EMIFLEX®

GENERAL CATALOGUE

Leader in Gas, Water and Solar

MADE IN ITALY

Founded in 1981, **Emiflex SpA** operates in its two plants located in Varedo (MB) and Siniscola (Nuoro). The Emiflex SpA facilities, covering an area of over 30,000 m², house specific departments for the design, production and marketing of flexible metal hose assemblies, expansion joints, rubber joints, piping supports and chimney flues.

Emiflex operates in both the public and industrial sectors, as its products have wide-ranging applications in the fields of heating, air conditioning and the distribution of water and energy.
While consistently monitoring and improving the various steps of its production processes, the company remains firmly focused on the personal needs of its customers. This attention to detail has successfully lead to the realization of a number of important patented products.

One of the most distinguishing features of **Emiflex** is its expertise in designing and manufacturing the machinery required for its metal hose and expansion joint production .

PRODUCTION

MADE IN ITALY

Emiflex boasts a production of over 2 million metres of tube per year, with a planned capacity increase to 4.5 million meters/year.
Each individual component* is manufactured internally at one of its two production sites
(*with the exception of certain plastic material and some minor brass articles).

The company's key products include **flexible metal hose assemblies** and **expansion joints.**

The **flexible metal hose assemblies** are particularly suitable for connecting domestic appliances to the gas supply and heating boilers to the water distribution system. In addition our products also have applications in the industrial sector, where flexible tubes are used to dampen the vibrations caused by machinery in operation.

The expansion joints are used in piping, equipment and numerous other situations requiring compensation for dimensional changes, vibrations or movements due, for example, to the fluid or gas being conveyed. They are used in a wide range of applications in diverse fields, such as: methane distribution systems, water supply systems, heating systems, the chemical and petrochemical industry, steelworks, textile, pharmaceutical and food industries, shipyards, electric and hydro-electric power stations and the transportation sector.

SALES NETWORK

An extensive sales network including commercial agents and distributors guarantees the availability of **Emiflex** products throughout Italy and abroad.

QUALITY

With the focus on product-quality, customer-service and environmental awareness, Emiflex has obtained the **ISO 9001:2000** and **ISO 14001:2004** certificates.
Emiflex is also a member of **EURO QUALIFLEX**, the European union of leading manufacturers of flexible elements (hoses, bellows and expansion joints), and the **European Technical Committee TC342**, as well as the Italian Technical Committee, responsible for the drawing up of technical standards for gas equipment.

The Emiflex expansion joints are manufactured in compliance with the **EJMA** Standards and are **PED** certified according to the **Standard 97/23/EC category III, module B1 + D.**



PATENTS

Patent n. 0000240728
EMISUPER – special sheathing for extensible gas joint in compliance with UNICIG9891:1998

Patent n. 0000246805
(European Patent Application n. EP1060845)
TIROFLEX – multi-size handle which facilitates the extension of extensible flexible joints

Patent n. 0000240728
(European Patent Application n. EP0813014)
Extensible joint equipped with anti-torsion system

Patent n. 0001359069
Chimney flue reducer element

Patent n. 0001359822
EMIMIX – extensible stainless steel joint for connecting mixer taps directly to the water-supply system

Patent Application n. UD2007A000087
(European Patent Application n. EP1995542)
EMISOLAR EXCHANGER – heat exchanger device

European Patent Application n. EP2107290
(Manufacturing method for the apllication of a heat-shrinkable protective sheathing to a corrugated metal hose)

1981 Emiflex founded

1986 Emiflex expands its product line, including the production of expansion joints, rubber joints and dismantling joints

1994 The production site in Sardinia is inaugurated: Sarflex SpA is founded

1999 Emiflex goes public: EMIFLEX SPA

2003 Certification of the Quality Management System according to the Standard ISO 9001:2000 for Sarflex SpA

2004 Certification of the Environmental Management System according to the Standard ISO 14001:2004 for Sarflex SpA

2004 Emiflex SpA inaugurates the new 5000 m^2 warehouse in Varedo (Milan)

2005 Certification of the Quality Management System according to the Standard ISO 9001:2000 for Emiflex SpA

2005 Emiflex SpA becomes a member of Euro Qualiflex

2006 Certification of the Environmental Management System according to the Standard ISO 14001:2004 for Emiflex SpA

2007 The second generation steps in to collaborate in synergy with the first

2008 Emiflex SpA becomes a member of the National Technical Committee for drawing up gas technical standards

2009 Emiflex SpA becomes a member of the European Technical Committee TC342 for drawing up gas technical standards

2009 Market launch of the new European gas hose: EMITEG

2009 - 2010 Emiflex SpA futher expands its production area

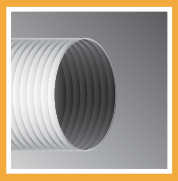
contents

Gas Products

Flexible by nature

CHARACTERISTICS OF THE PRODUCTS FOR GAS APPLICATIONS

MATERIALS

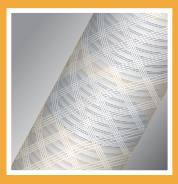


Corrugated tube obtained by machining a strip of austenitic stainless steel.
Type of steel used: AISI 321, AISI 304 or AISI 316L.
Fittings made from bars of: carbon steel, brass CW619N, AISI 303 or AISI 304.
Gaskets in: annealed 99.5% aluminium or nitrile rubber in compliance with EN 549.

CERTIFICATIONS

The EMIFLEX products have been awarded the highest technical recognition on an international level. Refer to the product's page to check the specific certifications obtained for each product.

PROTECTIVE SHEATHING



Sheathing made of heat-shrinkable flame-retardant crosslinked polyolefin with adhesion to the tube corrugations or in flame-retardant PVC.
The sheathing protects the tube from the aggression of the surrounding environment without contributing to the tube's mechanical strength or seal.

OPERATING TEMPERATURE

The operating temperature of the joints is estimated to be within the range of -55°C to +250°C.
For the joints with the protective sheathing the maximum temperature is +120°C.
For any applications with temperatures lower or higher than those indicated, please contact our technical staff.

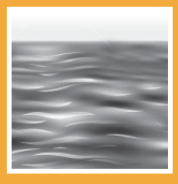
WELDING

All welding is carried out using the automatic TIG method in an atmosphere protected by Argon, without filler material, via direct fusion of the base materials.

OPERATING PRESSURE

The operating pressure of the gas joints is limited to 0.5 bar in compliance with current regulations which foresees their use on appliances with a maximum nominal heat capacity of 35 kW.
For any applications different from those indicated, please contact our technical staff.

TESTING

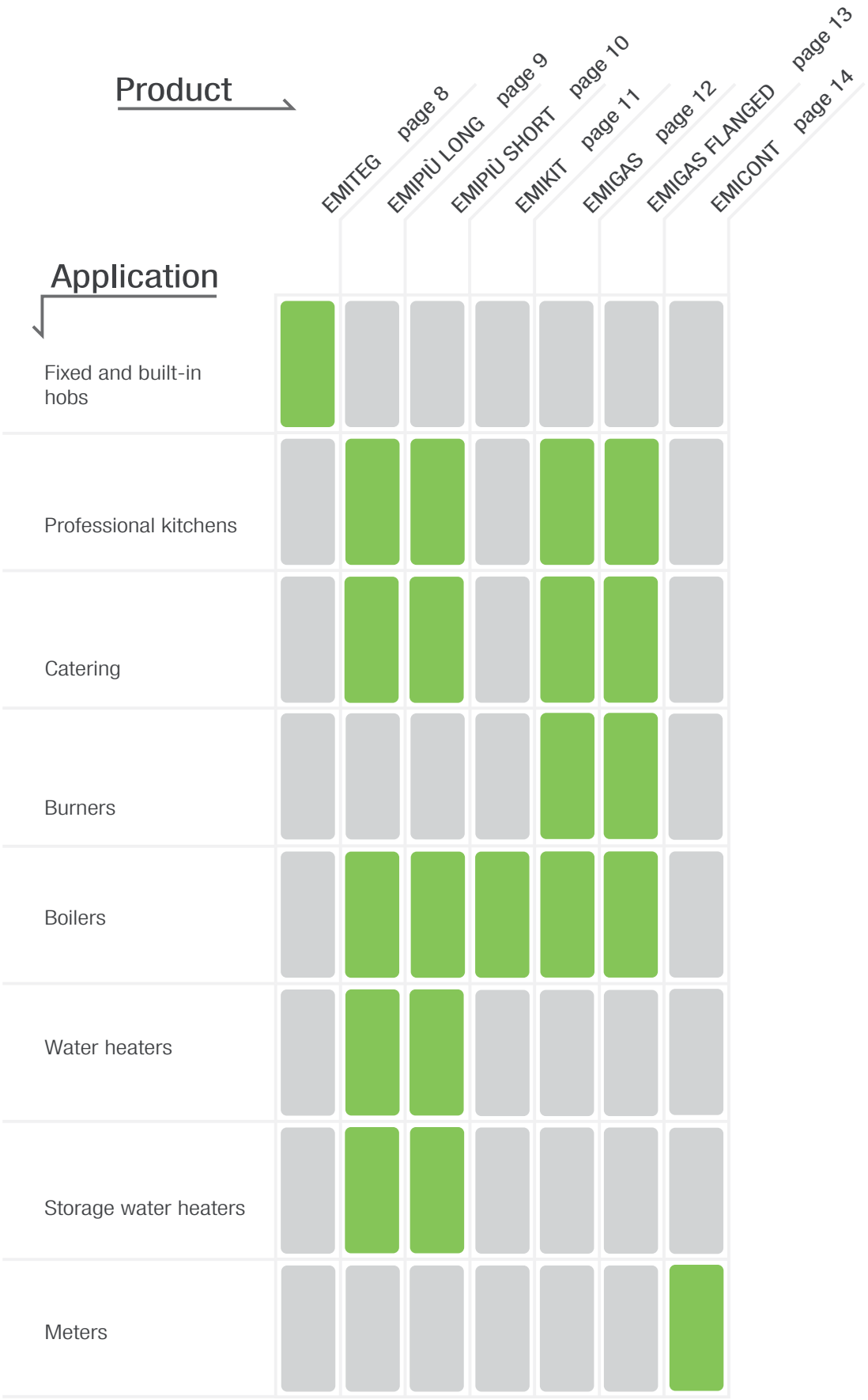


100% of the production: each individual piece is tested directly by EMIFLEX by immersing the joint in water and applying pneumatic pressure internally, thus testing the seal.
Sample tests (both destructive and non-destructive) are also carried out in an internal laboratory as required by the specific regulations in force.

BENDING RADIUS

Minimum bending radius = 1.5 times the external diameter of the tube (1.5 De).

FIND THE PRODUCT BEST SUITED TO YOUR NEEDS



EMITEG

MAIN APPLICATIONS

Fixed and built-in hobs.

CE

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel AISI 304.
- **Male fitting:** stainless steel thread as per Annex A of the European Standard **EN 14800:2007**.
- **Fitting for swivel nut:** stainless steel sealing seat as per Annex A of the European Standard **EN 14800:2007**.
- **Nut:** stainless steel thread as per Annex A of the European Standard EN 14800:2007.
- **Braid:** stainless steel AISI 304 wire Ø 0.25 mm, 4 wires per strand for a total of 96 wires.
- **Protective sheathing:** yellow fire-resistant PVC.
- **Gaskets:** nitrile rubber according to European Standard **EN 549**.

In conformity with the European Standard **UNI EN 14800:2007** and the Italian Installation Standard **UNI 7129:2008**.

Product covered by the CE mark.

Tube DN	End Fittings	Length	Pieces in Package	Code	
[mm]	[inches]	[mm]		M.F. - F.S.	F.S. - F.S.
12	1/2”	500	12	E0781500	E0781510
12	1/2”	750	12	E0781501	E0781511
12	1/2”	1000	12	E0781502	E0781512
12	1/2”	1250	12	E0781503	E0781513
12	1/2”	1500	12	E0781504	E0781514
12	1/2”	2000	12	E0781505	E0781515

M.F. = male fixed F.S. = female swivel

EMIPIÙ LONG

MAIN APPLICATIONS

Professional kitchens
Catering
Boilers
Water heaters
Storage water heaters

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel AISI 316L, thickness ≥ 0.21 mm.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat.
- **Nut:** stainless steel AISI 303 with UNI ISO 228/1 thread.
- **Protective sheathing:** yellow fire-resistant heat-shrinkable crosslinked polyolefin.
- **Gaskets:** P-Al 99.5% aluminium with complete annealing after the shearing.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings.

In conformity with current gas hose regulations and the Italian Installation Standard UNI 7129:2008.

Product covered by the IMQ mark.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	End Fittings	Length		Pieces in Package	Code	
[mm]	[inches]	From [mm]	To [mm]		M.F. - F.S.	F.S. - F.S.
20	3/4”	500	1000	12	0672000	0672010
20	3/4”	750	1500	12	0672001	0672011
20	3/4”	1000	2000	12	0672002	0672012
25	1”	500	1000	12	0672500	0672510
25	1”	750	1500	12	0672501	0672511
25	1”	1000	2000	12	0672502	0672512

M.F. = male fixed F.S. = female swivel

EMIPIÙ SHORT

MAIN APPLICATIONS

Professional kitchens
Catering
Boilers
Water heaters
Storage water heaters

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel 316L, thickness ≥ 0.21 mm.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat.
- **Nut:** stainless steel AISI 303 with UNI ISO 228/1 thread.
- **Protective sheathing:** yellow fire-resistant heat-shrinkable crosslinked polyolefin.
- **Gaskets:** P-Al 99.5% aluminium with complete annealing after the shearing.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings.

In conformity with current gas hose regulations and the Italian Installation Standard UNI 7129:2008.

Product covered by the IMQ mark.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below. .

Tube DN	End Fittings	Length		Pieces in Package	Code	
[mm]	[inches]	From [mm]	To [mm]		M.F. - F.S.	F.S. - F.S.
15	1/2”	90	130	12	0691503	0691513
15	1/2”	120	210	12	0691504	0691514
15	1/2”	180	300	12	0691505	0691515
15	1/2”	240	410	12	0691506	0691516
15	1/2”	290	470	12	0691507	0691517
20	3/4”	90	130	12	0692003	0692013
20	3/4”	120	210	12	0692004	0692014
20	3/4”	180	300	12	0692005	0692015
20	3/4”	240	410	12	0692006	0692016
20	3/4”	290	520	12	0692007	0692017
25	1”	90	130	12	0692503	0692513
25	1”	120	210	12	0692504	0692514
25	1”	180	300	12	0692505	0692515
25	1”	240	410	12	0692506	0692516
25	1”	290	520	12	0692507	0692517
					M.F.R. - F.S.	
16	1/2” x 3/4”	90	130	12	0699903	
16	1/2” x 3/4”	120	210	12	0699904	
16	1/2” x 3/4”	180	300	12	0699905	
16	1/2” x 3/4”	240	410	12	0699906	
16	1/2” x 3/4”	290	470	12	0699907	

M.F. = male fixed F.S. = female swivel M.F.R. = male fixed reduced

EMIKIT - WALL BOILER CONNECTION KIT

Description	Pieces in Package	Code
1 extendable Emipiù DN 20 (3/4”) length 180x300 M.F. - F.S. (FOR GAS ONLY) In compliance with current gas hose regulations and Italian Installation Standard UNI 7129:2008.	1	5690000
2 extendable hoses DN 20 (3/4”) length 150x300 M.F. - F.S. (FOR WATER ONLY)		
2 extendable hoses DN 12 (1/2”) length 150x300 M.F. - F.S. (FOR WATER ONLY)		
1 aluminium gasket		

Description	Pieces in Package	Code
1 extendable Emipiù DN 20 (3/4”) length 240x410 M.F. - F.S. (FOR GAS ONLY) In compliance with current gas hose regulations and Italian Installation Standard UNI 7129:2008.	1	5690001
2 extendable hoses DN 20 (3/4”) length 200x410 M.F. - F.S. (FOR WATER ONLY)		
2 extendable hoses DN 12 (1/2”) length 200x410 M.F. - F.S. (FOR WATER ONLY)		
1 aluminium gasket		

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed above.

EMIGAS

MAIN APPLICATIONS

Professional kitchens
Catering
Boilers
Burners

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel AISI 316L.
- **1/2" and 3/4" Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **1", 1" 1/4, 1" 1/2 and 2" Male fitting:** Fe carbon steel, UNI ISO 7/1 thread.
- **Treatment:** grey painting on end fittings for the type with male fittings (joint not subjected to annealing heat treatment).

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	End Fittings [inches]		Length	Pieces in Package	Code
[mm]	M.F.	M.F.	[mm]		
15	1/2"	1/2"	145	1	0541531
20	3/4"	3/4"	150	1	0542032
25	1"	1"	165	1	0542533
32	1"1/4	1"1/4	180	1	0543234
40	1"1/2	1"1/2	210	1	0544035
50	2"	2"	230	1	0545036

M.F. = male fixed

EMIGAS FLANGED

MAIN APPLICATIONS

Professional kitchens
Catering
Boilers
Burners

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel AISI 321.
- **Flange:** steel ASTM A105 Gr B with PN 10 drilling.
- **Treatment:** galvanized.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	Flange	Length	Pieces in Package	Code
[mm]	[PN]	[mm]		
50	10	175	1	0550500
65	10	175	1	0550650
80	10	175	1	0550800
100	10	195	1	0551000
125	10	195	1	0551250
150	10	200	1	0551500
200	10	200	1	0552000

EMICONT

MAIN APPLICATIONS

Gas meters

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel AISI 316L, thickness ≥ 0.21 mm.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Female fixed fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat.
- **Nut:** brass CW619N, UNI ISO 228/1 thread.
- **Protective sheathing:** yellow fire-resistant heat-shrinkable crosslinked polyolefin.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings (except for the 1" x 1" 1/4 joints).

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	End Fittings [inches]		Length	Pieces in Package	Code	
[mm]	F.F.	F.S.	[mm]		Without protective sheathing	With protective sheathing
20	3/4"	1"	160	1	0562140	0572140
20	3/4"	1"	200	1	0562142	0572142
20	3/4"	1"	400	1	0562144	0572144
20	3/4"	1"1/4	170	1	0563141	0573141
20	3/4"	1"1/4	300	1	0563143	0573143
20	3/4"	1"1/4	400	1	0563144	0573144
25	1"	1"1/4	170	1	0563341	not avail.
25	1"	1"1/4	300	1	0563343	not avail.

Tube DN	End Fittings [inches]		Length	Pieces in Package	Code	
[mm]	M.F.	F.G.	[mm]		Without protective sheathing	With protective sheathing
20	3/4"	1"	160	1	0562100	0572100
20	3/4"	1"	200	1	0562102	0572102
20	3/4"	1"	400	1	0562104	0572104
20	3/4"	1"1/4	170	1	0563101	0573101
20	3/4"	1"1/4	300	1	0563103	0573103
20	3/4"	1"1/4	400	1	0563104	0573104
25	1"	1"1/4	170	1	0563301	not avail.
25	1"	1"1/4	300	1	0563303	not avail.

F.F. = female fixed M.F. = male fixed F.S. = female swivel

EMICONT – extensible version

MAIN APPLICATIONS

Gas meters

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel AISI 316L, thickness ≥ 0.21 mm.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Female fixed fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat.
- **Nut:** brass CW619N, UNI ISO 228/1 thread.
- **Protective sheathing:** yellow fire-resistant heat-shrinkable crosslinked polyolefin.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	End Fittings [inches]		Length		Pieces in Package	Code	
[mm]	M.F.	F.S.	From [mm]	To [mm]		Without protective sheathing	With protective sheathing
20	3/4”	1”	160	320	1	0564105	0574105
20	3/4”	1”	200	400	1	0564107	0574107
20	3/4”	1”	300	600	1	0564108	0574108
20	3/4”	1”1/4	170	340	1	0565106	0575106
20	3/4”	1”1/4	200	400	1	0565107	0575107
20	3/4”	1”1/4	300	600	1	0565108	0575108

M.F. = male fixed F.S. = female swivel

Acrylonitrile rubber gaskets:

Tube DN	External ø	Internal ø	Thickness	Code
[mm]	[mm]	[mm]	[mm]	
25	30	23,3	3	0650040
32	38	31	3	0650030

GAS ACCESSORIES

Angle ball valve male / female

Nominal diameter (DN): 15 (1/2")

Pieces in Package	Code
1	0651500

Angle ball valve male / male

Nominal diameter (DN): 15 (1/2")

Pieces in Package	Code
1	0651510

Straight ball valve male / female

Nominal diameter (DN): 15 (1/2")

Pieces in Package	Code
1	0651511

Straight ball valve female / female

Nominal diameter (DN): 15 (1/2")

Pieces in Package	Code
1	0651512

Triple safety valve male / female

DWGV – DIN EN 331
Push & Turn, thermal safety, overflow.
Nominal diameter (DN): 15 (1/2")

Pieces in Package	Code
1	0651520

Jolly house adapter for flexible tubes

Nominal diameter (DN): 15 (1/2")
Internal port Ø 13-9

Pieces in Package	Code
1	0651530

Tiroflex handle

Nominal diameter (DN): 15 (1/2")

Pieces in Package	Code
2	0651600

Aluminium gaskets

Material: 99.5% aluminium annealed after shearing.

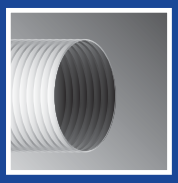
Tube DN	External ø	Internal ø	Thickness	Pieces in Package	Code
[mm]	[mm]	[mm]	[mm]		
15	18	12	2	100	0650050
20	23,5	18	2	100	0650060
25	29,5	23	2	50	0650070

Water
Products

Flexible by nature

CHARACTERISTICS OF THE PRODUCTS FOR WATER APPLICATIONS

MATERIALS

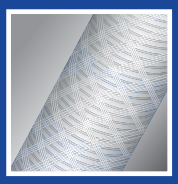


Corrugated tube obtained by machining a sheet of austenitic stainless steel.
Type of steel used: AISI 321, AISI 304 or AISI 316L.
Fittings made from bars of: brass CW619N, AISI 303 or AISI 304.

CERTIFICATIONS

The EMIFLEX products have been awarded the highest technical recognition on an international level.
Refer to the product's page to check the specific certifications obtained for each product.

PROTECTIVE SHEATHING



Sheathing made of heat-shrinkable flame-retardant crosslinked polyolefin with adhesion to the tube corrugations.
The sheathing protects the tube from the aggression of the surrounding environment without contributing to the tube's mechanical strength or seal.

OPERATING TEMPERATURE

The operating temperature of the joints is estimated to be within the range of -55°C to +250°C.
For the joints with the protective sheathing the maximum temperature is +120°C.
For any applications with temperatures lower or higher than those indicated, please contact our technical staff.

WELDING

All welding is carried out using the automatic TIG method in an atmosphere protected by Argon, without filler material, for direct fusion of the base materials.

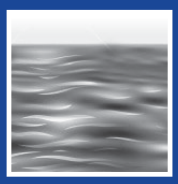
OPERATING PRESSURE

At minimum extension (bar)

DN10 (3/8”)	DN15 (1/2”)	DN20 (3/4”)	DN25 (1”)	DN32 (1”1/4)	DN40 (1”1/2)	DN50 (2”)
8	7	5	4	3.5	3	2.5
12	10	5.5	5.5	5.5	5.5	3.5

At maximum extension (bar)

TESTING

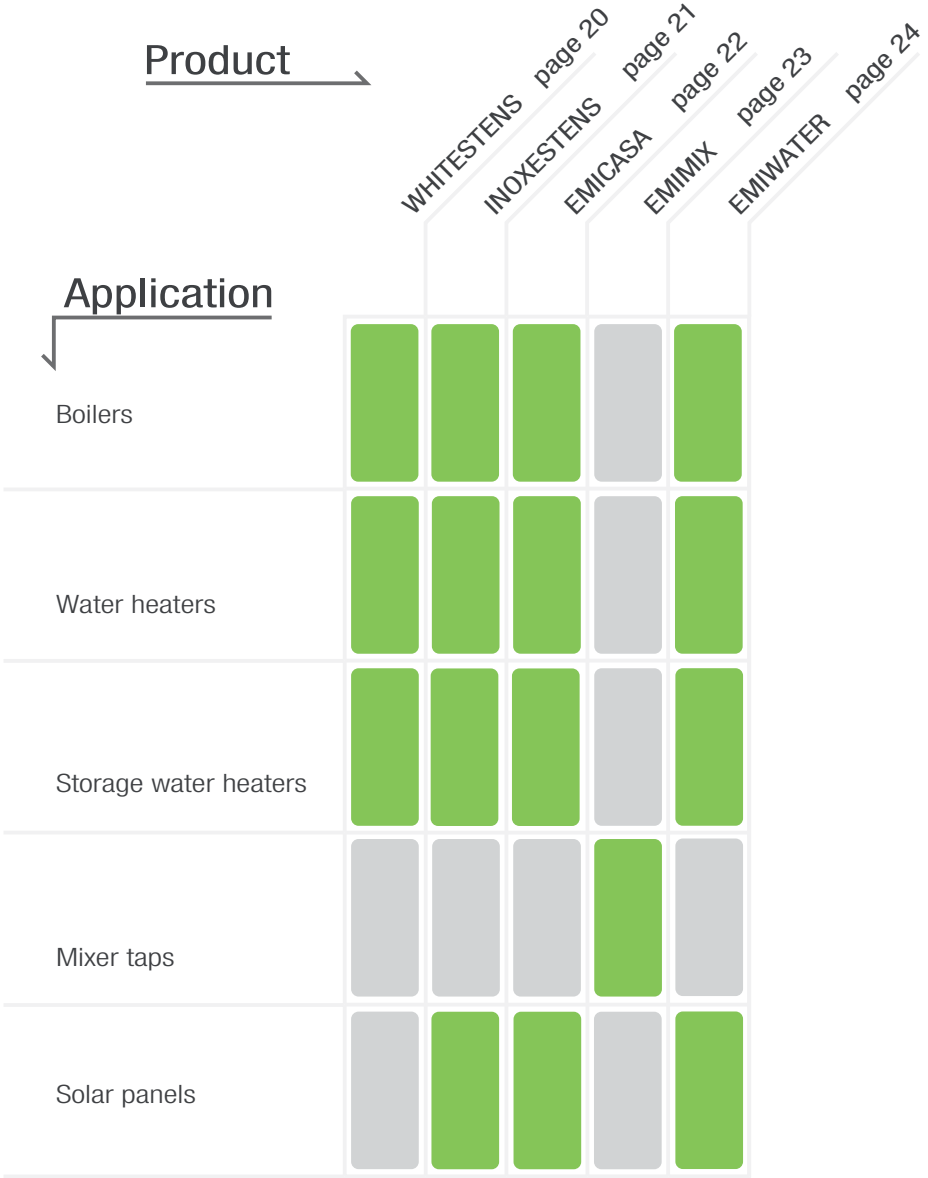


100% of the production: each individual piece is tested directly by EMIFLEX by immersing the joint in water and applying pneumatic pressure internally, thus testing the seal.
Sample tests (both destructive and non-destructive) are also carried out in an internal laboratory as required by the specific regulations in effect.

BENDING RADIUS

Minimum bending radius = 1.5 times the external diameter of the tube (1.5 De).

FIND THE PRODUCT BEST SUITED TO YOUR NEEDS



WHITESTENS

Boilers
Water heaters
Storage water heaters

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel, thickness ≥ 0.21 mm.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat.
- **Nut:** nickel-plated brass CW619N with UNI ISO 228/1 thread.
- **Protective sheathing:** white fire-resistant heat-shrinkable crosslinked polyolefin. Protects the tube from the aggression of external corrosive substances and dampens the vibrations.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.prodotti riportati.

Tube DN	End Fittings	Length		Pieces in Package	Code	
[mm]	[inches]	From [mm]	To [mm]		M.F. - F.S.	F.S. - F.S.
10	3/8”	90	130	12	0511003	0511013
10	3/8”	120	210	12	0511004	0511014
10	3/8”	180	300	12	0511005	0511015
10	3/8”	240	410	12	0511006	0511016
10	3/8”	290	520	12	0511007	0511017
15	1/2“	90	130	12	0511503	0511513
15	1/2”	120	210	12	0511504	0511514
15	1/2”	180	300	12	0511505	0511515
15	1/2“	240	410	12	0511506	0511516
15	1/2”	290	520	12	0511507	0511517
20	3/4”	90	130	12	0512003	0512013
20	3/4”	120	210	12	0512004	0512014
20	3/4”	180	300	12	0512005	0512015
20	3/4”	240	410	12	0512006	0512016
20	3/4”	290	520	12	0512007	0512017
25	1”	90	130	12	0512503	0512513
25	1”	120	210	12	0512504	0512514
25	1”	180	300	12	0512505	0512515
25	1”	240	410	12	0512506	0512516
25	1”	290	520	12	0512507	0512517
					M.F.R. - F.S.	
16	1/2” x 3/4”	90	130	12	0519903	
16	1/2” x 3/4”	120	210	12	0519904	
16	1/2” x 3/4”	180	300	12	0519905	
16	1/2” x 3/4”	240	410	12	0519906	
16	1/2” x 3/4”	290	520	12	0519907	

M.F. = male fixed F.S. = female swivel M.F.R. = male fixed reduced

INOXESTENS

MAIN APPLICATIONS

Boilers
Water heaters
Storage water heaters
Solar panels

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel, thickness ≥ 0.21 mm.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat.
- **Nut:** nickel-plated brass CW619N with UNI ISO 228/1 thread.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	End Fittings	Length		Pieces in Package	Code	
[mm]	[inches]	From [mm]	To [mm]		M.F. - F.S.	F.S. - F.S.
10	3/8”	75	130	12	0501003	0501013
10	3/8”	110	210	12	0501004	0501014
10	3/8”	200	410	12	0501006	0501016
10	3/8”	260	520	12	0501007	0501017
15	1/2”	75	130	12	0501503	0501513
15	1/2”	110	210	12	0501504	0501514
15	1/2”	200	410	12	0501506	0501516
15	1/2“	260	520	12	0501507	0501517
20	3/4”	75	130	12	0502003	0502013
20	3/4”	110	210	12	0502004	0502014
20	3/4”	200	410	12	0502006	0502016
20	3/4”	260	520	12	0502007	0502017
25	1”	75	130	12	0502503	0502513
25	1”	110	210	12	0502504	0502514
25	1”	200	410	12	0502506	0502516
25	1”	260	520	12	0502507	0502517
32	1”1/4	75	130	12	0503203	0503213
32	1”1/4	110	210	12	0503204	0503214
32	1”1/4	200	410	12	0503206	0503216
32	1”1/4	260	520	12	0503207	0503217
40	1”1/2	110	210	12	0504004	0504014
40	1”1/2	200	410	12	0504006	0504016
40	1”1/2	260	520	12	0504007	0504017
50	2”	110	210	12	0505004	0505014
50	2”	200	410	12	0505006	0505016
50	2”	260	520	12	0505007	0505017
					M.F.R. - F.S.	
16	1/2” x 3/4”	75	130	12	0509903	
16	1/2” x 3/4”	110	210	12	0509904	
16	1/2” x 3/4”	200	410	12	0509906	
16	1/2” x 3/4”	260	520	12	0509907	

M.F. = male fixed F.S. = female swivel M.F.R. = male fixed reduced

EMICASA

MAIN APPLICATIONS

Boilers
Water heaters
Storage water heaters
Solar panels

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel, thickness ≥ 0.21 mm.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat and anti-torsion hex.
- **Nut:** stainless steel AISI 303, UNI ISO 228/1 thread.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	End Fittings	Length		Pieces in Package	Code	
[mm]	[inches]	From [mm]	To [mm]		M.F. - F.S.	F.S. - F.S.
15	1/2”	75	130	12	0591503	0591513
15	1/2”	110	210	12	0591504	0591514
15	1/2”	200	410	12	0591506	0591516
15	1/2”	260	520	12	0591507	0591517
20	3/4”	75	130	12	0592003	0592013
20	3/4”	110	210	12	0592004	0592014
20	3/4”	200	410	12	0592006	0592016
20	3/4”	260	520	12	0592007	0592017
25	1”	75	130	12	0592503	0592513
25	1”	110	210	12	0592504	0592514
25	1”	200	410	12	0592506	0592516
25	1”	260	520	12	0592507	0592517
					M.F.R. - F.S.	
16	1/2” x 3/4”	75	130	12	0599903	
16	1/2” x 3/4”	110	210	12	0599904	
16	1/2” x 3/4”	200	410	12	0599906	
16	1/2” x 3/4”	260	520	12	0599907	
					M.F. - F.S.	F.S. - F.S.
15	1/2”	500	1000	12	0611500	0611510
15	1/2”	750	1500	12	0611501	0611511
15	1/2”	1000	2000	12	0611502	0611512
20	3/4”	500	1000	12	0612000	0612010
20	3/4”	750	1500	12	0612001	0612011
20	3/4”	1000	2000	12	0612002	0612012
25	1”	500	1000	12	0612500	0612510
25	1”	750	1500	12	0612501	0612511
25	1”	1000	2000	12	0612502	0612512

M.F. = male fixed F.S. = female swivel M.F.R. = male fixed reduced

EMIMIX

MAIN APPLICATIONS

Mixer taps
Wall-hung sanitary fittings

TECHNICAL-REGULATORY SPECIFICATIONS (model M10 x F.S.):

- **Tube:** austenitic stainless steel.
- **Male fitting:** stainless steel AISI 303, UNI EN 10226-1 thread.
- **Fitting for swivel nut:** stainless steel AISI 303 with flat sealing seat.
- **Nut:** nickel-plated brass CW619N with UNI ISO 228/1 thread.
- **Protective sheathing:** white fire-resistant heat-shrinkable crosslinked polyolefin.
- **Treatment:** subjected to annealing heat treatment after welding of the end fittings.

Important: even with the minimum bending radius the internal passage remains unchanged, thus preventing pressure drops and bursting of the joint.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Tube DN	End Fittings		Length		Pieces	Code	
[mm]			From [mm]	To [mm]		With protective sheathing	Without protective sheathing
8	M10	F.S. 1/2"	150	260	12	0630800	0640800
8	M10	F.S. 1/2"	280	500	12	0630801	0640801
8	M10	F.S. 3/8"	150	260	12	0630810	0640810
8	M10	F.S. 3/8"	280	500	12	0630811	0640811
10	M.F.	OG.	150	260	12	0631020*	0641020*
10	M.F.	OG.	280	500	12	0631021*	0641021*
10	OG.	OG.	150	260	12	0631030*	0641030*
10	OG.	OG.	280	500	12	0631031*	0641031*
10	F.S.	OG.	150	260	12	0631040*	0641040*
10	F.S.	OG.	280	500	12	0631041*	0641041*
10	S.S.	OG.	150	260	12	0631050*	0641050*
10	S.S.	OG.	280	500	12	0631051*	0641051*

M10 = thread pitch M10 F.S. = female swivel M.F. = male fixed OG. = ogival S.S. = smooth sleeve *= on request

EMIWATER end EMISET

Operating pressure: 15 bar

MAIN APPLICATIONS

Boilers
Water heaters
Storage water heaters
Solar systems

TECHNICAL-REGULATORY SPECIFICATIONS:

- **Tube:** austenitic stainless steel AISI 304 or AISI 316L.
- **Tube treatment:** subjected to annealing heat treatment.

Emiset is a kit of elements used for the quick and made-to-measure assembly of the EMIWATER flexible tubes. The system allows the nuts provided to be assembled on the EMIWATER tube by use of a self-flanging device.
This efficient system enables the installer to save time and money by quickly constructing the appropriate custom-made joint.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

Description	Pieces in Package	Code
DN 1/2” EMIWATER tube - 30 meter roll	1	0581530
DN 1/2” EMIWATER tube - 4 meter roll	1	0581504
DN 3/4” EMIWATER tube - 30 meter roll	1	0582030
DN 3/4” EMIWATER tube - 4 meter roll	1	0582004
DN 1” EMIWATER tube - 30 meter roll	1	0582530
DN 1” EMIWATER tube - 4 meter roll	1	0582504

EMISET Kit Carrying Case containing:	Code
1 tube cutter 1 flaring tool with 1/2” and 3/4” template 20 DN 1/2” nickel-plated brass nuts + gaskets 20 DN 3/4” nickel-plated brass nuts + gaskets	0580000

1" EMISET Kit Carrying Case containing:	Code
1 tube cutter 1 flaring tool with 1” template 22 DN 1” nickel-plated brass nuts + gaskets	0580001

EMISET SPARE PARTS

Description	Pieces in Package	Code
Flanging tool for 1/2” and 3/4” template (Fig. 1)	1	0580010
Flanging tool for 1” template (Fig. 1)	1	0580011
Tube cutter (Fig. 2)	1	0580020
1/2” and 3/4” template (Fig. 3)	1	0580030
1" template (Fig. 3)	1	0580031

Fig.1

Fig.2

Fig.3

EMIWATER ACCESSORIES

Description	Pieces in Package	Code
DN 1/2” nickel-plated brass nuts with gaskets (Fig. 4)	100	0581220
DN 3/4” nickel-plated brass nuts with gaskets (Fig. 4)	100	0583420
DN 1” nickel-plated brass nuts with gaskets (Fig. 4)	100	0583520
DN 1/2” stainless steel nuts with gaskets (Fig. 4)	100	0581290
DN 3/4” stainless steel nuts with gaskets (Fig. 4)	100	0583490
1/2" cylindrical male - 1/2" conical male nipple (Fig. 5)	20	0581260
3/4" cylindrical male - 3/4" conical male nipple (Fig. 6)	20	0583460
3/4" cylindrical male - 1/2" conical male nipple (Fig. 7)	20	0581270
1/2" cylindrical male - 3/4" conical male nipple (Fig. 8)	20	0583470
1/2" cylindrical male - 1/2" conical male extended nipple (Fig. 9)	20	0581280

Fig.4

Fig.5

Fig.6

Fig.7

Fig.8

Fig.9

EMIWATER ASSEMBLY INSTRUCTIONS

1. Measure the length of the joint you would like to create and add four additional corrugations (these will then be used for the flanging).

2. Cut the joint with the tube cutter.

3. Clamp the end of the tube with the template provided, leaving two corrugations protruding from the side with the plain stop.

4. Insert the template in the appropriate section of the flanging tool.

5. Vigorously open and close the metal plunger repeatedly until the 2 corrugations of the joint are completely flattened.

6. Insert the fittings with the thread facing outwards.

7. Repeat steps 3, 4 and 5 on the other end, insert the gaskets and connect the joints.

Solar
Products

Flexible by nature

EMISOLAR FLEX DUO

EMISOLAR FLEX DUO is a flexible metal tube in austenitic stainless steel AISI 316L covered by high-temperature resistant EPDM insulation designed for connecting solar heating systems. It allows quick connection of the solar panel to the hot water storage tank, significantly reducing installation time.
These tubes are designed to minimize heat dispersion whilst being resistant to chemical agents, bird and rodent attacks and aggressive weather conditions.

DETAILS:

- High-quality corrugated tube in austenitic stainless steel AISI 316L. Highly flexible, will bend and maintain the formed position.
- Sensor cable coated in high-temperature resistant silicone rubber.
- Insulation in closed-cell EPDM (> 98%) with anti-UV film and a high mechanical friction resistance.
- **Does not contain:** PVC, CFC, HCFC, Halogens, Asbestos, Bromine, Formaldehyde.
- High fire resistance. Flame-retardant. Non-dripping: Class E - DIN EN 13501 / B2 DIN 4102 Teil1 (D).
- Acoustic absorption according to EN ISO 11654, Absorption Class D.
- Permeability $\mu \geq 4500$.
- Thermal resistance from -50°C to +150°C (+175°C for short periods).
- Thermal conductivity: a 0°C 0,038 W/(m·k)
  a 20°C 0,040 W/(m·k)
  a 40°C 0,042 W/(m·k)
  a 60°C 0,045 W/(m·k)

ADVANTAGES:

- Suitable for use with all standard solar heating systems.
- Quick to install, with no need for welding or other accessories for creating the end fittings.
- High-quality individual components.
- Greater resistance due to the EPDM insulation and outer film which guarantee maximum protection against solar radiation and mechanical damge.

Note: EMIFLEX SPA, as manufacturer, is able to supply special versions of the products listed below.

AVAILABLE PRODUCT RANGE:

Tube DN	External Ø	Insulation Thickness	Available Lengths
[mm]	[mm]	[mm]	[m]
16 (3/4” fitting)	21,4	14	10/15/20/25/50
20 (1” fitting)	26,2	14	10/15/20/25/50
25 (1"1/4 fitting)	31,7	14	15/25

Note: each package includes a kit of fittings (4 nuts + 4 gaskets + 4 retaining rings + 2 cylindrical male/conical male nipples).

TESTING

100% of the production: each individual piece is tested directly by EMIFLEX by immersing the joint in water and applying pneumatic pressure internally, thus testing the seal.
Sample tests are also carried out in an internal laboratory as required by the applicable regulations.

ACCESSORIES:

Description	Pieces in Package	Code
Brass nut, DN 3/4" (Fig. 1)	20	S0300160
Brass nut, DN 1" (Fig. 1)	20	S0300200
Brass nut, DN 1"1/4 (Fig. 1)	10	S0300250
Retaining ring, DN 3/4" (Fig. 2)	50	S0302160
Retaining ring, DN 1" (Fig. 2)	50	S0302200
Retaining ring, DN 1"1/4 (Fig. 2)	20	S0302250
Cylindrical male brass nipple, DN 3/4" x 3/4" (Fig. 3)	10	S0301160
Cylindrical male brass nipple, DN 1" x 1" (Fig. 3)	10	S0301200
Cylindrical male brass nipple, DN 1"1/4 x 1"1/4 (Fig. 3)	4	S0301250
Cylindrical male brass reducer nipple, DN 1" x 3/4" (Fig. 4)	10	S0307200
Cylindrical male brass reducer nipple, DN 1"1/4 x 1" (Fig. 4)	4	S0307250
Cylindrical male brass nipple, DN 3/4" - smooth sleeve Ø22 (Fig. 5)	10	S0305161
Cylindrical male brass nipple, DN 1" - smooth sleeve Ø22 (Fig. 5)	10	S0306201
Centellen WS3820 high-temperature gasket, DN 3/4" (Fig. 6)	50	S0303160
Centellen WS3820 high-temperature gasket, DN 1" (Fig. 6)	50	S0303200
Centellen WS3820 high-temperature gasket, DN 1”1/4 (Fig. 6)	50	S0303250
Standard KIT, DN 3/4" (4 nuts + 2 nipples + 4 gaskets + 4 rings)	1	S0304160
Standard KIT, DN 1" (4 nuts + 2 nipples + 4 gaskets + 4 rings)	1	S0304200
Standard KIT, DN 1"1/4 (4 nuts + 2 nipples + 4 gaskets + 4 rings)	1	S0304250
Quick production station KIT, DN 3/4" (4 nuts 3/4" + 1 nut 1" + 2 reduction nipples 1” x 3/4" + 2 fittings 3/4” x Ø22)	1	S0308160
Quick production station KIT, DN 1" (5 nuts 1" + 2 nipples 1" + 2 fittings 1" x Ø22)	1	S0308200

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

MECHANICAL SEAL FITTINGS:

Description	Pieces in Package	Code
Cylindrical male mechanical seal fitting, DN16 x 1/2" (Fig. 1)	2	S0309120
Cylindrical male mechanical seal fitting, DN16 x 3/4" (Fig. 1)	2	S0309160
Cylindrical male mechanical seal fitting, DN20 x 3/4" (Fig. 1)	2	S0311160
Cylindrical male mechanical seal fitting, DN20 x 1" (Fig. 1)	2	S0311200
Cylindrical male mechanical seal fitting, DN25 x 1" 1/4 (Fig. 1)	2	S0313250
Female mechanical seal fitting, DN16 x 3/4" (Fig. 2)	2	S0310160
Female mechanical seal fitting, DN20 x 1" (Fig. 2)	2	S0312200
Female mechanical seal fitting, DN25 x 1" 1/4 (Fig. 2)	2	S0314250
Flexible tube extension mechanical seal fitting, DN16 x DN16 (Fig. 3)	2	S0315160
Flexible tube extension mechanical seal fitting, DN20 x DN20 (Fig. 3)	2	S0315200
Flexible tube extension mechanical seal fitting, DN25 x DN25 (Fig. 3)	2	S0315250
Copper mechanical seal fitting, DN16 x Ø18 (Fig. 4)	2	S0317160
Copper mechanical seal fitting, DN20 x Ø18 (Fig. 4)	2	S0317200
Copper mechanical seal fitting, DN16 x Ø22 (Fig. 4)	2	S0318160
Copper mechanical seal fitting, DN20 x Ø22 (Fig. 4)	2	S0318200
Copper mechanical seal fitting, DN25 x Ø22 (Fig. 4)	2	S0318250
Sealing ring, DN16 x DN16 (Fig.5)	40	S0319160
Sealing ring, DN16 x DN20 (Fig.5)	40	S0319200
Sealing ring, DN25 x DN25 (Fig.5)	20	S0319250


Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5

LOGISTIC DATA:

DN [mm]	External ø [mm]	Wall Thickness [mm]	Insulation Thickness [mm]	Package [m]	Code	Package Dimensions [mm]	Weight in Kg	Volume [m³]
16 (3/4")	21.4	0.18	14	10	S0016010	800 x 800 x 290	8.6	0.19
16 (3/4")	21.4	0.18	14	15	S0016015	800 x 800 x 390	12.2	0.25
16 (3/4")	21.4	0.18	14	20	S0016020	800 x 800 x 550	15.8	0.35
16 (3/4")	21.4	0.18	14	25	S0016025	800 x 800 x 550	19.0	0.35
16 (3/4")	21.4	0.18	14	50	S0016050	800 x 800 x 650	38.3	0.42
20 (1")	26.2	0.18	14	10	S0020010	800 x 800 x 290	10.6	0.19
20 (1")	26.2	0.18	14	15	S0020015	800 x 800 x 390	15.2	0.25
20 (1")	26.2	0.18	14	20	S0020020	800 x 800 x 550	18.8	0.35
20 (1")	26.2	0.18	14	25	S0020025	800 x 800 x 550	23.8	0.35
20 (1")	26.2	0.18	14	50	S0020050	800 x 800 x 650	48.0	0.42
25 (1" 1/4)	31.6	0.18	14	15	S0025015	800 x 800 x 390	17.4	0.25
25 (1" 1/4)	31.6	0.18	14	25	S0025025	800 x 800 x 650	28.4	0.42

Industrial Products

Flexible by nature

RUBBER JOINTS

The EMIFLEX rubber joints described in this catalogue have been used successfully for over 20 years in pipelines conveying pressurized fluids at various temperatures. The technical information and suggestions provided here are intended to facilitate the process of selecting the product best suited to the particular application.

A rubber joint is a flexible joint (expansion joint) in which the elastic part is composed of a synthetic elastomer-based rubber compound, with particular vulcanized components added.
The vulcanization process is essential in order to achieve the final characteristics of the product, as is the selection of the particular type of elastomer and other components used in the compound.
The components are selected in order to obtain certain effects on the final characteristics of the resultant compound: softening agents, protective agents, antioxidants, antiozonants, anti-ageing agents, filling agents, etc. The finished product is a rubber joint with superior elastic, mechanical and chemical properties.

To withstand the stresses due to the operating pressure and temperature to which they will be subjected, the rubber joints are internally reinforced with several layers of textile fibres and steel wires arranged accordingly. In this manner the rubber joint can be used safely in pipelines in order to:

- reduce stresses by compensating for the axial, lateral and angular movements due to contraction or extension of the pipelines caused by thermal variations of the piped fluid or the surrounding environment.
- dampen mechanical vibrations caused by operating machines.
- interrupt the propagation of noise caused by the pumping action of the fluid in the piping.

ADVANTAGES:

- Minimum overall axial dimensions
- Limited weight
- Low deformation forces
- High fatigue strength
- High corrosion resistance
- No need for gaskets during installation
- High acoustic damping capacity

PRODUCTION RANGE:

FSFA: from DN 25 to DN 750 **FSFB: from DN 25 to DN 300**

BODY

The body is moulded with a single long-radius arch and is formed by multiple plies of continuous nylon fibres which are twill-woven and embedded in the rubber so as to allow the necessary flexibility between the plies. In addition, the interior edge of each flare is reinforced further by high-strength steel-wire in order to increase the maximum allowable operating pressure.

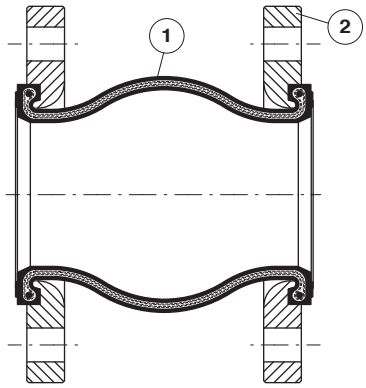
A protective impermeable tubular layer of elastomer continuously covers both the internal surface of the body as well as the flares. This prevents the piped fluid from penetrating into the casing. The type of elastomer used for the internal protective layer depends on the operating conditions and the type of fluid being piped. Select the best suited elastomer by evaluating its chemical resistance and other physical properties provided in the following tables.

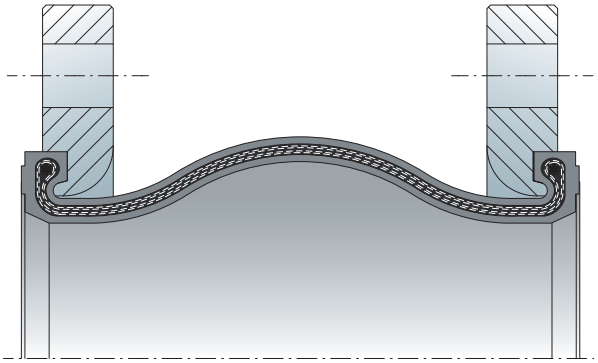
Similarly, the entire external surface of the body is protected by an additional impermeable tubular layer of elastomer which covers and protects it from the surrounding environment. The type of elastomer used for the external protective layer depends on the environmental conditions to which the joint will be exposed (sunlight, acidic fumes, saline environment, etc.). Select the best suited elastomer by evaluating its chemical resistance and other physical properties provided in the following tables.

FLANGES

The flanges swivel and contain the edge of the joint's flare in the special shaped groove. The flare allows a perfect seal at all pressures, eliminating the need for any additional gaskets. The standard drilling of the flanges is according to UNI 2223.

On request, flanges with ANSI drilling can be supplied.
Standard material: electrogalvanized carbon steel.
On request, stainless steel flanges can be supplied.





1. Joint body
2. Flange

FSFA anti-vibration joint

The elastomers normally used are the following:

NN	(Neoprene on both the outside and inside); label colour: BLUE / WHITE
EE	(EPDM on both the outside and inside); label colour: RED / WHITE
NP	(Neoprene on the outside + Nitrile on the inside); label colour: RED / YELLOW
NH	(Neoprene on the outside + Hypalon on the inside); label colour: GREEN / YELLOW
NV	(Neoprene on the outside + Viton on the inside); label colour: GREEN / WHITE

DN		PN	FSFA-NN Neoprene-Neoprene	FSFA-EE EPDM-EPDM	FSFA-NP Neoprene-Nitrile	FSFA-NH Neoprene-Hypalon	FSFA-NV Neoprene-Viton
[mm]	[inches]	[mm]	Code	Code	Code	Code	Code
25	1”	10/16	0300025	0310025	0320025	0330025	0340025
32	1”1/4	10/16	0300032	0310032	0320032	0330032	0340032
40	1”1/2	10/16	0300040	0310040	0320040	0330040	0340040
50	2”	10/16	0300050	0310050	0320050	0330050	0340050
65	2”1/2	10/16	0300065	0310065	0320065	0330065	0340065
80	3”	10/16	0300080	0310080	0320080	0330080	0340080
100	4”	10/16	0300100	0310100	0320100	0330100	0340100
125	5”	10/16	0300125	0310125	0320125	0330125	0340125
150	6”	10/16	0300150	0310150	0320150	0330150	0340150
200	8”	10	0300200	0310200	0320200	0330200	0340200
250	10”	10	0300250	0310250	0320250	0330250	0340250
300	12”	10	0300300	0310300	0320300	0330300	0340300
350	14”	10	0300350	0310350	0320350	0330350	
400	16”	10	0300400	0310400	0320400	0330400	
450	18”	10	0300450	0310450	0320450	0330450	
500	20”	10	0300500	0310500	0320500	0330500	
600	24”	10	0300600	0310600	0320600	0330600	
700	28”	10	0300700	0310700	0320700		
200	8”	16	0301200	0311200	0321200	0331200	0341200
250	10”	16	0301250	0311250	0321250	0331250	0341250
300	12”	16	0301300	0311300	0321300	0331300	0341300
350	14”	16	0301350	0311350	0321350	0331350	
400	16”	16	0301400	0311400	0321400	0331400	
450	18”	16	0301450	0311450	0321450	0331450	
500	20”	16	0301500	0311500	0321500	0331500	
600	24”	16	0301600	0311600	0321600	0331600	
700	28”	16	0301700	0311700	0321700		

DN		Free Length	Max Allowable Movements (not concurrent)				Active Section	Max Allowable Pressure up to 80°C		Total Weight
			Axial		Lateral	Angular				
[mm]	[inches]	[mm]	Compress. mm	Extens. mm	+/- mm	+/- degrees	cm^2	Positiv bar	Vacuum mm Hg	Kg
25	1”	152	13	9	13	15°	24	16	660	2.2
32	1” 1/4	152	13	9	13	15°	30	16	660	3.2
40	1” 1/2	152	13	9	13	15°	36	16	660	3.8
50	2"	152	13	9	13	15°	65	16	660	5.1
65	2” 1/2	152	13	9	13	15°	84	16	660	5.9
80	3”	152	13	9	13	15°	106	16	660	7.0
100	4”	152	19	13	13	15°	157	16	660	7.6
125	5”	152	19	13	13	15°	232	16	660	10.0
150	6”	152	19	13	13	15°	322	16	660	12.4
200	8”	152	19	13	13	15°	504	16	660	18.3
250	10”	203	25	16	19	15°	774	16	660	24.2
300	12”	203	25	16	19	15°	1074	16	660	30.0
350	14”	203	25	16	19	15°	1389	10	660	53.0
400	16”	203	25	16	19	15°	1783	9	660	61.5
450	18”	203	25	16	19	15°	2183	9	660	66.8
500	20”	203	25	16	19	15°	2630	9	660	72.0
550	22”	254	25	16	19	15°	3105	8	660	96.8
600	24”	254	25	16	19	15°	3627	8	660	121.5
700	28”	254	25	16	19	10°	4793	8	660	
750	30”	254	25	16	19	10°	5836	8	660	

Notes
-For higher vacuums, i.e. pressures lower than 660 mm Hg, the joint must have an inner vacuum ring.
-The max allowable pressures indicated in the table above are valid for temperatures up to 80°C.
For higher operating temperatures, the max operating pressure is given by the formula:
operating P = allowable P x reduction factor R

T [°C]	80	85	90	95	100	105
Reduction factor R	1.0	0.92	0.83	0.75	0.67	0.60

FSFB anti-vibration joint

The elastomers normally used are the following:

NN	(Neoprene on both the outside and inside); label colour: BLUE / WHITE
EE	(EPDM on both the outside and inside); label colour: RED / WHITE
NP	(Neoprene on the outside + Nitrile on the inside); label colour: RED / YELLOW
NH	(Neoprene on the outside + Hypalon on the inside); label colour: GREEN / YELLOW
NV	(Neoprene on the outside + Viton on the inside); label colour: GREEN / WHITE

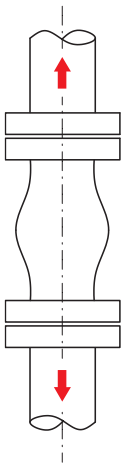
DN		PN	FSFB-NN Neoprene-Neoprene	FSFB-EE EPDM-EPDM	FSFB-NP Neoprene-Nitrile	FSFB-NH Neoprene-Hypalon	FSFB-NV Neoprene-Viton
[mm]	[inches]	[mm]	Code	Code	Code	Code	Code
25	1"	10/16	0302025	0312025	0322025	0332025	0342025
32	1"1/4	10/16	0302032	0312032	0322032	0332032	0342032
40	1"1/2	10/16	0302040	0312040	0322040	0332040	0342040
50	2"	10/16	0302050	0312050	0322050	0332050	0342050
65	2"1/2	10/16	0302065	0312065	0322065	0332065	0342065
80	3"	10/16	0302080	0312080	0322080	0332080	0342080
100	4"	10/16	0302100	0312100	0322100	0332100	0342100
125	5"	10/16	0302125	0312125	0322125	0332125	0342125
150	6"	10/16	0302150	0312150	0322150	0332150	0342150
200	8"	10	0302200	0312200	0322200	0332200	0342200
250	10"	10	0302250	0312250	0322250	0332250	0342250
300	12"	10	0302300	0312300	0322300	0332300	0342300
200	8"	16	0303200	0313200	0323200	0333200	0343200
250	10"	16	0303250	0313250	0323250	0333250	0343250
300	12"	16	0303300	0313300	0323300	0333300	0343300

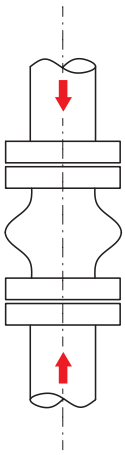
DN		Free Length	Max Allowable Movements (not concurrent)				Active Section	Max Allowable Pressure up to 80°C		Total Weight
			Axial		Lateral	Angular				
[mm]	[inches]	[mm]	Compress. mm	Extens. mm	+/- mm	+/- degrees	cm²	Positiv bar	Vacuum mm Hg	Kg
25	1"	130	13	9	13	15°	24	16	660	2.2
32	1" 1/4	130	13	9	13	15°	30	16	660	3.2
40	1" 1/2	130	13	9	13	15°	36	16	660	3.8
50	2"	130	13	9	13	15°	65	16	660	4.8
65	2" 1/2	130	13	9	13	15°	84	16	660	5.8
80	3"	130	13	9	13	15°	106	16	660	7.2
100	4"	130	13	9	13	15°	157	16	660	7.8
125	5"	130	13	9	13	15°	232	16	660	9.7
150	6"	130	13	9	13	15°	322	16	660	13.2
200	8"	130	13	9	13	15°	504	16	660	17.9
250	10"	130	13	9	14	10°	774	16	660	24.5
300	12"	130	13	9	15	10°	1074	16	660	31.0

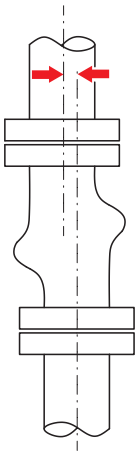
Notes
-For higher vacuums, i.e. pressures lower than 660 mm Hg, the joint must have an inner vacuum ring.
-The max allowable pressures indicated in the table above are valid for temperatures up to 80°C.
For higher operating temperatures, the max operating pressure is given by the table below:

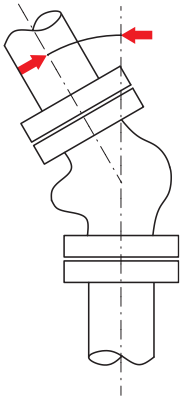
T [°C]	80	85	90	95	100	105
Pressure [bar]	16.0	14.7	13.3	12.0	10.7	9.6

Movements (FSFA-FSFB):







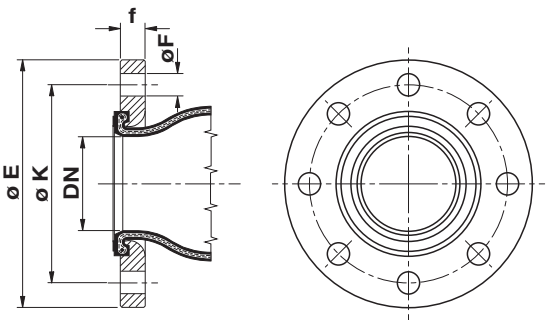


FSFA - FSFB

FLANGES Material: carbon steel (on request: stainless steel)
Surface protection: electrogalvanizing

DN		f	PN 6				PN 10			
[mm]	[inches]	[mm]	n. holes	Ø F	Ø K	Ø E	n. holes	Ø F	Ø K	Ø E
25	1"	14	4	11	75	100	4	14	85	115
32	1" 1/4	16	4	14	90	120	4	18	100	140
40	1" 1/2	16	4	14	100	130	4	18	110	150
50	2"	18	4	14	110	140	4	18	125	165
65	2" 1/2	18	4	14	130	160	4	18	145	185
80	3"	20	4	18	150	190	4	18	160	200
100	4"	20	4	18	170	210	8	18	180	220
125	5"	22	8	18	200	240	8	18	210	250
150	6"	24	8	18	225	265	8	22	240	285
200	8"	24	8	18	280	320	8	22	295	340
250	10"	26	12	18	335	375	12	22	350	395
300	12"	26	12	22	395	440	12	22	400	445
350	14"	28	12	22	445	490	16	22	460	505
400	16"	30	16	22	495	540	16	25	515	565
450	18"	30	16	22	550	595	20	25	565	615
500	20"	30	20	22	600	645	20	25	620	670
600	24"	30	20	25	705	755	20	30	725	780

DN		f	PN 16				ANSI 150			
[mm]	[inches]	[mm]	n. holes	Ø F	Ø K	Ø E	n. holes	Ø F	Ø K	Ø E
25	1"	14	4	14	85	115	4	15.9	79.5	108
32	1" 1/4	16	4	18	100	140	4	15.9	89.0	118
40	1" 1/2	16	4	18	110	150	4	15.9	98.4	127
50	2"	18	4	18	125	165	4	19	120.6	152
65	2" 1/2	18	4	18	145	185	4	19	139.7	178
80	3"	20	8	18	160	200	4	19	152.4	191
100	4"	20	8	18	180	220	8	19	190.5	229
125	5"	22	8	18	210	250	8	22.2	215.9	254
150	6"	24	8	22	240	285	8	22.2	241.3	279
200	8"	24	12	22	295	340	8	22.2	298.4	343
250	10"	26	12	25	355	405	12	25.4	361.9	406
300	12"	26	12	25	410	460	12	25.4	431.8	483
350	14"	28	16	25	470	520	12	28.6	476.2	533
400	16"	30	16	30	525	580	16	28.6	539.7	597
450	18"	30	20	30	585	640	16	31.8	577.8	635
500	20"	30	20	33	650	715	20	31.8	635.0	699
600	24"	30	20	36	770	840	20	34.9	749.3	813



FTUA anti-vibration joint

Production range: from DN 20 to DN 80.

MANUFACTURING CHARACTERISTICS

BODY

The body is moulded with a double arch and is formed by multiple plies of continuous nylon fibres which are twill-woven and embedded in the rubber so as to allow the necessary flexibility between the plies. In addition, the interior edge of each flare is reinforced further by a high-strength steel-wire in order to increase the maximum allowable operating pressure.
A protective impermeable tubular layer of elastomer completely covers both the internal surface of the body as well as the flares. This prevents the piped fluid from penetrating inside. The type of elastomer used for the internal protective layer depends on the operating conditions and the type of fluid being piped. Select the best suited elastomer by evaluating its chemical resistance and other physical properties provided in the following tables.
Similarly, the entire external surface of the body is protected by another impermeable tubular layer of elastomer which covers it continuously and protects it from the surrounding environment. The type of elastomer used for the external protective layer depends on the environmental conditions to which the joint will be exposed (sunlight, acidic fumes, saline environment, etc.). Select the best suited elastomer by evaluating its chemical resistance and other physical properties provided in the following tables.

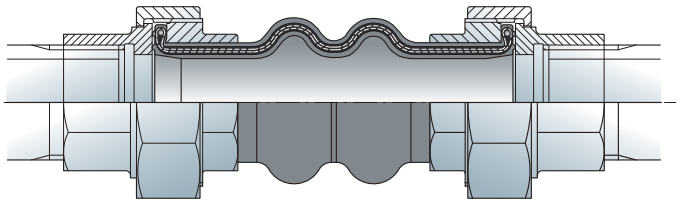
FITTINGS

The fittings are three-piece union fittings with female end pieces and BSP gas thread. The standard material is galvanized malleable cast iron. On request, the fittings can also be manufactured in stainless steel AISI 316 or bronze.

The elastomers normally used are the following:

NN	(Neoprene on both the outside and inside); label colour: BLUE / WHITE
EE	(EPDM on both the outside and inside); label colour: RED / WHITE
NP	(Neoprene on the outside + Nitrile on the inside); label colour: RED / YELLOW

DN		PN	FTUA-NN Neoprene-Neoprene	FTUA-EE EPDM-EPDM	FTUA-NP Neoprene-Nitrile
[mm]	[inches]	[mm]	Code	Code	Code
20	3/4"	10	0308020	0318020	0328020
25	1"	10	0308025	0318025	0328025
32	1"1/4	10	0308032	0318032	0328032
40	1"1/2	10	0308040	0318040	0328040
50	2"	10	0308050	0318050	0328050
65	2"1/2	10	0308065	0318065	0328065
80	3"	10	0308080	0318080	0328080



DN		Free Length	Max Allowable Movements (not concurrent)				Active Section	Max Allowable Pressure up to 80°C		Total Weight
			Axial		Lateral	Angular				
[mm]	[inches]	[mm]	Compress. mm	Extens. mm	+/- mm	+/- degrees	cm²	Positiv bar	Vacuum mm Hg	Kg
20	3/4"	203	22	6	22	32°	9	10	660	0.8
25	1"	203	22	6	22	25°	13	10	660	1.2
32	1"1/4	203	22	6	22	25°	13	10	660	1.4
40	1"1/2	203	22	6	22	20°	17	10	660	2.0
50	2"	203	22	6	22	15°	28	10	660	2.8
65	2"1/2	203	22	6	22	12°	45	10	660	4.1
80	3"	203	22	6	22	10°	57	10	660	4.5

Notes
-The max allowable pressures indicated in the table above are valid for temperatures up to 80°C.
For higher operating temperatures, the max operating pressure is given by the table below:

T [°C]	80	85	90	95	100	105
Pressure [bar]	10.0	9.7	8.3	7.5	6.7	6.0

SPECIAL VERSIONS OF THE FTUA JOINTS:

FTUA-R: this joint is identical to the FTUA joint with the addition of a reinforcement ring placed externally in the hollow between the two arches in order to stabilize them at high pressures. The ring is made of galvanized malleable cast iron.

FTUA-F: this joint is identical to the FTUA joint with the difference that the end part of each fitting is formed by a flange with internal coupling thread.
FTUA-P: this joint is identical to the FTUA joint with the difference that the fittings can be in PVC or PP and are used on plastic piping.

JM-10 Anti-vibration joint

EMIFLEX JM-10 anti-vibration joints can be installed on piping near pumps, compressors, regulators, valves, operating machines, etc., to interrupt the propagation of sound waves and absorb small vibrations.

MANUFACTURING CHARACTERISTICS

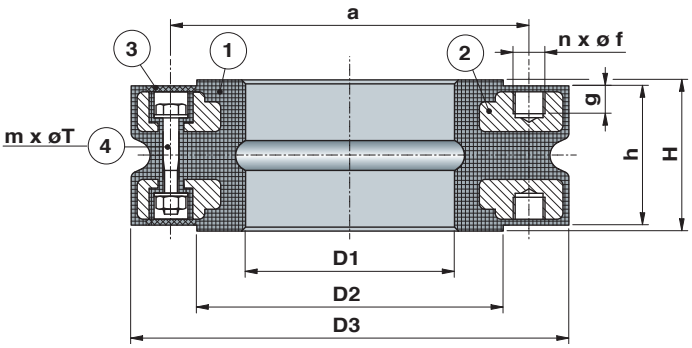
The cylindrical body is manufactured in EPDM elastomer and contains two flanged inserts in carbon steel. The coupling drilling is UNI ISO PN 16. Starting from DN 80, the pair of flanged inserts are completed with internal spacer tie rods in carbon steel in order to counter the end thrust effect due to the internal pressure which tends to extend the joint.
The JM-10 anti-vibration joint has no metal parts in contact with the piped fluid or the mating flanges.

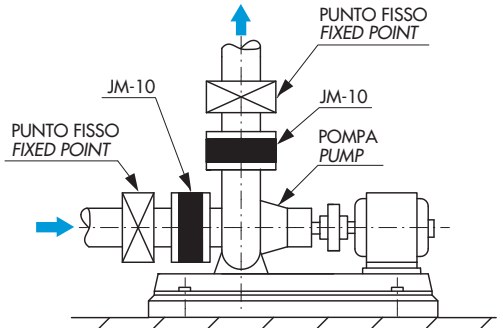
APPLICATION

Heating systems, water-pumping plants, air-conditioning systems, public installations such as condominiums, hospitals, schools, etc. Compatible fluids: water, seawater, weak acids and weak bases, etc. Max operating pressure: 10 bar. Max constant operating temperature: + 100°C.

WARNINGS

The JM-10 joints must not be used to absorb axial or lateral expansions, large-amplitude vibrations, torsions or angular movements. **Each JM-10 joint must be installed between two appropriately dimensioned fixed points. The JM-10 joints must be installed maintaining their specified length H and without any initial tension.** The mating flanges of the pipeline must be parallel with one another and aligned well. The connection to the mating flanges must be made with suitable bolts, ensuring that the length of the bolts is such as to not damage the joint (which has solid connection holes) and completing the connection with the relative washers. No gaskets are required.





Installation example for EMIFLEX type JM-10 anti-vibration joints.

DN	D1	D2	D3	a	H	g	h	n x ø f	m x øT	Code
20	20	56	105	75	76	12	70	4xM12	-	0319020
25	26	66	115	85	76	12	70	4xM12	-	0319025
32	32	76	140	100	76	14	70	4xM16	-	0319032
40	40	88	150	110	76	14	70	4xM16	-	0319040
50	50	100	165	125	76	14	70	4xM16	-	0319050
65	68	120	185	145	76	14	70	4xM16	-	0319065
80	80	134	200	160	76	14	70	8xM16	4xM8	0319080
100	105	154	220	180	76	14	70	8xM16	4xM8	0319100
125	130	182	250	210	76	16	70	8xM16	4xM10	0319125
150	155	212	285	240	76	16	70	8xM20	4xM10	0319150
200	200	264	340	295	96	16	90	8xM20	6xM12	0319200

ELAFLEX ERV joints

ERV ROTEX type with double red band. Suitable for hot water in heating systems with design temperatures up to 110° C (with short peaks at 130°C), for cooling water and hot air. Not suitable for hydrocarbons, drinking water or water and air with oily residues.
Body: reinforced with polymer plies and coated internally and externally with EPDM.
Flanges: swivel PN 10/16 in electrogalvanized carbon steel. Length 130 mm.

DN [mm]	PN [bar]	Operating pressure [bar]		
		65°C	100°C	110°C
25 - 150	16	16	10	6
200 - 300	10	10	6	3

ERV type with red band. Suitable for drinking water, cold water and hot water up to 90°C, seawater, cooling water and wastewater with no oily residues. Not suitable for hydrocarbons or water and air with oily residues.
Body: reinforced with nylon plies, coated internally with a butyl/EPDM compound and externally with EPDM.
Flanges: swivel PN 10/16 in electrogalvanized carbon steel. Length 130 mm.

DN [mm]	PN [bar]	Operating pressure [bar]		
		70°C	80°C	90°C
25 - 150	16	14	12	10
200 - 300	10	8	7	6

ERV type with yellow band. Suitable for oil products and fuels, methane (but not LPG). Also suitable for emulsions of cooling water with anticorrosive oils. Operating temperature up to 90°C.
Body: reinforced with nylon plies, coated internally with nitrile (NBR) and externally with neoprene.
Flanges: swivel PN 10/16 in electrogalvanized carbon steel. Length 130 mm.

DN [mm]	PN [bar]	Operating pressure [bar]		
		70°C	80°C	90°C
25 - 150	16	14	12	10
200 - 300	10	8	7	6

ERV type with green band. Suitable for moderate acids and alkalis up to 80°C, compressed air with oil residues.
Body: reinforced with nylon plies, coated internally and externally with Hypalon.
Flanges: swivel PN 10/16 in electrogalvanized carbon steel. Length 130 mm.

DN [mm]	PN [bar]	Operating pressure [bar]	
		70°C	80°C
25 - 150	16	14	12
200 - 300	10	8	7

ERV type with white band. Suitable for food liquids, vegetable oils, drinking water up to 80°C.
Body: reinforced with nylon plies, coated internally with white nitrile and externally with neoprene.
Flanges: swivel PN 10/16 in electrogalvanized carbon steel. Length 130 mm.

TECHNICAL CHARACTERISTICS OF THE JOINTS

Colour	Elastomer			Temperature	Resistant to:	Not suitable for
Joint type	Label	Internal layer	External layer	min / max °C		
EE	red / white	EPDM	EPDM	-10°C +105°C	Steam, hot and cold water, drinking water, compressed air without traces of lubricants, vegetable oils, ozone, alcohols, ketones	Mineral oils, solvents, aromatic hydrocarbons
NH	green / yellow	Hypalon	Neoprene	-10°C +100°C	Strong acids and bases, freon, hydroxides, ozone, alcohols, alkaline and hypochlorite solutions, aliphatic hydrocarbons	Ketones, esters, certain chlorinated oxidizing acids, nitro-aromatic hydrocarbons
NN	blue / white	Neoprene	Neoprene	-10°C +105°C	Hot and cold water, drinking water, moderate acids, ozone	Oxidizing acids, esters, ketones, nitro-aromatic hydrocarbons
NP	red / yellow	Nitrile	Neoprene	-10°C +100°C	Most of the hydrocarbons, fats, oils, hydraulic fluids, solvents	Ozone, ketones, esters, aldehydes, nitro and chlorinated hydrocarbons
NV	green / white	Viton	Neoprene	-10°C +105°C	All the aliphatic, aromatic and halogenated hydrocarbons. Many acids, animal and vegetable oils	Ketones, esters and chlorine

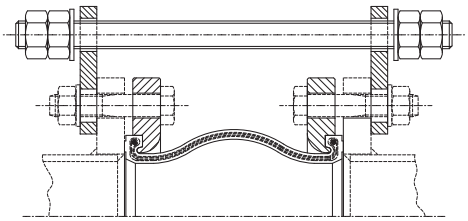
ELASTOMER CHEMICAL RESISTANCE

	Elastomer type				
Chemical product	neoprene	nitrile	hypalon	epdm	viton
Amyl acetate	X	X	C	A	X
Butyl acetate	X	X	C	B	X
Aluminium acetate	B	B	B	A	X
Lead acetate	B	B	C	A	X
Potassium acetate	B	B	B	A	X
Sodium acetate	B	B	B	A	X
Zinc acetate	B	B	C	A	X
Isobutyl acetate	X	X	C	X	X
Methyl acetate	C	X	C	B	X
Propyl acetate	X	X	X	B	X
Acetylene	B	A	B	A	A
Acetone	C	X	C	A	X
Fatty acids	B	B	X	X	A
Acetic acid 10%	B	B	B	A	A
Acetic acid 50%	C	C	B	A	C
Acetylacetic acid	X	X	-	-	-
Benzoic acid	C	X	B	B	A
Boric acid	A	A	A	A	A
Phenol carbolic acid	X	X	C	X	A
Carbonic acid	A	B	A	A	A
Hydrocyanic acid (prussic acid)	B	B	A	A	A
Hydrochloric acid (concentrated)	X	X	X	C	A
Hydrochloric acid 10%	A	B	A	A	A
Hydrochloric acid 100%	X	X	C	C	A
Hydrochloric acid 38%	C	C	A	A	A
Chromic acid 25%	X	X	A	A	A
Chromic acid 50%	X	X	B	B	A
Formic acid	A	C	B	A	C
Phosphoric acid 50%	B	C	B	A	A
Phosphoric acid 85%	C	X	B	B	A
Nitric acid 25%	C	X	B	B	A
Nitric acid 35%	X	X	B	C	A
Nitric acid 50%	X	X	C	X	A
Oleic acid	B	B	B	C	B
Oxalic acid	B	C	B	A	B
Picric acid	A	B	B	B	A
Salicylic acid	X	C	A	A	A
Sulphuric acid (concentrated)	X	X	B	B	A
Sulphuric acid (diluted)	B	X	B	A	A
Sulphuric acid 25%	C	X	B	B	A
Sulphuric acid 60%	X	X	B	B	A
Sulphuric acid 95%	X	X	C	C	A
Tannic acid	A	B	A	B	A
Tartaric acid	B	A	A	B	A
Water	B	A	A	A	B
Seawater	A	A	A	A	A
Distilled water	C	A	A	A	A
Sewage	B	A	A	B	A
Amyl alcohol	A	B	B	A	B
Benzyl alcohol	C	X	B	B	A
Butyl alcohol	A	A	A	B	A
Ethyl alcohol	A	A	A	A	B
Isopropyl alcohol	B	B	A	A	A
Propyl alcohol	A	A	A	A	A
Alum	A	A	A	A	A
Ammonia	A	A	A	A	A
Aniline	X	X	X	B	B
Air	A	A	A	A	A
Hot air 150 °C	B	B	B	B	A
Hot air 90 °C	A	A	A	A	A
Benzaldehyde	X	X	X	B	X
Petrol	B	A	X	X	A
Butyl benzoate	X	X	X	A	A
Sodium bicarbonate	A	A	A	A	A
Potassium bichromate	B	A	A	A	A
Calcium bisulphide	A	A	A	X	A
Sodium bisulphide	A	A	A	A	A
Borax	B	B	A	A	A
Butane	A	A	B	X	A
Fat lime	A	A	A	A	-
Ammonium carbonate	B	X	B	A	A
Aliphatic ketones	X	X	X	A	X
Aromatic ketones	X	X	X	A	X
Cyclohexane	C	A	X	X	A
Cyclohexanone	X	X	X	B	X
Chloroprene	X	X	C	X	A
Aluminium chloride	A	A	A	A	A
Ammonium chloride	A	A	A	A	A
Barium chloride	A	A	A	A	A
Calcium chloride	A	A	A	A	A
Cobalt chloride	A	A	A	A	A

	Elastomer type				
Chemical product	neoprene	nitrile	hypalon	epdm	viton
Iron chloride	B	A	A	A	A
Magnesium chloride	A	A	A	A	A
Mercury chloride	B	A	A	A	A
Potassium chloride	A	A	A	A	A
Sodium chloride	A	A	A	A	A
Zinc chloride	A	A	A	A	A
Ethyl chloride	B	B	C	B	A
Methyl chloride	X	X	X	C	A
Aviation gasoline	C	A	X	X	A
Hexane	B	A	B	X	A
Hexanol	B	A	B	C	A
Ethyl hexanol	B	B	A	A	A
Ethanol	A	A	A	A	B
Butyl ether	C	B	C	C	X
Isopropyl ether	C	B	C	X	X
Petroleum ether	B	A	X	X	A
Dimethyl ether	C	B	C	B	B
Ethylene	-	B	A	C	A
Ethylenediamine	A	A	B	A	X
Phenol	X	X	C	X	A
Formaldehyde	B	B	B	A	B
Aluminum phosphate	A	A	A	A	A
Ammonium phosphate	A	A	A	A	A
Tributyl phosphate	X	X	X	A	X
Tricresyl phosphate	X	X	C	A	B
Trioctyl phosphate	X	X	X	A	B
Dibutyl phthalate	X	X	X	A	B
Dioctyl phthalate	X	X	X	B	A
Furfural	X	X	C	B	X
Glycerine	A	A	A	A	A
Ethylene glycol	A	A	A	A	A
Propylene glycol	-	A	A	A	A
Liquid petroleum gas	B	A	X	X	A
Hydrazine	C	C	C	A	X
Hydrogen gas	A	A	B	A	A
Magnesium hydroxide	B	B	A	A	A
Potassium hydroxide	B	C	A	B	C
Sodium hydroxide	B	C	B	A	B
Calcium hypochloride	X	X	A	A	A
Sodium hypochlorite	C	C	C	B	A
Iso Octane	B	A	B	X	A
Lacquers	X	X	X	X	X
Sodium metaphosphate	B	A	B	A	A
Methane	B	A	B	X	A
Methanol	A	A	A	A	X
Methylamine	A	B	-	A	-
Naphtha	C	B	C	X	A
Aluminum nitrate	A	A	A	A	B
Ammonium nitrate	B	A	A	A	A
Calcium nitrate	A	B	A	A	A
Lead nitrate	A	A	B	A	A
Potassium nitrate	A	A	A	A	A
Silicone oils and greases	A	A	A	A	A
Mineral oils	B	A	B	X	A
Olive oil	B	A	B	B	A
Oil of palma christi	A	A	A	B	A
Ethyl oxide	X	X	X	C	C
Hydrogen oxide	B	A	A	A	B
Oxygen (cold)	A	B	B	A	A
Ozone	B	X	A	A	A
Paraffin	B	A	X	X	A
Pitch	B	A	B	X	A
Pentane	A	A	B	X	A
Sodium perborate	B	B	B	A	A
Potassium permanganate	C	B	A	A	B
Ammonium persulfate	A	X	A	B	A
Petroleum oil crude	B	A	B	X	A
Propane	B	A	B	X	A
Caustic soda	B	C	B	A	B
Aluminum sulfate	A	B	A	A	A
Barium sulfate	A	A	B	A	A
Iron sulfate	A	A	A	A	A
Nickel sulfate	A	A	A	A	A
Potassium sulfate	A	A	A	A	A
Sodium sulphate	A	A	A	A	A
Zinc sulfate	A	A	A	A	A
Sodium thiosulfate	A	A	A	A	A
Steam (to 225°F)	C	C	B	A	X
Steam (225°F to 300°F)	X	X	C	A	X
Vaseline	B	A	B	X	A

Rating: A = Excellent B = Good C = Not recommended for continuous use X = Not suitable - = No information

ACCESSORIES



LIMIT RODS FOR FSFA and FSFB JOINTS

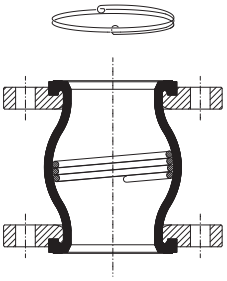
Limit rods represent an additional safety factor since they prevent the expansion joint from undergoing movements exceeding those for which it was designed and manufactured. These excessive movements could be caused by the failure of a fixed point or other components of the pipeline.
The travel limitation can be for compression, extension or both. The amount of travel to be limited is set by adjusting the position of the relative nuts and then tightening the locknuts.
The tie rods must be able to withstand the axial thrust developed by the expansion joint due to the internal pressure.
The compression travel can be limited using a nut and locknut or by fitting a pipe of suitable length on the tie rod between the flanges of the rubber joint.
If the joint must also allow lateral travel, spherical washers must be inserted between the nuts and the flange surfaces rather than plain washers. The locking plates of the limit rods are assembled on the mating flanges of the piping and must be properly spaced.

Limit rod unit composition	
Component	Quantity
Tie rod	1
Plate	2
Nut	4
Washer	2

DN		Tie rod		Number of units in kit
mm	inches	Ø mm	L mm	
32	1 1/4”	M 16	300	2
40	1 1/2”	M 16	300	2
50	2”	M 16	300	2
65	2 1/2”	M 20	315	2
80	3”	M 20	315	2
100	4”	M 20	315	2
125	5”	M 20	325	2
150	6”	M 24	335	2
200	8”	M 24	340	2
250	10”	M 24	400	3
300	12”	M 24	400	4
350	14”	M 24	410	4
400	16”	M 27	425	4
450	18”	M 27	425	4
500	20”	M 27	425	4
550	22”	M 27	425	4
600	24”	M 30	425	4

VACUUM RINGS (FSFA-FSFB)

The E-FLEX rubber joints have a vacuum rating of 660 mm Hg (0.88 bar). For higher vacuums, a stainless steel vacuum ring must be inserted inside the joint arch in order to prevent the body of the joint from imploding.



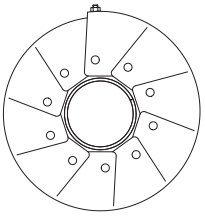
FLAME-PROOF PROTECTIVE COVER (FSFA-FSFB)

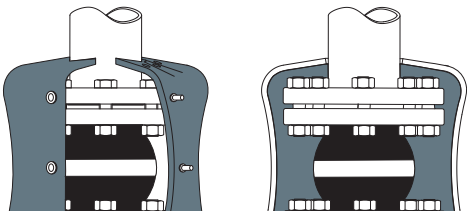
The flame-proof protective cover is required in order to protect the FSFA and FSFB joints from flames in case of fire with a max temperature of 800°C for a period of 30 minutes. It can be installed immediately.

Characteristics:

- it completely covers the joint and the mating flanges of the pipeline;
- it's flexible, so it allows all the designed movements of the joint;
- it's asbestos-free and made of several layers of special heat-resistant fabric;
- it's quick and easy to install: just wrap it around the assembled joints, fastening the flaps with the screws provided. It can also be disassembled easily at any time.

Flame Proof Protective Cover (FSFA-FSFB).





LIMIT RODS FOR FTUA JOINTS

Limit rods represent an additional safety factor since they prevent the joint from undergoing an elongation exceeding that for which it was designed and manufactured (6 mm). This can occur due to the failure of a fixed point or other components of the pipeline. The amount of travel to be limited is set by adjusting the position of the relative nuts and then tightening the locknuts (see Fig. A). The tie rods must be able to withstand the axial thrust due to the internal pressure.
The FTUA joint completed with limit rods can still absorb the designed lateral travel as well, since the tie rods are made of steel wire rope and are thus flexible.

DN	A	B	C	L
20	178	58	98	197
25	171.5	68	108	197
32	170	80	120	197
40	162	90	130	185
50	159	106	160	185
65	161	124	180	185
80	161	144	200	185

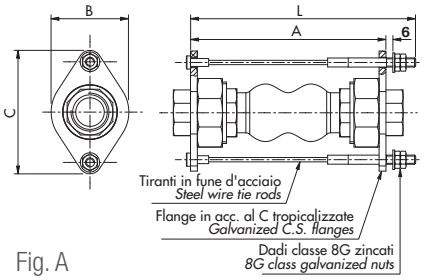
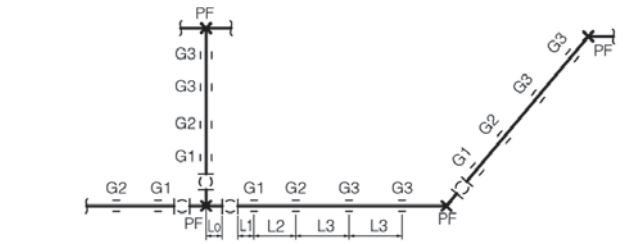


Fig. A

FSFA - FSFB joint installation instructions

The E-FLEX type FSFA and FSFB rubber expansion joints have been designed and manufactured for certain conditions of use, within which they can be used safely provided they've been installed correctly. Their life and performance can be compromised by operating conditions different from those provided for as well as by incorrect installation. They must be installed on the pipeline maintaining their specified free length.



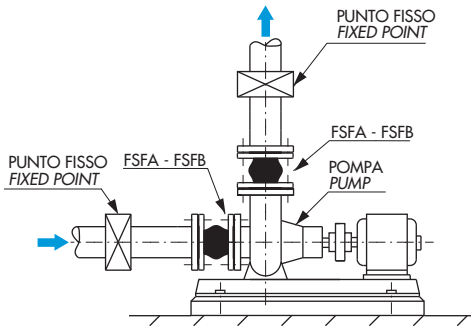
FIXED POINTS

Since the rubber joint is an elastic body, when it's subjected to internal pressure it develops an axial thrust (end effect) which tends to elongate it, dangerously deforming the piping. This thrust must be countered by the fixed points. The axial thrust is given by $S = p \cdot A$

where: S = axial thrust [kg] p = internal pressure [bar] A = active section of the joint [cm2]

This thrust must be countered by the fixed points.

- Each rubber joint must always be installed between two fixed points which are appropriately dimensioned to withstand the joint's axial thrust and line up coaxially with the joint. The section of piping including the first fixed point, the elastic joint and the second fixed point must be straight, supported properly and suitably guided so as to prevent any possibility of lateral deviation.
- The joint must be placed as close as possible to a fixed point.
- When the piping changes direction, a fixed point must be installed at the elbow. The fixed point on the elbow must support a total force given by the sum of the axial thrust defined above and the centrifugal force due to the change in direction of the piped fluid.



CONDITIONS OF USE

- Check that the operating conditions of the piping (pressure, temperature, expected movements) are compatible with the performance of the elastic joint being installed.
- Check that the elastomer selected for the joint being installed has the best chemical resistance against the piped fluid.

REAL STATE OF THE PIPING

- Check that the real course of the piping corresponds to the design diagram, without any misalignment errors which would cause unexpected movements for the joint. The travel indicated in the table for the standard rubber joints is the effective operating travel and does not take account of unspecified movements to compensate for misalignment errors.
- If the joints must be installed with specific initial predeformations (compression or elongation) the allowable movements of the joint must be reduced by the value of these deviations.
- Check that the piping is equipped with guides arranged properly in order to keep the piping aligned during operation.

SUPPORTS

- The piping must be properly supported so that its weight does not rest on the joint.

MATING FLANGES

- The mating flanges of the piping to which the joint will be connected must have a flat contact surface which is smooth, clean and free of any unevenness which could scratch or cut the sealing surface of the rubber flare of the joint (fig. B).

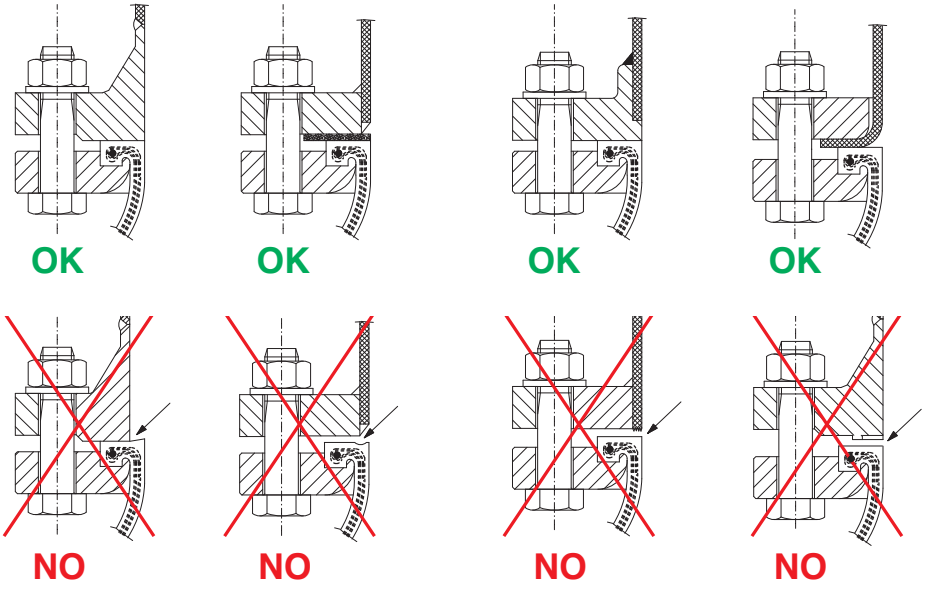


Fig. B

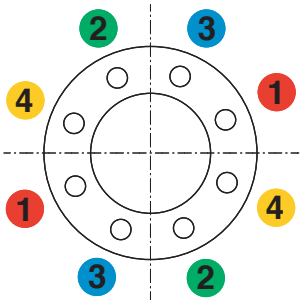


Fig. C

MATING FLANGE FASTENING BOLTS

- To prevent interference with the arch of the joint during compression, it is advisable to assemble the bolts by inserting them into the flange from the arch side so that their hexagonal head is facing the arch. If this is not possible, then the bolts used must have a length such that the minimum bolt-arch distance is not less than 15 mm. The tightening of the bolts must be done gradually, acting alternately and uniformly on nuts in diametrically opposite positions following the sequence indicated in the diagram in Fig. C. It's best to carry out the operation by holding the wrench acting on the internal face of the joint flange fixed while turning the other wrench on the mating flange. This prevents damage to the surface of the arch due to the tightening wrench slipping and striking it.
- The bolts must be tightened until the outer edge of the rubber flare of the joint swells slightly under the action of the metal faces of the flange and mating flange.

GENERAL WARNINGS

- The rubber expansion joints must be installed in locations where they are easily accessible for periodic inspections or replacement.
- Do not use any sharp-edged or pointed tools during installation (these could damage the rubber of the joint).
- During installation, strictly avoid twisting the rubber joint by trying to align the flange holes without first loosening all the bolts.
- To facilitate the dismantling of the joint at a later time, it is acceptable (but not necessary) to apply a thin film of graphite diluted in glycerine or water on the faces of the joint's rubber flanges before installation.
- The rubber expansion joints should not have any thermal insulation. Nevertheless: if they must be thermally insulated, the insulation must be removable so as to allow easy access to the joint for periodic inspections.
- No welding should be performed near the joint without first having covered the rubber parts with suitable protection against splatters of incandescent metal and the ultraviolet radiation emitted by the electric welding process.
- The rubber parts of the joint must never be painted. They must be kept clean. Clean the rubber parts using water or soapy water: never use solvents of any kind since they may attack the elastomer. The rubber of the joint must never be contaminated with grease or oil.
- If the joint must be installed outdoors, make certain the elastomer of its outer layer is resistant to ozone, solar radiation and the surrounding environmental conditions.

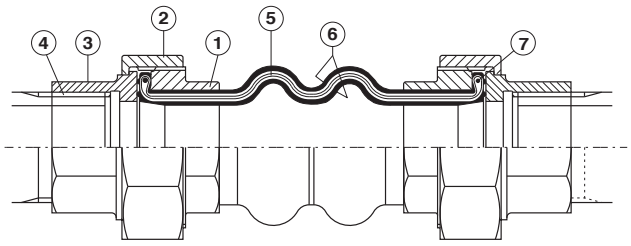
- Check the seal of the flanges one week after installation and then periodically. Tighten the bolts if necessary.
- Periodically check the condition of the elastomer; if it appears gummy or sticky, replace the joint as soon as possible.
- Check that no water hammers can occur on the pipeline: the overpressure could damage the joint.
- CAUTION: if the rubber joint is installed on piping carrying fluids at high pressure and temperature or hazardous fluids, suitable shields must be provided to protect the personnel in case of fluid leakage in the form of jets or sudden leaks.

STORAGE

For ideal preservation, these joints must be stored in a cool, dry, dust-free and shaded area. The joints must be stored horizontally face down on pallets or wooden shelves. They must not be stacked, and no heavy objects should be placed on top of them. Do not store solvents, fuels or other chemical products in the same room. The joints can be stored outdoors for brief periods provided that the joints are not in contact with the soil but are placed on wooden pallets and covered with a waterproof tarpaulin.

FTUA joint installation instructions

The E-FLEX type FTUA rubber expansion joints have been designed and manufactured for certain conditions of use, within which they can be used safely provided they've been installed correctly. Their life and performance can be compromised by operating conditions different from those provided for as well as by incorrect installation. They must be installed on the pipeline maintaining their specified free length. See the FSFA and FSFB joint installation instructions regarding: Fixed points - Conditions of use - Real state of the piping - Supports - General warnings - Storage.



1 • Union fitting
2 • Swivel nut
3 • Female fitting
4 • Gas thread (BSP)
5 • Nylon braid
6 • Rubber layers
7 • Steel wires and rope

FOR INSTALLATION OF THE FTUA JOINTS,
THE FOLLOWING MUST ALSO BE PERFORMED:

- Remove parts 2 and 3 of the two ends and proceed with assembling them on the piping. Screw parts 3 completely onto the pipeline. Hemp packing to improve the seal 3 on the piping is not allowed since this could damage the female fitting 3 which has a conical thread. It's better to use Teflon tape to improve the seal, if necessary.
- Insert the remaining unit composed of the rubber part with the two fittings 1.
- Engage the swivel nut of one end on the fitting 1, tightening it manually as far as possible, and then tighten it completely with a wrench, contrasting the tightening simultaneously with another wrench applied to the fitting 1.
- Repeat the operation with the other swivel nut, always taking care that the rubber joint is never subjected to any torsion.
- To obtain a good seal under pressure, it's important that the swivel nut 2 be tightened completely so that the extended rubber collar of the joint is solidly locked between the opposing surfaces of the fittings 1 and 3.

AW EXPANSION JOINTS

The EMIFLEX type AW axial expansion joints have been designed and manufactured to absorb axial expansions in the piping of heating and air conditioning systems using hot and cold water.

MANUFACTURING CHARACTERISTICS

BELLOWS:
This is the main part of the expansion joint. Its particular multiple-wall structure is specially designed to optimize performance because it simultaneously combines high flexibility, high resistance to pressure and high fatigue strength. It is hydraulically moulded and then welded to the fittings using the automatic TIG procedure.

INTERNAL FLOW SLEEVE:
The flow sleeve is fitted inside the bellows with the purpose of preventing the piped fluid from flowing in direct contact with the corrugations. This prevents the formation of vortices in the corrugation spaces and eliminates pressure drops.

Nominal pressure PN 16

STANDARD MATERIALS
Bellows: ASTM A 240 Tp. 321
Couplings, threaded fittings: Carbon steel (*)
Internal flow sleeve: ASTM A 240 Tp. 304
External protection: Carbon steel
Flanges: Carbon steel (*)
(*) On request: couplings and flanges in stainless steel.

END FITTINGS
In the standard versions, these are welded or flanged; on request, they can also be manufactured up to DN 100 with male threaded fittings.

EXTERNAL PROTECTION
This is an optional accessory designed to prevent foreign matter from damaging the bellows by striking them or lodging between the corrugations, limiting their movement.

CAUTION
When the **AW** expansion joint is used in hot water heating systems with a maximum temperature of 110°C, it does not fall within the scope of the European Directive 97/23/CE (PED) (art.1 paragraph 3.v) and thus does not require the CE marking. For higher temperatures or other fluids, however, the **AW** expansion joint could fall under the cited Directive. In this case, please contact our Sales Office.

Max allowable pressure PS [bar] at the max operating temperature TS [°C] for bellows PN 16 in AISI 321

TS [°C]	20	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190
PS [bar]	16	16	15.6	15.2	14.9	14.7	14.4	14.2	14	13.8	13.6	13.4	13.2	13	12.8	12.7	12.5
TS [°C]	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360
PS [bar]	12.4	12,2	12	11.8	11.7	11.6	11.5	11.3	11.2	11.1	11	10.9	10.8	10.7	10.6	10.5	10.4

During operation, the AW expansion joint must never be subjected to pressures greater than the max allowable pressure PS, which can be found in table 3 under the corresponding max operating temperature TS. For example: if TS = 100°C, then the PS is 14.2 bar.

Type AW – performance table

DN		Performance				
		axial race [mm]			R*	Am*
		Ca	Cc	Ct		
[mm]	[inches]	Elongation	Compression	Total	[N/mm]	[cm2]
20	3/4”	13	27	40	12	9
25	1”	13	27	40	13	12
32	1”1/4	13	27	40	26	18
40	1”1/2	13	27	40	25	25
50	2”	15	30	45	29	38
65	2”1/2	15	30	45	34	57
80	3”	15	30	45	40	76
100	4”	17	30	47	54	122
125	5”	17	33	50	106	188
150	6”	17	33	50	104	264
200	8”	17	33	50	134	433

***R =** Axial stiffness
***Am =** Effective section

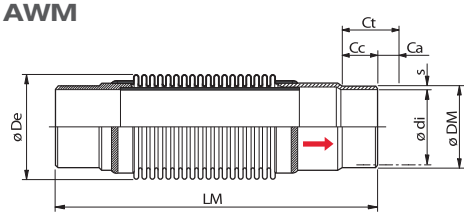
Type AW – product code table

DN		AWM	AWF	AWRF	AWM-P	AWF-P	AWRF-P
[mm]	[inch]	Code	Code	Code	Code	Code	Code
20	3/4”	0420020	0422020	0424020	0421020	0423020	0425020
25	1”	0420025	0422025	0424025	0421025	0423025	0425025
32	1 1/4”	0420032	0422032	0424032	0421032	0423032	0425032
40	1 1/2”	0420040	0422040	0424040	0421040	0423040	0425040
50	2”	0420050	0422050	0424050	0421050	0423050	0425050
65	2 1/2”	0420065	0422065	0424065	0421065	0423065	0425065
80	3”	0420080	0422080	0424080	0421080	0423080	0425080
100	4”	0420100	0422100	0424100	0421100	0423100	0425100
125	5”	0420125	0422125	-	0421125	0423125	-
150	6”	0420150	0422150	-	0421150	0423150	-
200	8”	0420200	0422200	-	0421200	0423200	-

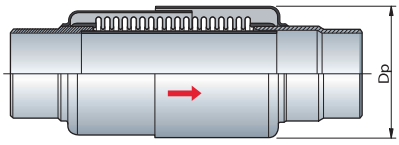
Type AW – dimensional table

DN		Dimensions [mm]																
				AWM				AWF							AWRF			
[mm]	[inches]	De	Dp	LM	di	DM	s	LF	Di	DF	Flanges UNI 2278 PN16				LR	di	Dr [inch]	M	Ch
											b	øa	n holes	øf					
20	3/4”	39.0	50	242	22.3	26.9	2.3	252	22.3	105	14	75	4	14	256	18.25	3/4”	16.5	30
25	1”	45.8	55	241	27.2	33.7	3.3	251	27.2	115	14	85	4	14	257	25	1”	19	37
32	1”1/4	54.2	65	266	35.0	42.4	3.7	276	35.0	140	16	100	4	18	294	30	1”1/4	21.5	44
40	1”1/2	65.0	77	265	41.5	48.3	3.4	275	41.5	150	16	110	4	18	284	40	1”1/2	21.5	50
50	2”	79.2	91	290	53.8	60.3	3.2	300	53.8	165	18	125	4	18	321	50	2”	25.5	62
65	2”1/2	95.6	107	292	69.6	76.1	3.2	302	69.6	185	18	145	4	18	338	64	2”1/2	30	78
80	3”	108.4	119	296	81.6	88.9	3.6	306	81.6	200	20	160	8	18	362	75	3”	33.5	92
100	4”	136.8	149	299	106.2	114.3	4.0	309	106.2	220	22	180	8	18	339	103	4”	35.8	115
125	5”	171.4	187	309	132.3	141.3	4.5	319	132.3	250	24	210	8	18	-	-	-	-	-
150	6”	200.4	215	340	159.3	168.3	4.5	350	159.3	285	24	240	8	22	-	-	-	-	-
200	8”	252.4	267	348	207.3	219.1	5.9	358	207.3	340	26	295	12	22	-	-	-	-	-

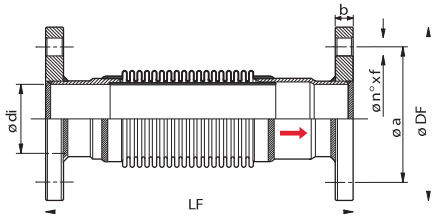
AWM



AWM-P



AWF



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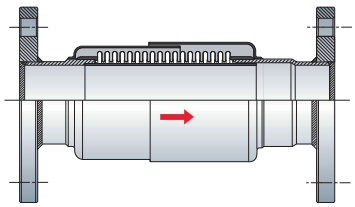
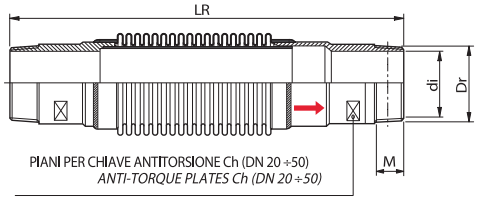


AWRF THREADED FITTINGS



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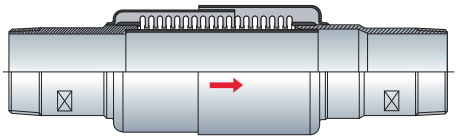


Type AW-L – performance table

DN		Performance				
		axial race [mm]			R*	Am*
		Ca	Cc	Ct		
[mm]	[inches]	Elongation	Compression	Total	[N/mm]	[cm2]
20	3/4”	20	40	60	8	9
25	1”	20	40	60	9	12
32	1”1/4	22	44	66	17	18
40	1”1/2	22	44	66	18	25
50	2”	23	47	70	22	38
65	2”1/2	25	50	75	23	57
80	3”	25	50	75	27	76
100	4”	26	54	80	35	122
125	5”	26	54	80	63	188
150	6”	26	54	80	77	264
200	8”	26	54	80	89	433

***R =** Axial stiffness
***Am =** Effective section

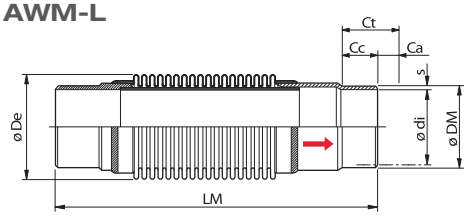
Type AW-L – product code table

		AWM-L	AWF-L	AWEF-L	AWM-LP	AWF-LP	AWRF-LP
DN		Code	Code	Code	Code	Code	Code
[mm]	[inch]						
20	3/4”	1420020	1422020	1424020	1421020	1423020	1425020
25	1”	1420025	1422025	1424025	1421025	1423025	1425025
32	1 1/4”	1420032	1422032	1424032	1421032	1423032	1425032
40	1 1/2”	1420040	1422040	1424040	1421040	1423040	1425040
50	2”	1420050	1422050	1424050	1421050	1423050	1425050
65	2 1/2”	1420065	1422065	1424065	1421065	1423065	1425065
80	3”	1420080	1422080	1424080	1421080	1423080	1425080
100	4”	1420100	1422100	1424100	1421100	1423100	1425100
125	5”	1420125	1422125	-	1421125	1423125	-
150	6”	1420150	1422150	-	1421150	1423150	-
200	8”	1420200	1422200	-	1421200	1423200	-

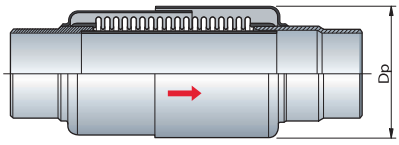
Type AW-L – dimensional table

DN		Dimensions [mm]																	
				AWM-L				AWF-L								AWRF-L				
[mm]	[inches]	De	Dp	LM	di	DM	s	LF	Di	DF	Flanges UNI 2278 PN16				LR	di	Dr [inch]	M	Ch
											b	øa	n holes	øf					
20	3/4”	39.0	50	323	22.3	26.9	2.3	333	22.3	105	14	75	4	14	337	18,25	3/4"	16,5	30
25	1”	45.8	55	318	27.2	33.7	3.3	328	27.2	115	14	85	4	14	334	25	1"	19	37
32	1”1/4	54.2	65	363	35.0	42.4	3.7	373	35.0	140	16	100	4	18	391	30	1”1/4	21,5	44
40	1”1/2	65.0	77	341	41.5	48.3	3.4	351	41.5	150	16	110	4	18	360	40	1”1/2	21,5	50
50	2”	79.2	91	373	53.8	60.3	3.2	383	53.8	165	18	125	4	18	404	50	2"	25,5	62
65	2”1/2	95.6	107	400	69.6	76.1	3.2	410	69.6	185	18	145	4	18	446	64	2”1/2	30	78
80	3”	108.4	119	397	81.6	88.9	3.6	407	81.6	200	20	160	8	18	463	75	3"	33,5	92
100	4”	136.8	149	411	106.2	114.3	4.0	421	106.2	220	22	180	8	18	451	103	4"	35,8	115
125	5”	171.4	187	435	132.3	141.3	4.5	445	132.3	250	24	210	8	18	-	-	-	-	-
150	6”	200.4	215	428	159.3	168.3	4.5	438	159.3	285	24	240	8	22	-	-	-	-	-
200	8”	252.4	267	460	207.3	219.1	5.9	470	207.3	340	26	295	12	22	-	-	-	-	-

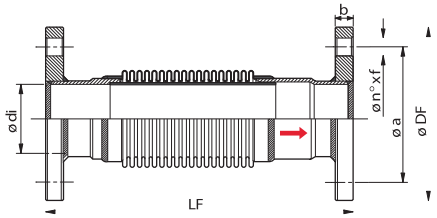
AWM-L



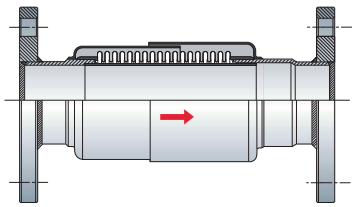
AWM-LP



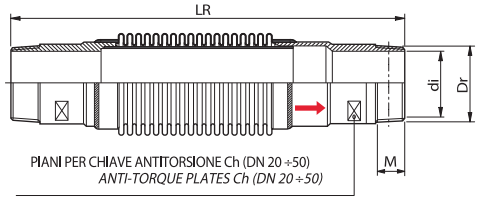
AWF-L



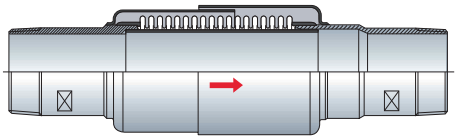
AWF-LP



AWRF-L THREADED FITTINGS



AWRF-LP THREADED FITTINGS



Instructions for installation, use and maintenance of the AW axial expansion joints

The **EMIFLEX** type **AW** expansion joints have been designed and manufactured for certain conditions of use, within which they can be used safely provided they've been installed correctly. Their life and performance can be compromised by operating conditions different from those provided for as well as by incorrect installation.

GENERAL WARNINGS

- The expansion joint must be handled carefully to prevent damage caused by impacts or friction against rigid bodies. The bellows must be suitably protected from any splatters of incandescent metal during the welding of the joint type AWM to the piping;
- The expansion joint must be installed with its axis straight, it must not be deformed nor extended or compressed to adapt it to an unsuitable space;
- The AW expansion joint is equipped with an internal flow sleeve: thus it must be installed with its directional arrow pointing in the same direction as the flow of the pipeline in which it is installed.
- Do not apply any torsion during positioning for installation. In particular: for the AWRF DN 20÷50 expansion joints, the tightening torque must be countered using the surfaces for the counter-torque wrench, while for the AWRF DN 65÷100 expansion joints a pipe wrench must be used for this purpose on the coupling.
- If the expansion joint must be stored before installation, make certain no foreign matter can become lodged between the corrugations.

INSTALLATION

- The AW expansion joint must not perform any travel exceeding its movement capacity declared on the data plate: thus its minimum and maximum length must never be exceeded under any operating condition. In order to comply with these limits, the travel of the joint when passing from the piping assembly temperature to the minimum and maximum operating temperatures must be checked and the pretension setting must be adjusted if necessary (by compressing or elongating the joint).

- **It is essential that each AW axial expansion joint is always installed on a straight section between two fixed points and with the axial guides arranged appropriately.**

1) Fixed points

The fixed points must be suitably dimensioned to counter the total axial thrust S [N] given by the formula: **S = F + Fe + Fa** where:

1 • **F** [daN] is the end thrust of the expansion joint **F = p x Am** with: **p** [bar] (max operating pressure) and **Am** [cm2] (effective section of the bellows)

2 • **Fe** [N] elastic reaction of the bellows **Fe = R x c** with: R [N/mm] (bellows axial stiffness) and c [mm] (axial travel of the expansion joint)

3 • **Fa** [N] summation of the friction forces of the axial guides located between the two fixed points and given by the formula **Fa = f x Q** with: **f** being the friction coefficient of the axial guides and Q [N] being the total weight of the section of piping being considered (evaluated full of water and complete with any thermal insulation, flanges, valves, etc.).

Am and **R** can be obtained from Table 1; the friction coefficient f depends on the type of axial guide being used: with a steel-steel support f = 0.2-0.5; with the **EMIFLEX roller support** (depending on the type) **f = 0.040-0.075**. The expansion joint must be installed as close as possible to the fixed point. If the piping changes direction on the pipeline, a fixed point must be installed at the elbow. See the diagram in Fig. 1.

2) Axial guides

- The axial guides are required in order to ensure that the pipeline expands in the axial direction only: they must be arranged and spaced as shown in Fig. 1.
  For standard-schedule carbon steel piping without concentrated loads (such as valves, etc.), the maximum spacing L can be obtained from the diagram in Fig. 2.
  If the piping is horizontal, the weight of the pipeline may also require sliding supports in addition to the guides in order to prevent excessive sagging and stresses on the piping.

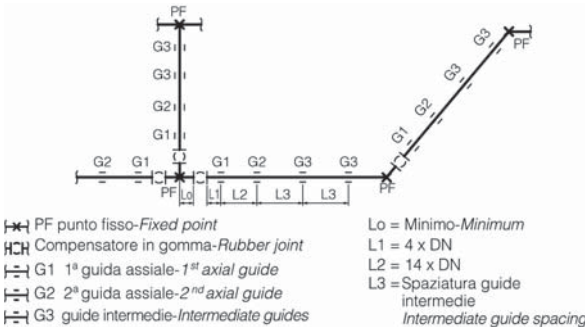


Fig. 1 - Installation example for axial expansion joints

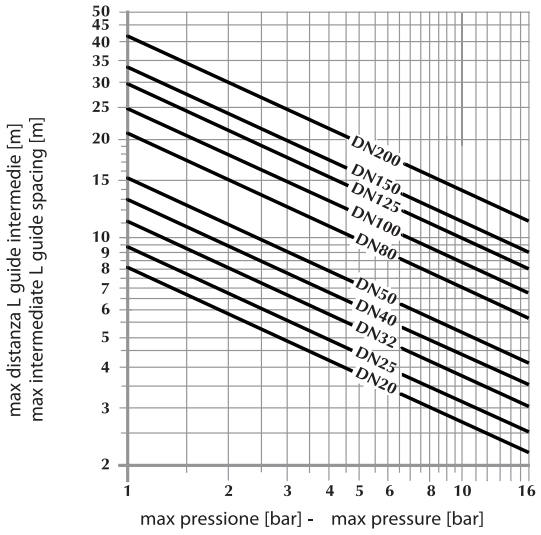


Fig. 2

Thermal expansion coefficient [mm/m]

T° [°C]	e [mm/m]	
	Carbon Steel	Stainless Steel
-30	-0.55	-0.79
-20	-0.43	-0.64
-10	-0.33	-0.48
0	-0.23	0.33
10	-0.12	0.18
21.1	0.00	0.00
30	0.10	0.15
40	0.22	0.32
50	0.33	0.49
60	0.45	0.66
70	0.56	0.83
80	0.67	0.99
90	0.79	1.16
100	0.91	1.33
110	1.04	1.51
120	1.15	1.67
130	1.28	1.85
140	1.41	2.02
150	1.53	2.19
160	1.66	2.37

T° [°C]	e [mm/m]	
	Carbon Steel	Stainless Steel
170	1.80	2.55
180	1.93	2.73
190	2.06	2.91
200	2.19	3.09
210	2.33	3.27
220	2.47	3.45
230	2.60	3.63
240	2.74	3.82
250	2.88	4.00
260	3.02	4.18
270	3.16	4.36
280	3.31	4.54
290	3.46	4.73
300	3.60	4.91
310	3.75	5.10
320	3.90	5.28
330	4.06	5.47
340	4.21	5.66
350	4.36	5.85

USE

- **The AW expansion joint must only be used with cold or hot water at temperatures below 110°C.** For higher temperatures or other fluids, the standard AW expansion joint could fall under the European Standard 97/23/CE (PED) and thus not be usable: in this case, please contact our Sales Office so we can evaluate the joint's suitability.
- The data plate of the AW expansion joint indicates the nominal pressure PN = 16 bar for which it has been designed: during operation, the AW expansion joint must never be subjected to pressures greater than the max allowable pressure PS, which can be found in table 3 under the corresponding max operating temperature TS.
- Before pressure testing the pipeline, check that the necessary axial guides and fixed points have been positioned properly.
- During and after the pressure testing, carefully inspect the entire pipeline checking that there are no deformations or yielding in the fixed points and guides.
- Ensure that no water hammers can occur in the pipeline with overpressures which could damage the bellows of the expansion joint.
  If this could occur, suitable devices must be fitted in the pipeline to reduce the pressure points.

MAINTENANCE

Plan a programme of periodic inspections to check that:

- The **AW** expansion joints are free to perform the movements for which they have been designed.
- The length of the **AW** expansion joint is precisely that due to the expansion which has occurred on the pipeline, and the longitudinal axis of the expansion joint is straight: a longer length or distorted axis indicates that one or more of the fixed points or axial guides have yielded. In this case, carefully inspect the pipeline to locate the defect and repair it

Caution: report the anomaly to the EMIFLEX technicians immediately so that they can recommend the appropriate action to take.

- For outdoor installation, check that there are no rigid foreign bodies (pebbles or solid debris) lodged between the corrugations of the bellows preventing them from moving freely.
- Check the state of the pipeline for any new deformations or sagging.

Note: the continuous qualitative and technical updating of our products may, at any time and without prior notice, lead to changes in the characteristics and dimensions quoted in this catalogue.
Whenever a specific correspondence with critical dimensions, performance or characteristics is required for the application, please contact our technical service department.

FLEXIBLE METAL TUBES

These flexible metal tubes with external braid are frequently used in a wide range of applications, including the conduction of steam, diathermic oil, lubricants, exhaust gases and cryogenic gases. Their flexibility, pressure resistance and vibration dampening capacity are the strong points that make them suitable for any application.
The corrugated tubes are made from calendered strip, welded longitudinally and deformed to create parallel corrugations.
The continuous wall guarantees a perfect internal pressure seal, while the corrugations allow flexibility.
The pressure acting on the inside of the corrugated tube generates an end thrust which, acting on the internal wall of the corrugation, would tend to extend the hose. To prevent this phenomenon from occurring, the tube is externally covered with one or more metal-wire braids which also increase the pressure resistance.

MATERIALS

The standard material used in manufacturing the tube is stainless steel ASTM A 240 Type 321. On request, stainless steel ASTM A 240 Type 316L is also available.
The braid is produced in stainless steel ASTM A 240 Type 304.

TEMPERATURE

The flexible metal tubes can be used with operating temperatures from -270°C up to +600°C.
Above 50°C, the pressure reduction factor CP based on the temperature must be taken into account.

PRESSURE

Nominal Pressure PN: maximum allowable pressure at room temperature.
Test Pressure PP: must not exceed 1.5 times the nominal pressure PN.
Bursting pressure PS: is at least 4 times greater than the nominal pressure PN.

BENDING RADIUS

The dynamic bending radius indicates the minimum curvature at room temperature and nominal pressure for several repeated movements.
The static bending radius indicates the minimum curvature at room temperature and nominal pressure for one single movement.

WARNINGS

1. Avoid damaging the tubes (abrasions, painting, welding splatters, deposits of dust or resin between the corrugations, etc.).
2. Avoid twisting the tubes.
3. Do not exceed the allowable bending radius.
4. Keep the movements in a single plane only.

Pressure reduction coefficient based on the temperature - CP			
Temperature °C	AISI 321 - tube	AISI 316L - tube	
20	1	1	
50	0,97	0,97	
100	0,84	0,83	
150	0,75	0,76	
200	0,69	0,71	
250	0,65	0,66	
300	0,62	0,63	
350	0,59	0,61	
400	0,58	0,59	
450	0,57	0,57	
500	0,56	-	
550	0,53	-	

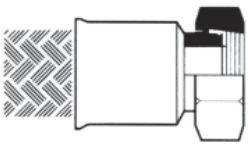
PN [flexible tube] · CP > Operating pressure [bar]

For the stainless steel flexible metal tubes, together with the end fittings shown below, the following information must always be taken into consideration:

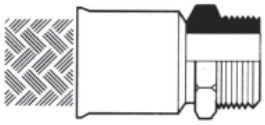
Welding procedure:
- T.I.G. electrowelding 550°C
- braze welding in silver alloy 250°C

Fitting material:
- malleable cast iron (300°C)
- carbon steel (395°C)
- stainless steel AISI 304/316L (550°C)
- copper (300°C)

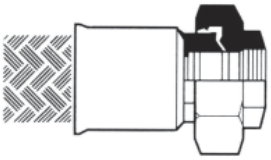
STANDARD FITTINGS



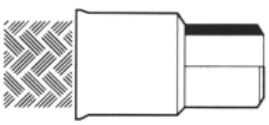
FS
Female swivel



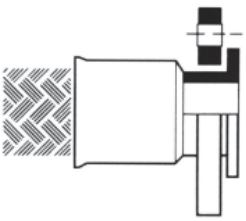
MF
Male



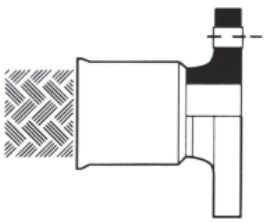
FU
Female union



SS
Smooth Sleeve

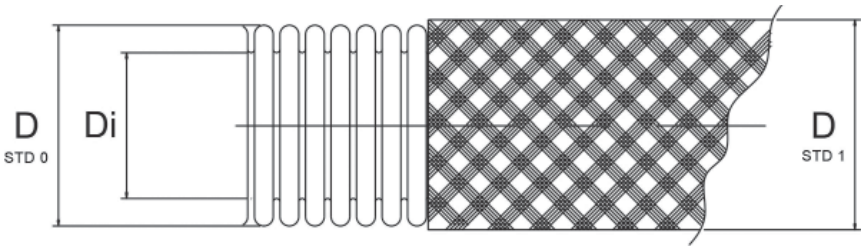


FLS
Flange Swivel



FLF
Flange Fixed

TECHNICAL SPECIFICATIONS - Model COMBILEX STD



The drawings are representative only, thus the reference standard must be indicated at the time of order.

Nominal Diameter DN		COMBIFLEX Type Diameter	Internal diameter Di	External diameter Di	Max Diameter Tol.	Dynamic bending radius	Static bending radius	Appr. Weight	Pressure at 20°C	Tube thickness
mm	inches		mm	mm	+ - mm	mm	mm	kg / m	bar	mm
6	1/4”	STD 0 STD 1	6.1	9.6 10.7	0.25 0.25	80	15 25	0.072 0.147	20 165	0.15
8	5/16”	STD 0 STD 1	8.4	12.2 13.6	0.25 0.25	124	16 32	0.086 0.197	15 142	0.15
10	3/8”	STD 0 STD 1	10.1	14.2 15.6	0.25 0.25	130	18 38	0.102 0.217	9 110	0.15
12	1/2”	STD 0 STD 1	12.3	16.9 18.3	0.25 0.25	140	20 45	0.116 0.224	6 76	0.15
16	5/8”	STD 0 STD 1	16.3	21.8 23.8	0.25 0.25	160	28 58	0.178 0.400	5 65	0.2
20	3/4”	STD 0 STD 1	20.3	26.6 28.6	0.25 0.25	170	32 70	0.261 0.491	3.5 50	0.2
25	1”	STD 0 STD 1	25.4	32.3 34.3	0.25 0.25	190	40 85	0.337 0.747	3 44	0.2
32	1”1/4	STD 0 STD 1	34.3	41.1 43	0.3 0.3	260	50 105	0.427 0.892	2.5 37	0.22
40	1”1/2	STD 0 STD 1	40	49.6 52	0.3 0.3	300	60 130	0.702 1.392	2 32	0.25
50	2”	STD 0 STD 1	50.5	60.5 62.4	0.4 0.4	320	70 160	0.892 1.652	1.6 25	0.25
65	2”1/2	STD 0 STD 1	65.3	78 81.2	0.6 0.6	460	115 200	0.935 1.851	1 20	0.3
80	3”	STD 0 STD 1	80.2	94,8 98	0.6 0.6	700	130 240	1.140 2.184	1 16	0.3
100	4”	STD 0 STD 1	100	116,2 119.4	0.8 0.8	750	160 290	1.354 2.755	0.8 14	0.3
125	5”	STD 0 STD 1	126.2	145 148.2	0.8 0.8	1000	500 500	2.750 4.822	0.6 14	0.4
150	6”	STD 0 STD 1	151.6	171 174.2	1.4 1.4	1300	700 700	3.211 5.864	0.5 12	0.4

STD 0	STD 1	Internal Tube	External Braid	Operating Temperatures
Without braid	1 Braid	Astm A240 Tp.321	Astm A240 Tp.304	Min. -270°C Max. 600°C

EXPANSION JOINTS

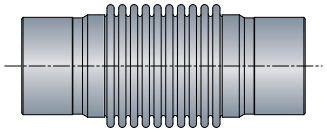


Fig. 1

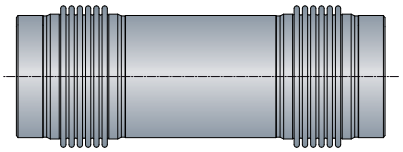


Fig. 2

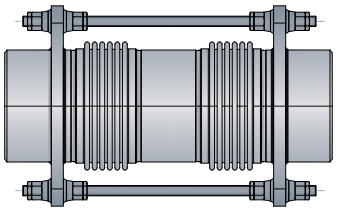


Fig. 3

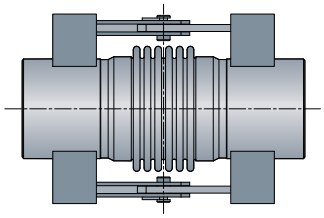


Fig. 4

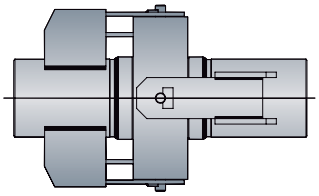


Fig. 5

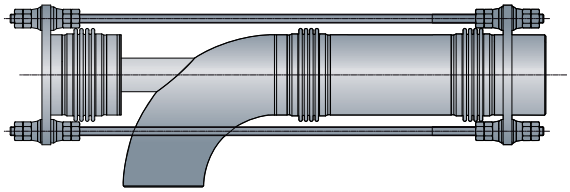


Fig. 6

AXIAL BELLOWS EXPANSION JOINT

This is the simplest type of expansion joint. It is composed of a single bellows and can absorb axial movements. (Fig. 1)

UNIVERSAL EXPANSION JOINT

The UNIVERSAL expansion joint is composed of two bellows separated by a single intermediate pipe. It can absorb any combination of movements on the three axes. (Fig. 2)

LATERAL EXPANSION JOINT

The LATERAL expansion joint has two bellows like the universal expansion joint, but it can only absorb lateral movements. It is fitted with tie rods to counter the end thrust. (Fig. 3)

ANGULAR EXPANSION JOINT

The ANGULAR expansion joint has a single bellows and articulated (hinged) supports which counter the end thrust and allow angular movements in a single plane only. It must be used in groups of two or three. (Fig. 4)

GIMBAL EXPANSION JOINT

The GIMBAL expansion joint has a single bellows and external supports with cardan joint which allow angular movements in any plane. (Fig. 5)

PRESSURE BALANCED EXPANSION JOINT

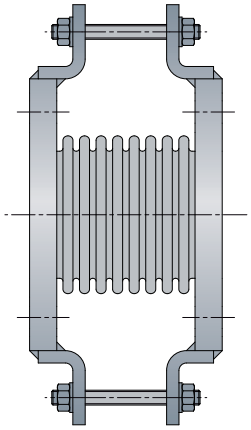
This joint absorbs axial and/or lateral movements and is composed of several bellows coupled together appropriately in order to eliminate thrusts due to the internal pressure, thereby reducing the loads on the fixed points. (Fig. 6)

Standard materials for the expansion joints: :
Bellows: in austenitic stainless steel ASTM A240 Tp 321
Couplings: in carbon steel
Flanges: in carbon steel
Tie rods: in carbon steel
Internal flow sleeve (optional): in austenitic stainless steel ASTM A240 Tp 304

Supply characteristics:
Nominal Diameter: from DN 20 to DN 3000
Nominal Pressure: from PN 1 to PN 64

Note: EMIFLEX SPA is also able to manufacture special versions of the types listed above, customizing both the materials and performance.

DISMANTLING JOINTS

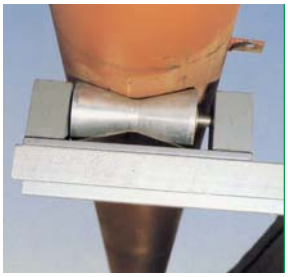


Dismantling joints allow the removal of various piping elements, such as gate valves, etc. They are composed of a multiply bellows in stainless steel which is compressed by tightening the nuts of the dismantling tie rods; the compression travel is usually 30 mm. They can also be supplied with an internal flow sleeve.

Standard materials for the dismantling joints:
Bellows: in austenitic stainless steel ASTM A240 Tp 321
Flanges: in carbon steel
Dismantling tie rods: in austenitic stainless steel ASTM A240 Tp 304
Pressure bearing tie rods: in carbon steel
Internal flow sleeve (optional): in austenitic stainless steel ASTM A240 Tp 304

Supply characteristics:
Nominal Diameter: from DN 40 to DN 2000
Nominal Pressure: from PN 6 to PN 40

ROLLER SUPPORTS



INTRODUCTION

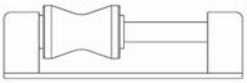
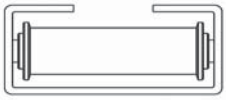
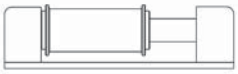
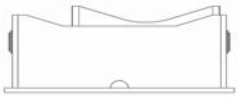
EMIFLEX S.p.A. has decided to provide its customers with an additional professional service by creating a complete line of roller supports, guaranteeing their quality and providing the necessary technical assistance.
Roller supports are piping support elements which allow the pipe positioned on them to slide, and they are designed to support heavy piping conveying fluids at various temperatures.
The temperature range to which the piping is subjected, due to temperature changes in both the surrounding environment as well as the fluid being piped, causes the piping to expand and thus creates friction on each of its support points.
The roller supports are designed to reduce this friction and, depending on the type, are also suitable to counter the lateral wind thrust.
The resistant forces, which otherwise would be transmitted to all the structures, are almost completely cancelled when using the EMIFLEX roller supports since these supports have an extremely low friction coefficient.

VERSIONS

The EMIFLEX roller supports are essentially composed of a sheet-metal frame supporting one or two carbon steel rollers which are assembled on self-lubricating bushings that rotate and translate on a stainless steel pin integral with the frame. The rollers can be cylindrical or composed of two truncated conic parts coupled together. Since they're self-lubricating, they require no maintenance and retain their original mechanical characteristics over time.
Our roller supports are manufactured in seven types, and each type is available in different sizes for various piping diameters and maximum allowable loads.
The OC and OD types, given the particular shape of the rollers, are suitable for reducing the lateral wind thrust.
The ODS-OSS-OMS types allow a lateral travel of 60 mm.
The OS type with a saddle support is used to support insulated pipes.
The OL type can be used as a lateral guide for the piping.
On request, roller supports with sizes and/or loads different from the standard versions can also be supplied for special applications.
Sketches of each of the Emiflex roller support types are provided on the next page.

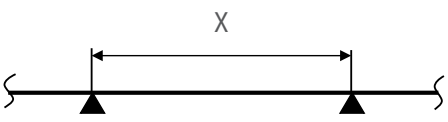
INSTALLATION INSTRUCTIONS

The majority of the roller supports can be connected to the structures by welding or using bolts, but the OS type must be welded.
For piping with large diameters, small thicknesses and significant linear weights, the concentrated loads that can occur at the piping-roller contact points must be evaluated carefully in order to prevent any failures.
In order to prevent the aforesaid inconveniences, it's advisable to install the supports with reduced distances between them and with appropriate reinforcements applied at the bearing points.
Table A schematizes the roller support distances depending on the fluid being piped.
In the case of insulated piping the appropriate saddle supports must be used (type SL shown on the next page), which are designed to prevent contact between the roller and the insulating material by keeping the pipe elevated.

OL 40 	OL 60 	OL 100 	OL 150-200 
OL 50-100 	OD 150-200 	ODS 50-100-150 - 200 	OS 60 - 65 - 75 - 100 - 120 
OSS 60 - 70 - 100 - 120 	SL 10 - 20 -30 -40 	OC 0 - 2 - 4 - 6 - 8 - 10 	OMS 2 - 4 - 6 - 8 

DN		Maximum spacing "x" [m] with pipes conveying:	
[mm]	[inches]	water, liquids	air, gas, gaseous bodies
25	1"	2.1	2.7
32	1" 1/4	2.4	3.1
50	2"	3.0	4.0
65	2" 1/2	3.4	4.4
80	3"	3.7	4.6
100	4"	4.3	5.2
125	5"	4.8	5.8
150	6"	5.2	6.4
200	8"	5.8	7.3
250	10"	6.4	8.2
300	12"	7.0	9.1
350	14"	7.6	10.0
400	16"	8.2	10.7
450	18"	8.6	11.3
500	20"	9.1	11.9
600	24"	9,8	12.8

Notes
The recommended spacing is valid for pipes conveying the fluids indicated and under the following conditions:
1) piping with standard-schedule thickness, with a straight and horizontal path
2) max operating temperature of 400°C
3) no concentrated loads (such as valves, etc.) between the supports



TYPE OL 40

MANUFACTURING CHARACTERISTICS:

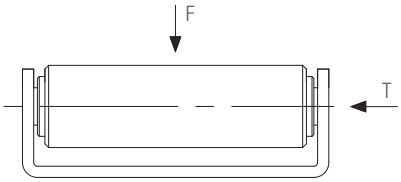
- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

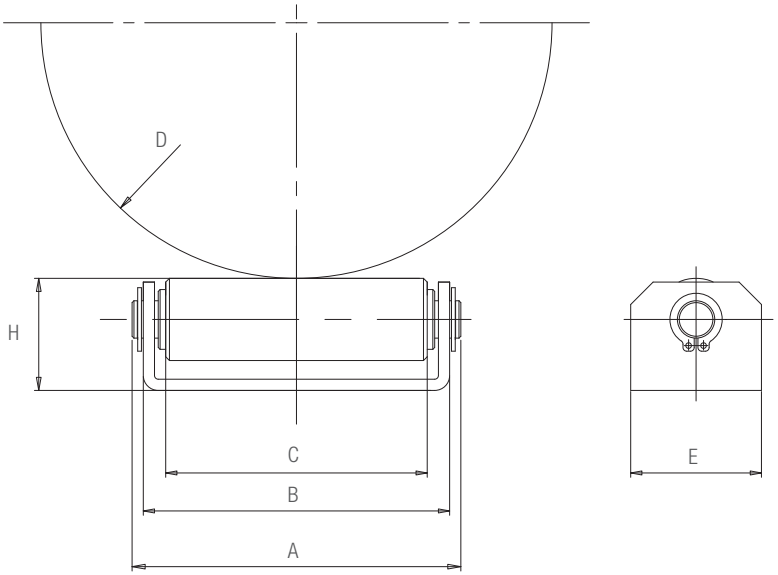
APPLICATIONS

This type of support is particularly suited for axially guiding the piping, as it can be assembled both horizontally and vertically with respect to the pipe. It allows to eliminate the friction of the piping which it supports.

INSTALLATION:

This support is connected to the plant by means of welding.





Size	F [kg]	r/F
40	600	0.040

r = radial friction force
r/F = radial friction coefficient

	Pipe diameter								
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	H [mm]	CODE
OL 40	0	160	600	89	82	70	35	30	0430040

TYPE OL 60

MANUFACTURING CHARACTERISTICS:

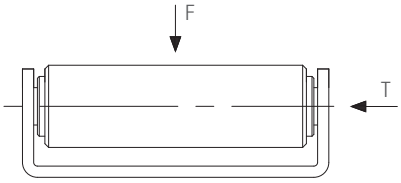
- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

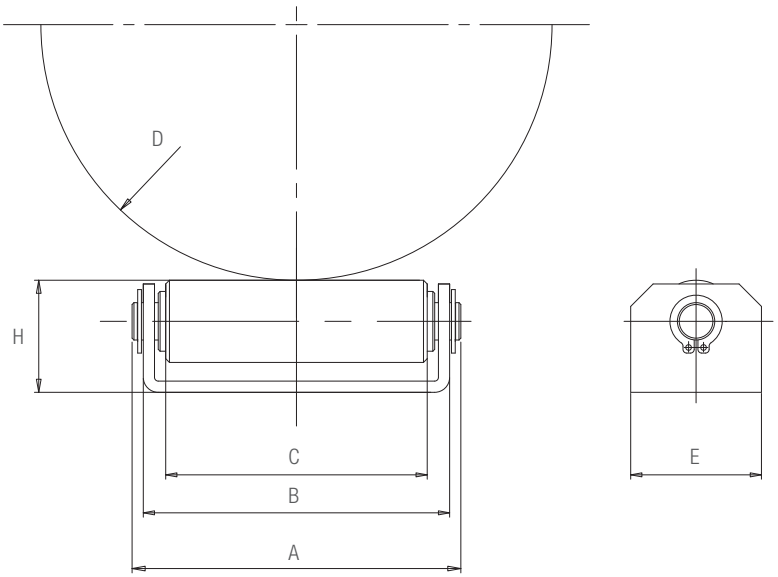
APPLICATIONS

This type of support is particularly suited for axially guiding the piping, as it can be assembled both horizontally and vertically with respect to the pipe. It allows to eliminate the friction of the piping which it supports.

INSTALLATION:

This support is connected to the plant by means of welding.





Size	F [kg]	r/F
60	600	0.040

r = radial friction force
r/F = radial friction coefficient

Roller type	Pipe diameter MIN [mm]	Pipe diameter MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	H [mm]	CODE
OL 60	50	160	600	117	110	97	35	30	0430060

TYPE OL 100

MANUFACTURING CHARACTERISTICS:

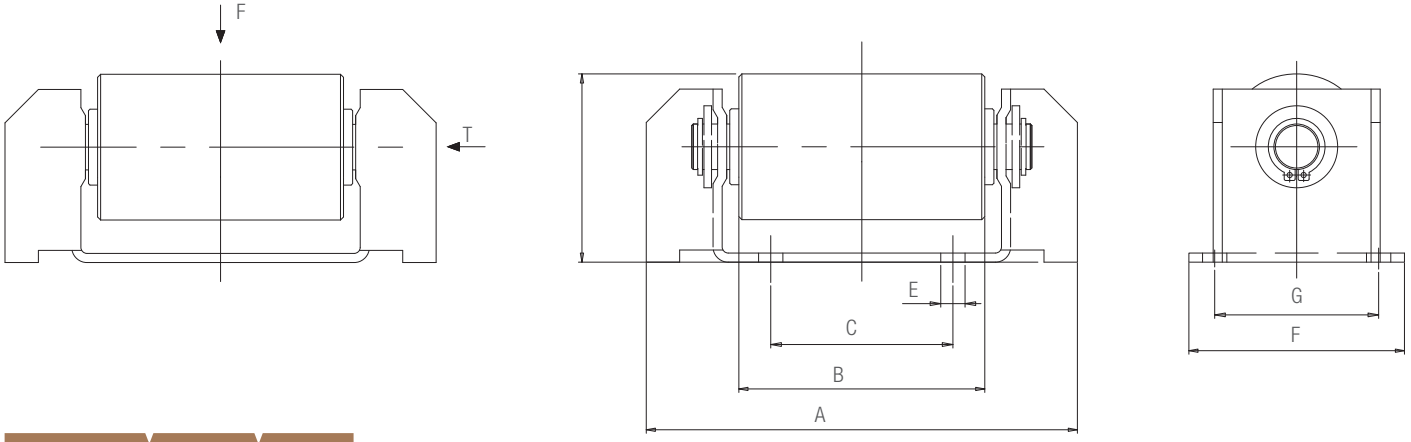
- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

APPLICATIONS

This type of support is particularly suited for axially guiding the piping, as it can be assembled both horizontally and vertically with respect to the pipe. It allows to eliminate the friction of the piping which it supports.

INSTALLATION:

This support is connected to the plant by means of bolts.



Size	F [kg]	r/F
100	1000	0.040

r = radial friction force
r/F = radial friction coefficient

	Pipe diameter										
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	CODE
OL 100	50	150	1000	142	80	60	8	71	54	61	0430100

TYPE OL 150 - 200

MANUFACTURING CHARACTERISTICS:

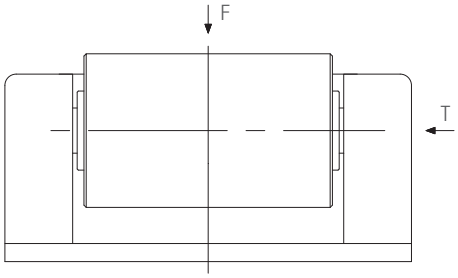
- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

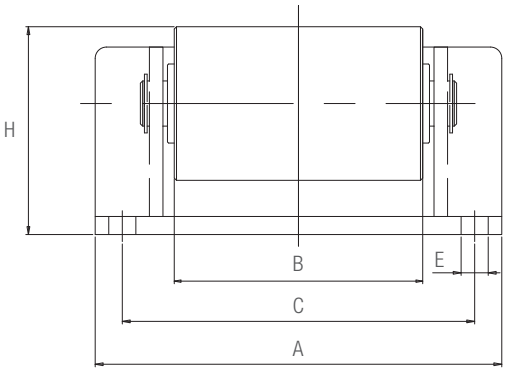
APPLICATIONS

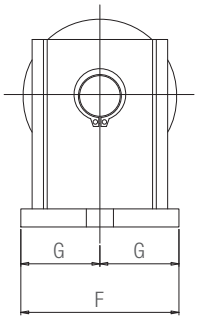
This type of support is particularly suited for axially guiding the piping, as it can be assembled both horizontally and vertically with respect to the pipe. It allows to eliminate the friction of the piping which it supports.

INSTALLATION:

This support is connected to the plant by means of bolts.







Size	F [kg]	r/F
150	2000	0.040
200	3200	0.042

r = radial friction force
r/F = radial friction coefficient

Roller type	Pipe diameter MIN [mm]	Pipe diameter MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	CODE
OL 150	100	300	2000	180	110	156	12	70	35	92	0430150
OL 200	200	500	3200	245	145	207	12	90	45	114	0430200

TYPE OD 50 - 100

MANUFACTURING CHARACTERISTICS:

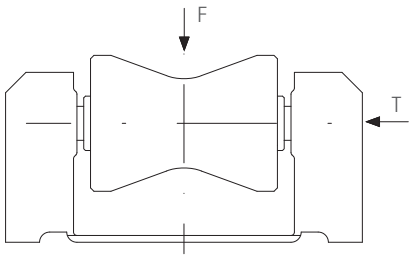
- **Cage:** in Fe 360
- **Roller:** in carbon steel, Nylon, Teflon (for insulating type)
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

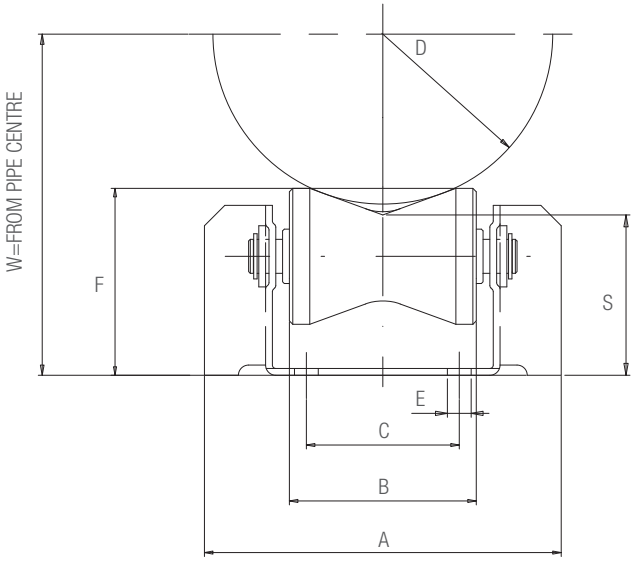
APPLICATIONS

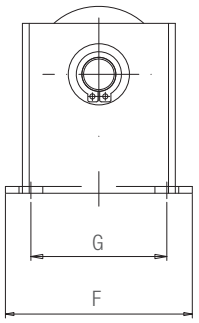
This type of support is used to guide and support the piping, and the concave form of the roller also provides lateral containment. It allows longitudinal sliding of the piping which it supports. It is particularly suited to support a lateral load which is up to 35% of the vertical load applied by the piping.

INSTALLATION:

This support is connected to the plant by means of bolts.







Size	F [kg]	r/F
50	500	0.075
100	1000	0.075

r = radial friction force
r/F = radial friction coefficient

W=Dx0.532+S

	Pipe diameter											
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	S [mm]	CODE
OD 50	50	100	500	105	43	45	7	55	40	55	47	0431050
OD 100	100	180	1000	142	70	60	8	71	54	61	47	0431100

TYPE OD 150 - 200

MANUFACTURING CHARACTERISTICS:

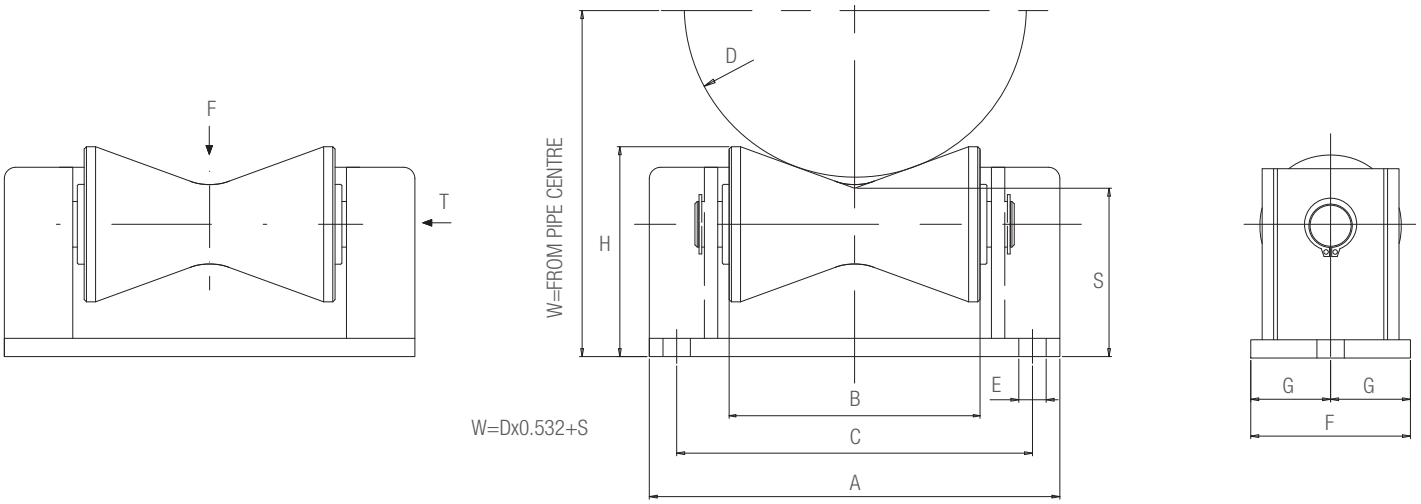
- **Cage:** in Fe 360
- **Roller:** in carbon steel, Nylon, Teflon (for insulating type)
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

APPLICATIONS

This type of support is used to guide and support the piping, and the concave form of the roller also provides lateral containment. It allows longitudinal sliding of the piping which it supports. It is particularly suited to support a lateral load which is up to 35% of the vertical load applied by the piping.

INSTALLATION:

This support is connected to the plant by means of bolts.



Size	F [kg]	r/F
150	2000	0.075
200	3200	0.075

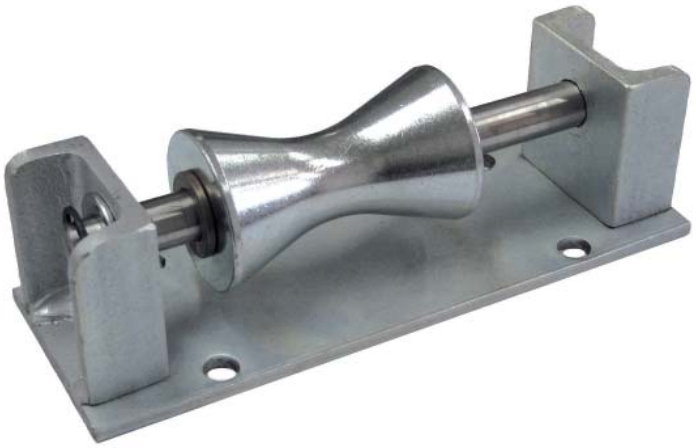
r = radial friction force
r/F = radial friction coefficient

Roller type	Pipe diameter MIN [mm]	Pipe diameter MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	S [mm]	CODE
OD 150	150	250	2000	180	100	156	12	70	35	92	74	0431150
OD 200	200	350	3200	245	135	207	12	90	45	114	89	0431200

TYPE ODS 50 - 100 - 150 - 200

MANUFACTURING CHARACTERISTICS:

- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

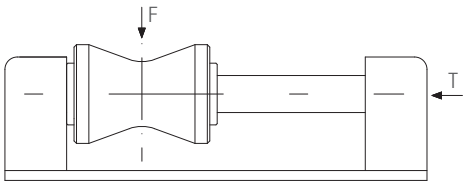


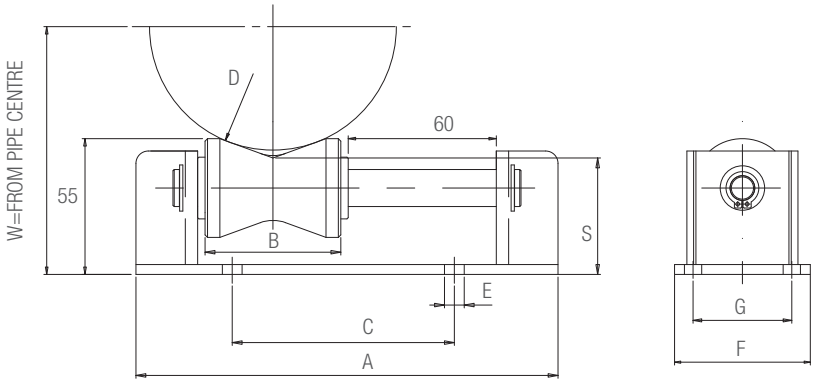
APPLICATIONS

This type of support is used to guide and support the piping, and the concave form of the roller also provides lateral containment. It allows longitudinal sliding of the piping which it supports as well as lateral sliding thanks to the design with a longer pin with respect to type OD.
This support is ideal for piping subject to wind action.
It is particularly suited to support a lateral load which is up to 35% of the vertical load applied by the piping.

INSTALLATION:

This support is connected to the plant by means of bolts.





W=Dx0.532+S

Size	F [kg]	T [kg]	r/F	r/T
50	500	150	0.075	0.10
100	1000	350	0.075	0.10
150	2000	700	0.055	0.10
200	3200	1100	0.050	0.10

r = radial friction force
r/F = radial friction coefficient
r/T = axial friction coefficient

	Pipe diameter											
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	S [mm]	CODE
ODS 50	50	100	500	171	43	90	8	60	45	55	47	0432050
ODS 100	100	180	1000	204	75	94	10	70	50	67	53	0432100
ODS 150	150	250	2000	240	100	140	10	80	60	94	76	0432150
ODS 200	200	350	3200	297	135	152	12	90	70	114	89	0432200

TYPE OS 60 - 65 - 75 - 100 - 120

MANUFACTURING CHARACTERISTICS:

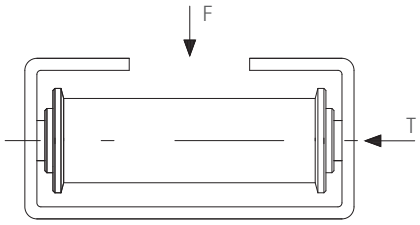
- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

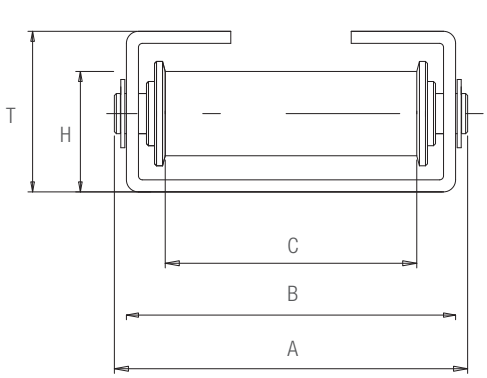
APPLICATIONS

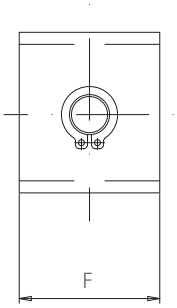
This type of support has been specially designed to provide support and allow longitudinal sliding for insulated piping. It can also be used for non-insulated piping to further reduce the friction of the piping in the area in contact with the roller.
The support must be installed together with a saddle support (TYPE SL) on which the piping rests to avoid direct contact between the roller of the support and the insulation.
Each OS roller must be combined with a suitable saddle support.

INSTALLATION:

This support is connected to the plant by means of welding.







Size	F [kg]	r/F
60	600	0.050
65	800	0.050
75	1000	0.050
100	1500	0.045
120	2500	0.045

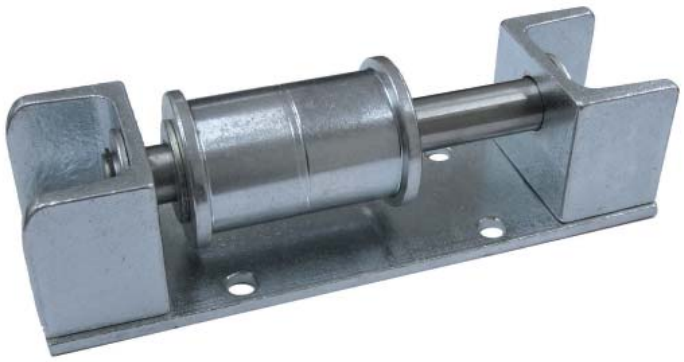
r = radial friction force
r/F = radial friction coefficient

	Pipe diameter										
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	Saddle type	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	H [mm]	CODE
OS 60	0	80	600	SL 10	89	82	62	40	35	30	0433060
OS 65	80	180	800	SL 20	97	90	65	64	40	48	0433065
OS 75	80	180	1000	SL 20	105	95	65	77	50	60	0433075
OS100	180	300	1500	SL 30	142	135	99	100	65	76	0433100
OS120	300	500	2500	SL 40	198	190	145	130	90	99	0433120

TYPE OSS 60 - 75 - 100 - 120

MANUFACTURING CHARACTERISTICS:

- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in sintered bronze and self-lubricating
- **Treatment:** galvanizing process (white colour)

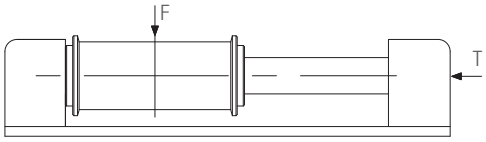


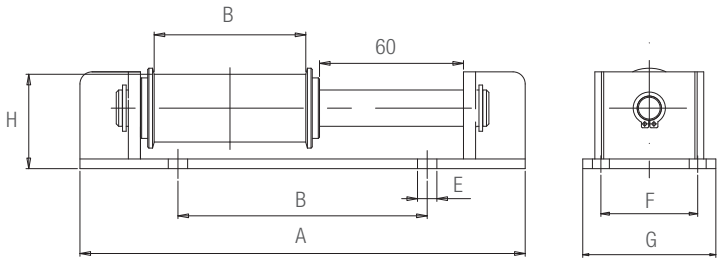
APPLICATIONS

This type of support has been specially designed to provide support and allow sliding for insulated piping. With respect to the type OS, the OSS support allows both longitudinal and lateral sliding.
It can also be used for non-insulated piping to further reduce the friction of the piping in the area in contact with the roller.
The support must be installed together with the saddle support (TYPE SL) on which the piping rests to avoid direct contact between the roller of the support and the insulation.
Each OSS roller must be combined with a suitable saddle support.

INSTALLATION:

This support is connected to the plant by means of bolts.





W=Dx0.532+S

Size	F [kg]	T [kg]	r/F	r/T
60	600	200	0.050	0.10
75	1000	350	0.050	0.10
100	1500	500	0.045	0.10
120	2500	850	0.045	0.10

r = radial friction force
r/F = radial friction coefficient
r/T = axial friction coefficient

	Pipe diameter											
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	Saddle type	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	CODE
OSS 60	0	80	600	SL 10	184	62	103	8	45	60	39	0434060
OSS 75	80	180	1000	SL 20	204	65	94	10	50	70	61	0434075
OSS100	180	300	1500	SL 20	238	99	128	10	50	70	76	0434100
OSS120	300	500	2500	SL 30	291	145	181	10	60	80	99	0434120

TYPE SL

MANUFACTURING CHARACTERISTICS:

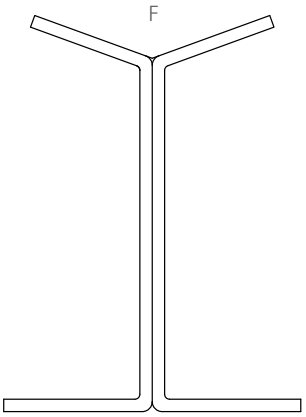
- **Saddle:** in carbon steel
- **Treatment:** galvanizing process (white colour)

APPLICATIONS

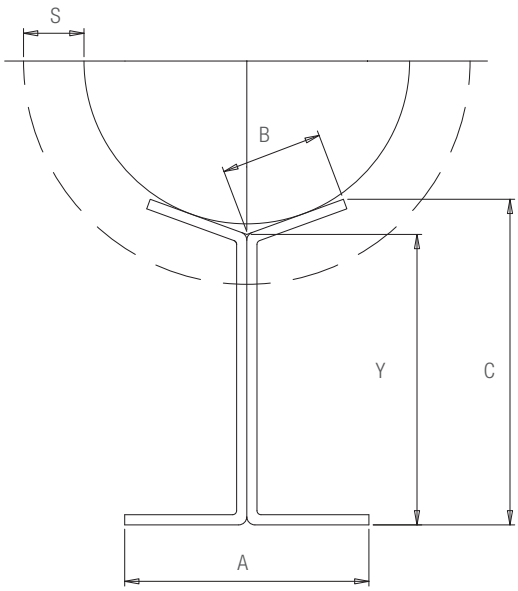
The saddle is a support element for insulated piping, but it can also be used for non-insulated piping to further reduce the friction of the piping in the sliding zone.
Specifically designed to be combined with a Type OS or Type OSS roller support, it guarantees correct installation of the piping, since it prevents contact between the roller of the support and the piping.

INSTALLATION:

The V-side resting against the piping and the flat side sliding on the support roller.



Size	F [kg]
10	600
20	1000
30	1500
40	2500



Roller type	Pipe diameter MIN [mm]	Pipe diameter MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	L length [mm]	S insulation [mm]	CODE
SL 10	0	80	600	60	25	80	200	40	0490010
SL 20	80	180	1000	60	35	95	300	60	0490020
SL 30	180	300	1500	92	60	125	300	80	0490030
SL 40	300	500	2500	135	90	170	300	110	0490040

TYPE OC 0 - 2 - 4 - 6 - 8 -10

MANUFACTURING CHARACTERISTICS:

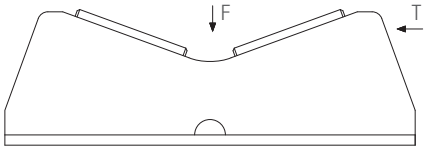
- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in Fe 360 with internal ring in PTFE, self-lubricating
- **Treatment:** galvanizing process (white colour)

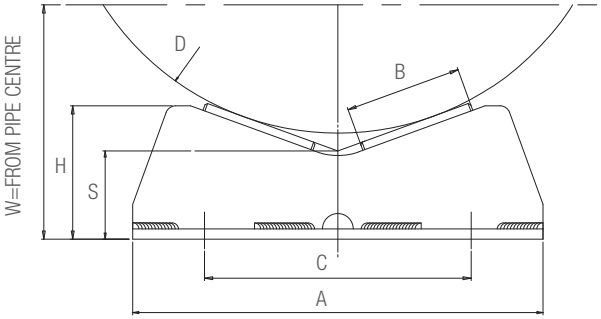
APPLICATIONS

This type of support is particularly suited for axially guiding the pipes. It can be assembled both horizontally and vertically with respect to the pipe, allowing to eliminate the friction of the piping which it supports.
This type of support is built with a closed cage.

INSTALLATION:

This support is connected to the plant by means of bolts.





W=Dx0.532+S

Size	F [kg]	r/F
0	2500	0.045
2	5000	0.045
4	8000	0.050
6	15000	0.060
8	25000	0.050
10	35000	0.045

r = radial friction force
r/F = radial friction coefficient

	Pipe diameter											
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	S [mm]	CODE
OC 0	115	250	2500	200	53	130	10	80	100	65	43	0439000
OC 2	150	400	5000	270	80	200	10	100	120	80	48	0439002
OC 4	400	800	8000	425	118	350	12	125	150	110	55	0439004
OC 6	800	1200	15000	600	128	500	14	150	180	125	42	0439006
OC 8	1200	1600	25000	790	178	640	16	150	180	153	39	0439008
OC 10	1600	2000	35000	940	174	790	18	220	250	170	30	0439010

TIPO OMS 2 - 4 - 6 - 8

MANUFACTURING CHARACTERISTICS:

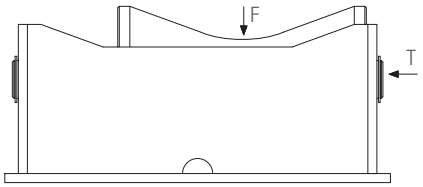
- **Cage:** in Fe 360
- **Roller:** in carbon steel
- **Pin:** in stainless steel AISI 303
- **Bushings:** in Fe 360 with internal ring in PTFE, self-lubricating
- **Treatment:** galvanizing process (white colour)

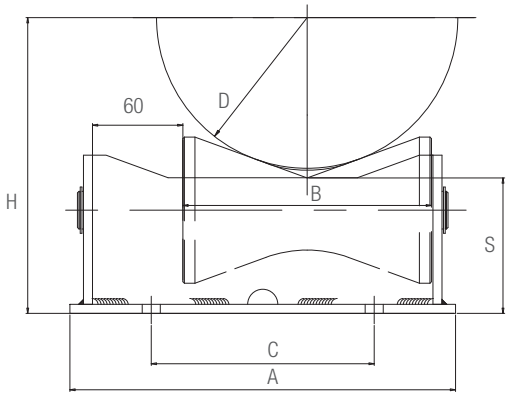
APPLICATIONS

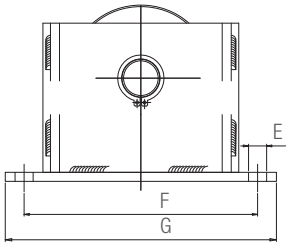
QThis type of support is used to guide and support the piping, and the concave form of the roller also provides lateral containment. It allows longitudinal sliding of the piping which it supports as well as lateral sliding thanks to the design with a longer pin. This support is ideal for piping subject to wind action. It is particularly suited to support a lateral load which is up to 35% of the vertical load applied by the piping.

INSTALLATION:

This support is connected to the plant by means of bolts.







W=Dx0.532+S

Size	F [kg]	T [kg]	r/F	r/T
2	2000	700	0.055	0.10
4	3500	1200	0.050	0.10
6	7000	2400	0.050	0.10
8	12000	4200	0.040	0.10

r = radial friction force
r/F = radial friction coefficient
r/T = axial friction coefficient

	Pipe diameter											
Roller type	MIN [mm]	MAX [mm]	Load [Kg]	A [mm]	B [mm]	C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	S [mm]	CODE
OMS 2	200	350	2000	258	149	148	12	155	180	117	90	0438002
OMS 4	350	500	3500	325	212	211	14	185	210	148	109	0438004
OMS 6	500	650	7000	376	258	262	16	210	240	178	131	0438006
OMS 8	650	800	12000	473	342	343	18	240	280	208	146	0438008

CHIMNEY FLUES

"RIGIDFORM" SINGLE-WALL PIPING

The RIGIDFORM single-wall piping has been designed to meet all the market demands in the best manner possible, and thus they have a wide range of applications. These pipes can be installed inside a masonry chimney, but they cannot be used externally unless they are insulated properly.
The particular applications for which they are used require high-strength materials with outstanding mechanical characteristics and high acid resistance.
For this reason, our piping is built in stainless steel AISI 316L with a thickness of 0.5 mm for all the diameters.
Our piping is built according to state-of-the-art techniques and with advanced-technology machinery which ensure a final product with perfect gas seal and watertightness with the aid of a silicone seal inserted in the joints between the various elements.
This type of piping has been designed for all types of applications where the piped fluid temperature does not exceed 600/700 °C in intermittent-duty conditions. It is always advisable to insulate the piping with materials such as mineral-wool or ceramic-fibre insulators, thereby significantly reducing the heat loss.

All the products in our product line are compliant with the current legislation.

Tube material: stainless steel AISI 316L or AISI 304
Diameters: from DN80 to DN500
Operating temperature: up to 450°C

"TERMICFORM" INSULATED DOUBLE-WALL PIPING

This piping is used exclusively for external applications and is composed of insulated double-wall modular elements. The particular applications for which the pipes are used require high-strength materials with outstanding mechanical characteristics and high acid resistance.
For this reason, the internal wall is built in stainless steel AISI 316L while the external wall is built in stainless steel AISI 304 (or, on request, it can be supplied in stainless steel AISI 316L or copper), and the insulation is in high-density mineral wool. Depending on the DN, the walls and the insulation of the "TERMICFORM" piping have different thicknesses.
From DN 80 to DN 500, the walls have a thickness of 0.5 mm; the insulation has a thickness of 25 mm for DN 80 to DN 350 and 50 mm for DN 400 to DN 500. Our piping is designed according to manufacturing techniques which allow the elimination of thermal bridges.
Our advanced-technology machinery ensures a final product with perfect gas seal and watertightness with excellent finishing due to the use of LASER and TIG welding machines.
The connection between the various elements is ensured by a male-female spigot-and-socket jointing system which allows the individual elements to absorb expansions caused by high temperatures.
This type of piping has been designed for all types of applications where the piped fluid temperature does not exceed 500°C in continuous service and 600/700°C in intermittent-duty conditions.

All the products in our product line are compliant with the current legislation.

Internal tube material: stainless steel AISI 316L
External tube material: stainless steel AISI 304, AISI 316L or copper
Diameters: from DN80 to DN500
Operating temperature: up to 450°C

“FLEXFORM” TUBES FOR FLUE EXHAUST

EMIFLEX has used its experience and professionalism to create a range of flexible flue-gas exhaust tubes for its customers.
To guarantee the high quality of the product, EMIFLEX has developed and improved the machinery and equipment for the manufacturing of the tubes, taking them to an outstanding technical-constructional level. The flue-gas exhaust tubes can essentially be classified in two groups:
- **“EXTENSIBLE”**
- **“NON-EXTENSIBLE”**

They are available either in **stainless steel AISI 316L, AISI 304,** aluminium or galvanized steel.

APPLICATIONS
Due to their adaptability and flexibility, the EMIFLEX flue-gas exhaust tubes have applications in all types of public and industrial installations.

The perfect seal of our tubes allows the piping and transport of flue gases and air in:
- heating systems
- air-conditioning systems
- ventilation systems
- renewal of old chimney flues
- exhaust pipe connection
- extraction of welding fumes
- dust extraction

CHARACTERISTICS
- structure made entirely in metal
- high flexibility
- good mechanical strength and sturdiness
- perfect seal
- constant section even with minimum bending radius
- minimum pressure drops
- remarkably quick and convenient assembly
- no maintenance required
- non-flammable
- maximum cost-effectiveness

STAINLESS STEEL TUBES

Tube material: in stainless steel AISI 316L or AISI 304.
Type: flexible and non-extensible.
Operating temperature: up to + 700°C.

SUPPLY CHARACTERISTICS:
From DN80 to DN300 the tube is supplied in rolls, while the diameter 350 tube is supplied in linear lengths owing to it tendency to deform when rolled. Other diameters available on request.

ALUMINIUM TUBE

Tube material: laluminium alloy 8011 (natural or painted).
Type: flexible and extensible
Operating temperature: max + 300°C.

SUPPLY CHARACTERISTICS
From DN70 to DN300 is supplied in compressed lengths of 0.85 m (3 m when fully extended).
Other lengths and diameters (max DN600) available on request.
The tube is rolled at the ends up to DN200.

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Valentina Lai

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