

## Basic Parker Hose Constructions



### Construction Elements

A hose is generally composed of three elements, each with an important role in the overall performance of that hose. The three elements are:

**The Tube** (usually rubber) must be compatible with and able to contain the material being conveyed. As shown on page 212, many rubber compounds are used for tube construction, depending upon the material the hose is designed to transmit.

**The Reinforcement** is the strength member of the hose. It enables the hose to withstand internal and external pressure and abuse. The reinforcement may be applied by several methods, and consists of cotton yarns, synthetic yarns, wire or a combination of these. If a suction or vacuum capability is a requirement, a helix wire may be part of the reinforcement.

**The Hose Cover** protects the reinforcement from abuse or damage. The cover is usually a rubber compound selected for its resistance to the environment, although, in some cases (fire hose) the reinforcement will also act as the cover. Typical considerations in selecting a cover stock are the need to resist abrasion, ozone, weather and sunlight, chemical or oil spillage, etc.

### Construction Methods

Several methods are used to manufacture Parker hose. Factors such as size, pressure requirements, cost range required and the application determine the selection of any particular hose style. Following is a description of the various construction methods employed by Parker.



### Non-Mandrel

Non-mandrel hose is constructed by passing long lengths of extruded tube material through a machine which adds the reinforcement in braided, spiraled or knitted layers. In this method, the hose is not built on a mandrel, therefore lengths are not restricted to the length of the mandrels.

**Size Range:** 3/16 in. through 1-1/2 in. ID

**Typical Uses:** Air, Water or general purpose service where operating conditions are not severe.

**Advantages:** Economy and long lengths.

**Disadvantages:** Requires wider ID and OD tolerance range than mandrel made hose, limited pressure capabilities.



### Rigid Mandrel – Braided

Hose produced by this method is supported on a rigid metal mandrel and is handled horizontally during production. While a rigid mandrel limits the hose length, it ensures good control of the inside diameter. It also offers sufficient support to the tube that either wire or textile reinforcement may be applied at high tensions, which is necessary in high pressure constructions. After the cover is applied, the hose may be wrapped tightly with nylon tape for curing, giving the familiar "wrapped" appearance to the cover.

**Size Range:** 1/2 in. through 4 in. ID

**Typical Uses:** Heavy Duty air, steam, and petroleum transfer.

**Advantages:** Close tolerances on inside diameter, high pressure ratings, good length stability.

**Disadvantages:** Higher cost than non-mandrel. Lengths restricted to length of mandrels.



### Flexible Mandrel

The flexible mandrel method combines the long length advantage of non-mandrel hose with the close inside diameter tolerances and high pressure ratings of rigid mandrel hose. This is achieved by building the hose on a long length mandrel made of flexible plastic or rubber.

**Size Range:** 1/4 in. through 1 in. ID

**Typical Uses:** High pressure, air, water, LPG and steam hoses.

**Advantages:** Long lengths, close tolerances on I.D., higher pressure ratings than non-mandrel produced hose.

**Disadvantages:** Higher cost than non-mandrel hose, not available in ID sizes as large as rigid mandrel hose.