MILITARY VEHICLE GROUND SUPPORT ULTRASONIC INSPECTION



DESCRIPTION

The most common areas for ultrasonic inspection in ground and air transportation are: air/water/gas leaks into personnel & equipment compartments, pressurized systems leaks, air brakes, motors, pumps & bearings. Until the advent of ultrasound, liquid and gas intrusion detection involved many hours of trial and error with a water hose and flashlight. Often applying a liquid under pressure or listening with a conventional stethoscope for a pressure leak required two people for many hours. Air brake leaks, exhaust and intake leaks can take hours to locate using conventional soap and water bubble testing. Not only can service facilities benefit from Ultrasonic Inspection, so can Quality Assurance departments by providing highly portable, fast, accurate, and simple testing.

How Ultrasonic Detection Works

Compressed gases, when leaking produce a turbulent flow with strong ultrasonic components. By scanning fittings, a leak will be heard as a distinct "hiss". Due to the high frequency, short wave nature of ultrasound, the sound will be loudest at its point of origin. The Microsonic unit translates the ultrasonic leak signals into recognizable audible signals where they are heard through headphones and seen as intensity increments on a meter. A unique test **incorporates** a patented ultrasonic transmitter called a Wave Form Generator. This device is placed in a cabin, tank, container or compartment where it floods the area with an intense ultrasonic signal. The generated ultrasound will deflect off solid seals but will flow through a leak path.

Some of the most common applications for ultrasonic inspection include:

- **COMPRESSED AIR SYSTEMS**, ***DETECT & LOCATE LEAKS***
- **CNG & LNG GAS SYSTEMS**, ***DETECT & LOCATE LEAKS***
- **VACUUM SYSTEMS**, ***DETECT & LOCATE LEAKS***
- **EXHAUST SYSTEM**, ***DETECT & LOCATE LEAKS***
- **RUN FLAT SYSTEM**, ***DETECT & LOCATE LEAKS***
- **DRIVE LINE DIAGNOSTICS**, ***DETECT & LOCATE INTERNAL FAILURES***
- **BEARINGS, PUMPS**, **MOTORS, SERVOS**, ***DETECT & LOCATE FAILING BEARINGS***
- **AIR & VACUUM ACTUATORS**, ***DETECT & LOCATE LEAKS***
- **CREW/PERSONNEL COMPARTMENT**, ***DETECT & LOCATE LEAKS AT SEALS, GASKETS, WELDS***
- **HATCH, BULKHEAD, WINDOW**, **FLOOR & ROOF SEALS**, ***DETECT & LOCATE LEAKS***
- **HYDRAULICS**, ***DETECT & LOCATE INTERNALLY FAILING VALVES & SEALS***

Detection Methods

Pressurized air, gas & fluid leaks produce turbulence with high frequency components. To locate air, gas or fluid leaks under pressure, simply scan the test area with the hand held EFI Microsonic detector. If a leak is present, ultrasonic sound not audible to the human ear is produced. This high frequency sound will be "heard" by the EFI detector and converted into an audible "hissing" sound heard through the systems headphones. Simply follow it to the loudest point. If it is difficult to discriminate the leaks location, reduce the sensitivity and continue to follow to the loudest point.

- ☐ **SIGNIFICANTLY ENHANCE QUALITY ASSURANCE EFFORTS**
- ☐ **SHORTEN DIAGNOSTIC TIME IN THE FIELD**
- ☐ **INCREASE FACTORY OR FIELD DIAGNOSTIC ACCURACY**