MECHANICS

DIDACTIC SYSTEM FOR MECHANICAL ASSEMBLY PRACTICES
DL 13003- 02

The system allows the evaluation, after each assembly and disassembly, of a set of shafts and bearings driven by belts, gears and toothed pulleys driven by a three-phase motor whose variable speed implies a higher or lower level of vibration; the vibratory intensity is measured on all three shafts.

DIDACTIC ACTIVITIES

- Assembly and disassembly of pulleys and bearings,
- Shaft alignment,
- Calculation of mechanical transmissions,
- Motor torque and resistive torque measurements,
- Energy efficiency measures,
- Vibration measurements in three planes,
- Vibration measurements at different speeds,
- Vibration measurements with inertia disc.

EQUIPMENT COMPOSITION

- Aluminum bench with wheels.
- Mechanical transmission.
- Electrical panel with AC digital multimeter.
- Frequency converter for speed control.
- Shaft alignment tool set.
- Mechanical dynamometer with graduated scale for torque application.
- Set of tools for assembly and disassembly of toothed pulleys.
- Set of shafts and bearings driven by belts, gears
- Two vibration indicators with RMS values
- 0.25 hp three-phase induction motor

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SYSTEM FEATURES

1. **Bench with wheels**
   The bench consists of a metal structure with wheels of the following dimensions: 1500 x 800 x 1300 mm (W x D x H). The top is suitable for typical machine shop applications

2. **Electric panel with:**
   - Inverter for speed control and measurement with built-in HMI for rotation, proportional torque and load current measurement.
   - Electric quantity multimeter (V, I, P, F, FP etc.).
   - Overload protections, differential circuit breaker and safety relay on top.
   - Speedometer with selector for 2 channels.

3. **Alignment tool set**
   A – Clock alignment system of probes, with fine adjustment.
   B – Magnetic bases.

4. **Shaft and bearing set**
   Driven by belts, gears and toothed pulleys with torque application with dynamometer. This set includes:
   - Mechanical belt.
   - Mechanical toothed pulleys.
   - Spur gears with a ratio of 2 to 1 or 1 to 2.
   - Belt tensioner.
   - Gear type elastic couplings.
   - Split bearing.
   - Monobloc bearing.
   - Tools for moving parts.

5. **Vibration indicators**
   The two digital vibration indicators are used to measure the periodic movement, verify imbalance and deflection of the moving parts of machinery. Sensors can be applied at various points in the system covering all three planes.

Includes manual of exercises and operation of the instruments.