

## Industrial Hydraulic Technology 1

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### I. Program Description

SNO-Motion's Industrial Hydraulic Technology 1 course is a 3-day overview of industrial hydraulic components and circuits. This hands-on course consists of about 25% lab time as students gain a working knowledge of hydraulic equipment.

#### A. Aims/Objectives

**In this course students will:**

- Learn where and why hydraulics are used in industrial machinery
- Understand how and why hydraulic systems and components work
- Learn to read and draw hydraulic schematics

#### B. Major Topics Covered

- A practical study of pumps, flow valves, pressure valves, directional valves, hydraulic motors, filters, cylinders and accumulators
- Hands-on experience, designing and building hydraulic circuits on system simulators
- Some trouble shooting tactics
- A practical study of hydraulic fluids

### II. Who Should Participate

Maintenance or non-engineering personnel and anyone who desires to increase their basic knowledge of hydraulic components and systems.

### III. Session Information

Classes are conducted several times per year. For scheduled dates, contact our offices.

**SNO-Motion Solutions**  
41 West Guest Avenue  
Salt Lake City, UT 84115  
Phone: 801.281.4SNO(4766)  
Fax: 801.263.6404

**To Apply for Training Class on Line:**  
<http://www.sno-motion/trainingsignup.html>  
and choose the appropriate class title.

# Industrial Hydraulic Technology 1

## Course Outline

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Note: This course outline is presented to show the areas of discussion contained in the 3-day training program. During the course, variations in the outline may occur - this would be left up to the instructor's discretion and would only be made to improve the class.

### A. First Day of Class

- I. Introductions
  - B. Pre-examination
- II. Begin Chapter 1 - "The Physical World of a Machine" a. Work in metric where appropriate
- III. Chapter 2 - "Hydraulic Transmission of Force and Energy"
  - a. work in metric where appropriate
  - b. video
    1. Transmission of Hydraulic Power
- IV. Chapter 3 - "Petroleum Base Hydraulic Fluid"
- V. Chapter 4 - "Fire Resistant Hydraulic Fluid"
- VI. Chapter 4a - "Biodegradable Hydraulic Fluid"

### II. Second Day of Class

- I. Chapter 6 - "Hydraulic Actuators" a. hand out formula sheet
- II. Chapter 7 - "Control of Hydraulic Energy"
- III. Chapter 9 - "Flow Control Valves"
- IV. Lab
  - a. explain lab rules
    1. no smoking, no horseplay
    2. fast as slowest group
    3. E-stop
  - b. extend and retract cylinder
  - c. measure pump flow (Senso control)
  - d. meter-in and meter-out
  - e. regeneration
  - f. motor speed circuit
    1. meter-in and meter-out

### II. Third Day of Class

- I. Third Day of Class I. Complete lab from day two
- II. Chapter 11 - "Pressure Control Valves"
- III. Chapter 12 - "Pilot Operated Pressure Control Valves"
- IV. Lab a. pressure reducing valve b. sequence valve
- V. Chapter 13 - "Hydraulic Pumps"
- VI. Chapter 15 - "Filtration"
  - a. symbol
  - b. filter placement
  - c. Beta ratio
- VII. Test
- VIII. Evaluation form
- IX. Adjourn class