

ALVENIUS[®]



**Galvanized
quick connection pipes
- for best overall economy**

A complete system which facilitates planning, procurement and assembly



Economical

Alvenius pipe systems result in lower costs for temporary and permanent installations. These benefits are derived, for the most part, from simple assembly and minimum maintenance requirements.

Easily assembled

The simple and ingenious design means that assembly work can be done in a short time by non-specialist manpower.

Considerable reliability

The design and self-sealing gaskets means that Alvenius pipe systems provide a high level of reliability over a long time and at low and extremely high pressures. A correctly installed pipe can withstand tensile forces and can cope with being out of alignment by 1 - 2.5° depending on the type of coupling. The couplings can also withstand vibra-

tions without a risk of a leakage occurring. Pipe stresses are avoided thanks to the axial play in the joints.

Flexibility and versatility

The Alvenius pipe system has almost unlimited versatility. It can be easily moved between different work sites or can be assembled for permanent operation.

Long life

The spiral-shaped welding seam and the high quality of the steel provide good rigidity and high strength. Together with effective corrosion protection, this guarantees good durability and a minimum need of maintenance.

Complete system

Being able to buy surface-treated pipes, pipe fittings and joints from the same supplier facilitates planning and contributes to overall cost-effectiveness.

Many applications

Compressed air, water, sludge, slurry and waste are examples of products that can be transported using an Alvenius pipe system.

Typical applications include mines, tunnel excavation, and drainage, process water and compressed air lines in industry, as well as temporary or permanent drinking water pipelines.

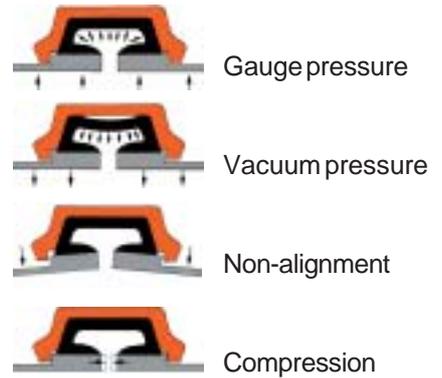


1. Standardised pipe network at the world's largest underground workings for iron ore, LKAB Kiruna in Sweden.
2. Permanent water/drain system installed at SKB's (Svensk Kärnbränslehantering AB) rock storage for final storage of reactor waste at the Forsmark nuclear power station.
3. 65,000 metres of Alvenius piping for compressed air, drilling water and sludge supplied to the TML Consortium (Trans-Manche Link) which built the tunnel under the English Channel between Cheriton in England and Coquelles in France.
4. Temporary drinking water pipeline extending over 11,000 metres at the 5-day orienteering event.
5. Drilling water, fire hydrant water, sludge and compressed air lines for driving a tunnel to the Troll 1 gas field off the coast of Bergen in Norway. The tunnel contractor was A/F Spesialprosjekt working for Norske Shell.

Quick couplings with self-sealing gaskets



Self-sealing gaskets make the Alvenius pipe system suitable for high pressure and low pressure and even for vacuum pressure under certain conditions.



The standard gasket made from EPDM rubber is suitable for all substances including many chemical compounds. Working temperatures range from -35 to +110°C. A nitrile or silicon gasket is recommended if there is long-term contact with petroleum products.

K10 ▲

Alvenius' K10 pipe system is based on the metric standard. The K10 system can be assembled using two different types of couplings. The most tried and tested has the designation K10. The other has the designation K70 and has a swing bolt and a special nut that is best suited for temporary assemblies.

The following maximum working pressures apply to water:

K10	Ø 48 - 152 mm	25 bar
K10	Ø 203 - 406 mm	16 bar
K70	Ø 48 - 152 mm	16 bar

Victaulic ▶

The Victaulic pipe system is based on ISO standards. It uses the same joint principle as the K10 system but can withstand even higher pressures. The following maximum working pressures apply to water:

ST75	Ø 60 - 114 mm	35 bar
ST75	Ø 139 - 219 mm	31 bar
ST77	Ø 60 - 168 mm	69 bar
ST77	Ø 219 - 323 mm	55 bar
ST77	Ø 356 - 508 mm	21 bar
HP70ES		80 bar



This is how quickly you can assemble the Alvenius pipe system

A common characteristic of the different pipe systems, K10 and Victaulic, is that they can be assembled by unskilled manpower. All that is necessary in most cases is to tighten two screw fasteners. The robust pipe can ab-

sorb considerable axial forces. This means that complicated and expensive anchors are not always necessary. The following provides a brief assembly instruction. More detailed instructions are available on request.



1

The gaskets outer mating surface and the lips' inner mating surfaces are lightly greased with a lithium or silicon-based grease. The rubber gasket is slid onto one of the pipe ends.



2

Align the connecting pipe's end with a clearance of 2-3 mm. Slide the rubber gasket over the joint.



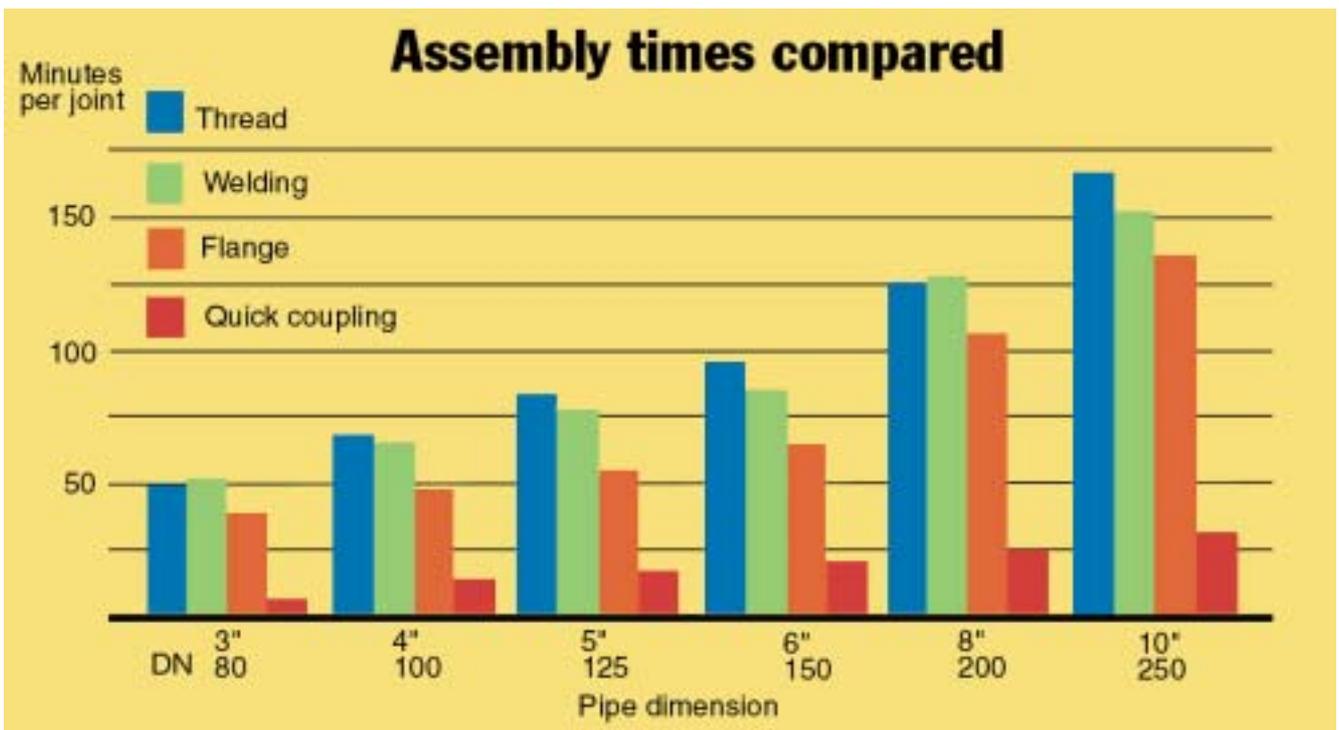
3

Fit the two halves of the coupling so that they enclose the gasket and the pipe ends.



4

Tighten the screws evenly and alternately.



Source: Victaulic Cost Comparison Workbook

Certified quality and technical benefits

Quality certified pressure vessel steel

Alvenius spiral-welded steel pipe system is manufactured and certified in accordance with the Pressure Equipment Directive, PED 97/23/EC.

The pressure vessel steel is EN 10028-2, P235 GH.

All pipes are spiral-welded with the exception of 48 and 60 mm pipes which are longitudinally-welded.



X-ray inspection of a weld joint

Quality Management System

Our Quality Management System is ISO9001 certified. Regular X-ray control takes place and all pipes undergo visual inspection as well as hydrostatic test at 1.5 times their working pressure. The Quality Management System is subject to an external audit twice a year.

Environmental Management System

Alvenius has an Environmental Management System according to EN-ISO 14001 certified by Lloyds Register. The Environment Management System undergoes an external audit twice a year.

Tight tolerances

Tight tolerances and good surface finish can be maintained since high quality steel coils are used as a raw material. The manufacturing method also produces accurate roundness and straightness - this facilitates assembly. The weld seam is smooth and flat and does not exceed 2.5 mm in height.

Warranty

A warranty is provided in accordance with Orgalime S2000 General Conditions for the Supply of Mechanical, Electrical and Associated Electronic Products.



Alvenius PED approved

The Alvenius standard product range is approved according to PED 97/23/EC, the Pressure Equipment Directive. This means that Lloyds Register has examined and scrutinized our design, drawings, choice of material and calculations. The manufacturing process has been studied and examined in terms of methods as well as staff competence.

The PED approval has been integrated with the certified Quality Management System.

Surface treatment

Pipes and pipe fittings are stocked in a galvanized condition. This surface treatment method combines good mechanical strength with chemical resistance against corrosion. The pipes can also be supplied with an external protective coating of fibre-glass reinforced bitumen or external and/or internal thermoplastic coating. Couplings are manufactured from cast blanks (malleable cast iron/nodular iron) and are coated with an anti-corrosive paint.

Alvenius pipe systems are used world-wide

Troll 1, Norway

Kollsnes outside Bergen is a land-based gas processing plant. The project costs were in the region of 26 billion Norwegian kroner. Three tunnels, each extending 3-4 km, lie 250 m below the sea bed and will serve as culverts for the pipeline network from the offshore drilling rigs at the Troll field. ▶

The Channel Tunnel between England and France

Against hard competition from the world's leading pipe manufacturers, Alvenius Industrier was awarded a contract by the TML Consortium (Trans Manche Link) to supply pipes for compressed air, drilling water and pump water. An attractive price in combination with low weight, a broad product range and good availability was decisive in the choice of AB Alvenius Industrier. ▼

Koumicho -Re-Ex, Japan

One of Japan's leading artificial snow plants. The first project of many where Alvenius Industrier has supplied the complete pipeline network against competition from domestic manufacturers of pipes.



▲ Mrica, Indonesia

Indonesia's prestigious hydroelectric power project at Mrica was built by a Swedish/British consortium together with local interests. Mrica is a concrete example of the Indonesian government's endeavour to reduce dependence on oil as a source of energy. It is also an opportunity for Swedish companies such as Alvenius Industrier to demonstrate their expertise in a project of this size.

◀ LKAB, Kiruna, Sweden

Alvenius Industrier is one of LKAB's major pipe suppliers and has supplied more than 500,000 metres of pipe and fittings to the Kiruna mine. The pipes are used primarily for the distribution of water and compressed air.



AB Alvenius Industrier, supplier to leading mining- and construction companies all over the world since the establishment in 1951.



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