



# MAINTENANCE TROUBLESHOOTING INTERNATIONAL LLC

OSM-201

Hands-On Training Center: 2860 Ogletown Road, Newark, DE 19711  
 Corporate Offices & Mailing Address: 2917 Cheshire Road Wilmington, DE 19810  
 Phone/TXT: 302.593.2698 (Frank) Email: Frank@mttroubleshooting.com  
 Website: www.mtroubleshooting.com

## OSM-201 OFF SET MACHINERY BASICS—BELT AND CHAIN DRIVEN EQUIPMENT

When working with belt or chain drives it is critical to understand component wear characteristics, proper installation procedures, alignment, proper tensioning, sheave and sprocket inspections are critical. It's not just achieving the expected life of the belt or chain but also the life of the bearings on the driver and driven machinery. Too much or even too little attention to tension or alignment can result in rapid and expensive bearing failures. This class covers everything about these drives in detail and offers the mechanic a "stress free" environment to accomplish "hands on" work on actual adjustment, inspection, and alignment. What better way to learn than by doing. The attendee will learn about basic mechanical applications, failures, life expectancy and maintenance of shafts, bearings, chains, sprockets, bushings, belts (V-belt, synchronous belt, timing belt), sheaves and other off set machines components. In our ZOOM classes, workbooks and tools are sent in advance to students to allow them to follow along while the instructor demonstrates "hands-on" techniques.



### Types of Drives

- Direct driven machines (straight line)
- Off-set machines (belts and chains)

### Bearing Life and Protection

- Short history of anti-friction bearings
- Why anti-friction bearings did not sell
- Theoretical life of an anti-friction bearing
- Bearing life varies as the cube of the load
- Bearing die by spalling
- Davis Law of Spalling
- Bearing configuration
  - Open
  - Shielded
  - Sealed
- Bearing numbering and sizes
- Hands-on exercise

### History of Belt Power Transmission

- Flat belts-how they work
- Correction of wandering
- V-Belts-how they work
- V-Belt Construction
- V-Belt videos
- Cross section identification
- Classical A,B,C,D,E
- Fractional HP belts
- Narrow-V belts 3V,5V,8V
- Cogged belts
- Banded belts

### V-Belt Inspection

- Sheave wear
- Sheave inspection
- Eyeballing sheave wear
- Use of correct inspection tool

### Storage of V-Belts

- Storage video
- Temperature and humidity specs

### Belt Guards

- Heat resistance of V-belts
- Adequate ventilation
- Inspection plates

### V-Belt Installation

- V-belt installation check list
- Checking replacement sheaves
- Temperature and humidity specs

### V-Belt Tensioning

- Force-deflection method
- Force-deflection video
- Force deflection hands-on exercise
- Tension finder method
- Tension finder video
- Forced frequency method
- Forced frequency video
- Percent elongation method
- Percent elongation hands-on

### Belt Alignment

- Straight edge alignment
- 4-point string alignment
- Laser alignment (Belt Hog)

### Synchronous Belts

- Trapezoidal belts
- Curvilinear belts
- Drive design

- Drive alignment
- Synchronous applications
- **Strobe Light Inspection**
- Checking bushing perpendicularity
- Slow motion study
- Determining RPM
- **Resonance of Belts**
- Object with natural frequency
- Forcing frequency
- Lack of damping
- **Chains and Sprockets**
- Roller chain video
- Lubrication
- Measuring sprocket wear
- Sprocket troubleshooting
- Chain tensioning
- Measuring chain wear
- Hands-on gauge construction
- Alignment using straight edge

### CLASS FORMATS AVAILABLE

- MTI Hands-On Center \$550/person
- ZOOM Interactive \$550/person
- On-Site (Your Location) Ask for Quote  
Quick Quote Available in 48 hrs.

### CLASS DURATION

1-day, 7-1/2 hours of instruction  
35% Hands-On

### FREE TOOLS AND BOOKS

Audel Multi-Craft Mini-Ref (\$20)  
Sheave Gage (\$25)  
Tension Tester (\$40)

**Class Details:** Each student will receive class books, work activity sheets, self-test progress evaluations, as well as questions from the instructor to make sure they understand the material presented. It is expected that an attendee will leave the class with the basic knowledge of the subject and possess new found skills to better equip them when they return to their job. A certificate suitable for framing will be issued to each attendee who successfully completes the course. Call, email or check the website for the next time this course is scheduled at the MTI training center or as a ZOOM interactive session. On-site sessions? Request a quick 48-hour turnaround quote. Revised: 01/07/2021