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Products  
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Units  
7.-Mechanics & Materials

### DESCRIPTION

The function of an automatic transmission is to change gears automatically without any human intervention.

Automatic gearboxes have two differentiated parts: the torque converter and the transmission. The automatic transmission is formed, most importantly, by one or more planetary (epicyclic) gear sets, set of clutches, band brakes and pilot valves.

EDIBON "MTE2" transmission consists of two coupled epicyclic gears sets. It will allow the students to carry out experiments of different gear ratios, as well as the torque conversions.

The epicyclic gears installed in the MTE2 unit are the same and they consists of the following elements:

- Sun gears ( $Z=21$ ).
- Satellite gears set ( $Z=21$ ).
- Common support of the satellites.
- Ring ( $Z=63$ ).

The unit has two graduated discs located at the input and output shafts, which will allow to check the velocity and torque ratios according to the application of the different brakes.

The power arrives to the epicyclic gears through the sun gears.



**ISO 9000: Quality Management**  
(for Design, Manufacturing,  
Commercialization and After-sales service)



**European Union Certificate**  
(total safety)



**Certificates ISO 14000 and  
ECO-Management and Audit Scheme**  
(environmental management)



**Worlddidac Quality Charter**  
Certificate  
(Worlddidac Member)

## SPECIFICATIONS

The MTE2 unit is assembled in an anodized aluminum profiles structure, with a steel panel painted in epoxy paint.

MTE2 is a bench-top unit supported by four legs. Besides, it is provided with four brackets to be suspended in the wall, which allows the experiments with weights to be carried out more easily.

This unit is mainly composed of:

2 Coupled epicyclic gears sets, formed by:

Sun gears.

Satellite gears set.

Common support of the satellites.

External ring.

2 Graduated discs located at the input and output shafts.

Different mechanical pins that simulate the pilot valves used to brake the different planetary components.

The shafts of the unit are made in stainless steel. The discs and gears are made in aluminium to facilitate the experiments.

The pinions are mounted on ball bearings to reduce frictional losses. They are made in aluminium, so the inertia will be less and the results of the experiments will be improved.

The MTE2 unit provides three forward speeds.

In order to carry out some of the practices with MTE2 unit, 2 set of weights "B type" are required. (See required accessories).

**Manuals:** This unit is supplied with the following manuals: Required services, Assembly and Installation, Starting-up, Security, Maintenance and Practices manual.

## EXERCISES AND PRACTICAL POSSIBILITIES

### Some Practical Possibilities of the Unit:

- 1.- Demonstration of the function of an epicyclic gear system.
- 2.- To determine and verify the velocity and torque ratios between the input and output shafts.
- 3.- Study of the mechanical advantage and efficiency of a planetary system.
- 4.- Determination of the angular displacement at the input and output and comparison with calculated ratios.
- 5.- Determination of the minimum force at the input to move a weight at the output.

Gears selection:

- 6.- First gear.
- 7.- Second gear.
- 8.- Third gear.
- 9.- Neutral.

Power Transmission:

- 10.- Checking the relation between the input motor torque and the output motor torque.

## DIMENSIONS & WEIGHT

-Dimensions: 360 x 260 x 300 mm. approx. -Weight: 24 Kg. approx.

## REQUIRED ACCESSORIES

- 2 set of weights "B type" (set B).

Each "B type" set is composed of:

- 6 weights of 200 gr.
- 6 weights of 100 gr.
- 2 weights of 50 gr.
- 2 weights of 20 gr.
- 2 weights of 10 gr.
- 1 support hook of 100 gr.

\*Specifications subject to change without previous notice, due to the convenience of improvements of the product.



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Issue: ED01/10  
Date: September/2010

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