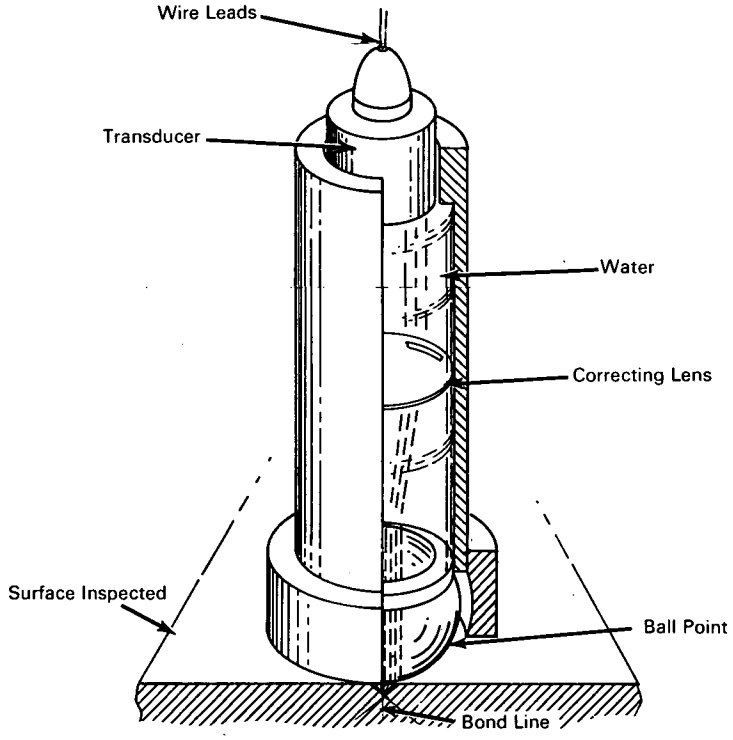
NASA TECH BRIEF

Ballpoint Probe Gives Optimum Results in Ultrasonic Testing



The problem:

To precisely focus an ultrasonic beam on the bond lines of a composite thin face sheet structure when testing for bond integrity. To obtain optimum results possible with ultrasonic testing, the beam must be accurately focused on the bond line. Contact transducers are physically impossible to focus; wheel transducers are bulky, have a fixed focal length, and also require an external couplant spray.

The solution:

A ballpoint-type ultrasonic probe assembly has been conceived which would scan in any direction, eliminate external couplant spray, and focus on the bond line. The probe would combine the features of larger, more complex probes into one small, easily used unit.

How it's done:

The ballpoint probe, shown in the figure, consists of a transducer, water as a couplant, a correcting lens, and a ballpoint contact.

During ultrasonic tests, the ball point is carefully placed on the bond line. The ultrasonic beam is then focused by varying the distance between the correcting lens and the transducer face (varying the focal point).

The external couplant spray is not required as the ball applies its own self-contained couplant, which

(continued overleaf)

flows around the edges of the ball. The scan motion can be in any direction by action of the rotating ball.

Note:

This development is in conceptual stage only and, as of date of publication of this Tech Brief, neither a model nor prototype has been constructed.

Patent status:

No patent action is contemplated by NASA.

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