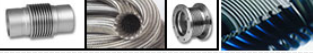


	TREVITEC 		DOCUMENTO N° File no.	
	EXPANSION JOINT Manufacturing range and type			
			REV.	PAG. 1 di 14 sheet

Range manufacturing :

Nominal diameter	From nd 15(1/2") up to 6000 (244")	
Nominal pressure	From NP 1 up to 40 (other pressure are possible but require a special design)	
Bellows design according to	E.J.M.A, ASME VIII div.1, AD-Merkblätter B13, Stoomwezen D0901, Suomen SFS 2773, Codap	
EJ type	Axial, Universal, Hinged, Gimbal, Lateral, Pressure balanced, Jacketed externally pressurized	
	Rectangular V-shaped and U-shaped	

NON-DESTRUCTIVE TESTS:

- Radiographic Examination
- Liquid Penetrant Examination
- Ultrasonic Examination
- Magnetic Particle Examination
- Hydraulic Pressure Test
- Chemical and Mechanical Analysis of the materials used
- Spring rate Test
- Helium Leak Detection Test

DESTRUCTIVE TESTS:

- Fatigue Life Testing
- Squirm Testing
- Meridional Yield Rupture Testing
- Burst Test

All of these controls and tests are carried out in line with the procedures and guidelines approved by the Quality Control Department which certifies such tests.

These tests can be carried out, monitored and/or certified by

independent outside companies or classification societies such as the following: TÜV, Lloyd's Register of Shipping, Bureau Veritas, Det Norske Veritas, ABS Industrial Verification, etc.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec .All rights reserved.



TREVITEC



DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV. PAG. 2 di
14
sheet

Manufacturing Materials Used.

The essential component of an Expansion Joint resides in the degree flexibility of its bellows and this depends upon the design of its convolution and the materials used during the production process. The choice of materials to be used

in manufacturing the bellows, being the basic component of the Expansion Joint, is made taking the following criteria into account:

- Temperature resistance.
- Resistance to corrosion.
- Forming capacity.
- Mechanical characteristics.

- Resistance to fatigue.
- Flexibility when in use.

The following is a list of the materials mostly used to produce our bellows:

AUSTENITIC STEELS ACEROS AUSTENITICOS			NICKEL ALLOYS ALEACIONES NIQUEL		
KNOWN AS CONOCIDO COMO	ASTM	DIN	KNOWN AS CONOCIDO COMO	ASTM	DIN
304	A 240 TP 304	1.4301	MONEL 400	B-127-400	2.4360
304 L	A 240 TP 304 L	1.4306	INCONEL 600	B-168-600	2.4816
316	A 240 TP 316	1.4401	INCONEL 625	B-443-625	2.4856
316 L	A 240 TP 316 L	1.4404	INCOLOY 800 H	B-409-800 H	1.4876
316 TI	A 240 TP 316 TI	1.4571	INCOLOY 825	B-424-825	2.4858
321	A 240 TP 321	1.4541	HASTELLOY-C4	B-575-C4	2.4610
309	A 240 TP 309	1.4828	HASTELLOY-C 276	B-575-C 276	2.4819
310	A 240 TP 310	1.4841			
253 MA	S30815	1.4893			
904 L	N08904	1.4539			
317 L	A 240 TP 317 L	1.4438			

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

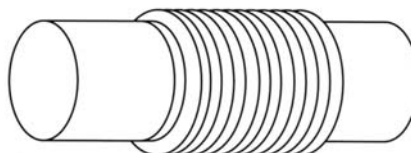
This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec. All rights reserved.

Data di stampa/Printed : 15/04/2008

2/14

	TREVITEC 		DOCUMENTO N° File no.	
	EXPANSION JOINT Manufacturing range and type			
			REV.	PAG. 3 di 14 sheet

Expansion Joint type :



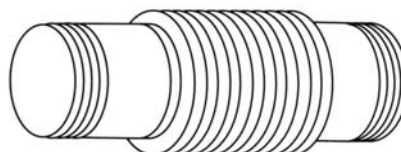
MWA

> CHARACTERISTICS

This type of Expansion Joint is made up of one single bellows provided with welding ends. Although this model will in fact absorb all of the movements in any one length of piping it is mainly used to absorb AXIAL MOVEMENTS.

> CARACTERISCTICAS

Compensador de Dilatación formado por un solo fuelle equipado con extremos para soldar en sus extremos. Absorbe todos los movimientos de un tramo de tubería aunque es utilizado principalmente para absorber MOVIMIENTOS AXIALES.



MTE

> CHARACTERISTICS

Similar to the MWA model with the only difference being that this model is fitted with BSP or NPT threads instead of welding ends. The threads are external.

> CARACTERISCTICAS

Igual al MWA pero con rosca BSP o NPT en sus extremos. La rosca es exterior.



TREVITEC

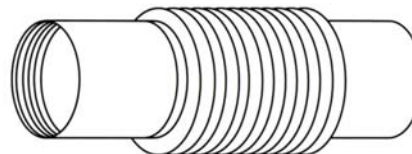


DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.

PAG. 4 di
14
sheet



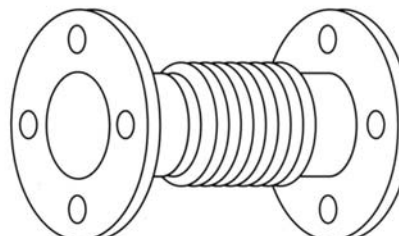
MTI

> CHARACTERISTICS

Similar to the MWA model with the only difference being that this model is fitted with BSP or NPT threads instead of welding ends. The threads are internal.

> CARACTERISCTICAS

Igual al MWA pero con rosca BSP o NPT en sus extremos. En este caso la rosca es interior.



MFA

> CHARACTERISTICS

This type of Expansion Joint is made up of one single bellows equipped with fixed flanges. Although this model will in fact absorb all of the movements in any one length of piping it is mainly used to absorb AXIAL MOVEMENTS.

> CARACTERISCTICAS

Compensador de Dilatación formado por un solo fuelle equipado con bridas fijas en sus extremos. Absorbe todos los movimientos de un tramo de tubería aunque se utiliza principalmente para absorber MOVIMIENTOS AXIALES.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec. All rights reserved.

Data di stampa/Printed : 15/04/2008

4/14



TREVITEC

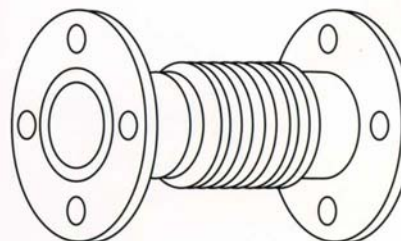


DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.

PAG. 5 di
14
sheet



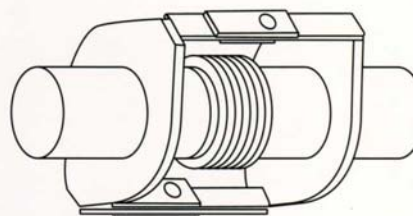
MFG

> CHARACTERISTICS

The same as MFA but with floating flanges instead of fixed flanges.

> CARACTERISCTICAS

Igual al tipo MFA pero con bridas giratorias



MWP

> CHARACTERISTICS

Also known as HINGED EXPANSION JOINT WITH WELDING ENDS. This model is made up of a bellows fitted with welding ends plus a system of articulated supports which allow for ANGULAR MOVEMENTS IN ONE PLANE ONLY.

> CARACTERISCTICAS

Denominado también COMPENSADOR DE DILATACION ARTICULADO CON TERMINALES PARA SOLDAR. Formado por un fuelle equipado con terminales para soldar y con un sistema de soportes articulados que le permiten MOVIMIENTOS ANGULARES EN UN SOLO PLANO.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

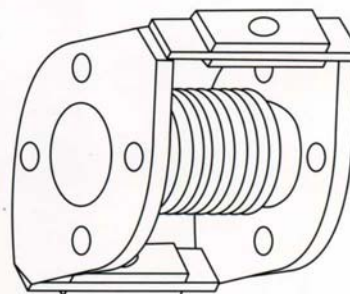
This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec .All rights reserved.

Data di stampa/Printed : 15/04/2008

5/14

**TREVITEC**DOCUMENTO N°
File no.**EXPANSION JOINT**
Manufacturing range and type

REV.

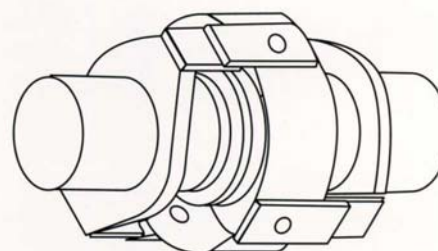
PAG. 6 di
14
sheet**MFP**

> CHARACTERISTICS

Also known as HINGED EXPANSION JOINT WITH FLANGES. This model is made up of a bellows with flanges plus a system of articulated supports which allow for ANGULAR MOVEMENTS IN ONE PLANE ONLY.

> CARACTERÍSTICAS

También denominado COMPENSADOR DE DILATACION ARTICULADO CON BRIDAS. Formado por un fuelle con bridas en sus extremos y un sistema de soportes articulados que le permiten MOVIMIENTOS ANGULARES EN UN SOLO PLANO.

**MWC**

> CHARACTERISTICS

Also known as GIMBAL OR CARDAN EXPANSION JOINT WITH WELDING ENDS. This model is made up of a bellows, provided with welding ends plus two pairs of articulations linked up to a common floating ring. It absorbs ANGULAR MOVEMENTS IN ANY PLANE.

> CARACTERÍSTICAS

También denominado COMPENSADOR DE DILATACION DE ROTULA O CARDAN CON TERMINALES PARA SOLDAR. Formado por un fuelle, terminales para soldar en sus extremos, y dos pares de articulaciones unidas a un anillo flotante común. Absorbe MOVIMIENTOS ANGULARES EN CUALQUIER PLANO.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec. All rights reserved.

Data di stampa/Printed : 15/04/2008

6/14



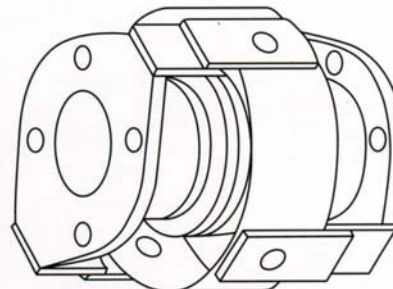
TREVITEC



DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.	PAG. 7 di 14 sheet
------	--------------------------



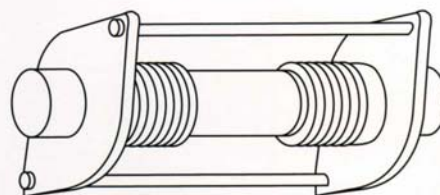
MFC

> CHARACTERISTICS

Also known as GIMBAL OR CARDAN EXPANSION JOINT WITH FLANGES. The same as MWC but with flanges instead of welding ends.

> CARACTERÍSTICAS

También denominado COMPENSADOR DE DILATACION DE ROTULA O CARDAN CON BRIDAS. Igual al tipo MWC pero con bridas en sus extremos.



MWL

> CHARACTERISTICS

This model is made up of two bellows joined together by a central pipe and a system of tie rods able to withstand the thrust produced by the internal pressure. This model is used to absorb LATERAL MOVEMENTS IN SEVERAL PLANES.

> CARACTERÍSTICAS

Formado por dos fuelles unidos entre sí por un tubo central y un sistema de tirantes que soportan el esfuerzo debido a la presión interna. Este tipo de Compensadores se utilizan para absorber MOVIMIENTOS LATERALES EN DISTINTOS PLANOS.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec. All rights reserved.

Data di stampa/Printed : 15/04/2008

7/14



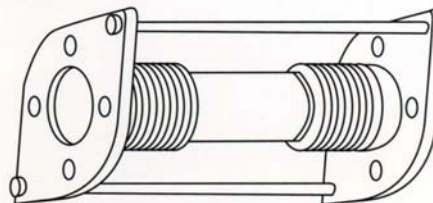
TREVITEC



DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV. PAG. 8 di
14
sheet



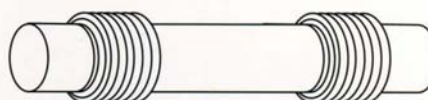
MFL

> CHARACTERISTICS

The same as MWL but with flanges.

> CARACTERÍSTICAS

Igual al tipo MWL pero con bridas en sus extremos.



MWD

> CHARACTERISTICS

Also known as the UNIVERSAL EXPANSION JOINT WITH WELDING ENDS. This model is made up of two bellows joined together by a central pipe and fitted with welding ends. Although it can be used to absorb any combination of the three basic movements it is mainly used to absorb large LATERAL MOVEMENTS.

> CARACTERÍSTICAS

También denominado COMPENSADOR DE DILATACION UNIVERSAL CON EXTREMOS PARA SOLDAR. Formado por dos fuelles unidos por un tubo central y extremos para soldar en sus extremos. Absorbe cualquier combinación de los tres movimientos básicos aunque es utilizado principalmente para absorber grandes MOVIMIENTOS LATERALES.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec. All rights reserved.

Data di stampa/Printed : 15/04/2008

8/14



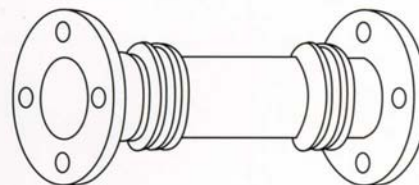
TREVITEC



DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV. PAG. 9 di
14
sheet



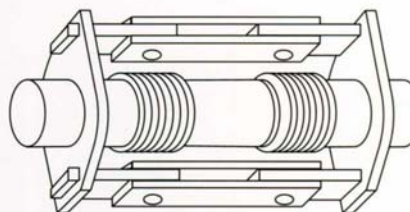
MFD

> CHARACTERISTICS

Also known as UNIVERSAL EXPANSION JOINT WITH FLANGES. This model is made up of two bellows joined together by a central pipe and fitted with flanges. Although it can be used to absorb any combination of the three basic movements it is mainly used to absorb large LATERAL MOVEMENTS.

> CARACTERISCTICAS

También Denominado COMPENSADOR DE DILATACION UNIVERSAL CON BRIDAS. Formado por dos fuelles unidos por un tubo central y con bridas en sus extremos. Absorbe cualquier combinación de los tres movimientos básicos aunque es utilizado principalmente para absorber grandes MOVIMIENTOS LATERALES.



MWY

> CHARACTERISTICS

This model is designed to absorb LATERAL AND ANGULAR MOVEMENTS IN ONLY ONE PLANE. It is made up of two bellows joined together by a linking pipe and is fitted with welding ends plus a system of double articulated system.

> CARACTERISCTICAS

Diseñado para absorber MOVIMIENTOS LATERALES Y ANGULARES EN UN SOLO PLANO. Formado por dos fuelles unidos por un tubo intermedio, terminales para soldar en sus extremos, y un sistema doble de soportes articulados.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec .All rights reserved.

Data di stampa/Printed : 15/04/2008

9/14



TREVITEC

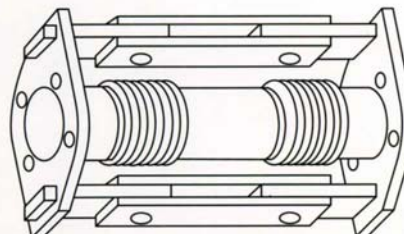


DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.

PAG. 10 di
14
sheet



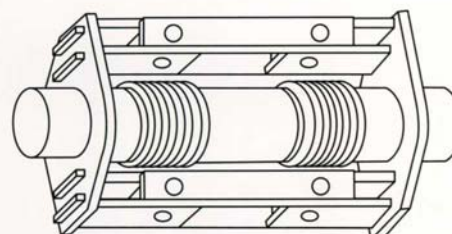
MFY

> CHARACTERISTICS

The same as MWF but with flanges instead of welding ends.

> CARACTERISCTICAS

Igual tipo MWY pero con bridas en sus extremos.



MWK

> CHARACTERISTICS

Designed to absorb LATERAL AND ANGULAR MOVEMENTS IN ANY DIRECTION. This model is made up of two bellows joined together by a linking pipe and is fitted with welding ends plus a universal system of double articulated supports.

> CARACTERISCTICAS

Diseñado para absorber MOVIMIENTOS LATERALES Y ANGULARES MULTIDIRECCIONALES. Formado por dos fuelles unidos por un tubo intermedio, terminales para soldar en sus extremos, y un sistema doble universal de soportes articulados.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec .All rights reserved.



TREVITEC

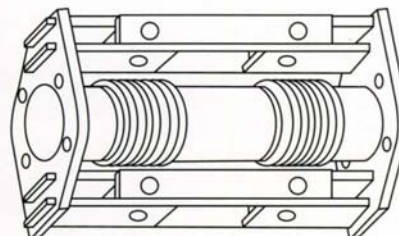


DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.

PAG. 11 di
14
sheet



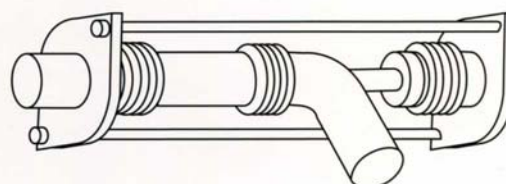
MFK

> CHARACTERISTICS

The same as MWK but with flanges instead of welding ends.

> CARACTERISCTICAS

Igual tipo MWK pero con bridas en sus extremos.



MPB

> CHARACTERISTICS

PRESSURE BALANCED - This Expansion Joint is designed to be used in very specific situations. It is designed to absorb LATERAL AND/OR AXIAL MOVEMENTS ELIMINATING THE THRUST CAUSED BY THE INTERNAL PRESSURE.

> CARACTERISCTICAS

AUTOCOMPENSADO - Compensador de Dilatación de aplicación muy específica. Es diseñado para absorber MOVIMIENTOS AXIALES Y/O LATERALES ELIMINANDO EL ESFUERZO DEBIDO A LA PRESION INTERNA SOBRE EL SISTEMA.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec .All rights reserved.

Data di stampa/Printed : 15/04/2008

11/14



TREVITEC

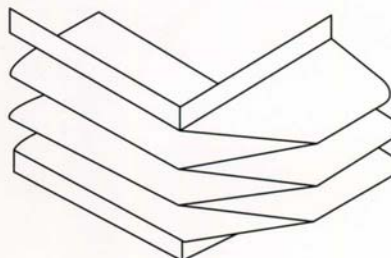


DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.

PAG. 12 di
14
sheet



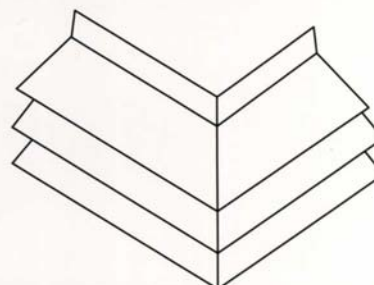
MRW

> CHARACTERISTICS

CAMERA CORNER - RECTANGULAR EXPANSION JOINT WITH V-SHAPED CONVOLUTIONS AND CAMERA CORNER. This model is used in exactly the same ways as the Circular Expansion Joints but bearing in mind the limitations inherent to this type of Expansion Joint. This model is characterized by the shape of its corner camera type and the V-shaped convolution. The connection elements are available either with flanges or welding ends.

> CARACTERISCTICAS

ESQUINA CAMARA - COMPENSADOR DE DILATACION RECTANGULAR CON PERFIL DE ONDA EN 'V' Y ESQUINA CAMARA. Compensador de Dilatación con un campo de aplicación idéntico a los Compensadores Circulares con las limitaciones propias de su configuración. La forma de la esquina, tipo cámara y la onda en 'V' determinan este tipo. Sus terminales de conexión pueden ser bridas o extremos para soldar.



MRV

> CHARACTERISTICS

MITER CORNER - RECTANGULAR EXPANSION JOINT WITH V-SHAPED CONVOLUTIONS AND MITER CORNER. This model is characterized by the shape of its miter type corner and its V-shaped convolution. The corner can be either single or double. The connection elements are available either with flanges or welding ends.

> CARACTERISCTICAS

ESQUINA MITER - COMPENSADOR DE DILATACION RECTANGULAR CON PERFIL DE ONDA EN 'V' Y ESQUINA MITER. La forma de la esquina, tipo 'miter' y la onda en forma de 'V' definen este tipo de Compensador Rectangular. La esquina puede ser simple o doble. Sus terminales de conexión pueden ser bridas o extremos para soldar.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec .All rights reserved.

Data di stampa/Printed : 15/04/2008

12/14



TREVITEC

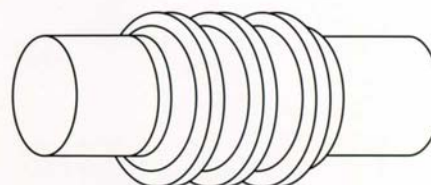


DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.

PAG. 13 di
14
sheet



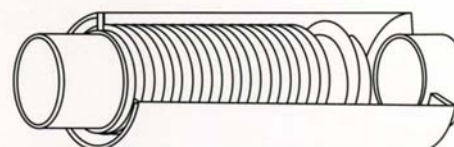
MRR

> CHARACTERISTICS

EXPANSION JOINT WITH REINFORCEMENT RINGS. This model is used in cases of high internal pressures. The system involves the use of reinforcement rings located around the outside of the convolution thus preventing the bellows being forced out of shape due to the high pressures.

> CARACTERÍSTICAS

COMPENSADOR DE DILATACION CON ANILLOS DE REFUERZO. Se utilizan en casos de muy alta presión interna. El sistema consiste en la utilización de anillos de refuerzo alrededor del exterior de las ondas, previniendo la deformación del fuelle por efectos de la presión.



MEP

> CHARACTERISTICS

EXTERNALLY PRESSURIZED EXPANSION JOINTS. This model is mainly used in cases of high pressure and large movements. When under external pressure, the bellows will retain its shape and can be manufactured in any length.

> CARACTERÍSTICAS

COMPENSADORES EXTERNAMENTE PRESURIZADOS. Utilizados principalmente en casos de presión elevada y grandes movimientos. Bajo presión externa los fuelles son resistentes a la deformación y permiten su fabricación en cualquier longitud.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec. All rights reserved.

Data di stampa/Printed : 15/04/2008

13/14



TREVITEC

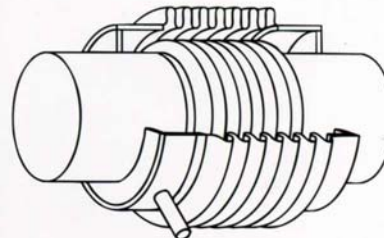


DOCUMENTO N°
File no.

EXPANSION JOINT Manufacturing range and type

REV.

PAG. 14 di
14
sheet



MJA

> CHARACTERISTICS

JACKETED EXPANSION JOINTS.
Jacketed Expansion Joints are used in a set of particular circumstances such as when regular insulation is not sufficient and when the main fluid has to be kept at a fixed temperature or simply when the external piping is security piping. This model involves using two bellows, one on the inside and one on the outside.

> CARACTERISCTICAS

COMPENSADORES 'JACKETED'. En ciertas aplicaciones, cuando el aislamiento normal no es suficiente, cuando se necesita mantener el fluido principal a cierta temperatura o simplemente cuando la tubería exterior es de seguridad, se utilizan los Compensadores 'Jacketed'. Consiste en la utilización de dos fuelles, uno en el interior y otro en el exterior.

Questo documento è proprietà della Trevitec. Ogni riproduzione parziale o totale è proibita senza l'approvazione scritta della Trevitec. Tutti i diritti sono riservati.

This document is property of Trevitec. Any partial or total reproduction is forbidden without the written consent of Trevitec. All rights reserved.

Data di stampa/Printed : 15/04/2008

14/14