

Shovel Mechanical Systems Training



Course Duration

Three days

Target Audience

This training is targeted for Mechanical Maintenance and Supervisory personnel responsible for preventive and corrective maintenance and servicing of P&H electric mining shovels.

Description

The course introduces the student to the operation and maintenance of P&H electric mining shovels. It focuses on critical knowledge and skills required in supporting P&H electric mining shovels. All mechanical systems and adjustments are discussed. Recommended preventive and corrective maintenance procedures and practices are also discussed.

Prerequisites

Students should have a basic knowledge of mechanical terminology and practical experience with maintenance equipment.

It is also suggested that students complete the following eLearning training modules: Product Overview, General Assembly Procedures, Disc Brakes, Theory of Operation of the Propel, Swing, Hoist, and Crowd Systems, and Compressed Air and Lubrication systems.

Course Location

- Milwaukee
- Field

Course Objectives

Upon completion of this course the student will be able to:

- Locate and identify major mechanical systems, subsystems and components.
- Identify and use available P&H reference material to operate or maintain the shovel.
- Understand the design and function of the various mechanical systems.
- Conduct preventive maintenance inspections.
- Perform maintenance adjustments and repairs.
- Recognize safety hazards associated with inspection, repair and maintenance of shovel mechanical systems.

Main Concepts

- Review of relevant P&H reference material
- Shovel motions and major components
- Lower machine structure and Propel system
- Revolving frame and Swing system
- Hoist system
- Boom assembly and Crowd system
- Machinery house and Ventilation system
- Compressed air system
- Brake system
- Automatic lubrication system
- Inspections, tests and adjustments of major mechanical systems
- Preventive and corrective maintenance procedures



Peak Services

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Day 1/2

Sources of Information

- Mechanical Maintenance Manual
- LinkOne Parts Book
- Service Bulletins and Notices

Shovel Orientation and Introduction

- Shovel Orientation
- Mechanical and Structural Overview

Safety Overview

- Electrical and Mechanical Hazards
- Stored Mechanical Energy

General Assembly Procedures

- Bolt Torquing Principles and Practices
- Bolt Tensioning
- “SuperNuts”
- Bearing Types and Adjustment

Shovel Systems: Propel

- Lower Structure and Lower Works
- Propel System Overview
- DELTA Drive System
- Crawler Track Tension Adjustment

Shovel Systems: Machinery House

- House Ventilation and Pressurization
- AirScrubPro

Shovel Systems: Swing

- Swing System Overview
- Center Gudgeon Nut Adjustment

Shovel Systems: Hoist

- Hoist System Overview

Day 2/3

Shovel Structures: Attachment

- Boom, Handles and ABSS

Shovel Systems: Dippers

- Dipper Wear Components
- Dipper Trip Mechanism
- “SnubRite” Snubbers
- Pitch Braces

Shovel Systems: Crowd

- Crowd System Overview
- Crowd Belt Replacement and Tensioning
- Shipper Shaft and Saddle Block Adjustments

Shovel Systems: Compressed Air System

- Air System Overview
- Air Compressor
- Air System Control
- Brake Air System
- Lube Air System

Shovel Systems: Disc Brakes

- Operation and Components Overview
- Disc Brake Safety
- Disc Brake Maintenance

Shovel Systems: Lubrication System

- Types of Lubricants
- Motor and Gearcase Lubrication
- Automatic Lubrication System Overview

