



## Hydraulic Conductors-Fittings, Tube, Pipe, & Hoses

Course Number 90

### Course Description

This course covers the types of connecting lines and fittings used to carry hydraulic fluid between the various components of a hydraulic system. Hands-on skills are acquired in tube bending and fittings installation. Students are also taught how to pick the correct conductor size and type for an application by calculating appropriate values, then reading industry standard charts. This is a good course to prepare the student for the International Fluid Power Society Conductor and Connector Certification.

Prerequisites: None

Course Length: 3 days

Textbooks: TBD

### Course Outline

#### Safety

- Safety

#### Introduction

- Connectors
- Sizing
- Flow/pressure drop

#### Fittings – Adaptors

- Types
- Sealing threads
- Torque valves
- Straight thread/parallel
- SAE Ord/BSPP/ISO/JIS
- Flanges
- SAE ISO Code 61/62
- Metric flanges
- Split flanges
- Static vs. dynamic
- Tube ends 37 degree flare

#### Tubing

- Sizes/temperature rating
- Steel/carbon/copper/plastic
- OD/ID/Wall Thickness
- Tube flaring/
- Compression ferrules

#### Hose/Pipe

- SAE
- Construction/where to use
- How to measure a hose assembly

### Learning Objectives

- State the benefits of the different conductors and when best to use them
- Demonstrate the ability to assemble hoses with permanent and reusable ends
- Construct a flared hydraulic tubing assembly
- Demonstrate how tubing assemblies seal to fittings
- Demonstrate the correct way to install a hose for proper position and alignment
- Demonstrate the ability to properly bend tubing
- Know the advantages and disadvantages of the different types of fittings
- Explain the working pressure, safety factor and burst pressure for hoses
- Read and use conductor inside diameter selection charts
- Calculate the necessary inside diameter of hoses for a given hydraulic circuit
- Explain how pipe size is classified
- State two reasons for fluid conductor supports
- Explain the terms GPM and CFM
- Explain pressure ratings and flow capabilities of tubing and pipe
- Calculate the flow an intake hose can pass, given the inside area and the max
- Be familiar with the guideline for hydraulic hoses, SAE J517 Standard
- Recognize cause of hose failures



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