

## Competence and Quality

FEINMETALL is your competent partner for the reliable contacting of electronic components. Our product portfolio includes spring contact probes as well as test fixtures and probe cards for wafer testing. This combination is outstanding in the market and provides a great competence in the field of precision technology and micro-mechanics, leading to innovative and successful products.



Spring contact probes are very sophisticated products in terms of precision, continuous quality and compliance of tolerances. Decades of experience in the field of precision manufacturing, a wide range of special machinery and the high competence in production processes ensure the constant high quality of our products.

To achieve our goal of high quality and innovation, the whole process from the first idea to the final contact probe needs to be taken into consideration. Therefore FEINMETALL performs extensive simulations and analyses during research and development as well as in manufacturing processes and quality control.

## International Customer Service

Our worldwide network of subsidiaries and representations makes sure that our customers have competent consultancy and an optimum of service and support. Our goal is to offer competent consulting on site and an excellent delivery performance on a global base.



## Quality Management

The Quality Management joins high priority at FEINMETALL, because the quality and reliability of our products are the most important success factors. FEINMETALL is certified to DIN ISO 9001:2000 and – specifically for the spring contact probe products – to VDA 6.1, the German Automotive Industry Standard.



## Table of Contents

|                                 |            |
|---------------------------------|------------|
| <b>Technology</b>               | <b>2-5</b> |
| <b>Tip Styles</b>               | <b>6-7</b> |
| <b>Receptacles and Mounting</b> | <b>8</b>   |
| <b>Overview ICT / FCT</b>       | <b>9</b>   |

### Probes for ICT / FCT

|                                |              |
|--------------------------------|--------------|
| <b>Progressive Series</b>      | <b>10-11</b> |
| <b>Standard ICT/FCT Probes</b> | <b>12-26</b> |
| <b>Overview Isolation Caps</b> | <b>27</b>    |
| <b>Robust ICT/FCT Probes</b>   | <b>28-31</b> |
| <b>Rotating Probes</b>         | <b>32</b>    |
| <b>Flying Probe Needle</b>     | <b>33</b>    |
| <b>Test Jets</b>               | <b>34-35</b> |
| <b>Bead Probes</b>             | <b>36</b>    |

|                          |              |
|--------------------------|--------------|
| <b>Fine Pitch Probes</b> | <b>37-41</b> |
|--------------------------|--------------|

|                            |              |
|----------------------------|--------------|
| <b>Short Travel Probes</b> | <b>42-48</b> |
|----------------------------|--------------|

|                         |              |
|-------------------------|--------------|
| <b>Interface Probes</b> | <b>49-54</b> |
|-------------------------|--------------|

|                         |              |
|-------------------------|--------------|
| <b>Pneumatic Probes</b> | <b>55-56</b> |
|-------------------------|--------------|

### Probes for Wire Harness and Connector Test

|                                      |                |
|--------------------------------------|----------------|
| <b>Applications</b>                  | <b>58-63</b>   |
| <b>Threaded Probes / Step Probes</b> | <b>64-78</b>   |
| <b>Switch Probes</b>                 | <b>79-93</b>   |
| <b>Twist Proof Probes</b>            | <b>94-101</b>  |
| <b>Push Back Probes</b>              | <b>102-106</b> |
| <b>High Current Probes</b>           | <b>107-115</b> |
| <b>Kelvin Probes</b>                 | <b>116-126</b> |
| <b>High Frequency Probes</b>         | <b>127-128</b> |

|                            |                |
|----------------------------|----------------|
| <b>Tools / Accessories</b> | <b>129-132</b> |
|----------------------------|----------------|

|                                |            |
|--------------------------------|------------|
| <b>Overview Contact Probes</b> | <b>133</b> |
|--------------------------------|------------|

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Different Types of Spring Contact Probes

FEINMETALL is offering a wide range of spring contact probes for a great variety of applications, including standardized probes for In-Circuit-Test and Functional Test, complex contact probes for Wire Harness and Connector Test and individual customized solutions. Here is a brief overview of the most important types of spring contact probes.

### ICT/FCT probes for test fixtures

At test fixtures for In-Circuit-Test (ICT) und Functional Test (FCT) mainly standard probes for the centers 50mil, 75mil und 100mil are used.

### Short Travel Probes

These probes are characterized by a very short travel of up to 2 mm. A very slender design is used for the test of fine pitch components. Short travel probes with larger diameters are used as battery contacts for boards and electronic devices.

### Interface Probes

The interface between test fixture and test system is usually realized by interface probes which are specifically standardized for each test system.

### Pneumatic Probes

For selective contacting of single test points or for contacting test points with limited access, it can be helpful to

use pneumatic probes, operated by compressed air. In this case the spring only has a pull back function.

### Threaded Probes

Contact probes with thread are mainly used in modules for the test of wire harnesses and connectors. The advantage is that even under difficult conditions the probes do not move out of the receptacle and so a secure seat in the module or fixture is guaranteed. Threaded probes can be screwed into the receptacles by using the corresponding tools.

### High Current Probes

For high current applications spring contact probes need to be designed for a very small probe resistance. High current probes are available in different versions. In probes with a split plunger the contact between barrel and plunger is optimized. Probes with continuous plungers allow even higher current values.

### Switch Probes

Special probes with integrated switch element are mainly used for presence tests. Switch probes close or open an electric circuit after a defined travel of the plunger (switch travel). For non-conductive contacting switch probes are available with various insulated tips. For quick and solderless replacement of switch probes FEINMETALL provides specific combi-receptacles (KB).

### Push Back Probes

During the push back test of connectors the tight seat of the connector elements is verified. For this application contact probes with very high spring forces are used.

### Kelvin Probes

Very low resistances of components (or e.g. relays) are measured by the „Kelvin 4-wire measurement“. For this application the connection of the current source and the voltmeter need to be very close to the component because otherwise the resistance of the conductors are leading to false results. These connections can be realized by special coaxial probes (Kelvin Probes), using the outer conductor for the constant current and the inner conductor for measuring the drop in voltage.

### High Frequency Probes

In many test applications, like testing HF-connectors, high frequency signals need to be transmitted. To carry these signals special coaxial contact probes are used. The coaxial probes have an inner conductor for the transmission of the signal and an outer conductor for the electromagnetic shielding.



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



## Design of a spring contact probe

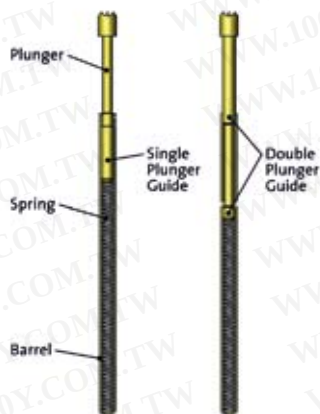
Spring contact probes are typically made of a plunger, a barrel and a spring. FEINMETALL is producing contact probes with single plunger guide and with double plunger guide. Probes with single guide are built with a crimped flange at the top of the barrel. These probes are regarded as international standard for ICT/FCT probes. Spring contact probes with double guide are built with a crimped flange in the upper third of the barrel. Thereby the plunger is guided at the flange and additionally at the end of the barrel.

### Plunger

FEINMETALL manufactures plungers with many different tip styles, suitable for a large variety of applications (see pages 6 and 7). Plungers are generally made from beryllium copper (BeCu) or steel. Aggressive tip styles are made by a special grinding process for ultra sharp edges. Optimized turning and plating processes are resulting in an outstanding straightness and exactness of the plunger surface, the base for a long lifetime.

### Barrel

FEINMETALL barrels are made of nickel-silver, bronze or brass. Nickelsilver barrels are deep-drawn whereas barrels made of bronze are turned or deep-drawn and barrels of brass are turned. All barrels are usually silver or gold plated. A small hole in the bottom permits the barrels to be thoroughly cleaned during manufacturing and ensures continuous wetting in the plating process.



### Spring

During the early years FEINMETALL developed long-life springs for the clock industry and subsequently made use of this knowledge in the manufacturing of spring contact probes. Compression springs are normally made of silver plated music wire or stainless steel, for some special applications also of non-magnetic beryllium copper. Springs made of music wire have a working temperature up to a maximum of 80°C (176°F) while stainless steel springs can be operated up to 250°C (482°F) and springs made of BeCu up to 200°C (392°F).

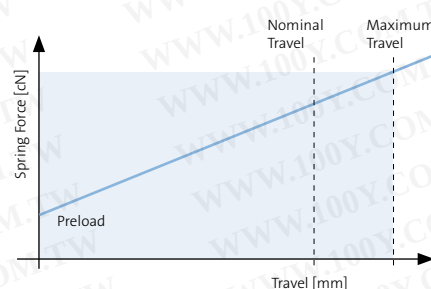
### Spring Force

The selection of the spring force mainly depends on the application. On the one hand the spring force needs to ensure the quality of the electrical contact and the penetration of contaminations or oxide layers. On the other hand it should not lead to any damages on the contacting surface or on the board. It needs to be taken into consideration that the

same spring force with one sharp tip has four times the force as a tip style with a four point crown head with four contact points. In test fixtures (especially vacuum fixtures) the sum of all spring forces has to be observed in order to close the fixture and the contacts without problems.

### Spring Travel

The spring force increases proportional to the spring travel. This linear function is shown in the force-travel-diagram. During the assembly of the probe the spring is already compressed by a certain travel. The resulting spring force is called preload. The preload makes sure that there is a certain force right from the beginning of the contacting process. Also it makes sure that the plunger is completely pushed back after the contacting. The nominal spring force is the spring force at the recommended working travel. The recommended working travel should not be exceeded significantly, because otherwise the life time of the probe could be considerably reduced.



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Materials and Plating

The optimum performance of a spring contact probe is significantly depending on the selection and combination of materials and plating. Developing, testing and qualifying of materials for the various applications is an important aspect of our research and development efforts.

## Plating Material

Typically the surfaces of all elements of spring contact probes are galvanically plated in order to protect the basic material against corrosion. At the assembled spring contact probe the plating also reduces friction and thereby leads to low abrasion and low contact resistances. FEINMETALL plating materials are basically galvanic nickel, chemical nickel, gold, rhodium or silver. To achieve the maximum performance the ideal selection and combination of coating materials, coating thickness, coating alloys as well as various boundary processes have to be made.

### Galvanic Nickel

has a good chemical durability and hardness. It is not brittle and adheres well to the base material. Nickel also prevents the base material from migrating into the precious metal surface and contaminating it.

### Chemical Nickel

has a very good chemical durability and a hardness of at least 700HV ('60HRC). Chemical nickel is most appropriate for aggressive tip styles, because it has a good contouring capability and wear resistance as well as high ductility.

### Gold

guarantees the best chemical durability, but its hardness is 150-200HV ('85HRB) only. Gold considerably improves the contact resistance.

### Silver

is used as a bearing surface and as corrosion protection for barrels and springs. The hardness of the silver layer is 60HV ('70HRB) only, but it adheres very well to the base material, improving the electrical conductivity.

### Rhodium

is extremely resistant to wear and abrasion. Due to its hardness of 600 to 1000HV ('55 to 70HRB) it is plated on plungers which are used in very rough applications.

### FM Longtime Gold

is a special gold plating for steel plungers developed by FEINMETALL. The combination of steel and FM Longtime Gold results in a high performance and a long lifetime, even at heavy load applications.

## Progressive Coating

is a new coating for contacting lead-free soldering pads and other contaminated or oxidized surfaces. This coating is characterized by very low contamination of the tip and thereby it leads to a very long lifetime of the probes.

## Electrical Specifications

In a contact probe the primary current flow is typically through the plunger, the barrel and the receptacle.

A secondary current flow is through the plunger, the spring and the barrel.

This leads to transfer resistances at the transition points that are influenced by the following factors:

- conductivity of the base material
- conductivity of the plating material
- condition of the surface of the probe
- size of the contact surface
- contact forces at the transition points

FEINMETALL is taking measures to guarantee a constant low contact resistance during the whole lifetime of the probes.

## Environment and Health Protection

FEINMETALL is committed to the goals of the up to date legislation regarding environment and health protection and to conform to all necessary measures. If you are interested in the current statements of FEINMETALL please contact us.



|                   | Basic Materials                                                                           | Plating                                                                       |
|-------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>Barrel</b>     | Nickel silver (deep-drawn)<br>Bronze (turned or deep-drawn)<br>Brass (turned)             | Silver<br>Gold                                                                |
| <b>Plunger</b>    | Beryllium-Copper (BeCu)<br>Steel<br>Synthetic Material                                    | Chemical Nickel<br>Gold<br>FM Longtime Gold<br>Rhodium<br>Progressive Coating |
| <b>Spring</b>     | Music Wire (max. 80°C)<br>Stainless Steel (max. 250°C)<br>BeCu (non magnetic, max. 200°C) | Silver<br>Gold                                                                |
| <b>Receptacle</b> | Nickel Silver<br>Bronze<br>Brass                                                          | Gold                                                                          |

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



## Life Cycle Test of Contact Probes

The life cycle of spring contact probes is depending on the design of the probes as well as on the operating conditions in the field. High lateral forces, high current load and contamination may lead to a significantly reduced lifetime of the probes. For us as manufacturer of these probes, it is vital to permanently control and review the quality parameters and to analyse the lifetime performance of our products. In our own laboratory we have various test and measurement setups for quality control and for the determination of technical parameters during research and development. One important subject is the life cycle test, conducted with seven autonomous stress stages. The test conditions provide an internal standard reference that

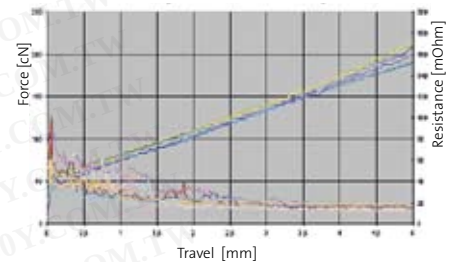
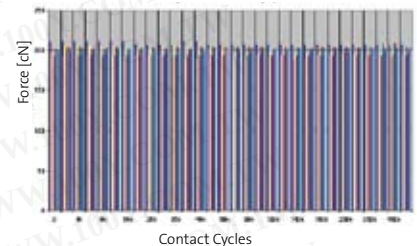
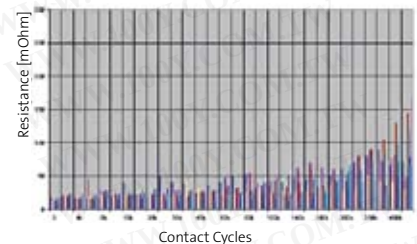


allows competent statements regarding the life cycles of our probes.

Life cycle tests are performed under the following conditions:

- Ambient Temperature: +20°C to +30°C
- Relative Humidity: 40 to 60%
- Dust free environment

For the life cycle test up to 10 sample probes are mounted in a stress stage and then pressed with a stroke frequency of 5 to 6 strokes per second. In predetermined steps (e.g. after 2000 strokes) the probes are analysed in a separate test station and the spring force and the contact resistance of each probe are measured as a function of the spring travel (see picture right on the top). Later the test results are combined in a diagram, showing the whole life cycle of the probe (up to more than a million strokes). The diagrams show typical life cycle test results of spring force and resistance.



## Pointing Accuracy and Radial Tolerance



The pointing accuracy of a spring contact probe is determined by many factors, for example by manufacturing tolerances, by the length of the plungers and by the type of plunger guiding. Further factors that are independent of the contact probe have to be considered, for example the receptacles and the mounting of the test fixture or module.

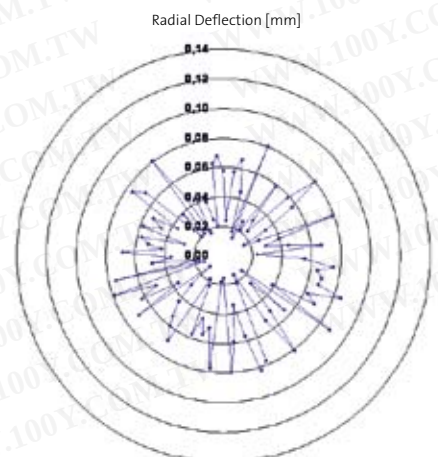
To optimize the pointing accuracy especially in applications with small centers additional guiding plates in the fixture can be used.

There is always a radial tolerance between plunger and barrel of a spring

contact probe. This leads to a certain deflection of the plunger tip. The guide clearance is necessary and if ideally designed, it guarantees a low abrasion and a reduction of lateral forces.

The know-how to produce a good functioning and still long living spring contact probe lies in the definition of the optimum tolerances of plunger and barrel.

The most important factor for the pointing accuracy is the radial deflection of the tip compared to the central axis of the probe at the moment of contacting. The specific pointing accuracy in the technical specifications of the probes is approximately corresponding with the maximum radial deflection. The radial deflection can be shown in a diagram.



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

# Plunger Tip Styles

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |    |    |    |
| 01                                                                                  | 02                                                                                  | 03                                                                                  | 04                                                                                  | 05                                                                                   | 05 (IK)                                                                               | 06                                                                                    |
| 90° Conical Shaft                                                                   | 90° Conical Head                                                                    | Conical Shaft 60°                                                                   | 60° Conical Head                                                                    | Inner Cone Head                                                                      | Inner Cone Head (Insulation Cap)                                                      | Serrated Head (Waffle)                                                                |
|    |    |    |    |    |    |    |
| 06 (IK)                                                                             | 07                                                                                  | 08                                                                                  | 09                                                                                  | 10                                                                                   | 11                                                                                    | 11 (SP)                                                                               |
| Serrated Head with Insulation Cap                                                   | 90° Hexagonal Head                                                                  | 60° Hexagonal Head                                                                  | 120° Inverted Hexagonal Head                                                        | 10° Flexible Needle                                                                  | Round Shaft                                                                           | Step Probe (Round Shaft)                                                              |
|    |    |    |    |    |    |    |
| 12                                                                                  | 12 (SP)                                                                             | 14                                                                                  | 15                                                                                  | 16                                                                                   | 16 (SP)                                                                               | 17                                                                                    |
| Round Head                                                                          | Step Probe (Round Head)                                                             | 4-Point Crown Head (Self Cleaning)                                                  | 45° Triangular Head                                                                 | Flat Shaft                                                                           | Step Probe (Flat Shaft)                                                               | Flat Head                                                                             |
|   |   |   |   |   |   |   |
| 17 (H)                                                                              | 17 (T)                                                                              | 18                                                                                  | 20                                                                                  | 21                                                                                   | 27                                                                                    | 28                                                                                    |
| Flat Head (Synthetic with Ring)                                                     | Flat Head (Insulated Tip)                                                           | 30° Conical Shaft                                                                   | 4-Point Crown Tapered (Self Cleaning)                                               | 4-Point Crown Shaft (Self Cleaning)                                                  | 120° Conical Head                                                                     | 4-Point Crown Head                                                                    |
|  |  |  |  |  |  |  |
| 29                                                                                  | 30                                                                                  | 32                                                                                  | 33                                                                                  | 34                                                                                   | 35                                                                                    | 36                                                                                    |
| 4-Point Crown Shaft                                                                 | 45° Triangular Shaft (Pyramid)                                                      | 10° Rigid Needle Shaft                                                              | Assymmetric Lance Shaft                                                             | 15° Rigid Needle                                                                     | 3-Point Crown Head                                                                    | 6-Point Crown (with Central Tip)                                                      |
|  |  |  |  |  |  |  |
| 37                                                                                  | 38                                                                                  | 39                                                                                  | 40                                                                                  | 41                                                                                   | 41 (K)                                                                                | 43                                                                                    |
| 4-Point Crown (Reduced)                                                             | 140° Assymmetric Lance Shaft                                                        | 30° Conical Shaft (Flat Tip)                                                        | 6-Point Crown Shaft                                                                 | 6-Point Crown Head (Self Cleaning)                                                   | 6-Point Crown Head (Insulated Cap)                                                    | 90° Assymmetric Lance Shaft                                                           |
|  |  |  |  |  |  |  |
| 45                                                                                  | 50                                                                                  | 60                                                                                  | 61                                                                                  | 62                                                                                   | 63                                                                                    | 64                                                                                    |
| 120° Conical Head with Eccentric Cut                                                | Concave Head with Drill                                                             | 3-Point Crown (Reduced)                                                             | Head for VG Connectors (Female)                                                     | 30° Triangular Shaft                                                                 | 8-Point Crown Head (Self Cleaning)                                                    | Mini-Waffle (Reduced)                                                                 |
|  |  |  |  |  |  |  |
| 80                                                                                  | 81                                                                                  | 82                                                                                  | 83                                                                                  | 84                                                                                   | 85                                                                                    | 90                                                                                    |
| Reduced Spade                                                                       | Reduced Spade (Tapered)                                                             | Spade Shaft                                                                         | Spade Head                                                                          | Spade Head (Tapered)                                                                 | Square Spade                                                                          | Ball Head                                                                             |

## Applications of most common tip styles



### Tip Style 01/02/03/04 Conical 90°, 60°

For gold plated vias and solder pads. Causes no or only very slight impressions on the pad.



### Tip Style 18, Head 30°

For tin-plated contact surfaces. Penetrates flux residues and oxide layers even with low spring forces.



### Tip Style 61

for VG connectors (female)  
(DIN 41612)



### Tip Style 32/34 Rigid Needle

Very aggressive tip which provides an excellent contact for flux-covered, contaminated or oxidized printed circuit boards.



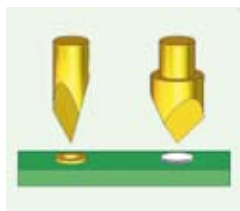
### Tip Style 10 Flexible Needle

For dirty, flux covered or oxidized contacting surfaces. It is deviated from the contact pins/wire-wrap posts due to its high flexibility.



### Tip Style 33/38/43 Lance Shaft

Special tip style for via holes. The aggressive tip penetrates oxide and flux layers while the sharp edges provide an excellent contacting.



### Tip Style 15/30, Triangular

For vias and pad surfaces. The sharp edges also penetrate flux residues and oxide layers.



### Tip Style 07/08/19 Hexagonal (Fluted Star) 90°

For vias, contact surfaces, and solder pads. The sharp edges also cut through dirt and oxide layers.



### Tip Style 11/12 Round (Bullet Nose)

For testing gold-plated contact surfaces where impressions or scratches are not allowed.



### Tip Style 05 Concave (Cup)

For long contacts, contact pins and wire-wrap posts. This head shape should be used only for clean products or with the cup pointing downwards.



### Tip Style 06/64 Serrated (Honeycomb)

Universal tip style for contacting wires, contact pins and wire-wrap posts. Can also be used without difficulty for bent component leads.



### Tip Style 13/36 7-point Tulip

Offers secure contacting on solder pads and vias.



### Tip Style 09/41/63 Hexagonal Crown

For wire-wrap posts. Also useable for twisted/bent contacts.



### Tip Style 14/21 Crown 4-point (Self-cleaning)

For pad surfaces and solder connections. The sharply ground edges penetrate flux residues and allow contamination to fall out.



### Tip Style 28/29/37 Crown 4-point

Like tip style 14/21, but has no self-cleaning feature. Economical solution for clean products.



### Tip Style IK Insulation Cap

For detecting the correct length and straightness of pins.

## Receptacles for Spring Contact Probes

For simple replacement spring contact probes are typically mounted into receptacles. The probes are either plugged-in or screwed into the receptacle, depending on the type of contact probe. Receptacles are available with different types of electrical connection.

### Mounting

Receptacles with collar on top have a fixed projection height and guarantee the tightest seat with very low tolerances. Receptacles with press ring can be used in two ways. Either the press ring is used as dead stop or it is inserted into the mounting plate, which results in a variable projection height. For receptacle insertion into the mounting plate, a special insertion tool is necessary.

### Connection of Receptacles

Almost all receptacles are available with solder or crimp connection. Wire wrap connections are frequently used for test fixture manufacturing, because they can be wired automatically. Some receptacles (especially those with very small diameters) are available with preassembled cables. Additionally, for example to

connect coaxial probes, special connecting elements can be used.

### Types of Receptacles

At ICT/FCT test fixtures mainly plug-in probes are used. However, in some applications, particularly at modules for wire harness and connector tests, threaded probes are used, which are screwed into the receptacles. Threaded probes guarantee a secure seat because they do not move out of the receptacle even under difficult conditions. Knurled receptacles ensure a firm seat of the receptacle in the drill hole. For switch probes and coaxial probes, FEINMETALL has developed special receptacles called „combi-receptacles“, which enable a solder free exchange of these probes. Further receptacles with integrated switch function are available, that are frequently used in combination with twist proof probes.

### Drilling Recommendations

Mounting the receptacle into the mounting plate (e.g. made of HGW23721/FR 4 or HP23611/Trolitax) demands special precision. Various parameters like rotating speed, feed, helical groove length, material and plate thickness are influencing the drilling

results. Therefore it is very important to make drilling tests in order to ensure that the receptacles have a proper seat in the mounting plate. The drilling recommendations in the technical specifications of the probes are guideline values only as a basis for your own drilling trials.

### Spacers

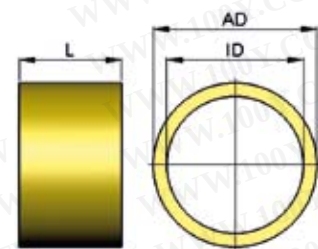
For height adjustment and balancing of tolerances.

#### Spacers H773 for 138 mil Probes

| Order Code | OuterØ | InnerØ | Length |
|------------|--------|--------|--------|
| H773DS/01  | 3,2    | 2,7    | 0,1    |
| H773DS/05  | 3,2    | 2,7    | 0,5    |
| H773DS/10  | 3,2    | 2,7    | 1,0    |
| H773DS/20  | 3,2    | 2,7    | 2,0    |
| H773DS/30  | 3,2    | 2,7    | 3,0    |
| H773DS/50  | 3,2    | 2,7    | 5,0    |

#### Spacers H772 for 100 mil Probes

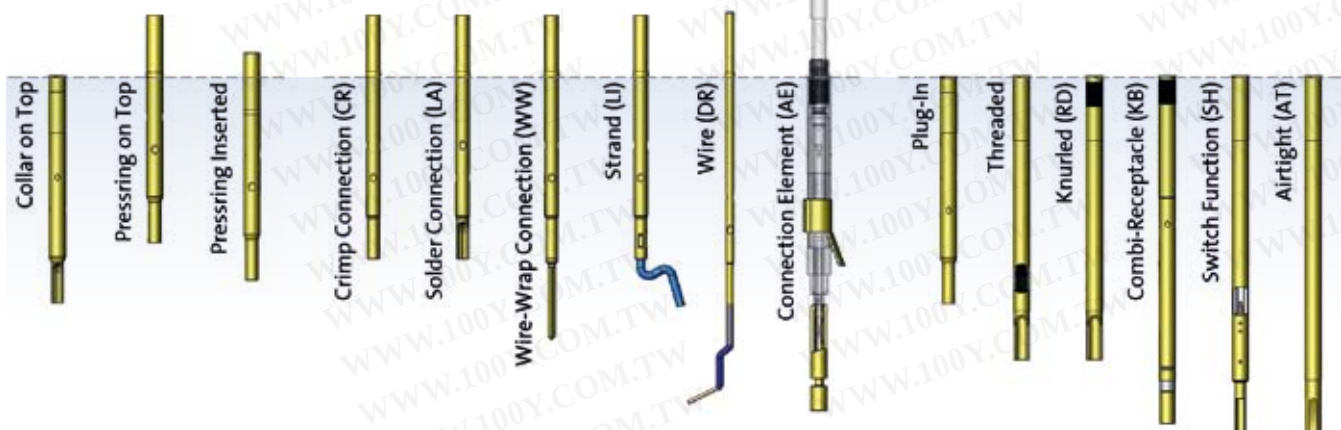
| Order Code | OuterØ | InnerØ | Length |
|------------|--------|--------|--------|
| H772DS/10  | 2,2    | 1,7    | 1,0    |
| H772DS/20  | 2,2    | 1,7    | 2,0    |
| H772DS/30  | 2,2    | 1,7    | 3,0    |
| H772DS/50  | 2,2    | 1,7    | 5,0    |
| H772DS/100 | 2,2    | 1,7    | 10,0   |



### Mounting

### Types of Connections

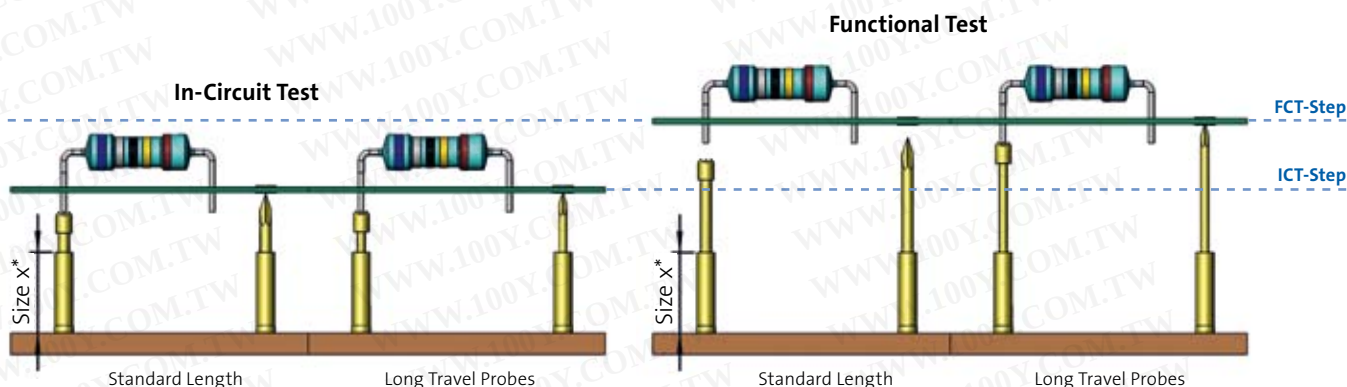
### Types of Receptacles





## Probes for In-Circuit-Test (ICT) und Functional Test (FCT)

### Height Proportions in Dual-Stage Fixtures



\* Depending on receptacle insertion depth

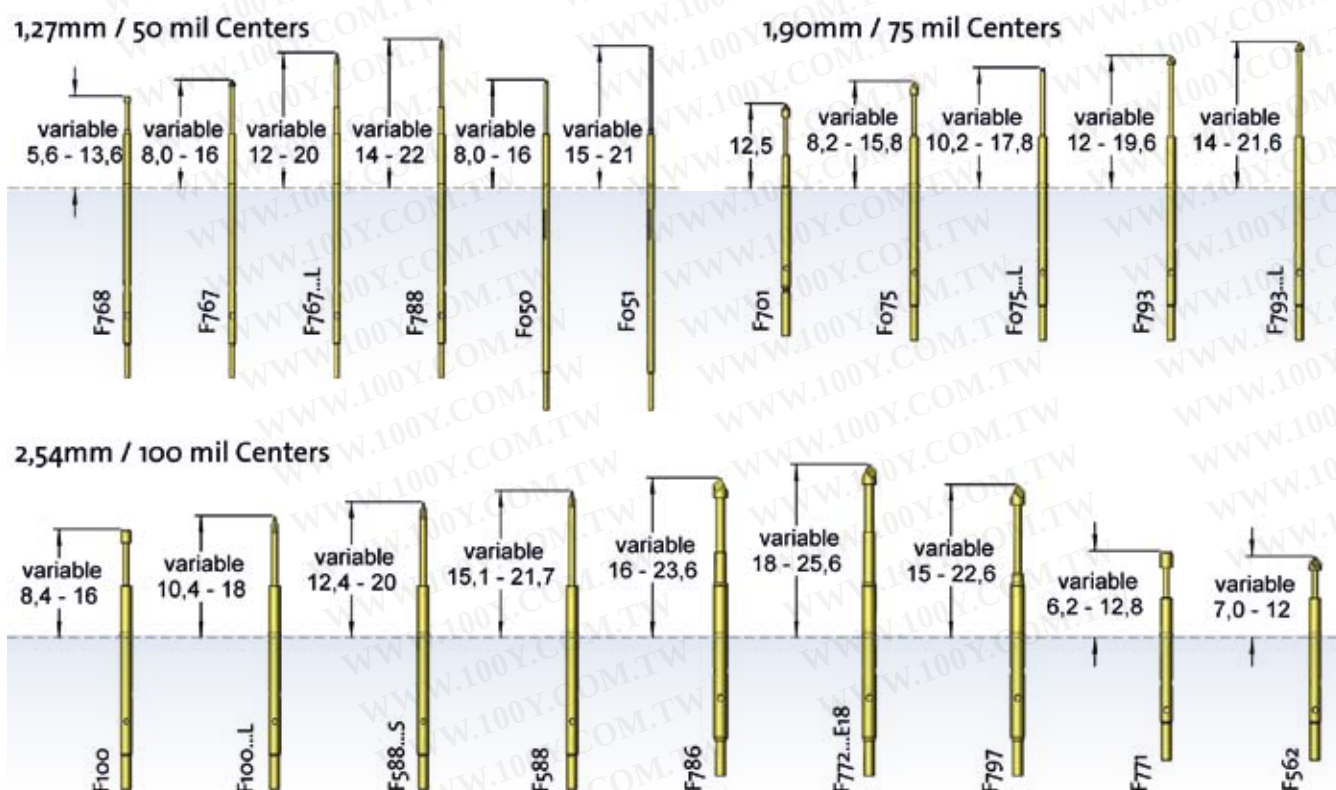
In-circuit test (ICT) and functional test (FCT) very often are performed in two steps by using one fixture only. The first step is the in-circuit test. At this level all installed probes are contacting the DUT. During the following functional test only the long travel probes are contacting the DUT. The different height needed to

contact wired components or pads on the board, requires probes with different lengths. Therefore for many probe families FEINMETALL is offering a short or standard length and a long version.

### Combination of probes for 2-Step-Fixtures:

|         | ICT-Step  | FCT-Step |
|---------|-----------|----------|
| 50 mil  | F050      | F051     |
| 50mil   | F767      | F788     |
| 75 mil  | F075/F703 | F793     |
| 100 mil | F100/F585 | F588     |

## The most important probes at a glance:



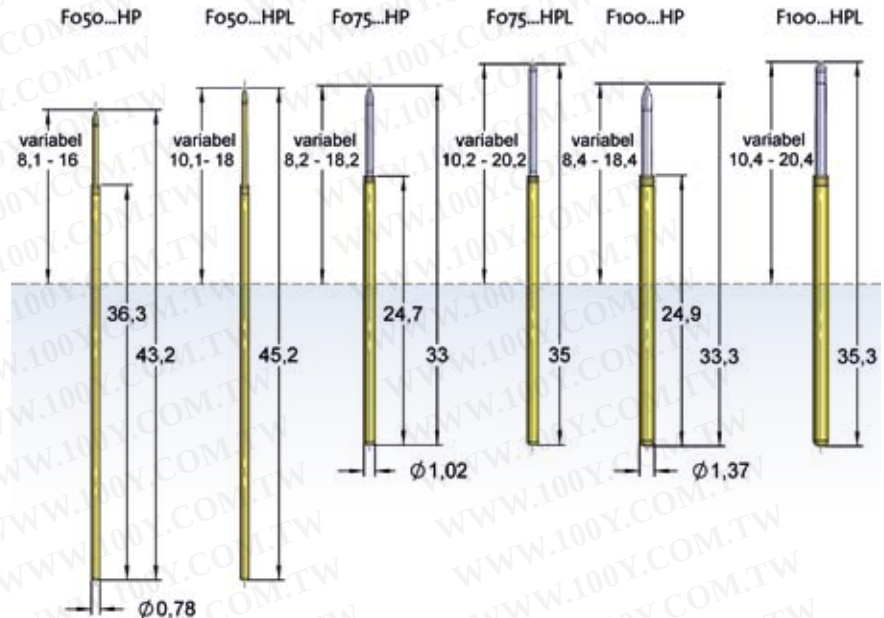
| Type      | Current | Temperature  | R <sub>typically</sub> |
|-----------|---------|--------------|------------------------|
| F050...HP | 3,0 A   | -20°...+80°C | <20 mOhm               |
| F075...HP | 4,0 A   | -20°...+80°C | <20 mOhm               |
| F100...HP | 5,0 A   | -20°...+80°C | <20 mOhm               |

## Progressive Series

### F050/F075/ F100 ... HP

The new „Progressive Series“ has been developed for rough and extreme requirements (e.g. for contacting lead free soldering or very contaminated PCB s). The Progressive Series tips are well prepared for those applications and they are more aggressive and harder than usual gold plated tips. Therefore they provide a better penetration, resulting in a excellent contact and a longer lifetime. The new progressive functional coating enhances the durability of the contact surface. At the same time it is also less sensitive for contamination, especially during soldering.

The Progressive Series has the same dimensions than the standard ICT-Probes F050, F075 and F100. Standard-length, L-Versions and Long Travel Probes are available.



#### Note:

applicable receptacles  
see F050 / F075 / F100

| Travel (mm) | F050..HP | F075/F100.. |
|-------------|----------|-------------|
| Nominal:    | 4,3      | 5,0         |
| Maximum:    | 5,0      | 6,4         |

| Spring Force (cN ±20%) |         |               |
|------------------------|---------|---------------|
|                        | Preload | Nominal Force |
| F050                   | 80      | 200           |
| F050                   | 130     | 200           |
| F075                   | 110     | 200           |
| F075                   | 150     | 250           |
| F100                   | 130     | 200           |
| F100                   | 200     | 300           |

#### Materials and Plating

Plunger: see Tip Styles

Barrel: Bronze, Gold plated

Spring: Music wire, Gold plated

| Type                                          | Tip-Ø | Spring Force |
|-----------------------------------------------|-------|--------------|
| F050                                          | 33 S  | 150          |
|                                               | 050   |              |
|                                               | P     |              |
|                                               | HP    |              |
| Tip Style Material Finish Special Version     |       |              |
| Material: S = Steel                           |       |              |
| Tip-Ø: 050 = 0,50 mm (e.g.)                   |       |              |
| Finish: P = functional coating                |       |              |
| Special Version: HP = Higher Preload          |       |              |
| Receptacle: HPL = Higher Preload in L-Version |       |              |
| see drawing F050/F075/F100                    |       |              |

ORDER EXAMPLE

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Tip Style, Material, Plating, Tip- Ø (mm)

##### F050...HP



21 Steel; P  
Ø 0,50

33 Steel; P  
Ø 0,50

43 Steel; P  
Ø 0,50

62 Steel; P  
Ø 0,50

##### F075...HP



21 Steel; P  
Ø 0,64

33 Steel; P  
Ø 0,64

43 Steel; P  
Ø 0,64

62 Steel; P  
Ø 0,64

##### F100...HP



21 Steel; P  
Ø 0,90

33 Steel; P  
Ø 0,90  
L-Version available

43 Steel; P  
Ø 0,90

62 Steel; P  
Ø 0,90  
L-Version available

Long Travel versions für 50 mil/75 mil/100 mil available, on request



## Progressive Series

**NEW**

### Probes for advanced requirements and lead-free soldering pads

#### The subject:

Printed circuit boards, which are tested after a longer shelf time or with unclear conditions, are very difficult to contact. The surface of the solder pads exhibits viscous flux-contaminations or hard and thick oxide layers. These layers are difficult to penetrate and have a poor conductivity during the electrical test. Moreover in these applications the tips are contaminated very quickly, which again results in further contacting issues.

#### Solution:

The new „Progressive Series“ has been developed for these applications. The special design and the choice of material of these probes enable reliable contacting and long lifetime even under difficult conditions.

#### Aggressive tip style

A specific FEINMETALL longitudinal grind, the concave geometry and ultra sharp edges lead to increased penetration at the contact surface.



Standard Grind



FEINMETALL Grind

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Functional „Progressive Coating“

The new progressive functional coating reduces the contamination of the contact tips and provides a remarkably longer life cycle of the probes.



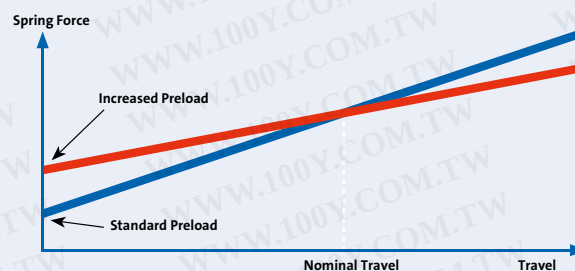
Standard Gold Coating,  
Contamination after  
1/2 Mio contacts



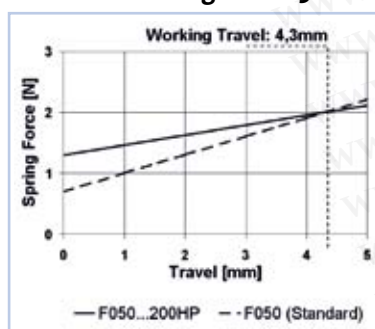
FEINMETALL  
„Progressive Coating“,  
Contamination after  
1/2 Mio contacts

#### Higher Preload

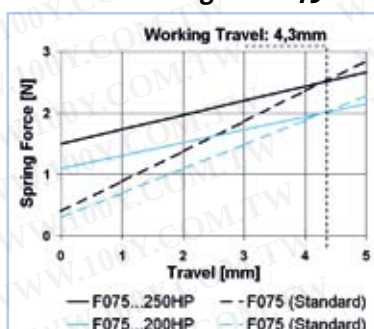
The contact force over the entire working travel up to the recommended working travel is raised by an increased preload. This increased preload is available immediately after the contacting of the DUT. The nominal force at the recommended working travel remains unchanged as standard without increasing the pressure load on the DUT.



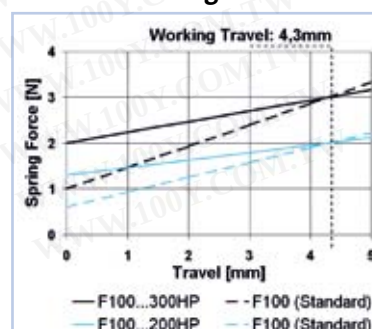
#### Force-Travel Diagram F050



#### Force-Travel Diagram F075



#### Force-Travel Diagram F100



| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F050     | 3,0 A   | -20°...+80°C  | <20 mOhm    |
| F050...H | 3,0 A   | -40°...+250°C | <30 mOhm    |

## Standard Probe 50 mil

## F050

NEW

The F050 can be delivered with standard length and as L-Version. For applications up to +250°C a High Temperature Version (H-Version) is available.

Due to the press ring, the receptacles H050 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

Receptacles H050 are available with Crimp- (CR) or Solder-Connection (LA). The receptacle H050DR has a 1000 mm long cable (AWG30).

## Mechanical Specifications

## Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,3 |
| Maximum: | 6,4 |

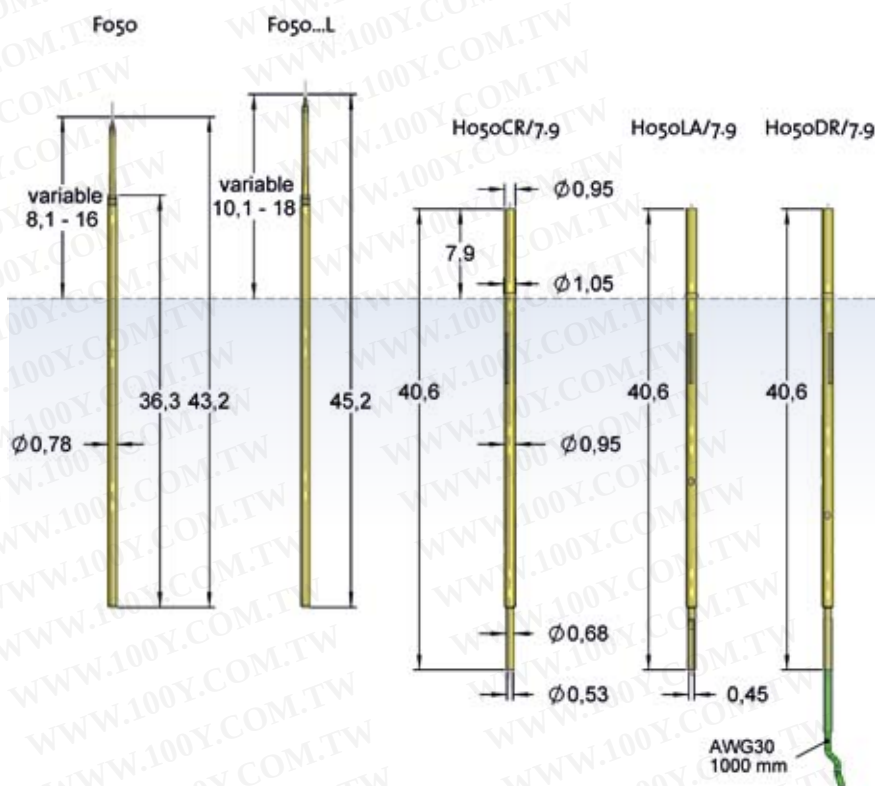
## Spring Force (cN ±20%)

|                |                       |
|----------------|-----------------------|
| Nominal Force: | 150 200 200 (H-Vers.) |
| Preload:       | 60 70 90 (H-Vers.)    |

Pointing Accuracy: ± 0,05 mm

## Materials and Plating

|             |                                                        |
|-------------|--------------------------------------------------------|
| Plunger:    | see Tip Styles                                         |
| Barrel:     | Bronze, Gold plated                                    |
| Spring:     | Music wire, Gold plated<br>Stainless steel (H-Version) |
| Receptacle: | BeCu, Gold plated                                      |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Drill Size (mm)

| Material                | press ring<br>as stop | press ring<br>inserted |
|-------------------------|-----------------------|------------------------|
| EP 105 (CEM1, Trolitax) | 0,96 - 0,97           | 0,98 - 1,00            |
| HGW 2372.1 (FR4)        | 0,97 - 0,98           | 0,99 - 1,01            |

## F050 | Tip Style, Material, Plating, Tip-Ø (mm)

| Type             | Tip-Ø                        | Spring Force |
|------------------|------------------------------|--------------|
| F050             | 33 S 050                     | L 150 H      |
| Tip Style        | Material                     | Finish       |
| Material:        | B = BeCu, S = Steel          |              |
| Tip-Ø:           | 050 = 0,50 mm (e.g.)         |              |
| Finish:          | G = Gold, L = Longtime Gold, |              |
| Special Version: | H = High Temperature Version |              |
|                  | L = Long Version             |              |
| Receptacle:      | Order-Code according drawing |              |
| ORDER EXAMPLE    |                              |              |

06 BeCu; G  
Ø 0,9011 BeCu; G  
Ø 0,5021 Steel; L  
Ø 0,9033 Steel; L  
Ø 0,50  
L-Version available43 Steel; L  
Ø 0,5062 Steel; L  
Ø 0,50



| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F768 | 3,0 A   | -20°...+80°C | <20 mOhm               |
| F767 | 3,0 A   | -20°...+80°C | <20 mOhm               |

## Standard Probe 50 mil short version

### F768 / F767

The F768 is 6,2 mm shorter than the F050 and has less travel. The F767 is the L-Version of F768 (2,5 mm longer). Receptacles are available with collar (H768) for a fix projection height, or with press ring (H787) for variable height adjustment. Insertion tools for receptacles please see Tools/Accessories. Both receptacles are available with Crimp- (CR) or Solder-Connection (LA). The receptacle H787 is available as special version H787LI, with a 500 mm stranded wire (AWG28).

#### Mechanical Specifications

| Travel (mm) | F768 | F767 |
|-------------|------|------|
| Nominal:    | 3,2  | 6,4  |
| Maximum:    | 4,0  | 8,0  |

#### Spring Force F768 (cN ±20%)

|                |     |
|----------------|-----|
| Nominal Force: | 130 |
| Preload:       | 40  |

#### Spring Force F767 (cN ±20%)

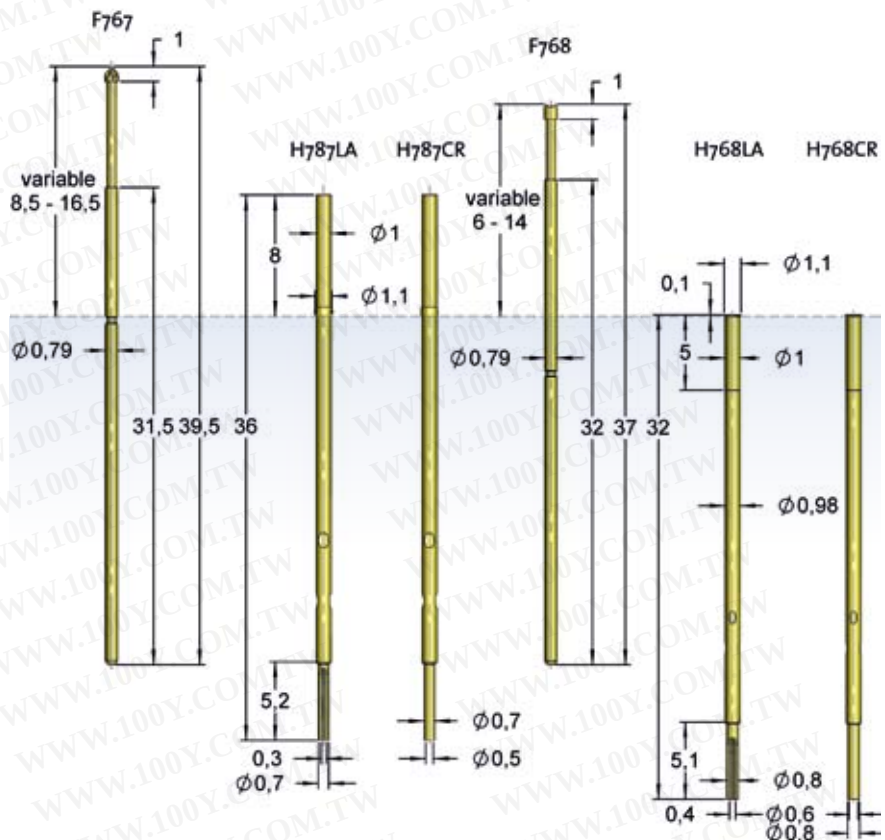
|                |     |
|----------------|-----|
| Nominal Force: | 165 |
| Preload:       | 35  |

#### Pointing Accuracy:

|       |           |
|-------|-----------|
| F768: | ± 0,07 mm |
| F767: | ± 0,05 mm |

#### Materials and Plating

|          |                            |
|----------|----------------------------|
| Plunger: | see Tip Styles             |
| Barrel:  | Bronze, Gold plated        |
| Spring:  | Music wire, Gold plated    |
| H787:    | Nickel Silver, Gold plated |
| H768:    | Bronze, Gold plated        |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 0,99-1,00          | 1,05-1,07           |
| HGW 2372.1 (FR4)        |                    |                     |

#### F768 | Tip Style, Material, Plating, Tip- Ø (mm)

|                              |                             |                              |                             |                              |
|------------------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|
|                              |                             |                              |                             |                              |
| <b>03 BeCu; G</b><br>Ø 0,60  | <b>06 BeCu; G</b><br>Ø 0,90 | <b>07 Steel; L</b><br>Ø 0,90 | <b>11 BeCu; G</b><br>Ø 0,60 | <b>18 BeCu; G</b><br>Ø 0,60  |
|                              |                             |                              |                             |                              |
| <b>21 Steel; L</b><br>Ø 0,60 | <b>28 BeCu; G</b><br>Ø 0,90 | <b>29 BeCu; G</b><br>Ø 0,40  | <b>30 BeCu; G</b><br>Ø 0,60 | <b>33 Steel; L</b><br>Ø 0,60 |

#### F767 | Tip Style, Material, Plating, Tip- Ø (mm)

|                              |                              |                              |                              |
|------------------------------|------------------------------|------------------------------|------------------------------|
|                              |                              |                              |                              |
| <b>07 Steel; L</b><br>Ø 0,90 | <b>21 Steel; L</b><br>Ø 0,60 | <b>33 Steel; L</b><br>Ø 0,60 | <b>38 Steel; L</b><br>Ø 0,60 |

| Type                                               | Tip-Ø    | Spring Force |   |     |
|----------------------------------------------------|----------|--------------|---|-----|
| F767                                               | 07S      | 090          | L | 165 |
| Tip Style                                          | Material | Finish       |   |     |
| <b>Material:</b> B = BeCu, S = Steel               |          |              |   |     |
| <b>Tip-Ø:</b> 090 = 0,90 mm (e.g.)                 |          |              |   |     |
| <b>Finish:</b> G = Gold, L = Longtime Gold plated, |          |              |   |     |
| <b>Receptacle:</b> Order-Code according drawing    |          |              |   |     |
| <b>ORDER EXAMPLE</b>                               |          |              |   |     |

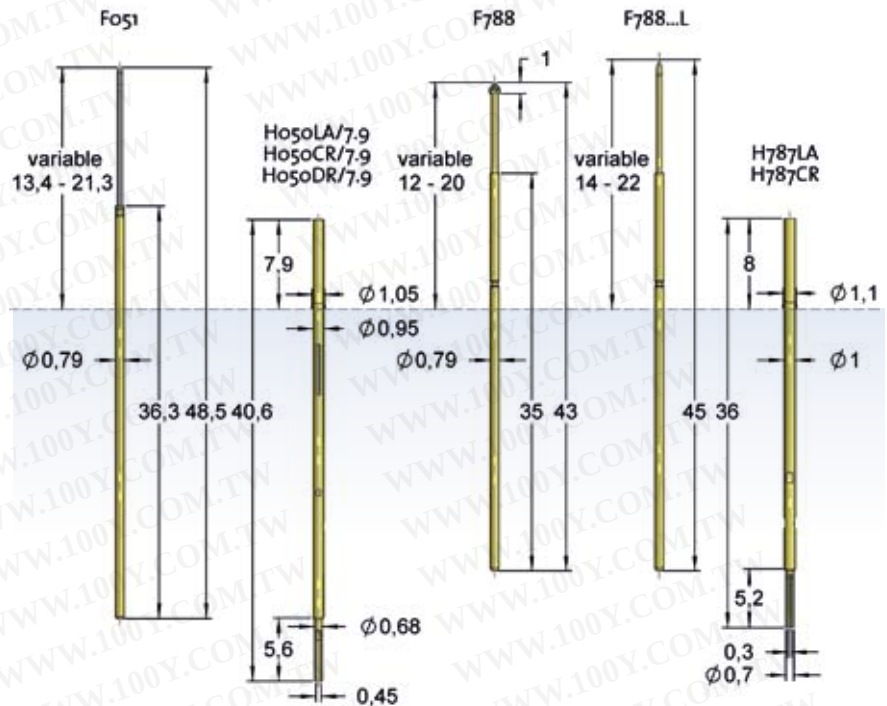
| Type     | Current | Temperature   | R <sub>typically</sub> |
|----------|---------|---------------|------------------------|
| F051     | 3,0 A   | -20°...+80°C  | <20 mOhm               |
| F788     | 3,0 A   | -20°...+80°C  | <20 mOhm               |
| F788...H | 3,0 A   | -40°...+250°C | <50 mOhm               |

## Long Travel Probe for Dual Stage Fixtures

### F051 / F788 NEW

The F051 is the long travel version of the F050 and 3,5 mm longer than the long travel probe F788.

For F051 the receptacles H050 can be used and the F788 can be assembled with the receptacles H787 or H768. (see page 12+13). Receptacles are either available with collar for a fix projection height, or with press ring for variable height adjustment (with Crimp- (CR) or Solder-Connection (LA)). Insertion tools for receptacles please see Tools/ Accessories. The receptacle H787 is available as special version H787LI, with a 500 mm stranded wire (AWG28). The receptacle H050DR has a 1000 mm long cable (AWG30).



### Mechanical Specifications

| Travel (mm) | F051 | F788 |
|-------------|------|------|
| Nominal:    | 8,0  | 6,4  |
| Maximum:    | 10,0 | 8,0* |

\*(max. travel F788 KF 05, 06, 07: 7mm)

| Spring Force (cN ±20%) | F051 | F788 |
|------------------------|------|------|
| Nominal Force:         | 150  | 165  |
| Preload:               | 40   | 40   |

Pointing Accuracy:

F050: ± 0,05 mm

F050...L: ± 0,07 mm

### Materials and Plating

Plunger: see Tip Styles

Barrel: Bronze, Gold plated

Spring: Music wire, F051: Gold plated  
F788: Silver plated

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### Drill Size F051 (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 0,96 - 0,97        | 0,98 - 1,00         |
| HGW 2372.1 (FR4)        | 0,97 - 0,98        | 0,99 - 1,01         |

### Drill Size F788 (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 0,99-1,00          | 1,05-1,07           |
| HGW 2372.1 (FR4)        |                    |                     |

### F051 | Tip Style, Material, Plating, Tip- Ø (mm)



**43 Steel; L, P**  
Ø 0,50

### F788 | Tip Style, Material, Finish und Tip-Ø (mm)



**05 BeCu; G**  
Ø 0,90



**06 BeCu; G**  
Ø 0,90



**07 Steel; L**  
Ø 0,90



**11 BeCu; G**  
Ø 0,60  
H-Version 70 cN



**18 BeCu; G**  
Ø 0,60



**21 Steel; L**  
Ø 0,60



**29 Steel; L**  
Ø 0,60  
L-Version available



**33 Steel; L**  
Ø 0,50  
L-Version available



**33 Steel; L**  
Ø 0,60



**43 Steel; L**  
Ø 0,60, but with  
130 or 180 cN

| Type             | Tip-Ø                                                         | Spring Force    |
|------------------|---------------------------------------------------------------|-----------------|
| F051             | 33 S 050 L                                                    | 150 H           |
| Tip Style        | Material                                                      | Finish          |
|                  |                                                               | Special Version |
| Material:        | B = BeCu, S = Steel                                           |                 |
| Tip-Ø:           | 050 = 0,50 mm (e.g.)                                          |                 |
| Finish:          | G = Gold, L = Longtime Gold plated,<br>P = Functional coating |                 |
| Special Version: | H = High Temperature Version                                  |                 |
| Receptacle:      | Order-Code according drawing                                  |                 |
| ORDER EXAMPLE    |                                                               |                 |



| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F701 | 4,0 A   | -20°...+80°C | <20 mOhm               |

## Standard Probe 75 mil short version

### F701

The F701 is 5,5 mm shorter than the F075 and has less travel. The F701 has a broad application range, mainly used for board test (basic grid field), in-line test systems and for automotive applications (test modules).

The receptacle H701 has a collar for a fix projection height. Receptacles are available with Wire-Wrap- (WW), Crimp- (CR) or Solder-Connection (LA).

#### Mechanical Specifications

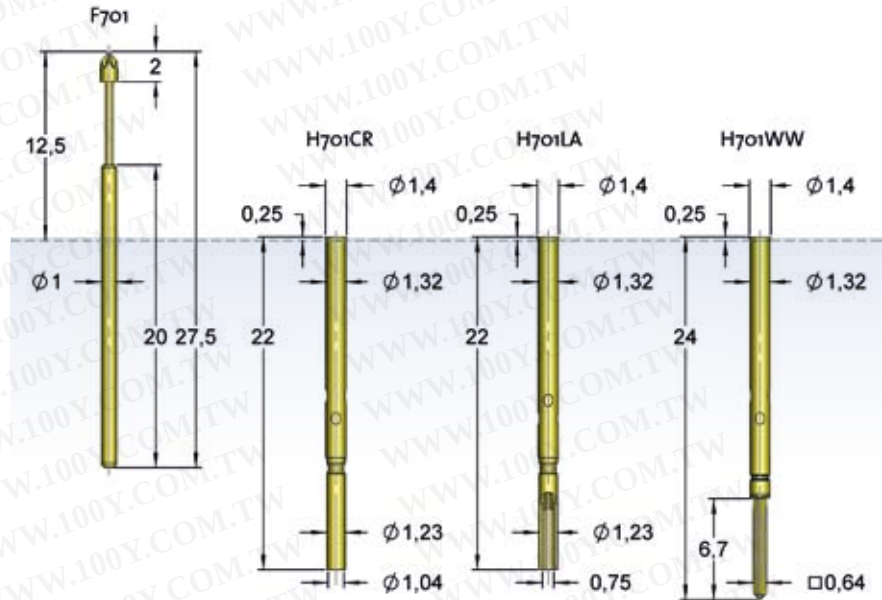
| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 4,0 |
| Maximum:    | 5,0 |

| Spring Force (cN ±20%) |     |
|------------------------|-----|
| Nominal Force:         | 150 |
| Preload:               | 30  |

Pointing Accuracy: ± 0,1 mm

#### Materials and Plating

|             |                           |
|-------------|---------------------------|
| Plunger:    | see Tip Styles            |
| Barrel:     | Bronze, Gold plated       |
| Spring:     | Music wire, Silver plated |
| Receptacle: | Bronze, Gold plated       |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,31-1,32    |
| HGW 2372.1 (FR4)        |              |

| Type                                                                                                                                                                               | Tip-Ø                     | Spring Force |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------|
| F701                                                                                                                                                                               | 07S 115 L                 | 150          |
|                                                                                                                                                                                    | Tip Style Material Finish |              |
| <b>Material:</b> B = BeCu, S = Steel<br><b>Tip-Ø:</b> 115 = 1,15 mm (e.g.)<br><b>Finish:</b> G = Gold, L = Longtime Gold plated<br><b>Receptacle:</b> Order-Code according drawing |                           |              |
| ORDER EXAMPLE                                                                                                                                                                      |                           |              |

#### F701 | Tip Style, Material, Plating, Tip- Ø (mm)

|                      |                       |                      |                       |                      |
|----------------------|-----------------------|----------------------|-----------------------|----------------------|
|                      |                       |                      |                       |                      |
| 06 BeCu; G<br>Ø 1,15 | 07 Steel; L<br>Ø 1,15 | 11 BeCu; G<br>Ø 0,50 | 14 Steel; L<br>Ø 1,15 | 15 BeCu; G<br>Ø 1,30 |
|                      |                       |                      |                       |                      |
| 18 BeCu; G<br>Ø 0,50 | 21 Steel; L<br>Ø 0,50 |                      |                       |                      |

| Type      | Current | Temperature  | R <sub>typically</sub> |
|-----------|---------|--------------|------------------------|
| F075/F703 | 4,0 A   | -20°...+80°C | <20 mOhm               |

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Standard Probe 75 mil F075 / F703

Both Probes are available with standard length and as L-Version. F075 and F703 have the same dimensions and they differ in the rolling position.

The F075 permits a higher spring force because of the flange at the end of his barrel. This design also allows a better plunger guidance in the fixture guiding plate, resulting in an improved pointing accuracy.

Due to the press ring, the receptacles H703 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

Receptacles are available with Wire-Wrap- (WW), Crimp- (CR) or Solder-Connection (LA).

### Mechanical Specifications

| Travel (mm) | F075 | F703 |
|-------------|------|------|
| Nominal:    | 5,0  | 5,0  |
| Maximum:    | 6,3  | 6,3  |

### Spring Force F075 (cN ±20%)

|                |     |     |     |
|----------------|-----|-----|-----|
| Nominal Force: | 130 | 180 | 280 |
| Preload:       | 30  | 30  | 30  |

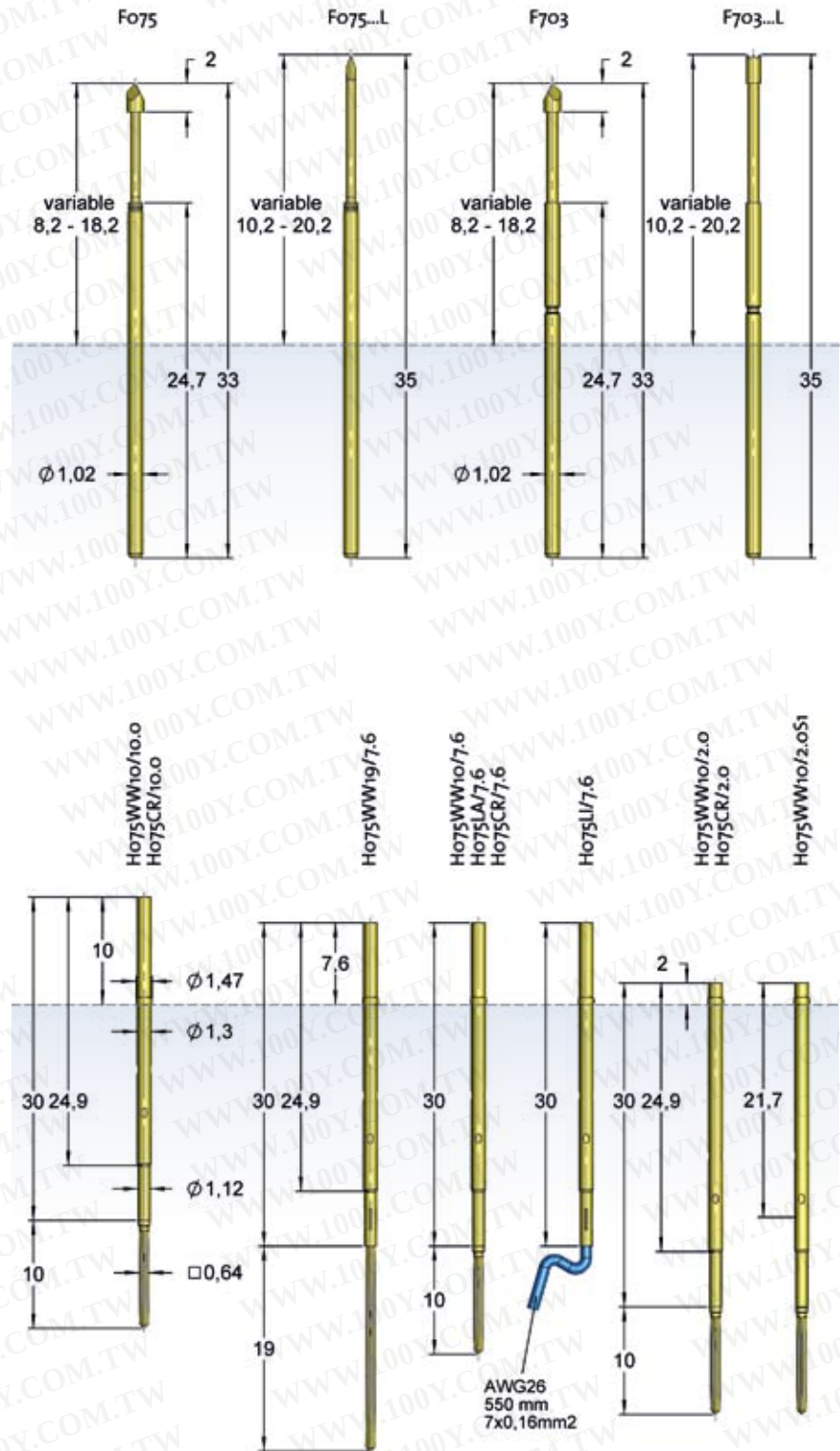
### Spring Force F703 (cN ±20%)

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 100 | 180 |
| Preload:       | 30  | 30  |

Pointing Accuracy:  
 F075/F703: ± 0,08 mm

### Materials and Plating

Plunger: see Tip Styles  
 Barrel: Nickel Silver, Gold plated  
 Spring: Music wire, Silver plated  
 Receptacle: Nickel Silver, Gold plated



All receptacles H075... are identical with the former article description H703...



## Standard Probe 75 mil F075 / F703

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### F075 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                              |                                                 |                                |                                             |                                         |
|----------------------------------------------|-------------------------------------------------|--------------------------------|---------------------------------------------|-----------------------------------------|
|                                              |                                                 |                                |                                             |                                         |
| 05 BeCu; G<br>Ø 1,20                         | 06 BeCu; G<br>Ø 1,20                            | 06 BeCu; G (IK)<br>see page 27 | 10 Steel; L<br>Ø 0,64                       | 11 BeCu; G<br>Ø 0,64<br>L-Vers.: 180cN  |
|                                              |                                                 |                                |                                             |                                         |
| 14 Steel; L<br>Ø 0,78 / 1,20                 | 15 BeCu; G<br>Ø 1,20                            | 17 BeCu; G<br>Ø 1,20           | 18 BeCu; G<br>Ø 0,78                        | 21 Steel; L<br>Ø 0,64<br>L-Vers.: 180cN |
|                                              |                                                 |                                |                                             |                                         |
| 30 Steel; L<br>Ø 0,64                        | 33 Steel; L<br>Ø 0,64 / 0,78<br>L-Version: 0,64 | 36 BeCu; G<br>Ø 1,20           | 37 BeCu; G<br>Ø 0,50<br>L-Version available |                                         |
|                                              |                                                 |                                |                                             |                                         |
| 38 Steel; L<br>Ø 0,64<br>L-Version available | 41 BeCu; G (IK)<br>see page 27                  | 43 Steel; L<br>Ø 0,64          | 63 Steel; L<br>Ø 1,20                       |                                         |

### F703 | Tip Style, Material, Plating, Tip- Ø (mm)

|                      |                                                |                                |                       |                       |
|----------------------|------------------------------------------------|--------------------------------|-----------------------|-----------------------|
|                      |                                                |                                |                       |                       |
| 05 BeCu; G<br>Ø 1,20 | 06 BeCu; G<br>Ø 1,00 / 1,20<br>L-Version: 1,00 | 06 BeCu; G (IK)<br>see page 27 | 10 Steel; L<br>Ø 0,64 | 11 BeCu; G<br>Ø 0,78  |
|                      |                                                |                                |                       |                       |
| 14 BeCu; G<br>Ø 1,20 | 15 BeCu; G<br>Ø 1,20                           | 18 BeCu; G<br>Ø 0,78           | 21 Steel; L<br>Ø 0,64 | 28 BeCu; G<br>Ø 1,20  |
|                      |                                                |                                |                       |                       |
| 30 BeCu; G<br>Ø 0,78 | 33 Steel; L<br>Ø 0,78                          | 36 Steel; L<br>Ø 1,20          | 36 BeCu; G<br>Ø 1,20  | 38 Steel; L<br>Ø 0,64 |
|                      |                                                |                                |                       |                       |
| 64 BeCu; G<br>Ø 0,46 |                                                |                                |                       |                       |

### Drill Size (mm)

| Material                | press ring<br>as stop | press ring<br>inserted |
|-------------------------|-----------------------|------------------------|
| EP 105 (CEM1, Trolitax) | 1,29-1,30             | 1,36-1,40              |
| HGW 2372.1 (FR4)        |                       |                        |

| Type             | Tip-Ø                              | Spring Force |
|------------------|------------------------------------|--------------|
| F075             | 33 S 064 L                         | 280 L        |
| Tip Style        | Material                           | Finish       |
| Material:        | B = BeCu, S = Steel                |              |
| Tip-Ø:           | 064 = 0,64 mm (e.g.)               |              |
| Finish:          | G = Gold, L = Longtime Gold plated |              |
| Special Version: | H = Long Version                   |              |
|                  | IK = Insulating cap                |              |
| Receptacle:      | Order-Code according drawing       |              |
| ORDER EXAMPLE    |                                    |              |

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F793 | 4,0 A   | -20°...+80°C | <20 mOhm               |

## Long Travel Probe for Dual Stage Fixtures

### F793

The F051 is the long travel version of the F075 / F703 and can be used in dual stage fixture applications for the functional test stage.

Due to the press ring, the receptacles H703 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories). Receptacles are available with Wire-Wrap- (WW), Crimp- (CR) or Solder-Connection (LA).

#### Mechanical Specifications

| Travel (mm)                 |      |
|-----------------------------|------|
| Nominal:                    | 8,0  |
| Maximum:                    | 10,0 |
| Spring Force (cN ±20%)      |      |
| Nominal Force:              | 120  |
| Preload:                    | 34   |
| Pointing Accuracy: ± 0,1 mm |      |

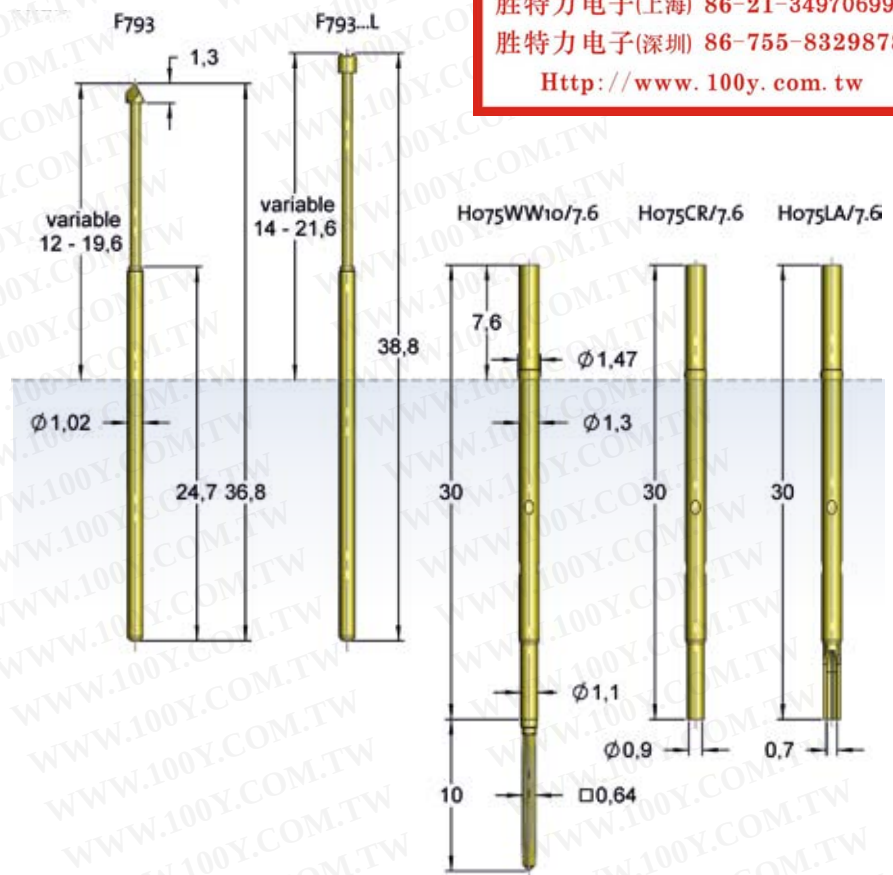
#### Materials and Plating

Plunger: see Tip Styles  
 Barrel: Nickel Silver, Gold plated  
 Spring: Music wire, Silver plated  
 Receptacle: Nickel Silver, Gold plated

#### Drill Size (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 1,29-1,30          | 1,36-1,40           |
| HGW 2372.1 (FR4)        |                    |                     |

| Type                                                                                                                                                                                                                           | Tip-Ø     | Spring Force    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------|
| F793                                                                                                                                                                                                                           | 06 B 120  | G 120 L         |
|                                                                                                                                                                                                                                | Tip Style | Material        |
|                                                                                                                                                                                                                                |           | Finish          |
|                                                                                                                                                                                                                                |           | Special Version |
| <b>Material:</b> B = BeCu, S = Steel<br><b>Tip-Ø:</b> 120 = 1,20 mm (e.g.)<br><b>Finish:</b> G = Gold, L = Longtime Gold plated<br><b>Special Version:</b> L = Long Version<br><b>Receptacle:</b> Order-Code according drawing |           |                 |
| ORDER EXAMPLE                                                                                                                                                                                                                  |           |                 |



All receptacles H075... are identical with the former article description H703...

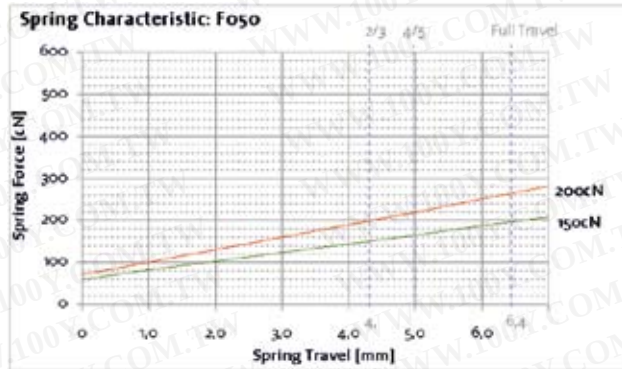
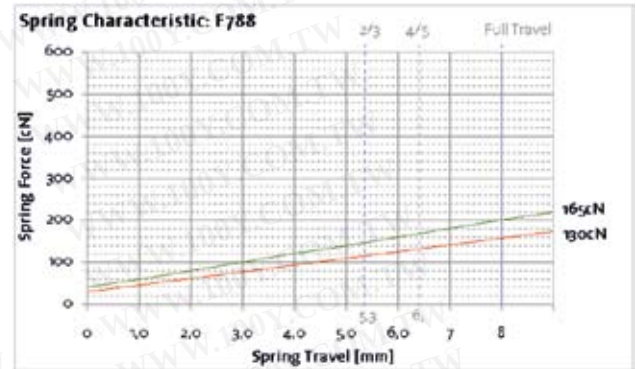
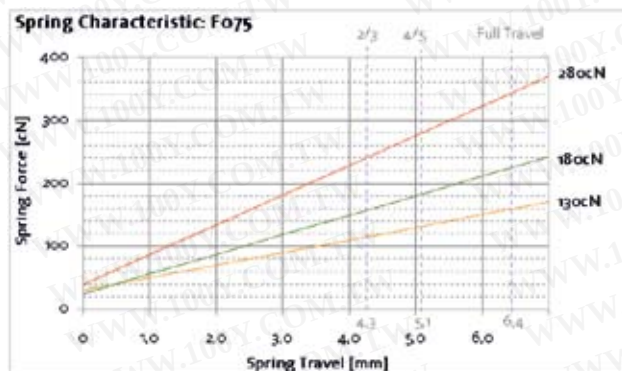
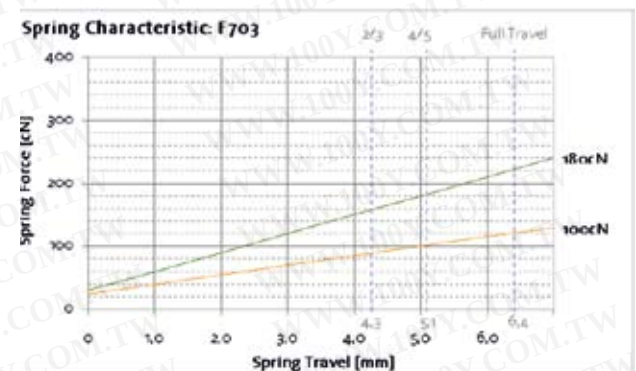
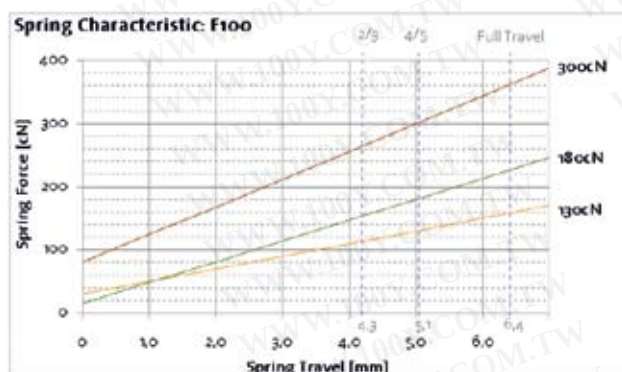
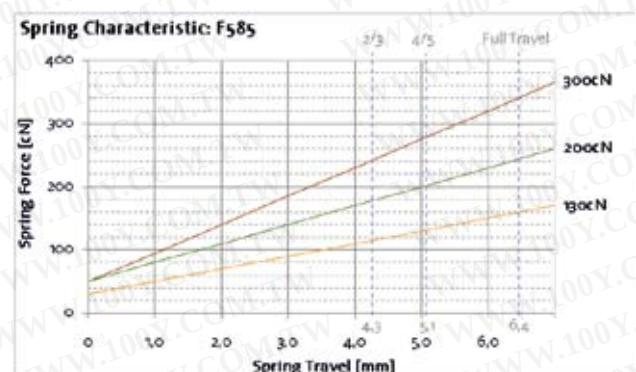
#### F793 | Tip Style, Material, Plating, Tip- Ø (mm)

|                      |                       |                                              |                                             |                      |
|----------------------|-----------------------|----------------------------------------------|---------------------------------------------|----------------------|
|                      |                       |                                              |                                             |                      |
| 06 BeCu; G<br>Ø 1,20 | 12 BeCu; G<br>Ø 1,20  | 14 BeCu; G<br>Ø 1,20<br>L-Version available  | 15 BeCu; G<br>Ø 1,20<br>L-Version available | 18 BeCu; G<br>Ø 1,30 |
|                      |                       |                                              |                                             |                      |
| 21 BeCu; G<br>Ø 0,64 | 30 Steel; L<br>Ø 0,64 | 33 Steel; L<br>Ø 0,64<br>L-Version available | 38 Steel; L<br>Ø 0,64                       |                      |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Force-Travel Diagram



| Type          | Current | Temperature   | R <sub>typically</sub> |
|---------------|---------|---------------|------------------------|
| F100/F585     | 5,0 A   | -20°...+80°C  | <20 mOhm               |
| F100/F585...H | 5,0 A   | -40°...+250°C | <30 mOhm               |

\* depend on chosen tip diameter

## Standard Probe 100 mil

## F100 / F585

Both Probes are available with standard length and as L-Version. High Temperature Versions (200 cN) are available for some tip styles on request.

F100 and F585 have the same dimensions and they differ in the rolling position.

The F100 permits a higher spring force because of the flange at the end of his barrel. This design also allows a better plunger guidance in the fixture guiding plate, resulting in an improved pointing accuracy.

Due to the press ring, the receptacles H100 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

Receptacles are available with Wire-Wrap- (WW), Crimp- (CR) or Solder-Connection (LA).

### Mechanical Specifications

| Travel (mm) | F100 | F585 |
|-------------|------|------|
| Nominal:    | 5,0  | 5,0  |
| Maximum:    | 6,4  | 6,4  |

### Spring Force F100 (cN ±20%)

|                |     |     |     |
|----------------|-----|-----|-----|
| Nominal Force: | 130 | 180 | 300 |
| Preload:       | 50  | 50  | 50  |

### Spring Force F585 (cN ±20%)

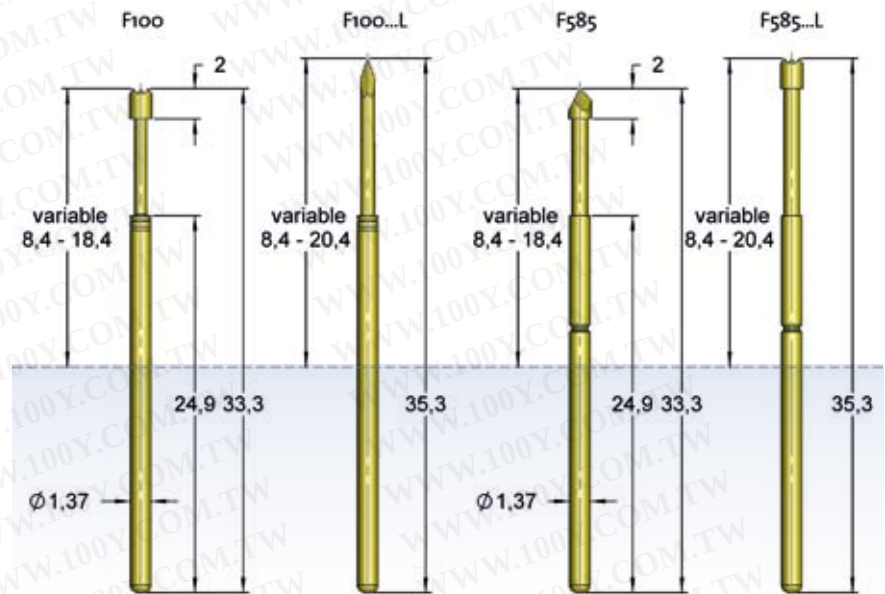
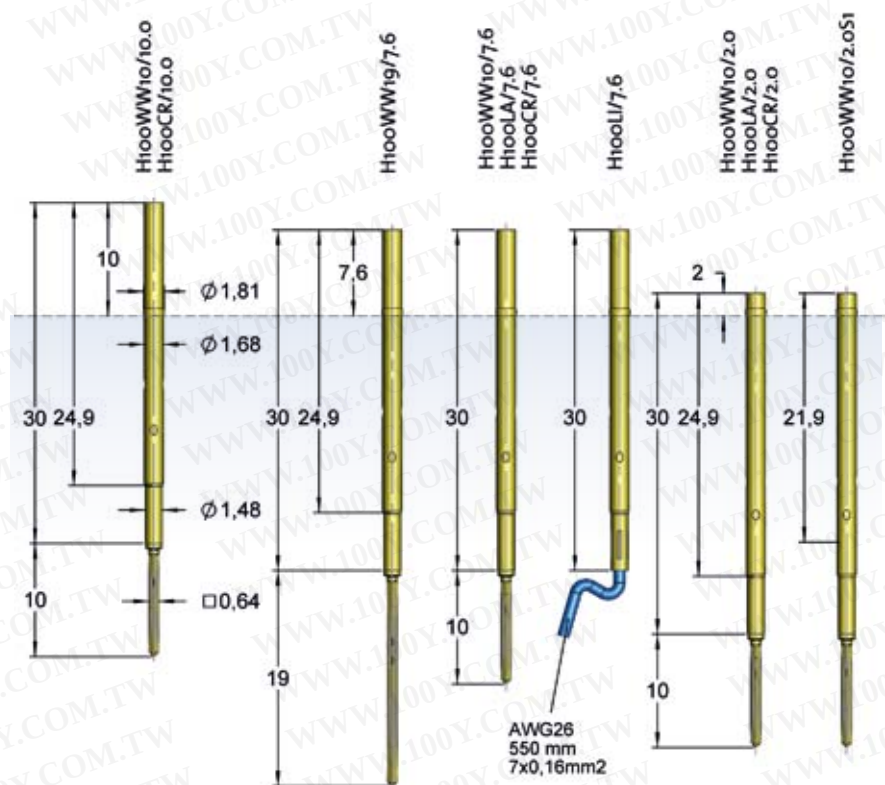
|                |     |     |     |
|----------------|-----|-----|-----|
| Nominal Force: | 130 | 200 | 300 |
| Preload:       | 50  | 50  | 50  |

(180, 450 cN on request)

Pointing Accuracy:  
 F100/F585: ± 0,08 mm

### Materials and Plating

Plunger: see Tip Styles  
 Barrel: Nickel Silver, Gold plated  
 Spring: Music wire, Silver plated  
 Receptacle: Nickel Silver, Gold plated



All receptacles H100... are identical with the former article description H585...



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Standard Probe 100 mil F100 / F585

### F100 | Tip Style, Material, Plating, Tip-Ø (mm)

|                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| <b>06 BeCu; G</b><br>Ø 1,50                                                       | <b>06 BeCu; G (IK)</b><br>see page 27                                             | <b>10 Steel; L</b><br>Ø 0,60                                                       | <b>11 BeCu; G</b><br>Ø 0,64<br>L-Vers. Ø 0,90                                       | <b>14 BeCu; G</b><br>Ø 1,30 / 1,50                                                  |
|  |  |  |  |  |
| <b>21 Steel; L</b><br>Ø 0,64<br>L-Version                                         | <b>30 BeCu; G</b><br>Ø 0,90                                                       | <b>33 Steel; L</b><br>Ø 0,90<br>L-Version                                          | <b>37 Steel; L</b><br>Ø 0,50<br>L-Version                                           | <b>38 Steel; L</b><br>Ø 0,90                                                        |
|  |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| <b>43 Steel; L</b><br>Ø 0,90                                                      |                                                                                   |                                                                                    |                                                                                     |                                                                                     |

### F585 | Tip Style, Material, Plating, Tip-Ø (mm)

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |
| <b>05 BeCu; G</b><br>Ø 1,50                                                         | <b>06 BeCu; G</b><br>Ø 1,30 / 1,50 / 2,00 / 2,50<br>L-Vers. Ø 1,50 / 2,00           | <b>06 BeCu; G (IK)</b><br>see page 27                                                | <b>07 Steel; L</b><br>Ø 1,50 / 1,70                                                   | <b>10 Steel; L</b><br>Ø 0,63                                                          |
|  |  |  |  |  |
| <b>11 BeCu; G</b><br>Ø 1,05                                                         | <b>12 BeCu; G</b><br>Ø 1,50                                                         | <b>14 BeCu; G</b><br>Ø 1,30 / 1,50                                                   | <b>14 Steel; L</b><br>Ø 1,30 / 1,50<br>L-Vers. Ø 1,30                                 | <b>15 BeCu; G</b><br>Ø 1,50 / 1,70 / 2,00 / 2,50<br>L-Version Ø 1,50                  |
|  |  |  |  |  |
| <b>17 BeCu; G</b><br>Ø 1,50 / 1,90                                                  | <b>18 BeCu; G</b><br>Ø 1,05                                                         | <b>18 Steel; L</b><br>Ø 1,05<br>L-Version                                            | <b>21 Steel; L</b><br>Ø 1,05                                                          | <b>30 BeCu; G</b><br>Ø 1,05                                                           |
|  |  |  |  |  |
| <b>33 Steel; L</b><br>Ø 1,05 / 1,50<br>L-Version Ø 1,0                              | <b>34 Steel; L</b><br>Ø 0,80                                                        | <b>35 Steel; L</b><br>Ø 1,45                                                         | <b>36 BeCu; G</b><br>Ø 1,37                                                           | <b>36 Steel; L</b><br>Ø 1,37                                                          |
|  |  |  |  |  |
| <b>41 BeCu; G</b><br>see page 27                                                    | <b>60 BeCu; G</b><br>Ø 0,46                                                         | <b>62 BeCu; G</b><br>Ø 1,05                                                          | <b>63 BeCu; G</b><br>Ø 1,50                                                           | <b>64 Steel; L</b><br>Ø 0,46                                                          |

### Drill Size (mm)

| Material                | press ring<br>as stop | press ring<br>inserted |
|-------------------------|-----------------------|------------------------|
| EP 105 (CEM1, Trolitax) | 1,67-1,68             | 1,70-1,75              |
| HGW 2372.1 (FR4)        | 1,68-1,69             |                        |

| Type                    | Tip-Ø                                 | Spring Force |
|-------------------------|---------------------------------------|--------------|
| <b>F100</b>             | <b>33 S</b>                           | <b>090</b>   |
| <b>L</b>                | <b>300</b>                            | <b>L</b>     |
| Tip Style               | Material                              | Finish       |
| <b>Material:</b>        | B = BeCu, S = Steel                   |              |
| <b>Tip-Ø:</b>           | 090 = 0,90 mm (e.g.)                  |              |
| <b>Finish:</b>          | G = Gold, L = Longtime Gold plated    |              |
| <b>Special Version:</b> | IK = Insulating cap, L = Long Version |              |
|                         | H = High Temperature Version          |              |
| <b>Receptacle:</b>      | Order-Code according drawing          |              |

ORDER EXAMPLE

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F588 | 5,0 A   | -20°...+80°C | <20 mOhm               |

## Long Travel Probe for Dual Stage Fixtures

# F588

The F588 is the long travel version of the F100 / F585 and can be used in dual stage fixture applications for the functional test stage. The short version length is 2,7 mm less the standard version. Available tip styles for S-Version see tip styles.

Due to the press ring, the receptacle H100 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

Receptacles are available with Wire-Wrap- (WW), Crimp- (CR) or Solder-Connection (LA).

### Mechanical Specifications

| Travel (mm) |                                                |
|-------------|------------------------------------------------|
| Nominal:    | 9,6                                            |
| Maximum:    | 12,0 (standard length)<br>10,3 (short version) |

**Spring Force** (cN  $\pm 20\%$ )

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 180 | 300 |
| Preload:       | 40  | 70  |

Pointing Accuracy:  $\pm 0,1$  mm

## Materials and Plating

Plunger: see Tip Styles

Barrel: Nickel Silver, Gold plated

Spring: Music wire, Silver plated

Receptacle: Nickel Silver, Gold plated

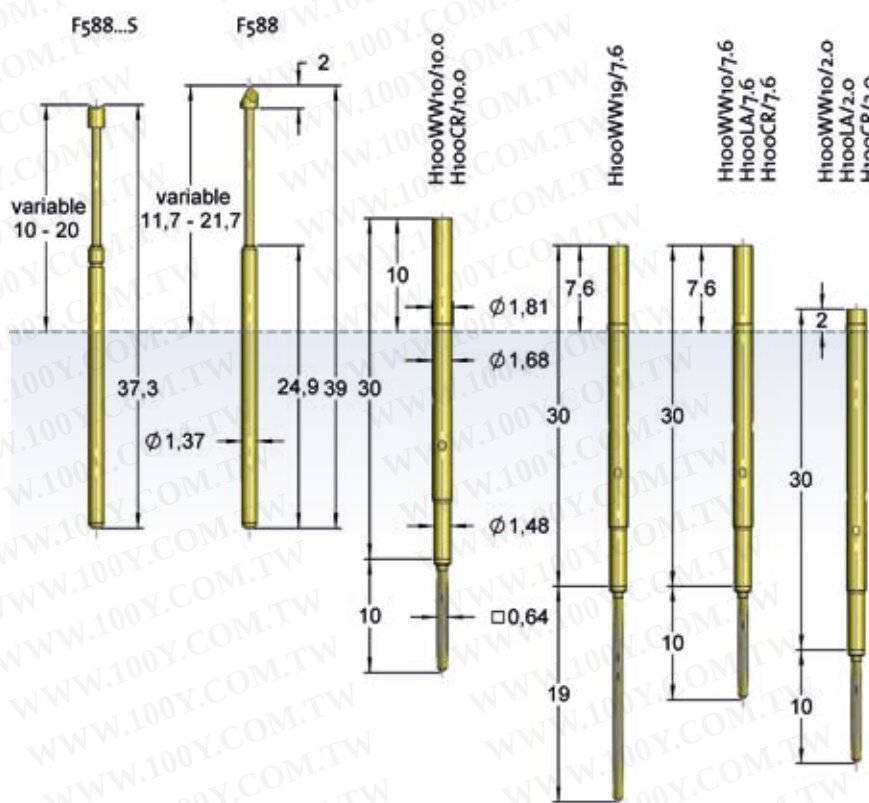
**Drill Size (mm)**

| Material                | press ring<br>as stop | press ring<br>inserted |
|-------------------------|-----------------------|------------------------|
| EP 105 (CEM1, Trolitax) | 1,67-1,68             |                        |
| HGW 2372.1 (FR4)        | 1,68-1,69             | 1,70-1,75              |

| Type      | Tip-Ø    | Spring Force    |
|-----------|----------|-----------------|
| F588      | 06 B     | 150             |
| G         | 180      | S               |
| Tip Style | Material | Finish          |
|           |          | Special Version |

**Material:** B = BeCu, S = Steel  
**Tip-Ø** 090 = 0,90 mm (e.g.)  
**Finish:** G = Gold, L = Longtime Gold plated  
**Special Version:** IK = Insulating cap  
 S = Short Version  
**Receptacle:** Order-Code according drawing

**ORDER EXAMPLE**



All receptacles H100... are identical with the former article description H585...

勝特力材料 886-3-5753170  
勝特力電子(上海) 86-21-34970699  
勝特力電子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**F588 | Tip Style, Material, Plating, Tip- Ø (mm)**



|                                                    |                                                    |                                                    |                             |                             |
|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|-----------------------------|-----------------------------|
| <b>05 BeCu; G</b><br>Ø 1,50<br>S-Version available | <b>06 BeCu; G</b><br>Ø 1,50<br>S-Version available | <b>12 BeCu; G</b><br>Ø 1,50<br>S-Version available | <b>15 BeCu; G</b><br>Ø 1,50 | <b>18 BeCu; G</b><br>Ø 0,76 |
|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|-----------------------------|-----------------------------|



|                                     |                                                    |                             |                                                            |                              |
|-------------------------------------|----------------------------------------------------|-----------------------------|------------------------------------------------------------|------------------------------|
| <b>21 Steel; L</b><br>Ø 0,76 / 0,90 | <b>28 BeCu; G</b><br>Ø 1,50<br>S-Version available | <b>30 BeCu; G</b><br>Ø 0,76 | <b>33 Steel; L</b><br>Ø 0,64 / 0,90<br>S-Version available | <b>36 Steel; L</b><br>Ø 1,40 |
|-------------------------------------|----------------------------------------------------|-----------------------------|------------------------------------------------------------|------------------------------|



|                              |                                       |                                                    |  |  |
|------------------------------|---------------------------------------|----------------------------------------------------|--|--|
| <b>38 Steel; L</b><br>Ø 0,90 | <b>41 BeCu; G (IK)</b><br>see page 27 | <b>63 BeCu; G</b><br>Ø 1,50<br>S-Version available |  |  |
|------------------------------|---------------------------------------|----------------------------------------------------|--|--|



| Type        | Current | Temperature  | R <sub>typically</sub> |
|-------------|---------|--------------|------------------------|
| F562 / F771 | 5,0 A   | -20°...+80°C | <20 mOhm               |

## Standard Probe 100 mil short version

### F 562 / F771

The F562 is 8,6 mm, the F771 is 7,9 mm shorter than F100. Both probes have less travel. The F771 is the dimension-compatible version of the threaded probe F731.

This probes are mainly used for board test (basic grid field), in-line test systems and for automotive applications (test modules).

Both probes fit to the receptacle H502, available with Wire-Wrap- (WW), Crimp- (CR) or Solder-Connection (LA). Due to the press ring, the receptacles H100 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

#### Mechanical Specifications

| Travel (mm) | F562 | F771 |
|-------------|------|------|
| Nominal:    | 2,7  | 2,6  |
| Maximum:    | 3,5  | 4,0  |

#### Spring Force F562 (cN ±20%)

|                |     |     |     |
|----------------|-----|-----|-----|
| Nominal Force: | 100 | 150 | 200 |
| Preload:       | 60  | 60  | 60  |

#### Spring Force F771 (cN ±20%)

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 150 | 300 |
| Preload:       | 80  | 80  |

#### Pointing Accuracy:

F562: ± 0,05 mm

F771: ± 0,08 mm

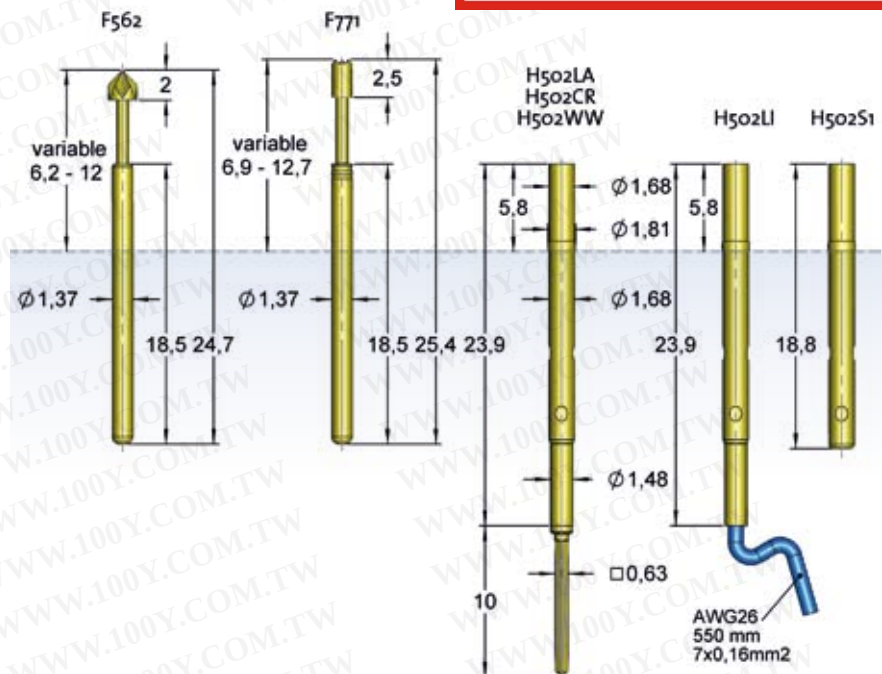
#### Materials and Plating

Plunger: see Tip Styles

Barrel: Bronze, Gold plated

Spring: Music wire, Silver plated

Receptacle: Bronze, Gold plated



#### Drill Size (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 1,67-1,68          | 1,70-1,75           |
| HGW 2372.1 (FR4)        | 1,68-1,69          |                     |

#### F562 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                            |                              |                                                      |                              |                              |
|--------------------------------------------|------------------------------|------------------------------------------------------|------------------------------|------------------------------|
|                                            |                              |                                                      |                              |                              |
| <b>04 BeCu; G</b><br>Ø 1,90                | <b>05 Steel; L</b><br>Ø 1,90 | <b>06 BeCu; G</b><br>Ø 1,90, also<br>100 cN + 220 cN | <b>07 Steel; L</b><br>Ø 1,90 | <b>14 Steel; L</b><br>Ø 0,90 |
|                                            |                              |                                                      |                              |                              |
| <b>15 BeCu; G</b><br>Ø 1,90 also<br>100 cN | <b>18 BeCu; G</b><br>Ø 0,76  | <b>21 Steel; L</b><br>Ø 0,76                         | <b>40 BeCu; G</b><br>Ø 1,05  |                              |

#### F771 | Tip Style, Material, Plating, Tip- Ø (mm)

|                             |                                    |                                    |                             |                             |
|-----------------------------|------------------------------------|------------------------------------|-----------------------------|-----------------------------|
|                             |                                    |                                    |                             |                             |
| <b>05 BeCu; G</b><br>Ø 1,80 | <b>06 BeCu; G</b><br>Ø 1,30 / 1,80 | <b>11 BeCu; G</b><br>Ø 0,65 / 0,75 | <b>14 BeCu; G</b><br>Ø 1,80 | <b>15 BeCu; G</b><br>Ø 1,80 |
|                             |                                    |                                    |                             |                             |
| <b>17 BeCu; G</b><br>Ø 1,80 |                                    |                                    |                             |                             |

| Type                 | Tip-Ø                              | Spring Force |
|----------------------|------------------------------------|--------------|
| F562                 | 05S 190                            | L 150        |
| Tip Style            | Material                           | Finish       |
| <b>Material:</b>     | B = BeCu, S = Steel                |              |
| <b>Tip-Ø</b>         | 190 = 1,90 mm (e.g.)               |              |
| <b>Finish:</b>       | G = Gold, L = Longtime Gold plated |              |
| <b>Receptacle:</b>   | Order-Code according drawing       |              |
| <b>ORDER EXAMPLE</b> |                                    |              |

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                     | Current | Temperature   | R typically |
|--------------------------|---------|---------------|-------------|
| F772                     | 5,0 A   | -20°...+80°C  | <20 mOhm    |
| F772 ... H <sup>1)</sup> | 5,0 A   | -40°...+250°C | <30 mOhm    |
| F772 ... C <sup>2)</sup> | 16,0 A  | -20°...+80°C  | <20 mOhm    |

\* depend on chosen tip diameter

<sup>1)</sup> on request, <sup>2)</sup> see High Current Probes

## Standard Probe 100 mil robust design

### F772

The F772 is a robust 100 mil probe, mainly used at dual stage applications in combination with the long travel probes F786/F797. The collar at the probe barrel is acting as stopper at the receptacle and provides fix projection height and proper seat. High temperature versions (on request) and high current versions are available.

Due to the press ring, the receptacles H772 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

Further available are receptacles H712 with collar and either Wire-Wrap-, Crimp- or Solder-Connection.

### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 4,0 |
| Maximum:    | 5,0 |

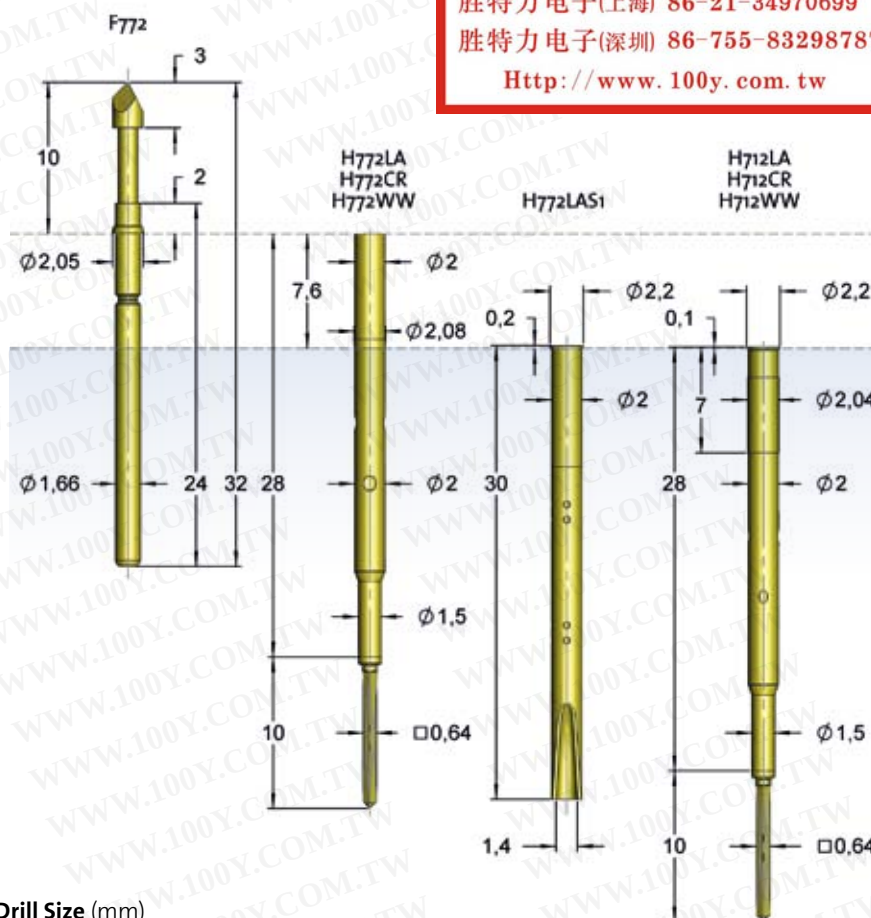
| Spring Force (cN ±20%) |     |     |     |
|------------------------|-----|-----|-----|
| Nominal Force:         | 150 | 220 | 300 |
| Preload:               | 60  | 60  | 60  |
| 450 cN on request      |     |     |     |

Pointing Accuracy: ± 0,08 mm

### Materials and Plating

Plunger: see Tip Styles  
Barrel: Nickel Silver, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Nickel Silver, Gold plated

| Type                                                                                                                                                                                                                                                                                                                 | Tip-Ø     | Spring Force    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------|
| F772                                                                                                                                                                                                                                                                                                                 | 06 B      | 200 G           |
|                                                                                                                                                                                                                                                                                                                      | Tip Style | Material        |
|                                                                                                                                                                                                                                                                                                                      |           | Finish          |
|                                                                                                                                                                                                                                                                                                                      |           | Special Version |
| <b>Material:</b> B = BeCu, S = Steel<br>200 = 2,00 mm (e.g.)<br><b>Tip-Ø:</b> G = Gold, L = Longtime Gold plated<br><b>Finish:</b> N = Nickel, R = Rhodium<br><b>Special Version:</b> IK = Insulating cap, H = High Temperature Version, C = High Current Version<br><b>Receptacle:</b> Order-Code according drawing |           |                 |
| ORDER EXAMPLE                                                                                                                                                                                                                                                                                                        |           |                 |



### Drill Size (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 1,99-2,00          | 2,03-2,05           |
| HGW 2372.1 (FR4)        |                    |                     |

### F772 | Tip Style, Material, Plating, Tip- Ø (mm) (Standard version: projection height = 10 mm)

|                                          |                                                      |                                                      |                                       |                                     |
|------------------------------------------|------------------------------------------------------|------------------------------------------------------|---------------------------------------|-------------------------------------|
|                                          |                                                      |                                                      |                                       |                                     |
| <b>03 BeCu; G</b><br>Ø 1,30<br>S-Version | <b>05 BeCu; G</b><br>Ø 1,80 / 2,00, /<br>2,50 / 4,00 | <b>06 BeCu; G</b><br>Ø 1,50 / 1,80, /<br>2,00 / 2,50 | <b>06 BeCu; G (IK)</b><br>see page 27 | <b>07 Steel; L</b><br>Ø 1,75 / 2,00 |
|                                          |                                                      |                                                      |                                       |                                     |
| <b>10 Steel; N</b><br>Ø 0,70 / 1,30      | <b>11 BeCu; G</b><br>Ø 0,63                          | <b>12 BeCu; G</b><br>Ø 1,50 / 2,00                   | <b>13 Steel; L</b><br>Ø 2,00          | <b>14 Steel; L</b><br>Ø 2,00        |
|                                          |                                                      |                                                      |                                       |                                     |
| <b>15 BeCu; G</b><br>Ø 2,00              | <b>17 BeCu; G</b><br>Ø 2,00                          | <b>18 BeCu; G</b><br>Ø 1,30                          | <b>18 Steel; N</b><br>Ø 0,80          | <b>21 Steel; L</b><br>Ø 1,30        |
|                                          |                                                      |                                                      |                                       |                                     |
| <b>28 BeCu; G</b><br>Ø 2,00              | <b>30 BeCu; G</b><br>Ø 1,30                          | <b>32 Steel; N</b><br>Ø 0,80                         | <b>33 Steel; L ; R</b><br>Ø 1,30      |                                     |



| Type       | Current | Temperature  | R <sub>typically</sub> |
|------------|---------|--------------|------------------------|
| F772...EXX | 5,0 A   | -20°...+80°C | <20 mOhm               |

\* depend on chosen tip diameter

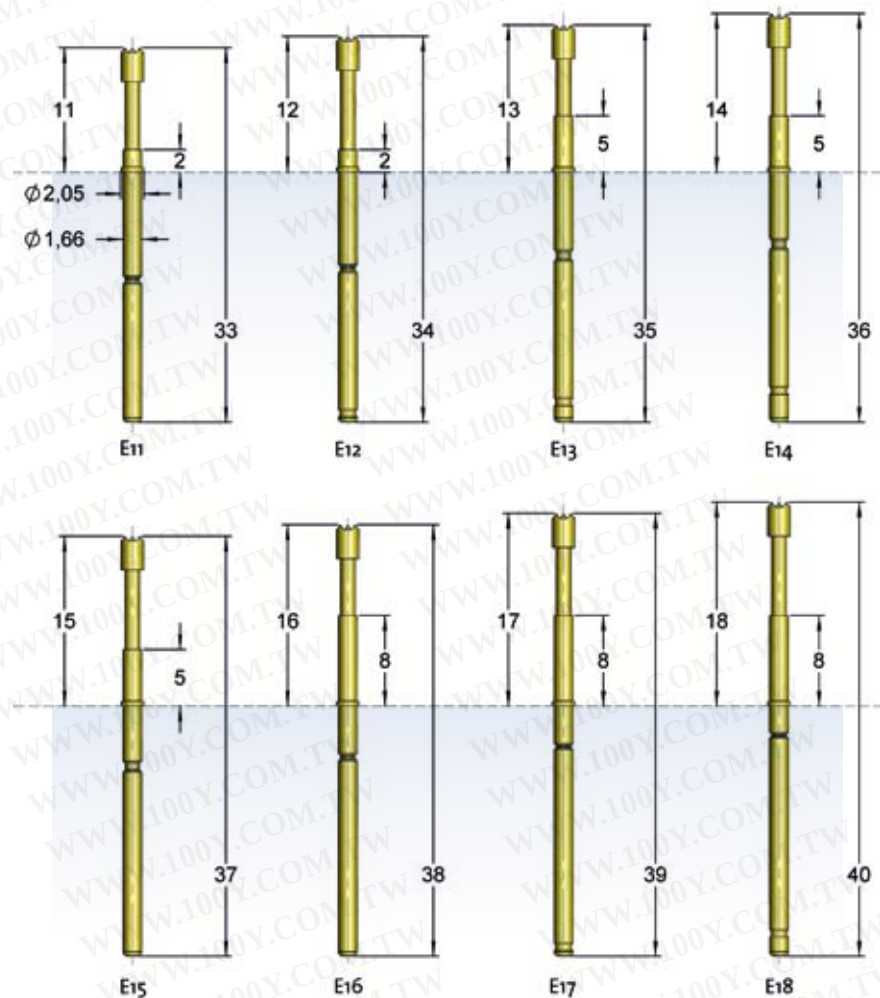
## Projection Heights Overview

### F772 ...Exx

Besides the F772 standard version with 10 mm projection height (E10), FEINMETALL is offering numerous probe lengths for F772...Exx, to realise different projection heights for various level of heights at the application. The probe length is encoded by Exx at the end of the Order Code.

By using the receptacles H772 with press ring, even larger projection height can be achieved. To guarantee the pointing accuracy for larger projection heights, FEINMETALL is recommending the usage of a guiding plate.

### Mechanical Specifications (see page 24)



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### F772...EXX | Tip Style, Material, Plating, Tip- Ø (mm) (Availability on request)

| Type             | Tip-Ø                                | Spring Force |
|------------------|--------------------------------------|--------------|
| F772             | 06 B                                 | 200          |
|                  | G                                    | 300          |
|                  | E18                                  |              |
| Tip Style        | Material                             | Finish       |
| Material:        | B = BeCu, S = Steel                  |              |
| Tip-Ø:           | 200 = 2,00 mm (e.g.)                 |              |
| Finish:          | G = Gold, L = Longtime Gold plated   |              |
|                  | N = Nickel, R = Rhodium              |              |
| Special Version: | EXX = projection height in mm        |              |
|                  | IK = Insulating cap,                 |              |
|                  | H = High Temperature Version         |              |
| Receptacle:      | C = High Current Version             |              |
|                  | Order-Code according drawing page 24 |              |

### ORDER EXAMPLE

|                       |                             |                           |                                |                       |
|-----------------------|-----------------------------|---------------------------|--------------------------------|-----------------------|
|                       |                             |                           |                                |                       |
| 03 BeCu; G<br>Ø 1,30  | 05 BeCu; G<br>Ø 1,30 / 2,00 | 06 BeCu; G<br>1,80 / 2,00 | 06 BeCu; G (IK)<br>see page 27 | 07 Steel; L<br>Ø 1,80 |
|                       |                             |                           |                                |                       |
| 11 BeCu; G<br>Ø 0,70  | 14 Steel; L<br>Ø 2,00       | 15 BeCu; G<br>Ø 2,00      | 18 BeCu; G<br>Ø 1,00 / 1,30    | 21 Steel; L<br>Ø 1,30 |
|                       |                             |                           |                                |                       |
| 33 Steel; L<br>Ø 1,30 | 63 Steel; L<br>Ø 2,00       |                           |                                |                       |

勝特力材料 886-3-5753170  
勝特力電子(上海) 86-21-34970699  
勝特力電子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F782 | 5,0 A   | -20°...+80°C | <20 mOhm               |
| F786 | 5,0 A   | -20°...+80°C | <20 mOhm               |
| F797 | 5,0 A   | -20°...+80°C | <20 mOhm               |

\* depend on chosen tip diameter

## Long Travel Probe robust design

## F782 / F786 / F797

All this probes are mainly used in dual stage fixture applications for the functional test stage. The collar at the probe barrel is acting as stopper at the receptacle and provides fix projection height and proper seat. Various projection heights for F797 are available: 15 mm (E15), 18 mm (E18) and 21 mm (E21). Due to the press ring, the receptacles H772 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories). Further available are receptacles H712 with collar for fix projection height and proper seat. All receptacles are available with either Wire-Wrap-, Crimp- or Solder-Connection.

### Mechanical Specifications

| Travel (mm) | F782 | F786 | F797 |
|-------------|------|------|------|
| Nominal:    | 6,4  | 6,4  | 8,0  |
| Maximum:    | 8,0  | 8,0  | 10,0 |

**Spring Force F782 / F786 / F797 (cN  $\pm$ 20%)**

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 150 | 300 |
| Preload:       | 60  | 60  |

### Pointing Accuracy:

F782 / F786:  $\pm 0,10$  mm

F797:  $\pm 0,18 \text{ mm}$

## Materials and Plating

Plunger: see Tip Styles

Barrel: Nickel Silver, Gold plated

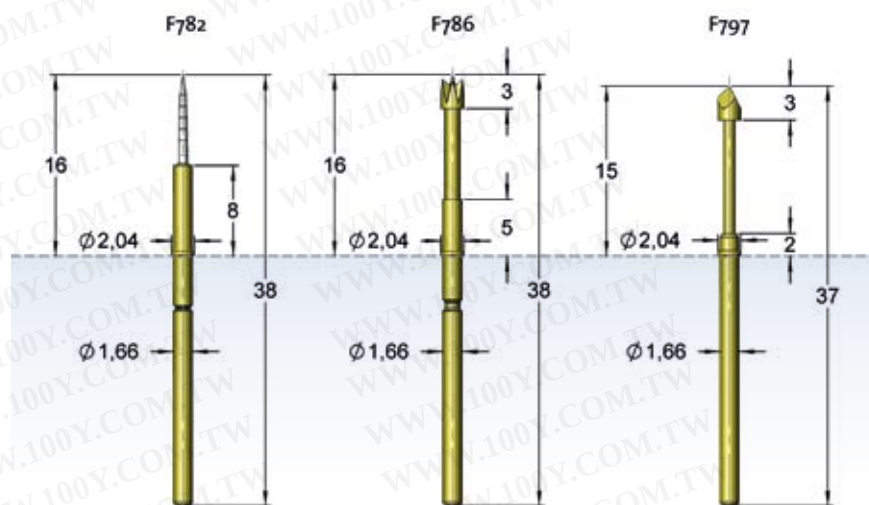
Spring: Music wire, Silver plated

Receptacle: Nickel Silver, Gold plated

**Drill Size (mm)**

| Material                                    | press ring<br>as stop | press ring<br>inserted |
|---------------------------------------------|-----------------------|------------------------|
| EP 105 (CEM1, Trolitax)<br>HWG 2372.1 (FR4) | 1,99-2,00             | 2,03-2,05              |

The diagram illustrates the structure of a part number. A blue bar contains the part number 'F786 06 B 450 G 300 IK'. Above the bar, labels with arrows point to specific parts of the number: 'Type' points to 'F786', 'Tip-Ø' points to '06 B', 'Spring Force' points to '450', and 'Finish' points to 'G'. Below the bar, labels with arrows point to specific parts of the number: 'Tip Style' points to 'F786', 'Material' points to '06 B', 'Finish' points to 'G', and 'Special Version' points to '300 IK'. To the right of the diagram, a list defines the codes: Material: B = BeCu, S = Steel; Tip-Ø: 450 = 4,50 mm (e.g.); Finish: G = Gold, L = Longtime Gold plated, N = Nickel; Special Version: IK = Insulating cap; Receptacle: Order-Code according drawing page 24.



**F782 | Tip Style, Material, Plating, Tip- Ø (mm)**



|                                 |                              |                              |  |  |
|---------------------------------|------------------------------|------------------------------|--|--|
| <b>10 Steel; L; N</b><br>Ø 0,63 | <b>32 Steel; N</b><br>Ø 0,80 | <b>33 Steel; L</b><br>Ø 1,30 |  |  |
|---------------------------------|------------------------------|------------------------------|--|--|

**F786 | Tip Style, Material, Plating, Tip- Ø (mm)**



|                             |                             |                             |                                  |                                       |
|-----------------------------|-----------------------------|-----------------------------|----------------------------------|---------------------------------------|
| <b>03 BeCu; G</b><br>Ø 1,30 | <b>04 BeCu; G</b><br>Ø 2,00 | <b>05 BeCu; G</b><br>Ø 1,30 | <b>06 BeCu; G</b><br>2,00 / 4,50 | <b>06 BeCu; G (IK)</b><br>see page 27 |
|-----------------------------|-----------------------------|-----------------------------|----------------------------------|---------------------------------------|



|                                     |                             |                              |                              |                             |
|-------------------------------------|-----------------------------|------------------------------|------------------------------|-----------------------------|
| <b>07 Steel; L</b><br>Ø 1,80 / 2,00 | <b>11 BeCu; G</b><br>Ø 1,30 | <b>13 Steel; L</b><br>Ø 2,00 | <b>14 Steel; L</b><br>Ø 2,00 | <b>15 BeCu; G</b><br>Ø 2,00 |
|-------------------------------------|-----------------------------|------------------------------|------------------------------|-----------------------------|



|                             |                              |                                 |                              |                              |
|-----------------------------|------------------------------|---------------------------------|------------------------------|------------------------------|
| <b>18 BeCu; G</b><br>Ø 1,30 | <b>21 Steel; L</b><br>Ø 1,30 | <b>32 Steel; L; N</b><br>Ø 0,80 | <b>33 Steel; L</b><br>Ø 1,30 | <b>34 Steel; L</b><br>Ø 0,80 |
|-----------------------------|------------------------------|---------------------------------|------------------------------|------------------------------|



|                              |                              |  |  |  |
|------------------------------|------------------------------|--|--|--|
| <b>38 Steel; L</b><br>Ø 1,30 | <b>63 Steel; L</b><br>Ø 2,00 |  |  |  |
|------------------------------|------------------------------|--|--|--|

**F797 | Tip Style, Material, Plating, Tip- Ø (mm)**



|                             |                             |                                       |                              |                             |
|-----------------------------|-----------------------------|---------------------------------------|------------------------------|-----------------------------|
| <b>03 BeCu; G</b><br>Ø 1,00 | <b>06 BeCu; G</b><br>Ø 2,00 | <b>06 BeCu; G (IK)</b><br>see page 27 | <b>14 Steel; L</b><br>Ø 2,00 | <b>15 BeCu; G</b><br>Ø 2,00 |
|-----------------------------|-----------------------------|---------------------------------------|------------------------------|-----------------------------|



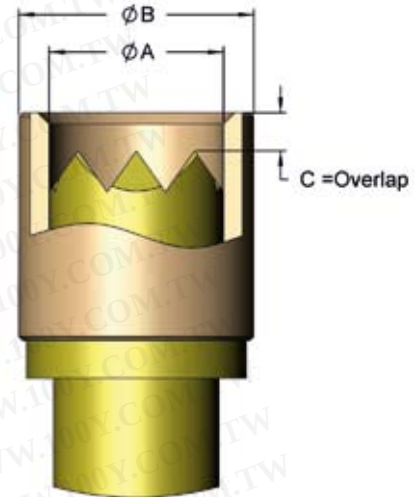
|                             |                                 |                             |  |  |
|-----------------------------|---------------------------------|-----------------------------|--|--|
| <b>16 BeCu; G</b><br>Ø 1,00 | <b>18 BeCu; G</b><br>Ø 1,Ø 1,00 | <b>29 BeCu; G</b><br>Ø 1,00 |  |  |
|-----------------------------|---------------------------------|-----------------------------|--|--|



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Insulating Caps Overview

|             |                                                                          |                                                                               |                                                                                     |                                                                               |                                                                                     |
|-------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>F175</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F17506B130G180IK</b><br>180 cN<br>Ø 1,3 mm<br>Ø 1,7 mm<br>0,4 mm           |    |                                                                               |                                                                                     |
| <b>F588</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F58841B150G300IK</b><br>300 cN<br>Ø 1,5 mm<br>Ø 2,2 mm<br>0,4 mm           |    |                                                                               |                                                                                     |
| <b>F703</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F70306B130G180IK</b><br>180 cN<br>Ø 1,3 mm<br>Ø 1,7 mm<br>0,4 mm           |    |                                                                               |                                                                                     |
| <b>F797</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F79706B250G300IK17</b><br>300 cN<br>Ø 2,5 mm<br>Ø 3,2 mm<br>1,7 mm         |    |                                                                               |                                                                                     |
| <b>F832</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F83205S0008L650IK10</b><br>650 cN<br>Ø 1,0 mm<br>Ø 2,0 mm<br>1,0 mm        |  |                                                                               |                                                                                     |
| <b>F075</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F07506B130GxxxIK</b><br>130, 180, 280 cN<br>Ø 1,3 mm<br>Ø 1,7 mm<br>0,4 mm |  | <b>F07541B130G280IK</b><br>280 cN<br>Ø 1,3 mm<br>Ø 1,7 mm<br>0,4 mm           |  |
| <b>F822</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F82205S0008L650IK10</b><br>650 cN<br>Ø 1,0 mm<br>Ø 2,0 mm<br>1,0 mm        |  | <b>F82205S0007L650IK15</b><br>650 cN<br>Ø 0,8 mm<br>Ø 2,0 mm<br>1,5 mm        |  |
| <b>F786</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F78606B400G300IK04</b><br>300 cN<br>Ø 4,0 mm<br>Ø 4,8 mm<br>0,4 mm         |  | <b>F78606B400G300IK06</b><br>300 cN<br>Ø 4,0 mm<br>Ø 4,8 mm<br>0,6 mm         |  |
| <b>F733</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F73306B180G150IK05</b><br>150 cN<br>Ø 1,8 mm<br>Ø 2,6 mm<br>0,5 mm         |  | <b>F73306B230G150IK05</b><br>150 cN<br>Ø 2,3 mm<br>Ø 3,1 mm<br>0,5 mm         |  |
| <b>F585</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F58506B100GxxxIK</b><br>130, 200, 300 cN<br>Ø 1,0 mm<br>Ø 2,2 mm<br>0,4 mm |  | <b>F58506B150Gxxxik</b><br>130, 200, 300 cN<br>Ø 1,5 mm<br>Ø 2,2 mm<br>0,4 mm |  |
| <b>F585</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F58506B200GxxxIK</b><br>130, 200, 300 cN<br>Ø 2,0 mm<br>Ø 3,2 mm<br>0,4 mm |  | <b>F58506B350GxxxIK</b><br>130, 200, 300 cN<br>Ø 3,5 mm<br>Ø 4,0 mm<br>0,4 mm |  |
| <b>F585</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F58506B370G300IK36</b><br>300 cN<br>Ø 3,7 mm<br>Ø 4,7 mm<br>3,6 mm         |  | <b>F58506B370G300IK47</b><br>300 cN<br>Ø 3,7 mm<br>Ø 6,0 mm<br>4,7 mm         |  |
| <b>F732</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F73206B120GxxxIK05</b><br>150, 300 cN<br>Ø 1,2 mm<br>Ø 2,0 mm<br>0,5 mm    |  | <b>F73206B120G150IK60</b><br>150 cN<br>Ø 1,2 mm<br>Ø 2,0 mm<br>6,0 mm         |  |
| <b>F732</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F73206B180G150IK05</b><br>150 cN<br>Ø 1,8 mm<br>Ø 2,6 mm<br>0,5 mm         |  | <b>F73206B180G150IK05</b><br>150 cN<br>Ø 1,8 mm<br>Ø 2,6 mm<br>0,5 mm         |  |
| <b>F772</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F77206B100G150IK05</b><br>150 cN<br>Ø 1,0 mm<br>Ø 1,9 mm<br>0,5 mm         |  | <b>F77206B120G150IK05</b><br>150 cN<br>Ø 1,2 mm<br>Ø 2,0 mm<br>0,5 mm         |  |
| <b>F772</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F77206B180G150IK05</b><br>150 cN<br>Ø 1,8 mm<br>Ø 2,6 mm<br>0,5 mm         |  | <b>F77206B180G150IK08</b><br>150 cN<br>Ø 1,8 mm<br>Ø 2,6 mm<br>0,8 mm         |  |
| <b>F772</b> | <b>Order Code</b><br>Spring Force<br>Inner-Ø A<br>Outer-Ø B<br>Overlap C | <b>F77206B200G150IK05</b><br>150 cN<br>Ø 2,0 mm<br>Ø 2,8 mm<br>0,5 mm         |  |                                                                               |                                                                                     |



| Type     | Current | Temperature   | R <sub>typically</sub> |
|----------|---------|---------------|------------------------|
| F563     | 6,0 A   | -20°...+80°C  | <50 mOhm               |
| F563...H | 6,0 A   | -40°...+250°C | <50 mOhm               |

## For heavy mechanical loads

### F563

The F563 is designed for heavy mechanical loads and higher level current. Main application is functional test (FCT), in-line and automotive applications. Due to the press ring, the receptacles H563 can be adjusted at variable height to achieve the requested projection height for the probe. The receptacles is available with Wire-Wrap- or Solder-Connection. For receptacle mounting please use the insertion tool FEWZ (see Tools/ Accessories).

#### Mechanical Specifications

##### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,2 |
| Maximum: | 6,4 |

##### Spring Force (cN ±20%)

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 180 | 300 |
| Preload:       | 50  | 50  |

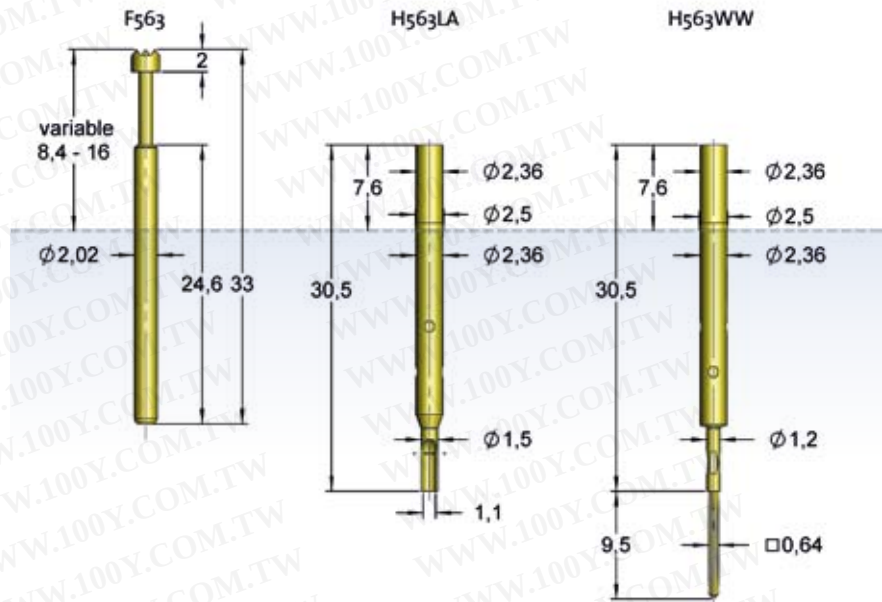
Pointing Accuracy: ± 0,10 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Nickel Silver, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Nickel Silver, Gold plated

#### Drill Size (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 2,34-2,35          | 2,40-2,45           |
| HGW 2372.1 (FR4)        |                    |                     |



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### F563 | Tip Style, Material, Plating, Tip-Ø (mm)

| Type                                                                                                                                                                                                                                       | Tip-Ø     | Spring Force    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------|
| F563                                                                                                                                                                                                                                       | 06 B 250  | G 250 H         |
|                                                                                                                                                                                                                                            | Tip Style | Material        |
|                                                                                                                                                                                                                                            |           | Finish          |
|                                                                                                                                                                                                                                            |           | Special Version |
| <b>Material:</b> B = BeCu, S = Steel<br><b>Tip-Ø:</b> 250 = 2,50 mm (e.g.)<br><b>Finish:</b> G = Gold, L = Longtime Gold plated<br><b>Special Version:</b> H = High Temperature Version<br><b>Receptacle:</b> Order-Code according drawing |           |                 |
| ORDER EXAMPLE                                                                                                                                                                                                                              |           |                 |

|                                    |                                                  |                              |                                    |                             |
|------------------------------------|--------------------------------------------------|------------------------------|------------------------------------|-----------------------------|
|                                    |                                                  |                              |                                    |                             |
| <b>05 BeCu; G</b><br>Ø 1,70 / 2,50 | <b>06 BeCu; G</b><br>Ø 2,00 / 2,50 / 4,00 / 4,50 | <b>06 Steel; L</b><br>Ø 2,50 | <b>11 BeCu; G</b><br>Ø 1,30 / 1,70 | <b>12 BeCu; G</b><br>Ø 2,50 |
|                                    |                                                  |                              |                                    |                             |
| <b>14 BeCu; G</b><br>Ø 2,50        | <b>15 BeCu; G</b><br>Ø 3,00                      | <b>18 BeCu; G</b><br>Ø 1,30  |                                    |                             |



**Centers F564: 3,18 mm/125 mil**  
**Centers F566: 4,75 mm/187 mil**

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F564 | 7,0 A   | -20°...+80°C | <50 mOhm    |
| F566 | 8,0 A   | -20°...+80°C | <50 mOhm    |

## Long travel probe for heavy mechanical loads

### F564 / F566

F564 and F566 are designed for heavy mechanical loads and higher level current. Main application is functional test (FCT), in-line and automotive applications. Due to the press ring, the receptacles H564 / H566 can be adjusted at variable height to achieve the requested projection height for the probe. The receptacles will be delivered with Solder-Connection.

For receptacle mounting please use the insertion tool FEWZ (see Tools/ Accessories).

#### Mechanical Specifications

| Travel (mm) | F564 | F566 |
|-------------|------|------|
| Nominal:    | 4,2  | 4,2  |
| Maximum:    | 6,4  | 6,4  |

| Spring Force (cN ±20%) | F564 | F566 |
|------------------------|------|------|
| Nominal Force:         | 135  | 450  |
| Preload:               | 60   | 175  |

Pointing Accuracy:

F564 / F566: ± 0,10 mm

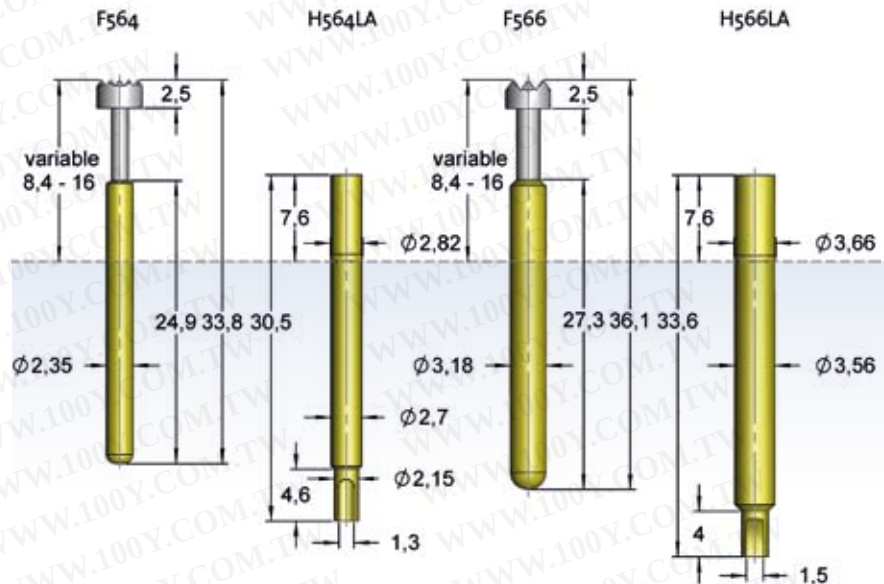
#### Materials and Plating

Plunger: see Tip Styles

Barrel: Nickel Silver, Gold plated

Spring: stainless Music wire, unplated

Receptacle: Nickel Silver, Gold plated



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size F564 (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 2,67-2,68          | 2,75-2,78           |
| HGW 2372.1 (FR4)        |                    |                     |

#### Drill Size F566 (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 3,54-3,55          | 3,58-3,63           |
| HGW 2372.1 (FR4)        |                    |                     |

#### F564 | Tip Style, Material, Plating, Tip- Ø (mm)



|                             |                             |                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <b>06 BeCu; R</b><br>Ø 4,00 | <b>11 BeCu; R</b><br>Ø 1,55 | <b>12 BeCu; R</b><br>Ø 2,40 | <b>16 BeCu; R</b><br>Ø 1,55 | <b>17 BeCu; R</b><br>Ø 4,00 |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|



|                             |  |  |  |  |
|-----------------------------|--|--|--|--|
| <b>18 BeCu; R</b><br>Ø 1,55 |  |  |  |  |
|-----------------------------|--|--|--|--|

#### F566 | Tip Style, Material, Plating, Tip- Ø (mm)



|                             |                                |                             |  |  |
|-----------------------------|--------------------------------|-----------------------------|--|--|
| <b>05 BeCu; R</b><br>Ø 4,00 | <b>06 BeCu; G; R</b><br>Ø 4,00 | <b>18 BeCu; G</b><br>Ø 2,00 |  |  |
|-----------------------------|--------------------------------|-----------------------------|--|--|

| Type        | Tip-Ø                        | Spring Force |
|-------------|------------------------------|--------------|
| F564        | 06 B 400                     | R 135        |
| Tip Style   | Material                     | Finish       |
| Material:   | B = BeCu, S = Steel          |              |
| Tip-Ø:      | 400 = 4,00 mm (e.g.)         |              |
| Finish:     | G = Gold, R = Rhodium        |              |
| Receptacle: | Order-Code according drawing |              |

ORDER EXAMPLE

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

|            | Current | Temperature   | R typically |
|------------|---------|---------------|-------------|
| F773       | 10,0 A  | -20...+80 °C  | <20 mOhm    |
| F773 ... H | 10,0 A  | -40...+250 °C | <30 mOhm    |
| F773 ... C | 24,0 A  | -40...+250 °C | < 8 mOhm    |
| F796       | 10,0 A  | -20...+80 °C  | <20 mOhm    |

\* depend on chosen tip diameter

## For high current and heavy mechanical loads

## F773 / F796

F564 and F566 are designed for heavy mechanical loads and higher level current. Main application is functional test (FCT) and burn-in or run-in test. The F773 has compatible dimensions to the threaded probe F773.

The F796 is a long travel probe with 10 mm maximum travel.

For F773 and F796 the receptacle H774 can be used. This receptacle has a collar for fix projection height and proper seat, available with either Wire-Wrap- or Solder-Connection. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

### Mechanical Specifications

| Travel (mm) | F773 | F796 |
|-------------|------|------|
| Nominal:    | 4,0  | 8,0  |
| Maximum:    | 5,0  | 10,0 |

### Spring Force F773 (cN ±20%)

|                |     |     |     |     |
|----------------|-----|-----|-----|-----|
| Nominal Force: | 150 | 220 | 300 | 400 |
| Preload:       | 80  | 30  | 80  | 80  |

### Spring Force F796 (cN ±20%)

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 150 | 300 |
| Preload:       | 70  | 80  |

Pointing Accuracy:

F773: ± 0,10 mm

F796: ± 0,13 mm

### Materials and Plating

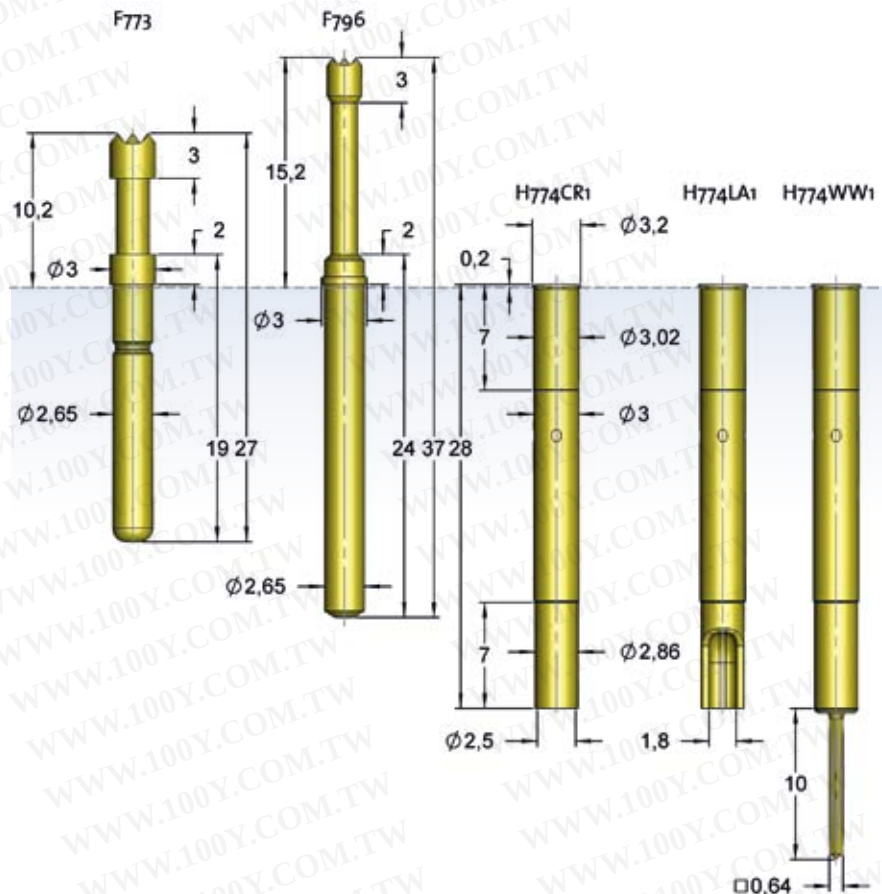
Plunger: see Tip Styles

Barrel: Nickel Silver, Gold plated

Spring: Music wire, Silver plated

H Version: Stainless steel

Receptacle: Nickel Silver, Gold plated



### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        |              |

### F773 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                    |                                  |                              |                                        |                                    |
|------------------------------------|----------------------------------|------------------------------|----------------------------------------|------------------------------------|
|                                    |                                  |                              |                                        |                                    |
| <b>04 BeCu; G</b><br>Ø 2,30        | <b>05 BeCu; G</b><br>Ø 2,30      | <b>06 BeCu; G</b><br>Ø 2,50  | <b>07 Steel; L</b><br>Ø 2,30/3,00/4,00 | <b>09 Steel; L</b><br>Ø 2,30       |
|                                    |                                  |                              |                                        |                                    |
| <b>11 BeCu; G</b><br>Ø 1,80        | <b>12 BeCu; G</b><br>Ø 2,30/3,00 | <b>14 Steel; L</b><br>Ø 2,30 | <b>15 BeCu; G</b><br>Ø 2,30/3,00       | <b>16 BeCu; G</b><br>Ø 1,40 / 1,80 |
|                                    |                                  |                              |                                        |                                    |
| <b>17 BeCu; G</b><br>Ø 2,30 / 3,00 | <b>18 BeCu; G</b><br>Ø 1,80      | <b>21 Steel; L</b><br>Ø 1,80 | <b>28 BeCu; G</b><br>Ø 2,30            |                                    |

### F796 | Tip Style, Material, Plating, Tip- Ø (mm)

|                             |                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
|                             |                             |                             |                             |
| <b>06 BeCu; G</b><br>Ø 2,30 | <b>11 BeCu; G</b><br>Ø 1,76 | <b>12 BeCu; G</b><br>Ø 2,30 | <b>14 BeCu; G</b><br>Ø 2,30 |

| Type                 | Tip-Ø                        | Spring Force |
|----------------------|------------------------------|--------------|
| <b>F773</b>          | <b>06 B 230</b>              | <b>G 300</b> |
|                      | <b>H</b>                     |              |
| Tip Style            | Material                     | Finish       |
| Material:            | B = BeCu, S = Steel,         |              |
| Tip-Ø:               | 230 = 2,30 mm (e.g.)         |              |
| Finish:              | G = Gold                     |              |
|                      | L = Longtime Gold plated     |              |
| Special Version:     | H = High Temperature Version |              |
| Receptacle:          | Order-Code according drawing |              |
| <b>ORDER EXAMPLE</b> |                              |              |



| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F785 | 10,0 A  | -20°...+80°C | <20 mOhm    |

\* depend on chosen tip diameter

## For high current and heavy mechanical loads

### F785

F785 is a long travel probe with 8mm maximum travel.

Main application is functional test (FCT) and burn-in or run-in test.

The F785 is available with standard length and as long version (L-Version)

For F785 the receptacle H774 can be used. This receptacle has a collar for fix projection height and proper seat, available with either Wire-Wrap- or Solder-Connection. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories).

#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 6,4 |
| Maximum:    | 8,0 |

| Spring Force (cN ±20%) |     |     |
|------------------------|-----|-----|
| Nominal Force:         | 150 | 300 |
| Preload:               | 80  | 80  |

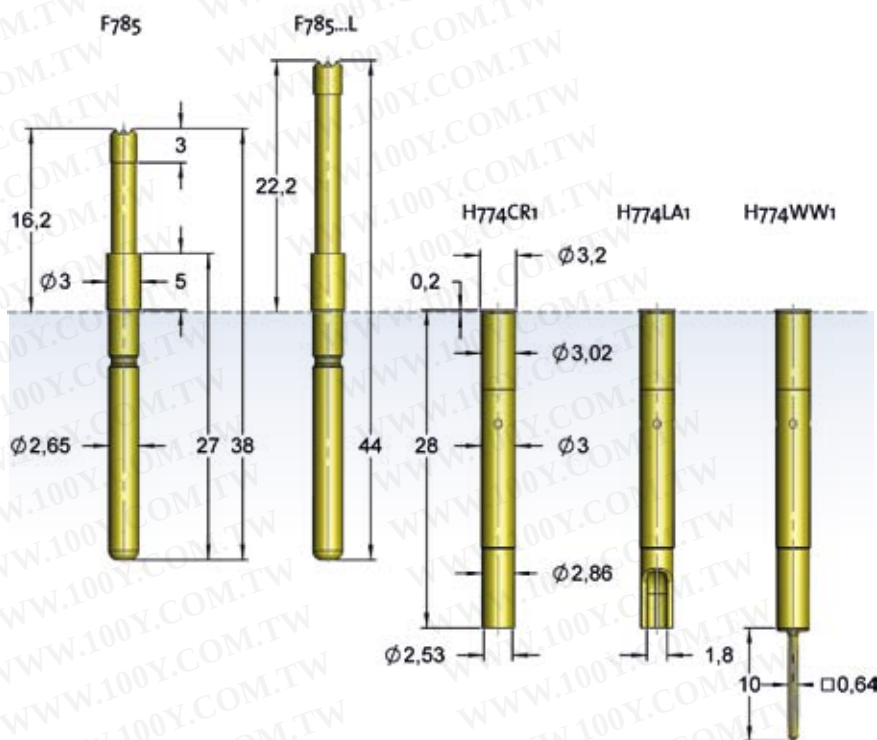
Pointing Accuracy: ± 0,10 mm

#### Materials and Plating

Plunger: see Tip Styles  
 Barrel: Nickel Silver, Gold plated  
 Spring: Music wire, Silver plated  
 Receptacle: Nickel Silver, Gold plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type             | Tip-Ø                                     | Spring Force           |
|------------------|-------------------------------------------|------------------------|
| F785             | 06 B 120                                  | G 300 L                |
| Tip Style        | Material                                  | Finish Special Version |
| Material:        | B = BeCu, S = Steel, 250 = 2,50 mm (e.g.) |                        |
| Tip-Ø:           | G = Gold, L = Longtime Gold plated        |                        |
| Finish:          |                                           |                        |
| Special Version: | L = Long Version                          |                        |
| Receptacle:      | Order-Code according drawing              |                        |

ORDER EXAMPLE

#### F785 | Tip Style, Material, Plating, Tip- Ø (mm)

|                              |                                                         |                                                                             |                                                  |
|------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------|
|                              |                                                         |                                                                             |                                                  |
| <b>01 Steel; L</b><br>Ø 2,00 | <b>06 BeCu; G</b><br>Ø 1,20 nur als L-Version available | <b>06 BeCu; G</b><br>Ø 2,30 / 2,50 / 3,50 L-Version Ø 2,50 / 3,50 available | <b>14 Steel; L</b><br>Ø 2,30 L-Version available |

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

Centers F591/F592: 1,27 mm / 50 mil  
 Centers F593: 1,90 mm / 75 mil  
 Centers F595: 2,54 mm / 100 mil

|           | Current | Temperature  | R typically |
|-----------|---------|--------------|-------------|
| F591      | 2,0 A   | -20...+80 °C | <30 mOhm    |
| F592      | 2,0 A   | -20...+80 °C | <35 mOhm    |
| F593/F595 | 3,0 A   | -20...+80 °C | <30 mOhm    |

## Rotating Probes for Board-Test

### F591/592/ 593/F595

NEW

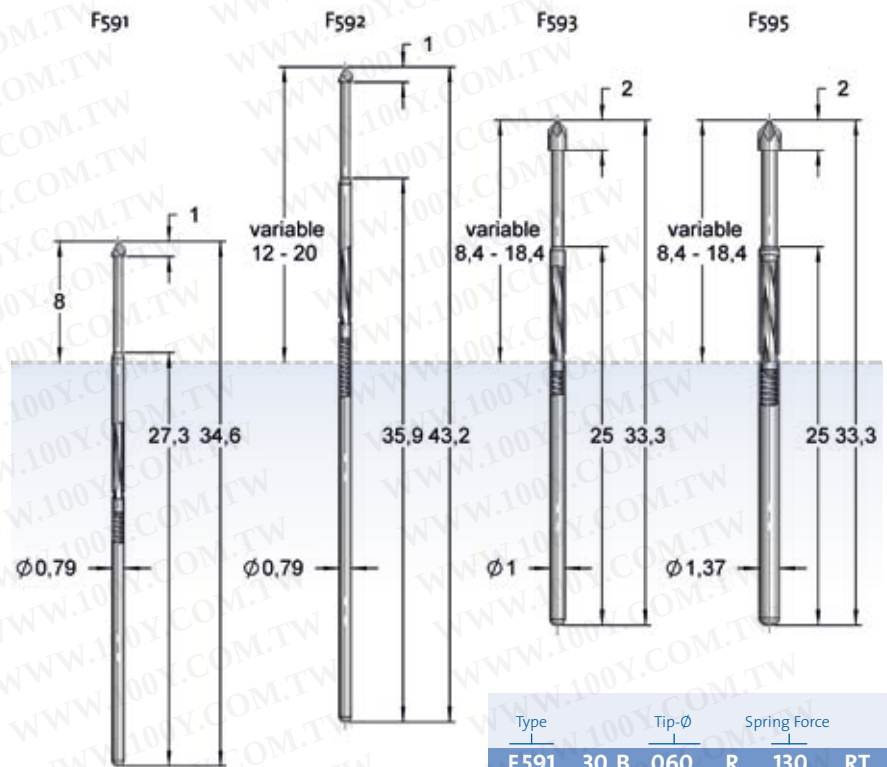
Rotating Probes are used to penetrate contamination, oxidation or flux residues on test points. The plunger performs a rotation of about 90° when pressed down.

For the F591 please use receptacles H768CR and H768LA.

The F592 has the same dimensions as the F788. Receptacles: H787LA and H787CR

The F593 has the same dimensions as the F075/F703. Receptacles: H075WW, H075CR and H075LA

The F595 has the same dimensions as the F100/F585. Receptacles: H100WW, H100CR and H100LA



| Type                                                                                                                                         | Tip-Ø      | Spring Force |
|----------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|
| F591                                                                                                                                         | 30 B 060 R | 130 RT       |
| Tip Style    Material    Finish    Special Version                                                                                           |            |              |
| <b>Material:</b> B = BeCu<br><b>Tip-Ø:</b> 060 = 0,60 mm (e.g.)<br><b>Finish:</b> R = Rhodium<br><b>Special Version:</b> RT = Rotating probe |            |              |
| ORDER EXAMPLE                                                                                                                                |            |              |

## Mechanical Specifications

| Travel (mm) | F591 | F592 | F593 | F595 |
|-------------|------|------|------|------|
| Nominal:    | 5,0  | 5,0  | 5,0  | 5,0  |
| Maximum:    | 6,4  | 6,4  | 5,7  | 5,6  |

| Spring Force (cN ±20%) |               |     |
|------------------------|---------------|-----|
| Preload                | Nominal Force |     |
| F591                   | 35            | 130 |
| F592                   | 40            | 120 |
| F592                   | 40            | 250 |
| F593                   | 30            | 130 |
| F593                   | 30            | 200 |
| F595                   | 50            | 130 |
| F595                   | 50            | 200 |

Pointing Accuracy: ±0,05 ±0,1 ±0,08 ±0,08

## Materials and Plating

Plunger: see Tip Styles

Barrel: F591, F592: Bronze, rhodanized

F593, F595: Nickel Silver, rhodanized

Spring: Music wire, Gold plated

### F591 | Tip Style, Material, Plating, Tip- Ø (mm)



30 BeCu; R  
 Ø 0,60

### F592 | Tip Style, Material, Plating, Tip- Ø (mm)



30 BeCu; R  
 Ø 0,60

### F593 | Tip Style, Material, Plating, Tip- Ø (mm)



07 BeCu; R  
 Ø 1,20



30 BeCu; R  
 Ø 0,78

### F595 | Tip Style, Material, Plating, Tip- Ø (mm)



07 BeCu; R  
 Ø 1,50



15 BeCu; R  
 Ø 1,50



30 BeCu; R  
 Ø 1,05

## Receptacles and Drill Size (mm)

see F768/F788/F075/F100



| Type  | Current | Temperature  | R <sub>typically</sub> |
|-------|---------|--------------|------------------------|
| FP732 | 5,0 A   | -20°...+80°C | <20 mOhm               |

## Threaded Probe for Flying Probe Test Systems

### FP732 NEW

The Flying Probe Needle has been developed for test systems of Acculogic (Scorpion) and Digitaltest. The special design leads to an excellent pointing accuracy.

The FP732 is used in combination with receptacle H732LARD.

#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 6,4 |
| Maximum:    | 8,0 |

| Spring Force (cN ±20%) |     |
|------------------------|-----|
| Nominal Force:         | 150 |
| Preload:               | 50  |

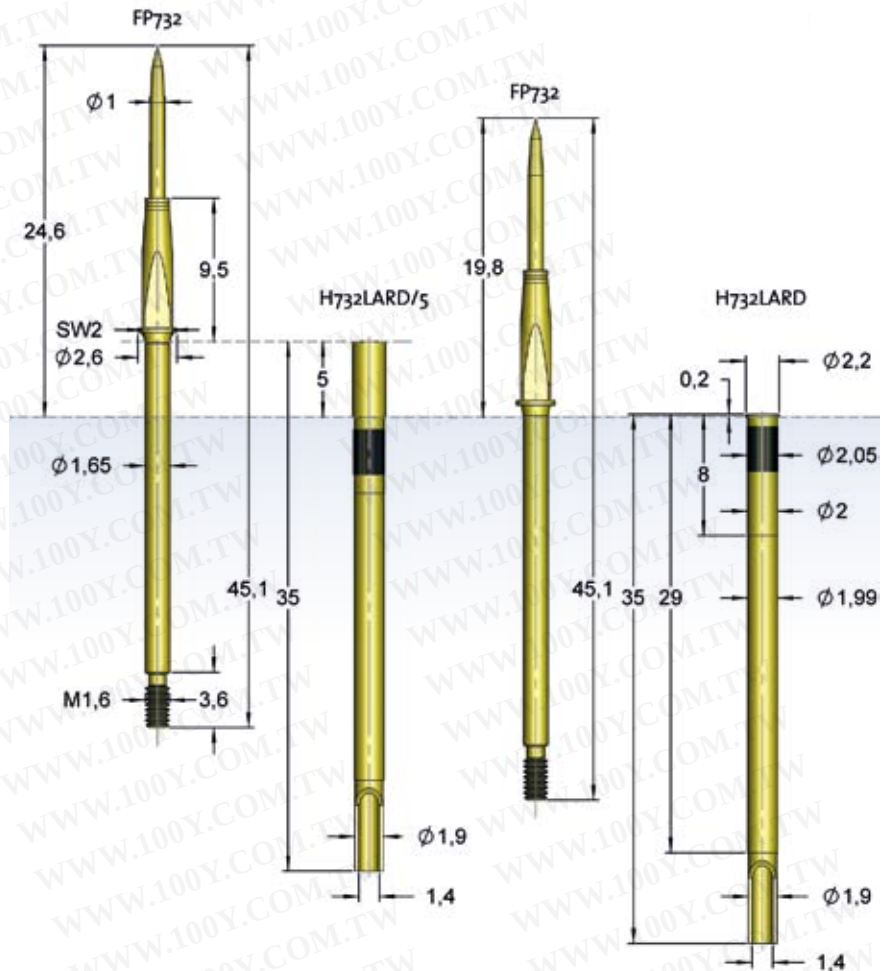
Pointing Accuracy: ± 0,05 mm

#### Materials and Plating

|             |                         |
|-------------|-------------------------|
| Plunger:    | Steel, Gold plated      |
| Barrel:     | Brass, Gold plated      |
| Spring:     | Music wire, Gold plated |
| Receptacle: | Brass, Gold plated      |

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 2,00-2,02     | 1,99-2,00        |
| HGW 2372.1 (FR4)        |               |                  |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                     | Tip-Ø                         | Spring Force |
|--------------------------|-------------------------------|--------------|
| FP732 18 S 100 L 150 E19 |                               |              |
| Tip Style                | Material                      | Finish       |
| Material:                | S = Steel                     |              |
| Tip-Ø:                   | 100 = 1,00 mm (e.g.)          |              |
| Finish:                  | L = Longtime Gold plated      |              |
| Special Version:         | E19 = projection height 19 mm |              |
|                          | E21 = on request              |              |
| Receptacle:              | Order-Code according drawing  |              |

**ORDER EXAMPLE**

#### FP732 | Tip Style, Material, Plating, Tip- Ø (mm)



**18 Steel; L**  
Ø 1,00

Further tip styles and dimension on request

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| Z585 | 3,0 A   | -20°...+80°C | 30 mOhm                |
| Z588 | 3,0 A   | -20°...+80°C | 25 mOhm                |

## For the Test of ICs on PCBs (Test Jet)

### Z585/Z588

The Z585/Z588 is a special probe for non-contact gauging of IC-components. The contact probes are used in pairs as flexible holder for the sensor plate. The flexible contact head with resilient element ensures an optimal adjustment of the sensor plate on the IC or component. This measuring principle is known as „TestJet“ in the Agilent-Testsystem and as „Frame Scan“ in the Teradyne-Testsystem.

Receptacles please see page 20

#### Mechanical Specifications

| Travel (mm)            | Z585 | Z588 |
|------------------------|------|------|
| Nominal:               | 5,0  | 9,6  |
| Maximum:               | 5,5  | 12,0 |
| Spring Force (cN ±20%) | Z585 | Z588 |
| Nominal Force:         | 130  | 180  |
| Preload:               | 30   | 40   |

#### Materials and Plating

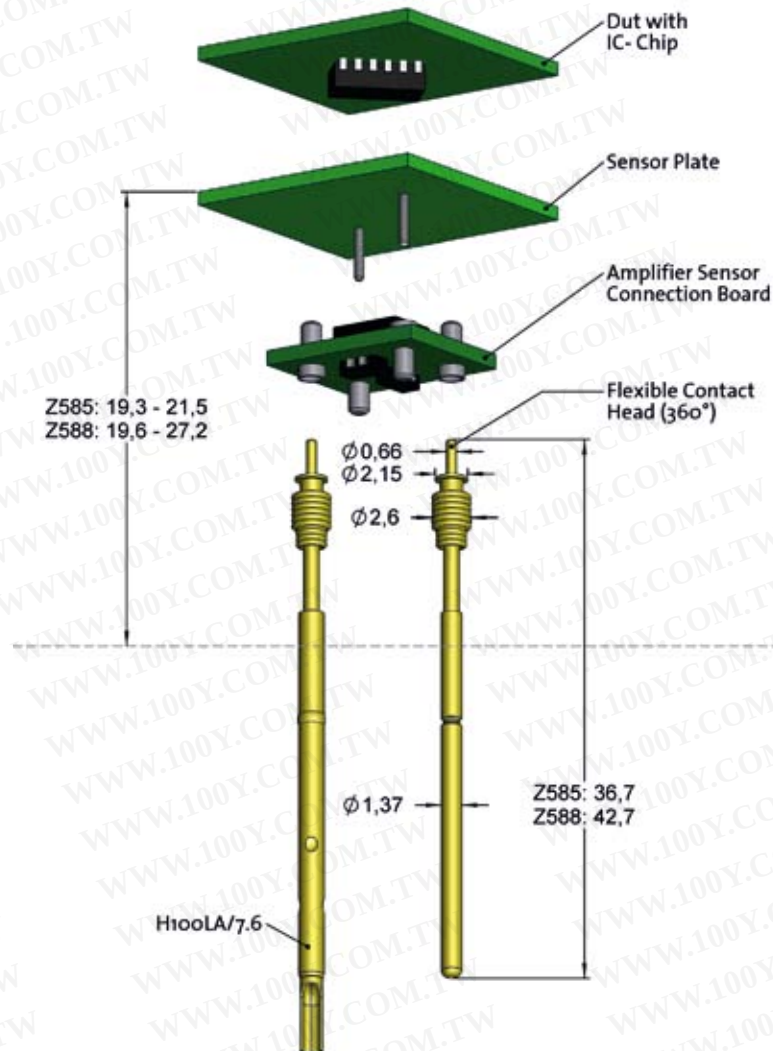
Plunger: BeCu, Gold plated

Barrel: Nickel Silver, Gold plated

Spring: **Z585:** Music wire, Silver plated

**Z588:** Music wire, Gold plated

Receptacle: Nickel Silver, Gold plated



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

For further details please see our special catalog „Test-Fixtures“ at [www.feinmetall.com](http://www.feinmetall.com)

| Product                                                                 | Order Code       |
|-------------------------------------------------------------------------|------------------|
| Testjet - Spring Contact Probe with flexible contact head               | Z58550B175G130S1 |
| Testjet - Spring Contact Probe flexible contact head, Overlength (+6mm) | Z58850B175G180S1 |
| Testjet - Spring Contact Probe*, original Agilent                       | 2100830          |
| Small-Testjet - Spring Contact Probe * (Fork Head) original Agilent     | 2100822          |

## Capacitive Sensors and Accessories

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Test System                                        | Product                                                                                               | Order Code     | Minimum Order |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------|---------------|
| <b>System Agilent („Testjet“ and „VTEP“)</b>       |                                                                                                       |                |               |
| Testjet                                            | Signal Conditioner Board* (MUX-Board)                                                                 | 2100175        | 1             |
|                                                    | Signal Conditioner Board* (MUX+REF B-Revision)                                                        | 2100191        | 1             |
|                                                    | Testjet-Amplifier incl. 2 Probes Type 2100830 loose                                                   | 2100176        | 1             |
|                                                    | Testjet-Amplifier incl. 2 Probes Type Z58550B175G130S1 loose                                          | 2101350        | 1             |
|                                                    | Testjet-Amplifier without Probes                                                                      | 2102310        | 1             |
|                                                    | Sensor Plates 9,5x12mm (0,375x0,475 inch), Effective Surface 5,5x10,3mm (0,217x0,405 inch) SO14       | 2100823        | 10            |
|                                                    | Sensor Plates 10,8x14,6mm (0,475x0,575 inch) SO20                                                     | 2100824        | 10            |
|                                                    | Sensor Plates 30x30mm (1,2x1,2 inch)                                                                  | 2100825        | 1             |
|                                                    | Sensor Plates 64x64mm (2,5x2,5 inch)                                                                  | 2100826        | 1             |
|                                                    | Sensor Plates 12,5x158mm (0,5x6,1 inch)                                                               | 2100827        | 1             |
|                                                    | Sensor Plates* 30x30mm (1,2x1,2 inch)                                                                 | 2100179        | 1             |
|                                                    | Sensor Plates* 64x64mm (2,5x2,5 inch)                                                                 | 2100180        | 1             |
|                                                    | Sensor Plates* 12,5x158mm (0,5x6,1 inch)                                                              | 2100190        | 1             |
|                                                    | Small-Testjet-Amplifier* incl. 2 Probes Type 2100822 loose                                            | 2100192        | 1             |
|                                                    | Small Sensor Plates* B-C Size 4x6,4mm also for VTEP                                                   | 2100193        | 10            |
|                                                    | Small Sensor Plates* D Size 5x7,6mm also for VTEP                                                     | 2100194        | 10            |
|                                                    | Set: Small-Testjet-Amplifier* incl. 2 Probes Type 2100822 soldered and Sensor Plate B-C-Size soldered | 40400146       | 1             |
|                                                    | Set: Small-Testjet-Amplifier* incl. 2 Probes Type 2100822 soldered and Sensor Plate D-Size soldered   | 40400147       | 1             |
|                                                    | Set: Small-Testjet-Amplifier* incl. 2 Probes Type 2100822 soldered without Sensor Plate               | 40400104       | 1             |
| VTEP                                               | VTEP Signal Conditioner Board* (MUX-Board)                                                            | 2101126        | 1             |
|                                                    | VTEP Signal Conditioner Board* (MUX+REF)                                                              | 2101127        | 1             |
|                                                    | VTEP Testjet-Amplifier* incl. 2 Probes Type 2100830 loose                                             | 2101128        | 1             |
|                                                    | VTEP Testjet-Amplifier* incl. 2 Probes Type Z58550B175G130S1 loose                                    | 2102041        | 1             |
|                                                    | VTEP Testjet-Amplifier* without probes                                                                | 2102275        | 1             |
|                                                    | VTEP Sensor Plates* 30x30mm (1,2x1,2 inch)                                                            | 2101131        | 1             |
|                                                    | VTEP Sensor Plates* 64x64mm (2,5x2,5 inch)                                                            | 2101132        | 1             |
|                                                    | VTEP Sensor Plates* 12,5x158mm (0,5x6,1 inch)                                                         | 2101130        | 1             |
|                                                    | VTEP Small-Testjet-Amplifier* incl. 2 Probes Type 2100822 loose                                       | 2101133        | 1             |
|                                                    | VTEP Small Sensor Plates, see above                                                                   |                |               |
|                                                    | * orig. Agilent                                                                                       |                |               |
| <b>System Teradyne („Framescan“ and „Capscan“)</b> |                                                                                                       |                |               |
| Framescan                                          | Teradyne Mux-Board                                                                                    | 4-805960       | 1             |
|                                                    | Teradyne-Framescan-Amplifier (higher amplification factor than System Agilent-Testjet-Amplifier)      | 2101970        | 1             |
|                                                    | alternatively also System Agilent Testjet-Amplifier usable - aside from VTEP, see above               |                |               |
| Capscan                                            | Sensor Plates identical to System Agilent, see above                                                  |                |               |
|                                                    | identical to System Agilent Small-Testjet parts - aside from VTEP, see above                          |                |               |
| <b>System Digitaltest („OpensCheck“)</b>           |                                                                                                       |                |               |
|                                                    | Digitaltest Opens-Check Board (Amplifier)                                                             | 2100199        | 1             |
|                                                    | Passive Sensor Connection Board incl. 2 Probes Type Z58550B175G130                                    | 4-806448       | 1             |
|                                                    | Sensor Plates identical to System Agilent, see above                                                  |                |               |
|                                                    | OpensCheck - probe FM spiral spring tip                                                               | Z58550B175G130 | 10            |
|                                                    | Insert for FM spiral spring probe                                                                     | SO585B02G      | 10            |

| Type  | Current | Temperature  | R typically |
|-------|---------|--------------|-------------|
| BP050 | 3,0 A   | -20...+80 °C | <20 mOhm    |
| BP075 | 4,0 A   | -20...+80 °C | <20 mOhm    |
| BP100 | 5,0 A   | -20...+80 °C | <20 mOhm    |

## Contacting of Solder Beads

NEW

## Bead Probes

For contacting solder beads of the Agilent Bead-Probe-Technology FEINMETALL has developed special spring contact probes. These applications require tip styles that guarantee a good contact of the beads without causing any damages on the board. Depending on the size and shape of the beads, different tip styles are available. The plungers of the Bead Probe Series are plated with the functional „Progressive Coating“ that minimizes contamination and leads to high durability.

### Mechanische Spezifikationen

| Travel (mm) |        |
|-------------|--------|
| Nominal:    | 4,3 mm |
| Maximum:    | 6,4 mm |

| Spring Force (cN ±20%) |         |               |
|------------------------|---------|---------------|
|                        | Preload | Nominal Force |
| BP050                  | 60      | 150           |
|                        | 70      | 200           |
| BP075                  | 50      | 150           |
|                        | 70      | 200           |
| BP100                  | 90      | 150           |
|                        | 80      | 200           |
|                        | 160     | 300           |

Pointing Accuracy:

BP050: ± 0,05 mm

BP075: ± 0,08 mm

BP100: ± 0,08 mm

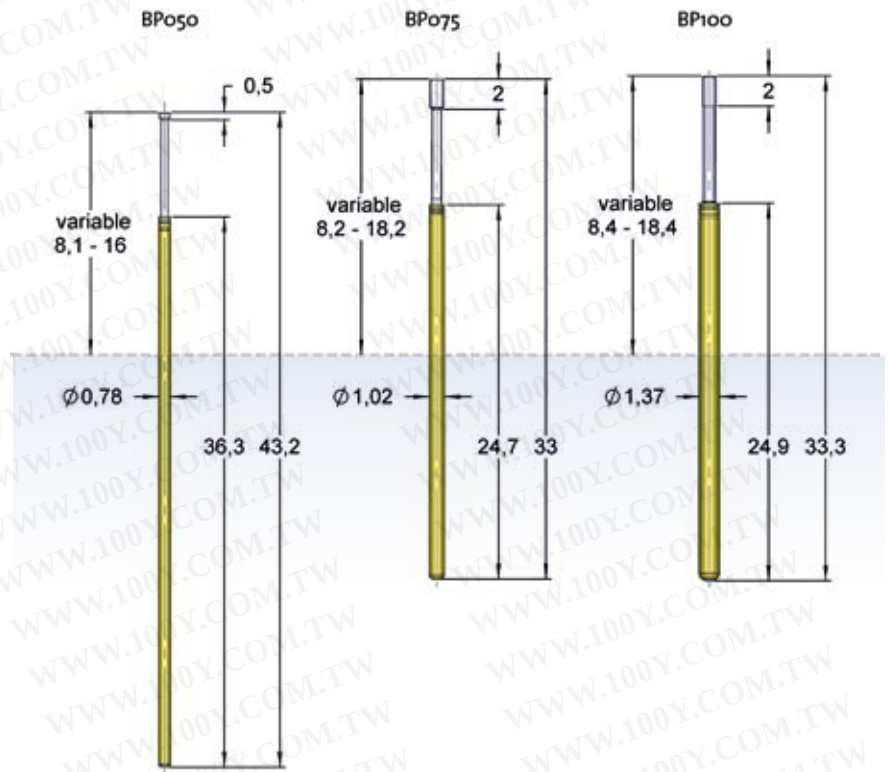
### Materials and Plating

Plunger: BeCu with

functional coating

Barrel: Nickel Silver, Gold plated

Spring: Music wire, Silver plated



### Drill Size (mm)

see Standard Probes F050 / F075 / F100

### BP050 | Tip Style, Material, Plating, Tip- Ø (mm)



**06 BeCu; P**  
 Ø 0,60  
 peak to peak  
 distance: 0,20



**06 BeCu; P**  
 Ø 0,70  
 peak to peak  
 distance: 0,10



**17 BeCu; P**  
 Ø 0,60

### BP075 | Tip Style, Material, Plating, Tip- Ø (mm)



**06 BeCu; P**  
 Ø 0,80  
 peak to peak  
 distance: 0,16



**06 BeCu; P**  
 Ø 0,90  
 peak to peak  
 distance: 0,10



**17 BeCu; P**  
 Ø 0,90

### BP100 | Tip Style, Material, Plating, Tip- Ø (mm)



**06 BeCu; P**  
 Ø 0,80  
 peak to peak  
 distance: 0,16



**06 BeCu; P**  
 Ø 0,90  
 peak to peak  
 distance: 0,10



**17 BeCu; P**  
 Ø 0,90 / 1,50

| Type                                                                                                                                                | Tip-Ø      | Spring Force |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|
| BP050                                                                                                                                               | 06 B 060 P | 150          |
|                                                                                                                                                     | Tip Style  | Material     |
|                                                                                                                                                     |            | Finish       |
| <b>Material:</b> B = BeCu<br><b>Tip-Ø:</b> 060 = 0,60 mm (e.g.)<br><b>Finish:</b> P = Functional coating<br><b>Receptacle:</b> see F050, F075, F100 |            |              |
| ORDER EXAMPLE                                                                                                                                       |            |              |

# Fine Pitch and Double Plunger Probes



Centers F681: 0,50 mm/20 mil  
Centers F680/F685: 0,75mm/30 mil

| Type      | Current | Temperature  | R typically |
|-----------|---------|--------------|-------------|
| F681      | 0,15 A  | -20...+80 °C | <60 mOhm    |
| F680/F685 | 0,50 A  | -20...+80 °C | <50 mOhm    |

## Double Plunger Probes for BGAs and Fine Pitch

### F681/F680/F685

This probes are mainly used at test-heads and test-sockets for component test. Those probes are double plunger probes with two separate spring loaded plungers. One for contacting the DUT and the other for contacting the tester's interface (translator-board, e.g.)

#### Mechanical Specifications

| Travel (mm) | F681 | F680 | F685 |
|-------------|------|------|------|
| Nominal:    | 0,65 | 0,50 | 0,75 |
| Maximum:    | 0,75 | 1,00 | 1,00 |

#### Spring Force (cN ±20%)

|      | Preload | Nominal Force |
|------|---------|---------------|
| F681 | 10      | 20            |
| F680 | 20      | 40            |
| F685 | 10      | 35            |

#### Pointing Accuracy:

|       |            |
|-------|------------|
| F681: | ± 0,04 mm  |
| F680: | ± 0,09 mm  |
| F685: | ± 0,04 mm: |

#### Materials and Plating

Plunger: see Tip Styles

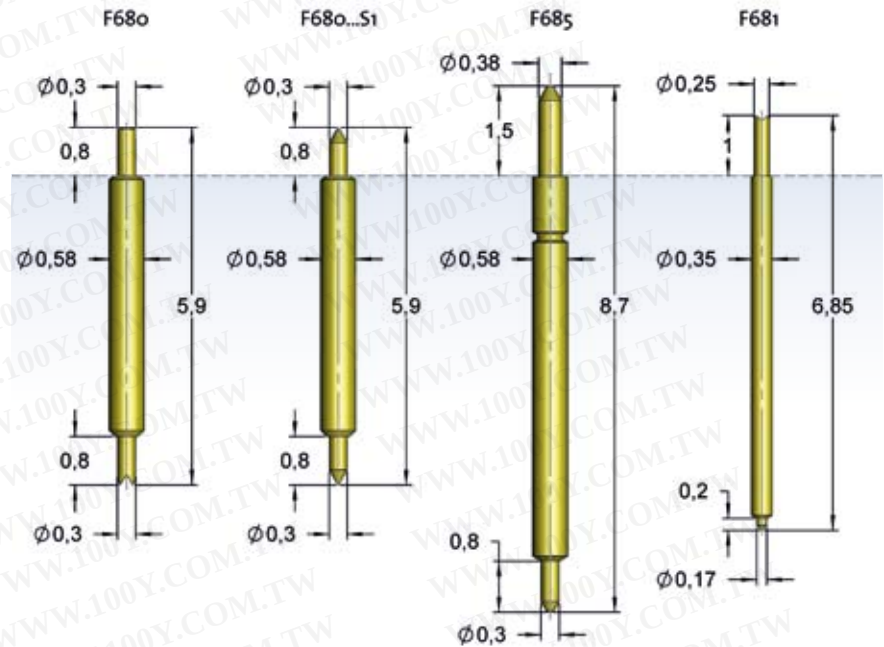
Barrel: Bronze, Gold plated

Spring:

F681: Music wire, Gold plated

F680: Music wire, Gold plated

F685: stainless steel, Gold plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size (mm)

same as barrel-Ø

#### F681 | Tip Style, Material, Plating, Tip- Ø (mm)



**16 BeCu; G**  
Ø 0,25  
Interface: 01

**29 BeCu; G**  
Ø 0,25  
Interface: 01

#### F680 | Tip Style, Material, Plating, Tip- Ø (mm)



...S1



**03 BeCu; G**  
Ø 0,30  
Interface: 29

**03 BeCu; G**  
Ø 0,30  
Interface: 03

**16 BeCu; G**  
Ø 0,30  
Interface: 29

**29 BeCu; G**  
Ø 0,30  
Interface: 29

#### F685 | Tip Style, Material, Plating, Tip- Ø (mm)



**03 Steel; L**  
Ø 0,38  
Interface: 03

**29 Steel; L**  
Ø 0,38  
Interface: 29

| Type                                                                                                                                                   | Tip-Ø     | Spring Force    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------|
| F680                                                                                                                                                   | 16 B 030  | G 040 S1        |
|                                                                                                                                                        | Tip Style | Material        |
|                                                                                                                                                        |           | Finish          |
|                                                                                                                                                        |           | Special Version |
| <b>Material:</b> B = BeCu, S = Steel<br><b>Tip-Ø:</b> 030 = 0,30 mm (e.g.)<br><b>Finish:</b> G = Gold, L = Longtime Gold plated<br>S1 = Interface KF03 |           |                 |
| <b>ORDER EXAMPLE</b>                                                                                                                                   |           |                 |

# Fine Pitch and Double Plunger Probes

Centers F238: 0,50 mm/20 mil  
Centers F206/F209: 0,70mm/28 mil  
Centers F252: 1,00 mm/40 mil

| Type     | Current | Temperature  | R <sub>typically</sub> |
|----------|---------|--------------|------------------------|
| F238     | 0,15 A  | -20...+80 °C | <60 mOhm               |
| F206/209 | 1,00 A  | -20...+80 °C | <70 mOhm               |
| F252     | 1,50 A  | -20...+80 °C | <75 mOhm               |

## Double Plunger Probes for Fine Pitch Components F238/F206/ F209/F252

This probes are mainly used at test-heads and test-sockets for component test. Those probes are double plunger probes with two separate spring loaded plungers. One for contacting the DUT and the other for contacting the tester's interface (translator-board, e.g.)

### Mechanical Specifications

#### Travel (mm) all types

|          |      |
|----------|------|
| Nominal: | 2,00 |
| Maximum: | 2,50 |

#### Spring Force (cN ±20%)

|          | Preload | Nominal Force |
|----------|---------|---------------|
| F238     | 10      | 50            |
| F206/209 | 10      | 50            |
| F252     | 30      | 85            |

#### Pointing Accuracy:

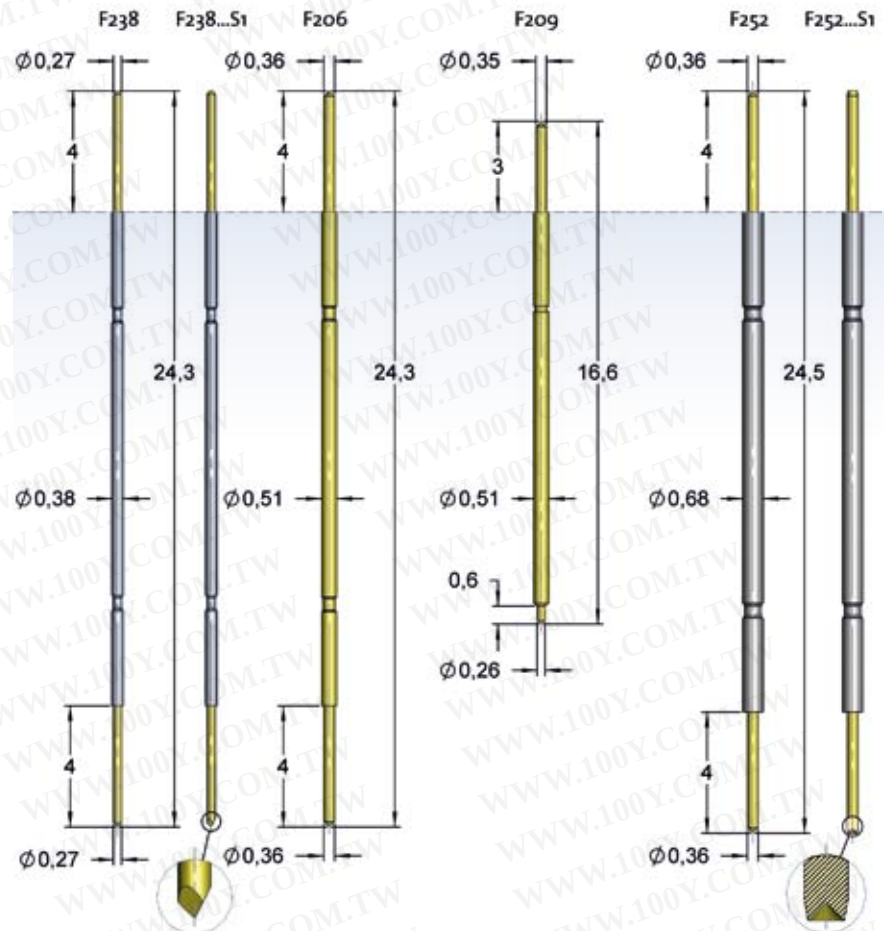
|           |           |
|-----------|-----------|
| F238:     | ± 0,04 mm |
| F206/209: | ± 0,09 mm |
| F252:     | ± 0,09 mm |

### Materials and Plating

|          |                                                     |
|----------|-----------------------------------------------------|
| Plunger: | see Tip Styles                                      |
| Barrel:  | Bronze, Silver plated<br>(F209: Bronze Gold plated) |
| Spring:  | Music wire, Silver plated                           |

### Drill Size (mm)

same as barrel-Ø



#### F238 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                              |                                              |                                              |       |
|----------------------------------------------|----------------------------------------------|----------------------------------------------|-------|
|                                              |                                              |                                              | ...S1 |
| <b>01 BeCu; L</b><br>Ø 0,27<br>Interface: 01 | <b>11 BeCu; L</b><br>Ø 0,27<br>Interface: 11 | <b>11 BeCu; L</b><br>Ø 0,27<br>Interface: 30 |       |

#### F206 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                               |                                               |
|-----------------------------------------------|-----------------------------------------------|
|                                               |                                               |
| <b>01 Steel; L</b><br>Ø 0,36<br>Interface: 01 | <b>11 Steel; L</b><br>Ø 0,36<br>Interface: 11 |

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### F209 | Tip Style, Material, Plating, Tip- Ø (mm)



|                                              |
|----------------------------------------------|
| <b>01 BeCu; L</b><br>Ø 0,35<br>Interface: 01 |
|----------------------------------------------|

#### F252 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                               |                                               |                                               |       |
|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-------|
|                                               |                                               |                                               | ...S1 |
| <b>01 Steel; L</b><br>Ø 0,35<br>Interface: 01 | <b>11 Steel; L</b><br>Ø 0,35<br>Interface: 11 | <b>05 Steel; L</b><br>Ø 0,35<br>Interface: 05 |       |

| Type                    | Tip-Ø                                                                    | Spring Force    |
|-------------------------|--------------------------------------------------------------------------|-----------------|
| F 238                   | 11B 027                                                                  | L 050 S1        |
| Tip Style               | Material                                                                 | Finish          |
|                         |                                                                          | Special Version |
| <b>Material:</b>        | B = BeCu, S = Steel                                                      |                 |
| <b>Tip-Ø</b>            | 027 = 0,27 mm (e.g.)                                                     |                 |
| <b>Finish:</b>          | G = Gold, L = Longtime Gold plated                                       |                 |
| <b>Special Version:</b> | S1 = Interface tip style 11 (F238)<br>S1 = Interface tip style 05 (F252) |                 |
| <b>ORDER EXAMPLE</b>    |                                                                          |                 |

# Fine Pitch and Double Plunger Probes



Centers F239: 0,50 mm/20 mil  
Centers F207: 0,70 mm/28 mil  
Centers F205: 1,27 mm/50 mil

| Type     | Current | Temperature  | R <sub>typically</sub> |
|----------|---------|--------------|------------------------|
| F239/207 | 1,0 A   | -20...+80 °C | <70 mOhm               |
| F205     | 2,0 A   | -20...+80 °C | <50 mOhm               |

## For test of Fine Pitch Components F239/F207/F205

These single sided spring contact probes are mainly used at test sockets for component testing. The connection between probe and test system is made by a plug in connecting element, which can be inserted at the lower probe end.

The connecting element is also available with 500 mm wire (AWG30). Order Codes for connecting elements: without wire: H239AE, H207AE, H205AE with wire: H239DR, H207DR, H205DR For the long special version 1860S156 please use connecting element H860S156.

### Mechanical Specifications

| Travel (mm) | F2xx | 1860S156 |
|-------------|------|----------|
| Nominal:    | 2,00 | 2,5      |
| Maximum:    | 2,50 | 3,3      |

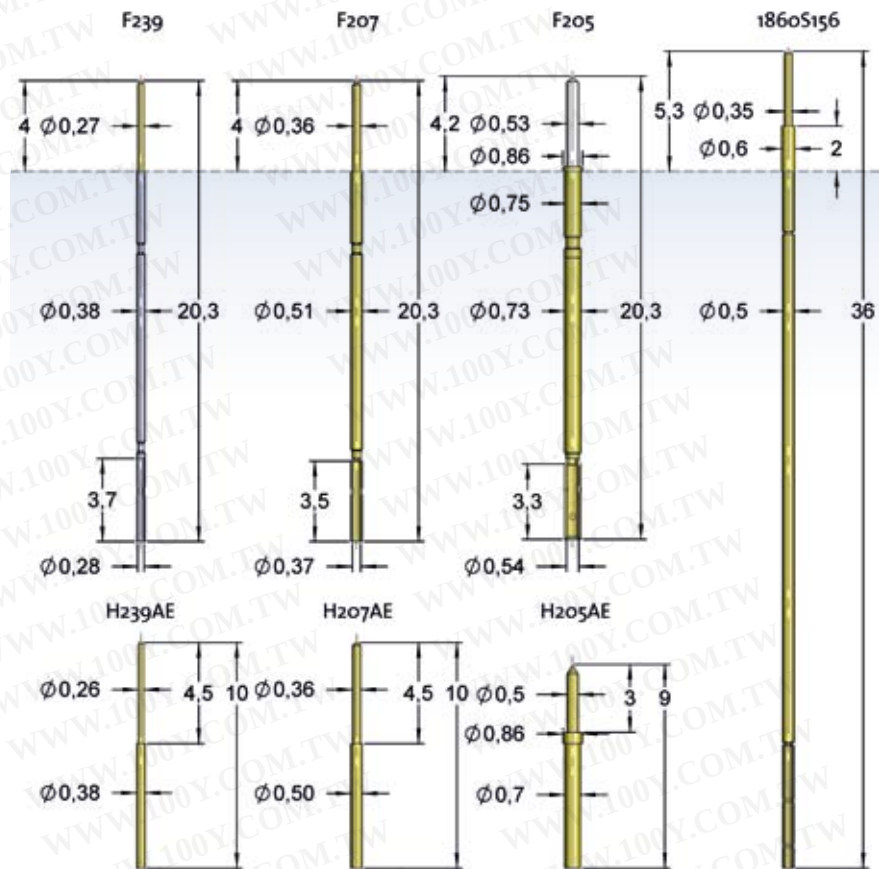
### Spring Force (cN ±20%)

|            | Preload | Nominal Force |
|------------|---------|---------------|
| F239/F207: | 10      | 50            |
| F205:      | 30      | 85            |
| 1860S156:  | 40      | 60            |

Pointing Accuracy all types: ± 0,09 mm

### Materials and Plating

Plunger: see Tip Styles  
Barrel: Bronze, Silver plated (1860S156 +F209: Bronze Gold plated)  
Spring: Music wire, Silver plated (1860S156: Music wire, Gold plated)



### Drill Size (mm)

same as barrel-Ø

### F239 | Tip Style, Material, Plating, Tip- Ø (mm)

### 1860S156



01 BeCu; L  
Ø 0,27

29 BeCu; G  
Ø 0,35

### F207 | Tip Style, Material, Plating, Tip- Ø (mm)



01 Steel; L  
Ø 0,36

11 Steel; L

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### F205 | Tip Style, Material, Plating, Tip- Ø (mm)



01 BeCu; L  
Ø 0,50

07 Steel; N  
Ø 0,80

09 BeCu; N  
Ø 0,80

11 Steel; N  
Ø 0,50

16 Steel; N  
Ø 0,50



18 Steel; N  
Ø 0,50

| Type          | Tip-Ø                    | Spring Force |
|---------------|--------------------------|--------------|
| F207          | 01S                      | 036          |
|               | L                        | 050          |
| Tip Style     | Material                 | Finish       |
| Material:     | B = BeCu, S = Steel      |              |
| Tip-Ø         | 036 = 0,36 mm (e.g.)     |              |
| Finish:       | L = Longtime Gold plated |              |
|               | G = Gold                 |              |
|               | N = Nickel               |              |
| ORDER EXAMPLE |                          |              |

# Fine Pitch and Double Plunger Probes

Centers F262: 1,50 mm/60 mil  
Centers F282: 2,54 mm/100 mil

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F262 | 2,00 A  | -20...+80 °C | <40 mOhm               |
| F282 | 2,50 A  | -20...+80 °C | <25 mOhm               |

## Double Plunger Probes for Basic Grid Field and Interfaces F262/F282

The F262 and F282 are mainly used at the basic grid field of bare board testers and to build up spring loaded interface boards.

The F282 is available in two versions, with preload (version OW) and without preload and 1 mm idle stroke (version LW).

The F262 is available only without preload and 1 mm idle stroke.

### Mechanical Specifications

| Travel (mm) | F262 | F282 |
|-------------|------|------|
| Nominal:    | 5,00 | 4,30 |
| Maximum:    | 7,00 | 6,00 |

### Spring Force (cN ±20%)

|             | Preload | Nominal Force |
|-------------|---------|---------------|
| F262        | 0       | 140           |
| F282 ... LW | 0       | 150           |
| F282 ... OW | 50      | 150           |

Pointing Accuracy:

F262: ± 0,08 mm

F282: ± 0,10 mm

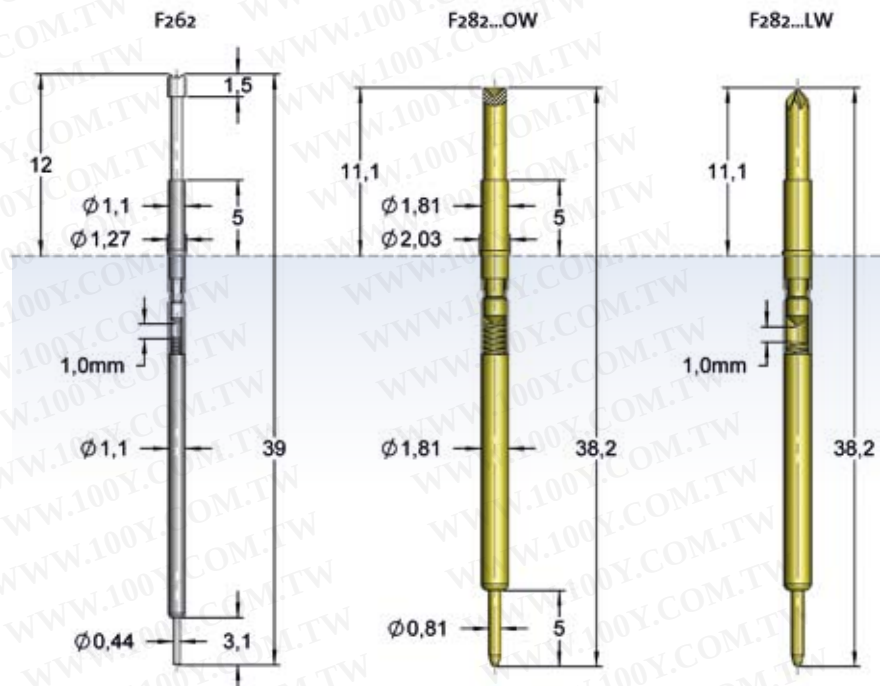
### Materials and Plating

Plunger: see Tip Styles

Barrel: Nickel Silver, unplated (F262)

Nickel Silver, Gold plated (F282)

Spring: Music wire, Silver plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### Drill Size (mm)

same as barrel-Ø

### F262 | Tip Style, Material, Plating, Tip- Ø (mm)



**05 Steel; N**  
Ø 1,20  
Interface: 16

**06 BeCu; N**  
Ø 1,20  
Interface: 16

**07 Steel; L**  
Ø 1,00  
Interface: 16

**07 Steel; N**  
Ø 1,00  
Interface: 16

### F282 | Tip Style, Material, Plating, Tip- Ø (mm)



**05 BeCu; L**  
Ø 1,20  
Interface: 39

**19 Steel; L**  
Ø 1,20  
Interface: 39

**29 BeCu; L**  
Ø 1,20  
Interface: 39

| Type             | Tip-Ø                                | Spring Force |
|------------------|--------------------------------------|--------------|
| F282             | 05 B                                 | 150          |
|                  | L                                    | 150          |
|                  | OW                                   |              |
| Version          | Tip Style                            | Material     |
| Material:        | B = BeCu, S = Steel                  |              |
| Tip-Ø            | 027 = 0,27 mm (e.g.)                 |              |
| Finish:          | L = Longtime Gold plated, N = Nickel |              |
| Special Version: | OW = with Preload                    |              |
|                  | LW = without Preload                 |              |
| ORDER EXAMPLE    |                                      |              |

# Fine Pitch and Double Plunger Probes



Centers 1,00 mm/40 mil

| Type | Current | Temperature  | R1 Pt    |
|------|---------|--------------|----------|
| F109 | 1,0 A   | -20...+80 °C | <65 mOhm |

## For test of Fine Pitch Components

### F109

The F109 is a short fine pitch probe for applications with space restrictions and with limited height and pitch size. The receptacle H109 has a collar for fix projection height and proper seat, available for Crimp-Connection. The receptacle can also be delivered with 500 mm stranded wire as H109LI.

#### Mechanical Specifications

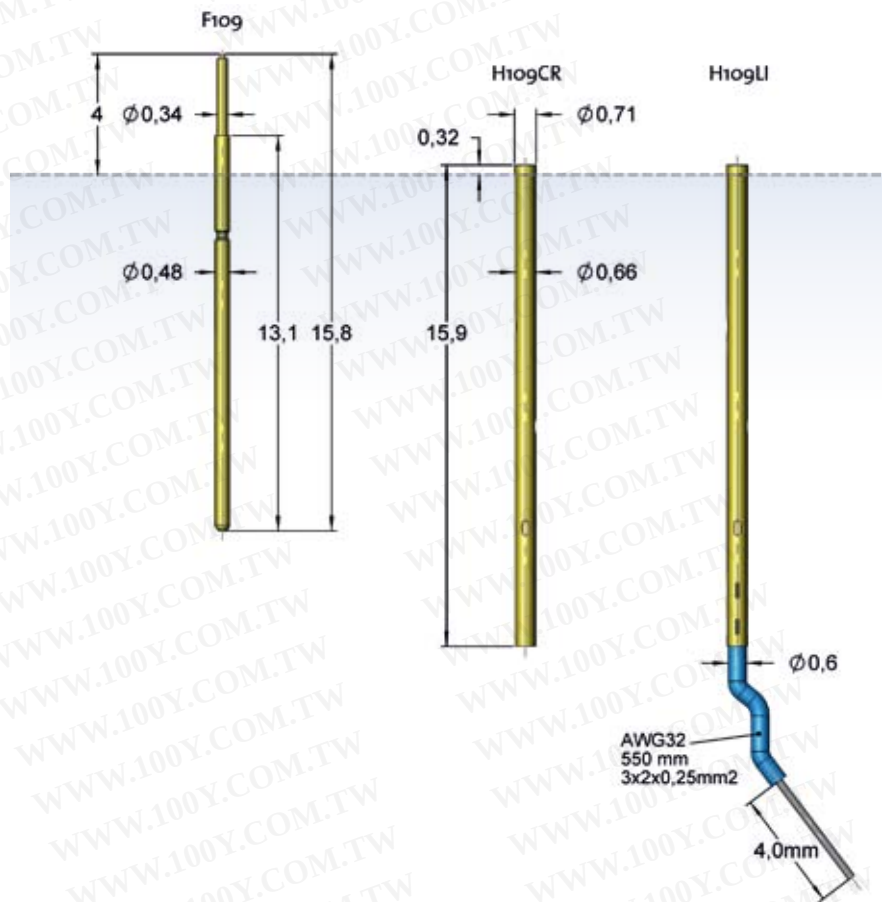
| Travel (mm)                  |      |
|------------------------------|------|
| Nominal:                     | 2,00 |
| Maximum:                     | 2,30 |
| Spring Force (cN ±20%)       |      |
| Nominal Force:               | 50   |
| Preload:                     | 10   |
| Pointing Accuracy: ± 0,05 mm |      |

#### Materials and Plating

|             |                            |
|-------------|----------------------------|
| Plunger:    | see Tip Styles             |
| Barrel:     | Nickel Silver, Gold plated |
| Spring:     | Music wire, Silver plated  |
| Receptacle: | Bronze, Gold plated        |

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 0,66-0,68    |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
 胜特力电子(上海) 86-21-34970699  
 胜特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                                     | Tip-Ø | Spring Force |
|------------------------------------------|-------|--------------|
| F109                                     | 01B   | 034          |
|                                          | G     | 050          |
| Tip Style Material Finish                |       |              |
| Material: B = BeCu                       |       |              |
| Tip-Ø: 034 = 0,34 mm (e.g.)              |       |              |
| Finish: G = Gold                         |       |              |
| Receptacle: Order-Code according drawing |       |              |
| ORDER EXAMPLE                            |       |              |

#### F109 | Tip Style, Material, Plating, Tip- Ø (mm)



01 BeCu; G  
 Ø 0,34

18 BeCu; G  
 Ø 0,34

# Short Travel Probes

Centers F111/F113/F114: 0,70mm/28 mil

| Type           | Current | Temperature  | R <sub>typically</sub> |
|----------------|---------|--------------|------------------------|
| F111/F113/F114 | 3,0 A   | -20...+80 °C | <65 mOhm               |

## For test of Fine Pitch Components

## F111/F113/F114 NEW

The F111 is often used for in-line applications and for sensor testing. F113 and F114 have the same design, but different travel and projection heights. Further this probes are available with different spring force and tip styles.

There is a great choice of receptacles at series H111, suitable for the probes F111, F113, F114 and F115.

The H111LA1 has a 4 mm increased projection height compared to the standard version H111, the H111LA2 has a 2 mm increased projection height. H111LI will be delivered with 500mm stranded wire.

### Mechanical Specifications

| Travel (mm) | F111 | F113 | F114 |
|-------------|------|------|------|
| Nominal:    | 2,0  | 1,7  | 2,2  |
| Maximum:    | 2,54 | 2,54 | 2,8  |

### Spring Force (cN ±20%)

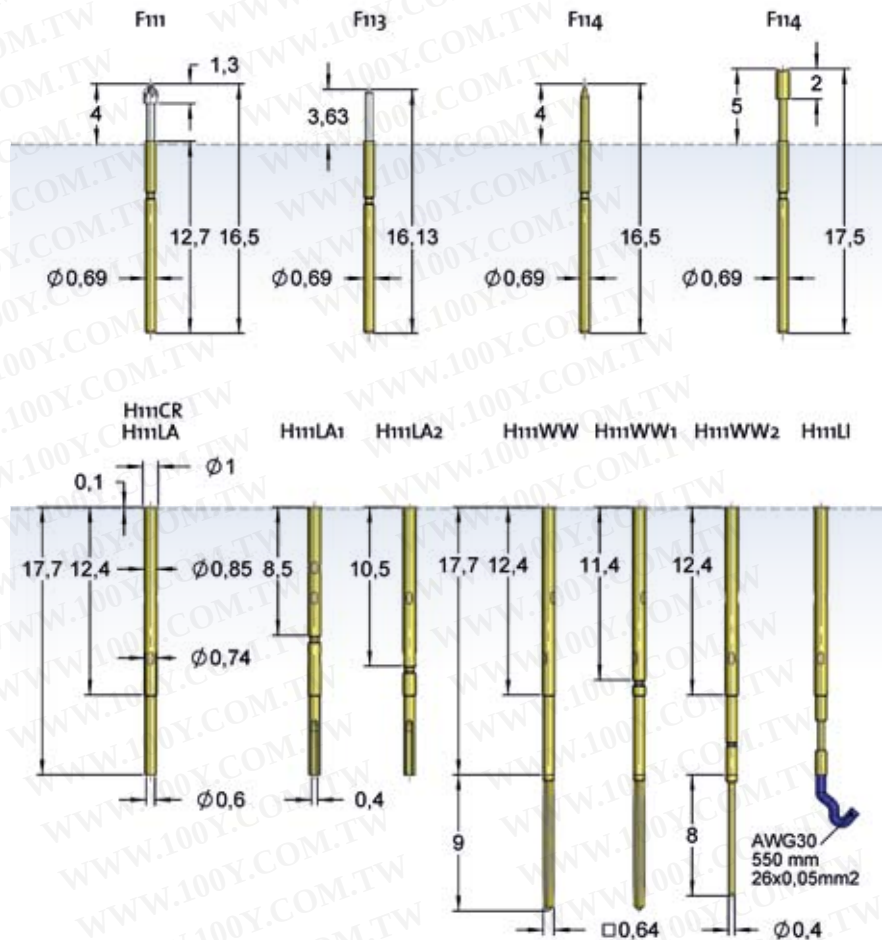
|      | Preload | Nominal Force |
|------|---------|---------------|
| F111 | 15 / 20 | 40 / 85       |
| F113 | 20      | 79            |
| F114 | 15 / 40 | 70 / 100      |

Pointing Accuracy: ± 0,09 mm

### Materials and Plating

Plunger: see Tip Styles  
 Barrel: Nickel Silver, Gold plated  
 Spring: Music wire, Silver plated  
 Music wire, Gold plated (F114)  
 Receptacle: Nickel Silver, Gold plated

| Type                                                                                                                                                                                                           | Tip-Ø    | Spring Force |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|
| F111                                                                                                                                                                                                           | 01 S 053 | N 085        |
| Tip Style    Material    Finish                                                                                                                                                                                |          |              |
| <b>Material:</b> B = BeCu, S = Steel,<br><b>Tip-Ø:</b> 053 = 0,53 mm (e.g.)<br><b>Finish:</b> G = Gold, N = Nickel<br>L = Longtime Gold plated, R = Rhodium<br><b>Receptacle:</b> Order-Code according drawing |          |              |
| <b>ORDER EXAMPLE</b>                                                                                                                                                                                           |          |              |



### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 0,83-0,84    |
| HGW 2372.1 (FR4)        |              |

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### F111 / F113 | Tip Style, Material, Plating, Tip- Ø (mm)

|                              |                              |                                     |                              |                              |
|------------------------------|------------------------------|-------------------------------------|------------------------------|------------------------------|
|                              |                              |                                     |                              |                              |
| <b>01 Steel; N</b><br>Ø 0,53 | <b>03 Steel; N</b><br>Ø 0,53 | <b>05 Steel; L</b><br>Ø 0,90 / 1,50 | <b>07 Steel; N</b><br>Ø 0,90 | <b>09 Steel; N</b><br>Ø 0,90 |
|                              |                              |                                     |                              |                              |
| <b>12 Steel; L</b><br>Ø 0,90 | <b>14 Steel; N</b><br>Ø 0,90 | <b>18 Steel; N; R</b><br>Ø 0,53     | <b>21 Steel; N</b><br>Ø 0,53 |                              |

### F114 | Tip Style, Material, Plating, Tip- Ø (mm)

|                             |                              |  |  |  |
|-----------------------------|------------------------------|--|--|--|
|                             |                              |  |  |  |
| <b>06 BeCu; G</b><br>Ø 0,90 | <b>18 Steel; L</b><br>Ø 0,53 |  |  |  |

# Short Travel Probes



Centers F112/ F115: 1,27 mm/50 mil

| Type      | Current | Temperature  | R <sub>typically</sub> |
|-----------|---------|--------------|------------------------|
| F112/F115 | 3,0 A   | -20...+80 °C | <35 mOhm               |

## Non-Magnetic Probe for Fine Pitch Components

### F112

The F112 has the same dimensions than the F111.

Material and plating of F112 do not contain magnetic materials and any effect to the test results by electro-magnetic fields is minimized.

#### Mechanical Specifications

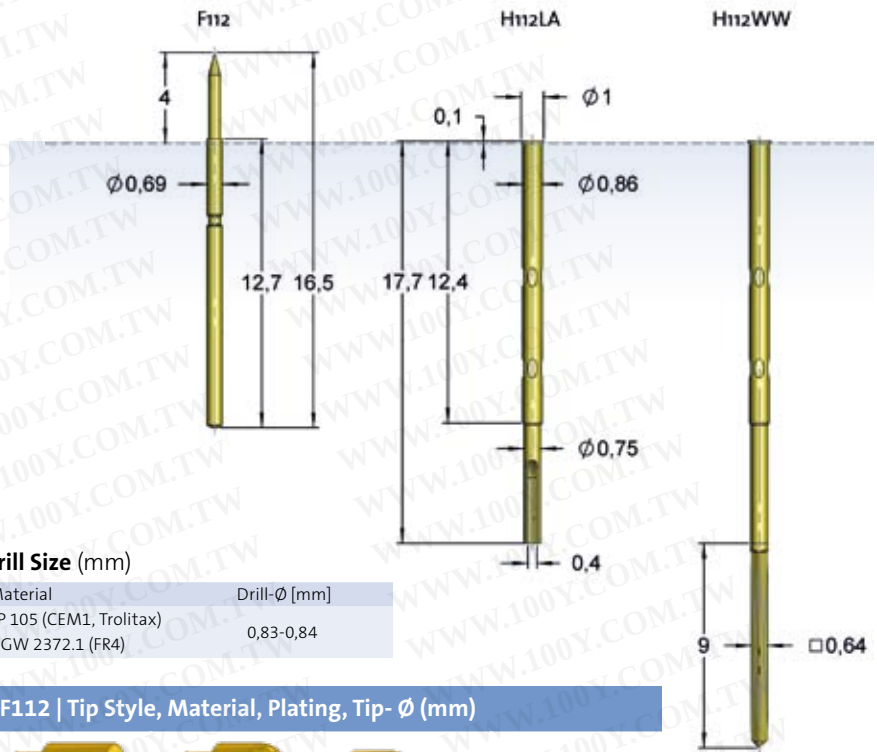
Travel + Pointing Accuracy see F111

#### Spring Force (cN ±20%)

Preload: 5 Nominal Force: 40

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Bronze, Gold plated  
Spring: BeCu, Gold plated  
Receptacle: Bronze, Gold plated



#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 0,83-0,84    |
| HGW 2372.1 (FR4)        | 0,83-0,84    |

#### F112 | Tip Style, Material, Plating, Tip- Ø (mm)



| 05 BeCu; G<br>Ø 0,90 | 12 BeCu; G<br>Ø 0,90 | 18 BeCu; G<br>Ø 0,53 |
|----------------------|----------------------|----------------------|
|----------------------|----------------------|----------------------|

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Short version for Fine Pitch Components

### F115 NEW

The F115 is 1.5 mm shorter in length than F111 and has less travel. The probe can be mounted with different receptacles for various projection height.

#### Receptacle: Projection height:

|                 |        |
|-----------------|--------|
| H111CR,LA,WW,LI | 2,6 mm |
| H115CR, H115LA  | 5,0 mm |
| H111LA1         | 6,6 mm |

#### Mechanical Specifications

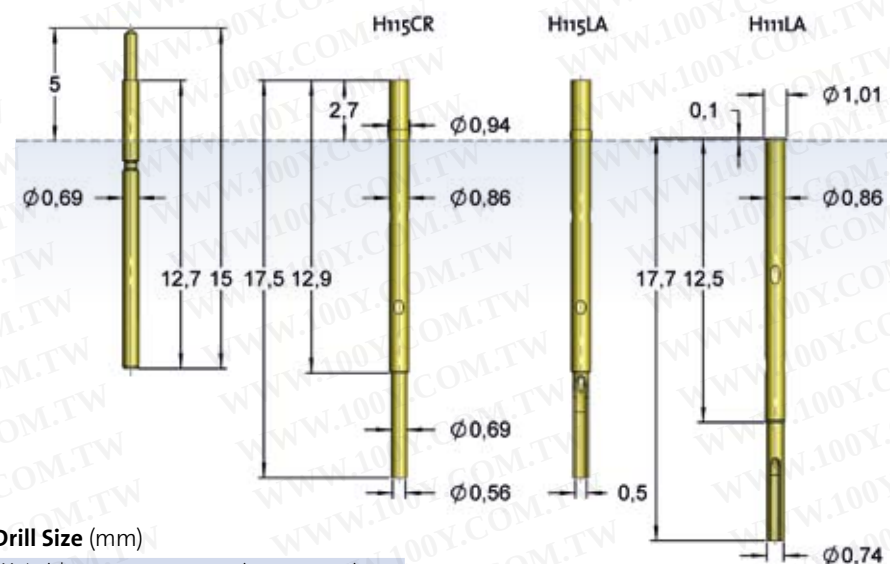
##### Travel (mm)

Nominal: 1,3 Maximum: 1,3

##### Spring Force (cN ±20%)

Preload: 40 Nominal Force: 90

#### Materials and Plating: see F111



#### Drill Size (mm)

| Material                | press ring as stop | press ring inserted |
|-------------------------|--------------------|---------------------|
| EP 105 (CEM1, Trolitax) | 0,83-0,84          | 0,86-0,90           |
| HGW 2372.1 (FR4)        | 0,83-0,84          | 0,86-0,90           |

#### F115 | Tip Style, Material, Plating, Tip- Ø (mm)



| 01 BeCu; G<br>Ø 0,53 | 03 BeCu; G<br>Ø 0,53 | 05 BeCu; G<br>Ø 0,53 | 15 BeCu; G<br>Ø 0,90 | 60 BeCu; G<br>Ø 0,46 |
|----------------------|----------------------|----------------------|----------------------|----------------------|
|----------------------|----------------------|----------------------|----------------------|----------------------|

| Type          | Tip-Ø                        | Spring Force |
|---------------|------------------------------|--------------|
| F115          | 05 B 053                     | G 090        |
| Tip Style     | Material                     | Finish       |
| Material:     | B = BeCu                     |              |
| Tip-Ø:        | 053 = 0,53 mm (e.g.)         |              |
| Finish:       | G = Gold                     |              |
| Receptacle:   | Order-Code according drawing |              |
| ORDER EXAMPLE |                              |              |

# Short Travel Probes

Centers 1,27 mm/50 mil

| Type     | Current | Temperature  | R <sub>typically</sub> |
|----------|---------|--------------|------------------------|
| F605     | 1,0 A   | -20...+80 °C | <70 mOhm               |
| 1860S213 | 2,0 A   | -20...+80 °C | <20 mOhm               |

## For test of Fine Pitch Components

### F605

The F605 is a very small fine pitch probe. Due to its small length and projection height this probe is most appropriate for applications with limited space.

The corresponding receptacle H605 has a small collar and a wire-wrap-pin for electrical connection.

#### Mechanical Specifications

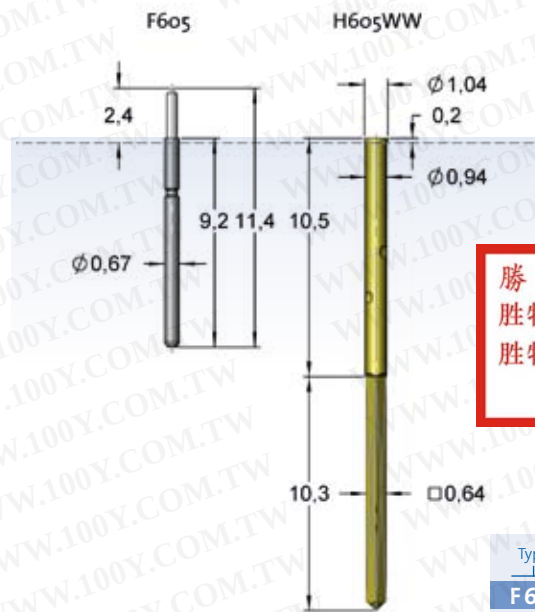
| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 0,8 |
| Maximum:    | 1,2 |

| Spring Force (cN ±20%) |    |
|------------------------|----|
| Nominal Force          | 75 |
| Preload                | 30 |

Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Bronze, Silver plated  
Spring: Music wire, Silver plated  
Receptacle: Bronze, Gold plated



#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 0,94-0,96    |
| HGW 2372.1 (FR4)        |              |

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                                         | Tip-Ø     | Spring Force |
|----------------------------------------------|-----------|--------------|
| F 605                                        | 01 S      | 050 L 075    |
|                                              | Tip Style | Material     |
|                                              |           | Finish       |
| Material: B = BeCu                           |           |              |
| Tip-Ø: 050 = 0,50 mm (e.g.)                  |           |              |
| Finish: L = Longtime Gold plated, N = Nickel |           |              |
| Receptacle: Order-Code according drawing     |           |              |
| ORDER EXAMPLE                                |           |              |

#### F605 | Tip Style, Material, Plating, Tip- Ø (mm)

|                          |                       |                       |                       |
|--------------------------|-----------------------|-----------------------|-----------------------|
|                          |                       |                       |                       |
| 01 Steel; L; N<br>Ø 0,50 | 05 Steel; L<br>Ø 1,00 | 07 Steel; L<br>Ø 1,00 | 11 Steel; L<br>Ø 0,50 |

## Short Travel Probe solder tight

### 1860S213 NEW

Very small fine pitch probe for soldering on PCB

#### Mechanical Specifications

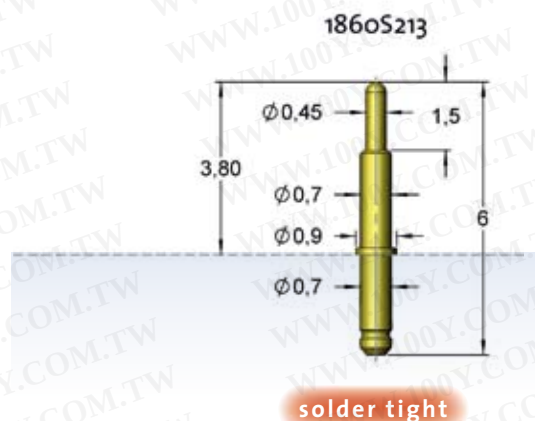
| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 1,0 |
| Maximum:    | 1,3 |

| Spring Force (cN ±20%) |    |
|------------------------|----|
| Nominal Force          | 30 |
| Preload                | 10 |

Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: BeCu, Gold plated  
Barrel: Bronze, Gold plated  
Spring: Music wire, Silver plated



#### 1860S213 | Tip Style, Material, Finish und Tip-Ø (mm)

|                      |  |  |
|----------------------|--|--|
|                      |  |  |
| 11 BeCu; G<br>Ø 0,50 |  |  |

Order Code: 1860S213

# Short Travel Probes



## Centers 1,7 mm/67 mil

| Type      | Current | Temperature   | R <sub>typically</sub> |
|-----------|---------|---------------|------------------------|
| F709      | 1,0 A   | -20...+80 °C  | <20 mOhm               |
| F709...ST | 1,0 A   | -40...+250 °C | <20 mOhm               |

## Battery Contact

### F709

The F709 is available in standard version and as solder tight High Temperature Version (ST-Version) for direct soldering. The probe can be mounted directly to PCB or with the receptacle H709 (receptacle is not solder tight). For height variation a 0,5 mm spacer H709DS/05 is available.

#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 1,0 |
| Maximum:    | 1,2 |

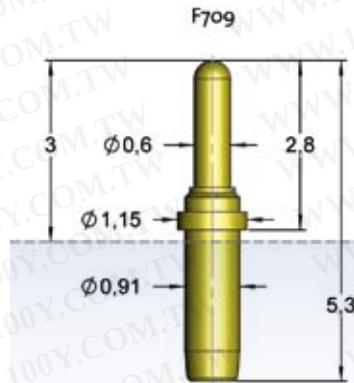
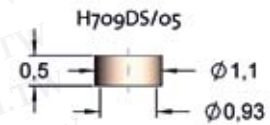
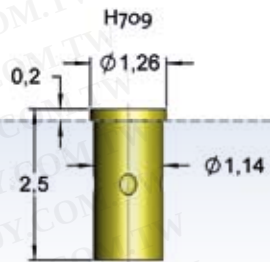
| Spring Force (cN ±20%) |                    |
|------------------------|--------------------|
| Nominal Force:         | 40 20 (ST-Version) |
| Preload:               | 10 10 (ST-Version) |

Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Brass, Gold plated

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



ST Version  
solder tight

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,12-1,14    |
| HGW 2372.1 (FR4)        |              |

#### F709 | Tip Style, Material, Finish und Tip-Ø (mm)



11 BeCu; G  
Ø 0,60

| Type                    | Tip-Ø                         | Spring Force |                 |
|-------------------------|-------------------------------|--------------|-----------------|
| F709                    | 11 B                          | 060          |                 |
|                         | G                             | 020          |                 |
|                         |                               | ST           |                 |
| Tip Style               | Material                      | Finish       | Special Version |
| <b>Material:</b>        | B = BeCu                      |              |                 |
| <b>Tip-Ø:</b>           | 060 = 0,60 mm (e.g.)          |              |                 |
| <b>Finish:</b>          | G = Gold                      |              |                 |
| <b>Special Version:</b> | ST = solder tight             |              |                 |
|                         | no letters = standard version |              |                 |
|                         | (not solder tight)            |              |                 |
| <b>Receptacle:</b>      | Order-Code according drawing  |              |                 |

ORDER EXAMPLE

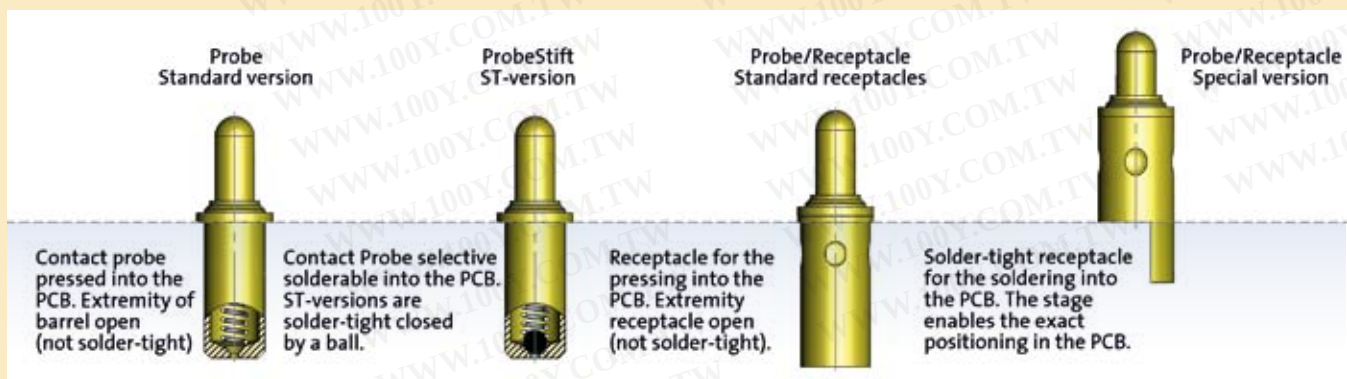
ORDER EXAMPLE

## Application Notes Battery Contacts

FEINMETALL offers a wide range of short travel probes for battery contact applications. Depending on their design, these probes either can be pressed or soldered to the PCB.

For applications where the probes will go through a solder process, please use solder tight versions only. Solder tightness for the probes is achieved by a ball, closing the hole at the barrel.

Suitable interface pins please see page 53.



# Short Travel Probes

## Centers 1,90 mm/75 mil

| Type        | Current | Temperature   | R <sub>typically</sub> |
|-------------|---------|---------------|------------------------|
| F670 / F708 | 3,0 A   | -20...+80 °C  | <20 mOhm               |
| F708...H/ST | 3,0 A   | -40...+250 °C | <20 mOhm               |
| 1860S177    | 1,0 A   | -20...+80 °C  | <30 mOhm               |

## Battery Contact

### F670 / F708 / 1860S177 NEW

These probes, especially the F708 with very low projection height and small length are appropriate for applications with limited space and small centers. The standard version of those probes are not solder tight.

For F708 a high temperature version (H) and a solder tight version (ST), also applicable at higher temperature, are available. The receptacle for the F670 has a collar and a wire-wrap-pin. For the F708 a short and a long receptacle are offered (not solder tight). The 1860S177 is for direct mounting or soldering.

### Mechanical Specifications

| Travel (mm) | F670 | F708 | 1860S177 |
|-------------|------|------|----------|
| Nominal:    | 0,8  | 1,0  | 2,2      |
| Maximum:    | 1,2  | 1,2  | 1,0      |

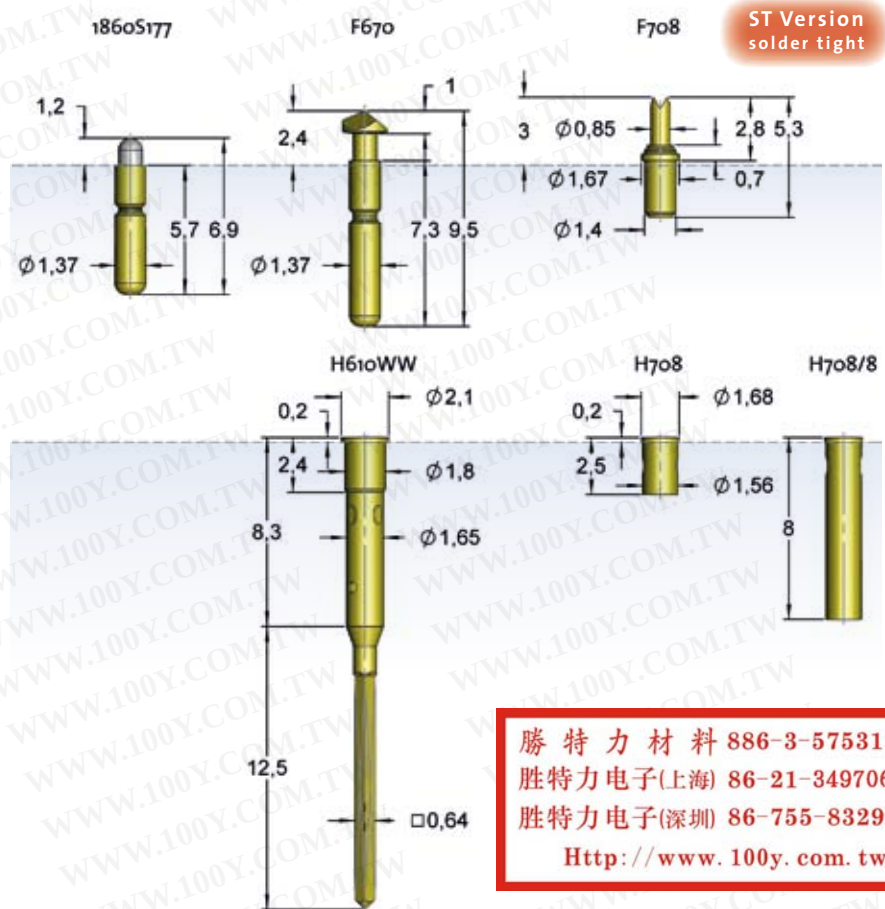
| Spring Force (cN ±20%) |         |               |
|------------------------|---------|---------------|
|                        | Preload | Nominal Force |
| F670                   | 40      | 85            |
| F708                   | 25      | 100           |
| F708...H/ST            | 10      | 80            |
| 1860S177               | 40      | 85            |

Pointing Accuracy: ± 0,08 mm

### Materials and Plating

Plunger: see Tip Styles  
 Barrel: Bronze, Gold plated  
 Brass, Gold plated (F708)  
 Spring: Music wire, Silver plated  
 Receptacle: Bronze, Gold plated

| Type                                                                                                                                                                                                                                                                                                                                                | Tip-Ø    | Spring Force |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|
| F708                                                                                                                                                                                                                                                                                                                                                | 11 B 085 | G 080 ST     |
| Tip Style    Material    Finish    Special Version                                                                                                                                                                                                                                                                                                  |          |              |
| <b>Material:</b> B = BeCu<br>Tip-Ø: 060 = 0,60 mm (e.g.)<br><b>Finish:</b> G = Gold, R = Rhodium,<br>L = Longtime Gold plated<br><b>Special Version:</b> ST = solder tight<br>High Temperature Version<br>H = High Temperature Version<br>(not solder tight)<br>not specified = standard version<br><b>Receptacle:</b> Order-Code according drawing |          |              |
| <b>ORDER EXAMPLE</b>                                                                                                                                                                                                                                                                                                                                |          |              |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

### Drill Size H610WW (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,78-1,79    |
| HGW 2372.1 (FR4)        |              |

### Drill Size H708 (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,54-1,55    |
| HGW 2372.1 (FR4)        |              |

### F670 | Tip Style, Material, Plating, Tip- Ø (mm)

|                      |                      |                      |  |  |
|----------------------|----------------------|----------------------|--|--|
|                      |                      |                      |  |  |
| 11 BeCu; G<br>Ø 1,05 | 12 BeCu; G<br>Ø 2,00 | 15 BeCu; G<br>Ø 2,00 |  |  |

### F708 | Tip Style, Material, Plating, Tip- Ø (mm)

|                       |                      |                      |                      |  |
|-----------------------|----------------------|----------------------|----------------------|--|
|                       |                      |                      |                      |  |
| 03 Steel; L<br>Ø 0,85 | 11 BeCu; G<br>Ø 0,85 | 16 BeCu; G<br>Ø 0,85 | 29 BeCu; G<br>Ø 0,85 |  |

### 1860S177 | Tip Style, Material, Plating, Tip- Ø (mm)

|                      |  |  |  |  |
|----------------------|--|--|--|--|
|                      |  |  |  |  |
| 11 BeCu; R<br>Ø 1,05 |  |  |  |  |

# Short Travel Probes



Centers 2,54 mm/100 mil

| Type     | Current | Temperature  | R <sub>typically</sub> |
|----------|---------|--------------|------------------------|
| F620     | 3,0 A   | -20...+80 °C | <30 mOhm               |
| F630     | 5,0 A   | -20...+80 °C | <30 mOhm               |
| 1860S172 | 5,0 A   | -20...+80 °C | <30 mOhm               |

For Multi Purpose  
and Battery Contact

**F620 / F630 /  
1860S172** **NEW**

The F620 is due to its small projection height suitable for applications with small height.

The connecting cable can be soldered to the probe. A ball prevents the solder tin to enter the probe.

The F630 has a collar for a fix projection height and a wire-wrap-pin for the electrical connection.

The 1860S172 is a low price probe for multiple applications.

## Mechanical Specifications

| Travel (mm) | F620 | F630 | 1860S172 |
|-------------|------|------|----------|
| Nominal:    | 1,3  | 0,9  | 2,8      |
| Maximum:    | 1,6  | 1,3  | 3,0      |

## Spring Force (cN ±20%)

|                | F620   | F630 | 1860S172 |
|----------------|--------|------|----------|
| Nominal Force: | 75/130 | 70   | 250      |
| Preload:       | 40     | 40   | 100      |

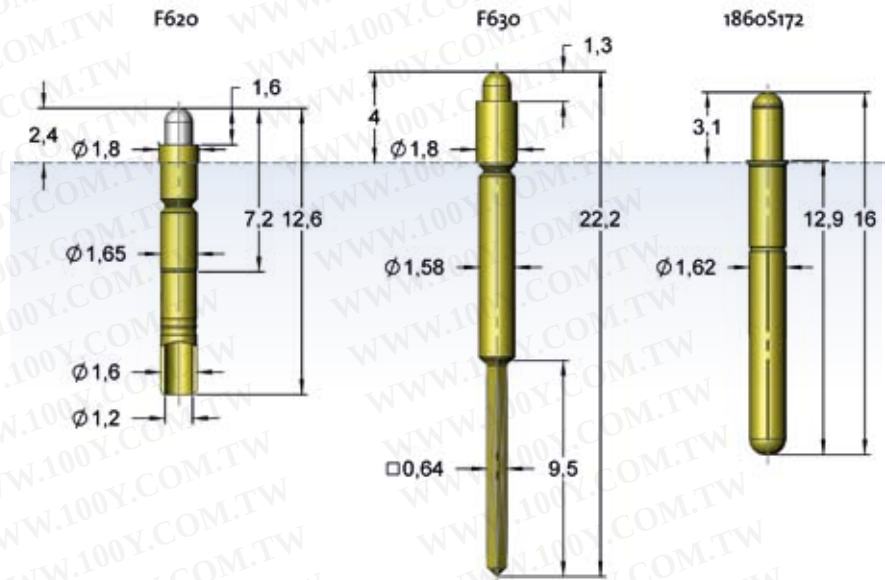
Pointing Accuracy: ± 0,08 mm

## Materials and Plating

Plunger: see Tip Styles

Barrel: Bronze, Gold plated

Spring: Music wire, Silver plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Drill Size (mm)

same as barrel-Ø

## F620 | Tip Style, Material, Plating, Tip- Ø (mm)



**11 Steel; L; N; R**  
Ø 1,30

## F630 | Tip Style, Material, Plating, Tip- Ø (mm)



**11 Steel; L**  
Ø 1,30

## 1860S172 | Tip Style, Material, Plating, Tip- Ø (mm)



**11 Steel; L**  
Ø 1,30

| Type                 | Tip-Ø                    | Spring Force |
|----------------------|--------------------------|--------------|
| <b>F 620</b>         | <b>11 S 120 L</b>        | <b>075</b>   |
| Tip Style            | Material                 | Finish       |
| <b>Material:</b>     | S = Steel                |              |
| <b>Tip-Ø:</b>        | 120 = 1,20 mm (e.g.)     |              |
| <b>Finish:</b>       | L = Longtime Gold plated |              |
|                      | N = Nickel, R = Rhodium  |              |
| <b>ORDER EXAMPLE</b> |                          |              |

# Short Travel Probes

Centers 2,54 mm/100 mil

| Type           | Current | Temperature   | R <sub>typically</sub> |
|----------------|---------|---------------|------------------------|
| F702/F705/F706 | 5,0 A   | -20...+80 °C  | <20 mOhm               |
| ST/H-Versions  | 5,0 A   | -40...+250 °C | <20 mOhm               |

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Battery Contact

## F702 / F705 / F706

These probes all have a barrel diameter of 2 mm, but different length, travel and spring forces. The mounting is possible with the receptacles H702, H702/5, H702/13, or directly.

As standard version those probes are not solder tight.

For all types, either a high temperature version (H) or a solder tight version (ST), also for high temperature, are available. For the F705, a special version (LA) with solder cup is available. Order Code: F70511B130G130LA

Assembled with the receptacle H706S1 to the PCB, the F706 can be easily exchanged.

### Mechanical Specifications

| Travel (mm) | F702 | F705 | F706 |
|-------------|------|------|------|
| Nominal:    | 1,5  | 1,5  | 1,0  |
| Maximum:    | 2,2  | 3,0  | 1,2  |

### Spring Force (cN ±20%)

| F702          |    |    |     |
|---------------|----|----|-----|
| Nominal Force | 15 | 30 | 130 |
| Preload       | 4  | 10 | 40  |

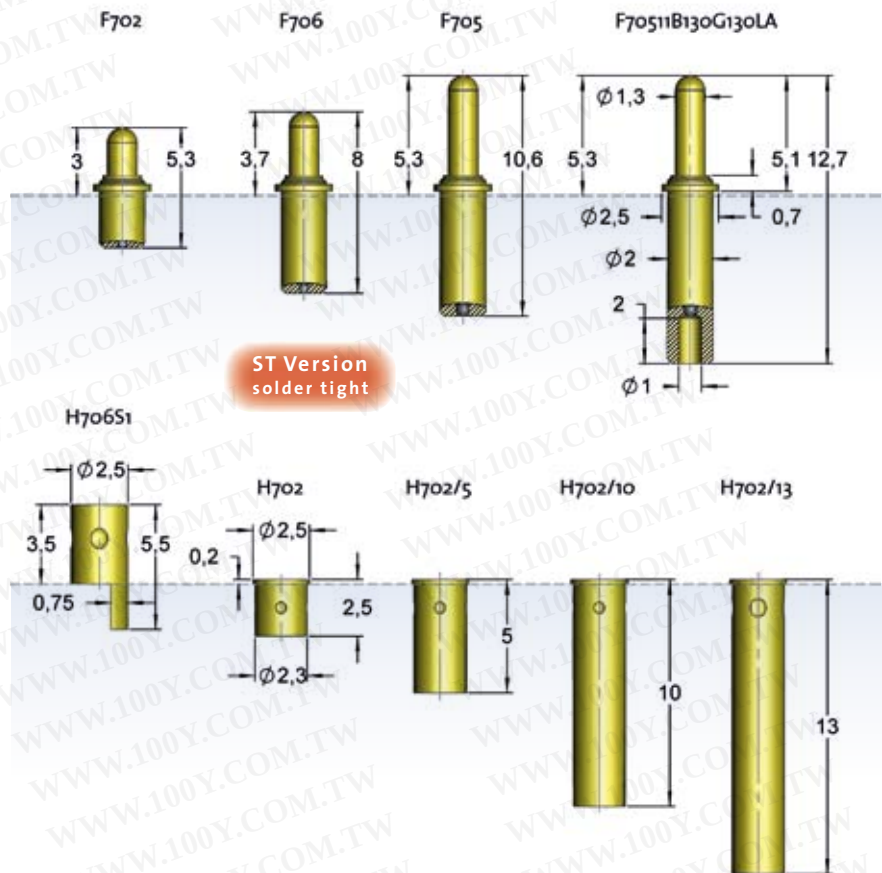
### F705

|               |     |                |
|---------------|-----|----------------|
| Nominal Force | 130 | 50 (H-Version) |
| Preload       | 60  | 30 (H-Version) |

### F706

|               |     |                  |
|---------------|-----|------------------|
| Nominal Force | 200 | 150 (ST-Version) |
| Preload       | 70  | 40 (ST-Version)  |

Pointing Accuracy: ± 0,08 mm



### Materials and Plating

Plunger: see Tip Styles  
 Barrel: Brass, Gold plated  
 Spring: Music wire, Silver plated  
 Receptacle: Bronze, Gold plated

### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,28-2,29    |
| HGW 2372.1 (FR4)        |              |

### F702 | Tip Style, Material, Plating, Tip- Ø (mm)

|                      |                      |                       |
|----------------------|----------------------|-----------------------|
|                      |                      |                       |
| 11 BeCu; G<br>Ø 1,30 | 29 BeCu; G<br>Ø 1,30 | 34 Steel; L<br>Ø 1,30 |

### F705 | Tip Style, Material, Plating, Tip- Ø (mm)

|                      |  |  |
|----------------------|--|--|
|                      |  |  |
| 11 BeCu; G<br>Ø 1,30 |  |  |

### F706 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                 |                      |                      |
|---------------------------------|----------------------|----------------------|
|                                 |                      |                      |
| 11 BeCu; G<br>Ø 1,0, Spitze 0,6 | 11 BeCu; G<br>Ø 1,30 | 29 BeCu; G<br>Ø 1,30 |

| Type             | Tip-Ø                                            | Spring Force |
|------------------|--------------------------------------------------|--------------|
| F706             | 11 B 130 G                                       | 200 ST       |
| Tip Style        | Material                                         | Finish       |
| Material:        | B = BeCu, S = Steel                              |              |
| Tip-Ø:           | 130 = 1,30 mm (e.g.)                             |              |
| Finish:          | G = Gold, L = Longtime Gold plated               |              |
| Special Version: | ST = solder tight                                |              |
|                  | H = High Temperature Version (not solder tight)  |              |
|                  | LA = solder cup                                  |              |
|                  | no letters = standard version (not solder tight) |              |
| Receptacle:      | Order-Code according drawing                     |              |

ORDER EXAMPLE

# Short Travel Probes



**Centers 1860S181: 3,50 mm/138 mil**  
**Centers 1860S089: 4,00 mm/157 mil**

| Type     | Current | Temperature    | R <sub>typically</sub> |
|----------|---------|----------------|------------------------|
| 1860S181 | 5,0 A   | -20...+80 °C   | <20 mOhm               |
| 1860S089 | 5,0 A   | -100...+120 °C | <20 mOhm               |

## Battery Contact

### 1860S181

**NEW**

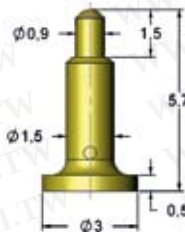
Special version of short travel probe with 3mm flat feet. Robust design for direct soldering to the PCB.

#### Mechanical Specifications

| Travel (mm)            |     |
|------------------------|-----|
| Nominal:               | 1,2 |
| Maximum:               | 1,5 |
| Spring Force (cN ±20%) |     |
| Nominal Force          | 65  |
| Preload                | 10  |

#### Materials and Plating

Plunger: BeCu, Gold plated  
 Barrel: Brass, Gold plated  
 Spring: Music wire, Gold plated



solder tight

#### Drill Size (mm)

same as barrel-Ø

**Order Code: 1860S181**

## With high spring force

### 1860S089

**NEW**

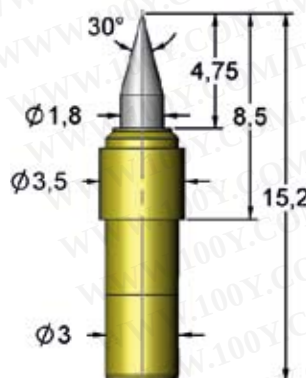
Special version of short travel probe with very high spring force and aggressive tip style for massive penetration and application at harsh conditions.

#### Mechanical Specifications

| Travel (mm)            |     |
|------------------------|-----|
| Nominal:               | 2,6 |
| Maximum:               | 3,0 |
| Spring Force (cN ±20%) |     |
| Nominal Force          | 450 |
| Preload                | 100 |

#### Materials and Plating

Plunger: Steel, rhodanized  
 Barrel: Brass, Gold plated  
 Spring: Stainless steel, Gold plated



solder tight

#### Drill Size (mm)

same as barrel-Ø

**Order Code: 1860S089**

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F504 | 5,0 A   | -20...+80 °C | <35 mOhm               |
| F538 | 5,0 A   | -20...+80 °C | <55 mOhm               |
| F585 | 3,0 A   | -20...+80 °C | <30 mOhm               |

### Test System Genrad 227x / 228x

## F504

| Travel (mm) | S-Version | L-Version |
|-------------|-----------|-----------|
| Nominal:    | 2,4       | 2,0       |
| Maximum:    | 3,2       | 3,9       |

#### Spring Force (cN ±20%) S-Version

| L-Version      |     |     |
|----------------|-----|-----|
| Nominal Force: | 130 | 100 |
| Preload:       | 60  | 40  |

Pointing Accuracy: ± 0,05 mm

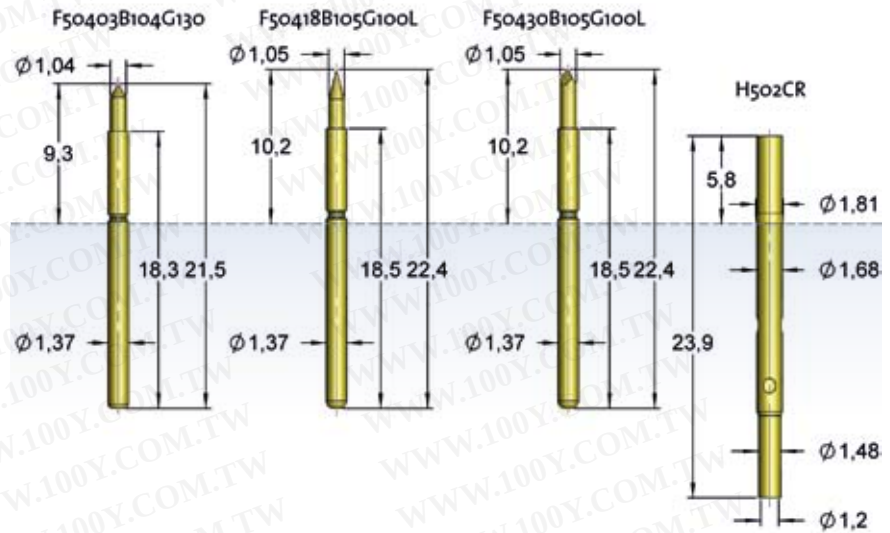
#### Materials and Plating

Plunger: BeCu, Gold plated

Barrel: Nickel Silver, Gold plated

Spring: BeCu, Silver plated (S-Version)  
 Music wire, Nickel plated (L-Vers.)

Receptacle H502: Nickel Silver, Gold plated



### Test System Digitaltest MTS 300

## F538

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 2,7 |
| Maximum:    | 4,0 |

#### Spring Force (cN ±20%)

Preload: 60 Nominal Force: 220

Pointing Accuracy: ± 0,05 mm

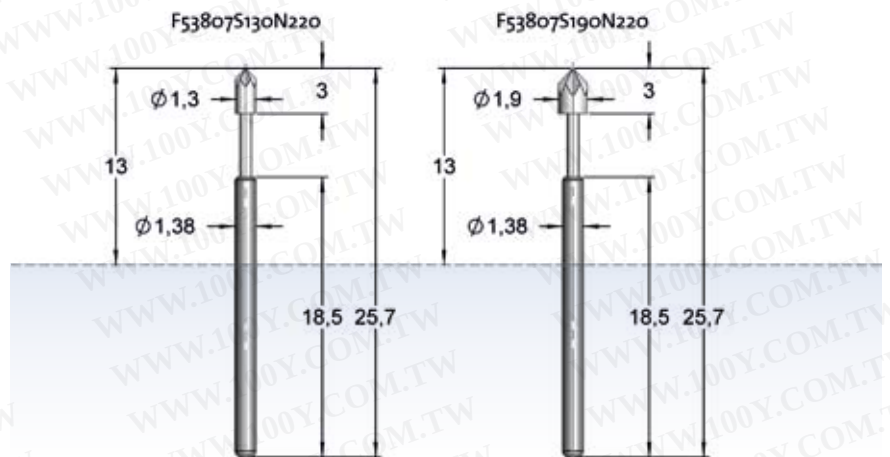
#### Materials and Plating

Plunger: Steel, Nickel plated

Barrel: Bronze, Silver plated

Spring: Music wire, Silver plated

Receptacle SPR-2W-3: Nickel Silver,  
 Gold plated (with circular pin)



### Test System Spea (Easytest / Unitest)

## F585

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 5,0 |
| Maximum:    | 6,4 |

#### Spring Force (cN ±20%)

Preload: 50 Nominal Force: 200

Pointing Accuracy: ± 0,08 mm

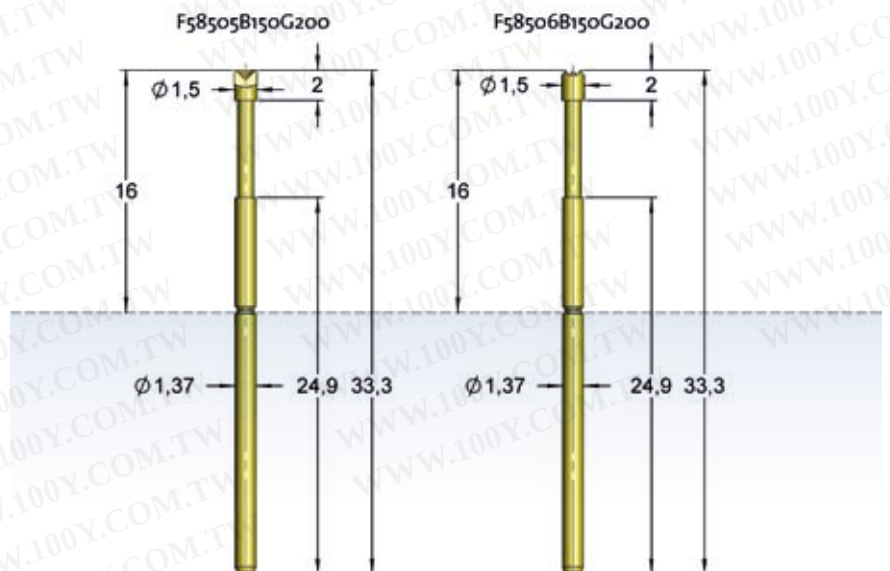
#### Materials and Plating

Plunger: BeCu, Gold plated

Barrel: Nickel Silver, Gold plated

Spring: Music wire, Silver plated

Receptacle H100WW: Nickel Silver,  
 Gold plated



# Interface Probes



## Centers: according Test System

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| F585 | 5,0 A   | -20...+80 °C | <20 mOhm               |
| I585 | 5,0 A   | -20...+80 °C | <8 mOhm                |

## Test System Agilent HP3070 / i5000

### I585

#### Travel (mm)

Nominal: 5,0 Maximum: 6,4

#### Spring Force (cN ±20%)

Preload: 35 Nominal Force: 130

Pointing Accuracy: ± 0,08 mm

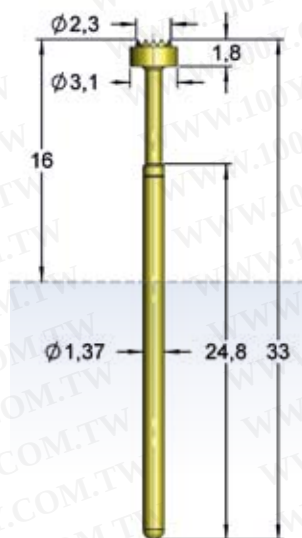
#### Materials and Plating

Plunger: BeCu, Gold plated

Barrel: Nickel Silver, Gold plated

Spring: Music wire, Silver plated

Receptacle H100WW: Nickel Silver,  
Gold plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

Order Code: I58506B310G130

## Test System Factron (Schlumberger) 300/700

### F585 ... S1

#### Travel (mm)

Nominal: 3,0 Maximum: 4,0

#### Spring Force (cN ±20%)

Preload: 95 Nominal Force: 120

Pointing Accuracy: ± 0,08 mm

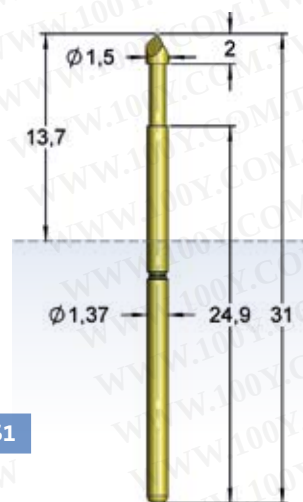
#### Materials and Plating

Plunger: BeCu, Gold plated

Barrel: Nickel Silver, Gold plated

Spring: Music wire, Silver plated

Receptacle H100WW: Nickel Silver,  
Gold plated



Order Code: F58515B150G120S1

## Test System Teradyne Spectrum 885xxx

### F585

#### Travel (mm)

Nominal: 5,0 Maximum: 6,4

#### Spring Force (cN ±20%)

Preload: 50 Nominal Force: 200

Pointing Accuracy: ± 0,08 mm

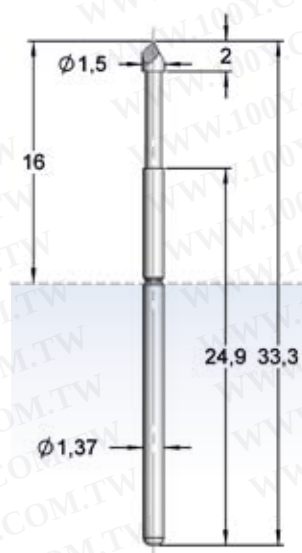
#### Materials and Plating

Plunger: BeCu, Gold plated

Barrel: Nickel Silver, Gold plated

Spring: Music wire, Silver plated

Receptacle H100WW: Nickel Silver,  
Gold plated



Order Code: F58515B150G200

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## for Teradyne Interface

**1860S137****1860S138****1860S154****Travel (mm)**

|          |     |
|----------|-----|
| Nominal: | 5,0 |
| Maximum: | 6,4 |

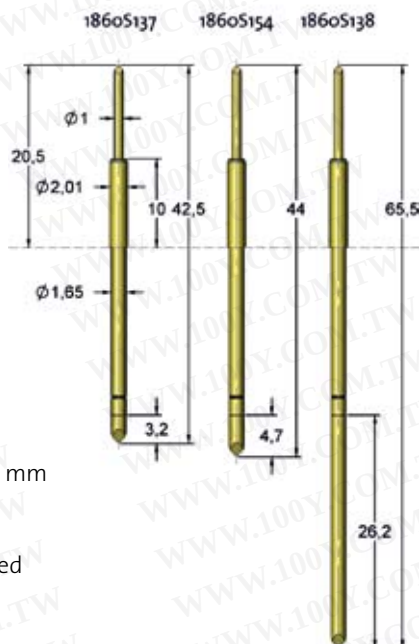
**Spring Force (cN ±20%)**

|                |     |
|----------------|-----|
| Nominal Force: | 130 |
| Preload:       | 35  |

Pointing Accuracy: ± 0,08 mm

**Materials and Plating**

Plunger: BeCu, Gold plated

Barrel: Nickel Silver,  
Gold platedSpring: Music wire,  
Silver plated

## Double Plunger Probe for Advantest Interface

**1860S149** **NEW****Travel (mm)**

|          |     |
|----------|-----|
| Nominal: | 2,5 |
| Maximum: | 5,0 |

**Spring Force (cN ±20%)**

|                |    |
|----------------|----|
| Nominal Force: | 80 |
| Preload:       | 50 |

Pointing Accuracy: ± 0,08 mm

**Materials and Plating**

Plunger: BeCu, Gold plated

Barrel: Nickel Silver,  
Gold platedSpring: Stainless steel,  
Gold plated

## Double Plunger Probe

**1860S176** **NEW****Travel (mm)**

|          |     |
|----------|-----|
| Nominal: | 2,5 |
| Maximum: | 5,0 |

**Spring Force (cN ±20%)**

|                |    |
|----------------|----|
| Nominal Force: | 80 |
| Preload:       | 50 |

Pointing Accuracy: ± 0,08 mm

**Materials and Plating**

Plunger: BeCu, Gold plated

Barrel: Nickel Silver,  
Gold platedSpring: Stainless steel,  
Gold plated

## for Teradyne Interface

**1860S188****Travel (mm)**

|          |     |
|----------|-----|
| Nominal: | 5,0 |
| Maximum: | 6,4 |

**Spring Force (cN ±20%)**

|                |     |
|----------------|-----|
| Nominal Force: | 130 |
| Preload:       | 35  |

Pointing Accuracy: ± 0,08 mm

**Materials and Plating**

Plunger: BeCu, Gold plated

Barrel: Nickel Silver,  
Gold platedSpring: Music wire,  
Silver plated

## Double Plunger Probe

**1860S174** **NEW****Travel (mm)**

|          |     |
|----------|-----|
| Nominal: | 5,0 |
| Maximum: | 6,4 |

**Spring Force (cN ±20%)**

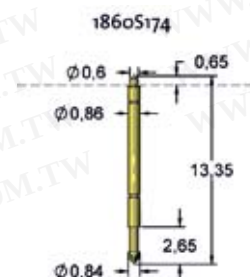
|                |     |
|----------------|-----|
| Nominal Force: | 130 |
| Preload:       | 35  |

Pointing Accuracy: ± 0,08 mm

**Materials and Plating**

Plunger: BeCu, Gold plated

Barrel: Nickel Silver, Gold plated

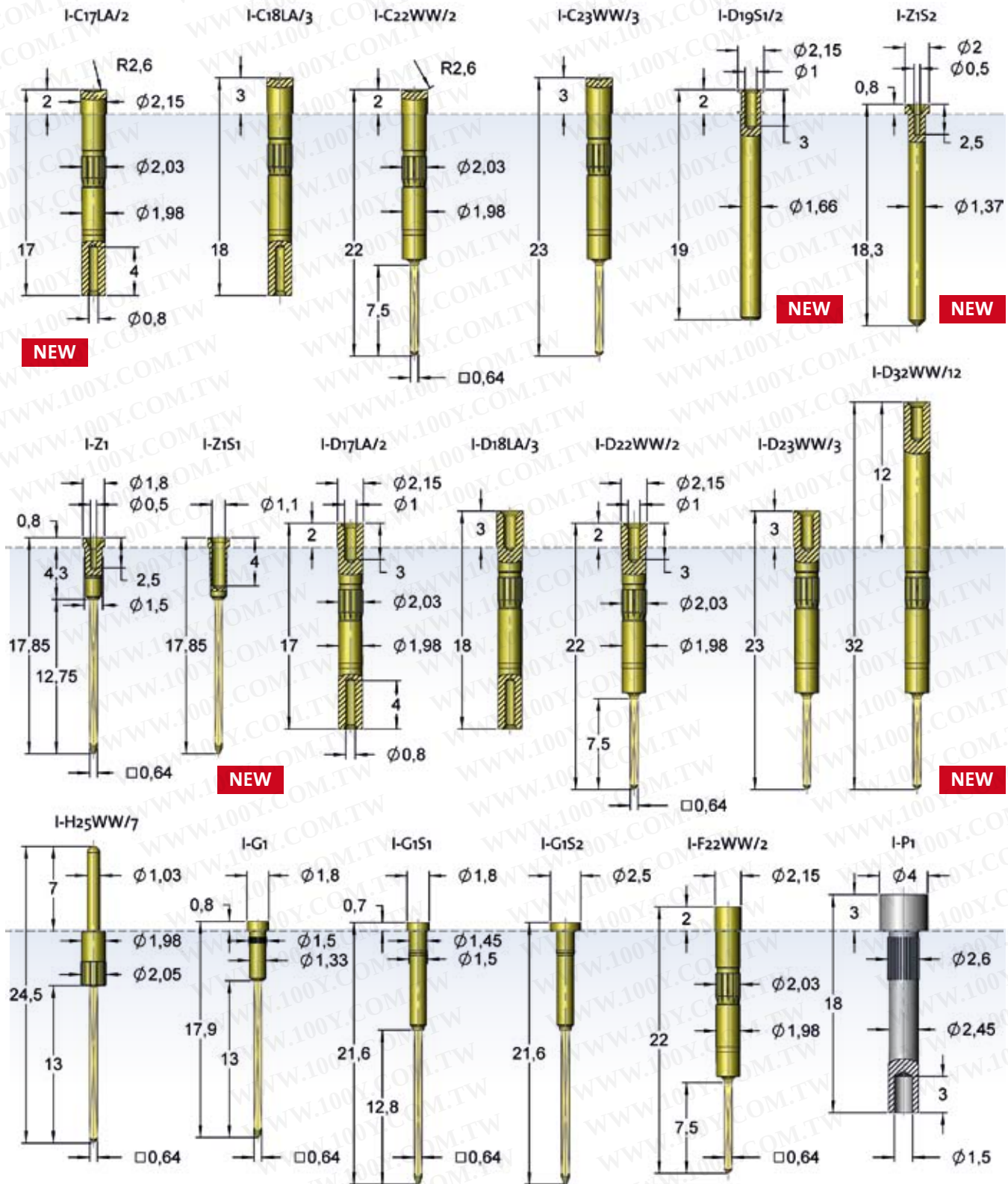


# Interface Probes



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Interface-Pins



# Pylon Interface Contact Blocks

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Signal Block 170 pin

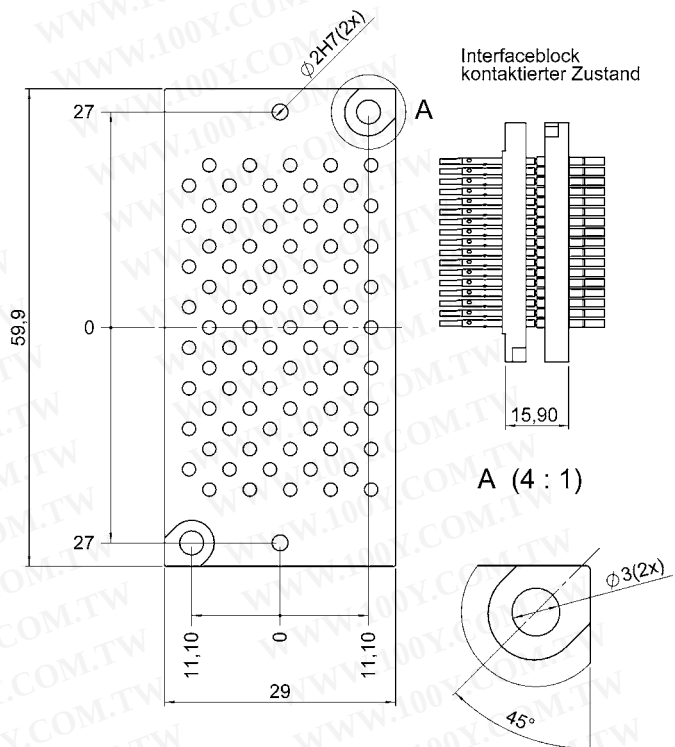


### Version with Wire Wrap Connection

|                       |                      |
|-----------------------|----------------------|
| Order code: 43900017  | Order code: 43900015 |
| Probe: F50403B104G130 | Pin: IG-1            |
| Receptacle: H502WW    |                      |

### Version with Solder Connection

|                       |
|-----------------------|
| Order code: 43900018  |
| Probe: F50403B104G130 |
| Receptacle: H502LA    |



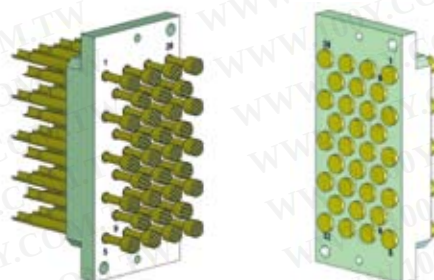
## Signal Block 145 pin



### Version with Solder Connection

|                       |                      |
|-----------------------|----------------------|
| Order code: 43900023  | Order code: 43900024 |
| Probe: F50403B104G100 | Pin: IZ1S2           |
| Receptacle: H502LA    |                      |

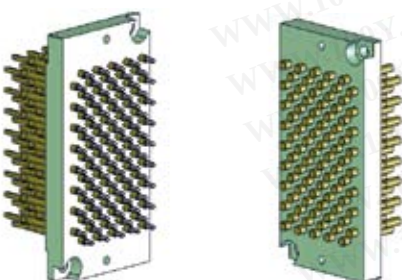
## Powerblock 20 pin max.24 A



### Version with Solder Connection

|                       |                      |
|-----------------------|----------------------|
| Order code: 43900028  | Order code: 43900027 |
| Probe: F73506B400G300 | Pin: IP-1            |
| Receptacle: H735LA    |                      |

## Signal Block 85 pin



### Version with Solder Connection

|                       |                      |
|-----------------------|----------------------|
| Order code: 43900021  | Order code: 43900022 |
| Probe: F50403B104G130 | Pin: I-C17LA/2       |
| Receptacle: H502LA    |                      |

## Pneumablock 8 pin



|                      |                      |
|----------------------|----------------------|
| Order code: 43900025 | Order code: 43900026 |
|----------------------|----------------------|

Further versions / special versions, on request

# Pneumatic Probes

Centers: 2,54 mm/100 mil - 4,00 mm/157 mil

| Type | Centers         | Current | R <sub>typically</sub> |
|------|-----------------|---------|------------------------|
| F890 | 2,54 mm/100 mil | 2,0 A   | <30mOhm                |
| F891 | 3,00 mm/118 mil | 3,0 A   | <30mOhm                |
| F893 | 3,50 mm/138 mil | 3,0 A   | <30mOhm                |
| F895 | 4,00 mm/157 mil | 3,0 A   | <30mOhm                |

## F890 / F891 / F893 / F895

FEINMETALL offers pneumatically operated probes for selective and individual test point contacting. The plunger is moved to the test point by compressed air and will be returned by a spring, if the pressure is taken away. The electrical connection is made with the specific connecting elements. The mounting takes place with the corresponding receptacles H891 / H893 / H895.

### Mechanical Specifications

| Travel (mm) | F890   |
|-------------|--------|
| Nominal:    | 3,0 mm |
| Maximum:    | 5,0 mm |

| Spring Force (cN ±20%) | F890 |
|------------------------|------|
| Nominal Force          | 50   |

| Travel (mm) | F891 - F895 |
|-------------|-------------|
| Nominal:    | 6,0 mm      |
| Maximum:    | 10,0 mm     |

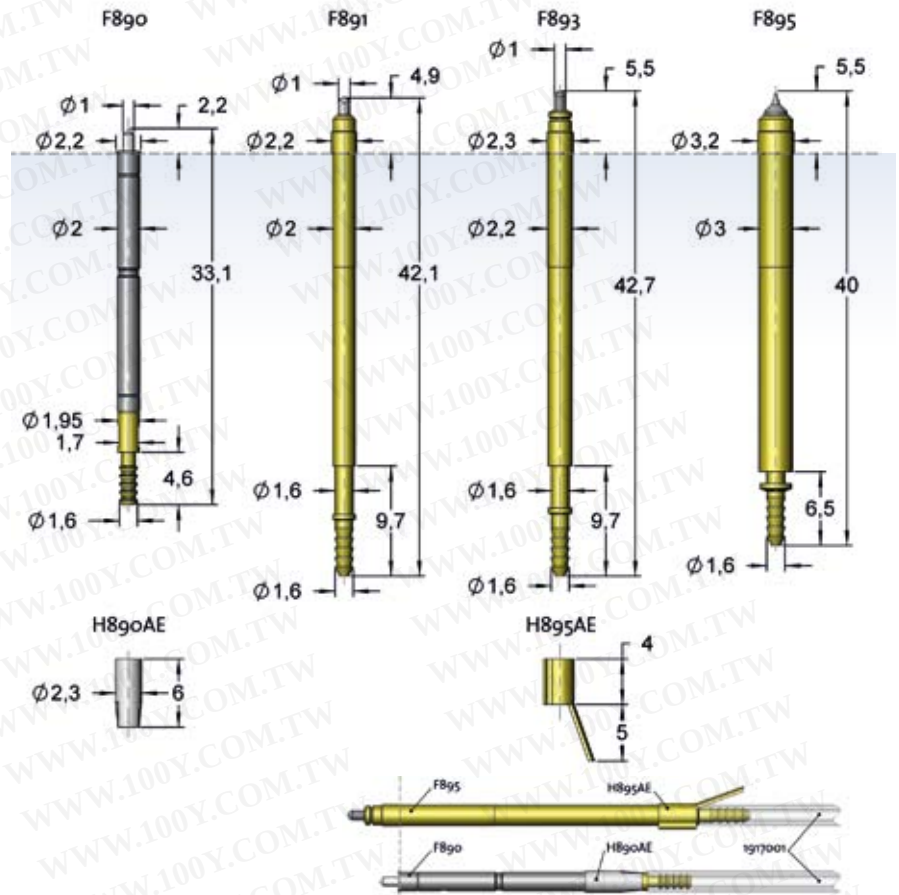
| Spring Force (cN ±20%) | F891 | F893 | F895 |
|------------------------|------|------|------|
| Nominal Force          | 60   | 80   | 150  |

Operating Pressure: 6 bar

Operated by: compressed air (filtered)

### Materials and Plating

Plunger: siehe Tip Style  
 Barrel: Brass, Gold plated  
 Bronze, Silver plated (F890)  
 Spring: Music wire, Gold plated  
 Receptacle: Brass, Gold plated  
 Connecting Element: BeCu, Gold plated



### Drill Size F890/891

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,38-2,39    |
| HGW 2372.1 (FR4)        | 2,39-2,40    |

### Drill Size F893

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        | 2,98-2,99    |

### Drill Size F895

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 3,38-3,39    |
| HGW 2372.1 (FR4)        | 3,39-3,40    |

### F890 | Tip Style, Material, Plating, Tip- Ø (mm)

|                       |                       |                       |
|-----------------------|-----------------------|-----------------------|
|                       |                       |                       |
| 01 Steel; N<br>Ø 1,00 | 01 Widia; N<br>Ø 1,00 | 11 Steel; N<br>Ø 1,00 |

### F891 | Tip Style, Material, Plating, Tip- Ø (mm)

|                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|
|                             |                             |                             |
| 28 Steel; R<br>Ø 1,30 (S/L) | 32 Steel; R<br>Ø 1,50 (S/L) | 33 Steel; R<br>Ø 1,00 (S/L) |

### F893 | Tip Style, Material, Plating, Tip- Ø (mm)

|                             |                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
|                             |                             |                             |                             |
| 06 Steel; R<br>Ø 2,50 (S/L) | 11 Steel; R<br>Ø 1,00 (S/L) | 28 Steel; R<br>Ø 1,30 (S/L) | 32 Steel; R<br>Ø 1,50 (S/L) |

### F895 | Tip Style, Material, Plating, Tip- Ø (mm)

|                             |                             |                             |
|-----------------------------|-----------------------------|-----------------------------|
|                             |                             |                             |
| 05 Steel; R<br>Ø 3,00 (S/L) | 28 Steel; R<br>Ø 1,30 (S/L) | 32 Steel; R<br>Ø 2,00 (S/L) |

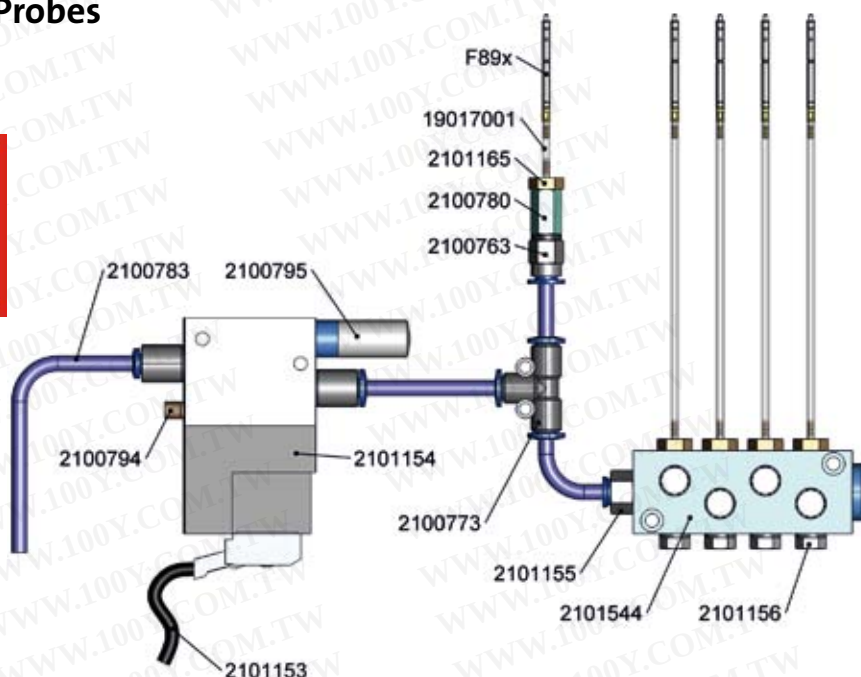
勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type             | Tip-Ø                           | Spring Force    |
|------------------|---------------------------------|-----------------|
| F891             | 28 S                            | 130 R           |
| Tip Style        | Material                        | Finish          |
|                  |                                 | Special Version |
| Material:        | S = Steel, W = Widia            |                 |
| Tip-Ø:           | 130 = 1,30 mm (e.g.)            |                 |
| Finish:          | R = Rhodium, N = Nickel         |                 |
| Special Version: | S = short hose connector, 7 mm  |                 |
|                  | L = long hose connector, 9,7 mm |                 |
| Receptacle:      | see text above                  |                 |
| ORDER EXAMPLE    |                                 |                 |

# Pneumatic Probes

## Accessories for Pneumatic Probes

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



### Silencer small

Order Code  
2100794



Material: Brass / Bronze  
 Threaded port: M3

### Distributor Block (12x)

Order Code  
2101544



Material: aluminium die casting  
 feeding connection: R1/8"  
 output connection: M5 (12x)

### Tee-Piece Connector

Order Code  
2100773



Material: PBT (POM)  
 feeding connection: hose connector for tube  $\varnothing$ 4mm  
 output connection: hose connector for tube  $\varnothing$ 4mm

### Threaded Sleeve

Order Code  
2100763



Material: brass, Ni plated  
 feeding connection: thread M5  
 output connection: hose connector for tube  $\varnothing$ 4 mm

### Silencer

Order Code  
2100795



Material: PE  
 Threaded port: M7

### Bush

Order Code  
2100780



Material: aluminium, anodized  
 Threaded port: M5

### Threaded Sleeve

Order Code  
2101155



Material: brass, Ni plated  
 feeding connection: thread R1/8"  
 output connection: hose connector for tube  $\varnothing$ 4 mm

### Dummy Plug with Seal

Order Code  
2101156



Material: aluminium  
 Threaded port: M5

### Socket Connector Cable

Order Code  
2101153



Material: Aluminium  
 Nominal voltage: 24V  
 Protection category: IP65  
 Cable: 2x0,25 mm<sup>2</sup>  
 Cable- $\varnothing$ : 3,4 mm  
 Cable lenght: 5 m

### Plastic Tube

Order Code  
2100783



Material: TPE-U(PU) blue  
 outer- $\varnothing$ : 4 mm  
 inner- $\varnothing$ : 2,6 mm

### Plastic Tube

Order Code  
19017001



Material: TPE-U(PU) - transparent  
 outer- $\varnothing$ : 2 mm  
 inner- $\varnothing$ : 1,3 mm



# FEINMETALL the Market Leader



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



Based on many years of experience and great proximity to our customers, FEINMETALL today offers a perfect product portfolio of test probes for the wire harness and connector test.

The high quality standard and the excellent availability of our products are inspiring our customers. FEINMETALL is setting

standards in cost optimized solutions, for always new and challenging requirements from the market, by specifically and well designed products. Innovation is the key to our success.

## Probes for Wire Harness and Connector Test

|                               |         |
|-------------------------------|---------|
|                               | 57      |
| Applications                  | 58-63   |
| Threaded Probes / Step Probes | 64-78   |
| Switch Probes                 | 79-93   |
| Twist Proof Probes            | 94-101  |
| Push Back Probes              | 102-106 |
| High Current Probes           | 107-115 |
| Kelvin Probes                 | 116-126 |
| High Frequency Probes         | 127-128 |

## Presence Test with Switch Probes

Switch Probes are contact elements, which close an electric circuit after a defined switch travel (NO - normally open) or open it (NC - normally closed). This condition persists beyond the switching point. FEINMETALL offers special combi-receptacles for the solderless exchange of switch probes (see below).

### Typical Applications:

- presence test of components or connectors
- voltage-free detection with synthetic heads
- short-circuit-proof modules by electrically isolated switch elements (voltage-free system)
- installation of intrinsically safe circuits (only with NC-versions, e.g. F873, F883)

### Versions of Switch Probes:

- openers (NC) and closers (NO)
- different switch travels
- short version for a gentle lateral contacting by ball element (F888)
- short and long versions of a series for different projection heights
- long travel versions for depth determination (F375 and F385)

## Solder less replacement of Switch Probes / Kelvin Probes

Combi receptacles allow a quick and solder less replacement of switch probes or kelvin probes (plug-in and threaded versions) without disassembly of the module or fixture. Secure connections of both signal circuits (inner and outer conductor) are realised by contact elements within the receptacle.

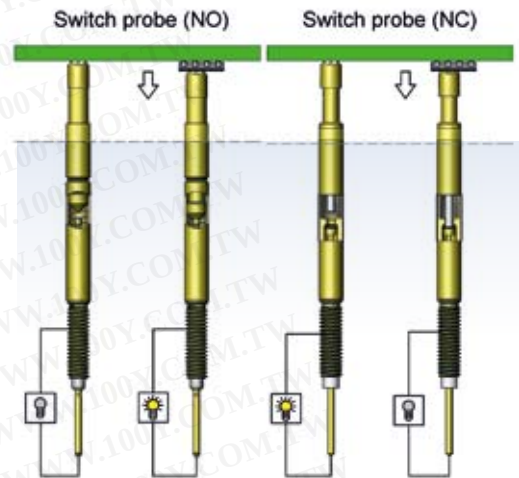
### Advantages of the combi receptacle

- solder less replacement of switch probes and kelvin probes
- prevention of incorrect wirings in case of maintenance
- Saving of time and assembly expenses in case of maintenance
- Height adjustability of switch probes by the probe thread and pressure marks at the receptacle
- High frequency capabilities in combination with coaxial kelvin probes

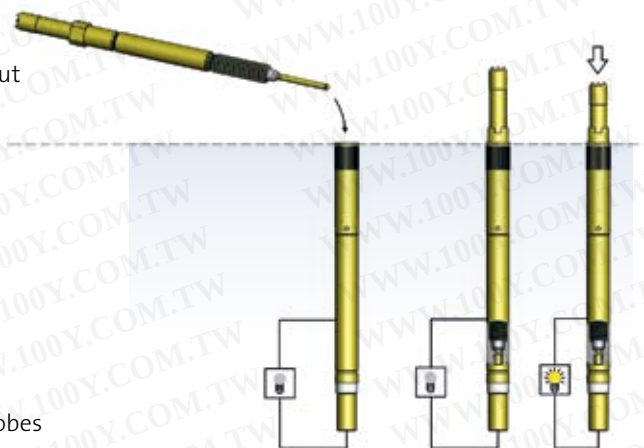
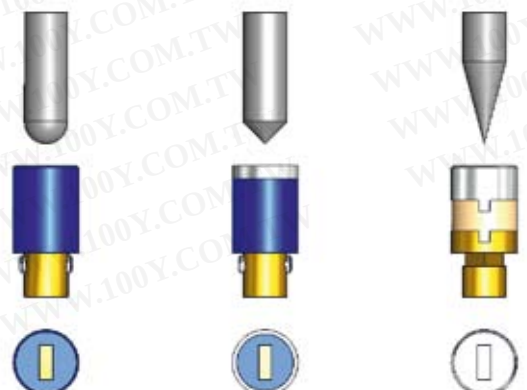
## Insulated tips for Switch Probes

There are three different versions of insulated test heads available (e.g. for Switch Probe Series F886).

- Version K made of synthetic material is the standard tip style for insulated contacting
- Version H is reinforced additionally by a brass ring, which allows higher stress on the synthetic head.
- Version T has a metall head, which is insulated versus the plunger and therefore is suitable for applications with higher mechanical exposure. The special design avoids any electrical contact between tip and barrel, even at maximum travel. The tip of this version is silver-coloured for better identification of the assembled probe.



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

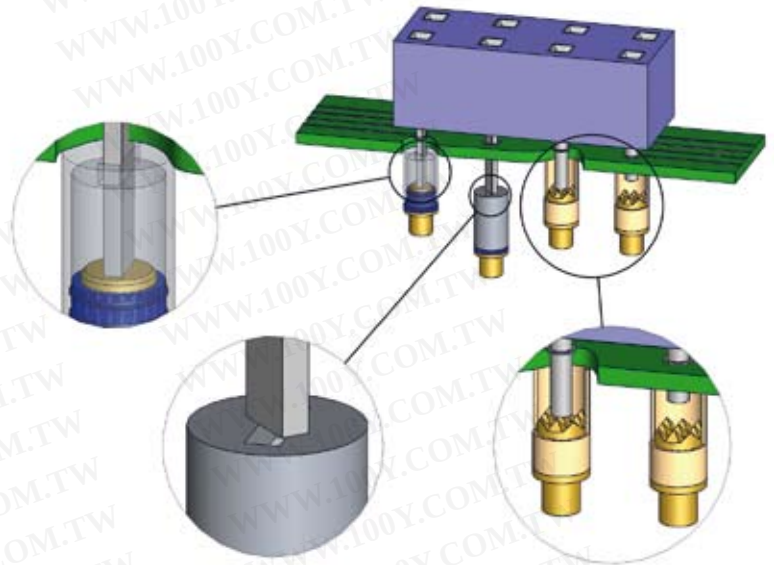




勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Insulated caps for the determination of correct length and straightness of contact elements

Using insulated caps (tip style IK), the correct length of a pin can be checked by simple means. The insulated cap comes to rest on a board or a connector housing and thus guarantees a defined distance of the electrical contact pad. The newly developed insulated cap with integrated slit additionally helps to check the alignment of a rectangular contact element. Is the contact element bended or twisted, the insulated cap strikes on it and there is no electrical contact.

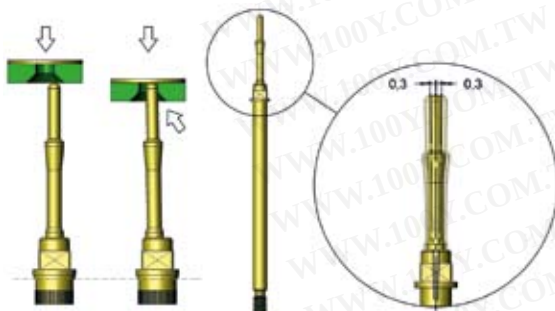


## Threaded Probe with Wobbling Plunger for larger range of tolerances at contacting

The picture shows the functional principle of a wobbling plunger, designed for testing connector contact elements with extended positioning tolerances. The consciously large pointing tolerance of the plunger at these probes allows proper immersion and contacting, even if the contact elements are not exactly in position.

Up to a certain degree the probe design is compensating corresponding lateral forces.

The wobbling plunger is available for probe family F732, the pictured version is F73211B064G150RP.



## Frequency Response of FEINMETALL Coaxial Probes

FEINMETALL coaxial Kelvin probes (e.g. F835) are optimised for higher frequencies. Thus, these probes are suitable for signals with frequencies up to 2 GHz. In this frequency range these probes are an alternative to classical high frequency probes.

The very good frequency response of the F835 is not losing performance by using the combi-receptacle for a solder less exchange of the probes.



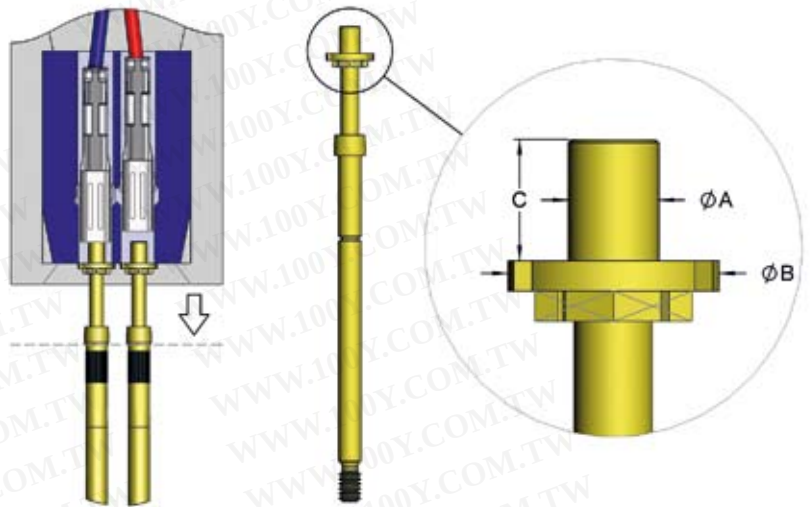
勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Position Test with Step Probes

The test principle of a step probe is based on the fact that the plate comes to rest on the DUT (e.g. connector housing) and thereby a defined penetration of the pin in the connector housing is given. The pin of the step probe identifies the presence and/or the correct position of the contact element by contacting.

FEINMETALL offers a great variety of step probes (please see chapter „Threaded Probes“ and SP-Overview on page 78).

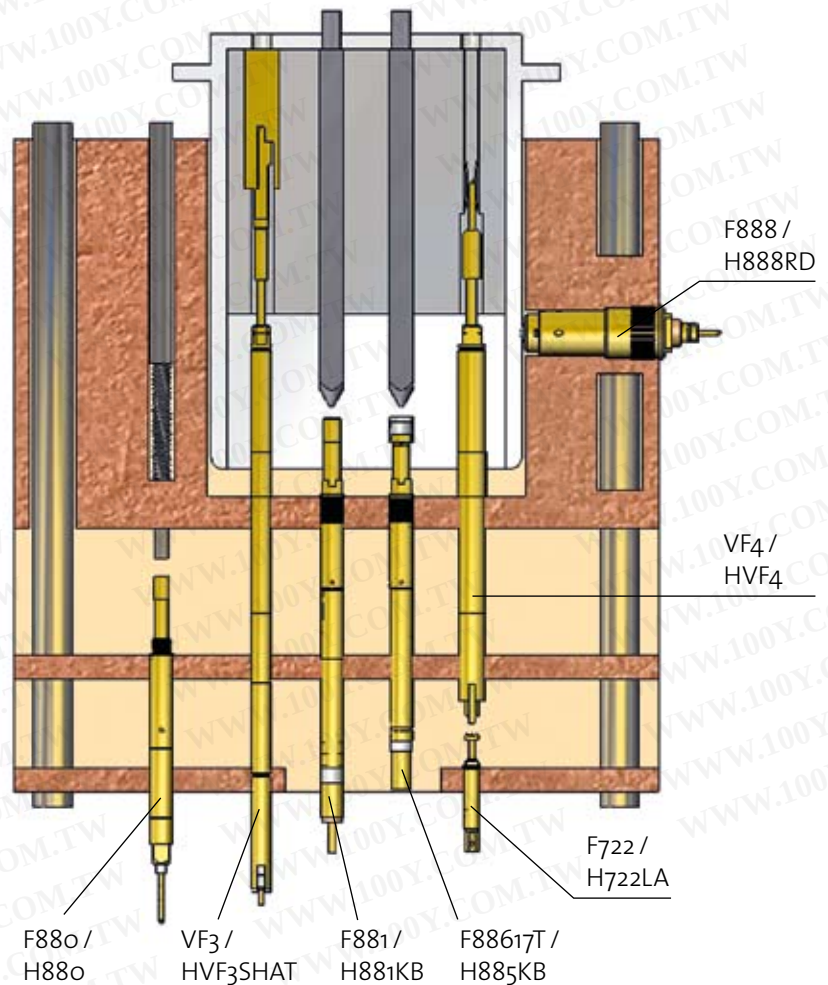
A special screw-in-tool allows applications with very small centers (please see page 61).



## Design of test modules for wire harness connectors with FEINMETALL contact probes

As market leader FEINMETALL offers a broad range of special contact probes and accessories for the design of test modules. With innovative and cost-effective solutions FEINMETALL satisfies the demand in the field and is a real trend-setter in the wire harness testing technology.

The picture shows the schematic design of a connector test module with FEINMETALL-products.





## Smart solutions for test module functions by FEINMETALL products

### Variable adjustment of the switch travel for push-back probes

The usage of push-back probes in combination with threaded probes on a second level allows a variable adjustment of the switch point (closing of the electric circuit) by height adjustability of the second level. To guarantee a reduced depth of the module we recommend the usage of the short-travel probe F722 together with the push-back probes VF4, VF3 or VF100.

### Push-back probes with fix switch travel

When using push-back probes, a predefined switching point is achieved by assembling a push-back probe with a corresponding switch receptacle. The switch function is integrated in the receptacle. For FEINMETALL airtight switch receptacles, the part number ends with "SHAT" ("SH" = switch function, "AT" = airtight). We recommend for example the combination of the push-back probe VF3 with the switch receptacle HVF3SHAT. Alternatively the new cost-saving version V03 with integrated switch function can be used (this version is airtight but not twist-proof).

### Push-back Probes with same projection height

The threaded push-back probes VF3, VF4 and VF100 have an identical projection height and thus can be combined without any additional procedures for height adjustment.

### Design of vacuum-tight modules

FEINMETALL offers all necessary probes and receptacles for the design of vacuum-tight modules. The airtight version can be identified by the ending "AT" at the order code. No additional cost-intensive provisions for tightening are necessary at contact probes and receptacles.

### Position Test of contact elements by insulated probe tips

For an insulated position test FEINMETALL offers a great selection of insulated tip styles for the switch probe series F886. Especially the version with tip style 17T (insulated metal cap) is extremely rugged and durable. Its construction avoids any electrical connection to the barrel of the probe also at maximum travel. A silver plating helps to distinguish the insulated tip style 17T from the conducting gold plated BeCu heads.

### Short-circuit-proof modules by voltage-free switch probes

Short-circuit-proof modules and fixtures can be designed with the switch probes F881 and F888 with electrically isolated switching circuit. This is an important matter given by the fact, that test tables in the market may be equipped with modules of different manufacturers. Due to different switching concepts and voltage levels at these different modules, the activation of the probe switch may lead to short-circuits with destructive consequences when using switch probes without electrical isolation. Isolated switch probes can avoid this problem. As the series F881 has the same installation dimensions as the standard switch probes F885/F886 no change of the design in the module is necessary for replacement. For the series F881 a specific combi-receptacle (H881KB) for solder less replacement is available.

### Note for the usage of voltage-free FEINMETALL switch probes:

According to DIN VDE 0100 (part 410) a maximum of 25V AC (rms) or 60V DC is permitted which includes any potential surge.

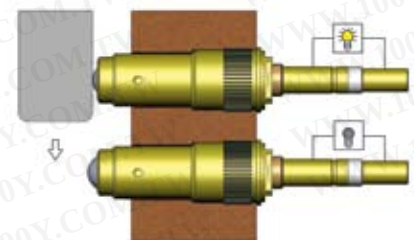
### Switch probes for backward assembly

Switch probes usually are assembled and exchanged from the top. If this is not possible or favoured, the switch probe F880 can be applied. This probe is for mounting from the bottom, and its switch point can be adjusted by the special tool FWZ888SA before fixing the wiring.

### Lateral presence test of connectors

The lateral presence test of connectors or housings generally is a problem for conventional contact probes due to the movement of the DUT. With Series F888 FEINMETALL offers an excellent and innovative solution for this application, providing lots of advantages.

- Rolling ball as contact element, which leads to a reduction of transverse forces and thus a remarkably higher durability compared to contact probes with fix plunger head of similar shape
- Airtight version for vacuum-tight modules
- electrically isolated switch available
- very short length for low installation depth
- variable height adjustment of the probe in combination with the corresponding receptacle
- Adjustment of switching point without wiring by special tool FWZ888SA



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## TOOLS (see page 129 bis 131)

### LED tool for adjusting the optimum switch point of switch probe F888

With tool FWZ888SA the switch probe with integrated ball (F888) can be screwed in and brought into the correct position, before finally connecting the cables or plugs. The exact switching position can be adjusted with the tool by help of the LED signal. The LED is lightning when the switch is activated by mechanical contacting of the test object.



### Hook Wrench

The hook wrench is the standard tool for all probes with square wrench sizes even if the head diameter is larger than the wrench size.



### Socket Wrench

The socket wrench can be used for square wrench sizes if the head diameter is smaller than the wrench size. The tool helps to assemble probes within small centers.



### Screw Driver

Screw drivers can be used if the contact area has any support (e.g. serrated honeycomb or slit) and the head has an integrated locking system.



### Tool for Step Probes

For assembly of oversized step probes FEINMETALL has developed a special tool for applications with very limited space between the probes.





勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

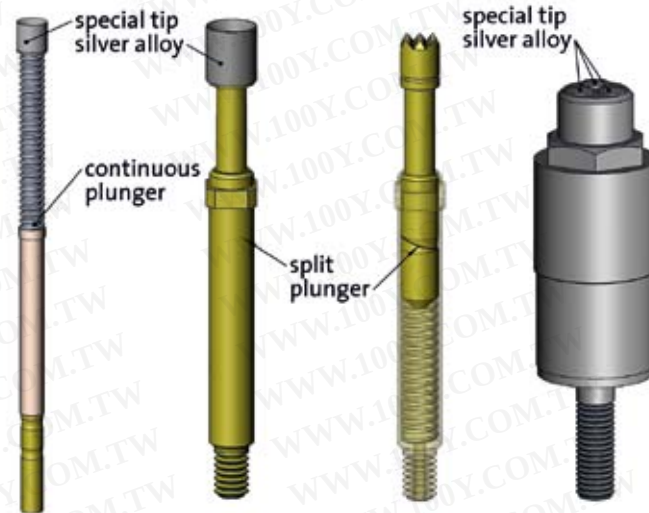
## High Current Probes

For high current applications the design of a spring contact probe has to consider a minimal electrical internal probe resistance as well as contact resistance. Otherwise, especially the spring of the probe would be overheated, what would lead to a remarkable reduction of the probe life time. A low electrical resistance of the probe significantly depends of the design and the material of the contact probe.

The maximum continuous current is defined as  $I_{RMS}$  (root-mean-square value). It is mainly limited by the maximum tolerable warming of the probe. The value for the  $I_{RMS}$  is independent from the frequency spectrum or waveform of the current. The figures for the maximum current indicated in the technical data refer to this  $I_{RMS}$ .

The design of springs of FEINMETALL high current probes ensures that also high temperatures up to 250°C do not lead to damages or a reduction in lifetime.

FEINMETALL manufactures different versions of high current probes.



### High current probes with continuous plunger

have the lowest resistance and therefore allow a high current loading. If the electrical connection is assembled at the end of the continuous plunger, the cable moves synchronously with the plunger, so that those contact probes always have to be furnished with flexible cables.

**High current probes with split plungers** are designed that way, that under force effect the plunger elements optimally

establish a low-resistance connection to the barrel of the contact probe. As a consequence, the current flows mainly through plunger and barrel without stressing the spring strongly.

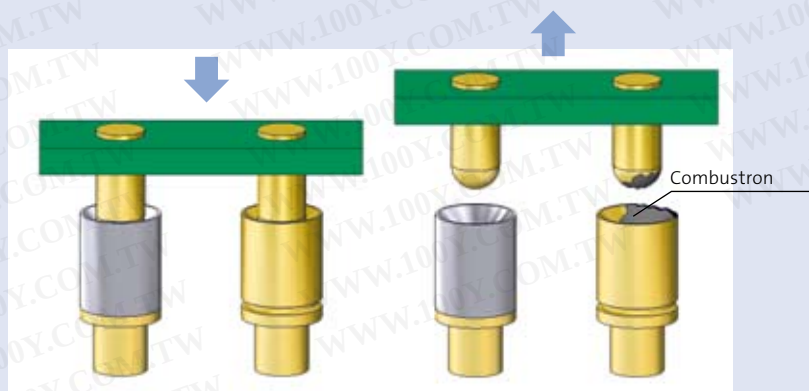
### Probes for very high currents

The range of FEINMETALL high current probes has been extended by contact probes, which allow a current flow of 100A, 200A or 400A (series F351, F352 and F354, please see page 115).

### Special head made of silver alloy

In high current applications ideally no voltage should apply and accordingly no current should flow during closing or releasing the contact. Otherwise, an electric spark may occur, which may damage the surface of the contact area.

To avoid or at least minimise such a contact-burn-off, FEINMETALL offers tips made of a special silver alloy to minimise the contact-burn-off, reducing the transition resistance and lead to a longer life time of the probes.



#### Application Note:

For an easy identification, FEINMETALL high current probes have a groove at the probe head. This groove makes sure that these probes can be distinguished from standard probes with identical dimensions.

# Threaded probes

Centers 1,27 mm/50 mil

| Type      | Current | Temperature   | R typically |
|-----------|---------|---------------|-------------|
| F730      | 3,0 A   | -20°...+80°C* | <30mOhm     |
| F730...SP | 3,0 A   | -20°...+80°C  | <30 mOhm    |

## Standard Threaded Probe 50 mil

### F730 / F730...SP

The F730 is available with standard tip styles and as step probe for connector testing (SP-Version).

The receptacle H730 is airtight and can be delivered either with solder connection (H730LA) or with 500 mm stranded wire AWG28 (H730LI).

#### Mechanical Specifications

##### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

##### Spring Force (cN ±20%)

|                |     |
|----------------|-----|
| Nominal Force: | 110 |
| Preload:       | 20  |

Pointing Accuracy: ± 0,08mm

#### Materials and Plating

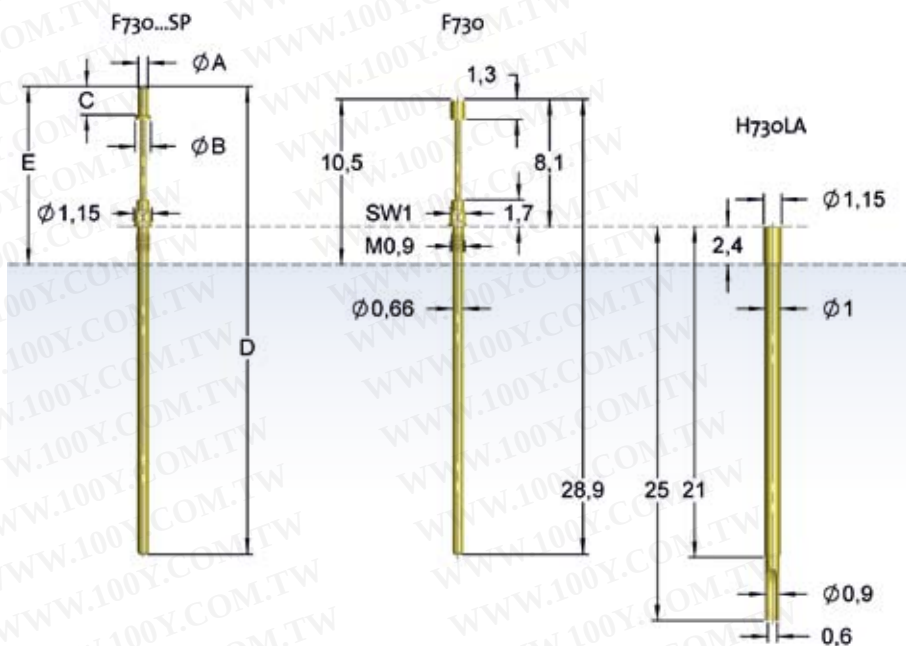
|             |                         |
|-------------|-------------------------|
| Plunger:    | see Tip Styles          |
| Barrel:     | Bronze, Gold plated     |
| Spring:     | Music wire, Gold plated |
| Receptacle: | Bronze, Gold plated     |

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 0,99-1,00    |
| HGW 2372.1 (FR4)        |              |

| Type                                                                                                                                                                               | Tip-Ø   | Spring Force |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|
| F730                                                                                                                                                                               | 06B 090 | G 110        |
| Tip Style Material Finish                                                                                                                                                          |         |              |
| <b>Material:</b> B = BeCu, S = Steel<br><b>Tip-Ø:</b> 090 = 0,90 mm (e.g.)<br><b>Finish:</b> G = Gold, L = Longtime Gold plated<br><b>Receptacle:</b> Order-Code according drawing |         |              |
| <b>ORDER EXAMPLE</b>                                                                                                                                                               |         |              |

| Type                                                                                                                                           | Number   | Spring Force |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|
| F730                                                                                                                                           | 12B 0001 | G 110 SP     |
| Tip Style Material Finish Step Probe                                                                                                           |          |              |
| <b>Material:</b> B = BeCu<br><b>Number:</b> see table<br><b>Finish:</b> G = Gold<br><b>Receptacle:</b> Order-Code according drawing            |          |              |
| At the order code of step probes, instead the coded tip diameter there is a number, by that you can find related head dimensions in the table. |          |              |
| <b>ORDER EXAMPLE STEP PROBES</b>                                                                                                               |          |              |



AIRTIGHT

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Tip Style, Material, Plating, Tip- Ø (mm)

|                      |                          |                       |                         |                          |
|----------------------|--------------------------|-----------------------|-------------------------|--------------------------|
|                      |                          |                       |                         |                          |
| 06 BeCu; G<br>Ø 0,90 | 11 BeCu; G<br>on request | 12 BeCu; G<br>Ø 0,64  | 12 BeCu; G<br>see table | 16 BeCu; G<br>on request |
|                      |                          |                       |                         |                          |
| 17 BeCu; G<br>Ø 0,64 | 18 BeCu; G<br>Ø 0,40     | 18 Steel; L<br>Ø 0,40 |                         |                          |

| Tip Style | No.  | A (Ø) | B (Ø) | C   | D    | E    |
|-----------|------|-------|-------|-----|------|------|
| 12        | 0001 | 0,6   | 1,0   | 1,8 | 29,7 | 11,3 |
| 12        | 0002 | 0,6   | 1,0   | 2,6 | 30,5 | 12,1 |
| 12        | 0003 | 0,5   | 0,9   | 1,4 | 29,3 | 10,9 |

# Threaded probes



## Centers 1,90 mm/75 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F175     | 4,0 A   | -20°...+80°C  | <20 mOhm    |
| F175...H | 4,0 A   | -40°...+250°C | <50 mOhm    |

## Standard Threaded Probe 75 mil

### F175

The F730 is a standard threaded probe with various tip styles. Step probe versions on request.

For secure seat the receptacle H175LARD has a knurling at the top end and an inner thread. The probe is screwed into the receptacle in order to prevent ejection under load.

#### Mechanical Specifications

| Travel (mm)            |              |
|------------------------|--------------|
| Nominal:               | 5,0          |
| Maximum:               | 6,0          |
| Spring Force (cN ±20%) |              |
| Nominal Force:         | 130 180 280* |
| Preload:               | 30 20 40*    |

\* not as H-Version

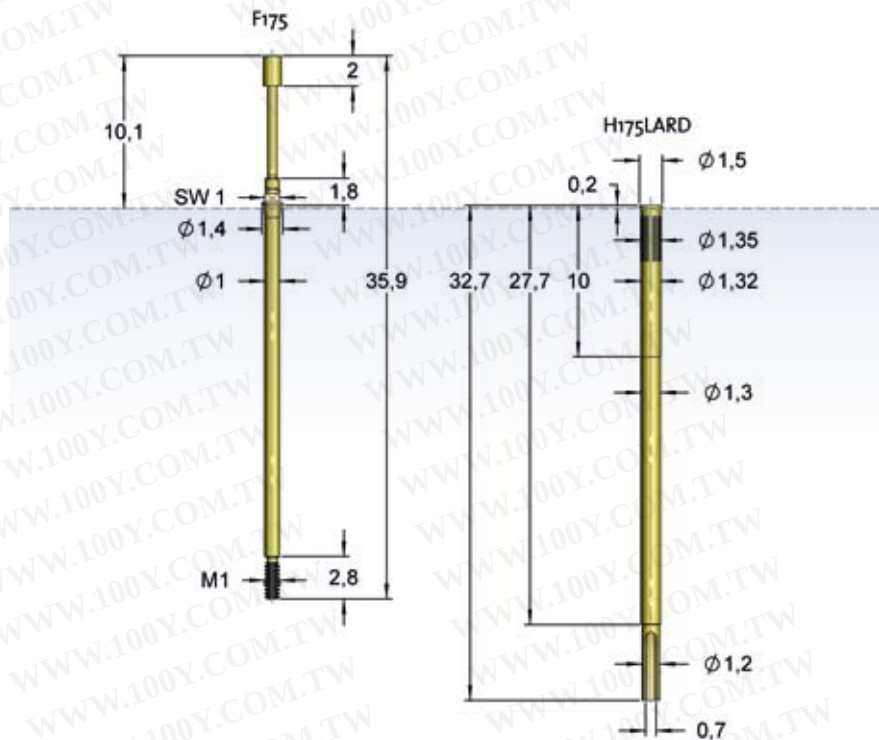
Pointing Accuracy: ± 0,08mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Gold plated  
Receptacle: Brass, Gold plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,32-1,34    |
| HGW 2372.1 (FR4)        |              |



**AIRTIGHT**

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Tip Style, Material, Plating, Tip- Ø (mm)

| Type                                       | Tip-Ø   | Spring Force |
|--------------------------------------------|---------|--------------|
| F175                                       | 06B 120 | G 180 IK     |
| Tip Style Material Finish Special Version  |         |              |
| Material: B = BeCu, S = Steel              |         |              |
| Tip-Ø: 120 = 1,20 mm(e.g.)                 |         |              |
| Finish: G = Gold, L = Longtime Gold plated |         |              |
| Special Version: IK = Insulating cap       |         |              |
| H = High Temperature Version (on request)  |         |              |
| Receptacle: Order-Code according drawing   |         |              |
| <b>ORDER EXAMPLE</b>                       |         |              |

|                          |                      |                              |                       |                       |
|--------------------------|----------------------|------------------------------|-----------------------|-----------------------|
|                          |                      |                              |                       |                       |
| 05 BeCu; G<br>Ø 1,20     | 06 BeCu; G<br>Ø 1,20 | 06 IK-Version<br>see page 27 | 11 BeCu; G<br>Ø 0,64  | 12 BeCu; G<br>Ø 0,78  |
|                          |                      |                              |                       |                       |
| SP-Version<br>on request | 17 BeCu; G<br>Ø 1,20 | 18 BeCu; G<br>Ø 0,78         | 21 Steel; L<br>Ø 0,64 | 30 Steel; L<br>Ø 0,64 |

# Threaded probes

Centers 2,20 mm/87 mil

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type      | Current | Temperature   | R typically |
|-----------|---------|---------------|-------------|
| F731      | 5,0 A   | -20°...+80°C  | <20mOhm     |
| F731...H  | 5,0 A   | -40°...+250°C | <20mOhm     |
| F731...SP | 5,0 A   | -20°...+80°C  | <20mOhm     |

## Standard Threaded Probe 87 mil

### F731/ F731...SP

The F731 is available with standard tip styles and as step probe for connector testing (SP-Version). A high temperature version up to +250 °C is available (tip style 11, with Ø 0,75 mm and 150 cN). Further versions on request.

The receptacle H730LA with knurling and solder cup has a collar with 3.4 mm height. Closing the hole at the solder cup by solder, the receptacle becomes airtight.

#### Mechanical Specifications

| Travel (mm) | F731 | 731...SP  |
|-------------|------|-----------|
| Nominal:    | 3,5  | see table |
| Maximum:    | 4,4  | see table |

#### Spring Force F731 (cN ±20%)

|                |    |     |     |     |     |
|----------------|----|-----|-----|-----|-----|
| Nominal Force: | 60 | 100 | 150 | 250 | 300 |
| Preload:       | 20 | 50  | 50  | 50  | 50  |

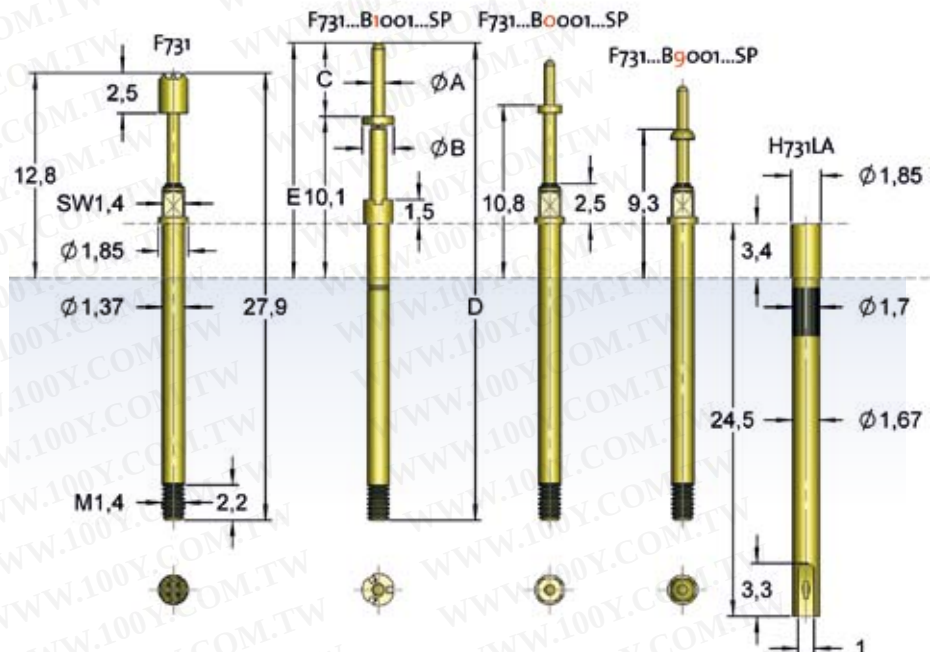
#### Spring Force F731...SP (cN ±20%)

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 110 | 150 |
| Preload:       | 40  | 60  |

Pointing Accuracy: ± 0,08mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Stainless steel (H-Version)  
Receptacle: Brass, Gold plated



**AIRTIGHT**

#### Note:

The order code for step probes is containing, instead of the coded head-Ø as for standard probes, a four digit number, identifying the probe and head dimensions in the table below.

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,67-1,68    |
| HGW 2372.1 (FR4)        |              |

#### Tip Style, Material, Plating, Tip- Ø (mm)

|                                |                                        |                                          |                                                         |                                |
|--------------------------------|----------------------------------------|------------------------------------------|---------------------------------------------------------|--------------------------------|
|                                |                                        |                                          |                                                         |                                |
| <b>05 BeCu; G</b><br>Ø 1,8     | <b>06 BeCu; G</b><br>Ø 1,0 / 1,3 / 1,8 | <b>11 BeCu; G</b><br>Ø 0,5 / 0,65 / 0,75 | <b>11 BeCu; G</b><br>Ø 0,75 / L-Version<br>4 mm Lengthr | <b>11 BeCu; G</b><br>see table |
|                                |                                        |                                          |                                                         |                                |
| <b>12 BeCu; G</b><br>see table | <b>16 BeCu; G</b><br>Ø 0,75            | <b>16 BeCu; G</b><br>see table           | <b>17 BeCu; G</b><br>Ø 1,5                              | <b>18 BeCu; G</b><br>Ø 0,75    |

| Type                    | Number                       | Spring Force           |
|-------------------------|------------------------------|------------------------|
| F731                    | 06B 130                      | G 150 H                |
|                         | Tip Style Material           | Finish Special Version |
| <b>Material:</b>        | B = BeCu                     |                        |
| <b>Tip-Ø:</b>           | 130 = 1,30 mm (e.g.)         |                        |
| <b>Finish:</b>          | G = Gold                     |                        |
| <b>Special Version:</b> | H = High Temperature Version |                        |
| <b>Receptacle:</b>      | Order-Code according drawing |                        |

#### ORDER EXAMPLE

| Type               | Number             | Spring Force      |
|--------------------|--------------------|-------------------|
| F731               | 11B 0001           | G 150 SP          |
|                    | Tip Style Material | Finish Step Probe |
| <b>Material:</b>   | B = BeCu           |                   |
| <b>Number:</b>     | see table          |                   |
| <b>Finish:</b>     | G = Gold           |                   |
| <b>Receptacle:</b> | H731LA             |                   |

#### ORDER EXAMPLE STEP PROBES

| Tip Style | No.  | PinØ A | PlateØ B | Pin Length C | Overall Length D | Projection Height E | Nominal | Maximum | Screw-In-Tool      |
|-----------|------|--------|----------|--------------|------------------|---------------------|---------|---------|--------------------|
| 11        | 0001 | 0,65   | 1,5      | 4,0          | 29,9             | 14,8                | 3,5     | 4,4     | FWZ731;FWZ731T     |
| 11        | 0002 | 0,65   | 1,5      | 2,8          | 28,7             | 13,6                | 3,5     | 4,4     | FWZ731;FWZ731T     |
| 11        | 0003 | 0,7    | 1,5      | 4,0          | 29,9             | 14,8                | 3,5     | 4,4     | FWZ731;FWZ731T     |
| 11        | 0004 | 0,65   | 1,4      | 5,5          | 31,4             | 16,3                | 3,5     | 4,4     | FWZ731;FWZ731T     |
| 11        | 0007 | 0,65   | 1,5      | 3,4          | 29,3             | 14,2                | 3,5     | 4,4     | FWZ731S1;FWZ731T1  |
| 11        | 1009 | 0,80   | 2,0      | 4,6          | 29,8             | 14,7                | 3,5     | 4,4     | FWZ731SP;FWZ731SPT |
| 12        | 9001 | 0,65   | 1,5      | 4,0          | 28,4             | 13,3                | 2,0     | 2,75    | FWZ731;FWZ731T     |
| 12        | 9007 | 0,65   | 1,5      | 3,4          | 27,8             | 12,7                | 2,0     | 2,75    | FWZ731;FWZ731T     |
| 12        | 9008 | 0,65   | 1,5      | 2,7          | 27,1             | 12,0                | 2,0     | 2,75    | FWZ731;FWZ731T     |
| 16        | 0006 | 0,65   | 1,5      | 2,1          | 28,0             | 12,9                | 3,5     | 4,4     | FWZ731;FWZ731T     |

Further tip styles and sizes on request

# Threaded probes



## Centers 2,54 mm/100 mil

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F722 | 5,0 A   | -20°...+80°C | <25 mOhm    |

## Short Travel Threaded Probe 100 mil F722

The F722 is a compact threaded probe for applications with small height and limited mounting depth.

For mounting the receptacle H722 with solder cup is used.

Closing the hole at the solder cup by solder, the receptacle becomes airtight.

### Mechanical Specifications

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 1,5 |
| Maximum: | 2,2 |

#### Spring Force (cN ±20%)

|                |     |
|----------------|-----|
| Nominal Force: | 100 |
| Preload:       | 40  |

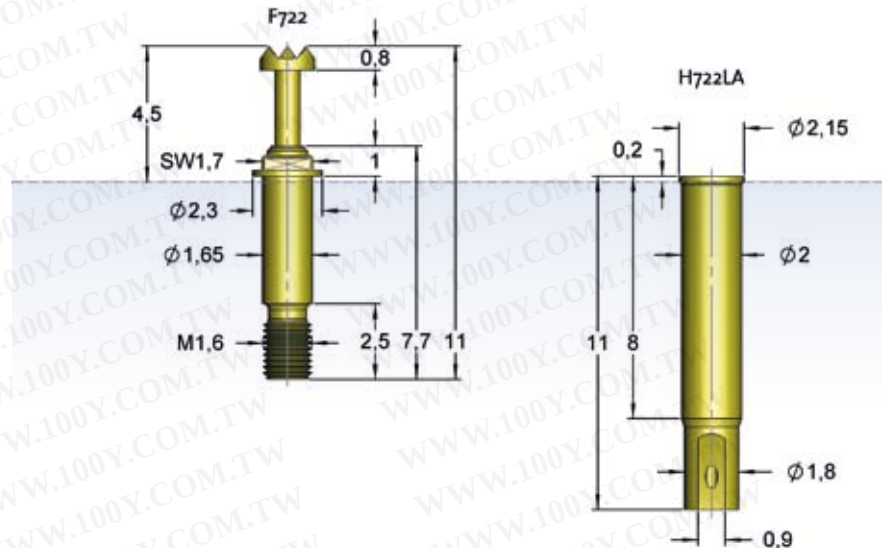
Pointing Accuracy: ± 0,08mm

### Materials and Plating

|             |                           |
|-------------|---------------------------|
| Plunger:    | see Tip Styles            |
| Barrel:     | Brass, Gold plated        |
| Spring:     | Music wire, Silver plated |
| Receptacle: | Brass, Gold plated        |

### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,99-2,00    |
| HGW 2372.1 (FR4)        |              |



**AIRTIGHT**

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                                     | Tip-Ø   | Spring Force |
|------------------------------------------|---------|--------------|
| F722                                     | 06B 180 | G 100        |
| Tip Style Material Finish                |         |              |
| Material: B = BeCu                       |         |              |
| Tip-Ø: 180 = 1,80 mm (e.g.)              |         |              |
| Finish: G = Gold                         |         |              |
| Receptacle: Order-Code according drawing |         |              |
| <b>ORDER EXAMPLE</b>                     |         |              |

### Tip Style, Material, Plating, Tip- Ø (mm)



|                      |                             |                      |  |  |
|----------------------|-----------------------------|----------------------|--|--|
| 06 BeCu; G<br>Ø 1,80 | 11 BeCu; G<br>Ø 0,64 / 0,85 | 17 BeCu; G<br>Ø 1,80 |  |  |
|----------------------|-----------------------------|----------------------|--|--|

# Threaded probes

Centers\* 2,54 mm/100 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F732     | 5,0 A   | -20°...+80°C* | <20mOhm     |
| F732...H | 5,0 A   | -40°...+250°C | <50 mOhm    |

\* depend on chosen tip diameter

## Standard Threaded Probe 100 mil

### F732

The F732 is a frequently used threaded probe in test modules manufacturing. A great variety of tip styles and a big choice of step probes are available from stock. For various projection heights, receptacles with three different collar heights are available, all with knurling and solder cup.

H732LAS1: 0,2 mm (no knurling)

H732LARD: 0,2 mm

H732LARD/5: 5,0 mm

H732LARD/10: 10,0 mm

Clearing of tolerances and small height adjustments can be done by spacers (see page 8).

Closing the hole at the solder cup by solder, the receptacle becomes airtight.

### Mechanical Specifications

#### Travel (mm)

Nominal: 4,0

Maximum: 5,0

#### Spring Force (cN ±20%)

Nominal Force: 150 200<sup>1</sup> 300 440<sup>1</sup>

Preload: 60 60<sup>1</sup> 60 180<sup>1</sup>

<sup>1</sup> on request

Pointing Accuracy: ± 0,08mm

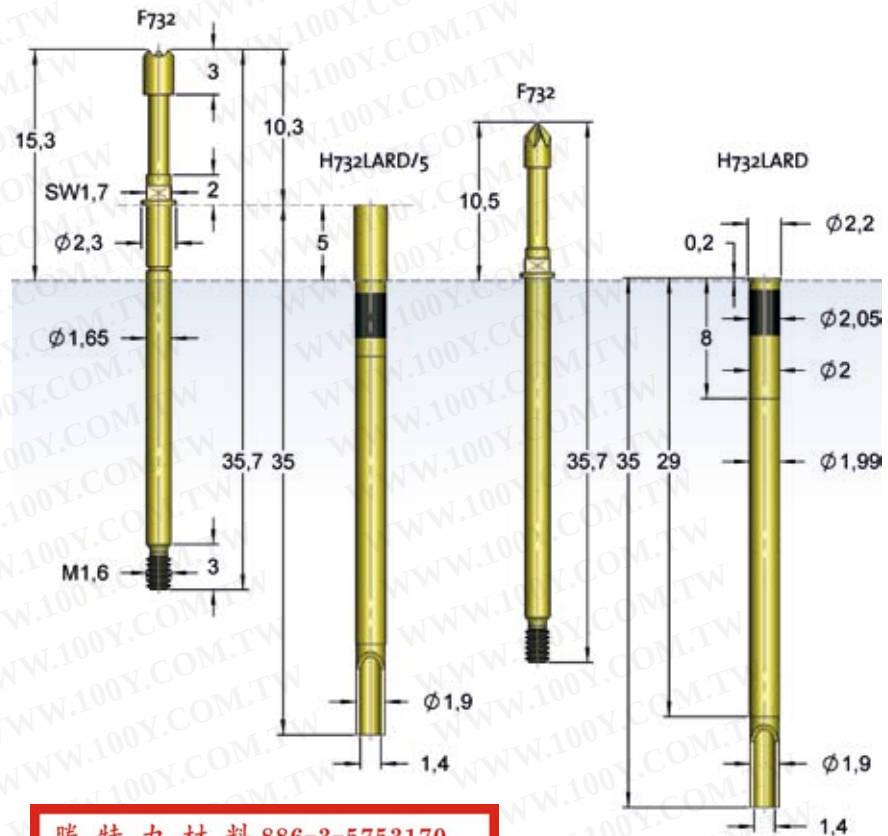
### Materials and Plating

Plunger: see Tip Styles

Barrel: Brass, Gold plated

Spring: Music wire, Silver plated  
Stainless steel (H-Version)

Receptacle: Brass, Gold plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

### Tip Style, Material, Finish und Tip-Ø (mm)

|                                 |                                       |                                                   |                           |                                  |
|---------------------------------|---------------------------------------|---------------------------------------------------|---------------------------|----------------------------------|
|                                 |                                       |                                                   |                           |                                  |
| 03 BeCu; G<br>Ø 1,3             | 05 BeCu; G<br>Ø 1,8 / 2,0 / 3,5       | 06 BeCu; G<br>Ø 1,3 / 1,4 / 1,5 / 1,8 / 2,0 / 2,5 | 06 BeCu; R<br>Ø 2,0 / 2,5 | IK-Version<br>see page 27        |
|                                 |                                       |                                                   |                           |                                  |
| 07 Steel; L<br>Ø 1,75 / 2,0     | 10 Steel; N<br>Ø 0,63                 | 11 BeCu; G<br>Ø 0,64 / 0,8 / 1,0 / 1,3            | 11 BeCu; R<br>Ø 0,64      |                                  |
|                                 |                                       |                                                   |                           |                                  |
| SP-Version<br>see pages 69-71   | 12 BeCu; G<br>Ø 1,4 / 1,6 / 1,8 / 2,0 | 14 Steel; L<br>Ø 2,0                              | 15 BeCu; G<br>Ø 2,0       | 16 BeCu; G<br>Ø 0,64 / 0,8 / 1,0 |
|                                 |                                       |                                                   |                           |                                  |
| 17 BeCu; G<br>Ø 1,4 / 1,5 / 2,0 | 17 BeCu; R<br>Ø 2,0                   | 18 BeCu; G<br>Ø 1,3                               | 18 Steel; N<br>Ø 0,8      | 21 Steel; L<br>Ø 1,3             |
|                                 |                                       |                                                   |                           |                                  |
| 28 BeCu; G<br>Ø 2,0             | 30 BeCu; G<br>Ø 1,3                   | 32 Steel; N<br>Ø 0,8                              | 33 Steel; L<br>Ø 1,3      | 41 BeCu; G<br>Ø 2,0              |

| Type             | Tip-Ø                          | Spring Force |
|------------------|--------------------------------|--------------|
| F732             | 06B                            | 200          |
|                  | G                              | 300          |
|                  | H                              |              |
| Tip Style        | Material                       | Finish       |
| Material:        | B = BeCu, S = Steel            |              |
| Tip-Ø:           | 200 mm = 2,00 mm (e.g.)        |              |
| Finish:          | G = Gold, N = Nickel           |              |
|                  | L = Longtime Gold, R = Rhodium |              |
| Special Version: | H = High Temperature Version   |              |
|                  | IK = Insulating cap            |              |
|                  | RP = Wobbling Plunger          |              |
| Receptacle:      | Order-Code according drawing   |              |
| ORDER EXAMPLE    |                                |              |

# Threaded probes



## Centers 2,54 mm/100 mil

| Type      | Current | Temperature  | R typically |
|-----------|---------|--------------|-------------|
| F732...SP | 5,0 A   | -20°...+80°C | <20 mOhm    |

## Step Probe 100 mil

### F732...SP

The large variety of available step probes guarantees precise determination of contact element position, for almost all wire harness connectors in the market.

The listing at the following 2 pages shows the available versions of F732 step probes.

#### Innovative Screw-In-Tool

For step probes with oversized plates (plate-Ø larger than probe-Ø or larger wrench size), FEINMETALL has developed a new 3 point tool solution which allows probe mounting at very small distances between the probes.



#### Mechanical Specifications

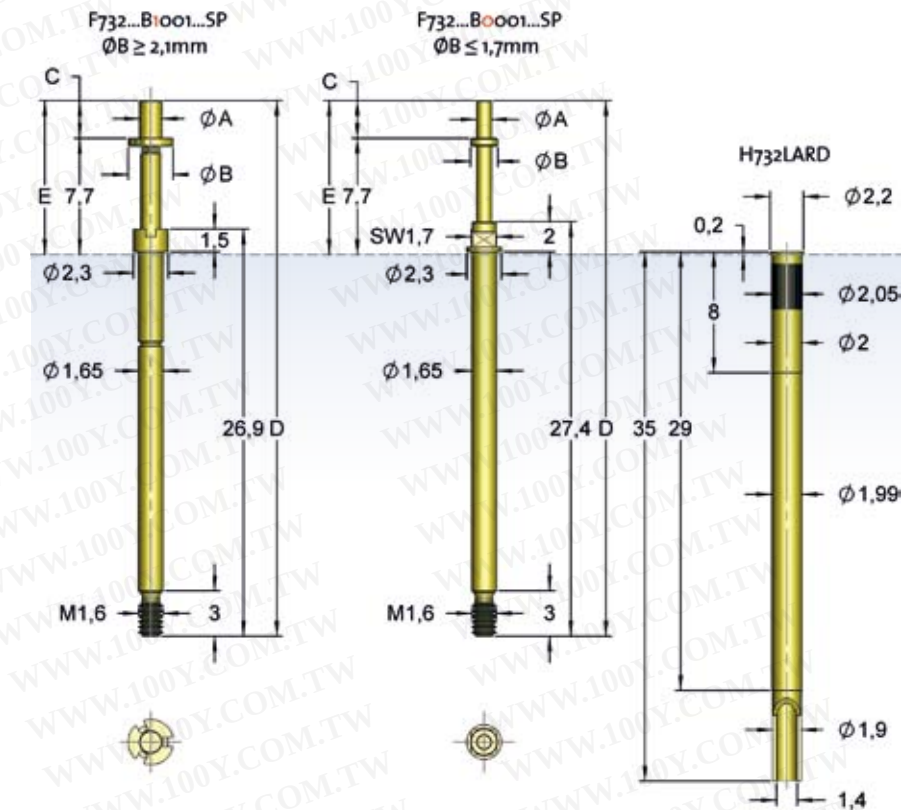
| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 4,0 |
| Maximum:    | 5,0 |

| Spring Force (cN ±20%) |     |     |
|------------------------|-----|-----|
| Nominal Force:         | 150 | 300 |
| Preload:               | 60  | 60  |

Pointing Accuracy: ± 0,08mm

#### Materials and Plating

|             |                           |
|-------------|---------------------------|
| Plunger:    | see Tip Styles            |
| Barrel:     | Brass, Gold plated        |
| Spring:     | Music wire, Silver plated |
| Receptacle: | Brass, Gold plated        |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 2,00-2,02     | 1,99-2,00        |
| HGW 2372.1 (FR4)        |               |                  |

#### Tip Style, Material, Plating, Tip-Ø (mm)

| Type             | Number                                | Spring Force |
|------------------|---------------------------------------|--------------|
| F732             | 16B 1025                              | G 300        |
|                  | SP 1                                  |              |
| Tip Style        | Material                              | Finish       |
| Material:        | B = BeCu                              |              |
| Number:          | see table page 70/71                  |              |
| Finish:          | G = Gold                              |              |
| Special Version: | SP1 = Step Probe with oversized plate |              |
| Receptacle:      | Order-Code according drawing          |              |

ORDER EXAMPLE STEP PROBES

|                                    |                                                |                          |                                              |                                   |
|------------------------------------|------------------------------------------------|--------------------------|----------------------------------------------|-----------------------------------|
|                                    |                                                |                          |                                              |                                   |
| 11 BeCu; G<br>Standard Plate (ØB)  | 11 BeCu; G<br>oversized Plate (ØB)             | 06 BeCu; G<br>on request | 12 BeCu; G<br>Standard Plate (ØB)            | 16 BeCu; G<br>Standard Plate (ØB) |
|                                    |                                                |                          | Dimensions and Order Codes<br>see page 70-71 |                                   |
| 16 BeCu; G<br>oversized Plate (ØB) | 16 BeCu; G<br>insulated Pin (ØA)<br>on request |                          |                                              |                                   |

## Order Codes for Step Probe Family

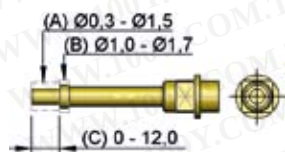
### F732 11...SP

The listing shows the available step probe versions of F732 with tip style 11.

#### Allocation of appropriate Screw-In-Tool

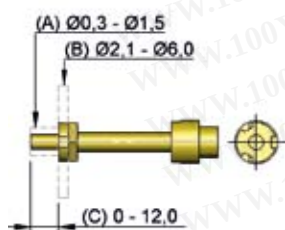
Depending on design and dimensions, the F732 step probes will be delivered with 3 different screw-in-inversions. Step probes with larger plate-Ø usually are fitted with the 3-point-solution. Probes with smaller plates are with integrated square wrench size. The allocation of probe design to the suitable tool is shown at the following pictures.

#### Square Wrench Tool for small plates for centers 3,2 mm



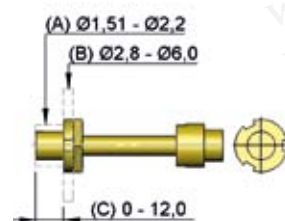
Order Code Tool: **FWZ732T**  
consisting of: handle GS400T  
und BIT732, with ratchet

#### Three-Point-Tool for Pin-Ø (A) <1,5mm for centers >2,8 mm



Order Code Tool: **FWZ732SPT**  
consisting of: handle GS400T  
und BIT732SP, with ratchet

#### Three-Point-Tool for Pin-Ø (A) >1,5mm for centers >3,5 mm



Order Code Tool: **FW732SPT1**  
consisting of: handle GS400T  
und BIT732SP1, with ratchet

| Order Code         | Tip Style | Number | Tip-Ø A | Plate-Ø B | Tip Length C | Overall Length D | Projection Height E | Screw-In-Tool  |
|--------------------|-----------|--------|---------|-----------|--------------|------------------|---------------------|----------------|
| F73211B0042G150SP  | 11        | 0042   | 0,64    | 1,5       | 1,5          | 34,4             | 9,0                 | FWZ732;FWZ732T |
| F73211B0043G150SP  | 11        | 0043   | 0,64    | 1,5       | 2,5          | 35,4             | 10,0                | FWZ732;FWZ732T |
| F73211B0045G150SP  | 11        | 0045   | 0,64    | 1,5       | 3,0          | 35,9             | 10,5                | FWZ732;FWZ732T |
| F73211B1026G150SP  | 11        | 1026   | 0,64    | 2,5       | 2,5          | 35,4             | 10                  | FWZ732SPT      |
| F73211B0048G080SP  | 11        | 0048   | 0,65    | 1,0       | 3,0          | 35,9             | 10,5                | FWZ732;FWZ732T |
| F73211B0048G150SP  | 11        | 0048   | 0,65    | 1,0       | 3,0          | 35,9             | 10,5                | FWZ732;FWZ732T |
| F73211B0051G150SP  | 11        | 0051   | 0,65    | 1,3       | 2,5          | 35,4             | 10,0                | FWZ732;FWZ732T |
| F73211B0028G150SP  | 11        | 0028   | 0,65    | 1,4       | 5,8          | 38,7             | 13,3                | FWZ732;FWZ732T |
| F73211B0029G100SP  | 11        | 0029   | 0,65    | 1,5       | 2,7          | 35,6             | 10,2                | FWZ732;FWZ732T |
| F73211B0029G150SP  | 11        | 0029   | 0,65    | 1,5       | 2,7          | 35,6             | 10,2                | FWZ732;FWZ732T |
| F73211B0024G080SP  | 11        | 0024   | 0,65    | 1,5       | 4,3          | 37,2             | 11,8                | FWZ732;FWZ732T |
| F73211B0024G150SP  | 11        | 0024   | 0,65    | 1,5       | 4,3          | 37,2             | 11,8                | FWZ732;FWZ732T |
| F73211B0018G150SP  | 11        | 0018   | 0,65    | 1,5       | 5,0          | 37,9             | 12,5                | FWZ732;FWZ732T |
| F73211B0053G150SP  | 11        | 0053   | 0,65    | 1,7       | 3,6          | 36,5             | 11,1                | FWZ732;FWZ732T |
| F73211B0052G150SP  | 11        | 0052   | 0,65    | 1,7       | 4,7          | 37,6             | 12,2                | FWZ732;FWZ732T |
| F73211B0037G300SP  | 11        | 0037   | 0,65    | 1,8       | 2,0          | 34,9             | 9,5                 | FWZ732;FWZ732T |
| F73211B0013G150SP  | 11        | 0013   | 0,65    | 1,8       | 2,5          | 35,4             | 10,0                | FWZ732;FWZ732T |
| F73211B1048G150SP  | 11        | 1048   | 0,65    | 2,1       | 2,0          | 34,9             | 9,5                 | FWZ732SPT      |
| F73211B1048G300SP  | 11        | 1048   | 0,65    | 2,1       | 2,0          | 34,9             | 9,5                 | FWZ732SPT      |
| F73211B1041G150SP  | 11        | 1041   | 0,65    | 2,1       | 2,5          | 35,4             | 10,0                | FWZ732SPT      |
| F73211B1054G150SP  | 11        | 1054   | 0,65    | 2,1       | 3,0          | 35,9             | 10,5                | FWZ732SPT      |
| F73211B1051G150SP  | 11        | 1051   | 0,65    | 2,1       | 3,4          | 36,3             | 10,9                | FWZ732SPT      |
| F73211B1042G150SP  | 11        | 1042   | 0,65    | 2,1       | 3,6          | 36,5             | 11,1                | FWZ732SPT      |
| F73211B1020G150SP  | 11        | 1020   | 0,65    | 2,5       | 2,3          | 35,2             | 9,8                 | FWZ732SPT      |
| F73211B1020G300SP  | 11        | 1020   | 0,65    | 2,5       | 2,3          | 35,2             | 9,8                 | FWZ732SPT      |
| F73211B1005G150SP  | 11        | 1005   | 0,65    | 3,0       | 3,4          | 36,3             | 10,9                | FWZ732SPT      |
| F73211B0030G150SP  | 11        | 0030   | 0,8     | 1,4       | 5,3          | 38,2             | 12,8                | FWZ732;FWZ732T |
| F73211B0036G150SP  | 11        | 0036   | 0,8     | 1,8       | 4,0          | 36,9             | 11,5                | FWZ732;FWZ732T |
| F73211B0011G150SP  | 11        | 0011   | 0,8     | 1,9       | 2,8          | 35,7             | 10,3                | FWZ732;FWZ732T |
| F73211B0011G300SP  | 11        | 0011   | 0,8     | 1,9       | 2,8          | 35,7             | 10,3                | FWZ732;FWZ732T |
| F73211B1037G150SP  | 11        | 1037   | 0,8     | 2,1       | 2,8          | 35,7             | 10,3                | FWZ732SPT      |
| F73211B1037G300SP  | 11        | 1037   | 0,8     | 2,1       | 2,8          | 35,7             | 10,3                | FWZ732SPT      |
| F73211B1036G150SP  | 11        | 1036   | 0,8     | 2,1       | 4,0          | 36,9             | 10,5                | FWZ732SPT      |
| F73211B0015G150SP  | 11        | 0015   | 0,8     | 2,3       | 3,2          | 36,1             | 10,7                | FWZ732;FWZ732T |
| F73211B1007G150SP  | 11        | 1007   | 0,8     | 2,3       | 3,2          | 36,1             | 10,7                | FWZ732SPT      |
| F73211B1017G150SP  | 11        | 1017   | 0,8     | 2,5       | 2,0          | 34,9             | 9,5                 | FWZ732SPT      |
| F73211B1024G150SP  | 11        | 1024   | 0,8     | 2,5       | 2,3          | 35,2             | 9,8                 | FWZ732SPT      |
| F73211B1024G300SP  | 11        | 1024   | 0,8     | 2,5       | 2,3          | 35,2             | 9,8                 | FWZ732SPT      |
| F73211B1001G150SP  | 11        | 1001   | 0,8     | 2,5       | 2,8          | 35,7             | 10,3                | FWZ732SPT      |
| F73211B1058G150SP  | 11        | 1058   | 0,8     | 2,5       | 3,4          | 36,3             | 10,9                | FWZ732SPT      |
| F73211B1006G150SP  | 11        | 1006   | 0,8     | 2,5       | 4,0          | 36,9             | 11,5                | FWZ732SPT      |
| F73211B1004G150SP  | 11        | 1004   | 0,8     | 2,5       | 4,6          | 37,5             | 12,1                | FWZ732SPT      |
| F73211B1004G300SP  | 11        | 1004   | 0,8     | 2,5       | 4,6          | 37,5             | 12,1                | FWZ732SPT      |
| F73211B1008G150SP  | 11        | 1008   | 0,8     | 2,8       | 5,3          | 38,2             | 12,8                | FWZ732SPT      |
| F73211B0006G150SP  | 11        | 0006   | 0,8     | 3,5       | 3,2          | 36,1             | 10,7                | FWZ732;FWZ732T |
| F73211B1002G150SP  | 11        | 1002   | 0,8     | 3,5       | 3,2          | 36,1             | 10,7                | FWZ732SPT      |
| F73211B0050G150SP  | 11        | 0050   | 1,0     | 1,5       | 6,0          | 38,9             | 13,5                | FWZ732;FWZ732T |
| F73211B0019G150SP  | 11        | 0019   | 1,0     | 1,8       | 2,0          | 34,9             | 9,5                 | FWZ732;FWZ732T |
| F73211B0031G150SP  | 11        | 0031   | 1,0     | 1,8       | 4,9          | 37,8             | 12,4                | FWZ732;FWZ732T |
| F73211B1038G150SP  | 11        | 1038   | 1,0     | 2,1       | 2,0          | 34,9             | 9,5                 | FWZ732SPT      |
| F73211B1050G150SP  | 11        | 1050   | 1,0     | 2,1       | 2,6          | 35,5             | 10,1                | FWZ732SPT      |
| F73211B1045G150SP  | 11        | 1045   | 1,0     | 2,1       | 4,2          | 37,1             | 11,7                | FWZ732SPT      |
| F73211B1047G150SP  | 11        | 1047   | 1,0     | 2,1       | 4,9          | 37,8             | 12,4                | FWZ732SPT      |
| F73211B1056G150SP  | 11        | 1056   | 1,0     | 2,3       | 2,6          | 35,5             | 10,1                | FWZ732SPT      |
| F73211B1003G150SP  | 11        | 1003   | 1,0     | 2,5       | 2,6          | 35,5             | 10,1                | FWZ732SPT      |
| F73211B1013G150SP  | 11        | 1013   | 1,0     | 2,5       | 3,5          | 36,4             | 11,0                | FWZ732SPT      |
| F73211B1032G150SP  | 11        | 1032   | 1,0     | 2,5       | 6,0          | 38,9             | 13,5                | FWZ732SPT      |
| F73211B1055G150SP  | 11        | 1055   | 1,0     | 3,0       | 2,5          | 35,4             | 10,0                | FWZ732SPT      |
| F73211B1021G300SP  | 11        | 1021   | 1,2     | 2,5       | 2,2          | 35,1             | 9,7                 | FWZ732SPT      |
| F73211B1018G150SP  | 11        | 1018   | 1,2     | 2,5       | 2,5          | 35,4             | 10,0                | FWZ732SPT      |
| F73211B1018G300SP  | 11        | 1018   | 1,2     | 2,5       | 2,5          | 35,4             | 10,0                | FWZ732SPT      |
| F73211B1035G300SP  | 11        | 1035   | 1,4     | 2,5       | 3,5          | 36,4             | 11,0                | FWZ732SPT      |
| F73211B1039G300SP  | 11        | 1039   | 1,4     | 2,8       | 3,5          | 36,4             | 11,0                | FWZ732SPT      |
| F73211B1031G150SP  | 11        | 1031   | 1,4     | 3,2       | 1,6          | 34,5             | 9,1                 | FWZ732SPT      |
| F73211B1022G150SP  | 11        | 1022   | 1,5     | 3,0       | 2,5          | 35,4             | 10,0                | FWZ732SPT      |
| F73211B1034G300SP1 | 11        | 1034   | 2,0     | 4,0       | 3,1          | 36,0             | 10,6                | FWZ732SPT1     |

# Threaded probes



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Order Codes for Step Probe Family

**F732 12...SP**  
**F732 16...SP**

The listing shows the available step probe versions of F732 with tip style 12 and tip style 16.

| Order Code         | Tip Style | Number | Pin-Ø A | Plate-Ø B | Tip Length C | Overall Length D | Projection Height E | Screw-In-Werkzeug  |
|--------------------|-----------|--------|---------|-----------|--------------|------------------|---------------------|--------------------|
| F73212B0017G150SP  | 12        | 0017   | 0,65    | 1,5       | 2,7          | 35,7             | 10,3                | FWZ732;FWZ732T     |
| F73216B1040G150SP  | 16        | 1040   | 0,5     | 2,1       | 1,5          | 34,4             | 9,0                 | FWZ732SPT          |
| F73216B0021G150SP  | 16        | 0021   | 0,7     | 1,8       | 2,0          | 34,9             | 9,5                 | FWZ732;FWZ732T     |
| F73216B1043G150SP  | 16        | 1043   | 0,7     | 2,1       | 2,0          | 34,9             | 9,5                 | FWZ732SPT          |
| F73216B1033G150SP  | 16        | 1033   | 0,7     | 2,5       | 1,5          | 34,4             | 9,0                 | FWZ732;FWZ732T     |
| F73216B0040G150SP  | 16        | 0040   | 0,8     | 1,8       | 3,2          | 36,1             | 10,7                | FWZ732;FWZ732T     |
| F73216B1052G150SP  | 16        | 1052   | 0,8     | 2,1       | 3,2          | 36,01            | 10,7                | FWZ732SPT          |
| F73216B1060G150SP  | 16        | 1060   | 0,8     | 2,3       | 1,8          | 34,7             | 9,3                 | FWZ732SPT          |
| F73216B1059G150SP  | 16        | 1059   | 0,8     | 2,5       | 2,5          | 35,4             | 10,0                | FWZ732SP;FWZ732SPT |
| F73216B0027G150SP  | 16        | 0027   | 1,0     | 1,8       | 2,5          | 35,4             | 10,0                | FWZ732;FWZ732T     |
| F73216B0041G150SP  | 16        | 0041   | 1,0     | 1,8       | 3,0          | 35,9             | 10,5                | FWZ732;FWZ732T     |
| F73216B1038G150SP  | 16        | 1038   | 1,0     | 2,1       | 2,0          | 34,9             | 9,5                 | FWZ732SPT          |
| F73216B1046G150SP  | 16        | 1046   | 1,0     | 2,1       | 2,5          | 35,4             | 10,0                | FWZ732SPT          |
| F73216B1053G150SP  | 16        | 1053   | 1,0     | 2,1       | 3,0          | 35,9             | 10,5                | FWZ732SPT          |
| F73216B0003G150SP  | 16        | 0003   | 1,0     | 2,4       | 3,2          | 38,6             | 13,2                | FWZ732SP;FWZ732T   |
| F73216B1011G150SP  | 16        | 1011   | 1,0     | 2,4       | 3,2          | 38,6             | 13,2                | FWZ732SPT          |
| F73216B1029G150SP  | 16        | 1029   | 1,0     | 2,5       | 1,7          | 35,1             | 9,7                 | FWZ732SPT          |
| F73216B1027G150SP  | 16        | 1027   | 1,0     | 2,5       | 1,8          | 35,2             | 9,8                 | FWZ732SPT          |
| F73216B1010G150SP  | 16        | 1010   | 1,0     | 2,5       | 2,0          | 35,4             | 10                  | FWZ732SPT          |
| F73216B1019G150SP  | 16        | 1019   | 1,0     | 2,5       | 3,0          | 35,9             | 10,5                | FWZ732SPT          |
| F73216B1013G150SP  | 16        | 1013   | 1,0     | 2,5       | 3,5          | 36,4             | 11,0                | FWZ732SPT          |
| F73216B0004G150SP  | 16        | 0004   | 1,2     | 1,9       | 2,0          | 35,7             | 10,3                | FWZ732;FWZ732T     |
| F73216B1049G150SP  | 16        | 1049   | 1,2     | 2,1       | 2,0          | 34,9             | 9,5                 | FWZ732SPT          |
| F73216B1030G150SP  | 16        | 1030   | 1,2     | 2,5       | 1,2          | 34,1             | 8,7                 | FWZ732SPT          |
| F73216B1061G150SP  | 16        | 1061   | 1,3     | 2,1       | 2,4          | 35,3             | 9,9                 | FWZ732SPT          |
| F73216B1028G150SP  | 16        | 1028   | 1,3     | 2,5       | 2,1          | 35,0             | 9,6                 | FWZ732SPT          |
| F73216B1009G150SP  | 16        | 1009   | 1,3     | 2,5       | 3,0          | 35,9             | 10,5                | FWZ732SPT          |
| F73216B1023G300SP  | 16        | 1023   | 1,4     | 3,5       | 1,6          | 34,5             | 9,1                 | FWZ732SPT          |
| F73216B1012G150SP  | 16        | 1012   | 1,5     | 2,3       | 3,3          | 36,2             | 10,8                | FWZ732SPT          |
| F73216B1014G150SP  | 16        | 1014   | 1,5     | 3,0       | 2,5          | 35,4             | 10                  | FWZ732SPT          |
| F73216B0023G150SP  | 16        | 0023   | 1,5     | 3,5       | 2,0          | 34,9             | 9,5                 | FWZ732;FWZ732T     |
| F73216B1015G150SP  | 16        | 1015   | 1,5     | 3,5       | 2,0          | 34,9             | 9,5                 | FWZ732SPT          |
| F73216B1025G150SP1 | 16        | 1025   | 1,8     | 3,5       | 1,4          | 34,3             | 8,9                 | FWZ732SPT1         |
| F73216B1025G300SP1 | 16        | 1025   | 1,8     | 3,5       | 1,4          | 34,3             | 8,9                 | FWZ732SPT1         |
| F73216B1016G300SP1 | 16        | 1016   | 1,8     | 3,5       | 1,6          | 34,5             | 9,1                 | FWZ732SPT1         |
| F73216B2001G150SP  | 16        | 2001   | 0,9     | 2,0       | 3,2          | 36,1             | 10,7                | FWZ732;FWZ732T     |

## Order Examples for Step Probes

FEINMETALL offers an enormous variety of tip styles and tip dimensions for step probes.

The identification of the various heads is made by a four digit number, integrated in the order code. The first digit of this number is identifying the type of the step probe head

- 0= plate without slots
- 1 = plate with slots
- 2 = plate without slots, insulated pin
- 3 = plate with slots, insulated pin

All these versions are available with the different tip styles.

### Plate Standard



| Type                                                       | Number   | Spring Force |
|------------------------------------------------------------|----------|--------------|
| F732 16B 0025 G 300 SP                                     |          |              |
| Tip Style                                                  | Material | Finish       |
| Step Probe                                                 |          |              |
| 0 = without slots and Plate-Ø smaller than wrench size 1,7 |          |              |

### ORDER EXAMPLE STEP PROBES

### Plate Standard, insulated Pin



| Type                                                       | Number   | Spring Force |
|------------------------------------------------------------|----------|--------------|
| F732 16B 2025 G 300 SP                                     |          |              |
| Tip Style                                                  | Material | Finish       |
| Step Probe                                                 |          |              |
| 2 = without slots and Plate-Ø smaller than wrench size 1,7 |          |              |

### ORDER EXAMPLE STEP PROBES

### Plate oversized



| Type                                                      | Number   | Spring Force |
|-----------------------------------------------------------|----------|--------------|
| F732 16B 1025 G 300 SP                                    |          |              |
| Tip Style                                                 | Material | Finish       |
| Step Probe                                                |          |              |
| 1 = without slots and Plate-Ø larger than wrench size 1,7 |          |              |

### ORDER EXAMPLE STEP PROBES

### Plate oversized, insulated Pin



| Type                                                      | Number   | Spring Force |
|-----------------------------------------------------------|----------|--------------|
| F732 16B 3025 G 300 SP                                    |          |              |
| Tip Style                                                 | Material | Finish       |
| Step Probe                                                |          |              |
| 3 = without slots and Plate-Ø larger than wrench size 1,7 |          |              |

### ORDER EXAMPLE STEP PROBES

# Threaded probes



Centers 4,00 mm/157 mil

| Type | Current | Temperature   | R typically |
|------|---------|---------------|-------------|
| F723 | 10,0 A  | -20°...+80°C* | <15mOhm     |

## Short Travel Threaded Probe 157mil

**F723** **NEW**

Due to the small length the F723 is suitable for applications with limited space. The probe is very robust, carries maximum up to 10 A and the thread prevents ejection under load. For even higher current a specific high current version F723...C is available (see High Current Probes). The receptacle H723LA with solder cup has a collar for fix projection height and proper seat.

### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 2,8 |
| Maximum:    | 3,5 |

| Spring Force (cN ±20%) |    |
|------------------------|----|
| Nominal Force:         | 80 |
| Preload:               | 30 |

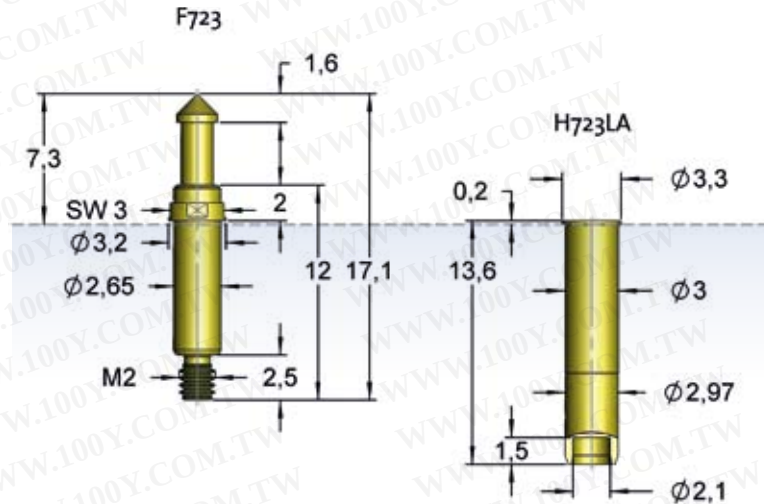
Pointing Accuracy: ± 0,08 mm

### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Gold plated  
Receptacle: Brass, Gold plated

### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                                                                                                                                          | Number         | Spring Force |
|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------|
| F723                                                                                                                                          | 02 B 230 G 080 |              |
| Tip Style                                                                                                                                     | Material       | Finish       |
| <b>Material:</b> B = BeCu<br><b>Tip-Ø:</b> 230 = 2,30 mm (e.g.)<br><b>Finish:</b> G = Gold<br><b>Receptacle:</b> Order-Code according drawing |                |              |
| <b>ORDER EXAMPLE</b>                                                                                                                          |                |              |

### Tip Style, Material, Plating, Tip- Ø (mm)

|                     |                     |                     |                     |
|---------------------|---------------------|---------------------|---------------------|
|                     |                     |                     |                     |
| 02 BeCu; G<br>Ø 2,3 | 06 BeCu; G<br>Ø 2,3 | 12 BeCu; G<br>Ø 2,3 | 17 BeCu; G<br>Ø 2,3 |

# Threaded probes

Centers\* 4,00 mm/157 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F733     | 10,0 A  | -20°...+80°C  | <25 mOhm    |
| F733...H | 10,0 A  | -40°...+250°C | <100 mOhm   |

\* depend on chosen tip diameter

## Standard Threaded Probe 157 mil

### F733

The F733 is a robust and frequently used threaded probe in test module design and cable harness testing. A great variety of tip styles and a big choice of step probes are available from stock. For clearing of tolerances, small height adjustments can be done by spacers. The receptacles are with solder cup and can be delivered either with knurling (H733LARD) or without knurling (F733LAS1). Closing the hole at the solder cup by solder, the receptacle becomes airtight.

#### Mechanical Specifications

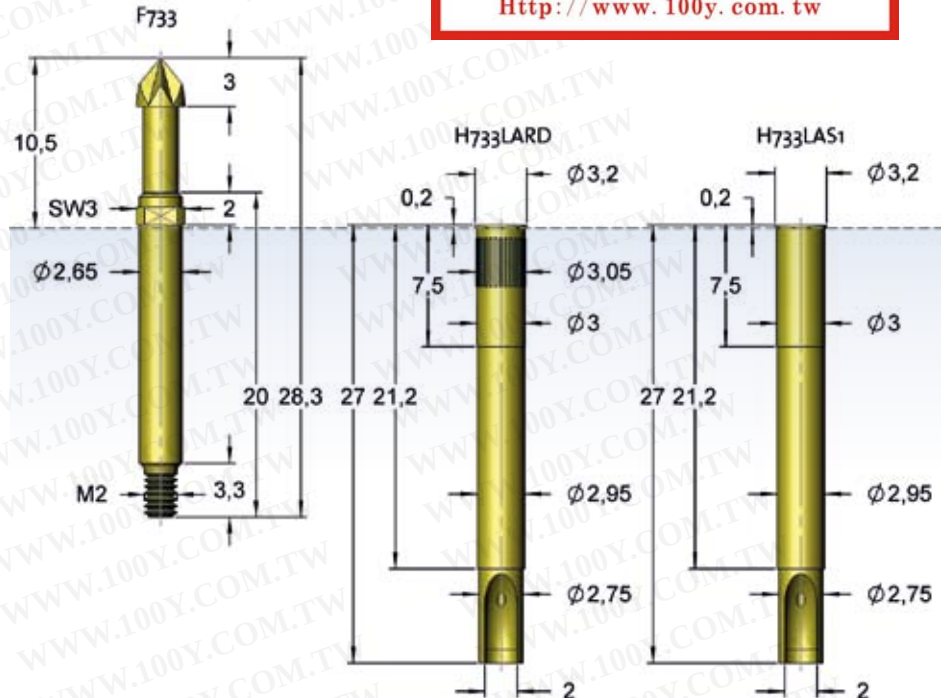
| Travel (mm)            |                                                        |
|------------------------|--------------------------------------------------------|
| Nominal:               | 4,0                                                    |
| Maximum:               | 5,0                                                    |
| Spring Force (cN ±20%) |                                                        |
| Nominal Force:         | 150 250 <sup>1</sup> 300 <sup>2</sup> 600 <sup>2</sup> |
| Preload:               | 60 50 <sup>1</sup> 80 <sup>2</sup> 100 <sup>2</sup>    |

<sup>1</sup> only for H-Version  
<sup>2</sup> only for Standard Version

Pointing Accuracy: ± 0,1 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Spring Steel, Silver plated  
Stainless steel (H-Version)  
Receptacle: Brass, Gold plated



AIRTIGHT

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,00-3,02     | 2,98-2,99        |
| HGW 2372.1 (FR4)        |               |                  |

#### Tip Style, Material, Plating, Tip- Ø (mm)

|                                         |                                        |                                                          |                                                |                                                                          |
|-----------------------------------------|----------------------------------------|----------------------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------|
|                                         |                                        |                                                          |                                                |                                                                          |
| <b>04 BeCu; G</b><br>Ø 2,3              | <b>05 BeCu; G</b><br>Ø 2,0 / 2,3 / 3,0 | <b>06 BeCu; G</b><br>Ø 1,6 / 2,3 / 2,5 / 3,0 / 3,5 / 4,0 | <b>06 Steel; L</b><br>Ø 2,3                    | <b>1K-Version</b><br>see table 27                                        |
|                                         |                                        |                                                          |                                                |                                                                          |
| <b>07 Steel; L</b><br>Ø 1,8 / 2,3 / 3,0 | <b>09 Steel; G</b><br>Ø 2,3            | <b>11 BeCu; G</b><br>Ø 0,64 / 0,8 / 1,0 / 1,4 / 1,8      | <b>SP-Version</b><br>see tables<br>Pages 74-76 | <b>11 BeCu; G</b><br>IP-Version Ø 1,55<br>insulated Head<br>Ø 0,78 x 0,5 |
|                                         |                                        |                                                          |                                                |                                                                          |
| <b>12 BeCu; G</b><br>Ø 2,3 / 3,0        | <b>14 Steel; L</b><br>Ø 2,3            | <b>15 BeCu; G</b><br>Ø 2,3 / 3,0                         | <b>16 BeCu; G</b><br>Ø 0,8 / 1,0 / 1,4 / 1,8   | <b>17 BeCu; G</b><br>Ø 2,3 / 3,0                                         |
|                                         |                                        |                                                          |                                                |                                                                          |
| <b>18 BeCu; G</b><br>Ø 1,8              | <b>21 Steel; L</b><br>Ø 1,8            | <b>28 BeCu; G</b><br>Ø 2,3                               | <b>29 BeCu; G</b><br>Ø 1,8                     | <b>39 BeCu; G</b><br>Ø 1,8                                               |

| Type                    | Tip-Ø                              | Spring Force |
|-------------------------|------------------------------------|--------------|
| <b>F733</b>             | <b>05B</b>                         | <b>230</b>   |
| Tip Style               | Material                           | Finish       |
| <b>G</b>                | <b>150</b>                         | <b>H</b>     |
| Special Version         |                                    |              |
| <b>Material:</b>        | B = BeCu, S = Steel                |              |
| <b>Tip-Ø:</b>           | 230 = 2,30 mm (e.g.)               |              |
| <b>Finish:</b>          | G = Gold, L = Longtime Gold plated |              |
| <b>Special Version:</b> | H = High Temperature Version       |              |
|                         | IK = Insulating cap                |              |
|                         | IP = insulated Pin                 |              |
| <b>Receptacle:</b>      | Order-Code according drawing       |              |

ORDER EXAMPLE

# Threaded probes

Centers\* 4,00 mm/157 mil

| Type      | Current | Temperature  | R typically |
|-----------|---------|--------------|-------------|
| F733...SP | 10,0 A  | -20°...+80°C | <25 mOhm    |

\* depend on chosen tip diameter

## Step Probe 157 mil

### F733...SP

The large variety of available step probes guarantees precise determination of contact element position, for almost all wire harness connectors in the market.

The listing at the following 2 pages shows the available versions of F733 step probes.

#### Innovative Screw-In-Tool

For step probes with oversized plates (plate-Ø larger than probe-Ø or larger wrench size), FEINMETALL has developed a new 3 point tool solution which allows probe mounting at very small distances between the probes.



#### Mechanical Specifications

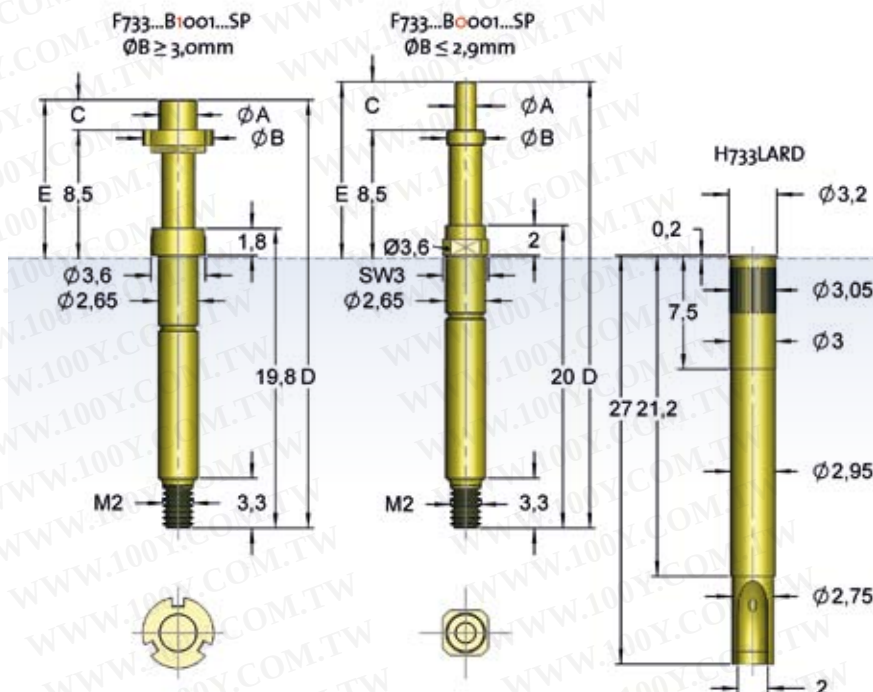
| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 4,0 |
| Maximum:    | 5,0 |

| Spring Force (cN ±20%) |         |
|------------------------|---------|
| Nominal Force:         | 150 300 |
| Preload:               | 60 80   |

Pointing Accuracy: ± 0,1 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Brass, Gold plated



AIRTIGHT

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,00-3,02     | 2,98-2,99        |
| HGW 2372.1 (FR4)        |               |                  |

#### Tip Style, Material, Plating, Tip- Ø (mm)



|                                       |                                                    |                          |                                              |                                      |
|---------------------------------------|----------------------------------------------------|--------------------------|----------------------------------------------|--------------------------------------|
| 11 BeCu; G<br>Standard<br>Plate (ØB)  | 11 BeCu; G<br>oversized<br>Plate (ØB)              | 06 BeCu; G<br>on request | 12 BeCu; G<br>Standard<br>Plate (ØB)         | 16 BeCu; G<br>Standard<br>Plate (ØB) |
| 16 BeCu; G<br>oversized<br>Plate (ØB) | 16 BeCu; G<br>Insulating cap<br>(ØA)<br>on request |                          | Dimensions and Order Codes<br>see page 75-76 |                                      |

| Type                      | Number                                                            | Spring Force |
|---------------------------|-------------------------------------------------------------------|--------------|
| F733                      | 16B 1015                                                          | G 150        |
| Tip Style                 | Material                                                          | Finish       |
|                           |                                                                   | Step Probe   |
| <b>Material:</b>          | B = BeCu                                                          |              |
| <b>Number:</b>            | see table page 75/76                                              |              |
| <b>Finish:</b>            | G = Gold                                                          |              |
| <b>Special Version:</b>   | SP1 = Step Probe with oversized plate<br>SP = Step Probe Standard |              |
| <b>Receptacle:</b>        | Order-Code according drawing                                      |              |
| ORDER EXAMPLE STEP PROBES |                                                                   |              |

# Threaded probes



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Order Codes for Step Probe Family F73311...SP

The listing shows the available step probe versions of F733 with tip style 11 and on the next page versions with tip style 16.

| Order Code         | Tip Style | Number | PinØ A | PlateØ B | Tip Length C | Overall Length D | Projection height E | Screw-In-Tool  |
|--------------------|-----------|--------|--------|----------|--------------|------------------|---------------------|----------------|
| F73311B0029G150SP  | 11        | 0029   | 0,8    | 3,0      | 1,5          | 27,8             | 9,8                 | FWZ733;FWZ733T |
| F73311B1037G150SP1 | 11        | 1037   | 0,8    | 3,0      | 1,5          | 27,8             | 9,8                 | FWZ732SPT1     |
| F73311B1038G150SP1 | 11        | 1038   | 0,8    | 3,0      | 1,5          | 28,8             | 10,8                | FWZ732SPT1     |
| F73311B0030G150SP  | 11        | 0030   | 0,8    | 3,0      | 2,5          | 28,8             | 10,8                | FWZ733;FWZ733T |
| F73311B0036G150SP  | 11        | 0036   | 0,8    | 3,0      | 2,8          | 29,1             | 11,1                | FWZ733;FWZ733T |
| F73311B1040G150SP1 | 11        | 1040   | 0,8    | 3,0      | 2,8          | 29,1             | 11,1                | FWZ732SPT1     |
| F73311B0031G150SP  | 11        | 0031   | 0,8    | 3,0      | 3,0          | 29,3             | 11,3                | FWZ733;FWZ733T |
| F73311B1039G150SP1 | 11        | 1039   | 0,8    | 3,0      | 3,0          | 29,3             | 11,3                | FWZ732SPT1     |
| F73311B0013G150SP  | 11        | 0013   | 1,0    | 3,5      | 2,8          | 29,1             | 11,1                | FWZ733;FWZ733T |
| F73311B1042G150SP1 | 11        | 1042   | 1,0    | 3,5      | 2,8          | 29,1             | 11,1                | FWZ732SPT1     |
| F73311B0004G150SP  | 11        | 0004   | 1,0    | 3,5      | 4,0          | 30,3             | 12,3                | FWZ733;FWZ733T |
| F73311B1030G150SP1 | 11        | 1030   | 1,0    | 3,5      | 4,0          | 30,3             | 12,3                | FWZ732SPT1     |
| F73311B0034G150SP  | 11        | 0034   | 1,4    | 3,2      | 1,7          | 28,0             | 10,0                | FWZ733;FWZ733T |
| F73311B1041G150SP1 | 11        | 1041   | 1,4    | 3,2      | 1,7          | 28,0             | 10,0                | FWZ732SPT1     |
| F73311B1045G150SP1 | 11        | 1045   | 1,4    | 3,5      | 1,0          | 27,3             | 9,3                 | FWZ732SPT1     |
| F73311B1016G150SP1 | 11        | 1016   | 1,4    | 3,5      | 2,0          | 28,3             | 10,3                | FWZ732SPT1     |
| F73311B0001G150SP  | 11        | 0001   | 1,4    | 3,5      | 2,4          | 28,7             | 10,7                | FWZ733;FWZ733T |
| F73311B0001G300SP  | 11        | 0001   | 1,4    | 3,5      | 2,4          | 28,7             | 10,7                | FWZ733;FWZ733T |
| F73311B1027G150SP1 | 11        | 1027   | 1,4    | 3,5      | 2,4          | 28,7             | 10,7                | FWZ732SPT1     |
| F73311B1027G300SP1 | 11        | 1027   | 1,4    | 3,5      | 2,4          | 28,7             | 10,7                | FWZ732SPT1     |
| F73311B1035G150SP1 | 11        | 1035   | 1,4    | 3,5      | 2,7          | 29,0             | 11,0                | FWZ732SPT1     |
| F73311B1049G150SP1 | 11        | 1049   | 1,4    | 3,5      | 3,2          | 29,5             | 11,5                | FWZ732SPT1     |
| F73311B0003G150SP  | 11        | 0003   | 1,4    | 3,5      | 3,3          | 29,6             | 11,6                | FWZ733;FWZ733T |
| F73311B1029G150SP1 | 11        | 1029   | 1,4    | 3,5      | 3,3          | 29,6             | 11,6                | FWZ732SPT1     |
| F73311B1053G150SP1 | 11        | 1053   | 1,4    | 3,5      | 3,6          | 29,9             | 11,9                | FWZ732SPT1     |
| F73311B1028G150SP1 | 11        | 1028   | 1,4    | 3,5      | 4,0          | 30,3             | 12,3                | FWZ732SPT1     |
| F73311B1056G150SP1 | 11        | 1056   | 1,40   | 3,5      | 8,0          | 34,3             | 16,3                | FWZ732SPT1     |
| F73311B0005G150SP  | 11        | 0005   | 1,5    | 3,5      | 4,0          | 30,3             | 12,3                | FWZ733;FWZ733T |
| F73311B1046G150SP1 | 11        | 1046   | 1,5    | 3,5      | 4,0          | 30,3             | 12,3                | FWZ732SPT1     |
| F73311B1026G150SP1 | 11        | 1026   | 1,7    | 3,3      | 2,2          | 28,5             | 10,5                | FWZ732SPT1     |
| F73311B1052G150SP1 | 11        | 1052   | 1,8    | 3,5      | 7,0          | 33,3             | 15,3                | FWZ732SPT1     |
| F73311B1047G150SP1 | 11        | 1047   | 1,8    | 4,0      | 1,4          | 27,7             | 9,7                 | FWZ732SPT1     |
| F73311B1047G300SP1 | 11        | 1047   | 1,8    | 4,0      | 1,4          | 27,7             | 9,7                 | FWZ732SPT1     |
| F73311B0032G150SP  | 11        | 0032   | 1,8    | 4,0      | 3,0          | 29,3             | 11,3                | FWZ733;FWZ733T |
| F73311B1048G150SP1 | 11        | 1048   | 1,8    | 4,0      | 3,0          | 29,3             | 11,3                | FWZ732SPT1     |
| F73311B1022G300SP  | 11        | 1022   | 3,0    | 5,0      | 3,4          | 29,7             | 11,7                | FWZ733SPT      |
| F73311B1023G300SP  | 11        | 1023   | 3,0    | 5,0      | 3,4          | 28,9             | 10,9                | FWZ733SPT      |

\* In combination with H733LA51 oder H733LARD

## Order Examples for Step Probes

FEINMETALL offers an enormous variety of tip styles and tip dimensions for step probes. The identification of the various heads is made by a four digit number, integrated in the order code.

The first digit of this number is identifying the type of the step probe head

- 0= plate without slots
- 1 = plate with slots
- 2 = plate without slots, insulated pin
- 3 = plate with slots, insulated pin

All these versions are available with the different tip styles.

### Plate Standard



| Type                                                     | Number   | Spring Force |
|----------------------------------------------------------|----------|--------------|
| F 733 16B 0025 G 300 SP                                  |          |              |
| Tip Style                                                | Material | Finish       |
| 0 = without slots and Plate-Ø smaller than wrench size 3 |          |              |

### ORDER EXAMPLE STEP PROBES

### Plate Standard, insulated Pin



| Type                                                     | Number   | Spring Force |
|----------------------------------------------------------|----------|--------------|
| F 733 16B 2025 G 300 SP                                  |          |              |
| Tip Style                                                | Material | Finish       |
| 2 = without slots and Plate-Ø smaller than wrench size 3 |          |              |

### ORDER EXAMPLE STEP PROBES

### Plate oversized



| Type                                                    | Number   | Spring Force |
|---------------------------------------------------------|----------|--------------|
| F 733 16B 1025 G 300 SP                                 |          |              |
| Tip Style                                               | Material | Finish       |
| 1 = without slots and Plate-Ø larger than wrench size 3 |          |              |

### ORDER EXAMPLE STEP PROBES

### Plate oversized, insulated Pin



| Type                                                    | Number   | Spring Force |
|---------------------------------------------------------|----------|--------------|
| F 733 16B 3025 G 300 SP                                 |          |              |
| Tip Style                                               | Material | Finish       |
| 3 = without slots and Plate-Ø larger than wrench size 3 |          |              |

### ORDER EXAMPLE STEP PROBES

# Threaded probes



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

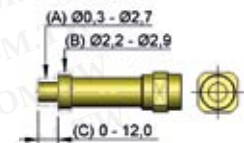
| Order Code         | Tip Style | Number | PinØ A | PlateØ B | Tip Length C | Overall Length D | Projection Height E | Screw-In-Tool  |
|--------------------|-----------|--------|--------|----------|--------------|------------------|---------------------|----------------|
| F73316B0033G150SP  | 16        | 0033   | 1,0    | 3,5      | 1,0          | 27,3             | 9,3                 | FWZ733;FWZ733T |
| F73316B1033G150SP1 | 16        | 1033   | 1,0    | 3,5      | 3,0          | 29,3             | 11,3                | FWZ732SPT1     |
| F73316B0006G150SP  | 16        | 0006   | 1,3    | 4,7      | 1,3          | 32,1             | 14,1                | FWZ733;FWZ733T |
| F73316B1005G150SP  | 16        | 1005   | 1,3    | 4,7      | 2,7          | 29,0             | 11,0                | FWZ733SPT      |
| F73316B1007G150SP  | 16        | 1007   | 1,3    | 4,7      | 3,0          | 29,3             | 11,3                | FWZ733SPT      |
| F73316B1004G150SP  | 16        | 1004   | 1,3    | 4,7      | 3,6          | 29,9             | 11,9                | FWZ733SPT      |
| F73316B1002G150SP  | 16        | 1002   | 1,3    | 4,7      | 5,3          | 31,6             | 13,6                | FWZ733SPT      |
| F73316B1001G150SP  | 16        | 1001   | 1,3    | 4,7      | 5,8          | 32,1             | 14,1                | FWZ733SPT      |
| F73316B0020G150SP  | 16        | 0020   | 1,4    | 2,5      | 3,2          | 29,0             | 11,5                | FWZ733;FWZ733T |
| F73316B1045G150SP1 | 16        | 1045   | 1,4    | 3,5      | 1,0          | 27,3             | 9,3                 | FWZ732SPT1     |
| F73316B0010G150SP  | 16        | 0010   | 1,4    | 3,5      | 1,7          | 28,0             | 10,0                | FWZ733;FWZ733T |
| F73316B1031G150SP1 | 16        | 1031   | 1,4    | 3,5      | 1,7          | 28,0             | 10,0                | FWZ732SPT1     |
| F73316B0008G150SP  | 16        | 0008   | 1,4    | 3,5      | 2,0          | 28,3             | 10,3                | FWZ733;FWZ733T |
| F73316B1016G150SP1 | 16        | 1016   | 1,4    | 3,5      | 2,0          | 28,3             | 10,3                | FWZ732SPT1     |
| F73316B0035G150SP  | 16        | 0035   | 1,4    | 3,5      | 2,4          | 28,7             | 10,7                | FWZ733;FWZ733T |
| F73316B1027G150SP1 | 16        | 1027   | 1,4    | 3,5      | 2,4          | 28,7             | 10,7                | FWZ732SPT1     |
| F73316B0012G150SP  | 16        | 0012   | 1,4    | 3,5      | 3,0          | 29,3             | 11,3                | FWZ733;FWZ733T |
| F73316B1032G150SP1 | 16        | 1032   | 1,4    | 3,5      | 3,0          | 29,3             | 11,3                | FWZ732SPT1     |
| F73316B1050G150SP1 | 16        | 1050   | 1,7    | 3,0      | 2,2          | 28,5             | 10,5                | FWZ732SPT1     |
| F73316B1034G150SP1 | 16        | 1034   | 1,7    | 3,5      | 1,7          | 28,5             | 10,5                | FWZ732SPT1     |
| F73316B0025G150SP  | 16        | 0025   | 1,8    | 3,5      | 1,6          | 27,9             | 9,9                 | FWZ733;FWZ733T |
| F73316B0025G300SP  | 16        | 0025   | 1,8    | 3,5      | 1,6          | 27,9             | 9,9                 | FWZ733;FWZ733T |
| F73316B1036G150SP1 | 16        | 1036   | 1,8    | 3,5      | 1,6          | 27,9             | 9,9                 | FWZ732SPT1     |
| F73316B1036G300SP1 | 16        | 1036   | 1,8    | 3,5      | 1,8          | 27,9             | 9,9                 | FWZ732SPT1     |
| F73316B1015G150SP1 | 16        | 1015   | 1,8    | 3,5      | 2,2          | 28,5             | 10,5                | FWZ732SPT1     |
| F73316B1015G300SP1 | 16        | 1015   | 1,8    | 3,5      | 2,2          | 28,5             | 10,5                | FWZ732SPT1     |
| F73316B1019G150SP  | 16        | 1019   | 1,8    | 4,5      | 1,4          | 27,7             | 9,7                 | FWZ733SPT      |
| F73316B1006G150SP  | 16        | 1006   | 1,8    | 4,5      | 1,5          | 27,8             | 9,8                 | FWZ733SPT      |
| F73316B1008G150SP  | 16        | 1008   | 1,8    | 4,7      | 2,0          | 28,3             | 10,3                | FWZ733SPT      |
| F73316B1009G150SP  | 16        | 1009   | 1,8    | 4,7      | 4,2          | 30,5             | 12,5                | FWZ733SPT      |
| F73316B1011G150SP  | 16        | 1011   | 1,8    | 4,7      | 5,0          | 31,3             | 13,3                | FWZ733SPT      |
| F73316B1014G150SP  | 16        | 1014   | 1,8    | 4,7      | 5,8          | 32,1             | 14,1                | FWZ733SPT      |
| F73316B1055G150SP1 | 16        | 1055   | 2,0    | 4,0      | 2,7          | 29,0             | 11,0                | FWZ732SPT1     |
| F73316B1044G150SP1 | 16        | 1044   | 2,2    | 3,5      | 1,8          | 28,1             | 10,1                | FWZ732SPT1     |
| F73316B1043G150SP1 | 16        | 1043   | 2,2    | 3,5      | 2,0          | 28,3             | 10,3                | FWZ732SPT1     |
| F73316B0015G150SP  | 16        | 0015   | 2,3    | 3,5      | 1,8          | 28,1             | 10,1                | FWZ733;FWZ733T |
| F73316B1020G150SP  | 16        | 1020   | 2,5    | 4,7      | 1,2          | 27,5             | 9,5                 | FWZ733SPT      |
| F73316B1020G300SP  | 16        | 1020   | 2,5    | 4,7      | 1,2          | 27,5             | 9,5                 | FWZ733SPT      |
| F73316B1017G150SP  | 16        | 1017   | 2,5    | 4,7      | 2,0          | 28,3             | 10,3                | FWZ733SPT      |
| F73316B1018G150SP  | 16        | 1018   | 2,5    | 4,7      | 2,2          | 28,5             | 10,5                | FWZ733SPT      |
| F73316B1010G150SP  | 16        | 1010   | 2,5    | 4,7      | 3,0          | 29,3             | 11,3                | FWZ733SPT      |
| F73316B1054G150SP  | 16        | 1054   | 3,0    | 6,0      | 2,5          | 28,8             | 10,8                | FWZ733SPT      |
| F73316B1021G150SP  | 16        | 1012   | 3,7    | 5,0      | 3,5          | 29,8             | 11,8                | FWZ732SPT      |
| F73316B1051G150SP  | 16        | 1051   | 3,7    | 5,0      | 5,5          | 31,8             | 13,8                | FWZ732SPT      |
| F73316B1025G150SP  | 16        | 1025   | 4,0    | 5,0      | 1,0          | 27,3             | 9,3                 | FWZ732SPT      |
| F73316B1013G150SP  | 16        | 1013   | 4,0    | 5,0      | 1,3          | 27,6             | 9,6                 | FWZ732SPT      |
| F73316B1012G150SP  | 16        | 1012   | 4,0    | 5,0      | 1,7          | 28,0             | 10,0                | FWZ732SPT      |
| F73316B1012G300SP  | 16        | 1012   | 4,0    | 5,0      | 1,7          | 28,0             | 10,0                | FWZ732SPT      |
| F73316B0009G150SP  | 16        | 0009   | 4,0    | 5,0      | 2,0          | 28,3             | 10,3                | FWZ733;FWZ733T |
| F73316B1003G150SP  | 16        | 1003   | 4,0    | 5,0      | 2,0          | 28,3             | 10,3                | FWZ732SPT      |
| F73316B1024G300SP  | 16        | 1024   | 4,0    | 7,0      | 8,2          | 28,0             | 10,0                | FWZ732SPT      |

## Allocation of appropriate Screw-In-Tool

Depending on design and dimensions, the F733 step probes will be delivered with 3 different screw-in-versions. Step probes with larger plate-Ø usually are fitted with the 3-point-solution. Probes with smaller plates are with integrated square wrench size. The allocation of probe design to the suitable tool is shown at the pictures (right-hand).

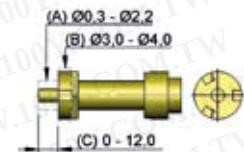
## Order Codes for Step Probe Family F733 16 ...SP Tool Allocation

**Square Wrench Tool for small plates** for centers >3,2 mm



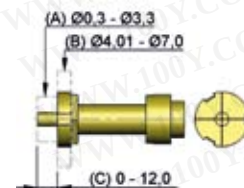
Order Code Tool: **FWZ733T** consisting of handle GS500T and BIT733, with ratchet

**Three-Point-Tool for Pin-Ø (A) <2.2mm** for centers >2,8 mm



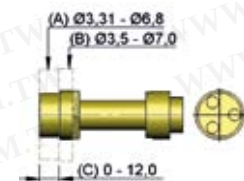
Order Code Tool: **FWZ732SPT1** consisting of handle GS400T and BIT732SP1, with ratchet

**Three-Point-Tool for Pin-Ø (A) >3.3mm** for centers >3,5 mm



Order Code Tool: **FWZ733SPT** consisting of handle GS500T and BIT733SP, with ratchet

**Three-Point-Tool on top of the pin** for centers >3,2 mm



Order Code Tool: **FWZ732SPT** consisting of handle GS400T and BIT732SP, with ratchet

# Threaded probes



Centers 4,00 mm/157 mil

| Type           | Current | Temperature   | R <sub>typically</sub> |
|----------------|---------|---------------|------------------------|
| F737/F737...SP | 10,0 A  | -20°...+80°C  | <25 mOhm               |
| F737...H       | 10,0 A  | -40°...+250°C | <100 mOhm              |

\* depend on chosen tip diameter

## Long Travel Threaded Probe and Step Probe

### F737/F737...SP

Due to the long plunger and the large travel, the F737 is appropriate for contacting deeply inside the connector.

### F777/F777...SP

This step probe is a plug in version with the same dimensions as the threaded probe F737. The technical specifications are the same as for F737. The mounting of F737 and F777 is made with the receptacle H737LARD. Closing the hole at the solder cup by solder, the receptacle becomes airtight.

NEW

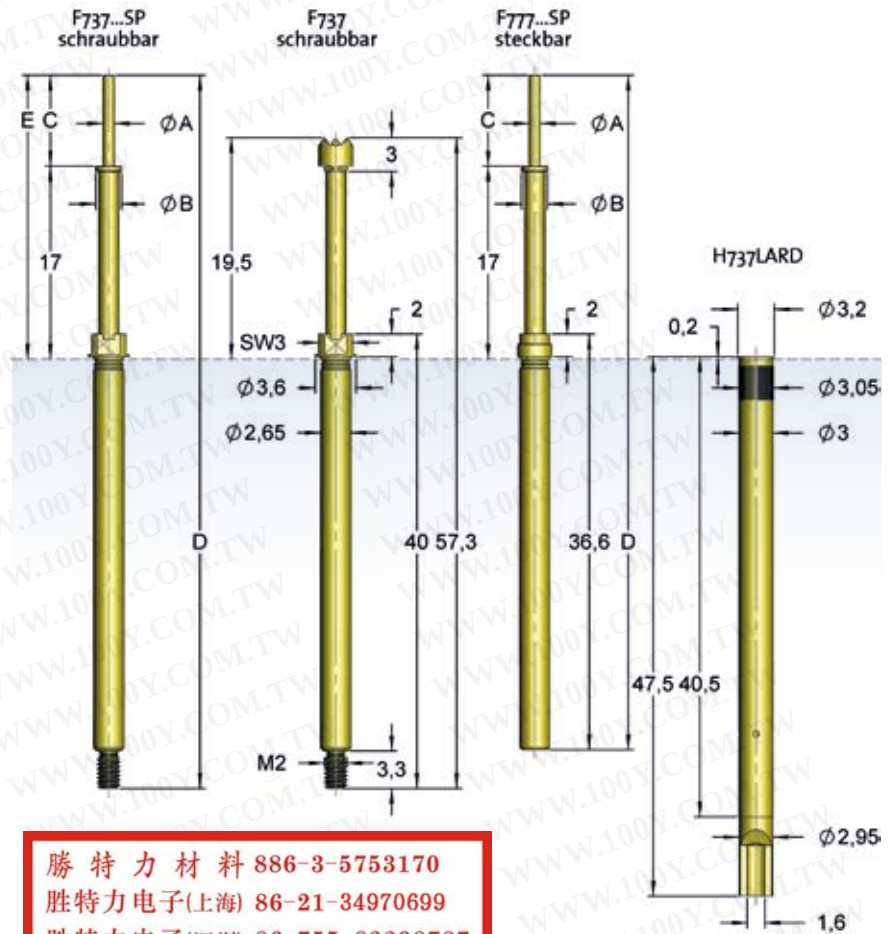
#### Mechanical Specifications

| Travel (mm)            |         |
|------------------------|---------|
| Nominal:               | 12,0    |
| Maximum:               | 14,3    |
| Spring Force (cN ±20%) |         |
| Nominal Force:         | 150 300 |
| Preload:               | 60 80   |

Pointing Accuracy: ± 0,1 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Stainless steel (H-Version)  
Receptacle: Brass, Gold plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        |              |

#### F737 / F777 | Tip Style, Material, Plating, Tip- Ø (mm)



06 BeCu; G  
Ø 3,0 / 4,0

16 BeCu; G  
Ø 1,8

#### F737 ...SP / F777...SP | Tip Style, Material, Plating, Tip- Ø (mm)



11 BeCu; G  
on request

16 BeCu; G  
see table

| Type                 | Tip-Ø                        | Spring Force |
|----------------------|------------------------------|--------------|
| F737 06B 300 G 300 H |                              |              |
| Tip Style            | Material                     | Finish       |
| Material:            | B = BeCu, S = Steel          |              |
| Tip-Ø:               | 300 = 3,00 mm (e.g.)         |              |
| Finish:              | G = Gold                     |              |
| Special Version:     | H = High Temperature Version |              |
| Receptacle:          | Order-Code according drawing |              |

#### ORDER EXAMPLE

At the order code of step probes, instead the coded tip diameter there is a number, by that you can find related head dimensions in the table.

|      |     |      |   |     |    |
|------|-----|------|---|-----|----|
| F737 | 16B | 0001 | G | 300 | SP |
|------|-----|------|---|-----|----|

#### ORDER EXAMPLE STEP PROBE

| Tip Style | No.  | Pin-Ø A | Plate-Ø B | Plate-Ø C | Overall Length D | Projection Height E | Screw-In-Tool      |
|-----------|------|---------|-----------|-----------|------------------|---------------------|--------------------|
| 16        | 0001 | 1,0     | 2,3       | 8,0       | 62,8             | 25,0                | FWZ733S1, FWZ733T1 |
| 16        | 0002 | 1,0     | 1,8       | 8,0       | 62,8             | 24,8                | FWZ733S1, FWZ733T1 |

## SWITCH PROBES

| F875 (threaded)                                                                   | Order Code          | F87511B1001G350SP40 | F87511B1002G200SP |
|-----------------------------------------------------------------------------------|---------------------|---------------------|-------------------|
|  | Code                | 11                  | 11                |
|                                                                                   | Tip-Ø A             | 1,0 mm              | 0,65 mm           |
|                                                                                   | Plate-Ø B           | 3,0 mm              | 2,1 mm            |
|                                                                                   | Plate-Ø C           | 3,0 mm              | 5,0 mm            |
|                                                                                   | Tip Length D        | 51,0 mm             | 53,0 mm           |
|                                                                                   | Projection Height E | 10,8 mm             | 12,8 mm           |
|                                                                                   | Spring Force        | 350cN               | 200 cN            |
|                                                                                   | Switch travel:      | 4,0 mm              | 1,5 mm            |

| F884 (plug-in)                                                                    | Order Code          | F88406B0001G200SP | F88406B0002G200SP |
|-----------------------------------------------------------------------------------|---------------------|-------------------|-------------------|
|  | Code                | 06                | 06                |
|                                                                                   | Tip-Ø A             | 1,0 mm            | 1,0 mm            |
|                                                                                   | Plate-Ø B           | 3,0 mm            | 2,3 mm            |
|                                                                                   | Plate-Ø C           | 2,6 mm            | 2,6 mm            |
|                                                                                   | Tip Length D        | 44,8 mm           | 44,8 mm           |
|                                                                                   | Projection Height E | 10,2 mm           | 10,2 mm           |
|                                                                                   | Spring Force        | 200cN             | 200 cN            |

| F885 (threaded)                                                                   | Order Code          | F88506B0001G200SP | F88506B0002G200SP | F88506B0003G200SP | F88506B120G350S2 | F88506B130G350S2 |
|-----------------------------------------------------------------------------------|---------------------|-------------------|-------------------|-------------------|------------------|------------------|
|  | Code                | 06                | 06                | 06                | 06               | 06               |
|                                                                                   | Tip-Ø A             | 1,0 mm            | 1,0 mm            | 1,0 mm            | 1,2 mm           | 1,3 mm           |
|                                                                                   | Plate-Ø B           | 3,0 mm            | 2,3 mm            | 2,3 mm            | 2,2 mm           | 2,2 mm           |
|                                                                                   | Plate-Ø C           | 2,6 mm            | 2,6 mm            | 9,1 mm            | 2,0 mm           | 2,0 mm           |
|                                                                                   | Tip Length D        | 44,8 mm           | 44,8 mm           | 51,3 mm           | 44,8 mm          | 44,8 mm          |
|                                                                                   | Projection Height E | 10,2 mm           | 10,2 mm           | 16,7 mm           | 10,2 mm          | 10,2 mm          |
|                                                                                   | Spring Force        | 200 cN            | 200 cN            | 200 cN            | 350 cN           | 350 cN           |

## PROBES FOR ICT/FCT

| F773 (plug-in)                                                                     | Order Code          | F77311B0002G300SP |
|------------------------------------------------------------------------------------|---------------------|-------------------|
|  | Code                | 11                |
|                                                                                    | Tip-Ø A             | 1,4 mm            |
|                                                                                    | Plate-Ø B           | 3,5 mm            |
|                                                                                    | Plate-Ø C           | 4,0 mm            |
|                                                                                    | Tip Length D        | 29,0 mm           |
|                                                                                    | Projection Height E | 12,2 mm           |
|                                                                                    | Spring Force        | 300cN             |

| F777 (plug-in)                                                                      | Order Code          | F77716B0001G300SP |
|-------------------------------------------------------------------------------------|---------------------|-------------------|
|  | Code                | 16                |
|                                                                                     | Tip-Ø A             | 1,0 mm            |
|                                                                                     | Plate-Ø B           | 2,3 mm            |
|                                                                                     | Plate-Ø C           | 8,0 mm            |
|                                                                                     | Tip Length D        | 59,4 mm           |
|                                                                                     | Projection Height E | 25,0 mm           |
|                                                                                     | Spring Force        | 300 cN            |

## TWIST PROOF PROBES

| F755 (threaded)                                                                     | Order Code          | F75589B0001G300S |
|-------------------------------------------------------------------------------------|---------------------|------------------|
|  | Code                | 89               |
|                                                                                     | Tip-Ø A x Height    | 1,8 x 0,8mm      |
|                                                                                     | Plate-Ø B           | 3,0 mm           |
|                                                                                     | Plate-Ø C           | 2,6 mm           |
|                                                                                     | Tip Length D        | 40 mm            |
|                                                                                     | Projection Height E | 13,6 mm          |
|                                                                                     | Spring Force        | 300 cN           |

| F760 (threaded)                                                                     | Order Code           | F76089B0001G150 | F76089B0001G300 |
|-------------------------------------------------------------------------------------|----------------------|-----------------|-----------------|
|  | Code                 | 89              | 89              |
|                                                                                     | Inside Width A       | 2,7 mm          | 2,7 mm          |
|                                                                                     | Outside Ø B x Height | 3,0 x 1,5 mm    | 3,0 x 1,5 mm    |
|                                                                                     | Plate-Ø C            | 5,3 mm          | 5,3 mm          |
|                                                                                     | Tip Length D         | 44,0 mm         | 44,0 mm         |
|                                                                                     | Projection Height E  | 14,7 mm         | 14,7 mm         |
|                                                                                     | Spring Force         | 150 cN          | 300 cN          |

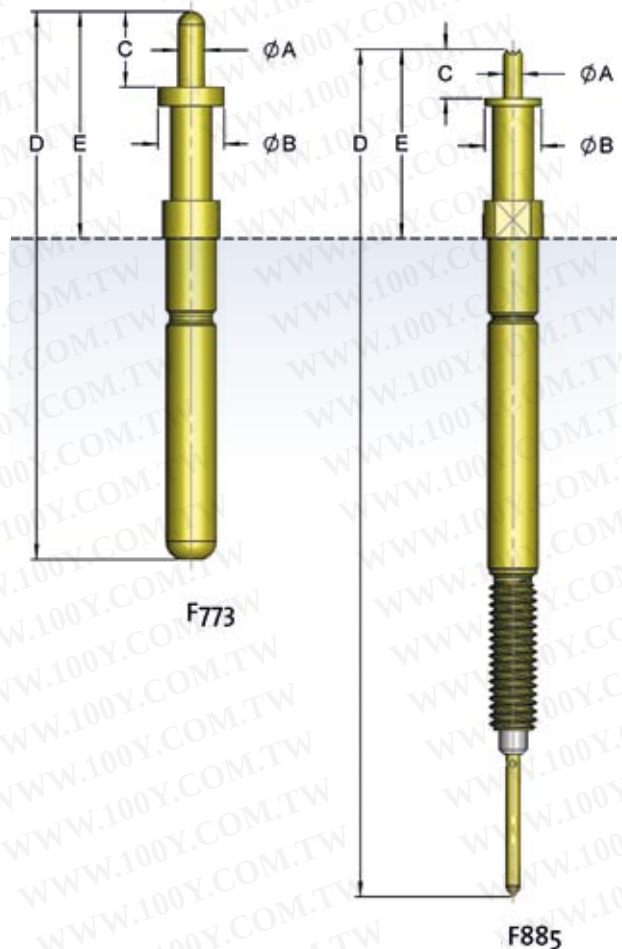
## PUSH BACK PROBES

| VF4 (threaded)                                                                      | Order Code          | VF416B0001G15SP |
|-------------------------------------------------------------------------------------|---------------------|-----------------|
|  | Code                | 16              |
|                                                                                     | Tip-Ø A             | 3,8 mm          |
|                                                                                     | Plate-Ø B           | 5,5 mm          |
|                                                                                     | Plate-Ø C           | 1,5 mm          |
|                                                                                     | Tip Length D        | 71,2 mm         |
|                                                                                     | Projection Height E | 42,0 mm         |
|                                                                                     | Spring Force        | 15 N            |

| VF4 (threaded)                                                                      | Order Code          | VF450B300G15S1 | VF450B300G05 |
|-------------------------------------------------------------------------------------|---------------------|----------------|--------------|
|  | Code                | 50             | 50           |
|                                                                                     | Tip-Ø A             | 1,7 mm         | 1,7 mm       |
|                                                                                     | Plate-Ø B           | 3,0 mm         | 3,0 mm       |
|                                                                                     | Plate-Ø C           | 2,5 mm         | 2,5 mm       |
|                                                                                     | Tip Length D        | 69,7 mm        | 69,7 mm      |
|                                                                                     | Projection Height E | 40,5 mm        | 40,5 mm      |
|                                                                                     | Spring Force        | 15 N           | 5 N          |

## Step Probe Versions for further FEINMETALL Probe Families

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



# Switch Probes



Centers 2,54 mm/100 mil

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F873 | 5,0 A Probe  | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <65 mOhm Switch |

## Switch Probe (NC) Opener

### F873



The normally closed principle of F873 allows a simple and quick detection of errors and interrupts at electrical signals and is suitable to build up intrinsically safe electrical circuits.

The F873 has the same dimensions as the F875, which has a normally open switching function.

The mounting of both probes is possible with the receptacles of series H875 (see page 82).

By usage of the combi-receptacle H875KB, the probes can be replaced very easy and solderless.

Due to the press fits at the receptacle, the probe projection height and the switching level can be adjusted by depth of screwing.

#### Mechanical Specifications

Switch Travel 1,5 ± 0,2 mm

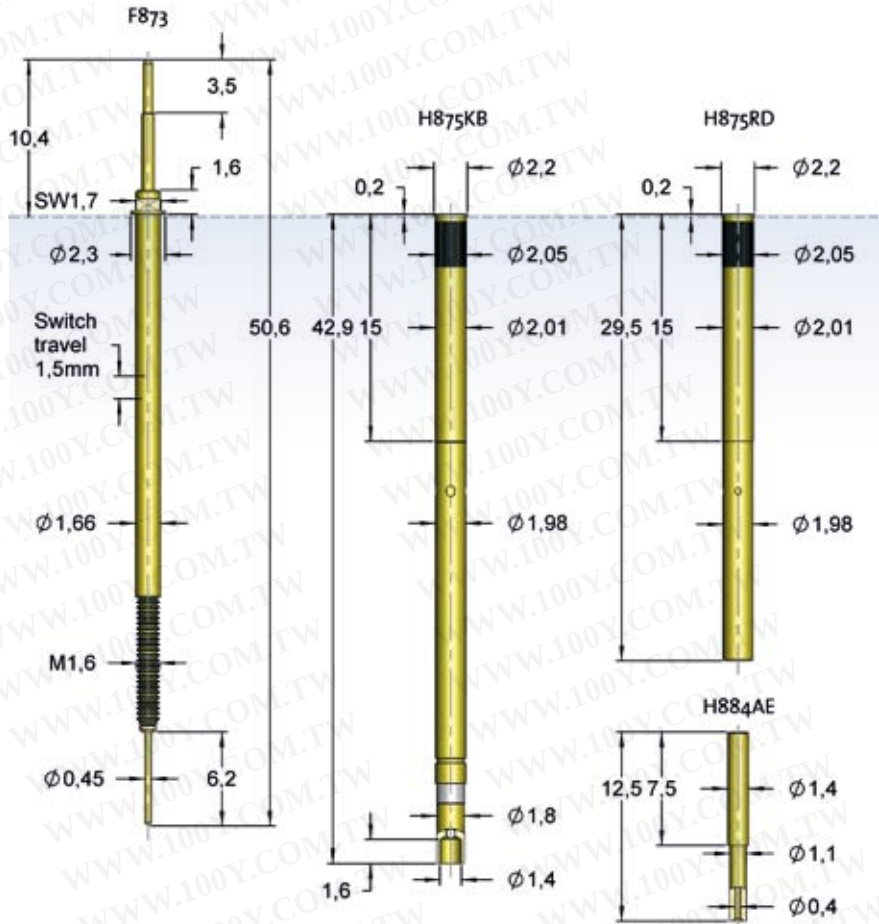
| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 4,0 |
| Maximum:    | 5,0 |

| Spring Force (cN ±20%) |     |
|------------------------|-----|
| Nominal Force          | 250 |
| Preload:               | 70  |

Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Brass, Gold plated



**ATTENTION:**  
Solder Temperature  
maximum 300 °C

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 2,00-2,02     | 1,99-2,00        |
| HGW 2372.1 (FR4)        |               |                  |

| Type                                            | Tip-Ø   | Spring Force |
|-------------------------------------------------|---------|--------------|
| F873                                            | 11B 064 | G 250        |
| Tip Style Material Finish                       |         |              |
| <b>Material:</b> B = BeCu                       |         |              |
| <b>Tip-Ø:</b> 064 = 0,64 mm (e.g.)              |         |              |
| <b>Finish:</b> G = Gold                         |         |              |
| <b>Receptacle:</b> Order-Code according drawing |         |              |
| <b>ORDER EXAMPLE</b>                            |         |              |

#### Tip Style, Material, Plating, Tip- Ø (mm)



11 BeCu; G  
Ø 0,64

16 BeCu; G  
Ø 1,0

| Type | Current      | Temperature  | R <sub>typically</sub> |
|------|--------------|--------------|------------------------|
| F875 | 5,0 A Probe  | -20°...+80°C | <20 mOhm Probe         |
|      | 1,0 A Switch |              | <65 mOhm Switch        |

## Standard Switch Probe (NO) Closer

### F875



The F875 is a frequently used switch probe with closer function in the test modules manufacturing. A short and a long version are available. The mounting is possible with all receptacles of series H875 (see page 82). By usage of the combi-receptacle H875KB, the probes can be exchanged very easy and solderless. Due to the press fits at the receptacle, the probe projection height and the switching level can be adjusted by depth of screwing.

#### Mechanical Specifications

Switch Travel 1,5 ± 0,2 mm

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

#### Spring Force (cN ±20%)

|               |    |     |     |     |     |
|---------------|----|-----|-----|-----|-----|
| Nominal Force | 80 | 135 | 200 | 300 | 350 |
| Preload:      | 20 | 30  | 60  | 60  | 80  |

Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

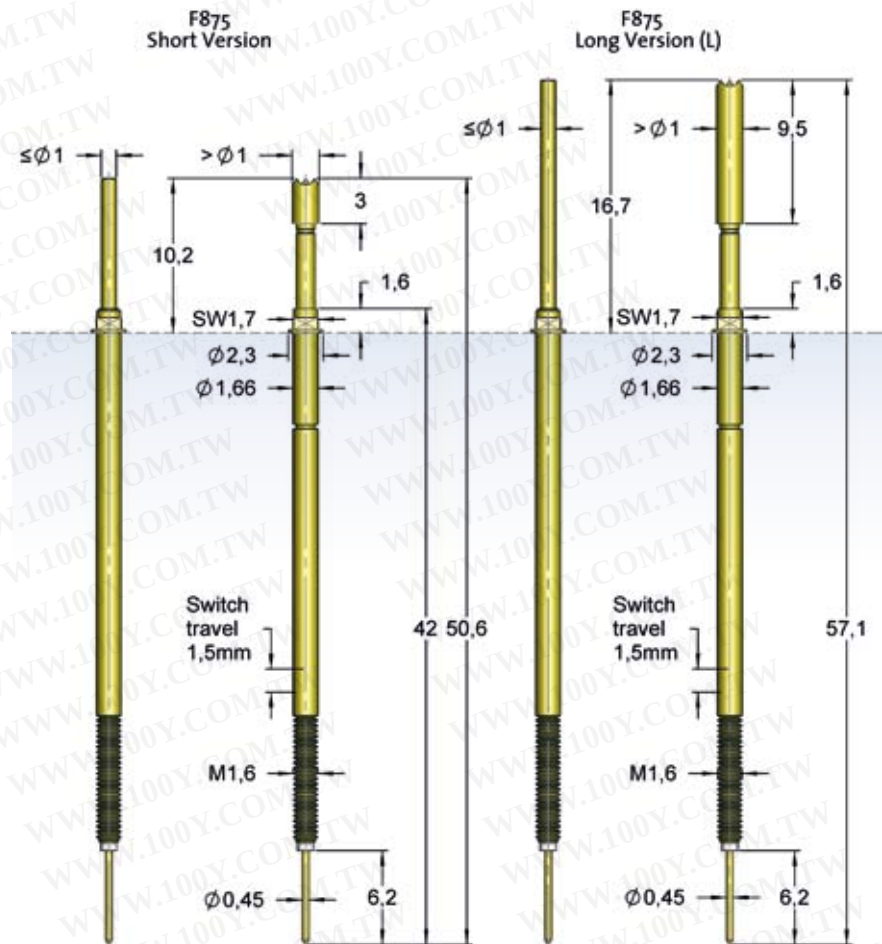
Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Bronze, Gold plated

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 2,00-2,02     | 1,99-2,00        |
| HGW 2372.1 (FR4)        |               |                  |

| Type               | Tip-Ø                            | Spring Force |
|--------------------|----------------------------------|--------------|
| F875               | 06B 180                          | G 135 L      |
|                    | Tip Style Material Finish Length |              |
| <b>Material:</b>   | B = BeCu, K = Synthetic          |              |
| <b>Tip-Ø:</b>      | 180 = 1,80 mm (e.g.)             |              |
| <b>Finish:</b>     | G = Gold, U = unplated           |              |
| <b>Length:</b>     | L = Long Version                 |              |
| <b>Receptacle:</b> | see page 82                      |              |

ORDER EXAMPLE



**ATTENTION:**  
Solder Temperature  
maximum 300 °C

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Tip Style, Material, Plating, Tip-Ø (mm)

|                                               |                                                    |                                                     |                                       |                                         |
|-----------------------------------------------|----------------------------------------------------|-----------------------------------------------------|---------------------------------------|-----------------------------------------|
|                                               |                                                    |                                                     |                                       |                                         |
| <b>05 BeCu; G</b><br>Ø 1,8                    | <b>06 BeCu; G</b><br>Ø 1,3 / 1,5 / 1,8 / 2,0 / 2,3 | <b>06 BeCu; G</b><br>L-Version<br>Ø 1,0 / 1,4 / 1,8 | <b>11 BeCu; G</b><br>Ø 0,64 / 1,0     | <b>11 BeCu; G</b><br>L-Version<br>Ø 1,0 |
|                                               |                                                    |                                                     |                                       |                                         |
| <b>16 BeCu; G</b><br>Ø 0,64 / 0,7 / 0,8 / 1,0 | <b>16 BeCu; G</b><br>L-Version<br>Ø 1,0            | <b>17 BeCu; G</b><br>Ø 1,8                          | <b>17 Synthetic; U</b><br>Ø 1,8 / 2,3 |                                         |

# Switch Probes



Centers 2,54 mm/100 mil

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F375 | 5,0 A Probe  | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <50 mOhm Switch |

## Long Travel Switch Probe (NO) Closer

**F375**

**NEW**



The F375 is a long travel switch probe. Due to the plungers length and the large travel, the F375 is appropriate for contacting deeply inside the DUT and for dual stage applications. The mounting is possible with all receptacles of series H875 (see page 82). By usage of the combi-receptacle H875KB, the probes can be exchanged very easy and solderless. Due to the press fits at the receptacle, the probe projection height and the switching level can be adjusted by depth of screwing.

Connecting element für probe pin:  
H884AE

### Mechanical Specifications

Switch Travel 1,5 ± 0,2 mm

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 8,0 |
| Maximum: | 9,5 |

#### Spring Force (cN ±20%)

|               |     |
|---------------|-----|
| Nominal Force | 200 |
| Preload:      | 30  |

Pointing Accuracy: ± 0,15 mm

### Materials and Plating

|             |                         |
|-------------|-------------------------|
| Plunger:    | see Tip Styles          |
| Barrel:     | Bronze, Gold plated     |
| Spring:     | Music wire, Gold plated |
| Receptacle: | Bronze, Gold plated     |

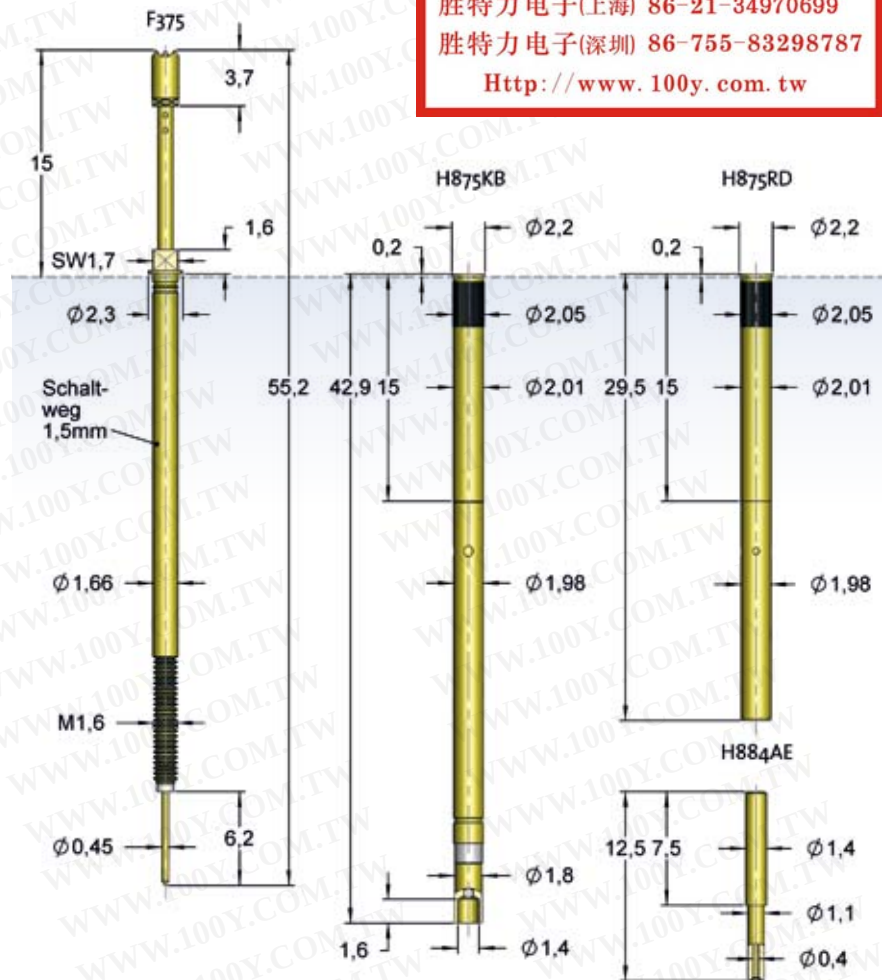
#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 2,00-2,02     | 1,99-2,00        |
| HGW 2372.1 (FR4)        |               |                  |

| Type | Tip-Ø                     | Spring Force |
|------|---------------------------|--------------|
| F375 | 06 B 180 G                | 200          |
|      | Tip Style Material Finish |              |

**Material:** B = BeCu  
**Tip-Ø:** 180 = 1,80 mm (e.g.)  
**Finish:** G = Gold  
**Receptacle:** Order-Code according drawing

**ORDER EXAMPLE**



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**ATTENTION:**  
 Solder Temperature  
 maximum 300 °C

### Specific Screw-In-Tool



Due to the integrated support at the plunger, this probe can be assembled with the small Screw-In-Tools FEWZ886 or FEWZ886T. Since the screw driver is positioned at the top of the serrated tip, very narrow distances between the probes are possible. We do recommend the Tool FEWZ886T with ratchet.

### Tip Style, Material, Plating, Tip- Ø (mm)



**06 BeCu; G**  
 ø 1,80

**17 BeCu; G**  
 ø 1,80

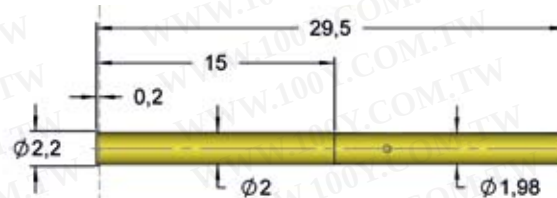
## Receptacles for Switch Probe Families F875, F873 und F375

### H875

#### Receptacle H875

This receptacle allows variable projection height:

|                      |                            |
|----------------------|----------------------------|
| F873: 10,4 – 15,4 mm | F875: 10,4 – 15,4 mm       |
| F375: 15,0 – 20,0 mm | F875 ... L: 16,9 – 21,9 mm |

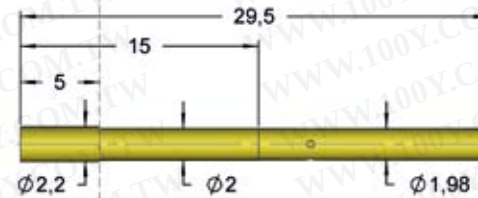


H875

#### Receptacle H875/5

The receptacle H875/5 has a 5mm collar for extended projection heights:

|                      |                            |
|----------------------|----------------------------|
| F873: 15,2 – 20,2 mm | F875: 15,2 – 20,2 mm       |
| F375: 19,8 – 24,8 mm | F875 ... L: 21,7 – 26,7 mm |

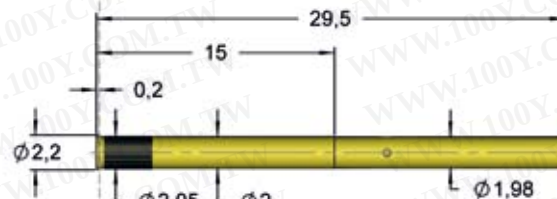


H875/5

#### H875RD

The receptacle H875RD has the same dimensions as H875, but with knurling for proper seat.

|                      |                            |
|----------------------|----------------------------|
| F873: 10,4 – 15,4 mm | F875: 10,4 – 15,4 mm       |
| F375: 15,0 – 20,0 mm | F875 ... L: 16,9 – 21,9 mm |

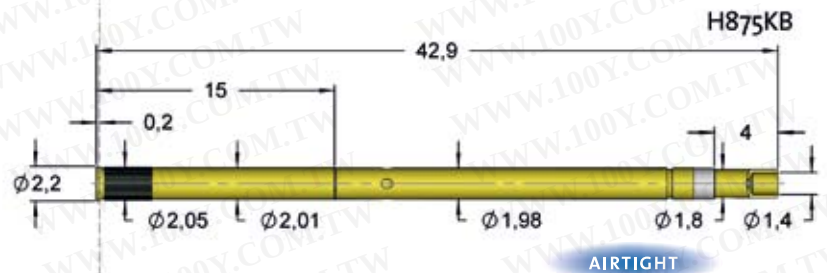


H875RD

#### Receptacle H875KB - for solderless exchange

By usage of the combi-receptacle H875KB the switch probes can be replaced solder less, saving time and cost for maintenance. Max. solder temperature 300°C. The projection height is also variable as for H875:

|                      |                            |
|----------------------|----------------------------|
| F873: 10,4 – 15,4 mm | F875: 10,4 – 15,4 mm       |
| F375: 15,0 – 20,0 mm | F875 ... L: 16,9 – 21,9 mm |



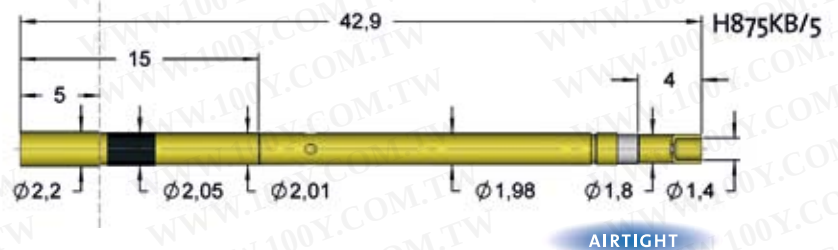
H875KB

#### Receptacle H875KB /5 -for solderless exchange

This receptacle has the same design like H875KB, but with a 5 mm collar for extended projection height.

|                      |                            |
|----------------------|----------------------------|
| F873: 15,2 – 20,2 mm | F875: 15,2 – 20,2 mm       |
| F375: 19,8 – 24,8 mm | F875 ... L: 21,7 – 26,7 mm |

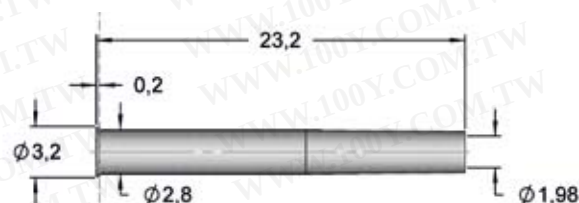
Solder temperature: max. 300 °C



H875KB/5

#### Insulating Sleeve H875IS

By usage of the insulating sleeve H875IS an insulated assembly of probes within conductive materials is possible (e.g. at steel). Maximum temperature: 300°C Due to the sleeve collar the projection height is increase by 0,2 mm.



H875IS

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

# Switch Probes



Centers 3,50 mm/138 mil

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F880 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <50 mOhm Switch |

## Switch Probe (NO) for backward assembly

### F880



The F880 has been specifically designed for backward assembly. In cases of hindered access to the module from the top, this design enables the probe replacement from the rear side of the module.

Especially for modules with several levels this probe can be used very efficient in the lower levels. Due to the thread the tip- $\varnothing$  is limited to 2mm. F888 is available as short and long version.

A specific screw-in-tool with LED-signal for Switch level adjustment is available. FEWZ880SA, see Tools / Accessories at page 129.

#### Mechanical Specifications

Switch Travel 1,7  $\pm$  0,2 mm

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

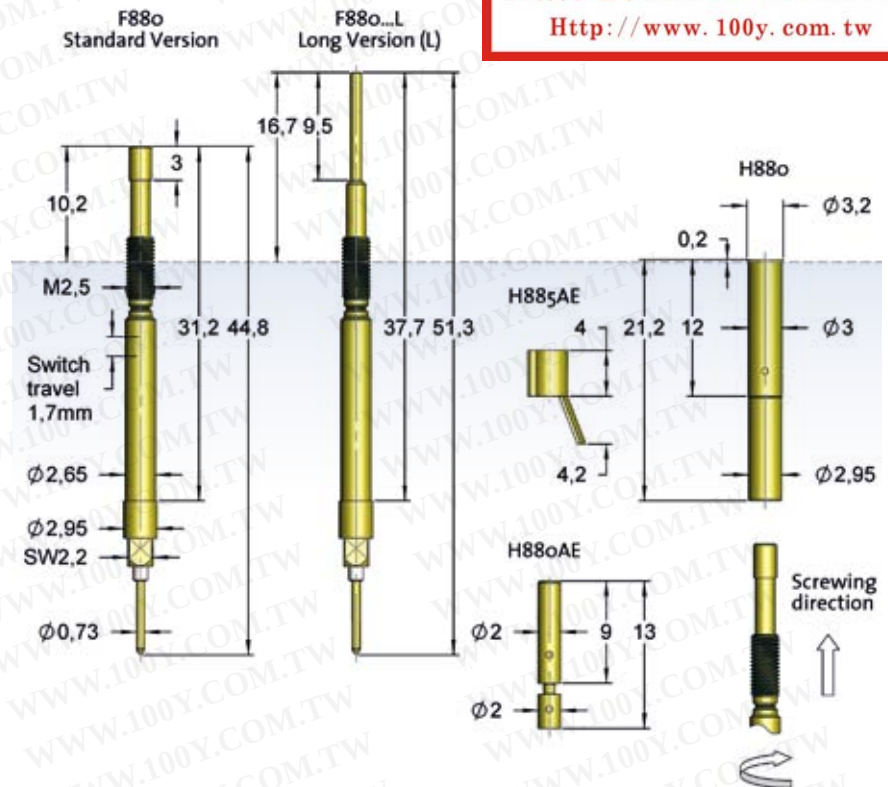
#### Spring Force (cN $\pm$ 20%)

|               |     |     |
|---------------|-----|-----|
| Nominal Force | 150 | 350 |
| Preload:      | 50  | 80  |

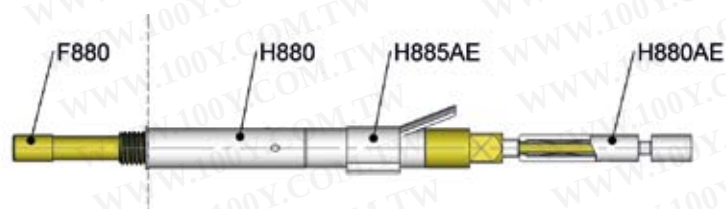
Pointing Accuracy:  $\pm$  0,08 mm

#### Materials and Plating

|             |                           |
|-------------|---------------------------|
| Plunger:    | see Tip Styles            |
| Barrel:     | Brass, Gold plated        |
| Spring:     | Music wire, Silver plated |
| Receptacle: | Brass, Gold plated        |
| H885AE:     | Brass, Gold plated        |
| H880AE:     | Brass, Gold plated        |



**ATTENTION:**  
Solder Temperature  
maximum 300 °C



#### Drill Size (mm)

| Material                | Drill- $\varnothing$ [mm] |
|-------------------------|---------------------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99                 |
| HGW 2372.1 (FR4)        |                           |

| Type        | Tip-Ø                        | Spring Force |
|-------------|------------------------------|--------------|
| F880        | 16B                          | 100          |
|             | G                            | 350          |
|             | L                            |              |
| Tip Style   | Material                     | Finish       |
|             |                              | Length       |
| Material:   | B = BeCu                     |              |
| Tip-Ø:      | 100 = 1,00 mm (e.g.)         |              |
| Finish:     | G = Gold                     |              |
| Length:     | L = Long Version             |              |
| Receptacle: | Order-Code according drawing |              |

ORDER EXAMPLE

#### Tip Style, Material, Plating, Tip- $\varnothing$ (mm)



|                                                     |                                        |
|-----------------------------------------------------|----------------------------------------|
| <b>16 BeCu; G</b><br>L-Version<br>$\varnothing$ 1,0 | <b>17 BeCu; G</b><br>$\varnothing$ 2,0 |
|-----------------------------------------------------|----------------------------------------|

| Type | Current      | Temperature  | R <sub>typically</sub> |
|------|--------------|--------------|------------------------|
| F881 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe         |
|      | 1,0 A Switch |              | <25 mOhm Switch        |

## Switch Probe (NO) electrically isolated

### F881



The F881 with insulated switching circuit, is appropriate to build up short-circuit proofed fixtures and test-modules for logic signals and measuring circuits (ICT). In combination with the standard receptacle H885 or with the combi-receptacle H881KB, the probe is height adjustable via the thread. With H881KB, the solderless replacement of probes is possible. Further suitable receptacles see page 90.

#### Mechanical Specifications

Switch Travel 1,7 ± 0,2 mm

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

#### Spring Force (cN ±20%)

|               |     |
|---------------|-----|
| Nominal Force | 380 |
| Preload:      | 80  |

Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

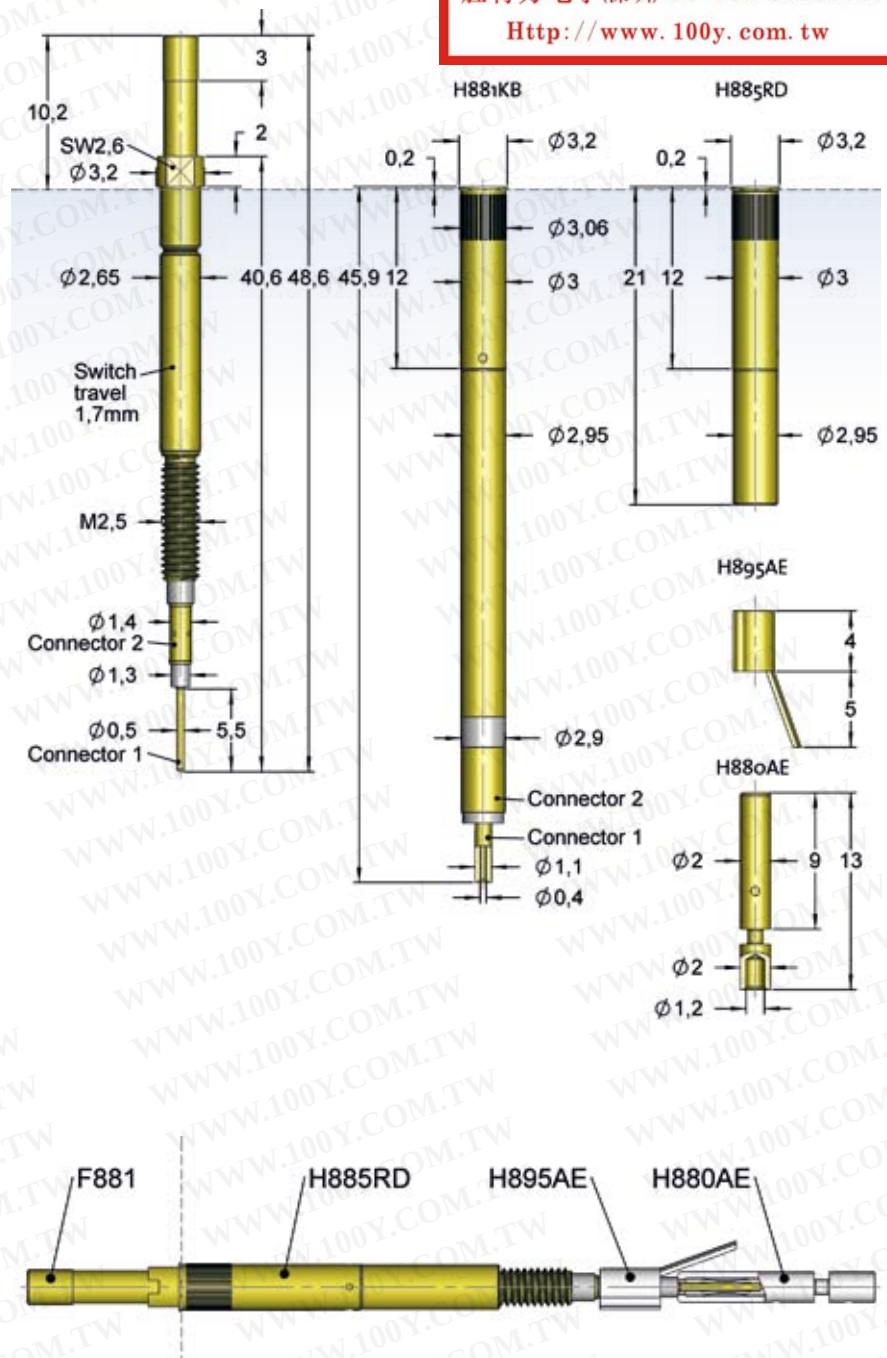
Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Brass, Gold plated

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 3,00-3,02    |
| HGW 2372.1 (FR4)        |              |

| Type                 | Tip-Ø                        | Spring Force |
|----------------------|------------------------------|--------------|
| F881                 | 17B 230                      | G 380        |
| Tip Style            | Material                     | Finish       |
| <b>Material:</b>     | B = BeCu                     |              |
| <b>Tip-Ø:</b>        | 230 = 2,3 mm (e.g.)          |              |
| <b>Finish:</b>       | G = Gold                     |              |
| <b>Receptacle:</b>   | Order-Code according drawing |              |
| <b>ORDER EXAMPLE</b> |                              |              |



#### Tip Style, Material, Plating, Tip- Ø (mm)



05 BeCu; G  
Ø 3,0



06 BeCu; G  
Ø 2,3



17 BeCu; G  
Ø 2,3



17 BeCu; G  
Ø 3,0\*



18 BeCu; G  
Ø 2,2

\* Max. Travel: 4,2 mm

| Type | Current      | Temperature  | R <sub>typically</sub> |
|------|--------------|--------------|------------------------|
| F883 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe         |
|      | 1,0 A Switch |              | <50 mOhm Switch        |

**F883**



Due to the press fits at the receptacle, the probe projection height and the switching level can be adjusted by depth of screwing.

Switch Travel  $1,7 \pm 0,2$  mm  
(0,5 mm on request)

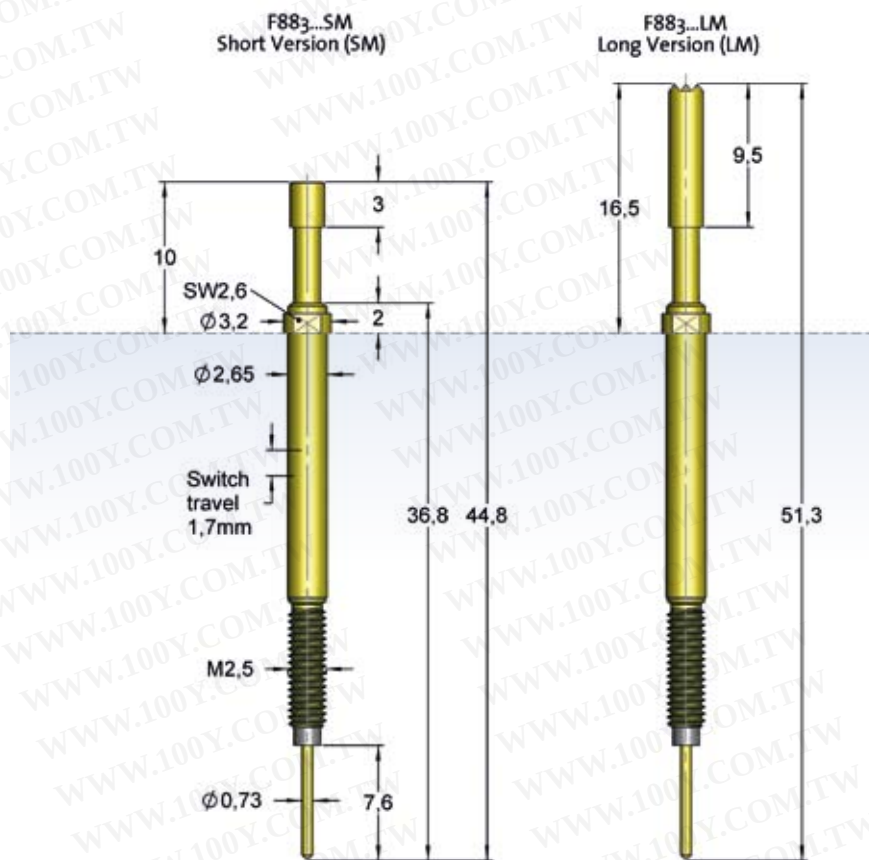
Pointing Accuracy:  $\pm 0,08$  mm

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Brass, Gold plated

| Type      | Tip Ø    | Spring Force | Length        |
|-----------|----------|--------------|---------------|
| F883      | 06B      | 230          | G             |
| Tip Style | Material | Finish       | Switch Travel |

**Material:** B = BeCu, K = Synthetic  
**Tip-Ø :** 230 = 2,30 mm (e.g.)  
**Finish:** G = Gold, U = unplated  
**Length:** SM = Short Version  
 LM = Long Version  
**Switch travel:** 05 = 0,5 mm  
 (deviating from standard)  
**Receptacle:** see page 90

**ORDER EXAMPLE**



**ATTENTION:**  
Solder Temperature  
maximum 300 °C

| Material                                    | with<br>knurling | without   |
|---------------------------------------------|------------------|-----------|
| EP 105 (CEM1, Trolitax)<br>HGW 2372.1 (FR4) | 3,00-3,02        | 2,98-2,99 |

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |
| <b>05 BeCu; G</b><br>S-Version<br>ø 2,3                                             | <b>06 BeCu; G</b><br>S-/L-Version<br>ø 2,3                                          | <b>16 BeCu; G</b><br>S-Version<br>ø 1,8                                             | <b>17 BeCu; G</b><br>S-Version<br>ø 2,3                                             | <b>17 Synthetic; U</b><br>S-Version<br>ø 2,3                                          |

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F884 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <50 mOhm Switch |

## Plug-In Switch Probe (NO) Closer

### F884

The F884 is the plug-in version of the threaded switch probes F885/F886. For the electrical connection to the barrel a clip with soldering tag is available (H885AE). The connection to the switch pin is made by the connecting element H880AE.

#### Mechanical Specifications

Switch Travel  $1,7 \pm 0,2$  mm  
(3,5 mm on request)

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

#### Spring Force (cN $\pm 20\%$ )

|               |     |
|---------------|-----|
| Nominal Force | 230 |
| Preload:      | 40  |

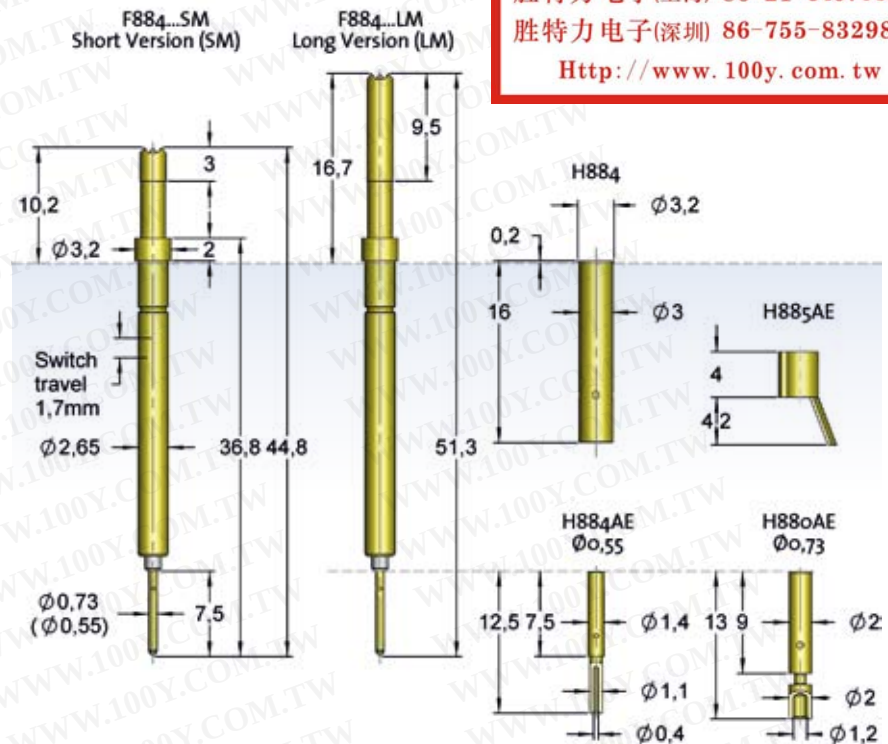
Pointing Accuracy:  $\pm 0,08$  mm

#### Materials and Plating

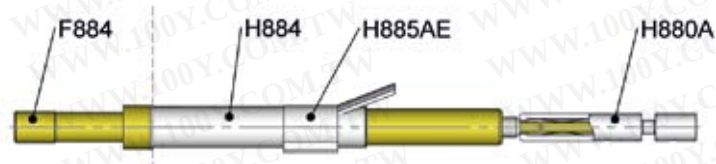
|             |                           |
|-------------|---------------------------|
| Plunger:    | see Tip Styles            |
| Barrel:     | Bronze, Gold plated       |
| Spring:     | Music wire, Silver plated |
| Receptacle: | Bronze, Gold plated       |
| H885AE:     | BeCu, Gold plated         |
| H880AE:     | BeCu, Gold plated         |

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        |              |



**ATTENTION:**  
Solder Temperature  
maximum 300 °C



#### Tip Style, Material, Plating, Tip-Ø (mm)

| Type                                                        | Tip-Ø    | Spring Force | Length | Switch Travel |     |    |
|-------------------------------------------------------------|----------|--------------|--------|---------------|-----|----|
| F884                                                        | 06B      | 230          | G      | 350           | S M | 35 |
| Tip Style                                                   | Material | Finish       |        | Pin-Ø         |     |    |
| <b>Material:</b> B = BeCu, K= Synthetic                     |          |              |        |               |     |    |
| <b>Tip-Ø:</b> 230 = 2,30 mm (e.g.)                          |          |              |        |               |     |    |
| <b>Finish:</b> G = Gold, U = unplated                       |          |              |        |               |     |    |
| <b>Special Version:</b> S = Short Version; L = Long Version |          |              |        |               |     |    |
| <b>Switch travel:</b> M = Pin-Ø: 0,73 mm; N= Pin-Ø: 0,55mm  |          |              |        |               |     |    |
| 35 = 3,5 mm<br>(deviating from standard)                    |          |              |        |               |     |    |
| <b>Receptacle:</b> Order-Code according drawing             |          |              |        |               |     |    |
| <b>ORDER EXAMPLE</b>                                        |          |              |        |               |     |    |

#### ORDER EXAMPLE

|                                                           |                                               |                                   |                                               |                                                          |
|-----------------------------------------------------------|-----------------------------------------------|-----------------------------------|-----------------------------------------------|----------------------------------------------------------|
|                                                           |                                               |                                   |                                               |                                                          |
| <b>06 BeCu; G</b><br>S-Version<br>Ø 1,0 / 1,8 / 2,3 / 3,0 | <b>06 BeCu; G</b><br>L-Version<br>Ø 1,0 / 2,3 | <b>SP-Version</b><br>see table 78 | <b>17 BeCu; G</b><br>S-Version<br>Ø 2,3 / 3,0 | <b>17 Synthetic; U</b><br>S-Version<br>Ø 2,3 / 3,0 / 5,0 |
|                                                           |                                               |                                   |                                               |                                                          |
| <b>17 T; G</b><br>S-Version<br>Ø 5,0*                     |                                               |                                   |                                               |                                                          |

\* Max. Travel: 4,2 mm

# Switch Probes



Centers 3,50 mm/138 mil

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F885 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <50 mOhm Switch |

## Standard Switch Probe 138 mil, Closer (NO)

### F885



The F885 is a very frequently used robust switch probe with Closer function. A short and a long version are available. The mounting is made with the receptacles of Series H885, see page 90.

By usage of the combi-receptacle H885KB, the probes can be replaced very easy and solderless.

Due to the press fits at the receptacle, the probe projection height and the switching level can be adjusted by depth of screwing.

#### Mechanical Specifications

Switch Travel  $1,7 \pm 0,2$  mm  
(3,5 mm on request)

#### Travel (mm)

Nominal: 4,0 Maximum: 5,0

#### Spring Force (cN $\pm 20\%$ )

|               |     |     |                   |
|---------------|-----|-----|-------------------|
| Nominal Force | 70  | 200 | 350               |
| Preload       | 30  | 80  | 80                |
| Nominal Force | 550 | 900 | 1250 <sup>1</sup> |
| Preload       | 120 | 50  | 200               |

<sup>1</sup> Nominal Travel: 4,0mm, Max. Travel: 4,2mm

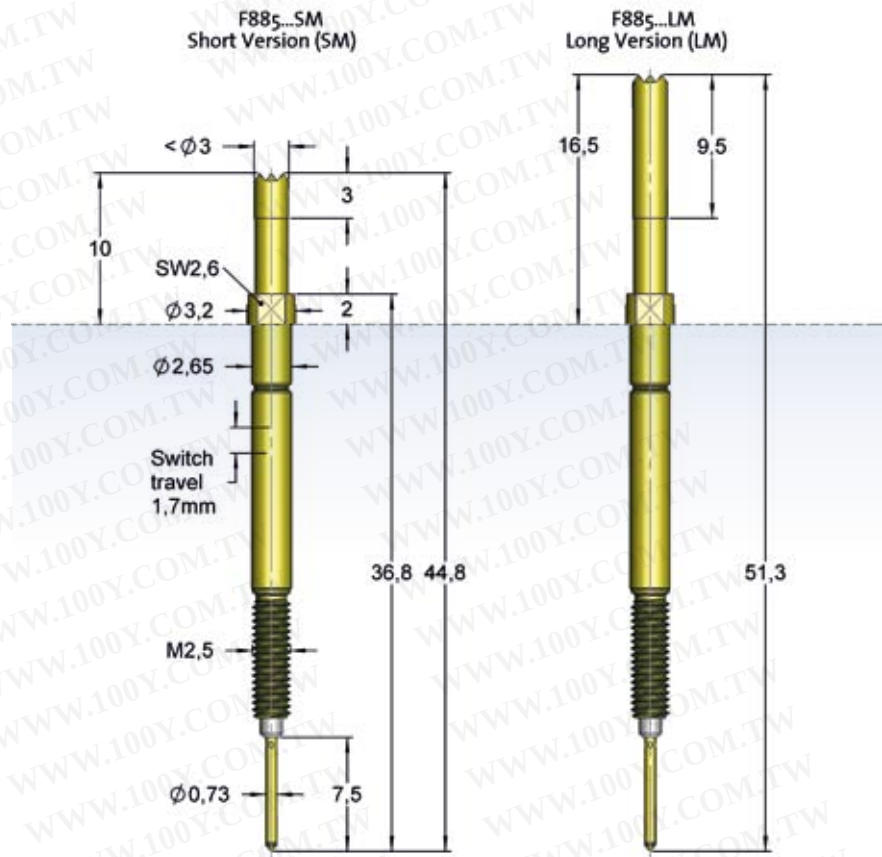
Pointing Accuracy:  $\pm 0,08$  mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Brass, Gold plated  
H885AE: Brass, Gold plated  
H880AE: Brass, Gold plated

| Type           | Tip-Ø                                              | Spring Force | Length        |
|----------------|----------------------------------------------------|--------------|---------------|
| F885           | 06B                                                | 230          | G 350         |
|                |                                                    |              | SM 35         |
|                |                                                    |              | Switch Travel |
| Material:      | B = BeCu, S = Steel<br>K = Synthetic               |              |               |
| Tip-Ø:         | 230 = 2,30 mm (e.g.)                               |              |               |
| Finish:        | G = Gold, U = unplated<br>L = Longtime Gold plated |              |               |
| Length:        | SM = Short Version<br>LM = Long Version            |              |               |
| Switch travel: | 35 = 3,5 mm<br>(deviating from standard)           |              |               |
| Receptacle:    | see page 90                                        |              |               |

ORDER EXAMPLE



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,00-3,02     | 2,98-2,99        |
| HGW 2372.1 (FR4)        |               |                  |

#### Tip Style, Material, Plating, Tip-Ø (mm)

|                                              |                                              |                                                     |                                                                 |                                                           |
|----------------------------------------------|----------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------|
|                                              |                                              |                                                     |                                                                 |                                                           |
| <b>03 BeCu; G</b><br>S-Version<br>Ø 0,8      | <b>05 BeCu; G</b><br>S-Version<br>Ø 2,3      | <b>05 BeCu; G</b><br>L-Version<br>Ø 2,3 / 3,0       | <b>06 BeCu; G</b><br>S-Version<br>Ø 0,7 / 1,0 / 1,3 / 1,8 / 2,3 | <b>06 BeCu; G</b><br>L-Version<br>Ø 1,0 / 1,4 / 1,8 / 2,3 |
|                                              |                                              |                                                     |                                                                 |                                                           |
| <b>SP-Version</b><br>see table 28            | <b>07 Steel; L</b><br>S-Version<br>Ø 2,3     | <b>16 BeCu; G</b><br>S-Version<br>Ø 1,0 / 1,4 / 1,8 | <b>16 BeCu; G</b><br>L-Version<br>Ø 1,8                         | <b>17 BeCu; G</b><br>S-Version<br>Ø 2,3                   |
|                                              |                                              |                                                     |                                                                 |                                                           |
| <b>17 Synthetic; U</b><br>S-Version<br>Ø 2,3 | <b>17 Synthetic; U</b><br>L-Version<br>Ø 2,3 |                                                     |                                                                 |                                                           |

# Switch Probes

Centers\* 3,50 mm/138 mil

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F886 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <50 mOhm Switch |

\* depend on chosen diameter

## Standard Switch Probe 138 mil, Closer (NO)

### F886



The F886 has the same design and dimensions than the F885 and differs in

head diameter only.

F886: Tip- $\varnothing > 3$ mm

F885: Tip- $\varnothing < 3$ mm

The mounting is made with receptacles of Serie H885 (see page 90).

#### Mechanical Specifications

Switch Travel  $1,7 \pm 0,2$  mm

(3,5 mm on request)

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 4,2 |

#### Spring Force (cN $\pm 20\%$ )

|               |     |     |     |
|---------------|-----|-----|-----|
| Nominal Force | 70  | 120 | 200 |
| Preload       | 30  | 30  | 80  |
| Nominal Force | 350 | 900 |     |
| Preload       | 80  | 50  |     |

Pointing Accuracy:  $\pm 0,08$  mm

#### Materials and Plating

Plunger: see Tip Styles

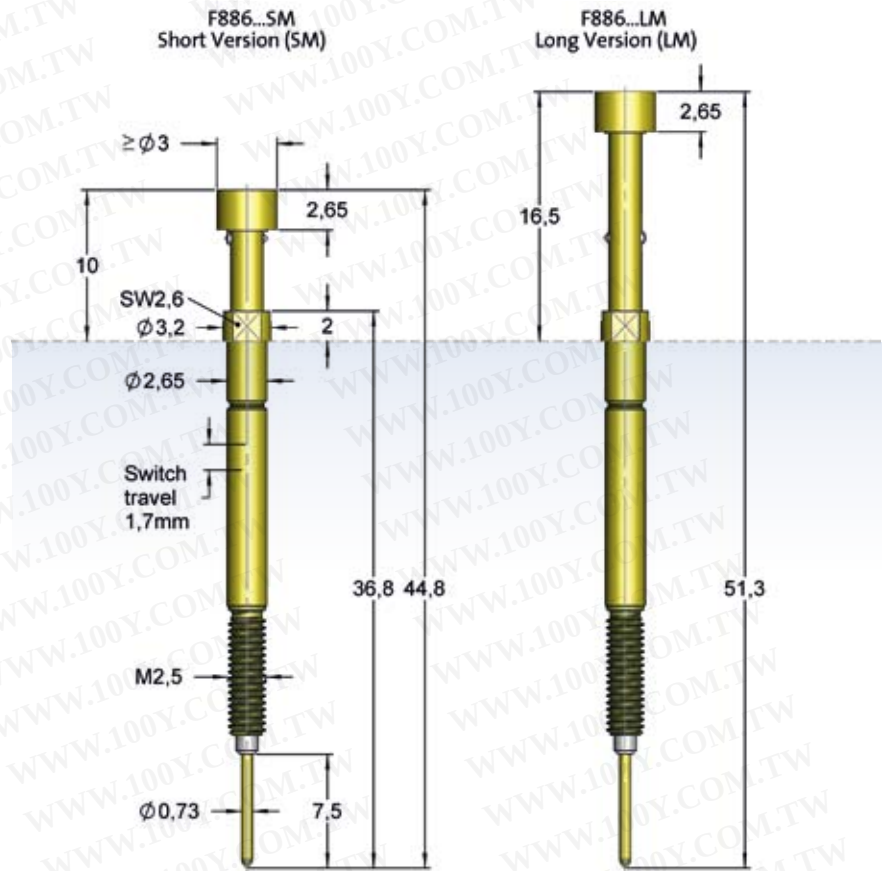
Barrel: Brass, Gold plated

Spring: Music wire, Silver plated

Receptacle: Brass, Gold plated

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,00-3,02     | 2,98-2,99        |
| HGW 2372.1 (FR4)        |               |                  |



**ATTENTION:**  
Solder Temperature  
maximum 300 °C

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Tip Style, Material, Plating, Tip- $\varnothing$ (mm)

| Type                                 | Tip- $\varnothing$                                                                             | Spring Force | Length      |
|--------------------------------------|------------------------------------------------------------------------------------------------|--------------|-------------|
| F886                                 | 06B                                                                                            | 300          | G 350 SM 35 |
|                                      | Tip Style                                                                                      | Material     | Finish      |
| <b>Material:</b>                     | B = BeCu, K = Synthetic<br>T = BeCu-Head insulated, Gold plated<br>H = Synthetic-Head mit Ring |              |             |
| <b>Tip-<math>\varnothing</math>:</b> | 300 = 3,00 mm (e.g.)                                                                           |              |             |
| <b>Finish:</b>                       | G = Gold, U = unplated                                                                         |              |             |
| <b>Special Version:</b>              | SM = Short Version, LM = Long Version                                                          |              |             |
| <b>Switch travel:</b>                | 35 = 3,5 mm (deviating from standard)                                                          |              |             |
| <b>Receptacle:</b>                   | see page 90                                                                                    |              |             |

ORDER EXAMPLE

|                                                                |                                                                                |                                                                                         |                                                                       |                                                                                              |
|----------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
|                                                                |                                                                                |                                                                                         |                                                                       |                                                                                              |
| <b>06 BeCu; G</b><br>S-Version<br>$\varnothing 3,0 / 4,0$      | <b>06 BeCu; G</b><br>L-Version<br>$\varnothing 3,0$                            | <b>17 BeCu; G</b><br>S-Version<br>$\varnothing 3,0 / 3,5 / 4,0 / 4,5 / 5,0 / 5,5 / 5,9$ | <b>17 BeCu; G</b><br>L-Version<br>$\varnothing 3,0 / 3,5 / 4,0 / 4,5$ | <b>17 Synthetic; U</b><br>S-Version<br>$\varnothing 3,0 / 3,5 / 4,0 / 4,5 / 5,0 / 5,5 / 5,9$ |
|                                                                |                                                                                |                                                                                         |                                                                       |                                                                                              |
| <b>17 Synthetic; U</b><br>L-Version<br>$\varnothing 3,0 / 3,5$ | <b>17 H; U</b><br>S-Version<br>$\varnothing 3,0 / 3,5 / 4,5 / 5,0 / 5,5 / 6,0$ | <b>17 H; U</b><br>L-Version<br>$\varnothing 3,0 / 3,5 / 4,0 / 4,5 / 5,0$                | <b>17 T; G</b><br>S-Version<br>$\varnothing 3,0 / 5,0$                |                                                                                              |

# Switch Probes



## Centers 3,50 mm/138 mil

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F385 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <50 mOhm Switch |

## Long Travel Switch Probe (NO) 138 mil

**F385**

**NEW**



The F385 is the long travel complement to standard switch probes F885/F886 and appropriate for contacting deeply inside the DUT and for dual stage applications. The mounting is made with the receptacles of Series H885, see page 90. By usage of the combi-receptacle H885KB, the probes can be replaced very easy and solderless. Due to the press fits at the receptacle, the probe projection height and the switching level can be adjusted by depth of screwing.

### Mechanical Specifications

Switch Travel 1,7 ± 0,2 mm

#### Travel (mm)

|          |      |
|----------|------|
| Nominal: | 9,0  |
| Maximum: | 11,0 |

#### Spring Force (cN ±20%)

|               |     |
|---------------|-----|
| Nominal Force | 200 |
| Preload:      | 40  |

Pointing Accuracy: ± 0,15 mm

### Materials and Plating

Plunger: see Tip Styles

Barrel: Brass, Gold plated

Spring: Music wire, Gold plated

Receptacle: Brass, Gold plated

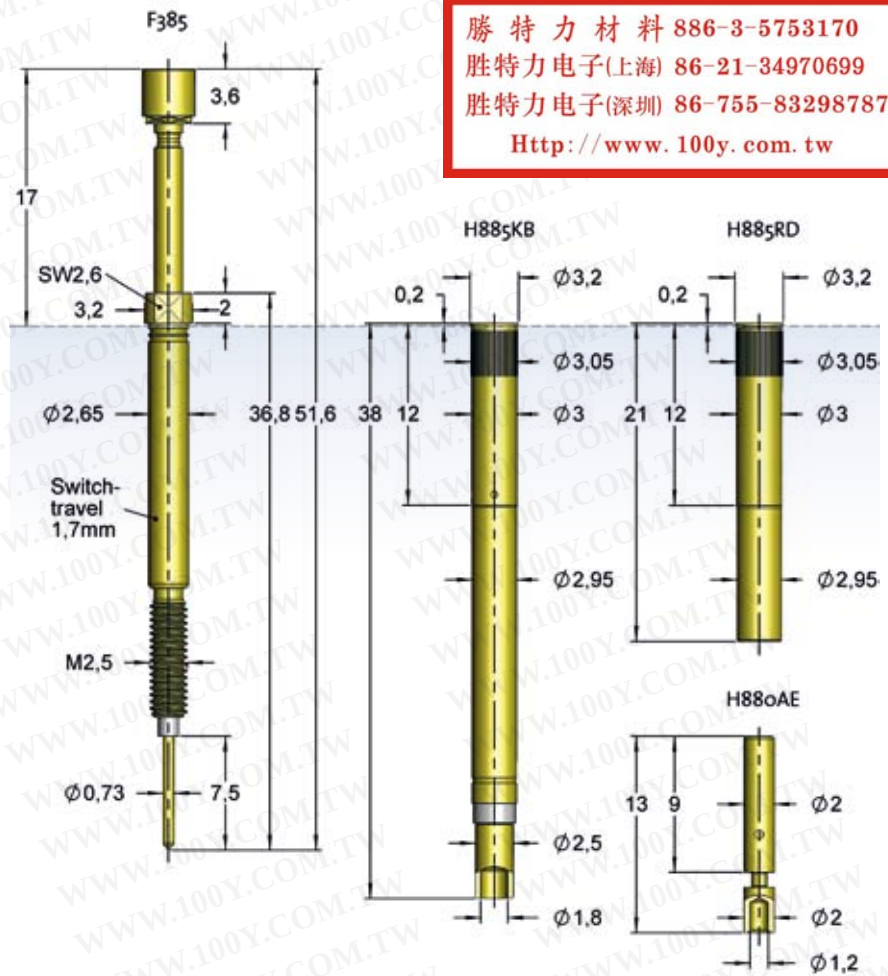
### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,00-3,02     | 2,98-2,99        |
| HGW 2372.1 (FR4)        |               |                  |

| Type        | Tip-Ø          | Spring Force |
|-------------|----------------|--------------|
| <b>F385</b> | <b>17B 350</b> | <b>G 200</b> |
| Tip Style   | Material       | Finish       |

**Material:** B = BeCu  
**Tip-Ø:** 350 = 3,50 mm (e.g.)  
**Finish:** G = Gold  
**Receptacle:** Order-Code according drawing (see also page 90)

**ORDER EXAMPLE**



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**ATTENTION:**  
 Solder Temperature  
 maximum 300 °C

### Specific Screw-In-Tool



Due to the integrated support at the plunger, this probe can be assembled with the small Screw-In-Tools FEWZ886 or FEWZ886T. Since the screw driver is positioned at the top of the serrated tip, very narrow distances between the probes are possible. We do recommend the Tool FEWZ886T with ratchet.

### Tip Style, Material, Plating, Tip- Ø (mm)



**06 BeCu; G**  
 Ø 3,50

**17 BeCu; G**  
 Ø 3,50

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

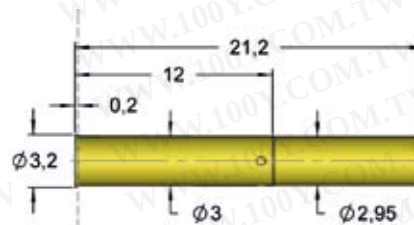
## Receptacles for Switch Probe Families F883, F885/886 und F385

### Receptacle H885

This receptacle allows variable projection height:

F883: 10,2 – 15,7 mm    F885/F886 ... SM 10,2 – 15,7 mm

F385: 17,0 – 22,5 mm    F885/F886 ... LM: 16,7 – 22,2 mm



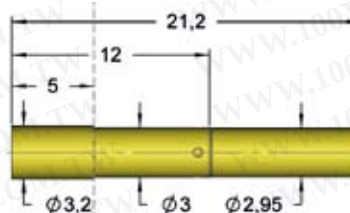
H885

### Receptacle H885/5

The receptacle H885/5 has a 5mm collar for extended projection height:

F883: 15,2 – 20,2 mm    F885/F886 ... SM: 15,2 – 20,2 mm

F385: 21,8 – 27,3 mm    F885/F886 ... LM: 21,5 – 27,0 mm



H885/5

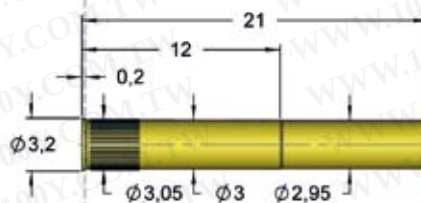
### Receptacle H885RD

The receptacle H885RD has the same dimensions as H885, but with knurling for proper seat.

Possible projection heights:

F883: 10,2 – 15,7 mm    F885/F886 ... SM 10,2 – 15,7 mm

F385: 17,0 – 22,5 mm    F885/F886 ... LM: 16,7 – 22,2 mm



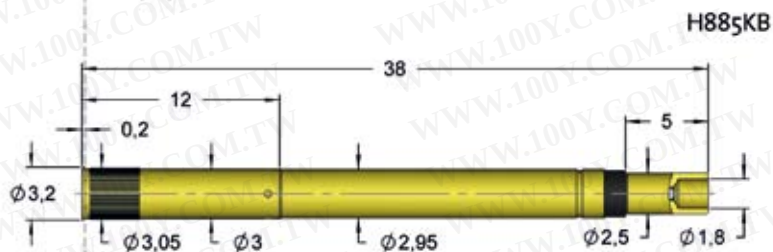
H885RD

### Receptacle H885KB - for solderless exchange

By usage of the combi-receptacle H885KB the switch probes can be replaced solderless, saving time and cost for maintenance. Max. solder temperature 300°C.

F883: 10,2 – 15,7 mm    F885/F886 ... SM 10,2 – 15,7 mm

F385: 17,0 – 22,5 mm    F885/F886 ... LM: 16,7 – 22,2 mm



H885KB

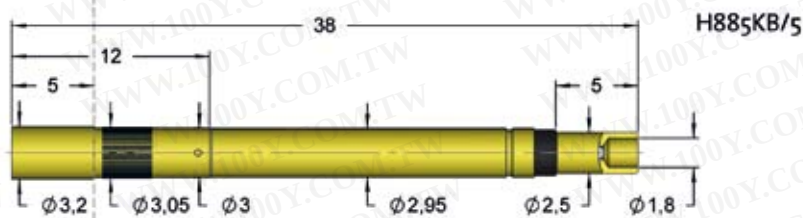
### Receptacle H885KB /5 - for solderless exchange

This receptacle has the same design like H885KB, but with a 5 mm collar for extended projection height.

F883: 15,2 – 20,2 mm    F885/F886 ... SM: 15,2 – 20,2 mm

F385: 21,8 – 27,3 mm    F885/F886 ... LM: 21,5 – 27,0 mm

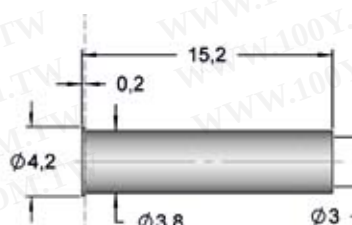
Solder temperature: max. 300 °C



H885KB/5

### Insulating Sleeve H885IS

By usage of the insulating sleeve H885IS an insulated assembly of probes within conductive materials is possible (e.g. at steel). Maximum temperature: 300°C. Due to the sleeve's collar the projection height is increase by 0,2 mm.



H885IS

# Switch Probes



## Centers 4,0 mm/157 mil

| Type | Current                      | Temperature  | R <sub>typically</sub>            |
|------|------------------------------|--------------|-----------------------------------|
| F887 | 10,0 A Probe<br>1,0 A Switch | -20°...+80°C | <20 mOhm Probe<br><40 mOhm Switch |

## Short Switch Probe 157 mil

### F887



The F887 is a very short and robust switch probe for applications with small mounting depth. The probe length is almost half of common standard switch probes.

A combi receptacle (H887KB) for solder less probe replacement and a standard receptacle with knurling are available. Both receptacles are with solder cup and the probes can be height adjusted in a range of 2 mm.

#### Mechanical Specifications

Switch Travel 1,7 ± 0,2 mm

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

#### Spring Force (cN ±20%)

|               |     |     |     |
|---------------|-----|-----|-----|
| Nominal Force | 150 | 200 | 300 |
| Preload:      | 50  | 50  | 120 |

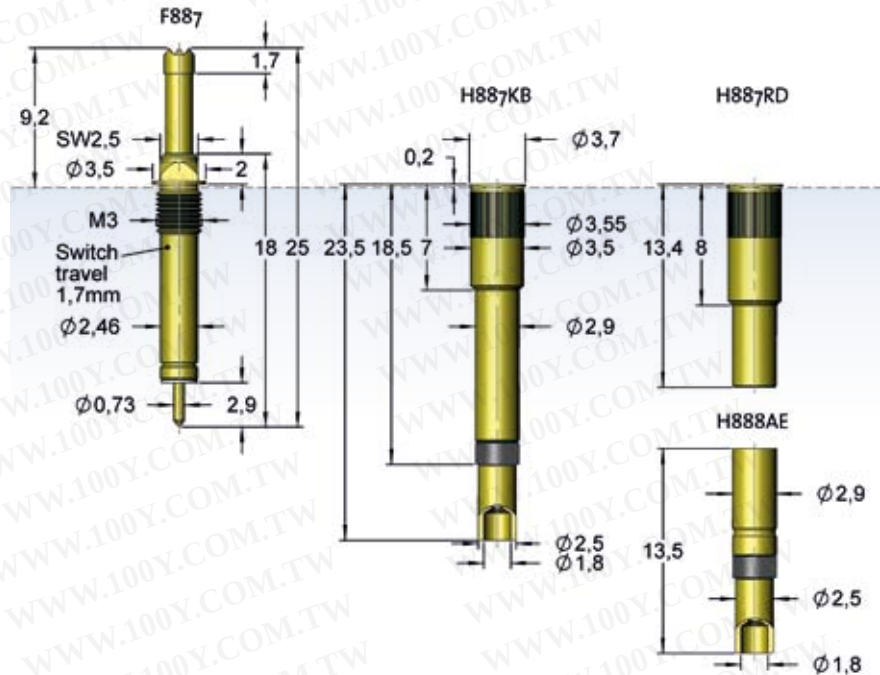
Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Silver plated  
Receptacle: Brass, Gold plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 3,50 - 3,52  |
| HGW 2372.1 (FR4)        |              |



**ATTENTION:**  
Solder Temperature  
maximum 300 °C

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type          | Tip-Ø                        | Spring Force |
|---------------|------------------------------|--------------|
| F887          | 06B 100                      | G 150        |
| Tip Style     | Material                     | Finish       |
| Material:     | B = BeCu                     |              |
| Tip-Ø:        | 100 = 1,00 mm (e.g.)         |              |
| Finish:       | G = Gold                     |              |
| Receptacle:   | Order-Code according drawing |              |
| ORDER EXAMPLE |                              |              |

#### Tip Style, Material, Plating, Tip- Ø (mm)



|                                 |                     |                           |  |  |
|---------------------------------|---------------------|---------------------------|--|--|
| 06 BeCu; G<br>ø 1,0 / 2,0 / 3,0 | 16 BeCu; G<br>ø 1,0 | 17 BeCu; G<br>ø 2,0 / 3,0 |  |  |
|---------------------------------|---------------------|---------------------------|--|--|

# Switch Probes

Centers 6,5 - 9,5 mm/157 - 374 mil

| Type | Current                      | Temperature  | R typically                       |
|------|------------------------------|--------------|-----------------------------------|
| F888 | 10,0 A Probe<br>1,0 A Switch | -20°...+80°C | <20 mOhm Probe<br><25 mOhm Switch |

## Switch Probe (NO) with Ball Head, threaded

### F888



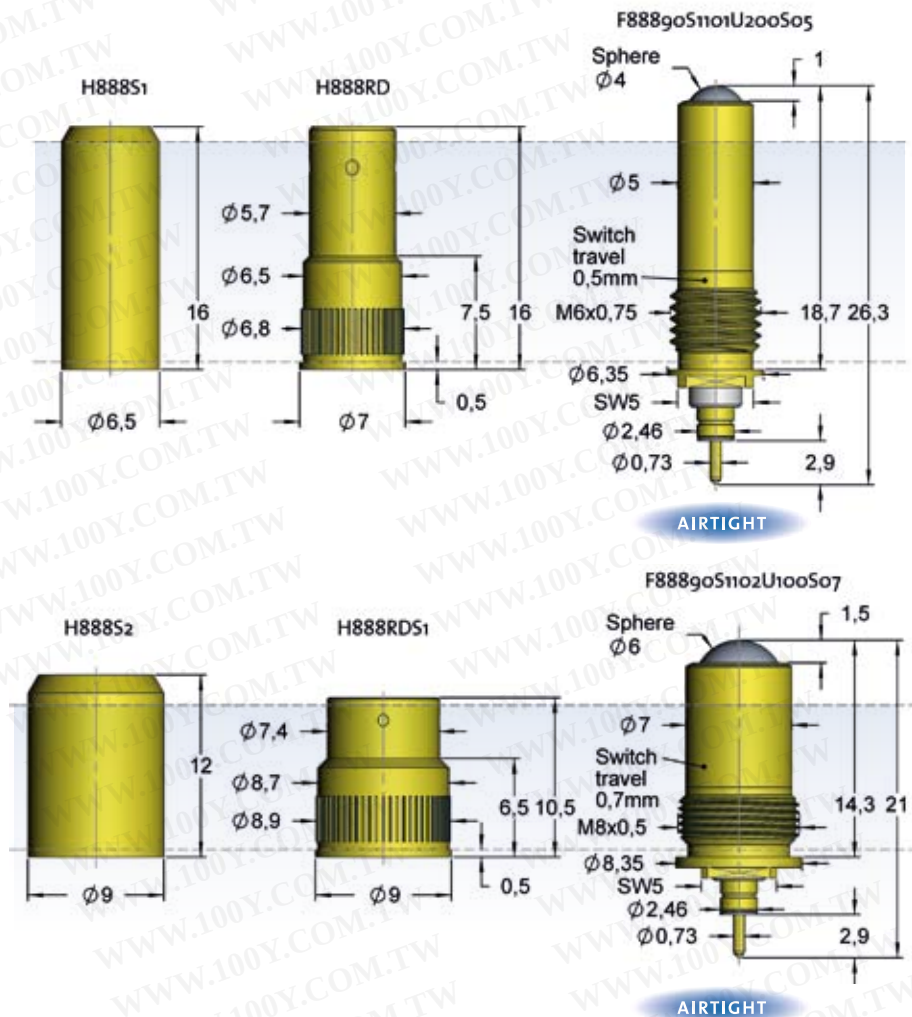
Probes of the family F888 are with an integrated ball as contact element on top of the plunger. This design makes the probe non-sensitive for lateral forces. The ball bedding allows rotation of the ball and therefore the contacting is very smooth and leaves no marks at the contact surface.

The major application is for connector presence test at test modules. The switching circuit of the treaded versions F888 is electrically isolated to the barrel (potential free). A non-isolated version is also available.

Further the probe can be delivered as poor contact probe without switching function, on request.

For mounting receptacles with collar and knurling (H888RD or H888RDS1) are available. Also longitudinal adjustable receptacles (H888S1 or H888S2) which may be fixed after positioning by a small set screw.

All probes F888 are airtight.



## Mechanical Specifications

### F888 ... S05

|                |              |
|----------------|--------------|
| Switch Travel: | 0,5 ± 0,2 mm |
| Maximum Travel | 1,0 mm       |

### Spring Force (cN ±20%)

Max.-Spring Force: 200, Preload: 100

### F888 ... S07

|                 |              |
|-----------------|--------------|
| Switch Travel:  | 0,7 ± 0,2 mm |
| Maximum Travel: | 1,5 mm       |

### Spring Force (cN ±20%)

Max.-Spring Force: 100, Preload: 70

## Materials and Plating

|             |                           |
|-------------|---------------------------|
| Ball:       | Stainless steel, unplated |
| Barrel:     | Brass, Gold plated        |
| Spring:     | Music wire, Silver plated |
| Receptacle: | Brass, Gold plated        |



## LED Tool

With the screw-in tool FWZ8885A, the mounting and the positioning for F888 probes is possible before the probe wiring has taken place. By using the signal of the integrated LED, the exact switching point can be easily adjusted with this tool.

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Drill Size (mm)

| Material                | H888RD    | H888RDS1  |
|-------------------------|-----------|-----------|
| EP 105 (CEM1, Trolitax) | 6,55-6,75 | 8,75-8,85 |
| HGW 2372.1 (FR4)        |           |           |

| Type                  | Number |                                                             |   |        |        |   | Switch Travel |     |
|-----------------------|--------|-------------------------------------------------------------|---|--------|--------|---|---------------|-----|
| F888                  | 90     | S                                                           | 1 | 1      | 01     | U | 200           | S05 |
| F888                  | 90     | S                                                           | 1 | 1      | 01     | U | 100           | S07 |
| Tip Style             |        | Material                                                    |   | Thread | Finish |   | Spring Force  |     |
| <b>Material:</b>      |        | S = Steel                                                   |   |        |        |   |               |     |
| <b>Number:</b>        |        |                                                             |   |        |        |   |               |     |
| first digit:          |        | 1 = switch electrically isolated<br>0 = switch not isolated |   |        |        |   |               |     |
| second digit:         |        | 1 = with thread<br>0 = without thread                       |   |        |        |   |               |     |
| 3./4. digit:          |        | running number                                              |   |        |        |   |               |     |
| <b>Finish:</b>        |        | U = unplated                                                |   |        |        |   |               |     |
| <b>Switch travel:</b> |        | S05 = 0,5 mm, S07 = 0,7 mm                                  |   |        |        |   |               |     |
| <b>Receptacle:</b>    |        | Order-Code according drawing                                |   |        |        |   |               |     |
| <b>ORDER EXAMPLE</b>  |        |                                                             |   |        |        |   |               |     |

# Switch Probes



Centers 6,5 - 9,5 mm/157 - 374 mil

| Type | Current      | Temperature  | R typically     |
|------|--------------|--------------|-----------------|
| F888 | 10,0 A Probe | -20°...+80°C | <20 mOhm Probe  |
|      | 1,0 A Switch |              | <25 mOhm Switch |

## Switch Probe (NO) with Ball Head, plug-in

### F888



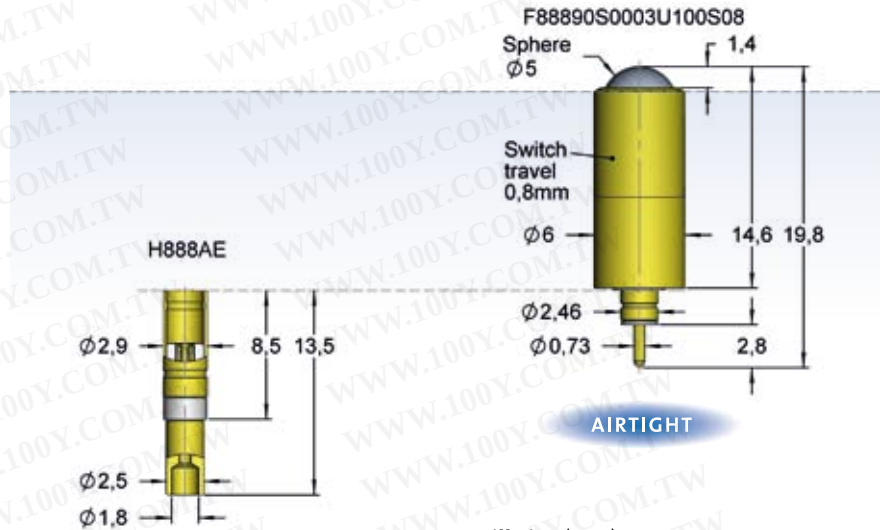
The plug-in versions of F888 have the same functional principle and similar design than the threaded ones.

The switching circuit is not electrically isolated in general. The probes are airtight and appropriate to build up vacuum fixtures and airtight modules. On request a version without switching function can be delivered.

The mounting usually takes place without receptacle.

After positioning the probe may be fixed by a small set screw.

The pluggable connecting element H888AE fits to the pin of all F888 and enables a solder less probe replacement.



#### Mechanical Specifications

##### F888 ... S08

Switch Travel: 0,8 ± 0,2 mm

Maximum Travel 1,0 mm

##### Spring Force (cN ±20%)

Max. Spring Force 100

Preload: 70

#### Materials and Plating

Ball: Stainless steel, unplated

Barrel: Brass, Gold plated

Spring: Music wire, Silver plated

#### Drill Size (mm)

| Material                | H888RD    | H888RDS1  |
|-------------------------|-----------|-----------|
| EP 105 (CEM1, Trolitax) | 6,55-6,75 | 8,75-8,85 |
| HGW 2372.1 (FR4)        |           |           |

| Type                  | Number                                                      |          |        |        | Switch Travel |   |     |     |
|-----------------------|-------------------------------------------------------------|----------|--------|--------|---------------|---|-----|-----|
| F888                  | 90                                                          | S        | 0      | 0      | 03            | U | 100 | S08 |
| Tip Style             |                                                             | Material | Thread | Finish | Spring Force  |   |     |     |
| <b>Material:</b>      | S = Steel                                                   |          |        |        |               |   |     |     |
| <b>Number:</b>        |                                                             |          |        |        |               |   |     |     |
| first digit:          | 1 = switch electrically isolated<br>0 = switch not isolated |          |        |        |               |   |     |     |
| second digit:         | 1 = with thread<br>0 = without thread                       |          |        |        |               |   |     |     |
| 3/4. digit:           | running number                                              |          |        |        |               |   |     |     |
| <b>Finish:</b>        | U = unplated                                                |          |        |        |               |   |     |     |
| <b>Switch travel:</b> | S08 = 0,8 mm                                                |          |        |        |               |   |     |     |

ORDER EXAMPLE

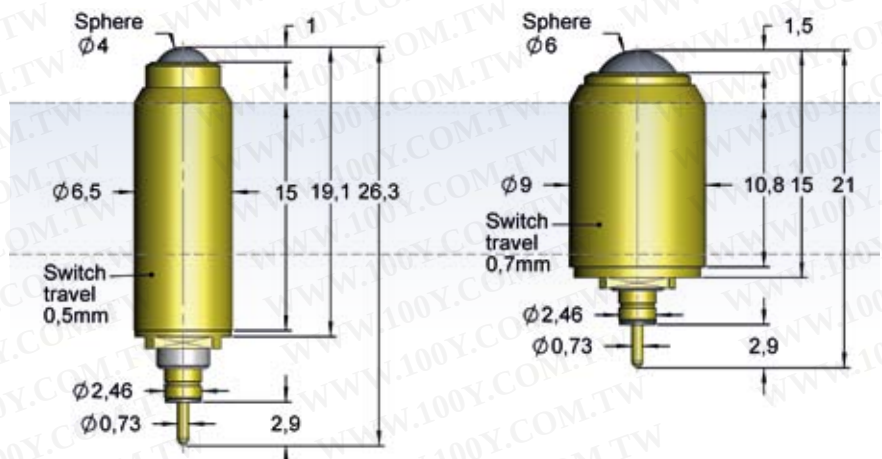
ORDER EXAMPLE

勝特力材料 86-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Pluggable Version with electrically isolated switching circuit

To build up potential free (electrically isolated) systems with pluggable Ball Head Switch Probes F888, the potential free threaded versions in combination with the receptacles can be used.

Mounted in the receptacle the unit can be handled like a plug-in version and due to the longitudinal adjustability, the projection height is variable. The unit may be fixed by a small set screw.



F888 ... S05 + H888S1

F888 ... S07 + H888S2

# Twist Proof Probes

Centers 2,54 mm/100 mil

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F752 | 3,0 A   | -20°...+80°C | <30 mOhm    |

## Plug-in Version 100 mil

### F752

The F752 is available as short or long version. The twist proof function is realised by a specific plunger guiding within the receptacle.

The knurling at the probe barrel guarantees a tight seat in the receptacle.

For probe mounting the receptacle H752 with solder cup is used.

#### Mechanical Specifications

##### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

##### Spring Force (cN ±20%)

|               |     |     |
|---------------|-----|-----|
| Nominal Force | 150 | 300 |
| Preload       | 50  | 50  |

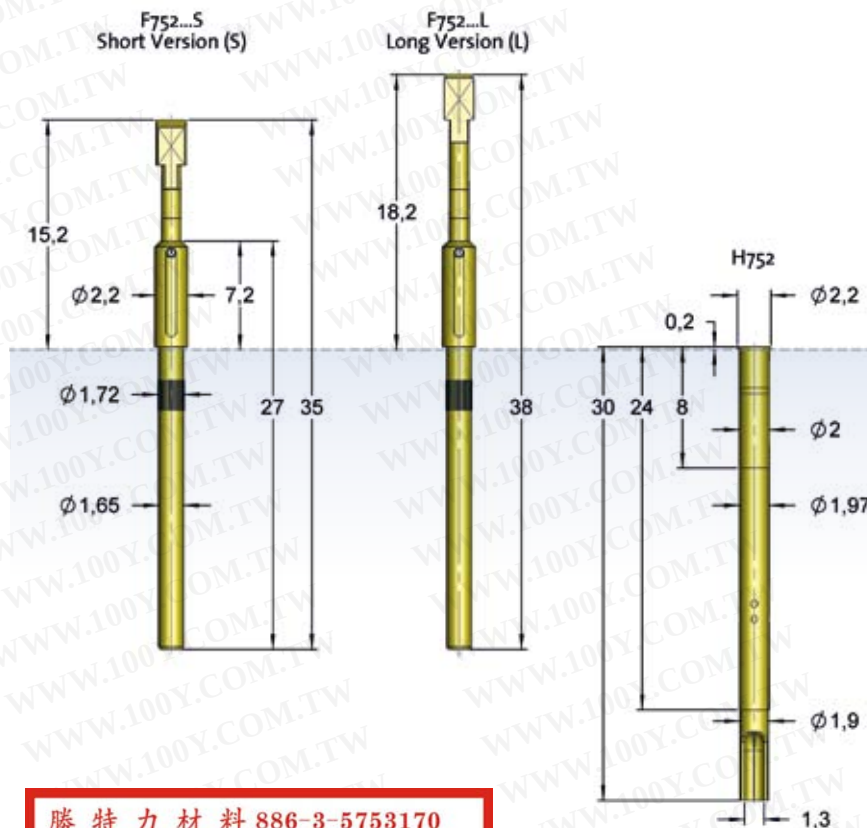
Pointing Accuracy: ± 0,1 mm

#### Materials and Plating

|             |                         |
|-------------|-------------------------|
| Plunger:    | see Tip Styles          |
| Barrel:     | Brass, Gold plated      |
| Spring:     | Music wire, Gold plated |
| Receptacle: | Brass, Gold plated      |

#### Drill Size (mm)

| Material                | F752 | H752        |
|-------------------------|------|-------------|
| EP 105 (CEM1, Trolitax) | 1,66 | 1,99 - 2,00 |
| HGW 2372.1 (FR4)        |      |             |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

#### Tip Style, Material, Plating, Tip- Ø (mm)



84 Steel; L

| Type             | Number                              | Spring Force  |
|------------------|-------------------------------------|---------------|
| F752             | 84S 0001                            | L 150 L       |
| Tip Style        | Material                            | Finish Length |
| Material:        | S = Steel                           |               |
| Number:          | see table                           |               |
| Finish:          | L = Longtime Gold plated            |               |
| Special Version: | L = Long Version, S = Short Version |               |
| Receptacle:      | Order Code according drawing        |               |
| ORDER EXAMPLE    |                                     |               |

| Tip Style | Number | A    | B (Ø) | C   | D   | Length |
|-----------|--------|------|-------|-----|-----|--------|
| 84        | 0001   | 0,58 | 2,0   | 4,5 | 3,0 | L      |
| 84        | 0002   | 0,5  | 2,0   | 4,5 | 3,0 | L      |
| 84        | 0003   | 1,0  | 2,0   | 4,5 | 3,0 | S      |
| 84        | 0004   | 0,5  | 2,0   | 8,0 | 6,0 | L      |
| 84        | 0005   | 0,5  | 1,5   | 7,5 | 6,0 | L      |
| 84        | 0006   | 0,4  | 2,0   | 8,0 | 6,0 | L      |

# Twist Proof Probes



Centers 2,54 mm/100 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F756     | 5,0 A   | -20°...+80°C  | <25 mOhm    |
| F756...H | 5,0 A   | -40°...+250°C | <50 mOhm    |

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Threaded Version switching function (Option)

### F756

The F756 is available with standard heads like tip style 11 or tip style 14 and with spade heads, tip style 84. in various dimensions. A high temperature version is suitable for applications up to +250 °C. The twist proof function is realised by a specific plunger guiding within the receptacle. Due to mounting within different receptacles some additional functions can be realised.

H756: standard receptacle  
 H756SH: receptacle with switching function  
 H756AT: airtight receptacle  
 H756SHAT: airtight receptacle with switching function

All receptacles are twist proof and with solder connection.

#### Mechanical Specifications

##### Travel (mm)

Nominal: 4,0 Maximum: 4,4

##### Spring Force (cN ±20%)

Nominal Force 150 300

Preload 60 60

Pointing Accuracy: ± 0,08mm

For receptacles with switching function (SH):

**Switch travel:** : 2,0 ± 0,2 mm

**Switch current:** max. 1 A

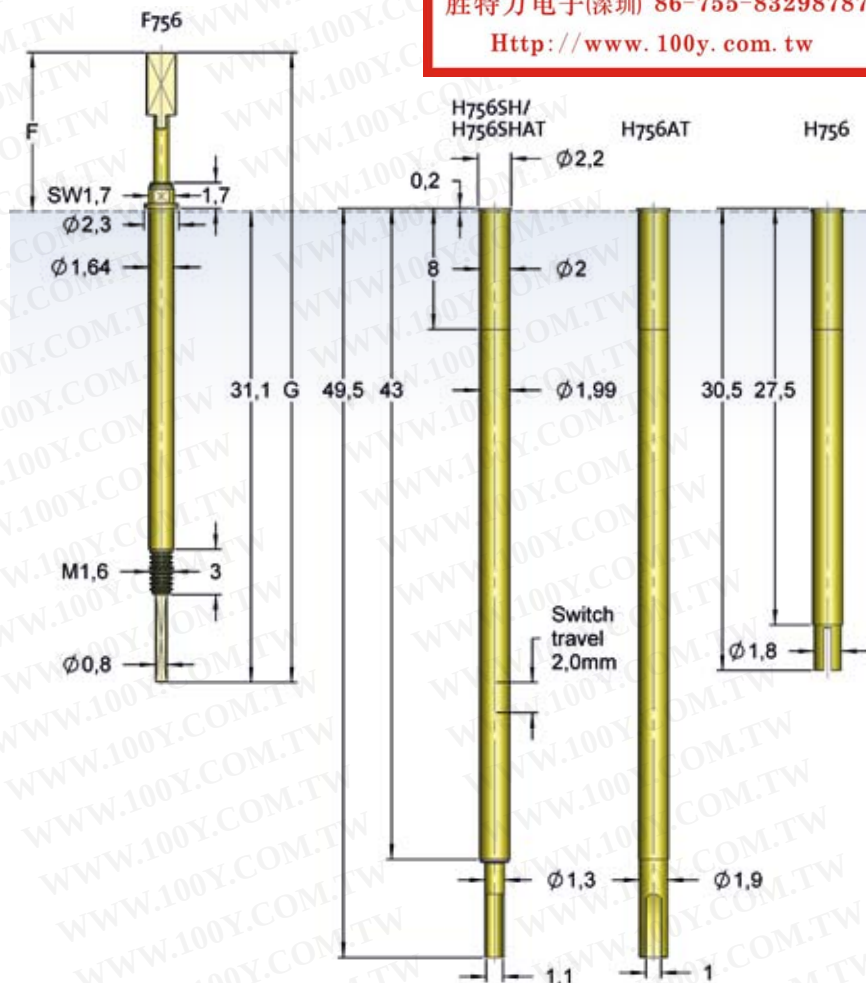
#### Materials and Plating

Plunger: see Tip Styles

Barrel: Brass, Gold plated

Spring: Music wire, Gold plated  
 stainless Music wire  
 (H-Version)

Receptacle: Brass, Gold plated



**AIRTIGHT**

**ATTENTION:**  
 Solder Temperature  
 maximum 300 °C

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,99 - 2,00  |
| HGW 2372.1 (FR4)        |              |

#### Tip Style, Material, Plating, Tip- Ø (mm)



**11 BeCu; G**  
 Ø 0,64

**84 BeCu; G**  
 see table

| Type                                                                                                                                                                                                                                                                                                                                                           | Tip-Ø                                     | Spring Force |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------|
| F756                                                                                                                                                                                                                                                                                                                                                           | 14B 200 G                                 | 150 H        |
|                                                                                                                                                                                                                                                                                                                                                                | Tip Style Material Finish Special Version |              |
| <b>Material:</b> B = BeCu<br><b>Tip-Ø:</b> 200 = 2,00 mm (e.g.)<br><b>Finish:</b> G = Gold<br><b>Special Version:</b> H = High Temperature Version<br><b>Receptacle:</b> Order-Code according drawing<br>At the Order Code of spade versions you will find a number instead of the coded tip-Ø. This number shows in the table the belonging spade dimensions. |                                           |              |
| F756                                                                                                                                                                                                                                                                                                                                                           | 84B 0001 G                                | 150 H        |
| <b>ORDER EXAMPLE</b>                                                                                                                                                                                                                                                                                                                                           |                                           |              |

| Tip Style | Number | A    | B (Ø) | C   | D    |
|-----------|--------|------|-------|-----|------|
| 84        | 0001   | 0,5  | 1,5   | 5,0 | 4,15 |
| 84        | 0002   | 0,45 | 1,1   | 5,0 | 4,15 |
| 84        | 0003   | 0,8  | 2,0   | 5,0 | 4,15 |
| 84        | 0004   | 1,0  | 1,5   | 5,0 | 4,15 |

| Type | Current | Temperature  | R        |
|------|---------|--------------|----------|
| F757 | 5,0 A   | -20°...+80°C | <25 mOhm |

## Short Threaded Version switching function (Option)

### F757

The F757 is 5,5 mm shorter than the F756 and is available with standard head tip style 16 or tip style 14 and with spade heads, tip style 84 and 85.

The twist proof function is realised by a specific plunger guiding within the receptacle. Due to mounting within different receptacles some additional functions can be realised.

H757SH: receptacle with switching function

H757AT: airtight receptacle

H757SHAT: airtight receptacle with switching function

All receptacles are twist proof and with solder connection.

### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 2,0 |
| Maximum:    | 3,5 |

| Spring Force (cN ±20%) |     |     |     |
|------------------------|-----|-----|-----|
| Nominal Force          | 150 | 300 | 500 |
| Preload                | 80  | 130 | 300 |

Pointing Accuracy: ± 0,08mm

For receptacles with switching function (SH):

**Switch travel:** : 2,0 ± 0,2 mm

**Switch current:** max. 1 A

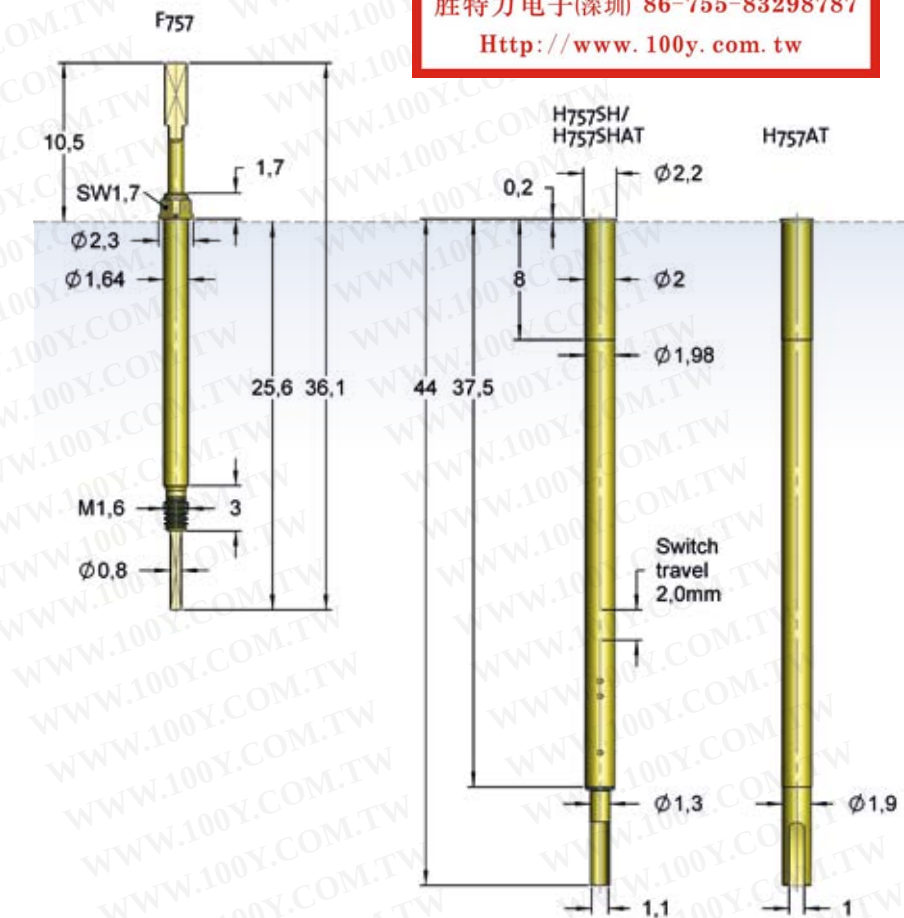
### Materials and Plating

Plunger: see Tip Styles

Barrel: Brass, Gold plated

Spring: Music wire, Gold plated

Receptacle: Brass, Gold plated



**AIRTIGHT**

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,99 - 2,00  |
| HGW 2372.1 (FR4)        |              |

### F757 | Tip Style, Material, Plating, Tip- Ø (mm)

| Type                                                                                                                                                  | Tip-Ø       | Spring Force                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------|
| F757                                                                                                                                                  | 16 B 070 G  | 150                          |
|                                                                                                                                                       | Tip Style   | Material                     |
|                                                                                                                                                       | Material    | Finish                       |
|                                                                                                                                                       | Material:   | 070 = 0,70 mm (e.g.)         |
|                                                                                                                                                       | Tip-Ø:      | G = Gold                     |
|                                                                                                                                                       | Finish:     | Order-Code according drawing |
|                                                                                                                                                       | Receptacle: |                              |
| At the Order Code of spade versions you will find a number instead of the coded tip-Ø. This number shows in the table the belonging spade dimensions. |             |                              |
| F757                                                                                                                                                  | 85 B 0001 G | 500                          |
| <b>ORDER EXAMPLE</b>                                                                                                                                  |             |                              |

| Tip Style | Number | A    | B (Ø) | C   | D    |
|-----------|--------|------|-------|-----|------|
| 84        | 0001   | 0,5  | 1,5   | 5,0 | 4,15 |
| 85        | 0001   | 0,7  | 0,7   | 5,0 | -    |
| 85        | 0002   | 0,64 | 0,64  | 5,0 | -    |

# Twist Proof Probes



Centers\* 3,50 mm/138 mil

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F760 | 10,0 A  | -20°...+80°C | <25 mOhm    |

\* depend on chosen diameter

## Threaded Version switching function (Option)

### F760

The F760 is available as short and long version with different spade tip styles and dimensions. The twist proof function is realised by a specific plunger guiding within the receptacle. Due to mounting within different receptacles some additional functions can be realised.

- H760: standard receptacle
- H760SH: receptacle with switching function
- H760AT: airtight receptacle
- H760SHAT: airtight receptacle with switching function

All receptacles are twist proof and with solder connection.

#### Mechanical Specifications

| Travel (mm)            |     |     |     |
|------------------------|-----|-----|-----|
| Nominal:               | 4,0 |     |     |
| Maximum:               | 5,0 |     |     |
| Spring Force (cN ±20%) |     |     |     |
| Nominal Force          | 150 | 300 | 400 |
| Preload                | 50  | 80  | 100 |

Pointing Accuracy: ± 0,08mm

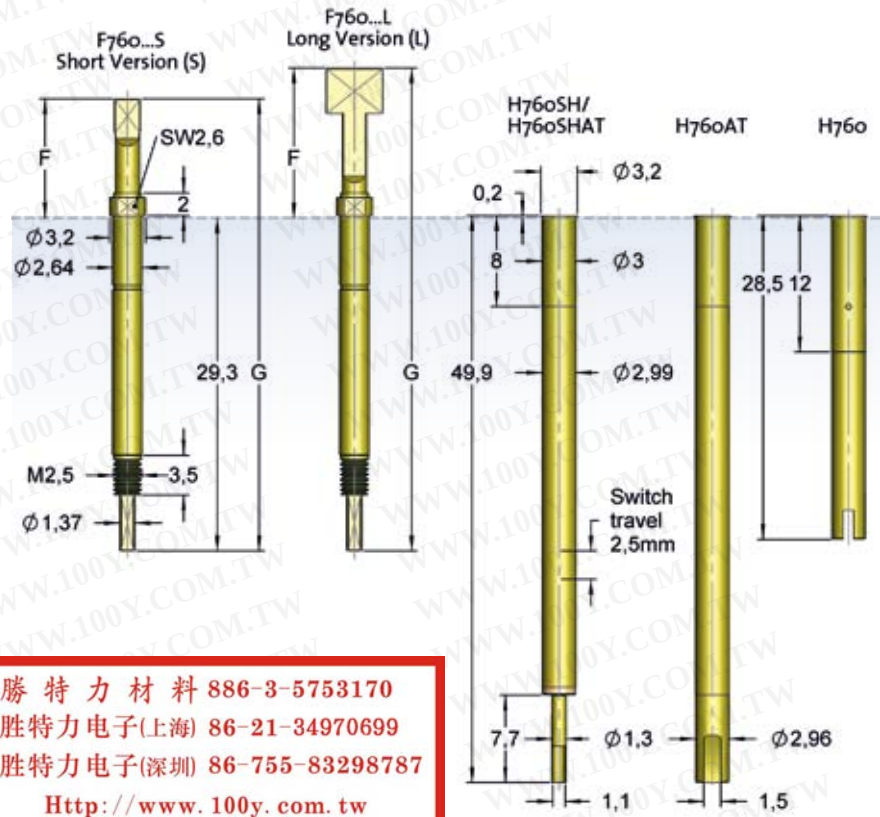
For receptacles with switching function (SH):

**Switch travel:** 2,5 ± 0,2 mm

**Switch current:** max. 1 A

#### Materials and Plating

- Plunger: see Tip Styles
- Barrel: Brass, Gold plated
- Spring: Music wire, Gold plated
- Receptacle: Brass, Gold plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**AIRTIGHT**

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98 - 2,99  |
| HGW 2372.1 (FR4)        |              |

#### F760 | Tip Style, Material, Plating, Tip- Ø (mm)



|                            |                                |                                |                                  |
|----------------------------|--------------------------------|--------------------------------|----------------------------------|
| <b>81 BeCu; G</b><br>Ø 0,7 | <b>84 BeCu; G</b><br>see table | <b>86 BeCu; G</b><br>see table | <b>89 BeCu; G</b><br>see page 78 |
|----------------------------|--------------------------------|--------------------------------|----------------------------------|

| Type                    | Number                              | Spring Force  |
|-------------------------|-------------------------------------|---------------|
| <b>F760</b>             | <b>81B</b>                          | <b>0001</b>   |
|                         | <b>G</b>                            | <b>300</b>    |
|                         |                                     | <b>S</b>      |
| <b>Tip Style</b>        | <b>Material</b>                     | <b>Finish</b> |
| <b>Material:</b>        | B = BeCu                            |               |
| <b>Number:</b>          | see table                           |               |
| <b>Finish:</b>          | G = Gold                            |               |
| <b>Special Version:</b> | L = Long Version, S = Short Version |               |
| <b>Receptacle:</b>      | Order-Code according drawing        |               |

**ORDER EXAMPLE**

| Tip Style | Number | A   | B (Ø) | C    | D    | E   | F    | G    | Length |
|-----------|--------|-----|-------|------|------|-----|------|------|--------|
| 81        | 0001   | 0,8 | 2,0   | 5,0  | 4,15 | -   | 10,5 | 39,8 | S      |
| 84        | 0001   | 0,5 | 2,8   | 9,5  | 6,0  | -   | 13,2 | 42,5 | L      |
| 84        | 0002   | 0,8 | 2,5   | 9,5  | 4,0  | -   | 13,2 | 42,5 | L      |
| 84        | 0003   | 0,8 | 2,3   | 3,5  | 3,0  | -   | 10,5 | 39,8 | S      |
| 84        | 0004   | 1,0 | 5,0   | 9,5  | 4,0  | -   | 13,2 | 42,5 | L      |
| 84        | 0005   | 1,0 | 5,0   | 15,5 | 10,0 | -   | 19,2 | 48,5 | E19    |
| 86        | 0001   | 0,5 | 3,0   | 6,0  | 2,7  | 2,3 | 13,2 | 42,5 | L      |
| 86        | 0002   | 0,5 | 2,8   | 19,5 | 16,5 | 4,5 | 26,7 | 56   | S1     |
| 86        | 0003   | 0,5 | 2,8   | 14,0 | 11,0 | 3,3 | 21,2 | 50,5 | S1     |

**Centers\* 3,50 mm/138 mil**

\* depend on chosen diameter

# F761

# Twist Proof Probes



Centers\* 4,5 mm/177 mil

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F754 | 10,0 A  | -20°...+80°C | <25 mOhm    |

\* depend on chosen diameter

## Plug-in Version 177 mil F754

The F754 is available as short or long version. The twist proof function is realised by a specific plunger guiding within the receptacle. The knurling at the probe barrel guarantees a tight seat in the receptacle.

For probe mounting the receptacle H752 with solder cup is used.

### Mechanical Specifications

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

#### Spring Force (cN ±20%)

|               |     |     |
|---------------|-----|-----|
| Nominal Force | 150 | 300 |
| Preload       | 30  | 80  |

Pointing Accuracy: ± 0,1 mm

### Materials and Plating

Plunger: see Tip Styles

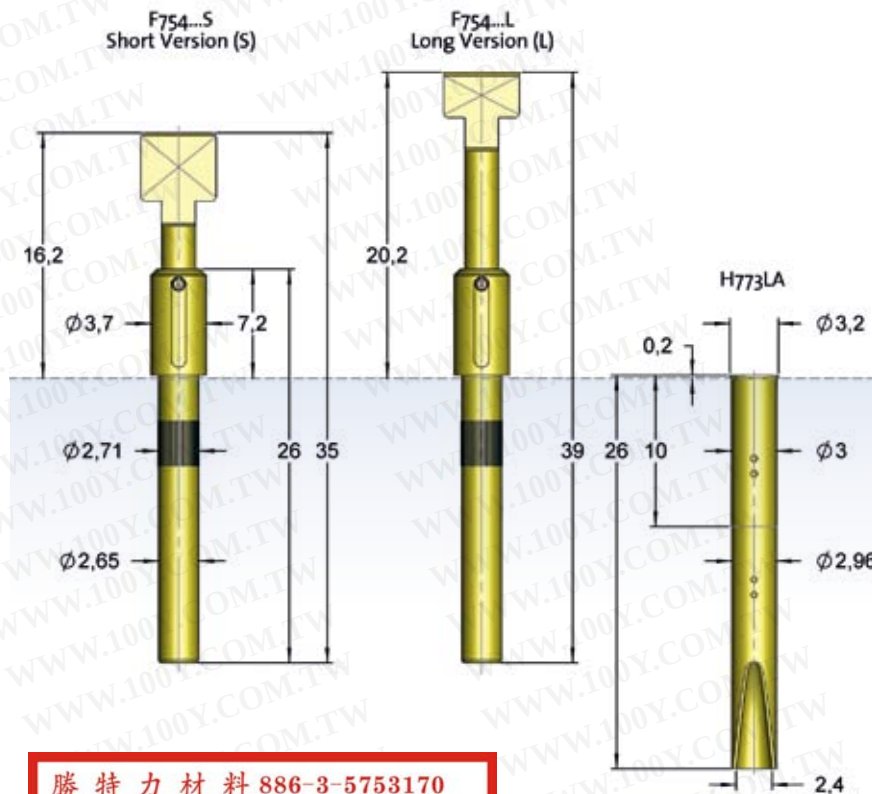
Barrel: Brass, Gold plated

Spring: Music wire, Gold plated

Receptacle: Brass, Gold plated

### Drill Size (mm)

| Material                | F754 | H773        |
|-------------------------|------|-------------|
| EP 105 (CEM1, Trolitax) | 2,66 | 2,98 - 2,99 |
| HGW 2372.1 (FR4)        |      |             |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

### Tip Style, Material, Plating, Tip-Ø (mm)



84 BeCu; G  
 see table

| Type                    | Number                              | Spring Force  |
|-------------------------|-------------------------------------|---------------|
| F754                    | 84 B 0001                           | G 150 S       |
|                         | Tip Style Material                  | Finish Length |
| <b>Material:</b>        | B = BeCu                            |               |
| <b>Number:</b>          | see table                           |               |
| <b>Finish:</b>          | G = Gold, L = Longtime Gold plated  |               |
| <b>Special Version:</b> | L = Long Version, S = Short Version |               |
| <b>Receptacle:</b>      | Order-Code according drawing        |               |
| <b>ORDER EXAMPLE</b>    |                                     |               |

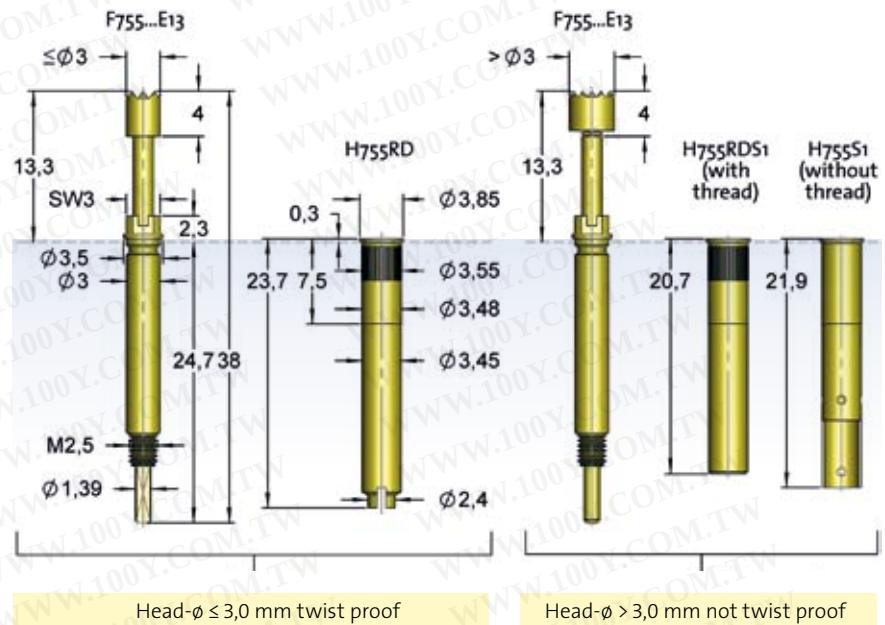
| Tip Style | No.  | A    | B (Ø) | C   | D   | Max. Travel | Length |
|-----------|------|------|-------|-----|-----|-------------|--------|
| 84        | 0001 | 1,0  | 5,0   | 4,5 | 3,0 | 5,0         | S      |
| 84        | 0002 | 1,0  | 4,0   | 6,0 | 3,0 | 5,0         | S      |
| 84        | 0003 | 0,5  | 5,0   | 5,0 | 3,0 | 5,0         | L      |
| 84        | 0004 | 0,65 | 4,0   | 6,0 | 3,0 | 5,0         | L      |
| 84        | 0005 | 0,4  | 5,0   | 6,0 | 4,5 | 4,5         | S      |
| 84        | 0005 | 0,4  | 5,0   | 7,5 | 4,5 | 5,0         | L      |

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F755 | 10,0 A  | -20°...+80°C | <30 mOhm    |

## Threaded Version Standard Tip Styles

### F755

The F755 will be delivered with serrated or crown head. Three probe versions with different projection heights are available: standard probe is 13,3 mm, on request: 15,3 mm or 18,3 mm projection height. The projection height is encoded by Exx at the end of the Order Code. The twist proof function is realised by a specific plunger guiding within the receptacle. Mounting of the probes is made with receptacle H755RD with solder cup. The F755 with serrated head  $\varnothing$  4mm is not twist proof and the mounting is made with threaded receptacle H755RDS1 or with the plug in receptacle H755S1. Both receptacles are with solder connection.



Head- $\varnothing$   $\leq$  3,0 mm twist proof

Head- $\varnothing$   $>$  3,0 mm not twist proof

## Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 5,0 |
| Maximum:    | 7,0 |

| Spring Force (cN $\pm$ 20%) |     |     |
|-----------------------------|-----|-----|
| Nominal Force               | 150 | 300 |
| Preload                     | 30  | 80  |

Pointing Accuracy:  $\pm$  0,1 mm

## Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Gold plated  
Receptacle: Brass, Gold plated

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                  | Head- $\varnothing$             | Spring Force |
|-----------------------|---------------------------------|--------------|
| F755                  | 06B 400                         | G 300 E13    |
| Tip Style             | Material                        | Finish       |
| Material:             | Be = BeCu                       |              |
| Head- $\varnothing$ : | 400 = 4,00mm (e.g.)             |              |
| Finish:               | G = Gold                        |              |
| Special Version:      | E13 = projection height 13,3 mm |              |
|                       | E15 = projection height 15,3 mm |              |
|                       | E18 = projection height 18,3 mm |              |
| Receptacle:           | Order-Code according drawing    |              |
| ORDER EXAMPLE         |                                 |              |

## Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,48 - 3,52   | 3,48 - 3,49      |
| HGW 2372.1 (FR4)        |               |                  |

## F755 | Tip Style, Material, Plating, Tip- $\varnothing$ (mm)

|                                 |                                 |                                 |                                 |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                                 |                                 |                                 |                                 |
| 06 BeCu; G<br>$\varnothing$ 3,0 | 06 BeCu; G<br>$\varnothing$ 4,0 | 14 BeCu; G<br>$\varnothing$ 3,0 | 18 BeCu; G<br>$\varnothing$ 1,8 |

# Twist Proof Probes



Centers 4,5 mm/177 mil

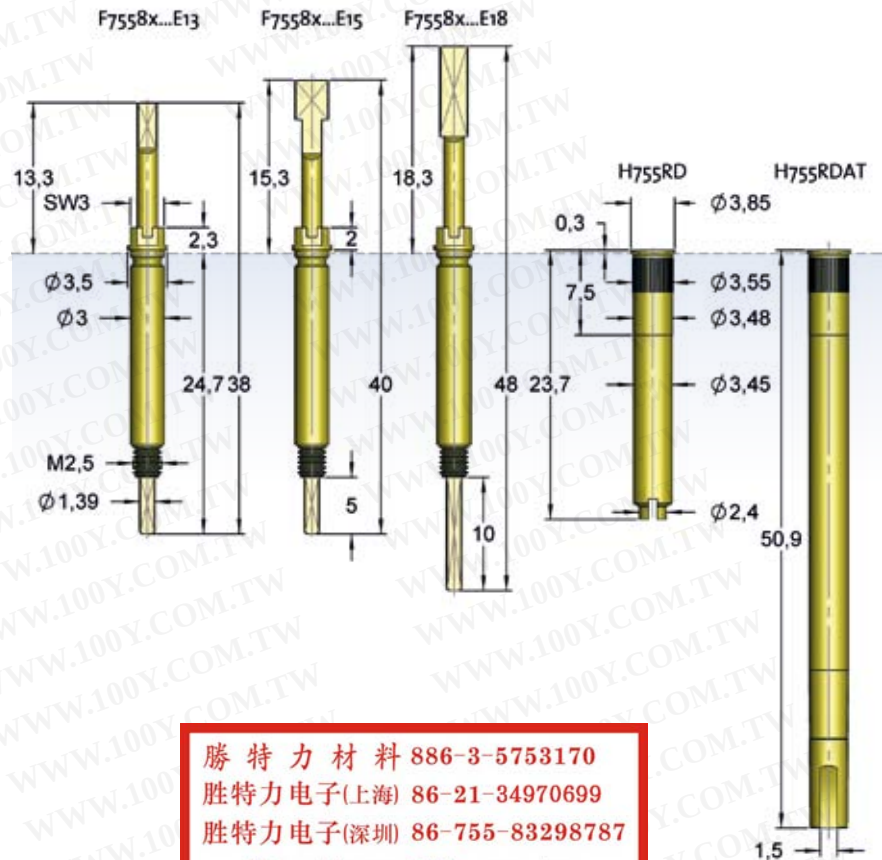
| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| F755 | 10,0 A  | -20°...+80°C | <30 mOhm    |

## Threaded Version Spade Tip Styles

### F755

The F755 is available with various spade tip styles. Three probe versions with different projection heights are available: standard probe is 13,3 mm, on request: 15,3mm or 18,3mm projection height.

The projection height is encoded by Exx at the end of the Order Code. The twist proof function is realised by a specific plunger guiding within the receptacle. Mounting of the probes with receptacle H755RD with solder cup.



#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 4,0 |
| Maximum:    | 5,0 |

| Spring Force (cN ±20%) |     |     |
|------------------------|-----|-----|
| Nominal Force          | 150 | 300 |
| Preload                | 30  | 80  |

Pointing Accuracy: ± 0,1 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: Music wire, Gold plated  
Receptacle: Brass, Gold plated

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,48 - 3,52   | 3,48 - 3,49      |
| HGW 2372.1 (FR4)        |               |                  |

#### F755 | Tip Style, Material, Plating, Tip- Ø (mm)

| 80 BeCu; G                    | 82 BeCu; G | 83 BeCu; G | 84 BeCu; G | 89 BeCu; G |
|-------------------------------|------------|------------|------------|------------|
|                               |            |            |            |            |
|                               |            |            |            |            |
| SP-Version<br>see table S. 78 |            |            |            |            |

| Type             | Number                             | Spring Force |
|------------------|------------------------------------|--------------|
| F755             | 82 B 0001 G                        | 300 E13      |
| Tip Style        | Material                           | Finish       |
| Material:        | B = BeCu                           |              |
| Number:          | see table                          |              |
| Finish:          | G = Gold, L = Longtime Gold plated |              |
| Special Version: | E13 = projection height 13,3 mm    |              |
|                  | E15 = projection height 15,3 mm    |              |
|                  | (on request)                       |              |
|                  | E18 = projection height 18,3 mm    |              |
|                  | (on request)                       |              |
|                  | S1: see table                      |              |
| Receptacle:      | Order-Code according drawing       |              |

ORDER EXAMPLE

| Tip Style | Number | A    | B (Ø) | C   | D   | Max. Travel | Exx |
|-----------|--------|------|-------|-----|-----|-------------|-----|
| 80        | 0001   | 0,8  | 1,2   | 4,0 | -   | 5,0         | E13 |
| 82        | 0001   | 0,8  | 1,8   | 4,0 | -   | 5,0         | E13 |
| 82        | 0002   | 0,5  | 1,8   | 4,0 | -   | 5,0         | E13 |
| 83        | 0001   | 0,8  | 2,5   | 8,0 | -   | 5,0         | E13 |
| 84        | 0001   | 0,7  | 3,0   | 6,5 | 3,5 | 5,0         | E13 |
| 84        | 0002   | 0,4  | 2,8   | 6,0 | 6,0 | 5,0         | E13 |
| 84        | 0003   | 0,4  | 5,2   | 6,0 | 6,0 | 5,0         | E13 |
| 89        | 0003   | 0,63 | 2,8   | 6,0 | -   | 4,5         | S1  |

# Push Back Probes

Centers\* 2,54 mm/100 mil

| Type  | Current | Temperature  | R typically |
|-------|---------|--------------|-------------|
| VF100 | 5,0 A   | -20°...+80°C | <30 mOhm    |

\* depend on chosen diameter

## Threaded Probe for Push Back Test

### VF100



The VF100 is available with standard tip styles and various spade heads.

By probe mounting with the different types of receptacles, additional operating functions can be realised.

HVF100: standard receptacle

HVF100AT: airtight receptacle

HVF100SHAT: airtight receptacle with switching function

In combination with the receptacle the probe becomes twist proof. All receptacles are with solder connection.

#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 5,0 |
| Maximum:    | 5,5 |

| Spring Force (N ±20%) |     |     |     |
|-----------------------|-----|-----|-----|
| Nominal Force:        | 5   | 10  | 15  |
| Preload:              | 0,8 | 0,8 | 1,2 |

#### Switching Receptacle HVF100SHAT

Switch travel: 2,5 ± 0,2 mm

Switch current: max. 1 A

#### Materials and Plating

Plunger: see Tip Styles

Spring: Music wire, Gold plated

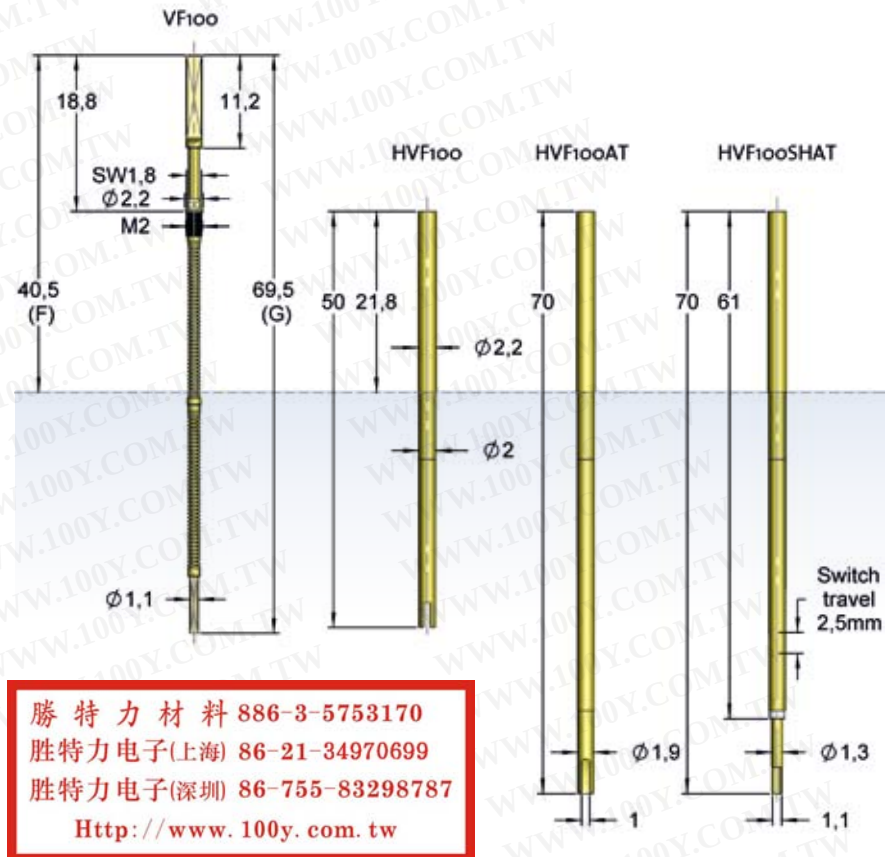
Receptacle: Brass, Gold plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,99 - 2,00  |
| HGW 2372.1 (FR4)        |              |

| Type               | Tip-Ø                              | Spring Force (N) |
|--------------------|------------------------------------|------------------|
| VF100              | 05 B 190                           | G 10             |
|                    | Tip Style      Material            | Finish           |
| <b>Material:</b>   | B = BeCu, S = Steel                |                  |
| <b>Tip-Ø:</b>      | 190 = 1,90 mm (e.g.)               |                  |
| <b>Finish:</b>     | G = Gold, L = Longtime Gold plated |                  |
| <b>Receptacle:</b> | Order-Code according drawing       |                  |

ORDER EXAMPLE



AIRTIGHT

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

#### VF100 | Tip Style, Material, Plating, Tip-Ø (mm)

|                           |                     |                     |                           |
|---------------------------|---------------------|---------------------|---------------------------|
|                           |                     |                     |                           |
| 05 BeCu; G<br>Ø 1,9 / 2,2 | 11 BeCu; G<br>Ø 1,2 | 12 BeCu; G<br>Ø 2,5 | 17 BeCu; G<br>Ø 1,5 / 1,8 |
|                           |                     |                     |                           |
| 80 BeCu; G                | 82 BeCu; G          | 82 Steel; L         | 84 BeCu; G                |

| Tip Style | Number | Material | A    | B (Ø) | C    | D   |
|-----------|--------|----------|------|-------|------|-----|
| 80        | 0001   | B        | 0,5  | 1,6   | 10,0 | -   |
| 82        | 0001   | S        | 0,30 | 1,9   | 10,0 | -   |
| 82        | 0002   | S        | 0,36 | 1,9   | 10,0 | -   |
| 82        | 0003   | B        | 0,5  | 1,9   | 10,0 | -   |
| 82        | 0004   | B        | 0,8  | 1,9   | 10,0 | -   |
| 84        | 0001   | B        | 0,8  | 2,5   | 10,0 | 3,0 |

# Push Back Probes



Centers\* 3,00 mm/118 mil

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| VF3  | 8,0 A   | -20°...+80°C | <30 mOhm    |

\* depend on chosen diameter

## Threaded Probe for Push Back Test

### VF3

The VF3 is available with standard tip styles and various spade heads. By probe mounting with the different types of receptacles, additional operating functions can be realised.

HVF3: standard receptacle

HVF3SHAT: airtight receptacle with switching function

In combination with the receptacle the probe becomes twist proof. All receptacles are with solder connection.

#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 5,0 |
| Maximum:    | 5,5 |

| Spring Force (N ±20%) |   |    |    |
|-----------------------|---|----|----|
| Nominal Force:        | 5 | 10 | 15 |
| Preload:              | 1 | 2  | 3  |

| Switching Receptacle HVF3SHAT |              |
|-------------------------------|--------------|
| Switch travel:                | 2,6 ± 0,2 mm |
| Switch current:               | max. 1 A     |

#### Materials and Plating

Plunger: see Tip Styles

Barrel: Brass, Gold plated

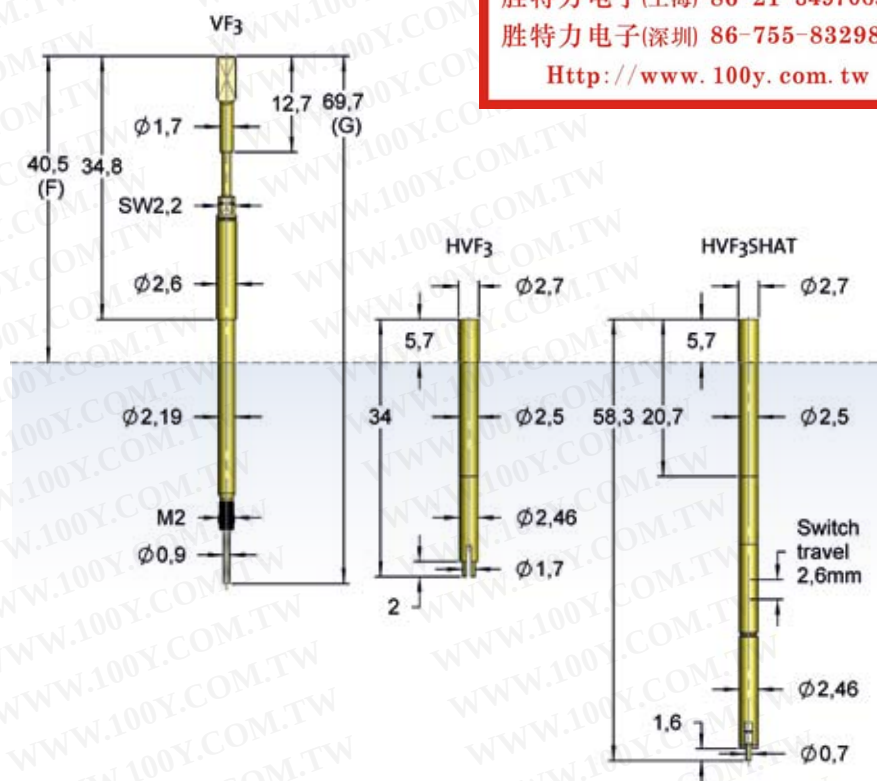
Spring: Music wire, Gold plated

Receptacle: Brass, Gold plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,48-2,49    |
| HGW 2372.1 (FR4)        |              |

| Type                                                                                                                                                                               | Tip-Ø                     | Spring Force (N) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|
| VF13                                                                                                                                                                               | 17 B 180 G 15             |                  |
|                                                                                                                                                                                    | Tip Style Material Finish |                  |
| <b>Material:</b> B = BeCu, S = Steel<br><b>Tip-Ø:</b> 180 = 1,80 mm (e.g.)<br><b>Finish:</b> G = Gold, L = Longtime Gold plated<br><b>Receptacle:</b> Order-Code according drawing |                           |                  |
| <b>ORDER EXAMPLE</b>                                                                                                                                                               |                           |                  |



AIRTIGHT

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

#### VF3 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                        |                                  |                            |                                        |
|----------------------------------------|----------------------------------|----------------------------|----------------------------------------|
|                                        |                                  |                            |                                        |
| <b>05 BeCu; G</b><br>Ø 1,9 / 2,2 / 3,0 | <b>06 BeCu; G</b><br>Ø 2,7 / 3,0 | <b>12 BeCu; G</b><br>Ø 2,3 | <b>17 BeCu; G</b><br>Ø 1,5 / 1,8 / 2,3 |
|                                        |                                  |                            |                                        |
| <b>80 BeCu; G</b>                      | <b>83 BeCu; G</b>                | <b>83 Steel; L</b>         |                                        |

| Tip Style | Number | Material | A   | B (Ø) | C    | F    | G    |
|-----------|--------|----------|-----|-------|------|------|------|
| 80        | 0001   | B        | 0,5 | 1,6   | 6    | 40,5 | 69,7 |
| 83        | 0001   | B        | 0,8 | 2,5   | 6,0  | 40,5 | 69,7 |
| 83        | 0002   | B        | 0,5 | 2,5   | 6,0  | 40,5 | 69,7 |
| 83        | 0003   | B        | 1,5 | 2,5   | 6,0  | 40,5 | 69,7 |
| 83        | 0004   | B        | 0,5 | 1,9   | 6,0  | 40,5 | 69,7 |
| 83        | 0004   | S        | 0,5 | 1,9   | 6,0  | 40,5 | 69,7 |
| 83        | 0005   | B        | 0,8 | 1,9   | 6,0  | 40,5 | 69,7 |
| 83        | 0006   | B        | 0,6 | 4,0   | 10,0 | 44,5 | 73,7 |
| 83        | 0007   | B        | 1,2 | 2,2   | 6,0  | 40,5 | 69,7 |
| 83        | 0008   | B        | 0,8 | 2,7   | 6,0  | 40,5 | 69,7 |
| 83        | 0009   | B        | 0,7 | 2,1   | 12,0 | 46,5 | 75,7 |

# Push Back Probes

Centers\* 4,00 mm/157 mil

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| VF4  | 10,0 A  | -20°...+80°C | <30 mOhm    |

\* depend on chosen diameter

## Threaded Probe for Push Back Test

### VF4

The VF4 is available with standard tip styles and various spade heads. By probe mounting with the different types of receptacles, additional operating functions can be realised.

- HVF4: standard receptacle
- HVF4SH: receptacle with switching function
- HVF4SHAT: airtight receptacle with switching function
- HVF4DS: spacer (5,7 mm)

In combination with the receptacle the probe becomes twist proof. All receptacles are with solder connection.

#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 5,0 |
| Maximum:    | 5,5 |

| Spring Force (N ±20%) |                 |
|-----------------------|-----------------|
| Nominal Force:        | 3 5 10 15 20 25 |
| Preload:              | 0,8 1 3 3 3 3   |

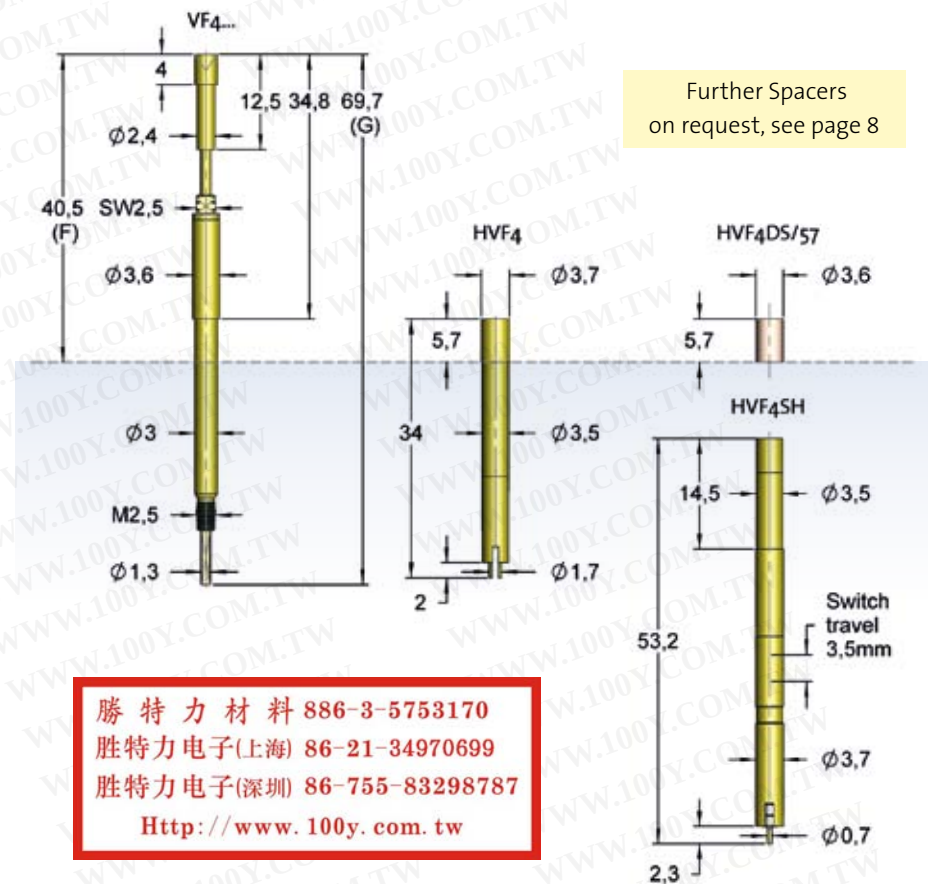
#### Switching Receptacle

##### HVF4SH / HVF4SHAT

|                 |              |
|-----------------|--------------|
| Switch travel:  | 3,5 ± 0,2 mm |
| Switch current: | max. 1 A     |

#### Materials and Plating

- Plunger: see Tip Styles
- Barrel: Brass, Gold plated
- Spring: Music wire, Gold plated
- Receptacle: Brass, Gold plated



Further Spacers  
on request, see page 8

AIRTIGHT

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

#### Drill Size (mm)

| Material                | VF4         | HVF4, HVF4SHAT |
|-------------------------|-------------|----------------|
| EP 105 (CEM1, Trolitax) | 2,97 - 2,99 | 3,48-3,49      |
| HGW 2372.1 (FR4)        |             |                |

#### VF4 | Tip Style, Material, Plating, Tip- Ø (mm)

| Type                                                                                                                                                                               | Tip-Ø                     | Spring Force (N) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------|
| VF4                                                                                                                                                                                | 17 B 300 G 25             |                  |
|                                                                                                                                                                                    | Tip Style Material Finish |                  |
| <b>Material:</b> B = BeCu, S = Steel<br><b>Tip-Ø:</b> 300 = 3,00 mm (e.g.)<br><b>Finish:</b> G = Gold, L = Longtime Gold plated<br><b>Receptacle:</b> Order-Code according drawing |                           |                  |
| <b>ORDER EXAMPLE</b>                                                                                                                                                               |                           |                  |

|                                        |                                              |                                                           |                             |                                              |
|----------------------------------------|----------------------------------------------|-----------------------------------------------------------|-----------------------------|----------------------------------------------|
|                                        |                                              |                                                           |                             |                                              |
| <b>05 BeCu; G</b><br>Ø 2,5 / 3,0 / 4,0 | <b>06 BeCu; G</b><br>Ø 2,4 / 3,0 / 4,0 / 4,8 | <b>11 BeCu; G</b><br>Ø 1,75 / 1,8 / 2,0 / 2,3 / 3,0 / 3,7 | <b>14 Steel; L</b><br>Ø 3,0 | <b>16 BeCu; G</b><br>Ø 1,4 / 1,8 / 2,0 / 2,3 |
|                                        |                                              |                                                           |                             |                                              |
| <b>SP-Version</b><br>see page 78       | <b>17 BeCu; G</b><br>Ø 3,0 / 4,0             | <b>Special Version</b><br>see page 78                     |                             |                                              |

# Push Back Probes



Centers 4,00 mm/157 mil

| Type | Current | Temperature  | R typically |
|------|---------|--------------|-------------|
| VF4  | 10,0 A  | -20°...+80°C | <30 mOhm    |

## Standard Verrastnadel 157 mil

### VF4

The VF4 is available with standard tip styles and various spade heads. By probe mounting with the different types of receptacles, additional operating functions can be realised.

- HVF4: standard receptacle
- HVF4SH: receptacle with switching function
- HVF4SHAT: airtight receptacle with switching function
- HVF4DS: spacer (5,7 mm)

In combination with the receptacle the probe becomes twist proof. All receptacles are with solder connection.

### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 5,0 |
| Maximum:    | 5,5 |

| Spring Force (N ±20%) |                 |
|-----------------------|-----------------|
| Nominal Force:        | 3 5 10 15 20 25 |
| Preload:              | 0,8 1 3 3 3 3   |

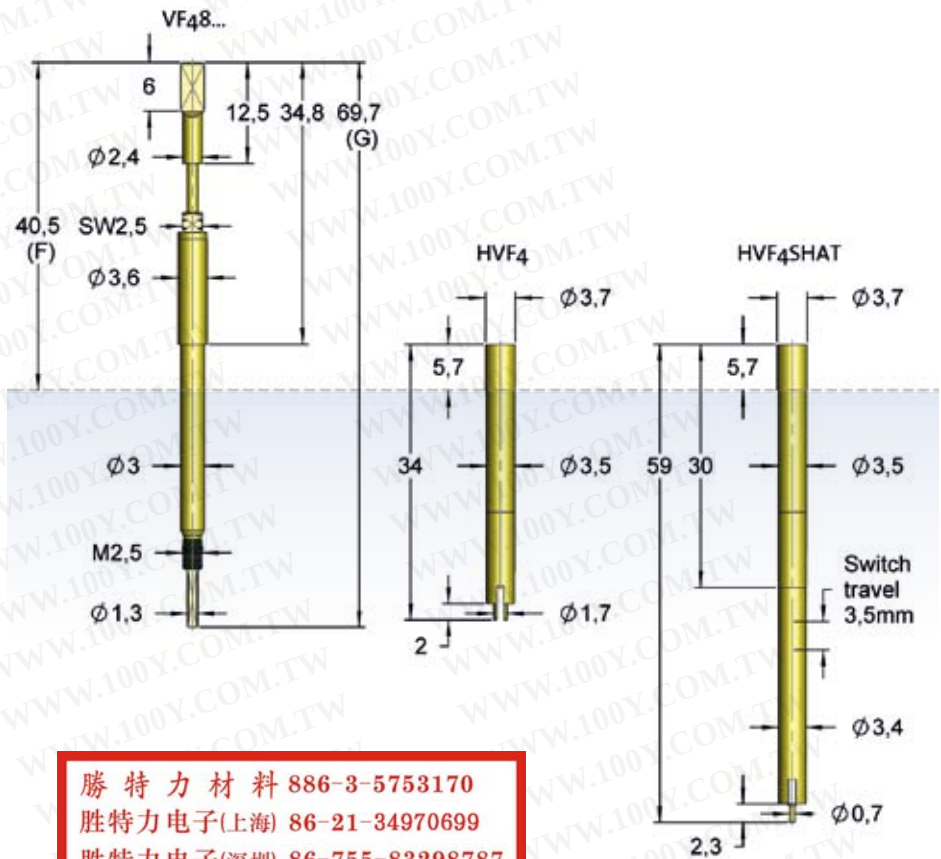
### Switching Receptacle

#### HVF4SH / HVF4SHAT

|                 |              |
|-----------------|--------------|
| Switch travel:  | 3,5 ± 0,2 mm |
| Switch current: | max. 1 A     |

### Materials and Plating

- Plunger: see Tip Styles
- Barrel: Brass, Gold plated
- Spring: Music wire, Gold plated
- Receptacle: Brass, Gold plated



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

**ATTENTION:**  
 Solder Temperature  
 maximum 300 °C

### Drill Size (mm)

| Material                | VF4         | HVF4, HVF4SHAT |
|-------------------------|-------------|----------------|
| EP 105 (CEM1, Trolitax) | 2,97 - 2,99 | 3,48-3,49      |
| HGW 2372.1 (FR4)        |             |                |

### VF4 | Tip Style, Material, Plating, Tip- Ø (mm)



|            |            |            |
|------------|------------|------------|
| 81 BeCu; G | 83 BeCu; G | 86 BeCu; G |
|------------|------------|------------|

| Tip Style | Number | A    | B (Ø) | C    | D   | E   | F    | G    |
|-----------|--------|------|-------|------|-----|-----|------|------|
| 81        | 0001   | 0,8  | 2     | 6    | -   | -   | 40,5 | 69,7 |
| 83        | 0001   | 0,8  | 2,5   | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0002   | 0,8  | 3,0   | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0003   | 1,6  | 2,25  | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0004   | 1,6  | 3,0   | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0005   | 1,8  | 2,25  | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0006   | 0,6  | 2,5   | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0007   | 1,3  | 2,25  | 16,0 | -   | -   | 50,5 | 79,7 |
| 83        | 0008   | 1,4  | 2,25  | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0009   | 1,3  | 2,2   | 6,0  | -   | -   | 40,5 | 69,7 |
| 83        | 0010   | 0,8  | 2,5   | 12,0 | -   | -   | 46,5 | 75,7 |
| 86        | 0001   | 0,5  | 3,2   | 7,7  | 1,5 | 3,2 | 42,0 | 71,2 |
| 86        | 0002   | 0,65 | 2,7   | 12,5 | 5,0 | 3,0 | 40,5 | 69,7 |

| Type                                                                                                                                | Number         | Spring Force (N) |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|
| VF4                                                                                                                                 | 17 B 0001 G 25 |                  |
|                                                                                                                                     | Tip Style      | Material         |
|                                                                                                                                     |                | Finish           |
| <b>Material:</b> B = BeCu<br><b>Number:</b> see table<br><b>Finish:</b> G = Gold<br><b>Receptacle:</b> Order-Code according drawing |                |                  |
| <b>ORDER EXAMPLE</b>                                                                                                                |                |                  |

| Type | Current | Temperature  | R <sub>typically</sub> |
|------|---------|--------------|------------------------|
| V03  | 8,0 A   | -20°...+80°C | <30 mOhm               |

## Plug-in Push Back Probe with Switching Function

### V03

**NEW**

The V03 is a low cost push back probe with integrated switch. The probe is not twist proof and available with standard tip styles only (no spade heads).

#### Mechanical Specifications

Switch Travel 3,5 ± 0,2 mm

#### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 5,0 |
| Maximum: | 6,0 |

#### Spring Force (N ±20%)

|                |    |
|----------------|----|
| Nominal Force: | 15 |
| Preload:       | 3  |

#### Materials and Plating

Plunger: see Tip Styles

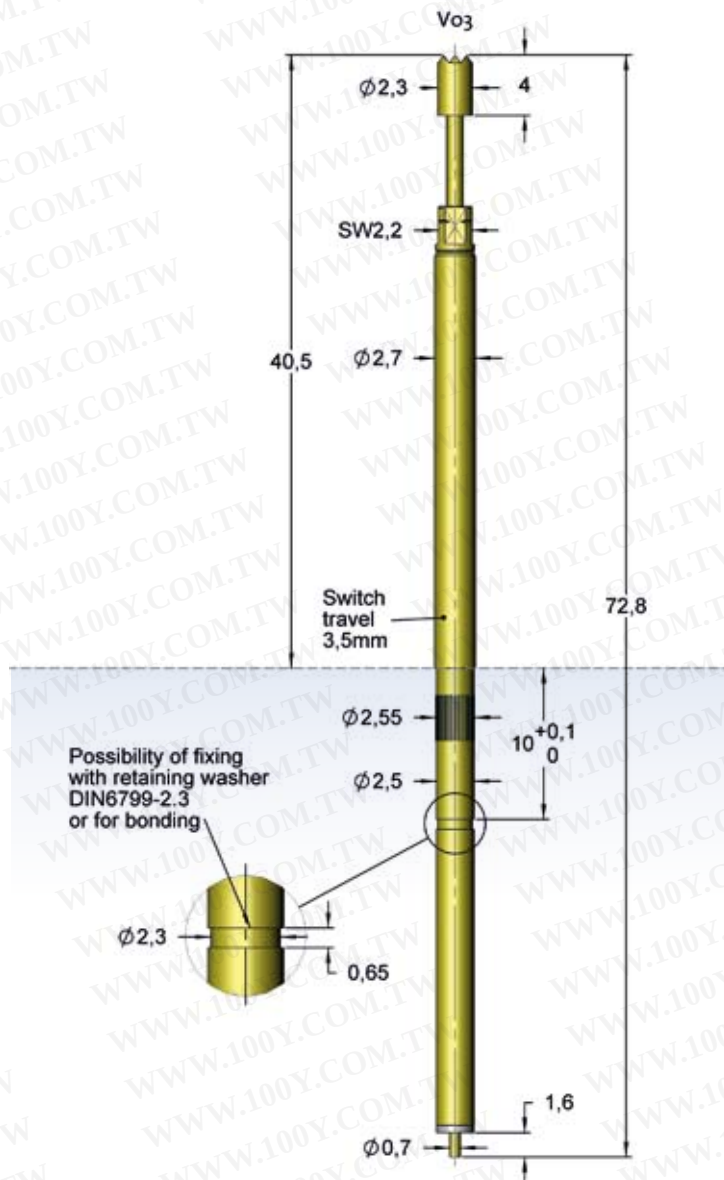
Barrel: Brass, Gold plated

Spring: Music wire, Gold plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,50-2,52    |
| HGW 2372.1 (FR4)        |              |

**ATTENTION:**  
Solder Temperature  
maximum 300 °C



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type          | Tip-Ø                     | Spring Force (N) |
|---------------|---------------------------|------------------|
| V03           | 06 B 230                  | G 15             |
|               | Tip Style Material Finish |                  |
| Material:     | B = BeCu                  |                  |
| Tip-Ø:        | 230 = 2,30 mm (e.g.)      |                  |
| Finish:       | G = Gold                  |                  |
| ORDER EXAMPLE |                           |                  |

#### V03 | Tip Style, Material, Plating, Tip- Ø (mm)



06 BeCu; G  
Ø 2,30

17 BeCu; G  
Ø 2,30

# High Current Probes



Centers F310: 1,90 mm/75 mil  
Centers F320: 2,54 mm/100 mil

| Type | Current | Temperature   | R typically |
|------|---------|---------------|-------------|
| F310 | 8,0 A   | -40°...+250°C | <15 mOhm    |
| F320 | 15,0 A  | -40°...+250°C | <10 mOhm    |

## With continuous Plunger Plug-in Version

### F310/F320

Due to the continuous plunger the internal probe resistance is very low. These probes are suitable for low resistance measurements and are able to carry high current in relation to the relatively small probe diameter. The rigid plunger is useful as actuator for switches and sensors. For electrical connection a flexible cable will be directly crimped or soldered at the probe. It has to be taken care, that the cable connected to the continuous plunger has sufficient room to move.

#### Mechanical Specifications

| Travel (mm)            | F310 | F320 |
|------------------------|------|------|
| Nominal:               | 2,4  | 3,2  |
| Maximum:               | 3,0  | 4,0  |
| Spring Force (cN ±20%) | F310 | F320 |
| Nominal Force:         | 90   | 130  |
| Preload:               | 40   | 50   |

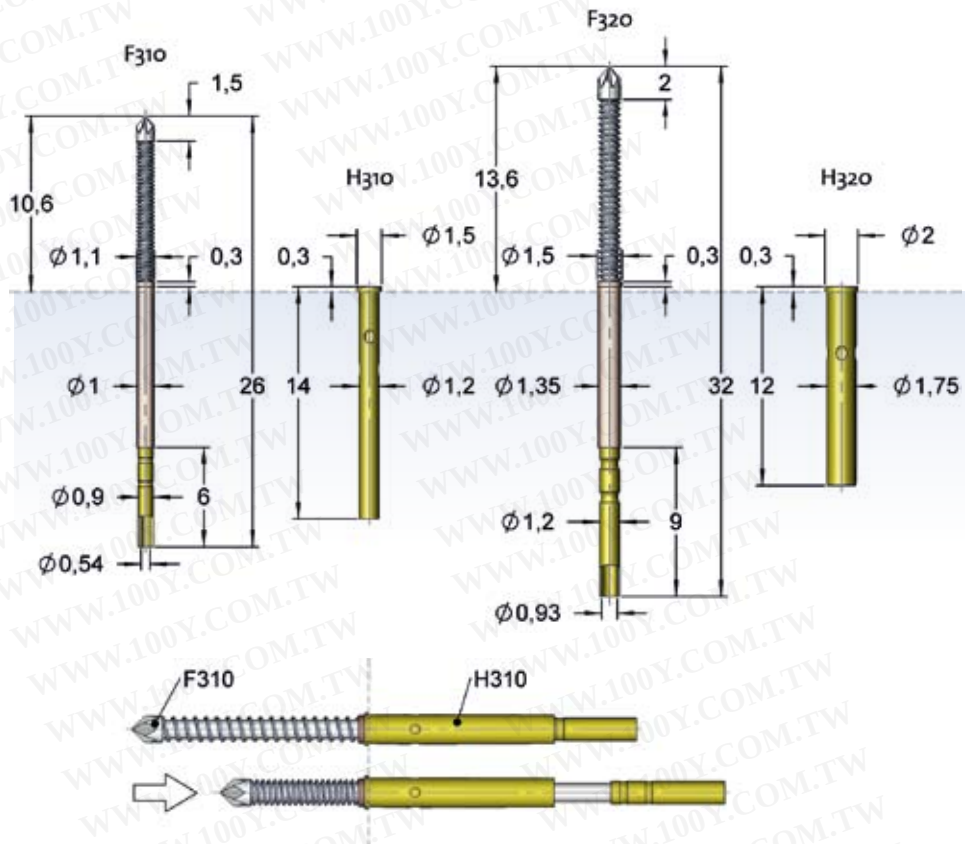
Pointing Accuracy:  
F310/F320: ± 0,1 mm

#### Recommended Connecting Cable:

F310: stranded wire 0,20 mm²  
F320: stranded wire 0,52 mm²

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Bronze, Gold plated  
Spring: stainless steel, unplated  
Receptacle: Bronze, Gold plated



#### Drill Size (mm)

| Material                | H310      | H320      |
|-------------------------|-----------|-----------|
| EP 105 (CEM1, Trolitax) | 1,19-1,20 | 1,74-1,75 |
| HGW 2372.1 (FR4)        |           |           |

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### F310 | Tip Style, Material, Plating, Tip- Ø (mm)

|                          |                          |                          |                          |                        |
|--------------------------|--------------------------|--------------------------|--------------------------|------------------------|
|                          |                          |                          |                          |                        |
| 02 Steel; L<br>Ø 1,10    | 04 Steel; L; N<br>Ø 1,10 | 05 Steel; L; N<br>Ø 1,10 | 07 Steel; L; N<br>Ø 1,10 | 08 Steel; L;<br>Ø 1,10 |
|                          |                          |                          |                          |                        |
| 09 Steel; L; N<br>Ø 1,10 | 14 Steel; L; N<br>Ø 1,10 |                          |                          |                        |

#### F320 | Tip Style, Material, Plating, Tip- Ø (mm)

|                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                          |                          |                          |                          |                          |
| 02 Steel; L<br>Ø 1,35    | 04 Steel; L; N<br>Ø 1,35 | 05 Steel; L; N<br>Ø 1,35 | 07 Steel; L; N<br>Ø 1,35 | 08 Steel; L; N<br>Ø 1,35 |
|                          |                          |                          |                          |                          |
| 09 Steel; L; N<br>Ø 1,35 | 12 Steel; L<br>Ø 1,35    | 14 Steel; L; N<br>Ø 1,35 |                          |                          |

| Type        | Tip-Ø                                   | Spring Force |
|-------------|-----------------------------------------|--------------|
| F 310       | 04 S 110                                | L 090        |
| Tip Style   | Material                                | Finish       |
| Material:   | S = Steel                               |              |
| Tip-Ø:      | 110 = 1,10 mm (e.g.)                    |              |
| Finish:     | L = Longtime Gold plated,<br>N = Nickel |              |
| Receptacle: | Order-Code according drawing            |              |

ORDER EXAMPLE

# High Current Probes

Centers F330: 3,00 mm/118 mil  
Centers F340\*: 3,50 mm/138 mil

| Type | Current | Temperature   | R typically |
|------|---------|---------------|-------------|
| F330 | 16,0 A  | -40°...+250°C | <11 mOhm    |
| F340 | 20,0 A  | -40°...+250°C | <6 mOhm     |

\* depend on chosen diameter

## With continuous Plunger Plug-in Version

### F330/F340

Due to the continuous plunger the internal probe resistance is very low. These probes are suitable for low resistance measurements and are able to carry high current in relation to the relatively small probe diameter. These probes are very robust and the rigid plunger is useful as actuator for switches and sensors. For electrical connection a flexible cable will be directly crimped or soldered at the probe. It has to be taken care, that the cable connected to the continuous plunger has sufficient room to move.

#### Mechanical Specifications

| Travel (mm) | F330 | F340 |
|-------------|------|------|
| Nominal:    | 5,6  | 6,4  |
| Maximum:    | 7,0  | 8,0  |

#### Spring Force F330 (cN ±20%)

|                |     |
|----------------|-----|
| Nominal Force: | 210 |
| Preload:       | 60  |

#### Spring Force F340 (cN ±20%)

|                |     |     |     |     |
|----------------|-----|-----|-----|-----|
| Nominal Force: | 210 | 260 | 400 | 540 |
| Preload:       | 60  | 80  | 150 | 300 |

Pointing Accuracy:  
F330/F340: ± 0,1 mm

#### Recommended Connecting Cable:

F330: stranded wire 1,7 mm<sup>2</sup>

F340: stranded wire 2,5 mm<sup>2</sup>

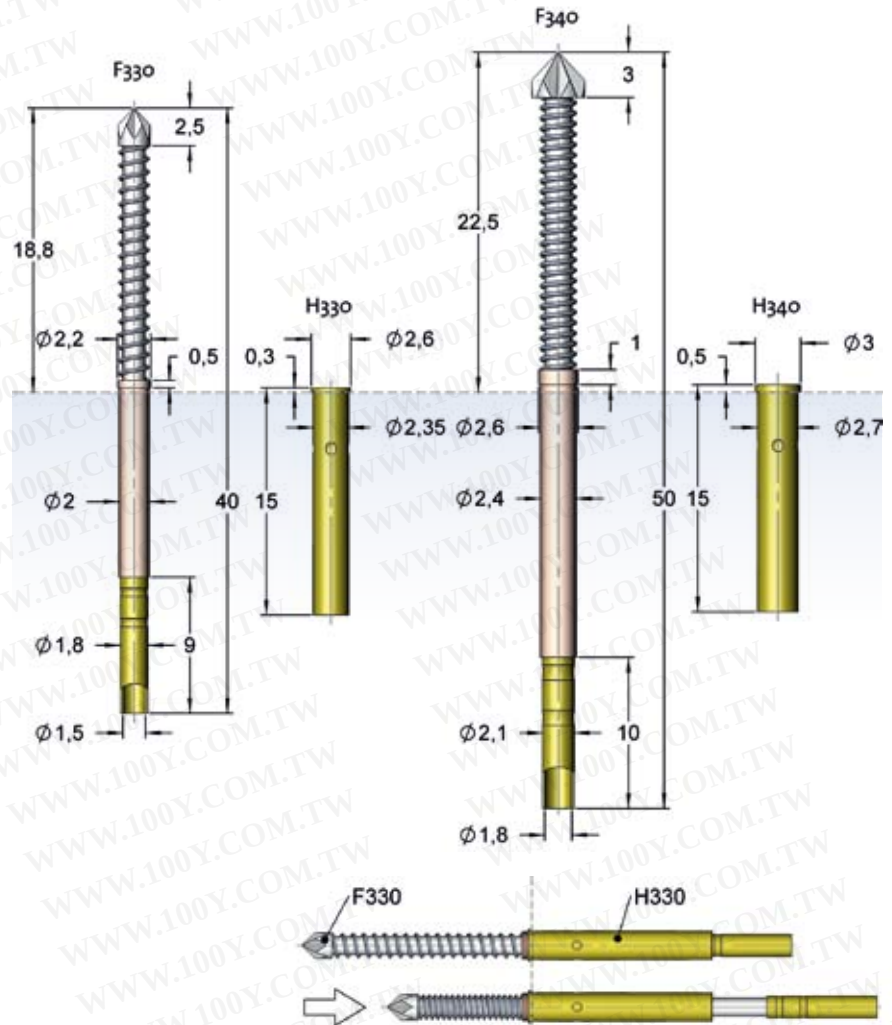
#### Materials and Plating

Plunger: see Tip Styles

Barrel: Bronze, Gold plated

Spring: stainless steel, unplated

Receptacle: Bronze, Gold plated



#### Drill Size (mm)

| Material                | H330      | H340      |
|-------------------------|-----------|-----------|
| EP 105 (CEM1, Trolitax) | 2,33-2,34 | 2,68-2,69 |
| HGW 2372.1 (FR4)        |           |           |

#### F330 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                        |                                 |                                 |                                 |                                 |
|----------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                                        |                                 |                                 |                                 |                                 |
| <b>02 Steel; L; N</b><br>Ø 2,10 / 3,50 | <b>05 Steel; L; N</b><br>Ø 2,10 | <b>06 BeCu; N</b><br>Ø 2,10     | <b>07 Steel; L; N</b><br>Ø 2,10 | <b>08 Steel; L; N</b><br>Ø 2,10 |
|                                        |                                 |                                 |                                 |                                 |
| <b>09 Steel; L; N</b><br>Ø 2,10        | <b>12 Steel; N</b><br>Ø 2,10    | <b>14 Steel; L; N</b><br>Ø 2,10 | <b>17 Steel; L; N</b><br>Ø 2,10 |                                 |

#### F340 | Tip Style, Material, Plating, Tip- Ø (mm)

|                                 |                                 |                             |                                 |                                 |
|---------------------------------|---------------------------------|-----------------------------|---------------------------------|---------------------------------|
|                                 |                                 |                             |                                 |                                 |
| <b>04 Steel; N</b><br>Ø 3,50    | <b>05 Steel; L; N</b><br>Ø 3,50 | <b>05 AgNi; U</b><br>Ø 3,00 | <b>07 Steel; L; N</b><br>Ø 3,50 | <b>08 Steel; L; N</b><br>Ø 3,50 |
|                                 |                                 |                             |                                 |                                 |
| <b>09 Steel; L; N</b><br>Ø 3,50 | <b>14 Steel; L</b><br>Ø 3,50    | <b>17 AgNi; U</b><br>Ø 3,00 |                                 |                                 |

| Type                                                                 | Tip-φ    | Spring Force |
|----------------------------------------------------------------------|----------|--------------|
| F330                                                                 | 05 S 210 | L 210        |
| Tip Style                                                            | Material | Finish       |
| <b>Material:</b> B = BeCu, S = Steel,<br>A = AgNi (Silver alloy)     |          |              |
| <b>Tip-φ:</b> 210 = 2,10 mm (e.g.)                                   |          |              |
| <b>Finish:</b> L = Longtime Gold plated,<br>N = Nickel, U = unplated |          |              |
| <b>Receptacle:</b> Order-Code according drawing                      |          |              |
| <b>ORDER EXAMPLE</b>                                                 |          |              |

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

# High Current Probes



Centers: 2,54 mm/100 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F732...C | 20,0 A  | -40°...+250°C | <10 mOhm    |

## Threaded Probe 100 mil

### F732...C

The high current probe F732...C is mainly used at burn-in / run-in test and for functional test with high level AC- or DC-current.

For demanding applications like disconnecting at active potential or for high level of vibrations, FEINMETALL is providing suitable probe heads made of a specific silver alloy. This material is minimising welding or burning effects at the probe tip contact surface. For different projection heights, receptacles with various collar heights are available.

| Receptacle         | projection height |
|--------------------|-------------------|
| H732LAS1 /H732LARD | 0,2 mm            |
| H732LARD/5         | 5,0 mm            |
| H732LARD/10        | 10,0 mm           |

Closing the hole at the solder cup by solder, the receptacle becomes airtight.

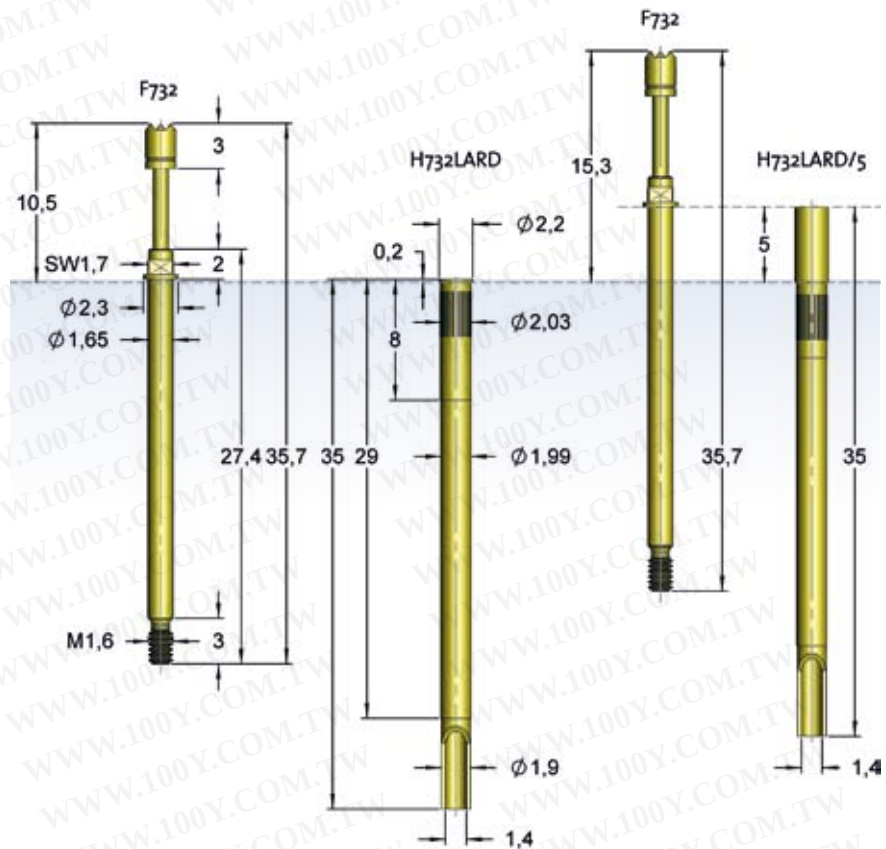
#### Mechanical Specifications

| Travel (mm)            |     |     |
|------------------------|-----|-----|
| Nominal:               | 4,0 |     |
| Maximum:               | 5,0 |     |
| Spring Force (cN ±20%) |     |     |
| Nominal Force:         | 150 | 300 |
| Preload:               | 50  | 50  |

Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: stainless steel, unplated  
Receptacle: Brass, Gold plated



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 2,00-2,02     | 1,99-2,00        |
| HGW 2372.1 (FR4)        |               |                  |

#### F732...C | Tip Style, Material, Plating, Tip- Ø (mm)

| Type                                               | Tip-Ø    | Spring Force |
|----------------------------------------------------|----------|--------------|
| F732                                               | 06 B 200 | G 300 C      |
| Tip Style Material Finish Special Version          |          |              |
| <b>Material:</b> B = BeCu, A = AgNi (Silver alloy) |          |              |
| <b>Tip-Ø:</b> 200 = 2,00 mm (e.g.)                 |          |              |
| <b>Finish:</b> G = Gold, U = unplated              |          |              |
| <b>Special Version:</b> C = High Current Version   |          |              |
| <b>Receptacle:</b> Order-Code according drawing    |          |              |
| <b>ORDER EXAMPLE</b>                               |          |              |

|                      |                      |                             |                      |                                    |
|----------------------|----------------------|-----------------------------|----------------------|------------------------------------|
|                      |                      |                             |                      |                                    |
| 05 AgNi; U<br>Ø 2,00 | 05 BeCu; G<br>Ø 2,00 | 06 BeCu; G<br>Ø 1,80 / 2,00 | 07 BeCu; G<br>Ø 1,75 | 11 BeCu; G<br>Ø 0,65 / 0,80 / 1,00 |
|                      |                      |                             |                      |                                    |
| 12 AgNi; U<br>Ø 2,00 | 16 BeCu; G<br>Ø 1,00 |                             |                      |                                    |

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F772...C | 20,0 A  | -40°...+250°C | <10 mOhm    |

## Plug-in Probe 100 mil for various applications

### F772 ... C

The F772...C is a high current version of the standard ICT/FCT Probe F772. Due to the press ring, the receptacles H772 can be adjusted at variable height to achieve the requested projection height for the probe. For receptacle mounting please use the insertion tool FEWZ (see Tools/Accessories). The receptacles H772LAS1 has a collar for a fix projection height and tight seat. All Receptacles are available with either Wire-Wrap-, Crimp- or Solder-Connection.

#### Mechanical Specifications

##### Travel (mm)

|          |     |
|----------|-----|
| Nominal: | 4,0 |
| Maximum: | 5,0 |

##### Spring Force (cN ±20%)

|                |     |     |
|----------------|-----|-----|
| Nominal Force: | 150 | 300 |
| Preload:       | 50  | 50  |

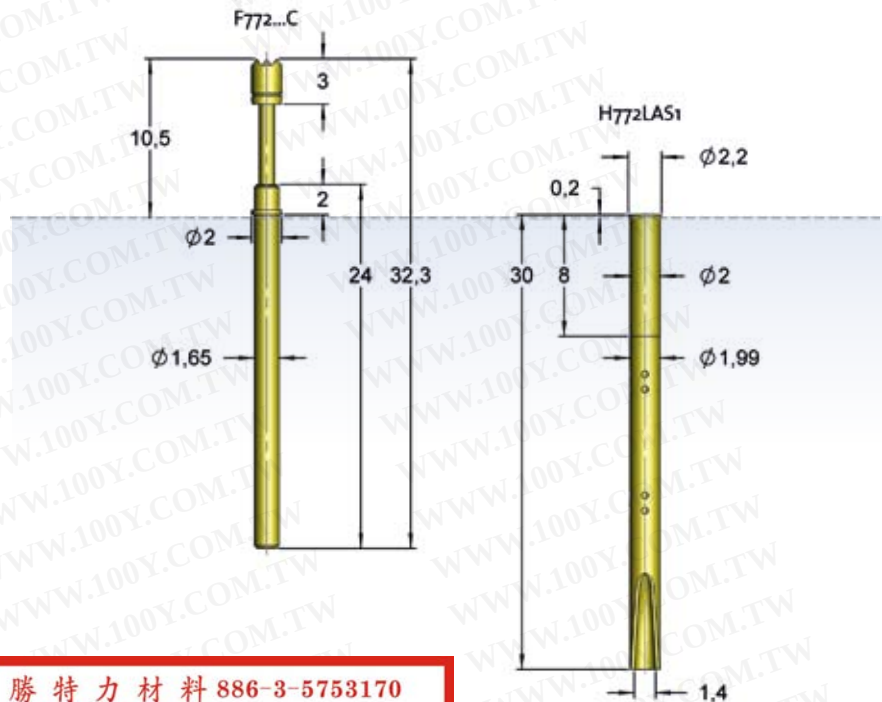
Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

|              |                           |
|--------------|---------------------------|
| Plunger:     | see Tip Styles            |
| Barrel:      | Brass, Gold plated        |
| Spring:      | stainless steel, unplated |
| Receptacles: | Brass, Gold plated        |

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,99 - 2,00  |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

#### F772...C | Tip Style, Material, Plating, Tip- Ø (mm)

| Type             | Tip-Ø                        | Spring Force           |
|------------------|------------------------------|------------------------|
| F772             | 06 B 200                     | G 300 C                |
| Tip Style        | Material                     | Finish Special Version |
| Material:        | B = BeCu, S = Steel          |                        |
| Tip-Ø:           | A = AgNi (Silver alloy)      |                        |
| Finish:          | 200 = 2,00 mm (e.g.)         |                        |
|                  | G = Gold, L = Longtime Gold, |                        |
|                  | U = unplated                 |                        |
| Special Version: | C = High Current Version     |                        |
| Receptacle:      | Order-Code according drawing |                        |
| ORDER EXAMPLE    |                              |                        |

|                      |                              |                      |                      |                             |
|----------------------|------------------------------|----------------------|----------------------|-----------------------------|
| 05 AgNi; U<br>Ø 2,00 | 05 BeCu; G<br>Ø 2,00         | 06 BeCu; G<br>Ø 2,00 | 07 BeCu; G<br>Ø 1,75 | 11 BeCu; G<br>Ø 0,80 / 1,00 |
| 14 BeCu; G<br>Ø 1,30 | 14 Steel; L<br>Ø 1,30 / 2,00 | 16 BeCu; G<br>Ø 1,00 |                      |                             |

# High Current Probes



Centers: 3,50 mm/138 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F773...C | 26,0 A  | -40°...+250°C | <8 mOhm     |

## Robust Probe up to 26 A Plug-in version

### F773...C

The high current probe F773...C is mainly used at burn-in / run-in test and for functional test with high level AC- or DC-current.

For demanding applications like disconnecting at active potential or for high level of vibrations, FEINMETALL is providing suitable probe heads made of a specific silver alloy. This material is minimising welding or burning effects at the probe tip contact surface. The mounting is made with the receptacle H773LA with solder cup. The receptacle has a 0,2 mm thin collar, providing a fix projection height.

#### Mechanical Specifications

| Travel (mm) |     |
|-------------|-----|
| Nominal:    | 4,0 |
| Maximum:    | 5,0 |

| Spring Force (cN ±20%) |     |     |
|------------------------|-----|-----|
| Nominal Force:         | 150 | 300 |
| Preload:               | 60  | 60  |

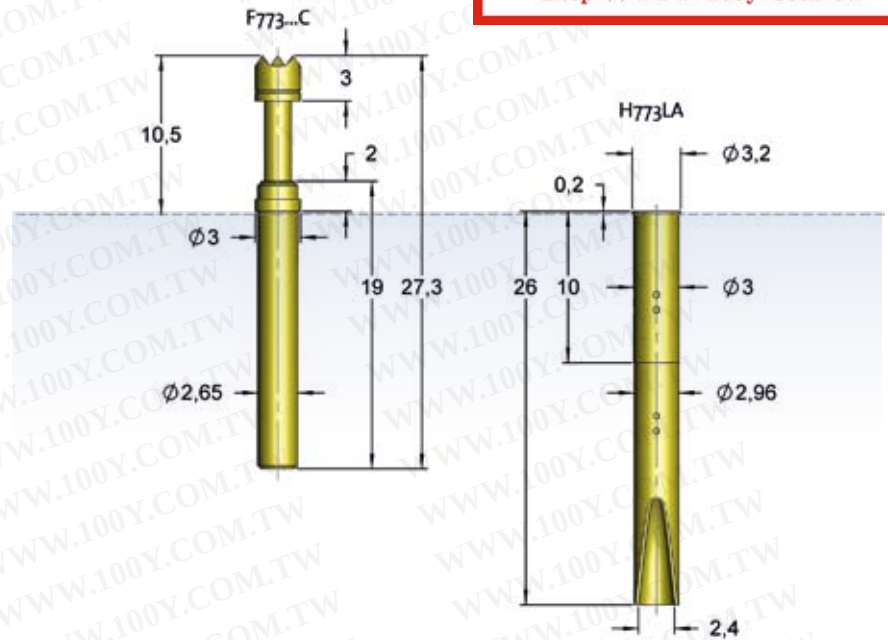
Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Bronze, Gold plated  
Spring: stainless steel, unplated  
Receptacle: Bronze, Gold plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

#### F773...C | Tip Style, Material, Plating, Tip-Ø (mm)

| Type             | Tip-Ø                                | Spring Force           |
|------------------|--------------------------------------|------------------------|
| F773             | 06 B 300                             | G 300 C                |
| Tip Style        | Material                             | Finish Special Version |
| Material:        | B = BeCu,<br>A = AgNi (Silver alloy) |                        |
| Tip-Ø:           | 300 = 3,00 mm (e.g.)                 |                        |
| Finish:          | G = Gold,<br>U = unplated            |                        |
| Special Version: | C = High Current Version             |                        |
| Receptacle:      | Order-Code according drawing         |                        |
| ORDER EXAMPLE    |                                      |                        |

|                      |                                              |                             |                      |                      |
|----------------------|----------------------------------------------|-----------------------------|----------------------|----------------------|
|                      |                                              |                             |                      |                      |
| 05 AgNi; U<br>Ø 3,00 | 06 BeCu; G<br>Ø 1,80 / 2,30 /<br>3,00 / 4,00 | 07 BeCu; G<br>Ø 3,00        | 11 BeCu; G<br>Ø 1,40 | 12 BeCu; G<br>Ø 2,30 |
|                      |                                              |                             |                      |                      |
| 12 AgNi; U<br>Ø 3,00 | 16 BeCu; G<br>Ø 1,00 / 1,80                  | 17 BeCu; G<br>Ø 2,30 / 4,00 |                      |                      |

# High Current Probes

Centers: 4,00 mm/157 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F733...C | 26,0 A  | -40°...+250°C | <8 mOhm     |

## Threaded Probe 157 mil robust, up to 26 A

### F733 ... C

The high current probe F733...C is mainly used at burn-in / run-in test and for functional test with high level AC- or DC-current. For demanding applications like disconnecting at active potential or for high level of vibrations, FEINMETALL is providing suitable probe heads made of a specific silver alloy. This material is minimising welding or burning effects at the probe tip contact surface. The mounting is made with the receptacle H733LAS1 or H733LARD with knurling. Closing the hole at the solder cup by solder, the receptacle becomes airtight.

#### Mechanical Specifications

| Travel (mm)            |     |     |
|------------------------|-----|-----|
| Nominal:               | 4,0 |     |
| Maximum:               | 5,0 |     |
| Spring Force (cN ±20%) |     |     |
| Nominal Force:         | 150 | 300 |
| Preload:               | 60  | 60  |

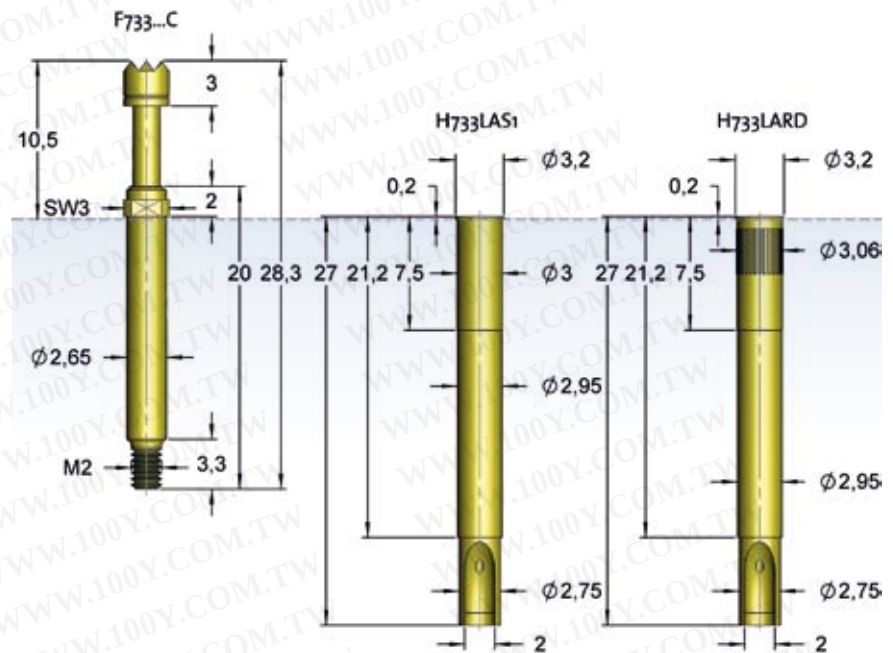
Pointing Accuracy: ± 0,08 mm

#### Materials and Plating

Plunger: see Tip Styles  
Barrel: Brass, Gold plated  
Spring: stainless steel, unplated  
Receptacle: Brass, Gold plated

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 3,00-3,02     | 2,98-2,99        |
| HGW 2372.1 (FR4)        |               |                  |



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

AIRTIGHT

#### F733...C | Tip Style, Material, Plating, Tip- Ø (mm)

| Type                              | Tip-Ø | Spring Force |
|-----------------------------------|-------|--------------|
| F733                              | 06 B  | 300 G        |
|                                   | 300   | 300 C        |
| Material:                         |       |              |
| B = BeCu, A = AgNi (Silver alloy) |       |              |
| Tip-Ø:                            |       |              |
| 300 = 3,00 mm (e.g.)              |       |              |
| Finish:                           |       |              |
| G = Gold, U = unplated            |       |              |
| Special Version:                  |       |              |
| C = High Current Version          |       |              |
| Receptacle:                       |       |              |
| Order-Code according drawing      |       |              |
| ORDER EXAMPLE                     |       |              |

|                      |                                              |                             |                      |                      |
|----------------------|----------------------------------------------|-----------------------------|----------------------|----------------------|
|                      |                                              |                             |                      |                      |
| 05 AgNi; U<br>Ø 3,00 | 06 BeCu; G<br>Ø 1,80 / 2,30 /<br>3,00 / 4,00 | 07 BeCu; G<br>Ø 3,00        | 11 BeCu; G<br>Ø 1,40 | 12 AgNi; U<br>Ø 3,00 |
|                      |                                              |                             |                      |                      |
| 12 BeCu; G<br>Ø 2,30 | 16 BeCu; G<br>Ø 1,00 / 1,80                  | 17 BeCu; G<br>Ø 2,30 / 4,00 |                      |                      |

# High Current Probes



Centers: 4,00 mm/157 mil

| Type     | Current | Temperature   | R typically |
|----------|---------|---------------|-------------|
| F723...C | 24,0 A  | -40°...+250°C | <8 mOhm     |

## Short Travel Probe

### F723 ... C

Due to its small length the F723...C is applicable for limited space applications. The probe is very robust and able to carry up to 24 A. The receptacle H723LA with solder cup has a collar for fix projection height and proper seat.

#### Mechanical Specifications

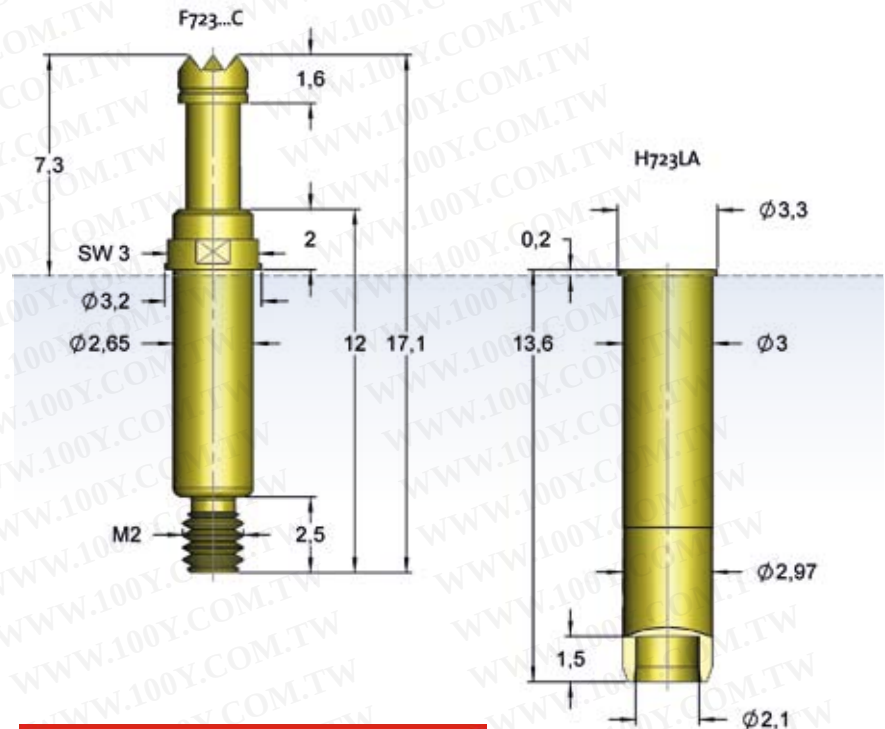
| Travel (mm)                  |     |
|------------------------------|-----|
| Nominal:                     | 2,8 |
| Maximum:                     | 3,5 |
| Spring Force (cN ±20%)       |     |
| Nominal Force:               | 80  |
| Preload:                     | 30  |
| Pointing Accuracy: ± 0,08 mm |     |

#### Materials and Plating

|             |                           |
|-------------|---------------------------|
| Plunger:    | see Tip Styles            |
| Barrel:     | Brass, Gold plated        |
| Spring:     | stainless steel, unplated |
| Receptacle: | Brass, Gold plated        |

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,98-2,99    |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                                      | Tip-Ø | Spring Force |
|-------------------------------------------|-------|--------------|
| F723                                      | 06 B  | 230          |
|                                           | G     | 080          |
|                                           | C     |              |
| Tip Style Material Finish Special Version |       |              |
| Material: B = BeCu                        |       |              |
| Tip-Ø: 230 = 2,30 mm (e.g.)               |       |              |
| Finish: G = Gold                          |       |              |
| Special Version: C = High Current Version |       |              |
| Receptacle: Order-Code according drawing  |       |              |
| ORDER EXAMPLE                             |       |              |

#### F723...C | Tip Style, Material, Plating, Tip- Ø (mm)



|                      |                      |  |  |  |
|----------------------|----------------------|--|--|--|
| 06 BeCu; G<br>Ø 2,30 | 12 BeCu; G<br>Ø 2,30 |  |  |  |
|----------------------|----------------------|--|--|--|

**Centers: 5,00 mm/197 mil**

114

# High Current Probes



Centers F351: 16,5 mm/670 mil  
Centers F352: 26,5 mm/1043 mil  
Centers F354: 32,5 mm/1280 mil

| Type | Current | Temperature   | R typically |
|------|---------|---------------|-------------|
| F351 | 100 A   | -40°...+250°C | <1 mOhm     |
| F352 | 200 A   | -40°...+250°C | <1 mOhm     |
| F354 | 400 A   | -40°...+250°C | <1 mOhm     |

## Heavy Duty Versions 100A, 200A, 400A

### F351 F352 F354

These heavy duty high current probes are applicable for very high currents, also for continuous operation. For each of the three different versions, FEINMETALL is offering the corresponding interface-pins also.

To avoid burning or welding effects at the contact area, a specific silver alloy is used.

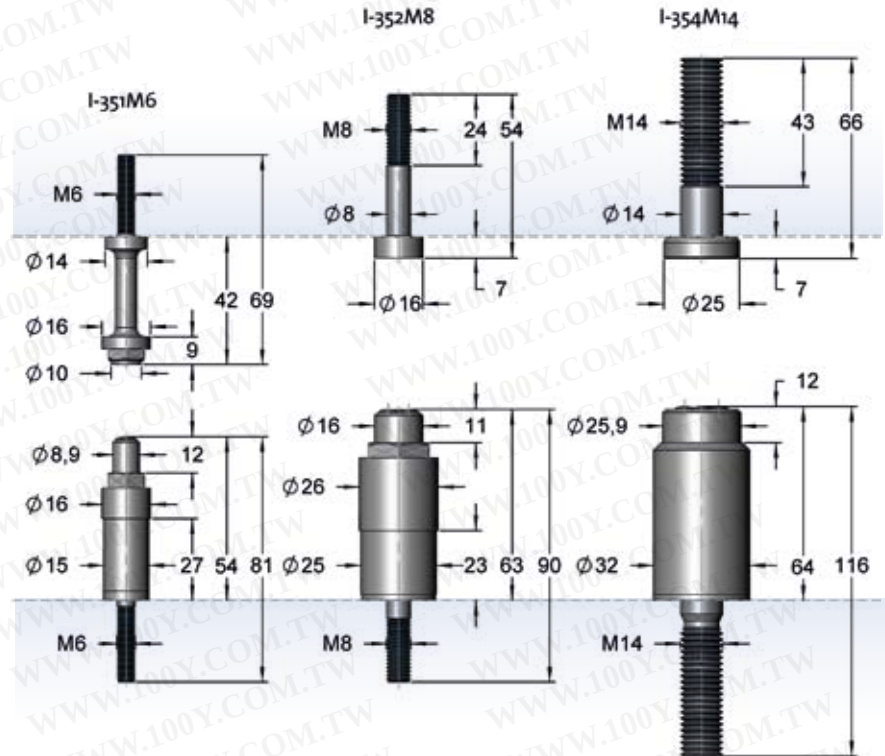
#### Mechanical Specifications

| Travel (mm) | F351 | F352 | F354 |
|-------------|------|------|------|
| Nominal:    | 7,0  | 7,0  | 7,0  |
| Maximum:    | 12,0 | 11,0 | 11,0 |

| Spring Force (cN ±20%) | F351 | F352 | F354 |
|------------------------|------|------|------|
| Nominal Force:         | 17   | 58   | 116  |
| Preload:               | 6,5  | 38   | 70   |

#### Materials and Plating

Plunger: Brass, Silver plated  
Barrel: Brass, Silver plated  
Spring: stainless steel



| Type      | Number           | Spring Force         |
|-----------|------------------|----------------------|
| F351      | 16 A 009 U 017 C |                      |
| F352      | 16 A 016 U 058 C |                      |
| F354      | 16 A 259 U 116 C |                      |
| Tip Style | Material         | Finish               |
|           |                  | High Current-Version |

ORDER CODE PROBES

#### Interface Pin

for F351 I-351M6  
for F352 I-352M8  
for F354 I-354M14

ORDER CODE INTERFACE PIN

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## 4-Wire Resistance Measurement by Kelvin Coaxial Probes

### The Kelvin Method

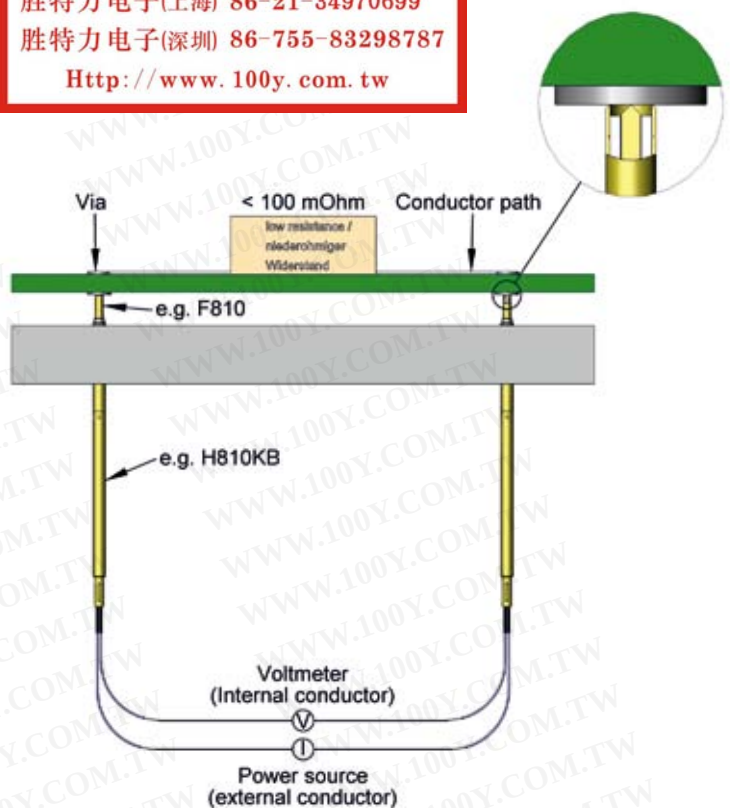
A Kelvin probe is a coaxial contact probe with two electrically insulated measuring circuits. The typical 4-wire-method is based on a constant current, flowing through the test resistance and the measurement of the resulting drop in voltage, which is directly proportional to the resistance value.

According "I=constant" and because of the very high internal resistance of the voltmeter, the cable and contact resistances are not influencing the measuring result. This leads to high accuracy of this measuring method.

The contacting for current source and voltmeter is realised by two Kelvin probes, ideally located very close to the device under test. The constant current usually is carried by the outer conductor (force signal), while the voltage drop is detected by the inner conductor (sense signal).

The inner and outer conductors of FEINMETALL Coaxial Probes are independently spring loaded in order to balance mechanical tolerances and heights.

勝 特 力 材 料 886-3-5753170  
 胜特力电子(上海) 86-21-34970699  
 胜特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



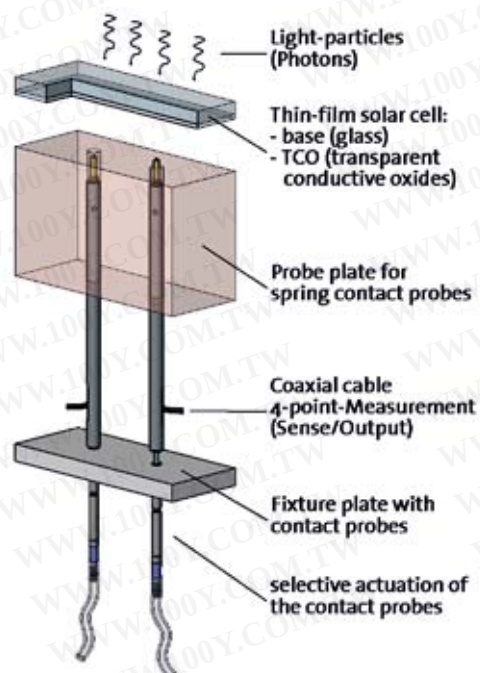
### Special Version: pneumatically driven Kelvin Probe F815

#### Contacting device for analysis of Solar Cell Modules

In cooperation with the Jülich research centre, FEINMETALL has developed a new Kelvin contact probe. In combination with an integrated pneumatic drive, it offers the possibility to contact solar cells and modules on a minimum space via sense and force (output), without any mechanical displacement of the contacting unit.

This innovative contact probe is especially suited for contacting of thin film solar cells. Further application opportunities are contacting of solar cells with rear contacts or at the test of mechanically sensible sensors.

Especially for the test and classification of solar cells, FEINMETALL is offering dedicated specific test equipment. Please contact us, we would like to support you in consulting and to provide an offer for your application.



# Coaxial Probes



Centers 2,54 mm/100 mil

| Type | Current                                            | Temperature                  |
|------|----------------------------------------------------|------------------------------|
| F810 | Circular Contact: 3,0 A<br>Internal Contact: 0,8 A | -20°...+80°C<br>-20°...+80°C |

## Kelvin Probe, plug-in

### F810

The F810 is the finest Kelvin Probe at FEINMETALL Probe Portfolio. For mounting the standard receptacle H810 or the combi receptacle H810KB can be used. The combi receptacle will be delivered with 500 mm coax cable (LSM50) assembled.

The H810KB allows solder less replacement of the probes, which saves time and cost in case of maintenance.

The electrical connection at the probe pin is made with the connecting element H810AE.

A special Kelvin probe version for contacting wire-wrap pins (0,64 mm) is offered as F81001S040L230S1.

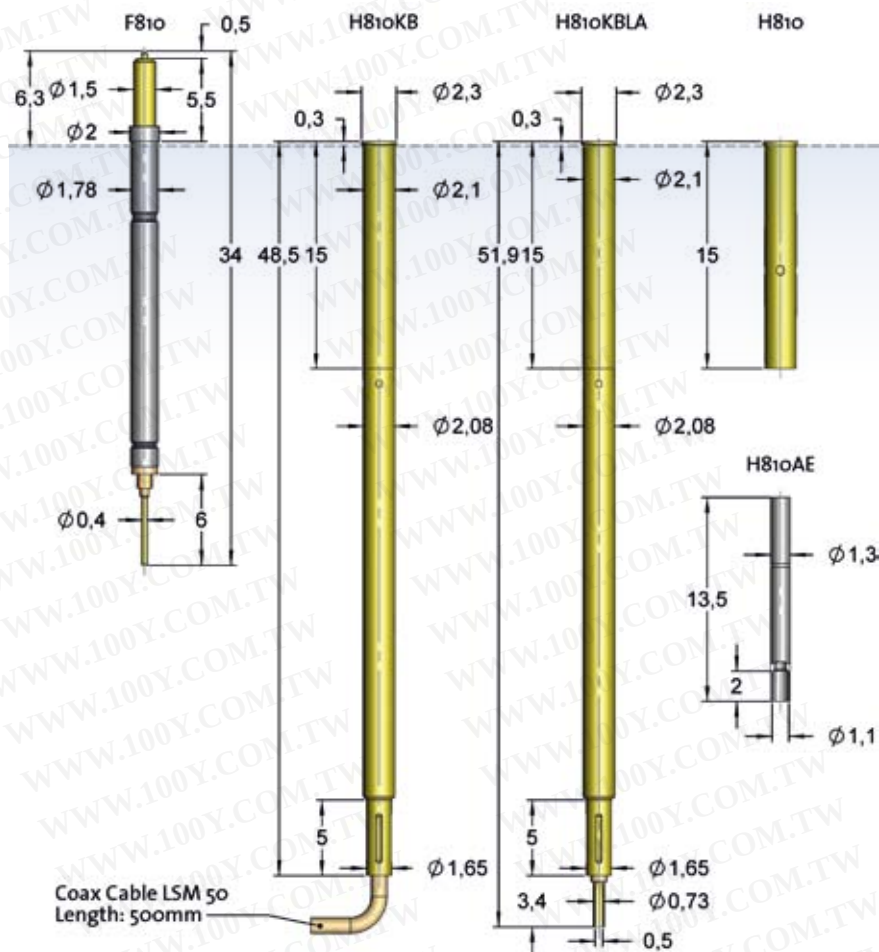
#### Mechanical Specifications

| Travel (mm) | Internal Contact | Ring Contact |
|-------------|------------------|--------------|
| Nominal:    | 2,8              | 2,3          |
| Maximum:    | 4,0              | 3,5          |

| Spring Force (cN ±20%)       | Internal Contact | Ring Contact |
|------------------------------|------------------|--------------|
| Nominal Force:               | 70               | 100          |
| Preload:                     | 30               | 40           |
| Total Spring Force:          | 170 cN           |              |
| Special Version F810 ... S1: | 230 cN           |              |

#### Materials and Plating

|                   |                             |
|-------------------|-----------------------------|
| Internal Contact: | Steel, Longtime Gold plated |
| Circular Contact: | BeCu, Gold plated           |
| Barrel:           | Bronze, Gold plated         |
| Spring:           | Music wire, Silver plated   |
| Receptacle:       | Bronze, Gold plated         |
| H810AE:           | Brass, Gold plated          |

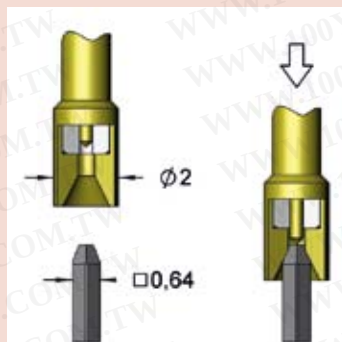


#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 2,08-2,09    |
| HGW 2372.1 (FR4)        |              |

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



**Special Version**  
**Kelvin Probe for**  
**contacting wire-**  
**wrap-pins**

Order Code:  
F81001S040L230S1

| Type                    | Tip-Ø                                              | Spring Force |
|-------------------------|----------------------------------------------------|--------------|
| F810                    | 01 S 040 L 170 S1                                  |              |
|                         | Tip Style Material Finish Special Version          |              |
| <b>Material:</b>        | S = Steel                                          |              |
| <b>Tip-Ø:</b>           | 040 = 0,40 mm (e.g.)                               |              |
| <b>Finish:</b>          | L = Longtime Gold plated                           |              |
| <b>Special Version:</b> | S1 = Version for contacting wire-wrap-pins 0,64 mm |              |
| <b>Receptacle:</b>      | Order-Code according drawing                       |              |

ORDER EXAMPLE

#### F810 | Tip Style, Material, Plating, Tip- Ø (mm)



11 Steel; L  
Ø 0,40

16 Steel; L  
Ø 0,40

| Type | Current                                            | Temperature  |
|------|----------------------------------------------------|--------------|
| F830 | Circular Contact: 5,0 A<br>Internal Contact: 1,0 A | -20°...+80°C |

## Kelvin Probe, plug-in F830

The F830 is a plug in Kelvin probe with various tip styles.

The electrical connection of the outer circuit (circular contact) is made by soldering a cable to the probe.

The inner contact is connected by plug-in the connecting element H810AE to the probe pin.

### Mechanical Specifications

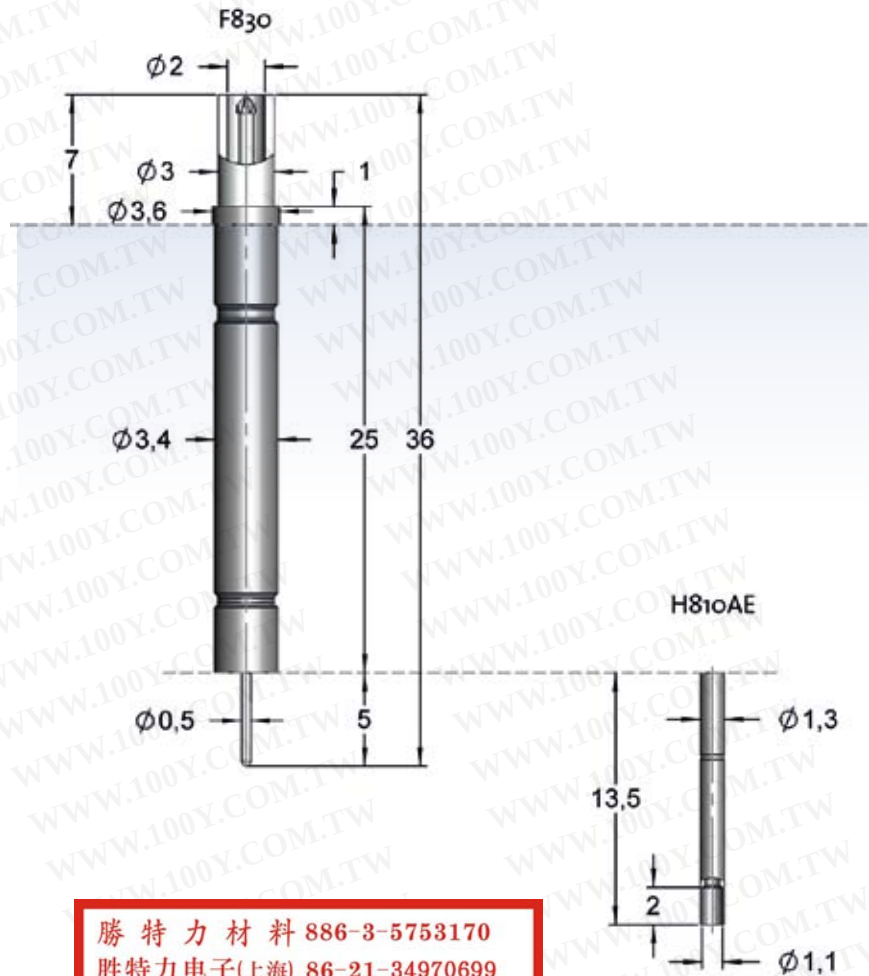
| Travel (mm)                | Internal Contact | Circular Contact |
|----------------------------|------------------|------------------|
| Nominal:                   | 4,0              | 4,0              |
| Maximum:                   | 4,2              | 4,2              |
| Spring Force (cN ±20%)     | Internal Contact | Circular Contact |
| Nominal Force:             | 160              | 160              |
| Preload:                   | 60               | 60               |
| Total Spring Force: 320 cN |                  |                  |

### Materials and Plating

Internal Contact: Steel, Nickel plated  
Circular Contact: BeCu, Nickel plated  
Barrel: Bronze, Silver plated  
Spring: Music wire, Silver plated  
Connecting Element: Brass, Gold plated

### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 3,39-3,40    |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type          | Tip-Ø                     | Spring Force |
|---------------|---------------------------|--------------|
| F830          | 07 S 100 N 320            |              |
|               | Tip Style Material Finish |              |
| Material:     | S = Steel                 |              |
| Tip-Ø:        | 100 = 1,00 mm (e.g.)      |              |
| Finish:       | N = Nickel                |              |
| ORDER EXAMPLE |                           |              |

### F830 | Tip Style, Material, Plating, Tip- Ø (mm)

|                       |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|-----------------------|
|                       |                       |                       |                       |
| 02 Steel; N<br>Ø 1,00 | 07 Steel; N<br>Ø 1,00 | 09 Steel; N<br>Ø 1,00 | 17 Steel; N<br>Ø 1,00 |

# Coaxial Probes



Centers 5,50 mm/217 mil

| Type     | Current                                            | Temperature  |
|----------|----------------------------------------------------|--------------|
| F820     | Circular Contact: 6,0 A<br>Internal Contact: 1,6 A | -20°...+80°C |
| F820...H | Circular Contact: 6,0 A<br>Internal Contact: 1,6 A | -20°...+80°C |

## Kelvin Probe, plug-in

### F820

The F820 is a standard Kelvin probe for a wide field of applications. A high temperature version is available. The F820 has similar dimensions than F821 and F822 and differs in projection height.

The mounting is possible with plug-in receptacle H820 or with threaded receptacle H831RD, with knurling for tight seat. The electrical connection to the probe pin is made by the connecting element H820AE.

With the combi receptacle H831KB, a solder less replacement of the probes is possible. The electrical connection at the H831KB is made with the pluggable connecting element H820AE1 or H820AE2, assembled with 600 mm coax cable RG174.

#### Mechanical Specifications

| Travel (mm) | Internal Contact | Circular Contact |
|-------------|------------------|------------------|
| Nominal:    | 3,0              | 2,0              |
| Maximum:    | 3,5              | 2,5              |

| Spring Force (cN ±20%) | Internal Contact | Circular Contact |
|------------------------|------------------|------------------|
| Nominal Force:         | 200              | 450              |
| Preload:               | 100              | 300              |

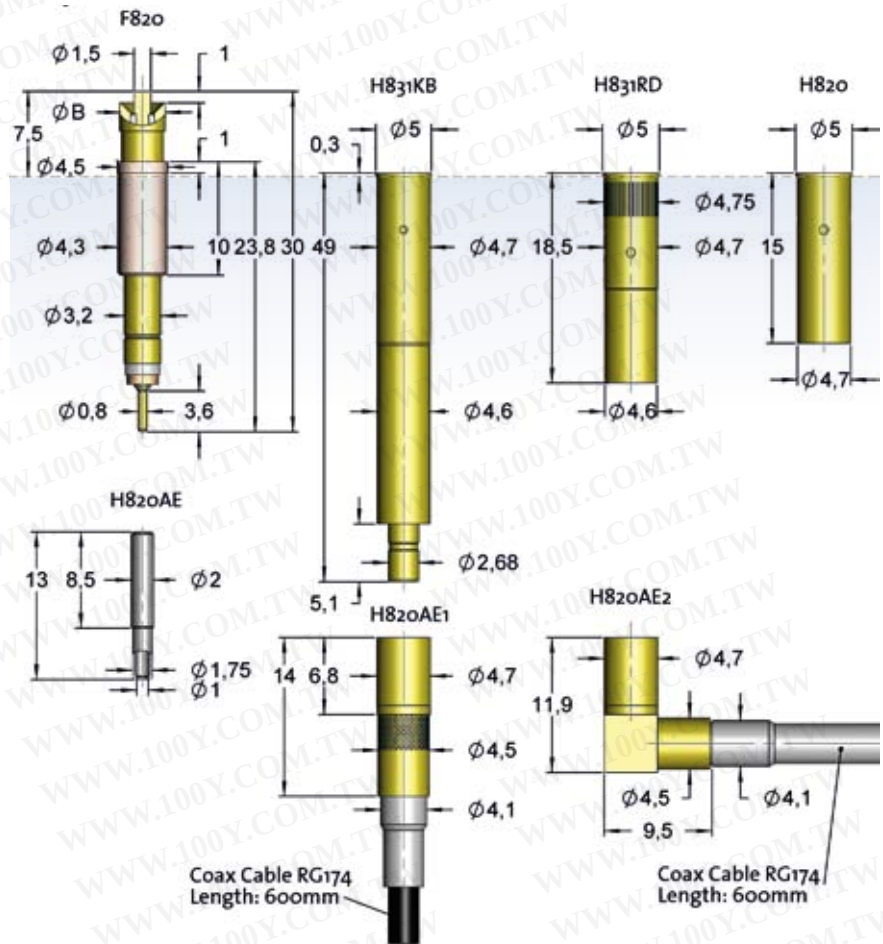
Total Spring Force: 650 cN

#### Materials and Plating

Internal Contact: Steel,  
Longtime Gold plated  
Circular Contact: BeCu, Gold plated  
Barrel: Bronze, unplated  
Spring: Music wire, Silver plated  
Receptacle: Bronze, Gold plated  
Connecting Element: Brass, Gold plated

| Type             | Tip-φ                                     | Spring Force |
|------------------|-------------------------------------------|--------------|
| F820             | 02 S 150 L 650 H                          |              |
|                  | Tip Style Material Finish Special Version |              |
| Material:        | S = Steel                                 |              |
| Tip-φ:           | 150 = 1,50 mm (e.g.)                      |              |
| Finish:          | L = Longtime Gold plated                  |              |
| Special Version: | H = High Temperature Version              |              |
| Receptacle:      | Order-Code according drawing              |              |

ORDER EXAMPLE



**ATTENTION:**  
Solder Temperature  
maximum 300 °C

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

#### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 4,70-4,72     | 4,68-4,69        |
| HGW 2372.1 (FR4)        |               |                  |

#### F820 | Tip Style, Material, Plating, Tip- φ (mm)



|                       |                       |                       |
|-----------------------|-----------------------|-----------------------|
| 02 Steel; L<br>φ 1,50 | 09 Steel; L<br>φ 1,50 | 17 Steel; L<br>φ 1,50 |
|-----------------------|-----------------------|-----------------------|

## Coaxial Probes

勝特力材料 886-3-5753170  
勝特力電子(上海) 86-21-34970699  
勝特力電子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**Centers 5,50 mm/217 mil**

| Type     | Current                                            | Temperature   |
|----------|----------------------------------------------------|---------------|
| F821     | Circular Contact: 6,0 A<br>Internal Contact: 1,6 A | -20°...+80°C  |
| F821...H | Circular Contact: 6,0 A<br>Internal Contact: 1,6 A | -40°...+250°C |

## Kelvin Probe, plug-in

# F821

The F820 is a standard Kelvin probe with pointed and semicircular tip styles for selective contacting. A high temperature version is available. The mounting is possible with plug-in receptacle H820 or with threaded receptacle H831RD, with knurling for tight seat. The electrical connection to the probe pin is made by the connecting element H820AE. With the combi receptacle H831KB, a solder less replacement of the probes is possible. The electrical connection at the H831KB is made with the pluggable connecting element H820AE1 or H820AE2, assembled with 600 mm coax cable RG174.

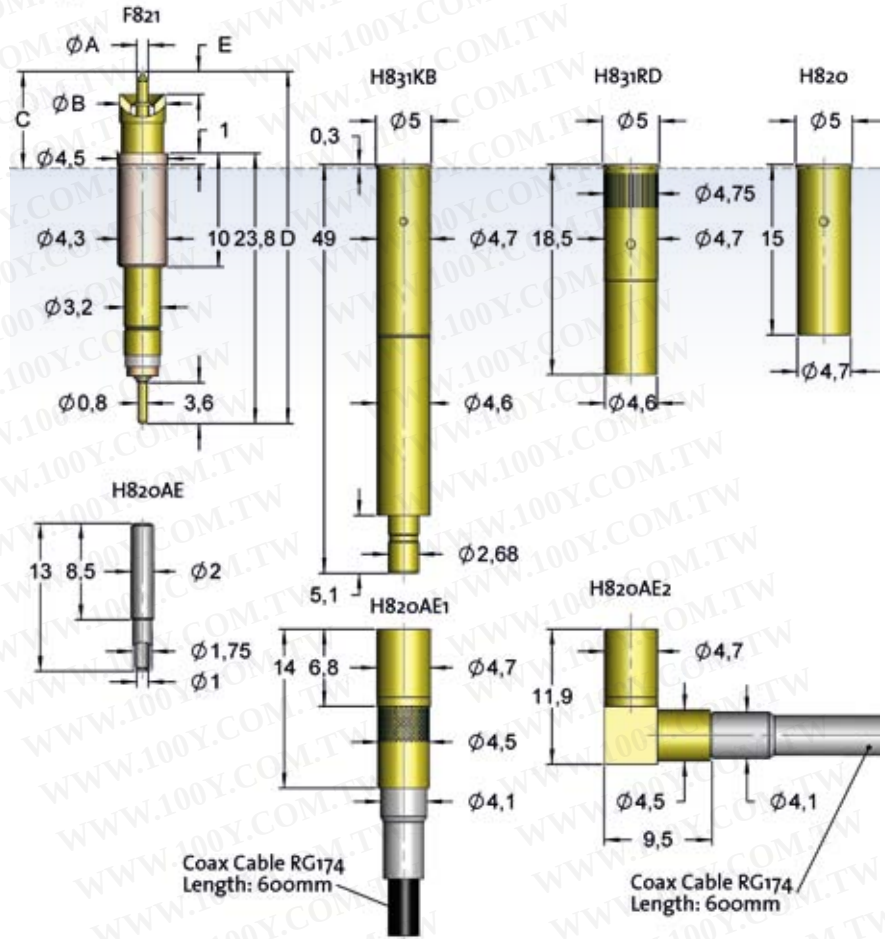
## Mechanical Specifications

| <b>Travel (mm)</b> | <b>Internal Contact</b> | <b>Circular Contact</b> |
|--------------------|-------------------------|-------------------------|
| Nominal:           | 3,0                     | 2,0                     |
| Maximum:           | 3,5                     | 2,5                     |

| <b>Spring Force</b><br>(N $\pm$ 20%) | Internal<br>Contact | Circular<br>Contact |
|--------------------------------------|---------------------|---------------------|
| Nominal Force:                       | 200                 | 450                 |
| Preload:                             | 100                 | 300                 |
| Total Spring Force: 650 cN           |                     |                     |

## Materials and Plating

Internal Contact: Steel,  
Longtime Gold plated  
Circular Contact: BeCu, Gold plated  
Barrel: Bronze, unplated  
Spring: Music wire, Silver plated  
Receptacle: Bronze, Gold plated  
Connecting Element: Brass, Gold plated



**Drill Size (mm)**

| Material                                    | with<br>knurling | without<br>knurling |
|---------------------------------------------|------------------|---------------------|
| EP 105 (CEM1, Trolitax)<br>HWG 2372.1 (FR4) | 4,70-4,72        | 4,68-4,69           |

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

**F821 | Tip Style, Material, Plating, Tip- Ø (mm)**



|                                   |                                   |                                   |  |  |
|-----------------------------------|-----------------------------------|-----------------------------------|--|--|
| <b>02 Steel; L</b><br>ø see table | <b>03 Steel; L</b><br>ø see table | <b>11 Steel; L</b><br>ø see table |  |  |
|-----------------------------------|-----------------------------------|-----------------------------------|--|--|

| Type      | Number   | Spring Force    |
|-----------|----------|-----------------|
| F821      | 03 S     | 0001            |
| L         | 650      | H               |
| Tip Style | Material | Finish          |
|           |          | Special Version |

**Material:** S = Steel  
**Number:** see table  
**Finish:** L = Longtime Gold plated  
**Special Version:** H = High Temperature Version  
**Receptacle:** Order-Code according drawing

**ORDER EXAMPLE**

| Tip Style | Number | Ø A  | Ø B | C    | D    | E   |
|-----------|--------|------|-----|------|------|-----|
| 02        | 0001   | 0,8  | 4,0 | 8,3  | 30,8 | 1,8 |
| 03        | 0001   | 1,0  | 4,0 | 8,5  | 31,0 | 2,0 |
| 03        | 0002   | 1,0  | 4,5 | 10,0 | 32,5 | 3,5 |
| 03        | 0003   | 0,3  | 4,0 | 10,0 | 32,5 | 3,5 |
| 03        | 0004   | 1,0  | 4,5 | 8,5  | 31,0 | 2,0 |
| 03        | 0005   | 1,0  | 4,0 | 10,0 | 32,5 | 3,5 |
| 03        | 0007   | 0,5  | 4,0 | 8,5  | 31,0 | 2,0 |
| 11        | 0006   | 0,64 | 4,5 | 10,0 | 32,5 | 3,5 |

# Coaxial Probes



Centers 5,50 mm/217 mil

| Type     | Current                                            | Temperature   |
|----------|----------------------------------------------------|---------------|
| F822     | Circular Contact: 6,0 A<br>Internal Contact: 1,6 A | -20°...+80°C  |
| F822...H | Circular Contact: 6,0 A<br>Internal Contact: 1,6 A | -40°...+250°C |

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Kelvin Probe, plug-in F822

The F820 is a standard Kelvin probe with inside cone or flat tip styles for centred contacting. A high temperature version is available. The mounting is possible with plug-in receptacle H820 or with threaded receptacle H831RD, with knurling for tight seat. The electrical connection to the probe pin is made by the connecting element H820AE. With the combi receptacle H831KB, a solder less replacement of the probes is possible. The electrical connection at the H831KB is made with the pluggable connecting element H820AE1 or H820AE2, assembled with 600 mm coax cable RG174.

### Mechanical Specifications

| Travel (mm) | Internal Contact | Circular Contact |
|-------------|------------------|------------------|
| Nominal:    | 3,0              | 2,0              |
| Maximum:    | 3,5              | 2,5              |

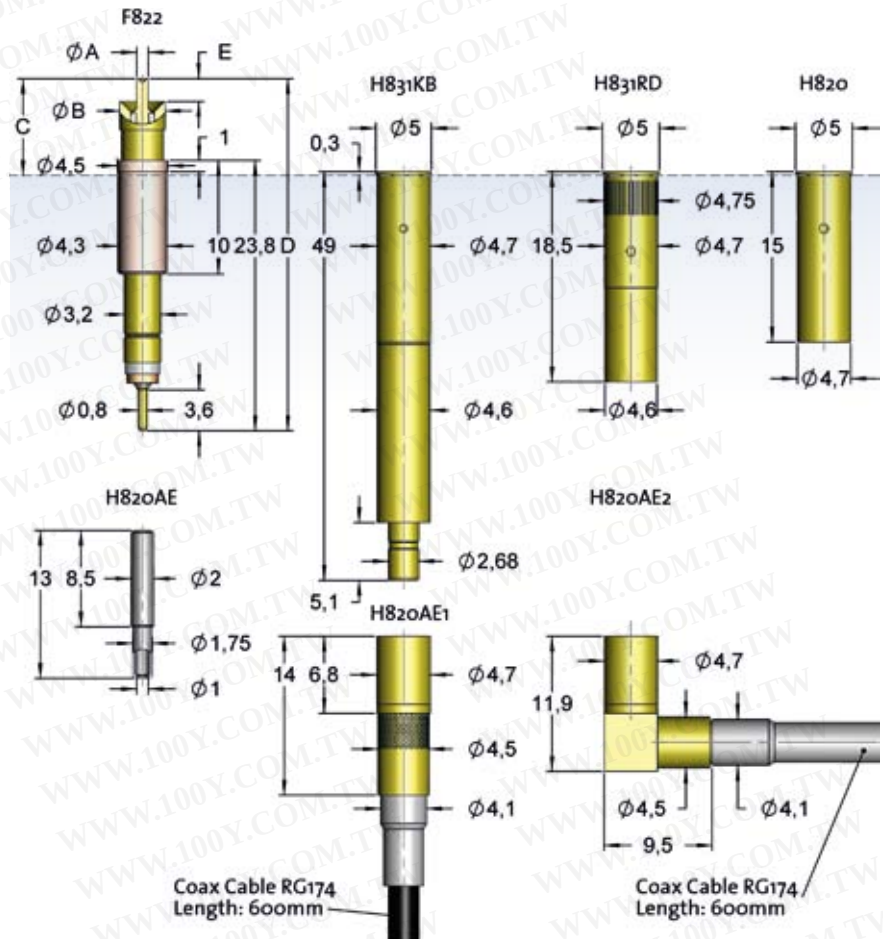
| Spring Force (cN ±20%) | Internal Contact | Circular Contact |
|------------------------|------------------|------------------|
| Nominal Force:         | 200              | 450              |
| Preload:               | 100              | 300              |
| Total Spring Force:    | 650 cN           |                  |

### Materials and Plating

Internal Contact: Steel,  
Longtime Gold plated  
Circular Contact: BeCu, Gold plated  
Barrel: Bronze, unplated  
Spring: Music wire, Silver plated  
Receptacle: Bronze, Gold plated  
Connecting Element: Brass,  
Gold plated

| Type             | Number                       | Spring Force |
|------------------|------------------------------|--------------|
| F822             | 05 S 0001                    | L 650 H      |
| Tip Style        | Material                     | Finish       |
| Material:        | S = Steel                    | see table    |
| Number:          | see table                    |              |
| Finish:          | L = Longtime Gold plated     |              |
| Special Version: | H = High Temperature Version |              |
|                  | IK = Insulating cap          |              |
| Receptacle:      | Order-Code according drawing |              |

ORDER EXAMPLE



**ATTENTION:**  
Solder Temperature  
maximum 300 °C

### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 4,70-4,72     | 4,68-4,69        |
| HGW 2372.1 (FR4)        |               |                  |

| Tip Style | Number | Ø A  | Ø B | C    | D    | E   |
|-----------|--------|------|-----|------|------|-----|
| 05        | 0001   | 1,0  | 4,0 | 8,5  | 31,0 | 2,0 |
| 05        | 0003   | 1,0  | 4,5 | 8,5  | 31,0 | 2,0 |
| 05        | 0005   | 1,5  | 4,0 | 11,0 | 33,5 | 4,5 |
| 17        | 0002   | 1,5  | 4,0 | 11,0 | 33,5 | 4,5 |
| 17        | 0004   | 1,5  | 4,5 | 11,0 | 34,0 | 4,5 |
| 17        | 0006   | 0,64 | 4,0 | 8,5  | 31,0 | 2,0 |

### F822 | Tip Style, Material, Plating, Tip- Ø (mm)



|                            |                              |                            |
|----------------------------|------------------------------|----------------------------|
| 05 Steel; L<br>ø see table | 05 IK-Version<br>see page 27 | 17 Steel; L<br>ø see table |
|----------------------------|------------------------------|----------------------------|

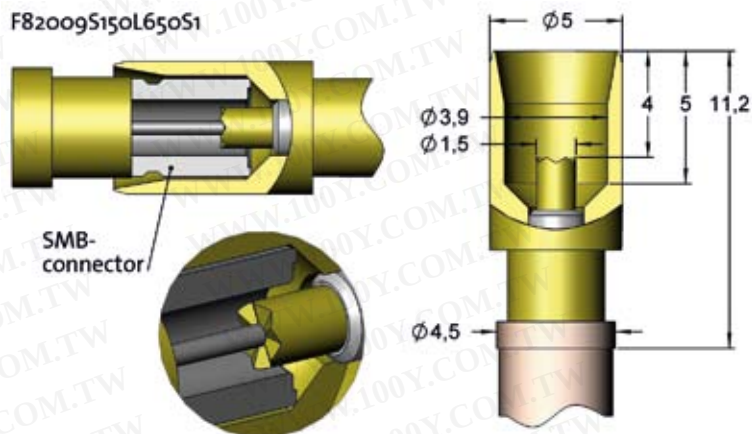
勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Special Versions of Family F82x

### For contacting SMB Connectors

This probe is designed for an optimal contacting and testing of SMB Connectors. The large inner bevel at the circular probe contact is centralising the connector for an exact contacting of the inner connector contact to the crown of the inner probe contact. Inner and outer conductor of the Kelvin probe are spring loaded. Receptacles and probe dimensions please see F820.

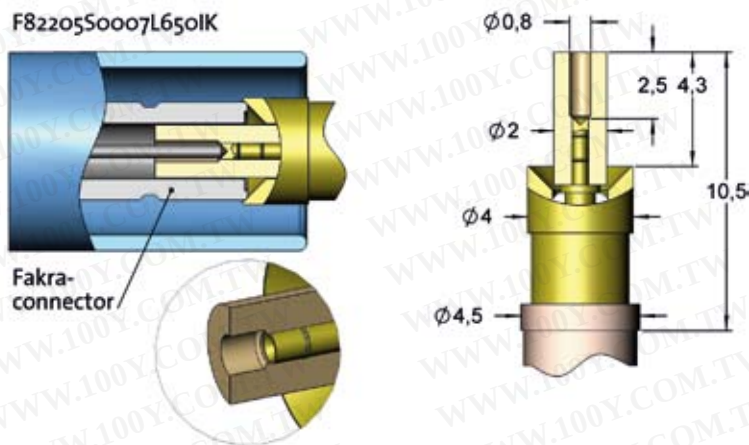
Order Code: F82009S150L650S1



### Fakra Connector Contacting Position- and Straightness Test with Insulating Cap

This probe has a leading insulating cap at the inner contact for testing position and straightness of the connector pin. Bended pins or pins with wrong position do not enter the insulating cap and are not able to contact the inner probe plunger. Inner and outer conductor of the Kelvin probe are spring loaded. Receptacles and probe dimensions please see F822.

Order Code: F82205S0007L650IK

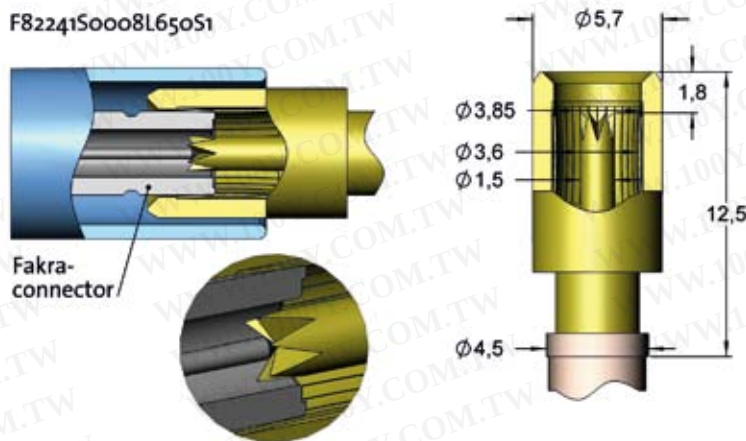


### Fakra Connector Contacting Lamella Socket for optimal Ground Contacting

This probe is provided with a bezel at the inner and outer contact to centre the connector. The connector ground contacting is securely made by a specific lamella socket, which tolerates deviations of position and angle.

Inner and outer conductor of the Kelvin probe are spring loaded. Receptacles and probe dimensions please see F822.

Order Code: F82241S0008L650S1



| Type | Current                                             | Temperature  |
|------|-----------------------------------------------------|--------------|
| F835 | Circular Contact: 10,0 A<br>Internal Contact: 2,0 A | -20°...+80°C |

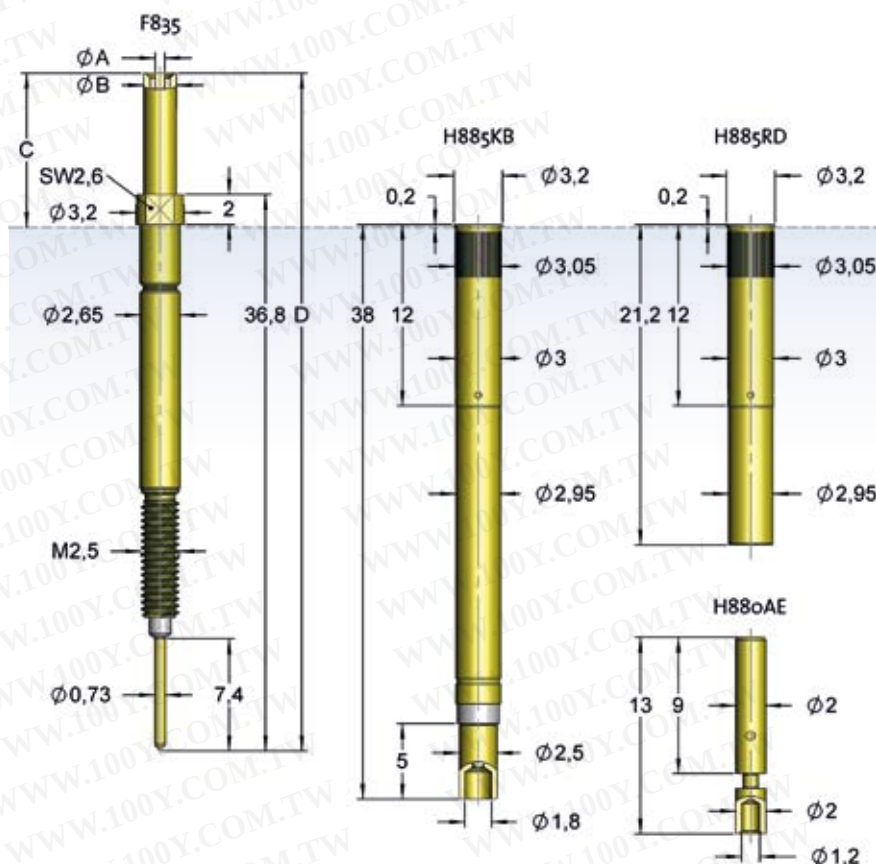
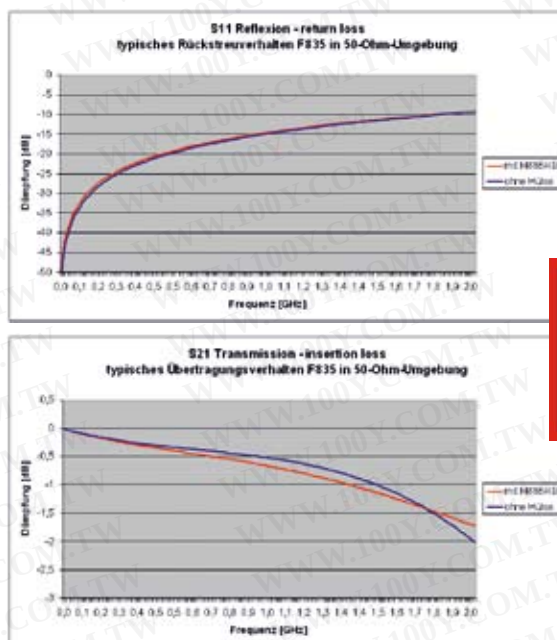


### Mechanical Specifications

| <b>Spring Force</b><br>(cN $\pm$ 20%) | Internal<br>Contact | Circular<br>Contact |
|---------------------------------------|---------------------|---------------------|
| Nominal Force:                        | 110                 | 300                 |
| Preload:                              | 20                  | 80                  |
| Total Spring Force:                   | 410                 | cN                  |

Internal Contact: BeCu, Gold plated  
Circular Contact: BeCu, Gold plated  
Barrel: Brass, Gold plated  
Spring: Music wire,  
Silver plated  
Receptacle: Brass, Gold plated

| Material                                    | with<br>knurling | without<br>knurling |
|---------------------------------------------|------------------|---------------------|
| EP 105 (CEM1, Trolitax)<br>HGW 2372.1 (FR4) | 3,00-3,02        | 2,98-2,99           |



# AIRTIGHT

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

勝特力材料 886-3-5753170  
勝特力電子(上海) 86-21-34970699  
勝特力電子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**F835 | Tip Style, Material, Plating, Tip- Ø (mm)**

**Type**                  **Number**                  **Spring Force**

F835    16 B    0001    G    410

**Tip Style**      **Material**                  **Finish**

**Material:**         B = BeCu  
**Number:**           see table  
**Finish:**             G = Gold  
**Receptacle:**     Order-Code according drawing

**ORDER EXAMPLE**

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |  |
| <b>03 BeCu; G</b><br>on request                                                     | <b>05 BeCu; G</b><br>on request                                                     | <b>09 BeCu; G</b><br>on request                                                      | <b>11 BeCu; G</b><br>on request                                                       | <b>16 BeCu; G</b><br>see table                                                        |

| Type | Tip Style | Number | ØA   | ØB   | C    | D    |
|------|-----------|--------|------|------|------|------|
| F835 | 16        | 0001   | 0,64 | 2,17 | 10,2 | 44,8 |

| Type      | Current                                            | Temperature  |
|-----------|----------------------------------------------------|--------------|
| F831/F832 | Circular Contact: 6,0 A<br>Internal Contact: 1,6 A | -20°...+80°C |

## Kelvin Probe, threaded F831 / F832

These Kelvin probes are with thread to screw into the receptacles to prevent probe ejection during operating.

The mounting is made with the receptacle H831RD. The electrical connection at the probe pin is made with the connecting element H820AE.

With the combi receptacle H831KB, a solder less replacement of the probes is possible. The electrical connection at the H831KB is made with the plugable connecting element H820AE1 or H820AE2, assembled with 600 mm coax cable RG174.

### Mechanical Specifications

| Travel (mm) | Internal Contact | Circular Contact |
|-------------|------------------|------------------|
| Nominal:    | 3,0              | 2,0              |
| Maximum:    | 3,5              | 2,5              |

| Spring Force (cN ±20%) | Internal Contact | Circular Contact |
|------------------------|------------------|------------------|
| Nominal Force:         | 200              | 450              |
| Preload:               | 100              | 300              |
| Total Spring Force:    | 650 cN           |                  |

### Materials and Plating

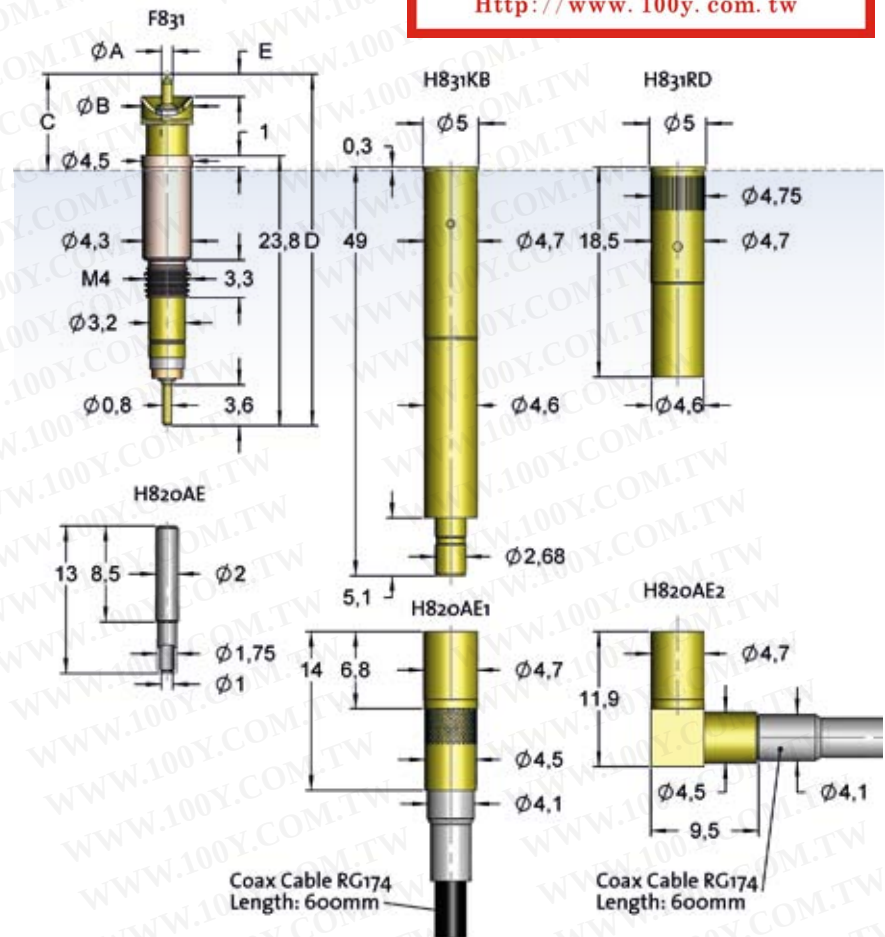
Internal Contact: Steel,  
Longtime Gold plated  
Circular Contact: BeCu, Gold plated  
Barrel: Bronze, unplated  
Spring: Music wire, Silver plated  
Receptacle: Bronze, Gold plated  
Connecting Element: Bronze, Gold plated

### Drill Size (mm)

| Material                | with knurling | without knurling |
|-------------------------|---------------|------------------|
| EP 105 (CEM1, Trolitax) | 4,70-4,72     | 4,68-4,69        |
| HGW 2372.1 (FR4)        |               |                  |

| Type                                                                                                                                                           | Number    | Spring Force |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|
| F831                                                                                                                                                           | 03 S 0001 | L 650 IK     |
| Tip Style: 03 S<br>Material: S = Steel<br>Finish: L = Longtime Gold plated<br>Special Version: IK = Insulating cap<br>Receptacle: Order-Code according drawing |           |              |

ORDER EXAMPLE



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

**ATTENTION:**  
Solder Temperature  
maximum 300 °C

### F831 | Tip Style, Material, Plating, Tip- Ø (mm)



03 Steel; L  
see table

05 Steel; L  
see table

05 IK-Version  
see page 27

17 Steel; L  
see table

| Type | Tip Style | Number | Ø A | Ø B | C    | D    | E   |
|------|-----------|--------|-----|-----|------|------|-----|
| F831 | 03        | 0001   | 1,0 | 4,0 | 8,5  | 31,0 | 2,0 |
| F831 | 03        | 0002   | 1,0 | 4,5 | 10,0 | 32,5 | 3,5 |
| F831 | 03        | 0004   | 1,0 | 4,5 | 8,5  | 31,0 | 2,0 |
| F832 | 05        | 0001   | 1,0 | 4,0 | 8,5  | 31,0 | 2,0 |
| F832 | 05        | 0003   | 1,0 | 4,5 | 8,5  | 31,0 | 2,0 |
| F832 | 17        | 0002   | 1,5 | 4,0 | 11,0 | 33,5 | 4,5 |

# Coaxial Probes

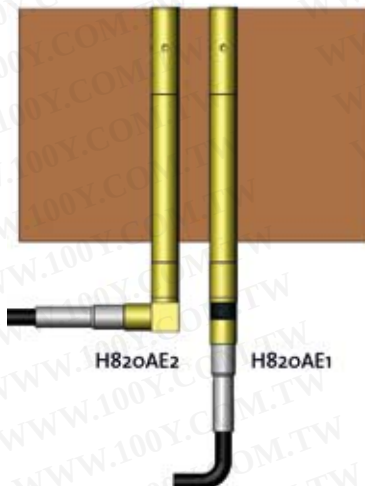
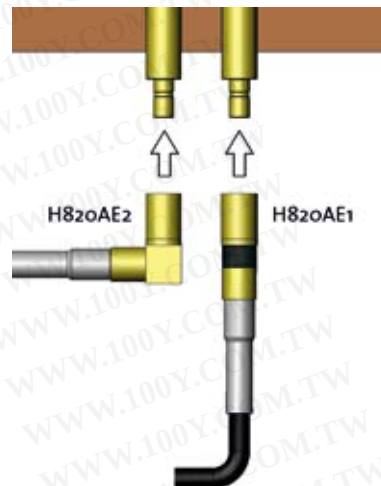


## Connecting and Mounting Notes for

## F831 / F832

### Electrical Connection for Combi Receptacle H831KB

For the connection two pluggable connecting elements with 600 mm assembled coax cable RG174 are available. The elbow connecting element H820AE2 and the straight connecting element H820AE1 are both with integrated standard SSMB plug.



### Combi Receptacle H831KB for plug-in and threaded Kelvin Probes

The receptacle H831KB is able to contain threaded probes as well as plug-in probes and allows solder less replacement of the Kelvin probe families F820/F821/F822/F831/F832. The electrical connection is made with double-pole connecting elements with coax cable.



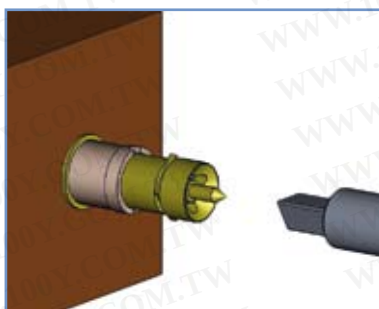
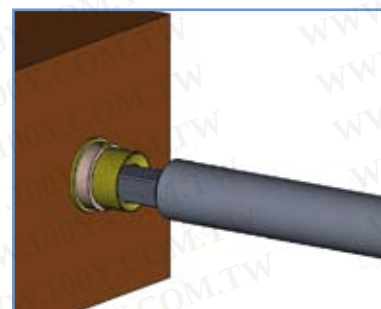
|      | H810KB | H831KB | H885KB |
|------|--------|--------|--------|
| F810 | x      |        |        |
| F820 |        | x      |        |
| F821 |        | x      |        |
| F822 |        | x      |        |
| F831 |        | x      |        |
| F832 |        | x      |        |
| F835 |        |        | x      |



### Screw-in Tool or F831/F832

For mounting of threaded Kelvin probes a special screw-in tool is available, consisting of bit and handle. The Kelvin probes provide an integrated three edged support to hold the specific triangular socket bit BIT831.

The bit can be loaded to the handle GS500 or GS500T.



Probe



BIT 831



handle GS500

# Coaxial Probes

Centers 7,00 mm/276 mil

| Type | Current                                             | Temperature    |
|------|-----------------------------------------------------|----------------|
| F840 | Circular Contact: 30,0 A<br>Internal Contact: 5,0 A | -20° ... +80°C |

## High Current Kelvin Probe

### F840

The F840 is designed for high current applications.  
The cable for the outer circular conductor is electrically connected at the solder lug, for the inner conductor it is soldered directly to the solder cup at the pin.

#### Mechanical Specifications

| Travel (mm) | Internal Contact | Circular Contact |
|-------------|------------------|------------------|
| Nominal:    | 2,0              | 5,0              |
| Maximum:    | 3,5              | 5,5              |

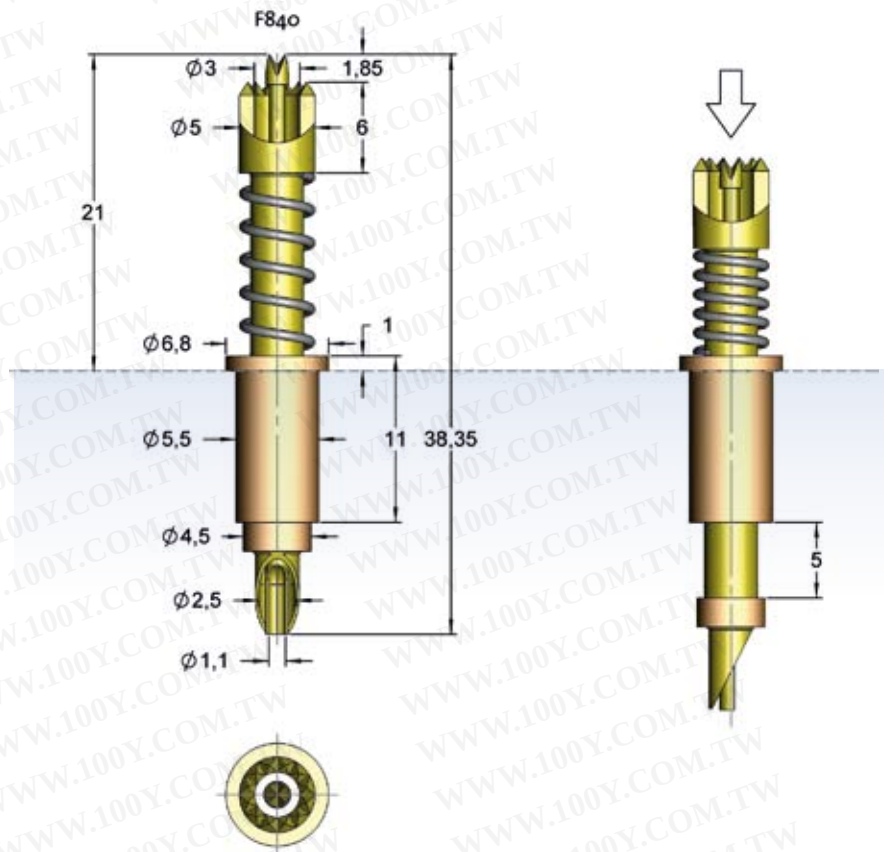
| Spring Force (cN ±20%)      | Internal Contact | Circular Contact |
|-----------------------------|------------------|------------------|
| Nominal Force:              | 280              | 1500             |
| Preload:                    | 200              | 100              |
| Total Spring Force: 1780 cN |                  |                  |

#### Materials and Plating

Internal Contact: Steel, Longtime Gold plated  
Circular Contact: Steel, Longtime Gold plated  
Barrel: Brass, unplated  
Spring: Music wire, Silver plated

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 5,50         |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Type                             | Number     | Spring Force |
|----------------------------------|------------|--------------|
| F840                             | 14 S 150 L | 1780         |
| Tip Style Material Finish        |            |              |
| Material: S = Steel              |            |              |
| Tip-Ø: 150 = 1,50mm (e.g.)       |            |              |
| Finish: L = Longtime Gold plated |            |              |
| ORDER EXAMPLE                    |            |              |

F840 | Tip Style, Material, Plating, Tip- Ø (mm)



14 Steel; L  
 Ø 1,50

# Coaxial Probes

Centers 1,27 mm/50 mil

| Type | Current                                            | Temperature  | Frequenz  | Impedanz |
|------|----------------------------------------------------|--------------|-----------|----------|
| F872 | Circular Contact: 3,0 A<br>Internal Contact: 1,0 A | -20°...+80°C | bis 3 GHz | 50 Ohm   |

## High Frequency Coaxial Probe

### F872

The F872 is designed for high frequency applications up to 3 GHz. The probe has a spring loaded inner conductor and a fix circular conductor for shielding purposes. The electrical connection to the probe pin is made with the connecting element H872 with 600 mm assembled coax cable (LSM50).

#### Mechanical Specifications

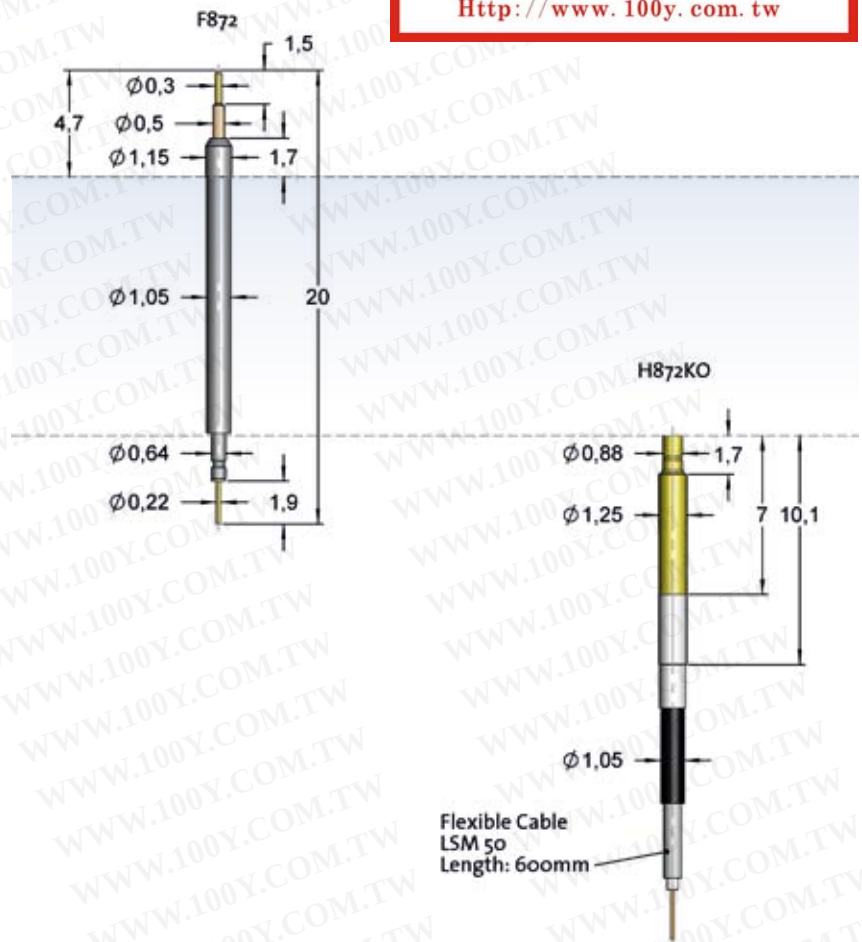
| Travel (mm)            | Internal Contact |
|------------------------|------------------|
| Nominal:               | 2,0              |
| Maximum:               | 2,8              |
| Spring Force (cN ±20%) |                  |
| Nominal Force:         | 32               |
| Preload:               | 15               |

#### Materials and Plating

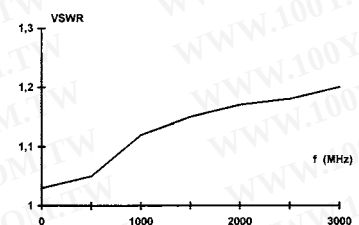
|                   |                           |
|-------------------|---------------------------|
| Internal Contact: | BeCu, Gold plated         |
| Circular Contact: | BeCu, Gold plated         |
| Barrel:           | Bronze, Silver plated     |
| Spring:           | Music wire, Silver plated |
| Anschl.E.:        | BeCu, Gold plated         |

#### Drill Size (mm)

| Material                | Drill-Ø [mm] |
|-------------------------|--------------|
| EP 105 (CEM1, Trolitax) | 1,04-1,05    |
| HGW 2372.1 (FR4)        |              |



勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



| Type                                                                                       | Number   | Spring Force |
|--------------------------------------------------------------------------------------------|----------|--------------|
| F872                                                                                       | 01 B 030 | G 032        |
| Tip Style                                                                                  | Material | Finish       |
| <b>Material:</b> B = BeCu<br><b>Tip-Ø:</b> 030 = 0,30 mm (e.g.)<br><b>Finish:</b> G = Gold |          |              |
| <b>ORDER EXAMPLE</b>                                                                       |          |              |

#### F872 | Tip Style, Material, Plating, Tip- Ø (mm)



01 BeCu; G  
ø 0,30

# Coaxial Probes

Centers F870: 2,54 mm / 100 mil  
Centers F869: 5,50 mm / 217 mil

| Type | Current                                            | Temperature  | Frequenz  | Impedanz |
|------|----------------------------------------------------|--------------|-----------|----------|
| F870 | Circular Contact: 5,0 A<br>Internal Contact: 2,0 A | -20°...+80°C | bis 1 GHz | 50 Ohm   |
| F869 | Circular Contact: 8,0 A<br>Internal Contact: 2,5 A | -20°...+80°C | bis 4 GHz | 50 Ohm   |

## High Frequency Coaxial Probe

### F870/F869

The F870 and the F869 are applicable for high frequency applications. The F870 has a spring loaded inner conductor and a fix circular conductor. At the F869 the inner and the outer conductor are spring loaded. The connecting element H871KO will be delivered with 1500 mm coax cable (RG178B/U) and is suitable for centers of 2,54 mm and more. The connecting element H870KO is suitable for centers from 3,5 mm on. It will be shipped with 1500 mm assembled coax cable (RG178).

#### Mechanical Specifications

##### Travel F870 (mm)

Internal Contact

Nominal: 2,0 Maximum: 3,5

##### Travel F869

Internal Contact Circular Contact

Nominal: 2,0 1,0

Maximum: 4,0 1,5

##### Spring Force F870

(cN ±20%) Internal Contact Circular Contact

Nominal Force: 170 -

Preload: 60 -

##### Spring Force F869

(cN ±20%) Internal Contact Circular Contact

Nominal Force: 300 200

Preload: 150 160

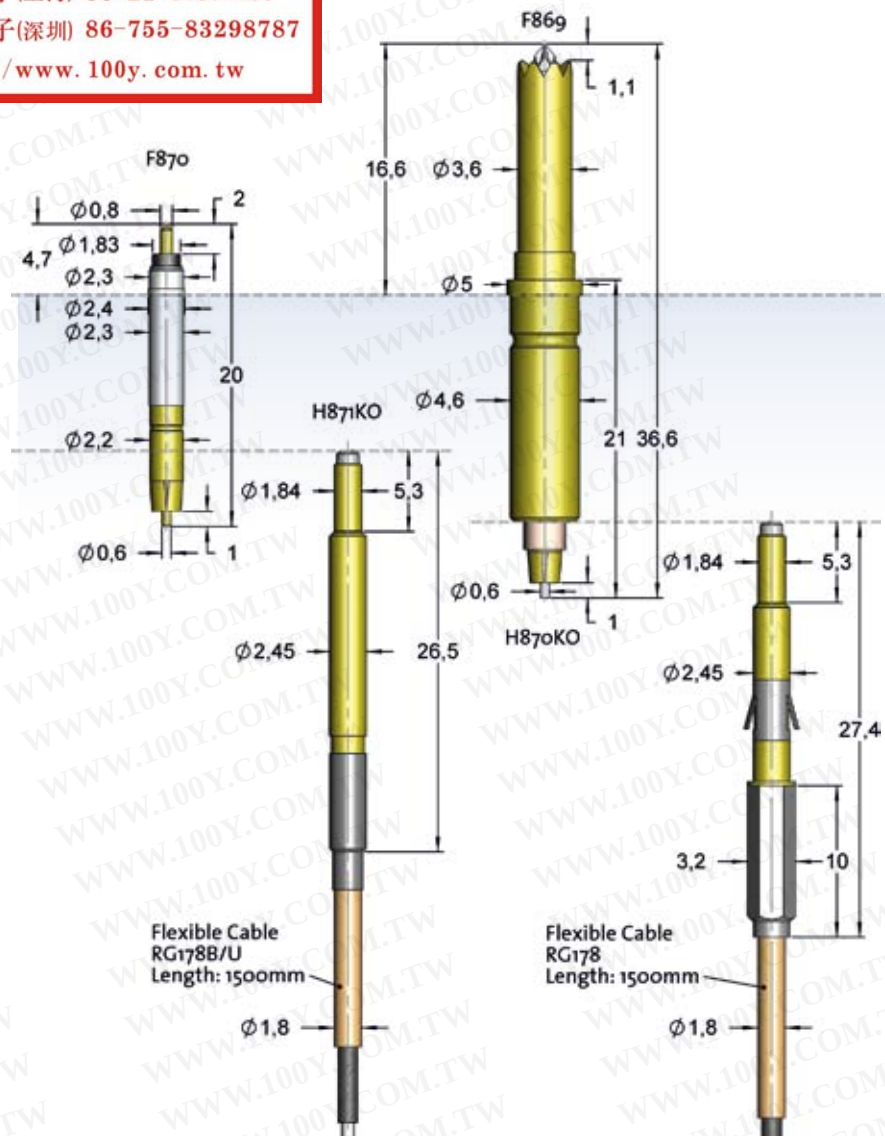
Total Spring Force: 500 cN

#### Materials and Plating

Internal Contact: BeCu, Gold plated  
Circular Contact: BeCu, Gold plated  
Barrel: Bronze, Nickel plated  
Spring: Music wire, Silver plated

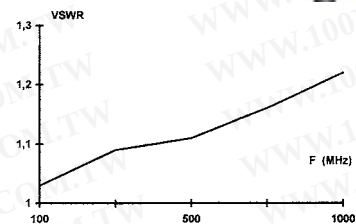
| Type      | Head-φ               | Spring Force |
|-----------|----------------------|--------------|
| F870      | 01 B 080             | G 170        |
| Tip Style | Material             | Finish       |
| Material: | B = BeCu             |              |
| Tip-φ:    | 080 = 0,80 mm (e.g.) |              |
| Finish:   | G = Gold, N = Nickel |              |

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



#### Drill Size (mm)

| Material                | F869      | F870      |
|-------------------------|-----------|-----------|
| EP 105 (CEM1, Trolitax) | 4,58-4,60 | 2,28-2,30 |
| HGW 2372.1 (FR4)        |           |           |



#### F870 | Tip Style, Material, Plating, Tip- φ (mm)



01 BeCu; G  
φ 0,30

#### F869 | Tip Style, Material, Plating, Tip- φ (mm)



07 BeCu; N  
φ 1,50

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Screw-In-Tools with LED-Signal for Switch Probes

| Probe              |  |  |  | Wrench Size | Overall Length | Shank ØA | Batteries     |  |
|--------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|----------------|----------|---------------|-------------------------------------------------------------------------------------|
| F880...            |                                                                                   | x                                                                                 |                                                                                   | 2,2         | 147,0          | 3,7      | 2 x AAAA 1,5V | FWZ880SA                                                                            |
| F88890S1101U200S05 |                                                                                   | x                                                                                 |                                                                                   | 5,0         | 147,0          | 8,0      | 2 x AAAA 1,5V | FWZ888SA                                                                            |
| F88890S1102U100S07 |                                                                                   | x                                                                                 |                                                                                   | 5,0         | 146,0          | 8,0      | 2 x AAAA 1,5V | FWZ888SA1                                                                           |

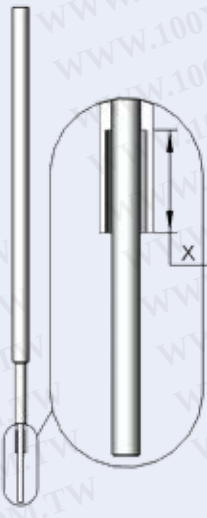
## Screw-In-Tool (Open-Ended Spanner)

| Probe   |  |  |  | Wrench Size | Overall Length | Shank ØA |  |
|---------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|----------------|----------|-------------------------------------------------------------------------------------|
| F880... |                                                                                   | x                                                                                 |                                                                                   | 2,2         | 105,0          | 4,0      | FWZ880                                                                              |
| VF3...  |                                                                                   | x                                                                                 |                                                                                   | 2,2         | 105,0          | 4,0      | FWZ880                                                                              |

## Receptacle Insertion Tools

| Receptacles | Insertion Height(x) | Insertion Tool |  |
|-------------|---------------------|----------------|-------------------------------------------------------------------------------------|
| H050, H787  | 0 - 10              | FEWZ-050EV     |                                                                                     |
| H075, H703  | 0 - 12              | FEWZ-075EV     |                                                                                     |
| H100, H585  | 0 - 12              | FEWZ-100EV     |                                                                                     |
| H772        | 0 - 10              | FEWZ-772EV     |                                                                                     |

## Insertion Tools with fixed stop

| Receptacles | Insertion Height(x) | Insertion Tool |  |
|-------------|---------------------|----------------|-------------------------------------------------------------------------------------|
| H075, H703  | 0,0                 | FEWZ-703E0     |                                                                                     |
|             | 5,0                 | FEWZ-703E50    |                                                                                     |
|             | 5,7                 | FEWZ-703E57    |                                                                                     |
|             | 6,0                 | FEWZ-703E6     |                                                                                     |
|             | 7,6                 | FEWZ-703E76    |                                                                                     |
| H100, H585  | 0,0                 | FEWZ-585E0     |                                                                                     |
|             | 3,6                 | FEWZ-585E36    |                                                                                     |
|             | 4,6                 | FEWZ-585E46    |                                                                                     |
|             | 5,5                 | FEWZ-585E55    |                                                                                     |
|             | 6,6                 | FEWZ-585E66    |                                                                                     |
|             | 7,6                 | FEWZ-585E76    |                                                                                     |
| H109        | 0,0                 | FEWZ-109E0     |                                                                                     |
| H511        | 0,0                 | FEWZ-511E0     |                                                                                     |
| H563        | 0,0                 | FEWZ-563E0     |                                                                                     |
| H564        | 0,0                 | FEWZ-564E0     |                                                                                     |
| H735        | 0,0                 | FEWZ-735E0     |                                                                                     |
| H772        | 0,0                 | FEWZ-772E0     |                                                                                     |
| H774        | 0,0                 | FEWZ-774E0     |                                                                                     |
| H050, H787  | 0,0                 | FEWZ-787E0     |                                                                                     |
|             | 5,7                 | FEWZ-787E57    |                                                                                     |
|             | 8,0                 | FEWZ-787E80    |                                                                                     |

Further insertion heights available, also for other probe types.

## Insertion and Alignment Tool

for twist proof receptacles

| Receptacle |  |       |           |
|------------|---------------------------------------------------------------------------------------|-------|-----------|
|            | (BIT+handle)                                                                          | BIT   | handle    |
| H756...    | FAWZ756                                                                               | AS756 | GSFAWZ500 |
| H757...    | FAWZ756                                                                               | AS756 | GSFAWZ500 |
| H760...    | FAWZ761                                                                               | AS761 | GSFAWZ500 |
| H761...    | FAWZ761                                                                               | AS761 | GSFAWZ500 |
| HVF3...    | FAWZVF3                                                                               | ASV3  | GSFAWZ500 |
| HVF4...    | FAWZVF4                                                                               | ASVF4 | GSFAWZ500 |

### ORDER CODE

#### FM-Toolbox

Empty box for up to 20 tools



### ORDER CODE

#### FM-SAMPLEBOX-TS

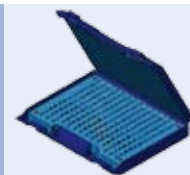
Sample box containing a great variety of plunger tip styles



### ORDER CODE

#### FM-SAMPLEBOX-SP

Sample box containing a selection of step probe plunger tips



# Tools / Accessories

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Screw-In-Tools

| Probe | max. tip Ø |  |  |  | Shank Ø A | Wrench Size |  |          |        |  |          |        |
|-------|------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------|-------------|------------------------------------------------------------------------------------|----------|--------|-------------------------------------------------------------------------------------|----------|--------|
|       |            |                                                                                   |                                                                                   |                                                                                   |           |             | (BIT+handle)                                                                       | BIT      | handle | (BIT+handle)                                                                        | BIT      | handle |
| F175  | 0,9        |                                                                                   | x                                                                                 |                                                                                   | 1,5       | 1           | FWZ730                                                                             | BIT730   | GS300  | FWZ730T                                                                             | BIT730   | GS300T |
|       | 1,5        | x                                                                                 |                                                                                   |                                                                                   | 2         | 1           | FWZ730S1                                                                           | BIT730S1 | GS300  | FWZ730T1                                                                            | BIT730S1 | GS300T |
| F375  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,7         | FWZ732                                                                             | BIT732   | GS400  | FWZ732T                                                                             | BIT732   | GS400T |
|       | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 1,7         | FWZ732S1                                                                           | BIT732S1 | GS400  | FWZ732T1                                                                            | BIT732S1 | GS400T |
| F385  | 2,5        |                                                                                   | x                                                                                 |                                                                                   | 3,75      | 2,6         | FWZ885                                                                             | BIT885   | GS500  | FWZ885T                                                                             | BIT885   | GS500T |
|       | 3,1        | x                                                                                 |                                                                                   |                                                                                   | 4         | 2,6         | FWZ885S1                                                                           | BIT885S1 | GS500  | FWZ885T1                                                                            | BIT885S1 | GS500T |
|       | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 2,6         | FWZ760S1                                                                           | BIT760S1 | GS500  | FWZ760T1                                                                            | BIT760S1 | GS500T |
|       | 4,9        | x                                                                                 |                                                                                   |                                                                                   | 6,5       | 2,6         | FWZ760S2                                                                           | BIT760S2 | GS500  | FWZ760T2                                                                            | BIT760S2 | GS500T |
| F722  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,7         | FWZ732                                                                             | BIT732   | GS400  | FWZ732T                                                                             | BIT732   | GS400T |
|       | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 1,7         | FWZ732S1                                                                           | BIT732S1 | GS400  | FWZ732T1                                                                            | BIT732S1 | GS400T |
| F723  | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 3           | FWZ733                                                                             | BIT733   | GS500  | FWZ733T                                                                             | BIT733   | GS500T |
|       | 3          |                                                                                   | x                                                                                 |                                                                                   | 5         | 3           | FWZ733S1                                                                           | BIT733S1 | GS500  | FWZ733T1                                                                            | BIT733S1 | GS500T |
| F730  | 0,9        |                                                                                   | x                                                                                 |                                                                                   | 1,5       | 1           | FWZ730                                                                             | BIT730   | GS300  | FWZ730T                                                                             | BIT730   | GS300T |
|       | 1,5        | x                                                                                 |                                                                                   |                                                                                   | 2         | 1           | FWZ730S1                                                                           | BIT730S1 | GS300  | FWZ730T1                                                                            | BIT730S1 | GS300T |
| F731  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,4         | FWZ731                                                                             | BIT731   | GS400  | FWZ731T                                                                             | BIT731   | GS400T |
|       | 1,4        |                                                                                   | x                                                                                 |                                                                                   | 2,4       | 1,4         | FWZ731S1                                                                           | BIT731S1 | GS400  | FWZ731T1                                                                            | BIT731S1 | GS400T |
| F732  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,7         | FWZ732                                                                             | BIT732   | GS400  | FWZ732T                                                                             | BIT732   | GS400T |
|       | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 1,7         | FWZ732S1                                                                           | BIT732S1 | GS400  | FWZ732T1                                                                            | BIT732S1 | GS400T |
| FP732 | 2,3        |                                                                                   | x                                                                                 |                                                                                   | 3,5       | 2,2         | FWZVF3S2                                                                           | BITVF3S2 | GS500  | FWZVF3T2                                                                            | BITVF3S2 | GS500T |
| F733  | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 3           | FWZ733                                                                             | BIT733   | GS500  | FWZ733T                                                                             | BIT733   | GS500T |
|       | 3          |                                                                                   | x                                                                                 |                                                                                   | 5         | 3           | FWZ733S1                                                                           | BIT733S1 | GS500  | FWZ733T1                                                                            | BIT733S1 | GS500T |
| F735  | 4,4        | x                                                                                 |                                                                                   |                                                                                   | 5,5       | 3,5         | FWZ735                                                                             | BIT735   | GS500  | FWZ735T                                                                             | BIT735   | GS500T |
| F737  | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 3           | FWZ733                                                                             | BIT733   | GS500  | FWZ733T                                                                             | BIT733   | GS500T |
|       | 3          |                                                                                   | x                                                                                 |                                                                                   | 5         | 3           | FWZ733S1                                                                           | BIT733S1 | GS500  | FWZ733T1                                                                            | BIT733S1 | GS500T |
| F755  | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 3           | FWZ733                                                                             | BIT733   | GS500  | FWZ733T                                                                             | BIT733   | GS500T |
|       | 3          |                                                                                   | x                                                                                 |                                                                                   | 5         | 3           | FWZ733S1                                                                           | BIT733S1 | GS500  | FWZ733T1                                                                            | BIT733S1 | GS500T |
| F756  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,7         | FWZ732                                                                             | BIT732   | GS400  | FWZ732T                                                                             | BIT732   | GS400T |
|       | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 1,7         | FWZ732S1                                                                           | BIT732S1 | GS400  | FWZ732T1                                                                            | BIT732S1 | GS400T |
| F757  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,7         | FWZ732                                                                             | BIT732   | GS400  | FWZ732T                                                                             | BIT732   | GS400T |
|       | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 1,7         | FWZ732S1                                                                           | BIT732S1 | GS400  | FWZ732T1                                                                            | BIT732S1 | GS400T |
| F760  | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 2,6         | FWZ760S1                                                                           | BIT760S1 | GS500  | FWZ760T1                                                                            | BIT760S1 | GS500T |
|       | 4,9        | x                                                                                 |                                                                                   |                                                                                   | 6,5       | 2,6         | FWZ760S2                                                                           | BIT760S2 | GS500  | FWZ760T2                                                                            | BIT760S2 | GS500T |
| F761  | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 2,6         | FWZ760S1                                                                           | BIT760S1 | GS500  | FWZ760T1                                                                            | BIT760S1 | GS500T |
|       | 4,9        | x                                                                                 |                                                                                   |                                                                                   | 6,5       | 2,6         | FWZ760S2                                                                           | BIT760S2 | GS500  | FWZ760T2                                                                            | BIT760S2 | GS500T |
| F831  | -          |                                                                                   |                                                                                   | x                                                                                 | 4         | -           | FWZ831                                                                             | BIT831   | GS500  | FWZ831T                                                                             | BIT831   | GS500T |
| F832  | -          |                                                                                   |                                                                                   | x                                                                                 | 4         | -           | FWZ831                                                                             | BIT831   | GS500  | FWZ831T                                                                             | BIT831   | GS500T |
| F835  | 2,5        | x                                                                                 |                                                                                   |                                                                                   | 3,75      | 2,6         | FWZ885                                                                             | BIT885   | GS500  | FWZ885T                                                                             | BIT885   | GS500T |
|       | 3,1        | x                                                                                 |                                                                                   |                                                                                   | 4         | 2,6         | FWZ885S1                                                                           | BIT885S1 | GS500  | FWZ885T1                                                                            | BIT885S1 | GS500T |
|       | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 2,6         | FWZ760S1                                                                           | BIT760S1 | GS500  | FWZ760T1                                                                            | BIT760S1 | GS500T |
|       | 4,9        | x                                                                                 |                                                                                   |                                                                                   | 6,5       | 2,6         | FWZ760S2                                                                           | BIT760S2 | GS500  | FWZ760T2                                                                            | BIT760S2 | GS500T |
| F873  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,7         | FWZ732                                                                             | BIT732   | GS400  | FWZ732T                                                                             | BIT732   | GS400T |
|       | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 1,7         | FWZ732S1                                                                           | BIT732S1 | GS400  | FWZ732T1                                                                            | BIT732S1 | GS400T |
| F875  | 2          | x                                                                                 |                                                                                   |                                                                                   | 2,8       | 1,7         | FWZ732                                                                             | BIT732   | GS400  | FWZ732T                                                                             | BIT732   | GS400T |
|       | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 1,7         | FWZ732S1                                                                           | BIT732S1 | GS400  | FWZ732T1                                                                            | BIT732S1 | GS400T |
| F880  | 2,7        | x                                                                                 |                                                                                   |                                                                                   | 3,5       | 2,2         | FWZVF3                                                                             | BITVF3   | GS500  | FWZVF3T                                                                             | BITVF3   | GS500T |
|       | 3,1        | x                                                                                 |                                                                                   |                                                                                   | 4         | 2,2         | FWZVF3S1                                                                           | BITVF3S1 | GS500  | FWZVF3T1                                                                            | BITVF3S1 | GS500T |
|       | 2,3        |                                                                                   | x                                                                                 |                                                                                   | 3,5       | 2,2         | FWZVF3S2                                                                           | BITVF3S2 | GS500  | FWZVF3T2                                                                            | BITVF3S2 | GS500T |
|       | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 2,2         | FWZVF3S3                                                                           | BITVF3S3 | GS500  | FWZVF3T3                                                                            | BITVF3S3 | GS500T |
| F881  | 2,5        |                                                                                   | x                                                                                 |                                                                                   | 3,75      | 2,6         | FWZ885                                                                             | BIT885   | GS500  | FWZ885T                                                                             | BIT885   | GS500T |
|       | 3,1        | x                                                                                 |                                                                                   |                                                                                   | 4         | 2,6         | FWZ885S1                                                                           | BIT885S1 | GS500  | FWZ885T1                                                                            | BIT885S1 | GS500T |
|       | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 2,6         | FWZ760S1                                                                           | BIT760S1 | GS500  | FWZ760T1                                                                            | BIT760S1 | GS500T |
|       | 4,9        | x                                                                                 |                                                                                   |                                                                                   | 6,5       | 2,6         | FWZ760S2                                                                           | BIT760S2 | GS500  | FWZ760T2                                                                            | BIT760S2 | GS500T |
| F883  | 2,5        |                                                                                   | x                                                                                 |                                                                                   | 3,75      | 2,6         | FWZ885                                                                             | BIT885   | GS500  | FWZ885T                                                                             | BIT885   | GS500T |
|       | 3,1        | x                                                                                 |                                                                                   |                                                                                   | 4         | 2,6         | FWZ885S1                                                                           | BIT885S1 | GS500  | FWZ885T1                                                                            | BIT885S1 | GS500T |
|       | 4          | x                                                                                 |                                                                                   |                                                                                   | 5         | 2,6         | FWZ760S1                                                                           | BIT760S1 | GS500  | FWZ760T1                                                                            | BIT760S1 | GS500T |
|       | 4,9        | x                                                                                 |                                                                                   |                                                                                   | 6,5       | 2,6         | FWZ760S2                                                                           | BIT760S2 | GS500  | FWZ760T2                                                                            | BIT760S2 | GS500T |

# Tools / Accessories

勝 特 力 材 料 886-3-5753170  
 勝 特 力 電 子 (上 海) 86-21-34970699  
 勝 特 力 電 子 (深 圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Screw-In-Tools

| Probe | max. Head Ø |   |   |   | Shank Ø A | Wrench Size |              |            |        | with ratchet |            |        |
|-------|-------------|---|---|---|-----------|-------------|--------------|------------|--------|--------------|------------|--------|
|       |             |   |   |   |           |             | (BIT+handle) | BIT        | handle | (BIT+handle) | BIT        | handle |
| F885  | 2,5         |   |   | x | 3,75      | 2,6         | FWZ885       | BIT885     | GS500  | FWZ885T      | BIT885     | GS500T |
|       | 3,1         | x |   |   | 4         | 2,6         | FWZ885S1     | BIT885S1   | GS500  | FWZ885T1     | BIT885S1   | GS500T |
|       | 4           | x |   |   | 5         | 2,6         | FWZ760S1     | BIT760S1   | GS500  | FWZ760T1     | BIT760S1   | GS500T |
|       | 4,9         | x |   |   | 6,5       | 2,6         | FWZ760S2     | BIT760S2   | GS500  | FWZ760T2     | BIT760S2   | GS500T |
| F886  | 3,1         | x |   |   | 4         | 2,6         | FWZ885S1     | BIT885S1   | GS500  | FWZ885T1     | BIT885S1   | GS500T |
|       | 4           | x |   |   | 5         | 2,6         | FWZ760S1     | BIT760S1   | GS500  | FWZ760T1     | BIT760S1   | GS500T |
|       | 4,9         | x |   |   | 6,5       | 2,6         | FWZ760S2     | BIT760S2   | GS500  | FWZ760T2     | BIT760S2   | GS500T |
| F887  | 4           | x |   |   | 5         | 2,5         | FWZVF4       | BITVF4     | GS500  | FWZVF4T1     | BITVF4     | GS500T |
|       | 3,1         | x |   |   | 4         | 2,5         | FWZVF4S1     | BITVF4S1   | GS500  | FWZVF4T1     | BITVF4S1   | GS500T |
| F888  | -           | x |   |   | 8         | 5           | FWZ888       | BIT888     | GS500  | FWZ888T      | BIT888     | GS500T |
| VF3   | 2,7         | x |   |   | 3,5       | 2,2         | FWZVF3       | BITVF3     | GS500  | FWZVF3T      | BITVF3     | GS500T |
|       | 3,1         | x |   |   | 4         | 2,2         | FWZVF3S1     | BITVF3S1   | GS500  | FWZVF3T1     | BITVF3S1   | GS500T |
|       | 2,3         |   | x |   | 3,5       | 2,2         | FWZVF3S2     | BITVF3S2   | GS500  | FWZVF3T2     | BITVF3S2   | GS500T |
|       | 4           | x |   |   | 5         | 2,2         | FWZVF3S3     | BITVF3S3   | GS500  | FWZVF3T3     | BITVF3S3   | GS500T |
| VF4   | 4           | x |   |   | 5         | 2,5         | FWZVF4       | BITVF4     | GS500  | FWZVF4T1     | BITVF4     | GS500T |
|       | 3,1         | x |   |   | 4         | 2,5         | FWZVF4S1     | BITVF4S1   | GS500  | FWZVF4T1     | BITVF4S1   | GS500T |
| VF100 | 2           |   | x |   | 2,8       | 1,8         | FWZVF100     | BITVF100   | GS400  | FWZVF100T    | BITVF100   | GS400T |
|       | 2,7         | x |   |   | 3,5       | 1,8         | FWZVF100S1   | BITVF100S1 | GS400  | FWZVF100T1   | BITVF100S1 | GS400T |

## Screw-In-Tools für F886

| Probe      |                     |        | with ratchet |       |         |
|------------|---------------------|--------|--------------|-------|---------|
|            |                     |        | (BIT+handle) | BIT   | handle  |
| F88606...  | FWZ886S1 / FWZ886S2 | FWZ886 | BIT886       | GS500 | FWZ886T |
| F88617K... | FWZ886S1            | FWZ886 | BIT886       | GS500 | FWZ886T |
| F88617H... | FWZ886S1            | FWZ886 | BIT886       | GS500 | FWZ886T |
| F88617T... | FWZ886S1            | FWZ886 | BIT886       | GS500 | FWZ886T |
| F88617B... | FWZ886S2            | FWZ886 | BIT886       | GS500 | FWZ886T |

## Screw-In-Tools für Step Probes

| Probe     | Plate Ø    | Tip-Ø      |           |   |   | Shank Ø A |              |           |        | with ratchet |           |        |
|-----------|------------|------------|-----------|---|---|-----------|--------------|-----------|--------|--------------|-----------|--------|
|           |            |            |           |   |   |           | (BIT+handle) | BIT       | handle | (BIT+handle) | BIT       | handle |
| F730...SP | 0,4 - 1,0  | 0,3 - 0,8  |           |   | x | 1,5       | FWZ730       | BIT730    | GS300  | FWZ730T      | BIT730    | GS300T |
| F731...SP | 0,4 - 1,3  | 0,3 - 1,1  |           |   | x | 2,4       | FWZ731S1     | BIT731S1  | GS400  | FWZ731T1     | BIT731S1  | GS400T |
|           | 0,4 - 1,7  | 0,3 - 0,8  | x         |   |   | 2,8       | FWZ731       | BIT731    | GS400  | FWZ731T      | BIT731    | GS400T |
|           | 1,8 - 3,0  | 0,3 - 1,0  |           | x |   | 1,85      | FWZ731SP     | BIT731SP  | GS400  | FWZ731SP     | BIT731SP  | GS400T |
|           |            |            | x         |   |   | 2,8       | FWZ732       | BIT732    | GS400  | FWZ732T      | BIT732    | GS400T |
| F732...SP | 1,0 - 1,7  | 0,3 - 1,5  | x         |   |   | 2,8       | FWZ732S1     | BIT732S1  | GS400  | FWZ732T      | BIT732S1  | GS400T |
|           | 1,0 - 2,7  | 0,3 - 1,5  | x         |   |   | 3,5       | FWZ732SP     | BIT732SP  | GS400  | FWZ732SPT    | BIT732SP  | GS400T |
|           | 2,1 - 6,0  | 0,3 - 1,5  |           | x |   | 2,4       | FWZ732SP     | BIT732SP  | GS400  | FWZ732SPT    | BIT732SP  | GS400T |
|           |            |            | x         |   |   | 3,1       | FWZ732SP1    | BIT732SP1 | GS400  | FWZ732SPT1   | BIT732SP1 | GS400T |
| F733...SP | 2,8 - 6,0  | 1,51 - 2,2 |           | x |   | 3,1       | FWZ733       | BIT733    | GS500  | FWZ733T      | BIT733    | GS500T |
|           | 2,2 - 2,9  | 0,3 - 2,7  | x         |   |   | 5         | FWZ733S1     | BIT733S1  | GS500  | FWZ733T1     | BIT733S1  | GS500T |
|           | 2,2 - 2,9  | 0,3 - 2,7  |           |   | x | 5         | FWZ733S1     | BIT733S1  | GS500  | FWZ733T1     | BIT733S1  | GS500T |
|           | 3,5 - 7,0  | 3,31 - 6,8 |           | x |   | 2,4       | FWZ732SP     | BIT732SP  | GS400  | FWZ732SPT    | BIT732SP  | GS400T |
|           | 4,01 - 7,0 | 0,3 - 3,3  |           | x |   | 4,2       | FWZ733SP     | BIT733SP  | GS500  | FWZ733SPT    | BIT733SP  | GS500T |
|           | F733...SP1 | 3,0 - 4,0  | 0,3 - 2,2 |   | x | 3,1       | FWZ732SP1    | BIT732SP1 | GS400  | FWZ732SPT1   | BIT732SP1 | GS400T |

Bits and handles can be ordered separately. Handles are colour marked depending on wrench size.



## Spring Force Gauge FK50

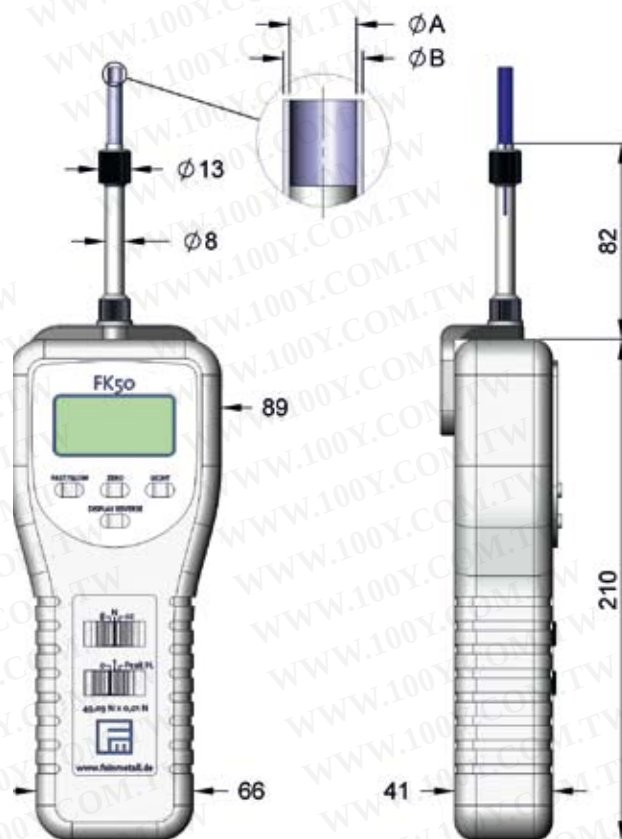
The Spring Force Gauge allows force measurement at all types of spring contact probes up to 50N. This instrument allows in a very simple way to verify, if a probe is still intact and to determine the spring force of the probe. The measuring results are displayed at the instrument and the display can be electrically turned by 180° if needed, e.g. for overhead applications. For the measurement just put the measuring sleeve over the probe and push it to the mounting plate. The sleeves depth can be adjusted according to the projection height of the probe. Adjustable measuring sleeves are available with three different diameters.

### Technical Specifications:

- minimum force: 3g / 0,10oz / 0,03N
- resolution 1g / 0,03oz / 0,01N
- measuring accuracy: +/- 0,5% at 25°C
- data output via RS 232
- power supply: 6 x 1,5V AA (UM-3 batteries)

### Included in Delivery:

- Spring Force Gauge with receptacle for measuring sleeve
- measuring sleeve  $\varnothing$  5,0mm
- operating manual
- calibration certificate
- carrying case



| Article                               | Order Code |
|---------------------------------------|------------|
| Spring Force Gauge FK50               | FK50       |
| Measuring Sleeve $\varnothing$ 3,0 mm | MS30       |
| Measuring Sleeve $\varnothing$ 4,0 mm | MS40       |
| Measuring Sleeve $\varnothing$ 5,0 mm | MS50       |
| Data Cable RS232                      | on request |
| Power Supply DC9V                     | on request |
| USB Adapter                           | on request |

| Dimensions of adjustable measuring sleeves |                      |                      |                      |
|--------------------------------------------|----------------------|----------------------|----------------------|
|                                            | Outer- $\varnothing$ | Inner- $\varnothing$ | Height Adjustability |
| MS30                                       | 4 mm                 | 3 mm                 | 0-40,5 mm            |
| MS40                                       | 5 mm                 | 4 mm                 | 0-40,5 mm            |
| MS50                                       | 6 mm                 | 5 mm                 | 0-40,5 mm            |

### Rigid measuring sleeves with fixed stop

Rigid measuring sleeves for repeat measurements at probes with fixed projection height are available with different diameters.

### Example for height adjustment at measuring sleeve



projection height of the probe, e.g. F732: = 10,50 mm  
Nominal Travel: = 4,00 mm  
Projection height - Nominal Travel: = 10,50-4,00 mm  
Height to fix: = 6,50 mm



| Measuring Sleeve      | Order Code | for Probe | inner $\varnothing$ A | outer $\varnothing$ B | Projection Height Probe | Nominal Travel |
|-----------------------|------------|-----------|-----------------------|-----------------------|-------------------------|----------------|
| measuring sleeve F732 | MS230E065  | F732      | 2,30 mm               | 2,70 mm               | 10,50 mm                | 4,00 mm        |
| measuring sleeve F733 | MS360E065  | F733      | 3,60 mm               | 4,00 mm               | 10,50 mm                | 4,00 mm        |
| measuring sleeve VF3  | MS270E355  | VF3       | 2,70 mm               | 3,20 mm               | 40,50 mm                | 5,00 mm        |
| measuring sleeve VF4  | MS370E355  | VF4       | 3,70 mm               | 4,20 mm               | 40,50 mm                | 5,00 mm        |
| measuring sleeve VF5  | MS460E317  | VF5       | 4,60 mm               | 5,00 mm               | 36,50 mm                | 4,80 mm        |

# Overview Spring Contact Probes

勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

| Probe    | Chapter             | Nominal Travel (mm) | Maximum Travel (mm) | Maximum Cont. Current (A) | Total Length (mm) | Barrel Diameter (mm) | Centers (mil) | Centers (mm) | Page |
|----------|---------------------|---------------------|---------------------|---------------------------|-------------------|----------------------|---------------|--------------|------|
| F050     | ICT / FCT           | 4,3                 | 6,4                 | 2,0                       | 43,2              | 0,78                 | 50            | 1,27         | 12   |
| F050...L | ICT / FCT           | 4,3                 | 6,4                 | 2,0                       | 45,2              | 0,78                 | 50            | 1,27         | 12   |
| F767     | ICT / FCT           | 6,4                 | 8,0                 | 2,0                       | 39,5              | 0,79                 | 50            | 1,27         | 13   |
| F768     | ICT / FCT           | 3,2                 | 4,0                 | 2,0                       | 37,0              | 0,79                 | 50            | 1,27         | 13   |
| F051     | ICT / FCT           | 8,0                 | 10,0                | 2,0                       | 48,5              | 0,78                 | 50            | 1,27         | 14   |
| F788     | ICT / FCT           | 6,4                 | 8,0                 | 2,0                       | 43,0              | 0,79                 | 50            | 1,27         | 14   |
| F788...L | ICT / FCT           | 6,4                 | 8,0                 | 2,0                       | 45,0              | 0,79                 | 50            | 1,27         | 14   |
| F701     | ICT / FCT           | 4,0                 | 5,0                 | 1,5                       | 27,5              | 1,01                 | 75            | 1,90         | 15   |
| F075     | ICT / FCT           | 5,0                 | 6,3                 | 3,0                       | 33,0              | 1,02                 | 75            | 1,90         | 16   |
| F075...L | ICT / FCT           | 5,0                 | 6,3                 | 3,0                       | 35,0              | 1,02                 | 75            | 1,90         | 16   |
| F703     | ICT / FCT           | 5,0                 | 6,3                 | 3,0                       | 33,0              | 1,02                 | 75            | 1,90         | 16   |
| F703...L | ICT / FCT           | 5,0                 | 6,3                 | 3,0                       | 35,0              | 1,02                 | 75            | 1,90         | 16   |
| F793     | ICT / FCT           | 8,0                 | 10,0                | 3,0                       | 36,8              | 1,02                 | 75            | 1,90         | 18   |
| F793...L | ICT / FCT           | 8,0                 | 10,0                | 3,0                       | 38,8              | 1,02                 | 75            | 1,90         | 18   |
| F100     | ICT / FCT           | 5,0                 | 6,4                 | 5,0                       | 33,3              | 1,37                 | 100           | 2,54         | 20   |
| F100...L | ICT / FCT           | 5,0                 | 6,4                 | 5,0                       | 35,3              | 1,37                 | 100           | 2,54         | 20   |
| F585     | ICT / FCT           | 5,0                 | 6,4                 | 5,0                       | 33,3              | 1,37                 | 100           | 2,54         | 20   |
| F585...L | ICT / FCT           | 5,0                 | 6,4                 | 5,0                       | 35,3              | 1,37                 | 100           | 2,54         | 20   |
| F588...S | ICT / FCT           | 9,6                 | 10,3                | 5,0                       | 37,3              | 1,37                 | 100           | 2,54         | 22   |
| F588     | ICT / FCT           | 9,6                 | 12,0                | 5,0                       | 39,0              | 1,37                 | 100           | 2,54         | 22   |
| F771     | ICT / FCT           | 3,5                 | 4,4                 | 3,0                       | 25,4              | 1,37                 | 100           | 2,54         | 23   |
| F562     | ICT / FCT           | 2,7                 | 4,1                 | 3,0                       | 24,7              | 1,37                 | 100           | 2,54         | 23   |
| F772     | ICT / FCT           | 4,0                 | 5,0                 | 5,0                       | 32,0              | 1,66                 | 100           | 2,54         | 24   |
| F782     | ICT / FCT           | 6,4                 | 8,0                 | 5,0                       | 38,0              | 1,66                 | 100           | 2,54         | 26   |
| F786     | ICT / FCT           | 6,4                 | 8,0                 | 5,0                       | 38,0              | 1,66                 | 100           | 2,54         | 26   |
| F797     | ICT / FCT           | 8,0                 | 10,0                | 5,0                       | 37,0              | 1,66                 | 100           | 3,50         | 26   |
| F563     | ICT / FCT           | 4,2                 | 6,4                 | 6,0                       | 33,0              | 2,02                 | 126           | 3,18         | 28   |
| F564     | ICT / FCT           | 4,2                 | 6,4                 | 7,0                       | 33,5              | 2,36                 | 126           | 3,18         | 29   |
| F566     | ICT / FCT           | 4,2                 | 6,4                 | 8,0                       | 36,1              | 3,18                 | 187           | 4,75         | 29   |
| F773     | ICT / FCT           | 4,0                 | 5,0                 | 10,0                      | 27,0              | 2,65                 | 138           | 3,50         | 30   |
| F785     | ICT / FCT           | 6,4                 | 8,0                 | 10,0                      | 38,0              | 2,65                 | 138           | 2,54         | 30   |
| F796     | ICT / FCT           | 8,0                 | 10,0                | 10,0                      | 37,0              | 2,65                 | 138           | 3,50         | 31   |
| F591     | ICT / FCT           | 5,0                 | 6,4                 | 3,0                       | 34,6              | 0,79                 | 50            | 1,27         | 32   |
| F592     | ICT / FCT           | 5,0                 | 6,4                 | 3,0                       | 43,2              | 0,79                 | 50            | 1,90         | 32   |
| F593     | ICT / FCT           | 5,0                 | 5,7                 | 3,0                       | 33,3              | 1,00                 | 75            | 2,54         | 32   |
| F595     | ICT / FCT           | 5,0                 | 5,6                 | 5,0                       | 33,3              | 1,37                 | 100           | 2,54         | 32   |
| F681     | Fine Pitch Probes   | 0,64                | 0,76                | 0,15                      | 6,9               | 0,35                 | 20            | 0,50         | 37   |
| F680     | Fine Pitch Probes   | 0,50                | 1,00                | 0,50                      | 5,9               | 0,58                 | 30            | 0,75         | 37   |
| F685     | Fine Pitch Probes   | 0,75                | 1,00                | 0,50                      | 8,7               | 0,58                 | 30            | 0,75         | 37   |
| F238     | Fine Pitch Probes   | 2,00                | 2,50                | 0,50                      | 24,5              | 0,38                 | 20            | 0,50         | 38   |
| F206     | Fine Pitch Probes   | 2,00                | 2,50                | 1,00                      | 24,5              | 0,51                 | 28            | 0,70         | 38   |
| F252     | Fine Pitch Probes   | 2,00                | 2,50                | 1,50                      | 24,5              | 0,68                 | 40            | 1,00         | 38   |
| F239     | Fine Pitch Probes   | 1,50                | 2,50                | 0,50                      | 20,5              | 0,38                 | 20            | 0,50         | 39   |
| F207     | Fine Pitch Probes   | 2,00                | 2,50                | 1,00                      | 20,3              | 0,51                 | 28            | 0,70         | 39   |
| F109     | Fine Pitch Probes   | 2,00                | 2,30                | 0,50                      | 15,8              | 0,49                 | 40            | 1,00         | 41   |
| F111     | Short Travel Probes | 2,00                | 2,50                | 1,5                       | 16,5              | 0,69                 | 50            | 1,27         | 42   |
| F113     | Short Travel Probes | 1,70                | 2,54                | 3,0                       | 16,1              | 0,69                 | 50            | 1,27         | 42   |
| F114     | Short Travel Probes | 2,2                 | 2,8                 | 3,0                       | 16,5              | 0,69                 | 50            | 1,27         | 42   |
| F112     | Short Travel Probes | 2,00                | 2,50                | 1,5                       | 16,5              | 0,69                 | 50            | 1,27         | 43   |
| F115     | Short Travel Probes | 1,27                | 1,27                | 3,0                       | 15,0              | 0,69                 | 50            | 1,27         | 43   |
| F605     | Short Travel Probes | 0,80                | 1,20                | 1,0                       | 11,4              | 0,67                 | 50            | 1,27         | 44   |
| F709     | Short Travel Probes | 1,00                | 1,20                | 1,0                       | 5,3               | 0,91                 | 59            | 1,50         | 45   |
| F670     | Short Travel Probes | 0,80                | 1,20                | 2,0                       | 9,5               | 1,37                 | 100           | 2,54         | 46   |
| F708     | Short Travel Probes | 1,00                | 1,20                | 3,0                       | 5,3               | 1,40                 | 75            | 1,90         | 46   |
| F620     | Short Travel Probes | 1,30                | 1,60                | 3,0                       | 12,7              | 1,65                 | 100           | 2,54         | 47   |
| F630     | Short Travel Probes | 0,90                | 1,30                | 1,0                       | 22,2              | 1,58                 | 100           | 2,54         | 47   |
| F702     | Short Travel Probes | 1,50                | 2,20                | 1,5                       | 8,0               | 2,00                 | 106           | 2,70         | 48   |
| F705     | Short Travel Probes | 1,50                | 3,00                | 5,0                       | 12,7              | 2,00                 | 106           | 2,70         | 48   |
| F706     | Short Travel Probes | 1,00                | 1,20                | 5,0                       | 5,3               | 2,00                 | 106           | 2,70         | 48   |
| F504     | Interface Probes    | 2,4                 | 3,2                 | 5,0                       | 21,5              | 1,37                 | 100           | 2,54         | 50   |
| F538     | Interface Probes    | 2,7                 | 4,0                 | 3,0                       | 25,7              | 1,37                 | 100           | 2,54         | 50   |
| I585     | Interface Probes    | 5,0                 | 6,4                 | 3,0                       | 33,0              | 1,37                 | 130           | 3,30         | 51   |
| F730     | Threaded probes     | 4,0                 | 5,0                 | 3,0                       | 28,9              | 0,66                 | 50            | 1,27         | 64   |
| F175     | Threaded probes     | 5,0                 | 6,3                 | 3,0                       | 35,9              | 1,00                 | 75            | 1,90         | 65   |
| F731     | Threaded probes     | 3,5                 | 4,4                 | 5,0                       | 27,9              | 1,37                 | 87            | 2,20         | 66   |
| F731...L | Threaded probes     | 3,5                 | 4,4                 | 5,0                       | 32,0              | 1,37                 | 87            | 2,20         | 66   |
| F722     | Threaded probes     | 1,5                 | 2,2                 | 1,0                       | 11,0              | 1,65                 | 100           | 2,54         | 67   |
| F732     | Threaded probes     | 4,0                 | 5,0                 | 5,0                       | 35,7              | 1,65                 | 100           | 2,54         | 68   |
| F732...L | Threaded probes     | 4,0                 | 5,0                 | 5,0                       | 37,7              | 1,65                 | 100           | 2,54         | 68   |

| Probe     | Chapter             | Nominal Travel (mm) | Maximum Travel (mm) | Maximum Cont. Current (A) | Total Length (mm) | Barrel Diameter (mm) | Centers (mil) | Centers (mm) | Page |
|-----------|---------------------|---------------------|---------------------|---------------------------|-------------------|----------------------|---------------|--------------|------|
| F723      | Threaded probes     | 2,8                 | 3,5                 | 10,0                      | 17,1              | 2,65                 | 138           | 3,50         | 72   |
| F733      | Threaded probes     | 4,0                 | 5,0                 | 10,0                      | 28,3              | 2,64                 | 157           | 4,00         | 73   |
| F733...L  | Threaded probes     | 4,0                 | 5,0                 | 10,0                      | 34,0              | 2,64                 | 157           | 4,00         | 73   |
| F737      | Threaded probes     | 12,0                | 14,3                | 10,0                      | 57,3              | 2,65                 | 157           | 4,00         | 77   |
| F777      | Threaded probes     | 12,0                | 14,3                | 10,0                      | 59,4              | 2,65                 | 157           | 4,00         | 77   |
| F873      | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 50,6              | 1,66                 | 100           | 2,54         | 79   |
| F875      | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 50,6              | 1,66                 | 100           | 2,54         | 80   |
| F875...L  | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 57,1              | 1,66                 | 100           | 2,54         | 80   |
| F375      | Switch Probes       | 8,0                 | 9,5                 | 5,0                       | 55,2              | 1,66                 | 100           | 2,54         | 81   |
| F880      | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 44,8              | 2,65                 | 138           | 3,50         | 83   |
| F880...L  | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 51,3              | 2,65                 | 138           | 3,50         | 83   |
| F881      | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 48,6              | 2,65                 | 138           | 3,50         | 84   |
| F883...SM | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 44,8              | 2,65                 | 138           | 3,50         | 85   |
| F883...LM | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 51,3              | 2,65                 | 138           | 3,50         | 85   |
| F884...SM | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 44,8              | 2,65                 | 138           | 3,50         | 86   |
| F884...LM | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 51,3              | 2,65                 | 138           | 3,50         | 86   |
| F885...SM | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 44,8              | 2,65                 | 138           | 3,50         | 87   |
| F885...LM | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 51,3              | 2,65                 | 138           | 3,50         | 87   |
| F886...SM | Switch Probes       | 4,0                 | 4,2                 | 1,0                       | 44,8              | 2,65                 | 138           | 3,50         | 88   |
| F886...LM | Switch Probes       | 4,0                 | 4,2                 | 1,0                       | 51,3              | 2,65                 | 138           | 3,50         | 88   |
| F385      | Switch Probes       | 9,0                 | 11,0                | 1,0                       | 51,6              | 2,65                 | 100           | 2,54         | 89   |
| F887      | Switch Probes       | 4,0                 | 5,0                 | 1,0                       | 24,5              | 2,46                 | 157           | 4,00         | 91   |
| F888      | Switch Probes       | 1,0                 | 1,0                 | 1,0                       | 26,3              | 5,00                 | 276           | 6,50         | 92   |
| F888      | Switch Probes       | 1,0                 | 1,0                 | 1,0                       | 21,0              | 7,00                 | 374           | 8,00         | 92   |
| F888      | Switch Probes       | 1,0                 | 1,0                 | 1,0                       | 19,9              | 6,00                 | 256           | 9,50         | 92   |
| F752      | Twist Proof Probes  | 4,0                 | 5,0                 | 3,0                       | 35,0              | 1,65                 | 100           | 2,54         | 94   |
| F752...L  | Twist Proof Probes  | 4,0                 | 5,0                 | 3,0                       | 38,0              | 1,65                 | 100           | 2,54         | 94   |
| F756      | Twist Proof Probes  | 4,0                 | 4,4                 | 5,0                       | 41,6              | 1,64                 | 100           | 2,54         | 95   |
| F757      | Twist Proof Probes  | 2,0                 | 3,5                 | 5,0                       | 36,1              | 1,64                 | 100           | 2,54         | 96   |
| F760...S  | Twist Proof Probes  | 4,0                 | 5,0                 | 10,0                      | 39,8              | 2,64                 | 138           | 3,50         | 97   |
| F760...L  | Twist Proof Probes  | 4,0                 | 5,0                 | 10,0                      | 42,5              | 2,64                 | 138           | 3,50         | 97   |
| F761      | Twist Proof Probes  | 2,0                 | 3,5                 | 10,0                      | 39,8              | 2,64                 | 138           | 3,50         | 98   |
| F755      | Twist Proof Probes  | 4,0                 | 5,0                 | 10,0                      | 38,0              | 3,00                 | 177           | 4,50         | 99   |
| F755      | Twist Proof Probes  | 4,0                 | 5,0                 | 10,0                      | 38,0              | 3,00                 | 177           | 4,50         | 99   |
| F754...S  | Twist Proof Probes  | 4,0                 | 5,0                 | 5,0                       | 35,0              | 2,65                 | 177           | 4,50         | 101  |
| F754...L  | Twist Proof Probes  | 4,0                 | 5,0                 | 5,0                       | 39,0              | 2,65                 | 177           | 4,50         | 101  |
| VF100     | Push Back Probes    | 5,0                 | 5,5                 | 5,0                       | 69,5              | 2,20                 | 100           | 2,54         | 102  |
| VF3       | Push Back Probes    | 5,0                 | 5,5                 | 8,0                       | 69,7              | 2,60                 | 118           | 3,00         | 103  |
| VF4       | Push Back Probes    | 5,0                 | 5,5                 | 8,0                       | 69,7              | 3,60                 | 157           | 4,00         | 104  |
| V03       | Push Back Probes    | 5,0                 | 6,0                 | 8,0                       | 72,8              | 2,50                 | 118           | 3,00         | 106  |
| F310      | High Current Probes | 2,4                 | 3,0                 | 6,0                       | 26,0              | 0,99                 | 59            | 1,50         | 107  |
| F320      | High Current Probes | 3,2                 | 4,0                 | 10,0                      | 32,0              | 1,35                 | 67            | 1,70         | 107  |
| F330      | High Current Probes | 5,6                 | 7,0                 | 16,0                      | 40,0              | 2,00                 | 100           | 2,54         | 108  |
| F340      | High Current Probes | 6,4                 | 8,0                 | 20,0                      | 50,0              | 2,40                 | 157           | 4,00         | 108  |
| F732...C  | High Current Probes | 4,0                 | 5,0                 | 16,0                      | 35,7              | 1,65                 | 100           | 3,50         | 109  |
| F772...C  | High Current Probes | 4,0                 | 5,0                 | 16,0                      | 32,0              | 1,65                 | 100           | 3,50         | 110  |
| F773...C  | High Current Probes | 4,0                 | 5,0                 | 24,0                      | 27,3              | 2,65                 | 138           | 3,50         | 111  |
| F733...C  | High Current Probes | 4,0                 | 5,0                 | 24,0                      | 28,3              | 2,65                 | 157           | 4,00         | 112  |
| F723...C  | High Current Probes | 2,8                 | 3,5                 | 24,0                      | 17,1              | 2,65                 | 138           | 3,50         | 113  |
| F735      | High Current Probes | 4,4                 | 5,5                 | 50,0                      | 38,5              | 3,50                 | 197           | 5,00         | 114  |
| F775      | High Current Probes | 4,4                 | 5,5                 | 50,0                      | 43,1              | 3,50                 | 197           | 5,00         | 114  |
| F351      | High Current Probes | 7,0                 | 12,0                | 100                       | 81,0              | 15,0                 | 670           | 16,5         | 115  |
| F352      | High Current Probes | 7,0                 | 11,0                | 200                       | 90,0              | 25,0                 | 1043          | 26,5         | 115  |
| F354      | High Current Probes | 7,0                 | 11,0                | 400                       | 115,5             | 32,0                 | 1280          | 32,5         | 115  |
| F815      | Kelvin Probes *     | 3,0                 | 5,0                 | 3,0                       | 99,2              | 3,01                 | 177,0         | 4,50         | 116  |
| F810      | Kelvin Probes *     | 2,3                 | 3,5                 | 3,0                       | 34,0              | 1,78                 | 100           | 2,54         | 117  |
| F830      | Kelvin Probes *     | 4,0                 | 5,0                 | 5,0                       | 36,0              | 3,40                 | 157,0         | 4,00         | 118  |
| F820      | Kelvin Probes *     | 2,0                 | 2,5                 | 6,0                       | 30,0              | 4,30                 | 200,0         | 5,00         | 119  |
| F821      | Kelvin Probes *     | 2,0                 | 2,5                 | 6,0                       | 30,8              | 4,30                 | 217,0         | 5,50         | 120  |
| F822      | Kelvin Probes *     | 2,0                 | 2,5                 | 6,0                       | 31,0              | 4,30                 | 197,0         | 5,50         | 121  |
| F835      | Kelvin Probes *     | 4,0                 | 5,0                 | 10,0                      | 44,8              | 2,65                 | 138,0         | 3,50         | 123  |
| F831      | Kelvin Probes *     | 2,0                 | 2,5                 | 6,0                       | 31,0              | 4,30                 | 217           | 5,50         | 124  |
| F832      | Kelvin Probes *     | 2,0                 | 2,5                 | 6,0                       | 31,0              | 4,30                 | 217           | 5,50         | 124  |
| F840      | Kelvin Probes *     | 5,0                 | 5,5                 | 20,0                      | 38,3              | 5,50                 | 276           | 7,00         | 126  |
| F872      | HF-Probes *         | 2,0                 | 2,8                 | 1,0                       | 20,0              | 1,05                 | 50            | 1,27         | 127  |
| F869      | HF-Probes *         | 2,0                 | 4,0                 | 1,0                       | 36,6              | 4,60                 | 100           | 2,54         | 128  |
| F870      | HF-Probes *         | 2,4                 | 2,8                 | 1,0                       | 20,0              | 2,30                 | 217           | 5,50         | 128  |