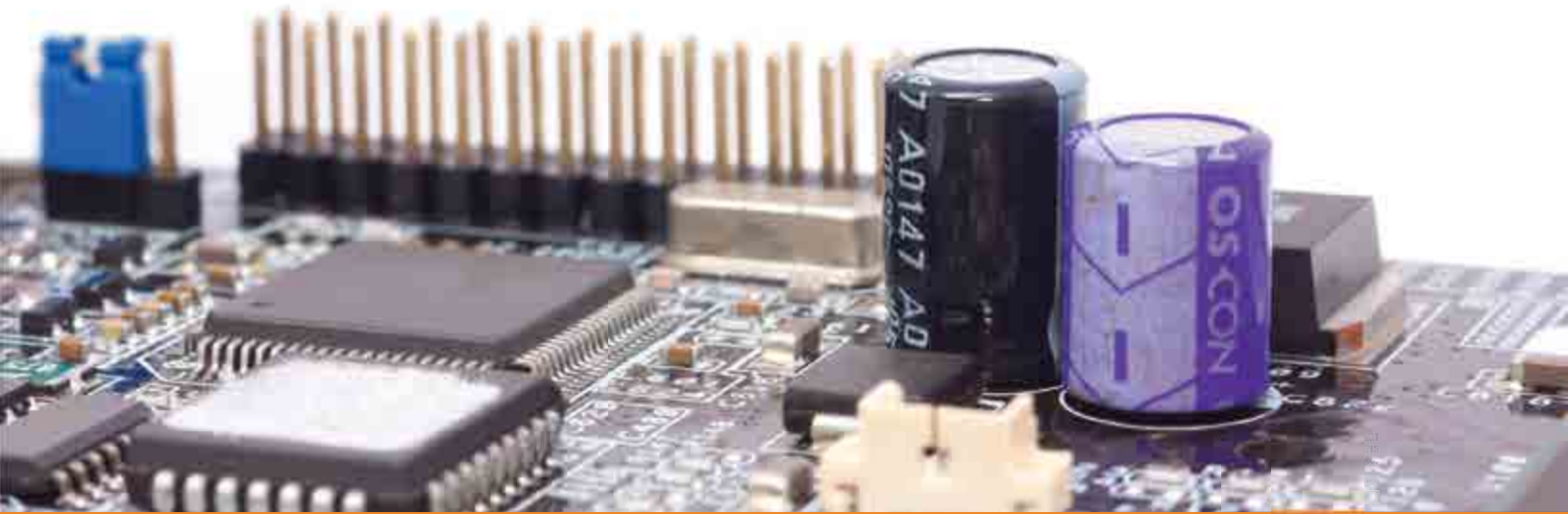
Loaded PCB Test Probes / Functional

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

Mixed Test Centers

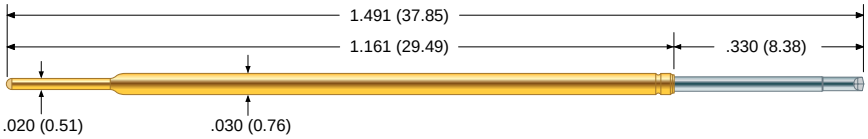
In loaded board applications, probes are designed for use on 0.039, 0.050, 0.075 and 0.100 inch test centers. They can also be mixed in single or dual-stage fixtures, even those with minor variations in plunger travel. When mounted correctly, probe plunger tips will align when compressed to recommended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

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



MTX-39

39 mil (1.00 mm)



Mechanical

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

Spring Force in oz. (grams)

	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)

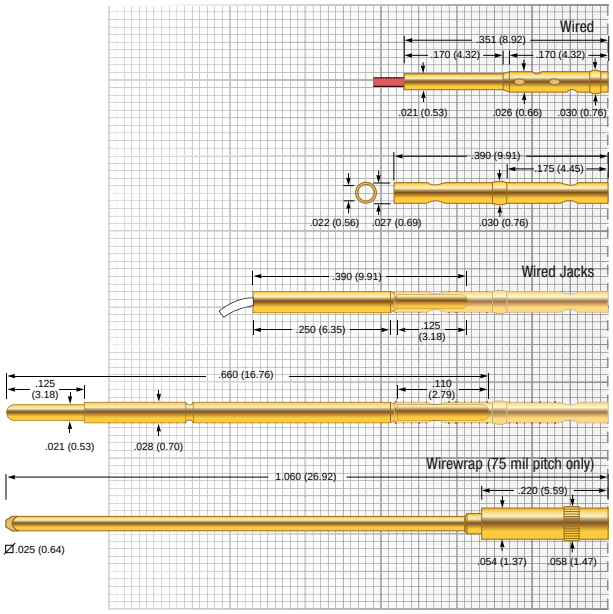
Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

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 .028 (0.70)
Suggested drill:	#70 or 0.70 mm
Recommended wire gauge:	28-30 AWG
Material Housing	
• HPR-40T:	Work-hardened Nickel Silver, Gold plated over hard Nickel
• HPR-40W:	Work-hardened Nickel Silver, Gold plated over hard Nickel
• STT:	Work-hardened BeCu, Gold plated over hard Nickel



STT-80W
(Pre-wired versions -28, -30)

HPR-40W

HPR-40T with HPR-40W

HPA-40 with HPR-40W

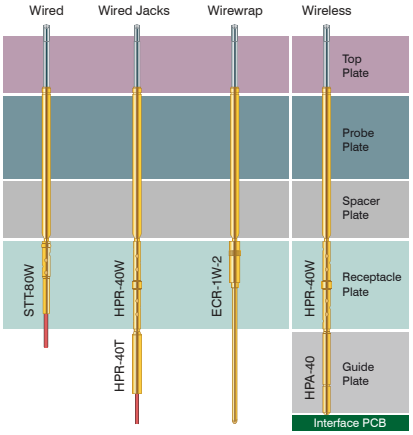
ECR-1W-2

Tip Style

H	HC	HF	I	I8	I15	I40
Ø .035 (0.89)	Ø .024 (0.56)	Ø .035 (0.89)	Ø .019 (0.48)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .017 (0.43)
						

J	T1	T20	T38	U
Ø .017 (0.43)	Ø .019 (0.48)	Ø .019 (0.48)	Ø .038 (0.97)	Ø .019 (0.48)
				

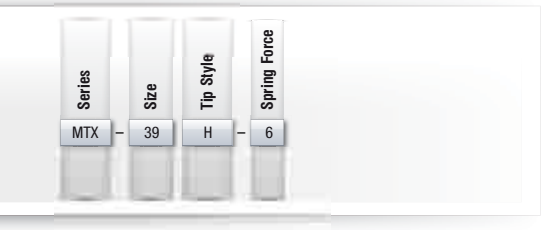
Termination Example



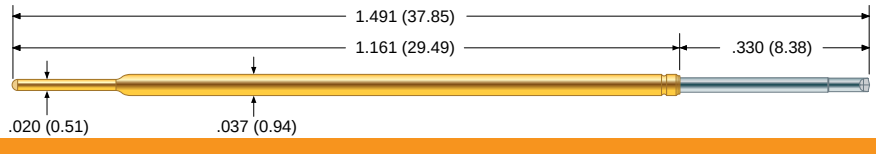
Metrix™

Metrix Summary

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

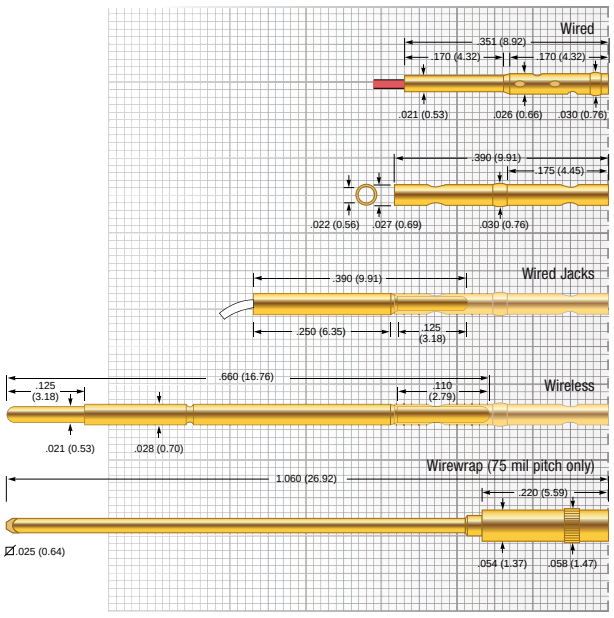


Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels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



MTX-50

50 mil (1.27 mm)



STT-80W
(Pre-wired versions -28, -30)

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

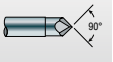
Receptacle

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

Material Housing

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

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™

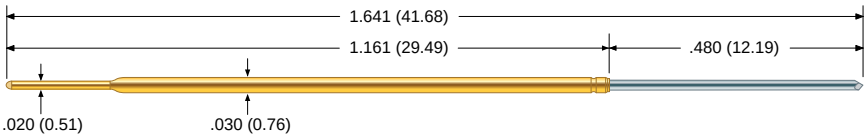
Metrix Introduction

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 allows the probe to be plugged into a receptacle sitting underneath the probe. Now, since the probe is placed above the receptacle, it allows you to use a receptacle with the same or lesser diameter as the probe. Valuable space is saved between the two adjacent probes which now can be placed in a tighter spacing.

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

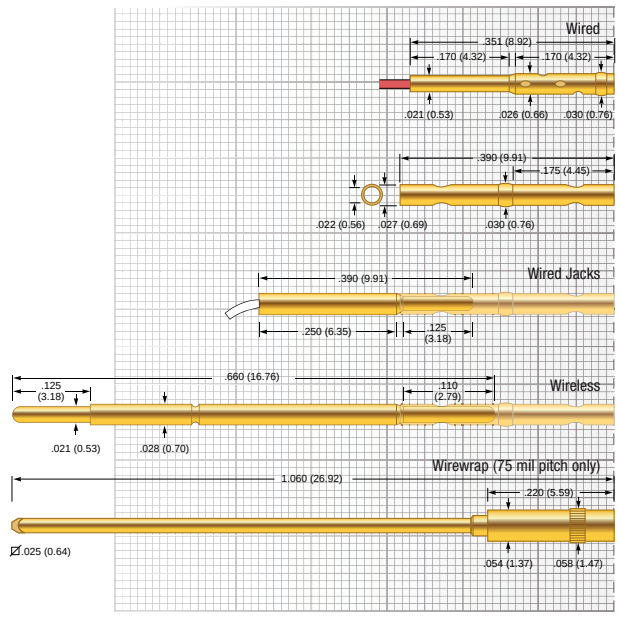
Plunger:	High performance alloy LFRE proprietary plating
Barrel:	BeCu, Gold plated over hard Nickel
Spring:	Stainless Steel
Ball:	Stainless Steel

Receptacle

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

Material Housing

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



STT-80W
(Pre-wired versions -28, -30)

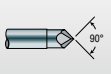
HPR-40W

HPR-40T with HPR-40W

HPA-40 with HPR-40W

ECR-1W-2

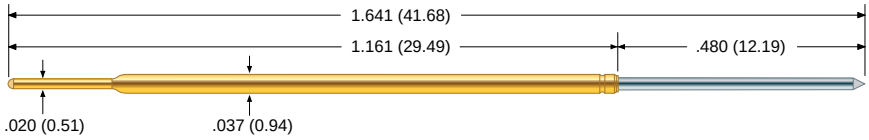
Tip Style

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

Metrix™

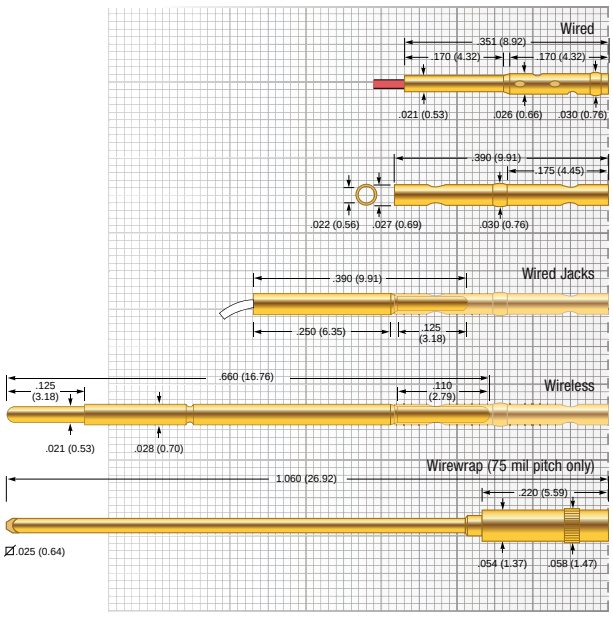
Series	Size	Tip Style	Spring Force
MXLT	39	U	4.5

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.
Availability is based on current levels of usage and demand.



MXLT-50

50 mil (1.27 mm)



STT-80W
(Pre-wired versions -28, -30)

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:	
• Standard Spring:	.400 (10.16)
• Alternate Spring:	.350 (8.89)
• High Spring:	.350 (8.89)
Operating Temperature:	-55°C to +105°C

Spring Force in oz. (grams)

	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:	Music Wire
High:	Music Wire
Ball:	Stainless Steel

Receptacle

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

Metrix™

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

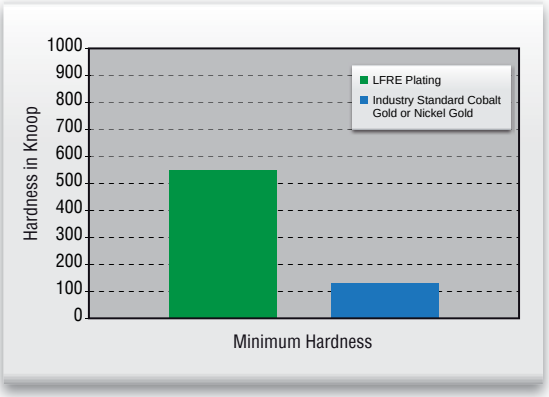
The Lead Free Challenge

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

ECT Lead Free POGO® Series

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

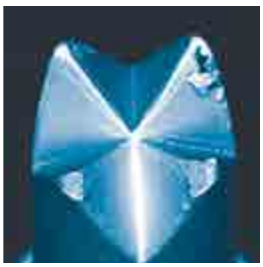
- **LFRE Plating**
  Our Lead Free probe incorporates a harder and slicker plating that not only resists wear but also reduces solder and debris transfer.
- **Higher Preload**
  All of our LFRE probes incorporate higher preloads. Higher preload reduces spring force variation with board flex and increases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



LFRE Plating vs. the Industry Standard Plating

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

Plating



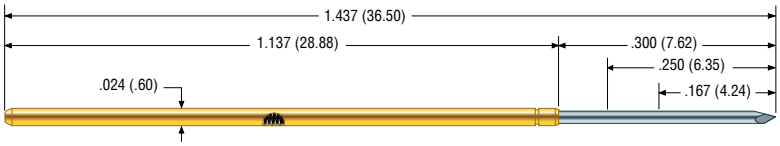
Industry Standard Gold

LFRE Plating

Contaminant Transfer

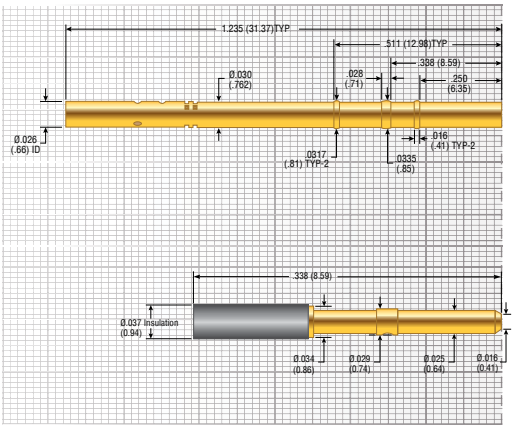
Industry Standard Gold

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

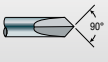
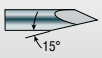
Plunger:	High performance alloy LFRE proprietary plating
Barrel:	Nickel Silver, Gold plated
Spring:	Stainless Steel

Receptacle

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

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

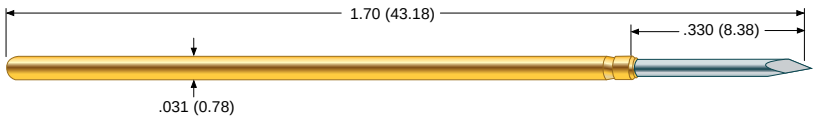
Tip Style (ADDITIONAL TIPS AVAILABLE)

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)

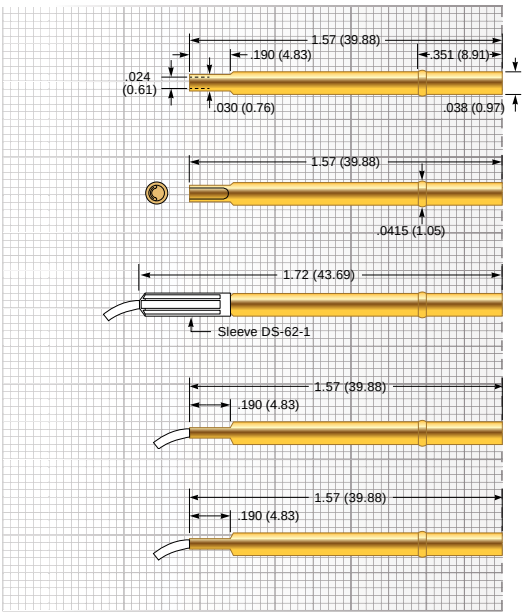
Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

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

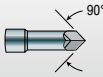
HPR-72W-1

HPR-72W-4
FASTITE® Insertion

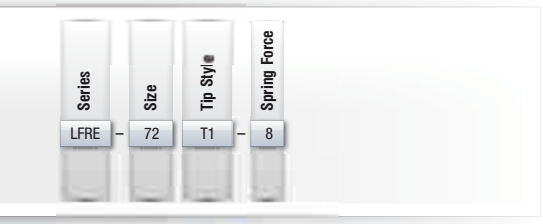
HPR-72W-28

HPR-72W-30

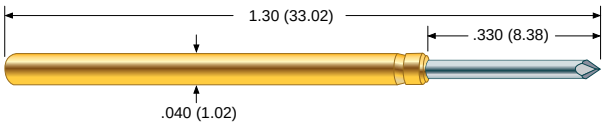
Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I	I8	I15	I40	J	T1
Ø .035 (0.89)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .020 (0.51)	Ø .019 (0.48)
						

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

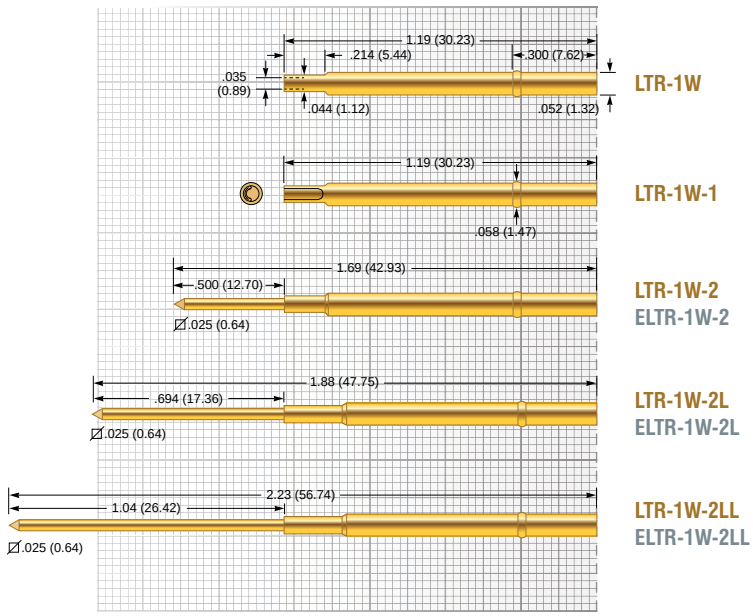


Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels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

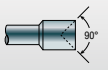
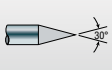
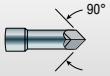
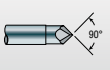


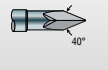
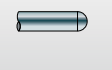
LFRE-1

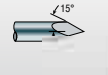
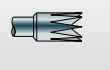
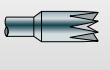
75 mil (1.91 mm)



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 .021 (0.51)	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 (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:	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

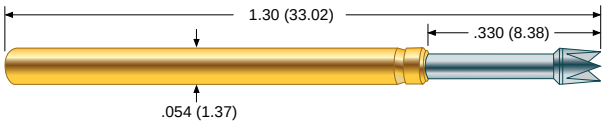
- LTR Housing: Work-hardened Nickel Silver, Gold plated over hard Nickel
- ELTR Housing: Work-hardened Nickel Silver, unplated

Post: Phosphorous Bronze, Gold plated

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:	-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)
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:	Stainless Steel
Ball:	Stainless Steel

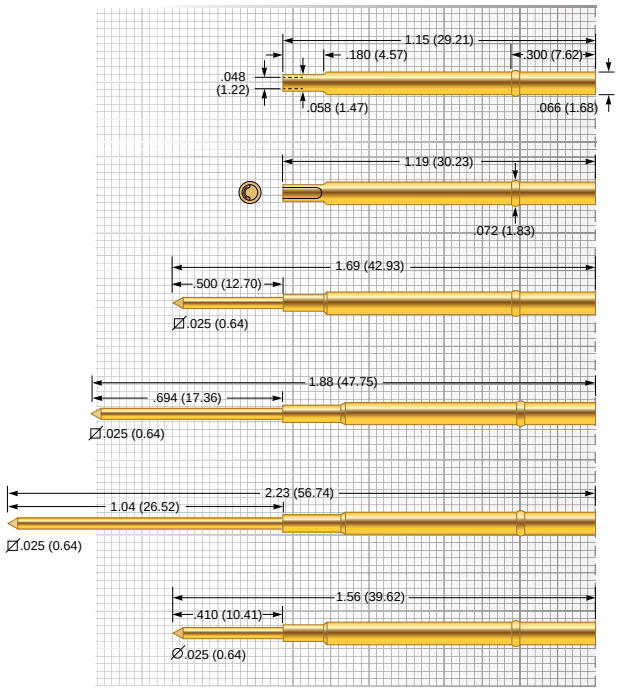
Receptacle

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

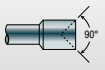
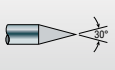
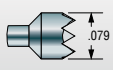
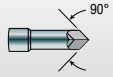
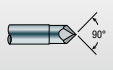
Material

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

Post: Phosphorous Bronze, Gold plated

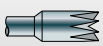


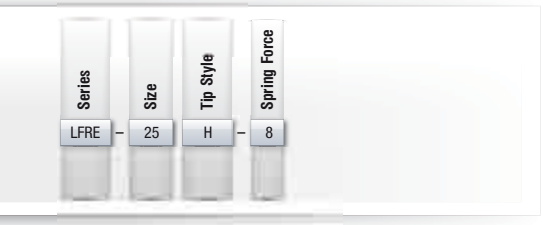
Tip Style (ADDITIONAL TIPS AVAILABLE)

A	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)




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

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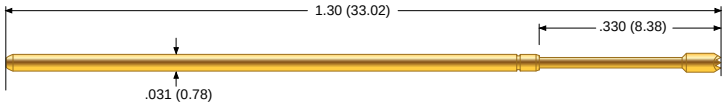
POGO-62

50 mil (1.27 mm)



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 (113)
Alternate	- 6	2.15 (61)	6.0 (170)

Electrical (Static Conditions)

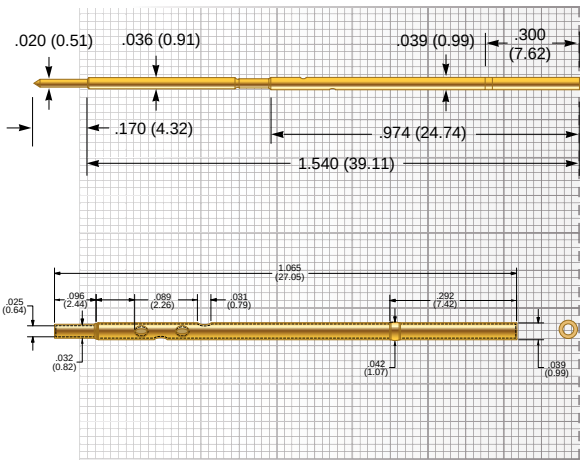
Current Rating:	3 amps
Average Probe Resistance:	<15 mOhms

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



DER-050

HPR-62W-SS

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 .020 (0.51)	Ø .019 (0.48)	Ø .019 (0.48)	Ø .038 (0.97)	Ø .019 (0.48)
						

PogoPlus Bias Ball Design

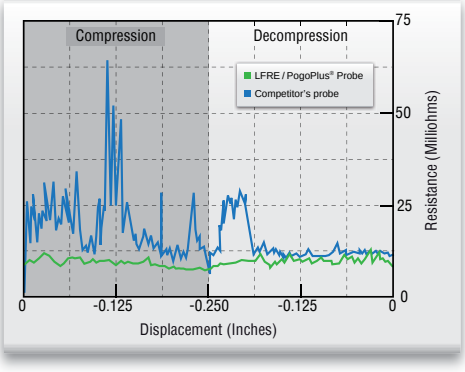
The PogoPlus internal bias ball design guarantees uninterrupted electrical contact with the probe sidewall virtually eliminating probe related false opens.

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

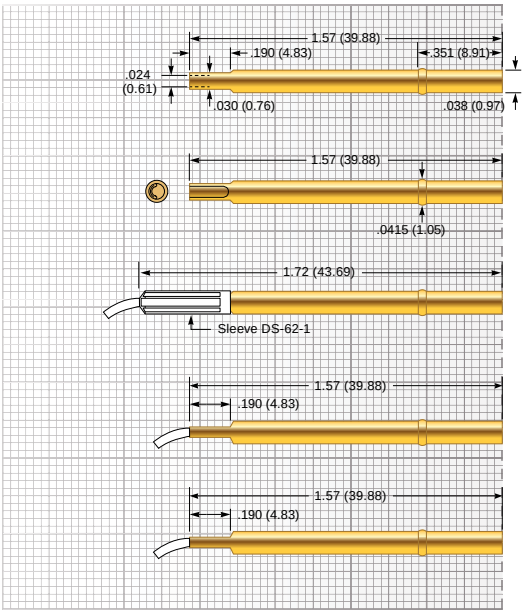
Resistance performance comparison of a PogoPlus® bias design to a conventional bias design, during the full compression / decompression cycle of the probe.

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)

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

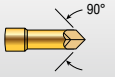
Materials and Finishes

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

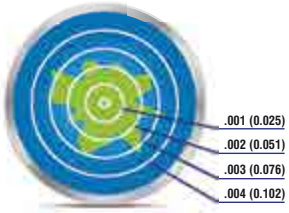
Tip Style (ADDITIONAL TIPS AVAILABLE)

H	I...-S	I8...-S	J	T1...-S	T20...-S	T38...-S
Ø .035 (0.89)	Ø .017 (0.43)	Ø .017 (0.43)	Ø .020 (0.51)	Ø .019 (0.48)	Ø .019 (0.48)	Ø .038 (0.97)
						

U
Ø .019 (0.48)

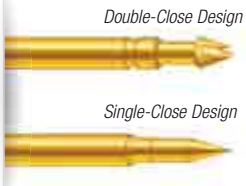

Tighter Pointing Tolerances

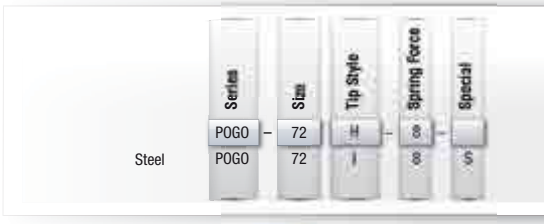
ECT Pogo contacts deliver superior pointing accuracy demonstrated by test results measuring sideload TIR.



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.
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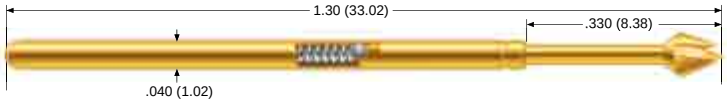
Availability is based on current levels of usage and demand.

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 (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:	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

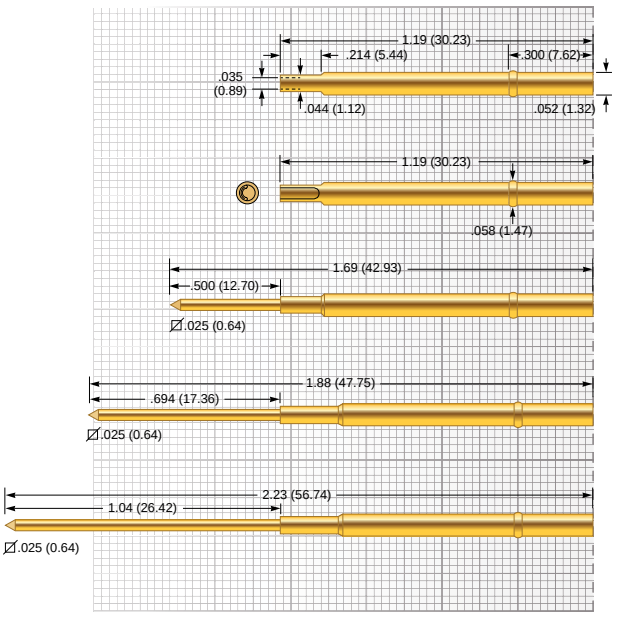
Receptacle

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

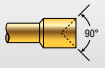
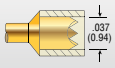
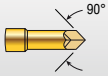
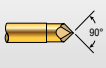
LTR-1W-1

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 .020 (0.51)	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)
						

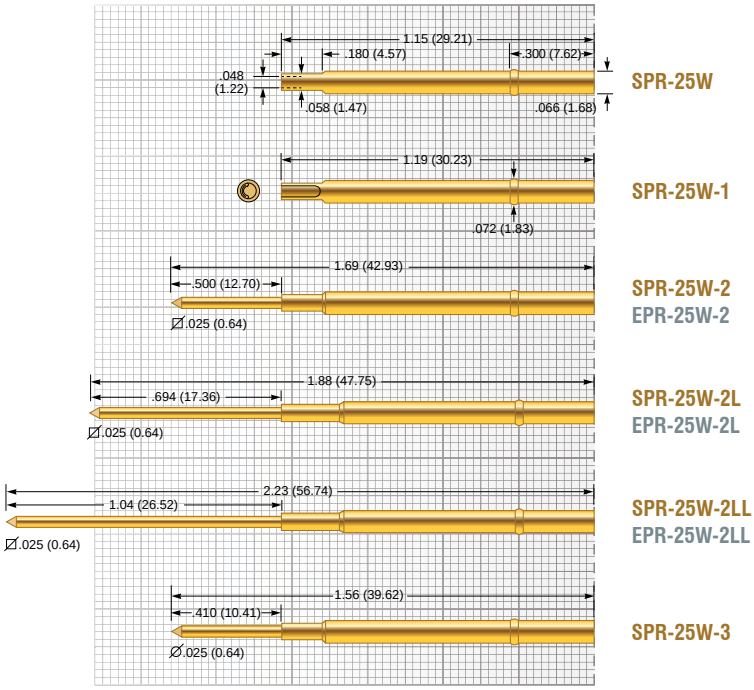
T24...-S	T30...-S	UN	V	Z	Z1
Ø .022 (0.56)	Ø .022 (0.56)	Ø .021 (0.53)	Ø .047 (1.19)	Ø .047 (1.19)	Ø .038 (0.97)
					

Pogo Plus®

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-25

100 mil (2.54 mm)



SPR-25W

SPR-25W-1

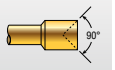
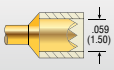
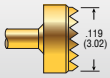
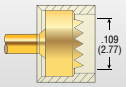
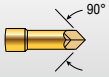
SPR-25W-2
EPR-25W-2

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 .033 (0.84)
						

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...-S	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)
	

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

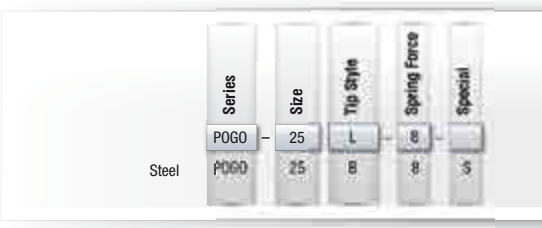
Plunger:	Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	Stainless Steel
Ball:	Stainless Steel

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

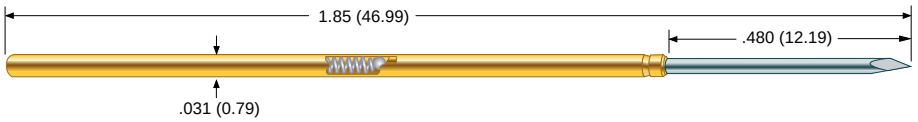
Post: Phosphorous Bronze, Gold plated



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)

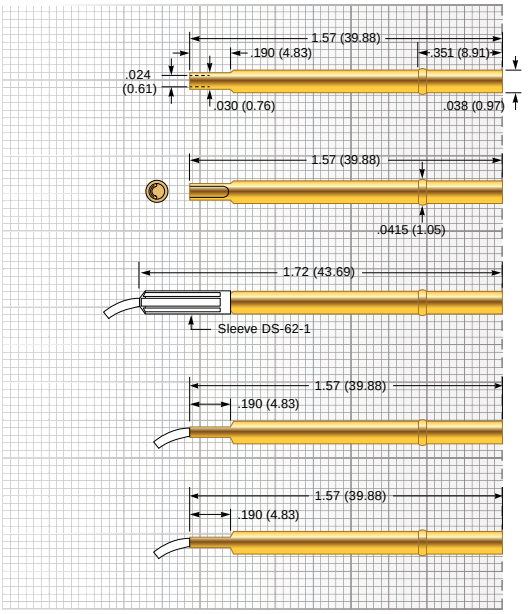
Current Rating:	6 amps
Average Probe Resistance:	<100 mOhms

Materials and Finishes

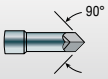
Plunger:	High performance alloy LFRE proprietary plating
Barrel:	Heat treated BeCu, Gold plated over hard Nickel
Spring:	Stainless Steel
Ball:	Stainless Steel

Receptacle

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



Tip Style (ADDITIONAL TIPS AVAILABLE)

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

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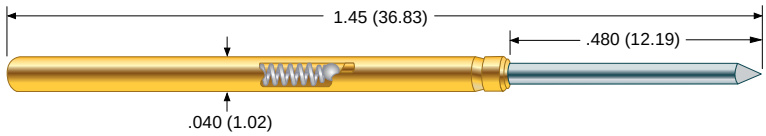
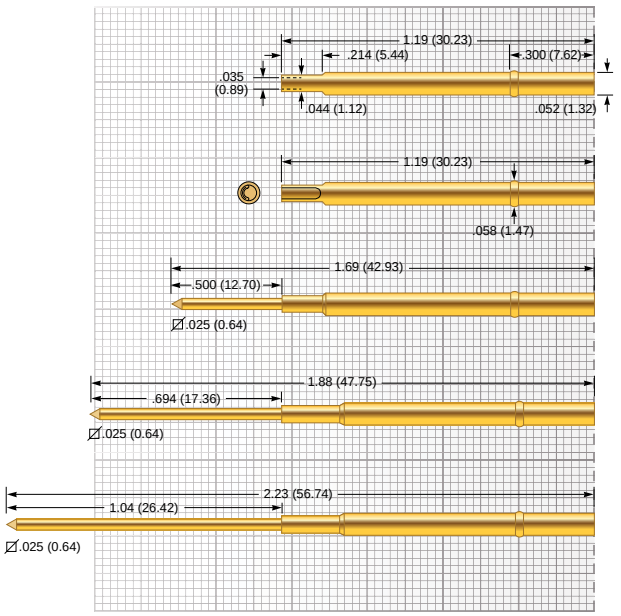
Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels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



LFLT-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:	-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:	Music Wire
• High:	Music Wire
Ball:	Stainless Steel

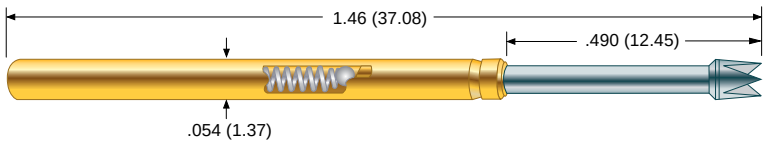
Receptacle

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

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-25

100 mil (2.54 mm)



Mechanical

Recommended Travel:	.315 (8.00)
Full Travel:	
• Standard Spring:	.400 (10.16)
• Alternate 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 (113)
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)

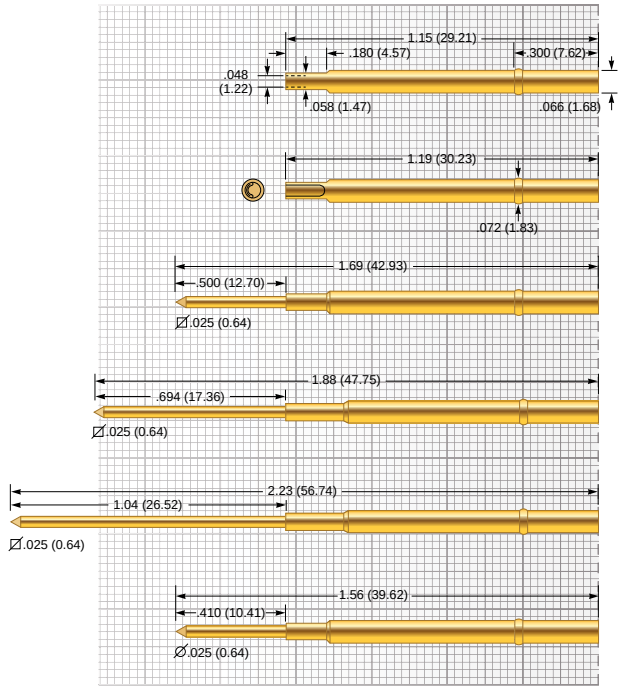
Current Rating:	8 amps
Average Probe Resistance:	<8 mOhms

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

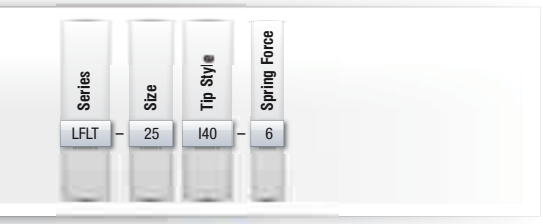
Receptacle

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



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

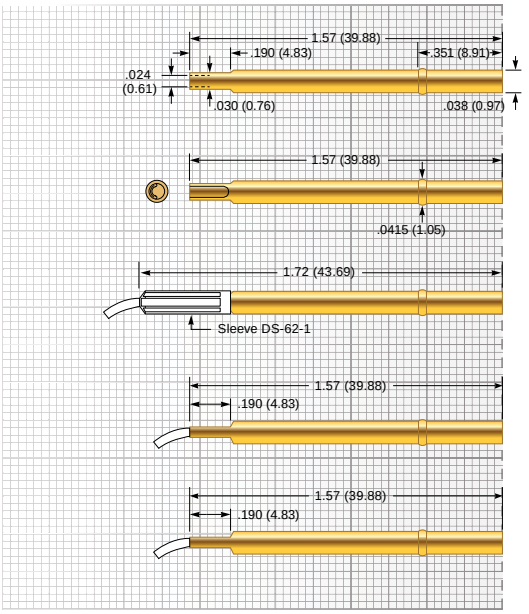
Ball: Stainless Steel

Receptacle

Hole diameter: Ø .039 (0.99)

Suggested drill: #61 or 0.99 mm

Material Housing: Work-hardened BeCu, Gold plated over hard Nickel



HPR-72W

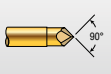
HPR-72W-1

HPR-72W-4
FASTITE® Insertion

HPR-72W-28

HPR-72W-30

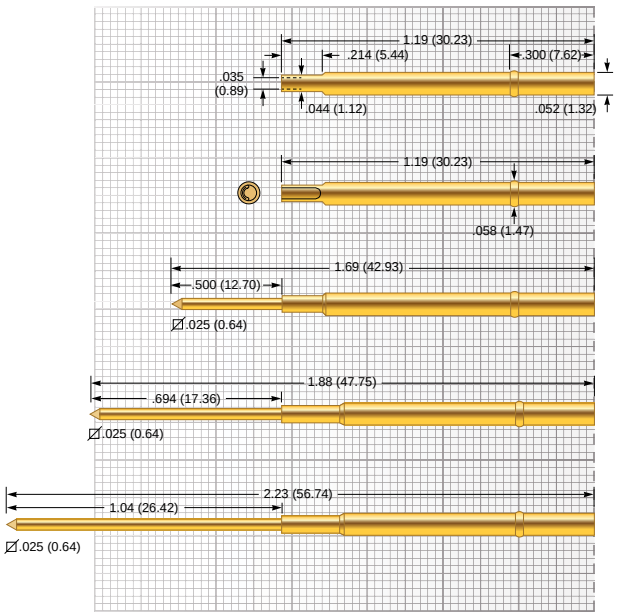
Tip Style (ADDITIONAL TIPS AVAILABLE)

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

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-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:	-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:	Music Wire
• High:	Music Wire
Ball:	Stainless Steel

Receptacle

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

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:	
• Standard Spring:	.400 (10.16)
• Alternate Spring:	.400 (10.16)
• High Spring:	.400 (10.16)
• Ultra High Spring:	.350 (8.89)
• 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 (113)
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)

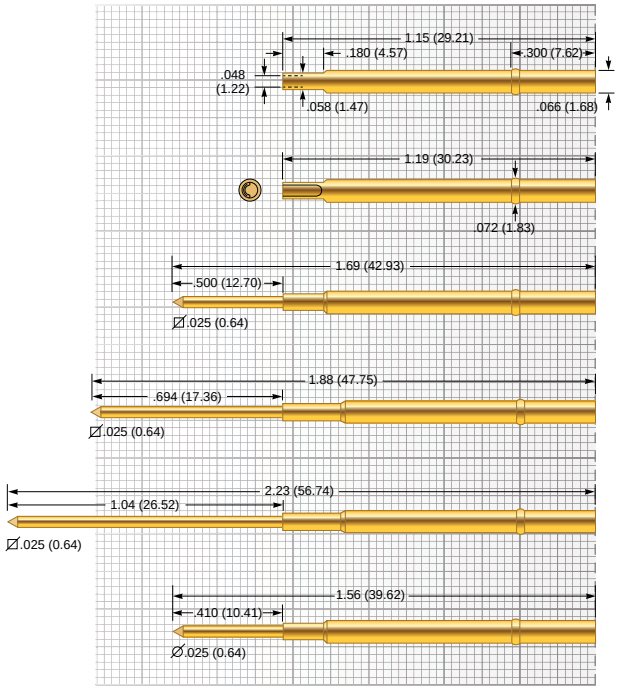
Current Rating:	8 amps
Average Probe Resistance:	<8 mOhms

Materials and Finishes

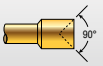
Plunger:	Heat-treated tool Steel or BeCu, Gold plated over hard Nickel
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring	
• Standard:	Music Wire
• Alternate:	Music Wire
• High:	Music Wire
• Ultra High:	Stainless Steel
Ball:	Stainless Steel

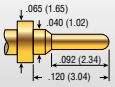
Receptacle

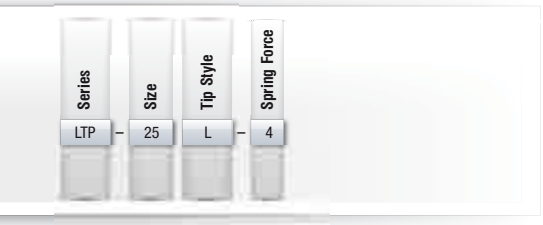
Hole diameter:	Ø .067 to .069 (1.70 to 1.75)
Suggested drill:	#51 or 1.75 mm
Material	
• SPR Housing:	Work-hardened Nickel Silver, Gold plated over hard Nickel
• EPR Housing:	Nickel Silver, unplated
Post:	Phosphorous Bronze, Gold plated



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.
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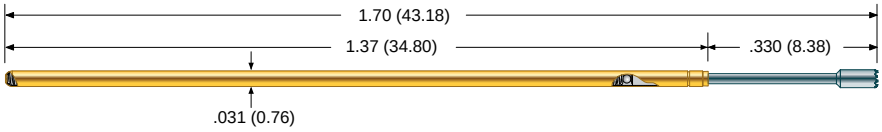
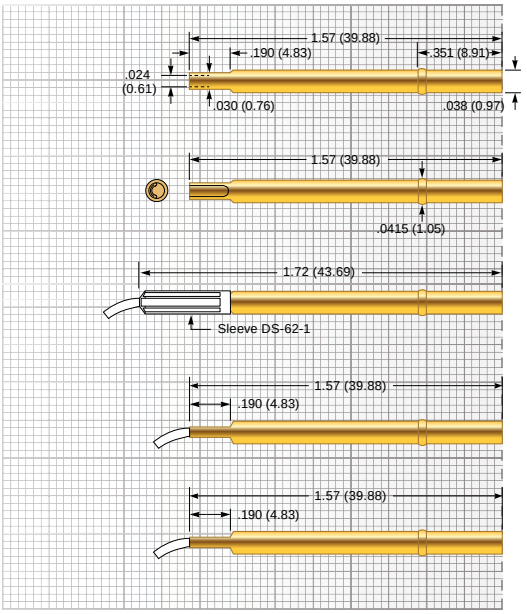


BTP-72

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 (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	3.38 (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)				
						

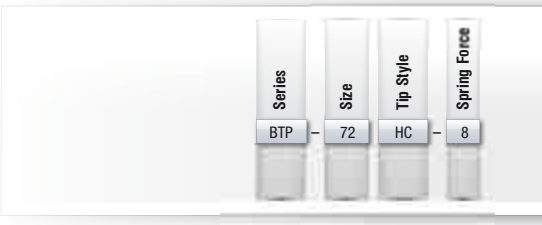
BTP SERIES Bead Target Probes

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

Features

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

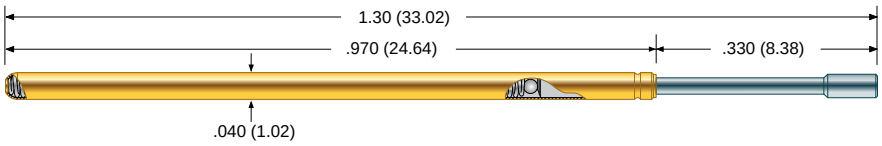
- Pogo Plus® Design
- LFRE Plating
- Flat and "Micro-Textured" Tips



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 (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)

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

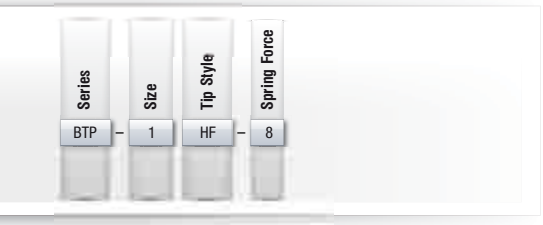
Receptacle

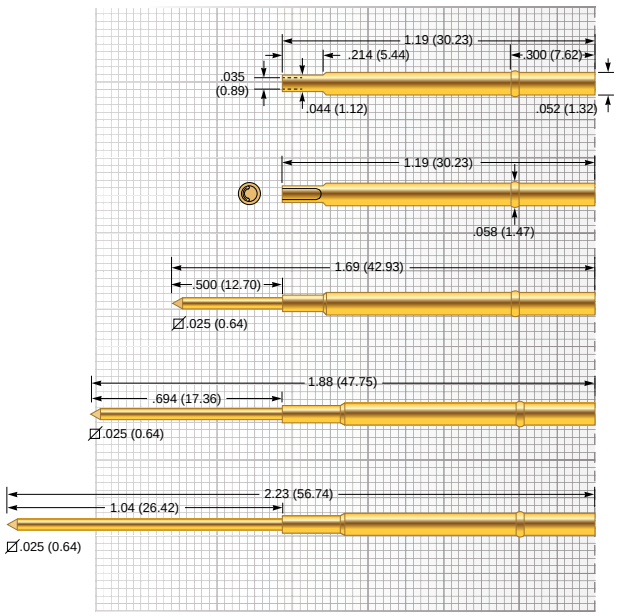
Hole diameter:	Ø .053 to .055 (1.35 to 1.40)
Suggested drill:	#54 or 1.40 mm

Material

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

Post: Phosphorous Bronze, Gold plated





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

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)		
						

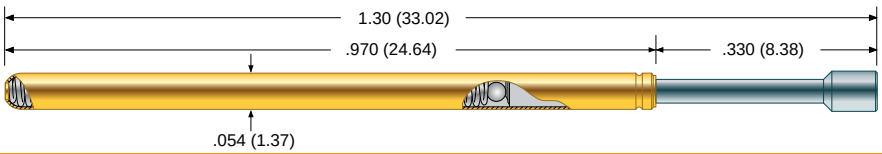
Micro Structured Tip

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.

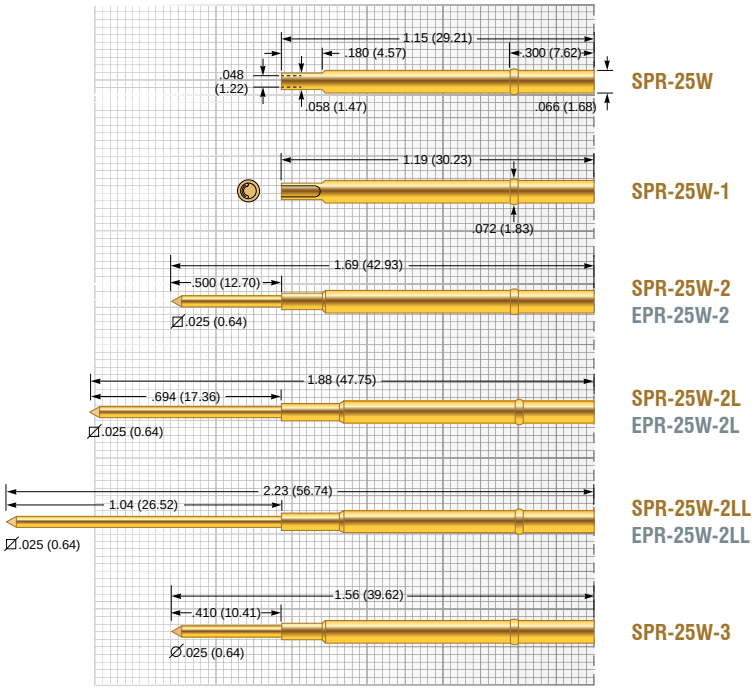
Micro structured Tip

Standard serrated Tip



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 (113)
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

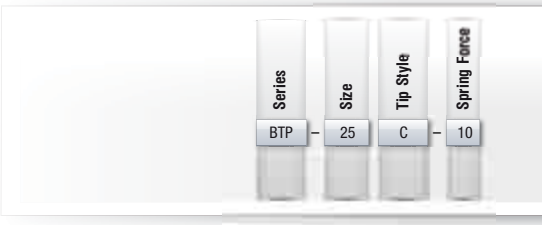
Plunger:	High performance alloy LFRE proprietary plating
Barrel:	Work hardened Phosphor Bronze, Gold plated over hard Nickel
Spring:	Stainless Steel
Ball:	Stainless Steel

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

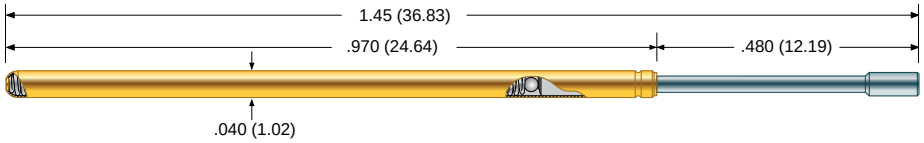
Post: Phosphorous Bronze, Gold plated



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

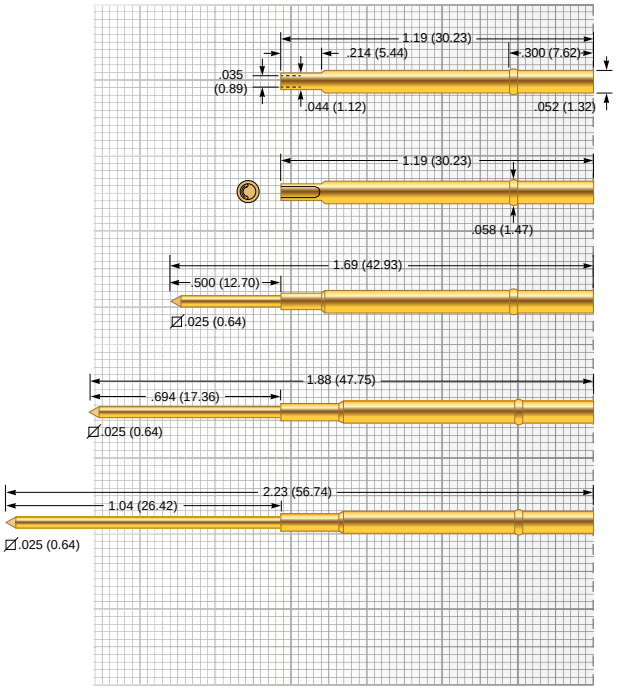
Receptacle

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

Material

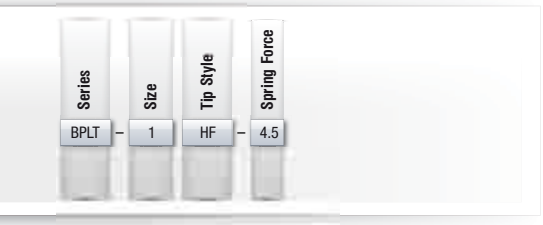
- LTR Housing: Work-hardened Nickel Silver, Gold plated over hard Nickel
- ELTR Housing: Work-hardened Nickel Silver, unplated

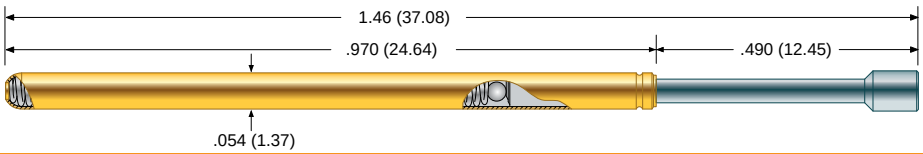
Post: Phosphorous Bronze, Gold plated



Tip Style

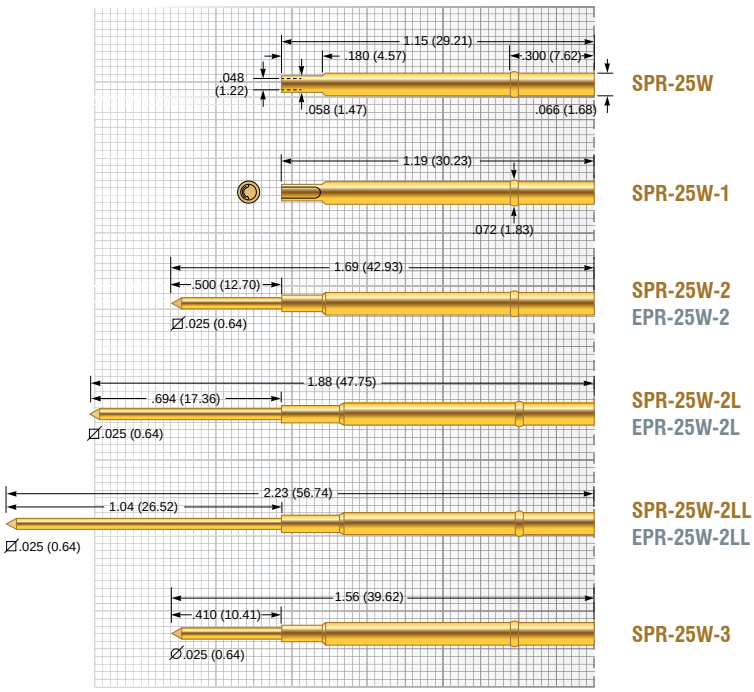
C	F	HF	HL			
Ø .035 (0.89)	Ø .047 (1.19)	Ø .035 (0.89)	Ø .047 (1.19)			
						





BPLT-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:	.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 (113)
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)

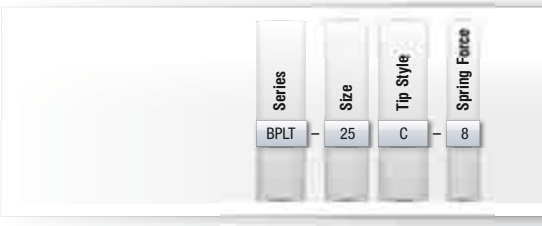
Current Rating:	8 amps
Average Probe Resistance:	<8 mOhms

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.

PP-3070

GSP-2B
GSP-2BL

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.

PP-3070

Personality Pins

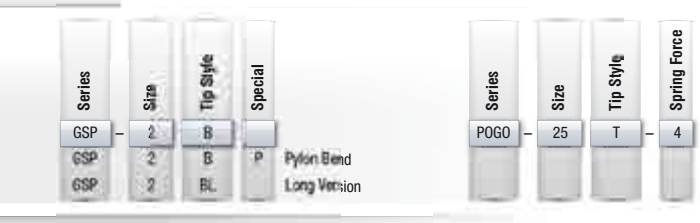
Part number: PP-3070-S

Keysight Part number: Mint Pins 44275P

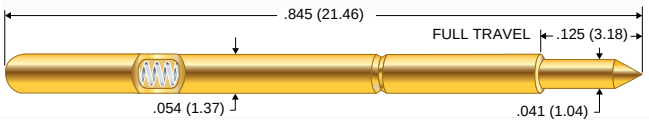
Packing unit: 200 pieces (strip)

Application

Used on fixture interfaces as bottom transfer pins.



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

GSP-2BL

Application GenRad 227x, Pylon, Rhode&Schwarz

Mechanical

Recommended Travel:	.080 (2.03)
Full Travel:	.160 (4.10)
Operating Temperature:	-55°C to +105°C

Spring Force in oz. (grams)

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

Electrical (Static Conditions)

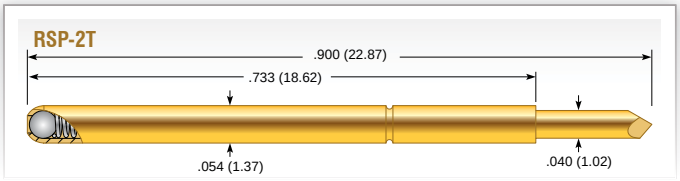
Current Rating:	5 amps
Average Probe Resistance:	<35 mOhms

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

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

RSP-2T
FRP-25T



Application Rhode&Schwarz

Mechanical

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

Spring Force in oz. (grams)

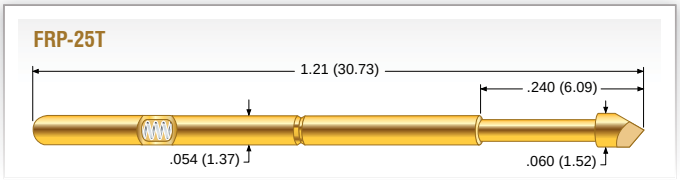
	Preload	Rec. Travel
Standard	1.44 (41)	3.6 (102)

Electrical (Static Conditions)

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

Materials and Finishes

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



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)

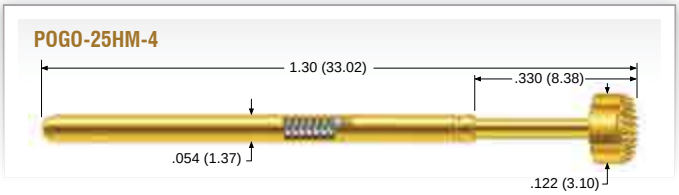
Electrical (Static Conditions)

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

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



Application Keysight/Agilent / HP-3070

Mechanical

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

Spring Force in oz. (grams)

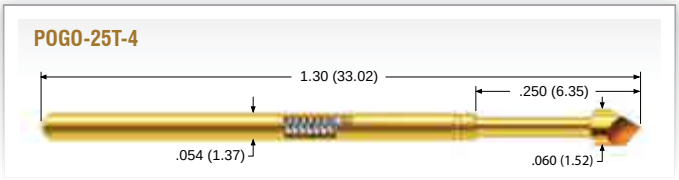
	Order Code	Preload	Rec. Travel
Standard	- 4	1.50 (43)	4.0 (113)

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



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 (113)

Electrical (Static Conditions)

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

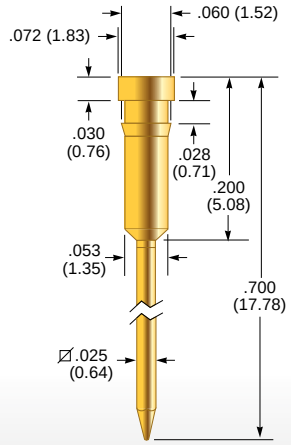
Materials and Finishes

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

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.

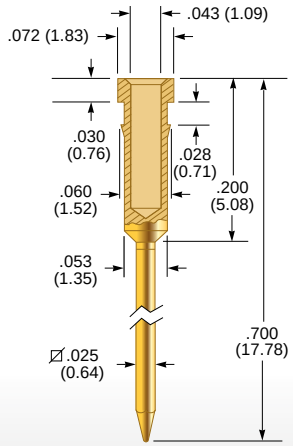
SIP-90
GPP-95

SIP-90-2



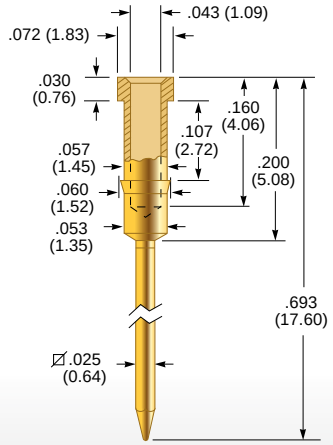
Application	GenRad
Material	Brass, Gold plated
Hole diameter	Ø .055 (1.40)
Suggested drill	#54 or 1.40 mm

SIP-90-3



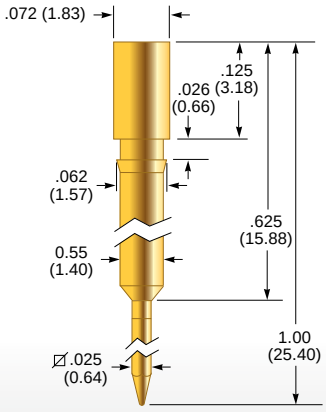
Application	Factron
Material	Brass, Gold plated
Hole diameter	Ø .055 (1.40)
Suggested drill	#54 or 1.40 mm

SIP-90-4



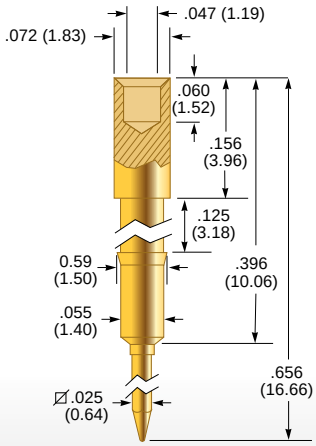
Application	General Interconnect
Material	Brass, Gold plated
Hole diameter	Ø .057 (1.45)
Suggested drill	1.45 mm

SIP-90-5



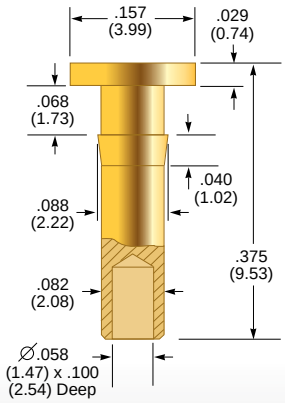
Application	Zehntel
Material	Brass, Gold plated
Hole diameter	Ø .055 (1.40)
Suggested drill	#54 or 1.40 mm

SIP-90-6



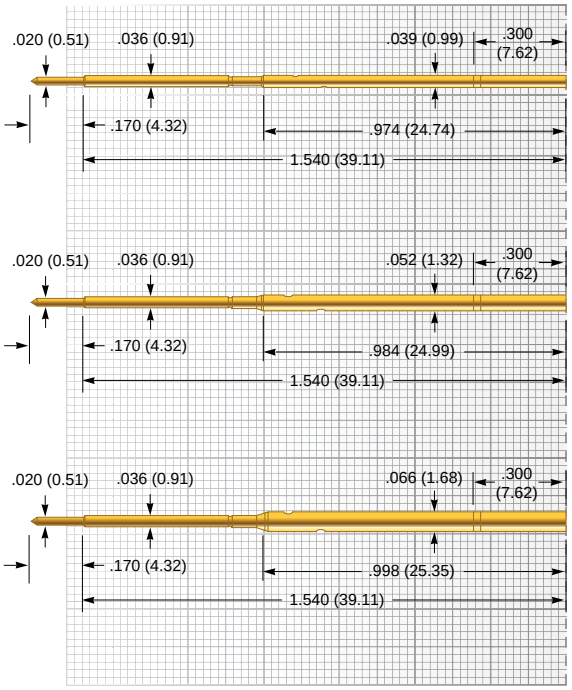
Application	General Interconnect
Material	Brass, Gold plated
Hole diameter	Ø .057 (1.45)
Suggested drill	1.45 mm

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 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 LTP-25

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.

BMP-1 / BMP-1-S / BMP-3

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

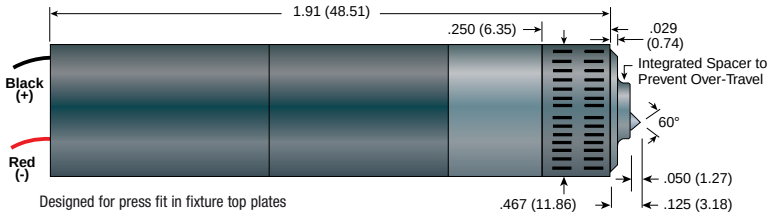
Order Number

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

Tools

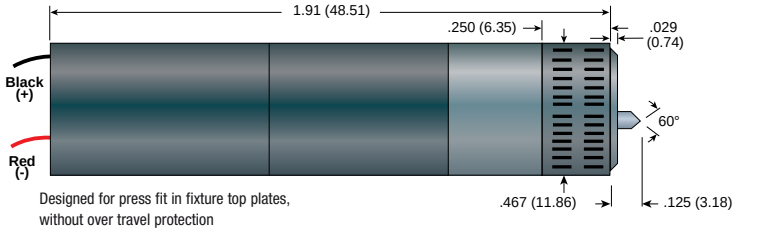
Insertion tool for BMR-1:	RIT-BMP
Extraction tool for BMR-1:	EXT-BMP

BMP-1



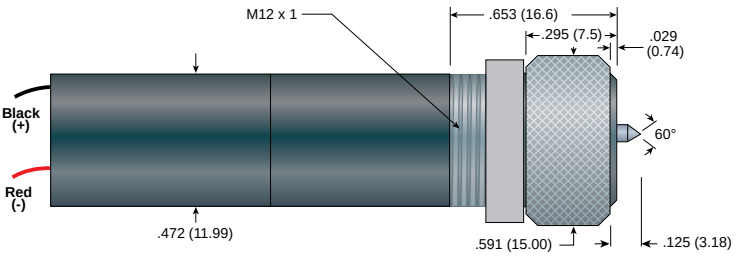
Designed for press fit in fixture top plates

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

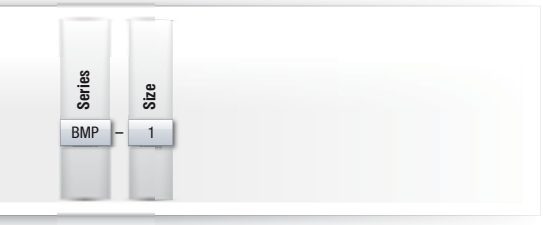
- Bare Board Test
- Loaded Board Test
- Connector / Wire Harness

Benefits

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

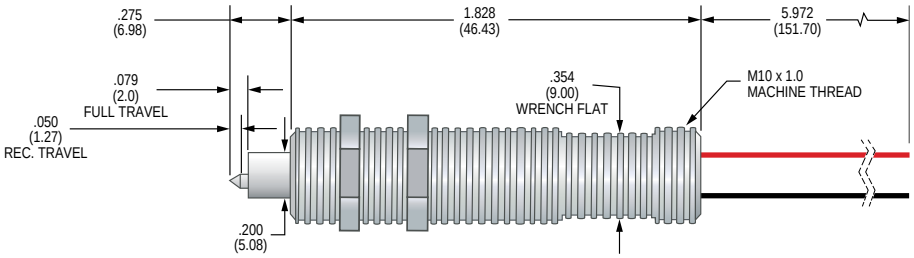
Features

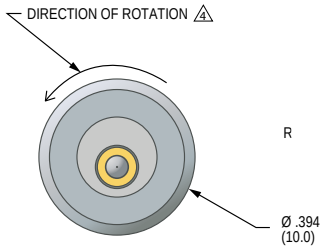
- Permanent Mark
- Controllable Mark Intensity
- Driven by Test Program
- MicroGrain Carbide Tip
- Replaceable Tip

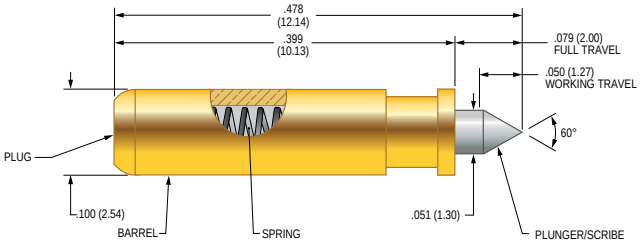


Dimensions in inches (millimeters). Specifications subject to change without notice.
Consult factory for other temperature requirements, and applications below -40°C.
Stocking Disclaimer: Stocking levels for part numbers listed in this catalog are subject to change.
Availability is based on current levels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

BMP-4







BMT-4

Mechanical

Recommended Travel:	.050 (1.27)
Full Travel:	.079 (2.00)
Direction of Rotation:	Counter clock wise
Scribed Diameter:	.050 (1.27)

Spring Force in oz. (grams)

	Preload	Rec. Travel
Standard	2.43 (68.9)	5.0 (141.7)

Electrical (Static Conditions)

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

Materials and Finishes

Plunger Tip:	Carbide
Receptacle:	Stainless Steel

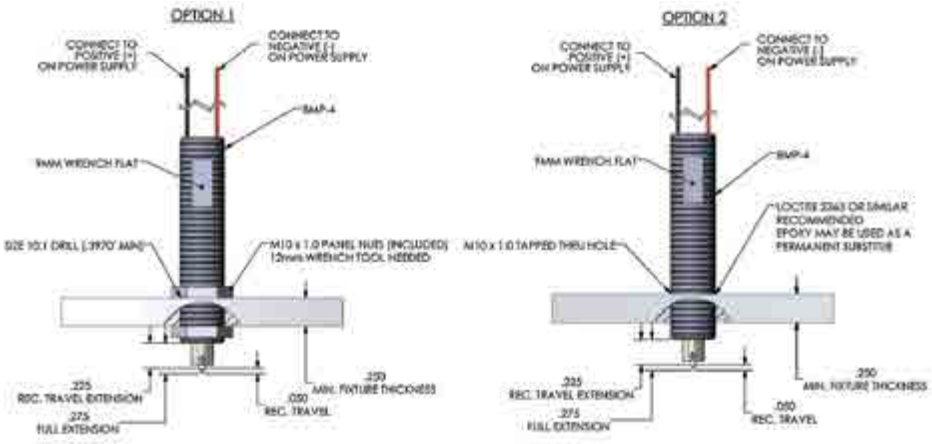
Mounting

	BMP-4
Hole diameter:	Ø .398 (10.1)
	or M10 x 1.0 threaded hole

Order Number

Board Marker:	BMP-4
Repcalement Tip kit:	BMT-4

Mounting Options



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.

BMP-5

Mechanical

Recommended Travel:	.050 (1.27)
Full Travel:	.079 (2.00)
Direction of Rotation:	Counter clock wise
Scribed Diameter:	.050 (1.27)

Spring Force in oz. (grams)

	Preload	Rec. Travel
Standard	2.43 (68.9)	5.0 (141.7)

Electrical (Static Conditions)

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

Materials and Finishes

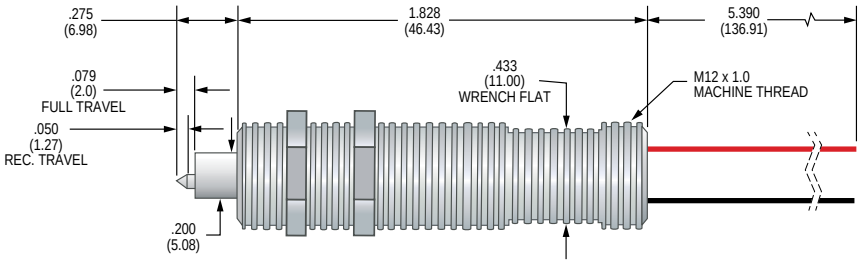
Plunger Tip:	Carbide
Receptacle:	Stainless Steel

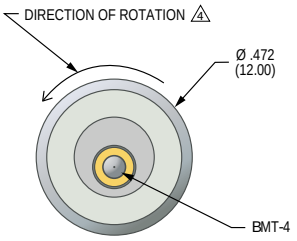
Mounting

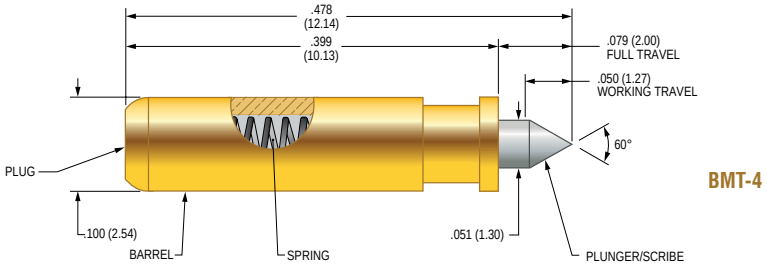
	BMP-5
Hole diameter:	Ø .472 (12.1)
	or M12 x 1.0 threaded hole

Order Number

Board Marker:	BMP-5
Repcalement Tip kit:	BMT-4

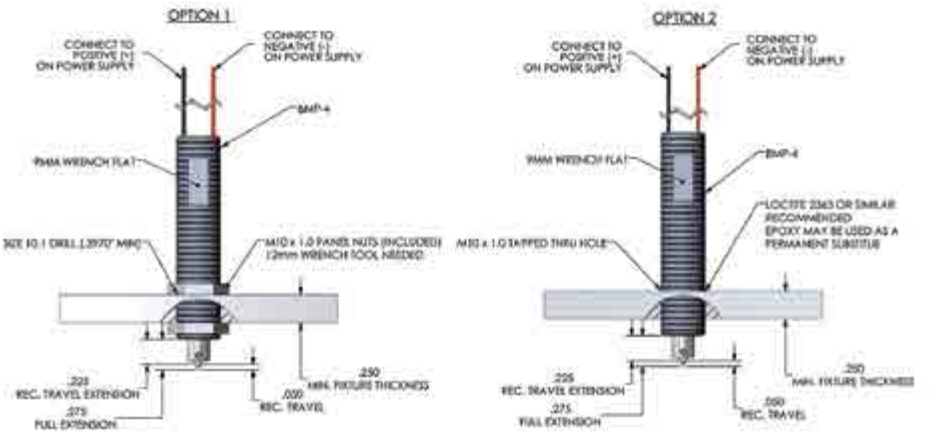






BMT-4

Mounting Options



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.
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