

# SPRING PROBES

*Loose Probe & Connector Solutions*



# SPRING PROBE TECHNOLOGY

Smiths Connectors is the world leader in spring contact probe design and the industry's expert in applying spring probes as connector contacts. Embodied in our connector products, probes are an enabling technology that fundamentally changes the capabilities of the products in which they are incorporated.



## FEATURES

### LOW PROFILE, HIGH COMPLIANCE RATIO

Spring probe technology permits a very high compliance-to-length ratio. This allows Smiths Connectors to design connectors as dense as 2 mm, while maintaining 0.5 mm of compliance. Spring probe connectors are low profile designs which are forgiving of challenging mating conditions and heavy vibration.

### HIGH FREQUENCY

Our spring probes' short signal path, combined with Smiths Connectors' industry-leading expertise, ensures remarkable signal integrity for both analog and digital applications.

### LOW, STABLE RESISTANCE

Smiths Connectors' spring probes feature several innovations for control of DC performance. Advanced biasing techniques provide excellent stability of contact resistance, even under conditions of heavy shock and vibration. Our connectors can be designed to withstand up to 30 Amps of current.

### HIGH INSERTION LIFE

Spring contact probes are capable of remarkable longevity from 20K to 300K cycles based on design. Our probes are driven by helical coil springs, which maintain a constant force of contact over millions of cycles. Our extensive plating and materials knowledge combined with engineering expertise, delivers contacts that exceed the highest customer specifications for insertion life.

### TERMINATIONS

Smiths Connectors offers a wider range of termination options. Our connectors terminate easily to flexible or rigid PCBs via through-hole, surface mount or solderless compression mount. Cable termination is also an available option.

## BENEFITS

### EXCELLENT FOR BLIND MATE

Spring probe connectors are compliant on the surface of their mating half, rather than extending into it as with conventional pin and socket connectors, allowing unique blind-mate capabilities. Designed to engage and disengage at a 90° angle to its target and wiping into position to clear contaminants, probe technology is an ideal approach to quick-disconnect applications.

### MATING TARGETS

Smiths Connectors' spring contact probes have the unique advantage of requiring only a flat pad as their target. This low profile, environmentally sealed solution greatly simplifies the design and lowers the cost of the complete connector.

### EXCEPTIONAL MISALIGNMENT TOLERANCE

Because spring probes are compliant and require only a flat pad for their target, contact is maintained as long as the probe tip touches any point within the target's diameter. This ensures forgiveness of any X, Y, Z, angular and rotational misalignment.

### HIGH RELIABILITY IN HARSH ENVIRONMENTS

Smiths Connectors' application expertise and the durable nature of spring probes allows for connectors which are designed for high performance in the harshest conditions. Whether it's harsh environmental factors like shock, vibration, rotation, wipe, salt, sand, dust, heat or the vacuum of space, Smiths Connectors delivers a reliable, fail-safe connection.

### SPRING PROBE CONNECTORS

Spring contact probes provide repeatable contact in the field for modular components, reduce costs and eliminate cable connections by providing a dependable direct connection in rotating or sliding joints.

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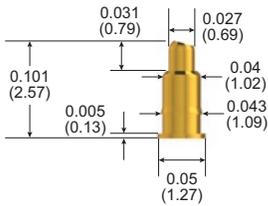
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# STANDARD CONNECTOR PROBES

## Dimensions & Specifications

### ▶ 101582 PROBE



#### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.07 (1.78) 0.05 (1.27)) staggered rows
<b>Current Rating</b>	9 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	48 g @ 0.03 (0.76) travel
<b>Typical Resistance</b>	< 10 mΩ
<b>Maximum Travel</b>	0.03 (0.76)
<b>Working Travel</b>	0.03 (0.76)

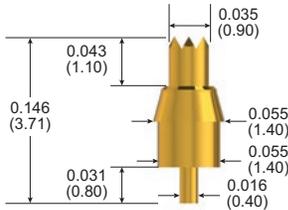
#### MATERIALS

<b>Barrel</b>	Brass, gold plated
<b>Spring</b>	Stainless steel
<b>Plungers</b>	Beryllium copper, gold plated

#### HOW TO ORDER

<b>Part Number</b>	101582-000
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### ▶ 101438 PROBE



#### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.08 (2.03)
<b>Current Rating</b>	1 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	99 g @ 0.02 (0.51) travel
<b>Typical Resistance</b>	< 10 mΩ
<b>Maximum Travel</b>	0.039 (0.99)
<b>Working Travel</b>	0.02 (0.51)

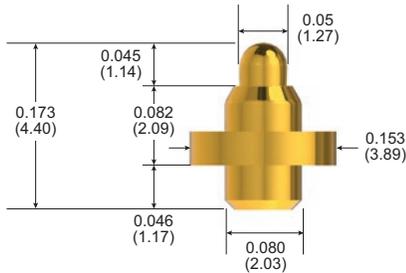
#### MATERIALS

<b>Barrel</b>	Brass, gold plated
<b>Spring</b>	Stainless steel, gold plated
<b>Plunger</b>	Beryllium copper, gold plated

#### HOW TO ORDER

<b>Part Number</b>	101438-000
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## ▶ 100671 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.175 (4.45)
<b>Current Rating</b>	3 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	145 g @ 0.027 (0.69) travel
<b>Typical Resistance</b>	< 10 mΩ
<b>Maximum Travel</b>	0.04 (1.02)*
<b>Working Travel</b>	0.027 (0.69)

### MATERIALS

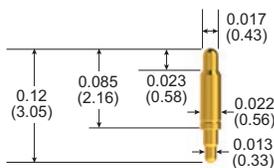
<b>Barrel</b>	Nickel/silver, gold plated
<b>Spring</b>	Stainless steel, gold plated
<b>Plunger</b>	Beryllium copper, gold plated

### HOW TO ORDER

<b>Part Number</b>	100671-000
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\*Not recommended for use at maximum travel

## ▶ 101111 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.029 (0.75)
<b>Current Rating</b>	6 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	43 g @ 0.022 (0.55) travel
<b>Typical Resistance</b>	< 50 mΩ
<b>Maximum Travel</b>	0.025 (0.58)
<b>Working Travel</b>	0.022 (0.55)

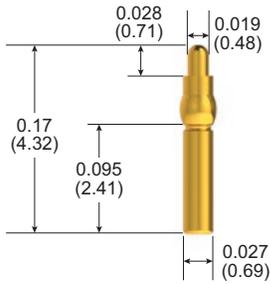
### MATERIALS

<b>Barrel</b>	Phosphor bronze, gold plated
<b>Spring</b>	Music wire, gold plated
<b>Plunger</b>	Phosphor bronze, gold plated

### HOW TO ORDER

<b>Part Number</b>	101111-000
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► 101506 PROBE



PROBE SPECIFICATIONS

Minimum Centers	0.05 (1.27)
Current Rating	5 A continuous <i>(individual probe in free air @ ambient temperature)</i>
Spring Force	39 g @ 0.02 (0.51) travel
Typical Resistance	< 20 mΩ
Maximum Travel	0.028 (0.71)
Working Travel	0.02 (0.51)

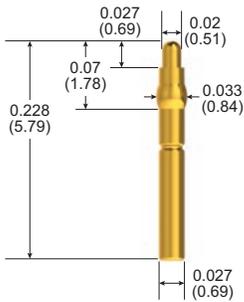
MATERIALS

Barrel	Nickel/silver, gold plated
Spring	Stainless steel, gold plated
Plunger	Beryllium copper, gold plated

HOW TO ORDER

Part Number	101506-000
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► 101294 PROBE



PROBE SPECIFICATIONS

Minimum Centers	0.05 (1.27)
Current Rating	5 A continuous <i>(individual probe in free air @ ambient temperature)</i>
Spring Force	26 g @ 0.02 (0.51) travel
Typical Resistance	< 20 mΩ
Maximum Travel	0.027 (0.69)
Working Travel	0.02 (0.51)

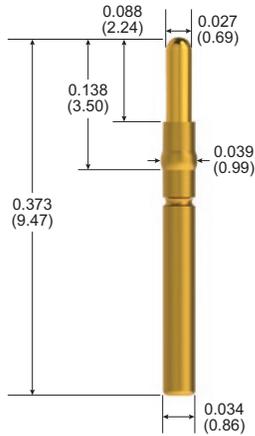
MATERIALS

Barrel	Nickel/silver, gold plated
Spring	Stainless steel, gold plated
Plunger	Beryllium copper, gold plated

HOW TO ORDER

Part Number	101294-000
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## ▶ 100803 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.05 (1.27)
<b>Current Rating</b>	5 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	34 g @ 0.05 (1.27) travel
<b>Typical Resistance</b>	< 50 mΩ
<b>Maximum Travel</b>	0.06 (1.52)
<b>Working Travel</b>	0.05 (1.27)

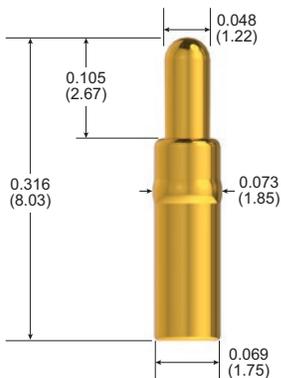
### MATERIALS

<b>Barrel</b>	Nickel/silver, gold plated
<b>Spring</b>	Stainless steel, gold plated
<b>Plunger</b>	Beryllium copper, gold plated

### HOW TO ORDER

<b>Part Number</b>	100803-011
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## ▶ 101190 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.10 (2.54)
<b>Current Rating</b>	15 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	74 g @ 0.067 (1.70) travel
<b>Typical Resistance</b>	< 6 mΩ
<b>Maximum Travel</b>	0.10 (2.54)
<b>Working Travel</b>	0.067 (1.70)

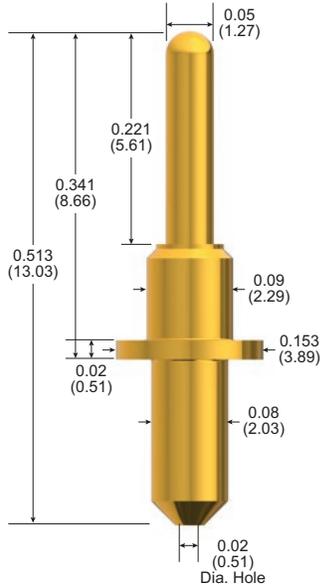
### MATERIALS

<b>Barrel</b>	Nickel/silver, gold plated
<b>Spring</b>	Stainless steel
<b>Plungers</b>	Beryllium copper, gold plated

### HOW TO ORDER

<b>Part Number</b>	101190-002
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► 100606 PROBE



PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.175 (4.45)
<b>Current Rating</b>	15 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	176 g @ 0.06 (1.52) travel
<b>Typical Resistance</b>	< 10 mΩ
<b>Maximum Travel</b>	0.09 (2.29)
<b>Working Travel</b>	0.06 (1.52)

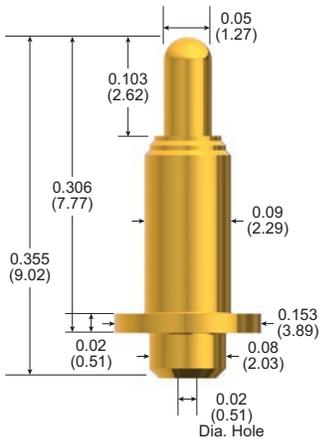
MATERIALS

<b>Barrel</b>	Nickel/silver, gold plated
<b>Spring</b>	Stainless steel, passivated
<b>Plunger</b>	Beryllium copper, gold plated
<b>Bias Ball</b>	Stainless steel

HOW TO ORDER

<b>Part Number</b>	100606-000
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► 100891 PROBE



PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.175 (4.45)
<b>Current Rating</b>	15 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	256 g @ 0.067 (1.70) travel
<b>Typical Resistance</b>	< 5 mΩ
<b>Maximum Travel</b>	0.10 (2.54)
<b>Working Travel</b>	0.067 (1.70)

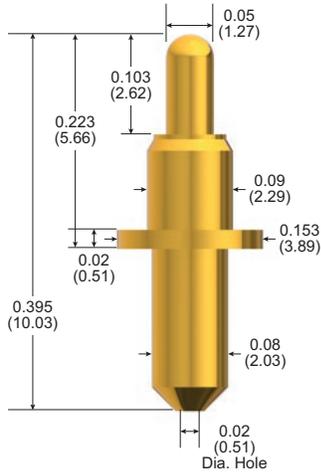
MATERIALS

<b>Barrel</b>	Nickel/silver, gold plated
<b>Spring</b>	Stainless steel, gold plated
<b>Plunger</b>	Beryllium copper, gold plated

HOW TO ORDER

<b>Part Number</b>	100891-002
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## ▶ 100410 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.175 (4.45)
<b>Current Rating</b>	15 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	176 g @ 0.06 (1.52) travel
<b>Typical Resistance</b>	< 5 mΩ
<b>Maximum Travel</b>	0.09 (2.29)
<b>Working Travel</b>	0.06 (1.52)

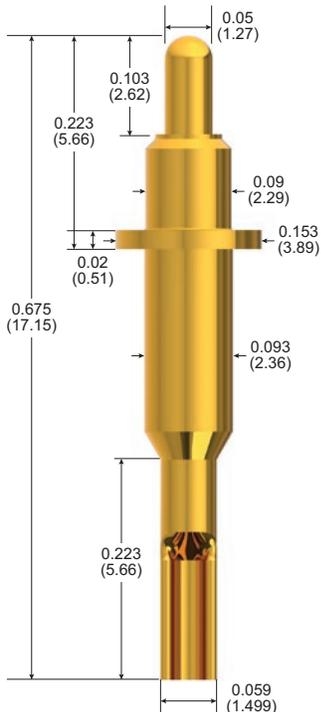
### MATERIALS

<b>Barrel</b>	Nickel/silver, gold plated
<b>Spring</b>	Stainless steel
<b>Plunger</b>	Beryllium copper, gold plated
<b>Bias Ball</b>	Stainless steel

### HOW TO ORDER

<b>Part Number</b>	100410-005
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## ▶ 101119 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.175 (4.45)
<b>Current Rating</b>	15 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	176 g @ 0.06 (1.52) travel
<b>Typical Resistance</b>	< 10 mΩ
<b>Maximum Travel</b>	0.09 (2.29)
<b>Working Travel</b>	0.06 (1.52)

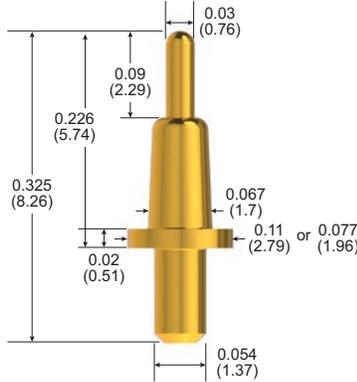
### MATERIALS

<b>Barrel</b>	Nickel/silver, gold plated
<b>Spring</b>	Stainless steel
<b>Plunger</b>	Beryllium copper, gold plated
<b>Bias Ball</b>	Stainless steel
<b>Receptacle</b>	Nickel/silver, gold plated

### HOW TO ORDER

<b>Part Number</b>	101119-001
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► 101050 PROBE



PROBE SPECIFICATIONS

Minimum Centers	0.125 (3.18)
Current Rating	10 A continuous <i>(individual probe in free air @ ambient temperature)</i>
Spring Force	65 g @ 0.06 (1.52) travel
Typical Resistance	< 10 mΩ
Maximum Travel	0.09 (2.29)
Working Travel	0.06 (1.52)

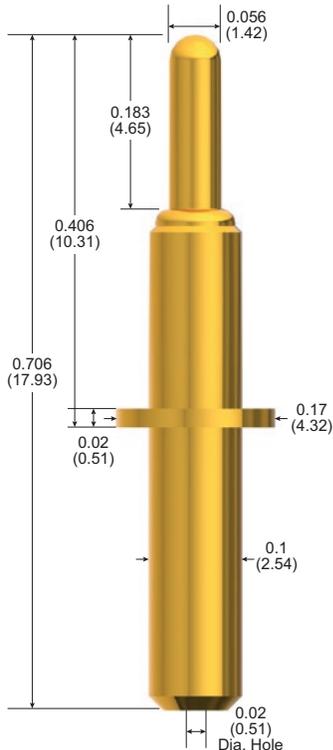
MATERIALS

Barrel	Nickel/silver, gold plated
Spring	Stainless steel, passivated
Plunger	Beryllium copper, gold plated
Ball	Stainless steel, gold plated

HOW TO ORDER

Part Number	101050-003 (0.11 dia. flange) 101050-005 (0.077 dia. flange)
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► 101247 PROBE



PROBE SPECIFICATIONS

Minimum Centers	0.20 (5.08)
Current Rating	20 A continuous <i>(individual probe in free air @ ambient temperature)</i>
Spring Force	332 g @ 0.147 (3.73) travel
Typical Resistance	< 10 mΩ
Maximum Travel	0.180 (4.57)
Working Travel	0.147 (3.73)

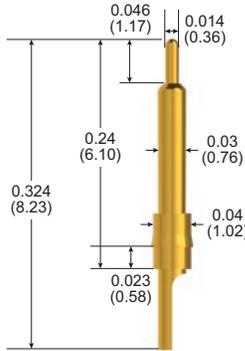
MATERIALS

Barrel	Brass, gold plated
Spring	Stainless steel, passivated
Plunger	Beryllium copper, gold plated

HOW TO ORDER

Part Number	101247-001
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## ▶ 101679 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.055 (1.40)
<b>Current Rating</b>	3 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	37 g @ 0.023 (0.58) travel
<b>Typical Resistance</b>	< 25 mΩ
<b>Maximum Travel</b>	0.023 (0.58)
<b>Working Travel</b>	0.023 (0.58)

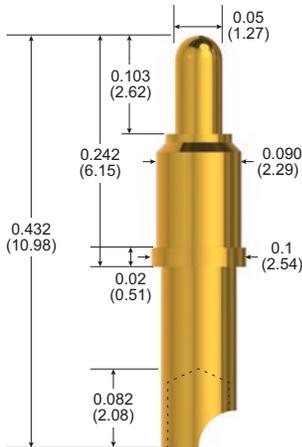
### MATERIALS

<b>Barrel</b>	Brass, gold plated
<b>Spring</b>	Stainless steel
<b>Plunger</b>	Brass, gold plated

### HOW TO ORDER

<b>Part Number</b>	101679-000
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## ▶ 101628 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.125 (3.18)
<b>Current Rating</b>	25 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	150 g @ 0.04 (1.02) travel
<b>Typical Resistance</b>	< 5 mΩ
<b>Maximum Travel</b>	0.04 (1.02)
<b>Working Travel</b>	0.04 (1.02)

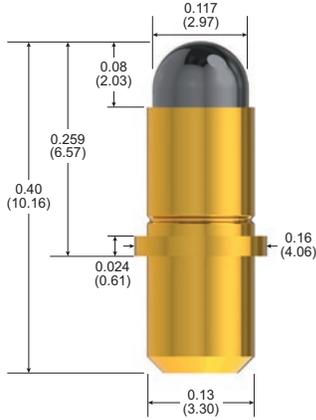
### MATERIALS

<b>Barrel</b>	Brass, gold plated
<b>Spring</b>	Music wire, nickel plated
<b>Plunger</b>	Beryllium copper, gold plated
<b>Ball</b>	Stainless steel

### HOW TO ORDER

<b>Part Number</b>	101628-000
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► 101402 PROBE



PROBE SPECIFICATIONS

Minimum Centers	0.175 (4.45)
Current Rating	20 A continuous <i>(individual probe in free air @ ambient temperature)</i>
Spring Force	275 g @ 0.05 (1.27) travel
Typical Resistance	< 10 mΩ
Maximum Travel	0.08 (2.03)
Working Travel	0.05 (1.27)

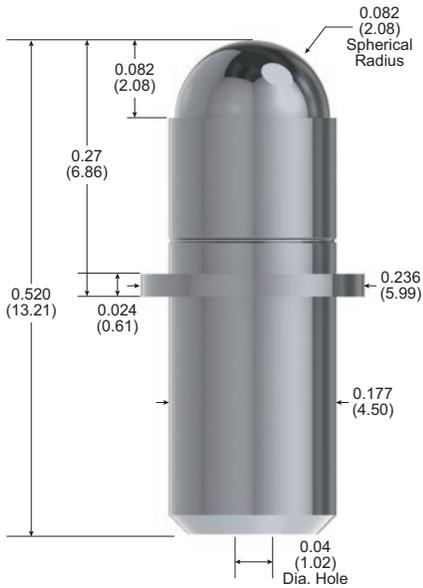
MATERIALS

Barrel	Nickel/silver, gold plated
Spring	Stainless steel, passivated
Plunger	Brass, Duralloy™

HOW TO ORDER

Part Number	101402-000
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► 100804 PROBE



PROBE SPECIFICATIONS

Minimum Centers	0.25 (6.35)
Current Rating	30 A continuous <i>(individual probe in free air @ ambient temperature)</i>
Spring Force	252 g @ 0.54 (1.37) travel
Typical Resistance	< 5 mΩ
Maximum Travel	0.082 (2.08)
Working Travel	0.054 (1.37)

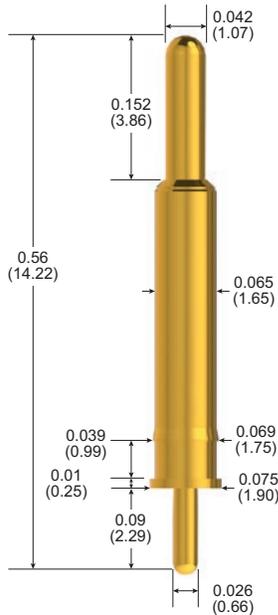
MATERIALS

Barrel	Brass, Duralloy™ plated
Spring	Stainless steel, passivated
Plunger	Brass, Duralloy™ plated

HOW TO ORDER

Part Number	100804-002
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## ▶ 101712 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.10 (2.54)
<b>Current Rating</b>	3 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	102 g @ 0.06 (1.52) travel
<b>Typical Resistance</b>	< 50 mΩ
<b>Maximum Travel</b>	0.12 (3.05)
<b>Working Travel</b>	0.06 (1.52)

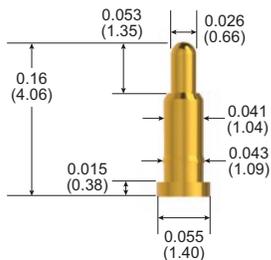
### MATERIALS

<b>Barrel</b>	Brass, gold plated
<b>Spring</b>	Stainless steel
<b>Plunger</b>	Brass, gold plated

### HOW TO ORDER

<b>Part Number</b>	101712-000
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## ▶ 101530 PROBE



### PROBE SPECIFICATIONS

<b>Minimum Centers</b>	0.07 (1.78)
<b>Current Rating</b>	1 A continuous <i>(individual probe in free air @ ambient temperature)</i>
<b>Spring Force</b>	71 g @ 0.042 (1.07) travel
<b>Typical Resistance</b>	< 50 mΩ
<b>Maximum Travel</b>	0.05 (1.27)
<b>Working Travel</b>	0.042 (1.07)

### MATERIALS

<b>Barrel</b>	Brass, gold plated
<b>Spring</b>	Stainless steel
<b>Plunger</b>	Full-hard beryllium copper, gold plated

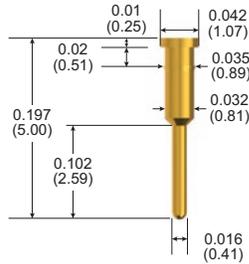
### HOW TO ORDER

<b>Part Number</b>	101530-000
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# CONNECTOR TARGET CONTACTS

## Dimensions & Specifications

### ▶ PI-5328



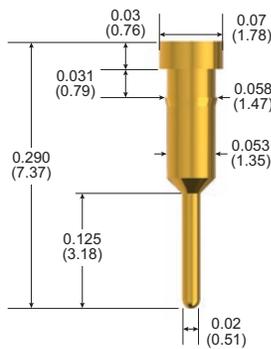
#### PIN SPECIFICATIONS

Mounting Hole	0.034 (0.86)
Pin Material	Brass
Plating Material	Gold over nickel

#### HOW TO ORDER

Part Number	305328-000
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### ▶ PI-5329



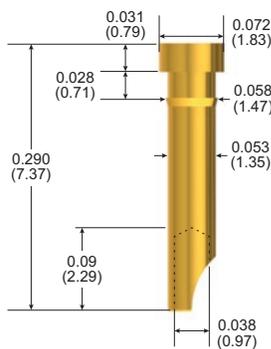
#### PIN SPECIFICATIONS

Mounting Hole	0.057 (1.45)
Pin Material	Brass
Plating Material	Gold over nickel

#### HOW TO ORDER

Part Number	305329-000
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### ▶ PI-5327



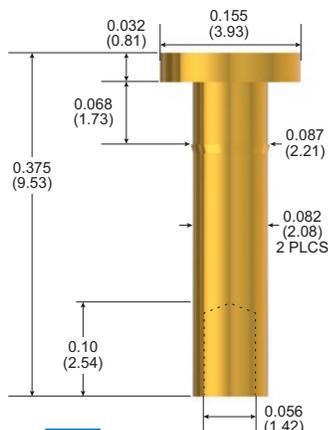
#### PIN SPECIFICATIONS

Mounting Hole	0.057 (1.45)
Pin Material	Brass
Plating Material	Gold over nickel

#### HOW TO ORDER

Part Number	305327-000
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### ▶ PI-5330



#### PIN SPECIFICATIONS

Mounting Hole	0.084 (2.15)
Pin Material	Brass
Plating Material	Gold over nickel

#### HOW TO ORDER

Part Number	305330-000
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# MARKETS & APPLICATIONS

## Medical



- ▶ MRI and CT scanning equipment
- ▶ Patient monitors
- ▶ Portable applications
- ▶ Catheters
- ▶ Therapeutic devices

## Commercial Aviation



- ▶ Avionics and radar equipment
- ▶ Power distributions systems
- ▶ Engine, landing gear and braking control systems
- ▶ In-flight entertainment and cabin equipment

## Defense



- ▶ Military aircraft and ground vehicles
- ▶ Land communications
- ▶ Naval systems
- ▶ UAVs/missiles/torpedoes
- ▶ Public safety communications

## Industrial



- ▶ Heavy equipment/machinery
- ▶ Servo drivers and encoders
- ▶ Robotics
- ▶ Factory automation
- ▶ Power supplies

## Rail



- ▶ High speed trains
- ▶ Main lines
- ▶ Inter-cities/metros
- ▶ Signaling equipment
- ▶ Infrastructures

## Oil & Gas



- ▶ Well-head logging recorders
- ▶ Smart PIGs
- ▶ Down hole monitoring systems
- ▶ Offshore exploration
- ▶ Seismic instrumentation

## Alternative Energy



- ▶ Wind turbines
- ▶ Solar panels
- ▶ Power systems
- ▶ Energy storage systems

## Test & Measurement



- ▶ Telecommunications
- ▶ Electronics testing
- ▶ Automotive testing

## Space



- ▶ Spacecraft / satellites
- ▶ Launchers
- ▶ Navigational systems
- ▶ Communications equipment



# SMITHS CONNECTORS

## GLOBAL SUPPORT

### AMERICAS

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#### Costa Mesa, CA

1.714.371.1100

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