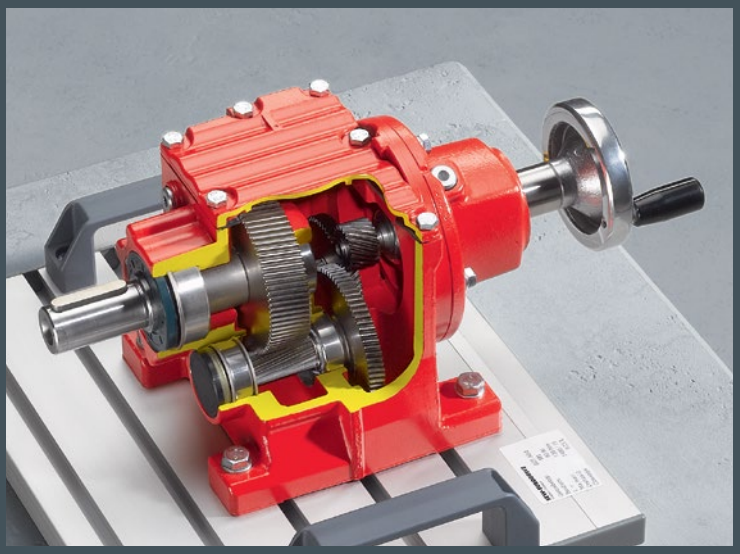
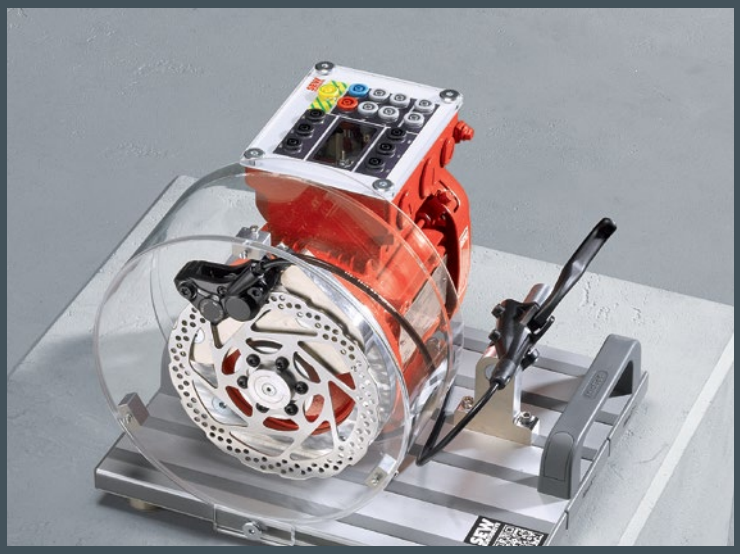
SEW EURODRIVE

Didactics

Technical training and further education
Learning – Understanding – Inspiring!





Didactics – tailor-made and practical

Technology is part and parcel of almost all areas of life. Automated systems not only make life easier – they also make consumer goods widely affordable.

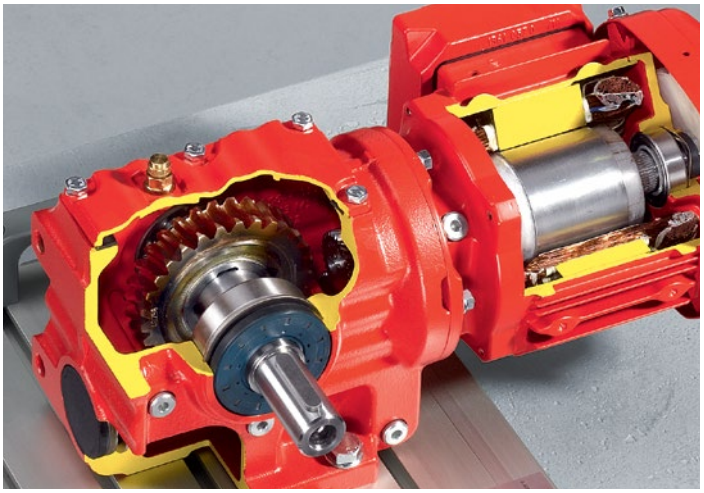
This means the next generation of skilled workers is going to have to get to grips with the requirements associated with system automation even more effectively. Trends such as energy efficiency in automation technology are creating new challenges, but also opportunities for the training of skilled workers.

The SEW-EURODRIVE portfolio is based around the official German “Lernfeld” (learning field) curriculum classifications and is geared toward typical lecture content. It has been developed for use in further education and training – for example at vocational schools or training centers in industry and at colleges and universities.

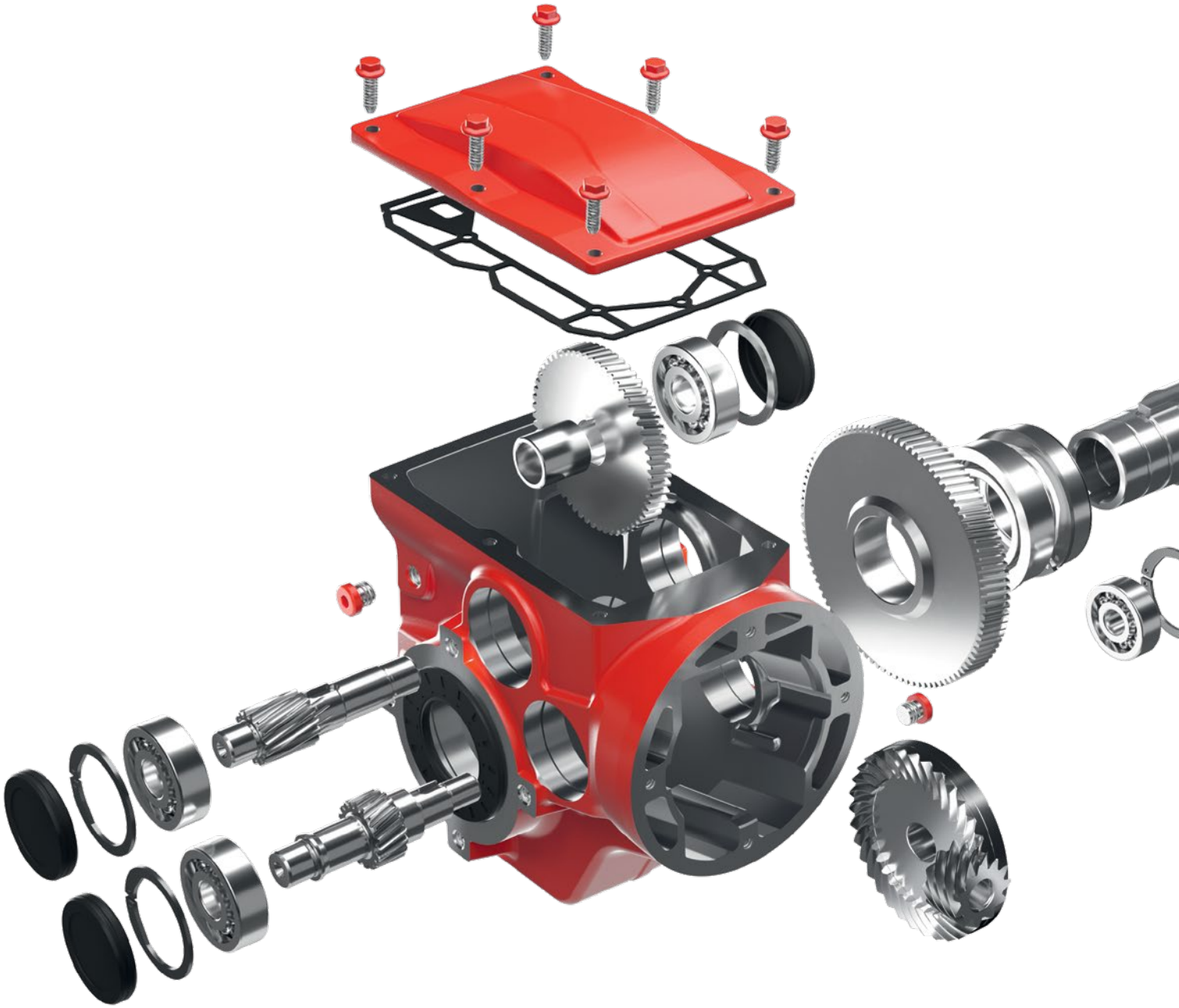
The didactics demo units for **gear unit technology** are ideal for all “Lernfeld 10” training associated with metal-working occupations such as mechatronics technician and industrial mechanic. Industry-standard gear units have been specially modified for use in training.

The units can thus be used to replicate the simple assembly and disassembly of a wide range of gear unit parts, without the need for expensive pressing tools. The gear unit parts are protected against corrosion, making them wear-free.

→ **The clear presentation of all components and tools ensures little time is needed for preparations and clearing up.**



The **functional cut-away models** demonstrate how the components inside helical, helical-bevel, and helical-worm gear units interact and how a gear unit works. Each cut-away model has a nameplate showing the key data, thus also enabling calculations for features such as speeds and gear ratios.



Our didactics modules for **electromechanics** can be used to provide hands-on experience of operating various electric motors.

Our two **didactics systems**, starting with the multi-functional demo unit, can be used to implement various SEW-EURODRIVE components to customer-specific requirements. The conveyor line has a modular structure, and its drive and sensor technology can be run directly on the grid or by using a frequency inverter.

In addition to the electromechanics and gear unit technology modules for practical use, SEW-EURODRIVE offers various **documents/materials** for the teaching of theory.

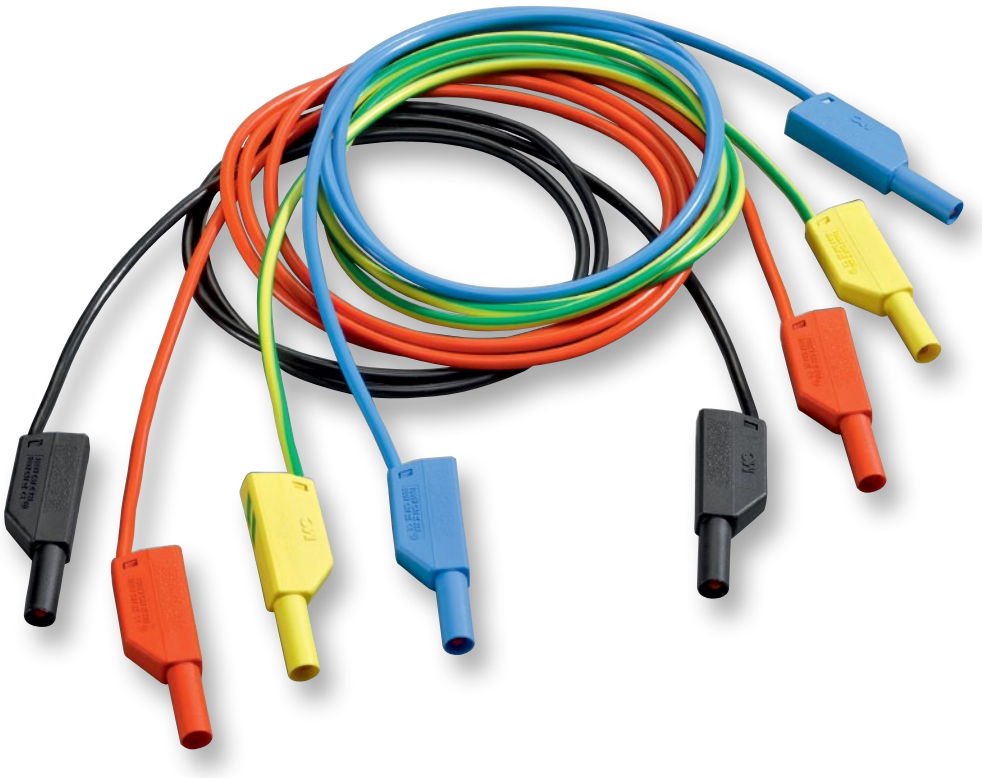
The prefabricated **connection leads (cables)** ensure users can safely get straight on with connecting and running the electromechanics didactics modules. Various standard industrial plug connectors that are connected to 4-mm shrouded plugs are available.

The cables are shielded, thus making them suitable for EMC-compliant wiring. The connection leads can be combined and used with various didactics modules and lab benches.

→ Safety is a top priority in the laboratory environment.

All electrical connections are made via laboratory test sockets and industrial plug connectors. Live components are covered, while power and control signals are separated from each other physically and visually.

Freely available MOVITOOLS® and MOVISUITE® engineering software from SEW-EURODRIVE offers an ideal training platform for practical and hands-on tasks, particularly in a laboratory context.



The SEW-EURODRIVE didactics portfolio:

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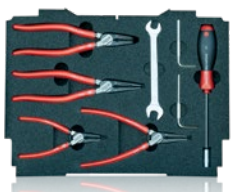
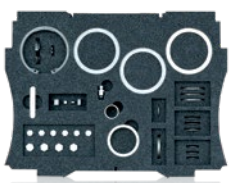
Gear unit technology – modular and practical

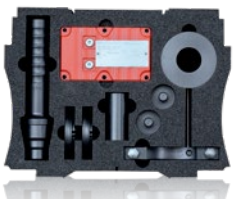
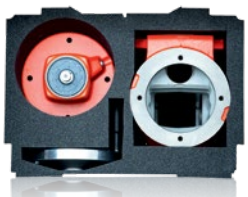
Didactics assembly kit
Helical gear unit

Use	We have designed an industrial helical gear unit as a didactics assembly kit and developed the relevant accessory components and spare parts, specifically for vocational training purposes. This teaching aid is intended for use in further education and training – for example at vocational and technical schools, colleges, universities, and company training centers. – Supports a theoretical and practical introduction to gear unit technology – Users can repeatedly assemble and disassemble the gear unit, without needing expensive pressing tools
Technical data	– Design based closely on series-standard model, gear unit designation: R57FAD2 – Gear ratio i = 16.79 (2-stage) and i = 26.97 (3-stage) – Gear unit with input shaft assembly – Can be assembled and disassembled using standard industrial tools – Components such as gear wheels, pinion shafts, and grooved ball bearings are protected against corrosion – Integrated into sturdy plastic cases or a base cabinet – The gear unit demo unit has been developed exclusively for training purposes
Practical laboratory exercises	– Determining the gear ratio and torques for a gear unit with a fixed speed – Identifying and understanding the interaction of the individual gear unit parts in a gear unit (shaft-hub connection) – Planning preventive maintenance using the parts list or individual components – Assembly-oriented design – Handling

Didactics assembly kit
Helical-bevel gear unit

Use	We have designed an industrial helical-bevel gear unit as a didactics assembly kit and developed the relevant accessory components and spare parts, specifically for vocational training purposes. This teaching aid is intended for use in further education and training – for example at vocational and technical schools, colleges, universities, and company training centers. – Supports a theoretical and practical introduction to gear unit technology – Users can repeatedly assemble and disassemble the gear unit, without needing expensive pressing tools
Technical data	– Design based closely on series-standard model, gear unit designation: K47AD2 – Gear ratio i = 35.39 – Gear unit with input shaft assembly – Can be assembled and disassembled using standard industrial tools – Components such as gear wheels, pinion shafts, and tapered roller bearings are protected against corrosion – Integrated into sturdy plastic cases or a base cabinet – The gear unit demo unit has been developed exclusively for training purposes
Practical laboratory exercises	– Determining the gear ratio and torques for a gear unit with a fixed speed – Identifying and understanding the interaction of the individual gear unit parts in a gear unit (shaft-hub connection) – Planning preventive maintenance using the parts list or individual components – Assembly-oriented design – Working with assembly tools and aids

Gear unit technology

Didactics assembly kit
Helical-worm gear unit

Use	We have designed an industrial helical-worm gear unit as a didactics assembly kit and developed the relevant accessory components and spare parts, specifically for vocational training purposes. This teaching aid is intended for use in further education and training – for example at vocational and technical schools, colleges, universities, and company training centers. – Supports a theoretical and practical introduction to gear unit technology – Users can repeatedly assemble and disassemble the gear unit, without needing expensive pressing tools
Technical data	– Design based closely on series-standard model, gear unit designation: SF47AD2 – Gear ratio i = 29 – Gear unit with input shaft assembly – Can be assembled and disassembled using standard industrial tools – Components such as gear wheels, worms, and grooved ball bearings are protected against corrosion – Integrated into a sturdy plastic case – The gear unit demo unit has been developed exclusively for training purposes
Practical laboratory exercises	– Determining the gear ratio and torques for a gear unit with a fixed speed – Identifying and understanding the interaction of the individual gear unit parts in a gear unit (shaft-hub connection) – Planning preventive maintenance using the parts list or individual components – Assembly-oriented design – Working with assembly tools and aids

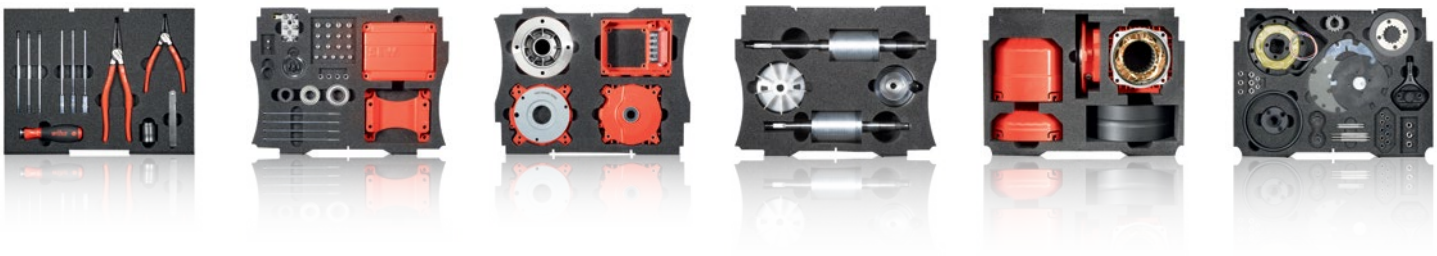
Didactics assembly kit
Planetary servo gear unit

Use	We have designed an industrial planetary servo gear unit as a didactics assembly kit and developed the relevant accessory components and spare parts, specifically for vocational training purposes. This teaching aid is intended for use in further education and training – for example at vocational and technical schools, colleges, universities, and company training centers. – Supports a theoretical and practical introduction to gear unit technology – Users can repeatedly assemble and disassemble the gear unit, without needing expensive pressing tools
Technical data	– Design based closely on series-standard model, gear unit designation: - PSC521 ECH05 (1-stage) - PSC522 ECH05 (2-stage) – Gear ratio i = 5 (1-stage), i = 25 (2-stage) – Gear unit with input adapter flange and handwheel – Can be assembled and disassembled using standard industrial tools – Components such as planet gears, annulus gears, and grooved ball bearings are protected against corrosion – Integrated into a sturdy plastic case – The gear unit demo unit has been developed exclusively for training purposes
Practical laboratory exercises	– Planning preventive maintenance using the parts list or individual components – Assembly-oriented design – Working with assembly tools and aids

Gear unit technology

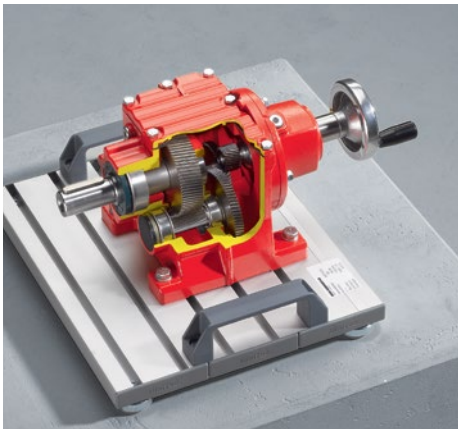
Didactics assembly kit
AC asynchronous motor

Use	We have designed an industrial AC asynchronous motor as a didactics assembly kit and developed the relevant accessory components and spare parts, specifically for vocational training purposes. This teaching aid is intended for use in further education and training – for example at vocational and technical schools, colleges, universities, and company training centers. – Supports a theoretical and practical introduction to electrical engineering – Users can repeatedly assemble and disassemble the motor, without needing expensive pressing tools
Technical data	– Design based closely on series-standard model, motor designation: DRN71M4 – BE05 brake – Handwheel at fan end – Can be assembled and disassembled using standard industrial tools – Components such as motor shafts, grooved ball bearings, and pinions are protected against corrosion – Integrated into a sturdy plastic case – The motor demo unit has been developed exclusively for training purposes
Practical laboratory exercises	– Flange-mounting the AC asynchronous motor on the didactics gear unit assembly kit – Planning preventive maintenance using the parts list or individual components – Assembly-oriented design – Working with assembly tools and aids

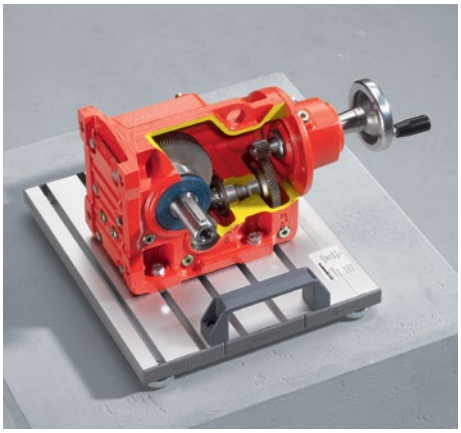


Gear unit technology

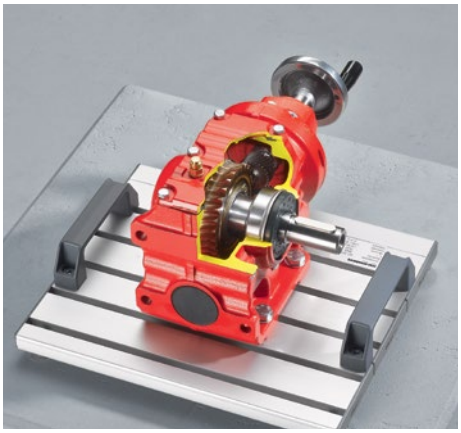
Didactics range of functional cut-away models
Gear unit



Helical gear unit
3-stage (i = 90.96)



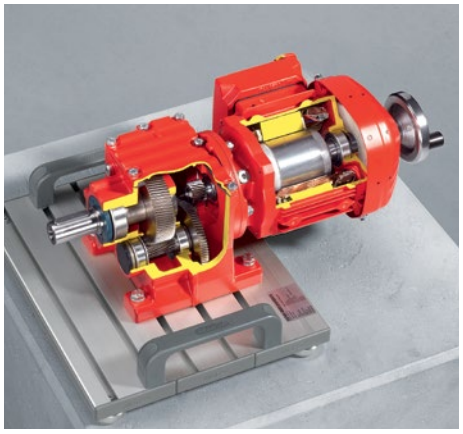
Helical-bevel gear unit
3-stage (i = 97.81)



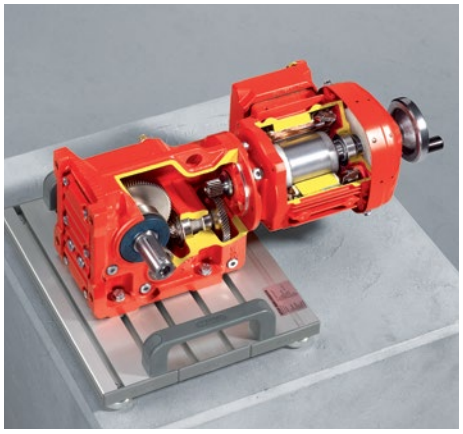
Helical-worm gear unit
2-stage (i = 29)

Use	The range of functional cut-away models for gear units demonstrates how the components inside helical, helical-bevel, and helical-worm gear units interact and how a gear unit works. Using the handwheel on the cut-away models, we aim to show the interplay between different gears, as well as the resulting power flows (90° power flow with a right-angle gear unit and linear power flow with a helical gear unit) and gear ratios. Each cut-away model has a nameplate showing the technical data of a standard industrial gear unit.
Technical data	– Steady and stable thanks to aluminum base plate with rubber feet – Components such as gear wheels, bearings, and shafts are protected against corrosion – Sturdy plastic case available as an option for transportation and storage – The gear unit demo units have been developed exclusively for training purposes
Practical laboratory exercises	– Calculating/determining gear ratios – Determining lubricant quantities for various mounting positions

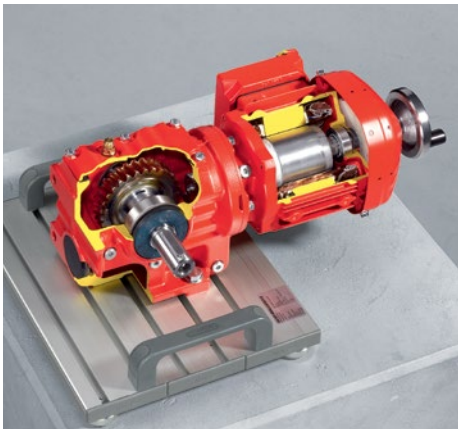
Didactics range of functional cut-away models
Gearmotor



Helical gearmotor
3-stage (i = 90.96)
4-pole AC asynchronous motor



Helical-bevel gearmotor
3-stage (i = 97.81)
4-pole AC asynchronous motor



Helical-worm gearmotor
2-stage (i = 29)
4-pole AC asynchronous motor

Use	The range of functional cut-away models for gearmotors demonstrates how the components inside helical, helical-bevel, and helical-worm gearmotors interact and how the drive as a whole works. Using the handwheel on the cut-away models, we aim to show the interplay between motor and gear unit and between different gears, as well as the resulting power flows (90° power flow with a right-angle gear unit and linear power flow with a helical gear unit) and gear ratios. Each cut-away model has a nameplate showing the technical data of a standard industrial drive.
Technical data	– Steady and stable thanks to aluminum base plate with rubber feet – Mechanical components such as gear wheels, pinion shafts, and bearings benefit from permanent corrosion protection thanks to a high-quality coating – Some components are also made from stainless steel – The cut-away edges on the drive are color-coded (yellow). The gear unit and motor housing are painted specifically for use as exhibits – Sturdy plastic case available as an option for transportation and storage – The gearmotor demo units have been developed exclusively for training purposes
Practical laboratory exercises	– Calculating/determining gear ratios – Determining lubricant quantities for various mounting positions

Electromechanics – easy to grasp and safe

Didactics frequency inverter
MOVITRAC® B module (MCB)

Use	The MCB module is designed for a single-phase frequency inverter from the SEW-EURODRIVE MOVITRAC® B series. The advantage of this module lies in the use of the industry-standard frequency inverter, with a high level of functionality for controlling and running third-party motors, free parameterization, and positioning control: – Controlled using digital and analog signals – Optional control via PROFIBUS – Optional control via PROFINET
Technical data	– Connection voltage 1-phase / 230 V / 50 Hz – Inverter size 0S – Inverter accessories including – FBG11B keypad – FSC11B communication interface – BW027-003 braking resistor – USM21A USB interface adapter – MOVITOOLS® MotionStudio engineering software (parameterization, operation, and visualization)
Practical laboratory exercises	– Basic parameterization of frequency inverters / AC asynchronous motors using a keypad or USM21A USB interface adapter – Activating safety and monitoring functions – Visualizing and optimizing user parameters using MOVITOOLS® MotionStudio engineering software from SEW-EURODRIVE – Measuring and recording electrical values (voltage and current) – Integration into industrial networks (PROFIBUS/PROFINET)

Didactics frequency inverter
MOVIDRIVE® B module (MDX61B)

Use	On the MDX61B module, the three-phase MOVIDRIVE® B drive inverter from SEW-EURODRIVE can be used for optional control of AC asynchronous and AC synchronous motors (synchronous servomotors). The MOVIDRIVE® B drive inverter supports the broad use of a wide range of fieldbus systems and encoder controls. A large selection of application modules and technology functions with high dynamics and control quality is available, such as synchronous operation and the “flying saw”.
Technical data	– Connection voltage 3-phase / 400 V / 50 Hz (also suitable for connection to RCD switch type B if using a line filter with a low leakage current) – Inverter size 1 – Inverter accessories including - DBG60B-01 keypad - USM21A USB interface adapter - BW100-005 braking resistor - MOVITOOLS® MotionStudio engineering software (parameterization, operation, and visualization)
Practical laboratory exercises	– Starting up drive inverters and AC asynchronous or AC synchronous motors using a keypad or MOVITOOLS® MotionStudio engineering software – Activating safety and monitoring functions, as well as interaction between different motor and encoder types – Recording scope functions and parameter comparison for diagnosing electrical values – Integration into industrial networks (PROFIBUS/PROFINET)

Electromechanics

Didactics frequency inverter
MOVIDRIVE® technology module (MDX91A)

Use	MOVIDRIVE® technology is the next generation of application inverters with direct line connection, suitable for a wide range of applications. This module can be used to run either AC asynchronous or AC synchronous motors (synchronous servomotors). Its scope ranges from open-loop speed control to servo drive with kinematic model. The drive inverter can be incorporated into industrial controllers via an industrial communication interface such as PROFINET or EtherNet/IP™. What's more, the MOVILINK® DDI digital data interface supports the direct transfer of information from the drive – such as details of the connected motor's electronic nameplate or brake and diagnostic data (e.g. temperature sensor data) – which means it meets the future requirements of industrial applications.
Technical data	– Connection voltage 3-phase / 400 V / 50 Hz (also suitable for connection to RCD switch type B if using a line filter with a low leakage current) – Performance class 4 A / 1.5 kW – Size 1 / technology variant – Included accessories – CBG21A keypad (2.4" color display) – CIO21A expansion card (digital and analog inputs/outputs) – USM21A USB interface adapter – BW100-003 braking resistor – MOVISUITE® engineering software – Optional accessories – Choice of fieldbus interface: PROFINET / EtherNet/IP™ / Modbus TCP / EtherCAT® – Prefabricated cables and test lead sets (4 mm)
Practical laboratory exercises	– Starting up drive inverters and AC asynchronous or AC synchronous motors using a keypad or MOVISUITE® engineering software – Optimizing speed and torque control loops – Activating safety and monitoring functions, as well as interaction between different motor and encoder types – Recording travel profiles and parameter comparison for diagnosing electrical values – Incorporating into industrial networks, for example via PROFINET or EtherNet/IP™

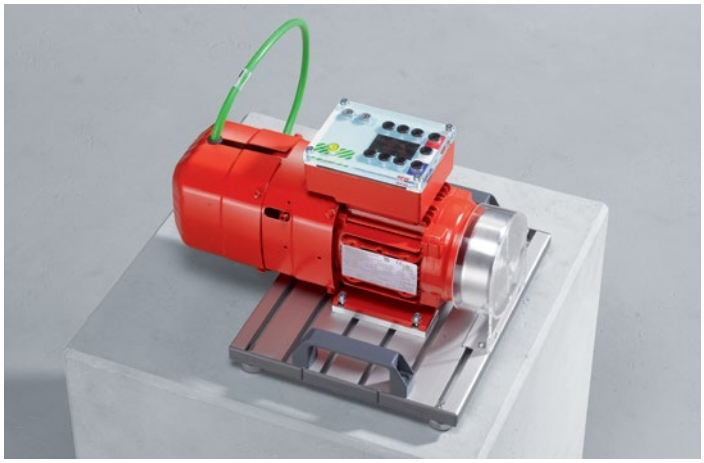

min.
Sollwert
max.

Electromechanics

Didactics motor assembly
DRx..

Use	The AC asynchronous motor installed here supports simple and reliable startup using 4-mm test sockets. The motor assembly is bolted securely to an aluminum plate. Two carry handles enable easy transportation and a modular and flexible design. An aluminum flywheel protected by a cover is mounted on the input shaft.
Technical data	– DRx71 4-pole AC asynchronous motor - Nominal power 0.37 kW - Voltage 230 V / 400 V or 400 V / 690 V - Insulation class F – TH thermostat – Built-in encoder (optional), various add-on encoders (optional) – The connections for the temperature sensor and encoder are 4-mm test sockets – Steady and stable thanks to aluminum base plate with rubber feet – Aluminum flywheel mounted on motor shaft with cover
Practical laboratory exercises	– Full motor protection using thermistor (TH type) – Simple positioning using built-in encoder – Star or delta connection of AC asynchronous motor, with inspection through transparent terminal box cover – Switching AC asynchronous motors on the grid and on the frequency inverter – Flexible application of load to the AC asynchronous machine

Didactics brakemotor assembly
DRx..



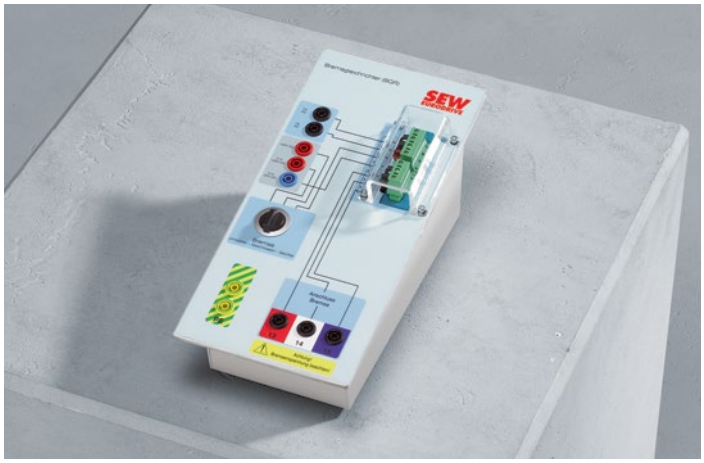
Use	The asynchronous machine is available with two different encoder systems and brakes, depending on the drive design. The transparent terminal box cover with 4-mm sockets supports easy and safe star or delta connection of the motor. The connections for the temperature sensor and built-in encoder are also 4-mm test sockets. An aluminum flywheel protected by a cover is mounted on the input shaft. The module is bolted securely to an aluminum plate and equipped with two carry handles, making it easy to transport.
Technical data	– DRx71 4-pole AC asynchronous motor - Nominal power 0.37 kW - Voltage 230 V / 400 V or 400 V / 690 V - Insulation class F – Temperature sensor – Built-in encoder (optional), various add-on encoders (optional) – BE05 brake – Braking torque 5 Nm – Steady and stable thanks to aluminum base plate with rubber feet – Easy and safe handling – Aluminum flywheel mounted on motor shaft with cover
Practical laboratory exercises	– Connection and wiring of an AC asynchronous machine in star/delta connection, and connection of the brake via brake control module (BMK) – Positioning using various encoder systems, with various frequency inverters – Startup of an asynchronous machine on the grid or on the frequency inverter – Compatible with various didactics products such as the MLD module

Electromechanics

Didactics motor load brake module **DRN..**

Use	This module is a compact bench module used as a safe means of applying load to the electric drive. It is designed for DRN.. AC asynchronous motors from SEW-EURODRIVE. The module specifically offers the function of simulating load changes in a system with an AC asynchronous machine in an industry-standard protection or reversing contactor circuit and in frequency inverter operation.
Technical data	– DRN71M4 AC asynchronous motor - Nominal power 0.37 kW - Voltage 230 V / 400 V or 400 V / 690 V - Insulation class F – Temperature sensor – EI8C built-in encoder (optional), various add-on encoders (optional) – BE05 brake (optional) – Braking torque 5 Nm – Steady and stable thanks to aluminum base plate with rubber feet – Easy and safe handling
Practical laboratory exercises	– Switching AC asynchronous motor on the grid and on the frequency inverter – Flexible application of load to the AC asynchronous machine – Measuring and recording electrical values

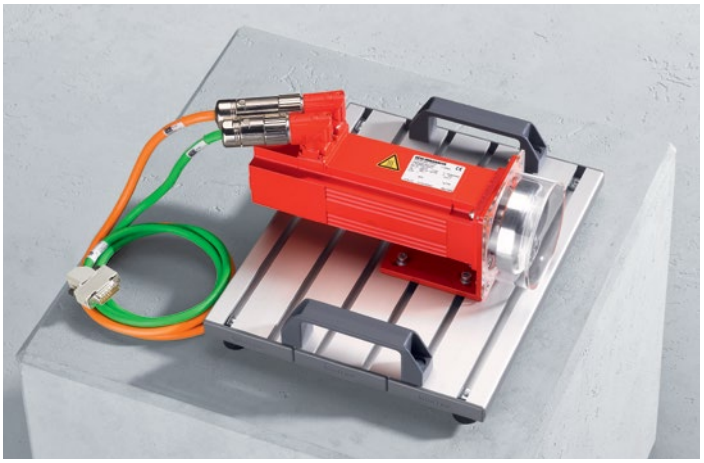
Didactics brake control module
BMK



Use	The BMK brake control module controls the brake of the DRx.. brakemotor assembly. The BMK module applies and releases the DRx.. motor's brake. The three-step rotary switch can be used to implement a very wide range of control concepts.
Technical data	– Brake control (BMKB 1.5) – One-way rectifier with electrical switching – DC 24 V control input – External DC 24 V required for brake control – 150 – 500 V brake voltage – Separation on DC side with LED to show readiness for operation – 3-step rotary switch
Practical laboratory exercises	– Connecting a brake rectifier to the brakes of asynchronous motors – Releasing the brake manually or with a frequency inverter

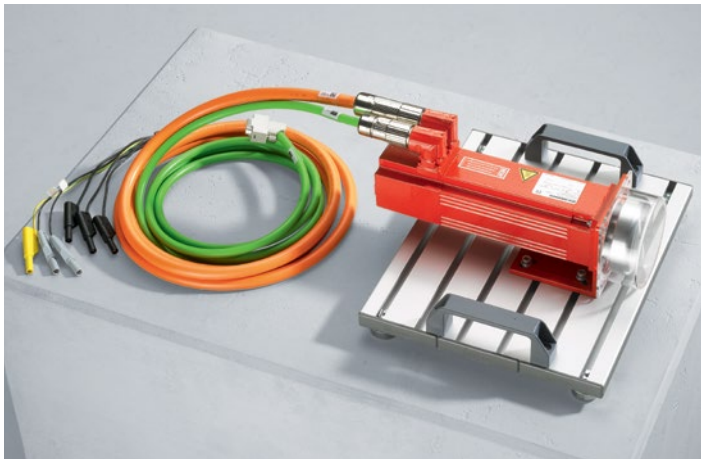
Electromechanics

Didactics motor assembly
CMP..



Use	The AC synchronous motor installed here supports easy and safe startup using industry-standard prefabricated connectors for power and D-sub connectors for the encoder. The motor assembly is bolted securely to an aluminum plate. Two carry handles enable easy transportation and a modular and flexible design. The output shaft is secured by a flywheel with cover.
Technical data	– CMP50M synchronous servomotor - Nominal torque 2.4 Nm - Voltage 400 V - Insulation class F – Encoder and power connection via industry-standard M23 connectors – Temperature sensor – Aluminum flywheel mounted on motor shaft with cover – EK1H HIPERFACE® single-turn encoder – Steady and stable thanks to aluminum base plate with rubber feet
Practical laboratory exercises	– Startup of an AC synchronous motor on the frequency inverter – Dynamic behavior under the widest range of control modes – Flexible application of load to the AC synchronous machine – Functioning of an encoder system on the synchronous servomotor – Exercises on positioning (including for master-slave applications, such as the “flying saw”)

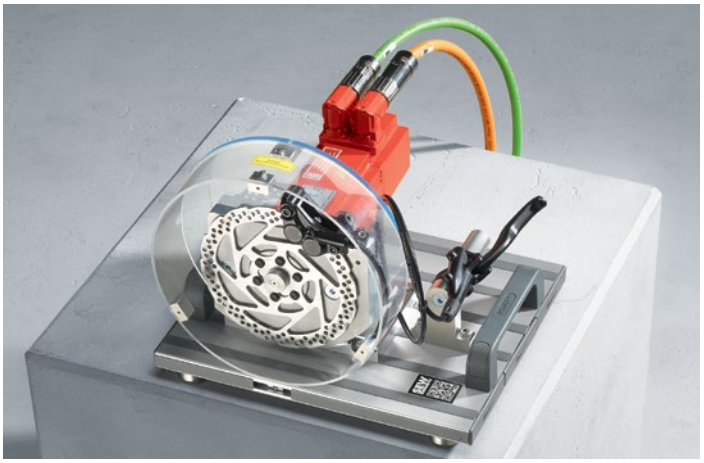
Didactics brakemotor assembly
CMP..



Use	The CMP.. brakemotor assembly gives users the opportunity to learn about a synchronous motor's highly precise and dynamic operation. This drive is fully equipped with a temperature sensor, brake, and encoder.
Technical data	– CMP50M/BK synchronous servomotor with brake - Nominal torque 2.4 Nm - Voltage 400 V - Max. current 9.6 A - Insulation class F – Brake voltage 24 V – Braking torque 4.3 Nm – Temperature sensor – Steady and stable thanks to aluminum base plate with rubber feet – Aluminum flywheel mounted on motor shaft with cover – Encoder and power connection via industry-standard M23 connectors – Various encoders can be selected
Practical laboratory exercises	– Starting up a servo drive with brake – Wiring with BMV module and its functioning – Fast, dynamic positioning and control – Encountering the differences between servo and asynchronous machines

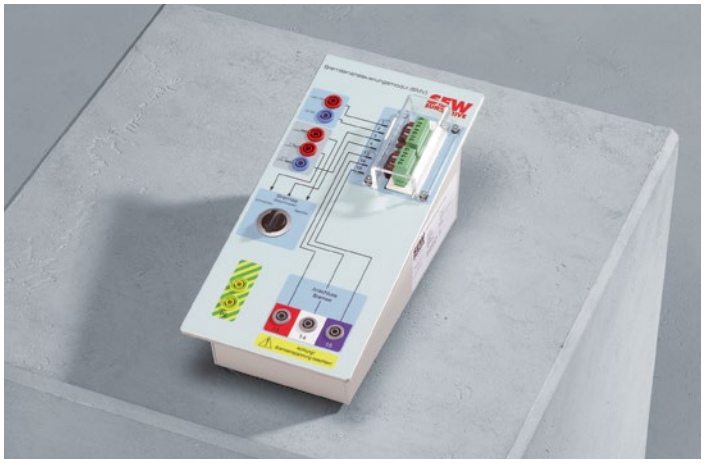
Electromechanics

Didactics motor load brake module **CMP..**



Use	This module is a compact bench module used as a safe means of applying load to the electric drive. It is designed for CMP.. synchronous motors from SEW-EURODRIVE. The module specifically offers the function of simulating load changes in a system with synchronous motors in frequency inverter operation.
Technical data	– CMP50 synchronous servomotor - Nominal torque 2.4 Nm - Voltage 400 V - Max. current 9.6 A - Insulation class F – Brake (optional) - Brake voltage 24 V - Braking torque 4.3 Nm – Temperature sensor – Steady and stable thanks to aluminum base plate with rubber feet – Easy and safe handling
Practical laboratory exercises	– Flexible application of load to the synchronous motor – Measuring and recording electrical values

Didactics brake control module
BMV



Use	The BMV brake control module can control the brake of the CMP.. brakemotor assembly. The BMV module applies and releases the CMP.. motor's brake. The three-step rotary switch can be used to implement a very wide range of control concepts.
Technical data	– Brake control (BMV 5) – DC 24 V control input – External DC 24 V required for brake control – DC 24 V brake voltage – 3-step rotary switch
Practical laboratory exercises	– Connecting a brake control unit for CMP.. synchronous motors – Releasing the brake manually or with a frequency inverter

Didactics systems – modular and flexible

Didactics multi-functional demo unit

- → Demo unit has CE marking
- → Comprehensive functionality and high degree of flexibility
- → Touch-safe electrical connections
- → Mobile and transportable demo unit
- → Integrated workstation with pull-out laptop platform
- → Modular design with custom expansion options
- → Based on the SEW-EURODRIVE modular system

Special features

- High degree of safety
- Practical exercises on standard components
- Teaching of correct electrical installation
- Series of exercises can be reproduced thanks to the use of a standardized connection technology using 4-mm safety test sockets
- The basic electrical supply and monitoring of the power and control voltage are integrated into the rack
- The latest drive components and any that are the subject of training in a seminar can be combined and installed on a custom basis

Practical laboratory exercises

- Starting up electrical drives and frequency inverters
- Setting and parameterizing a very wide range of sensor technology
- Creating different programs with a higher-level controller
- Communication via various bus systems
- Linear axis system can be used to create positioning exercises for finite and infinite motion sequences

Declaration of conformity retains validity

The didactics portfolio offered by SEW-EURODRIVE is the basis for this flexibility when it comes to designing exercises. The demo units are CE-certified and, when they are combined with the CE-certified demo unit rack, there is no need to obtain a new declaration of conformity. The demo unit concept is subject only to the recurrent annual VDE inspection for movable electrical consumers.

Didactics systems

Didactics conveyor line

Use	The didactics conveyor belt can be used to create tests and practical learning scenarios. All the installed components are industrial products that support a practical approach to teaching specialist expertise. Thanks to the modular system, the conveyor belt can be expanded with a very wide range of drives and sensor packages from SEW-EURODRIVE. The width and height of the side guidance can be adapted flexibly to suit the material to be conveyed. The drive can be run directly on the grid or by using a frequency inverter. A higher-level controller and various sensors / evaluation units can optionally be used for a very wide range of queries about the products on the conveyor belt. Ideal addition for programming exercises in the automation laboratory.
Technical data	– Easy and safe handling – Mounting option for distance encoders – Belt conveyor center distance: 800 mm – Drum diameter: 50 mm – Side guidance: adjustable
Practical laboratory exercises	– Startup on the grid or with a frequency inverter – Setting a very wide range of sensor technology directly on the conveyor line – Functional testing and querying of sensor technology using a higher-level controller – Application programming can be monitored directly – Modular design of multiple conveyor lines in one logistics system

Accessories for the didactics conveyor line

Sensor package with retro-reflective photoelectric sensor

Sensor packages

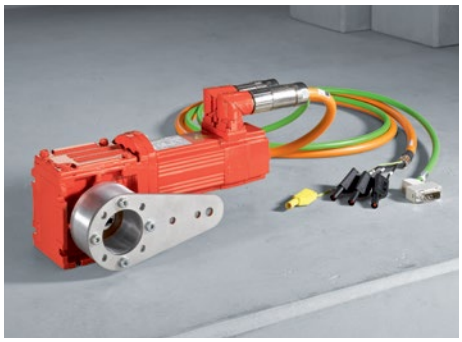
- Inductive and capacitive proximity switches
- Retro-reflective photoelectric sensor
- Photoelectric proximity sensor
- RFID read/write head

Each sensor package comprises a sensor and holder. Thanks to the integrated guide lugs on the sensor holder, which align it in terms of angle and height, it can be fastened with just one screw.

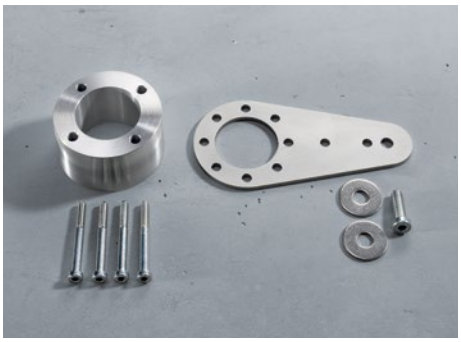
This single clamping screw ensures that the position of the holder can be adjusted very quickly. This detail provides a great deal of flexibility for building test setups with little time needed for preparations and clearing up.

Motor attachment

AC asynchronous motor
Type WA10DR2S56M4
- With and without didactics terminal box cover
- Including gear unit mounting kit



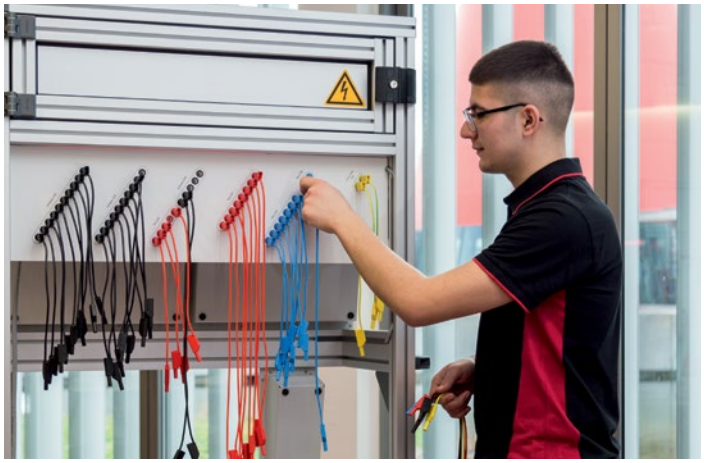
Synchronous servomotor
Type WA10CMP40M
- Including gear unit mounting kit



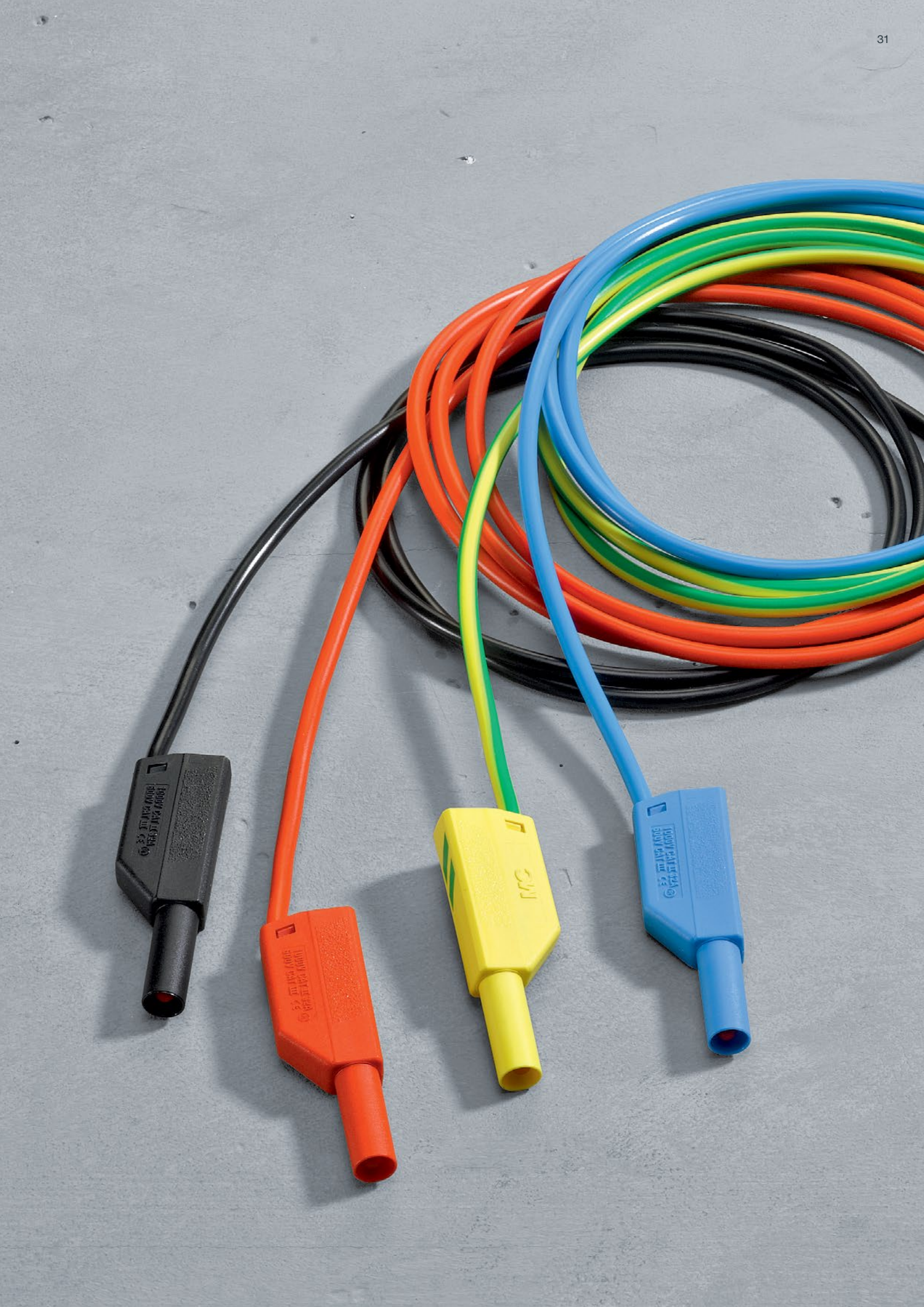
Gear unit mounting kit
Additional torque arm with a flange that can be used for a further gearmotor of type WA10. When using this mounting kit, gearmotors can be replaced very quickly and can be adapted to the requirements of the relevant laboratory test.

Didactics systems

Didactics test lead sets for modules



Use	Facilitating the fast and safe connection of different didactics modules
Technical data	– 4-mm laboratory safety test leads – 600 V, CAT III ~ 1000 V CAT II / 32 A, 2.5 mm² – Highly flexible – Stackable



Didactics documentation – learning and understanding

USB stick
Gear unit technology

Use
The gear unit technology USB stick contains the assembly instructions for the demo gear unit, technical drawings for individual gear unit parts, CAD data in STEP format, and exercises on the relevant gear units. It also comes with various technical documents such as manuals and catalogs.

Training objectives
The detailed technical drawings can be used to calculate and check fits. A CAD simulation shows the interaction between all the stages in a gear unit. The USB stick also contains exercises on gear unit technology to test what has been learned.

Technical calculations exercise book
Edition for students/trainees

Use
The edition for students/trainees contains only the exercises, without the solutions (workbook).

Training objectives
The technical calculations exercise book contains a very wide range of exercises, from reading and understanding an electric motor's nameplate right through to adjusting the motor circuit breaker and performing calculations to identify the appropriate drive. The electric motor and its functioning are thus explained step by step.

Technical calculations exercise book
Edition for trainers/teachers

Use
The edition for trainers/teachers contains all the questions and solutions.

Training objectives
The technical calculations exercise book contains a very wide range of exercises, from reading and understanding an electric motor's nameplate right through to adjusting the motor circuit breaker and performing calculations to identify the appropriate drive. The electric motor and its functioning are thus explained step by step.

Gear unit technology basics exercise book
Edition for students/trainees

Use
The edition for students/trainees contains only the exercises, without the solutions (workbook).

Training objectives
The exercise book explains what a gear unit is and why it is needed. We cover various gear unit types, designs, and mounting positions. Questions are also integrated into each chapter to test learners' knowledge.

Gear unit technology basics exercise book
Edition for trainers/teachers

Use
The edition for trainers/teachers contains all the questions and solutions.

Training objectives
The exercise book explains what a gear unit is and why it is needed. We cover various gear unit types, designs, and mounting positions. Questions are also integrated into each chapter to test learners' knowledge.

Notes

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The Didactics team is happy to answer any queries by phone or e-mail:
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