



 **CONNECTIONS**

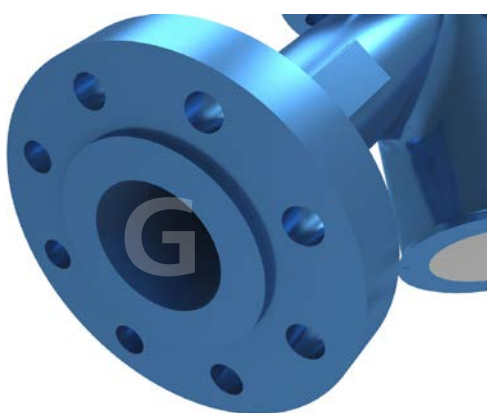

www.guichon.com

BASICS OF INDUSTRIAL VALVES

CONNECTIONS

The connection is the part which allows for a sealed pressure link between the valve body or heating/cooling jacket and the adjoining piping.

FLANGE CONNECTIONS



■ Flanged End Connection

Flange connections are the most frequently used connections for process valves. Their dimensions are normalized by construction standards such as NF EN 1092, EN1759, ASME B16.5 or DIN 2501. The dimensioning of a flange depends on the nominal diameter and the pressure class (PN2.5 to PN400 or Class 150 to Class 2500).

Distinctive Features

- Requires the use of bolting for mounting
- Requires the use of connection seals adapted to the type of flange and operating conditions
- Possible leakage (wearing of seals...)
- Does not require special qualified personnel for installation
- Easy to dismount
- Flange facing to define according to the type of gasket used: roughness, spiral/concentric serrated

Several types of standard flanges exist. The following table summarizes them:

Definition of flange types according to standard EN 1759-1		Definition of flange facing types according to standard EN1759-1	
Type 01. Plate welding flange	Type 05. Blind flange	Type A. Flat face (ASME B16.5)	Type E. Simple male Spigot (Large or small male face)
Type 11. Welding neck flange	Type 12. Slip-on (hubbed) welding flange	Type B. Raised face (ASME B16.5)	Type F. Simple female Spigot (Large or small female face)
Type 13. Threaded neck flange	Type 14. Socket weld flange	Type CL (Large Tongue face) And Type CS (Straight Tongue face)	Type J. Face for o-ring joint
Type 15. Loose plate flange with lapped pipe end (Lapped joint flange)	Type 21. Integral flange	Type DL (Large groove face) Type DS (small groove face)	

WELDED CONNECTIONS

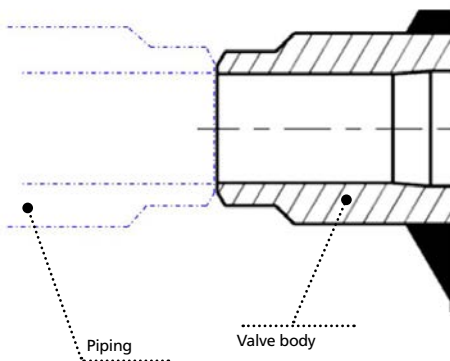
To install a valve equipped with welded connections, the valve body must be machined prior to welding it to the piping or other connections.

There are two types of weld connections : **Butt weld (BW)** and **Socket weld (SW)**

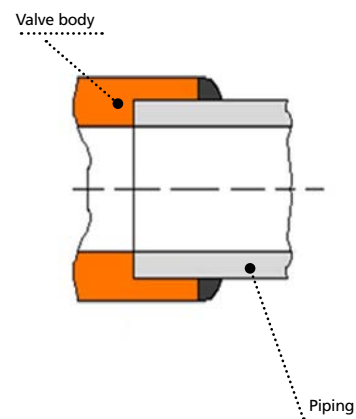
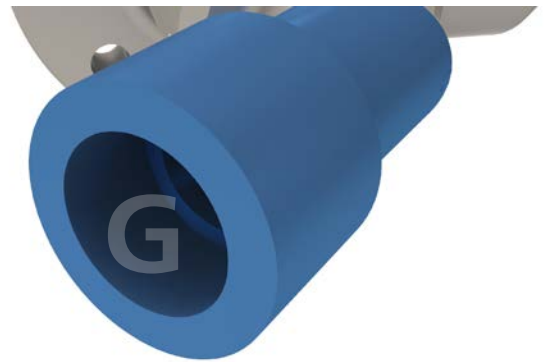
Distinctive Features

- Requires qualified welders for installation
- Does not require bolting or seals : no risk of leakage
- Difficult to dismount (requires cutting of piping and re-machining of ends before re-installation)

■ Butt weld end Connection



■ Socket weld end Connection



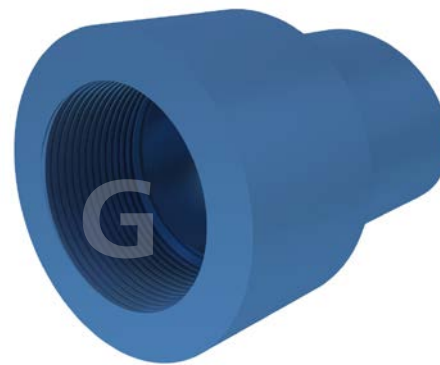
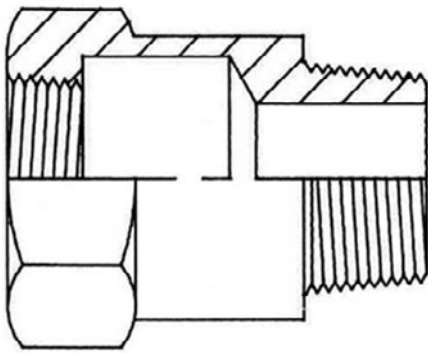
CONNECTIONS

THREADED CONNECTIONS

Threaded connections are adapted to small diameters. For male or female NPT (National Pipe Thread) or gas type threads, the maximum diameter is 4" (DN100), however they are generally used for sizes up to 2" (DN50).

Distinctive Features

- Quick to connect/disconnect
- Possible galling during installation
- Requires the use of a sealing product such as PTFE tape, sealing paste, etc.
- No control over the valve orientation

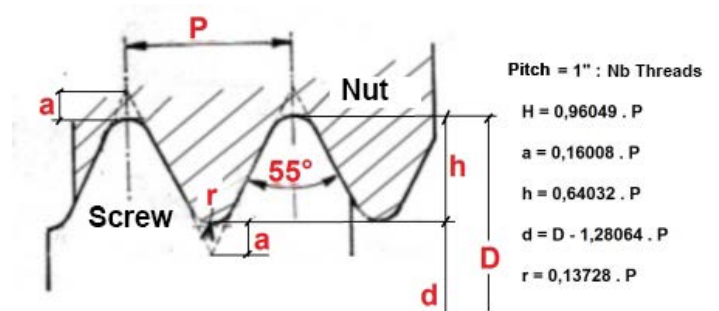


■ Tapped/threaded NPT/Gas (Male or Female) Connector

Two conditions of use:

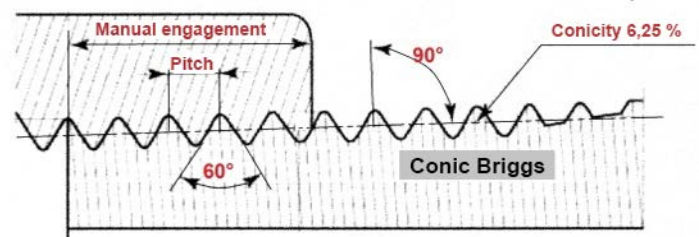
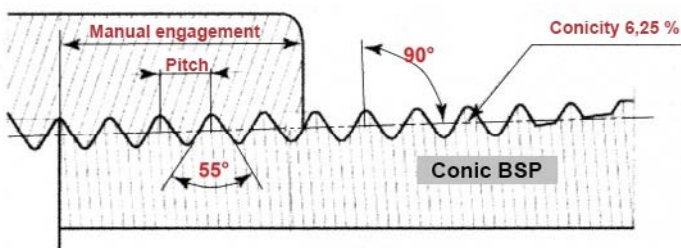
WITHOUT LEAK-PROOF THREADS

The external threads and tapping are cylindrical



WITH LEAK-PROOF THREADS

The external threading is conical. The tapping is generally cylindrical. Tightness is achieved through squeezing the male threads against the female threads. There are two types of profiles: BSP (British Standard Pipe) and Briggs (American Standard).

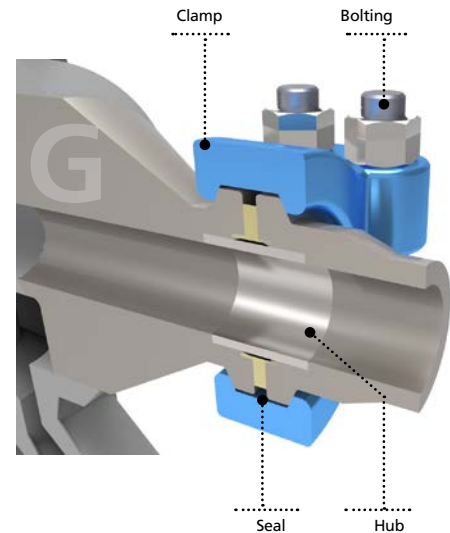


CLAMP CONNECTIONS

Clamp connections are made up of 2 hubs, a seal and a binding system called clamps. The hubs can be welded to the ends to be connected or directly machined in.

Distinctive Features

- Tightening stress lower than that of flanged connections (stress perpendicular to the piping axis)
- Less bolting required
- Generally used in high pressure applications
- Quick and easy to dismount
- Easy to adjust the valve orientation
- Requires a seal for tightness
- Better resistance to piping constraints



■ Clamp connection

3-PIECE CONNECTIONS

Three-piece connections are generally used for small diameters (< 2") and in particular for jacket nozzle connections. They can quickly be adapted on site by adding an adaptor with the desired format (male, female, cylindrical or conical gas).

Distinctive Features

- Allow to compensate the absence of a turning nut on one of the connecting ends
- Numerous possible standard configurations (available in any material)

