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Technical Teaching Equipment

Borg-Warner Automatic Transmission

MBW

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Units
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DESCRIPTION

The function of an automatic transmission is to carry out changes of gear in an automatic way without any human intervention.

The most significant elements of any automatic transmission are: one or more planetary gears (epicicloidal), sets of clutches, band brakes and pilot valves.

The MBW unit simulates the working of all the elements that compose an automatic transmission and it lets the student learn its working, being able to proceed to its diagnosis and study the consequences of a fault in a clutch or in band brakes.

The graduated discs disposal in the input and the output of the unit allows us to know the different running relations of the unit and to compare it with the values calculated theoretically.

The Automatic Transmission MBW consists on three forward gears and one reverse gear that can be selected by inserting the adequate mechanic pin in the different discs prepared to brake the different components of planetary gear train.

The differentiator element of the automatic transmission is its planetary gear set. The installed in this unit is composed by:

- Two sun gears; one for forward operations and the other one for reverse operations.
- Two sets of pinions: long and short pinions, used to transmit power from the sun gear to the ring gear.
- A common carrier for the pinions.
- A ring gear.

Another characteristic of the unit is that there is a freewheel mechanism assembled that blocks the rotation of a shaft in a certain direction, allowing the rotation in the opposite direction and the visualization of the motor's brake effect.

ISO 9001:2000 Certificate of Approval

European Union Certificate

Certificates ISO 14001: 2004 and **ECO-Management and Audit Scheme**
(environmental management)

Worlddidac Quality Charter Certificate
Worlddidac Member

SPECIFICATIONS

The MBW unit is assembled in an anodized aluminum profile structure, in steel panels painted in epoxy.

This unit is mainly composed of:

Planetary gear set formed for:

2 sun gears, one for forward operations and the other one for reverse operations.

2 set of pinions: long and short pinions.

A common carrier for the pinions.

A ring gear.

2 graduated discs placed in the input and output shaft.

2 input discs to simulate the clutch of gears.

Some mechanic actuators or pins that simulate the pilot valves used to brake the different components of the planetary gear.

The shaft of the unit is made of stainless steel. The discs and the gears are made of aluminum to facilitate the practice's carrying out.

MBW is a bench-top unit supported by four legs. Besides, it is provided with four brackets to be suspended in the wall, which allows an easier carrying out of the practice with weights.

In order to carry out some of the practices with MBW unit, are required 2 set of weights "B type" (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:

Selection of the gears:

1.- First gear (lockup selected).
2.- First gear imposed (drive selected).
3.- Second gear.
4.- Third gear.
5.- Reverse gear.
6.- Neutral position.
7.- Parking break.

Faults simulation:

8.- Forward gear clutch fault.
9.- Reversing gear clutch fault.
10.- Brakes fault

Power Transmission:

11.- Checking the connection between the pair motor of the input and the pair motor of the output.
12.- Experiment for the different connections of reduction but activating the motor brake of the transmission.

DIMENSIONES Y PESOS

-Dimensions: 450 x 320 x 300 approx. -Weight: 15 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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