



## MB.FPA16 Probes

**Straight Beam Phased Array Probes, featuring a Hard Face, Direct Contact Surface, a Low-Profile Housing and Near Surface Detection Capability.**

**Providing Long Life, Accurate Flaw Detection and Reduced Inspection Times Even for Thicker Parts**

The MB.FPA16 probe is the latest addition to GE's innovative family of phased array straight beam contact probes. It allows high resolution detection of flaws in welded joints, billet materials, and forgings over a longitudinal wave steering range of  $\pm 45^\circ$  at a sound velocity of 5920 m/s, with a typical inspection thickness range of 10 – 100mm.

Its hard-faced contact surface, which ensures a long working life, offers a higher sensitivity than other probes in the family that employ non-abrasive protective membranes. It also eliminates the need for delay lines, which are required to protect sensitive probe faces but can limit the inspection range because of recurring interface echoes. The probe's high bandwidth phased array signal allows high resolution detection of near surface defects while its small footprint offers good coupling when inspecting curved surfaces.

The probe can be used for standard phased array applications such as DAC sizing and sector scanning while the high energy of the longitudinal wave allows excellent penetration depth. It requires no wedges to carry out volumetric inspection and can be used with commercial available phased array flaw detectors.

With its ergonomic and robust housing which is well known from GE's MB.F conventional probes, the probe offers ease of inspection in the harshest of applications. In addition the housing's low profile fingertip design with a height of only 14mm offers accessibility to narrow regions.

**Increased Sensitivity, Near Surface Defect Detection with High Resolution and Comprehensive Inspection coverage With Just One Probe**

Obtaining comprehensive inspection coverage with conventional probes involves using wedges to provide various angles of inspection, a method which requires calibration for each probe/wedge unit and which is usually only carried out at a specified number of angles. The use of wedges or delay lines limits the inspection range and reduces the inspection sensitivity resulting in a reduced probability of detection for small defects.

**The new MB.FPA16 probe** is a phased array probe, where the longitudinal wave sound beam is electronically steered through a sector of up to  $\pm 45^\circ$ , producing inspection data in one degree steps, without the need for wedges and individual wedge calibration. **This sector scanning significantly reduces inspection times with respect to those required using conventional scanning under multiple angles.** The full coverage of the sector scan and higher sensitivity of the probe increases the probability of detection even for small defects and large material thicknesses.

Features	Benefits
1. Steerable phased array sound beam allows comprehensive coverage over a +/- 45° sector	1. Eliminates the need for multiple inspections using different wedges, as required with conventional straight beam probes. Saves time while providing more comprehensive inspection coverage.
2. High energy steerable longitudinal wave. Coupling face best matched to metals.	2. Can inspect parts of medium thickness, up to 100mm and provides an easy-to-interpret sector scan. Higher sensitivity than other probes employing non-abrasive protective membranes or delay lines.
3. High bandwidth signal.	3. High resolution of defects and near surface defect detection.
4. Hard-face contact surface for long durability, no need of delay lines which limit the inspection range	4. Allows long working life, inspection range not limited by recurring interface echoes.
5. Small footprint of probe contact surface	5. Can be used on curved surfaces
6. A robust, small finger-tip and ergonomic MB.F-type probe housing with a height of only 14mm.	6. Easy to use in harsh environments and provides accessibility of narrow regions

## Applications

The MB.FPA16 probe will provide faster, more accurate and more comprehensive inspection in applications where conventional straight beam probes have historically been used in conjunction with wedges. Typically, these include the inspection of billets, welds and forgings. In addition the probe replaces standard phased array applications in which delay lines are used. Due to the low profile housing the probe can be used in applications with limited access space.

The probe can be used as a conventional straight beam probe for thickness measurement, dynamic focusing and DAC sizing.

**One single probe for a wide range of applications.**

## Technical specifications

Frequency	2 MHz	4 MHz
Bandwidth	>40%	>60%
Transducer dimension	Ø 10 mm	Ø 10 mm
Number of elements	16	16
Pitch	0.63 mm	0.63 mm
Element size	variable	variable
Near-field length*	8 mm	15.6 mm
Steering range*	-/+45 degree	-/+45 degree
Connector type	Phasor™ : 0600066 Omniscan™ **: 0600070 Hypertronics: 0600074	Phasor™: 0600067 Omniscan™ **: 0600071 Hypertronics: 0600075
Cable length	2m / 3m / 3m	2m / 3m / 3m
Additional functionalities	<ul style="list-style-type: none"> <li>• Hard-face contact surface</li> <li>• Near surface resolution</li> <li>• Low Profile Housing</li> <li>• Standard PA probe for steering and DAC sizing</li> </ul>	

