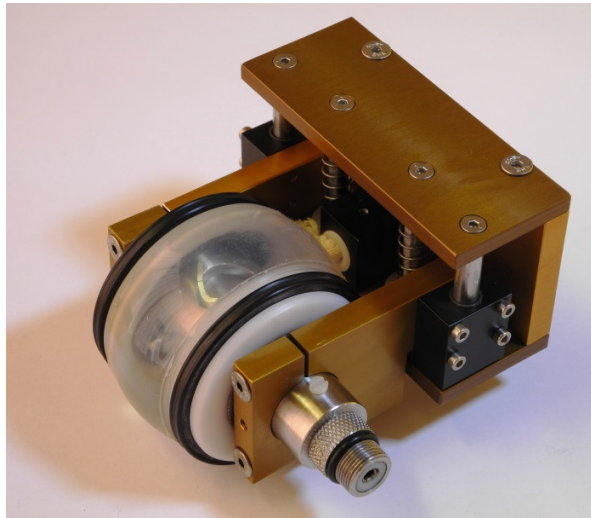


RL-70 ULTRASONIC WHEEL PROBE



The RL-70 ultrasonic wheel probe (or roller search unit) from N.T.S. Ultrasonics Pty Ltd will be of interest to organizations engaged in ultrasonic non-destructive testing. This wheel probe is intended for ultrasonic inspection applications requiring a single transducer aligned normal to the test surface. It presents a compact design suitable for use in many applications.

Advantages of the RL-70 ultrasonic wheel probe include:

- Compact size for the internal water path length achieved.
- Manual alignment (zeroing) not required.
- Downward pressure not required to ensure good surface contact.
- The acoustic impedance of the tyre material is similar to that of water.
- The design minimizes internal reflections.
- Uses off-the-shelf transducers.

Based on information from the client concerning the end application, N.T.S. Ultrasonics will select a suitable transducer for the RL-70 that matches the client requirements. Alternatively, the client can select a transducer compatible with the requirements of the RL-70.

Applications.

The RL-70 ultrasonic wheel probe is suited to a wide variety of applications including:

- Tank wall inspection.
- Drill stem inspection.
- Corrosion mapping.
- Thickness testing.
- Ultrasonic flaw detection.

RL-70 tyres.

The RL-70 tyres are manufactured from a modified commercially available resin. The tyres are relatively soft compared to the tyres of many other wheel probes. The intention is that softer tyres and low inflation pressures allow for better coupling on many surfaces.

Property	Value
Hardness	Shore A 40
Density	1.67 g/cc
Ultrasonic velocity	1.25 mm/us
Impedance	$2.085 \cdot 10^5 \text{ g}/(\text{cm}^2 \text{ sec})$
Insertion loss @ 5 MHz	Approx.. 12 dB
Attenuation @ 5 MHz	Approx. 2 dB/mm

The RL-70 tyre has limited **dry coupling** capability. On smooth surfaces dry coupling is possible with an approximately 12 dB loss compared to wet coupling.

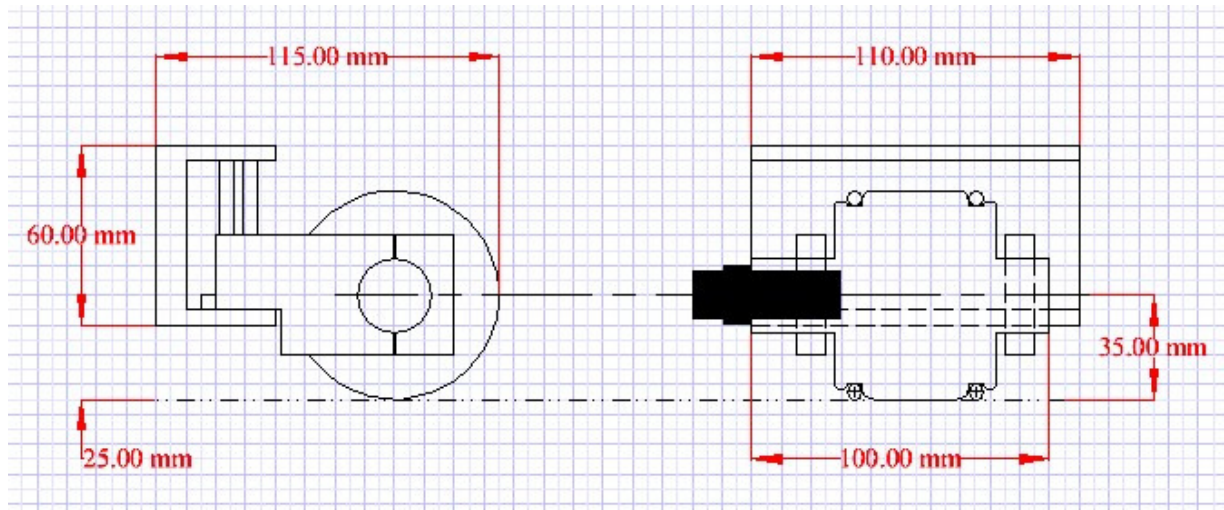
Caliper.

The RL-70 can be supplied with a caliper to allow attachment to crawlers and other structures. The caliper can be a simple bracket or can incorporate a full suspension system.

DESIGN FEATURES OF THE RL-70 WHEEL PROBE WITH SUSPENSION CALIPER.

- Quick changeover of wheels.
- Simple tyre clamping arrangement allows for simple removal of bubbles when filling the wheel with water.
- The stiffness of the suspension can be changed by adding/removing or changing springs.
- Long internal water path (delay) for the geometric size of the wheel allows for inspection depths in steel of nearly 220 mm.

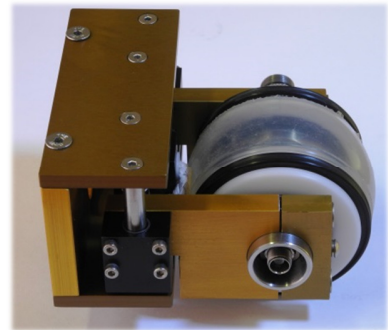
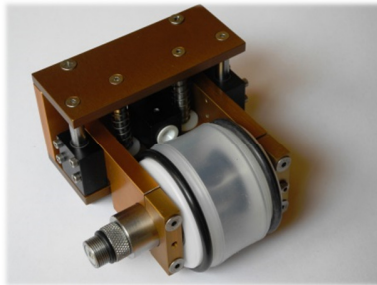
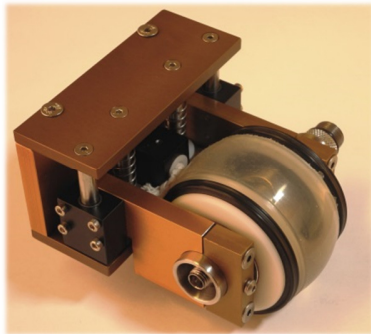
Property	Value
Wheel probe assembly weight	1.3 Kg
Wheel probe without caliper	650 g
Wheel diameter	Approx. 70 mm
Filling fluid	Water
Internal delay	75 us
Suspension stiffness (as supplied)	0.98 N/mm
Suspension stroke	25 mm
Maximum ultrasonic frequency	5 MHz
Couplant (typical)	Water



KEY DIMENSIONS OF THE RL-70 WHEEL PROBE WITH SUSPENSION CALIPER

Customizing.

The RL-70 ultrasonic wheel probe can be customized. The RL-70 design can be altered to take different types of transducer, or altered to produce a shear wave (forward, back, or side shooting) in the test material.



For more information on the RL-70 wheel probe, please contact:

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