



INTRODUCTION

Gears are a critical part in engine and machine operation; they increase the output torque and adjust the direction of rotation or the number of turns of a drive according to the needs.

Spur gears are the most common type, and their special feature is that their teeth are assembled on parallel shafts. They are used for large gear reductions, and small and medium speeds. In this way, the spur gears are greatly used when the movement needs to be conveyed from one shaft to another parallel shaft close to it.

The Spur Gear Assembly Unit, "SGA", allows to study the practical assembly and dismantling of a spur gear with simple tools. The adjustment devices have been designed so that they are assembled manually.

GENERAL DESCRIPTION

The Spur Gear Assembly Unit, "SGA", consists of a spur gear with spiral gearing. As it is a fixed gear, it has only a single stage and a fixed transmission ratio. The gear consists of: an operating box, housing, input and output shafts, drive gear and output pinion, and bearings. The gear is covered by a housing, so it belongs to the group of independent gears. These gears are placed between the engine and the power-supplying machine, or they are used as an integrated module in machines.

The advantage of spiral gears compared to the spur gears is that in spiral gears teeth are not loaded instantaneously over their entire width, but starting from the tooth's edge, and then going along the entire width, engaging several teeth simultaneously. For this reason, these gears work without bumping and are almost noise-free. Spiral gears are ideal for fast engagement with high turns, and they bear higher loads than spur gears.

The parts are supplied in a briefcase for easy transport.

This unit is perfect to work in a practically self-sufficient way, in groups of up to three students, provided that clear instructions are given for distribution and task planning.

The teaching material includes technical drawings with lists of parts, components and the assembly.



ISO 9001: Quality Management (for Design, Manufacturing, Commercialization and After-sales service)



European Union Certificate (total safety)



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



Certificate and Worlddidac Member

SPECIFICATIONS

Aluminum transporting case.

Transparent storage box for small parts: Screws of different measuring, seal spare parts, bearings, etc.

Spur gears.

Cast iron housing.

Steel shafts.

Cylindrical steel gears.

Spur gear transmission:

Pinion: No. of teeth: $z = 24$, module: $m = 1$.

Gear: $z = 68$, $m = 1$ mm.

Moment of inertia: $i = 2.83$.

Max. output torque: 54 nM at 494 min^{-1} .

Toolbox with separable compartments.

Manuals: This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manual.

EXERCISES AND PRACTICAL POSSIBILITIES

- 1.- Study of spur gear operation with spiral gearing.
- 2.- Analysis of spur gear structure with spiral gearing.
- 3.- Reading comprehension of technical drawings.
- 4.- Study and establishment of work planning - assembly planning and representation.
- 5.- Groups and set assembly and disassembly study and exercises.
- 6.- Performance of repairing exercises and maintenance tasks for damages and anomalies.
- 7.- Study and exercises of part measurement and dimension.
- 8.- Study and analysis of assembly auxiliary means and devices.
- 9.- Study and analysis of various machine components: ball bearings , shaft retainers.
- 10.-Study and understanding of the necessary criteria for materials selection.

DIMENSIONS AND WEIGHTS

SGA:

- Case dimensions: 150 x 445 x 310 mm approx. (5.90 x 17.52 x 12.20 inches approx.)
- Toolbox Dimensions: 311 x 168 x 130 mm approx. (12.24 x 6.61 x 5.11 inches approx.)
- Weight: 20 Kg approx. (44 pounds approx.)

SGA/ICAI. Interactive Computer Aided Instruction Software System:



With no physical connection between unit and computer (PC), this complete software package consists of an Instructor Software (EDIBON Classroom Manager -ECM-SOF) totally integrated with the Student Software (EDIBON Student Labsoft -ESL-SOF). Both are interconnected so that the teacher knows at any moment what is the theoretical and practical knowledge of the students.

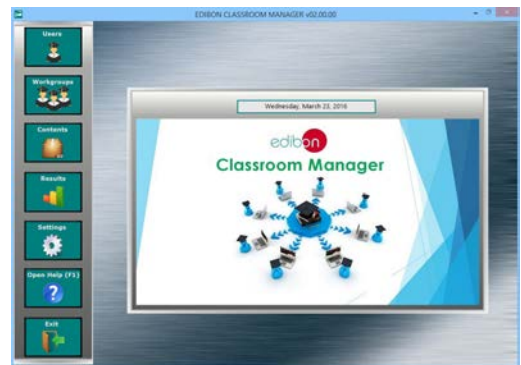
Instructor Software

- ECM-SOF. EDIBON Classroom Manager (Instructor Software).

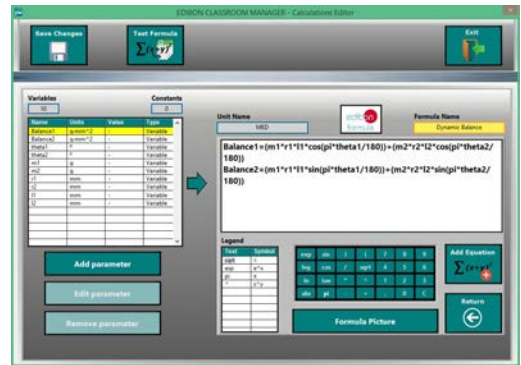
ECM-SOF is the application that allows the Instructor to register students, manage and assign tasks for workgroups, create own content to carry out Practical Exercises, choose one of the evaluation methods to check the Student knowledge and monitor the progression related to the planned tasks for individual students, workgroups, units, etc... so the teacher can know in real time the level of understanding of any student in the classroom.

Innovative features:

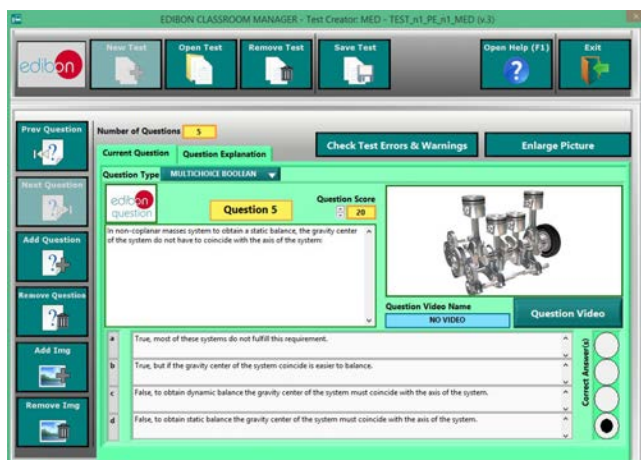
- User Data Base Management.
- Administration and assignment of Workgroup, Task and Training sessions.
- Creation and Integration of Practical Exercises and Multimedia Resources.
- Custom Design of Evaluation Methods.
- Creation and assignment of Formulas & Equations.
- Equation System Solver Engine.
- Updatable Contents.
- Report generation, User Progression Monitoring and Statistics.



ECM-SOF. EDIBON Classroom Manager (Instructor Software) Application Main Screen



ECAL. EDIBON Calculations Program Package - Formula Editor Screen



ETTE. EDIBON Training Test & Exam Program Package - Main Screen with Numeric Result Question



ERS. EDIBON Results & Statistics Program Package - Student Scores Histogram

Optional
Student Software

- ESL-SOF. EDIBON Student Labsoft (Student Software).

ESL-SOF is the application addressed to the Students that helps them to understand theoretical concepts by means of practical exercises and to prove their knowledge and progression by performing tests and calculations in addition to Multimedia Resources. Default planned tasks and an Open workgroup are provided by EDIBON to allow the students start working from the first session. Reports and statistics are available to know their progression at any time, as well as explanations for every exercise to reinforce the theoretically acquired technical knowledge.

Innovative features:

- Student Log-In & Self-Registration.
- Existing Tasks checking & Monitoring.
- Default contents & scheduled tasks available to be used from the first session.
- Practical Exercises accomplishment by following the Manual provided by EDIBON.
- Evaluation Methods to prove your knowledge and progression.
- Test self-correction.
- Calculations computing and plotting.
- Equation System Solver Engine.
- User Monitoring Learning & Printable Reports.
- Multimedia-Supported auxiliary resources.

For more information see ICAI catalogue. Click on the following link:

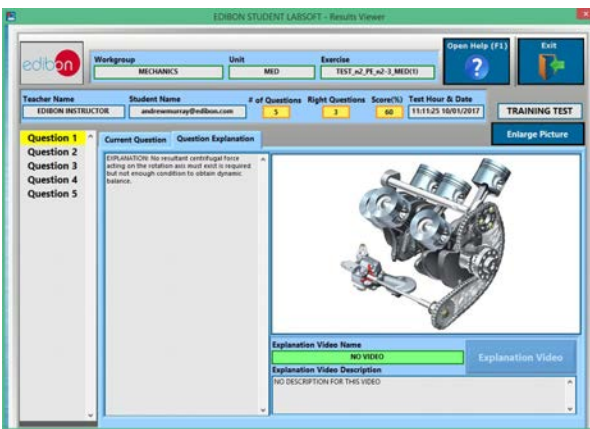
www.edibon.com/en/files/expansion/ICAI/catalog



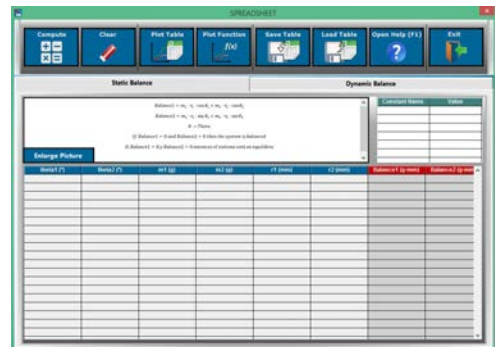
ESL-SOF. EDIBON Student LabSoft (Student Software)
Application Main Screen



EPE. EDIBON Practical Exercise Program Package Main Screen



ERS. EDIBON Results & Statistics Program Package - Question Explanation



ECAL. EDIBON Calculations Program Package Main Screen

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



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REPRESENTATIVE:

