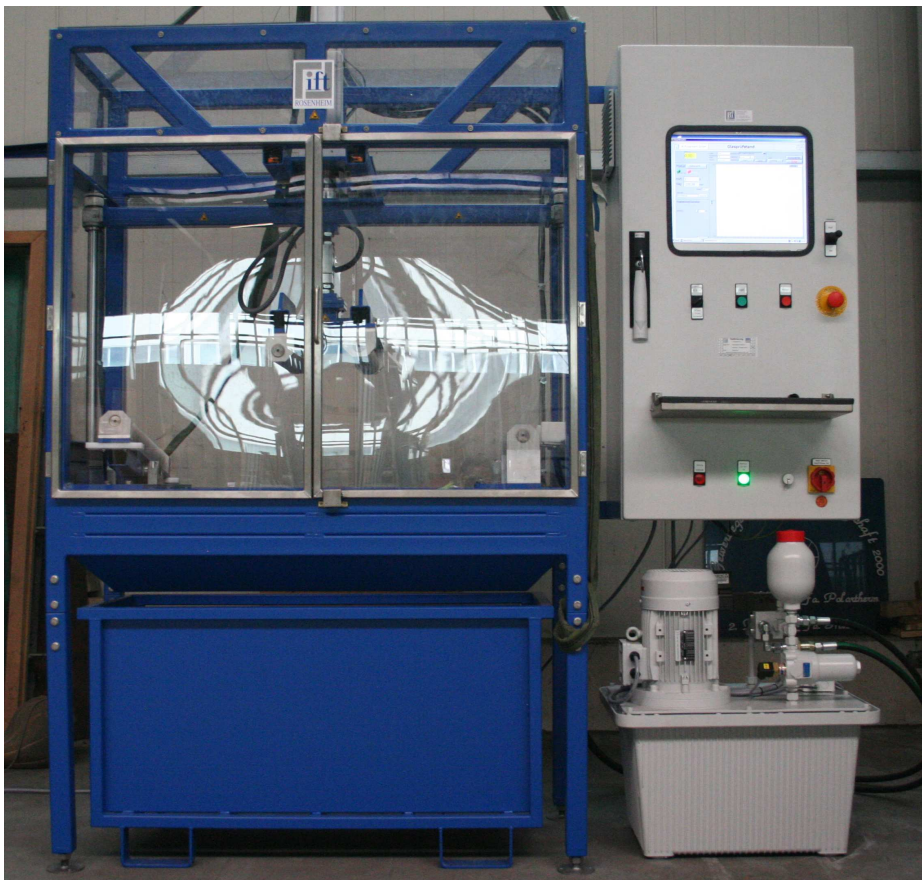


Hydraulic tension and compression test rig

Universal bending and tension machine

Type: ZPM-U



1 Description of the universal ZPM-U test rig

Test rig and mountings for tension and compression testing for single-plane safety glass or ship/marine glass. This module analyses the tensile strength of glasses.

The test rig is made of a solid coated metal frame. A hydraulic servo axis is installed in the center. Those raises controlled force loads to the specimen.

This module is able to apply forces up to ± 50 kN to the specimen. As supply a safety socket CEE 16 A 400 v is required.

Tension and compression test device



The compressing indenter attachment and the bearing are made of an Ø 50 mm steel shaft, coated with rubber, and inserted in high performance slide bearings. Operating is force controlled.

There are three different indenters to choose from:

- **G** : Glass (single-pane and toughened safety glass)
- **SG**: Shipbuilding and marine structures
- **E** : Welded corner and T-joint

Inserting of the specimen by an examiner is at an ergonomic height in the front.

The measurement occurs by a protected measuring system with a range of 500 mm that is installed protected in the hydraulic cylinder.

A premium load cell and a carries frequency amplifier measure the force load.

Through the use of high-quality signal sensors the test rig offers high precision and meets the standards. Additional it can be calibrated easily.

The examiner inserts the glass specimen and the software controls the selected automated test run independently. Beginning with the first move of the indenter, linear increase of force, and finally the return of the indenter to the start/end position after the glass is broken.

The servo axis is controlled by a computer and an analog/digital converter with a carrier frequency amplifier. The evaluation of the

breaking load and the recording of the measured values in Excel format take place by the software. A graph visualizes the test run.

The optional available Excel analysis software enables comfortable evaluation of the test results according to the standard as well as continuous quality monitoring.

Customization of the software can be offered after consulting.

The surrounding and the operating staff are protected by a Plexiglas hood. Furthermore a security check against glass fragments is installed at the doors.

A container catches the cullet below the test rig. Cost-intensive cleaning time is hereby avoided. The color is RAL 7035 (light grey). Customized color can be chosen optionally.

Tension and compression test device



2 ZPM-U test according to following standards

Test characters	Standards
<i>Optional indenter attachments for various standards</i>	
Bending strength of glass	EN 1288-3
Shipbuilding and marine structures	DIN ISO 614
Determination of the strength of welded corners and t-joints	EN 514
Single axis hinges	EN 1935
Lever handles and knob furniture	EN 1906
Requirements regarding timber blanks and semi-finished profiles	DIN EN 13307

3 Technical data

- Dimensions:
approx. 2050 x 2700 x 620 in mm (WxHxD)
- **ift** software (regulation, control, visualization and analysis; Excel data export)
- 50 kN hydraulic cylinder
- 50 kN premium load cell
- RAL 7035 coating (light grey)
- Required supply:
 - Safety socket: CEE 16 A 400 V

4 Scope of delivery

Basic version:

- Test rig with Plexiglas hood
- Basic coating of the frame in RAL 7035 (light grey)
- Hydraulic cylinder and premium load cell 50 kN with integrated measuring system
- Control unit: PC (incl. TFT screen) with operating system and **ift** software for recording, controlling, visualizing and analyzing; Excel data export
- Automated test run
- Testing of tension and compression of different specimen

5 Optional features / modifications

The following options can be offered on enquiry:

- Electro mechanic tension and compression test rig
(like basic version however, load initialization via a servo regulated electro spindle and 20 kN premium load cell)
- Bending strength of plate glasses
(EN 1288-3; four point bending indenter and four point controlling bearing incl. rubber coating)
- Determination of the strength of welded corners and t-joints
(DIN ISO 614; compressing indenter and bearing, test gap: 5 mm, test width: 110 mm)

Tension and compression test device



- Attachment for testing of PVC and plastic corners
(standard EN 514; base plate and indenter)
- Testing of timber blanks and semi-finished profiles according to DIN EN 13307 standard
(adjustable four point indenter)
- Adjustable 4-point bending indenter:
 - 4-point support
 - max. Length of specimen: 1100 mm
 - Adjustable support and indenter
 - Rotatable support points
- Excel analysis software for comfortable evaluation as well as continuous quality monitoring according to the standard
- Individual coating

Individual features, especially for your needs, can be provided after consulting.

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