



Fucoli Somepal
FUNDIÇÃO DE FERRO, S.A.

DESDE
SINCE 1946

GFIX® MULTIMATERIAL COUPLING AND FLANGE ADAPTOR

OPERATION MANUAL

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APPLICATION



MADE IN EUROPE

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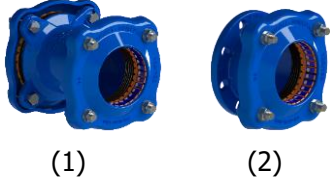
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1. DESCRIPTION

The multimaterial coupling and flange adaptor with GFIX® grip system from Fucoli-Somepal allow connection of pipes with diferentes external diameters and/or materials. Composed of a ductile cast iron (EN-GJS-500-7) body, fully coated with epoxy coating of 250 µm. The sealing and restraint system consists of a seal and a hold system of the grippers with steel rivets that locking the pipes.

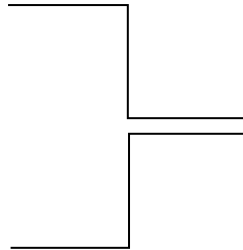
This product has at least the following marks:

	Marking	Observation
Product manufacturer	Fucoli-Somepal	See section 10 – Further information.
Design/ Model  (1) (2)	Two models: (1) GFIX® multimaterial coupling (2) GFIX® multimaterial flanged adaptor	Identification according to the application of the product: Drinking water 08.400 and 08.401 Wastewater 11.4000 and 11.4001 With sealing for gas 16.400 and 16.401
Identification	Lot/date/product code	Identified in the product itself.
Nominal diameter	e.g. DN and numerical value	Numerical value for DN in [mm].
Tolerance	e.g. min./max. and numerical value	Numerical value min./max. In [mm].
Nominal pressure	PN and numerical value	Numerical value for PN in bar.
Working pressure range	Operation pressure range PN and numerical value	Pressure data is displayed as overpressure above atmospheric pressure.
Service temperature	Max. permitted temperature	Drinking water and wastewater from 0° C (excluding frost) to 70° C With sealing for gas from -5° C to 60° C
Material	e.g. Ductile iron EN-GJS-500-7	Identification of the materials of the components in the technical datasheet.

ATTENTION: The markings should neither be covered, painted nor altered to remain identifiable.

2. OPERATION

These coupling are suitable for the following pipes:



Types of pipes:

- Asbestos cement
- PE + Insert [ref.15.400]
- PVC + Insert [ref.15.400]
- PVC-O + Insert [ref.15.400]
- Steel
- Stainless steel
- Ductile cast iron
- Grey cast iron
- Glass fiber reinforcement plastic (GRP)

Figure 1

For more information consult the technical datasheet








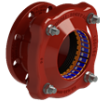

	 Drinking water	 Wastewater	 with sealing for gas
GFIX® multimaterial coupling	 08.400	 11.4000	 16.400
GFIX® multimaterial flanged adaptor	 08.401	 11.4001	 16.401

Table 1

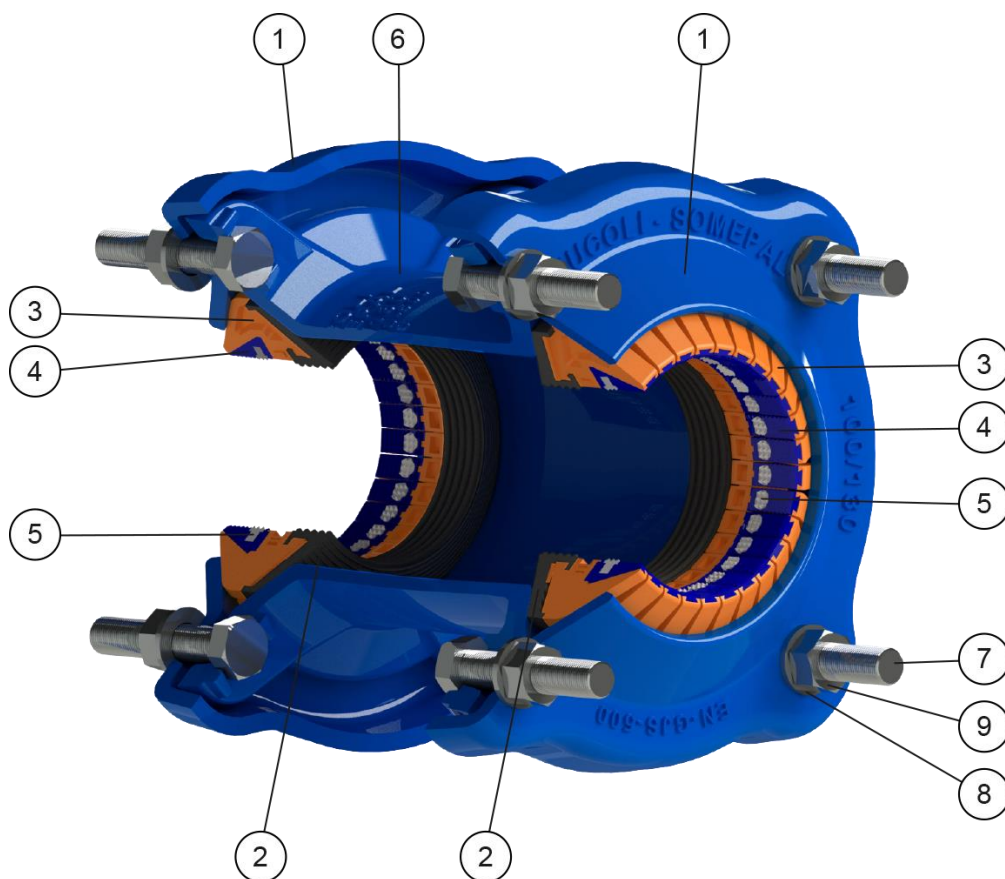


Figure 2

Item	Description	Material
1	Locking ring	Ductile iron EN-GJS-500-7
2	Sealing	Elastomer EPDM or Elastomer NBR
3	Grippers holder	POM
4	Grippers	POM
5	Rivets with milling	Tempered steel cq 15
6	Body	Ductile iron EN-GJS-500-7
7	Bolts	Stainless steel A2
8	Washers	Stainless steel A2
9	Nuts	Stainless steel A4

Table 2

In figure 2 the sealings of the GFIX® multimaterial coupling are identified, they can be of the following materials depending on the purpose:

- Elastomer EPDM, approved for drinking water, according to EN 681-1 and ZA annex – with CE for drinking water networks;
- Elastomer NBR for wastewater EN 681-1;
- Elastomer NBR for gas EN 682-GA;

GFIX® SYSTEM

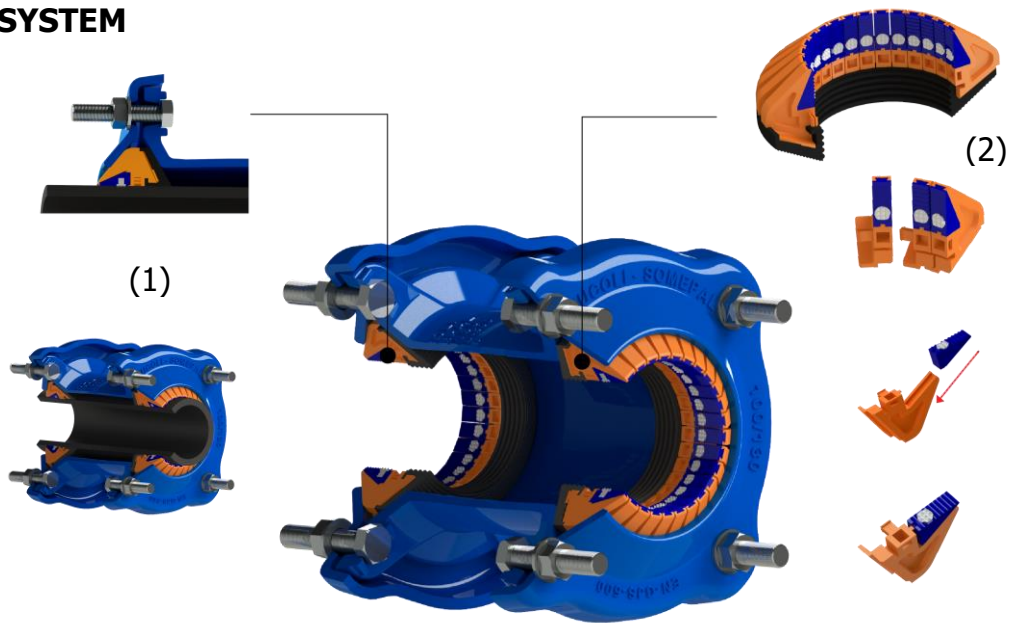


Figure 3

The GFIX® System allows a high-fidelity seal/locking of the assembly without pipe disconnections.

(1) The pipe block is performed by a tempered serrated rivets system mounted on the conical claws that fit and grip causing no damage on the pipe.

(2) The sealing is carried out through a seal with O-rings, mounted on a ring made by the grip support, which will slide until being pressed against the pipe.

The developed GFIX® System allows pipe connection above or below ground, without component change needs.

3. BASIC INSTRUCTION FOR SAFETY

3.1. USED ADVICE

Ensure that all health and safety regulations are being applied on the system which this product is being installed. The following requirements identified below are no responsibility of the manufacturer, but have to be guaranteed by the user:

1. The product may only be used for purposes described in section 1.
2. The installation must be carried out by competent and trained person using the appropriate equipment. The main contractor must guarantee that any operators or subcontractors involved in the installation are properly competent to carry out the work. The installer shall assure that all equipment used during the installation is properly maintained, suitable for safe installation and will not cause any damage to the product.
3. Whenever the products are installed, operated or maneuvered, the risks inherent in the pressurizing of liquids or gases must all be taken into account. The coupling must be fully insulated, depressurized and drained before starting the work.
4. The system must be designed properly so that the product is not in tension.
5. The Fucoli-Somepal products are designed to be suitable for their purpose and to high standard of reliability, providing a safe and low risk product when used correctly for the purpose for which it was designed.

The Fucoli-Somepal cannot be held responsibility for incidents involving installation, operation or incorrect maintenance. In this way the responsibility will be entirely on the user.

3.2. HANDLING HAZARDS

Operators must comply with the rules defined at the intervention place.

In addition to the defined, during maintenance operations, of the product or other elements where the product is installed, it is necessary to always comply with the safety rules, taking into account the risk of falling with a drop in the use of this type of products, seeking to delimit the dangerous area and allowing only access to operators who know the risks.

During handling the product, always use the following personal protective equipment:



Protection gloves



Steel-tipped boots

You can prevent situations associated with the risk of product fall during handling

When moving the product manually, if the weight of the product exceeds 30 Kg, you must carry out with more than one operator.

Those involved in assembly/disassembly operations, utilization, inspection and maintenance must have read and understood this installation manual.

3.3. PRODUCT CHANGE

Before any modification and/or alteration to the product, carried out by the user, Fucoli-Somepal SA should be asked about it in order to give its approval. Otherwise, the warranty becomes invalid.

4. TRANSPORTATION

The coupling should be handled, transported and stored with care. The load should be placed gently on the floor without dropping, avoiding shocks. Raise only by suitable straps.

When mechanical means are required for lifting and handling the coupling, they must be appropriate and applied as shown in figure 4.

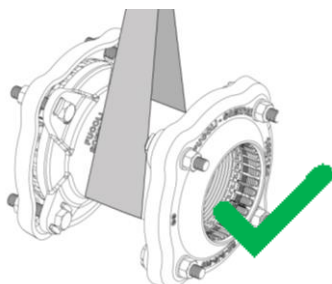


Figure 4

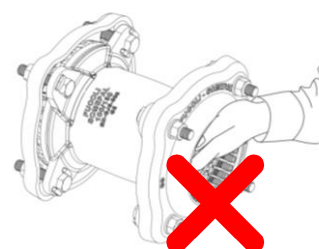
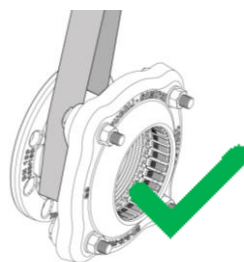


Figure 5

5. STORAGE

Under no circumstance should the coupling be stored outdoors, to avoid damage caused by environmental conditions. The coupling must not come into contact with any contaminants before installation.

Climate protection must be provided. Ideally, couplings should be stored in a location that protects the equipment from direct exposure to sunlight and freezing, with the current temperature coupling always greater than the dew point.

If the joint is stored for a long time, it is recommended to inspected before use.

Make sure that the seals are not compressed during storage.

NOTE: ISO 2230 describes the storage conditions for elastomers in detail and specifies the permissible storage period.

The coupling should be stored in the horizontal position – fig. 6

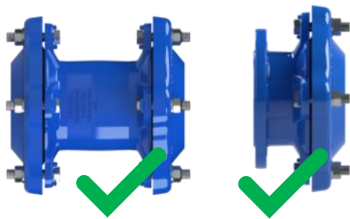


Figure 6

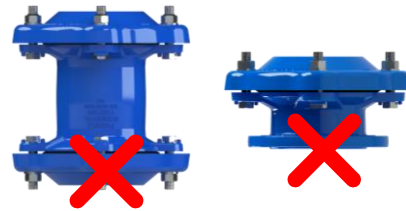


Figure 7

6. INSTALLATION

Before installation, operators must ensure that the pipework is free of debris and the equipment is in proper condition. If debris are found disposed of them.

ATTENTION: Prior to installation make sure the pipes are cleaned of all debris.

It is very important that the sealing of the coupling is protected from dust and debris during the installation process, avoiding non-compliant sealing.

WARNING: Before installation, make sure that all pressurized lines involved in the installation are insulated, depressured and drained before starting any work.

6.1 INSTALLATION INSTRUCTION

Installation instruction next page.

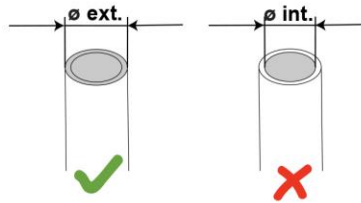
GFIX® SYSTEM

INSTALLATION INSTRUCTION

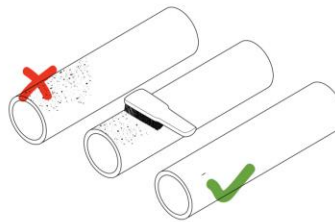
COUPLING CHOICE

TOLERANCES

Coupling		Coupling flanged	
mm	DN	mm	mm
39 - 52	50	39 - 52	
49 - 64	50	49 - 64	
63 - 83	60/65	63 - 83	
72 - 93	-	-	
78 - 103	80	78 - 103	
87 - 117	80/100	87 - 117	
100 - 130	100	100 - 130	
117 - 147	125	117 - 147	
138 - 168	-	-	
152 - 182	150	152 - 182	
172 - 202	-	-	
198 - 228	200	198 - 228	
217 - 257	-	-	
245 - 285	200 250	245 - 285	
300 - 340	300	300 - 340	
340 - 380	300 350	340 - 380	
390 - 430	400	390 - 430	

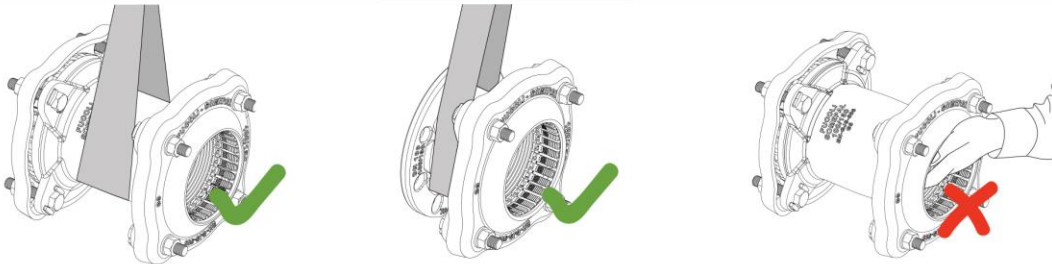


1. Choose the coupling according to the pipe external diameter.



2. Clean the pipe.

TRANSPORT



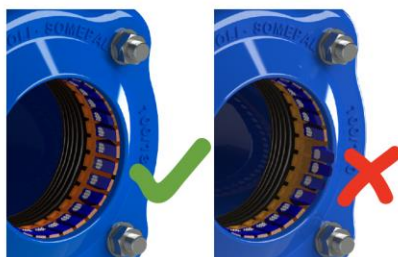
1. Coupling should be handled, transported and stored with care. When mechanical means are required for lifting and handling the coupling, they must be appropriate and applied as shown in the image.

UNSCREW



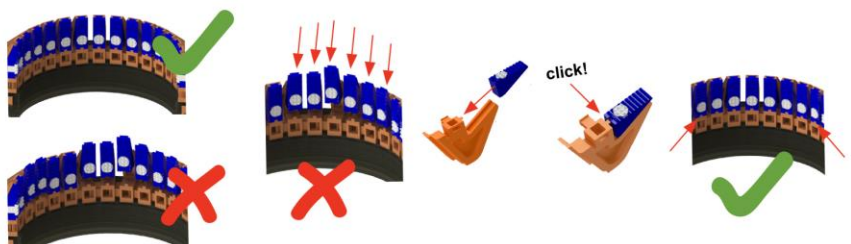
1. Unscrew the screws by hand, but do not remove them. See table 1 page 3 (for coupling) or table 2 page 4 (for flanged coupling).

CHECK THE PRODUCT - GRIPPERS GFIX® SYSTEM

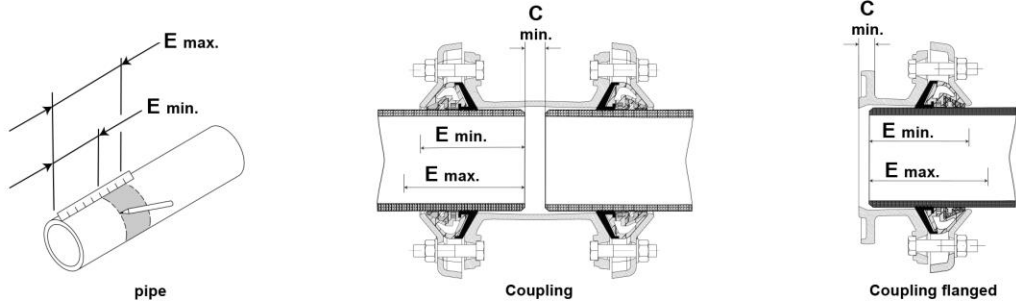


2.1. Check if the grippers are in the correct position.

PROCEDURE FOR CORRECTION OF THE GRIPPERS



2.2. Fit the loose grippers into the grippers holder until you hear 'click'.

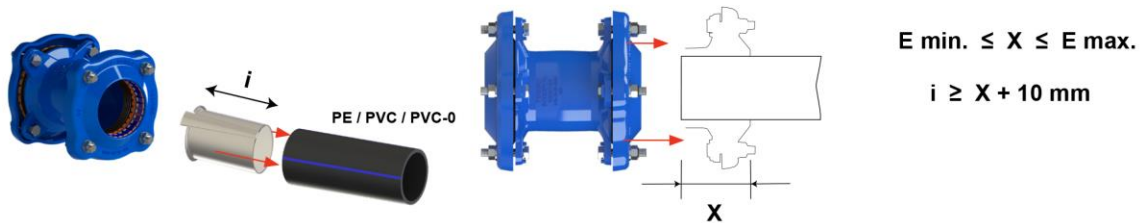


3. Mark the insertion depth (E) in the pipe. See table 1 page 3 (for coupling) or table 2 page 4 (for flanged coupling).

4. Pipe should be inserted into the coupling at a depth $E_{min.} \leq X \leq E_{max.}$

A. PIPES PE / PVC / PVC-O

PE / PVC / PVC-O pipes should be installed with insert.



5.1. Insert length must be $i \geq X + 10$ mm.

INSERT INSTALLATION



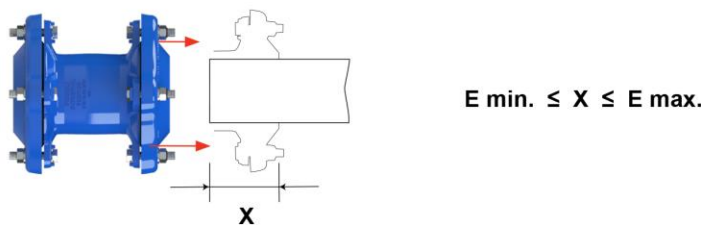
5.2. Check if the insert is suitable for the internal diameter of the pipe.

5.3. Fit the insert body until the edge butts against the pipe end.

5.4. Insert the wedge until the body touches fully pipe inside. Mark the wedge 5-10 mm and cut off the excess.

5.5. Tap the wedge in place, until flush with the pipe surface.

B. OTHER PIPES



SCREW




6. Tighten the screws by hand. See table 1 page 3 (for coupling) or table 2 page 4 (for flanged coupling).

PRESSURE TEST

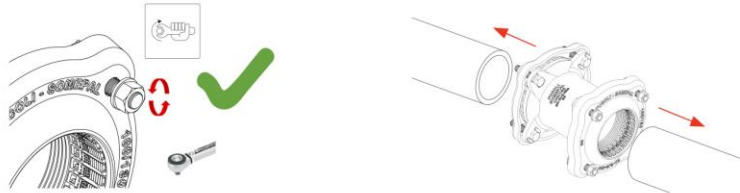


$$P_{max} \leq 1.5 \times PFA$$

 $\leq 0^\circ \text{C}$ PE pipe applied to temperatures $\leq 0^\circ \text{C}$
Apply torque, wait 30 min and reapply the torque.

See table 1 page 3 (for coupling) or table 2 page 4 (for flanged coupling)

DISMANTLING INSTRUCTIONS

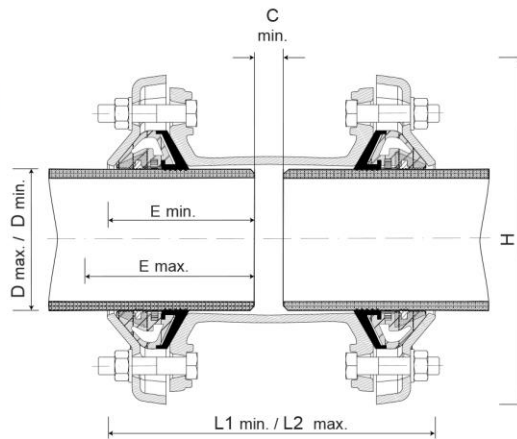


1. Unscrew the screws by hand, but do not remove them.
2. Disassemble the tubes

TABLE 1 - GFIX® MULTIMATERIAL COUPLING



Deflection angle of the pipe 8°



GFIX® multimaterial coupling



 Drinking water
PFA = 16 bar


ref.08.400






 Wastewater
PFA = 16 bar

ref.11.4000

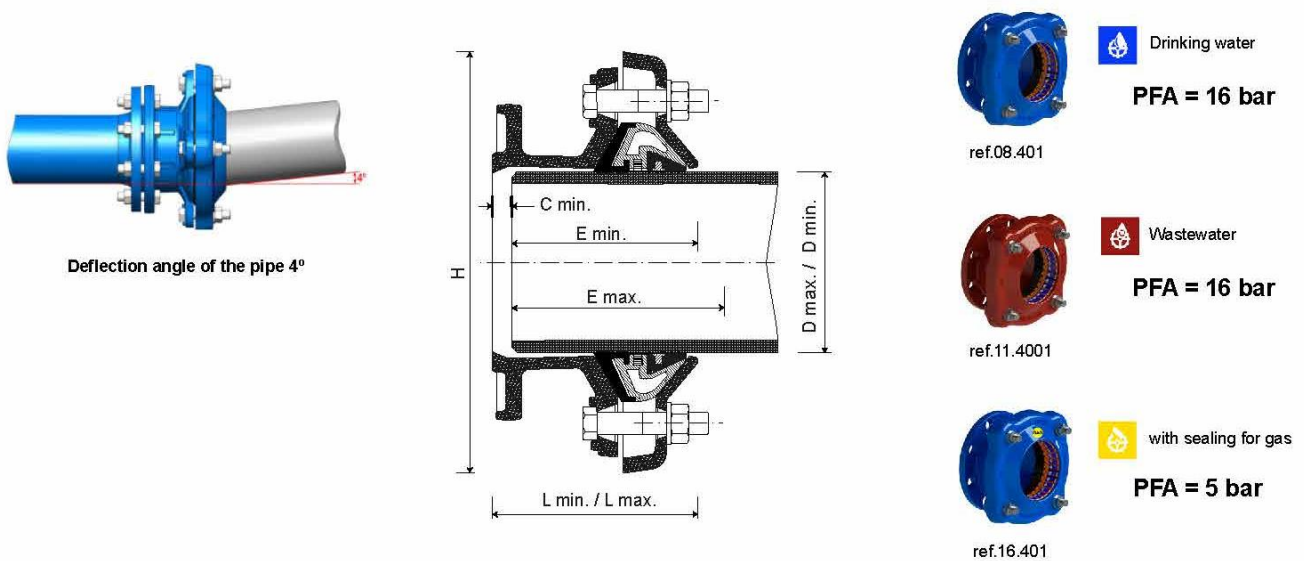





 with sealing for gas
PFA = 5 bar

ref.16.400

D min. / max.				L1 min. mm	L2 max. mm	H mm	E min. mm	E max. mm	C min. mm	i mm
	code Drinking water	code Wastewater	code with sealing for gas							
39/52	10900400	10908400	10900800	233	250	162	90	115	20	175
49/64	10900401	10908401	10900802	231	250	175	90	115	20	175
63/83	10900402	10908402	10900804	258	286	209	105	133	20	175
72/93	10900424	10908415	10900805	257	286	217	105	133	20	175
78/103	10900403	10908403	10900806	250	286	229	105	133	20	175
87/117	10900404	10908404	10900808	244	286	243	105	133	20	175
100/130	10900405	10908405	10900810	253	299	256	105	140	20	175
117/147	10900406	10908406	10900812	253	299	273	105	140	20	175
138/168	10900407	10908407	10900814	253	299	294	105	140	20	175
152/182	10900408	10908408	10900816	288	330	308	115	155	20	200
172/202	10900409	10908409	10900818	288	330	325	115	155	20	200
198/228	10900410	10908410	10900820	288	330	354	115	155	20	200
217/257	10900411	10908411	10900822	300	359	392	130	170	20	225
245/285	10900412	10908412	10900824	383	440	434	150	210	20	225
300/340	10900413	10908413	10900826	383	440	479	150	210	20	225
340/380	10900413	10908414	10900828	383	440	519	150	210	20	225
390/430	10900415	10908416	10900830	383	440	571	150	210	20	225

D min. / max.	Bolt		Torque
49/64	M12	19mm	50 - 70 Nm
63/83	M12	19mm	50 - 70 Nm
72/93	M12	19mm	50 - 70 Nm
78/103	M12	19mm	50 - 70 Nm
87/117	M12	19mm	50 - 70 Nm
100/130	M16	24mm	90 - 120 Nm
117/147	M16	24mm	90 - 120 Nm
138/168	M16	24mm	90 - 120 Nm
152/182	M16	24mm	90 - 120 Nm
172/202	M16	24mm	90 - 120 Nm
198/228	M16	24mm	90 - 120 Nm
217/257	M16	24mm	90 - 120 Nm
245/285	M16	24mm	90 - 120 Nm
300/340	M16	24mm	90 - 120 Nm
340/380	M16	24mm	90 - 120 Nm
390/430	M16	24mm	90 - 120 Nm

TABLE 2 - GFIX® MULTIMATERIAL COUPLING FLANGE ADAPTOR

GFIX® multimaterial coupling flanged adaptor

DN Flange	D min. / max.	PN				L1 min. mm	L2 max. mm	H mm	E min. mm	E max. mm	C min. mm	i mm	Bolt	Torque
			code Drinking water	code Wastewater	code with sealing for gas									
50	39/52	10/16	10900500	10908500	10900600	129	138	195	90	120	15	175	M12	19mm 50 - 70 Nm
50	49/64	10/16	10900501	10908501	10900602	128	138	197	90	120	15	175	M12	19mm 50 - 70 Nm
60/65	63/83	10/16	10900502	10908502	10900604	129	143	209	105	128	15	175	M12	19mm 50 - 70 Nm
80	78/103	10/16	10900503	10908503	10900606	125	143	229	105	128	15	175	M12	19mm 50 - 70 Nm
80/100	87/117	10/16	10900504	10908504	10900608	121	143	243	105	128	15	175	M12	19mm 50 - 70 Nm
100	100/130	10/16	10900505	10908505	10900610	127	150	256	105	130	20	175	M16	24mm 90 - 120 Nm
125	117/147	10/16	10900506	10908506	10900612	127	150	273	105	130	20	175	M16	24mm 90 - 120 Nm
150	152/182	10/16	10900507	10908507	10900614	147	168	308	115	145	20	175	M16	24mm 90 - 120 Nm
200	198/228	10/16	10900508	10908508	10900616	147	168	354	115	145	20	200	M16	24mm 90 - 120 Nm
200	245/285	10/16	10900523	10908524	10900617	251	280	424	150	180	95	200	M16	24mm 90 - 120 Nm
250	245/285	10/16	10900509	10908509	10900618	191	220	420	150	180	30	225	M16	24mm 90 - 120 Nm
300	300/340	10/16	10900510	10908510	10900620	191	220	479	150	180	30	225	M16	24mm 90 - 120 Nm
300	340/380	10/16	10900525	10908525	10900621	271	300	519	150	180	110	225	M16	24mm 90 - 120 Nm
350	340/380	10/16	10900511	10908511	10900622	191	220	520	150	180	40	225	M16	24mm 90 - 120 Nm
400	390/430	10	10900513	10908513	10900624	191	220	571	150	180	40	225	M16	24mm 90 - 120 Nm
400	390/430	16	10900514	10908514	10900626	191	220	571	150	180	40	225	M16	24mm 90 - 120 Nm

7. PIPE ANGULAR DEFLEXION

Besides the capacity to connect and grip pipes with different materials and diameters the multimaterial coupling with GFIX grip system, also allows an 8° pipe angular deflexion in the symmetry axle (fig. 8) and 4° for the flange adaptor with GFIX grip system (fig. 9)



Figure 8



Figure 9

8. MAINTENANCE

The multimaterial coupling with grippers GFIX® System, after installed does not require any maintenance actions.

9. PRESSURE TESTING

In case of a pressure test, ensure that the piping and coupling are properly installed, fixed and that are no undesired movements. Make sure that proper drainage is done to avoid frost damage.

Do not exceed the maximum $P_{max} \leq 1.5 \times PFA$



 Drinking water
PFA = 16 bar



 Drinking water
PFA = 16 bar




 Wastewater
PFA = 16 bar



 Wastewater
PFA = 16 bar



 with sealing for gas
PFA = 5 bar



 with sealing for gas
PFA = 5 bar

10. FURTHER INFORMATION

You can obtain instructions, technical datasheet and additional information at the following addresses:

HEAD OFFICE

Estrada de Coselhas,
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