

Specimen Preparation | Notching, Punching, and Milling Machines

Proper preparation of the specimen is a critical process for accurate material characterization. An appropriate preparation of the specimen, as well as an adequate notching procedure affect the final test results, generating reliable outcomes in the finish product performances. This is accomplished by several specimen preparation techniques, making them particularly suitable to select the most appropriate material and failure results analysis. According to the requirements of the main international standards, Instron® offers an extensive range of notching, milling, and punching machines designed to prepare specimens from thin to thick samples, as well as from soft to hard and reinforced plastic materials.

Main Features and Benefits

- Compact design of the instruments for an easy and fast preparation of the specimens testing operations.
- Manual and automatic models allow to obtain specimen of different size and geometries for a wide range of plastics testing applications.
- High level of results repeatability and time saving test procedures.

Application Range

- Plastics, rubbers, elastomers, reinforced plastic materials, film and thin sheets of various materials.
- From tensile testing to impact failure analysis, from mechanical to thermo-mechanical testing, from standard QC to advanced R&D.

Applicable Standards

ISO 2818, ISO 179, ISO 180, ISO 8256, ASTM 6110, ASTM D256, DIN 53453, Industry/customer specific geometries and dimensions



Notching Machines Specifications

Notching Machines are designed to notch specimens for impact resilience determinations according to Izod, Charpy and Tensile impact methods. These instruments use a linear knife cutting technique to avoid overheating and consequent stresses during the specimens notching operations. Therefore, they are able to guarantee an accurate notch preparation. Manual, motorized and fully-automatic models are available to cover the different testing needs.

Manual and Motorized Models

The manual and motorized Notching Machines are designed to notch thermoplastics material specimen. A notch, with dimension according to the requirement of the main international standards, is obtained by means of a constant profile knife with an alternating linear movement. Further for high precision, a micro metric head with digital display can be supplied to ensure a constant monitoring of the specimen notch.

Automatic Model

It is designed for laboratories which need to perform a large number of impact tests. Up to 50 specimens can be notched in a single cycle with the key parameters stored for later use. The optional knife cooling system, double notch loader and an adjustable cutting speed allow for consistent time saving and accurate notching operations at the same time.

Punching Machines Specifications

These machines are developed to obtain specimens by punching, using hollow dies of different sizes and contours. Several hundreds of dies can be created by interchangeable socket punches with different profiles and sizes according to the standards and to the customer needs. Dies are made of steel with hand finished cutting edges and can be provided with ejector for ease removal of the specimen after punching.

Milling machines Specifications

This machine is a computer numerical controlled tri-axial milling machine, used to prepare specimens from hard plastics. The working station consists of a milling machine working in X,Y and Z axis, able to prepare specimens for a full range of shapes and test methods. The instrument includes a software, having several pre-installed standard profiles. Further, it is possible to upload custom CAD drawings to set up different test parameters according to the customer needs.



Motorized Notching Machine



Pneumatic Hollow Die Punch Machine



Manual Hollow Die Punch Machine



Automatic Milling Machine

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