

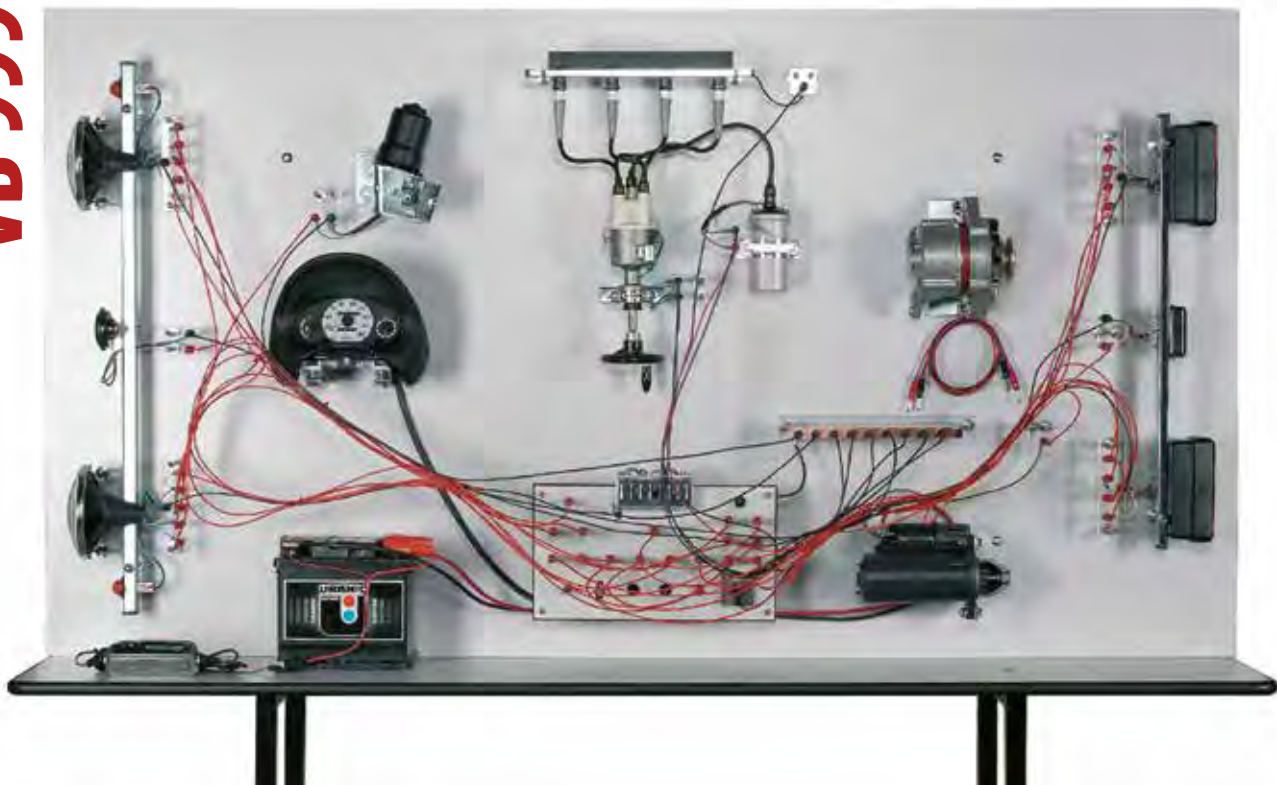


## Components & Accessories

# VB 9990 - VB 9991

**VB 9990E TEACHING BENCH FOR CAR WITH WIRING TROUBLE-SHOOTING SYSTEM (on stand) CONVENTIONAL COIL IGNITION SYSTEM - electrical**

**VB 9991E TEACHING BENCH FOR CAR WITH WIRING TROUBLE-SHOOTING SYSTEM (on stand) ELECTRONIC IGNITION UNIT - electrical**



Indicative picture for reference only

All main components of the electric system of a car are fixed together on a board and can be operated at 12 Volts.

The teacher can train the student to:

- assemble an electric system
- shoot the troubles (that have been produced previously on purpose) in the connections
- study the whole system by disassembling and assembling its various parts.

### Approx. weight and dim.:

Cm 55x195x205h  
Net Weight: kg 90  
Gross Weight: kg 180

### Main technical specifications:

- Front and rear lights
- Turn indicators
- Emergency
- Licence plate light
- Horn
- Windshield wiper motor
- Instrument panel
- Battery
- Distributor
- Battery ignition
- Spark plugs
- Coil
- Fuse box
- Starter motor
- Alternator
- Voltage regulator
- Wires with red couplings (positive) N°19
- Wires with black couplings (negative) N°10

## VB 9992E ELECTRIC PANEL FOR LIGHTING AND ELECTRONIC IGNITION SYSTEM WITH ALTERNATOR (on stand with wheels) - electrical

### Main technical specifications:

- Position lights
- Head lights
- Beam lights
- Indicators
- Rear fog-lights
- Stop lights
- Reverse light
- Work lights
- Relays
- Dashboard with lights
- Four spark plugs
- High tension coil
- Electronic distributor
- Battery with isolator
- *Electronic functioning Alternator with variable speed electric engine*
- Complete with volt-meter and ampere-meter
- Pin outs for tension values of each component

Indicative picture for reference only



### Approx. weight and dim.:

Cm: 130x100x206h

Net weight : kg 110

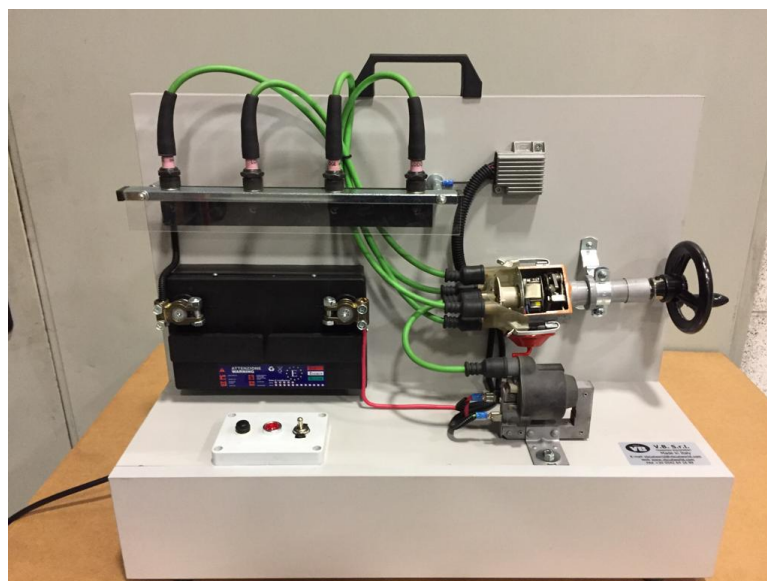
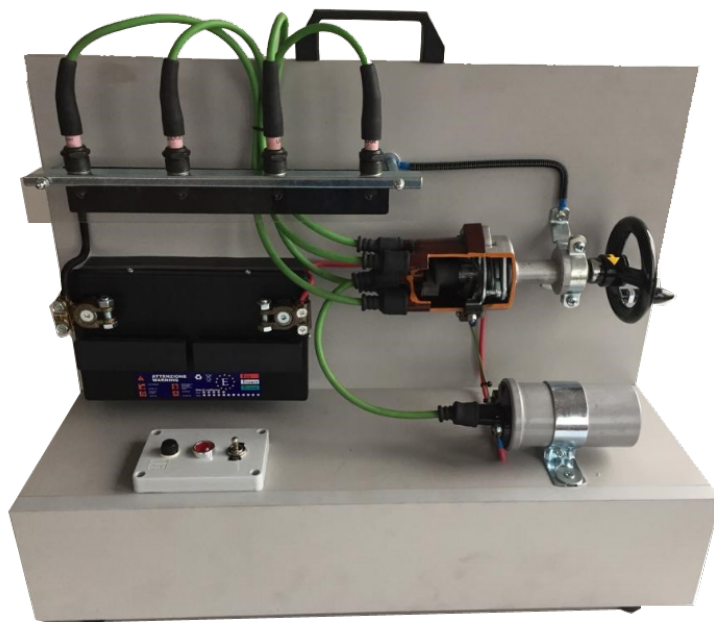
Gross weight: Kg 220

VB 9992

**VB 10000E COIL IGNITION UNIT (on base) - electrical**

**VB 10010E ELECTRONIC IGNITION UNIT (on base) - electrical**

# VB 10000 - VB 10010



Indicative picture for reference only

## **VB 10000E**

*A plastic-plated wooden base is the support of the main components of the coil ignition of a 4-stroke engine:*

*battery, spark coil, coil, spark plugs.*

*Rotating the flywheel, it shows the operation of the whole unit (the action of the platinum points and of the distributor can be observed through the section) and the spark flashing in the respective spark plugs is shown as well.*

## **VB 10010E**

*Same as VB 10000E with electronic ignition.*

## **VB 10000E - VB 10010E ·**

### **Approx. weight and dim.:**

Com: 70x25x55h

Net Weight: kg 10

Gross Weight: kg 15



## VB 10030M IGNITION SYSTEM (on base) - manual

Representation of the ignition system composed of: distributor, spark coil and spark plug connected to each other by high voltage cables. The distributor is operated through a hand wheel and it is carefully sectioned to show the breaker points and the (centrifugal) automatic advance.

### Approx. weight and dim.:

Cm: 30x20x15h  
Net Weight: kg 2  
Gross Weight: kg 5

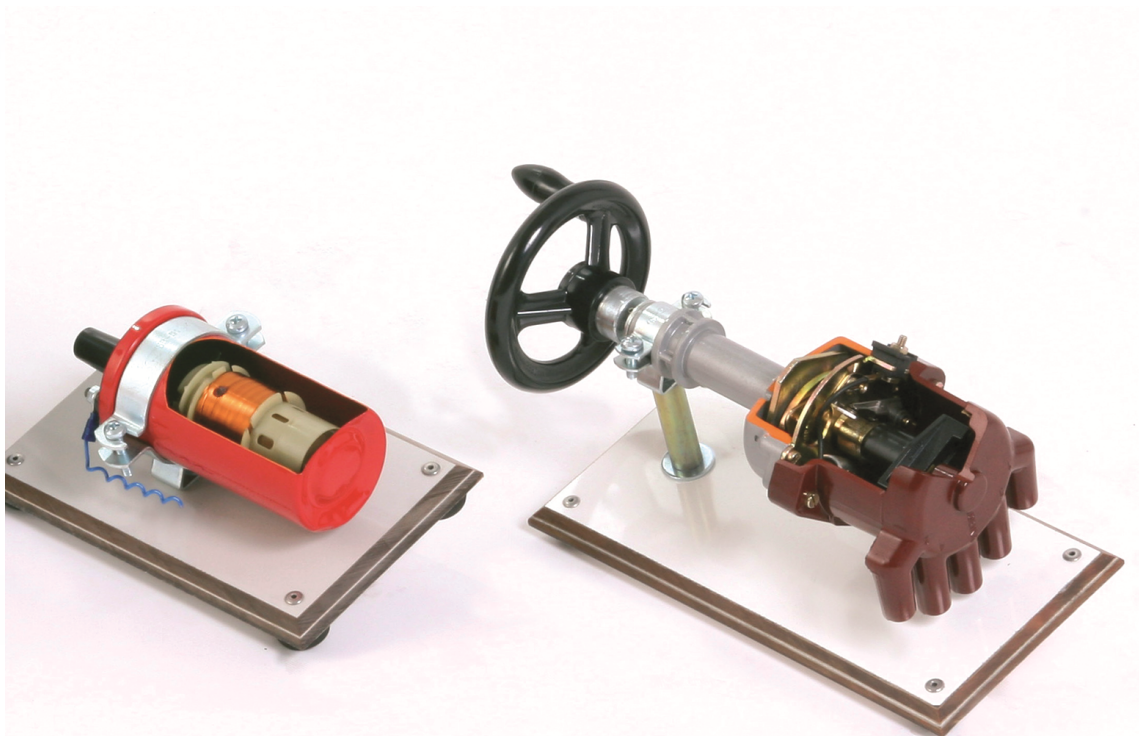


**VB 10030**

Indicative picture for reference only

## VB 10050S COIL - static

## VB 10060M DISTRIBUTOR - manual



**VB 10050 - VB 10060**

**VB 10070 - VB 10071**

**VB 10070M STARTER MOTOR FOR CARS (on base) - manual**

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**VB 10071M STARTER MOTOR WITH REDUCTION GEARS FOR CARS (on base) - manual**

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**Approx. weight and dim.:**

*Cm:* 25x20x20h  
*Net Weight:* kg 6  
*Gross Weight:* kg 10



**VB 10080M ALTERNATOR SINGLE-FLOW COOLING (on base) - manual**

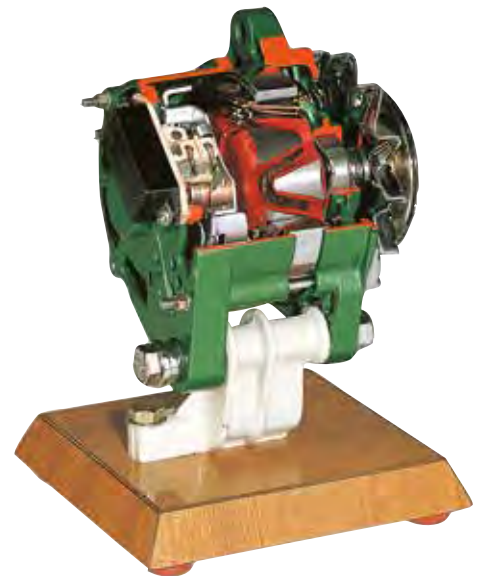
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**VB 10081M ALTERNATOR DOUBLE-FLOW COOLING (on base) - manual**

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**Approx. weight and dim.:**

*Cm:* 25x20x20h  
*Net Weight:* kg 4  
*Gross Weight:* kg 8



*Indicative picture for reference only*

**VB 10090M DYNAMO - manual**

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**Approx. weight and dim.:**

*Cm:* 25x20x20h  
*Net Weight:* kg 6  
*Gross Weight:* kg 10



**VB 10080 - VB 10081**

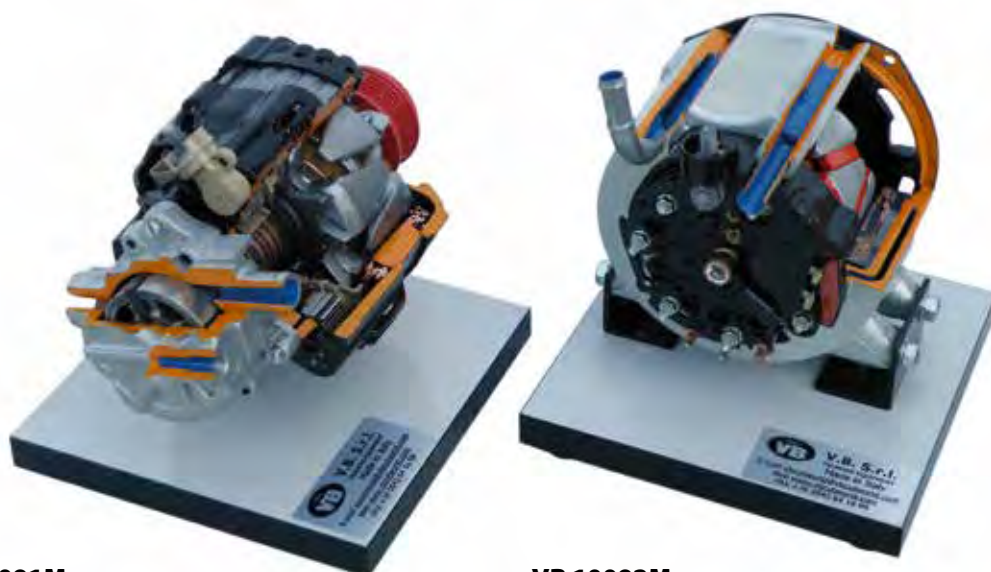
**VB 10090**

**VB 10091M VACUUM PUMP ALTERNATOR (on base) - manual**

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**VB 10092M LIQUID-COOLED WINDINGLESS-ROTOR COMPACT ALTERNATOR (on base) - manual**

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**VB 10091M**

**Approx. weight and dim.:**

Cm: 20x20x25h  
Net Weight: kg 8  
Gross Weight: kg 15

**VB 10092M**

**Approx. weight and dim.:**

Cm: 20x20x25h  
Net Weight: kg 8  
Gross Weight: kg 15

**VB 10095S THROTTLE JACKING DEVICE - static**

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**VB 10096S EGR VALVE - static**

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**VB 10097S AIR-FLOW SENSOR - static**

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**VB 10095S**

**Approx. weight and dim.:**

Cm: 15x10x10h  
Net Weight: kg 1  
Gross Weight: kg 1,5

**VB 10096S**

**Approx. weight and dim.:**

Cm: 20x10x10h  
Net Weight: kg 1,5  
Gross Weight: kg 2

**VB 10097S**

**Approx. weight and dim.:**

Cm: 10x10x10h  
Net Weight: kg 1  
Gross Weight: kg 1,5

Indicative picture for reference only

**VB 10091 - VB 10092**

**VB 10095 - VB 10096 - VB 10097**



## VB 9900E IAW 59 F MULTI-POINT ELECTRONIC INJECTION SYSTEM - MPI (on stand with wheels) - electrical

The panel shows the functioning of an electronic injection system. It is possible to regulate the rpm from 0 to 2000 rpm by means of a pedal. It can simulate the air pressure sensor in the collector and the water temperature. It is possible to generate sensors and actuators faults disconnecting the relevant EOBD connections interface (standard with K line and 7 pins).



### Main technical specifications:

- Fuel tank
- Electric fuel pump (N40)
- Multifunction valve
- Safety valve
- Fuel delivery pipe
- Electronic injection/ignition control unit (M10)
- Battery
- Ignition switch
- Inertia switch (I50)
- Engine compartment junction unit
- Climate control system
- Fuel vapour cut out solenoid valve (L10)
- Injection timing sensor (K47)
- Activated carbon filter
- Body Computer (diagnostic socket and Fiat CODE signal)
- Temperature/absolute pressure sensor (K44)
- Rpm sensor (K46)
- Spark plugs
- Coolant temperature sensor (K45)
- Injectors (N70)
- Throttle valve position sensor (K56)
- Idle speed actuator (N74)
- Fuel supply rail
- Air filter
- Ignition coils (A30)
- Lambda sensor (upstream) (K15)
- System failure warning light
- Rev. counter
- Catalytic converter
- Lambda sensor (downstream) (K16)

### Approx. weight and dim.:

Cm	140x80x200h
Net Weight:	kg 96
Gross Weight:	kg 175

Indicative picture for reference only



## VB 9901E SINGLE-POINT INJECTION SYSTEM - SPI (on stand with wheels) - electrical

This panel shows the functioning of an electronic injection system. It is possible to regulate the rpm from 0 to 2000 by means of a pedal. The IAW Weber-Marelli single point injection (SPI) system is a self-contained engine management system, which controls both the fuel injection and ignition. The fuel injection system comprises a fuel tank, an electric fuel pump, a fuel filter, fuel supply and return lines, a throttle body with an integral electronic fuel injector, and an Electronic Control Unit (ECU) together with its associated sensors, actuators and wiring.



Indicative picture for reference only

### Main technical specifications:

- Fuel tank
- Fuel pump
- Fuel pressure regulator
- Injector
- Fuel vapour trap
- Idle stepper motor
- Absolute pressure sensor
- Injection/ignition ECU
- Throttle position sensor
- Engine coolant temperature sensor
- Intake air temperature sensor
- Injection/ignition dual relay
- Ignition coils
- Rpm and TDC sensor
- Spark plugs
- Diagnostic socket
- EVAP solenoid
- Lambda /oxygen sensor

### Approx. weight and dim.:

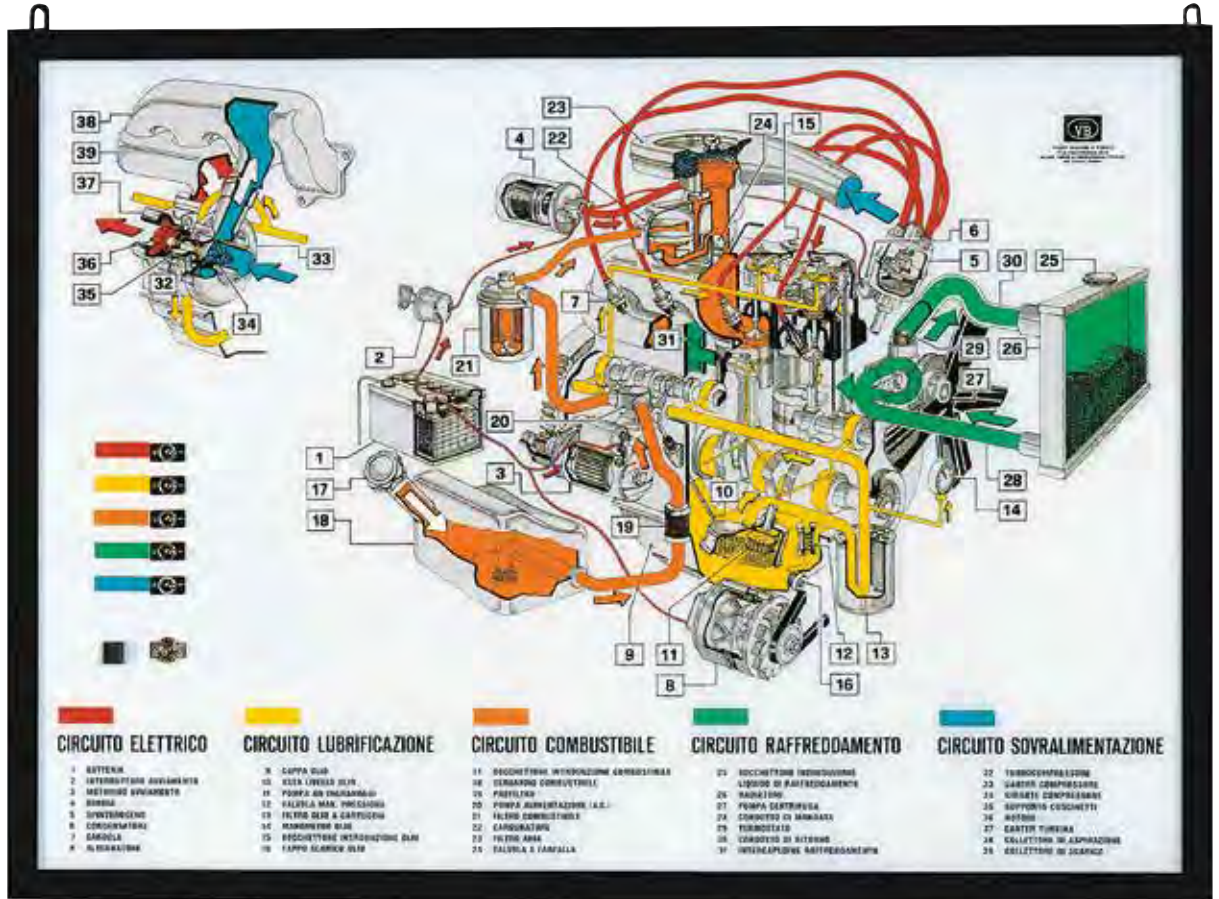
Cm	140x70x210h
Net Weight:	kg 96
Gross Weight:	kg 170

VB 9901

# VB 5500 - VB 5510

**VB 5500E ENGINE VIDEO SYSTEM (on panel) - electrical**

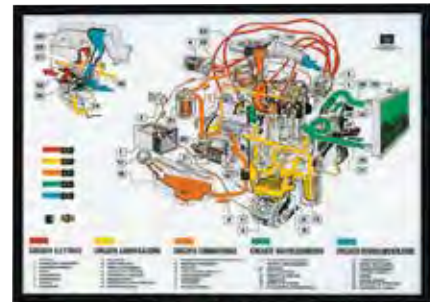
**VB 5510E ENGINE VIDEO SYSTEM (on stand with wheels) - electrical**



Luminous training panel with silk-screened plexiglass front painted with different colours to better show the most important functions inside an internal combustion system.

The ignition, lubrication, carburetting, cooling and supercharging system (different colours) are shown separately by some lamps flashing one after the other to give the movement impression.

Perfect operation of the panel is got by means of an electric board.



## VB 5510E

Same as VB 5500E but on a wheeled stand.

**ENGLISH / FRENCH TEST AVAILABLE UPON REQUEST  
VB 5500E**

## VB 5500E

**Approx. weight and dim.:**

Cm: 110x80x10h  
Net Weight: kg 10  
Gross Weight: kg 20

## VB 5510E

**Approx. weight and dim.:**

Cm: 110x80x50h  
Net Weight: kg 20  
Gross Weight: kg 30

Indicative picture for reference only

**VB 10310S VERTICAL TWIN CARBURETTOR (on base) - static**

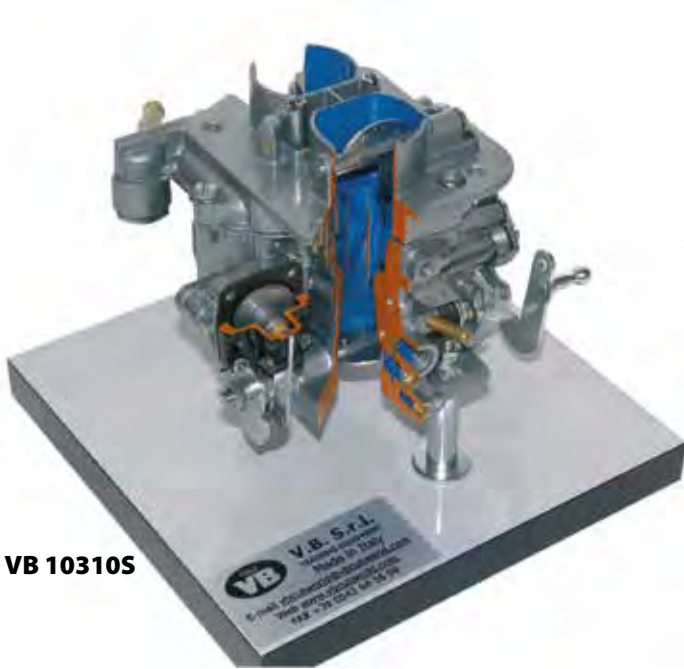
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**VB 10320S SINGLE-BODY CARBURETTOR (on base) - static**

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**VB 10330S VACUUM CARBURETTOR (on base) - static**

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**VB 10310S**



**VB 10320S**



**VB 10330S**

*Indicative picture for reference only*

**VB 10310 - VB 10320 - VB 10330**

**Approx. weight and dim.:**

Cm: 25x30x30h

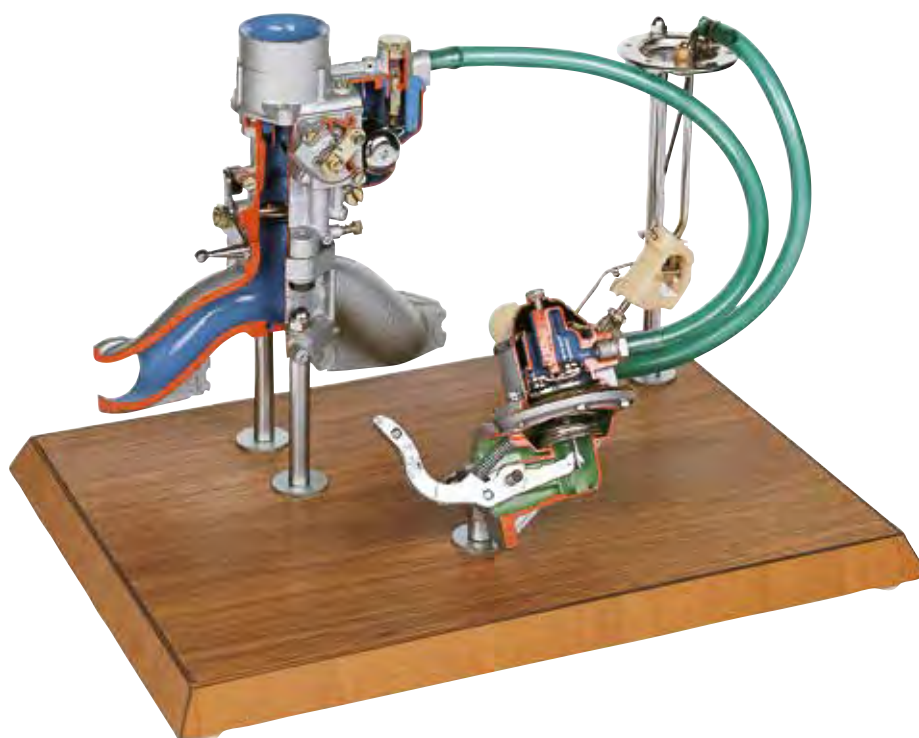
Net Weight: kg 1

Gross Weight: kg 2



# VB 10350

## VB 10350S PETROL ENGINE FEEDING CIRCUIT (on base) - static



### Main technical specifications:

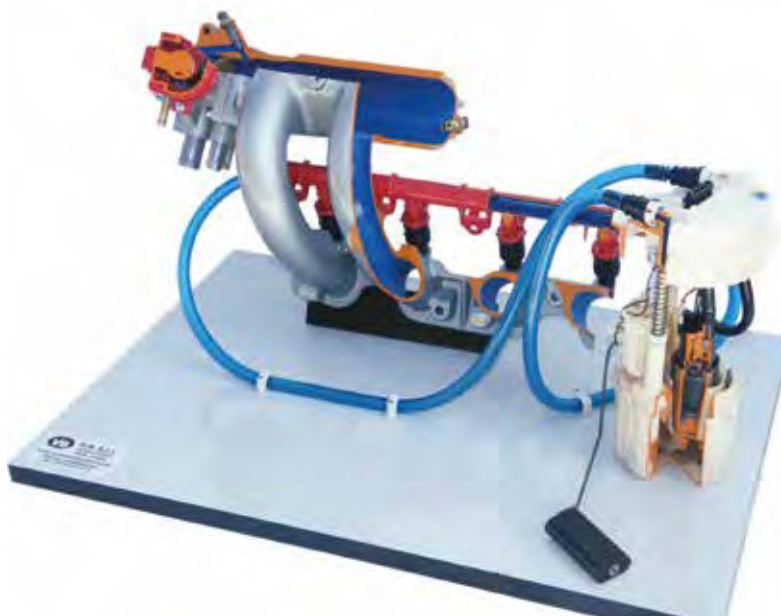
- Float with fuel level gauge (tank)
- Diaphragm pump
- Single-body carburettor
- Inlet manifold

### Approx. weight and dim.:

Cm: 40x30x30h  
Net Weight: kg 3  
Gross Weight: kg 6

# VB 10355

## VB 10355S ELECTRONIC INJECTION FEEDING CIRCUIT (on base) - static



### Main technical specifications:

- Suction manifold with electro-injector
- Air capacity meter
- Fuel manifold to the injectors
- Butterfly body
- Accelerator position switch
- Submersed electric petrol pump
- Fuel lever meter

Section of an electronic injection feeding circuit, 4 cylinders multi-point

### Approx. weight and dim.:

Cm: 40x60x40h  
Net Weight: kg 8  
Gross Weight: kg 12

Indicative picture for reference only



## VB 10360S MONO-JETRONIC THROTTLE BODY (on base) - static

Accurate section of a throttle body fitted to Mono-jetronic engines with the following visible parts:

- Pressure control
- Bottom feed type injector
- Air and water temperature sensor
- Potentiometer
- Idling control actuator

### Approx. weight and dim.:

Cm: 25x25x25h

Net Weight: kg 3

Gross Weight: kg 6



VB 10360

## VB 10361S PETROL ELECTRO-INJECTOR (on base) - static

Cutaway model of an electro injector for multipoint injection engines.

The following parts are shown:

- Injector body
- Needle
- Magnetic core
- Winding
- Electric connector



VB 10361

## VB 10365S SPARK PLUG (on base) - static

Internal combustion engine spark plug cutaway model.

The following part are shown:

- Spark plug body
- Ceramic insulator
- Earth electrode



VB 10365

Indicative picture for reference only

# VB 10366

## VB 10366S 2 VALVE DESMO SOHC ENGINE HEAD (on base) - static



Accurate section of a Ducati two-valve desmo engine head.

### Approx. weight and dim.:

Cm: 25x20x20h  
Net Weight: kg 7  
Gross Weight: kg 7

Indicative picture for reference only

# VB 10367

## VB 10367S 3 VALVE OHC ENGINE HEAD (on base) - static

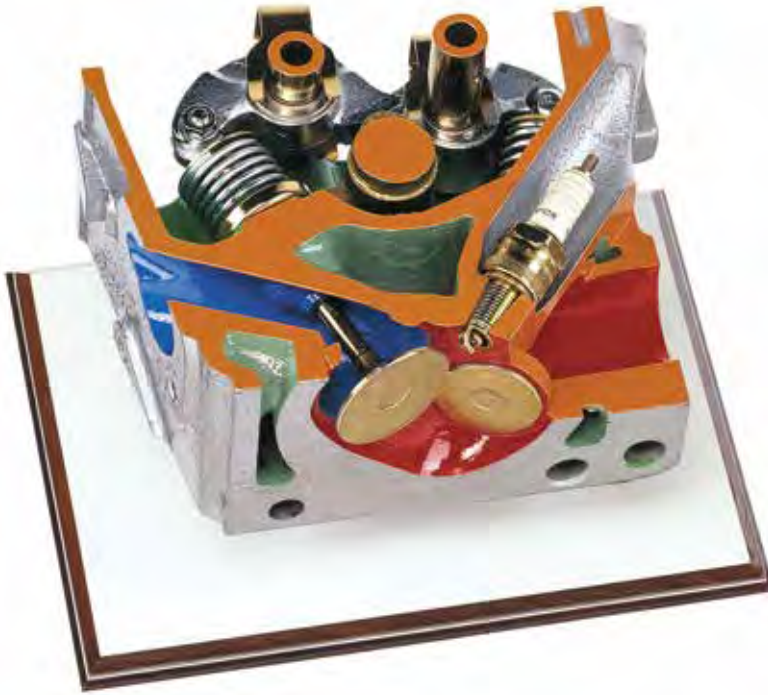


Accurate section of FIAT three-valve engine head with hydraulic tappet.

### Approx. weight and dim.:

Cm: 20x20x15h  
Net Weight: kg 3,5  
Gross Weight: kg 6

## VB 10368S TWIN VALVE OHC ENGINE HEAD (on base) - static



Accurate section of a BMW twin-valve per cylinder engine head.

### Approx. weight and dim.:

Cm: 25x20x20h

Net Weight: kg 5

Gross Weight: kg 8

## VB 10369S 4 VALVE DOHC ENGINE HEAD (on base) - static



Top-of-the-range Volkswagen engine head, with 4 valves per cylinder and hydraulic tappet adjustment.

### Approx. weight and dim.:

Cm: 25x20x20h

Net Weight: kg 5

Gross Weight: kg 8

Indicative picture for reference only

VB 10368

VB 10369



# VB 10525

## VB 10525S LPG TIMED SEQUENTIAL INJECTION FOR ELECTRONIC INJECTION ENGINES (wall-mounted) - static

LPG timed sequential injection for petrol engine with multi-point electronic injection, complete with the following components:

- E.C.U.
- Injection rail
- L.P.G. solenoid valve
- Reducer – vaporizer
- Pressure sensor
- Pressure stabilizer
- Switch commutator
- Nozzles for manifold
- Water temperature sensor
- Gas temperature sensor
- Refuelling valve
- Level indicator



The panel is equipped with nomenclature table.

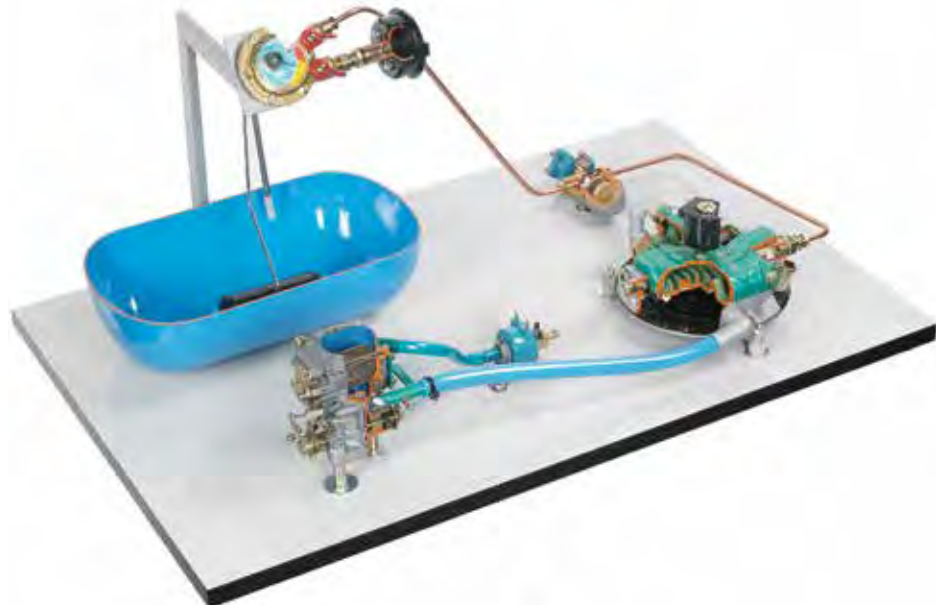
### Approx. weight and dim.:

Cm	70x120x15h
Net Weight:	kg 16
Gross Weight:	kg 30

Indicative picture for reference only

# VB 10520

## VB 10520S LPG FUEL CIRCUIT FOR CARBURETTOR ENGINES (on base) - static



Main technical specifications:

- Filler Plug
- LPG tank
- Level gauge
- LPG solenoid valve
- Petrol solenoid valve
- Vaporiser reduction gear
- Carburettor

Layout of a car LPG fuel system with single-body type carburettor for educational purposes.

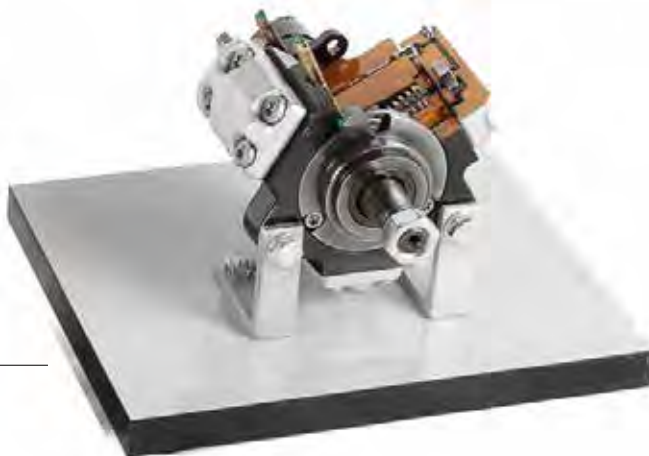
### Approx. weight and dim.:

Cm:	80x50x40h
Net Weight:	kg 12
Gross Weight:	kg 20



### **VB 10104M CP1 BOSCH HIGH PRESSURE PUMP (on base) - manual**

Radial-piston pump for common rail engine, pressure 1100-1350 bar, fuel lubrication, three plungers.



**Approx. weight and dim.:**

Cm: 25x20x20h

Net Weight: kg 5

Gross Weight: kg 8

### **VB 10106M CP3 BOSCH HIGH-PRESSURE PUMP (on base) - manual**

Radial-piston pump for common rail engine, pressure 1600 bar, fuel lubrication, three plungers.



**Approx. weight and dim.:**

Cm: 25x20x25h

Net Weight: kg 5

Gross Weight: kg 8

### **VB 10108M CP4 BOSCH HIGH-PRESSURE PUMP (on base) - manual**

Radial-piston pump for common rail engine, pressure 2000 bar, fuel lubrication, two plungers.



**Approx. weight and dim.:**

Cm: 25x20x25h

Net Weight: kg 4

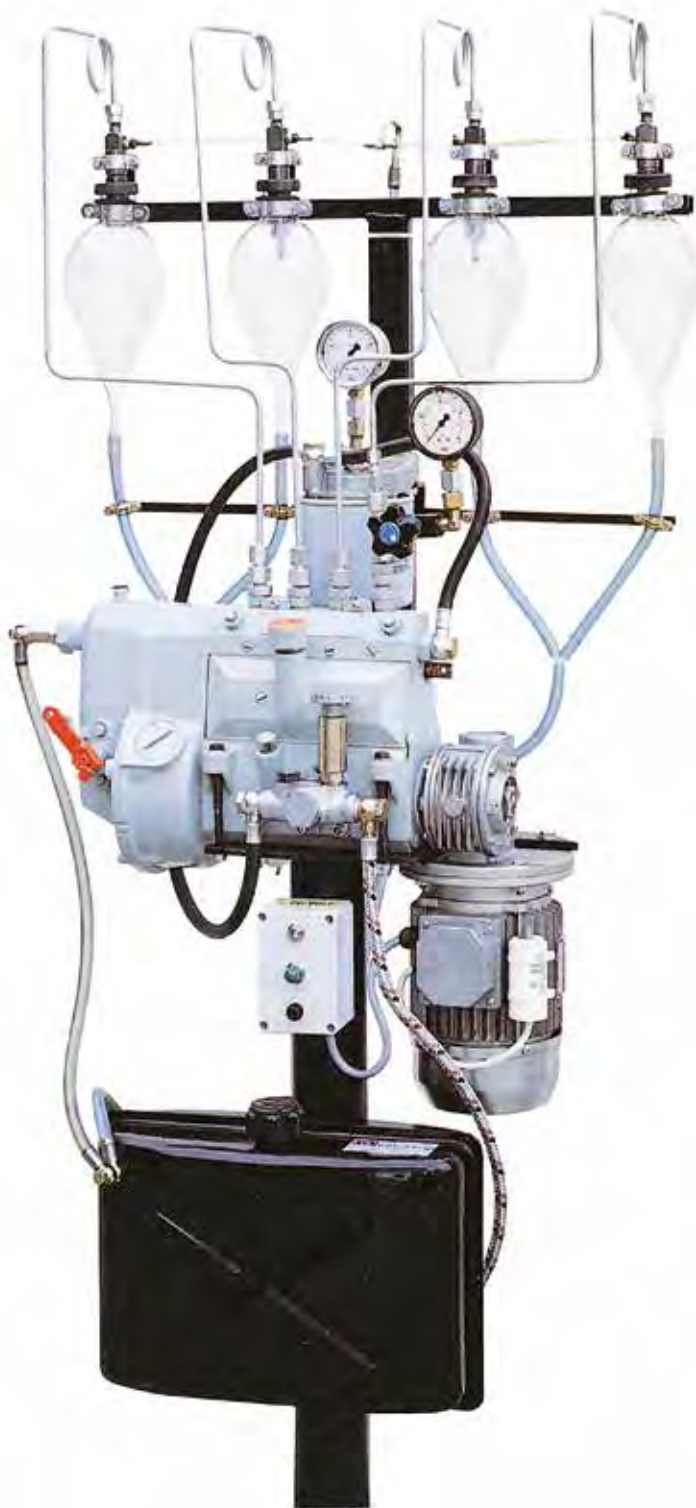
Gross Weight: kg 8

*Indicative picture for reference only*

**VB 10104**

**VB 10106**

**VB 10108**



Indicative picture for reference only

Reproduction of the fuel circuit of a diesel engine, complete with:

- 2 direct injectors;
- 2 indirect injectors;
- fuel filter;
- in-line injection pump with cylinder;
- low pressure gauge (pump circuit);
- high pressure gauge (injector circuit);
- tank;
- feeding pump;
- high and low pressure delivery and return pipings.

The injection pump, operates by means of a 220 V geared motor, sends the fuel to the injectors which atomize it in special glass bulbs.

In this way the fuel injection and atomization can be displayed.

The unit is also suitable for idling tests and demonstrations with simulated breakdowns.

### Approx. weight and dim.:

Cm	80x80x160h
Net Weight:	kg 55
Gross Weight:	kg 90

# VB 10300

## VB 10300M DIESEL COMMON-RAIL (on base) - manual



Accurate cross-section of the high pressure (1600 bar) fuel system known as Common-rail. This circuit consists of a radial piston pressure pump, one delivery manifold and an electro-injector, all connected via high-pressure hoses.

*It is operated manually.*

### Approx. weight and dim.:

Cm: 50x20x30h

Net Weight: kg 8

Gross Weight: kg 15

Indicative picture for reference only

# VB 10305

## VB 10305S DIESEL ELECTRO-INJECTOR WITH SOLENOID VALVE (on base) - static



Section of electro injector for modern diesel engines. The main interesting components from the educational point of view are displayed.

### Approx. weight and dim.:

Cm: 10x25x10h

Net Weight: kg 0,5

Gross Weight: kg 1

## VB 10110S INJECTOR PUMP (on base) - static

Accurate section of a unit injector system for commercial vehicles, where it is possible to observe:

- electromagnetic valve HD
- pumping element
- duster, etc.



*Indicative picture for reference only*

### Approx. weight and dim.:

Cm: 40x20x10h

Net Weight: kg 3

Gross Weight: kg 4

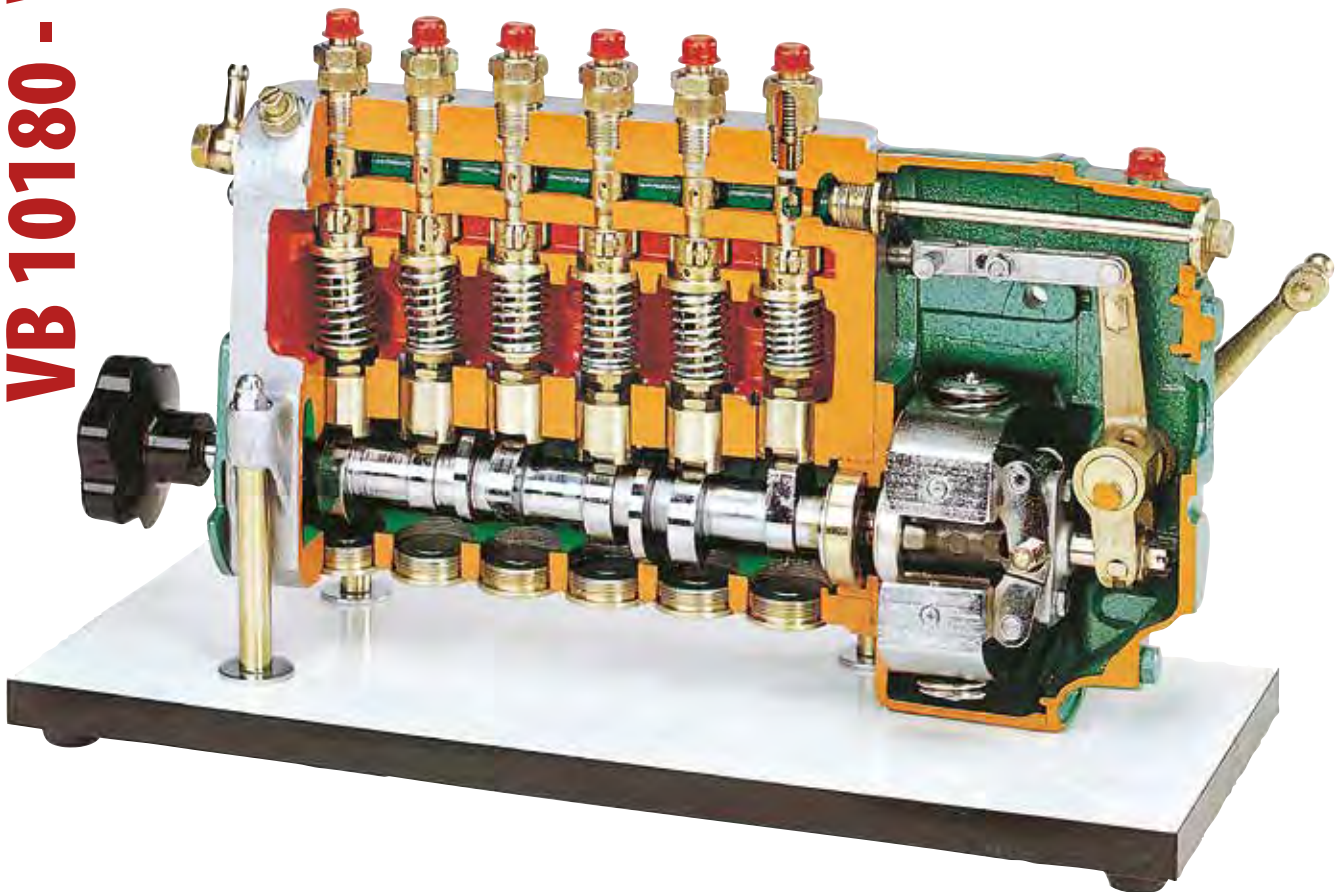
**VB 10110**



# VB 10180 - VB 10181

**VB 10180M INJECTION PUMP WITH 6 IN-LINE CYLINDERS AND CENTRIFUGAL GOVERNOR (on base) - manual**

**VB 10181M INJECTION PUMP WITH 4 IN-LINE CYLINDERS AND CENTRIFUGAL GOVERNOR (on base) - manual**



Indicative picture for reference only

## **VB 10180M**

### **Main technical specifications:**

- Small piston;
- Cylinder;
- Sector gear,
- Rock,
- Camshaft,
- Check valve,
- Centrifugal governor

Operated manually through a crank handle.

## **VB 10180M**

### **Approx. weight and dim.:**

Cm: 25x55x45h  
Net Weight: kg 16  
Gross Weight: kg 20

## **VB 10181M**

### **Main technical specifications:**

- Small piston;
- Cylinder;
- Sector gear,
- Rock,
- Camshaft,
- Check valve,
- Centrifugal governor

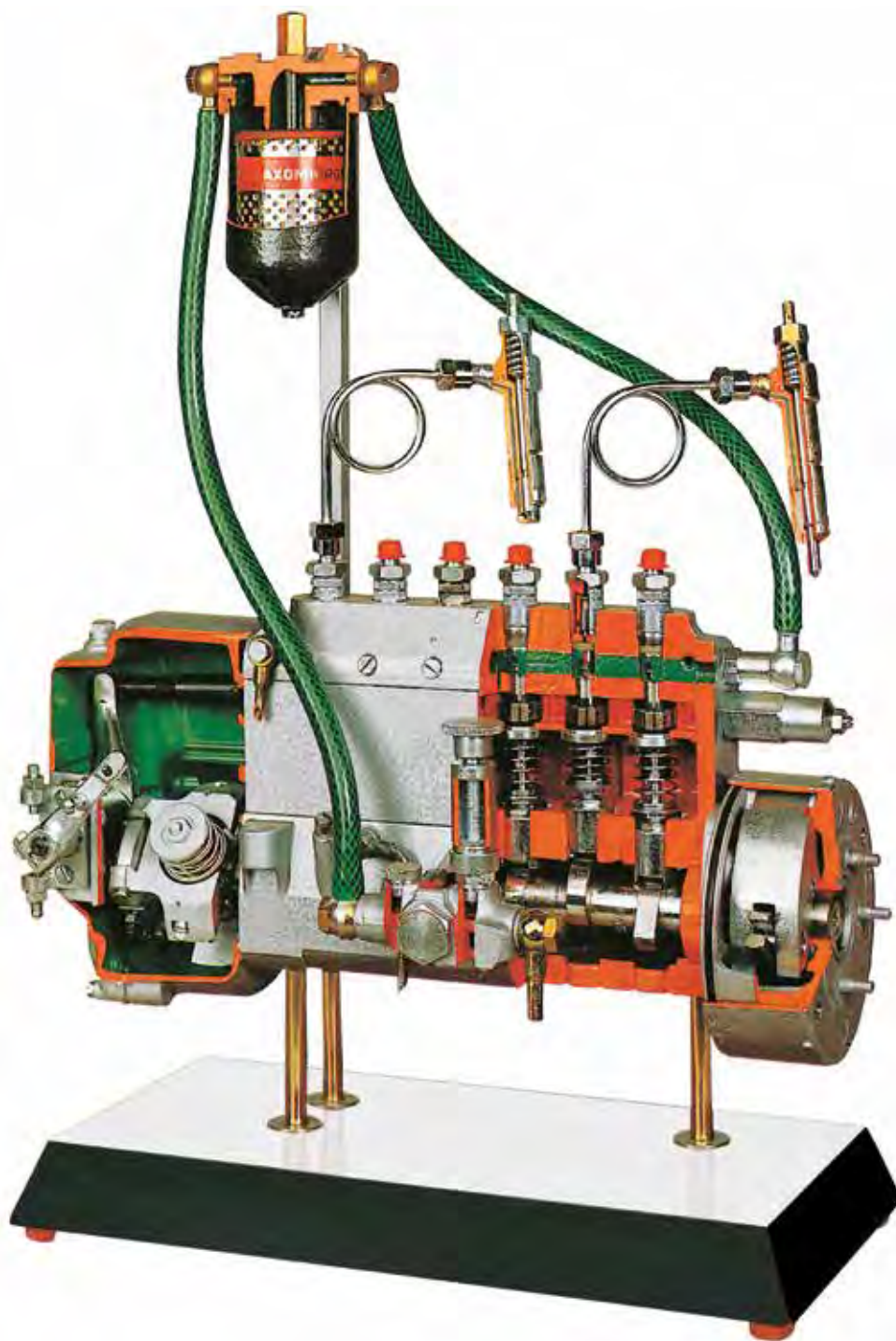
Operated manually through a crank handle.

## **VB 10181M**

### **Approx. weight and dim.:**

Cm: 20x40x30h  
Net Weight: kg 9  
Gross Weight: kg 15

*Indicative picture for reference only*



**VB 10200M**

**Main technical specifications:**

- Small piston;
- Cylinder;
- Sector gear,
- Rock,
- Camshaft,
- Check valve,
- Centrifugal governor
- 2 injectors of different type
- Fuel filter
- Fuel pump

**Approx. weight and dim.:**

Cm: 60x30x60h  
Net Weight: kg 24  
Gross Weight: kg 35

*Operated manually through a crank handle.*

# VB 10220

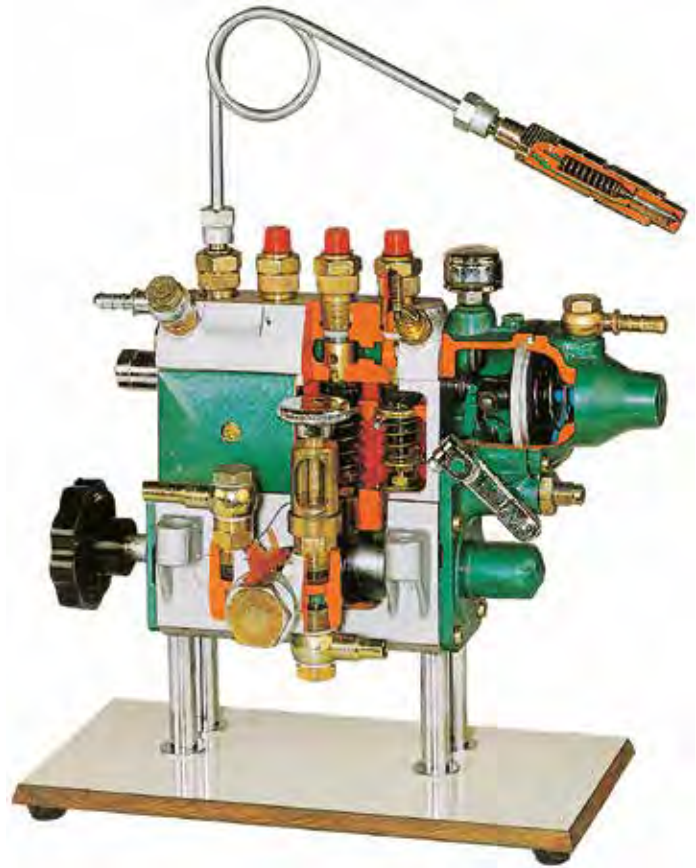
## VB 10220M BOSCH INJECTION PUMP WITH 4 IN-LINE CYLINDERS + PNEUMATIC SPEED GOVERNOR (on base) - manual

Accurate section of a pump suitable for medium displacement engine (FIAT, Mercedes) with pneumatic speed governor (rock rod or acceleration rod controlled by a diaphragm connected to the suction collector). It is provided with a feeding pump.

Operated manually through a crank handle.

### Approx. weight and dim.:

Cm: 20x30x30h  
Net Weight: kg 7  
Gross Weight: kg 10



## VB 10230M SINGLE-CYLINDER INJECTION PUMP (on base) - manual

Alternative single-cylinder injection pump model complete with one injector.

### Approx. weight and dim.:

Cm: 20x20x30h  
Net Weight: kg 3  
Gross Weight: kg 5

Operated manually through a crank handle.

These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts, cross-sections, lubricating circuits, fuel system. Many parts have been chromium, plated and galvanized for a longer life.



Indicative picture for reference only



## VB 10240M BOSCH ROTARY INJECTION PUMP (on base) - manual



The most popular rotating pump (Bosch VE) has been sectioned for training purposes to show all its operating parts.

The distributor during the gas oil pumping and distribution phase, the transfer pump, the speed governor, the automatic advance regulator and the fuel circuit are clearly displayed.

It is supplied complete with an indirect injector.

*Operated manually through a crank handle.*

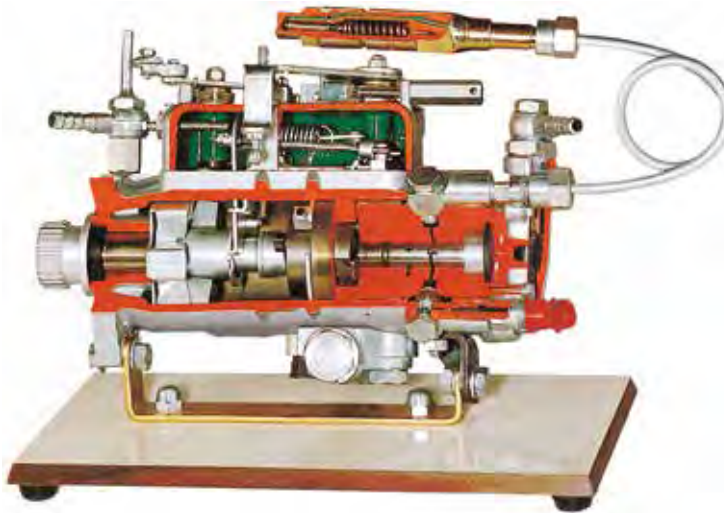
### Approx. weight and dim.:

Cm: 30x15x30h

Net Weight: kg 5

Gross Weight: kg 8

## VB 10250M CAV DPA-DPS ROTARY INJECTION PUMP (on base) - manual



Careful section of a CAV rotary pump for training purposes, showing all its operating parts.

The transfer pump, the speed governor, the automatic advance regulator, the hydraulic sensor device, the fuel circuit and the pumping small piston are clearly shown. It is supplied complete with an indirect injector.

*Operated manually through a crank handle.*

### Approx. weight and dim.:

Cm: 30x20x20h

Net Weight: kg 6

Gross Weight: kg 8

These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts, cross-sections, lubricating circuits, fuel system. Many parts have been chromium, plated and galvanized for a longer life.

Indicative picture for reference only

VB 10240

VB 10250

# VB 10260

## VB 10260M CAV DPC INJECTION PUMP (on base) - manual

*This is an evolution of the CAV DPA pump.  
It has been cross sectioned according to the same criteria to show its main parts.  
It is provided with an indirect injector.*

*It is operated manually.*

### Approx. weight and dim.:

Cm: 30x20x20h  
Net Weight: kg 6  
Gross Weight: kg 9



# VB 10270

## VB 10270M RADIAL PISTON INJECTION PUMP WITH ELECTRONIC ADJUSTER VP 44 BOSCH DISTRIBUTOR (on base) - manual

### Approx. weight and dim.:

Cm: 40x20x30h  
Net Weight: kg 9  
Gross Weight: kg 15

### Main technical specification:

- Vane pump
- Electric fan
- Distributor plunger
- Injection phase
- Electronic control unit, etc.



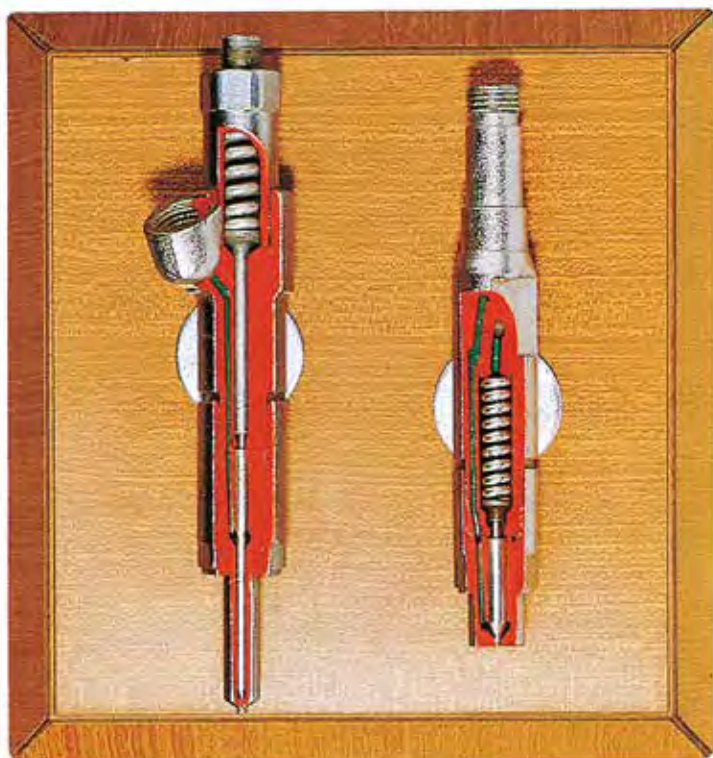
*Modern high-pressure rotary injection pump (approx. 1500 bars).*

*It is operated manually.*

*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts, cross-sections, lubricating circuits, fuel system. Many parts have been chromium, plated and galvanized for a longer life.*

*Indicative picture for reference only*

## VB 10280S INJECTORS (on base) - static



Careful section of two different injectors (direct and indirect injection type) showing their internal parts and relevant operation.

### Approx. weight and dim.:

Cm: 30x20x15h

Net Weight: kg 1

# VB 10280

## VB 10500S DIRECT INJECTION PISTON - static

## VB 10510S INDIRECT INJECTION PISTON - static



### VB 10500S

#### Approx. weight and dim.:

Cm: 18x18x35h

Net Weight: kg 5

Gross Weight: kg 7

### VB 10510S

#### Approx. weight and dim.:

Cm: 12x12x22h

Net Weight: kg 2.5

Gross Weight: kg 4

# VB 10500 - VB 10510

## VB 10290M DIESEL PUMPING ELEMENT - manual



Giant model (scale 5:1) of the pumping element of a Diesel engine. It has been carefully cross sectioned to show the cylinder inlet hole and the helical spline on the piston.

*It is operated manually.*

### Approx. weight and dim.:

Cm: 30x6x6h

Net Weight: kg 1

# VB 10290

Indicative picture for reference only



# VB 10430

## VB 10430M TURBOSUPERCHARGER WITH WASTE-GATE VALVE (on base) - manual

### Approx. weight and dim.:

Cm:	30x30x30h
Net Weight:	kg 6
Gross Weight:	kg 8



Indicative picture for reference only

## VB 10460M VARIABLE GEOMETRY TURBOSUPERCHARGER (on base) - manual

# VB 10460



Very detailed cutaway item, with clearly visible moving blade assembly.  
The operation of the variable geometry system is clearly displayed.

These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts, cross-sections, lubricating circuits. Many parts have been chromium, plated and galvanized for a longer life.

### Approx. weight and dim.:

Cm:	30x25x30h
Net Weight:	kg 6
Gross Weight:	kg 10

## VB 10441M TURBO-CHARGER WITH VARIABLE GEOMETRY + ELECTRICAL CONTROL MOTOR (on base) - manual



### Approx. weight and dim.:

Cm:	50x20x25h
Net Weight:	kg 7
Gross Weight:	kg 10

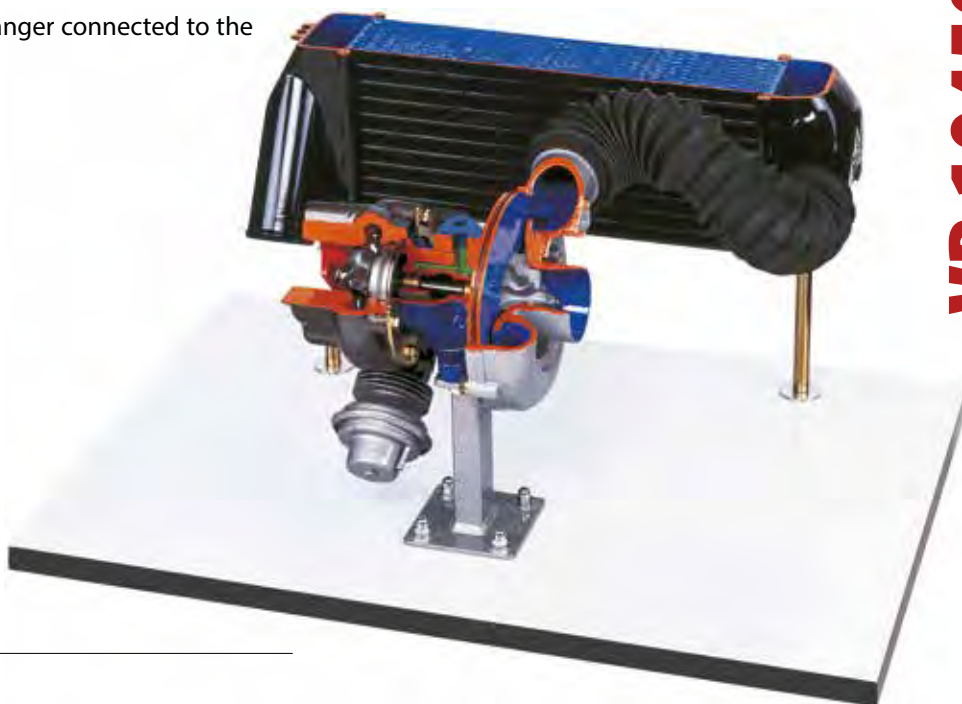
## VB 10450M TURBO-INTERCOOLER (on base) - manual

### VB 10450M

Accurate section of a supercharging unit for Diesel or petrol motorcars.

The cross-section of the turbo-supercharger highlights the following:

- Exhaust gas turbine
- Waste-gate valve
- Centrifugal compressor
- Lubricating circuit
- Cutaway air-air heat exchanger connected to the turbo-supercharger.



### VB 10450M

#### Approx. weight and dim.:

Cm:	60x40x40h
Net Weight:	kg 12
Gross Weight:	kg 18

Indicative picture for reference only

VB 10441

VB 10450

# VB 10442

## VB 10442M ROOTS-TYPE SUPERCHARGER (on base) - manual

### Approx. weight and dim.:

Cm: 50x20x25h  
Net Weight: kg 9  
Gross Weight: kg 15



# VB 10452

## VB 10452M SEQUENTIAL TWIN-TURBO (on base) - manual

Accurate section of a sequential turbo showing one turbocharger for lower engine speeds and a second turbocharger at higher engine speeds.



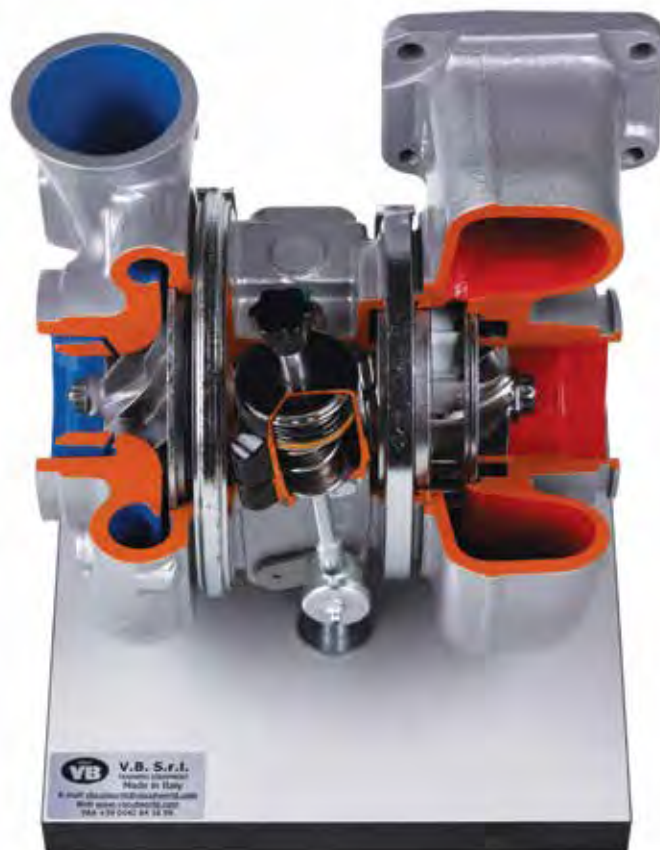
### Approx. weight and dim.:

Cm: 55x35x40h  
Net Weight: kg 8  
Gross Weight: kg 15

Indicative picture for reference only



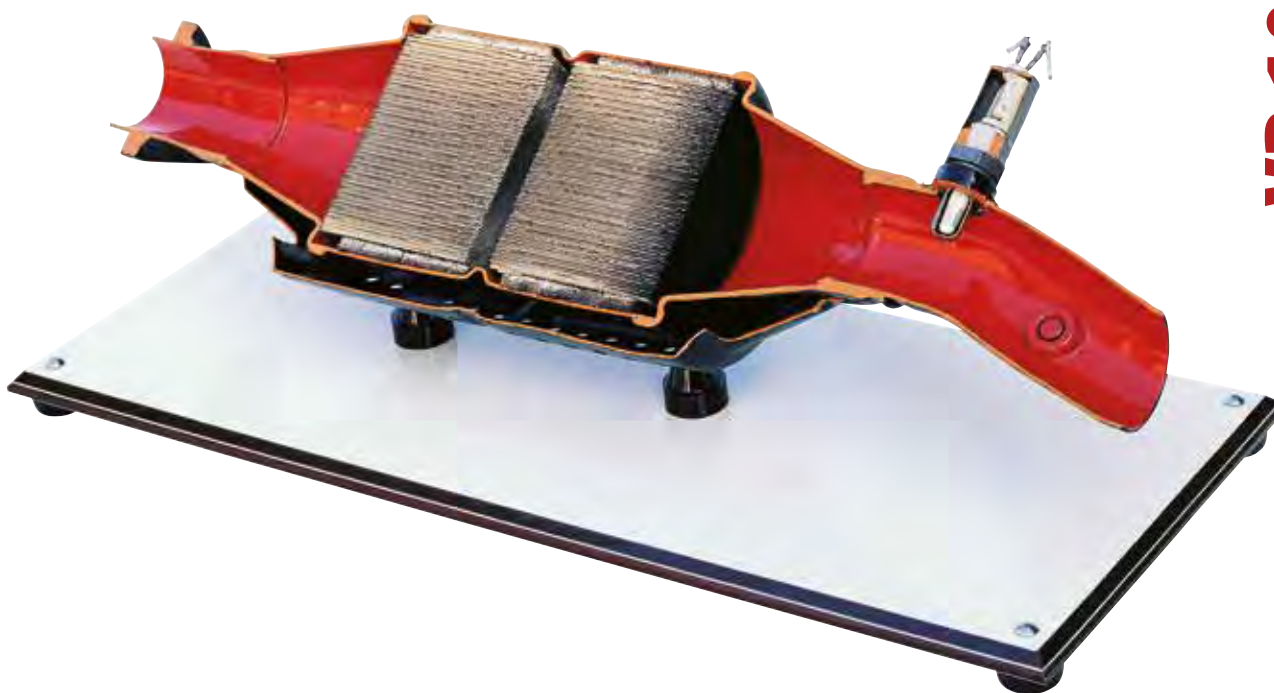
**VB 10453S TURBOCHARGER WITH VARIABLE GEOMETRY HOLSET FOR TRUCKS**  
(on base) - static



**Approx. weight and dim.:**

Cm: 45x45x45h  
Net Weight: kg 26  
Gross Weight: kg 35

**VB 10630S CATALYTIC SILENCER WITH LAMBDA PROBE** (on base) - static



**Approx. weight and dim.:**

Cm: 50x20x20h  
Net Weight: kg 3  
Gross Weight: kg 6  
Packing

Indicative picture for reference only

**VB 10453**

**VB 10630**

**VB 10370S PISTON PUMP (on base) - static**

**VB 10380S ELECTRICAL FUEL PUMP (on base) - static**

**VB 10385S MECHANICAL FUEL PUMP (on base) - static**

**VB 10390M WATER PUMP WITH RADIATOR (on base) - manual**

**VB 10400M OIL PUMP WITH FILTER (on base) - manual**



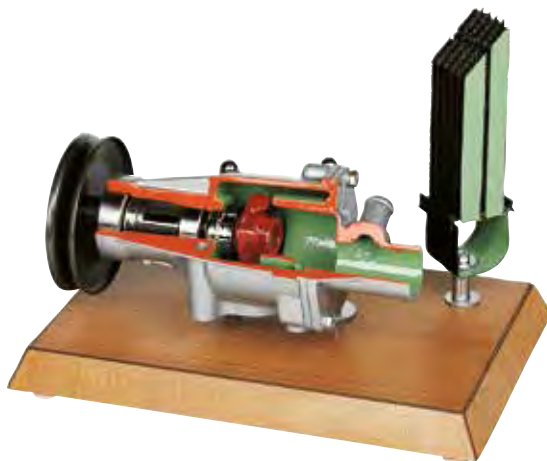
**VB 10370S**



**VB 10380S**



**VB 10385S**



**VB 10390M**



**VB 10400M**

*Indicative picture for reference only*

**VB 10370S - VB 10380S - VB 10385S**

**Approx. weight and dim.:**

*Cm:* 15x15x15h

*Net Weight:* kg 0,5

*Gross Weight:* kg 1,0

**VB 10390M - VB 10400M**

**Approx. weight and dim.:**

*Cm:* 30x20x30h

*Net Weight:* kg 3

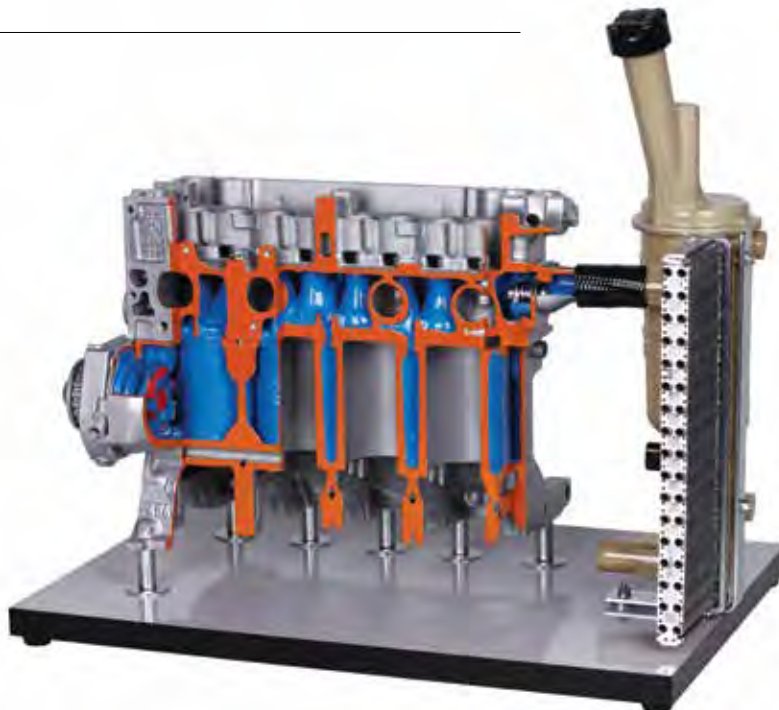
*Gross Weight:* kg 6

## VB10401S ENGINE COOLING SYSTEM (on base) - static

Complete Cooling System unit

### Main technical specifications:

- Block-head canalisation
- Water pump
- Thermostatic valve
- Water temperature bulb
- Expansion tank
- Radiator
- Connecting pipe



### Approx. weight and dim.:

Cm: 50x70x75h

Net weight : kg 26

Gross weight: Kg 35

## VB 10402S DUAL MASS FLYWHEEL(on base) - static

Sectioned to highlight the two different damped masses by means of internal springs



### Approx. weight and dim.:

Cm: 35x35x20h

Net Weight: kg 16

Gross Weight: kg 21

VB 10401

VB 10402

Indicative picture for reference only



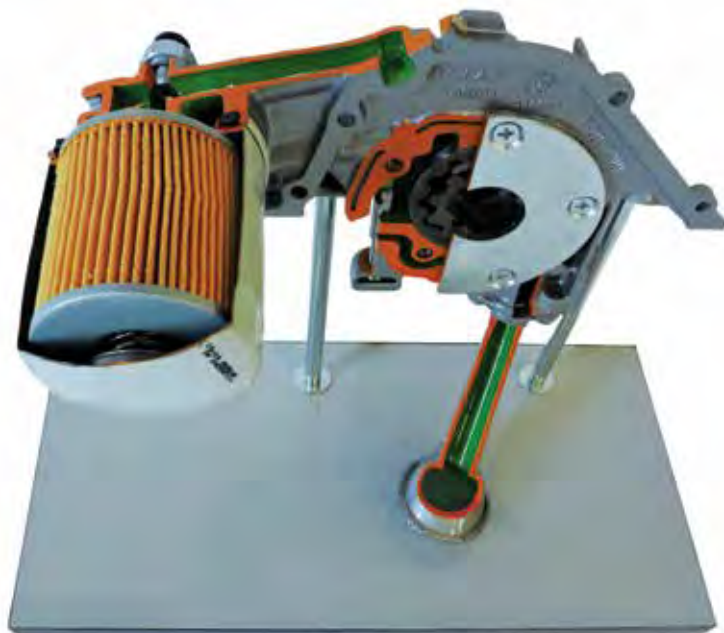
# VB 10403

## VB 10403S LUBRICATION CIRCUIT WITH GEAR ROTOR TYPE PUMP (on base) - static

Oil pump apparatus with internal gears complete with oil filter.

### Main technical specification:

- Pressure bulb
- Pressure relief valve
- Suction device with small net



### Approx. weight and dim.:

Cm	30x40x40h
Net Weight:	kg 2,5
Gross Weight:	kg 4

Indicative picture for reference only

# VB 10404

## VB 10404M FLANGE OIL PUMP COMPLETE WITH PRESSURE RELIEF VALVE (on base) - manual



### Approx. weight and dim.:

Cm:	20x20x30h
Net Weight:	kg 4
Gross Weight:	kg 6

**VB 10405M** ROTOR OIL PUMP (on base) - manual

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**VB 10410M** VANE PUMP (on base) - manual

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**VB 10420M** GEAR PUMP (on base) - manual

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*Indicative picture for reference only*



**VB 10405M**



**VB 10420M**

**VB 10405M**

**Approx. weight and dim.:**

*Cm: 25x20x30h*

*Net Weight: kg 1*

*Gross Weight: kg 2*

**VB 10410M**

**Approx. weight and dim.:**

*Cm: 15x15x20h*

*Net Weight: kg 1*

*Gross Weight: kg 2*

**VB 10420M**

**Approx. weight and dim.:**

*Cm: 25x20x30h*

*Net Weight: kg 1*

*Gross Weight: kg 2*



**VB 10410M**

**VB 10405 - VB 10410 - VB 10420**

## VB 9130E CAR AIR CONDITIONING SYSTEM (on stand with wheels) - electrical

After market unit mounted on an auto chassis. It is ideal for training in the operation, maintenance, repair and troubleshooting.

### Main technical features:

- Max. power 2 Kw
- Cooling liquid 400gt Freon R134a
- Piston compressor
- Condenser
- Dehydrating filter
- Pressure switch
- Expansion valve
- Evaporation unit
- Resistor
- Thermostat
- Troubleshooting device for simulation of 4 faults
- With nomenclature table



Indicative picture for reference only

*It operates at 220V by means of a mono-phase 1,5 Kw motor.*

### Approx. weight and dim.:

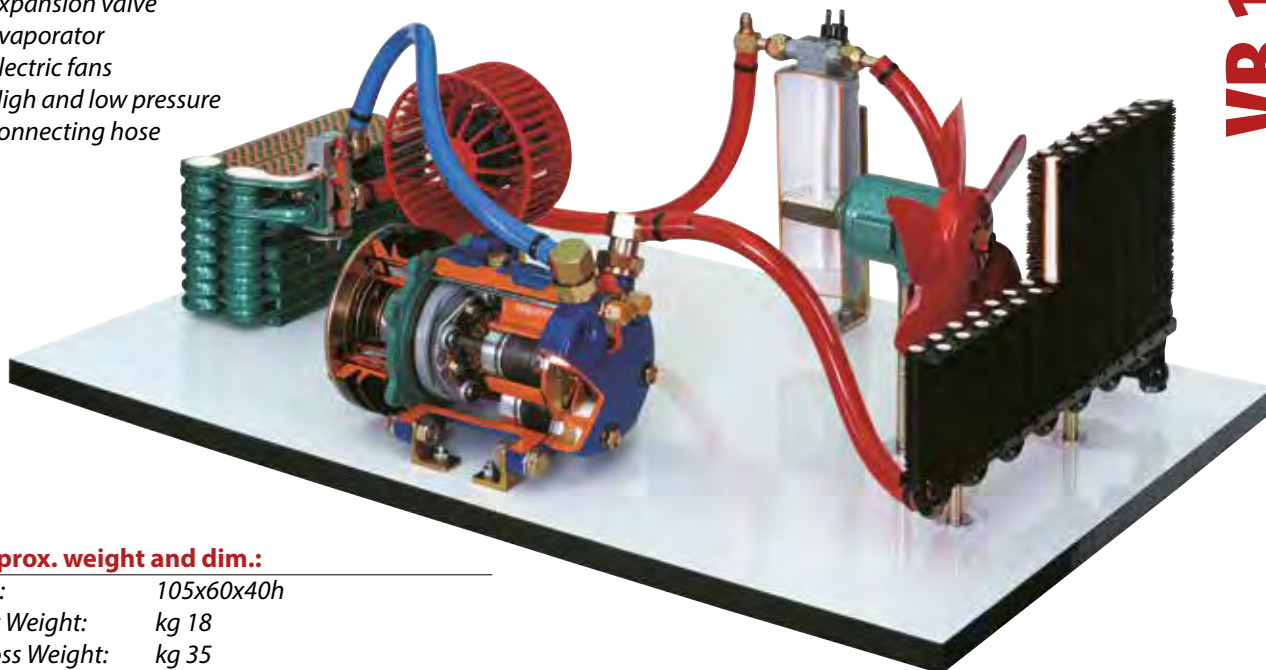
Cm: 105x75x130h  
Net Weight: kg 70  
Gross Weight: kg 120



## VB 10650M AIR CONDITIONING SYSTEM (on base) - manual

### Main technical specifications:

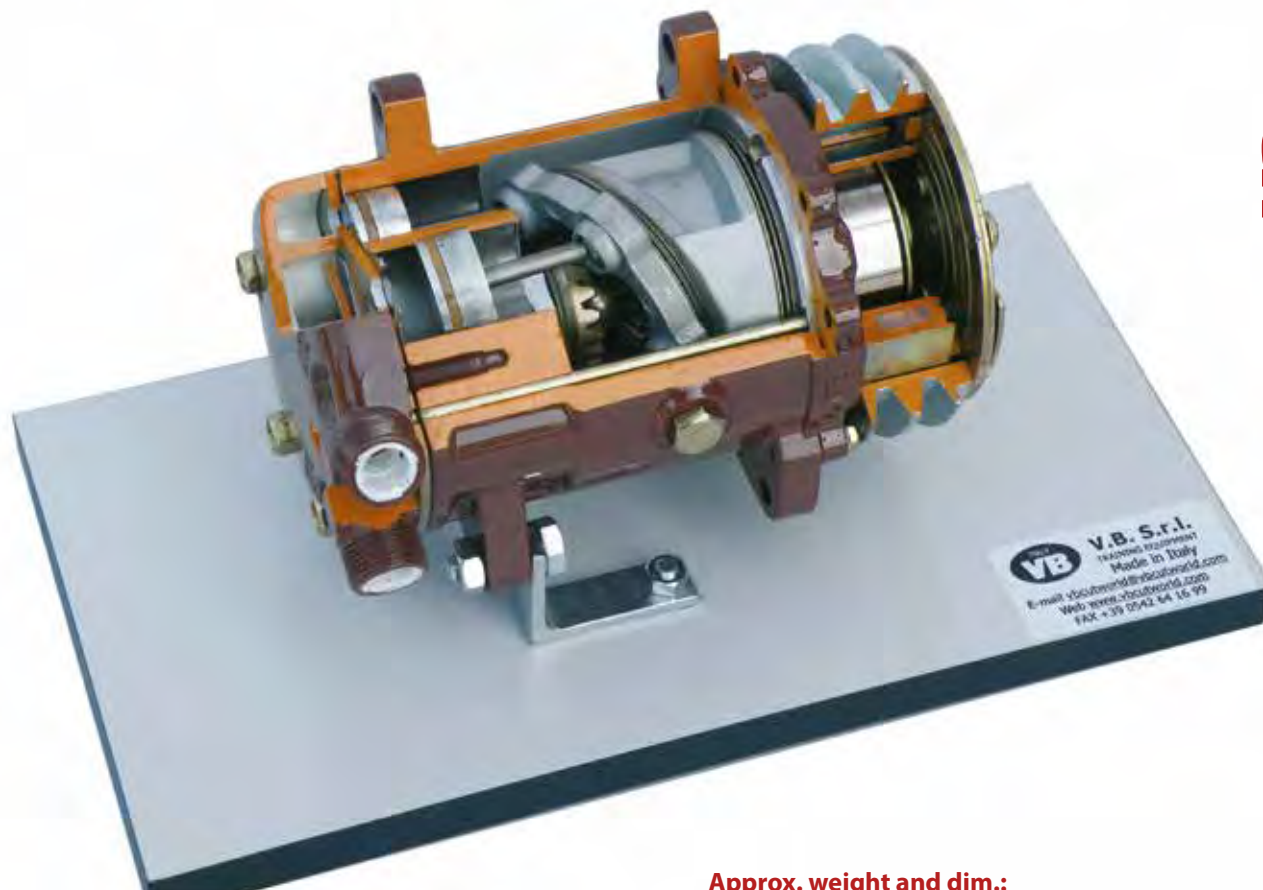
- Radial piston compressor
- Condenser
- Filter
- Expansion valve
- Evaporator
- Electric fans
- High and low pressure connecting hose



### Approx. weight and dim.:

Cm: 105x60x40h  
Net Weight: kg 18  
Gross Weight: kg 35

## VB 10651M AXIAL ALTERNATIVE COMPRESSOR WITH SIMPLE EFFECT PISTON (on base) - manual



### Approx. weight and dim.:

Cm: 30x20x20h  
Net Weight: kg 8  
Gross Weight: kg 13

Indicative picture for reference only

VB 10650

VB 10651

# VB 10652 - VB 10653

**VB 10652M AXIAL ALTERNATIVE COMPRESSOR WITH VARIABLE DISPLACEMENT (on base) - manual**



**VB 10652M**

**Approx. weight and dim.:**

Cm: 20x20x20h  
Net Weight: kg 7  
Gross Weight: kg 12

**VB 10653M AXIAL ALTERNATIVE COMPRESSOR WITH DOUBLE EFFECT PISTON (on base) - manual**



**VB 10653M**

**Approx. weight and dim.:**

Cm: 20x20x20h  
Net Weight: kg 7  
Gross Weight: kg 12

# VB 10654 - VB 10655

**VB 10654M ROTARY SCROLL COMPRESSOR (on base) - manual**



**VB 10654M**

**Approx. weight and dim.:**

Cm: 20x20x20h  
Net Weight: kg 6  
Gross Weight: kg 12

**VB 10655M VANE COMPRESSOR (on base) - manual**



**VB 10655M**

**Approx. weight and dim.:**

Cm: 20x20x20h  
Net Weight: kg 7  
Gross Weight: kg 12

Indicative picture for reference only

**VB 10700M STEERING BOX WITH HOURGLASS SCREW (on base) - manual**

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**VB 10710M SEGMENTAL STEERING (on base) - manual**

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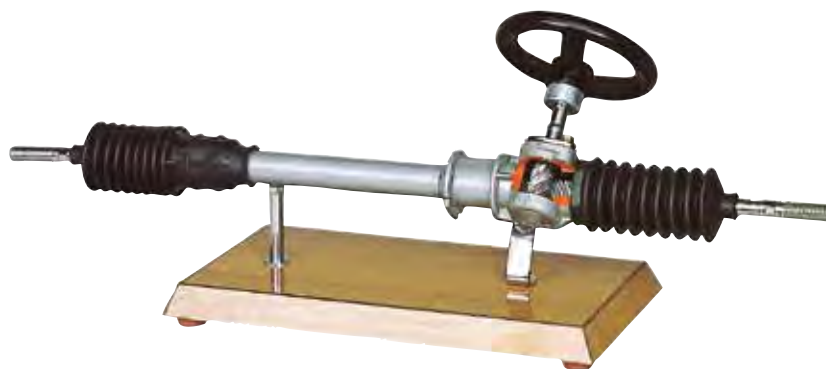
**VB 10720M STEERING BOX WITH RE-CIRCULATING BALL SYSTEM (on base) - manual**

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**VB 10730M RACK STEERING BOX (on base) - manual**

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*Indicative picture for reference only*



**VB 10700 - VB 10710 - VB 10720 - VB 10730**

**VB 10700M**

**Approx. weight and dim.:**

---

Cm: 30x40x40h  
Net Weight: kg 7  
Gross Weight: kg 10

**VB 10710M**

**Approx. weight and dim.:**

---

Cm: 30x25x20h  
Net Weight: kg 4  
Gross Weight: kg 6

**VB 10720M**

**Approx. weight and dim.:**

---

Cm: 25x35x40h  
Net Weight: kg 8  
Gross Weight: kg 11

**VB 10730M**

**Approx. weight and dim.:**

---

Cm: 70x25x30h  
Net Weight: kg 4  
Gross Weight: kg 6



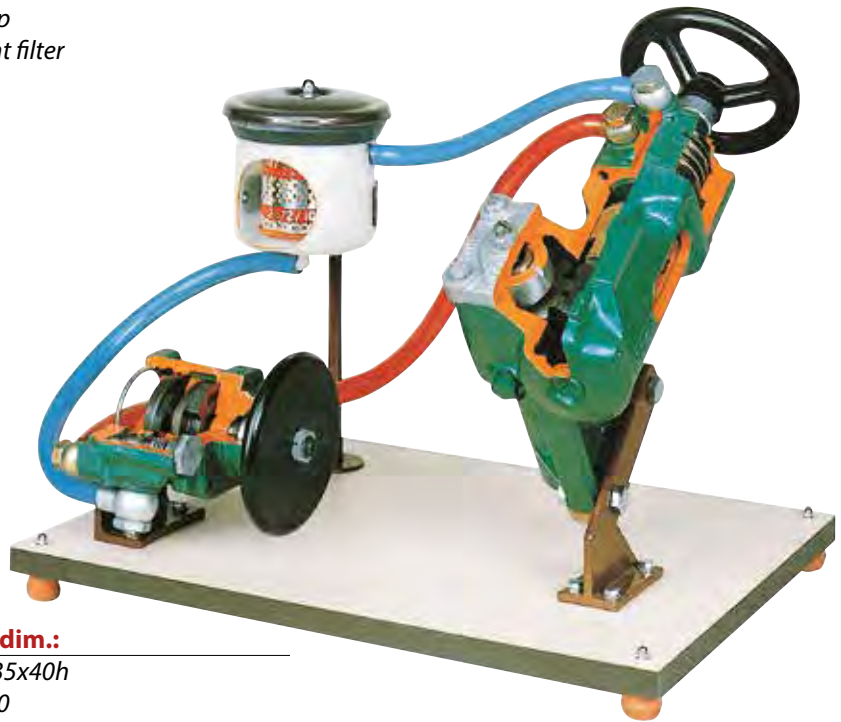
# VB 10750

## VB 10750M POWER STEERING WITH RE-CIRCULATING BALL SYSTEM (on base) - manual

### Main technical specifications:

- Ball type steering box
- Hydraulic vane pump
- Oil tank with relevant filter
- Connecting pipes

Operated through a hand wheel.



### Approx. weight and dim.:

Cm:	50x35x40h
Net Weight:	kg 20
Gross Weight:	kg 35

Indicative picture for reference only

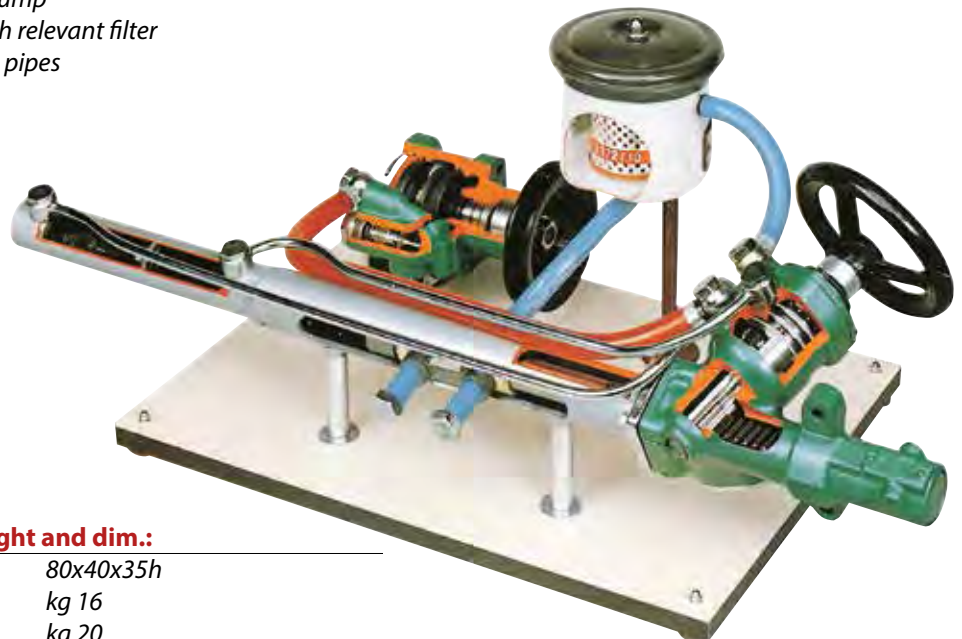
# VB 10760

## VB 10760M RACK POWER STEERING (on base) - manual

### Main technical specifications:

- Rack type steering box
- Hydraulic pump
- Oil tank with relevant filter
- Connecting pipes

Operated through a hand wheel.



### Approx. weight and dim.:

Cm:	80x40x35h
Net Weight:	kg 16
Gross Weight:	kg 20

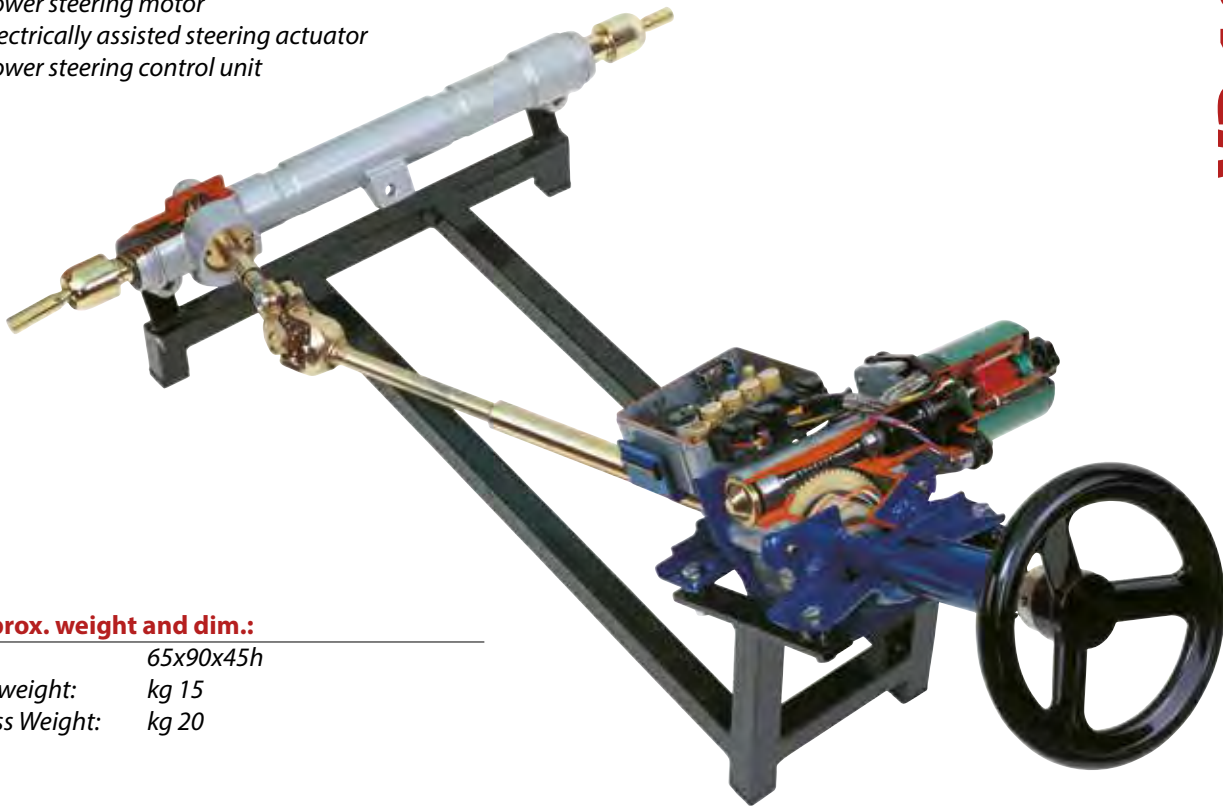
These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts, cross-sections. Many parts have been chromium, plated and galvanized for a longer life.

## VB 10780M ELECTRICALLY ASSISTED STEERING (on a table stand) - manual

### Main technical specifications:

- Rack steering box
- Power steering motor
- Electrically assisted steering actuator
- Power steering control unit

*Operated manually by means of a wheel fitted to the electric motor.*



### Approx. weight and dim.:

Cm: 65x90x45h  
Net weight: kg 15  
Gross Weight: kg 20

Indicative picture for reference only

## VB 10782M ELECTRICAL RACK AND PINION STEERING (on base) - manual



### Approx. weight and dim.:

Cm: 70x30x40h  
Net Weight: kg 15  
Gross Weight: kg 22

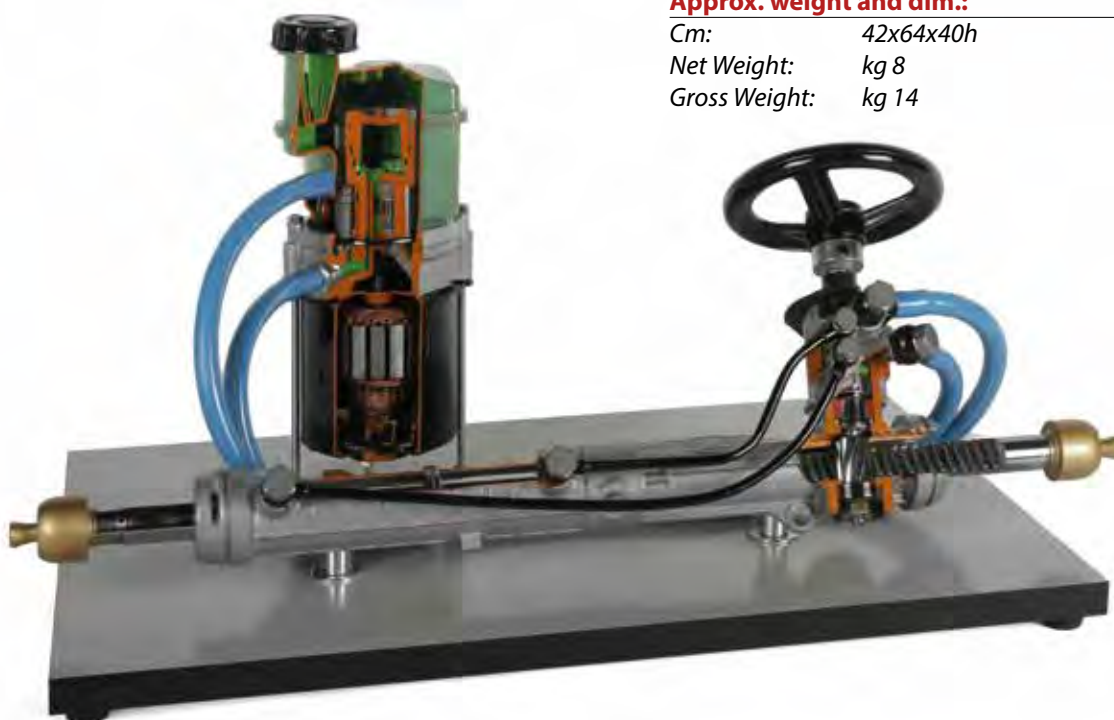
VB 10780

VB 10782

# VB 10784

## VB 10784M POWER-ASSISTED STEERING WITH ELECTRICALLY-CONTROLLED HYDRAULIC PUMP (on base) - manual

The power-assisted steering consists of an electro-hydraulic system allowing power saving because the pump is driven by an electric motor.

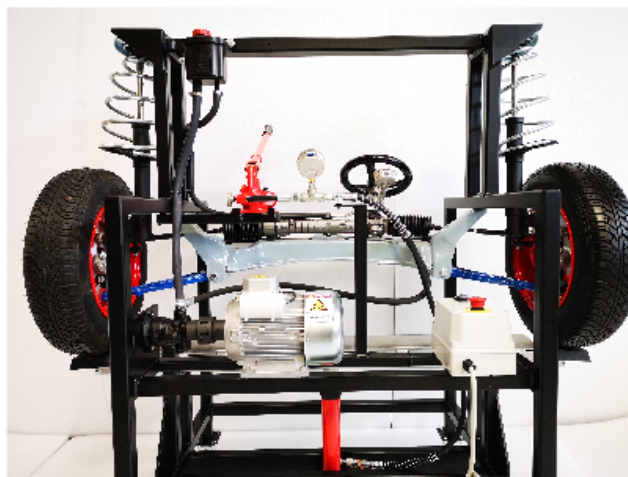


### Approx. weight and dim.:

Cm: 42x64x40h  
Net Weight: kg 8  
Gross Weight: kg 14

# VB 10777E

## VB 10777E HYDRAULIC POWER STEERING (on stand with wheels) – electrical



### Approx. weight and dim.:

Cm: 167x107x166h  
Net weight: kg 210  
Gross weight: kg 330

Indicative picture for reference only



## VB 10778E ELECTRIC POWER ASSISTED STEERING (EPS) WITH SUSPENSIONS (on stand with wheels) - electrical

Electrical power steering (EPS) trainer in working conditions with fully operating McPherson suspension, for the study of the steering system. Any information used by the steering (car speed, alternator, city, steering effort) can be varied by the user. An instrument cluster and two displays show all information concerning the operation.

Large production and diffusion EPS complete with:

- Operating McPherson struts, rack and pinion
- Adjustment of the steering effort directly on the rack
- Vehicle speed simulation from 0 to 120 km/h
- Normal/city push-button
- Alternator simulation
- Indicator lamp and voltage/current display
- Body computer with diagnostic socket (with low speed CAN) OBD 16 pin



### Approx. weight and dim.:

Cm: 160x130x150h  
Net Weight: kg 150  
Gross Weight: kg 230

Indicative picture for reference only

## VB 11201S HOMOCYNETIC JOINT (on base) - static



### Approx. weight and dim.:

Cm: 55x20x15h  
Net Weight: kg 4  
Gross Weight: kg 6

## VB 11160S PROPELLER SHAFT WITH 2 TYPES OF COUPLING - static



### Approx. weight and dim.:

Cm: 15x15x60h  
Net Weight: kg 4  
Gross Weight: kg 6

VB 10778

VB 11201

VB 11160

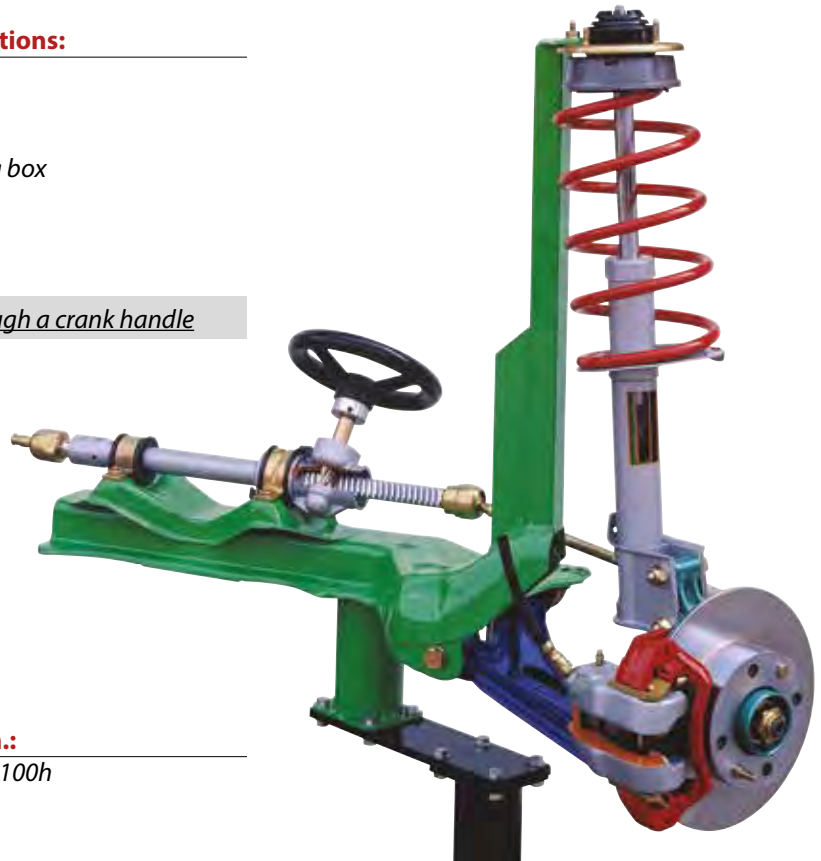
# VB 11210

## VB 11210M STEERING UNIT WITH McPHERSON SUSPENSIONS (on stand with wheels) - manual

### Main technical specifications:

- McPherson suspension
- Shock absorber
- Spring
- Rack and pinion steering box
- Disc brake
- Steering wheel

*Operated manually through a crank handle*



### Approx. weight and dim.:

Cm: 100x60x100h  
Net Weight: kg 40  
Gross Weight: kg 65

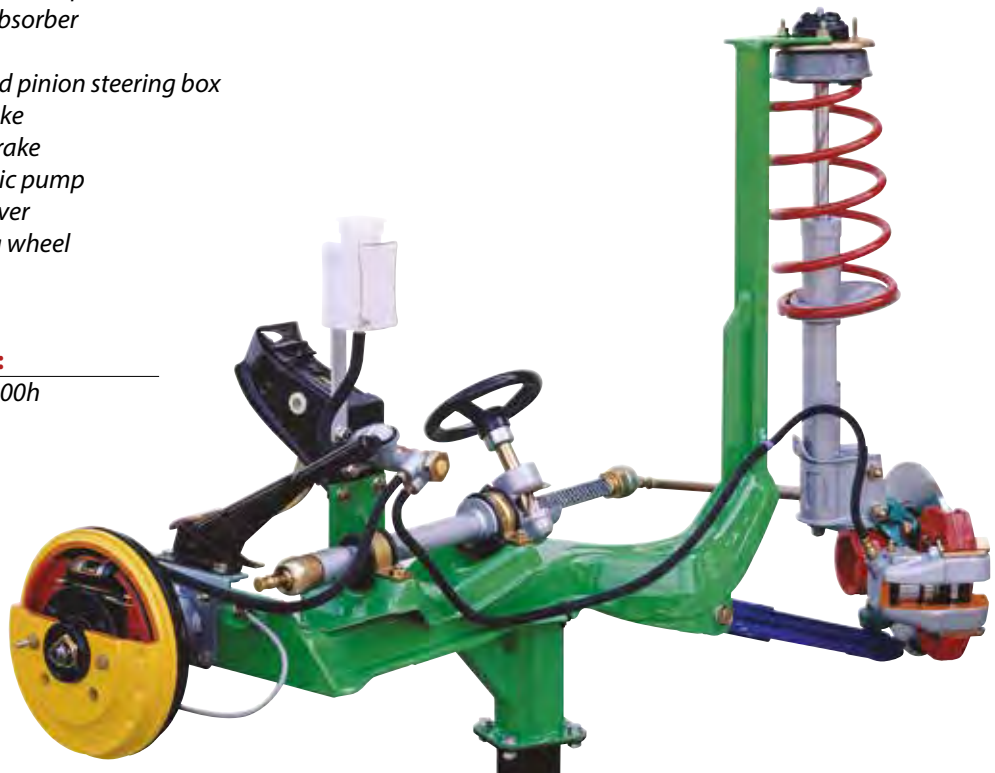
# VB 11220

## VB 11220M STEERING UNIT WITH McPHERSON SUSPENSIONS AND BRAKES (on stand with wheels) - manual

### Main technical specifications:

- McPherson suspension
- Shock absorber
- Spring
- Rack and pinion steering box
- Disc brake
- Drum brake
- Hydraulic pump
- Brake lever
- Steering wheel

*Operated manually through a crank handle*



### Approx. weight and dim.:

Cm: 120x60x100h  
Net Weight: kg 50  
Gross Weight: kg 75

*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts.  
Many parts have been chromium, plated and galvanized for a longer life.*

*Indicative picture for reference only*

## VB 11202M CAR FORECARRIAGE (on stand with wheels) - manual

Standard car fore-carriage with McPherson suspension and steering box with pinion and rack. Complete with disc brakes. (This unit is not cross sectioned).



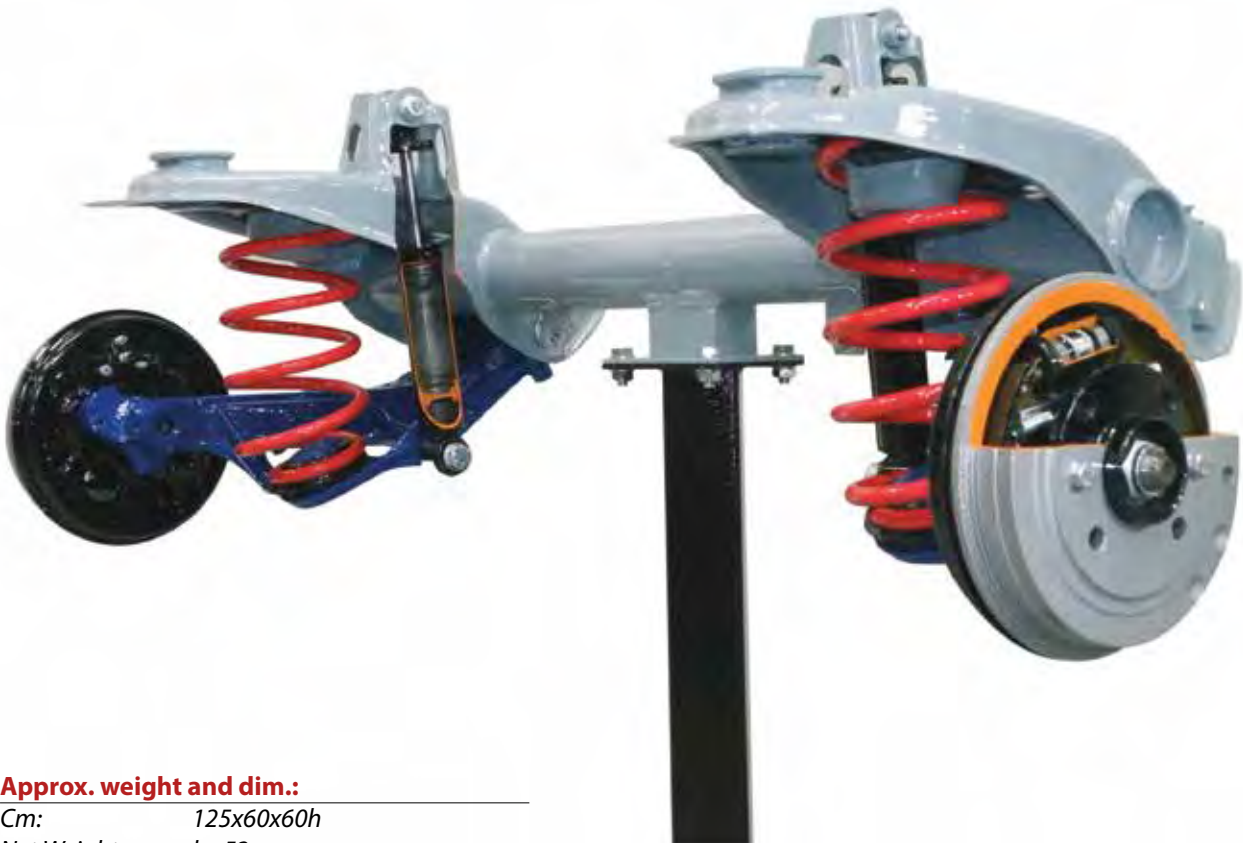
### Approx. weight and dim.:

Cm: 100x155x130h  
Net Weight: kg 80  
Gross Weight: kg 120

Indicative picture for reference only

VB 11202

## VB 11204M REAR AXLE (on stand with wheels) - manual



### Approx. weight and dim.:

Cm: 125x60x60h  
Net Weight: kg 52  
Gross Weight: kg 70

VB 11204



## VB 11206S MULTILINK SUSPENSIONS (on stand with wheels) – static

Multilink system is an independent vehicle suspension type with multiple arms (5). It is mainly used for the rear axle in order to dampen the vibrations.

### Main technical specifications:

- Used on Alfa Romeo, Mercedes, etc. cars
- Spherical/ball joint for each arm

### Approx. weight and dim.:

Cm: 170x75x100h  
 Net Weight: kg 84  
 Gross Weight: kg 150



Indicative picture for reference only

## VB 10636 HYDRAULIC McPHERSON SHOCK ABSORBER

## VB 10637 HYDRAULIC SHOCK ABSORBER

## VB 10638 GAS SHOCK ABSORBER

### VB 10636

#### Approx. weight and dim.:

Cm: 65x25x20h  
 Net Weight: kg 8  
 Gross Weight: kg 10

### VB 10637

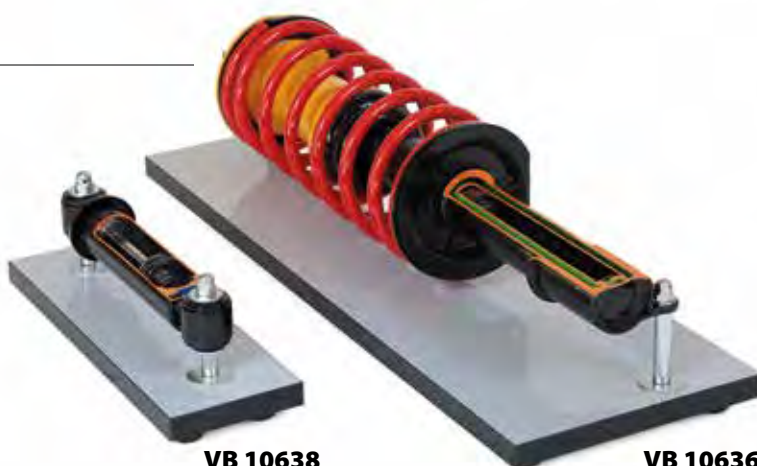
#### Approx. weight and dim.:

Cm: 30x10x10h  
 Net Weight: kg 1,5  
 Gross Weight: kg 2

### VB 10638

#### Approx. weight and dim.:

Cm: 30x10x10h  
 Net Weight: kg 1,5  
 Gross Weight: kg 2



VB 10638

VB 10636

## **VB 11082M HYBRID TRANSMISSION MG (MOTOR/GENERATOR) Toyota Prius (on stand with wheels) - manual**

The Motor Generator 1 (MG1) operates as the control element for the power splitting planetary gear set. It recharges the HV battery and also supplies electrical power to drive Motor Generator 2 (MG2). MG1 effectively controls the continuously variable transmission function of the transaxle and operates as the engine starter.



### **Approx. weight and dim.:**

Cm:	60x70x65h
Net Weight:	kg 100
Gross Weight:	kg 130

Indicative picture for reference only

## **VB 10990M GEARBOX 5 SPEEDS + REVERSE (on stand with wheels) - manual**

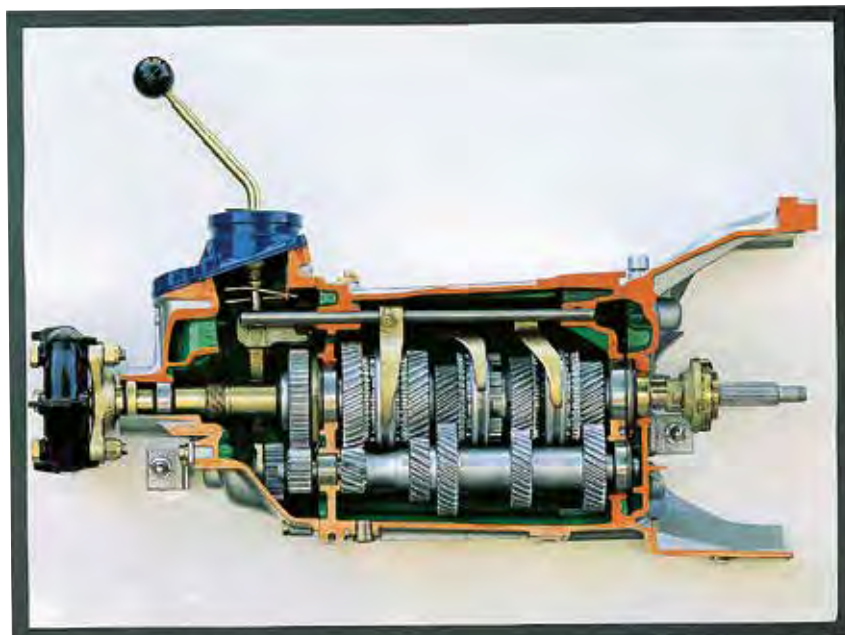
With possibility of selecting any speed.

*Operated manually through a hand wheel.*

### **VB 10990M**

#### **Approx. weight and dim.:**

Cm:	90x65x50h
Net Weight:	kg 50
Gross Weight:	kg 75



**VB 11082**

**VB 10990**

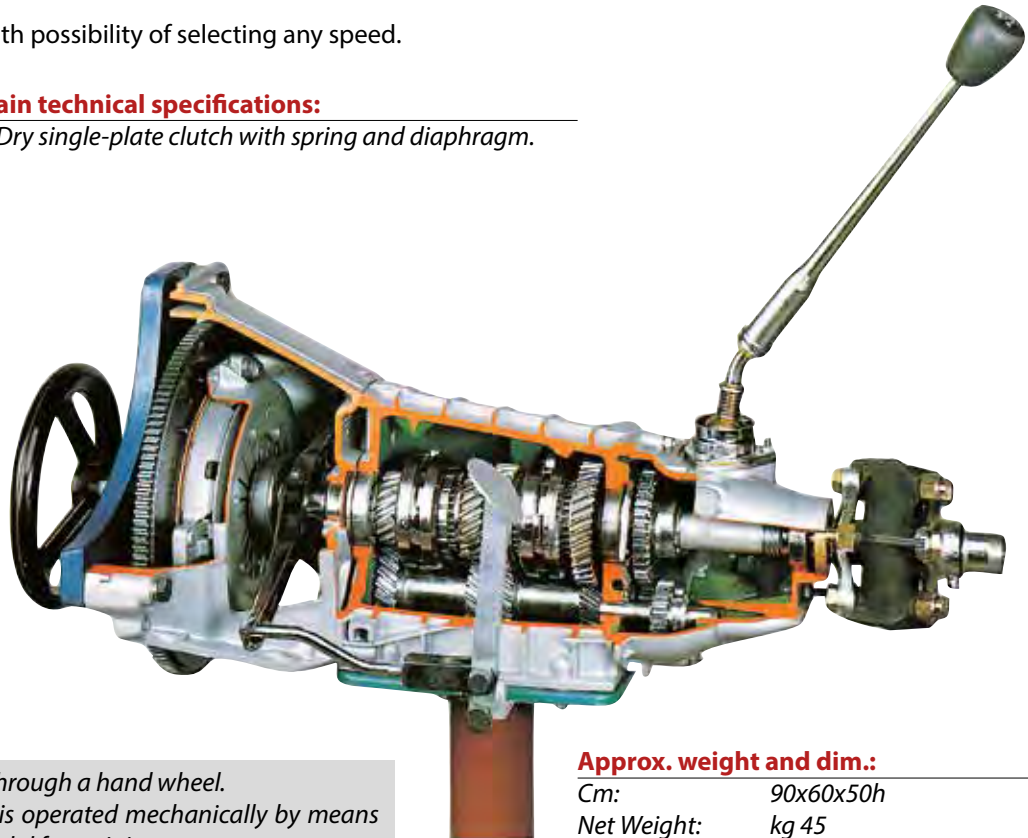
# VB 11020

## VB 11020M GEARBOX WITH CLUTCH 4 FORWARD SPEED + REVERSE (on stand with wheels) - manual

With possibility of selecting any speed.

### Main technical specifications:

- Dry single-plate clutch with spring and diaphragm.



Operated through a hand wheel.  
The clutch is operated mechanically by means  
of a foot pedal for training purposes.

### Approx. weight and dim.:

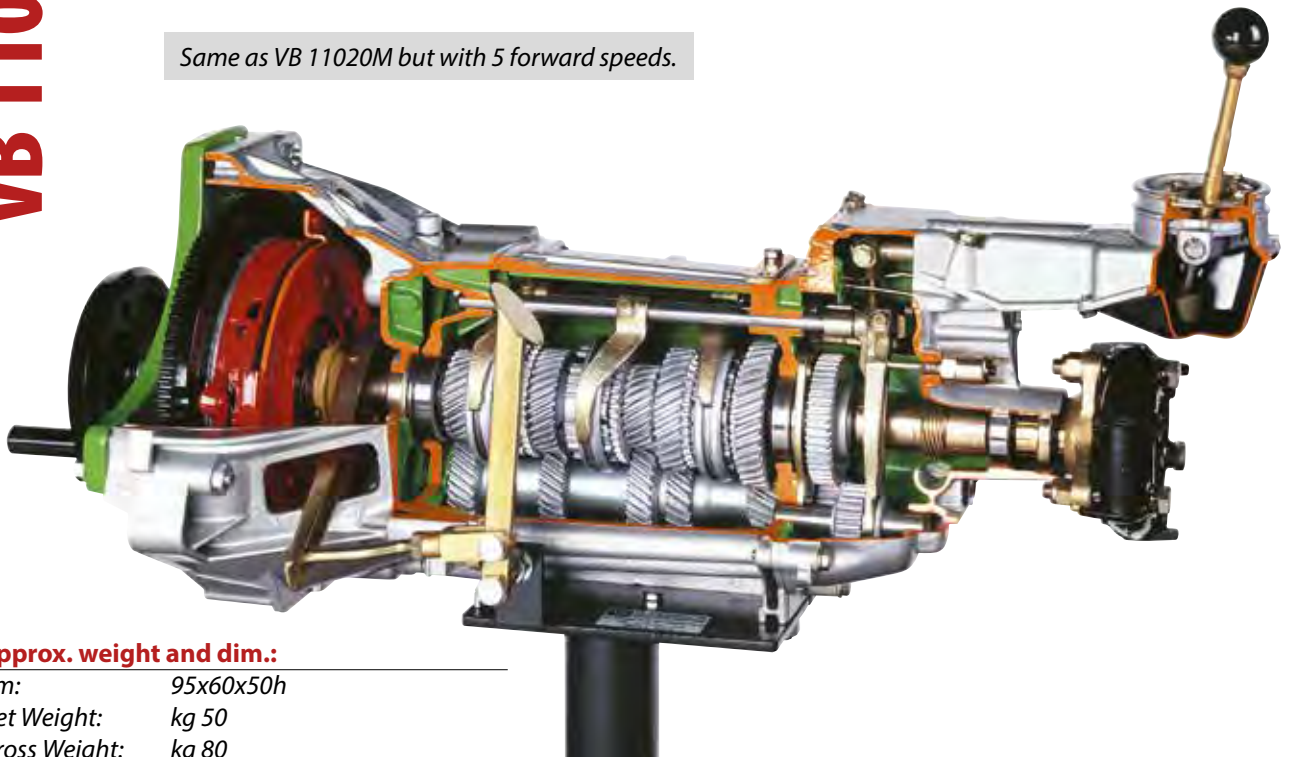
Cm: 90x60x50h  
Net Weight: kg 45  
Gross Weight: kg 65

Indicative picture for reference only

# VB 11030

## VB 11030M GEARBOX WITH CLUTCH 5 FORWARD SPEEDS + REVERSE (on stand with wheels) - manual

Same as VB 11020M but with 5 forward speeds.



### Approx. weight and dim.:

Cm: 95x60x50h  
Net Weight: kg 50  
Gross Weight: kg 80

These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts.  
Many parts have been chromium, plated and galvanized for a longer life.



**VB 11005M GEARBOX WITH DIFFERENTIAL 5 FORWARD SPEED + REVERSE**  
**(on stand with wheels) - manual**

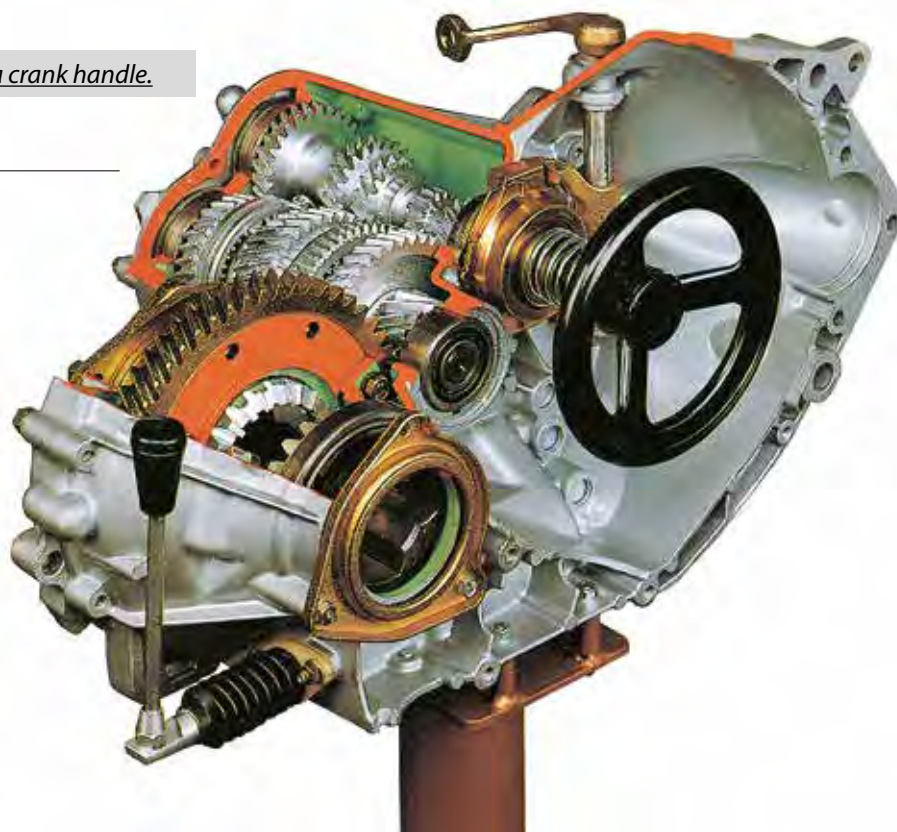
*Operated manually through a crank handle.*

**Approx. weight and dim.:**

Cm: 60x60x60h

Net Weight: kg 50

Gross Weight: kg 70

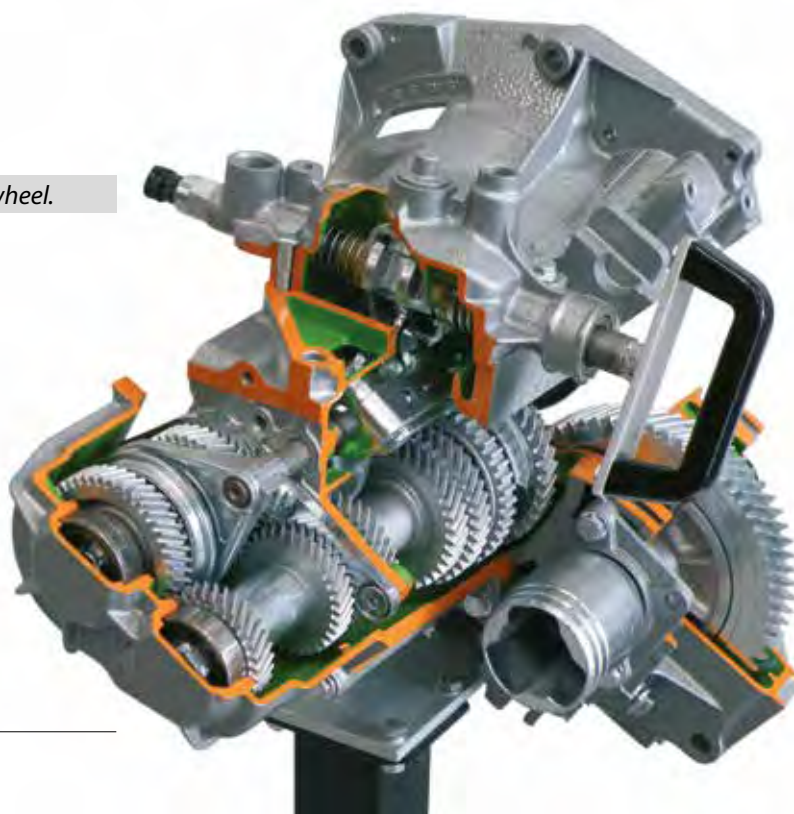


**VB 11005**

*These cutaways are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts, cross-sections.  
Many parts have been chromium, plated and galvanized for a longer life.*

**VB 11006M GEARBOX WITH DIFFERENTIAL 6 FORWARD SPEEDS + REVERSE**  
**(on stand with wheels) - manual**

*Operated manually through a hand wheel.*



**VB 11006**

**Approx. weight and dim.:**

Cm: 70x70x80h

Net Weight: kg 40

Gross Weight: kg 55

*Indicative picture for reference only*

# VB 10788

## VB 10788M GEARBOX WITH DIFFERENTIAL 5 FORWARD SPEED + REVERSE + HYDRAULIC CONTROL CLUTCH (on support) - manual



Sectioned gearbox with working non-sectioned hydraulic clutch. The movement of the clutch disc is visible when applying pressure on the pedal. Gears can be selected by means of a mechanical lever.

### Approx. weight and dim.:

Cm:	60x60x60h
Net Weight:	kg 60
Gross Weight:	kg 90

Indicative picture for reference only

# VB 10789

## VB 10789M FRONT DRIVE GEARBOX WITH DIFFERENTIAL 5 FORWARD SPEEDS + REVERSE + MECHANICAL FUNCTIONING OF THE CLUTCH (on support) - manual



Just pushing the pedal you can observe the mechanical functioning of the clutch

### Approx. weight and dim.:

Cm:	70x70x80h
Net Weight:	kg 65
Gross Weight:	kg 95



## VB 11040M AUTOMATIC TRANSMISSION (on stand with wheels) - manual



### Main technical specifications:

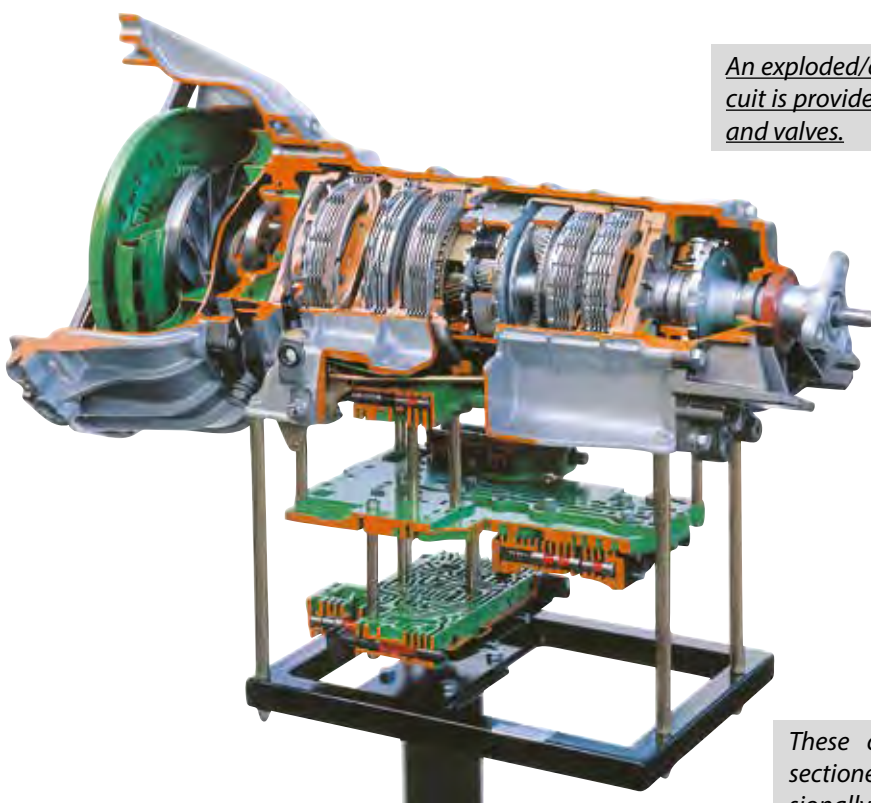
- Hydraulic converter
- Epicyclic gear with 3 forward speeds + reverse
- Multiple-plate clutches
- Control valves

Operated manually by means of a crank handle applied on the converter.

### Approx. weight and dim.:

Cm: 100x65x70h  
Net Weight: kg 70  
Gross Weight: kg 90

## VB 11060M AUTOMATIC TRANSMISSION REAR DRIVE 5 FORWARD SPEED + REVERSE WITH ELECTRONIC CONTROL (on stand with wheels) - manual



An exploded/cutaway view of the hydraulic circuit is provided to better show its various ducts and valves.

### Approx. weight and dim.:

Cm: 90x60x100h  
Net Weight: kg 60  
Gross Weight: kg 85

*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate among the various parts. Many parts have been chromium, plated and galvanized for a longer life.*

**VB 11040**

**VB 11060**

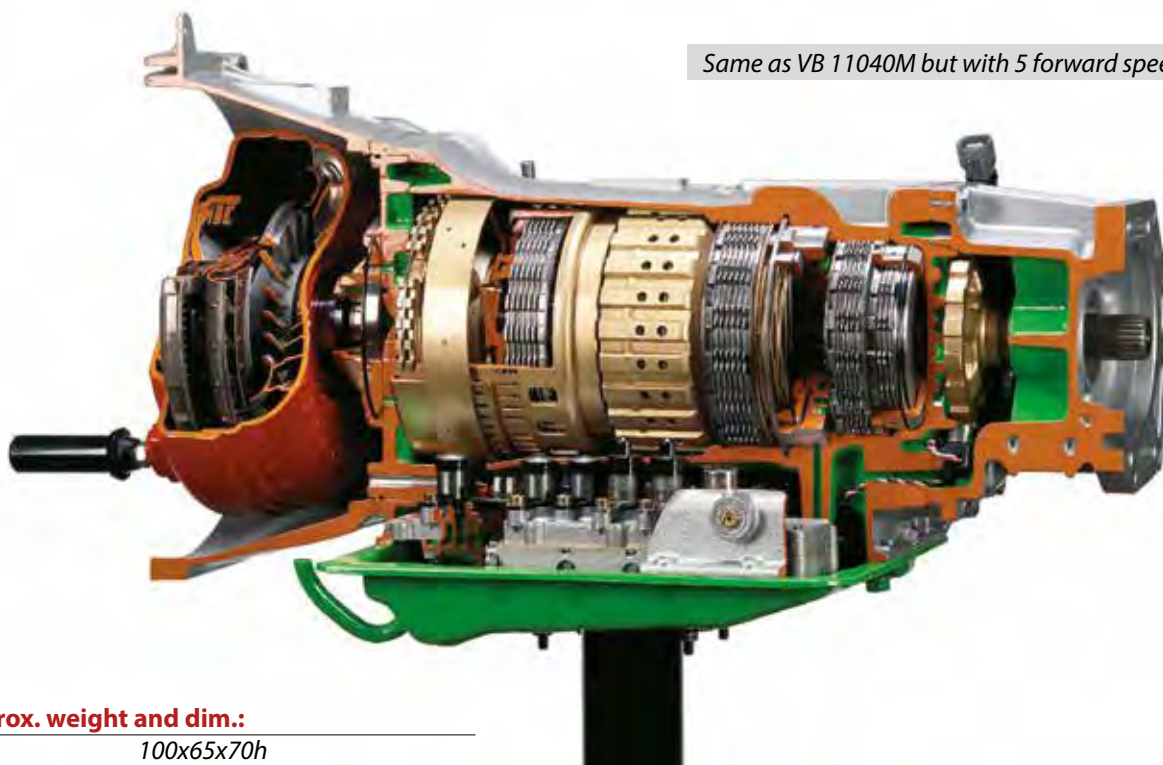
Indicative picture for reference only



# VB 11042

## VB 11042M AUTOMATIC TRANSMISSION 5 FORWARD SPEED + REVERSE (on stand with wheels) - manual

Same as VB 11040M but with 5 forward speeds.



### Approx. weight and dim.:

Cm:	100x65x70h
Net Weight:	kg 75
Gross Weight:	kg 100

These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts.  
Many parts have been chromium, plated and galvanized for a longer life.

Indicative picture for reference only

# VB 11063

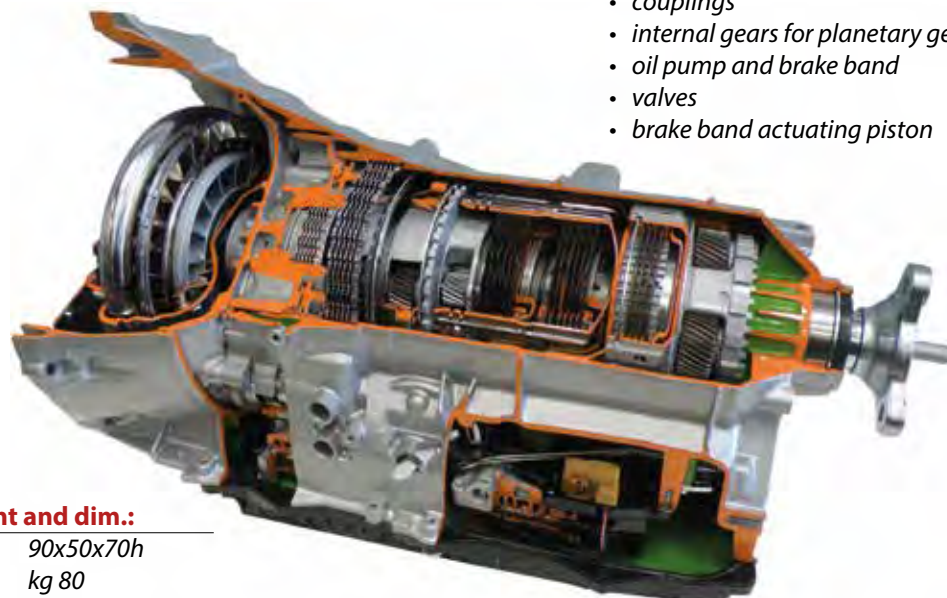
## VB11063/6M AUTOMATIC GEARBOX 6 SPEEDS + REVERSE (on base) - manual

## VB11063/7M AUTOMATIC GEARBOX 7 SPEEDS + REVERSE (on base) - manual

### 8 SPEEDS VERSION AVAILABLE

### Main technical specifications:

- torque converter with lock-up clutch
- couplings
- internal gears for planetary gear sets
- oil pump and brake band
- valves
- brake band actuating piston



### Approx. weight and dim.:

Cm:	90x50x70h
Net Weight:	kg 80
Gross Weight:	kg 110

## **VB 11061M AUTOMATIC ZF 5HP 4WD TRANSMISSION (on stand with wheels) – manual**

### **Main technical specifications:**

- 4 wheel drive
- 5 forward speeds + reverse
- Torque converter
- Sectioned hydraulic circuit
- Sectioned valves
- Sectioned front differential
- Sectioned epicyclical gear
- Multi disk clutch



### **Approx. weight and dim.:**

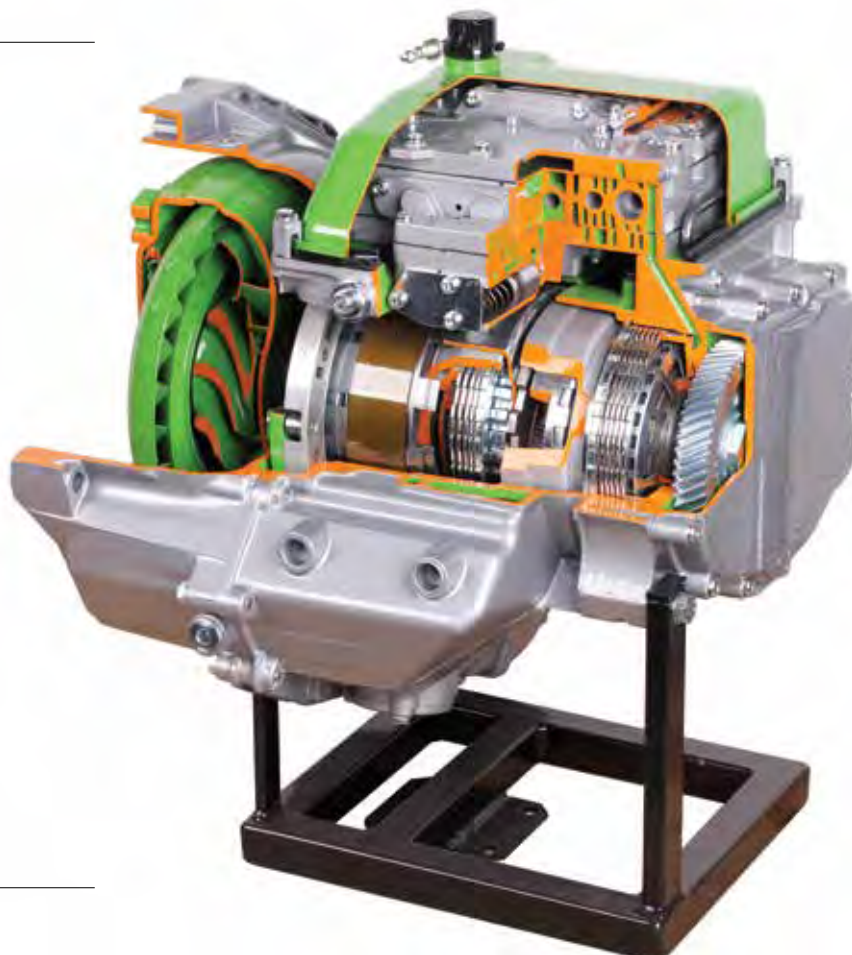
Cm: 100x80x75h  
Net weight: kg 125  
Gross Weight: kg 160

Indicative picture for reference only

## **VB 11062M AUTOMATIC TRANSMISSION FRONT DRIVE 4 SPEEDS + REVERSE (on stand with wheels) – manual**

### **Main technical specifications:**

- Hydraulic torque converter
- Front differential
- Epicyclical gear train
- Multi disk clutches



### **Approx. weight and dim.:**

Cm: 50x70x70h  
Net weight: kg 75  
Gross Weight: kg 140

**VB 11061**

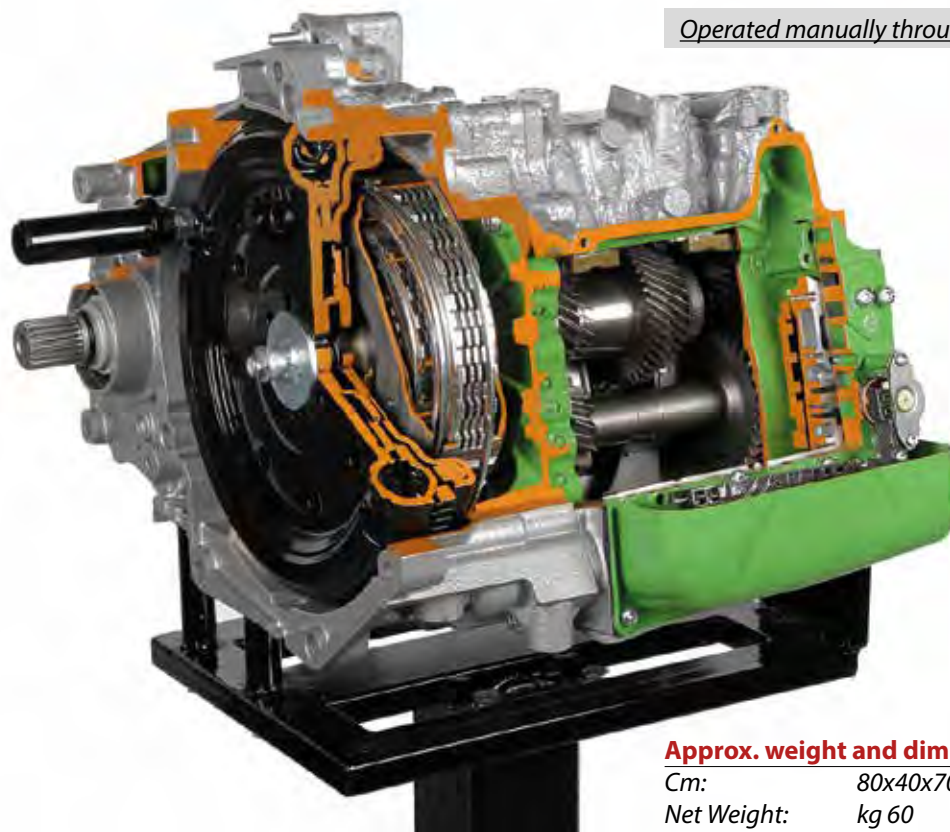
**VB 11062**



# VB 11064

## VB 11064M DSG - DIRECT-SHIFT GEARBOX (on stand with wheels) - manual

Also referred to as double-clutch gearbox, it has two main shafts; one for the odd gears and the other for the even gears. Each shaft is inserted into one of the discs of the coaxial clutches. The shafts connected to the clutches can transmit motion to an auxiliary shaft having the relevant speed-gears by means of a mechanism.



*Operated manually through a crank handle.*

### **Approx. weight and dim.:**

Cm: 80x40x70h  
Net Weight: kg 60  
Gross Weight: kg 85

# VB 11066

## VB 11066M ROBOTISED TIP-TRONIC GEARBOX (on stand with wheels) - manual

Electronically-assisted manual gearbox in which the driver's command is translated into motion of the clutch sleeve timers by means of levers similar to those of the mechanical gearbox, operated by electro-magnetic, electro-hydraulic or electro-pneumatic actuators.



*Operated manually through a crank handle.*

### **Approx. weight and dim.:**

Cm: 60x50x80h  
Net Weight: kg 35  
Gross Weight: kg 55

*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts. Many parts have been chromium, plated and galvanized for a longer life.*

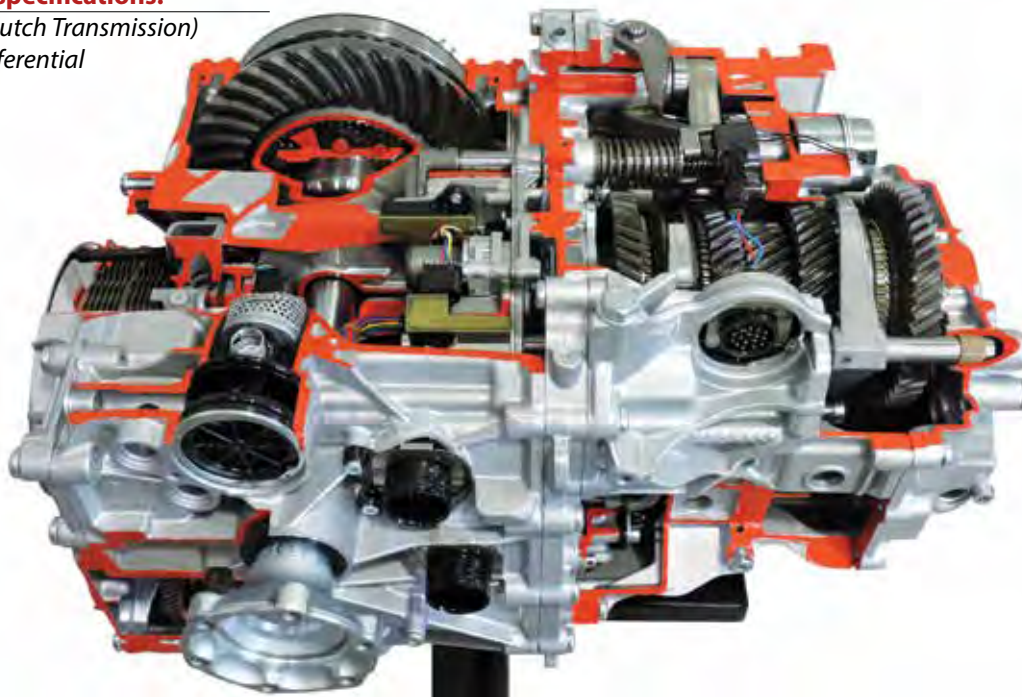
*Indicative picture for reference only*



## **VB 11067M GETRAG DCT 7 SPEEDS TRANSMISSION USED ON FERRARI/MERCEDES VEHICLES (on stand with wheels) – manual**

### **Main technical specifications:**

- DCT (Double Clutch Transmission)
- Self-locking differential
- Gears
- Mechatronics
- Oil filter
- Oil pump
- Shift forks



### **Approx. weight and dim.:**

Cm: 80x80x70h  
Net weight: kg 140  
Gross Weight: kg 185

## **VB 11068M CONTINUOUSLY VARIABLE TRANSMISSION (CVT) GEARBOX (on stand with wheels) - manual**

Special gearbox that can change continuously through an infinite number of effective gear ratios between maximum and minimum values. There are two V-belt pulleys that are split perpendicular to their axes of rotation, with a V-belt running between them.

### **Main technical features:**

- Electro-magnetic clutch
- Forward and reverse insertion lever
- Primary pulley
- Secondary pulley
- Roller belt
- Final reduction unit
- Hydraulic command unit

*Operated manually through a crank handle.*



### **Approx. weight and dim.:**

Cm: 60x50x80h  
Net Weight: kg 45  
Gross Weight: kg 75

Indicative picture for reference only

**VB 11061**

**VB 11068**

# VB 11071

## VB 11071M HEAVY TRUCK GEARBOX ZF 5HP (on stand with wheels) -manual



- Sectioned heavy truck gearbox. Composed by:
- Torque converter with lock-up clutch
  - Hydrodynamic retarder
  - Rotating multi-disc clutches
  - Fixed-position multi-disc brakes
  - Oil cooler with oil-water exchanger
  - Electro- valves

On stand with wheels – Operated manually through a crank handle.

### Approx. weight and dim.:

Cm:	100x70x85h
Net Weight:	kg 295
Gross Weight:	kg 350

# VB 11069

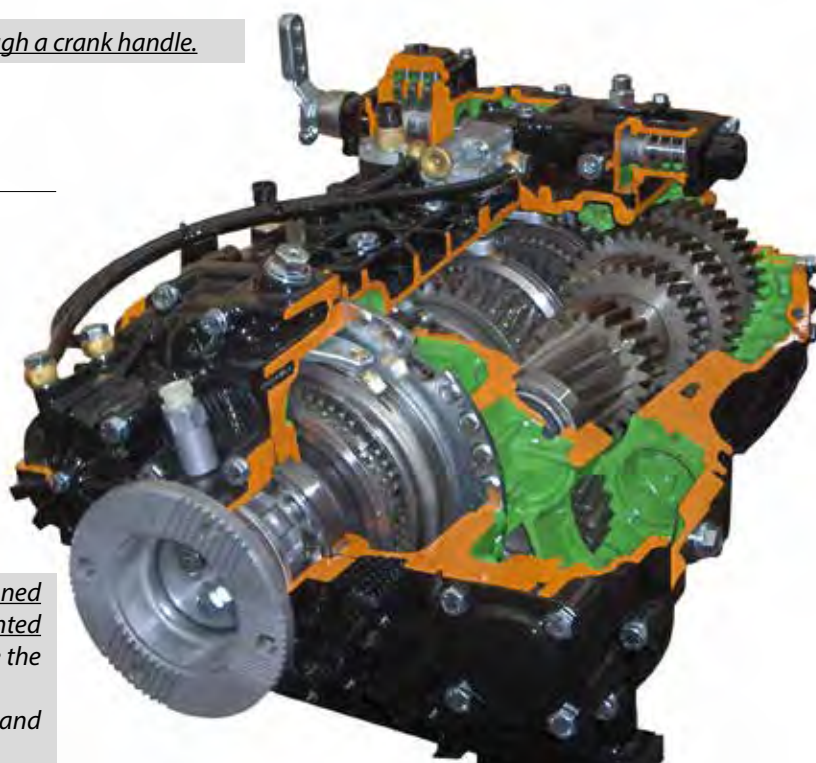
## VB 11069M ZF 16S ECOSPLIT GEARBOX FOR HEAVY TRUCKS 16F + 2R (on stand with wheels) - manual

The gearbox is composed of a central box containing 4 forward speeds gearings and 2 reverse speeds gearings, epicyclic unit for selecting the speed-gears mounted on the base and over-gear on top. The over-gear allows to divide each gear into slow or fast obtaining 16 forward gears which can be inserted and geared down in sequence.

Operated manually through a crank handle.

### Approx. weight and dim.:

Cm:	90x110x130h
Net Weight:	kg 280
Gross Weight:	kg 380



These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts.

Many parts have been chromium, plated and galvanized for a longer life.

Indicative picture for reference only



## VB 11070M EATON FULLER 13 SPEED GEARBOX (on stand with wheels) - manual

Quick change gear box used in 300/400HP heavyweight vehicles with mechanical and pneumatic control.

It is a non-synchronized gearbox, the box is divided in 2 parts:

on the engine side are the 1st 2nd 3rd and 4th speed gears, reverse speed gears and extra low ratio pick-up speed gears.

All these gears are mechanically controlled by the change gear lever.

In the other part of the gearbox (on the output shaft side), there are the standard, low ratio and semi-low ratio speed gears, pneumatically controlled by the pre-selectors provided on the gear lever. This gearbox is made very sturdy by the presence of 2 auxiliary shafts sharing stress to an equal degree.

**VB 11070**



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### Approx. weight and dim.:

Cm:	110x100x130h
Net Weight:	kg 300
Gross Weight:	kg 400

Indicative picture for reference only

## VB 11080M GEARBOX WITH REDUCTION GEAR (on stand with wheels) - manual

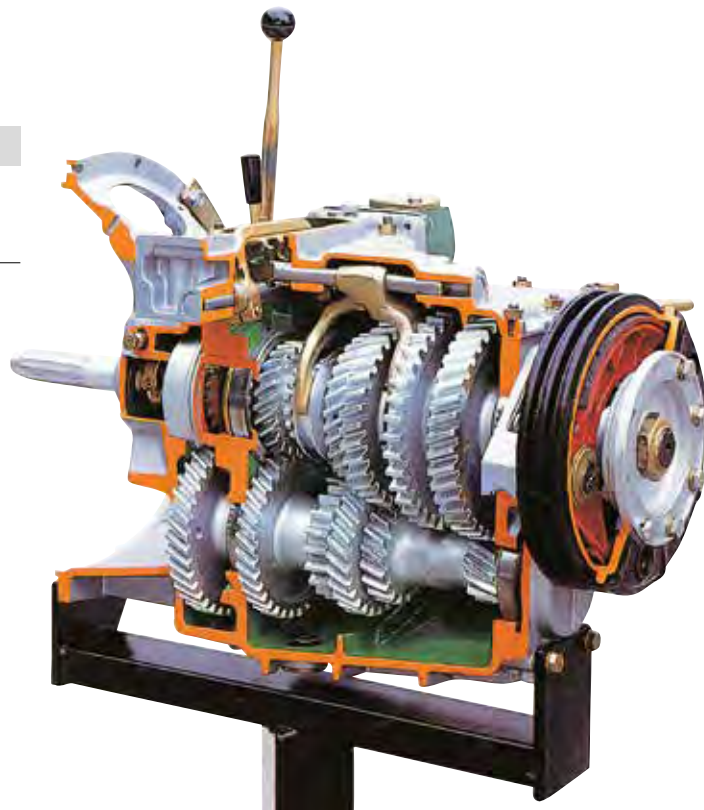
Gearbox for heavy vehicle.

*Operated manually through a crank handle.*

### Approx. weight and dim.:

Cm:	80x80x140h
Net Weight:	kg 150
Gross Weight:	kg 210

4 speeds + reverse gearbox with one lever for the speed selection one lever for the reducer insertion



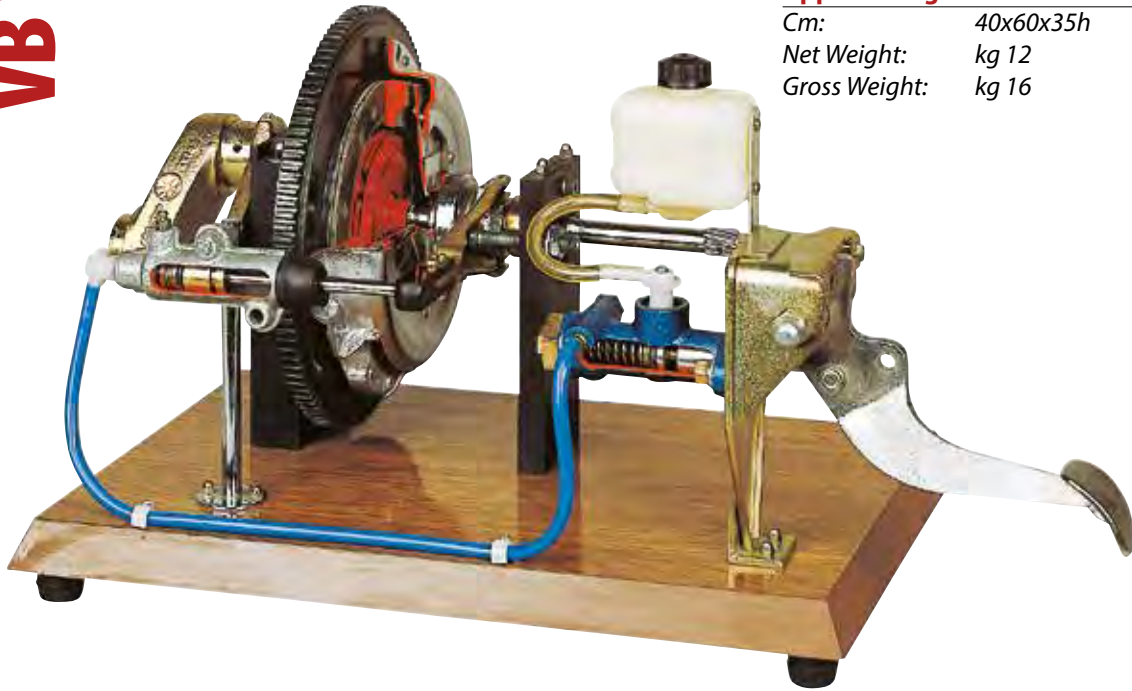
**VB 11080**



# VB 11100

## VB 11100S HYDRAULIC CONTROL CLUTCH (on base) - static

This panel shows the hydraulic circuit which controls a diaphragm clutch. The pump, cylinder and clutch units are fully sectioned.



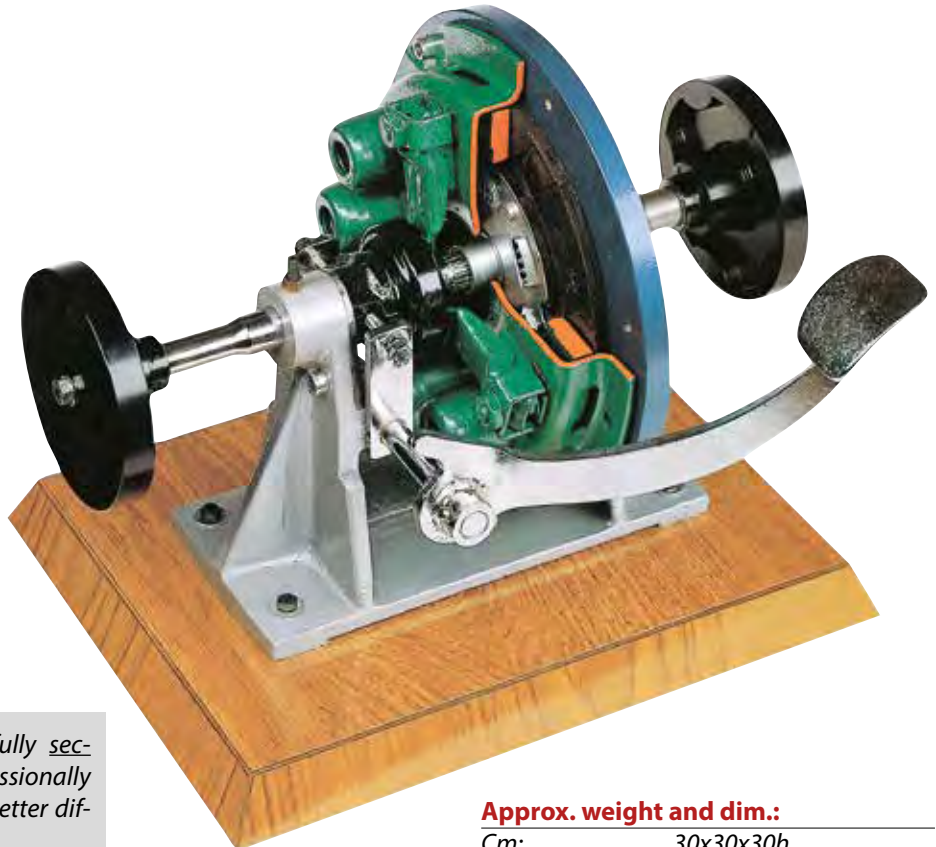
### Approx. weight and dim.:

Cm: 40x60x35h  
Net Weight: kg 12  
Gross Weight: kg 16

# VB 11110

## VB 11110M SINGLE DISC CLUTCH COIL SPRING (on base) - manual

Typical example of the most common car clutch, single disc type. Its operation can be clearly observed by pressing the foot control and rotating flywheel manually by means of the dedicated hand wheel.



*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts. Many parts have been chromium, plated and galvanized for a longer life.*

### Approx. weight and dim.:

Cm: 30x30x30h  
Net Weight: kg 6  
Gross Weight: kg 10

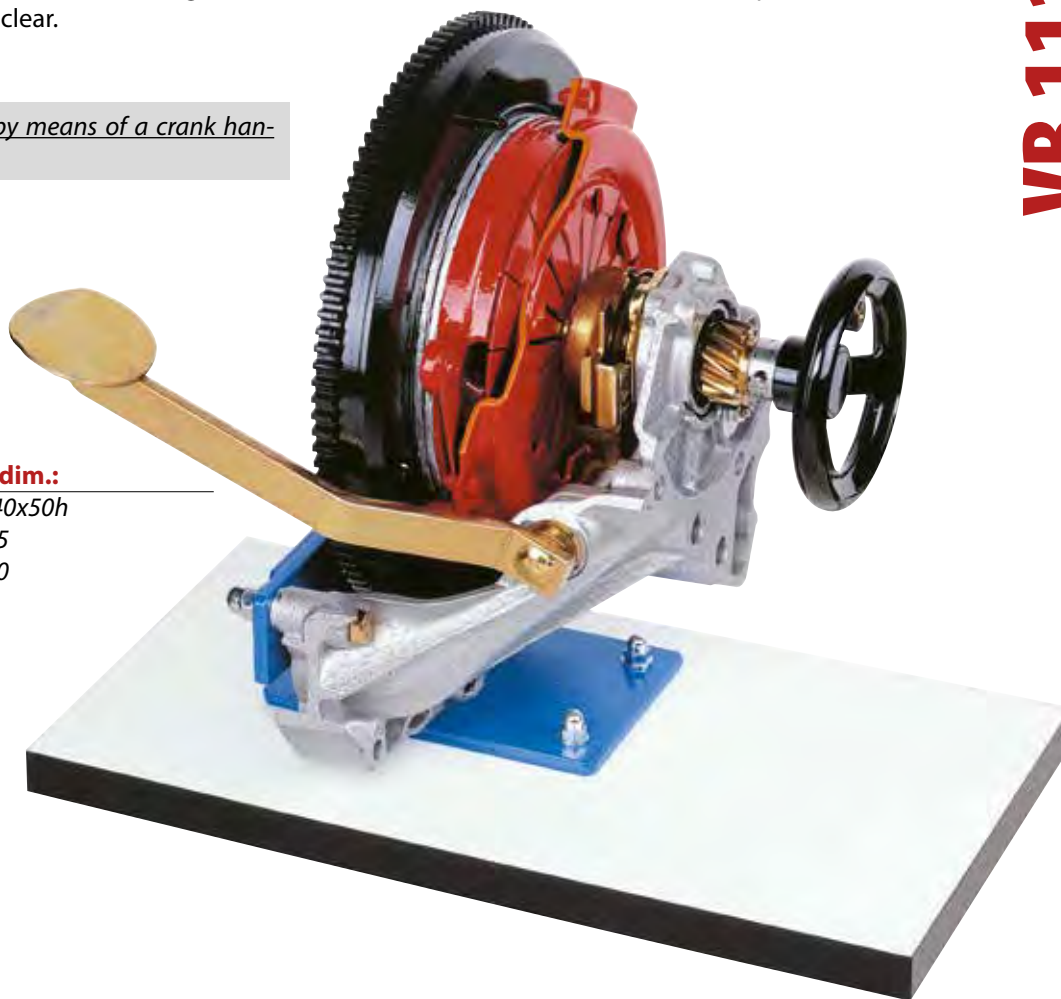
Indicative picture for reference only

## VB 11130M MEMBRANE SPRING CLUTCH (on base) - manual

Accurate section of a car clutch assembly.

By pressing the foot control and turning the hand wheel connected to the disc the clutch operation will become immediately clear.

*Operated manually by means of a crank handle.*



### Approx. weight and dim.:

Cm: 50x40x50h

Net Weight: kg 15

Gross Weight: kg 20

Indicative picture for reference only

## VB 11140S TORQUE CONVERTER (on base) - static

### Approx. weight and dim.:

Cm: 35x35x30h

Net Weight: kg 8

Gross Weight: kg 12



*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts.*

*Many parts have been chromium, plated and galvanized for a longer life.*

VB 11130

VB 11140

# VB 11090

## VB 11090S DOUBLE CLUTCH (HYDRAULIC + MECHANICAL) FOR CARS (on base) - static

### Approx. weight and dim.:

Cm: 40x35x40h

Net Weight: kg 27

Gross Weight: kg 35



# VB 11095

## VB 11095M DOUBLE CLUTCH (HYDRAULIC + MECHANICAL) FOR BUSES (on stand with wheels) - manual

Representation of a typical clutch used in buses, composed of a traditional mechanical dry clutch coupled to a hydraulic joint allowing soft starting.

*Operated manually through a crank handle.*

### Approx. weight and dim.:

Cm: 100x100x130h

Net Weight: kg 172

Gross Weight: kg 240

*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts.*

*Many parts have been chromium, plated and galvanized for a longer life.*



*Indicative picture for reference only*



## VB 11141M CENTRIFUGAL CLUTCH (on base) - manual

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Accurate section of a centrifugal clutch, moving parts type used in Mopeds.

### VB 11141

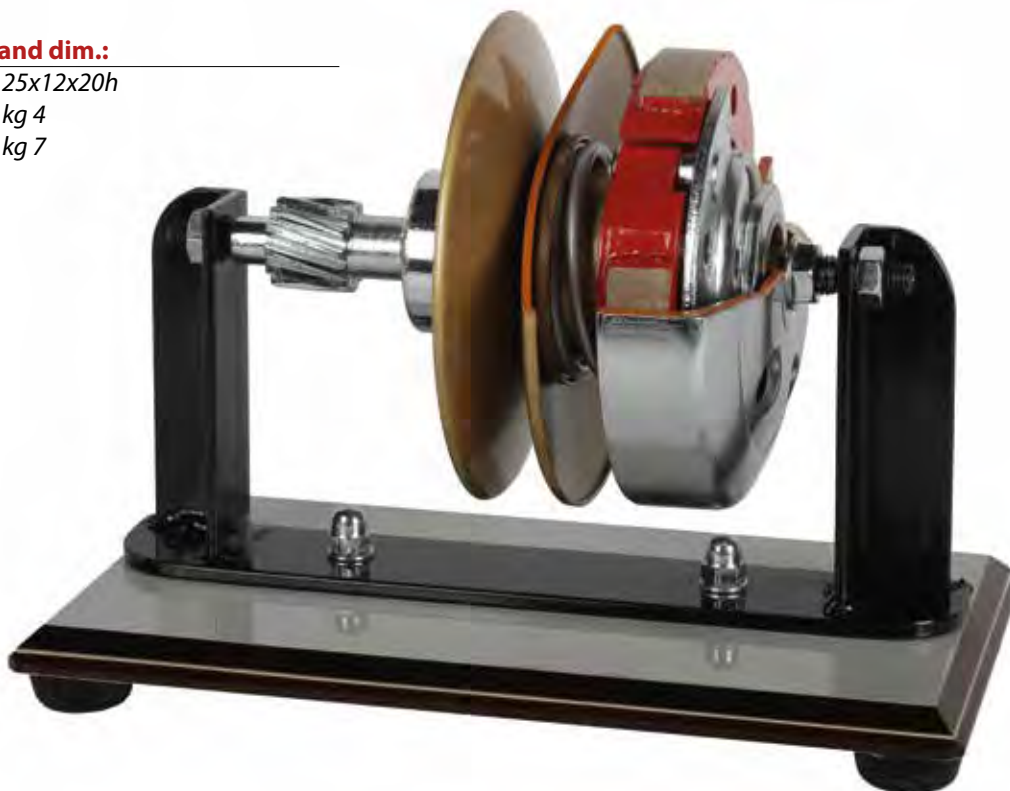
#### Approx. weight and dim.:

---

Cm: 25x12x20h

Net Weight: kg 4

Gross Weight: kg 7



Indicative picture for reference only

## VB 11142S MULTI DISK CLUTCH (on base) – static

---



#### Approx. weight and dim.:

---

Cm: 20x20x25h

Net Weight: kg 4

Gross Weight: kg 6

VB 11141

VB 11142

# VB 11200

## VB 11200M REAR AXLE WITH DIFFERENTIAL (on stand with wheels) - manual

Rigid rear axle complete with differential unit, axle shafts and rear drum brakes, carefully sectioned to show the operation of the differential unit where planetary gears, the ring gear and the pinion are clearly displayed. A brake drum and a cylinder are sectioned too.

*Operated manually through a crank handle.*



### **Approx. weight and dim.:**

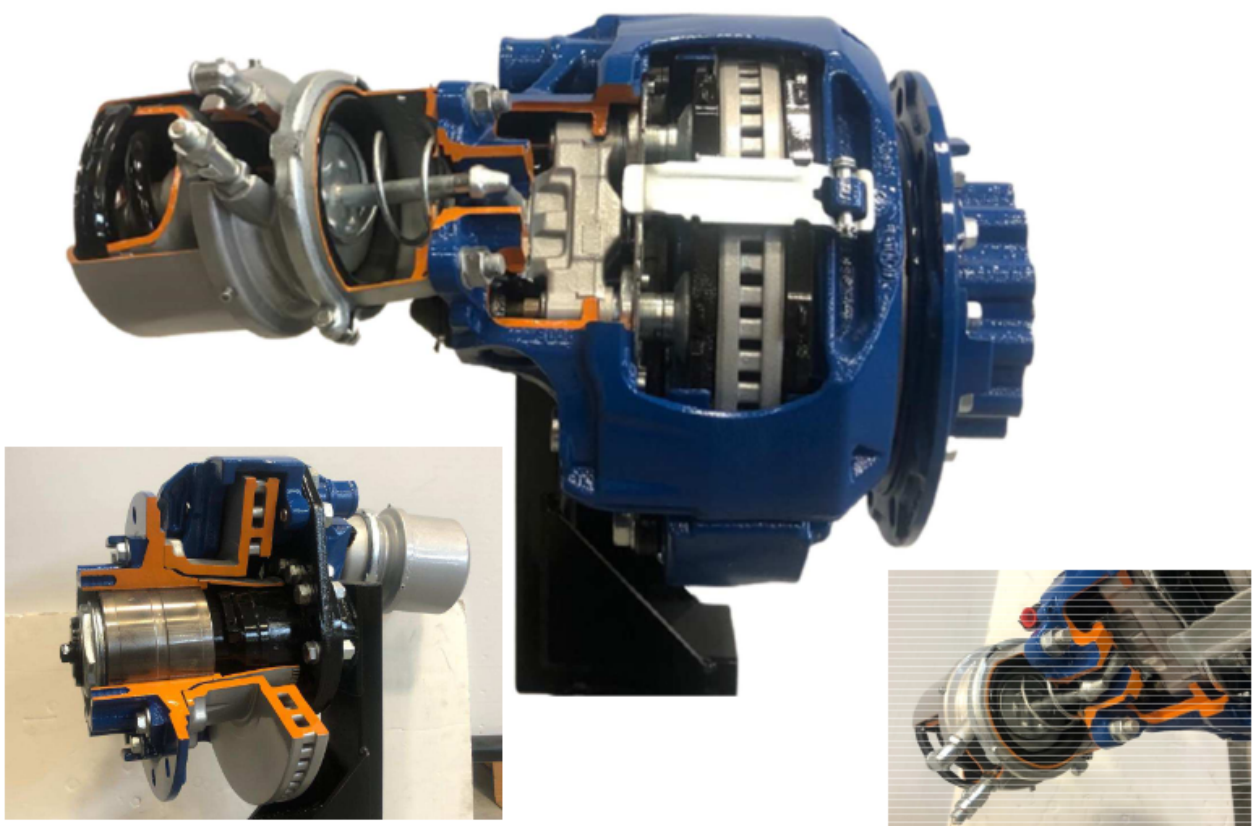
Cm:	120x70x65h
Net Weight:	kg 40
Gross Weight:	kg 55

# VB 11197M

## VB11197M - CUTAWAY IVECO TRUCK DISC BRAKE WITH PNEUMATIC CONTROL

Accurate section of a pneumatic controlled disc brake mounted on IVECO Stralis truck from 2002

Approx. weight and dimensions of the packed equipment: cm 80x60x100 kg 200 (net weight 150 kg)



*Indicative picture for reference only*

**VB 11198M - REAR AXLE HEAVY TRUCK WITH LOCKING DIFFERENTIAL (on stand with wheels) –manual**

**VB 11199M REAR AXLE HEAVY TRUCK WITHOUT LOCKING DIFFERENTIAL (on stand with wheels) –manual**

Rear axle for heavy truck with locking differential.

Complete section of the rear axle. The main components are:

- Bevel gear (pinion – crown)
- Differential (satellite and planetary) with locking differential
- Axle shafts
- Reducer and planetary on the hub
- Brakes with jaws/drum
- Double air brake element

*Indicative picture for reference only*



*On stand with wheels – Operated manually through a crank handle.*



**Approx. weight and dim.:**

Cm: 235x95x1050h

Net Weight: kg 590

Gross Weight: kg 700

**VB 11198 - VB 11199**



# VB 11290

## VB 11290M LOCKING DIFFERENTIAL 100% (on base) - manual

Full locking differential usually mounted on off-road vehicles.



### Approx. weight and dim.:

Cm:	50x35x35h
Net Weight:	kg 24
Gross Weight:	kg 32

Indicative picture for reference only

# VB 11291

## VB 11291M DIFFERENTIAL WITH ELECTRONIC CONTROL WITH ELECTRO HYDRAULIC JOINTS(HALDEX Type) (on table support) – manual

### Main technical specifications:

- Pinion-crown group
- Differential group
- Multi disk clutch
- Control valve
- Hydraulic piston
- Outlet shafts



### Approx. weight and dim.:

Cm:	40x60x40h
Net Weight:	kg 20
Gross Weight:	kg 30

## VB 11250M VISCOUS COUPLING DIFFERENTIAL (on table stand) - manual

Accurate section of an assembly including a Ferguson type viscous coupling differential for four-wheel drive (4x4) motorcars.

### Approx. weight and dim.:

Cm: 30x40x30h  
Net Weight: kg 20  
Gross Weight: kg 25



## VB 11260M SELF-LOCKING HYPOID DIFFERENTIAL (on table stand) - manual

Accurate section of an assembly including hypoid bevel gear pair with self-locking differential.

### Approx. weight and dim.:

Cm: 40x30x40h  
Net Weight: kg 25  
Gross Weight: kg 30



## VB 11270M TORSEN DIFFERENTIAL (on table stand) - manual

Accurate section of Torsen bevel gear pair differential assembly, to show the complex operation system which works according to the worm screw principle. Fitted to top-of-the-range four-wheel drive (4x4) motorcars.

### Approx. weight and dim.:

Cm: 40x40x40h  
Net Weight: kg 20  
Gross Weight: kg 25



*These cutaway items are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts. Many parts have been chromium, plated and galvanized for a longer life.*

Indicative picture for reference only

VB 11250

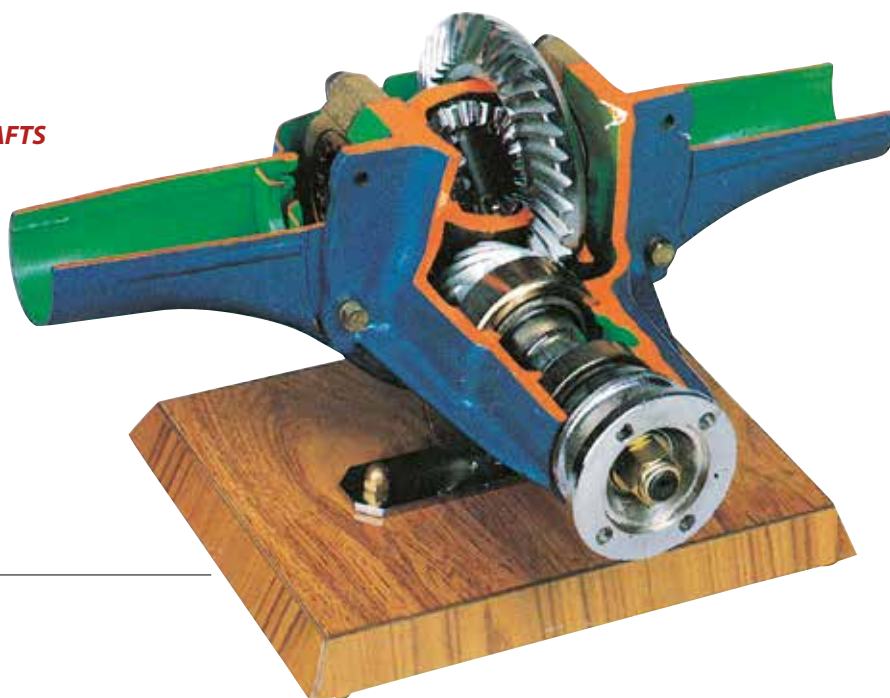
VB 11260

VB 11270

# VB 11280

## VB 11280M HYPOID DIFFERENTIAL (on base) - manual

COMPLETE WITH SHAFTS



**Approx. weight and dim.:**

Cm: 50x40x30h

Net Weight: kg 30

Gross Weight: kg 40

# VB 11281

## VB 11281S CROWN AND PINION DIFFERENTIAL GROUP (on base) - static



**Approx. weight and dim.:**

Cm: 30x40x26h

Net Weight: kg 8

Gross Weight: kg 10

Indicative picture for reference only



## VB 11300M 4X4 VEHICLE TRANSMISSION ASSEMBLY WITH 5 SPEED MECHANICAL GEARBOX (on stand with wheels) - manual

Transmission assembly fitted to most 4x4 cross-country vehicles.  
The various parts are supplied as accurate real cutaway, connected together to show their operation in an easy and immediately understandable manner.

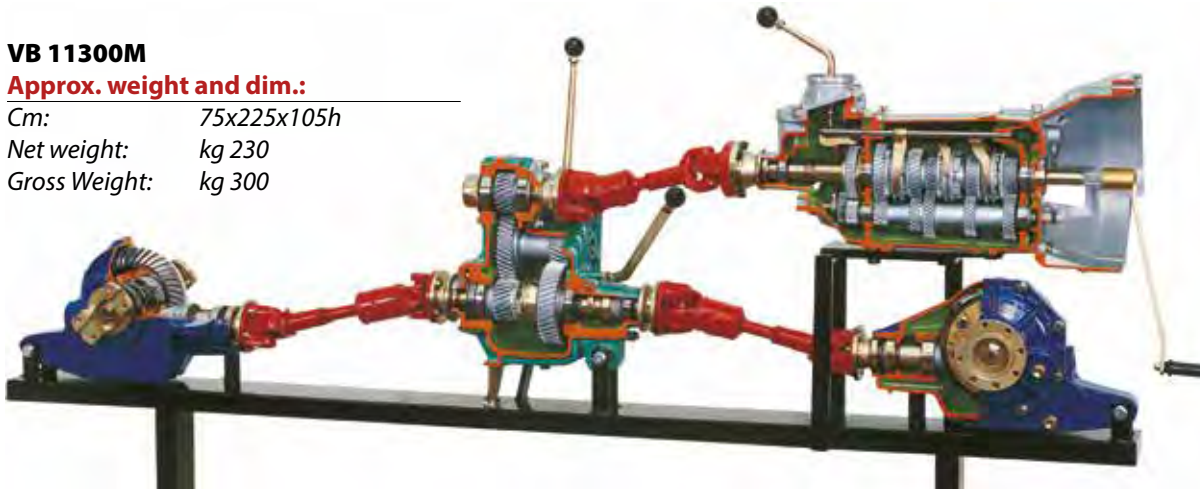
### VB 11300M

#### Approx. weight and dim.:

Cm: 75x225x105h

Net weight: kg 230

Gross Weight: kg 300



VB 11300

Indicative picture for reference only

### VB 11300M

#### Main technical specifications:

- Gearbox: 5 forward speeds+ reverse
- 2-Speeds reduction gear
- Movement restorer with front wheel drive manual control
- Drive shafts with universal joints
- **Self-locking hypoid differentials**
- Manual operation

## VB 11084M - 4WD TRANSFER CASE WITH LOCKING DIFFERENTIAL (on base) – manual

Speed reducer transfer case for 4WD cars. It is permanent with possibility of differential locking in order to make the front axle independent from the rear one.

On base – Operated manually through a crank handle.



VB 11084

#### Approx. weight and dim.:

Cm: 40x40x60h

Net Weight: kg 25

Gross Weight: kg 40

# VB 10790

## VB 10790M EDUCATIONAL MODEL OF PLANETARY-GEAR (on base) - manual

This model shows very clearly and instructively the operating system of a planetary gear and the available gearshift possibilities.  
Typical as in every automatic motorcar transmission there is a planetary gear.



### Approx. weight and dim.:

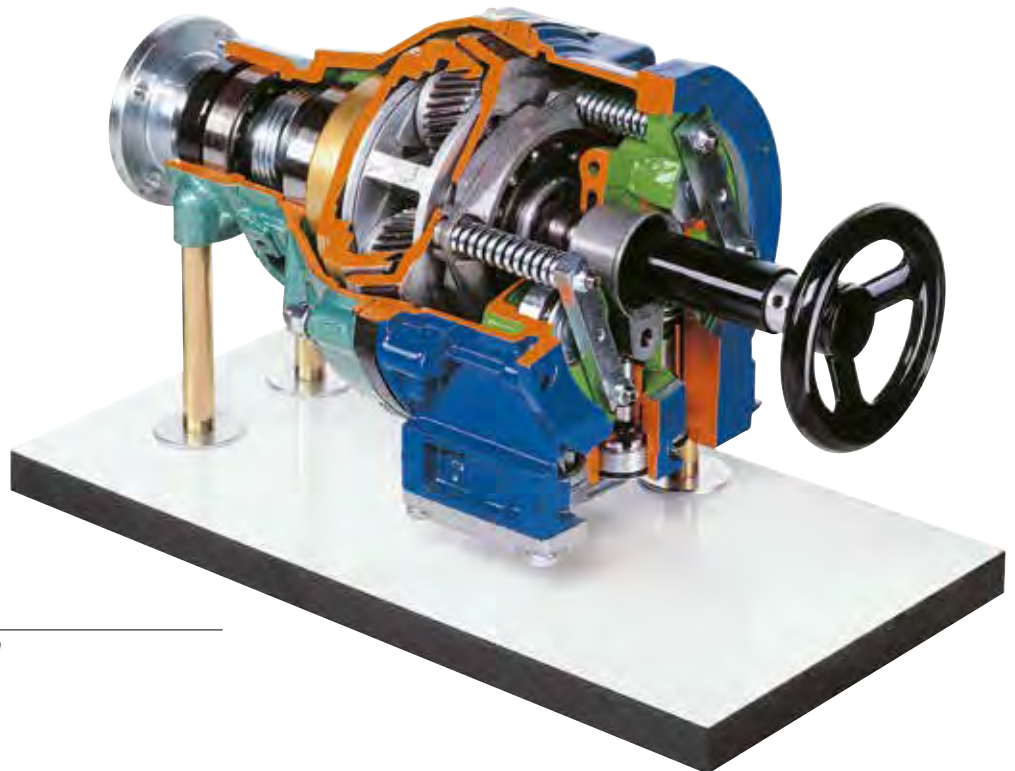
Cm: 25x25x30h  
Net Weight: kg 5  
Gross Weight: kg 8

# VB 11150

## VB 11150M OVERDRIVE (on base) - manual

Epicyclic overdrive cutaway model, with electromagnetic actuator, of the type fitted to Volvo motorcars.

*Operated manually through a crank handle.*



### Approx. weight and dim.:

Cm: 50x30x40h  
Net Weight: kg 15  
Gross Weight: kg 20

*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts and cross-sections.  
Many parts have been chromium, plated and galvanized for a longer life.*

Indicative picture for reference only

# VB 12040

## VB 12040S SELF-VENTILATING BRAKE APPARATUS WITH 4 SMALL PISTONS (on base) – static

Brake apparatus which can be installed either on front or rear wheels on high performances vehicles.

The section highlights:

- self-ventilating brake disk
- 4 pistons brake caliper with oil duct
- brake pads



### Approx. weight and dim.:

*Cm:* 50x50x50h

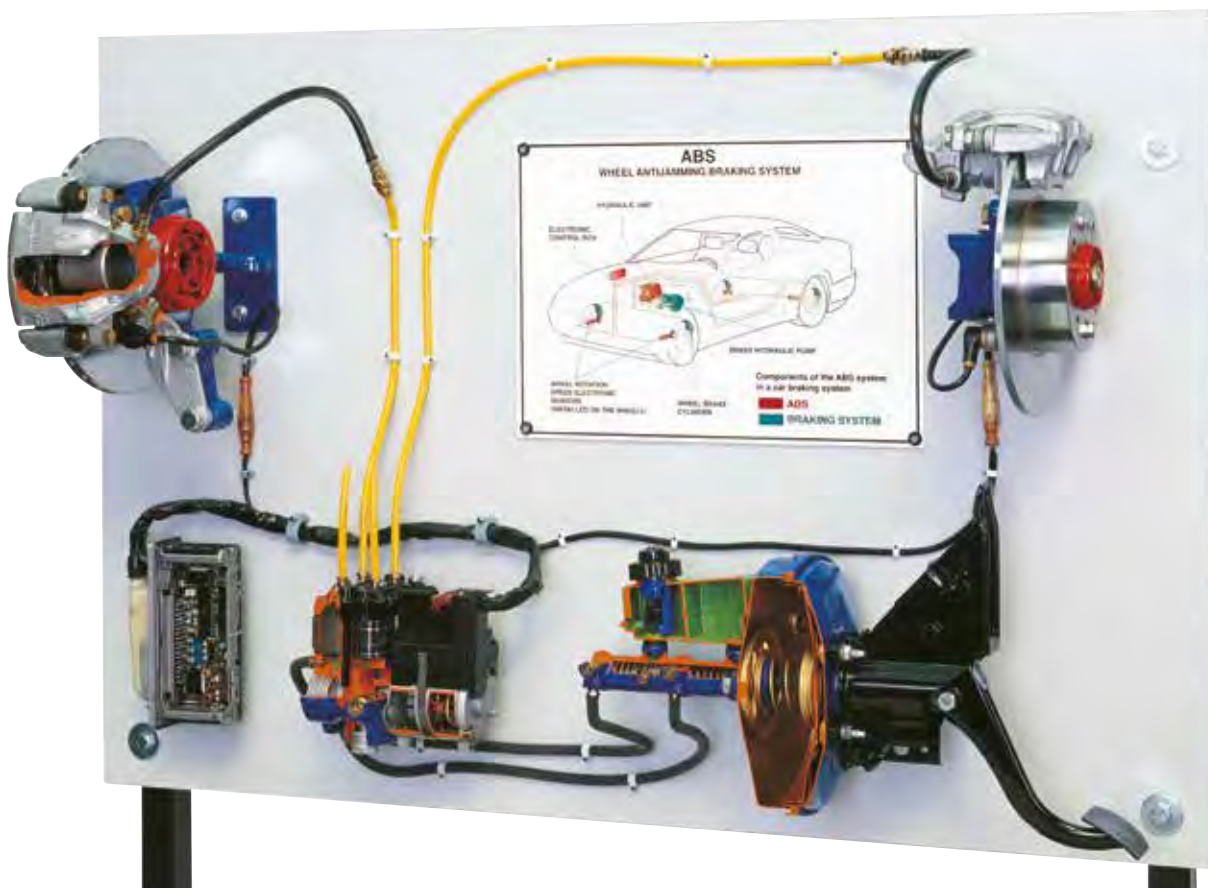
*Net Weight:* kg 18

*Gross Weight:* kg 25

*Indicative picture for reference only*



## VB 12230 ABS BRAKE BOARD (on stand with wheels) - static



Indicative picture for reference only

Educational model of a modern ABS braking system for motorcars. All the brake parts are provided as detailed cutaway models, connected together to enable easy understanding of the brake assembly operation.

The assembly consist of:

- Self-ventilating disc brake with phonic wheel and sensor
- Rear disc brake with phonic wheel and sensor
- Servo brake with foot control panel and brake pump
- Electronic control unit
- Oil tank

### Approx. weight and dim.:

Cm: 140x50x90h

Net Weight: kg 60

Gross Weight: kg 120

## VB 12251S ABS PUMP (on base) – static

## VB 12252S ESP PUMP (on base) – static



### VB 12251S

#### Approx. weight and dim.:

Cm: 40x35x40h

Net Weight: kg 8

Gross Weight: kg 15



### VB 12252S

#### Approx. weight and dim.:

Cm: 35x30x30h

Net Weight: kg 6

Gross Weight: kg 10

VB 12230

VB 12251 - VB 12252

# VB 12000

## VB 12000M DISC BRAKE (on base) - manual

Section of a disc brake, floating type. The small piston and the brake strips are clearly shown.

### Approx. weight and dim.:

Cm: 35x40x40h  
Net Weight: kg 11  
Gross Weight: kg 15



# VB 12010

## VB 12010M DRUM BRAKE (on base) - manual

Section of a drum brake. The cylinder and shoes are clearly shown.

*Operated manually through the parking brake lever.*

### Approx. weight and dim.:

Cm: 35x35x35h  
Net Weight: kg 8  
Gross Weight: kg 12



Indicative picture for reference only

# VB 12030

## VB 12030M DISC + DRUM BRAKE (on base) - manual

Particular brake for luxury cars composed of brake pump, oil tank and brake lever and disc brake in which there is a drum brake.

*Operated manually through the parking brake lever.*

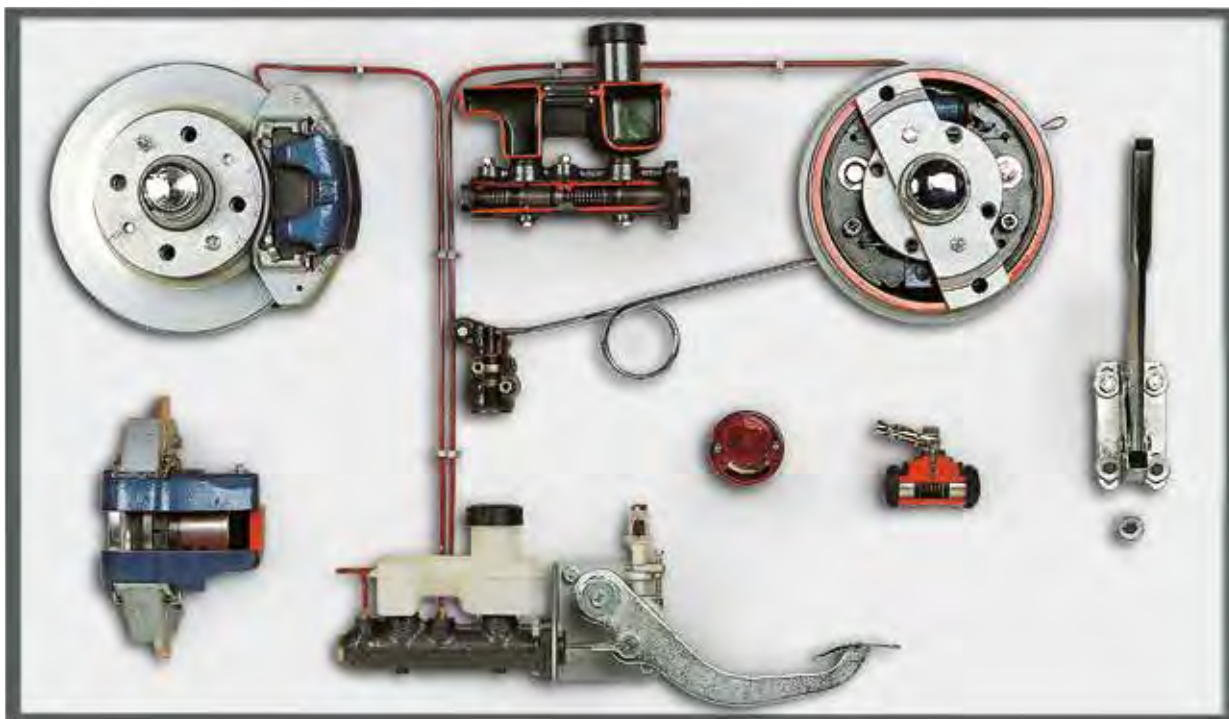
### Approx. weight and dim.:

Cm: 40x35x40h  
Net Weight: kg 20  
Gross Weight: kg 26

*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate among the various parts. Many parts have been chromium, plated and galvanized for a longer life.*



## VB 12050M DOUBLE CIRCUIT BRAKES (on panel) - manual



**VB 12050**

*Indicative picture for reference only*

Wall panel representing a double circuit braking system. As in real conditions, it is operated by a hydraulic pump connected to the disc brake and a drum brake. A braking adjuster is placed between the pump and the (rear) drum brake in the circuit in order to avoid the rear wheels locking during the braking phase.

The same devices used in the circuit have been sectioned and added in the panel to clearly show their operation.

### **Approx. weight and dim.:**

*Cm:* 110x30x85h

*Net Weight:* kg 35

*Gross Weight:* kg 65

## VB 12060S BRAKE + SUSPENSION (on panel) - static



**VB 12060**

This wall panel consists of:

- Disc brake
- Drum brake
- Double brake pump
- Rear damper
- McPherson damper

### **Approx. weight and dim.:**

*Cm:* 110x65x30h

*Net Weight:* kg 30

*Gross Weight:* kg 45

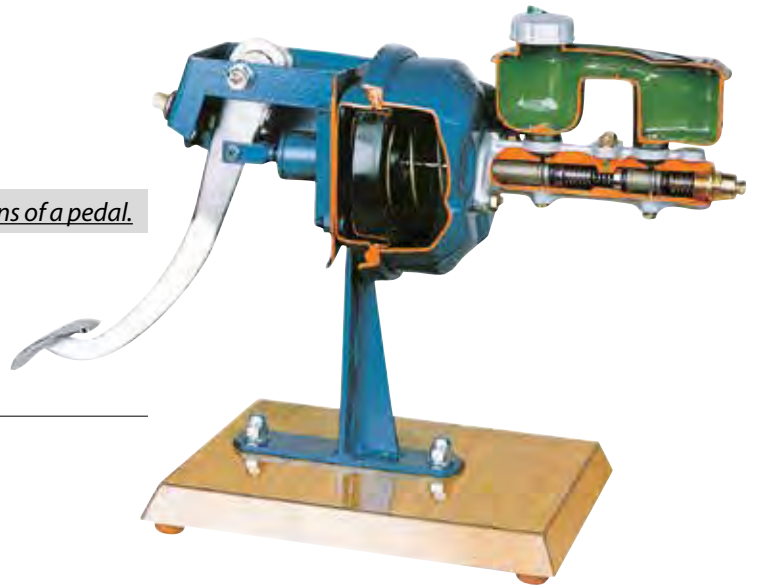


# VB 12300

## VB 12300M VACUUM SERVOBRAKE (on base) - manual

Section of a diaphragm servo brake used for light vehicles, complete with double circuit brake pump.

*It is operated mechanically by means of a pedal.*



### Approx. weight and dim.:

Cm: 50x30x40h  
Net Weight: kg 6  
Gross Weight: kg 10

# VB 12302

## VB 12302M TANDEM MAIN BRAKE CYLINDER WITH PEDAL (on base) - manual

### Approx. weight and dim.:

Cm: 35x15x25h  
Net Weight: kg 2  
Gross Weight: kg 3



Indicative picture for reference only

# VB 12304

## VB 12304M SINGLE-STAGE MAIN BRAKE WITH PEDAL (on base) - manual

### Approx. weight and dim.:

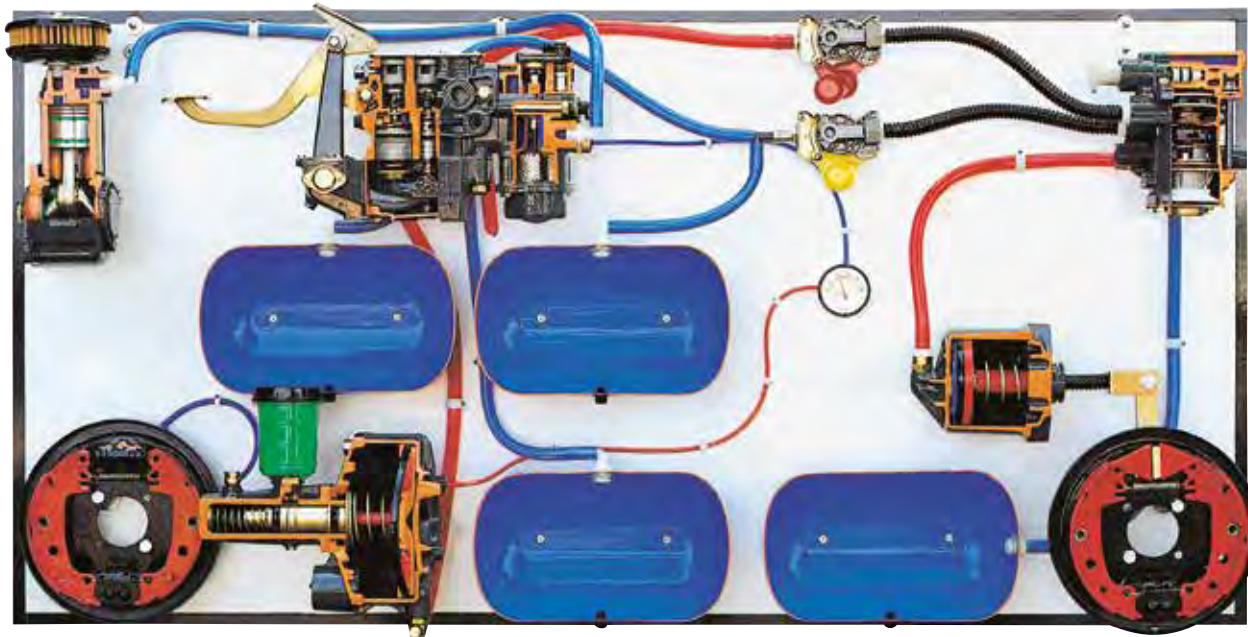
Cm: 30x15x25h  
Net Weight: kg 1  
Gross Weight: kg 2



*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts.  
Many parts have been chromium, plated and galvanized for a longer life.*

## VB 12065S HYDROPNEUMATIC BRAKING SYSTEM (on panel) - static

Wall panel showing the hydro-pneumatic braking elements of a truck (tractor-trailer) complete with: air compressor, triplex Marelli distributor with adjusting and control unit, pressure brake booster, tractor-trailer coupling joint, hydraulic control braking element, mechanical and air control braking element for parking braking, servo-distributor valve for the trailer, no. 4 air reservoirs (3 for the tractor). All elements are connected with rubber pipes of different colours to distinguish the various circuits.



### Approx. weight and dim.:

Cm: 170x35x105h  
Net Weight: kg 60  
Gross Weight: kg 100

## VB 12070S PRESSURE SERVOBRAKE (on base) - static

Section of a piston servo brake used for trucks and complete with brake pump.

### Approx. weight and dim.:

Cm: 30x30x40h  
Net Weight: kg 6  
Gross Weight: kg 10



*These cutaway models are carefully sectioned for training purposes, professionally painted with different colours to better differentiate the various parts. Many parts have been chromium, plated and galvanized for a longer life.*

VB 12065

VB 12070

Indicative picture for reference only

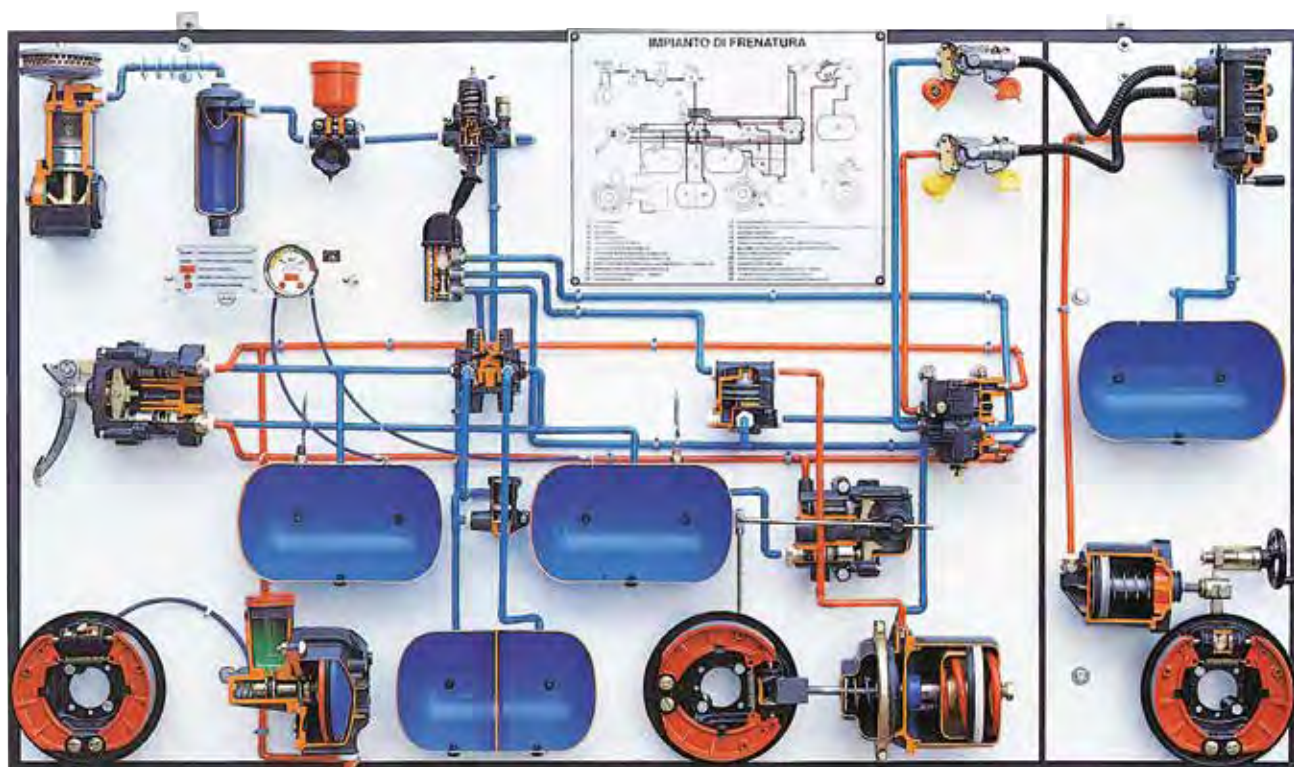
## VB 12170S MOTOR/TRAILER AIR BRAKING SYSTEM WITH DOUBLE SPRING BRAKING UNIT WITH CHUCK DEVICE (on wall panel) -static

## VB 12180S MOTOR/TRAILER AIR BRAKING SYSTEM WITH DOUBLE SPRING BRAKING UNIT WITH CHUCK DEVICE (on stand with wheels) -static

Wall panel including all the elements of a compressed air braking system. It is complete with all connection circuit components and everything else required for the teaching purposes this panel is intended for. The connection pipes are painted in different colours, in order to differentiate the different circuits. This panel is a must-have training instrument allowing the teacher to clearly describe and teach the running of a modern braking system. The hydro-pneumatic braking system and the braking system with the olive pivot are displayed.

The components shown are:

- compressor
- heating coil
- air purifier
- anti-freeze system
- pressure regulator
- pressure gauge
- safety valve tank
- front brakes air tank
- rear brakes air tank
- spring brake and trailer tank
- pressure reducer
- duplex distributor
- double-governor servo-distributor
- triple governor servo-distributor with built-in pulsed signalman
- jackknife
- charge-pressure modulator
- pneumo-hydraulic pump with braking element
- low pressure indicator
- double-spring wedge-shaped braking element
- ISO coupling joints
- servo-auto distributor
- auxiliary trailer tank
- olive pivot braking element
- parking brake trailer device
- service tank



Indicative picture for reference only

### VB 12170S

#### Approx. weight and dim.:

Cm: 220x36x140h  
 Net Weight: kg 95  
 Gross Weight: kg 135

### VB 12180S

#### Approx. weight and dim.:

Cm: 220x36x140h  
 Net Weight: kg 110  
 Gross Weight: kg 150



## VB 12190S AIR BRAKING SYSTEM FOR TRUCKS WITH ABS/ASR (on wall panel) -static

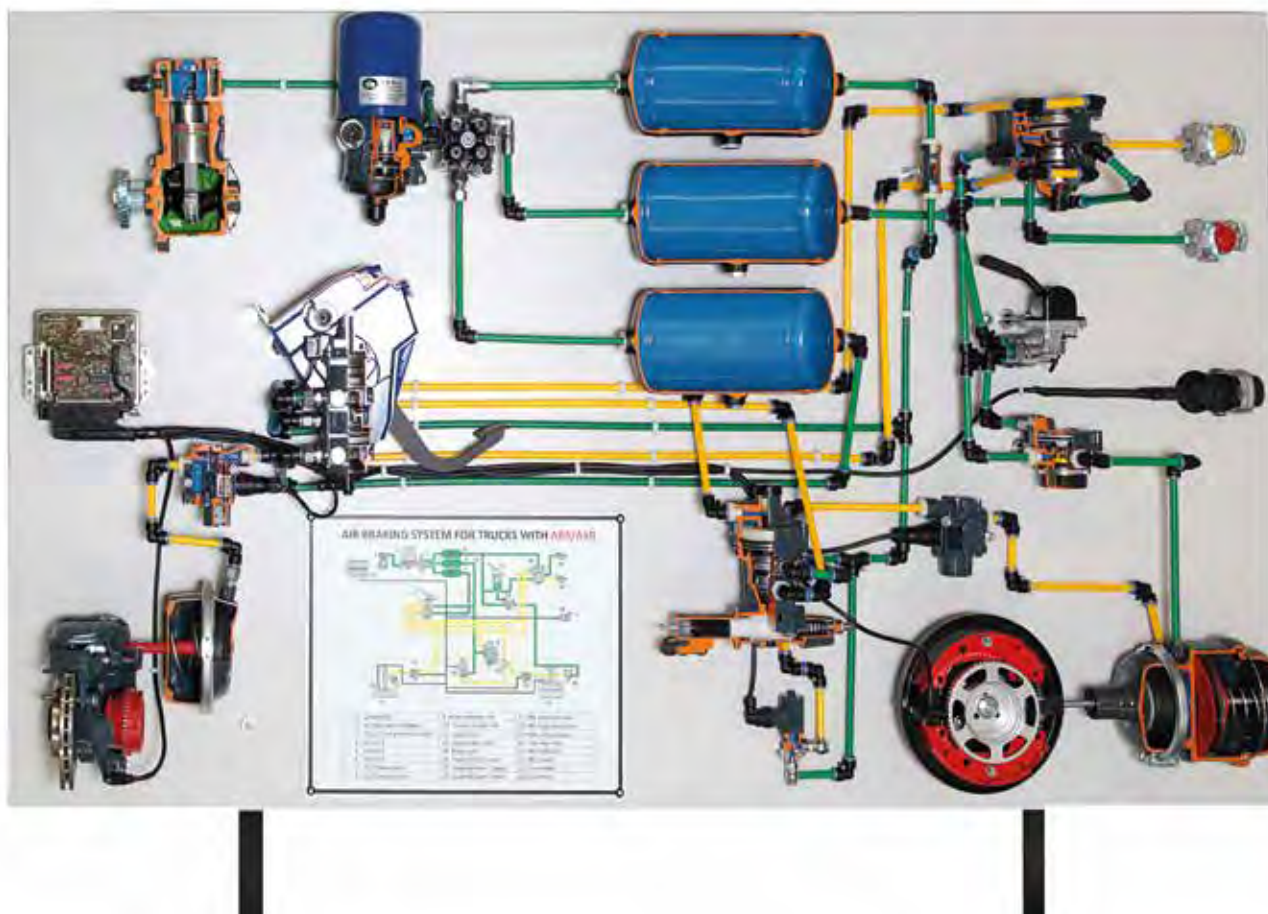
## VB 12195S AIR BRAKING SYSTEM FOR TRUCKS WITH ABS/ASR (on stand with wheels) -static

Wall panel including all the elements of a compressed air braking system. It is complete with all connection circuit components and everything else required for the teaching purposes this panel is intended for. The connection pipes are painted in different colours, in order to differentiate the different circuits. This panel is a must-have training instrument allowing the teacher to clearly describe and teach the running of a modern braking system. The hydro-pneumatic braking system and the braking system with the olive pivot are displayed.

The components shown are:

- 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

Indicative picture for reference only



### VB 12190S

#### Approx. weight and dim.:

Cm: 220x36x140h

Net Weight: kg 110

Gross Weight: kg 150

### VB 12195S

#### Approx. weight and dim.:

Cm: 220x36x140h

Net Weight: kg 125

Gross Weight: kg 165

# VB 12190 - VB 12195



*Indicative picture for reference only*