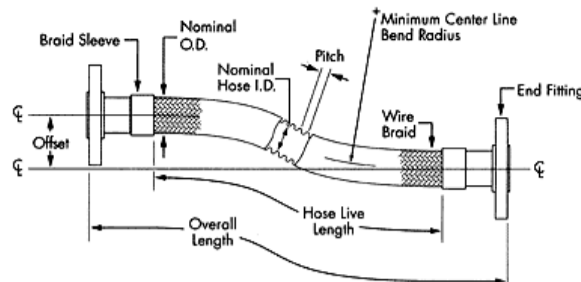




Terminology

- Metal Hose
- Braid
- Hose assembly
- Specification Chart Headings



Metal Hose

Corrugated metal hose allows for the transfer of liquids or gases, usually at high pressure and high or cryogenic temperature while remaining flexible.

Corrugation Design

Annular hose is formed from tubing into individual parallel corrugations. **Helical** hose is also formed from tubing but into a continuous spiral corrugation. Both designs allow for flexibility of the hose assembly under pressure. In addition, helical hose has unique self-draining properties.

Pitch

Corrugated metal hose is normally manufactured in **Standard Pitch** (Close Pitch). Each manufacturer specifies a standard number of corrugations per foot based on their desire to provide for acceptable flexibility while considering economic requirements.

Open Pitch hose is also available and has fewer corrugations per foot. This hose will not be as flexible as a Standard Pitch hose and will have a much lower flexing cycle life. Open Pitch hose is intended to be used in less severe applications where flexibility and cycle life are not an important requirement or as an effective method for dampening vibration.

Superflex allows SSB Hose to achieve greater flexibility without thinning the wall of the hose by increasing the number of corrugations per foot. Superflex will normally have a higher flexing cycle life and can be used in more severe applications where ease of flexibility is important.

Wall Thickness

Each manufacturer designs a hose with criteria for the wall thickness that considers flexibility, cycle life and corrosion resistance. Increasing or decreasing the wall thickness has both advantages and disadvantages to the user.

Braid

Metal wire braid on a hose assembly provides the hose assembly a higher pressure capability by acting as a restraint against hose elongation and acts to dampen vibration. A second layer of braid may be used to increase pressure ratings provided the test pressure is not exceeded which can result in permanent corrugation deformation.

Other design considerations may result in the use of a heavy braid to increase abrasion resistance characteristics.

Braid Coverage

Optimal braid coverage is engineered to contain the core under pressure and reduce the possibility of squirm. Properly designed braid coverage will balance pressure capability with flexing requirements. Minimization of braid wear on the crown of the corrugation is also provided by optimal braid coverage.

Tubular Braid

Tubular Braid is manufactured by grouping single wires and then braiding them into an intricate pattern that tightens when the braid is stretched. The group of wires is also known as a strand.

Construction of the braid is expressed as (number of carriers) x (number of wires in each group) x (wire diameter). An example would be 24 x 8 x .012 where 24 is the number of carriers on the braiding equipment, there are 8 wires in each strand of wires and the diameter of each wire is .012".

Braided Braid

Larger diameter hose assemblies require the strength of Braided Braid. Braided braid is manufactured the same as tubular braid except that wires in the strand are braided together prior to the manufacture of the braid.

Construction is expressed the same as tubular braid except the use of parentheses around the groups of wire and the wire diameter. An example would be 128 x (21 x .016) where 128 is the number of carriers, 21 is the number of wires in each group and .016" is the diameter of each wire in the braid.

Hose Assembly

Braid Sleeve/Ferrule

The braid sleeve or ferrule is used to isolate the end of the corrugated hose and braid from flexure. The core and braid are welded to the braid sleeve or ferrule during fabrication of the hose assembly.

Properties of the hose and braid material are changed during welding. This area where the properties are changed is known as the "heat-affected zone". The heat-affected zone must be isolated or premature failure of the hose assembly can occur. Care should be taken to insure the braid sleeve or ferrule has a proper fit.

Cover/Armor

The cover or armor on a metal hose assembly is used to protect the braid from external abrasion or to diffuse the media inside the hose in case of rupture. Many different materials can be used including interlock casing, heat shrink covers, lay-flat or many types of heavy-duty elastomers. The use of covers that contain chlorides (such as PVC) should be avoided.

Reinforced Ends

Reinforced ends or re-ends are recommended on applications where sharp bends or extreme flexure occurs near the end of the hose. A short interlock casing or spring guard is generally used to restrict bending.

Liner

Applications where the media being transferred is abrasive or the velocity of the media is above recommended levels require the use of a Liner.

Material for the liner is usually an interlock hose and it is welded to each end of the hose. The liner will allow for a smooth flow while maintaining hose flexibility and will reduce the inside diameter. The bend radius of the interlock hose may limit the bend radius of the corrugated hose. A directional flow arrow is normally provided on the outside of the hose assembly.

Specification Chart Headings

Hose Nominal Size

The nominal inside diameter of the hose.

Number of Braid Layers

Indicated the number of braid layers required to achieve the pressure ratings listed.

Nominal Outside Diameter

Nominal outside diameter of the hose or the hose and indicated number of braid layers. This column is usually used to determine the proper braid sleeve/ferrule or the cover dimensions.

Minimum Centerline Bend Radius

The hose may be bent to a radius not less than the indicated amount without permanent deformation. The type of flexing can be static or dynamic. Hose in a static bend is in a non-moving application. The dynamic application allows for random or intermittent flexing.

Pressure Ratings

Pressure ratings are shown in three categories:

Maximum Rated Working pressure is the maximum pressure the hose should be subjected to on a continuous basis.

Maximum Rated Test pressure is the maximum amount of pressure the hose can be subjected to during testing without possible deformation of the hose corrugations.

Nominal Rated Burst pressure is the pressure at which the hose assembly can be expected to fail.

Safety Factor of 4:1 is maintained by SSB Hose on all published pressures.

Published pressures are shown in psig at 70°F. Reduction of pressure ratings should be used by the proper application of temperature correction factors. See Temperature Correction Factors for more information.