### ELECTRICAL MAINTENANCE

**AC/DC THEORY**
- AC/DC Theory: Current
- AC/DC Theory: Voltage
- AC/DC Theory: Resistance
- AC/DC Theory: Ohm's Law
- AC/DC Theory: Magnetism
- AC/DC Theory: Electrical Measurements
- AC/DC Theory: DC Circuits
- AC/DC Theory: Inductance and Capacitance
- AC/DC Theory: Alternating Current
- AC/DC Theory: AC Measurements
- AC/DC Theory: Capacitive Circuits
- AC/DC Theory: Inductive Circuits
- AC/DC Theory: Transformers
- AC/DC Theory: Tuned Circuits

**APPLIED DC FUNDAMENTALS**
- Applied DC Fundamentals: Voltage, Resistance, Current, Ohm’s Law & DC Circuits
- Applied DC Fundamentals: Ohm’s Law & DC Circuits
- Applied DC Fundamentals: Electronic Components & Magnetism
- Applied DC Fundamentals: Electronic Schematics & Circuit Analysis

**PROGRAMMABLE LOGIC CONTROLLERS**
- PLCs: Fundamentals
- PLCs: Programming
- PLCs: Inputs & Outputs
- PLCs: Troubleshooting
- PLCs: Communications & Advanced Programming

**INDUSTRIAL ELECTRICITY**
- Industrial Electricity: Basic Principles
- Industrial Electricity: Alternating Current
- Industrial Electricity: Conductors
- Industrial Electricity: Wiring
- Industrial Electricity: Generators & Motors
- AC Motor Control & Current Measurement
- Industrial Electricity: Installation, Distribution & Lighting

**BASIC ELECTRONIC COMPONENTS & THEIR MEASUREMENT**
- Basic Electronic Components & Their Measurement: Types & Diagrams
- Basic Electronic Components & Their Measurement: Controls & Application
- Basic Electronic Components & Their Measurement: Operation & Troubleshooting
- Electronic Circuits: Logic Fundamentals, Types & Application
- Electronic Circuits: Characteristics & Operations
- Electronic Circuits: Basic Principles

**DC MOTORS AND DC MOTOR CONTROLLERS**
- DC Motor Controllers: Controller Function & Operation
- DC Motor Controllers: Maintenance Procedures & Applications
- DC Motor: Maintenance & Troubleshooting
- DC Motor: Basics & Internal Parts

**MOTOR DRIVES**
- Motor Drives: Identification
- Motor Drives: Open & Closed Loop Systems
- Motor Drives: Variable Speed AC Drives
- Motor Drives: Servo & Stepper Motors
- Motor Drives: AC Motor Operation
- Motor Drives: AC Drive Selection & Setup

**MOTOR CONTROLS**
- Motor Controls: Basic Motor Controls & Relays
- Motor Controls: Overload Relays
- Motor Controls: Time Delay Relays
- Motor Controls: Schematic Symbols
- Motor Controls: Schematics & Wiring Diagrams
- Motor Controls: Starting Methods for Squirrel Cage Motors
- Motor Controls: Wye-Delta, Synchronous, & Wound Rotor Controls
- Motor Controls: Installing & Troubleshooting Control Systems
ELECTRICAL MAINTENANCE

MECHANICAL ELECTRICAL CONTROL SYSTEMS
- Mechanical Electrical Control Systems: Introduction to Control Schematics
- Mechanical Electrical Control Systems: Creating Schematics
- Mechanical Electrical Control System: Electrical Lockout
- Mechanical Electrical Control System: Design & Troubleshooting
- Mechanical Electrical Control System: Energy Management
- Mechanical Electrical Control System: Electronic Controls
- Mechanical Electrical Control System: Responsive Systems

OPERATOR TRAINING
- Operator Inspection: Pneumatic System Inspection
- Operator Inspection: Vacuum System Inspection
- Operator Inspection: Clutches & Brake Inspection
- Operator Inspection: Lubrication System Inspection
- Operator Inspection: Motor Drive System Inspection
- Operator Inspection: Air Compression System Inspection
- Operator Inspection: Fastener & Equipment Structures Inspection
- Operator Inspection: Electrical Equipment Control System Inspection
- Operator Inspection: Belt Drive, Chain Drive & Gear Box Inspection
- Take the Step Up to Supervisor

MECHANICAL MAINTENANCE

HYDRAULICS
- Hydraulics: Harnessing Hydraulic Power
- Hydraulics: The Hydraulic Circuit
- Hydraulics: Pumps & Actuators
- Hydraulics: Control Valves
- Hydraulics: Hydraulic Fluid
- Hydraulics: Hydraulic Systems Safety & Maintenance
- Hydraulics: The Hydraulic Systems Troubleshooting

HYDRAULIC POWER SYSTEMS & TROUBLESHOOTING
- Hydraulics Power Systems & Troubleshooting: Identification & Operation
- Hydraulics Power Systems & Troubleshooting: Troubleshooting Techniques

INDUSTRIAL HYDRAULICS
- Industrial Hydraulics: Basic Principles & Application
- Industrial Hydraulics: Types & Concepts
- Industrial Hydraulics: Function & Operating Principles
- Industrial Hydraulics: Maintenance & Troubleshooting

CENTRIFUGAL PUMPS
- Centrifugal Pumps: Design & Function
- Centrifugal Pumps: System Characteristics & Selection
- Centrifugal Pumps: Operation & Maintenance
- Centrifugal Pumps: Troubleshooting & Disassembly
- Centrifugal Pumps: Reassembling & Installation

INDUSTRIAL BEARINGS
- Industrial Bearings: Application & Technology
- Industrial Bearings: Maintenance & Installation
- Industrial Bearings: Troubleshooting

PNEUMATICS
- Pneumatics: The Power Of Compressed Air
- Pneumatics: The Pneumatic Circuit
- Pneumatics: Processing Air
- Pneumatics: Using Compressed Air
- Pneumatics: Pneumatic Control Valves
- Pneumatics: Working Safely With Pneumatic Systems
- Pneumatics: Pneumatic System Maintenance
- Pneumatics: Troubleshooting Pneumatic System
# MECHANICAL MAINTENANCE

## INDUSTRIAL SEALS
- Industrial Seals: Types Materials & Properties
- Industrial Seals: Gaskets & Packings Inspection & Installation
- Industrial Seals: Mechanical Face Seals
- Troubleshooting & Installation

## MACHINERY LUBRICATION
- Machinery Lubrication: Lubricating Oil Types, Properties & Handling
- Machinery Lubrication: Lubricating Oil Equipment & Procedures
- Machinery Lubrication: Lubricating Grease Types, Application & Equipment

## INDUSTRIAL DRIVES
- Industrial Drives: Belt Drives
- Industrial Drives: Chain Drives
- Industrial Drives: Complete Drive Packages
- Industrial Drives: Enclosed Drive Systems
- Industrial Drives: Gears & Gear Systems
- Industrial Drives: Shaft Joint and Coupling Devices

## CLUTCHES & BRAKES
- Clutches & Brakes: Types & Applications
- Clutches & Brakes: Troubleshooting

## STEAM TRAPS
- Steam Traps: Types, Principles, & Functions
- Steam Traps: Sizing, Installation, and Monitoring
- Steam Traps: Diagnostics & Troubleshooting

## PIPEFITTING
- Pipefitting: Introduction To Pipefitting
- Pipefitting: Piping Systems & Standards
- Pipefitting: Pipe Fittings & Joints
- Pipefitting: Measuring Pipe & Drawings
- Pipefitting: Offsets
- Pipefitting: Manual & Electric Threaded Pipe
- Pipefitting: Flanged Pipe
- Pipefitting: Plastic Pipe
- Pipefitting: Accessories & Specialty Equipment
- Pipefitting: Tubing
- Pipefitting: Hoses

## HVAC&R
- HVAC&R: Air Handlers — Mechanical Systems
- HVAC&R: Air Handlers — Calibration
- HVAC&R: Chillers — Mechanical Components
- HVAC&R: Chillers — Leak Check & Electrical
- HVAC&R: Cooling Towers — Maint. & Troubleshooting
- HVAC&R: Condensers — Maint. & Troubleshooting
- HVAC&R: Complete System Troubleshooting

## BOILER OPERATION & CONTROL
- Boiler Operation & Control:
  - Introduction to Boilers An Overview
  - Boiler Operation & Control: Design & Construction
  - Boiler Operation & Control: Feed water & Steam
  - Boiler Operation & Control: Fuel & Air
  - Boiler Operation & Control: Boiler Operation
INSTRUMENTATION & CONTROL

BASIC PROCESS CONTROL
- Basic Process Control: Feedback Control
- Basic Process Control: Process Control Modes
- Basic Process Control: Process Characteristics
- Basic Process Control: Process Variables
- Basic Process Control: Instrumentation Symbols
- Basic Process Control: Instrumentation Loop Diagrams
- Basic Process Control: Piping & Instrumentation Drawings
- Basic Process Control: Mechanical Connections
- Basic Process Control: Electrical Connections
- Calibration Test Equipment: Instrumentation Errors
- Calibration Test Equipment: Instrument Calibration

USING RSLogix™
- RSLogix™: Configuring Hardware & Software
- RSLogix™: Programming & Editing
- RSLogix™: Testing & Troubleshooting

CONTINUOUS PROCESS CONTROL
- Continuous Process Control: Principles Of Continuous Control
- Continuous Process Control: Applications Of Heat Exchanger Control
- Continuous Process Control: Applications Of Distillation Control
- Continuous Process Control: Applications Of pH Control

CONTROL VALVES & ACTUATORS
- Control Valves & Actuators: Basics & Function
- Control Valves & Actuators: Types & Design
- Control Valves & Actuators: Fundamentals & Selection
- Control Valves & Actuators: Sizing & Installation

CALIBRATION & TEST EQUIPMENT
- Calibration Test Equipment: Primary Calibration Standards
- Calibration Test Equipment: Pneumatic Test Equipment
- Calibration Test Equipment: Electronic Test Equipment
- Calibration Test Equipment: Oscilloscopes

ELECTRONIC MAINTENANCE
- Electronic Maintenance: Solid-State Devices
- Electronic Maintenance: Sensor & Transducer Principles
- Electronic Maintenance: Transmitters
- Electronic Maintenance: Transducers
- Electronic Maintenance: Controllers, Indicators & Recorders
- Electronic Maintenance: Tuning
- Electronic Maintenance: Spectroscopic Analyzers
- Electronic Maintenance: Sampling Systems & Gas Chromatograph Valves
- Electronic Maintenance: Gas Chromatograph Ovens & Controllers
- Electronic Maintenance: Electrochemical Analyzers
- Electronic Maintenance: Instrument Loop Troubleshooting

SMART DIGITAL INSTRUMENTATION
- Smart Digital Instrumentation: Understanding HART Protocol
- Smart Digital Instrumentation: Applications Of Smart Field Devices
- Smart Digital Instrumentation: Configuring, Calibrating & Testing HART Smart Field Devices
- Smart Digital Instrumentation: FOUNDATION™ Fieldbus

CONTROLLOGIX
- ControlLogix: Introduction To The ControlLogix PLC Family
- ControlLogix: Introduction To RSLogix 5000 Software
- ControlLogix: Creating & Using Tags & The Program Editor
- ControlLogix: Basic Instructions
- ControlLogix: Advanced Programming & Analog Devices
- ControlLogix: PLC Troubleshooting
INSTRUMENTATION & CONTROL

PROCESS MEASUREMENT
- Process Measurement: Temperature 1 — Thermometers & Thermocouples
- Process Measurement: Temperature 2 — Resistance & Radiation Devices
- Process Measurement: Pressure 1 Manometers & Gages
- Process Measurement: Pressure 2 Indicators & Transmitters
- Process Measurement: Level 1 Measurement & Gages
- Process Measurement: Level 2 Indicators & Transmitters
- Process Measurement: Flow 1 Measurement Overview

FIELDBUS
- Fieldbus: Fieldbus Curriculum Overview
- Fieldbus: The Road To Fieldbus
- Fieldbus: Fieldbus Wiring
- Fieldbus: Fieldbus Devices
- Fieldbus: Introduction to Configuration
- Fieldbus: Introduction to Control Strategy
- Fieldbus: Control Strategy
- Fieldbus: Data Flow & Communications
- Fieldbus: Fieldbus Calibration
- Fieldbus: OPC
- Fieldbus: Introduction To Troubleshooting
- Fieldbus: Troubleshooting
- Fieldbus: Fieldbus Maintenance
- Fieldbus: Maintenance Exercises

DRESSER-RAND® EQUIPMENT-SPECIFIC: RECIPROCATING PRODUCTS
- Dresser-Rand: Engine — Major Components
- Dresser-Rand: Engine — Four-Cycle Theory
- Dresser-Rand: Engine — Pre-Ignition & Detonation
- Dresser-Rand: Engine — Balancing Firing Pressures
- Dresser-Rand: Recip — Compressor Major Components
- Dresser-Rand: Recip — Compressor Theory
- Dresser-Rand: Recip — Compressor Piston End-Clearance
- Dresser-Rand: Recip — Compressor Rod Run-out
- Dresser-Rand: Recip Compressor Frame Lubrication System
- Dresser-Rand: Recip/Engine — Crankshaf Web Deflection
- Dresser-Rand: Recip — Compressor Rod Packing Fundamentals
- Dresser-Rand: Recip — Compressor Rod Packing Reconditioning
- Dresser-Rand: Recip — Compressor Wedge Ring Packing
- Dresser-Rand: Recip — Compressor Divider Block Cylinder & Packing Lubrication
- Dresser-Rand: Recip — Compressor Pump to Point Cylinder & Packing Lubrication
- Dresser-Rand: Recip — Compressor Set Screw Type Valve Cover
- Dresser-Rand: Bolt Torque
- Dresser-Rand: Recip — Compressor Crosshead & Piston Supernut
- Dresser-Rand: Steam — Turbine Major Components
- Dresser-Rand: Steam — Turbine Operation
- Dresser-Rand: Steam — Turbine Overspeed Trip Systems
- Dresser-Rand: Centrifugal — Compressor Types
- Dresser-Rand: Centrifugal — Compressor Surge

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PREDICTIVE MAINTENANCE

MACHINERY OIL ANALYSIS
- Machinery Oil Analysis: Fundamentals & Methods
- Machinery Oil Analysis: Strategies Options & Testing
- Machinery Oil Analysis: Establishing an Effective Program

THERMOGRAPHY
- Thermography: Basic Operation
- Thermography: Operating Procedures & Implementation
- Thermography: Practical Application

ULTRASONICS
- Ultrasonics: Basic Principles
- Ultrasonics: Leak Detection
- Ultrasonics: Mechanical & Electrical Inspection

GENERAL MAINTENANCE
- Maintenance Principles
- Maintenance Troubleshooting: Troubleshooting Procedures
- Maintenance Troubleshooting: Power Distribution & Lighting Systems
- Maintenance Troubleshooting: Motors & Motor Controls
- Maintenance Troubleshooting: Pumps & Compressors
- Maintenance Troubleshooting: Hydraulic Circuits & HVAC
- Maintenance and Reliability Principles: People
- Maintenance and Reliability Principles: Processes
- Maintenance and Reliability Principles: Technologies

ADVANCED VIBRATION: AC INDUCTION MOTORS
- Advanced Vibration: AC Induction Motors Part I
- Advanced Vibration: AC Induction Motors Part II

VIBRATION ANALYSIS
- Vibration Analysis: Predictive Maint & Mach Vibration
- Vibration Analysis: Machine Vibration, Basic Theory
- Vibration Analysis: Preparing for Data Collection
- Vibration Analysis: The Data Processing System
- Vibration Analysis: Data Collection
- Vibration Analysis: Data Analysis

SUSTAINABILITY
- DuPont Energy Efficiency: Energy Smart
- DuPont Energy Efficiency: Energy System Instrumentation & Controls
- DuPont Energy Efficiency: Theory of Steam Generation
- DuPont Energy Efficiency: Fuels & the Combustion Process
- DuPont Energy Efficiency: Boilers & Auxiliaries
- DuPont Energy Efficiency: Emission Control & Ash Handling
- DuPont Energy Efficiency: Steam Distribution
- DuPont Energy Efficiency: Steam Turbines & Condensers
- DuPont Energy Efficiency: Electricity Generation & Distribution
- DuPont Energy Efficiency: Pumping Systems
- DuPont Energy Efficiency: Cooling Towers
- DuPont Energy Efficiency: Water Treatment
- DuPont Energy Efficiency: Compressed Air
- DuPont Energy Efficiency: Refrigeration
- DuPont Energy Efficiency: HVAC & Indoor Air Quality

ENVIRONMENTAL
- RCRA Small Quantity Generators: A Commitment To The Future
- RCRA Large Quantity Generators: A Commitment To The Future
MACHINE TECHNOLOGY

BASIC MACHINE LATHE
- Basic Engine Lathe: Identification of Parts & Care
- Basic Engine Lathe: Engine Lathe Accessories
- Basic Engine Lathe: Cutting Speeds & Feeds For Lathe-Ferrous, Non-Ferrous Plastics
- Basic Engine Lathe: Grinding a Right-Hand Roughing Tool
- Basic Engine Lathe: Grinding a Round-Nose Finishing Tool
- Basic Engine Lathe: Mounting & Truing Work in the 4-Jaw, Independent Chuck
- Basic Engine Lathe: Three Methods of Facing Work to Length
- Basic Engine Lathe: Straight Turning Work of Two Diameters
- Basic Engine Lathe: Straight Turning Between Centers
- Basic Engine Lathe: Drilling, Boring, & Reaming Work
- Basic Engine Lathe: Turning A Radius
- Basic Engine Lathe: Taper Turning On The Lathe
- Basic Engine Lathe: Filing & Polishing On The Engine Lathe
- Basic Engine Lathe: Knurling On The Lathe
- CNC: Three-Axis Linear & Circular Milling
- CNC: Complete Milling Programs
- CNC: Drilling, Boring, and Spot-Facing
- CNC: Subroutines
- CNC: Looping
- CNC: Special Cycles
- CNC: Translation
- CNC: Polar Coordinate Programming
- CNC: Mirror Image Special Cycles
- CNC: Scaling & Engraving
- CNC: Multi-Quadrant Interpolation & Rotation
- CNC: Cutter Radius Compensation

BASIC MACHINE TECHNOLOGY
- Basic Machine Technology: Safety Procedures & Guidelines
- Basic Machine Technology: Hand Tools & their Uses
- Basic Machine Technology: The Use of Measuring Tools
- Basic Machine Technology: The Vertical Milling Machine
- Basic Machine Technology: Vernier Caliper & Vernier Protractor
- Basic Machine Technology: The Pedestal Grinder
- Basic Machine Technology: Sharpening Drill Bits By Hand & Machine
- Basic Machine Technology: Drill Presses Sensitive & Radial Arm
- Basic Machine Technology: Drill Press Operations
- Basic Machine Technology: Vertical Band Saws Parts, Accessories & Operation

COMPUTER NUMERICAL CONTROL
- CNC: Introduction to Computer Numerical Control
- CNC: Preparing For Programming
- CNC: Absolute & Incremental Positioning
- CNC: One & Two-Axis Linear Milling

BASIC SKILLS

MECHANICAL PRINT READING
- Mechanical Print Reading: Orthographic Projection
- Mechanical Print Reading: Drawing Format & Dimensioning
- Mechanical Print Reading: Drawing Types & Symbols
- Mechanical Print Reading: Thread Specifications

WORKPLACE MATHEMATICS
- Workplace Mathematics: Whole Numbers
- Workplace Mathematics: Fractions
- Workplace Mathematics: Decimals
- Workplace Mathematics: Introduction to Algebra

WORKPLACE READING
- Workplace Reading: Basic Skills
- Workplace Reading: Literal Comprehension: Main Idea
- Workplace Reading: Literal Comprehension: Relationships
- Workplace Reading: Inference
- Workplace Reading: Study Skills

GAGING & MEASUREMENT
- Gaging & Measurement: Types & Fundamentals
- Gaging & Measurement: Procedures & Operation
PREDICTIVE MAINTENANCE

MACHINERY OIL ANALYSIS
- Machinery Oil Analysis: Fundamentals & Methods
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THERMOGRAPHY
- Thermography: Basic Operation
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- Thermography: Practical Application

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- Ultrasonics: Basic Principles
- Ultrasonics: Leak Detection
- Ultrasonics: Mechanical & Electrical Inspection

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- Vibration Analysis: The Data Processing System
- Vibration Analysis: Data Collection
- Vibration Analysis: Data Analysis

PROCESS OPERATIONS
- Operators & Their Responsibilities: Abnormal Operations

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