

## Air-Coupled Composite Bond Tester



### Applications

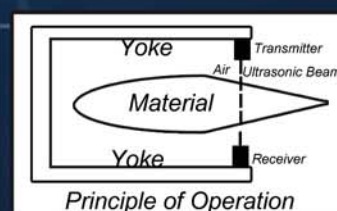
- Integrity of composites and adhesively bonded structures
- Inspections on highly attenuating multi-layered structures including carbon-carbon, wood, foam, glass fiber/ carbon fiber composites and honeycomb
- Delaminations, disbonds, skin to core flaws, crushed core, voids, Impact damage, liquid Ingress

### Features

- High Penetration air-coupled ultrasonics for attenuating materials
- RF display mode with flaw gate and alarm modes
- Non-contact, no surface preparation
- Robust aluminum construction with rubber end caps
- Custom Yokes for easy alignment of probes
- Programmable user setups



*Curlin Air- Inspection of composites using air-coupled ultrasonics*



*Magnetic wheeled carriers*

### Introduction

As the use of adhesively bonded structures has increased across many industries, the need for testing bond integrity has grown. Multiple glue lines, sandwich constructions with foam and honeycomb cores, bonded carbon fiber composites and even wood have all become important in manufacturing. The integrity of these bonds is critical to the quality of the final product.

Conventional ultrasonic methods can be limited for these applications and so a variety of alternative methods have been developed to handle this range of material combinations.

### High Penetration Ultrasonics

The Curlin Air is a non-contact, through transmission, air-coupled ultrasonic flaw detector. With an operating frequency of 50kHz, very low compared to conventional ultrasonic testing, the system is able to detect anomalies in the sound path through even the most attenuating materials. The Curlin Air requires no surface preparation and can penetrate up to 6 inches (150mm) of foam, wood, honeycomb and other materials with a high air volume ratio.

A transmitting and receiving probe are positioned on opposite sides of the test object by means of a mechanical yoke or a pair of magnetic wheeled carriers. The live displays shows instantly if the sound path is interrupted by a defect in the material. Flaw gates and alarms can be programmed and stored for each application.



# Curlin Air

## Unique Applications

The Curlin Air has become synonymous with specialized inspections including:

### Carbon-fiber sandwich with honeycomb core:

Aerospace application for control surfaces, thrust reversers, cargo doors-inspecting for skin-core disbonds or damaged core.

### Carbon-Carbon:

Space application used for heat shields- inspecting for delaminations, disbonds in highly porous material.

### Metal sandwich with foam core:

A typical construction used for fire doors and walls. Inspecting for voids in the foam core

### Solid Foam:

Inspecting for cracks or voids internally

### Drywall:

Used extensively in the construction industry

### Multiple core sandwich:

Marine composites application with multiple core sheets and glue lines between- inspecting for skin to core and core to core disbonds.



Carbon fiber skins, honeycomb core



Glass fiber skins, wood core



Multiple core sheets



Metal skins, foam core



Plastic to foam welds



Foam

TECHNICAL SPECIFICATIONS		
Physical	Package Includes:	Standard package includes Curlin Air instrument, Pelican style shipping case, manual, batteries, AC charger (110-240V) and Calibration Certificate
	Dimensions	10.20in. x 5.75in. x 4.50in. (259mm x 146mm x 114mm)
	Weight	6.3lb (2.9kg)
	Case Construction	Aluminum body, rubber end caps
	Connector Type	BNC
	Keypad type	Tactile membrane feedback keys
	Operating Temperature	32 °F to 140 °F (0 °C to 60 °C)
	Power Source	5x D-sized NiMH or alkaline (8-10 hours) or AC Mains (110-240V)
Display	Type	High-speed LCD
	Size	4.75in. x 3.50in. (121mm x 89mm)
Transducer	Type	AT1- Standard Transmitter and Receiver; 1.5in. (38mm) diameter AT2 Mini-Receiver; 0.25in. (6.4mm) diameter
	Freq range	50kHz
Measurements	Thickness Range	1in. to 200in. (0.025m to 5.08m) in Air
	Velocity Range	0.005 to 0.750in./μs (0.13 to 19.05mm/μs)
	Delay	0in. to 199in. (0m to 5.05m) in Air
	Gain	115dB
	Display modes	RF
	Pulse Length	Adjustable cycles in tone-burst
	Units Displayed	In. / mm
	Alarms	Audible and visual alarm modes
	Gates	Amplitude
Connectivity	Storage	Up to 50 setups
	Output	Analog Output (option)
Options		Transducers, Yoke adapters, Magnetic wheeled carriers

The specifications in this document are subject to change without notice.

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