

## Training Courses

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### Involvement Training

- Industrial Hydraulic Technology 1
- Industrial Hydraulic Technology 2
- Hydraulic Component Sizing
- Hydraulic Maintenance Technology
- Hydraulic Pumps & Controls
- Introduction to Electrohydraulics
- Electrohydraulic Feedback Systems
- Cartridge Valve Systems
- Mobile Hydraulic Technology
- Basic Pneumatic Technology
- Pneumatic Technology

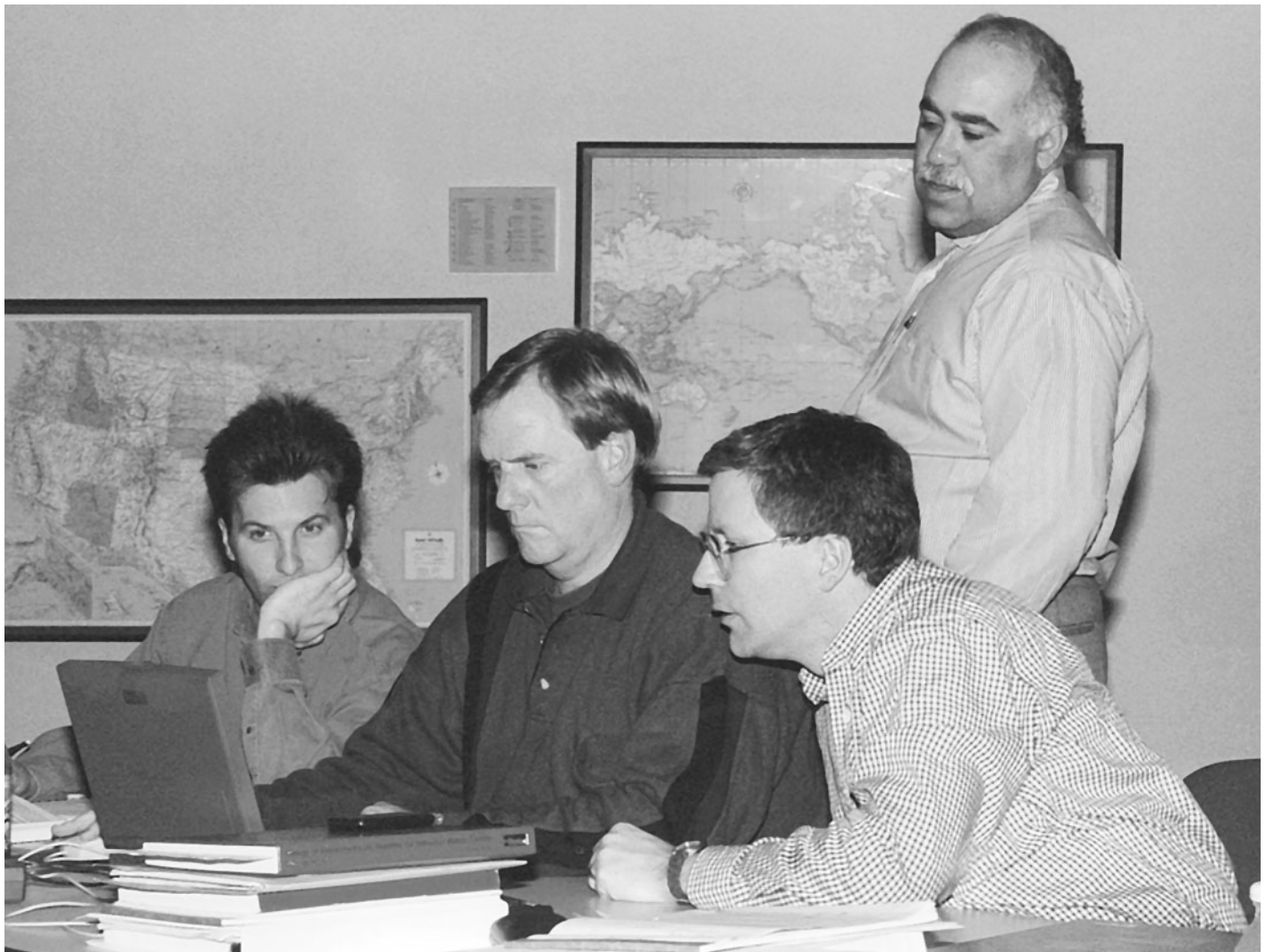
### Video Tape Programs, CD-ROMs

Hydraulic & Pneumatic Video Tapes & CDs

### Motion Control Training Materials

#### Portable Hydraulic Trainer Stand

- Operates on 115 volt AC
- Standard Industrial Components
- No loose components to misplace
- Easy to move
- Quiet operation



For more information contact the Motion Control  
Training Dept., phone 216-896-2495, fax 216-514-6738,  
e-mail [mctrain@parker.com](mailto:mctrain@parker.com)



## What is Involvement Training?

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The Motion Control Training Department was established in the early seventies. It was at this time that the department's charter was written. In this document it was stated that the general area of activity would include all phases of technical training for the hydraulic and pneumatic industries. This training would be noncommercial, involving state of the art technology.

The Parker approach is one of involvement training. In its full scope, involvement training is active participation. This participation results in excellent student retention, plus a very comfortable way of learning. It has been received with great enthusiasm.

Our present efforts involve eleven continually running courses. They are:

- Industrial Hydraulic Technology 1
- Industrial Hydraulic Technology 2
- Hydraulic Component Sizing
- Hydraulic Maintenance Technology
- Hydraulic Pumps and Controls
- Mobile Hydraulic Technology
- Introduction to Electrohydraulics
- Electrohydraulic Feedback Systems
- Cartridge Valve Systems
- Basic Pneumatic Technology
- Pneumatic Circuitry

All the above courses have associated texts or visual aids. Also, sets of video tapes and CD-ROMs are available.

The success of any training endeavor is difficult to measure. However, a few concrete statistics will show that involvement training is working. For one, customer enrollment has our class registration backlogged. In addition, 500 colleges, universities and technical institutions are using our text materials; educational institutions such as Ohio State University, Purdue University and Maine Maritime Academy.

Many corporations and government agencies have adopted our courses to be used in plant to train their ever changing work force. Names like Chrysler, General Motors, Ford, IBM, and Virginia Department of Highways have all used these programs successfully.

If you feel that any of the training materials and/or training developed here at Parker could be of use to you, we welcome your inquiry. We stand ready to become INVOLVED WITH YOU.



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## Parker Involvement Training Courses

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### Industrial Hydraulic Technology 1 and 2

Parker Hannifin's **Industrial Hydraulic Technology 1 and 2** (IHT1) are completely integrated 3-day programs during which you discuss and work with fundamental fluid power principles and formulas, and actually experience the functional characteristics of the complete spectrum of hydraulic components.

You will be studying and using pumps, flow valves, pressure valves, directional valves, hydraulic motors, filters, cylinders and accumulators. And, because its divisions actually manufacture and market all of these products, Parker Hannifin is uniquely qualified to give you an in-depth practical knowledge of how to best use them in your field. You will receive the broadest and deepest exposure possible during a five-day period.

At least 25% of the time you will be working at the Parker Hannifin Portable Hydraulic Trainer Stands. These units were designed and built by Parker Hannifin expressly for this program. They supply you with all the necessary components – valves, pumps, motor, cylinders, filters, power unit, hoses and gauges – to hook up to working hydraulic circuits and then check flows, pressure and velocity. Unlike most other training apparatus, the Parker Hannifin stands operate at pressures up to 500 psi so that you can closely simulate real system conditions.

The balance of your time will be devoted to classroom sessions. But, these are designed for maximum interest and involvement. There is plenty of lively discussion, questions, answers and practical problem solving.

The **Industrial Hydraulic Technology 1 and 2** courses are conducted at these Parker Hannifin locations: Elyria, OH; Irvine, CA; Troy, MI; Milton, ONT, Canada and Calgary, AB, Canada. The course fee includes the textbooks and use of special equipment. Your meals, transportation and lodging are not included. However, Parker Hannifin will be glad to assist you with lodging arrangements.

Further information can be obtained by contacting the Parker Hannifin Motion Control Training Dept., 6035 Parkland Blvd., Cleveland, OH 44124-4141 (216) 896-2495, or visit our website at [www.parker.com/training](http://www.parker.com/training).

### Hydraulic Component Sizing

**Hydraulic Component Sizing** (HCS) is ideally suited for the new designer and the maintenance and service individual who needs that important step beyond fundamental circuit design; that step that provides a more comprehensive understanding of efficient power transmission.

This program, using standard catalog data and standard formulas creates a benchmark that allows the student to objectively analyze the quality of the circuit in terms of efficiency and energy conservation. You will learn how to overcome problem areas and also become aware of the proper conditions for selecting components such as pressure compensated valves and fixed vs. compensated pumps.

Parker Hannifin has written a special textbook for this course, which you will use during the program as the basis for your discussions and practical problem solving.

Since **Hydraulic Component Sizing** is an analytical course, we want to ensure that all participants have a solid, relatively equal background in basic fluid power technology. Completion of Parker's **Industrial Hydraulic Technology 1 and 2** courses are an ideal foundation for understanding and further pursuing the maximum energy savings approach that is key to the **Hydraulic Component Sizing** subject matter.

The Hydraulic Component Sizing course is conducted at these Parker Hannifin locations: Elyria, OH; Troy, MI; Irvine, CA; and Milton, ONT, Canada.

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### Hydraulic Maintenance Technology

**Hydraulic Maintenance Technology** (HMT) is ideally suited for maintenance personnel, engineers, first-line supervisors and anyone desiring an in-depth understanding and appreciation of hydraulic system component operation and troubleshooting techniques. Participants should have completed the **Industrial Hydraulic Technology 1 and 2** courses or equivalent.

The topics covered in this four-day program are graphic symbols of hydraulic components, in which we utilize the International Standards Organization (ISO) System; troubleshooting common hydraulic components such as pumps, cylinders, valves, rotary actuators, hydraulic motors; hose and tube fittings maintenance and assembly; and maintenance of fluid power systems.

The **Hydraulic Maintenance Technology** course is conducted at the Parker Hannifin location in Elyria, OH. The course fee includes the textbook, template and use of special equipment. Your meals, transportation and lodging are not included. However, Parker Hannifin will be glad to assist you with lodging arrangements.

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### **Hydraulic Pumps and Controls**

In **Hydraulic Pumps and Controls** (HPC) the students learn a logical procedure for designing circuits, not just from the standpoint to make them work, but to make them work efficiently. This is done by approaching the entire design with a view toward power transmission and ultimate circuit efficiency. This is accomplished by concentrating on the power unit. That is, the various variable volume pressure compensated pumps and numerous pump controls are examined in detail.

An important result of this new Parker design method is that the student can always obtain a very efficient circuit. Therefore, it is possible for a group of designers to develop very similar circuits for each set of mechanical requirements. The only variance will be in the sequential logic and the appearance, which depends upon which components are selected.

System design is aided by Parker's hands-on approach to learning. The course attendees will receive ample opportunity to practice their newly acquired skills. Approximately 40% of the class time is spent in the training lab using the Parker hydraulic power units and trainer stands. This familiarization with typical styles of variable volume pressure compensated pumps and their controls, ties together the lecture material and the design problem. This practical approach to efficient hydraulic systems is easily followed by the attendees as the instructor presents the course text material. The instructor supplements this material with many years of fluid power industrial involvement. Your final benefit is in economy. As we proceed in **Hydraulic Pumps and Controls**, we demonstrate that circuits designed with the new method are less expensive to operate and maintain. Also included is the Parker *Design Engineers Handbook*.

To get the most from this course, it is necessary to establish prerequisites for attendance. This assures that everyone participating has approximately equal knowledge of fluid power and can work at a compatible pace. You should have a working knowledge in the fluid power field and have previously completed Parker's **Hydraulic Component Sizing** course.

The **Hydraulic Pumps and Controls** course is conducted at the Elyria, OH; and Irvine, CA locations. The course fee includes class manual, textbook and use of special equipment. Your meals, transportation

and lodging are not included. However, Parker Hannifin will assist you with lodging arrangements.

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### **Introduction to Electrohydraulics**

The **Introduction to Electrohydraulics** (EHD) course is designed for the individual who requires an increased understanding of the rapidly emerging field of electrohydraulic proportional control valves and the electronics used to operate these valves. The individual must have completed the **Industrial Hydraulic Technology** and the **Hydraulic Component Sizing** courses or equivalent. Basic DC theory knowledge is helpful but not necessary, as the topic is covered in the course.

In this five-day course we present fundamental electronic theory applicable to electrohydraulic proportional valves; help participants understand how electrohydraulic proportional valves operate; examine in detail a typical circuit board used with a typical electrohydraulic proportional valve.

Approximately 50% of the class time is spent in the lab where the individual is familiarized with lab instrumentation and various circuits on the printed circuit board are examined in detail.

The **Introduction to Electrohydraulics** course is conducted at the Elyria, OH; and Irvine, CA, locations. The course fee includes the textbook and use of special equipment. Your meals, transportation and lodging are not included. However, Parker Hannifin will assist you with lodging arrangements.

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### **Electrohydraulic Feedback Systems**

**Electrohydraulic Feedback Systems** (EFS) course is designed for engineering oriented individuals requiring an in-depth understanding of electrohydraulic feedback control systems. Attendees should have completed the Parker Introduction to Electrohydraulics prior to attending this advanced course.

The following topics are covered in this course: servo valve sizing, basic positional servo valve systems, position transducers, speed transducers, frequency response curves, transfer functions and speed control loops.

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Approximately 50% of the class time is spent in the lab working with various feedback control systems to gain a better understanding of their operating characteristics.

The **Electrohydraulic Feedback Systems** course is conducted at the Parker Hannifin locations in Elyria, OH; and Irvine, CA. The course fee includes the textbook and use of special equipment. Your meals, transportation and lodging are not included. Parker Hannifin will be glad to assist you with lodging arrangements.

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### **Cartridge Valve Systems**

**Cartridge Valve Systems** (CVS) course is an integrated three-day course where the student will work with and discuss the principles, applications, formulas and functional characteristics of “insert” or “DIN” style cartridge valves.

The student will learn the practical aspects of “insert” and “screw-in” style cartridge valves as they apply to industrial machinery. Principles of operation, functional characteristics, and typical applications for these valves are presented. The student also uses performance characteristics and fluid power formulas in realistic design problems. Valves studied include spool and poppet types, pilot operated valves, direct acting types, and multistage valves, as well as proportional types.

**Cartridge Valve Systems** is recommended for maintenance personnel, technicians and engineering personnel. It is also suitable for sales and non-technical personnel who want to increase their knowledge and understanding of cartridge valve systems.

Parker’s **Cartridge Valve Systems** course integrates classroom sessions with lab activities to give the student practical knowledge and skills that can be used in a workplace setting. In the labs students get hands-on experience with typical valves, and the circuits which use them.

The **Cartridge Valve Systems** course is conducted at the Parker Hannifin location in Elyria, OH. The course fee includes class manual and use of special equipment. Your meals, transportation and lodging are not included. Parker Hannifin will be glad to assist you with lodging arrangements.

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### **Mobile Hydraulic Technology**

**Mobile Hydraulic Technology** (MHT) is a new course being developed. Please contact us for details and class availability at Parker Hannifin Corporation, Motion Control Training Dept., 6035 Parkland Blvd., Cleveland, OH 44124-4141 (216) 896-2495, or visit our website at [www.parker.com/training](http://www.parker.com/training).

### **Basic Pneumatic Technology**

Parker Hannifin’s **Basic Pneumatic Technology** (IPT) course is a completely integrated three-day program during which you discuss and work with fundamental fluid power principles and formulas, and actually experience the functional characteristics of the complete spectrum of pneumatic components.

You will learn about dryers, air receivers, flow valves, filters, pressure valves, regulators, lubricators, directional valves, silencers, quick exhaust valves, and actuators. And because Parker Hannifin divisions actually manufacture and market most of these products, it is uniquely qualified to give you an in-depth, practical knowledge of how to best use them in your field. You will receive the broadest and deepest exposure possible during a three-day period.

At least 25% of the time you will be working at the Parker Hannifin pneumatic trainer boards. These units were developed and built by Parker Hannifin expressly for this program. They supply you with all the necessary components to hook up working pneumatic circuits.

The balance of your time will be devoted to classroom sessions. But these too are designed for maximum interest and involvement. There is plenty of lively discussion, questions, answers and practical problem solving.

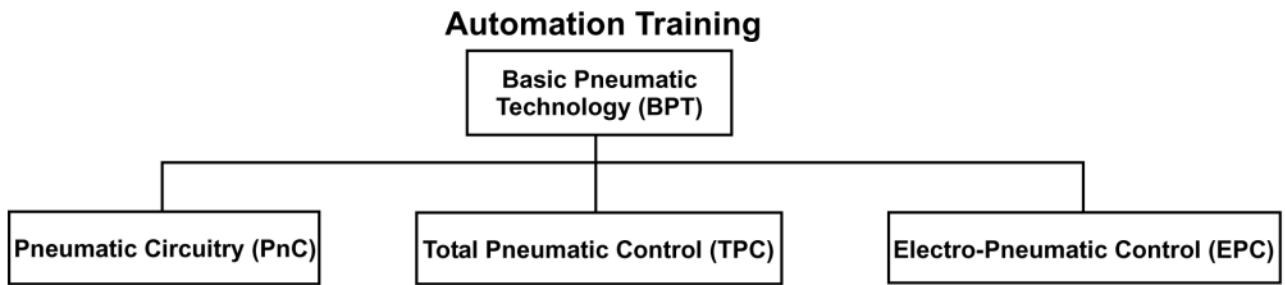
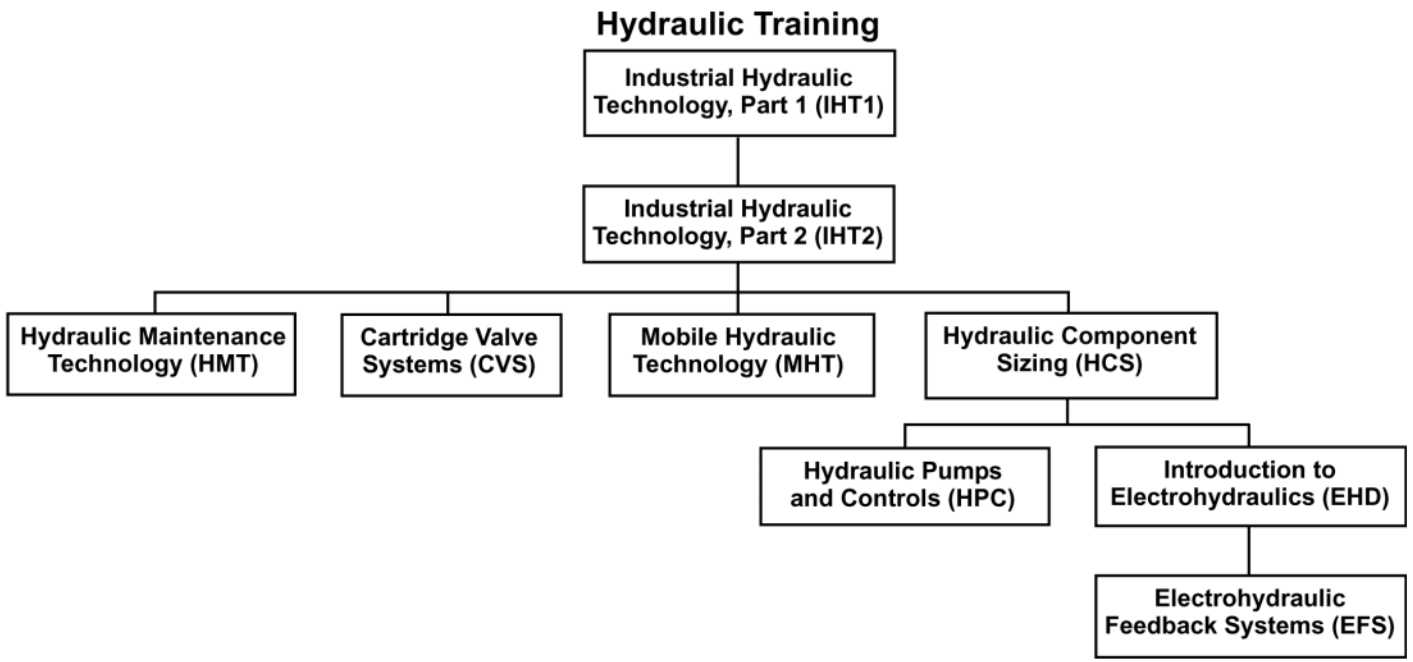
The **Basic Pneumatic Technology** is conducted at these Parker Hannifin locations: Troy, MI; Atlanta, GA; Irvine, CA; Toronto, Canada.

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## Video Tape Instruction and CD-ROMs



### Industrial Hydraulic Technology

14 Video Tapes, 1 Textbook, 1 Instructor's Guide  
Bulletin 0299-T1

The Industrial Hydraulic Technology course material is available using an audio-visual tape training method. The various tapes aid in the instruction of basic hydraulics. With all the training information stored on the cassette tapes, the training sessions can be repeated as often as necessary, allowing each student to acquire technical knowledge at his or her own pace. Tapes are available as a set or individually.



### Basic Pneumatic Technology CD-ROM

Bulletin 0298-P4

With years of product expertise and worldwide resources, Parker has developed the Basic Pneumatic Technology CD. It is the equivalent of countless textbooks, videos and classroom lectures covering the subject of basic pneumatic components and systems technology. Using the latest computer based training techniques, along with state-of-the-art animated and video motion visuals, Basic Pneumatic Technology is designed to maximize information retention while reducing student's time and related educational expenses. This CD is also available in Spanish and German.



### Industrial Pneumatic Technology Video Training Library

Bulletin 0299-T7

The pneumatic Video Training Library consists of 4 video tapes on pneumatic systems, compressed air, air preparation and pneumatic directional control valves. Available as a set or individually.



### IHT Computer Transparencies

Bulletin 0232-B3/CD

All graphics from the Industrial Hydraulic Technology textbook, Bul. 0232-B1, have been placed on one convenient, easy to use CD-ROM.

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**Parker**  
Cylinder

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When the pressure is on, increase personnel productivity with

## Parker Motion Control Training Materials.

Order these free publications –

**Catalog 0200** – a detailed 32-page description of classes and training materials. These training materials include textbooks, instructor's guides, video tapes, CD-ROMs and computer software.

**Bul. 0203** Portable Hydraulic Trainer Stand – details on Parker hydraulic training equipment.

How to obtain your free publications:

- Contact your nearby fluid power distributor
- Write to Parker Hannifin Corp., MC Training Dept. W3MC01, 6035 Parkland Blvd., Cleveland, OH 44124-4141
- Fax your request to 216/514-6738
- E-mail your request to [mctrain@parker.com](mailto:mctrain@parker.com)

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## Portable Hydraulic Trainer Stand

**General Description** – The Parker Portable Hydraulic Trainer Stand is designed to be a tool for learning hydraulic technology principles and circuitry. It has been engineered for ruggedness, portability and ease of operation. For detailed information, request Bulletin 0203.

### Features

- Self-contained stand
- Operates on 115 volt AC
- Standard industrial components
- Rugged construction
- Vertical panel
- Quick hose disconnects
- 0-500 psi (0-34 bar) operation
- 3000 psi (207 bar) rated components
- Hose storage rack
- Components panel mounted
- Quiet operation
- Ball valve
- Needle valve
- Parker filtration
- CE Compliant conversion available

### Benefits

- All necessary components readily accessible
- Plugs into standard 110 volt outlet
- Familiarization with “real world” components
- Long, trouble-free operation
- Allows easy access to components
- Facilitates faster circuit hook up; no tools required
- Safe operating pressure
- Safer operation, longer component life
- Safe, convenient storage
- No loose components to misplace
- Great for classroom learning
- Can simulate sound of cavitation
- Can simulate sound of aeration
- 2 year warranty on hydraulic components
- CE compliant version available

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