ARIES CSP TEST SOCKET
"PROBE AND SPRING" EXPLANATION

Aries has designed a complete, new, cost effective concept for test sockets. The design is very cost effective for two reasons.

First, each contact position consists of just two elements – a probe, and a spring.

Second, Aries has "tooled up" five different "standardized" housings. The housings consist of the lid, the hinges, and the "frame" of the base. Since the standardized housings are molded, the only things that have to be machined are the "interposer set" and the "pressure pad" (described below).

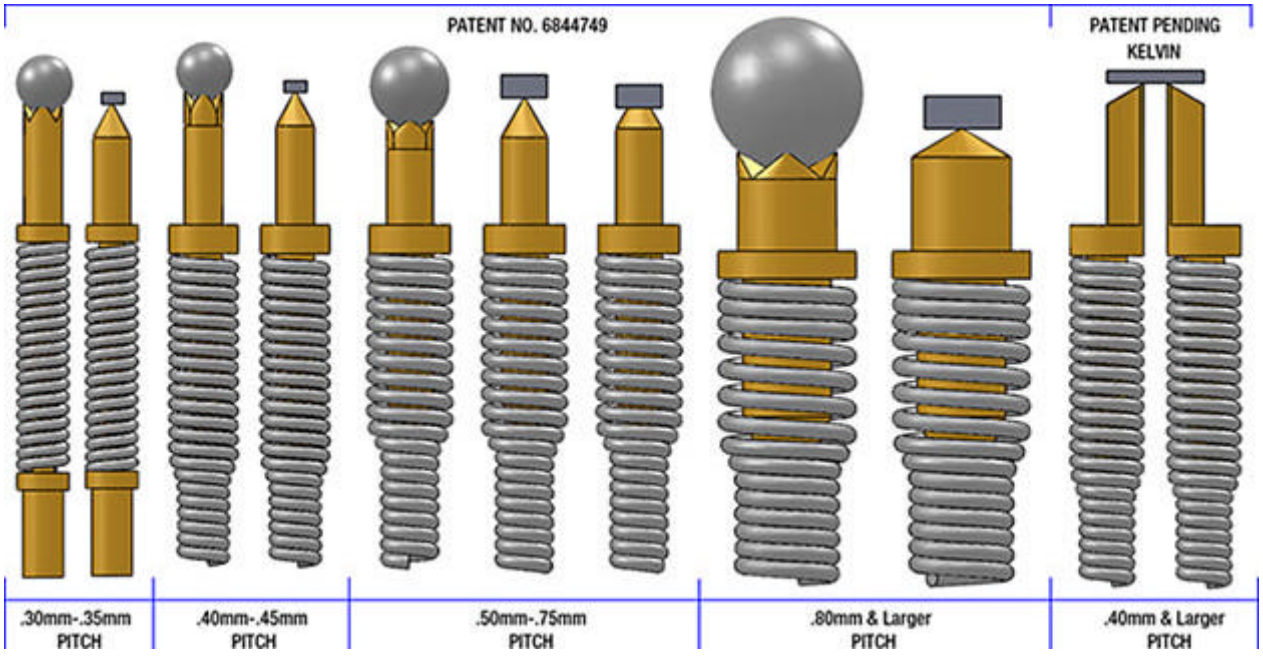
The five standardized housings are:

- Housing for devices up to 6.5mm square in size (see data sheet 23021, located at http://www.dema.net/pdf/htm/8970_23021.html).
- Housing for devices from 6.5mm square up to 13mm square in size (see data sheet 23017, located at http://www.dema.net/pdf/htm/6873_23017.html).
- Housing for devices from 13mm square up to 27mm square (see data sheet 23018, located at http://www.dema.net/pdf/htm/7206_23018.html).
- Housing for devices from 27mm square to 40mm square (see data sheet 23019, located at http://www.dema.net/pdf/htm/9539_23019.html).
- Housing for devices from 40mm square to 55mm square (see data sheet 23020, located at http://www.dema.net/pdf/htm/9592_23020.html).

An "interposer set" is inserted into the "frame" of the base. The interposer set is designed to work with the customer's specific device. If the customer's specific device is a BGA device, a crown shaped probe is used. If the customer's specific device is something other than BGA, an alternate probe is used (either sharp shaped, flat shaped, or special shaped, depending on the application).

The customer must create a new test board that is designed to accept the Aries socket. The Aries socket must be bolted down to the customer's new test board.

The key to the new Aries design is that it does not use pogo pins, and it does not use a Kapton interposer. Instead, the Aries design uses a contact that consists of just two pieces - a "probe" and a "spring". The following probe and spring illustration is on each of the above Aries data sheets:



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Here is how it works.

The “interposer set” consists of a top interposer and a bottom interposer. Both interposers are drilled to the exact footprint of the customer’s device.

When the Aries socket is manufactured, the top interposer is turned upside down. A probe is placed into each of the holes. Each hole is “tapered”. The probe fits in the hole, but it does not fall out because the bottom of the hole is smaller than the “shoulder” of the probe.

Next, a spring is placed over the bottom of each of the probes. Next, the “bottom interposer”(turned upside down) is positioned over the top of all the springs. The holes in the bottom interposer are tapered. The bottom of each spring projects out of the interposer hole. The spring does not fall out of the bottom interposer because the bottom of the hole is smaller than the diameter of the wide middle of the tapered spring.

Once this assembly process is complete, an “interposer sandwich” has been created. The completed interposer sandwich is turned over, so it is right-side up (with probes projecting from the top and springs projecting from the bottom), and is positioned into the appropriate “standardized housing”. (NOTE: the “sandwich” interposer set is replaceable, in the event the customer exceeds 500,000 cycles and wears out the original interposer set.)

Finally, a “pressure pad” is positioned into the lid of the “standardized housing”. The pressure pad can be very thick, or very thin, or in between. The thickness depends on the thickness of the device that is being tested (if the device is thin, the pressure pad is thick; if the device is thick, the pressure pad is thin – regardless, the thickness of the pressure pad is designed to insure that every device lead mates properly with its corresponding probe).

Once the completed socket is bolted to the test board, the bolting process causes the springs coming out of the bottom of the bottom interposer to mate with the pads of the customer’s test board via “pressure mount”. The customer places the device into the Aries test socket and closes the lid. The closing of the lid causes each device lead to mate with the top of its corresponding probe.

The closing of the lid also causes each spring to “collapse”, resulting in a very short signal path, since the signal path is from the device lead to the probe head to the (collapsed) spring to the test board pad.