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Euro-Qualiflex

Association of the leading manufactures of flexible elements



ASSOCIATION EURO-QUALIFLEX

Heinestraße 169
D-70597 Stuttgart
Phone +49 (0) 711 - 9 76 58-0
Fax +49 (0) 711 - 9 76 58-30
www.euro-qualiflex.com



WHO WE ARE

EURO-QUALIFLEX initiates the European harmonized standards for metal hoses and expansion joints

EURO-QUALIFLEX stands for approved quality

- Quality requirements guaranteed by the EURO-QUALIFLEX Label
- Strong criteria to get and maintain the EURO-QUALIFLEX Label

EURO-QUALIFLEX is focused on

- Reliability of the flexible elements
- Safety for the different kinds of application fields
- Economical solutions for users

EURO-QUALIFLEX gives support to

- Minimize risks in the application
- Fulfil extreme requirements
- Provide durable and reliable products

EURO-QUALIFLEX is the association of leading European manufacturers of flexible elements (hoses, bellows, expansion joints)

Special requirements which guarantee constant quality for each product.

Each of the following special quality requirements has to be proved by audits of notified bodies according to the quality management system ISO 9001 for the total product range:

- Design and calculation according to each technical requirement as the European directives and standards and/or Customer requests as PED, EN standards, ISO standards, if applicable
- Selection of qualified suppliers
- Validated manufacturing methods
- Reliable own forming equipments
- Assessed welding procedures
- Qualified welders
- Suitable testing procedures and equipment to fulfil the requested technical standards
- Appropriate product liability insurance

EURO-QUALIFLEX – THE HISTORY

1956 – „Union-Qualiflex“ comes into existence

Seven French manufacturers of metal hoses and expansion joints pool together. Their most important target: quality assurance

1966 – Association Euro-Qualiflex is founded

1981: Association Euro-Qualiflex wird gesamteuropäisch

1981 -1997: AEQ is working on the European Standards (CEN and ISO)

- DIN EN/ISO 7369 Pipework – flexible metallic hoses
- ISO/FDIS 10380 Corrugated metal hose and hose assemblies
- DIN EN/ISO 10806 Pipework - Fittings for corrugated metal hoses
- ISO 10807 Pipework - Corrugated flexible metallic hose assemblies for the protection of electrical cables in explosive atmospheres
- DIN 2827 Stainless steel hose assemblies for chemical materials

1997 - 2007: Only products with reliable quality are to come on the market

AEQ is developing the legal minimum requirements for metal hoses and expansion joints.

The TC 342 is founded and develops the harmonized basic standards.

- EN 14917 Metal bellows expansion joints for pressure applications
- EN 14585 Corrugated metal hose assemblies for pressure applications

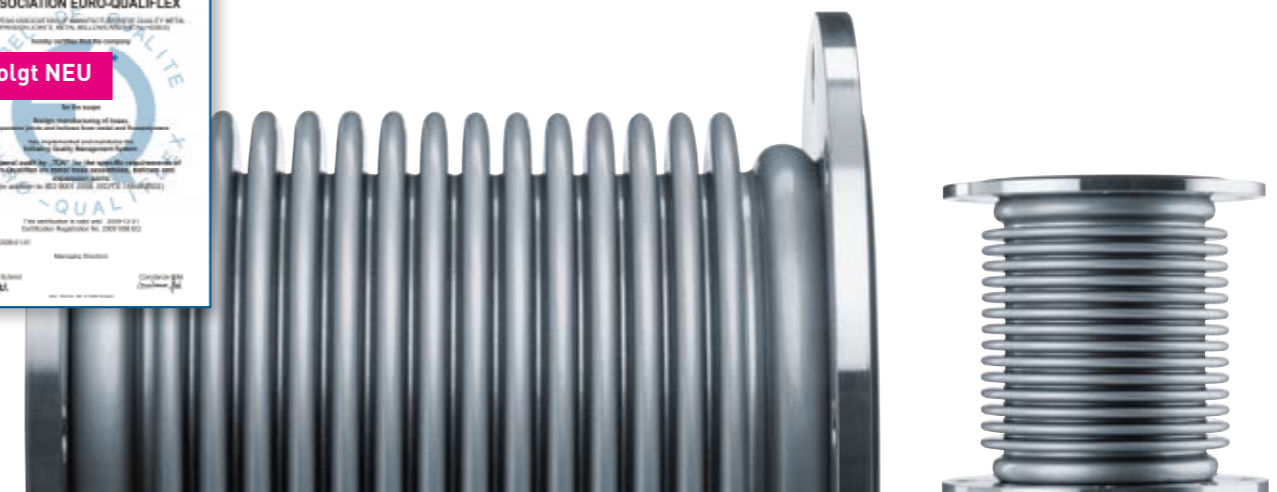
Most important examples for the AEQ commitment are:

- DIN/EN 13445 UFPV – unfired pressure vessels
- DIN/EN 13480 IPMA – metallic industrial piping

2007 - 2009: AEQ-Quality catches on – always!

For this reason AEQ has developed a tailor-made quality management system with defined minimum requirements and continuous external quality control by notified bodies.

AEQ tops the existent ISO 9001 certification.



EN 14917, THE EUROPEAN STANDARD FOR EXPANSION JOINTS

Main Features of the Standard for expansion joints.

With assistance of Euroqualiflex, the European Standard for Expansion Joints, EN 14917 was elaborated under a mandate given to CEN by the European Commission.

There was no comprehensive standard for expansion joints available in Europe for decades. The EN 14917 is more than a standard. It is a harmonized European Standard. This means that the essential safety requirements given in the PED* are fulfilled. Accordingly expansion joints – either being piping components or parts of pressure vessels – are to be CE marked. * Pressure Equipment Directive (PED) – Directive 97/23/EC

Detailed requirements are given for:

- Manufacturing
- Testing and inspection
- Documentation

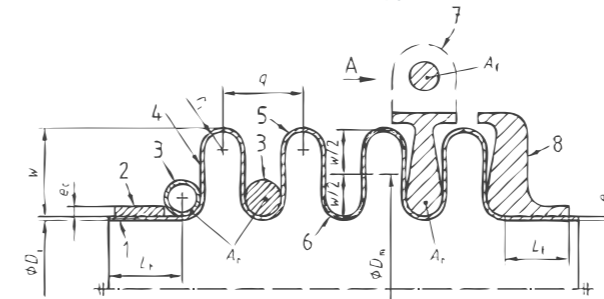
10 Annexes for assisting guides and information, as:

- Material specification including for selected nickel alloys
- Incorporation of expansion joints in vessels and piping
- Calculation of pipe systems with expansion joints
- Expansion joints risk analysis
- Material properties

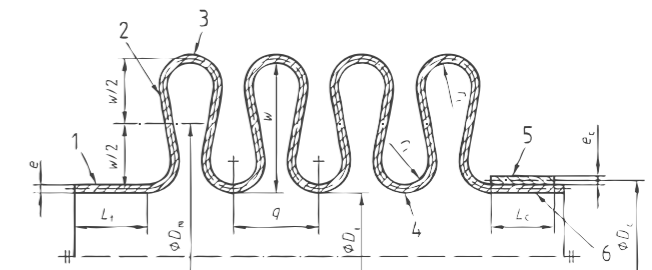
All in all, a complete document making the design and use of expansion joints very much easier and safer.

MAIN FEATURES OF THE STANDARD

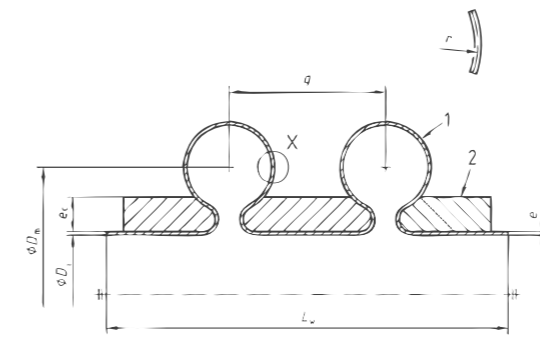
Calculation of all types of bellows Stress limitation and fatigue analysis are given



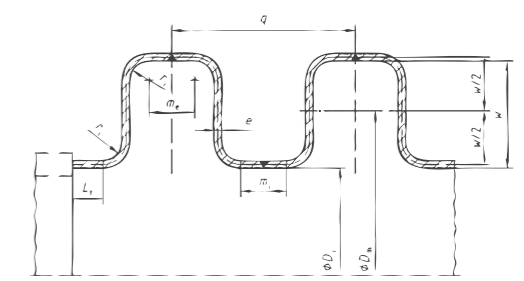
Reinforced bellows



Lyra-shaped bellows



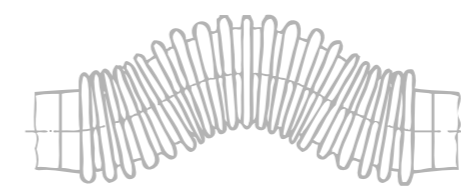
Toroidal bellows



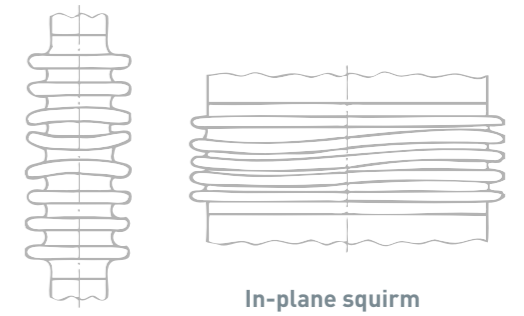
Half-corrugation bellows

STABILITY CHECK FOR ALL OPERATION AND TEST CONDITIONS

- All kinds of squirm are avoided



Column squirm



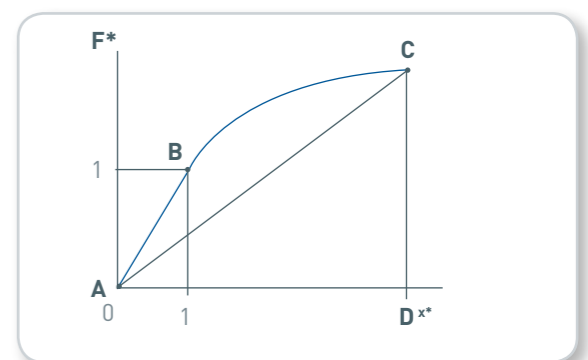
In-plane squirm

INCREASED DEFORMATIONS OF ANGULAR ROTATED PRESSURISED BELLOWS ARE CONSIDERED



Unsteady deformed bellows caused by internal pressure

ELASTIC, EFFECTIVE AND WORKING SPRING RATES



Elastic-plastic material behaviour results in a non-linear characteristic of bellows



EN ISO 10380 - THE EUROPEAN AND WORLD-WIDE STANDARD FOR CORRUGATED METAL HOSES AND METAL HOSE ASSEMBLIES

EN ISO 10380 was developed to support the industry defining minimum requirements for quality, design, manufacturing and testing of corrugated metal hose and hose assemblies. Corrugated metal hoses and metal hose assemblies which conform to all aspects of this International Standard are considered to be designed and manufactured to sound engineering practice (SEP). The requirements of this International Standard are of importance to designers, manufacturers, users, suppliers and importers of corrugated metal hoses.

It was decided to produce an International Standard under the Vienna Agreement on technical cooperation between ISO and the European Committee for Standardization (CEN) in order to maintain a unique EN ISO document. Experts of AEQ, all nominated by the national bodies of their member states, strongly support the development of this standard by their work in the corresponding technical committees. They are permanently accompanying the improvement of the design and the quality of their products on highest level possible, by enhancing their methods of calculation, testing and simulation with state-of-the-art equipment and tools and test labs. Strong and deep partnerships between AEQ and the users of the products submit successful results.



MAIN FEATURES OF THE STANDARD

EN ISO 10380 specifies the minimum requirements for design, materials, manufacturing, testing and installation of corrugated metal hose and metal hose assemblies and introduces an evaluation of conformity and a system of certification. Non-permanent, detachable connections between hoses and fittings are available in the market, but their design is not covered by this International Standard.

QUALITY DEDICATED MAIN FEATURES OF THE STANDARD

Types of hoses

Corrugated metal hoses are divided into four different types which have to be tested accordingly:

- Type 1-50: corrugated metal hoses of high flexibility with high fatigue life;
- Type 1-10: corrugated metal hoses of high flexibility with standard fatigue life;
- Type 2-10: corrugated metal hoses of normal flexibility;
- Type 3: corrugated metal hoses where only pliability is required.

Fatigue Life

Type 1 and type 2 corrugated metal hoses shall permit repeated flexing under pressure for reasonable expected life cycles of the product. The performance of the products shall be tested by representative cycle tests.

Depending on the performance level, the cycle requirements shall be:

- Type 1-50: 50 000 cycles
- Type 1-10: 10 000 cycles
- Type 2-10: 10 000 cycles

Pliability

A corrugated metal hose shall be capable of being bent 10 times to a very small radius (type 3) without leakage.

Burst Pressure

The burst pressure of a corrugated metal hose assembly shall not be less than four times the maximum allowable pressure at room temperature. To determine the safety factor under working conditions, at least the thermal derating factor shall be taken into consideration.

Pressure Resistance – Pressure test

All corrugated metal hose and metal hose assemblies delivered, shall be capable to withstand the test pressure without any deformation, leakage or other mode of failure. The permanent elongation of a corrugated metal hose assembly subjected to its test pressure shall, after release of the pressure, not exceed 1% of the assembly length.

Leak Tightness – Leak Test

All corrugated metal hose and metal hose assemblies delivered, shall be leak-tight when tested in accordance with the given methods.

Evaluation of Conformity

Depending on their procedure the manufacturers shall declare their products accordingly. The conformity of corrugated metal hoses and metal hose assemblies shall always be demonstrated by initial type testing, factory production control and by the final product assessment.

Marking

All corrugated metal hose and metal hose assemblies delivered, shall be marked with the name of the manufacturer or a trademark, the year of manufacture and with the designation of the product.

