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CHARPY NOTCH BROACHING MACHINE

The Charpy Notch Broaching Machine TT-Series is designed for precise and repeatable preparation of V-notch and U-notch specimens used in Charpy impact testing. Developed by Torontech, this machine is widely recognized as an industry standard for accuracy, consistency, and long-term reliability in metal testing laboratories.

Accurate notch geometry is critical for evaluating the toughness and impact resistance of metallic materials. The TT-Series ensures uniform notch shape and depth, helping produce consistent test results and reducing variation between specimens. Its stable broaching process supports reliable preparation of impact test samples across a wide range of metals.

Torontech offers a comprehensive range of Charpy notch broaching machines, designed to support different testing volumes and operational needs. Whether used for low-volume laboratory work or higher-throughput sample preparation, the TT-Series delivers dependable performance and repeatable results. This combination of precision, durability, and flexibility has made the TT-Series one of Torontech’s most popular and widely adopted broaching solutions.

Key Highlights

- Designed for Charpy V-notch and U-notch specimen preparation
- Ensures high notch accuracy and consistency
- Supports reliable assessment of metal toughness and impact strength
- Stable broaching performance for repeatable test results
- Suitable for laboratory, quality control, and materials testing environments
- Proven and widely used solution in the metal testing market

APPLICATIONS

Torontech’s TT-CHB-M Manual Charpy Broaching Machine is cost effective single station unit ideal for low volume impact specimen notching.

Torontech’s TT-CHB-E2 & TT-CHB-E3 Motorized (Ball Screw) Charpy Broaching Machines are built with long lasting balls screws, linear guide support track for ensuring structural stability of the broach and geometric precision of the notch. The machines are available in options of two and three broaching stations which can work simultaneously to make V or U notches.

Torontech’s TT-CHB-H2 Hydraulic Charpy Broaching Machine is hydraulically driven with electric control of broaching tool movement wherein the broaching speed can be adjusted. Lubrication of the blade tooth is simultaneous to the movement of the broaching tool.

Fast, accurate, and reliable Charpy specimens: Extremely fast operation that can make a notch within just 10 seconds. The broach itself is made of W18Cr4V which is a very tough material and has wear-resistance properties. The lifecycle of each broach is estimated 20,000 specimens (within HRC45 hardness specimens)

The process of V-type or U-type notches respectively meets demands of ASTME23 (Standard Test Methods for Notched Bar Impact Testing of Metallic Materials), ISO148 (Steel-Charpy Impact Test - U-notch)

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1. TT-CHB-E2 Double Station Motorized Notch Broaching Machine

This machine uses a high-precision ball screw drive and linear guide support to ensure the broach's stability and the geometric precision of the incision. Equipped with a double-knife broach, it can simultaneously process two notches: one V-type and one U-type (or two V- or U-notches).

Whether processing V- or U-notches, no ATC is required. Processing one sample notch takes only 10 seconds, making it easy to operate and reliable for creating V- and U-gaps. It meets the corresponding standards of ASTM E23, ISO148, and ISO0083 both domestically and internationally.

The broaching machine adopts W18Cr4V manufacturing for high hardness and good wear resistance. Each broach can process up to 20,000 samples with materials within HRC40.

Applicable Standards

- ASTM E23-02a "Standard Test Methods for Notched Bar Impact Testing of Metallic Materials"
- ISO148-2008 "Metallic materials – Charpy pendulum impact test"
- DIN 50 115-1991 "Metallic materials – Impact testing – Specimen dimensions and preparation"

Main Function

Used for making the metal Charpy pendulum impact specimen notch.

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2. TT-CHB-E3 Triple Station Motorized Notch Broaching Machine

This machine uses a high-precision ball screw drive and linear guide support, ensuring the broach's stability and the geometric precision of the incision. Equipped with a triple-knife broach, it can simultaneously process three notches: three V-types or three U-types (or a combination of two V-types and one U-type, or two U-types and one V-type).

It is easy to operate and reliable for processing V- and U-notches, meeting ASTM E23, ISO148, ISO0083 standards.

The broaching machine is made of W18Cr4V, offering high hardness and good wear resistance. Each broach can process up to 20,000 samples with materials within HRC40.

Applicable Standards

- ASTM E23-02a "Standard Test Methods for Notched Bar Impact Testing of Metallic Materials"
- ISO148-2008 "Metallic materials – Charpy pendulum impact test"
- DIN 50 115-1991 "Metallic materials – Impact testing – Specimen dimensions and preparation"

Main Function

Used for making the metal Charpy pendulum impact specimen notch.

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3. TT-CHB-H2 Double Station Hydraulic Notch Broaching Machine

The TT-CHB-H2 Impact Specimen Notch Broaching Machine is specialized equipment designed to work with metallic pendulum impact testing machines. This machine uses hydraulic drive and electric control to manage the rise and fall of the broach. The broach lifting speed is adjustable, and lubricating oil is used to ensure the blade parts are properly lubricated, ensuring the sample meets the required notch size and surface finish.

The use of a forming principle results in good consistency in the machined notches. The broach is made from high-quality steel alloy, offering high hardness, good wear resistance, and a long service life, with each broach capable of processing over 20,000 samples with hardness within HRC40.

Applicable Standards

- ASTM E23-02a "Standard Test Methods for Notched Bar Impact Testing of Metallic Materials"
- ISO148-2008 "Metallic materials – Charpy pendulum impact test"
- DIN 50 115-1991 "Metallic materials – Impact testing – Specimen dimensions and preparation"

Main Function

Used for making the metal Charpy pendulum impact specimen notch.

Main Characteristics

- The broach is made using high-quality alloy steel with cutting tool parameters especially designed for a long service life.
- The hydraulic system features a compact structure and layout with convenience of use in mind.
- Equipped with a blade tooth cooling lubrication system to ensure the sample meets the required notch size and surface finish, extending the broach's service life.
- The broach's raise and fall guide uses a high-precision linear guide, ensuring equipment accuracy and extending its service life.

- The hydraulic system uses high quality components significantly improving equipment's operation and stability.
- Capable of processing two samples simultaneously, improving working efficiency.

TECHNICAL SPECIFICATIONS

TT-CHB-M Manual Single Station Notch Broaching Machine	
Model	TT-CHB-M
Notch Type	V-or U-(2mm)
Processing the sample size	10×10□ 7.5 or 5□ ×55mm
Notching mode	Manual control
Notching mode	Manual control
Broach stroke	350mm
Broach Materials	W18Cr4V
Power	No electricity
Dimensions (mm)	350*350*600
Weight	100Kg
Standard Configuration	
Main Machine, V2 Broach	

TT-CHB-E2 Double Station Motorized Notch Broaching Machine	
Notch Type	V (2mm) - U (2mm)

TT-CHB-E2 Double Station Motorized Notch Broaching Machine	
Sample Size	10 × 10 × 55mm
Broach Itinerary	350mm
Broaching Speed	2.3m/min
Power	380V 50Hz 0.5Kw, working motor: 0.4Kw
Dimension	350 × 510 × 1280mm
Equipment Weight	180Kg
Standard Configuration	
Main Machine V2 Broach: Qty 1 U2 Broach: Qty 1	

TT-CHB-E3 Triple Station Motorized Notch Broaching Machine	
Processing Notch	V (2mm) - U (2mm)
Sample Size	10 × 10 × 55mm
Broach Itinerary	350mm
Broaching Speed	2.3m/min
Power	380V 50Hz 0.5Kw, working motor: 0.4Kw
Dimension	350 × 510 × 1280mm
Equipment Weight	180Kg
Standard Configuration	

TT-CHB-E3 Triple Station Motorized Notch Broaching Machine
Main Machine V2 Broach: Qty 2 U2 Broach: Qty 1

TT-CHB-H2 Double Station Hydraulic Notch Broaching Machine	
Sample Notch Type	U type (U2), V type (V2)
Processing Sample Size	10×10 (7.5 or 5) × 55mm
Broach Hardness	Around HRC65
Installed Broach Quantity	2
Cutting Speed	2.5m/min (adjustable)
System Pressure	2.5MPa
Hydraulic Oil Storage	25L
Broach Stroke	340mm (U2, V2)
Broach Materials	W18Cr4V
Motor Power	370W
Dimensions	480mm × 660mm × 1200mm (L×W×H)
Weight	200Kg
Standard Configuration	
Main Unit: one V2 Broach: Qty 1 U2 Broach: Qty 1	

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