Technical teaching aids and specialty instruction furnishings for training and continuing education

SANITARY - HEATING - AIR CONDITION

PRODUCT CATALOGUE

SD-SHK_EN 01/2024

Schreiner-Didaktik Lehrsysteme GmbH & Co. KG
Oberhützer Straße 24 • D-42857 Remscheid

Phone +49 2191-464499- 0
Fax +49 2191-464499-33

www.schreiner-didaktik.de
info@schreiner-didaktik.de

Innovative competence in training and continuing education

Digital building technology

802000	Training wall Digital building technology	4
802010	Training trolley Digital building technology	8
802020	Training trolley Digital building technology shading and security	10
802030	Trainingtrolley Digital building technology compact	12

Renewable energies

84446	Training stand Heat pump split/air-water	14
84440	Training stand Heat pump, water-water	15
84402	Training station Heat pump, system water - water	16
84406	Training station Heat pump, system air - water	17
572245	Training stand Solar system, tube collector	18
572248	Training stand Solar system, flat plate collector	19
572295	Training stand Solar installation photovoltaic	20
800932	Experimentation assembly fuel cell	21
805000	Photovoltaics – experiment system	22
805050	Windtrainer experimental system	23

Air-conditioning and ventilation technology

572224-H	Controlled air ventilation system, make Viessmann	24
572224-W	Controlled air ventilation system, make Wolf	25
830940-MS	Compact model Air condition regulation	26
572258	Training station Air conditioner	27
572263	Training station Air conditioner, industrial version	28

SANITARY TECHNOLOGY

571917	Module kit Electronic sanitary control, 2 elements	29
571905	Module kit Electronic sanitary control, 3 elements	30
571900	Modul kit Drinking water installation	31
571915	Module kit Armatures testing	32
571950	Training Stand for Drinking Water Hygiene	33
579150	Training stand for wastewater technology - glass pipe system	34
571012	Universal test and assembly panel	35

HEATING TECHNOLOGY

572040-M1	Training stand Heating system control	36
571800	Module kit Heating engineering	38
571800-E2	Module kit Heating extension	39

GAS AND OIL TECHNOLOGY

801100	Gas device trainer, internet capable	40
571700	Gas devices test stand	41
572070	Training stand Combined gas boiler	42
571780	Module Kit Gasinstallation TRGI	43
572069	Service and work table for oil and gas burner	44
575072	Burner test bench	45

OTHER

571730	Testing and assembly rack 1500	46
571013	Universal test and assembly cabin	47
572330	Electrical practice Case VDE safety measures	48
571019	Electrical practice case -Basics of metal working professions	49

Training wall Digital building technology

E-802000

Description

The training wall for digital building technology offers students a comprehensive opportunity to understand, apply, and eventually master various aspects of digital building technology through practical examples.

The focus of the demonstrated digital building technology lies in three areas: heating-plumbing-ventilation, as well as electro-communication and security-surveillance.

The available exercises make it easy to achieve set learning objectives and, consequently, observable learning outcomes through the functions of the training facility.

The learning and management of digital building technology components are carried out through the wiButler pro central unit (IoT) and the corresponding wiButler application (iOS and Android).







This training wall consists of two floors and is divided into the following rooms:

Ground floor

- technical room
- bathroom
- entrance area

Upper floor

- roof terrace
- Kitchen
- living room
- homr office

The sturdy frame of the training wall is made of corrosion-resistant and powder-coated 120 x 120 mm aluminum profiles. The wall cladding is composed of high-quality printed aluminum composite panels, which lend the rooms tranquility and clarity.
The robust construction, combined with high-quality materials and equipment, ensures a long lifespan and, consequently, an extended period of use for the training wall

Equipment

The extensive equipment of the training facility provides numerous experimentation and testing possibilities in the field of building technology. The various sensors and the central control unit are configurable through an application (iOS and Android), allowing all important data to be comprehended and traced.

Moreover, the system is expandable at will, and new technological developments can be seamlessly integrated into the existing concept.

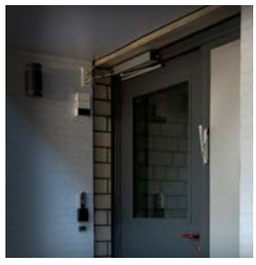




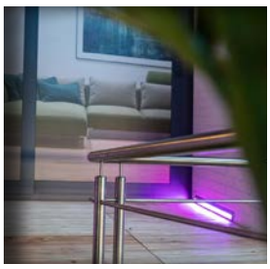






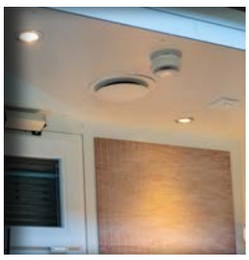
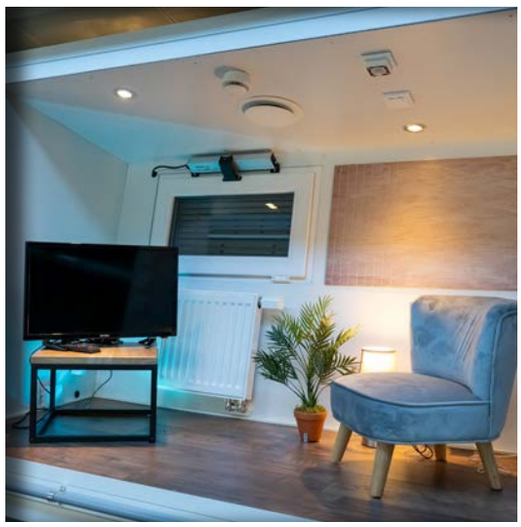
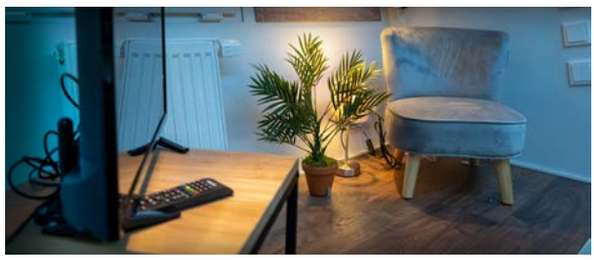




Photos

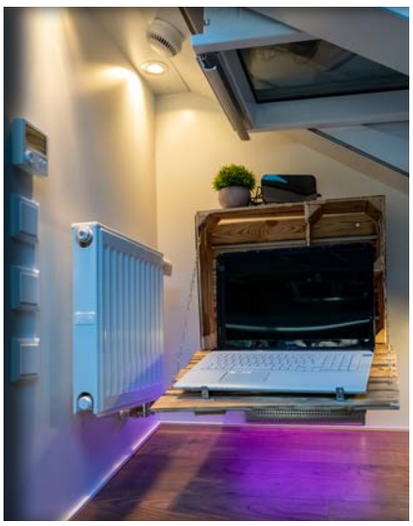









Variants




The size and design of the training facility are highly variable and can be adapted to various purposes. The floor plan and number of floors can be customized to meet almost any requirement. We are available to assist you with any questions, during the planning phase, and in the subsequent implementation.

Learning contents

- Constraction of a building automation system
- Commissioning a complex smart home system
- Creating automation rules
- Connecting sensors and actuators for increased comfort and/or energy savings
- Creating scenes
- Maintenance of a smart system

Equipment

The accessories include the following items for influencing the sensors:

- Spray bottle (rain simulation)
- Handheld fan (wind simulation)
- LED flashlight (light simulation)

Dimensions, weight, electrical supply

(WxHxD) 10000 x 4000 x 800 mm

Required building connections:

- 400V 32A
- cold water
- waste water

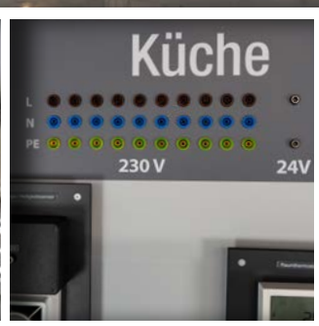
Training trolley Digital building technology

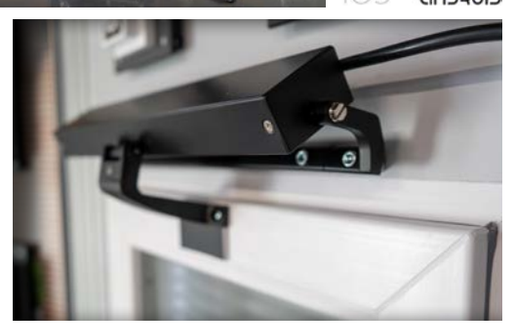
E-802010

Description

The trainingtrolley demonstrates the functionalities of a digital building technology system in the respective application areas of a building in a space-saving and comprehensive manner. These include the application areas of heating-plumbing-ventilation as well as electro-communication and security-surveillance.

The functions and applications of various sensors and actuators can be practiced and learned in a visually engaging manner at a technically high level. The learning and management of digital building technology components are carried out through the wiButler pro central unit (IoT) and the corresponding wiButler application (iOS and Android).





The sturdy and mobile frame made of anodized aluminum profiles can be folded and unfolded. This creates a spacious working area during use and allows for space-saving storage when folded. The cladding of the training cart consists of high-quality printed, magnetic steel composite panels. Equipped with magnets, the module plates (filled with sensors and actuators) effortlessly adhere to the panels and can be positioned arbitrarily.

Dimensions

(WxHxD)	1800 x 1910 x 800 mm (closed)
	3100 x 1910 x 980 mm (open)

Equipment

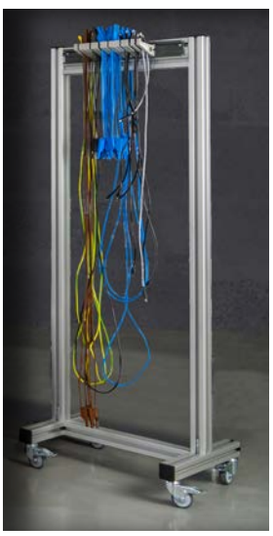
The stable and mobile frame made of anodized aluminum profiles can be folded and unfolded. This creates a spacious working area during use and allows for space-saving storage when folded. The cladding of the training cart consists of high-quality printed, magnetic steel composite panels. Equipped with magnets, the module plates (filled with sensors and actuators) effortlessly adhere to the panels and can be positioned arbitrarily.

For better organization, the module plates are stored on the back of the training cart when not in use. Each module plate is assigned a number corresponding to a designated storage space on the cart, making it easy to match them correctly thanks to the printed graphics.

The training cart is divided into the following areas:

- entrance
- technical room
- kitchen
- living room
- bath room
- terrace

Accesories



The accessories include a cable cart and an accessory box. The cable cart consists of a mobile frame and a cable holder for all the necessary cables of the training cart, available in four different lengths.

The accessory box
contains the following items to influence the sensors:

- Test spray for smoke detectors
- Spray bottle (rain simulation)
- Handheld fan (wind simulation)
- LED flashlight (light simulation)
- Acrylic cover plates for brightness and motion sensors
- Metal plates for window contact
- Magnet for calibrating brightness and motion sensors

Learning contents

- Construction of a digital building system
- Commissioning a complex digital building system
- Creating automation rules
- Connecting sensors and actuators for increased comfort and/or energy savings
- Creating scenes
- Maintenance of a smart building system

Training trolley Digital building technology shading and safety

802020

Description

The training trolley for digital building technology demonstrates in a space-saving manner how to set up a digital building technology system. The emphasis is on common shading elements such as awnings and blinds. Another significant focus is on the security and surveillance of buildings.

Students learn about various aspects and features, from basic settings to complex regulations, as well as the meaningful integration of today's digital building technology into existing and new building systems.

Operation is carried out through the wiButler IoT platform and the corresponding wiButler application (iOS and Android). All actuators and sensors, as well as the necessary connections, are pre-installed and can be put into operation immediately.

Dimension

(WxHxD)	1850 x 1980 x 1300mm (open)
	1350 x 1980 x 510mm (closed)

Equipment

The training trolley consists of a mobile frame (anodized aluminum profiles) and cladding made of high-quality printed aluminum composite panels.

To minimize the required storage space, the trolley can be folded. This makes the training stand a space- and cost-effective solution for various types of training rooms, providing high educational value in the field of digital building technology.

The training trolley is pre-assembled and ready for operation, making it immediately usable for training purposes. All components are pre-configured and can be selected and controlled through the wiButler pro central unit or the wiButler application (iOS and Android). In addition to the wibutler Smart Home Central, the following components are included:

- actuators for windows, blinds, and awnings
- weather station with sensors for wind, rain, brightness, and sun position (East, West, South)
- air quality sensor
- room thermostat
- radiator actuator
- window contact

Learning contents

- Structure of a blind or window control system
- Commissioning
- Creating automation rules
- Linking sensors and actuators for increased comfort and/or energy savings
- Creating scenes
- Maintenance of a smart building system

Training trolley Digital building technology compact

E-802030

Description

The training trolley for digital building technology demonstrates in a compact way how a fundamental structure of a digital building technology system is designed.

In this context, students learn about various aspects and features, from basic settings to complex regulations, as well as the meaningful integration of today's digital building technology into existing and new building systems.

Operation is carried out through the wiButler IoT platform and the corresponding wiButler application (iOS and Android). All components and necessary connections are pre-installed and can be put into operation immediately.







Dimension

(WxHxD)	900 x 1940 x 800 mm

Equipment

The compact training trolley consists of a mobile frame (anodized aluminum profiles) and cladding made of high-quality printed aluminum composite panels. The depicted building illustrates specific application areas of a common digital building system.

The training trolley is pre-assembled and ready for operation, making it immediately usable for training purposes. All components are pre-configured and can be selected and controlled through the wiButler pro central unit or the wiButler application (iOS and Android).

Scope of delivery and accessories

- 1 x wibutler pro central unit
- 1 x weather station
- 2 x blind / roller shutter actuators
- 1 x window / door contact
- 1 x underfloor heating actuator
- 2 x actuators for underfloor heating valves
- 1 x radiator actuator
- 3 x gauge clocks for visualizing the opening stroke of the thermostat valves
- 3 x room devices oventrop R-Tronic
- 1 x dimmer switch LED-RGBW
- 1 x LED profile RGBW
- 1x smart socket
- 2 x motion-brightness sensor
- 2 x button
- 1 x profile button

1 x Set of accessories for simulating weather influences consisting of:

- 1 x spray bottle = rain
- 1 x LED flashlight = sunlight
- 1 x handheld fan = wind
- 2 x blinds for brightness sensor / motion detector

Learning contents

- Planning digital building technology systems
- Recognizing the advantages of a digital building technology system in terms of comfort and/or energy efficiency
- Commissioning a digital building technology system
- Creating automation functions

Training stand Heat pump split/air-water

E-84446

Description

Original air/water heat pump on a mobile trolley made of 40 x 40 mm aluminum profile with 4 lockable castors 100 mm.
The heat pump enables both heating and hot water operation.
The heatbuilt up is via exchangers on the heating and drinking water side (the heat exchangers can be omitted if a storage tank connection is provided).
When operating with heat exchangers, different heating or hot water requirements can be set.
The heat exchangers also offer the option of manual temperature measurement on the built-in measuring rings.
The control allows to read all relevant values of the heat pump and remote access via the Internet via a PC, tablet, smartphone, etc.

Training station Heat pump split

Learning contents

- Name and document the components of a heat pump
- Create a functional description of a heat pump
- Acquire knowledge of the heat pump processes
- Commissioning a heat pump
- Exercises with different heating or cooling loads
- Controller setting according to user behavior
- Possibilities for control via the Internet with a PC / smartphone / tablet
- Remote maintenance and error analysis

Dimensions, weight, electrical supply

L x H x W ca. 1600 x 1950 x 780 mm

Weight ca. 160 kg

230 V

Subject to technical changes

Training stand Heat pump, water-water

E-84440

Description

Original-equipment industry brine water, 6 kW

- front side with covered with plexiglass for teaching demonstration
- built-in interior lighting for viewing of the components, including built-in measurement points with sensor adapters for temperature and pressure
- with built-in reservoir for 175 l water
- control simulation mounted with potentiometer
- built on an aluminum frame, built with 80 x 40 mm and 40 x 40 mm profile
- heat consumption system either via a mounted stainless steel heat exchanger 18 kW or by feeding it into the built-in reservoir
- heat source system (brine water) by externally mounted stainless steel heat exchanger 18 kW
- both heat exchangers each have 4 measuring points for temperature and pressure
- digital display of temperature and pressure via control unit in all three process areas: heat source, heat consumption and refrigeration cycle

Training station Heat pump

Dimensions, weight, electrical supply

L x H x W	1000 x 1900 x 750 mm
Weight	ca. 250 kg
400 V	

Subject to technical changes

Training station Heat pump, system water - water

E-84402

Description

A fully functional demonstration model enables easy explanation of a heat pump. Two large manometers (120 mm) show the pressure ratios of the cooling agent in the pressure / suction hose. The heat exchanger (vaporiser and condenser are designed as copper spirals, under which a can (containing approx. 1 L water) is placed as a source of heat / for heat supply. The names of the most important elements are printed on the rear wall.

Learning contents

- Name and document components of a heat pump
- Create functional description of the components
- Determine the temperature curves of the heat source and the heat sink by measurement
- Calculate the coefficient of performance of heat pump
- Influence of different heat source temperatures and heat sink temperatures on the coefficient of performance

Training station Heat pump, water-water

Technical data

- 1 hermetic refrigeration unit 230 volt,
- 2 built-in large-manometer (D 160 mm) class 1.6
- 2 sight glasses for viewing refrigerant
- 1 expansion valve,
- 1 refrigerant agent dryer
- 1 plastic reservoir (10 l) as a drinking/heating water tank with a stainless steel pipe heat exchanger including drain fitting with valve
- 1 plastic reservoir (10 l) as a heat source with a stainless steel pipe heat exchanger including drain fitting with valve
- 1 integrated digital thermometers -20 to +120°C for measuring the drinking/heating temperature in the reservoir
- 1 integrated digital thermometer -20 to +120 ° C for measuring the temperature in the heating water reservoir
- 1 electrical power unit up to max. 2000 W for measuring the electrical power

Scope of delivery

- 2 plastic vessel 10 L contents
- Manual with test documents and theoretical foundations, including CD-ROM

Dimensions and weight

L x H x W	ca. 1100 x 1700 x 610 mm
Weight	ca. 75 kg
230 V	

Subject to technical changes

Training station Heat pump, system air - water

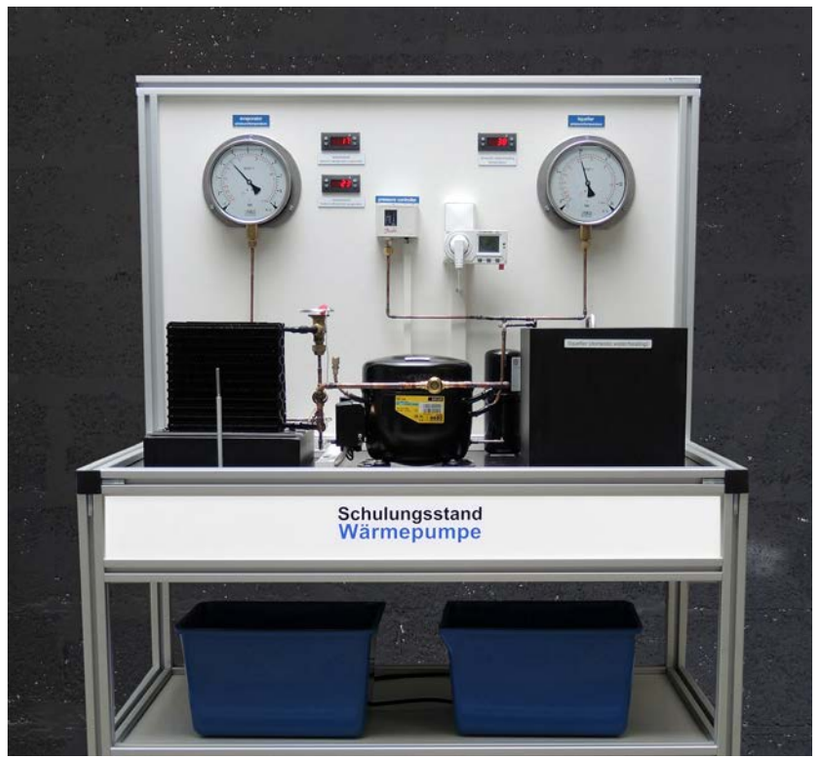
E-84406

Description

With the fully functional demonstration model in the simplest way, the operation of a heat pump be explained. Two large manometer (160 mm) show the pressure conditions of the refrigerant fluid to the pressure or suction line. An air heat exchanger serves as a heat source, a 10 l tank with tubular heat exchanger serves as a heat storage tank .

Learning contents

- Name and document components of a heat pump
- Create functional description of the components
- Determine the temperature curves of the heat source and the heat sink by measurement
- Calculate the coefficient of performance of heat pump
- Influence of different heat source temperatures and heat sink temperatures on the coefficient of performance



Training station Heat pump, air-water

Technical data

- 1 hermetic refrigeration unit 230 volt,
- 2 built-in large-manometer (D 160 mm) class 1.6
- 2 sight glasses for viewing refrigerant
- 1 expansion valve,
- 1 refrigerant agent dryer
- 1-air heat exchanger (evaporator)
- 1 tube coil heat exchanger
- 1 plastic reservoir (10 l) as a drinking/heating water tank with a stainless steel pipe heat exchanger including drain fitting with valve
- 2 integrated digital thermometers -20 to + 120°C for measuring the air temperature before and behind the air heat exchanger
- 1 integrated digital thermometer -20 to +120 °C for measuring the temperature in the heating water reservoir
- 1 electrical power unit up to max. 2000 W for measuring the electrical power

Scope of delivery

- 2 plastic vessel 10 L contents
- Manual with test documents and theoretical foundations, including CD-ROM

Dimensions and weight

L x H x W	ca. 1100 x 1700 x 610 mm
Weight	ca. 75 kg
230 V	

Subject to technical changes

Training stand Solar system, tube collector

E-572245

Description

Mobile training bench with original components, assembled in functioning state. The system contains the following main components:

- Pipe collector W x H x D: 500 x 1600 x 100 mm with 6 pipes with anchor and track set
- 1 hosing connection set matching the collector
- 1 compact solar control station with pump, 2 thermometers, 1 manometer, 2 fill / drain valves, 1 safety valve, 1 gravity bake
- 1 18 L solar expansion tank
- 1 Solar hand pump
- 1 automatic air separator
- 1 automatic air vent
- 1 Solar regulator with digital display, with 3 sensors, 1 connection cable C1/C2
- 1 26L solar energy storage unit with inbuilt copper coiled piping as a heat exchanger,
- 3 penetration thermometers for displaying air stratification
- 1 pipe system (copper pipes 18 x 1.5 mm)
- 1 mobile unit frame made of all-round grooved extruded aluminium profile 40 x 40 mm and 80 x 40 mm

Learning contents

- Naming components of a solar unit
- Compiling functions description of the components
- Calculating minimum/maximum fill pressure of the unit
- Filling solar unit with a slush pump
- Commissioning solar unit
- Adjust controller
- Align the solar system

Scope of delivery

- 1 handbook with experimental and theoretical foundations
- 1 CD ROM with practical tasks for solar heat

Special accessories:

- **572245.15** Filling device
- **572245.20** Lighting unit, 8 x halogen spotlights
- **572245.30** Solarmeter with evaluation on the PC
- **572245.35** Solar test kit

Training stand Solar system, tube collector

Dimensions and weight

L x H x W	1590 x 1920 x 800 mm
Weight	98 kg
230 V	

Subject to technical changes

Training stand Solar system, flat plate collector

E-572248

Description

Mobile training bench with original components, assembled in functioning state. The system contains the following main components:

- Plate collector W x H x D: 800 x 1600 x 100 mm with anchor and track set
- 1 hosing connection set matching the collector
- 1 compact solar control station with pump, 2 thermometers, 1 manometer, 2 fill / drain valves, 1 safety valve, 1 gravity bake
- 1 18 L solar expansion tank
- 1 Solar hand pump
- 1 automatic air separator
- 1 automatic air vent
- 1 Solar regulator with digital display, with 3 sensors, 1 connection cable C1/C2
- 1 26L solar energy storage unit with inbuilt copper coiled piping as a heat exchanger,
- 3 penetration thermometers for displaying air stratification
- 1 pipe system (copper pipes 18 x 1.5 mm)
- 1 mobile unit frame made of all-round grooved extruded aluminium profile 40 x 40 mm and 80 x 40 mm

Learning contents

- Naming components of a solar unit
- Compiling functions description of the components
- Calculating minimum/maximum fill pressure of the unit
- Filling solar unit with a slush pump
- Commissioning solar unit
- Adjust controller
- Align the solar system

Scope of delivery

- 1 handbook with experimental and theoretical foundations
- 1 CD ROM with practical tasks for solar heat

Special accessories:

- **572245.15** Filling device
- **572245.20** Lighting unit, 8 x halogen spotlights
- **572245.30** Solarmeter with evaluation on the PC
- **572245.35** Solar test kit

Training stand Solar system, flat plate collector

Dimensions and weight

L x H x W	1590 x 1900 x 800 mm
Weight	85 kg
230 V	

Subject to technical changes

Training stand Solar installation photovoltaic

E-572295

Description

A mobile training stand with original components consisting of:

1 mobile rack system from all sides grooved extruded aluminum profile 40 x 40 mm and 80 x 40 mm,

4 castors 100 mm in diameter with brakes, 2 PV modules - jointly adjustable, 1 construction with original components for a stand-alone operation, 1 construction with original components for an operation with power grid connection. The constructions are clearly arranged on a display board made of printed multi-layer plastic.

10 analog dial instruments provide a quick overview of the present Volt-/Ampere-readings

In addition to the main point measuring points are provided, they allow an independent measurement, such as the comparison between parallel and series circuit.

In construction for grid feeding the inverter can be read via an USB adapter.

Software and adapters are included.

Measuring instruments and teaching materials can be placed on the practical storage.

Training stand solar installation photovoltaic

Learning contents

- Difference between series and parallel connection of the solar modules
- Operation of the stand-alone photovoltaic system or grid-connected-photovoltaic system at different angles of incidence or different shading
- Operation of the system with only one solar module
- Operation of the system with the consumer
- Calculation of the accumulator capacity

Scope of delivery

- 1 handbook with experimental and theoretical foundations
- 1 CD ROM with practical tasks

Special accessories:

- **E-572245.20** Lighting unit, 8 x halogen spotlights
- **E-572245.30** Solarmeter with evaluation on the PC

Dimensions and weight

L x H x W	1650 x 1800 x 780 mm
Weight	98 kg
230 V	

Subject to technical changes

Experimentation assembly fuel cell

E-800932

Description

The wall panel format of the instruction models (from the professional series) makes them suitable for demonstrations in front of large groups. The system components can be assembled individually and in a goal-oriented fashion for each individual lesson.

Experimentation assembly fuel cell

Fittings

- Solar module high-capacity solar module for powering the electrolyzer. The solar module can be rotated in its holder. Can be positioned in both the holder frame and on the table.
  Power output 1.6 W W x H x D: 200 x 297 x 100 mm
- Electrolyzer, high-power PEM electrolyzer (operation with distilled water) with graduated gas tank (Volume / 65 ml)
  output: 7W W x H x D: 200 x 297 x 100 mm
- Fuel cell
  PEM double fuel cell for hydrogen / oxygen operation. The cells can be switched in parallel and series.
  Power output 7W W x H x D: 200 x 297 x 90 mm
- Consumer module consumer module with motor, lamp and 10 switchable resistors. The resistors are optimally adapted to the solar module and fuel cell.
  W x H x D: 100 x 297 x 100 mm
- Measurement device demonstration measurement device for current and voltage.
  Digit size: 25 mm. Analogue data output.
  W x H x D: 200 x 297 x 100 mm
- Holder frame width: 850 mm, height: 1100 mm for acceptance of the module plates

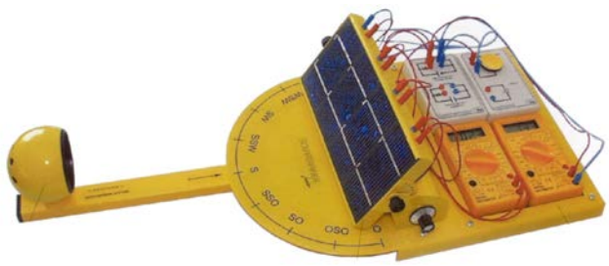
Subject to technical changes

Photovoltaics – experiment system

E-805000

Description

The scope of the experimental materials enables users to perform all basic experiments regarding photovoltaics. The modular-structure of the experiments means that they can be integrated in lessons where necessary.
The materials are clearly arranged in a special box. It is always available. The experiments can be assembled and dismantled quickly.



Photovoltaics – experiment system

Learning contents

- Measuring different sources of light
- Dependence of light strength on distance from the light source
- Demonstration experiment with battery
- Solar cell with motor as load (polarity)
- Function of the pn layer on the solar cell
- Depiction: Diode function/diode characteristics
- No-load voltage / short-circuit current in various shadowings and angles of incidence
- Switching in sequence / parallel
- Switching in sequence with various shadowings
- Switching in parallel with various shadowings
- Recording the U/L characteristics in dependence on the light strength
- Influence of temperature on the U/L characteristics, determining the internal resistance of a solar cell
- Determining the output characteristics / MPP
- Determining the degree of efficiency
- Depicting "daily output"
- Charging battery / Gold Cap with the solar cell
- Discharging battery/Gold Cap with various loads
- Layout of an isolated network

- Equipment with an extension package: **805010** recording measurement values and evaluating various experiments with the PC -measurement box and software. Functional depiction of an invertor (rectangular and sinusoidal signal)
- Adjustable halogen lamp (low voltage) with integrated voltage supply. Moving around the solar module possible (course of the sun).

Technical data / fittings

- Special case with interior moulding section
- Basis plate with acceptance frame for the measuring devices and and experiment boxes
- Low-voltage halogen spot lights
- Adjustable voltage supply
- Solar module with four individual cells and inclination adjustment
- Two multimeters with 2 mm bushes
- Radiation sensor box
- Load box with electric motor and light bulb
- Battery box with NC accumulator, Gold Cap and blocking diode
- Measurement box with resistance for characteristics
- Connection lines
- Experiment instructions / teacher's guide

Subject to technical changes

Windtrainer experimental system

E-805050

Description

The available experimental materials allow the carrying out of all basic experiments in the field of windenergy. Because the experiments are built up modularly the adaption to the actual teaching is possible according to the requirement. The materials are arranged clearly and optically attractive in a specific with suitcase. Everything is always completely at hand, extra material is not necessary. The experiments can be built up and removed fast.The pupils are able to carry out the experiments by themselves with the help of the easily understandable experimentation instruction. The teacher gets further information to do the exercises and to understand the physics.

Windtrainer – Experimentiersystem

Learning contents

- Measuring of the wind force in the vicinity of the school
- Measuring of the wind force of the wind machine dending on the adjustment of the control knob
- Power output of the generator depending on the shape of the wing (even / curved)
- Power output of the generator depending on the number of wings (2, 3 , 4)
- Power output of the generator depending on the position (angle) of the wing
- Characteristic curve of a generator (U/I) at constant speed
- Characteristic curve of a generator(U/I). Measuring the resistance- and buoyancy rotor at constant wind force
- Power output of the generator depending on the wind force
- Charge of an akku/Gold Cap with the generator
- Discharge an akku/Gold Cap with different loads
- Build up of a stand alone operation net

Technical data/ equipment

- Specific white suitcase with shaped part made of foam plastic
- Basic board with frame to put the experimental boxes und multimeters
- Wind machine with controllable power supply
- Wind power plant with axial rotor, generator without gear, with tacho generator, hub for mounting 2, 3, and 4 wings, angle of the wings adjustable
- 4 wings even, 4 wings curve
- Protection cover, wind shield, tool
- 2 multimeters with 2 mm connectors
- Anemometer
- Load box with electric motor and light bul
- Storage box with NC accumulator and GoldCap and blocking diode
- Measuring box with variable resistor
- Experimental instruction/experimental solutions/ professional informations/CD

Accessories

805055 Savonius-Rotor

Technische Änderungen vorbehalten

Controlled air ventilation system with home installation, make Viessmann

E-572224-H

Description

Original controlled air ventilation unit, power 300 m³/h, 1 cross-flow heat exchanger with heat recovery performance, to 80%, 1 supply and 1 exhaust fan, 1 micro-filter system for outdoor air and exhaust air, mounted pipe system for outside air, exhaust air, supply air, air distributor, silencers, electric preheater and different air outlet or inlet valves mounted on a coated chipboard for measuring with a funnel meter, further closable openings for temperature measurement and differential pressure measurement, changeover to summer /winter operation possible.

Design example Controlled air ventilation system, made Viessmann

Learning contents

- Physical basics
- Construction and components of a Living room ventilation system
- Mode of action of the overall facility
- Functioning of the individual components
- Planning a system with PC support
- Measuring exercises with practical measuring devices
- Setting and service exercises using the manufacturer's documents
- Acceptance of a system with protocol generation

Scope of delivery

- Optionally, a digital differential pressure gauge or manually tube manometer,
- Operating instructions and original manufacturer documents

Special accessories:

- differential pressure switch (Fireplaces monitoring)
- fun anemometer with measuring funnel

The system is installed on a mobile rack, consistig of all sides groove dextruded aluminum profile 80x40 mm and 40x40 mm.

Dimensions and weight

L x H x W	approx. 2200 x 1950 x 780 mm
Weight:	approx. 120 kg, 230 V

Subject to technical changes

Controlled air ventilation system with home installation, make Wolf

572224-W

Description

Original controlled air ventilation unit, power 300 m³/h, 1 cross-flow heat exchanger with heat recovery performance, to 80%, 1 supply and 1 exhaust fan, 1 micro-filter system for outdoor air and exhaust air, mounted pipe system for outside air, exhaust air, supply air, air distributor, silencers, electric preheater and different air outlet or inlet valves mounted on a coated chipboard for measuring with a funnel meter, further closable openings for temperature measurement and differential pressure measurement.

Design example Controlled air ventilation system, made Wolf

Learning contents

- Physical basics
- Construction and components of a Living room ventilation system
- Mode of action of the overall facility
- Functioning of the individual components
- Planning a system with PC support
- Measuring exercises with practical measuring devices
- Setting and service exercises using the manufacturer's documents
- Acceptance of a system with protocol generation

Scope of delivery

- Optionally, a digital differential pressure gauge or manually tube manometer,
- Operating instructions and original manufacturer documents

Special accessories:

- differential pressure switch (Fireplaces monitoring)
- fun anemometer with measuring funnel

The system is installed on a mobile rack, consistig of all sides groove dextruded aluminum profile 80x40 mm and 40x40 mm.

Dimensions and weight

L x H x W	approx. 2200 x 1950 x 780 mm
Weight:	approx. 120 kg, 230 V

Subject to technical changes

Compact model Air condition regulation

E-830940-MS

Description

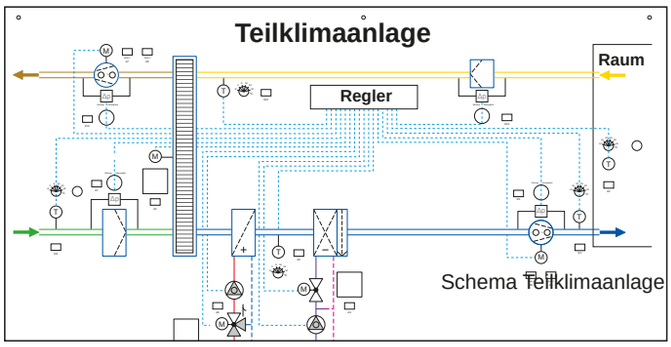
Training device with integrated, fully-functioning Siemens control for partial air conditioning unit - full air conditioning units with changeable front plate for the respective partial or full air conditioning unit plan. Flush housing of all connections, LED's displaying the operating state and analogue flap position displays in the basic body. A 6-stage potentiometer allows the reproducible setting of temperature and air humidity. The compact model can be used as a bench model.

A mobile frame is available as an accessory.

Compact Model Air Condition Regulation

Learning contents

- Energy-optimized control of an air conditioning system
- Control variations in ventilation technology
- Behavior of the control variants on changes
- Learning the various control strategies
- Air handling functions of a air conditioning system
- Recognize and correct faults in an air conditioning system
- Cascade control
- Antifreeze
- Remote maintenance option (KNX bus capable)



Schema Teilklimaanlage

Scope of delivery

- 1 compact model with aluminium frame grooved on every side
- 2 plan plates (1 x partial and 1 x full air conditioning unit)
- 1 Siemens control (integrated in compact model)
- 1 mains cable

Dimensions and weight

L x H x W	2000 x 1840 x 810 mm
Weight	45 kg
230 V	

Subject to technical changes

Training station Air conditioner

E-572258

Description

Original Vaillant multi-split air-conditioner consisting of 2 separate units for mounting inside or outside. Heating and cooling system, 2.8KW+2.9 KW output, entirely functional; front constructed to suit instruction purposes (multi-layer material), dimensions 620x820 mm, with graphical digital print-out of the entire system installation layout inc. function diagram with two inset digital displays for temperature with illuminated numbers and 2 analogue displays for temperature and pressure in the cooling and heating circulation.

Two in-built observation panes for observing the state of the cooling agent (fluid and gaseous). Light display for operating mode (heating cooling) Multi-layer plate body closed on all sides with complete extruded aluminium profile mobile bench frame (40x80 and 40X40 mm) including measurement technology (temperature and pressure) for cold and thermal circulation, fitted switching cabinet with surge protector and emergency switch.

Delivered with remote control and digital measuring kit for air humidity, temperature and dewpoint.

Training station Air conditioner

Learning contents

- Name and document components of the split device
- Functional description of the components
- Acquire knowledge about the cooling processes
- Carry out commissioning
- Carry out practical service and maintenance work

Scope of delivery

- Operating instructions and original manufacturer's documents
- Remote control
- Digital measuring kit for air humidity, temperature and dewpoint

Special accessories:

- **E-572258.20** Service case set "Climate" included vacuum pump

Dimensions and weight

L x H x W	approx. 1000 x 1900 x 800 mm
Weight	approx. 95 kg
230 V	

Subject to technical changes

Training station Air conditioner, industrial version

E-572263

Description

A mobile training stand with original industrial components for heating and cooling, inc. control with touch panel and Ethernet interfaces including WLAN module. The unit is prepared didactically and allows all practical function and service exercises. For transportation purposes it can be flexibelly decoupled electrically and mechanically into 2 parts. Electrical connection 400 V / 16 A. On request 230 Volt / 16 A.

Training Station Air conditioner, industrial version

Dimensions and weight

L x H x W	3900 x 1950 x 1000 mm
Weight	580 kg
400 V	

Subject to technical changes

Module kit Electronic sanitary control, 2 elements

E-571917

Description

Training stand consisting of 2 pre-wall elements flexible mounted on trolley article no. E-571730:

- 1 x washbasin with opto-electronics,
- 1x urinal simulation model with original HF electronics (with heat sensor), including piping and electrical wiring.

Operating possibility with and without water supply. Electric supply by battery.

Supplied fully assembled and ready to test and training trolley no. 571730.

Module kit Electronic sanitary control, mounted on trolley E-571730

Learning contents

- Name and document components of the training stand
- Selection of the suitable control (customer advice)
- Adjustment of the sanitary control (inconsideration of the hygienic aspects, usage behavior and customer requests)
- Commissioning, customer advice, maintenance
- Service exercises, troubleshooting

Scope of delivery

- Operating instructions and original manufacturer documents

Dimensions and weight

L x H x W	1580 x 1970 x 780 mm
Weight	160 kg incl. rack
230 V	

Subject to technical changes

Module kit Electronic sanitary control, 3 elements

E-571905

Description

Training stand consisting of 2 pre-wall elements flexible mounted on trolley article no. E-571730-20:

- 1 x urinal simulation model with radar electronics,
- 1 x urinal simulation model with HF electronics,
- 1 x wash basin with opto-electronics including a basin mixer

The elements are completely piped ready for connection and allow a wet and dry operation.

Electric supply with battery.

Delivery including mobile rack article no. E-571730-20 (L= 2000 mm).

Alternatively without further costs delivery with mobile rack article no. E-571730 (L = 1580 mm), elements assembly on both sides.

Module kit Electronic sanitary control, 3 elements, here built on a rack with a width of 2000 mm art. no. E-571730-20

Learning contents

- Name and document components of the training stand
- Selection of the suitable control (customer advice)
- Adjustment of the sanitary control (inconsideration of the hygienic aspects, usage behavior and customer requests)
- Commissioning, customer advice, maintenance
- Service exercises, troubleshooting

Scope of delivery

- Operating instructions and original manufacturer documents

Dimensions and weight

L x H x W	2000 x 1970 x 780 mm
Weight	180 kg incl rack
230 V	

Subject to technical changes

Modul kit Drinking water installation

E-571900

Description

Entire system completely assembled in the rail: Consisting of: house connection with water meter, backflush filters, pressure reducer with manometer, two pipe aerator and bleeder, system separator, circulation pump, three extraction fittings, one tap with a stainless steel basin, eight shut-off valves, electric hot water tank, two pressure sockets for pressure loss tests and for system pressure tests, two temperature sockets.

Module Kit Drinking water installation, mounted on trolley E-571730

Learning contents

- Naming and documenting the components of a drinking water system
- Drawing up up a functional description of the components
- Sketching the system using DIN symbols and creating a technical drawing in the scale 1:10
- Compiling a dimensions and material digest
- The construction of a residential water connection
- The function of the safety armatures with accident simulation
- Acquaintance with and commissioning of the hot water circulation unit
- Filling and bleeding the circulation system
- Checking the electrical connection of the circulation pump, and re-connecting where necessary (in accordance with the revised PHS systems mechanic)
- Measuring the energy consumption of the circulation pump
- Discussing the problem of legionnaire's bacteria
- Pressure ratios in drinking water systems
- System pressure test (pipe test pump present)
- Prevention of suck-back (single and double backflow guard)
- The operation of backflow valves
- Preventative measures against overly-loud flow noises
- Air and structure borne measurement (with a sound level measuring device)
- Maintenance of filters and system armatures
- Flushing a drinking water system (with flushing compressor)

Scope of delivery

- 2 drinking water pressure gauges, Tectite assembly tool set, 2 penetration thermometers, 1 inlet and outlet hose, manual with manufacturer documents and experiments incl. CD

Dimensions and weight

L x H x W	approx. 1500 x 1750 x 340 mm,
Weight	approx. 58 kg incl. rack
230V	

Subject to technical changes

Module kit Armatures testing

E-571915

Description

A set for the commissioning, testing and measurement-based evaluation of cold and warm water armatures, consisting of:

- 3 armature-holding module plates prepared for connection in the track system. The module plates are connected with a pipe stretch in a plug connection system. The module panels are fitted with the following armatures: 1 double lever armature, 1 single lever mixer, 1 thermostat battery. The armatures are fitted with quick connections. All 3 armatures can be operated simultaneously and their measurements compared.
- 6 massive brass ring gauges, each with a screwed-in brass temperature adapter with leak proof interior rubber coating, and a screwed-in brass pressure tap with plug-in coupling for pressure measurement
- 1 connectible stainless steel water water receptacle WxH: 700x450mm fitted on a module plate material quality 1.4301
- 2 flow meters (float) mounted on a module plate, connected via plug fittings measurement area corresponds to the armatures delivered
- 2 bourdon tube pressure gauge with slave pointer, 1 pressure reducer

Module Kit Armatures testing mounted on trolley E-571730

Learning contents

- Naming and documenting the components of a drinking water system
- Sketching the system using DIN symbols and create a technical drawing in the scale 1:10
- Compiling a dimensions and material digest
- Through-flow / consumption measurements on the armatures
- Water-loss dripping armatures
- Armature sealing characteristics
- Mixer tap control sequence
- Pressure measurement on the armatures: Pressure during flow and rest

Scope of delivery

- 2 hoses 2m in length
- 3 digital thermometer
- 3 drinking water pressure gauges
- manual with experimental and theoretical foundations incl. CD

Dimensions and weight

L x H x W	approx. 1200 x 1350 x 300 mm,
Weight	approx. 160 kg incl. rack

Subject to technical changes

Training tand Drinking Water Hygiene

E-571950

Description

Assembled and functional on a mobile cart made of aluminum profiles 40x40 and 80x40 mm with Alu-Dibond panels.

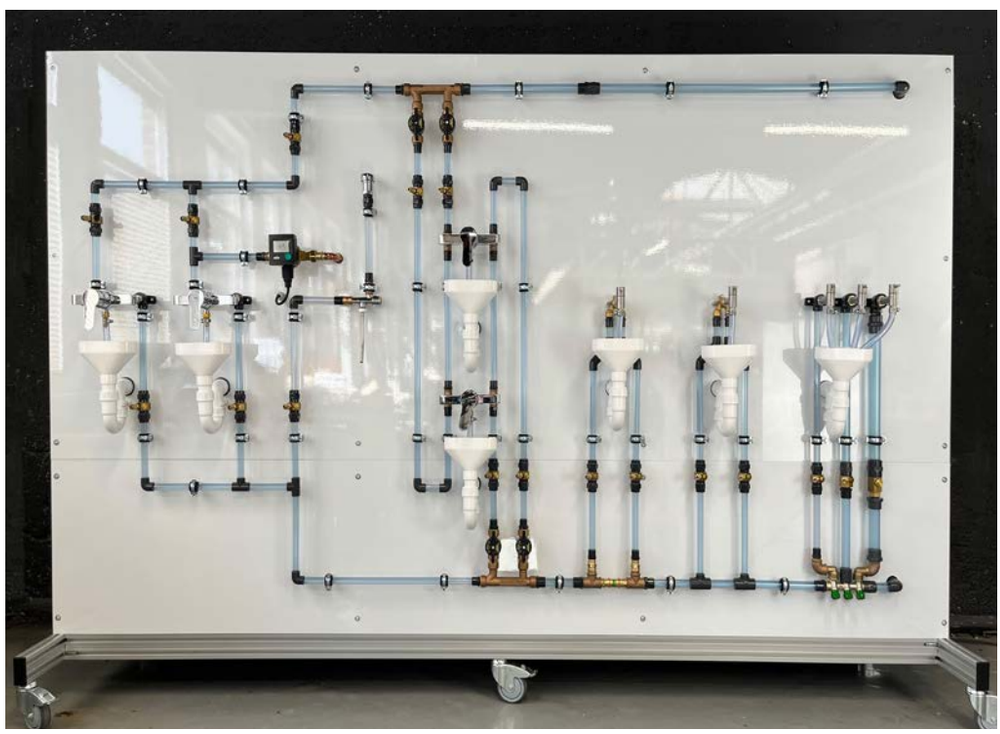
The training stand is designed to familiarize trainee with essential components and elements needed for the proper installation of a drinking water system. Using the training stand, various types of piping can be demonstrated, showcasing their impact on flow behavior and consequently on drinking water hygiene.

To visually present flow behavior, outlet valves are integrated. Additionally, transparent pipelines and various measuring devices for pressure and temperature are installed. A differential pressure gauge and a temperature measuring device are included in the delivery.

The system is structured to be utilized in a circulation principle.

The system consists of:

- 1 x domestic water supply unit, including a collection tank for circulation principle
- 1 x circulation pump
- 1 x circulation control valve AquaVip
- 2 x flow dividers
- 1 x Injection nozzle
- 1 x drinking water distributor
- various outlet fittings such as taps and single-lever mixers
- different piping configurations such as T-piece installation, ring installation, ring installation with flow dividers and distributor installation
- wastewater piping



Training stand Drinking Water Hygiene

Learning contents

- Identification and documentation of components of drinking water systems.
- Creation of functional descriptions for the components.
- Sketching the system with DIN symbols and creating a technical drawing.
- Taking measurements and creating a material list.
- Familiarizing oneself with various installation methods along with their advantages and disadvantages.
- Effective prevention of stagnant water.
- Learning about and putting into operation dynamic flow dividers based on the Venturi principle.
- Understanding the function of a domestic water supply unit with a membrane vessel and putting it into operation.
- Learning the proper procedure for taking samples for drinking water analysis (according to Drinking Water Ordinance 2011).
- Performing maintenance and adjustment tasks on fittings.

Dimension

WxHxD: 3000x1970x780 mm

230 V

Training stand Wastewater technology - glass pipe system

E-579150

Description

The wastewater training stand serves to illustrate the effects of faulty wastewater installations and, on the other hand, to demonstrate a norm-compliant setup. The wastewater stand represents a single-family house with 2 floors and consists of:

- A pipeline with faulty installation featuring the following components: 1 washbasin, 1 cistern including floor-standing toilet, 1 urinal, and 1 motor-driven ventilation flap. The following installation errors are included:
- incorrect installation of a single branch line
- incorrect installation of a common branch line
- incorrect toilet connection
- incorrect ventilation
- incorrect pipe routing in the downpipe

- A pipeline with correct and norm-compliant installation. For easy comparison with the faulty installation, this pipeline includes the same components as the faulty one:
- 1 washbasin
- 1 cistern including floor-standing toilet
- 1 urinal
- 1 motor-driven ventilation flap"

The system is controlled using a tablet. The software interface allows for the control of each valve and ventilation flap via Wi-Fi. The currently active pipeline is indicated by LED lighting.

The piping and all fittings of the training stand are made of transparent borosilicate glass.

The water supply operates in a circulation principle. For this purpose, a water tank with a filling connection and a sufficiently dimensioned pump is installed. The pump additionally includes a diaphragm pressure vessel to avoid frequent switching of the pump in case of only minor pressure drops in the system.

Dimension

W x H x D: 4700 x 3200 x 1000 mm

Universal test and assembly panel

E-571012

Beschreibung

Universal assembly panel made of extruded aluminum profiles. The continuously adjustable cross braces have a square cross-section and an embedded precision groove on all 4 outer surfaces.
Into these grooves fit the nut blocks with threaded rods from common HVAC mounting rail manufacturers.
A wide range of accessories is available, including hinge and roller systems for creating spatial cabin solutions.

Execution example

Execution example

Execution example

Technical Data/equipment

- Distance between the cross braces: 125 mm
- The distance can be continuously adjusted. A reduction in distance is possible by using additional braces.

Dimension

Customized design and dimensions according to customer requirements.

System-compatible testing and assembly racks available in various dimensions

Subject to technical changes

Training stand Heating system control

E-572040-M1

Description

Enables the commissioning and practical setting of heating controllers different makes with flexible controller and sensor connections via plug connections.
The training stand consists of:

- 1 corpus made of aluminum profile with front and back sides
- 3 exchangeable front panels with a printed 3D house model magnetically attached.

The house consists of 4 rooms with the following equipment:

- heat generator,
- drinking water storage tank,
- radiator heating circuit,
- floor heating circuit with mixer.

The hydraulic connection of the individual components is printed accordingly.

Two additional front panels with extended hydraulic schemes are included in the scope of delivery.
Plate 2 contains, in addition to plate 1, a solar system integrated into the heating system / hot water system.
Plate 3 contains, in addition to plate 2, another mixer, a return flow boost and a combination storage tank (hot water / heating).
Plates 1, 2 and 3 have metal plates on the back so that they can be fixed on the base plate.

The heating control (make depending on customer requirements) and other necessary components (such as mixer and solar modules) are installed in a another corpus made of aluminum profile.

Additionally mounted switches on the front panel serve to generate errors such us incorrect temperature values of the sensors, faulty pumps or incorrectly connected mixers in the heating system.
A tablet can be ordered as an option. This can be plugged into a holder on the front panel and serves to use the digital functions of the control system: create customer base, remote maintenance, operation of the system via W-LAN, creation of maintenance reports. Can be combined with smart home products.

The heating control is NOT included in the scope of delivery and can be provided or ordered.

Dimensions and weight

L x H x W 800 x 1015 x 80 mm (per corpus)

The dimensions of the front panel with controls depend on the controller

Weight approx. 50 kg

230 V

Subject to technical changes

Learning contents

- Name and document the components of the heating system
- Explain the function of the components
- Select the appropriate hydraulic plan according to the manufacturer's documents
- Electrical cabeling of the heating control
- Commissioning of the heating control
- Setting the heating control according to user behavior.

Scope of delivery

- 1 set of potentiometers (number depends on controller)
- 1 laboratory cable set (15 cables) with end ferrules
- 1 set terminals for connectors
- 1 operating instructions and original manufacturer's documents incl. CD

Special accessories

E-572040.5	Movable receiving frame
E-572040.10	Vaillant heating controller
E-572040.20	Honeywell heating controller
E-572040.30	Brötje heating controller
E-572040.40	Wolf heating controller
E-572040.50	Viessmann heating controller
E-572040.60	Buderus heating controller
E-572040.70	Boschheating controller

Module kit Heating engineering

E-571800

Description

Total system fully fitted in a rail / plug fitting system. This is a DVGW-approved plug system available in the material combinations brass fitting / copper tube or stainless steel fitting / stainless steel tube in all established dimensions. The distinctive feature of this system is the ease which they can be disconnected and re-connected and that the tube and fitting are still able to turn even which connected.

Module kit Heating engineering mounted on trolley E-571730

Learning contents

- Naming and documenting heating systems
- Drawing up up a functional description of the components
- Sketching the system using DIN symbols and create a technical drawing in the scale 1:10
- Compiling a dimensions and material digest
- Pressure maintenance - function / servicing of the expansion tank: Checking and adjusting the correct pre-pressure on the expansion tank
- The function of the safety valve with accident simulation
- Measuring the pump characteristics
- Compiling the system characteristics
- Pre-adjusting an individual radiator
- Determining the output of radiators
- Determining the effectiveness of the heating system (Q/Pel)
- Determining the thermostat valve characteristics
- The function and setting of a line control valve
- The hydraulic alignment of heating systems
- Comparing the power consumption of pumps
- Checking the electrical connection of the circulation pump, and re-connecting where necessary (in accordance with the revised PHS systems mechanic)
- Simulating turning-on tight (stuck) heating pumps
- Simulating the under-supply of the radiator / heating circuit through opening the bypass between the supply and return

Scope of delivery

- venting hose
- vent key
- keys for thermostatic valves
  Tectite assembly tool
- filling hose
- drain hose
- differential pressure gauge including measuring hoses
- air pump for membrane expansion tank
- 3 inserting thermometer
- 2 Heating manometer
- manual with manufacturer documents and experiments incl. CD

Special accessories

E-571730	Testing and assembly rack
E-571800-E2	Module kit heating extension
E-571800-SM	Smart heating control

Dimensions and weight

L x H x W	1600 x 1700 x 270 mm*
Weight	160 kg inkl. rack, 230 V

Subject to technical changes

Module kit Heating extension

E-571800-E2

Description

Supplement to the module kit Heating engineering E-571800.
The module set represents a second heating circuit (underfloor heating). This is connected to the module kit heating engineering. The three-way mixer can easily be exchanged for a four-way mixer.

Learning contents

- Naming the connections of a three-way / four-way mixing valve
- Describing the function of a three-way / four-way mixing valve
- Investigating the ratio between volume and temperature in relation to the position of the mixer
- Depicting the control sequence in a diagram

Scope of delivery

- Tectite assembly tool
- Four-way mixer
- Mounting kit for four-way mixer
- manual with manufacturer documents and experiments incl. CD

Dimensions and weight

L x H x W	1500 x 1800 x 210 mm
Weight	170 kg incl. rack
230 V	

Module kit Heating extension mounted on trolley E-571730

Gas device trainer, internet capable

E-801100

Description

Didactically prepared for the original practice operation **without** the media gas and water.

The device can be used in demo mode without the media mentioned above as well as in real-life operation.

All necessary control and operating units are included in the scope of delivery.

Learning contents

- Mechanical work, make all settings on the gas appliance
- Commissioning
- install various errors from the control panel and track them using the error list
- simulate flame monitoring
- adjustment of the control with the help of the potentiometer (the following potentiometers are included in the scope of delivery: outside sensor, storage sensor, boiler sensor and hydraulic separator)
- Possibility of network access to read out errors, maintenance and settings (operational level and craftsman level)

Gas device trainer

Scope of delivery

- 1 condensing boile, internet cabable
- 1 set of adjustable sensors built-in for media-free operation
- 1 control unit
- 1 operating unit with touchscreen
- 1 mobile support frame made of aluminum profile 40x40mm and 40x80mm

Dimensions and weight

L x H x W	1300 x 1900 x 780 mm
Weight	105 kg
230V	

Subject to technical changes

Gas devices test stand

E-571700

Description

For commissioning and performing various tests on the gas condensing boiler, consisting of:

- 1 gas condensing boiler 24 kW, make Vaillant
- 1 device connection unit with 4 supply and disposal connections (HVL-HRL-TKW-Gas) in practical arrangement
- 1 control unit equipped with 1 x gas meter with-gas socket, gas safety hose and safety valves-according to TRGI 2008 as well as a PC connection
- 1gas pressure regulator
- 1 stop valve and pressure control unit for drinking water with measuring adapter for pressure and temperature
- 1 x gas pressure regulator sampling unit for drinking water and warm water incl. double tap fittings and measuringadapter for temperature and pressure
- 1 heat dissipation system consisting of an additional 150 l reservoir, in addition via heat exchangers 30 KW via flexible drinking water hose connection on site, incl. flow controller and 4 temperature measuring points
- 1 emergency switch with key
- 1 electrical box
- 2 socket 230 V
- 1 water collecting channel of stainless steel, mountable, W x H x D: 800 x 200 x 300 mm
- 1 exhaust pipe system with flexible connection, ready for connection of the supply and disposal system on room side

The training stand is set up on the test and assembly trolley (item E-571730) and piped ready for use.

Gas devices-test stand

Learning contents

- Aufgaben und Funktion der Außenfühler und Raumaufschaltung
- Wirkungsgrad der Gastherme berechnen
- Plattenwärmetauscher berechnen
- Inbetriebnahme der Anlage (Befüllen, Aufbereitung des Heizungswassers, Gaseinstellung und Wärmebelastung prüfen)
- Anpassung an die Heizungsanlage
- Inspektion und Wartung
- Störungsbeseitigung

Scope of delivery

- Operating instructions and original manufacturer's documents, incl. CD
- 2 manometer
- 2 penetration thermometer

Dimensions and weight

L x H x W	approx. 1580 x 2000 x 780 mm,
Weight	approx. 195 kg,

230 V

Subject to technical changes

Training stand Combined gas boiler

E-572070

Description

For commissioning and performing various tests on the gas boiler.
Consisting of a mobile trolley with an insertable module plate set on which all components of a gas appliance are functionally mounted:
1 control device, 1 burner control, 1 fan block, 1 Mixing chamber with ignition unit, 1 air fan, 1 combustion chambe, 1 spark transformer, 1 Insufficient water valve, 1 hot water block, 2 circulation pumps, 1 changeover valve unit.
The components are visible and functionally connected with original plugs. The complete hydraulic and gas connection between the components is also made using a pipe system. This allows the device to be examined in burn mode. Built-in throttling devices and various electrical measures enable fault simulation. The burner flame is visible during operation.
The software supplied allows extensive metrological evaluation via the device interface.
Additional equipment includes: 1 gas meter including safety fitting with TAE, 1 gas safety hose and 1 gas socket, 1 electrical box, 1 heat dissipation system (consisting of 1 radiator and 1 plate heat exchanger), 1 stainless steel gutter.

Training stand combined gas boiler

Learning contents

- Tasks and functions of the outdoor sensors
- Calculate the efficiency of the gas boiler
- Calculate plate heat exchanger
- Commissioning of the system (filling, treatment of the heating water, checking gas setting and heat load)
- Maintenance and troubleshooting

Scope of delivery

Fully assembled on trolley item no. 571730

- Operating instructions and original manufacturer's documents, incl. CD

Dimensions and weight

L x H x W	approx. 1580 x 1995 x 780 mm,
Weight	approx. 187 kg, 230 V

Subject to technical changes

Module kit Gas installation TRGI

E-571780

Descrption

For practical and theoretical training, to train the new TRGI rules, can be operated with gas and compressed air.

The mofule kit consisting:

- 3 pipe sections with different pipe materials (stainless steel, copper and steel, galvanized)
- 2 gas meters (one-pipe and two-pipe) with the prescribed safety devices
- 4 different gas flow monitors
- 2 different TAE assemblies
- 4 differently installed gas sockets (2 x surface-mounted, 2 x flush-mounted)
- 1 gas pressure regulator
- 1 leak simulation unit with water container and needle valve
- 1 connection unit for compressed air with pressure reducer in special design (10 bar - 20 mb)

Training stand gasinstallation, mounted on trolley item no. 571730-o.W

Learning contents

- name and document the components of gas installation
- Create a sketch / technical drawing
- Functional description of the components
- Perform a stress test
- Perform a leak test
- Perform usability test

Equipment

E-571730-o.W	Testing and assembly Rack
E-571780.60	Pressure measuring device for leak testing complete in case
E-5033790	Flue gas analyzer

Dimensions and weight

L x H x W	approx. 1580 x 1750 x 780 mm
Weight	approx. 117 kg incl. rack
230 V	

Subject to technical changes

Service and work table for oil and gas burner

E-572069

Description

Consisting of:
- fMobile stainless steel table, table top size WxD 1000 x 700 mm, with screwed-on burner mounting device made of aluminum profile 80 x 40 mm, with original burner door
- 1 housing for storing an 11l gas bottle, with gas fitting and gas pressure regulator, 1 oil canister with oil filter and burner connection hoses
- 2 drawers including a 25-piece tool set
- 1 electrical wiring with switch box according to VDE with FI switch, motor protection switch and heating switch for burner control

Service and work table for oil or gas burner with built-in oil burner (item no. 572072.10)

Learning contents

- Commissioning the burner
- Burner settings
- Recognize the connections between burner settings and flame pattern

Equipment

E-575072.15 Oil burner 12 - 40 KW
E-572072.10 Gas burner 15 - 44 KW

Dimensions and weight

L x H x W approx. 1000 x 1560 x 700 mm
230 V

Burner test bench

E-575072

Description

Burner test bench with 2 highly heat-resistant glass panes on every chamber side to enable observation of the flame. The panes must be sprung for safety reasons, possible even to reduce excess pressure (e.g. in the case of an explosion). An additional heat protection panel should be mounted on every chamber side (dimensions 300x400) with a vacuum metallized heat protective layer.

Ferner sind verbaut:

- 1electrical safety circuit with built-in boiler control, safety temperature limiter with boiler thermostat
- 1 safety group, 1 universal burner holder for oil and gas burners
  21-30 KW boiler capacity

Mounted on a mobile boiler platform made of aluminum profile, hard anodized, 80x40mm, incl. rail attachment for flexible boiler mounting and
4 heavy-duty castors Ø 125mm with brakes

Burner test bench

Learning contents

- Theoretical foundations of gaseous and liquid fuels
- Setting up and commissioning of a forced draught burner
- Recognize the connections between burner settings and flame pattern
- Combustion pollutants and their limit values
- Analysis of exhaust gases

Scope of delivery

- 2 metallic tissue connection hoses, length1500 mm,
- 1 oil tank 20l including extraction fitting

Special accessories

E-575072.10 Heat dissipation system 30 kW

E-572072.10 fan-assisted oil burner, 18 KW output complete with connection accessories

E-575072.15 fan-assisted gas burner, 18 KW output complete with connection accessories

E-5033780 exhaust gas analysis computer for exhaust measurement

Dimensions and weight

L x H x W	approx. 800 x 1800 x 1300 mm
Weight	approx. 250 kg; 230 V

Subject to technical changes

Testing and assembly rack 1500

E-571730

Desciption

Testing and assembly dolly as mobile work station for PHS experiments and fittings. Consisting of: Grooved extruded aluminium profile base frame 80/40 mm. Two mobile frame portals (heavy-duty aluminium profile) are mounted on the base frame. Every portal is fitted with 14 flexible module tracks grooved on every side 40/40x1500 mm (groove width 10 mm) aluminium extruded profile, with exterior surfaces grooved on every side. The rails are vertically infinitely adjustable. In-built stainless steel water collection channels with run-off fittings. The trolley functions both as a work station and a mobile store.

Testing and assembly rack for use on both sides. Both frame portals are adjustable on the base frame, enabling three-dimensional experimental constructions, e.g. practice-oriented waste-water piping between the portals. A wall frame can be used to construct a cabin work station. The cross-members within a portal are infinitely adjustable.

Testing and assemblx rack 1500

Dimensions and weight

L x H x W 1580 x 1970 x 780 mm
Other dimensions are entirely possible

Weight 120 kg

Subject to technical changes

Universal test and assembly cabin

E-571013

Description

The universal assembly cabin serves as a work and practice space for installations and experimental setups, as well as a storage station. In the aluminum rail system, fully assembled from hard-anodized aluminum extrusion profiles with grooved surfaces on all sides (groove width 10 mm, core hole 11 mm).
Consists of:

1 x rear panel element equipped with:
- 2 x vertical struts 40x40x200mm
- 14 x horizontal struts 40x40x2000mm, continuously adjustable
- 2 x floor-mounting feet, matching the aluminum profile
- 1 x set of wall mounting elements and wall spacers

2 x side panel elements in construction and quality identical to the rear panel element.
The side walls of adjacent assembly cabins are connected with the help of spacers. External side walls can be braced with the ceiling or room wall for stability if needed.

Execution example

Optional available:
Art. No. 571012.MO – Mounting accessories for wall workstations and assembly carts, compatible with the aluminum profile, for securing assemblies and installations, as well as mounting plates on the profiles.

Dimension

WxTDxH: 2.100 x 2.000 x 2.000 mm

Individual design and dimensions according to customer requirements

Individual design and dimensions

Electrical practice Case VDE safety measures

E-572330

With the electrical practice case offers a training system with which experiments from the whole field of electric safety measures can be conducted.

All the necessary experiment components have been integrated directly in the case to minimise the time required for preparing and dismantling the experiments.

Description

- All the important electric safety measures on one Board
- Built-in power supply, single-phase mains socket suffices
- Optimum safety for the user due to protective low voltage
- Short setup time because all accessories are integrated directly in the unit
- TT mains, TN-C-S mains, IT mains possible by replugging
- Detailed experiment instructions with solutions

Learning contents

- Protection against direct and indirect contact
- Protection by protective low voltage
- Autotransformer
- Protective devices against overcurrent
- Summation current transformer
- Protection against leakage current
- Protective measures in theTN system
- Protective measures in the TT system
- Measuring the earthing resistance
- Protective measures in the IT system
- Protective insulation
- Protective isolation
- Earth electrodes

Scope of delivery

- Experiment - manual: „Electric Safety Technology“ (Type V 0119)
- Set of Accessories (Type 2330.1), consisting ofconnecting plugs and leads (2 mm)

Dimensions and weight

L x W x H	580 x 450 x 155 mm
Weight	7,25 kg; 230 V

Subject to technical changes

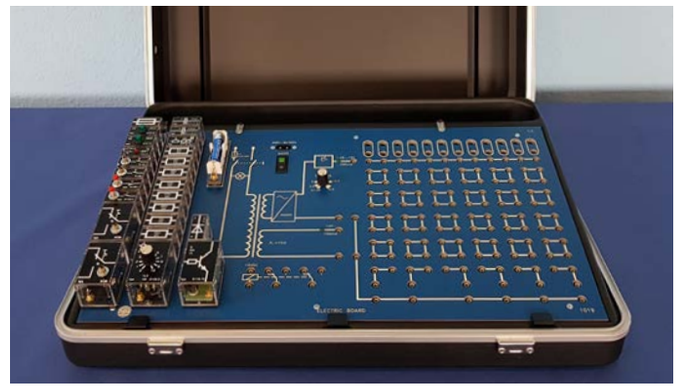
Electrical practice case - Basics of metal working professions

571019

Description

The box is used in demonstrations in metalworking professional training. It is equipped with an adjustable source of DC and AC power supply.
Both powers supplies are secured against overload and short circuit. Their function are displayed via LEDs. The experiments are constructed using the pluggable components. To this end, a clearly laid-out jack panel with 4 mm jacks laid out in a 19mm grid is located on the practice plate. Four jacks make up a group. The jacks in a group are connected electrically (marked with white colour impression). The ordering of the jacks enables quick and safe switching in accordance with the specified circuit diagram without any complicated practice time. The connection between the individual jack groups is effected via plug connections and / or connection cables.
The pluggable components are stored in the left-hand area.

- Universal teaching and learning system for metalworking professions



- With integrated AC DC source
- All functions protected against short-circuit and monitored by LED display
- Clearly arranged accessory storage directly on the basis device.
- Extensive experiment instructions with solutions
- Components protected against miswiring

Learning contents

- Circuit
- Ohm's law
- Electrical measuring devices
- Wattage
- Electrical resistance
- Resistors connected in series
- Resistors connected in parallel
- Potentiometer
- Mixed electrical switching
- Electrical cut out
- Lamp switching
- Relay switching
- Power supply unit connected in series
- Power supply unit connected in parallel
- Capacitor
- Diode
- LED
- Transistor as switch
- Half cycle rectifier
- Logical switching

Scope of delivery

- Training case
- Experiment handbook "Principles of Electrotechnology"

Dimensions and weight

L x W x H	580 x 450 x 155 mm
Weight	6,6 kg
230 V	

Subject to technical changes

Examples for execution

Laboratory room

Example of a classroom installation. Mounted experimental units: 572040-M Compact Model Heating System Control - 571900 Modul Kit Drinking Water Installation - 571915 Module Kit Armatures Testing - 571917 Module Kit Electronic Sanitary Control

Subject room for oil and gas equipment testing

Test benches for oil and heating devices

Test bench examples for wall mounted and stand-alone devices

Wall workstations with energy profiles

Special room for oil and gas appliance testing

Combined work and test bench for wall-mounted and stand-alone devices

Gas appliances test benches

Boiler pedestal for floor-standing appliances

Energy column in horizontal design

Energy column with boiler on pedestals

Energy column for heat generators

Training room at the company Wilo in Dortmund

Laboratory for gas appliance training

Combined workplace with energy supply and energy disposal column for heat generators

Example of a gas appliance laboratory

Heat pump test laboratory

Gas appliances test bench

Example of a test stand for gas devices

We deliver complete equipment for speciality instruction rooms

We will support you in planning the equipment of technical rooms for the following departments:

- SSanitary Heating Air Condition
- Building Security
- Color Technology

Our product range

Request the desired catalog.

Sanitary – Heating Air-conditioning

Building Security/Metal Technology

Colour Technology

Visit our website at:
www.schreiner-didaktik.de

Schreiner-Didaktik Lehrsysteme GmbH & Co. KG
Oberhützer Straße 24 • D-42857 Remscheid

Phone +49 2191-464499- 0
Fax +49 2191-464499-33

www.schreiner-didaktik.de
info@schreiner-didaktik.de