

Mechanical Drives Training System

Fundamentals for competent industrial mechanics

FESTO



Highlights

- Safe, versatile, and space-saving workstation
- Industrial-grade components
- Broad topic coverage with comprehensive curriculum
- Aimed at vocational school students and industry workers
- Quick and easy equipment set-up

Machinery maintenance

Skilled industrial mechanics are in demand worldwide. We rely on them to install, maintain, repair, and replace a vast array of mechanical equipment.

Master fundamental skills

The Mechanical Drives Training System exposes students and trainees to the hardware, tools, and methods used by industrial mechanics to keep plants running. The system covers the identification, installation, and troubleshooting of common machine elements, and is suitable for beginners in vocational schools, as well as industrial mechanics who need to refresh their basic skills.

Answer specific needs

Topics are grouped in levels to meet your training needs and budget. This modularity makes it possible to add topics over time.

Realistic learning experience

Industrial-grade equipment, coupled with detailed, hands-on exercises create a realistic training that prepares students and trainees for the workplace.

Overview of the Mechanical Drives Training System

A modular approach to suit a range of training needs

A turnkey, practical learning solution



Note: Find the hardware and manuals that are available for each level by visiting the website.

Ergonomic design

The system is designed with moveable, T-slotted extrusions to minimize assembly time.

Positioning the extrusions and the main components requires just a single tool and a couple of minutes, allowing students to focus their attention on the most relevant learning objectives.

Space-efficiency

Industrial-grade machine elements, such as pulleys, gears, chains, or bearings, are sized specifically so that experiments can be performed within the table-top workstation.

Components are stored on panels for better organization, storage, and inventory control. Panels can be wall-mounted on the optional support or stored in the optional workbench.

Safety first

Safety is maintained with an industrial-grade detection circuit that cuts power when the polycarbonate cover is opened. The cover can also be locked when closed to further improve safety during operation and allow instructors to control access to the components.

A lockout/tag out procedure is performed by students on the main switch each time they work with the system.

Guided learning

Student and instructor manuals complement the training system, and consist of illustrated theory and exercises, offering self-paced experiments with step-by-step procedures. This is ideal for autonomous learning, and enables instructors to optimize the time they spend with students.

Manuals are available in electronic or printed format for convenience.

Start with the workstation package, then select the level packages you need

Workstation package

The Workstation package is the foundation of the training system and includes the Workstation and the components common to most of the system experiments.

The Workstation can be enriched through the addition of one or more levels packages. Each level includes machine elements, basic tools, and measuring apparatus; student manuals and instructor guides are also available. The Workstation package is prerequisite to all levels.

Topics covered:

- Mechanical drives and safety procedures
- Familiarization with workstation hardware and controls
- Building simple set-ups with frequently-used components, such as pillow block bearings, shafts, and couplings
- Basic alignment procedures, measurement of torque and speed, and the calculation of power and efficiency

Level 1

Level 1 includes components and exercises for teaching basic skills related to the installation and commissioning of belt, chain, and gear drives.

Topics covered:

- Students learn to align pulleys, sprockets, and gears, as well as adjust belt tension, chain slack, and gear backlash, among other skills. Recognizing the most common problems is also part of the curriculum.

Level 2

Level 2 provides students with more practice in installation procedures for belt, chain, and gear drives, as well as familiarization with additional hardware and set-ups commonly found in industry. Level 1 is a prerequisite for Level 2.

Topics covered:

- Multiple and variable speed belt drives, synchronous belt drives, and multiple belt/chain set-ups
- Use of an idler for belt and chain drives
- Types of gears and their specific installation procedures; bevel, helical, and worm/worm gear set-ups
- Gearbox components and operation

Level 3

Level 3 introduces couplings and additional shaft alignment methods. In the context of real industrial applications, students learn methods for installing/removing bearings and seals in housings and on shafts.

Topics covered:

- Installation of couplings with various misalignment tolerances, including the universal joint
- Dial and reverse indicators shaft alignment methods
- Use of a press, a pusher/puller, or a heating plate for installation/removal of ball bearings in various configurations
- Installation methods for seals, such as O-ring, lip, and mechanical

Level 4

Level 4 deals in part with the fundamentals of engaging and braking loads. The learning material also includes a linear slide application to introduce the hardware required to convert between rotary and linear motion.

Topics covered:

- Installation and operation of an electromagnetic clutch-brake unit, roller ramp clutch, and torque limiter
- Building of a linear slide with ball screws and linear bearings. Backlash measurement, lead, and speed ratio are covered

Additional packages

Two different packages are offered to better understand the nature of vibrations in mechanical drives: Vibration metering and Vibration analysis. Both packages include hardware to generate vibrations.

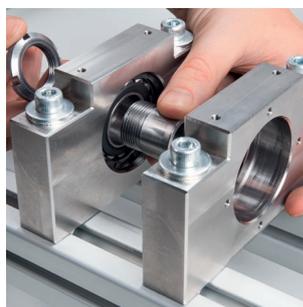
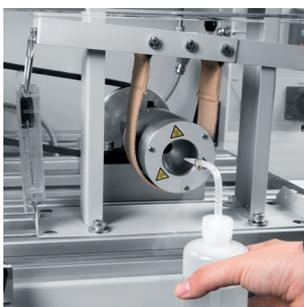
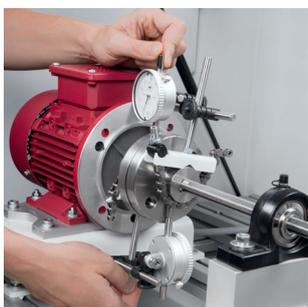
Topics covered:

- Basic package:
 - Vibration metering – Measurement using an accelerometer in different positions, comparison of vibration levels to a severity chart
- Advanced package:
 - Vibration analysis – Introduction to vibration, level measurement, FFT spectrum and waveform analyses, machine diagnosis, and data analysis/reporting.

Mechanical Drives Training System

A versatile platform for acquiring essential skills

Sample of set-ups and exercises: a wide range of hands-on learning scenarios



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