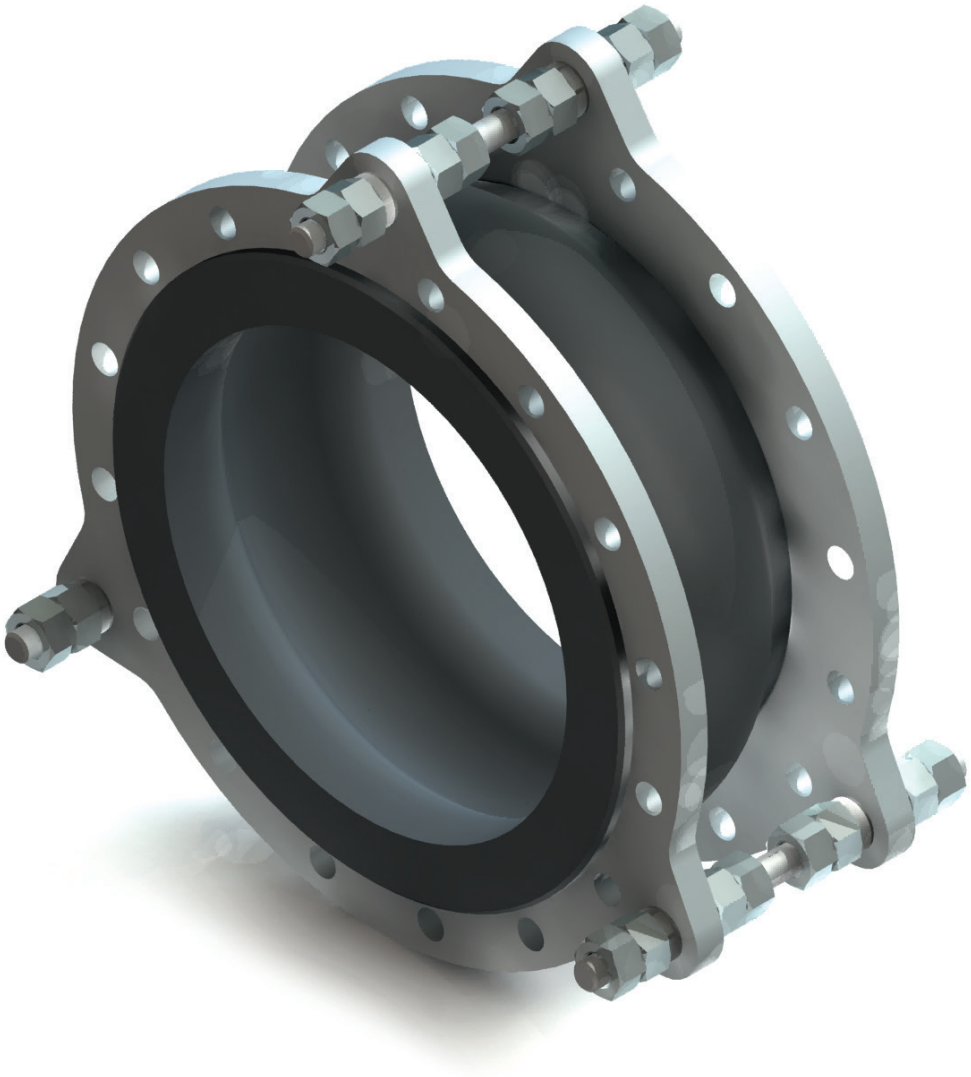
Rubber Expansion Joints



MACOGA
ENGINEERED EXPANSION JOINTS

Rubber Expansion Joints

MACOGA has more than 40 years of experience in expansion joints and offers the most complete range ever concerning sizes, material, shapes etc., to meet all types of applications.

Thermal growth, equipment movement, vibration or pressure pulsation may generate movement in a piping system. When this movement is not absorbed by the piping system itself, an expansion joint is the perfect solution.

Advantages

• Minimal face-to-face dimensions while absorbing large movements

• Low Spring Rates due to inherent flexibility of rubber

• Corrosion and Erosion resistance

• No gaskets required for installation

• Reduced fatigue factor

COLOUR LABEL	INNER TUBE	OUTER TUBE	MAX. TEMP °C	APPLICATIONS
RED	EPDM	EPDM	90 °C	Hot water, cooling water with salt solutions, chlorine solutions, esters and ketones
DOUBLE RED HT	EPDM HT	EPDM HT	130 °C	Hot water, vapour, hot air etc. at temperatures up to 130 °C
YELLOW	Nitrile ®	Nitrile ®	90 °C	Water, salt solutions, alkalis, mineral oils, vegetable or animal oils, oils aerosols, butane or propane gas, etc.
DOUBLE YELLOW HO	Special Nitrile ®	Special Nitrile ®	130 °C	Water, salt solutions, alkalis, mineral oils, vegetable or animal oils, oils aerosols, butane or propane gas, etc.up to 130ºC
WHITE	Nitrile ® white	Nitrile ®	90 °C	Drinking water, food and beverages, including fats and oils
GREEN	Hypalon ®	Neoprene ® Clhoroprene	90 °C	Strong and/or concentrated acids, etc. Compressed air that bears oil aerosols
BLUE	SBR	Neoprene® Chloroprene	90 °C	Wearing material such as sludge suspended stone, calcium
PURPLE	Viton ®	EPDM	90 °C	Highly aggressive chemicals (strong acids, aromatic solvents)
BLACK	Neoprene ® Chloroprene	Neoprene ® Chloroprene	90 °C	Water, warm water, sea water, air and weak acids

Fabric reinforcements Nylon®, Polyester, Aramid or Kevlar®
Metal reinforcements Wire or solid steel strings are imbedded in the carcass and are used as strengthening members of the Expansion Joint.

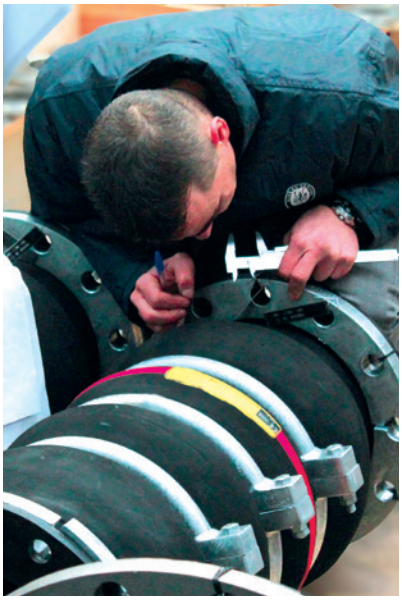
Bellows Constrution Details

Materials

A Rubber Expansion Joint is a flexible connector fabricated of natural or synthetic elastomers, fluoroplastics and fabrics and, if necessary, metallic reinforcements used to absorb movements in a piping system while containing pressure and a medium running through it.

Ur rubber expansion joints are designed according to:

- Pressure Equipment Directive PED 97/23/EC



- FSA (Fluid Sealing Association) Non- Metallic Expansion Joints Division.

- ASTM F1123 - 87(2010) Standard Specification for Non-Metallic Expansion Joints.

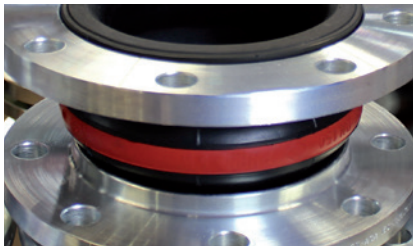
MACOGA Rubber Expansion Joints are manufactured considering:

• Chemical and Temperature resistance of internal layers

• Pressure-resistant reinforcing fabrics

• Weather, ozone and UV-resistance of external layers

MAC-W Series



These are the standard moulded Expansion Joints consisting on high quality rubber body incorporating floating flanges in zinc plated carbon steel as a standard.

Body: EPDM,EPDM HT, Nitrile®, Spec. Nitrile®, Nitrile® white, Hypalon®, SBR, Viton®, Cloroprene, etc.

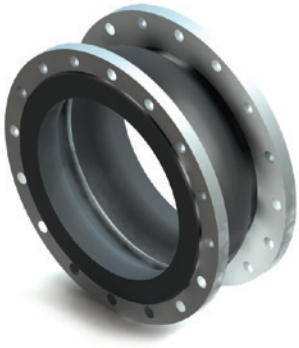
Flanges: Zinc plated carbon steel as standard. Also available in hot dip galvanized carbon steel, stainless steel, etc. DN 32-DN 1000 with flanges drilled to EN 1092-1 PN 6, PN 10, PN 16 and ANSI. On request, flanges are also available drilled to JIS and AWWA standards.

DN	Length mm	Compression mm	Extension mm	Lateral mm	Angular deg.	Working Pressure
32	130 & 150	30	20	20	30	16
40	130 & 150	30	20	20	30	16
50	130 & 150	30	20	20	30	16
65	130 & 150	30	20	20	30	16
80	130 & 150	30	20	20	30	16
100	130 & 150	30	20	20	25	16
125	130 & 150	30	20	20	25	16
150	130 & 150	30	20	20	15	16
200	200 & 130	30	20	20	15	16
250	200 & 130	30	20	20	10	16
300	200 & 130	30	20	20	10	16
350	200	30	20	20	10	10
400	200	30	20	20	10	10
450	200	30	20	20	10	10
500	200	30	20	20	10	10
600	200	30	20	20	6	10
700	275	40	25	30	5	10
800	275	40	25	30	4	10
900	300	40	25	30	3	10
1000	300	40	25	30	3	10

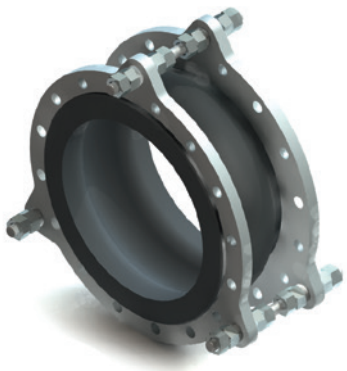
MAC-WT Series

As MAC-W but incorporating control units/tie rod system. A control unit assembly is a system of 2 or more control rods placed across the expansion joint from flange to flange to set the maximum allowable expansion/contraction of the expansion joint and will absorb the pressure thrust. Recommended on most applications to prevent damage due to excessive pipe movements, each rod incorporates double nuts on each end to keep the expansion joint from over-elongating and spherical washers to allow Lateral, Angular and some Torsional movements as well as to accommodate moderate piping misalignments.

MAC-W Section



MAC-W Type



MAC-WT Type

MAC-F Series

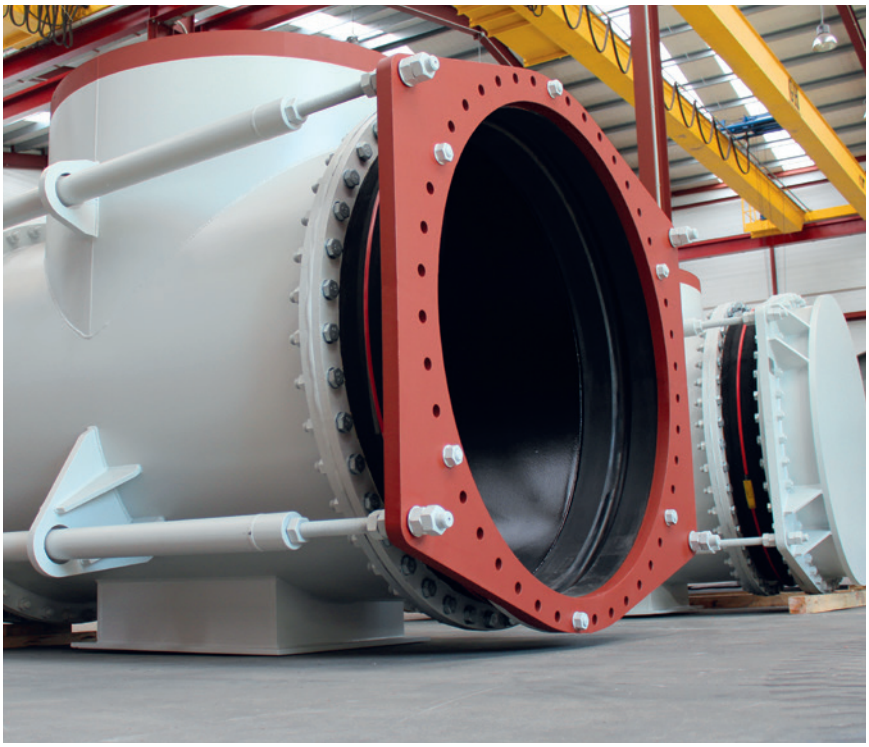
Expansion Joints with Full Face Rubber Flange.
The full face flanges are integral with the body of the joint and drilled to conform the bolt pattern of the companion flanges of the pipe line. These are high quality "custom-made" Expansion Joints supplied with split or fixed flanges in carbon steel as standard

Sizes: Any size up to 4000 mm diameter.

Pressure rating: Up to 40 bar. Higher pressure ratings available depending on size.

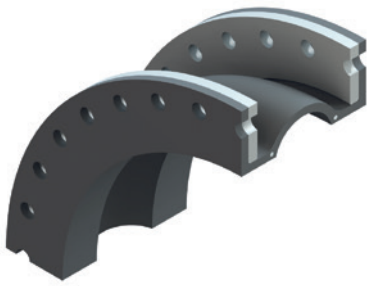
Body: EPDM, EPDM HT, Nitrile®, Neoprene®, Hypalon ®, Viton®, Nitrile®, Nitrile® White, PTFE lining

Flanges: Shot-blasted and painted carbon steel as standard. Also available in hot dip galvanized carbon steel, stainless steel, etc. DN 1100-DN 3800 with flanges drilled to EN 1092-1 PN 6, PN 10, PN 16 and ANSI. On request, flanges are also available drilled to JIS and AWWA standards.



MAC-FT Series

As MAC-F but incorporating control units / tie rod system. A control unit assembly is a system of 2 or more control rods placed across the expansion joint from flange to flange to set the maximum allowable expansion/contraction of the expansion joint and will absorb the pressure thrust. Recommended on most applications to prevent damage due to excessive pipe movements, each rod incorporates double nuts on each end to keep the expansion joint from over-elongating and spherical washers to allow Lateral, Angular and some Torsional movements as well as to accommodate moderate piping misalignments.



MAC-F Section

MAC-F Type

MAC-FT Type

Accesories

Control units
(tie rods, spherical washers, etc.)
MAC-F and MAC-W Expansion Joints can be supplied with Control Rods.

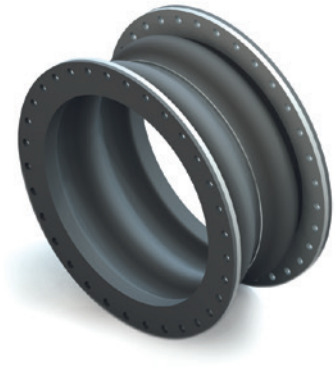
Metal Reinforcements and Vacuum Rings
The expansion joints can also incorporate internal vacuum rings and/or external pressure support rings. Vacuum and pressure support rings can be supplied in hot dip galvanized carbon steel, in stainless steel or PTFE lined.

Special Designs

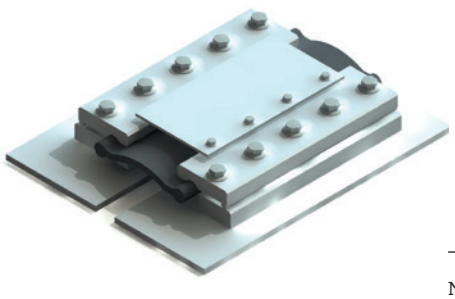
Multiply Arch Design
Rubber Expansion Joints with two or more arches. Generally used to absorb large movements.

"Dog Bone" Type Expansion Joints
The Belt Type (Dog Bone) Condenser Expansion Joint is specifically designed for turbine/condenser connections. It is the most widely used turbine to condenser expansion joint in use.

A moulded construction of plies of rubber impregnated polyester fabric, EPDM or Neoprene rubber cover and reinforcing cord at each end. MACOGA designs and supplies the rubber Dog Bone part and the special clamping system required for installation.



MAC-F2 Type



Dog Bone Type

MACOGA
ENGINEERED EXPANSION JOINTS

Leira. s/n. 15680 Ordenes. La Coruña, Spain. Tel: +34 981 68 00 00. Fax: +34 981 68 02 38
www.macoga.com e-mail: *macoga@macoga.com*