

# ATAG

SERVING INDUSTRY SINCE 1947



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# PAST, PRESENT, FUTURE

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**ATAG** is serving industry since **1947** and is constantly growing.

The wide range of products, the three domestic locations, the controlled companies, the large warehouses, the extensive sales network, the increasingly stringent internal workings, the website in constant evolution and a service based on the qualified technical expertise offered by our sales department, are the reasons why our customers rely constantly on ATAG.

In recent years we have incorporated complementary companies, using their great competencies to improve our own skills. An efficient export department, our European resellers and long-standing customers, allow us to have a better knowledge of foreign markets and strengthen our presence beyond the Italian borders.

Collaborations and agreements with international prestige partners enable us to offer our country products and solutions that are already appreciated and well established in Europe, and to stimulate our research into improved solutions for the Italian industry.

## ATAG METAL EXPANSION JOINTS

**DESIGNED and MANUFACTURED**  
to guarantee high levels of

- Reliability,
- Durability,
- Quality

Planned plant shutdown?  
Machinery or plant refurbishment or  
upgrading (revamping)?  
Do you need to design and build a new  
production line? Count on ATAG!  
Since 1947, we have been providing  
solutions to your problems.



According to the type of expansion they can absorb, expansion joints are classified as:

- Axial
- Anti-vibration
- Universal
- Angular
- Spherical (or gimbal)
- Lateral
- Spherical lateral
- Axial pressure-balanced
- Universal pressure-balanced

Piping systems are subject to expansions caused by temperature variations, pressure, external movements and the weight of the piping itself. When force and movement exceed acceptable limits, the use of expansion joints becomes necessary in order to **absorb thermal expansions**.

From an engineering standpoint, their application offers numerous advantages and, thanks to the **flexibility** of **metal expansion joints**, ensures a significant reduction in operating costs (labor) during plant construction, as well as a higher system efficiency, considerably extending its service life. **Pressure losses** and **thermal dispersion** are also reduced.

In order to fully perform their function, expansion joints must be correctly selected and designed according to operating conditions. This is why it is essential to rely on a trustworthy partner: **ATAG**.





## COMPONENTS OF AN EXPANSION JOINT

An expansion joint mainly consists of three parts:

- 1) Bellows
- 2) End fittings
- 3) Accessories

### BELLOWS

The bellows is the core component of the expansion joint. Generally made of stainless steel (or alloy steel), it is manufactured from rolled sheet metal with a longitudinal weld. It is then formed using mechanical or hydraulic forming methods, based on specific parameters (number of plies, sheet thickness, convolution height, convolution radius, pitch between convolutions, etc.) to ensure the required movements and, if necessary, other characteristics such as stiffness.

The selection of the base material for bellows forming must meet precise requirements, namely:

- Fatigue resistance
- Corrosion resistance
- Weldability

### END FITTINGS

These are the components that connect the bellows to the piping system (or to the relevant section). They must meet customer requirements (e.g. flanged or weld-end fittings) as well as any applicable certification standards.

### ACCESSORIES

In some cases, it is necessary to equip the expansion joint with additional components designed to perform specific functions. Below is a summary of the most common solutions:

- Tie rods (e.g. movement limiters, installation pre-tensioning, or to withstand thrust caused by internal pressure)
- External protection (to facilitate insulation operations or prevent damage to the bellows caused by foreign objects)



# METAL EXPANSION JOINTS

- **Reinforcing rings**, added to the bellows to allow operation at higher pressures
- **Flow liners (single or double)**, used to reduce pressure losses, localized turbulence, possible erosion and thermal stresses



**Do you have a carbon steel plant? Or a stainless-steel plant? Whatever your requirement, with ATAG metal expansion joints you will find the best solution - because choosing the right product also means selecting the appropriate material.**



Bellows are typically manufactured using **AISI 321** or **AISI 316L stainless steel**. Special materials can also be supplied upon request.

End fittings (weld-end, flanged, threaded or custom-designed) can be supplied in **carbon steel** (depending on the selected fitting, e.g. A105, P245GH, A106 Gr.B), **austenitic stainless steel** (AISI 304/L or AISI 316/L), or other specific materials.

Material selection must meet customer requirements while also taking into account operating and design conditions.

Attention to detail has always been an ATAG hallmark. When customers require documentation certifying product quality and/or design and manufacturing parameters, and when a simple declaration is not sufficient, certified approvals become necessary to validate the work carried out.



Below is a summary of certifications commonly requested by our customers:

- **PED** (Pressure Equipment Directive)
- **ASME** (American Society of Mechanical Engineers)
- **ATEX** (Atmospheres Explosive)
- **MOCA** (Materials and Articles in Contact with Food)
- **Third-party inspection bodies** (Bureau Veritas, Lloyd's Register, RINA, ABS, DNV, TÜV, etc.)



At **ATAG**, we meet the needs of customers who are constantly seeking the best solutions for the challenges of modern industry.

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