

**Bettis Gas/Hydraulic Product Servicing**
**Course VA101 CEUs: 2.8**

**Overview** This 4-day course uses classroom style lectures and hands-on experience with working models to teach the student to:

- assemble, install, operate and maintain a gas/hydraulic actuator
- use troubleshooting techniques and tests to identify problems in gas/hydraulic systems, and perform routine maintenance and emergency repairs on each component
- install any Bettis control device on the corresponding actuator, connect calibration equipment, and carry out set-up and calibration procedures
- adapt and install control upgrade or modification kits including all tubing connections and final adjustments
- identify graphic fluid schematic symbols, match to the actual control device, and integrate the symbols into a functioning relationship

**Prerequisites**

Students should be involved with the application, service or maintenance of Bettis Canada gas/hydraulic products.

**Topics**

- Gas/Hydraulic Actuators
- Gas/Hydraulic Control Systems
- Gas/Hydraulic Control System Accessories
- Control Applications
- Control Component Calibration
- New Products

**Price/Location/Start Date:**

Mansfield, OH Call 419-529-4311 to Discuss  
Waller, TX Call 281-727-5300 to Discuss


**Bettis PressureGuard & Linear Actuators, Control Systems & Accessories & Multiport Flow Selector Products**
**Course VA102 CEUs: 2.1**

**Overview** This 3-day course provides an introduction to the range of valve actuators, control components and systems manufactured by Bettis. In addition to discussing product features and benefits, students will be given a broad overview of the valve automation industry and provided with training on product selection and applications.

**Prerequisites**

Involved with the purchase, application and marketing or sales of products.

**Topics**

- PressureGuard (Self-Contained Hydraulic) Control System Overview
- LineGuard Electronic Linebreak System
- Non-API Linear Actuator Selection/Sizing
- API Linear Actuator Selection/Sizing
- Multiport Flow Selectors Overview
- GVO Linear Actuator

**Price/Location/Start Date:**

Mansfield, OH Call 419-529-4311 to Discuss  
Waller, TX Call 281-727-5300 to Discuss

**Bettis Rack & Pinion & Scotch-Yoke Product Servicing**
**Course VA103 CEUs: 2.1**
**Overview**

This 3-day class provides comprehensive information concerning the installation, operation and maintenance of all Bettis Waller products.

**Prerequisites**

Involved with the purchase / application / marketing or sales / service of products.

**Topics**

- Valve Automation Center Contract Review
- Installation/Maintenance Instruction Manuals
- Product Serial Numbers Review
- Service Procedure Index Review
- General Operating/Maintenance Instructions
- General servicing information on RPB, RPC, D, CB, CBA 300, HD, T and G-Series Actuators
- Conversion of Fail-Close Spring-Return G-Series Actuators to Fail-Open Spring-Return
- Field Service Work Performed by VAC's, Bettis Waller Procedure Review
- 2-1/2 days of Practical Exercises Involving the Disassembly/Reassembling of Products

**Price/Location/Start Date:**

Waller, TX Call 281-727-5300 to Discuss

**Bettis Rack & Pinion & Scotch-Yoke Products**
**Course VA104 CEUs: 2.8**

**Overview** This 4-day course provides an introduction to the range of pneumatic and hydraulic valve actuators manufactured by Bettis in their Waller, Texas facility. In addition to discussing product features and benefits, students will be given a broad overview of the valve automation industry and provided with training on product selection and applications. Common pneumatic and hydraulic control components and systems will also be discussed; and a review of competitive products.

**Prerequisites** Involved with the purchase/application/marketing or sales of products.

**Topics**

- D-Series Actuators Overview
- CBA-Series Actuators Overview
- CBA 300-Series Actuators Overview
- G-Series Actuators Overview
- Bettis Electronic Data Formats Overview
- Torque Mechanisms Overview
- Manual Overrides Overview
- Actuator Selection/Sizing
- Introduction to Valve Automation Sizing Tool (VAST)
- Common Control Components/Control System
- Valve Mounting Hardware Overview
- Competitor Product Comparisons
- General Practical Work

**Price/Location/Start Date:**

Mansfield, OH Call 419-529-4311 to Discuss  
Waller, TX Call 281-727-5300 to Discuss



**Dantorque Products****Course VA106 CEUs: 1.4**

**Overview** This 2-day product training course provides an overview of the valve automation products manufactured by Dantorque. Primarily focused on product features & benefits, sizing/selection and applications; service/ maintenance training can also be provided if requested in adv. of the class. Classes will be tailored to meet specific needs.

**Prerequisites** Students should be involved with the purchase, application, marketing, sales or service/maintenance of Dantorque products.

**Topics**

- Introduction
- Overview Dantorque Actuators
- Onshore, Offshore and Subsea Applications
- General Control Options
- Subsea Control Options
- ROV Overrides
- Actuator Sizing/Selection
- Question and Answer Session

**Price/Location/Start Date:**

This training can be tailored to a specific project application and is usually conducted at the customer's location. Please call Paul Warren, Product Manager at 419-529-4311.

**El-O-Matic Products****Course VA107 CEUs: 2.1**

**Overview** This 3-day class provides information on the ranges of pneumatic and electric actuators and accessories available from El-O-Matic. Detailed information on electric actuator module boards/ bus communication options will be addressed.

**Prerequisites** Students should be involved with the application, marketing, sales or service/ maintenance of El-O-Matic products.

**Topics**

- Electric Actuator Series (ELS/EL/ELD & ELQ)
  - Identification of Components; - Basic Bench Testing; - Installation Options;
  - Actuator Sizing/Selection; - Control Options;
  - Hands-on Training Covering Installation of Module Boards for Different Control Functionality; - Bus Communication Options;
  - El-O-Matic Sizing Program
- Pneumatic Actuator Series (E & P Series)
  - History; - Identification of Components;
  - Comparison of E & P Series Actuator;
  - 180° Rotation Actuators; - Actuator Sizing/Selection; - Available Accessories
  - Hands-on Training Including; Spring Changes, Seal Changes, Travel Stop Adjustment and Mounting of Accessories;
  - El-O-Matic Sizing
- QA Systems, Functions, RMA's and Customer Complaint Handling

**Price/Location/Start Date:**

Tampa Bay, FL Call 813-630-2255 to Discuss

**Hytork Products****Course VA108 CEUs: 2.1****Overview**

This 3-day class provides a solid grounding in valve automation solutions in general with detailed and specific information given on the range of actuators and control accessories available from Hytork. Classes are tailored to fit specific student requirements.

**Prerequisites**

Students should be involved with the purchase, application, marketing, sales or service/maintenance of Hytork products.

**Topics**

- Overview of Hytork
- Key Accounts and Markets
- Pneumatic Actuators, History, Theory and Different Types
- Comparison of Pneumatic Actuators to Electric, Hydraulic and Electro-Hydraulic Designs
- Advantages of the Rack & Pinion Design
- ISO Standards
- General Valve Automation Applications
- Hytork Actuator Variations and Evolution
- Valve Automation Accessories Including Limit Switches, Solenoid Valves, Speed Control Valves and Valve Mounting Options
- Mounting of Control Accessories
- Hytork Product Features and Benefits
- General Valve Types/Torque Characteristics
- Actuator Sizing Techniques, Test Questions
- Hytork Actuator Sizing Program
- Hytork Drawing Types and Procedures
- QA Systems, Functions, RMA's and Customer Complaint Handling
- Hytork Product Warranties
- Price Book Review
- Hands-on Review of Competitive Products
- Selling and Marketing Techniques
- Hands-on Actuator Assembly, Disassembly, Mounting and End-Stop Adjustment
- Question and Answer Session
- Final Test

**Price/Location/Start Date:**

Tampa Bay, FL Call 813-630-2255 to Discuss

**Shafer Products****Course VA109 CEUs: 2.8****Overview**

This 4-day product training course provides an overview of the valve automation products manufactured by Shafer. Primarily focused on product features & benefits, sizing/selection and applications; service and maintenance training can also be provided if requested in advance of the class. In addition, an overview of Dantorque products can be included in the class if requested.

**Prerequisites**

Students should be involved with the purchase, application, marketing, sales or service/ maintenance of Shafer products.

**Topics**

- Introduction and Company History
- Introduction Inside Sales Organization/Basic Funct.
- Plant Tour
- Gas Pipeline Valve/Actuator Applications
- Rotary Vane Actuators
- Assembly of Rotary Vane and Travel Adjustments
- Poppet Block, Hand Pump
- Local Manual Control/Control Schematics
- Control Functions and Components:
  - High & Low Pressure Shutoff; - 2-Way Electric & Failsafe; - ESD; - Pneumatic Linebreak Devices
- Limit Switches and Solenoid Valves
- Rotary Actuator Sizing - Theory and Ex
- Subsea and High Speed Rotary Vane Actuators
- Valve Position System
- LineGuard 2100
- Linear Actuators
- Shafer Service Organization
- Installation and Routine Maintenance of Actuators
- Pricing, Project Pricing & Commission Structure
- Pressure Equipment and Bookings Reports
- Pressure Equipment Directive (PED)
- Quality Assurance; Open Shop Time

**Price/Location/Start Date:**

This training can be tailored to a specific project application and is usually conducted at the customer's location. Please call Paul Warren, Product Manager at 419-529-4311.

To enroll in Valve Automation courses reference phone number under course description. For additional contact information refer to the appropriate contact on page 107. Updated dates & locations are available on our website at [www.emersonprocess.com/education](http://www.emersonprocess.com/education).

### FieldQ Products

#### Course VA110

##### Overview

This 3-day class provides the knowledge required for the student to understand, troubleshoot and even repair the Valve Automation FieldQ actuator and modules. The class covers the full range of the actuators and the modules used to interface to the actuator. Classes are held periodically but can be tailored to fit specific needs of the students in attendance.

##### Prerequisites

Students should be involved with the purchase, application, marketing, sales, or / service/maintenance of the FieldQ Actuation System

##### Topics

- Basic Product Overview
  - Actuator, Control Modules, Pneumatic Modules
- Introduction to Actuators
  - Rack & Pinion Operation, FieldQ Features/Benefits, Data Sheets
- Introduction to Modules
  - General Features and Benefits, Types, Construction, Functionality
  - Hands on with Conventional, Smart, and Bus Modules
- Field Topics
  - Installation, Maintenance, and Troubleshooting
- Sales Training
  - Applications, Pricing, Configurations
- QA Systems, Functions, RMA's and Customer Complaint Handling

Training is set up to include hours of learning the FieldQ product family via hands on activities. In fact, students will often spend more time learning in the lab than being lectured

##### Price/Location/Start Date:

This training is offered in a standard training class or can be tailored to fit your specific needs including customer focused training in Tampa, on site training, and an adjustable schedule via an abbreviated agenda. Please call Valve Automation in Tampa Florida at (813) 630-

### Series 2000 Actuator Maintenance

#### Course VA111

##### Overview

This 32-hour program presents the fundamental aspects of Series 2000 actuator maintenance. Attendees are presented with the basics of actuators and how they operate valves. Basic components and assemblies are studied through actual disassembly and reassembly of an actuator. In that mechanical operation is learned. Each student will learn how to set travel limits, torque limits and operate an actuator on a variety of valves. Model number interpretation, how to order parts from local distributors, Control Package wiring diagram interpretation and basic maintenance are all presented in a combination hands-on / instructor led lecture format. At the end of the program all students complete a written performance based evaluation prior to leaving. Any original course documentation and certificates are provided to all attendees for company records at the end of the program.

##### Prerequisites

Students interested in attending this program should have a background or equivalent work experience in basic mechanical and electrical practices and principles. No previous service experience necessary.

##### Topics

- Identify the Basic Components and Assemblies of a Series 2000 Actuator by Function and Operation
- Disassemble and Reassemble a Series 2000 Actuator with Installed Controls:
  - Multi-Turn Valve and Part Turn Valve
- Identify EIM Control Packages by Function with the Aide of a Control-Wiring Diagram
- Demonstrate the Correct Method to Set Position and Torque Limits:
  - Multi-Turn Valve and Part Turn Valve
- Demonstrate the Operation of a Modulating Unit with Futronic II
- Perform Basic Maintenance Associated with the Operation of an Actuator

##### Price/Location/Start Date:

Missouri City, TX  
Call 281-499-1561 to Discuss

### Gold Seal Service Training - Level II TEC2000 Maintenance and Operation

#### Course VA112

##### Overview

This 48-hour program presents a fundamental overview of the construction, assembly, hardware, software and configuration of a TEC2000 actuator. Students attending this program will demonstrate an ability to identify actuator hardware, components and assemblies. Students will interconnect various control configurations for the TEC2000 units and prove actuator operation. All students will demonstrate the ability to setup, configure, check and verify operation of various actuator configurations using appropriate hardware or software.

##### Prerequisites

Students planning on attending this program should have a minimum of 3 years field service experience and have previously attended the Gold Seal Service Training Program – Level 1 and have a working knowledge of MS Windows. Each student MUST have a strong background in the mechanical operation and electrical operation of EIM products. Other attendees with a solid background in electrical controls [including microprocessor basics] are encouraged to attend.

##### Topics

- Identify the Basic Components and Assemblies of a TEC2000 Non-Intrusive Actuator by Function, Configuration and Operation
- Disassemble and Reassemble a TEC2000 Actuator
- Customize the Configuration of a TEC2000 Actuator
- Wiring Options
- Application
- Troubleshoot Start-up Problems Associated with Installation, Configuration and Operation of Various Control and Actuator Combinations
- Demonstrate How to Upgrade the Service Pack for a TEC2000 Actuator

##### Price/Location/Start Date:

Missouri City, TX  
Call 281-499-1561 to Discuss