

COMMERCIAL BUILDING Grooved Piping System

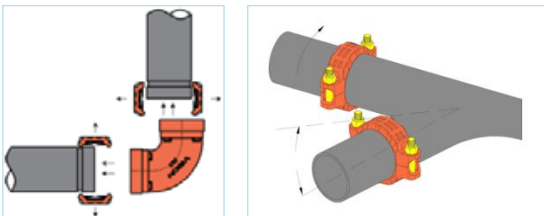
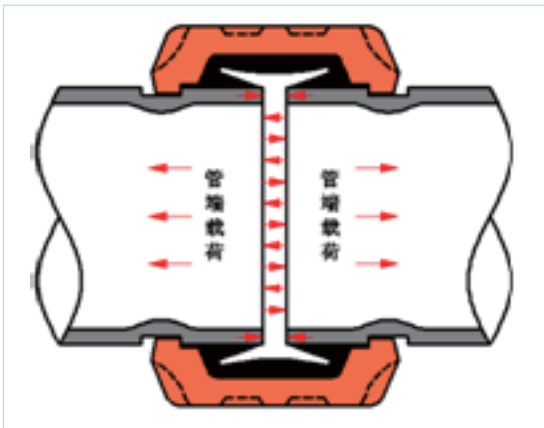
HVAC | Plumbing | Fire Protection



Grooved Piping System

Grooved piping system has incomparable advantages over traditional flange connection, welding and threaded connection .

1. Different with welding and flange connection that need professional technicians and inspectors, but for grooved connection, it's fast and convenient to install without any special technicians.no matter to do the groove on the end of pipe or to install the grooved products, that can save lots of work.
2. There is no fire and harmful gas in the whole construction process, which completely eliminates the potential risk of fire and improves the safety environment on site.
3. Grooved connection and unique leak-tight triple seal design guarantee reliable and permanent sealing ,and ensure construction quality.
4. Cold-forming or machining process doesn't damage the pipeline and destroy the galvanized coating to avoid secondary installation, and reduce the cost of construction significantly
5. Due to the characteristics of grooved connection, the construction efficiency has been greatly improved, which is 3-5 times higher than flange and welding connection, ensuring the period of construction.
6. The flexible coupling can accommodate expansion/contraction, provide superior vibration attenuation, as well as minimize noise, the Rubber joint , flexible hose or other flexible piping elements can be replaced by flexible coupling. If grooved connection be used for Pump station, it can minimize the noise and vibration efficiently.
7. It's easy to do the maintenance and convenient to change and expand the piping system.
8. Unique grooved assembly design can isolate the vibration of earthquake.
9. No any direction requirement for installation is especially suitable for factory fabrication, such as pump station, chilled room and energy station.
10. The comprehensive cost of materials and manpower is reduced obviously and efficiently.





Applications

The grooved connection is widely used for various of piping systems in commercial building, including HVAC, Plumbing and Fire Protection, to make the piping system more convenient, economical and efficient.

□ HVAC

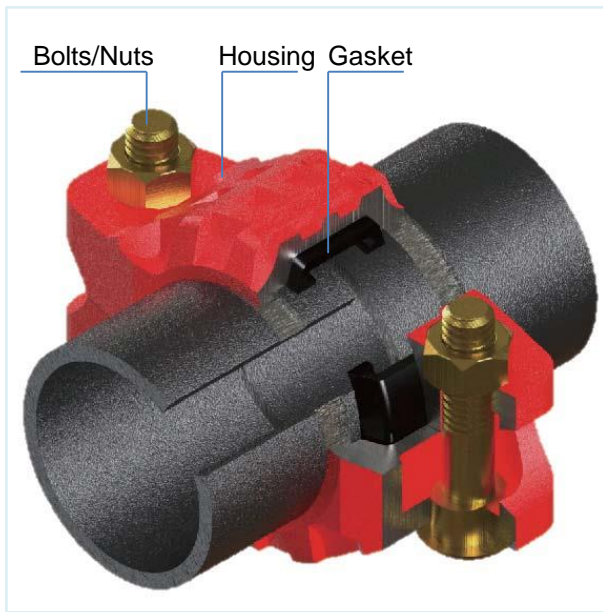
- Cooling Water System
- Cooling Tower
- Chilled Water System
- Hot Water System
- Chilled Room
- Heat Exchange Unit
- Condensate Water System
- Fan-Coil Unit
- Air-Conditioning Unit

□ Plumbing

- Water Supply System
- Constant Pressure Water Supply Unit
- Rainwater System
- Water Reuse System

□ Fire Protection

- Automatic Sprinkler System
- Fire Hydrant System
- Fire Water Supply System
- Foam Extinguishing System
- Gas Extinguishing System



Grooved End Technology

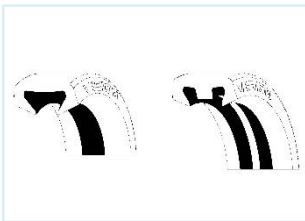
The Groove is the core of Grooved End Technology. The grooved coupling, which consists of 4 basic elements named groove, housing, gasket and bolts/nuts, is the key element of grooved piping system. The grooved piping system is a simple, fast, safe and reliable piping system with high efficiency, it can connect with pipes, fittings and valves.

Housing: Ductile Iron comply with QT450-12 (ASTM A536 65-45-12)

Coating: Epoxy or Galvanized

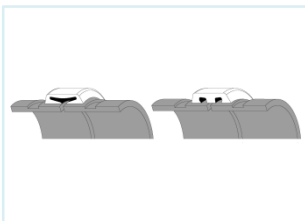
Gasket: EPDM, more gasket materials are available

Bolts/Nuts: Class 9.8/8.8, Zinc coating



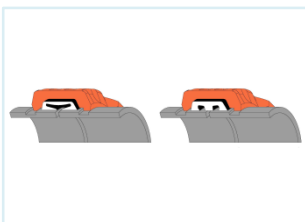
The Initial Seal

Due to the internal diameter of gasket is slight smaller than outside diameter of the pipe, when the C-type gasket is stretched over the pipe ends, the internal diameter is expanded and the lips provide a pressure on the pipe to form an initial seal, similar as O-ring sealing principle.



The Secondary Seal

Upon placement of the housing around the gasket and into the grooves, the gasket is positioned as the housing segments are tightened. due to the gasket is pressure response, the resilient gasket is further compressed by tightening the housing to enhance the gasket seal against the pipe, that's the secondary seal similar with washer seal.



The Final Seal

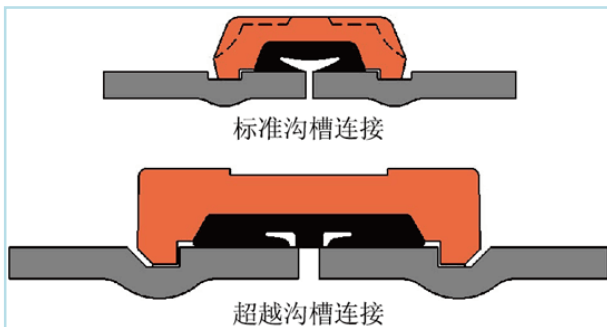
When the line pressure was served, and vertically apply to the internal surface of gasket, to strengthen the seal through the cation of pressure downward on the lips, that's the final seal similar with reactive seal.



Ultra Grooved Piping System

Ultra Grooved Piping System is specially designed for large size pipe, especially for large cooling water or Chilled water pipe connection, the max. size is up to 1800mm.

1. Two-Pieces Structure design, Easy to install.
2. Groove is uniformed in size 350-600mm, easier to make the groove, no need to change the roller on groove machine frequently.
3. E-type gasket design with wider gasket seat provide safer sealing even there are some defects on the surface of the pipe, to avoid the risk of flare at the pipe ends.
4. The deeper groove ensure safer connection, the working pressure is up to 25bar.
5. The back-edge key structure design can resist stronger axial stress.
6. The wider groove is able to be borne greater bending movement.



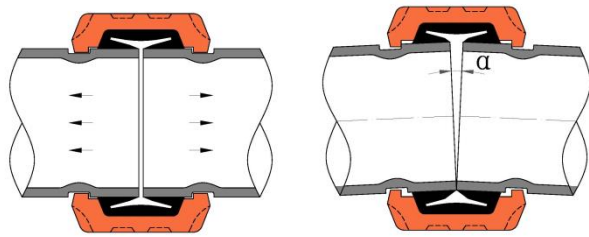
THE GASKETS



The C-type gasket which has better seal is designed by finite element method. the deformation under various circumstances is fully considered so that the C-type gasket is suitable for temperature change, expansion/contraction and flare application within its service life, to create a permanent leak-tight triple seal.

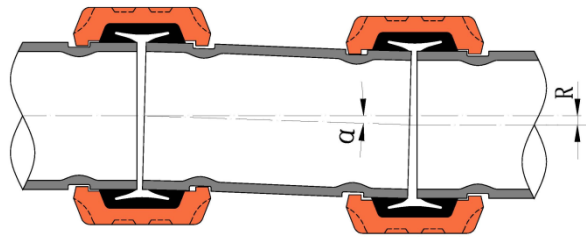
The special material formula maintain and ensure the performance of gasket in the permissible range under various working conditions and in the long-term use process, because the permanent compression deformation, temperature resistance and aging properties of the sealing material are effectively controlled, the gasket can have long-term service life as long as the sealing material is within the applicable temperature range,

| Material | Temperature | General Service Recommendation |
|----------|-------------|--------------------------------|
| EPDM | -40°C-125°C | water, oil-free air |
| Nitrile | -30°C-85°C | oil, air with oil |
| Silicon | -70°C-150°C | fresh water, sea water |
| CR | -25°C-125°C | sea water, waster water |



LINEAR
MOVEMENT

ANGULAR
MOVEMENT



MISALIGNMENT

VISION grooved system provide both rigid system and flexible system, the correct selection shall be under the feature of different piping system. The combination of rigid and flexible system can used for some application.

Rigid coupling is not able to accommodate expansion/contraction but flexible coupling can accommodate expansion/contraction and allow angular movement. The lateral misalignment can be achieved by an assembly of two flexible couplings.

RIGID COUPLING

Rigid coupling creates a rigid connection by constricting the housing keys into the groove around the full circumference. Rigid coupling for commercial building includes LIGID,001 and UG28R etc.

001 rigid coupling has a 60° angle pad design which constricts the housing key into the groove around circumference to create a rigid connection by permitting the housing to slide on the opposed angle pad.

Size: 25-300mm (1-12")

Max. working pressure: 52bar (750psi)

UG28R is ultra grooved system with back-edge key structure design which creates a rigid connection not allowing linear movement and angular movement. It has stronger structure and is suitable for large size pipeline.

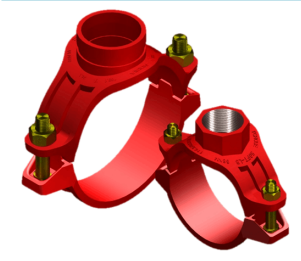
Size:350-1800mm

Max. working pressure: 25bar

FLEXIBLE COUPLING

Flexible coupling for commercial building including 101, 101H, 101CL, UG28 etc., allow axial, angular, lateral movement to accommodate expansion/contraction, settling,vibration and noise,these features provides advantages in designing piping system.

All flexible couplings have same feature which is the key width is larger than groove width, a certain gap exist between the housing key and the bottom of groove, as well as a flat-pad bolt seat used.



GROOVED COUPLINGS:

Grooved couplings are divided into rigid coupling and flexible coupling which are selected according to different systems, working condition and location. The size of standard coupling is up to 300mm(12") and working pressure up to 52bar(750psi), the size of heavy duty coupling is up to 900mm(36") and working pressure up to 69bar(1000psi), the size of USG coupling up to 1800mm(72") and working pressure up to 25bar(362psi).

- 001 Standard Rigid Coupling
- UG28R Ultra Groove Rigid Coupling
- 101 Standard Flexible Coupling
- 101H Heavy Duty Flexible Coupling
- UG28 Ultra Groove Flexible Coupling

Grooved Fittings

Grooved fittings include short, standard and long pattern series, radius of short pattern is around 0.75D and used for fire protection only, standard pattern fittings are used for chilled water/hot water and cooling water, if require less resistance, the long pattern fitting with 1.5D shall be used. like other pipe connections, the grooved fittings are consist of elbows, tees, reducers, flange adapters and end cap etc. ,which can match the size and pressure of grooved couplings.

Mechanical Tees

When chilled water/hot water system needs to connect branch pipe to fan coil unit, heater and air conditioning unit, or riser pipe to connect fire hydrant, or sprinkler system to connect water distribution branch pipe or nipple, mechanical tees can be used. This hole-cut piping system makes branch pipe connection more convenient and faster, the max. size is up to 250 mm.

Grooved Assemblies

When more axial, angular or lateral movements are needed, the pre-fabricated groove assemblies can be used.

- 220 Expansion Joint
- 221 Expansion Joint
- 224 Seismic Protection Grooved Assembly

Pre-Fabrication

With more than 10 years experience of fabrication, we are competent enough to do the fabrication for HVAC system, chilled room, energy station, plumbing and fire protection.



About VISION

Since 1999, VISION has been developing and manufacturing grooved piping system for more than 20 years, and exports grooved products to more than 60 countries in the world, the grooved products are widely used for commercial buildings, general Industries, power plant, petrochemical, steel plant, mining, municiple etc., with thousands of job references.

VISION quality was approved and accepted by clients as time goes on. Since 2003, fire protection grooved products were approved by UL/FM.

Besides grooved piping system, more piping systems are developed by VISION. for details visit our website.



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