Spring Contact Test Probes
Bench-top Test Jigs
Specialist Test Products

Kelvin Test Probes
General Purpose Test Probes
ATE Test Probes
Micro Test Probes
Kelvin Test Pins and Fixture Kits

www.coda-systems.co.uk

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Welcome to the largest ever Coda-Pin Test Product Catalogue.

For the first time we have combined our extensive range of test probes, bench-top test jigs and many other specialist test products into one catalogue.

If you can’t find the test probe or product you require please contact us; we may be able to source something for you.

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What is a Spring Contact Test Probe?

Test probes - test pins - spring probes - page pins; these are all generic terms to describe a component whose spring loaded tip will provide a reliable electrical contact to a target whose distance away may well be indeterminate. The traditional use for them is to make contact with printed circuit boards (PCBs) or electrical components, in order to test functionality and to measure the value of the components. They are widely used in vacuum test fixtures associated with automatic test equipment (ATE). They are also used inside a functional test station as part of a larger production line.

The test probe is comprised of a metal tube, ready assembled with a spring and contact plunger, supplied as a one-piece item. They are usually gold plated as gold is an excellent electrical conductor and is resistant to corrosion. The electrical cable is generally connected to a receptacle which the test probe inserts into. The use of a receptacle allows the test probe to be removed for cleaning or replacement without having to disconnect the electrical cable (see illustration below).

The illustration opposite shows a test probe and its receptacle mounted in a block with the electrical connection made to the tail of the receptacle. The receptacle has been inserted using a receptacle insertion tool. Finally the cable is soldered to the termination and the probe installed.

General Purpose Test Probes

ATE Test Probes

High Current Test Probes

Specialist Test Products

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## Information

<table>
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<th>Product selection</th>
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<th>Aftercare</th>
</tr>
</thead>
</table>

### Short Reach

- Low profile, short travel test probes for restricted space applications
- Applications where long travel is not required, such as for testing thin film/hybrid circuits or bareboard PCBs
- For use in bench-top test jigs
- Replaceable test probe by use of a receptacle
- Other applications such as device programming, as an interface between two stages or for use as a compliant contact in your product

### Medium Reach

- Industry standard height for test jigs, fixtures and production line test positions
- Wide range of widths available depending on the test centre spacing (pitch)
- General purpose testing of components, transformers, connectors and sub-assemblies
- Replaceable test probe by use of a receptacle

### Long Reach

- Recessed test targets
- Dual-height test fixtures
- Component leads whose height may vary
- Replaceable test probe by use of a receptacle

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Product selection

Once you have decided which series of general purpose test probe best suits your application, you will need to select a suitable tip style. The table below illustrates which of the tip styles is likely to be most effective in a particular situation.

Most of our series have a choice of spring pressure. A lighter spring is preferred in test applications where the test point is considered clean or uncontaminated. The heavier spring will help the probe tip to penetrate better through any contamination. A lighter spring may have to be a consideration in test fixtures with large quantities of probes, or in situations where the density of probes is very high in a small area.

### Tip style selection

<table>
<thead>
<tr>
<th>Tip style</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concave</td>
<td>• Clean leads, pins&lt;br&gt;• Clean terminal pins&lt;br&gt;• Connector testing</td>
</tr>
<tr>
<td>Spear or Point</td>
<td>• PCB lands&lt;br&gt;• PCB pads</td>
</tr>
<tr>
<td>Radius</td>
<td>• PCB gold edge fingers&lt;br&gt;• Connector testing&lt;br&gt;• Leaves no witness marks</td>
</tr>
<tr>
<td>Serrated</td>
<td>• For slightly contaminated leads, pins and blades&lt;br&gt;• Male connector pins&lt;br&gt;• High current applications&lt;br&gt;• Large headed types for ill-defined targets</td>
</tr>
<tr>
<td>Flat</td>
<td>• Clean component pins&lt;br&gt;• Flat PCB pads&lt;br&gt;• Leaves no witness marks&lt;br&gt;• Bead probing applications</td>
</tr>
<tr>
<td>Convex</td>
<td>• Clean plated through holes&lt;br&gt;• Connector sockets&lt;br&gt;• Clean PCB pads</td>
</tr>
<tr>
<td>Pyramid</td>
<td>• PCB plated through holes&lt;br&gt;• Connector test applications&lt;br&gt;• Self-cleaning tip style</td>
</tr>
<tr>
<td>Star Head</td>
<td>• PCB plated through holes&lt;br&gt;• Connector test applications&lt;br&gt;• Self-cleaning tip style</td>
</tr>
<tr>
<td>Serrated</td>
<td>• Contaminated PCB leads and pads&lt;br&gt;• Self-cleaning tip style&lt;br&gt;• 8-pt crown for connector pins</td>
</tr>
<tr>
<td>Sharp Pyramid</td>
<td>• Contaminated or clean plated through holes&lt;br&gt;• PCB pads and lands</td>
</tr>
<tr>
<td>Steel Super</td>
<td>• Contaminated via holes&lt;br&gt;• Contaminated PCB pads and lands</td>
</tr>
<tr>
<td>Blade</td>
<td>• Contaminated/ varnished PCBs&lt;br&gt;• Uneven soldered surfaces&lt;br&gt;• Bent or folded over component lands</td>
</tr>
<tr>
<td>Flexi-needle</td>
<td>• Contaminated, contaminated PCBs&lt;br&gt;• PCBArea&lt;br&gt;• Connector pads and lands</td>
</tr>
</tbody>
</table>

The receptacle is a type of socket that fits into the drilled hole in the probe plate or block. The test probe slips inside the receptacle allowing it to become a replaceable item as the electrical cable is connected to the tail of the receptacle. There are several versions of receptacle (see below) depending on your preferred choice of cable termination - providing it is available in the specific probe series.

### Receptacle termination selection

<table>
<thead>
<tr>
<th>Termination</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crimped</td>
<td>• Solderless connection&lt;br&gt;• Crimp tool required</td>
</tr>
<tr>
<td>Solder-in</td>
<td>• Wireless connection&lt;br&gt;• Low resistance</td>
</tr>
<tr>
<td>Connector plug-on</td>
<td>• Solderless connection&lt;br&gt;• Quick release</td>
</tr>
<tr>
<td>Solder-cup</td>
<td>• Solder connection for cables&lt;br&gt;• Suitable for low density arrays&lt;br&gt;• Multi-strand cable recommended</td>
</tr>
<tr>
<td>Solder-pot</td>
<td>• Solder connection for cables&lt;br&gt;• Suitable for low density arrays&lt;br&gt;• Multi-strand cable recommended</td>
</tr>
<tr>
<td>Wire-wrap</td>
<td>• For high density arrays particularly in ATE test fixtures&lt;br&gt;• Single or double wrap&lt;br&gt;• Various lengths available&lt;br&gt;• For solid core cable only</td>
</tr>
<tr>
<td>Round-pin</td>
<td>• For connector plug-on&lt;br&gt;• For use with multiway connectors</td>
</tr>
<tr>
<td>Solder-in</td>
<td>• Wireless connection&lt;br&gt;• Low resistance&lt;br&gt;• Minimal extra length to the assembly</td>
</tr>
</tbody>
</table>

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Example fitment methods are shown for each series in the General Purpose Test Probe section starting overleaf. The receptacle is usually mounted into a probe plate. This plate can be made of resin-laminated fibreglass (types such as G10 or FR4), or plastic materials such as nylon, perspex or polycarbonate. The thickness should be such that it will support the total spring pressure of all probes without it bending significantly. For very large arrays of probes it may be necessary to put some support pillars underneath to minimise this problem. For general purpose test applications, an 8-10mm thickness of material is recommended.

Carbide drills are best suited for drilling holes for receptacles in the harder composite or fibre based materials. Commonly available high-speed drills (HSS) are suitable for plastics, such as peek, nylon or perspex. A few sizes of carbide drills have an option of longer flutelength for thicker probe plate materials.

**Fitment and usage**

**How to fit a receptacle into a drilled hole in a general purpose test position**

1. **Inserting the receptacle**
   The receptacle may be flush mounted or set raised slightly above the probe. In most general purpose test situations the receptacle height is fixed to flush. The receptacle should slip down unassisted until the press-ring rests against the probe plate.

2. **Using a receptacle insertion tool**
   Receptacle insertion tools are required for inserting the receptacle’s press-ring into the hole without damaging it (see table above for tool selection). This in particular important if you are using harder materials for the probe plate. Insert the pin of the tool into the receptacle and tap the insertion tool gently with a hammer, until the receptacle is set to the desired height. See box 2a for instructions using epoxy fitment.

3. **Inserting the probe**
   Remove the tool and insert the probe rearwards and press home. The probe’s body is normally fully enclosed within the receptacle.

4. **Cable attachment**
   Attach the cable to the back end of the receptacle. Aftercare

A regular maintenance programme for your probes will help you achieve the maximum probe performance and lifespan. The necessary frequency and method of the maintenance/cleaning programme depends on your production environment, the type of equipment and the probe series used.

Contamination left behind on the probe tip is the primary cause of probe contact problems. This is often caused by a bi-product of the soldering process of either soldering flux or a solder residue. Other local contaminants such as dust, fluff, oil and grime can cause more temporary problems.

Light brushing of the probe tip with nylon, bristle or soft metal brushes will dislodge most contaminants.

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General Purpose Test Probes - Short Reach

**Example installations**

- **PA1 Series** A short reach, general purpose test probe for 1.27 mm test centres
- **PA2 Series** A short reach, general purpose test probe for 1.91 mm test centres

### Specification

<table>
<thead>
<tr>
<th>Tip styles</th>
<th>PA1 Series</th>
<th>PA2 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full travel</strong></td>
<td>2.54 mm</td>
<td>2.54 mm</td>
</tr>
<tr>
<td><strong>Working travel</strong></td>
<td>1.79 mm</td>
<td>1.79 mm</td>
</tr>
<tr>
<td><strong>Spring force initial</strong> at wig travel</td>
<td>(S) Light spring 17g</td>
<td>(S) Light spring 17g</td>
</tr>
<tr>
<td></td>
<td>(X) Heavy spring 27g</td>
<td>(X) Heavy spring 27g</td>
</tr>
<tr>
<td><strong>Current rating DC cont (max)</strong></td>
<td>3 Amps</td>
<td>3 Amps</td>
</tr>
<tr>
<td><strong>Minimum test centres</strong></td>
<td>1.27 mm</td>
<td>1.91 mm</td>
</tr>
</tbody>
</table>

### Tip styles

- **CONCAVE HEAD**
- **PLAIN CONCAVE**
- **REDUCED CONCAVE**
- **SPEAR POINT**
- **RADIUS HEAD**
- **SERRATED HEAD**
- **PLAIN RADIUS**

### Receptacles

- **CRIMP**
- **ROUND-PIN**
- **SOLDER-CUP**
- **WIRE-WRAP**

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**General Purpose Test Probes - Short Reach**

### PA3 Series

**A short reach, general purpose test probe for 2.54mm test centres. See high current version page 22.**

#### Specification

- **Full travel**: 4.90mm
- **Working travel**: 2.89mm
- **Spring force**: initial at 0kg travel
  - (S) Light spring 31g 99g
  - (X) Heavy spring 75g 184g
- **Current rating DC cont (max)**: 3 Amps
- **Minimum centre spacing**: 2.54mm

#### Tip styles

- **CONCAVE HEAD**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **SPEAR POINT**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **PLAIN FLAT**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **RADIUS HEAD**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **CONVEX HEAD**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **FLAT HEAD**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **SERRATED HEADS**
  - Tip sizes: 1.80
  - 1.80 1.80 2.15
  - 2.50 2.25 2.50
  - 3.50 3.50 3.50
- **PLAIN RADIUS**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **REDUCED RADIUS - 0.76mm**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **STAR HEAD**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **FLEXI-NEEDLE**
  - L.SPRING: PA3S
  - H.SPRING: PA3X
- **PYRAMID HEAD**
  - L.SPRING: PA3S
  - H.SPRING: PA3X

### PC6 Series

**A short reach, general purpose test probe for 2.54mm test centres**

#### Specification

- **Full travel**: 1.27mm
- **Working travel**: 0.86mm
- **Spring force at full travel**:
  - (S) Light 110g
  - (X) Heavy 200g
- **Current rating DC cont (max)**: 3 Amps
- **Minimum centre spacing**: 2.54mm

#### Receptacles

- **SOLDER-CUP**
  - Mounting hole size: 1.70mm
  - 2.0mm drill most commonly used: Drill part no. D63882 drill tool part no. 5/6

### PC8 Series

**A short reach, robust general purpose test probe for 4mm test centres. See high current version page 23.**

#### Specification

- **Full travel**: 3.5mm
- **Working travel**: 2.8mm
- **Spring force at 0kg travel**: 150g
- **Current rating DC cont (max)**: 5 Amps
- **Minimum centres**: 4.0mm
- **Other spring forces available**: see under each tip style

#### Receptacles

- **SOLDER-CUP**
  - Mounting hole size: 3.0mm
  - Drill part no. D56

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**Example installations**

**PA4 Series** A medium reach, general purpose test probe for testing at a minimum of 2.54mm centres. See high current version page 22.

**Specification**

- **Full travel**: 6.35mm
- **Working travel**: 4.24mm
- **Spring force at working travel**
  - (X) Light spring: 1.1g
  - (U) Ultra heavy spring: 2.83g
  - (H) Heavy spring: 1.70g
  - (S) Light spring: 0.87g

**Example installations**

- **Current rating DC cont (max)** shown under each tip style.
- **Minimum test centres**: 2.54mm
- **Working travel**: 4.24mm
- **Full travel**: 6.35mm
- **Spring force at working travel**
  - (X) Light spring: 1.1g
  - (U) Ultra heavy spring: 2.83g
  - (H) Heavy spring: 1.70g
  - (S) Light spring: 0.87g

**Tip styles**

- **SPEAR POINT**
- **PLAIN FLAT**
- **CONCAVE HEAD**
- **DOME HEAD**
- **FLAT HEAD**
- **SERRATED HEAD**
- **1.5mm CROWN**
- **2.0mm CROWN HEAD**
- **0.9mm PLAIN CROWN**
- **0.5mm SMALL CROWN**
- **8-POINT CROWN HEAD**
- **SHARP PYRAMID**

**Receptacles**

- **Mounting hole size**: 1.7/1.75mm. 1.75mm drill is most commonly used: Drill part no. RA5, RIT tool part no. TA3, TA4A

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### General Purpose Test Probes - Medium Reach

**PA5 Series**
A medium reach, general purpose probe for testing at a minimum of 3.2mm centres

**Specification**
- Full travel: 6.35mm
- Working travel: 4.24mm
- Spring force initial at 45g
- Light spring: 45g
- Heavy spring: 91g
- Current rating DC cont (max): 7 Amps

**Tip styles**

<table>
<thead>
<tr>
<th>Tip Styles</th>
<th>Probe Description</th>
<th>Spring Force</th>
<th>Working Travel</th>
<th>Full Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONCAVE HEAD</strong></td>
<td>L. SPRING PA6X, H. SPRING PA6X</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>RADIUS HEAD</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6SX</td>
<td>1.75</td>
<td>2.36</td>
<td>3.66</td>
</tr>
<tr>
<td><strong>SPEAR POINT</strong></td>
<td>L. SPRING PA6X, H. SPRING PA6X, PA6BS</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>CONVEX HEAD</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6S, PA6X</td>
<td>2.36</td>
<td>3.56</td>
<td>4.57</td>
</tr>
<tr>
<td><strong>FLAT HEAD</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6S, PA6SX</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>PLAIN FLAT</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6X, PA6XX</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>WIRE-WRAP</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6S, PA6X</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
</tbody>
</table>

**Receptacles**

- CRIMP - plug-on
- SOLDER - IN
- SOLDER - CUP
- WIRE-WRAP

**Example installation for PA5,6,7**

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**PA6 Series**
A medium reach, general purpose test probe for testing at a minimum of 4.75mm centres

**Specification**
- Full travel: 6.35mm
- Working travel: 4.24mm
- Spring force initial at 45g
- Light spring: 45g
- Heavy spring: 91g
- Current rating DC cont (max): 8 Amps

**Tip styles**

<table>
<thead>
<tr>
<th>Tip Styles</th>
<th>Probe Description</th>
<th>Spring Force</th>
<th>Working Travel</th>
<th>Full Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONCAVE HEAD</strong></td>
<td>L. SPRING PA6X, H. SPRING PA6X</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>RADIUS HEAD</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6SX</td>
<td>1.75</td>
<td>2.36</td>
<td>3.66</td>
</tr>
<tr>
<td><strong>SPEAR POINT</strong></td>
<td>L. SPRING PA6X, H. SPRING PA6X, PA6BS</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>CONVEX HEAD</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6S, PA6X</td>
<td>2.36</td>
<td>3.56</td>
<td>4.57</td>
</tr>
<tr>
<td><strong>FLAT HEAD</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6S, PA6SX</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>PLAIN FLAT</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6X, PA6XX</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>WIRE-WRAP</strong></td>
<td>L. SPRING PA6S, H. SPRING PA6S, PA6X</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
</tbody>
</table>

**Receptacles**

- CRIMP - plug-on
- SOLDER - IN
- SOLDER - CUP
- WIRE-WRAP

**Example installation for PA5,6,7**

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**PA7 Series**
A medium reach, general purpose test probe with a high spring force for testing at a minimum of 4.75mm centres

**Specification**
- Full travel: 6.35mm
- Working travel: 4.24mm
- Spring force initial at 45g
- Light spring: 45g
- Heavy spring: 91g
- Current rating DC cont (max): 8 Amps

**Tip styles**

<table>
<thead>
<tr>
<th>Tip Styles</th>
<th>Probe Description</th>
<th>Spring Force</th>
<th>Working Travel</th>
<th>Full Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONCAVE HEAD</strong></td>
<td>L. SPRING PA7X, H. SPRING PA7X</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>RADIUS HEAD</strong></td>
<td>L. SPRING PA7S, H. SPRING PA7SX</td>
<td>1.75</td>
<td>2.36</td>
<td>3.66</td>
</tr>
<tr>
<td><strong>SPEAR POINT</strong></td>
<td>L. SPRING PA7X, H. SPRING PA7X, PA7XS</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>CONVEX HEAD</strong></td>
<td>L. SPRING PA7S, H. SPRING PA7S, PA7XT</td>
<td>2.36</td>
<td>3.56</td>
<td>4.57</td>
</tr>
<tr>
<td><strong>FLAT HEAD</strong></td>
<td>L. SPRING PA7S, H. SPRING PA7S, PA7X</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>PLAIN FLAT</strong></td>
<td>L. SPRING PA7S, H. SPRING PA7X, PA7XX</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
<tr>
<td><strong>WIRE-WRAP</strong></td>
<td>L. SPRING PA7S, H. SPRING PA7S, PA7X</td>
<td>45g</td>
<td>2.36</td>
<td>3.57</td>
</tr>
</tbody>
</table>

**Receptacles**

- CRIMP - plug-on
- SOLDER - IN
- SOLDER - CUP
- WIRE-WRAP

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General Purpose Test Probes - Long Reach

Example installations showing heights

ELPA2 Series
Designated for use in dual-level fixtureing where two different sets of probes with different working travels are required in the same test fixture. The long reach of this test probe also enables access to contacts which are otherwise inaccessible with normal length probes. For 1.91mm centres.

Speciation

<table>
<thead>
<tr>
<th>Full travel</th>
<th>Working travel</th>
<th>Spring force at working travel</th>
<th>Current rating DC cont (max)</th>
<th>Minimum test centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.91mm</td>
<td>0.95mm</td>
<td>150g</td>
<td>3 Amps</td>
<td>2.54mm</td>
</tr>
</tbody>
</table>

Tip styles

- SERRATED HEAD
- CROWN HEAD - 1.2mm
- SUPER SHARP BLADE
- PLAIN CROWN

Receptacles

- ELPA2G5
- ELPA2KS
- ELPA2QS

LPAS & LPA7 Series
A longer reach version of P5 and P7, this series is ideal for functional test applications where a point might be recessed or lower than the other points. For 3.2mm and 4.75mm centres.

Speciation

<table>
<thead>
<tr>
<th>Full travel</th>
<th>Working travel</th>
<th>Spring force at working travel</th>
<th>Current rating DC cont (max)</th>
<th>Minimum test centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2mm</td>
<td>1.83 Press ring</td>
<td>1.85 Press ring</td>
<td>4 Amps</td>
<td>4.75mm</td>
</tr>
</tbody>
</table>

Tip styles

- CONCAVE HEAD
- SPEAR POINT
- PLAIN CROWN

Receptacles

- LPAS5
- LPAS6
- LP7AS
- LP7BS

ELPA4 & ELPA4 Series
Designed for use in dual-level fixtureing where two different sets of probes with different working travels are required in the same test fixture. The long reach solves other problems of gaining access to contacts which are inaccessible with normal length probes. Use the standard RA4 series receptacles (shown below). For 2.54mm centres.

Speciation

<table>
<thead>
<tr>
<th>Full travel</th>
<th>Working travel</th>
<th>Spring force at working travel</th>
<th>Current rating DC cont (max)</th>
<th>Minimum test centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.91mm</td>
<td>1.83 Press ring</td>
<td>1.85 Press ring</td>
<td>4 Amps</td>
<td>4.75mm</td>
</tr>
</tbody>
</table>

Tip styles

- NEEDLE POINT
- PLAIN CROWN
- PYRAMID HEAD

Receptacles

- ELPA4QX-040
- ELPA4QX-060
- ELPA4TS
- ELPA4TX

For technical advice:
technical@coda-systems.co.uk

For samples, quotations, availability or to place an order:
www.coda-systems.co.uk sales@coda-systems.co.uk
+44 (0)1787 47 8678

For technical advice:
+44 (0)1787 47 8678
### Information

<table>
<thead>
<tr>
<th>PA4, ST-PA4 Series</th>
<th>The universal size for use at 2.54mm test centres in the majority of ATE test fixtures</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF-PA4 Series</td>
<td>2.54mm/0.1&quot; centres</td>
</tr>
<tr>
<td>LPA2, ST-LPA2 Series</td>
<td>The universal size for use at 1.91mm test centres in the majority of ATE test fixtures</td>
</tr>
<tr>
<td>LF-LPA2 Series</td>
<td>1.91mm/0.075&quot; centres</td>
</tr>
<tr>
<td>LPC1, ST-LPC1 Series</td>
<td>The universal size for use at 1.27mm test centres in the majority of ATE test fixtures</td>
</tr>
<tr>
<td>LF-LPC1 Series</td>
<td>1.27mm/0.050&quot; centres</td>
</tr>
<tr>
<td>PI Series</td>
<td>Presence detection using an insulating shroud</td>
</tr>
<tr>
<td>TIP Series</td>
<td>ATE travel indicator probes</td>
</tr>
<tr>
<td>ATE Test Probe &amp; Receptacle Tools</td>
<td>ATE tools for the removal and insertion of probes and receptacles. Pass marking unit</td>
</tr>
</tbody>
</table>

For samples, quotations, availability or to place an order:

- [www.coda-systems.co.uk](http://www.coda-systems.co.uk)
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For technical advice:

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Product selection

ATE test probe tip selection

There are three sizes of ATE test probes for the three standard test centre spacings (pitch) commonly used on printed circuit boards (PCBs). See previous page. Once you have selected the probe size which will best suit your application you will need to select suitable tip styles. The table below shows which of the tip styles is likely to be most effective for each particular test target.

Spring pressure

Most series have a wide choice of spring pressure. A lighter spring is preferred in test applications where the test point is fairly clean or uncontaminated. The heavier and extra heavy springs will help the probe tip to penetrate better through any contamination. A lighter spring may have to be a consideration in test fixtures with large quantities of probes, or in situations where the density of probes is very high in a small area.

Be careful not to fit a probe spring force, which in total is more than the fixture can handle, or may damage your PCBs top layer. It is better to target the extra-heavy spring forces in known problem areas.

Plunger material and lead-free solder

Three choices of plunger and tip material are available depending on the volume of the production run and the level of PCB contamination. See below:

<table>
<thead>
<tr>
<th>Part number prefix</th>
<th>Plunger and tipstyle specification</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA4, LP42, LPC1</td>
<td>Standard material, beryllium copper, gold plated</td>
<td>Low volume production, traditional solder, slight surface contamination.</td>
</tr>
<tr>
<td>ST-PA4, ST-LP42, ST-LPC1</td>
<td>Steel tipped plungers, gold plated</td>
<td>High volume production, for test targets which cause tipstyle wear, higher surface contamination from traditional or lead-free solders.</td>
</tr>
<tr>
<td>LF-PA4, LF-P42, LF-LPC1</td>
<td>Up-rated, pre-loaded spring, hard wearing plated surface</td>
<td>High volume, surface contamination particular to many lead-free solders.</td>
</tr>
</tbody>
</table>

Probe tip selection

<table>
<thead>
<tr>
<th>Tip style</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Con cave</td>
<td>Clean leads, pins</td>
</tr>
<tr>
<td>Spear or Point</td>
<td>PCB lands, PCB pads</td>
</tr>
<tr>
<td>Serrated Head</td>
<td>For slightly contaminated leads, pins and blades, Male connector pins, Also available for lead-free solders</td>
</tr>
<tr>
<td>Pyramid and Star Head</td>
<td>PCB plated through holes, Connector test applications, Self-cleaning</td>
</tr>
<tr>
<td>Crowns</td>
<td>Comtaminated PCB leads and pads</td>
</tr>
<tr>
<td>Super Sharp 3-needle</td>
<td>Gold edge fingers, Provides positive contact without leaving any marks or indentations, Also used for some connector applications</td>
</tr>
<tr>
<td>Steel Super Sharp Blade</td>
<td>Contaminated via holes, Suitable for lead-free solder</td>
</tr>
<tr>
<td>Steel Super Sharp Dagger</td>
<td>Contaminated via holes, Suitable for lead-free solder</td>
</tr>
<tr>
<td>Tulip</td>
<td>Tip for general purpose use, Six outer points with raised centre point, Self-cleaning</td>
</tr>
<tr>
<td>Steel 90° Blades</td>
<td>Ideal for blind vias, Robust, hard wearing, Suitable for lead-free solder</td>
</tr>
<tr>
<td>Steel Crossed Blade</td>
<td>Lands and pads, Open tracks, Self cleaning</td>
</tr>
</tbody>
</table>

Receptacle termination selection

<table>
<thead>
<tr>
<th>Termination</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solder-cup</td>
<td>Solder connection for cables, Suitable for low density arrays, Multicore cable recommended</td>
</tr>
<tr>
<td>Crimp and Connector plug-on</td>
<td>Solder-less connection, Crimp tool required, Not vacuum tight</td>
</tr>
<tr>
<td>Wire-wrap tail</td>
<td>Single or double wrap, For high density arrays particularly in ATE test fixtures, Various tail lengths available, Vacuum tight</td>
</tr>
<tr>
<td>Round-pin tail</td>
<td>For plug-on connectors, For use with multiway connectors</td>
</tr>
</tbody>
</table>

The receptacle is a type of socket that fits into the drilled hole in the probe plate. Its use allows the probe to be a replaceable item for easy maintenance, without having to disconnect the electrical cable. There are several versions of receptacle (see below) depending on your preferred choice of cable termination - providing it is available in the specific probe series.

For samples, quotations, availability or to place an order:

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For technical advice:

😎 technical@coda-systems.co.uk  ☎️ +44 (0)1787 478678
Fitment and usage

The receptacle is usually mounted into a probe plate. This plate can be made of resin-laminated fibreglass (types such as G10 or FR4), or plastic materials such as nylon, perspex or polycarbonate. Usually, the probe plate used is made from fibreglass. Tungsten carbide drill bits are required to drill holes in this material. The thickness of the probe plate should be such that it will support the total spring pressure of all probes without it bending significantly. For very large arrays of probes it may be necessary to put some support pillars underneath to minimise this problem. For general purpose test applications, an 8-10mm thickness of material is recommended.

A regular maintenance programme for your probes will help you achieve the maximum probe performance and lifespan. The necessary frequency and method of the maintenance/cleaning programme depends on your production environment, the type of equipment and the probe series used.

Contamination left behind on the probe tip is the primary cause of probe contact problems. This is often caused by a by-product of the soldering process of either soldering flux or a solder residue. Other local contaminants such as dust, fluff, oil and grime can cause more temporary problems.

Light brushing of the probe tip with nylon, bristle or soft metal brushes will dislodge most contaminants.

How to fit a receptacle into a drilled hole in an ATE test fixture

1. Inserting the receptacle
   The receptacle may be flush mounted, or set raised slightly above the probe plate. In most ATE situations the receptacle’s height is set raised. The receptacle should slip down unassisted until the press-ring rests against the probe plate.

2. Using a receptacle insertion tool
   Insert the pin of the tool into the receptacle (you will need to set the height required on the adjustable tool). Tap the end of the tool with several light taps until the receptacle is set to the required height. See the table above for tool selection.

3. Inserting the probe
   Remove the tool and insert the probe rearwards and press home with a probe insertion tool (see above). The probe’s body is normally fully enclosed within the receptacle.

4. Wire attachment
   Attach the cable to the back end of the receptacle.

Notes: To replace an existing receptacle, either broken or wrongly set, you can use our receptacle removal kits. See page 15.

After care

A regular maintenance programme for your probes will help you achieve the maximum probe performance and lifespan. The necessary frequency and method of the maintenance/cleaning programme depends on your production environment, the type of equipment and the probe series used.

Contamination left behind on the probe tip is the primary cause of probe contact problems. This is often caused by a by-product of the soldering process of either soldering flux or a solder residue. Other local contaminants such as dust, fluff, oil and grime can cause more temporary problems.

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For technical advice:
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ATE Test Probes 2.54mm/0.1” centre spacing

PA4, ST-PA4 & LF-PA4 Series

The PA4 series is the universal size for use at 2.54mm test centres in the majority of ATE test fixtures. It has a very wide range of tip styles for almost all test targets. Additionally, a wide choice of spring forces is available. The ST-PA4 series adds hardened steel tips which ensure an exceptional resistance to wear in high volume PCB test production runs. The LF-PA4 series has hardened tips, extra-resilient plated surfaces and an enhanced pre-loaded spring pressure, to enable good penetration of the tough residual contamination often found on the surface of many lead-free solders.

Maximum test centres: 2.54mm
Full travel: 6.35mm
Working travel: 4.24mm
Spring forces at all tip styles:
- (U) Ultra-light spring 50g
- (E) Light spring 114g
- (C) Heavy spring 227g
- (U) Ultra-heavy spring 283g

Current: 3 Amps max

SOLDER-CUP

ROUND-PINS

CRIMP - plug-on

WIRE-WRAP

RA4S

For technical advice:

technical@coda-systems.co.uk

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+44 (0)1787 478678
ATE Test Probes 1.91mm/0.075” centre spacing

**LPA2, ST-LPA2 & LF-LPA2 Series**

The LPA2 series is the universal size for use at 1.91mm test centres in the majority of ATE test fixtures. It has a very wide range of tip styles for almost all test targets. Additionally, a wide choice of spring forces is available.

The ST-LPA2 series adds hardened steel tips which ensure an exceptional resistance to wear in high volume PCB test production runs. The LF-LPA2 series has hardened tips, extra-resilient plated surfaces and an enhanced pre-loaded spring pressure, to enable good penetration of the tough residual contamination often found on the surface of many lead-free solders.

**Specification**

<table>
<thead>
<tr>
<th>Minimum test centres</th>
<th>1.91mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full travel</td>
<td>6.35mm</td>
</tr>
<tr>
<td>Working travel</td>
<td>4.24mm</td>
</tr>
<tr>
<td>Spring force at 1kg</td>
<td>8oz</td>
</tr>
<tr>
<td>(U) Light spring</td>
<td>28g</td>
</tr>
<tr>
<td>(U) Heavy spring</td>
<td>33.02</td>
</tr>
<tr>
<td>(W) Ultra heavy spring</td>
<td>4.57</td>
</tr>
<tr>
<td>(W) Ultra heavy spring</td>
<td>38.4</td>
</tr>
<tr>
<td>Current rating DC cont (max)</td>
<td>6 Amps</td>
</tr>
</tbody>
</table>

**Tip styles**

**CONCAVE HEAD**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2AH</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2AH</td>
</tr>
</tbody>
</table>

**SPEAR POINT**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2BS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2BH</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2BH</td>
</tr>
</tbody>
</table>

**SERRATED HEAD**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2HS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2HH</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2HH</td>
</tr>
</tbody>
</table>

**SHARP 90° BLADE**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2HL</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2HL</td>
</tr>
</tbody>
</table>

**ROBUST 90° BLADE**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2RS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2HR</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2HR</td>
</tr>
</tbody>
</table>

**SUPER SHARP BLADE**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2JS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2HJ</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2HJ</td>
</tr>
</tbody>
</table>

**STEEL CROSSED BLADE**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2HL</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2HL</td>
</tr>
</tbody>
</table>

**STAR HEAD**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2HL</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2HL</td>
</tr>
</tbody>
</table>

**TULIP HEAD**

<table>
<thead>
<tr>
<th>L. SPRING</th>
<th>ST-LPA2LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H. SPRING</td>
<td>ST-LPA2HL</td>
</tr>
<tr>
<td>D.H. SPRING</td>
<td>LPA2HL</td>
</tr>
</tbody>
</table>

**RECEPTACLES**

*Mounting hole size: 1.35/1.40mm – 1.4mm drill is most commonly used: Drill part no. DA2 – RIT tool part no. TA2A, TA2B.*

**For technical advice:**

sales@coda-systems.co.uk

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For samples, quotations, availability or to place an order:
ATE Test Probes 1.27mm/0.050” centre spacing

LPC1, ST-LPC1 & LF-LPC1 Series

The LPC1 series is the universal size for use at 1.27mm test centres in the majority of ATE test fixtures. It has a very wide range of tip styles for almost all test targets. Additionally, a wide choice of spring forces is available.

The ST-LPC1 series adds hardened steel tips which ensure an exceptional resistance to wear in high volume PCB test production runs. The LF-LPC1 series has hardened tips, extra-resilient plated surfaces and an enhanced pre-loaded spring pressure to enable good penetration of the tough residual contamination often found on the surface of many lead-free solders.

Receptacles

CRIMP

Mounting hole size: 0.97/0.99mm 0.95mm drill is most commonly used. Drill part no. DRCC RIT tool part no. TC1A and TRC1

PLUG-ON

Used with LRC and LC1 series

SOLDER-CUP

For LPA2 series

Flat Head - 2mm centres

TIP SERIES A useful series of devices for measuring the travel at any probe position in a test fixture. After the PCB is fully down onto the probe field, the indicator probes remain compressed. The change in length indicates the travel. Do not insert into the receptacle by pressing on the plunger!

PI Series Insulated head probes are used for circuit board component lead detection and testing. The insulating shroud is raised slightly higher than the metal serrated tip. During test, if the component lead or connector pin is set correctly, the electrical contact will be made. Pins absent or misaligned will cause the shroud to make contact first and fail the test.

SERRATED HEAD

Receptacle LRA2 series; see page 12

SMALL SERRATED HEAD

Receptacle LPA4 series; see page 12

LARGE SERRATED HEAD

Receptacle LPA4 series; see page 12

How to use insulated head probes

It is often a requirement to provide a multi-purpose test onto a single component or connector lead. The probes will fit into standard ATE receptacles and require just one wire connection. The insulated head probe will:

- Presence test the pin to check it’s set to the correct height
- Check whether the pin has passed through the hole
- Instigate an electrical test to ensure that the pin is soldered properly to its pad, in combination with other probes in the test fixture
- Fail any leads that have been bent over significantly.

Component Lead Detection

Pass Reason for failure: Pin set incorrectly
Fail Reason for failure: Pin missing

Component Pin Detection

Pass Reason for failure: Pin set incorrectly
Fail Reason for failure: Pin missing

For technical advice:

technical@coda-systems.co.uk

+44 (0)1787 478678
ATE Test Probe and Receptacle Tools

Probes Insertion Tools

These PIT’s allow the installation of certain series of test probes into their receptacles with less risk of damage by handling.

<table>
<thead>
<tr>
<th>Test Probe Series</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPC1</td>
<td>PITC1</td>
</tr>
<tr>
<td>LPA2, LPA4, ELPA2</td>
<td>PIT2</td>
</tr>
<tr>
<td>PA4, LPA4, ELPA4</td>
<td>PIT4</td>
</tr>
</tbody>
</table>

Receptacle insertion tools are required for inserting the ATE receptacle into the hole without damage to the tube, particularly if you are using harder materials for the probe plate.

With a correctly sized drilled hole, the receptacle should slide unsassisted down to the press-rings. The insertion tool will take over the insertion from here. In most ATE applications the receptacle’s height is usually set as raised, so we supply adjustable height receptacle tools for inserting them. See the ‘How to fit’ box for more information - page 11.

<table>
<thead>
<tr>
<th>Test Centre</th>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.91mm</td>
<td>ATE test probes (headed)</td>
<td>PRTA2</td>
</tr>
<tr>
<td>2.54mm</td>
<td>ATE test probes (headed)</td>
<td>PRTA4</td>
</tr>
</tbody>
</table>

Pass Marking Unit

The BMP-1 test pass marking unit is intended for installation into test fixtures and production equipment. Upon receipt of a test pass signal it will rapidly scribe a permanent circular mark onto the unit under test removing the risk of human errors. This compact unit requires a footprint of less than 15mm² on the test board. The spring loaded carbide tip is long lasting and its hardness will mark bare fibreglass (FR4), solder mask over glass or copper, bare tinned copper, plastics and metal castings.

The unit is supplied with a mounting receptacle with knurled fitment, cables and a plug/socket kit allowing easy connection to the jig’s internal wiring. The scriber can easily be unscrewed from its receptacle so it can be transported for use in other positions. Extra receptacles, an insertion tool and tip replacement parts are available as spares and these are listed within the specifications.

**Scriber Specification**

**Mechanical**
- Full marker tip travel: 1.37mm
- Recommended working travel: 1.27mm
- Direction of rotation: CCW
- Scriber diameter: 1.27mm
- Mounting hole size: 11.89/11.91mm

**Electrical (Operating Conditions)**
- Current rating: 50mA
- Voltage required: 12 - 15VDC
- Recommended duty cycle: 1 sec. On (min) 5 sec. Off

**Materials and Finishes**
- Plunger tip: Carbide steel
- Receptacle: Stainless steel

**Spare/Accessories Part No.**
- Receptacle insertion tool: RIIT-BMP
- Receptacle extraction tool: RTE-BMP
- Replacement carbide tip: BMF-1

**Example fitment methods**

**Warning:** Adequate thickness spacers MUST be used to limit board travel as shown. Failure to use proper spacers will allow the scriber to bottom out, stalling the motor and permanently damaging the marker.

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For technical advice: /envelopeback technical@coda-systems.co.uk /telephonesolid +44 (0)1787 478678
### Bench-top Test Jigs and Accessories

Robust, easily customised, standalone kits for testing a variety of PCBs, such as those containing conventional and surface mount circuitry. There are three versions - basic hinged-top, cam-operated pusher plate or advanced cam-operated gate with fully adjustable push-fingers.

Typical examples of their usage are:
- Low to medium volume testing of PCBs - such as power supplies and control boards
- Functional testing and alignment of modules and sub-assemblies
- Repair and calibration stations
- Probing of both sides of the PCB is possible

You can use these jigs as the basis to build your own test station. We can suggest a jig customising specialist who could do the work for you.

<table>
<thead>
<tr>
<th><strong>MF series</strong></th>
<th>Uncomplicated test jig, using a hinged lid and push fingers for compression. Ideal for self customisation</th>
<th>Page 17</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CMF series</strong></td>
<td>Robust test jig using a cam-operated, horizontal, rigid push plate for compression. Ideal for self customisation</td>
<td>Page 18</td>
</tr>
<tr>
<td><strong>CGF series</strong></td>
<td>Advanced test jig, using a cam-operated gate, with fully adjustable push fingers for compression. Ideal for self customisation</td>
<td>Page 19</td>
</tr>
</tbody>
</table>

### Information

How to fit test probes and receptacles into a bench-top test jig | Page 20

For quotations, availability or to place an order:
- www.coda-systems.co.uk
- sales@coda-systems.co.uk
- +44 (0)1787 478678

For technical advice:
- technical@coda-systems.co.uk
- +44 (0)1787 478678
The MF series is designed to test simpler PCBs, such as those containing low density, conventional circuitry. Typical examples of their usage are:

- Repair and calibration stations
- Testing PCBs such as power supplies and control boards
- Modules and sub-assembly alignment

This series has a hinged polycarbonate top plate which, when latched closed, and using the supplied push fingers, puts a downward force onto the PCB and the test probes.

Two Carlson springs allow the top plate to remain open at any position (except MF0SC).

Probe plate will open on hinges, allowing access to the pan (probe plate thickness: 9.75mm).

All sides and base plate can be removed for drilling. 100mm deep pan is supplied as standard.

---

**Fixture customisation accessories suitable for MF series**

<table>
<thead>
<tr>
<th>Code part no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF0SC+SH</td>
<td>Shallow pan, 65mm deep instead of 100mm</td>
</tr>
<tr>
<td>MF2SCS+SH</td>
<td>Sloping pan, so that the probe plate faces you a little more (available for MF2SCS and MF3SCS)</td>
</tr>
<tr>
<td>MF50S+SH</td>
<td>Riser block sets - for PCBs with taller components (6 - 25mm)</td>
</tr>
<tr>
<td>MF1BOXS</td>
<td>Pan and probe board only (no hinged lid), for open access to the unit under test</td>
</tr>
<tr>
<td>PF1</td>
<td>Extra push fingers</td>
</tr>
<tr>
<td>TK1</td>
<td>Tool kit for disassembling MF series</td>
</tr>
</tbody>
</table>

---

**Recommended Coda-Pin™ probes for the MF series**

- HD-PA4 to HD-PA6 series for high current applications
- Switching probes, such as PS3 and PS5, for presence detection applications

---

**For technical advice:**

technical@coda-systems.co.uk

+44 (0)1787 478678
Bench-top Test Jig  

**CMF series**

Robust test jig using a cam-operated horizontal probe plate. Ideal for self customisation.

The CMF series uses fixed position push fingers and is designed to test low to medium density PCBs, such as those containing conventional and surface mount circuitry. Typical examples of their usage are:

- Repair and calibration stations
- Low to medium volume testing of PCBs - such as power supplies and control boards
- Single or double-sided PCB probing

This series has a cam-operated G10 fibreglass push plate. When the lid is latched closed the handle will then push down the upper plate, with the provided pusher rods, ensuring a true linear downward motion onto the PCB. Test probes can be fitted into both the base pan’s probe plate and, to a limited extent, on the top plate allowing some double-sided probing. The optional stripper plate supports the PCB and protects the probe field.

**Fixture customisation accessories suitable for CMF series**

- **Rigid tooling pins** (pegs for locating PCB guide holes)

  - M4 x 0.7
  - Ø D (mm): 6.0
  - Short taper (mm): 2.9

  Long length tooling pins, with an M4 thread, suitable for loaded board testing.

  **Coda part no.**
  - RLTP1.95: 1.95
  - RLTP2.45: 2.45
  - RLTP2.95: 2.95
  - RLTP3.15: 3.15
  - RLTP3.45: 3.45
  - RLTP3.75: 3.75
  - RLTP3.85: 3.85
  - RLTP3.95: 3.95
  - RLTP4.45: 4.45

**Rhubna**

- **Floating pins** for keeping the PCB raised away from the test probes until the top plate is lowered. Also useful for levelling pressure in unpopulated areas.

  - Drill hole size: 2.95 - 3.00mm
  - Maximum height 37mm

**CMF series extra options**

- **Example CMF2S + SH**
  - Shallow pan 65mm deep instead of 100mm

- **Example CMF2S + SLOPE**
  - Sloping pan so that the probe plate faces you a little more

- **Example RBS12**
  - Riser block sets - for PCBs with taller components

- **PF1**
  - PCB push fingers

- **TK1**
  - Tool kit for disassembling CMF series 1 x 1/8", 1 x 1/4", 1 x PH2

- **Contact us for details**
  - Upper head unit only, no pan or probe plate
  - Transparent polycarbonate top plate - for PCB visibility
  - Full range of spare parts available

**For quotations, availability or to place an order:**

[www.coda-systems.co.uk](http://www.coda-systems.co.uk)  
[technical@coda-systems.co.uk](mailto:technical@coda-systems.co.uk)  
[+44 (0)1787 478678](tel:+44%20(0)1787%20478678)

---

### Part numbers

<table>
<thead>
<tr>
<th>Including stripper plate</th>
<th>Without stripper plate</th>
<th>Base box size W x L x D (mm)</th>
<th>Max U.U.T (mm)</th>
<th>Max node count (60 probes)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMF1 + SP</td>
<td>CMF1</td>
<td>200 x 300 x 100</td>
<td>140 x 220</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>CMF1S + SP</td>
<td>CMF1S</td>
<td>300 x 200 x 100</td>
<td>240 x 110</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>CMF2 + SP</td>
<td>CMF2</td>
<td>300 x 400 x 100</td>
<td>225 x 300</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>CMF2S + SP</td>
<td>CMF2S</td>
<td>400 x 300 x 100</td>
<td>340 x 220</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>CMF3 + SP</td>
<td>CMF3</td>
<td>400 x 500 x 100</td>
<td>340 x 400</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>CMF3S + SP</td>
<td>CMF3S</td>
<td>500 x 400 x 100</td>
<td>440 x 310</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>CMF4S + SP</td>
<td>CMF4S</td>
<td>600 x 500 x 100</td>
<td>550 x 420</td>
<td>800</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The cam system may differ visually from the mechanism shown in the illustration.*

---

**CMF series extra options**

- **Example CMF2S + SLOPE**
  - Sloping pan so that the probe plate faces you a little more (available for jigs with (S) suffix only)

- **Example RBS12**
  - Riser block sets - for PCBs with taller components

- **PF1**
  - PCB push fingers

- **TK1**
  - Tool kit for disassembling CMF series 1 x 1/8", 1 x 1/4", 1 x PH2

- **Contact us for details**
  - Upper head unit only, no pan or probe plate
  - Transparent polycarbonate top plate - for PCB visibility
  - Full range of spare parts available

---

**For technical advice:**

[technical@coda-systems.co.uk](mailto:technical@coda-systems.co.uk)  
[+44 (0)1787 478678](tel:+44%20(0)1787%20478678)
The CGF series uses adjustable position push fingers and is designed to test low to medium density PCBs, such as those containing conventional and surface mount circuitry. Typical examples of their usage are:

- Repair and calibration stations
- Low to medium volume testing of PCBs such as power supplies and control boards
- Single or double side PCB probing

This series has a cam-operated gate fitted onto the hinged lid. When the lid is latched closed, the handle will then push down the gate, pressing the PCB into position upon the probe field. This will ensure a true linear downward motion onto the PCB. The cam-operated gate allows limited access to the upper side of the PCB. The optional stripper plate supports the PCB and protects the probe field.

### Fixture customisation accessories suitable for CGF series

**Rigid tooling pins** ( pegs for locating PCB guide holes)

<table>
<thead>
<tr>
<th>Coda part no.</th>
<th>Ø D (mm)</th>
<th>Pin tip shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>RLTP1.95</td>
<td>1.95</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP2.45</td>
<td>2.45</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP2.95</td>
<td>2.95</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP3.15</td>
<td>3.15</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP3.45</td>
<td>3.45</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP3.75</td>
<td>3.75</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP3.85</td>
<td>3.85</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP3.95</td>
<td>3.95</td>
<td>short taper 3mm</td>
</tr>
<tr>
<td>RLTP4.45</td>
<td>4.45</td>
<td>long taper 10mm</td>
</tr>
</tbody>
</table>

Long length tooling pins, with an M4 thread, suitable for loaded board testing. M4 nut and washer included. Bullet nose tip. Drill hole size: 3.95 - 4.00mm

*Note: You may need to drill the stripper plate to allow the tooling pin to pass through.*

### Recommended Coda-Pin™ probes for the CGF series

- HD-PA4 to HD-PA6 series for high current applications.
- Switching probes, such as PS3 and PS6, for presence detection applications.

### Part numbers

<table>
<thead>
<tr>
<th>Including stripper plate</th>
<th>Without stripper plate</th>
<th>Base box size W x L x D (mm)</th>
<th>Max U.L.T. (mm)</th>
<th>Max node count (box probes)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGF1 + SP</td>
<td>CGF1</td>
<td>220 x 300 x 100</td>
<td>120 x 185</td>
<td>300</td>
<td>S’ suffix means that the latch is on the long side of the pan.</td>
</tr>
<tr>
<td>CGF2S + SP</td>
<td>CGF2S</td>
<td>400 x 300 x 100</td>
<td>250 x 200</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>CGF3S + SP</td>
<td>CGF3S</td>
<td>500 x 400 x 100</td>
<td>350 x 275</td>
<td>600</td>
<td></td>
</tr>
</tbody>
</table>

### Bench-top Test Jig CGF series

Advanced test jig, using a cam-operated gate, with fully adjustable push fingers. Ideal for self customisation.

For quotations, availability or to place an order:

www.coda-systems.co.uk  / sales@coda-systems.co.uk

For technical advice:

technical@coda-systems.co.uk  / +44 (0)1787 478678

---

HD-PA4 to HD-PA6 series for high current applications.

Switching probes, such as PS3 and PS6, for presence detection applications.

Polycarbonate or G10 top plate instead of the adjustable gate

Full range of spare parts available
How to fit test probes and receptacles into a bench-top test jig

**Jigs without stripper/floating plates**

- Drill holes according to PCB data. Hole sizes are given in each receptacle series. Tungsten carbide drills are required to drill the G10 material
- To set the height of the receptacle, use an adjustable receptacle insertion tool
- The floating pin keeps the PCB away from the probe field until the push fingers press it down
- You may need to drill the push plate to allow the tooling pin to pass through

**Jigs with stripper/floating plates**

- Drill holes according to PCB data. Hole sizes are given in each receptacle series. Tungsten carbide drills are required to drill the G10 material
- Drill holes for each probe and tooling pin in the stripper plate (if option is fitted)
- The stripper plate keeps the PCB away from the probe field until the push fingers press it down
- You may need to drill the push plate to allow the tooling pin to pass through

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For technical advice:
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# Specialist Test Products

<table>
<thead>
<tr>
<th>Specialist Test Products</th>
<th>Details</th>
<th>Page</th>
</tr>
</thead>
</table>
| **High Current Test Probes**                  | - Large sized probes for high-power testing  
   - Current flows of up to 35 amps can be passed           | 22, 23        |
| **Ultra High Current Test Probes**            | - Even higher current handling capacity than the standard high current test probes (above)  
   - Current flows of up to 400 amps can be passed           | 24            |
| **Kelvin Test Probes**                        | - Test probes with a concentric design intended specifically for making 4-pole kelvin measurements | 25            |
| **Kelvin Test Pins and Fixture Kits**         | - For the testing of transformers, chokes, relays, solenoids and cable harnesses | 26, 27        |
| **High Frequency Test Probes**                | - Test probes with a broad bandwidth for making high frequency tests of RF connectors and PCBs | 28            |
| **Switching Test Probes**                     | - Test probes with an integral microswitch used for electrically testing and signalling the presence of a lead or pin | 29            |
| **Pneumatically Controlled Probing Systems**  | - A system where the tip of the test probe is moved by compressed air negating the need to move the probe plate or the unit towards the probe field | 30, 31        |
| **Micro Test Probes**                         | - For testing of PCBs, components and substrates down to 0.46mm test centres         | 32, 33        |
| **Presence Detection Switch Probes**          | - Test probes with integral micro switch used for signalling the presence and correct position of a component or pin | 34            |
| **Bladed Test Probes**                        | - Two series of test probes which allow access to a connector in a slotted connector housing. Pinned plunger stops tip rotation | 35            |
| **Large Headed Test Probes**                  | - Test probes with unusually large tip diameters for use in applications where the contact area is ill defined | 35            |
| **Jig Parts**                                 | - Essential components for jig builders such as guide plates, latches, tooling pins and pass marking units  
   - You can also build your own test station with our test boxes | 36, 37        |
High Current Test Probes

For load and functional testing of power components

This range of test probes can be used for load and functional testing of power components such as semi-conductors, solenoids, loaded PCBs, bus-bars, wound components and batteries. They share identical dimensions and will readily intermix with the PA3, PA4 and PA5 series general purpose test probes. In particular, the HD-PA4 series is physically interchangeable with the PA4 series used in standard ATE test fixtures.

Example installations

<table>
<thead>
<tr>
<th>HD-PA3 Series</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full travel</td>
<td>4.2mm</td>
</tr>
<tr>
<td>Working travel</td>
<td>2.7mm</td>
</tr>
<tr>
<td>Spring force</td>
<td>initial at wig travel</td>
</tr>
<tr>
<td>(S) Light spring</td>
<td>19g</td>
</tr>
<tr>
<td>(X) Heavy spring</td>
<td>196g</td>
</tr>
<tr>
<td>Operating temp. range</td>
<td>-35°C to +150°C</td>
</tr>
<tr>
<td>Current rating DC cont (max)</td>
<td>8 Amps</td>
</tr>
<tr>
<td>Minimum test centres</td>
<td>2.54mm</td>
</tr>
</tbody>
</table>

Tip styles

CONCAVE HEAD
L. SPRING HD-PA3AS
H. SPRING HD-PA3AX

SPEAR POINT
L. SPRING HD-PA3BS
H. SPRING HD-PA3BX

SERRATED HEAD
L. SPRING HD-PA3HS
H. SPRING HD-PA3HX

PLAIN RADIUS
L. SPRING HD-PA3JS
H. SPRING HD-PA3JX

Receptacles

Mounting hole size: 1.7/1.75mm
1.75mm drill is most commonly used: Drill part no. DA3
RIT tool part no. TA3, TA3A

SOLDER-CUP - with collar
RA3SF
Hole size: 1.70mm

SOLDER-IN
RA3P

SOLDER-CUP - with press-ring
RA3S

<table>
<thead>
<tr>
<th>HD-PA4 Series</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full travel</td>
<td>6.35mm</td>
</tr>
<tr>
<td>Working travel</td>
<td>4.26mm</td>
</tr>
<tr>
<td>Spring force</td>
<td>initial at wig travel</td>
</tr>
<tr>
<td>(S) Light spring</td>
<td>46g</td>
</tr>
<tr>
<td>(X) Heavy spring</td>
<td>184g</td>
</tr>
<tr>
<td>Operating temp. range</td>
<td>-35°C to +150°C</td>
</tr>
<tr>
<td>Current rating DC cont (max)</td>
<td>10 Amps</td>
</tr>
<tr>
<td>Minimum test centres</td>
<td>2.54mm</td>
</tr>
</tbody>
</table>

Tip styles

CONCAVE HEAD
HD-PA4AS

SPEAR POINT
HD-PA4BS

SERRATED HEAD
HD-PA4HS

Receptacles

Mounting hole size: 2.03/2.44mm
2.44mm drill is most commonly used: Drill part no. DA5
RIT tool part no. TA5

SOLDER-CUP - with collar
RA4SF

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For technical advice:
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+44 (0)1787 478678
High Current Test Probes  
For load and functional testing of power components

This range of test probes can be used for load and functional testing of power components such as semi-conductors, solenoids, loaded PCBs, bus-bars, wound components and batteries. They share identical dimensions and will readily intermix with the PA6 and PA7 series general purpose test probes.

**Example installations**

<table>
<thead>
<tr>
<th>HD-PA6 Series</th>
<th>HD-PA7 Series</th>
<th>HD-PC8 Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tip styles</strong></td>
<td><strong>Tip styles</strong></td>
<td><strong>Tip styles</strong></td>
</tr>
<tr>
<td><strong>CONCAVE HEAD</strong></td>
<td><strong>CONCAVE HEAD</strong></td>
<td><strong>SERRATED HEAD - 2.3mm</strong></td>
</tr>
<tr>
<td>HD-PA6AS</td>
<td>HD-PA7AS</td>
<td>HD-PC8HS-090</td>
</tr>
<tr>
<td><strong>BULLET NOSE</strong></td>
<td><strong>BULLET NOSE</strong></td>
<td><strong>SERRATED HEAD - 3.5mm</strong></td>
</tr>
<tr>
<td>HD-PA6BS</td>
<td>HD-PA7BS</td>
<td>HD-PC8HS-138</td>
</tr>
<tr>
<td><strong>SERRATED HEAD - 4mm</strong></td>
<td><strong>SERRATED HEAD - 4mm</strong></td>
<td><strong>SOLDER-POT - press-fit</strong></td>
</tr>
<tr>
<td>HD-PA6HS</td>
<td>HD-PA7HS</td>
<td>RA7S</td>
</tr>
<tr>
<td><strong>Receptacle</strong></td>
<td><strong>Receptacle</strong></td>
<td><strong>RA7S</strong></td>
</tr>
<tr>
<td>Mounting hole size: 2.72/2.77mm</td>
<td>Mounting hole size: 3.58/3.63mm</td>
<td>Mounting hole size: 3.0mm</td>
</tr>
<tr>
<td>2.75mm drill is most commonly used: Drill part no. DA6</td>
<td>3.6mm drill is most commonly used: Drill part no. DA7</td>
<td>Drill part no. DS6</td>
</tr>
</tbody>
</table>

### HD-PA6 Series Specification
- Full travel: 6.35mm
- Working travel: 4.24mm
- Spring force: 24g at 136g
- Operating temp. range: −55°C to +150°C
- Current rating: 25 Amps
- Minimum test centres: 4.75mm

### HD-PA7 Series Specification
- Full travel: 6.35mm
- Working travel: 4.24mm
- Spring force: 107g at 454g
- Operating temp. range: −55°C to +150°C
- Current rating: 35 Amps
- Minimum test centres: 4.75mm

### HD-PC8 Series Specification
- Full travel: 3.5mm
- Working travel: 2.8mm
- Spring force at 45g: 150g
- Operating temp. range: −100°C to +200°C
- Current rating: 24 Amps
- Minimum test centres: 4.0mm

This range of lower profile test probes can be used for load and functional testing of power components, wound components and batteries. The short overall length is useful in positions where available space is minimal.

For samples, quotations, availability or to place an order:  
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For technical advice:  
technical@coda-systems.co.uk  
+44 (0)1787 478678
Ultra High Current Test Probes

These series have an even higher current handling capacity than the other heavy duty (HD) ranges. By use of through-pin construction and a silver alloy contacting area, current flows of up to 400 amps can be passed. The probe bolts into the probe plate and will easily disassemble for cleaning. Uses for this range include load and functional testing of bus-bars and batteries.

Example installation of Kelvin/4-pole version

Also available: High current kelvin probe

For technical advice:

+= +44 (0)1787 478678
sales@coda-systems.co.uk

drawings shown actual size

Temperature range to 100°C
Kelvin Test Probes

A range of concentric test probes intended specifically for making 4 to 6 pole (Kelvin) measurements on PCBs, bus-bars, equipment chassis and screw heads

A wide range of tip styles is available including sharp inner and outer probes for contact problem areas and concaved outer designed for contacting pan-head screws. This range makes low resistance measurements very easy. Contact us regarding our high current/heavy duty range.

**Example installations**

- **Centre pin sense connection**
- **Outer pin current connection**
- **Epoxy**

**PK2 Series**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Tip styles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full travel (outer) 4.5mm</td>
<td>FLAT/PYRAMID PK2FT</td>
</tr>
<tr>
<td>Recommended travel (outer) 3.0mm</td>
<td>FLAT/CROWN PK2FQ</td>
</tr>
<tr>
<td>Spring force at full travel 195g</td>
<td>CROWN/CROWN PK2QQ</td>
</tr>
<tr>
<td>Maximum current (outer) 3 Amp</td>
<td>Receptacle Mounting hole size: 2.0mm</td>
</tr>
<tr>
<td>Drill hole size for probe 1.65mm</td>
<td>Optional receptacle RK2</td>
</tr>
<tr>
<td>Drill hole size for receptacle 2.05mm</td>
<td>Tip styles</td>
</tr>
<tr>
<td></td>
<td>CROWN/PYRAMID PK2OT</td>
</tr>
<tr>
<td></td>
<td>FLAT/PYRAMID PK2FT</td>
</tr>
<tr>
<td></td>
<td>FLAT/CROWN PK2FQ</td>
</tr>
<tr>
<td></td>
<td>CROWN/CROWN PK2QQ</td>
</tr>
</tbody>
</table>

**PK3 Series**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Tip styles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full travel (outer) 4.0mm</td>
<td>SERRATED/SPEAR PK3HB</td>
</tr>
<tr>
<td>Recommended travel (outer) 3.0mm</td>
<td>SERRATED/SERRATED PK3HH</td>
</tr>
<tr>
<td>Spring force at full travel 270g</td>
<td>CROWN/SPEAR A0</td>
</tr>
<tr>
<td>Maximum current (outer) 5 Amp</td>
<td>2.5mm PK3QB-2.5</td>
</tr>
<tr>
<td>Drill hole size for probe 2.9mm</td>
<td>3.0mm PK3QB-3.0</td>
</tr>
<tr>
<td>Optional receptacle RK3</td>
<td>3.5mm PK3QB-3.5</td>
</tr>
<tr>
<td>Drill hole size for receptacle 3.25mm</td>
<td>Receptacle Mounting hole size: 3.2mm</td>
</tr>
<tr>
<td></td>
<td>Mounting hole size: 3.2mm</td>
</tr>
<tr>
<td></td>
<td>CROWN/SERRATED</td>
</tr>
<tr>
<td></td>
<td>SERRATED/SPEAR PK4HB</td>
</tr>
<tr>
<td></td>
<td>SERRATED/SERRATED PK4QH</td>
</tr>
<tr>
<td></td>
<td>CROWN/SPEAR PK4QB-3.5</td>
</tr>
<tr>
<td></td>
<td>PK4QH</td>
</tr>
<tr>
<td></td>
<td>PK4HH</td>
</tr>
<tr>
<td></td>
<td>M3 PAN HEAD SCREWS PK5M3J</td>
</tr>
<tr>
<td></td>
<td>M4 PAN HEAD SCREWS PK5M4J</td>
</tr>
<tr>
<td></td>
<td>CROWN/SPEAR PK5QB</td>
</tr>
<tr>
<td></td>
<td>CROWN/SERRATED PK5QH</td>
</tr>
<tr>
<td></td>
<td>Receptacle Mounting hole size: 6.2mm</td>
</tr>
</tbody>
</table>

**For quotations, availability or to place an order:**

[www.coda-systems.co.uk](http://www.coda-systems.co.uk)  sales@coda-systems.co.uk

**For technical advice:**

technical@coda-systems.co.uk  +44 (0)1787 478678
Kelvin Test Pins & Fixture Kits

Kelvin Test Pins

**KWP Series**
A twin-terminal socket pin providing a two point contact onto a single lead, pin or terminal. This method allows a high quality and effective 4-pole/kelvin connection, and with suitable equipment attached, will enable the taking of accurate resistance and impedance measurements.

Available in two sizes, the open construction and the simple fitment method of this range allows quick installation into your test block. The high quality of materials used in manufacturing this product range allows durability and a reliable test contact for a wide range of component lead diameters, typically 0.5mm to 1.3mm.

**Example installation**

<table>
<thead>
<tr>
<th>Lead diameter range: 0.5mm - 0.8mm</th>
<th>Minimum test centre spacing: 2.54mm</th>
<th>Material: Gold plated beryllium copper</th>
<th>Overall length: 26.3mm</th>
</tr>
</thead>
</table>

**Specification**

<table>
<thead>
<tr>
<th>Lead diameter range: 0.8mm - 1.3mm</th>
<th>Minimum test centre spacing: 3.75mm</th>
<th>Material: Gold plated beryllium copper</th>
<th>Overall length: 26.0mm</th>
</tr>
</thead>
</table>

Transformer Test Fixture Kits

**KWF Series**
Incorporating KWP kelvin pins (shown above), this series is suitable for use with Voltech’s Universal Fixture and for standalone testing. Each kit is ideal for users that have the facilities to customise their own test fixtures. The kit of parts include enough KWP kelvin pins to test wound components with up to 10 pins. Full customising instructions are available on www.coda-systems.co.uk

Kit contains:
- 1 x socket blank plate
- Spacer blocks
- Velcro fixing strips
- 1 x G11 lead guide (increases life of socket blank plate)
- 10 x KWP kelvin pins
- 1 x drill template, all fixings and full instructions

**Customised KWF100 small transformer test jig**
Finished KWF100 jig with small transformer under test. This type of jig can be built to your requirements, please contact us with your specific enquiry.

**Customised KWF150 large transformer test jig**
Finished KWF150 jig with larger transformer under test. This type of jig can be built to your requirements, please contact us with your specific enquiry.

SMD Component Test Fixture

**KWC Series**
A brand new solution to the fast testing of many configurations of SMD wound components.

This range of jigs feature:
- Zero insertion force connection which eliminates lead bending.
- Every lead has two separate connections which allows a kelvin test, if required
- Locking lever system prevents the component under test jumping out.
- The simplicity of the jig allows for a reduced handling time when open
- A pneumatically operated version is available as an option, please ask about this

This type of jig is built to your unique requirements. Please contact us with your specific enquiry.

**Typical KWC jig for testing SMT transformers.**

For quotations, availability or to place an order:
www.coda-systems.co.uk /envelopeback
sales@coda-systems.co.uk /telephonesolid
+44 (0)1787 478678

For technical advice:
technical@coda-systems.co.uk /envelopeback
+44 (0)1787 478678
Kelvin Pliers

**Kelvin Plier**
A twin-terminal alligator clip with separate terminals, which allows 4-pole kelvin measurements to be taken of leads, terminals and cables. Ideal for LRC bridges, milliohm meters and transformer testers.

**KPP600 Kelvin Plier (ready wired)**
A twin-terminal alligator clip ready wired with 600mm long cables and banana plugs fitted. Available with red or black cables fitted.

**Specification**
- Maximum current rating: 3amps
- Maximum temperature: 175°C
- Cable length: 600mm
- Cable type: Multistrand

**Dimensions**
- Length: 41mm
- Width: 8.75mm
- Height: 23.6mm

**KPP6 Kelvin Plier**
A twin-terminal alligator clip with separate terminals, which allows 4-pole kelvin measurements to be taken of leads, terminals and cables. Ideal for LRC bridges, milliohm meters and transformer testers.

**Specification**
- Maximum current rating: 3amps
- Maximum temperature: 175°C
- Jaw depth: 9mm (max)
- Jaw opening: 8mm (max)
- Contact material, plating: BeCu, gold plated
- Contact pressure: 1.2kg
- Weight: 6.1g
- Connection: 2 screws for M3 ring terminals or direct cable attachment

**KPP600B**
- black cables

**KWM Series**
Twin terminal socket module providing a two point contact onto a single lead, pin or terminal. Ideal for testing DC-DC converters and encapsulated power supplies. This method allows a high quality and effective 4-pole/kelvin connection, and with suitable equipment attached, will enable the accurate measurement of resistance and impedance.

Available in two sizes, the modular construction and the very simple fitment method of this range allows quick self-installation onto a suitable surface. The high quality of materials used in manufacture allows durability and a reliable test contact for a wide range of component lead diameters, typically 0.5mm, up to 2.0mm. The modules are easily replaceable, allowing a simple jig refurbishment process.

**Example installations**
- Example showing surface mounting of KWM100 kelvin socket module
- Inductor impedance measurement when incorporated into a 4-pole circuit

**Small socket module KWM100**
- Specification
  - Lead diameter range: 0.5 - 1.0mm
  - Minimum lead length: 5.1mm
  - Minimum pitch: 3.8mm

**Large socket module KWM150**
- Specification
  - Lead diameter range: 1.15 - 2.0mm
  - Minimum lead length: 5.1mm
  - Minimum pitch: 3.8mm

**KW M Series**
Kelvin test pins, modules and fixture kits for the testing of transformers, chokes, relays, solenoids and cable harnesses

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www.coda-systems.co.uk
sales@coda-systems.co.uk
+44 (0)1787 478678

**For technical advice:**
technical@coda-systems.co.uk
+44 (0)1787 478678
### High Frequency Test Probes

#### PE3 Series
**Coaxial RF Interfacing Pair** - The PE3 is a coaxial probe and land designed to be a spring-loaded high frequency mating pair.

**Specification**
- **Mounting hole size:** 6.35/6.40mm press fitment
- **Drill Pattern No:** DE3

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance</td>
<td>50 Ohms</td>
</tr>
<tr>
<td>Working travel</td>
<td>4.24mm</td>
</tr>
<tr>
<td>Spring force at working travel</td>
<td>57g</td>
</tr>
<tr>
<td>Inner contact</td>
<td>113g</td>
</tr>
<tr>
<td>Current rating DC c/o</td>
<td>3 amps</td>
</tr>
<tr>
<td>Maximum frequency</td>
<td>4GHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.15:1 @ 4GHz</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>0.13 dB/1GHz</td>
</tr>
<tr>
<td>Required tail connector</td>
<td>SMA plug</td>
</tr>
</tbody>
</table>

**Configurations**

**Linear Configuration:** 5mm centres

**Side view**
- **Part number:** PE6KB
- **Weight:** 6.14mm
- **Description:** Spear
- **Part number:** PE6KH
- **Weight:** 6.04mm
- **Description:** Serrated

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight</th>
<th>Description</th>
<th>Spare probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE6KB</td>
<td>6.14mm</td>
<td>Spear</td>
<td>PE6KB-SP</td>
</tr>
<tr>
<td>PE6KH</td>
<td>6.04mm</td>
<td>Serrated</td>
<td>PE6KH-SP</td>
</tr>
</tbody>
</table>

**Top view (PE6KBN)**
- **Notes:**
  - 3 types
  - Short contact length

- **Top view (PE6KN)**
- **Notes:**
  - 2 types
  - Long contact length

**Quadrature Configuration:** 3mm centres

**Side view**
- **Part number:** PE6KQG
- **Weight:** 5.21mm
- **Description:** Coaxial probe
- **Spare probe:** PE6QG

**Top view:**
- **Notes:**
  - 3 types
  - Other tip styles can be fitted
  - 4 outer probe positions allow several configurations

**Notes:**
- For technical advice: +44 (0)1787 478678
- For quotations, availability or to place an order: www.coda-systems.co.uk

**Tip styles**
- **SMB**
- **SMA**
- **MCX**
- **For PE6 series**

### PE6 Series
**For PCB Test** - A series of superior performance RF coaxial test probes designed to allow an instrumentation-quality interface for broadband RF measurements up to 4GHz. Accurate small signal and RF power (up to 50w) measurements make them ideal for cellular telephone testing applications.

**Specification**
- **Mounting hole size:** 6.35/6.40mm press fitment

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance</td>
<td>50 Ohms</td>
</tr>
<tr>
<td>Working travel</td>
<td>4.24mm</td>
</tr>
<tr>
<td>Spring force at working travel</td>
<td>57g</td>
</tr>
<tr>
<td>Inner contact</td>
<td>113g</td>
</tr>
<tr>
<td>Current rating DC c/o</td>
<td>3 amps</td>
</tr>
<tr>
<td>Maximum frequency</td>
<td>4GHz</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.15:1 @ 4GHz</td>
</tr>
<tr>
<td>Insertion loss</td>
<td>0.13 dB/1GHz</td>
</tr>
<tr>
<td>Required tail connector</td>
<td>SMA plug</td>
</tr>
</tbody>
</table>

**Configurations**

**Linear Configuration:** 5mm centres

**Side view**
- **Part number:** PE6KL
- **Weight:** 5.38mm
- **Description:** Spear

- **Part number:** PE6QS
- **Weight:** 5.88mm
- **Description:** Serrated

<table>
<thead>
<tr>
<th>Part number</th>
<th>Weight</th>
<th>Description</th>
<th>Spare probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE6KL</td>
<td>5.38mm</td>
<td>Spear</td>
<td>PE6KL-SP</td>
</tr>
<tr>
<td>PE6QS</td>
<td>5.88mm</td>
<td>Serrated</td>
<td>PE6QS-SP</td>
</tr>
</tbody>
</table>

**Top view (PE6KN)**
- **Notes:**
  - 3 types
  - Other tip styles can be fitted

**Top view (PE6QB)**
- **Notes:**
  - 3 types
  - Other tip styles can be fitted

**Notes:**
- For technical advice: +44 (0)1787 478678
- For quotations, availability or to place an order: www.coda-systems.co.uk

**Tip styles**
- **N-Type Socket**
- **Press-Fitment**
- **SMB**
- **SMA**
- **MCX**
- **For PE6 series**

### PE8 Series
**For use as a spring loaded test probe for all of the common radio frequency connectors, this will remove the need to use sacrificial plugs. Contact us if your connector type is not shown.**

**Specification**
- **Mounting hole size without receptacle:** 4.5mm
- **Mounting hole size with receptacle:** see in each receptacle type

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance</td>
<td>50 Ohms</td>
</tr>
<tr>
<td>Working travel</td>
<td>4mm</td>
</tr>
<tr>
<td>Spring force at working travel</td>
<td>530g</td>
</tr>
<tr>
<td>Maximum frequency (3dB c/o)</td>
<td>2GHz</td>
</tr>
<tr>
<td>Required tail connector</td>
<td>SMB plug</td>
</tr>
</tbody>
</table>

**Tip styles**
- **SMB**
- **N-Type**
- **Press-Fitment**
- **For PE8 series**

**Notes:**
- For technical advice: +44 (0)1787 478678
- For quotations, availability or to place an order: www.coda-systems.co.uk

**For PCB and RF testing to measurements up to 4GHz. Accurate small signal and RF power (up to 50w) measurements make them ideal for cellular telephone testing applications.**

For technical advice: +44 (0)1787 478678

For quotations, availability or to place an order: www.coda-systems.co.uk

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Switching Test Probes

**Example installations**

- **Presence detection and electrical test**
- **Switch closed if pin is present and positional accuracy**
- **Switch closed if present**
- **Presence detection of component**

**Electrical test and presence detection using switchprobes**

**PS3 Series**

**Specification**

- **Test centres**: 2.54mm
- **Full travel (±/- 25mm)**: 5mm
- **Recommended travel up to**: 4mm
- **Switch point (±/- 30mm)**: 1.5mm
- **Electrical (Non-Inductive, DC)**
  - **Current rating (max)**: 1 Amp
  - **Average switch resistance**: 50mΩ
- **Spring force**
  - **Light**: 45g
  - **Heavy**: 90g
- **At recommended travel**: 150g-300g

**SOLDER**

- **Receptacle**

**FLAT (HEADED)**

- **PS3CS**
  - **Push-on connector for probe's tail CS4**

**Receptacle**

2.0mm drill is most commonly used.

**For technical advice:**

- **For quotations, availability or to place an order:**
  - **technical@ coda-systems.co.uk**
  - **sales@ coda-systems.co.uk**

**For quotations, availability or to place an order:**

- **www.coda-systems.co.uk**
- **+44 (0)1787 478678**

**Tip styles**

- **CONCAVE - 1.8mm**
  - **L. SPRING**: PS3AS
  - **H. SPRING**: PS3AX

- **FLAT HEAD - 1.8mm**
  - **L. SPRING**: PS3SF
  - **H. SPRING**: PS3FX

- **INSULATED CAP - 1.8mm**
  - **L. SPRING**: PS3INS
  - **H. SPRING**: PS3INSX

- **RADIUS - 1mm**
  - **L. SPRING**: PS3S
  - **H. SPRING**: PS3SX

**Tip styles**

- **SERRATED - 1.8mm**
  - **L. SPRING**: PS3SHS
  - **H. SPRING**: PS3SXH

**Tip styles**

- **INSULATED CAP - 1.8mm**
  - **L. SPRING**: PS3INS
  - **H. SPRING**: PS3INSX

**Test probes with an integral microswitch used for electrically testing and signalling the presence of a lead or pin**

**TYPICAL USES**

- **Connector pin test and in place switch**
- **UUT 'in-place' so start test switch**
- **Cycle counter/actuation switch in ATE**
- **Presence detection/test of a fitted part or component**

- **See page 34 for presence detection switch probes**

**Tip styles**

- **SERRATED HEAD - 4.0mm**
- **INSULATED CAP - 5.0mm**
- **PLAIN FLAT**

**Specifikation**

- **PS4 Series**

**Specification**

- **Test centres**: 2.54mm
- **Full travel (±/- 25mm)**: 5mm
- **Recommended travel up to**: 2.16mm
- **Switch point (±/- 30mm)**: 0.76mm
- **Electrical (Non-Inductive, DC)**
  - **Current rating (max)**: 3 Amps
  - **Average switch resistance**: 50mΩ
- **Spring force**
  - **At switch point**: 70g
  - **At recommended travel**: 230g

**LPS6 Series**

**Specification**

- **Test centres**: 4.5mm
- **Full travel (±/- 25mm)**: 8mm
- **Recommended travel up to**: 4.15mm
- **Switch point (±/- 30mm)**: 2.4mm
- **Electrical (Non-Inductive, DC)**
  - **Current rating (max)**: 5 Amps
  - **Average switch resistance**: 50mΩ
- **Spring force**
  - **At switch point**: 90g
  - **At recommended travel**: 350g

**Receptacle**

**PS6 Series**

**Specification**

- **Test centres**: 4.5mm
- **Full travel (±/- 25mm)**: 5.2mm
- **Recommended travel up to**: 4.15mm
- **Switch point (±/- 30mm)**: 1.7mm
- **Electrical (Non-Inductive, DC)**
  - **Current rating (max)**: 3 Amps
  - **Average switch resistance**: 50mΩ
- **Spring force**
  - **At switch point**: 70g
  - **At recommended travel**: 230g

**Receptacle**

**Tip styles**

- **CONCAVE HEAD - 2.3mm**
- **FLAT HEAD - 3.0mm**
- **INSULATED CAP - 3.0mm**
- **INSULATED CAP - 5.0mm**
- **PLAIN FLAT**

**Receptacle**

- **PS5 Series**

**Specification**

- **Test centres**: 3.17mm
- **Full travel (±/- 25mm)**: 3.5mm
- **Recommended travel up to**: 2.7mm
- **Switch point (±/- 30mm)**: 0.76mm
- **Electrical (Non-Inductive, DC)**
  - **Current rating (max)**: 3 Amps
  - **Average switch resistance**: 50mΩ
- **Spring force**
  - **At switch point**: 70g
  - **At recommended travel**: 230g

**Receptacle**

**PS7 Series**

**Specification**

- **Test centres**: 4.19mm
- **Full travel (±/- 25mm)**: 4.70mm
- **Recommended travel up to**: 3.35mm
- **Switch point (±/- 30mm)**: 6.5mm
- **Electrical (Non-Inductive, DC)**
  - **Current rating (max)**: 5 Amps
  - **Average switch resistance**: 20mΩ
  - **Spring force**
  - **At switch point**: 71g
  - **At recommended travel**: 136g

**Receptacle**

**SOLDER**

- **Receptacle**

2.01mm drill is most commonly used.

- **For technical advice:**
  - **technical@ coda-systems.co.uk**
  - **sales@ coda-systems.co.uk**

- **www.coda-systems.co.uk**
- **+44 (0)1787 478678**
Pneumatically Controlled Probing

Pneumatic test probes provide an alternative to the use of conventional spring contact test probes to solve some problems in test fixture design. The major features of pneumatic probing systems are:

- There is no need for a moving probe plate or push plate.
- The probes are held away from the test item until contact is required, which avoids damage and wear on the probe tips. When the compressed air is switched on to the probe the tip moves into contact with the test pad.
- The ability to program sequential tests using a programmer and electric valves to operate different probes at set times in the test program.

An important consideration is that probes not in use are not in contact with the item under test and so cannot introduce measurement errors by adding any erroneous circuit paths. Below is a complete range of probes, together with all the hoses, terminations, manifolds for air distribution, and electric switches for programming a test routine. Please note, this is a hypothetical set up to show all the components in use.

**Pneumatic system components**

**Connector buses**
- **Coda part no.**
  - **CB-1**: Single connector base for a single electric valve. Uses AM3 series connectors.
  - **CB-2 to CB-10**: Multiple connector base for multiples of electric air valves. Uses AM5 series connectors.

**Electric air valves**
- **Coda part no.**
  - **EV12**: Electric valve: 12V DC operation
  - **EV24**: Electric valve: 24V DC operation

**Hose connectors for CB-1 manifold**
- **Coda part no.**
  - **AM3-1**: An M3 to 1mm hose connector
  - **AM3-2**: An M3 to 2mm hose connector
  - **AM3-3**: An M3 to 3mm hose connector

**Hose connectors for all except CB-1**
- **Coda part no.**
  - **AM5-0**: An M5 blanking plug
  - **AM5-1**: An M5 to 1mm hose connector
  - **AM5-2**: An M5 to 2mm hose connector
  - **AM5-3**: An M5 to 3mm hose connector
  - **AI-G1-8-3**: Air inlet connector for 3mm hose
  - **AI-G1-8-M5**: Air inlet connector for M5 connection
  - **AI-G1-8-0**: Air inlet blanking plug

**Manifolds**
- **Code part no.**
  - **MAN2-0**: A 2-way manifold, supplied with 3 x M5 threaded holes so that you can fit your choice of AM5 series connectors.
  - **MAN2-3-1**: A MAN2-0 supplied fitted with 3 x AM5-1 connectors for use with AH-1 1mm hose.
  - **MAN2-3-2**: A MAN2-0 supplied fitted with 3 x AM5-2 connectors for use with AH-2 2mm hose.
  - **MAN10-0**: A 10-way manifold supplied with 10 x M5 threaded holes for connectors; AM5-1 for 1mm output or blanking plug AM5-0. The air input uses either AI-GI-8-3 for 3mm hose or AI-GI-8-M5 for AM5 connectors.

**Hose reducers**
- **Code part no.**
  - **HR2-1**: A 2mm to 1mm reducer
  - **HR3-1**: A 3mm to 1mm reducer
  - **HR3-2**: A 3mm to 2mm reducer

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---

**Manifolds**
- **Code part no.**
  - **MAN2-0**: A 2-way manifold, supplied with 3 x M5 threaded holes so that you can fit your choice of AM5 series connectors.
  - **MAN2-3-1**: A MAN2-0 supplied fitted with 3 x AM5-1 connectors for use with AH-1 1mm hose.
  - **MAN2-3-2**: A MAN2-0 supplied fitted with 3 x AM5-2 connectors for use with AH-2 2mm hose.
  - **MAN10-0**: A 10-way manifold supplied with 10 x M5 threaded holes for connectors; AM5-1 for 1mm output or blanking plug AM5-0. The air input uses either AI-GI-8-3 for 3mm hose or AI-GI-8-M5 for AM5 connectors.
Pneumatically Controlled Probing Systems

Example installations

PP2 Series

PP2 Series pneumatically operated test probes with a wide range of tip styles to suit most applications.

Specification

- Minimum test centres:
  - Without receptacle: 1.91mm
  - With receptacle: 3.50mm
- Full travel: 10.0mm
- Working travel up to: 6.0mm
- Contact force at working travel: 80g
- Current rating DC cont (max): 2 Amps
- Maximum test operating temperature: 90°C
- Hose: use AH-1
- Connector: use ECP4
- Compressed air specification:
  - Filtered, oil-free at recommended pressure of 6 bar
  - Contact force at working travel: 170g
  - Work travel up to: 6.0mm
  - Full travel: 20.0mm
  - Max test centres:
    - With receptacle: 3.50mm
    - Without receptacle: 2.54mm

Tip styles

- 4 POINT SMALL CROWN
  - PP2QS-020
- 4 POINT LARGE CROWN
  - PP2QS-040
- DAGGER
  - PP2TS-040

Receptacle & Terminations

- Receptacle
  - Drill holes: use 3.3mm
- RP4
- ECP4

PP4 Series

PP4 Series pneumatically operated test probes with a wide range of tip styles to suit most applications.

Specification

- Minimum test centres:
  - Without receptacle: 2.56mm
  - With receptacle: 3.50mm
- Full travel: 10.0mm
- Working travel up to: 6.0mm
- Contact force at working travel: 80g
- Current rating DC cont (max): 2 Amps
- Maximum test operating temperature: 90°C
- Hose: use AH-1
- Connector: use ECP4
- Compressed air specification:
  - Filtered, oil-free at recommended pressure of 6 bar
  - Contact force at working travel: 420g
  - Work travel up to: 12.0mm
  - Full travel: 20.0mm
  - Max test centres:
    - With receptacle: 5.0mm
    - Without receptacle: 4.5mm

Tip styles

- CONCAVE
  - PP4AS
- SPEAR POINT
  - PP4BS
- SERRATED
  - PP4HS
- DOME
  - PP4JS
- 4 POINT CROWN
  - PP4QS

Receptacle & Terminations

- Receptacle
  - Mounting holes: use 3.3mm
- RP5
- ECP4

PP5 Series

PP5 Series medium-sized pneumatic test probes with a medium spring force and an extra long stroke for use in difficult test areas, such as recessed test points.

Specification

- Minimum test centres:
  - Without receptacle: 3.5mm
  - With receptacle: 4.0mm
- Full travel: 20.0mm
- Working travel up to: 10.0mm
- Contact force at working travel: 170g
- Current rating DC cont (max): 2 Amps
- Maximum test operating temperature: 90°C
- Hose: use AH-1
- Connector: use ECP4
- Compressed air specification:
  - Filtered, oil-free at recommended pressure of 6 bar
  - Contact force at working travel: 420g
  - Work travel up to: 12.0mm
  - Full travel: 20.0mm
  - Max test centres:
    - With receptacle: 5.0mm
    - Without receptacle: 4.5mm

Tip styles

- SPEAR POINT
  - PP5BS
- FLAT HEAD - 2.5mm
  - PP5FS
- SERRATED - 2.5mm
  - PP5FS
- 4 POINT CROWN HEAD
  - PP5QS

Receptacle & Terminations

- Receptacle
  - Mounting holes: use 4.5mm
- RP6
- ECP4

PP6 Series

PP6 Series large pneumatic test probes with a high spring force and an extra long stroke for use in difficult test areas, such as recessed test points.

Specification

- Minimum test centres:
  - Without receptacle: 4.5mm
  - With receptacle: 5.0mm
- Full travel: 20.0mm
- Working travel up to: 12.0mm
- Contact force at working travel: 420g
- Current rating DC cont (max): 2 Amps
- Maximum test operating temperature: 90°C
- Hose: use AH-1
- Connector: use ECP4
- Compressed air specification:
  - Filtered, oil-free at recommended pressure of 6 bar
  - Contact force at working travel: 420g
  - Work travel up to: 12.0mm
  - Full travel: 20.0mm
  - Max test centres:
    - With receptacle: 5.0mm
    - Without receptacle: 4.5mm

Tip styles

- SPEAR POINT
  - PP6BS
- FLAT HEAD - 2.5mm
  - PP6FS
- SERRATED - 2.5mm
  - PP6FS
- 4 POINT CROWN HEAD
  - PP6QS

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For technical advice:
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Micro Test Probes

For the very fine pitch testing of semi-conductor devices and PCBs down to 0.46mm centres

Example installations

PM1 Series

| Specification |
|---------------|---|
| Minimum test centres | 0.46mm |
| Full travel | 1mm |
| Working travel | 0.67mm |
| Spring force at working travel | 1.5g |
| Current rating DC cont (max) | 1 Amp |
| Drill hole size | 0.27 - 0.398mm |

PM2 Series

| Specification |
|---------------|---|
| Minimum test centres | 0.51mm |
| Full travel | 2mm |
| Working travel | 1.33mm |
| Spring force at working travel | 1.5g |
| Current rating DC cont (max) | 2 Amps |
| Drill hole size | 0.34 - 0.398mm |

PM4 Series

| Specification |
|---------------|---|
| Minimum test centres | 0.63mm |
| Full travel | 1.9mm |
| Working travel | 1.27mm |
| Spring force initial at working travel | 1.5g |
| Current rating DC cont (max) | 2 Amps |
| Drill hole size | 0.52mm |
| Probe insertion tool | PM1 |

Installation

PM1 and PM2, non-replaceable micro test probes

The non-replaceable micro test probes feature a collar at the top of the barrel, which is used as a stop in the fitment process. Due to the minute barrel diameters and thin walls, it is imperative that the drilled hole diameter and straightness are very accurate. We recommend that the pre-wired option is taken as connecting a cable to these probes is an extremely delicate operation.

Usually, multi-plate fixtures containing no less than 3 plates, are used to retain large multiples of probes. Otherwise a block of stable material which will allow reliable drilled holes is to be recommended, with the microprobe fitted wire/tail first with tweezers, with a small amount of locking compound on the side to secure it, if required.

Tip styles

<table>
<thead>
<tr>
<th>Tip styles</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEAR POINT</td>
</tr>
<tr>
<td>PM1B</td>
</tr>
<tr>
<td>PM1B-W33</td>
</tr>
<tr>
<td>PM1A</td>
</tr>
<tr>
<td>SPEAR POINT</td>
</tr>
<tr>
<td>PM2B</td>
</tr>
<tr>
<td>PM2B-W33</td>
</tr>
<tr>
<td>PM2</td>
</tr>
<tr>
<td>SPEAR POINT</td>
</tr>
<tr>
<td>PM4</td>
</tr>
</tbody>
</table>

Installations

PM4, replaceable micro test probe

The tail of this micro test probe plugs into a socket installed in a second block, located beneath the probe plate. This allows the probe to be a replaceable item, without the extra width of a receptacle around it. The socket can either have a cable crimped or soldered into it, or can accept the RM4T terminal plug (see illustration on the top right of this page).

Receptacles

<table>
<thead>
<tr>
<th>Tip styles</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPEAR POINT</td>
</tr>
<tr>
<td>PM4B</td>
</tr>
<tr>
<td>PM4C</td>
</tr>
<tr>
<td>PM4G</td>
</tr>
<tr>
<td>PM4J</td>
</tr>
</tbody>
</table>

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+44 (0)1787 478678
**Micro Test Probes - Replaceable with receptacle**

**For the very fine pitch testing of semi-conductor devices and PCBs down to 0.51mm centres**

### PM2'R Series

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum test centres</td>
</tr>
<tr>
<td>Full travel</td>
</tr>
<tr>
<td>Working travel</td>
</tr>
<tr>
<td>Spring force</td>
</tr>
<tr>
<td>Current rating DC (max)</td>
</tr>
</tbody>
</table>

### PM3'R Series

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum test centres</td>
</tr>
<tr>
<td>Full travel</td>
</tr>
<tr>
<td>Working travel</td>
</tr>
<tr>
<td>Spring force</td>
</tr>
<tr>
<td>Current rating DC (max)</td>
</tr>
</tbody>
</table>

### Installation

**PM2’R and PM3’R, micro test probe receptacles**

The receptacles of the replaceable micro test probes feature a collar at the top of the tube, which is used as a stop in the fitment process. Due to the minute tube diameters and thin walls, it is imperative that the drilled hole diameter and straightness are very accurate. It is recommended that the pre-wired option is taken - as connecting a cable to these receptacles is an extremely delicate operation.

Usually, multi-plate fixtures containing no less than 3 plates, are used to retain multiples of receptacles. - as connecting a cable to these receptacles is an extremely delicate operation.

Receptacles

- **Mounting hole size:** 0.41/0.43mm 6.70mm drill is most commonly used: Drill part no. DA4. RIT tool part no. TAD

**PM2BR CRIMP**

- **Mounting hole size:** 0.48/0.53mm 2.54mm drill is most commonly used: Drill part no. DA5. RIT tool part no. TAD

**CRIMP**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**RECENT CONCAVE**

- **Mounting hole size:** 0.56/0.68mm 16.13mm drill is most commonly used: Drill part no. DA7. RIT tool part no. TAD

### Tip styles

<table>
<thead>
<tr>
<th>POINT</th>
<th>SPEAR POINT</th>
<th>PLAIN CROWN</th>
<th>STEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM2BR</td>
<td>PM3BR</td>
<td>PM3QR</td>
<td>PM3QR</td>
</tr>
</tbody>
</table>

### Receptacles

- **Mounting hole size:** 0.47/0.70mm 6.70mm drill is most commonly used: Drill part no. DA4. RIT tool part no. TAD

**CRIMP**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PRE-WIRED with 760mm kevlar wire (30 awg)**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

### PA0’R Series

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum test centres</td>
</tr>
<tr>
<td>Full travel</td>
</tr>
<tr>
<td>Working travel</td>
</tr>
<tr>
<td>Spring force</td>
</tr>
<tr>
<td>Current rating DC (max)</td>
</tr>
</tbody>
</table>

### Tip styles

**PLAIN CONCAVE**

- **Mounting hole size:** 0.48/0.70mm 2.80mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PLAIN RADIUS**

- **Mounting hole size:** 0.48/0.70mm 2.80mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PLAIN CROWN**

- **Mounting hole size:** 0.48/0.70mm 2.80mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PLAIN RADIUS**

- **Mounting hole size:** 0.48/0.70mm 2.80mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

### Receptacles

- **Mounting hole size:** 0.47/0.70mm 6.70mm drill is most commonly used: Drill part no. DA4. RIT tool part no. TAD

**CRIMP**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PRE-WIRED with 760mm kevlar wire (30 awg)**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

### PA1 Series

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum test centres</td>
</tr>
<tr>
<td>Full travel</td>
</tr>
<tr>
<td>Working travel</td>
</tr>
<tr>
<td>Spring force</td>
</tr>
<tr>
<td>Current rating DC (max)</td>
</tr>
</tbody>
</table>

### Tip styles

**SPEAR POINT**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PLAIN CROWN**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PLAIN RADIUS**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PLAIN CONCAVE**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

### Receptacles

- **Mounting hole size:** 0.38/0.56mm 2.54mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**CRIMP**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

**PRE-WIRED with 760mm kevlar wire (30 awg)**

- **Mounting hole size:** 0.48/0.53mm 3.05mm drill is most commonly used: Drill part no. DA6. RIT tool part no. TAD

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### For technical advice:

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### Presence Detection Switching Probes

**For detecting the absence or presence of non-conductive features, where a normal contact probe cannot be used.**

#### Example installation - presence detection of component

- **PI Series**
  - Insulated head probes are used for circuit board component lead detection and testing. The insulating shroud is raised slightly higher than the metal serrated tip. During test, if the component lead or connector pin is set correctly, the electrical contact will cause the shroud to make contact first and fail the test.

- **PS3 Series**
  - Tip styles
    - **INSULATED CAP - 1.8mm**
      - L. SPRING: PS3INSS
      - H. SPRING: PS3INSX
  - Receptacle
    - Solder type, Press fit
      - 2.0mm drill is most commonly used.
        - Drill Part No: DS6

- **PS6 Series**
  - Tip styles
    - **INSULATED CAP - 3.0mm**
      - G. SPRING: PS6INS
    - **INSULATED CAP - 5.0mm**
      - G. SPRING: PS6INS-5.0
  - Receptacle
    - Solder type, Press fit
      - 3.0mm drill is most commonly used.
        - Drill Part No: R9X

- **PS8 Series**
  - **A large switching probe for presence detection use. It has a long travel and is ideal for more robust applications. Can be used with or without its receptacle.**
  - **Specification**
    - Test centres: 7.5mm
    - Full travel (+/- 25mm): 14.0mm
    - Recommended travel up to: 11.0mm
    - Switch point (+/- 0.2mm): 0.7mm
    - Electrical (Non-Inductive, DC)
      - Current rating (max): 3 Amps
      - Average switch resistance: 50msΩ
    - Spring force at switch point: 290g
    - At recommended travel: 510g

- **PS9 Series**
  - **A large switching probe with an extra long travel for presence detection use; ideal for more robust applications. Can be used with or without its receptacle.**
  - **Specification**
    - Test centres: 10.0mm
    - Full travel (+/- 25mm): 16.0mm
    - Recommended travel up to: 13.0mm
    - Switch point: 2.0mm
    - Electrical (Non-Inductive, DC)
    - Switch current rating (max): 3 Amps
    - Spring force at switch point: 290g
    - At recommended travel: 640g

---

**PI Series**

**How to use insulated head probes**

- It is often a requirement to provide a multi-purpose test onto a single component or connector lead. The probes will fit into standard ATE receptacles and require just one via connection. The insulated head probe will:
  - Presence test the pin to check that it is set to the correct height
  - Check whether the pin has passed through the hole interconnect an electrical test to ensure that the pin is soldered properly to its pad, in combination with other probes in the test fixture
  - Fail any leads that have been bent over significantly

**Component Lead Detection**

- **Pass**
  - Reason for failure: Pin set incorrectly

**Component Pin Detection**

- **Pass**
  - Reason for failure: Pin missing

**Small Serrated Head**

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS4HXS</td>
<td>110g</td>
<td>Receptacle RA4 series; see page 5</td>
</tr>
<tr>
<td>PS4HXX</td>
<td>180g</td>
<td>Centre: 4.0mm</td>
</tr>
</tbody>
</table>

**Medium Serrated Head**

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>P44HXS</td>
<td>180g</td>
<td>Receptacle RA4 series; see page 5</td>
</tr>
</tbody>
</table>

**Large Serrated Head**

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>P44HXX</td>
<td>220g</td>
<td>Centre: 2.54mm</td>
</tr>
</tbody>
</table>

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---

**See page 29 for switching test probes**

---

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Bladed Test Probes

This series of test probes has a pinned plunger to stop tip rotation. This allows the probes to access a connector in a slotted connector housing.

Example installations

Full travel: 5.0mm
Working travel: 4.0mm
Spring force at working travel: 150g

Tip styles

BLADED for slotted connector applications

Receptacle

Mounting hole size: 2.0mm with receptacle
Drill part number: DD3

SOLDER-CUP - press-fit

PD1 Series Specification

<table>
<thead>
<tr>
<th>PD1B-020</th>
<th>PD1B-039</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. SPRING</td>
<td>M. SPRING</td>
</tr>
<tr>
<td>Steel</td>
<td>Steel</td>
</tr>
</tbody>
</table>

PD2 Series Specification

<table>
<thead>
<tr>
<th>PD2B-016</th>
<th>PD2B-039</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. SPRING</td>
<td>M. SPRING</td>
</tr>
<tr>
<td>Steel</td>
<td>Steel</td>
</tr>
</tbody>
</table>

Receptacle

Mounting hole size: 3.0mm with receptacle
Drill part number: DD6

SOLDER-CUP - press-fit

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Large Headed Test Probes

A series of test probes with unusually large tip diameters. For applications where a very large head is required, for example where the contact target is ill-defined.

Example installation

Full travel: 6.0mm
Working travel: 4.8mm
Spring force at working travel:
(L) Light spring 80g
(M) Medium spring 150g
(X) Heavy spring 300g

Tip styles

DOME HEAD - 4mm

SERRATED HEAD - 6.5mm

SERRATED HEAD - 9mm

CROWN HEAD - 4mm

Receptacle

Mounting hole size: 3.5mm with receptacle
Drill part number: DD3

SOLDER-CUP - press-fit

35
Pass Marking Unit

The BMP-1 test pass marking unit is intended for installation into test fixtures and production equipment. Upon receipt of a test pass signal it will rapidly scribe a permanent circular mark onto the unit under test removing the risk of human error. This compact unit requires a footprint of less than 15mm square on the test board. The spring loaded carbide tip is longlasting and its hardness will mark bare fibreglass (FR4), solder mask over glass or copper, bare tinned copper, plastics and metal castings.

The unit is supplied with a mounting receptacle with knurled fitment, cables and a plug/socket kit allowing easy connection to the jig’s internal wiring. The scriber can easily be unscrewed from its receptacle so it can be transported for use in other positions. Extra receptacles, an insertion tool and tip replacement parts are available as spares and these are listed within the specifications.

### Mechanical
- Full marker tip travel: 1.57mm
- Recommended working travel: 1.27mm
- Direction of rotation: CW
- Scribbled diameter: 1.27mm
- Mounting hole size: 11.89/11.91mm

### Materials and Finishes
- Plunger tip: Carbide steel
- Receptacle: Stainless steel

### Electrical (Operating Conditions)
- Current rating (max): 50mA
- Voltage required: 12 - 15VDC
- Recommended daily cycle: 3 sec. On (min)
- 5 sec. Off

### Pass Marking Unit

**BMP-1**

**Drill hole size:**
- FP1-35: 300gm spring force, tip diameter 3.5mm
- FP1-60: 300gm spring force, tip diameter 6.0mm

**Rigid tooling pins (pegs for locating PCB guide holes)**

**Rigidity test:**
- M4 x 0.67
- O D (mm): 7.0
- O D: 4.0
- O D: 23.0
- Short taper shown

**Long length tooling pins, with an M4 thread, suitable for loaded board testing. M4 nut and washer included. Bullet nose tip.**
- Drill hole size: 3.95 - 4.00mm

### Accessories for jig customisation

**Floating pins** for keeping the PCB raised away from the test probes until the top plate is lowered. Also useful for levelling pressure in unpopulated areas.

**Drill hole size:**
- FP1-35: 300gm spring force, tip diameter 3.5mm
- FP1-60: 300gm spring force, tip diameter 6.0mm

**Guide plates** to ensure the alignment of the PCB and to give some protection to the tooling pins and probes.

**Plastic PCB latch** (optional 3mm riser included)

---

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For technical advice:
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**Test Jig Parts**

*Essential accessories for jig builders such as guide plates, latches and tooling pins. You can also build your own test station with our test boxes.*

---

**PCB latches: Suitable for open-topped desktop test boxes**

**Double latches**

- **Top release bar**
- **Nylon latch**
- **PCB guide plate (adjustable)**

**PCBDL1**

**Guidelines for double latches**

- Adjustable position of both latches
- Suitable for larger PCB sizes
- Ideal for use with PA4 to PA6 probe ranges
- Receptacles should be mounted into the probe plate, raised high enough to that the probe is suitably compressed when the PCB is latched in place

**PCBDL2**

**Single PCB latch: top release**

- **Top release bar**
- **PCB guide plate**
- **Nylon latch**

**PCBL1**

**Guidelines for single latches**

- Ideal for use with PA4 to PA6 probe ranges
- Suitable for smaller sized PCBs
- Receptacles should be mounted into the probe plate, raised high enough so that the probe is suitably compressed when the PCB is latched in place

---

**Bench top test boxes**

Jig base, consisting of a pan and a hinged probe plate, allows you to construct a simple but effective benchtop test station. Available in two sizes and having a 65mm deep pan - allowing some room for any supporting electronics, power supply and wiring.

<table>
<thead>
<tr>
<th>Coda part no.</th>
<th>Base box size W x L x D (mm)</th>
<th>Max U.U.T. (mm)</th>
<th>Max probe count (6oz probes)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF1BOXS</td>
<td>300 x 200 x 65</td>
<td>230 x 100</td>
<td>50</td>
<td>All of the side plates remove for easy customisation</td>
</tr>
<tr>
<td>MF2BOXS</td>
<td>400 x 300 x 65</td>
<td>300 x 170</td>
<td>60</td>
<td>Deeper pans are available (100mm)</td>
</tr>
</tbody>
</table>

**Suitable accessories:**

- PCB latches (above)
- Guide plates
- Rigid tooling pins
- Floating pins

---

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**For technical advice:**

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What is an interfacing component?

The spring loaded contact consists of a gold plated tubular metal barrel, spring and plunger as a one piece assembly. The tip of the spring loaded plunger will provide a reliable electrical contact to the mating surface, whose distance away or position may well be indeterminate.

The tip of the plunger will usually be rounded in shape (radius) which will prevent damage or significant wear to the contact land.

Several fitment types are available including surface mount and press fitment. Some series of the press fitment type are available with a receptacle which allows the spring contact to be replaceable. One of our series of surface mount spring contacts can be supplied moulded in an array of up to 20 spring contacts.

Typically a mating contact land is used as the mating surface. These are available as press fitment or solder-in.