

Motion Control Training

Training Equipment and Services



ENGINEERING YOUR SUCCESS.



Systems from a Global Leader



Parker Hannifin is the World's leading diversified manufacturer of motion and control technologies and systems, providing precision engineered solutions for a wide variety of commercial, mobile, industrial, and aerospace markets. Parker's products are vital to virtually everything that moves or requires control, including the manufacture and processing of raw materials, durable goods, infrastructure development, and all forms of transport.

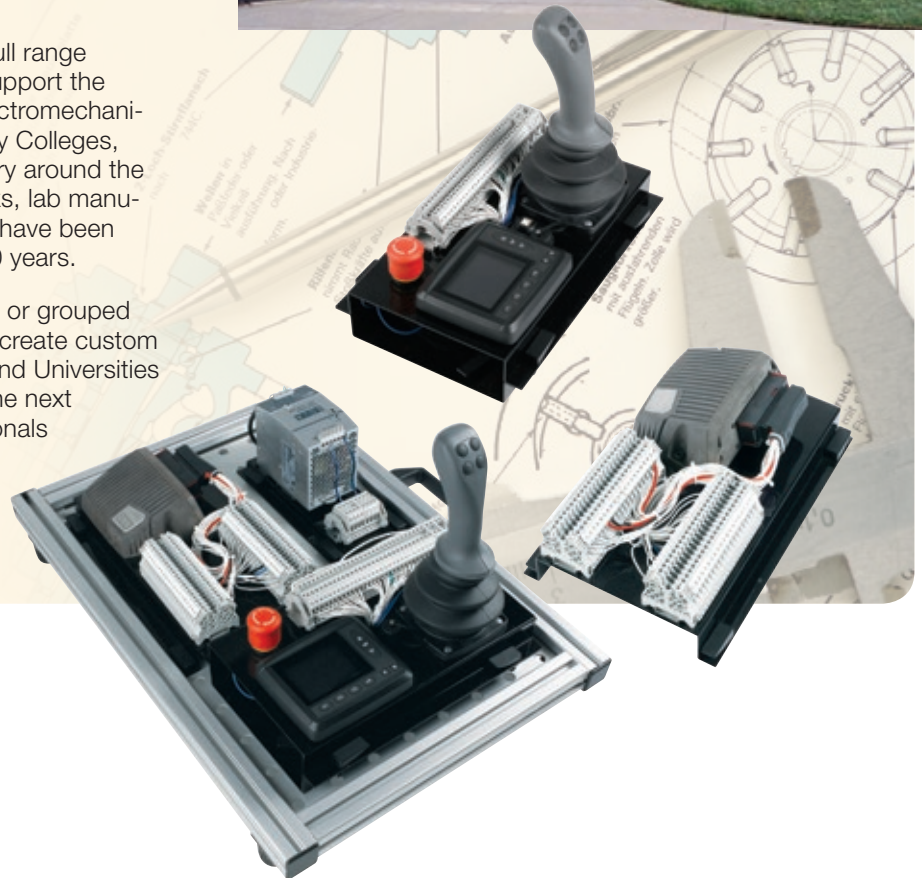
Customers rely on Parker for engineering excellence, World-class manufacturing, and outstanding customer service to provide comprehensive application solutions. Parker's technical training for Hydraulic, Pneumatic, and Electromechanical technology is the best in the World.



Custom Learning Modules

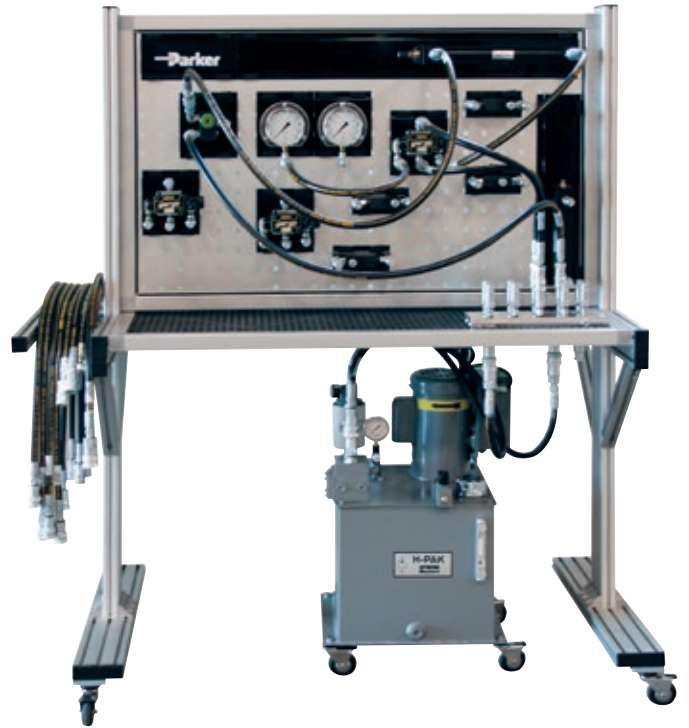
Parker's Motion Control Institute offers a full range of training equipment and curriculum to support the teaching of Hydraulic, Pneumatic, and Electromechanical motion control technologies. Utilized by Colleges, Universities, Technical Schools and industry around the World, Parker's training systems, textbooks, lab manuals, instructor's guides, and teaching aids have been educating technology students for over 40 years.

Training products are available individually, or grouped with other components and curriculum to create custom learning modules. Hundreds of Colleges and Universities use Parker learning modules to educate the next generation of motion and control professionals



Flexible Learning with Parker Solutions

- Parker's Motion and Control Institute offers a full range of training equipment and curriculum to support the teaching of hydraulic and pneumatic motion control technologies. Utilized by Colleges, Universities, Technical Schools and industry around the world, Parker's training systems, textbooks, lab manuals, instructor's guides, and teaching aids have been educating technology students for over 40 years.
- Parker's modular training system is a flexible training platform. The system can be customized to meet the user's needs and budget.
- The components on Parker's training equipment are industrial grade and are used in industry today. Students benefit from learning with the components actually used in demanding real-world applications.
- Training products are available individually, or grouped with other components and curriculum to create custom learning modules. Hundreds of Colleges and Universities use Parker learning modules to educate the next generation of motion and control professionals.



PSKSP0 – Standard Platform

PSKPO – Standard Platform

Part Number	Quantity	Description
PSKMF	1	Modular Frame
PSK-PL48X28	1	Modular Panel
PSK9T66	1	Storage Cart
PSK20607	13	Hose Assemblies
PSKPU1	1	Power Unit
Duraclean	3	Filter & Hydraulic Oil – 5 gal bucket

PSK20607 – Hose Assemblies

A total of 13 hose assemblies are included, offering a mix of 60 inch and 30 inch lengths for connecting the power unit and hydraulic learning modules. Each end is connected to a flush face coupler for easy connections and provides a leak free training environment.



PSK9T66 – Storage Cart (Optional)

The storage cart rolls beneath the modular frame for easy storage or can be used to transport training modules into the classroom to support a visual learning experience.



PSKMF – Modular Frame

The lightweight aluminum frame is ideal for a versatile training environment. Components from any learning module easily snap onto the panel in any configuration. An additional panel (PSK-PL48X28) can be mounted to the back for a double-sided learning platform.



Circuits can be created with ease and brought into the classroom to reinforce learning objectives.

- 68" high x 54" wide x 31" deep
- 4" swivel locking casters
- Hose rack

PSKPU1 – Power Unit

The industrial power unit is used in many hydraulic applications and connects directly to any of the hydraulic components or through a manifold (PSK20600). It offers a huge training opportunity for students to learn about industry standards and proper maintenance. Also includes 15 gallons of Duraclean™ Hydraulic Oil.

Power Unit

- 1 horsepower
- 115 volt electric motor
- Pressure gauge
- Filter
- Motor starter
- Tank gauge
- Bypass valve
- Swivel locking casters



Duraclean™

- Formulated for high performance hydraulic power units and equipment
- Formulated to help extend the life of hoses and seals
- Superior thermal stability for uncompromised performance at high temperatures
- Parker gold dye for easy identification

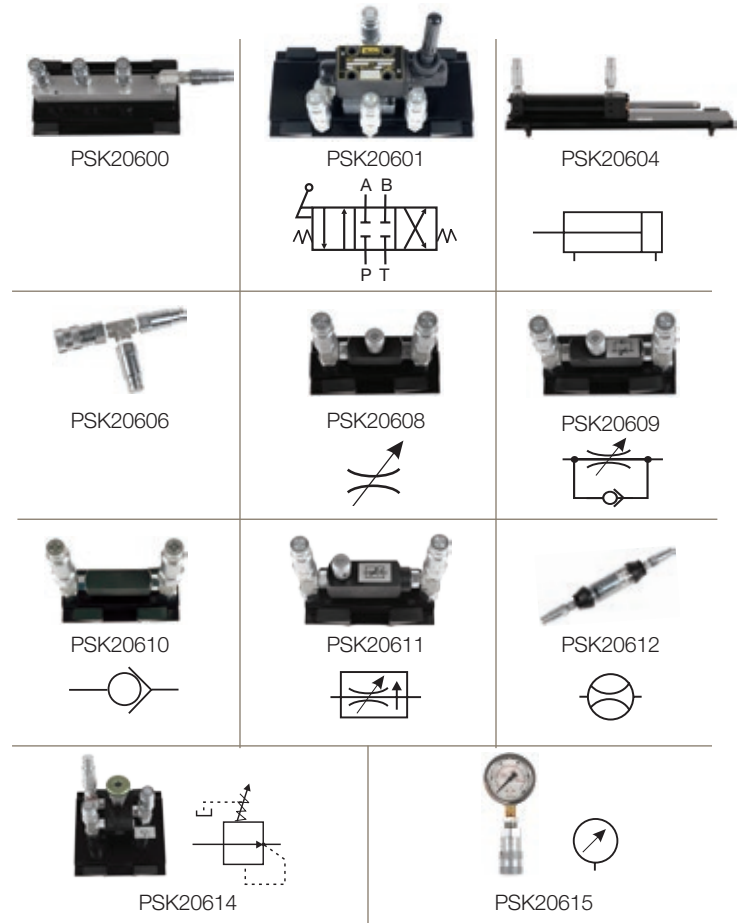


BHLM01 & BHEM02 – Basic Hydraulic Learning Modules

The BHLM01 Basic Hydraulic Learning Module includes fourteen experiments to provide hands-on learning. All of the components in this module are mounted on individual fixtures that snap onto the modular panels.

BHLM01 – Basic Hydraulic Learning Module

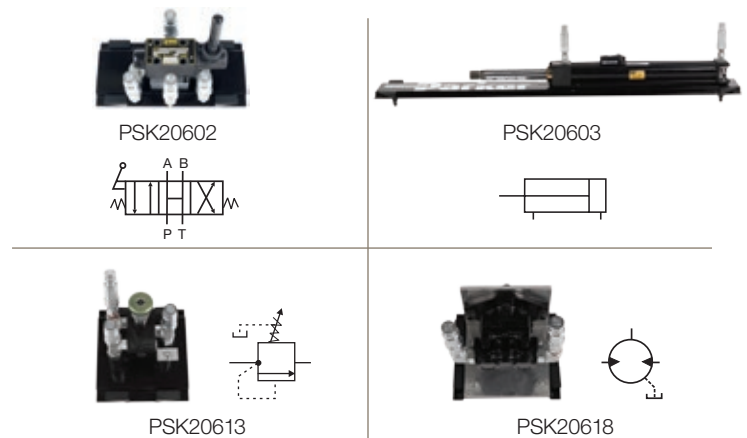
Part Number	Quantity	Description
PSK20600	2	Manifold
PSK20601	1	Closed Center Lever Operated Valve
PSK20604	1	6" Double-Acting Cylinder
PSK20606	4	Tees
PSK20608	1	Needle Valve
PSK20609	1	Flow Control Valve with Bypass Check
PSK20610	1	Check Valve
PSK20611	1	Pressure Compensated Flow Control Valve
PSK20612	1	Flow Meter
PSK20614	1	Pressure Reducing Valve
PSK20615	2	0-1000 psi Gauges
Bulletin 0232-B1	1	Student Textbook
Bulletin 0232-B3	1	Digital Images CD
Bulletin 0216-B8-R1	1	Lab Manual



The BHEM02 Basic Hydraulic Expansion Module must be used with the BHLM01 Basic Hydraulic Module to allow for an additional seventeen experiments.

BHEM02 – Basic Hydraulic Expansion Module

Part Number	Quantity	Description
PSK20602	1	3-position, 4-way, Open Center Lever Operated
PSK20603	1	12" Double-acting Cylinder
PSK20609	1	Flow Control Valve with Bypass Check
PSK20610	1	Check Valve
PSK20613	1	Sequencing Valve
PSK20618	1	Bidirectional Gerotor Motor
Bulletin 0216-B8-R1	1	Lab Manual





Lab Manual – Bulletin 0216-B8-R1

BHLM01

Lab Manual Learning Exercises:

- Maximum Relief Pressure
- Flow Rate of Pump
- Standard Closed Center Circuit
- Setting Flow Rate Through a Flow Control Valve
- Cylinder Leak Test
- Regeneration
- Measuring Flow Out of a Cylinder
- Meter-In
- Meter-Out
- Meter-Out With Pressure Compensated Control Valve
- Bleed-Off Flow Control, Retract
- Bleed-Off Flow Control, Bidirectional
- Pressure Reducing Valve Adjustment
- Pressure Reducing Circuit



BHLM02

Lab Manual Learning Exercises:

- Standard Open Center Circuit
- Closed Center Pressure Buildup
- Regeneration Without Full Flow Through Directional Valve
- Synchronize on Extend Only
- Synchronize Both Ways Without Flow Control
- Hydraulic Motor Meter-In Flow Circuit
- Hydraulic Motor Meter-Out Flow Circuit
- Flow Divider
- Counterbalance
- Counterbalancing a Hydraulic Motor
- Sequence Valve Adjustment
- Sequencing Cylinders
- Sequencing Cylinder and Motor
- Sequencing and Pressure Reducing
- Crossover Relief
- Tri Pressure System
- Directional Control Without Directional Control Valve (Introductory Lab for Cartridge Valve Systems)

Curriculum

Additional learning exercises simulate thousands of real world applications.

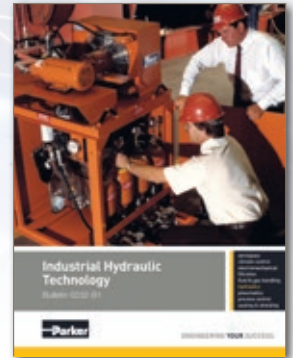
The BHLM02 basic hydraulic expansion module utilizes the same textbook, instructor guide, as the BHLM01 basic hydraulic module.

Student Textbook – Bulletin 0232-B1

Industrial Hydraulic Technology – 2nd Edition ISBN

The industrial hydraulic technology student textbook is designed to introduce hydraulics as it relates to industrial machinery. The 316 page text is organized into fifteen chapters which include:

- The Physical World of a Machine
- Hydraulic Transmission of Force and Energy
- Petroleum Base Hydraulic Fluid
- Fire Resistant Hydraulic Fluid
- Operation at the Suction Side of the Pump
- Hydraulic Actuators
- Control of Hydraulic Energy
- Check Valves, Accumulators and Cylinders
- Flow Control Valves
- Directional Control Valves
- Pressure Control Valves
- Pilot Operated Pressure Control Valves
- Hydraulic Pumps
- Hydraulic Motors
- Reservoirs, Coolers and Filters



Each chapter includes an exercise reviewing the lesson's main points.

Industrial Hydraulic Technology Instructor Guide – Bulletin 0232-B2 ISBN

The instructor guide follows the format of the student textbook (Bulletin 0232-B1). The instructor guide includes the answers to the chapter quizzes, margin notes for the instructor and the answer key to the final exam (Bulletin 0232-B5).

Course Materials

Colleges, universities and corporations throughout the world use Parker textbooks in motion and control courses. To learn more, contact us at mctrain@parker.com or call 216-896-2495.

MHLM01 – Mobile Hydraulic Module

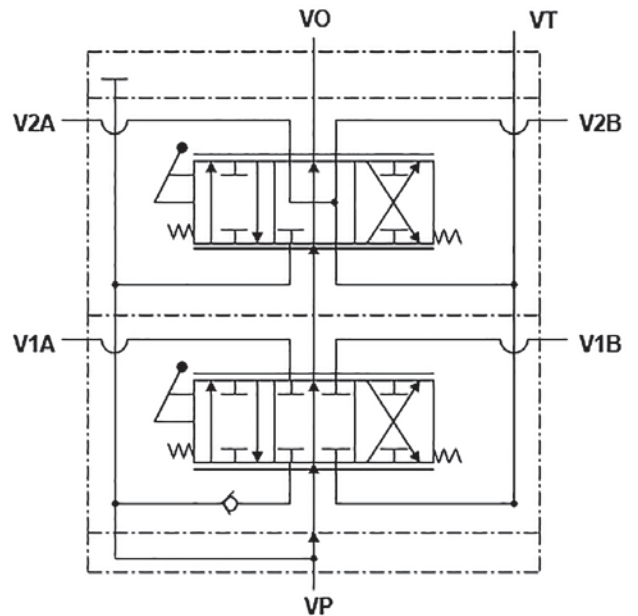
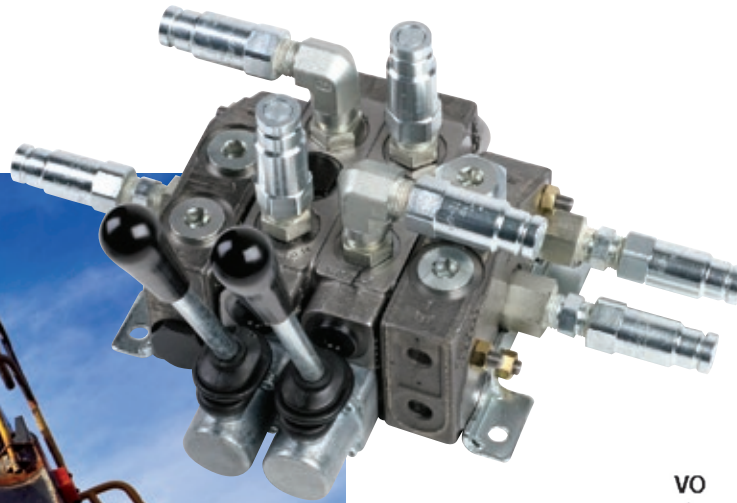
Our new Mobile Hydraulic Module features a mobile, two spool proportional valve. It is configured to highlight metering in both the open and closed center mode.

The valve has the capacity for simultaneous metering of two actuators. It also can be configured to show the power beyond function plus much more.

The valve itself is a current production model used in real world applications.

MHLM01 – Mobile Hydraulic Module

Part Number	Quantity	Description
MOB50600	1	Mobile Valve Assembly-Lever Operated
Bulletin 0274-B1	1	Mobile Hydraulic Technology Textbook
Bulletin 0274-B8.1	1	Mobile Hydraulic Technology Lab Manual





Mobile Hydraulic Technology Lab Manual – Bulletin 0274-B8.1

Learning Exercises:

- Simple Circuit –Open Center
- Simple Circuit – Closed Center
- Operating a Cylinder with a Float Section
- Multiple Circuit – Splitting with an Open Center Valve
- Multiple Circuit – Splitting with a Closed Center Valve
- Measuring Flow out of a Cylinder
- Regeneration
- Pressure Reducing Valve Adjustment
- Pressure Reducing Circuit
- Sequence Valve Adjustment
- Sequencing Cylinders
- Sequencing a Cylinder and Motor
- Meter – In
- Meter – Out
- Synchronize Cylinders with Flow Controls
- Synchronize Cylinders Both Ways without Flow Controls
- Closed Center Pressure Build-up
- Cylinder Leak Test Power Beyond Circuit



Mobile Hydraulic Technology Textbook – Bulletin 0274-B1

Mobile Hydraulic Technology is one of our most recent additions to the line of Parker technical textbooks. Over 400 pages, this text covers technical topics including steering systems, directional control valves, hydraulic cylinders, fluids, and applications.

This text is a must as a fundamental introduction to mobile hydraulics.

Chapters include:

- Introduction to Mobile Hydraulics
- Basic Hydraulic Principles
- Mobile Hydraulic Pumps
- Hydraulic Motors and Hydraulic Drives
- Hydraulic Cylinders
- Pressure Control Valves
- Flow Control Valves
- Directional Control Valves
- Remote Controls in Mobile Hydraulic Systems
- Fluids
- Hydraulic Filters
- Fluid Conductors
- Steering Hydraulic Systems & Accumulators
- Reservoirs and Coolers
- Unit Conversions
- Applications
- Hydraulic Fluid Filter Selection



SELM01 – Hydraulic Diagnostic Module

The Hydraulic Diagnostic Module combines innovative technology with increased overall capabilities to bring you a premier diagnostic instrument. This new tool is more than just a meter; it incorporates data measurement, display, and on-screen analysis to provide increased functionality that extends far beyond standard meters currently on the market.

Combining CAN bus sensor communication protocol with traditional analog inputs, the instrument has 24 channels for a variety of inputs and outputs. In addition, this unit incorporates multiple data interfaces for connectivity and data storage, a variety of display options for user preference and storage capabilities of up to one billion measured values. It is truly a user-friendly, versatile, diagnostic tool for any fluid power system.

Features:

- On-screen data measurement, display and analysis
- Combines analog and CAN bus sensor inputs over 24 channels.
- Multiple display options for user convenience: numerical, bar graph, pointer, curve graph etc.
- Multiple connection interfaces: LAN, USB
- Up to one billion data points storage
- Operates with user-friendly SensoWin software
- Measuring parameters: pressure, temperature, flow, rpm, voltage, and current

Diagnostic Kit Contents:

- Service Master Plus Instrument
- Operation Instructions
- SensoWin software
- Transducers
- Transducer Cables
- Power Supply
- USB Connection Cable
- LAN Cable

SELM01 – Hydraulic Diagnostic Module

Part Number	Quantity	Description
SEN40600	1	Diagnostic Kit
SEN40601	1	Flow Meter, 1 to 4 GPM
SEN40602	2	Diagnostic Tees
Bulletin 0240 – B1	1	Student Textbook
Bulletin 0240-B8.PSK	1	Lab Manual



SEN40600



SEN40601



SEN40602



Hydraulic Maintenance Technology Lab Manual – Bulletin 0240-B8.PSK

Learning Exercises:

Hydraulic Maintenance Exercises

- Maximum Relief Valve Pressure
- Backpressure Affects Relief Valve Setting
- Standard Circuit
- Cylinder Leak Test
- Regeneration
- Measuring Flow Out of a Cylinder
- Meter – In
- Meter – Out
- Meter – Out with a Pressure Compensated Flow Control
- Closed Center Pressure Buildup
- Synchronize on Extend Only
- Synchronize Both Ways Without Flow Controls
- Hydraulic Motor Meter – In vs. Meter – Out



Diagnostics Exercises

- Test Pump Flow Rate
- Test for Pressure Spikes with Cylinder
- Test for Pressure Spikes with Motor
- Test Pressure Drop Across Quick Connect
- Test Pressure Drop Through Hoses
- Test Pressure Drop Across Closed Center Valve
- Test Pressure Drop Across Open Center Valve
- Test Motor Pressure Drop
- Test Check Pressure Drop
- Test Cylinder Pressure Drop
- Test Motor Pressure Drop at Lower Flow
- Test Check Pressure Drop at Lower Flow
- Test for Temperature Rise
- Test for Pressure Intensification
- Test Flow and Pressures During Regeneration
- Record System Cycle and Interface with PC
- Predict Pressure Requirement of a System

Hydraulic Maintenance Technology Textbook – Bulletin 0240 – B1

The Hydraulic Maintenance Technology textbook provides detailed maintenance and troubleshooting information for the user of industrial hydraulic equipment and is a valuable reference for designers of industrial hydraulic equipment. The text is organized into 10 different chapters, including the following:

- Hydraulic Maintenance Introduction
- Hydraulic Graphic Symbology
- Power Unit Maintenance
- Pump Maintenance
- Pressure Control Valve Maintenance
- Directional Control Valve Maintenance
- Flow Control and Check Valve Maintenance
- Cylinder, Motor, and Accumulator Maintenance
- Leakage Elimination in Hydraulic Systems
- Fluids and Filter Maintenance



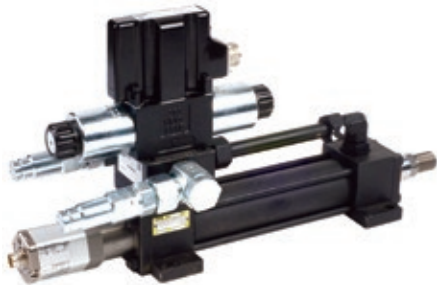
EHTM07 – Electrohydraulic Module

Learn the skill of Open and Closed loop control exactly as you would in the real world. Automatic control of hydraulic systems has evolved into an increasingly superior alternative for many industrial applications. Advances in hydraulic hardware and electronics have combined to make the design and installation of these systems more intuitive, reliable, cost effective, repeatable and user friendly.

Controlling the position of a cylinder is one of the more demanding hydraulic motion control techniques. The electrohydraulic module is intended to develop a solid background in controlling the position of a cylinder, along with references to controlling velocity, pressure, force and combinations thereof.

EHTM07 – Electrohydraulic Module

Part Number	Quantity	Description
SKHD1FB	1	Servo/Proportional Valve and cylinder
SKPID	1	Signal Conditioning Card
SKPS2401	1	Power Supply 24 Volt - 4 Amps
SKPDS	1	Potentiometer
SKEHC	1	7-pin Valve Cable
SK0866	1	Cylinder Cable
	1	Parametrizing Cable
Bulletin 0211-B1	1	Electrohydraulic System Engineering Textbook
Bulletin 0217.1	1	Electrohydraulic System Engineering Lab Manual



SKHD1FB

SKHD1FB Servo/Proportional Valve and Cylinder

This Electrohydraulic Axis is the heart of hydraulic control in many applications. The proportional directional valve is available with digital onboard electronics. The valve parameters can be saved, changed and duplicated in combination with the digital power amplifier. The cylinder feedback is a magnetostrictive probe common in high end applications.

- Digital onboard electronics.
- ProPxD software available on the internet.
- Set Ramps, Limits and Dead-band with your computer
- Command options for D1FB +/- 10V
- Plot spool command and linearization
- Manual override



SKPID / SKPS2401

SKPID Signal Conditioning Card

The digital servo amplifier unit combines all necessary functions for the optimal operation of closed loop controls. The most important features are:

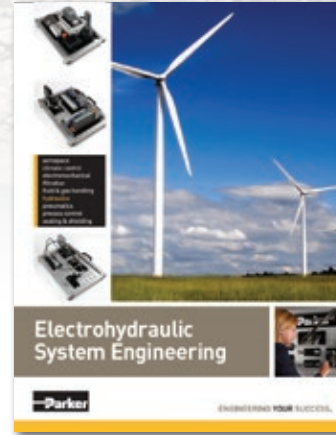
- Extended PID controls
- Speed control with position feedback
- Differential input stage with different signal options
- Output stage with different output options
- Four-quadrant ramp function
- Status indicator
- Digital circuit design
- Connection by disconnectable terminals
- Compatible to the relevant European EMC standards



Electrohydraulic Training Module 01 Lab Manual – Bulletin 0217.1

Learning Exercises:

- Electrohydraulic Valve
- LVDT (linear variable differential transformer)
- PC Board Input/Output Connections
- “On Board” Driver Card Current and Bias Options
- “On Board” Driver Card Electronic Limits
- “On Board” Driver Card Deadband Compensators
- Open Loop Operation with Cylinder
- Proportional Valve Characteristics
- Open Loop Operation with a Motor
- Closed Loop Operation with a Cylinder



Electrohydraulic System Engineering Textbook – Bulletin 0211-B1

The Electrohydraulic System Engineering Textbook focuses on the challenges faced by individuals involved with electrohydraulic systems. These challenges include bridging the theory of open and closed loop hydraulic systems to real applications for improved system performance.

These concepts are highlighted by the chapter descriptions.

Chapter 1

- Electrohydraulic Valves (Servo and Proportional Valves)

Chapter 2

- Defining Force Requirements
- Open Loop Considerations

Chapter 3

- Motion Profiles
- Establishing Target Position, Velocity and Acceleration

Chapter 4

- Sizing Hydraulic System Parameters
- Meeting Force and Velocity Requirements

Chapter 5

- Hydraulic System Dynamics
- Meeting Closed Loop Requirements
- Position and Following Error Tolerances

Chapter 6

- Optimizing System Performance
- Tuning Parameters and Their Effects

Proportional Valve Test Unit

The ValveMaster® Test Unit is suitable for testing and commissioning of all proportional and servo proportional valves with onboard electronics.

For easy on-site service, all necessary cables are located inside the rugged case. The test unit provides all command signal sources and measuring ports for concerted and time saving control and diagnosis of the valves.

Features:

- Control of valves incorporating integrated electronics
- Built-in fuses and safety appliances
- Cable set included
- Lockable rugged box
- DC valve output (24VDC/40W)



EHEM02 – Electrohydraulic Expansion Module

Digital motion controllers transform the way hydraulic systems function in today's demanding applications. Profiles are entered into the motion controllers with the expectation that the electrohydraulic system will closely follow the profile. This module is designed to explore all the variables that affect the performance of these systems.

EHEM02 – Electrohydraulic Expansion Module

Part Number	Quantity	Description
SKC3F01	1	Compax3F Controller
SKRS232	1	Cable

SKC3F01

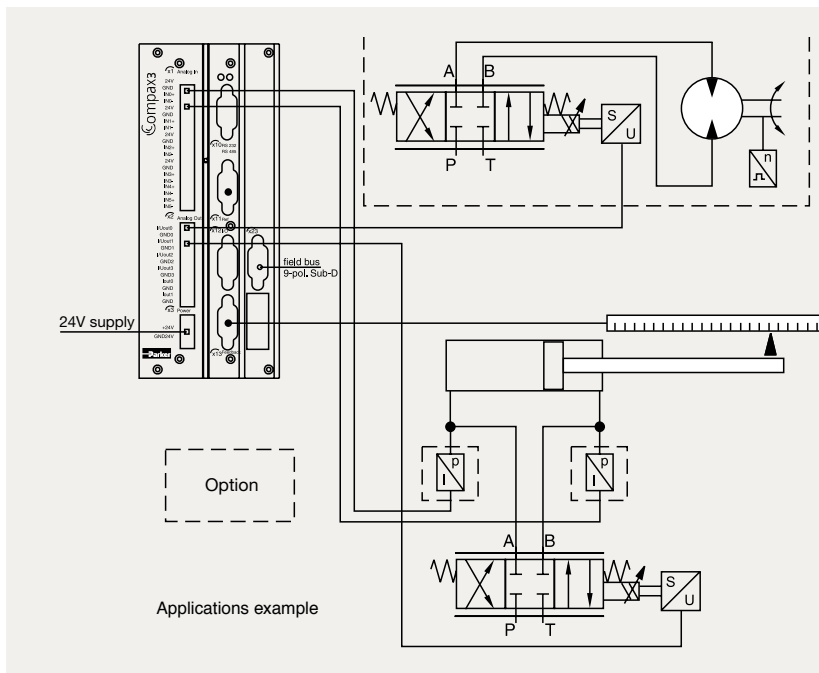
The Compax3F was especially designed to meet the requirements of electrohydraulic systems for the control of position and force of hydraulic axes.

Motion control with motion profiles was created with Standard IEC 61131-3. The motion control functions specified in PLC open are also provided by Parker as a library with the device and control software.



SKRS232-Cable

This cable is required to communicate with the SKC3F01 Controller.



BPLM01 – Pneumatic Learning Module

The BPLM01 Basic Pneumatic Learning Module includes fifteen experiments to provide hands-on learning. All of the components in this module are mounted on individual fixtures that snap into the modular panels.

The lab manual (Bulletin 0213-B8) describes the step-by-step procedures for all of the experiments and references the learnings of the Pneumatic Technology for Industry student textbook.



BPLM01 – Pneumatic Learning Module

Part Number	Quantity	Description
BPT30600	2	Single Rod Cylinder
BPT30601	1	Double Rod Cylinder
BPT30602	1	5/2 Manual Hand Valve
BPT30603	3	3/2 Manual Hand Valve
BPT30604	3	Quick Exhaust/Shuttle Valve
BPT30605	2	3/2 Single Air Pilot Valve
BPT30606	5	5/2 Double Air Pilot Valve
BPT30607	1	Filter-Regulator with Gauge
BPT30608	2	Regulator with Gauge
BPT30609	5	In line Flow Controls; 1/4" Tube
BPT30610	1	1/4" Tube Check Valve
BPT30611	1	Six Port Junction
BPT30612	3	Quad Junction
BPT30613	5	Tee
BPT30614	13	Plug
Bulletin 0212-B1	1	Student Textbook
Bulletin 0213-B8	1	Lab Manual



BPT30600



BPT30601



BPT30604



BPT30607



BPT30610



BPT30613



BPT30602



BPT30605



BPT30608



BPT30611



BPT30614



BPT30603



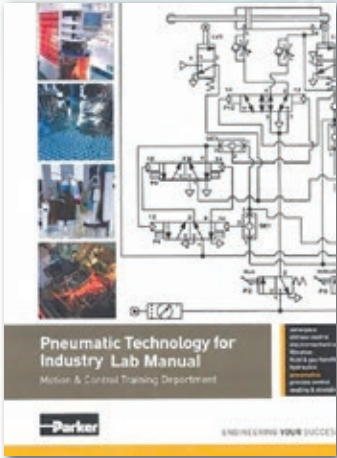
BPT30606



BPT30609



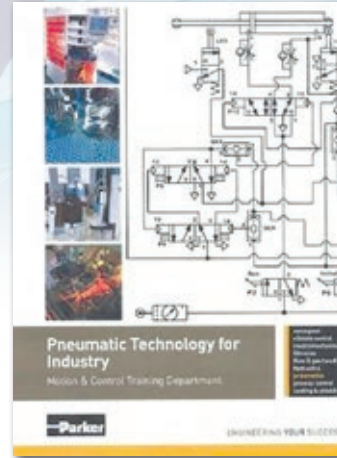
BPT30612



Pneumatic Technology for Industry Lab Manual – Bulletin 0213 - B8

Learning Exercises:

- Operating a cylinder with two 3-way, 2-position valves
- Use of a 5 –way, 4-position valve to actuate a double acting cylinder
- Use of a spring applied, air pressure released rodlock to restrict cylinder motion
- Controlling a large valve using a smaller valve, using pneumatic control
- Use of a quick exhaust valve to open an actuator very quickly
- Pneumatic circuit that will cycle automatically
- Automatic circuit with two stop signals – momentary and retained
- Control system that converts a momentary pressure signal into a sustained pressure signal
- Automatic reciprocating circuit that does not use the limit valves
- Pneumatic sequencing circuit
- Two pressure pneumatic circuit
- Energy conservation circuit
- Using limit valves to cause cylinder's motion to precede another
- Two speed circuit
- 3 position circuit using a duplex cylinder



Pneumatic Technology for Industry Textbook – Bulletin 0212 – B1

The Pneumatic Technology for Industry student textbook is designed to introduce pneumatics as it relates to industrial machinery. The 217 page text is organized into 10 different chapters which include:

- Compressed air Safety
- Introduction to compressed air
- Symbols
- Actuators
- Control valves
- Pneumatic circuits
- Air preparations
- Solenoids and electronic control
- Pneumatic Logic
- Compressed air production and distribution



e-Learning

Why e-Learning?

e-Learning is the utilization of technology to increase the effectiveness and accessibility of learning. e-Learning can include presentations, interactive materials, assessments, and guidance from experts.

Available 24/7

Courses offered in an e-Learning environment can be taken in multiple settings and are available 24/7 to better accommodate your busy schedule.

Training as mobile as you are!

Your training can take place on the road, in the café, or any other place you have a computer, phone, or tablet.

Contact Information

Parker Hannifin Corporation
6035 Parkland Blvd.
Cleveland, OH 44124
Phone: 216-896-2495
Email: mctrain@parker.com
<http://www.parker.com/training>

What Does Parker Offer?

Through the Motion Control Institute, Parker offers many comprehensive online training courses.

Each course offers a broad-based understanding of the most important concepts in hydraulics, pneumatics, electromechanical, filtration, precision fluidics, process control, and sealing and shielding applications.

These courses feature trade specific e-Learning filled with:

- Interactive presentations
- Assessments
- Quizzes
- And more

Certificate Program

Individuals who successfully complete a training track are issued a certificate signifying an elevated status in the workforce.



What Courses Are Offered?

Technology Training

Technology training courses feature topics covering many aspects of the technology platform including an introduction to the platform, safety and many more technology specific topics.

- Pneumatic Technology
- Hydraulic Technology
- Electromechanical Technology
- Liquid Valve Technology
- DC Drive Technology

Product Training

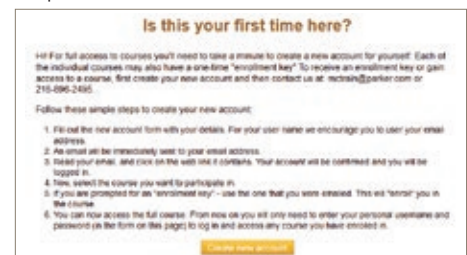
Product training courses feature information on the many product categories available. Courses within this track provide a deeper knowledge of specific products and their specifications.

- Pneumatic Products
- Actuators
- Valves
- Fieldbus
- Air Preparation
- Liquid Valve Products
- DC Drive Products

Access

Access to Motion Control Institute courses is easy, just follow these simple steps:

1. To access the Motion Control Institute home page, type the following URL into your address bar:
<http://www.parker.com/training>
2. Fill out a course registration form and contact Motion Control Institute at mctrain@parker.com to register for a course.
3. Register for a site user name and password.



4. Sign-in to the course using your registration key and begin your 30 day access.

Instructor Led Training

What Courses Are Offered?

- Motion Control Institute Instructor Led courses are conducted globally by qualified subject matter experts providing both theory and hands-on exercises to help develop skills used throughout the industry.
- Technology courses currently offered in North America include Industrial Hydraulic, Mobile Hydraulic, and Pneumatic. Hydraulic Product Schools are also offered at a number of Parker locations in the United States and Canada.
- Multiple Fluid Power Society Certification courses are currently offered, and arrangements can be made for field schools to be conducted on site.

> Industrial Hydraulic

Industrial Hydraulic Technology (IHT)

Covers basic components of an industrial hydraulic system. Class sessions are reinforced with lab exercises.

Introduction to Electrohydraulics (EHD)

Students are introduced to electrohydraulic proportional control. The course concentrates on how electronics are used to control hydraulic components. A typical circuit board is analyzed and explained. 25% lab work with electrohydraulic proportional valves.

Electrohydraulic Feedback Systems (EFS)

Concentrates on how to design a predictable, stable, electrohydraulic positioning system to meet speed, force, duty cycle, and accuracy requirements. Approximately 25% lab connecting, operating, and tuning a closed loop electrohydraulic system.

Hydraulic Component Sizing (HCS)

An in-depth study of hydraulic components, their performance, and how available performance data should be interpreted to evaluate circuits for effectiveness, cost savings, and energy conservation. In addition, students will learn to recognize and overcome problem areas related to individual component characteristics, which can affect the total operation of a system.

Hydraulic Maintenance Technology (HMT)

Covers basic theory and methods for maintaining and troubleshooting hydraulic components and circuits. The student will receive actual hands-on experience with such things as pump set up procedures, circuit assembly, troubleshooting, and graphic symbology reading.

Fluid Power Society – Hydraulic Specialist Review Class & Exam (FPS HS)

This review and test encompasses 28 hours of review for the Hydraulic Specialist Certification, followed by a 3 hour written test. The review consists of going through the material/knowledge required for the Certification (including any necessary math), as well as taking written sample tests. The course is taught by an IFPS Accredited Instructor.

> Mobile Hydraulic

Introduction to Mobile Fluid Power Concepts and Components (MFP)

Introduces the student to how fluid power is used in the mobile industry. Shows the major components that can be found in mobile fluid power systems. Hydraulic systems and components will be discussed in general as the instructor builds a hands-on working tabletop model of a complete hydraulic system.

Mobile Hydraulic Technology (MHT)

Designed to introduce students to fundamentals of mobile hydraulic components and how to maintain and diagnose components within a system. Students will apply these fundamentals through the use of actual circuit assembly.

Advanced Mobile Hydraulics (AMH)

This component and control level course will incorporate component symbols learned in MHT into complete schematics. Remote control of pressure valves using pilot valves, bleed off orifices, and proportional controls will be discussed. Simultaneous control of multiple actuators while maintaining pressure and flow requirements will be reviewed. Operation and setup of load sense pumps will be demonstrated. Slip-in and cartridge valve design and operation will be presented. Proportional directional control valve function will be introduced. Closed loop hydrostatic systems, power steering, and power beyond functions will also be covered.

Troubleshooting Mobile Hydraulic Systems (MTS)

Troubleshooting technology is provided using the hydraulic circuit to group and isolate the potential problems when symptoms such as improper speed, pressure, heat, noise, leaks, and specific failures have been identified. This course begins with a brief review of fundamental fluid principles and hydraulic schematic symbols. It then covers reasons for selection of components and hydraulic accessories.

Fluid Power Society – Mobile Hydraulic Mechanical Review Class & Exam (FPS MHM)

This review and test encompasses 28 hours of review for the Mobile Hydraulic Mechanic Certification, followed by a 3 hour written test. The review consists of going through the material/knowledge required for the Certification (including any necessary math), as well as taking sample written tests. The course is taught by an IFPS Accredited Instructor.

> Pneumatic

Pneumatic Technology for Industry (PTI)

3 day course – Designed to introduce students to pneumatics as it relates to industrial machinery. Students will learn how and why pneumatic components work, and how to maintain pneumatic systems.

Fluid Power Society – Pneumatic Specialist Review Class & Exam (FPS PS)

This review and test encompasses 28 hours of review for the Pneumatic Specialist Certification, followed by a 3 hour written test. The review consists of going through the material/knowledge required for the Certification (including any necessary math), as well as taking sample written tests. The course is taught by an IFPS Accredited Instructor.



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