TECH TALK:
HOSE BASICS

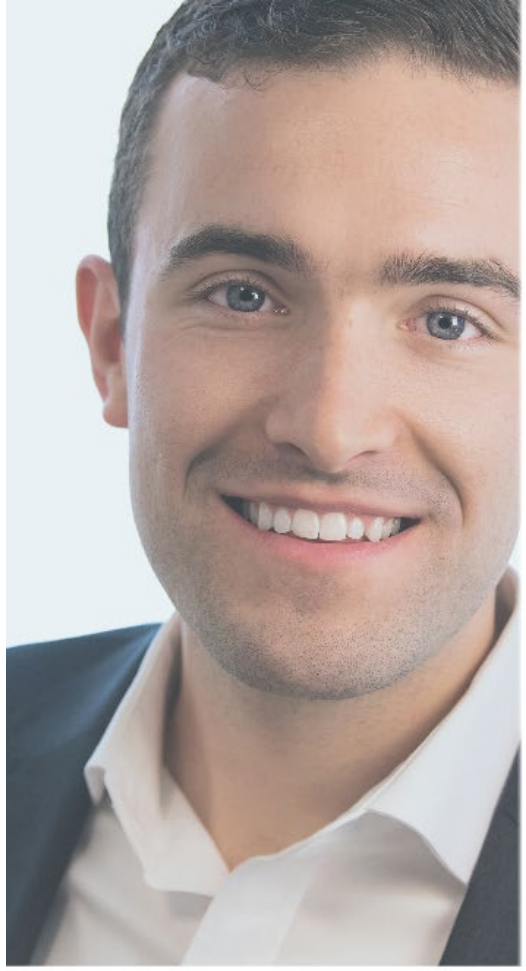
11/19/2020

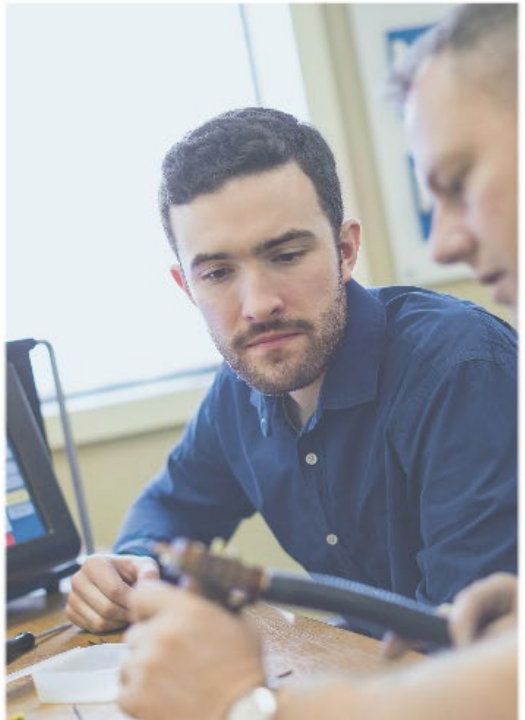
Swagelok

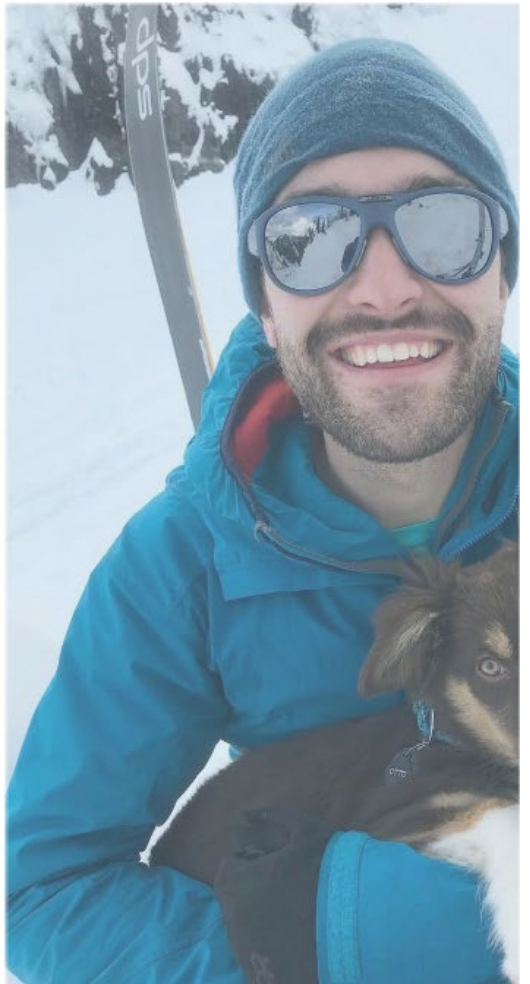
Swagelok Northwest (US)

Meet Your Field Engineers

Matt Hasenohr
Field Engineer

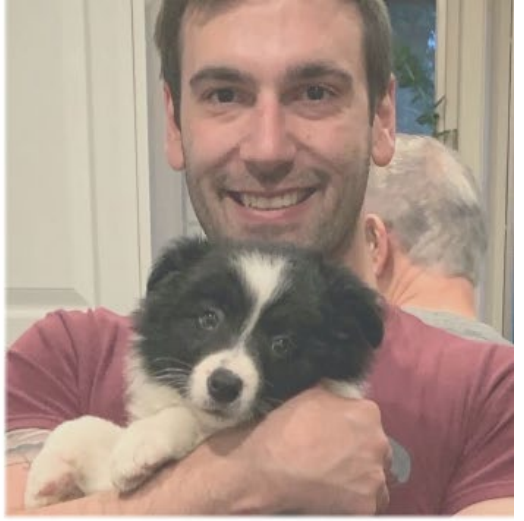


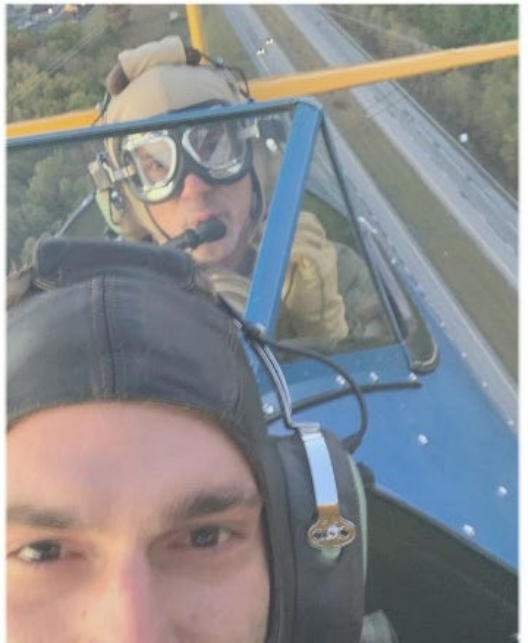


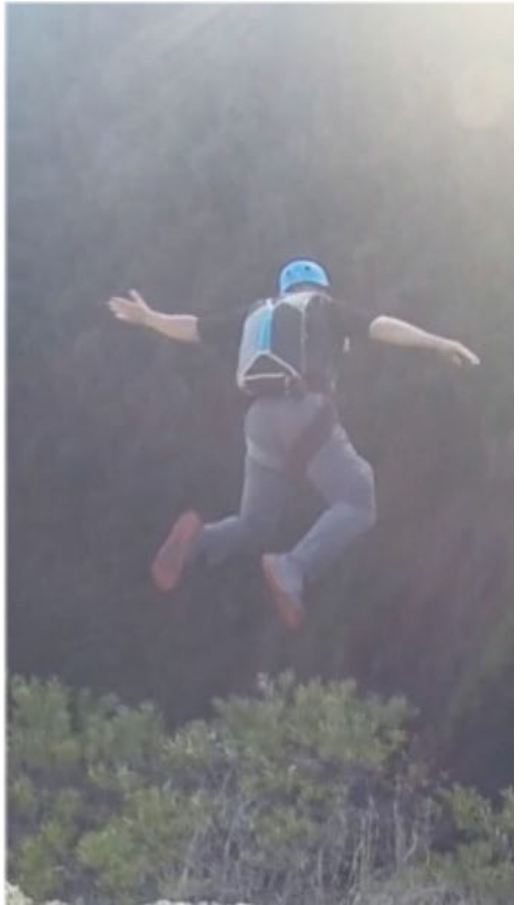


Meet Your Field Engineers

Adam Ghannoum
Field Engineer







Agenda

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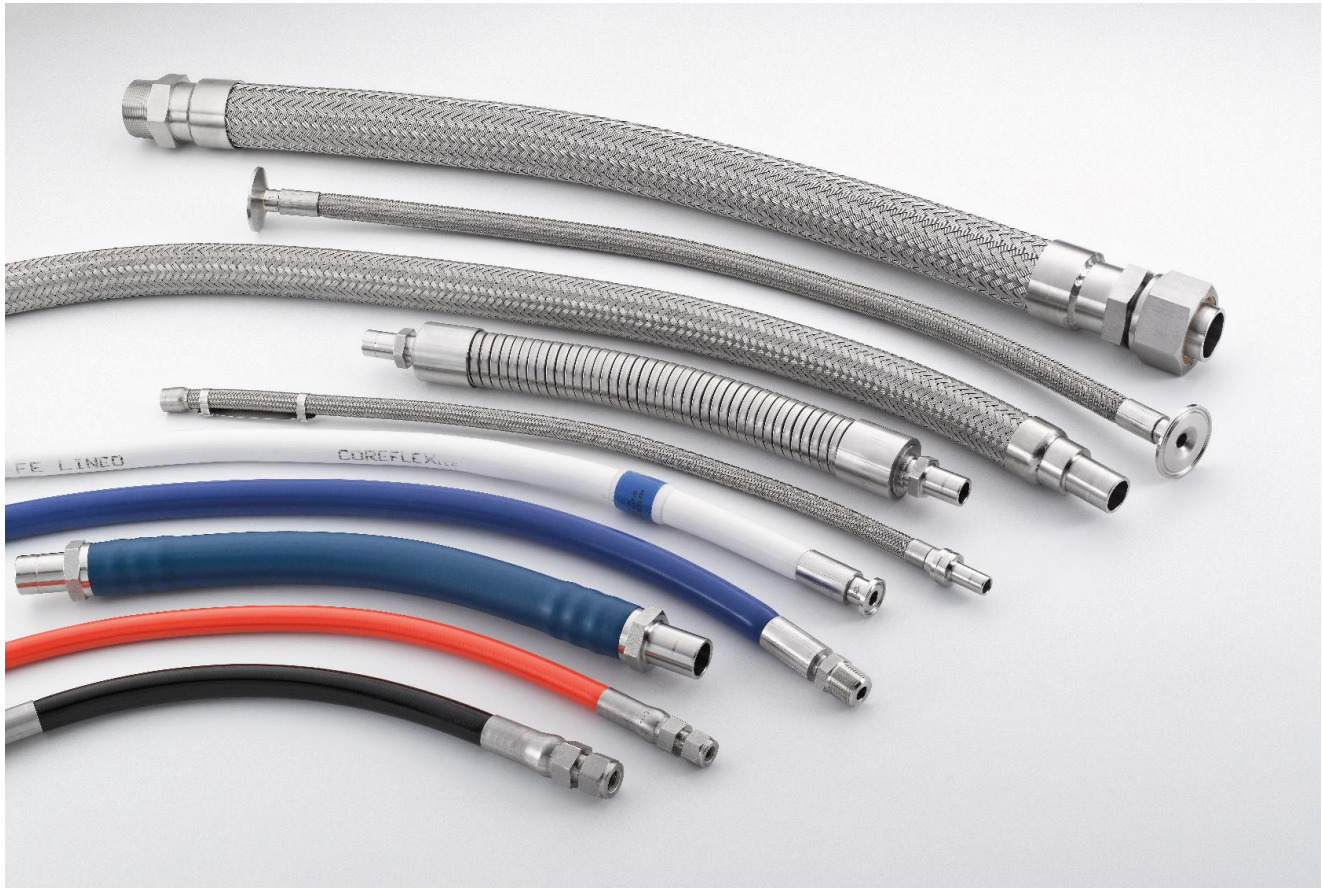
- What Is a Hose?
- Why Should We Use a Hose?
- Construction
  - Core
  - Reinforcement
  - Cover
  - End Connections
- Product Selection
  - Method
- Questions



What Is a Hose?

An industrial hose is a reinforced tube for conveying liquids, solids, and gases.

Why Should We Use a Hose?

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- Flexibility
- Routing
- Portable equipment
- Vibration
- Ability to fabricate
- Storage capabilities

Construction

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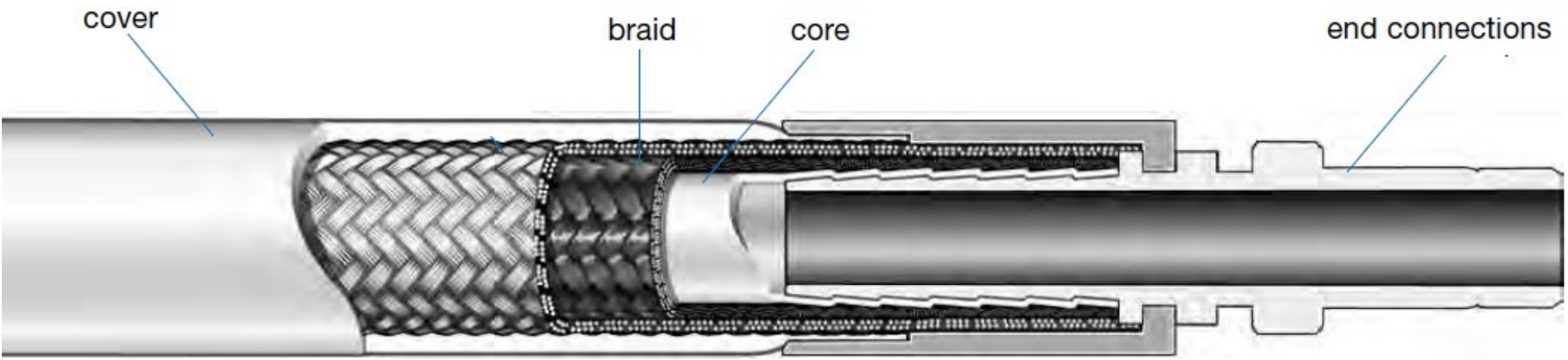
Typically a hose assembly will consist of four components:

1. Core tube
2. Reinforcement (braid)
3. Cover
4. End connections



Core Tube

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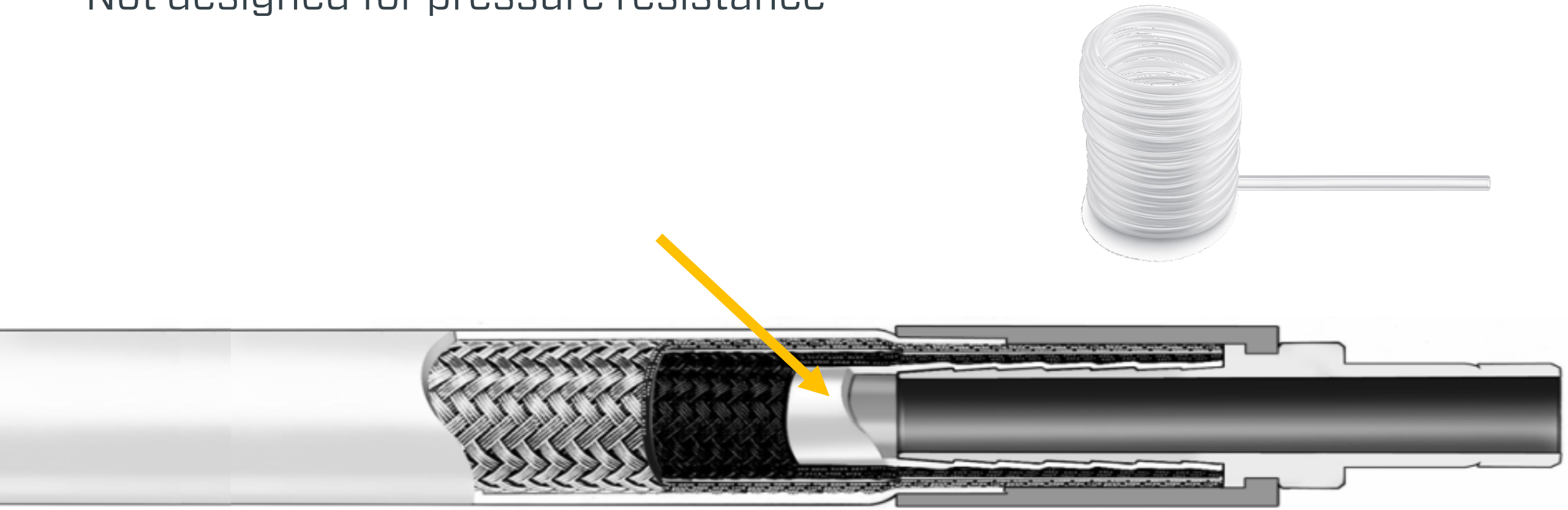
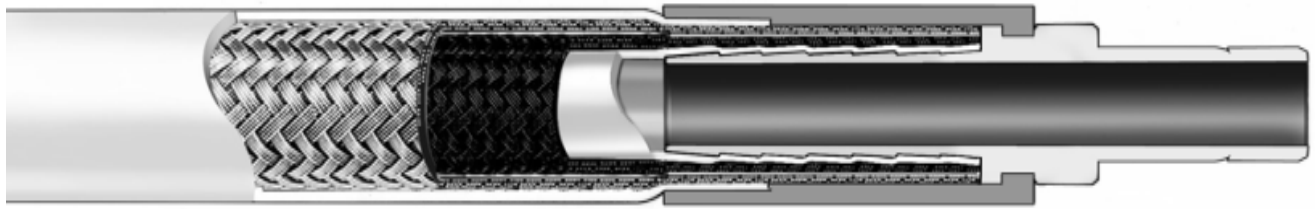
- Wetted surface
- Media contact
- Not designed for pressure resistance



Core Tube - Types

- Metal
- Fluoropolymer
- Thermoplastic
- Rubber



Core Tube - Metal

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- Most commonly stainless steel
- Temperatures up to 1000º F / 537º C
- Low permeation levels
- Large range of sizes
- Convoluted construction

Core Tube - Fluoropolymer

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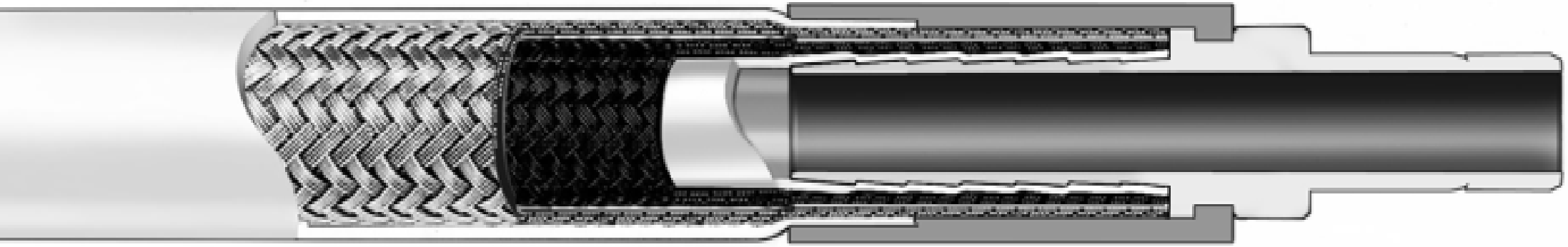
- Chemically inert
- Typically PFA or PTFE
- Temperatures -65º F / 450º F (-53º C / 230º C)
- Permeable
- Optional carbon black – static dissipative applications
- Cleanable



Core Tube - Thermoplastic

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- Nylon, polyurethane, etc.
- Allow for higher pressures
- Common in hydraulic applications
- Temperatures - 40º F / 200º F (- 40º C / 93º C)
- Well suited for general industrial applications

Core Tube - Rubber

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- Economical and general purpose
- Lower pressure applications
- Temperatures -40º F / 200º F (-40º C / 93º C)
- Large size range
- More resistance to damage from crushing and kinking
- Can be crushed without major damage
- Reinforced with wire or fibers

Core Tube - Permeation

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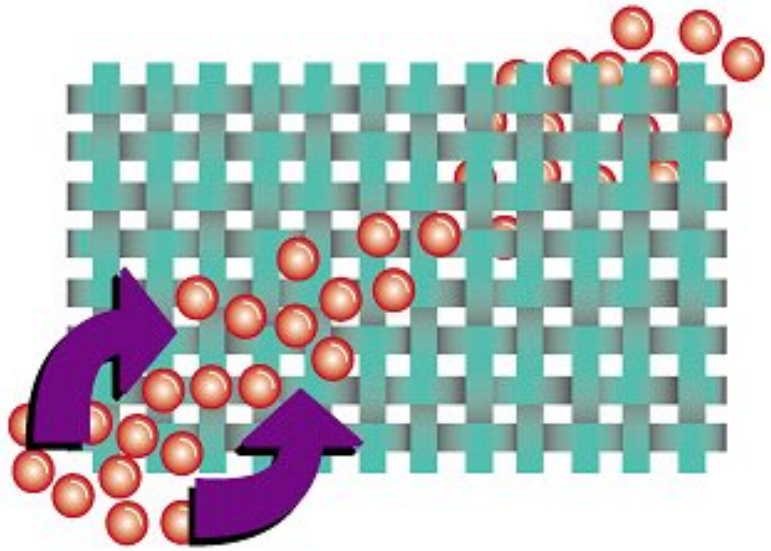
- Permeation should be considered for:
  - Applications with small molecules such as
    - Helium
    - Hydrogen

- Some gases are more permeable than others
- Understand and accept permeability rates



Core Tube - Design

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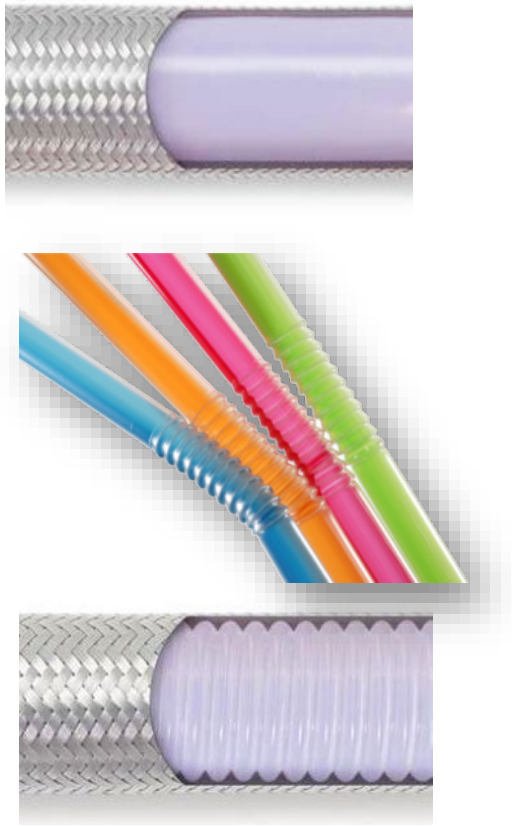
- Smooth bore
  - Precise flow control
  - Easier to clean; better drainability
  - Less flexible in large diameters
  - More susceptible to kinking

- Convoluted bore (annular and helical)
  - Increased flexibility without kinking
  - Flexible in larger diameters
  - Traps fluid
  - Affects flow



Reinforcement

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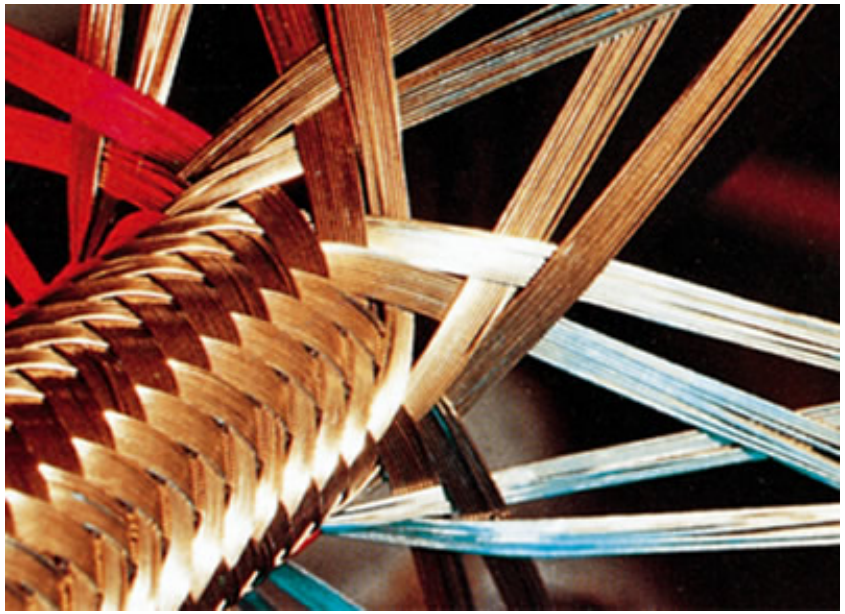
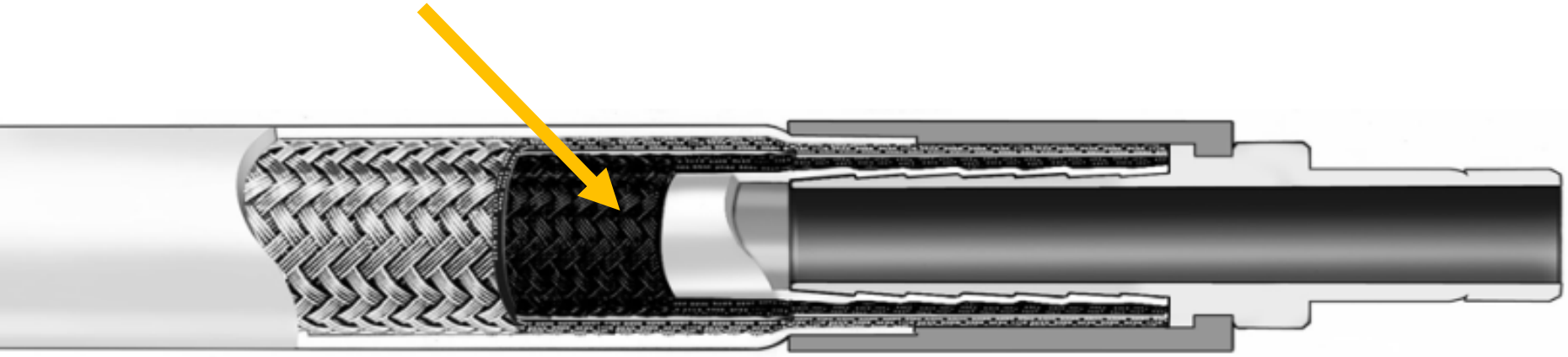
- Protects the tube and allows the hose to contain pressure
- Provides kink resistance
- Fiber or wire braid





Reinforcement

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Can also be the cover

Cover

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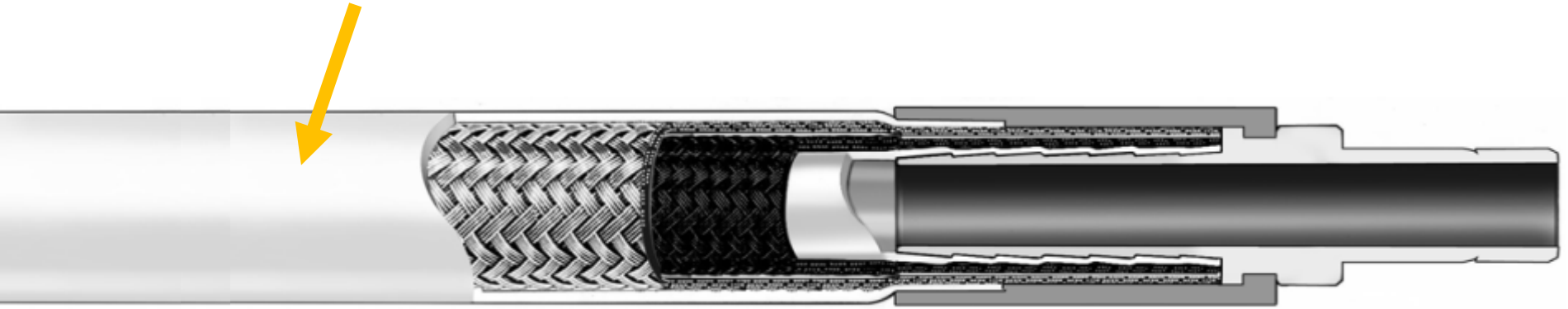
- Protects the reinforcement

- Allows the manufacturer to print information on the hose



End Connection

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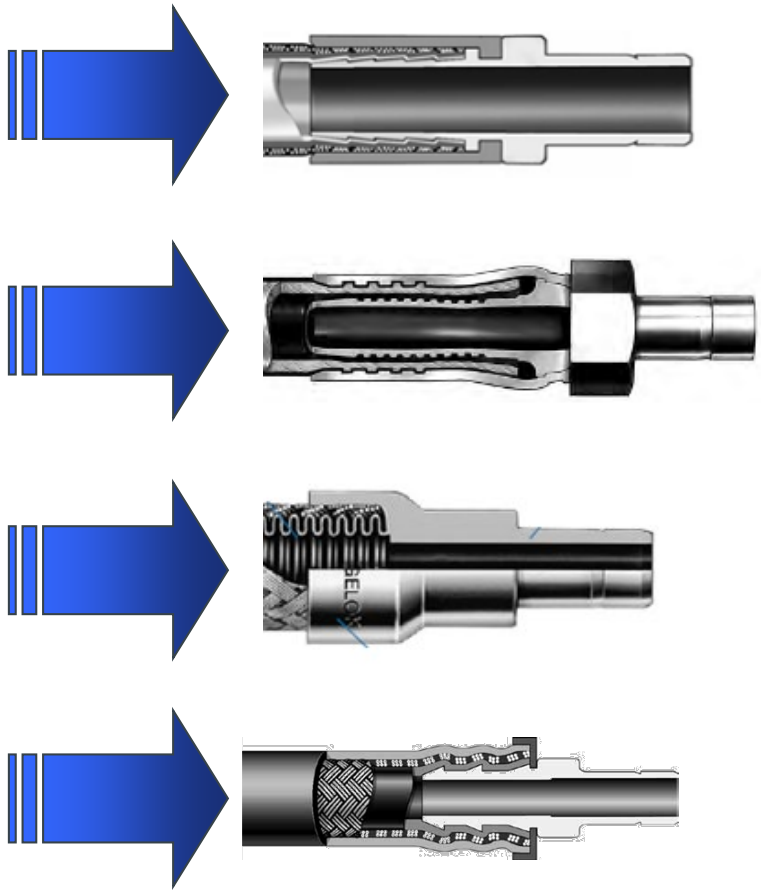
- Crimped end connection
- Swaged end connection
- Welded-end metal hoses
- Push-on end connection



Product Selection

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- **S** ize: I.D. / O.D.
- **T** emperature: Internal and external, minimum and maximum
- **A** pplication: Where and how, conductivity concerns, steam, etc.
- **M** edia: Chemical names and phase state (liquid, solid, gas)
- **P** ressure: Working, surge, vacuum
- **E** nd Connections: What type and what standard
- **D** elivery: How many, and when are they needed

Get In Touch

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