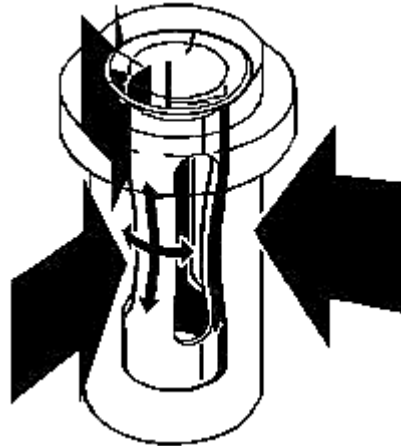


## Technical Information - Cambion Cage Jacks



**Figure 1 The compound curvature of the Cambion cage jack connector spring gives high normal force and long term reliability over many cycles.**

Formed from beryllium copper then annealed and plated, the cage jack spring is the heart of the Cambion cage jack connector. The spring is manufactured in such a way that the holes through the body of the spring are punched from inside to out thus ensuring that any microscopic burrs that are formed during the punching process are on the outside of the spring and do not cause damage to any mating plug that is inserted into the finished connector.

The spring is formed in an hour glass shape with three individually acting leaf springs which are joined top and bottom. Each leaf has a compound curvature, the long curve, top to bottom, provides the spring action whilst the short curve around the inside of the spring conforms to the circumference of the mating pin. This second plane of curvature also has the effect of stiffening and strengthening the spring (see Figure 1 at the top of this page).

The spring is formed in this way for a variety of reasons. Firstly, the three contact leaves make contact with 60% of the circumference of the mated pin. Secondly, the hourglass shape means that there is considerable wiping of the contact area by the mating pin during insertion which ensures a clean contact area. Thirdly, reliability of connection is assured by having three individually spring loaded metal to metal contacts which provide parallel conductor paths. Failure of one due to an insulating fragment not being wiped away during insertion or temporary open circuit due to mechanical shock will leave two parallel conductive paths and maintain a good connection.

The body of the cage jack is either formed from copper or turned from brass. Simple, low cost jack bodies are deep drawn using copper, where more complex shapes are required, bodies are turned from

brass. During the assembly process the spring is inserted into the body and the outer edge of the body carefully rolled over to captivate the spring. Once this operation is complete, it is impossible to remove the spring without destroying the connector body.

### Electrical Performance Data

| Cage Jack Diameter | Average Contact Resistance (mW) | @ Rated Current For 1°C DT (A) | Max Current For 30°C DT (A) |
|--------------------|---------------------------------|--------------------------------|-----------------------------|
| .020"(0,51mm)      | 1.5                             | 1.4                            | 11.0                        |
| .025"(0,64mm)      | 1.2                             | 1.7                            | 14.2                        |
| .030"(0,76mm)      | 1.1                             | 2.1                            | 17.0                        |
| .040"(1,02mm)      | 1.0                             | 3.0                            | 23.0                        |
| .050"(1,27mm)      | 1.0                             | 3.0                            | 27.0                        |
| .062"(1,57mm)      | 0.56                            | 3.5                            | 30.0                        |
| .080"(2,03mm)      | 0.35                            | 4.0                            | 32.0                        |

### Mechanical Performance data

#### Insertion/extraction forces

| Cage Jack Diameter | Typical Insertion Force |       | Typical Extraction Force |       |
|--------------------|-------------------------|-------|--------------------------|-------|
|                    | Ounces                  | Grams | Ounces                   | Grams |
| .020"(0,51mm)      | 5.5                     | 156   | 4.5                      | 128   |
| .025"(0,64mm)      | 14.5                    | 411   | 10                       | 284   |
| .030"(0,76mm)      | 14.5                    | 411   | 10                       | 284   |
| .040"(1,02mm)      | 14.5                    | 411   | 10                       | 284   |
| .050"(1,27mm)      | 14.5                    | 411   | 10                       | 284   |
| .062"(1,57mm)      | 17.5                    | 496   | 12                       | 340   |
| .080"(2,03mm)      | 44                      | 1247  | 32                       | 907   |

Note:- Typical insertion extraction forces given here are for guidance only. They are measures using a polished, radiused steel pin, presented perpendicularly to the connector. There are many factors that could affect these figures such as the plating on the pin and cage jack; the angle of insertion of a mating pin; the positional tolerance of pin and socket when more than one mating pair is present.

Please contact us for specific information on insertion and extraction for a given pair of Cambion connectors.