Xstress 3000 **G2**/**G2R**

X-ray Stress Analyzer

The reliable and time proven technique for measuring residual stresses and retained austenite

stresstech group

Xstress 3000 Unique Features

X-RAY DIFFRACTION is the conventional and time proven technique for measuring residual stresses. Using the interatomic spacing as the ultimate gage length, the X-ray technique is ideal for and applicable to all crystalline materials, especially for metals, but also for ceramics. It measures the absolute stress without the need for an unstressed sample for calibration.

Stresstech Group's **Xstress 3000 G2/G2R** represents advances in design and construction, which provide enhanced reliability and function in the first truly portable X-ray stress analyzer.

Main features

As an easily portable instrument **Xstress 3000 G2/G2R** is suitable for measurements in the laboratory as well as in the field. It is set up in less than 10 minutes needing no special tools. Aligning before measurements is fast and easy. Measurements can be made by only one person.

Xstress 3000 G2/G2R can be operated in any position. There are no limits for sample size, neither is there need for sample cutting.

The instrument has only one software that takes care of the user interface, numerical analyses and machine control. This software is easy to update for optional features.

Residual stress and retained austenite measurements can be made in every direction. Thanks to patented semiconductor detectors measurement time is on typical steel sample two minutes or less. The distance between goniometer and measurement point is automatically adjusted.

Xstress 3000 G2/G2R includes versatile in-built safety features. Optionally it can be equipped with safety cabinet with fail-safe interlocking door switch. A special table for electropolishing makes measuring stress profiles easy and convenient to do. With a floor stand can measurements be made on parts or surfaces on which the standard tripod is hard to attach.

X-ray ring stand

G2 goniometer

X-ray elastic constant determination system

Table for electropolishing

Safety enclosure

X-Y unit with logic controller, floor stand model

X-Y unit with logic controller, table top model

Technical Specifications

Safety

- Meets or exceeds ANSI N43.3-1993 and other industry standards for open beam X-ray operation, including
  - fail-safe "X-rays on" and "shutter open" lights.
  - automatic shutdown if shutter stuck, open or removed; tube shielding is loose or removed; coolant temperature is too high or its flow disturbed.

Main Unit X3000

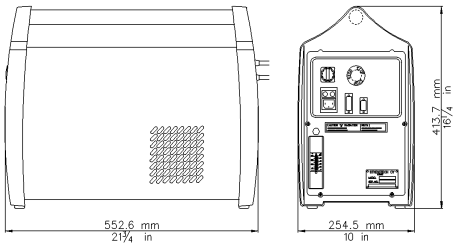
- High voltage power supply (generator) for X-ray tube continuously variable within 5 to 30 kV / 0 up to 10 mA. Ultra-compact design.
- Electrical
  90 to 260 VAC, 48 to 62 Hz, 600 VA
- Cooling
  Self-contained recirculating water cooling with heat exchanger for X-ray tube and power supply. No external water supply needed.

Goniometer

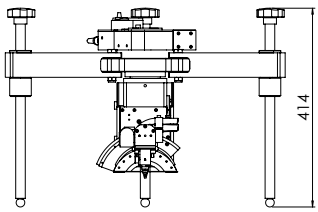
- Xstress 3000 goniometer type G2 mounted on a tripod with magnetic anchoring as a standard. χ-inclination: Programmable –45° to +45° (standard) χ-oscillation: Programmable 0° to ±6°. Distance between goniometer and the measurement point automatically adjusted to ± 0.003 mm accuracy.
- Detectors
  Dual position sensitive MOS Linear Image Sensors in symmetrical modified χ (side inclination) geometry. Angular resolution: 0.029°/pixel, 512 pixels/0.5 in. 2θ-angle is instantly adjustable by sliding the detectors manually to the desired angular position along arc-shaped detector holder. 2θ-range of the detectors is continuously adjustable within +100° to 165°
- X-ray Tube
  Miniature, 30 kV, 10 mA, 300 W, Cr, Cu, Co, Fe, V, Ti, Mn. Cr-tube provided as a standard. Tube can be replaced in less than 10 minutes without special tools.
- Cables
  5 meters standard.
- Collimator
  Replaceable, to provide 1, 2, 3, 4, and 5 millimeter spot sizes. Special collimators available as an option.

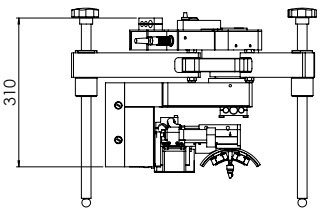
Software

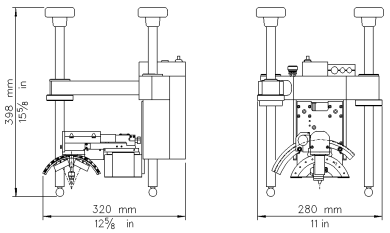
- Full featured Microsoft Windows software using thread based multitasking
  - operating system: Windows 2000 pro, Windows XP, Windows Vista
  - X-ray run-up and control
  - multiple d-sin$^2\chi$ exposure mode; peak shift calculation by cross-correlation and three other methods
  - library functions for material and measurement parameters
  - automated calibration for goniometer to sample distance
  - controlling detectors, DC motors, power supply, shutter, safety interlock functions, etc.



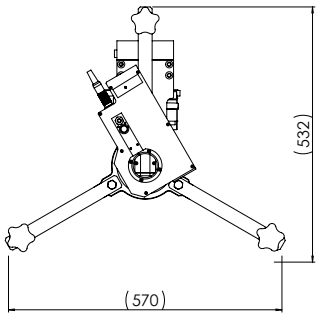
X3000 weight: 25 kg 55 lb







G2 weight: 10 kg 22 lb



G2R weight: 16 kg 35 lb

Options

- Four Peak Retained Austenite Testing Project Manager
- Ω-mode
- Software for Triaxial Stress Analysis
- φ-rotation –180° to +180° with φ-oscillation (G2R)
- χ-inclination –45° to +45°
- Extended detector window 30°
- Extended measurement distance up to 75 mm, up to 169°

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