



Positronic Industries  
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# Solid Technology from Positronic



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## Reliability

- Solid machined contacts meet performance requirements for Military applications – M24308, M28748, and M39029 as examples.
- Solid machined contacts meet performance requirements for space applications – GSFC-311 for example.
- Solid machined contacts meet high-end performance needs in applications such as aviation, medical, telecom, and industrial electronics - IEC60807-2, IEC60807-3, IEC60807-6, and IEC60807-7 as examples.
- Solid machined male contacts do not easily bend if subjected to misuse. Stamped contact technology produces round male contacts that are “hollow”. These are susceptible to bending, which can result in contact breakage. Bent male contacts can also cause damage to female connector mates.
- Solid male contacts are circular. Stamped contacts can be oval-shaped or triangular in shape. These conditions can minimize the surface area in the connection between male and female contacts. If a contact leans to a “triangular” shape, edges are formed which can damage plating on the female contact mate.
- Solid machined female contacts have more material in the walls of the contact than do stamped contacts. This allows the female contact to have a more stable normal force over time. Stable normal forces render stable contact resistance. Heavier contact walls also resist unintentional abuse by the connector user.
- Machined female contacts can employ closed entry designs. The opening of the female contact is an unbroken ring. This feature helps prevent the female contact from losing its normal force during repeated mating cycles and potential abuse.
- Solid machined contacts have a substantially higher degree of performance under shock and vibration conditions than do stamped contacts. Shock and vibration can cause discontinuity across the contact interface if lower performance connectors are used.

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- Connectors designed to withstand high numbers of mating cycles employ machined contact technology.
- Machined contacts seat into connector housing utilizing square edged retaining features. Stamping contacts out of sheet metal can produce a radius on the retention feature that allows the contact to be pushed out of the housing more easily.
- Solid machined contacts with crimp terminations provide a 360-degree, gas tight interface between the wire and the crimp barrel. The crimp is robust and does not require additional mechanical attachment to the wire insulation to pass pull tests.

## Electrical Current Density

- Solid machined contacts have much greater cross sectional area than do stamped contacts. More cross sectional area provides lower contact resistance and allows machined contacts to carry more current through any given space.
- Many machined contact designs provide a large surface area interface between male and female contacts. Greater surface area at the interface provides superior contact resistance and current-carrying characteristics.
- Solid machined contacts provide uniform thermal transfer of heat generated at the contact interface. The interface between male and female contacts is almost always the hottest area in the circuit path. This assumes that conductors in the circuit are sized properly to carry a given current. Efficient thermal transfer of the heat generated at the contact interface into the relatively larger circuit path allows more current to be carried through individual contacts.

## Value

- State-of-the-art manufacturing techniques have decreased manufacturing costs of machined contacts allowing competitive pricing against stamped contacts in many applications.
- Machined contact tooling for application specific products or the release of new standard products is dramatically lower priced than new stamped contact tooling. This fact negates the need to amortize high tooling costs into new connector designs.
- Utilizing high performance machined contacts adds value to electronic equipment by helping to eliminate field failures.
- Higher current density allows fewer connectors and wires to be used. This can save time and money in upfront costs, inventory costs, and manufacturing costs.

*Positronic is dedicated to supplying high reliability connector products to a wide variety of high-end applications.*

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