

fixtest 



... SIMPLY THE BETTER CONTACT!

SPRING PROBES

EDITION 11 | 2015

Interactive
Navigation Elements





OVERVIEW

Dieses PDF ist mit interaktiven Querverweisen erstellt worden. Über die beiden oben platzierten Schaltflächen kommen Sie entweder zur letzten von Ihnen betrachteten Seite oder zu dieser Inhaltsübersicht.

Zudem sind alle Verzeichnisse und Produkt- oder Seitenverweise in Tabellen und Texten entsprechend verlinkt.

Series min. pitch Page

ICT / FCT TEST PROBES IMPERIAL TYPES

| | | |
|-------|---------|----|
| 107 | 1,00 mm | 18 |
| 108 | 1,00 mm | 18 |
| 07 | 1,27 mm | 19 |
| 071 | 1,27 mm | 20 |
| 141 | 1,27 mm | 21 |
| 14 | 1,27 mm | 22 |
| 15 | 1,27 mm | 23 |
| 115 | 1,27 mm | 24 |
| 151 | 1,27 mm | 24 |
| 18 | 1,90 mm | 26 |
| 75 | 1,90 mm | 27 |
| 751 | 1,90 mm | 28 |
| 752 | 1,90 mm | 29 |
| 754 | 1,90 mm | 29 |
| 21 | 2,54 mm | 31 |
| 29 | 2,54 mm | 32 |
| 100 | 2,54 mm | 33 |
| 101 | 2,54 mm | 35 |
| 125 | 2,54 mm | 35 |
| 26 | 3,18 mm | 36 |
| 27 | 3,96 mm | 37 |
| 28 | 4,80 mm | 38 |
| V75X | 1,27 mm | 39 |
| V100X | 2,54 mm | 39 |

ICT / FCT TEST PROBES METRIC TYPES

| | | |
|-----|---------|----|
| 30 | 2,54 mm | 43 |
| 31 | 2,54 mm | 44 |
| 40 | 2,54 mm | 45 |
| 41 | 2,54 mm | 46 |
| 42 | 2,54 mm | 46 |
| 44 | 2,54 mm | 47 |
| 49 | 2,54 mm | 47 |
| 50 | 3,80 mm | 50 |
| 150 | 3,80 mm | 50 |
| 154 | 3,80 mm | 51 |
| 155 | 3,80 mm | 51 |
| 51 | 3,80 mm | 52 |
| 60 | 4,50 mm | 53 |

INTERFACE CONTACTS

| | | |
|------------------|---------|----|
| GR1-GR4 | 2,54 mm | 56 |
| 20.08.23Z050T310 | | 56 |
| 211 | 2,54 mm | 57 |
| FK-069 | | 58 |
| FK-011 | | 58 |
| FK-011-F | | 58 |
| FK-627 | | 58 |
| FK-520 | | 58 |
| FK-069-80 | | 58 |
| FK-657 | | 58 |
| FK-726 | | 58 |
| FK-090 | | 59 |

| | | |
|------------|--|----|
| FK-190 | | 59 |
| FK-521 | | 59 |
| FK-507 | | 59 |
| FK-411 | | 59 |
| FK-488 | | 59 |
| FK-745 | | 59 |
| FK-026 | | 60 |
| FK-027 | | 60 |
| FK-027-E12 | | 60 |
| FK-352 | | 60 |
| FK-374 | | 60 |
| FK-458 | | 60 |
| FK-465 | | 60 |
| FK-500 | | 60 |
| FK-535 | | 61 |
| FK-650 | | 61 |
| FK-526 | | 61 |
| FK-386 | | 61 |
| FK-595 | | 61 |
| FK-596 | | 61 |

FINEPITCH CONTACTS

| | | |
|----------------|---------|-------|
| μHelix 200 | 254 μm | 66 |
| μHelix 300 | 363 μm | 67 |
| μHelix 400 | 477 μm | 68/69 |
| μHelix 500 | 592 μm | 69-71 |
| 105 | 1,00 mm | 72 |
| 106 | 1,00 mm | 73 |
| 700 | 1,27 mm | 74 |
| 701 | 0,50 mm | 75 |
| 702 | 0,70 mm | 76 |
| 703 | 0,80 mm | 77 |
| 704 | 0,80 mm | 78 |
| 705 | 1,00 mm | 79 |
| 706 | 1,00 mm | 80 |
| 708 | 0,50 mm | 81 |
| 707 | 1,27 mm | 82/83 |
| 820 | 0,50 mm | 84 |
| 825 | 0,70 mm | 84 |
| 831 | 0,70 mm | 85 |
| 835 | 0,70 mm | 85 |
| 838 | 0,80 mm | 86 |
| 840 | 0,80 mm | 86 |
| 848 | 1,00 mm | 87 |
| 858 | 1,00 mm | 87 |
| 872 | 1,27 mm | 88 |
| KJS-030-001W1 | 0,30 mm | 89 |
| KJS-030-002NW2 | 0,30 mm | 89 |
| KB1-026Q/W-02 | 0,40 mm | 90 |
| KHS-040-009W1 | 0,40 mm | 90 |
| KHS-040-010NW2 | 0,40 mm | 90 |
| KHS-050-011W1 | 0,50 mm | 90 |
| KHS-050-012NW2 | 0,50 mm | 90 |
| KHS-017-001CP | 0,17 mm | 91 |
| KHS-017-002RP | 0,17 mm | 91 |
| KHS-025-001CP | 0,25 mm | 92 |

| | | |
|---------------|---------|----|
| KHS-025-002RP | 0,30 mm | 92 |
| KHW-030-001C2 | 0,30 mm | 92 |
| KHW-030-002R1 | 0,30 mm | 92 |
| KHW-035-001C2 | 0,35 mm | 92 |
| KHW-035-002C2 | 0,35 mm | 92 |
| KHW-035-003R1 | 0,35 mm | 92 |
| KGW-040-001CP | 0,40 mm | 93 |
| KHW-040-002C2 | 0,40 mm | 93 |
| KHW-040-001R2 | 0,40 mm | 93 |
| KHW-040-004CP | 0,40 mm | 93 |
| KHW-040-003C2 | 0,40 mm | 93 |
| KHW-040-005R2 | 0,40 mm | 93 |
| KHW-040-006CP | 0,40 mm | 93 |
| KHW-040-008C2 | 0,40 mm | 93 |
| KHW-040-007R2 | 0,40 mm | 93 |
| KHW-050-003CP | 0,50 mm | 94 |
| KHW-050-001C2 | 0,50 mm | 94 |
| KHW-050-001C2 | 0,50 mm | 94 |
| KHW-050-002R2 | 0,50 mm | 94 |
| KGW-050-002CP | 0,50 mm | 94 |
| KHW-050-104C2 | 0,50 mm | 94 |
| KHW-050-105R2 | 0,50 mm | 94 |
| KHW-050-006CP | 0,50 mm | 94 |
| KHW-050-007C2 | 0,50 mm | 94 |
| KHW-050-008R2 | 0,50 mm | 94 |
| KHS-080-001CA | 0,80 mm | 95 |
| KGS-080-001CA | 0,80 mm | 95 |
| KHS-080-002RA | 0,80 mm | 95 |
| KJW-050-003CG | 0,50 mm | 95 |
| KJW-050-002RG | 0,50 mm | 95 |

BATTERY PROBES

| | | |
|--------------------|----------|-----|
| FK-480 | 4,30 mm | 100 |
| FK-554 | 5,30 mm | 100 |
| FK-381 | 5,72 mm | 100 |
| FK-598 | 4,45 mm | 100 |
| FK-382 | 7,00 mm | 100 |
| FK-519 | 7,00 mm | 100 |
| FK-575-WL | 5,56 mm | 100 |
| FK-441 | 8,22 mm | 100 |
| FK-674 | 5,85 mm | 101 |
| FK-492 | 8,60 mm | 101 |
| FK-555 | 5,30 mm | 101 |
| FK-466 / FK-664 | 7,80 mm | 101 |
| FK-757 | 4,70 mm | 101 |
| FK-516 / FK-516-08 | 10,50 mm | 101 |
| FK-717 / FK-717-05 | 5,60 mm | 101 |
| FK-640 | 11,50 mm | 101 |
| FK-459 | 10,00 mm | 101 |
| FK-576 | 4,20 mm | 102 |
| FK-460 / FK-460-08 | 4,10 mm | 102 |
| FK-744 | 2,70 mm | 102 |
| FK-540 / FK-540-15 | 3,70 mm | 102 |
| FK-648 | 2,00 mm | 102 |
| FK-715 | 2,90 mm | 102 |
| FK-663 | 2,10 mm | 103 |

| | | |
|--------------------|---------|-----|
| FK-499 | 2,00 mm | 103 |
| FK-714 / FK-714-06 | 2,60 mm | 103 |
| FK-691 / FK-691-06 | 2,54 mm | 103 |
| FK-741-HT | 2,80 mm | 103 |
| FK-754 | 2,54 mm | 103 |
| FK-454 | 2,70 mm | 103 |
| FK-565 | 2,54 mm | 103 |
| FK-566 | 2,54 mm | 103 |
| FK-566-GF | 2,54 mm | 103 |
| FK-515 | 3,18 mm | 104 |
| FK-586 | 2,54 mm | 104 |
| FK-606 | 2,54 mm | 104 |
| FK-576 | 2,54 mm | 104 |
| FK-694-S | 2,80 mm | 104 |
| FK-725 | 3,50 mm | 104 |
| 365 | 6,50 mm | 105 |
| 509E | 3,60 mm | 105 |

HIGH CURRENT CONTACTS

| | | |
|--------|---------|-----|
| 120 | 2,54 mm | 108 |
| 126 | 3,20 mm | 109 |
| 226 | 3,20 mm | 109 |
| 127 | 4,00 mm | 110 |
| 128 | 4,75 mm | 110 |
| FK-133 | | 111 |
| FK-052 | | 111 |
| FK-679 | | 111 |

KELVIN CONTACTS

| | | |
|------|---------|-----|
| BA10 | 3,00 mm | 115 |
| CA20 | 2,80 mm | 115 |

COAX / RF CONTACTS

| | | |
|------------|--|-----|
| 10103 | | 118 |
| 10105 | | 118 |
| 10107.001D | | 119 |
| 10114.001C | | 119 |
| FK-661 | | 119 |
| FK-652 | | 119 |
| FK-651 | | 119 |

CABLE HARNESS TEST

| | | |
|------|---------|-----|
| 70 | 2,54 mm | 122 |
| 71 | 2,54 mm | 123 |
| 72 | 4,00 mm | 124 |
| 172 | 4,00 mm | 125 |
| 73 | 2,54 mm | 126 |
| 265E | 3,50 mm | 127 |

OPTICAL LED-CHECK

| | | |
|-------------|--|-----|
| FINN® | | 130 |
| Smart FINN® | | 130 |
| Ultra FINN™ | | 131 |
| P-FINN® | | 131 |

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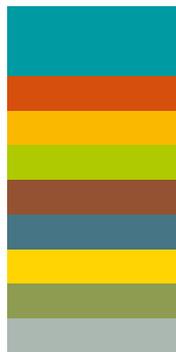




Illustration: Part of the FIXTEST Team



Dear customers and readers,

with the release of the latest edition no. 11 of our catalogue a special year for us has just ended: in 2014, we celebrated our 30th anniversary.

Our team experienced one or the other change and expansion, new products have been developed and put into production, new applications and markets are served.

Market requirements and your wishes moved us to redesign the catalog at some points: Case studies from different fields of use typically show how numerous the applications for spring contacts are and can be. For you as user of these versatile products these examples shall demonstrate which solutions are possible and how much easier and simplified some complex tasks can be that you face every day in your work life. If we succeed in the idea to stimulate your imagination and arouse your interest in our products and services, we have achieved our first goal and are very happy about that.

Do you also have tasks in the field of contacting? With the entire team of creative FIXTEST designers we look forward to your challenges and new exciting goals.

And we would be delighted to be continuously your fixed partner for all questions around Testing and Contacting.

Yours sincerely

Rainer M. Rothe
Managing Director





FIXTEST - THE ENTERPRISE

FIXTEST didn't invent the spring contact probe – it already existed some decades before our company was founded. But throughout more than 30 years being in business we added many new ideas and solutions to our industry. Since our early days it has been clear for us: mass products – that's the business of others.

Our company motto "... simply the better contact!" literally stands for our claim to an excellent customer relationship: We want to deliver more than just good products. FIXTEST's customers can always count on friendly, qualified, and reliable services. Their requirements form the basis of our future success.

LOCAL FOCUS

It's our aim to cooperate with business partners and suppliers from our local region whenever possible. We put emphasis on short distances and personal contact.

SOPHISTICATED TECHNOLOGIES

It is one of our core objectives: to innovate by turning new ideas of a motivated team into products and solutions – to use fantasy, strong will, and latest technology while considering our internal guidelines concerning the environment.

Innovative solutions, developed according to the needs of our customers, continuously accompany our corporate history. We have been first in Europe to use deep-drawn barrels and since then our customers benefit from increased reliability of spring contact probes. Just another example of customer-oriented developments is our patented switching probe with LED status indicator, used for testing multi-pin plugs, not to mention the new nano-coating for contact surfaces with improved characteristics.

Countless projects have been successfully implemented combining customer requirements with our ideas and long-term experience. The open-minded, straightforward and friendly contact with customers and interested parties, which repeatedly comes up with suggestions and advancements, is our daily business.

QUALITY

To meet your and our expectations we put considerable emphasis on the quality of our products. Fields of application like medical engineering place high demands on material quality, service life time, and reliability of the contact probes. Long-term partnerships with our suppliers raises trust and experience for both parties.

Certification according to ISO 9001:2008 and our comprehensive quality management system make sure that highest-level quality guidelines are met.

ENVIRONMENT

The prospect of our company building illustrates our values regarding environment: Preserving environment is often in the forefront of our decision making. During the planning period of our corporate building which we took over in 2007, we have put some extra focus on resource-conserving and environmental aspects. We utilise the power of the sun to heat building and water. Modern construction materials – mainly from renewable resources – assure efficient thermal insulation and a geothermics-based ventilation installation with heat exchanger provides a comfortable indoor climate.

Our certification according to ISO 14001:2009 emphasises our efforts to permanently check and improve the environmental performance of our enterprise.

Participating in the Dual System "Der Grüne Punkt" we make sure that our packaging materials will be fed into recycling systems. Thus raw materials and resources are conserved and the emission of greenhouse gases is reduced.



Our nano technology based surface coating XXLonglife has been specially developed for the requirements of lead-free soldering, enabling our customers to trouble-free use this environmentally friendly production technology.

SAFETY AND SECURITY

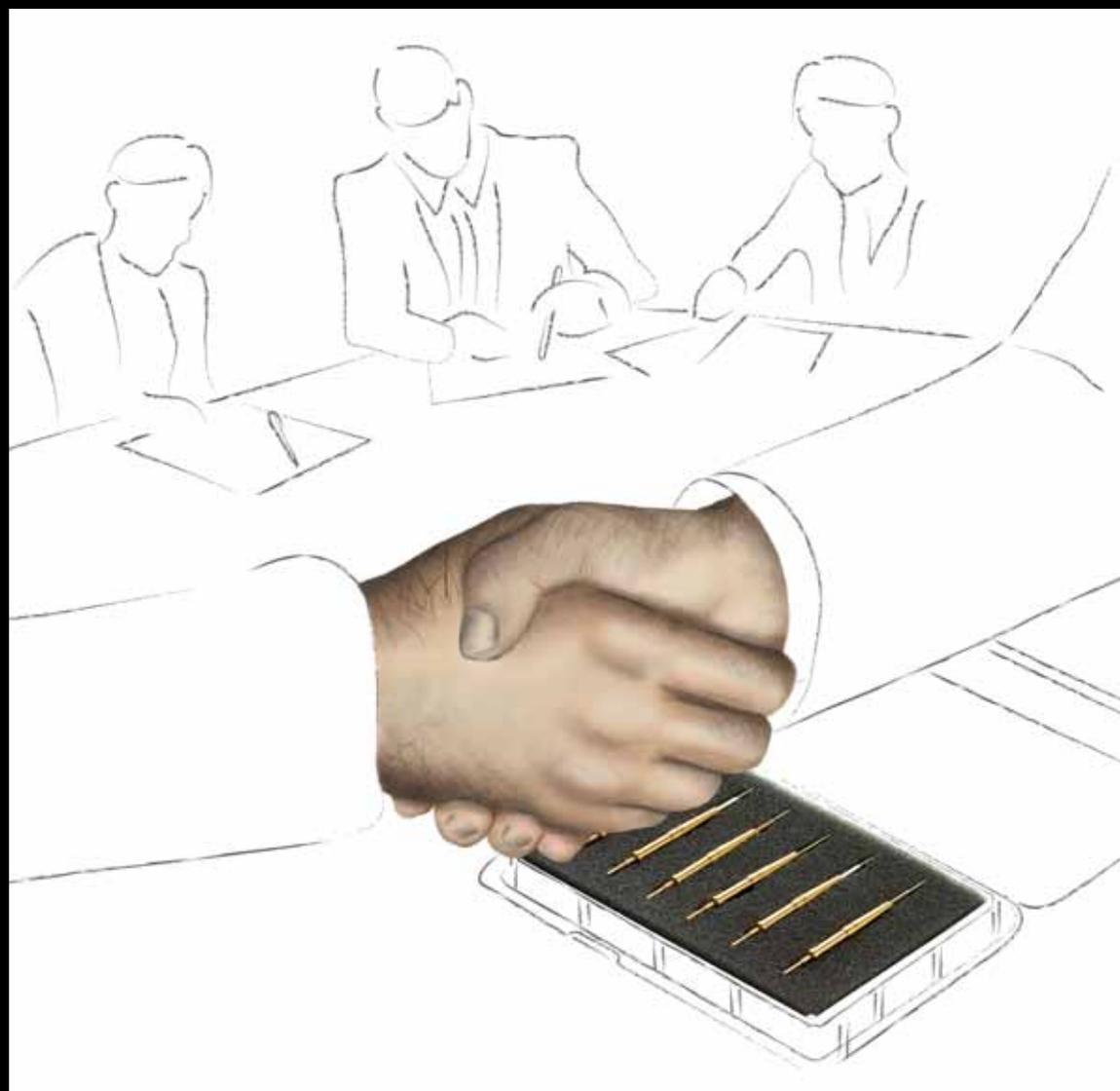
Apart from the sectors QUALITY and ENVIRONMENT, FIXTEST's combined management system also covers the SAFETY aspect with emphasis on the current topics of secured supply chain. We continuously forge ahead and dynamically extend our comprehensive management handbook with new topics to become part of our daily business life.

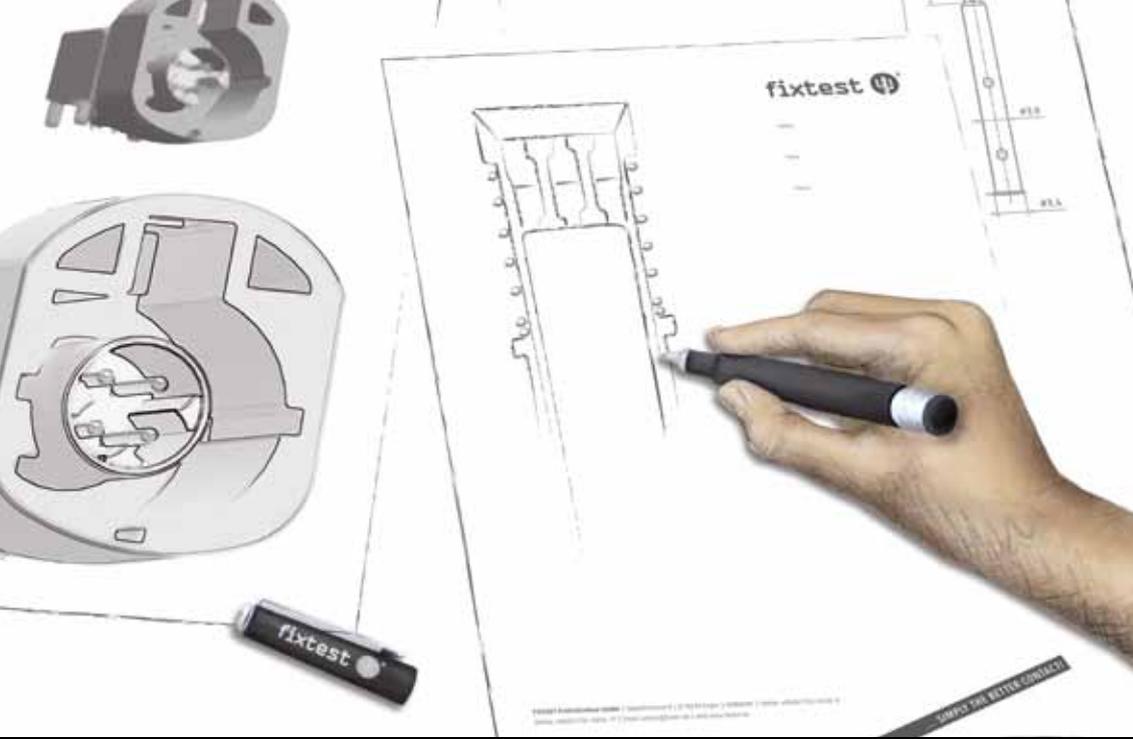
The milestones of a successful project: Our know-how, our creativity and our service ensure the reliability of our, and thus your products.



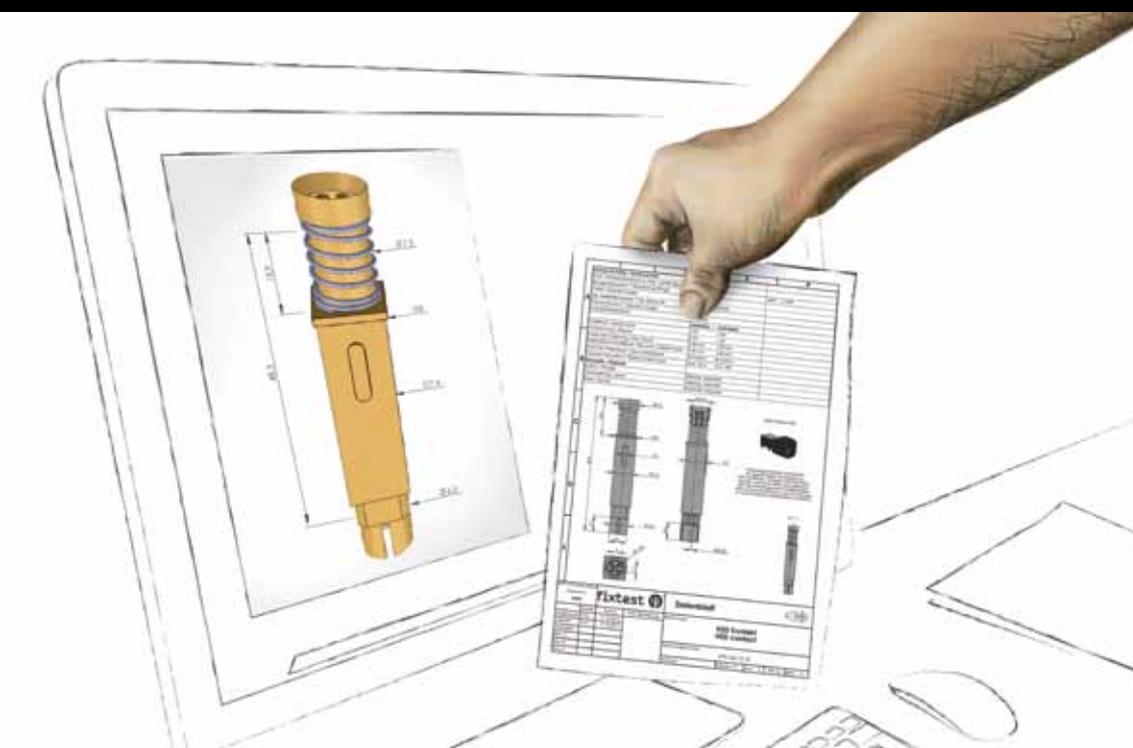
Good advice and reliable agreements are the basic requirements that you as a customer - regardless of what sector of the electronics industry to come - expect from us. We will not disappoint you!

Call us at
+49 7733 5056-0

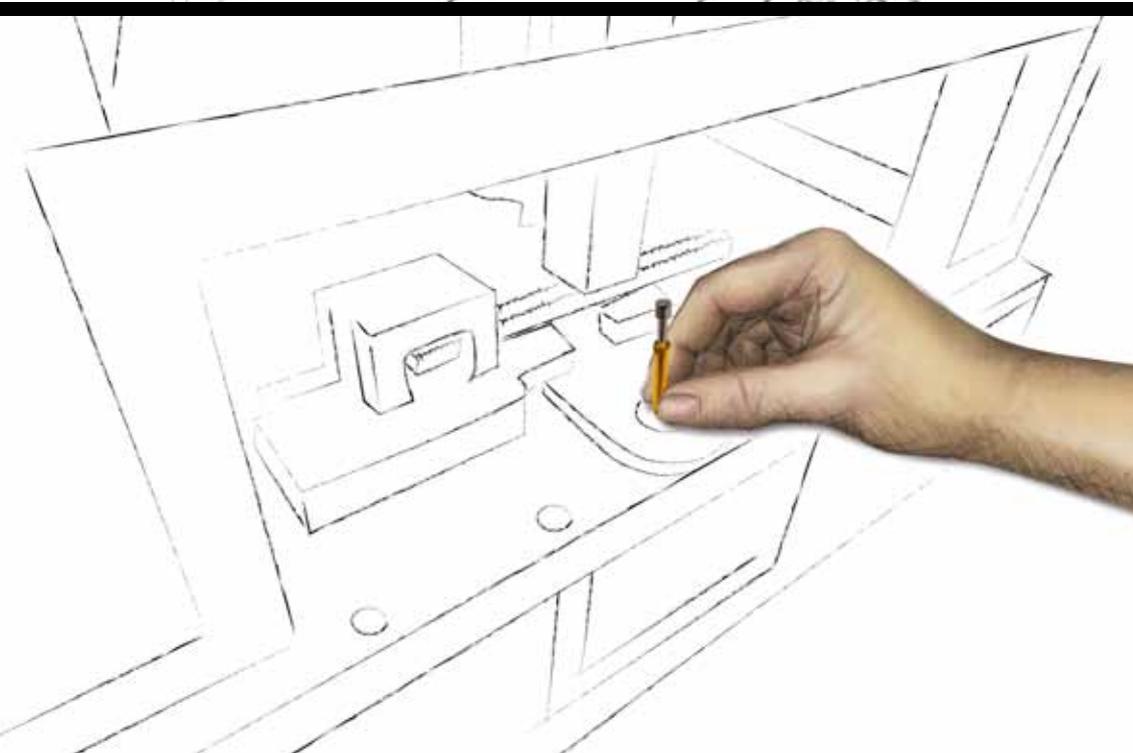




You name the task - we provide the solution! The design and development is always at the beginning of each new project. Experience from 30 years of successful business development coupled with the use of modern technologies provide the basis for innovation.



Design, construction, documentation - the close contact with our customers and suppliers allows us fast development times.



Personal service is our pursuit, variety and market proximity our trademark. Semi-automated production processes allow us a high degree of flexibility to adapt to your test application.

SPRING CONTACT PROBES

FIXTEST offers a comprehensive product range of spring loaded contact connections. The traditional focus is on test engineering. For this field of application we offer contact probes for the following subcategories:

- Test contacts for bare-board and loaded board test (ICT/FCT)
- Rigid interface-pins and pin blocks
- Fine-pitch contacts for hybrids and semiconductors
- Switch probes and pneumatically actuated contacts
- High-current probes
- Threaded spring contact probes, for instance used in cable harness test
- Coaxial and radio-frequency (RF) spring contacts

SPECIAL INTERCONNECTING SOLUTIONS

- Battery probes used in battery chargers, docking stations or interface solutions for mobile devices
- Kelvin contacts for four-wire resistance measurement

In addition, we provide accessories and tools for spring contacts and test engineering.

CUSTOM-MADE PRODUCTS

Custom-made articles and new products are designed and manufactured in close cooperation with our customers. Our technical staff will be glad to advise you in a personal conversation. Our service does not necessarily stop after the spring probe itself. We would also be happy to be at your service with design, manufacture and assembly of complete contact fixtures. Confront us with your entire problem before running into a headache for singular solutions.

TESTING DEVICES

In the area of test engineering we develop and assemble test setups and test fixtures and interfaces tailor-made for your applications. Particularly when the area of standard solutions is left behind we like to come into play. Be it a high voltage test jig, a workpiece support system with integrated contacting or a test socket for smallest fine pitch terminals - call our consultancy team today!

SERVICES

FIXTEST offers additional services for the manufacture of test subassemblies and entire test rigs:

- Drilling and milling on specialized machinery
- Prototyping
- Placement, soldering, and assembly of spring contacts or sub-assemblies
- Measurements and quality checks with measuring microscopes

MAINTENANCE PRODUCTS

We supply care and cleaning products from CAIG Laboratories, Inc. which protect the surface of contacts and reliably improve signal transmission. Contaminations and oxides will be removed, cleaned surfaces will be long-term protected.

LED COLOUR VERIFICATION

For testing of LEDs on board assemblies we offer the FINN™ LED sensors from Test Coach Corp. You can use different types of FINN™ sensors for fast and easy checks of hue and value of your assembled LEDs.



THE STRUCTURE OF FIXTEST ARTICLE NUMBERS

How to select the right probe for your application:

Step 1:

Determine the ideal contact diameter based on the test point pitch of the points you want to probe. Often the total length and/or the travel of the probe is of importance. Rule of thumb: Always select the maximum diameter for the contact probe.

Step 2:

Decide whether you will use metric or imperial sized contact probes. Consider the probe travel requirements of your test fixture or jig, when selecting the contact probe. The metric types provide a fixed stop which is less error-prone during maintenance work. The imperial types are more flexible during installation. This could be regarded as advantage – or disadvantage. If you seek advice – just call us. We will be glad to assist you any time.

Step 3:

Use the summary table to select the probe series that best suits your criteria. From the catalogue page of the chosen series you can select head style and spring force. Application examples on page 11 might be helpful to make your decision. If you feel lost due to the enormous type variety: we will be glad to give advise. We can also “translate” the code numbers of compatible brands for you. Those codes could be found e.g. on the spare parts list of your test equipment.

Step 4:

The corresponding code number can be found besides each head style illustration. The code numbers end in a “xx” wildcard. Often you can choose among different spring forces.

Replace “xx” with the code of the selected force.

If additional options are available for the respective series, they will be described and can be chosen by adding the option code to the code number.



Don't forget to choose the optional **XXLonglife-Nano-Coating** which we offer for many products. Contacts with this option have much longer service life and – in the long run – provide more reliable contacting than conventional products. Add a capital „X” directly after the “series” part of the code number to select this option.

Step 5:

Choose the appropriate receptacle. Normally test probes are inserted into receptacles which are wired by soldering, crimping, or wire-wrapping. Benefit: The wiring stays untouched when a spring probe must be replaced. Finally choose your preferred wiring technique.

EXAMPLE FOR THE COMPOSITION OF THE ORDER CODE NUMBER

| | | | | | | | |
|---|---------------|------------|-------------------|------------------------|-------------------------------|---------------------------------|---------------------------------|
|  | Ø 1,50 | 100 | X. | 08. | 15. | xx | SP |
| Head style illustration | Head diameter | a. | XXLonglife-Option | b. | c. | d. | e. |
| | | Series | | Head style code number | Head diameter (rounded value) | Rated Spring force in dN | Additional option, if available |

EXPLANATIONS AND NOTES

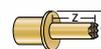
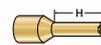
This order number coding system doesn't apply for all articles. e.g. battery probes with FK numbers are excluded.

b. Head styles made of steel start with an extra leading „1”.
Example: Serrated, CuBe: 08; Serrated, steel: 108

d. Select desired spring force and replace „xx” by the value from the selection table.

e. Extra Option

Some series offer additional options which are described in the explanatory text of the series. Add this code here.



The values for **H**, **Z** and **T** are given in the product numbers in hundredths of a millimeter.

Example: **20.08.23Z050T310**
Z = 0,50 mm; **T** = 3,10 mm

XXLONGLIFE NANO-COATING

XXLONGLIFE-NANO-COATING. OUR SPECIALTY.

Contamination, wear, and corrosion are serious problems for the use of contacts in various electronic devices or for test purposes of assemblies and components.

Particularly the in-circuit-test of board assemblies is faced with problems which arise mainly from tin or tin oxide particles which tend to adhere to the contact probe. Lots of contact malfunctions (false alarms) and a reduced service life of the test probes are direct consequences.

To solve this problem for our customers, we partnered with an institute for nano technology to create the contact surface coating XXLonglife.

The XXLonglife advantage: Compared with conventional contacts, corrosion and wear are avoided or at least massively delayed. Service life of the spring contacts is largely extended. Annoying and costly maintenance work can be reduced. Production expenses are lowered and downtime of the test equipment is significantly reduced.

The XXLonglife coating is available for many of our products. Information is provided on the respective product pages.

CONVINCING FEATURES OF OUR NANO-COATING FOR CONTACT SURFACES

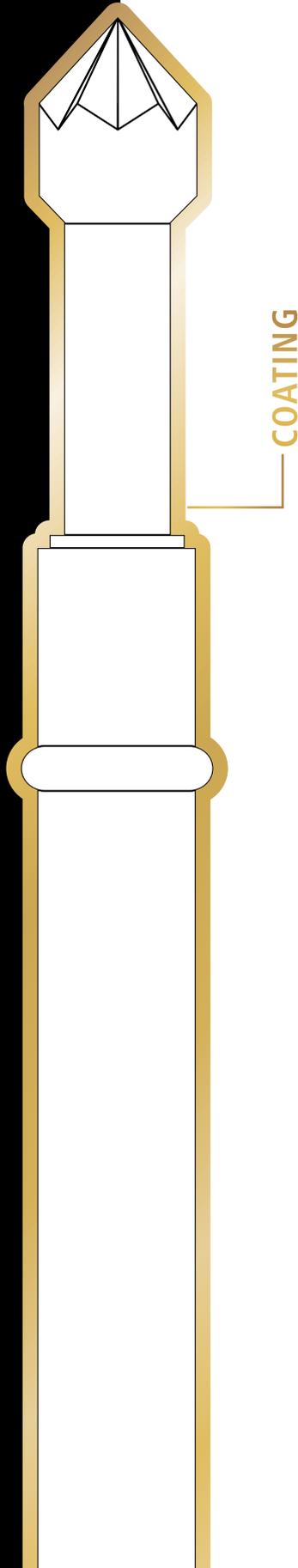
Our nano-coating is the ultimate solution to provide the spring contact head with a dirt-repellent and hardened surface. Further more, friction is reduced and wear is lowered.

- Prolonged service lifetime of the contacts
- Reduced production costs for in-circuit-test
- Prolonged maintenance intervals of test jigs and inline systems
- Increased first pass yield rate
- Contacting malfunction is avoided
- Increased service life – lower costs

To specify the XXLonglife coating in your purchase order, simply add a capital „X“ after the series code segment.

Example:

75.07.12.15 > 75X.07.12.15



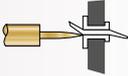
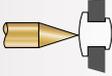
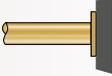
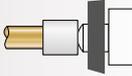
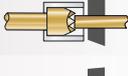
HEAD STYLES

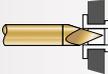
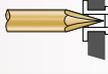
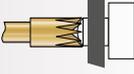
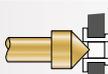
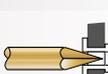
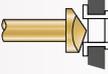
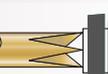
HEAD STYLES FOR SPRING PROBES FIELDS OF APPLICATION

The illustrated typical application examples shall assist you in making your selection. The numerical codes near the head style descriptions are the same as used in the order number codes which you will find on the following product pages.

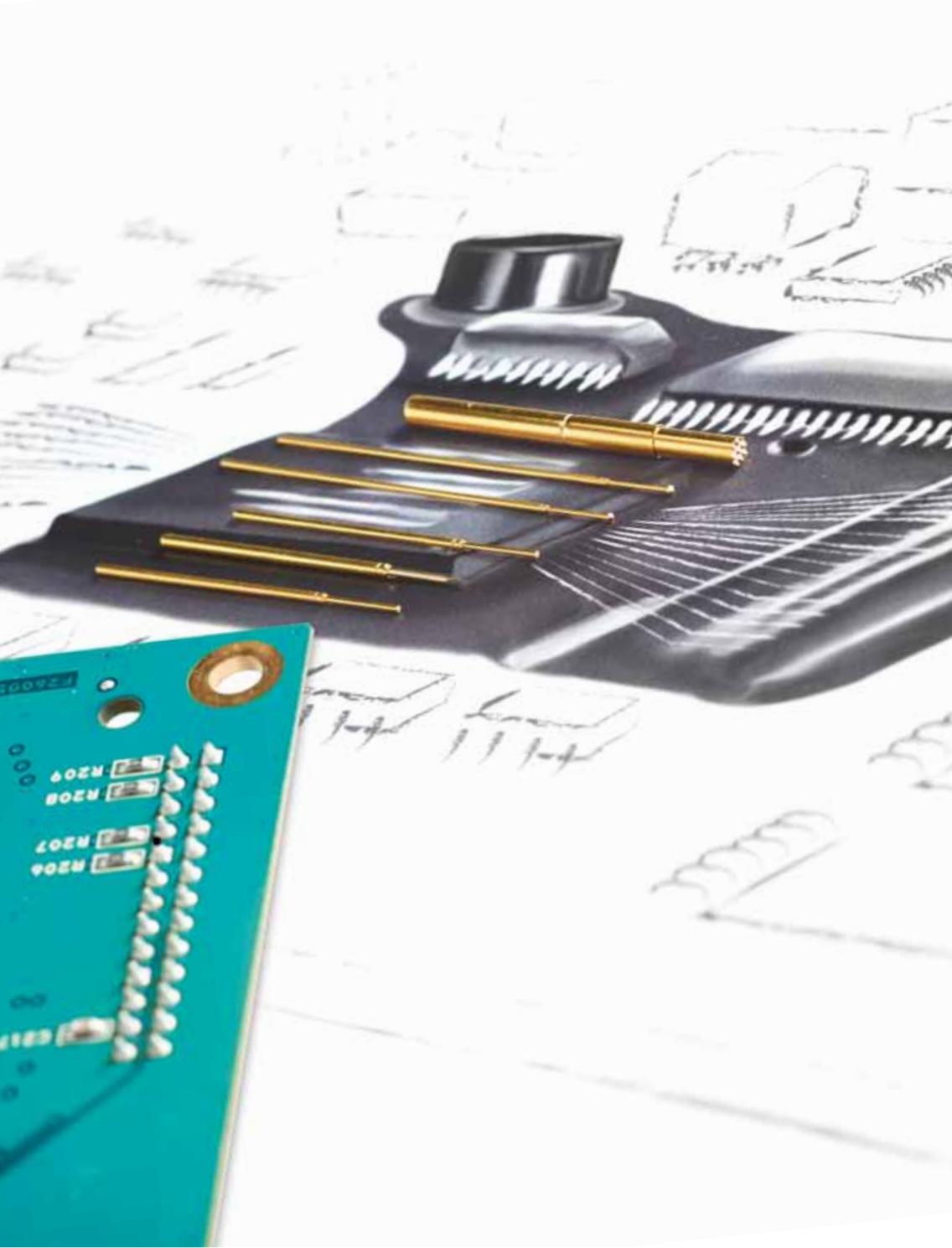
Spring contact probes are being used mainly for the test of loaded or unloaded boards in electronics (bare board test, MDA test, In-Circuit-Test, Functional Test).

Selection of the best suiting head style depends on several factors. Particularly the use of lead-free solder products imposes high requirement levels on the contact elements for testing board assemblies. Flux residues or other contaminations on the device under test impede reliable contacting with traditional methods. Special head styles or application specific contact probes can lead a way out

| No. | Head Style | | Main field of application |
|-------|--|---|---|
| 101 | Flex-Needle Steel |  | Long, cut, irregular shaped component pins. Highly resistant against radial force. Aggressive and flexible, penetrates insulating coatings. |
| 102 | Sharp Tip Steel |  | Similar range of application compared with the flex needle, but not flexible and with better electrical characteristics. |
| (1)03 | Flat |  | For sensitive contact surfaces (gold plated pads), edge connectors, and clean surfaces which must not be damaged (indented). Easy to clean. |
| 203 | Plastic Flat Head non-conductive |  | Mainly used for switch probes and seating pins which have only mechanical modes of operation and should be non-conductive. |
| 04 | Concave Head Cup |  | Connector pins, wire-wrap posts, long component terminals. Self-centering. |
| 05 | Spherical Round |  | Gold plated pads, edge connectors. Leaves no marks or indentations. |
| 06 | 4-point Crown |  | Convex solder pads, short component leads, solder points, general purpose areas. Universal use. |
| 07 | Crown with Centre Tip Centre Tip is protruding |  | Component leads, wire-wrap posts, solder points of any shape. Universal use. |
| 08 | Serrated Tip typically composed of nine pyramids |  | Component leads, terminal strips, screw heads, general purpose areas. |
| 308 | Serrated with protruding plastic sleeve |  | Detecting the presence of component leads. Missing pins or too short pins are not contacted. |
| 09 | 6-sided Chisel 90° |  | Open vias (plated through holes), breaks through contaminations. Certain terminal strips. |

| | | | |
|-----|---|---|--|
| 10 | 3-sided Chisel 30° Tip shows up with 30° when rotated |  | Open vias on bare boards and loaded boards. Interface contacts. |
| 12 | 6-sided Dagger |  | Heavily flux-contaminated pads (long time after soldering), soldered or open vias. |
| 13 | 8-point Crown self cleaning |  | Good self-centering, for heavily contaminated component leads (after wave soldering) and pads of suitable size. |
| 14 | Rounded Sharp Tip 60° |  | Similar to Sharp Tip, but with less penetration and indentation marks. Concentrates the contact force on a point. |
| 15 | Conical Tip 90° |  | Open, clean vias, doesn't leave marks or indentations. Partly suitable for female connector contacts. |
| 118 | Dagger also called Spear, 4-sided |  | Heavily flux-contaminated pads (long time after soldering), soldered or open vias. This is the most common head-style in ICT fixtures. |
| 20 | 3-sided Chisel Tip shows up with 90° when rotated |  | Open vias, applications similar to style 15, but with three edges. Good contact quality in interfaces with hollow counter-parts. Self-centering. |
| 22 | 4-sided Chisel |  | Open vias, applications similar to style 20, however with four edges. |
| 24 | Spade also called passive dagger |  | Open vias (plated through holes), breaks through contaminations. Less aggressive than style 118. |
| 26 | Spade also called passive dagger |  | Open vias (plated through holes), breaks through contaminations. Certain terminal strips. Similar to type 24, but more obtuse angle. |
| 27 | Crown with Centre Tip Centre Tip has same length |  | Component leads, wire-wrap posts, solder points of any shape. Universal use. Similar to type 07, centre-tip has same length as crown tips around. |
| 30 | 3-sided Chisel Tip shows up with 106° when rotated |  | Large open vias in Bare Board Test. Only available in series 29. |
| 35 | Lentil Head |  | Surface protecting contact on pads and foil. Very common on Battery Probes and slip ring contacts. |
| 46 | Self cleaning 4-point Crown |  | Convex solder pads, short component leads, solder points, general purpose areas. Universal use. Similar to type 06, but self cleaning. |
| 49 | 6-sided Chisel with Collar |  | Open vias (plated through holes), breaks through contaminations. Certain terminal strips |
| 61 | Cross-slotted Concave Head self cleaning |  | Connector pins, wire-wrap posts, long component terminals. Self-centering. Similar to type 04, but more aggressive because of additional inner edges and self-cleaning by removal ducts. |
| 162 | 5-point Crown Steel |  | Universal shape. Due to odd-numbered points at least one point makes contact, even with bar-shaped contacts. |

In addition to the above mentioned examples a broad range of special head styles is available. We will be happy to assist you in selecting the suitable head style for your application. Many head styles are optionally available as steel type. In such cases the code number begins with a 1, for instance 146 instead of 46.



ICT / FCT

The fields of In-Circuit Test and Functional Test is the origin of the spring contact technology for almost 50 years - and still an important part of what we do. We offer international standards of great diversity.

But also for special solutions, we are open and happy to help you!



AUTOMATION

Whether as a connecting element in the interface of changeable robot grippers or in the power of supply rail-guided transport systems and workpiece carriers - the spring contact impresses with its simple and insensitive handling.



APPLICATION EXAMPLES

SPORTS AND LEISURE

Modern battery technologies enable more and more mobile devices for sports and leisure.

The use of high-performance LEDs is just one of many examples of spring contacts in outdoor equipment, where for the charging interface our products come into play.



RADIO AND TELE- COMMUNICATIONS

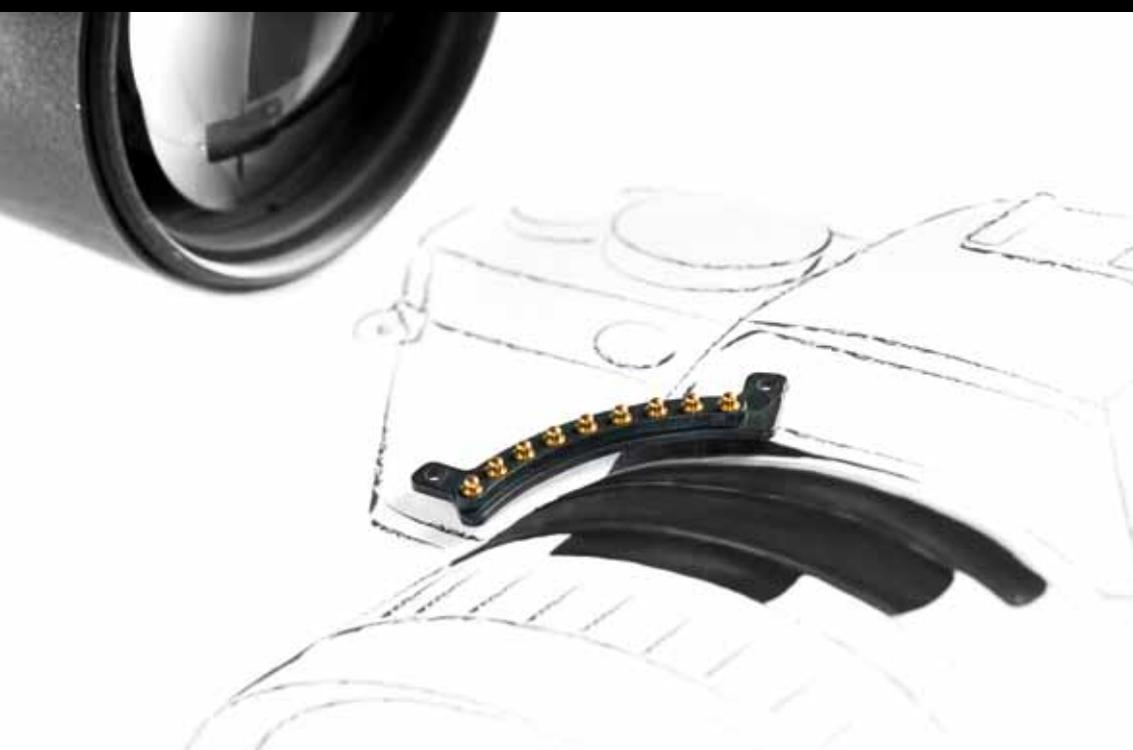
In mobile communications, in addition to the power supply and signal transmission RF antenna terminals are relevant.





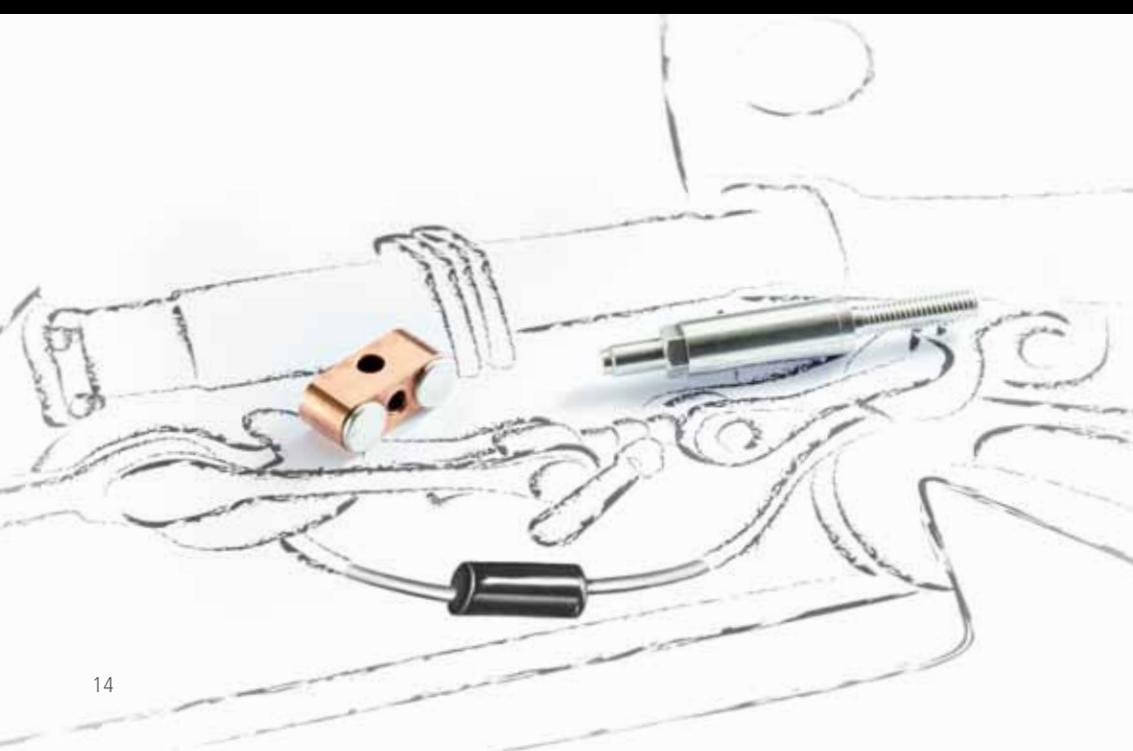
MEDICAL TECHNOLOGY

Wireless mobile devices are used more and more in medical practice and the operating room. The power supply of appliances and instruments reliably works with our spring contacts.



ELECTRICAL APPLIANCES

Household appliances, white goods, but also cameras and gadgets are typical application areas for our resilient contacts „Made in Germany“.



HIGH CURRENT

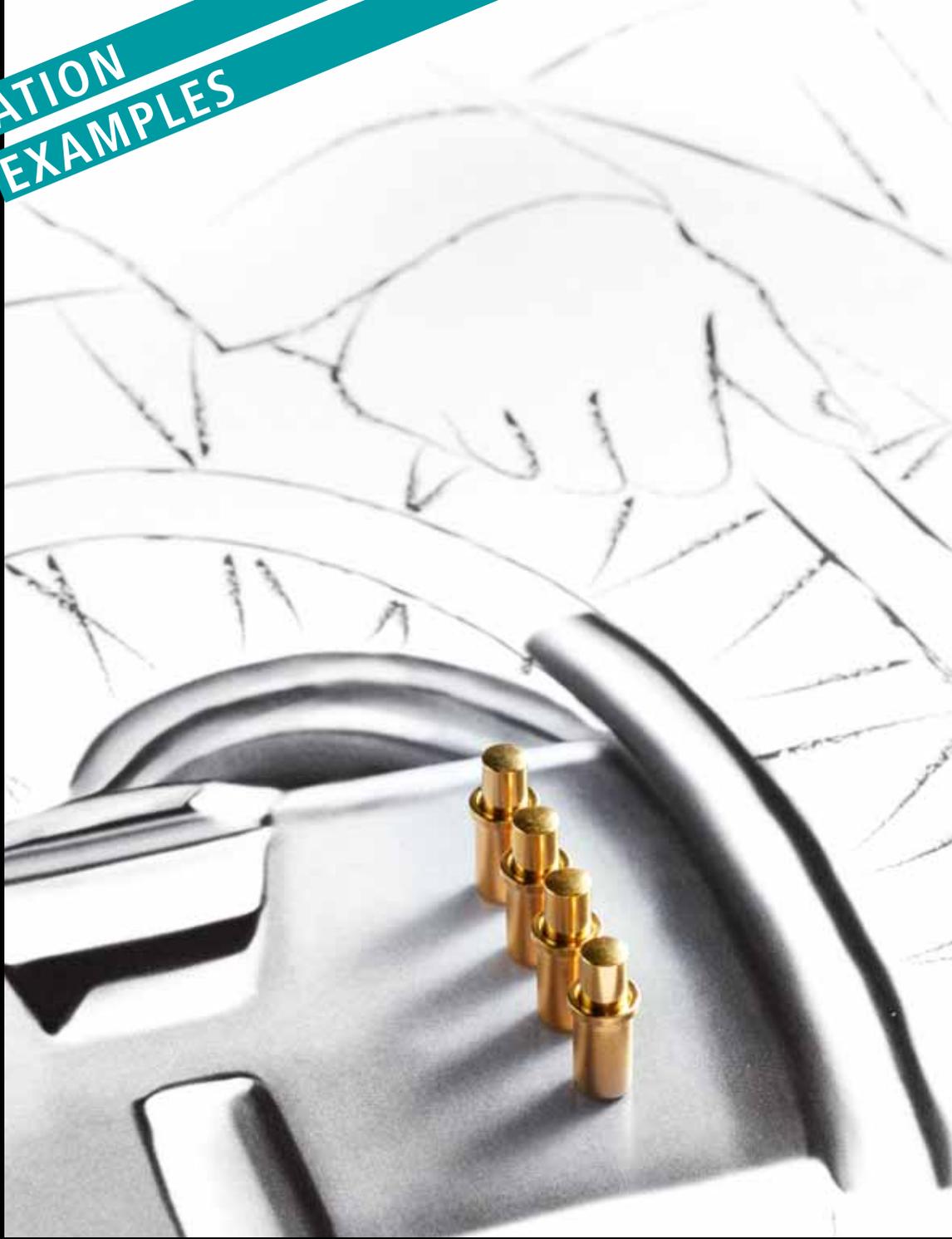
Where really high current flows accordingly durable contact solutions are demanded. Our high-power department will be waiting for with compelling products.



APPLICATION EXAMPLES

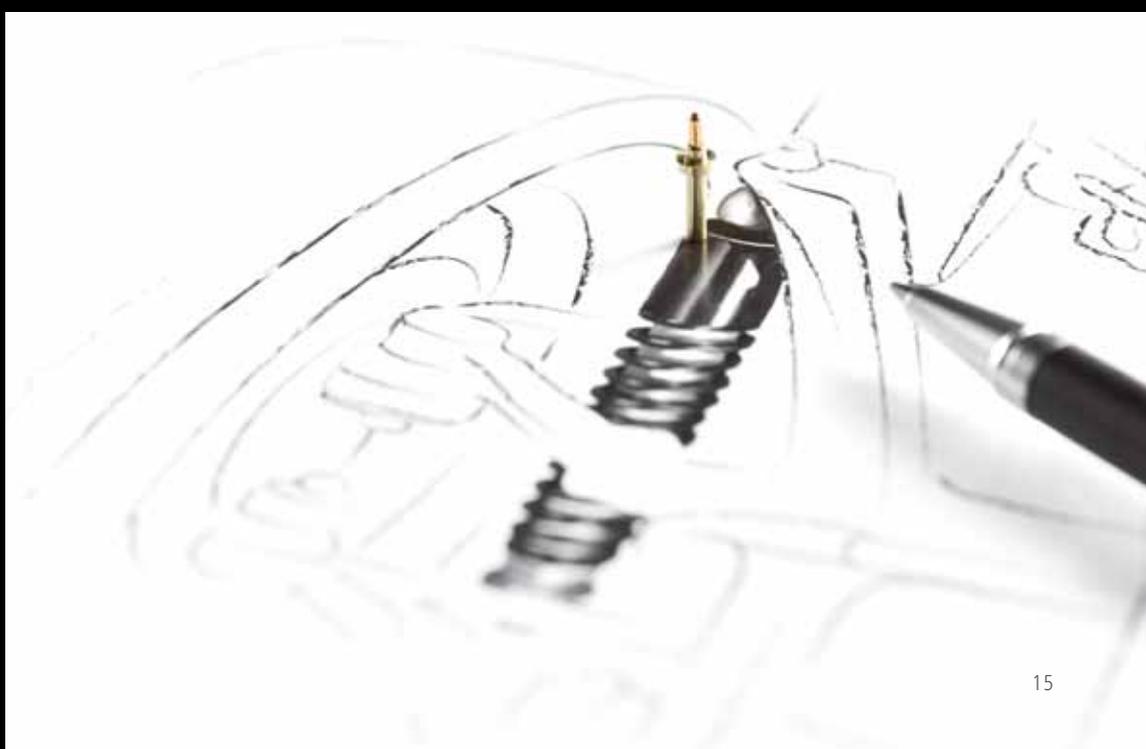
VEHICLES AND MOBILITY

Electric mobility is the magic word of this decade. The spectrum of electrically operated vehicles ranges from the car over Pedelecs and e-bikes up to the wheelchair with electric power assistance. In the battery box our contacts care for durable and reliable operation during the move.



AUTOMOTIVE

Sometimes amazing where spring contacts are found throughout the vehicle. Latest technologies are changing the future - and with it the spring contacts of FIXTEST.



ICT / FCT TEST PROBES

In-circuit-test (ICT), manufacturing defects analysis (MDA), and functional test (FCT) are the most widely used test methods for testing electronic board assemblies. Each of these test methods has its own limits regarding test coverage and fault detection/diagnosis. Therefore it makes sense to combine different test methods. In all cases a test jig or fixture is required which uses spring contact probes to connect the unit under test (UUT) or device under test (DUT) with the test equipment.

In this chapter you will find the most common series/styles for this field of application. In most cases, they will be compatible in size with spring contacts from other manufacturers on the international market. We would be glad to assist you in translating other manufacturer's order codes into compatible FIXTEST codes.

Imperial sized test probes (inch-types)

Grid spacing (centre-pitch) in board design – and therefore also in test engineering – is widely dominated by the inch based imperial measurement unit system. So US manufacturers have developed sizes for contact series which are oriented towards common standard sizes of drill bits and other tools in the United States. Many of these designs are spread around the world today and have also become standard in Europe. We have been offering imperial sized series for a long time and continuously broaden the range. However, there are arguments for the selection of the best suiting measurement system which should be considered. See a detailed discussion of the topic "imperial or metric" in the handbook that you find on our website.





| Imperial Series | Page |
|-----------------|------|
| 07 | 19 |
| 14 | 22 |
| 15 | 23 |
| 18 | 26 |
| 21 | 31 |
| 26 | 36 |
| 27 | 37 |
| 28 | 38 |
| 29 | 32 |
| 071 | 20 |
| 75 | 27 |
| 100 | 33 |
| 101 | 35 |
| 107 | 18 |
| 108 | 18 |
| 125 | 35 |
| 141 | 21 |
| 115 | 24 |
| 151 | 24 |
| 751 | 28 |
| 752 | 29 |
| 754 | 29 |
| V75X | 39 |
| V100X | 39 |



Metric series
starting at page 40

Series 107 / 108

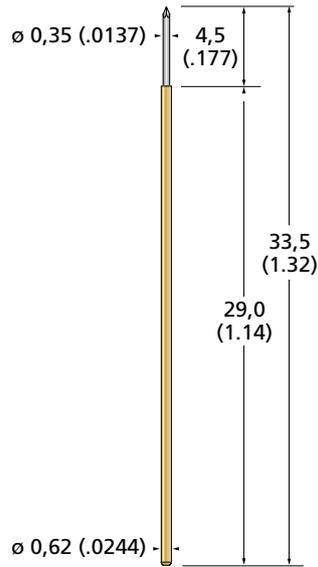
Technical Data

| | |
|-------------------------|--------------------|
| Overall Length | 33,5 / 35,90 mm |
| Minimum Centre Spacing | 1,00 mm |
| Maximum Travel | 4,50 / 6,90 mm |
| Working Travel | 2,20 / 4,60 mm |
| Temperature Range from | -45°C |
| Up to | +120°C |
| Typical Resistance | 50 mΩ |
| Current Load rated/max. | 1,0 / 1,5 A |

Materials

| | |
|---------|-------------------------|
| Plunger | Steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, gold plated |

Series 107



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|----------|
| 0,4 N | 0,9 N | xx 09 |

| | | |
|--|--------|---------------|
| | Ø 0,35 | 107.123.04.09 |
| | Ø 0,35 | 108.123.04.09 |
| | Ø 0,35 | 107.126.04.09 |
| | Ø 0,35 | 108.126.04.09 |
| | Ø 0,60 | 107.126.06.09 |
| | Ø 0,60 | 108.126.06.09 |



For XXLonglife-Nanocoating order as 107X / 108X

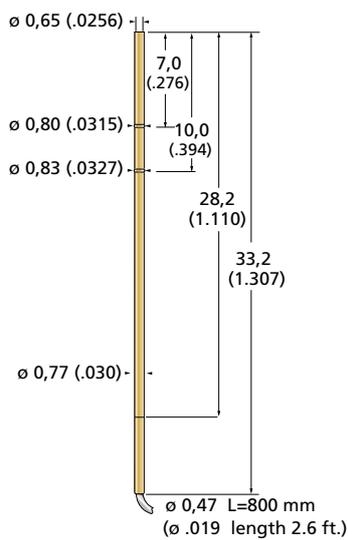
The Series 107 and 108 use the receptacles of the series 108.

Series 107 is shorter and has a better pointing accuracy, suitable even for small test pads ≥ 0.6 mm. The Series 108 can be combined with other standard series for larger grid which have the same stroke length. Test pads with min. ≥ 0.70 mm in diameter are recommended.

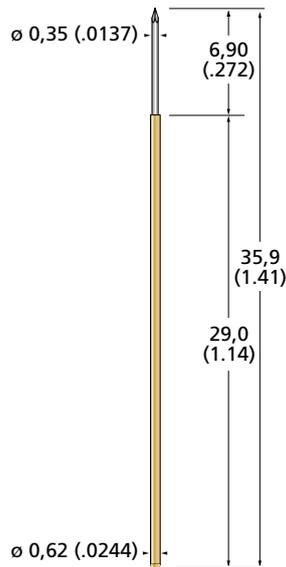
More head style variants available on request.

S 108.02-CD

AWG30 wire pre-attached

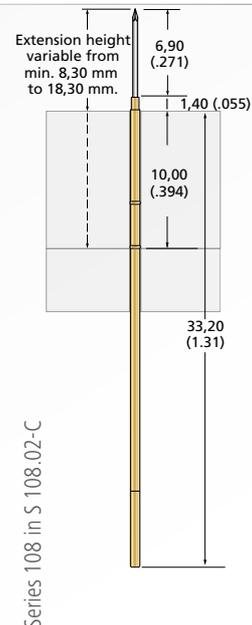
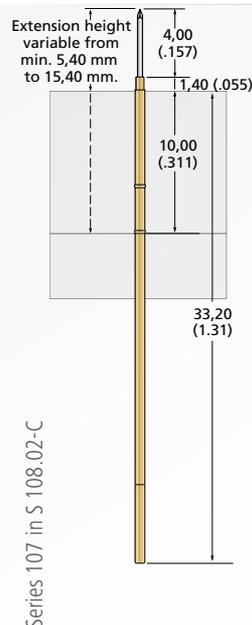
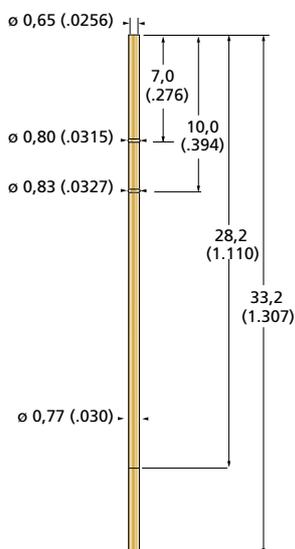


Series 108



S 108.02-C

Open Crimp End



FIXTURING EXAMPLE

Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,15 N | 0,6 N | 06 |
| 0,30 N | 1,0 N | 10 |

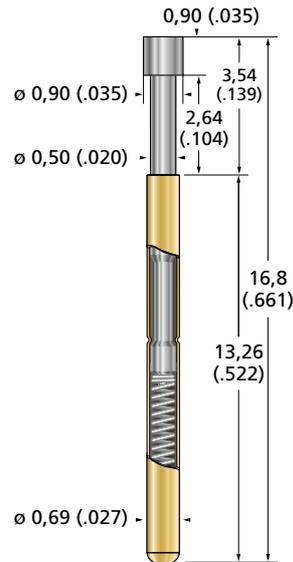
| | | |
|---|--------|-------------|
|  | Ø 0,50 | 07.02.05.xx |
|  | Ø 0,50 | 07.04.05.xx |
|  | Ø 0,90 | 07.04.09.xx |
|  | Ø 1,40 | 07.04.14.xx |
|  | Ø 0,50 | 07.05.05.xx |
|  | Ø 0,90 | 07.05.09.xx |
|  | Ø 0,90 | 07.08.09.xx |
|  | Ø 0,90 | 07.15.09.xx |
|  | Ø 0,90 | 07.20.09.xx |



For **XXLonglife-Nanocoating**
order as **07X**

More head style variants available on request.

Series 07



Series 07

Technical Data

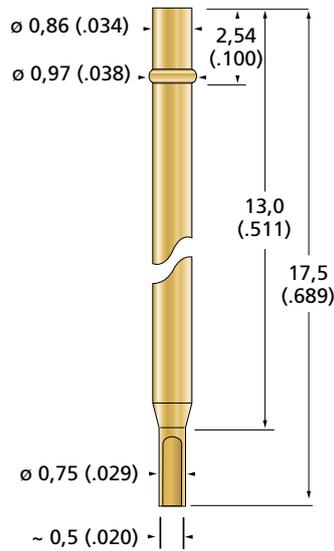
| | |
|-------------------------|-------------|
| Overall Length | 16,8 mm |
| Minimum Centre Spacing | 1,27 mm |
| Maximum Travel | 2,54 mm |
| Working Travel | 1,70 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,0 / 3,0 A |

Materials

| | |
|---------|--|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated or silver plated |

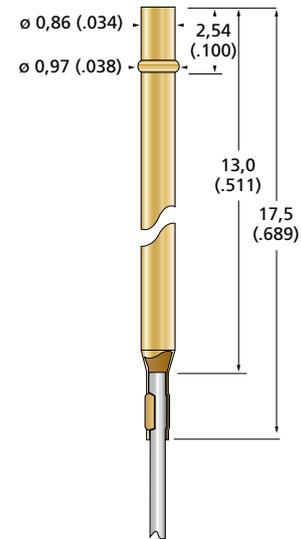
S 07.00-L

Solder Cup



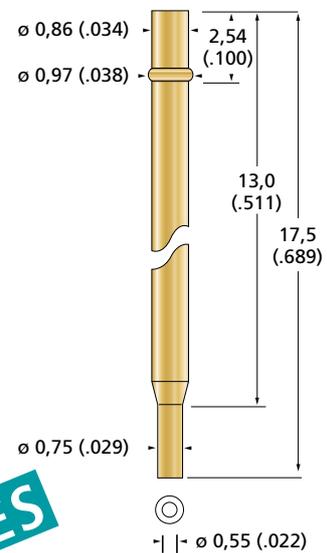
S 07.00-CD

Pre-attached Wire

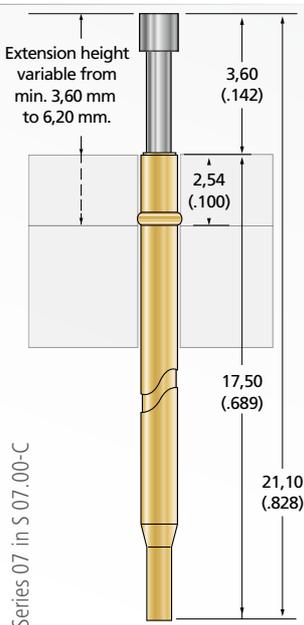


S 07.00-C

Open Crimp End



FIXTURING EXAMPLE



ICT / FCT
TEST PROBES

ICT/FCT TEST PROBES
SERIES 07

Max. Current Load
3,0 A

Overall Length
16,80 mm

Working Travel
1,70 mm

Max. Travel
2,54 mm

Pitch
≥ 1,27 mm ≥ 50 mil



Series 071

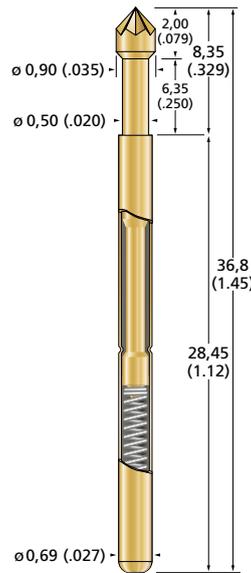
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 36,8 mm |
| Minimum Centre Spacing | 1,27 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,0 / 3,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

Series 071



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|----------|
| 0,2 N | 0,6 N | xx 06 |
| 0,3 N | 1,0 N | 10 |

| | | |
|--|--------|----------------------|
| | Ø 0,50 | 071.02.05.xx |
| | Ø 0,90 | 071.05.09.xx |
| | Ø 0,50 | 071.06.05.xx |
| | Ø 0,90 | 071.06.09.xx |
| | Ø 0,90 | 071.106.09.xx |
| | Ø 0,90 | 071.08.09.xx |
| | Ø 0,90 | 071.09.09.xx |
| | Ø 0,90 | 071.20.09.xx |

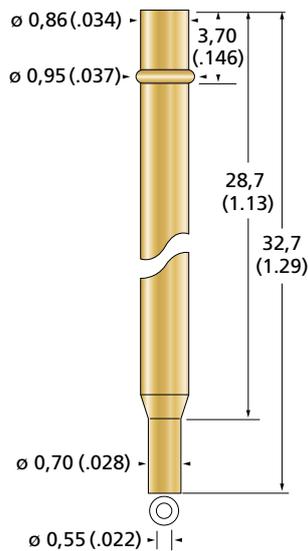


For **XXLonglife-Nanocoating**
order as **071X**

Having the same length and travel the series 071 can be used in combination with the series 100 (for 2.54 mm pitch) and 75 (for 1.90 mm pitch).

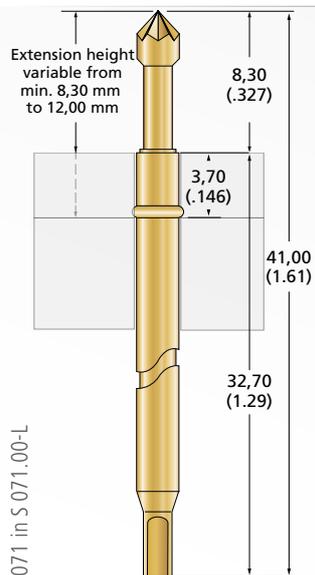
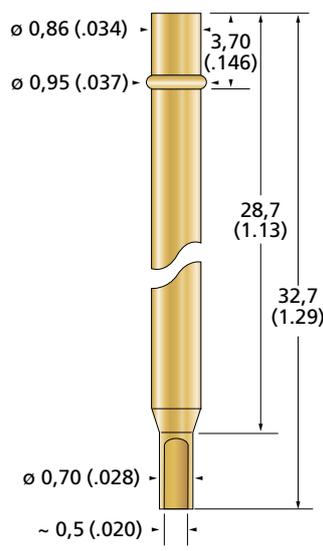
S 071.00-C

Open Crimp End



S 071.00-L

Solder Cup



Series 071 in S 071.00-L

FIXTURING EXAMPLE

Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,4 N | 1,0 N | 10 |
| 0,4 N | 1,5 N | 15 |
| 0,45 N | 2,0 N | 20 |



Ø 0,60 **141.102.06.10**

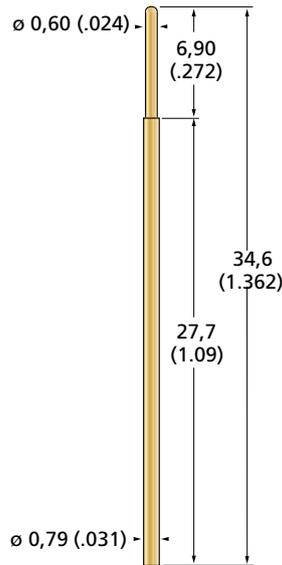


Ø 0,60 **141.05.06.10**



**For XXLonglife-Nanocoating
order as 141X**

Series 141



Series 141

Technical Data

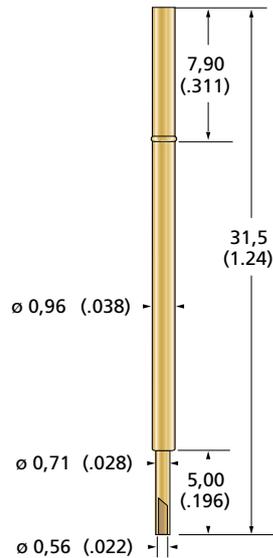
| | |
|-------------------------|-------------|
| Overall Length | 34,6 mm |
| Minimum Centre Spacing | 1,27 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,0 / 3,0 A |

Materials

| | |
|---------|--|
| Plunger | CuBe or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated or silver plated |

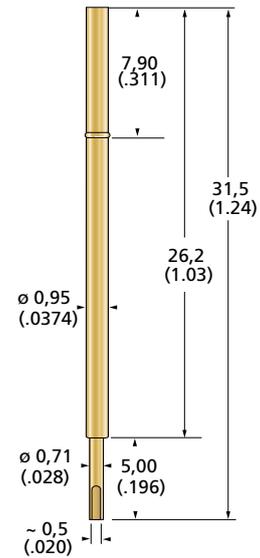
S 141.00-C

Open Crimp End



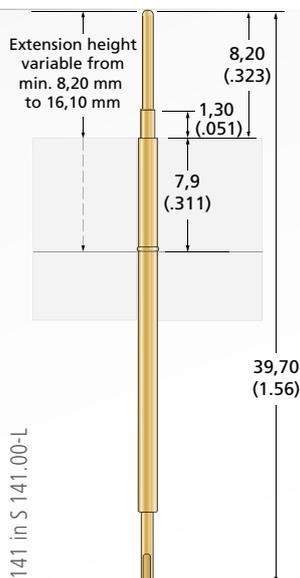
S 141.00-L

Solder Cup



FIXTURING EXAMPLE

Series 141 in S 141.00-L



ICT / FCT
TEST PROBES

ICT/FCT TEST PROBES
SERIES 141

Max. Current Load
3,0 A

Overall Length
34,60 mm

Working Travel
4,20 mm

Max. Travel
6,35 mm

Pitch
≥ 1,27 mm ≥ 50 mil



Series 14

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 40,3 mm |
| Minimum Centre Spacing | 1,27 mm |
| Maximum Travel | 3,50 mm |
| Working Travel | 1,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,0 / 3,0 A |

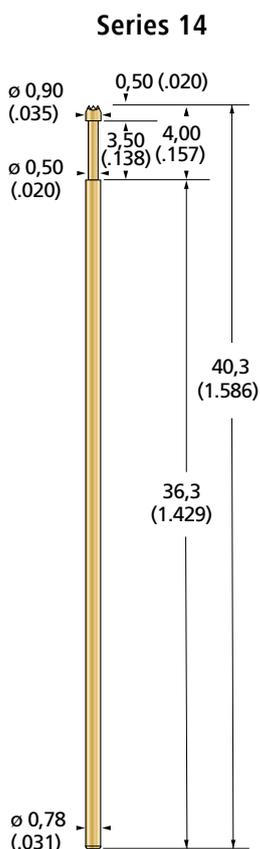
Materials

| | |
|---------|---|
| Plunger | CuBe or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Stainless steel / Music wire, gold plated |

The Series 14 and 15 are nearly identical and differ only in Overall Length and travel. This will affect the combinations with other series for larger grid of mixed-equipped adapters. The Series 14 combined with Series 751 (for 1,90 mm pitch) and Series 21 (for 2.54 mm pitch).

The Series 14 used Receptacles Series 15.

An overview of the receptacles and installation examples you find on page 25.



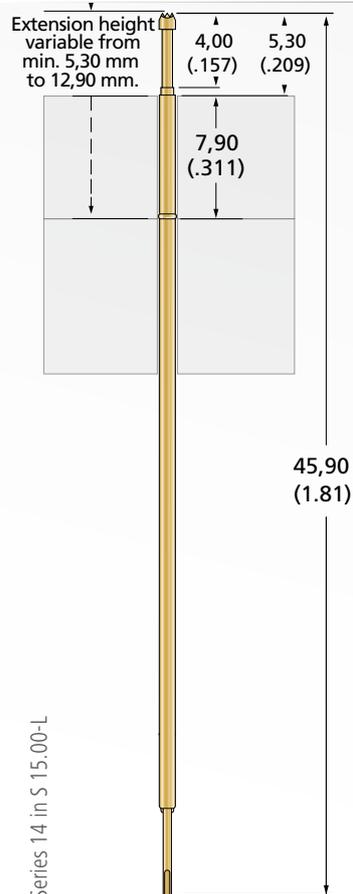
Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|------|
| 0,25 N | 1,0 N | 10 |
| 0,38 N | 1,5 N | 15 |
| 0,45 N | 2,0 N | 20 |

| | | |
|--|--------|--------------|
| | Ø 0,50 | 14.102.05.xx |
| | Ø 0,90 | 14.04.09.xx |
| | Ø 0,50 | 14.05.05.xx |
| | Ø 0,50 | 14.106.05.xx |
| | Ø 0,90 | 14.08.09.xx |
| | Ø 0,50 | 14.10.05.xx |
| | Ø 0,90 | 14.10.09.xx |
| | Ø 0,50 | 14.118.05.xx |
| | Ø 0,50 | 14.123.05.xx |
| | Ø 0,50 | 14.126.05.xx |
| | Ø 0,50 | 14.165.05.xx |



For **XXLonglife-Nanocoating**
order as **14X**



Series 14 in S 15.00-L

FIXTURING EXAMPLE

Spring Force (xx)

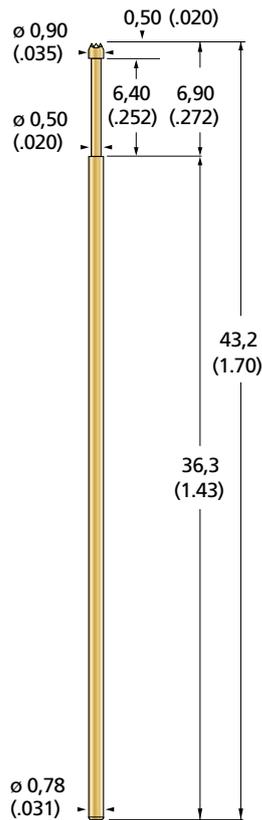
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,15 N | 0,6 N | 06 |
| 0,25 N | 1,0 N | 10 |
| 0,38 N | 1,5 N | 15 |
| 0,45 N | 2,0 N | 20 |

| | | |
|---|--------|---------------------|
|  | Ø 0,50 | 15.102.05.xx |
|  | Ø 0,90 | 15.04.09.xx |
|  | Ø 0,50 | 15.05.05.xx |
|  | Ø 0,50 | 15.106.05.xx |
|  | Ø 0,90 | 15.08.09.xx |
|  | Ø 0,50 | 15.10.05.xx |
|  | Ø 0,90 | 15.10.09.xx |
|  | Ø 0,50 | 15.118.05.xx |
|  | Ø 0,50 | 15.123.05.xx |
|  | Ø 0,50 | 15.126.05.xx |
|  | Ø 0,50 | 15.165.05.xx |



For **XXLonglife-Nanocoating**
order as **15X**

Series 15



Series 15

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 43,2 mm |
| Minimum Centre Spacing | 1,27 mm |
| Maximum Travel | 6,40 mm |
| Working Travel | 4,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,5 / 3,0 A |

Materials

| | |
|---------|---|
| Plunger | CuBe or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Stainless steel / Music wire, gold plated |

The Series 14 and 15 are nearly identical and differ only in Overall Length and travel. This will affect the combinations with other series for larger grid of mixed-equipped adapters. The Series 15 combined with Series 75 (for 1,90 mm pitch) and Series 100 (for 2.54 mm pitch).

An overview of the receptacles and installation examples you find on page 25.

Series 115

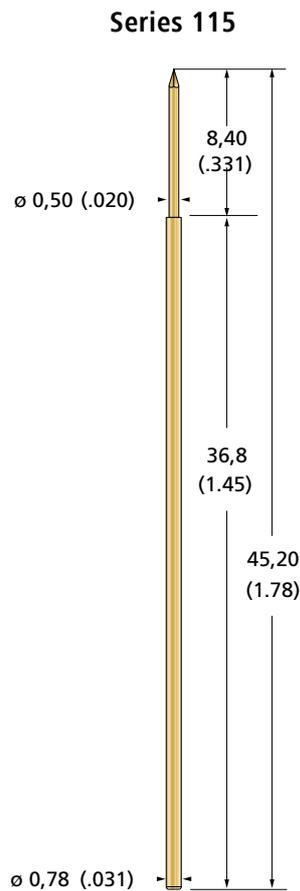
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 45,2 mm |
| Minimum Centre Spacing | 1,27 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,5 / 3,0 A |

Materials

| | |
|---------|---|
| Plunger | Cu-alloy or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Stainless steel / Music wire, gold plated |

The Series 115 has an excess length of 2 mm in comparison with the standard series 15, which can compensate differences in the height profile of test points on a p.c.b. Both series use the same plug-in receptacles of Series 15. An overview is given on page 25.



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|---------|
| 0,25 N | 1,0 N | 10 |
| 0,38 N | 1,5 N | 15 |
| 0,45 N | 2,0 N | 20 |

| | | |
|--|--------|---------------|
| | Ø 0,50 | 115.118.05.xx |
| | Ø 0,90 | 115.20.09.xx |

For **XXLonglife-Nanocoating** order as **115X**

Series 151

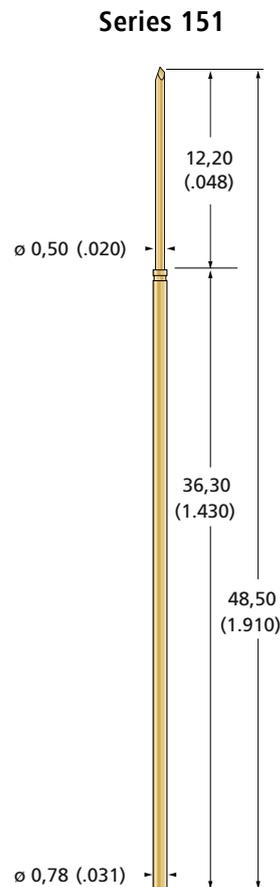
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 48,50 mm |
| Minimum Centre Spacing | 1,27 mm |
| Maximum Travel | 10,00 mm |
| Working Travel | 8,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 2,0 / 3,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, gold plated |

Long stroke type for two-stage adapters. The Series 151 uses receptacles of Series 15. For an overview, see page 25.



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|---------|
| 0,5 N | 1,5 N | 15 |

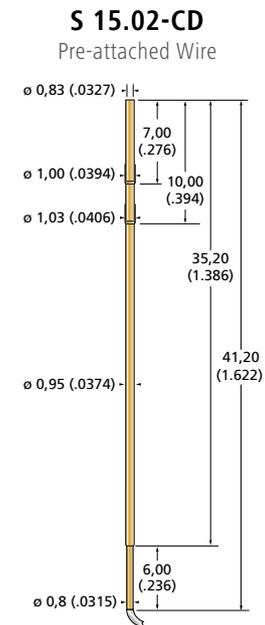
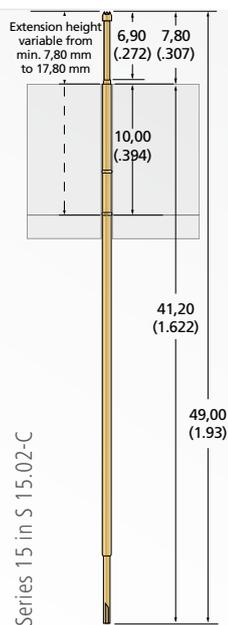
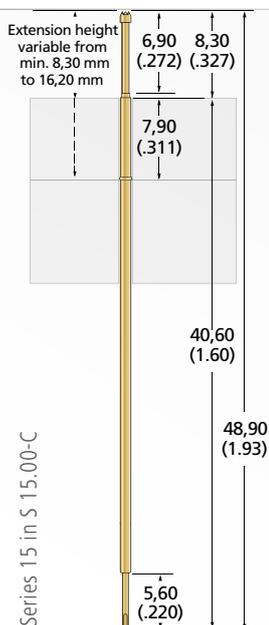
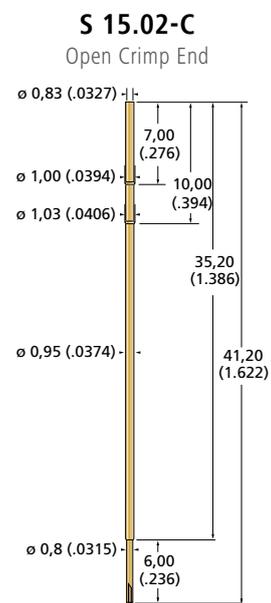
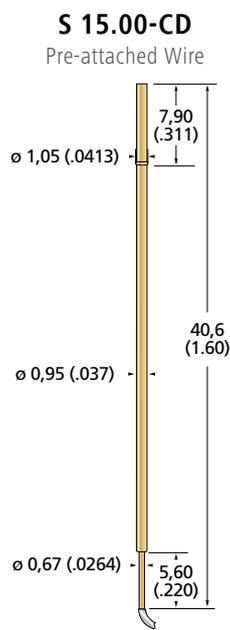
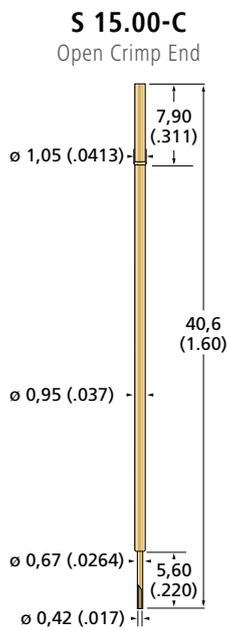
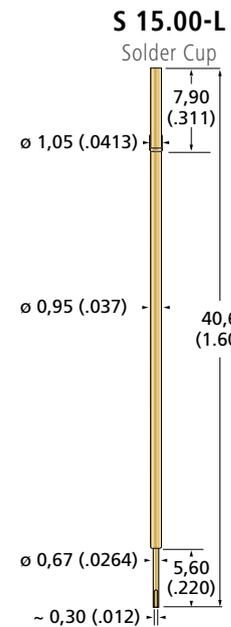
| | | |
|--|--------|---------------|
| | Ø 0,50 | 151.106.05.xx |
| | Ø 0,50 | 151.110.05.xx |

For **XXLonglife-Nanocoating** order as **151X**

RECEPTACLES SERIES 14 / 15 / 115 / 151

Receptacles of **SERIES 15** are also used for **SERIEN 14, 115** and **151**.

Receptacle versions **S 15.02-C** and **S 15.02-CD** feature two press-rings to improve straight alignment of the receptacles in the bore hole and thus optimize pointing accuracy of the spring contact tip. „CD” receptacle versions have pre-attached wire (standard length appr. 800 mm).



FIXTURING EXAMPLE

ICT/FCT RECEPTACLES
SERIES 14 / 15 / 115 / 151

Pitch
≥ 1,27 mm ≥ 50 mil



Series 18

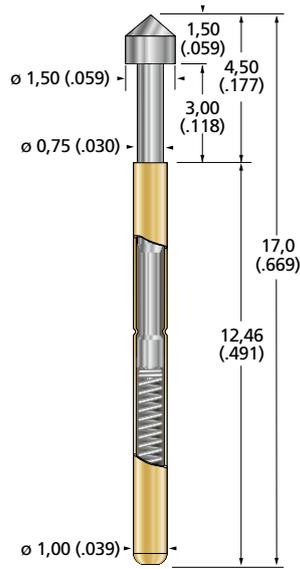
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 17,0 mm |
| Minimum Centre Spacing | 1,90 mm |
| Maximum Travel | 3,00 mm |
| Working Travel | 2,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 30 mΩ |
| Current Load rated/max. | 2,5 / 3,5 A |

Materials

| | |
|---------|--|
| Plunger | Cu-alloy, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated or silver plated |

Series 18



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|----------|
| 0,3 N | 0,8 N | xx 08 |
| 0,4 N | 1,4 N | xx 14 |

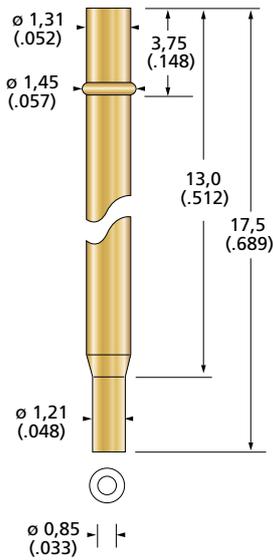
| | | |
|--|--------|--------------|
| | Ø 0,75 | 18.02.08.xx |
| | Ø 1,50 | 18.03.15.xx |
| | Ø 0,75 | 18.04.08.xx |
| | Ø 1,50 | 18.04.15.xx |
| | Ø 0,75 | 18.05.08.xx |
| | Ø 1,00 | 18.05.10.xx |
| | Ø 1,50 | 18.05.15.xx |
| | Ø 1,50 | 18.106.15.xx |
| | Ø 1,50 | 18.08.15.xx |
| | Ø 1,50 | 18.15.15.xx |
| | Ø 1,50 | 18.20.15.xx |



For **XXLonglife-Nanocoating**
order as **18X**

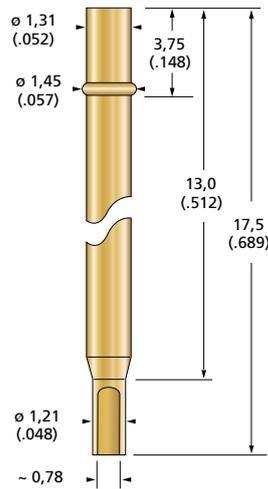
S 18.00-C

Open Crimp End



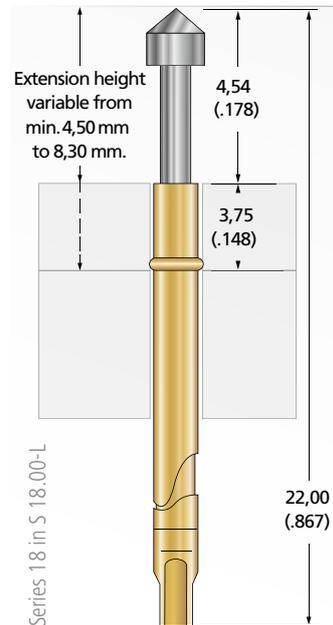
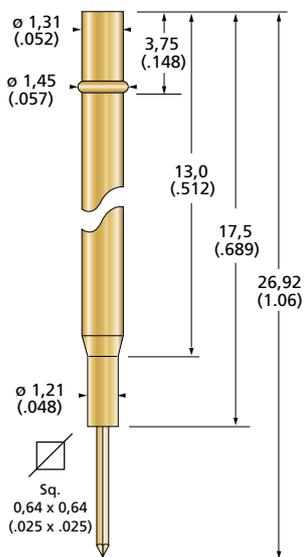
S 18.00-L

Solder Cup



S 18.00-W

Wire-Wrap-Post



FIXTURING EXAMPLE

Spring Force (xx)

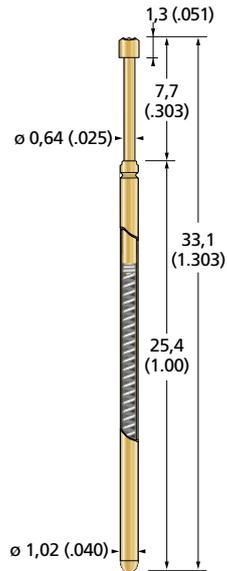
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,3 N | 1,0 N | 10 |
| 0,4 N | 1,5 N | 15 |
| 0,8 N | 2,0 N | 20 |
| 0,7 N | 2,5 N | 25 |
| 0,8 N | 3,0 N | 30 |

| | | |
|---|--------|---------------------|
|  | Ø 0,50 | 75.101.05.xx |
|  | Ø 0,64 | 75.102.06.xx |
|  | Ø 0,90 | 75.103.09.xx |
|  | Ø 1,20 | 75.103.12.xx |
|  | Ø 1,20 | 75.04.12.xx |
|  | Ø 0,64 | 75.05.06.xx |
|  | Ø 0,64 | 75.106.06.xx |
|  | Ø 1,00 | 75.106.10.xx |
|  | Ø 1,20 | 75.106.12.xx |
|  | Ø 1,40 | 75.106.14.xx |
|  | Ø 1,30 | 75.07.13.xx |
|  | Ø 0,64 | 75.08.06.xx |
|  | Ø 1,00 | 75.08.10.xx |
|  | Ø 1,20 | 75.08.12.xx |
|  | Ø 1,40 | 75.08.14.xx |
|  | Ø 2,00 | 75.308.20.xx |
|  | Ø 1,20 | 75.109.12.xx |
|  | Ø 1,40 | 75.109.14.xx |
|  | Ø 0,64 | 75.112.06.xx |
|  | Ø 0,90 | 75.112.09.xx |
|  | Ø 1,20 | 75.112.12.xx |
|  | Ø 1,40 | 75.112.14.xx |
|  | Ø 1,20 | 75.113.12.xx |
|  | Ø 0,64 | 75.118.06.xx |
|  | Ø 1,20 | 75.20.12.xx |
|  | Ø 1,30 | 75.20.13.xx |
|  | Ø 1,60 | 75.20.16.xx |
|  | Ø 0,64 | 75.123.06.xx |
|  | Ø 0,64 | 75.124.06.xx |
|  | Ø 0,64 | 75.126.06.xx |
|  | Ø 1,20 | 75.162.12.xx |
|  | Ø 0,50 | 75.166.05.xx |



For **XXLonglife-Nanocoating**
order as **75X**

Series 75



Series 75

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 33,1 mm |
| Minimum Centre Spacing | 1,90 mm |
| Maximum Travel | 6,40 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 2,5 / 3,5 A |

Materials

| | |
|---------|--|
| Plunger | Cu-alloy or steel hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated or silver plated |

Series 75 is the standard series for 1.9 mm (75 mil) pitch, and combined with the series 100 (for 2.54 mm) and 071 (for 1.27 mm) by the same length and travel.

An overview of the receptacles on page 30.

Series 751

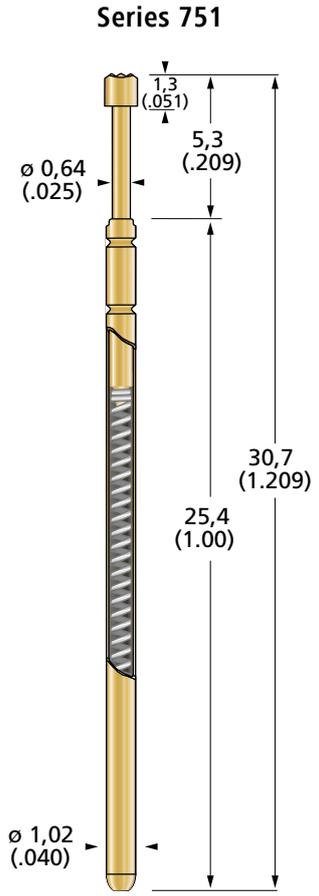
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 30,70 mm |
| Minimum Centre Spacing | 1,90 mm |
| Maximum Travel | 5,30 mm |
| Working Travel | 2,70 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 2,5 / 3,5 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

75 mil type with reduced stroke.
Combined with the Series 21 (for 2.54 mm pitch) and Series 14 (for 1.27 mm pitch) by similar length and travel.
Use receptacle types S 75, shown on page 30, as well as some examples of installation.



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,3 N | 1,0 N | 10 |
| 0,4 N | 1,5 N | 15 |
| 0,8 N | 2,0 N | 20 |
| 0,7 N | 2,5 N | 25 |

| | | |
|--|--------------------|---------------|
| | $\varnothing 0,50$ | 751.101.05.xx |
| | $\varnothing 0,64$ | 751.102.06.xx |
| | $\varnothing 0,90$ | 751.103.09.xx |
| | $\varnothing 1,20$ | 751.103.12.xx |
| | $\varnothing 1,20$ | 751.04.12.xx |
| | $\varnothing 0,64$ | 751.05.06.xx |
| | $\varnothing 0,64$ | 751.106.06.xx |
| | $\varnothing 1,00$ | 751.106.10.xx |
| | $\varnothing 1,20$ | 751.106.12.xx |
| | $\varnothing 1,40$ | 751.106.14.xx |
| | $\varnothing 1,30$ | 751.07.13.xx |
| | $\varnothing 0,64$ | 751.08.06.xx |
| | $\varnothing 1,00$ | 751.08.10.xx |
| | $\varnothing 1,20$ | 751.08.12.xx |
| | $\varnothing 1,40$ | 751.08.14.xx |
| | $\varnothing 2,00$ | 751.308.20.xx |
| | $\varnothing 1,20$ | 751.109.12.xx |
| | $\varnothing 1,40$ | 751.109.14.xx |
| | $\varnothing 0,64$ | 751.112.06.xx |
| | $\varnothing 0,90$ | 751.112.09.xx |
| | $\varnothing 1,20$ | 751.112.12.xx |
| | $\varnothing 1,40$ | 751.112.14.xx |
| | $\varnothing 1,20$ | 751.113.12.xx |
| | $\varnothing 0,64$ | 751.118.06.xx |
| | $\varnothing 1,20$ | 751.20.12.xx |
| | $\varnothing 1,30$ | 751.20.13.xx |
| | $\varnothing 1,60$ | 751.20.16.xx |
| | $\varnothing 0,64$ | 751.123.06.xx |
| | $\varnothing 0,64$ | 751.124.06.xx |
| | $\varnothing 0,64$ | 751.126.06.xx |
| | $\varnothing 1,20$ | 751.162.12.xx |
| | $\varnothing 0,50$ | 751.166.05.xx |

For **XXLonglife-Nanocoating**
order as **751X**

Spring Force (xx)

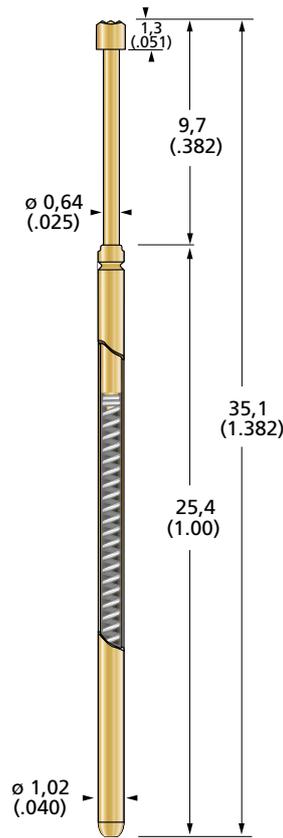
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| | | xx |
| 0,3 N | 1,0 N | 10 |
| 0,4 N | 1,5 N | 15 |
| 0,8 N | 2,0 N | 20 |
| 0,7 N | 2,5 N | 25 |

| | | |
|---|--------|----------------------|
|  | Ø 0,64 | 752.02.06.xx |
|  | Ø 1,00 | 752.08.10.xx |
|  | Ø 0,64 | 752.118.06.xx |



For **XXLonglife-Nanocoating**
order as **752X**

Series 752



Series 752

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 35,10 mm |
| Minimum Centre Spacing | 1,90 mm |
| Maximum Travel | 8,40 mm |
| Working Travel | 4,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 2,5 / 3,5 A |

Materials

| | |
|---------|---|
| Plunger | Cu-alloy or steel hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

Compared with the standard Series 75 the series 752 has an excess length of 2 mm, which compensates differences in the height profile of the test points on a UUT (Unit under Test). Both series use the same receptacles types S 75, where an overview is given on page 30.

Spring Force (xx)

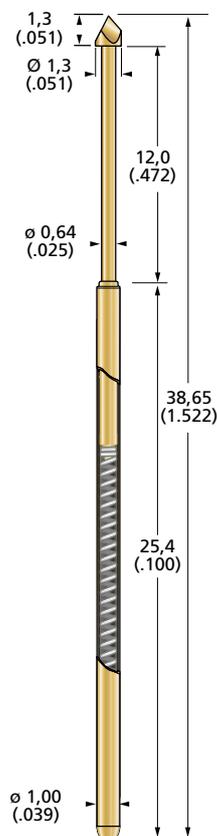
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| | | xx |
| 0,15 N | 1,5 N | 15 |

| | | |
|---|--------|----------------------|
|  | Ø 1,10 | 754.106.11.15 |
|  | Ø 1,10 | 754.08.11.15 |
|  | Ø 0,64 | 754.118.06.15 |
|  | Ø 1,30 | 754.20.13.15 |



For **XXLonglife-Nanocoating**
order as **754X**

Series 754



Series 754

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 38,65 mm |
| Minimum Centre Spacing | 1,90 mm |
| Maximum Travel | 12,00 mm |
| Working Travel | 8,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 2,5 / 3,5 A |

Materials

| | |
|---------|-------------------------|
| Plunger | CuBe, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

The matching receptacles of series 75 can be found on the following page .

ICT / FCT
TEST PROBES

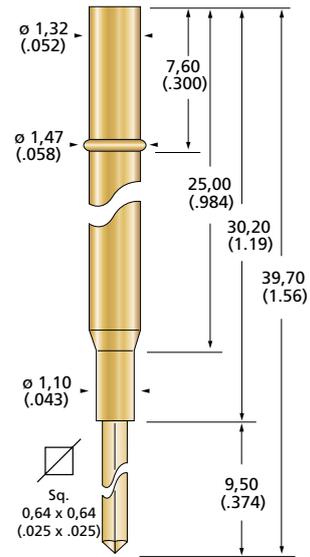
RECEPTACLES FOR SERIES 75 / 751 / 752 / 754

Receptacles of **SERIES 75** are also used for the **SERIES 751, 752** and **754**.

Receptacle version **S 75.02-W** features two press-rings to improve alignment of the receptacles in the mounting hole and thus to optimize pointing accuracy of the spring contact tip. The **S 75.00-CD** version has pre-attached wire (standard length appr. 800 mm) and is available on demand.

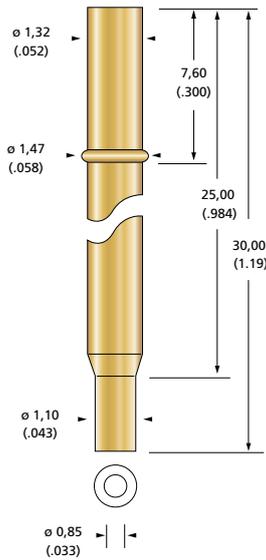
S 75.00-W

Wire-Wrap-Post



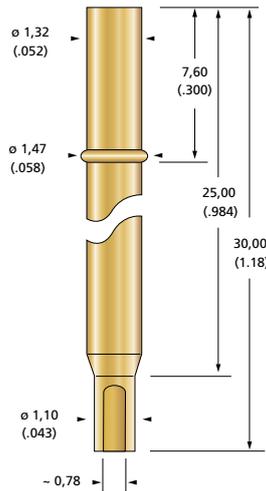
S 75.00-C

Open Crimp End



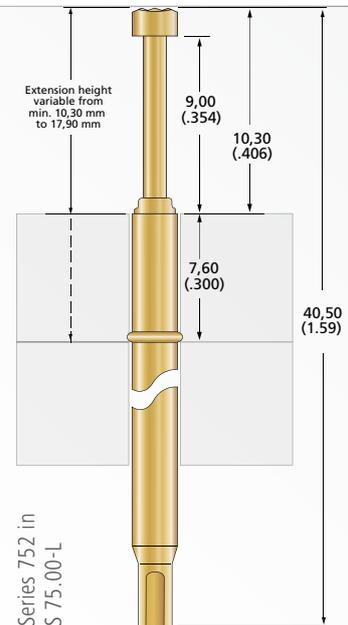
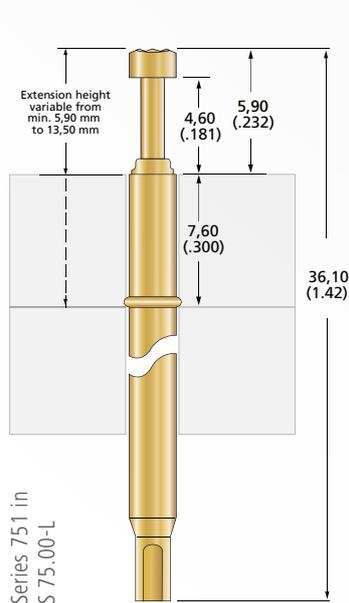
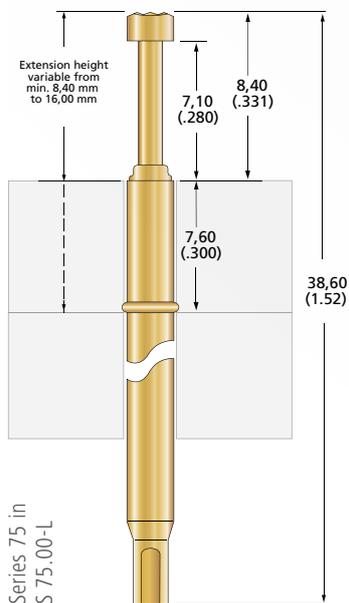
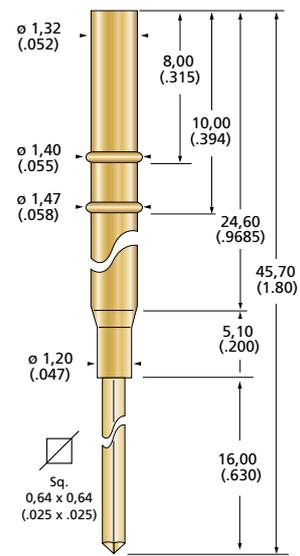
S 75.00-L

Solder Cup



S 75.02-W

Wire-Wrap-Post



FIXTURING EXAMPLE

Spring Force (xx)

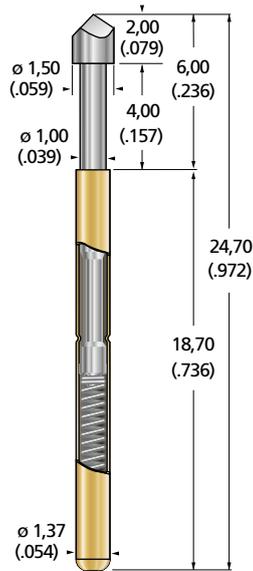
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,3 N | 1,0 N | 10 |
| 0,8 N | 1,8 N | 18 |
| 1,2 N | 2,5 N | 25 |

| | | |
|--|--------|------------------------|
| | Ø 1,00 | 21.102.10.xx |
| | Ø 1,00 | 21.03.10.xx |
| | Ø 1,50 | 21.03.15.xx |
| | Ø 1,80 | 21.03.18.xx |
| | Ø 1,80 | 21.103.18.xx |
| | Ø 1,00 | 21.04.10.xx |
| | Ø 1,50 | 21.04.15.xx |
| | Ø 1,80 | 21.04.18.xx |
| | Ø 0,60 | 21.05.06H600.xx |
| | Ø 0,80 | 21.05.08H600.xx |
| | Ø 1,00 | 21.05.10.xx |
| | Ø 1,20 | 21.05.12.xx |
| | Ø 1,50 | 21.05.15.xx |
| | Ø 1,80 | 21.05.18.xx |
| | Ø 1,00 | 21.06.10.xx |
| | Ø 1,50 | 21.06.15.xx |
| | Ø 1,50 | 21.08.15.xx |
| | Ø 1,80 | 21.08.18.xx |
| | Ø 1,90 | 21.08.19.xx |
| | Ø 1,50 | 21.09.15.xx |
| | Ø 1,80 | 21.09.18.xx |
| | Ø 1,50 | 21.15.15.xx |
| | Ø 1,50 | 21.20.15.xx |
| | Ø 1,80 | 21.20.18.xx |
| | Ø 0,50 | 21.166.05.xx |



For **XXLonglife-Nanocoating**
order as **21X**

Series 21



Series 21

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 24,70 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 4,00 mm |
| Working Travel | 2,70 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

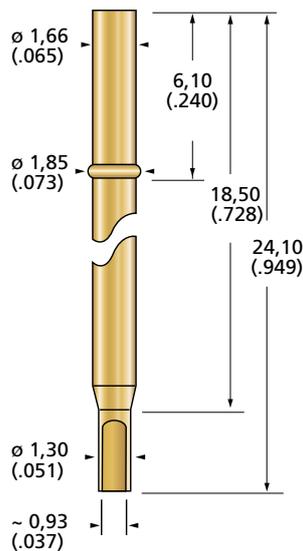
Materials

| | |
|---------|--|
| Plunger | CuBe hardened or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated or silver plated |

Version for 2.54 mm (100 mils) in reduced length design. Combined with the Series 14 and 751 for the 1.27 mm and 1.90 mm pitches (50 and 75 mils). At the same „family“ includes the interface contacts GR1-GR4 which can be found on page 60.

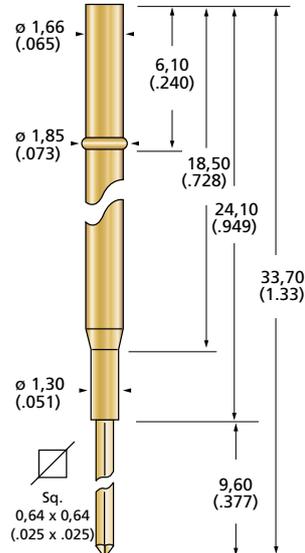
S 21.00-L

Solder Cup



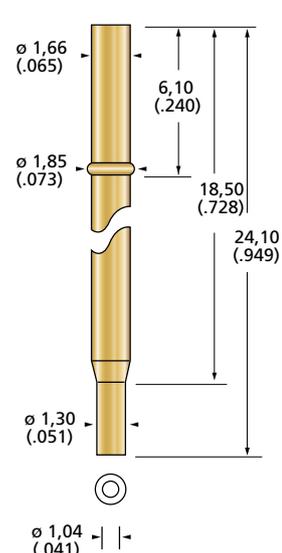
S 21.00-W

Wire-Wrap-Post



S 21.00-C

Open Crimp End



Series 29

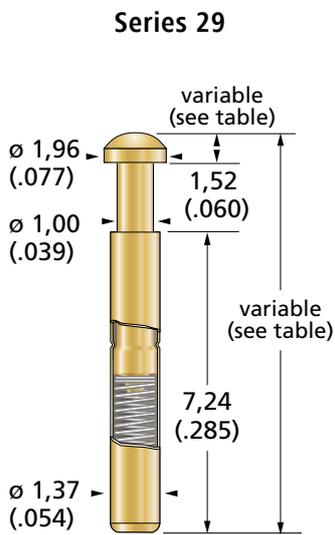
Technical Data

| | |
|-------------------------|---------------------|
| Overall Length | variable, see table |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 1,52 mm |
| Working Travel | 1,27 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|---|
| Plunger | CuBe hardened, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Stainless steel / Music wire, gold plated |

In Series 29 the different head shapes have different lengths, so that the protrusion of the complete probe varies. The values are listed in the table on the right hand side. The dimensions given do not include the build-up of the socket receptacle.



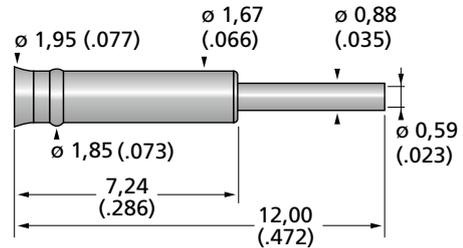
Spring Force (xx)

| Preload | Rated Force | Code xx | Head length mm | Extension height mm | Overall Length mm |
|---------|-------------|---------|----------------|---------------------|-------------------|
| 0,5 N | 1,0 N | 10 | - | 2,24 | 9,48 |
| 0,6 N | 2,0 N | 20 | - | 2,92 | 10,16 |
| | | | 1,55 | 3,07 | 10,31 |
| | | | - | 2,50 | 9,74 |
| | | | 0,75 | 2,20 | 9,44 |
| | | | 1,27 | 2,79 | 10,03 |
| | | | 0,95 | 2,47 | 9,71 |
| | | | 0,75 | 2,27 | 9,51 |

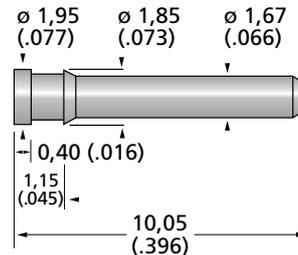


For **XXLonglife-Nanocoating** order as **29X**

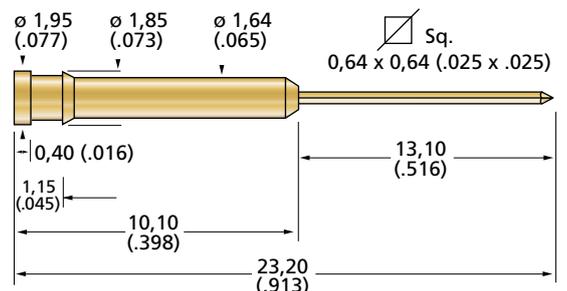
S 29.00-C Open Crimp End



S 29.00-NT Closed bottom end, good for soldering, Nickel silver unplated



S 29.00-W Wire-Wrap-Post

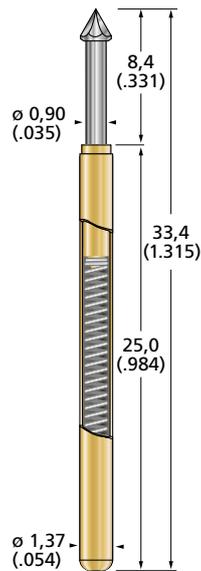


Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,3 N | 1,0 N | 10 |
| 0,35 N | 1,5 N | 15 |
| 0,4 N | 2,0 N | 20 |
| 0,5 N | 2,5 N | 25 |
| 0,8 N | 3,0 N | 30 |

| | | |
|---|---------------|----------------------|
|  | Ø 0,60 | 100.101.06.xx |
|  | Ø 0,90 | 100.102.09.xx |
|  | Ø 1,50 | 100.03.15.xx |
|  | Ø 2,30 | 100.203.23.xx |
|  | Ø 1,50 | 100.04.15.xx |
|  | Ø 2,00 | 100.04.20.xx |
|  | Ø 2,10 | 100.304.21.xx |
|  | Ø 0,90 | 100.05.09.xx |
|  | Ø 1,30 | 100.05.13.xx |
|  | Ø 1,50 | 100.05.15.xx |
|  | Ø 1,00 | 100.106.10.xx |
|  | Ø 1,30 | 100.106.13.xx |
|  | Ø 1,50 | 100.06.15.xx |
|  | Ø 1,40 | 100.07.14.xx |
|  | Ø 0,90 | 100.08.09.xx |
|  | Ø 1,30 | 100.08.13.xx |
|  | Ø 1,50 | 100.08.15.xx |
|  | Ø 1,50 | 100.108.15.xx |
|  | Ø 2,00 | 100.08.20.xx |
|  | Ø 2,50 | 100.08.25.xx |
|  | Ø 3,00 | 100.08.30.xx |
|  | Ø 3,20 | 100.08.32.xx |
|  | Ø 2,30 / 1,50 | 100.308.23.xx |
|  | Ø 3,20 / 2,70 | 100.308.32.xx |
|  | Ø 3,90 / 3,30 | 100.308.39.xx |
|  | Ø 4,10 / 3,00 | 100.308.41.xx |
|  | Ø 0,90 | 100.112.09.xx |
|  | Ø 1,50 | 100.112.15.xx |
|  | Ø 1,70 | 100.112.17.xx |
|  | Ø 1,50 | 100.113.15.xx |
|  | Ø 0,90 | 100.118.09.xx |
|  | Ø 1,50 | 100.118.15.xx |
|  | Ø 0,90 | 100.120.09.xx |
|  | Ø 1,50 | 100.20.15.xx |
|  | Ø 2,00 | 100.20.20.xx |
|  | Ø 0,90 | 100.123.09.xx |

Series 100



Series 100

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 33,40 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 6,40 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, gold plated |

The 100 Series is THE international standard type for the 2.54 mm (100 mils). The list of head styles is extended continuously, so please ask our sales team! We design and produce tailor-made extras on demand!

Combined with probes series for larger and smaller grid spacing but with the same stroke length: Series 071 for 1.27 mm pitch, Series 75 for 1.9 mm pitch, Series 26, 27 and 28 for the centre spaces of 3.20 mm, 4.00 mm and 4.80 mm.

An overview of available receptacles you find on page 34.

| | | |
|---|--------|----------------------|
|  | Ø 0,90 | 100.124.09.xx |
|  | Ø 0,90 | 100.126.09.xx |
|  | Ø 1,50 | 100.162.15.xx |
|  | Ø 0,50 | 100.66.05.xx |
|  | Ø 0,80 | 100.166.08.xx |

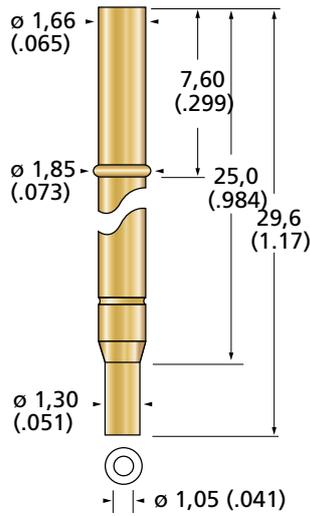


For **XXLonglife-Nanocoating** order as **100X**

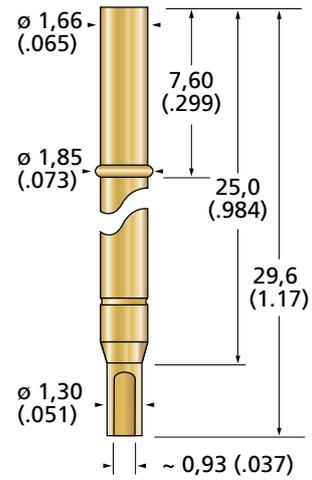
**ICT / FCT
TEST PROBES**

RECEPTACLES SERIES 100 / 101 / 125

S 100.00-C
Open Crimp End

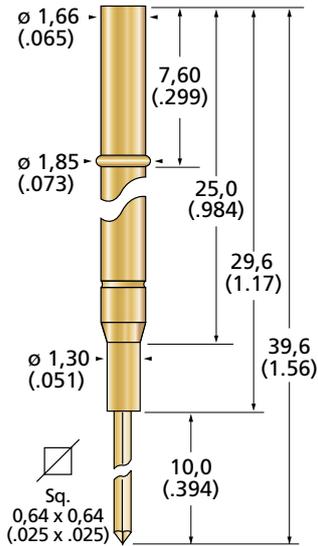


S 100.00-L
Solder Cup

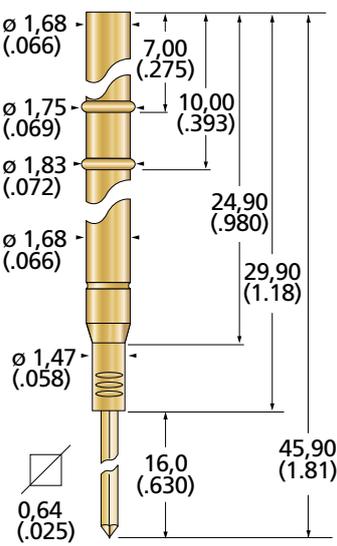


SERIES 100 receptacles are used as well for SERIES 101 and 125. Further types with other terminations and press-ring locations available on request.

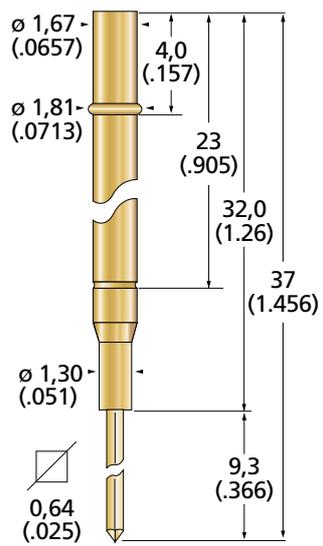
S 100.00-W
Wire-Wrap-Post



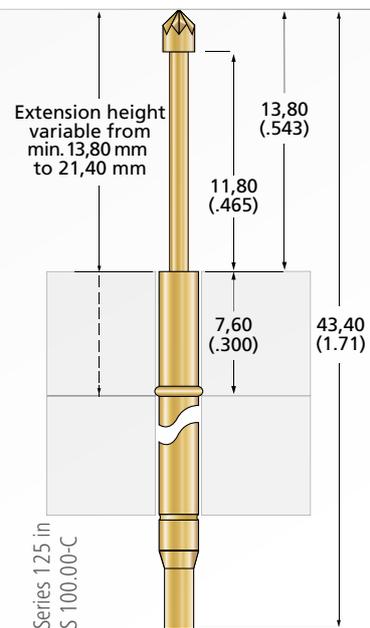
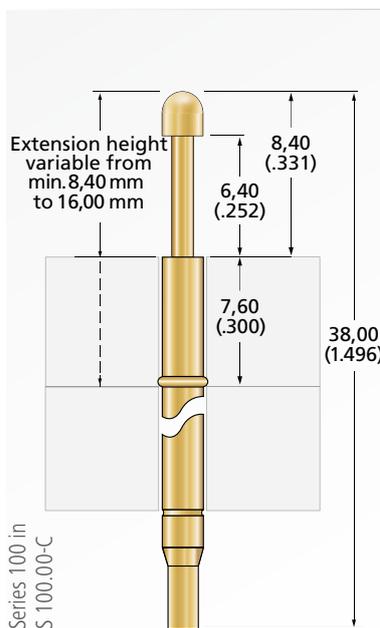
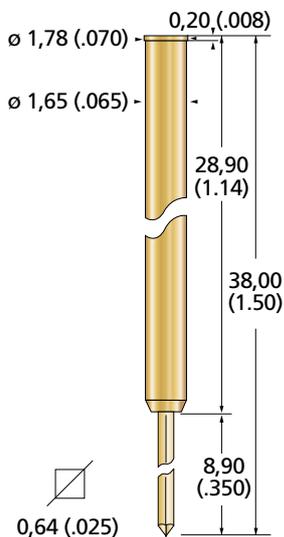
S 100.10-W
Wire-Wrap-Post



S 100.04-WI
Wire-Wrap-Post



S 100.05-WI
Wire-Wrap-Post



FIXTURING EXAMPLE

ICT/FCT RECEPTACLES
SERIES 100 / 101 / 22 / 125

Pitch
≥ 2,54 mm ≥ 100 mil

Spring Force (xx)

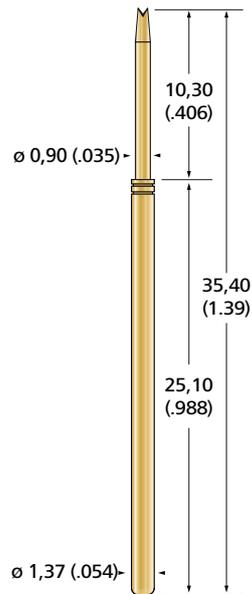
| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,3 N | 1,0 N | 10 |
| 0,35 N | 1,5 N | 15 |
| 0,4 N | 2,0 N | 20 |
| 0,5 N | 2,5 N | 25 |
| 0,8 N | 3,0 N | 30 |

| | | |
|---|--------|---------------|
|  | Ø 0,90 | 101.05.09.xx |
|  | Ø 1,30 | 101.106.13.xx |
|  | Ø 0,90 | 101.08.09.xx |
|  | Ø 0,90 | 101.118.09.xx |
|  | Ø 1,50 | 101.20.15.xx |
|  | Ø 0,50 | 101.166.05.xx |



For **XXLonglife-Nanocoating**
order as **101X**

Series 101



Series 101

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 35,40 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 9,40 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, silver plated |

Compared with the standard 100 series the Series 101 and 22 have an over-length which compensates height differences in the test point level on a p.c.b.

Receptacles are shown on page 34. All variants with a head larger than the shaft have a reduced max. travel of 8.5 mm.

Spring Force (xx)

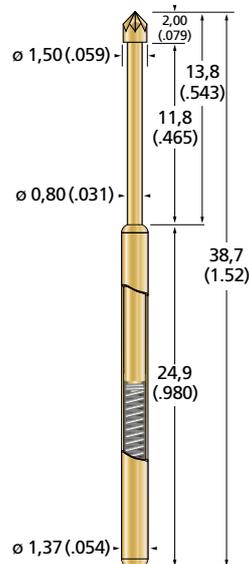
| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,3 N | 1,5 N | 15 |
| 0,3 N | 2,0 N | 20 |

| | | |
|---|--------|---------------|
|  | Ø 0,80 | 125.02.08.xx |
|  | Ø 1,50 | 125.04.15.xx |
|  | Ø 0,50 | 125.05.05.xx |
|  | Ø 1,00 | 125.06.10.xx |
|  | Ø 1,20 | 125.06.12.xx |
|  | Ø 1,50 | 125.06.15.xx |
|  | Ø 1,50 | 125.08.15.xx |
|  | Ø 0,80 | 125.09.08.xx |
|  | Ø 1,50 | 125.09.15.xx |
|  | Ø 0,90 | 125.118.09.xx |
|  | Ø 1,50 | 125.20.15.xx |
|  | Ø 0,80 | 125.23.08.xx |
|  | Ø 1,50 | 125.162.15.xx |



For **XXLonglife-Nanocoating**
order as **125X**

Series 125



Series 125

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 38,70 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 11,80 mm |
| Working Travel | 9,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|-------------------------------------|
| Plunger | CuBe hardened or steel, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

The 125 Series is used in the so-called two stage or dual-level fixtures where ICT and FCT are performed in the same jig. The long reach needles 125 touch the functional test points, while the shorter series 100 pins do the In-Circuit-Test.

Combineable series are:

| Pitch | Series | Max. Travel |
|---------|--------|-------------|
| 1,27 mm | 071 | 6,40 mm |
| 1,27 mm | 151 | 10,00 mm |
| 1,90 mm | 75 | 6,40 mm |
| 1,90 mm | 754 | 12,00 mm |
| 2,54 mm | 100 | 6,40 mm |

plus all types with extra length to compensate for the test-point height profile (series 115, 752 and 101). 125 Series probes use Series 100 Receptacles (see page 34).

Series 26

Technical Data

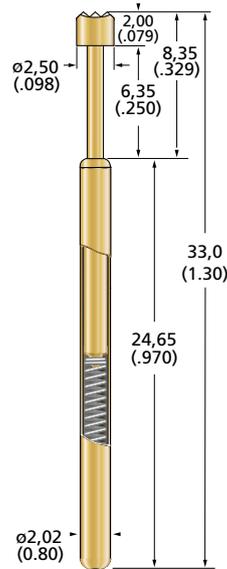
| | |
|-------------------------|-------------|
| Overall Length | 33,00 mm |
| Minimum Centre Spacing | 3,18 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 15 mΩ |
| Current Load rated/max. | 4,0 / 5,0 A |

Materials

| | |
|---------|-------------------------|
| Plunger | Cu-alloy, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

The Series 26 includes the previously available 262 series types.

Series 26



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,4 N | 1,2 N | 12 |
| 0,6 N | 1,8 N | 18 |
| 0,8 N | 2,5 N | 25 |
| 1,5 N | 4,4 N | 44 |

| | | |
|--|--------|----------------------------|
| | Ø 0,70 | 26.02.07H500.xx |
| | Ø 1,70 | 26.02.17.xx |
| | Ø 1,70 | 26.03.17.xx |
| | Ø 2,50 | 26.03.25.xx |
| | Ø 1,70 | 26.04.17.xx |
| | Ø 2,50 | 26.04.25.xx |
| | Ø 1,70 | 26.05.17.xx |
| | Ø 2,50 | 26.05.25.xx |
| | Ø 2,00 | 26.06.20.xx |
| | Ø 1,70 | 26.08.17.xx |
| | Ø 2,50 | 26.08.25.xx |
| | Ø 1,20 | 26.08.12Z300T250.xx |
| | Ø 2,50 | 26.15.25.xx |
| | Ø 3,00 | 26.20.30.xx |
| | Ø 4,00 | 26.20.40.xx |

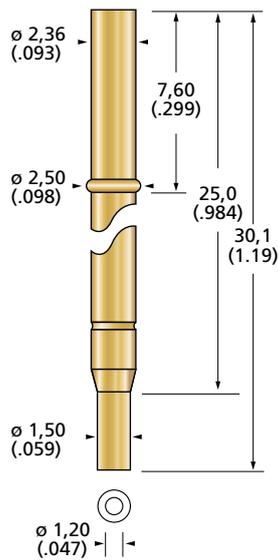


For XXLonglife-Nanocoating order as 26X

In the series 26, we offer you even more head shapes. For an overview of all available versions download the data sheet from the Internet at www.fixtest.de.

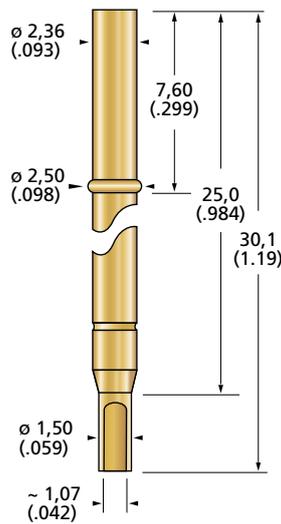
S 26.00-C

Open Crimp End



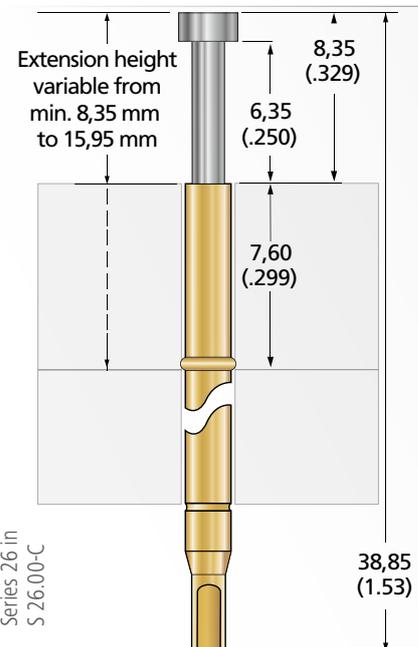
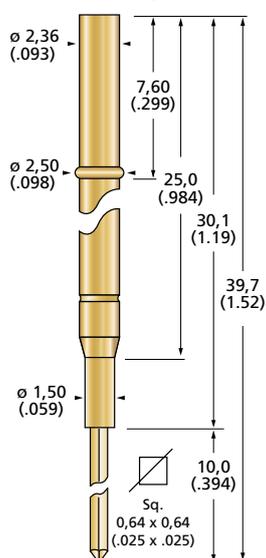
S 26.00-L

Solder Cup



S 26.00-W

Wire-Wrap-Post



FIXTURING EXAMPLE

Spring Force (xx)

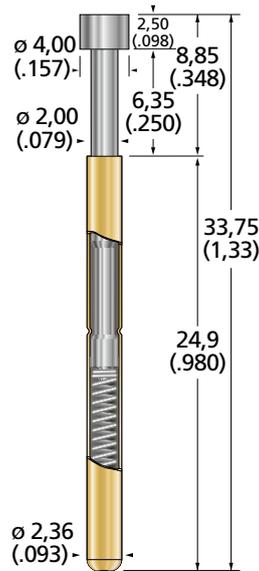
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,6 N | 1,3 N | 13 |
| 0,8 N | 1,9 N | 19 |
| 1,2 N | 3,0 N | 30 |

| | | |
|--|--------|--------------------|
| | Ø 2,00 | 27.02.20.xx |
| | Ø 2,00 | 27.03.20.xx |
| | Ø 4,00 | 27.03.40.xx |
| | Ø 2,00 | 27.04.20.xx |
| | Ø 4,00 | 27.04.40.xx |
| | Ø 1,50 | 27.05.15.xx |
| | Ø 2,00 | 27.05.20.xx |
| | Ø 2,30 | 27.05.23.xx |
| | Ø 4,00 | 27.05.40.xx |
| | Ø 3,00 | 27.08.30.xx |
| | Ø 4,00 | 27.08.40.xx |
| | Ø 4,00 | 27.15.40.xx |



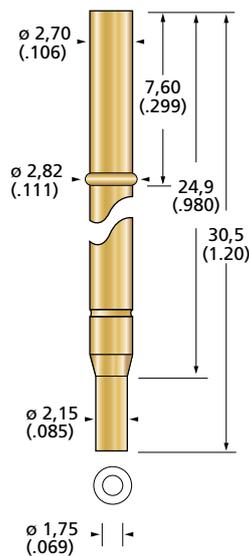
For **XXLonglife-Nanocoating**
order as **27X**

Series 27



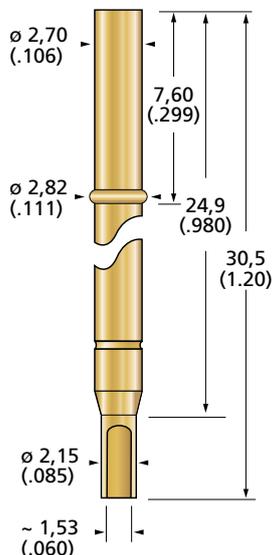
S 27.00-C

Open Crimp End



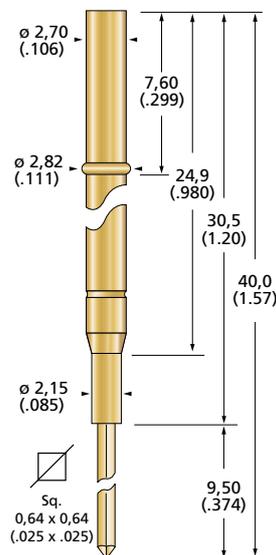
S 27.00-L

Solder Cup



S 27.00-W

Wire-Wrap-Post



Series 27

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 33,75 mm |
| Minimum Centre Spacing | 4,00 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 4,0 / 5,0 A |

Materials

| | |
|---------|-------------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

In terms of length, travel and protrusion the Series 27 - as well as the series 26 on the left hand page - can be combined with the international standard series 100.

According to the rule „always use the largest possible spring contact size“ the series 27 is ideal where the distance between the test points is 4 mm or more. Here, the robust design brings reliable contact and long service life as well as higher current load. For all types with a head diameter ≥ 4 mm, the specification of the minimum grid spacing of 4 mm is of course no more applicable.

Even bigger in diameter but with the same body length is our series 28, while the Series 26 is located in size between the Series 100 and Series 27.

Series 28

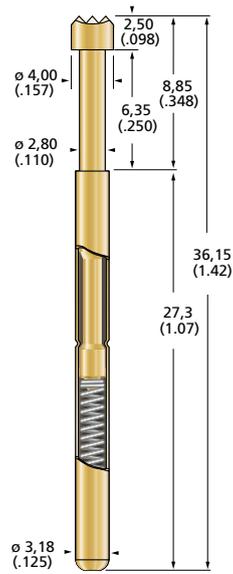
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 36,15 mm |
| Minimum Centre Spacing | 4,80 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 5,0 / 6,0 A |

Materials

| | |
|---------|---|
| Plunger | CuBe hardened, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Stainless steel / Music wire, silver plated |

Series 28



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|---------|
| 0,8 N | 1,9 N | 19 |
| 0,8 N | 2,3 N | 23 |
| 1,5 N | 4,0 N | 40 |

| | | |
|--|--------|-------------|
| | Ø 2,80 | 28.02.28.xx |
| | Ø 2,80 | 28.03.28.xx |
| | Ø 4,00 | 28.03.40.xx |
| | Ø 2,80 | 28.04.28.xx |
| | Ø 4,00 | 28.04.40.xx |
| | Ø 2,03 | 28.05.20.xx |
| | Ø 4,00 | 28.05.40.xx |
| | Ø 3,00 | 28.06.30.xx |
| | Ø 2,80 | 28.08.28.xx |
| | Ø 4,00 | 28.08.40.xx |
| | Ø 4,00 | 28.15.40.xx |



For **XXLonglife-Nanocoating**
order as **28X**

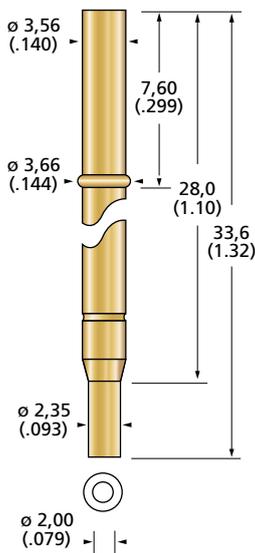
In terms of length, travel and protrusion the Series 28 can be combined with the international standard series 100. According to the rule „always use the largest possible spring contact size“ the series 28 is ideal where the distance between the test points is 4.75 mm or more.

Typical applications are: connector test, terminal blocks, cable harness test.

With identical sizes but for higher current loads available as series 128 (see the chapter „high current contacts“).

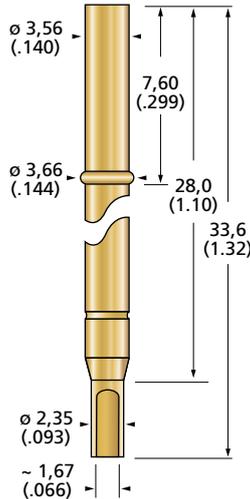
S 28.00-C

Open Crimp End



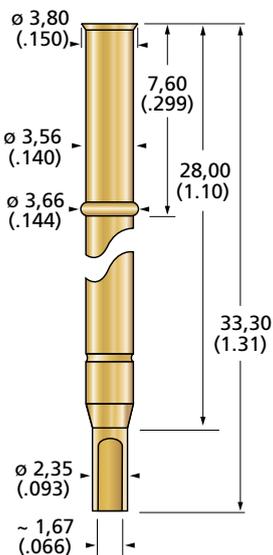
S 28.00-L

Solder Cup



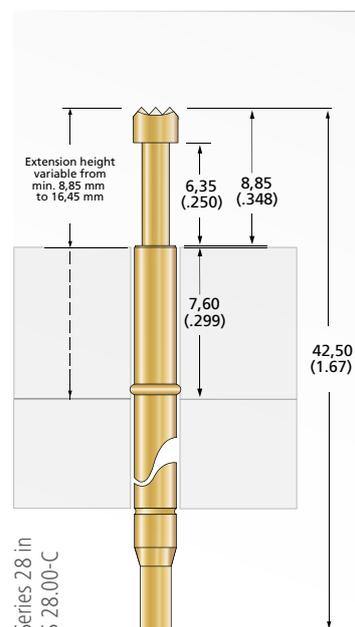
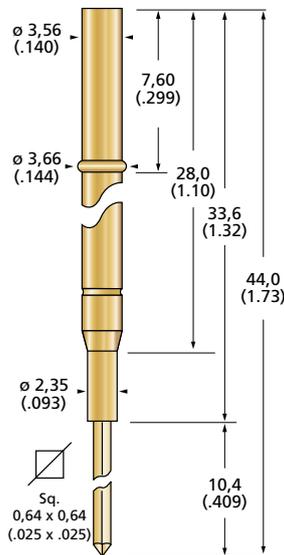
S 28.00-LC

Wire-Wrap-Post



S 28.00-W

Wire-Wrap-Post



Series 28 in
S 28.00-C

FIXTURING EXAMPLE

SERIES V75X / V100X HIGHER PRELOAD

INCREASED SPRING PRELOAD

Flux residues and contaminations on solder joints often complicate an error-free test contact. The FIXTEST series V75X and V100X for the 75 mil and 100 mil pitches offer higher preloaded springs and selected aggressive head shapes. Even at short travel a high impact force and optimum penetration of insulating layers is ensured.

XXLONGLIFE-NANOCOATING

In addition to increased preload our V-types have **XXLonglife-Nano-Coating**.

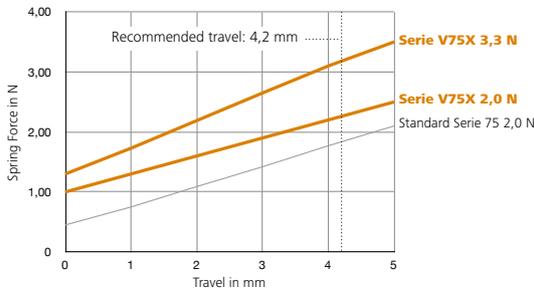
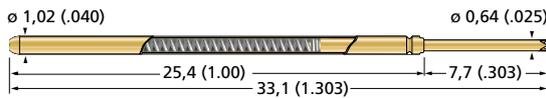
XXLonglife prolongs the life and enhances the contact quality by:

- Protection against pollution / dirt pick-up
- hardening of the surface
- Reduction of frictional resistance



THE PERFECT SOLUTION FOR CONTACT PROBLEMS THROUGH FLUX RESIDUES

Series V75X



Spring Force V75X (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 1,0 N | 2,0 N | 20 |
| 1,2 N | 3,3 N | 33 |



Ø 0,64

V75X.106.06.xx

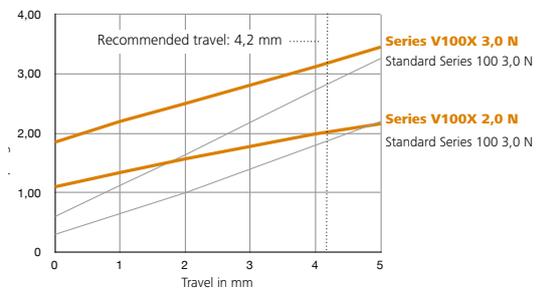
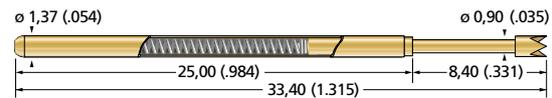


Ø 0,64

V75X.118.06.xx

More head styles available on request

Series V100X



Spring Force V100X (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 1,1 N | 2,0 N | 20 |
| 1,8 N | 3,0 N | 30 |



Ø 1,30

V100X.106.13.xx



Ø 0,90

V100X.118.09.xx

ICT / FCT
TEST PROBES

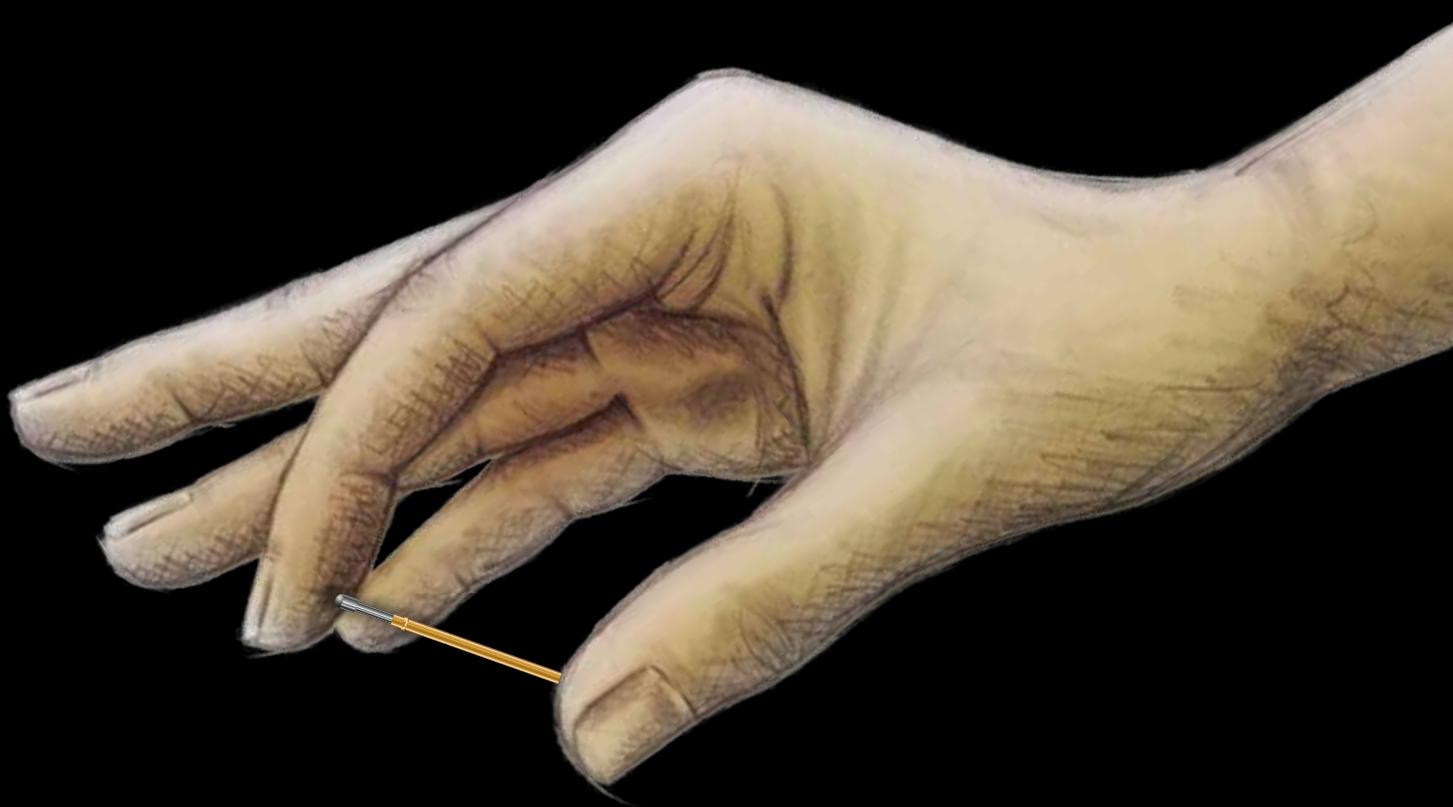
Metric Size Test Probes

Metric pins have against the imperial contacts two main differences: Firstly, the alignment at the metric unit system, ie, the holes for the installation of sockets to be drilled with conventional drilling diameters such as 2.0 mm. On the other hand in the metric sizes have both, the contacts and the receptacles, a fixed stop collar, which guarantee exact positioning of the pins in the vertical axis. In order to achieve variable installation heights, our metric series have different collar options. In addition, spacers can be placed between receptacle and probe collar. Hints about this installation method are shown in the particular installation examples for each type.

The **SERIES 30** is the basic form of the metric series for 2.54 mm pitch. The **SERIES 31, 40, 41, 42, 44** and **49** offer variations in the collar heights, lengths and the piston stroke. In combination with the illustrated spacers very variable installation heights (or so called protrusion heights) can be realized. For larger grid spacing the **SERIES 50, 51, 150, 154, 155** and **60** are available, where some of them have the same mounting heights like the smaller sizes. More metric designs for the grid ≥ 2.54 mm are available on request.



METRIC TYPES



| Metric Series | Page |
|---------------|------|
| 30 | 43 |
| 31 | 44 |
| 40 | 45 |
| 41 | 46 |
| 42 | 46 |
| 44 | 47 |
| 49 | 47 |
| 50 | 50 |
| 51 | 52 |
| 60 | 53 |
| 150 | 50 |
| 154 | 51 |
| 155 | 51 |

Imperial Series
starting at page 16

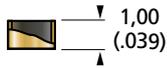


RECEPTACLES SERIES

30 / 31 / 40 / 41 / 42 / 44 / 49

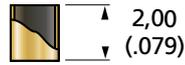
D 30.01

Spacer tube 1 mm



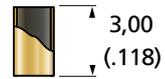
D 30.02

Spacer tube 2 mm



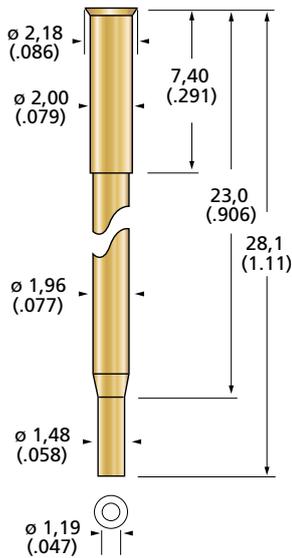
D 30.03

Spacer tube 3 mm



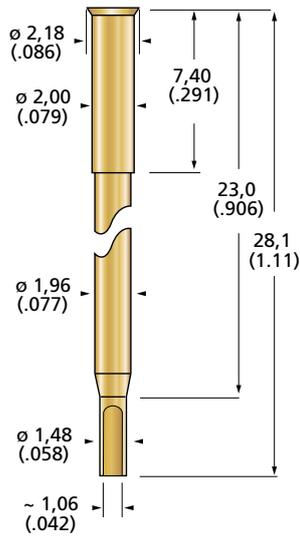
S 30.00-C

Open Crimp End



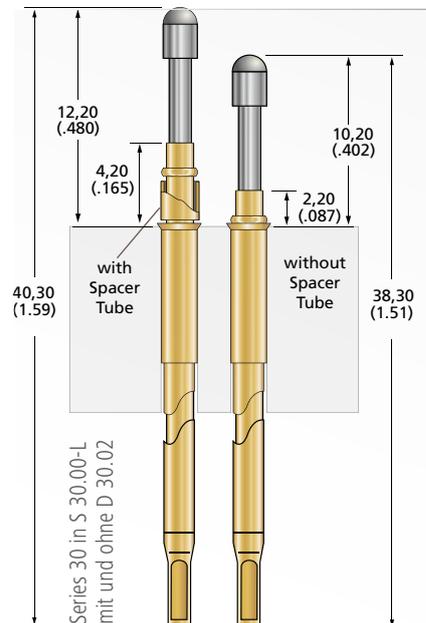
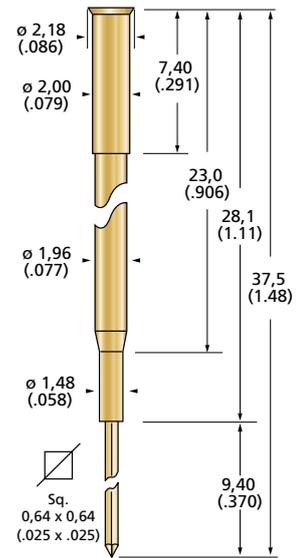
S 30.00-L

Solder Cup



S 30.00-W

Wire-Wrap-Post



FIXTURING EXAMPLE

ICT/FCT RECEPTACLES
SERIES 30 / 31 / 40 / 41 / 42 / 44 / 49

Pitch
 $\geq 2,54$ mm ≥ 100 mil

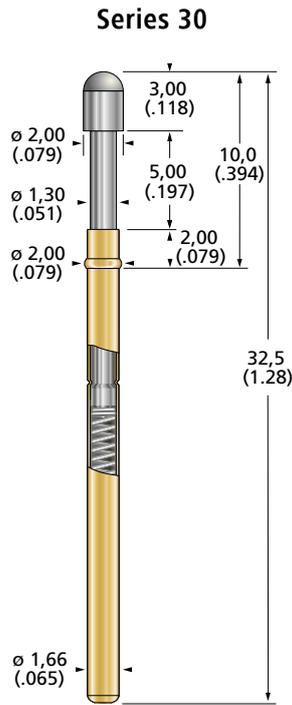
Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| | | xx |
| 0,3 N | 0,8 N | 08 |
| 0,9 N | 1,5 N | 15 |
| 1,5 N | 3,0 N | 30 |
| 2,0 N | 5,0 N | 50 |

| | | |
|---|---------------|---------------------|
|  | Ø 0,70 | 30.101.07.xx |
|  | Ø 0,70 | 30.102.07.xx |
|  | Ø 1,30 | 30.102.13.xx |
|  | Ø 1,30 | 30.103.13.xx |
|  | Ø 2,00 | 30.103.20.xx |
|  | Ø 3,00 | 30.03.30.xx |
|  | Ø 1,90 | 30.104.19.xx |
|  | Ø 1,30 | 30.05.13.xx |
|  | Ø 1,50 | 30.05.15.xx |
|  | Ø 2,00 | 30.05.20.xx |
|  | Ø 1,30 | 30.06.13.xx |
|  | Ø 1,60 | 30.106.16.xx |
|  | Ø 2,00 | 30.106.20.xx |
|  | Ø 1,30 | 30.107.13.xx |
|  | Ø 1,30 | 30.108.13.xx |
|  | Ø 2,00 | 30.108.20.xx |
|  | Ø 2,70 / 2,30 | 30.308.27.xx |
|  | Ø 1,30 | 30.10.13.xx |
|  | Ø 1,80 | 30.10.18.xx |
|  | Ø 1,30 | 30.118.13.xx |
|  | Ø 2,00 | 30.61.20.xx |



For **XXLonglife-Nanocoating**
order as **30X**



Series 30

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 32,50mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 5,00 mm |
| Working Travel | 3,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, silver plated |

The standard metric series for many applications such as manual handling adapter, connector test heads etc. For matching receptacles, see page 42.

Series 31

Technical Data

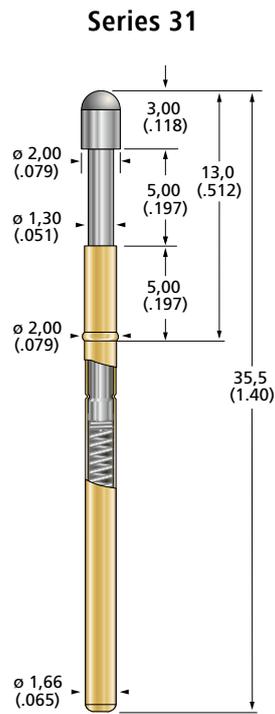
| | |
|-------------------------|-------------|
| Overall Length | 35,50 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 5,00 mm |
| Working Travel | 3,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, silver plated |

Compared to the standard 30 the Series 31 has a collar elongated by 3 mm and thus a correspondingly larger installation height.

The 31 series uses the receptacles of the series 30 shown on page 42.



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|----------|
| 0,3 N | 0,8 N | xx 08 |
| 0,9 N | 1,5 N | 15 |
| 1,5 N | 3,0 N | 30 |
| 2,0 N | 5,0 N | 50 |

| | | |
|--|--------|--------------|
| | Ø 0,70 | 31.101.07.xx |
| | Ø 0,70 | 31.102.07.xx |
| | Ø 1,30 | 31.102.13.xx |
| | Ø 1,30 | 31.103.13.xx |
| | Ø 2,00 | 31.103.20.xx |
| | Ø 3,00 | 31.03.30.xx |
| | Ø 1,90 | 31.104.19.xx |
| | Ø 1,30 | 31.05.13.xx |
| | Ø 1,50 | 31.05.15.xx |
| | Ø 2,00 | 31.05.20.xx |
| | Ø 1,30 | 31.06.13.xx |
| | Ø 1,60 | 31.106.16.xx |
| | Ø 2,00 | 31.106.20.xx |
| | Ø 1,30 | 31.107.13.xx |
| | Ø 1,30 | 31.108.13.xx |
| | Ø 2,00 | 31.108.20.xx |
| | Ø 2,70 | 31.308.27.xx |
| | Ø 1,30 | 31.10.13.xx |
| | Ø 1,80 | 31.10.18.xx |
| | Ø 1,30 | 31.118.13.xx |
| | Ø 2,00 | 31.61.20.xx |



For **XXLonglife-Nanocoating**
order as **31X**

Spring Force (xx)

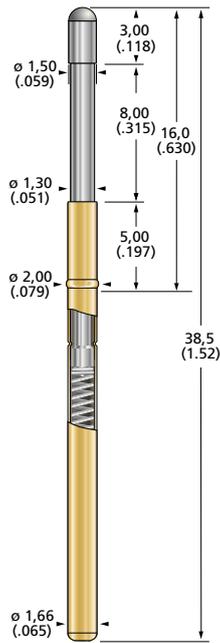
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,3 N | 0,8 N | 08 |
| 0,9 N | 1,5 N | 15 |
| 1,0 N | 2,2 N | 22 |
| 1,2 N | 3,0 N | 30 |
| 2,0 N | 5,0 N | 50 |

| | | |
|---|--------|---------------------|
|  | Ø 0,70 | 40.101.07.xx |
|  | Ø 0,70 | 40.102.07.xx |
|  | Ø 1,30 | 40.102.13.xx |
|  | Ø 1,30 | 40.103.13.xx |
|  | Ø 1,90 | 40.104.19.xx |
|  | Ø 1,50 | 40.05.15.xx |
|  | Ø 1,30 | 40.08.13.xx |
|  | Ø 1,60 | 40.08.16.xx |
|  | Ø 2,00 | 40.108.20.xx |
|  | Ø 1,30 | 40.10.13.xx |
|  | Ø 1,80 | 40.10.18.xx |
|  | Ø 1,30 | 40.118.13.xx |
|  | Ø 1,30 | 40.146.13.xx |
|  | Ø 1,60 | 40.146.16.xx |
|  | Ø 1,50 | 40.174.15.xx |



For **XXLonglife-Nanocoating**
order as **40X**

Series 40



Series 40

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 38,50 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 8,00 mm |
| Working Travel | 5,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, silver plated |

Longer standard series with 8 mm max. travel and 16 mm extension height. These dimensions are common standard in many test fixtures from different manufacturers.

The Series 40 uses the receptacles of the series 30 on page 42. Further head styles available on request.

Series 41

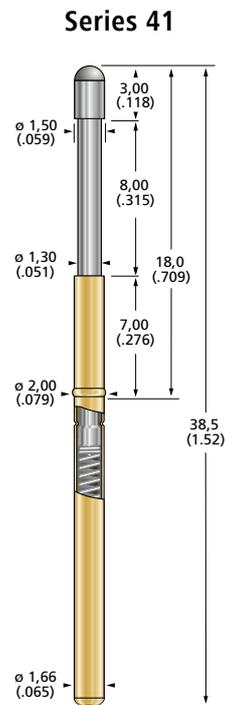
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 38,50 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 8,00 mm |
| Working Travel | 5,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, silver plated |

The series 41 has compared to the Series 40 a prolonged collar height of 7 mm. Use the receptacles of Series 30 shown on page 42.



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,3 N | 0,8 N | 08 |
| 0,9 N | 1,5 N | 15 |
| 1,0 N | 2,2 N | 22 |
| 1,2 N | 3,0 N | 30 |
| 2,0 N | 5,0 N | 50 |

| | | |
|--|--------|--------------|
| | Ø 0,70 | 41.101.07.xx |
| | Ø 0,70 | 41.102.07.xx |
| | Ø 1,30 | 41.102.13.xx |
| | Ø 1,30 | 41.103.13.xx |
| | Ø 1,90 | 41.104.19.xx |
| | Ø 1,50 | 41.05.15.xx |
| | Ø 1,30 | 41.08.13.xx |
| | Ø 1,60 | 41.08.16.xx |
| | Ø 2,00 | 41.108.20.xx |
| | Ø 1,30 | 41.10.13.xx |
| | Ø 1,80 | 41.10.18.xx |
| | Ø 1,30 | 41.118.13.xx |
| | Ø 1,30 | 41.146.13.xx |
| | Ø 1,60 | 41.146.16.xx |
| | Ø 1,50 | 41.174.15.xx |



For **XXLonglife-Nanocoating**
order as **41X**

Series 42

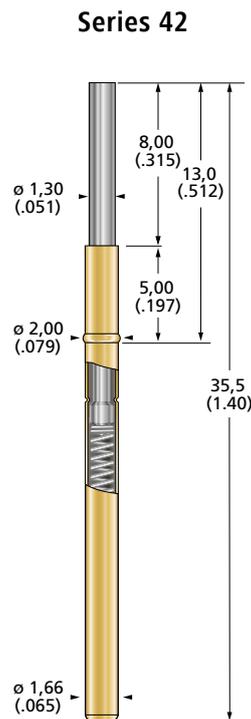
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 35,50 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 8,00 mm |
| Working Travel | 5,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, silver plated |

The plunger of the 42 series can be completely deflected flush with the barrel. Therefore we offer in this series only stem types without a head larger than the shaft. Receptacles of Series 30 shown on page 42.



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,9 N | 1,5 N | 15 |
| 1,2 N | 3,0 N | 30 |

| | | |
|--|--------|--------------|
| | Ø 0,70 | 42.101.07.xx |
| | Ø 0,70 | 42.102.07.xx |
| | Ø 1,30 | 42.102.13.xx |
| | Ø 1,30 | 42.103.13.xx |
| | Ø 1,30 | 42.08.13.xx |
| | Ø 1,30 | 42.10.13.xx |
| | Ø 1,30 | 42.118.13.xx |
| | Ø 1,30 | 42.146.13.xx |



For **XXLonglife-Nanocoating**
order as **42X**

Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,9 N | 1,5 N | 15 |
| 1,2 N | 3,0 N | 30 |



Ø 1,00 **44.118.10.xx**

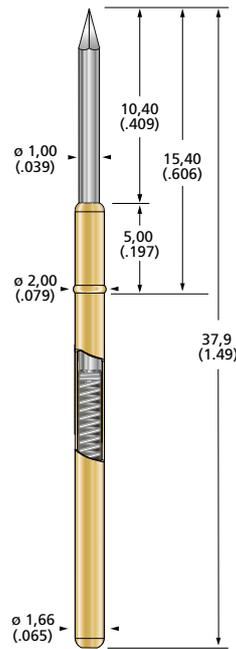


Ø 1,00 **44.46.10.xx**



For XXLlonglife-Nanocoating order as 44X

Series 44



Series 44

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 37,90 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 10,40 mm |
| Working Travel | 7,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, silver plated |

Like in series 42, the series 44 probe pistons 44 can be deflected flush with the barrel. Compared to the other metric types the plunger shaft has a diameter of 1mm instead of 1.3 mm. The Series 44 uses receptacles of Series 30 shown on page 42.

Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,3 N | 0,8 N | 08 |
| 0,9 N | 1,5 N | 15 |
| 1,0 N | 2,2 N | 22 |
| 1,2 N | 3,0 N | 30 |
| 2,0 N | 5,0 N | 50 |



Ø 0,70 **49.101.07.xx**



Ø 0,70 **49.102.07.xx**



Ø 1,30 **49.102.13.xx**



Ø 1,30 **49.103.13.xx**



Ø 1,90 **49.104.19.xx**



Ø 1,50 **49.05.15.xx**



Ø 1,30 **49.08.13.xx**



Ø 1,60 **49.08.16.xx**



Ø 2,00 **49.108.20.xx**



Ø 1,30 **49.10.13.xx**



Ø 1,80 **49.10.18.xx**



Ø 1,30 **49.118.13.xx**



Ø 1,30 **49.146.13.xx**



Ø 1,60 **49.146.16.xx**

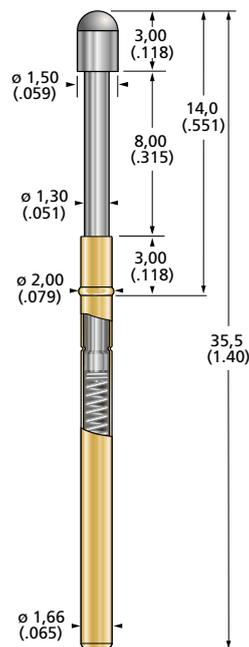


Ø 1,50 **49.174.15.xx**



For XXLlonglife-Nanocoating order as 49X

Series 49



Series 49

Technical Data

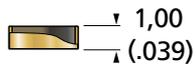
| | |
|-------------------------|-------------|
| Overall Length | 35,50 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 8,00 mm |
| Working Travel | 5,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver, gold plated |
| Spring | Music wire, silver plated |

The Series 49 uses receptacles of Series 30 shown on page 42.

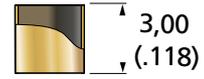
D 50.01
Spacer tube 1 mm



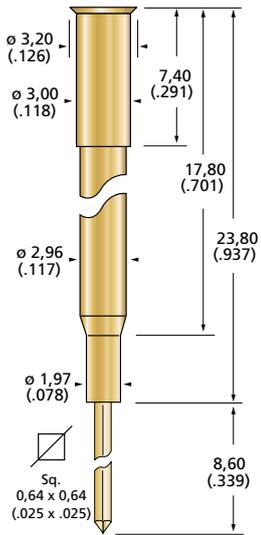
D 50.02
Spacer tube 2 mm



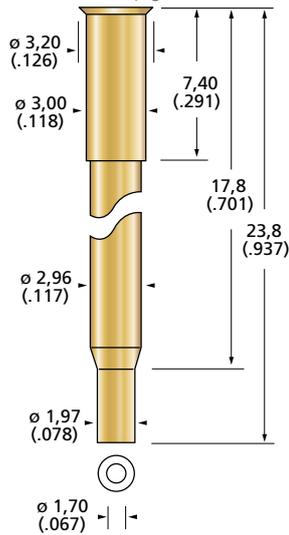
D 50.03
Spacer tube 3 mm



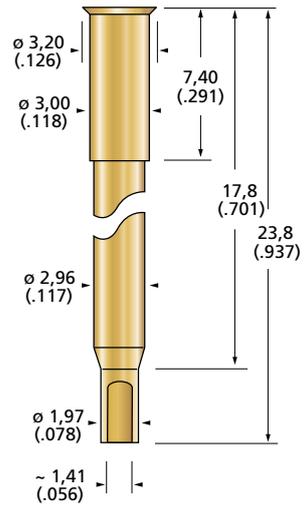
S 50.00-W
Wire-Wrap-Post without snap groove



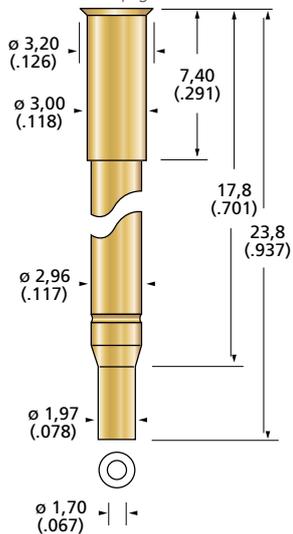
S 50.00-C
Open Crimp End
without snap groove



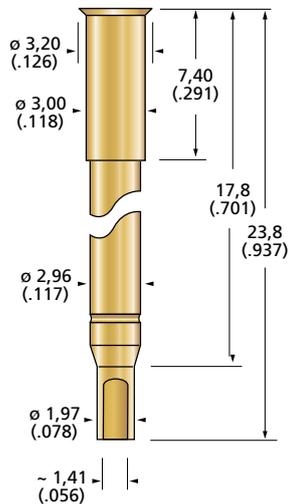
S 50.00-L
Solder Cup without snap groove



S 150.00-C
Open Crimp End
with snap groove



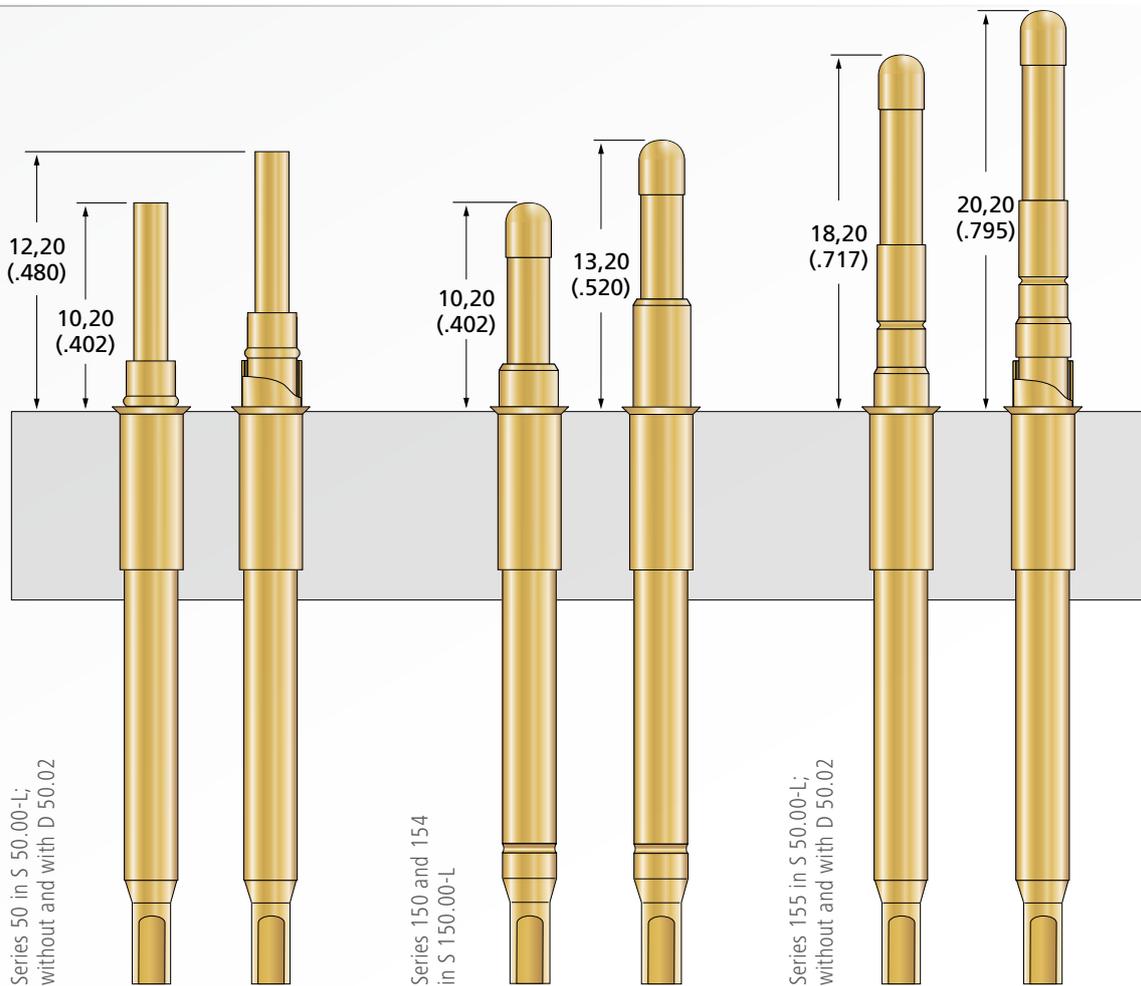
S 150.00-L
Solder Cup with snap groove



RECEPTACLES SERIES 50 / 150 / 154 / 155

The **SERIES 50**, together with its variants **150**, **154** and **155**, offer a multitude of combination options. The metric series for pitch ≥ 3.80 mm, like the series for pitch ≥ 2.54 mm, features a fixed stop ring that, if combined with spacer tubes, allows for extremely variable installation height values. Additionally, some series and receptacles have a „snap groove“ that provides a higher retention force for the contact probe in the receptacle. This option is widely used in the field of cable harness test. Please note: when using spacer tubes, this feature won't work due to the raised position of the spring contact probe in the receptacle.

FIXTURING EXAMPLE



Series 50

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 24,80mm |
| Minimum Centre Spacing | 3,80 mm |
| Maximum Travel | 5,00 mm |
| Working Travel | 3,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 4,0 / 5,5 A |

Materials

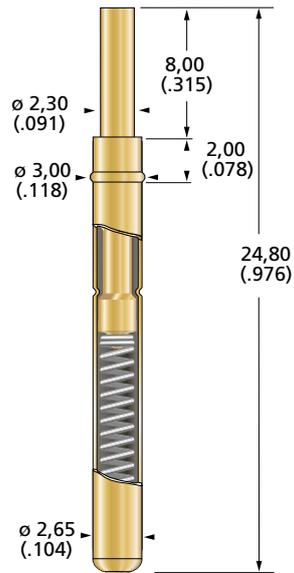
| | |
|---------|-------------------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver or brass, gold plated |
| Spring | Music wire, silver plated |



For XXLlonglife-Nanocoating order as 50X

Receptacles shown on page 48.

Series 50



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|---------|
| 0,8 N | 1,5 N | 15 |
| 1,0 N | 2,0 N | 20 |
| 1,2 N | 3,0 N | 30 |
| 3,0 N | 5,0 N | 50 |

| | | |
|--|--------|--------------|
| | Ø 2,30 | 50.102.23.xx |
| | Ø 2,30 | 50.03.23.xx |
| | Ø 2,50 | 50.103.25.xx |
| | Ø 6,00 | 50.03.60.xx |
| | Ø 2,50 | 50.104.25.xx |
| | Ø 2,50 | 50.105.25.xx |
| | Ø 2,50 | 50.06.25.xx |
| | Ø 4,00 | 50.106.40.xx |
| | Ø 2,50 | 50.08.25.xx |
| | Ø 3,00 | 50.108.30.xx |
| | Ø 4,00 | 50.08.40.xx |
| | Ø 2,50 | 50.110.25.xx |
| | Ø 2,50 | 50.122.25.xx |
| | Ø 2,50 | 50.35.25.xx |

Series 150

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 27,00 mm |
| Minimum Centre Spacing | 3,80 mm |
| Maximum Travel | 5,00 mm |
| Working Travel | 3,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 4,0 / 5,5 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, silver plated |

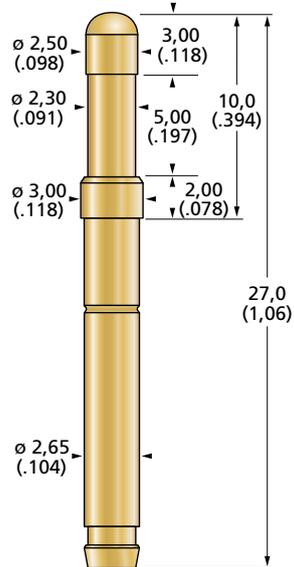


For XXLlonglife-Nanocoating order as 150X

The Series 150 has a barrel with snap groove. Please note that if you use one of the spacers, the function of the locking groove is no longer present.

Receptacles shown on page 48.

Series 150



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|---------|
| 0,8 N | 1,5 N | 15 |
| 1,0 N | 2,0 N | 20 |
| 1,2 N | 3,0 N | 30 |
| 3,0 N | 5,0 N | 50 |

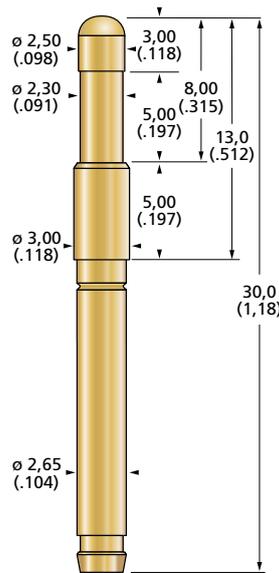
| | | |
|--|--------|---------------|
| | Ø 2,30 | 150.102.23.xx |
| | Ø 2,30 | 150.03.23.xx |
| | Ø 2,50 | 150.103.25.xx |
| | Ø 6,00 | 150.03.60.xx |
| | Ø 2,50 | 150.104.25.xx |
| | Ø 2,50 | 150.105.25.xx |
| | Ø 2,50 | 150.06.25.xx |
| | Ø 4,00 | 150.106.40.xx |
| | Ø 2,50 | 150.08.25.xx |
| | Ø 3,00 | 150.108.30.xx |
| | Ø 4,00 | 150.08.40.xx |
| | Ø 2,50 | 150.110.25.xx |
| | Ø 2,50 | 150.122.25.xx |
| | Ø 2,50 | 150.35.25.xx |

Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| | | xx |
| 0,8 N | 1,5 N | 15 |
| 1,0 N | 2,0 N | 20 |
| 1,2 N | 3,0 N | 30 |
| 3,0 N | 5,0 N | 50 |

| | | |
|---|--------|----------------------|
|  | Ø 2,30 | 154.102.23.xx |
|  | Ø 2,30 | 154.03.23.xx |
|  | Ø 2,50 | 154.103.25.xx |
|  | Ø 6,00 | 154.03.60.xx |
|  | Ø 2,50 | 154.104.25.xx |
|  | Ø 2,50 | 154.105.25.xx |
|  | Ø 2,50 | 154.06.25.xx |
|  | Ø 4,00 | 154.106.40.xx |
|  | Ø 2,50 | 154.08.25.xx |
|  | Ø 3,00 | 154.108.30.xx |
|  | Ø 4,00 | 154.08.40.xx |
|  | Ø 2,50 | 154.110.25.xx |
|  | Ø 2,50 | 154.122.25.xx |
|  | Ø 2,50 | 154.35.25.xx |

Series 154



Series 154

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 30,00 mm |
| Minimum Centre Spacing | 3,80 mm |
| Maximum Travel | 5,00 mm |
| Working Travel | 3,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 4,0 / 5,5 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, silver plated |



For **XXLonglife-Nanocoating** order as **154X**

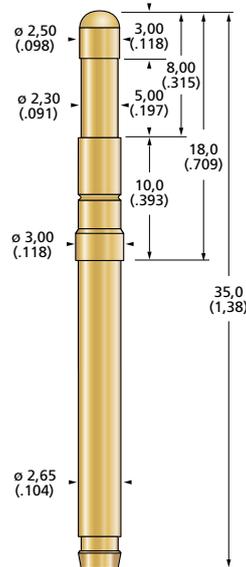
The Series 154 has a barrel with snap groove. Please note that if you use one of the spacers, the function of the locking groove is no longer present. Receptacles shown on page 48.

Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| | | xx |
| 0,8 N | 1,5 N | 15 |
| 1,0 N | 2,0 N | 20 |
| 1,2 N | 3,0 N | 30 |
| 3,0 N | 5,0 N | 50 |
| 3,2 N | 8,0 N | 80 |

| | | |
|---|--------|----------------------|
|  | Ø 2,30 | 155.102.23.xx |
|  | Ø 2,30 | 155.03.23.xx |
|  | Ø 2,50 | 155.103.25.xx |
|  | Ø 6,00 | 155.03.60.xx |
|  | Ø 2,50 | 155.104.25.xx |
|  | Ø 2,50 | 155.105.25.xx |
|  | Ø 2,50 | 155.06.25.xx |
|  | Ø 4,00 | 155.106.40.xx |
|  | Ø 2,50 | 155.08.25.xx |
|  | Ø 3,00 | 155.108.30.xx |
|  | Ø 4,00 | 155.08.40.xx |
|  | Ø 2,50 | 155.110.25.xx |
|  | Ø 2,50 | 155.122.25.xx |
|  | Ø 2,50 | 155.35.25.xx |

Series 155



Series 155

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 35,00 mm |
| Minimum Centre Spacing | 3,80 mm |
| Maximum Travel | 5,00 mm |
| Working Travel | 3,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 4,0 / 5,5 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, silver plated |



For **XXLonglife-Nanocoating** order as **155X**

The Series 155 has a barrel with snap groove. Please note that if you use one of the spacers, the function of the locking groove is no longer present. Receptacles shown on page 48.

ICT / FCT
TEST PROBES



Series 51

Technical Data

| | |
|-------------------------|--------------|
| Overall Length | 34,10 mm |
| Minimum Centre Spacing | 3,80 mm |
| Maximum Travel | 5,00 mm |
| Working Travel | 3,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 5 mΩ |
| Current Load rated/max. | 8,0 / 10,0 A |

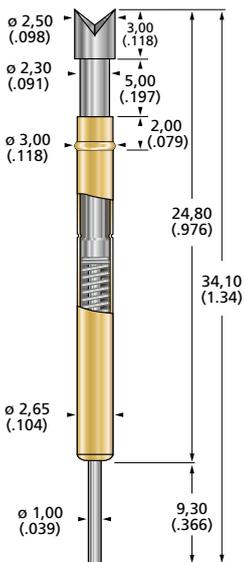
Materials

| | |
|---------|-------------------------------------|
| Plunger | CuBe or steel, gold plated |
| Barrel | Nickel silver or brass, gold plated |
| Spring | Music wire, silver plated |

The special feature of this design is that the piston is brought out at the lower end (connection with 1 mm diameter). As a result the electrical current is passed directly over the piston and not, as in the classical case common to have a „parallel“ of compression spring and housing cover. The current carrying capacity is correspondingly higher and also the transition resistance behaves according to low and constant. The connection pin which protrudes from the housing bottom, is moved during compression of the contact. We recommend to use highly flexible cable for the connection wiring. On request we can supply matching connectors for this pin with pre-attached wire. For further questions, please contact our office.

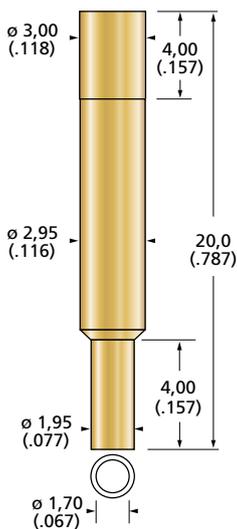
The socket S 51.00-C has in this series no electrical function but merely ensures easy installation and interchangeability. Since the terminal pin should be freely sticking out, only the Type S 51.00-C with open end can be used here.

Series 51



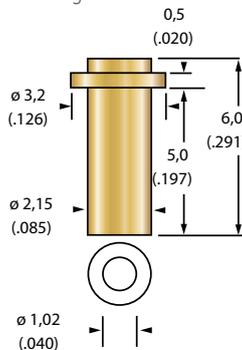
S 51.00-C

Open end for continuous plunger



FK-541

Plug-On-Terminal



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,8 N | 1,5 N | 15 |
| 1,0 N | 2,0 N | 20 |
| 1,2 N | 3,0 N | 30 |
| 3,0 N | 5,0 N | 50 |

| | | |
|--|--------|--------------|
| | Ø 2,50 | 51.103.25.xx |
| | Ø 2,50 | 51.106.25.xx |
| | Ø 4,00 | 51.106.40.xx |
| | Ø 2,50 | 51.08.25.xx |

For **XXLonglife-Nanocoating**
order as **51X**

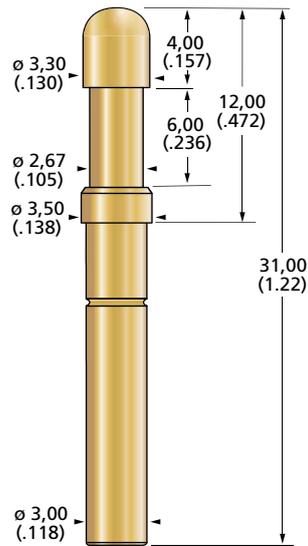
Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 1,0 N | 1,5 N | 15 |
| 1,2 N | 3,0 N | 30 |
| 3,0 N | 5,0 N | 50 |

| | | |
|---|--------|--------------------|
|  | Ø 3,30 | 60.05.33.xx |
|  | Ø 4,00 | 60.08.40.xx |

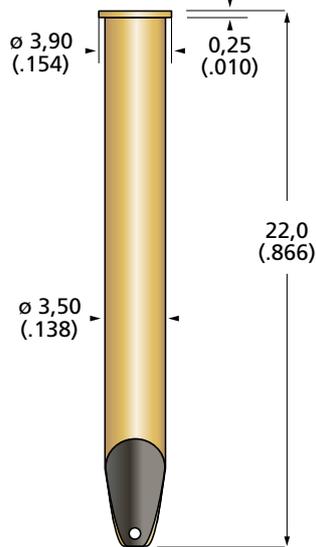
 **For XXLlonglife-Nanocoating order as 60X**

Series 60



S 60.00-LO

Open end with solder tail



Series 60

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 31,00 mm |
| Minimum Centre Spacing | 4,50 mm |
| Maximum Travel | 6,00 mm |
| Working Travel | 4,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 4,0 / 5,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, silver plated |

Similar as the series 51, shown on the page before, the series 60 is also available with a pass-through-plunger design named series 61.

We make that only on demand, so please contact us when you need that.

INTERFACE CONTACTS

Interface contacts are usually a pair consisting of a rigid mating contact matching to a spring-loaded pin. They are suitable for use in various standard interfaces, interface blocks and interchangeable adapters, but also in workpiece carriers or pallets, if the inserted products must be supplied with electrical power. Its purpose is to easily and thereby reliable and fast to connect electrically to a base station or unit test adapter or changing cartridges in in-line systems - thus temporarily to dock.

Sometimes in addition to the normal electrical connections for signals and power also connections for RF-techniques or for media such as compressed air or hydraulics must be coupled.

FIXTEST offers under the product line of Interface contacts not only rigid pins, but also sprung. They are fundamentally not much different from normal test probes, but because of their outer structure they are mainly used for this purpose or even standardized for specific systems. Above all, a short design and a short stroke are the decisive factors here, but in addition also the current carrying capacity and a constant low resistance value.

Completely assembled interface blocks, we have also in numerous variations. A separate brochure is available for you to download on our site. And of course, we will gladly customize your own variants and special forms for you.





| | |
|------|----|
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| Interface contacts | |
| 20.08.23Z070T310 | 211 |
| GR1 - GR4 | |
| FK-011 | |
| FK-011-F | |
| FK-026 | |
| FK-027 | |
| FK-027-E12 | |
| FK-069 | |
| FK-069-80 | |
| FK-070 | |
| FK-090 | |
| FK-190 | |
| FK-352 | |
| FK-374 | |
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| FK-526 | |
| FK-535 | |
| FK-595 | |
| FK-596 | |
| FK-627 | |
| FK-650 | |
| FK-657 | |
| FK-726 | |
| FK-745 | |



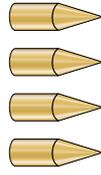
Series GR1 - GR4

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | see Table |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | see Table |
| Working Travel | see Table |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,0 / 3,0 A |

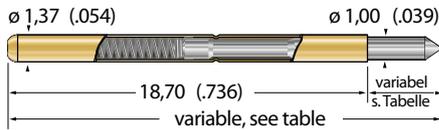
Materials

| | |
|---------|--|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated or silver plated |

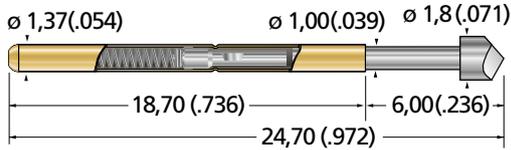


| | | | Extension height mm | Maximum Travel mm | Working Travel mm | Overall Length mm | Spring Force N |
|---|--------|---------------------|---------------------|-------------------|-------------------|-------------------|----------------|
|  | Ø 1,00 | GR1.02.10.11 | 3,20 | 3,20 | 2,00 | 21,90 | 1,1 |
|  | Ø 1,00 | GR2.02.10.10 | 3,60 | 2,60 | 2,20 | 22,30 | 1,0 |
|  | Ø 1,00 | GR3.02.10.10 | 3,80 | 2,60 | 2,20 | 22,50 | 1,0 |
|  | Ø 1,00 | GR4.02.10.10 | 3,90 | 2,60 | 2,20 | 22,60 | 1,0 |

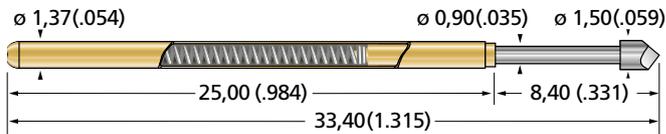
GR1 - GR4



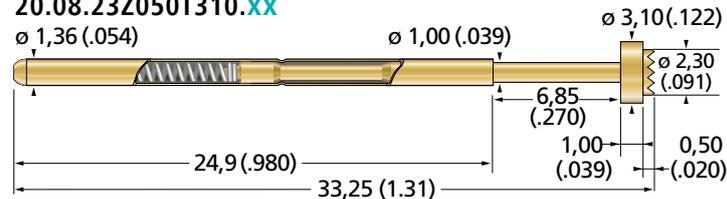
21.20.18.xx



100.20.15.xx



20.08.23Z050T310.xx



Interface Contacts for Test Platforms:

| | |
|----------------------------|-------------------|
| GR1 -GR4 | GenRad |
| 21.20.18.xx | Factron 300/700 |
| 100.20.15.xx | Teradyne 800/1800 |
| 20.08.23Z050T310.xx | HP 3070 MINT |

Spring Force (xx)

| Preload | Rated Force | Code xx |
|----------------------------|-------------|------------|
| 21.20.18.xx | | |
| 0,3 N | 1,0 N | 10 |
| 0,8 N | 1,8 N | 18 |
| 1,2 N | 2,5 N | 25 |
| 100.20.15.xx | | |
| 0,3 N | 1,0 N | 10 |
| 0,35 N | 1,5 N | 15 |
| 0,4 N | 2,0 N | 20 |
| 0,5 N | 2,5 N | 25 |
| 0,8 N | 3,0 N | 30 |
| 20.08.23Z050T310.xx | | |
| 0,3 N | 1,0 N | 10 |
| 0,4 N | 1,2 N | 12 |
| 0,5 N | 1,6 N | 16 |
| 0,6 N | 1,8 N | 18 |
| 0,8 N | 2,5 N | 25 |
| 1,0 N | 3,0 N | 30 |

Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,3 N | 1,2 N | 12 |
| 0,4 N | 1,8 N | 18 |
| 0,6 N | 2,1 N | 21 |

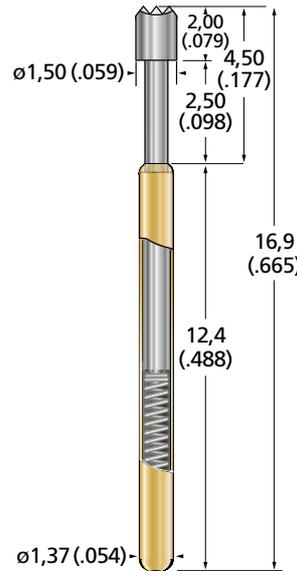
| | | |
|---|--------|---------------------|
|  | ∅ 0,80 | 211.02.08.xx |
|  | ∅ 0,80 | 211.05.08.xx |
|  | ∅ 1,50 | 211.05.15.xx |
|  | ∅ 1,00 | 211.06.10.xx |
|  | ∅ 1,50 | 211.08.15.xx |
|  | ∅ 2,50 | 211.08.25.xx |



For **XXLonglife-Nanocoating**
order as **221X**

This series is designed for a ≥ 2.54 mm pitch and is in length and travel almost identical to the 07 series, which is used in 1.27 mm pitch.

Series 211



Series 211

Technical Data

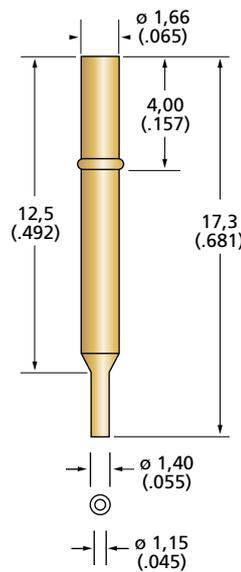
| | |
|-------------------------|-------------|
| Overall Length | 16,90 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 2,50 mm |
| Working Travel | 1,70 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

Materials

| | |
|---------|-------------------------|
| Plunger | Cu-alloy, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

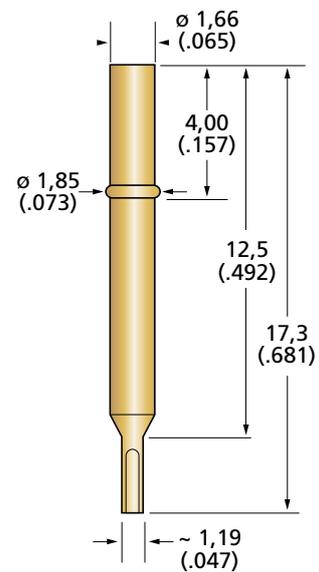
S 211.00-C

Open Crimp End



S 211.00-L

Solder Cup



INTERFACE CONTACTS
SERIES 211

Max. Current Load
4,0 A

Overall Length
16,90 mm

Working Travel
1,70 mm

Max. Travel
2,50 mm

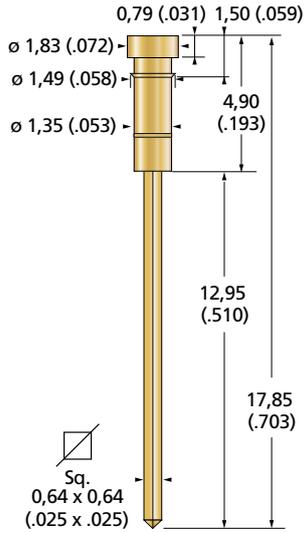
Pitch
 $\geq 2,54$ mm ≥ 100 mil

INTERFACE CONTACTS



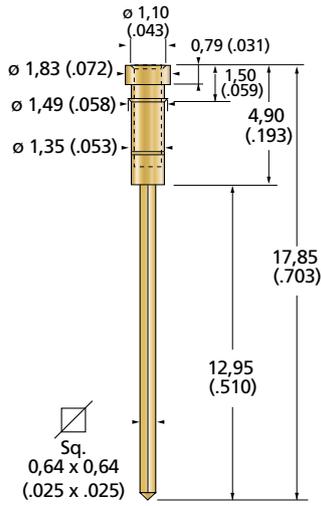
FK-069

Flat Front
Fish Hook



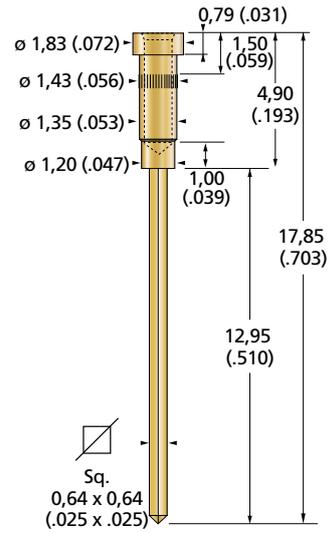
FK-070

Hollow Pin
Fish Hook



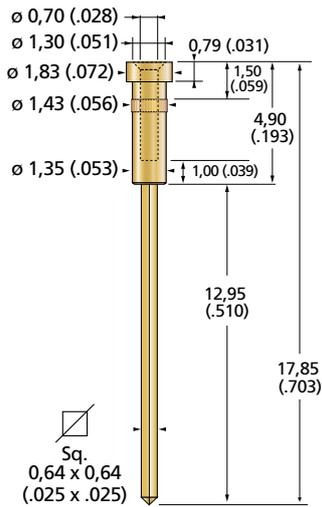
FK-011

Knurled and Hollow



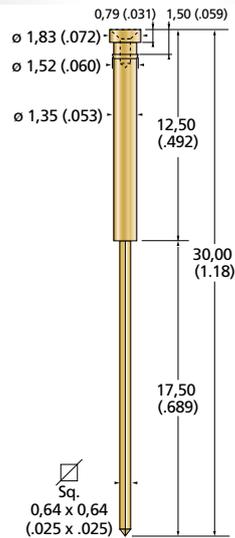
FK-011-F

Hollow pin with contact slip



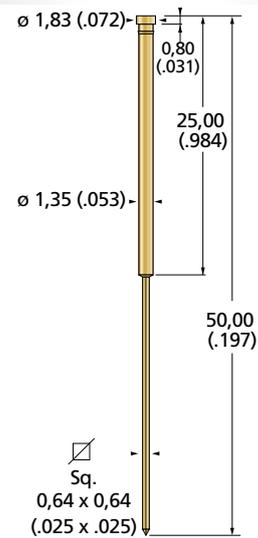
FK-627

Fish Hook



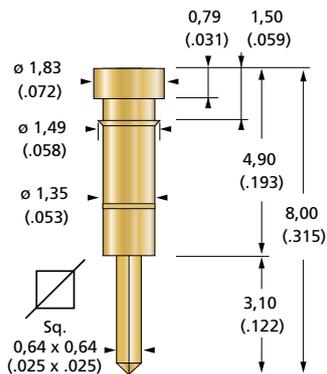
FK-520

Fish Hook



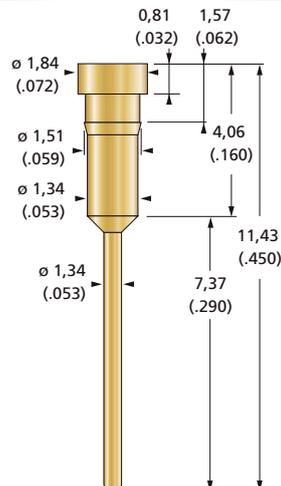
FK-069-80

Fish Hook



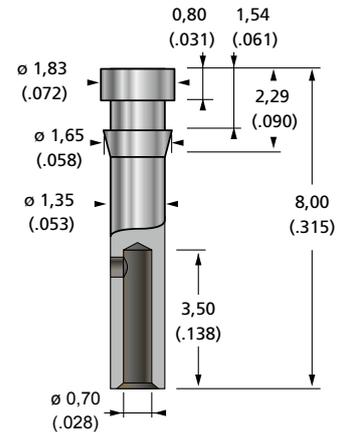
FK-657

Fish Hook



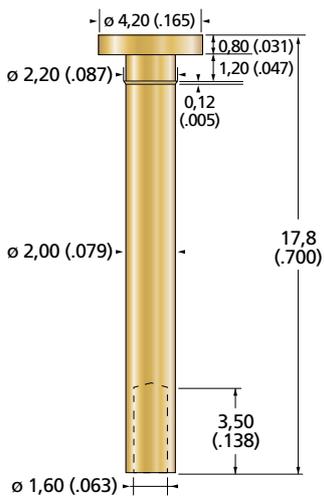
FK-726

Sliver alloy



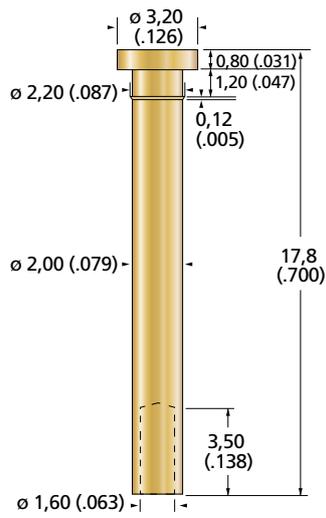
FK-090

Flat Front
Fish Hook



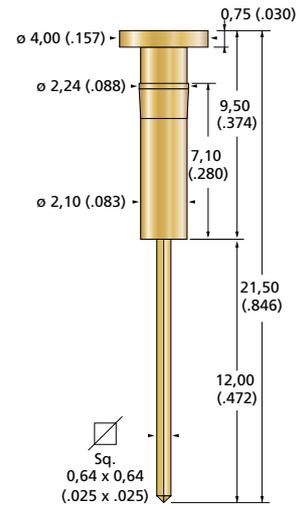
FK-190

Fish Hook



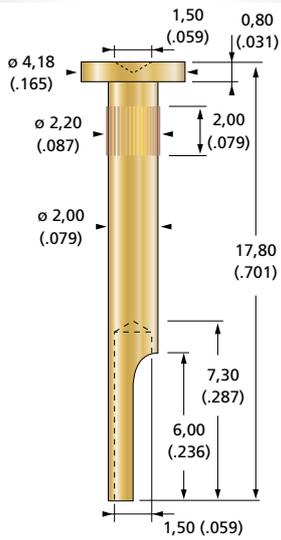
FK-521

Fish Hook



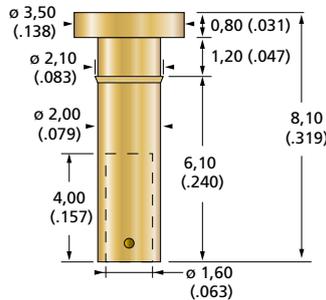
FK-507

Press fit knurl



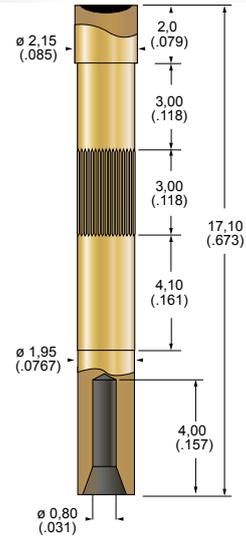
FK-411

Fish Hook



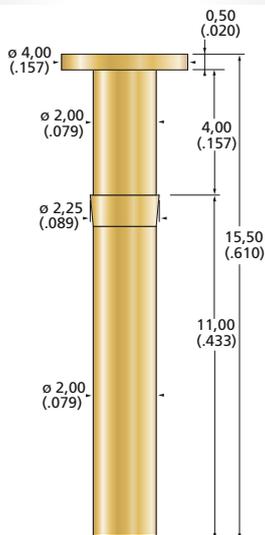
FK-488

Press fit knurl



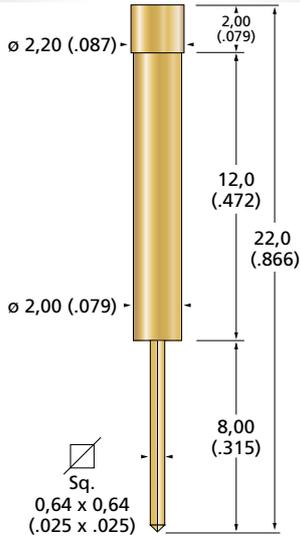
FK-745

Fish-Hook

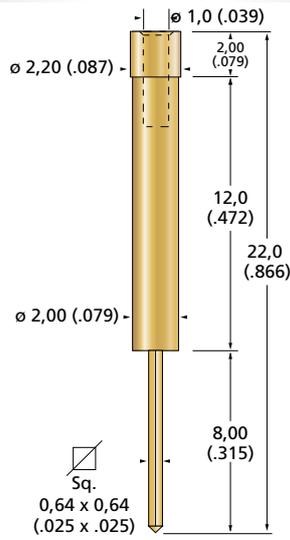


RIGID
INTERFACE CONTACTS

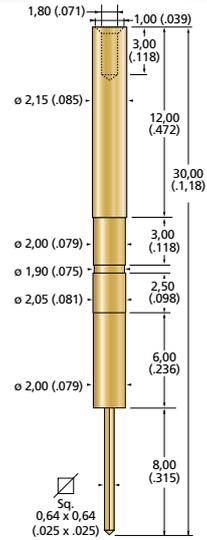
FK-026
Flat Front
Press fit shaft



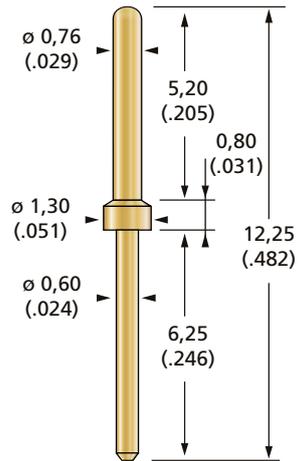
FK-027
Hollow Pin
Press fit shaft



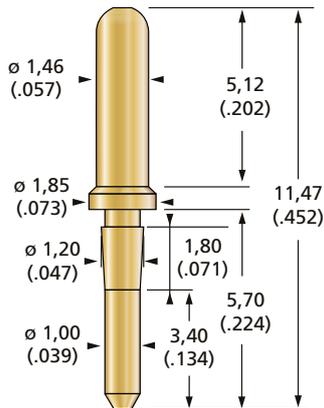
FK-027-E12



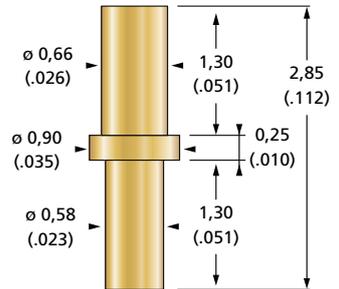
FK-352



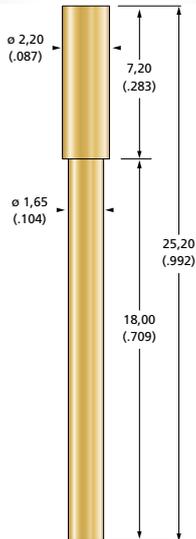
FK-374
Fish Hook



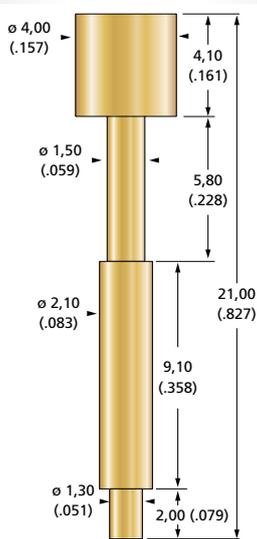
FK-458



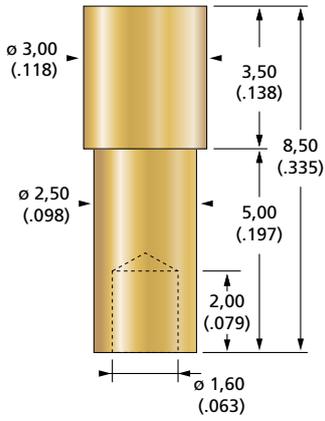
FK-465



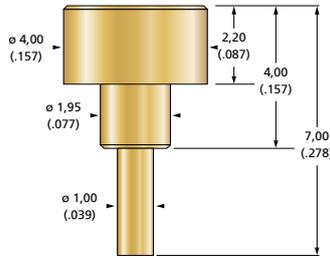
FK-500



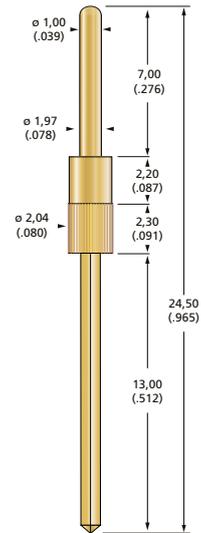
FK-535



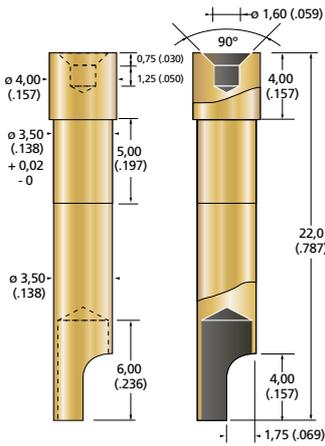
FK-650



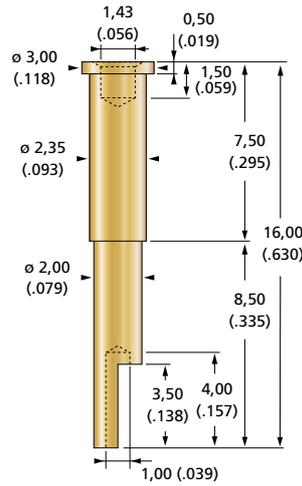
FK-526



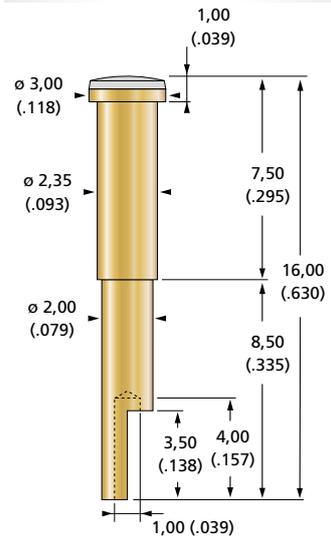
FK-386
Hollow Pin
Press fit shaft



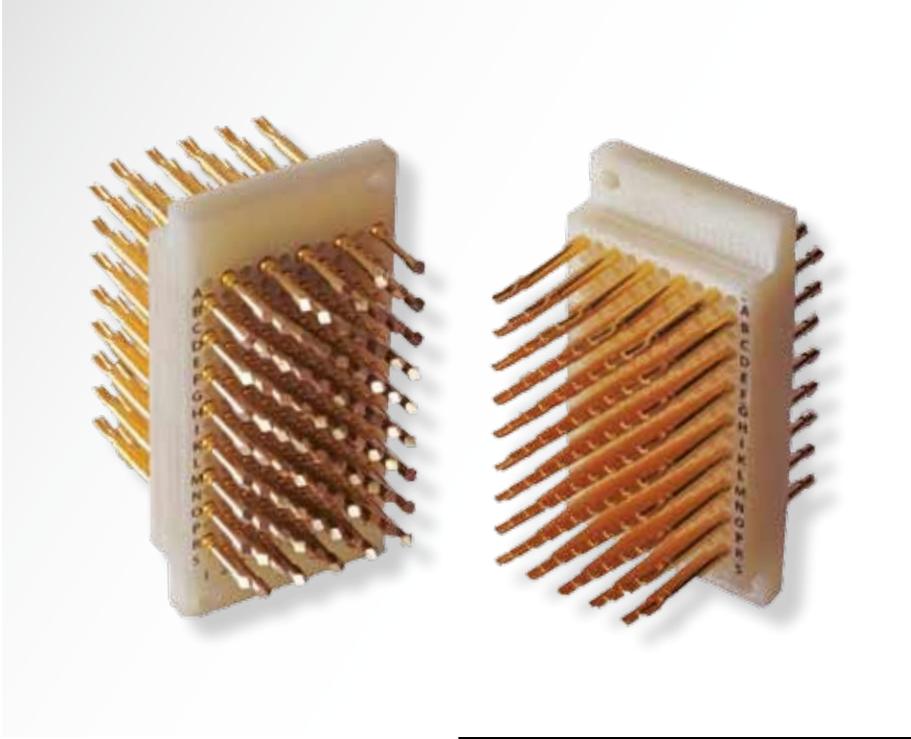
FK-595



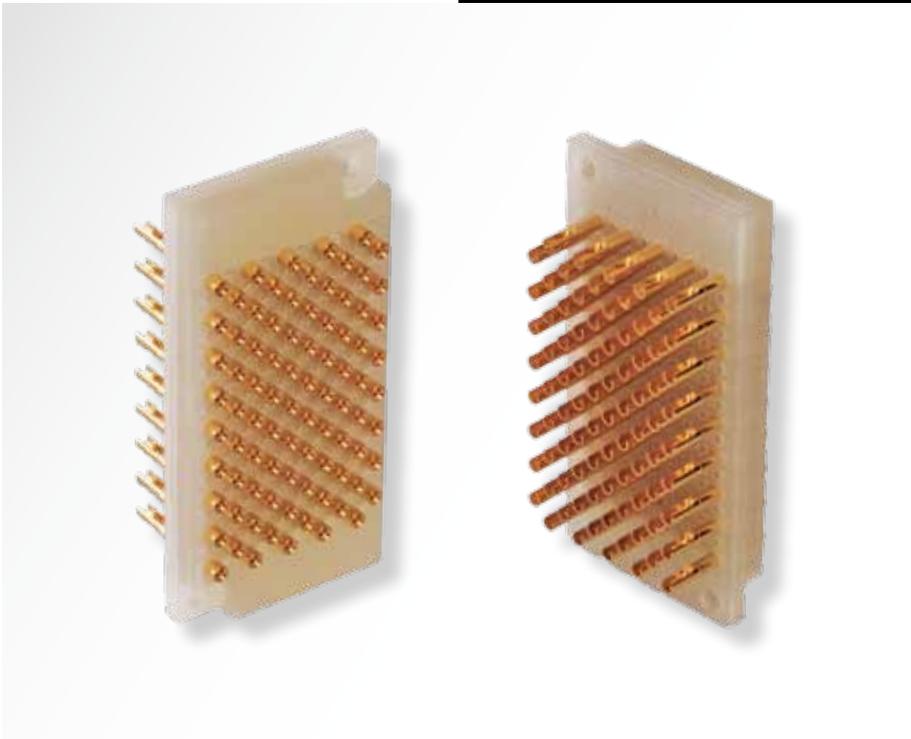
FK-596
Silver cap



RIGID
INTERFACE CONTACTS



85-pin
with spring loaded contacts
solder cup connection



85-pin
with rigid interface pins
solder cup connection



102-pin
with rigid interface pins
wire-wrap-connection



INTERFACE BLOCKS

INTERFACE BLOCKS

The exemplary pictures here on the left show only a small part of the many variants of interface components, which FIXTEST produces. Most types are based on the same carrier plate size, but there may be system-specific deviations. Also, the assembly can vary, both in terms of the number of poles, but also with respect to the connecting elements. So there are interface blocks with a combined placement of signal and power contacts, and others with compressed air connectors for applications in which to both electrical and pneumatic connections have to be supplied. Various test system manufacturers have committed themselves to various standards, and some manufacturer of inline inspection systems dock

their exchange units on the base unit via standardized interface blocks. Even those components you will find at FIXTEST, and we are always open for special orders according to your wishes.

For a full list of available types which are available on request - please contact us.

| Part No. | Pin Count | Receiver side | Fixture side | Contact | Working Travel | Termination |
|-----------|-----------|---------------|--------------|-----------------------------------|----------------|-------------------------|
| 600-070 | 85 | ✓ | | 21.20.15.10 | 2,70 mm | Wire-Wrap |
| 600-074 | 85 | ✓ | | GR2.02.10.10 | 2,20 mm | Solder Cup |
| 2690-0020 | 102 | ✓ | | 21.20.18.10 | 2,70 mm | Solder Cup |
| 2690-0022 | 102 | ✓ | | 21.20.15.10 | 2,70 mm | Wire-Wrap |
| 600-001 | 128 | ✓ | | 30.10.18.10 | 3,30 mm | Solder Cup |
| 600-023 | 170 | ✓ | | 21.20.15.10 | 2,70 mm | Solder Cup |
| 600-011 | 170 | ✓ | | 21.20.18.10 | 2,70 mm | Wire-Wrap |
| 600-071 | 85 | | ✓ | FK-011 | rigid | Wire-Wrap |
| 600-072 | 85 | | ✓ | FK-666 | rigid | Solder Cup |
| 2690-0010 | 102 | | ✓ | FK-011 | rigid | Wire-Wrap |
| 600-000 | 102 | | ✓ | FK-666 | rigid | Solder Cup |
| 600-013 | 128 | | ✓ | FK-070 | rigid | Wire-Wrap |
| 600-022 | 170 | | ✓ | FK-666 | rigid | Solder Cup |
| 600-010 | 170 | | ✓ | FK-026 | rigid | Wire-Wrap |
| 600-015 | 170 | | ✓ | FK-011 | rigid | Wire-Wrap |
| 600-024 | 170 | | ✓ | FK-666 50 pcs. FK-070 120 pcs. | rigid | Solder Cup Wire-Wrap |

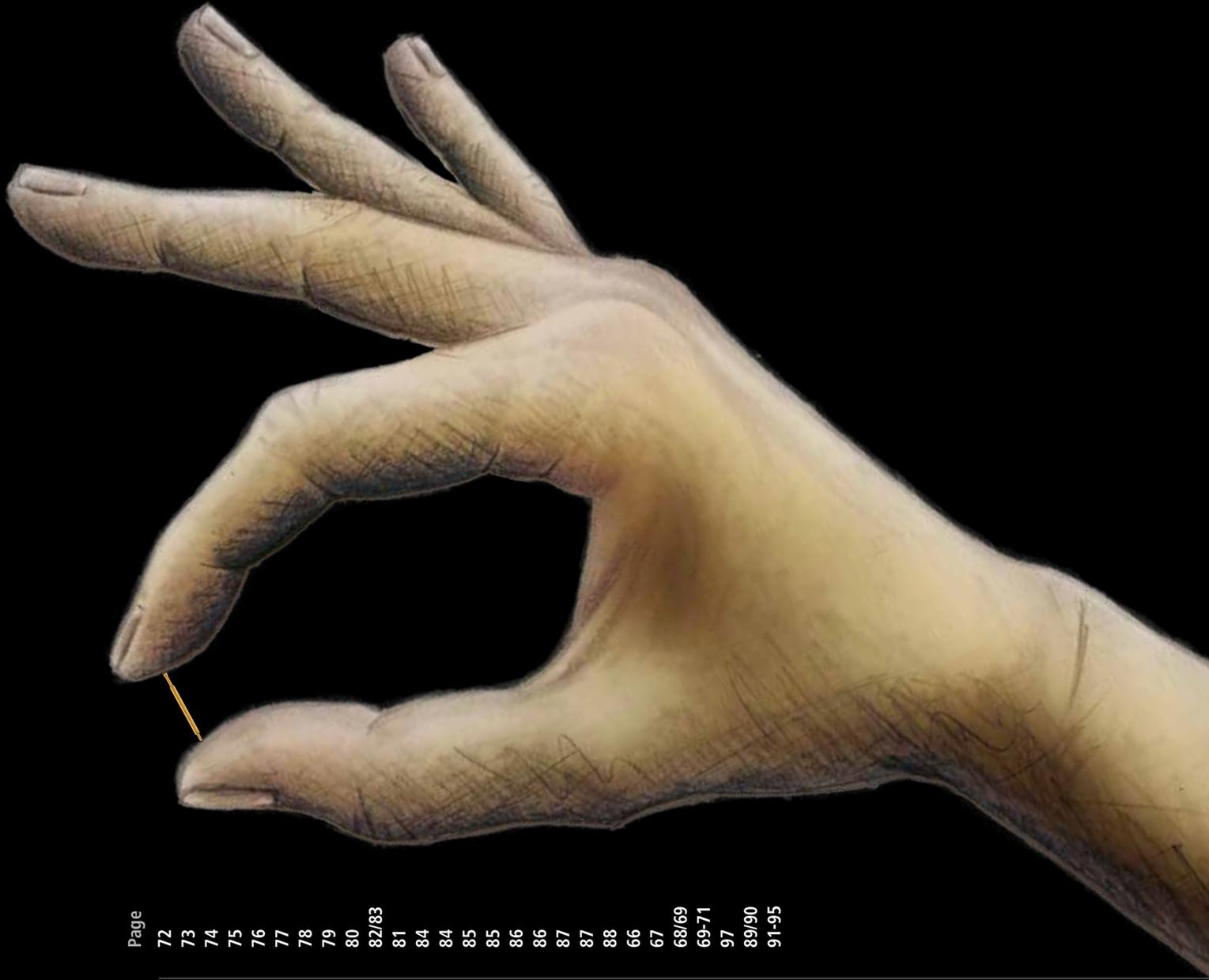
FINEPITCH PROBES

For applications in semiconductor test sockets and similar areas we offer in our category fine pitch pins for centre pitches below 0.8 mm. The thinnest spring contacts in our program have a diameter of only 0.11 mm. You can also find Kelvin contacts here for 0.4 mm pitch and many other specialties in extremely small sizes.

Another special feature is the range of MARATHON probes made by our partner KITA in Japan. These usually have sprung contacts on both sides, and - as the name suggests - a long life-cycle time, high current capability and low resistance values. KITA also specializes in customer or application-specific designs. Especially socket manufacturers across the globe preferably use KITA products, as they have obtained a very good reputation due to their durability and reliability. The product variety is so extensive that it can't be listed in a catalog. Therefore, please ask us for assistance, where the first selecting criteria is the minimum centre pitch of the contact array. Next are still important: single-end or double-end spring loaded plungers? Overall Length? Contact stroke and force? Temperature range, humidity? We have extensive product lists and provide you with information on request.

FIXTEST is the responsible distribution partner of KITA Mfg. Co. in Europe and your competent partner in all matters relating to fine pitch. We help you also in questions around socket design and manufacturing.





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OVERVIEW

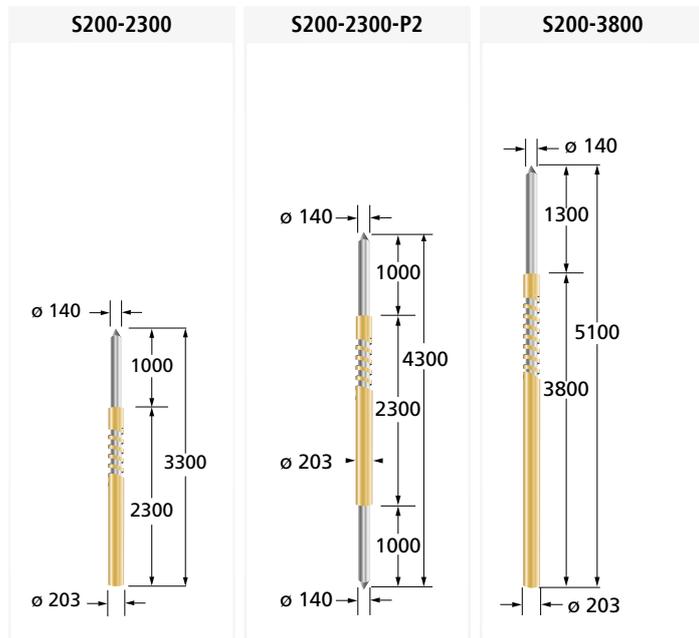
μHELIX 200

μHELIX-PROBES

The unusual design of the μHelix contacts immediately catches the eye. In contrast to conventional spring contacts the μHelix fine pitch contacts do not have an internal coil spring - their „spring“ is instead directly integrated into the housing sleeve, or in other words, the sleeve is also spring. The special design has enormous benefits: The electrical properties are excellent, a particularly relevant factor for

RF transmissions or the use of relatively high currents.

Also for burn-in applications μHelix contacts are ideally suited, as the materials used are very temperature resistant. Due to their design μHelix contacts have an extremely long service life: Over 5 million load cycles were achieved in laboratory tests with no apparent change of spring force or electrical resistance. Important is the correct installation of the contacts that



| Technical Data | S200-2300 | S200-2300-P2 | S200-3800 |
|------------------------|-----------------------------|--------------|-----------------------------|
| Overall Length | 3300 μm | 4300 μm | 5100 μm |
| Tube part length | 2300 μm | 2300 μm | 3800 μm |
| Minimum Centre Spacing | 254 μm | 254 μm | 254 μm |
| Spring Force | 30 g (0,3 N) / 40 g (0,4 N) | 30 g (0,3 N) | 30 g (0,3 N) / 60 g (0,6 N) |
| Maximum Travel | 300 μm / 250 μm | 300 μm | 700 μm / 600 μm |
| Working Travel | 150 μm / 125 μm | 150 μm | 350 μm / 300 μm |
| Temperature Range from | -40°C | -40°C | -40°C |
| Up to | +150°C | +150°C | +150°C |
| Typical Resistance | ≤ 100 mΩ | ≤ 130 mΩ | ≤ 150 mΩ |
| Current rating | 0,5 A | 0,5 A | 0,5 A |

Materials

Plunger CuBe or steel, gold plated

Spring 304 Stainless steel

μHelix Finepitch contacts for pitch ≥ 254 μm. All dimensions in μm.

FINEPITCH CONTACTS
SERIES S200

Current rating
0,5 A

Overall Length
3300 – 5100 μm

Working Travel
125 – 350 μm

Max. Travel
250 – 700 μm

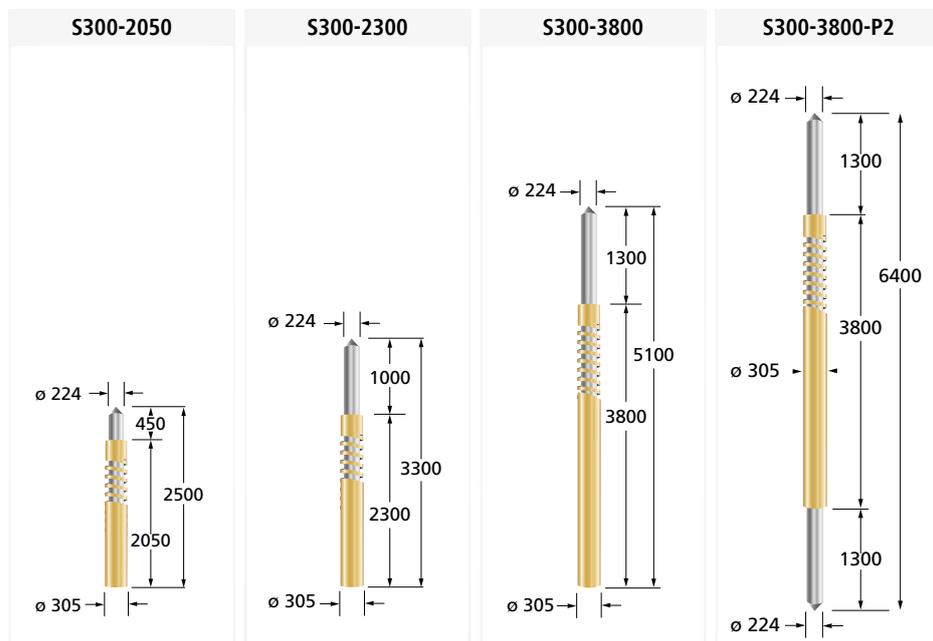
Pitch
≥ 254 μm

OVERVIEW

μHELIX 300

provides reliable protection against exceeding of the specified nominal stroke. In addition to the standard types shown here, there are many other versions with different head shapes and types of connection. For more information about the large range of μHelix contacts, please visit: www.fixtest.de/en/helix

Please Note: The dimensions in the catalog drawings showing μHelix contacts are given in thousandths of a millimeter (micrometers)! The type number tells you the outside diameter of the tube, for example S300 stands for 300 micrometers.



| Technical Data | S300-2050 | S300-2300 | S300-3800 | S300-3800-P2 |
|------------------------|--------------|-----------------------------|-----------------------------|--------------|
| Overall Length | 2500 μm | 3300 μm | 5100 μm | 6400 μm |
| Tube part length | 2050 μm | 2300 μm | 3800 μm | 3800 μm |
| Minimum Centre Spacing | 363 μm | 363 μm | 363 μm | 363 μm |
| Spring Force | 20 g (0,2 N) | 30 g (0,3 N) / 60 g (0,6 N) | 30 g (0,3 N) / 60 g (0,6 N) | 30 g (0,3 N) |
| Maximum Travel | 400 μm | 300 μm / 250 μm | 700 μm / 600 μm | 700 μm |
| Working Travel | 200 μm | 150 μm / 125 μm | 350 μm / 300 μm | 350 μm |
| Temperature Range from | -40°C | -40°C | -40°C | -40°C |
| Up to | +150°C | +150°C | +150°C | +150°C |
| Typical Resistance | ≤ 70 mΩ | ≤ 70 mΩ | ≤ 70 mΩ | ≤ 80 mΩ |
| Current rating | 1,5 A | 1,5 A | 1,5 A | 1,5 A |

Materials

| | |
|---|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Spring | 304 Stainless steel |
| μHelix Finepitch contacts for pitch ≥ 363 μm. All dimensions in μm. | |

FINEPITCH CONTACTS
SERIES 300

Current rating 1,5 A
Overall Length 2500 – 6400 μm
Working Travel 200 – 350 μm
Max. Travel 300 – 700 μm

Pitch ≥ 363 μm

OVERVIEW

μHELIX 400

FINEPITCH CONTACTS
SERIES 400

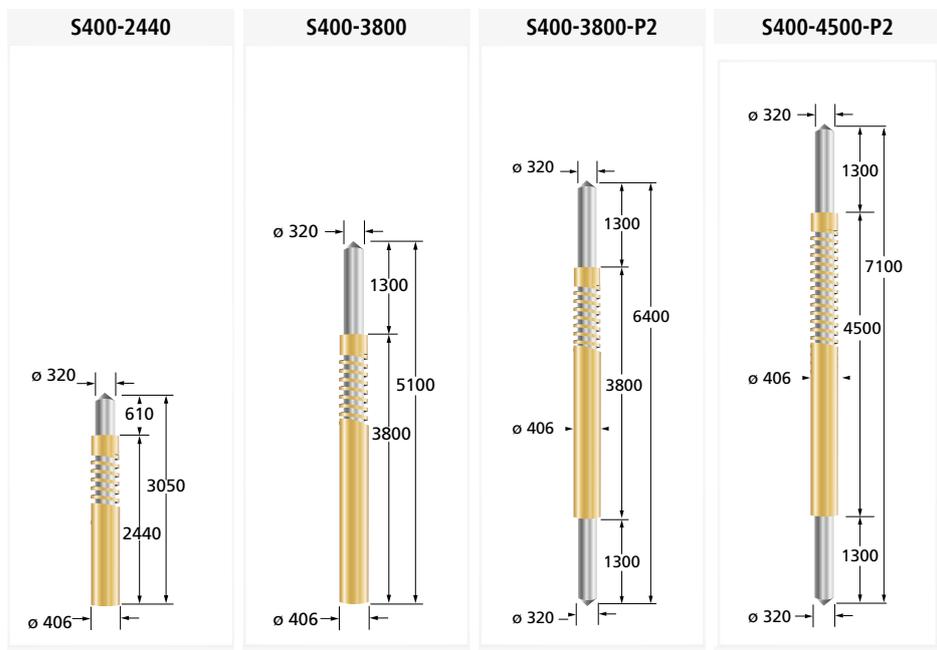
Current rating
2,0 A

Overall Length
3050 – 7100 μm

Working Travel
200 – 450 μm

Max. Travel
400 – 900 μm

Pitch
≥ 477 μm



| Technical Data | S400-2440 | S400-3800 | S400-3800-P2 | S400-4500-P2 |
|------------------------|--------------|-----------------------------|-----------------------------|-----------------------------|
| Overall Length | 3050 μm | 5100 μm | 6400 μm | 7100 μm |
| Tube part length | 2440 μm | 3800 μm | 3800 μm | 4500 μm |
| Minimum Centre Spacing | 477 μm | 477 μm | 477 μm | 477 μm |
| Spring Force | 30 g (0,3 N) | 30 g (0,3 N) / 80 g (0,8 N) | 30 g (0,3 N) / 80 g (0,8 N) | 30 g (0,3 N) / 80 g (0,8 N) |
| Maximum Travel | 400 μm | 900 μm / 625 μm | 900 μm / 625 μm | 900 μm |
| Working Travel | 200 μm | 450 μm / 350 μm | 450 μm / 350 μm | 450 μm |
| Temperature Range from | -40°C | -40°C | -40°C | -40°C |
| Up to | +150°C | +150°C | +150°C | +150°C |
| Typical Resistance | ≤ 60 mΩ | ≤ 60 mΩ | ≤ 80 mΩ | ≤ 80 mΩ |
| Current rating | 2,0 A | 2,0 A | 2,0 A | 2,0 A |

| Materials | |
|---|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Spring | 304 Stainless steel |
| μHelix Finepitch contacts for pitch ≥ 477 μm. All dimensions in μm. | |

Alongside the series and types illustrated in this catalogue are additional versions and modified types with different terminations.

Find more information on our website: www.fixtest.de/en/helix

OVERVIEW

μHELIX 400 / 500

| S400-6350 | S400-6350-P2 | S500- 2440 | S500-3000-800 | S500-3000-1300 |
|-----------------------------|-----------------------------|--------------|---------------|----------------|
| | | | | |
| S400-6350 | S400-6350-P2 | S500- 2440 | S500-3000-800 | S500-3000-1300 |
| 8250 μm | 10150 μm | 3050 μm | 3800 μm | 4300 μm |
| 6350 μm | 6350 μm | 2440 μm | 3000 μm | 3000 μm |
| 477 μm | 477 μm | 592 μm | 592 μm | 592 μm |
| 30 g (0,3 N) / 60 g (0,6 N) | 30 g (0,3 N) / 60 g (0,6 N) | 30 g (0,3 N) | 30 g (0,3 N) | 30 g (0,3 N) |
| 1500 μm / 1200 μm | 1500 μm / 1200 μm | 400 μm | 650 μm | 650 μm |
| 750 μm / 600 μm | 750 μm / 600 μm | 200 μm | 325 μm | 325 μm |
| -40°C | -40°C | -40°C | -40°C | -40°C |
| +150°C | +150°C | +150°C | +150°C | +150°C |
| ≤ 60 mΩ | ≤ 100 mΩ | ≤ 30 mΩ | ≤ 30 mΩ | ≤ 30 mΩ |
| 2,0 A | 2,0 A | 2,0 A | 2,0 A | 2,0 A |

Materials

| | |
|--|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Spring | 304 Stainless steel |
| μHelix Finepitch contacts for pitch ≥ 254 μm and 592 μm. All dimensions in μm. | |

FINEPITCH CONTACTS
SERIES 400 / 500

Current rating
2,0 A

Overall Length
10150 / 4300 μm

Working Travel
750 / 325 μm

Max. Travel
1500 / 650 μm

Pitch
≥ 477 / 592 μm

FINEPITCH CONTACTS



OVERVIEW

μHELIX 500

FINEPITCH CONTACTS
SERIES 500

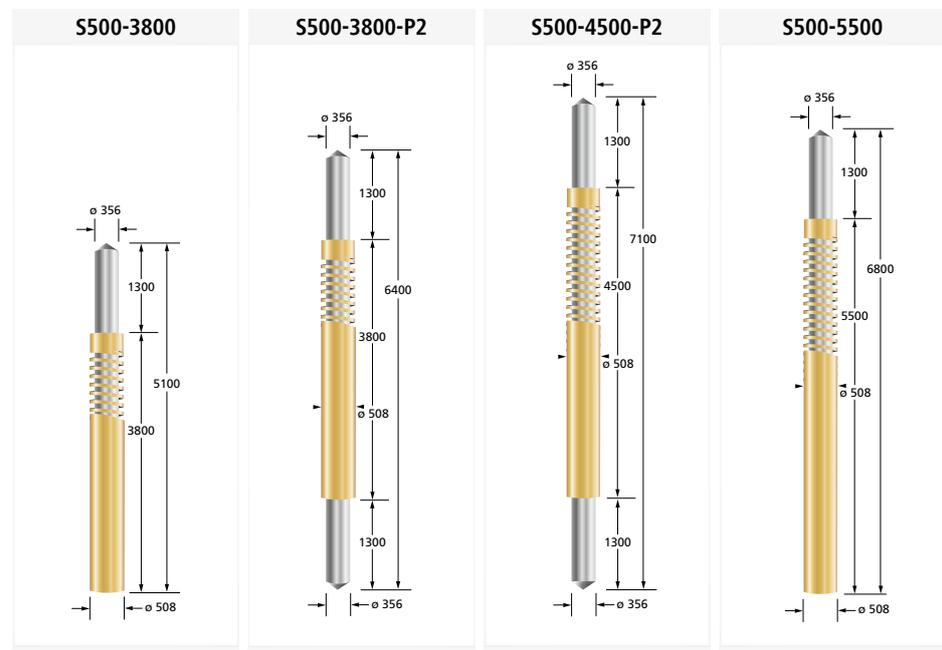
Current rating
2,0 A

Overall Length
3050 – 10400 μm

Working Travel
250 – 750 μm

Max. Travel
400 – 1500 μm

Pitch
≥ 592 μm



| Technical Data | S500-3800 | S500-3800-P2 | S500-4500-P2 | S500-5500 |
|------------------------|-----------------------------|-----------------------------|--------------|--------------|
| Overall Length | 5100 μm | 6400 μm | 7100 μm | 6800 μm |
| Tube part length | 3800 μm | 3800 μm | 4500 μm | 5500 μm |
| Minimum Centre Spacing | 592 μm | 592 μm | 592 μm | 592 μm |
| Spring Force | 30 g (0,3 N) / 90 g (0,9 N) | 30 g (0,3 N) / 90 g (0,9 N) | 30 g (0,3 N) | 30 g (0,3 N) |
| Maximum Travel | 900 μm / 700 μm | 500 μm | 900 μm | 900 μm |
| Working Travel | 450 μm / 350 μm | 350 μm | 450 μm | 450 μm |
| Temperature Range from | -40°C | -40°C | -40°C | -40°C |
| Up to | +150°C | +150°C | +150°C | +150°C |
| Typical Resistance | ≤ 30 mΩ | ≤ 30 mΩ | ≤ 100 mΩ | ≤ 115 mΩ |
| Current rating | 2,0 A | 2,0 A | 2,0 A | 2,0 A |

| Materials | |
|---|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Spring | 304 Stainless steel |
| μHelix Finepitch contacts for pitch ≥ 592 μm. All dimensions in μm. | |

Alongside the series and types illustrated in this catalogue are additional versions and modified types with different terminations.

Find more information on our website: www.fixtest.de/en/helix

OVERVIEW

μHELIX 500

| S500-5500-P2 | S500-6350 | S500-6350-P2 | S500-6600 |
|---------------------|-----------------------------|-----------------------------|------------------|
| | | | |
| S500-5500-P2 | S500-6350 | S500-6350-P2 | S500-6600 |
| 8100 μm | 8250 μm | 10150 μm | 10400 μm |
| 5500 μm | 6350 μm | 6350 μm | 6600 μm |
| 592 μm | 592 μm | 592 μm | 592 μm |
| 30 g (0,3 N) | 30 g (0,3 N) / 90 g (0,9 N) | 30 g (0,3 N) / 90 g (0,9 N) | 30 g (0,3 N) |
| 900 μm | 1500 μm / 1200 μm | 1500 μm / 1200 μm | 1500 μm |
| 450 μm | 750 μm / 600 μm | 750 μm / 600 μm | 750 μm |
| -40°C | -40°C | -40°C | -40°C |
| +150°C | +150°C | +150°C | +150°C |
| ≤ 125 mΩ | ≤ 50 mΩ | ≤ 60 mΩ | ≤ 70 mΩ |
| 2,0 A | 2,0 A | 2,0 A | 2,0 A |

Materials

| | |
|---|----------------------------|
| Plunger | CuBe or steel, gold plated |
| Spring | 304 Stainless steel |
| μHelix Finepitch contacts for pitch ≥ 592 μm. All dimensions in μm. | |

FINEPITCH CONTACTS
SERIES 500

Current rating 2,0 A
Overall Length 3050 – 10400 μm
Working Travel 250 – 750 μm
Max. Travel 400 – 1500 μm

Pitch ≥ 592 μm

FINEPITCH CONTACTS



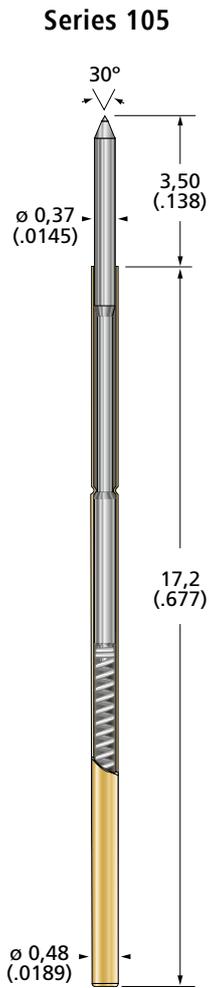
Series 105

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 20,70 mm |
| Minimum Centre Spacing | 1,00 mm |
| Typical Spring Force | 0,75 N |
| Maximum Travel | 3,50 mm |
| Working Travel | 2,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 50 mΩ |
| Current Load rated/max. | 1,0 / 1,5 A |

Materials

| | |
|---------|--|
| Plunger | Steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire or Stainless steel, gold plated |



Spring Force (xx)

| Rated Force | Code |
|-------------|----------|
| 0,75 N | xx 08 |



Ø 0,37

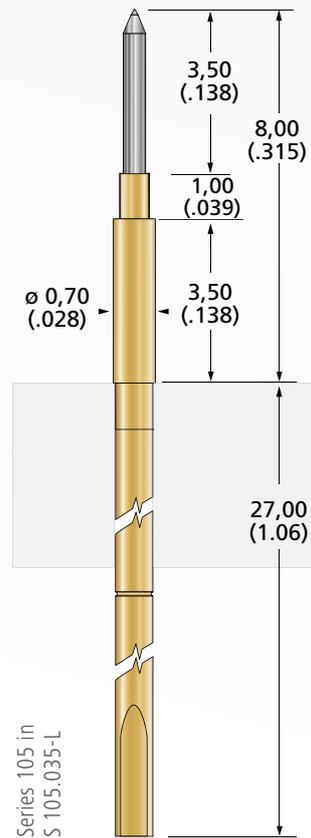
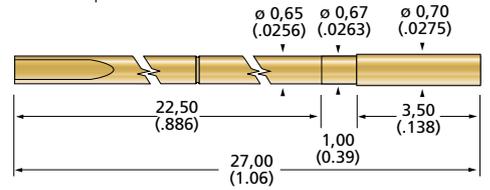
105.102.04.08



For XXLlonglife-Nanocoating order as 105X

S 105.035-L

Solder Cup



Series 105 in
S 105.035-L

FIXTURING EXAMPLE

Spring Force (xx)

Rated Force

Code

1,0 N

xx

10



Ø 0,42

106.02.04.10

Ø 0,42

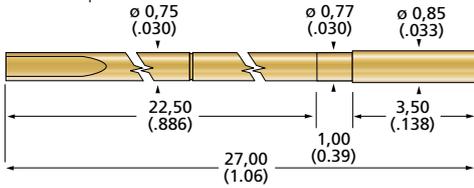
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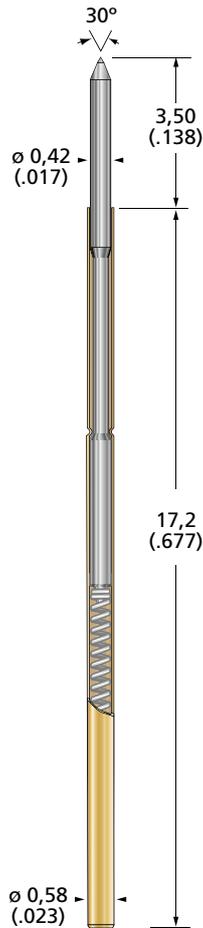
For **XXLonglife-Nanocoating**
order as **106X**

S 106.035-L

Solder Cup



Series 106



Series 106

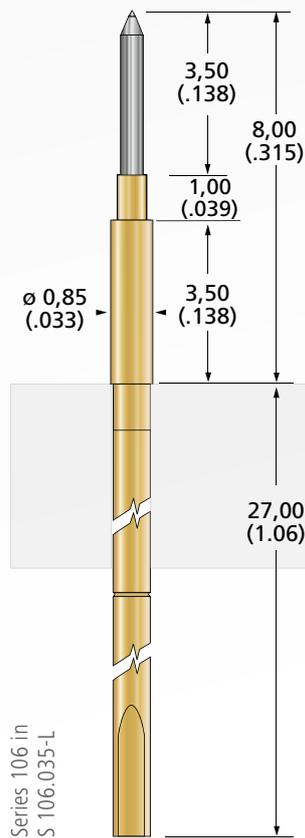
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 20,70 mm |
| Minimum Centre Spacing | 1,00 mm |
| Typical Spring Force | 1,0 N |
| Maximum Travel | 3,50 mm |
| Working Travel | 2,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 50 mΩ |
| Current Load rated/max. | 1,0 / 2,0 A |

Materials

| | |
|---------|--|
| Plunger | Steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

FIXTURING EXAMPLE



Series 106 in
S 106.035-L

FINEPITCH CONTACTS

FINEPITCH CONTACTS
SERIES 106

Max. Current Load
2,0 A

Overall Length
20,70 mm

Working Travel
2,00 mm

Max. Travel
3,50 mm

Pitch
≥ 1,00 mm



Series 700

Technical Data

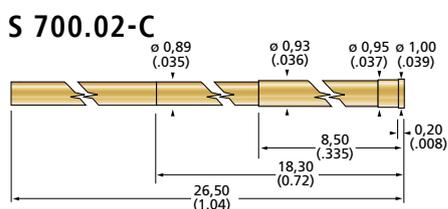
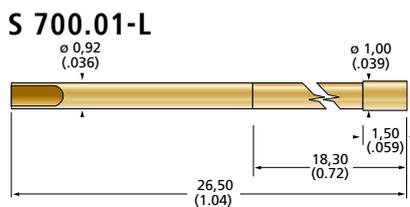
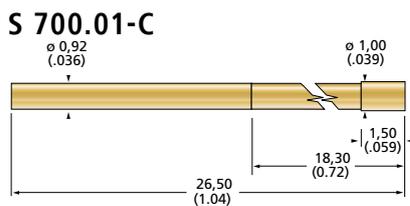
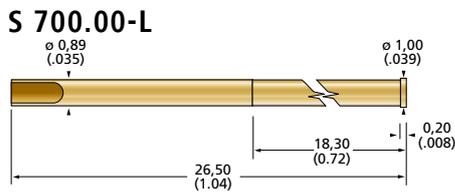
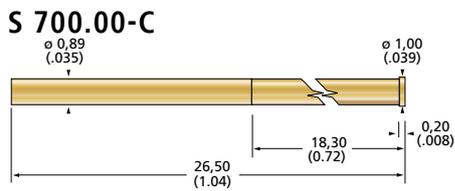
| | |
|------------------------|----------|
| Overall Length | 22,80 mm |
| Minimum Centre Spacing | 1,27 mm |
| Typical Spring Force | 0,80 N |
| Maximum Travel | 3,00 mm |
| Working Travel | 2,00 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 50 mΩ |
| Current rating | 1,0 A |

Materials

| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |



For **XXLonglife-Nano-coating** order as **700X**



Series 701

Technical Data

| | |
|------------------------|------------------|
| Overall Length | 12,00 - 14,50 mm |
| Minimum Centre Spacing | 0,50 mm |
| Typical Spring Force | 0,16 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 250 mΩ |
| Current rating | 0,2 A |

Materials

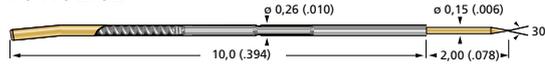
| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |



For **XXLonglife-Nano-coating** order as **071X**

Finepitch series for pitch $\geq 0,70$ mm.

701.02.02



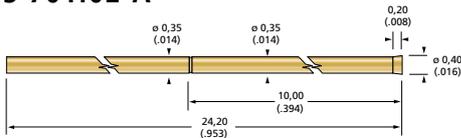
701.66.03K25



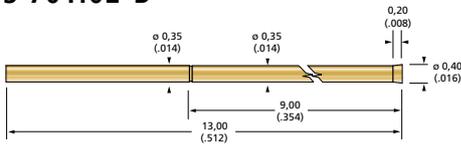
701.15.03



S 701.02-A



S 701.02-B



Series 702

Technical Data

| | |
|------------------------|------------------|
| Overall Length | 11,00 - 14,50 mm |
| Minimum Centre Spacing | 0,70 mm |
| Typical Spring Force | 0,22 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 180 mΩ |
| Current rating | 1,0 A |

Materials

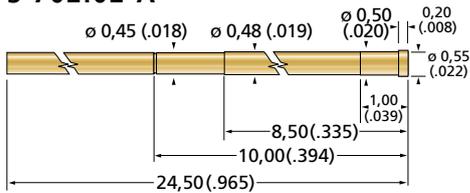
| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |



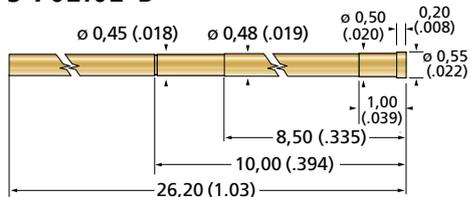
For **XXLonglife-Nano-coating** order as **702X**

Finepitch series for pitch $\geq 0,70$ mm.

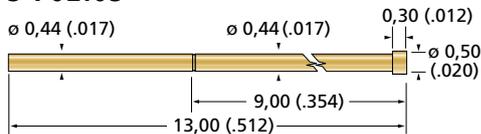
S 702.02-A



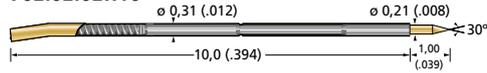
S 702.02-B



S 702.03



702.02.02H10



702.02.02H20



702.04.02



702.04.03K25



702.05.02



702.05.03K25



702.06.02



702.15.03K25



702.66.02



702.66.03K25



Series 703

Technical Data

| | |
|------------------------|------------------|
| Overall Length | 11,00 - 14,50 mm |
| Minimum Centre Spacing | 0,80mm |
| Typical Spring Force | 0,35 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 180 mΩ |
| Current rating | 1,0 A |

Materials

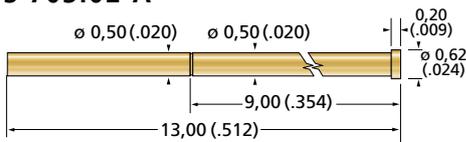
| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |



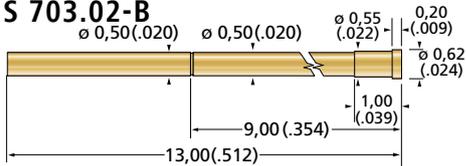
For **XXLonglife-Nano-coating** order as **703X**

Finepitch series for pitch $\geq 0,80$ mm.

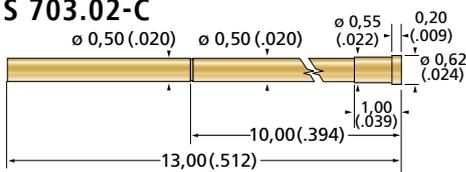
S 703.02-A



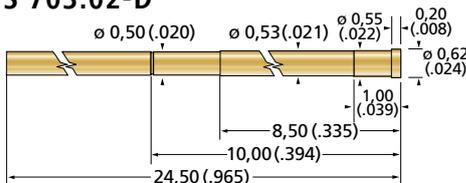
S 703.02-B



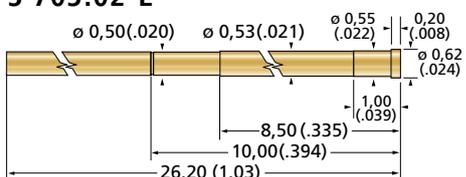
S 703.02-C



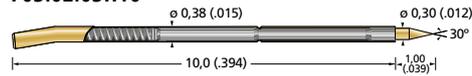
S 703.02-D



S 703.02-E



703.02.03H10



703.02.03



703.03.04K25



703.04.03



703.04.04K25



703.05.03



703.05.04K25



703.06.03



703.15.04



703.66.03



703.66.04K25



Series 704

Technical Data

| | |
|------------------------|----------|
| Overall Length | 19,00 mm |
| Minimum Centre Spacing | 0,80 mm |
| Typical Spring Force | 0,50 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 100 mΩ |
| Current rating | 1,0 A |

Materials

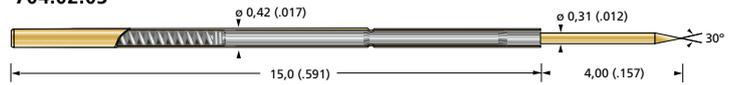
| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |



For **XXLonglife-Nano-coating** order as **704X**

Finepitch series for pitch $\geq 0,80$ mm.

704.02.03



704.02.05K20



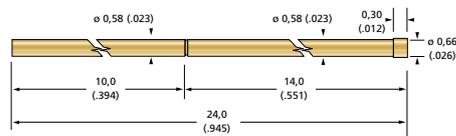
704.66.03



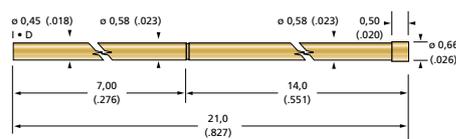
704.66.05K20



S 704.03-N



S 704.05-N



FINEPITCH CONTACTS



Series 705

Technical Data

| | |
|------------------------|------------------|
| Overall Length | 17,00 - 19,00 mm |
| Minimum Centre Spacing | 1,00 mm |
| Typical Spring Force | 0,50 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 100 mΩ |
| Current rating | 1,0 A |

Materials

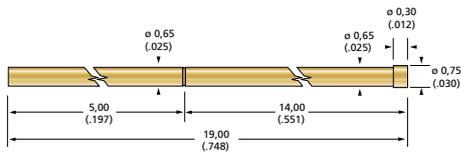
| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |



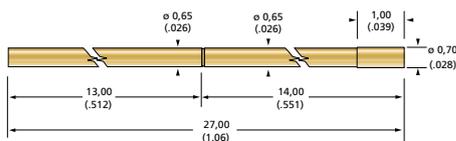
For **XXLonglife-Nano-coating** order as **705X**

More receptacles available on request.

S 705.03-A



S 705.10



705.102.04



705.102.04H40



705.03.06K20



705.04.04



705.04.04H40



705.04.06K20



705.05.04



705.05.04H40



705.05.05K20



705.06.04H40



705.06.06K20



705.14.05K20



705.66.04



705.66.04H40



705.66.06K20



Series 706

Technical Data

| | |
|------------------------|------------------|
| Overall Length | 16,00 - 18,50 mm |
| Minimum Centre Spacing | 1,00 mm |
| Typical Spring Force | 0,50 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 60 mΩ |
| Current rating | 1,0 A |

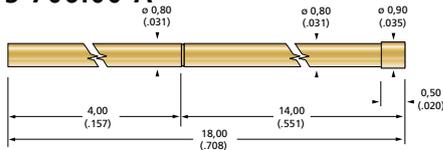
Materials

| | |
|---------|------------------------------|
| Plunger | Stel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |

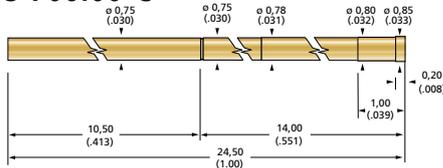


For **XXLonglife-Nano-coating** order as **706X**

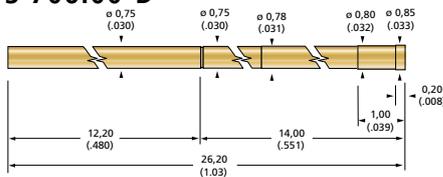
S 706.00-A



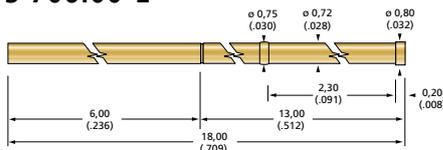
S 706.00-C



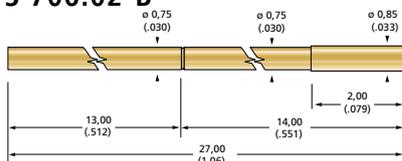
S 706.00-D



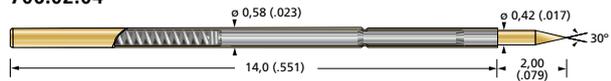
S 706.00-E



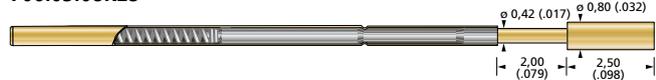
S 706.02-B



706.02.04



706.03.08K25



706.04.04



706.04.08K25



706.05.04



706.05.08K25



706.06.04



706.06.08K25



706.15.08K25



Series 708

Technical Data

| | |
|------------------------|----------|
| Overall Length | 24,60 mm |
| Minimum Centre Spacing | 1,27 mm |
| Typical Spring Force | 0,8 N |
| Maximum Travel | 4,30 mm |
| Working Travel | 3,00 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 60 mΩ |
| Current rating | 1,0 A |

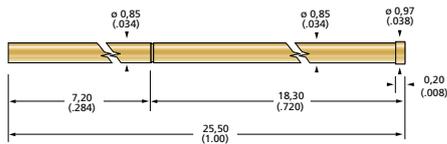
Materials

| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |

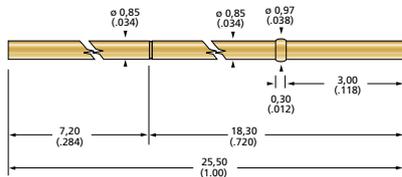


For **XXLonglife-Nano-coating** order as **708X**

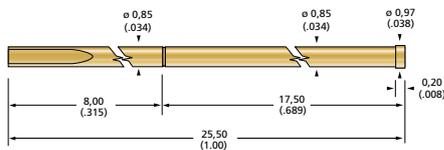
S 708.00-W



S 708.03-N



S 708.08-L



708.02.05



708.03.12K20



708.04.05



708.04.12K20



708.05.05



708.05.12K20



708.06.05



708.08.12K20



708.15.12K20



FINEPITCH CONTACTS

Series 707

Technical Data

| | |
|------------------------|------------------|
| Overall Length | 15,20 - 17,70 mm |
| Minimum Centre Spacing | 1,27 mm |
| Typical Spring Force | 0,70 N |
| Maximum Travel | 3,30 mm |
| Working Travel | 2,20 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 60 mΩ |
| Current rating | 1,0 A |

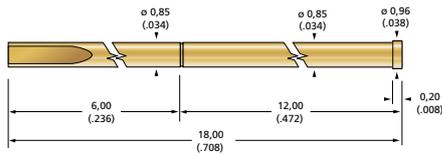
Materials

| | |
|---------|------------------------------|
| Plunger | Steel, gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire, silver plated |

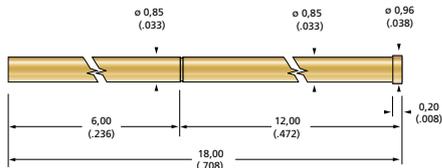


For **XXLonglife-Nano-coating** order as **707X**

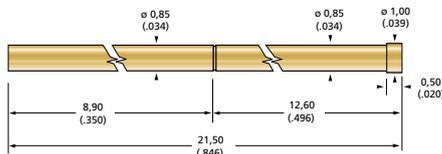
S 707.00-L18



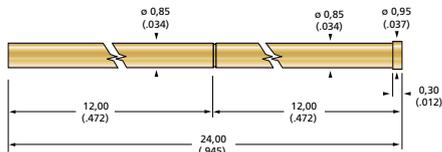
S 707.00-N18



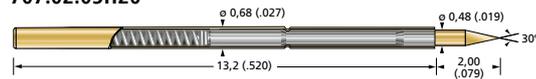
S 707.00-N22



S 707.00-N24



707.02.05H20



707.02.05H35



707.02.05H40



707.04.05H35



707.04.05H40



707.05.05H20



707.05.05H40



707.06.05H40



707.14.05H20



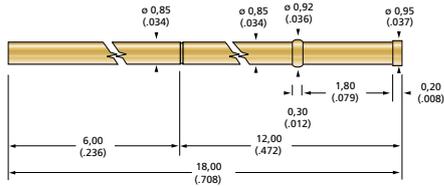
707.14.05H40



707.14.10K20



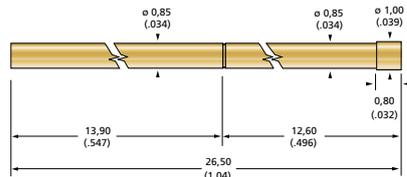
S 707.01-N18



707.20.10K20



S 707.01-N27



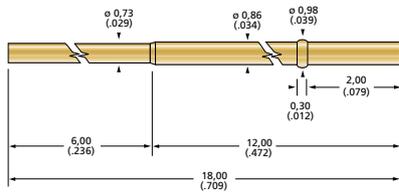
707.66.05H35



707.66.05H40



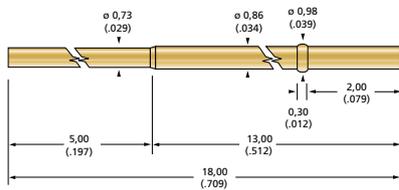
S 707.02-C12



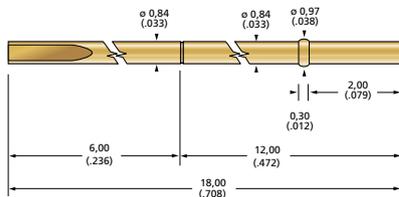
707.66.10K10



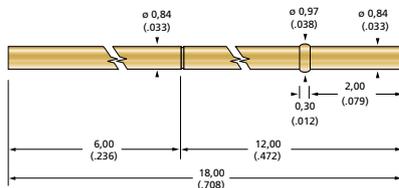
S 707.02-C13



S 707.02-L18



S 707.02-N18



FINEPITCH CONTACTS

Series 820

Technical Data

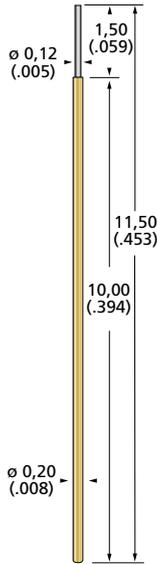
| | |
|-------------------------|-------------|
| Overall Length | 11,50 mm |
| Minimum Centre Spacing | 0,50 mm |
| Typical Spring Force | 0,15 N |
| Maximum Travel | 1,50 mm |
| Working Travel | 1,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 100 mΩ |
| Current Load rated/max. | 0,5 / 0,7 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Finepitch series for pitch ≥ 0,50 mm.

Series 820



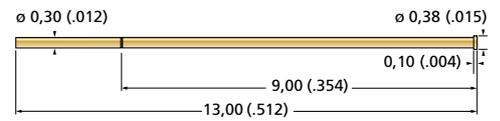
Spring Force (xx)

| Rated Force | Code |
|-------------|------------|
| 0,15 N | xxx 015 |

| | | |
|---|--------|---------------|
|  | Ø 0,12 | 820.02.01.015 |
|  | Ø 0,12 | 820.03.01.015 |
|  | Ø 0,12 | 820.05.01.015 |

 For **XXLonglife-Nanocoating**
order as **820X**

S 820-FM



Series 825

Technical Data

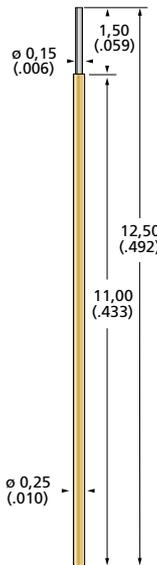
| | |
|-------------------------|-------------|
| Overall Length | 12,50 mm |
| Minimum Centre Spacing | 0,70 mm |
| Typical Spring Force | 0,15 N |
| Maximum Travel | 1,50 mm |
| Working Travel | 1,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 100 mΩ |
| Current Load rated/max. | 0,5 / 0,7 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Finepitch series for pitch ≥ 0,70 mm

Series 825



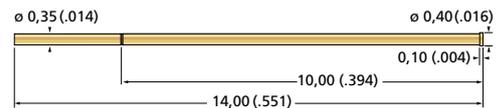
Spring Force (xx)

| Rated Force | Code |
|-------------|------------|
| 0,15 N | xxx 015 |

| | | |
|---|--------|---------------|
|  | Ø 0,15 | 825.02.01.015 |
|  | Ø 0,15 | 825.03.01.015 |
|  | Ø 0,15 | 825.05.01.015 |

 For **XXLonglife-Nanocoating**
order as **825X**

S 825-FM



S 825-RM



Spring Force (xx)

Rated Force

0,24 N

Code

xxx

024



Ø 0,22 **831.02.02.024**



Ø 0,22 **831.03.02.024**



Ø 0,22 **831.05.02.024**

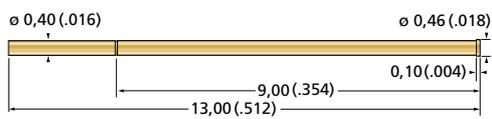


Ø 0,22 **831.06.02.024**

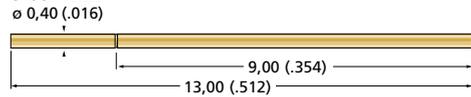


For **XXLonglife-Nanocoating**
order as **831X**

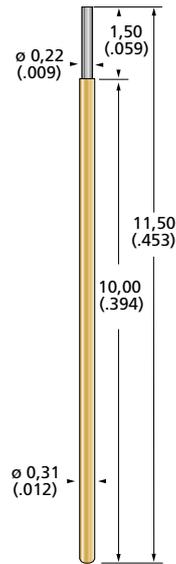
S 831-FM



S 831-RM



Series 831



Series 831

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 11,50 mm |
| Minimum Centre Spacing | 0,70 mm |
| Typical Spring Force | 0,24 N |
| Maximum Travel | 1,50 mm |
| Working Travel | 1,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 100 mΩ |
| Current Load rated/max. | 0,6 / 0,8 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Finepitch series for pitch $\geq 0,70$ mm.

Spring Force (xx)

Rated Force

0,45 N

Code

xxx

046



Ø 0,26 **835.02.03.046**



Ø 0,26 **835.03.03.046**

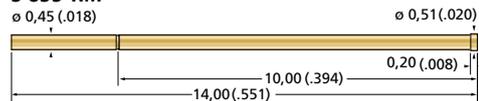


Ø 0,26 **835.05.03.046**

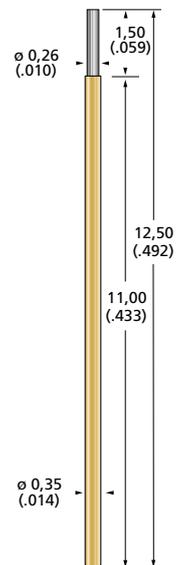


For **XXLonglife-Nanocoating**
order as **835X**

S 835-RM



Series 835



Series 835

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 12,50 mm |
| Minimum Centre Spacing | 0,70 mm |
| Typical Spring Force | 0,46 N |
| Maximum Travel | 1,50 mm |
| Working Travel | 1,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 100 mΩ |
| Current Load rated/max. | 0,6 / 0,8 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Finepitch series for pitch $\geq 0,70$ mm.

Series 838

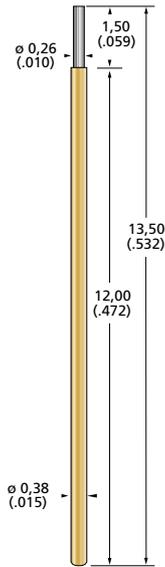
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 13,50 mm |
| Minimum Centre Spacing | 0,80 mm |
| Typical Spring Force | 0,36 N |
| Maximum Travel | 1,50 mm |
| Working Travel | 1,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 80 mΩ |
| Current Load rated/max. | 0,6 / 0,8 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Series 838



Finepitch series for pitch ≥ 0,70 mm.

Spring Force (xx)

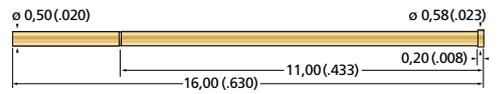
| Rated Force | Code |
|-------------|------------|
| 0,36 N | xxx 036 |

| | | |
|---|--------|---------------|
|  | ∅ 0,26 | 838.02.03.036 |
|  | ∅ 0,26 | 838.03.03.036 |
|  | ∅ 0,26 | 838.05.03.036 |
|  | ∅ 0,26 | 838.06.03.036 |



For XXLonglife-Nanocoating order as 838X

S 838-RM



Series 840

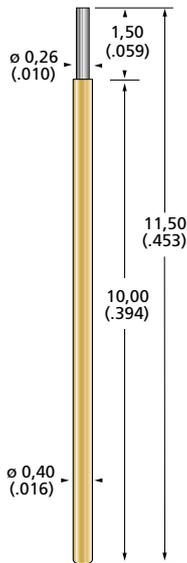
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 11,50 mm |
| Minimum Centre Spacing | 0,80 mm |
| Typical Spring Force | 0,36 N |
| Maximum Travel | 1,50 mm |
| Working Travel | 1,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 80 mΩ |
| Current Load rated/max. | 0,6 / 0,8 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Series 840



Finepitch series for pitch ≥ 0,80 mm.

Spring Force (xx)

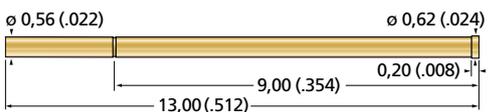
| Rated Force | Code |
|-------------|------------|
| 0,36 N | xxx 036 |

| | | |
|---|--------|---------------|
|  | ∅ 0,26 | 840.02.03.036 |
|  | ∅ 0,26 | 840.03.03.036 |
|  | ∅ 0,26 | 840.05.03.036 |
|  | ∅ 0,26 | 840.06.03.036 |



For XXLonglife-Nanocoating order as 840X

S 840-RM



Spring Force (xx)

Rated Force

Code

0,41 N

xxx
041



Ø 0,30 **848.02.03.041**



Ø 0,30 **848.03.03.041**



Ø 0,30 **848.05.03.041**

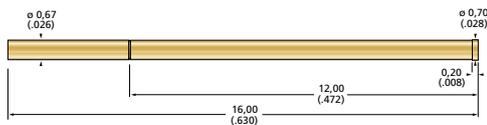


Ø 0,30 **848.06.03.041**

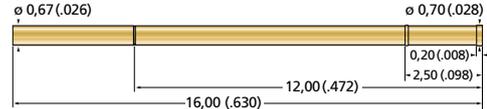


**For XXLonglife-Nanocoating
order as 848X**

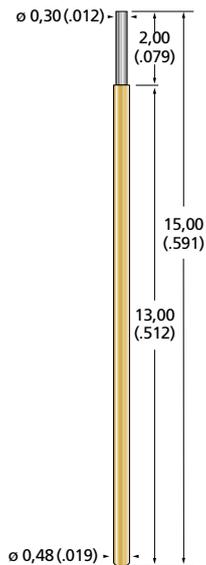
S 848-FM-I



S 848-FM-II



Series 848



Series 848

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 15,00 mm |
| Minimum Centre Spacing | 1,00 mm |
| Typical Spring Force | 0,41 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 80 mΩ |
| Current Load rated/max. | 0,8 / 1,0 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Phosphor bronze, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Finepitch series for pitch \geq 1,00 mm.

Spring Force (xx)

Rated Force

Code

0,41 N

xxx
041



Ø 0,38 **858.02.04.041**



Ø 0,38 **858.03.04.041**



Ø 0,38 **858.05.04.041**

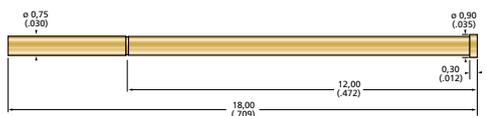


Ø 0,38 **858.06.04.041**

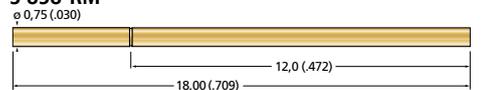


**For XXLonglife-Nanocoating
order as 858X**

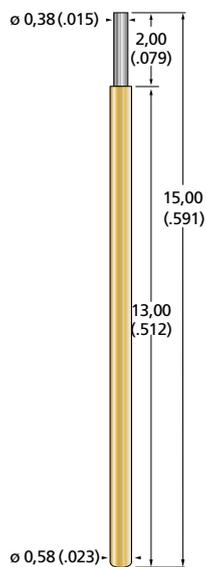
S 858-FM



S 858-RM



Series 858



Series 858

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 15,00 mm |
| Minimum Centre Spacing | 1,00 mm |
| Typical Spring Force | 0,41 N |
| Maximum Travel | 2,00 mm |
| Working Travel | 1,33 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 70 mΩ |
| Current Load rated/max. | 1,0 / 1,2 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Finepitch series for pitch \geq 1,00 mm.

Series 872

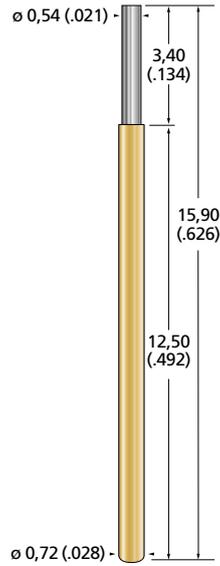
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 15,90 mm |
| Minimum Centre Spacing | 1,27 mm |
| Typical Spring Force | 0,92 N |
| Maximum Travel | 3,40 mm |
| Working Travel | 2,30 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 50 mΩ |
| Current Load rated/max. | 1,0 / 1,2 A |

Materials

| | |
|---------|--|
| Plunger | Steel, rhodium plated or gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire or Stainless steel, gold plated |

Series 872



Spring Force (xx)

Rated Force

0,92 N

Code

xxx

092



Ø 0,54

872.02.05.092



Ø 0,54

872.03.05.092



Ø 0,54

872.05.05.092



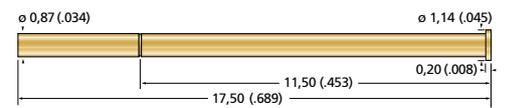
Ø 0,54

872.06.05.092

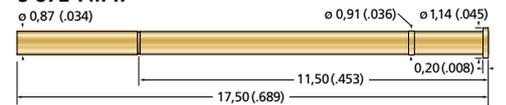


For **XXLonglife-Nanocoating**
order as **872X**

S 872-FM I



S 872-FM II



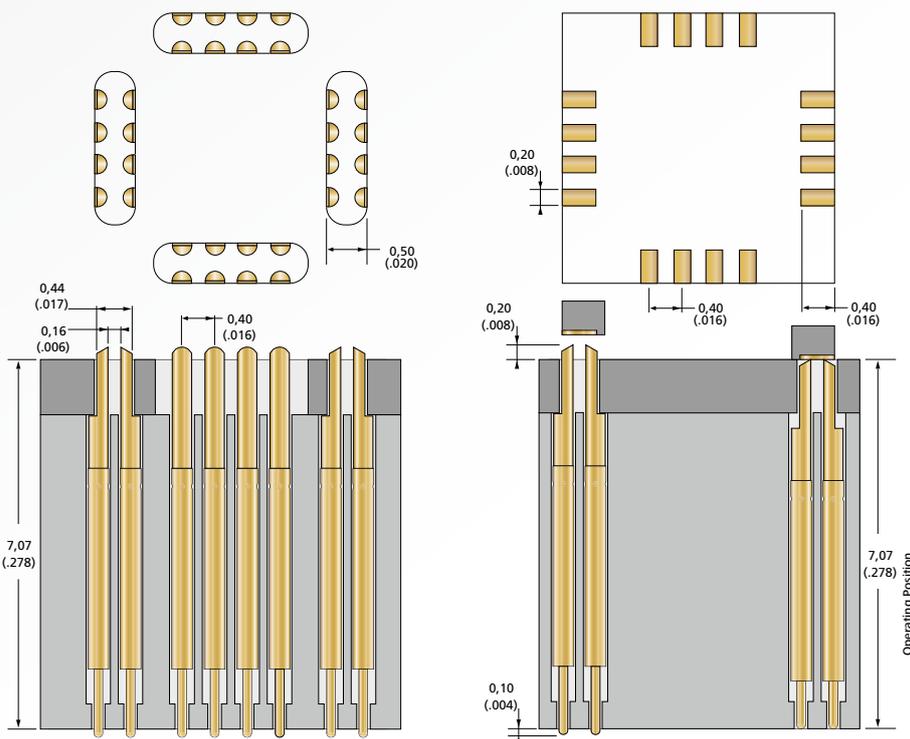
FINEPITCH KELVIN CONTACTS

The „real“ Kelvin measurement - also referred to as four-wire measurement - requires that each test point on the UUT is scanned with two insulated contacts in the shortest possible distance from each other. Not an easy task when the pads are at very small grid spacing and/or offer only very small test land size. A typical application is QFN devices.

The designs presented on the following pages do that job masterfully from 0.4 mm pitch distance and higher. Design and production of the necessary bases are not easy ... we're glad to help on your request.

FIXTURING EXAMPLE

KB1-026Q/NW-02



Spring Force Profile

| Free | Set | Test |
|------|-----------|-----------|
| | @ 0,10 mm | @ 0,30 mm |
| | | 0,15 N |



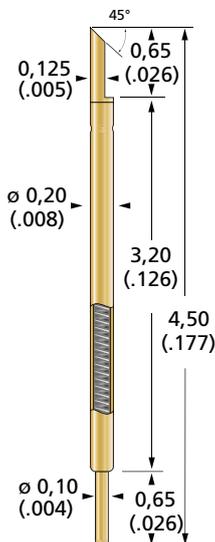
| | |
|--------|-----------------------|
| Ø 0,20 | KJS-030-001W1 |
| Ø 0,20 | KJS-030-002NW2 |

Head style W for Pads (QFN, DFN, etc.)

Head style NW for Solder balls (BGA)

Minimum array pitch: 0,50 mm

4,50 mm



0,30 mm Pitch

Technische Daten

| | |
|------------------------|---------|
| Overall Length | 4,50 mm |
| Minimum Centre Spacing | 0,30 mm |
| Typical Spring Force | 0,15 N |
| Working Travel | 0,30 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 50 mΩ |
| Current rating | 0,7 A |

Materials

| | |
|----------------|----------------------------|
| Upper Plunger | Hardened CuBe, gold plated |
| Bottom Plunger | HrdenedCuBe, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Music wire, gold plated |

0,40 mm Pitch

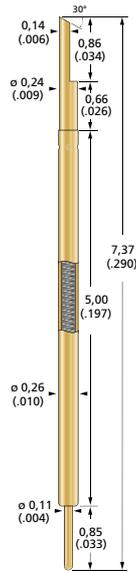
Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 7,37 mm |
| Minimum Centre Spacing | 0,40 mm |
| Typical Spring Force | 0,16 N |
| Maximum Travel | 0,60 mm |
| Working Travel | 0,30 mm |
| Temperature Range from | -45°C |
| Up to | +125°C |
| Typical Resistance | 50 mΩ |
| Current Load rated/max. | 1,0 / 1,5 A |

Materials

| | |
|----------------|------------------------------|
| Upper Plunger | Steel, gold plated |
| Bottom Plunger | CuBe, gold plated |
| Barrel | Au Clad |
| Spring | Stainless steel, gold plated |

7,37 mm



Spring Force Profile

| Free | Set | Test |
|------|-----------|----------|
| | @ 0,10 mm | @ 0,3 mm |
| | | 0,16 N |



Ø 0,24

KB1-026Q/W-02

0,40 mm Pitch

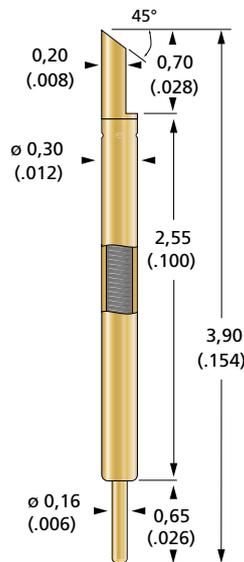
Technical Data

| | |
|------------------------|---------|
| Overall Length | 3,90 mm |
| Minimum Centre Spacing | 0,40 mm |
| Typical Spring Force | 0,22 N |
| Working Travel | 0,45 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 100 mΩ |
| Current rating | 1,5 A |

Materials

| | |
|----------------|-------------------------|
| Upper Plunger | CuBe, gold plated |
| Bottom Plunger | CuBe, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Music wire, gold plated |

3,90 mm



Spring Force Profile

| Free | Set | Test |
|------|-----------|-----------|
| | @ 0,15 mm | @ 0,45 mm |
| | | 0,22 N |



Ø 0,30

KHS-040-009W1



Ø 0,30

KHS-040-010NW2

Head style W for Pads (QFN, DFN, etc.)

Head style NW for Solder balls (BGA)

Minimum array pitch: 0,65 mm

0,50 mm Pitch

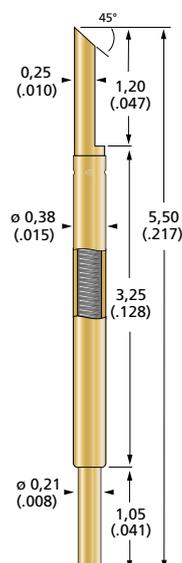
Technical Data

| | |
|------------------------|---------|
| Overall Length | 5,50 mm |
| Minimum Centre Spacing | 0,50 mm |
| Typical Spring Force | 0,31 N |
| Working Travel | 0,45 mm |
| Temperature Range from | -40°C |
| Up to | +140°C |
| Typical Resistance | ≤50 mΩ |
| Current rating | 1,7 A |

Materials

| | |
|----------------|------------------------------|
| Upper Plunger | CuBe, gold plated |
| Bottom Plunger | CuBe, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Stainless steel, gold plated |

5,50 mm



Spring Force Profile

| Free | Set | Test |
|------|-----------|-----------|
| | @ 0,15 mm | @ 0,45 mm |
| | | 0,31 N |



Ø 0,38

KHS-050-011W1



Ø 0,38

KHS-050-012NW2

Head style W for Pads (QFN, DFN, etc.)

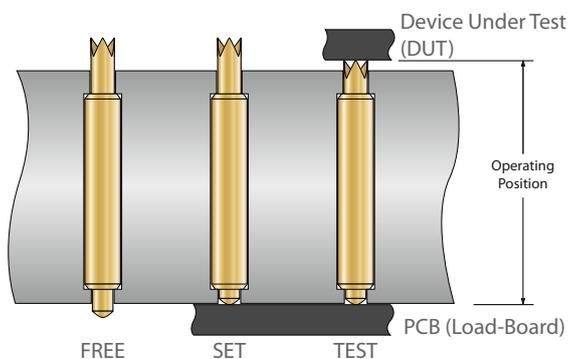
Head style NW for Solder balls (BGA)

Minimum array pitch: 0,80 mm

KITA MARATHON PINS

The contact pins of the MARATHON series of KITA are, as the name suggests, true endurance athletes. The bilateral sprung contacts for use in test sockets with grid spacings in the fine pitch range have lifetimes of up to 1 million strokes and feature high current capability and low resistance values.

The grid spacing of Marathon types start from 0.2 mm and reach up to 0.80 mm. At the end of this section you will find two special types: For applications in strong magnetic fields and / or near the absolute zero (superconductivity) the KHW 050-009RG is suitable due to its use of materials. The KHW 050-010C1 is, however, for high temperature applications up to 200 °C.



INSTALLATION INSTRUCTIONS

The double-end spring-loaded contact pins are made for installation in test sockets which usually have a sandwich-layer design. In the tables showing the graphs of the spring forces the probe is shown in its 3 standard stages of condition:

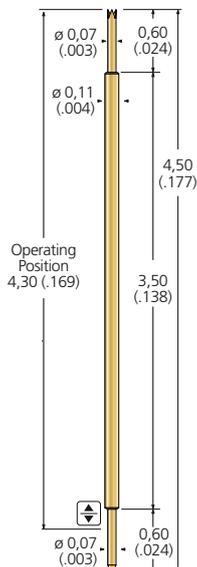
- FREE:** Own preload of the inner spring, no contact on either side
- SET:** The test-socket is mounted onto the Load Board, the lower piston springs are compressed somewhat
- TEST:** DUT is installed, Spring Probe force and travel in nominal position. This situation is also called „operating position“.

Spring Force Profile

| Free | Set @ 0,15 mm | Test @ 0,40 mm |
|--------|------------------|-------------------|
| 0,02 N | 0,03 N | 0,06 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,07 | KHS-017-001CP |
|  | Ø 0,07 | KHS-017-002RP |

4,70 mm



0,17 mm Pitch

Technical Data

| | |
|------------------------|---------|
| Overall Length | 4,50 mm |
| Minimum Centre Spacing | 0,17 mm |
| Maximum Travel | 0,50 mm |
| Working Travel | 0,40 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | ≤500 mΩ |
| Current rating | 0,31 A |

Materials

| | |
|----------------|-------------------------|
| Upper Plunger | Palladium alloy |
| Bottom Plunger | Palladium alloy |
| Barrel | Alloy |
| Spring | Music wire, gold plated |

0,25 mm Pitch

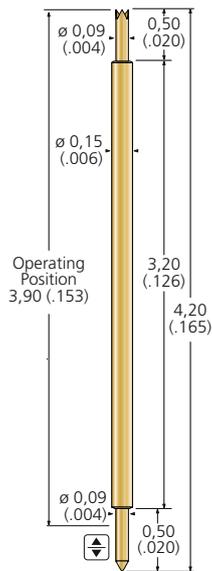
Technical Data

| | |
|------------------------|---------|
| Overall Length | 4,20 mm |
| Minimum Centre Spacing | 0,25 mm |
| Maximum Travel | 0,40 mm |
| Working Travel | 0,30 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | ≤500 mΩ |
| Current rating | 0,35 A |

Materials

| | |
|----------------|-------------------------|
| Upper Plunger | Palladium alloy |
| Bottom Plunger | Steel, gold plated |
| Barrel | Alloy |
| Spring | Music wire, gold plated |

4,20 mm



Spring Force Profile

| Free | Set @ 0,10 mm | Test @ 0,30 mm |
|--------|------------------|-------------------|
| 0,05 N | 0,08 N | 0,14 N |

| | | |
|--|--------|----------------------|
| | Ø 0,09 | KHS-025-001CP |
| | Ø 0,09 | KHS-025-002RP |

0,30 mm Pitch

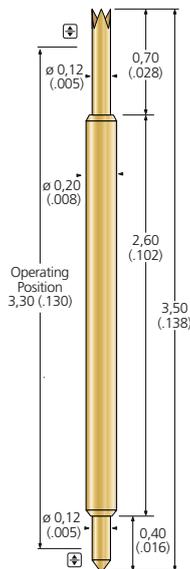
Technical Data

| | |
|------------------------|---------|
| Overall Length | 3,50 mm |
| Minimum Centre Spacing | 0,30 mm |
| Maximum Travel | 0,55 mm |
| Working Travel | 0,40 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | ≤100 mΩ |
| Current rating | 0,85 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Music wire, gold plated |

3,70 mm



Spring Force Profile

| Free | Set @ 0,15 mm | Test @ 0,40 mm |
|--------|------------------|-------------------|
| 0,07 N | 0,11 N | 0,17 N |

| | | |
|--|--------|----------------------|
| | Ø 0,12 | KHW-030-001C2 |
| | Ø 0,12 | KHW-030-002R1 |

0,35 mm Pitch

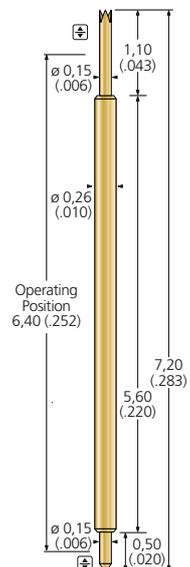
Technical Data

| | |
|------------------------|---------|
| Overall Length | 7,20 mm |
| Minimum Centre Spacing | 0,35 mm |
| Maximum Travel | 1,00 mm |
| Working Travel | 0,80 mm |
| Temperature Range from | -40°C |
| Up to | +140°C |
| Typical Resistance | ≤100 mΩ |
| Current rating | 2,0 A |

Materials

| | |
|---------|------------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Stainless steel, gold plated |

7,20 mm



Spring Force Profile

| Free | Set @ 0,25 mm | Test @ 0,80 mm |
|--------|------------------|-------------------|
| 0,05 N | 0,11 N | 0,25 N |

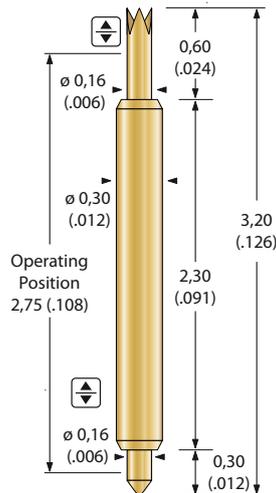
| | | |
|--|--------|----------------------|
| | Ø 0,15 | KHW-035-001C2 |
| | Ø 0,15 | KHW-035-002C2 |
| | Ø 0,15 | KHW-035-003R1 |

Spring Force Profile

| Free | Set @ 0,15 mm | Test @ 0,45 mm |
|--------|------------------|-------------------|
| 0,08 N | 0,1 N | 0,21 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,16 | KGW-040-001CA |
|  | Ø 0,16 | KHW-040-002C2 |
|  | Ø 0,16 | KHW-040-001R2 |

3,20 mm



0,40 mm Pitch

Technical Data

| | |
|------------------------|---------|
| Overall Length | 3,20 mm |
| Minimum Centre Spacing | 0,40 mm |
| Maximum Travel | 0,60 mm |
| Working Travel | 0,45 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 48 mΩ |
| Current rating | 1,5 A |

Materials

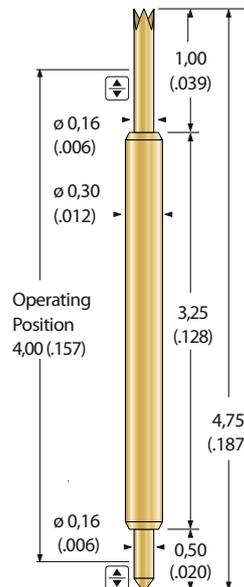
| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Au-Clad |
| Spring | Music wire, gold plated |

Spring Force Profile

| Free | Set @ 0,25 mm | Test @ 0,75 mm |
|--------|------------------|-------------------|
| 0,06 N | 0,11 N | 0,22 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,15 | KHW-040-004C2 |
|  | Ø 0,15 | KHW-040-003C2 |
|  | Ø 0,15 | KHW-040-005R2 |

4,75 mm



0,40 mm Pitch

Technical Data

| | |
|------------------------|---------|
| Overall Length | 4,75 mm |
| Minimum Centre Spacing | 0,40 mm |
| Maximum Travel | 1,10 mm |
| Working Travel | 0,75 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 45 mΩ |
| Current rating | 0,95 A |

Materials

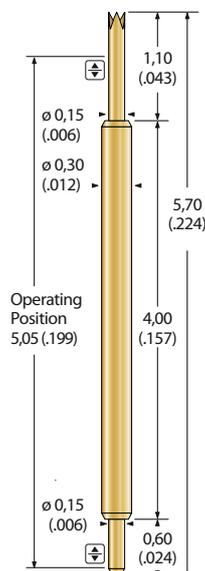
| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Music wire, gold plated |

Spring Force Profile

| Free | Set @ 0,20 mm | Test @ 0,65 mm |
|--------|------------------|-------------------|
| 0,09 N | 0,15 N | 0,3 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,15 | KHW-040-006CA |
|  | Ø 0,15 | KHW-040-008C2 |
|  | Ø 0,15 | KHW-040-007R2 |

5,70 mm



0,40 mm Pitch

Technical Data

| | |
|------------------------|---------|
| Overall Length | 5,70 mm |
| Minimum Centre Spacing | 0,40 mm |
| Maximum Travel | 0,80 mm |
| Working Travel | 0,65 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 51 mΩ |
| Current rating | 1,4 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Music wire, gold plated |

**KITA
MARATHON PINS**

0,50 mm Pitch

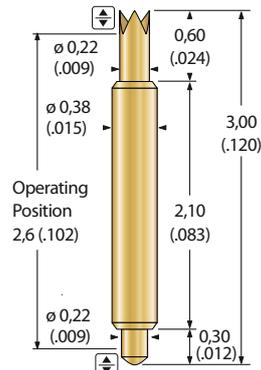
Technical Data

| | |
|------------------------|---------|
| Overall Length | 3,00 mm |
| Minimum Centre Spacing | 0,50 mm |
| Maximum Travel | 0,50 mm |
| Working Travel | 0,40 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 32 mΩ |
| Current rating | 1,52 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Music wire, gold plated |

3,00 mm



Spring Force Profile

| Free | Set @ 0,15 mm | Test @ 0,40 mm |
|--------|---------------|----------------|
| 0,09 N | 0,15 N | 0,25 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,22 | KHW-050-003C2 |
|  | Ø 0,22 | KHW-050-001C2 |
|  | Ø 0,22 | KHW-050-002R2 |

0,50 mm Pitch

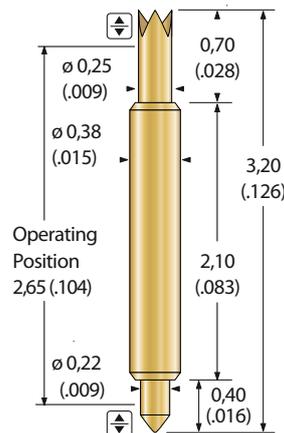
Technical Data

| | |
|------------------------|---------|
| Overall Length | 3,20 mm |
| Minimum Centre Spacing | 0,50 mm |
| Maximum Travel | 0,70 mm |
| Working Travel | 0,55 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 42 mΩ |
| Current rating | 1,7 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Au-Clad, gold plated |
| Spring | Music wire, gold plated |

3,20 mm



Spring Force Profile

| Free | Set @ 0,20 mm | Test @ 0,55 mm |
|--------|---------------|----------------|
| 0,07 N | 0,12 N | 0,26 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,25 | KGW-050-002CA |
|  | Ø 0,25 | KHW-050-004C2 |
|  | Ø 0,25 | KHW-050-005R2 |

0,50 mm Pitch

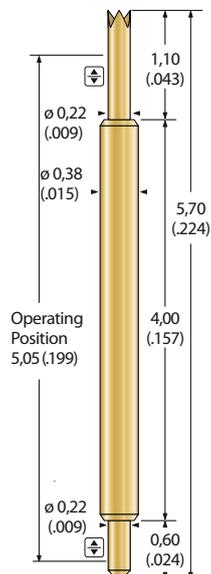
Technical Data

| | |
|------------------------|---------|
| Overall Length | 5,70 mm |
| Minimum Centre Spacing | 0,50 mm |
| Maximum Travel | 0,80 mm |
| Working Travel | 0,65 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 42 mΩ |
| Current rating | 2,6 A |

Materials

| | |
|---------|------------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Alloy, gold plated |
| Spring | Stainless steel, gold plated |

5,70 mm



Spring Force Profile

| Free | Set @ 0,20 mm | Test @ 0,65 mm |
|--------|---------------|----------------|
| 0,08 N | 0,12 N | 0,27 N |

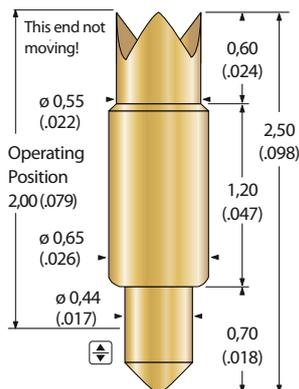
| | | |
|---|--------|----------------------|
|  | Ø 0,22 | KHW-050-006CG |
|  | Ø 0,22 | KHW-050-007C2 |
|  | Ø 0,22 | KHW-050-008R2 |

Spring Force Profile

| Free | Set @ 0,15 mm | Test @ 0,50 mm |
|--------|------------------|-------------------|
| 0,06 N | 0,1 N | 0,20 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,55 | KHS-080-001CA |
|  | Ø 0,55 | KGS-080-001CA |
|  | Ø 0,55 | KHS-080-002RA |

2,50 mm



0,80 mm Pitch

Technical Data

| | |
|------------------------|---------|
| Overall Length | 2,50 mm |
| Minimum Centre Spacing | 0,80 mm |
| Maximum Travel | 0,70 mm |
| Working Travel | 0,50 mm |
| Temperature Range from | -40°C |
| Up to | +120°C |
| Typical Resistance | 38 mΩ |
| Current rating | 2,2 A |

Materials

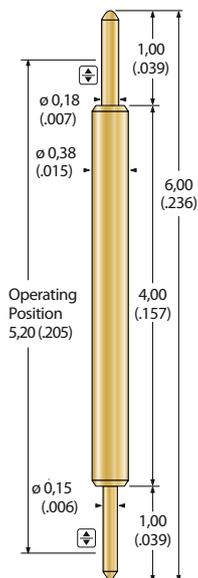
| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | CuBe hardened, gold plated |
| Spring | Music wire, gold plated |

Spring Force Profile

| Free | Set @ 0,25 mm | Test @ 0,80 mm |
|--------|------------------|-------------------|
| 0,04 N | 0,11 N | 0,14 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,18 | KHW-050-009RG |
|---|--------|----------------------|

KHW-050-009RG



0,50 mm Pitch

Technical Data

| | |
|------------------------|---------|
| Overall Length | 6,00 mm |
| Minimum Centre Spacing | 0,50 mm |
| Maximum Travel | 1,00 mm |
| Working Travel | 0,80 mm |
| Temperature Range from | -265°C |
| Up to | +80°C |
| Typical Resistance | 30 mΩ |
| Current rating | 3,0 A |
| Magnetic Field | 7 T |
| Vacuum Pressure | 10-8 Pa |

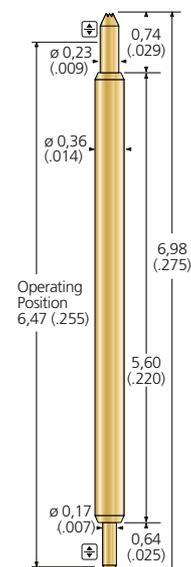
Non-magnetic contact for superconductivity applications below 10K.

Spring Force Profile

| Free | Set @ 0,15 mm | Test @ 0,51 mm |
|--------|------------------|-------------------|
| 0,13 N | 0,17 N | 0,28 N |

| | | |
|---|--------|----------------------|
|  | Ø 0,23 | KHW-050-010C1 |
|---|--------|----------------------|

KHW-050-010C1



0,50 mm Pitch

Technical Data

| | |
|------------------------|---------|
| Overall Length | 6,98 mm |
| Minimum Centre Spacing | 0,50 mm |
| Maximum Travel | 0,64 mm |
| Working Travel | 0,51 mm |
| Temperature Range from | -40°C |
| Up to | +200°C |
| Typical Resistance | 54 mΩ |
| Current rating | 3,5 A |

Materials

| | |
|---------|------------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Brass, gold plated |
| Spring | Stainless steel, gold plated |

For high temperature applications up to 200°C.

BATTERY PROBES

BATTERY PROBES

It is not only in test applications where spring contacts are being used. For the pure transmission of power supply or LF and HF we at FIXTEST speak about BATTERY PROBES. Many mobile devices of daily life today are powered by batteries, which of course need to be recharged. Or additional accessories need to be connected to the devices, ... but how? Our battery contacts make those connections reliable and easy to use. They are found in appliances for example in medical, communications equipment or bicycle lights. The number of possible applications is virtually unlimited. In the following section you will find our standard range of battery contacts. Very often, there are also custom modifications of standard contacts or new developments according to your wishes. Talk to us!





| Battery Probes | Page |
|--------------------|------|
| 365 | 105 |
| FK-381 | 100 |
| FK-382 | 100 |
| FK-441 | 100 |
| FK-460 / FK-460-08 | 102 |
| FK-446 / FK-664 | 101 |
| FK-454 | 103 |
| FK-459 | 101 |
| FK-480 | 100 |
| FK-492 | 101 |
| FK-499 | 103 |
| FK-515 | 104 |
| FK-516 / FK-516-08 | 101 |
| FK-519 | 100 |
| FK-540 / FK-540-15 | 102 |
| FK-554 | 100 |
| FK-555 | 101 |
| FK-565 | 103 |
| FK-566 | 103 |
| FK-566-GF | 103 |
| FK-586 | 104 |
| FK-598 | 100 |
| FK-575-WL | 100 |
| FK-576 | 102 |
| FK-606 | 104 |
| FK-640 | 101 |
| FK-648 | 102 |
| FK-674 | 101 |
| FK-663 | 103 |
| FK-691/FK-691-06 | 103 |
| FK-694-S | 104 |
| FK-714 / FK-714-06 | 103 |
| FK-715 | 102 |
| FK-717 / FK-717-05 | 101 |
| FK-725 | 104 |
| FK-741-HT | 103 |
| FK-744 | 102 |
| FK-754 | 103 |
| FK-756 | 104 |
| FK-757 | 101 |
| 509E.35.36.20 | 105 |





[1] THT-t



[2] THT-b



[3] SMT



[4] Crimp

The stated extension dimension “E” has been derived from the typical style of the respective series. If you use a non-standard installation of the battery probes you can derive the resulting extension dimension “E” from the scaled drawing of the respective type.

Typical styles and types of connection:

THT-t | Through hole technology, insertion from top

With this technique the battery probes are directly soldered to plated through holes of a printed board. The contacts are inserted from top and soldered from the bottom side. Pin-in-paste technology (reflow soldering) is also possible (see figure 1).

THT-b | Through hole technology, insertion from bottom side

Again, probes are installed in plated through holes but inserted from the bottom side. Soldering is from top or bottom side (see figure 2).

SMT | Surface mount assembly

Contacts with SMT marking are directly soldered to board pads using standard surface mount technology. They are heat-resistant to withstand standard reflow methods. Please note: Some types feature a small drill hole in the bottom section to ensure proper gold plating on the inside of the barrel. Soldering tests have shown that no damage of the contacts will occur due to penetrating solder. However SMT pins could float on lead-free solder paste during reflow. We recommend pre-assembly in plastic carriers or use of pin-in-paste (PiP) versions (see THT-t group). Delivery in reel-tapes or trays for automated pick&place assembly available on request.

Crimp | For direct connection to stranded wire

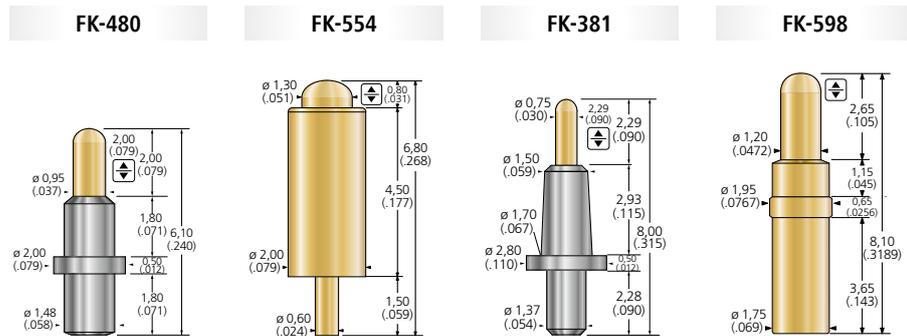
Contacts for this wiring technique provide an open I/O end which is suitable for crimping or soldering of flexible stranded wire (see figure 4).

Some types are designed for use in contact strips or blocks. Electrical connection is possible via board or wire. On request, we develop and supply the entire solution for you, whether in machined or injection molded version. Please contact us!

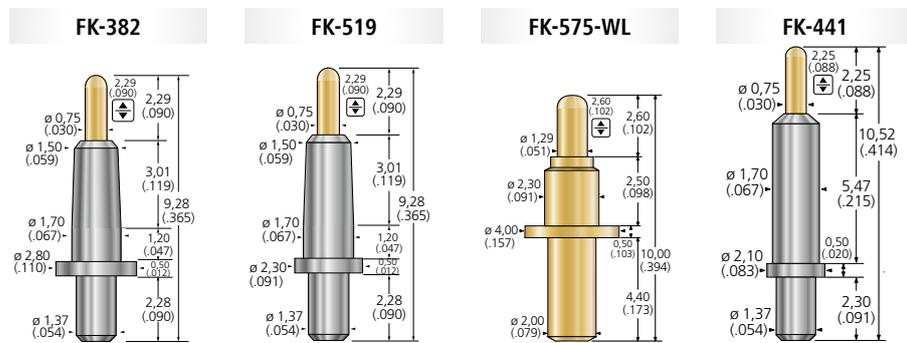
**BATTERY
PROBES**

| Battery Probe | Overall Length (mm) | Pitch (mm) | Extension Height (mm) | Maximum Travel (mm) | Installation Type Termination | | | | Page |
|--------------------|---------------------|------------|-----------------------|---------------------|---------------------------------|-------|-----|-------|------|
| | | | | | THT-t | THT-b | SMT | Crimp | |
| FK-480 | 6,10 | 2,30 | 4,30 | 2,00 | ✓ | | | | 100 |
| FK-554 | 6,80 | 2,20 | 5,30 | 0,80 | ✓ | | | | 100 |
| FK-381 | 8,00 | 3,00 | 5,72 | 2,29 | ✓ | | | | 100 |
| FK-598 | 8,10 | 2,20 | 4,45 | 2,65 | ✓ | | | | 100 |
| FK-382 | 9,28 | 3,00 | 7,00 | 2,29 | ✓ | | | | 100 |
| FK-519 | 9,28 | 2,54 | 7,00 | 2,29 | ✓ | | | | 100 |
| FK-575-WL | 10,04 | 4,20 | 5,56 | 2,29 | ✓ | | | | 100 |
| FK-441 | 10,52 | 2,30 | 8,22 | 2,25 | ✓ | | | | 100 |
| FK-674 | 10,55 | 2,70 | 5,85 | 2,80 | ✓ | | | | 101 |
| FK-492 | 10,88 | 2,20 | 8,60 | 2,18 | ✓ | | | | 101 |
| FK-555 | 11,30 | 2,70 | 5,30 | 3,00 | ✓ | | | | 101 |
| FK-446 / FK-664 | 11,80 | 4,10 | 7,80 | 2,50 | ✓ | | | | 101 |
| FK-757 | 11,80 | 2,80 | 4,70 | 2,60 | ✓ | | | | 101 |
| FK-516 / FK-516-08 | 13,00 | 2,70 | 10,50 | 2,80 | ✓ | | | | 101 |
| FK-717 / FK-717-05 | 14,10 | 3,00 | 5,60 | 5,20 | ✓ | | | | 101 |
| FK-640 | 15,00 | 2,70 | 11,50 | 2,80 | ✓ | | | | 101 |
| FK-459 | 15,00 | 4,10 | 10,00 | 2,54 | ✓ | | | | 101 |
| Series 365 | 15,00 | 6,50 | 6,00 | 4,00 | ✓ | | | | 105 |
| FK-576 | 17,15 | 4,20 | 5,66 | 2,29 | ✓ | | | ✓ | 102 |
| FK-460 / FK-460-08 | 18,65 | 4,10 | 14,35 | 3,00 | ✓ | | | | 102 |
| FK-744 | 18,80 | 2,70 | 7,30 | 4,80 | ✓ | | | | 102 |
| FK-540 / FK-540-15 | 22,50 | 3,70 | 16,00 | 5,50 | ✓ | | | | 102 |
| FK-648 | 3,50 | 2,00 | 3,10 | 1,00 | | ✓ | | | 102 |
| FK-715 | 5,90 | 2,90 | 4,40 | 1,40 | | ✓ | | | 102 |
| FK-663 | 9,00 | 2,10 | 5,60 | 1,40 | | ✓ | | | 103 |
| FK-499 | 9,90 | 2,00 | 7,40 | 1,20 | | ✓ | | | 103 |
| FK-714 / FK-714-06 | 10,10 | 2,60 | 7,40 | 1,80 | | ✓ | | | 103 |
| FK-691 / FK-691-06 | 11,00 | 2,54 | 7,40 | 1,70 | | ✓ | | | 103 |
| FK-741-HT | 11,00 | 2,80 | variable | 1,70 | | ✓ | | | 103 |
| FK-754 | 11,60 | 2,54 | 7,40 | 3,30 | | ✓ | | | 103 |
| FK-454 | 12,30 | 2,70 | 6,30 | 1,20 | | ✓ | | | 103 |
| FK-565 | 12,35 | 2,54 | 8,40 | 1,30 | | ✓ | | | 103 |
| FK-566 | 9,05 | 2,54 | 6,20 | starr | | ✓ | | | 103 |
| FK-566-GF | 15,90 | 2,54 | 6,20 | starr | | ✓ | | | 103 |
| FK-515 | 6,65 | 3,18 | 6,65 | 1,00 | | | ✓ | | 104 |
| FK-586 | 8,50 | 2,54 | 8,50 | 2,00 | | | ✓ | | 104 |
| FK-606 | 8,50 | 2,54 | 8,50 | 2,00 | | | ✓ | | 104 |
| FK-756 | 8,50 | 2,54 | 8,50 | 2,40 | | | ✓ | | 104 |
| FK-694-S | 11,27 | 2,80 | 11,27 | 2,25 | | | ✓ | | 104 |
| FK-725 | 11,30 | 3,50 | 11,30 | 3,90 | | | ✓ | | 104 |
| Serie 509 | 17,70 | 3,60 | 8,00 | 5,50 | - | - | - | - | 105 |

BATTERY PROBES



| Technical Data | FK-480 | FK-554 | FK-381 | FK-598 |
|------------------------|-----------------------|--------------------|-----------------------|------------------------------|
| Overall Length | 6,10 mm | 6,80 mm | 8,00 mm | 8,10 mm |
| Minimum Centre Spacing | 2,30 mm | 2,20 mm | 3,00 mm | 2,20 mm |
| Extension Height | 4,30 mm | 5,30 mm | 5,72 mm | 4,45 mm |
| Spring Force | 0,6 N | 0,3 N | 0,8 N | 0,8 N |
| Maximum Travel | 2,00 mm | 0,80 mm | 2,29 mm | 2,65 mm |
| Working Travel | 1,70 mm | 0,50 mm | 1,52 mm | 1,70 mm |
| Temperature Range from | -55°C | -55°C | -55°C | -55°C |
| Up to | +250°C | +250°C | +250°C | +250°C |
| Typical Resistance | 80 mΩ | 50 mΩ | 50 mΩ | 30 mΩ |
| Current rating | 2,0 A | 2,0 A | 3,0 A | 5,0 A |
| Materials | | | | |
| Plunger | Cu-alloy, gold plated | Brass, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated |
| Barrel | Nickel silver | Brass, gold plated | Nickel silver | Nickel silver, gold plated |
| Spring | Stainless steel | Stainless steel | Stainless steel | Stainless steel, gold plated |
| Ball | | | | |



| Technical Data | FK-382 | FK-519 | FK-575-WL | FK-441 |
|------------------------|-----------------------|-----------------------|--------------------|-----------------------|
| Overall Length | 9,28 mm | 9,28 mm | 10,04 mm | 10,52 mm |
| Minimum Centre Spacing | 3,00 mm | 2,54 mm | 4,20 mm | 2,30 mm |
| Extension Height | 7,00 mm | 7,00 mm | 5,66 mm | 8,22 mm |
| Spring Force | 0,8 N | 0,8 N | 2,0 N | 0,8 N |
| Maximum Travel | 2,29 mm | 2,29 mm | 2,29 mm | 2,25 mm |
| Working Travel | 1,52 mm | 1,52 mm | 1,52 mm | 1,52 mm |
| Temperature Range from | -55°C | -55°C | -55°C | -55°C |
| Up to | +250°C | +250°C | +250°C | +250°C |
| Typical Resistance | 50 mΩ | 50 mΩ | 20 mΩ | 100 mΩ |
| Current rating | 3,0 A | 3,0 A | 5,0 A | 3,0 A |
| Materials | | | | |
| Plunger | Cu-alloy, gold plated | Cu-alloy, gold plated | Brass, gold plated | Cu-alloy, gold plated |
| Barrel | Nickel silver | Nickel silver | Brass, gold plated | Nickel silver |
| Spring | Stainless steel | Stainless steel | Stainless steel | Stainless steel |

BATTERY PROBES
FK-480 / 554 / 598 / 381 / 382 / 519 / 575-WL / 441

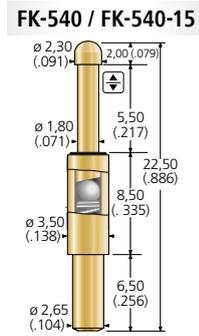
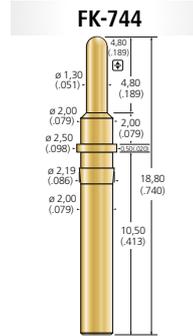
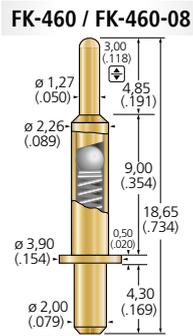
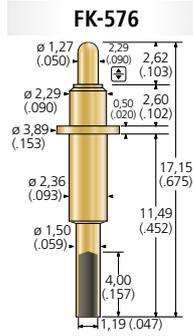
Installation type
THI-T



| FK-674 | FK-492 | FK-555 | FK-446 / FK-664 | FK-757 |
|------------------------------|-----------------------|--------------------|----------------------------|-----------------------|
| | | | | |
| FK-674 | FK-492 | FK-555 | FK-446 / FK-664 | FK-757 |
| 10,55 mm | 10,88 mm | 11,30 mm | 11,80 mm | 11,80 mm |
| 2,70 mm | 2,20 mm | 2,70 mm | 4,10 mm | 2,80 mm |
| 5,85 mm | 8,60 mm | 5,30 mm | 7,80 mm | 4,70 mm |
| 0,3 N | 0,9 N | 2,0 N | 3,0 / 1,2 N | 1,5 N |
| 2,80 mm | 2,18 mm | 3,00 mm | 2,50 mm | 2,60 mm |
| 1,52 mm | 1,45 mm | 2,00 mm | 1,70 mm | 1,70 mm |
| -55°C | -55°C | -55°C | -55°C | -55°C |
| +125°C | +250°C | +125°C | +125°C | +200°C |
| 30 mΩ | 50 mΩ | 50 mΩ | 30 mΩ | 30 mΩ |
| 2,0 A | 3,0 A | 1,0 A | 8,0 A | 8,0 A |
| Brass, gold plated | Cu-alloy, gold plated | Brass, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated |
| Brass, gold plated | Nickel silver | Brass, gold plated | Nickel silver, gold plated | Brass, gold plated |
| Cu-alloy, gold plated | Stainless steel | Music wire | Music wire | Stainless steel |
| Stainless steel, gold plated | | | | Stainless steel |

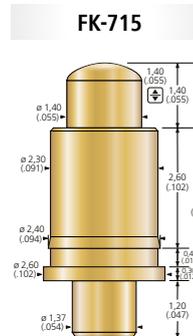
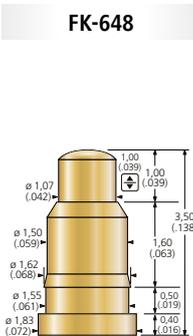
| FK-516 / FK-516-08 | FK-717 / FK-717-05 | FK-640 | FK-459 |
|-----------------------|------------------------------|------------------------------|--------------------------------|
| | | | |
| FK-516 / FK-516-08 | FK-717 / FK-717-05 | FK-640 | FK-459 |
| 13,00 mm | 14,10 mm | 15,00 mm | 15,00 mm |
| 2,70 mm | 3,00 mm | 2,70 mm | 4,10 mm |
| 10,50 mm | 5,60 mm | 11,50 mm | 10,00 mm |
| 0,3 / 0,8 N | 2,0 / 0,5 N | 0,8 N | 0,4 N |
| 2,80 mm | 5,20 mm | 2,80 mm | 2,54 mm |
| 1,52 mm | 3,30 mm | 1,52 mm | 1,70 mm |
| -55°C | -55°C | -55°C | -55°C |
| +250°C | +250°C | +250°C | +250°C |
| 30 mΩ | <50 mΩ | 50 mΩ | 30 mΩ |
| 7,0 A | <3,0 A | 4,0 A | 2,0 A |
| Cu-alloy, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated |
| Cu-alloy, gold plated | Brass, gold plated | Cu-alloy, gold plated | Nickel silver, gold plated |
| CuBe, gold plated | Stainless steel, gold plated | Stainless steel, gold plated | Stainless steel, silver plated |

BATTERY PROBES



| Technical Data | FK-576 | FK-460 / FK-460-08 | FK-744 | FK-540 / FK-540-15 |
|------------------------|--------------------|---|---|-----------------------------------|
| Overall Length | 17,15 mm | 18,65 mm | 18,80 mm | 22,50 mm |
| Minimum Centre Spacing | 4,20 mm | 4,10 mm | 2,70 mm | 3,70 mm |
| Extension Height | 5,66 mm | 14,35 mm | 7,30 mm | 16,00 mm |
| Spring Force | 2,0 N | 1,8 / 0,8 N | 0,7 N | 2,5 / 1,5 N |
| Maximum Travel | 2,29 mm | 3,00 mm | 4,80 mm | 5,50 mm |
| Working Travel | 1,52 mm | 2,00 mm | 3,60 mm | 3,67 mm |
| Temperature Range from | -55°C | -55°C | -55°C | -55°C |
| Up to | +250°C | +250°C | +250°C | +250°C |
| Typical Resistance | 20 mΩ | 30 mΩ | ≤30 mΩ | 20 mΩ |
| Current rating | 5,0 A | 3,0 A | ≤5,0 A | 5,0 A |
| Materials | | | | |
| Plunger | Brass, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated |
| Barrel | Brass, gold plated | Brass, gold plated | Brass, gold plated | Nickel silver, gold plated |
| Spring / Ball | Stainless steel | Stainless steel, gold plated / Stainless steel | Stainless steel, gold plated / Stainless steel | Stainless steel / Stainless steel |

Connector Termination, e.g.
STOCKO RFB 8121.020 R 2-1.5.
Mating contact FK-745 on page 59



| Technical Data | FK-648 | FK-715 |
|------------------------|-------------------------|--------------------|
| Overall Length | 3,50 mm | 5,90 mm |
| Minimum Centre Spacing | 2,00 mm | 2,90 mm |
| Extension Height | 3,10 mm | 4,40 mm |
| Spring Force | 0,95 N | 0,5 N |
| Maximum Travel | 1,00 mm | 1,40 mm |
| Working Travel | 0,70 mm | 0,90 mm |
| Temperature Range from | -55°C | -55°C |
| Up to | +125°C | +250°C |
| Typical Resistance | 30 mΩ | 20 mΩ |
| Current rating | 1,0 A | 2,0 A |
| Materials | | |
| Plunger | Brass, gold plated | Brass, gold plated |
| Barrel | Brass, gold plated | Brass, gold plated |
| Spring | Music wire, gold plated | Stainless steel |
| Ball | | Stainless steel |

BATTERY PROBES
FK-576 / 460 / 744 / 540 / 648 / 680 / 715

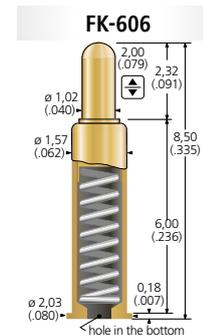
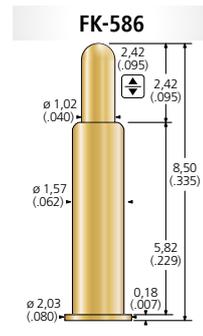
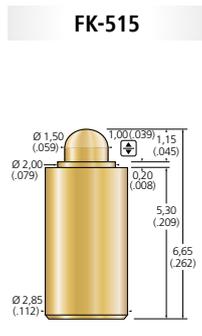
Installation type
THT-t / THT-b

| FK-663 | FK-499 | FK-714 / FK-714-06 | FK-691/FK-691-06 | FK-741-HT |
|-------------------------|------------------------------|-----------------------------------|-----------------------------------|------------------------------|
| | | | | |
| FK-663 | FK-499 | FK-714 / FK-714-06 | FK-691/FK-691-06 | FK-741-HT |
| 9,00 mm | 9,90 mm | 10,10 mm | 11,00 mm | 11,00 mm |
| 2,10 mm | 2,00 mm | 2,60 mm | 2,54 mm | 2,80 mm |
| 5,60 mm | 7,40 mm | 7,40 mm | 7,40 mm | variabel |
| 0,85 N | 2,0 N | 2,0 / 0,6 N | 1,0 / 0,6 N | 1,0 N |
| 1,40 mm | 1,80 mm | 1,70 mm | 1,70 mm | 1,70 mm |
| 0,70 mm | 1,20 mm | 1,00 mm | 1,00 mm | 1,00 mm |
| -25°C | -55°C | -55°C | -55°C | -55°C |
| +85°C | +250°C | +250°C | +250°C | +300°C |
| 20 mΩ | 40 mΩ | 15 mΩ | ≤30 mΩ | 15 mΩ |
| 2,0 A | 3,0 A | 5,0 A | 5,0 A | 5,0 A |
| Cu-alloy, gold plated | Cu-alloy, gold plated | Brass, gold plated | Brass, gold plated | Brass, gold plated |
| Cu-alloy, gold plated | Brass, gold plated | Brass, gold plated | Brass, gold plated | Brass, gold plated |
| Music wire, gold plated | Stainless steel, gold plated | Stainless steel / Stainless steel | Stainless steel / Stainless steel | Stainless steel, gold plated |

High-temp version
up to 300°C: **FK-691-HT**

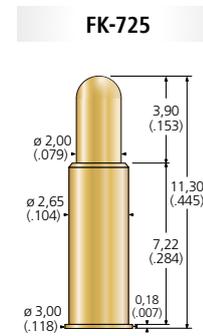
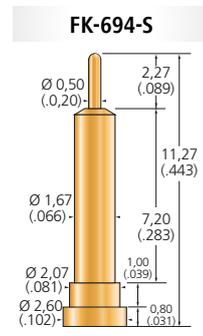
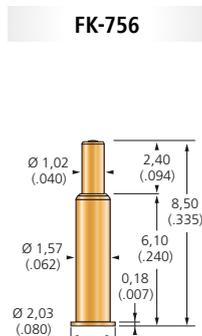
| FK-754 | FK-454 | FK-565 | FK-566 | FK-566-GF |
|-----------------------------|----------------------------|------------------------------|--------------------|--------------------|
| | | | | |
| FK-754 | FK-454 | FK-565 | FK-566 | FK-566-GF |
| 11,60 mm | 12,30 mm | 12,35 mm | 9,05 mm | 15,90 mm |
| 2,54 mm | 2,70 mm | 2,54 mm | 2,54 mm | 2,54 mm |
| 7,40 mm | 6,30 mm | 8,40 mm | 6,20 mm | 6,20 mm |
| 0,4 N | 1,0 N | 1,0 N | rigid contact | rigid contact |
| 3,30 mm | 1,20 mm | 1,30 mm | rigid contact | rigid contact |
| 1,50 mm | 0,80 mm | 0,80 mm | rigid contact | rigid contact |
| -55°C | -55°C | -55°C | -55°C | -55°C |
| +250°C | +250°C | +250°C | +250°C | +250°C |
| 15 mΩ | 50 mΩ | 50 mΩ | 20 mΩ | 20 mΩ |
| 5,0 A | 3,0 A | 3,0 A | 3,0 A | 3,0 A |
| Bronze & steel, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated | Brass, gold plated | Brass, gold plated |
| Brass, gold plated | Nickel silver, gold plated | Brass, gold plated | | |
| Stainless steel | Stainless steel | Stainless steel, gold plated | | |

BATTERY PROBES



| Technical Data | FK-515 | FK-586 | FK-606 |
|------------------------|---------|---------|---------|
| Overall Length | 6,65 mm | 8,50 mm | 8,50 mm |
| Minimum Centre Spacing | 3,18 mm | 2,54 mm | 2,54 mm |
| Extension Height | 6,65 mm | 8,50 mm | 8,50 mm |
| Spring Force | 0,8 N | 0,5 N | 1,0 N |
| Maximum Travel | 1,00 mm | 2,00 mm | 2,00 mm |
| Working Travel | 0,75 mm | 1,33 mm | 1,33 mm |
| Temperature Range from | -55°C | -55°C | -55°C |
| Up to | +200°C | +250°C | +250°C |
| Typical Resistance | 40 mΩ | 30 mΩ | 30 mΩ |
| | 7,0 A | 1,0 A | 3,0 A |

| Materials | FK-515 | FK-586 | FK-606 |
|-----------|-----------------------|------------------------------|------------------------------|
| Plunger | Cu-alloy, gold plated | Cu-alloy, gold plated | Cu-alloy, gold plated |
| Barrel | Cu-alloy, gold plated | Brass, gold plated | Brass, gold plated |
| Spring | CuBe | Stainless steel, gold plated | Stainless steel, gold plated |



| Technical Data | FK-756 | FK-694-S | FK-725 |
|------------------------|---------|----------|----------|
| Overall Length | 8,50 mm | 11,27 mm | 11,30 mm |
| Minimum Centre Spacing | 2,54 mm | 2,80 mm | 3,50 mm |
| Extension Height | 8,50 mm | 11,27 mm | 11,30 mm |
| Spring Force | 0,5 N | 1,0 N | 0,7 N |
| Maximum Travel | 2,40 mm | 2,25 mm | 3,90 mm |
| Working Travel | 1,60 mm | 1,50 mm | 2,50 mm |
| Temperature Range from | -55°C | -55°C | -55°C |
| Up to | +250°C | +250°C | +250°C |
| Typical Resistance | 10 mΩ | 50 mΩ | <50 mΩ |
| Current rating | 3,0 A | 3,0 A | <3,0 A |

| Materials | FK-756 | FK-694-S | FK-725 |
|-----------|-----------------------|--------------------|------------------------------|
| Plunger | Cu-alloy, gold plated | Steel, gold plated | Cu-alloy, gold plated |
| Barrel | Brass, gold plated | Brass, gold plated | Brass, gold plated |
| Spring | Stainless steel | Stainless steel | Stainless steel, gold plated |
| Ball | Stainless steel | | |

BATTERY PROBES
FK-515 / 586 / 606 / 694-S / 725

Installation type
SMT

Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,15 N | 1,5 N | 15 |
| 0,35 N | 3,0 N | 30 |
| 0,5 N | 4,0 N | 40 |



Ø 4,00 **365.106.40.xx**



Ø 4,00 **365.14.40.xx**



Ø 4,00 * **365B.35.40.xx**



Ø 4,00 * **365C.35.40.xx**

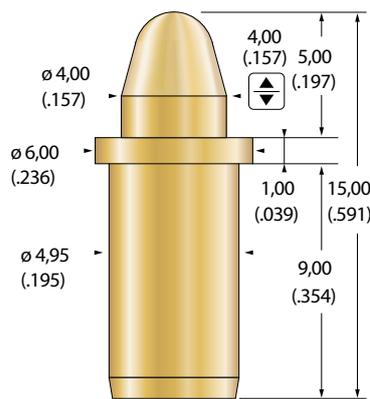


**For XXLonglife-Nanocoating
order as 365X**

* 365B.35.40.xx Current rating: 15A

* 365C.35.40.xx: Plunger length: 4,00 mm
Overall Length: 14,00mm

Series 365



Series 365

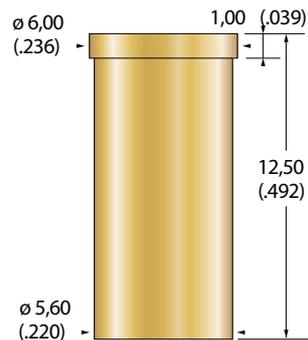
Technical Data

| | |
|------------------------|---------------------|
| Overall Length | 14,00 / 15,00 mm |
| Minimum Centre Spacing | 6,50 mm |
| Maximum Travel | 4,00 mm |
| Working Travel | 2,70 / 3,00 mm |
| Temperature Range from | -55°C |
| Up to | +250°C |
| Typical Resistance | 30 mΩ |
| Current rating | 3,0 / 15,0 A |

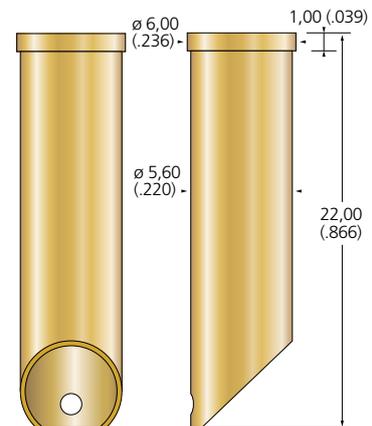
Materials

| | |
|---------|-------------------------|
| Plunger | CuBe, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

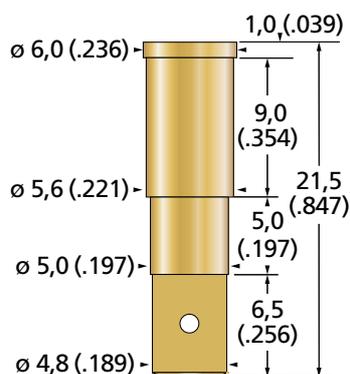
S 365.01



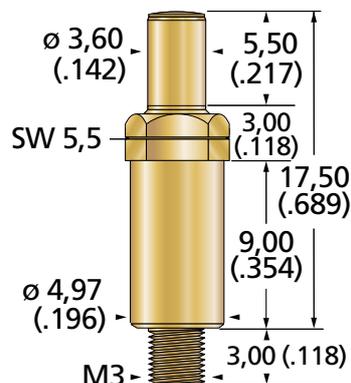
S 365.22



S 509.01-F



Series 509E.35.36.20



Series 509E.35.36.20

Technical Data

| | |
|-------------------------|----------|
| Overall Length | 17,70 mm |
| Minimum Centre Spacing | 3,60 mm |
| Maximum Travel | 5,50 mm |
| Working Travel | 3,60 mm |
| Temperature Range from | -55°C |
| Up to | +105°C |
| Typical Resistance | 20 mΩ |
| Current Load rated/max. | 5,0 A |

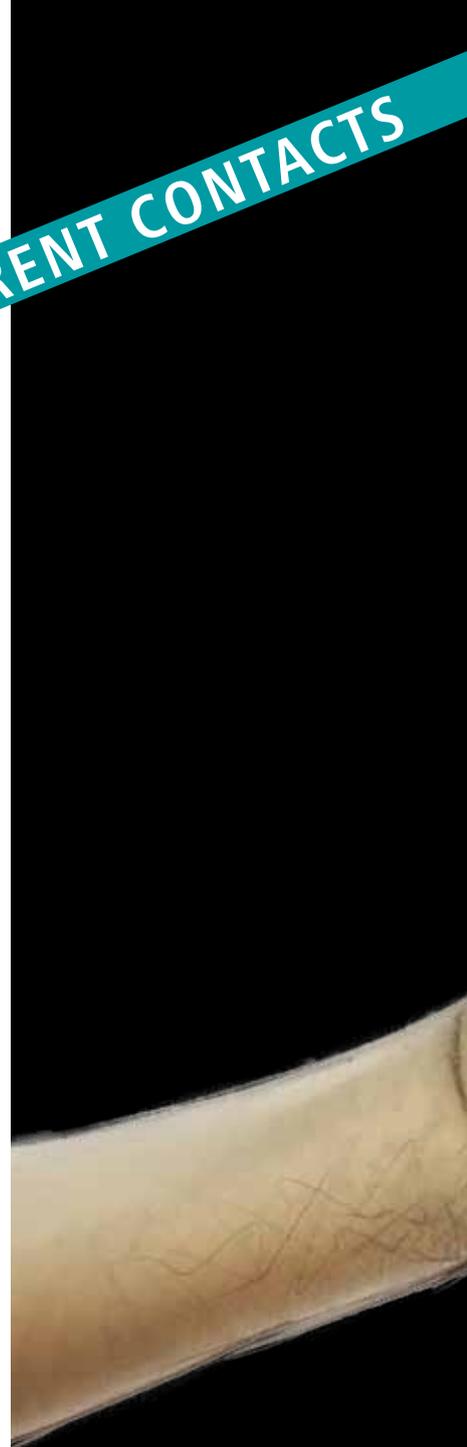
Materials

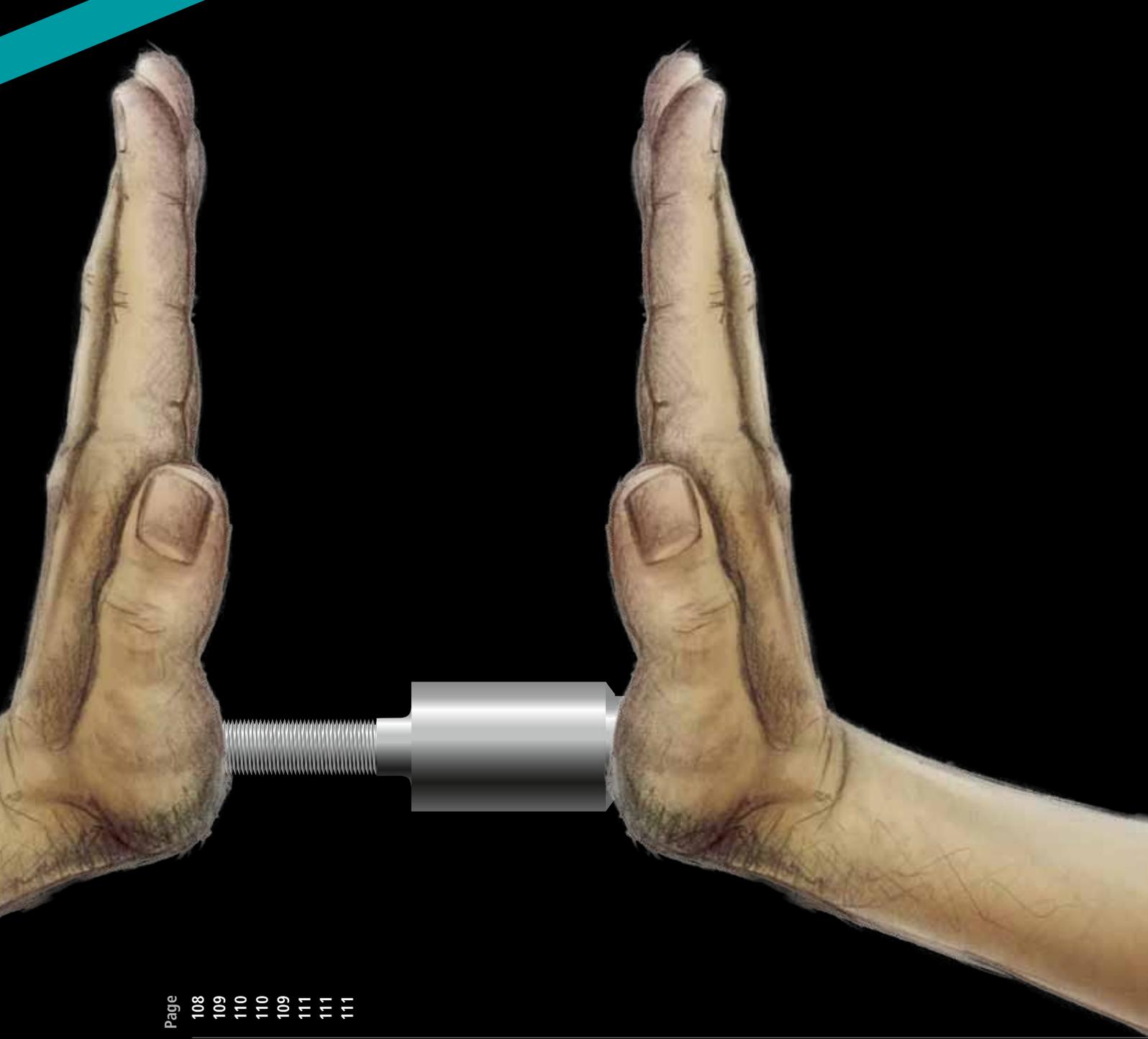
| | |
|---------|--------------------|
| Plunger | Brass, gold plated |
| Barrel | Brass, gold plated |
| Spring | Stainless steel |

HIGH CURRENT CONTACTS

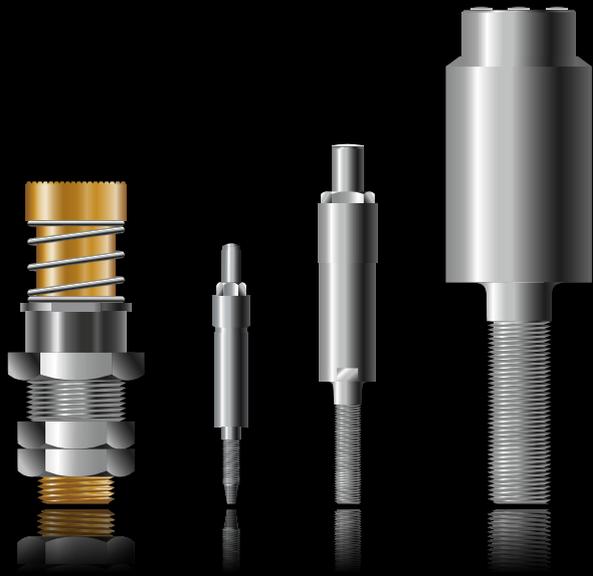
Test applications involving high currents increasingly grow in number and requirements. Actual Keywords are for instance electric mobility, hybrid drives or solar energy. The requirements for testing and coupling contacts increase from day to day. Special designs, materials and surfaces give us the necessary characteristics to ensure that contacts can cope with the enormous power loads reliably and sustainably.

In our Chapter Power Contacts, we explain which solutions we can offer you in this - of course always sprung - field of contact products. The selection here is not limited to the test area. Our JUMBO types can „put away“ a lot, so they find applications even in harsh working environments.





| Series | Page |
|--------|------|
| 120 | 108 |
| 126 | 109 |
| 127 | 110 |
| 128 | 110 |
| 226 | 109 |
| FK-133 | 111 |
| FK-050 | 111 |
| FK-679 | 111 |



Series 120

Technical Data

| | |
|-------------------------|--------------|
| Overall Length | 33,25 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 15 mΩ |
| Current Load rated/max. | 8,0 / 10,0 A |

Materials

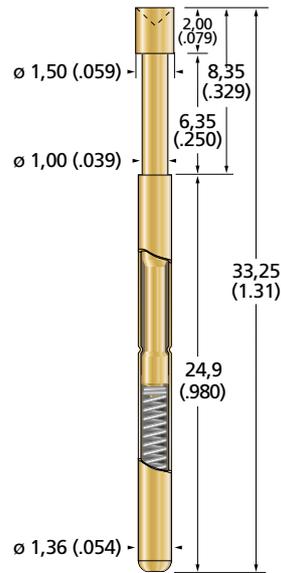
| | |
|---------|-------------------------|
| Plunger | Cu-alloy, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

Regarding the geometric dimensions this design is similar to the standard 100 series, however, made for a higher current load. As with all high-voltage and high-power contact applications, cyclic cooling intervals should be provided between the load phases.

The data on current carrying capacity should not be construed here as a constant current load, as in the usual test applications there are intervals for the loading and unloading of the test apparatus. If you are looking for a high-current contact to be inserted under continuous load, we recommend to look through this chapter in detail. There is more on the following pages!

The matching receptacles of the 100 series you find on page 34.

Series 120



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,3 N | 1,1 N | 11 |
| 0,6 N | 1,8 N | 18 |
| 1,0 N | 2,5 N | 25 |

| | | |
|--|--------------------|---------------------|
| | $\varnothing 1,00$ | 120.02.10.xx |
| | $\varnothing 1,00$ | 120.03.10.xx |
| | $\varnothing 1,50$ | 120.03.15.xx |
| | $\varnothing 1,00$ | 120.04.10.xx |
| | $\varnothing 1,50$ | 120.04.15.xx |
| | $\varnothing 1,00$ | 120.05.10.xx |
| | $\varnothing 1,50$ | 120.05.15.xx |
| | $\varnothing 1,50$ | 120.08.15.xx |
| | $\varnothing 2,00$ | 120.08.20.xx |
| | $\varnothing 1,50$ | 120.20.15.xx |



For **XXLonglife-Nanocoating** order as **120X**

HIGH CURRENT CONTACTS

Spring Force (xx)

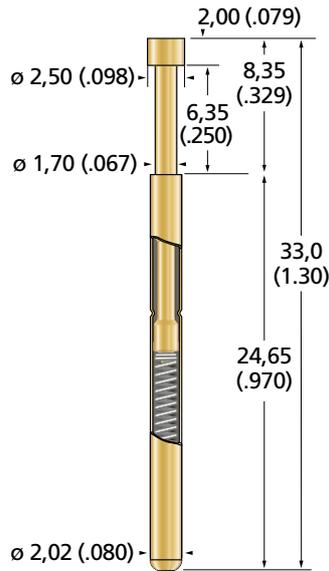
| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,6 N | 1,8 N | 18 |
| 1,0 N | 2,5 N | 25 |

| | | |
|---|--------|------------------|
|  | Ø 1,30 | 126.02.13.xx |
| | Ø 1,70 | 126.02.17.xx |
|  | Ø 1,70 | 126.03.17.xx |
|  | Ø 2,50 | 126.03.25.xx |
|  | Ø 2,50 | 126.04.25.xx |
|  | Ø 0,70 | 126.05.07H500.xx |
| | Ø 0,90 | 126.05.09H500.xx |
|  | Ø 1,70 | 126.05.17.xx |
|  | Ø 2,50 | 126.05.25.xx |
|  | Ø 2,00 | 126.06.20.xx |
| | Ø 2,50 | 126.06.25.xx |
|  | Ø 1,70 | 126.08.17.xx |
|  | Ø 2,50 | 126.08.25.xx |
| | Ø 4,00 | 126.08.40.xx |
|  | Ø 2,50 | 126.15.25.xx |
|  | Ø 3,00 | 126.20.30.xx |
|  | Ø 1,70 | 126.49.17.xx |



For **XXLonglife-Nanocoating** order as **126X**

Series 126



Series 126

Technical Data

| | |
|-------------------------|--------------|
| Overall Length | 33,00 mm |
| Minimum Centre Spacing | 3,20 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 10 mΩ |
| Current Load rated/max. | 8,0 / 20,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, silver plated |

This high current version is identical to the Series 26 in the outer dimensions, but can take up higher current loads. For extremely demanding high current applications, we recommend the 226 series (below). This type has an especially complex design in the interior and can therefore transmit high continuous current without overheating.

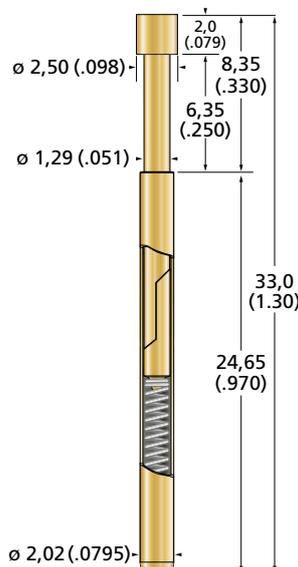
The Series 126 and 226 use the receptacles of the series 26 (see page 36).

Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|------------|
| 0,4 N | 1,2 N | 12 |
| 0,6 N | 1,8 N | 18 |
| 0,8 N | 2,5 N | 25 |
| 1,5 N | 4,4 N | 44 |

| | | |
|---|--------|--------------|
|  | Ø 2,50 | 226.03.25.xx |
|  | Ø 2,50 | 226.05.25.xx |
|  | Ø 2,50 | 226.06.25.xx |
|  | Ø 2,50 | 226.08.25.xx |

Series 226



Series 226

Technical Data

| | |
|-------------------------|---------------|
| Overall Length | 33,00 mm |
| Minimum Centre Spacing | 3,20 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 10 mΩ |
| Current Load rated/max. | 30,0 / 35,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, gold plated |

Features a split plunger to ensure a reliable current transmission.

Series 127

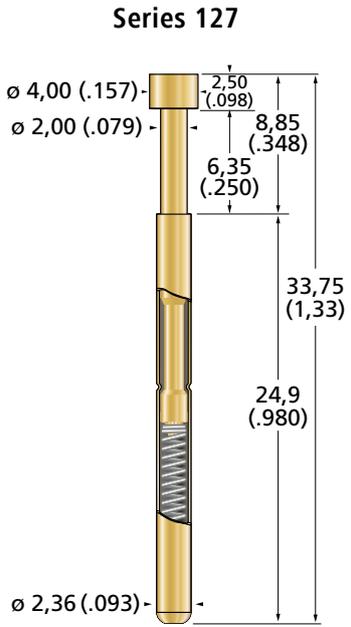
Technical Data

| | |
|-------------------------|---------------|
| Overall Length | 33,75 mm |
| Minimum Centre Spacing | 4,00 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 10 mΩ |
| Current Load rated/max. | 15,0 / 25,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Music wire, silver plated |

In the outer dimensions equal to the Series 27, but due to the different surface coatings more durable in high current use.
Receptacles see page 37.



Spring Force (xx)

| Preload | Rated Force | Code xx |
|---------|-------------|---------|
| 0,8 N | 1,9 N | 19 |
| 0,8 N | 3,0 N | 30 |
| 1,5 N | 5,0 N | 50 |

| | | |
|--|--------|--------------|
| | Ø 4,00 | 127.03.40.xx |
| | Ø 4,00 | 127.04.40.xx |
| | Ø 3,00 | 127.08.30.xx |
| | Ø 4,00 | 127.08.40.xx |
| | Ø 4,00 | 127.15.40.xx |

For **XXLonglife-Nanocoating** order as 127X

Series 128

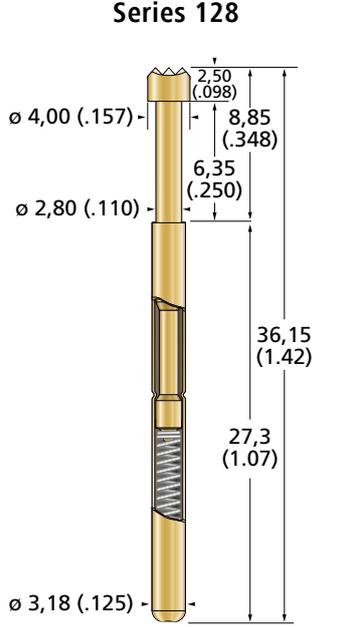
Technical Data

| | |
|-------------------------|---------------|
| Overall Length | 36,15 mm |
| Minimum Centre Spacing | 4,75 mm |
| Maximum Travel | 6,35 mm |
| Working Travel | 4,20 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 10 mΩ |
| Current Load rated/max. | 15,0 / 30,0 A |

Materials

| | |
|---------|---|
| Plunger | CuBe hardened, gold plated |
| Barrel | Cu-alloy, gold plated |
| Spring | Stainless steel / Music wire, silver plated |

In the outer dimensions equal to the Series 28, but due to the different surface coatings more durable in high current use.
Receptacles see page 38.



Spring Force (xx)

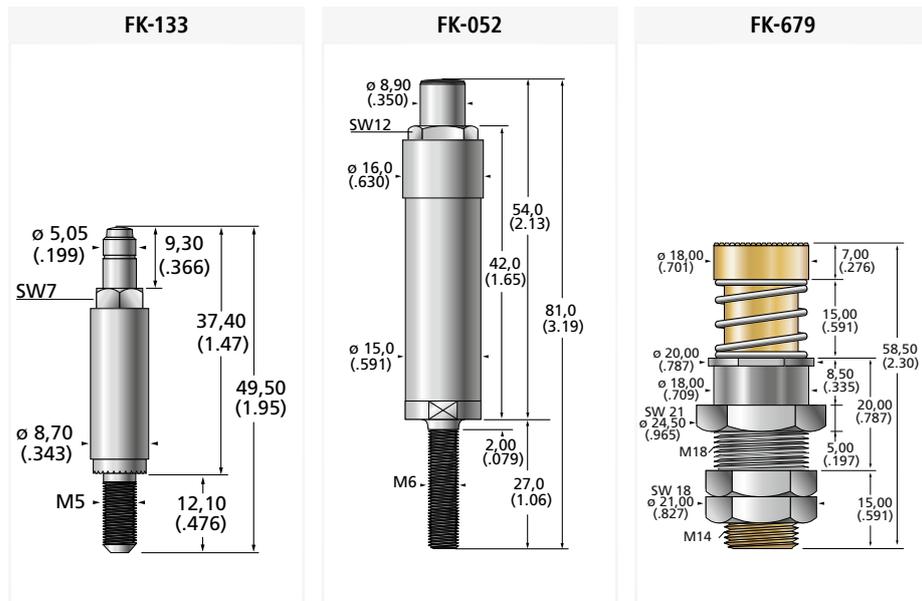
| Preload | Rated Force | Code xx |
|---------|-------------|---------|
| 0,8 N | 1,9 N | 19 |
| 0,8 N | 2,3 N | 23 |
| 1,5 N | 4,0 N | 40 |

| | | |
|--|--------|--------------|
| | Ø 2,80 | 128.02.28.xx |
| | Ø 2,80 | 128.03.28.xx |
| | Ø 4,00 | 128.03.40.xx |
| | Ø 4,00 | 128.04.40.xx |
| | Ø 2,00 | 128.05.20.xx |
| | Ø 4,00 | 128.05.40.xx |
| | Ø 2,80 | 128.08.28.xx |
| | Ø 4,00 | 128.08.40.xx |
| | Ø 4,00 | 128.15.40.xx |

For **XXLonglife-Nanocoating** order as 128X

HIGH CURRENT CONTACTS

FK-133 / 052 / 679



| Technical Data | FK-133 | FK-052 | FK-679 |
|-------------------------|----------|--|---|
| Overall Length | 49,50 mm | 81,00 mm | 58,50 mm |
| Spring Force | 10,0 N | 17,0 N | 48,50 N |
| Spring preload | 5,0 N | 6,0 N | 29,0 N |
| Maximum Travel | 8,30 mm | 12,10 mm | 6,50 mm |
| Max. continuous current | 25,0 A | 100 A | ≤ 220 A |
| Max. impulse current | 1 kA | 4 kA | 300 A |
| Contact resistance | 1,0 mΩ | ≤ 1,0 mΩ | 0,5 mΩ |
| Temperature up to | +125°C | +150°C | +100°C |
| Max. tightening torque | 3,0 Nm | 5,0 Nm | 5,0 Nm |
| | | Version FK-152 features a higher continuous current rating of 150 A. | Further variations with different diameters on request. Also available with additional sense-pin for kelvin measurement applications. |

HIGH CURRENT „JUMBOS“

In addition to the high-current contacts for the test area we carry our „thick JUMBOS“ for applications with significantly higher current loads. By special inner design structures and the use of pure silver as the contact material load values of several hundred amps are possible. More designs and types are available on request.

HIGH CURRENT JUMBOS

KELVIN CONTACTS SPARE PARTS FOR IC-HANDLERS

William Thomson, 1st Baron Kelvin (usually named as Lord Kelvin or Kelvin of Largs) is mainly known for his research on the thermodynamics and the Kelvin temperature scale named after him. In his work on electricity, he developed among others the Kelvin bridge and found the most accurate method to measure low resistances: the four-wire measurement, named after him as „Kelvin measurement“. In the following chapter, we show you how you can perform this test method as accurately as possible using our Kelvin contacts. Especially measurements in the low range (milliohms and $\mu\Omega$) benefit from this. For the Kelvin measurement it is important that each measuring point is contacted of two mutually insulated contacts, which are located as close as possible to each other. Suitable and specially designed pins can be found here on the following pages.

Besides axially sprung contacts as they are mainly found in our catalog, there is a second technology group that brings great advantages for many applications: Projecting strip contacts, or in technical jargon so-called Cantilever Beam Contacts. In the different groups Standard, Kelvin, RF or customized we offer them down to the smallest grid spacing of 0.3 mm (0.4 mm for Kelvin).

Many automated IC handler systems are built on this technology - the appropriate spare parts can be found here - if not, please consult us.

Other applications include relay test (coil resistance measurement) or contacting other components with leads.

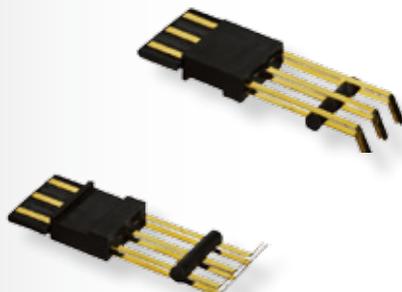
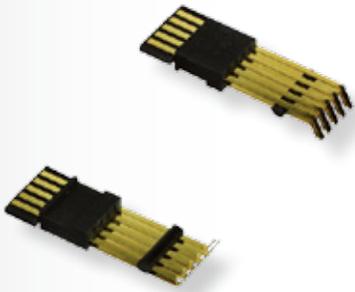




| Series | Page |
|--------|------|
| BA10 | 115 |
| CA20 | 115 |



KELVIN CONTACTS

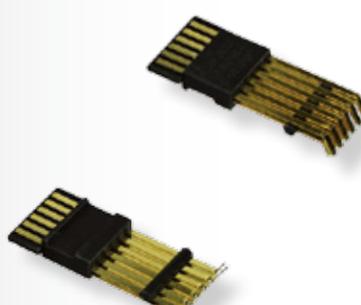


KELVIN UC-010A

2,54 mm pitch used for DIL-components. 2 x 5-way leads. Every single lead gets double contacts. CuBe-strips 0,20 mm thick.
(left photo)

KELVIN UC-010A -S1

Variant of the UC-01A with some contacts left out. Pitch 5,08 mm. Further variants on request! CuBe-strips 0,20 mm thick.
(right photo)

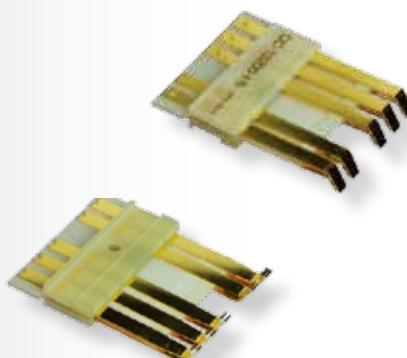
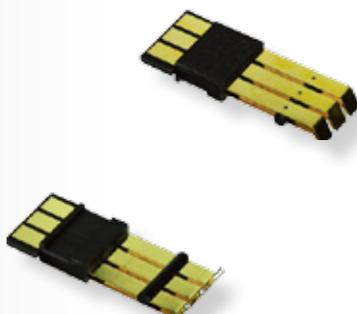


KELVIN UC-012-A

2,54 mm pitch used for DIL-components. 2 x 6-way leads. Every single lead gets double contacts. CuBe-strips 0,20 mm thick.
(left photo)

KELVIN CC-012A

2,54 mm pitch used for DIL-components. 2 x 6-way leads. Every single lead gets double contacts. CuBe-strips 0,30 mm thick.
(left photo)



KELVIN CC-EX3

High current version. 2 x 3-way, pitch 5,08 mm (200mil). CuBe-strips 0,30 mm thick.
(left photo)

KELVIN CC-10200-L

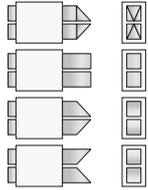
Custom design type. Two separate contacts for every lead. CuBe-strips 0,30 mm thick.
(right photo)



BI-AXIAL CO-AXIAL

Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|------|
| 0,20 N | 0,50 N | SPL |
| 0,35 N | 0,76 N | SPS |
| 0,50 N | 1,20 N | SPH |



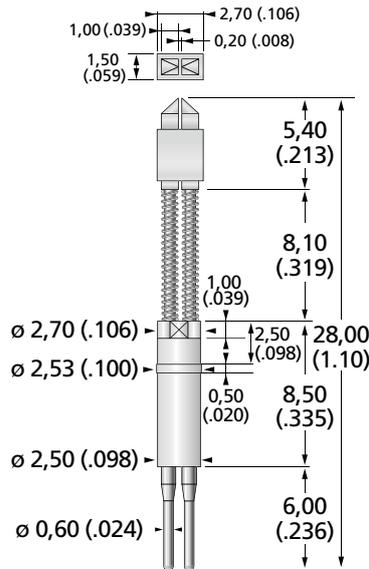
BA10(1)-QAW

BA10(1)-QFW

BA10(1)-QNW

BA10(1)-QNW-R

BA10



BA10

Technical Data

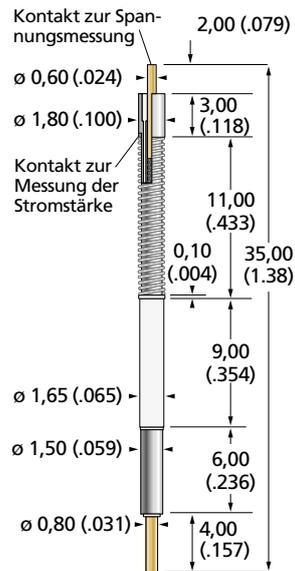
| | |
|------------------------|----------|
| Overall Length | 28,00 mm |
| Minimum Centre Spacing | 3,00 mm |
| Spring Force | 0,76 N |
| Maximum Travel | 4,50 mm |
| Working Travel | 3,00 mm |
| Up to | +60°C |
| Typical Resistance | 20 mΩ |
| Current rating | 2,0 A |

Materials

| | |
|---------|---------------------------|
| Plunger | Steel, gold plated |
| Spring | Music wire, silver plated |

Terminal for crimping or soldering available.

CA20



CA20

Technical Data

| | |
|------------------------|----------------|
| Overall Length | 35,00 mm |
| Minimum Centre Spacing | 2,80 mm |
| Spring Force | 1,95 N |
| Maximum Travel | 2,00 / 4,50 mm |
| Working Travel | 0,70 / 3,00 mm |
| Up to | 60°C |
| Typical Resistance | 15 mΩ |
| Current rating | 3,0 A |

Materials

| | |
|---------|---------------------------|
| Plunger | Steel, gold plated |
| Spring | Music wire, silver plated |

Further variations with different diameters available on request.

Kelvin contacts for fine pitch applications

On page 97 you will find special finepitch kelvin contacts for applications with pitches of 0.40 mm and 0.50 mm.

COAXIAL CONTACTS

Of course the Coaxial RF-contacts from FIXTEST are spring loaded. This is our business and that's what we can. Normal antenna connections for plug- in or screw mount you will not find here.

Our coaxial spring contacts are mainly used in the testing during the production of mobile radios, vehicle components or smartphones, but also in dock connectors which transmit RF signals (WLAN, GPRS, GPS, UMTS and so on). These contacts we design and produce on a project basis and according to customer specifications, often adapted to the installation situation. From this point there is no real standard product line shown here in this category.

The items shown here represent case studies of some of our recent developments.

Does one of the examples fit to an application you are looking for? Or do you need a completely different solution? Please don't hesitate to contact us! We look forward to your inquiry!



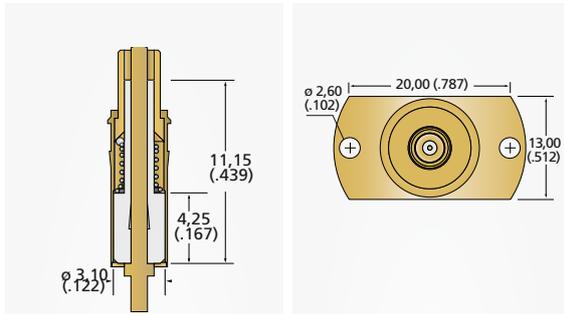
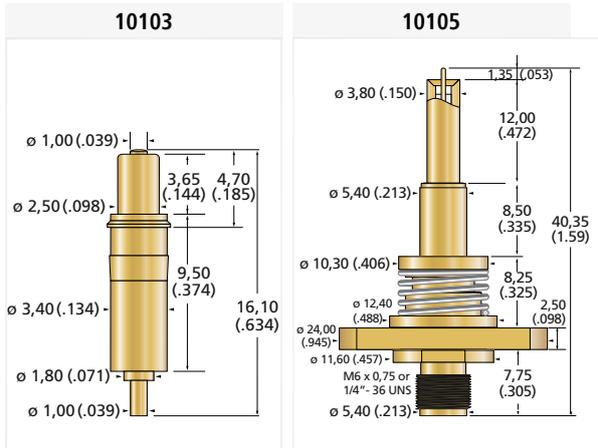


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Series
10103
10105
10107.001D
10114.001C
FK-651
FK-652
FK-661



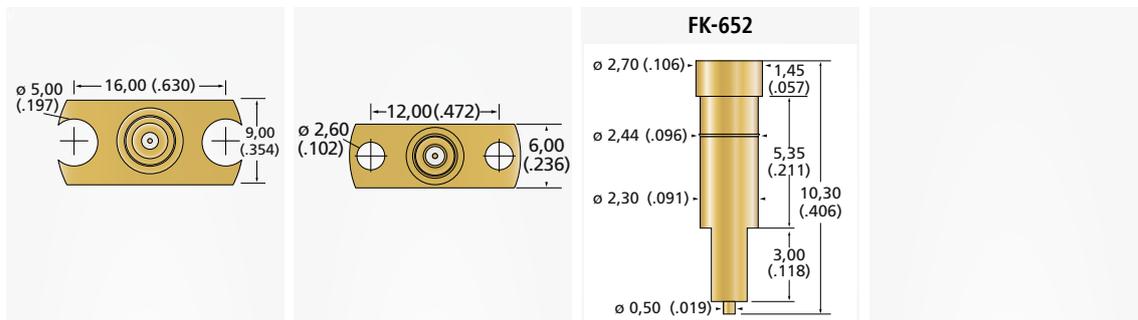
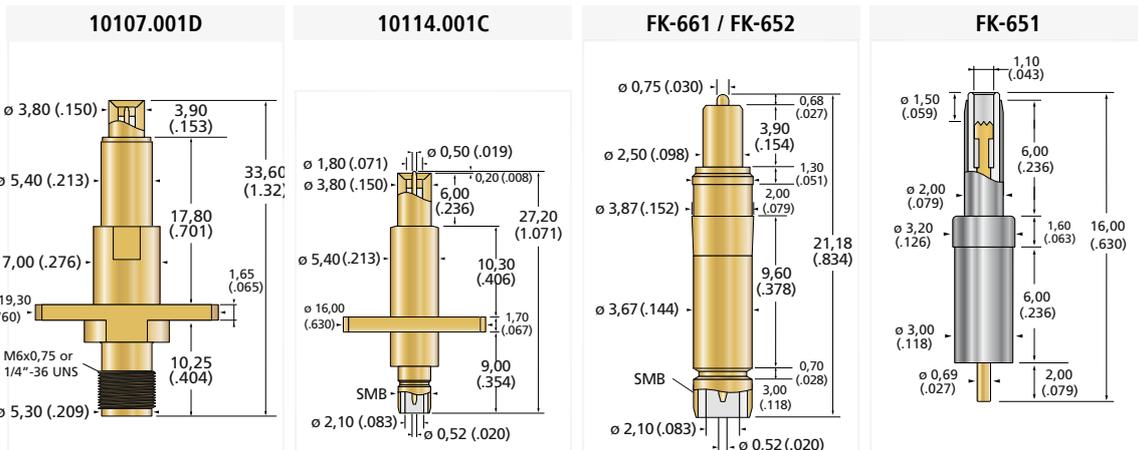
COAXIAL CONTACTS



| Technical Data | 10103 | 10105 |
|---|---------|---------|
| Centre pin max. travel | — | 3,00 mm |
| Centre pin working travel | — | 2,00 mm |
| Centre pin spring force at working travel | rigid | 0,8 N |
| Shield max. travel | 1,60 mm | 2,90 mm |
| Shield Working Travel | 1,00 mm | 1,90 mm |
| Shield spring force at working travel | 1,5 N | 2,3 N |
| Temperature range from | -40°C | -40°C |
| Up to | +90°C | +90°C |
| Wave impedance | 50 Ω | 50 Ω |
| Frequency range | — | — |
| Insertion Loss DC to 3 GHz | — | — |
| Insertion Loss 3 to 6 GHz | — | — |

Solder terminal (THT), developed for a docking system for digital radio TPH700 (external antenna).

SMA conversion adapter, floating installation, compatible with HRS MS-156-HRMJ-12, however with replaceable centre pin.
Two versions available:
a) M6 x 0.75 mm thread: 10105-M
b) 1/4" -36 UNS (SMA): 10105-U



| 10107.001D | 10114.001C | FK-661 / FK-652 | FK-651 |
|---|--|--|---|
| 3,00 mm | 2,90 mm | 2,70 mm | 1,50 mm |
| 2,00 mm | 1,40 mm | 1,90 mm | 1,00 mm |
| 0,8 N | 1,0 N | 1,0 N | 1,0 N |
| 2,90 mm | 1,70 mm | 2,10 mm | |
| 1,90 mm | 1,20 mm | 1,20 mm | |
| 2,3 N | 1,2 N | 2,0 N | 1,0 N |
| -40°C | -40°C | -40°C | -55°C |
| +90°C | +90°C | +90°C | +120°C |
| 50 Ω | 50 Ω | 50 Ω | 25 mΩ |
| DC to 6 GHz | DC to 6 GHz | DC to 6 GHz | |
| 0.6 dB | 0.6 dB | — | — |
| 1.5 dB | 1.5 dB | — | — |
| Compatible with muRata MM126036, however with replaceable centre pin. Two versions available: a) M6 x 0.75 mm thread: 10107.001D-M b) 1/4"-36 UNS (SMA): 10107.001D-U | Similar to type 10107.001D, however with threadless SMB plug connection. | SMB plug-in connection, developed for a docking system for different radio frequencies (WLAN, UMTS etc.). Suitable mating contact (rigid): FK-652. | Current Load rated / max. 2,0 / 3,0 A Suitable for Nokia DC-connections. |

CABLE HARNESS TEST

Special spring contacts for cable harness inspection in the automotive industry have an important common property: the probe and the socket must stay tightly together, so in many cases they are connected by threads.

The recurring withdrawal forces in the plug connector test may pull out the normal spring contact probe slowly from the receptacle - not so with the screw-fit types.

Our portfolio includes besides the normal spring contacts also switch contact pins, which establish the contact link only after a certain minimum stroke. Thus, the verification of correct installation dimensions or a query component can be easily realized.

Some spring contacts have a large, plate-like disc below the probe tip. This serves to determine or limitate the depth of penetration of the probe into the socket or the plug housing. As in other fields of applications also here some standardization has established over the years, which means that brand products of different manufacturers are interchangeable or compatible. Our cable testing products are compatible with those of other brands, and we will help you with the „translation“ of the different item codes.

The necessary tools for screwing are available upon request.





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| 70 | 122 |
| 71 | 123 |
| 72 | 124 |
| 73 | 125 |
| 172 | 126 |
| 265E | 127 |



Series 70

Technical Data

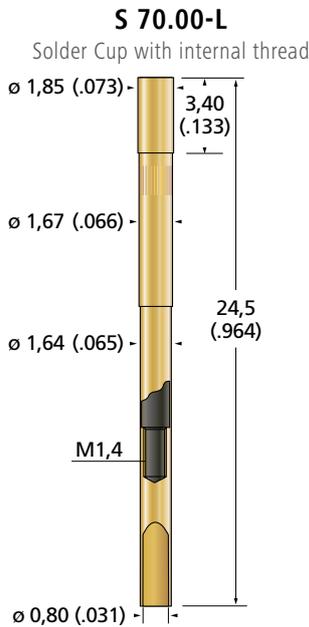
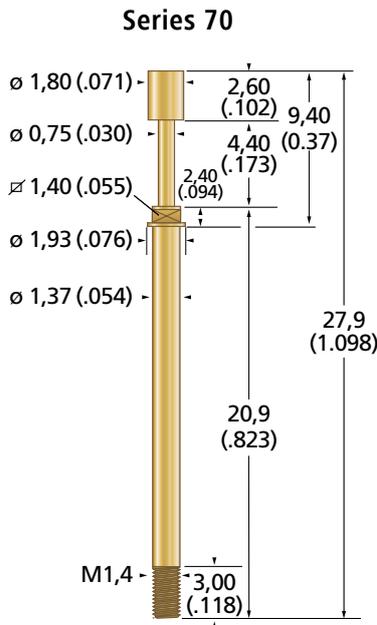
| | |
|-------------------------|-------------|
| Overall Length | 27,90 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 4,40 mm |
| Working Travel | 3,50 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 30 mΩ |
| Current Load rated/max. | 3,0 / 3,5 A |

Materials

| | |
|---------|-------------------------------------|
| Plunger | CuBe, gold plated or rhodium plated |
| Barrel | Brass, gold plated |
| Spring | Stainless steel |

Screwed spring contact probe for pitch ≥ 2.54 mm. Recommended torque 3 to 5 (max.) Ncm.

Screw-in-tool: IGL-TL-7 or IGL-TL-8.
List of all tools on page 137.



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,4 N | 1,0 N | 10 |
| 0,4 N | 1,5 N | 15 |
| 0,7 N | 2,5 N | 25 |
| 0,7 N | 3,0 N | 30 |

| | | |
|--|--------------------|---------------------|
| | $\varnothing 0,38$ | 70.102.04.xx |
| | $\varnothing 0,75$ | 70.102.08.xx |
| | $\varnothing 0,75$ | 70.103.08.xx |
| | $\varnothing 1,80$ | 70.103.18.xx |
| | $\varnothing 0,65$ | 70.105.06.xx |
| | $\varnothing 0,75$ | 70.105.08.xx |
| | $\varnothing 1,25$ | 70.105.13.xx |
| | $\varnothing 1,80$ | 70.106.18.xx |
| | $\varnothing 1,25$ | 70.08.13.xx |
| | $\varnothing 1,80$ | 70.08.18.xx |
| | $\varnothing 0,60$ | 70.14.06.xx |
| | $\varnothing 1,80$ | 70.115.18.xx |



For **XXLonglife-Nanocoating**
order as **70X**

Collar types with predefined penetration depth

| | \varnothing mm | Code xx | Z-Wert mm | T- / K- Wert mm |
|--|--------------------|-----------------------------|--------------|--------------------|
| | $\varnothing 0,60$ | 70.105.06Z340K150.xx | 3,40 | 1,50 |
| | $\varnothing 0,60$ | 70.105.06Z400K150.xx | 4,00 | 1,50 |
| | $\varnothing 0,60$ | 70.105.06Z400T150.xx | 4,00 | 1,50 |
| | $\varnothing 0,60$ | 70.105.06Z550T140.xx | 5,50 | 1,40 |
| | $\varnothing 0,70$ | 70.105.07Z200T150.xx | 2,00 | 1,50 |
| | $\varnothing 0,70$ | 70.105.07Z340T150.xx | 3,40 | 1,50 |
| | $\varnothing 0,70$ | 70.105.07Z350T150.xx | 3,50 | 1,50 |

Further versions available on request.



For **XXLonglife-Nanocoating**
order as **70X**

Spring Force (xx)

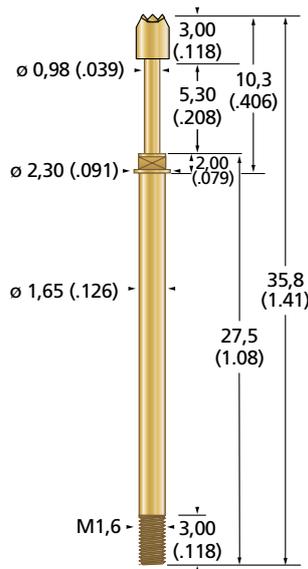
| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,3 N | 0,80 N | 08 |
| 0,5 N | 1,50 N | 15 |
| 0,5 N | 2,25 N | 23 |
| 0,8 N | 3,00 N | 30 |
| 1,0 N | 5,00 N | 50 |

| | | |
|---|--------|-----------------------|
|  | Ø 0,60 | 71.101.06.xx |
|  | Ø 0,70 | 71.102.07.xx |
|  | Ø 1,30 | 71.102.13.xx |
|  | Ø 1,30 | 71.103.13.xx |
|  | Ø 2,00 | 71.103.20.xx |
|  | Ø 1,90 | 71.104.19.xx |
|  | Ø 1,30 | 71.105.13.xx |
|  | Ø 1,50 | 71.105.15.xx |
|  | Ø 2,00 | 71.105.20.xx |
|  | Ø 1,30 | 71.106.13.xx |
|  | Ø 2,00 | 71.106.20.xx |
|  | Ø 1,30 | 71.107.13.xx |
|  | Ø 1,30 | 71.108.13.xx |
|  | Ø 2,00 | 71.108.20.xx |
|  | Ø 1,30 | 71.10.13.xx |
|  | Ø 1,80 | 71.10.18.xx |
|  | Ø 1,30 | 71.118.13.xx |
|  | Ø 2,00 | * 71.61A.20.xx |
|  | Ø 2,00 | * 71.61B.20.xx |



For **XXLonglife-Nanocoating**
order as **71X**

Series 71



Series 71

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 35,80 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 5,30 mm |
| Working Travel | 4,00 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 3,0 / 4,0 A |

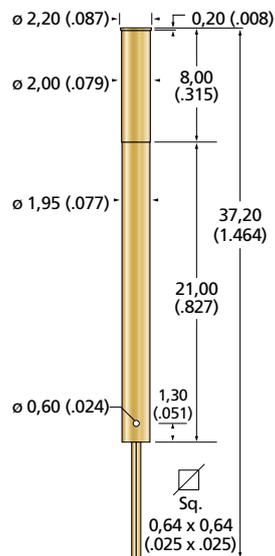
Materials

| | |
|---------|--------------------------------------|
| Plunger | Steel, gold plated or rhodium plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, gold plated |

Screwed spring contact probe for
pitch ≥ 2.54 mm.

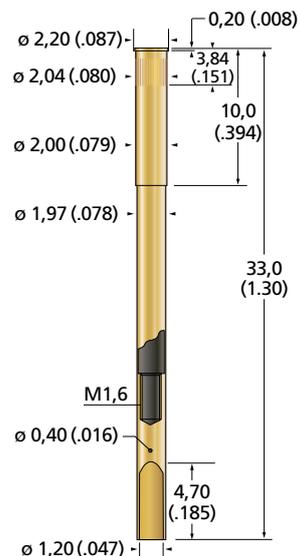
S 71.00-W

Wire-Wrap-Post with internal thread



S 71.00-L

Solder Cup with internal thread



Probes with reduced heads

| Ø mm | Code | H-Wert mm |
|--------|-------------------------|--------------|
| Ø 0,80 | 71.103.08H300.xx | 3,00 |
| Ø 0,60 | 71.105.06H500.xx | 5,00 |
| Ø 0,80 | 71.105.08H500.xx | 5,00 |

* Version A: Slot width 0,40 mm

* Version B: Slot width 0,30 mm

Collar types with predefined penetration depth

| Ø mm | Code | Z-Wert mm | T- / K-Wert mm |
|--------|-----------------------------|--------------|-------------------|
| Ø 0,70 | 71.103.07Z200T180.xx | 2,00 | 1,80 |
| Ø 1,50 | 71.103.15Z250T300.xx | 2,50 | 3,00 |
| Ø 0,80 | 71.05.08Z450T180.xx | 4,50 | 1,80 |
| Ø 1,00 | 71.05.10Z150T180.xx | 1,50 | 1,80 |
| Ø 1,00 | 71.05.10Z180T180.xx | 1,80 | 1,80 |
| Ø 1,00 | 71.105.10Z200T180.xx | 2,00 | 1,80 |
| Ø 1,00 | 71.105.10Z260T250.xx | 2,60 | 2,50 |

CABLE HARNESS TEST

CABLE HARNESS TEST
SERIES 71

Max. Current Load
4,0 A

Overall Length
35,80 mm

Working Travel
4,00 mm

Max. Travel
5,30 mm

Pitch
 $\geq 2,54$ mm ≥ 100 mil



Series 72

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 28,50 mm |
| Minimum Centre Spacing | 4,00 mm |
| Maximum Travel | 5,50 mm |
| Working Travel | 4,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 30 mΩ |
| Current Load rated/max. | 5,0 / 6,0 A |

Materials

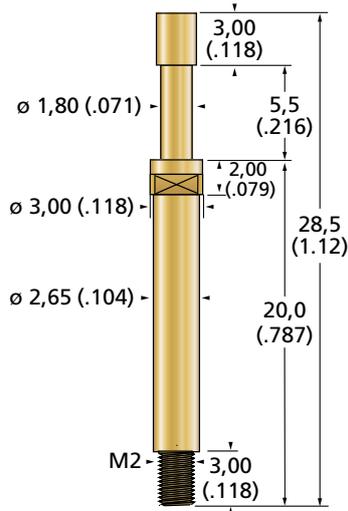
| | |
|---------|--------------------------------------|
| Plunger | Steel, gold plated or rhodium plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, gold plated |

Screwed spring contact probe for pitch ≥ 4.00 mm. Recommended torque 3 to 5 (max.) Ncm.

Screw-in-tool: IGL-TL-5 or IGL-TL-6.

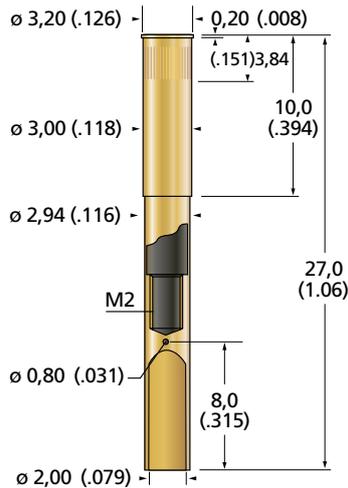
List of all tools on page 137.

Series 72



S 72.00-L

Solder Cup with internal thread



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|------|
| 0,3 N | 0,60 N | 06 |
| 0,4 N | 1,50 N | 15 |
| 0,5 N | 2,25 N | 23 |
| 0,6 N | 3,00 N | 30 |
| 1,0 N | 5,00 N | 50 |

| | | |
|--|--------|----------------------|
| | Ø 1,80 | 72.102.18.xx |
| | Ø 1,00 | 72.03.10.xx |
| | Ø 1,00 | 72.103.10.xx |
| | Ø 1,40 | 72.03.14.xx |
| | Ø 1,80 | 72.103.18.xx |
| | Ø 2,30 | 72.103.23.xx |
| | Ø 3,00 | 72.103.30.xx |
| | Ø 4,00 | 72.103.40.xx |
| | Ø 2,50 | 72.104.25.xx |
| | Ø 4,00 | 72.104.40.xx |
| | Ø 0,80 | 72.105.08H500.xx |
| | Ø 1,40 | 72.105.14H500.xx |
| | Ø 2,30 | 72.105.23.xx |
| | Ø 2,50 | 72.105.25.xx |
| | Ø 3,00 | 72.105.30.xx |
| | Ø 1,00 | 72.105.10Z400T350.xx |
| | Ø 1,40 | 72.105.14Z240T350.xx |
| | Ø 1,80 | 72.106.18.xx |
| | Ø 2,30 | 72.106.23.xx |
| | Ø 4,00 | 72.106.40.xx |
| | Ø 1,80 | 72.108.18.xx |
| | Ø 2,30 | 72.108.23.xx |
| | Ø 2,50 | 72.08.25.xx |
| | Ø 3,00 | 72.108.30.xx |
| | Ø 4,00 | 72.108.40.xx |
| | Ø 6,00 | 72.08.60.xx |
| | Ø 1,80 | 72.14.18.xx |
| | Ø 2,50 | 72.120.25.xx |
| | Ø 3,00 | 72.120.30.xx |



For **XXLonglife-Nanocoating**
order as **72X**

Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,7 N | 3,0 N | 30 |



Ø 2,30 **172.03.23.30**



Ø 4,00 **172.03.40.30**



Ø 2,30 **172.05.23.30**



Ø 2,30 **172.08.23.30**

Ø 3,00 **172.08.30.30**

Ø 4,00 **172.08.40.30**

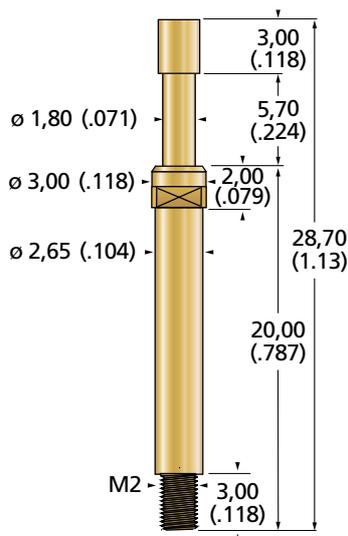


Ø 1,80 **172.14.18.30**



**For XXLonglife-Nanocoating
order as 172X**

Series 172



Series 172

Technical Data

| | |
|-------------------------|---------------|
| Overall Length | 28,70 mm |
| Minimum Centre Spacing | 4,00 mm |
| Maximum Travel | 5,50 mm |
| Working Travel | 4,40 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 5 mΩ |
| Current Load rated/max. | 20,0 / 24,0 A |

Materials

| | |
|---------|-------------------------|
| Plunger | CuBe, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, gold plated |

Outer dimensions of series 172 are identical to series 72, however the interior construction differs widely: The split plunger ensures a reliable continuous current transmission with high performance potential.

Receptacles of series 72 can be used.

Screw-in-tool: IGL-TL-5 or IGL-TL-6.
List of all tools on page 137.

CABLE HARNESS TEST

CABLE HARNESS TEST
SERIE 172

Max. Current Load
24,0 A

Overall Length
28,70 mm

Working Travel
4,40 mm

Max. Travel
5,50 mm

Pitch
≥ 4,00 mm ≥ 157 mil



Series 73

Technical Data

| | |
|-------------------------|-------------|
| Overall Length | 46,60 mm |
| Minimum Centre Spacing | 2,54 mm |
| Maximum Travel | 5,00 mm |
| Travel to switch point | 1,50 mm |
| Temperature Range from | -25°C |
| Up to | +80°C |
| Typical Resistance | 25 mΩ |
| Current Load rated/max. | 2,0 / 3,0 A |

Materials

| | |
|---------|----------------------------|
| Plunger | CuBe hardened, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, gold plated |

The Series 73 is a screw-fit Switch Probe. After a stroke of 1.5 mm, the piston reaches the switch point and the contact between connecting pin (which protrudes from the insulator below) and the housing is established.

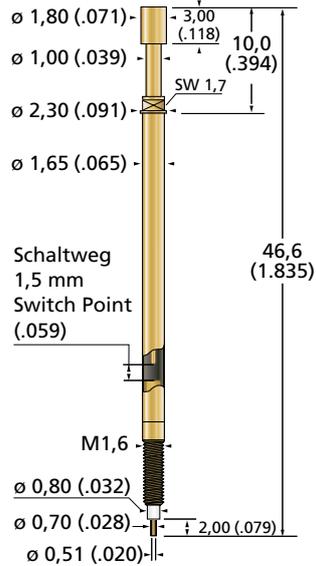
Typical applications are: presence control of components, length control of connector pins and many more.

The indication of the preload spring force is the force at the switching point. The Rated Force is achieved at 80% of the maximum stroke, being 4.0 mm.

Screw-in Tools: IGL-TL-1, IGL-TL-1B, IGL-TL-2 or IGL-TL-3.

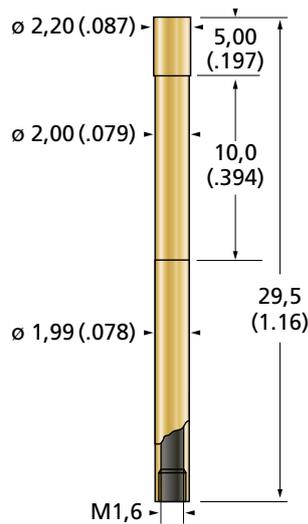
See descriptions on page 137.

Series 73



S 73.05-M

Open end with internal thread



Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 0,23 N | 0,8 N | 08 |
| 0,45 N | 1,5 N | 15 |
| 0,9 N | 3,0 N | 30 |

| | | |
|--|--------|---------------------|
| | Ø 1,00 | 73.103.10.xx |
| | Ø 1,80 | 73.03.18.xx |
| | Ø 1,80 | 73.203.18.xx |
| | Ø 1,80 | 73.04.18.xx |
| | Ø 1,00 | 73.05.10.xx |
| | Ø 1,80 | 73.108.18.xx |



For XXLlonglife-Nanocoating order as 73X

Spring Force (xx)

| Preload | Rated Force | Code |
|---------|-------------|-----------|
| 1,4 N | 2,0 N | 20 |
| 2,1 N | 3,5 N | 35 |
| 4,3 N | 9,0 N | 90 |

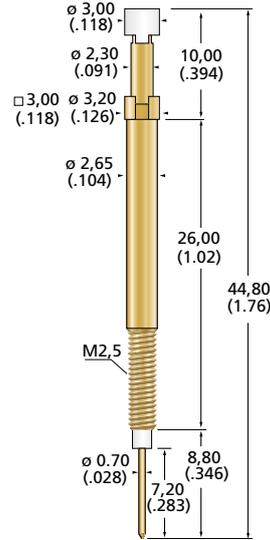
| | | |
|---|--------|------------------------|
|  | Ø 2,30 | 265E.03.23.xx |
|  | Ø 3,00 | 265E.03.30.xx |
|  | Ø 3,00 | 265E.03S.30.xx |
|  | Ø 3,50 | 265E.03S.35.xx |
|  | Ø 4,00 | 265E.103S.40.xx |
|  | Ø 4,50 | 265E.103S.45.xx |
|  | Ø 2,30 | 265E.203S.23.xx |
|  | Ø 3,00 | 265E.203S.30.xx |
|  | Ø 3,00 | 265E.203S.30.xx |
|  | Ø 3,50 | 265E.203S.35.xx |
|  | Ø 4,00 | 265E.203S.40.xx |
|  | Ø 4,50 | 265E.203S.45.xx |
|  | Ø 5,00 | 265E.203S.50.xx |
|  | Ø 5,90 | 265E.203S.59.xx |



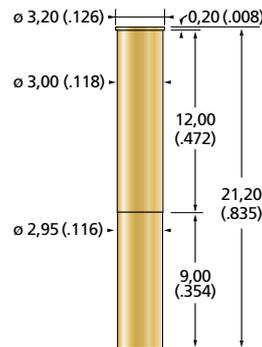
For **XXLonglife-Nanocoating** order as **265X**

Versions with supplementary „S“ feature a slotted head to screw in the probe using a screwdriver

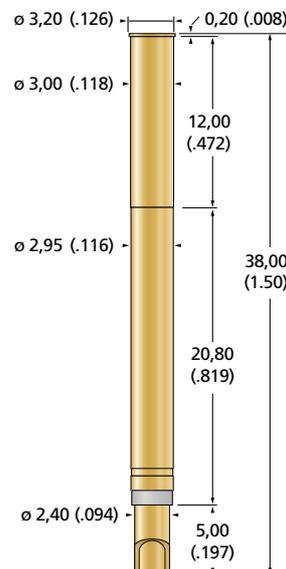
Series 265E



S 265.00-0



S 265.00-Q



Series 265E

Technical Data

| | |
|------------------------|----------|
| Overall Length | 44,60 mm |
| Minimum Centre Spacing | 3,50 mm |
| Maximum Travel | 5,30 mm |
| Travel to switch point | 1,70 mm |
| Temperature Range from | -55°C |
| Up to | +120°C |
| Typical Resistance | 30 mΩ |
| Current rating | 3,0 A |

Materials

| | |
|---------|-------------------------|
| Plunger | Steel, gold plated |
| Barrel | Brass, gold plated |
| Spring | Music wire, gold plated |

The Series 265E is a screw-fit Switch Probe. After a stroke of 1.7 mm, the piston reaches the switch point and the contact between connecting pin (which protrudes from the insulator below) and the housing is established.

Typical applications are: presence control of components, length control of connector pins and many more.

The indication of the preload spring force is the force at the switching point. The Rated Force is achieved at 80% of the maximum stroke, being 4.2 mm.

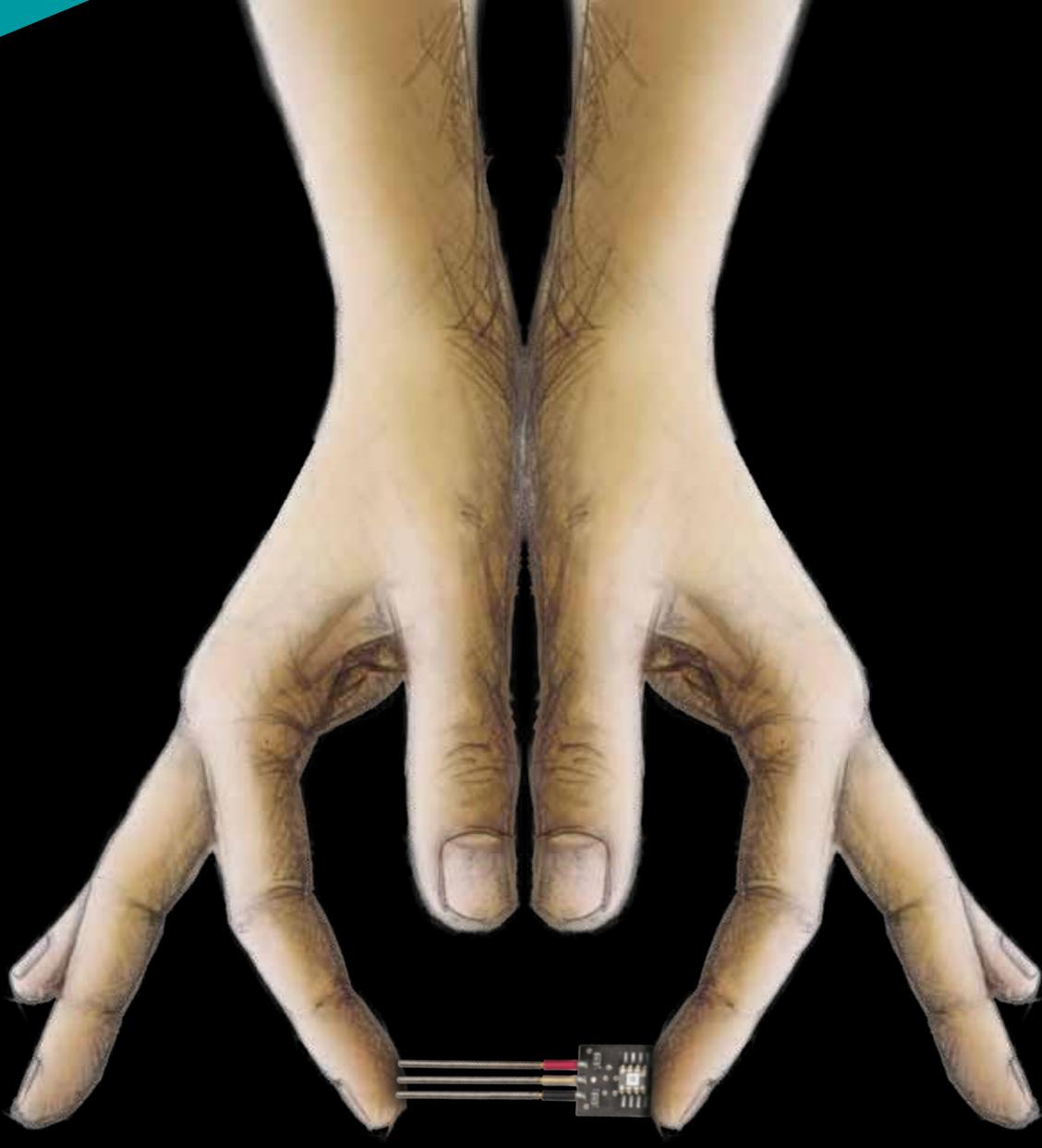
Screw-in Tools: IGL-TL-14.
See descriptions on page 137.

OPTICAL LED-CHECK

OPTICAL LED-CHECK

The FINN® sensors simplify the testing of LEDs enormously. Whether built in adapters for in-circuit test, MDA, or functional test - these modules allow you not only a function control of the LED, but also the verification of the correct color. The models Smart FINN® and Ultra FINN™ determine beyond both the brightness of the LED and the color of the emitted light in one measurement.





| Series | Page |
|-------------|------|
| FINN® | 130 |
| P-FINN® | 130 |
| Smart FINN® | 131 |
| Ultra FINN™ | 131 |

OVERVIEW

FINN[®]-SENSORS

LED-CHECK WITH FINN[®]-SENSORS

More and more electronic components using LEDs, and these need to be tested for function, brightness and correct color fast and reliably.

The obvious is to carry out the LED test during the in-circuit or functional test, which means to integrate the necessary sensors right to the test fixture.

The FINN sensors are especially suitable for this case and are ideal for fixture houses because they are extremely easy to use. Normally and different from other products, the FINN-sensors do not require additional optical fiber and can be installed directly in front of the LEDs on the UUT. Fitted to connection pins which match to common standard receptacles the FINN sensors make the installation and integration into a typical test fixture almost to a child's play.

THE PERFORMANCE CHARACTERISTICS OF FINN[®] SERIES AT A GLANCE:

The **Standard-FINN[®]s** allow the verification of a certain color value. Each sensor is calibrated to a specific color range (Green, Red, Blue, Clear, infrared) and gives as a result of measurement an output voltage which is easily interpreted as „Pass“ or „No Pass“.

Sensors of the **SMART FINN[®]** line - the name says it all - are more intelli-

FINN[®] - Colour Sensors

| | vertical | Colours | right angle |
|---|-----------------|----------|-----------------|
|  | TC2901VP | green | TC2901RP |
| | TC3001VP | red | TC3001RP |
| | TC2801VP | blue | TC2801RP |
| | TC2801VP | clear | TC8704RP |
| | TC8708VP | infrared | TC8708RP |

Easy installation in two 100 mil receptacles.

SMART FINN[®] - One Sensor, All Colours

| | vertical | Colours | right angle |
|---|-----------------|---------|-----------------|
|  | TC11SF-V | all | TC11SF-R |

Not only for color determination, but also to check the brightness of an LED. Extends across the entire color spectrum from infrared to ultraviolet. Easy installation in three standard receptacles for 100 MIL, as commonly in test fixtures.

SMART FINN[®] - For Plug Connectors

| | | |
|---|-----------------|-----|
|  | TC11SF-V | all |
| 3-Pin Header Connector Style | | |

gent. The **Smart FINN®** integrates four color sensors, thus covering the entire spectrum from infrared to Ultraviolet. In addition, the luminosity of the LED is measured. Both light values can be read from the same signal: the wavelength (color) as the frequency, and the brightness as the voltage of the signal. The **Smart FINN®** not only verifies a specific color, but „recognizes“ the color value of an LED.

The same features as the bigger little brother, but faster, more compact in size and better: The **Ultra FINN™**. The further developed following model of the successful Smart FINN® reliably measures the color and brightness values with improved performance and covers the entire color spectrum. With the socket **UF-SL** and due to its extremely small size the installation of an **Ultra FINN™** is done quick and easy. The **Ultra FINN™** is the best solution for fast and safe test of your LEDs.

Not intended to test the LEDs light, but with the functional principle of the standard FINN®s the **P-FINN®** is made for contactless and mechanicless inspection of position, color and presence of components on printed circuit boards or other devices. The **P-FINN®** combines an LED as a light source and a FINN® sensor and has both on board. The sensor is placed close to the object to be tested, and the integrated LED spotlights the surface of it. The sensor part of the **P-FINN®** detects the appropriate color and brightness values of the reflected light, and from these values the presence, correct position and so forth can be determined.

ULTRA-FINN® - Top-of-the-line

| | | Colours | | |
|--|--------------------------------------|---------|---|---|
|  | TCUF102 Packaged Sensor | all | TCUF102SL Set including sleeve UF-SL |  |
| <p>The ULTRA-FINN® sensor is the miniaturized further development of the SMART FINN® and determines the color and brightness of the detected light. High resolution and accurate test results.</p> | | | | |

Accessory: Sleeve UF-SL

The installation is ultra-simple: prepare a single mounting hole, insert UF-SL socket and just plug in the ULTRA-FINN® sensor - done! For the wiring of the socket side it is equipped with 3 wire-wrap posts.

P-FINN® - Component Presence Detection

| | | Colours | | |
|---|------------------|---------|-------------------------|--|
|  | P-FINN®-R | red | with red light source | |
| | P-FINN®-G | green | with green light source | |
| | P-FINN®-B | blue | with blue light source | |
| <p>The P-FINN® detects presence, location and color of objects by it's reflected light. Light source and sensor in one component!</p> | | | | |



**OPTICAL
LED-CHECK**

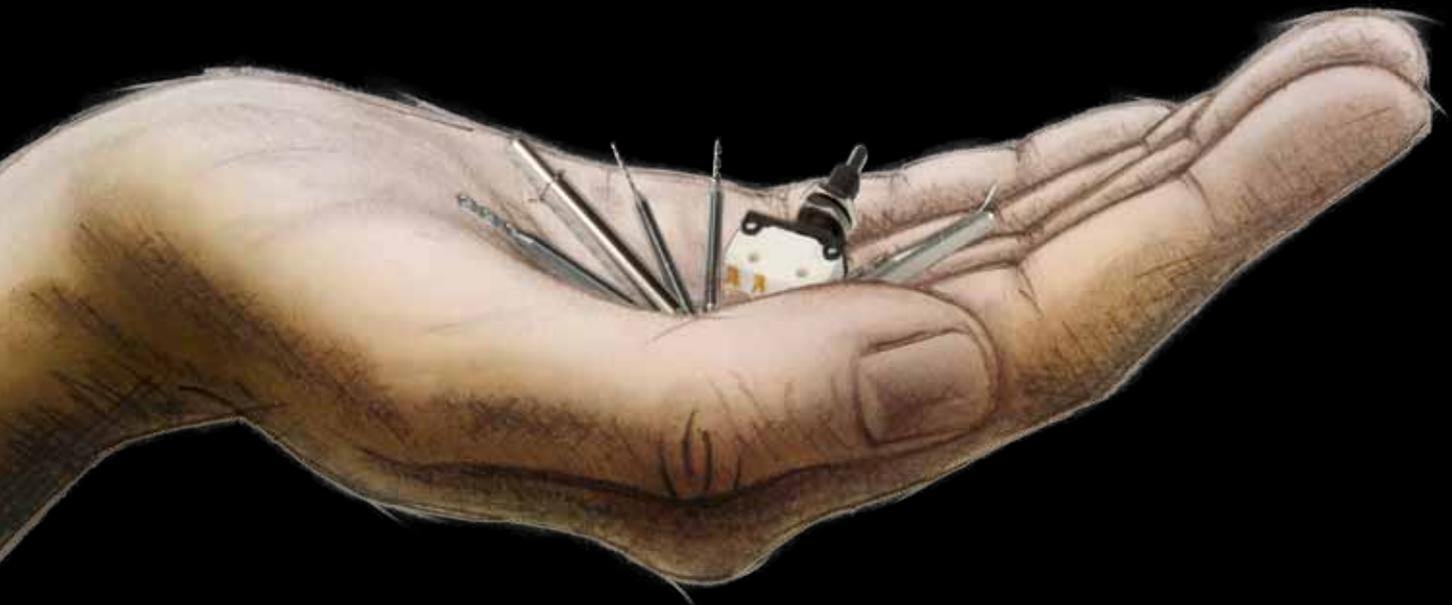


TOOLS & ACCESSORIES FOR TEST APPLICATIONS

Starting with insertion tools for receptacles and spring contacts, carbide drills with ,exotic' dimensions up to the spring force meter for checking the force of a test probe ... in our stock you can find lots of useful tools and accessories for the inspection and fixturing.

You look for adjustable tooling and positioning aid? Or are you looking for ergonomic insertion aid for manual loading of test jigs? Components of this kind can be found in this chapter. And as for the entire catalog also applies here: If you are looking for something that you can't find here, please ask us. Our product range is constantly expanding and therefore includes much of what is not shown here.







SOLID CARBIDE DRILLS

Accurate mounting holes for receptacles are the first requirement for a properly functioning test application. As a service to our customers, we deliver high-quality solid carbide drills that fit our spring contact types. On page 150 you'll find a summary list and further recommendations.



SPECIAL TOOLS

Receptacles and spring contacts require a careful use and handling over the whole process of fixture making. Special tools help you in this precision engineering work. You can find an overview of the insertion tools for contacts and receptacles on the pages 136 and 137.



ACCESSORIES FOR TEST FIXTURING

Your own in-house fixture department requires special aids and products that are not found in the normal tool dealers? Your search has a successful end here, and besides numerous products, you find also the necessary advice from us. Feel free to contact us!



DESIGN AND MAINTENANCE OF TEST FIXTURES

Many electronics manufacturers obtain their test fixtures from specialized providers; others buy only fixture kits and do the finishing in-house. For that reason they require specific components made for that task. Maybe repairs have to be done, or modifications due to changes on the tested product are in the pipeline. In all such cases, we are with help and advice at your side: on one hand with practical special products, on the other, with a rounded range of services specifically for the test area.

DRILLING AND MILLING

You need a quick and easy solution for a fixture plate, drilled precisely and with the receptacles already installed? Nothing is easier! Just send us your PCB data and, if desired, the plate material (you can choose if you want to consign the plate material, or whether we shall support you with the full job just based on data). Within a few days you'll get the finished plate of us. You have all the options: as a fully assembled and wired unit, or just drilled and filled, but without wiring, or even drilled for self-assembly. Our service is tailored to your needs.

Of course, we can also offer milling and routing services - the selection of materials is large: from standards like glass fiber reinforced plastics such as FR4 (G10 and G11), followed by EP105 (epoxy laminated paper), over high-tech plastics such as PEEK or machinable ceramics to light and non-ferrous metals such as aluminum or brass we make parts that fit for your application.

Our strength lies in the field of precision mechanical parts, primarily for testing and/or in combination with our contact products. It is not our aim to compete with specialized service providers in the field of CNC milling technology - for this capacities are too precious. We focus on the work that make too much effort for the „normal“ supplier in this field, often requiring very high spindle speeds and standing out from the usual type of parts.

MICRO ASSEMBLY

You have found in the catalog optimum fine pitch contact for your application? But you frighten back due to the complex task of processing these small parts? Our team of experienced assemblers has the appropriate procedures

and the necessary skills that it takes to both precisely and inexpensive assemble for example, a test socket in the grid of 0.4 mm with several hundred contacts.

For our customers we provide services like re-loading, alterations and additions to existing contact arrays, as well as cleaning and maintenance jobs and so on.

TEST HEADS, TEST SOLUTIONS

The classic PCB Test Fixture - usually in the form of a vacuum adapter - is not our core business. This market is well staffed with capable providers, and some of them are among our valued customers for spring contacts.

But there are many testing tasks beyond this range, and very often these problems can be solved only by specially tailor-made or bespoke special contacts, produced and integrated into the overall solution. This can be, for example test heads that are integrated into an automated assembly line. Or socket-like fine-pitch test assemblies, integrated in a conventional test fixture but responsible for a dedicated area on the UUT. Or highly specialized devices for high voltage testing of electronic loads for determining the efficiency of solar cells and, and, and ...

Through the interaction of our own spring contact manufacturing, as well as our own special design-team supported by supplementing external partners, we were able to complete successfully a large number of complex projects for clients in the industry, university labs or research institutes.

We are curious about your specific requirements! Please send them to our technical team at:

Phone +49 (0) 7733.50 56-0
technical-support@fixtest.de

RECEPTACLE INSERTION TOOLS

INSERTION TOOLS FOR RECEPTACLES

For the press-fit insertion of receptacles we have appropriate setting tools for most of our series. With these tools you achieve better results with less risk of damaging the expensive drill plate.

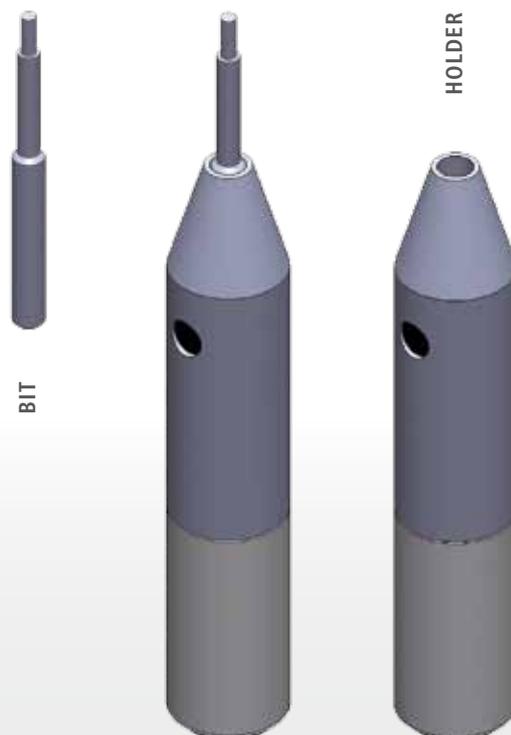
In addition to setting tools for individual series (table below), we also offer a tool with changeable bits. This consists of a holder and replaceable inserts (bits) for different inner diameter of the receptacles.

Changeable insertion tool system

| Suitable for receptacle series | Tool-Ø (mm) | Part-No. |
|---|-------------|--------------------|
| - | - | SEW-Holder |
| 831 702 701 | 0,27 | SEW-831.027 |
| 840 838 703 835 | 0,34 | SEW-838.034 |
| 705 105 704 | 0,44 | SEW-848.044 |
| 706 106 858 848 | 0,54 | SEW-106.054 |
| 108 | 0,64 | SEW-107.064 |
| 07 071 141 15 700 707 708 872 | 0,68 | SEW-07.068 |
| 18 75 | 1,00 | SEW-75.100 |
| 21 29 100 211 | 1,37 | SEW-100.137 |

Single series tools

| Suitable for receptacle series | Part-No. |
|--------------------------------|---------------|
| 26 | SEW-26 |
| 27 | SEW-27 |
| 30 | SEW-30 |
| 50 | SEW-50 |



SCREW-IN-TOOLS SCREWED PROBES

SCREW-IN-TOOLS FOR SCREWED PROBES

To screw in our screw-type pins, special tools are used.

Related to the series and the head-diameter of the probe several different screw-in tools are needed and available.

| Suitable for receptacle series | Max. Head Ø (mm) | Tool type | Part-No. |
|--------------------------------|------------------|-----------|-----------|
| 70 | 1,50 | SO | IGL-TL-8 |
| 70 | 2,00 | SC | IGL-TL-7 |
| 71 | 1,80 | SC | IGL-TL-1 |
| 71 | 2,00 | SC | IGL-TL-1B |
| 71 | 2,60 | SO | IGL-TL-2 |
| 71 | 2,70 | RS | IGL-TL-3 |
| 72 172 | 3,10 | SC | IGL-TL-6 |
| 72 172 | 4,00 | SO | IGL-TL-5 |
| 73 | 1,80 | SC | IGL-TL-1 |
| 73 | 2,00 | SC | IGL-TL-1B |
| 73 | 2,60 | SO | IGL-TL-2 |
| 73 | 2,70 | RS | IGL-TL-3 |
| 265E | 2,40 | T | IGL-TL-14 |



METHODS AND CLEANSING AGENTS FOR CLEANING AND MAINTENANCE OF CONTACTS

Physical and chemical alterations in the surface of electronic connectors are the major cause of reduced performance and equipment failures of components and devices. Contact surfaces that are constantly exposed to contaminants in the ambient atmosphere can form non-metallic films, which deteriorate the conductivity. Oxidation is the most common reaction that leads to formation of metal-oxides. Metals corrode due to aggressive components of air, forming chloride films. While private users can live with these problems for some time, even minor problems in industrial applications - or for example in aviation systems - are already unacceptable. Some of these films can be removed on the principle of „contact washing“ with common detergents or alcohol. The oxides and sulphides, however, can not be removed by ordinary cleaning agents.

The most effective method for removing such films is the chemical activation. The DeoxIT series of CAIG Laboratories, Inc. dissolves oxides and sulfides formed on the metallic contact areas, and the causes of increased electrical resistance are thereby removed.

The signal integrity is restored, and at the same time DeoxIT leaves a thin organic layer which protects the metal. Special additives prevent that dissolved oxides set back to the surface. The unique properties of DeoxIT allow the use on fixed as well as on moving contacts, and connectors or switches with similar or dissimilar surface coatings can be treated. Even if a surface that is treated with DeoxIT contacts on an untreated surface, the active ingredient migrates self-acting and coats the other surface as well. If connections are separated, DeoxIT automatically wets the exposed surface areas.

All this is true, and even more in the area of testing. We have received reports of most extraordinary cleaning methods that test engineers came up with to make a failed adapter to get back to work. If the failure happened in the middle of the series production, haste is called for.

With a little luck this can also work - but this effect is usually of short duration and so you push the problem still ahead of it. We have addressed this issue and created a product kit optimized for the maintenance of test pins with contact cleaners. These products are also the only ones we allow in the sense of a warranty for our products. Usage is simple and safe, the effect in contrast strikingly clear.

If you have questions about contact maintenance - especially in the area of testing - you can call us or send a mail. Do not wait until problems can already be seen, but do preventive steps before ... then you will see your production running smoothly and round!

contact@fixtest.de

NANOTEK-BRUSHES

The Nanotek Brushes from KITA are a proven and highly valued tool in the semiconductor industry for years. Their extremely fine bristles made of stainless steel or brass remove dirt deposits from contact surfaces without damaging the gold and nickel layers deeply.



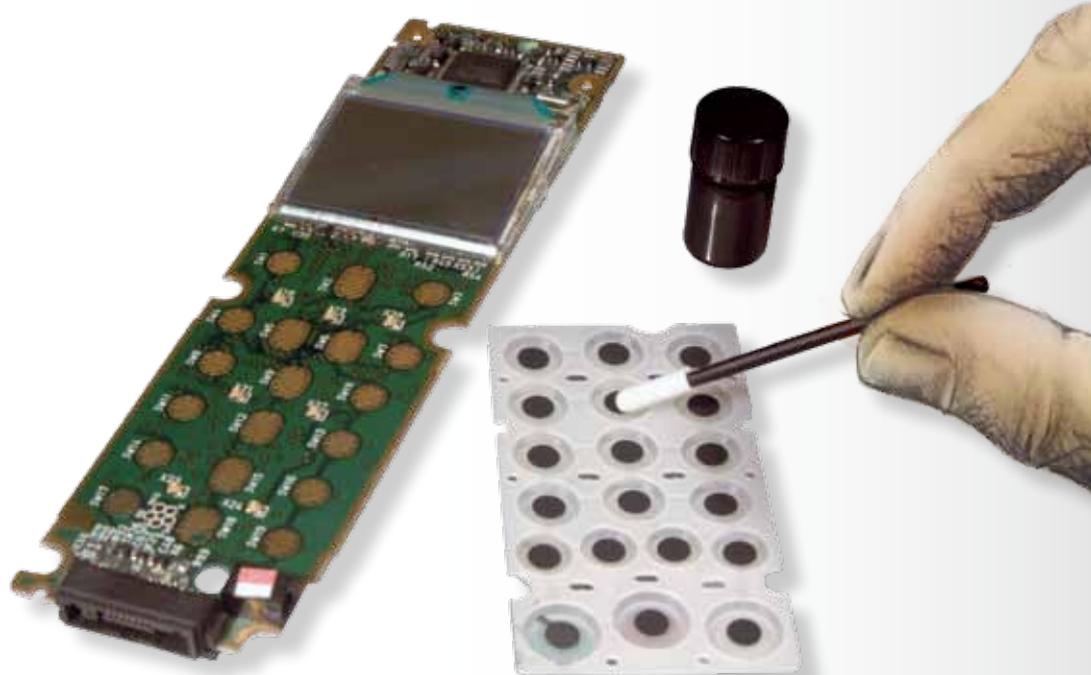
MAINTENANCE SUBSTANCES

The family of DeoxIT products with their practical applicators as an alternative to spray provides an optimal solution for every application. These care substances not only clean, but provide long-lasting protection of the treated contact surfaces. That's why we're not talking about contact cleaners, but contact enhancers and rejuvenating agents.



REGULAR CARE

Spring contact probes and other test contact assemblies not only last longer but also provide more reliable and accurate results when they are regularly maintained. We're glad to advise about the „how“ and „by which“.



DRILL SIZE TABLE

| Series | Installation Method | Drill Size (mm) for FR4 | Part-No. | Drill Size (mm) for CEM1 | Part-No. |
|--------|---------------------|----------------------------|----------|-----------------------------|----------|
| 07 | flush inserted | 0,90 | 500-0090 | 0,90 | 500-0090 |
| | stop ring | 0,88 | 500-0088 | 0,87 | 500-0087 |
| 071 | flush inserted | 0,90 | 500-0090 | 0,90 | 500-0090 |
| | stop ring | 0,88 | 500-0088 | 0,87 | 500-0087 |
| 15 | flush inserted | 1,00 | 500-0100 | 0,99 | 500-0099 |
| | stop ring | 0,99 | 500-0099 | 0,99 | 500-0099 |
| 18 | flush inserted | 1,35 | 500-0135 | 1,35 | 500-0135 |
| | stop ring | 1,31 | 500-0131 | 1,31 | 500-0131 |
| 21 | flush inserted | 1,72 | 500-0172 | 1,72 | 500-0172 |
| | stop ring | 1,67 | 500-0167 | 1,67 | 500-0167 |
| 26 | flush inserted | 2,45 | 500-0245 | 2,40 | 500-0240 |
| | stop ring | 2,38 | 500-0238 | 2,38 | 500-0238 |
| 27 | flush inserted | 2,75 | 500-0275 | 2,75 | 500-0275 |
| | stop ring | 2,72 | 500-0272 | 2,72 | 500-0272 |
| 28 | flush inserted | 3,60 | 500-0360 | 3,60 | 500-0360 |
| | stop ring | 3,57 | 500-0357 | 3,57 | 500-0357 |
| 29 | flush inserted | – | – | – | – |
| | stop ring | 1,75 | 500-0175 | 1,72 | 500-0172 |
| 30 | flush inserted | – | – | – | – |
| | stop ring | 2,00 | 500-0200 | 2,00 | 500-0200 |
| 50 | flush inserted | – | – | – | – |
| | stop ring | 3,00 | 500-0300 | 3,00 | 500-0300 |
| 51 | flush inserted | – | – | – | – |
| | stop ring | 3,00 | 500-0300 | 3,00 | 500-0300 |
| 60 | flush inserted | – | – | – | – |
| | stop ring | 3,50 | 500-0350 | 3,50 | 500-0350 |
| 70 | flush inserted | – | – | – | – |
| | stop ring | 1,70 | 500-0170 | 1,69 | 500-0169 |
| 71 | flush inserted | – | – | – | – |
| | stop ring | 2,02 | 500-0202 | 2,00 | 500-0200 |
| 72 | flush inserted | – | – | – | – |
| | stop ring | 3,00 | 500-0300 | 3,00 | 500-0300 |
| 73 | flush inserted | – | – | – | – |
| | stop ring | 2,00 | 500-0200 | 2,00 | 500-0200 |
| 75 | flush inserted | 1,35 | 500-0135 | 1,35 | 500-0135 |
| | stop ring | 1,31 | 500-0131 | 1,31 | 500-0131 |
| 100 | flush inserted | 1,72 | 500-0172 | 1,72 | 500-0172 |
| | stop ring | 1,67 | 500-0167 | 1,67 | 500-0167 |
| 108 | flush inserted | 0,80 | 500-0080 | 0,79 | 500-0079 |
| | stop ring | 0,79 | 500-0079 | 0,78 | 500-0078 |
| 141 | flush inserted | 0,98 | 500-0098 | 0,98 | 500-0098 |
| | stop ring | 0,96 | 500-0096 | 0,96 | 500-0096 |
| 211 | flush inserted | 1,72 | 500-0172 | 1,72 | 500-0172 |
| | stop ring | 1,67 | 500-0167 | 1,67 | 500-0167 |



MATERIALS

Material Properties

| | FR4 | CEM1 |
|---------------------------------------|--------------------|------|
| Density (g/cm ³) | 1,7 - 1,9 | 1,54 |
| Moisture absorption (%) | 0,15 | 0,15 |
| Thermal conductivity (W/m K) | 0,30 | 0,20 |
| Operating temperature, long term (°C) | 155 | 130 |
| Surface resistance (Ω) | 5*10 ¹⁰ | — |

| Diameter (mm) | Speed (RPM * 1000) | | Feed rate (m/min) | | Feed (mm PR) | | Return Stroke rate (m/min) | |
|---------------|--------------------|------|-------------------|------|--------------|-------|----------------------------|------|
| | FR4 | CEM1 | FR4 | CEM1 | FR4 | CEM1 | FR4 | CEM1 |
| 0,10 | 80 | 80 | 0,6 | 0,6 | 0,007 | 0,007 | 2 | 2 |
| 0,15 | 80 | 80 | 0,8 | 0,8 | 0,011 | 0,011 | 4 | 4 |
| 0,20 | 80 | 80 | 1,1 | 1,1 | 0,014 | 0,014 | 6 | 6 |
| 0,25 | 80 | 80 | 1,4 | 1,4 | 0,018 | 0,018 | 8 | 8 |
| 0,30 | 80 | 80 | 1,7 | 1,7 | 0,021 | 0,021 | 10 | 10 |
| 0,35 | 80 | 80 | 2,0 | 2,0 | 0,025 | 0,025 | 12 | 12 |
| 0,40 | 80 | 80 | 2,2 | 2,2 | 0,028 | 0,028 | 14 | 14 |
| 0,45 | 80 | 80 | 2,5 | 2,5 | 0,032 | 0,032 | 16 | 16 |
| 0,50 | 80 | 80 | 2,8 | 2,8 | 0,035 | 0,035 | 18 | 18 |
| 0,55 | 80 | 72 | 3,1 | 2,8 | 0,039 | 0,039 | 20 | 20 |
| 0,60 | 80 | 66 | 3,4 | 2,8 | 0,042 | 0,042 | 25 | 25 |
| 0,65 | 80 | 61 | 3,6 | 2,8 | 0,046 | 0,046 | 25 | 25 |
| 0,70 | 80 | 57 | 3,9 | 2,8 | 0,049 | 0,049 | 25 | 25 |
| 0,75 | 74 | 53 | 3,9 | 2,8 | 0,053 | 0,053 | 25 | 25 |
| 0,80 | 70 | 50 | 3,9 | 2,8 | 0,056 | 0,056 | 25 | 25 |
| 0,85 | 66 | 47 | 3,9 | 2,8 | 0,060 | 0,060 | 25 | 25 |
| 0,90 | 62 | 44 | 3,9 | 2,8 | 0,063 | 0,063 | 25 | 25 |
| 0,95 | 59 | 42 | 3,9 | 2,8 | 0,066 | 0,066 | 25 | 25 |
| 1,00 | 56 | 40 | 3,9 | 2,8 | 0,070 | 0,070 | 25 | 25 |
| 1,10 | 51 | 36 | 3,9 | 2,8 | 0,077 | 0,077 | 25 | 25 |
| 1,20 | 46 | 33 | 3,9 | 2,8 | 0,084 | 0,084 | 25 | 25 |
| 1,30 | 43 | 31 | 3,9 | 2,8 | 0,091 | 0,091 | 25 | 25 |
| 1,40 | 40 | 28 | 3,9 | 2,8 | 0,098 | 0,098 | 25 | 25 |
| 1,50 | 37 | 27 | 3,7 | 2,7 | 0,100 | 0,100 | 25 | 25 |
| 1,60 | 35 | 25 | 3,5 | 2,5 | 0,100 | 0,100 | 25 | 25 |
| 1,70 | 33 | 23 | 3,3 | 2,3 | 0,100 | 0,100 | 25 | 25 |
| 1,80 | 31 | 22 | 3,1 | 2,2 | 0,100 | 0,100 | 25 | 25 |
| 1,90 | 29 | 21 | 2,9 | 2,1 | 0,100 | 0,100 | 25 | 25 |
| 2,00 | 28 | 20 | 2,8 | 2,0 | 0,100 | 0,100 | 25 | 25 |
| 2,10 | 27 | 19 | 2,7 | 1,9 | 0,100 | 0,100 | 25 | 25 |
| 2,20 | 25 | 18 | 2,5 | 1,8 | 0,100 | 0,100 | 25 | 25 |
| 2,30 | 24 | 17 | 2,4 | 1,7 | 0,100 | 0,100 | 25 | 25 |
| 2,40 | 23 | 17 | 2,3 | 1,7 | 0,100 | 0,100 | 25 | 25 |
| 2,50 | 22 | 16 | 2,2 | 1,6 | 0,100 | 0,100 | 25 | 25 |
| 2,60 | 21 | 15 | 2,1 | 1,5 | 0,100 | 0,100 | 25 | 25 |
| 2,70 | 21 | 15 | 2,1 | 1,5 | 0,100 | 0,100 | 25 | 25 |
| 2,80 | 20 | 14 | 2,0 | 1,4 | 0,100 | 0,100 | 25 | 25 |
| 2,90 | 19 | 14 | 1,9 | 1,4 | 0,100 | 0,100 | 25 | 25 |
| 3,00 | 19 | 13 | 1,9 | 1,3 | 0,100 | 0,100 | 25 | 25 |
| 3,10 | 18 | 13 | 1,8 | 1,3 | 0,100 | 0,100 | 25 | 25 |
| 3,175 | 18 | 13 | 1,8 | 1,3 | 0,100 | 0,100 | 25 | 25 |
| 3,20 | 17 | 12 | 1,7 | 1,2 | 0,100 | 0,100 | 25 | 25 |
| 3,30 | 17 | 12 | 1,7 | 1,2 | 0,100 | 0,100 | 25 | 25 |
| 3,40 | 16 | 12 | 1,6 | 1,2 | 0,100 | 0,100 | 25 | 25 |
| 3,50 | 16 | 11 | 1,6 | 1,1 | 0,100 | 0,100 | 25 | 25 |
| 3,60 | 15 | 11 | 1,5 | 1,1 | 0,100 | 0,100 | 25 | 25 |
| 3,70 | 15 | 11 | 1,5 | 1,1 | 0,100 | 0,100 | 25 | 25 |
| 3,80 | 15 | 10 | 1,5 | 1,0 | 0,100 | 0,100 | 25 | 25 |
| 3,90 | 14 | 10 | 1,4 | 1,0 | 0,100 | 0,100 | 25 | 25 |
| 4,00 | 14 | 10 | 1,4 | 1,0 | 0,100 | 0,100 | 25 | 25 |

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