

# Mechanical Drive Maintenance

## Course 341: Mechanical Drive Maintenance

Covers alignment, particularly coupling alignment. Includes installation and maintenance of mechanical drives, from chain drives to enclosed gear drives.

TPC Training is accredited by IACET to offer **0.5 CEU** for this program.



### Lesson 1: Chain Drives

#### Topics

Types of Chain Drive; Installing and Aligning Shafts; Mounting the Drive Sprockets; Mounting the Drive Chain; Test Running with No Load; Lubrication Recommendations; Lubrication Methods or Types; Test Running with Full Load; Preventive Maintenance of Chain; Care of Stored Chain; Troubleshooting Chain Drives; Chain Drives and Safety

#### Objectives

- List four types of chain drives.
- Describe the procedure for aligning the driving and driven shafts.
- Distinguish between bored sprockets and bushed sprockets and tell how each is mounted.
- Tell how a drive chain is mounted on the sprockets.
- List four methods of lubrication for chain drives.
- Explain both no-load and full-load test running procedures.
- Describe the causes of fatigue breaks, tensile breaks, rapid chain wear, roller wear, and side plate spreading.

### Lesson 2: Belt Drives

#### Topics

Types of Belt Drive; Installing and Aligning Drives; Mounting Sheaves and Pulleys; Installation of V-belts; Adjusting the Sheave Centers; Use of Idler Sheaves; Adjusting V-belt Tension; Test-Running and Initial Run-in; Flat Belt Drives; Positive Belt Drives; Preventive Maintenance of Belts; Operating Environment for Belts; Troubleshooting Belt Drives; Belt Drives and Safety

#### Objectives

- List the three general types of belt drive and explain how they work.
- Tell how sheaves and pulleys are mounted and aligned on their shafts.
- Explain why all the belts in a multi-belt drive must be replaced at the same time.
- Describe two ways of taking up slack in a stretched V-belt.
- List three ways of splicing the ends of a flat belt together.
- Differentiate between the way positive-drive belts and other types of belt transmit power.

### Lesson 3: Open Gear Drives

#### Topics

Makeup of a Gear Train; Terminology of Gearing; Aligning the Shafts; Handling the Gears; Preparing the Shafts; Mounting the Gears; Checking the Gear Alignment; Lubricating Open Gearing; Preventive Maintenance of Gearing; Troubleshooting Open Gear Drives; Open Gearing and Safety

#### Objectives

- Explain why open gearing requires special provisions for feeding lubricating oil to its parts.
- Describe how to align parallel shafts, intersecting right-angle shafts, and nonintersecting right-angle shafts.
- Describe the procedure for aligning worm gearing.
- List some of the problems a visual inspection of gearing can uncover.
- Describe the appearance and causes of wear, abrasion, corrosion, scoring, pitting, spalling, cold flowing, fatigue breaks, and cracked rims and webs.

### Lesson 4: Enclosed Gear Drives

#### Topics

Installation of Enclosed Drives; Preparing the Drive Foundation; Installing the Gear Drive and Accessories; Lubricating; Test Running; Run-in; One-Week Check; Thirty-Day Check; Storage; Preventive Maintenance; Troubleshooting Enclosed Gear Drives

#### Objectives

- Tell how an enclosed gear drive should be mounted on the floor.
- Tell how an enclosed gear drive should be mounted on the framework of a driven machine.
- Describe the two methods of lubrication used in enclosed gear drives.
- Explain what should be done during the initial run-in, the one-week check, and the thirty-day check.
- List four steps you should take to protect an enclosed gear drive that is to be put into storage.
- Identify typical nameplate data.

# Mechanical Drive Maintenance

## Lesson 5: Drive Couplings

### Topics

Introduction to Couplings; Installing Standard Shaft Couplings; Aligning Shaft Couplings; Precision Coupling Alignment; Coupling Expansion Allowance; Lubrication of Couplings; No-Load Testing; Installing Spacer Couplings; Installing Floating Shaft Couplings; Installing Universal Joints; Preventive Maintenance of Couplings; Drive Couplings and Safety

### Objectives

- List three purposes of a coupling.
- List the three basic types of coupling.
- Explain how to check both the angular and the parallel alignment of shafts.
- Tell how a dial indicator is used in precision coupling alignment.
- Calculate shim thickness required to align couplings in an angular plane.
- Distinguish between couplings that need lubrication and those that do not.
- Describe how shaft couplings, spacer couplings, floating shaft couplings, and universal joints are installed.