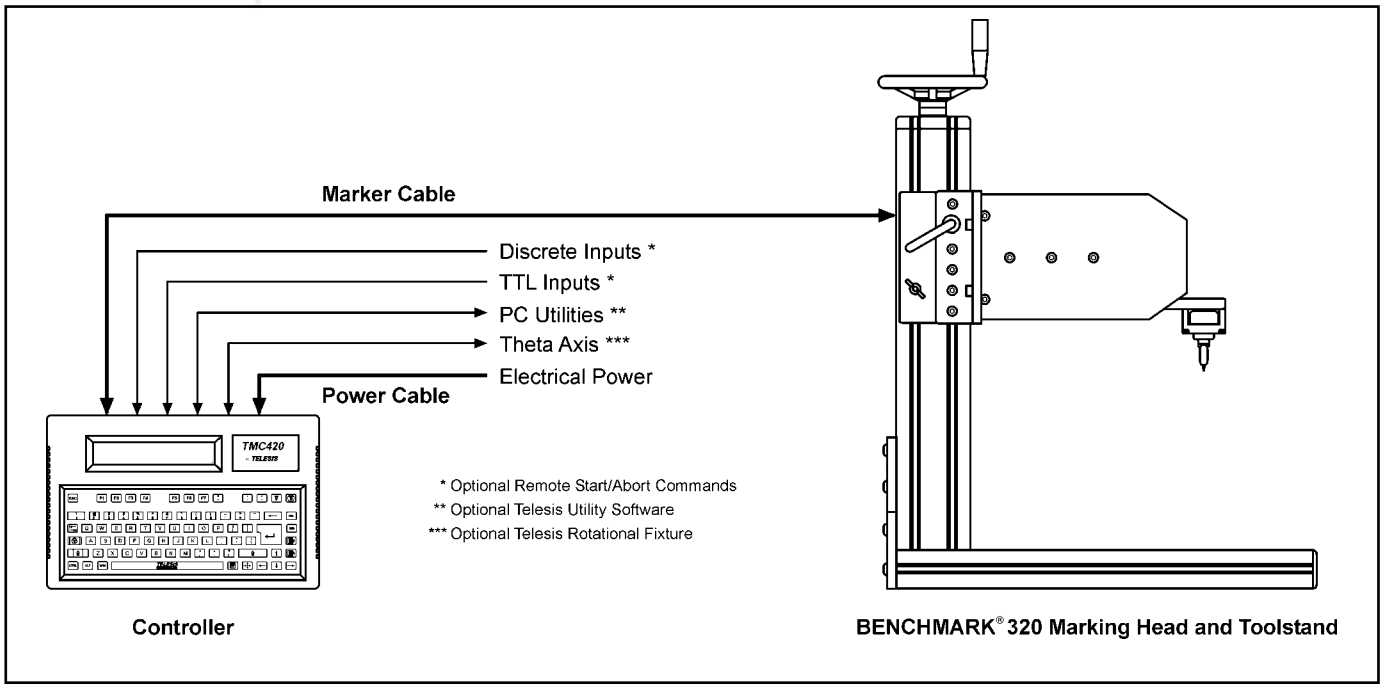


System Overview

The BENCHMARK®320 marking system permanently prints messages into a variety of materials such as steel, aluminum, and plastic. A hardened pin is accelerated to indent dot matrix characters into the item being marked. Character shape, size, density, and location are determined by the user through the marking system software.

The **Marking Head** is an electromechanical marker. The internal, mechanical components position the pin cartridge and an electric solenoid fires the marking pin. A spring returns the pin to its idle position within the cartridge. The marking head moves the pin cartridge through X- and Y-axis motions to reach the correct position for each dot of the characters to be marked. The system software automatically controls pin extension to mark the message.

The marker uses two stepper-motor drives to rapidly and accurately position the pin at coordinate-defined locations in the marking window within 0.032 mm (0.00125"). The marker accommodates the rigorous dynamics of impacting, rebounding, and rapid positioning of the marking pin through a system of rigid rails and ball bearing saddles, timing belts, and direct-drive, toothed pulleys.

The floating pin design permits high quality, consistent marks on irregular, slightly curved surfaces. It also accommodates applications where marking surfaces cannot be positioned at a consistent distance from the marker.

The unique design of the BENCHMARK®320 provides liberal access for securing and positioning parts for printing. Using a gantry arm and a programmable park position, you can tuck the impact pin out of the way when the marker finishes printing. Parts can then be easily secured and removed in front of the marking head.

The **Marker Cable** connects the marker to the controller. The cable is 4 m (13 ft.) long and is pre-wired to the marking head.

The **Pin Cartridge**, machined from plastic materials, offers long life with little maintenance. Screws attach the pin cartridge to the marking head for easy removal, cleaning, and pin replacement.

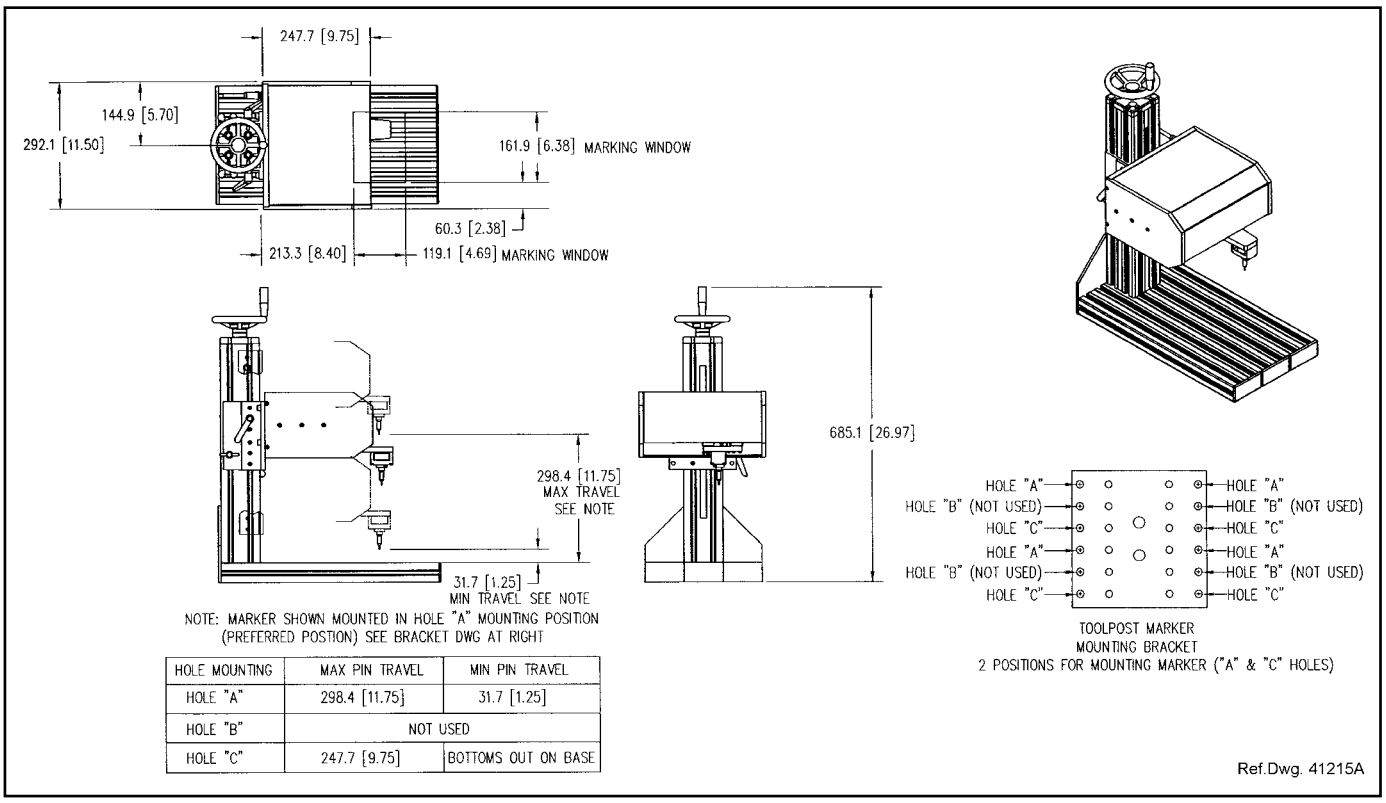
The **25XLE-series Marking Pins** are made of tungsten carbide and are available in 30° and 45° cone angles.

The **Controller** includes an integrated keyboard with a four line LCD display. It provides the electrical interface and software control of the BENCHMARK®320 marking head. (Refer to *Controller Specifications* for details.)

The **Toolstand** holds the marking head and provides a base for securing parts to be marked. It uses a screw jack with an adjustment wheel to position the marker above the marking surface. Adjustment locks secure it in place. The generous vertical adjustment accommodates parts up to 298.4 mm (11.75") high. The toolstand base contains slots to accommodate part fixtures. The toolstand comes with two 8mm T-nuts to aid in securing the parts for marked.

System Options

- Controller Mounting Bracket Kit
- Foot Switch (Start Print)
- Pushbutton Station (Start/Abort)
- Model RD3 Theta Axis Rotational Fixture
- Bar Code Scanner
- Backup Utility Software
- Upgrade Utility Software
- Logo/Font Generator Software



NOTE: MARKER SHOWN MOUNTED IN HOLE "A" MOUNTING POSITION (PREFERRED POSTION) SEE BRACKET DWG AT RIGHT

HOLE MOUNTING	MAX PIN TRAVEL	MIN PIN TRAVEL
HOLE "A"	298.4 [11.75]	31.7 [1.25]
HOLE "B"	NOT USED	
HOLE "C"	247.7 [9.75]	BOTTOMS OUT ON BASE

System Setup

1. Position toolstand assembly in desired location.
2. Mount marking head to toolstand assembly using four socket head cap screws (provided).
3. Adjust pin stroke for proper pin impact depth.
4. Locate controller as close as practical to marking head. Standard marker cable length is 4 m (13 ft.).

   Note: The controller is not a sealed unit. Protect it from potentially damaging conditions; do not block case vents.
5. Ensure controller power switch (on back panel) is OFF; connect power cable to controller.
6. Connect marker cable from marking head to controller; tighten securely.
7. Position controller power switch to ON (on back panel) to start the marking system software.

Marking Head Specifications

DIMENSIONS	*see illustration above*
WEIGHT	Marking Head and cable: 8.63 Kg (19 lb.) Toolstand: 16 Kg (35 lb.)
OPERATING TEMP.	0° to 50° C (32° to 122° F), non-condensing
MARKING AREA	150 x 100 mm (6.0 x 4.0")
PIN TYPES	25XLE-series
PIN MATERIAL	Tungsten Carbide

Marking Characteristics. The BENCHMARK®320 can accommodate character sizes from .762 to 100 mm (.030 to 4.0") in .025 mm (.001") increments. Characters can be rotated in 1° increments with printing resolutions from 5 dots/cm (10 dots/in.) to 75 dots/cm (200 dots/in.) for an engraved look.

Marking Speeds. Generally, the system will mark three characters per second using 5x7 font, 3 mm (.118") high, 2mm (.080") wide characters. Speeds will vary slightly depending on the selected character size, style, and dot density. Specific times can be verified by a Telesis representative.

Marking Noise. Although every attempt is made to reduce noise, the material being marked significantly influences the noise level. For example, marking a solid lead block produces less noise than marking a thin-walled steel pipe.

Pin Life. Pin life depends largely on the type of material being marked, how hard or abrasive it is, and the required marking depth. On typical metals with a hardness of Rockwell Rb47, marking at a depth of .127 mm (.005"), carbide pins average approximately 9 million impressions before needing sharpened.

Marking Depth. The BENCHMARK®320 can obtain a marking depth of .127 mm (.005") in mild steel (Rb53) using a 25XLE carbide pin with a 45° cone angle. The depth of mark can be adjusted over a significant range by changing the impact distance (pin stroke) or the impact force (software parameter). Specific depths can be verified by a Telesis representative.

Controller

System Software. The marking system software is permanently installed in the controller. It provides the user interface for the operator to control the marker. The software also provides a library for storing, loading, and editing user-defined patterns. Patterns are files stored in the controller memory. The controller can store up to 75 patterns. Each pattern contains one or more fields. A field defines a single object and how it will be printed. Fields may define text strings, arcs, arctext strings, Goto or Pause commands, or machine-readable data matrix symbols. Text fields may include alphanumeric characters, symbols, and special message flags. The message flags automatically insert data into the text string, such as serial numbers, times, and dates.

Specifications:

DIMENSIONS	*see illustration below*
RATING	NEMA 1 (I.P. 30)
WEIGHT	2.15 Kg (4.75 lb.)
OPERATING TEMP.	0° to 50°C (32° to 122° F), non-condensing
REQUIRED POWER	95-130 VAC, 2 amps, 50-60 Hz single phase 200-250 VAC, 1 amp, 50-60 Hz single phase
INPUT SIGNALS	12 to 24 VDC (optional, customer-supplied)

Back Panel. The power entry module contains fuses for circuit protection and connects the controller to facility electrical power. The back panel also provides a Marker port for connecting the marking head and an Aux Axis port for connecting an optional Telesis rotary drive (Theta Axis) fixture.

Input Control Signals. The controller is configured for VDC input only. The TTL Input port may be used to connect a remote foot switch or remote pushbutton station for Start Print commands. The Discrete Input port may be used for remote Start Print and Abort signals. Cable connectors and connector pins are supplied with the controller for constructing appropriate interface cables.

START PRINT	Input signal, begins print cycle
ABORT	Input signal, aborts print cycle
INPUT COMM	For all inputs (+ or – supply)

PC Utilities. The PC Utilities port on the controller back panel is used for connecting to an optional, customer-supplied PC to access Telesis software utilities. Utility software may be used to backup patterns stored in the controller, to download a custom font to the controller, or to download controller software upgrades.

Bar Code Scanner Interface. The PC Utilities port also allows you to connect an optional bar code scanner. When the bar code scanner interface is used, the marking system reads the scanned data from the bar code, then inserts it into the variable text field of the current pattern. If more than one variable text field exists in the pattern, the operator must select which field is to receive the data.