* Optional Remote Start/Abort Commands
** Optional Telesis Utility Software
** Optional Bar Code Scanner/Wand

**BenchMark®460 Hand-held Marker**

**BenchMark®Controller**

## System Overview

The BenchMark®460 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 rectilinear 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 0.006 mm (0.00024"). The marker accommodates the rigorous dynamics of impacting, rebounding, and rapid positioning of the marking pin through a linear rail/ball bearing saddle assembly, ceramic-coated guide shaft/linear bushing assemblies, and drive motors with concentric, linear drive screws.

The lightweight and portable BenchMark®460 was designed for remote operation. The hand-held marker incorporates a pistol grip handle with a Start Print pushbutton switch. It can be used in virtually any orientation. The integral standoff with its padded front surface is held against the marking surface while marking. The standoff can be adjusted forward and aft to change the pin stroke.

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 **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 **BenchMark® Controller** includes an integrated keyboard with a four line LCD display. It provides the electrical interface and software control of the BenchMark®460 marking head. (Refer to *BenchMark® Controller Specifications* for details.)

## System Options

- Controller Mounting Bracket Kit
- Foot Switch (Start Print)
- Pushbutton Station (Start/Abort)
- Bar Code Scanner or Bar Code Wand
- Logo/Font Generator Software
- Backup Utility Software
- Upgrade Utility Software
- Language Translation Utility Software

Ref. Dwg 54919 –
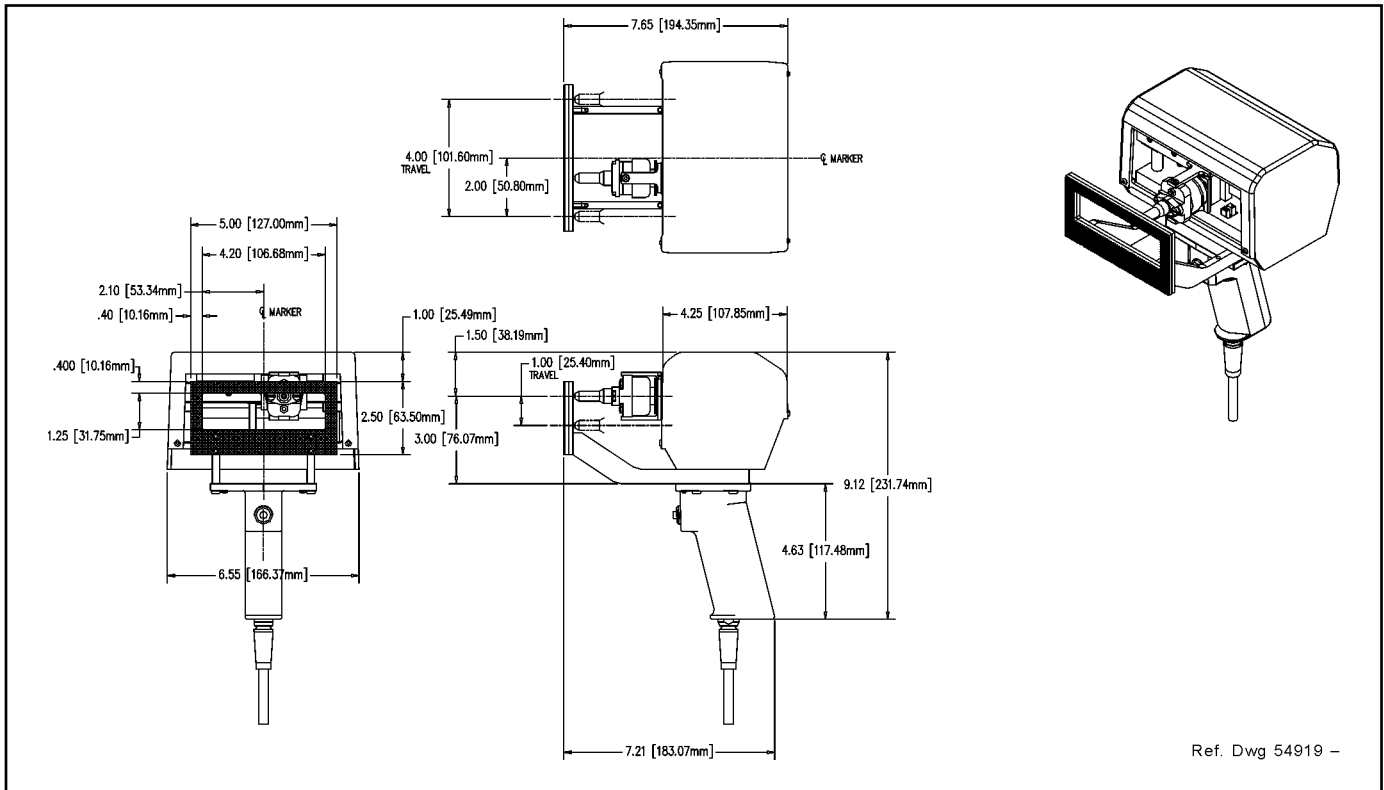
## System Setup

1. Adjust standoff position to increase or decrease the pin stroke, as applicable, for proper pin impact depth.
2. Locate controller as close as practical to marking head. The 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.**
3. Ensure controller power switch (on back panel) is OFF; connect power cable to controller.
4. Connect marker cable from marking head to controller; tighten securely.
5. Position controller power switch to ON (on back panel) to start the marking system software.

## BenchMark®460 Marking Head Specifications

| | |
|---|---|
| **DIMENSIONS** | *see illustration above* |
| **WEIGHT** | Marking Head: 1.58 Kg (3.47 lb.) Marker Cable: 0.80 Kg (1.76 lb.) |
| **OPERATING TEMP.** | 0° to 50° C (32° to 122° F), non-condensing |
| **MARKING AREA** | 100 x 25 mm (4.0 x 1.0") |
| **PIN TYPES** | 25XLE-series |
| **PIN MATERIAL** | Tungsten Carbide |

**Marking Characteristics.** The BenchMark®460 can accommodate character sizes from .762 to 100 mm (.030 to 4.0") in .025 mm (.001") increments. Characters can be rotated 359° in 1° increments with a printing resolution range from 5 dots/cm (10 dots/in.) to 75 dots/cm (200 dots/in.) for an engraved look.

**Marking Speeds.** The system will mark 2.3 characters per second (max.) 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®460 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 force (software parameter) or the impact distance (pin stroke). Note that the maximum pin stroke distance is 4 mm (.15"). Specific depths can be verified by a Telesis representative.

## BenchMark® Controller Specifications

**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<br>200-250 VAC, 1 amp, 50-60 Hz single phase |
| INPUT SIGNALS | 12 to 24 VDC (optional, customer-supplied) |

**Power and Marker Connections.** 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. **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) |

**Optional PC Utilities Interface.** 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.

**Optional 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.



OPTIONAL MOUNTING BRACKET KIT (35991)

DO NOT BLOCK VENT ON EITHER SIDE.

SURROUNDING ENVELOPE DIMENSIONS

CAUTION

This envelope provides minimum clearance for cable connections and air flow. It does not guarantee adequate cooling.

If controller is enclosed, ensure ambient temperature does not exceed acceptable level. Do not block fan or vents in the controller's case.

Power Entry — Discrete Input — TTL Input — PC Utilities — Marker — Aux Axis

Ref. Dwg 38324A*

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