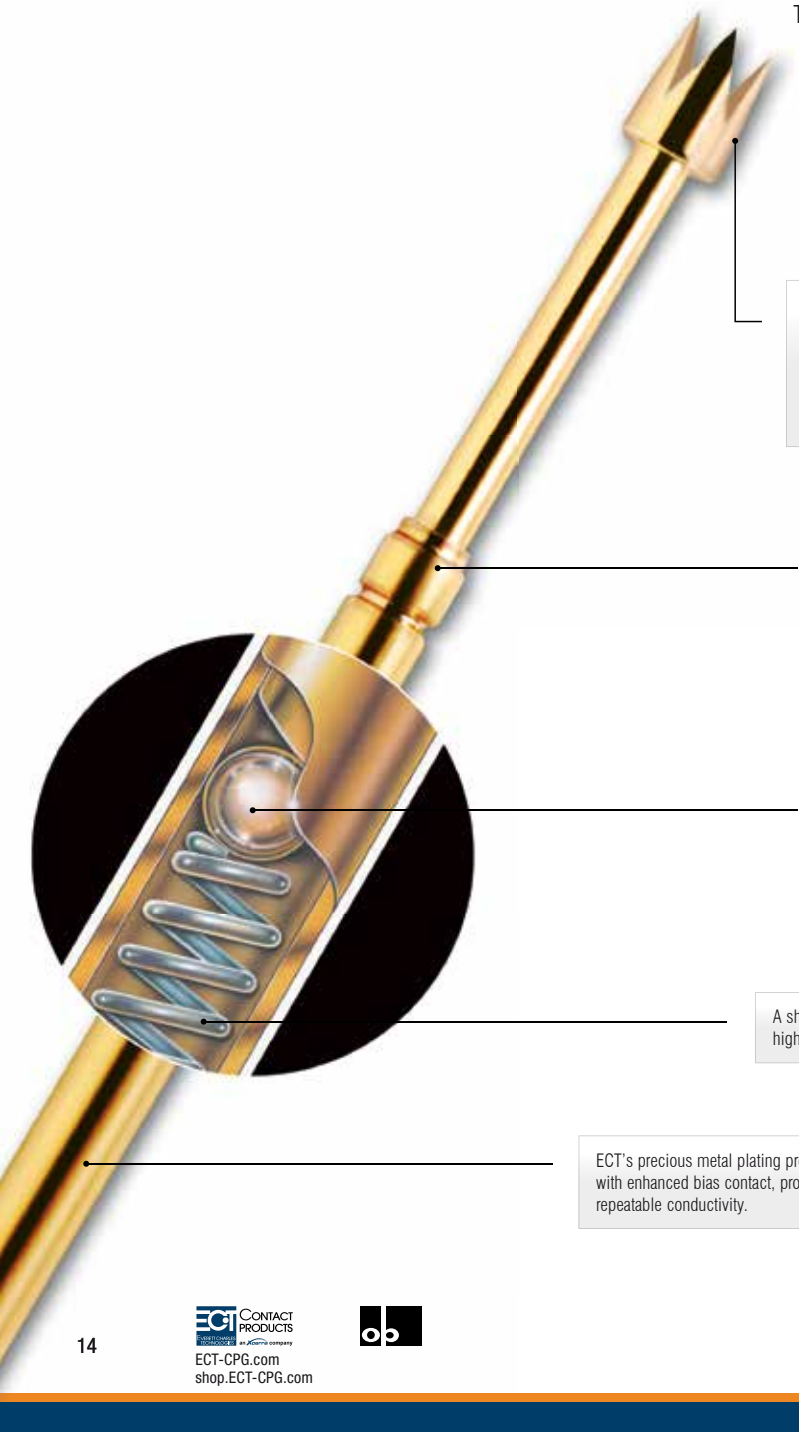
Probe Advantage

PogoPlus® Series probes

Conventional bias-type probes are susceptible to false opens — that is, transient electrical discontinuities that cause good products to "fail" during test. Revolutionary PogoPlus probes eliminate probe-induced false opens, saving you the time, money and trouble of needless product retesting.

The unrivaled electrical performance of the PogoPlus is due to the interaction between the spring, captured ball and plunger, which forces the plunger into continuous contact with the barrel wall at all times. The result is uninterrupted electrical continuity and low overall resistance that can't be equaled by any other "high performance" probe.

The PogoPlus® is also designed to be the world's most durable probe with features like optional stainless-steel MicroSharp™ tips, a larger spring volume and enhanced pointing precision.



Available steel tips, manufactured with ECT's MicroSharp™ technology, offer the ultimate in long-lasting tip sharpness and contact integrity.

A variety of innovative tip styles give you the flexibility to match the PogoPlus® to your specific test application.

A double-roll close offers the industry's best pointing accuracy that helps you hit the smallest test targets with high repeatability.

Interaction of the captured ball, bias-cut plunger end and applied spring force guarantees uninterrupted electrical contact with the probe barrel sidewall, virtually eliminating probe related false opens.

A shorter plunger permits more spring volume, higher spring force and longer spring life.

ECT's precious metal plating process, together with enhanced bias contact, provides highly repeatable conductivity.

Loaded PCB Test Probes / Functional

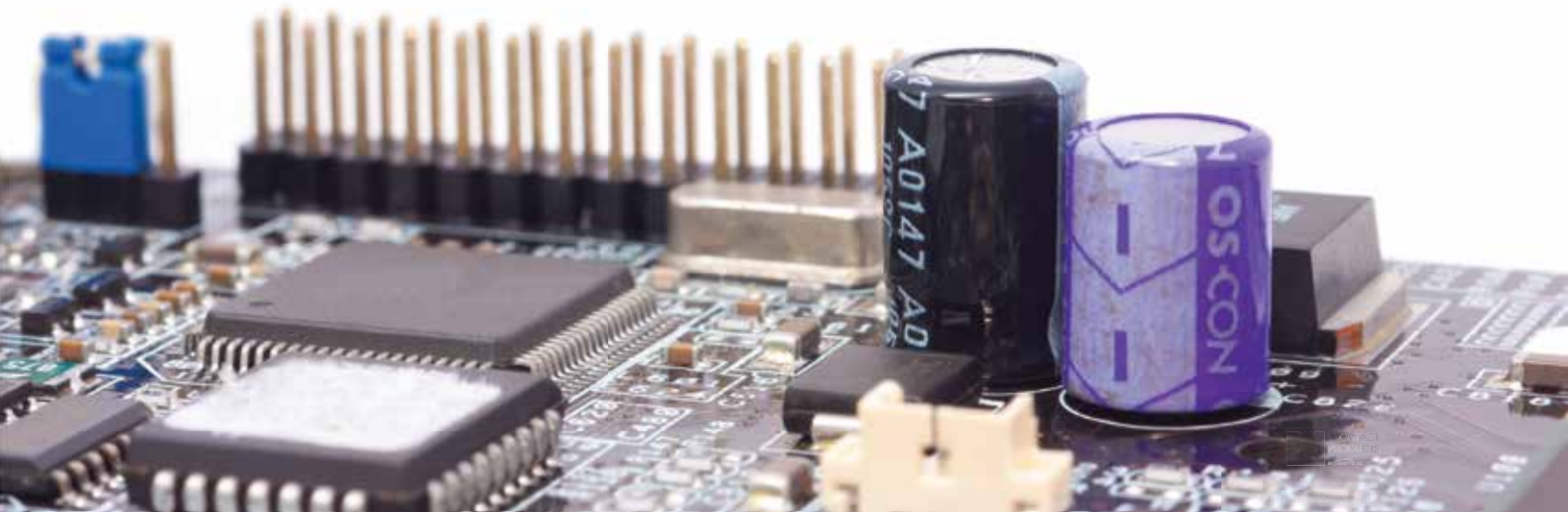
The ICT / FCT product lines, which includes the new EDGE, LFRE and PogoPlus® Series, address the unique demands of loaded board and vacuum fixture applications. Most probes feature an enhanced version of the legendary bias-ball design to virtually eliminate "false opens"; proprietary metal plating processes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

Mixed Test Centers

In loaded board applications, probes designed for use on 0.050, 0.075 and 0.100 inch test centers can be mixed in single or dual-stage fixtures, even though there may be minor variations in plunger travel. When mounted correctly, probe plunger tips should align when plungers are at recommended working travel – generally 2/3. This will ensure contact integrity between the tip and test pad. Minor adjustments may be required to compensate for variations in accessing component leads, flat test pads or through-holes.

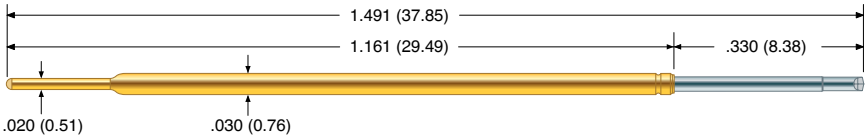
edge™ LFRE Pogo Plus Metrix™

- **EDGE:** Our new ICT / FCT probe taking full advantage of the flat technology. The flat tip is 10 times sharper than any traditional radial manufactured probe tip.
- **LFRE:** The solution for your RoHS complaint boards and lead-free solder test points.
- **POGO:** High performance ICT / FCT probe like the LFRE probe but with gold plated tips. Features the legendary PogoPlus® Bias Ball design.
- **METRIX:** New Probe Series for smallest test centers down to .039 inch or 1.00 mm.



MTX-39

39 mil (1.00 mm)



Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4	1.02 (29)	4.0 (113)
Alternate	- 6	2.15 (61)	6.0 (170)
Elevated	- 7	1.17 (33)	7.0 (198)

Electrical (Static Conditions)

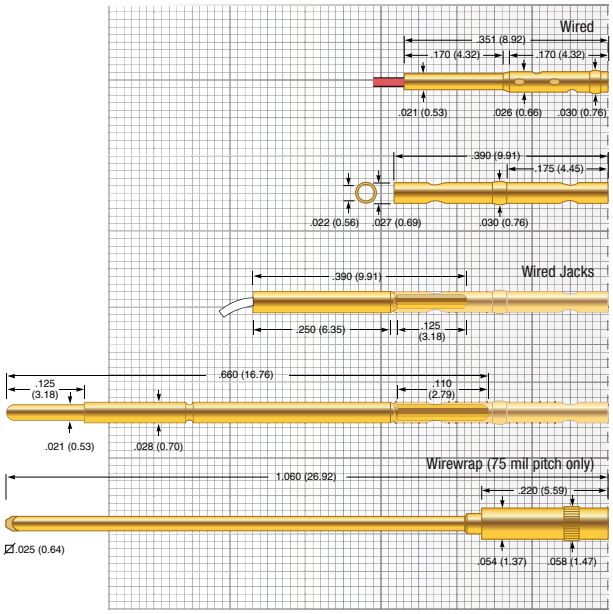
Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

Materials and Finishes

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

Receptacle

Hole diameter:	Ø .029 (0.75)
Suggested drill:	#69 or 0.75 mm
Recommended wire gauge:	28-30 AWG
Material Housing	
• HPR-40T:	Work-hardened Nickel Silver, Gold plated over hard Nickel
• HPR-40W:	Work-hardened Nickel Silver, Gold plated over hard Nickel
• STT:	BeCu, Gold plated



STT-80W

HPR-40W

HPR-40T with HPR-40W

HPA-40 with HPR-40W

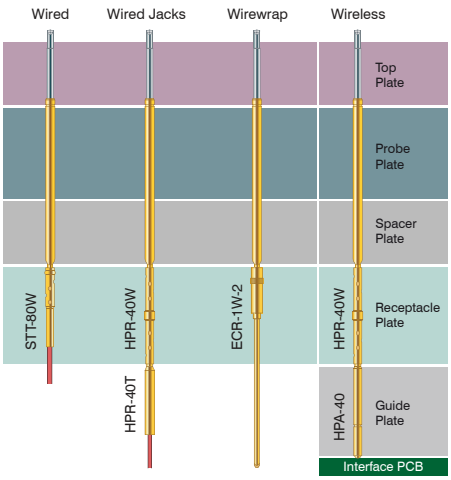
ECR-1W-2

Tip Style

H	I	I8	I15	I40	T1	T20
Ø .035 (0.89)	Ø .019 (0.48)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .019 (0.48)	Ø .019 (0.48)
						

T38	U
Ø .038 (0.97)	Ø .019 (0.48)
	

Termination Example



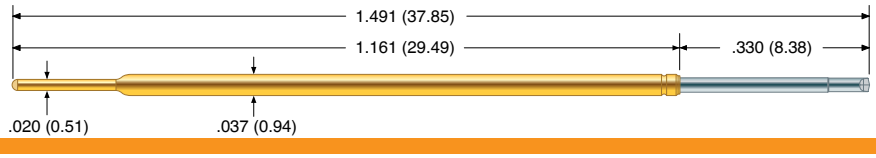
Metrix™

Metrix Summary

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

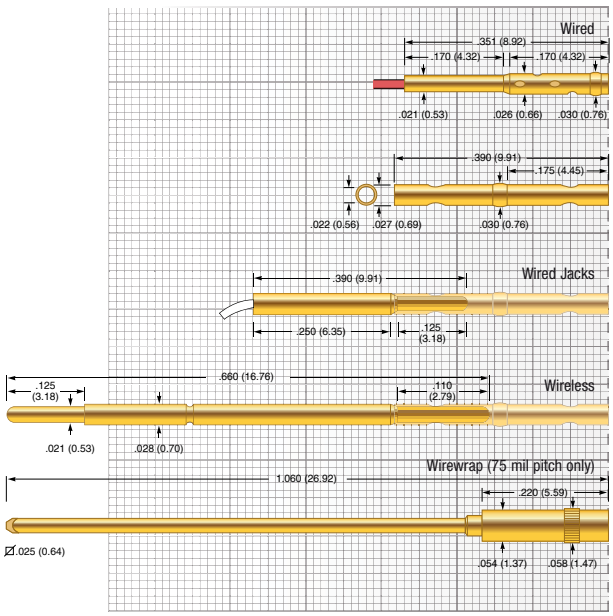
Series	Size	Tip Style		Spring Force
MTX	39	H	–	6

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



MTX-50

50 mil (1.27 mm)



STT-80W

HPR-40W

HPR-40T with HPR-40W

HPA-40 with HPR-40W

ECR-1W-2

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4	0.72 (20)	4.0 (113)
Alternate	- 6	2.39 (68)	6.0 (170)
Elevated	- 7	1.68 (48)	7.0 (198)
High	- 8	1.73 (49)	8.0 (227)
Ultra High	-10	2.84 (81)	10.0 (283)

Electrical (Static Conditions)

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

Materials and Finishes

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

Receptacle

Hole diameter:	Ø .029 (0.75)
Suggested drill:	#69 or 0.75 mm
Recommended wire gauge:	28-30 AWG

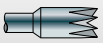
Material Housing

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

Tip Style

H	I	I8	I15	I35	I40	J
Ø .047 (1.19)	Ø .022 (0.56)	Ø .020 (0.51)	Ø .021 (0.53)	Ø .022 (0.56)	Ø .022 (0.56)	Ø .022 (0.56)
						

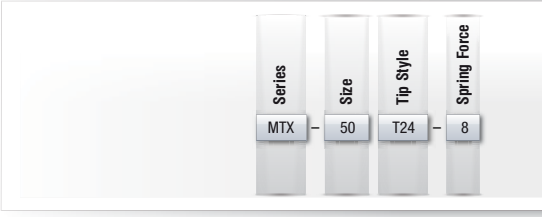
L	L18	T	T1	T24	T30	T67
Ø .040 (1.02)	Ø .018 (0.46)	Ø .047 (1.19)	Ø .020 (0.51)	Ø .022 (0.56)	Ø .022 (0.56)	Ø .067 (1.70)
						

Z	Z1
Ø .047 (1.19)	Ø .038 (0.97)
	

Metrix™

Metrix Introduction

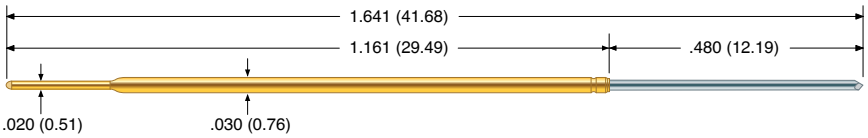
For test center spacing below 50mil, conventional ICT Probes reach their limits. ECT Metrix Probes overcome this issue by providing test center spacing as low as 39mil. In a conventional probe/receptacle design, the pitch is limited by the largest diameter, which typically is the diameter of the receptacle.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



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

MXLT-39

39 mil (1.00 mm)



Mechanical

Recommended Travel:	.315 (8.00)
Full Travel:	.400 (10.16)
Operating Temperature	-55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4.5	0.49 (14)	4.00 (113)

Electrical (Static Conditions)

Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

Materials and Finishes

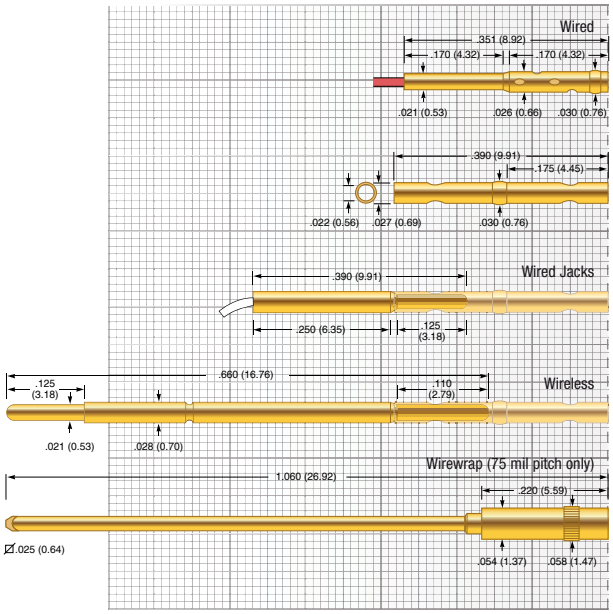
Plunger:	High performance alloy LFRE proprietary plating
Barrel:	BeCu, Gold plated over hard Nickel
Spring:	Stainless Steel
Ball:	Stainless Steel

Receptacle

Hole diameter:	Ø .029 (0.75)
Suggested drill:	#69 or 0.75 mm
Recommended wire gauge:	28-30 AWG

Material Housing

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



STT-80W

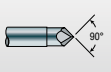
HPR-40W

HPR-40T with HPR-40W

HPA-40 with HPR-40W

ECR-1W-2

Tip Style

I8	I15	T20	U			
Ø .017 (0.43)	Ø .017 (0.43)	Ø .019 (0.48)	Ø .019 (0.48)			
						

Metrix™

Series	Size	Tip Style	Spring Force
MXLT	39	U	4.5

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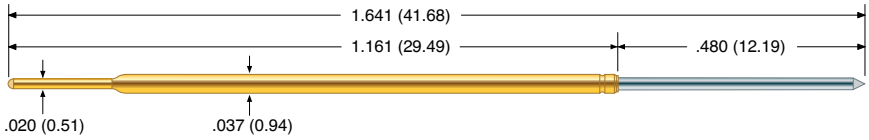
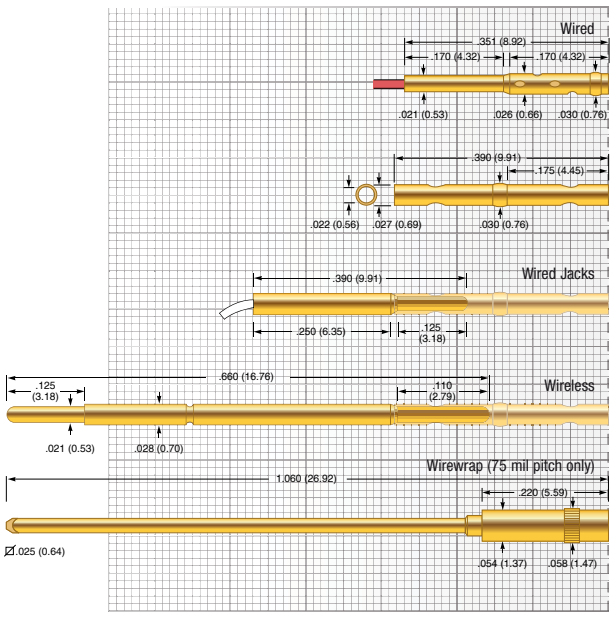


MXLT-50

50 mil (1.27 mm)



STT-80W

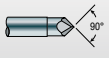
HPR-40W

HPR-40T with HPR-40W

HPA-40 with HPR-40W

ECR-1W-2

Tip Style

B	I8	I15	L	L24	T	T24
Ø .022 (0.56)	Ø .020 (0.51)	Ø .020 (0.51)	Ø .040 (1.02)	Ø .022 (0.56)	Ø .047 (1.19)	Ø .022 (0.56)
						

T30
Ø .022 (0.56)


Mechanical

Recommended Travel:	.315 (8.00)
Full Travel:	.400 (10.16)
Operating Temperature	
• Standard Spring:	-55°C to +105°C
• Alternate Spring:	-55°C to +150°C
• High Spring:	-55°C to +105°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4.5	1.09 (31)	4.5 (128)
Alternate	- 7	0.75 (21)	7.0 (198)
High	- 9.6	1.50 (43)	9.6 (272)

Electrical (Static Conditions)

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

Materials and Finishes

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

Receptacle

Hole diameter:	Ø .029 (0.75)
Suggested drill:	#69 or 0.75 mm
Recommended wire gauge:	28-30 AWG
Material Housing	
• HPR-40T:	Work-hardened Nickel Silver, Gold plated over hard Nickel
• HPR-40W:	Work-hardened Nickel Silver, Gold plated over hard Nickel
• STT:	BeCu, Gold plated

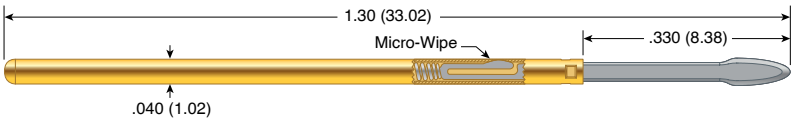
Metrix™

Series	Size	Tip Style	Spring Force
MXLT	50	B	9.6

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

EDGE-1

75 mil (1.91 mm)



Mechanical

Recommended Travel:	.192 (4.88)
Full Travel:	.275 (6.99)
Operating Temperature:	-55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Alternate	- 5.5	1.39 (39)	5.5 (156)
Elevated	- 7	1.82 (52)	7.0 (198)
Ultra High	- 8	1.91 (54)	8.0 (227)

Electrical (Static Conditions)

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

Materials and Finishes

Plunger:	Work hardened Steel, LFRE proprietary plating
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	Stainless Steel

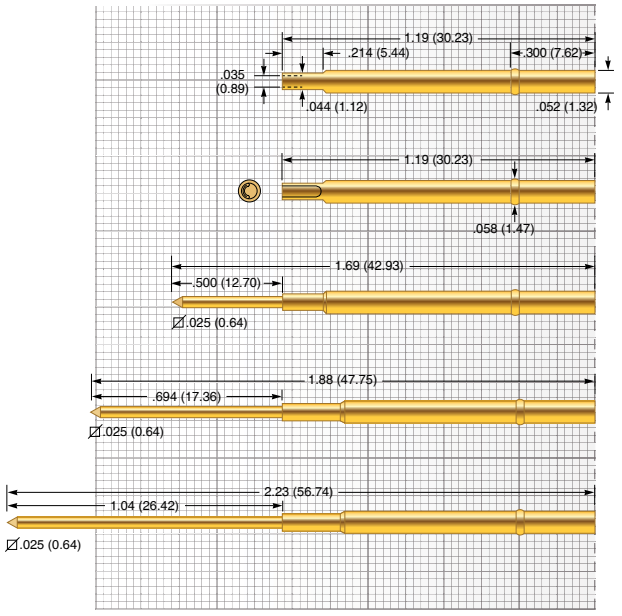
Receptacle

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

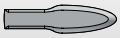
Material

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

Post: Phosphorous Bronze, Gold plated



Tip Style

I	I15					
Ø .031 (0.79)	Ø .028 (0.71)					
						

edge™

Lead Free Contact Products

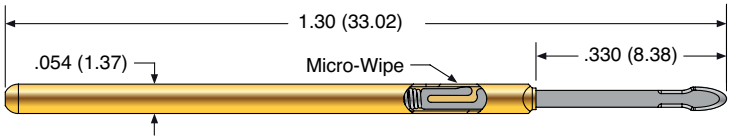
ECT's EDGE series was designed to overcome some of the industries toughest testing challenges while providing superior performance and reliability.

EDGE features ECT's innovative flat plunger technology that improves internal electrical performance and tip-to-target contact, making EDGE the perfect solution for demanding test applications such as penetrating OSP and no-clean flux residues.

Micro-Wipe

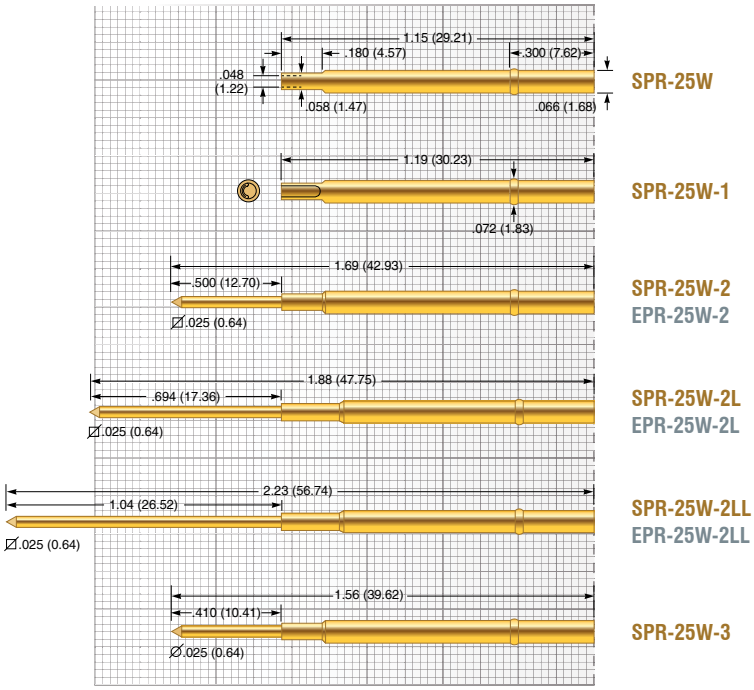
EDGE's Micro-Wipe technology provides a constant low-friction internal contact yielding stable resistance without the need of lubricant. The absence of lube prevents the build up of "black stuff" on the plunger, and early probe failure, due to particle accumulation.

Series	Size	Tip Style	Spring Force
EDGE	1	I15	7



EDGE-25

100 mil (2.54 mm)



SPR-25W

SPR-25W-1

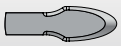
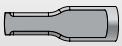
SPR-25W-2
EPR-25W-2

SPR-25W-2L
EPR-25W-2L

SPR-25W-2LL
EPR-25W-2LL

SPR-25W-3

Tip Style

I	I15					
Ø .039 (1.00)	Ø .039 (1.00)					
						

Mechanical

Recommended Travel:	.192 (4.88)
Full Travel:	.275 (6.99)
Operating Temperature:	-55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Alternate	- 5.5	1.64 (46)	5.5 (156)
Elevated	- 7	2.94 (83)	7.0 (198)
Ultra High	-10	3.85 (109)	10.0 (283)

Electrical (Static Conditions)

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

Materials and Finishes

Plunger:	Work hardened Steel, LFRE proprietary plating
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	Stainless Steel

Receptacle

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

Material
- SPR Housing: Work-hardened Nickel Silver, Gold plated over hard Nickel
- EPR Housing: Nickel Silver, unplated

Post: Phosphorous Bronze, Gold plated

edge™


EDGE Witness Marks


Round Probe Tip Witness Marks

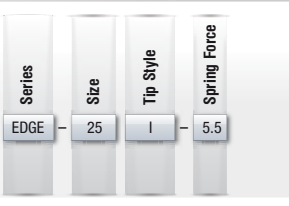
Blade Tip

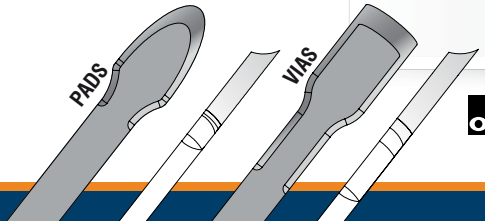
The EDGE probe tips feature a very hard 650 knoop LFRE plated steel base material which is up to 10x sharper than traditional machined or ground probe tips. EDGE tips are sharper, and last longer, resulting in more reliable pad and via testing, and an overall lower cost of test!

Flat Technology

Unlike traditional radial screw machine designs, ECT's photolithographic manufacturing process does not induce material stresses and provides for:

- Econonomical and repeatable, high volume production
- Improved surface finishes
- More consistent blade formation and tolerance control
- Outstanding plating quality





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

ECT LFRE: Cleaner Probes, Cleaner Environment

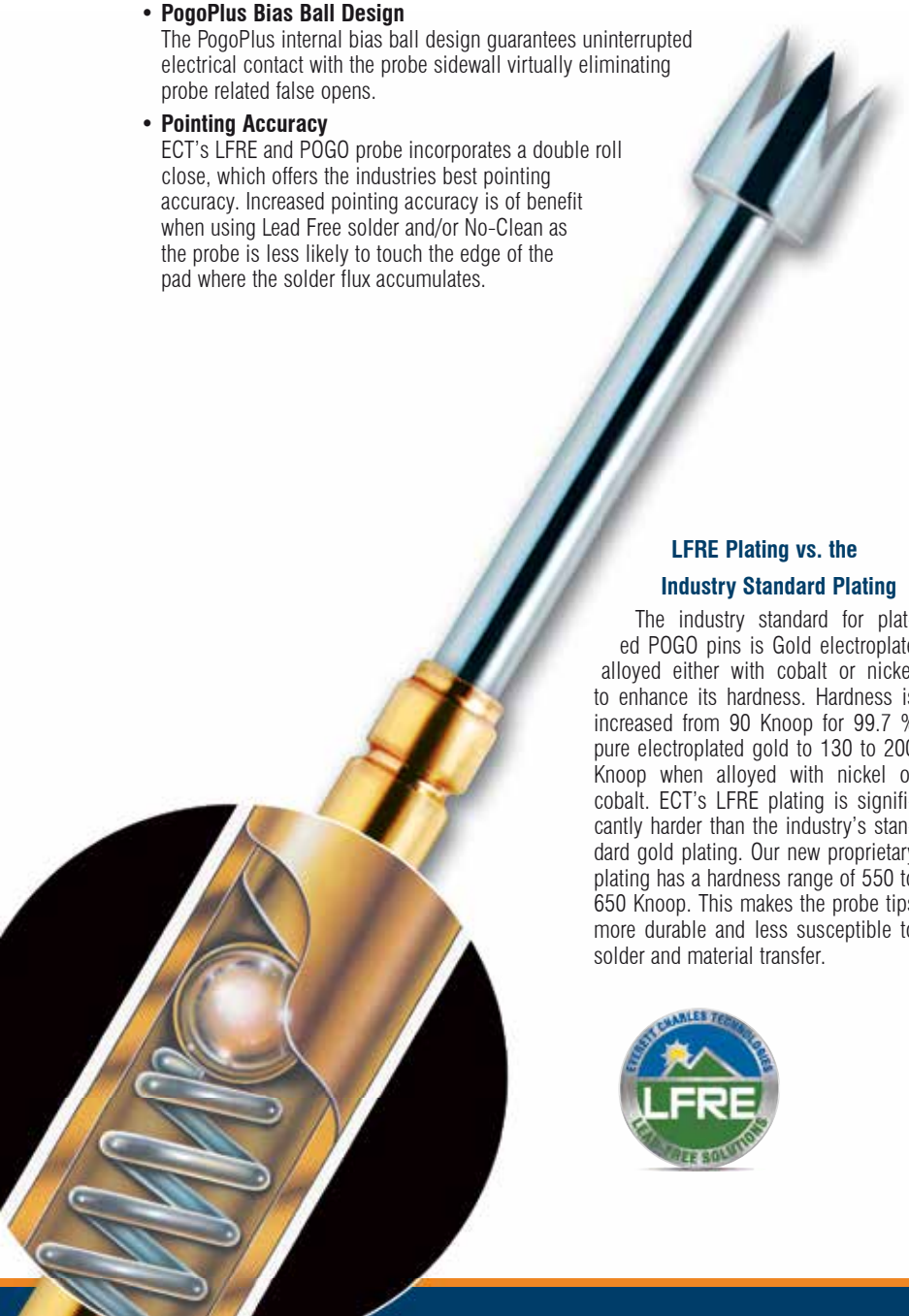
The Lead Free Challenge

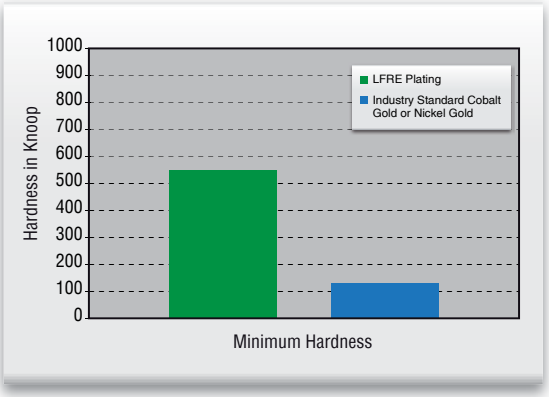
Lead free solder can cause many problems in Circuit Testing. Lead Free Solder has a higher reflow temperature, which can result in harder and stickier solder flux resin and a thicker, harder oxide layer. This thicker layer of resin and oxide is more difficult to penetrate and increases wear on the pogo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

ECT Lead Free POGO® Series

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

- **LFRE Plating**
  Our Lead Free probe incorporates a Harder and Slicker plating that not only resists wear but also reduces solder and debris transfer.
- **Higher Preload**
  All of our LFRE probes incorporate higher preloads. Higher preload reduces spring force variation with board flex and increases the initial impact penetration, resulting in higher first pass yields.
- **PogoPlus Bias Ball Design**
  The PogoPlus internal bias ball design guarantees uninterrupted electrical contact with the probe sidewall virtually eliminating probe related false opens.
- **Pointing Accuracy**
  ECT's LFRE and POGO probe incorporates a double roll close, which offers the industries best pointing accuracy. Increased pointing accuracy is of benefit when using Lead Free solder and/or No-Clean as the probe is less likely to touch the edge of the pad where the solder flux accumulates.

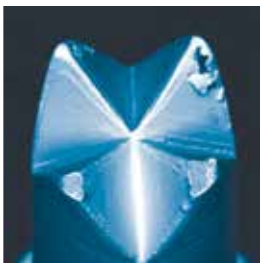




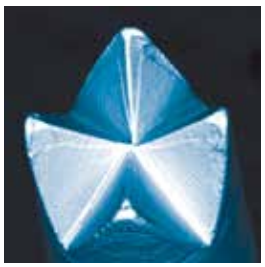
LFRE Plating vs. the Industry Standard Plating

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

Plating

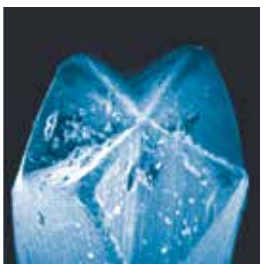


Industry Standard Gold

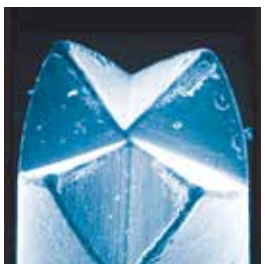


LFRE Plating

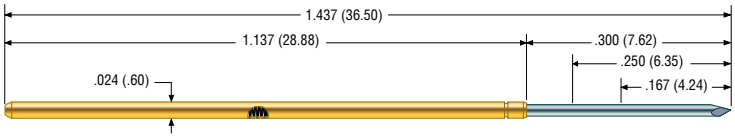
Contaminant Transfer



Industry Standard Gold

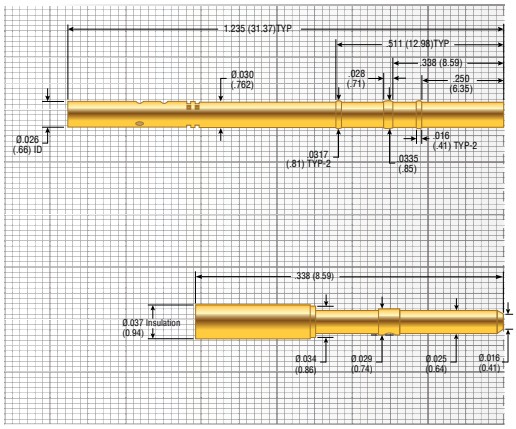


LFRE Plating



LFRE-39

39 mil (1.0 mm)



SPR-39W-S

SPT-39T
Wire Jack

Mechanical

Recommended Travel:	.167 (4.24)
Full Travel:	.250 (6.35)
Mechanical Life*:	50,000 cycles
Operating Temperature:	-55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 5.4	0.62 (18)	5.4 (153)

Electrical (Static Conditions)

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

Materials and Finishes

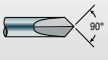
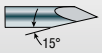
Plunger:	High performance alloy LFRE proprietary plating
Barrel:	Nickel Silver, Gold plated
Spring:	Stainless Steel

Receptacle

Hole diameter:	Ø .0307 to .0317 (.77 to .80)
Suggested drill:	1/32" or .8 mm
Material Housing:	Work-hardened BeCu, Gold plated over hard Nickel

* Life specifications are based on lab results but are dependent on cleaning frequency and the specific customer application, including DUT materials, handler kit, maintenance, etc.

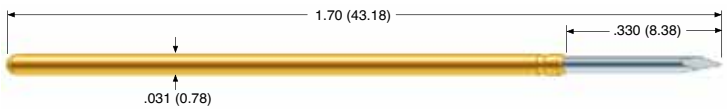
Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I	I15	L15	T15		
Ø .028 (.711)	Ø .015 (0.38)	Ø .015 (0.38)	Ø .015 (0.38)	Ø .015 (0.38)		
						

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

LFRE-72

50 mil (1.27 mm)



Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.60 (17)	2.0 (57)
Standard	- 4	1.53 (43)	4.0 (113)
Alternate	- 6	2.14 (61)	6.0 (170)
Elevated	- 7	2.67 (76)	7.0 (198)
High	- 8	3.12 (88)	8.0 (227)
Ultra High	-10	3.83 (109)	10.0 (283)

Electrical (Static Conditions)

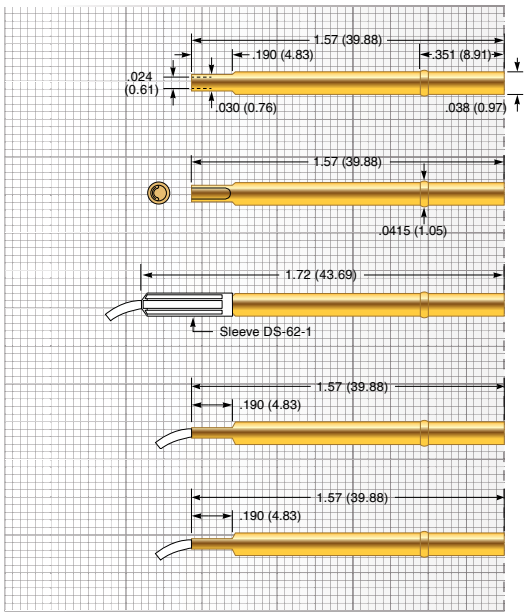
Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

Materials and Finishes

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

Receptacle

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



HPR-72W

HPR-72W-1

HPR-72W-4
FASTITE® Insertion

HPR-72W-28

HPR-72W-30

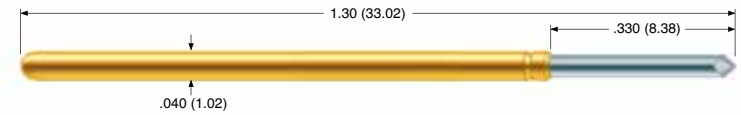
Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I	I8	I15	I40	J	T1
Ø .035 (0.89)	Ø .019 (0.48)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .019 (0.48)
						

T20	T38	U
Ø .019 (0.48)	Ø .038 (0.97)	Ø .019 (0.48)
		

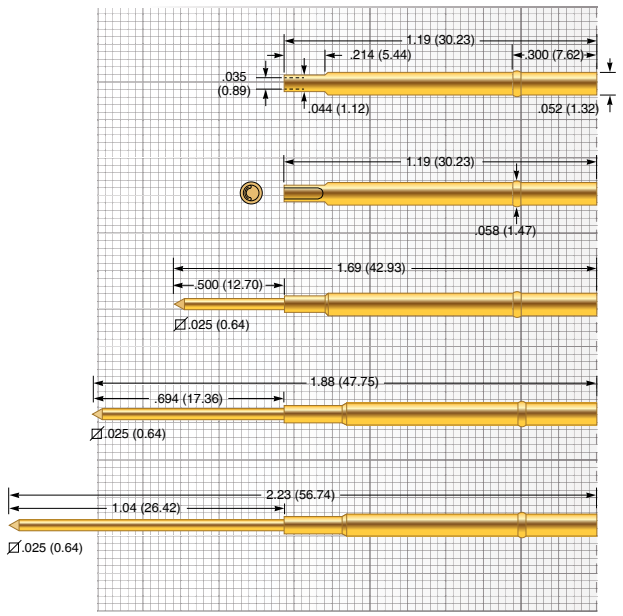
Series	Size	Tip Style	Spring Force
LFRE	72	T1	8

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



LFRE-1

75 mil (1.91 mm)



LTR-1W

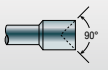
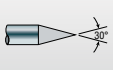
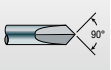
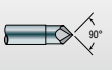
LTR-1W-1

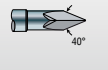
LTR-1W-2
ELTR-1W-2

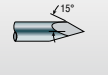
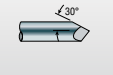
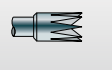
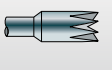
LTR-1W-2L
ELTR-1W-2L

LTR-1W-2LL
ELTR-1W-2LL

Tip Style (ADDITIONAL TIPS AVAILABLE)

A	B	H	I	I8	I15	I35
Ø .047 (1.19)	Ø .022 (0.56)	Ø .047 (1.19)	Ø .022 (0.56)	Ø .020 (0.51)	Ø .021 (0.53)	Ø .022 (0.56)
						

I40	J	L	L18	L24	T	T1
Ø .021 (0.53)	Ø .022 (0.56)	Ø .033 (0.84)	Ø .018 (0.46)	Ø .022 (0.56)	Ø .047 (1.19)	Ø .022 (0.56)
						

T24	T30	UN	V	Z	Z1
Ø .022 (0.56)	Ø .022 (0.56)	Ø .021 (0.53)	Ø .047 (1.19)	Ø .047 (1.19)	Ø .038 (0.97)
					

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.83 (24)	2.0 (57)
Standard	- 4	0.62 (18)	4.0 (114)
Alternate	- 6	2.39 (68)	6.0 (170)
Elevated	- 7	1.68 (48)	7.0 (198)
High	- 8	1.73 (49)	8.0 (227)
Ultra High	-10	2.84 (81)	10.0 (283)

Electrical (Static Conditions)

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

Materials and Finishes

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

Receptacle

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

Material

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

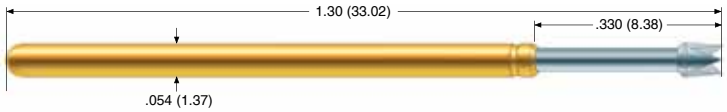
Post: Phosphorous Bronze, Gold plated

Series	Size	Tip Style	Spring Force
LFRE	1	A	7

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

LFRE-25

100 mil (2.54 mm)



Mechanical

Recommended Travel:	.167 (4.24)
Full Travel:	.250 (6.35)
Operating Temperature	
• All Springs, except Super:	-55°C to +150°C
• Super Spring:	-55°C to +105°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.75 (21)	2.0 (57)
Standard	- 4	1.50 (43)	4.0 (113)
Alternate	- 6	2.58 (73)	6.0 (170)
Elevated	- 6.5	2.56 (73)	6.5 (184)
High	- 8	2.84 (81)	8.0 (227)
Ultra High	-10	1.77 (50)	10.0 (283)
Premium	-12	4.49 (127)	12.0 (340)
Super	-16	3.90 (111)	16.0 (454)

Electrical (Static Conditions)

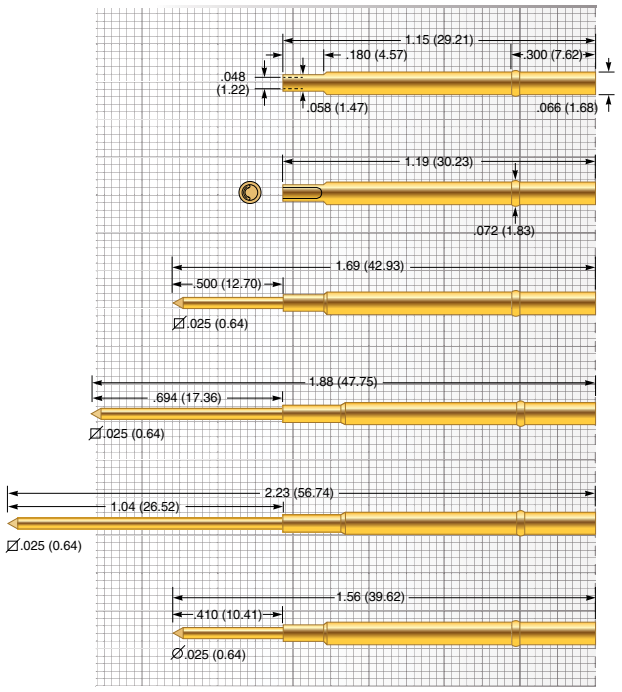
Current Rating:	8 amps
Average Probe Resistance:	<8 mOhms

Materials and Finishes

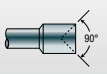
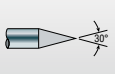
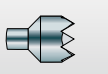
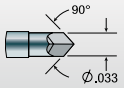
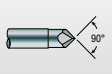
Plunger:	High performance alloy LFRE proprietary plating
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	All Stainless Steel, except Super
Super:	Music Wire
Ball:	Stainless Steel

Receptacle

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

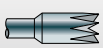


Tip Style (ADDITIONAL TIPS AVAILABLE)

A	B	H	H79	I	I8	I15
Ø .060 (1.52)	Ø .034 (0.86)	Ø .060 (1.52)	Ø .079 (2.01)	Ø .033 (0.84)	Ø .033 (0.84)	Ø .033 (0.84)
						

I35	I40	J	L	L18	L36	T
Ø .034 (0.86)	Ø .033 (0.84)	Ø .025 (0.64)	Ø .050 (1.27)	Ø .018 (0.46)	Ø .034 (0.86)	Ø .060 (1.52)
						

T1	T30	T36	T79	UN	V	Z
Ø .030 (0.74)	Ø .034 (0.86)	Ø .034 (0.86)	Ø .079 (2.01)	Ø .025 (0.64)	Ø .055 (1.40)	Ø .060 (1.52)
						

Z1
Ø .051 (1.30)


Series	Size	Tip Style		Spring Force
LFRE	25	H	–	8

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

Dimensions in inches (millimeters). Specifications subject to change without notice.
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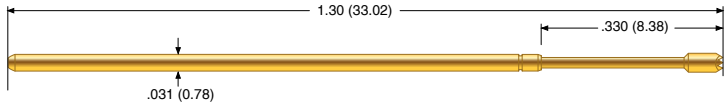
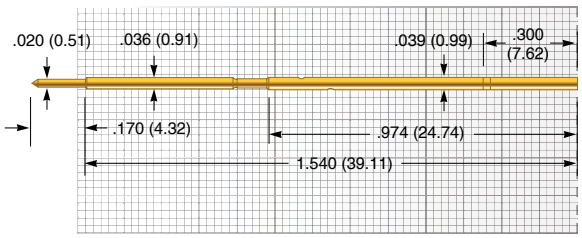
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels of usage and demand.

POGO-62

50 mil (1.27 mm)





DER-050

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.48 (14)	2.0 (57)
Standard	- 4	1.02 (29)	4.0 (114)
Alternate	- 6	2.15 (61)	6.0 (170)

Electrical (Static Conditions)

Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

Materials and Finishes

Plunger:	Heat-treated tool Steel, Gold plated over hard Nickel
Barrel:	Work-hardened BeCu, Gold plated over hard Nickel
Spring:	
• Light:	Music Wire
• Standard:	Music Wire
• Alternate:	Stainless Steel
Ball:	Stainless Steel

Receptacle (DER-050)

Hole diameter:	Ø .038 to .039 (0.97 to 0.99)
Suggested drill:	#61 or 0.99 mm
Recommended Travel:	.130 (3.30)
Full Travel:	.160 (4.06)
Spring Force:	3.5 oz. (99 grams)
Material	
• Plunger:	BeCu, Gold plated over hard Nickel
• Barrel:	BeCu, Gold plated over hard Nickel
• Spring:	Steel alloy, Gold plated over hard Nickel

Tip Style (ADDITIONAL TIPS AVAILABLE)

H...-S	I8...-S	J...-S	T1...-S	T20...-S	T38...-S	U...-S
Ø .035 (0.89)	Ø .017 (0.43)	Ø .019 (0.48)	Ø .019 (0.48)	Ø .019 (0.48)	Ø .038 (0.97)	Ø .019 (0.48)
						

PogoPlus Bias Ball Design

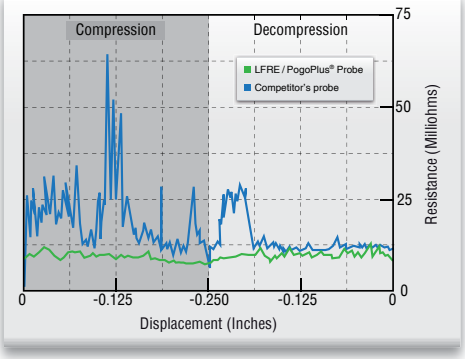
The PogoPlus internal bias ball design guarantees uninterrupted electrical contact with the probe sidewall virtually eliminating probe related false opens.

PogoPlus Bias Design

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

Conventional Bias Design

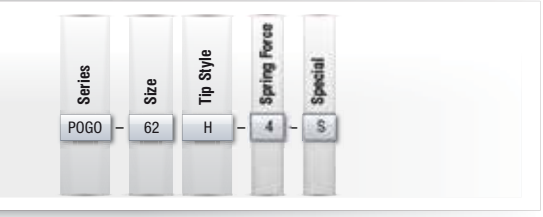
Angle of spring coil end matches biased plunger end, compromising bias force and electrical contact



Benefit

Resistance performance comparison of a PogoPlus® bias design to a conventional bias design, during the full compression / decompression cycle of the probe.

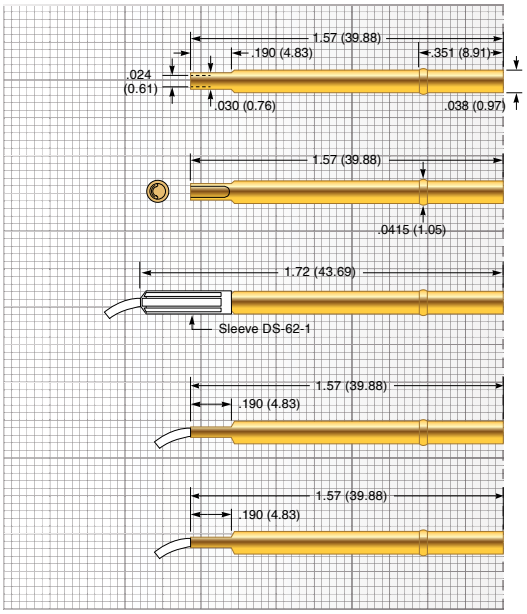
The resistance vs. displacement graph shows the LFRE / POGO® probe has a more consistent resistivity performance resulting in significantly fewer probe false opens and tighter control of the test process.



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

POGO-72

50 mil (1.27 mm)



HPR-72W
Crimp

HPR-72W-1
Solder Cup

HPR-72W-4
FASTITE® Insertion

HPR-72W-28

HPR-72W-30

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.60 (17)	2.0 (57)
Standard	- 4	1.53 (43)	4.0 (113)
Alternate	- 6	2.14 (61)	6.0 (170)
Elevated	- 7	2.67 (76)	7.0 (198)
High	- 8	3.12 (89)	8.0 (227)
Ultra High	-10	3.38 (109)	10.0 (283)

Electrical (Static Conditions)

Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

Materials and Finishes

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

Receptacle

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

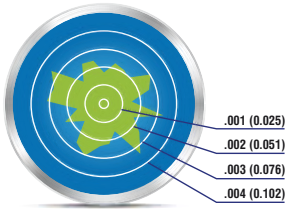
Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I...-S	I8...-S	J	T1...-S	T20...-S	T38...-S
Ø .035 (0.89)	Ø .019 (0.48)	Ø .017 (0.43)	Ø .019 (0.48)	Ø .019 (0.48)	Ø .019 (0.48)	Ø .038 (0.97)
						

U
Ø .019 (0.48)

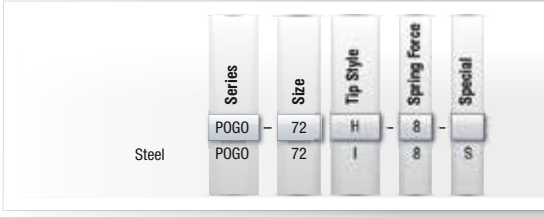

Tighter Pointing Tolerances

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



Double-Close Design

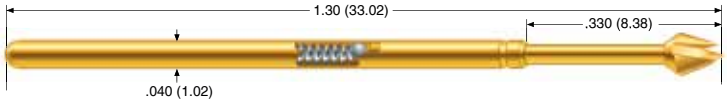
Conventional single-close probes provide marginal pointing accuracy. The double-close design of the LFRE / PogoPlus probe constrains the plunger to a tighter range of vertical motion for more accurate pointing precision.



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

POGO-1

75 mil (1.91 mm)



Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.83 (24)	2.0 (57)
Standard	- 4	0.62 (18)	4.0 (114)
Alternate	- 6	2.39 (68)	6.0 (170)
Elevated	- 7	1.68 (48)	7.0 (198)
High	- 8	1.73 (49)	8.0 (227)
Ultra High	-10	2.84 (81)	10.0 (283)

Electrical (Static Conditions)

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

Materials and Finishes

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

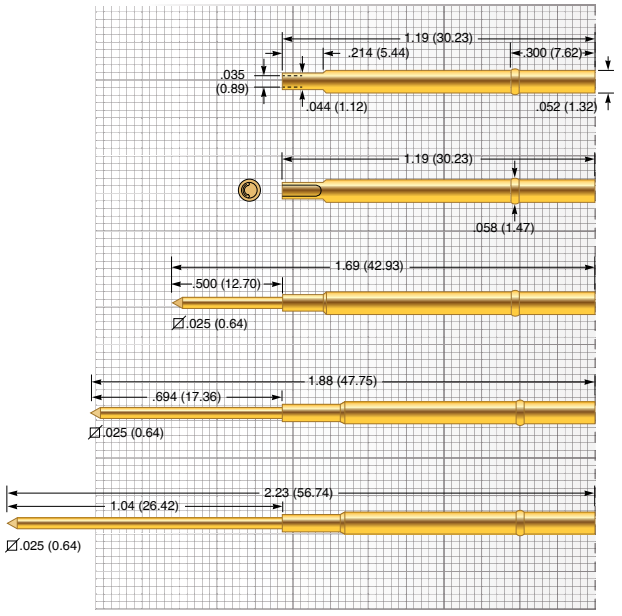
Receptacle

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

Material

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

Post: Phosphorous Bronze, Gold plated



LTR-1W

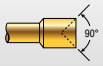
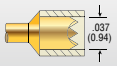
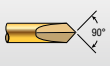
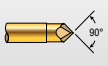
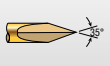
LTR-1W-1

LTR-1W-2
ELTR-1W-2

LTR-1W-2L
ELTR-1W-2L

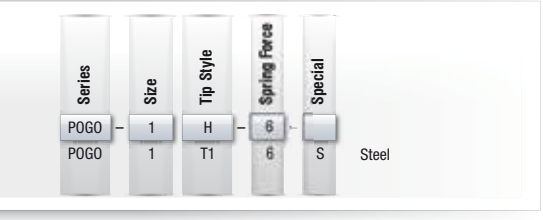
LTR-1W-2LL
ELTR-1W-2LL

Tip Style (ADDITIONAL TIPS AVAILABLE)

A	B...-S	H	H-INS	I...-S	I8...-S	I35...-S
Ø .047 (1.19)	Ø .022 (0.56)	Ø .047 (1.19)	Ø .060 (1.52)	Ø .022 (0.56)	Ø .020 (0.51)	Ø .022 (0.56)
						

J	L	L18	L24	P	T	T1...-S
Ø .022 (0.56)	Ø .033 (0.84)	Ø .018 (0.46)	Ø .022 (0.56)	Ø .047 (1.19)	Ø .047 (1.19)	Ø .020 (0.51)
						

T24...-S	T30...-S	UN	V	Z	Z1
Ø .022 (0.56)	Ø .022 (0.56)	Ø .021 (0.53)	Ø .047 (1.19)	Ø .047 (1.19)	Ø .038 (0.97)
					



Dimensions in inches (millimeters). Specifications subject to change without notice.
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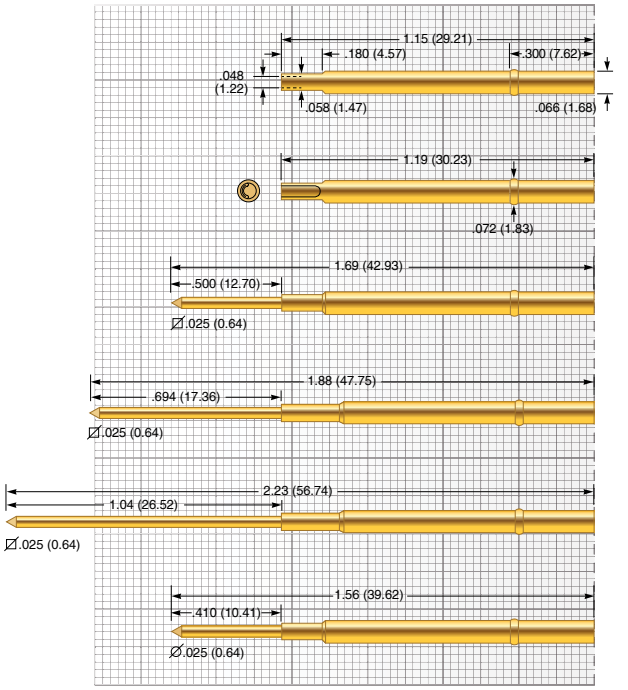
POGO-25

100 mil (2.54 mm)



SPR-25W

SPR-25W-1

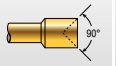
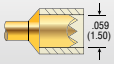
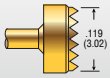
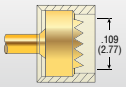
SPR-25W-2
EPR-25W-2

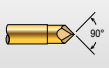
SPR-25W-2L
EPR-25W-2L

SPR-25W-2LL
EPR-25W-2LL

SPR-25W-3

Tip Style (ADDITIONAL TIPS AVAILABLE)

A	B...-S	H	H-INS	HM	HM-INS	I...-S
Ø .060 (1.52)	Ø .034 (0.86)	Ø .060 (1.52)	Ø .085 (2.16)	Ø .122 (3.10)	Ø .140 (3.56)	Ø .034 (0.86)
						

I8...-S	I15...-S	I35...-S	J	L	L18	L36
Ø .033 (0.84)	Ø .033 (0.84)	Ø .034 (0.86)	Ø .025 (0.64)	Ø .050 (1.27)	Ø .018 (0.46)	Ø .034 (0.86)
						

T	T10	T1...-S	T30...-S	T36...-S	UN	V
Ø .060 (1.52)	Ø .034 (0.86)	Ø .030 (0.74)	Ø .034 (0.86)	Ø .034 (0.86)	Ø .025 (0.64)	Ø .055 (1.40)
						

Z	Z1
Ø .060 (1.52)	Ø .051 (1.30)
	

Pogo Plus®

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.75 (21)	2.0 (57)
Standard	- 4	1.50 (43)	4.0 (113)
Alternate	- 6	2.58 (73)	6.0 (170)
Elevated	- 6.5	2.65 (75)	6.5 (184)
High	- 8	2.84 (81)	8.0 (227)
Ultra High	-10	1.77 (50)	10.0 (283)
Super	-16	3.93 (111)	16.0 (455)

Electrical (Static Conditions)

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

Materials and Finishes

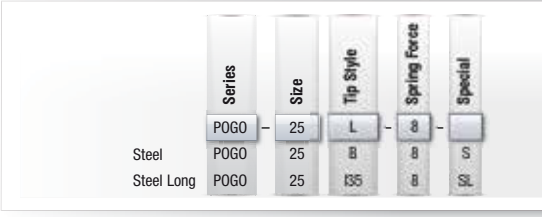
Plunger:	Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	Stainless Steel
Ball:	Stainless Steel

Receptacle

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

Material
- SPR Housing: Work-hardened Nickel Silver, Gold plated over hard Nickel
- EPR Housing: Nickel Silver, unplated

Post: Phosphorous Bronze, Gold plated



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

LFLT-72

50 mil (1.27 mm)

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Alternate	- 6	1.85 (52)	6.0 (170)
High	- 9	1.90 (54)	9.0 (255)

Electrical (Static Conditions)

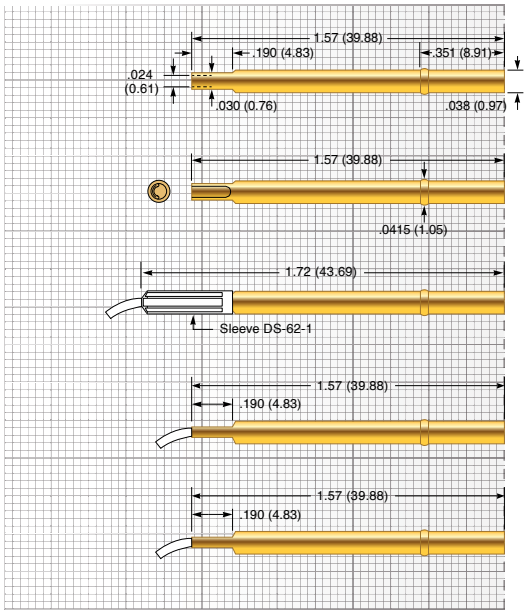
Current Rating:	6 amps
Average Probe Resistance:	<100 mOhms

Materials and Finishes

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

Receptacle

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



HPR-72W

HPR-72W-1

HPR-72W-4
FASTITE® Insertion

HPR-72W-28

HPR-72W-30

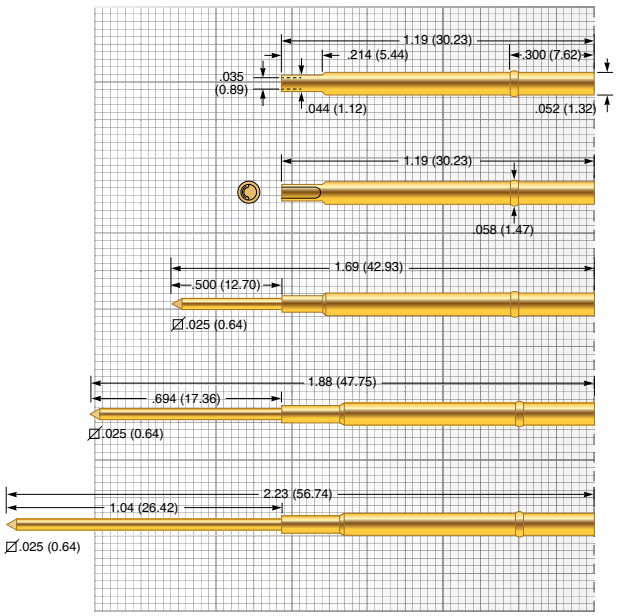
Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I	I40	T38	U		
Ø .035 (0.89)	Ø .019 (0.48)	Ø .017 (0.43)	Ø .038 (0.97)	Ø .019 (0.48)		
						

Series	Size	Tip Style		Spring Force
LFLT	72	I40	–	6

LFLT-1

75 mil (1.91 mm)



LTR-1W

LTR-1W-1

LTR-1W-2
ELTR-1W-2

LTR-1W-2L
ELTR-1W-2L

LTR-1W-2LL
ELTR-1W-2LL

Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I15	I40	L	T		
Ø .047 (1.19)	Ø .021 (0.53)	Ø .021 (0.53)	Ø .033 (0.84)	Ø .047 (1.19)		
						

Mechanical

Recommended Travel:	.317 (8.05)
Full Travel:	
• Standard Spring:	.400 (10.16)
• Elevated Spring:	.350 (8.89)
• High Spring:	.350 (8.89)
Operating Temperature	
• Standard Spring:	-55°C to +105°C
• Elevated Spring:	-55°C to +150°C
• High Spring:	-55°C to +105°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4.5	1.09 (31)	4.5 (128)
Elevated	- 7	0.75 (21)	7.0 (198)
High	- 9.6	1.51 (43)	9.6 (272)

Electrical (Static Conditions)

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

Materials and Finishes

Plunger:	High performance alloy LFRE proprietary plating
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring	
• Standard:	Music Wire
• Elevated:	Stainless Steel
• High:	Music Wire
Ball:	Stainless Steel

Receptacle

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

Series	Size	Tip Style	Spring Force
LFLT	1	I40	7

Dimensions in inches (millimeters). Specifications subject to change without notice.
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LFLT-25

100 mil (2.54 mm)

Mechanical

Recommended Travel: .315 (8.00)

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

Operating Temperature
- Standard Spring: -55°C to +105°C
- Alternate Spring: -55°C to +105°C
- High Spring: -55°C to +105°C
- Ultra High Spring: -55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4	1.08 (31)	4.0 (114)
Alternate	- 6	0.99 (28)	6.0 (170)
High	- 8	0.75 (21)	8.0 (227)
Ultra High	- 9.7	1.16 (33)	9.7 (275)

Electrical (Static Conditions)

Current Rating: 8 amps

Average Probe Resistance: <8 mOhms

Materials and Finishes

Plunger: High performance alloy
LFRE proprietary plating

Barrel: Work hardened Phosphor Bronze,
LFRE proprietary plating

Spring
- Standard: Music Wire
- Alternate: Music Wire
- High: Music Wire
- Ultra High: Stainless Steel

Ball: Stainless Steel

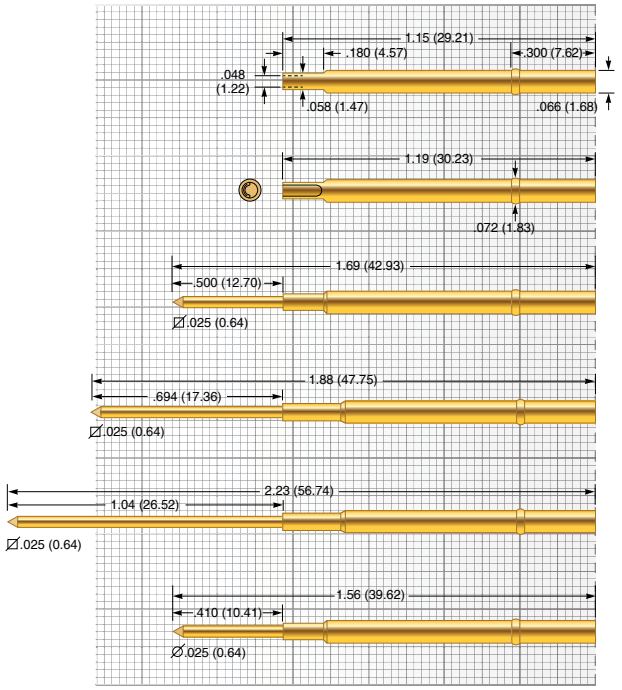
Receptacle

Hole diameter: Ø .067 to .069 (1.70 to 1.75)

Suggested drill: #51 or 1.75 mm

Material
- SPR Housing: Nickel Silver, Gold plated
- EPR Housing: Nickel Silver, unplated

Post: Phosphorous Bronze, Gold plated



SPR-25W

SPR-25W-1

SPR-25W-2
EPR-25W-2

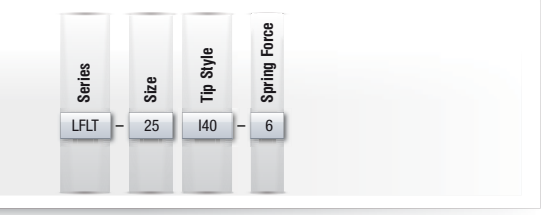
SPR-25W-2L
EPR-25W-2L

SPR-25W-2LL
EPR-25W-2LL

SPR-25W-3

Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I15	I40	J	L	T	
H=.060(1.52)	I15=.033(0.84)	I40=.033 (0.84)	J= .034 (0.86)	L=.050 (1.27)	T=.060 (1.52)	
						



Dimensions in inches (millimeters). Specifications subject to change without notice.
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Availability is based on current levels of usage and demand.

LTP-72

50 mil (1.27 mm)

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Alternate	- 6	1.85 (52)	6.0 (170)
High	- 9	1.90 (54)	9.0 (255)

Electrical (Static Conditions)

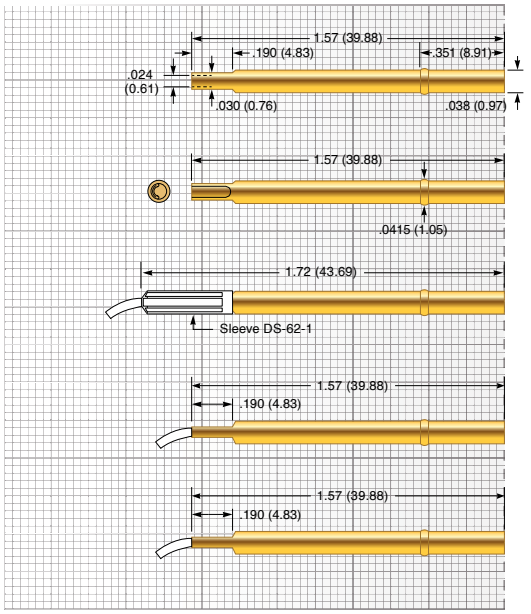
Current Rating:	6 amps
Average Probe Resistance:	<100 mOhms

Materials and Finishes

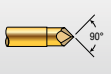
Plunger:	Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	Stainless Steel
Ball:	Stainless Steel

Receptacle

Hole diameter:	Ø .039 (0.99)
Suggested drill:	#61 or 0.99 mm
Material Housing:	Work-hardened BeCu, Gold plated over hard Nickel



Tip Style (ADDITIONAL TIPS AVAILABLE)

I8	I15	T20	U			
Ø .017 (0.43)	Ø .017 (0.43)	Ø .019 (0.48)	Ø .019 (0.48)			
						

Series	Size	Tip Style	Spring Force
LTP	72	T20	6

Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
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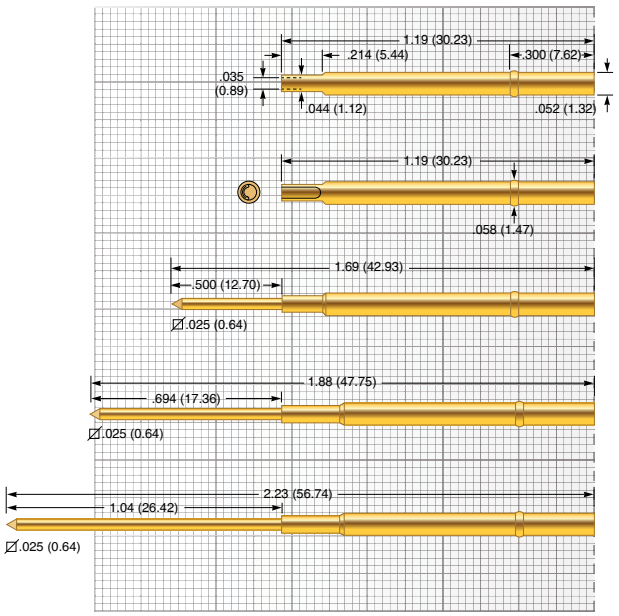
LTP-1

75 mil (1.91 mm)



LTR-1W

LTR-1W-1

LTR-1W-2
ELTR-1W-2

LTR-1W-2L
ELTR-1W-2L

LTR-1W-2LL
ELTR-1W-2LL

Tip Style (ADDITIONAL TIPS AVAILABLE)

B	I8	I15	J	L	L24	T
Ø .022 (0.56)	Ø .020 (0.51)	Ø .020 (0.51)	Ø .022 (0.56)	Ø .033 (0.84)	Ø .022 (0.56)	Ø .047 (1.19)
						

T24	T30
Ø .022 (0.56)	Ø .022 (0.56)
	

Mechanical

Recommended Travel:	.317 (8.05)
Full Travel:	
• Standard Spring:	.400 (10.16)
• Elevated Spring:	.350 (8.89)
• High Spring:	.350 (8.89)
Operating Temperature	
• Standard Spring:	-55°C to +105°C
• Elevated Spring:	-55°C to +150°C
• High Spring:	-55°C to +105°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4.5	1.09 (31)	4.5 (128)
Elevated	- 7	0.75 (21)	7.0 (198)
High	- 9.6	1.51 (43)	9.6 (272)

Electrical (Static Conditions)

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

Materials and Finishes

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

Receptacle

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

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

LTP-25

100 mil (2.54 mm)

Mechanical

Recommended Travel:	.315 (8.05)
Full Travel:	.400 (10.16)
Full Travel (only LTP-25TJ):	.340 (8.60)
Operating Temperature:	
• Standard Spring:	-55°C to +105°C
• Alternate Spring:	-55°C to +105°C
• High Spring:	-55°C to +105°C
• Ultra High Spring:	-55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4	1.08 (31)	4.0 (114)
Alternate	- 6	0.99 (28)	6.0 (170)
High	- 8	0.75 (21)	8.0 (227)
Ultra High	- 9.7	2.3 (65)	9.7 (275)

Electrical (Static Conditions)

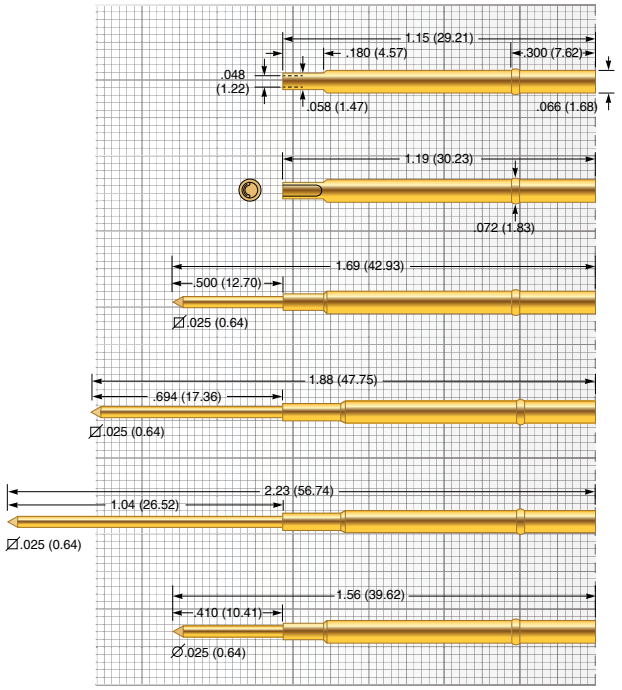
Current Rating:	8 amps
Average Probe Resistance:	<8 mOhms

Materials and Finishes

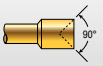
Plunger:	Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring	
• Standard:	Music Wire
• Alternate:	Music Wire
• High:	Music Wire
• Ultra High:	Stainless Steel
Ball:	Stainless Steel

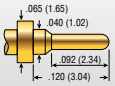
Receptacle

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

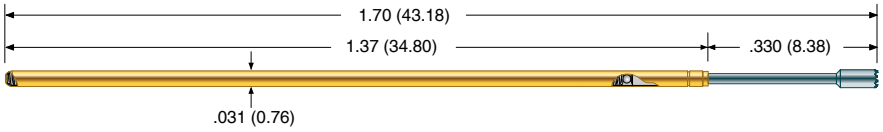


Tip Style (ADDITIONAL TIPS AVAILABLE)

A	H	I8	L	L36	T	T36
Ø .060 (1.52)	Ø .060 (1.52)	Ø .035 (0.89)	Ø .050 (1.27)	Ø .036 (0.91)	Ø .060 (1.52)	Ø .035 (0.89)
						

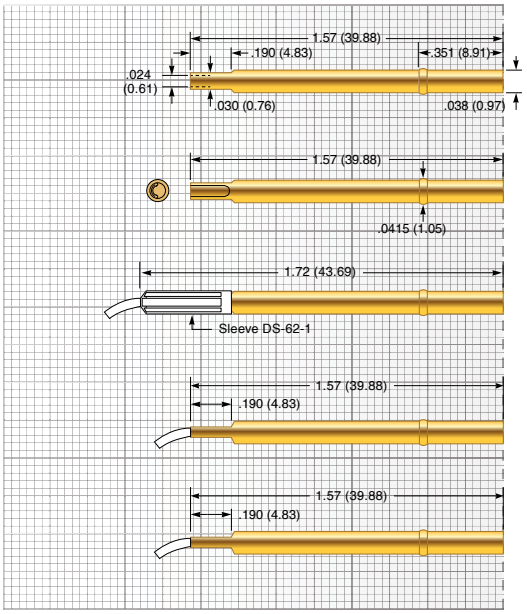
TJ	Z
Ø .025 (0.64)	Ø .060 (1.52)
	

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



BTP-72

50 mil (1.27 mm)



HPR-72W

HPR-72W-1

HPR-72W-4
FASTITE® Insertion

HPR-72W-28

HPR-72W-30

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.60 (17)	2.0 (57)
Standard	- 4	1.53 (43)	4.0 (114)
Alternate	- 6	2.14 (61)	6.0 (170)
Elevated	- 7	2.67 (76)	7.0 (198)
High	- 8	3.12 (88)	8.0 (227)
Ultra High	-10	3.38 (96)	10.0 (283)

Electrical (Static Conditions)

Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

Materials and Finishes

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

Receptacle

Hole diameter:	Ø .039 (0.99)
Suggested drill:	#61 or 0.99 mm

Material Housing: Hardened BeCu, Gold plated

Tip Style (ADDITIONAL TIPS AVAILABLE)

F	HC	HF				
Ø .035 (0.89)	Ø .024 (0.56)	Ø .035 (0.89)				
						

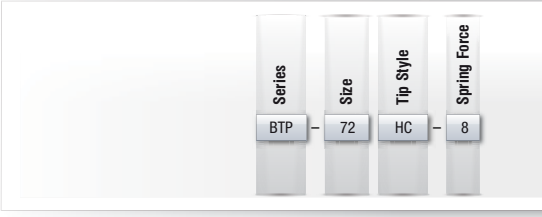
BTP SERIES Bead Target Probes

Introduction – What is Bead Probe technology?
ECT is supporting the development of the Agilent Medalist Bead Probe Technology with OEM's, contract manufacturers, and test fixture partners. Bead Probing is a methodology for placing test points directly on a PCB's copper traces, or top metal, thus forming a "Bead Probe". These Bead Probes are then contacted by "Bead Target Probes" during in-circuit esting for expanded test access.
For more information, visit Agilent website: http://www.home.agilent.com. There is a flash demo on the Agilent website for your review.

Features

ECT has developed a series of probes specifically for Bead Probe applications featuring:

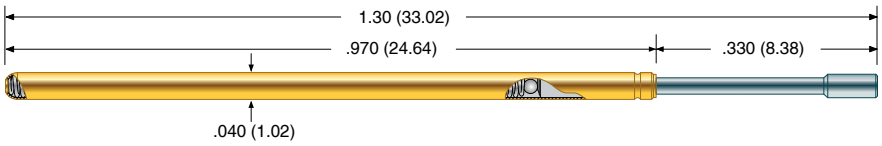
- Pogo Plus® Design
- LFRE Plating
- Flat and "Micro-Textured" Tips



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

BTP-1

75 mil (1.91 mm)



Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.83 (24)	2.0 (57)
Standard	- 4	0.62 (18)	4.0 (114)
Alternate	- 6	2.39 (68)	6.0 (170)
Elevated	- 7	1.68 (48)	7.0 (198)
High	- 8	1.73 (49)	8.0 (227)

Electrical (Static Conditions)

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

Materials and Finishes

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

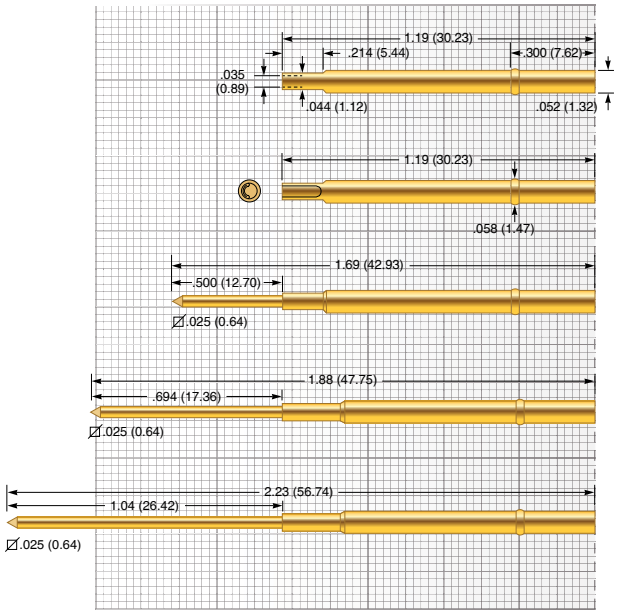
Receptacle

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

Material

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

Post: Phosphorous Bronze, Gold plated



Tip Style

C	F	HC	HF	HL		
Ø .035 (0.89)	Ø .047 (1.19)	Ø .022 (0.56)	Ø .035 (0.89)	Ø .047 (1.19)		
						

Micro Structured Tip

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

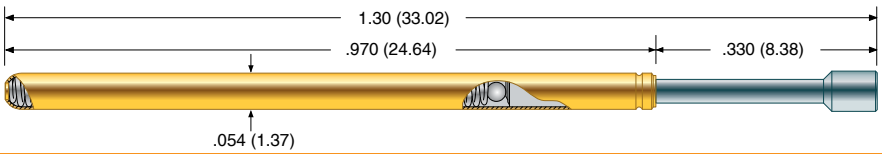
An innovative "Micro-Textured" tip incorporates closely spaced triangular pyramid shapes to form a textured surface. Perfect for contacting beads that are long yet have a small width when placed on a PCB trace.

Micro structured Tip

Standard serrated Tip

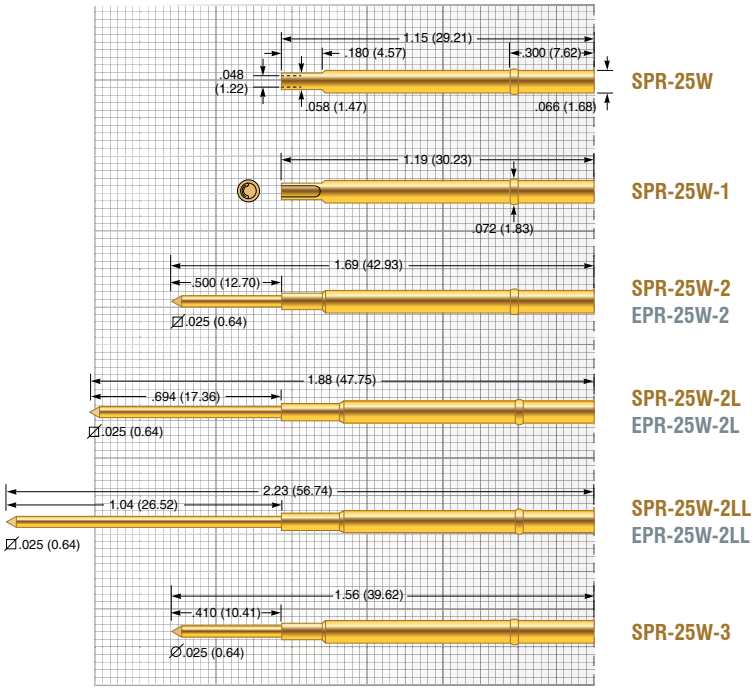
Series	Size	Tip Style	Spring Force
BTP	1	HF	8

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



BTP-25

100 mil (2.54 mm)



SPR-25W

SPR-25W-1

SPR-25W-2
EPR-25W-2

SPR-25W-2L
EPR-25W-2L

SPR-25W-2LL
EPR-25W-2LL

SPR-25W-3

Tip Style

C	F	HF	HL			
Ø .035 (0.89)	Ø .060 (1.52)	Ø .035 (0.89)	Ø .060 (1.52)			
						

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Light	- 2	0.75 (21)	2.0 (57)
Standard	- 4	1.50 (43)	4.0 (114)
Alternate	- 6.5	2.65 (75)	6.5 (184)
High	- 8	2.84 (81)	8.0 (227)
Ultra High	- 10	1.77 (50)	10.0 (283)

Electrical (Static Conditions)

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

Materials and Finishes

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

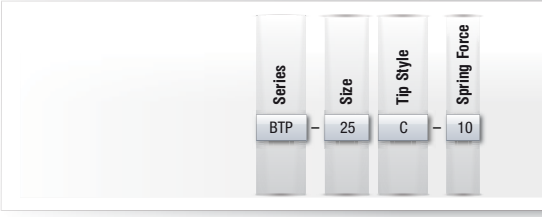
Receptacle

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

Material

- SPR Housing: Work-hardened Nickel Silver, Gold plated over hard Nickel
- EPR Housing: Nickel Silver, unplated

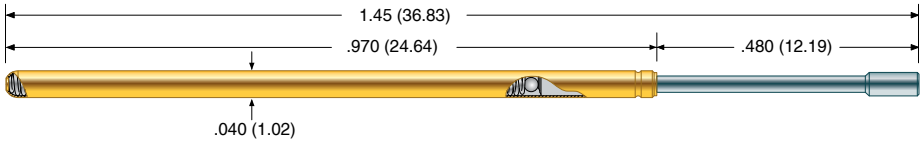
Post: Phosphorous Bronze, Gold plated



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

BPLT-1

75 mil (1.91 mm)



Mechanical

Recommended Travel:	.317 (8.05)
Full Travel:	.350 (8.89)
Operating Temperature:	-55°C to +105°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4.5	1.09 (31)	4.5 (128)
High	- 9.6	1.50 (43)	9.6 (272)

Electrical (Static Conditions)

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

Materials and Finishes

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

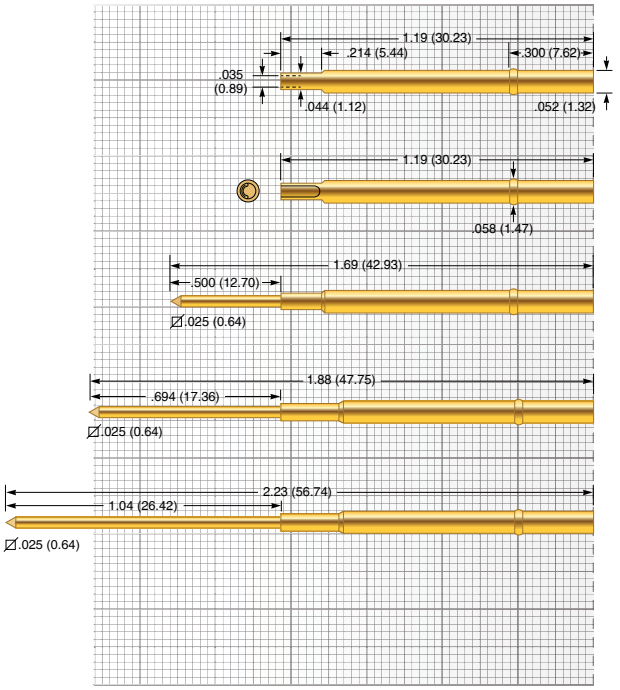
Receptacle

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

Material

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

Post:	Phosphorous Bronze, Gold plated



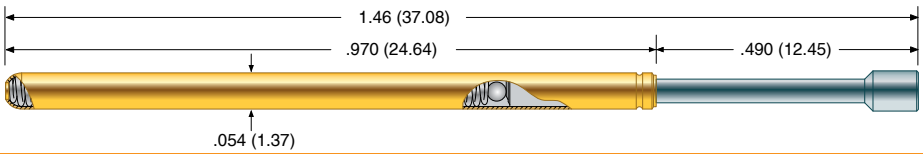
Tip Style

C	F	HF	HL			
Ø .035 (0.89)	Ø .047 (1.19)	Ø .035 (0.89)	Ø .047 (1.19)			
						

Series	Size	Tip Style	Spring Force
BPLT	1	HF	4.5

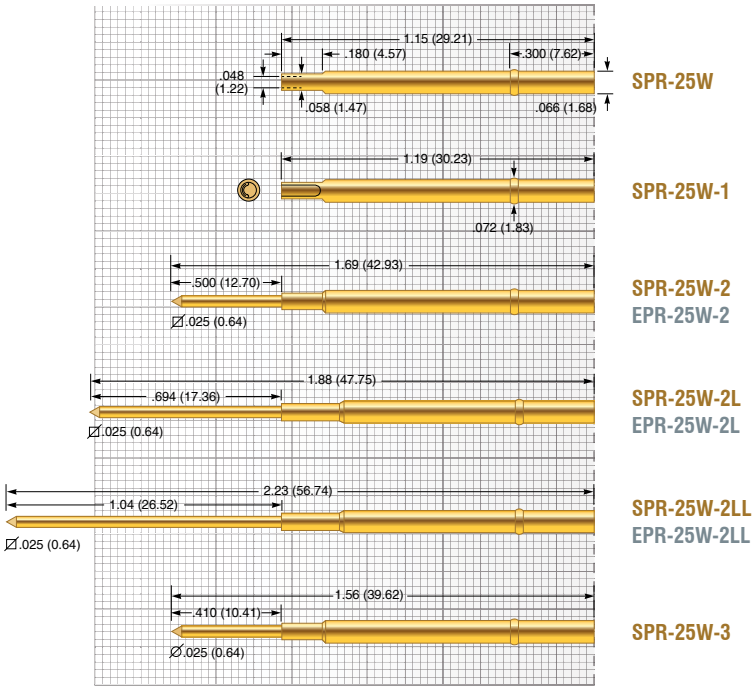
ECT-CPG.com
shop.ECT-CPG.com

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



BPLT-25

100 mil (2.54 mm)



Tip Style

C	F	HF	HL			
Ø .035 (0.89)	Ø .060 (1.52)	Ø .035 (0.89)	Ø .060 (1.52)			
						

Mechanical

Recommended Travel:	.317 (8.05)
Full Travel:	.350 (8.89)
Operating Temperature:	
• Standard Spring:	-55°C to +105°C
• Alternate Spring:	-55°C to +105°C
• High Spring:	-55°C to +105°C
• Ultra High Spring:	-55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4	1.08 (31)	4.0 (114)
Alternate	- 6	0.99 (28)	6.0 (170)
High	- 8	0.75 (21)	8.0 (227)
Ultra High	- 9.7	1.16 (33)	9.7 (275)

Electrical (Static Conditions)

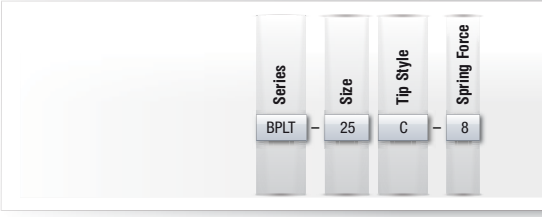
Current Rating:	8 amps
Average Probe Resistance:	<8 mOhms

Materials and Finishes

Plunger:	High performance alloy LFRE proprietary plating
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring	
• Standard:	Music Wire
• Alternate:	Music Wire
• High:	Music Wire
• Ultra High:	Stainless Steel
Ball:	Stainless Steel

Receptacle

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



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

GSP-2B

GSP-2B

Application GenRad 227x, Pylon, Rhode&Schwarz

Mechanical

Recommended Travel:	.125 (3.18)
Full Travel:	.125 (3.18)
Operating Temperature:	-55°C to +105°C

Spring Force in oz. (grams)

	Preload	Rec. Travel
Standard	2.5 (71)	4.5 (128)

Electrical (Static Conditions)

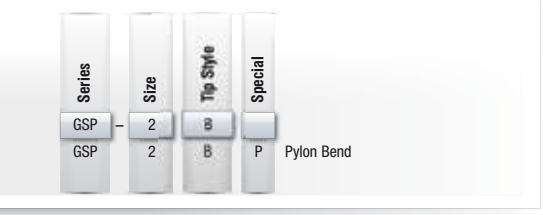
Current Rating:	5 amps
Average Probe Resistance:	<35 mOhms

Materials and Finishes

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

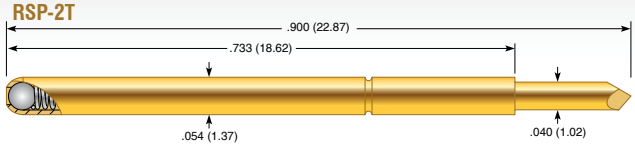
ECT is your source for interface probes for all major brands of test systems, including Teradyne, GenRad and Hewlett-Packard. In fact, two of these companies specify ECT probes as original equipment.

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



RSP-2T
FRP-25T

RSP-2T



Application Rhode&Schwarz

Mechanical

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

Spring Force in oz. (grams)

	Preload	Rec. Travel
Standard	1.44 (41)	3.6 (102)

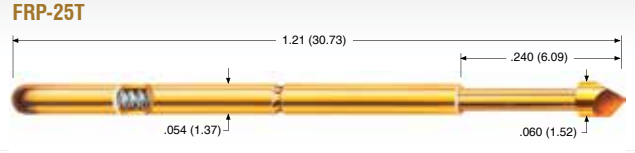
Electrical (Static Conditions)

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

Materials and Finishes

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

FRP-25T



Application Schlumberger, Factron

Mechanical

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

Spring Force in oz. (grams)

	Preload	Rec. Travel
Standard	0.92 (26)	4.0 (113)

Electrical (Static Conditions)

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

Materials and Finishes

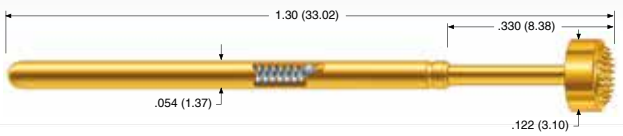
Plunger:	Heat-treated BeCu, Gold plated over hard Nickel
Barrel:	Work-hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	Stainless Steel

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

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

PP-3070

POGO-25HM-4



Application Agilent / HP-3070

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4	1.50 (43)	4.0 (114)

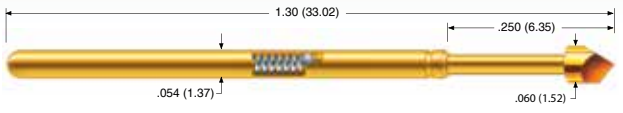
Electrical (Static Conditions)

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

Materials and Finishes

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

POGO-25T-4



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

Mechanical

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

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 4	1.50 (43)	4.0 (114)

Electrical (Static Conditions)

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

Materials and Finishes

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

Personality Pins

Part number:	PP-3070-S
Keysight Part number:	Mint Pins 44275P
Packing unit:	200 pieces (strip)

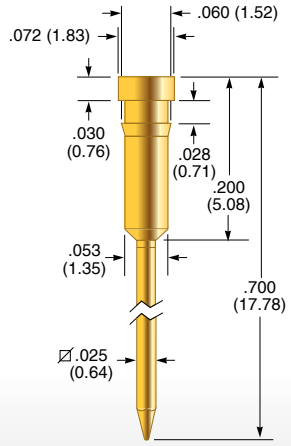
Application

Used on fixture interfaces as bottom transfer pins.

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

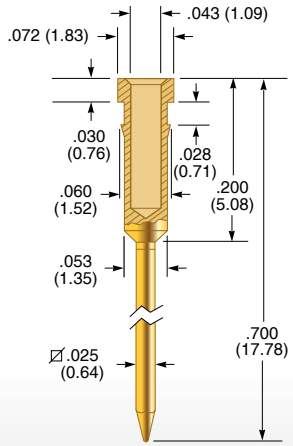
SIP-90
GPP-95

SIP-90-2



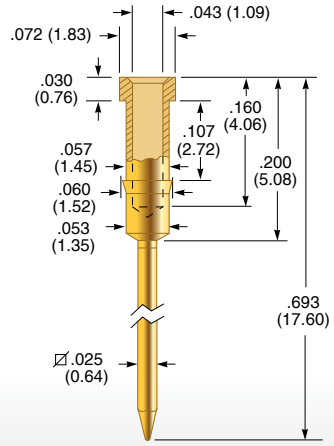
Application	GenRad
Material	Brass, Gold plated
Hole diameter	Ø .055 (1.40)
Suggested drill	#54 or 1.40 mm

SIP-90-3



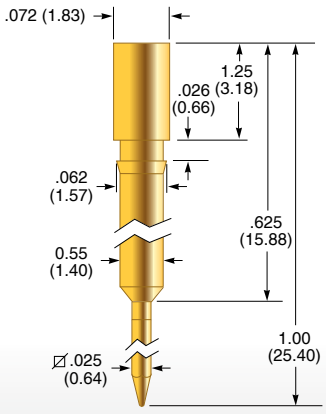
Application	Factron
Material	Brass, Gold plated
Hole diameter	Ø .055 (1.40)
Suggested drill	#54 or 1.40 mm

SIP-90-4



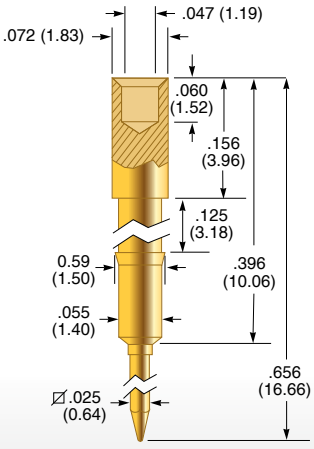
Application	General Interconnect
Material	Brass, Gold plated
Hole diameter	Ø .057 (1.45)
Suggested drill	1.45 mm

SIP-90-5



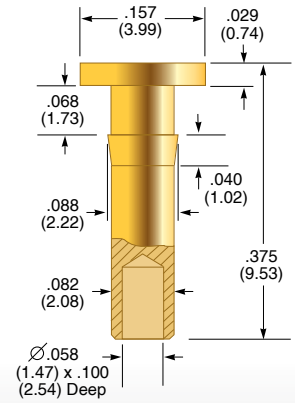
Application	Zehntel
Material	Brass, Gold plated
Hole diameter	Ø .055 (1.40)
Suggested drill	#54 or 1.40 mm

SIP-90-6



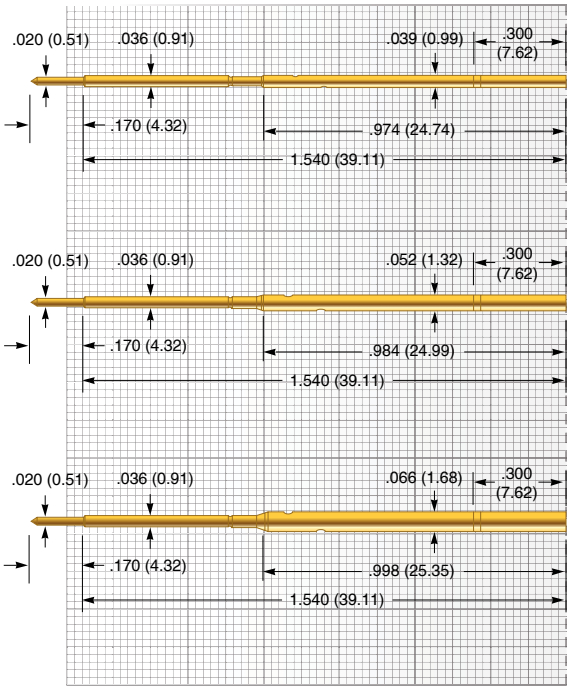
Application	General Interconnect
Material	Brass, Gold plated
Hole diameter	Ø .057 (1.45)
Suggested drill	1.45 mm

GPP-95-2



Application	GenRad
Material	Brass, Gold plated
Hole diameter	Ø .085 (2.15)
Suggested drill	#44 or 2.15 mm

DER

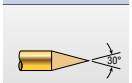


DER-050
50 mil

DER-075
75 mil

DER-100
100 mil

Tip Style

B	J	T				
Ø .020 (0.51)	Ø .020 (0.51)	Ø .020 (0.51)				
						

DER Series for wireless fixtures

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

Example showing receptacle and probe

Mechanical

Recommended Travel:	.130 (3.30)
Full Travel:	.160 (4.06)
Operating Temperature:	-55°C to +150°C

Spring Force in oz. (grams)

	Order Code	Preload	Rec. Travel
Standard	- 3.5	2.62 (74)	3.50 (99)

Electrical (Static Conditions)

Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

Materials and Finishes

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

DER-050

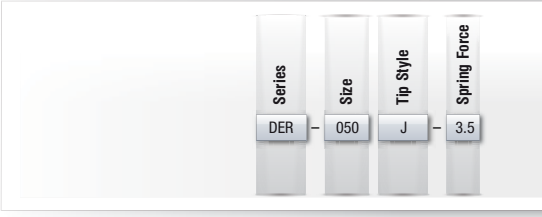
Hole diameter:	Ø .038 to .039 (0.97 to 0.99)
Suggested drill:	#61 or 0.99 mm
Probes (ordered separately):	POGO-62

DER-075

Hole diameter:	Ø .053 to .055 (1.35 to 1.40)
Suggested drill:	#54 or 1.40 mm
Probes (ordered separately):	LFRE-1 / POGO-1 EDGE-1 / LTP-1

DER-100

Hole diameter:	Ø .067 to .069 (1.70 to 1.75)
Suggested drill:	#51 or 1.75 mm
Probes (ordered separately):	LFRE-25 / POGO-25 EDGE-25 / LTP-25



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

Mechanical

Recommended Travel:	.050 (1.27)
Full Travel:	.062 (1.57)
Direction of Rotation:	Counter clock wise
Scribed Diameter:	.050 (1.27)
Special diameters available.	

Spring Force in oz. (grams)

	Preload	Rec. Travel
Standard	4.41 (125)	5.19 (147)

Electrical (Static Conditions)

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

Materials and Finishes

Plunger Tip:	Carbide
Receptacle:	Stainless Steel

Mounting

BMP-1 / BMP-1-S

Hole diameter:	Ø .468 (11.89)
Suggested drill:	15/32 (in.) or 11.90 mm

BMP-3

Hole diameter:	Ø .610 (15.50)
Suggested drill:	39/64 (in.) or 15.50 mm

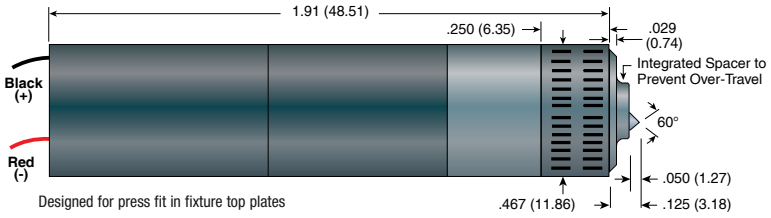
Order Number

Board Marker:	BMP-1 BMP-1-S BMP-3
Spare Receptacle:	BMR-1 BMR-3
Repcalement Tip:	BMT-1

Tools

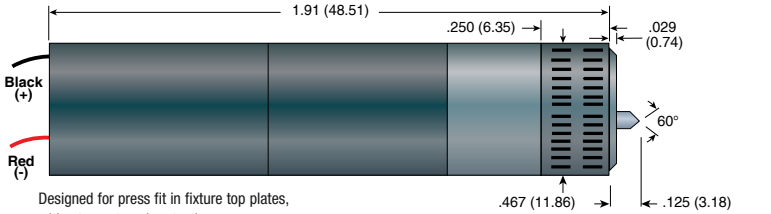
Insertion tool for BMR-1:	RIT-BMP
Extraction tool for BMR-1:	EXT-BMP

BMP-1



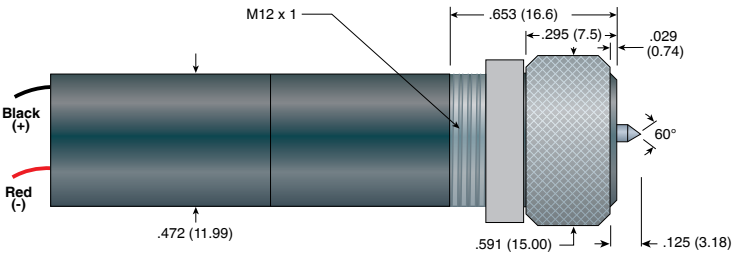
Designed for press fit in fixture top plates

BMP-1-S



Designed for press fit in fixture top plates, without over travel protection

BMP-3



Designed for press fit in fixture top plates or other mounting plates with adjustable BMP height range of up to 0.440 inch (11.2mm).

Applications

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

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

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

Application Examples

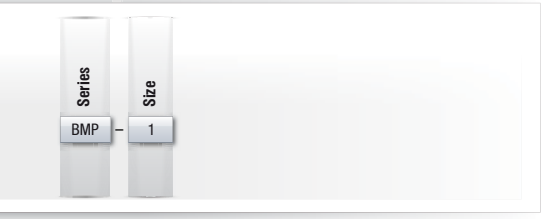
- Bare Board Test
- Loaded Board Test
- Connector / Wire Harness

Benefits

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

Features

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



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