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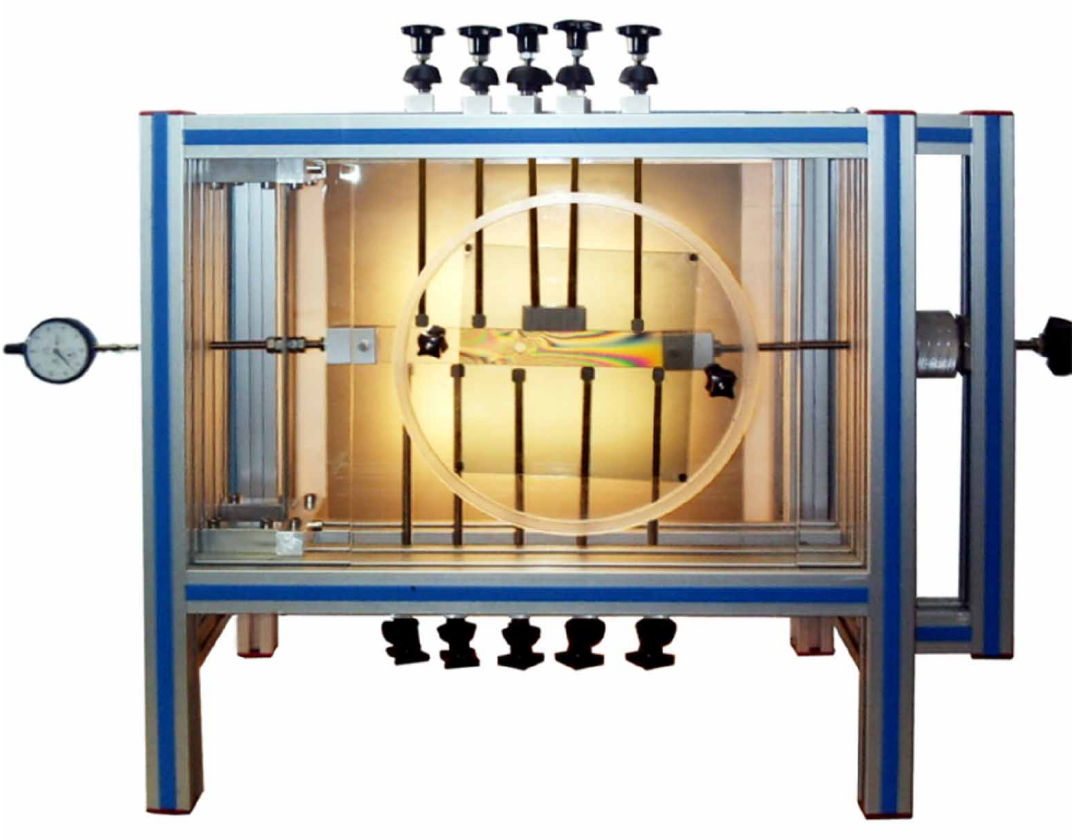
Technical Teaching Equipment

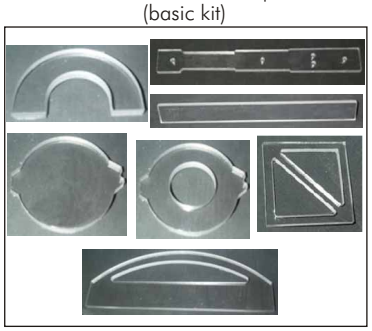
Photoelasticity Unit

EFO

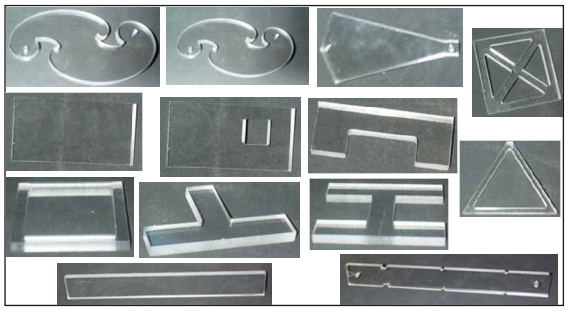


Test Specimens

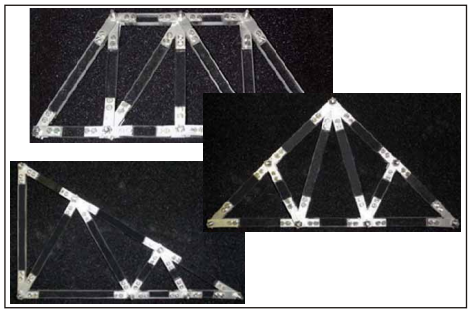
EFO-K1. Kit of Static Test Specimens (basic kit)



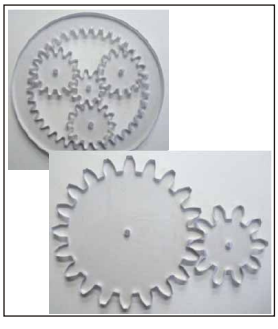
EFO-K2. Kit of Static Test Specimens (advanced kit)



EFO-K5. Kit of Articulated Structures



EFO-K6. Kit of Dynamic Panels



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Units
7.-Mechanics & Materials

ISO 9000: Quality Management
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(total safety)

Certificates ISO 14000 and
ECO-Management and Audit Scheme
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Worlddidac Quality Charter Certificate
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INTRODUCTION

Photoelasticity is the method of analysing and recording mechanical stresses and strains in components.

The components used are test specimens or models made of transparent special material which becomes optically double-refractive under mechanical loading.

Using polarised light, the distribution of stress in test specimens is investigated.

The polarisation filters represent the distribution of stress in colours.

By using white or monochromatic light and different configuration of linear and circular polarizer / analyzer we can obtain the principal stresses direction and the principal stresses difference.

GENERAL DESCRIPTION

Unit for photoelasticity practices, illustrating the subjects of the Photoelasticity theory, the Elasticity theory, Strength of Materials, and Structure theory.

It is very suitable for the introduction and study of photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tensionsing, etc.

Using this unit photoelastic experiments and practices of transparent test specimens (models) may be performed.

The different test specimens are subjected to loading by external forces and have poralised light shone through them.

A load application element can apply tensile, bending, compressive, and distributed and punctual loads to the specimen.

The stresses and strains occurring in the test specimen are represented as bright spots or figures of different colours, and we can visualise the distribution of stress.

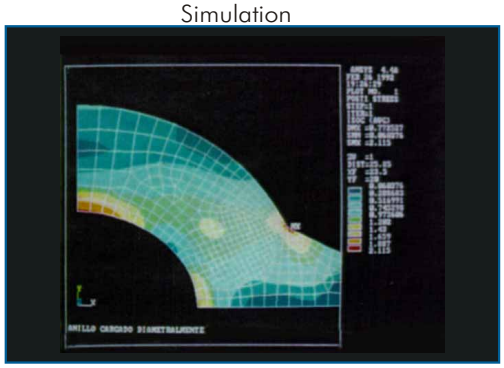
We offer a wide range of test specimens for making a variety of practices and experiments.

These specimens show a full color and high contrast results and are also made of a special very hard material that avoids breaking during daily use.

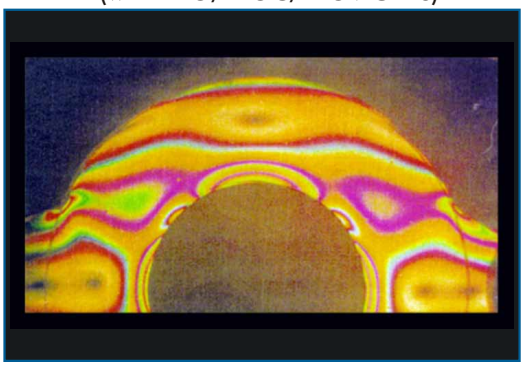
RESULTS

1. Differences between the simulation and the photoelastic reality

Software Simulation

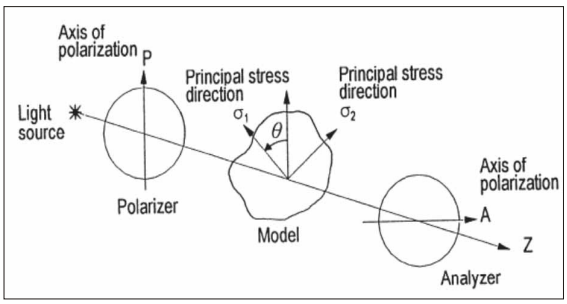


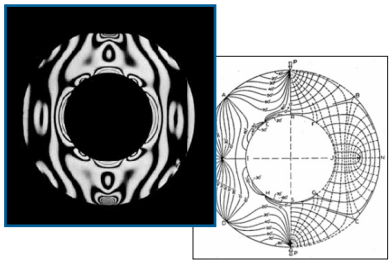
Real
(with EFO/EFOC/EFOV Units)



2. Main configurations with EFO/EFOC/EFOV Units

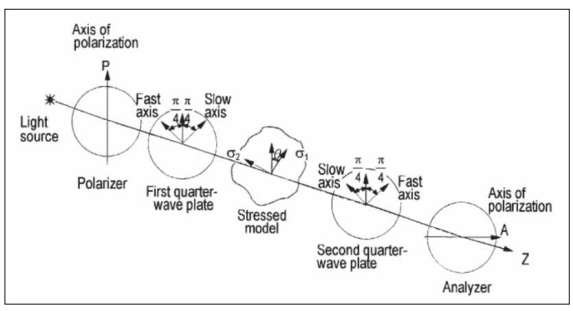
Plane Polariscope configuration

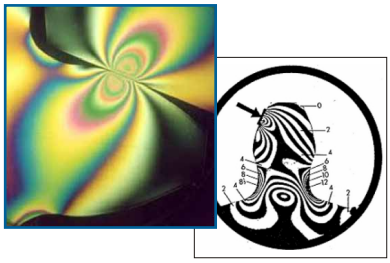




Plane polariscope configuration with monochromatic light, for isoclines and direction of principal stresses determination.

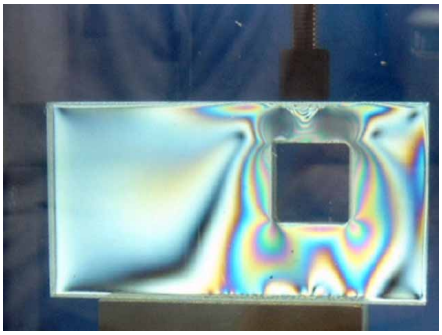
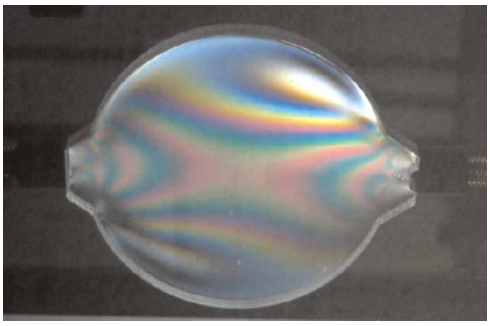
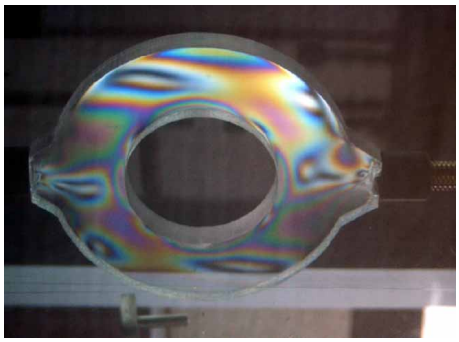
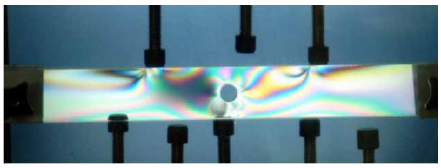
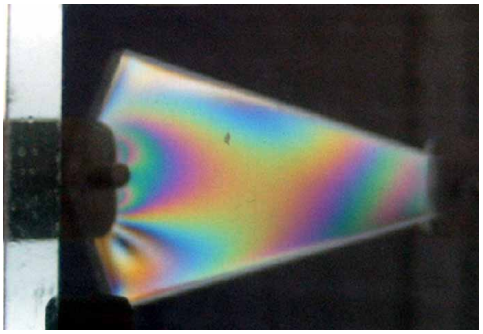
Circular Polariscope configuration





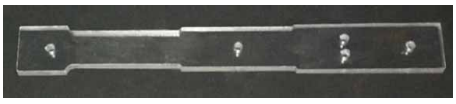
Circular polariscope configuration for isochromatics and principal stresses difference determination.

3. Some typical results with EFO/EFOC/EFOV Units and different specimens

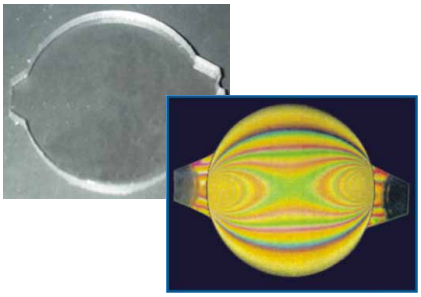







Test Specimens

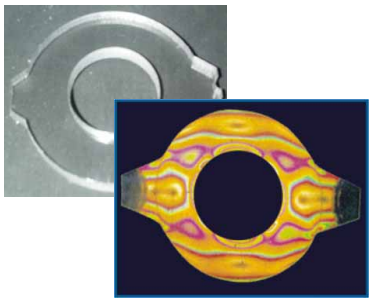
EFO-K1. Kit of Static Test Specimens (basic kit) (always included with the EFO unit)



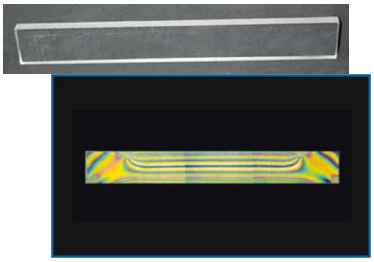
N°3
Stepped Rectangular Specimen



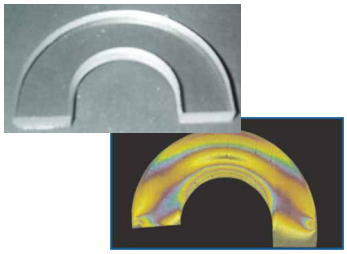
N°4
Compact Circular Specimen



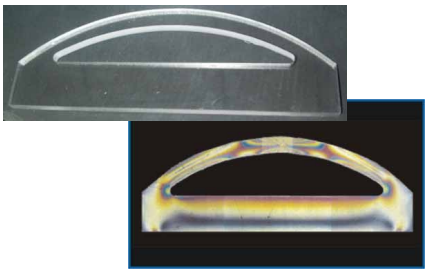
N°5
Circular with Orifice Specimen



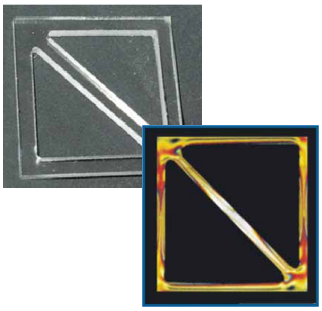
N°9
Medium Rectangular Specimen



N°13
"C" Specimen

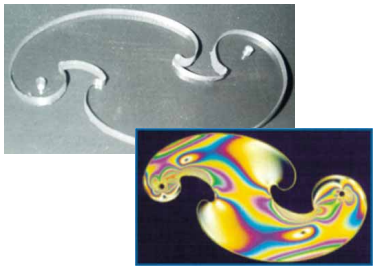


N°14
Specimen with Arch

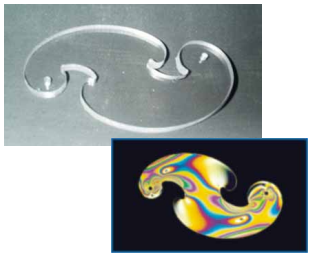


N°17
Square with Diagonal Bar Specimen

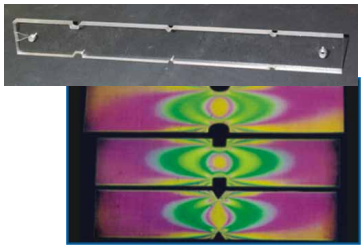
EFO-K2. Kit of Static Test Specimens (advanced kit)



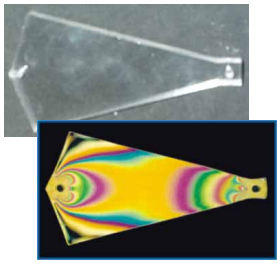
N°1
Big Irregular Specimen



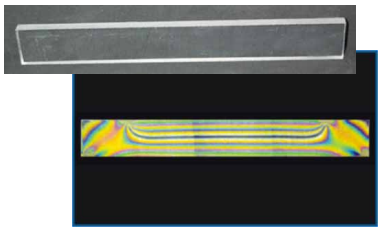
N°2
Small Irregular Specimen



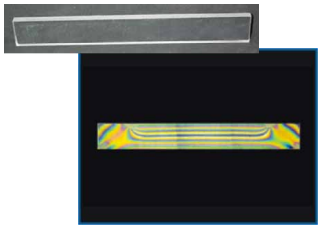
N°6
Notches Rectangular Specimen



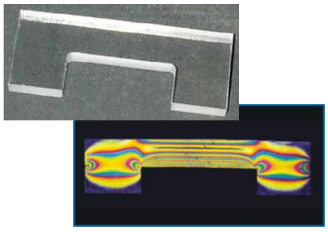
N°7
Trapezoidal Specimen



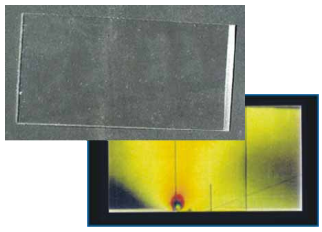
N°8
Big Rectangular Specimen



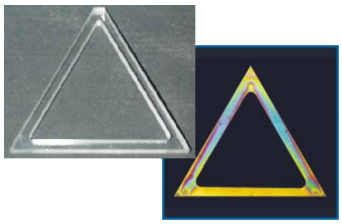
N°10
Small Rectangular Specimen



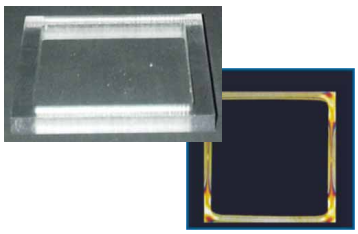
N°11
"U" Specimen



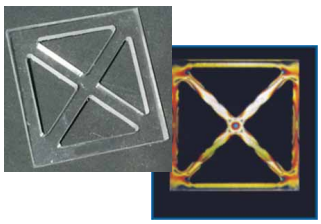
N°12
Wide Rectangular Specimen



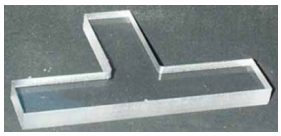
N°15
Triangular Specimen



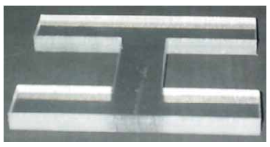
N°16
Hollow Square Specimen



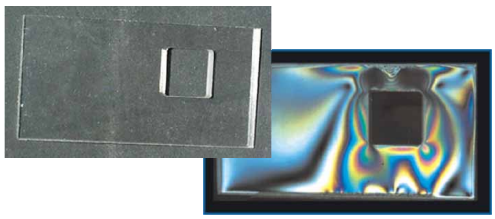
N°18
Square with two Diagonal Bars Specimen



N°19
"T" Beam Specimen

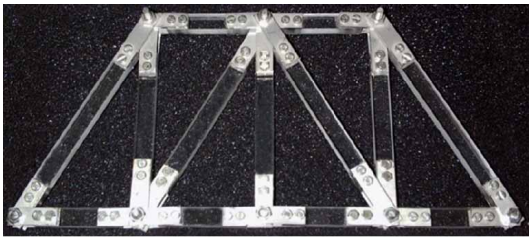


N°20
Double "T" Beam Specimen

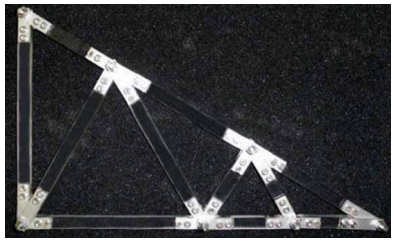


N°21
Rectangular with Hole Specimen

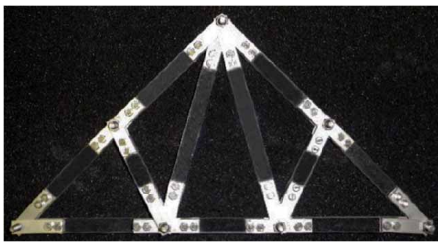
EFO-K5. Kit of Articulated Structures



N°30
Articulated Structure 1

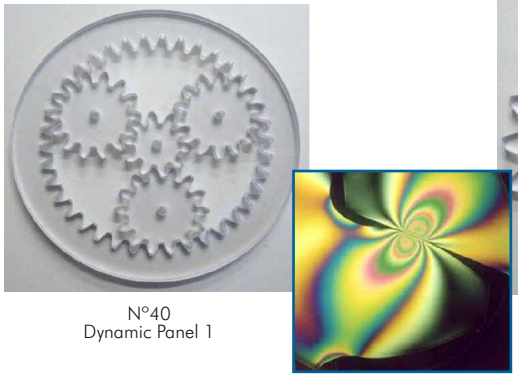


N°31
Articulated Structure 2

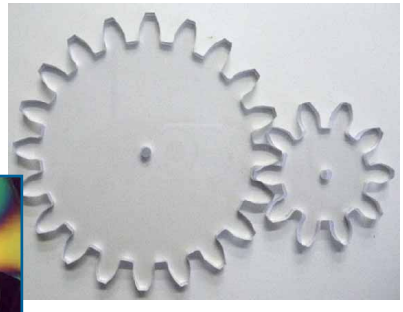


N°32
Articulated Structure 3

EFO-K6. Kit of Dynamic Panels



N°40
Dynamic Panel 1



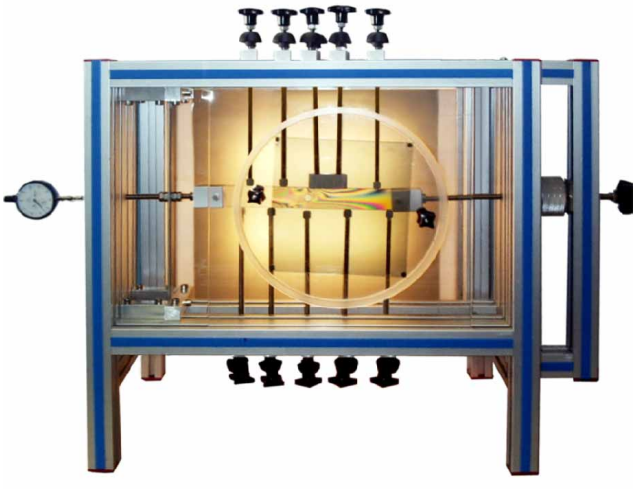
N°41
Dynamic Panel 2

SPECIFICATIONS

Bench-top unit.
Anodized aluminium structure.
Main metallic elements in stainless steel.
Light source, two fluorescent tubes of 30 cm and 8W.
Monochromatic light 35W.
Opalescent diffuser plate.
Double effect polarizing filters (linear polarization and circular polarization), of 30 x 30 cm and protected by methacrylate plates.
Load frame with pulling jack.
Dynamometric bar.
Comparator clock (millesimal indicator).
10 pressure screws and accessories.
This unit is supplied with the EFO-K1. Kit of Static Test Specimens (basic kit), formed by:

- N°3. Stepped Rectangular Specimen.
- N°4. Compact Circular Specimen.
- N°5. Circular with Orifice Specimen.
- N°9. Medium Rectangular Specimen.
- N°13. "C" Specimen.
- N°14. Specimen with Arch.
- N°17. Square with Diagonal Bar Specimen.

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



EFO. Unit

EFO-K1. Kit of Static Test Specimens (basic kit)

Additional and optional Test Specimens: (not included in the standard supply)

-EFO-K2. Kit of Static Test Specimens (advanced kit), formed by:

- N°1. Big Irregular Specimen.
- N°2. Small Irregular Specimen.
- N°6. Notches Rectangular Specimen.
- N°7. Trapezoidal Specimen.
- N°8. Big Rectangular Specimen.
- N°10. Small Rectangular Specimen.
- N°11. "U" Specimen.
- N°12. Wide Rectangular Specimen.
- N°15. Triangular Specimen.
- N°16. Hollow Square Specimen.
- N°18. Square with two Diagonal Bars Specimen.
- N°19. "T" Beam Specimen.
- N°20. Double "T" Beam Specimen.
- N°21. Rectangular with Hole Specimen.

-EFO-K5. Kit of Articulated Structures, formed by:

- N°30. Articulated Structure 1.
- N°31. Articulated Structure 2.
- N°32. Articulated Structure 3.

-EFO-K6. Kit of Dynamic Panels, formed by:

- N°40. Dynamic Panel 1.
- N°41. Dynamic Panel 2.

EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Unit:

1.- Introduction to photoelasticity: optical elements, isochromatic, isoclinic, band order, band factor, edge tension sign, etc.
2.- Determination of principal stress difference.
3.- Isochromatics.
4.- Illustration of the themes about elasticity, strength of materials and structures using photoelastic tests.
5.- Pure traction/optical-tensional law.
6.- Diametrically compressed disc.
7.- Ring with diametrical compression traction.
8.- Ring with diametrical compression.
9.- Plate with circular drill with traction.
10.- Comparison of the effects from different engraves in piece with traction.
11.- Pure traction in a piece with section linearly variable.
12.- Pure flexion.
13.- Simple flexion.
14.- Simple flexion, compound beams.
15.- Compound flexion.
16.- Compound central core of the section.
17.- Piece with a great curvature subjected to flexion.
18.- Arch built-in with a central charge.
19.- Triangular structure.
20.- Comparison of the structures.
21.- Comparison of the effect of different notches.

REQUIRED SERVICES

-Electrical supply: single-phase, 220V./50Hz or 110V./60Hz.

DIMENSIONS & WEIGHTS

-Dimensions: 750 x 400 x 550 mm. approx.
(29.53 x 15.75 x 21.65 inches approx.).
-Weight : 20 Kg. approx. (44 pounds approx.).

ADDITIONAL AND OPTIONAL TEST SPECIMENS

-EFO-K2. Kit of Static Test Specimens (advanced kit), formed by:
- N°1. Big Irregular Specimen.
- N°2. Small Irregular Specimen.
- N°6. Notches Rectangular Specimen.
- N°7. Trapezoidal Specimen.
- N°8. Big Rectangular Specimen.
- N°10. Small Rectangular Specimen.
- N°11. "U" Specimen.
- N°12. Wide Rectangular Specimen.
- N°15. Triangular Specimen.
- N°16. Hollow Square Specimen.
- N°18. Square with two Diagonal Bars Specimen.
- N°19. "T" Beam Specimen.
- N°20. Double "T" Beam Specimen.
- N°21. Rectangular with Hole Specimen.

-EFO-K5. Kit of Articulated Structures, formed by:
- N°30. Articulated Structure 1.
- N°31. Articulated Structure 2.
- N°32. Articulated Structure 3.

-EFO-K6. Kit of Dynamic Panels, formed by:
- N°40. Dynamic Panel 1.
- N°41. Dynamic Panel 2.

AVAILABLE VERSIONS

Offered in this catalogue:

-EFO. Photoelasticity Unit.

Offered in other catalogues:

-EFOC. Photoelasticity Unit with Strain Gauges Measurement System.

-EFOV. Photoelasticity Unit with Strain Gauges Measurement System and Artificial Vision System.

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

edibon INTERNATIONAL

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REPRESENTATIVE:

Issue: ED01/12
Date: October/2012