The ICT / FCT product lines, which include the LFRE and PogoPlus® Series, address the unique demands of loaded board and vacuum fixture applications. Most probes feature an enhanced version of the legendary bias-ball design to virtually eliminate “false opens”, proprietary metal plating processes for higher conductivity, and precision MicroSharp™ steel tips for long-lasting durability. A full range of sizes accommodates applications with mixed test center requirements.

**Mixed Test Centers**

In loaded board applications, probes are designed for use on 0.039, 0.050, 0.075 and 0.100 inch test centers. They can also be mixed in single or dual-stage fixtures, even those with minor variations in plunger travel. When mounted correctly, probe plunger tips will align when compressed to recommended working travel. This ensures contact integrity between the tip and test pad. Minor adjustments may be required to compensate for variations in accessing component leads, flat test pads, or through-holes.

- **LFRE**: The solution for your RoHS complaint boards and lead-free solder test points.
- **POGO**: High performance ICT / FCT probes similar to the LFRE probe, but with gold plated tips. Features the legendary PogoPlus® Bias Ball design.
- **METRIX**: Probe series for smallest test centers down to .039 inch or 1.00 mm.
- **LTP/LFLT**: High performance ICT/FCT long probes for dual-stage fixtures.
MTX-39
39 mil (1.00 mm)

Mechanical
- Recommended Travel: .167 (4.24)
- Full Travel: .250 (6.35)
- Operating Temperature:
  - Standard Spring: -55°C to +105°C
  - Alternate Spring: -55°C to +150°C
  - Elevated Spring: -55°C to +105°C

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>1.02</td>
<td>4.0</td>
</tr>
<tr>
<td>Alternate</td>
<td>2.15</td>
<td>6.0</td>
</tr>
<tr>
<td>Elevated</td>
<td>1.17</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Electrical (Static Conditions)
- Current Rating: 3 amps
- Average Probe Resistance: <15 mΩs

Materials and Finishes
- Plunger: High performance alloy, LFRE proprietary plating
- Barrel: BeCu, Gold plated over hard Nickel
- Spring:
  - Standard: Music Wire
  - Alternate: Stainless Steel
  - Elevated: Music Wire
- Ball: Stainless Steel

Receptacle
- Hole diameter: Ø .028 (0.70)
- Suggested drill: #70 or 0.70 mm
- Recommended wire gauge: 28-30 AWG

Material Housing
- HPR-40T: Work-hardened Nickel Silver, Gold plated over hard Nickel
- HPR-40W: Work-hardened Nickel Silver, Gold plated over hard Nickel
- STT: Work-hardened BeCu, Gold plated over hard Nickel

Termination Example

Metrix Summary
- Unified receptacles across all test center spacing
- Large variety of tips and receptacles
- Proprietary LFRE plunger plating
- Bias ball design

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
**Metrix Introduction**

For test center spacing below 50mil, conventional ICT Probes reach their limits. ECT Metrix Probes overcome this issue by providing test center spacing as low as 39mil. In a conventional probe/receptacle design, the pitch is limited by the largest diameter, which typically is the diameter of the receptacle. The Metrix probe has a stepped down diameter tail. This allows the probe to be plugged into a receptacle sitting underneath the probe. Now, since the probe is placed above the receptacle, it allows you to use a receptacle with the same or lesser diameter as the probe. Valuable space is saved between the two adjacent probes which now can be placed in a tighter spacing.

---

### Tip Style

<table>
<thead>
<tr>
<th>H</th>
<th>I</th>
<th>I8</th>
<th>I15</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .047 (1.19)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .020 (0.51)</td>
<td>Ø .021 (0.53)</td>
<td>Ø .022 (0.56)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L</th>
<th>L18</th>
<th>T</th>
<th>T1</th>
<th>T24</th>
<th>T30</th>
<th>T67</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .040 (1.02)</td>
<td>Ø .018 (0.46)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .020 (0.51)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Z</th>
<th>Z1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .047 (1.19)</td>
<td>Ø .038 (0.97)</td>
</tr>
</tbody>
</table>

---

### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>0.72 (20)</td>
</tr>
<tr>
<td>Alternate</td>
<td>- 6</td>
<td>2.39 (68)</td>
</tr>
<tr>
<td>Elevated</td>
<td>- 7</td>
<td>1.68 (48)</td>
</tr>
<tr>
<td>High</td>
<td>- 8</td>
<td>1.73 (49)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>- 10</td>
<td>2.84 (81)</td>
</tr>
</tbody>
</table>

### Electrical (Static Conditions)

- **Current Rating**: 6 amps
- **Average Probe Resistance**: <10 mOhms

### Materials and Finishes

- **Plunger**: High performance alloy
- **LFRE proprietary plating**
- **Barrel**: BeCu, Gold plated over hard Nickel
- **Spring**: Stainless Steel
- **Ball**: Stainless Steel

### Receptacle

- **Hole diameter**: Ø .028 (0.70)
- **Suggested drill**: #70 or 0.70 mm
- **Recommended wire gauge**: 28-30 AWG

---

---
**MXLT-39**

39 mil (1.00 mm)

**Mechanical**
- Recommended Travel: 0.315 (8.00)
- Full Travel: 0.500 (10.16)
- Operating Temperature: -55°C to +150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>4.5</td>
<td>4.00 (113)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- Current Rating: 3 amps
- Average Probe Resistance: <15 mΩ

**Materials and Finishes**
- Plunger: High performance alloy
- Barrel: BeCu, Gold plated over hard Nickel
- Spring: Stainless Steel
- Ball: Stainless Steel

**Receptacle**
- Hole diameter: Ø .028 (0.70)
- Suggested drill: #70 or 0.70 mm
- Recommended wire gauge: 28-30 AWG

**Material Housing**
- HPR-40T: Work-hardened Nickel Silver, Gold plated over hard Nickel
- HPR-40W: Work-hardened Nickel Silver, Gold plated over hard Nickel
- STT: Work-hardened BeCu, Gold plated over hard Nickel

**Order Code**
- MXLT-39

**Tip Style**
- I8
- I15
- T20
- U

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>Ø .017 (0.43)</th>
<th>Ø .017 (0.43)</th>
<th>Ø .019 (0.48)</th>
<th>Ø .019 (0.48)</th>
</tr>
</thead>
</table>

**Dimensions in inches (millimeters). Specifications subject to change without notice.**

Consult factory for other temperature requirements, and applications below -40°C.

Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.
### Tip Style

<table>
<thead>
<tr>
<th>B</th>
<th>I8</th>
<th>I15</th>
<th>L</th>
<th>L24</th>
<th>T</th>
<th>T24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .022 (0.56)</td>
<td>Ø .020 (0.51)</td>
<td>Ø .020 (0.51)</td>
<td>Ø .040 (1.02)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .022 (0.56)</td>
</tr>
</tbody>
</table>

### MXLT-50
50 mil (1.27 mm)

#### Mechanical
- **Recommended Travel:** .315 (8.00)
- **Full Travel:**
  - Standard Spring: .400 (10.16)
  - Alternate Spring: .350 (8.89)
  - High Spring: .350 (8.89)
- **Operating Temperature:** -55°C to +105°C

#### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>4.5</td>
<td>1.09 (31)</td>
</tr>
<tr>
<td>Alternate</td>
<td>7</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>High</td>
<td>9.6</td>
<td>1.50 (43)</td>
</tr>
</tbody>
</table>

#### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mΩ

#### Materials and Finishes
- **Plunger:** High performance alloy
- **Barrel:** BeCu, Gold plated over hard Nickel
- **Spring:**
  - Standard: Music Wire
  - Alternate: Music Wire
  - High: Music Wire
- **Ball:** Stainless Steel

#### Receptacle
- **Hole diameter:** Ø .028 (0.70)
- **Suggested drill:** #70 or 0.70 mm
- **Recommended wire gauge:** 28-30 AWG
- **Material Housing:**
  - **HPR-40T:** Work-hardened Nickel Silver, Gold plated over hard Nickel
  - **HPR-40W:** Work-hardened Nickel Silver, Gold plated over hard Nickel
  - **STT:** Work-hardened BeCu, Gold plated over hard Nickel
ECT LFRE: Cleaner Probes, Cleaner Environment

The Lead Free Challenge

Lead free solder can cause many problems during PCBA test. Lead free solder has a higher reflow temperature which can result in harder and stickier solder flux resin and a thicker, harder oxide layer. This thicker layer of resin and oxide is more difficult to penetrate and increases wear on the pogo pin. Lead free solder resin and oxides can also increase debris transfer to spring probes. These are many of the issues found in OSP and No-Clean applications. ECT’s LFRE series of test probes were specifically designed to solve these challenges.

ECT Lead Free POGO® Series

ECT’s LFRE probe line incorporates a number of features that will significantly reduce the issues that arise when switching to lead free solder as well as those contact issues that arise with OSP and No-Clean solder flux.

- **LFRE Plating**
  
  Our Lead Free probe incorporates a harder and slicker plating that not only resists wear but also reduces solder and debris transfer.

- **Higher Preload**
  
  All of our LFRE probes incorporate higher preloads. Higher preload reduces spring force variation with board flex and increases the initial impact penetration, resulting in higher first pass yields.

- **PogoPlus® Bias Ball Design**
  
  The PogoPlus internal bias ball design guarantees uninterrupted electrical contact with the probe sidewall virtually eliminating probe-related false opens.

- **Pointing Accuracy**
  
  ECT’s LFRE and POGO probes incorporate a double roll close, which offers the industry’s best pointing accuracy. Increased pointing accuracy means the probe is less likely to touch the edge of the pad where the solder flux accumulates, a great benefit when using Lead Free solder and/or No-Clean.

---

**LFRE Plating vs. the Industry Standard Plating**

The industry standard for plated POGO pins is gold electroplate alloyed either with cobalt or nickel to enhance its hardness. Hardness is increased from 90 Knoop for 99.7% pure electroplated gold to 130 to 200 Knoop when alloyed with nickel or cobalt. ECT’s LFRE plating is significantly harder than the industry’s standard gold plating. Our new proprietary plating has a hardness range of 550 to 650 Knoop. This makes the probe tips more durable and less susceptible to solder and material transfer.

---

**Contaminant Transfer**

The LFRE plating technique reduces contact issues with OSP and No-Clean solder flux.
High Performance Lead Free Probe

***LFRE-39***

39 mil (1.0 mm)

**Dimensions in inches (millimeters). Specifications subject to change without notice.**

Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.

### High Performance Lead Free Probe

**Tip Style** (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>H</th>
<th>I</th>
<th>L15</th>
<th>L15</th>
<th>T15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .028 (.711)</td>
<td>Ø .015 (0.38)</td>
<td>Ø .015 (0.38)</td>
<td>Ø .015 (0.38)</td>
<td>Ø .015 (0.38)</td>
</tr>
</tbody>
</table>

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>-.54</td>
<td>5.4 (153)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**

- **Current Rating:** 2 amps
- **Average Probe Resistance:** <50 mOhms average

**Materials and Finishes**

- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Nickel Silver, Gold plated
- **Spring:** Stainless Steel
- **Receptacle**
  - **Hole diameter:** Ø .0307 to .0317 (.77 to .80)
  - **Suggested drill:** 1/32" or .8 mm
  - **SPR Housing:** Work-hardened BeCu, Gold plated over hard Nickel
  - **SPT Housing:** Work-hardened Brass, Gold plated over hard Nickel with nylon insulator

* Life specifications are based on lab results but are dependent on cleaning frequency and the specific customer application, including DUT materials, handler kit, maintenance, etc.
**LFRE-72**
50 mil (1.27 mm)

**Mechanical**
- Recommended Travel: 0.167 (4.24)
- Full Travel: 250 (6.35)
- Operating Temperature: -55°C to 150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>0.60 (17)</td>
<td>2.0 (57)</td>
</tr>
<tr>
<td>Standard</td>
<td>1.53 (43)</td>
<td>4.0 (113)</td>
</tr>
<tr>
<td>Alternate</td>
<td>2.14 (61)</td>
<td>6.0 (170)</td>
</tr>
<tr>
<td>Elevated</td>
<td>2.67 (76)</td>
<td>7.0 (198)</td>
</tr>
<tr>
<td>High</td>
<td>3.12 (88)</td>
<td>8.0 (227)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>3.83 (109)</td>
<td>10.0 (283)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- Current Rating: 3 amps
- Average Probe Resistance: <15 mΩhms

**Materials and Finishes**
- Plunger: High performance alloy
- Barrel: Work hardened BeCu, Gold plated over hard Nickel
- Spring: Stainless Steel
- Ball: Stainless Steel

**Receptacle**
- Hole diameter: 0.039 (0.99)
- Suggested drill: #61 or 0.99 mm
- Material Housing: Hardened BeCu, Gold plated

**Tip Style** *(ADDITIONAL TIPS AVAILABLE)*

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Ø .035 (0.89)</td>
</tr>
<tr>
<td>I</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I8</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I15</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I40</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>J</td>
<td>Ø .029 (0.51)</td>
</tr>
<tr>
<td>T1</td>
<td>Ø .019 (0.48)</td>
</tr>
<tr>
<td>T20</td>
<td>Ø .019 (0.48)</td>
</tr>
<tr>
<td>T38</td>
<td>Ø .038 (0.97)</td>
</tr>
<tr>
<td>U</td>
<td>Ø .019 (0.48)</td>
</tr>
</tbody>
</table>

**Mechanical**
- Recommended Travel: 0.167 (4.24)
- Full Travel: 250 (6.35)
- Operating Temperature: -55°C to 150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>0.60 (17)</td>
<td>2.0 (57)</td>
</tr>
<tr>
<td>Standard</td>
<td>1.53 (43)</td>
<td>4.0 (113)</td>
</tr>
<tr>
<td>Alternate</td>
<td>2.14 (61)</td>
<td>6.0 (170)</td>
</tr>
<tr>
<td>Elevated</td>
<td>2.67 (76)</td>
<td>7.0 (198)</td>
</tr>
<tr>
<td>High</td>
<td>3.12 (88)</td>
<td>8.0 (227)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>3.83 (109)</td>
<td>10.0 (283)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- Current Rating: 3 amps
- Average Probe Resistance: <15 mΩhms

**Materials and Finishes**
- Plunger: High performance alloy
- Barrel: Work hardened BeCu, Gold plated over hard Nickel
- Spring: Stainless Steel
- Ball: Stainless Steel

**Receptacle**
- Hole diameter: 0.039 (0.99)
- Suggested drill: #61 or 0.99 mm
- Material Housing: Hardened BeCu, Gold plated

**Tip Style** *(ADDITIONAL TIPS AVAILABLE)*

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Ø .035 (0.89)</td>
</tr>
<tr>
<td>I</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I8</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I15</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I40</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>J</td>
<td>Ø .029 (0.51)</td>
</tr>
<tr>
<td>T1</td>
<td>Ø .019 (0.48)</td>
</tr>
<tr>
<td>T20</td>
<td>Ø .019 (0.48)</td>
</tr>
<tr>
<td>T38</td>
<td>Ø .038 (0.97)</td>
</tr>
<tr>
<td>U</td>
<td>Ø .019 (0.48)</td>
</tr>
</tbody>
</table>

**Mechanical**
- Recommended Travel: 0.167 (4.24)
- Full Travel: 250 (6.35)
- Operating Temperature: -55°C to 150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>0.60 (17)</td>
<td>2.0 (57)</td>
</tr>
<tr>
<td>Standard</td>
<td>1.53 (43)</td>
<td>4.0 (113)</td>
</tr>
<tr>
<td>Alternate</td>
<td>2.14 (61)</td>
<td>6.0 (170)</td>
</tr>
<tr>
<td>Elevated</td>
<td>2.67 (76)</td>
<td>7.0 (198)</td>
</tr>
<tr>
<td>High</td>
<td>3.12 (88)</td>
<td>8.0 (227)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>3.83 (109)</td>
<td>10.0 (283)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- Current Rating: 3 amps
- Average Probe Resistance: <15 mΩhms

**Materials and Finishes**
- Plunger: High performance alloy
- Barrel: Work hardened BeCu, Gold plated over hard Nickel
- Spring: Stainless Steel
- Ball: Stainless Steel

**Receptacle**
- Hole diameter: 0.039 (0.99)
- Suggested drill: #61 or 0.99 mm
- Material Housing: Hardened BeCu, Gold plated

**Tip Style** *(ADDITIONAL TIPS AVAILABLE)*

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Ø .035 (0.89)</td>
</tr>
<tr>
<td>I</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I8</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I15</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>I40</td>
<td>Ø .017 (0.43)</td>
</tr>
<tr>
<td>J</td>
<td>Ø .029 (0.51)</td>
</tr>
<tr>
<td>T1</td>
<td>Ø .019 (0.48)</td>
</tr>
<tr>
<td>T20</td>
<td>Ø .019 (0.48)</td>
</tr>
<tr>
<td>T38</td>
<td>Ø .038 (0.97)</td>
</tr>
<tr>
<td>U</td>
<td>Ø .019 (0.48)</td>
</tr>
</tbody>
</table>
High Performance Lead Free Probe

**LFRE-1**

75 mil (1.91 mm)

**Dimensions in inches (millimeters). Specifications subject to change without notice.**

Consult factory for other temperature requirements, and applications below -40°C.

Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.

Availability is based on current levels of usage and demand.

**Mechanical**

Recommended Travel: .167 (4.24)
Full Travel: 2.0 (57)
Operating Temperature: -55°C to +150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>- 2</td>
<td>0.83 (24)</td>
</tr>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>0.62 (18)</td>
</tr>
<tr>
<td>Alternate</td>
<td>- 6</td>
<td>2.39 (68)</td>
</tr>
<tr>
<td>Elevated</td>
<td>- 7</td>
<td>1.68 (48)</td>
</tr>
<tr>
<td>High</td>
<td>- 8</td>
<td>1.73 (49)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>-10</td>
<td>2.84 (81)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**

Current Rating: 6 amps
Average Probe Resistance: <10 mOhms

**Materials and Finishes**

- **Plunger**: High performance alloy
- **Barrel**: Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring**: Stainless Steel
- **Ball**: Stainless Steel

**Materials**

- **LTR Housing**: Work-hardened Nickel Silver, Gold plated over hard Nickel
- **ELTR Housing**: Work-hardened Nickel Silver, unplated
- **Post**: Phosphorous Bronze, Gold plated

**Tip Style** (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>A</th>
<th>B</th>
<th>H</th>
<th>I</th>
<th>I8</th>
<th>I15</th>
<th>I35</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ø .047 (1.19)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .021 (0.51)</td>
<td>Ø .020 (0.51)</td>
<td>Ø .021 (0.53)</td>
<td>Ø .022 (0.56)</td>
</tr>
<tr>
<td>I40</td>
<td>Ø .021 (0.53)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .033 (0.84)</td>
<td>Ø .018 (0.46)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .022 (0.56)</td>
</tr>
<tr>
<td>T24</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .038 (0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T30</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .038 (0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .038 (0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .038 (0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .038 (0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z1</td>
<td>Ø .022 (0.56)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .038 (0.97)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mechanical**

- **Spring Force**
  - Light: 0.83 (24)
  - Standard: 0.62 (18)
  - Alternate: 2.39 (68)
  - Elevated: 1.68 (48)
  - High: 1.73 (49)
  - Ultra High: 2.84 (81)

**Electrical**

- **Current Rating**: 6 amps
- **Average Probe Resistance**: <10 mOhms

**Materials**

- **Plunger**: High performance alloy
- **Barrel**: Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring**: Stainless Steel
- **Ball**: Stainless Steel
**LFRE-25**

100 mil (2.54 mm)

**Mechanical**
- Recommended Travel: 0.167 (4.24)
- Full Travel: 0.75 (19.05)
- Operating Temperature: -55°C to +150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>-2</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>Standard</td>
<td>-4</td>
<td>1.50 (43)</td>
</tr>
<tr>
<td>Alternate</td>
<td>-6.5</td>
<td>2.58 (73)</td>
</tr>
<tr>
<td>High</td>
<td>-8</td>
<td>2.84 (81)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>-10</td>
<td>1.77 (50)</td>
</tr>
<tr>
<td>Premium</td>
<td>-12</td>
<td>4.49 (127)</td>
</tr>
<tr>
<td>Super</td>
<td>-16</td>
<td>3.90 (111)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- Current Rating: 8 amps
- Average Probe Resistance: <8 mOhms

**Materials and Finishes**
- Plunger: High performance alloy
- Barrel: Work hardened Phosphor Bronze, Gold plated over hard Nickel
- Spring: Stainless Steel
- Ball: Stainless Steel

**Receptacle**
- Hole diameter: 0.067 to 0.069 (1.70 to 1.75)
- Suggested drill: #51 or 1.75 mm

**Tip Style**

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>ADDITIONAL TIPS AVAILABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Ø .060 (1.52)</td>
<td>Ø .034 (0.86)</td>
</tr>
<tr>
<td>B</td>
<td>H</td>
</tr>
<tr>
<td>Ø .060 (1.52)</td>
<td>Ø .079 (2.01)</td>
</tr>
<tr>
<td>H</td>
<td>H79</td>
</tr>
<tr>
<td>Ø .079 (2.01)</td>
<td>Ø .033 (0.84)</td>
</tr>
<tr>
<td>I</td>
<td>I8</td>
</tr>
<tr>
<td>Ø .033 (0.84)</td>
<td>Ø .033 (0.84)</td>
</tr>
<tr>
<td>I15</td>
<td></td>
</tr>
<tr>
<td>Ø .033 (0.84)</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions in inches (millimeters). Specifications subject to change without notice.**

**Stocking Disclaimer:** Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
POGO-62
50 mil (1.27 mm)

Mechanical
- **Tip Style**: ADDITIONAL TIPS AVAILABLE
- **Spring Force in oz. (grams)**
<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>0.48 (14)</td>
<td>2.0 (57)</td>
</tr>
<tr>
<td>Standard</td>
<td>1.02 (29)</td>
<td>4.0 (113)</td>
</tr>
<tr>
<td>Alternate</td>
<td>2.15 (61)</td>
<td>6.0 (170)</td>
</tr>
</tbody>
</table>
- **Operating Temperature**:
  - Light Spring: -55°C to +105°C
  - Standard Spring: -55°C to +105°C
  - Alternate Spring: -55°C to +150°C
- **Materials and Finishes**
  - Plunger: Heat-treated tool Steel, Gold plated over hard Nickel
  - Barrel: Work-hardened BeCu, Gold plated over hard Nickel
  - Spring:
    - Light: Music Wire
    - Standard: Music Wire
    - Alternate: Stainless Steel
  - Ball: Stainless Steel
- **Receptacle (DER-050)**
  - Hole diameter: Ø .038 to .039 (0.97 to 0.99)
  - Suggested drill: #61 or 0.99 mm
  - Recommended Travel: .130 (3.30)
  - Full Travel: .160 (4.06)
  - Spring Force: 3.5 oz. (99 grams)
  - Material:
    - Plunger: BeCu, Gold plated over hard Nickel
    - Barrel: BeCu, Gold plated over hard Nickel
    - Spring: Steel alloy, Gold plated over hard Nickel

Electrical (Static Conditions)
- **Current Rating**: 3 amps
- **Average Probe Resistance**: <15 mOhms

POGOPlus Bias Ball Probe
- **POGO-62 Series**
- **Size**
- **Tip Style**: ADDITIONAL TIPS AVAILABLE
- **Spring Force**
- **Special**

PogoPlus Bias Ball Design
- The enhanced bias-ball design forces contact between plunger and barrel wall at all times, virtually eliminating probe-related false opens.

Conventional Bias Design
- Angle of spring coil end matches biased plunger end, compromising bias force and electrical contact.

Benefit
- Resistance performance comparison of a PogoPlus® bias design to a conventional bias design, during the full compression / decompression cycle of the probe.
- The resistance vs. displacement graph shows the LFRE / POGO® probe has a more consistent resistivity performance resulting in significantly fewer probe false opens and tighter control of the test process.

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
Double-Close Design

Conventional single-close probes provide marginal pointing accuracy. The double-close design of the LFRE / PogoPlus probe constrains the plunger to a tighter range of vertical motion for more accurate pointing precision.

Tighter Pointing Tolerances
ECT Pogo contacts deliver superior pointing accuracy demonstrated by test results measuring sideload TIR.

Electrical (Static Conditions)
Current Rating: 3 amps
Average Probe Resistance: <15 mOhms

Materials and Finishes
- Plunger: Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
- Barrel: Work hardened BeCu, Gold plated over hard Nickel
- Spring: Stainless Steel
- Ball: Stainless Steel

Receptacle
- Hole diameter: Ø 0.039 (0.99)
- Suggested drill: #61 or 0.99 mm
- Material Housing: Hardened BeCu, Gold plated
POGO-1
75 mil (1.91 mm)

Mechanical
- Recommended Travel: .167 (4.24)
- Full Travel: .250 (6.35)
- Operating Temperature: -55°C to +150°C

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>.83 (24)</td>
<td>2.0 (57)</td>
</tr>
<tr>
<td>Standard</td>
<td>1.68 (48)</td>
<td>7.0 (198)</td>
</tr>
<tr>
<td>Alternate</td>
<td>2.39 (68)</td>
<td>6.0 (170)</td>
</tr>
<tr>
<td>Elevated</td>
<td>1.73 (49)</td>
<td>8.0 (227)</td>
</tr>
</tbody>
</table>

Electrical (Static Conditions)
- Current Rating: 6 amps
- Average Probe Resistance: <10 mOhms

Materials and Finishes
- Plunger: Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
- Barrel: Work hardened Phosphor Bronze, Gold plated over hard Nickel
- Spring: Stainless Steel
- Ball: Stainless Steel

Receptacle
- Hole diameter: Ø .053 to .055 (1.35 to 1.40)
- Suggested drill: #54 or 1.40 mm
- Material:
  - LTR Housing: Work-hardened Nickel Silver, Gold plated over hard Nickel
  - ELTR Housing: Work-hardened Nickel Silver, unplated
  - Post: Phosphorous Bronze, Gold plated

Tip Style (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>A</th>
<th>B-...-S</th>
<th>H</th>
<th>H-INS</th>
<th>I-...-S</th>
<th>I8-...-S</th>
<th>I35-...-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .047 (1.19)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .060 (1.52)</td>
<td>Ø .020 (0.51)</td>
<td>Ø .020 (0.51)</td>
<td>Ø .022 (0.56)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>J</th>
<th>L</th>
<th>L18</th>
<th>L24</th>
<th>P</th>
<th>T</th>
<th>T1-...-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .022 (0.56)</td>
<td>Ø .033 (0.84)</td>
<td>Ø .018 (0.46)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .047 (1.19)</td>
<td>Ø .022 (0.56)</td>
<td>Ø .038 (0.97)</td>
</tr>
</tbody>
</table>

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
### Tip Style (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>A</th>
<th>B...-S</th>
<th>H</th>
<th>H-INS</th>
<th>HM</th>
<th>HM-INS</th>
<th>L...-S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .060 (1.52)</td>
<td>Ø .034 (0.86)</td>
<td>Ø .060 (1.52)</td>
<td>Ø .085 (2.16)</td>
<td>Ø .122 (3.10)</td>
<td>Ø .140 (3.56)</td>
<td>Ø .033 (0.84)</td>
</tr>
<tr>
<td>Ø .033 (0.84)</td>
<td>Ø .033 (0.84)</td>
<td>Ø .034 (0.86)</td>
<td>Ø .025 (0.64)</td>
<td>Ø .050 (1.27)</td>
<td>Ø .018 (0.46)</td>
<td>Ø .034 (0.86)</td>
</tr>
<tr>
<td>Ø .060 (1.52)</td>
<td>Ø .034 (0.86)</td>
<td>Ø .030 (0.74)</td>
<td>Ø .034 (0.86)</td>
<td>Ø .034 (0.86)</td>
<td>Ø .025 (0.64)</td>
<td>Ø .055 (1.40)</td>
</tr>
</tbody>
</table>

### Pogo Plus

- **Series**: POGO 25 L
- **Size**: 8
- **Spring**: Steel

### Mechanical
- **Recommended Travel**: 0.167 (4.24)
- **Full Travel**: 250 (6.35)
- **Operating Temperature**: -55°C to +150°C

### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>- 2</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>1.50 (43)</td>
</tr>
<tr>
<td>Alternate</td>
<td>- 6</td>
<td>2.58 (73)</td>
</tr>
<tr>
<td>Elevated</td>
<td>- 6.5</td>
<td>2.65 (75)</td>
</tr>
<tr>
<td>High</td>
<td>- 8</td>
<td>2.84 (81)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>-10</td>
<td>1.77 (50)</td>
</tr>
<tr>
<td>Super</td>
<td>-16</td>
<td>3.93 (111)</td>
</tr>
</tbody>
</table>

### Electrical (Static Conditions)
- **Current Rating**: 8 amps
- **Average Probe Resistance**: < 8 mOhms

### Materials and Finishes
- **Plunger**: Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
- **Barrel**: Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring**: Stainless Steel
- **Ball**: Stainless Steel
- **Receptacle**: Nickel Silver, unplated
- **Post**: Phosphorous Bronze, Gold plated

### Dimensions in inches (millimeters). Specifications subject to change without notice.

Consult factory for other temperature requirements, and applications below -40°C.

Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.

Availability is based on current levels of usage and demand.
LFLT-72
50 mil (1.27 mm)

Mechanical
Recommended Travel: .317 (8.05)
Full Travel:
• Alternate Spring: .400 (10.16)
• High Spring: .350 (8.89)
Operating Temperature: -55°C to +150°C

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternate</td>
<td>- 6</td>
<td>1.85 (52)</td>
</tr>
<tr>
<td>High</td>
<td>- 9</td>
<td>1.90 (54)</td>
</tr>
</tbody>
</table>

Electrical (Static Conditions)
Current Rating: 6 amps
Average Probe Resistance: <100 mOhms

Materials and Finishes
Plunger: High performance alloy
LFRE proprietary plating
Barrel: Heat treated BeCu,
Gold plated over hard Nickel
Spring: Stainless Steel
Ball: Stainless Steel

Receptacle
Hole diameter: Ø .039 (0.99)
Suggested drill: #61 or 0.99 mm
Material Housing: Hardened BeCu, Gold plated

Tip Style (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>H</th>
<th>I</th>
<th>I40</th>
<th>T38</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .035 (0.89)</td>
<td>Ø .017 (0.43)</td>
<td>Ø .017 (0.43)</td>
<td>Ø .038 (0.97)</td>
<td>Ø .019 (0.48)</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.
High Performance Lead Free Long Travel Probe

LFLT-1
75 mil (1.91 mm)

**Mechanical**
- **Recommended Travel:** .317 (8.05)
- **Full Travel:**
  - Standard Spring: .400 (10.16)
  - Elevated Spring: .350 (8.89)
  - High Spring: .350 (8.89)
- **Operating Temperature:** -55°C to +105°C

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 4.5</td>
<td>1.09 (31)</td>
</tr>
<tr>
<td>Elevated</td>
<td>- 7</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>High</td>
<td>- 9.6</td>
<td>1.51 (43)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- **Current Rating:** 6 amps
- **Average Probe Resistance:** < 10 mOhms

**Materials and Finishes**
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring**:
  - Standard: Music Wire
  - Elevated: Music Wire
  - High: Music Wire
- **Ball:** Stainless Steel
- **Receptacle**
  - **Hole diameter:** Ø .053 to .055 (1.35 to 1.40)
  - **Suggested drill:** #54 or 1.40 mm
- **Material**
  - **LTR Housing:** Work-hardened Nickel Silver, Gold plated over hard Nickel
  - **ELTR Housing:** Work-hardened Nickel Silver, unplated
  - **Post:** Phosphorous Bronze, Gold plated

**Tip Style** (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>H</th>
<th>I15</th>
<th>I40</th>
<th>L</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .047 (1.19)</td>
<td>Ø .021 (0.53)</td>
<td>Ø .021 (0.53)</td>
<td>Ø .033 (0.84)</td>
<td>Ø .047 (1.19)</td>
</tr>
</tbody>
</table>
LFLT-25
100 mil (2.54 mm)

Mechanical
- Recommended Travel: 0.315 (8.00)
- Full Travel:
  - Standard Spring: 0.400 (10.16)
  - Alternate Spring: 0.400 (10.16)
  - High Spring: 0.400 (10.16)
  - Ultra High Spring: 0.350 (8.89)
- Operating Temperature:
  - Standard Spring: -55°C to +105°C
  - Alternate Spring: -55°C to +105°C
  - High Spring: -55°C to +105°C
  - Ultra High Spring: -55°C to +150°C

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>4-4</td>
<td>1.08 (31)</td>
</tr>
<tr>
<td>Alternate</td>
<td>6-6</td>
<td>0.99 (28)</td>
</tr>
<tr>
<td>High</td>
<td>8-8</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>9.7</td>
<td>1.16 (33)</td>
</tr>
</tbody>
</table>

Electrical (Static Conditions)
- Current Rating: 8 amps
- Average Probe Resistance: < 8 mOhms

Materials and Finishes
- Plunger: High performance alloy, LFRE proprietary plating
- Barrel: Work hardened Phosphor Bronze, LFRE proprietary plating
- Spring:
  - Standard: Music Wire
  - Alternate: Music Wire
  - High: Music Wire
  - Ultra High: Stainless Steel
- Ball: Stainless Steel

Receptacle
- Hole diameter: Ø .067 to .069 (1.70 to 1.75)
- Suggested drill: #51 or 1.75 mm
- Material:
  - SPR Housing: Nickel Silver, Gold plated
  - EPR Housing: Nickel Silver, unplated
  - Post: Phosphorous Bronze, Gold plated

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>(ADDITIONAL TIPS AVAILABLE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>I15 (0.84)</td>
</tr>
<tr>
<td></td>
<td>I40 (0.84)</td>
</tr>
<tr>
<td></td>
<td>J (0.86)</td>
</tr>
<tr>
<td></td>
<td>L = 0.50 (1.27)</td>
</tr>
<tr>
<td></td>
<td>T = 0.60 (1.52)</td>
</tr>
</tbody>
</table>

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
High Performance Lead Free Probe

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.

Page left blank intentionally
LTP-72
50 mil (1.27 mm)

Mechanical
Recommended Travel: 0.317 (8.05)
Full Travel:
• Alternate Spring: 0.400 (10.16)
• High Spring: 0.350 (8.89)
Operating Temperature: -55°C to +150°C

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternate</td>
<td>- 6</td>
<td>1.85 (52)</td>
</tr>
<tr>
<td>High</td>
<td>- 9</td>
<td>1.90 (54)</td>
</tr>
</tbody>
</table>

Electrical (Static Conditions)
Current Rating: 6 amps
Average Probe Resistance: <100 mOhms

Materials and Finishes
Plunger: Heat-treated tool Steel or BeCu,
Gold plated over hard Nickel
Barrel: Work hardened Phosphor Bronze,
Gold plated over hard Nickel
Spring: Stainless Steel
Ball: Stainless Steel

Receptacle
Hole diameter: Ø 0.039 (0.99)
Suggested drill: #61 or 0.99 mm
Material Housing: Work-hardened BeCu, Gold plated over hard Nickel

Tip Style (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>I8</th>
<th>I15</th>
<th>T20</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 0.017 (0.43)</td>
<td>Ø 0.017 (0.43)</td>
<td>Ø 0.019 (0.48)</td>
<td>Ø 0.019 (0.48)</td>
</tr>
</tbody>
</table>

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
### High Performance Long Travel Probe

#### LTP-1

**Dimensions in inches (millimeters). Specifications subject to change without notice.**

**Consult factory for other temperature requirements, and applications below -40°C.**

**Stocking Disclaimer:** Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.

#### Tip Style (ADDITIONAL TIPS AVAILABLE)

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>Ø 0.022 (0.56)</th>
<th>Ø 0.020 (0.51)</th>
<th>Ø 0.022 (0.56)</th>
<th>Ø 0.022 (0.56)</th>
<th>Ø 0.033 (0.84)</th>
<th>Ø 0.022 (0.56)</th>
<th>Ø 0.047 (1.19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T24</td>
<td>Ø 0.022 (0.56)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T30</td>
<td>Ø 0.020 (0.51)</td>
<td>Ø 0.022 (0.56)</td>
<td>Ø 0.022 (0.56)</td>
<td>Ø 0.022 (0.56)</td>
<td>Ø 0.033 (0.84)</td>
<td>Ø 0.022 (0.56)</td>
<td>Ø 0.047 (1.19)</td>
</tr>
</tbody>
</table>

#### Mechanical

**Recommended Travel:** .317 (8.05)

**Full Travel:**
- Standard Spring: .400 (10.16)
- Elevated Spring: .350 (8.89)
- High Spring: .350 (8.89)

**Operating Temperature:** -55°C to +105°C

#### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 4.5</td>
<td>1.09 (31)</td>
</tr>
<tr>
<td>Elevated</td>
<td>- 7</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>High</td>
<td>- 9.6</td>
<td>1.51 (43)</td>
</tr>
</tbody>
</table>

#### Electrical (Static Conditions)

**Current Rating:** 6 amps

**Average Probe Resistance:** < 10 mΩms

#### Materials and Finishes

**Plunger:** Heat-treated tool Steel or BeCu, Gold plated over hard Nickel

**Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel

**Spring:**
- Standard: Music Wire
- Elevated: Music Wire
- High: Music Wire

**Ball:** Stainless Steel

#### Receptacle

**Hole diameter:** Ø 0.053 to 0.055 (1.35 to 1.40)

**Suggested drill:** #54 or 1.40 mm

**Material**
- LTR Housing: Work-hardened Nickel Silver, Gold plated over hard Nickel
- ELTR Housing: Work-hardened Nickel Silver, unplated

**Post:** Phosphorous Bronze, Gold plated
**LTP-25**

100 mil (2.54 mm)

### Mechanical

**Tip Style**

A-H I8 L T T36

- Ø .060 (1.52)
- Ø .060 (1.52)
- Ø .035 (0.89)
- Ø .050 (1.27)
- Ø .036 (0.91)
- Ø .060 (1.52)
- Ø .035 (0.89)

**Tip Style (ADDITIONAL TIPS AVAILABLE)**

- 90°
- 30°
- 15°

### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>1.08 (31)</td>
</tr>
<tr>
<td>Alternate</td>
<td>- 6</td>
<td>0.99 (28)</td>
</tr>
<tr>
<td>High</td>
<td>- 8</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>- 9.7</td>
<td>2.3 (65)</td>
</tr>
</tbody>
</table>

### Electrical (Static Conditions)

- **Current Rating:** 8 amps
- **Average Probe Resistance:** <8 mOhms

### Materials and Finishes

- **Plunger:** Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:**
  - Standard: Music Wire
  - Alternate: Music Wire
  - High: Music Wire
  - Ultra High: Stainless Steel
- **Ball:** Stainless Steel

### Receptacle

- **Hole diameter:** Ø .067 to .069 (1.70 to 1.75)
- **Suggested drill:** #51 or 1.75 mm
- **Material**
  - **SPR Housing:** Work-hardened Nickel Silver, Gold plated over hard Nickel
  - **EPR Housing:** Nickel Silver, unplated
  - **Post:** Phosphorous Bronze, Gold plated

---

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
Bead Probe

BTP SERIES Bead Target Probes

Introduction – What is Bead Probe technology?
ECT is supporting the development of the Keysight Technologies Medalist Bead Probe Technology with OEM’s, contract manufacturers, and test fixture partners. Bead Probing is a methodology for placing test points directly on a PCB’s copper traces, or top metal, thus forming a “Bead Probe”. These Bead Probes are then contacted by “Bead Target Probes” during in-circuit testing for expanded test access. For more information, visit Keysight website: www.keysight.com, search word bead probe. There is a flash demo on the Keysight website for your review.

Features
ECT has developed a series of probes specifically for Bead Probe applications featuring:
• Pogo Plus® Design
• LFRE Plating
• Flat and “Micro-Textured” Tips

Electrical (Static Conditions)
Current Rating: 3 amps
Average Probe Resistance: <15 mOhms

Materials and Finishes
Plunger: High performance alloy
LFRE proprietary plating
Barrel: Heat treated BeCu, Gold plated over hard Nickel
Spring: Stainless Steel
Ball: Stainless Steel

Receptacle
Hole diameter: Ø .039 (0.99)
Suggested drill: #61 or 0.99 mm
Material Housing: Hardened BeCu, Gold plated

Mechanical
Recommended Travel: .167 (4.24)
Full Travel: 2.50 (6.35)
Operating Temperature: -55°C to +150°C

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>-2</td>
<td>0.60 (17)</td>
</tr>
<tr>
<td>Standard</td>
<td>-4</td>
<td>1.53 (43)</td>
</tr>
<tr>
<td>Alternate</td>
<td>-6</td>
<td>2.14 (61)</td>
</tr>
<tr>
<td>Elevated</td>
<td>-7</td>
<td>2.67 (76)</td>
</tr>
<tr>
<td>High</td>
<td>-8</td>
<td>3.12 (88)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>-10</td>
<td>3.38 (96)</td>
</tr>
</tbody>
</table>

Tips Style (Additional Tips Available)

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>F</th>
<th>HC</th>
<th>HF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .035 (0.89)</td>
<td>Ø .024 (0.56)</td>
<td>Ø .035 (0.89)</td>
<td></td>
</tr>
</tbody>
</table>
**BTP-1**

**75 mil (1.91 mm)**

### Mechanical

- **Recommended Travel:** 0.167 (4.24)
- **Full Travel:** 0.250 (6.35)
- **Operating Temperature:** -55°C to +150°C

### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>0.83 (24)</td>
<td>2.0 (57)</td>
</tr>
<tr>
<td>Standard</td>
<td>0.62 (18)</td>
<td>4.0 (113)</td>
</tr>
<tr>
<td>Alternate</td>
<td>2.39 (68)</td>
<td>6.0 (170)</td>
</tr>
<tr>
<td>Elevated</td>
<td>1.68 (48)</td>
<td>7.0 (198)</td>
</tr>
<tr>
<td>High</td>
<td>1.73 (49)</td>
<td>8.0 (227)</td>
</tr>
</tbody>
</table>

### Electrical (Static Conditions)

- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes

- **Plunger:** High performance alloy
  - LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Stainless Steel
- **Ball:** Stainless Steel

### Receptacle

- **Hole diameter:** Ø 0.053 to 0.055 (1.35 to 1.40)
- **Suggested drill:** #54 or 1.40 mm
- **Materials and Finishes**
  - **Plunger:** Work-hardened Nickel Silver, Gold plated over hard Nickel
  - **Barrel:** Work-hardened Nickel Silver, unplated
  - **Post:** Phosphorous Bronze, Gold plated

### Dimensions

- LTR-1W: 1.30 (33.02)
- LTR-1W-1: 0.970 (24.64)
- LTR-1W-2: 1.19 (30.23)
- LTR-1W-2L: 0.300 (7.62)
- ELTR-1W-2: 0.044 (1.12)
- ELTR-1W-2L: 0.214 (5.44)
- ELTR-1W-2LL: 0.300 (7.62)

### Tip Style

<table>
<thead>
<tr>
<th>C</th>
<th>F</th>
<th>HC</th>
<th>HF</th>
<th>HL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 0.035 (0.89)</td>
<td>Ø 0.047 (1.19)</td>
<td>Ø 0.022 (0.56)</td>
<td>Ø 0.035 (0.89)</td>
<td>Ø 0.047 (1.19)</td>
</tr>
</tbody>
</table>

### Micro Structured Tip

The hemi-ellipsoid shape of a Bead Probes presents a unique probing challenge in that standard serrated probes may fall into the valleys between serrations. ECT has developed a new textured tip face that is optimized for contact to the hemi-ellipsoid shape of Bead Probes as small as .004”.

An innovative “Micro-Textured” tip incorporates closely spaced triangular pyramid shapes to form a textured surface. Perfect for contacting beads that are long yet have a small width when placed on a PCB trace.

---

ECT-CPG.com
shop.ECT-CPG.com

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
Bead Probe

BTP-25
100 mil (2.54 mm)

Tip Style

<table>
<thead>
<tr>
<th>C</th>
<th>F</th>
<th>HF</th>
<th>HL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø .035 (0.89)</td>
<td>Ø .060 (1.52)</td>
<td>Ø .035 (0.89)</td>
<td>Ø .060 (1.52)</td>
</tr>
</tbody>
</table>

Mechanical

- **Recommended Travel:** .167 (4.24)
- **Full Travel:** .250 (6.35)
- **Operating Temperature:** -55°C to +150°C

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light</td>
<td>- 2</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>1.50 (43)</td>
</tr>
<tr>
<td>Alternate</td>
<td>- 6.5</td>
<td>2.65 (75)</td>
</tr>
<tr>
<td>High</td>
<td>- 8</td>
<td>2.84 (81)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>- 10</td>
<td>1.77 (50)</td>
</tr>
</tbody>
</table>

Electrical (Static Conditions)

- **Current Rating:** 8 amps
- **Average Probe Resistance:** <8 mOhms

Materials and Finishes

- **Plunger:** High performance alloy
- **LFRE proprietary plating**
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Stainless Steel
- **Ball:** Stainless Steel

Receptacle

- **Hole diameter:** Ø .067 to .069 (1.70 to 1.75)
- **Suggested drill:** #51 or 1.75 mm

Materials

- **SPR Housing:** Work-hardened Nickel Silver, Gold plated over hard Nickel
- **EPR Housing:** Nickel Silver, unplated
- **Post:** Phosphorous Bronze, Gold plated

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.
### Mechanical
- **Recommended Travel:** .317 (8.05) in
- **Full Travel:** .350 (8.89) in
- **Operating Temperature:** -55°C to +105°C

### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>4.5</td>
<td>1.09 (31)</td>
</tr>
<tr>
<td>High</td>
<td>9.6</td>
<td>1.50 (43)</td>
</tr>
</tbody>
</table>

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Receptacle
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Mechanical
- **Hole diameter:** Ø .053 to .055 (1.35 to 1.40) in
- **Suggested drill:** #54 or 1.40 mm

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel

### Electrical (Static Conditions)
- **Current Rating:** 6 amps
- **Average Probe Resistance:** <10 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Music Wire
- **Ball:** Stainless Steel
### Mechanical
- **Recommended Travel:** .317 (8.05) oz
- **Full Travel:** .350 (8.89) oz
- **Operating Temperature:**
  - Standard Spring: -55°C to +105°C
  - Alternate Spring: -55°C to +105°C
  - High Spring: -55°C to +105°C
  - Ultra High Spring: -55°C to +150°C

### Spring Force in oz (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>1.08 (31)</td>
</tr>
<tr>
<td>Alternate</td>
<td>- 6</td>
<td>0.99 (28)</td>
</tr>
<tr>
<td>High</td>
<td>- 8</td>
<td>0.75 (21)</td>
</tr>
<tr>
<td>Ultra High</td>
<td>9.7</td>
<td>1.16 (33)</td>
</tr>
</tbody>
</table>

### Electrical (Static Conditions)
- **Current Rating:** 8 amps
- **Average Probe Resistance:** <8 mOhms

### Materials and Finishes
- **Plunger:** High performance alloy, LFRE proprietary plating
- **Barrel:** Work hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:**
  - Standard: Music Wire
  - Alternate: Music Wire
  - High: Music Wire
  - Ultra High: Stainless Steel
- **Ball:** Stainless Steel
- **Hole diameter:** Ø .067 to .069 (1.70 to 1.75) mm
- **Suggested drill:** #51 or 1.75 mm
- **SPR Housing:** Work-hardened Nickel Silver, Gold plated over hard Nickel
- **EPR Housing:** Nickel Silver, unplated
- **Post:** Phosphorous Bronze, Gold plated
ECT is your source for interface probes for all major brands of test systems, including Teradyne, GenRad and Hewlett-Packard. In fact, two of these companies specify ECT probes as original equipment.

If our standard products don’t meet your requirements, contact Everett Charles Technologies for expert assistance in designing and manufacturing your custom interface probe.

**Application**
- GenRad 227x, Pylon, Rhode & Schwarz
- GSP-2B
- GSP-2BL

**Mechanical**
- Recommended Travel: 0.125 (3.18)
- Full Travel: 0.125 (3.18)
- Operating Temperature: -55°C to +105°C

**Spring Force in oz. (grams)**
- Preload
  - Standard: 2.5 (71)
  - Long: 2.5 (71)
- Rec. Travel
  - Standard: 4.5 (128)
  - Long: 4.5 (128)

**Electrical (Static Conditions)**
- Current Rating: 5 amps
- Average Probe Resistance: <35 mOhms

**Materials and Finishes**
- Plunger: Heat-treated BeCu, Gold plated over hard Nickel
- Barrel: Work-hardened Nickel Silver, Gold plated over hard Nickel
- Spring: Music Wire, Gold plated

**Application**
- GenRad 227x, Pylon, Rhode & Schwarz
- PP-3070

**Mechanical**
- Recommended Travel: 0.080 (2.03)
- Full Travel: 0.160 (4.10)
- Operating Temperature: -55°C to +105°C

**Spring Force in oz. (grams)**
- Preload
  - Long: 2.5 (71)
- Rec. Travel
  - Long: 4.5 (128)

**Electrical (Static Conditions)**
- Current Rating: 5 amps
- Average Probe Resistance: <35 mOhms

**Materials and Finishes**
- Plunger: Heat-treated BeCu, Gold plated over hard Nickel
- Barrel: Work-hardened Nickel Silver, Gold plated over hard Nickel
- Spring: Music Wire, Gold plated

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.
**RSP-2T**  
**FRP-25T**

**Application**  
Rhode&Schwarz

**Mechanical**

- **Recommended Travel:** .079 (2.00)
- **Full Travel:** .167 (4.25)
- **Operating Temperature:** -55°C to +105°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>1.44  (41)</td>
<td>3.6  (102)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**

- **Current Rating:** 5 amps
- **Average Probe Resistance:** <20 mOhms

**Materials and Finishes**

- **Plunger:** Heat-treated BeCu, Gold plated over hard Nickel
- **Barrel:** Nickel Silver, Gold plated
- **Spring:** Music Wire, Silver plated
- **Ball:** Stainless Steel

---

**FRP-25T**

**Application**

Schlumberger, Factron

**Mechanical**

- **Recommended Travel:** .120 (3.05)
- **Full Travel:** .160 (4.06)
- **Operating Temperature:** -55°C to +150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>0.92  (26)</td>
<td>4.0  (113)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**

- **Current Rating:** 5 amps
- **Average Probe Resistance:** <35 mOhms

**Materials and Finishes**

- **Plunger:** Heat-treated BeCu, Gold plated over hard Nickel
- **Barrel:** Work-hardened Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Stainless Steel

---

**POGO-25HM-4**  
**POGO-25T-4**

**Application**  
Keysight/Agilent / HP-3070

**Mechanical**

- **Recommended Travel:** .167 (4.24)
- **Full Travel:** .250 (6.35)
- **Operating Temperature:** -55°C to +150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>1.50  (43)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**

- **Current Rating:** 8 amps
- **Average Probe Resistance:** <8 mOhms

**Materials and Finishes**

- **Plunger:** Heat-treated BeCu, Gold plated over hard Nickel
- **Barrel:** Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Stainless Steel
- **Ball:** Stainless Steel

---

**POGO-25T-4**

**Application**

Teradyne 800 / 1800 / Spectrum  
Teradyne #092-431-00

**Mechanical**

- **Recommended Travel:** .167 (4.24)
- **Full Travel:** .250 (6.35)
- **Operating Temperature:** -55°C to +150°C

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 4</td>
<td>1.50  (43)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**

- **Current Rating:** 8 amps
- **Average Probe Resistance:** <8 mOhms

**Materials and Finishes**

- **Plunger:** Heat-treated BeCu, Gold plated over hard Nickel
- **Barrel:** Phosphor Bronze, Gold plated over hard Nickel
- **Spring:** Stainless Steel
- **Ball:** Stainless Steel
SIP-90-2
Application: GenRad
Material: Brass, Gold plated
Hole diameter: Ø .055 (1.40)
Suggested drill: #54 or 1.40 mm

SIP-90-3
Application: Factron
Material: Brass, Gold plated
Hole diameter: Ø .055 (1.40)
Suggested drill: #54 or 1.40 mm

SIP-90-4
Application: General Interconnect
Material: Brass, Gold plated
Hole diameter: Ø .057 (1.45)
Suggested drill: 1.45 mm

SIP-90-5
Application: Zehntel
Material: Brass, Gold plated
Hole diameter: Ø .055 (1.40)
Suggested drill: #54 or 1.40 mm

SIP-90-6
Application: General Interconnect
Material: Brass, Gold plated
Hole diameter: Ø .057 (1.45)
Suggested drill: 1.45 mm

GPP-95
Application: General Interconnect
Material: Brass, Gold plated
Hole diameter: Ø .085 (2.15)
Suggested drill: #44 or 2.15 mm

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.
Double-Ended Receptacle

Tip Style

<table>
<thead>
<tr>
<th>Tip Style</th>
<th>Ø .020 (0.51)</th>
<th>Ø .020 (0.51)</th>
<th>Ø .020 (0.51)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Ø .036 (0.91)</td>
<td>Ø .036 (0.91)</td>
<td>Ø .036 (0.91)</td>
</tr>
<tr>
<td>J</td>
<td>Ø .036 (0.91)</td>
<td>Ø .036 (0.91)</td>
<td>Ø .036 (0.91)</td>
</tr>
<tr>
<td>T</td>
<td>Ø .052 (1.32)</td>
<td>Ø .052 (1.32)</td>
<td>Ø .052 (1.32)</td>
</tr>
</tbody>
</table>

DER Series for wireless fixtures

The DER Series receptacle is used with a replaceable POGO, LFRE, LFLT or LTP probe to build a doubled ended probe. ECT offers the DER series in all common used test center spacing.

Example showing receptacle and probe

---

Dimensions in inches (millimeters). Specifications subject to change without notice. Consult factory for other temperature requirements, and applications below -40°C. Stocking Disclaimer: Stacking levels for part numbers listed in this catalog are subject to change. Availability is based on current levels of usage and demand.

### Mechanical
- **Recommended Travel:** 0.130 (3.30)
- **Full Travel:** 0.160 (4.06)
- **Operating Temperature:** -55°C to +150°C

### Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>- 3.5</td>
<td>2.62 (74)</td>
</tr>
</tbody>
</table>

### Electrical (Static Conditions)
- **Current Rating:** 3 amps
- **Average Probe Resistance:** <15 mOhms

### Materials and Finishes
- **Plunger:** Heat-treated BeCu alloy, plated with hard Gold over Nickel
- **Barrel:** Work-hardened Nickel Silver alloy, plated with hard Gold over Nickel
- **Spring:** Stainless Steel

---

**DER-050**
- **Hole diameter:** Ø 0.038 to 0.039 (0.97 to 0.99)
- **Suggested drill:** #61 or 1.99 mm
- **Probes (ordered separately):** POGO-62

**DER-075**
- **Hole diameter:** Ø 0.053 to 0.055 (1.35 to 1.40)
- **Suggested drill:** #54 or 1.40 mm
- **Probes (ordered separately):** LFRE-1 / POGO-1

**DER-100**
- **Hole diameter:** Ø 0.067 to 0.069 (1.70 to 1.75)
- **Suggested drill:** #51 or 1.75 mm
- **Probes (ordered separately):** LFRE-25 / POGO-25
**BMP-1 / BMP-1-S / BMP-3**

**Mechanical**
- Recommended Travel: .050 (1.27)
- Full Travel: .062 (1.57)
- Direction of Rotation: Counter clockwise
- Scribed Diameter: .050 (.27)
- Special diameters available.

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>4.41 (125)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- Current Rating: 50 mA
- Voltage Rating: 15VDC
- Recommended Duty Cycle: 1 sec. On (min.) 5 sec. Off

**Materials and Finishes**
- Plunger Tip: Carbide
- Receptacle: Stainless Steel

**Mounting**
- BMP-1 / BMP-1-S
  - Hole diameter: Ø .468 (11.89)
  - Suggested drill: 15/32 (in.) or 11.90 mm
- BMP-3
  - Hole diameter: Ø .610 (15.50)
  - Suggested drill: 39/64 (in.) or 15.50 mm

**Order Number**
- Board Marker: BMP-1, BMP-1-S, BMP-3
- Spare Receptacle: BMR-1, BMR-3
- Replacement Tip: BMT-1

**Tools**
- Insertion tool for BMR-1: RIT-BMP
- Extraction tool for BMR-1: EXT-BMP

**Applications**
The BMP Board Marker Probe patented design is for installation on bare board or loaded board test fixtures. When your tester is equipped with the appropriate electronics and software, the BMP scribes a permanent .050” circle on every “passed” PCB or device tested. Boards that fail the test are not marked. The risk of human error is eliminated in PCB testing and sorting.

The unit requires less than .500” of fixture area. It is designed to mark board areas of bare glass (FR4), solder mask over glass or copper, or bare tinned copper.

The BMP includes a mounting receptacle and a motor/transmission assembly. It can be easily removed from the receptacle for use in other fixtures. Spare receptacles and tip replacement assemblies are available. The thread between receptacle and housing is 7/16-20 UNF.

**Application Examples**
- Bare Board Test
- Loaded Board Test
- Connector / Wire Harness

**Benefits**
- Hands Free Operation
- No Hazardous Consumables
- Durable
- > 50,000 Cycles before Tip Replacement
- Easy to Fixture

**Features**
- Permanent Mark
- Controllable Mark Intensity
- Driven by Test Program
- MicroGrain Carbide Tip
- Replaceable Tip

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.
Board Marker Probes

**BMP-4**

**Mechanical**
- **Recommended Travel:** 0.050 (1.27)
- **Full Travel:** 0.079 (2.00)
- **Direction of Rotation:** Counter clockwise
- **Scribed Diameter:** 0.050 (1.27)

**Spring Force in oz. (grams)**

<table>
<thead>
<tr>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.43 (68.9)</td>
<td>5.0 (141.7)</td>
</tr>
</tbody>
</table>

**Electrical (Static Conditions)**
- **Current Rating:** 20 mA
- **Voltage Rating:** 12VDC
- **Recommended Duty Cycle:** 2 sec. On (min.) 3 sec. Off

**Materials and Finishes**
- **Plunger Tip:** Carbide
- **Receptacle:** Stainless Steel

**Mounting**
- **BMP-4**
- **Hole diameter:** Ø 0.398 (10.1) or M10 x 1.0 threaded hole

**Order Number**
- **Board Marker:** BMP-4
- **Replacement Tip kit:** BMT-4

---

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.

---

**Mounting Options**

- **BMP-4**
  - Hole diameter: Ø 0.398 (10.1) or M10 x 1.0 threaded hole

---

**Board Marker Probes**

**ICT / FCT**

ECT-CPG.com
shop.ECT-CPG.com
BMP-5

Mechanical
- Recommended Travel: .050 (1.27)
- Full Travel: .079 (2.00)
- Direction of Rotation: Counter clockwise
- Scribed Diameter: .050 (1.27)

Spring Force in oz. (grams)

<table>
<thead>
<tr>
<th>Preload</th>
<th>Rec. Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>2.43 (68.9)</td>
</tr>
<tr>
<td></td>
<td>5.0 (141.7)</td>
</tr>
</tbody>
</table>

Electrical (Static Conditions)
- Current Rating: 20 mA
- Voltage Rating: 12VDC
- Recommended Duty Cycle: 2 sec. On (min.) 3 sec. Off

Materials and Finishes
- Plunger Tip: Carbide
- Receptacle: Stainless Steel

Mounting
- BMP-5
- Hole diameter: Ø .472 (12.1) or M12 x 1.0 threaded hole

Order Number
- Board Marker: BMP-5
- Replacement Tip kit: BMT-4

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.