



# STEP MASH THERMOMETER User Guide

The Tel-Tru Step Mash Thermometer is designed to provide brewers essential temperature information at a glance during the mashing process.

## GENERAL INFORMATION

- Accuracy is  $\pm 1\%$  full span per ASME B40.3 Grade A
- Over temperature limit - up to 250°F 100%
- For accurate reading thermometer must be immersed PAST GROOVE on lower portion of stem

## USE

Modifying the temperature profile during the mashing process allows the brewer to customize wort fermentability. By controlling the temperature you can precisely adjust a wort to produce a particular style of beer.

- Lower mash temperature (less than 150°F) yields a thinner bodied, drier beer
- Higher mash temperature (greater than 156°F) yields a less fermentable, sweeter beer

*Note: 153°F works well as a compromise for beta and alpha rests.*

## CAUTION

- Any severe shock to the thermometer dropping, bending of the stem or head, etc., can possibly impair its accuracy. Use caution when gripping dial to push the thermometer into thicker mashes, and never use the thermometer to stir your mash.

## HANDLING

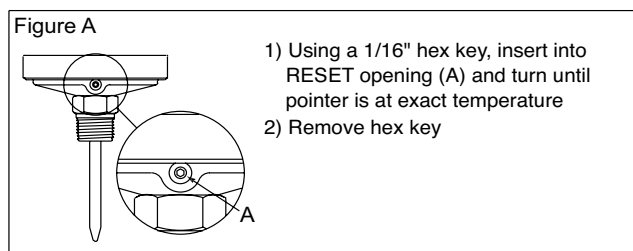
- Insert stem into the mash to the desired depth; the groove on the stem indicates the minimum depth.
- Hold the thermometer in position for at least 1 minute to let the reading stabilize.

## CALIBRATING INSTRUCTIONS

- A master thermometer with a high degree of accuracy should be used for calibrating.
- Place thermometer to be calibrated alongside a master thermometer. Immerse both thermometers into an agitated liquid for at least 3 minutes. Compare temperatures.

**Important:** For accurate reading, thermometer must be immersed PAST GROOVE on lower portion of stem. Master thermometer should also be immersed to same depth.

**Note:** Units can be calibrated by using the external reset feature as shown in Figure A below.



- 1) Using a 1/16" hex key, insert into RESET opening (A) and turn until pointer is at exact temperature
- 2) Remove hex key

Happy brewing!



Mash Step	Temperature	Description
Protein Rest	113°-138°F	<ul style="list-style-type: none"> <li>• Optimal at 122°F</li> <li>• Typically done for 15-30 minutes</li> <li>• Breaks down peptones, polypeptides and peptides to make them smaller, improving clarity without negatively affecting head retention or body</li> <li>• Breaks down long-chain proteins to medium and short-chains</li> </ul>
Beta-Amylase	130°-150°F	<ul style="list-style-type: none"> <li>• Most active at 148°F</li> <li>• Denatured within 40–60 minutes at 148°F</li> <li>• Creates small sugar chains that are highly fermentable</li> <li>• Leaves the lowest finished gravity and lightest body</li> </ul>
Alpha-Amylase	150°-160°F	<ul style="list-style-type: none"> <li>• Most active at 158°F</li> <li>• Activity will cease after 2 hours at 158 °F</li> <li>• Produces glucose, maltose and un-fermentable dextrins</li> <li>• Leaves the highest finished gravity and fuller body</li> <li>• Can be slower to work than beta-amylase</li> </ul>
Mash out	168°-170°F	<ul style="list-style-type: none"> <li>• Stops the enzyme action (preserving fermentable sugar profile)</li> <li>• Makes the grain bed and wort more fluid prior to lautering</li> </ul>

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