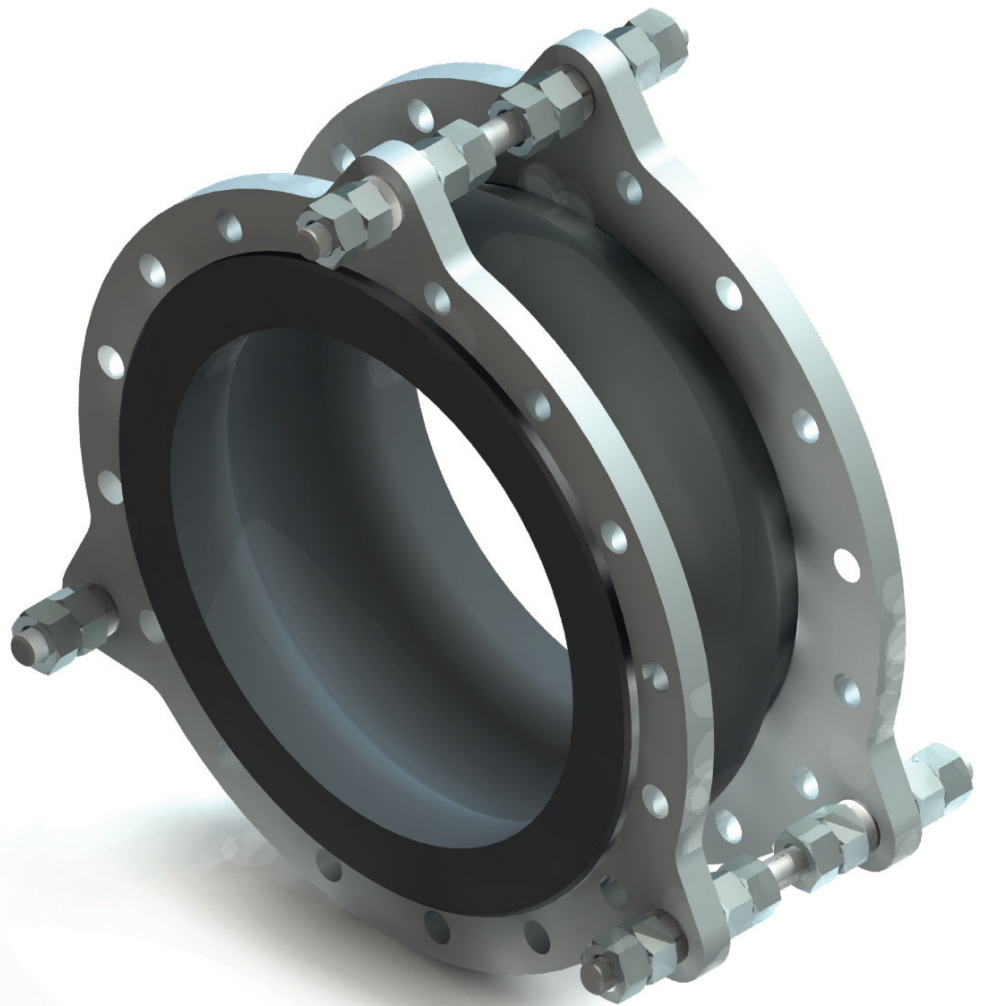


RUBBER EXPANSION JOINTS

MAC-F AND MAC-W SERIES



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**

BELLOWS CONSTRUCTION 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.

Our rubber expansion joints are designed according to the **Pressure**

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	Spec. Nitrile ®	Spec. Nitrile ®	130 °C	Water, salt solutions, alkalis, mineral oils, vegetable or animal oils, oils aerosols, butane or propane gas, etc. up to 130 °C
WHITE	Nitrile ® white	Nitrile ®	90 °C	Drinking water, food and beverages, including fats and oils
GREEN	Hypalon ®	Neoprene ® Chloroprene	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.

Equipment Directive PED 97/23/EC for the specified operating conditions and according to the **FSA (Fluid Sealing Association) Non-Metallic Expansion Joints Division**.

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-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

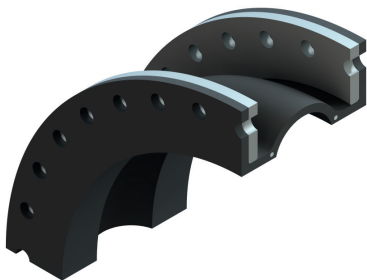
Body: EPDM, EPDM HT, Nitrile®, Neoprene®, Hypalon®, Viton®, Nitrile®, Nitrile® White, PTFE lining

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.

DN (")	Length mm (")	Compression mm	Extension mm	Lateral mm	Angular deg.	Working Pressure bar (**)
1100	350	35	30	20	4	10
1200	350	35	30	20	4	10
1300	350	35	30	20	3	10
1400	350	35	30	20	3	10
1500	350	35	30	20	3	10
1600	350	35	30	20	3	6
1800	350	35	30	20	2	6
1900	350	35	30	20	2	6
2000	350	35	30	20	2	6
2200	350	35	30	20	2	6
2400	350	35	30	20	1,5	6
2500	350	35	30	20	1,5	6
2600	350	35	30	20	1,5	6
2700	350	35	30	20	1,5	6
2800	350	35	30	20	1,5	6
2900	350	35	30	20	1,5	6
3000	350	35	30	20	1,5	6
3200	350	35	30	20	1,5	2
3400	350	35	30	20	1,5	2
3600	350	35	30	20	1,5	2
3800	350	35	30	20	1,5	2

(*) Other sizes and other lengths available upon request

(**) Higher pressure ratings available upon request



MAC-F Section



MAC-F Type



MAC-FT Type

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.

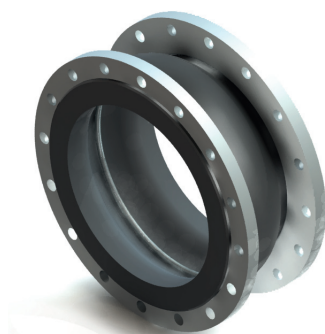
Body: EPDM, EPDM HT, Nitrile®, Spec. Nitrile®, Nitrile® white, Hypalon®, SBR, Viton®, Chloroprene, etc.

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.

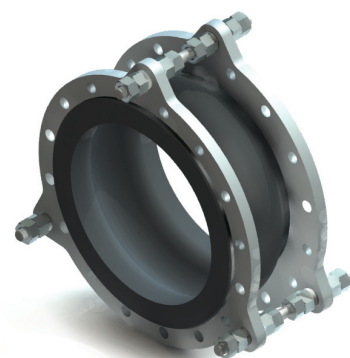
DN	Length mm	Compression mm	Extension mm	Lateral mm	Angular deg.	Working Pressure
32	130 & 150	30	20	20	30	16
40	130 & 150	30	20	20	30	16
50	130 & 150	30	20	20	30	16
65	130 & 150	30	20	20	30	16
80	130 & 150	30	20	20	30	16
100	130 & 150	30	20	20	25	16
125	130 & 150	30	20	20	25	16
150	130 & 150	30	20	20	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-W Section



MAC-W Type



MAC-WT Type

ACCESSORIES

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

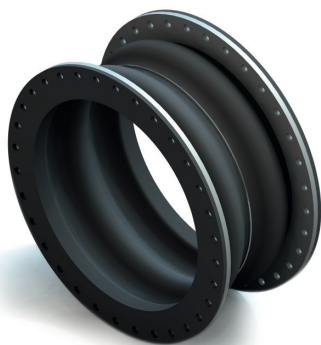
The expansion joints can also incorporate internal vacuum rings and/or external pressure support rings. Vacuum and pressure support rings can be supplied in hot dip galvanized carbon steel, in stainless steel or PTFE lined.



SPECIAL DESIGNS

Multiply Arch Design

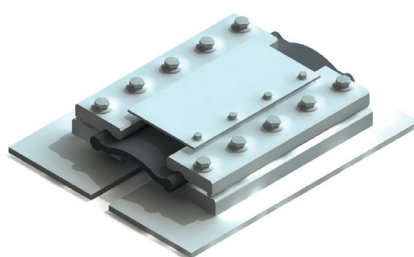
Rubber Expansion Joints with two or more arches. Generally used to absorb large movements.



MAC-F2 Type

“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.



Dog Bone Type

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.

Neoprene, Viton, Hypalon, Nitrile and Kevlar are registered trademarks of the DuPont Company or its affiliates.

MACOGA

ENGINEERED EXPANSION JOINTS

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