

AUTOMOTIVE PETROL / DIESEL

AMTEC TECHNIQUIP

Engineering The Future



Suppliers Of Educational Engineering
Equipment & Accessories





Amtec Techniquip applies 30 years of knowledge & experience in the design, manufacture and import of educational engineering equipment, accessories, instrumentation and consumables.

During this time, we have been a market leader in innovation, bringing many new concepts and products to the educational industry while expanding our comprehensive range of quality teaching equipment to a level unsurpassed by any other company in the industry.

This includes unique new methods of introducing and educating the learners in all facets of modern engineering. Our products are visual and demonstrational to best teach and explain concepts from basic engineering, all the way up to research and thesis levels in the most advanced forms of engineering.

Amtec Techniquip's commitment to the end user...

AMTEC offers a personal approach to each and every end user as we are always available to meet and discuss any requirements face-to-face basis to provide a tailor-made solution.

AMTEC have a large footprint throughout Southern Africa and regularly visit the countries and provinces we service while also keeping our customers up-to-date with any new products and innovations we bring to the market.

AMTEC supplies expert training on all our products. Our team of experts offer training at the end user or alternately at our head office in Jhb. All our products are supplied with their relevant manuals, course materials and exercise guides.

AMTEC offers unmatched after-sales service and customer support. All our equipment is supplied complete with ICT (Installation, Commissioning & Training). Our sales and support teams are at the end user's disposal should any assistance be needed during the life of a product.

AMTEC offers an extended Service and Maintenance plan to make sure that your equipment and apparatus are maintained to ensure a long lifespan with little or no downtime.

AMTEC makes use of only quality components to ensure reliability and longevity of all our manufactured equipment. This provides the end user with peace of mind and a product that will stand the test of time in an educational environment.

AMTEC has the manufacturing capability to R+D and manufacture "one-off" designs and customise any equipment within our range to meet the end users requirements. We have many accessories, add-ons and tooling that can work in conjunction with our equipment and trainers.

AMTEC offers a 24-month factory warranty on all our products supported by the backing of our local & international suppliers.



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AMTEC WORKSHOP MACHINES AND EQUIPMENT

AMTEC can offer all Workshop equipment and tools required in the Automotive and Training facilities.

We can offer a comprehensive solution to fit-out your entire center.





AMTEC – RUNNING ENGINES

Amtec Techniquip make use of various engines and produces high quality Running petrol / diesel engines built onto a stand. These running engines are used in diesel mechanics / automotive workshops for demonstrating principles of internal combustion engines, the unit can be used to complete numerous practical experiments within the various curriculum's.

Engines are used in vehicles locally to ensure spares and service part are available from your local automotive retailer.

Amtec Running Engines Specification:

- i) Supplied complete on an accessible Working level stand
- ii) Stand fitted with Extra H/Duty lockable castor wheels for ease of Movement
- iii) Stands include drip Tray
- iv) Wiring Fault finding circuits
- v) Instrument Cluster (includes Charging light, oil pressure, Engine Temp & tachometer)
- vi) Starting Via Push Button
- vii) Protective Cage for Safe Operation
- viii) Includes Gearbox
- ix) All Engines are reconditioned and include 12 moth warrantees
- x) Clutch Removal and Fitment
- xi) All Engines are supplied with User manuals and Workshop Manuals

Carburetor Engine Tests that can be accomplished:

- i) Timing via distributor
- ii) Cooling system
- iii) Valve Clearances / tolerances
- iv) Assembly and disassembly of components
- v) Gearbox fitment and removal
- vi) Exhaust Emission Testing
- vii) Alternator Fitment Removal and Testing
- viii) Starter Wiring and Testing (Fitment and Removal)
- ix) Timing
- x) Basic Servicing (Oil filter, fuel Filter, Oil Change & Air cleaner)
- xi) Clutch removal and fitment

EFI Engine Tests that can be accomplished:

- i) Timing Via Pc Software
- ii) Diagnostic Testing Via OBD Plug
- iii) Cooling system
- iv) Valve Clearances / tolerances
- v) Assembly and disassembly of components
- vi) Gearbox fitment and removal
- vii) Exhaust Emission Testing
- viii) Alternator Fitment Removal and Testing
- ix) Starter Wiring and Testing (Fitment and Removal)
- x) Timing
- xi) Basic Servicing (Oil filter, fuel Filter, Oil Change & Air cleaner)
- xii) Setting and adjustment of engine variables
- xiii) Engine can be supplied with OEM / Aftermarket management systems

AMTEC DIESEL RUNNING ENGINES

DIESEL ENGINE INDIRECT INJECTION

- 4 strokes, 4 cylinders, 8 valves
- Displacement 1.700 cc - 2.000 cc - 2.500 cc
- Overhead camshaft (OHC)
- Indirect Injection
- Rotary Injection pump BOSCH
- Toothed belt
- Preheating glow plugs
- Water cooling
- Control panel
- ART 6 Mounted on trestle with safety protections

TURBO DIESEL ENGINE DIRECT INJECTION

- 4 strokes, 4 cylinders, 8 valves
- Displacement 2.000 cc - 2.500 cc
- Overhead camshaft (OHC)
- Direct Injection
- Rotary Injection pump BOSCH
- Turbo compressor
- Toothed belt
- Preheating glow plugs
- Water cooling
- Control panel
- Mounted on trestle with safety protections

TURBO DIESEL ENGINE COMMON RAIL MULTIJET 16V DIRECT INJECTION

- 4 strokes, 4 cylinders, 16 valves
- Displacement 1.300 cc
- Double overhead camshaft (OHC)
- MULTIJET Direct Injection
- Common Rail
- Turbo compressor
- Toothed belt
- Preheating glow plugs
- Water cooling
- Catalytic silencer
- Control panel
- Diagnostic connector (16pin)
- Mounted on trestle with safety protections



TURBO DIESEL ENGINE COMMON RAIL JTD "UNIJET" DIRECT INJECTION

- 4 strokes, 4 cylinders
- Available 8V or 16V on request
- Displacement 1.900 cc
- OHC (8V) or DOHC (16V)
- UNIJET Direct Injection
- Common Rail with electronic control HDI
- Turbo compressor
- Toothed belt
- Preheating glow plugs
- Water cooling
- Catalytic silencer
- Control panel
- Diagnostic connector 8V (3pin) or 16V (16 pin)
- Mounted on trestle with safety protections



AMTEC PETROL RUNNING ENGINES

PETROL ENGINE CARBURETTOR

Technical Features

- 4 strokes, 4 cylinders, 8 valves
- Displacement 1.000 cc
- Overhead camshaft (OHC)
- Carburettor
- Toothed belt
- Coil ignition, distributor
- Water cooling
- Control panel
- Mounted on trestle with safety protections

PETROL ENGINE SPI (SINGLE POINT INJECTION) MONO-JETRONIC

Technical Features

- 4 strokes, 4 cylinders, 8 valves
- Displacement 1.100 cc
- Overhead camshaft (OHC)
- Electronic Injection MONOJETRONIC
- Toothed belt
- Electronic ignition, distributor
- Water cooling
- Catalytic silencer
- Control panel
- ART 693: gearbox 5 forward speed + reverse
- Diagnostic connector (3 pin)
- Mounted on trestle with safety protections

PETROL ENGINE MPI (MULTI POINT INJECTION)

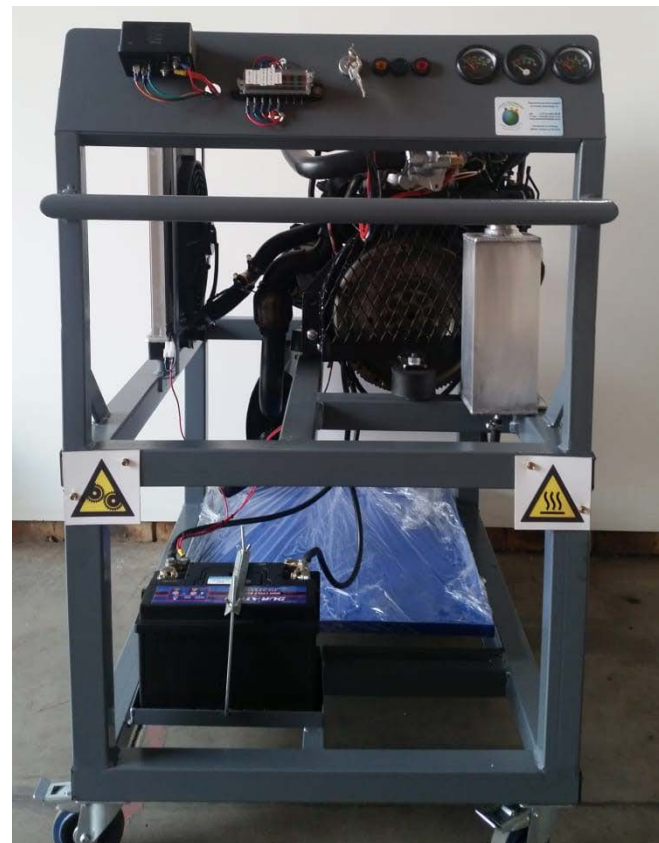
Technical Features

- 4 strokes, 4 cylinders, 16 valves
- Displacement 1.600 cc
- Double overhead camshaft (DOHC)
- Electronic Injection - MULTIPOINT
- Toothed belt
- Electronic ignition
- Water cooling
- Control panel
- Diagnostic connector (3pin)
- Mounted on trestle with safety protections

PETROL ENGINE TURBO MPI (MULTI POINT INJECTION)

Technical Features

- 4 strokes, 4 cylinders, 8 valves
- Displacement 1.200 cc
- Overhead camshaft (OHC)
- Electronic Injection MULTIPOINT
- Toothed belt
- Electronic ignition
- Water cooling
- Catalytic silencer
- Control panel
- Diagnostic connector (16pin)
- Mounted on trestle with safety protections



AMTEC DIAGNOSTIC AND OBD READERS



AMTEC are suppliers of various diagnostic readers and OBD scanners. From entry-level and handheld instruments to the top of the range multi-function diagnostic equipment from BOSCH, LAUNCH and AUTEL



AMTEC STEERING AND SUSPENSION TRAINERS



AMTEC supplies a variety trainers covering the topics of Steering, Suspension, Shock absorbers, Wheels, Canter, Camber and Power steering.



AMTEC HYDRAULIC-PNEUMATIC BRAKING TRAINER – HORSE AND TRAILER



TRUCK

Single chamber air-drier with pressure regulator. Complete motor engine back-pressure brake system with slave cylinder, adjusting lever for injector pump and throttle valve.
ALB controller with adjuster and rod failure simulation. Trailer control valve with integrated 2/2 way valve.
Relay valve for fast pressure build-up and pressure release of tristop cylinder.
Third circuit safety via non-return valve.
Plastic hoses according to DIN standard

TRAILER

ALB controller with adjuster and rod failure simulation and spaced for ease of access.

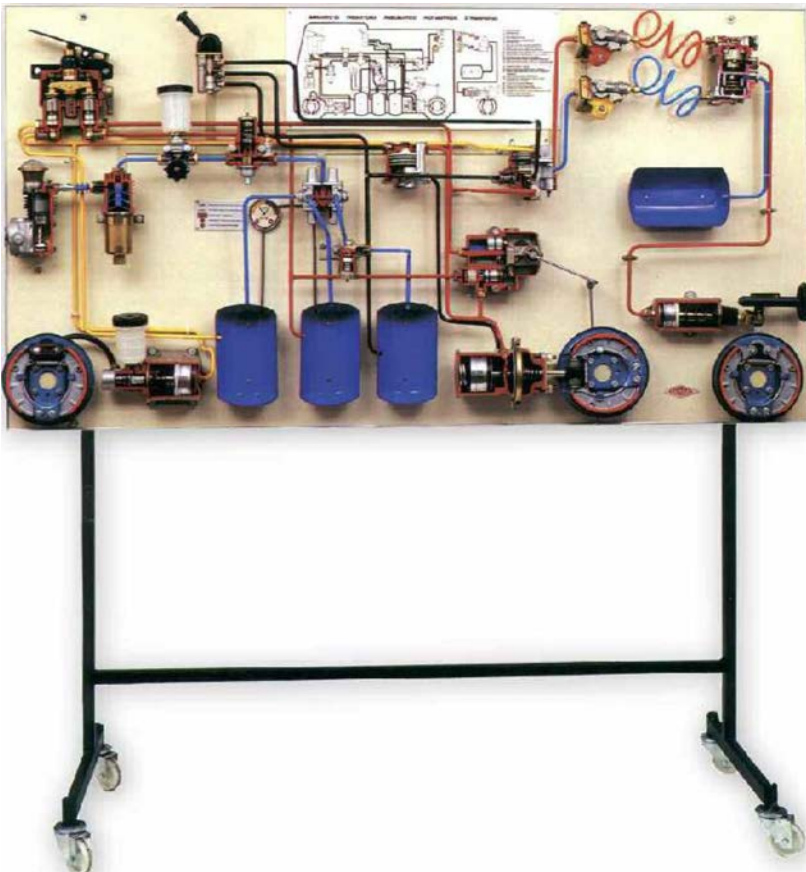
FEATURES:

Components mounted to reinforced panels.
All components are of industrial quality to ensure long life.
Color-coordinated hoses for supply and return

- compressor
- air dryer with unloader
- four-circuit protection valve
- 3 tanks
- foot brake valve
- load sensing valve
- brake chamber VA
- three-stop cylinder HA
- check valve
- hand brake valve
- relay valve
- trailer control valve
- coupling head "supply"
- coupling head "brake"
- ABS solenoid valve
- ABS plug connection
- ASR solenoid valve
- two-way valve
- ABS/ASR-ECU
- ABS sensor
- drum brake
- disc brake



SECTIONED HYDRAULIC-PNEUMATIC BRAKING TRAINER



TWIN LINE (TRAILER AND TRUCK)

HYDRAULIC PNEUMATIC BRAKING
SYSTEM

ON STAND WITH WHEELS

Dimensions and Weight:
ems 200x60x200 h
Kgs 120

TWIN LINE (TRAILER AND TRUCK)

HYDRAULIC PNEUMATIC
BRAKING SYSTEM

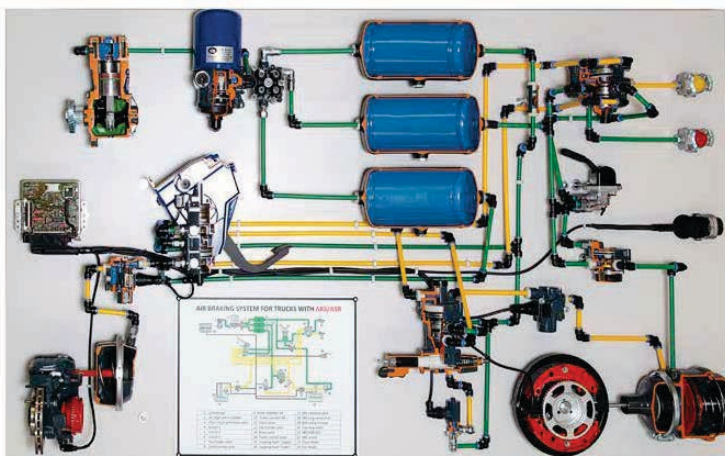
WALL PANEL

Dimensions and Weight: ems
200x15x105 h
Kgs 100

Technical Features

- Air compressor
- Pipe coil
- Moisture separator
- Antifreeze
- Pressure regulator
- Gauge
- Reservoir protection valves
- Front wheel brake system
- Reservoir
- Back wheel
broke system reservoir
- Spring brake and trailer
broke system air reservoir
- Pressure reducers
(7,2 - 7,4 bars)
- Duplex brake valve,
pedal-operated
- Dual control relay valve
- Triple control relay valve built
in modulated relay emergency
- Diverter valve
- Hand control brake valve
- Load/pressure modulator
- Hydraulic-pneumatic pump
with brake chamber
- Low pressure indicator
- Diaphragm/spring broke actuator with
wedge device
- Couplings
- Self-relay valve
- Trailer auxiliary reservoir
- Brake valve with olive shaped pivot
- Broking system stationary trailer

This is the hydraulic-pneumatic compressed air braking system of a modern trailer truck, carried out in compliance with the latest European Community standards. The connection hoses are colored differently in order to single out the different circuits. For an exhaustive explanation at a didactic level, we have included the essential "DIAPHRAGM/SPRING BRAKE ACTUATOR WITH WEDGE DEVICE" as well as the "HYDRAULIC-PNEUMATIC" braking system and the braking system "WITH OLIVE SHAPED PIVOT" now used on various trucks.



AMTEC SERVO BRAKE SYSTEM WITH DISC AND DRUM BRAKES



Technical features

Fully operating educational trainer of a cross diagonal servo-assisted hydraulic brake system of a car. Dual circuit front disc/hub and rear drum/hub with Servobrake, hand brake and brake pedal.

The trainer provides:

- Full simulation of the working of the vacuum booster broke system .
- Influence of the broke assist on the operation of the braking system.
- Observation of the cross diagonal hydraulic circuit and all components.

Trainer includes:

- 2 front disc/hub assemblies
- 2 rear drum/hub assemblies
- Vacuum booster with pedal
- Moster cylinder with tonk
- Hand brake lever
- Vacuum pump
- 12V batery
- Control panel

AMTEC AUTOMOTIVE AIRCON TRAINER



This trainer integrate the main components of a vehicle air conditioning system. The compressor is driven by an electric motor at mains voltage allowing the execution of the refrigeration cycle and the operation of the entire system. It is possible monitoring the compressor inlet pressures (low pressure, blue) and the compressor output pressure (high pressure, red) and the temperatures of the condenser and of the evaporator.

Main features:

- Max. power 2 kW
- Cooling liquid 400gt Freo
- Piston compressor
- Condenser
- Dehydrating filter
- Pressure switch
- Expansion valve
- Evaporation unit
- Resistor
- Thermostat



The trainer corresponds to an aftermarket unit mounted on a chassis. Ideal for training in the operation and maintenance

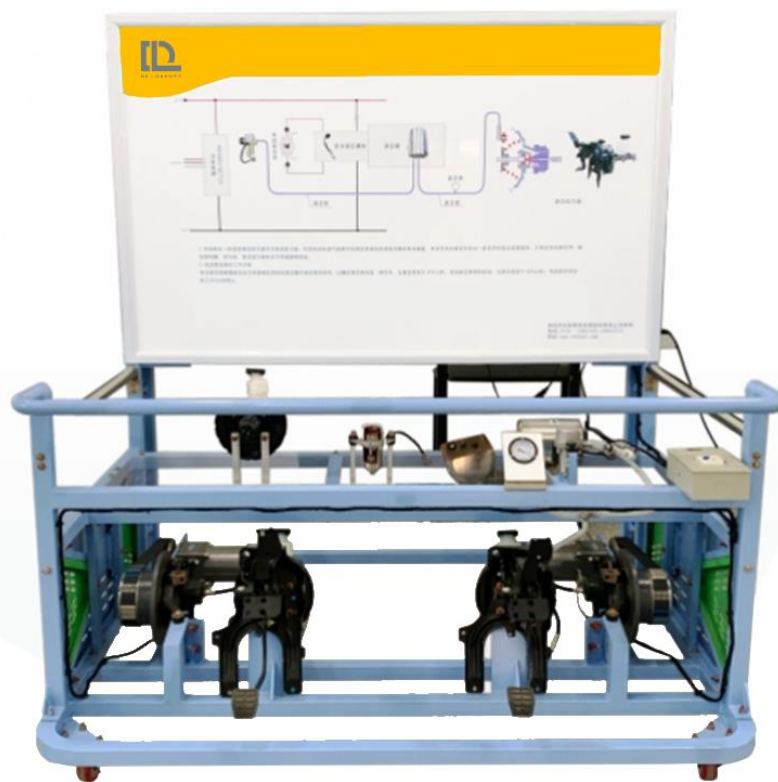
****Also available:
Sectioned Aircon Unit**

The system can simulate 4 electrical failures without disconnecting connectors and wires, but by acting on switches which interrupt the following circuits:

- Compressor enable signal from pressure switch
- Compressor clutch
- Cooling fan enable signal from pressure switch
- First speed evaporator fan

DEMONSTRATIONAL BENCHES

DEMONSTRATION BENCH VACUUM ASSISTED ELECTRO-HYDRAULIC BRAKE SYSTEM



DL DM49

LEARNING EXPERIENCE

This demonstration bench shows the most common components included in an electric vacuum assisted hydraulic brake system included in electric vehicles. The bench reproduces the same function and control mode of the most popular pure electric vehicles. It represents the connection and control relationship, installation position and operating parameters of each component of an electric vacuum assisted hydraulic brake system. A vacuum meter shows the vacuum degree, it helps trainees to know the principle that vacuum degree affect the working status of vacuum pump. It also helps trainees to develop the fault analysis and processing skills about electric vacuum assisted brake system.

MAIN CHARACTERISTICS

This trainer shows the structure and logic control relationship of all main components that can be found in an electric vacuum assisted hydraulic brake system included in electric vehicles powered by new types of energy. All main components are installed on the rack, with the same electrical connection mode as real vehicles. It is convenient for assembly and disassembly, so that students can learn the disassembly points of electric vacuum assisted hydraulic brake components during disassembling and assembling connections.

OTHER CHARACTERISTICS

- a) The connecting lines can be scanned with the help of a two-dimensional code, after which, their assembly and disassembly methods and precautions can be completely demonstrated on the screen.
- b) Vacuum meter is connected with the vacuum tank installed on the panel of rack, where the connection and disconnection of vacuum pump current digits can be displayed at the same time.
- c) By pressing the brake pedal, students can observe the control relationship between vacuum meter level and vacuum pump running status; when the vacuum degree decreases to -45Kpa, the pressure sensor closes 12V power supply and the vacuum pump starts to work. When the vacuum degree increases to -80Kpa, the pressure sensor disconnects the 12V power supply and the vacuum pump stops working. Students can master the working principle of pure electric vacuum booster through practical observation.
- d) The training bench is placed horizontally for installing main components.
- e) 4 wheels for moving flexibly are mounted, which also have self-lock device for fixing position.
- f) The training bench is equipped with a brake shield and other safety protecting devices to safeguard students' experiments.
- g) The training panel shows the cutaway view of vacuum pump assembly, vacuum tank assembly and booster pump assembly to clearly reproduce the internal structure of the main components of an electric vacuum assisted system.
- h) The training platform includes a gear induction reduction motor. It drives the brake wheels to rotate through a belt transmission, truly reproduces the characteristics of the wheel speed and the vacuum assisted braking force.
- i) The training platform includes a set of non-vacuum booster system. They can perceive the difference between the system and vacuum booster in real time, so that students can understand the role of vacuum booster system in vehicle braking system.

GENERAL CHARACTERISTICS

- Dim. mm (HxLxW): 1800x1600x1200
- Weight approx. 150 kg
- Input power supply: AC 220V±10% 50 Hz
- Switchable mode
- Working temperature: -40°C ~ +50°C.

The training bench includes a 4mm aluminium panel, which displays the working principal diagram of the electric vacuum power system. The main components are equipped with points of measurement. A multimeter is suggested for the real time data detection.

ACCESSORIES

Suggested instruments for best practice:

Digital Multimeter (not included)

DEMONSTRATIONAL BENCHES

COMMON RAIL DIESEL ENGINE MANAGEMENT SYSTEM



DL DM22

LEARNING EXPERIENCE

The trainer enables the study of the operating of the electronic, mechanic and hydraulic elements that constitute the control and fuel feed system of the contemporary CR/EDC ignition diesel engine.

GENERAL CHARACTERISTICS

- Dim. Main Bench mm approx (HxLxW) : 1700x1000x500
- Dim. Small Bench mm approx (HxLxW) : 1350x900x450
- Weight approx. kg 150
- Input power supply: AC 220V±10% 50/60 Hz
- Working temperature: -40°C ~ +50°C.

MAIN CHARACTERISTICS

The system is composed of two benches:

- The main training bench shows the common rail pump and injector control system for demonstration of its working and for the study of the electric and hydraulic parameters of the high-pressure pump and electro-injector control system. The module can work autonomously or together with the Diesel Common Rail engine electronic control unit. The pump drive control allows the simulation of the full rotational speed range from the start phase to full capacity.
- The small training bench shows a Diesel Common Rail engine control unit, equipped with a microprocessor controller used for the demonstration of the high-pressure pump and electro-injector control system. The module can only work with the pump and injector control module.

The fault simulation console can create errors in chosen circuits and it is possible to observe the reaction of the control system to the occurred position.

AMTEC AUTOMOTIVE SPECIALITY TOOLS AND SERVICE KITS

AMTEC is able to supply all Specialty tools and Service kits for the Automotive workshops and Training centers

- Multimeters
- Compression testers
- Fuel injector testers
- Fuel pressure testers
- Vacuum and bleeder kits
 - Oil testers
 - Seal kits
 - Bearing kits
 - Aircon testers
 - Coolant kits
 - Brake calibrators
 - Puller sets
- Battery testers and chargers



AMTEC HYBRID ENGINE TRAINERS



AUTOTRONICS - DEMONSTRATORS

GASOLINE-ELECTRIC HYBRID ENGINE TRAINING BENCH – LIVE ENGINE

DL DM45

LEARNING EXPERIENCE

This demonstration panel is designed based on the Toyota Prius's gasoline-electric hybrid power engine. It can simulate engine start-up, speedup, slowdown and other actions with the aim of illustrating the structure and working principle of gasoline and electric hybrid power engines. The device applies to theoretical teaching and maintenance training of the gasoline and electric hybrid power engine for secondary vocational skill schools.

GENERAL CHARACTERISTICS

- Dim. mm (HxLxW) : 1800x1800x1000
- Weight approx. 500 kg
- Fuel No.: RON 92 or 95
- Fuel tank size: 10L
- Operating voltage: 12V DC
- Operating functioning temperature: -40°C to +50°C

MAIN CHARACTERISTICS

The didactic system shows a real and operable gasoline and electric hybrid power engine used to illustrate the structure and working process of the engine.

The trainer is composed of a synoptic panel and a live engine.

Main component:

- Detection control panel (with various detection terminals)
- Engine assembly
- Automatic transmission assembly
- Driving motor
- High-voltage battery
- Generator
- ECU
- Diagnosis socket
- Dashboard
- Multi-functional display screen
- Start / stop engine system
- Converter

ACCESSORIES

Suggested instruments for best practice:

- Digital Multimeter (not included)
- Automotive Oscilloscope (not included)
- OBD Fault diagnosis Scanner (not included)

OTHER CHARACTERISTICS

- The trainer is made of advanced aluminum-plastic plate with characteristics of not less than 4mm thick. The plate is corrosion resistant, impact resistant, pollution resistant, fireproof, and moisture proof. The panel surface is processed by special craft and spraying primer. The circuit diagrams are painted with never fade colour and the boards are coated with varnish. The trainees can learn and analyse the working principle of the control system by looking and analysing the diagram and the real-life components. Pivoting wheels are mounted.
 - The training bench is installed with dashboard and multi-functional display to illustrate parameters changes in the power transmission process, speed, fuel pressure light and electronic control system failure indicating light.
 - The training panel has installed detection terminals to identify various detectors, actuators, engine control unit, automatic transmission, hybrid power unit and power control unit pins' electrical signals, such as resistance, voltage, current or frequency.
- High-voltage cable
 - P gear switch / Intelligent key /EV mode switch
 - Electronic transmission bridge
 - Braking system
 - Fuel pressure meter
 - Vacuum pressure meter
 - Fuel tank and fuel pump
 - Throttle controller
 - Inlet and exhaust pipes (including protection covers)
 - Water tank (including the stainless-steel protection cover)
 - Cooling fan
 - Auxiliary battery
 - Master power switch
- The training panel has installed a diagnosis socket to which an automobile decoder can be connected to read and clear fault codes, and reads data stream from the engine, automatic transmission, hybrid power and power electronically controlled systems.
 - A throttle controller is installed on the bench to accelerate and slowdown. A master power switch, a water tank shield, flywheel shield and other protection devices are installed on the training bench to keep students safe during the testing process.
 - Equipped with intelligent fault setting system, include fault setting and troubleshooting.

AMTEC HYBRID ENGINE TRAINERS

CUTAWAY MODEL
FOR TOYOTA HYBRID
ENGINE 1NZE-FXE
HYBRID SYNERGY
DRIVE - GASOLINE
AND ELECTRIC

DL C4500M



AUTOTRONICS - CUTAWAYS

LEARNING EXPERIENCE

This cutaway model shows the Toyota hybrid system (THS) which has two sources of power, the petrol engine and the electric motor. The THS recovers energy otherwise lost to heat in the brakes and uses it to supplement the power of its fuel-burning engine.

MG1 (motor generator 1) generates electrical power and starts the engine; MG2 (motor generator 2) drives the vehicle. During deceleration, the wheels drive MG2 which acts as a generator for regenerative power recovery. The THS uses different modes to achieve the most efficient operation in response to driving conditions.

GENERAL CHARACTERISTICS

- Dim. mm approx (HxLxW) : 1300x1000x800
- Weight approx. kg 250

OPTION

- **DL C4500E** same as **DL C4500M** but operated electrically by means of two electric motors: one on the petrol engine and the other on the generator. The electric motors can be operated separately or simultaneously, according to teaching requirements. The engine is provided with nomenclature panel.

MAIN CHARACTERISTICS

The cutaway model shows the following main specifications :

- 4 cylinders
- Displacement: 1500 cc
- DOHC overhead camshaft
- 4 valves per cylinder
- Roller chain
- VVT-I system (Variable Valve Timing with intelligence) electronically controlled intake valves
- Multi-point electronic injection with throttle
- Electrical engine
- Epicyclic engine
- Generator
- Transmission belt (CTV)
- Gears
- Differential group
- Exhaust manifold with Lambda probe

The engine is mounted on a stand with wheels and it is operated manually by means of one crank handle placed on the thermal engine and one on the electric engine in order to simulate the different cycles.

AMTEC HYBRID ENGINE TRAINERS

ELECTRIC DRIVE TRANSMISSION SYSTEM TRAINING BENCH DL DM47



LEARNING EXPERIENCE

The training bench is designed to develop the knowledge about main components installed on electric vehicles. The bench reproduces the same functions and control mode of the most popular pure electric vehicles.

This trainer closely represents:

- the connection and control relationship among the core components of electric drive systems related to the use of new types of clean energy;
- the installation position;
- the operating parameters;
- the safety precautions for high voltage system.

It is developed to improve students' ability to analyse and process the failures of these types of electric drive system.

MAIN CHARACTERISTICS

This trainer shows the structure and logic control relationship of all main components that can be found in an electric drive system related to the new types of clean energy.

All components are installed on the bench, with the same electrical connection mode as real vehicles, convenient for assembly and disassembly. This trainer makes students learn the disassembly points and safety protection of high voltage system components during disassembling and assembling connection.

The connecting lines can be scanned with the help of a two-dimensional code, after which, their assembly and disassembly methods and precautions can be completely demonstrated on the screen.

GENERAL CHARACTERISTICS

- Dim. mm (HxLxW) : 1800x1600x1200
- Weight approx. 300 kg
- Auxiliary battery: 12V 45AH.
- Power battery type: Environment-friendly lithium iron phosphate power battery (square aluminum case, single battery 3.2V 50AH)
- Capacity of power battery pack: 76.8V 50AH (3.8 kilowatt-hour)
- Input power supply: single phase
- Operating functioning temperature: -5°C to +40°C

ACCESSORIES

Suggested instruments for best practice:

- Digital Multimeter (not included)

OTHER CHARACTERISTICS

- Power battery pack display and instruments are installed on the teaching board, where there is a circuit control chart. Pressing the accelerator, students can observe all the parameters about the running status of the vehicle and master the operation control logic of pure electric vehicle and the law of parametric variation of main components. With the help of a smart switch, the control logic under each state can be reproduced on the screen.
- The training bench consists of a main bench and a teaching board. The bench is placed horizontally for installing main components. The teaching board is placed vertically and connected with screws. At the bottom of training bench, 4 wheels are installed for moving flexibly, which also has self-lock device for fixing position. Pivoting wheels are mounted.
- The power battery pack is designed to be translucent with built-in LED bank lights for lighting so that students can observe the internal structure of battery.
- With real mechanical gear transmission and brake system, students can observe the braking energy feedback current variation and master the concept of braking energy absorption.
- The training bench has an electric vacuum assisted hydraulic brake system and switch signals can be controlled intelligently through pressure sensor.
- The training bench is equipped with a 12V power ground mechanical switch that can disconnect the 12V ground from time to time to disconnect the power supply of the whole system.
- The training bench is equipped with brake shield and other safety protecting devices for a safe use of students.
- It is equipped with intelligent fault setting and appraisal system.

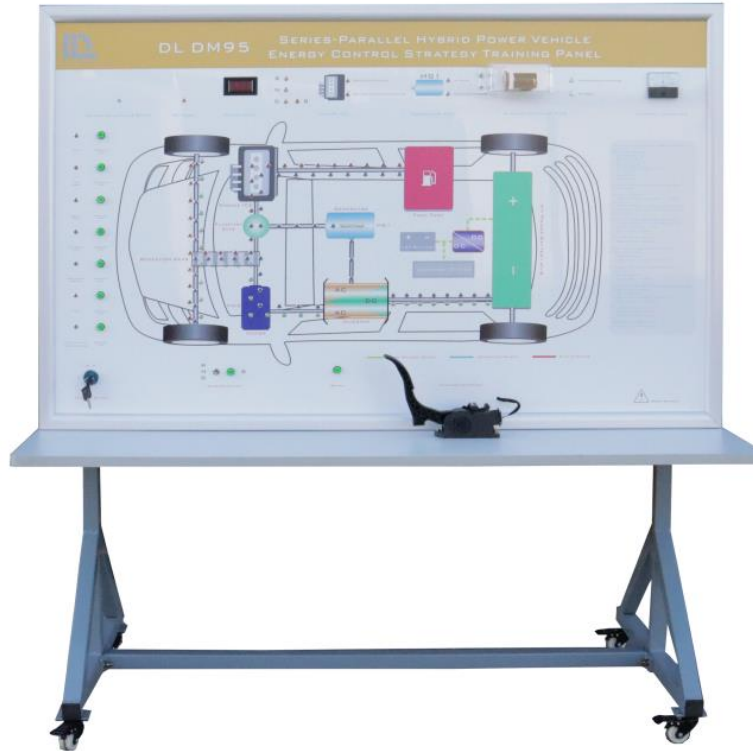
Main components:

- Detection control panel (with various detection terminals)
- Ignition switch / Dashboard
- Lithium iron phosphate battery / Battery Management System (BMS)
- Battery real-time details display screen
- Vehicle-mounted charger and charging plug
- DC-DC (From 76.8 Vdc to 13.8 Vdc) converter
- Electronic throttle assembly
- Shift mechanism assembly
- Driving motor / Motor controller
- Gearbox / Driving shaft / Front wheel disc brakes
- Magnetic powder brake / Adjustable tension controller
- Booster pump assembly / Vacuum pump assembly / Vacuum tank assembly
- Auxiliary battery
- Emergency power switch

AMTEC HYBRID ENGINE TRAINERS

SERIES-PARALLEL HYBRID POWER VEHICLE ENERGY CONTROL STRATEGY TRAINING PANEL

DL DM95



LEARNING EXPERIENCE

This demonstration panel is designed based on a Toyota Prius series-parallel hybrid power system with a working management control to dynamically demonstrate several working conditions such as starting, driving at low speed, normal speed, full speed, reduced speed and stopping.

GENERAL CHARACTERISTICS

- Dim. mm (HxLxW) : 1700x1600x700
- Weight approx. 200 kg
- Input power supply: A.C. 220V \pm 10% 50Hz
- Operating voltage: 12V DC

MAIN CHARACTERISTICS

The didactic system fully demonstrates a series-parallel hybrid power vehicle with energy control strategy and it can dynamically simulate the energy flow direction. It can also display the motor, engine, generator running status during starting, driving at low speed, normal speed, full speed and reduced speed and stopping. It is possible to show actively the characteristics and advantages of a series-parallel hybrid power system.

Main components:

- Ignition switch
- Different vehicle speed switches
- Accelerator pedal
- Switch for changing gears
- Switch for braking
- Digital tachometer
- Ammeter
- Light emitting diodes (For showing the energy flow direction)
- Movable framework

OTHER OPTIONS

DL DM95A - Series Hybrid Power Vehicle Energy Control Strategy Training Panel

The equipment fully demonstrates series hybrid power vehicle energy control strategy and can dynamically simulate energy flow direction and motor, engine, generator running status during starting, driving at low speed, normal speed, full speed and reduced speed and stopping.

The device applies to theoretical teaching and maintenance training of series hybrid power system for secondary vocational skill schools.

DL DM95B - Parallel Hybrid Power Vehicle Energy Control Strategy Training Panel

The equipment fully demonstrates parallel hybrid power vehicle energy control strategy and can dynamically simulate energy flow direction and motor, engine, generator running status during starting, driving at low speed, normal speed, full speed and reduced speed and stopping.

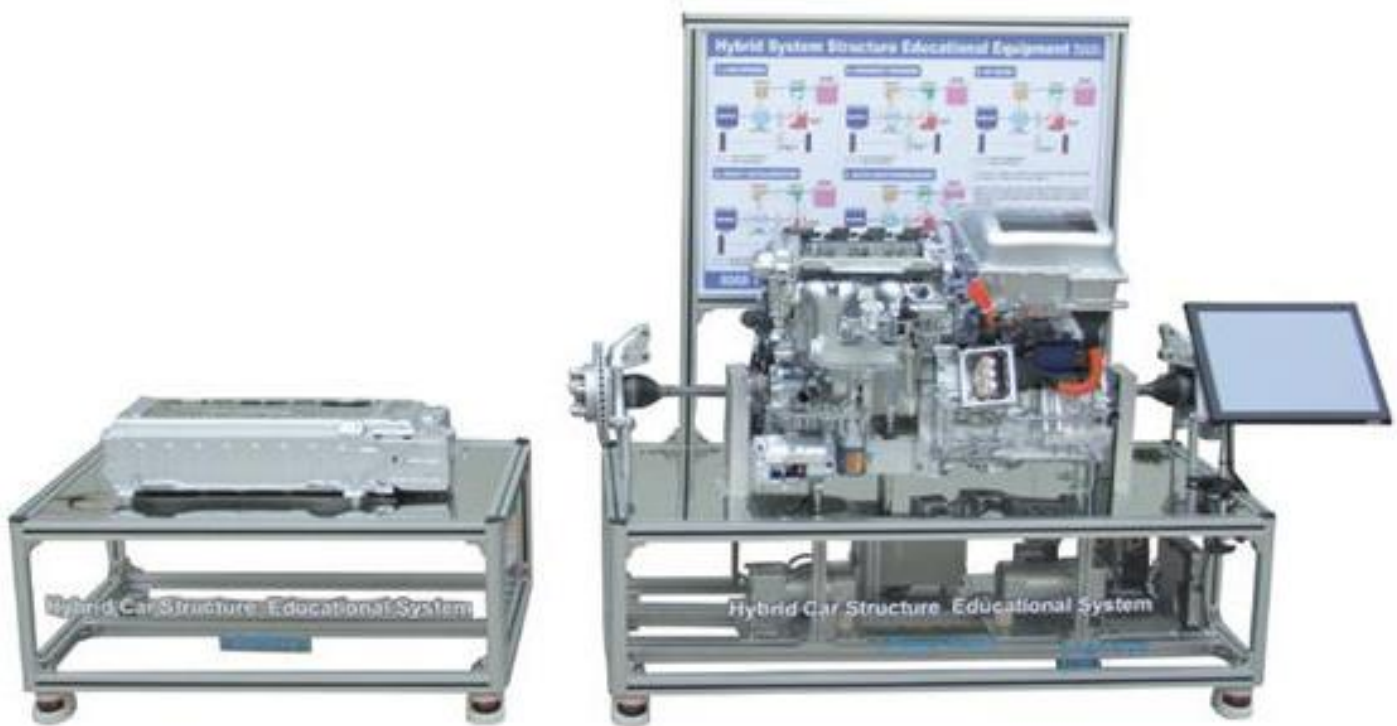
The device applies to theoretical teaching and maintenance training of parallel hybrid power system for secondary vocational skill schools

OTHER CHARACTERISTICS

- a) The trainer is made of advanced aluminum-plastic plate with characteristics of not less than 4mm thick. The plate is corrosion resistant, impact resistant, pollution resistant, fireproof, and moisture proof. The panel surface is processed by special craft and spraying primer. The circuit diagrams are painted with never fade colour and the boards are coated with varnish. The trainees can learn and analyse the working principle of the control system by looking and analysing the diagram and the real-life components.
- b) Instruction board panel is installed with ignition switch, operating mode switch, throttle pedal, gear shift switch, brake switch, digital tachometer and ammeter. Supplied with light emitting diode for dynamic indication of system flow direction. Moreover, working state of engine, motor and generator are simulated.
- c) The training base frame is made of steel and the surface is paint-coated. The training base frame is made of moulded aluminium steel and the chassis part is welded to the steel structure. The surface is processed with spraying. Pivoting wheels are mounted. A small table top shelf is fixed on the base frame to place material and testing devices
- d) The didactic panel does not use accumulators or battery and it does not require any charging. It can be connected to a 220V AC voltage which changes to a 12V DC voltage through the internal circuit. The 12V DC voltage protects the training panel against short circuit.

AMTEC HYBRID ENGINE TRAINERS

AT-161233 Hybrid System Structure Exhibit Educational Equipment



- It is an exhibit educational training model for understanding engine, motor of hybrid system by cross-sectioning components
- It is a hybrid system for gasoline 99HP and electricity 82HP of 1.8 liter vehicle of PRIUS by Toyota Motor Co.
- It can be systematically educated for operating principle of hybrid system such as engine, transmission, electric motor, etc, and it is effectively manufactured for understanding.
- It is equipped with a control box manufactured by a special module to educate the operating state of each part for the hybrid system such as low/ high speed, acceleration, deceleration, brake and charging, braking & charging and has a PC, hybrid software and touch screen system.
- It is an operating system of each engine and motor part for changing process on hybrid system of 6 types of driving condition and it has a high effect on education using LED system to color circuit panel.
- It is an operating educational system to show the operating structure of power system by cross-sectioning engine, motor, transmission, differential gear, drive shaft.
- The model is printed by our company's detailed specification for painting to enhance the educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, cylinder block: light black, cylinder head: silver, gasket: white.
- Exterior is painted by diamond clear and parts are coated for durability.
- Module for system, control box, single-phase 220V, two motors, RPM: 0~5, additional safety devices, aluminium name plate.
- 4 wheels, foot master of moving, fixed, leveling, vibration / Aluminum profile stand, Battery stand
- An user's manual and a dust cover

AMTEC HYBRID ENGINE TRAINERS

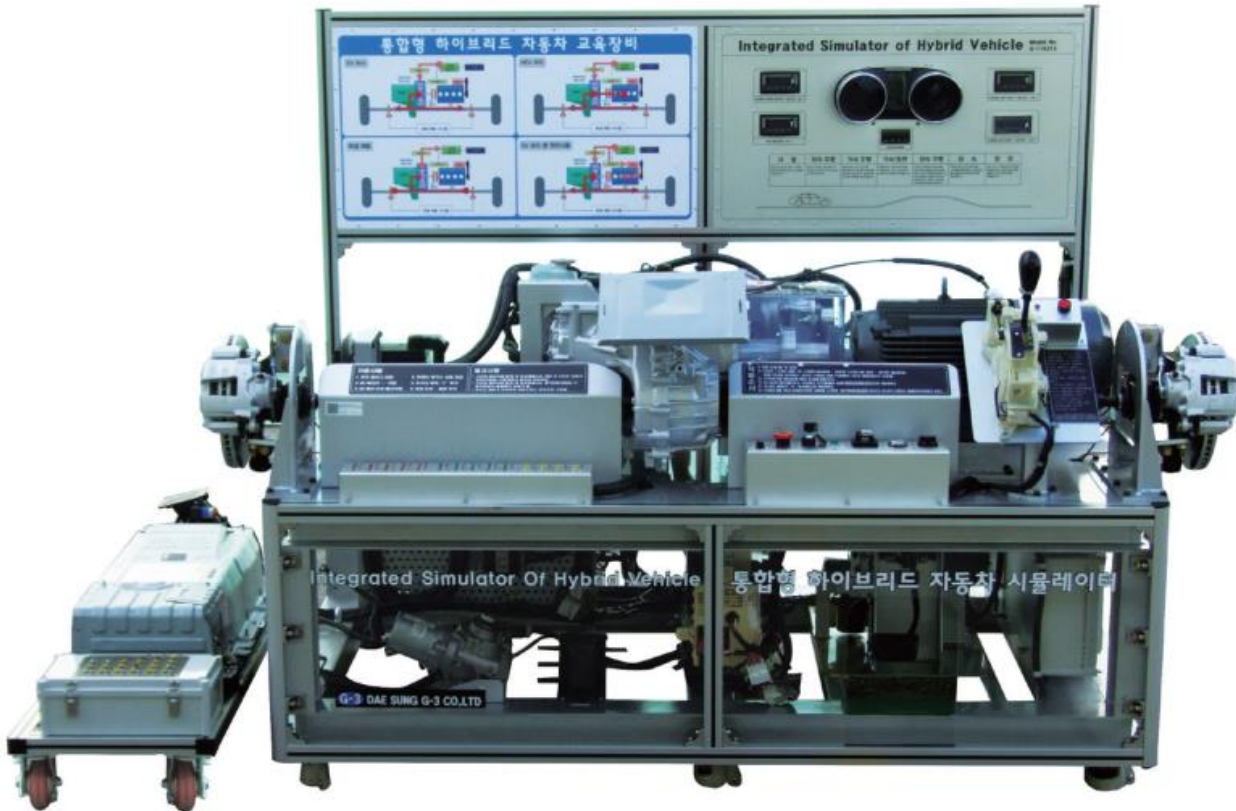
AT-161220 Hybrid System Structure Exhibit Educational Equipment



- It is an exhibit educational training model for understanding engine, motor of hybrid system by cross-sectioning components
- It is a hybrid system for gasoline 99HP and electricity 82HP of 1.8 liter vehicle of PRIUS by Toyota
- It can be systematically educated for operating principle of hybrid system such as engine, transmission, electric motor, etc, and it is effectively manufactured for understanding.
- It is equipped with a control box manufactured by a special module to educate the operating state of each part for the hybrid system such as low/ high speed, acceleration, deceleration, brake and charging.
- It is an operating educational system to show the operating structure of power system by cross-sectioning of engine, motor, transmission, differential gear.
- The model is printed by our company's detailed specification for painting to enhance the educational quality. Cut face: dark red, intake system: sky blue, exhaust system: pink, lubricating system: yellow, cylinder block: light black, cylinder head: silver, gasket: white.
- Exterior is painted by diamond clear and parts are coated for durability.
- Module for system, single-phase 220V, two motors, RPM: 0~5, additional safety devices, aluminum name plate.
- 4 wheels, foot master of moving, fixed, leveling, vibration / Aluminum profile stand
- An user's manual and a dust cover

AMTEC HYBRID ENGINE TRAINERS

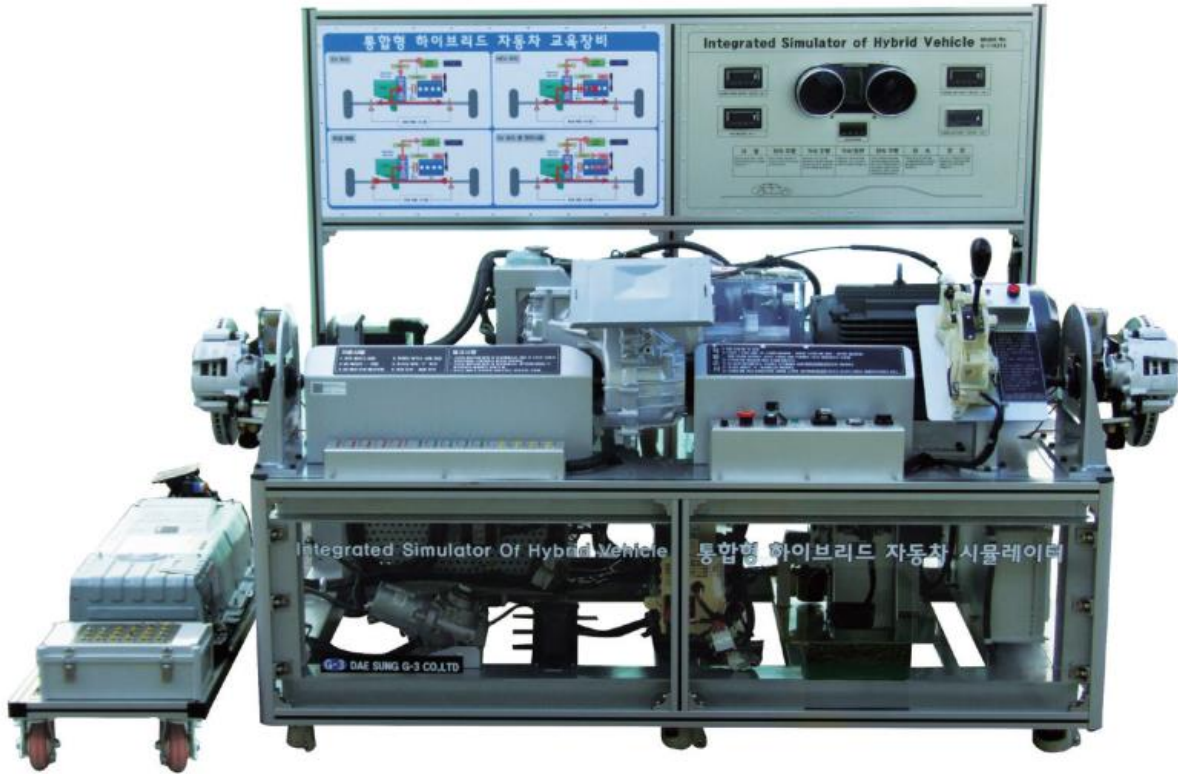
AT-162058 Hybrid Power Train System Educational Training Equipment



- It is an educational equipment for training the operating principle of power system of hybrid vehicle.
- Components; Hyundai Sonata (or Kia K5) hybrid system, 30~38KW electric motor, 6 speed automatic transmission, front wheel, high voltage battery, hybrid starter, generator (HSG), hybrid power control unit (HPCU), etc.
- Fault control system is installed at hybrid modules such as battery management system(BMS), motor control unit(MCU), low voltage controller(LDC), hybrid control unit(HCU), etc for controlling the input and output states. Resistance, voltage and current can be measured with diagnostic terminals.
- Effective for training the analysis of fault code with diagnostic instrument.
- Colored circuit diagram is displayed on panel and voltage, current and motor rpm, etc are displayed on the aluminum panel.
- AC 4P 380V motor, inverter speed setting system.
- Aluminum profile stand with 4 wheels. Height adjustable.
- An user's manual and a dust cover

AMTEC HYBRID ENGINE TRAINERS

AT-162058 Hybrid Power Train System Educational Training Equipment



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AMTEC HYBRID ENGINE TRAINERS

AT-162102 : Hybrid Transmission System Structure Exhibit Equipment



- It is an educational equipment for the exhibition of structures of Continuous Variable Transmission for Hyundai Motor hybrid vehicle.
- Effective for the exhibition of internal and external structures of motor, planetary gear, transaxle, etc of transmission of hybrid vehicle.
- Exterior is painted by diamond clear and parts are coated for durability.
- The model is painted and coated by our company's detailed specifications to enhance the educational quality and durability.
- 4 wheels Aluminum profile stand
- An user's manual and a dust cover

AMTEC HYBRID ENGINE TRAINERS

AT-162111 : Hybrid Generator Exhibit Model



- It is an educational model for understanding the operating principle and structure of precisely cross-sectioned generator for hybrid vehicle.
- The model is painted and coated by our company's detailed specifications to enhance the educational quality and durability.
- Design 30-0509810 : Product display stand-Mirror stainless stand with adjustable base frame.
- An user's manual and a dust cover

AMTEC HYBRID ENGINE TRAINERS

AT-162112 Hybrid Motor Exhibit Model



- It is an educational model for understanding the operating principle and structure of precisely cross-sectioned motor for hybrid vehicle.
- The model is painted and coated by our company's detailed specifications to enhance the educational quality and durability.
- Design 30-0509810 : Product display stand-Mirror stainless stand with adjustable base frame.
- An user's manual and a dust cover

AMTEC HYBRID ENGINE TRAINERS

AT-162305: Hybrid Engine Simulator System Educational Training Equipment



- 2.0 liter, L4 cylinder, MPI, DOHC, 150HP, Hybrid engine, 6 speed transmission. Electric motor 30kW, FF type/ Hyundai motor co. hard type, Sonata (Kia K5) hybrid system.
- Components; Hybrid control unit(HCU), Inverter(HPCU-MCU, HCU, LDC), high voltage battery(HV BATT), battery management system(BMS)
- Fuel, cooling, intake, and exhaust system of engine, instrument panel, shift lever, accelerator, wheel, etc are installed. Operating type.
- Digital voltmeter and ammeter are installed at charging and discharging circuits of motor, generator, and battery for education.
- It is an educational equipment like actual vehicle for education quality of hybrid system.
- It has an educational training function that controls the condition of input and output by installing fault control module to ECU, TCU circuit.
- DM System-Diagnosis and fault control module
 - Fault controls for circuits are set by the switch.
 - AL sculpture box, fault control part can be locked with cover.
- Pressure gages are installed at P, R, N, D hydraulic circuits of automatic transmission to instruct the operation of hydraulic circuits according to each range.
- By installation of check terminal to circuit, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- It is composed as an efficient system for automotive engineer qualifying education and inspection training such as engine tune-up, exhaust gas, ignition timing, intake pipe, vacuum level, cylinder pressure, radiator, timing, fan belt, fuel, oil, electrolyte, charging, moving circuit, etc.
- Electronic-control function of EOBD and instruction of diagnostic system and data can be trained through DLC and DM.
- By installing check terminal for each sensor, it is convenient to use tester and it protects the circuit.
- Instruments, vacuum gauge, fuel pressure gauge, voltmeter, DLC, power source jack, key, accelerate pedal, battery, engine, radiator protector, fire extinguisher, a book holder etc. are installed.
- Control panel has an excellent durability with aluminum plate, CNC engraver and color.
- Powder-coated, 2-door cabinet stainless molding, 4 wheels stand
- An user's manual and a cover
- Product size ≒ (L)200cm×(W)187cm×(H)122cm, Wt≒650kg
- Patent 10-1256563 : Hybrid vehicle simulation training equipment
- Registration Number of Utility Model 20-0439940 : Automobile training educating equipment holder
- Utility Model 20-0440071 : Carrying board of articulated

AMTEC HYBRID ENGINE TRAINERS

AT-170103 Automotive Electric & Electronic Integrated System Educational Training Equipment



- It is an integrated educational training equipment of gasoline 3,300~3,800cc luxury passenger car's Hyundai V6 Lambda electric and electronic system.
- It is an educational equipment that is efficient for understanding system and training of electronic system with electronic parts and wire harness installed to panel stand.
- Components: controllers of ECU, TCU, IPDM, BCM, meter, air conditioner, amplifier, etc, CAN system, audio & A/V, air conditioning system, air bag system, remote keyless entry system, smart card system, immobilizer system, power heater IMS seat system, central door lock power window, electronic ignition system, handle, multi-functional switch, lamp system, charging system, actuators, motor, switches, relay, sensor, operating sensor module, LED fuel injection system, etc.
- It has an educational training function that controls condition of input and output by installing fault control module to ECU, TCU circuit
- BU System-Button fault control and diagnosis unit
 - 50 fault controls for circuits are set by the program.
 - Set / Set All / Clear / Clear All / Lamp illumination per education number.
 - AL sculpture box, fault control part can be locked with cover.
 - Patent registration number 10-0902667 : Control system for automobile education apparatus
- Sensor Variable Control System: AFS, TPS, WTS, VSS, etc.
- Fuel injection system-Design 30-0575944 : Fuel tank installation
- By installation of check terminal to circuit, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- By installing 1:1 circuit check terminal to each components, it makes convenient to use the tester and protects its circuit.
- Automatic battery charging system by a high-efficiency, constant-voltage transformer which is designed & manufactured for the automotive electronic control.
- The name of components is indicated with an aluminum plate and safety cover is attached to motor, fan and sparker.
- Control box with operating switch, automatic circuit breaker, fuse and safety switch.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Powder-coated, 4 door cabinet, 6 wheels panel stand.
- An user's manual and a dust cover
- Product size ≒ (L)250cm×(W)102cm×(H)180cm, Wt ≒ 415kg

AMTEC HYBRID ENGINE TRAINERS

AT-180331 : Common Rail Direct Injection System Educational Training Equipment

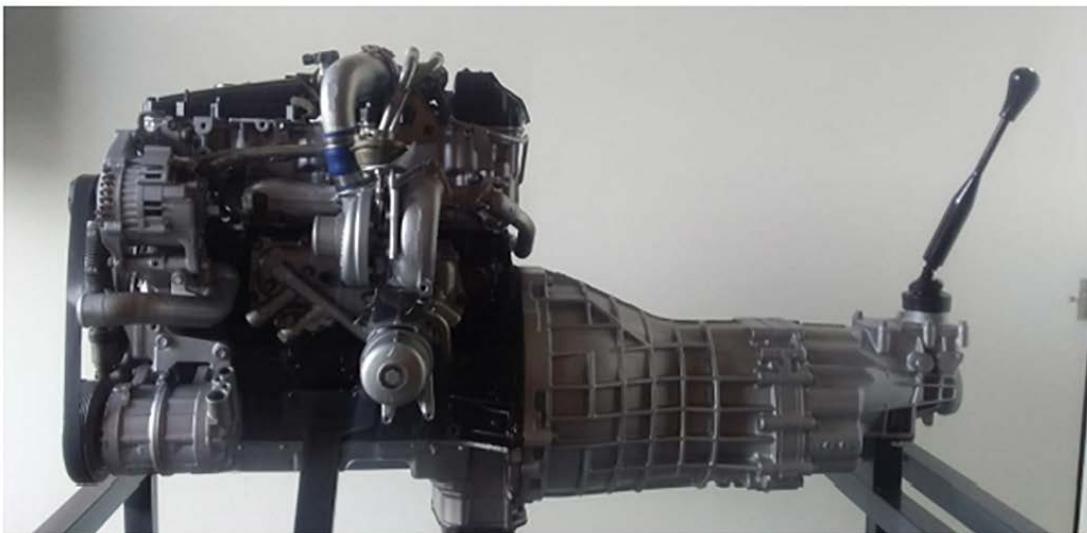


- It is a CRDI(Common Rail Direct Injection) Diesel engine system equipment for Delphi type of new model SUV vehicle.
- It is a high standard educational training equipment of CRDI fuel injection system such as ECU, high pressure pump, injector, fuel pump, filter, fuel tank, fuel line, etc.
- By controlling injection time and injection amount with installation of data variable controller to APS, MAFS, IATS, ECTS and RPM, data change of input and output can be analyzed and theory & practice of CRDI system can be educated.
- Injection condition for each nozzle can be seen visually through a high pressure transparent glass. Also, injection amount for each nozzle can be measured.
- By installation of diagnosis terminal to ECU circuit and sensors, input and output data can be measured and trained conveniently with multimeter or oscilloscope.
- Education can be efficiently done by indicating engine rpm and pressure of rail's high pressure as a digital meter.
- EOBD and CRDI function can be controlled and data instruction can be trained with DLC.
- Color circuit diagram panel is effective for training theory and test, and has an excellent durability with an aluminum plate designed and engraved with CNC.
- Constant-voltage transformer with high efficiency, designed and manufactured for automotive electric control, is installed.
- It is composed of a safety cover and control box such as key, power lamp, automatic cutout, fuse, safety switch, etc.
- Single phase 220V, motor, inverter speed variable system.
- The model is designed and manufactured according to ISO 9001 and our company's technical spec.
- Registration Number of Design 30-0707573 : Educational vehicle for diesel direct injection system simulator
- Design 30-0575944 : Fuel tank for a vehicle, installation
- Power-coated, Utility Model 20-0441632 : 4 wheels 2 door panel stand
- An user's manual and a dust cover
- Product size ≒ (L)122cm×(W)80cm×(H)160cm, Wt ≒ 200kg

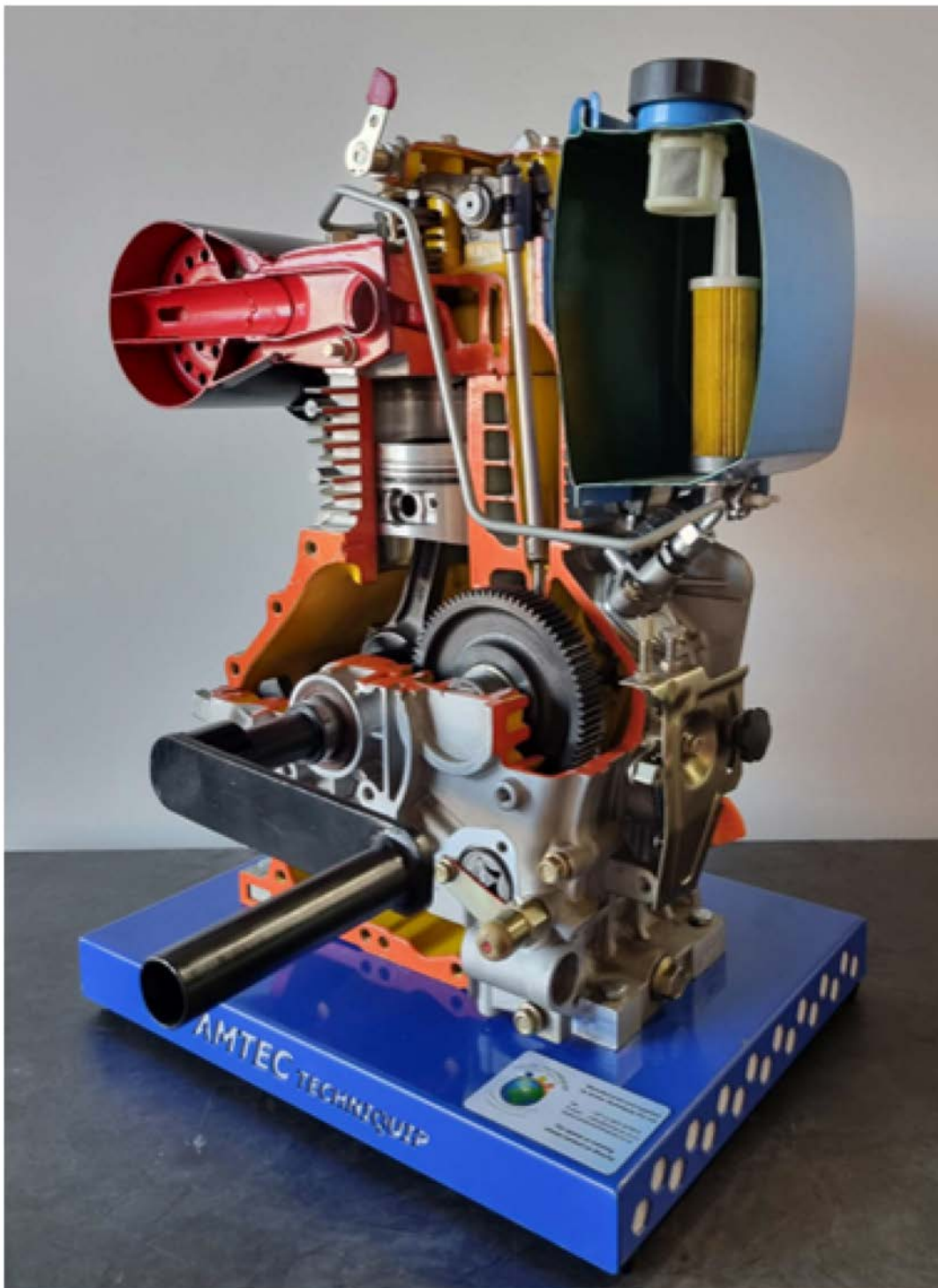
AMTEC – SERVICEABLE PARTS



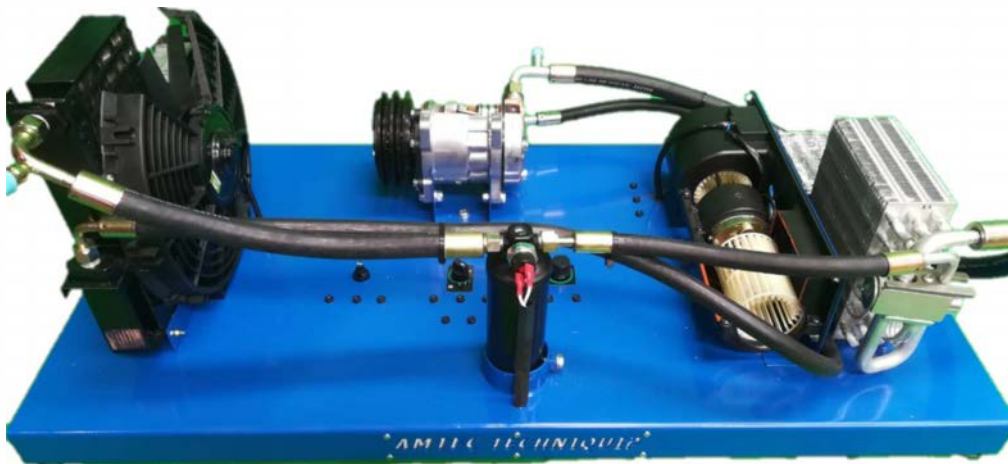
AMTEC – SERVICEABLE PARTS



AMTEC SECTIONED / CUT-AWAY EQUIPMENT



AMTEC SECTIONED / CUT-AWAY EQUIPMENT

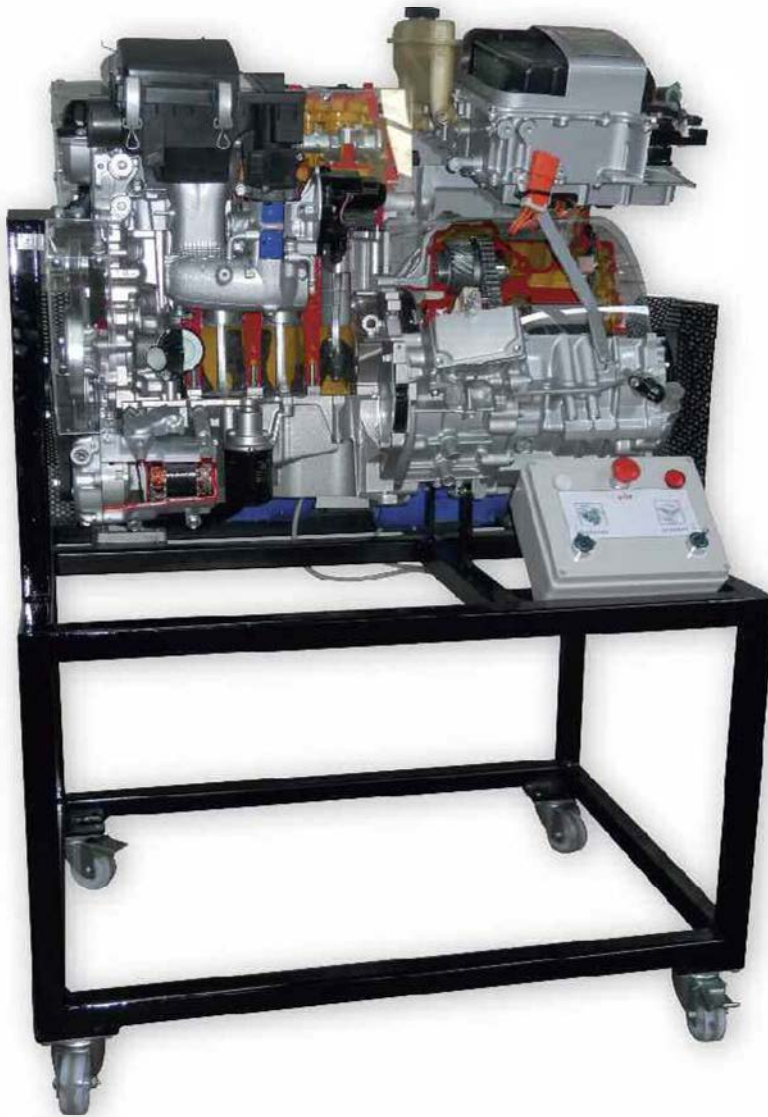


AMTEC SECTIONED / CUT-AWAY EQUIPMENT



■ TOYOTA Hybrid System (THS) Petrol Engine

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Art. 610

HYBRID ENGINE
HYBRID SYNERGY DRIVE
GASOLINE AND ELECTRIC
SECTIONED
Handcrank operation
or Electric motor operation

Art. 610IE

HYBRID ENGINE
HYBRID SYNERGY DRIVE
WITH INVERTER
GASOLINE AND ELECTRIC
SECTIONED
Handcrank operation
or Electric motor operation

Technical Features

Petrol engine 1NZ-FXE

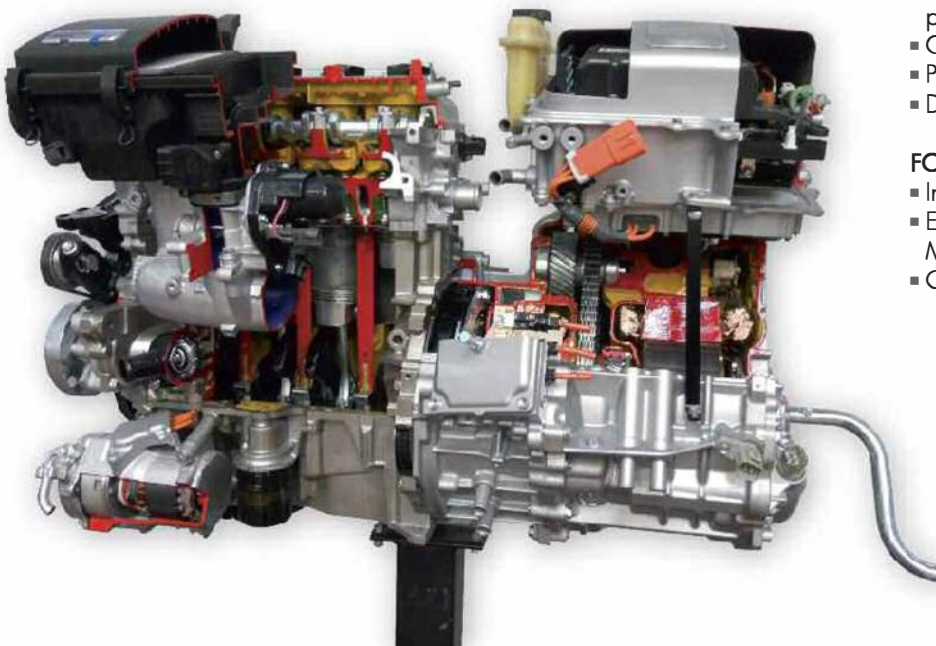
- 4 strokes, 4 cylinders in-line
- 16 valves VVT-i system
- 1497 cc - DOHC
- Chain drive
- Electronic injection
- Air filter
- Gear oil pump - oil filter
- Water pump

Electric Motor and HV Transmission Group

- Motor Generator 1 (MG1)
permanent magnet motor
- Motor Generator 2 (MG2)
permanent magnet motor
- Clutch
- Planetary gear group
- Differential

FOR ART. 601IE ONLY:

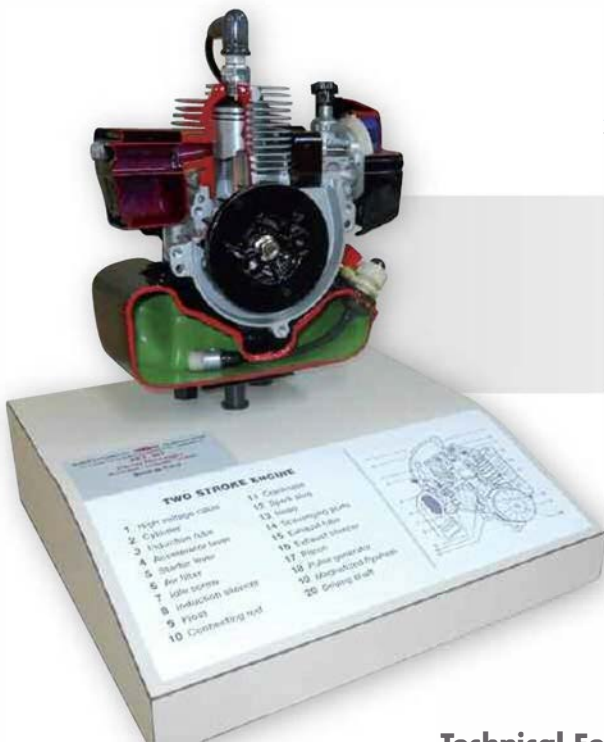
- Inverter
- Electric motor operation
Main Supply: 230V
- Control panel



Two-Stroke Petrol Engine

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

This new series of teaching aids represents the very best available for teaching motor car mechanical engineering at a professional technical level. The concept underlying this series of products is simple but effective. We suggest a series of the same engine in both **SECTIONED and OPERATING** forms. With this new product-line we have solved all teaching problems. The trainee now has a double way of learning, in the theoretical part by means of the sectioned engine and in the technical functioning part with the fully-operating engine **ASSEMBLY and DISASSEMBLY**.



Art. 501 TWO STROKE PETROL ENGINE

Brand-new engine
SECTIONED
handcrank operation
on base
30x30x45 h cms.
weight 5 kg

Art. 502 TWO STROKE PETROL ENGINE

Brand-new engine
SECTIONED
Electric motor operation
on base
35x35x55h cms.
weight 6 kg
main supply: 230V

Technical Features

- Two-stroke Petrol Engine
- 48 cc. - HP 3.0
- Brand-New engine
- Single cylinder
- Carburettor
- Electronic ignition
- Petroil feeding
- Air cooling

Art. 503 TWO STROKE PETROL ENGINE

Brand-new engine
FULLY OPERATING
Mounted on work-bench
Recoil starting.
52x52x115 h cms.
weight 33 kg

Art. 504 TWO STROKE PETROL ENGINE

Brand-new engine
FULLY OPERATING
Recoil starting.
27x20x26 h cms.
weight 3 kg



Four-Stroke Petrol Engine

Four-Stroke Diesel Engine

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Art. 505 FOUR STROKE PETROL ENGINE

Brand-new engine
SECTIONED
handcrank operation
on base
40x40x45 h cms.
weight 20 kg

Art. 506 FOUR STROKE PETROL ENGINE

Brand-new engine
FULLY OPERATING
Mounted
on work-bench
recoil start.
52x52x125 h cms.
weight 52 kg

Art. 507 FOUR STROKE PETROL ENGINE

Brand-new engine
FULLY OPERATING
recoil start.
32x32x40 h cms.
weight 22 kg

Art. 508 FOUR STROKE DIESEL ENGINE

Brand-new engine
SECTIONED
Handcrank operation.
on base
45x45x55 h cms.
weight 38 kg



Technical Features

- Four-stroke Petrol Engine
- 160 cc. - HP 5.5
- Brand-New engine, single cylinder, overhead valves
- Camshaft in the crankcase
- Carburettor
- Electronic ignition
- Splash lubrication
- Air cooling

Technical Features

- Four-stroke diesel engine
- 225 cc. - HP 4.8
- Brand-New engine, direct injection, single cylinder
- Pushrod and rocker arms overhead valves
- Camshaft in the crankcase
- Injection pump operated by camshaft
- Air cooling
- Lubrication forced by vane pump



Art. 509 FOUR STROKE DIESEL ENGINE

Brand-new engine
FULLY OPERATING
Mounted on work-bench
Electric starter
or recoil start.
52x52x135 h cms.
weight 70 kg

Art. 510 FOUR STROKE DIESEL ENGINE

Brand-new engine
FULLY OPERATING
recoil start.
45x45x50 h cms.
weight 40 kg

■ Diesel Engine Model Indirect Injection

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

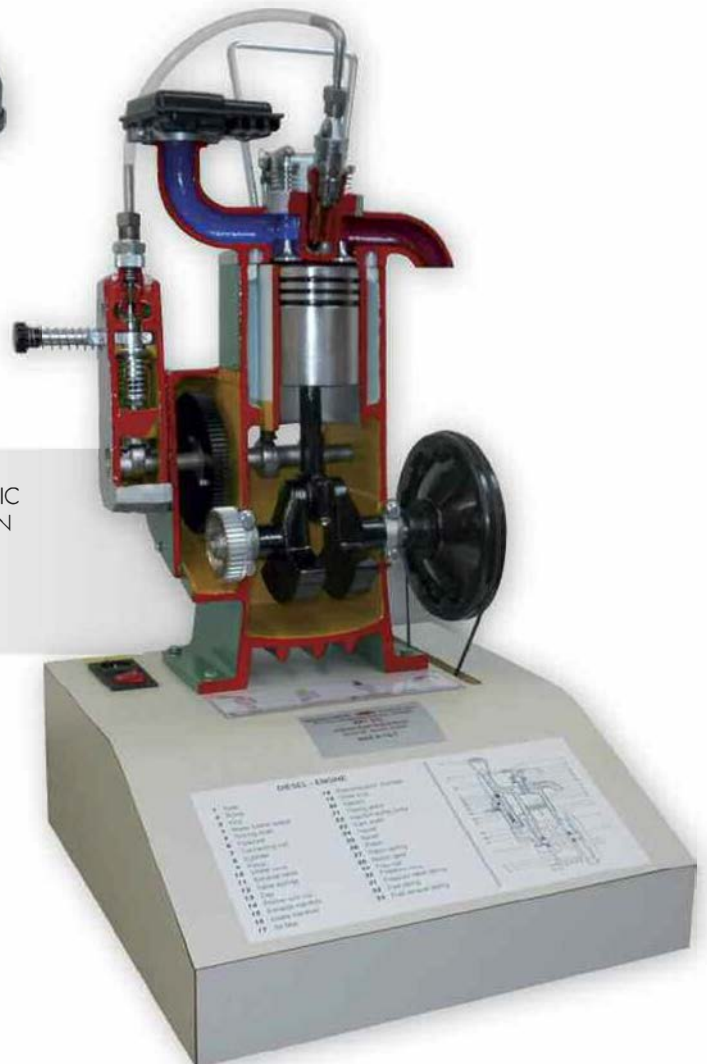


Art. 511
DIESEL ENGINE MODEL
4 STROKE
INDIRECT INJECTION
SECTIONED
HANDCRANK OPERATION
on base
33x30x58 h cms.
weight 8 kg.
Main supply: 1.5 V battery

Art. 511-2S
DIESEL ENGINE MODEL
2 STROKE
DIRECT INJECTION
SECTIONED
HANDCRANK OPERATION
on base
40x40x65 h cms.
weight 9 kg.

Technical Features

- Diesel engine model
- Two-Stroke
- Single Cylinder
- Full size model
- Direct Injection
- Injection pump
- Injector
- Volumetric compressor
- Cooling system



Art. 512
DIESEL ENGINE
MODEL
4 STROKE
SECTIONED ELECTRIC
MOTOR OPERATION
on base
33x30x58 h cms.
weight 8 kg.
Main supply: 230 V

Technical Features

- Diesel engine model
- Four-Stroke
- Single cylinder
- Full size model
- Indirect injection
- Injection pump
- Pre-combustion chamber
- Overhead valves
- Pushrods and rocker arms
- PRE-HEATING GLOW PLUG simulated by push-button

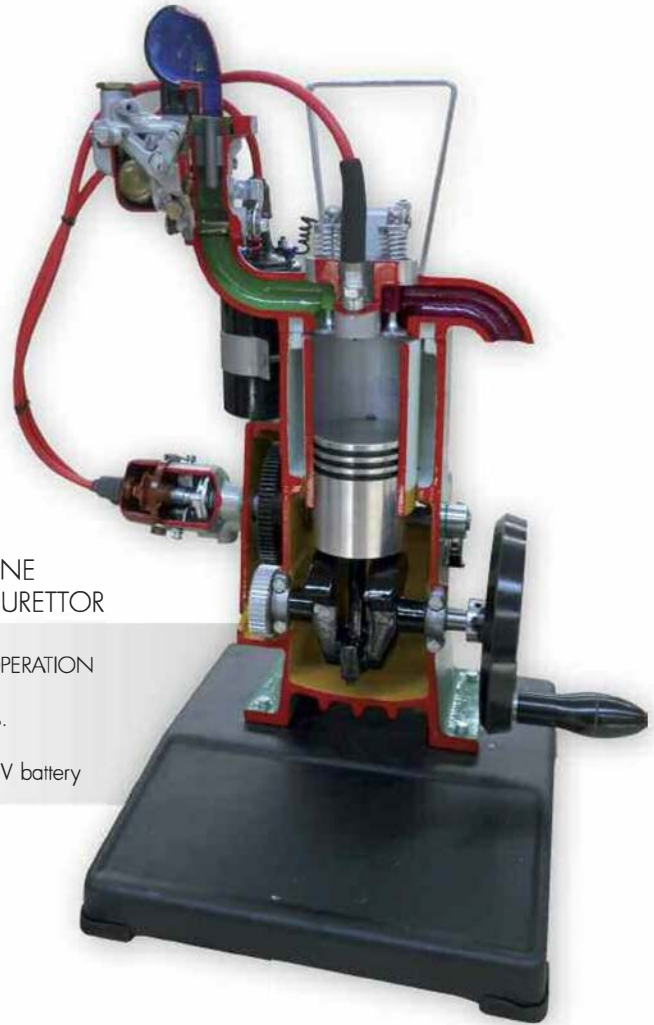
■ Petrol Engine Model Carburettor

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Technical Features

- Carburettor
- Petrol engine model
- Four-Stroke
- Single Cylinder
- Full size model
- Overhead valves
- Pushrods and rocker arms
- Camshaft in the crankcase
- Coil ignition
- Distributor

EXPLOSION stroke simulated from the automatically lighting of the SPARK PLUG



Art. 513
PETROL ENGINE
MODEL-CARBURETTOR
SECTIONED
HANDCRANK OPERATION
on base
40x30x62 h cms.
weight 9 kg.
Main supply: 1.5 V battery



Art. 514
PETROL ENGINE
MODEL-CARBURETTOR
SECTIONED
ELECTRIC MOTOR OPERATION
on base
40x30x62 h cms.
weight 9 kg.
Main supply: 230 V

NOTE: This item Art. 514 is equipped with a "STROKES INDICATOR", that lights up automatically during its rotation indicating the 4 strokes: Inlet - Compression - Explosion - Exhaust

■ Petrol Engine

Single Overhead Camshaft - rocker arms

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Technical Features

- Petrol engine
- 4 strokes
- 4 cylinders in-line
- Overhead Camshaft
- Rocker arms
- Chain drive or Toolhed belt
- Displacement 1600 cc
- **Carburettor**
- Air filter
- Coil ignition
- Gear oil pump
- Oil filter
- Water cooling

For Art. 573 and Art. 574 only:

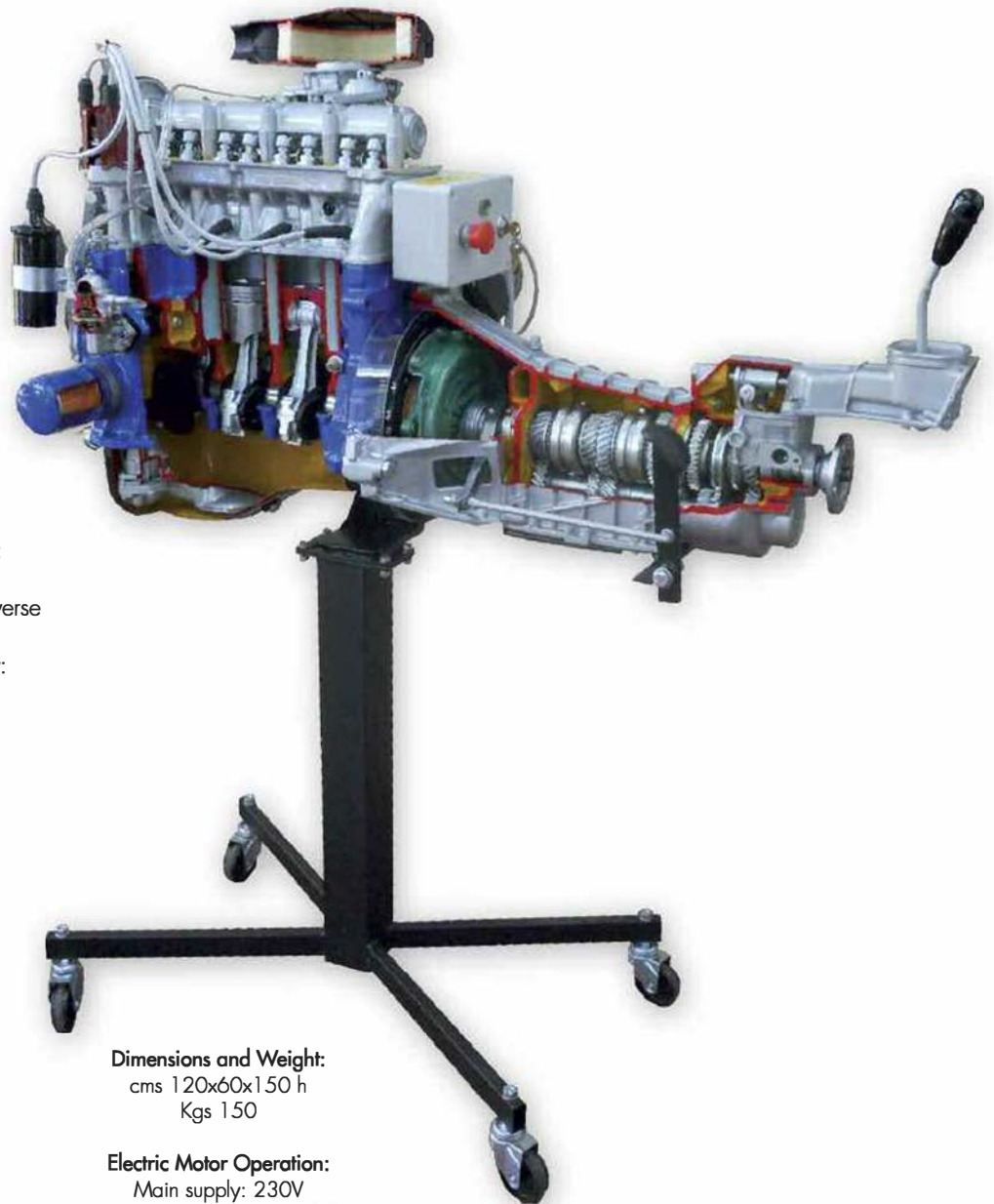
- Dry clutch single plate
- Gearbox 4 or 5 forward + reverse

For electric motor operation only:

- Distributor

EXPLOSION stroke simulated from the automatically lighting of the SPARK PLUG

ON STAND WITH WHEELS



Dimensions and Weight:

cms 120x60x150 h
Kgs 150

Electric Motor Operation:

Main supply: 230V
Electrical System Complying with **CE** Standard

Art. 571

PETROL
ENGINE

OVERHEAD CAMSHAFT
ROCKER ARMS

Handcrank operation

Art. 572

PETROL
ENGINE

OVERHEAD CAMSHAFT
ROCKER ARMS

Electric motor operation

Art. 573

PETROL
ENGINE

OVERHEAD CAMSHAFT
ROCKER ARMS
with GEARBOX

Handcrank operation

Art. 574

PETROL
ENGINE

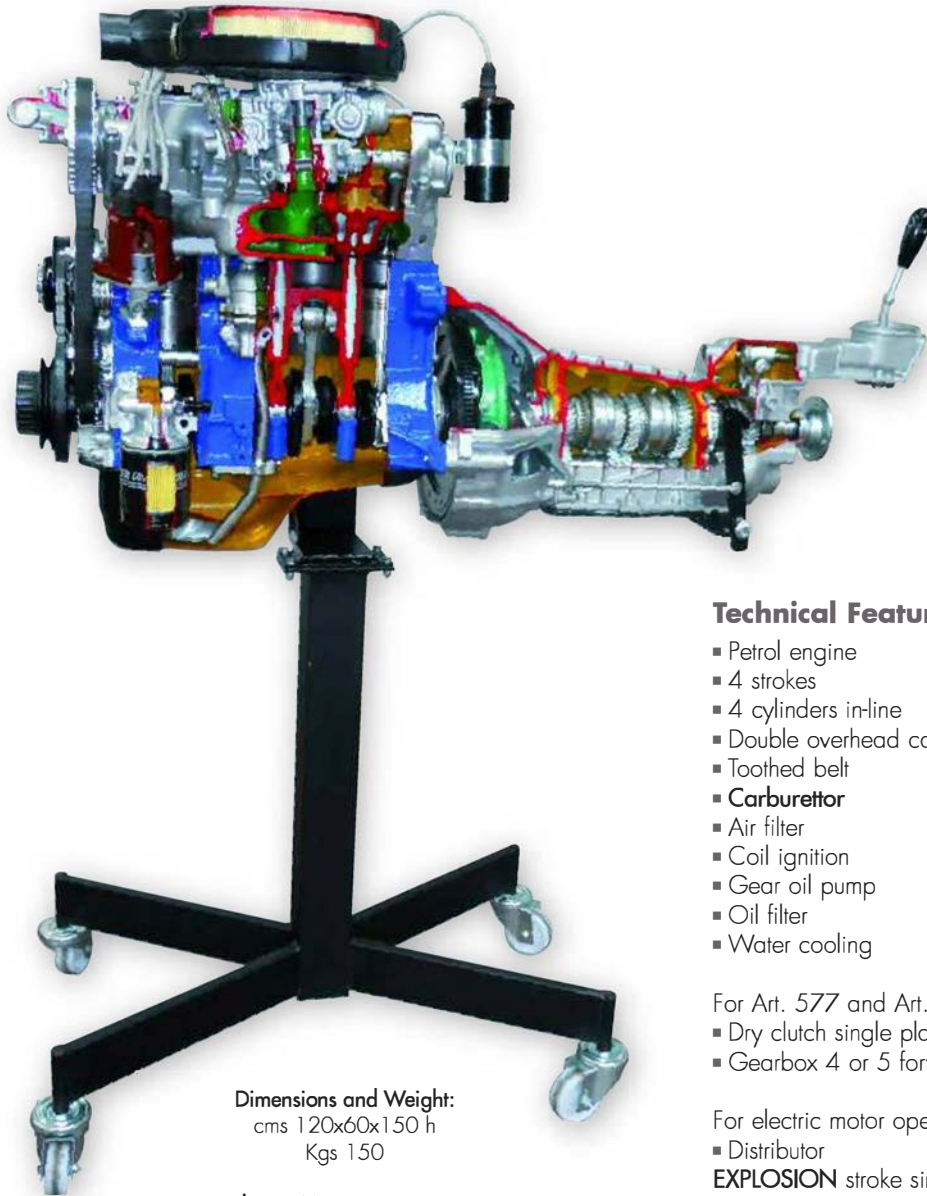
OVERHEAD CAMSHAFT
ROCKER ARMS
with GEARBOX

Electric motor operation

■ Petrol Engine

Double overhead camshaft

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Dimensions and Weight:
cms 120x60x150 h
Kgs 150

Electric Motor Operation:
Main supply: 230V
Electrical System Complying with **CE** Standard

Technical Features

- Petrol engine
- 4 strokes
- 4 cylinders in-line
- Double overhead camshaft
- Toothed belt
- **Carburettor**
- Air filter
- Coil ignition
- Gear oil pump
- Oil filter
- Water cooling

For Art. 577 and Art. 578 only:

- Dry clutch single plate
- Gearbox 4 or 5 forward + reverse

For electric motor operation only

- Distributor
- EXPLOSION** stroke simulated from the automatically lighting of the SPARK PLUG

ON STAND WITH WHEELS

Art. 575

PETROL
ENGINE

DOUBLE OVERHEAD
CAMSHAFT

Handcrank operation

Art. 576

PETROL
ENGINE

DOUBLE OVERHEAD
CAMSHAFT

Electric motor operation

Art. 577

PETROL
ENGINE

DOUBLE OVERHEAD
CAMSHAFT

with GEARBOX
Handcrank operation

Art. 578

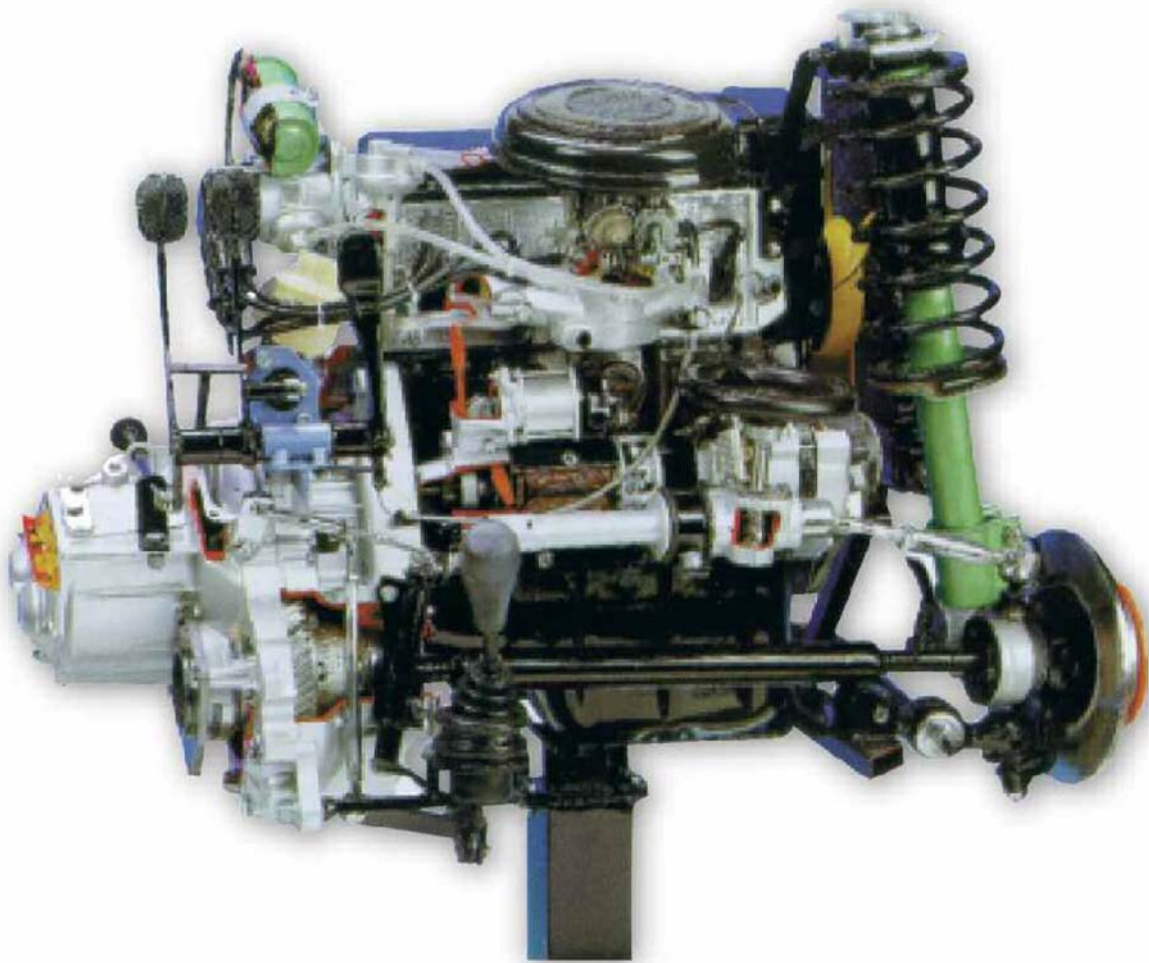
PETROL
ENGINE

DOUBLE OVERHEAD
CAMSHAFT

with GEARBOX
Electric motor operation

■ Front-Wheel Drive Petrol Engine Cylinders In-Line

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Art. 621

FRONT-WHEEL DRIVE

PETROL ENGINE
OVERHEAD CAMSHAFT
CARBURETTOR

Handcrank operation

Art. 622

FRONT-WHEEL DRIVE

PETROL ENGINE
OVERHEAD CAMSHAFT
CARBURETTOR

Electric motor operation

Art. 623

FRONT-WHEEL DRIVE

PETROL ENGINE
OVERHEAD CAMSHAFT
ELECTRONIC INJECTION

Handcrank operation

Art. 624

FRONT-WHEEL DRIVE

PETROL ENGINE
OVERHEAD CAMSHAFT
ELECTRONIC INJECTION

Electric motor operation

Technical Features

- Petrol engine
- 4 strokes
- 4 cylinders in-line
- Overhead camshaft
- Displacement 1000-1100 cc
- Toothed belt
- Air filter
- Gear oil pump
- Oil filter
- Water cooling
- Radiator
- Dry clutch single plate
- Gearbox 4 o 5 forward + reverse
- Rack and pinion steering box
- Steering wheel
- Complete pedal board
- Brake-clutch-accelerator
- Differential
- Axle shaft
- Disc brake
- Mc Pherson suspension
- Hydraulic shock-absorber

ON STAND WITH WHEELS

Dimensions and Weight:

cms 100x55x140 h
Kgs 95

Electric Motor Operation:

Main supply: 230V
Electrical System Complying with **CE** Standard

■ Front Wheel Drive Diesel Engine Indirect Injection - Rotary Injection pump

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 631

FRONT WHEEL DRIVE

DIESEL ENGINE
INDIRECT INJECTION
ROTARY INJECTION PUMP
Handcrank operation

Art. 632

FRONT WHEEL DRIVE

DIESEL ENGINE
INDIRECT INJECTION
ROTARY INJECTION PUMP
Electric motor operation

Art. 633

FRONT WHEEL DRIVE

DIESEL ENGINE
INDIRECT INJECTION
ROTARY INJECTION PUMP
with CLUTCH-GEARBOX
Handcrank operation

Art. 634

FRONT WHEEL DRIVE

DIESEL ENGINE
INDIRECT INJECTION
ROTARY INJECTION PUMP
with CLUTCH-GEARBOX
Electric motor operation

Art. 635

FRONT WHEEL DRIVE

TURBO DIESEL ENGINE
INDIRECT INJECTION
ROTARY INJECTION PUMP
with CLUTCH-GEARBOX
TURBOCHARGER
Electric motor operation



Technical Features

- Diesel engine
- 4 strokes
- 4 cylinders
- Indirect Injection
- Overhead camshaft
- Toothed belt
- Rotary Injection pump
- Gear oil pump
- Oil filter
- Water cooling

For Art. 633 - 634 - 635 only:

- Dry clutch single plate
- Gearbox 5 forward + reverse

ON STAND WITH WHEELS

Dimensions and Weight:

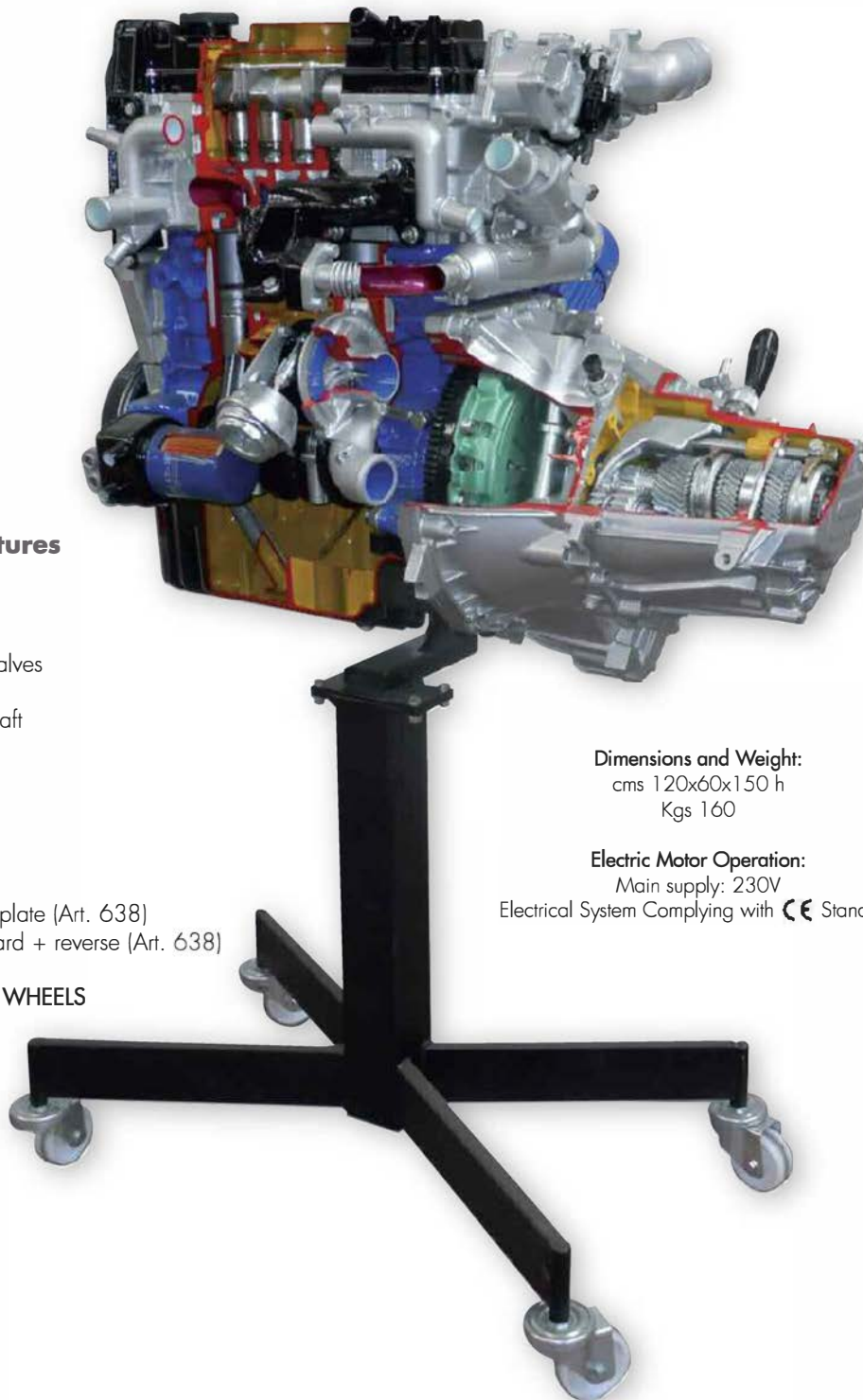
cms 120x60x150 h
Kgs 160

Electric Motor Operation:

Main supply: 230V
Electrical System Complying with **CE** Standard

■ Front Wheel Drive Turbo Diesel Engine Direct Injection - Common Rail

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Technical Features

- Diesel engine
- 4 strokes
- 4 cylinders
- 8 valves or 16 valves
- Direct Injection
- Overhead camshaft
- Toothed belt
- Common rail
- Gear oil pump
- Oil filter
- Water cooling
- Turbocharger
- Dry clutch single plate (Art. 638)
- Gearbox 5 forward + reverse (Art. 638)

Dimensions and Weight:

cms 120x60x150 h
Kgs 160

Electric Motor Operation:

Main supply: 230V
Electrical System Complying with **CE** Standard

ON STAND WITH WHEELS

Art. 636

FRONT WHEEL DRIVE
COMMON RAIL
TURBO DIESEL ENGINE
DIRECT INJECTION
Handcrank operation

Art. 637

FRONT WHEEL DRIVE
COMMON RAIL
TURBO DIESEL ENGINE
DIRECT INJECTION
Electric motor operation

Art. 638

FRONT WHEEL DRIVE
COMMON RAIL
TURBO DIESEL ENGINE
DIRECT INJECTION
with CLUTCH-GEARBOX
Electric motor operation

Truck Diesel Engine Turbo Intercooler

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 644

TRUCK
DIESEL ENGINE

DIRECT INJECTION
6 CYLINDERS
TURBOCHARGER
INTERCOOLER
with CLUTCH-GEARBOX
IN LINE INJECTION PUMP
Electric motor operation

Dimensions and Weight:
cms 160x70x130 h
Kgs 490

Art. 644W

TRUCK
DIESEL ENGINE

DIRECT INJECTION
6 CYLINDERS
TURBOCHARGER
INTERCOOLER
without CLUTCH-GEARBOX
IN LINE INJECTION PUMP
Electric motor operation

Dimensions and Weight:
cms 115x70x130 h
Kgs 400

Art. 645

TRUCK
DIESEL ENGINE

DIRECT INJECTION
8 CYLINDERS "V"
TURBOCHARGER
INTERCOOLER
without CLUTCH-GEARBOX
IN LINE INJECTION PUMP
Electric motor operation

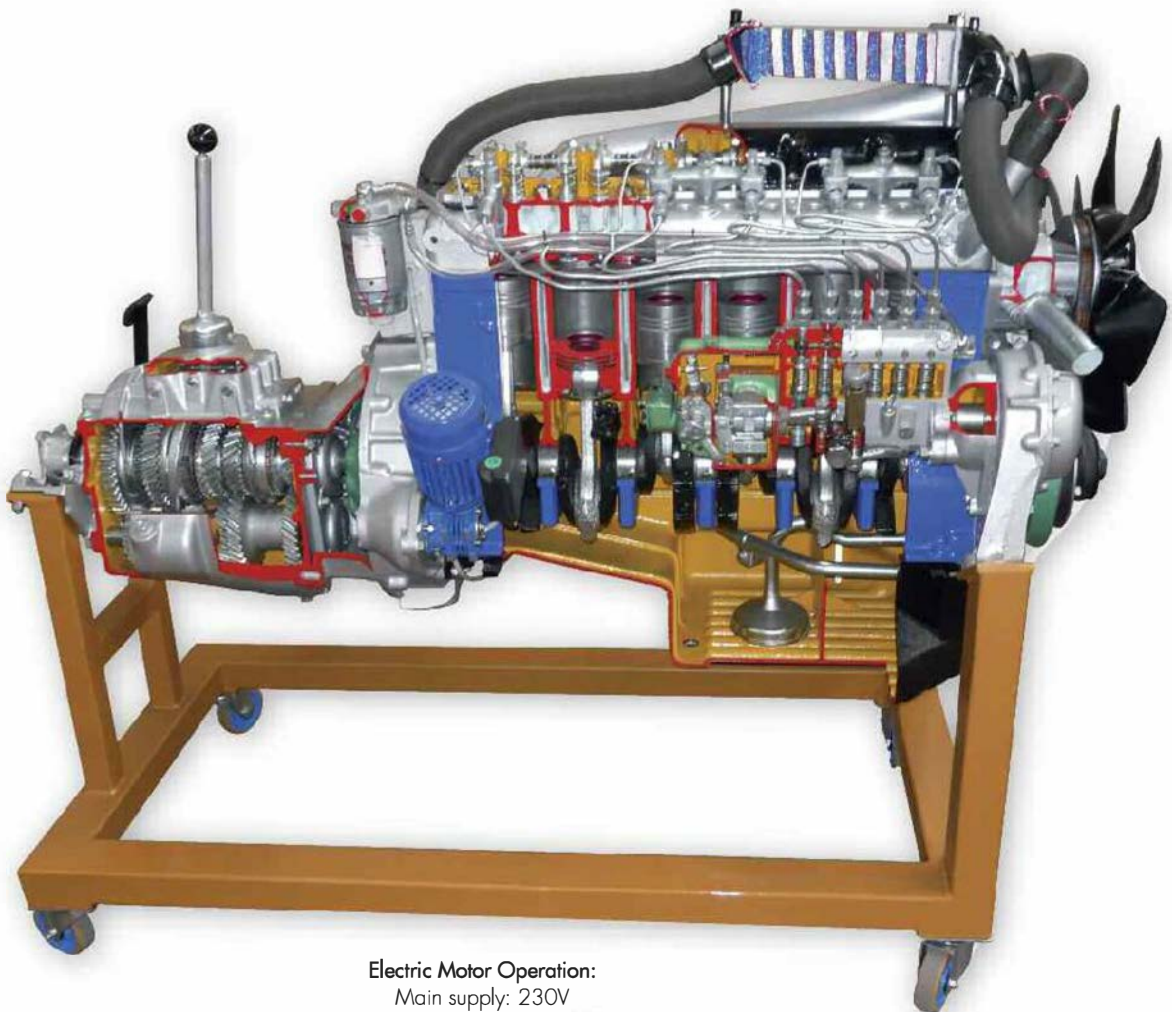
Technical Features

- Truck diesel engine
- Turbo intercooler
- 4 strokes
- Direct Injection
- Camshaft in the crankcase
- Pushrods and rocker arms
- Gear drive
- In line injection pump
- Gear oil pump
- Oil filter
- Water cooling

FOR ART. 644 ONLY:

- Dry clutch single plate
- Gearbox 4 forward + reverse

ON STAND WITH WHEELS



Electric Motor Operation:
Main supply: 230V
Electrical System Complying with **CE** Standard

■ Front-Wheel Drive Diesel Engine with suspension

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Technical Features

- Diesel engine
- 4 strokes
- 4 cylinders in-line
- Indirect Injection
- Overhead camshaft
- Displacement 1 300 cc
- Toothed belt
- Rotating distributor
- Air filter
- Gear oil pump
- Oil filter
- Water cooling
- Radiator
- Dry clutch single plate
- Gearbox 4 forward + reverse
- Rack and pinion steering box
- Steering wheel
- Complete pedal board
- Brake-clutch-accelerator
- Differential
- Axle shaft
- Disc brake
- Mc Pherson suspension
- Hydraulic shock-absorber

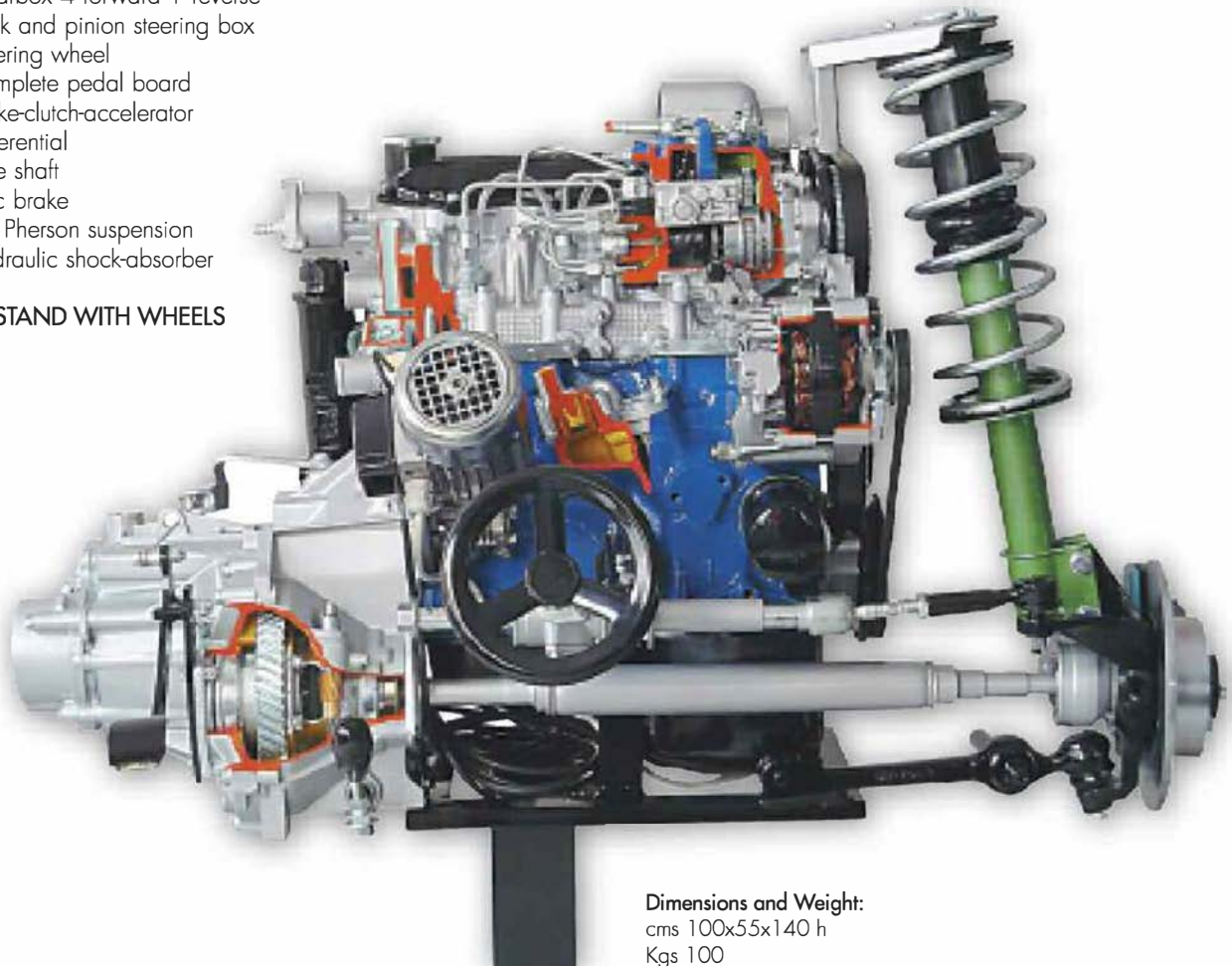
ON STAND WITH WHEELS

Art. 651 FRONT-WHEEL DRIVE


DIESEL ENGINE
with MC PHERSON
SUSPENSION
Handcrank operation

Art. 652 FRONT-WHEEL DRIVE

DIESEL ENGINE
with MC PHERSON
SUSPENSION
Electric motor operation



Dimensions and Weight:
cms 100x55x140 h
Kgs 100

Electric Motor Operation:
Main supply: 230V
Electrical System Complying with  Standard

■ Rear Wheel Drive Diesel Engine Indirect Injection

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Dimensions and Weight:

cms 120x60x150 h
Kgs 160

Electric Motor Operation:

Main supply: 230V
Electrical System Complying with **CE** Standard

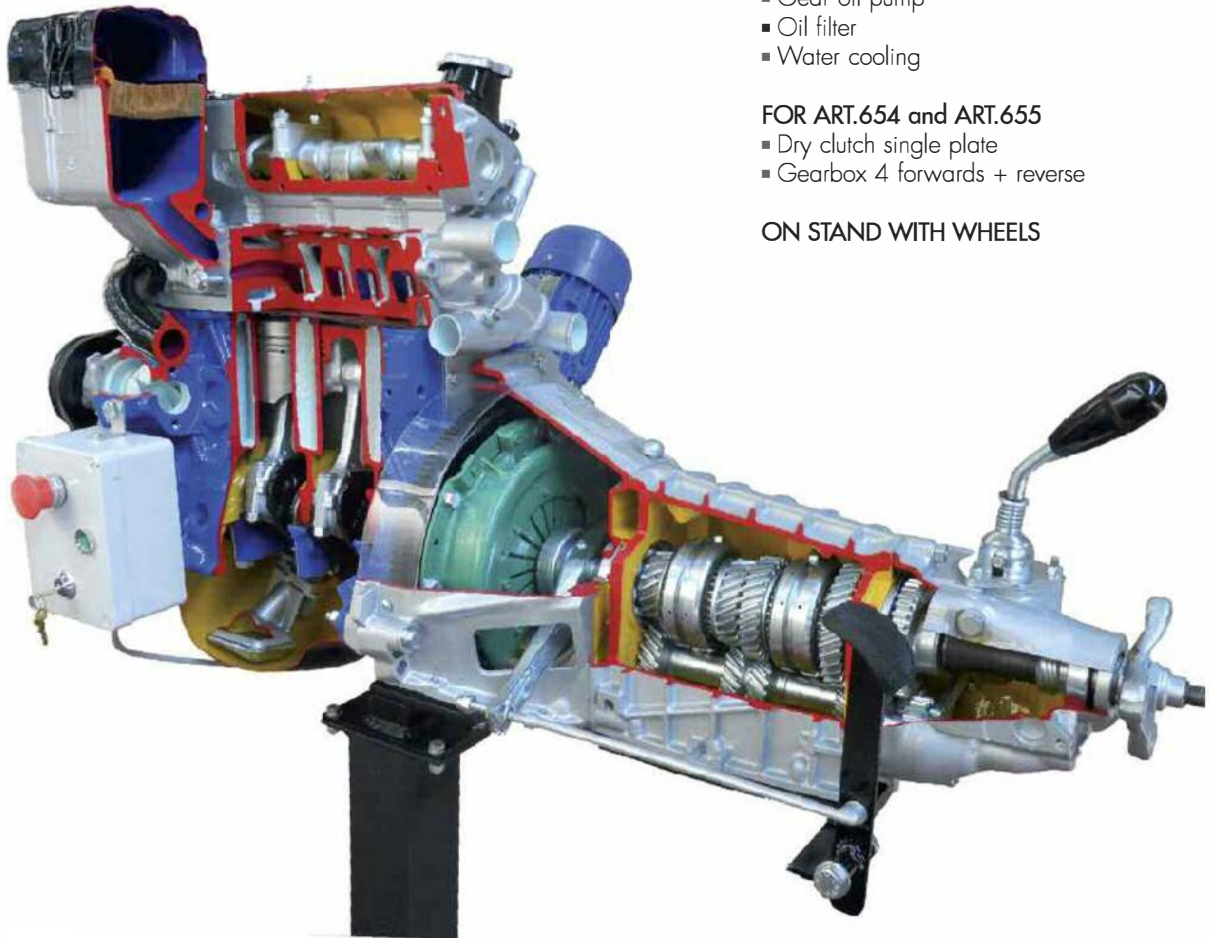
Technical Features

- Diesel engine
- 4 strokes
- 4 cylinders
- Indirect Injection
- Overhead camshaft
- Toothed belt
- Rotary injection pump
- Gear oil pump
- Oil filter
- Water cooling

FOR ART.654 and ART.655

- Dry clutch single plate
- Gearbox 4 forwards + reverse

ON STAND WITH WHEELS



Art. 653

REAR WHEEL
DRIVE

DIESEL ENGINE
INDIRECT INJECTION
ROTARY INJECTION PUMP
Handcrank operation

Dimensions and Weight:
cms 70x60x150 h
Kgs 110

Art. 654

REAR WHEEL
DRIVE

DIESEL ENGINE
INDIRECT INJECTION
with CLUTCH-GEARBOX
ROTARY INJECTION PUMP
Electric motor operation

Dimensions and Weight:
cms 120x60x150 h
Kgs 160

Art. 655

REAR WHEEL
DRIVE

TURBO DIESEL ENGINE
INDIRECT INJECTION
with CLUTCH-GEARBOX
ROTARY INJECTION PUMP
TURBOCHARGER
Electric motor operation

Dimensions and Weight:
cms 120x60x150 h
Kgs 160

■ Tilting Chassis Front-Wheel Drive Longitudinal Position

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Dimensions and Weight:
cms 225x130x150 h
Kgs 310

Electric Motor Operation:
Main supply: 230V
Electrical System Complying with **CE** Standard

Technical Features

- Tilting Chassis
- 4 strokes
- 4 cylinders in-line
- Overhead Camshaft
- Toothed Belt
- Air filter
- Electronic ignition
- Gear oil pump
- Oil filter
- Water cooling
- Radiator
- Dry clutch single plate
- Gearbox 5 forward + reverse
- Rack and pinion steering box
- Steering Wheel
- Complete pedal board
brake-clutch-accelerator
- Mc Pherson suspensions
- Rear Axle with stabilizer bar
- Hydraulic shock-absorbers
- Front wheel disc brakes
- Rear wheel drum brakes

For petrol engine only:

- Distributor
- **EXPLOSION** stroke simulated from the automatically lighting of the SPARK PLUG

▪ **Working Lighting System**
*head lights - indicator lights
side lights - stop light
rear fog light - reverse light
horn - emergency blinker*

▪ **Fully Operating Brakes**
*twin hydraulic circuit
front right-hand disc brake sectioned
rear right-hand drum brake sectioned
front left-hand disc brake operating
rear left-hand drum brake operating*

ON STAND WITH WHEELS

Art. 531
CHASSIS FWD
K-JETRONIC
PETROL ENGINE
K-Jetronic injection

Art. 532
CHASSIS FWD
K-JETRONIC
PETROL ENGINE
K-Jetronic injection
Working lighting system
Fully operating brakes

Art. 533
CHASSIS FRONT
WHEEL DRIVE
DIESEL ENGINE
Indirect injection
Rotary Injection pump

Art. 534
CHASSIS FRONT
WHEEL DRIVE
DIESEL ENGINE
Indirect injection
Rotary Injection pump
Working lighting system
Fully operating brakes

Art. 535
CHASSIS FRONT
WHEEL DRIVE
TURBO DIESEL ENGINE
Indirect injection
Rotary Injection pump
Turbocharger

Art. 536
CHASSIS FRONT
WHEEL DRIVE
TURBO DIESEL ENGINE
Indirect injection
Rotary Injection pump
Turbocharger
Working lighting system
Fully operating brakes

Car Wiring System and Electrical Parts

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 710

CAR WIRING SYSTEM
IGNITION SYSTEM
ON BASE

Composed by:

- Distributor
- Coil
- Spark plug

Dimensions and Weight:
cms32x22x30 h
Kgs 4



Art. 710C

CAR WIRING SYSTEM
COIL
ON BASE

Art. 710D

CAR WIRING SYSTEM
DISTRIBUTOR
ON BASE

Dimensions and Weight:
cms20x20x25 h
Kgs 2.5

Art. 710SP

CAR WIRING SYSTEM
SPARK PLUG

Composed by:

- Spark plug body
- Ceramic insulator
- Earth electrode

Dimensions and Weight:
cms12x11x13 h
Kgs 0,5



Art. 710B

CAR WIRING SYSTEM
BATTERY

Composed by:

- Battery terminals
- Battery case cover
- Plastic casing
- Lead plates

Dimensions and Weight:
cms 20x18x20 h
Kgs 2

Car Wiring System and Electrical Parts

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 711

COIL IGNITION UNIT
DEMONSTRATION MODEL

Composed by:

- 4 spark plugs
- distributor with contact breakers unit
- rotor arm
- coil - battery (cover)
- handwheel

Dimensions and Weight:
cms 70x18x50 h
Kgs 10



Electrical appliances:
Main supply: 230V
Electrical System Complying
with **CE** Standard

Art. 712

ELECTRONIC IGNITION
DEMONSTRATION MODEL

Composed by:

- 4 spark plugs
- distributor with pulse generator
- coil - battery (cover)
- handwheel



Dimensions and Weight:
cms 70x18x50 h
Kgs 11

Art. 713

PRE-HEATING GLOW PLUG
DEMONSTRATION MODEL

Composed by:

- 4 pre-heating glow plugs
- battery (cover)
- on/off switch



Dimensions and Weight:
cms 70x18x50 h
Kgs 11

Art. 713R

PRE-HEATING SYSTEM UNIT
REAL OPERATING

This unit reproduces the real operation circuit of the Preheating glow plugs by means of 12V battery. Provided with battery charger 230/12V

Dimensions and Weight:
cms 70x18x50 h
Kgs 9/12

Electric Motor Operation:
Main supply: 230/12V
Electrical System Complying
with **CE** Standard



Car Wiring System - Induction system and Electrical Parts

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 714

CAR WIRING SYSTEM

CYLINDER HEAD
2 VALVES



CYLINDER HEAD
3 VALVES



CYLINDER HEAD
4 VALVES



CYLINDER HEAD
5 VALVES



ON BASE

Dimensions and Weight:
cms 25x20x25 h - Kgs 5

Art. 716

CAR WIRING SYSTEM
CAMSHAFT



Art. 717

CAR WIRING SYSTEM
CRANKSHAFT



Art. 718

SILENCER
ON BASE



Art. 718C

SILENCER
AND CATALYTIC
CONVERTER UNIT
ON BASE



Dimensions and Weight:
cms 60x40x18 h
Kgs 7

Art. 718L

CATALYTIC CONVERTER
WITH LAMBDA PROBE
ON BASE

Dimensions and Weight:
cms 50x20x18 h
Kgs 4

Automatic Transmission Rear Drive

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 721

AUTOMATIC TRANSMISSION

3 SPEED + REVERSE

Handcrank operation

Art. 721C

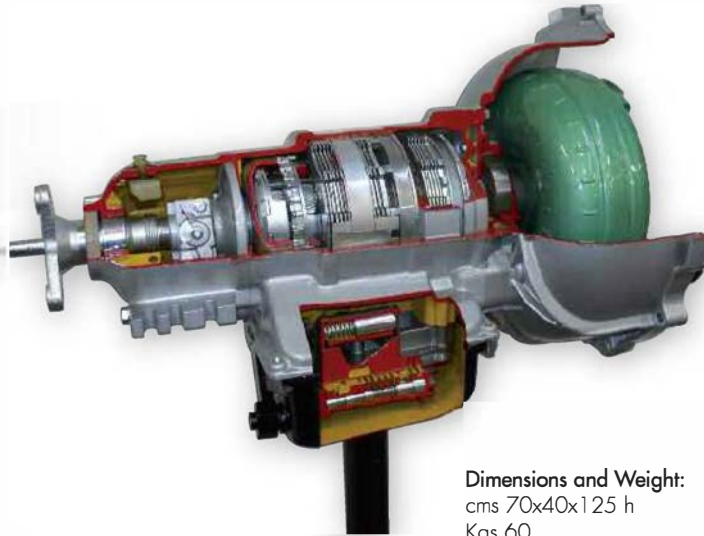
AUTOMATIC TRANSMISSION

3 SPEED + REVERSE

with TORQUE CONVERTER

Handcrank operation

ON STAND WITH WHEELS



Dimensions and Weight:
cms 70x40x125 h
Kgs 60

Art. 722

AUTOMATIC TRANSMISSION

4 SPEED + REVERSE

Handcrank operation

Art. 722C

AUTOMATIC TRANSMISSION

4 SPEED + REVERSE

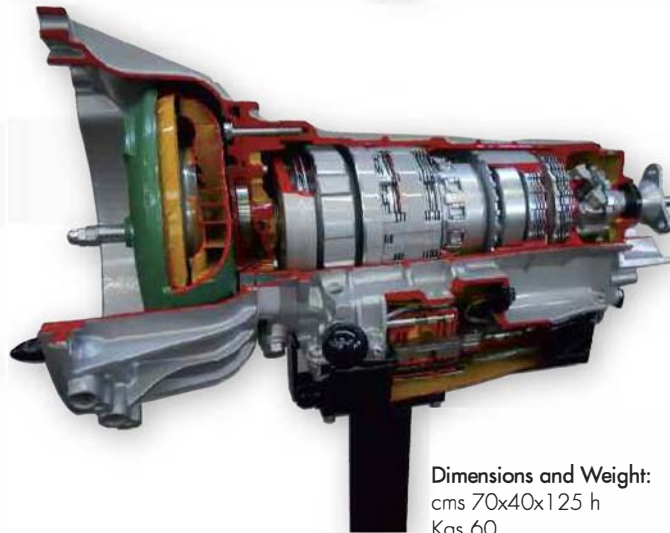
with TORQUE CONVERTER

Handcrank operation

Composed by:

- hydraulic valves
- epicyclic gear train

ON STAND WITH WHEELS



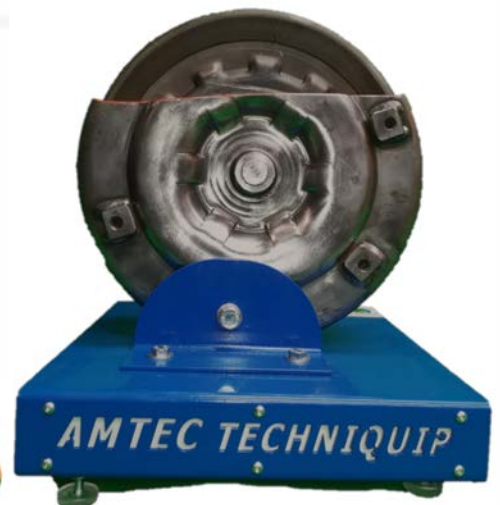
Dimensions and Weight:
cms 70x40x125 h
Kgs 60

Art. 727

TORQUE CONVERTER

ON BASE

Dimensions and Weight:
cms 40x40x35 h
Kgs 15



Art. 723

AUTOMATIC TRANSMISSION

5 SPEED + REVERSE

Handcrank operation

Dimensions and Weight:
cms 80x40x125 h
Kgs 60

Art. 723C

AUTOMATIC TRANSMISSION

5 SPEED + REVERSE

with TORQUE CONVERTER

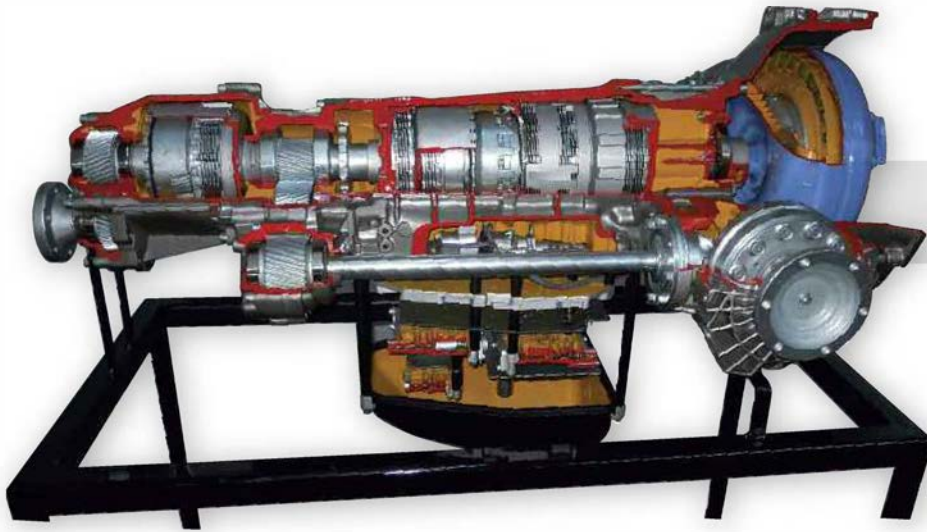
Handcrank operation

- hydraulic valves
- epicyclic gear train



Automatic Transmission 4WD and Front Drive

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

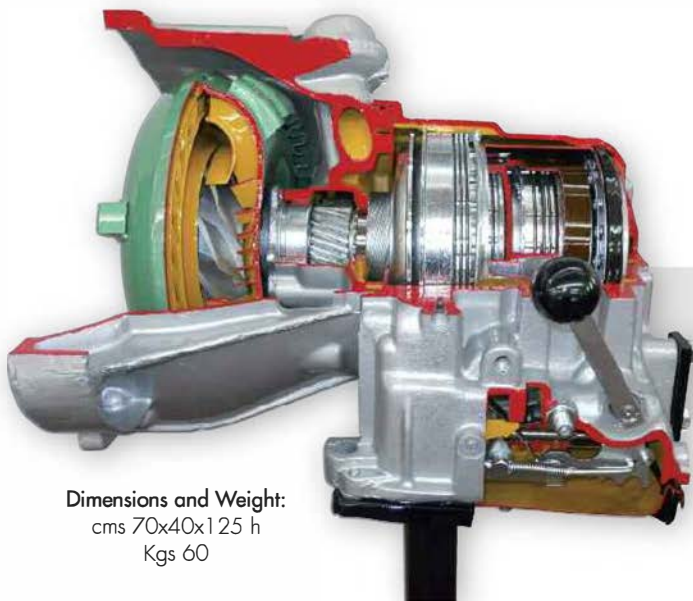


Art. 722-4WD
AUTOMATIC TRANSMISSION
4 WHEEL DRIVE
Handcrank operation

Dimensions and Weight:
cms 105x50x130 h
Kgs 145

Composed by:

- 4 wheel drive
- Automatic transmission
- 4 forward + reverse
- Torque Converter
- Exploded sectioning of the hydraulic circuit
- Hydraulic valves
- Front differential



Dimensions and Weight:
cms 70x40x125 h
Kgs 60

Art. 725
FRONT DRIVE
AUTOMATIC TRANSMISSION
3 SPEED + REVERSE
with TORQUE CONVERTER
Handcrank operation

Composed by:

- hydraulic valves
- epicyclic gear train
- hydraulic torque converter

ON STAND WITH WHEELS

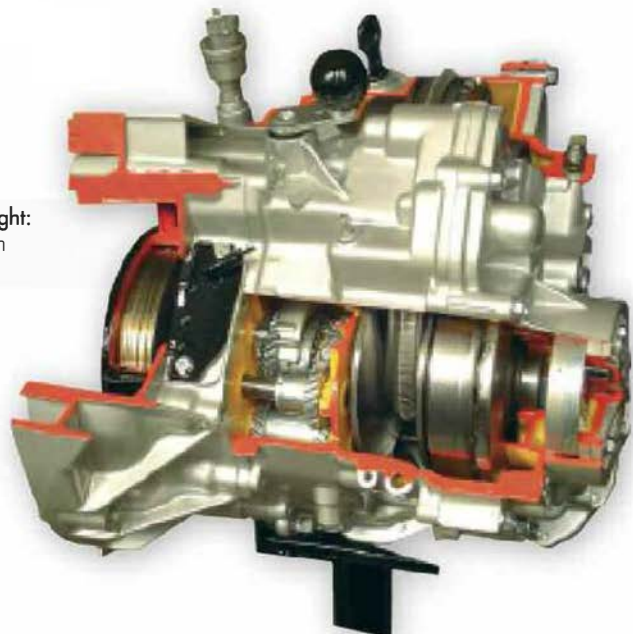
Art. 726
CVT
CONTINUOUSLY VARIABLE
TRANSMISSION
Handcrank operation

Dimensions and Weight:
cms 70x40x125 h
Kgs 40

Composed by:

- input shaft
- planetary gear with electro-magnetic clutch
- primary and secondary pulleys
- conical disc
- rubber belt
- idler gear and differential
- hydraulic command unit

ON STAND WITH WHEELS



Manual Gearbox

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 730

SOFTIP SEQUENTIAL
6 SPEED MANUAL GEARBOX
Handcrank operation

Composed by:

- gear selector shaft
- selector fork
- selector fork collar
- corkscrew grooves

Dimensions and Weight:
cms 55x55x120 h
Kgs 35



Art. 731

MECHANICAL GEARBOX
REAR DRIVE
5 SPEED + REVERSE
Handcrank operation

Art. 732

MECHANICAL GEARBOX
REAR DRIVE
5 SPEED + REVERSE
with CLUTCH
Handcrank operation

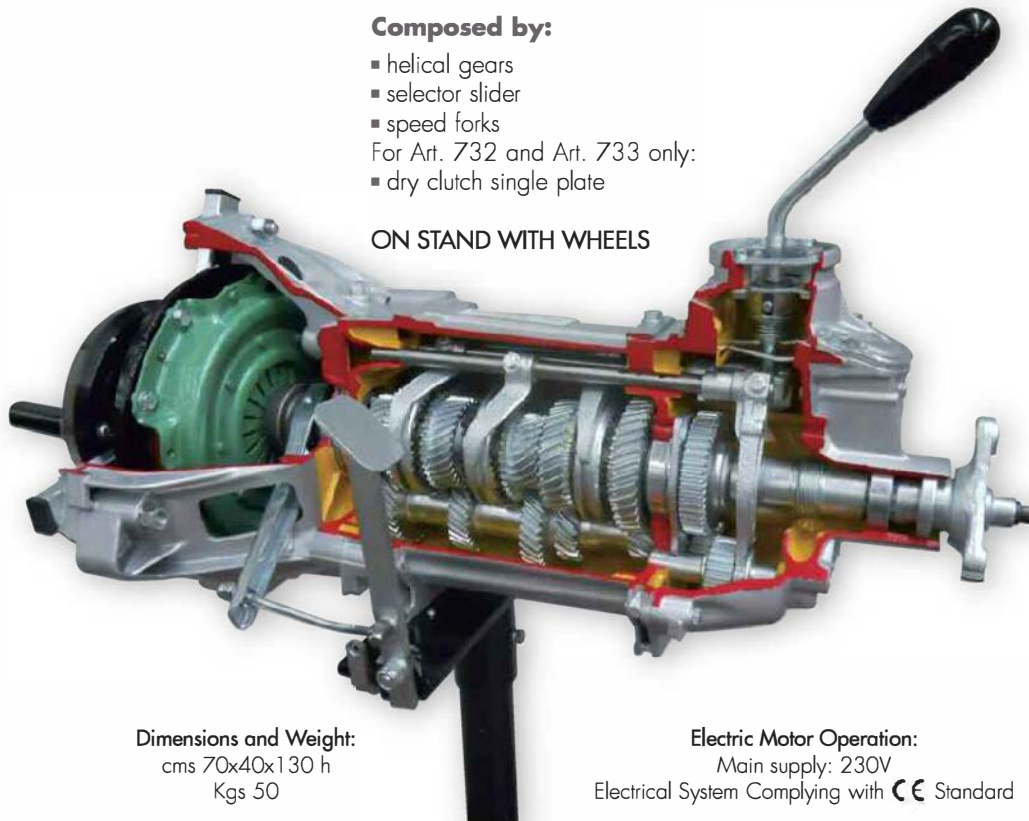
Art. 733

MECHANICAL GEARBOX
REAR DRIVE
5 SPEED + REVERSE
with CLUTCH
Electric motor operation

Composed by:

- helical gears
 - selector slider
 - speed forks
- For Art. 732 and Art. 733 only:
- dry clutch single plate

ON STAND WITH WHEELS



Dimensions and Weight:
cms 70x40x130 h
Kgs 50

Electric Motor Operation:
Main supply: 230V
Electrical System Complying with  Standard

Manual Gearbox Front Drive with Differential

Gearboxes with Reducer

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 734

GEARBOX
WITH DIFFERENTIAL
FRONT DRIVE
4 or 5 SPEED + REVERSE
with CLUTCH
Handcrank operation

Composed by:

- helical gears
- selector slider
- speed forks
- differential
- dry clutch single plate

ON STAND WITH WHEELS

Dimensions and Weight:
cms 43x43x130 h
Kgs 25

Art. 735

GEARBOX
WITH DIFFERENTIAL
FRONT DRIVE
4 or 5 SPEED + REVERSE
without CLUTCH
Handcrank operation

Composed by:

- helical gears
- selector slider
- speed forks
- differential

ON STAND WITH WHEELS

Dimensions and Weight:
cms 43x43x130 h
Kgs 20

Art. 736

GEARBOX WITH REDUCER
FOR HEAVY VEHICLES
SPEED + REVERSE
4 SPEED + REVERSE REDUCED
Handcrank operation

Composed by:

- selector slider
- helical gears
- speed forks
- reduction gear
- drum brake

ON STAND WITH WHEELS

Dimensions and Weight:
cms 90x60x120 h
Kgs 150



Rear Axle with Differential

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 745

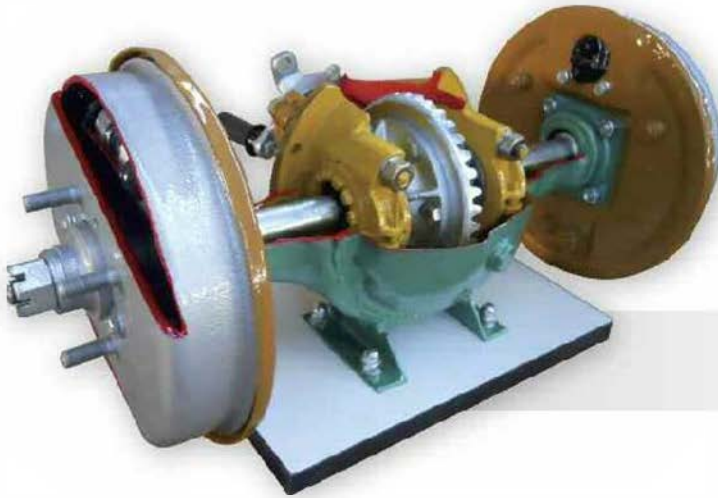
REAR AXLE
REAL SIZE VERSION
Handcrank operation

Composed by:

- differential with crown, pinion, planets, satellites
- axle shafts - drum brakes

ON STAND WITH WHEELS

Dimensions and Weight:
cms 130x60x120 h
Kgs 50



Art. 745s

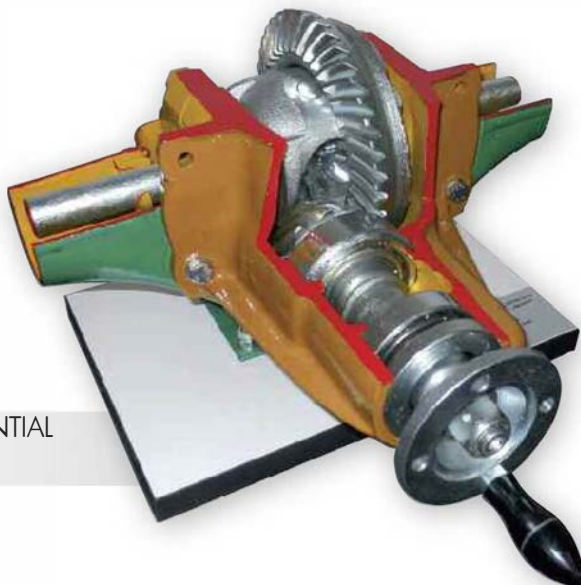
REAR AXLE
SHORT VERSION
Handcrank operation

Dimensions and Weight:
cms 60x40x30 h
Kgs 25

Composed by:

- differential with crown, pinion, planets, satellites
- axle shafts - drum brakes

ON BASE



Art. 746

HYPOID DIFFERENTIAL
Handcrank operation

Composed by:

- differential with crown, pinion, planets, satellites

ON BASE

Dimensions and Weight:
cms 50x40x30 h
Kgs 25

Differential and Overdrive

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 747
DIFFERENTIAL WITH
LOCKING SYSTEM
Handcrank operation

Composed by:

- crown, pinion
- planets, satellites
- thrust rings
- friction disks

ON METAL BASE

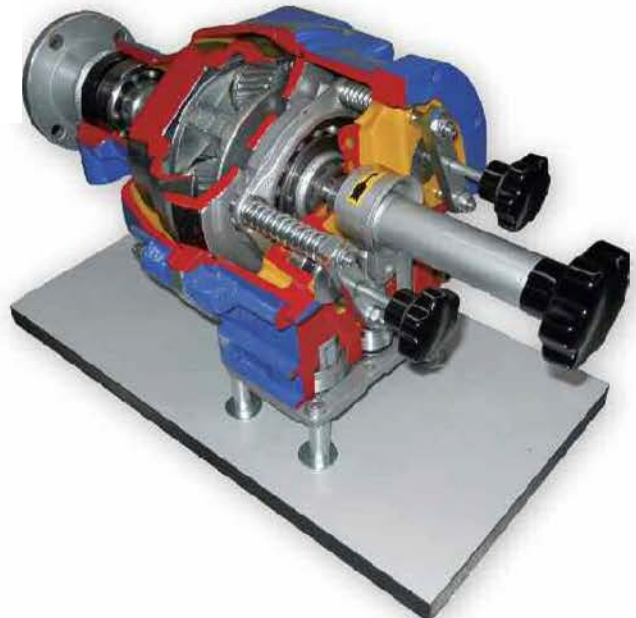
Dimensions and Weight:
cms 42x32x35 h
Kgs 32



Art. 748
DIFFERENTIAL GEAR SET
Handcrank operation

ON BASE

Dimensions and Weight:
cms 32x22x25 h
Kgs 7



Art. 749
OVERDRIVE
Handcrank operation

ON BASE

Dimensions and Weight:
cms 45x30x40 h
Kgs 15

Composed by:

- Epicyclic overdrive
- Electromagnetic actuator

■ Axle Bar

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 750 FRONT AND REAR AXLE

Manually operated

Composed by:

- Mc Pherson suspension
- sectioned steering box
- sectioned disc brake
- steering wheel
- vacuum servo brake
- hand brake lever
- rear suspension
- shock absorbers
- sectioned drum brake

ON STAND WITH WHEELS



Dimensions and Weight:
cms 150x145x155 h
Kgs 110

Art. 751

FRONT AXLE

Manually operated



Dimensions and Weight:
cms 145x60x150 h
Kgs 80

Composed by:

- Mc Pherson suspension
- sectioned steering box
- sectioned disc brake
- shock absorber
- steering wheel
- rear suspension
- sectioned shock absorber
- sectioned drum brake

ON STAND WITH WHEELS

Art. 752

REAR AXLE

Manually operated



Dimensions and Weight:
cms 145x60x140 h
Kgs 75

Composed by:

- Mc Pherson suspension
- sectioned steering box
- sectioned disc brake
- shock absorber
- steering wheel

ON STAND WITH WHEELS

Steering System with Suspensions

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 770
SINGLE-TUBE
SHOCK ABSORBER
Manually operated
ON BASE

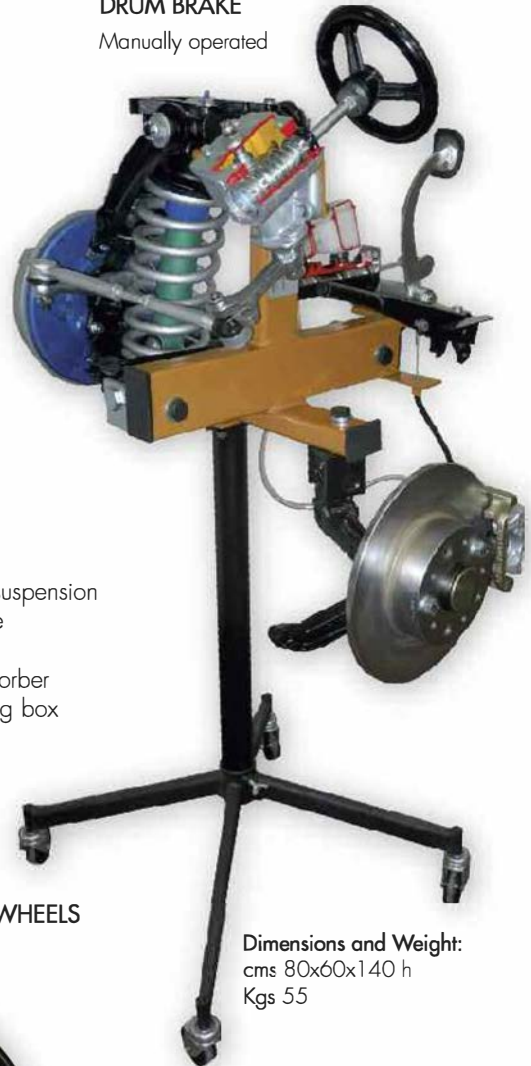
Dimensions and Weight:
cms 20x20x40 h
Kgs 2

Art. 770D
TWIN-TUBE
SHOCK ABSORBER
Manually operated
ON BASE

Dimensions and Weight:
cms 20x20x35 h
Kgs 1,5



Art. 772
STEERING SYSTEM
WITH DISC AND
DRUM BRAKE
Manually operated



Composed by:

- front independent suspension trapezoid-arm type
 - swinging arms
 - spring - shock absorber
 - sector gear steering box
 - drum brake
 - steering wheel
- For Art. 772 only:**
- disc brake
 - hand brake lever

ON STAND WITH WHEELS

Dimensions and Weight:
cms 80x60x140 h
Kgs 55

Art. 771
STEERING SYSTEM
Manually operated
ON STAND
WITH WHEELS

Dimensions and Weight:
cms 70x50x120 h
Kgs 35

Art. 773S
DUAL STEERING SYSTEM
Manually operated

Composed by:

- dual front independent suspension trapezoid-arm type
- springs
- shock absorber
- sector gear steering box
- drum brake
- steering wheel

ON STAND WITH WHEELS

Dimensions and Weight:
cms 75x30x50 h
Kgs 30



Art. 773
DUAL STEERING
SYSTEM
Manually operated
ON BASE

Steering System and Steering Geometry

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Art. 774 STEERING SYSTEM WITH MCPHERSON SUSPENSION

Manually operated

Composed by:

- McPherson suspension
- shock absorber
- spring
- rack and pinion steering box
- disc brake
- steering wheel

ON STAND WITH WHEELS

Dimensions and Weight:

cms 57x50x136 h

Kgs 20

Art. 775 STEERING GEOMETRY



Composed by:

Training model designed and built to demonstrate with casethe various angles of balance and geometry of motor vehicle forecarriages.

It is possible to show:

- effect of the JEANTEAUD quadrilateral - camber
- angle of incidence - turning radius
- steering angle - toe-in and toe-out

All real driving conditions can be simulated.

This item is provided with an instruction manual for a correct use both in theory and practice.

Dimensions and Weight:

cms 85x65x45 h

Kgs 22

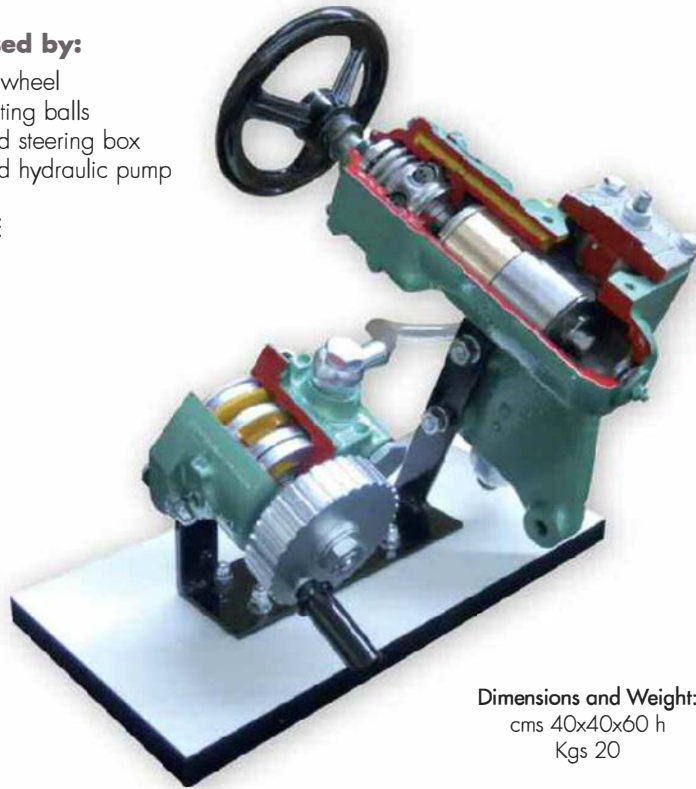
Power Assisted Steering

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Composed by:

- steering wheel
- recirculating balls
- sectioned steering box
- sectioned hydraulic pump

ON BASE



Art. 776

RECIRCULATING BALLS

POWER STEERING

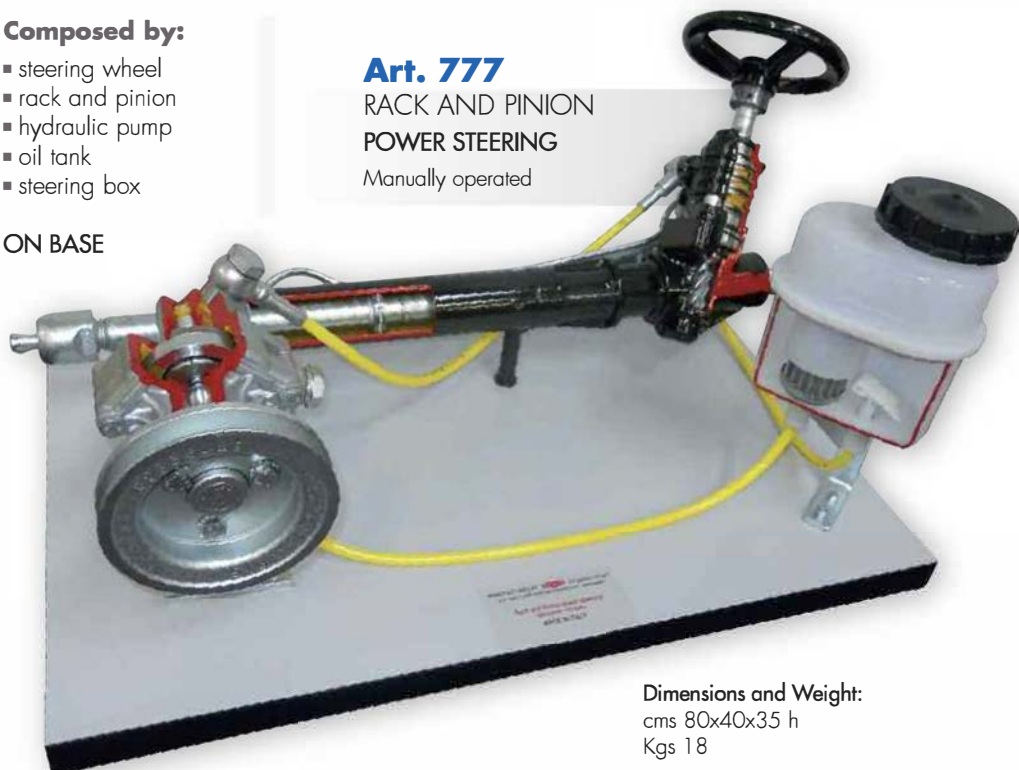
Manually operated

Dimensions and Weight:
cms 40x40x60 h
Kgs 20

Composed by:

- steering wheel
- rack and pinion
- hydraulic pump
- oil tank
- steering box

ON BASE



Art. 777

RACK AND PINION

POWER STEERING

Manually operated

Dimensions and Weight:
cms 80x40x35 h
Kgs 18

Steering Boxes

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 781 WORM AND SECTOR STEERING BOX

Manually operated

Composed by:

- steering wheel
- worm
- sector
- rocker shaft
- drop arm

ON BASE

Dimensions and Weight:
cms 32x32x45 h
Kgs 5



Art. 782 RECIRCULATING BALLS STEERING BOX

Manually operated

Composed by:

- steering wheel
- rocker arm
- half-nut assembly
- rocker shaft

ON BASE

Dimensions and Weight:
cms 32x32x45 h
Kgs 8



Art. 783 STEERING BOX GROUP

Manually operated



This article includes:

- Steering boxes:
- worm and sector
 - recirculating balls
 - worm and roller
 - rack and pinion

ON STAND WITH WHEELS

Dimensions and Weight:
cms 80x65x140 h
Kgs 25

Art. 784 WORM AND ROLLER STEERING BOX

Manually operated

Composed by:

- steering wheel
- rocker shaft
- worm
- roller

ON BASE

Dimensions and Weight:
cms 32x25x44 h
Kgs 7



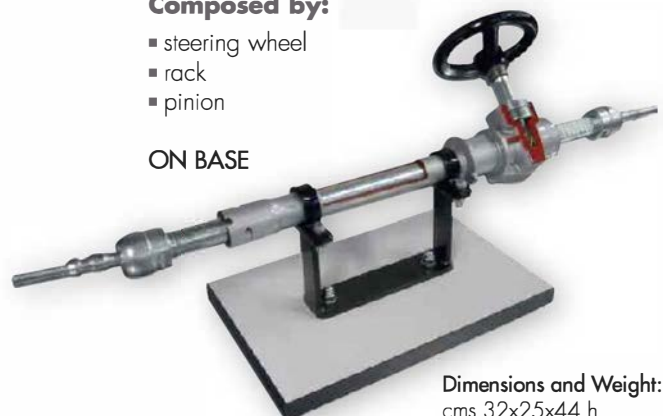
Art. 785 RACK AND PINION STEERING BOX

Manually operated

Composed by:

- steering wheel
- rack
- pinion

ON BASE



Dimensions and Weight:
cms 32x25x44 h
Kgs 7

Electrical Power Steering

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Art. 786
ELECTRICAL
POWER STEERING
Manually operated

Composed by:

- steering wheel
- rack and pinion
- steering box
- electrical power
- control unit

ON BASE

Dimensions and Weight:
cms 80x60x35 h
Kgs 20



Art. 787
REAL OPERATING ELECTRICAL
POWER STEERING
Electric motor operation

Dimensions and Weight:
cms 90x65x130 h
Kgs 35

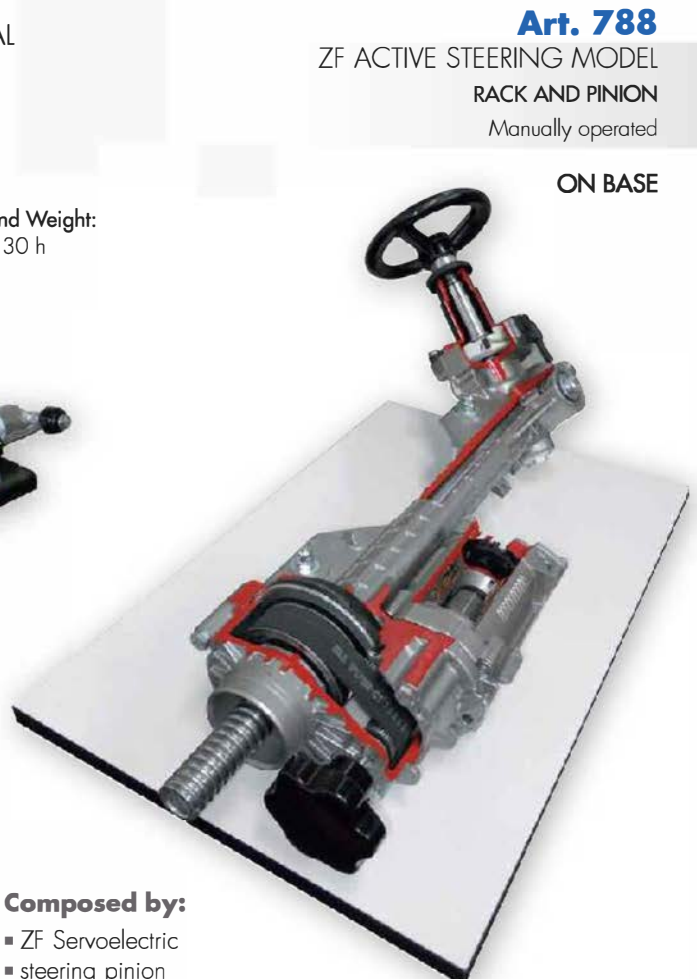
Composed by:

- steering wheel
- rack and pinion
- steering box
- sensor
- power supply 230V
and 12V DC reversible
- control unit

ON STAND WITH WHEELS

Composed by:

- ZF Servoelectric
- steering pinion
- electric motor



Art. 788
ZF ACTIVE STEERING MODEL
RACK AND PINION
Manually operated

ON BASE

■ Suspension and Steering Trainer

■ Power Steering Trainer

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Art. 791

REAL OPERATING SUSPENSION AND STEERING TRAINER

Electric motor operation

Composed by:

- front axle
- McPherson suspension
- shock absorber
- wheels
- steering wheel
- rack and pinion
- hydraulic pump
- oil tank
- steering box

ON STAND WITH WHEELS

Dimensions and Weight:
cms 160x135x150 h
Kgs 160



Art. 792

REAL OPERATING CAR POWER STEERING

Electric motor operation

Composed by:

- steering wheel
- rack and pinion
- hydraulic pump
- oil tank
- steering box
- manometers pressure

ON STAND WITH WHEELS



Car Safety Systems

Art. 808

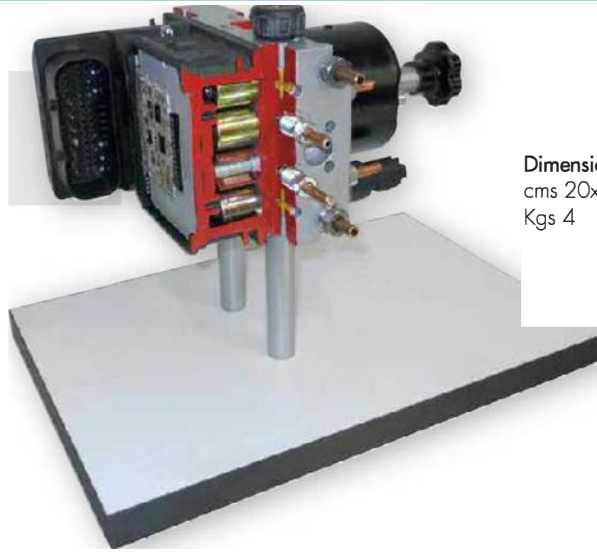
ESC/ESP/DSC
ELECTRONIC STABILITY CONTROL
SECTIONED

Manually operated

Composed by:

- sectioned ESC
- hydraulic circuit
- electric motor
- high pressure and return pump
- plungers
- plug/transmitter

ON BASE



Dimensions and Weight:
cms 20x20x30 h
Kgs 4

Art. 809

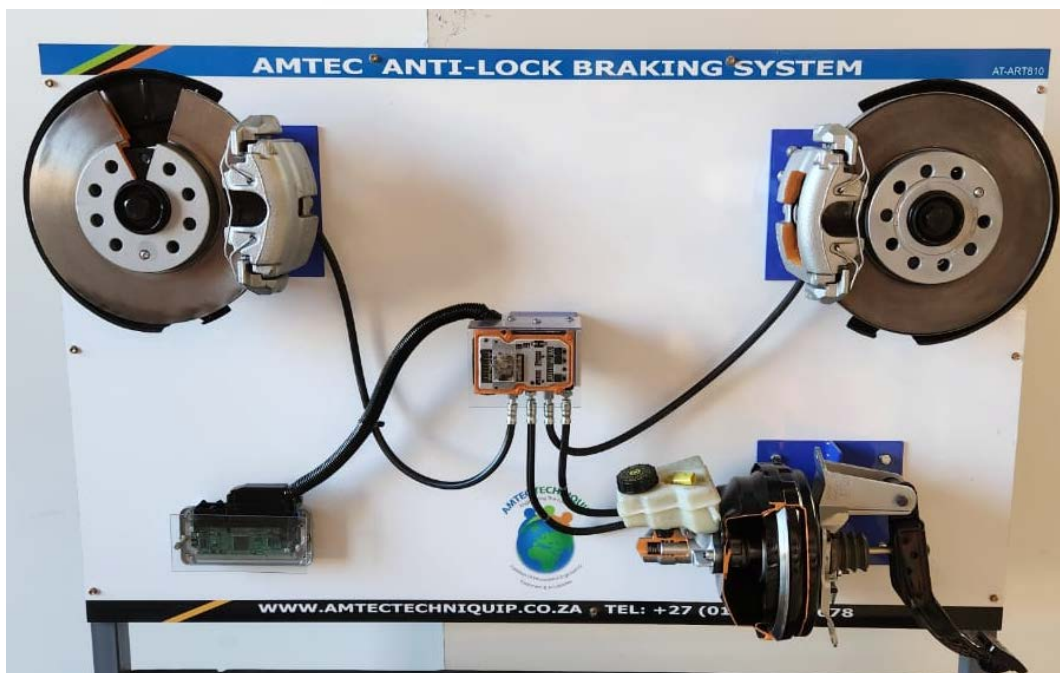
AIRBAG SYSTEM
SECTIONED

Composed by:

- driver-side airbag module
- passenger-side airbag module
- seat belt tensioner
- airbag control unit
- contact reel
- passenger-side airbag on/off

WALL PANEL

Dimensions and Weight:
cms 120x30x54 h
Kgs 23



Art. 810

ABS BRAKING SYSTEM
SECTIONED

Dimensions and Weight:
cms 120x32x48 h
Kgs 60

- Composed by:**
- ventilated disc brake
 - disc brake
 - phonic wheel
 - sensor
 - ABS electric power unit
 - hydraulic power unit
 - hydraulic pump unit

Braking System

Sectioned and Really Operating

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Composed by:

- drum brake
- brake pump
- brake pedal
- hand brake lever
- oil tank
- stop lights
- sectioned pump
- sectioned cylinder

ON STAND WITH WHEELS



Art. 817

DISC BRAKE

Manually operated

Art. 817W

DISC BRAKE

Manually operated

WALL MODEL

Dimensions and Weight:
cms 60x50x125 h
Kgs 23

Main supply: 1.5V battery
Electrical System Complying
with **CE** Standard

Art. 815

DRUM BRAKE

Manually operated

Art. 815W

DRUM BRAKE

Manually operated

WALL MODEL



Dimensions and Weight:

cms 60x50x125 h
Kgs 25

Main supply: 1.5V battery
Electrical System Complying
with **CE** Standard

Composed by:

- disc brake
- brake pump
- brake pedal
- hand brake lever
- oil tank
- stop light
- sectioned pump
- sectioned cylinder
- sectioned caliper

ON STAND WITH WHEELS



Art. 818

DISC BRAKE WITH DOUBLE CALIPER

Composed by:

- disc brake
- double caliper
- friction pads
- pistons
- rubber seal

Art. 816

DISC AND DRUM BRAKE

Manually operated

Dimensions and Weight:
cms 60x30x50 h
Kgs 22



Composed by:

- drum brake
- brake pump
- brake pedal
- hand brake lever
- oil tank
- stop lights
- sectioned pump
- sectioned cylinder

WALL MODEL

Clutch and Brake pump

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.



Art. 763
SECTIONED
HYDRAULIC CLUTCH
SINGLE PLATE

Composed by:

- diaphragm spring
- flywheel
- hydraulic pump
- hydraulic cylinder
- oil tank
- pedal

ON BASE

Dimensions and Weight:
cms 40x60x35 h
Kgs 25



Art. 765
SINGLE BRAKE
MASTER CYLINDER

Composed by:

- fluid reservoir
- primary and secondary pistons
- return springs
- valve
- pedal

ON BASE

Art. 766
TANDEM BRAKE
MASTER CYLINDER



Composed by:

- fluid reservoir
- rod piston
- piston return spring
- valve
- pedal

ON BASE

Dimensions and Weight:
cms 30x20x25 h
Kgs 1

Dimensions and Weight:
cms 30x20x25 h
Kgs 2

■ Diesel Injection Pump In-line

The photos in the catalog are "INDICATIVE". The articles may differ visually but not technically depending on the retrievable spare parts.

Art. 821-4

IN-LINE DIESEL
INJECTION PUMP
4 CYLINDERS
Handcrank operation

ON BASE

Dimensions
and Weight:
cms 40x20x35 h
Kgs 10

Art. 821-6S

IN-LINE DIESEL
INJECTION PUMP
6 CYLINDERS
Handcrank operation

ON STAND
WITH WHEELS

Dimensions
and Weight:
cms 57x50x160 h
Kgs 27

Art. 821-6

IN-LINE DIESEL
INJECTION PUMP
6 CYLINDERS
Handcrank operation

ON BASE

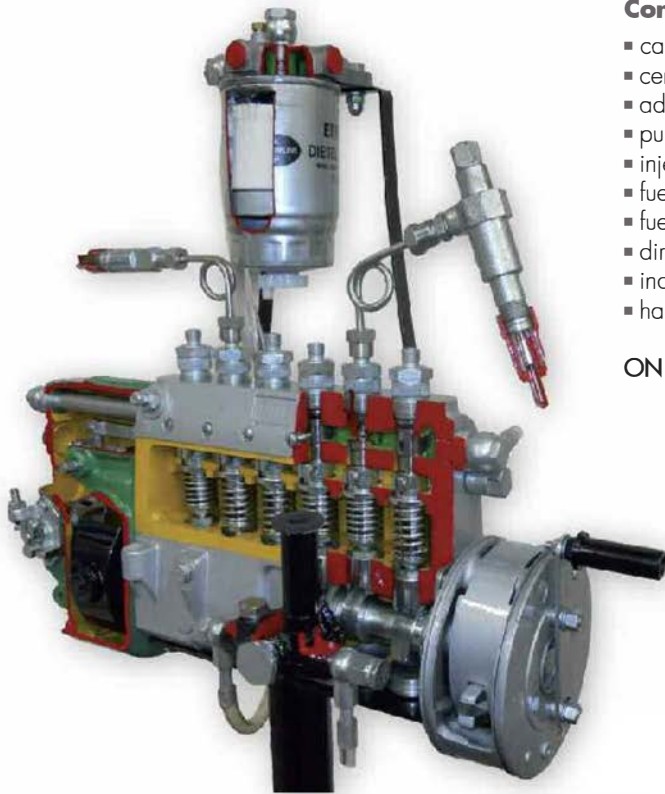
Dimensions
and Weight:
cms 57x25x60 h
Kgs 22

Art. 821-12

IN-LINE DIESEL
INJECTION PUMP
12 CYLINDERS
Handcrank operation

ON BASE

Dimensions
and Weight:
cms 72x20x38 h
Kgs 28



Composed by:

- camshaft
- centrifugal regulator
- adjustment rack
- pump cylinder
- injection timing
- fuel pump
- fuel filter
- direct injection injector
- indirect injection injector
- hand wheel

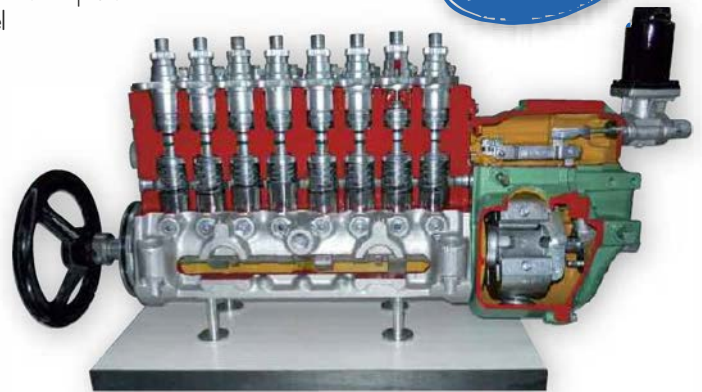
ON STAND

Art. 821-8

IN-LINE DIESEL
INJECTION PUMP 8 CYLINDERS
Handcrank operation

ON BASE

Limited
Production

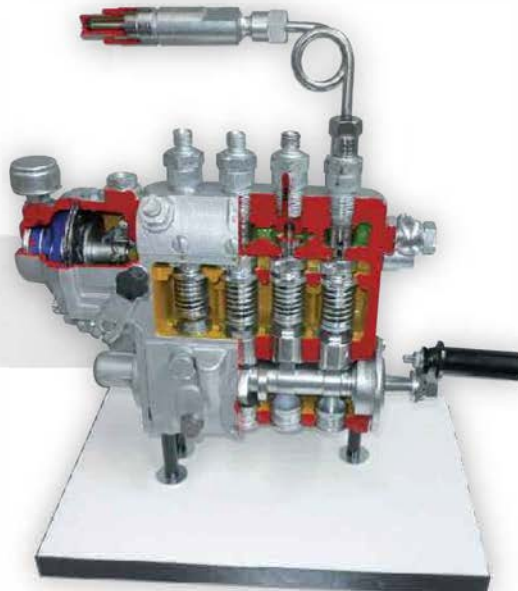


Dimensions and Weight:
cms 62x20x35 h
Kgs 18

Art. 821P

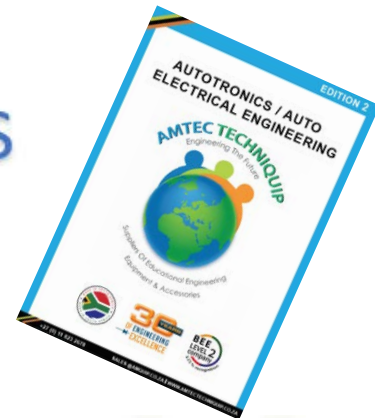
IN-LINE DIESEL
INJECTION PUMP WITH
PNEUMATIC GOVERNOR
4 CYLINDERS
ON BASE
Handcrank operation

Dimensions and Weight:
cms 40x20x35 h
Kgs 12



AMTEC AUTO ELECTRICAL EQUIPMENT AND TRAINERS

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AMTEC HYDRAULICS AND PNEUMATICS

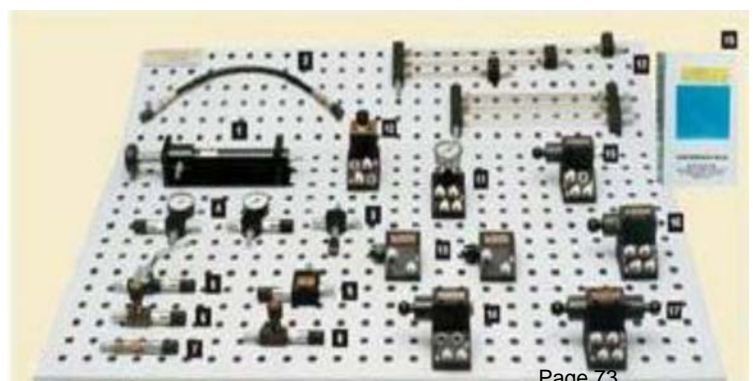
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