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Signature to Technical Education

- Fluid mechanics
- Heat transfer
- Air conditioning
- Heating Systems
- Thermodynamics
- Cooling Systems
- Electric-Electronics
- Industrial automation
- Control Systems
- Energy efficiency
- Plumbing
- Renewable energy
- Automotive
- Electrical Appliances
- Fire and Extinguishing
- Marine and Ship Machinery

GENERAL PRODUCT CATALOG

IMAGES FROM OUR COMPANY

STAFF

PRODUCTION

PROJECT UNIT

DESIGN UNIT

TRAINING HALL

ABOUT US

ARGEMSAN Education Technologies was established in 2014 in Balıkesir to serve in the education sector.

Manufactures training sets in the fields of **HEAT TRANSFER, FLUID MECHANICS, THERMODYNAMIC, RENEWABLE ENERGY, AIR CONDITIONING, HEATING SYSTEMS, COOLING SYSTEMS, CONTROL SYSTEMS, ENERGY EFFICIENCY, SANITARY INSTALLATION, ELECTRIC-ELECTRONICS, AUTOMOTIVE, INDUSTRIAL AUTOMATION, FIRE AND EXTINGUISHING, MARINE AND SHIP MACHINERY** to universities and vocational high schools.

ARGEMSAN which is pioneer in Turkey produce projects with R&D and innovation studies to the production of SPECIAL EXPERIMENT and TESTING DEVICES for academicians who want to realize their academic studies in higher education institutions and other educational institutions and innovations companies with support of TUBITAK, SAN-TEZ, KOSGEB, DEVELOPMENT AGENCY, BAP, ISKUR, European Support Fund and other international funds. In addition, it provides consultancy and application services to applied graduate and doctorate projects.

ARGEMSAN supports the R&D activities of many institutions and organizations with the first time produced experiment and test devices in Turkey. With the experience gained from the past, it continues to expand its fields of activity and increase its production capacity. All of our productions are produced by passing the necessary experiments, controls, tests and analyzes at every stage of the production starting from the project stage. Experienced mechanical and industrial engineers, expert technical staff controls with care and diligence at every stage of production.

ARGEMSAN makes a difference in its products by giving importance to original design with following the modern technology closely and improving its system with continuous improvements and giving importance to research, development and innovation.

Our company continues its activities as a reliable brand of the sector without giving up the principles of its establishment. It's expanding its domestic and international sales day by day by offering economic products and services on time without compromising quality.

OUR VISION

Contribute to our country as a company with production systems that explain the importance of application and technology in education, never compromise on quality, serve beyond customer expectations, contribute to R&D activities and innovative developments, transform innovative ideas into effective outputs.

OUR MISSION

Become an organization that will give direction to scientific and technological development with a global perspective and professional management approach with socio-cultural, scientific and technological point of view as well as targeting continuous improvement in Turkey and in the world.

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Dear Costumer;

As it is known, one of the most effective and permanent learning methods in vocational and technical education is applied trainings with experimental studies.

As Argemsan Education Technologies, we were established in Balıkesir in 2014 to serve applied education. Our company, which is preferred with the product and technical support quality in the domestic and national training sets we produce, has a high level of customer satisfaction; closely following modern technology and adapting to research and development and innovation, it has completed many successful projects in a short time.

In addition to that, our company operates R&D and production of training and test equipments not manufactured in Turkey to contribute innovation and development of our country.

With the training sets we have produced, we have supported the development of practical education opportunities of 96 goverment universities, 24 private universities and 16 technical and vocational high schools. In addition, we carried out R&D activities with many universities, private companies and public institutions and produced special test and test equipment. We also aim to extend our work to all over the world, started with Bosnia-Herzegovina and contuining with Jordan, Dubai, Qatar and Pakistan.

Our young and dynamic staff, open to innovations, is working diligently to achieve greater success. As ARGEMSAN, we are ready to respond to your demands and questions and realize your new ideas with our customer satisfaction and quality-oriented understanding, R&D activities that we work on and work with.

I wish you success in your work.
Erkan ATİK
General Manager

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NEWS

COOPERATION OF DENEYSAN AND MINISTRY OF EDUCATION

Our company ARGEMSAN Education Technologies San. and Tic. Inc. was signed "Cooperation Protocol" with General Directorate of Vocational and Technical Education from Ministry of Education. Within the scope of the protocol, scholarship support will be provided to the students studying in the schools covered by the protocol and increasing the qualifications of teachers and students in the fields of Electrical-Electronics Technology, Plumbing Technology and Air Conditioning and Renewable Energy Technologies.

AS ARGEMSAN, WE COMPLETED THE BASIC AIR CONDITIONING TRAINING COURSE

As Argemsan Education Technologies, the Vocational Education Cooperation we have made with the Directorate of National Education After the Renewable Energy Course we organized within the scope of the protocol, we started our Basic Air Conditioning Course. We have successfully completed. Turkey's qualified workforce that will be trained in vocational high schools with applied education knows very well its importance for the development of the industry, our educators in these high schools are equipped with the latest technology and technology in the relevant fields. With the pride of contributing to this development, we provide in-service trainings that will enable you to be aware of the applications.

NEWS

WE HAVE ESTABLISHED PLUMBING TECHNOLOGY AND AIR CONDITIONING WORKSHOP IN BANDIRMA IMKB

We established a Plumbing Technology and Air Conditioning Workshop for Bandırma IMKB Vocational and Technical Anatolian High School within the scope of "Uygulayarak Öğreniyorum Mesleğimi Seviyorum" Project by Developing Vocational Education-2 Financial Support Program with South Marmara Development Agency. In this workshop, students of Plumbing Technology and Air Conditioning Area will receive qualified training and qualified technicians will contribute to the development of industry in our district and in our province.

WE ESTABLISHED 3D DESIGN WORKSHOP IN ALTIEYLÜL MOE

The workshop installation of the project titled "From Design to Production" carried out by the South Marmara Development Agency and Balıkesir Altıeylül District National Education Directorate within the scope of the Financial Support Program for the Improvement of Vocational Education-2 in 2018 was carried out by our company. The installation of the workshop, which includes 3D design, virtual reality and 3D production has been successfully completed. Students of our city will design, produce and develop themselves in this workshop.

NEWS

WE ESTABLISHED RENEWABLE ENERGY WORKSHOP IN BALIKESIR OSB MTAL

Southern Marmara Development Agency Development of Vocational Education Financial Support Program Innovative Balıkesir Organized Industry Vocational and Technical Anatolia within the scope of Techno-Workshop Project with Model Renewable Energy Technologies and Industrial Automation Technologies vocational training for High School we have established laboratories in each of the fields. In our laboratories designed with a focus on technology, students will have the opportunity to get qualified training by taking practical vocational training.

WE SET UP OUR WORKSHOP ON BABAESKI IMKB MTAL

Within the scope of "Babaeski İmkb Developing, TR21 Changing" Project of Trakya Development Agency Heating systems, cooling systems for Babaeski ISE Vocational Technical and Anatolian High School we established a mixed workshop that includes renewable energy and electricity applications.

ARGEMSAN QUALITY OF EDUCATION IN EVERY FIELD IT CONTRIBUTES TO INCREASING!

In addition to the training sets we produce, Metal Technology, Machine Technology, Science Laboratory, Robotics and we set up workshops and laboratories in many educational fields such as coding. The new generation, the future of our country we contribute to the growth of our young people as qualified individuals with quality education.
You can send us your workshop requests, workshop machinery and equipment to be prepared in line with your needs.You can evaluate our offers.

BANDIRMA 17 EYLÜL UNIVERSITY GÖNEN VOCATIONAL SCHOOL ROBOTICS AND CODING WORKSHOP

BALIKESİR MUNICIPALITY ROBOT WORKSHOPS

ALTIEYLÜL NATIONAL EDUCATION DIRECTORATE VIRTUAL REALITY LABORATORY

BALIKESIR BKM SCHOOLS SCIENCE LABORATORY

ARGEMSAN QUALITY OF EDUCATION IN EVERY FIELD IT CONTRIBUTES TO INCREASING!

NECMETTIN ERBAKAN UNIVERSITY AVIATION LABORATORY

CANAKKALE IMBK PROFESSION AND TECHNICAL ANATOLIAN HIGH SCHOOL INSTALLATION WORKSHOP

BURHANİYE SCIENCE AND ART EDUCATION CENTER SCIENCE LABORATORY

KAYSERİ ARCHITECT SINAN VOCATION AND TECHNICAL ANATOLIAN HIGH SCHOOL INSTALLATION TECHNOLOGY AND AIR CONDITIONING WORKSHOP

BALIKESIR O.S.B. VOCATIONAL AND TECHNICAL ANATOLIAN HIGH SCHOOL INDUSTRIAL AUTOMATION WORKSHOP

IZMIR HIGH TECHNOLOGY INSTITUTE ENERGY SYSTEMS WORKSHOP

ARGEMSAN QUALITY OF EDUCATION IN EVERY FIELD IT CONTRIBUTES TO INCREASING!

AMASYA ŞEHİT GULTEKIN TIRPAN VOCATIONAL AND TECHNICAL ANATOLIAN HIGH SCHOOL INSTALLATION TECHNOLOGY AND AIR CONDITIONING WORKSHOP

BARTIN FUAT SEZGIN PROFESSIONAL AND TECHNICAL ANATOLIAN HIGH SCHOOL WORKSHOP

BARTIN UNIVERSITY ENGINEERING FACULTY WORKSHOP

KAHRAMANMARAS AFSIN TURGAY CINER VOCATIONAL AND TECHNICAL ANATOLIA HIGH SCHOOL INSTALLATION TECHNOLOGY AND AIR CONDITIONING, METAL TECHNOLOGY, ELECTRICAL ELECTRONICS TECHNOLOGY WORKSHOPS

KIRIKKALE VOCATIONAL AND TECHNICAL ANADOLU HIGH SCHOOL INDUSTRIAL AUTOMATION TECHNOLOGIES WORKSHOP

SIMAV VOCATIONAL AND TECHNICAL ANATOLIA HIGH SCHOOL INSTALLATION TECHNOLOGY AND AIR CONDITIONING WORKSHOP

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FLUID MECHANICS

T-405
NATUREL AND FORCED
VORTEX TRAINING SET

T-410
CENTRIFUGAL PUMP
TRAINING SET

T-415
SERIES/PARALLEL
CENTRİFUGAL PUMP
TRAINING SET

T-420
PRESSURE LOSSES IN
PLUMBING
TRAINING SET

T-423
PRESSURE MEASUREMENT
AND CALIBRATION TRAININ SET

T-425
PELTON TURBINE
TRAINING SET

T-430
FRANCIS TURBINE
TRAINING SET

T-435
VENTURIMETER
TRAINING SET

T-440
BERNOULLI'S PRINCIPLE
TRAINING SET

T-450
FLOW MEASUREMENT
TRAINING SET

T-455
FLOW VISUALIZATION
TRAINING SET

T-460
WATER JET
TRAINING SET

T-465
CAVITATION TRAINING SET

T-475
OPEN CHANNEL FLOW
TRAINING SET

T-480
OSBORNE REYNOLD'S
TRAINING SET

T-485
TAYLOR COUETTE FLOW
TRAINING SET

T-490
AIR TUNNEL
TRAİNING SET

T-491
DETERMINING THE HEAT AND FLOW
CHARACTERISTICS IN THE WIND
TUNNEL TRAINING SET

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T-405 NATUREL AND FORCED VORTEX TRAINING SET

GENERAL EXPLANATION

This training set is designed for the experimental investigation of the natural and forced vortex motion of the basic fluid mechanics experiments.

EXPERIMENTS

1. Natural and forced vortex visualization

2. Determination of vortex speed

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In order to form a natural vortex, water is entered into the transparent liquid tank and one of the outlet diameters is attached to the water discharge to examine the profile and speed of the liquid. Forced vortex is fitted with a split wheel, which is a water extractor, and water is fed to the radial entering pipes. When the fluid begins to move like a rigid body, the pressure distribution of the fluid is examined with the vortex that forms.

TECHNICAL DETAILS

- Centrifugal pump
- 3-blade wheel
- 3-way valve
- Tank
  -Diameter: 250 mm
  -Height: 200 mm
- For water extraction
  -Diameter: 8, 12, 16, 24 mm
- Movable rods
- Horizontal 0-90 mm Vertical 70-200 mm

DIMENSIONS

A x B x H : 800 x 500 x 1200 mm

PACKAGE INCLUDED

Device, 1 printed experiment report, circuit diagram and product catalog

T-410 CENTRIFUGAL PUMP TRAINING SET

GENERAL EXPLANATION

This training set designed to be used in the practice of lessons; fluid mechanics, flow machinery, pumps-compressors. With this set, it is easy to comprehend basic concepts such as efficiency, specific speed, NPSH of centrifugal pumps, how pump performance curves are generated and interpreted.

EXPERIMENTS

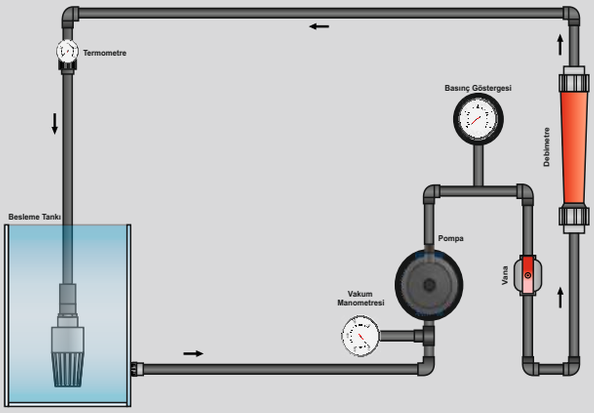
1. Pump head - flow relation
2. Finding the pump specific speed
3. Finding pump efficiency
4. Finding the pump NPSH value

DIMENSIONS

A x B x H : 1250 x 750 x 1380 mm

TECHNICAL SPECIFICATION

The experimental setup consists of a tank, a piping system for water circulation and a small scale centrifugal pump. The centrifugal pump is driven by an electric motor and the water is supplied to the pump by a flow control valve.



TECHNICAL DETAILS

- Centrifugal pump
- Ball valve
- Digital ammeter, cos(fi) meter and multimeter
- Rotameter type water flowmeter
- Manometer

PACKAGE INCLUDED

Device, 1 printed experiment report, circuit diagram and product catalog

T-415 SERIES / PARALLEL CENTRIFUGAL PUMP TRAINING SET

GENERAL EXPLANATIONS

This training set designed to be used in the practice of lessons; fluid mechanics, flow machinery, pumps-compressors. With this set, it is easy to comprehend the basic concepts such as centrifugal pump yield, pump specific speed, serial and parallel connections, NPSH, how pump performance curves are drawed and interpreted.

EXPERIMENTS

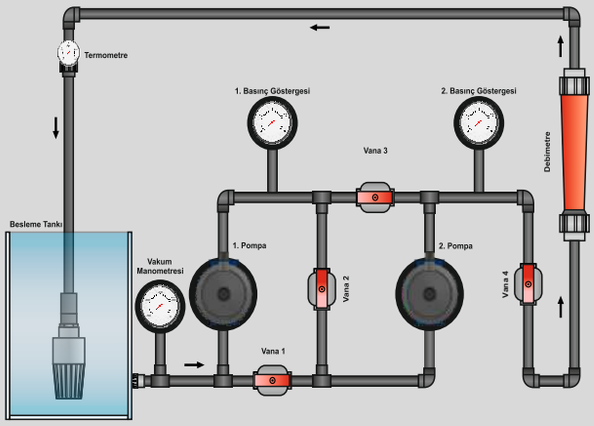
1. Pump head-flow relationship (characteristic curve)
2. Pump specific speed
3. Finding to pump efficiency
4. Finding to pump NPSH value
5. Serial pump characteristic curve drawing
6. Parallel pump characteristic curve drawing

DIMENSIONS

A x B x H : 1250 x 750 x 1380 mm

TECHNICAL SPECIFICATION

Pumps are used to increase the flow rate of liquid flowing in a pipe. Through the valves on the training set, serial and parallel connections of two centrifugal pumps are realized and the differences between these two connections and the effects on the pumps can be observed thanks to the measuring devices on the device.



TECHNICAL DETAILS

- Centrifugal pump
- Ball valve
- Rotameter type water flowmeter
- Numerical measurement of electrical data
- 1 suction pressure manometer
- 2 discharge pressure manometers
- Water tank

PACKAGE INCLUDED

Device, 1 printed experiment report, circuit diagram and product catalog

T-420 PRESSURE LOSSES IN PLUMBING TRAINING SET

GENERAL EXPLANATION

This training set is designed to calculate the pressure losses in installation elements commonly used in the market.

EXPERIMENTS

1. Pressure losses in elbow and connecting elements
2. Calculation of K values for different opening rates of the valves
3. Calculation of losses in straight pipes of different diameters

DIMENSIONS

A x B x H : 2100 x 540 x 1500 mm

OPTIONAL FEATURES

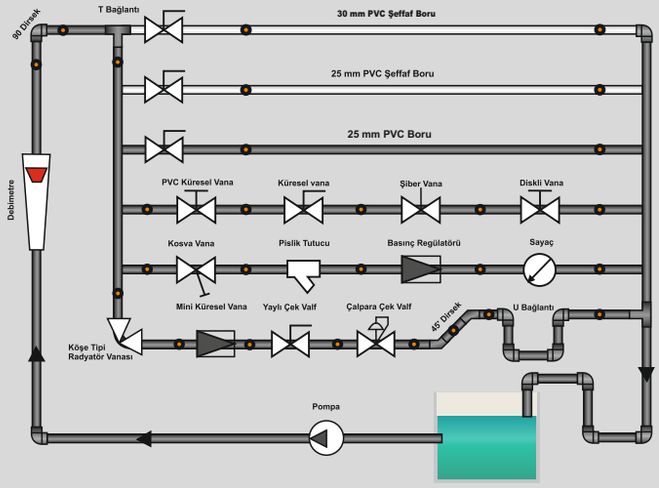
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

In this training set, the pressure losses due to friction in the angled and bent elbows in straight pipe and special pipe elements will be calculated. It should be taken into consideration that pipe elements, fittings and measuring instruments cause pressure losses. The test setup consists of 6 different sections which can be opened and closed separately. In these sections, various pipe sections are equipped with fasteners. Pressure differentials are detected with pressure gauges.



TECHNICAL DETAILS

- Rotameter type water flowmeter
- Centrifugal pump
- Quick couplings
- Pressure measurement from 27 different points
- Pipe sections:
- 30x4 mm PVC Transparent pipe,
- 25x3,25 mm PVC Transparent pipe
- 25x1,5 mm PVC pipe
- PVC Ball Valve, Chiba Valve, Kosva Valve, Corner Type Radiator Valve, Disilicate Valve, Spring Check Valve
- 90° elbow, 45° elbow, U connection

T-423 PRESSURE MEASUREMENT AND CALIBRATION TRAININ SET

GENERAL EXPLANATIONS

This training set is designed to show pressure measurement in different ways and to experimentally examine the calibration of the pressure gauges.

EXPERIMENTS

1.Pressure measurement with U type manometer

2.Pressure measurement with V type manometer

3.Pressure measurement with Bourdon type manometer

4.Calibration of Bourdon type manometer

DIMENSIONS

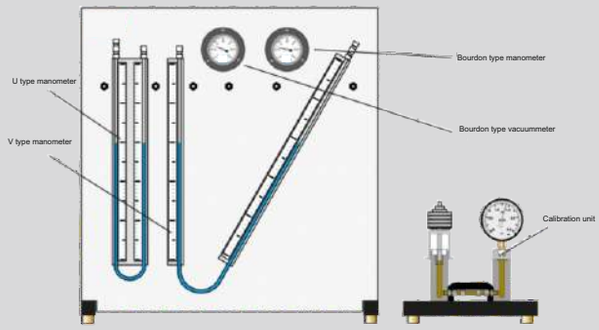
A x B x H : 800 x 700 x 800 mm

PACKAGE INCLUDED

Device, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

This training set aims to show students the pressure measurement and calibration of pressure gauges. With U type pressure gauge, the pressure can be measured in mmSS and converted into bar or psi. The V type and Bourdon type pressure gauge can be used to measure and compare their accuracy. The Bourdon type pressure gauge can be calibrated with the calibration unit.



TECHNICAL DETAILS

- U type manometer
- V type manometer
- Bourdon type manometer
- Bourdon type vacuummeter
- Syringe
- Calibration module

T-425 PELTON TURBINE TRAINING SET

GENERAL EXPLANATION

Pelton turbines are a type of turbine often used in dams where high water droplets are present. In these turbines, the speed of the impeller can be changed by adjusting the water flow with the help of the valve. In addition, the efficiency of the water beam can be changed using the deflector. This training set is designed to adopt the basic concepts of pelton turbines.

EXPERIMENTS

1. Determination of turbine efficiency
2. Determination of turbine specific speed
3. Calculation of turbine efficiency at different speeds
4. Finding suitable flow and head height for maximum efficiency point
5. Determination of generator efficiency

DIMENSIONS

A x B x H : 900 x 600 x 1500 mm

OPTIONAL FEATURES

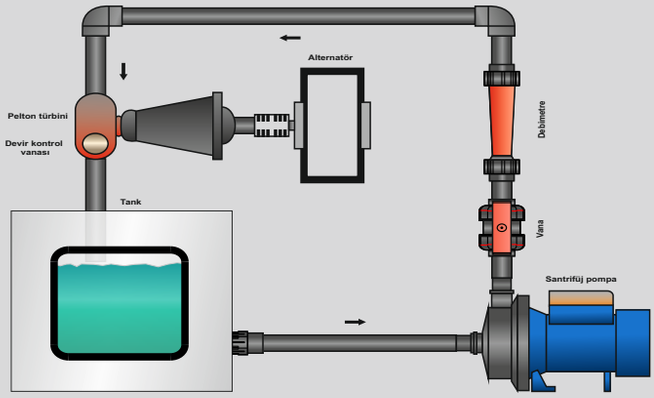
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The main parts of the Pelton turbines come from the spouting nozzle and the circle-shaped impeller. The nozzle delivers the water from the liquid pipe to the wheel's lobes like a fixed sprinkler. There is a needle in the nozzle that adjusts by moving inaxial direction. By moving the needle forward and backward, the flow is reduced and increased and the turbine power is adjusted according to the energy taken. At the same time, this needle can completely close the water. The needle needs to be moved slowly to avoid dangerous water bumps in the rough pipe. Water rushes out of the circular tip of your nozzle and strikes the impeller shovels. The alternator connected to the wheel generates electricity by turning the impeller.



TECHNICAL DETAILS

- Pelton Turbine
- Pressure manometer
- Digital temperature display
- Ball valve
- Liquid tank
- Centrifugal pump
- Rotameter type water flowmeter
- Alternator
- Turbine output power 50 W
- Turbine wheel diameter 150 mm
- Electrical data is digitally measured

T-430 FRANCIS TURBINE TRAINING SET

GENERAL EXPLANATION

Francis turbines are widely used for medium water drops. In these turbines, the angle of the water entering the wheel can be changed with the help of guide blades. By means of this training set, basic structure and properties of such turbines can be learn.

EXPERIMENTS

1. Finding turbine efficiency
2. Variation of turbine outlet power in different flows
3. Variation of turbine efficiency at different guide blade angles
4. Electric energy exchange produced in different flows

DIMENSIONS

A x B x H : 1100 x 700 x 1500 mm

OPTIONAL FEATURES

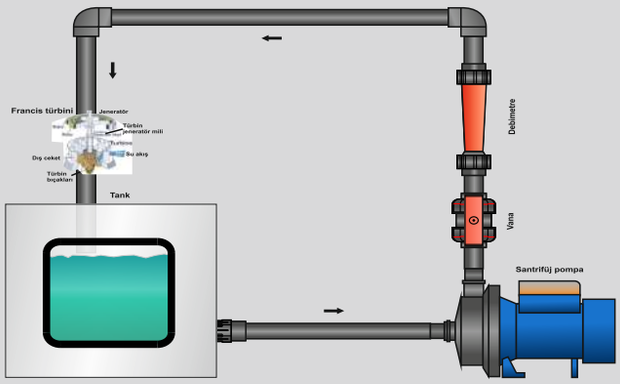
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Francis turbines are usually good at mid-stage water falls and large flows. Some of the potential energy of the water in the inlet is converted to kinetic energy. The water velocity through the diffuser is the highest value at the inlet of the impeller. The reaction occurs when the water comes out rapidly and the impeller is rotated. In these turbines, the stator (snail) sends the mass of water around the wheel. The water orbit is parallel to the center of the impeller at the inlet, and parallel to the axis of rotation at the outlet.



TECHNICAL DETAILS

- Francis turbine
- Pressure manometer
- Digital cycle indicator
- Electrical data are measured digitally
- Water tank and centrifugal pump
- Rotameter type water flowmeter
- Stainless ball valve
- Turbine output power 50W
- Turbine wheel diameter 250 mm
- Torque measurement
- Alternator
- Wing angle adjustment
- Turbine housing transparent plexi glass

T-435 VENTURIMETER TRAINING SET

GENERAL EXPLANATION

Venturimeters are used for measuring speed and flow, and they are useful for visually grasping the concepts of speed, pressure, and height in mechanics.

EXPERIMENTS

1. Observation of static pressure
2. Observation of dynamic pressure change
3. Calculation of flow rate

DIMENSIONS

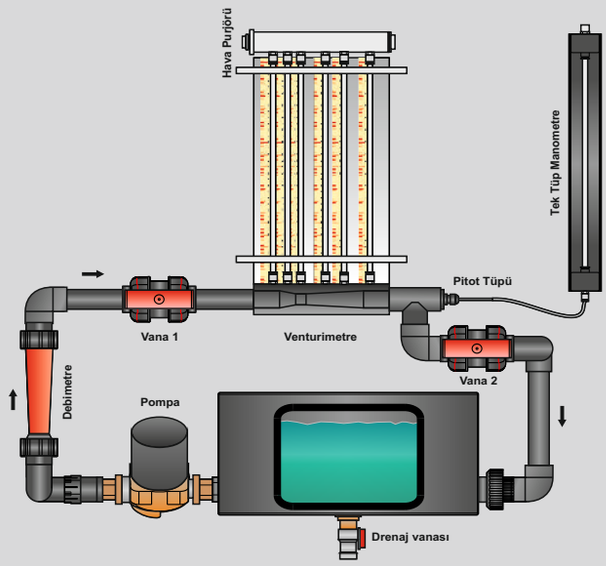
A x B x H : 1180 x 450 x 1500 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

A venturimeter is a measuring device that determines the volumetric flow of a flow by measuring the flow rate in pipes and channels with a narrowing and expanding flow region. Static pressure measurement can be done by using the pipe type manometers from 6 points on the venturi tube.



TECHNICAL DETAILS

- Ball valve
- Circulation pump
- Static pressure change along the venturi tube
- Calculation of pressure loss coefficient at different flow rates
- Pressure measurement chart
- 6 polyurethane measuring tubes
- Venturimeter

T-440 BERNOULLI'S PRINCIPLE TRAINING SET

GENERAL EXPLANATION

In fluid mechanics, the Bernoulli's principle is useful for visually grasping concepts such as high velocity and pressure.

EXPERIMENTS

1. Measurement of velocity and pressure elevation changes in ideal fluids
2. Measurement of velocity and pressure elevation changes in different flows in ideal liquids
3. Measuring velocity height in real fluids
4. Measuring speed variation in different flow streams in real fluids

DIMENSIONS

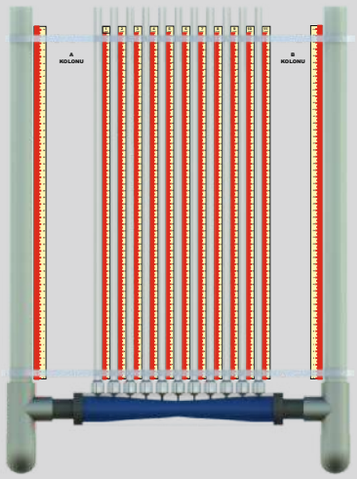
A x B x H : 980 x 450 x 1500 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The main purpose of the Bernoulli's experiment is to demonstrate the use and importance of the venturimeter used in flow measurement in practice, as well as the application of Bernoulli (conservation of energy) and Continuity (conservation law of conservation) equations, which are the most important equations of fluid mechanics. Thus, concepts such as static pressure, dynamic pressure, total pressure, energy conversion and energy losses can be understood with practical measurements.



TECHNICAL DETAILS

- Recirculation pump
- Ball valve
- Rotameter type water flowmeter
- Water level arm
- Level measurement from 11 different points
- Calculation of pressure loss coefficient at different flow rates

T-450 FLOW MEASUREMENT TRAINING SET

GENERAL EXPLANATION

This training set is designed to apply a set of flow measurement methods commonly used in fluid spaces.

EXPERIMENTS

1. Flow measurement experiment with turbine type flow meter
2. Flow measurement experiment with rotameter type flow meter
3. Flow measurement experiment with orifice plate type flow meter
4. Flow measurement experiment with venturimeter type flow meter

DIMENSIONS

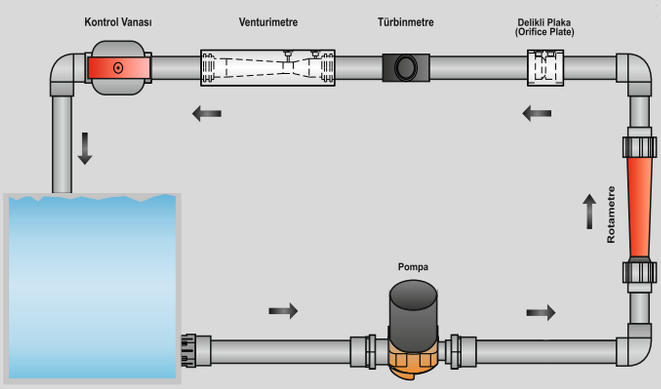
A x B x H : 1200 x 450 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this experiment, the relations between static pressure and current magnitudes can be investigated by applying mass and energy conservation (continuity and Bernoulli) equations as well as flow measurements. At the same time the loss coefficients of the flowmeters can be determined. The venturi, rotameter, turbine type and orifice plate can be compared with each other.



TECHNICAL DETAILS

- Turbine type flow meter
- Orifis plate
- Rotameter type flow meter
- Venturimeter type flow meter
- 3 stage circulation pump
- Digital flow and differential pressure indication
- Ball valve
- Liquid tank

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

GENERAL EXPLANATION

The main purpose of the test setup is around different sections to visualize the flow. Flow in test setup water is used for the medium. In visualizing the flow ink is used.

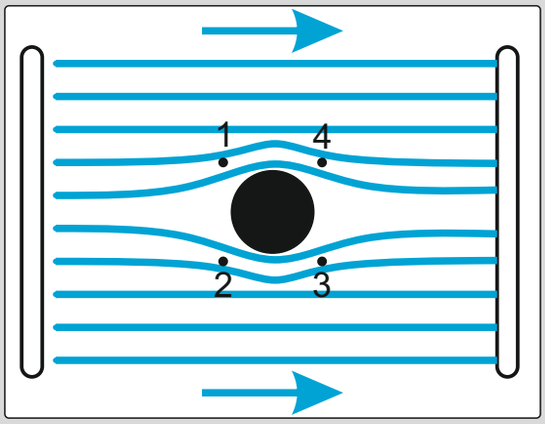
EXPERIMENTS

- Observation of flow lines at the determined flow rate
- Determination of streamlines in different bodies
- Examination of welds and depressions on streamlines

TECHNICAL SPECIFICATION

Ink is injected through small nozzles into the flow area between two parallel plates. Different drag bodies are added to the flow area. The drag body can be cut as desired from the rubber bag supplied by our company.

Welding and sink simulations can be performed using openings in the flow area.



TECHNICAL DETAILS

Device, 1 printed test sheet

T-460 WATER JET TRAINING SET

GENERAL EXPLANATION

Cavitation is a physical phenomenon that represents the formation of a set of cavities or bubbles in a liquid fluid. It is aimed to visualize the cavitation in this training set.

EXPERIMENTS

1. Function of pressure flow rate
2. Cavitation processes and flow rates at different pressures

DIMENSIONS

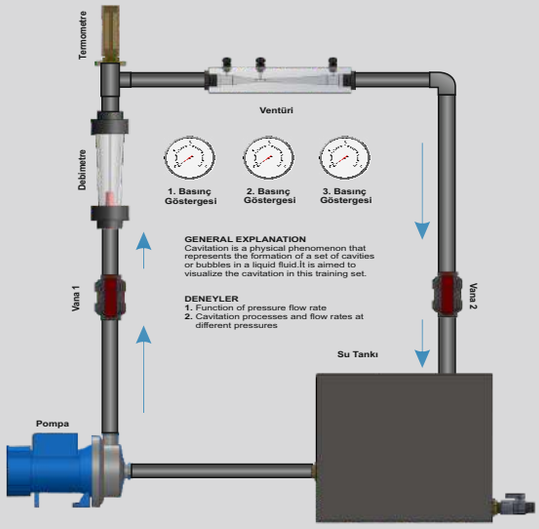
A x B x H : 980 x 480 x 1570 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Evaporation pressure; it is the pressure that the liquid evaporates and is in balance with its own vapor. When the fluid's pressure drops below the evaporation pressure due to flow, the liquid tends to evaporate in the flow and this is called cavitation.



TECHNICAL DETAILS

- The training set consisted of three manometers with ventilator input (0-4) bar, cavitation throat (-1, + 1) bar and exit (0-4) bar
- Transparent venturi device
- Rotameter type flow meter
- Throttling valve to set the flow
- Centrifugal pump
- Water tank
- Flow adjustment valve

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GENERAL EXPLANATION

Cavitation is a physical phenomenon that represents the formation of a set of cavities or bubbles in a liquid fluid. It is aimed to visualize the cavitation in this training set.

EXPERIMENTS

1. Function of pressure flow rate
2. Cavitation processes and flow rates at different pressures

DIMENSIONS

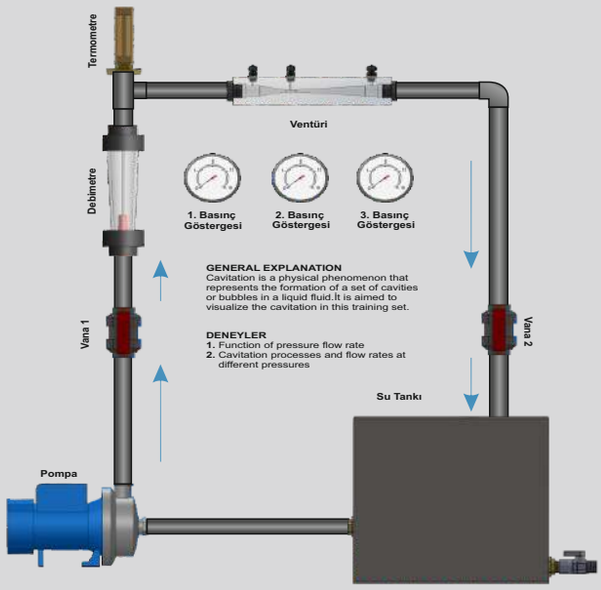
A x B x H : 980 x 480 x 1570 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Evaporation pressure; it is the pressure that the liquid evaporates and is in balance with its own vapor. When the fluid's pressure drops below the evaporation pressure due to flow, the liquid tends to evaporate in the flow and this is called cavitation.



TECHNICAL DETAILS

- The training set consisted of three manometers with ventilator input (0-4) bar, cavitation throat (-1, + 1) bar and exit (0-4) bar
- Transparent venturi device
- Rotameter type flow meter
- Throttling valve to set the flow
- Centrifugal pump
- Water tank
- Flow adjustment valve

T-475 12.5M OPEN CHANNEL FLOW TRAINING SET

GENERAL EXPLANATION

This training set provides engineering flow to students. practical demonstration of the arrangement of structures designed for the purpose.

TECHNICAL DETAILS

- centrifugal pump
- 200 ton/h flow
- Inlet and outlet tanks
- 1000kg sediment tank
- +2.5 / -0.25 degree angle adjustment
- Flow control with drive pump and butterfly valve

DIMENSIONS

A x B x H : 12500 x 600 x 700 mm

PACKAGE INCLUDED

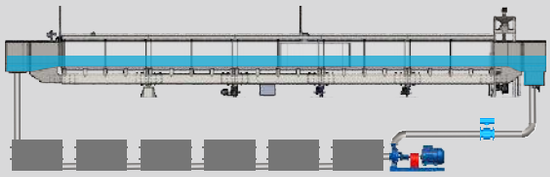
The device includes 1 printed test sheet

OPTIONAL FEATURES

- Touchscreen LCD Display
- USB Computer Connection
- Computer Control
- Can be made in desired dimensions

TECHNICAL SPECIFICATION

Hydraulic engineering, among other things artificial by the arrangement of waterways, rivers and dams is relevant. Experimental studies in the laboratory teaching the necessary basic principles using possible. The T-475 uses these principles in practical ways. aims to teach. For this purpose, weirs, radial and flow with linear gates, caliper and jump blocks arrangement is displayed.



OPEN CHANNEL MODULES

SLUICES	TRIANGLE THRESHOLD SLUICE	THICK SIDED SLUICE	DAM SOLUTIONS	VENTURI

CHANNEL MODULES

- Depth gauge
- Stopwatch
- Crump weir
- Flat door
- Venturi
- Pitot tube
- Sunken weir
- sluice gate
- Square and circular jump blocks
- Sediment system

T-480 OSBORNE REYNOLD'S TRAINING SET

GENERAL EXPLANATION

The purpose of this experiment is to perform intensive laminate (layered) flow, transition zone flow and turbulent flow observation and related calculations.

EXPERIMENTS

1. Laminar flow visualization experiment
2. Transition region visualization experiment
3. Turbulent flow visualization experiment
4. Experiment to determine the number of critical reynolds

DIMENSIONS

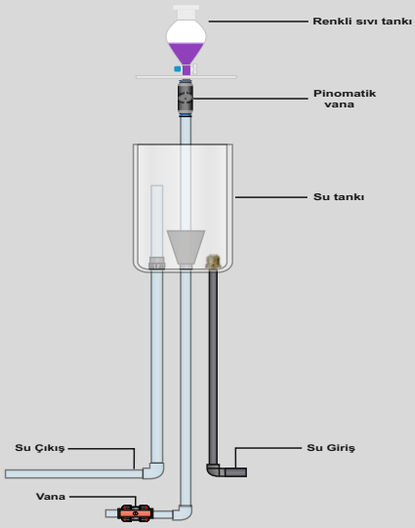
A x B x H : 750 x 520 x 1500 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

This training set works in a vertical position. The feed tank has a bell mouth entry which allows the water to constantly apply pressure to the head and allows flow monitoring. This line is regulated by the control valve at the end of the discharge line. The amount of water in the pipes is measured. Thus, knowing the velocity of the water allows the calculation of the Reynolds number.



TECHNICAL DETAILS

- Plexiglas cylinder and pipe
- Bell mouth entry for colored liquid addition
- Sliding control valve
- Test pipe diameter: 20 mm
- Test tube length: 700 mm
- Paint reservoir capacity: 0.5 liters
- Laminer and turbulent flow

T-485 TAYLOR COUTTE FLOW TRAINING SET

GENERAL EXPLANATION

This training set is designed to monitor the flow of the Taylor Couette stream in the fluid space, the laminar flow that occurs in the fluid between the inner cylinder and the outer cylinder when the rotation speed exceeds a critical value.

TECHNICAL SPECIFICATION

In this training set, the inner and outer cylinders whose revolutions can be adjusted are rotated in different directions; the flow occurring in the fluid between the cylinders can be observed.

TECHNICAL DETAILS

- 2 electric motors
- Ball valve
- Transparent liquid tank
- Aluminum case
- Control Board

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

T-490 AIR TUNNEL TRAINING SET

GENERAL EXPLANATION

This training set is designed for use in flow studies and aerodynamic applications.

EXPERIMENTS

1. Air velocity measurement experiment
2. Bernoulli experiment
3. Flow experiment around a cylinder
4. Flow test around a wing pattern
5. Drag and lift effect experiment with different apparatuses

DIMENSIONS

A x B x H : 2500 x 670 x 1250 mm

OPTIONAL FEATURES

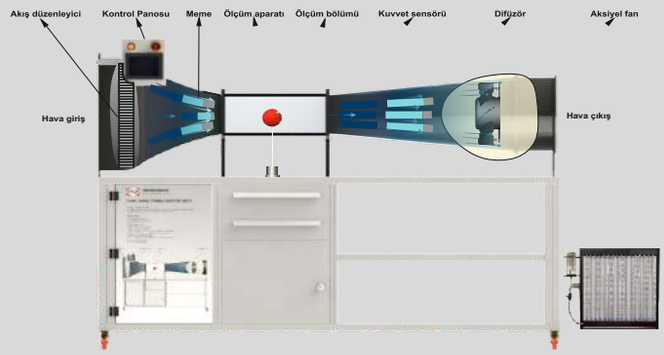
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The T-490 is designed to perform experiments in the field of aerodynamic and fluid mechanics. This is an open-air tunnel. In this type of air tunnels, air is taken from the atmosphere and again given atmosphere. The nozzle part controls the steady distribution of the velocity in the closed measurement area.



TECHNICAL DETAILS

- Air velocity measurement
- Fan speed control
- Large-scale intermediate channels for airflow, aerodynamics and heat transfer experiments
- Open type air tunnel
- Flow regulator
- Transparent measurement section
- Tunnel type axial fan
- Drag and lift force measurement with different apparatuses
- Wing model pressure distribution
- Cylindrical pressure distribution

T-491 DETERMINATION OF HEAT AND FLOW CHARACTERISTICS IN WIND TUNNEL TRAINING SET

GENERAL EXPLANATION

This training set is designed to be used in convective heat transfer and aerodynamic applications to determine the characteristics of heat and flow in the wind tunnel.

DIMENSIONS

A x B x H : 2500 x 670 x 1500 mm

OPTIONAL FEATURES

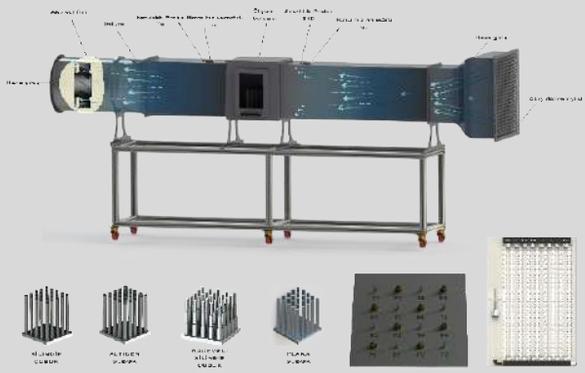
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Determining Heat and Flow Characteristic Wind Tunnel The Training Set is designed to perform experiments on aerodynamic and fluid mechanics areas.This tunnel is an open-air tunnel. In this type of air tunnels, air is taken from the atmosphere and again given atmospheres. The nozzle controls the steady distribution of velocity in the closed measuring zone.



TECHNICAL DETAILS

- Air velocity measurement
- Fan speed control
- Large-scale intermediate channels for airflow, aerodynamics and heat transfer experiments
- Open type air tunnel
- Flow regulator
- Transparent measurement section
- Tunnel type axial fan

FLUID MECHANICS

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FML 15 HYDROLOGY MAIN UNIT

GENERAL EXPLANATION

This training set is the main unit to help applications with regard to fluid handling.

MODULS

- FML 15.02 Cavitation Module
- FML 15.03 Pressure Losses In Pipe Elements Module
- FML 15.15 Pelton Turbine Module
- FML 15.16 Water Impact Effect Module
- FML 15.17 Water Jet Module

DIMENSIONS

A x B x H : 1250 x 760 x 1030 mm

OPTIONAL FEATURES

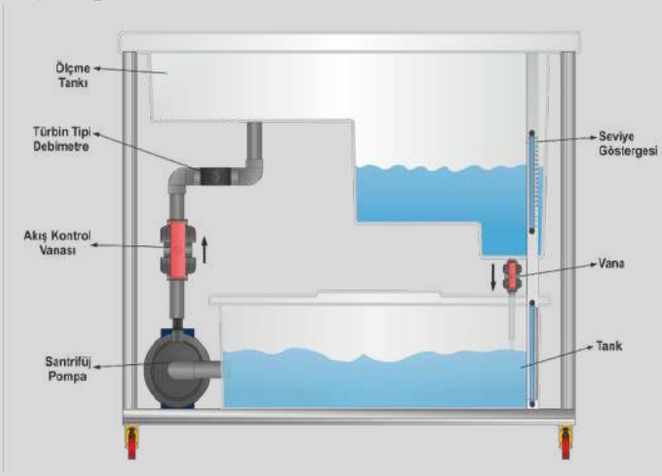
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

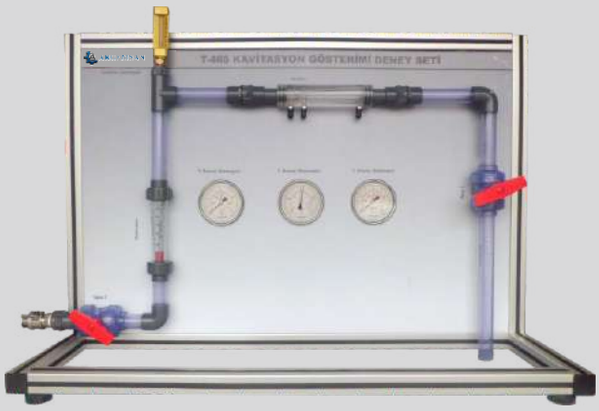
The hydraulic bench unit provides a volumetric measurement of the pump and water supply that can be used with all additional accessories and tests. The measuring tank is cascaded for accurate measurement of both high and low flow rates. The level indicator allows the flow to show the appropriate result. The measuring tank is evacuated to the fiberglass sump tank by helps of a valve.



TECHNICAL DETAILS

- Centrifugal pump
- Pump inverter
- 180 lt water tank
- 50 lt volume measuring tank
- Turbine type flow meter
- Transparent level indicator and measurement scale

FML 15.02 CAVITATION MODULE



GENERAL EXPLANATION

Cavitation is a physical phenomenon that represents the formation of a set of cavities or bubbles in a liquid fluid. This training is aimed at visualization of cavitation.

EXPERIMENTS

1. Pressure test as a function of flow rate
2. Cavitation processes and pressures at different flow rates

TECHNICAL SPECIFICATION

Evaporation pressure; it is the pressure that the liquid evaporates and is in balance with its own vapor. When the fluid's pressure drops below the evaporation pressure due to flow, the liquid tends to evaporate in the flow and this is called cavitation.

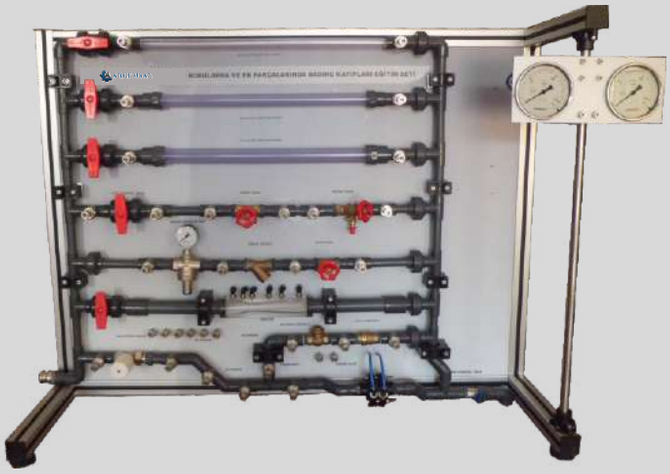
TECHNICAL DETAILS

- The training set consisted of three manometers, with the ventricular input (0-4), the bar cavitation throat (-1, +1) bar and the exit (0-4) bar
- The venturi device is transparent
- Rotameter type flow meter
- Throttling valve to set flow

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

FML 15.03 PRESSURE LOSSES IN PIPES MODULE



GENERAL EXPLANATION

This training set is designed to calculate the pressure losses in installation elements commonly used in the market.

EXPERIMENTS

1. Calculation of pressure losses in elbows and fittings
2. Calculation of K values for different opening rates of the valves
3. Calculation of losses in straight pipes of different diameters

DIMENSIONS

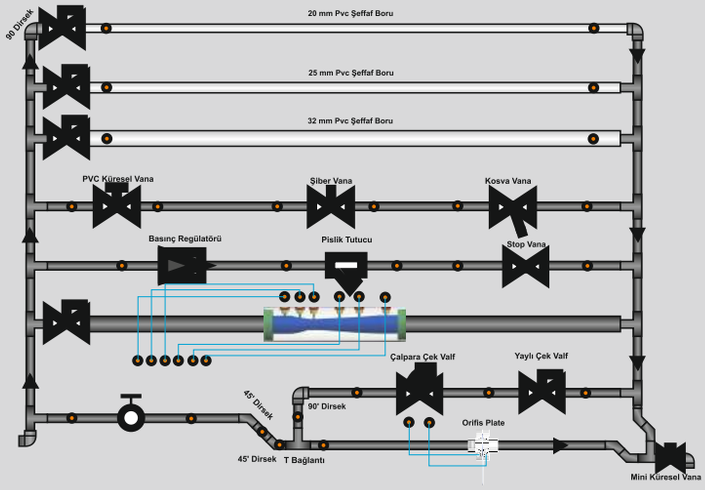
A x B x H : 1210 x 600 x 940 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

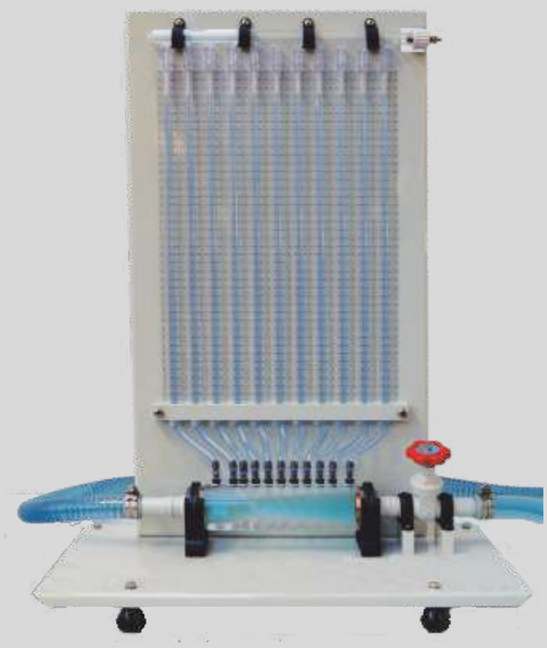
In this test, the pressure losses due to friction in straight pipe and angled and bent elbows from special pipe elements are calculated. Although the loss of the connection elements appears to be secondary losses, the losses caused by the pipes themselves are misused. The resulting pressure losses allow pressure measurements from 34 different points.



TECHNICAL DETAILS

- Male-female quick couplings
- 34 separate pressure measurements
- Pipe sections: 30x4 mm PVC Clear Pipe, 25x3,25mm PVC Transparent Pipe, PVC Transparent Pipe 20x3 mm
- PVC Ball Valve, Chiba Valve, Kosva Valve, Radiator Valve, Stop Valve, Spring Check Valve, Çalpara Check Valve, Counter, Mini Ball Valve, Strainer,
- Pressure Regulator
- Venturi
- Orifice Plate
- 90˚ Elbow, 45˚ Elbow, T Connection

FML 15.09 VENTURIMETER MODULE



GENERAL EXPLANATION

This training set is designed to visualize and experimentally examine the pressure and flow rate change in the venturiimeter.

EXPERIMENTS

1. Measurement of velocity in liquids

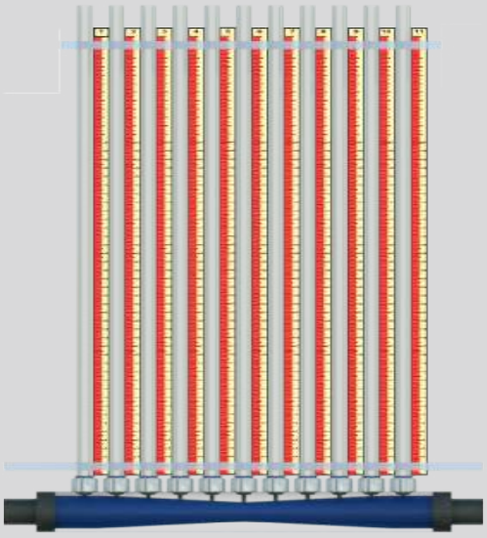
2. Measurement of velocity height change in liquids at different flow rates

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

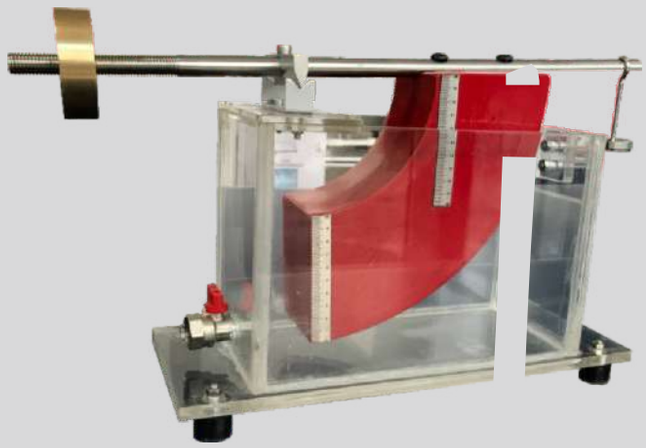
The main purpose of this module is to introduce the Bernoulli equation, which is one of the most important equations of fluid mechanics, in the laboratory and to introduce the importance and use of venturi-meter in flow measurement. Thus, it will be possible to understand concepts such as static pressure, dynamic pressure and total pressure with practical measurements.



TECHNICAL DETAILS

- Venturimeter
- Manometer with 11 tubes
- Flow adjustment with valve

FML 15.10 CENTER OF HYDROSTATIC PRESSURE MODULE



GENERAL EXPLANATION

This training device is designed to teach the center and amount of water pressure acting on a body that is half or fully submerged from the fluid mechanics.

EXPERIMENTS

1. The presence of a hydrostatic pressure center of a partially submerged body

2. The presence of hydrostatic pressure center of a fully submerged body

PACKAGE INCLUDED

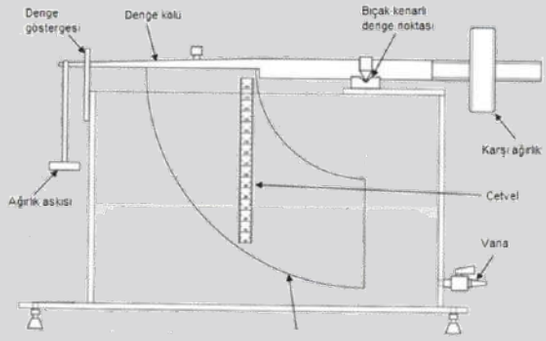
Device, device cover, 1 printed experiment report, circuit diagram and product catalog

DIMENSIONS

A x B x H : 500 x 300 x 200 mm

TECHNICAL SPECIFICATION

The weight on the shaft is balanced and the total moment becomes zero. It then varies with the total moment water effect such that the desired amount of water into the transparent tank is filled. The balance is restored by adding weight to the weight strap. When the torque is calculated with the added weight, the force applied by the water, pressure and the location of the pressure center can be found.



TECHNICAL DETAILS

- Transparent tank
- Relief valve
- Stainless steel shaft
- Aluminum knife edge balance arm
- Corrugated weight set

FML 15.11 STABILIZATION OF FLOATING BODIES MODULE

GENERAL EXPLANATION

This training set is designed to experimentally demonstrate the balance of the floating object and the determination of the swimming center.

EXPERIMENTS

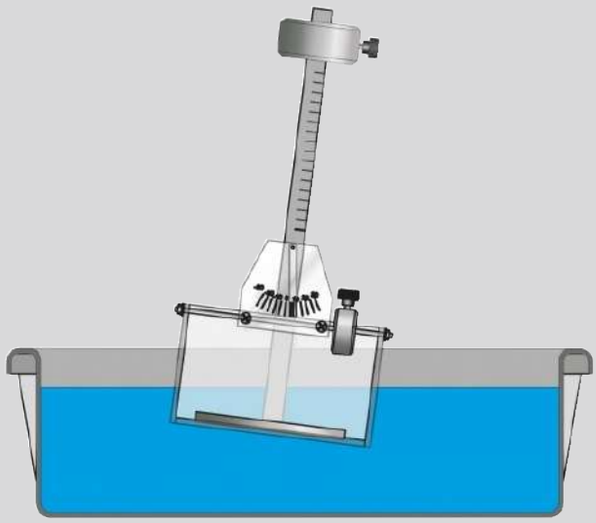
1. Determination of swimming center height at different angles

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

In hydrostatic, the swimming center is an important issue to be considered when evaluating the stability of floating bodies. Stability refers to the ability of a ship to correct itself from a lying position. The swimming center is the intersection of the flotation vector and the axis of a certain horizontal symmetry of the ship.



TECHNICAL DETAILS

- Flotation tank
- Clinometer
- Vertical and horizontal weight

FML 15.12 PRESSURE MEASUREMENT AND BERNOULLI EXPERIMENT MODULE

GENERAL EXPLANATION

This training set is designed to demonstrate the flow measurement in different ways and to visualize and experimentally change the pressure and velocity variation within the Bernoulli apparatus.

EXPERIMENTS

1. Flow measurement with different methods

2. Visualization of pressure distribution with Bernoulli apparatus

PACKAGE INCLUDED

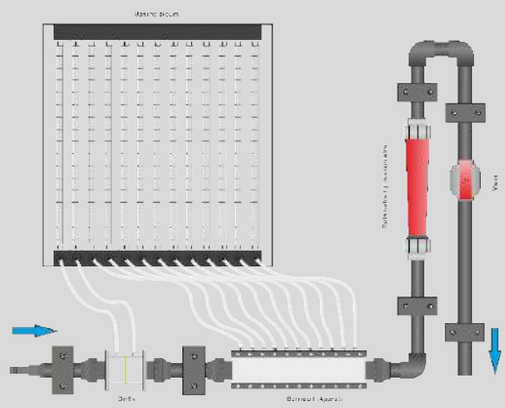
Device, device cover, 1 printed experiment report, circuit diagram and product catalog

DIMENSIONS

A x B x H : 900 x 700 x 1200 mm

TECHNICAL SPECIFICATION

The relationship between the Bernoulli apparatus and the pressure and flow rate can be examined. There will be a change in speed and pressure as the flow rate will remain constant due to the contraction in Bernoulli. A similar relationship can be achieved in the orifice. Speed measurement is also carried out by means of the rotameter type flowmeter which is normally used. These measurement methods are compared with each other.



TECHNICAL DETAILS

- Bernoulli apparatus
- Orifice
- Flow control with valve
- Rotameter type flowmeter
- Pressure measuring apparatus

FML 15.13 FRICTION IN LAMINAR AND TURBULANT FLOW MODULE

GENERAL EXPLANATION

This training set is designed to show the velocity between the pressure loss due to fluid friction and the flow rate in the laminar and turbulent flow. In addition, the pipe friction factor can be calculated.

EXPERIMENTS

1. Coefficient of friction in laminar flow

2. Coefficient of friction in turbulent flow

PACKAGE INCLUDED

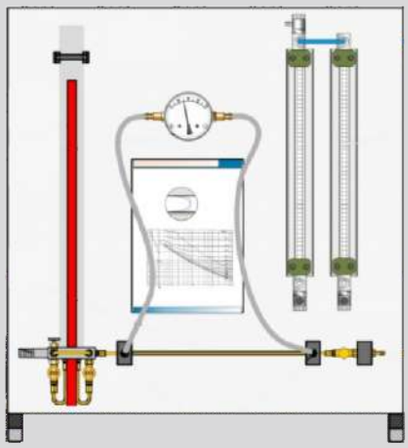
Device, device cover, 1 printed experiment report, circuit diagram and product catalog

DIMENSIONS

A x B x H : 850 x 700 x 950 mm

TECHNICAL SPECIFICATION

During flow through the pipe there is friction between the fluid and the wall, resulting in pressure losses due to friction. Pressure losses are different for laminar and turbulent flow. When calculating pressure losses, a pressure factor with a dimensionless number must be known. The friction factor is determined by the Reynolds number, which describes the ratioof inertial forces to friction forces.



TECHNICAL DETAILS

- Tube manometer
- Differential pressure with Bourdon type manometer
- Overflow tank
- Thin flow pipe
- Flow regulating valves

FML 15.15 PELTON TURBINE MODULE

GENERAL EXPLANATION

Pelton turbines are a type of turbine often used in dams where high water droplets are present. In these turbines, the speed of the impeller can be changed by adjusting the water flow with the help of the valve. In addition, the efficiency of the water beam can be changed using the deflector. This training set is designed to adopt the basic concepts of pelton turbines.

EXPERIMENTS

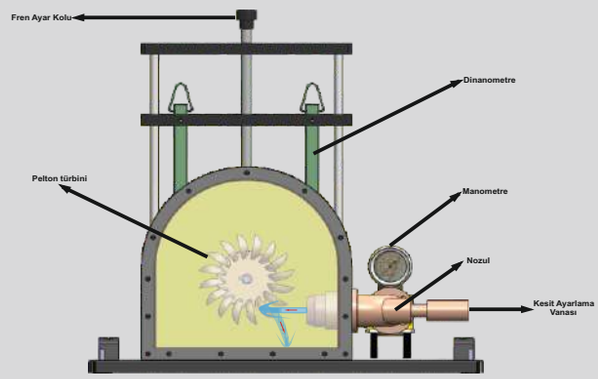
1. Calculation of turbine efficiency at different speeds
2. Determination of flow rate and number of revolutions for maximum efficiency

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The main parts of the Pelton turbines come from the spouting nozzle and the circle-shaped impeller. The nozzle delivers the water from the liquid pipe to the impeller's lobes like a fixed sprinkler. There is a needle in the nozzle that adjusts by moving in the axial direction. By moving the needle forward and backward, the flow is reduced and multiplied and the turbine power is adjusted according to the energy taken. At the same time, this needle can completely close the water. The needle needs to be moved slowly to avoid dangerous water bumps in the rough pipe. Water rushes out of the circular tip of your nozzle and strikes the impeller shovels. The alternator connected to the wheel generates electricity by turning the impeller.



TECHNICAL DETAILS

- Pelton Turbine
- Pressure Manometer
- Ball valve
- Turbine output power 50 W
- Turbine wheel diameter 150 mm

FML 15.16 WATER IMPACT MODULE

GENERAL EXPLANATION

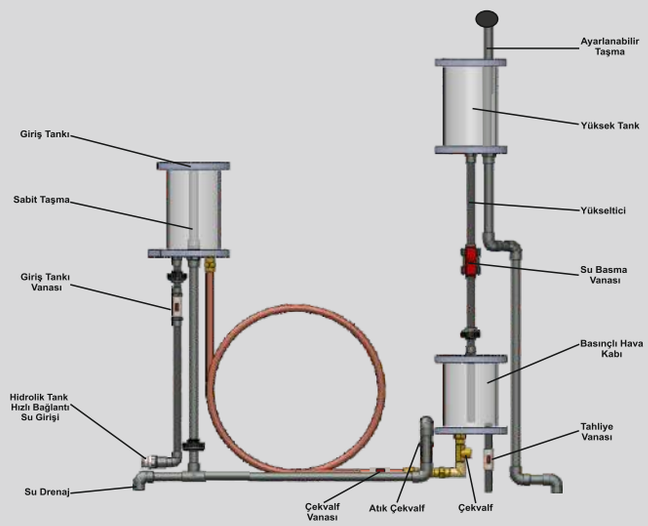
Among the many unknown water pump types, the water pulse pump provides ease of use, especially in rural areas. It is practical to use because no electrical energy is needed. The use of this pump is very beneficial in areas where there is trouble to provide energy to the machines. Water pulse pump does not need any fuel such as electricity, gasoline, diesel to work, but it does the water pumping operation by taking advantage of a feature of water called ram shot. This training set is designed to adopt the basic concepts of water impact effect.

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

For the operation of the pump, a height called water drop is needed. Some of the water dropped from the heavens is thrown out to get a ram impulse while the remainder is pressed upwards. In short, by using water ressure which is higher than the pump level, some of the water is pumped to the water reservoir, which is much higher. It is very easy to use in rural areas because the pulse pump is a self-powered pump, so it can be easily used in areas where trouble is caused by energy supply. The FML 15 Hydrology Main Unit is placed on the working surface and the operation of the Water Impact Training Module is provided here.



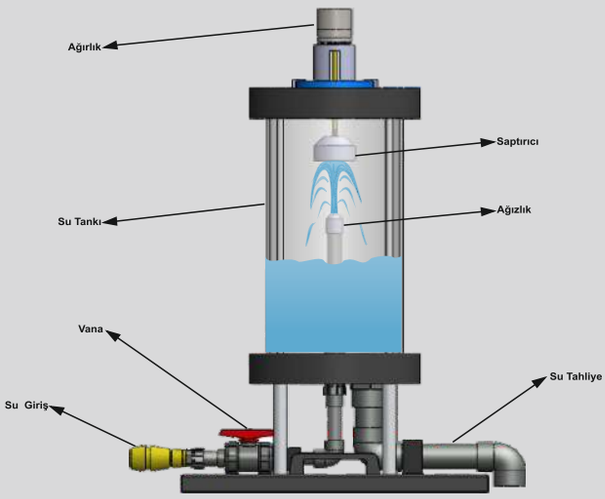
TECHNICAL DETAILS

- Bleed valve
- Discharge valve
- Spherical pipe network
- Stepper valve
- Regulation valve
- Rubber valve flap

FML 15.17 WATER JET MODULE

GENERAL EXPLANATION

This training set is designed to demonstrate the fit of theory with the amount of momentum created by the water jet in the fluid spaces, using counterweights.



PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The training module consists of a conical water pipe vertically placed in a transparent cylindrical container. The solid surface piece of flat plate to be tested in the experiment is attached directly to the water jet by a scalloped bell supported by a spring with a rolling support and with a sliding mass on it. At the bottom of the cylindrical container is a hole through which the water is transferred to the metering tank. The relationship between the momentum and the force of action of a water jet that changes direction by multiplying by a solid surface is experimentally tested. The FML 15 Hydrology Main Unit is placed on the working surface and the water jet is run from there. The water flow is set via the Hydrology Main Unit.

TECHNICAL DETAILS

- 90° flat surface, 45/135° inclined surface, 180° semi-circular surface and 135° conical surface
- Flat surface: 90º
  With inclined surface: 45º / 135º
  Half-circle surface: 180º
  Conical surface: should be 135º.
- The weight set must consist of at least the following weights;

  - 4x 0,2N
  - 3x 0.3N
  - 3x 1N
  - 3x 2N
  - 3x 5N

- Transparent main body
- Replaceable injectors of 6 mm, 8 mm and 10 mm sizes of the water jet

HEAT TRANSFER

HT-320
MULTIPLE HEAT EXCHANGER
TRAINING SET

HT-320.10
MODULER MULTİPLE HEAT
EXCHANGER TRAINING SET

HT-330
NATURAL AND FORCED HEAT
TRANSFER TRAINING SET

HT-332
NATURAL AND FORCED HEAT
CONVECTION TRAINING SET

HT-340
HEAT RECOVERY SYSTEM
TRAINING SET

HT-350
THERMAL CONDUCTIVITY
TRAINING SET

HT-355
THERMAL CONDUCTIVITY IN FLUIDS
AND GASES TRAINING SET

HT-356
HEAT TRANSFER IN METALS
TRAINING SET

HT-357
HEAT TRANSFER IN BUILDING MATERIALS
TRAINING SET

HT-360
TEMPERATURE MEASUREMENT
TRAINING SET

HT-370
BOLING AND CONDENSATION
TYPE HEAT TRANSFER TRAINING SET

HT-380
THERMAL RADIATION
TRAINING SET

HT-390
JOMINY TRAINING SET

argemsan

HT-320 MULTIPLE HEAT EXCHANGER TRAINING SET

GENERAL EXPLANATION

This training set is designed to support theoretical topics and calculations in high schools and heat exchangers in heat exchangers and heat transfer courses. 4 different heat exchangers and 8 different experiments can be done in 7 different ways. Each heat exchange point can be controlled with temperature sensors and thermometers.

EXPERIMENTS

Calculation of the capacity and total heat transfer coefficient according to the heat exchanger types:

1. Serpentine type with fan
2. Parallel flow internal tube
3. Counterflow internal pipe
4. Parallel flow shell and tube type
5. Counterflow shell and tube type
6. Parallel flow plate heat exchanger
7. Counterflow plate heat exchanger

DIMENSIONS

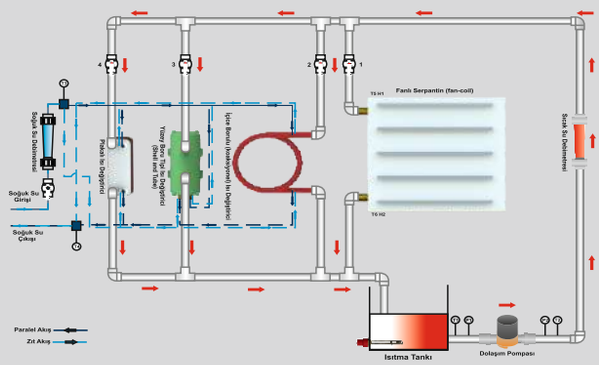
A x B x H : 1400 x 750 x 1490 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

With 4 type heat exchanger, experiments are performed by 7 different methods. Heat exchangers; surface tube type, internal pipe, fan coil and plate heat exchanger. The installation fluid can direct the desired heat exchanger with the valves and the direction of the fluid can be changed. The heat is produced by the heater with a 2kW power supply in the heater tank. The input-output temperature of the system where the heat is generated and transmitted is measured by sensors.



TECHNICAL DETAILS

- Heating and circulation system
- Resistance
- Recirculation pump
- Adjustable resistance water temperature
- Heat exchangers and their properties
- Surface and pipe heat exchanger
- Inside pipe type heat exchanger
- Coil type heat exchanger with fan
- Plate heat exchanger

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

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www.argemsan.com

HT-320.10 MODULAR MULTI HEAT EXCHANGER TRAINING SET

GENERAL EXPLANATION

This training set is designed to support theoretical topics and calculations in high schools and faculty in heat exchangers and heat transfer courses. Numerous parallel heat exchangers and counterflow experiments have been carried out.

EXPERIMENTS

Calculation of the capacity and total heat transfer coefficient according to the heat exchanger types:

1. Parallel flow internal tube
2. Counterflow internal pipe
3. Parallel flow shell and tube type
4. Counterflow shell and tube type
5. Parallel flow plate heat exchanger
6. Counterflow plate heat exchanger

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Parallel and counterflow experiments are performed with a large number of different types of heat exchangers. Heat exchangers; surface tube type, in-pipe and plate heat exchanger and many similar heat exchangers. The installation fluid can direct the desired heat exchanger with the valves and the direction of the fluid can be changed. The heat is produced by the heater with a 2kW power supply in the heater tank. Temperature is measured by input-output temperature sensors of the system where heat is generated and transmitted.

TECHNICAL DETAILS

- Parallel flow inner tube
- Counterflow internal pipe
- Parallel flow surface and pipe type
- Counterflow surface and pipe type
- Parallel flow plate heat exchanger
- Counterflow plate heat exchanger

DIMENSIONS

AxBxH : 1100 x 600 x 1250 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

HT-330 NATURAL AND FORCED HEAT TRANSFER TRAINING SET

GENERAL EXPLANATION

This training set shows natural and forced convection heat transfer mechanism. The device can examine the heat balance, the energy balance of the inner tube transfer, the Nusselt, Graetz number changes in the natural and forced state.

EXPERIMENTS

1. Display of parallel and counter flow heat transfer in a tube-in-tube heat exchanger
2. Calculation of heat transfer in natural and forced flow in heat exchanger
3. Calculation of the total heat transfer coefficient at the oil and water side
4. Calculation of the numberless Nusselt and Graetz numbers
5. Experiment to calculate the change in the total heat permeability coefficient in the tube-in-tube heat exchanger in relation to the flow

DIMENSIONS

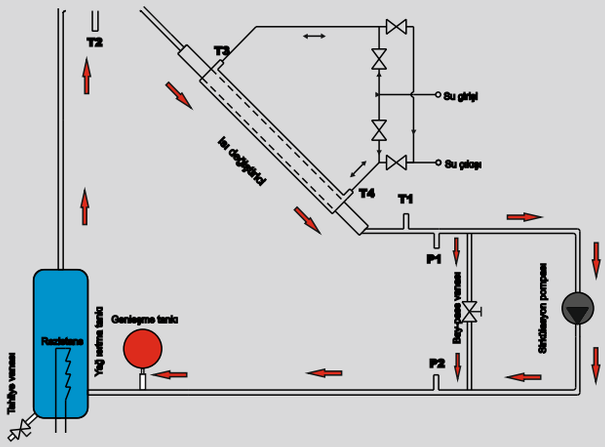
A x B x H : 1180 x 450 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Heat transfer is analyzed in two parts as natural and forced according to the motion of the fluid. At the beginning, the oil in the tank is heated by a 1kW resistance to generate heat energy. At the same time, the water taken from the network is used as the system where the energy is transferred. In the natural flow; the pump in the device is deactivated, the heated oil rises and the heat exchanger is switched on and the energy is transferred to the other system. The heat transfer here is low. In the forced flow, the pump is activated and the oil sends a heat exchanger with a specific action. The heat transfer there is higher than the natural flow. At the same time, the direction of the installation fluid is changed and heat transfer experiments are carried out by reverse flow.



TECHNICAL DETAILS

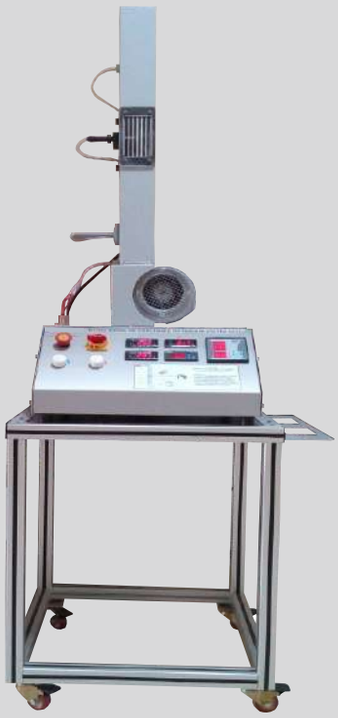
- Heating and circulation system
- 1 kW resistance
- 3 speed steps and 2 mwc discharge capacity
- Recirculation pump
- At least 50 °C oil temperature
- At least 2 L heating tank
- Tube-in-tube heat exchanger

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

argemsan
www.argemsan.com

HT-332 NATURAL AND FORCED HEAT TRANSPORT TRAINING SET



GENERAL EXPLANATION

This training set shows natural and forced convection heat transfer mechanism. Flat plate type and bar type heaters are available.

EXPERIMENTS

1. Calculation of energy balance with natural and forced convection in different types of heat exchangers
2. Change in total heat transfer coefficients depending on the velocity in different types of heat exchangers
3. Calculation of planery thermal conductivity value for different plate heat exchanger at different speeds
4. Calculation of thermal efficiencies for natural and forced convection of different types of heaters

DIMENSIONS

A x B x H : 600 x 600 x 1790 mm

OPTIONAL FEATURES

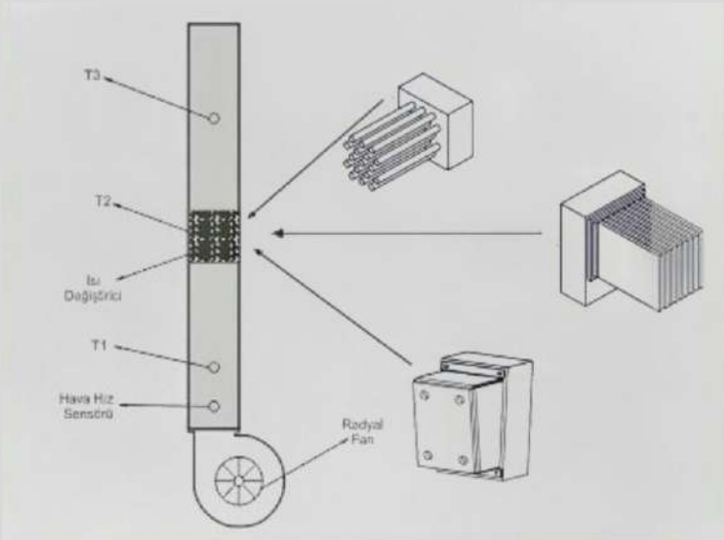
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

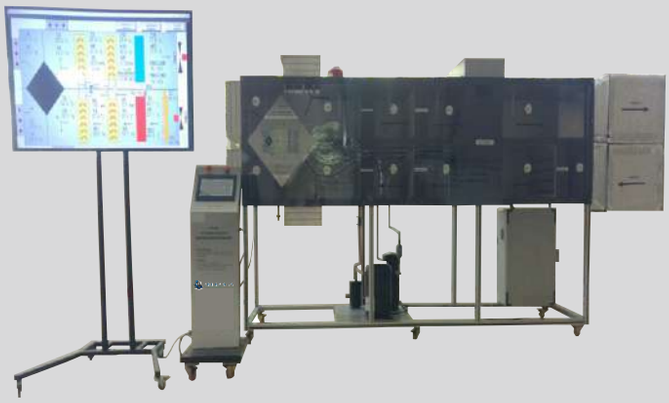
The device uses air as the fluid type. It transfers the necessary heat energy to the system input fluid through the lamellar resistance in the air duct, simulating the excess heat to be transformed. Air is sent through flat plate, multi plate, rod type heat exchanger by natural flow or by fan running with 350m³/h. The fan's flow rate can be controlled and the fan speed can be measured. The temperature sensors work directly with the air. At the same time, the values of the fan, resistance and temperature sensors can be displayed digitally.



TECHNICAL DETAILS

- Heating and circulation system
- Radial fan
- Lamellite type resistance
- Hot wire type air speed converter
- 3 temperature sensors
- Heat exchanger and features
- Flat plate type
- Multiple plate type
- Rod type

HT-340 HEAT RECOVERY TRAINING SET



GENERAL EXPLANATION

This training set shows plated, water-pumped, heat-pumped and heat-recovered heat recovery methods.

EXPERIMENTS

1. Calculation of heat sink recovery and capacity
2. Efficiency calculation of heat pump heat recovery system
3. Calculation of water heat exchanger efficiency
4. Calculation of plate heat exchanger efficiency

DIMENSIONS

A x B x H : 3000 x 850 x 1560 mm

OPTIONAL FEATURES

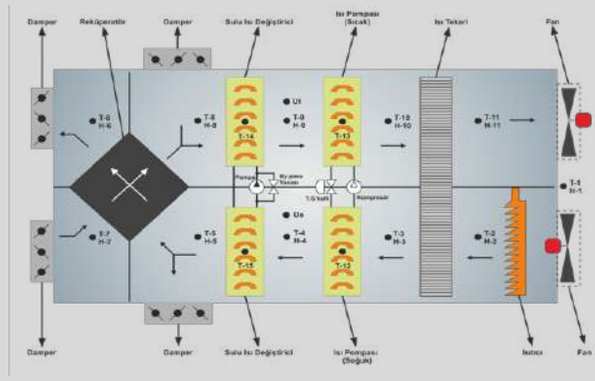
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Transferring the heat generated in one system to another system and recycling the heat in different ways. Here, the heat exchanger includes a fluid having a different temperature value, and heat exchange is provided between the heat exchanger. The heat thus obtained is transferred to another system in a controlled manner.



TECHNICAL DETAILS

- Humidity recuperated heat sink
- Heat pump
- Pumped with water
- Plate heat exchanger
- 2 frequency drive controlled fans
- Temperature and humidity measurement
- Automatic air flow control with 4 separate dampers
- Graduated circulation pump
- Digital measurement of electrical data

HT-350 THERMAL CONDUCTIVITY TRAINING SET

GENERAL EXPLANATION

This training set is designed to investigate radial and linear heat conduction.

EXPERIMENTS

1. Linear heat conduction experiment

2. Radial heat transfer experiment

DIMENSIONS

A x B x H : 900 x 480 x 1240 mm

OPTIONAL FEATURES

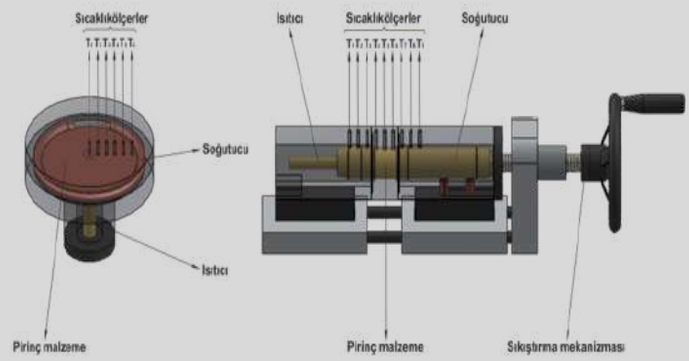
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

In heterogeneous temperature differences over or on the whole, materials tend to transfer the heat energy inside it, by atomic vibrations, convection and radiation, to obtain a homogeneous distribution. The geometric structure of the part in the conduction of heat with atomic vibrations brings about differences in heat conduction. In the device, thermal conductivity and differences are measured with radial and linear parts used in experiments..



TECHNICAL DETAILS

- Linear and radial heat conduction system
- 15 temperature measuring sensors
- 100W linear heater power
- 100W radial heater power
- -20 to 200 ° C measurement range
- Water cooling system
- Digital measurement of electrical data

HT-355 THERMAL CONDUCTIVITY IN FLUIDS AND GASES TRAINING SET

GENERAL EXPLANATION

This training set is a guide to the students in measuring the thermal conductivities of gases and liquids, and thermal conductivity tests of many different fluids and gases can be made.

EXPERIMENTS

1. Determination of thermal conductivity coefficient in liquids
2. Determination of thermal conductivity coefficient in gas

DIMENSIONS

A x B x H : 750 x 520 x 1280 mm

OPTIONAL FEATURES

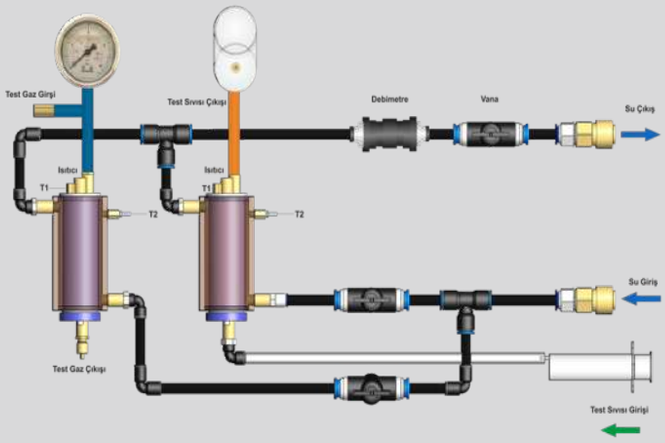
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Materials tend to have a homogeneous distribution by transferring the heat energy within the heterogeneous temperature differences on the whole or in contact with atomic vibrations, convection and radiation. The unit has 2 types of heat transfer units. In these units the test fluid and the network water are subjected to heat exchange. The resistances in the units give the required heat energy to the test fluid. The temperature increase in the units is monitored instantaneously through temperature sensors connected by direct contact. This heat energy is transferred to the units through the network water and the heat transfer is ensured. The network water flow and inlet and outlet temperatures are measured and calculated by sensors so that the energy transferred to the network water can be calculated.



TECHNICAL DETAILS

- One cylindrical test device for gas and liquid
- Test fixtures heaters
- Temperature measurement from 2 different points
- Water cooling system
- Refrigeration flow setting and measurement
- Digital measurement of electrical data

HT-356 HEAT TRANSFER IN METALS TRAINING SET

GENERAL EXPLANATION

This training set is designed to calculate the heat conduction coefficient in metals in a practical way.

EXPERIMENTS

1. Calculation of thermal conductivity coefficient of different materials

2. Calculation of thermal resistance of different materials

3. Heat transfer with different samples connected in series

4. Effect of length on heat conduction

DIMENSIONS

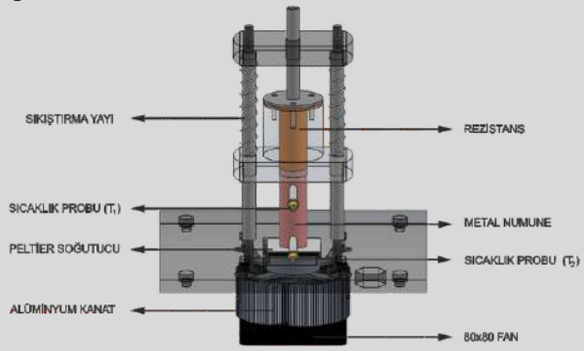
A x B x H : 700 x 350 x 480 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

There are different metal samples in the heart of the unit. Samples are placed in a heater and heated on the one hand. Heat is passed through the sample and spread to the environment. The sample used acts as a cooling fin. Also there are fans under the sample. The flow rate of the fans can be adjusted continuously to influence convective heat transfer. The air flow is carried evenly around the sample. As a result, in addition to performing the experiment with stationary air (free convection), it is also possible to perform experiments with flowing air (forced convection). The effect of different materials on heat conduction has been shown by comparing different samples.



TECHNICAL DETAILS

- 5-point temperature measurement
- 57 W Peltier cooler
- 10 different test samples
- Adjustable temperature

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

HT-357 HEAT TRANSFER IN BUILDING MATERIALS TRAINING SET

GENERAL EXPLANATION

This training set is designed to calculate the heat conduction coefficient in building materials in a practical way.

EXPERIMENTS

1. Calculation of thermal conductivity coefficient of different materials

2. Calculation of thermal resistance of different materials

3. Heat transfer with different samples connected in series

4. Calculation of the coolant temperature

DIMENSIONS

Device dimensions
A x B x H : 410 x 390 x 560 mm

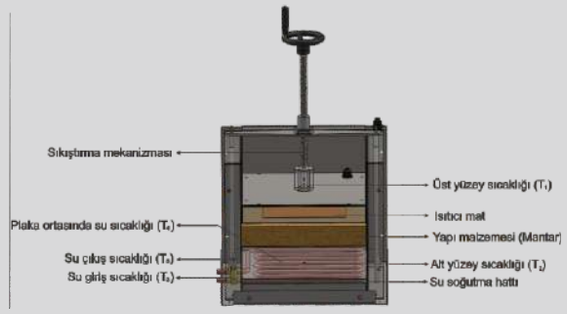
Panel dimensions
A x B x H : 445 x 415 x 485 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The hot plate is heated with an electric heating mat. In cold plate, the temperature is provided by water cooling. The sensors measure the temperatures in the inlet and outlet of the cooling water and in the middle of both plates. The hot plate at the top of the sample and the temperatures for the cold plate at the bottom of the sample are adjusted using the software provided. Temperature control system provides constant temperature. The heat flow between the hot plate and the cold plate passes through the sample and is measured by a special heat flow sensor. The entire housing including the cover is thermally insulated to ensure stable ambient conditions.



TECHNICAL DETAILS

- 6-point temperature measurement
- 500W heater
- 8 different test samples
- Adjustable temperature

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

HT-360 TEMPERATURE MEASUREMENT TRAINING SET

GENERAL EXPLANATION

This training set is designed to apply different temperature measurement methods.

EXPERIMENTS

1. Temperature measurement with a spirit thermometer
2. Temperature measurement with a dial thermometer
3. Temperature measurement with K type thermocouple
4. Temperature measurement with J type thermocouple
5. Temperature measurement with PT100
6. Temperature measurement with PT1000

DIMENSIONS

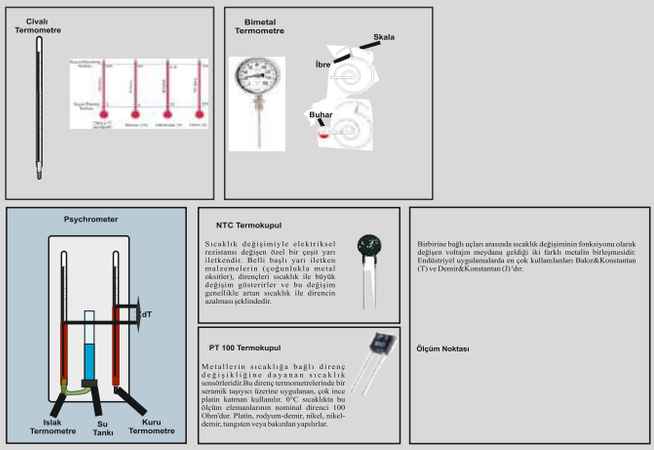
A x B x H : 1200 x 600 x 1210 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

With different types of thermometers, different temperature values and sensitivities are observed. The temperature of the liquid reservoir in the system is controlled by means of resistance. The cooling system in the different tank also reduces the temperature of the liquid. Here, it is aimed to observe at which temperature range and at which temperatures different types of thermometers give clearer results.



TECHNICAL DETAILS

- Spirit thermometer
- Dial thermometer
- K type thermal couple
- J type thermal couple
- PT-100
- PT-1000

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

HT-370 BOILING AND CONVERSION TYPE HEAT EXCHANGER TRAINING SET

GENERAL EXPLANATION

This training set is designed to easier understanding of boiling and condensation processes from common applications of heat transfer.

EXPERIMENTS

1. Experiment to observe the convection core and transition boiling
2. Experiment to find system energy balance at constant boiling temperature
3. Experiment to find heat flow and surface heat transfer coefficient at constant boiling temperature
4. Condenser capacity, surface convection coefficient and Nusselt number calculation experiment

DIMENSIONS

A x B x H : 1180 x 450 x 1500 mm

OPTIONAL FEATURES

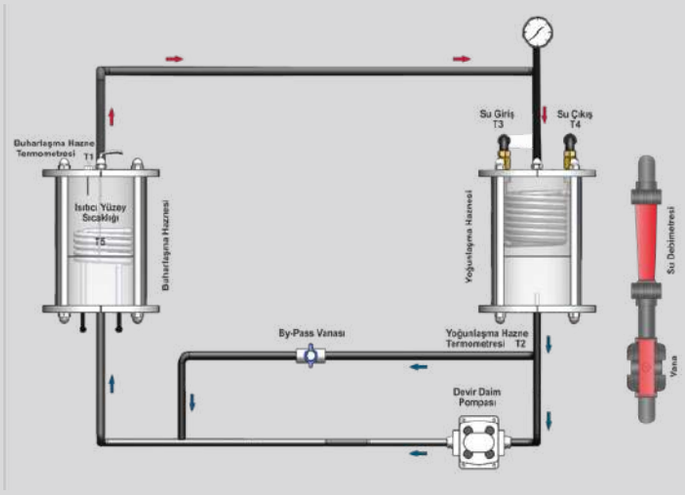
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

With different types of thermometers, different temperature values and sensitivities are observed. The temperature of the liquid reservoir in the system is controlled by means of resistance. The cooling system in the different tank also reduces the temperature of the liquid. Here, it is aimed to observe at which temperature range and at which temperatures different types of thermometers give clearer results.



TECHNICAL DETAILS

- 1 kW heating resistor
- 2 pieces 2 liters transparent tanks
- Recirculation pump
- Water cooled and wound tubular condenser
- Temperature sensors
- Digital measurement of electrical data

HT-380 THERMAL RADIATION TRAINING SET

GENERAL EXPLANATION

This training set has been developed to understand and calculate the basic mechanism of heat transfer by radiation.

EXPERIMENTS

1. Inverse square law of heat experiment
2. Stefan Boltzmann law experiment
3. Experiment to determine the diffusion of different types of plate surfaces
4. Inverse square rule of light experiment
5. Lambert's cosine law experiment
6. Beer-Lambert law experiment

DIMENSIONS

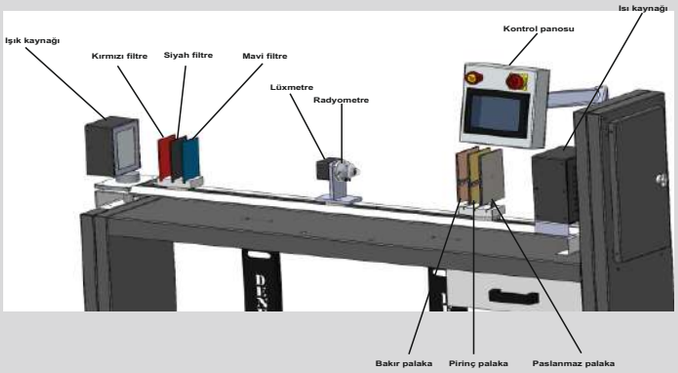
A x B x H : 1580 x 600 x 1300 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Radiation; the transmission of energy in the form of electromagnetic waves or particles. If the number of neutrons in a nucleus of a substance is greater than the number of protons, this substance shows an unstable structure and the neutrons in the core are broken up by emitting various rays such as alpha, beta, gamma. The aim here is to observe the transfer of energy from one object to another through radiation.



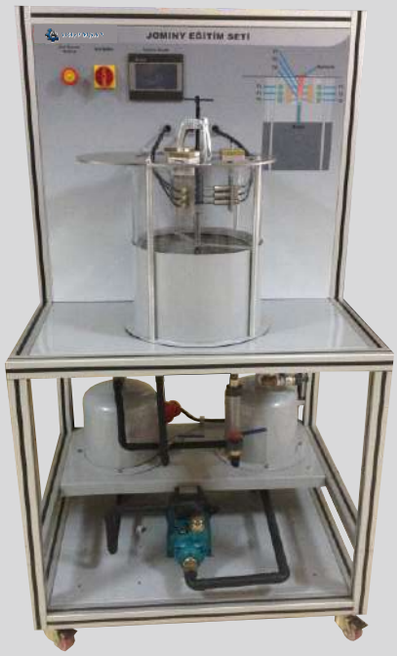
TECHNICAL DETAILS

- Radiation sensor
- Luxmetre
- Temperature sensors
- White light observable radiation radiator
- Color filters in different colors
- Measuring with angle adjustment
- Radiation source

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

HT-390 JOMINY TRAINING SET



GENERAL EXPLANATION

The purpose of this training set is to examine the effect of cooling rate on the hardness of steels with different chemical compositions. Furthermore, the test reveals that the parts added as alloying elements to the steels are more uniformly and more deeply cured.

DIMENSIONS

A x B x H : 820 x 670 x 1390 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The test sample is sufficiently heated in the heat treatment furnace; centered and positioned at each end in the same position, is placed in the center of the apparatus, which is fixed to a transparent test cabinet with three legs at an angle of 120 degrees and at its end portions. Thermocouples in contact with the parts where the temperature is to be measured are positioned to measure the temperatures during the test from the end point in the centrally located position of the test sample with a temperature of about 1000 ° C. It is ensured that the thermocouples apply constant pressure to the same point. In this case, the convection coefficient of the current conditions of the Jominy test is determined.

TECHNICAL DETAILS

- Float flowmeter
- Recirculation pump
- Thermocouple probe
- Stainless body
- Temperature set point
- Digital measurement of electrical data

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

AIR CONDITIONING

K-203
HEAT RECOVERY VENTILATION TRAINING SET

K-204
BASIC AIR CONDITIONING TRAINING SET

K-208
RECIRCULATION TYPE AIR CONDITIONING T.S

K-212
HEAT RECOVERY TYPE AIR CONDITIONING T.S

K-215
AIR TO WATER TYPE HEAT PUMP T.S

K-216
AIR TO AIR TYPE HEAT PUMP T.S

K-217
AIR-WATER-AIR TYPE HEAT PUMP T.S

K-218
WATER TYPE HEAT PUMP T.S

K-220
MECHANICAL DRAFT COOLING TOWER T.S

K-230
EVAPORATİVE COOLING T.S

K-240
DRIER TRAINING SET

K-242
CONVECTIVE DRIER T.S

K-250
AUTOMOTIVE AIR CONDITIONING T.S

K-252
AUTOMOTIVE AIR CONDITIONING FAILURE SIMULATOR

K-280
VENTILATION ELEMENTS T.S

K-282
RADIAL FAN TEST T.S

K-290
SPLIT AIR CONDITIONING T.S

K-292
SPLIT AIR CONDITIONING FAILURE SIMULATOR

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K-203 HEAT RECOVERY VENTILATION TRAINING SET

GENERAL EXPLANATION

This training set is designed to understand the logic of HRV devices used to make energy saving while ventilating an environment and to comprehend the efficiency calculations.

EXPERIMENTS

1. Calculation of energy balance in a brass heat exchanger
2. Calculation of thermal efficiency of heat exchanger
3. Calculation of the coefficient of thermal efficiency in the heat exchanger

DIMENSIONS

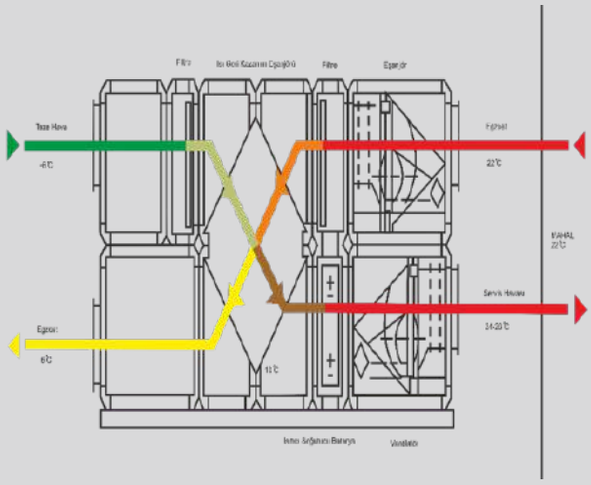
A x B x H : 1320 x 580 x 1540 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

HRV devices are used to provide fresh air and to exhaust polluted air. The energy of the exhausted air is transferred to the fresh air through the aluminum plate type heat recovery exchanger and energy economy is provided. Enables indoor equipment to be selected at lower capacities for air conditioning.



TECHNICAL DETAILS

- Aluminum plate heat exchanger
- 2 fans
- Wing heater
- Resistance
- Heat exchanger

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-204 BASIC AIR CONDITIONING TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce basic functions of a basic air conditioning unit and to apply basic psychrometric operations.

EXPERIMENTS

1. Experiment of basic air conditioning process

2. Summer climate experiment

3. Winter climate practice

DIMENSIONS

A x B x H : 1650 x 550 x 1235 mm

OPTIONAL FEATURES

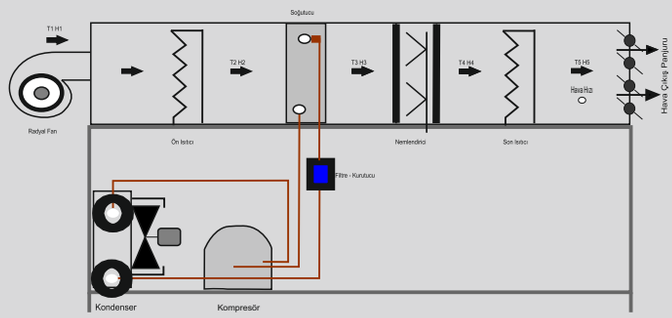
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The training set has a cooling group, resistors for heating operations and a humidification unit. The amount of air used is adjusted by means of an adjustable radial fan. The air channel system has a cross-sectional area of about 0.10 m^2. The air sucked from the atmosphere first enters a variable speed centrifugal fan and then through the duct system. During the heating process, the humidification unit is activated to increase the humidity content. In heating process, the heating elements are switched on, the preheating resistance power is 1 kW and the last heating resistance power is 0.5 kW. The air is heated by these resistances. Information from temperature and humidity sensors can be viewed on the LCD screen. If the cooled and humidified air is going to pass through the system, the cooling system will be activated and the air passing through the 3 channels will be cooled by the cooling group and the channel evaporator. As the cool and dry air passes through the duct, the humidity and temperature sensors in this section measure. If air desired to be reheated, the last heating resistors must be switched on. The conditioned air is measured by an air speed meter (anemometer) before the air is released into the atmosphere.



TECHNICAL DETAILS

- Hermetic reciprocating compressor
- Forced air cooled condenser
- Air-cooled evaporator
- Aqueous humidifying pads
- Radial fan
- Digital temperature measurement from 5 different points
- Digital relative humidity measurement from 5 different points
- Anemometer

K-208 RECIRCULATION TYPE AIR CONDITIONING TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce basic functions of a simple air conditioning unit and to apply basic psychrometric operations.

EXPERIMENTS

1. Non-mixed air winter climate

2. Non-mixed air summer climate

3 Mixed air winter climate

4. Mixed air summer climate

DIMENSIONS

A x B x H : 2000 x 750 x 1420 mm

OPTIONAL FEATURES

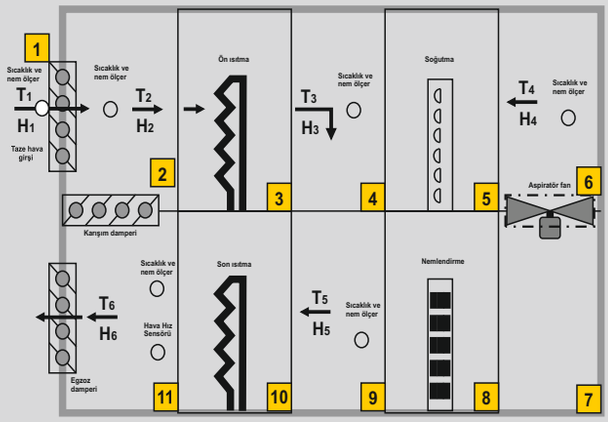
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The training set consists of lamellar resistance, fresh air, exhaust and mixture air dampers, humidifier unit, air speed meter, evaporator, condenser, temperature and humidity meter. The system is an air handling unit with air heater and cooling unit. The mixing point of the air in two separate features can be found on the psychometric diagram.



TECHNICAL DETAILS

- 1 kW stainless laminar preheater
- 500 W stainless laminar end heater
- Filling type water spray humidifier
- Hermetic compressor
- Condenser with hood
- Axial fan with fan speed control
- Angle-controlled damper
- Low pressure manometer
- Digital temperature measurement from 6 different points
- Anemometer

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K-212 HEAT RECOVERY TYPE AIR CONDITIONING TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the basic functions of a heat recovery air conditioning unit and to apply basic psychrometric operations.

EXPERIMENTS

1. Heating operation
2. Cooling and drying process
3. Aqueous humidification
4. Calculation of heat recovery capacity and efficiency in winter climate

DIMENSIONS

A x B x H : 1520 x 530 x 1500 mm

PACKAGE INCLUDED

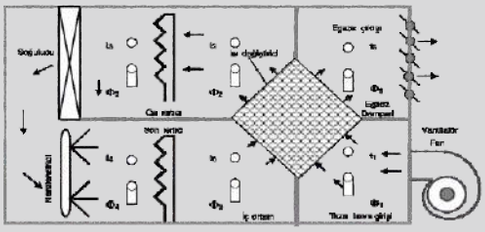
Device, device cover, 1 printed experiment report, circuit diagram and product catalog

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Heat recovery air conditioning units operate with air-to-air heat recovery plate heat exchangers and the principle of adding fresh air to the energized air in the air exhausted from the environment. This allows a high amount of energy savings to be achieved. The heat exchangers are placed in the air-conditioning plants in a straight diagonal arrangement. Diagonal placement can be defined as a two-floor air conditioning unit. In the applications of double-duck air conditioning unit, by-pass damper installation in fresh and exhaust air circulation prevents excessive energy consumption during transitional periods or atmospheric conditions. The basic function of the heat recovery exchanger in the air handling unit is to serve as preheater or precooler. Heat recovery in an air conditioning unit with all functions (filter, mix, heating, cooling, humidification, etc.); while the air conditioner reduces the cost of the power plant by 40% ~ 60%, the power plant increases the total energy from the system by 5% ~ 15%.



TECHNICAL DETAILS

- Hermetic compressor
- Digital relative humidity measurement from 7 different points
- Digital temperature measurement from 7 different points
- Plate heat exchanger
- Moisturizing filling type water spray
- Last heater power 500W
- Preheater power 1000W
- Radial fan
- Anemometer
- Lamellar condenser with fan
- Compact lamellar evaporator

K-215 AIR TO WATER TYPE HEAT PUMP TRAINING SET

GENERAL EXPLANATION

This training set is prepared for the application of air-water heat pumps.

EXPERIMENTS

1. Calculation of the efficiency (performance) coefficient
2. Experiment of preparing heat pump efficiency curves using different sources and temperatures
3. Comparison of ideal and practical cycles on the p-h diagram and experiment of determining the energy balances for the condenser and compressor
4. Drawing heat pump efficiency curves based on R-134A characteristics at various condensation temperatures
5. Experiments to compare ideal and practical cycles on the p-h diagram
6. Experiments on the effect of compressor compression ratio on volumetric efficiency

DIMENSIONS

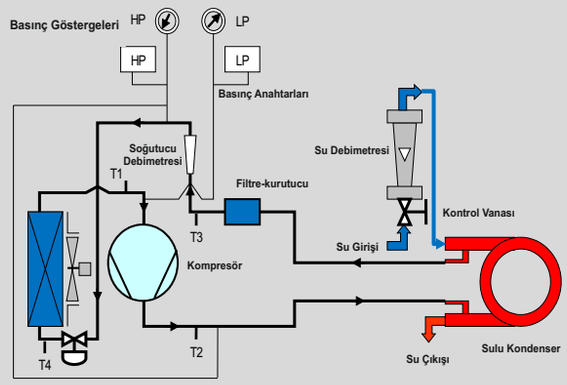
A x B x H : 1100 x 680 x 1380 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The heat pump is a thermodynamic cycle designed to perform heating and cooling functions. The aim is to achieve heat transfer from a low temperature environment to a high temperature atmosphere, in other words, to reverse the heat transfer direction. The heat pump basically consists of condenser, expansion valve, evaporator and compressor elements.



TECHNICAL DETAILS

- Hermetic reciprocating compressor
- Forced air winged evaporator
- Evaporator fan axial fan
- Water condenser with nested pipe
- Rotameter type water flowmeter
- Digital temperature measurement from 6 different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-216 AIR TO AIR TYPE HEAT PUMP TRAINING SET

GENERAL EXPLANATION

This training set has been prepared for the application of air-to-air heat pumps.

EXPERIMENTS

1. Comparison of ideal and practical cycles via pH diagram and determination of energy balances for condenser-compressor
2. Calculation of the heating efficiency coefficient (COP)
3. Calculation of the cooling efficiency coefficient (COP)
4. Change of COP values at different condensation temperatures
5. Calculation of condenser heat conductivity value

DIMENSIONS

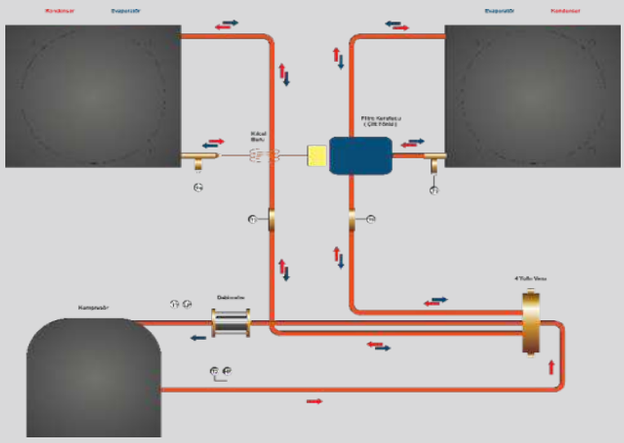
A x B x H : 1280 x 600 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Air-source heat pumps are used as an energy source for outside exhaust (waste) air heating, cooling or hot water. Heat dissipation is often done with the help of a hydraulic distribution system or with a fan. Air temperature varies throughout the year. Therefore, it is impossible to give a definite COP value for airborne devices.



TECHNICAL DETAILS

- Hermetic compressor
- R134A refrigerant
- Evaporator with fan
- Fan-shaped lamellar condenser
- Bi-directional filter dryer
- Turbine type flow meter with digital output
- Temperature measurement from 4 different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-217 AIR-WATER-AIR TYPE HEAT PUMP TRAINING SET

GENERAL EXPLANATION

This training set is designed to show the operation of the heat pump from air to water and from water to air again (fanless serpentine unit).

EXPERIMENTS

1. Calculation of heating efficiency coefficient
2. Calculation of cooling efficiency coefficient
3. Comparison of ideal and practical cycles on the pH diagram
4. Drawing heat pump efficiency curves using different evaporation temperatures
5. Drawing COP curves at different condensation temperatures
6. Relation of compressor compression ratio - volumetric efficiency

DIMENSIONS

A x B x H : 1420 x 680 x 1365 mm

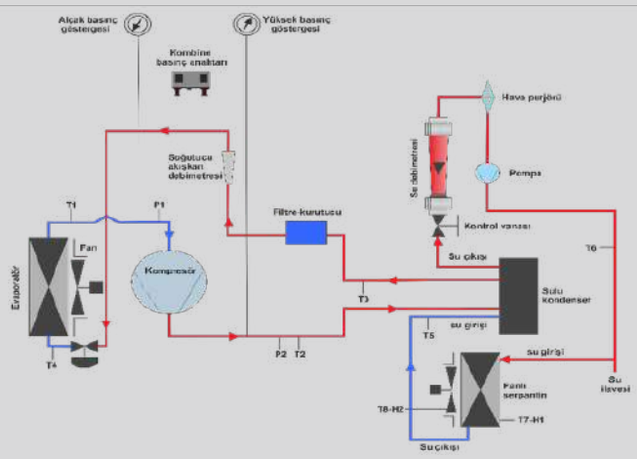
OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Heat pumps are devices that can transfer heat from a low temperature environment to a higher temperature environment. The heat pump transfers energy from the natural source environment to the user when heating and transfers energy to natural environment to the user when cooling. When examined as a thermodynamic process, heat pump is a cooling machine working on the principle of "Reverse Carnot Cycle" and consists of 5 important building elements:

- Refrigerant
- Compressor
- Condenser
- Expansion Valve
- Evaporator



TECHNICAL DETAILS

- Hermetic compressor
- Fan with evaporator
- Fan cooled lamellar water-cooled condenser
- Capacitor air inlet-outlet temperature and humidity measurement
- Inner tube heat exchanger
- Step circulation pump

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-218 WATER TYPE HEAT PUMP TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the operation of a water-to-water heat pump.

EXPERIMENTS

1. Calculation of heating efficiency coefficient
2. Calculation of cooling efficiency coefficient
3. Comparison of ideal and practical cycles on the pH diagram
4. Compressor compression ratio - volumetric efficiency relation

DIMENSIONS

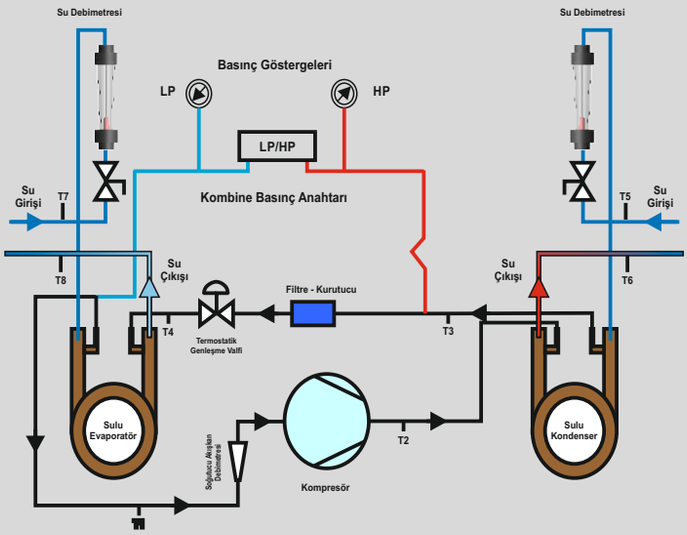
A x B x H : 1420 x 680 x 1365 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Water-cooled systems are smaller and more efficient than air-based systems. The volume of water in the pipes also serves as an energy store. It is a higher efficiency system that allows it to operate at lower gas pressures. On the condenser side, water-cooled heat pump systems are called water-based heat pump systems. The purpose of this system is to enable the condenser waste energy to be used at another point in the system if needed.



TECHNICAL DETAILS

- Hermetic compressor
- Inner tube heat exchanger
- Filter dryer
- Expansion valve
- Turbine type flow meter

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-220 MECHANICAL DRAFT COOLING TOWER TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the working principles of water cooling towers experimentally.

EXPERIMENTS

1. Observation of processes in the cooling tower
2. Calculation of thermodynamic changes in air and water
3. Effect of the cooling load on the " wet chamber method "
4. The relationship between the sagging load and the cooling difference
5. Effect of changes in air velocity on " wet chamber method "

DIMENSIONS

A x B x H : 864 x 600 x 1675 mm

OPTIONAL FEATURES

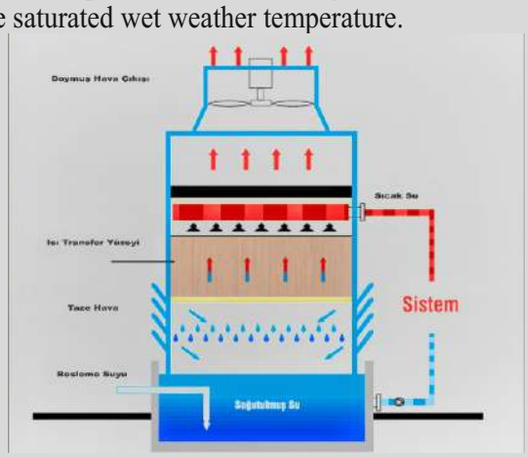
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The cooling tower is a heat removal unit. The water cooling towers are sprayed on the hot water from the system and the heat is given to the atmosfere to cool away from the environment. It gives the unwanted heat in the system to the atmosphere by allowing some of the water that passes through to evaporate. The remaining water is cooled down to the desired level. Water cooling halls are a structure working in the direction of heat transfer and fluid mechanics principles. The hot water from the system separates the particles from the filling materials and collides with the outside air entering through the air panel. A part of the water evaporates, and the remaining part becomes enthalpy. Thus, the water temperature sent to the system can be reduced to the saturated wet weather temperature.



TECHNICAL DETAILS

- Coolant build-up resistance
- Cooling load
- Axial fan
- Fan speed control
- Evaporative cooling pump
- 4-point temperature sensor
- 2-point digital relative humidity sensor
- Recirculation pump
- Transparent plexi glass tower

K-230 EVAPORATIVE COOLING TRAINING SET

GENERAL EXPLANATION

This training set is designed to experimentally observe the basic principles of the evaporative cooling process.

EXPERIMENTS

1. Observation of the processes in the evaporative cooler
2. Calculation of evaporative coolant capacity
3. Calculation of efficiency value (COP) of the evaporative cooler
4. Effect of changes in water flow on cooling capacity
5. Effect of changes in air velocity on cooling capacity

DIMENSIONS

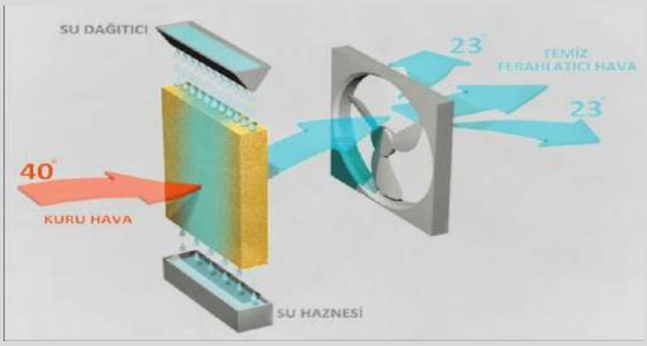
A x B x H : 800 x 600 x 1280 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Evaporation of dry and hot air from a wet surface is referred to as "evaporative cooling" when the temperature drops from the air to evaporate from the air. 100% external fresh air is used in the system. For this reason, it is also called natural cooling. In evaporative cooling, the heat required to evaporate water forms the basis for the removal from the environment. With the evaporation of water, latent heat is taken from the environment and the sensible heat remains the same. The system has a fan and water pump as mechanical parts. The water pump system sprays the water in the water reservoir onto the honeycomb surface where the water evaporates. Fresh air from outside is passed through this moist fiber by means of a fan. The air cools during this air pass. Because; the evaporation of water from the air evaporation heat is the result of the drop in temperature resulting from the coolness of the air is also cooled.



TECHNICAL DETAILS

- Fan speed control
- Tower fill
- Automatic water supply
- 4-point temperature sensors
- 2 point moisture sensors
- Air speed meter

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-240 DRIER TRAINING SET

GENERAL EXPLANATION

The purpose of this training set is to examine the effect of cooling rate on the hardness of steels with different chemical compositions. Furthermore, the test reveals that the parts added as alloying elements to the steels are more uniformly and more deeply cured.

EXPERIMENTS

1. Basic calculations

2. Psychrometric operations

3. Change of pressure losses due to fan speed

DIMENSIONS

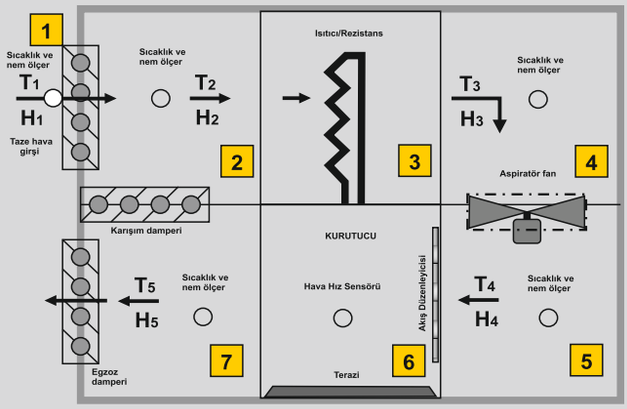
A x B x H : 1500 x 750 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The purpose in drying systems is to vent the humid air. There are two diagonal heat exchangers for heat recovery. The fan blows air from the outside onto the heaters. Here, the heated air is sent to the drying chamber with the aid of air guiding devices.



TECHNICAL DETAILS

- Stainless winged resistance
- Fan speed control
- Radial fan
- 2 plate heat exchanger
- 7 point temperature sensors
- Temperature limit control
- 7 point moisture sensors

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-242 CONVECTIVE DRIER TRAINING SET

GENERAL EXPLANATION

In this training set, it is aimed to calculate the heat loss that is evident during drying and to learn the important factors theoretically for the choice of dryer to be used in the industry.

EXPERIMENTS

1. Basic calculations

2. Psychrometric operations

DIMENSIONS

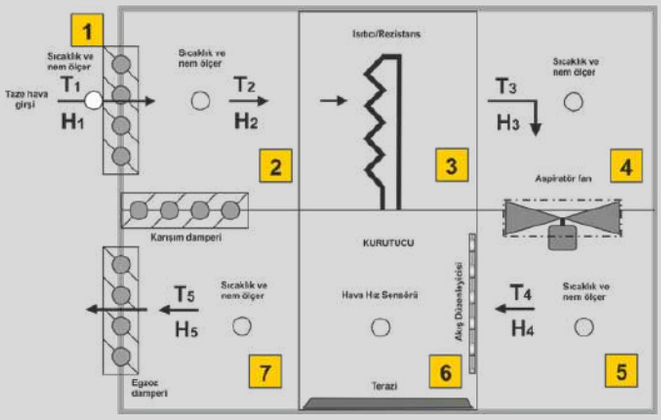
A x B x H : 1500 x 750 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Drying is carried out by means of winged electric heaters. For heat recovery, there is a damper that provides a mix of fresh air with exhaust air. Damper is used in exhaust with fresh air. Measures can be taken by putting the scale in the dryer section.



TECHNICAL DETAILS

- 3 pieces damper motors
- Stainless steel electric heaters
- Plug fan
- Fan speed control
- Digital temperature measurement from 5 different points
- Digital humidity measurement from 5 different points
- Air speed sensor

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-250 AUTOMOTIVE AIR CONDITIONING TRAINING SET

GENERAL EXPLANATION

This training set is designed to show the basic functions and working principles of automotive air conditioners.

EXPERIMENTS

1. Operation of the automotive climate system
2. Display of the cooling cycle on the pH diagram
3. Increase of pressurization line pressure
4. Suction line pressure drop

DIMENSIONS

A x B x H : 1120 x 670 x 1150 mm

OPTIONEL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The air conditioning system needs to be compressed and cooled to convert refrigerant gas into liquid. The compressor compresses the refrigerant to the condenser. As the pressure and temperature increase, the refrigerant passes through the condenser and becomes liquid at an average temperature of 60 ° C. The high pressurized liquid refrigerant passes through the expansion valve, a large volume, and the pressure drops. The liquid refrigerant gas evaporates in the evaporator and collects heat from the evaporator. The evaporator surface and its periphery cools to -10 ° C to -18 ° C. This coolant is blown into the car with the evaporator fan controlled by the driver. This event; is repeated as the refrigerant gas is converted from vapor to liquid again.

TECHNICAL DETAILS

- Piston compressor
- Auto air conditioning condenser
- Auto air conditioner evaporator
- 6 point temperature sensors
- Low-high pressure manometer

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-252 AUTOMOTIVE AIR CONDITIONING FAILURE SIMULATOR

GENERAL EXPLANATION

This training set is designed to show the basic faults of automotive air conditioners and methods of finding faults.

EXPERIMENTS

1. Fuse failure
2. Compressor clutch failure
3. Filter dryer partially blocked
4. Expansion valve partially blocked
5. Decrease of compressor capacity
6. Missing refrigerant in system
7. Excess refrigerant in the system
8. Dirty condenser

DIMENSIONS

A x B x H : 1120 x 670 x 1150 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The automotive air conditioner failure training set is designed to visualize the most common failures. There are 8 faults in the device, such as fuse failure, compressor clutch failure, filter-drier partially blocked, expansion valve partially blocked, compressor capacity reduced, missing refrigerant in system, excess refrigerant in system, dirty condenser failure.

TECHNICAL DETAILS

- 8 kinds of fault type application
- Piston compressor
- Auto air conditioning condenser
- Auto air conditioner evaporator
- Step evaporator fan
- 6 point temperature sensors
- Low-high pressure manometers

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

K-280 VENTILATION ELEMENTS TRAINING SET

GENERAL EXPLANATION

This training set is designed to observe the pressure losses caused by the fittings used in the ventilation systems.

EXPERIMENTS

1. Drawing the fan characteristic curve
2. Calculation of pressure losses in filter and fittings
3. Finding special resistance values of filters and fittings
4. Finding pressure losses in the straight channel at different speeds

DIMENSIONS

A x B x H : 1120 x 670 x 1150 mm

OPTIONAL FEATURES

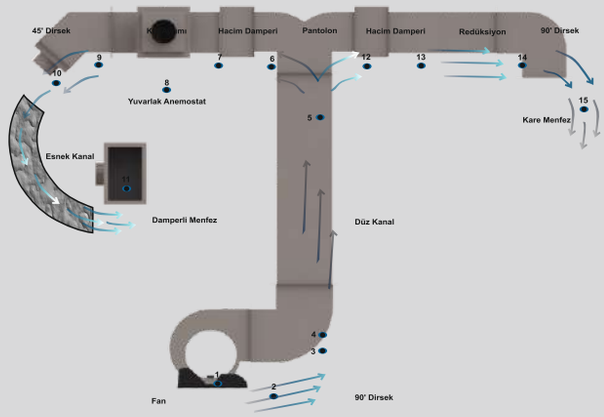
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

In the places where ventilation is made, all the air is taken from the outside and given to the place without any thermodynamic treatment. While fresh air is coming from the outside, the polluted air is being thrown out. Total pressure in ducts; for total pressure loss, due to the friction of the channel walls with the channel joints, resistances of the devices used (heater, cooler, drop holder, etc.) and other side fittings; due to the viscosity of the fluid, is caused by friction between the channel walls and, if necessary, the fluid's own molecules. Parts such as lids, mufflers, heaters and coolers, air filters, humidifiers, drop holders, humidity holders and heat recovery devices are also causing considerable pressure loss. Dynamic losses (local losses) occur due to disturbances such as flow direction or cross-section change in various fittings. These fittings include inlet and outlet ports, section modifiers (reducers), elbows, mating and separating.



TECHNICAL DETAILS

- 3 speed stage centrifugal fan
- Fiber filter
- Straight channel, trouser piece, arm pick, full elbow, half elbow, flexible connection channels
- Round anemostat
- Blower and suction grille
- Volume damper
- Digital differential pressure transmitters
- Pressure measurement at different points
- Anemometer

K-282 RADIAL FAN TEST TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate how find relationship between pressure and flow experimentally in radial fans.

EXPERIMENTS

1. Drawing the fan characteristic curve
2. The pressure losses in the suction channel depend on the speed
3. The pressure losses in the discharge channel depend on the velocity
4. The relationship between fan power and electrical power input

DIMENSIONS

A x B x H : 1500 x 600 x 900 mm

OPTIONAL FEATURES

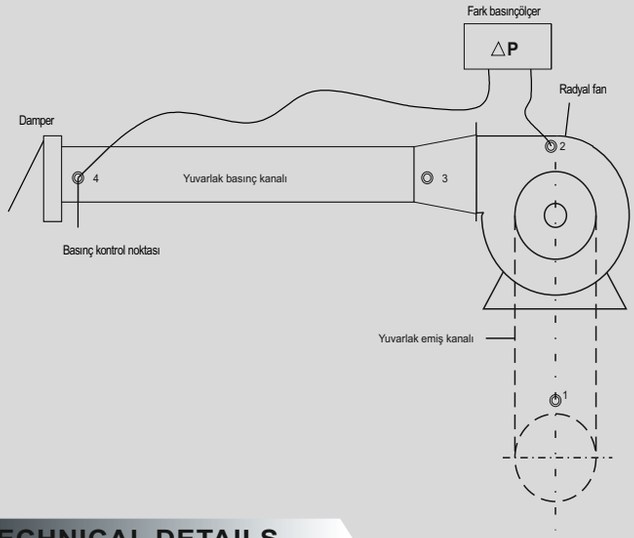
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Fans are like pumps, but unlike pumps, they provide pressurized transfer of air or gas instead of liquid. The fans can pressurize the air at maximum of 60-70 millibars and can be used both for air suction and for air discharge. The energy used by the fans is mainly required to overcome the following two factors. 1. Static pressure (Hs) that can pass through the air or gas through the channel, elbow, filter, heat exchanger, etc. 2. The speed press (Hv) that the air or gas will need to spread all the way through and from the process after it has been transported. In the radial fans there is a rotating impeller as in the pumps and a helical slot in which the impeller is located. The air or gas spigot enters in parallel from the center, is pressurized and transferred to the ducts tangentially to the periphery of the impeller.



TECHNICAL DETAILS

- 3-phase speed control fan motor
- Radial fan
- Anemometer
- Differential pressure measurement
- Digital multimeter

K-290 SPLIT AIR CONDITIONER TRAINING SET

GENERAL EXPLANATION

This training set is designed to experimentally show the basic functions and elements of split air conditioners.

EXPERIMENTS

1. Operation of split air conditioner in summer
2. Operation of split air conditioner in winter
3. Operating the split air conditioner in ventilation
4. Operating the split air conditioner in dehumidification mode
5. Automatic operation of the split air conditioner
6. Introduction of the split air conditioner control card
7. Introducing the indoor unit card of the split air conditioner
8. Adding potential relay and start capacitor to split air conditioner

DIMENSIONS

A x B x H : 880 x 640 x 1500 mm

OPTIONAL FEATURES

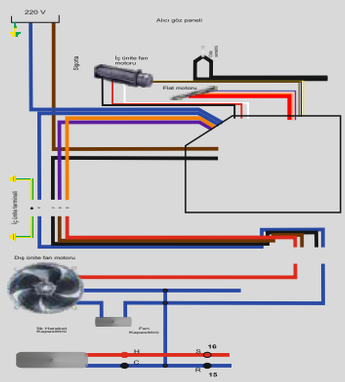
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The working method of the air conditioner is to vaporize the fluid under a certain pressure at the desired temperature and to return it to the liquid state again in the vapor state. The liquid material is transformed into gas phase by absorbing heat with pressure, also called phase change. The gas used as the cycle material is absorbed and compressed by means of a compressor and liquefied. The working principle describes the second law of thermodynamics. Thanks to the special chemical compounds used in the climate, this phase transformation property is utilized by providing evaporation. A closed loop system is used to re-condense the evaporated fluid to form a loop. In the related compounds, there are refrigerants which have modifying properties at relatively low temperatures. The air conditioners also include fans that move hot air over the cooling coils. As the hot air flows over the cooler, the low-pressure evaporator coils absorb heat from the coolant and gaseous transition from the liquid is observed. To keep the cooling efficient, the air conditioner turns the refrigerant back into a liquid. To do this, under high pressure, the compressor gas is introduced and the process brings undesirable heat to the well. All the extra heat generated by the compression of the gas is then discharged in the open air by means of a second coil group and a second fan, called capacitor rolls. The gas cools down, returns to a liquid and the process starts again.



TECHNICAL DETAILS

- Digital temperature measurement from 4 different points
- Split air conditioner indoor unit
- Split air conditioner outdoor unit
- Compressor
- Low-high pressure indicators
- Digital ammeter

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K-292 SPLIT AIR CONDITIONER FAILURE SIMULATOR

GENERAL EXPLANATION

With this training set, 15 different faults can be created. It is possible to diagnose the possibility of faults by means of measuring points on the panel and to diagnose faults.

EXPERIMENTS

1. Power cut
2. Voltage malfunction
3. Thermal cut-off
4. Compressor windings damaged
5. Capacitor cut-off
6. Indoor unit card failure
7. Outdoor unit fan motor failure
8. Outdoor unit fan capacitor cut-off
9. Indoor fan motor failure
10. Malfunction with instrument panel
11. Step motor malfunction
12. Four-way valve failure
13. Defective receiver eye panel
14. Pipe temperature sensor malfunction
15. Room temperature sensor malfunction

DIMENSIONS

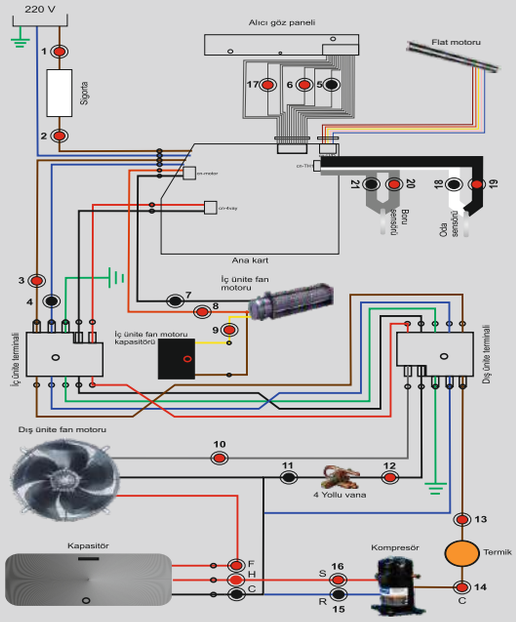
A x B x H : 880 x 640 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The split air conditioner failure simulator is designed to visualize and detect the most common failures in the climate. 15 different faults can be created such as voltage fault, indoor unit card fault, outdoor unit fan motor fault, four-way valve fault, room temperature sensor fault.



TECHNICAL DETAILS

- Split air conditioner
- Remote control system
- Compressor
- Heating, cooling, ventilation and dehumidification functions
- Digital temperature measurement from 4 different points
- Split air conditioner interior unit
- Split air conditioner exterior unit
- 15 different faults

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

HEATING SYSTEMS

H-950
CENTRAL HEATING SYSTEM SIMULATOR

H-960
GAS COMBI TRAINING SET

H-961
GAS COMBI FAILURE TRAINING SET

H-970
ROOM RADIATOR TRAINING SET

H-980
HOUSEHOLD NATURAL GAS INSTALLATION TRAINING SET

H-990
GAS FUELLED BURNER TRAINING SET

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H-950 CENTRAL HEATING SYSTEM SIMULATOR

GENERAL EXPLANATION

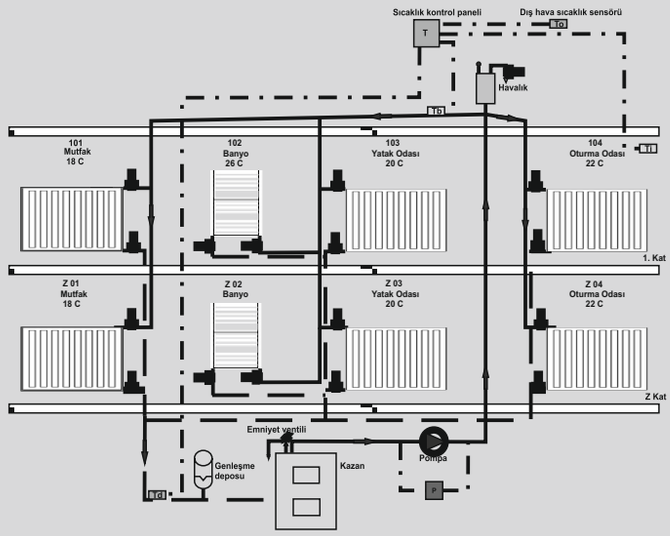
This training simulator is designed to show the operation of the components of the heating plant with a fuel-oil fueled boiler.

EXPERIMENTS

1. Switching on safety devices
2. Adjust boiler temperature with on-off control
3. Control of water circulation pump
4. Experiment to examine burner burnout efficiency
5. Experiment of outdoor air temperature compensation application

TECHNICAL SPECIFICATION

Safety valves, boiler upper limit thermostat and lower limit thermostat are used in the central heating systems used in the market to prevent the boiler pressure and temperature from changing uncontrollably. Manual and thermostatic valves are used to control the water circulation pump. Boiler temperature is adjusted by on-off control. These applications are simulated on the device.



DIMENSIONS

A x B x H : 1200 x 600 x 1600 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

H-960 GAS COMBI TRAINING SET

GENERAL EXPLANATION

This training set is designed to show the working principle of hot water and gas combination used in heating installation.

EXPERIMENTS

1. Investigation of pressure-temperature change
2. Thermostatic valve adjustment
3. Calculation of heating capacity in boiler heater position
4. Calculation of heating capacity in boiler hot water position
5. Boiler control due to water temperature
6. Boiler control due to room temperature

DIMENSIONS

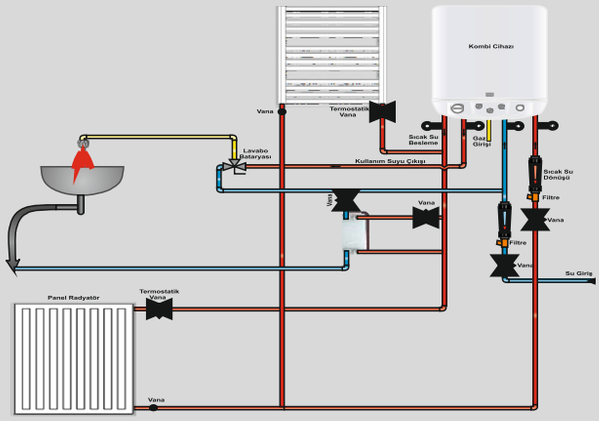
A x B x H : 880 x 640 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

There is a radiator with thermostatic valve in the heating circuit of the boiler and a towel with a thermostatic valve. The actual instantaneous heating capacity of the combination can be measured by measuring the inlet and outlet temperatures and the gauges of the hot water and heating circuit.



TECHNICAL DETAILS

- Towel
- Panel radiator
- Cold water flowmeter
- Hot water flowmeter
- Plate heat exchanger
- Temperature measurement from 4 different points
- Digital display combi boiler
- Natural gas / LPG usage option in training set
- Thermostatic radiator inlet valve
- Thermostatic towel inlet valve

PACKAGE ICLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

H-961 GAS COMBI FAILURE TRAINING SET

GENERAL EXPLANATION

This training set is used in hot water and heating installation the working principle of the gas boiler used show and may occur in the combi to simulate faults was designed.

EXPERIMENTS

- Examining the Pressure-Temperature Change
- Adjusting the thermostatic valve
- Calculation of heating capacity in combi boiler mode
- Calculation of heating capacity in combi hot water mode
- Boiler control based on water temperature
- Combi boiler control based on room temperature
- power off
- Electronic board failure test
- Fan motor failure test
- Heating water temperature sensor malfunction
- Main heat exchanger pipe temperature sensor malfunction
- Main heat exchanger temperature sensor malfunction
- Fan pressure sensor malfunction
- Ignition transformer fault

DIMENSIONS

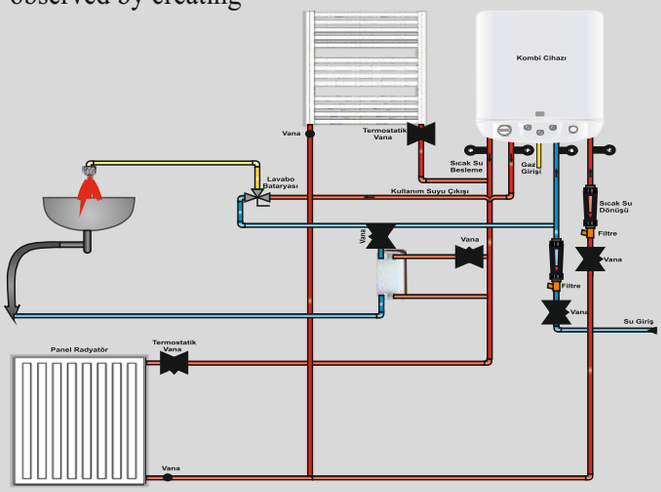
A x B x H : 1730 x 740 x 1550 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

There is a radiator with thermostatic valve in the heating circuit of the boiler and a towel with a thermostatic valve. The actual instantaneous heating capacity of the combination can be measured by measuring the inlet and outlet temperatures and the gauges of the hot water and heating circuit. At the same time, malfunctions that may occur in the boiler Combi boiler failure conditions can be observed by creating



TECHNICAL DETAILS

- Towel
- Panel radiator
- Cold water flow meter
- Hot water flow meter
- Plate heat exchanger
- Temperature measurement from 4 different points
- Combi boiler with digital display
- Natural gas/LPG usage option in the training set
- thermostatic radiator inlet valve
- Thermostatic towel warmer inlet valve

PACKAGE ICLUDED

Device, 1 printed test sheet, circuit diagram

H-970 ROOM RADIATOR TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the working principle of a typical liquid-oil-layer calorific heating system.

EXPERIMENTS

1. Investigation of pressure-temperature change
2. Adjustment of the thermostatic valve
3. Calculation of floor heating capacity
4. Calculation of floor heating water use capacity
5. Control of water quality based on floor heating
6. Floor temperature control based on room temperature

DIMENSIONS

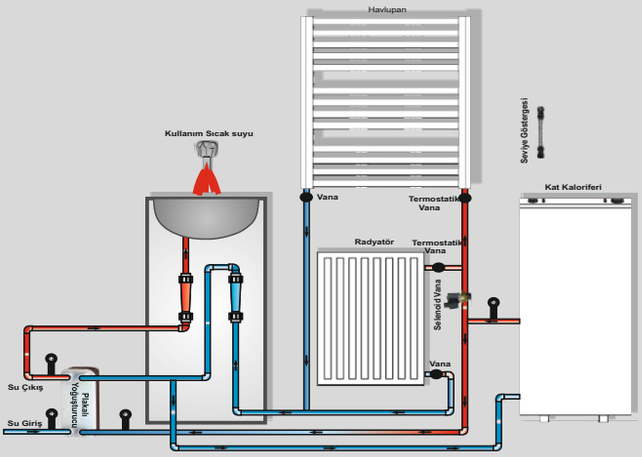
A x B x H : 2080 x 730 x 1680 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

There is a radiator with a thermostatic valve, a towel with a thermostatic valve and a plate exchanger in the heating circuit. By measuring the water inlet and outlet temperatures and the flow rate of the hot water and heating circuit, the instantaneous actual heating capacity of the floor heating can be measured.



TECHNICAL DETAILS

- Towel
- Panel radiator
- Cold water flowmeter
- Hot water flowmeter
- Temperature measurement from 4 different points
- Plate heat exchanger
- Fuel tank and filter
- Thermostatic radiator inlet valve
- Thermostatic towel inlet valve

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

H-980 HOUSEHOLD NATURAL GAS INSTALLATION TRAINING SET

GENERAL EXPLANATION

This training set is designed to show the household natural gas installation and its connections. It consists typical kitchen and bathroom fittings for natural gas.

EXPERIMENTS

1. Construction of natural gas set-top hob connection
2. Connection of natural gas stove
3. Testing the natural gas leakage safety system
4. Calculation of gas consumption amount

DIMENSIONS

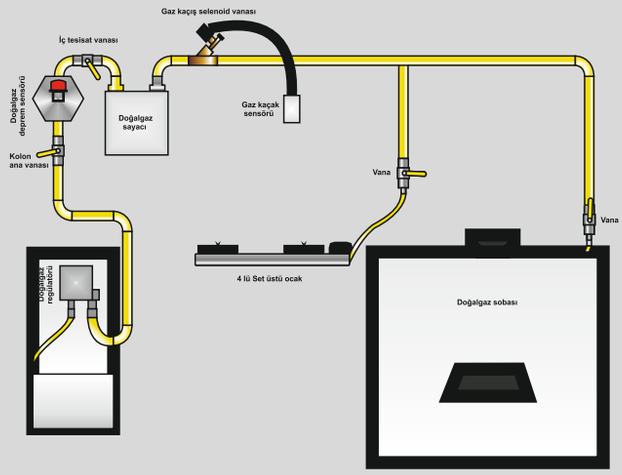
A x B x H : 2000 x 750 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The household natural gas plant consists of natural gas stove, set top cooker, natural gas regulator, natural gas counter, gas leak sensor, earthquake sensor, solenoid valve and spherical valve.



TECHNICAL DETAILS

- Natural gas powered gas cut-off solenoid valve
- Natural gas powered earthquake sensor
- Gas leak alarm system
- Set top hob and connections
- Natural gas regulator
- Household gas counter

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

H-990 GAS FUELLED BURNER TRAINING SET

GENERAL EXPLANATION

In this training set, the working principle of the burner system and the air fuel mixture can be adjusted.

EXPERIMENTS

1. Commissioning of the burner system

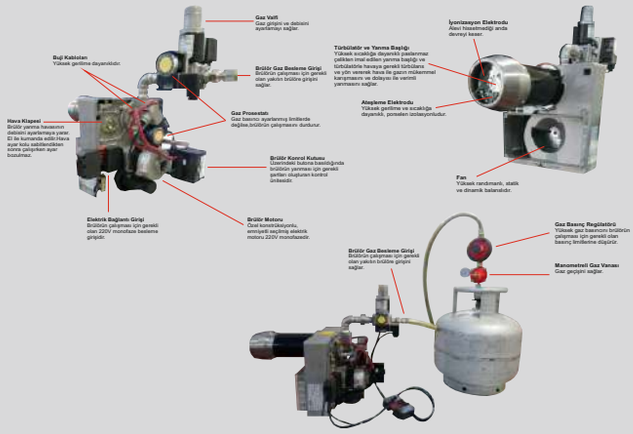
2. Adjustment of flame length

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

By means of the air and fuel clips on this training unit, it is aimed to adjust the flame size to achieve the most suitable combustion.



TECHNICAL DETAILS

- 12 kg industrial tube
- Manometer gas valve
- Gas pressure regulator
- Burner motor
- Ignition elektrode
- Ionization
- Gas valve
- Air clap

THERMODYNAMIC

TE-605
SERIES AND PARALLEL AIR COMPRESSOR TRAINING SET

TE-660
STEAM TURBINE TRAINING SET

TE-670
GAS TURBINE TRAINING SET

TE-680
IDEAL GAS LAWS TRAINING SET

TE-690
SCROLL COMPRESSOR TRAINING SET

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TE-605 SERIES AND PARALLEL AIR COMPRESSOR TRAINING SET

GENERAL EXPLANATION

This training set is prepared to experimentally apply the thermodynamic working principles of a typical air compressor used for compressed air production.

EXPERIMENTS

1. PV = mRT relationship and P-T diagram in air compression
2. Pressure-flow and flow-time relationship in single-stage single cylinder compression
3. Pressure-flow and flow-time relationship in single-stage parallel compression
4. Pressure-flow and pressure-time relationship in two-stage (series), intercooled air compression
5. Calculate volumetric efficiency based on compressor compression ratio in parallel operation
6. Total efficiency calculation based on compressor compression ratio in parallel operation
7. Volumetric efficiency change due to compressor compression ratio in series operation

DIMENSIONS

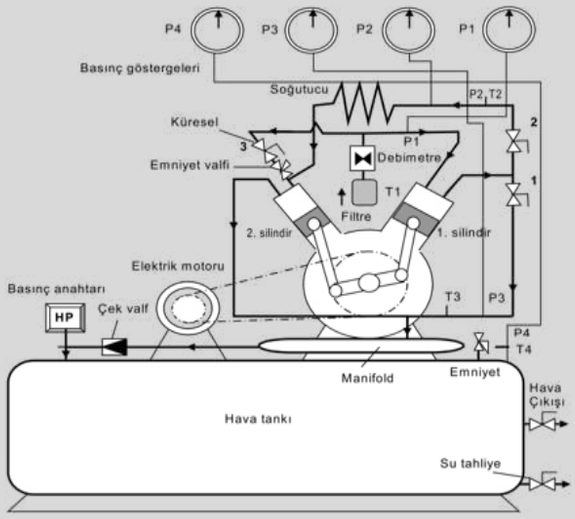
A x B x H : 1650 x 800 x 1650 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Basic thermodynamic calculations of air compressors are being made. The compressor uses pressure, volume, mass, R coefficient and temperature values for series and parallel compaction, intercooled compaction test.



TECHNICAL DETAILS

- Speed sensor
- Digital cycle indicator
- Pressure manometer
- Ball valve
- Compressor
- Pressure switch
- Pressure measurement from 4 different points
- Temperature measurement from 5 different points
- Digital measurement of electrical data

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TE-660 STEAM TURBINE TRAINING SET

GENERAL EXPLANATION

This training set converts steam pressure and speed into mechanical energy. At the same time, with the aid of the generator, it converts mechanical energy into electrical energy.

EXPERIMENTS

1. Calculation of turbine efficiency
2. Calculation of boiler efficiency
3. Determination of condenser capacity and efficiency
4. Relationship of turbine electrical power and speed

DIMENSIONS

A x B x H : 1480 x 650 x 1500 mm

OPTIONAL FEATURES

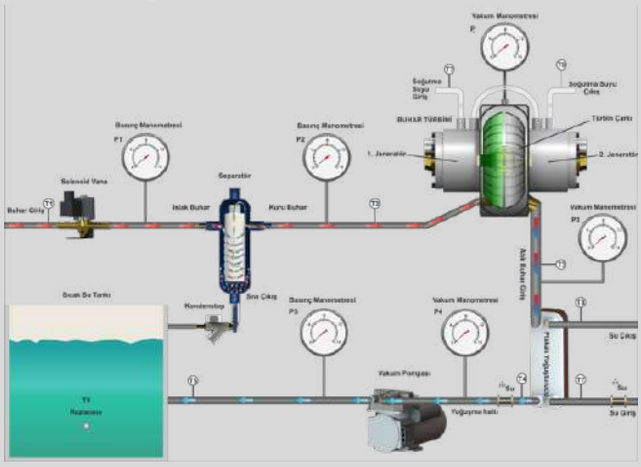
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Steam turbines convert the thermal and kinetic energy of steam into electricity. The fuel source of the steam turbine is the steam boilers. The hot steam, which is produced in the steam boiler with high temperature and pressure, is transferred to the turbine system, then condensed and directed back to the steam boiler and the cycle is completed.



TECHNICAL DETAILS

- Alpha laval type turbine
- Wing entrance angle 45°
- Rotor diameter 100 mm
- Turbine revolution 31,000 rpm
- Steaming steam reaching 160 °C and 5.2 bar
- Plate heat exchanger
- Temperature measurement from different points
- Vacuum pressure from 2 different points
- Pressure measurement
- Digital measurement of electrical data

TE-670 GAS TURBINE TRAINING SET

GENERAL EXPLANATION

The gas turbine has been developed to study dual-spindle and jet engine behavior. The main units of the training set are the gas generator and the free-running power turbine. The generator consists of radial compressor, combustion chamber and radial turbine. The compressor and the turbine are connected to the same shaft.

EXPERIMENTS

1. Gas turbine operation experiment
2. Calculation of turbine inlet power
3. Finding turbine thermal efficiency experiment
4. Turbine input power and number of revolutions experiment
5. Turbine thermal efficiency and rotational speed relationship experiment
6. Turbine electrical output power and number of revolutions experiment

DIMENSIONS

A x B x H : 1400 x 800 x 1600 mm

OPTIONAL FEATURES

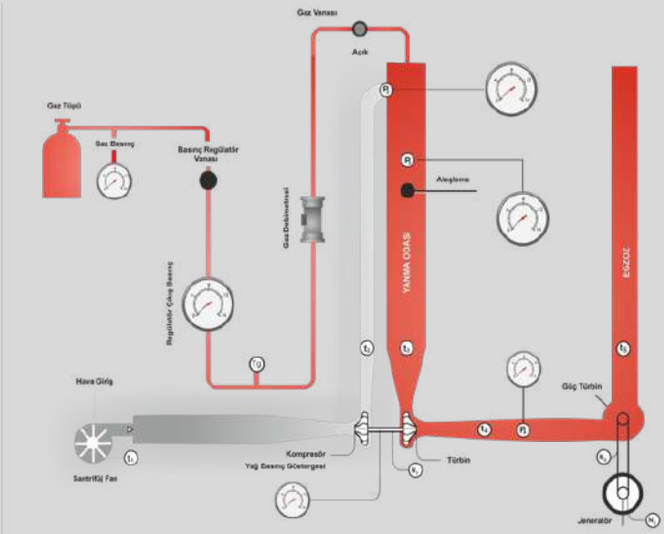
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The device works according to the principles of jet motor consists compressor, combustion chamber and radial turbine. The air taken from the compressor enters the combustion chamber in a compressed state and an air-fuel mixture is formed in the combustion chamber. The thrust force is obtained by passing the torch to the radial turbine of the flaming air fuel mixture.



TECHNICAL DETAILS

- Radial fan
- Propane tube and propane regulator
- Oil circulation pump
- Oil tank
- Temperature measurement from 5 different points
- Pressure measurement from 4 different points
- Plate heat exchanger
- Digital measurement of electrical data

TE-680 IDEAL GAS LAWS TRAINING SET

GENERAL EXPLANATION

This training set is designed to examine the practical applications of ideal gas laws.

EXPERIMENTS

1. Experiment to find gas constant
2. Finding the pressure-volume relation (Boyle Law) experiment
3. Finding the relationship between pressure and temperature (Charles Law) experiment

DIMENSIONS

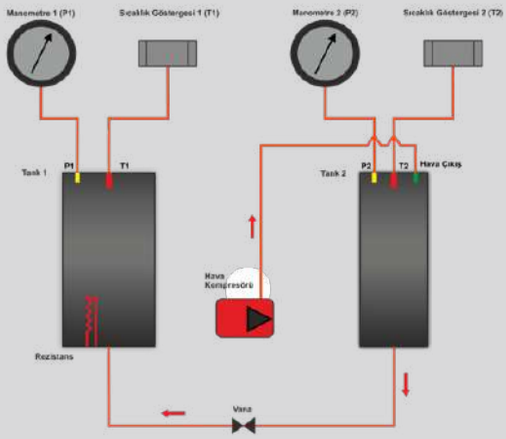
A x B x H : 1180 x 800 x 1600 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The finding of known gas constants in basic thermodynamic calculations, Boyle's law, allows the practical application of the Gay-Lussac law. This includes variable limiting vessels, a compressor for pressure regulation and a resistance working with the system for temperature changes.



TECHNICAL DETAILS

- Compressor
- Insulated container
- Resistance
- Digital measurement of electrical data
- Pressure measurement from different points
- Ball valve

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TE-690 SCROLL COMPRESSOR TRAINING SET

GENERAL EXPLANATION

The scroll compressor used to pressurize the gas in the automotive air conditioners in the market is an educational set that shows the transformation of the mechanical energy obtained from the compressed air applied to the compressor to the electrical energy by taking advantage of this feature.

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The scroll compressor is a training set that can digitally measure the inlet and outlet temperatures of the compressed air that is sent to produce electricity, the pressures, the currents generated by the scroll compressor, the voltage values, and the force values applied by the alternator.

TECHNICAL DETAILS

- Compressed air
- Manometer
- Scroll compressor
- Temperature, pressure, flow digital displays
- Temperature measurement from different points
- Ammeter and voltmeter
- Digital measurement of electrical data

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

COOLING SYSTEMS

S-801
BASIC REFRIGERATION
TRAINING SET

S-802B
TWO DOORED DOMESTIC
REFRIGERATOR TRAINING SET

S-803
COLD STORAGE
TRAINING SET

S-804
REFRIGERATION BREAKDOWN
DETECTING TRAINING SET

S-805
TRANSPARENT REFRIGERATION
SYSTEM TRAINING SET

S-808
AIR COOLED CHILLER
TRAINING SET

S-810
COMPRESSOR CALORIMETER
TEST TRAINING SET

S-812
MULTI PURPOSE REFRIGERATION
TRAINING SET

S-813
ELECTRİCAL INPUT TYPE
REFRIGERATION TRAINING SET

S-814
ABSORPTION TYPE
REFRIGERATION
TRAINING SET

S-815
MODÜULAR REFRIGERATION
TRAINING SET

S-815.01
MODULAR REFRIGERATION
TRAINING SET

S-860
ADVANCED REFRIGERATION FAULT
SIMULATOR TRAINING SET

S-880
INDUSTRIAL REFRIGERATION
TRAINING SET

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S-801 BASIC REFRIGERATION TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the basic features of the mechanical compression refrigeration cycle and the evaporation of the refrigerant in the transparent evaporator can be observed with different expansion options.

EXPERIMENTS

1. Observation of the refrigeration cycle and the relationship between pressure and temperature
2. Cooling cycle monitoring experiment
3. Experiment of using capillary tube as flow control
4. Experiment to use automatic expansion valve as flow control
5. The use of a thermostatic expansion valve
6. The function test of the heat exchanger
7. Experiment of setting pressure switches
8. Experiment of increasing compression pressure

DIMENSIONS

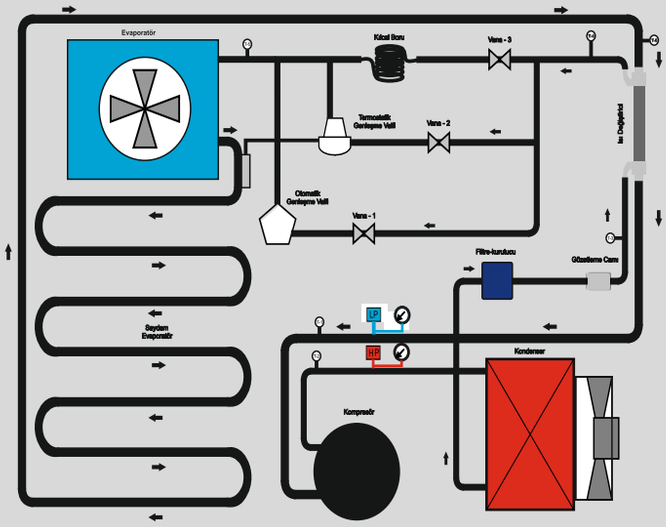
A x B x H : 1245 x 700 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The training set is designed to teach the basic refrigeration cycle and its components. Condenser, evaporator, expansion valve, compressor, capillary tube, filter drier and other basic elements are introduced and their functions are explained. As the pressure-enthalpy diagram, the PH diagram of R-134a gas is used. Comparisons of automatic expansion valve, thermostatic expansion valve and capillary tube are possible.



TECHNICAL DETAILS

- Hermetic reciprocating compressor
- Forced air winged condenser
- Forced air winged evaporator
- Transparent evaporator
- Internally balanced thermostatic expansion valve
- Evaporator heat control
- Inner tube heat exchanger
- Combined pressure switch
- Digital temperature measurement from 6 different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-802B TWO DOORED REFRIGERATOR TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the basic features of the mechanical compression refrigeration cycle and the evaporation of the refrigerant in the transparent evaporator can be observed with different expansion options.

EXPERIMENTS

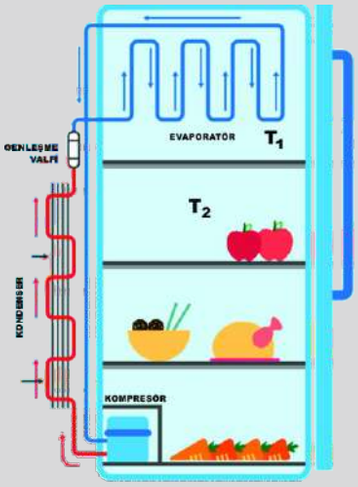
1. Disclosure of working principle
2. Operation of the semi-automatic defrosting system
3. Adjusting the freezer temperature with thermostat

DIMENSIONS

A x B x H : 750 x 680 x 1500 mm

TECHNICAL SPECIFICATION

The refrigerator is a white goods found in every house today. The S-802B describes the cooling of the refrigerator in practical ways. The cooling elements are sealed with transparent materials so that they can be seen. Temperature sensors can show the temperature of the upper and lower cabin. The function and function of defrost are shown.



TECHNICAL DETAILS

- Hermetic reciprocating compressor
- Condenser
- Evaporator
- Capillaty tube
- Digital temperature measurement from 2 different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-803 COLD STORAGE TRAINING SET

GENERAL EXPLANATION

This training set has been prepared to show the basic working functions of cold air depots.

EXPERIMENTS

1. Setting the cold room temperature
2. Use of low pressure switch as operating device
3. Adjusting the difference between room temperature and evaporation temperature
4. Hot gas defrost operation

DIMENSIONS

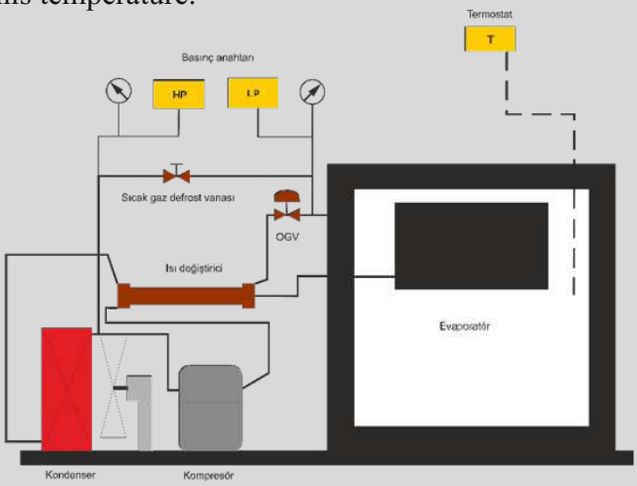
A x B x H : 1400 x 720 x 1240 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this experiment set, the ambient temperature of the cold room can be adjusted by using the automatic expansion valve. Defrosting can be done depending on this temperature.



TECHNICAL DETAILS

- Hermetic reciprocating compressor
- Forced air cooled condenser
- Axial condenser fan
- Air-cooled evaporator
- Stainless steel tank with polyurethane body
- Inner tube heat exchanger
- Digital temperature measurement

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-804 REFRIGERATION BREAKDOWN DETECTING TRAINING SET

GENERAL EXPLANATION

This training set is designed to test the designation of faults by establishing basic refrigeration cycle failures.

EXPERIMENTS

1. Normal operation test of the cooling system
2. Partial clogging experiment of filter drier
3. Partial clogging test of expansion valve
4. Decrease of compressor capacity experiment
5. Experiment with missing refrigerant in system
6. Experiment with excess refrigerant in the system
7. Dirty condenser failure experiment
8. Snowy evaporator failure experiment

DIMENSIONS

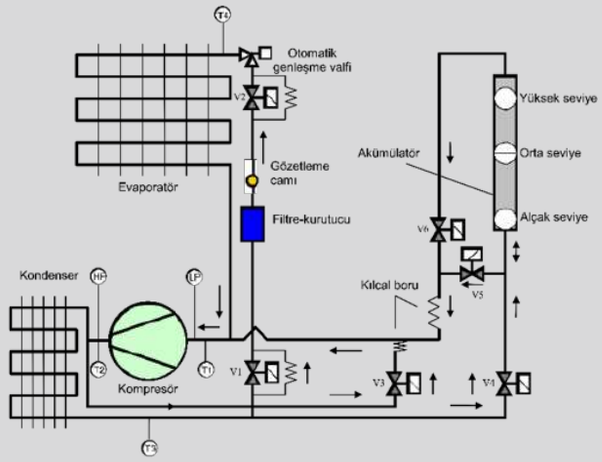
A x B x H : 1030 x 550 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this training set, it is aimed to observe the results by creating possible failures such as partial clogging of filter drier which may occur in cooling, partial clogging of expansion valve, decrease of compressor capacity, lack of refrigerant, presence of excess refrigerant.



TECHNICAL DETAILS

- Compressor
- Evaporator
- Filter dryer
- Automatic expansion valve
- Accumulator
- Condenser
- Sight glass

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-805 TRANSPARENT REFRIGERATION SYSTEM TRAINING SET

GENERAL EXPLANATION

On this training set, the boiling, condensation, expansion and oil drift of the refrigerant can be observed.

EXPERIMENTS

1. Observation of condensation in the condenser
2. Observation of the expansion in the capillary tube
3. Observation of evaporation in the evaporator
4. Pressure-temperature relationship experiment
5. Drawing a single stage mechanical vapor compression refrigeration cycle on the log pH diagram

DIMENSIONS

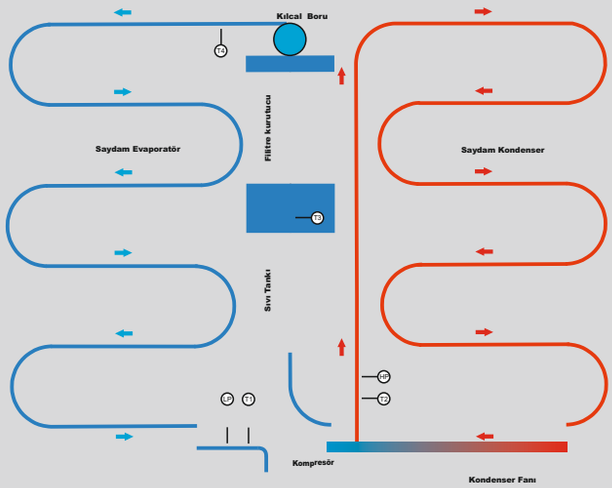
A x B x H : 880 x 600 x 1555 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this training set, the hot circulation, the liquid line, the expansion line and the saturated steam lines, which are the four zones of the refrigeration cycle and the PH diagram, can be observed transparently.



TECHNICAL DETAILS

- Hermetic compressor
- Transparent condenser
- Radial condenser fan
- Transparent evaporator
- Liquid tank
- Capillary tube
- Low-high pressure indicators
- Digital temperature measurement from different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

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www.argemsan.com

S-808 AIR COOLED CHILLER TRAINING SET

GENERAL EXPLANATION

This training set is designed to help understanding the working principles of water cooling groups, which are common industrial cooling applications.

EXPERIMENTS

1. Calculation of cooling capacity
2. Calculation of cooling coefficient
3. Variation of the cooling effect coefficient at different cooling loads
4. Calculation of compressor volumetric efficiency

DIMENSIONS

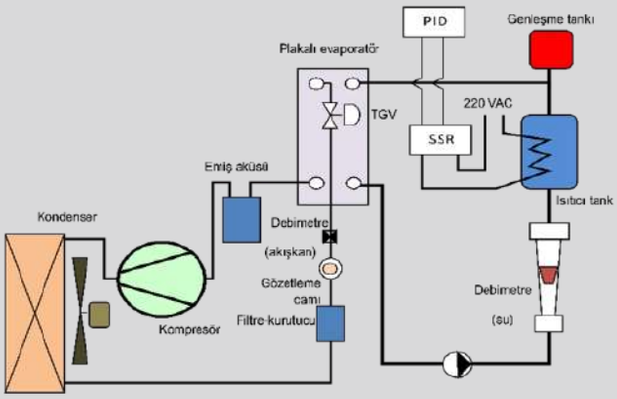
A x B x H : 880 x 600 x 1555 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Chiller is another form of refrigerant system. The system is the same, only those chiller coolers are systems where water is used as a coolant to cool the gaseous mass circulating in the copper tube. Water cooled chiller models are installed in boiler rooms, basements or ground floors where the airy space is not possible.



TECHNICAL DETAILS

- Combined pressure switch
- Frequency driver
- Compressor capacity control
- Expansion tank
- Air purifier
- Flow key
- Digital multimeter
- Temperature measurement from different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-810 COMPRESSOR CALORIMETER TEST TRAINING SET

GENERAL EXPLANATION

This training set is used to determine the cooling capacities of hermetic commercial type compressors.

EXPERIMENTS

1. Calculation of 1/4 HP compressor cooling capacity

2. Calculation of 1/3 HP compressor cooling capacity

DIMENSIONS

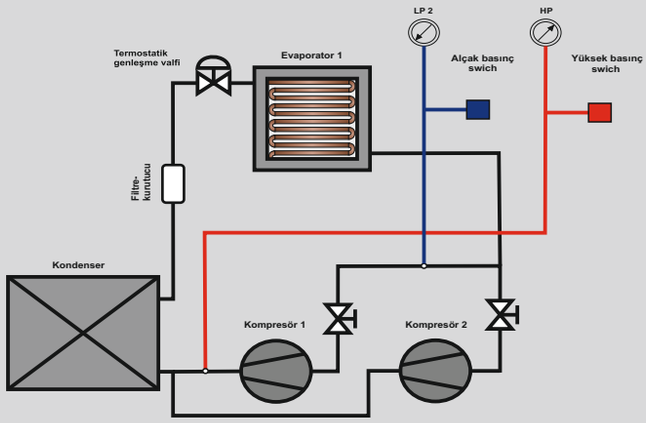
A x B x H : 1250 x 800 x 1320 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

It is designed to calculate compressor cooling capacities and compare volumetric efficiencies using compressors of different capacities.



TECHNICAL DETAILS

- Hermetic compressor
- Air-cooled condenser
- Water tank
- Fluid level switch
- Fan speed control
- Digital temperature measurement from different points
- Evaporator

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-812 MULTI PURPOSE REFRIGERATION TRAINING SET

GENERAL EXPLANATION

This training set is designed to provide a comprehensive review of the steam compression mechanical refrigeration cycle.

EXPERIMENTS

1. Use of capillary tube as expansion device in flow control
2. Use of internally balanced thermostatic expansion valve in flow control
3. Use of externally balanced thermostatic expansion valve in flow control
4. Display of theoretical and actual cooling cycles on the pH diagram
5. Increase of pressure line pressure
6. Liquid line clogging
7. Single evaporator-parallel compressor application
8. Parallel compressor - single compressor application
9. Different evaporation pressure parallel evaporator-parallel compressor application
10. Series evaporator - parallel compressor
11. Liquid injection into the suction line
12. Hot gas defrost operation

DIMENSIONS

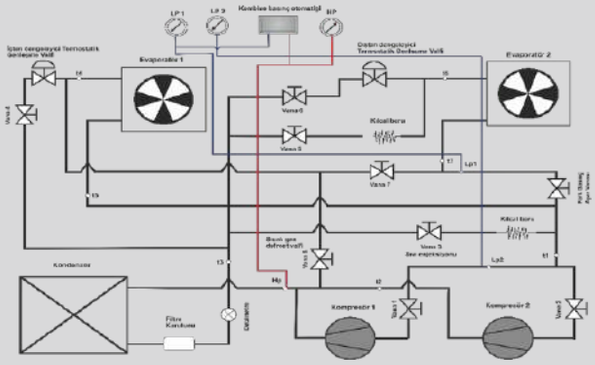
A x B x H : 1580 x 600 x 1540 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Determination of compressor, evaporator and condenser capacities in multi-purpose cooling training set can compare p-h diagram of theoretical and actual cooling cycles. Internally and externally balanced thermostatic valves are used in the flow control.



TECHNICAL DETAILS

- Axial fan condenser
- Axial fan evaporator
- Capillary tube
- Expansion valve
- Pressure adjustment valve
- Multimeter
- Digital temperature measurement from 7 different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-813 ELECTRICAL INPUT TYPE REFRIGERATION TRAINING SET

GENERAL EXPLANATION

This training set is used for the applications of the cooling technique courses and for the laboratory lessons.

EXPERIMENTS

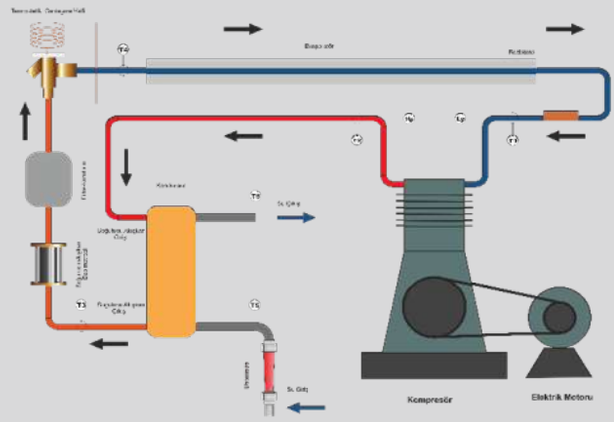
1. Steam compression cooling application and pH diagram drawing experiment
2. Experiment to establish an energy balance for the cooling system
3. Experiment to examine changes in the cooling load of the cooler depending on different evaporation temperatures
4. Investigation of changes in cooling efficiency coefficient (COP) depending on different evaporation and condensation temperatures
5. Experimental study of heating effect coefficient (COP) at different condensation temperatures
6. Examine the amount of heat given to the cooling water depending on the variation in condensation temperature
7. Experiment to examine the effect of different compression ratios on compressor volumetric efficiency
8. Experimental investigation of the characteristics of the thermostatic expansion valve
9. Determination of the thermal conductivity value of the condenser cooling coil

DIMENSIONS

A x B x H : 1200 x 580 x 1500 mm

TECHNICAL SPECIFICATION

In this training set, the compressor is driven externally by electric motor and plate condenser is used. The p-h diagram of the R134-a refrigerant can be examined.



TECHNICAL DETAILS

- Open type externally driven compressor
- Nested plate condenser
- Evaporator unit
- Electric evaporator resistance
- Thermostatic expansion valve
- Combined pressure switch
- Tork meter
- Digital revolution indicator
- Digital multimeter
- Digital temperature measurement from 6 different points

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-814 ABSORPTION TYPE REFRIGERATION TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the application of the ammonia-water mixed absorption cooling and to show the temperature changes.

EXPERIMENTS

1. Observation of the absorption refrigeration cycle and measurement of the temperatures

DIMENSIONS

A x B x H : 680 x 500 x 1320 mm

OPTIONAL FEATURES

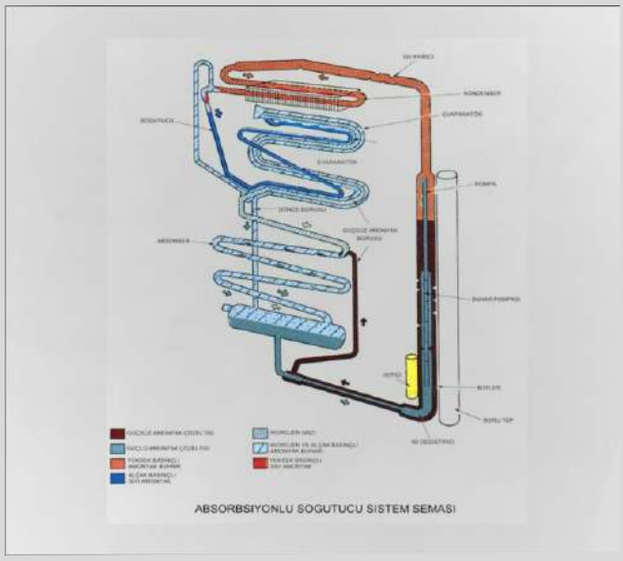
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Absorption refrigeration cycles are systems that operate with two fluid pairs. It is composed of the refrigerant which evaporates in the generator and the absorbent which performs the cooling process in the absorber. Absorption refrigeration systems generally resemble vapor compression systems, but in these systems the absorber, generator, expansion valve and solution pump are located in the compressor. The only difference between an absorbing refrigeration system and a steam compression mechanical refrigeration system is the compressor. In the case of absorbing systems, the group of heat exchangers consisting of the boiler and the absorber is performing the compressor function. Both systems have a condenser, a throttle valve and an evaporator. In addition to these, in the absorptive system, absorber, pump and boiler.



TECHNICAL DETAILS

- Ammonia water mixed system
- Resistance
- Digital multimeter
- Digital temperature measurement from 4 different points
- Transparent cooling unit
- Digital measurement of electrical data

S-815 MODULAR REFRIGERATION TRAINING SET

GENERAL EXPLANATION

This training set is designed to arrange different cooling circuits and applications with the help of rod connections.

EXPERIMENTS

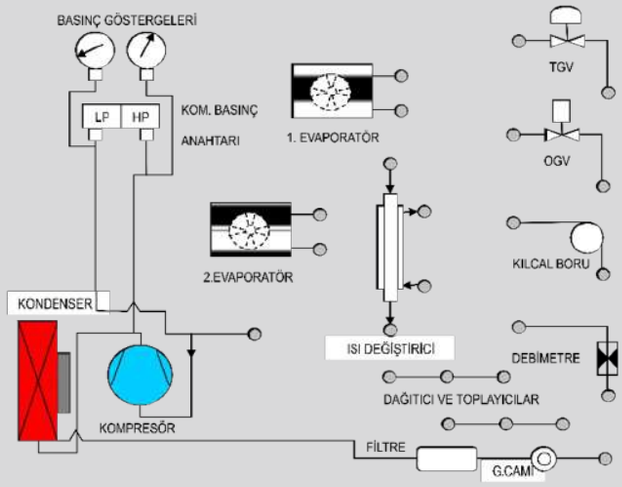
1. Capillary tube-single evaporator application experiment
2. Capillary tube-single evaporator-heat exchanger application experiment
3. Capillary tube-parallel evaporator application experiment
4. Capillary tube series evaporator application test
5. AEV-single evaporator application test
6. AEV-single evaporator-heat exchanger application experiment
7. AEV-parallel evaporator application test
8. AEV series evaporator application experiment
9. TEV-single evaporator application test
10. TEV-single evaporator-heat exchanger application test
11. TEV-parallel evaporator application test
12. TEV series evaporator application test
13. Calculation of the values of cooling coefficient (COP)
14. Calculation of the value of the heating coefficient

DIMENSIONS

A x B x H : 1120 x 650 x 1500 mm

TECHNICAL SPECIFICATION

Because the system consists of modules, the desired modules can be added and removed (Automatic expansion element, thermostatic expansion valve, capillary tube). Connection hoses with tappet and fittings are used to easily connect the expansion elements to the system



TECHNICAL DETAILS

- Hermetic compressor
- Air-cooled condenser
- Air-cooled evaporator
- Capillary tube
- Low-high pressure indicators
- Filter dryer
- Digital multimeter
- Digital temperature measurement from 7 different points

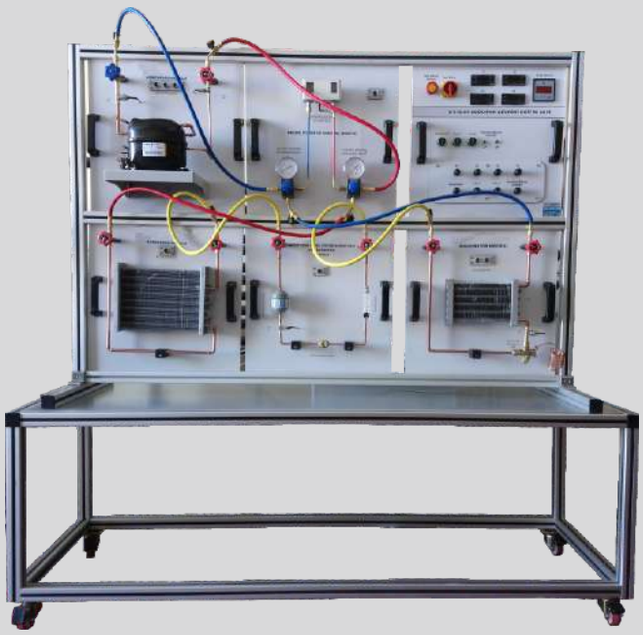
OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKED INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-815.01 MODULAR REFRIGERATION TRAINING SET



GENERAL EXPLANATION

This training set is designed to arrange different cooling circuits and applications with the help of rod connections.

EXPERIMENTS

1. Systematic display of the refrigeration cycle
2. Operation of the cooling system and calculation of the COP value

DIMENSIONS

A x B x H : 1840 x 640 x 1680 mm

OPTIONAL FEATURES

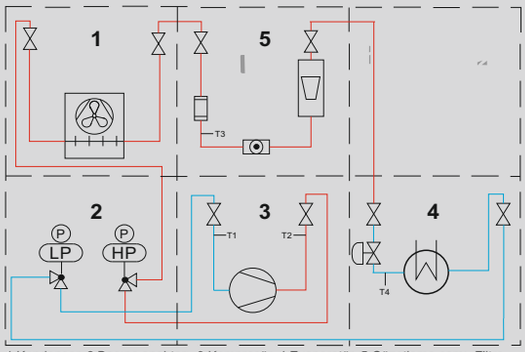
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Because the system consists of modules, the desired modules can be added and removed (Automatic expansion element, thermostatic expansion valve, capillary tube). Connection hoses with tappet and fittings are used to easily connect the expansion elements to the system



1 Kondenser, 2 Basınç anahtarı, 3 Kompresör, 4 Evaporatör, 5 Gözetleme camı, Filtre Kurutucu ve Debimetre

TECHNICAL DETAILS

- Hermetic compressor
- Air-cooled condenser
- Air-cooled evaporator
- Capillary tube
- Low-high pressure indicators
- Filter dryer
- Digital wattmeter
- Digital temperature measurement from 4 different points

S-860 ADVANCED REFRIGERATION FAULT SIMULATOR TRAINING SET

GENERAL EXPLANATION

This training set is designed to provide a number of faults that may occur in a mechanical cooling set and to facilitate fault diagnosis.

EXPERIMENTS

1. Excessive refrigerant charge
2. Missing refrigerant charge
3. Oil separator clogged
4. The oil separator float remains in the open position
5. Condensation of the fluid in the oil separator
6. Condenser fan defective
7. Air-cooled condenser battery is dirty
8. Condenser pressure regulator defective
9. Aqueous condenser dirty (lime)
10. Overpressure drop failure in wet condenser
11. Compressor capacity regulator defective
12. Fluid line solenoid valve defective
13. Leakage failure when fluid line solenoid valve stops system
14. Filter drier clogged failure
15. Failure to locate air in the cooling system
16. Expansion valve partially blocked failure
17. Failure of run-out of tail charge of expansion valve
18. Capillary tube partially clogged failure
19. Automatic expansion valve partially blocked
20. Check valve malfunction
21. Evaporator fan defective
22. Insufficient air flow in the evaporator
23. Evaporator pressure regulator defective
24. Heat exchanger pressure regulator defective
25. Insufficient compression in compressor
26. Compressor fluid walk-through failure
27. Compressor overheating fault
28. Defective hot gas defrost system
29. Water cooling tower fan failure
30. Cooling tower pump defective
31. Cooling tower three-way valve defective
32. Water regulation valve defective

TECHNICAL SPECIFICATION

The training set is used to detect defects in the cooling system. 32 different faults can be generated in the device.

TECHNICAL DETAILS

- Semi hermetic reciprocating compressor
- Air-cooled condenser
- Air-cooled evaporator
- Capillary tube
- Evaporator, condenser, capacity and heat exchanger pressure regulators
- Electronic expansion valve
- Water cooling tower
- Digital multimeter

DIMENSIONS

A x B x H : 2000 x 600 x 1600 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

S-880 INDUSTRIAL REFRIGERATION TRAINING SET

GENERAL EXPLANATION

This training set is designed to show the basic elements and their working principles found in an industrial cooling set. All pressure and temperature values can be retrieved from the display. System controls can be done with touch screen.

EXPERIMENTS

1. Air-cooled condenser-single evaporator application (capillary tube)
2. Automatic expansion valve
3. Thermostatic expansion valve
4. Electronic expansion valve
5. Air-cooled condenser-double evaporator application
6. Air-cooled condenser-different pressure double evaporator application
7. Water-cooled condenser-water regulating valve single evaporator application
8. Condenser water regulation valve-double evaporator application
9. Water-cooled condenser-water cooling tower-single evaporator application
10. Water-cooled condenser-water cooling tower-double evaporator application
11. Adjustment of the heat exchanger pressure regulator
12. Adjustment of capacity pressure regulator
13. Setting of the condenser pressure regulator
14. Intermittent operation of the condenser fan depending on the condenser pressure switch

DIMENSIONS

A x B x H : 2000 x 600 x 1600 mm

TECHNICAL SPECIFICATION

In this training set, an air cooled and water cooled condenser is used. As expansion valve, automatic expansion, thermostatic expansion, electronic expansion and capillary tube are used. 14 different experiments can be done.

TECHNICAL DETAILS

- Semi hermetic reciprocating compressor
- Air-cooled condenser
- Surface-pipe type water condenser
- Air-cooled evaporator
- Automatic expansion valve
- Capillary tube
- Electronic expansion valve
- Electromechanical control with solenoid valve
- Low-high pressure indicators
- Evaporator, condenser, capacity and heat exchanger pressure regulator
- Fluid storage
- Suction aku
- Water cooling tower
- Step circulation pump
- 11 temperature gauges
- 5 pieces humidity meters

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

ELECTRIC-ELECTRONIC

E-106
SINGLE PHASE AC-R CONTROL
CIRCUIT TRAINING SET

E-107
THREE PHASE AC-R CONTROL
CIRCUIT TRAINING SET

E-115
AC-R ELECTRICAL FAILURE
SIMULATOR TRAINING SET

E-116
SINGLE PHASE MOTOR
TRAINING MODULE

E-120
ELEVATOR
TRAINING SET

E-121
VIDEO INTERCOM
TRAINING SET

E-125
SMART BUILDING AUTOMATION
TRAINING SET

E-126
AMPLIFIER
TRAINING SET

E-127
FIBER OPTIC COMMUNICATION
TRAINING SET

E-128
COMMUNICATION
TRAINING SET

E-129
OPERATIONAL AMPLIFIER
TRAINING SET

E-140
HERMETIC COMPRESSOR
ANALYSIS TRAINING SET

E-141
ELECTRICAL INSTALLATION
TRAINING SET

E-142
GROUNDING
TRAINING SET

E-150
BATTERY CHARGING SYSTEM
TRAINING SET

E-151
GENERATOR TRANSFER SYSTEM
TRAINING SET

E-152
MEASUREMENT INSTRUMENTS
TRAINING SET

E-153
SENSORS
TRAINING SET

E-154
BASIC ELECTRICAL
TRAINING SET

E-155
UPS SYSTEM
TRAINING SET

E-157
SOLDERING STATION
BAG

E-158
ANTI THEFT ALARM
TRAINING SET

E-160
MICROCONTROLLER
TRAINING SET

E-161
INDUSTRIAL ELECTRONICS
TRAINING SET

E-170
MODULAR COMPENSATION
TRAINING SET

argemsan

E-106 SINGLE PHASE AC-R CONTROL CIRCUIT TRAINING SET

GENERAL EXPLANATION

This training set can be used to create single phase basic conditioning cooling circuits. 8 basic cooling circuit connections can be realized with the control cables. In addition to standard tests, many different connections can be made.

EXPERIMENTS

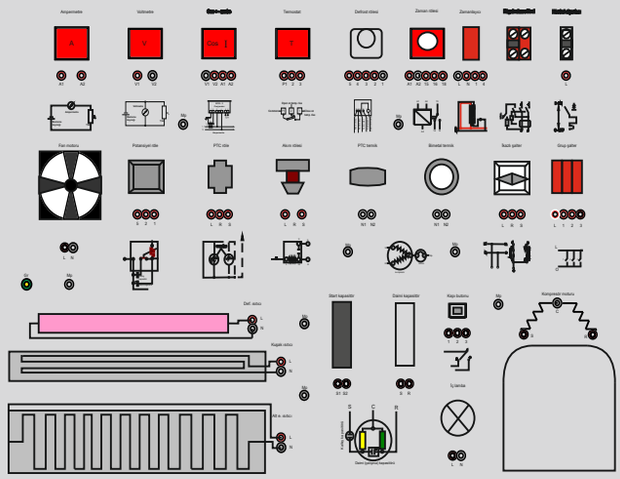
1. Compressor deceleration with tactile switch
2. Passing the compressor relay through the current relay
3. Compressor drive with electronic relay
4. Compressor drive with potential relay
5. Compressor drive with permanent capacitor
6. Single-door household cooling control circuit
7. Double-door home type cooling control circuit
8. Non-flammable household cooling control circuit
9. Voltmeter and ammeter connection
10. Cos fi meter connection for power coefficient

DIMENSIONS

A x B x H : 1180 x 600 x 1500 mm

TECHNICAL SPECIFICATION

In this set, it is aimed to introduce the most used electrical connection elements in single phase basic conditioning cooling systems, to teach working principles and differences between them. The connection of many circuit elements used in the refrigeration power such as the connection of the compressor to the continuous and start capacitor, the connection with the potential relay, the current relay, the connection with bimetal and electronic thermal, defrost relay, time relay, room thermostat can be examined.



TECHNICAL DETAILS

- Hermetic compressor
- Digital ammeter
- Digital voltmeter
- Digital cos fi meter
- Thermostat
- Fan motor

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

E-107 THREE PHASE AC-R CONTROL CIRCUIT TRAINING SET

GENERAL EXPLANATION

This training set is designed to implement three-phase air conditioning-cooling control methods. In addition, basic electrical control applications can be performed.

EXPERIMENTS

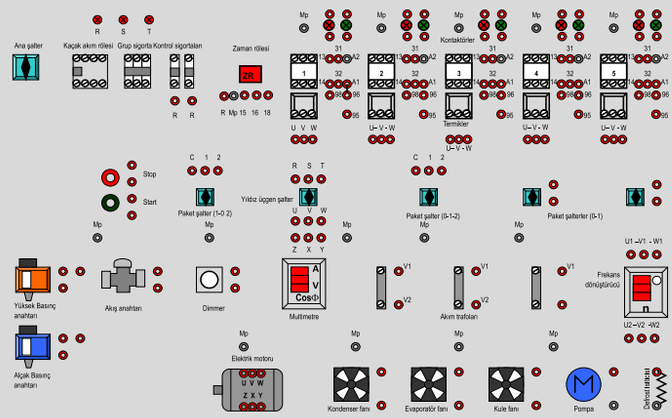
1. Direct drive to three-phase motors with contactor-pack switch
2. Straight and reverse contact connection applications
3. Start-stop control circuit
4. Star-triangle drive with package switch
5. Automatically star-delta drive
6. Drive three-phase motor with frequency driver
7. Cold air storage control application
8. Water cooling group control application

DIMENSIONS

A x B x H : 2000 x 600 x 1600 mm

TECHNICAL SPECIFICATION

In this set, it is aimed to introduce electrical protection, control and measurement devices used in three phase basic air conditioning and cooling systems and teach the usage patterns. With this set, many tests can be done to three-phase motors such as starting with package switch, automatic starting, starting with inverter, connecting multimeter to system, functions of pressure and flow control switches and usage patterns.



TECHNICAL DETAILS

- Frequency inverter
- Star-triangle connection
- Defrost resistance
- 3-phase asynchronous electric motor
- Digital multimeter
- Pump
- Axial fan
- Dimmer

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

E-115 AC-R ELECTRICAL FAILURE SIMULATOR TRAINING SET

GENERAL EXPLANATION

This training set provides students with the opportunity to practice trial & error on the basic faults that may occur in the conditioning-cooling electrical circuits.

EXPERIMENTS

1. Power cut
2. Voltage is low
3. Main switch fault
4. Fault current relay fault
5. Fuse cut
6. The thermostat tail is broken
7. Thermostat contacts are stuck
8. Relay coil is broken
9. Relay contacts welded
10. Start capacitor short circuit
11. Start capacitor cut-off circuit
12. Permanent capacitor short circuit
13. Permanent capacitor cut-off circuit
14. Auxiliary winding short circuit
15. Auxiliary winding cut-off circuit
16. Main winding short circuit
17. Main winding cut-off circuit
18. Compressor windings grounded
19. Compressor thermal cut-off circuit
20. Contacts of the fan thermostat adhered
21. The tail of the fan thermostat is broken
22. Fan relay coil cut-off circuit
23. Fan relay coil short circuit
24. Fan relay contact adhered
25. Fan relay contact oxidized
26. Fan motor windings short circuit
27. Fan motor windings cut-off circuit

TECHNICAL SPECIFICATION

This set aims to inform students about the detection and elimination of the most common failures in a basic cooling system. The unit may generate 27 basic faults such as low voltage fault, compressor coil ground fault, compressor thermal cut-off circuit fault, fan motor coil short circuit fault, and the fault reactors of the system can be observed with the measuring points of the control circuit.

TECHNICAL DETAILS

- 27 fault finding options
- Hermetic compressor
- Air-cooled condenser
- Axial condenser fan
- Air-cooled evaporator
- Digital ammeter
- 2 mechanical room thermostats

DIMENSIONS

A x B x H : 630 x 485 x 1625 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

E-116 SINGLE PHASE MOTOR TRAINING MODULE

GENERAL EXPLANATION

This training set; It is designed to operate a single-phase motor by using command and starting methods.

EXPERIMENTS

- Automatic direction application with time relay
- Starting application with warning switch
- Application of connecting the voltage protection relay to the installation
- Starting application with pako switch

TECHNICAL SPECIFICATION

Although there are two types of windings in single-phase motors, the windings are fed with the same voltage and the windings have different characteristics to create a phase difference. Single-phase motors are preferred in many machines used in homes because their maintenance and cost are low.

TECHNICAL DETAILS

- 0-1 pack switch
- Warning (start) switch
- start button
- stop button
- contactor
- Timer
- single phase motor

DIMENSIONS

A x B x H : 1000 x 700 x 1600

PACKAGE INCLUDED

Device , 1 printed experiment report, 1.5mm2 cable

E-120 ELEVATOR TRAINING SET

GENERAL EXPLANATION

This training set is the elevator used today.
the operating principle of the systems in a simple way.
Made to tell.

DIMENSIONS

AxBxH: 740x740x1700 mm

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

The elevator trainer sets the structure of a real four-floor elevator. and it has been designed in a structure suitable for examining its work. Elevator Trainer, with its mechanical structure visible is transparent. Input, output and control units are on the top of the set. part and compact laminate material placed on it.

TECHNICAL DETAILS

- Start, stop and emergency stop buttons, 25A/30mA leakage current relay, 10 A neutral break fuse,
- 14DI / 10DO / 2AI / PLC with Profinet connection,
- (All IO terminals of the PLC have been moved to the control panel.)
- Microcontroller with 33 inputs and outputs, (For LCD and serial communication of the microcontroller)
- All IO terminals except the pins used are connected to the control panel has moved.)
- 4x20 LCD, microcontroller reset button and D9 female connector, (on the microcontroller 20MHz bootloader is installed and serial port can be programmed.)
- 24V DC / at least 6A SMPS,
- Inductive sensors for floors and upper and lower limits,
- LED indicators showing up and down movements,
- Illuminated indicator where all digital inputs and outputs are observed,
- Eight ON-OFF-MOM switches,
- 7 segment floor level indicators
- +24V and GND outputs,
- Geared 24V DC motor, 24V buzzer, counterweight system,
- 24 different colored jacked test connection cables,
- IEC power cable,

  There are components such as with the experimental set modules, mainly;
- Elevator application with PLC or microcontroller in the set
- Apart from independent motor control applications, sensor applications,
- PLC programming and simulation applications,
- Desired inputs and outputs of PLC and microcontroller, be able to control the desired units of the elevator
- flexible, (can be determined by the user), contains hard links, software development applications,
- Control with microcontroller,
- Via computer (special software and elevator system) controllable (with interface showing) applications such as

E-121 VIDEO INTERCOM TRAINING SET

GENERAL EXPLANATION

In this training set, the video intercom systems used in
introduction of electrical connections, working principles
intended to be displayed.

TECHNICAL SPECIFICATION

Security and Building Automation Systems Application Kits
It has a modular structure. Experiment in modular structure
modules on the laboratory table with AC / DC power unit
system by making the desired energy and installation connections.
applications are feasible. Modules are compact
It is made of laminate material. dismantling the modules
There is a skid system for attaching and moving.
Laboratory table Single-phase AC / DC energy unit table
The frame is designed with aluminum profiles and is ground adjustable.

DIMENSIONS

A X B X H : 1520 x 660 x 1740 mm

TECHNICAL DETAILS

- Video Doorphone Flat Module
- Magnetic Door Opener Module
- Bell Button Module
- Video Doorphone Doorman Module
- Video Doorphone Ringer Panel Module
- Video Doorphone Energy Module
- Video Doorphone Switchboard Module

4mm shielded 100cm born cable red 14 pcs
4mm shielded 100cm born cord black 11 pcs
4mm shielded 50 cm born cable green 5 pcs
4mm shielded 50 cm born cable blue 5 pcs
4mm shielded 50 cm born cable yellow 10 pcs

PACKAGE INCLUDED

Device, 1 printed user manual.

E-125 SMART BUILDING AUTOMATION TRAINING SET

GENERAL EXPLANATION

This training set; It is designed about the electrical transportation of the elements used in smart homes and how they will be directed.

EXPERIMENTS

- Garage door control application
- RGB led control application
- Blinds (curtain) application
- Solenoid valve (water-gas) application
- DC servo motor application
- DC stepper motor application

TECHNICAL SPECIFICATION

The home control center receives information from the internet and can activate or deactivate a command when it arrives at a certain location thanks to its GPS feature. These controls are provided by the elements on the system. Intelligent building automation circuit elements can be examined together with the modules on the training set.

TECHNICAL DETAILS

- Home control center
- Solenoid valve
- Remote control
- Push button
- Dimmer
- Single - double relay
- Motion detector
- Door - window sensor
- USB programming

DIMENSIONS

A x B x H : 1200 x 600 x 1700

PACKAGE INCLUDED

Device, 1 printed experiment report, circuit diagram, 22 modules, connecting cables

E-126 AMPLIFIER TRAINING SET

GENERAL EXPLANATION

In this training set; Circuit elements used in sound amplification are used and the circuits used are designed to be examined.

EXPERIMENTS

- Mixer application
- Dual amp and dual speaker application
- Preamp Application
- Tone control application

TECHNICAL SPECIFICATION

Amplifiers are used to amplify electrical signals. Amplifiers amplify the signals by taking them from a power supply and matching the shape of these output signals, that is, they regulate the signals they receive from the power supply.

TECHNICAL DETAILS

- Mixer
- Amp
- Preamp
- Speaker
- 12V DC constant power supply

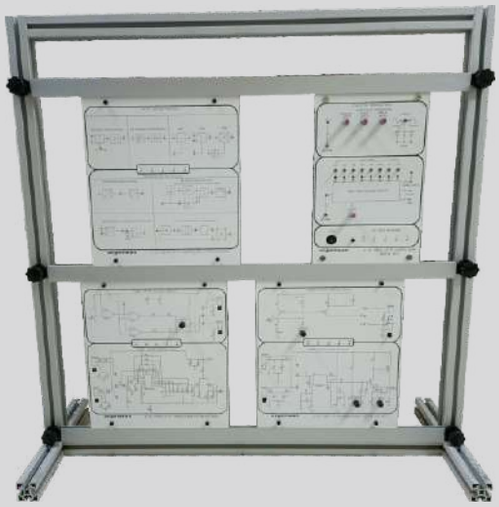
DIMENSIONS

A x B x H : 500 x 400 x 320

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

E-127 FIBER OPTIC COMMUNICATION TRAINING SET



GENERAL EXPLANATION

This training set; It is designed to observe the physical properties of light and factors such as transmitting a different signal over a fiber optic cable using light.

EXPERIMENTS

- Modulation application
- Demodulation application
- Fiberoptic Digital Transceiver Application
- Fiberoptic Analog Transceiver Application

TECHNICAL SPECIFICATION

Fiber optic is an optical fiber made of plastic or glass fiber in which it is oriented along itself or through the glass fiber. On the training set, modulation and the relationship between receivers and transmitters can be observed.

TECHNICAL DETAILS

- Function Generator
- DC power supply
- Serial data converter

DIMENSIONS

A x B x H : 1050 x 400 x 1050

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

E-128 COMMUNICATION TRAINING SET

GENERAL EXPLANATION

This training set; It is designed to observe analog and digital communication methods.

EXPERIMENTS

- Analog and Digital Converter Application
- Unipolar Digital to Analog Converter Application
- Bipolar Digital to Analog Converter Application
- PWM Modulation PWM demodulation Application
- Modulation – Demodulation Application

TECHNICAL SPECIFICATION

The training set converts digital data to analog data and analog data to digital data. We can observe the results of the transformations by making measurements on the training set.

TECHNICAL DETAILS

- Function Generator
- Data oscillator
- RF oscillator
- Regulated power supply
- DC power supply

DIMENSIONS

A x B x H : 1050 x 400 x 1050

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

E-129 OPERATIONAL AMPLIFIER TRAINING SET

GENERAL EXPLANATION

This training set; It consists of electronic circuits (modules) that amplify electrical signals to its input. It can be observed on the training set by measurement taken at the output with the energy applied to the input of different modules.

EXPERIMENTS

- Study of OP-AMP Application
- OFF SET setting and BIAS current measurement application
- Inverting – noninverting amplifier application operating on DC and AC
- Half wave – full wave rectifier application
- Derivatives application
- Integral receiver application
- Comparator application
- High – low pass filter applicaiton

TECHNICAL SPECIFICATION

Opamp circuits are integrated circuits with high signal amplification power, which are used to increase the functionality of electronic circuits in general. They are fed with direct current and provide voltage current gain, accordingly they perform power amplification and impedance conversion tasks. These conditions can be observed by using a measuring instrument and an oscilloscope on the device.

TECHNICAL DETAILS

- Regulated power supply
- Constat power supply
- DC power supply
- Application modules

DIMENSIONS

A x B x H : 500 x 400 x 320

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

E-140 HERMETIC COMPRESSOR ANALYSIS TRAINING SET

GENERAL EXPLANATION

This set is designed to check the stability of single phase hermetic compressors and to fix some faults (mechanical jam etc.) electrically.

EXPERIMENTS

1. Compressor windings and grounding control
2. Measurement of the flow of the compressor at start-up and during operation
3. Developing and operating the compressor
4. Opening the compressed compressors with back and forth movement

TECHNICAL SPECIFICATION

Hermetic piston and rotor compressors can compress mechanically. If this compression can not be open electrically, the compressor must be removed and renewed. Every year hundreds of compressors are disabled for this reason. With this device it is possible to make such defective compressors operational again.

TECHNICAL DETAILS

- 50 mF capacitor
- 70 mF capacitor
- 90 mF capacitor
- Start capacitor
- Digital ammeter

DIMENSIONS

A x B x H : 320 x 150 x 180 mm

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

E-141 ELECTRICAL INSTALLATION TRAINING SET

GENERAL EXPLANATION

This training set; It is designed to study and implement the steps taken when installing electrical wiring during the construction of a house.

EXPERIMENTS

- Mechanical ballast application
- 2 fluorescent applications with mechanical ballast
- Electronic ballast application
- PIR detector application
- Digital electronic counter application
- Door opener application
- Voltmeter and Ammeter application

TECHNICAL SPECIFICATION

We can observe how it is used in the electrical installation of a house with elements such as junction boxes, door automatics, fluorescents, ballasts, and electricity meters on the device.

TECHNICAL DETAILS

- AC 220V socket
- Digital electricity meter
- AC 12-24V transformer
- Electronic ballast
- Mechanical ballast
- Starter
- Fluorescent

DIMENSIONS

A x B x H : 1600 x 600 x 1900

OPTIONEL FEATURES

- Terminal Connection

PACKAGE INCLUDED

Devices, 1 printed experiment report, 1.5mm2 TTR cable, connections cable.

E-142 GROUNDING TRAINING SET

GENERAL EXPLANATION

This training set; It is designed with the aim of examining the grounding connections and types that should be made against a possible electrical leakage hazard of electrically operated devices.

EXPERIMENTS

- IT grid connection application
- Earthing measurement application with Meger device
- TNC grid connection application
- TNCS grid connection application
- TNS grid connection application
- Earth – earth network connection application

TECHNICAL SPECIFICATION

Grounding is a system that must be made and used in order to secure human life. Proper grounding is an important component for protection from electricity. In this training set, you can find answers to your questions such as how to make correct grounding and what are the grounding types.

TECHNICAL DETAILS

- Ammeter
- Grounding resistors
- Applications on the human model
- MEGGER earth ground meter

DIMENSIONS

A x B x H : 1600 x 600 x 1700

PACKAGE INCLUDED

Device,1 printed experiment report , connection cable

E-150 BATTERY CHARGING SYSTEM TRAINING SET

GENERAL EXPLANATION

This training set is designed for working with battery charging systems.
to experimentally demonstrate the principle was designed.

EXPERIMENTS

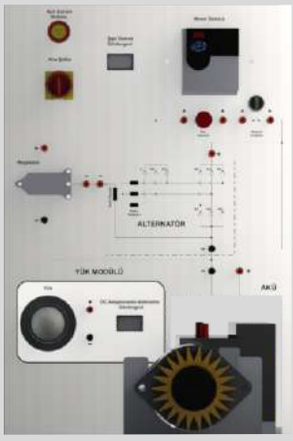
- Charger of changes in engine speed examination of its effects.
- Examination of the connection type of the charging system.
- On the circuit of the ammeter and voltmeter examining the connection.
- Examination of the operation of the battery charging system

DIMENSIONS

A x B x H: 600 x 600 x 1600

TECHNICAL SPECIFICATION

This system is generally used in the automotive, marine and generator sectors to convert the mechanical energy produced into electrical energy and to meet the electrical need for the operation of the system. In this training set, it is aimed to teach how the charging system works, how the equipment used in the charging system is connected, the use of measuring instruments such as ammeter and voltmeter, and the effects of the variables on the system.



TECHNICAL DETAILS

- 1 alternator
- 12 Volt 60 Ah battery
- Digital DC ammeter
- Digital DC voltmeter
- asynchronous motor
- frequency drive

PACKAGE INCLUDED

Device, 1 test sheet

E-151 GENERATOR TRANSFER SYSTEM TRAINING SET

GENERAL EXPLANATION

Bu eğitim setinin amacı ayrı çalışan iki jenarötörün aşığıun gözlemlenmesidir.

EXPERIMENTS

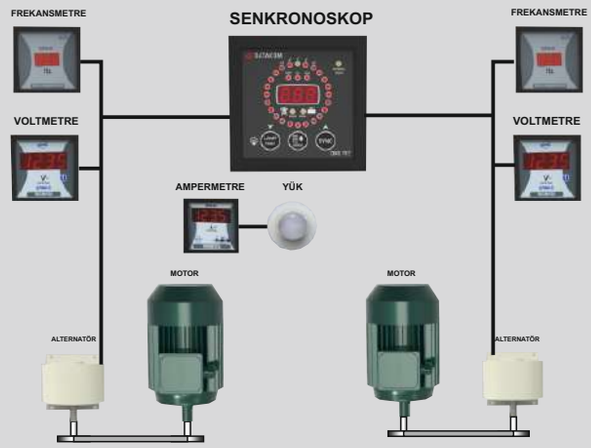
- Changes in engine speed on alternator study of its effects.
- Examination of the synchronoscope and its connection type.
- Circuit of ammeter, voltmeter and frequency meter examination of its connection.
- Synchronization between two generators provision and examination of the synchronization process.
- The effect of two synchronously connected alternators on the load. examination of its effects.

DIMENSIONS

A x B x H : 1000 x 600 x 1600

TECHNICAL SPECIFICATION

In facilities with high power and variable loads according to the condition of the loads (network - generator),
(generator – generator) or between generator groups synchronization is performed. This training synchronization process between two alternators in the set
performing the synchronization synchronoscope used to perform
introduction and examination of its connection to the system,
Introducing ammeter, voltmeter and frequency meter and its connection to the system, the speed change in alternators
effects on synchronization, two units connected in synchronization
examining the effect of alternator on load intended.



TECHNICAL DETAILS

- 2 alternators
- 2 frequency meters
- 2 AC voltmeters
- 1 syncronoscope
- 1 AC ammeter
- 2 motor frequency drivers

PACKAGE INCLUDED

Device, 1 user manual, circuit diagram

E-152 MEASURING INSTRUMENTS TRAINING SET

GENERAL EXPLANATION

This training set is designed for comparison of electrical measuring devices.

EXPERİMENTS

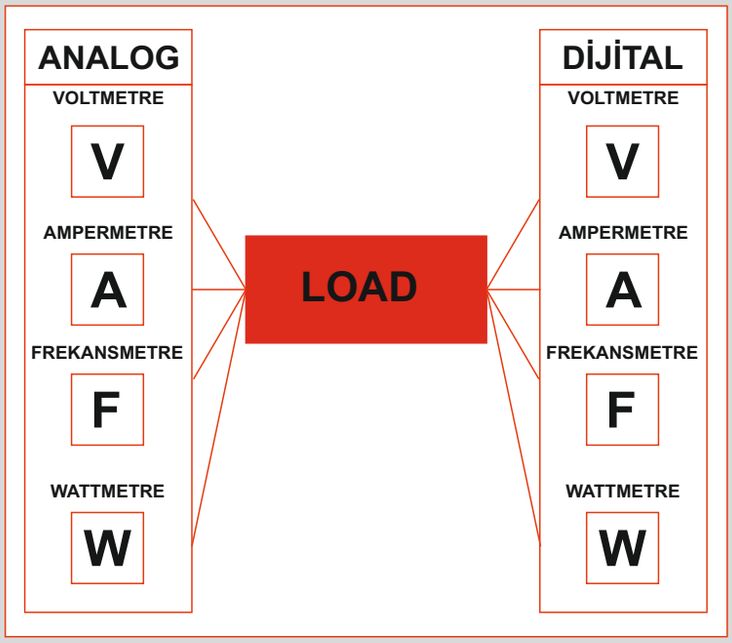
- Examination of analog and digital AC ammeter system connection.
- Examination of analog and digital AC voltmeter system connection.
- Examination of analog and digital AC wattmeter system connection.
- Examination of analog and digital AC frequencymeter system connection.

DEMENTIONS

AXBXH: 600X600X1600

TECHNICIAL SPECIFICATIONS

The purpose of this set is the connection of analog and digital measuring instruments used to make electrical measurements on the system, the effects of the connections made on the measurement, and the comparison of two different types of the same measuring instruments on the same system and to observe the difference between them.



TECHNICAL DETAILS

- Analog AC ammeter
- Digital AC ammeter
- Analog AC voltmeter
- Digital AC voltmeter
- Analog AC wattmeter
- Digital AC wattmeter
- Analog AC frequency meter
- Digital AC frequency meter

PACKAGE İNCLUDING

Device, 1 instruction manual, circuit diagram

E-153 SENSORS TRAINING SET

GENERAL EXPLANATION

This training set; in electronic devices for examining sensors by taking measurements was designed.

EXPERIMENTS

- LDR-PTC-NTC application
- Ultrasonic sensor application
- Photocell, optocoupler application
- sound sensor app
- Piezo pressure sensor application
- humidity sensor, gas sensor application
- K , IC type thermocouple application
- PT type thermistor application
- Photodiode, Phototransistor application
- IR transceiver application
- Hall sensor application
- Reed relay, mercury switch application
- PIR sensor application
- Loadcell application
- Capacitive sensor application
- Inductive sensor application
- Reflective optical sensor applicationı

TECHNICAL SPECIFICATION

The sensors used in the training set are used in many electronic products today. The purpose of the training set is to recognize the sensors, understand how they work, and take measurements to understand whether the sensor is defective.

TECHNICAL DETAILS

- 0-24V Regulated power supply
- Voltmeter
- Ammeter
- TTL oscillator
- DC Symmetrical power supply
- signal generator
- up down counter

DIMENSIONS

A x B x H : 450 x 350 x 150

PACKAGE INCLUDED

Device, 1 printed test sheet, IEC power cable, application modules, connecting cables

E-154 BASIC ELECTRICAL TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce basic equipment used in electronic cards.

EXPERIMENTS

Studying the working principle of the diode and its robustness control.

Study of the working principle of Resistance and durability control.

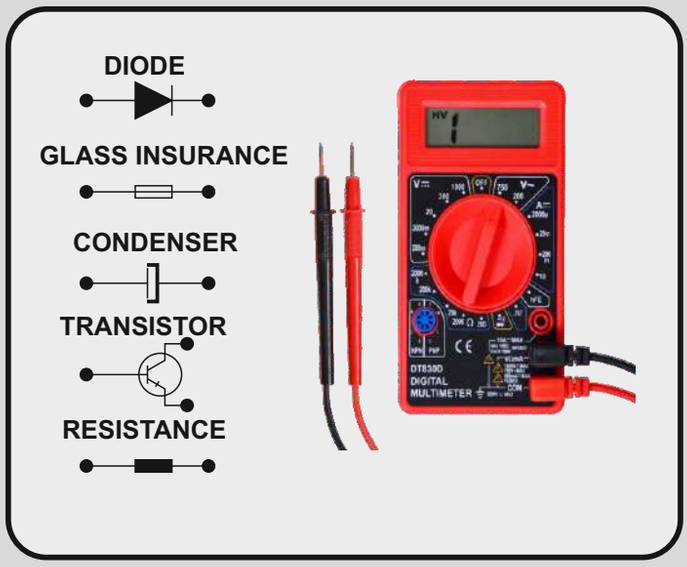
Examining the working principle of glass fuse and Checking the robustness.

Examining the working principle of the transistor, presence of legs and stability control to be done.

Examination of the working principle of the capacitor and Checking the robustness.

TECHNICAL SPECIFICATION

It is a training set prepared to examine the basic components used in the production of electronic cards, to learn the operating principles and to make sound checks. By using the fault switches on the set, it is aimed to give the fault to the relevant component, to examine the responses of the component and to detect the malfunctions and to intervene in such a problem that may be encountered in the future easily and quickly.



TECHNICAL DETAILS

- 0-12V 3A regulated power supply
- 5V, 12V constant output DC power supply
- 10 different values of resistors
- 10 diodes with different values
- 10 capacitors with different values
- 10 transistors with different values

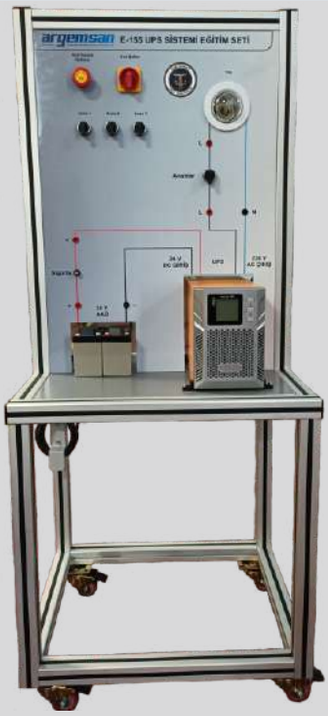
PACKAGE INCLUDINGS

Device, 1 instruction manual, circuit diagram

DEMENTIONS

AXBXH: 400X300X130

E-155 UPS SYSTEM TRAINING SET



GENERAL EXPLANATION

This training set is designed for examining UPS systems.

EXPERIMENTS

- Examination of fuse failure in UPS system.
- Examination of battery failure in the UPS system.
- Examination of 220V AC output failure in UPS system.

DEVICE DIMENSIONS

AXBXH: 1000X600X1600

OPTIONAL FEATURES

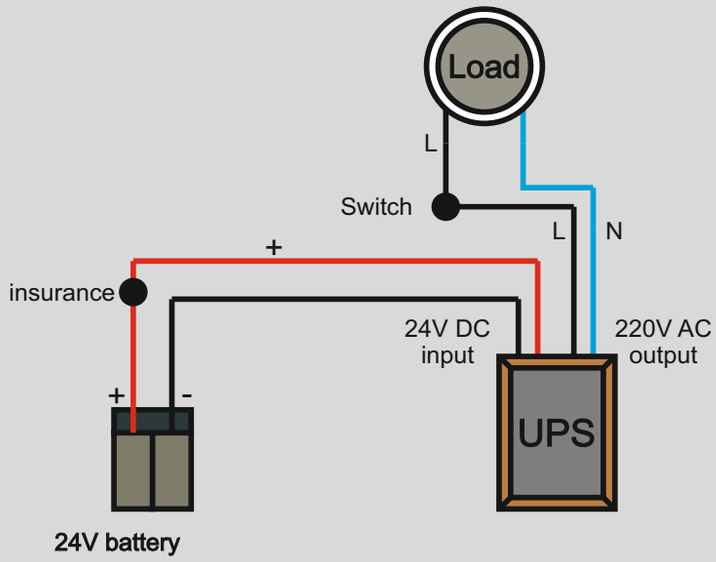
Touchscreen LCD
USB Computer Connection
Computer Control

WORKING REQUIREMENTS

220V AC mains supply

TECHNICAL SPECIFICATION

Uninterruptible Power Supply (UPS) In cases such as possible voltage fluctuations (low voltage, high voltage, phase loss), short or long-term sections or harmonies that occur or may occur in the network to which the electrical load is connected, a technical system that protects the load from these changes and are electronic devices that provide healthy and clean energy. In the training set, it is aimed to intervene easily and quickly to such a malfunction that may be encountered in the future by giving the three most common malfunctions in such systems to the system,examining the reactions of the system and making fault determinations.



TECHNICAL DETAILS

- UPS system
- Digital indicator
- Load module
- Shielded jack connection
- Protected born screw

PACKAGE INCLUDED

Device, 1 instruction manual, circuit diagram

E-157 SOLDERING STATION BAG

GENERAL EXPLANATION

This training set is designed for card soldering.

EXPERIMENTS

- Circuit like diode, resistor, capacitor and transistor Assembly of the elements on the PCB.
- Circuit like diode, resistor, capacitor and transistor of disassembling elements from the PCB to be done.
- Examination of different soldering applications.

DEVICE DIMENSIONS

AXBXH: 400X300X130

TECHNICAL SPECIFICATION

This set includes four heat-adjusted soldering stations,
solder, paste and eight sample PCBs and a perforated
plate for four people to perform soldering at the same time.

TECHNICAL DETAILS

- 4 heat adjustable station pen type soldering irons
- 4 solder wires
- 4 pieces of at least 50gr solder paste
- 4 pc PCB card holder
- 8 perforated plaques
- 8 PCB

PACKAGE INCLUDED

Device, 1 instruction manual

E-158 ANTI THEFT ALARM TRAINING SET

GENERAL EXPLANATION

This training set; It is designed to examine the circuit elements of burglar alarm systems and their relationship with each other.

EXPERIMENTS

- External and internal siren application
- Magnetic door contact application
- Vibration and impact detector application
- Glass break detector application
- PIR sensor appication

TECHNICAL SPECIFICATION

Thief alarm systems are electronic security systems designed to protect buildings and their surroundings against thieves and intruders. Applications can be made with different scenarios on the device.

TECHNICAL DETAILS

- 8 zone thief detection system
- 12V 7Ah battery
- 220V AC socket and IEC power socket
- AC 0V-12V-24V energy output
- DC 0V-12V-24V energy output

DIMENSIONS

A x B x H : 1600 x 600 x 1700

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

E-160 MICROCONTROLLER TRAINING SET

GENERAL EXPLANATION

This training set; It allows working with microcontrollers in DIP40, DIP18A, DIP28, DIP14, DIP20, DIP8 packages.

EXPERIMENTS

- Elevator simulation application
- Stepper motor application
- DC motor application
- EEPROM applicaiton
- Digital input applications

TECHNICAL SPECIFICATION

Microcontrollers are the components of a microprocessor such as MIB, memory, input and output, crystal oscillator, timers, serial analog inputs and outputs, programmable memory produced on a single circuit. Thanks to many functions on the training set, different application observations and experiments can be made on it.

TECHNICAL DETAILS

- 2x16 character LCD
- 128x64 character LCD
- DS1820 digital temperature sensor
- Lm35 analog temperature sensor

DIMENSIONS

A x B x H : 270 x 220 x 30

PACKAGE INCLUDED

Device, 1 printed experiment report, power cable, USB cable, circuit diagram

E-161 INDUSTRIAL ELECTRONICS TRAINING SET

GENERAL EXPLANATION

This training set; It is designed to examine electronic circuits such as time constants, relays, triacs, diacs, optical elements and circuits, motor control circuits, temperature control circuits.

EXPERIMENTS

- Application of stair automatic
- Half wave - full wave rectifier application
- PWM generator's implementation
- Time delay circuit application

TECHNICAL SPECIFICATION

It is a training set that allows the examination of industrial electronic circuit elements that can be encountered in the installation, maintenance and repair of various electronic and electronic machine in factories and workshops.

TECHNICAL DETAILS

- DC 0-30V regulated power supply
- Touch panel HMI
- Digital voltmeter – ammeter
- AC 12-0-12 power supply
- USB port

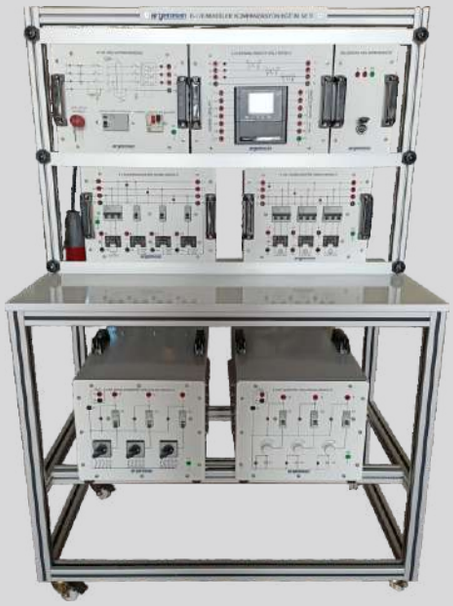
DIMENSIONS

A x B x H : 1600 x 600 x 1700

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

E-170 MODULAR COMPENSATION TRAINING SET



GENERAL EXPLANATION

In this training set; compensation electricity in the engine, in the coil and similar systems same with electric energy with magnet effect converting a difference into electrical energy or an energy
with the effect of this magnetization process of the devices.
due to back-shifting of the phase current, the mains
the inductive reagent on which they are formed balancing the power and the current of the phase should be
The field retraction process is called compensation.
With different load group modules in the training set, this
It is designed for the study of events.

EXPERIMENTS

- Examining the Effect of Inductive Load on the System
- Investigation of the Effect of Resistive Load on the System
- Investigation of the Effect of Capacitive Load on the System
- Individual Compensation application
- Central Compensation application

TECHNICAL SPECIFICATION

Compensation is made by balancing the inductive power drawn from the network by drawing a capacitive load in a special reactive power generator. Compensation is made to carry the produced energy from the power plant to the smallest receiver with the least loss in distribution so that it is economical.

TECHNICAL DETAILS

- 3 Phase power supply module
- Reactive relay module with LCD display
- computer interface module
- 1-2 Phase capacitor group module
- 3 Phase capacitor group module
- 3 Phase regulated resistive load group module
- 3 Phase inductive load group module

DIMENSIONS

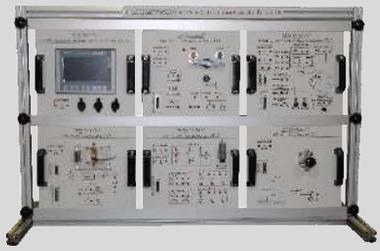
A x B x H : 1080 x 580 x 1600

PACKAGE INCLUDED

Device, 1 printed test sheet, connection cables

INDUSTRIAL AUTOMATION

EO-110
BAG TYPE PLC
TRAINING SET



EO-111
PLC APPLICATIONS MODULE
TRAINING SET

EO-200
S7-1500 PLC
TRAINING SET

EO-210
S7-1500 SENSORS
TRAINING SET

EO-220
DESK TYPE PLC
TRAINING SET

EO-230
CONVEYOR
TRAINING SET

EO-250
SERVO-MOTOR
TRAINING SET

EO-251
STEP MOTOR
TRAINING SET

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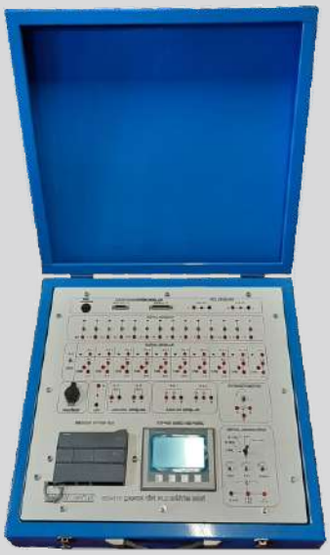
EO-110 BAG TYPE PLC TRAINING SET



GENERAL EXPLANATION

This training set; It is designed as a bag type to examine the software and electrical connections of sensors, motors and similar elements that can be controlled by PLC in automation systems.

EXPERIMENTS

- Basic input/output applications
- Logical computing applications
- Comparison Operations applications
- Move command applications
- Arithmetic operations applications
- Floating light application with TON timer
- 24V lamp application with TON timer
- 24V lamp application with TOFF timer
- Up counter application
- Up/down counter application
- Operator Panel HMI application
- I/O application with operator panel
- Data display application with operator panel
- Analog input/output application
- Digital input/output applications with and without relay

TECHNICAL SPECIFICATION

Plc systems are automation systems developed for use in industrial areas. They are automation devices that provide control to users at points such as timing, counting, storage, arithmetic operation functions. The training set is designed to simulate and perform these controls.

TECHNICAL DETAILS

- PLC
- Profinet
- Touch panel
- 24V DC power supply
- 10V DC power supply
- Signal Generator

DIMENSIONS

A x B x H : 570 x 540 x 160

PACKAGE INCLUDED

Device, 1 printed experiment report, licensed plc programming software CD, programing cable, conneciton cables, IEC power cable

EO-111 PLC APPLICATIONS MODULE SET

GENERAL EXPLANATION

This training set; It is designed modularly to examine the software and electrical connections of sensors, motors and similar elements that can be controlled by PLC in automation systems.

EXPERIMENTS

- DC motor application module
- Sensor applications module
- Traffic signaling simulation module
- Level and pump simulation module
- Pressure control simulation module
- Stepper motor application module
- Weight measurement application module
- Temperature measurement application modüle

TECHNICAL SPECIFICATION

Plc systems are automation systems developed for use in industrial areas. They are automation devices that provide control to users at points such as timing, counting, storage, arithmetic operation functions. The training set modules are designed to simulate and perform these controls.

TECHNICAL DETAILS

- Application modules
- Touch panel HMI
- Profinet port
- USB port
- 24V DC power supply
- 12V DC power supply
- 10V DC power supply

DIMENSIONS

A x B x H : 1230 x 500 x 800

PACKAGE INCLUDED

Device, 1 printed experiment report, programing cable, conneciton cables, IEC power cable

EO-200 S7-1500 PLC TRAINING SET

GENERAL EXPLANATION

This training set; It is designed to examine the software and electrical connection of sensors, motors and similar elements that can be controlled by PLC in automation systems with a high-level PLC.

EXPERIMENTS

- Asynchronous motor and motor driver application
- DC motor and motor driver application
- Servo motor and motor driver application
- Inductive sensor application
- Capacitive sensor application
- Reflective sensor application
- Operator panel application

TECHNICAL SPECIFICATION

Plc systems are automation systems developed for use in industrial areas. They are automation devices that provide control to users at points such as timing, counting, storage, arithmetic operation functions. A more advanced Siemens S7-1500 series plc was used in the training set and the applications were designed to be observed on this plc.

TECHNICAL DETAILS

- Siemens S7-1500
- Operator panel
- AC motor driver
- stepper motor driver
- 3 phase asynchronous motor
- Servo motor
- DC motor
- Inductive, capacitive, reflector sensor
- 24V DC power supply
- USB and Profinet port

DIMENSIONS

A x B x H : 1200 x 700 x 1600

PACKAGE INCLUDED

Device, 1 printed experiment report, licensed plc programming software CD, programing cable, conneciton cables

EO-210 S7-1500 SENSORS TRAINING SET

GENERAL EXPLANATION

This training set; It has been designed with the S7-1500 Plc training set to show how the electrical connections of the sensors are made in automation systems and how the sensors can be controlled with a licensed plc program.

EXPERIMENTS

- Step motor and motor driver application
- Servo motor and motor driver application
- Optical sensor application
- Ultrasonic sensor application
- Infrared beam curtain (area sensor) application
- Potentiometric sensor application
- Loadcell application
- PT-100 temperature sensor application
- Laser field scanner application
-

TECHNICAL SPECIFICATION

Plc systems are automation systems developed for use in industrial areas. In the training set, sensors that can be applied with Siemens S7-1500 plc have been added to the system. In addition, there is a detailed explanation of the laser scanner and its program in the test sheet.

TECHNICAL DETAILS

- Step motor
- Step motor driver
- Servo motor
- Servo motor driver
- Fiberoptic, Ultrasonic sensor
- Potentiometric ruler
- Loadcell
- PT-100 temperature sensor
- Laser field scanner
- Plc modules
- Profinet connection

DIMENSIONS

A x B x H : 900 x 660 x 1400

PACKAGE INCLUDED

Device, 1 printed experiment report, programing cable, laser scanner software, connection cables

EO-220 DESK TYPE PLC TRAINING SET

GENERAL EXPLANATION

This training set; It is designed to examine the software and electrical connections of sensors, motors and similar elements that can be controlled by PLC in automation systems.

EXPERIMENTS

- DC motor application
- Level control application
- Step motor application
- Sensor Applications
- AC motor driver application
- Switching applications
- Temperature control applications

TECHNICAL SPECIFICATION

Plc systems are automation systems developed for use in industrial areas. They are automation devices that provide control to users at points such as timing, counting, storage, arithmetic operation functions. The training set and modules are designed to simulate and perform these controls.

TECHNICAL DETAILS

- PLC
- HMI Touch Panel
- USB and Ethernet Port
- Voltmeter
- 0-10V Regulated Power Supply
- 24V DC Power Supply
- 220V Power Output
- Application Modules

DIMENSIONS

A x B x H : 1200 x 600 x 1520

PACKAGE INCLUDED

Devices, Modules, 1 printed experiment report, licensed plc programming software CD, programing cable, connecting cables, IEC power cable

EO-230 CONVEYOR TRAINING SET

GENERAL EXPLANATION

This training set; It is designed to show how conveyor systems in factories work. In addition, there are fault switches for fault simulations in the system.

EXPERIMENTS

- Engine controls application
- Separation of plastic and metal in the conveyor system application

TECHNICAL SPECIFICATION

A system has been established that allows the conveyor systems to be controlled by a PLC and at the same time to choose from among the products. With the fault switches, faults can be created on the system and measurements can be taken in case of a malfunction, and how the malfunctions occurred can be examined.

TECHNICAL DETAILS

- Capacitive sensor
- Inductive sensor
- Photoelectric sensor
- DC motor driver
- 24V DC power supply
- PLC unit

DIMENSIONS

A x B x H : 1200 x 600 x 1000

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

EO-250 SERVO MOTOR TRAINING SET

GENERAL EXPLANATION

This training set; It is designed for the purpose of examining the loaded - unloaded operation, speed, torque, position parameters of the servomotor.

EXPERIMENTS

- Built-in position control application
- Application of examining speed, torque, position parameters under adjustable load
- Position application with external pulse
- Right and left limit application

TECHNICAL SPECIFICATION

Servo motors provide precise control to the system. Position change with the system limit switches in the device, position change of the servomotor with the function generator, the reactions of the motor in the loaded or unloaded condition with the magnetic powder brake can be examined.

TECHNICAL DETAILS

- Servo motor
- Servo motor driver
- PWM generatör
- Frequency generator
- magnetic brake
- 24V DC power supply

DIMENSIONS

A x B x H : 1200 x 600 x 1000

PACKAGE INCLUDED

Device, 1printed experiment report, connecting cables, IEC power cable

EO-251 STEP MOTOR TRAINING SET

GENERAL EXPLANATION

This training set; It was repeated with the aim of examining the movement of stepper motors with precise repeatable steps.

EXPERIMENTS

- Adjustable load speed, torque, position application
- Application of using stepper motor with relay

TECHNICAL SPECIFICATION

Step motors provide very precise control to the system. In the training set, the state of the stepper motor can be examined with the magnetic brake and at the same time the position control can be controlled by a motor driver or a pwm generator.

TECHNICAL DETAILS

- Step motor driver
- Relay unit
- Regulated power supply
- Frequency generator
- PWM generatör
- Step motor

DIMENSIONS

A x B x H : 1200 x 600 x 1000

PACKAGE INCLUDED

Device, 1 printed experiment report, connecting cables, IEC power cable

CONTROL SYSTEMS

KN-710
SPLIT AIR CONDITIONER
CONTROL BOARD TRAINING SET

KN-750
MULTIPLE CONTROL TRAINING SET

KN-760
FLOW CONTROL TRAINING SET

KN-770
TEMPERATURE CONTROL TRAINING SET

KN-780
LEVEL CONTROL TRAINING SET

KN-782
LEVEL CONTROL WITH FREQUENCY CONVERTER TRAINING SET

KN-790
PRESSURE CONTROL TRAINING SET

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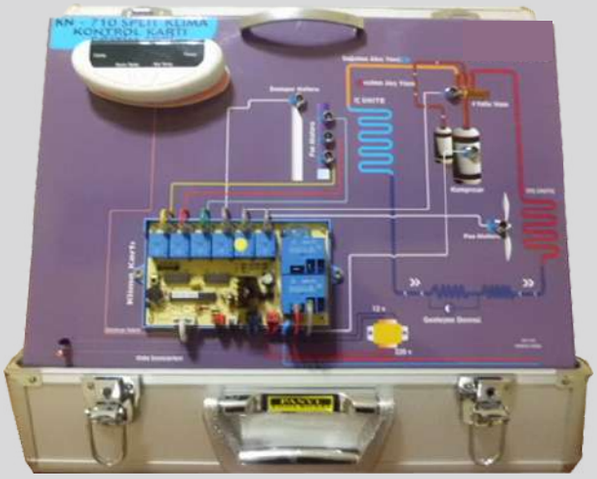
KN-710 SPLIT AIR CONDITIONER CONTROL BOARD TRAINING SET



GENERAL EXPLANATION

This training set can represent all the functions of the split air conditioning control card in the simulation circuit. Connection of the circuit elements and fault follow-up can be done on the set.

EXPERIMENTS

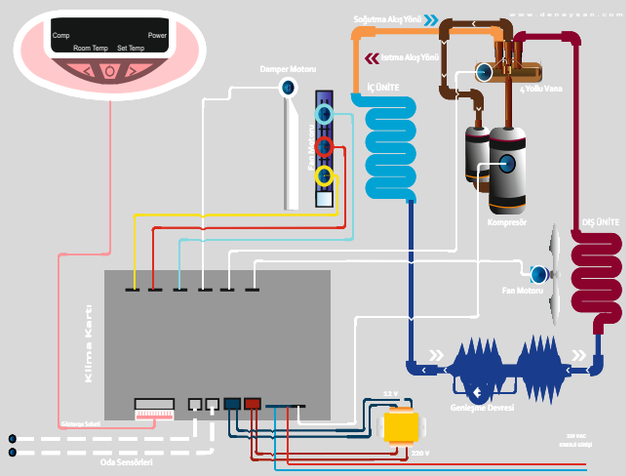
1. Operating the split air conditioner in the "cooling" position
2. Operation of the split air conditioner in the "dehumidification" position
3. Operation of the split air conditioner in the "heating" position
4. Operation of the split air conditioner in the "ventilation" position
5. Operation of the split air conditioner in the "automatic" position
6. Measurement of air conditioning card outputs of individual air conditioner

DIMENSIONS

A x B x H : 330 x 135 x 460 mm

TECHNICAL SPECIFICATION

A universal climate control card was used in the training set. This card has 220 V AC power input, 220 V / 12 V transformer inputs and outputs, pipe and air temperature sensor sockets, three different speed stages for the internal fan motor, compressor, outdoor fan, 4-way valve and dashboard outputs. The operation of the compressor on the mechanical system, the operation of the internal unit and the speed steps, the operation of the outdoor unit fan and the 4-way valve, the operation of the oscillating damper are indicated by the led diode lamps.



TECHNICAL DETAILS

- Universal climate control card
- 3 different speed stage internal fan motor
- Outdoor unit fan
- Pipe and air temperature sensor sockets
- Internal dashboard showing temperatures
- LED lamps representing the operation of fans, damper, compressor and four-way valve

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

KN-750 MULTIPLE CONTROL TRAINING SET

GENERAL EXPLANATION

This training set is a pioneer application combining automatic level, flow, pressure and temperature control methods and different control algorithms can be applied on this set.

EXPERIMENTS

1. Two-position (ON-OFF) control (level, flow, pressure and temperature)
2. Proportional (P) control (level, flow, pressure and temperature)
3. Proportional and integral (PI) control (level, flow, pressure and temperature)
4. Proportional and derivative (PD) control (level, flow, pressure and temperature)
5. Proportional, integral and derivative (PID) control (level, flow, pressure and temperature)

DIMENSIONS

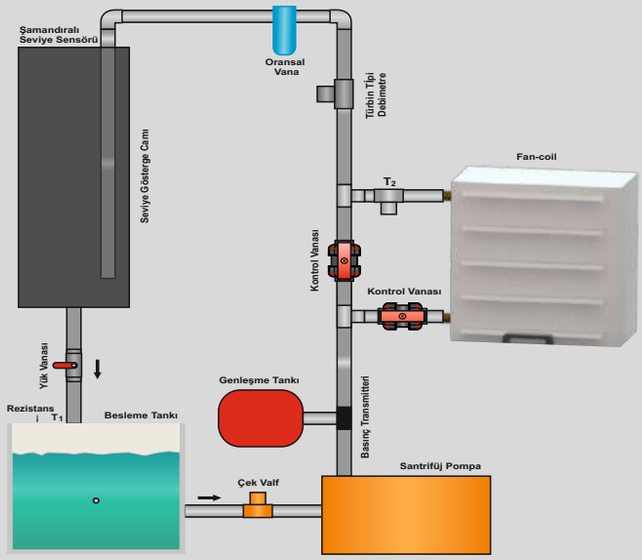
A x B x H : 1580 x 300 x 1460 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this set, the working principles and application forms of the most used automatic control systems are introduced. The effects of the proportional coefficient, the integral coefficient and the derivative coefficient on the PID control, the operating principle of the on-off control can be observed.



TECHNCIAL DETAILS

- Resistance
- Pressure manometer
- Proportional controlled two-way valve
- Centrifugal pump
- Transparent plexiglass water level column
- Fan coil
- Turbine type water flowmeter
- Rotameter type water flowmeter

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

KN-760 FLOW CONTROL TRAINING SET

GENERAL EXPLANATION

This training set is a typical application of automatic flow control and standard control algorithms can be applied.

EXPERIMENTS

1. Two-position (ON-OFF) flow control of the water flow
2. Proportional (P) flow control of water flow
3. Proportional and integral (PI) flow control of water flow
4. Proportional and differential (PD) flow control of water flow
5. Proportional, integral and derivative (PID) flow control of water flow

TECHNICAL SPECIFICATION

This set is aimed to set the water flow to the desired set values with automatic control systems. The effects of the proportional coefficient, the integral coefficient and the derivative coefficient on the PID control, the operating principle of the on-off control can be observed.

TECHNICAL DETAILS

- Centrifugal pump
- Proportional valve
- Turbine type and rotameter type flow meter

DIMENSIONS

A x B x H : 900 x 500 x 1450 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

KN-770 TEMPERATURE CONTROL TRAINING SET

GENERAL EXPLANATION

This training set is a typical application of automatic temperature control and different control algorithms can be applied.

EXPERIMENTS

1. Two-position (ON-OFF) control of water temperature
2. Proportional (P) control of water temperature
3. Proportional and integral (PI) control of water temperature
4. Proportional and derivative (PD) control of water temperature
5. Proportional, integral and derivative (PID) control of water temperature

TECHNICAL SPECIFICATION

It is aimed to set water temperature to desired set values with automatic control systems in this set. The effects of the proportional coefficient, the integral coefficient and the derivative coefficient on the PID control, the operating principle of the on-off control can be observed.

TECHNICAL DETAILS

- Centrifugal pump
- Closed expansion tank
- Open-close and PID control
- Resistance

DIMENSIONS

A x B x H : 900 x 500 x 1450 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

KN-780 LEVEL CONTROL TRAINING SET

GENERAL EXPLANATION

This training set is a typical application of automatic level control and different control algorithms can be applied.

EXPERIMENTS

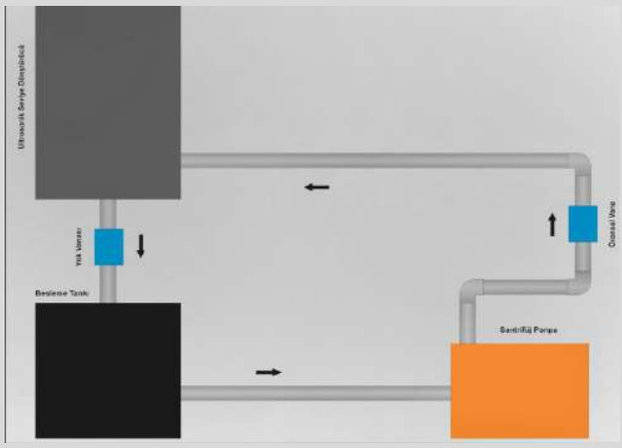
1. Two-position (ON-OFF) control of water level
2. Proportional (P) control of water level
3. Proportional and integral (PI) control of water level
4. Proportional and derivative (PD) control of water level
5. Proportional, integral and derivative (PID) control of water level

DIMENSIONS

A x B x H : 1080 x 640 x 1500 mm

TECHNICAL SPECIFICATION

It is aimed to set water level to desired set values with automatic control systems in this set. The effects of the proportional coefficient, the integral coefficient and the derivative coefficient on the PID control, the operating principle of the on-off control can be observed.



TECHNICAL DETAILS

- Recirculation pump
- Proportional valve
- Transparent level column

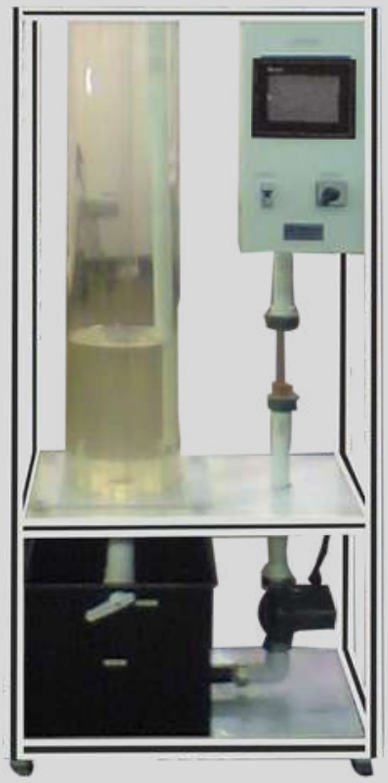
OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

KN-782 LEVEL CONTROL WITH FREQUENCY CONVERTER TRAINING SET



GENERAL EXPLANATION

This training set is a different application of automatic level control and the pump motor is controlled by frequency driver.

EXPERIMENTS

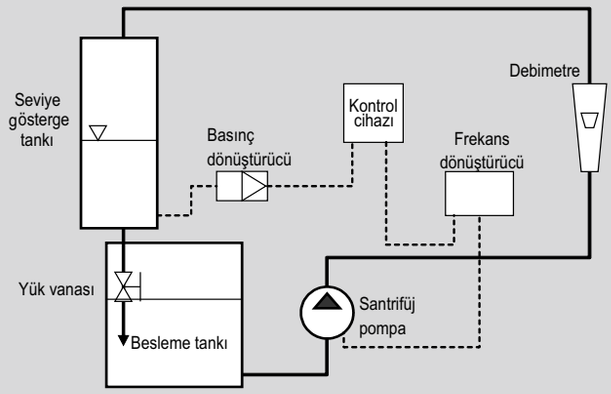
1. Two-position (ON-OFF) level control of water level
2. Proportional (P) level control of water level
3. Proportional and integral (PI) level control of water level
4. Proportional and differential (PD) level control of water level
5. Proportional, integral and derivative (PID) level control of water level

DIMENSIONS

A x B x H : 900 x 500 x 1550 mm

TECHNICAL SPECIFICATION

In this set, it is aimed to set the water level to the desired set values by driving the pump with frequency driver with automatic control systems. The effects of the proportional coefficient, the integral coefficient and the derivative coefficient on the PID control, the operating principle of the on-off control can be observed.



TECHNICAL DETAILS

- Centrifugal pump
- Proportional valve
- Transparent level column
- Frequency driver

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

KN-790 PRESSURE CONTROL TRAINING SET

GENERAL EXPLANATION

This training set is a typical application of automatic pressure control and different control algorithms can be applied.

EXPERIMENTS

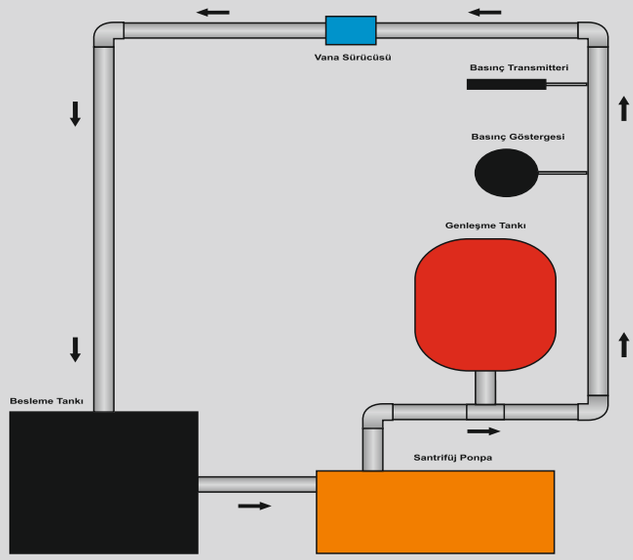
1. Two-position (ON-OFF) level control of water pressure
2. Proportional (P) level control of water pressure
3. Proportional and integral (PI) level control of water pressure
4. Proportional and differential (PD) level control of water pressure
5. Proportional, integral and derivative (PID) level control of water pressure

DIMENSIONS

A x B x H : 1080 x 500 x 1550 mm

TECHNICAL SPECIFICATION

In this set, it is aimed to set the water pressure to the desired set values with automatic control systems. The effects of the proportional coefficient, the integral coefficient and the derivative coefficient on the PID control, the operating principle of the on-off control can be observed.



TECHNICAL DETAILS

- Centrifugal pump
- Proportional valve
- Diaphragm expansion tank
- Pressure transmitters (0-4 bar)
- Pressure manometer
- 32 mm connection control valve and valve driver

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

ENERGY EFFICIENCY

EVD-1210
INSULATED AND-NON INSULATED COLD ROOM TRAINING SET

EVD-1220
PUMP TRAINING SET

EVD-1230
PRESSURIZED AIR TRAINING SET

EVD-1240
FAN TRAINING SET

EVD-1260
LIGHTING TRAINING SET

EVD-1270
BUILDING EXTERNAL SIDE TRAINING SET

EVD-1300
OPEN COMBUSTION TRAINING SET

EVD-1320
ELECTRIC MOTORS TRAINING SET

EVD-1360
HEAT PUMP TRAINING SET

argemsan

EVD-1210 INSULATED AND NON-INSULATED COLD ROOM TRAINING SET

GENERAL EXPLANATION

This training set consists of two cold rooms, one insulated and the other uninsulated. Heat loss calculations can be made in these two cold rooms.

EXPERIMENTS

1. Calculation of amount of cold storage
2. Calculation of heat loss
3. Performance measurement (compressor energy consumption)

DIMENSIONS

A x B x H : 1500 x 800 x 1500 mm

OPTIONAL FEATURES

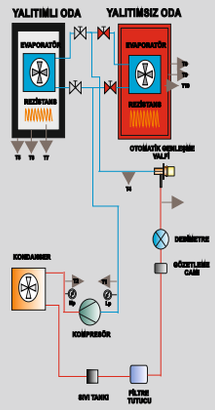
- Touch LCD Display
- USB Computer Connection
- Computer Control

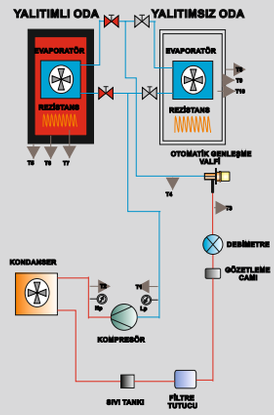
PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

This training set is designed to calculate the energy efficiency of insulated and uninsulated cold rooms used in the market. Cold room was formed by joining polyurethane panels and R134A gas was used as refrigerant.





TECHNICAL DETAILS

- Compressor
- Refrigerant R134A
- Evaporator
- Condenser
- Sight glass
- Filter dryer
- Automatic expansion valve
- Low-high pressure manometer
- Resistance

EVD-1220 PUMP TRAINING SET

GENERAL EXPLANATION

Within the pump training set, two pumps were used with the same diameters but different capacities. In practice, it is aimed to realize the energy consumed by a selected pump more than necessary and the improvement works that can be performed without changing the existing pump.

EXPERIMENTS

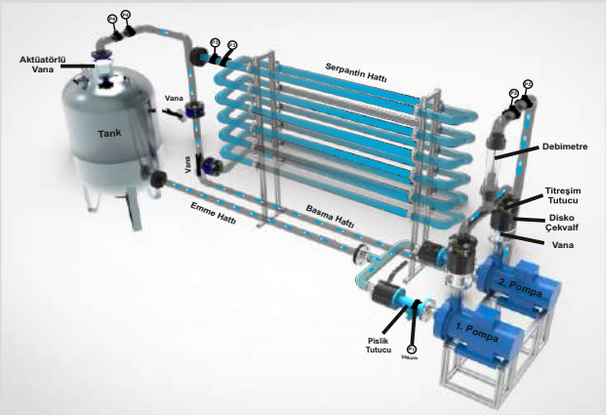
1. Current situation
2. Indication and results of valve throttling
3. Analysis of inverter manual control
4. Finding pressure loss of serpentine and serpentine lines in variable speed pump
5. Automatic operation of the inverter in pressure control
6. Large impeller centrifugal pump at different speeds of pump efficiency

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Two different capacities of the pump are used in the training set to compare energy consumption, pressure losses and emissions. How the pump reacts at fixed and variable cycles can be compared by filling the table.



TECHNICAL DETAILS

- Centrifugal pump
- 2 pumps
- Water tank
- Flowmeter
- 4 manometers
- 4 pressure sensors
- Check valve

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

EVD-1230 PRESSURIZED AIR TRAINING SET

GENERAL EXPLANATION

In this training set, energy efficiency calculations can be done by using two different driving methods of compressor.

EXPERIMENTS

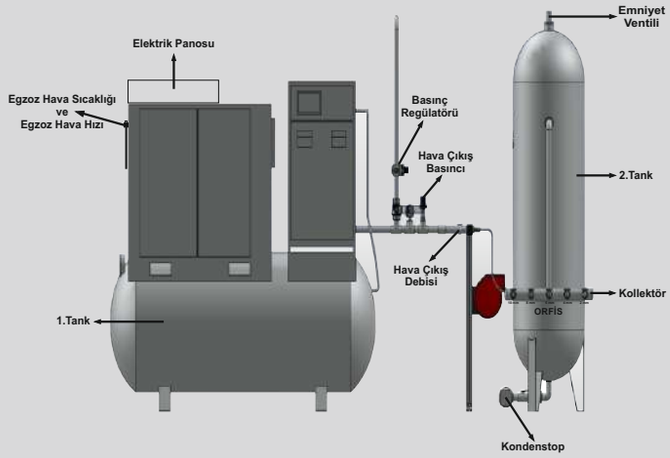
1. Specific power consumption
2. No-load power consumption
3. Inlet air and energy saving
4. Air storage
5. Calculation of distribution line pressure loss
6. Calculating the amount of air leakage and the power consumed consisting of five different diameters of orifices

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this training set, energy efficiency calculations can be done by using two different driving methods of compressor.



TECHNICAL DETAILS

- Tank
- 2, 4, 6, 8, 10 mm diameter orifice
- Steam trap
- Pressure regulator
- Collector
- Air flow

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

GENERAL EXPLANATION

In this training set, air velocity measurement with pitot tube and air flow measurement at different sections can be done.

EXPERIMENTS

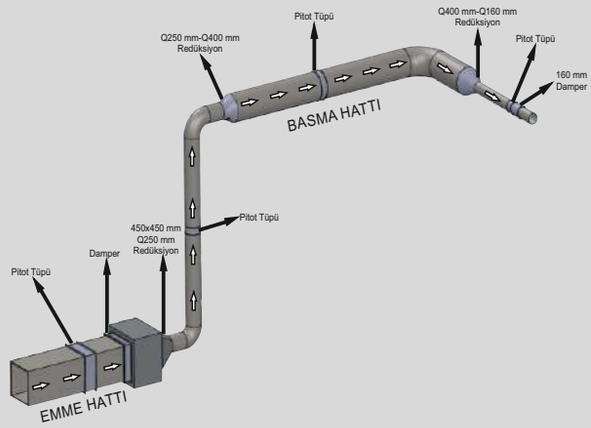
1. Air flow rate
2. Fan electrical power
3. Electrical power provided by valve adjustment
4. Electrical power provided by the inverter
5. Setting the flow rate with inverter
6. Provided energy saving

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this training unit, measurements such as speed and flow measurement with pitot tube, fan power and air temperature can be done.



TECHNICAL DETAILS

- Pitot tube
- Dump
- Reduction
- Fan motor
- Flow straightener

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

EVD-1260 LIGHTING TRAINING SET

GENERAL EXPLANATION

This training set is designed to examine the differences between ballasts used in fluorescent lamps and their power consumption effects and the differences between the light consumption and energy consumption of 4 lamps which are the most used in environmental lighting today.

EXPERIMENTS

1. Comparison of energy and power coefficients between ballast applications
2. Comparison of energy and power coefficients between gas discharge lamp applications
3. Comparison of color appearance under gas discharge lamp applications

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

In a part of the training set, 4 fluorescent lamps in 21 W power are operated with mechanical ballast, electronic ballast and dimmable ballast and their power and power coefficients are measured and the power consumption effects of the ballasts used in the same power lamps are examined. In the other part, there are four types of lamps used for ambient lighting, including high-pressure sodium-vapor lamp with 100 W power, gas lamp, led projector, compact fluorescent lamp and metal halide lamp. These lamps are examined in terms of lighting efficiency and color conversion indexes by measuring the power, power coefficients and light intensities they have consumed by using a closed, black screen, equal measure and the same height.

GAZ DEŞARJLI METAL HALİDE			GAZ DEŞARJLI YÜKSEK BASINÇ SODYUM BUHARLI			KOMPAKT FLUORESAN LAMBA			LED		
GERİLİM	220	V	GERİLİM	220	V	GERİLİM	220	V	GERİLİM	220	V
GÜÇ	100	W	GÜÇ	100	W	GÜÇ	100	W	GÜÇ	100	W
DUY	E 40		DUY	E 40		DUY	E 27		DUY	–	
IŞIK AKISI	10600	lm	IŞIK AKISI	10000	lm	IŞIK AKISI	8000	lm	IŞIK AKISI	9000	lm
IŞIK ETKİNLİĞİ	106	lm/W	IŞIK ETKİNLİĞİ	100	lm/W	IŞIK ETKİNLİĞİ	80	lm/W	IŞIK ETKİNLİĞİ	90	lm/W
RENK SICAKLIĞI	3000	K	RENK SICAKLIĞI	2000	K	RENK SICAKLIĞI	6400	K	RENK SICAKLIĞI	6500	K
RENK GERİ VERİMİ	80-89	Ra	RENK GERİ VERİMİ	25-70	Ra	RENK GERİ VERİMİ	75-90	Ra	RENK GERİ VERİMİ	65-99	Ra
MAX.UZUNLUK	210	mm	MAX.UZUNLUK	204	mm	MAX.UZUNLUK	243	mm	MAX.UZUNLUK	24	mm
ÇAP	47	mm	ÇAP	46	mm	ÇAP	78	mm	ÇAP	24	mm
RENK	830, Sıcak Beyaz		RENK	Altın Sarısı		RENK	Beyaz		RENK	Beyaz	
Açık hava spor sahalarında , Bina dış cephe aydınlatmalarında			Yol aydınlatmasında , Sanayi alanlarının aydınlatılması, Spor tesislerinin aydınlatılması			Çalışma odaları , Atelyeler , Ev Ofisleri			Halı saha , Otopark , Stadyum , Bahçe , Şantiye		

TECHNICAL DETAILS

- 100 W led floodlight
- 100 W gas discharge high pressure sodium
- Steam light bulb
- 100 W compact fluerosan
- 100 W metal halide
- 4x21 W fluorescent lamp
- Mechanical ballast
- Electronic ballast
- Dimmable electronic ballast
- Electronic ballast with sensor

EVD-1270 BUILDING EXTERNAL SIDE TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the usefulness of different insulation materials in terms of heat loss and resulting energy efficiency.

EXPERIMENTS

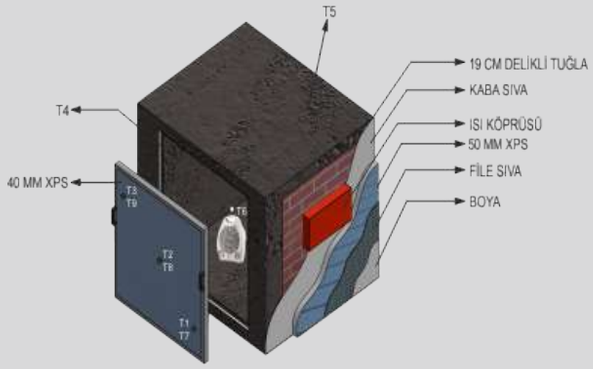
1. System heat loss experiment
2. Heat loss experiment in different insulation materials
3. Heat loss experiment at unit wall

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In this experimental set, rockwool, EPS, XPS were used as insulation material. Materials will have an impact on energy efficiency among themselves.



TECHNICAL DETAILS

- 40 mm XPS foam
- 40 mm EPS foam
- 50 mm rockwool
- Heat bridge
- 19 cm perforated brick
- Heater

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

EVD-1300 OPEN COMBUSTION TRAINING SET

GENERAL EXPLANATION

In this training set, the working principle of the burner system and the air fuel mixture can be adjusted.

EXPERIMENTS

1. Commissioning of the burner system

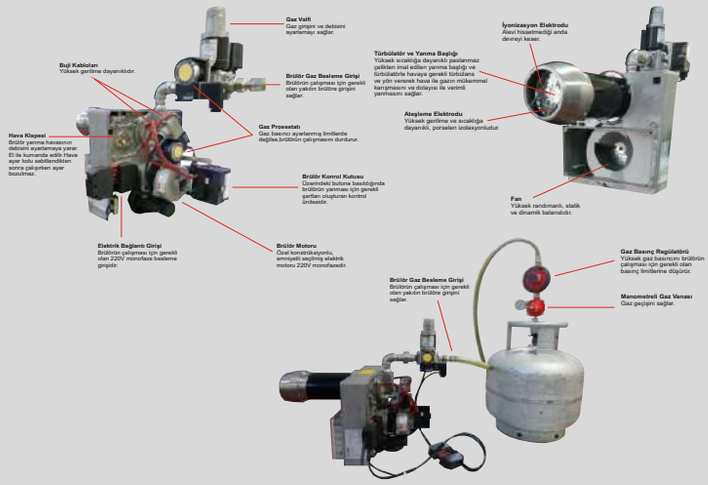
2. Adjustment of flame length

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

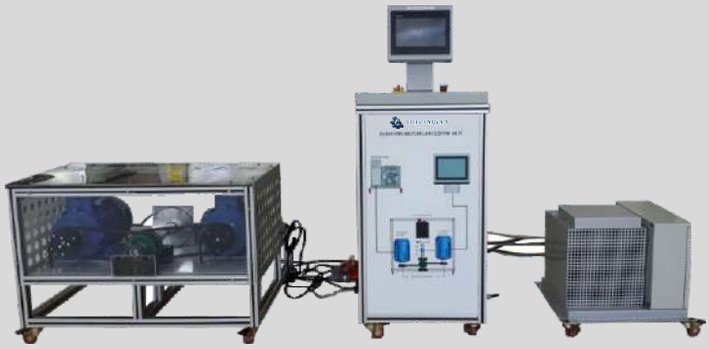
By means of the air and fuel clips on this training unit, it is aimed to adjust the flame size to achieve the most suitable combustion.



TECHNICAL DETAILS

- 12 kg industrial tube
- Manometer gas valve
- Gas pressure regulator
- Burner motor
- Ignition elektrodu
- Ionization
- Gas valve
- Air clap

EVD-1320 ELECTRIC MOTORS TRAINING SET



GENERAL EXPLANATION

In this training set can compare IE1, the International Electrotechnical Commission's IEC efficiency classifications for three-phase asynchronous squirrel cage motors the most inefficient, and IE4, the most efficient class.

EXPERIMENTS

1. Comparison of IE1 and IE4 engines

OPTIONAL FEATURES

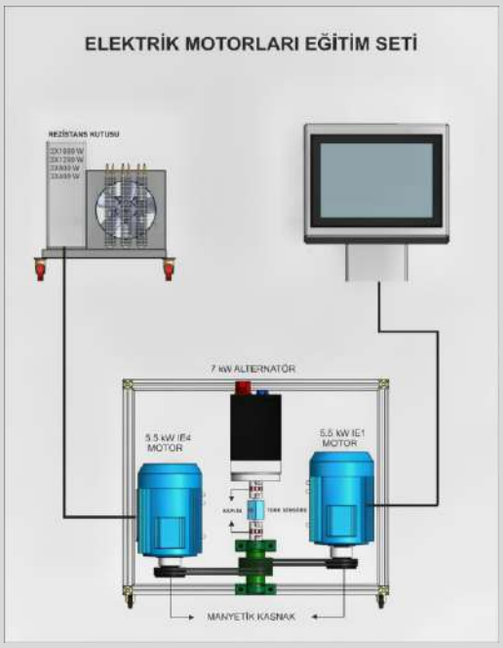
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

IE1, the most inefficient class of IEC efficiency classification, and IE4, the most efficient class, to increase energy efficiency by ensuring proper engine selection by observing energy consumption and efficiency differences between two asynchronous engines. In this set, the total active and apparent powers taken from the alternator by the total active, reactive and apparent powers that the motors have taken from the network, the instantaneous torque measurement of the motor circuits with the dynamic torque sensor and the four stage heater load we used to load the motors, and the energy they have drawn from the network are instantaneously measured. Values from two motors over a 10-inch operator panel can be compared side-by-side on a single page.



TECHNICAL DETAILS

- IE1, IE4 Electric motors
- Alternator
- Load (resistance)
- Belt pulley system

EVD-1360 HEAT PUMP TRAINING SET

GENERAL EXPLANATION

This training set is designed to show the operation of the heat pump in water-water, water-to-air, water-to-soil (fan coil) unit.

EXPERIMENTS

1. Calculation of the heating performance coefficient (COP) of the ground source heat pump
2. Calculation of the heating performance coefficient (COP) of the water source heat pump
3. Calculation of the heating performance coefficient (COP) of the air source heat pump

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

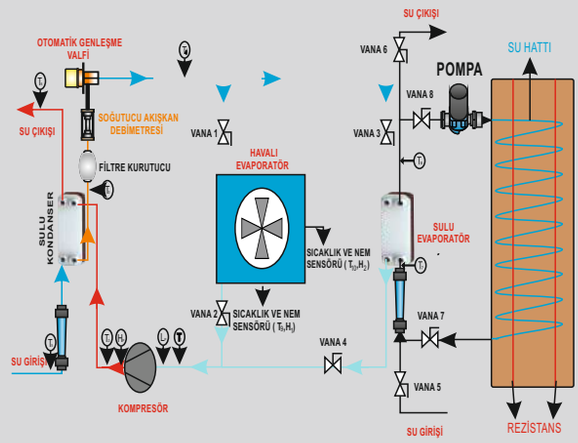
PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Heat pumps are devices that can transfer heat from a low temperature environment to a higher temperature environment. The heat pump transfers heat from the natural source environment to the energetic source environment when heating. When examined as a thermodynamic process, heat pump; "Reverse Carnot Cycle" is a working refrigerant with the principle that it consists of 5 important building elements:

- Refrigerant
- Compressor
- Condenser
- Expansion valve
- Evaporator



TECHNICAL DETAILS

- Hermetic compressor
- Fan with evaporator
- Fan cooled lamellar water-cooled condenser
- Condenser air inlet-outlet temperature
- Graduated circulation pump
- Soil unit

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PLUMBING

ST-510
CIRCULATION PUMP TRAINING SET

ST-530
HOUSEHOLD COLD WATER PLUMBING TRAINING SET

ST-540
HOUSEHOLD HOT WATER PLUMBING TRAINING SET

ST-550
HYDROPHOR TRAINING SET

ST-560
FRESH WATER TRAINING SET

ST-570
SHIP FUEL TRAINING SET

ST-510 CIRCULATION PUMP TRAINING SET

GENERAL EXPLANATION

This training set is designed for use in mechanical installation applications. It is easily to understand the basic concepts of circulation pumps such as efficiency, specific speed, how pump performance curves are generated and how they are interpreted.

EXPERIMENTS

1. Pump head-flow rate relationship
2. Determining of pump specific speed
3. Calculation of pump efficiency
4. Relationship between head-flow rateat different revolution levels

TECHNICAL SPECIFICATION

Circulation pumps are a type of pump used in closed loop systems for circulating water in the circulation system. They are preferred as dry and wet rotors for their intended use. The pressure gauge on the training set allows the pump head, specific speed and feed rate to be calculated.

TECHNICAL DETAILS

- Recirculation pump
- Rotameter type flow meter
- 2 pressure gauges
- Digital wattmeter

DIMENSIONS

A x B x H : 700 x 500 x 2250 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

ST-530 HOUSEHOLD COLD WATER PLUMBING TRAINING SET

GENERAL EXPLANATION

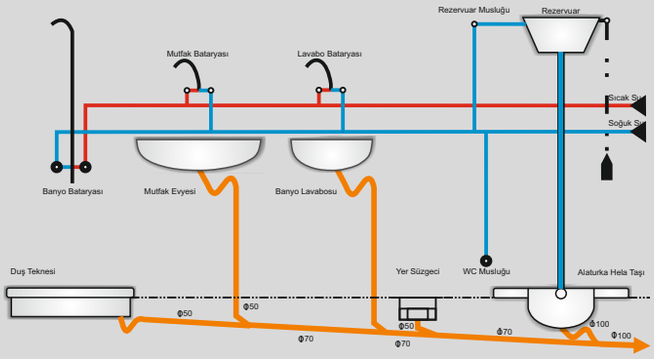
This training set is designed to introduce the installation elements commonly used in homes. It consists of dirty and clean water installations.

DIMENSIONS

A x B x H : 2270 x 840 x 1650 mm

TECHNICAL SPECIFICATION

The training set is designed to visualize the plumbing materials and teach the symbols. It is equipped with installation elements such as shower cabin, kitchen mixer, basin mixer, bath mixer, toilet spout, kitchen sink, bathroom sink, shower booth, floor drainer for water removal, reservoir, squatting toilet stones.



TECHNICAL DETAILS

- Water supply lines
- Household sanitary fittings

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

ST-540 HOUSEHOLD HOT WATER PLUMBING TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the elements of a simple hot water installation and show the connection patterns.

EXPERIMENTS

1. Measurement of pressure losses in cold water installation

2. Measurement of pressure losses in electric water heater and hot water line

3. Measurement of pressure losses in gas water heater and hot water line

4. Measurement of pressure losses in electric water heater and hot water line

5. Measurement of the electric heater heating capacity

6. Measurement of Gas boiler heating capacity

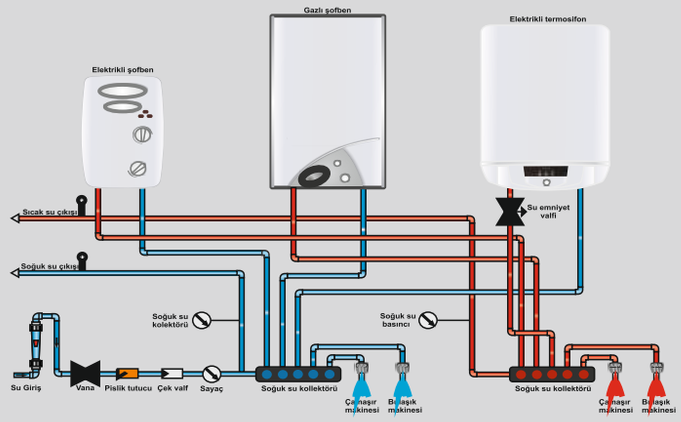
7. Measurement of electric water heater heating capacity

DIMENSIONS

A x B x H : 1480 x 750 x 1500 mm

TECHNICAL SPECIFICATION

The training set is equipped with water meter, gas water heater, electric water heater, electric thermosyphon, washing machine connections, dishwasher connections.



TECHNICAL DETAILS

- Rotameter type water flowmeter
- Digital temperature measurement from 2 points
- Hot water pressure indicator
- Cold water pressure indicator
- Electric water heater
- Gas water heater
- Electric thermosyphon

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

ST-550 HYDROPHOR TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the pressurization (hydrophor) system used in clean water installation and to apply basic experiments.

EXPERIMENTS

1. Flow rate-operating time in the hydroforming system
2. Setting the pressure switch
3. Use of pressure regulators in multi-storey buildings

DIMENSIONS

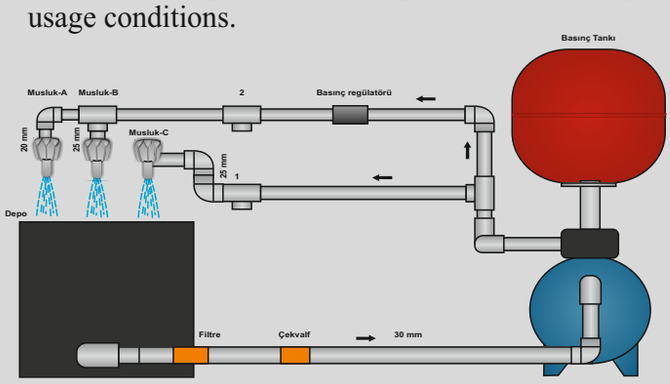
A x B x H : 1250 x 750 x 1470 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Hydrophor system is an air-cushioned pump system that takes a low pressure fluid from a certain reservoir and provides the required pressure and discharge, and automatically performs its operation according to usage conditions.



TECHNICAL DETAILS

- Centrifugal pump
- Membrane expansion tank
- Turbine type flow meter and indicator
- 2 pressure manometers
- Pressure regulator

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

ST-560 FRESH WATER TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the pressurization (hydrophor) cleaning system used in clean water installations at ships and to implement basic experiments.

DIMENSIONS

A x B x H : 1250 x 650 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Hydrophor system is an air-cushioned pump system that takes a low pressure fluid from a certain reservoir and provides the required pressure and discharge, and automatically performs its operation according to usage conditions.

TECHNICAL DETAILS

- Centrifugal pump
- Membrane expansion tank
- Hydrophore pressure auto switch
- 1 pressure manometer
- Strainer
- Pressure regulator

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

ST-570 SHIP FUEL TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the ship's fuel system and to implement basic experiments.

DIMENSIONS

A x B x H : 1400 x 720 x 1580 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In tank fuel system, the principles of discharging, filling and cleaning between tanks are applied.

TECHNICAL DETAILS

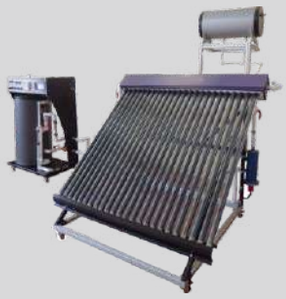
- Centrifugal pump
- Ball valve
- Oil filter
- 2 pressure manometers
- Sampling tank
- Pressure regulator

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

RENEWABLE ENERGY

YE-1010
SOLAR ENERGY SYSTEM WITH PLANT COLLECTOR TRAINING SET



YE-1020
SOLAR ENERGY SYSTEM WITH VACUUM TUBE TRAINING SET

YE-1030
SOLAR CELL (PV) TRAINING SET

YE-1032
MULTI SOLAR AND THERMAL(PVT) TRAINING SET

YE-1035
SOLAR CELL AND THERMAL (PVT) TRAINING SET

YE-1040
WIND TURBINE TRAINING SET

YE-1041
TUNNEL TYPE WIND TUNNEL TRAINING SET

YE-1050
WIND AND SOLAR ENERGY(COMBINED) TRAINING SET

YE-1051
TUNNEL TYPE WIND AND SOLAR ENERGY TRAINING SET

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YE-1010 SOLAR ENERGY SYSTEM WITH FLAT COLLECTOR TRAINING SET

GENERAL EXPLANATION

This training set consists of flat panel, single serpentine boiler, control panel and measurement systems.

EXPERIMENTS

1. Installation and operation of the solar panel system
2. Finding momentary thermal forces in plane panels
3. Flat panel efficiency in different positions
4. Performing differential temperature control
5. Finding the flat panel thermal power change due to temperature
6. Transition of solar energy to heat energy
7. Measuring the effect of the circulation pump on the plane panel to the heating capacity

OPTIONAL FEATURES

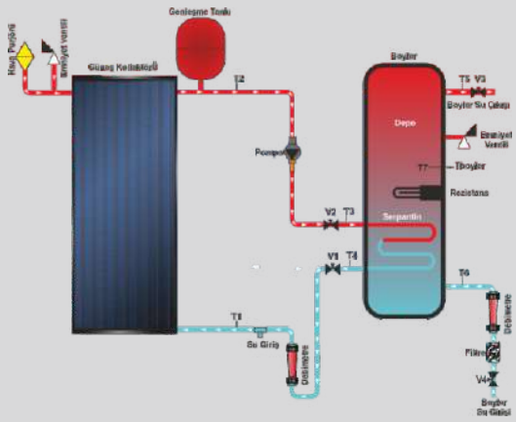
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Solar collecting hot water systems consist of flat collectors collecting solar energy, storage tank for heated water, insulated pipes providing connection between these two parts, pump and controller. The flat solar collectors consist of a top cover made from glass, a top cover made from glass, enough space between the glass and the absorbent plate, absorbent plate which is the most important part of the collector, rear and side insulation. Since panel angles can be changed, panel efficiencies in different locations are can compared.



TECHNICAL DETAILS

- Single serpentine boiler
- Plane collecting copper selective panel
- 3-stage circulation pump
- Closed expansion tank
- Rotameter type flow meter
- Thermostated resistance

YE-1020 SOLAR ENERGY SYSTEM WITH VACUUM TUBE TRAINING SET

GENERAL EXPLANATION

It is estimated that Turkey has an average of 2400 hours of sunshine per year and a radiation intensity of 0.15 million calories/cm^2. These data show that Turkey is very suitable for solar energy applications. For this reason, there is a great need for such energy converters.

EXPERIMENTS

1. Instantaneous thermal power in the vacuum tube collector
2. Calculation of collector capacity at different azimuth angles
3. Performing differential temperature control
4. Finding the time-dependent collector thermal capacity change

DIMENSIONS

Boiler
A x B x H : 1000 x 4000 x 1000 mm

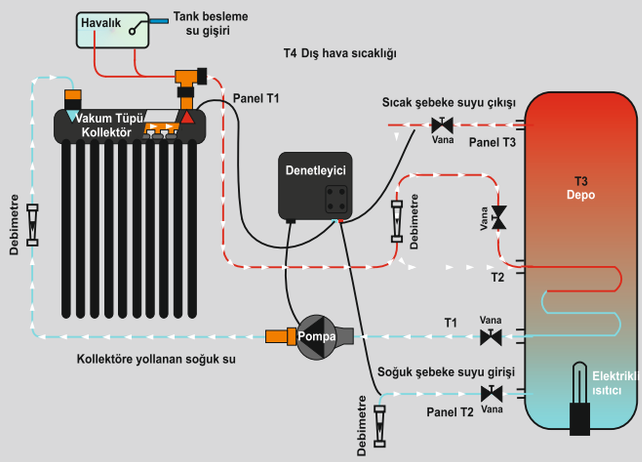
Control Panel
A x B x H : 1380 x 350 x 1390 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

The system consists of two borosilicate glass tubes which are intertwined. Heat loss is reduced to a minimum thanks to the vacuum between the two tubes. Al-N / Al is coated with the external spray method of the inner tube. Thanks to this selective surface, 93% of the rays coming from the tube are perfectly absorbed and turned into heat. Due to the intake of air between the two tubes, the heat loss from the inner tube is negligible. It's done in the same way as thermos in the house. The solar energy absorpted by the selective surface passes through the water in the inner tube. This is called natural circulation and the same phenomenon continues in every tube.



TECHNICAL DETAILS

- Single serpentine boiler
- Vacuum glass tube
- 3-stage circulation pump
- Closed expansion tank
- Rotameter type flow meter
- Temperature measurement from different points

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

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YE-1030 SOLAR CELL (PV) TRAINING SET

GENERAL EXPLANATION

The solar cell power supply and wiring diagram in this training set is useful for vocational students to study. This training set can show characteristics such as sunshine, battery capacity, AC and DC distribution, AC and DC loading.

EXPERIMENTS

1. Calculation of instantaneous electrical output power of solar cell

2. Determination of solar cell efficiency

3. Examining the change of solar cell power depending on angle

DIMENSIONS

Control Panel
A x B x H : 880 x 450 x 1500 mm

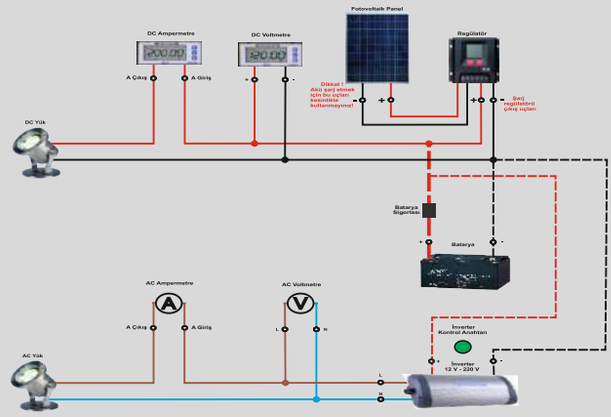
Solar Panel
A x B x H : 1270 x 750 x 1220 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Solar PV panels convert solar energy to DC (direct current) electricity. Behind the shining surface of a PV panel, semiconductor plates produce electricity using solar light (photons); this process is called photovoltaic effect. Other components in the system, such as the inverter and charge controller, also convert the electrical energy generated by the solar panels to the form that can be used by refrigerators, washing machines and other devices.



TECHNICAL DETAILS

- Solar panel
- System output voltage: 220 VAC (inverter)
- Fan
- Siren
- Lamp
- Dimmer lamp
- Halogen lamp
- Phase number: 1 (monophasic)

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

YE-1032 MULTI SOLAR CELL TRAINING SET

GENERAL EXPLANATION

This training set is designed to show the energy efficiency between 3 solar panels; monocrystalline, polocrystal and thin film.

EXPERIMENTS

1. Calculation of instantaneous electrical output power of solar cell

2. Determination of solar cell efficiency

3. Examining the change of solar cell power depending on angle

DIMENSIONS

Control Panel
A x B x H : 880 x 450 x 1500 mm

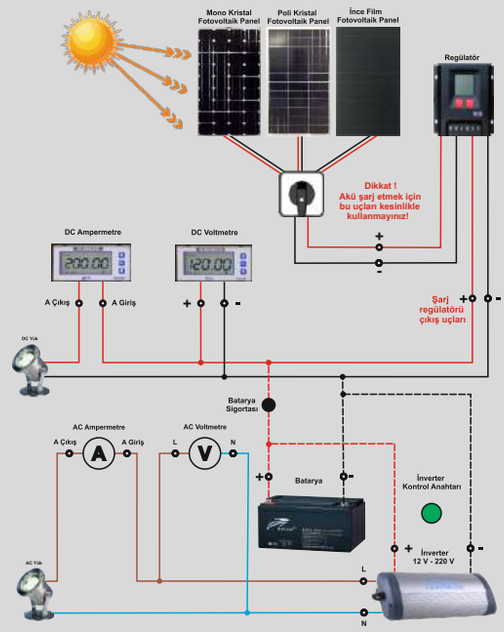
Panel-1, Panel-2
A x B x H : 1700 x 740 x 1600 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

This training set is designed to show the energy efficiency between 3 solar panels; monocrystalline, polo crystal and thin film.



TECHNICAL DETAILS

- Monocrystalline photovoltaic panel
- Policrystalline photovoltaic panel
- Thin film photovoltaic panel
- Inventors
- Regulator
- Lamp
- Battery

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

YE-1035 SOLAR CELL AND THERMAL (PVT) TRAINING SET

GENERAL EXPLANATION

In solar cells, the surface temperature is higher than 80 °C, yield decreases. It is possible to solve this problem by placing a hot water panel on the cell bottom surface. In this way both efficiency increase and hot water need are met.

EXPERIMENTS

1. Calculation of solar cell instantaneous electrical capacity
2. Finding solar cell efficiency
3. Experimental study of solar cell angle dependent of current-angle change
4. Finding momentary thermal forces in the flat panes
5. Flat panel efficiency in different positions
6. Finding the flat panel thermal power change depending on the temperature
7. Transition of solar energy to heat energy
8. Measuring the effect of the circulation pump on the flat panel on the heating rate

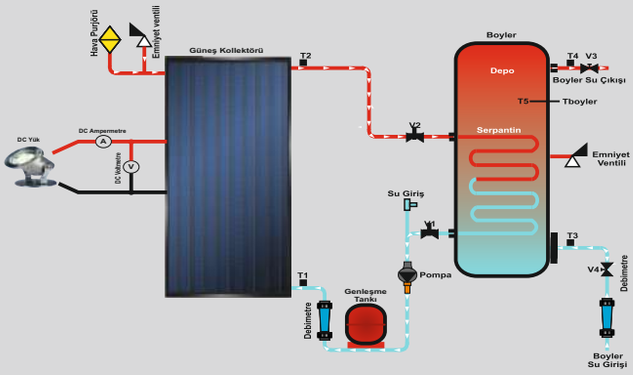
DIMENSIONS

Control Panel
A x B x H : 930 x 490 x 1460 mm

Boiler
A x B x H : 1173 x 1050 x 2100 mm

TECHNICAL SPECIFICATION

PVT, which is an integrated solar energy system, meets both electric and hot water needs. In photovoltaic panels, it is necessary to remove the excessive heat load generated by solar radiation which can not be converted to electricity. For this reason, photovoltaic thermal (PVT) systems are designed. With PVT systems, both the excess heat load can be removed from the photovoltaic material and this energy can be utilized as heat.



TECHNICAL DETAILS

- Single serpentine boiler
- Expansion tank
- Pump
- Solar collector
- Flowmeter
- Air purge
- Safety valve

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

YE-1040 WIND TURBINE TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the logic of the simple wind turbine cycle.

EXPERIMENTS

1. Wind turbine power generation-air velocity relationship

2. Calculation of turbine efficiency

DIMENSIONS

Control Panel
A x B x H : 880 x 450 x 1500 mm

Wınd Turbine
A x B x H : 800 x 750 x 1595 mm

OPTIONAL FEATURES

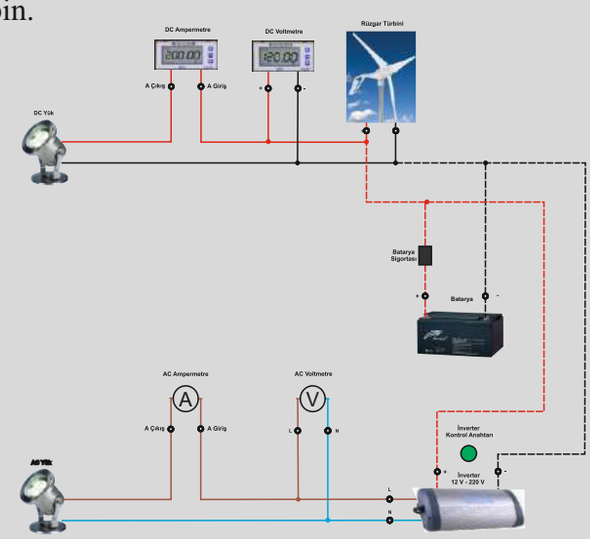
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Wind turbines consist of propeller blades, shaft and generator. When the wind blows, the wind hits the wing of the propeller and starts to rotate it. In this view, kinetic (motion) energy is obtained by wind energy. Propellers are designed to turn in the same direction when the wind is blowing. When the propellers turn, the shaft connected to it also begins to turn. When the shaft rotates, movement occurs in the motor and electrical energy is generated at the output of the motor. Electric energy is produced by electromagnetic induction. For the calculation of the energy generated by a wind turbine, the speed of the wind and the diameter of the propeller are needed. Theoretically, it is necessary to increase the diameter of the propeller to increase the generated energy. This means that the height of the wind turbine also increases. It takes more wind and provides a faster spin.



TECHNICAL DETAILS

- Wind turbine
- Battery
- 220V output inverter
- Fan
- Lamp
- Halogen lamp
- Siren

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YE-1041 TUNNEL TYPE WIND TURBINE TRAINING SET

GENERAL EXPLANATION

This training set is designed to demonstrate the practical working principle of tunnel-type wind turbines.

EXPERIMENTS

1. Wind turbine power generation-air velocity relationship

2. Calculation of turbine efficiency

DIMENSIONS

Control Panel
A x B x H : 880 x 450 x 1500 mm

Wind Turbine
A x B x H : 800 x 750 x 1595 mm

OPTIONAL FEATURES

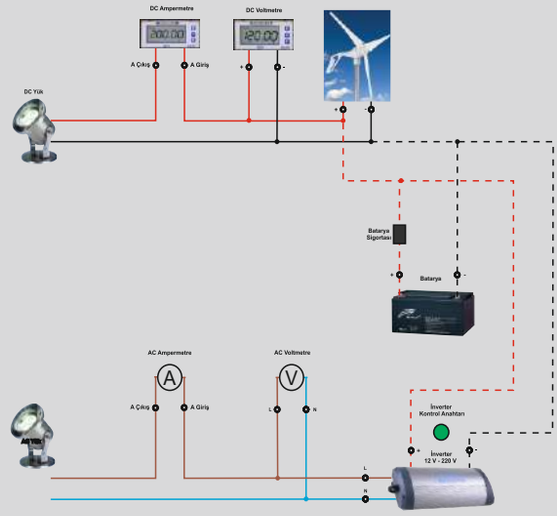
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

Wind turbines consist of propeller blades, shaft and generator. When the wind blows, the propeller slams its wings and starts to turn it. In this way, wind energy and kinetic (motion) energy is obtained. The propellers are designed to rotate in the same direction as the wind blows. With the rotation of the propellers, the shaft, which is connected to it, begins to rotate. With the rotation of the shaft, movement occurs inside the motorand electric energy is generated at the output of the motor. Electrical energy is produced by electromagnetic induction. For the calculation of the energy produced by a wind turbine, wind speed and propeller diameter are needed. In order to increase the energy produced theoretically, it is necessary to increase the propeller diameter. This means that the height of the wind turbine also increases. This results in faster rotation.



TECHNICAL DETAILS

- Wind turbine
- Tunnel type fan
- Tunnel
- Regulator
- Inventor
- Lamp
- Battery

YE-1050 WIND AND SOLAR ENERGY (COMBINED) TRAINING SET

GENERAL EXPLANATION

This training set is designed to teach the combined working system of simple wind turbines and photovoltaic panel circuit.

EXPERIMENTS

1. Wind turbine power generation-air velocity relationship
2. Calculation of turbine efficiency
3. Calculation of solar cell electrical capacity
4. Experimental study of solar cell angle dependent of current-angle change

DIMENSIONS

Control Panel
A x B x H : 880 x 450 x 1500 mm

Solar Panel
A x B x H : 1270 x 750 x 1130 mm

Wind Turbine
A x B x H : 800 x 750 x 1595 mm

OPTIONAL FEATURES

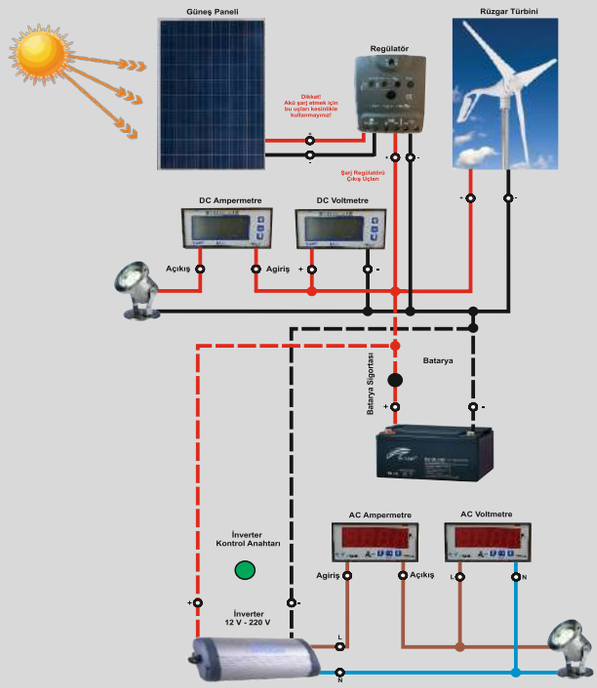
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

TECHNICAL SPECIFICATION

The combined training set teaches the connection of wind turbine and solar panel. Calculation the power generation and the efficiency of the wind turbine depend on the air velocity and the change of the power, efficiency and power of the solar cell is examined.



TECHNICAL DETAILS

- Wind turbine
- Solar panel
- Regulator
- Inventors
- Fan
- Siren
- Lamp
- Halogen lamp
- Battery

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YE-1051 TUNNEL TYPE WIND AND SOLAR ENERGY TRAINING SET

GENERAL EXPLANATION

This training set is designed to teach the combined working system of tunnel type wind turbine and photovoltaic panel circuit.

EXPERIMENTS

1. Connection diagram of wind turbine and working principle with solar panel
2. Wind turbine power generation-air velocity relation
3. Calculation of turbine efficiency
4. Calculation of solar cell electrical capacity
5. Finding solar cell efficiency
6. Experimental study of solar cell angle dependent of current-angle change

DIMENSIONS

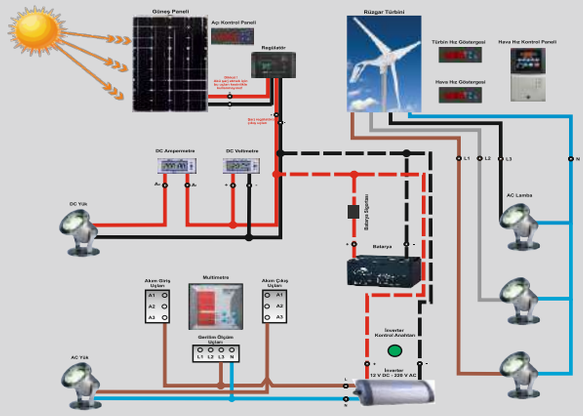
Control Panel
A x B x H : 880 x 450 x 1500 mm

Solar Panel
A x B x H : 1270 x 750 x 1130 mm

Turbin Type Wind Turbine
A x B x H : 1600 x 712 x 1750 mm

TECHNICAL SPECIFICATION

The combined training set teaches the connection of tunnel type wind turbine and solar panel. Calculation the power generation and the efficiency of the tunnel type wind turbine depend on the air velocity and the change of the power, efficiency and power of the solar cell is examined.



TECHNICAL DETAILS

- Tunnel type wind turbine
- Solar panel
- Regulator
- Inventors
- Battery
- Multimeter

OPTIONAL FEATURES

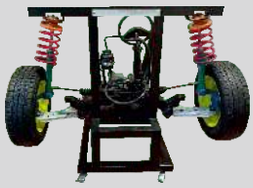
- Touch LCD Display
- USB Computer Connection
- Computer Control

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

AUTOMOTIVE

OT-205
ALTERNATOR SECTION



OT-207
SUSPENSION AND STEERING SYSTEM
TRAINING SET

OT-210
IGNITION SYSTEM IN VEHICLES
TRAINING SET

OT-216
ALTERNATOR AND STARTING SYSTEM
TRAINING SET

OT-217
SEQUENTIAL LPG SYSTEM ENGINE
TRAINING SET

OT-220
DIESEL COMMON-RAIL
TRAINING SET

OT-223
AUTOMOTIVE ELECTRICAL ELECTRONICS
TRAINING SET

OT-224
VEHICLE LIGHTING AND WARNING SYSTEMS
TRAINING SET

OT-230
PASSENGER SAFETY IN VEHICLES
TRAINING SET

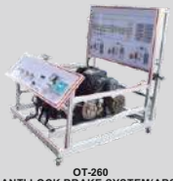
OT-240
PARKING SENSOR
TRAINING SET

OT-245
PNEUMATIC BRAKE SYSTEM
TRAINING SET

OT-246
HYDRAULIC TRAVEL
MOTOR SECTION

OT-255
GASOLINE ENGINE (INJECTION)

OT-256
DIFFERENTIAL SECTION



OT-260
ANTI LOCK BRAKE SYSTEM(ABS)
TRAINING SET

OT-263
DIESEL ENGINE SECTION
(COMMON-RAIL FUEL SYSTEM)

OT-265
GASOLINE ENGINE (INJECTION-HYBRID)
TRAINING SET

OT-266
DIESEL ENGINE SECTION
(WITH SOLENOID INJECTOR PUMP FUEL SYSTEM)

OT-268
RETARDER
TRAINING SET

OT-272
GASOLINE ENGINE SECTION
(WITH INJECTION)

OT-275
GASOLINE ENGINE
(DIRECT INJECTION SYSTEM)
TRAINING SET

OT-300
MECHANICAL STEERING
TRAINING SET

OT-331
BATTERY SECTION

OT-332
CATALYTIC CONVERTER SECTION

OT-333
STARTER MOTOR SECTION

OT-340 MECHANICAL (MANUAL)
GEARBOX SECTION

OT-341 AUTOMATIC
GEARBOX SECTION

OT-345 CENTER HYDRAULIC HARDWARE
TRAINING SET

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OT-205 ALTERNATOR SECTION

GENERAL EXPLANATION

This training set is designed to introduce the alternator internal structure.

TECHNICAL DETAILS

- Alternator section.

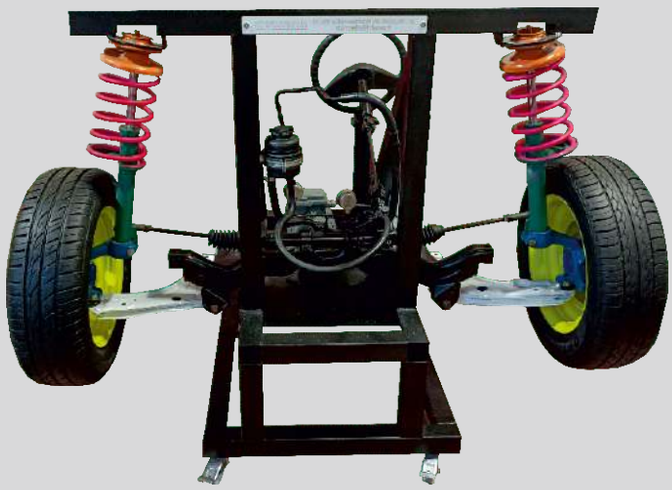
TECHNICAL SPECIFICATION

The alternator undertakes the task of charging the battery in the vehicle and meeting the electricity consumed by the vehicle while running. Generally, it is connected to the internal combustion engine with a belt-pulley system. In this training set, all parts of the alternator are observed with the help of cross-sections.

PACKAGE INCLUDED

Device, 1 printed experiment report

OT-207 SUSPENSION AND STEERING SYSTEM TRAINING SET



GENERAL EXPLANATION

This training set is designed to introduce the working principle of the mechanical steering box.

TECHNICAL DETAILS

- Steering box
- Steering knuckle
- Steering shaft
- Steering wheel
- Wheel
- Axle carrier
- Shock absorber
- Asynchronous electric motor
- Control panel
- Pressure manometer
- Power steering oil pump

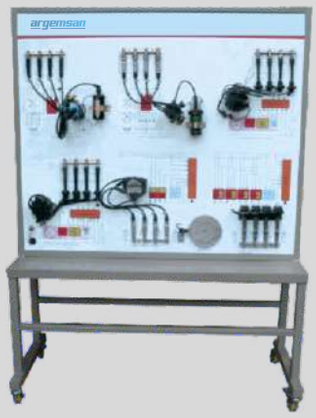
TECHNICAL SPECIFICATION

The hydraulic steering system, which is connected to an internal combustion engine with a belt-pulley system, moves the double-acting cylinder located in the steering box linearly in the desired direction as a result of the direction of the hydraulic oil, which is pressurized by the rotation of the hydraulic steering oil pump, by the directional valves in the steering box. With this movement, the direction that the vehicle will go left or right is determined. The suspension system, on the other hand, undertakes the task of keeping the comfort of the driver at the maximum level by absorbing the impacts caused by the condition of the road by making this directional movement and stretching according to the road conditions. In this training set, we can simulate all of these events.

PACKAGE INCLUDED

Device, 1 printed experiment report

OT-210 IGNITION TRAINING SET IN VEHICLES



GENERAL EXPLANATION

This training set is used in different types of vehicles. to show the firing methods was designed.

EXPERIMENTS

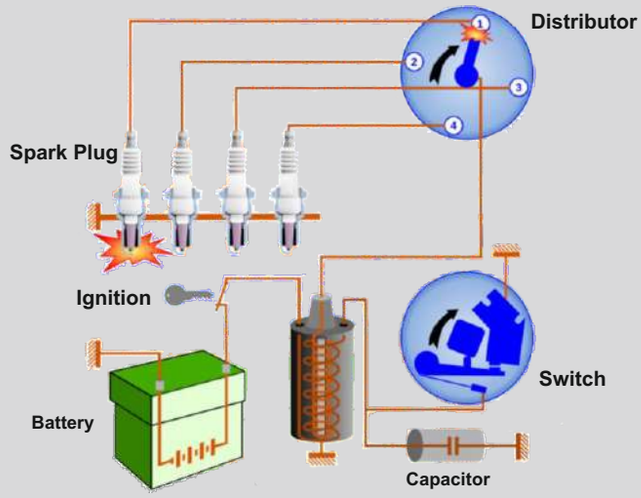
- Platinum spark plug ignition
- 2 Magnetic induction ignition
- Electronic ignition

TECHNICAL DETAILS

- Possibility of ignition with 3 types of spark plugs
- Ignition coil
- Contact start
- Distributor

TECHNICAL SPECIFICATION

Demonstrate the structure and operation of the ignition system three real and operable ignition systems for used. The device describes the structure of the engine ignition system and its operation based on real components shows it holistically.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-216 ALTERNATOR AND STARTING SYSTEM TRAINING SYSTEM

GENERAL EXPLANATION

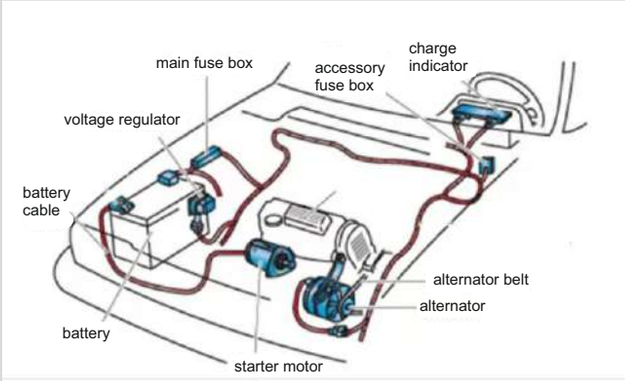
This training set is designed to explain the working principle of the alternator and starter system in internal combustion vehicle engines.

TECHNICAL DETAILS

- Alternator
- Starter motor
- Battery
- Flywheel gear
- Crank arm
- Speed sensor
- Tachometer
- Ammeter
- Voltmeter
- Asynchronous motor
- Asynchronous motor driver

TECHNICAL SPECIFICATION

In this training set, the charging and starting system of vehicles is simulated. The electrical energy from the battery is connected to the starter motor. The starter is triggered by the ignition and gives the flywheel the first move. We simulate the operation of the vehicle after the first movement given to the flywheel. After the first start-up, the alternator, which is connected to the asynchronous electric motor with the belt-pulley system, starts to move. With the rotation of the alternator, electrical energy begins to be produced with the help of kinetic energy. The generated electrical energy starts to charge the battery.



PACKAGE INCLUDED

Device, 1 printed experiment report

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OT-217 SEQUENTIAL LPG SYSTEM ENGINE TRAINING SET

GENERAL EXPLANATION

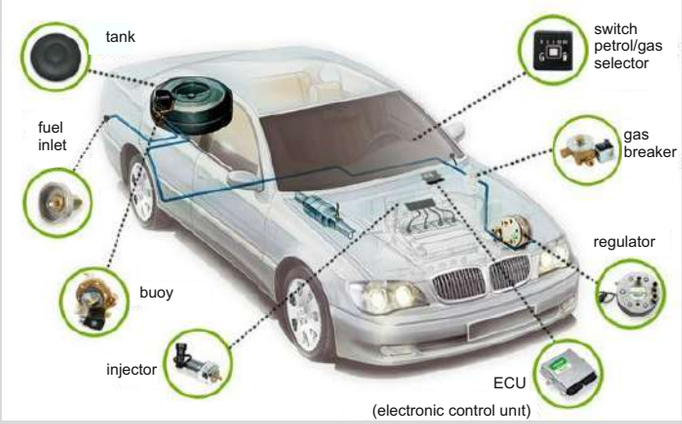
This training set is designed to examine the working principle of the sequential LPG system.

TECHNICAL DETAILS

- Multipoint Injection Gasoline Engine
- LPG fuel system

TECHNICAL SPECIFICATION

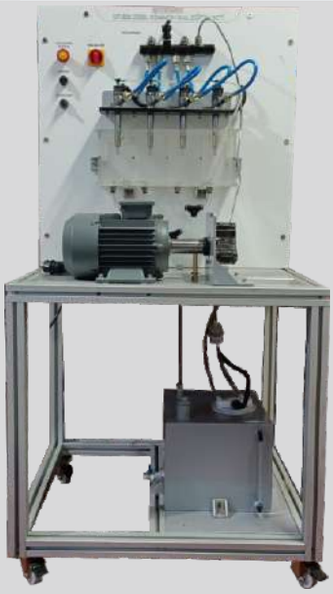
In this training set, the differences between the LPG system, which was subsequently installed on the vehicle, and the gasoline system, which is available as a fabrication of the vehicle, the observation of the parts that were subsequently integrated into the engine, and the working system are shown.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-220 DIESEL COMMON RAIL TRAINING SET



GENERAL EXPLANATION

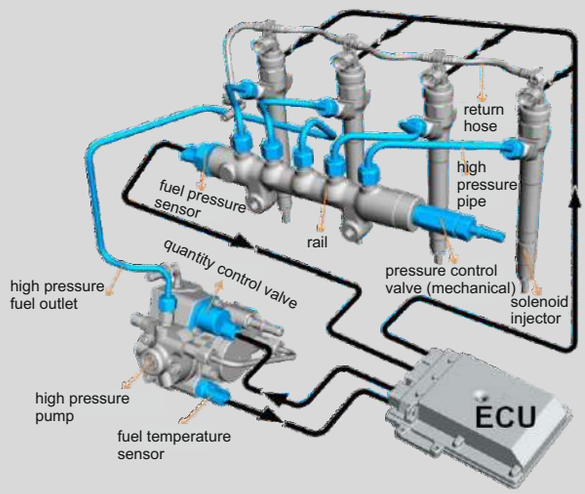
This training set is designed to introduce the diesel common-rail fuel system.

TECHNICAL DETAILS

- High pressure fuel pump
- In-tank fuel pump
- 4 diesel injectors
- Rail line
- Steel fuel hoses
- Asynchronous electric motor (speed adjustable)
- Electronic control unit (ECU)

TECHNICAL SPECIFICATION

Common-Rail fuel system is the fuel system used in diesel vehicles. The Common-Rail fuel system transmits the fuel from the tank to the high pressure fuel pump with the help of the fuel pump. The high pressure pump is coupled to the internal combustion engine. The fuel reaching the high pressure pump is pressurized here and transmitted to the rail line through steel hoses. In the rail line, the fuel always waits at 1600 Bar pressure to be injected. Pressurized fuel is directed separately to 4 injectors by means of steel hoses. As a result of the data received from the speed sensor, the electronic control unit (ECU) triggers the injectors with an electrical signal and the injectors spray the fuel into the combustion chamber. In this way, the injection process is completed. This training set simulates all these processes.



PACKAGE INCLUDED

Device, 1 printed experiment report

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OT-223 AUTOMATIVE ELECTRICAL - ELECTRONICS TRAINING SET

GENERAL EXPLANATION

This training set is used in electrical-electronics vehicles introduce systems and show their work designed for the purpose.

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

The training set includes electrical and electrical equipment in general automobiles. Contains electronic circuits. Taillights and headlights are available. With these headlights, signal, quad and reverse gear lamps can be used. found in automobiles how to ignite with electronic ignition circuit can be demonstrated. To the car with the starter circuit the first given electricity can be shown. with 12V battery car battery is simulated and realism is increased. The wiper in the device and the automobile wipers electrical structure can be shown in detail.

TECHNICAL DETAILS

- Headlight circuit
- Windshield wiper circuit
- Ignition circuit
- Starting circuit
- 12V Battery
- Signal circuit
- Backlight circuit
- Door lock system circuit
- Alternator circuit
- Horn circuit

OT-224 VEHICLE LIGHTING AND WARNING SYSTEMS TRAINING SET

GENERAL EXPLANATION

This training set is designed to make the electrical connections of the lighting and warning systems in the vehicles and to introduce the working principle.

EXPERIMENTS

- Brake circuit electrical connection.
- Reverse circuit electrical connection.
- Electrical connection of interior lighting circuit.
- Horn circuit electrical connection.
- Starter motor circuit electrical connection.
- Central locking system electrical connection.
- Park-Low Beam-High Beam circuit electrical connection.
- Wiper motor circuit electrical connection.
- Signal lamp circuit electrical connection.
- Fog lamp circuit electrical connection.
- Water sprinkler circuit electrical connection.

TECHNICAL SPECIFICATION

The training set contains the circuits of the lighting and warning systems in general cars. The electrical connections of the lighting and warning systems in the vehicles are made and the working principle of these systems is shown. The closest simulation to reality was obtained by using the original parts used in the vehicles on the training set. By simulating the operation of the alternator and starter system on the training set, almost all the systems in the vehicles are available on the training set.

TECHNICAL DETAILS

- Brake circuit
- Reversing circuit
- Interior lighting circuit
- Horn circuit
- Starter motor circuit
- Central locking system
- Park-Low Beam-High Beam circuit
- Wiper motor circuit
- Signal lamp
- Fog lamp circuit
- Water sprinkler circuit
- Battery and charging system

PACKAGE INCLUDED

Device, 1 printed experiment report

OT-230 PASSENGER SAFETY IN VECHILES TRAINING SET

GENERAL EXPLANATION

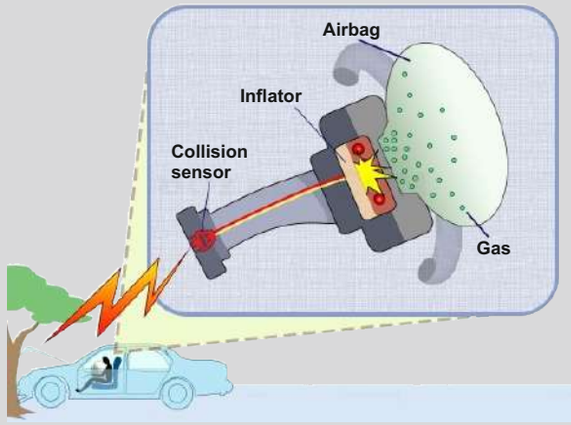
This training set includes airbag and safety equipment in vehicles. In order to show the working principle of the belt was designed.

TECHNICAL DETAILS

- Front and side airbags
- 2 seat belts
- Compressor
- Collision sensor

TECHNICAL SPECIFICATION

Compressor in the device unlike real airbags airbag is inflated. Collision on set sensor warns the inflator in the event of an accident and the inflator with this sensor, which is located at the outlet of the compressor. Opens the solenoid valve air in a few seconds. The pillow inflates completely. Then the solenoid valve turns off and the air in the airbag emptied so as not to suffocate. Also on the training set the mechanism of seat belts is also introduced.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-240 PARKING SENSOR TRAINING SET

GENERAL EXPLANATION

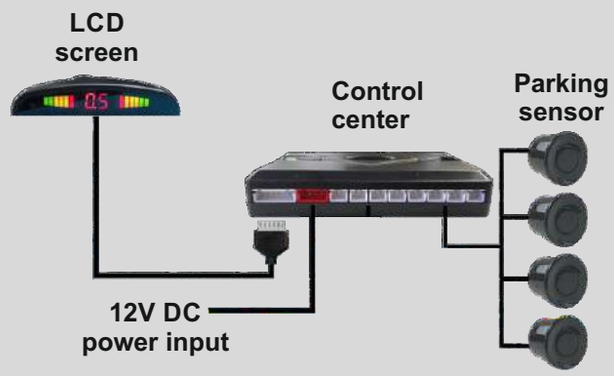
This training set is based on the parking sensors in the vehicles. It is designed to show the working system.

TECHNICAL DETAILS

- 4 parking sensors
- control center
- LCD display with meter display
- Turkish warning system
- Parking sensor interconnects
- Vehicle reversing lights

TECHNICAL SPECIFICATION

Parking status is determined with the parking button. Parking sensor, detects the distance between the device and the obstacle. LCD The distance is shown in meters on the screen. Remaining distance information with voice warning system reported to the driver. In this way, parking sensors the way it works is shown.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-245 PNEUMATIC BRAKE SYSTEM TRAINING SET

GENERAL EXPLANATION

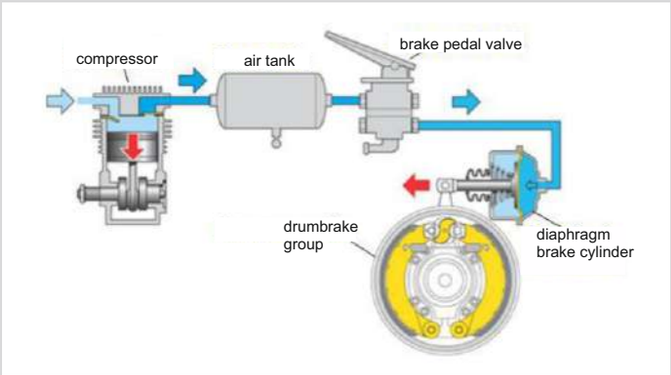
This training set has been designed with the aim of introducing the working principle and system parts of the braking system of vehicles in the heavy vehicle category.

TECHNICAL DETAILS

- Air compressor
- Brake disc
- The brake lining
- Brake pedal
- Air tank
- Control Panel

TECHNICAL SPECIFICATION

In this training set, the braking system of heavy vehicles is simulated. With the operation of the device via the control panel, the electric compressor is activated. With the operation of the compressor, the air tank is filled with compressed air. When the brake pedal of the vehicle is pressed, the double-circuit brake valve located under the pedal operates and allows compressed air to go to the front and rear brake cylinders. Thus, the operation of the braking process is observed.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-246 HYDRAULIC TRAVEL MOTOR SECTION

GENERAL EXPLANATION

This training set is designed to examine the internal structure of the hydraulic travel motor.

TECHNICAL DETAILS

- Hydromotor
- Hydraulic directional control valve

TECHNICAL SPECIFICATION

In this training set, the internal structure and working principle of the hydromotor used in construction machines is shown by taking a cross-section. Traveling hydromotor is generally used in construction machines. Hydraulic energy is generated as a result of the internal combustion engines of construction machines driving an oil pump. With this hydraulic energy, heavy-duty components of the construction machine are managed by directional valves. In this training set, we introduce the internal structure of the hydraulic motor that uses this energy.

PACKAGE INCLUDED

Device, 1 printed experiment report

OT-255 GASOLINE ENGINE (INJECTION)

GENERAL EXPLANATION

This training set is designed to introduce the working principle of the injection gasoline engine.

TECHNICAL DETAILS

- Gasoline engine (Injection)
- 12V battery
- Fuel tank
- Dashboard

TECHNICAL SPECIFICATION

In gasoline engines, the fuel is transferred from the tank to the injection common line with the help of an electric pump. This transmitted fuel is injected into the intake manifold as a result of processing the data given by the sensors in the ECU and triggering the injectors with the ECU control. As a result of this process, the injection process is completed. At the same time, this training set can be performed in applications such as assembly and disassembly of the parts on the engine.

PACKAGE INCLUDED

Device, 1 printed experiment report

OT-256 DIFFERENTIAL SECTION

GENERAL EXPLANATION

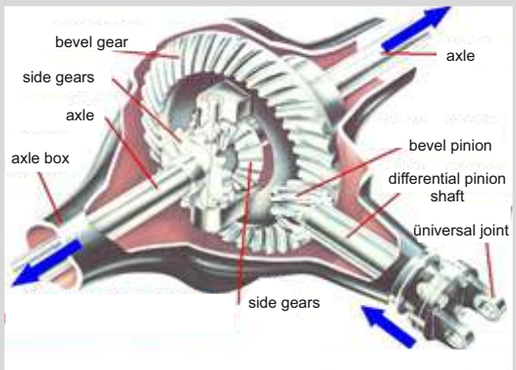
This training set is the differential used in vehicles. with the aim of observing the system by cross-section was designed. The cuts are different painted with colors.

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

The differential system is a powertrain that undertakes the task of transmitting the rotational movement produced by the internal combustion engine to the transmission and transmitting this rotational movement to the wheels after the transmission. The differential system contains more than 1 different gear type in its internal structure. With the harmony of these gear systems, power transmission takes place and at the same time, the independent traction system works.



TECHNICAL DETAILS

- Differential system
- Hydraulic brake piston
- Drumbrake
- The brake lining

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OT-260 ANTI-LOCK BRAKING SYSTEM (ABS) TRAINING SET

GENERAL EXPLANATION

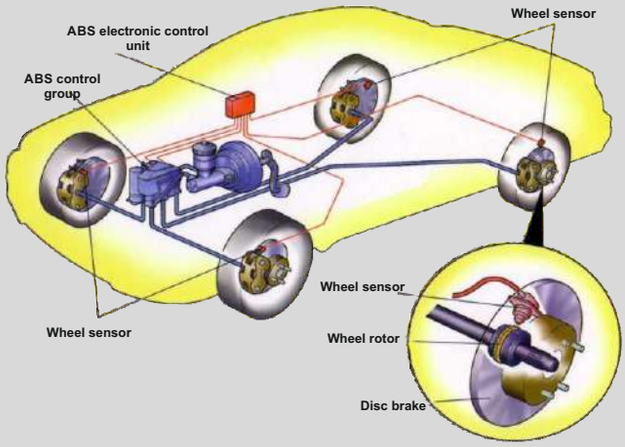
This training set uses ABS brakes on vehicles. It is designed to demonstrate the technology.

TECHNICAL DETAILS

- Electric motor
- Brake discs
- Electronic control unit
- ABS Control group

TECHNICAL SPECIFICATION

The purpose of ABS is to shorten the braking distance. Although it is considered, its real purpose is in sudden and hard braking that the driver does not lose control of the steering wheel is to provide. ABS system when the driver brakes suddenly by examining the pressure in each wheel separately. braking accordingly. In this way the wheels deadlock situation is prevented. Brake suddenly pressed in such a way that the brake pedal hardens and a vibration is felt. ABS system in the device braking to discs driven by electric motor is run by.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-263 DIESEL ENGINE SECTION (COMMON-RAIL FUEL SYSTEM)

GENERAL EXPLANATION

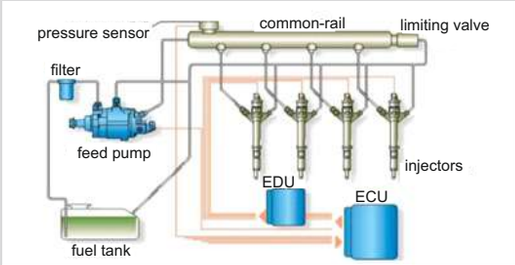
This trainer is diesel with common-rail fuel system. In order to show the working principle of the engine was designed. The cuts are different painted with colors.

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

In Diesel (Common-Rail Fuel System) engines, the fuel is transferred from the tank to the high pressure fuel pump with the help of an electric pump. The high pressure fuel pump is coupled to the internal combustion vehicle engine. The high pressure fuel pump pressurizes the incoming fuel and transmits it to the rail line through steel pipes. This high pressure fuel is ready to be injected at 1600 Bar at any time. This trainer simulates real motor operation with an asynchronous motor drive.



TECHNICAL DETAILS

- Diesel Engine Section (Common-Rail Fuel System)
- Asynchronous Motor
- Control Panel

OT-265 GASOLINE ENGINE (INJECTION-HYBRID) TRAINING SET

GENERAL EXPLANATION

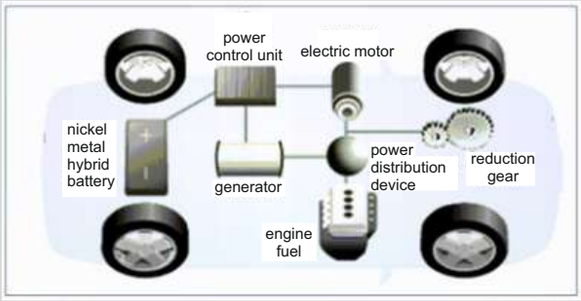
This training set is designed to introduce Gasoline-Hybrid vehicles.

TECHNICAL DETAILS

- Gasoline-Hybrid Engine
- 12V battery
- Fuel tank
- Dashboard

TECHNICAL SPECIFICATION

In gasoline engines, the fuel is transferred from the tank to the injection common line with the help of an electric pump. This transmitted fuel is injected into the intake manifold as a result of processing the data given by the sensors in the ECU and triggering the injectors with the ECU control. As a result of this process, the injection process is completed. In hybrid engines, when low speed and torque are required, the vehicle receives the required power from the electric motor coupled to the internal combustion engine, thus providing fuel savings. At the same time, this training set can be performed in applications such as assembly and disassembly of the parts on the engine.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-266 DIESEL ENGINE SECTION (SOLENOID INJECTOR PUMP FUEL SYSTEM)

GENERAL EXPLANATION

This training set is diesel engine (Solenoid Injector Introduction of the Pump Fuel System) type designed for the purpose. The cuts are different painted with colors.

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

In Diesel (Solenoid Injector Pump Fuel System) engines, the fuel is transferred from the tank to the high pressure fuel pump with the help of an electric pump. The high pressure fuel pump is coupled to the internal combustion vehicle engine. The high pressure fuel pump pressurizes the incoming fuel and transmits it to the injectors located inside the engine top cover through steel pipes. Each injector is individually driven by the camshaft. Thus, the Injection process takes place. This trainer simulates real motor operation with an asynchronous motor drive.

TECHNICAL DETAILS

- Diesel Engine Section (Solenoid Injector Pump Fuel System)
- Asynchronous Motor
- Control Panel

OT-268 RETARDER TRAINING SET

GENERAL EXPLANATION

This training set includes the retarder in heavy duty vehicles. Designed to promote the system. Section The places taken are painted in different colors.

TECHNICAL DETAILS

- Retarder Section
- Crank Handle

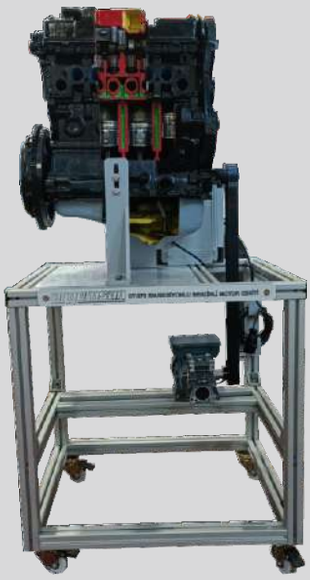
TECHNICAL SPECIFICATION

This training set is an extra braking system that works with the help of hydraulic fluid or electrical energy, which is coupled to the gearbox or at the output of the gearbox, apart from the braking system normally used in vehicles carrying heavy vehicles, cargo and passengers. In this training set, a cross-sectional process has been taken to show the working principle of this brake system.

PACKAGE INCLUDED

Device, 1 printed experiment report

OT-272 GASOLINE ENGINE SECTION (with INJECTION)



GENERAL EXPLANATION

In this training set, the injection gasoline engine It is designed to introduce the working principle. Sections were painted in different colors.

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

In gasoline engines, the fuel is transferred from the tank to the injection common line with the help of an electric pump. This transmitted fuel is injected into the intake manifold as a result of processing the data given by the sensors in the ECU and triggering the injectors with the ECU control. As a result of this process, the injection process is completed. In this training set, these processes are simulated by driving the motor with an asynchronous electric motor.

TECHNICAL DETAILS

- Gasoline engine (Injection) section.
- Asynchronous electric motor.
- Control Panel.

OT-275 GASOLINE ENGINE (DIRECT INJECTION SYSTEM) TRAINING SET

GENERAL EXPLANATION

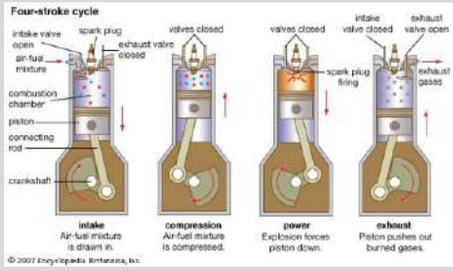
In this training set, the injection gasoline engine It is designed to introduce the working principle. Sections were painted in different colors.

TECHNICAL DETAILS

- Gasoline engine (Direct Injection) section.
- Asynchronous electric motor
- Control Panel

TECHNICAL SPECIFICATION

In gasoline engines, the fuel is transferred from the tank to the injection common line with the help of an electric pump. This transmitted fuel is injected into the combustion chamber as a result of processing the data given by the sensors in the ECU and triggering the injectors with the ECU control. As a result of this process, the direct injection process is completed. In this training set, these processes are simulated by driving the motor with an asynchronous electric motor.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-300 MECHANICAL STEERING TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the working principle of the mechanical steering box.

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

In this training set, mechanical steering system simulation was carried out. The turning force (torque-torque) obtained from the steering wheel is transferred to the steering gear box via the steering shaft. Steering shaft rotates the pinion gear in the steering gearbox, pinion gear; It has passed into the rack, which consists of milled channels opened on a straight shaft. Thus, as the pinion gear rotates (circular movement), the rack will move to the right-left (linear movement), this linear push-pull movement is transmitted to the wheel axle carrier by the tie rod ends with the tie rods (connecting rods) connected to the end of the rack gear, the wheels are rotated.

TECHNICAL DETAILS

- Mechanical steering box
- Steering knuckle
- Steering shaft
- Steering Wheel
- Tie rod end

OT-331 BATTERY SECTION

GENERAL EXPLANATION

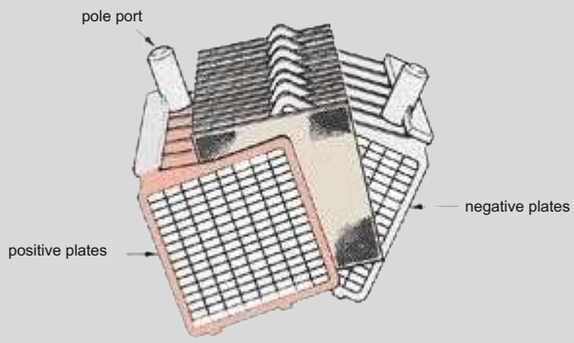
This training set is designed to introduce the internal structure of the battery.

TECHNICAL DETAILS

- Battery section.

TECHNICAL SPECIFICATION

A battery stores electricity for future use. It generates voltage from the chemical reaction that occurs when dissimilar materials, such as positive and negative plates, are immersed in a solution of sulfuric acid and water. A typical lead-acid battery has 6 cells, the voltage per cell is approximately 2 volts for a total of 12 volts. In this training set, this structure can be observed without chemical components.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-332 CATALYTIC CONVERTER SECTION

GENERAL EXPLANATION

In order to introduce the internal structure of the catalytic converter section was taken.

PACKAGE INCLUDED

Device, 1 printed experiment report

TECHNICAL SPECIFICATION

The catalytic converter aims to mix the toxic gases that are formed during combustion and come out of the vehicle exhaust into the air as cleanly as possible. There are special materials coated with zirconia in the catalyst. Toxic gases enter a chemical reaction as they pass through the area where these materials are located. In a reaction called afterburning, the toxic gases become less harmful and are released into the air through the exhaust pipe.

TECHNICAL DETAILS

- Catalytic converter

OT-333 STARTER MOTOR SECTION

GENERAL EXPLANATION

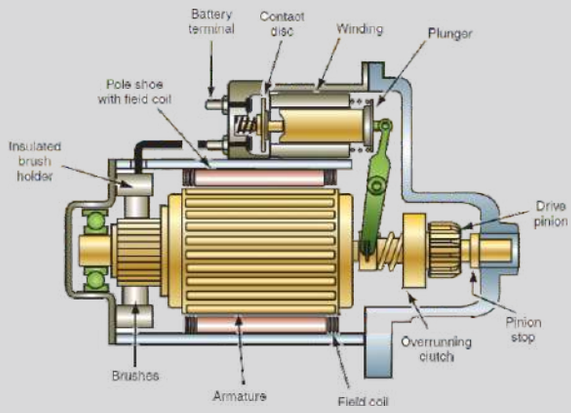
Cross section to introduce the internal structure of the starter motor taken.

TECHNICAL DETAILS

- Starter motor section

TECHNICAL SPECIFICATION

The starter motor converts the electrical energy it receives from the battery to kinetic energy and transmits it to the flywheel. When the flywheel gear starts to rotate, the internal combustion engine starts to work by taking the first move.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-340 MECHANICAL (MANUAL) GEARBOX SECTION

GENERAL EXPLANATION

Introducing the internal structure of mechanical (manual) gearbox section was taken. The cuts are different painted with colors.

TECHNICAL DETAILS

- Mechanical (Manual) gearbox section.

TECHNICAL SPECIFICATION

A manual transmission is a gearbox that allows the driver to choose between different gear ratios to drive the vehicle. Lower gear ratios offer more torque, while higher gear ratios offer less torque but higher speed can be achieved.
The manual transmission consists of three shafts with continuously meshed gears of different sizes. The input shaft (Prizdirek) is connected to the engine via the clutch. The group shaft is constantly intertwined with the input (Pluzdirek) shaft and has more than one gear. The output shaft connects it to the drive shaft and finally to the wheels.

PACKAGE INCLUDED

Device, 1 printed experiment report

OT-341 AUTOMATIC GEARBOX SECTION

GENERAL EXPLANATION

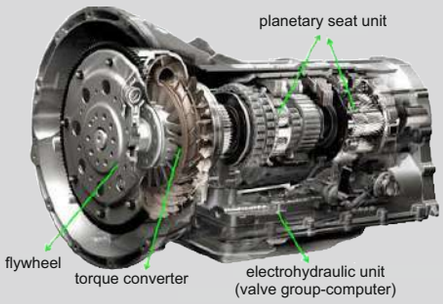
This training set includes the internal structure of the automatic gearbox. It is designed to promote. The cuts are different painted with colors.

TECHNICAL DETAILS

- Automatic gearbox section

TECHNICAL SPECIFICATION

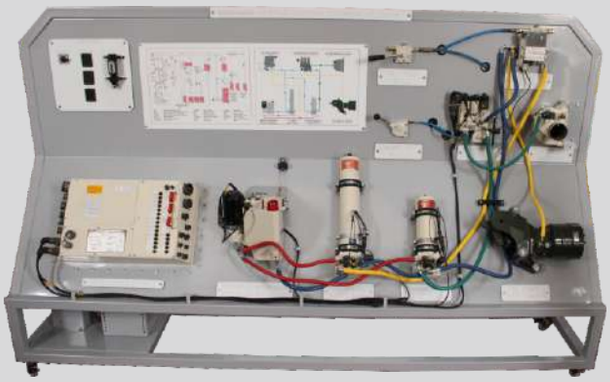
The gearbox, in which the driver does not change gear with the gear lever and does not press the clutch pedal, and the gear shifts are made automatically, is called an automatic transmission in general. There is no clutch pedal. Gear shifts are performed automatically by the transmission control unit (ecu-mechatronics-brain) depending on driving conditions. It provides a great driving comfort compared to a manual gearbox. Generally, gear changes are achieved using the force of oil pressure.



PACKAGE INCLUDED

Device, 1 printed experiment report

OT-345 CENTER HYDRAULIC HARDWARE TRAINING SET



GENERAL EXPLANATION

This training set is in the TAF inventory. Parking brake and plunge hydraulics of the LEOPARD 2A4 tank To show the working principle of the system was designed.

TECHNICAL SPECIFICATION

Materials used on the training set all belong to the LEOPARD 2A4 tank. spring of handbrake package, flaps in the plunge hydraulic system, Works with hydraulic and electrical installations training is provided. used in the system

Used in C635 oil and LEOPARD 2A4 tank operation of the system by training with the pump. principle is taught. Also in the system

Opportunity to provide training in case of malfunctions are available.

ELECTRICAL HOUSEHOLD APPLIANCES

EE-400 WASHING MACHINE
TRAINING SET

EE-410 DISHWASHER
TRAINING SET

EE-420 MICROWAVE OVEN
TRAINING SET

EE-430 ELECTRIC-GAS OVEN
TRAINING SET

EE-440 LCD TELEVISION
TRAINING SET

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EE-400 WASHING MACHINE TRAINING SET

GENERAL EXPLANATION

This training set is designed to understand the logic of automatic washing machines and to examine the repair and maintenance processes.

EXPERIMENTS

1. To understand the working logic of washing machine

2. Installing the washing machine electrical control circuit

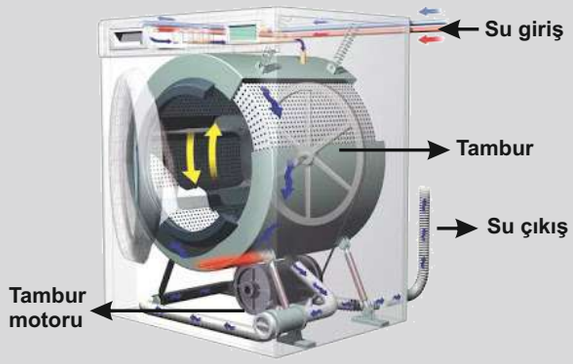
3. Understanding washing machine failures

PACKAGE INCLUDED

Device, 1 printed test sheet, circuit diagram and product catalog

TECHNICAL SPECIFICATION

This training set is designed to show how the automatic washing machine works, to detect and repair faults that may occur frequently in washing machines. The training set has a transparent structure so that the internal structure can be seen. Experiments can be carried out on the training set with the help of born screws and breakdown switches.



TECHNICAL DETAILS

- Automatic water level adjustment
- Washing capacity 5 kg
- Double water inlet
- Born screws
- Multimeter
- Clamping speed 600 rpm

EE-410 DISHWASHER TRAINING SET

GENERAL EXPLANATION

This training set is designed to understand the working logic of automatic dishwashers and toexamine the repair and maintenance processes.

EXPERIMENTS

1. To understand the working logic of the dishwasher

2. Installing the electrical control circuit of the dishwasher

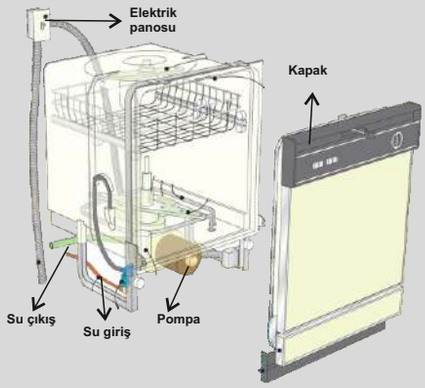
3. Understanding dishwasher failures

PACKAGE INCLUDED

Device, 1 printed test sheet, circuit diagram and product catalog

TECHNICAL SPECIFICATION

This training set is designed to show how the automatic dishwasher works and how to detect and repair faults that may occur frequently in dishwashers. The training set has a transparent structure so that the internal structure can be seen. Experiments can be carried out on the training set with the help of born screws and breakdown switches.



TECHNICAL DETAILS

- Double water inlet
- Programmable 3 wash modes
- Electronic program monitoring indicator
- Born screws
- Multimeter
- Salt indicator

EE-420 MICROWAVE OVEN TRAINING SET

GENERAL EXPLANATION

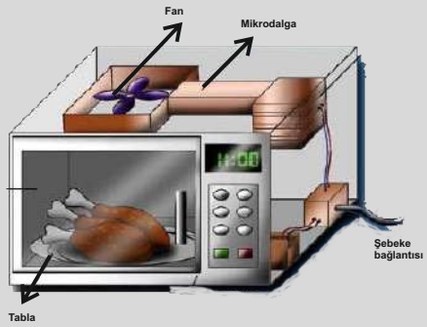
This training set is designed to understand the logic of the microwave oven and to examine the repair and maintenance processes.

EXPERIMENTS

1. Electric heater open circuit failure
2. Electric heater short circuit failure
3. Transformer primary circuit open circuit failure
4. Transformer primary circuit short circuit failure
5. Turntable motor push button open circuit failure
6. Turntable motor push button open circuit failure
7. Door switch open circuit failure

TECHNICAL SPECIFICATION

This training set is designed to show how microwave oven works, to detect and repair faults that may occur frequently on a microwave oven. The training set has a transparent structure so that the internal structure can be seen. Experiments can be carried out on the training set with the help of born screws and breakdown switches.



TECHNICAL DETAILS

- Electrostatic painted panel coating
- Electric heater
- In oven lighting
- Born screws
- Multimeter

PACKAGE INCLUDED

Device, 1 printed test sheet, circuit diagram and product catalog

EE-430 ELECTRIC-GAS OVEN TRAINING SET

GENERAL EXPLANATION

This training set is designed to understand the logic of automatic electric gas oven and to examine the repair and maintenance processes.

EXPERIMENTS

1.Understanding working logic of electric gas oven

2.Electric gas oven electrical control circuit installation

3.Electric gas furnace failures to understand

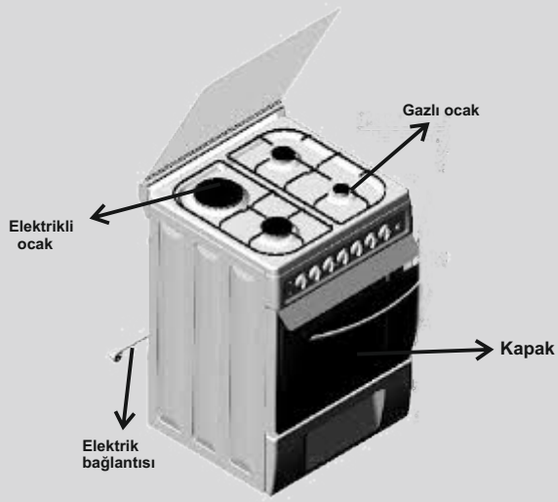
4.Electric gas furnace gas connection

PACKAGE INCLUDED

Device, 1 printed test sheet, circuit diagram and product catalog

TECHNICAL SPECIFICATION

This training set is designed to show how electric gas oven works, to detect and repair faults that can occur frequently on electric gas oven. The training set has a transparent structure so that the internal structure can be seen. Experiments can be carried out on the training set with the help of born screws and breakdown switches.



TECHNICAL DETAILS

- Three gas cookers and one electric cooker
- Electronic ignition feature
- Electric fan and grill
- Born screws
- Multimeter
- In oven lighting

EE-440 LCD TELEVISION TRAINING SET

GENERAL EXPLANATION

This training set is designed to understand the logic of LCD television operation and to examine the repair and maintenance procedures.

EXPERIMENTS

1. Understanding the working logic of LCD television

2. Installation of LCD television electrical control circuit

3. Understanding of LCD television malfunctions

TECHNICAL SPECIFICATION

This training set is designed to show the way LCD television works, detect and repair faults that may occur frequently on LCD televisions. The training set has a transparent structure so that the internal structure can be seen. Experiments can be carried out on the training set with the help of born screws and breakdown switches.

TECHNICAL DETAILS

- 22 inch LCD television
- Interior satellite receiver
- USB and HDMI input
- Born screws
- Multimeter

PACKAGE INCLUDED

Device, 1 printed test sheet, circuit diagram and product catalog

FIRE AND EXTINGUISHING SYSTEMS

E-156
FIRE ALARM
TRAINING SET

YTS-300
FIRE FIGHTING DRILL SET

YS-201
PHYSICAL PROPERTIES OF COMBUSTION
TRAINING SET

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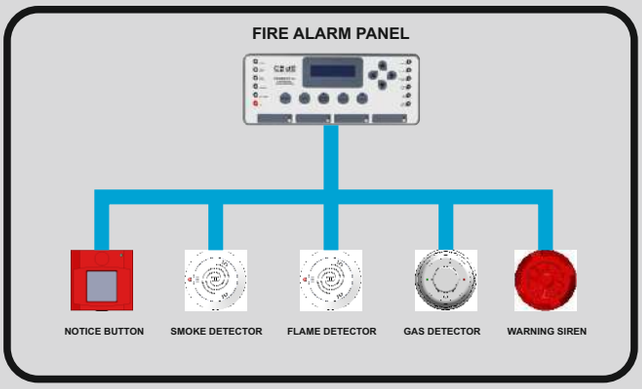
E-156 FIRE ALARM TRAINING SET

TECHNICAL SPECIFICATION

This set is used in fire alarm systems.
Equipment introduction, connections and operation designed to learn the principles.



GENERAL EXPLANATION

In this training set, fire alarm systems
The equipment used is introduced.

EXPERIMENTS

- Examination of conventional fire alarm panel and making connections.
- Gas (LPG) sensor inspection and connections to be done.
- Inspection and connections of the smoke sensor to be done.
- Inspection and connections of the flame sensor to be done.

- Examination of the report button and its connections to be done.
- Inspection and connection of the warning siren.
- Examination of the operation of the fire alarm system and commissioning by making connections.

DIMENSIONS

A x B x H : 600 x 600 x 1600

TECHNICAL DETAILS

- 1 flame detection detector
- 1 smoke detector
- 1 whip button
- 1 warning siren
- 1 gas detector
- 1 fire alarm control panel

PACKAGE INCLUDED

Device, 1 user manual, circuit diagram

YTS-300
FIRE FIGHTING DRILL SET

GENERAL EXPLANATION

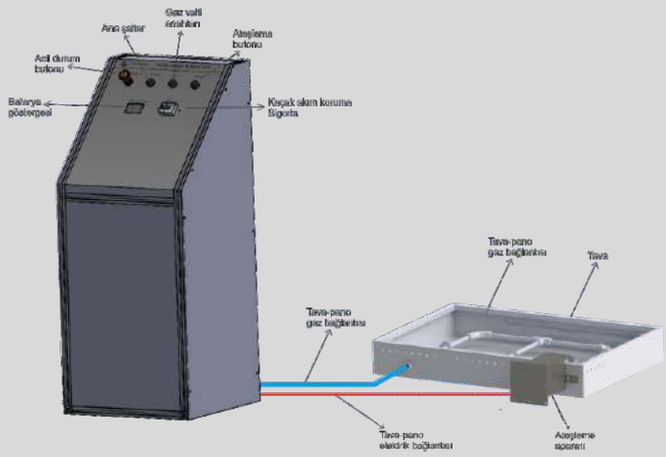
This training set includes pressure and visualize and experimentally visualize the flow rate change was designed to examine.

PACKAGE INCLUDED

Device, 1 printed user manual, circuit scheme and product catalog

TECHNICAL SPECIFICATION

By connecting the training set control panel and ceiling can be easily installed. contained in
control panel without electricity thanks to the battery
It can allow experimentation even under these conditions.
Battery
With the indicator, it can be understood whether charging is necessary.
Fire with LPG tube in the training set
is removed. Pressure with the regulator on the tube replaceable
and thus the flame length can be adjusted.
The pan is made of stainless steel and
Gas line is connected from stainless steel pipes.
Remote ignition with the ignition device on it
it becomes possible.



TECHNICAL DETAILS

- Control Panel
- Pan
- 12kg long tube
- Battery status indicator

YS-201 PHYSICAL PROPERTIES OF COMBUSTION TRAINING SET

GENERAL EXPLANATION

This system can be used in different types of buildings.
It is designed to simulate fires.

EXPERIMENTS

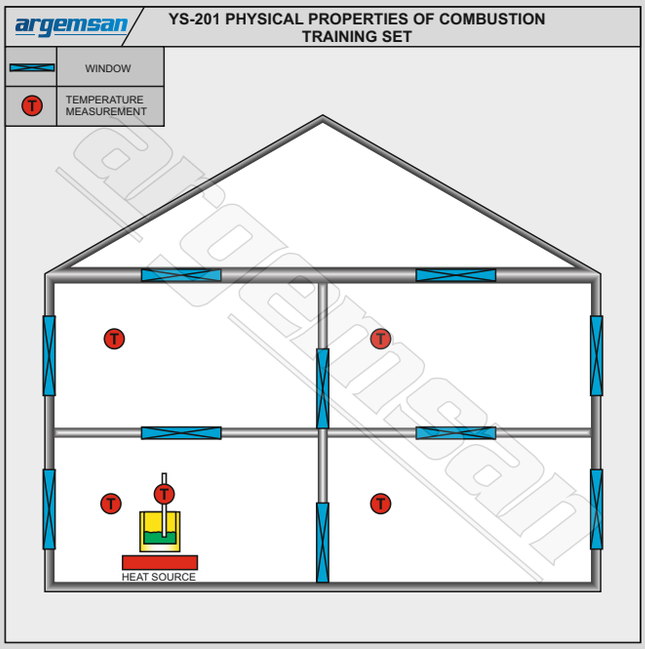
- Study of the physical properties of combustion
- Determination of flashing and ignition temperatures
- Simulating a fire

PACKAGE INCLUDED

Device, control board

TECHNICAL SPECIFICATION

The main purpose of this module is to provide the necessary personnel with combustion and physical to teach its features practically.



TECHNICAL DETAILS

- Heat source
- Control and measurement with PLC
- 5 temperature measurements
- Control Board
- Transparent side surfaces

MARINE AND SHIP MACHINERY

DS-100 STEERING SYSTEM ON SHIPS TRAINING SET

DS-320 SHIP FRESH WATER TRAINING SET

DS-350 SHIP FUEL TRAINING SET

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DS-100 STEERING SYSTEM ON SHIPS TRAINING SET

GENERAL EXPLANATION

This training set includes the rudder system on the ships for experimental demonstration of the working principle was designed.

EXPERIMENTS

- Simulation of the rudder system
- Angle control experiment

DIMENSIONS

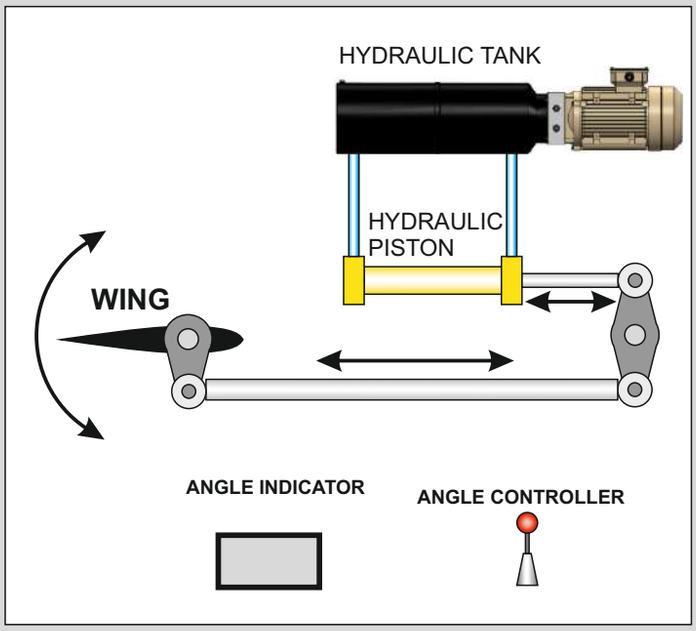
A x B x H : 1500 x 600 x 1400

OPTIONAL FEATURES

- Touchscreen LCD
- USB computer connection
- Computer control

TECHNICAL SPECIFICATION

On ships found rudder system simulated to make purpose designed the one which this system the truth one-to-one
It is fully hydraulically designed to reflect. The oil pumped from the hydraulic tank to the hydraulic cylinder by giving linear movement is provided in the cylinder linear The movement is converted into angular movement with the help of a tiller.
Angular motion is measured with an angle sensor and displayed on a digital display transferred. Thus, the rudder angle is measured. It is brought to the desired angle by controlling it with a joystick.



TECHNICAL DETAILS

- Hydraulic steering cylinder
- Digital angle measuring system
- Joistic type key
- Hydraulic tank
- Hydraulic pump
- Protective transparent plate

PACKAGE INCLUDED

Device, 1 user manual, circuit diagram

DS-320 SHIP FRESH WATER TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the pressurization (hydrophor) cleaning system used in clean water installations at ships and to implement basic experiments.

DIMENSIONS

A x B x H : 1250 x 650 x 1500 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

Hydrophor system is an air-cushioned pump system that takes a low pressure fluid from a certain reservoir and provides the required pressure and discharge, and automatically performs its operation according to usage conditions.

TECHNICAL DETAILS

- Centrifugal pump
- Membrane expansion tank
- Hydrophore pressure auto switch
- 1 pressure manometer
- Strainer
- Pressure regulator

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

DS-350 SHIP FUEL TRAINING SET

GENERAL EXPLANATION

This training set is designed to introduce the ship's fuel system and to implement basic experiments.

DIMENSIONS

A x B x H : 1400 x 720 x 1580 mm

OPTIONAL FEATURES

- Touch LCD Display
- USB Computer Connection
- Computer Control

TECHNICAL SPECIFICATION

In tank fuel system, the principles of filling, discharging and cleaning between tanks are applied.

TECHNICAL DETAILS

- Centrifugal pump
- Ball valve
- Oil filter
- 2 pressure manometers
- Sampling tank
- Pressure regulator

PACKAGE INCLUDED

Device, device cover, 1 printed experiment report, circuit diagram and product catalog

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TESTIMONIALS

OUR REFERENCES

HAVELSAN

T.C GENERAL DIRECTORATE OF RENEWABLE ENERGY

T.C MINISTRY OF NATIONAL EDUCATION

YILDIZ TEKNİK UNIVERSITY

TÜBİTAK

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