longer period in the Relevant sectoral standard is set. Any condensation is inside of the remove surface of the specimen. It takes 10 minutes to wait, and it is to ensure that the inner surface of the sample is completely dry. During the subsequent pressure test is to determine and record whether there are signs of leakage occurred on the inner surface of the test specimen and at what pressure. The first test pressure, P1 is to apply for at least 1h. Then the pressure is evenly without pressure surges on the second test pressure, increase P2. This test pressure is then at least for a further period of 1 hour to apply. *) The test instrument must have a clear view through the test body to make sure.	yes	Selected test pressures P1 = 100mbar P2 = 800mbar Additional test pressure P = 1,0bar

2.2 Measurements

Testing period: 12.2013 – 01.2014; Tester: Gottschald

Allocation of the samples

The test laboratory were handed the following test samples

sample	quantity	type	nominal diameter
1	1	two pipe sections connected with coupling	d 20
2	1		d 25
3	1		d 32
4	1		d 40
5	1		d 50
6	1		d 63

Measurements

The laboratory has determined the following measurements.

Test performed acc. to chapter 5

sample	nominal diameter	Name of test pressure	test pressure	leakage rate control		test result
				Visual check	measured	
1	d 20	P1	100 mbar	OK no moisture visible	0 cm ³ /h	passed
1	d 20	P2	800 mbar	OK no moisture visible	0 cm ³ /h	passed
1	d 20	P (additional)	1,0 bar	OK no moisture visible K	0 cm ³ /h	passed
2	d 25	P1	100 mbar	OK no moisture visible	0 cm ³ /h	passed
2	d 25	P2	800 mbar	OK no moisture visible	0 cm ³ /h	passed
2	d 25	P (additional)	1,0 bar	OK no moisture visible	0 cm ³ /h	passed
3	d 32	P1	100 mbar	OK no moisture visible	0 cm ³ /h	passed
3	d 32	P2	800 mbar	OK no moisture visible	0 cm ³ /h	passed
3	d 32	P (additional)	1,0 bar	OK no moisture visible	0 cm ³ /h	passed
4	d 40	P1	100 mbar	OK no moisture visible	0 cm ³ /h	passed
4	d 40	P2	800 mbar	OK no moisture visible	0 cm ³ /h	passed
4	d 40	P (additional)	1,0 bar	OK no moisture visible	0 cm ³ /h	passed
5	d 50	P1	100 mbar	OK no moisture visible	0 cm ³ /h	passed
5	d 50	P2	800 mbar	OK no moisture visible	0 cm ³ /h	passed

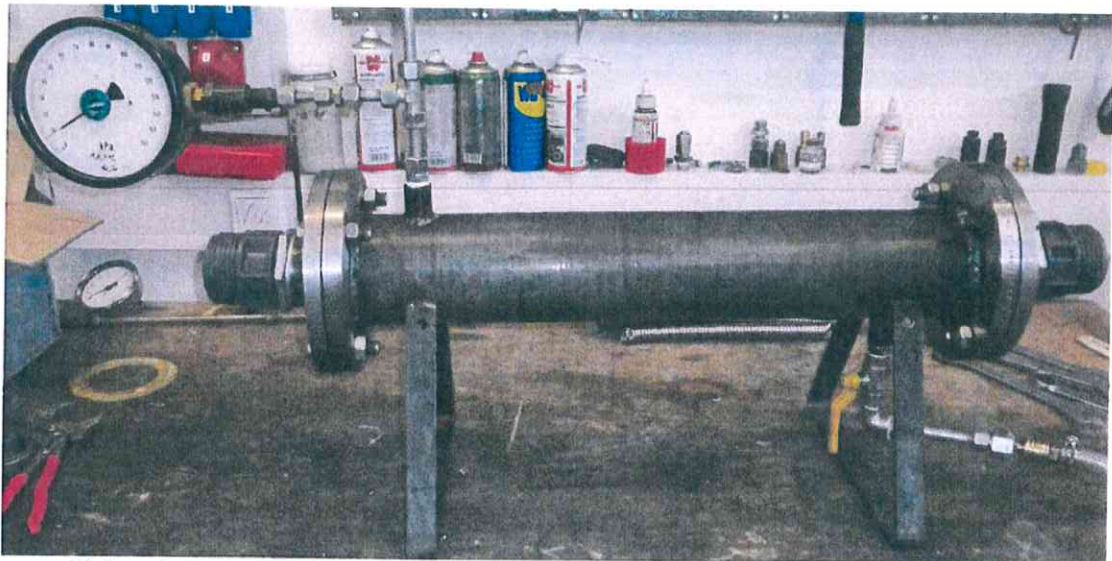
sample	nominal diameter	Name of test pressure	test pressure	leakage rate control		test result
				Visual check	measured	
5	d 50	P (additional)	1,0 bar	OK no moisture visible	0 cm ³ /h	passed
6	d 63	P1	100 mbar	OK no moisture visible	0 cm ³ /h	passed
6	d 63	P2	800 mbar	OK no moisture visible	0 cm ³ /h	passed
6	d 63	P (additional)	1,0 bar	OK no moisture visible	0 cm ³ /h	passed

Test conditions: test medium water, water temperature 20 °C, conditioning time 20 minutes, test pressures P1 = 100mbar, P2 = 800mbar and P(additional) 1,0bar, procedure visible check of the inner surface of the pipe if there is any moisture and waiting time for each test pressure 1 hour

Allowed measurement uncertainty: leakage rate $\pm 5\%$, pressure $\pm 0,05$ bar, water temperature $\pm 2^\circ\text{C}$,

There were no leaks at the test items before and after the aging cycles

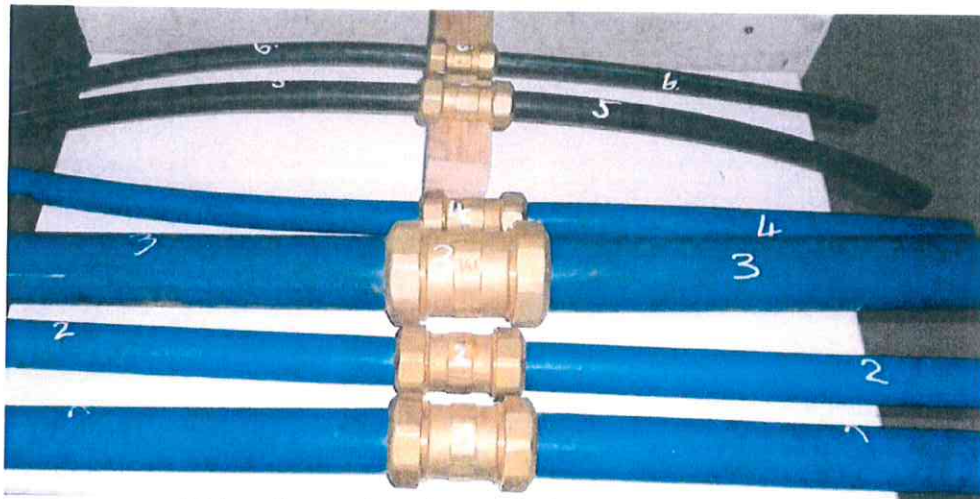
3. Photographs



Picture 2: test appliance, with test sample mounted, as shipped by the manufacturer



Picture 3: inner view of pipe and connector, visible moisture check



Picture 4: overview about tested pipes and connectors



4. Used measuring instruments

Kennzeichnung identification	Bezeichnung description	Meßgenauigkeit accuracy of measurement	Id.-nummer identification number	Letzte Kalibrierung Date last calibration	Kalibrierintervall Monate frequency of checks months
P 0107-1	Spring Pressure Gauge 0 – 160 kPa (0-1,6 bar)	$\pm 0,60\%$	DB 34	06.2012	24
MG 0041-1	Stopwatch SP100LH 1/100, 10h	+ 1s	9050	05.2012	24
V 0010-2 mit	Messgerät Almemo 2590-9 programmierbar, verschiedene Messbereiche	$\pm 0,02 \%$	514922	07.2012	48
T 0008-2	Temperaturfühler 1,5 mm Thermoelement, NiCrNi (Typ K)	$\pm 1,5 \text{ K}$			12



TECHNICAL REPORT n.09g1

Verification of compliance to brass fittings for polyethylene pipe (Series 4000, 4200, 4300) produced by Tecnovielle SpA against the requirements defined in the standard UNI EN 713:1995.

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1. GENERALITY

This report presents the results of tests conducted on brass fittings for polyethylene pipe (series 4000, 4200, 4300), produced by Tecnovielle SpA, manufacturer in Lumezzane Pieve, via Caduti, 2 - 25065 (BS) - Italy, conducted in the manner defined by the UNI EN 713:1995 "Plastics piping systems. Mechanical joints between fittings and polyolefin pressure pipes. Test method for leaktighness under internal pressure of assemblies subject to bending".

2. CLASSIFICATION

The nominal pressure for these fittings (Tecnovielle series 4000, 4200, 4300) is 25 bar.

3. FEATURES

From the data sheets of the producer is:

Line 4000

Body: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;
Nut: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;
Fastener ring: polyoxymethylene (POM);
OR: NBR

The articles of the line 4000 are:

- 4001 Joint for PE pipe - male



- 4002 Joint for PE pipe - female



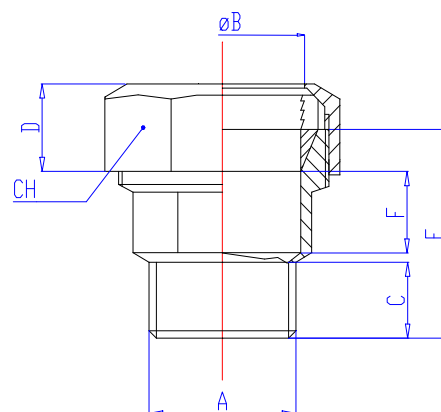
- 4003 Reduced joint for PE pipe - male



- 4004 Reduced joint for PE pipe - female



- 4005 Double Joint for PE pipe





- 4006 T Joint for PE pipe PE-F



- 4007 T Joint for PE pipe



- 4008 Elbow 90° for PE pipe



- 4009 Elbow 90° for PE pipe - male



- 4010 Elbow 90° for PE pipe - female



- 4021 Joint with flange for PE pipe male



- 4022 Joint with flange for PE pipe - female



Line 4200

Body: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;
Nut: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;
Fastener ring: Cu Zn 39 Pb 3 - CW614N - UNIEN12164;
OR: NBR

The articles of the line 4200 are:

- 4201 Joint for PE pipe - male
- 4202 Joint for PE pipe - female
- 4203 Reduced joint for PE pipe - male
- 4204 Reduced joint for PE pipe - female
- 4205 Double Joint for PE pipe
- 4206 T Joint for PE pipe PE-F
- 4207 T Joint for PE pipe
- 4208 Elbow 90° for PE pipe
- 4209 Elbow 90° for PE pipe - male
- 4210 Elbow 90° for PE pipe - female

Line 4300

Body: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;
Nut: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;
Fastener ring – gasket: polyamide with fiberglass - NBR



The articles of the line 4300 are:

- 4301 Joint for PE pipe - male
- 4302 Joint for PE pipe - female
- 4303 Reduced joint for PE pipe - male
- 4304 Reduced joint for PE pipe - female
- 4305 Double Joint for PE pipe
- 4306 T Joint for PE pipe PE-F
- 4307 T Joint for PE pipe
- 4308 Elbow 90° for PE pipe
- 4309 Elbow 90° for PE pipe - male
- 4310 Elbow 90° for PE pipe - female

4. ARTICLES TESTED

Line 4000 - the articles tested are:

DN	tubo PE	art. serie 4000						
20	PE100	4001	4002			4008	4009	4010
25	PE100	4001	4002	4003	4004	4008	4009	4010
32	PE100	4001	4002	4003	4004	4008	4009	4010

Line 4200 - the articles tested are:

DN	tubo PE	art. serie 4200						
20	PE100	4201	4202			4208	4209	4210
25	PE100	4201	4202	4203	4204	4208	4209	4210
32	PE100	4201	4202	4203	4204	4208	4209	4210

Line 4300 - the articles tested are:

DN	tubo PE	art. serie 4300						
20	PE100	4301	4302			4308	4309	4310
25	PE100	4301	4302	4303	4304	4308	4309	4310
32	PE100	4301	4302	4303	4304	4308	4309	4310

5. TEST PARAMETERS

The UNI EN 713:95 specify a method for verifying the required hydrostatic pressure inside the mechanical assembly of fittings and polyolefins pipes subjected to bending. It defines a method for calculating the average radius of curvature and the procedure for the decline. The verification of the internal pressure required to be made in accordance with the method of UNI EN 715:1995 "Thermoplastics pipings systems. End- load bearing joints between small diameter pressure pipes and fittings. Test method for leaktightness under internal water pressure, including end thrust. " Therefore, the test parameters such as temperature testing, and test pressure are identical to those that were used for test the performance of the brass fittings for polyethylene pipe of lines 4000, 4200 and 4300 Tecnovielle (see TECHNICAL REPORT n.09e1).

In our tests, we adopted the following parameters:

- temperature=25°C (with waiting for 20 minutes before entering the test pressure);
- achievement of the test pressure (PS) in 30 + / - 5 seconds;
- time-keeping pressure PS, t = 4h;
- increase the pressure (in the absence of losses in the junction under test) to the junction leakage or the occurrence of the outbreak of the pipe;
- with a nominal pressure of the polyethylene tube like 25 bar, we defined as value of the test pressure PS = 30bar (*);
- the free length, L, of pipe was determined in accordance with the requirements of paragraph 5 of the standard UNI EN 713:1995 and is equal to 10 times the nominal outside diameter of the pipe (dn);
- a radius of curvature R equal to 20 times the nominal outside diameter of the pipe (dn);
- a length "l" in the shape of bending of the tube amounted to three quarters of the free length "L", between the joints (ie, equal to 7.5 times the nominal outside diameter of the pipe dn).

All components of all the tubes tested were assembled after more than 24 hours of their manufacture.



(*) has adopted a PS value identical to that used for the test of Tecnovielle fittings series 4000, 4200 and 4300 according to UNI EN 715 (Ref. Technical report n.09e1, 27 May 2009).

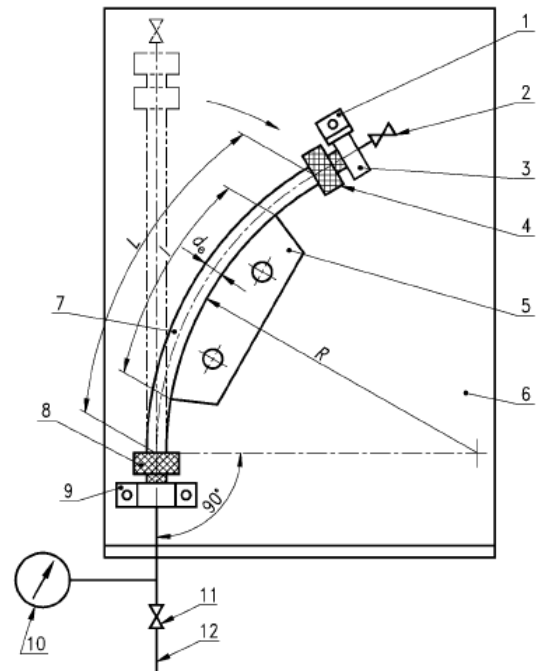
6. TEST INSTRUMENTATION

The execution of the tests has been used a machine that can reach a pressure equal to 100bar and adjusting the temperature of fluid up to 70 °C.

The gauge tied to the machine is subjected to regular verification / calibration (see attached certificate).

The outline of the test described in paragraph 4 of the UNI EN 713:1995 is as follows:

1. fixing plate
2. valve
3. sleeve
4. terminal fitting
5. bending shape
6. panel test
7. pipe
8. tested fitting
9. sleeve
10. manometer
11. valve
12. tube connecting the hydraulic pump



Test machine used:



7. DATE OF TEST

The summary of tests performed on the n.57 above Articles, with the date of execution is the following:



Fitting code	R of bending pipe (mm)	DN	Nominal Pressure (PN)	Test Pressure (PS)	Pressione with pipe failure	Result	Date
4001	400	20	25 bar	30 bar	84 bar	OK	27/05/09
4002	400	20	25 bar	30 bar	80 bar	OK	27/05/09
4008	400	20	25 bar	30 bar	80 bar	OK	28/05/09
4009	400	20	25 bar	30 bar	78 bar	OK	28/05/09
4010	400	20	25 bar	30 bar	86 bar	OK	29/05/09
4001	500	25	25 bar	30 bar	78 bar	OK	29/05/09
4002	500	25	25 bar	30 bar	80 bar	OK	03/06/09
4003	500	25	25 bar	30 bar	78 bar	OK	03/06/09
4004	500	25	25 bar	30 bar	80 bar	OK	04/06/09
4008	500	25	25 bar	30 bar	82 bar	OK	04/06/09
4009	500	25	25 bar	30 bar	76 bar	OK	05/06/09
4010	500	25	25 bar	30 bar	80 bar	OK	05/06/09
4001	640	32	25 bar	30 bar	72 bar	OK	08/06/09
4002	640	32	25 bar	30 bar	70 bar	OK	08/06/09
4003	640	32	25 bar	30 bar	76 bar	OK	09/06/09
4004	640	32	25 bar	30 bar	76 bar	OK	09/06/09
4008	640	32	25 bar	30 bar	74 bar	OK	10/06/09
4009	640	32	25 bar	30 bar	74 bar	OK	10/06/09
4010	640	32	25 bar	30 bar	76 bar	OK	11/06/09
4201	400	20	25 bar	30 bar	80 bar	OK	11/06/09
4202	400	20	25 bar	30 bar	86 bar	OK	12/06/09
4208	400	20	25 bar	30 bar	80 bar	OK	12/06/09
4209	400	20	25 bar	30 bar	80 bar	OK	15/06/09
4210	400	20	25 bar	30 bar	86 bar	OK	15/06/09
4201	500	25	25 bar	30 bar	80 bar	OK	16/06/09
4202	500	25	25 bar	30 bar	82 bar	OK	16/06/09
4203	500	25	25 bar	30 bar	80 bar	OK	17/06/09
4204	500	25	25 bar	30 bar	80 bar	OK	17/06/09
4208	500	25	25 bar	30 bar	76 bar	OK	18/06/09
4209	500	25	25 bar	30 bar	80 bar	OK	18/06/09
4210	500	25	25 bar	30 bar	80 bar	OK	19/06/09
4201	640	32	25 bar	30 bar	76 bar	OK	19/06/09
4202	640	32	25 bar	30 bar	76 bar	OK	22/06/09
4203	640	32	25 bar	30 bar	74 bar	OK	22/06/09
4204	640	32	25 bar	30 bar	76 bar	OK	23/06/09
4208	640	32	25 bar	30 bar	74 bar	OK	23/06/09
4209	640	32	25 bar	30 bar	76 bar	OK	24/06/09
4210	640	32	25 bar	30 bar	76 bar	OK	24/06/09
4301	400	20	25 bar	30 bar	86 bar	OK	25/06/09
4302	400	20	25 bar	30 bar	80 bar	OK	25/06/09
4308	400	20	25 bar	30 bar	80 bar	OK	26/06/09
4309	400	20	25 bar	30 bar	80 bar	OK	26/06/09
4310	400	20	25 bar	30 bar	80 bar	OK	29/06/09
4301	500	25	25 bar	30 bar	78 bar	OK	29/06/09
4302	500	25	25 bar	30 bar	80 bar	OK	30/06/09
4303	500	25	25 bar	30 bar	78 bar	OK	30/06/09
4304	500	25	25 bar	30 bar	82 bar	OK	01/07/09
4308	500	25	25 bar	30 bar	80 bar	OK	01/07/09
4309	500	25	25 bar	30 bar	78 bar	OK	02/07/09
4310	500	25	25 bar	30 bar	80 bar	OK	02/07/09
4301	640	32	25 bar	30 bar	74 bar	OK	03/07/09
4302	640	32	25 bar	30 bar	76 bar	OK	03/07/09
4303	640	32	25 bar	30 bar	76 bar	OK	06/07/09
4304	640	32	25 bar	30 bar	76 bar	OK	06/07/09
4308	640	32	25 bar	30 bar	74 bar	OK	07/07/09
4309	640	32	25 bar	30 bar	72 bar	OK	07/07/09
4310	640	32	25 bar	30 bar	76 bar	OK	08/07/09



8. RESULTS

I, Ing Domenico Aglioni, declares that no loss was recorded on all connections of the various fittings tested and that they are in compliance with the requirements of UNI EN 713:1995. The fittings analyzed are produced by Tecnovielle SpA, identified by lines 4000, 4200, 4300.

Attached there is a copy of the calibration certificate of the gauge tied to the machine test (code S007).

Lumezzane, 6 July 2009

Ing. Domenico Aglioni





TECHNICAL REPORT n.10e1

Verification of compliance to brass fittings for polyethylene pipe (Series 4300) produced by Tecnovielle SpA against the requirements defined in the standard UNI EN 715:1995

1.	GENERALITY	1
2.	CLASSIFICATION	1
3.	FEATURES	1
4.	ARTICLES TESTED	2
5.	TEST PARAMETERS	2
6.	TEST INSTRUMENTATION	3
7.	DATE OF TEST	4
8.	RESULTS	4

1. GENERALITY

This report presents the results of tests conducted on brass fittings for polyethylene pipe (series 4300), produced by Tecnovielle SpA, manufacturer in Lumezzane Pieve, via Caduti, 2 - 25065 (BS) - Italy, conducted in the manner defined by the UNI EN 715:1995 "Thermoplastics pipings systems. End- load bearing joints between small diameter pressure pipes and fittings. Test method for leaktightness under internal water pressure, including end thrust".

2. CLASSIFICATION

The nominal pressure for these fittings (Tecnovielle serie 4300) is 25 bar.

3. FEATURES

From the data sheets of the producer is:

Line 4300

Body: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;

Nut: Cu Zn 40 Pb 2 - CW617N - UNIEN12165;

Fastener ring - gasket: polyamide with fiberglass - NBR 70 (in compliance with EN 682 and EN681)

The articles of the line 4300 are:

- 4301 Joint for PE pipe - male



- 4302 Joint for PE pipe - female



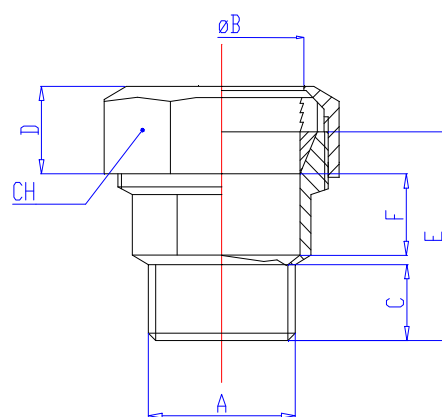
- 4303 Reduced joint for PE pipe - male



- 4304 Reduced joint for PE pipe - female



- 4305 Double Joint for PE pipe





- 4306 T Joint for PE pipe PE-F



- 4307 T Joint for PE pipe



- 4308 Elbow 90° for PE pipe



- 4309 Elbow 90° for PE pipe - male



- 4310 Elbow 90° for PE pipe - female



4. ARTICLES TESTED

Line 4300 - the articles tested are:

DN	tubo PE	art. serie 4300									
20	PE100	4301	4302			4305	4306	4307	4308	4309	4310
25	PE100	4301	4302	4303	4304	4305	4306	4307	4308	4309	4310
32	PE100	4301	4302	4303	4304	4305	4306	4307	4308	4309	4310
40	PE100	4301	4302	4303	4304	4305	4306	4307	4308	4309	4310
50	PE100	4301	4302	4303	4304	4305	4306	4307	4308	4309	4310
63	PE100	4301	4302			4305	4306	4307	4308	4309	4310

5. TEST PARAMETERS

In our tests, we adopted the following parameters:

- time-keeping pressure $t = 8h$;
- free length, L , of the tested pipe more than 300mm;
- temperature=25°C (with waiting for 20 minutes before entering the test pressure);
- achievement of the test pressure (PS) in 30 ± 5 seconds;
- with a nominal pressure of the polyethylene tube like 25 bar, we defined as value of the test pressure $PS = 30bar (*)$.

(*) tests with higher pressures have highlighted the outbreak of the polyethylene pipe without any previous failure occurred in brass fittings or loss of hydraulic pressure.

All components of all the tubes tested were assembled after more than 24 hours of their manufacture.



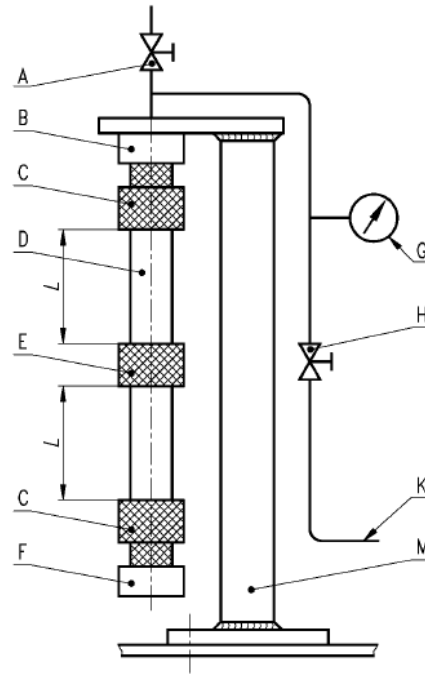
6. TEST INSTRUMENTATION

The execution of the tests has been used a machine that can reach a pressure equal to 100bar and adjusting the temperature of fluid up to 70 °C.

The gauge tied to the machine is subjected to regular verification / calibration (see attached certificate).

The outline of the test described in paragraph 3 of the UNI EN 715:1995 is as follows:

- A. valve
- B. sleeve
- C. tested fitting
- D. pipe
- E. tested fitting (optional)
- F. end terminal
- G. manometer
- H. valve
- K. connection to the hydraulic pump
- M. structure



Test machine used:





7. DATE OF TEST

The summary of n.22 tests performed on n.56 above Articles, with the date of execution is the following:

Fitting code 1	Fitting code 2 (jointed to code 1)	Fitting code 3 (jointed to code 1 e 2)	DN	Q.ty tested	Nominal pressure (PN)	Pressure of test	Result	Date
4301	4302	4305	20	1	25 bar	30 bar	OK	12/04/10
4307	4309	-	20	1	25 bar	30 bar	OK	13/04/10
4308	4310	4306	20	1	25 bar	30 bar	OK	14/04/10
4301	4302	4305	25	1	25 bar	30 bar	OK	15/04/10
4303	4304	4306	25	1	25 bar	30 bar	OK	16/04/10
4307	4309	-	25	1	25 bar	30 bar	OK	19/04/10
4308	4310	-	25	1	25 bar	30 bar	OK	20/04/10
4301	4302	4305	32	1	25 bar	30 bar	OK	21/04/10
4303	4304	4306	32	1	25 bar	30 bar	OK	22/04/10
4307	4309	-	32	1	25 bar	30 bar	OK	23/04/10
4308	4310	-	32	1	25 bar	30 bar	OK	26/04/10
4301	4302	4305	40	1	25 bar	30 bar	OK	27/04/10
4303	4304	4306	40	1	25 bar	30 bar	OK	28/04/10
4307	4309	-	40	1	25 bar	30 bar	OK	29/04/10
4308	4310	-	40	1	25 bar	30 bar	OK	30/04/10
4301	4302	4305	50	1	25 bar	30 bar	OK	03/05/10
4303	4304	4306	50	1	25 bar	30 bar	OK	04/05/10
4307	4309	-	50	1	25 bar	30 bar	OK	05/05/10
4308	4310	-	50	1	25 bar	30 bar	OK	06/05/10
4301	4302	4305	63	1	25 bar	30 bar	OK	07/05/10
4307	4309	-	63	1	25 bar	30 bar	OK	10/05/10
4308	4310	4306	63	1	25 bar	30 bar	OK	11/05/10

8. RESULTS

I, Ing Domenico Aglioni, declares that no loss was recorded on all connections of the various fittings tested and that they are in compliance with the requirements of UNI EN 715:1995. The fittings analyzed are produced by Tecnovielle SpA, identified by lines 4300.

Attached there is a copy of the calibration certificate of the gauge tied to the machine test (code S007).

Lumezzane, 11 May 2010

Ing. Domenico Aglioni



 Trescal S.r.l. - 25039 Travagliato (BS) - Via dei Metalli, 1 Tel. 030 21491 - Fax 030 2722091 - e-mail: info@trescal.com - http://www.trescal.it Società soggetta all'attività di direzione e coordinamento di Financiere Seringa III		RAPPORTO DI TARATURA CALIBRATION CERTIFICATE N° MA-RTI-0152-2010	SERVIZIO DI TARATURA CALIBRATION SERVICE TEMPERATURA: 20°C HUMIDITY: UR 45 ± 5%
CLIENTE - CUSTOMER TECNOVIELLE S.p.A. 25066 - LUMEZZANE PIEVE (BS)		ORDINE CLIENTE - ORDER N° 91 COMMESSA INTERNA - JOB NUMBER 0433826	
DESCRIZIONE DELLO STRUMENTO TARATO - DESCRIPTION OF THE CALIBRATED GAUGE Manometro a quadrante 0 ÷ 100 bar Kl. 1.6 (NUOVA FIMA)		MATRICOLA N° - SERIAL N° S007 DISEGNO - DRAWING N° -	
STRUMENTO UTILIZZATO PER LA TARATURA - INSTRUMENT USED FOR CALIBRATION CALIBRATORE RUSKA mod. 7010-713		MATRICOLA N° - SERIAL N° 48412	
NORMA DI RIFERIMENTO - REFERENCE SPECIFICATIONS UNI EN 837-1/2/3		PROCEDURA INTERNA - INTERNAL PROCEDURE MG/PC/42	
CAMPIONE DI RIFERIMENTO - REFERENCE MASTER 48412	CERTIFICATO SIT DEL CAMPIONE - SIT CERTIFICATE OF THE MASTER C1090799E0	PERIODICITÀ CONTROLLI (MESI) - CALIBRATION PERIODICITY (MONTHS) -	

Pressione di riferimento <i>bar</i>	Valore indicato <i>bar</i>		Errore di indicazione <i>%</i>	
	Pressione		Pressione	
	crescente	decrescente	crescente	decrescente
0.00	-	0.0	-	0.00
10.00	10.4	10.4	0.40	0.40
30.00	31.2	31.2	1.20	1.20
50.00	51.2	51.6	1.20	1.60
80.00	81.6	81.6	1.60	1.60
100.00	101.2	-	1.20	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

ERRORE MASSIMO RILEVATO			%
Errore di indicazione E_{max}	positivo		1.60
	negativo		0.00

CONDIZIONI DI TARATURA DELLO STRUMENTO :

Posizione : Verticale
 Fluido di taratura : Aria
 Modalità di taratura : Pressione relativa alla pressione atmosferica
 Livello di riferimento : Piano del raccordo di connessione pneumatico
 Minima divisione : 2 bar Risoluzione : 0.4 bar
 Campo di uscita : 0 ÷ 100 bar Alimentazione : -

CONDIZIONI AMBIENTALI DI TARATURA :

Temperatura : 20.0 ± 1°C

INCERTEZZA ESTESA DEL LABORATORIO

$U = 0.43\%$ (Riferita al fondo scala)

OSSERVAZIONI :

Il manometro è stato picchiettato ad ogni punto di misura.

(U corrisponde per una distribuzione normale ad una probabilità di copertura di circa il 95%)

ESITO DELLA VERIFICA - RESULT CONFORME	IL COLLAUDATORE - CHECKED BY CLERICI M.	IL RESPONSABILE - MANAGER MUSA TTI G.	Travagliato, 2010/02/24
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