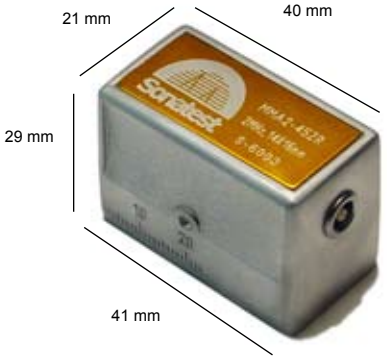
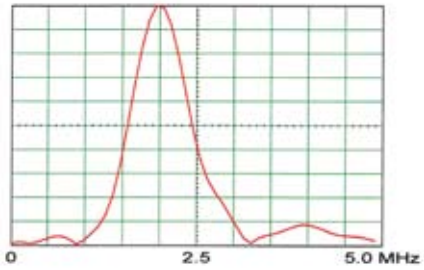
Sonatest Transducer Datasheet MMA 2-45

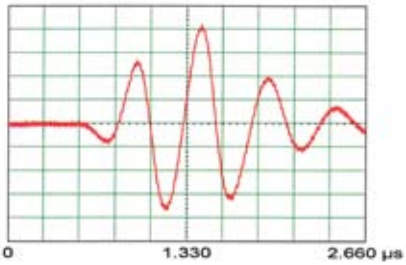
Applicable to transducer serial nos: s-1001 onwards.

Category	Soll Ref	Tolerance	Dimension
Test Frequency	4	±0.2	MHz
Relative Bandwidth @-6dB	45	±10	%
Near Field Length	39	±6	mm
Focal width Vertical @-6dB	2.5	±0.2	mm
Focal width Horiz. @-6dB	2.1	±0.04	mm
Transducer dimensions	14 x 14	± 0.1	mm x mm
Effective Transducer Dims	13.6 x13.6	±0.2	mm x mm
Beam Angle	45	±2	Grad/degree
Temperature Dependance	0.6	±0.1	Grad/deg/ 10 °C
Delay path (2730 m/s)	10.2	±1.5	mm
Squint Angle	0.8	-	Grad/degree
Offset	1	-	mm
Probe Index	±1	-	mm
Angle of Divergence (Vert)	3.5	±0.4	Grad/degree
Angle of Divergence (Horiz)	3.0	±0.5	Grad/degree
Wear Allowance	3	-	mm
Point pressure resistance	100	-	N
Working Temp. Range	-20 - +50	-	°C
Short duration Temperature	150	-	°C
v_r	82	±6	dB
s_0	0	-	mm
s_{20}	15	±7.5	mm
s_{40}	25	±12.5	mm
t_0	0	-	mm
t_{20}	9	±4.5	mm
t_{40}	20	±10	mm
e_0	3	±1.5	mm
e_{20}	4.5	±2.25	mm
r_0	2.2	±1.1	mm
r_{20}	3.2	±1.6	mm





Frequency Spectrum



Signal Waveform

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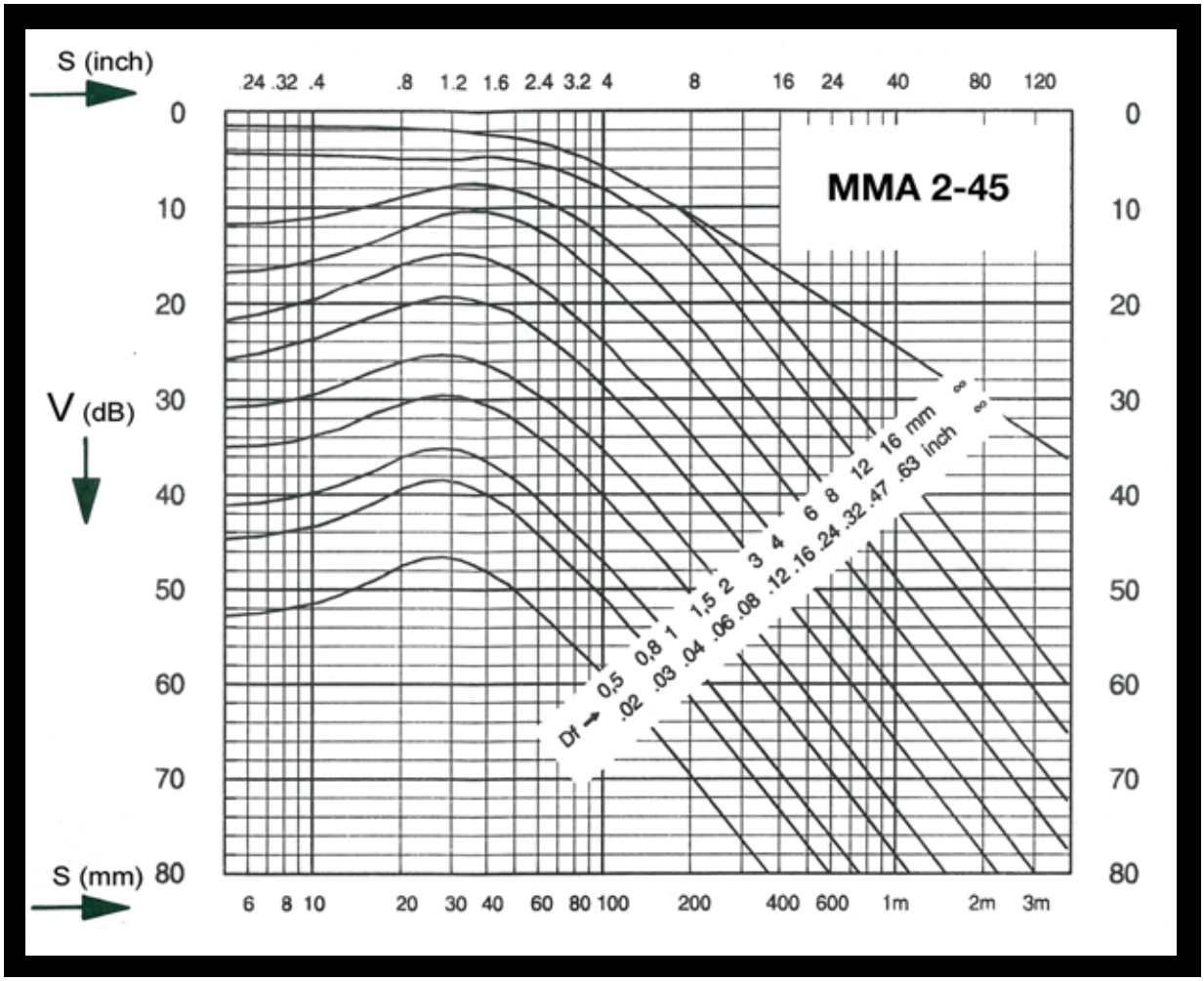

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The amplitue correction values △V show the difference in dB between the reflections from a curved reflecting face on a reference block compared to a back wall echo from a plane perpendicular to the beam. The curved face gives a focusing effect which normally increases the reflection amplitude.

$\triangle V_{K1}$ corresponds to the V1/K1 reference standard (also known as the IIW block or A2 Block)
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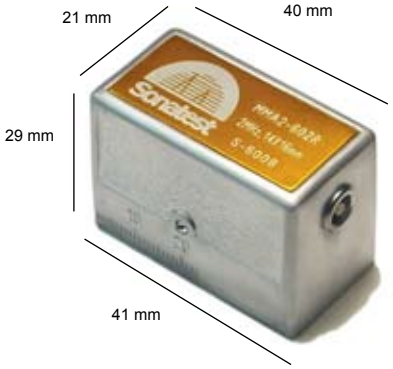
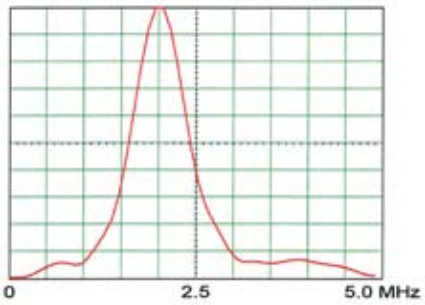
Sonatest Transducer Datasheet MMA 2-60

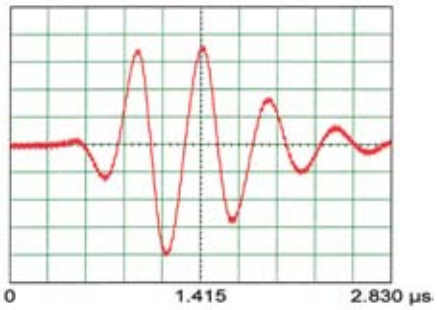
Applicable to transducer serial nos: s-1001 onwards.

Category	Soll Ref	Tolerance	Dimension
Test Frequency	2	±0.1	MHz
Relative Bandwidth @-6dB	45	±10	%
Near Field Length	39	±6	mm
Focal width Vertical @-6dB	2.8	±0.3	mm
Focal width Horiz. @-6dB	2.1	±0.1	mm
Transducer dimensions	14 x 14	± 0.1	mm x mm
Effective Transducer Dims	13.6 x13.6	±0.2	mm x mm
Beam Angle	60	±2	Grad/degree
Temperature Dependance	0.7	±0.1	Grad/deg/ 10 °C
Delay path (2730 m/s)	13.4	±2	mm
Squint Angle	0.8	-	Grad/degree
Offset	1	-	mm
Probe Index	±1	-	mm
Angle of Divergence (Vert)	4.0	±0.4	Grad/degree
Angle of Divergence (Horiz)	3.0	±0.5	Grad/degree
Wear Allowance	3	-	mm
Point pressure resistance	100	-	N
Working Temp. Range	-20 - +50	-	°C
Short duration Temperature	150	-	°C
v_r	80	±6	dB
s_0	0	-	mm
s_{20}	12	±6	mm
s_{40}	22	±11	mm
t_0	0	-	mm
t_{20}	8	±4	mm
t_{40}	18	±9	mm
e_0	3	±1.5	mm
e_{20}	4.5	±2.25	mm
r_0	2.2	±1.1	mm
r_{20}	3.2	±1.6	mm





Frequency Spectrum



Signal Waveform

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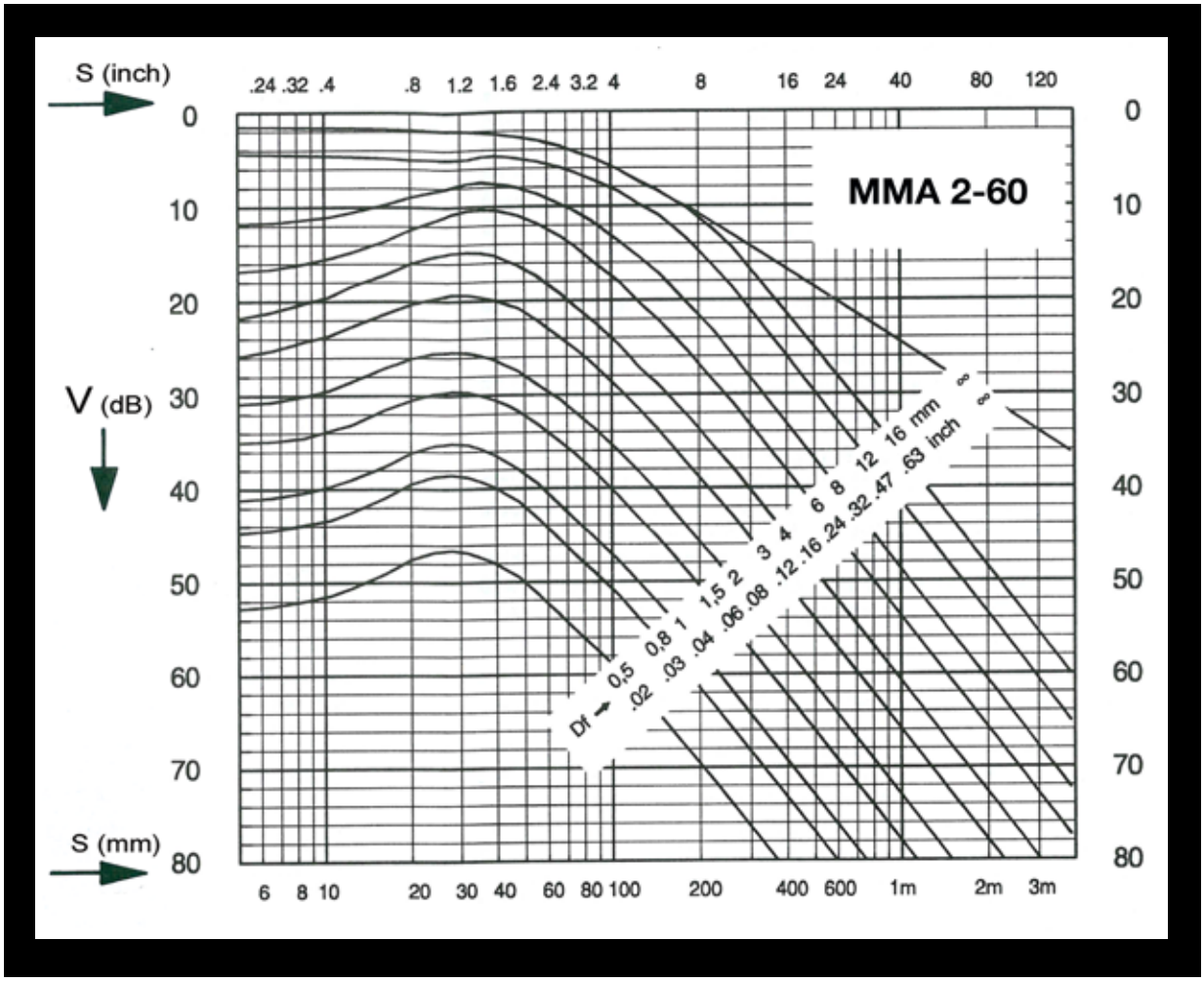

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The amplitue correction values △V show the difference in dB between the reflections from a curved reflecting face on a reference block compared to a back wall echo from a plane perpendicular to the beam. The curved face gives a focusing effect which normally increases the reflection amplitude.

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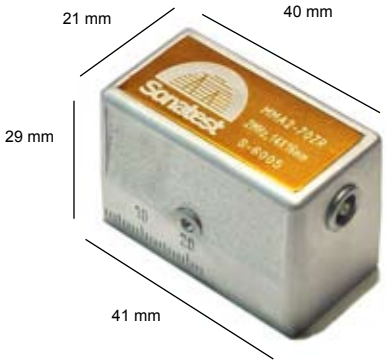
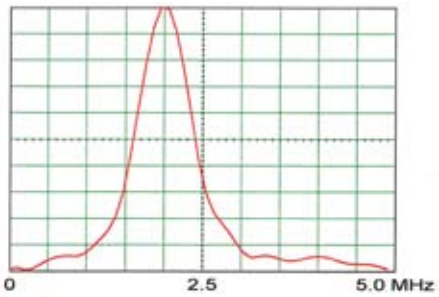
Sonatest Transducer Datasheet MMA 2-70

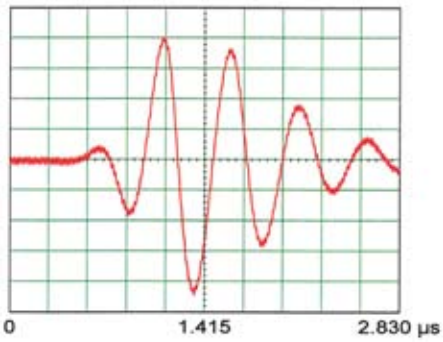
Applicable to transducer serial nos: s-1001 onwards.

Category	Soll Ref	Tolerance	Dimension
Test Frequency	2	±0.1	MHz
Relative Bandwidth @-6dB	45	±10	%
Near Field Length	39	±6	mm
Focal width Vertical @-6dB	3.1	±0.3	mm
Focal width Horiz. @-6dB	2.1	±0.1	mm
Transducer dimensions	14 x 14	± 0.1	mm x mm
Effective Transducer Dims	13.6 x13.6	±0.2	mm x mm
Beam Angle	70	±3	Grad/degree
Temperature Dependance	0.7	±0.1	Grad/deg/ 10 °C
Delay path (2730 m/s)	15.9	±2	mm
Squint Angle	0.8	-	Grad/degree
Offset	1	-	mm
Probe Index	±1	-	mm
Angle of Divergence (Vert)	4.5	±0.4	Grad/degree
Angle of Divergence (Horiz)	3.0	±0.5	Grad/degree
Wear Allowance	3	-	mm
Point pressure resistance	100	-	N
Working Temp. Range	-20 - +50	-	°C
Short duration Temperature	150	-	°C
v_r	78	±6	dB
s_0	0	-	mm
s_{20}	10	±5	mm
s_{40}	20	±10	mm
t_0	0	-	mm
t_{20}	7	±3.5	mm
t_{40}	16	±8	mm
e_0	3	±1.5	mm
e_{20}	4.5	±2.25	mm
r_0	2.2	±1.1	mm
r_{20}	3.2	±1.6	mm





Frequency Spectrum



Signal Waveform

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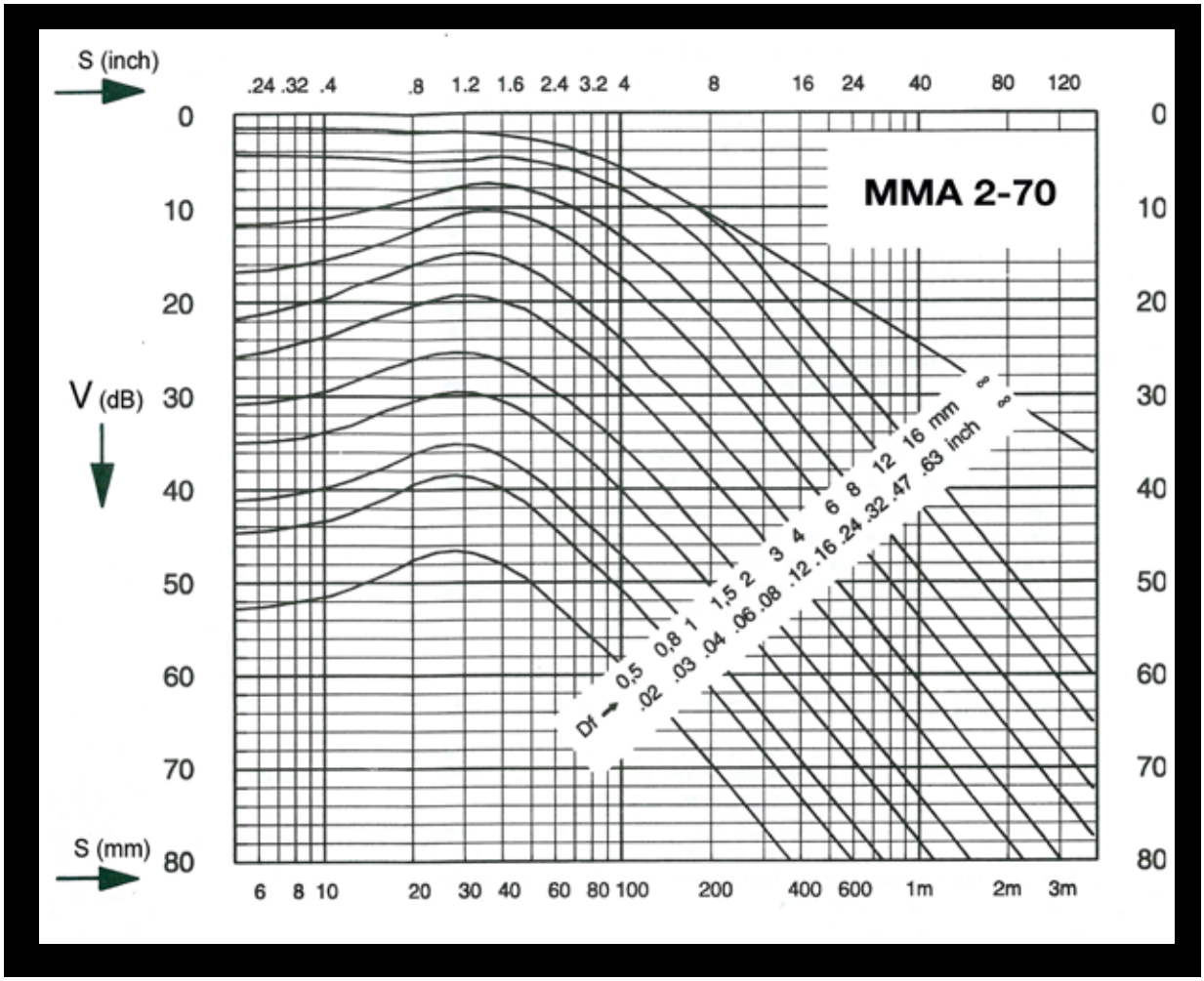

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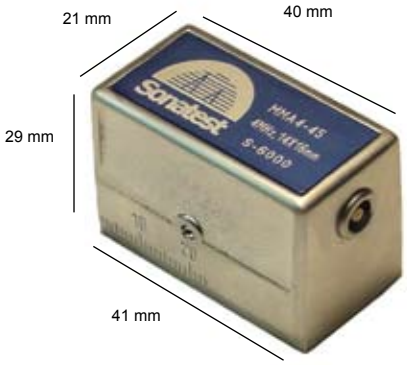
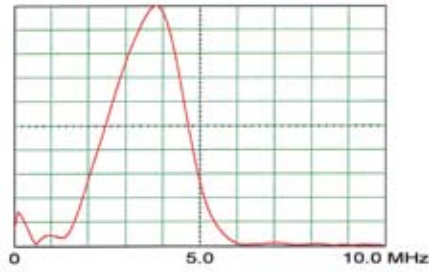
Sonatest Transducer Datasheet MMA 4-45

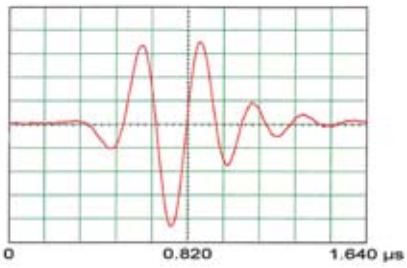
Applicable to transducer serial nos: s-1001 onwards.

Category	Soll Ref	Tolerance	Dimension
Test Frequency	4	±0.2	MHz
Relative Bandwidth @-6dB	40	±10	%
Near Field Length	98	±15	mm
Focal width Vertical @-6dB	2.7	±0.2	mm
Focal width Horiz. @-6dB	2.1	±0.1	mm
Transducer dimensions	14 x 14	± 0.1	mm x mm
Effective Transducer Dims	13.6 x13.6	±0.2	mm x mm
Beam Angle	45	±1.5	Grad/degree
Temperature Dependance	0.9	±0.2	Grad/deg/ 10 °C
Delay path (2730 m/s)	10.2	±1.5	mm
Squint Angle	0.8	-	Grad/degree
Offset	1	-	mm
Probe Index	±1	-	mm
Angle of Divergence (Vert)	1.7	±0.2	Grad/degree
Angle of Divergence (Horiz)	1.2	±0.2	Grad/degree
Wear Allowance	3	-	mm
Point pressure resistance	100	-	N
Working Temp. Range	-20 - +50	-	°C
Short duration Temperature	150	-	°C
v_r	80	±6	dB
s_0	0	-	mm
s_{20}	0	-	mm
s_{40}	12	±6	mm
t_0	0	-	mm
t_{20}	0	-	mm
t_{40}	13	±6.5	mm
e_0	1.2	±0.6	mm
e_{20}	1.8	±0.9	mm
r_0	0.9	±0.45	mm
r_{20}	1.3	±0.65	mm





Frequency Spectrum



Signal Waveform

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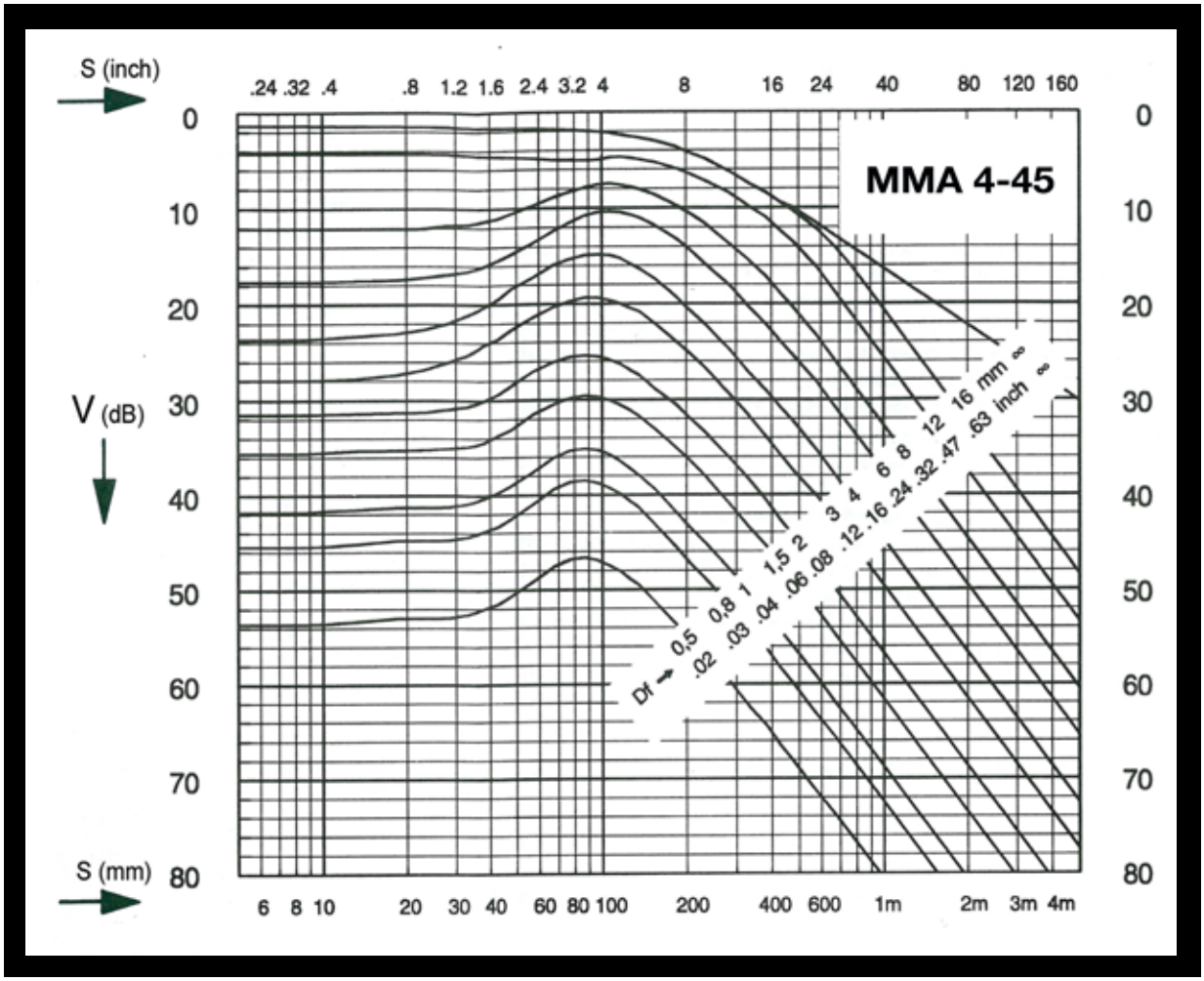

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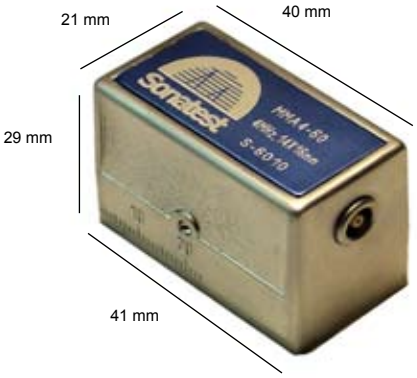
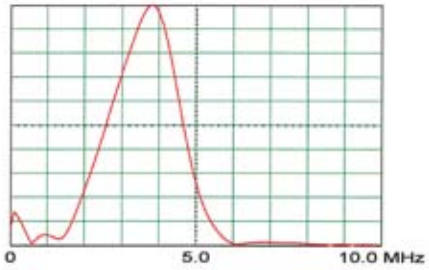
Sonatest Transducer Datasheet MMA 4-60

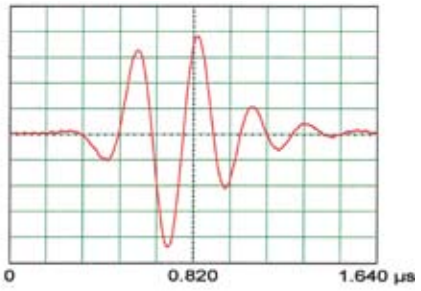
Applicable to transducer serial nos: s-1001 onwards.

Category	Soll Ref	Tolerance	Dimension
Test Frequency	4	±0.2	MHz
Relative Bandwidth @-6dB	40	±10	%
Near Field Length	98	±15	mm
Focal width Vertical @-6dB	3.0	±0.3	mm
Focal width Horiz. @-6dB	2.1	±0.1	mm
Transducer dimensions	14 x 14	± 0.1	mm x mm
Effective Transducer Dims	13.6 x13.6	±0.2	mm x mm
Beam Angle	60	±2.0	Grad/degree
Temperature Dependance	1.1	±0.3	Grad/deg/ 10 °C
Delay path (2730 m/s)	13.4	±2	mm
Squint Angle	0.8	-	Grad/degree
Offset	1	-	mm
Probe Index	±1	-	mm
Angle of Divergence (Vert)	1.9	±0.2	Grad/degree
Angle of Divergence (Horiz)	1.2	±0.2	Grad/degree
Wear Allowance	3	-	mm
Point pressure resistance	100	-	N
Working Temp. Range	-20 - +50	-	°C
Short duration Temperature	150	-	°C
v_r	78	±6	dB
s_0	0	-	mm
s_{20}	0	-	mm
s_{40}	9	±4.5	mm
t_0	0	-	mm
t_{20}	0	-	mm
t_{40}	8	±4	mm
e_0	1.2	±0.6	mm
e_{20}	1.8	±0.9	mm
r_0	0.9	±0.45	mm
r_{20}	1.3	±0.65	mm





Frequency Spectrum



Signal Waveform

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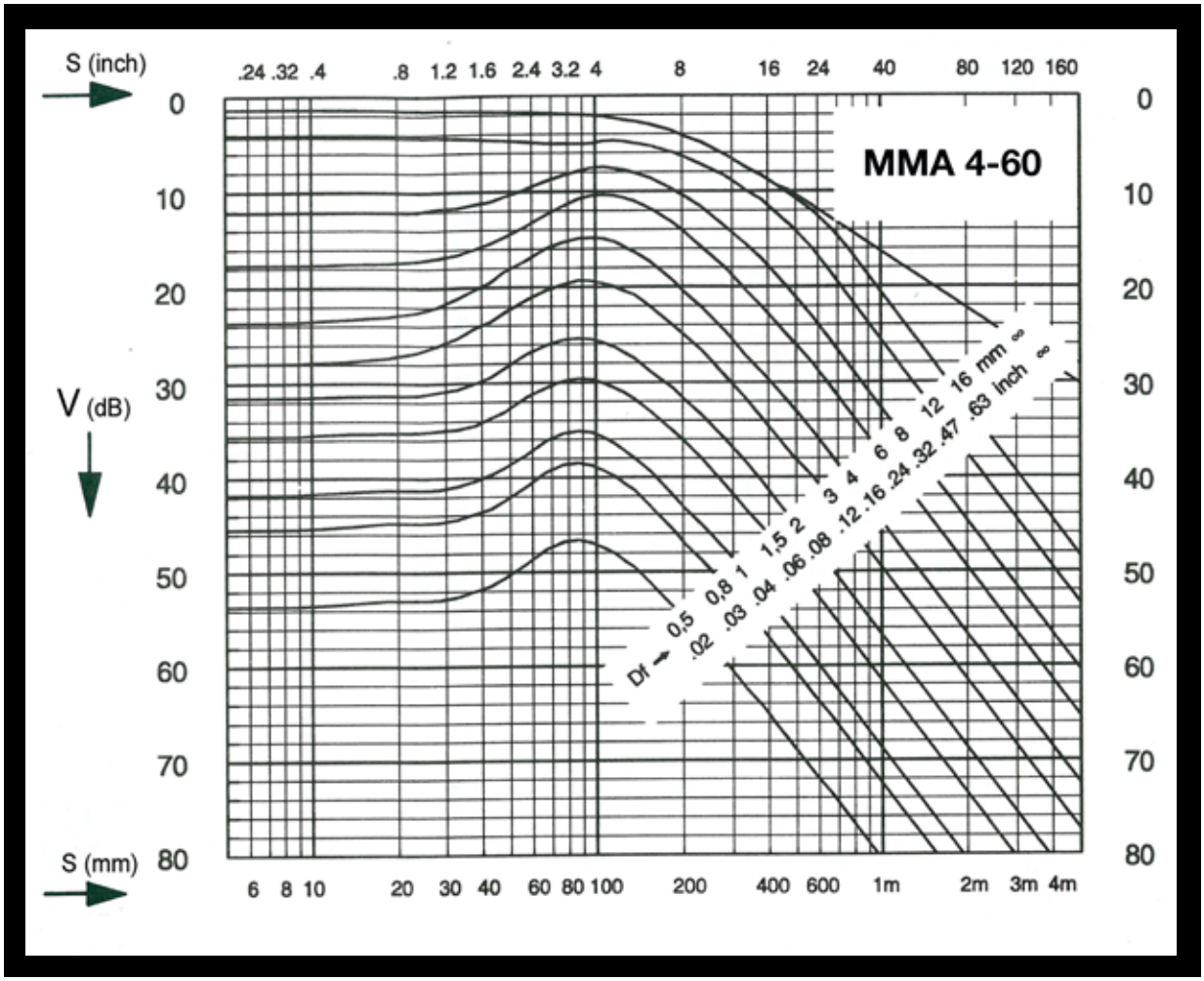

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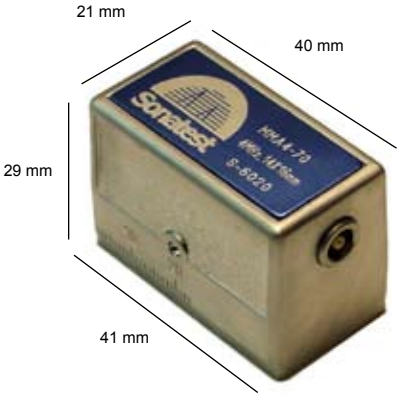
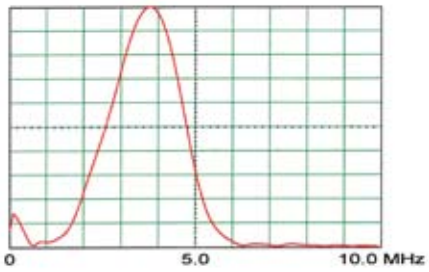
Sonatest Transducer Datasheet MMA 4-70

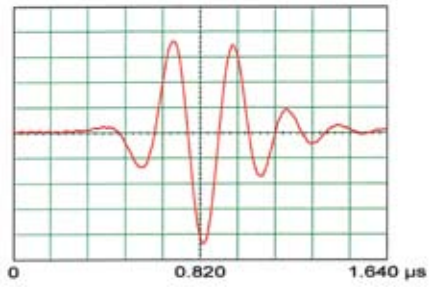
Applicable to transducer serial nos: s-1001 onwards.

Category	Soll Ref	Tolerance	Dimension
Test Frequency	4	±0.2	MHz
Relative Bandwidth @-6dB	40	±10	%
Near Field Length	98	±15	mm
Focal width Vertical @-6dB	3.3	±0.3	mm
Focal width Horiz. @-6dB	2.1	±0.1	mm
Transducer dimensions	14 x 14	± 0.1	mm x mm
Effective Transducer Dims	13.6 x13.6	±0.2	mm x mm
Beam Angle	70	±2.0	Grad/degree
Temperature Dependance	1.2	±0.3	Grad/deg/ 10 °C
Delay path (2730 m/s)	15.9	±2	mm
Squint Angle	0.8	-	Grad/degree
Offset	1	-	mm
Probe Index	±1	-	mm
Angle of Divergence (Vert)	2.6	±0.3	Grad/degree
Angle of Divergence (Horiz)	1.2	±0.2	Grad/degree
Wear Allowance	3	-	mm
Point pressure resistance	100	-	N
Working Temp. Range	-20 - +50	-	°C
Short duration Temperature	150	-	°C
v_r	76	±6	dB
s_0	0	-	mm
s_{20}	0	-	mm
s_{40}	8	±4	mm
t_0	0	-	mm
t_{20}	0	-	mm
t_{40}	6	±3	mm
e_0	1.2	±0.6	mm
e_{20}	1.8	±0.9	mm
r_0	0.9	±0.45	mm
r_{20}	1.3	±0.65	mm





Frequency Spectrum



Signal Waveform

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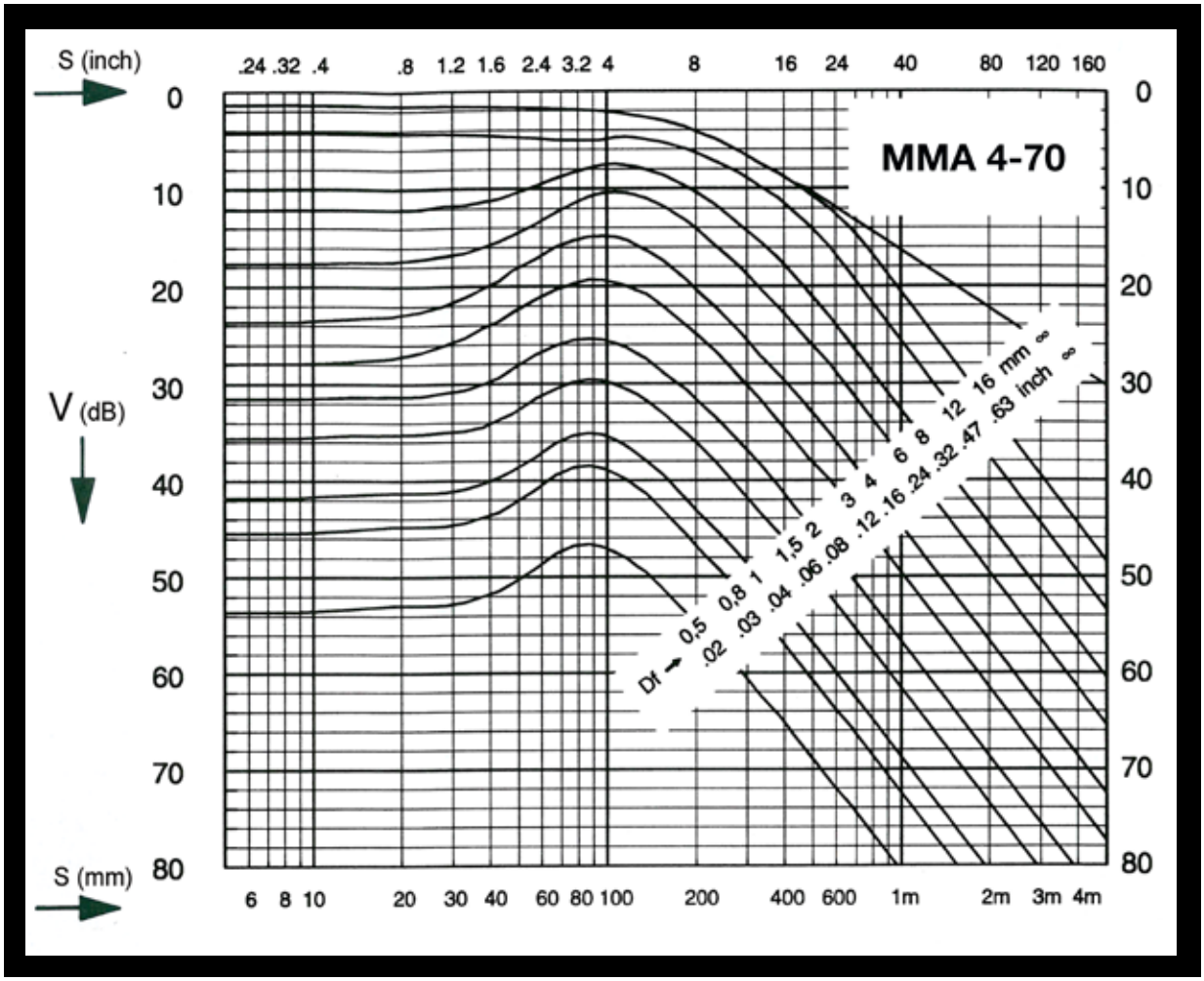

Notes

This Datasheet provides standard information about the supplied probe type. All numbers represent, or are based on, design standards - supplied probes will match these within an acceptable tolerance. Probes will normally be supplied with a calibration document detailing key parameters as measured for the actual probe.

As probes wear or age some parameters may change slightly, although technique calibration procedures should take this into account. Probes can normally be recertified periodically if required.

Depending on the manufacturing procedure, some probe types are supplied with a very smooth contact face, new probes may tend to "stick" in use, until some wear occurs. If desired the contact face can be roughened with fine emery paper to reduce this.

DGS

This datasheet includes AVG/DGS diagrams which show how the amplitude, the echo from different sized reflectors, changes with distance. The DGS method allows the instrument to give a reliable estimate of "Equivalent Reflector Size" at varying distances, based on a single sensitivity calibration. The mathematical model used relies on accurate knowledge of key probe characteristics.

The amplitude correction values △V show the difference in dB between the reflections from a curved reflecting face on a reference block compared to a back wall echo from a plane perpendicular to the beam. The curved face gives a focusing effect which normally increases the reflection amplitude.

$\triangle V_{K1}$ corresponds to the V1/K1 reference standard (also known as the IIW block or A2 Block)
$\triangle V_{K2}$ corresponds to the V2/K2 reference standard (also known as the kidney block or A4 Block)

Unless otherwise stated, all values refer to measurements in steel at a nominal temperature of 23 °C.

Special Probes

Sonatest Ltd can supply a wide range of variations on the standard probe, please contact us if you have a particular requirement not met by our standard products.

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