THE SPRING-LOADED CONTACT

A modern alternative to conventional connection solutions

Superior technical characteristics
Well proven reliability in service
Easy, cost-effective integration
A WELL PROVEN
TYPE OF CONTACT

The first applications
In 1995, we designed our first spring-loaded contacts for mobile telephony. At this period of time, the market for mobile phones was expanding at a very fast rate. The requests of the customers concentrated on three basic requirements: miniaturisation, reliability, low cost. The new spring-loaded contact with its helical compression spring, presented by PRECI-DIP, was the perfect answer.

Research and design
In order to respond to the requirements of this application, we developed a variety of innovative solutions, requiring a considerable investment. We also acquired a specific know-how, which we now make available to you.

A developing market
Thanks to its numerous advantages, the spring-loaded contacts quickly found uses in a variety of other applications.

The ease of integration and the inherent simplification of the mechanical design and assembly of electronic equipment brought our connectors into an omnipresent position on the connectors market. Presently, we can affirm that PRECI-DIP is one of the world leaders in the production of spring-loaded contacts.

General characteristics
- Very long lifetime: up to 100,000 cycles;
- Excellent electrical characteristics;
- Very good resistance to shocks and vibration;
- Small dimensions for use in applications with limited space;
- SMD, through hole, press-fit or wire soldering terminations;
- Very good design flexibility: floating contact, double action contact;
- Many product versions, from 3 mm contact length upward;
- Tape & Reel or carrier packaging for automatic assembly equipment.

The connectors can be supplied on tape & reel for processing on automatic pick and place assembly lines.

SPECIFIC ADVANTAGES

- Admits important positioning tolerances of the connectors.
- Compensates errors of parallelism and flatness.
- Connects surfaces non-perpendicular to the contact axis.
- Connects pivoting or rotating elements.
- Connects with sliding mating action (push & lock) e.g. audio connectors, camera lenses, etc.
- Suitable for blind matings: connection solution for confined assemblies.

Suitable for blind matings: connection solution for confined assemblies.
**Functional principle**
PRECI-DIP spring-loaded contacts are composed of a contact body or barrel, a piston and a helical compression spring. The electrical contact is established by the pressure exerted by the spring of the piston against a fixed, flat area of the opposite part. This is currently called the «dead connector».

**An evolving line**
Based on this initial model, we have developed additional designs featuring particular advantages:

- contacts with a slant spring bearing surface of the piston. This design exerts a lateral force on the piston, resulting in a lower ohmic resistance.
- patented contact design with integrated multifinger sliding contact establishing electrical continuity between the contact body and the piston. This solution, protected by international patents, comes in two versions: «coaxial» type and «in-line» type.

The electrical multipoint connection between the mobile piston and the clip guarantees low, stable electrical resistance values without micro-discontinuities, even when the piston is moving or in case of vibrations, thus assuring maximum reliability.

We can produce a wide range of dimensions with varying technical specifications (see table).

**Contact us!**
We will be happy to help you with additional information on existing products and their technical data or for a study of a customised product. Please visit us at www.precidip.com or mail us at: sales@precidip.com

---

### TECHNOLOGY OF SPRING-LOADED CONTACT

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Standard contacts</th>
<th>«High Reliability» contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piston + barrel type</td>
<td>Slant piston + barrel</td>
<td>Clip coaxial design</td>
</tr>
</tbody>
</table>

#### Environmental

- **Operating temp. range**
  
  - 55 to + 125 °C

#### Materials

- **Piston**
  - Gold plated machined brass
- **Barrel**
  - Gold plated machined brass
- **Spring**
  - Stainless steel / gold plated music wire
- **Clip**
  - Gold plated BeCu C17200

#### Mechanical

- **Min. diameter**
  - 1.8 mm
  - 1.5 mm
  - 1.8 mm
  - 1.0 mm
- **Min. initial height**
  - 3 mm
  - 6 mm
  - 5 mm
  - 10 mm
- **Travel / height ratio**
  - Max. 0.3
  - Max. 0.2
  - Max. 0.2
  - Max. 0.15
- **Max. travel (stroke)**
  - 2 mm
  - 2 mm
  - 1.5 mm
  - 1.5 mm
- **Min. initial spring force**
  - 0.2 N
  - 0.2 N
  - 0.2 N
  - 0.2 N
- **Mechanical life**
  - Min. 100 000 cycles
  - Min. 50 000 cycles
  - Min. 40 000 cycles
  - Min. 40 000 cycles

#### Electrical

- **Contact resistance**
  - Max. 15 mΩ*
  - Max. 10 mΩ*
  - Max. 20 mΩ
  - Max. 20 mΩ
- **Max. operating current**
  - 3.5 A cont.** / 7 A peak
  - 2 A cont.** / 4 A peak

* Static measurement in halfway position of piston travel.
** Above max. current values are for single contacts in free air and for 10°C temperature rise.
MOBILE COMMUNICATION TERMINALS

1. Connector with integrated guiding system for docking station for professional mobile radio.
2. Connector with holding bracket for remote microphone and control unit for mobile radio.
3. SIM card connector in mobile phones and professional mobile radios.
4. Connector for sealed assembly for mobile phone battery.
5. SMD spring-loaded board-to-board connector for blind assembly on professional mobile radio.
6. Double action connector, cover position detector on mobile phone.
7. SMD connector for automatic assembly for mobile phone loudspeaker.

PORTABLE DATA PROCESSING AND ACQUISITION UNITS

1. Battery connector on portable data processing unit.
2. Connector for security control loop on automatic cash dispenser, banking and vending machines.
3. SMD connector for docking station for tablet-PC, PDA and bar code readers.

VEHICLE EQUIPMENT

1. SMD spring-loaded and dead connector for dash board add-on for telecommunication equipment.
2. Connector for press-fit assembly and connection to removable operation panel for car radio.
3. SMD connector for internal dash board connection.

AIRCRAFT, AEROSPACE AND MILITARY EQUIPMENT

1. Board-to-board connection in tactical manpack radio.
2. High-stiffness 2 mm-pitch connector for avionics equipment.
3. Sealed connector with very high contact pressure for avionics equipment, electronic defence systems.
AUTOMATION AND INDUSTRIAL EQUIPMENT

1. Internal board-to-board connector for electro-pneumatic actuator.
2. SMD connector for industrial sensor.
3. Spring-loaded and dead connector for gate control on automatic conveyor system.

TESTING AND MEASURING EQUIPMENT

1. Connector for calibration and testing equipment for field-installed sensors and transducers.
2. Spring-loaded connector with recessed pistons for functional test systems for disk drives.
3. Connector with mixed SMD and through-hole terminations for bare-board test systems.

MEDICAL EQUIPMENT

1. Floating-pin spring-loaded connector with integrated snap-in bracket for motherboard to mezzanine board connection.
2. Overmoulded miniature connectors with high degree of protection IP 67 for patient monitoring systems.

PROFESSIONAL AND CONSUMER ELECTRONIC GOODS

1. Clamp-on connector to load data from wrist-watch type diving computer into PC.
2. Cable-to-cable connector for audio professional headset.
3. Board-to-board connection for model train.
5. Double-action connector for modular system of professional camera.
Many years of experience
PRECI-DIP Durtal SA, established 1976 in Delémont, capital of the Swiss Jura, has long experience in manufacturing screw-machined high precision contacts.

Today, we are one of the world leaders in manufacturing connectors with spring-loaded contacts. We offer a large line of reliable, high-quality standard contacts, available in loose condition or assembled with insulator bodies.

Take advantage of our experience in studying and quoting solutions according to your specific requirements. You will be pleasantly surprised by the rapidity of implementation.

Customer safety
We fully guarantee the reliability and the irreproachable performance of our products. To this end, we have chosen a challenging, but efficient way: under the surveillance of a vigilant quality assurance organisation (ISO 9001:2000), we handle in our own manufacturing plant:
- The screw-machining of all parts including possible secondary operations;
- All the electroplating processes and surface treatments;
- The production of the miniature helical springs with precisely defined characteristics;
- The injection of the insulator bodies in materials adapted to their application;
- All the assembling operations, executed on automatic equipment of our own design.

Fully integrated production...
Flexibility, rapidity, know-how
Mastering the entire product by an integrated production tool is one of the best trump cards one can have.

Our special machinery is designed and built by our engineering department. We are therefore totally independent from any sub-contractors. Consequently, we will be able to respond to all your enquiries with economically priced solutions, equally for small or high volume batches.

info and products online : www.precidip.com

<table>
<thead>
<tr>
<th>CONNECT US !</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRECI-DIP Durtal SA</td>
</tr>
<tr>
<td>Rue Saint-Maurice 34, P.O.Box 341</td>
</tr>
<tr>
<td>CH-2800 Delémont / Switzerland</td>
</tr>
<tr>
<td>Phone: +41 (0)32 421 04 00</td>
</tr>
<tr>
<td>Fax: +41 (0)32 421 04 01</td>
</tr>
<tr>
<td>E-mail: <a href="mailto:sales@precidip.com">sales@precidip.com</a></td>
</tr>
</tbody>
</table>