



# ELECTROMECHANICS WORKSHOP



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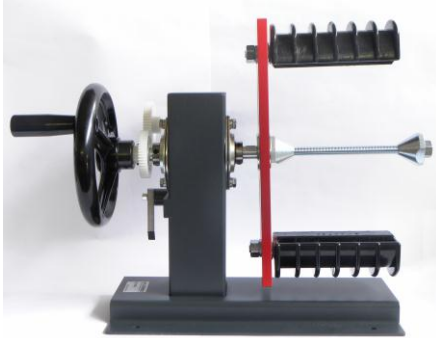
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## WINDING MACHINES

### MANUAL COIL WINDER



**DL 1010B**

To be fixed to the bench, it allows the manual winding of motor coil or of linear windings without wire guide. Complete with a 300 mm diameter faceplate, a pair of square mandrels, a pair of 6 grooves straight arbors, 60 mm diameter, a central arbor for linear winding and a 5 digit revolution counter.

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### BOBBIN HOLDER WITH COLUMN



**DL 1010D**

Column to be fixed to the bench, complete with bobbin holder with wire stretcher and two regulating springs. Suitable for wires from 0.2 to 1.5 mm of diameter. It is suggested as an accessory for the manual coil winder DL 1010B.

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## WINDING MACHINES



DL 1012Z

### DL 1012Z

#### WINDING MACHINE FOR MOTORS

Windings:

- coils for motors

Wires:

- Minimum diameter: 0.1 mm.
- Maximum diameter: 2 mm.

Coils:

- Maximum diameter of the coils: 180 mm.
- Maximum width of the coils: 200 mm.

Motor:

- Three-phase motor with brake, 0.75 kW

Winding modes:

Both automatic and manual winding modes.

Dimensions: 700 x 700 x 1700 (h) mm

### DL 1012E

#### WINDING MACHINE FOR MOTORS AND TRANSFORMERS

Windings:

- coils for motors
- coils for transformers

Wires:

- Minimum diameter: 0.1 mm.
- Maximum diameter: 2 mm.

Coils:

- Maximum diameter of the coils: 180 mm.
- Maximum width of the coils: 200 mm.

Motor:

- Three-phase motor with brake, 0.75 kW

Winding modes:

Both automatic and manual winding modes.

Wire guide with automatic displacement.

Dimensions: 700 x 700 x 1700 (h) mm



DL 1012E

### DL 1012PE

#### DIDACTIC WINDING MACHINE FOR MOTORS

Windings:

- coils for motors

Wires:

- Minimum diameter: 0.1 mm.
- Maximum diameter: 2 mm.

Coils:

- Maximum diameter of the coils: 180 mm.
- Maximum width of the coils: 200 mm.

Motor:

- Three-phase motor with brake, 1.5 kW

Winding modes:

Both automatic and manual winding modes.

Dimensions: 900 x 900 x 1700 (h) mm

Complete with stator pack and necessary accessories to perform the electromagnetic test of the coils.



## TRANSFORMERS AND MOTORS KITS

The proposed kits consist of a set of components commonly used in the electro mechanics construction and a laboratory exercise handbook.

The components sizes, quality and hardness have been chosen so as to make easy the assembling work for the students and to guarantee at the same time an immediate understanding of the theoretical principles which lay the basis of the electric machines design. The handbook delivered with the kits illustrates comprehensively the construction principles and is an effective guide to the design of the motors and of the transformers.

### KIT FOR THE CONSTRUCTION OF 2 TRANSFORMERS



DL 2106

The kit is complete with magnetic pack, coils and mechanical parts, copper excluded, for the construction of 2 transformers:

- single phase, 1000 VA, 220/380 V
- three phase, 1000 VA, 220/380 V

### SET OF SLIDES

(DL 2106A)

For illustrating the construction phases of a transformer.

### KIT FOR THE CONSTRUCTION OF 6 TRANSFORMERS



DL 2108

The kit is complete with magnetic pack, coils and mechanical parts, copper excluded, for the construction of 6 transformers:

- single phase, 200-600-1000 VA
- three phase, 300-600-1000 VA



# ELECTROMECHANICS WORKSHOP



## KIT FOR THE CONSTRUCTION OF AN ASYNCHRONOUS MOTOR



DL 2105

The kit is complete with magnetic pack, rotor and mechanical parts, copper excluded, for the construction of a 2 poles squirrel cage three phase asynchronous motor (1kW).

**SET OF SLIDES (DL 2105A)**  
For illustrating the construction phases of a motor.

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## KIT FOR THE CONSTRUCTION OF 4 ASYNCHRONOUS MOTORS



DL 2107

The kit is complete with magnetic pack, rotor and mechanical parts, copper excluded, for the construction of 4 asynchronous motors:

- squirrel cage three phase, 2 poles, 1000 W
- squirrel cage three phase, 4 poles, 800 W
- squirrel cage three phase, 6 poles, 600 W
- asynchronous single phase with capacitor, 2-4 poles, 300 W



# ELECTROMECHANICS WORKSHOP



## ACCESSORIES

### IMPREGNATING MACHINE



DL C20

Machine for impregnating in a simple and clean way the electric motors.

It allows the impregnation of different sizes at the same time.

The impregnating material at the end of the operation flows back into the tank.

Dimensions: 900 x 700 x 930 mm.

### RADIAL VICE



DL 1010A

Radial vice to be fixed to the bench for holding stators with maximum diameter 320 mm.

This accessory makes it easy to put into the slot in the winding stators for the construction of a motor.

### ROTOR SUPPORT BRACKET



DL 1010C

Adjustable in length; to be fixed to the bench. Suitable for supporting the rotors during the motor construction and testing phases.

### ARC WELDER



DL 1010F

Complete with electrodes suitable for welding of motor and transformer windings without use of tin.



## TEST BENCH

### POWER SUPPLY



**DL 1013M2**

Suitable for supplying fixed and variable alternating current and fixed and variable rectified direct current, in order to carry out all the tests on electric machines. Complete with start, stop and emergency push-button and with differential magneto-thermal protection.

Connector for over-speed protection of the motors.

Output voltages :

- variable ac 3 x 0 - 430 V, 5 A  
3 x 0 - 240 V, 8 A
- fixed ac 3 x 380 V + N, 16 A  
3 x 220 V, 8 A
- variable dc 0 - 240 V, 10 A  
0 - 225 V, 1 A
- fixed dc 220 V, 10 A

Power supply: 3 x 380 V + N, 50/60 Hz

Available also for 220 V three phase mains voltage (see DL 1013M3 in Unilab catalogue).

### EDDY CURRENT BRAKE

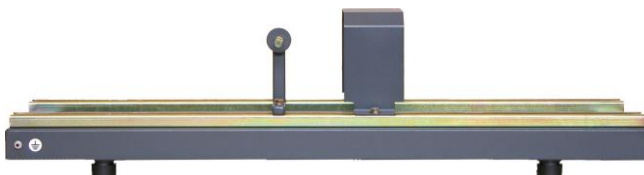


**DL 1019M**

Smooth roll rotor and salient pole stator.

Provided with water level, arms, weight and balance weight for measuring the output torque of the motor. Possibility of assembling a load cell.

### UNIVERSAL BASE



**DL 1013A**

Duralumin alloy structure mounted on anti vibration rubber feet, provided with slide guides for fixing one or two machines and coupling guard.

Provided with locking device of slip ring rotor for short circuit test.



# ELECTROMECHANICS WORKSHOP



## TORQUE MEASURING UNIT



DL 2006CN

Digital readout and analogue output proportional to the measured value.

Measurement through load cell mounted on the braking device.

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## LOAD CELL



DL 2006E

Resistance electronic strain gauge, with 150 N range, to be assembled on the braking device.

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## CONTACT TACHOMETER



DL 2026

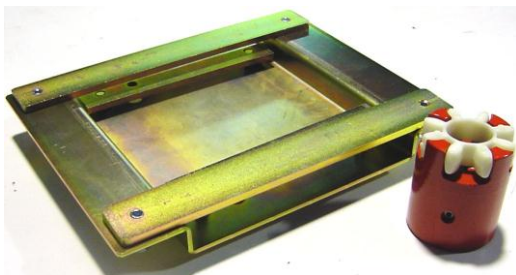
Suitable for measuring the revolving speed with digital read out.

Measuring range: 0 - 19,999 rpm

Batteries supplied.

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## BRACKET FOR MOTOR KIT



DL 2107BA

Through this accessory it is possible to test, after winding, the motors relevant to the kits DL 2105 and DL 2107, by coupling them to the brake DL 1019M.





# ELECTROMECHANICS WORKSHOP



## ELECTRONIC TACHOMETER



DL 2025DN

For measuring the revolving speed through optical transducer mounted on the machine.

Digital read out and analogue output proportional to the measured value.

Complete with connector for over-speed protection to be connected to the power supply.

## ELECTRICAL POWER DIGITAL MEASURING UNIT



DL 10065N

Measurement in direct current of: voltage, current, power and energy.

Measurement in alternate current of: voltage, current, power, active energy, reactive energy, apparent energy, cosphi and frequency.

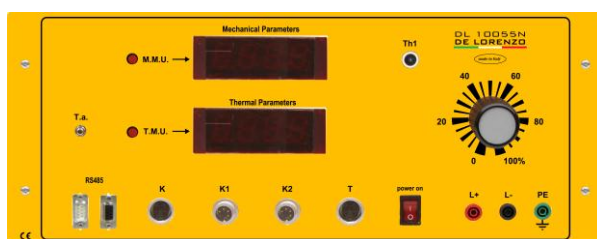
Main technical features:

- DC voltage: 300 Vdc
- DC current: 20 Adc
- AC voltage: 450 Vac
- AC current: 20 Aac
- Power: 9000 W

Power supply: single-phase from mains

Communication: RS485 with MODBUS RTU protocol.

## MECHANICAL POWER DIGITAL MEASURING UNIT



DL 10055N

For direct measurement of motor output torque through load cell and of rotating speed through optical transducer, with mechanical power display; provided with direct current variable power supply for the excitation of the brakes or of the dynamometer.

Digital readout of the measured quantities.

Connector for overspeed protection of the motors through the connection to the power supply module.

Ambient temperature sensor and probe for measuring the temperature of the motor.

Communication: RS485 with MODBUS RTU protocol.

Technical features:

- Torque: suitable for measuring the maximum torque of the laboratory through the load cell
- Speed: suitable for measuring the maximum speed of the machines of the laboratory
- Power: suitable for measuring the maximum power of the machines of the laboratory
- Dc output: 0-220 V, 2 A
- Power supply: single-phase from mains



## STATOR AND ROTOR TESTER



**DL 1010E**

Electronic instrument for testing rotors and stators. Complete with separate power supply unit. Very simple to use thanks to a clear optical and acoustical indication. No need for calibrations. Inductive test without connecting cables.

## RESISTIVE LOAD



**DL 1017R**

Single or three phase resistive step variable load. Max. power: 3 x 400 W