Industrial Skills Product Catalog

Electrical Skills

Ammeters, Meggers and Wheatstone Bridge Library

This library consists of five lessons. This library is designed for participants familiar with AC/DC theory, electrical safety, and electrical print reading. A basic understanding of electronic devices and circuits is recommended. The library describes megohmmeters, Wheatstone bridges, and clamp-on ammeters. It gives examples of the use of these instruments, identifies their components, and defines their functions. The lessons also describe safety and selection considerations for their use, how to set up the instruments, how to connect them to the systems under test, and how to take and read measurements.

Introduction to Megohmmeters
This is the first lesson in the iKNOW™ Ammeters, Meggers, and Wheatstone Bridge Library. This lesson explains Ohm's Law and how it is used when analyzing test results. The basic components, uses, and functions of a megohmmeter are described. Insulation and causes of insulation damage are also covered.

Using the Megohmmeter
This is the second lesson in the iKNOW™ Ammeters, Meggers, and Wheatstone Bridge Library. This lesson describes safety issues to consider when using a megohmmeter, how to select the correct megger for the job, setup, and the steps necessary to take a megger reading.

Wheatstone Bridge
This is the third lesson in the iKNOW™ Ammeters, Meggers, and Wheatstone Bridge Library. This lesson explains what a bridge circuit is, the purpose and components of a Wheatstone bridge, and its function.

Using a Wheatstone Bridge
This is the fourth lesson in the iKNOW™ Ammeters, Meggers, and Wheatstone Bridge Library. This lesson explains how to balance a Wheatstone bridge and the process used to set mechanical and electrical zero. How to interpret the readings of a Wheatstone bridge is also explained.

Clamp-on Ammeters
This is the final lesson in the iKNOW™ Ammeters, Meggers, and Wheatstone Bridge Library. This lesson presents the components and features and functions of clamp-on ammeters. The lesson also describes safety considerations that should be noted when selecting a clamp-on ammeter. Instruction in the procedures for setting up, taking readings, and modifying the range of a clamp-on ammeter are also covered.

AC/DC Motor Maintenance Library

This library was designed for electricians, mechanics, and others, needing to know more about AC and DC motor maintenance. The library trains participants to understand, maintain, and test AC and DC motors. The library consists of twelve lessons.

Introduction to AC Motor Maintenance
This is the first lesson in the iKNOW™ AC/DC Motor Maintenance Library. The lesson explains the purpose of AC motor maintenance programs and the types of motor maintenance. The lesson also identifies safety procedures that should be used during motor maintenance.

Records, Tools, and Instruments
This is the second lesson in the iKNOW™ AC/DC Motor Maintenance Library. The lesson explains the purpose of keeping complete and accurate records using various record keeping formats. The lesson also identifies tools and instruments used for given tasks in motor maintenance.

Preventive AC Motor Maintenance
This is the third lesson in the iKNOW™ AC/DC Motor Maintenance Library. The lesson explains aspects of preventive motor maintenance, the steps in inspecting a motor for general maintenance and for identifying problems, and cleaning and lubricating a motor as part of a preventive motor maintenance program.

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Measurement in Preventive AC Motor Maintenance
This is the fourth lesson in the iKNOW™ AC/DC Motor Maintenance Library. The lesson demonstrates the need for taking measurements, and the importance of comparing measurements. Causes and effects of current variations, temperature extremes, and vibration measurements are described.

Preparing for Periodic AC Motor Maintenance
This is the fifth lesson in the iKNOW™ AC/DC Motor Maintenance Library. The lesson identifies the characteristics of periodic motor maintenance and the major components of an AC motor. Instruction in testing winding resistance, and winding insulation resistance, as part of pre-maintenance testing is given.

Motor Disassembly and Reassembly in Periodic AC Motor Maintenance
This is the sixth lesson in the iKNOW™ AC/DC Motor Maintenance Library.

Corrective Maintenance for AC Motors
This is the seventh lesson in the iKNOW™ AC/DC Motor Maintenance Library. This lesson discusses causes and corrective actions for various motor malfunctions.

Introduction to DC Motor Maintenance
This is the eighth lesson in the iKNOW™ AC/DC Motor Maintenance Library. This lesson introduces participants to DC motors and compares them to AC motors.

Commutator Inspection
The ninth lesson in the iKNOW™ AC/DC Motor Maintenance Library, this lesson shows participants how to identify some problems that affect the commutator.

Commutator Wear
This is the tenth lesson in the iKNOW™ AC/DC Motor Maintenance Library. This lesson trains participants to recognize friction damage, streaking, threading, and grooving, the cause of these problems, and corrective actions.

Commutator Maintenance
This is the eleventh lesson in the iKNOW™ AC/DC Motor Maintenance Library. The lesson demonstrates the process of preparing a commutator for reconditioning, how to properly cut mica, how to check the commutator after maintenance, and explains the purpose of performing a commutator run-in procedure.

Brush Maintenance
This is the final lesson in the iKNOW™ AC/DC Motor Maintenance Library.
The lesson describes how to select and inspect brushes. The lesson identifies the procedures for cleaning, inspecting, and setting the height of a brush holder. How to seat brushes and adjust spring pressure is demonstrated.

AC/DC Motor Theory Library

This library was designed to provide training for electricians, mechanics, and others, that need to learn more about AC and DC motor theory. This library consists of eleven lessons that address various aspects of AC and DC motor theory.

Introduction to AC Components and Motors
This is the first lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson identifies the components of an AC motor and explains their functions. Basic magnetic principles, sine waves, methods of increasing magnetic flux in a conductor, and how a rotating field is created in an AC Motor are presented.

Advanced AC Motor Principles
The second lesson in the iKNOW™ AC/DC Motor Theory Library, this lesson explains synchronous speed and how to calculate it. The lesson demonstrates the relationship between phased current and rotor spin and induction and its effect on a rotor. Slip and how to calculate slip using its formula are also covered.

Three-Phase Motors – Part 1
This is the third lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson defines and explains the components and functions of various three-phase motors. The lesson also defines torque and explains its role in motor operation.

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Three-Phase Motors – Part 2
This is the fourth lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson defines and explains the components and functions of externally excited motors, starters, and variable speed drives. There is also a review topic to reinforce the information covered in the lesson, Three-Phase Motors – Part 1.

Single-Phase Motors
This is the fifth lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson trains the participants to distinguish single-phase motors from three-phase motors. Split-phase motors and capacitance start motors are discussed.

Introduction to DC Motors
This is the sixth lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson introduces the learner to DC Motors and their basic components.

Introduction to DC Motor Theory
This is the seventh lesson in the iKNOW™ AC/DC Motor Theory Library. The lesson introduces participants to DC motor theory.

Armature Reaction, Compensation, and Induced Voltage
The eighth lesson in the iKNOW™ AC/DC Motor Theory Library, this lesson demonstrates armature reaction, compensation, and induced voltage.

Series, Shunt, and Compound DC Motors
This is the ninth lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson instructs the participant in the design of series wound, shunt wound, and compound DC motors and how they work.

Permanent Magnet, Universal, and Brushless DC Motors
This is the tenth lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson instructs the student in the design of permanent magnet, universal, and brushless DC motors and how they work.

DC Motor Controls
This is the final lesson in the iKNOW™ AC/DC Motor Theory Library. This lesson trains participants in starters, rotation direction, speed control, and drive controls of DC motors.

Conduit Installation Library

This library consists of three lessons designed for the training of electricians as well as for the multi-craft training needs of process and manufacturing facilities. This library provides instructions and interactions concerning general conduit bending and installation, in accordance with the National Electrical Code (NEC). This lesson defines a conduit system, lists general specifications for use of types of conduit, and introduces the major components or materials of a basic conduit system. This lesson also demonstrates and provides instruction on general methods and practices for cutting, cleaning, bending and installing conduit.

Conduit System Materials
This is the first lesson in the iKNOW™ Conduit Installation Library. This lesson introduces the learner to conduit systems and components, and instructs in the use of trade size and fill charts.

Conduit Bending
This is the second lesson in the iKNOW™ Conduit Installation Library. This lesson instructs the learner in the proper methods of cutting, cleaning, and bending conduit. The lesson also demonstrates how to make various bends and when different bends are used.

Conduit Layout and Installation
This final lesson in the iKNOW™ Conduit Installation Library explains the procedure used to plan, measure, and install a conduit system.

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Electrical Print Reading Library

This library consists of eight lessons. The lessons in this library present general information about electrical schematics and electrical diagrams showing and explaining how to read and interpret the symbols on an electrical schematics and electrical diagrams.

Introduction to Electrical Schematics
This is the first lesson in the iKNOW™ Electrical Print Reading Library. This lesson teaches about input, logic, and output devices, and the state in which symbols are drawn on electrical schematics.

Electrical Schematic Symbols – Input Devices
This is the second lesson in the iKNOW™ Electrical Print Reading Library. The lesson presents the symbols for various manually and process actuated input devices and how they are represented on an electrical schematic.

Electrical Schematic Symbols – Logic and Output Devices
This is the third lesson in the iKNOW™ Electrical Print Reading Library. This lesson defines the function of logic and output elements of a control circuit and presents the symbols for various logic and output devices.

Interpreting Electrical Schematics
This is the fourth lesson in the iKNOW™ Electrical Print Reading Library. This lesson describes the steps for interpreting the relationships among the input, logic, and output components of an electrical schematic

Introduction to Electrical Diagrams
This is the fifth lesson in the iKNOW™ Electrical Print Reading Library, and the first lesson covering electrical diagrams. This lesson presents information about the purpose of various types of electrical diagrams and how to interpret the information in the title block. It also explains how to make electrical drawing revisions.

Building Electrical Diagrams
This is the sixth lesson in the iKNOW™ Electrical Print Reading Library. This lesson presents the different views used in electrical diagrams as well as how to identify components, cables, and conduits. The cable chart is also presented.

Single-Line Electrical Diagrams
This is the seventh lesson in the iKNOW™ Electrical Print Reading Library. This lesson presents information regarding how to identify loads, equipment, and isolation breakers on a single-line electrical diagram.

Wiring Diagrams
This is the final lesson in the iKNOW™ Electrical Print Reading Library.
The lesson presents information how to identify components, equipment, wires and cables on a wiring diagram. It also explains how to relate a wiring diagram to the installed hardware and how to use diagrams for maintenance and troubleshooting problems.

Electrical Safety Library

This library consists of eight lessons. The lessons in this library were designed to provide training for electricians, mechanics, and others working with or around electricity. The lessons in this library provide an understanding of electricity focused on increased awareness and prevention of industrial accidents.

Working Safely with Electricity
This is the first lesson in the iKNOW™ Electrical Safety Library. This lesson forms the foundation for the other lessons in Electrical Safety Library. The lesson explains safe work habits and basic safety rules that should be used when working around electricity. The importance of safely using circuits, the dangers of static electricity and the methods used to control it, is discussed. The used of fire extinguishers and how to identify the correct type of fire extinguisher to use on an electrical fire is also presented.

Electrical Circuits and Supplies
This is the second lesson in the iKNOW™ Electrical Safety Library. This lesson explains the relationship between voltage, current and resistance. It also demonstrates the correct method for selecting, inspecting, and handling extension cords and portable electric hand tools, and the purpose of ground fault interrupters is explained.

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Electrical Shock
This is the third lesson in the iKNOW™ Electrical Safety Library. This lesson describes the effects electrical current has on the human body. Proper methods of removing a victim from an energized circuit are discussed. Who is “qualified” to perform a particular task and alerting techniques are introduced.

Electrical Personal Protective Equipment
This is the fourth lesson in the iKNOW™ Electrical Safety Library. This lesson defines personal protective equipment. The need for various alerting techniques, barriers, and attendants, and their roles is discussed, as well as the importance of following safe work habits. In addition, the lesson reinforces the requirements for being “qualified” for a particular task introduced in lesson 3, Electrical Shock.

Protective Gloves and Sleeves
This is the fifth lesson in the iKNOW™ Electrical Safety Library. This lesson discusses the types and classes of protective gloves and sleeves used when working around electricity. The lesson identifies the proper practices for inspecting, repairing, wearing, and maintaining gloves and sleeves.

Eye and Face Protection
This is the sixth lesson in the iKNOW™ Electrical Safety Library. This lesson explains the importance of eye and face protection, as well as the proper practices for its inspections, care, and wear.

Protective Helmets
This is the seventh lesson in the iKNOW™ Electrical Safety Library. This lesson explains the protection provided by helmets, and the proper methods of inspection, wearing, and maintaining a helmet.

General Protective Equipment
This is the eighth lesson in the iKNOW™ Electrical Safety Library. This lesson presents information about safeguards, other than Personal Protective Equipment worn on the body, used when working with or around electricity. Inspection, repair, and care of general protective equipment, and proper used of this equipment are presented.

Electrical Theory for Troubleshooters Library

This library consists of twelve that are excellent for the training of electricians and electronic technicians, as well as for the multi-craft training needs of process and manufacturing facilities.

Introduction to Electricity
This is the first lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson uses animation to demonstrate atomic structure, electricity, and how a simple circuit operates. The lesson also explains the characteristics of good conductors and insulators.

Basic Electrical Properties
This is the second lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson covers Ohm’s Law, as well as the use of Ohm’s Law to calculate an unknown value. The lesson also defines voltage, current, resistance, and power.

Series Circuits
This is the third lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. The lesson presents the operation of a series circuit and trains participants in the identification of simple schematic symbols used to represent components in a series circuit. The behavior of current, resistance, and current in a series circuit, and the used of Kirchhoff’s Voltage Law to find total voltage are also covered.

Parallel Circuits
This is the fourth lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson describes the behavior of voltage, current, and resistance in a parallel circuit. The learner is also instructed in the identification of the series and parallel portions of a series-parallel circuit.

Alternating Current
This is the fifth lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson teaches the basic AC characteristics of voltage, including how voltage changes over time. The participant is also instructed in using sine waves to interpret the frequency of AC voltage.

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Electromagnetism
This sixth lesson in the iKNOW™ Electrical Theory for Troubleshooters Library uses animations and demonstrations to explain the principles of magnetism, including flux density and electromagnetic induction. The lesson also shows how to plot a sine wave using a graph.

Inductance
This is the seventh lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson builds on the information presented in the lesson, Electromagnetism. Types of induction, phase, and the effect of induction in AC circuits are covered.

Capacitance
This is the eighth lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson explains capacitors, their function, and how capacitance affects AC circuits.

Three-Phase AC Circuits
This is the ninth lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson defines 3-phase AC, describes the components and operating principle of 3-phase generators, and using the formula for frequency, shows how rotor speed and the number of poles is related to frequency.

Wye and Delta Connections
The tenth lesson in the iKNOW™ Electrical Theory for Troubleshooters Library, this lesson discusses Wye and Delta configurations and explains the relationship between phase and line voltages in various connections, and demonstrates the application of the formula that shows this relationship.

Introduction to Transformers
The eleventh lesson in the iKNOW™ Electrical Theory for Troubleshooters Library, this lesson presents the basic parts of a transformer and their function. The lesson explains turns ratio and its relationship to a transformer's input and output voltages. The participant is also cautioned regarding the dangers of improper transformer connections.

Transformers
This is the final lesson in the iKNOW™ Electrical Theory for Troubleshooters Library. This lesson builds on the information presented in the lesson, Introduction to Transformers. How to determine primary current and voltage, secondary current and voltage, and load is taught. The function of various transformers is also explained.

Multimeters Library

This library consists of five designed to provide training for persons working with electrical or electronic test equipment. These lessons demonstrate and explain how to use both a digital and an analog multimeter. During these lessons, voltage, resistance, current, capacitance, and frequency are measured. The final lesson also describes some of the more common features of a digital multimeter.

Digital Multimeters
This is the first lesson in the iKNOW™ Multimeters Library. The lesson presents the types of multimeters. The lesson describes the display area, function switch, and leads and jacks on a digital multimeter.

Analog Multimeters
This is the second lesson in the iKNOW™ Multimeters Library. This lesson demonstrates various aspects of an analog multimeter, including how to adjust mechanical zero, how to interpret a reading on the voltage and resistance scales, and how to set the function and range switches.

Multimeter Selection and Inspection
This is the third lesson in the iKNOW™ Multimeters Library. This lesson trains the learner in the inspection of a multimeter, the steps that should be taken before using a multimeter, and how to perform a continuity check.

Using Multimeters
This is the fourth lesson in the iKNOW™ Multimeters Library. This lesson trains the learner to use a multimeter to measure resistance, AC voltage, DC voltage, current, frequency, and capacitance.

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Advanced Features of Digital Multimeters
The final lesson in the iKNOW™ Multimeters Library, this lesson instructs the participant in the use of the advanced features of digital multimeters.

Oscilloscopes Library

This library contains nine lessons designed for the training of electricians and electronic technicians as well as for the multi-craft training needs of process and manufacturing facilities. These lessons are designed for participants familiar with AC and DC theory, electrical safety, and electrical print reading. A basic understanding of electronic devices and circuits is recommended. The lessons in this library explain and demonstrate the use of both analog and digital oscilloscopes. Participants will learn the controls on each type of oscilloscope, how to use a probe with an oscilloscope, how to set up an oscilloscope, and how to determine various measurements taken with an oscilloscope.

Introduction to Oscilloscopes
This is the first lesson in the iKNOW™ Oscilloscopes Library. This lesson explains the purpose of oscilloscopes, introduces waveforms, and presents analog and digital oscilloscope systems using a flowchart.

The Display
This is the second lesson in the iKNOW™ Oscilloscopes Library. This lesson explains the functions of the display and display controls on an analog and digital oscilloscope. The lesson also explains how divisions are used.

Vertical System Controls
This is the third lesson in the iKNOW™ Oscilloscopes Library. This lesson explains the vertical system controls on analog and digital oscilloscopes.

Horizontal System Controls
This is the fourth lesson in the iKNOW™ Oscilloscopes Library. This lesson explains the horizontal system controls on analog and digital oscilloscopes.

The Trigger System
This is the fifth lesson in the iKNOW™ Oscilloscopes Library. This lesson explains the functions and controls of the trigger system on analog and digital oscilloscopes.

Probes
This is the sixth lesson in the iKNOW™ Oscilloscopes Library. This lesson explains the purpose and use of probes, and trains the participant to match the probe/scope combination to the application.

Setup
This is the seventh lesson in the iKNOW™ Oscilloscopes Library. This lesson trains the participant to safely setup an oscilloscope for use, how to adjust the controls, and compensate the probe.

Waveforms
This is the eighth lesson in the iKNOW™ Oscilloscopes Library. This lesson teaches participants to recognize the various waveform types and how to analyze waveforms.

Measurement
This is the final lesson in the iKNOW™ Oscilloscopes Library. This lesson teaches how to determine various measurements taken with an oscilloscope.

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Industrial Skills Product Catalog

Mechanical Skills

Hand Tools Library

This library consists of four lessons. This library is designed for employees in all disciplines as well as for the multi-craft training needs of process and manufacturing facilities. Upon completion of this lesson, participants will be able to improve their on-the-job performance through the proper use hand tools.

Clamps, Vises, and Pliers
This is the first lesson in the iKNOW™ Hand Tools Library. This lesson introduces and demonstrates the proper use of tools used for holding.

Screwdrivers
This is the second lesson in the iKNOW™ Hand Tools Library. This lesson introduces and demonstrates the proper use of screwdrivers.

Wrenches
This is the third lesson in the iKNOW™ Hand Tools Library. This lesson introduces and demonstrates the proper use of wrenches.

Hammers, Mallets, and Sledges
This is the final lesson in the iKNOW™ Hand Tools Library. This lesson introduces and demonstrates the proper use of tools used for striking.

Industrial Hydraulic Power Library

This library consists of thirteen lessons. These lessons were designed for beginning hydraulic technicians as well as mechanics, electricians, operators, and for those individuals who need to learn more about industrial hydraulic power. The lessons in this library train participants to identify system components, read schematics, and understand the conditions necessary for proper operation of a hydraulic system.

Introduction to Hydraulic Systems
This is the first lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson identifies the basic components of an industrial hydraulic system and explains their functions. Formulas, including Pascal's Law, are presented and their use in determining values in a hydraulic system is explained.

Hydraulic Schematics
This is the second lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson introduces the schematic symbols that represent the basic components of a hydraulic system. It explains the use of color-coding used to identify pressure and how to identify the flow path through the system using schematics.

Hydraulic Fluids
This is the third lesson in the iKNOW™ Industrial Hydraulic Power Library. The lesson discusses the types, properties, and functions of hydraulic fluids and the components in which they are used.

Hydraulic Pump Applications
The fourth lesson in the iKNOW™ Industrial Hydraulic Power Library, this lesson discusses the various hydraulic pumps and their applications. It also describes symptoms of pump malfunction.

Positive Displacement Pumps
This is the fifth lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson describes various positive displacement pumps and their components. The lesson explains some of the causes of system inefficiencies associated with fixed volume pumps and describes applications in which variable volume pumps are used.

Hydraulic Accumulators
This is the sixth lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson describes the common accumulators and their schematic symbols. It also describes the application and operation of an accumulator in a hydraulic system. Safety considerations for depressurizing and pre-charging an accumulator are discussed.

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Pressure Control Principles
This is the seventh lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson describes the functions of a pressure relief valve in a hydraulic system and the conditions necessary for normal operation of a pressure relief valve. Pressure characteristics, the relationship of pressure and flow, and depressurization are also discussed.

Pressure Control Operation
The eighth lesson in the iKNOW™ Industrial Hydraulic Power Library, this lesson presents various pressure control valves, their operation, and components.

Pressure Control Valve Applications
This is the ninth lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson describes the proper operation of pressure control valves used in various applications.

Directional Control Principles
This is the tenth lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson describes various directional control valves. The lesson explains the function of the ports on a directional control valve and instructs the process of tracing the various flow paths through the valve. The lesson also describes the centering conditions and piloting arrangements commonly used with directional control valves.

Flow Control Valves
This is the eleventh lesson in the iKNOW™ Industrial Hydraulic Power Library. The lesson demonstrates how to determine speed and flow rates and differential pressure. It describes various valves, their components, and their uses.

Actuator Cylinders
This is the twelfth lesson in the iKNOW™ Industrial Hydraulic Power Library. This lesson describes the various cylinders used in hydraulic actuators. It also describes the operation of a cylinder controlled by regulating flow or pressure, and the purpose of a cylinder leak test.

Hydraulic Motors
This is the final lesson in the iKNOW™ Industrial Hydraulic Power Library. General knowledge of hydraulic schematics is required. Review of the lesson, Hydraulic Schematics, is recommended. This lesson describes various hydraulic motors and their functions. It also describes the operation of various hydrostatic drive circuits and the function of components and flow path in a braking circuit.

Mechanical Print Reading Library

This library consists of four lessons. This lesson was designed to provide training for maintenance technicians, mechanics, electricians, and others requiring knowledge of mechanical print reading. The lessons in this library show and explain how to read and interpret various mechanical drawings.

Introduction to Mechanical Print Reading
This is the first lesson in the iKNOW™ Mechanical Print Reading Library. This introductory lesson trains the learner to identify the various parts of mechanical drawings and their components.

Lines Used in Mechanical Print Reading
This is the second lesson in the iKNOW™ Mechanical Print Reading Library. This lesson explains the types of lines used in mechanical print reading and what they represent.

Dimensions in Mechanical Print Reading
This is the third lesson in the iKNOW™ Mechanical Print Reading Library. This lesson explains the use of dimension and extension lines in mechanical print reading, and how to calculate dimensions, tolerance, and limits. The use of surface finish designations is also discussed.

Orthographic Projection
This is the final lesson in the iKNOW™ Mechanical Print Reading Library.
This lesson trains participants in the use of orthographic projections in mechanical print reading. Pictorial drawings and various views used in mechanical print reading are demonstrated. The lesson also discusses aspects of sectional views, threaded fasteners, and how to identify thread designations.

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Mechanical Seals

This library consists of four lessons designed for persons with a basic understanding of the operation and maintenance of pumps, agitators, and rotating equipment. The lessons in this library train participants to work effectively with mechanical seals. The functions, operation, and repair of common mechanical seals are demonstrated. The library presents specific procedures for failure analysis and identification, seal removal, disassembly, reassembly, and installation.

Introduction to Mechanical Seals
This is the first lesson in the iKNOW™ Mechanical Seals Library. The lesson explains the purpose and basic components of mechanical seals. The participant is instructed in the identification and characteristics of materials commonly used to make seal faces and seal hardware, and to understand the limitations of seals. Characteristics, limitations, and application of packing are also discussed.

Mechanical Seal Designs
This is the second lesson in the iKNOW™ Mechanical Seals Library. It describes various seal designs and their application. The lesson also describes conditions that may affect mechanical seal performance.

Failure Analysis
This is the third lesson in the iKNOW™ Mechanical Seals Library. This lesson demonstrates the steps necessary to prepare to remove, and to remove, a failed mechanical seal. The lesson trains the participant in failure analysis to determine the cause of seal failure and identify the means to correct the problem or condition that caused the failure.

Mechanical Seal Maintenance
This, the final lesson in the iKNOW™ Mechanical Seals Library, trains the learner in seal disassembly and reassembly, 0-ring installation, and seal installation.

Precision Measuring Instruments

This library consists of four lessons. The lessons in this library were designed for employees in all disciplines as well as for the multi-craft training needs of process and manufacturing facilities. In order to successfully complete these lessons participants should be familiar with whole number operations and decimals. This library describes the purpose and the basic components of some common precision measuring instruments. The library also provides procedures for properly using each of these instruments to measure the dimensions of an object.

Dial Calipers
This is the first lesson in the iKNOW™ Precision Measuring Instruments Library. This lesson describes the purpose and the basic components of dial calipers. The lesson also provides procedures for properly using a dial caliper to measure the dimensions of an object.

Micrometers
This is the second lesson in the iKNOW™ Precision Measuring Instruments Library. This lesson describes the purpose and the basic components of outside micrometers, inside micrometers, and depth micrometers. The lesson also provides procedures for properly using each of these instruments to measure the dimensions of an object.

Telescoping and Thickness Gauges
This is the third lesson in the iKNOW™ Precision Measuring Instruments Library. This lesson describes the purpose and the basic components of telescoping gauges and thickness gauges. The lesson also provides procedures for properly using each of these instruments to measure the dimensions of an object.

Dial Indicators
This is the final lesson in the iKNOW™ Precision Measuring Instruments Library. This lesson describes the purpose and the basic components of dial indicators. The lesson also provides procedures for properly using dial indicators to measure the dimensions of an object.

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Industrial Skills Product Catalog

General Skills

Office Computer Data Security

This library consists of one lesson designed to provide training for anyone using computers in the workplace.

Troubleshooting Skills: Developing Logical Thinking

This library consists of four lessons. The lessons in this library teach strategic troubleshooting skills that can be applied to the analysis of problems in any type of industrial system. This library teaches participants how to develop logical thinking and create a personal troubleshooting outlook that will prove valuable under any troubleshooting situation.

Introduction to Troubleshooting
This is the first lesson in the iKNOW™ Troubleshooting Skills: Developing Logical Thinking Library. This lesson defines root cause problem solving and troubleshooting. The lesson also describes the basic steps in a general troubleshooting procedure.

Information Gathering
This is the second lesson in the iKNOW™ Troubleshooting Skills: Developing Logical Thinking Library. This lesson presents the steps involved in interviewing and researching to obtain information about a malfunctioning system and the importance of investigating the normal operation and history of the system. The relationship between symptom and cause is also explained.

Troubleshooting
This is the third lesson in the iKNOW™ Troubleshooting Skills: Developing Logical Thinking Library. This lesson teaches participants to develop a troubleshooting plan to evaluate problems. The importance of schematics in troubleshooting, steps necessary to repair the problems, and prevention of future trouble is discussed.

Improving Skills
This is the final lesson in the iKNOW™ Troubleshooting Skills: Developing Logical Thinking Library. This lesson uses the information taught in the previous lessons in the library to assist in improving the learner's troubleshooting skills.
The learner will be instructed in the steps needed to prevent future trouble, what is required when it is necessary to troubleshooting under pressure, and the importance of gaining troubleshooting experience.

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