Mechanical Transmission Trainer

40-001
40-002
40-003

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Description

Mechanical transmission systems are widely used in today's manufacturing industry. This training system has been designed to prepare a well-trained and multi-skilled workforce.

Feedback's range of Mechatronics trainers adds a new and affordable dimension to the engineering training of those preparing for or working in these areas.

The Mechatronics range of equipment has been developed by engineering trainers for engineering trainers and lecturers, with safety, ease-of-use and cost-effectiveness as prime considerations. Portability and space efficiency have been carefully considered, too, as the range is available in different configurations to allow for transporting and storage. Industry specification components are used throughout.

To complement the laboratory and workshop equipment, extensive training material is provided. All the courseware is based around genuine industrial products and practical applications, providing appropriate content to cover school, college, university and industrial level training.

The Mechanical Transmission Trainer provides a variety of fully working components to demonstrate belt, chain, shaft, gear, coupling, gearbox and transmission drive chains on a worktable with full industrial safety facilities.

Features

- Fully operational equipment covers a wide range of transmission systems
- Genuine industrial components
- Flexible configuration
- Accompanying exercises and solutions

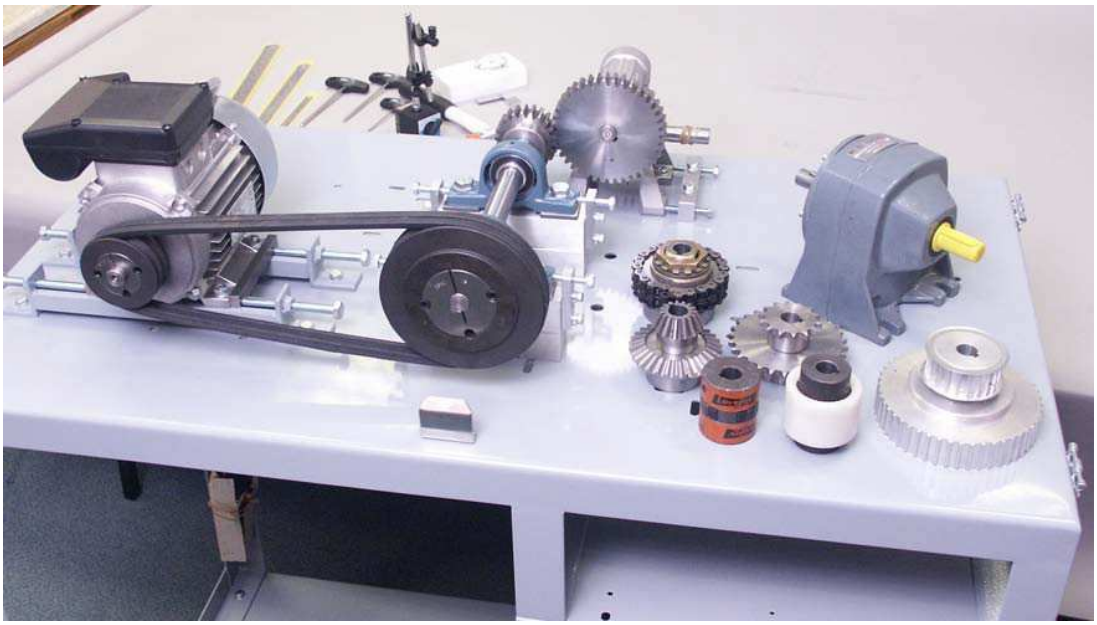
Benefits

- Improved quality of training
- Cost effective system
- Extensive number of exercises
- Supplied ready for use

Curriculum coverage

- Methods of connecting different shaft arrangements
- Principles & characteristics of transmission systems
- Materials used for transmission systems
- Safety precautions relevant to transmission systems

Mechanical Transmission Trainer 40-001 & 40-002



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Description

Feedback's Mechanical Transmission Trainer provides a variety of fully working components to demonstrate belt, chain and gear transmissions and couplings that are fitted on a worktable, with full industrial safety features. This system has been designed with the specific purpose of meeting the needs of education and training centres offering programmes for multi-skilling, cross-skilling, mechanical technician qualifications and apprenticeships. The trainer provides hands-on experience to allow students and trainees to set up different transmission systems and compare

them in terms of underlying principles, ease of assembly, maintenance issues and operational characteristics.

For maximum flexibility, the system is based on a worktable design, which can be supplied as either a complete mobile trolley (with built-in equipment storage), or as a unit suitable for bench-top mounting. Rubber-faced castors are fitted to the strong and sturdy mobile trolley, allowing the Trainer to be moved easily between locations.

Note that the guards can be easily lifted away (without tools) from the worktable, to allow full access during transmission set-up. However, operation of the motor is not possible until the guards are replaced and closed.

A complete collection of exercises and solutions is supplied with each system. These exercises support the transmission trainers and include exercises for motor, vee belts/pulleys, chains/sprockets, timing belts/pulleys, gearboxes and gear sets, clutches and couplings. Starting at a basic level, these exercises build up in complexity with issues such as: alignment, tensioning and adjustment. Question and answer papers are supplied to monitor student progress.

As is the case in industry, the safe use of the operational transmission trainer is essential. The safety features on the trainer include:

- Power breaker RCD plug on the mains cable (UK version only)
- Lockable isolator switch on the mains supply
- Lockable safety guards and two interlocked safety switches that cut motor power as soon as the hoods are lifted during operation
- Impact resistant safety guards

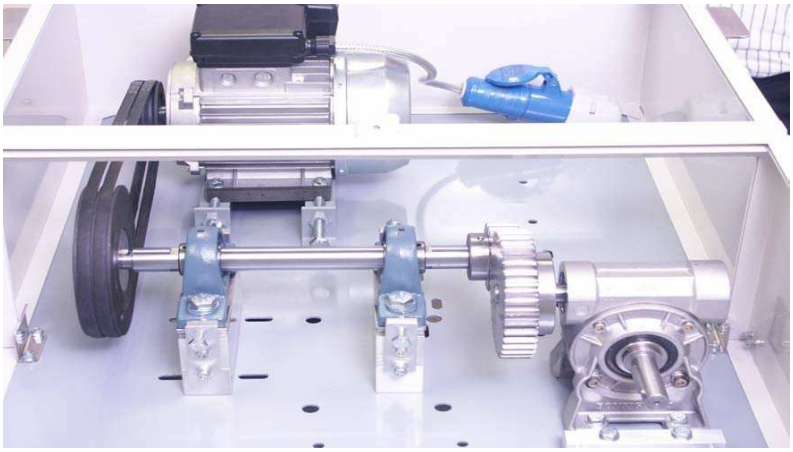
40-001 Components

1 Electric motor, 80 frame, 6 pole (230 V 50 Hz 1ph) or (115 V 60 Hz 1ph)
1 Worm and Wheel gearbox
1 Inline gearbox
1 SPUR gear set
1 BEVEL gear set
1 Sprocket set
1 Twin Vee belt pulley set
1 Taper lock bush set (for use with vee belt pulleys)
1 Timing belt pulley set
2 Vee belts
1 Timing belt
1 Chain
1 Shaft
2 Plummer (pillow) blocks
1 Adjustable torque limiter
1 Gear coupling
1 Spider coupling
2 Sets Motor/gearbox adjustment rails
2 Sets Motor/gearbox adjusters
4 Ground stock spacer blocks @5.00, 5.25, 5.50, 5.75 & 6.00 mm
10 Stainless steel shims @ 0.05, 0.075, 0.10 & 0.20 mm

Two interlocked safety switches that cut motor power if the hoods are lifted during operation

Curriculum Coverage

Includes the following but is not limited to:



- VEE belt pulleys/belts - fitting, adjustment, alignment and tensioning
- Sprockets/chain - fitting, adjustment, alignment and tensioning
- Timing belt pulleys/timing belt - fitting, adjustment, alignment and tensioning
- Shaft and plummer blocks - fitting and adjustment with straight edge
- Shaft and plummer blocks - fitting and adjustment with DTI
- Gear coupling - fitting and alignment
- Spider coupling - fitting and alignment
- Torque limiter - fitting and alignment
- Spur gear set - fitting and alignment
- Bevel gear set - fitting and alignment
- Gearbox drive via shaft, torque limiter and gear coupling
- Three stage speed reduction using Vee belts, gears and gearbox
- Three stage speed reduction using Vee belts, timing belt and gearbox
- Three stage speed reduction using Vee belts, shaft, spur gears and gearbox
- Five stage speed reduction using Vee belts, shaft, spur gears, sprockets/chain and two (2) gearboxes
- Five stage speed reduction using Vee belts, shaft, timing belt, bevel gears and two (2) gearboxes

Inverter Drive and 3-phase Electric Motor 40-003

The Inverter Drive and Three-phase Electric Motor gives students a basic insight into Electrical Motor Control without having to go into complicated electrical theory.

The Inverter Drive and Three Phase electric motor has been designed to expand the curriculum covered by the Mechanical Transmission System. It is now possible to control a 3-phase motor from a single phase electrical supply by varying the frequency of the electrical output from the inverter drive. The inverter control box has 'Forward', 'Reverse' & 'Stop' switches, along with a speed control dial for 'High', 'Medium', 'Slow' or 'Variable' speed, that enables the motor to be set to run in either 'Forward' or 'Reverse' direction and in each direction can be set to run at 'High', 'Medium', 'Slow' or 'Variable' speed. The High, Medium & Slow speeds can be pre-selected (at different values), when the variable speed position is selected a potentiometer is used to give infinitely variable speed (in either forward or reverse direction).

Selection and programming of speeds (frequencies) can be made either from the inverter panel direct or from the hand-held programmer, which comes with the system. On the front of the inverter is a digital display showing the various parameters set as well as readouts of the frequency, current draw, programming codes, error codes etc.

Toolkit 40-202

Setting up transmission configurations requires a small number of readily available, standard workshop tools. A complete toolkit can be supplied as an option, if required.

The Toolkit comprises:-

1 Dial Test indicator
1 Magnetic base for Dial Test Indicator
1 19 mm Combination spanner
1 17 mm Combination spanner
2 13 mm Combination spanners
1 'T' handle hex (allen) key 3 mm
1 'T' handle hex (allen) key 5 mm
1 'T' handle hex (allen) key 6 mm
1 150 mm / 6 inch engineers steel rule
1 300 mm / 12 inch engineers steel rule

1 600 mm / 24 inch engineers steel rule
1 50 mm / 2 inch engineers square
1 Nylon faced mallet
1 Belt tensioner
1 Padlock for electrical isolator / safety guards

Ordering Information

Mechanical Transmission Training System - Trolley mounted with toolkit	40-001
Mechanical Transmission Training System - Benchtop with toolkit	40-002
Mechanical Transmission Training System - Trolley mounted, without toolkit	40-200
Mechanical Transmission Training System - Benchtop without toolkit	40-201
Mechanical Transmission Training System toolkit	40-202
Mechanical Transmission Training System - Trolley mounted with toolkit	40-001
Mechanical Transmission Training System with Inverter Drive and Three-phase Motor - Trolley mounted, with toolkit (40-202, 40-203)	40-003
Mechanical Transmission Training System with Inverter Drive and Three-phase Motor - Trolley mounted	40-203

Feedback

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