Universal Testing Machine

CAPABILITY SHEET · THE RATE IS PART OF THE RESULT. · A STIFF FRAME, A HYDRAULIC DRIVE, GRIPS, A CO

THE ONE IDEA

PRINCIPLE	The rate is part of the result.
WHY IT MATTERS	Most materials give a different answer at a different rate, so the standards set the rate. At the yield the load stops rising, and the controller must hold the strain rate there too.

THE MACHINE

FRAME	A stiff load frame with a fixed upper crosshead and a moving lower crosshead, that stores little energy and holds the load train in line.
DRIVE	A hydraulic cylinder and power unit with a relief valve, or a servo-hydraulic drive with a control valve for a rate held from the stretch.
MEASUREMENT	Grips for each specimen, a load cell verified against a reference force transducer, and an extensometer clipped on the specimen.
GUARD	A shield in front of the grips and an emergency stop within reach, for the day that a specimen breaks.

THE METHOD

ORDER	Duty, frame and hydraulics, grips and measurement, control and guard, build and prove. The rate and the proof are the two that a quick job skips.
LIMITS	Forces, rates, speeds, strokes and temperatures come from the customer's tests, and are not printed here.

CONFIGURATIONS

HYDRAULIC FRAME	A hydraulic load frame: a stiff frame, a cylinder and a motor-driven pump, with the rate set from the force.
SERVO-HYDRAULIC	A servo-hydraulic frame: a control valve and a closed loop, so that the rate is held from the stretch.
TEMPERATURE	A frame with a temperature chamber: a chamber around the specimen, for tests hot or cold.

STANDARDS & SCOPE

STANDARDS	Public reference: ISO 6892-1 for tensile testing of metallic materials, and ISO 7500-1 for verifying tension and compression testing machines.
SCOPE BOUNDARY	It is the universal testing machine: not a fatigue machine, not a compression testing machine, not an impact machine and not a force calibrator.
STATUS	Neometrix has quoted against successive universal testing machine and tensile testing machine requirements, and no delivered universal testing machine is claimed.

DEFENCE PROGRAMMES DESK

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