

**Spring Probes for ATE, Connectors, Batteries, Wire Harnesses,  
Semiconductor Packages and General Purpose Applications**



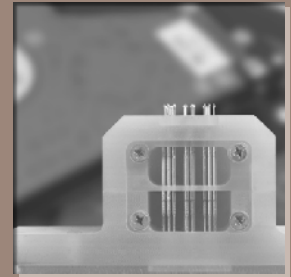
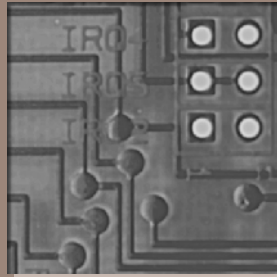
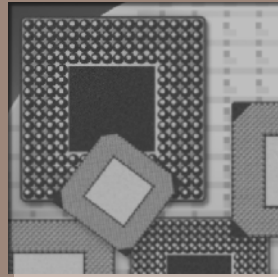
**Semiconductor**



**Board Test**



**Custom Pogos®**



**OSTBY BARTON  
POGO® PROBES**



# Ostby Barton's Experience... It Works for You

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### Plating Legend

Plunger plating is color coded for easy reference.

■ Gold plated    ■ Gold plated steel



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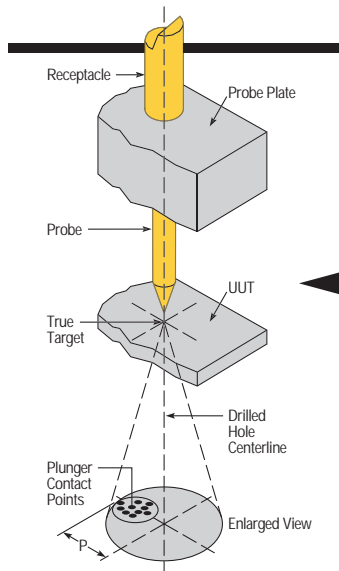
# The Perfect Solution for Your Testing Problem

## Test Probe Selection

Whether you are testing bare or loaded, conventional or SMT PCBs, you can maximize your testing efficiency by selecting the correct probe. Probes are manufactured in a combination of sizes (dimensional configurations), tip styles, and spring pressures to meet a variety of testing factors such as test pad geometry, component lead length, hole size, solder mask, and electrical current/resistance rating. In general, probes are divided into two groups – bare board (short stroke probes) and loaded board (long stroke probes). Short stroke probes usually have a full plunger travel of .160" (4,06 mm) or less, while the longer stroke probe is typically .250" (6,35).

## Probe Selection & Mixed Test Center Applications

Test Centers	Full Plunger Travel		
	.050 (1,27)	.100 (2,54)	.250 (6,35)
.050 (1,27)	IP271	IP261	Pogo-72
.075 (1,91)	Consult Factory	IP40	Pogo-1
.100 (2,54)	MT54	MT554	Pogo-25



## MIXED TEST CENTERS

In some cases, test centers vary on a PCB and you may need to mix probe sizes within a test fixture. This can be accomplished by selecting probes with a similar plunger travel and mounting them accordingly.

## SPRING PRESSURE

Most probe series have several spring pressures. Use the light spring pressure in densely populated areas of your vacuum fixture to insure proper actuation. High pressure springs penetrate contamination more effectively, and should be used in low density areas or in mechanically actuated fixtures where vacuum is

success of SMT PCB testing, it is but one consideration in maximizing tip-to-target accuracy. Other factors include fixture and PCB manufacturing tolerances. These include tooling pin alignment, drill hole perpendicularity, probe platen flatness as well as PCB artwork alignment.

## 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,

**Ostby Barton manufactures probes in a combination of sizes (dimensional configurations), tip styles and spring pressures to accommodate a variety of testing factors.**

not used. As a rule of thumb, use high pressure when possible. If you can't “pull” a sufficient vacuum on your board, then the spring pressure per sq. inch may exceed atmospheric pressure and a light spring pressure may be needed. Spring forces may be  $\pm 20\%$ .

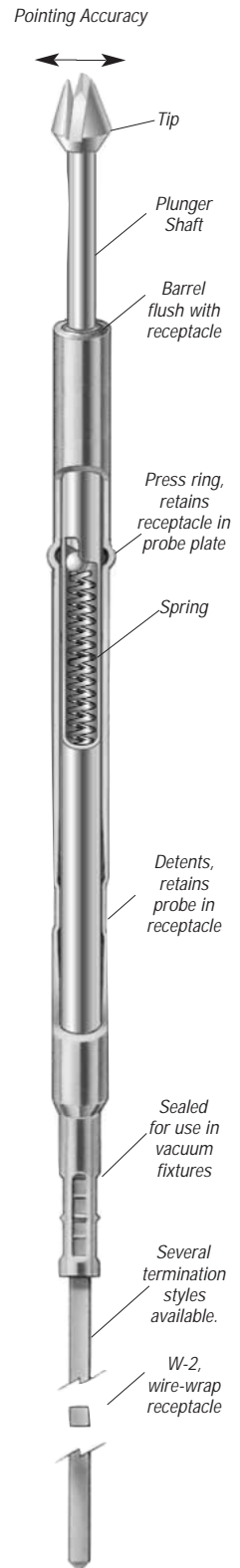
## SMT Probes

A full line of 50 mil (1,27 mm) center SMT Test Probes are available. These probes are designed for use in applications where probe tip to PCB target accuracy and electrical performance is critical. Look for the “SMT” symbol in this catalog as your guide in selecting a SMT probe.

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.

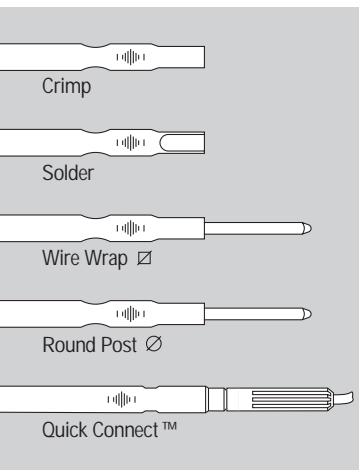
The PogoPlus is also designed to be the world's most durable probe with features like optional stainless-steel MicroSharp™ tips, tough plating, a larger spring volume and enhanced pointing precision.



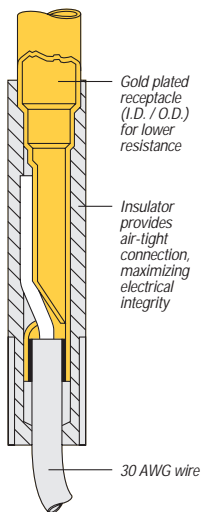
## POINTING ACCURACY (P)

The radial movement of the plunger tip from the centerline of the mounting location is considered the pointing accuracy. The buildup of tolerances between components, as well as the probe design and assembly techniques, dictate the achievable pointing accuracy for a particular probe. While critical to the

## Receptacles



### Quick Connect™ Receptacle



## High Current Probes

High current probes can carry 8-35 amps through a circuit. This is especially useful in non PCB test applications. The HC probe series provides low constant electrical resistance and excellent mechanical life on a variety of test centers. The special internal design provides higher current carrying capacity than "similar looking" probes. The stainless steel springs permit use in high temperature applications while their high pressure provides tip-to-target force minimizing constriction resistance.

## Cyclo-Soldered Probes

The actuation of your vacuum fixture can pull solder fumes, fluxes, dust and smoke from the air. These elements are then deposited, together with friction-induced plating wear, on the bearing surfaces of your probe. Resistance can then skyrocket from under 50 milliohms to 2-3 ohms. In addition, high resistance readings may be intermittent, which makes it nearly impossible to find and replace the problem probes.

To address this situation, Ostby Barton originated and developed the Cyclo-Soldered test probe. This unique process provides a continuous, metallurgically bonded unit ensuring low and stable electrical constant resistance from one end of the probe to the other. When the bearing surfaces become completely insulated by contaminants, the spring (which is silver soldered to the plunger and barrel) takes over as the path of least resistance and remains constant throughout the probe's life. The maximum probe resistance is limited to that of the spring itself, which is typically under one ohm.

The Cyclo-Soldered process is available on selected probes shown in this catalog. Please consult the factory for more information.

## Custom Probes

Ostby Barton has the industry's largest collection of custom probe designs. We had electrical contact design experience even before electrical contacts were adopted for ATE use.

Chances are good that you'll find the solution you need off the shelf. But if your application demands a more unique approach, our engineers will work with you to develop the probe that meets your needs.

## Receptacles

Five receptacle styles are available: crimp, solder, wire wrap, round pin, and Quick Connect™. Some styles are only available in certain sizes (see specific probe series). See the TOOLS section for installation tips.

**Ostby Barton creates more custom probe designs than anyone else in the industry.**

### CRIMP

This reliable connection is used primarily on smaller probe sizes in high density applications where wire wrap is not available or in situations where probe plate thickness inhibits the use of wire wrapping. Push-on terminals can also be used and are commercially available from most connector manufacturers.

### SOLDER

This termination provides excellent electrical integrity for high reliability applications. It is used primarily in low density situations.

### WIRE WRAP

These terminations are strong and provide excellent electrical integrity. It is the most common termination used in ATE fixturing. Connections can be made quickly by skilled technicians. Push-on terminals which fit the standard .025" (0,63 mm) square post can also be used.

### ROUND POST

Round Post receptacles with .025" (0,63 mm) diameter posts are used with .100" (2,54 mm) center connectors and/or ribbon cable assemblies for mass termination.

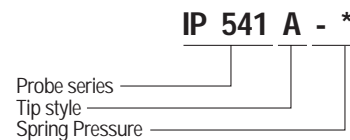
### QUICK CONNECT™

Quick Connect termination provides exceptional contact integrity and is available only on SMT receptacles. Connections can be made quickly and wiring mistakes can be corrected easily without damaging the receptacles.

## Ordering Information

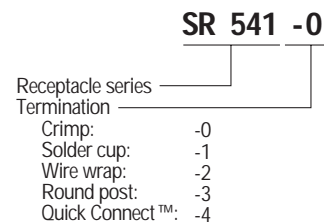
### PROBES

Specify probe series, tip style, and spring force as shown below.



### RECEPTACLES

Specify receptacle series and termination method as shown below.



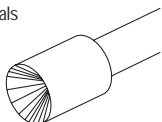
# Probe Tip Selection and Applications

More selections to choose from... Ostby Barton.

Most tip styles can be used in a variety of applications. Factors to consider for loaded board tip selection are lead length (bent or straight), cleanliness and pad size. In general, tips with sharp points and internal cutting edges (to trap the lead) such as the crown or tulip, are excellent choices. To penetrate through contamination on bare boards choose a tip with sharp external cutting edges, like the chisel or star tip. These tips may mark the contact surface. As an alternative, use the convex tip on boards which are clean and free of contaminants. Experiment with several different styles until you find the one that works for your application.

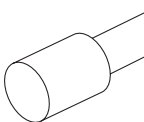
**A** Concave

Long leads, terminals and wire wrap posts.



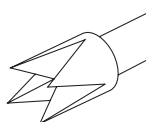
**F** Flat (headed)

Gold edge fingers. Provides positive contact without leaving any marks or indentations.



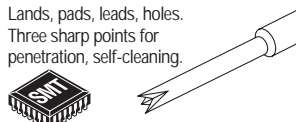
**L** Crown

Lands, pads, leads. Four sharp points for penetration, self-cleaning.



**U** 3 Point Crown

Lands, pads, leads, holes. Three sharp points for penetration, self-cleaning.



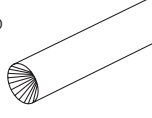
**AE** Target

Lands, pads, leads, holes. Self-centers on offset leads, for contaminated boards.



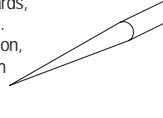
**G** Cup Shaft

Short leads, terminals, wire wrap posts, small-plated holes.




**N** One-piece Flexi

Contaminated boards, conformal coating. Excellent penetration, flexes for optimum point location.



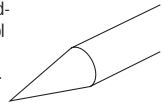
**UN** Trident

For pads, leads and vias.



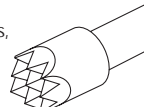
**B** Spear Tip

Lands, pads, plated-through holes. Tool steel holds sharp point, very durable.



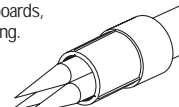
**H** Serrated

Lands, pads, leads, terminals. Nine points, high current, periodic tip cleaning required.



**N3** Tri-Needle

Contaminated boards, conformal coating.



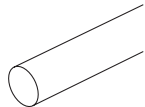
**V** Tulip

Plated-through holes and short or long component leads, self-cleaning.

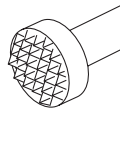


**C** Flat

Gold edge fingers. Provides positive contact without leaving any marks or indentations.



**HM** HP Receiver Probe



**P** Star

Plated-through holes, lands, pads. Best contact reliability for holes, self-cleaning.



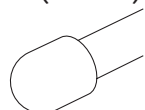
**X** Tapered Crown

Lands, pads, leads, holes. Four outer points tapered to lead into hole, self-cleaning.



**D** Spherical Radius (headed)

Gold edge fingers. Provides positive contact without leaving any marks or indentations.



**I** Pads, vias micro vias

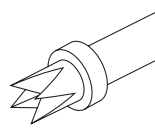


**I35**



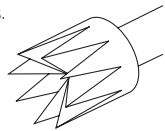
**R** Ringed Crown .040"

Lands, pads, leads. Four sharp points, ideal for fine line testing, self-cleaning.



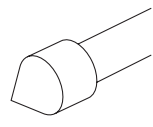
**Z** Eight Point

Lands, pads, leads. Eight sharp points for penetration, self-cleaning.



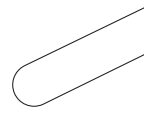
**E** Convex

Plated-through holes. Use on contamination-free boards, leaves no marks or indentations.



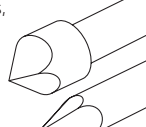
**J** Spherical Radius

Connectors. Provides positive contact without leaving any marks or indentations.




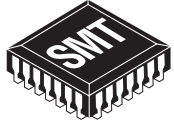
**T** Chisel

Plated-through holes, test pads, vias

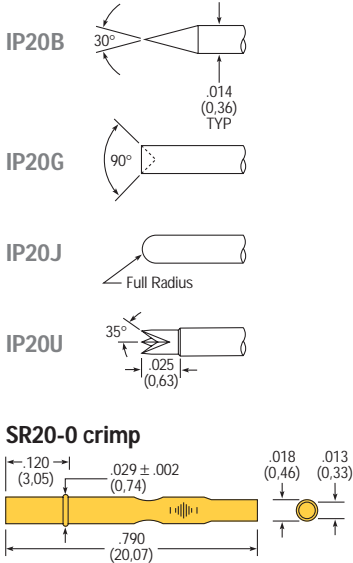
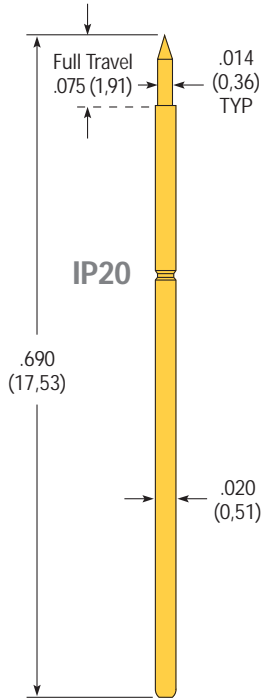


**T41, T31, T1**

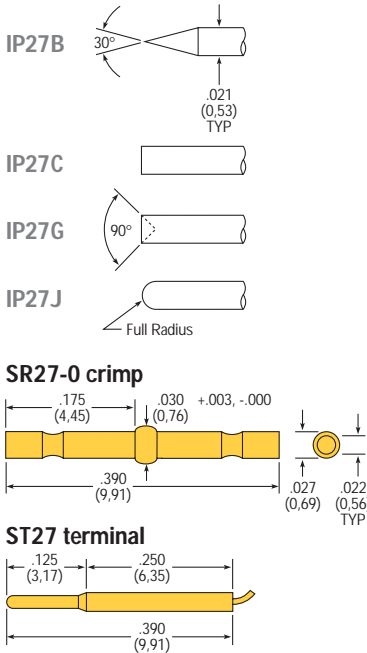
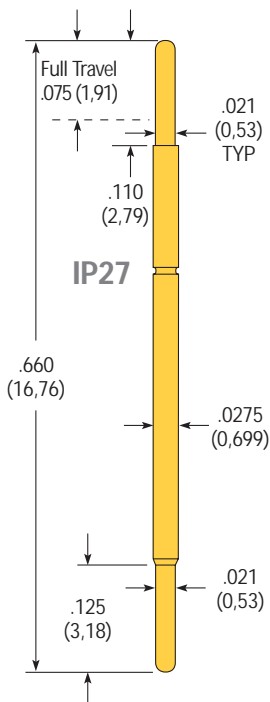




# IP20 IP27



**ORDERING INFORMATION:**  
To order, specify tip style. Example: IP20B is a "B" tip with a standard light spring pressure.



**ORDERING INFORMATION:**  
To order, specify tip style. Example: IP27C is a "C" tip with a standard light spring pressure.

Specifications subject to change without notice.  
Drawings not to scale.  
Optional tip styles, spring pressures, and materials available, contact factory for more information.

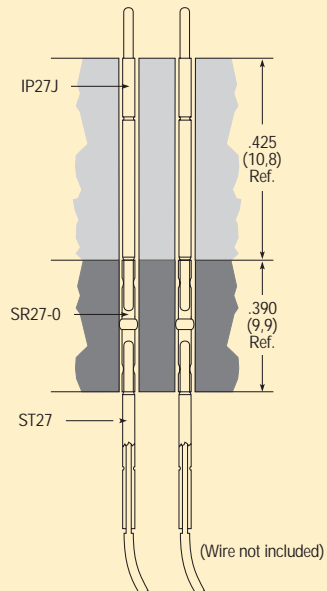
## Test Probes for Bare SMT and Substrate Testing

### SPECIFICATIONS

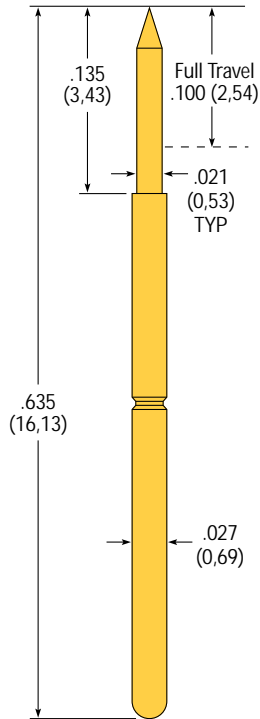
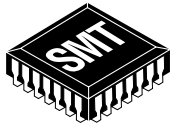
PROBE SERIES	IP20	IP27
Test Centers	.030 (0,762)	.039 (1,00)
Mechanical		
Max. Plunger Travel	.075 (1,91)	.075 (1,91)
Recom. Working Travel	.050 (1,27)	.050 (1,27)
Mechanical Life (cycles)	>250,000	>1,000,000
Spring Pressure		
Light: initial	.4 oz. (11g)	.8 oz. (23g)
@ working travel	1.4 oz. (40g)	1.8 oz. (51g)
Materials & Finishes		
Plunger	Hardened Beryllium Copper, Gold plated over Nickel plate	Hardened Beryllium Copper, Gold plated over Nickel plate
Barrel	Hardened Beryllium Copper, Gold plated (I.D. & O.D.) over Nickel plate	Work hardened Nickel Silver, Gold plated (I.D. & O.D.) over Nickel plate
Spring	Music Wire, Silver plated	Stainless Steel, Silver plated
Operating Range (typical)	-55°C to + 105°C	-55°C to + 150°C
Electrical		
Current Rating (static conditions)	2 amps	2 amps
Avg. Resistance (mOHMS)	50	35

RECEPTACLE SERIES	SR20	Uses Insertion Tool #T20-0	SR27	Uses Insertion Tool #T27-0
Mounting Hole Size	.0265/.0276 (0,67/0,70)		.0285/.0295 (0,72/0,75)	
Suggested Drill Size	0,70 mm		#69 or 0,75 mm	
Suggested Wire Gauge	30 AWG		28-30 AWG	
Materials & Finishes	Hardened Beryllium Copper, Gold plated (I.D. & O.D.) over Nickel plate		Work hardened Nickel Silver, Gold plated (I.D. & O.D.) over Nickel plate	
Terminations	Crimp		Crimp, terminal	

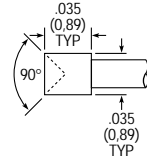
Pre-terminated receptacles available, contact factory for information.



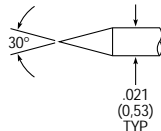
# IP261



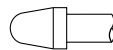
IP261A



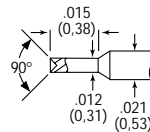
IP261B



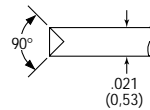
IP261D



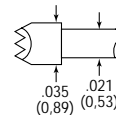
IP261G12



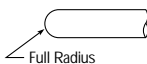
IP261G21



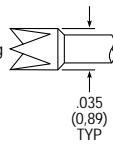
IP261H



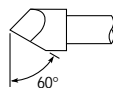
IP261J



IP261L Self Cleaning



IP261T



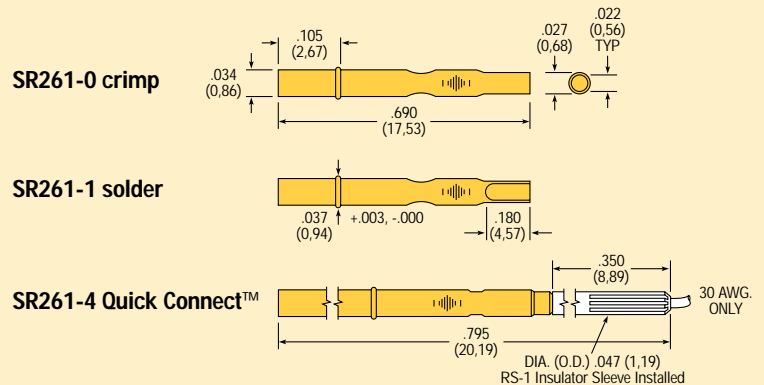
## Test Probes for Bare and Loaded SMT PCB Testing

### SPECIFICATIONS

PROBE SERIES	IP261
Test Centers	.050 (1,27)
Mechanical	
Max. Plunger Travel	.100 (2,54)
Recom. Working Travel	.067 (1,70)
Mechanical Life (cycles)	>1,000,000
Spring Pressure	
Light: initial	.6 oz. (17g)
@ working travel	2.8 oz. (79g)
Heavy: initial	.8 oz. (23g)
<b>-1</b> @ working travel	3.7 oz. (105g)
Materials & Finishes	
Plunger	Hardened Beryllium Copper, Gold plated over Nickel plate
Barrel	Work hardened Phosphor Bronze, Gold plated (I.D. & O.D.) over Nickel plate
Spring — light:	Stainless Steel, Silver plated
— heavy:	Music Wire, Silver plated
Operating Range (typical)	Light -55°C to +150°C Heavy -55°C to +105°C
Electrical	
Current Rating (static conditions)	3 amps
Avg. Resistance (mOHMS)	35

RECEPTACLE SERIES	SR261 (Uses Insertion Tool #T261-0)
Mounting Hole Size	.035/.0365 (0,89/0,93)
Suggested Drill Size	#64 or 0,92 mm
Suggested Wire Gauge	28-30 AWG
Materials & Finishes	Work hardened Nickel Silver, Gold plated over Nickel plate
Terminations	Crimp, solder, Quick-Connect™

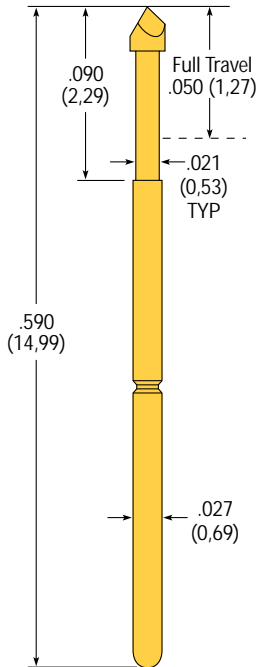
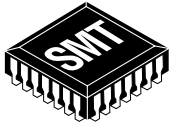
One RS-1 insulator sleeve is provided with each Quick Connect™ receptacle. Contact factory for price and delivery on additional quantities.



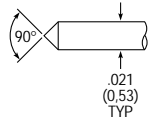
Specifications subject to change without notice.  
 Drawings not to scale.  
 Optional tip styles, spring pressures, and materials available, contact factory for more information.

**ORDERING INFORMATION:** To order, specify tip style and spring pressure. Example: IP261A is an "A" tip with a light spring. For a heavy spring pressure, add -1 to the model number, i.e., IP261A-1.

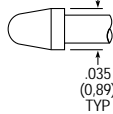
# IP271



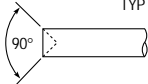
IP271B



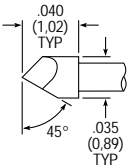
IP271D



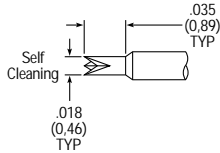
IP271G



IP271T



IP271U



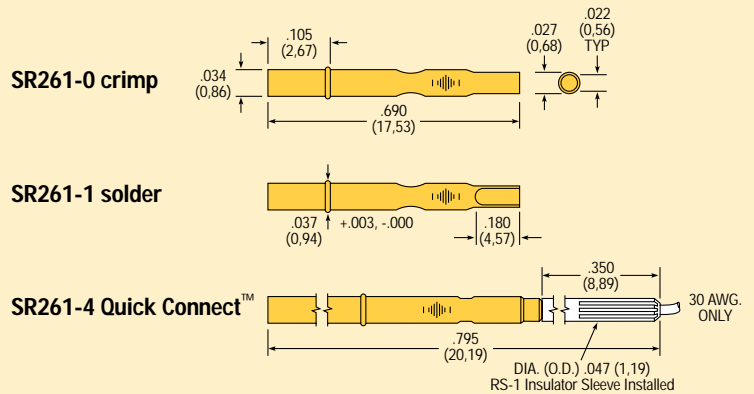
## Test Probes for Bare and Loaded SMT PCB Testing

### SPECIFICATIONS

PROBE SERIES	IP271
Test Centers	.050 (1,27)
Mechanical	
Max. Plunger Travel	.050 (1,27)
Recom. Working Travel	.050 (1,27)
Mechanical Life (cycles)	>1,000,000
Spring Pressure	
initial	1.6 oz. (45g)
@ working travel	3.2 oz. (91g)
Materials & Finishes	
Plunger	Hardened Beryllium Copper, Gold plated over Nickel plate
Barrel	Work hardened Phosphor Bronze, Gold plated (I.D. & O.D.) over Nickel plate
Spring — light:	Music Wire, Silver plated
Operating Range (typical)	-55°C to + 105°C
Electrical	
Current Rating (static conditions)	3 amps
Avg. Resistance (mOHMS)	35

RECEPTACLE SERIES	SR261 (Uses Insertion Tool #T261-0)
Mounting Hole Size	.035/.0365 (0,89/0,93)
Suggested Drill Size	#64 or 0,92 mm
Suggested Wire Gauge	28-30 AWG
Materials & Finishes	Work hardened Nickel Silver, Gold plated over Nickel plate
Terminations	Crimp, solder, Quick Connect™

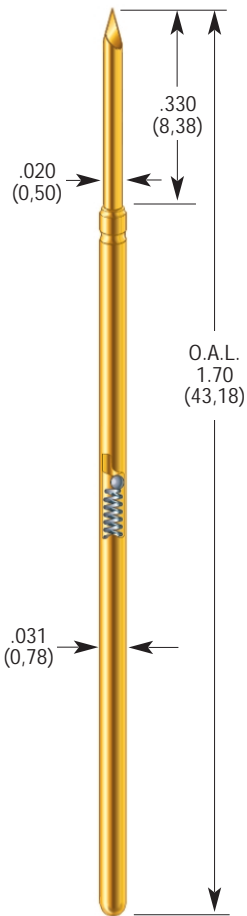
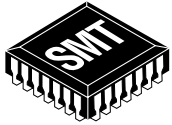
One RS-1 insulator sleeve is provided with each Quick Connect™ receptacle. Contact factory for price and delivery on additional quantities.



Specifications subject to change without notice.  
 Drawings not to scale.  
 Optional tip styles, spring pressures, and materials available, contact factory for more information.

**ORDERING INFORMATION:** To order, specify tip style and spring pressure. Example: IP271B is a "B" tip with a standard spring.

# POGO-72

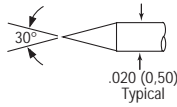


Patented

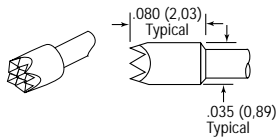
NOTE: To order in steel, include a -S after model #, i.e. POGO-72H-4-S

Pogo series not available with cyclo-soldered option

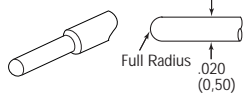
## POGO-72B



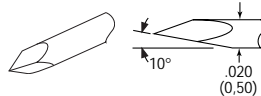
## POGO-72H POGO-72H-S



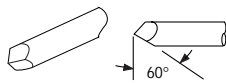
## POGO-72J POGO-72J-S



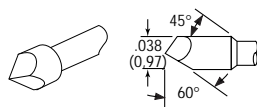
## POGO-72T1 POGO-72T1-S



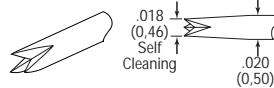
## POGO-72T20 POGO-72T20-S



## POGO-72T38 POGO-72T38-S



## POGO-72U POGO-72U-S



## High-Performance Bias Ball Probe For Loaded PCB Testing

### SPECIFICATIONS

PROBE SERIES	POGO-72	POGO-72 STEEL
<b>Mechanical</b>		
Full Travel:	.250 (6,35)	.250 (6,35)
Recommended Working Travel:	.167 (4,24)	.167 (4,24)
Mechanical Life Exceeds:	1 x 10 <sup>6</sup> cycles	1 x 10 <sup>6</sup> cycles
<b>Operating Temperature</b>	-55°C to +105°C	-55°C to +105°C
Consult factory for other temperature requirements, and applications below -40°C		
<b>Electrical (Static Conditions)</b>		
Current Rating:	3 amps	3 amps
maximum continuous current, non-inductive at working travel		
<b>Probe Resistance</b>	15 m Ω	15 m Ω
With a standard deviation of <2 mV @ 25 mA test current		
<b>Materials and Finishes</b>		
Plunger:	Heat-treated beryllium copper, gold-plated over hard nickel	Heat-treated tool steel, gold-plated over hard nickel
Barrel:	Work hardened beryllium copper, HPA-GOLD™ plated (I.D. and O.D.) over hard nickel	Work hardened beryllium copper, HPA-GOLD™ plated (I.D. and O.D.) over hard nickel
Spring:	Music wire	Music wire
Ball:	Stainless steel	Stainless steel

### RECEPTACLE SPECIFICATIONS (Uses Insertion Tool #AT31)

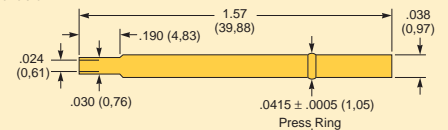
<b>Mounting Hole Size:</b>	A #61 drill is most commonly used. .039 (0,99)	
<b>Recommended Wire Gauge:</b>	28-30 AWG	28-30 AWG
<b>Connections:</b>	<p><b>HPR-72W</b> Crimp (To order with 30 inches of 28 or 30 AWG wire attached, add -28 or -30 to model number.)</p> <p><b>HPR-72W-1</b> Solder cup termination (30 AWG only), max. insulation diameter = .019 (0,48), wire strip length = .125 (3,2)</p> <p><b>HPR-72W-4</b> FASTITE® wire termination (30 AWG only), max. insulation diameter = .019 (0,48), wire strip length = .125 (3,2)</p> <p><b>DS-62-1</b> Insulation sleeve for HPR-72-W-4. One sleeve is provided with each FASTITE® receptacle at no charge. Consult factory for price/delivery on additional quantities.</p> <p><b>FWA-1-30</b> 30 AWG wire with DS-62-1 insulation sleeve attached.</p>	<p><b>HPR-72W</b> Crimp (To order with 30 inches of 28 or 30 AWG wire attached, add -28 or -30 to model number.)</p> <p><b>HPR-72W-1</b> Solder cup termination (30 AWG only), max. insulation diameter = .019 (0,48), wire strip length = .125 (3,2)</p> <p><b>HPR-72W-4</b> FASTITE® wire termination (30 AWG only), max. insulation diameter = .019 (0,48), wire strip length = .125 (3,2)</p> <p><b>DS-62-1</b> Insulation sleeve for HPR-72-W-4. One sleeve is provided with each FASTITE® receptacle at no charge. Consult factory for price/delivery on additional quantities.</p> <p><b>FWA-1-30</b> 30 AWG wire with DS-62-1 insulation sleeve attached.</p>
<b>Materials and Finishes</b>	Work-hardened beryllium copper, HPA-Gold™ plated (I.D. and O.D.) over hard nickel.	Work-hardened beryllium copper, HPA-Gold™ plated (I.D. and O.D.) over hard nickel.

### SPRING FORCE +/- 20% IN OZ. (GRAMS)

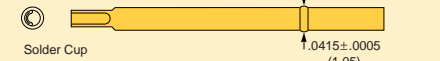
Spring Type	Preload	2/3 Travel
Light	-2 .73 (21)	2.0 (57)
Standard	as shown -4 .99 (28)	4.0 (114)
Alternate	-6 .64 (18)	6.0 (170)
High	-8 2.33 (66)	8.0 (227)

Optional spring forces and materials are available.

### HPR-72W

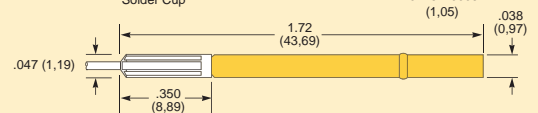


### HPR-72W-1



### HPR-72W-4

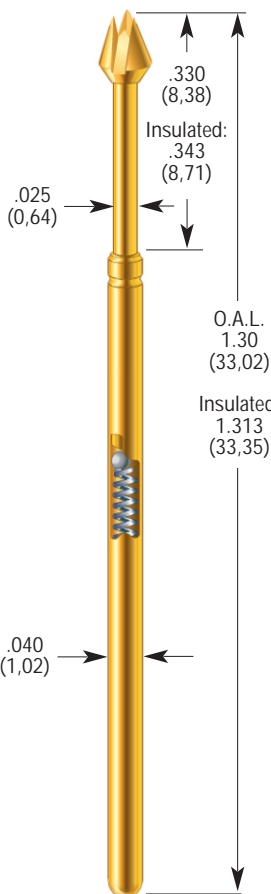
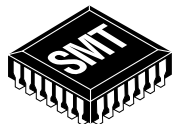
(Shown with DS-62-1 installed)



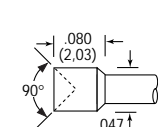
Dimensions in inches (millimeters)

**Pogo Plus**

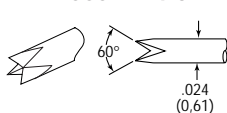
# POGO-1



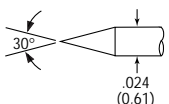
**POGO-1A**



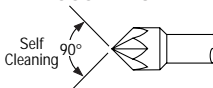
**POGO-1L24  
POGO-1L24-S**



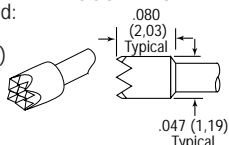
**POGO-1B  
POGO-1B-S**



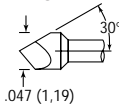
**POGO-1P  
POGO-1P-S**



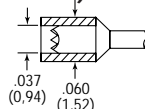
**POGO-1H  
POGO-1H-S**



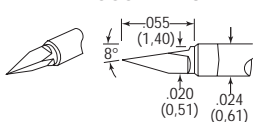
**POGO-1T  
POGO-1T-S**



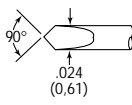
**POGO-1H-INS-8  
(Insulated)**



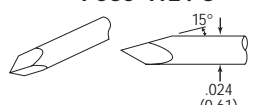
**POGO-1T1  
POGO-1T1-S**



**POGO-1I  
POGO-1I-S**



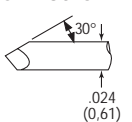
**POGO-1T24  
POGO-1T24-S**



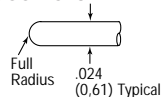
**POGO-1I35-S**



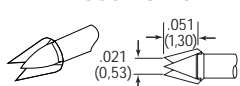
**POGO-1T30  
POGO-1T30-S**



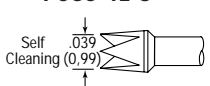
**POGO-1J  
POGO-1J-S**



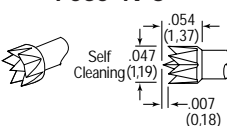
**POGO-1UN  
POGO-1UN-S**



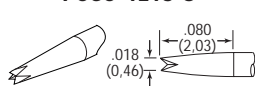
**POGO-1L  
POGO-1L-S**



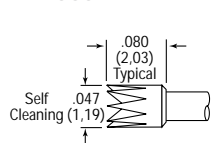
**POGO-1V  
POGO-1V-S**



**POGO-1L18  
POGO-1L18-S**



**POGO-1Z**



## High-Performance Bias Ball Probe For Loaded PCB Testing

### SPECIFICATIONS

PROBE SERIES	POGO-1	POGO-1 STEEL
<b>Mechanical</b>		
Full Travel:	.250 (6,35)	.250 (6,35)
Recommended Working Travel:	.167 (4,24)	.167 (4,24)
Mechanical Life Exceeds:	1 x 10 <sup>6</sup> cycles	1 x 10 <sup>6</sup> cycles
<b>Operating Temperature</b>	-55°C to +105°C Consult factory for other temperature requirements, and applications below -40°C	-55°C to +105°C
<b>Electrical (Static Conditions)</b>		
Current Rating:	6 amps	6 amps
Maximum continuous current, non-inductive at working travel		
<b>Probe Resistance</b>	20 m Ω With a standard deviation of <3 mV @ 25 mA test current	15 m Ω
<b>Materials and Finishes</b>		
Plunger:	Heat-treated beryllium copper, gold-plated over hard nickel	Heat-treated tool steel, gold-plated over hard nickel
Barrel:	Work hardened phosphor bronze, HPA-GOLD™ plated (I.D. and O.D.) over hard nickel	Work hardened phosphor bronze, HPA-GOLD™ plated (I.D. and O.D.) over hard nickel
Spring:	Music wire	Music wire
Ball:	Stainless steel	Stainless steel

### RECEPTACLE SPECIFICATIONS (Uses Insertion Tool #ARIT40)

<b>Mounting Hole Size:</b>	.053/.055 (1,35/1,40)	.053/.055 (1,35/1,40)
<b>Suggested Drill Size:</b>	#54 or 1,4 mm	
<b>Recommended Wire Gauge:</b>	24-28 AWG	24-28 AWG
<b>Connections:</b>	<b>LTR-1W Crimp</b> <b>LTR-1W-1 Solder cup</b> <b>LTR-1W-2 Wire wrap/square post.</b> Vacuum leak rate not to exceed 1 x 10 <sup>-4</sup> CFM @ 15 psi <b>SR40-2L Wire wrap, square post</b> <b>SR40-2LL Wire wrap, square post</b>	<b>LTR-1W Crimp</b> <b>LTR-1W-1 Solder cup</b> <b>LTR-1W-2 Wire wrap/square post.</b> Vacuum leak rate not to exceed 1 x 10 <sup>-4</sup> CFM @ 15 psi <b>SR40-2L Wire wrap, square post</b> <b>SR40-2LL Wire wrap, square post</b>
<b>Materials and Finishes</b>		
Housing:	Work-hardened nickel silver, gold plated over hard nickel	Work-hardened nickel silver, gold plated over hard nickel
Square Post:	Phosphor bronze, gold plated	Phosphor bronze, gold plated

### SPRING FORCE +/- 20% IN OZ. (GRAMS)

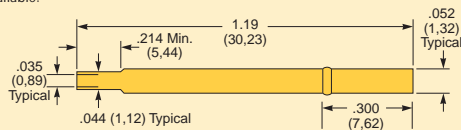
Spring Type	Preload	2/3 Travel
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To order, add dash number to Model Number.

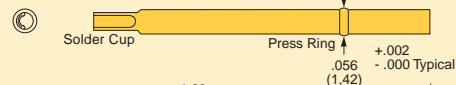
Light	-2	0.72 (20)	2.0 (57)	
Standard	as shown	-4	1.47 (42)	4.0 (114)
Alternate	-6	1.73 (49)	6.0 (170)	
High	-8	1.20 (34)	8.0 (227)	
Ultra High	-10	3.50 (99)	10.0 (283)	

Optional spring forces and materials are available.

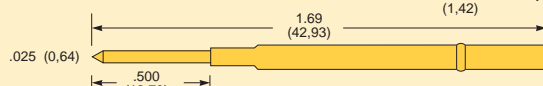
**LTR-1W**



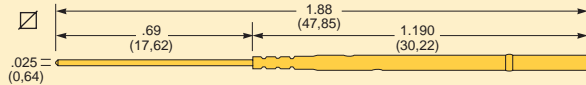
**LTR-1W-1**



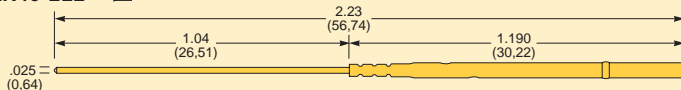
**LTR-1W-2**



**LR40-2L**

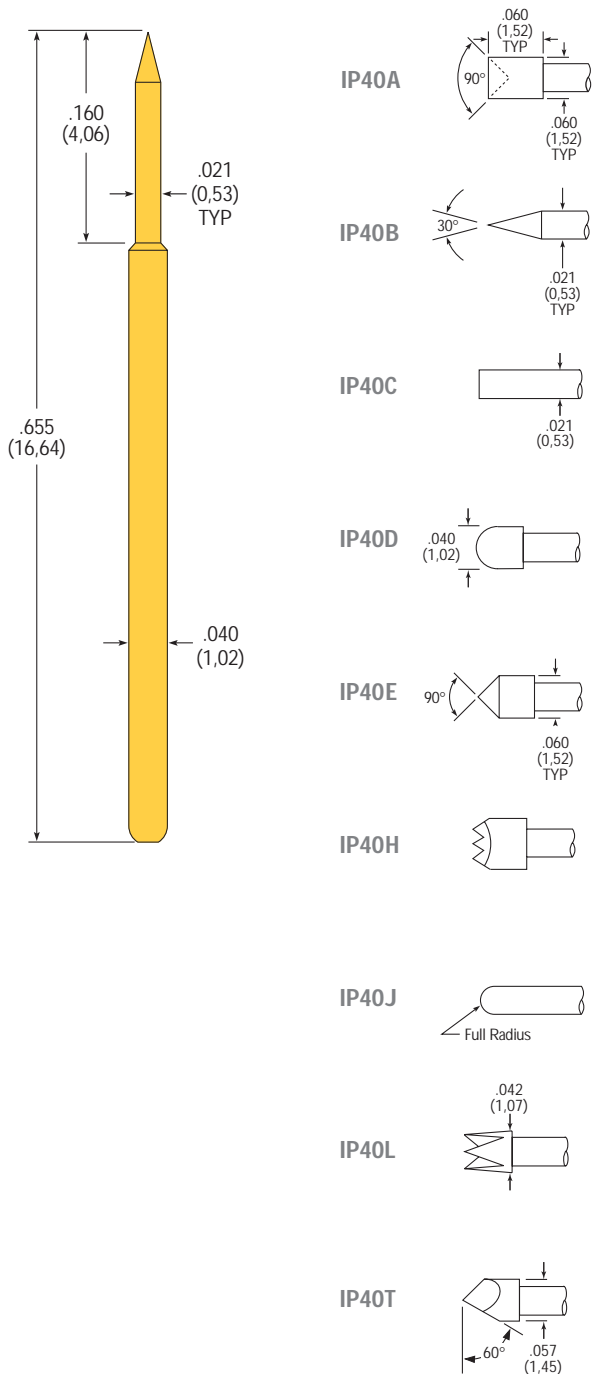


**LR40-2LL**



**Pogo Plus**

# IP40

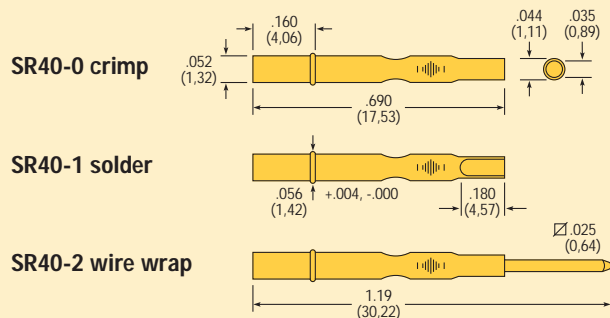


## Test Probes for Bare and Loaded PCB Testing

### SPECIFICATIONS

PROBE SERIES	IP40
Test Centers	.075 (1,91)
Mechanical	
Max. Plunger Travel	.100 (2,54)
Recom. Working Travel	.067 (1,70)
Mechanical Life (cycles)	>1,000,000
Spring Pressure	
Light: initial	1.1 oz. (31g)
@ working travel	2.5 oz. (71g)
Heavy: initial	1.3 oz. (37g)
<b>-1</b> @ working travel	4.5 oz. (128g)
Materials & Finishes	
Plunger	Hardened Beryllium Copper, Gold plated over Nickel plate
Barrel	Work hardened Phosphor Bronze, Gold plated (I.D. & O.D.) over Nickel plate
Spring	Stainless Steel, Silver plated
Operating Range (typical)	-55°C to + 150°C
Electrical	
Current Rating (static conditions)	3 amps
Avg. Resistance (mOHMS)	35

RECEPTACLE SERIES	SR40 (Uses Insertion Tool #ARIT40)
Mounting Hole Size	.053/.055 (1,35/1,40)
Suggested Drill Size	#54 or 1,4 mm
Suggested Wire Gauge	24-28 AWG
Materials & Finishes	Work hardened Nickel Silver, Gold plated over Nickel plate
Terminations	Crimp, solder, wire wrap

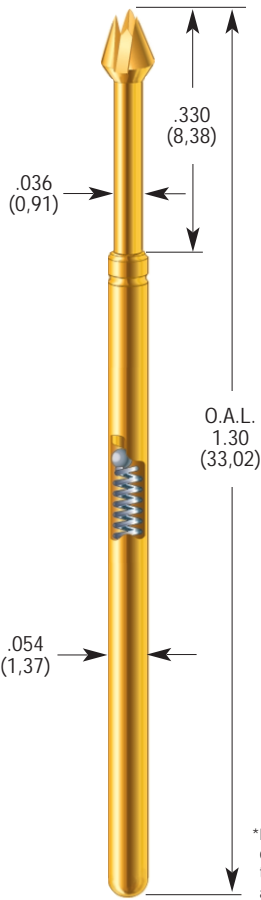


Specifications subject to change without notice.  
 Drawings not to scale.  
 Optional tip styles, spring pressures, and materials available, contact factory for more information.

**ORDERING INFORMATION:** To order, specify tip style and spring pressure. Example: IP40A is an "A" tip with a light spring. For a heavy spring pressure, add -1 to the model number, i.e., IP40A-1.

# POGO-25

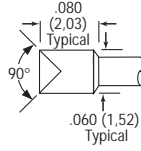
## High-Performance Bias Ball Probe For Loaded PCB Testing



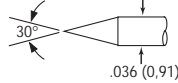
NOTE: To order in steel, include a -S after model #, i.e. POGO-25H-4-S

Pogo series not available with cyclo-soldered option

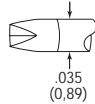
### POGO-25A POGO-25A-S



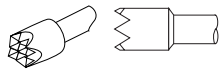
### POGO-25B POGO-25B-S



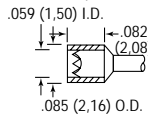
### POGO-25FL-S



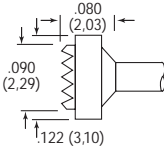
### POGO-25H POGO-25H-S



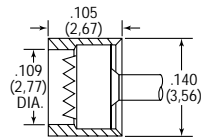
### POGO-25H-INS (Insulated)



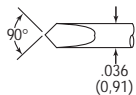
### POGO-25HM



### POGO-25HM-INS (Insulated)



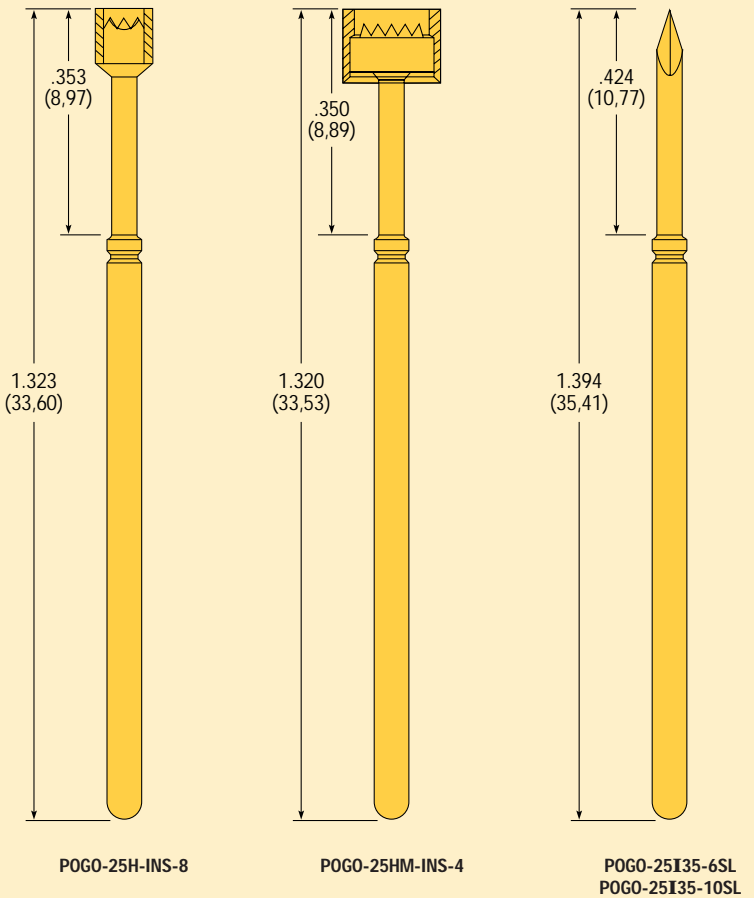
### POGO-25I POGO-25I-S



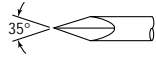
## SPECIFICATIONS

PROBE SERIES	POGO-25	POGO-25 STEEL
<b>Mechanical</b>		
Full Travel:	.250 (6,35)	.250 (6,35)
Recommended Working Travel:	.167 (4,24)	.167 (4,24)
Mechanical Life Exceeds:	1 x 10 <sup>6</sup> cycles	1 x 10 <sup>6</sup> cycles
<b>Operating Temperature</b>	-55°C to +105°C	-55°C to +105°C
Consult factory for other temperature requirements, and applications below -40°C		
<b>Electrical (Static Conditions)</b>		
Current Rating:	10 amps	10 amps
Maximum continuous current, non-inductive at working travel		
<b>Probe Resistance</b>	8 m Ω	8 m Ω
With a standard deviation of <1 mV @ 25 mA test current		
<b>Materials and Finishes</b>		
Plunger:	Heat-treated beryllium copper, gold-plated over hard nickel	Plunger steel, heat-treated tool steel, gold-plated over hard nickel
Barrel:	Work hardened phosphor bronze, HPA-GOLD™ plated (I.D. and O.D.) over hard nickel	Work hardened phosphor bronze, HPA-GOLD™ plated (I.D. and O.D.) over hard nickel
Spring:	Music wire	Music wire
Ball:	Stainless steel	Stainless steel

### Insulated and Special Tip Probe Dimensions



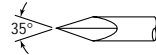
**POGO-25I35-S**



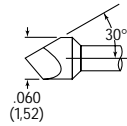
**POGO-25L36  
POGO-25L36-S**



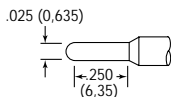
**POGO-25I35-6SL\*  
POGO-25I35-10SL\***



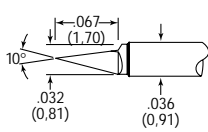
**POGO-25T  
POGO-25T-S**



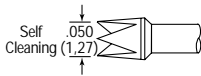
**POGO-25J  
POGO-25J-S**



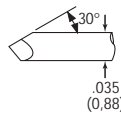
**POGO-25T1-S**



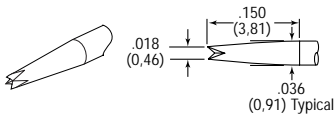
**POGO-25L  
POGO-25L-S**



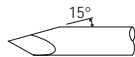
**POGO-25T30  
POGO-25T30-S**



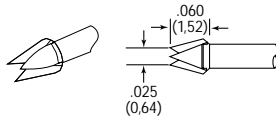
**POGO-25L18  
POGO-25L18-S**



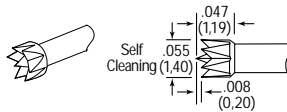
**POGO-25T36  
POGO-25T36-S**



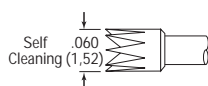
**POGO-25UN  
POGO-25UN-S**



**POGO-25V  
POGO-25V-S**



**POGO-25Z  
POGO-25Z-S**



**RECEPTACLE SPECIFICATIONS** (Uses Insertion Tool #ARIT54)

<b>Mounting Hole Size:</b>	.067/.069 (1,7/1,75)	.067/.069 (1,7/1,75)
<b>Recommended Wire Gauge:</b>	22-26 AWG	22-26 AWG
<b>Connections:</b>	<p><b>SPR-25W</b> Crimp or push-on termination (AMP terminal 60983-1 or equivalent)</p> <p><b>SPR-25W-1</b> Solder cup</p> <p><b>SPR-25W-2</b> Wire wrap/square post. Vacuum leak rate not to exceed <math>1 \times 10^{-4}</math> CFM @ 15 psi</p> <p><b>SPR-25W-3</b> Connector pin/round post</p> <p><b>SR54-2L</b> Wire wrap, square post</p> <p><b>SR54-2LL</b> Wire wrap, square post</p>	<p><b>SPR-25W</b> Crimp or push-on termination (AMP terminal 60983-1 or equivalent)</p> <p><b>SPR-25W-1</b> Solder cup</p> <p><b>SPR-25W-2</b> Wire wrap/square post. Vacuum leak rate not to exceed <math>1 \times 10^{-4}</math> CFM @ 15 psi</p> <p><b>SPR-25W-3</b> Connector pin/round post</p> <p><b>SR54-2L</b> Wire wrap, square post</p> <p><b>SR54-2LL</b> Wire wrap, square post</p>

**Materials and Finishes**

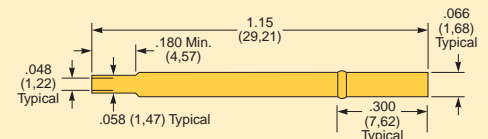
<b>Housing:</b>	Work-hardened nickel silver, gold plated over hard nickel	Work-hardened nickel silver, gold plated over hard nickel
<b>Round Post:</b>	Phosphor bronze, gold plated	Phosphor bronze, gold plated
<b>Square Post:</b>	Phosphor bronze, gold plated	Phosphor bronze, gold plated

**SPRING FORCE +/- 20% IN OZ. (GRAMS)**

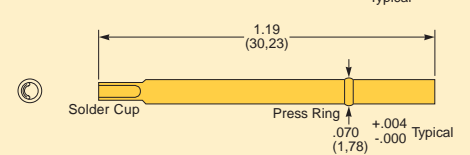
Spring Type	Preload	2/3 Travel
To order, add dash number to Model Number.		
<b>Light</b>	-2 0.70 (20)	2.0 (57)
<b>Standard</b> as shown	-4 1.24 (35)	4.0 (114)
<b>Alternate</b>	-6 1.73 (49)	6.0 (170)
<b>High</b>	-8 2.15 (61)	8.0 (227)
<b>Ultra High</b>	-10 1.87 (53)	10.0 (283)
<b>Super</b> (Available)	-16 3.90 (111)	16.0 (455)

Optional spring forces and materials are available.

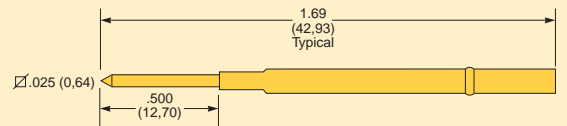
**SPR-25W**



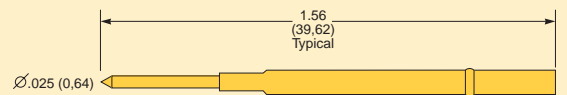
**SPR-25W-1**



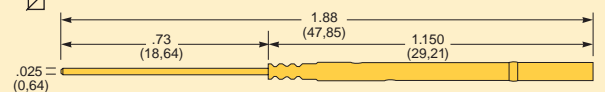
**SPR-25W-2** ☒



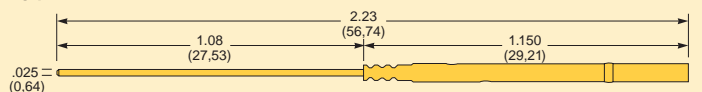
**SPR-25W-3** ∅



**SR54-2L** ☒

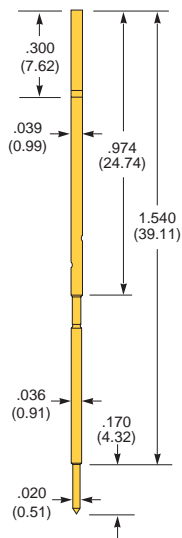


**SR54-2LL** ☒

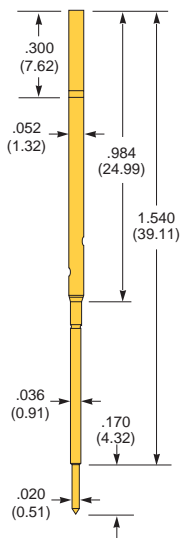


\* See diagrams at left for dimensions

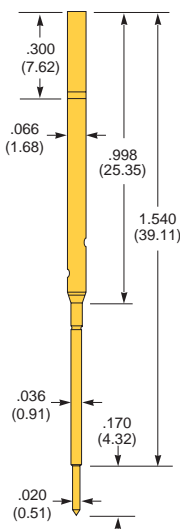
# DER-50 DER-75 DER-100



DER-50



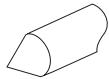
DER-75



DER-100

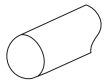
**B TIP STYLE**

Order DER-xxxB-3.5



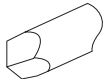
**J TIP STYLE**

Order DER-xxxJ-3.5



**T TIP STYLE**

Order DER-xxxT-3.5



## Double-Ended Receptacles

### RECEPTACLE SPECIFICATIONS

	DER-050	DER-075	DER-100
<b>Mechanical</b>			
Recommended Mounting Centers:	.050 (1.27)	.075 (1.91)	.100 (2.54)
Full Travel:	.160 (4.06)	.160 (4.06)	.160 (4.06)
Recommended Travel:	.130 (3.30)	.130 (3.30)	.130 (3.30)
Test Height:	1.586 (40.28)	1.586 (40.28)	1.586 (40.28)
Spring Force in oz. (grams):	3.5 (99)	3.5 (99)	3.5 (99)
Overall Length:	1.710 (43.43)	1.710 (43.43)	1.710 (43.43)
Recommended Mounting Hole Size:	.037/.038 (.94/.97)	.053/.055 (1.35/1.40)	.067/.069 (1.70/1.75)
<b>Materials and Finishes</b>			
Plunger:	Beryllium copper alloy, hard gold over nickel	Beryllium copper alloy, hard gold over nickel	Beryllium copper alloy, hard gold over nickel
Barrel:	Beryllium copper alloy, hard gold over nickel	Beryllium copper alloy, hard gold over nickel	Beryllium copper alloy, hard gold over nickel
Spring:	Steel alloy, hard gold over nickel	Steel alloy, hard gold over nickel	Steel alloy, hard gold over nickel
Receptacle:	Beryllium copper alloy, hard gold over nickel	Nickel silver alloy, hard gold over nickel	Nickel silver alloy, hard gold over nickel

Fixture Probes (Ordered Separately)	Pogo-62 (see below)	Pogo-1 (see page 8)	Pogo-25/LT54 (see 10, 11 & 13)
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PROBE SPECIFICATIONS	POGO-62	POGO-62 STEEL
<b>Mechanical</b>		
Full Travel:	.250 (6.35)	.250 (6.35)
Recommended Working Travel:	.167 (4.24)	.167 (4.24)
Mechanical Life:	500,000 cycles	500,000 cycles

Operating Temperature	-55°C to +105°C	-55°C to +105°C
Consult factory for other temperature requirements, and applications below -40° C.		

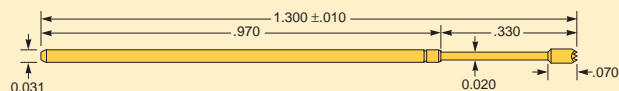
Electrical (Static Conditions)	3 amps	3 amps
Current Rating:		
Maximum continuous current, non-inductive at working travel		

Probe Resistance	15 mΩ	15 mΩ
With a standard deviation of <1 mΩ @ 25 mA test current		

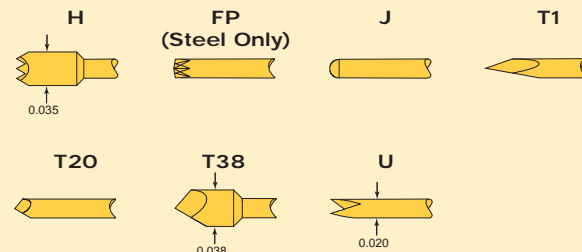
Materials and Finishes	Heat-treated beryllium copper, hard gold over nickel	Heat-treated beryllium copper, hard gold over nickel
Plunger:		
Barrel:	Work-hardened beryllium copper, hard gold over nickel	Work-hardened beryllium copper, hard gold over nickel
Spring:	Music wire	Music wire
Ball:	Stainless steel	Stainless steel

SPRING FORCE IN OZ. (GRAMS)	Preload	2/3 Travel
Light	-2 .48 (14)	2.0 (57)
Standard	-4 1.02 (29)	4.0 (114)
Alternate	-6 .66 (19)	6.0 (170)

**POGO-62**

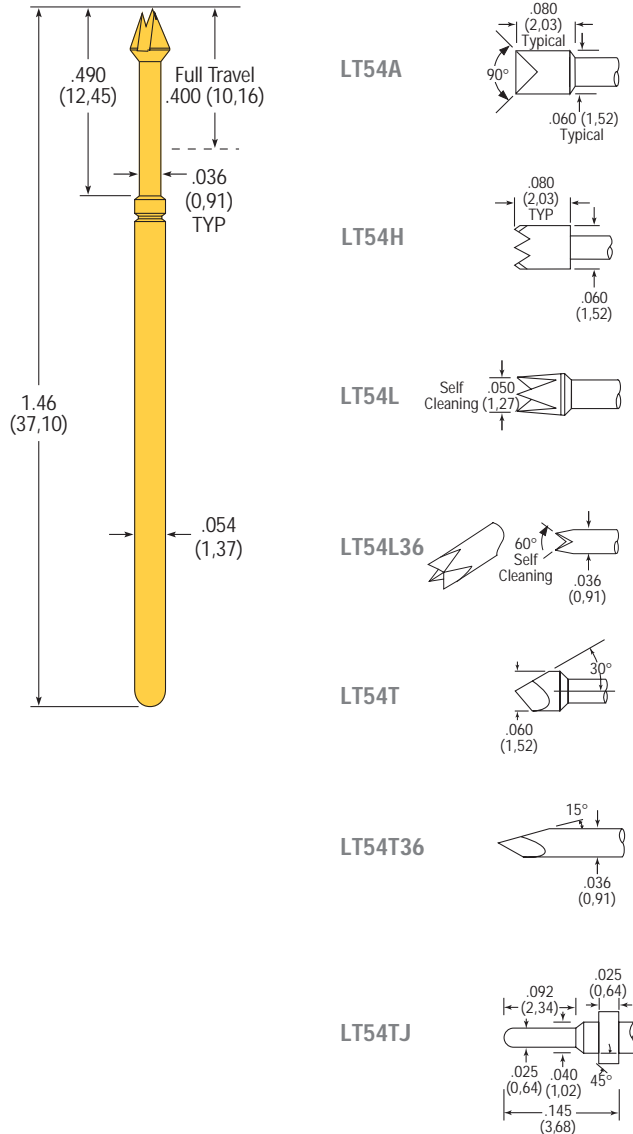


**Tip Styles**



# LT54

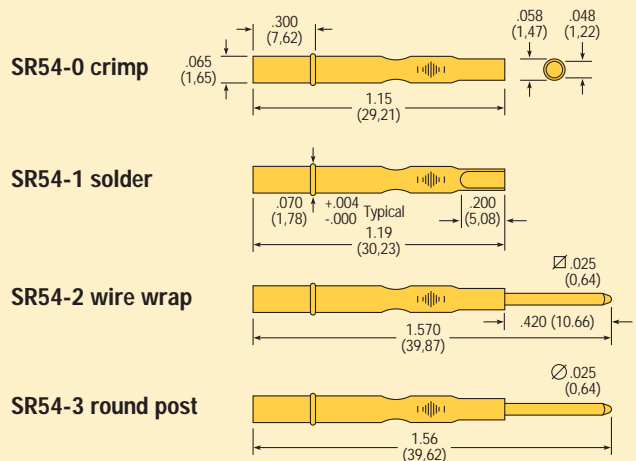
## Long Travel Test Probes for Bare, Loaded and Dual Level PCB Testing



### SPECIFICATIONS

PROBE SERIES	LT54	LT54TJ
Test Centers	.100 (2,54)	.100 (2,54)
Mechanical		
Max. Plunger Travel	.400 (10,16)	.345 (8,76)
Recom. Working Travel	.315 (8,0)	.315 (8,00)
Mechanical Life (cycles)	>100,000	>100,000
SPRING FORCE IN OZ. (GRAMS)		
Spring Type	Preload	.315 Travel
Standard	-4	1.24 (35)
Alternate	-6	1.73 (49)
High	-8	2.15 (61)
Materials & Finishes		
Plunger	Hardened Beryllium Copper, Gold plated over Nickel plate	Hardened Beryllium Copper, Gold plated over Nickel plate
Barrel	Work hardened Phosphor Bronze, Gold plated (I.D. & O.D.) over Nickel plate	Work hardened Phosphor Bronze, Gold plated (I.D. & O.D.) over Nickel plate
Spring	Music Wire, Silver plated	Music Wire, Stainless steel
Operating Range (typical)	-55°C to + 105°C	-55°C to + 105°C
Electrical		
Current Rating (static conditions)	10 amps	10 amps
Avg. Resistance (mOHMS)	8	8

RECEPTACLE SERIES	SR54 (Uses Insertion Tool #ARIT54)	SR54 (Uses Insertion Tool #ARIT54)
Mounting Hole Size	.067/.069 (1,70/1,75)	.067/.069 (1,70/1,75)
Suggested Drill Size	1,75 mm	1,75 mm
Suggested Wire Gauge	22-26 AWG	22-26 AWG
Materials & Finishes	Work hardened Nickel Silver, Gold plated over Nickel plate	Work hardened Nickel Silver, Gold plated over Nickel plate
Terminations	Crimp, solder, wire wrap, round post	Crimp, solder, wire wrap, round post



**ORDERING INFORMATION:** To order, specify tip style and spring pressure. Example: LT54H is an "H" tip with a standard spring.

Specifications subject to change without notice.  
 Drawings not to scale.  
 Optional tip styles, spring pressures, and materials available, contact factory for more information.