Staveley Sensors Inc.

PowerStation

Sonic WorkStation

Sonic 137 / 138 / 237

Sonic 1000S / 1200S
Sonic 1000HR / 1200HR

Sonic
1000 Precision Gauge
1000 Corrosion Gauge

Sonic 133 D / DL / DL+

Contents

All products, specifications, dimensions, and tolerances are subject to change without notice.

About The Company

The Company

Staveley Sensors Inc., located in East Hartford, Connecticut is a subsidiary of Staveley NDT Technologies Inc. Staveley NDT Technologies is one of the leading manufacturers of Nondestructive Testing (NDT) equipment in the world.

Staveley Sensors designs and manufactures ultrasonic transducers under its Harisonic® brand name. Harisonic® is one of the oldest, most recognized names in the NDT industry. Customers have relied on Harisonic® transducers for more than a quarter century. The Harisonic® product line is one of the industry's broadest, and is continually expanding to give customers a superior range of capabilities and the most important state-of-the-art advances.

The Catalog

Staveley Sensors offers hundreds of standard and special ultrasonic transducers and accessories for a wide variety of applications. This catalog details Staveley Sensors' standard line of ultrasonic transducers. Special transducers are available to be manufactured to customer's specifications. (See the section on special application transducers for more information).

Staveley Sensors maintains a wide range of popular transducers and accessories in stock for **overnight delivery**. For those items not in stock, delivery is generally less than two weeks. For your convenience, Staveley Sensors is represented by a worldwide network of professional representatives and distributors. Contact us for the representative/ distributor nearest you.

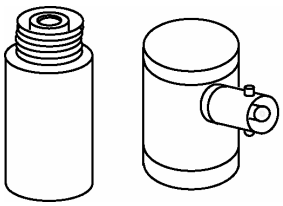
How to Order

You may order new or replacement transducers using the part number listed in the catalog pages. If you prefer, you may order by providing a complete description of the transducer you require. State the application, type and case style, frequency, element size, focus requirements, connector, performance and any other special requirements. Your orders for standard or special (custom) transducers will receive our prompt attention.

	Staveley Sensors, Inc.	**Staveley Instruments, Inc.**
Mail:	Sales Department 91 Prestige Park Circle East Hartford, CT 06108	Sales Department 421 N. Quay St. Kennewick, WA 99336
Phone:	(860) 289-5428	(509) 736-2751
Fax:	(860) 289-3189	(509) 735-4672
Email:	sndt.xducer@snet.net	sndt1@staveleyndt.com
Web site:	www.staveleyndt.com	www.staveleyndt.com

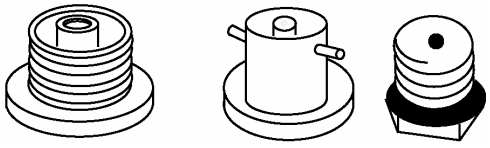
Visa and MasterCard Accepted

Connector Options:
Harisonic® transducers are normally supplied with UHF, BNC, or Microdot connectors. Standard axial right angle connector locations are listed below. Other connectors or configurations, including permanently attached cables, are available by special order.



A-Axial R-Right Angle

Standard Connector Locations



U-UHF B-BNC M-Microdot

Standard Connector Types

Transducer Selection Criteria

Many factors must be considered in selecting the proper transducer for Flaw Detection or Thickness Gauging applications.

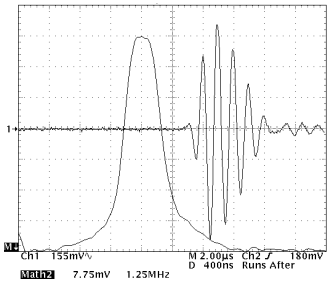
For Flaw Detection, an important consideration is the ultrasonic Beam Width at the location of the flaw, and the size of the flaw itself. This is the controlling parameter for Lateral Resolution.

For Thickness Gauging, important considerations are Ringdown and Frequency. These are the controlling parameters for Axial Resolution.

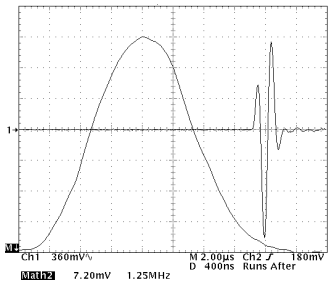
Resolution is a function of Damping and Bandwidth. Bandwidth is measured at the –6dB points of the Frequency Spectrum, and indicates the range of Frequencies that the transducer will operate in. Bandwidth is controlled by the degree of mechanical damping and tuning.

Harisonic "P" type transducers are Narrow-Band, lightly damped, tuned transducers. They have high-energy output and penetrating power, but have limited resolving power.

Type P



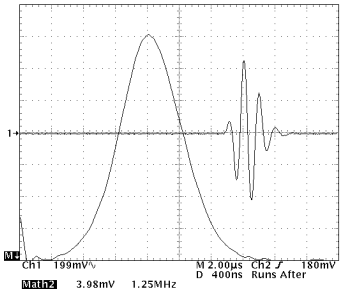
Type R



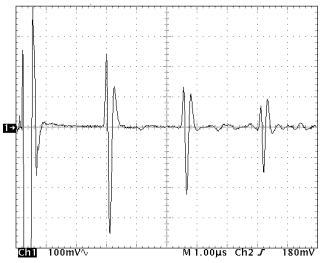
Harisonic "R" type transducers are Broadband, highly damped, tuned transducers. They are used for high resolution, near and far surface flaw detection and thickness gauging applications.

Harisonic "S" type transducers are Medium-Band, medium damped, tuned transducers. They are used for general-purpose flaw detection, and represent a compromise between high sensitivity and high resolution.

Type S



Type G



Harisonic "G" type transducers are Broadband, highly damped, untuned transducers. They are used almost exclusively for Precision Thickness Gauging applications.

The two tables in the back of this catalog will help in selecting the proper frequency and element size for a specific test. The Beam Spread Table will aid in determining beam spread in selected materials as a function of element size and frequency. The Near Field Table determines the Natural Focal Length, or Yo+ point of a flat-faced transducer as a function of element size and frequency.

Focusing transducers allows for the shaping of the sound beam, and optimizing Sensitivity and Resolution at distances shorter than the Yo+ point. Spherical Focusing shapes the beam into a Spot pattern, which relates to a specific reflector size at a specific distance in the test material. Cylindrical Focusing shapes the beam into a Line pattern, which permits the use of larger scan indexes, resulting in increased testing speed with no loss of detectability.

General Purpose Contact Transducers

For dependability and durability, rely on Harisonic® Contact Transducers. (CR Series)

They are built with a heavy wall, machined, stainless steel case. The element is protected with an alumina wear face, offering the best combination of resistance to brittle fracture and to wear due to scrubbing on abrasive surfaces. **CR transducers** are available with right angle or axial UHF or BNC connectors. Unless otherwise specified, right angle BNC connectors will be supplied.

Resolution

Catalog Number	Frequency (MHz)	Element Dia. (in.)
CR-0208-R	2.25	.500
CR-0308-R	3.5	.500
CR-0508-R	5.0	.500
CR-0708-R	7.5	.500
CR-0212-R	2.25	.750
CR-0312-R	3.5	.750
CR-0512-R	5.0	.750
CR-0712-R	7.5	.750
CR-0216-R	2.25	1.0
CR-0316-R	3.5	1.0
CR-0516-R	5.0	1.0

TYPE R: Optimum damping and high resolution

Power

Catalog Number	Frequency (MHz)	Element Dia. (in.)
CR-0008-P	0.5	.500
CR-0108-P	1.0	.500
CR-0208-P	2.25	.500
CR-0012-P	0.5	.750
CR-0112-P	1.0	.750
CR-0212-P	2.25	.750
CR-0016-P	0.5	1.0
CR-0116-P	1.0	1.0
CR-0216-P	2.25	1.0
CR-0018-P	0.5	1.125
CR-0118-P	1.0	1.125
CR-0218-P	2.25	1.125

TYPE P: Maximum gain and penetration

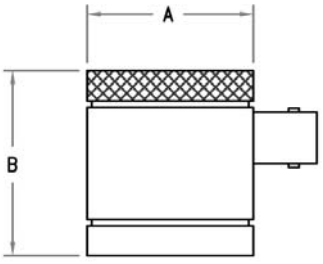
Standard

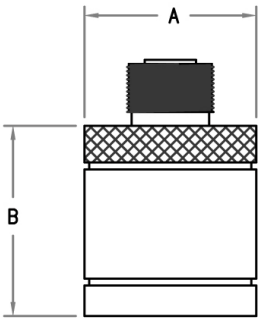
Catalog Number	Frequency (MHz)	Element Dia. (in.)
CR-0108-S	1.0	.500
CR-0208-S	2.25	.500
CR-0308-S	3.5	.500
CR-0508-S	5.0	.500
CR-0708-S	7.5	.500
CR-0012-S	0.5	.750
CR-0112-S	1.0	.750
CR-0212-S	2.25	.750
CR-0312-S	3.5	.750
CR-0512-S	5.0	.750
CR-0712-S	7.5	.750
CR-0016-S	0.5	1.0
CR-0116-S	1.0	1.0
CR-0216-S	2.25	1.0
CR-0316-S	3.5	1.0
CR-0516-S	5.0	1.0
CR-0018-S	0.5	1.125
CR-0118-S	1.0	1.125
CR-0218-S	2.25	1.125

TYPE S: Optimum combination of resolution and sensitivity for general purpose testing

Transducer Dimensions (in)

Element Diameter	A	B
.500	.740	1.375
.750	.990	1.375
1.000	1.240	1.375
1.125	1.365	1.375





Contact Rugged Transducers

Designed for a long wear life in the toughest applications. (CRW Series)

Harisonic® Contact Rugged Transducers are engineered to meet the toughest conditions relative to environment and application conditions. They are armored against the damaging effects of rough test surfaces with a tough, hardened steel wear ring and an impervious alumina wear face that is acoustically matched to afford the best performance. Harisonic® Contact Rugged Transducers are the preferred choice for contact testing of rough forgings, castings, extrusions, billets, any steel, aluminum or other rough metal surface you wouldn't dare run your finger over. **CRW Transducers** are supplied in a knurled epoxy housing and are available with either a right angle or axial BNC or UHF connection. Unless otherwise specified, the right angle BNC connector is supplied.

Resolution

Catalog Number	Frequency (MHz)	Element Dia. (in.)
CRW-0208-R	2.25	.500
CRW-0308-R	3.5	.500
CRW-0508-R	5.0	.500
CRW-0212-R	2.25	.750
CRW-0312-R	3.5	.750
CRW-0512-R	5.0	.750
CRW-0216-R	2.25	1.0
CRW-0316-R	3.5	1.0
CRW-0516-R	5.0	1.0

TYPE R: Optimum damping and high resolution

Power

Catalog Number	Frequency (MHz)	Element Dia. (in.)
CRW-0008-P	0.5	.500
CRW-0108-P	1.0	.500
CRW-0208-P	2.25	.500
CRW-0012-P	0.5	.750
CRW-0112-P	1.0	.750
CRW-0212-P	2.25	.750
CRW-0016-P	0.5	1.0
CRW-0116-P	1.0	1.0
CRW-0216-P	2.25	1.0
CRW-0018-P	0.5	1.125
CRW-0118-P	1.0	1.125
CRW-0218-P	2.25	1.125

TYPE P: Maximum gain and penetration

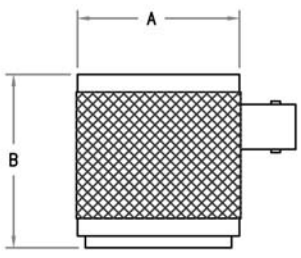
Standard

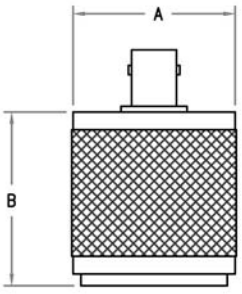
Catalog Number	Frequency (MHz)	Element Dia. (in.)
CRW-0108-S	1.0	.500
CRW-0208-S	2.25	.500
CRW-0308-S	3.5	.500
CRW-0508-S	5.0	.500
CRW-0012-S	0.5	.750
CRW-0112-S	1.0	.750
CRW-0212-S	2.25	.750
CRW-0312-S	3.5	.750
CRW-0512-S	5.0	.750
CRW-0016-S	0.5	1.0
CRW-0116-S	1.0	1.0
CRW-0216-S	2.25	1.0
CRW-0316-S	3.5	1.0
CRW-0516-S	5.0	1.0
CRW-0018-S	0.5	1.125
CRW-0118-S	1.0	1.125
CRW-0218-S	2.25	1.125

TYPE S: Optimum combination of resolution and sensitivity for general purpose testing

Transducer Dimensions (in)

Element Diameter	A	B
.500	.860	1.385
.750	1.135	1.385
1.000	1.380	1.385
1.125	1.480	1.385





Fingertip Contact Transducers

Recommended for general purpose testing. (CM Series)

Each Harisonic® Fingertip Contact Transducer is color coded by frequency. Easy to read and long wearing nameplates are embedded in clear epoxy. This ensures that, even after extended use, the transducer can be accurately identified. Fingertip Contact Transducers are supplied with right-angle Microdot connectors for all element sizes, unless otherwise specified. BNC connectors can be supplied on units $^{1}/_{2}$" or larger, if specified.

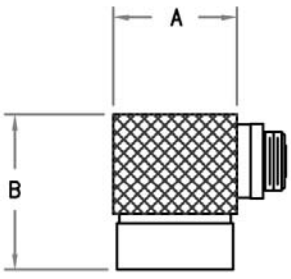
Resolution		
Catalog Number	Frequency (MHz)	Element Dia. (in.)
CM-0204-R	2.25	.250
CM-0304-R	3.5	.250
CM-0504-R	5.0	.250
CM-0704-R	7.5	.250
CM-1004-R	10.0	.250
CM-1504-R	15.0	.250
CM-0206-R	2.25	.375
CM-0306-R	3.5	.375
CM-0506-R	5.0	.375
CM-0706-R	7.5	.375
CM-1006-R	10.0	.375
CM-1506-R	15.0	.375
CM-0208-R	2.25	.500
CM-0308-R	3.5	.500
CM-0508-R	5.0	.500
CM-0708-R	7.5	.500
CM-1008-R	10.0	.500
CM-0212-R	2.25	.750
CM-0312-R	3.5	.750
CM-0512-R	5.0	.750

TYPE R: Optimum damping and high resolution

Standard		
Catalog Number	Frequency (MHz)	Element Dia. (in.)
CM-0204-S	2.25	.250
CM-0304-S	3.5	.250
CM-0504-S	5.0	.250
CM-0704-S	7.5	.250
CM-1004-S	10.0	.250
CM-0206-S	2.25	.375
CM-0306-S	3.5	.375
CM-0506-S	5.0	.375
CM-0706-S	7.5	.375
CM-1006-S	10.0	.375
CM-0108-S	1.0	.500
CM-0208-S	2.25	.500
CM-0308-S	3.5	.500
CM-0508-S	5.0	.500
CM-0708-S	7.5	.500
CM-1008-S	10.0	.500
CM-0112-S	1.0	.750
CM-0212-S	2.25	.750
CM-0312-S	3.5	.750
CM-0512-S	5.0	.750
CM-0116-S	1.0	1.0
CM-0216-S	2.25	1.0
CM-0316-S	3.5	1.0
CM-0516-S	5.0	1.0

TYPE S: Optimum combination of resolution and sensitivity for general purpose testing

Transducer Dimensions (in)		
Element Diameter	A	B
.250	.390	.500
.375	.560	.500
.500	.690	.625
.750	1.00	.625
1.00	1.25	.625

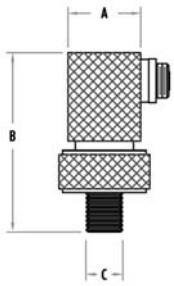


Thickness Gauging Transducers

Designed specifically for thickness measurement. (G, GR, GD Series)

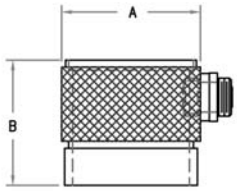
Staveley Sensors takes great care to insure proper damping for resolution of thin section material. Yet, the transducers are also engineered to retain a high level of sensitivity. Excellent performance can be expected from Harisonic Thickness Gauging Transducers, and they can be used with many commercially available thickness gauges. All units are supplied with right angle Microdot connectors. Axial connectors are available on request.

Type GR			
Element Diameter	A	B	C
0.250”	0.400”	0.900”	0.300”



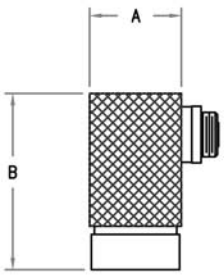
Removable Delay Line		
Thickness range	**Frequency**	**Element**
0.006” to 0.500”	**(MHz)**	**Dia. (in)**
GR-0504	5.0	0.250
GR-1004	10.0	0.250
GR-1504	15.0	0.250
GR-2004	20.0	0.250
GR-2504	25.0	0.250

Type G		
Element Diameter	A	B
0.250”	0.400”	0.500”
0.375”	0.575”	0.500”
0.500”	0.700”	0.620”
0.750”	1.000”	0.620”



Contact Transducers		
For use above	**Frequency**	**Element**
0.050” thickness	**(MHz)**	**Dia. (in)**
G-0204	2.25	0.250
G-0504	5.0	0.250
G-1004	10.0	0.250
G-1504	15.0	0.250
G-0206	2.25	0.375
G-0506	5.0	0.375
G-1006	10.0	0.375
G-0208	2.25	0.500
G-0508	5.0	0.500
G-0212	2.25	0.750
G-0512	5.0	0.750

Type GD		
Element Diameter	A	B
0.250”	0.400”	0.750”

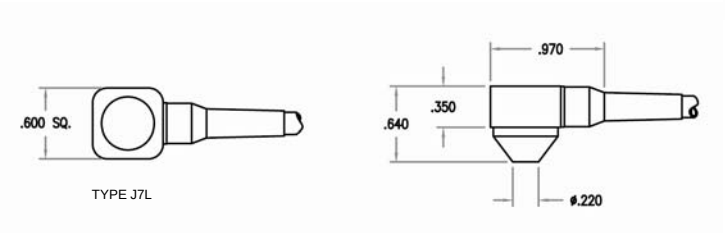


Internal Delay Line		
Thickness range	**Frequency**	**Element**
0.006” to 0.500”	**(MHz)**	**Dia. (in)**
GD-0504	5.0	0.250
GD-1004	10.0	0.250
GD-1504	15.0	0.250
GD-2004	20.0	0.250

Thickness Gauging Transducers

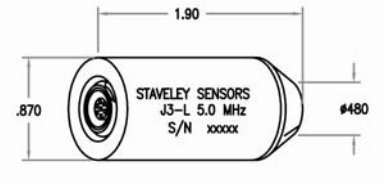
Designed for Staveley Instruments' Sonic Thickness Gauges. (J Series)

The **J Series** of Transducers are used with the Sonic 133D and Sonic 1000CG gauges. The are available in both Dual and Single element models to cover any thickness gauging application. The units all utilize a 7 pin connector and incorporate PowerLink™ Technology to assure optimal gauge / transducer performance.

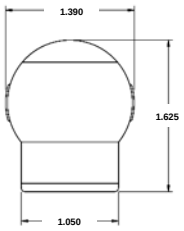


TYPE J7L

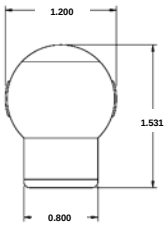
TYPE J7L



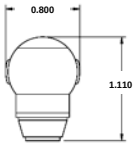
TYPE J3L



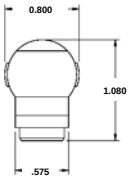
TYPE J1L



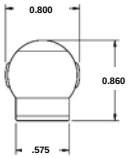
TYPE J2L & J23L



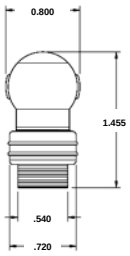
TYPE J4L & J6L



TYPE J5L



TYPE J20L



TYPE J21L, J22L, J24L

SONIC 133D & 1000CG DUAL ELEMENT TRANSDUCER					
Catalog Number	Frequency (MHz)	Element Dia. (in)	Range (Steel)	Description	Temp. Range
J1L	2.25	0.750	0.200" - 20.0"	High penetration	<200°F
J2L	5	0.500	0.040" - 10.0"	General purpose	<200°F
J3L	5	0.250	0.040" - 5.00"	High temperature	<1000°F
J4L	5	0.250	0.040" - 2.00"	Fingertip	<200°F
J5L	7.5	0.375	0.030" - 2.00"	High resolution	<200°F
J6L	10	0.250	0.020" - 1.00"	Thin wall applications	<200°F
J7L	10	0.125	0.030" - 1.00"	Thin wall applications	<200°F

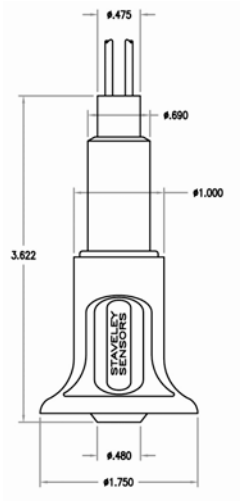
SONIC 133D & 1000CG SINGLE ELEMENT TRANSDUCER					
Catalog Number	Frequency (MHz)	Element Dia. (in)	Range (Steel)	Description	Temp. Range
J20L	10	0.250	Per application	Contact	<200°F
J21L	10	0.250	Per application	Delay Line	<200°F
J22L	10	0.250	Per application	Delay Line	<200°F
J23L	5	0.500	Per application	Contact	<200°F
J24L	5	0.250	Per application	Delay Line	<200°F

Dual Element Contact Transducers

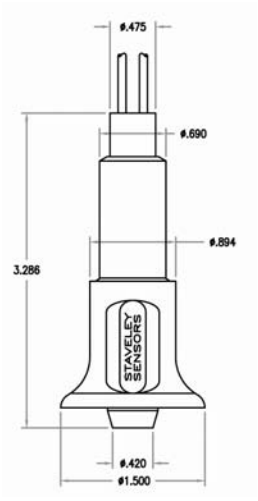
Staveley Sensors has the largest selection of Harisonic Dual Element Contact Transducers. (MD,DI Series)

These units are designed specifically for corrosion, pitting and thickness measurements, braze inspection, and lamination detection, with better than 0.040" resolving capability in many materials. Unless otherwise specified, dual units are focused for maximum response from a depth of 0.250". All standard DI units utilize an included angle of 14°. They will operate at ranges from approximately 0.050" to 5.0", depending on the material to be gauged. High gain and resolution are achieved with minimum cross talk in each unit.

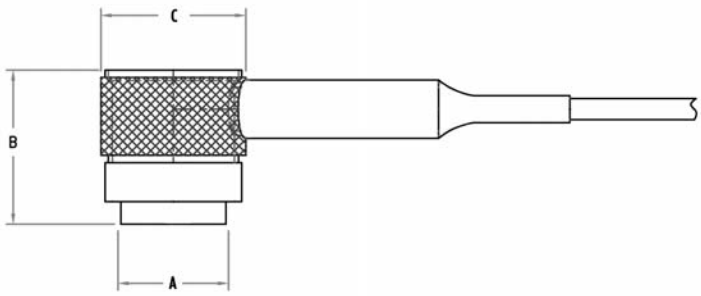
Part Number	Frequency (MHz)	Element Dia. (in)
DI-0204	2.25	0.250
DI-0304	3.5	0.250
DI-0504	5.0	0.250
DI-1004	10.0	0.250
DI-0206	2.25	0.375
DI-0306	3.5	0.375
DI-0506	5.0	0.375
DI-1006	10.0	0.375
DI-0108	1.0	0.500
DI-0208	2.25	0.500
DI-0308	3.5	0.500
DI-0508	5.0	0.500
DI-1008	10.0	0.500
DI-0112	1.0	0.750
DI-0212	2.25	0.750
DI-0312	3.5	0.750
DI-0512	5.0	0.750



J3MD



J4MD



Dual Microdot Transducers			
Catalog Number	Frequency (MHz)	Element Dia.	Description
J3MD	5	0.250	High Temp
J4MD	5	0.250	General Purpose

Transducer Dimensions (in)			
	A	B	C
.250	.250	.625	.415
.375	.385	.600	.575
.500	.515	.725	.700
.750	.765	.725	1.015

Angle Beam Transducers

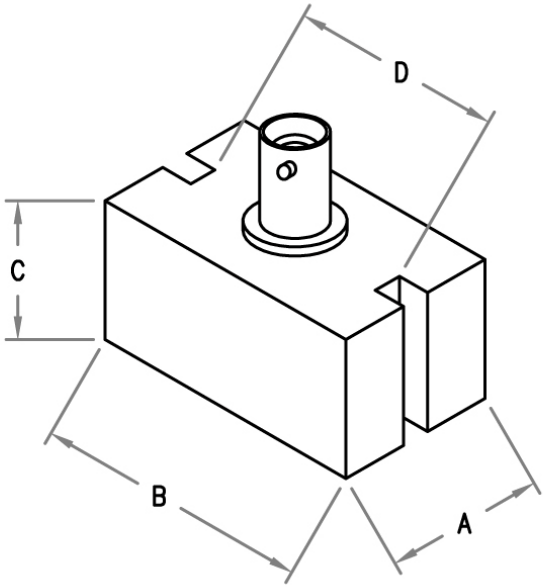
Ideal for general purpose testing and weld inspection. (AB Series)

Harisonic® Angle Beam Transducers with replaceable wedges permit the use of a complete set of wedges of different angles with one transducer. All housings are internally shielded to eliminate case noise and RF radiation pick up. Staveley Sensors color-codes the cases by frequency for easy identification at the test site. All Harisonic Angle Beam Transducers have high gain, optimum resolution, and excellent signal to noise ratio. They can be used with all standard pulse echo equipment. All employ a BNC top mount connector.

Frequency (MHz)	Element Size	Element Size	Element Size	Element Size
	0.50" x 0.50"	**0.50" x 1.00"**	**0.75" x 1.00"**	**1.00" x 1.00"**
0.5	AB-000808	AB-000816	AB-001216	AB-001616
1.0	AB-010808	AB-010816	AB-011216	AB-011616
2.25	AB-020808	AB-020816	AB-021216	AB-021616
3.5	AB-030808	AB-030816	AB-031216	AB-031616
5.0	AB-050808	AB-050816	AB-051216	AB-051616

Transducers for AWS Structural Welding Code D1.1

Frequency (MHz)			Element Size
	.625" x .625"	**.625" x .750"**	**.750" x .750"**
2.25	AB-021010	AB-021012	AB-021212



Element Size	A	B	C	D
0.50" x 0.50"	.750"	1.00"	.750"	.810"
0.50" x 1.00"	.750"	1.50"	.750"	1.31"
0.75" x 1.00"	1.25"	1.75"	.750"	1.31"
1.00" x 1.00"	1.25"	1.75"	.750"	1.38"
AWS	1.00"	1.47"	.750"	1.00"

Angle Beam Replaceable Wedges

Staveley Sensors supplies two types of angle beam replaceable wedges. (ABW Series)

Both types are designed for use with Angle Beam Transducers. Replaceable Wedge Type ABW is made from low temperature acrylic plastic that has excellent sound transmission characteristics. ABW Wedges are effective in temperatures up to 200°F.

ABWH Wedges are made from high temperature abrasive resistant material for use at temperatures up to 600°F with intermittent contact. Specify the effective angle required from the table; for special wedges, see below.

Serrated Wedge (0° to 200°F)				
Transducer Size	**Effective Angle (Steel)**			
	45°	**60°**	**70°**	**90°**
.5" x .5"	ABWS-0808-45	ABWS-0808-60	ABWS-0808-70	ABWS-0808-90
.5" x 1.0"	ABWS-0816-45	ABWS-0816-60	ABWS-0816-70	ABWS-0816-90
.75" x 1.0"	ABWS-1216-45	ABWS-1216-60	ABWS-1216-70	ABWS-1216-90
1.0" x 1.0"	ABWS-1616-45	ABWS-1616-60	ABWS-1616-70	ABWS-1616-90
Snail Wedge (0° to 200°F)				
Transducer Size	**Effective Angle (Steel)**			
	45°	**60°**	**70°**	**90°**
.5" x .5"	ABW-0808-45	ABW-0808-60	ABW-0808-70	ABW-0808-90
.5" x 1.0"	ABW-0816-45	ABW-0816-60	ABW-0816-70	ABW-0816-90
.75" x 1.0"	ABW-1216-45	ABW-1216-60	ABW-1216-70	ABW-1216-90
1.0" x 1.0"	ABW-1616-45	ABW-1616-60	ABW-1616-70	ABW-1616-90
High Temperature Serrated Wedge (0° to 600°F)				
Transducer Size	**Effective Angle (Steel)**			
	45°	**60°**	**70°**	**90°**
.5" x .5"	ABWH-0808-45	ABWH-0808-60	ABWH-0808-70	ABWH-0808-90
.5" x 1.0"	ABWH-0816-45	ABWH-0816-60	ABWH-0816-70	ABWH-0816-90
.75" x 1.0"	ABWH-1216-45	ABWH-1216-60	ABWH-1216-70	ABWH-1216-90
1.0" x 1.0"	ABWH-1616-45	ABWH-1616-60	ABWH-1616-70	ABWH-1616-90
Wedges for AWS Welding Code D1.1 (0° to 200°F)				
Transducer Size	**Effective Angle (Steel)**			
	45°	**60°**	**70°**	**90°**
.625" x .625"	ABW-1212-45	ABW-1212-60	ABW-1212-70	——
.625" x .750"	ABW-1212-45	ABW-1212-60	ABW-1212-70	——
.750" x .750"	ABW-1212-45	ABW-1212-60	ABW-1212-70	——

Note: Mounting holes are threaded 6-32 UNC.

SPECIAL WEDGES

Cylindrical Curvature specify O.D. or I.D. configuration material and circumferential or axial propagation.

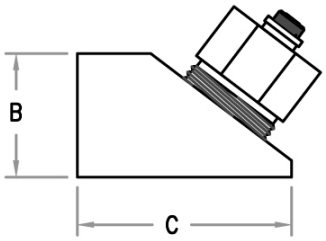
Special Angles specify effective refracted angle in material to be inspected and surface temperature.

Miniature Screw-In Angle Beam Transducers & Wedges

For quick and easy change of transducers size / frequency and wedge angle. (ABT & ABTW Series)

The **ABT** and **ABTW series** of transducers and wedges are designed to allow the user to change the combination of transducer and wedge, depending on the test requirement. Wedges use the Harisonic® "Multi-Layer" construction technique that results in low noise, optimum gain, superior resolution and high signal-to-noise ratio. Another key design feature of the wedge is the incorporation of a threaded steel insert, which mates with the transducer. This design eliminates the cross-threading problem encountered when screwing the transducers into plastic wedges. These medium-damped transducers perform well with all conventional pulse-echo type equipment. All transducers are fitted with a microdot connector.

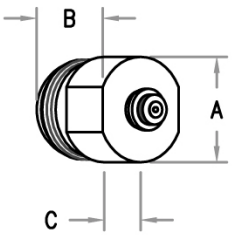
Part Number	Frequency (MHz)	Element Dia. (in)
ABT-0204-S	2.25	.250
ABT-0304-S	3.50	.250
ABT-0504-S	5.00	.250
ABT-0704-S	7.50	.250
ABT-1004-S	10.0	.250
ABT-0206-S	2.25	.375
ABT-0306-S	3.50	.375
ABT-0506-S	5.00	.375
ABT-0706-S	7.50	.375
ABT-1006-S	10.0	.375
ABT-0108-S	1.00	.500
ABT-0208-S	2.25	.500
ABT-0308-S	3.50	.500
ABT-0508-S	5.00	.500
ABT-0708-S	7.50	.500
ABT-1008-S	10.0	.500



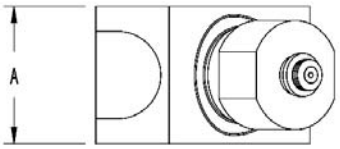
Wedge Style 0° to 200°F	Element Dia. (in)	Effective Angle In Steel
ABTW-04-45	.250	45°
ABTW-06-45	.375	45°
ABTW-08-45	.500	45°
ABTW-04-60	.250	60°
ABTW-06-60	.375	60°
ABTW-08-60	.500	60°
ABTW-04-70	.250	70°
ABTW-06-70	.375	70°
ABTW-08-70	.500	70°
ABTW-04-90	.250	90°
ABTW-06-90	.375	90°
ABTW-08-90	.500	90°

Note 1: Select required wedges, specifying measured refracted angle and material to be tested.

Note 2: Select wedge configurations for O.D., I.D. curvatures and for special angles are available by special order.



Transducer Dimensions (in)				
Element Dia. (in)	A	B	C	Thread Size
.250	.450	.550	.370	$^{3}/_{8}$" - 32UNEF
.375	.580	.590	.410	$^{1}/_{2}$" - 28UNEF
.500	.690	.625	.375	$^{5}/_{8}$" - 24UNEF



Wedge Dimensions* (in)									
Refracted Angle in Steel	.250 Element			.375 Element			.500 Element		
	A	B	C	A	B	C	A	B	C
45°	.55	.55	1.00	.69	.60	1.10	.83	.78	1.30
60°	.55	.60	1.00	.69	.70	1.30	.83	.80	1.50
70°	.55	.68	1.10	.69	.80	1.40	.83	.85	1.60
90°	.55	.70	1.40	.69	.85	1.70	.83	.95	1.80

* Wedges for 10.0 MHz transducers differ in material and dimensions. When ordering, add "RX" after desired angle i.e., "ABT-W04-45RX".

Miniature Angle Beam Transducers & Wedges

For success in critical testing in limited space. (ABM & ABMW Series)

Staveley Sensors' Miniature Angle Beam (ABM) Transducers with replaceable wedges permit the use of a complete set of wedges of different angles with one transducer element. Housings with internal shielding eliminate case noise and RF radiation pickup. Optimum gain, superior resolution and high signal-to noise ratio make these Harisonic® Transducers ideal for critical testing where space is limited. **ABM Transducers** are designed for use with all conventional pulse-echo equipment. Special High Temperature Wedges are also available.

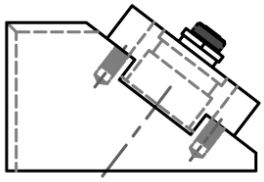
General Purpose Series	Frequency (MHz)	Element Size (in)
ABM-0204	2.25	.250 x .250
ABM-0304	3.50	.250 x .250
ABM-0504	5.00	.250 x .250
ABM-0704	7.50	.250 x .250
ABM-1004	10.0	.250 x .250
ABM-0206	2.25	.375 x .375
ABM-0306	3.50	.375 x .375
ABM-0506	5.00	.375 x .375
ABM-0706	7.50	.375 x .375
ABM-1006	10.0	.375 x .375
ABM-0108	1.00	.500 x .500
ABM-0208	2.25	.500 x .500
ABM-0308	3.50	.500 x .500
ABM-0508	5.00	.500 x .500
ABM-0708	7.50	.500 x .500
ABM-1008	10.0	.500 x .500

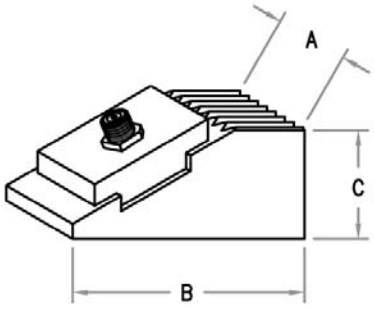
Note 1: All units are supplied with Microdot connectors

Note 2: Select required wedges, specifying the desired refracted angle and material to be tested

Note 3: Special wedge configurations for O.D., I.D. curvatures and special angles are available on special order.

Wedge Style Wedges 0° to 200°F	Part Number	Transducer Size (in)	Effective Angle In Steel
ABMW	ABMW-04-45	.250	45°
ABMW	ABMW-06-45	.375	45°
ABMW	ABMW-08-45	.500	45°
ABMW	ABMW-04-60	.250	60°
ABMW	ABMW-06-60	.375	60°
ABMW	ABMW-08-60	.500	60°
ABMW	ABMW-04-70	.250	70°
ABMW	ABMW-06-70	.375	70°
ABMW	ABMW-08-70	.500	70°
ABMW	ABMW-04-90	.250	90°
ABMW	ABMW-06-90	.375	90°
ABMW	ABMW-08-90	.500	90°





ABMW Wedge Dimensions* (in)									
Refracted Angle in Steel	Element Size 0.250" x 0.250"			Element Size 0.375" x 0.375"			Element Size 0.500" x 0.500"		
	A	B	C	A	B	C	A	B	C
45°	.330	1.065	.665	.515	1.165	.800	.635	1.25	.830
60°	.330	1.140	.680	.515	1.140	1.00	.635	1.42	1.00
70°	.330	1.200	.700	.515	1.500	1.00	.635	1.52	1.00
90°	.330	1.425	.750	.515	1.800	1.00	.635	1.83	1.00

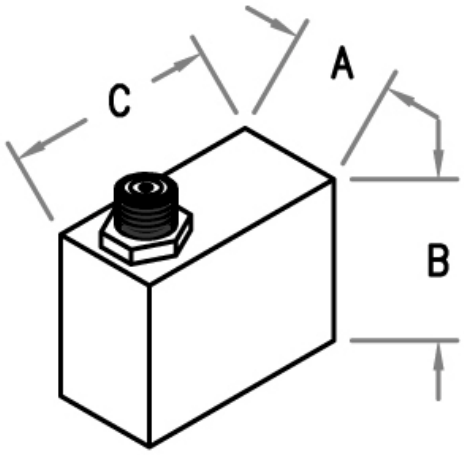
Note: All screw holes clear 2-56 unless otherwise specified.

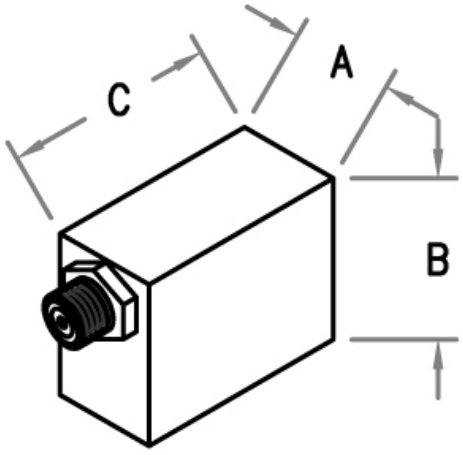
Miniature Potted Angle Beam Transducers

For outstanding results in confined spaces. (PAB Series)

Staveley Sensors' Miniature Potted Angle Beam Transducers have performance characteristics, which are similar to those of ABM removable wedge units. The major advantage of the Potted Angle Beam is small size. It makes them highly effective in confined spaces and constricted areas. Depending on your dimension requirements, Microdot connectors can be side or top mounted. If not specified, side mount connectors will be supplied. Special angles and configurations are available on special order. When ordering, please specify part number, frequency, angle, material to be inspected, and connector location.

Part Number	Frequency (MHz)	Element Dia. (in)	Effective Angle in Steel
PAB-0203-45	2.25	.187 x .187	45°
PAB-0503-45	5.00	.187 x .187	45°
PAB-1003-45	10.0	.187 x .187	45°
PAB-0203-60	2.25	.187 x .187	60°
PAB-0503-60	5.00	.187 x .187	60°
PAB-1003-60	10.0	.187 x .187	60°
PAB-0203-70	2.25	.187 x .187	70°
PAB-0503-70	5.00	.187 x .187	70°
PAB-1003-70	10.0	.187 x .187	70°
PAB-0203-90	2.25	.187 x .187	90°
PAB-0503-90	5.00	.187 x .187	90°
PAB-1003-90	10.0	.187 x .187	90°
PAB-0204-45	2.25	.250 x .250	45°
PAB-0504-45	5.00	.250 x .250	45°
PAB-1004-45	10.0	.250 x .250	45°
PAB-0204-60	2.25	.250 x .250	60°
PAB-0504-60	5.00	.250 x .250	60°
PAB-1004-60	10.0	.250 x .250	60°
PAB-0204-70	2.25	.250 x .250	70°
PAB-0504-70	5.00	.250 x .250	70°
PAB-1004-70	10.0	.250 x .250	70°
PAB-0204-90	2.25	.250 x .250	90°
PAB-0504-90	5.00	.250 x .250	90°
PAB-1004-90	10.0	.250 x .250	90°





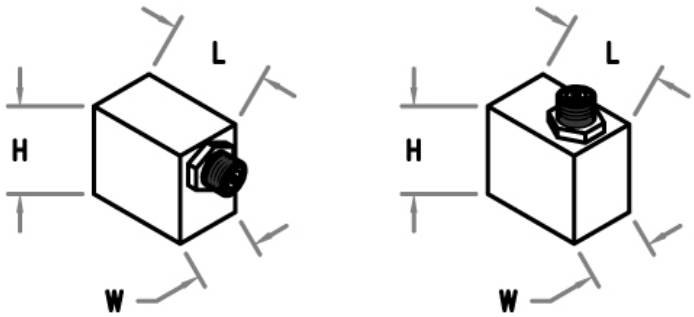
Case Dimensions		
A	B	C
.300"	.550"	.675"

Sub-Miniature & Ultra-Miniature Angle Beam Transducers

Shear wave testing-where space is limited and the need is for a small transducer. (HS-225 & HS-877)

The sub-miniature (HS-225) and ultra-miniature (HS-877) angle beam transducers are supplied in frequencies from 2.25-10.0 MHz with angles from 45° through 90°. Epoxy housings prevent the transducer from causing scratches to the test surface. These transducers are ideal for inspection of small diameter welded tubes and application where the requirement is for a shear-wave transducer with a very small "footprint". Depending on the type selected, either top or side mounted, Microdot connectors are available. When ordering, please specify part number, frequency, angle, material to be inspected, and connector location.

Sub-Miniature Transducers			
Part Number	**Frequency (MHz)**	**Angle (Steel)**	**Crystal**
HS-225-2-xx	2.25	xx	.120" x 250" (3 mm x 6mm)
HS-225-5-xx	5.00	xx	.120" x 250" (3 mm x 6mm)
HS-225-10-xx	10.0	xx	.120" x 250" (3 mm x 6mm)
"xx" = specify angle desired. Also specify material to be inspected.			
Transducer Housing Dimensions			
.375" L x .425" H x .325" W			

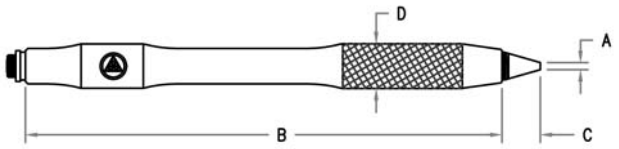


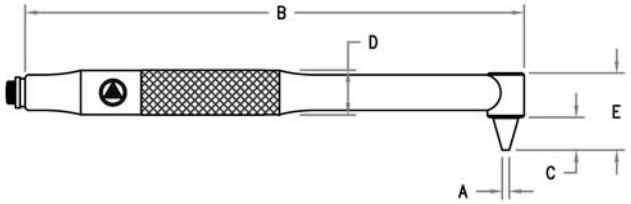
Ultra-Miniature Transducers			
Part Number	**Frequency (MHz)**	**Angle (Steel)**	**Crystal**
HS-877-2-xx	2.25	xx	.187" x .187" (4.7 mm x 4.7mm)
HS-877-5-xx	5.00	xx	.187" x .187" (4.7 mm x 4.7mm)
HS-877-10-xx	10.0	xx	.187" x .187" (4.7 mm x 4.7mm)
"xx" = specify angle desired. Also specify material to be inspected.			
Transducer Housing Dimensions			
.375" L x .375" H x .250" W			

Pencil Transducers

For high-precision thickness gauging.

These high frequency, focused delay line transducers are compatible with any ultrasonic instrument capable of displaying a return echo at depths as low as .010" in steel. The useful range is approximately from .010" to .250" in steel. The 0.060" circular contact face enables readings to be taken on curved surfaces, with little or no difficulty. Typical applications for these transducers include turbine blades, small diameter tubing and concave areas in small parts, to name a few. Both transducers utilize replaceable delay tips. For best performance, a short cable (such as **MB** type, 6') should be used. These models incorporate PowerLink™ Technology to assure optimal performance when used with a Staveley Instruments Ultrasonic Instrument.



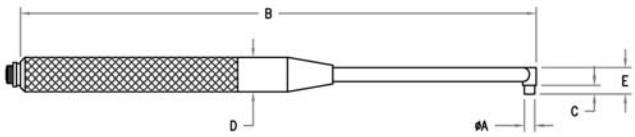


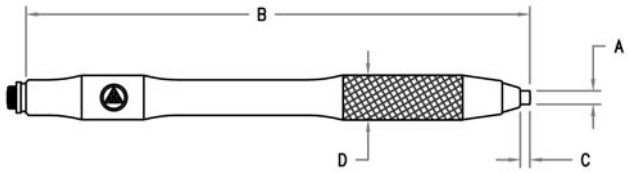
TECHNICAL SPECIFICATIONS	
Frequency range:	Center freq. approx. 10 MHz
Bandwidth:	≥ 90° @ -6dB
Tip Delay Time:	10 ± 0.2 microseconds
Tip Contact Area:	.060" ± .003"
Case:	Anodized aluminum (black)
Connector:	Microdot
Maximum Recommended Excitation Voltage:	-250V

ORDERING INFORMATION AND DIMENSIONS	HC-398-RDL Straight Pencil Type	HC-398-RA-RDL Right Angle Type
A: Contact Area	.060"	.060"
B: Length	4.070"	4.300"
C: Length of Delay Line	.330"	.330"
D: Maximum Diameter	.380"	.380"
E: Height of RA Type	-	.700"
Replacement Tips	HAX-398	HAX-398

Gauging Transducers for Thin Materials.

The HC-876 ultrasonic transducer operates at high frequency (20 MHz) with a broad bandwidth and small contact surface. Its chief application is thickness measuring of critical components such as jet engine blades, etc. (.004" - .300") This special transducer assembly is recommended for use with high precision flaw detectors with digital thickness readout capability. It is fitted with a Microdot connector. These models incorporate PowerLink™ Technology to assure optimal performance when used with a Staveley Instruments' Ultrasonic Instrument.





TECHNICAL SPECIFICATIONS	
Frequency range:	Center freq. 20 MHz
Bandwidth:	≥ 60%
Tip Delay Time:	3.6 ± 0.1 microseconds
Tip Contact Area:	.120"
Case:	Anodized aluminum (black) & Stainless Steel
Connector:	Microdot

ORDERING INFORMATION AND DIMENSIONS	HC-876 Right Angle Type	HC-876-L Straight Pencil Type
A: Contact Area	.120"	.120"
B: Length	5.70"	4.070"
C: Length of Delay Line	.060"	.060"
D: Maximum Diameter	.375"	.380"
E: Height of RA Type	.250"	N/A

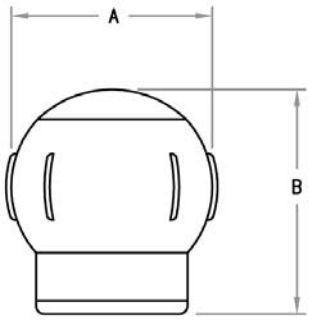
Spectrum PowerLink™ Contact Transducers

State of the art performance for all contact ultrasonic inspection applications.

Spectrum PowerLink™ Transducers are available in **Power**, **Resolution** and **Standard** versions and in various configurations, diameters and frequencies. Spectrum PowerLink™ Transducers can be used with any Ultrasonic Flaw Detector, but when used in conjunction with Staveley's new ultrasonic instrumentation, will provide automatic transducer recognition and documentation.

Power					Standard				
Catalog Number	Frequency (MHz)	Element Dia. (in)	Case Style	Connector Type	Catalog Number	Frequency (MHz)	Element Dia. (in)	Case Style	Connector Type
A1L	1.00	1.00	Type 1	BNC	E1L	1.00	1.00	Type 1	BNC
A2L	1.00	0.75	Type 2	BNC	E2L	1.00	0.75	Type 2	BNC
A3L	2.25	1.00	Type 1	BNC	E3L	2.25	1.00	Type 1	BNC
A4L	2.25	0.75	Type 2	BNC	E4L	2.25	0.75	Type 2	BNC
A5L	2.25	0.50	Type 3	BNC	E5L	2.25	0.50	Type 3	BNC
A6L	5.00	1.00	Type 1	BNC	E6L	5.00	1.00	Type 1	BNC
A7L	5.00	0.75	Type 2	BNC	E7L	5.00	0.75	Type 2	BNC
A8L	5.00	0.50	Type 3	BNC	E8L	5.00	0.50	Type 3	BNC
A9L	5.00	0.25	Type 4	Microdot	E9L	5.00	0.25	Type 4	Microdot
A10L	10.0	0.50	Type 3	BNC	E10L	10.0	0.50	Type 3	BNC
A11L	10.0	0.25	Type 4	Microdot	E11L	10.0	0.25	Type 4	Microdot

Resolution				
Catalog Number	Frequency (MHz)	Element Dia. (in)	Case Style	Connector Type
B1L	2.25	0.50	Type 3	BNC
B2L	5.00	0.50	Type 3	BNC
B3L	5.00	0.25	Type 4	Microdot
B4L	10.0	0.50	Type 3	BNC
B5L	10.0	0.25	Type 4	Microdot



Cables	
Catalog Number	Description
899001L	6 foot BNC to BNC cable, RG-17/U
899002L	6 foot BNC to BNC cable, RG-58A/U
899003L	6 foot BNC to Microdot cable, RG-174/U
899004L	6 foot Lemo 1 to BNC cable, RG-58A/U
899005L	6 foot Lemo 1 to BNC cable, RG-174/U
899006L	6 foot Lemo 1 to Microdot cable, RG-174/U

Case Style	A	B
Type 4	0.75"	0.80"
Type 3	1.15"	1.50"
Type 2	1.35"	1.63"
Type 1	1.55"	1.70"

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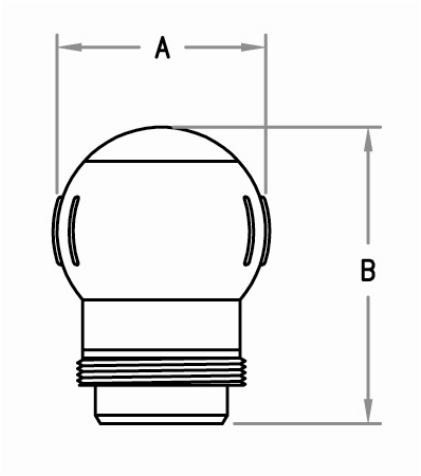
Power (Membrane/Delay Line)				
Catalog Number	Frequency (MHz)	Element Dia. (in)	Case Style	Connector Type
C1L	1.00	1.00	Type 5	BNC
C2L	1.00	0.75	Type 6	BNC
C3L	2.25	1.00	Type 5	BNC
C4L	2.25	0.75	Type 6	BNC
C5L	2.25	0.50	Type 7	BNC
C6L	5.00	1.00	Type 5	BNC
C7L	5.00	0.75	Type 6	BNC
C8L	5.00	0.50	Type 7	BNC

Resolution (Delay Line)				
Catalog Number	Frequency (MHz)	Element Dia. (in)	Case Style	Connector Type
C14L	5.00	0.50	Type 7	BNC
C15L	5.00	0.25	Type 8	Microdot
C16L	10.0	0.50	Type 7	BNC
C17L	10.0	0.25	Type 8	Microdot



Cables	
Catalog Number	Description
899001L	6 foot BNC to BNC cable, RG-17/U
899002L	6 foot BNC to BNC cable, RG-58A/U
899003L	6 foot BNC to Microdot cable, RG-174/U
899004L	6 foot Lemo 1 to BNC cable, RG-58A/U
899005L	6 foot Lemo 1 to BNC cable, RG-174/U
899006L	6 foot Lemo 1 to Microdot cable, RG-174/U

Case Style	A	B
Type 8	0.75"	1.10"
Type 7	1.15"	1.65"
Type 6	1.35"	1.78"
Type 5	1.55"	1.90"

Composite Transducers

Superior Performance.

Staveley Sensors offers a variety of transducers using its **proprietary** composite piezo-ceramic elements. Composite transducers can provide increased sensitivity, improved bandwidth and superior penetration over typical monolithic ceramic element transducers. Staveley Sensors offers a wide range of composite transducers, including angle beam, contact, immersion and dual. Special application transducers are also available.

The following is a **partial** listing of currently available standard composite transducers:

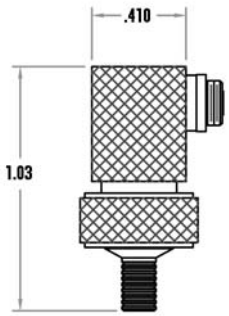
Part Number	Type	Frequency (MHz)	Size (in)
CMC-0504-R	Contact	5.00	.250
DIC-0408	Dual	4.00	8.00 millimeters
F7-L	Quick Change	2.25	.250
F8-L	Quick Change	2.25	.500
F9-L	Quick Change	5.00	.250
F10-L	Quick Change	5.00	.500
F13-L	Quick Change	2.25	.375
F14-L	Quick Change	5.00	.375
HS-7507	Angle Beam	2.25	.500
I2C-0204-S	Immersion	2.25	.250
I2C-0504-S	Immersion	5.00	.250
I3C-0508-S	Immersion	5.00	.500
I7C-0512-R	Immersion	5.00	.750
PABC-0504-45	Angle Beam	5.00	.250 x .250

Spot Weld Transducers

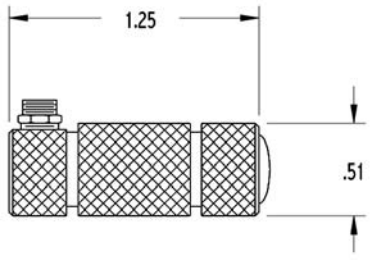
Ultrasonic Spot Weld Evaluation

Three styles of transducer designs are popular for spot weld inspection. Each has distinctive advantages. Common features among these styles are small diameter (3mm-6mm) and high frequency (10MHz-20MHz).

- **Hard-tip Delay Line** - Optimum for spot welds with relatively smooth/flat nugget surfaces. The hard plastic tip placed directly onto the nugget provides tactile feedback, assuring proper placement. A lightweight liquid is required to transmit the ultrasonic energy into the nugget.
- **Soft-tip Captive Water Column** - Optimum for spot welds with flash free, recessed/concave nuggets. The soft tip conforms to the irregular surface of the spot weld nugget. A lightweight liquid is required to transmit (couple) the ultrasonic energy into the nugget.
- **Soft-tip Captive Water Column - Polymer Transducers** - Polymer transducers generally are higher resolution transducers due to their greater bandwidth.



Hard Tip Delay Line		
Part Number	Frequency (MHz)	Element Dia. (mm)
HGR-6214	15.0	3.00
HGR-6215	15.0	4.00
HGR-6216	15.0	5.00
HGR-6217	15.0	6.00
HGR-6218	15.0	2.30
HGR-6219	15.0	3.20
HGR-6220	15.0	4.30
HGR-6221	15.0	5.20
HGR-6222	15.0	6.50
HGR-6223	15.0	5.50
HGR-6224	15.0	2.50
HGR-6225	15.0	11.0
HAX-1990-XX	Delay lines for HGR transducers “XX” = Element Diameter	



Soft Tip Captive Water Column - Polymer Transducers		
Part Number	Frequency (MHz)	Element Dia. (mm)
HPF-0315	20.0	3.15
HPF-0360	20.0	3.60
HPF-0400	20.0	4.00
HPF-0450	20.0	4.50
HPF-0500*	20.0	5.00
* Outside diameter = .60”		

Soft Tip Captive Water Column		
Part Number	Frequency (MHz)	Element Dia. (in)
SWM-1502	15.0	0.125
SWM-1503	15.0	0.187
SWM-1504	15.0	0.250
SWM-2002	20.0	0.125
SWM-2003	20.0	0.187
SWM-2004	20.0	0.250

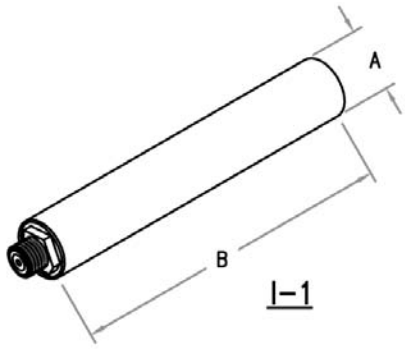
Immersion Transducers

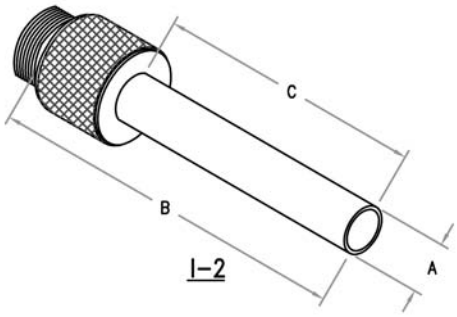
How to get to hard to reach areas?

Use Staveley Sensors' Pencil Case Transducers I-1 and I-2. They give you access to difficult to reach fillet or bore areas requiring immersion inspection. Most applications require near surface resolution plus the ability to detect small reflectors. Spherical or Cylindrical focusing is usually specified to maximize performance at a specified focal point in the test material. Specify the type of focus, required focal length in water and/or the material to be tested. By special order you can obtain special configurations that require smaller diameter cases, changes in case length to fit a particular test requirement, special beam angulations, etc.

Type S-General Purpose		
Part Number Type I-1	**Frequency (MHz)**	**Element Dia. (in)**
I1-0204-S	2.25	.250
I1-0304-S	3.50	.250
I1-0504-S	5.00	.250
I1-1004-S	10.0	.250
Type I-2		
I2-0204-S	2.25	.250
I2-0304-S	3.50	.250
I2-0504-S	5.00	.250
I2-1004-S	10.0	.250

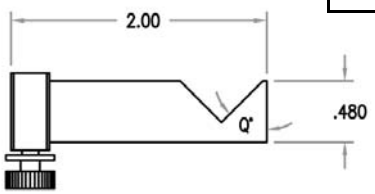
Type R-High Resolution		
Part Number Type I-1	**Frequency (MHz)**	**Element Dia. (in)**
I1-0504-R	5.00	.250
I1-1004-R	10.0	.250
I1-1504-R	15.0	.250
I1-2004-R	20.0	.250
I1-2504-R	25.0	.250
Type I-2		
I2-0504-R	5.00	.250
I2-1004-R	10.0	.250
I2-1504-R	15.0	.250
I2-2004-R	20.0	.250
I2-2504-R	25.0	.250





Element Diameter (in)	A	B
.125, .250	.375	2.00

Element Diameter (in)	A	B	C
.125, .250	.375	2.60	2.00



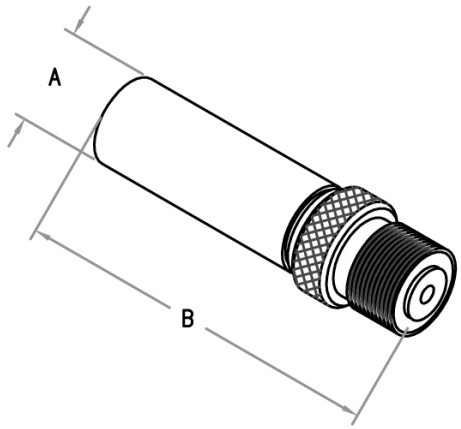
Angle Reflectors for Type I-1 and I-2 Transducers

Angle Reflector (specify angle required)

Immersion Transducers

Recommended for many testing applications.

Staveley Sensors' I-3 Type Immersion Transducers combine a medium range of element sizes, wide selection of frequencies and adaptability to spherical or cylindrical focusing. Specify the type of focus, required focal length in water and/or the material to be tested. The case size is only .630 in. O.D. All I-3 Type Transducers are enclosed in stainless steel cases with axial UHF connectors. Staveley Sensors color-codes the cases by frequency. Angle reflectors are available as an accessory for directing the sound beam into hard to reach areas.



I-3 Dimensions		
Element Diameter (in)	**A**	**B**
.250, .375, .500	.63	1.73

Type S-Standard, general purpose		
Part Number	**Frequency (MHz)**	**Element Dia. (in)**
I3-0204-S	2.25	.250
I3-0304-S	3.50	.250
I3-0504-S	5.00	.250
I3-1004-S	10.0	.250
I3-0206-S	2.25	.375
I3-0306-S	3.50	.375
I3-0506-S	5.00	.375
I3-1006-S	10.0	.375
I3-0108-S	1.00	.500
I3-0208-S	2.25	.500
I3-0308-S	3.50	.500
I3-0508-S	5.00	.500
I3-1008-S	10.0	.500

Type R-High Resolution		
Part Number	**Frequency (MHz)**	**Element Dia. (in)**
I3-0240-R	2.25	.250
I3-0340-R	3.50	.250
I3-0540-R	5.00	.250
I3-1004-R	10.0	.250
I3-1504-R	15.0	.250
I3-2004-R	20.0	.250
I3-2504-R	25.0	.250
I3-0206-R	2.25	.375
I3-0306-R	3.50	.375
I3-0506-R	5.00	.375
I3-1006-R	10.0	.375
I3-1506-R	15.0	.375
I3-0208-R	2.25	.500
I3-0308-R	3.50	.500
I3-0508-R	5.00	.500
I3-1008-R	10.0	.500

Type P-Penetration Power		
Part Number	**Frequency (MHz)**	**Element Dia. (in)**
I3-0204-P	2.25	.250
I3-0504-P	5.00	.250
I3-0206-P	2.25	.375
I3-0506-P	5.00	.375
I3-0108-P	1.00	.500
I3-0208-P	2.25	.500
I3-0508-P	5.00	.500

Immersion Transducers

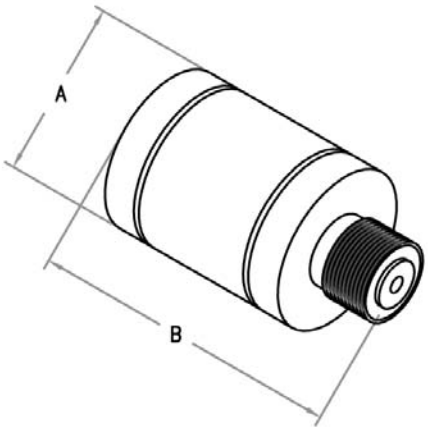
A choice of housings to fit a range of needs.

Staveley Sensors' I-7 and I-8 style transducers feature axial UHF connectors. All transducers are supplied as flat, cylindrical or spherically focused. Spherically focused transducers substantially increase sensitivity to small reflectors and are particularly useful for the thickness measurement of thin wall materials. Cylindrically focused transducers are widely used in the high speed testing of tubing, pipe, bar stock and similar cylindrical objects. Specify the type of focus, required focal length in water and/or the material to be tested. A properly specified transducer can increase test sensitivity and testing speed to a very significant degree.

Type R-High Resolution		
I-7 Housing	**Frequency (MHz)**	**Element Dia. (in)**
I7-0212-R	2.25	.750
I7-0312-R	3.50	.750
I7-0512-R	5.0	.750
I7-1012-R	10.0	.750
I-8 Housing		
I8-0216-R	2.25	1.00
I8-0516-R	5.00	1.00
I8-0218-R	2.25	1.125
I8-0518-R	5.00	1.125

Type S-Standard, general purpose		
I-7 Housing	**Frequency (MHz)**	**Element Dia. (in)**
I7-0112-S	1.00	.750
I7-0212-S	2.25	.750
I7-0312-S	3.50	.750
I7-0512-S	5.00	.750
I7-1012-S	10.0	.750
I-8 Housing		
I8-0116-S	1.00	1.000
I8-0118-S	1.00	1.125
I8-0216-S	2.25	1.000
I8-0218-S	2.25	1.125
I8-0316-S	3.50	1.000
I8-0318-S	3.50	1.125
I8-0516-S	5.00	1.000
I8-0518-S	5.00	1.125

Type P-Penetration Power		
I-7 Housing	**Frequency (MHz)**	**Element Dia. (in)**
I7-0012-P	0.5	.750
I7-0112-P	1.0	.750
I7-0212-P	2.25	.750
I7-0312-P	3.50	.750
I7-0512-P	5.0	.750
I-8 Housing		
I8-0016-P	0.50	1.00
I8-0116-P	1.00	1.00
I8-0216-P	2.25	1.00
I8-0516-P	5.00	1.00
I8-0018-P	0.50	1.125
I8-0118-P	1.00	1.125
I8-0218-P	2.25	1.125
I8-0518-P	5.00	1.125



Style I-7 and Style I-8		
Element Dia. (in)	**A**	**B**
.750	1.0	1.375
1.00, 1.125	1.25	1.375

Immersion Transducers

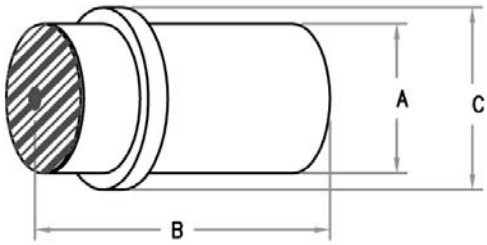
A choice of housings to fit a range of needs.

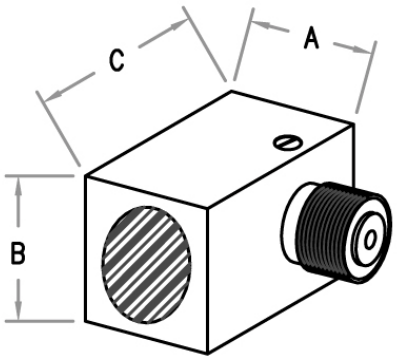
Style I-F Flange housings are available only with .75 in. diameter elements and are designed to fit 1.375 in. diameter immersion search tubes used on many immersion-scanning tanks. Style I-R transducers, which commonly have .5" diameter elements, are a popular choice for both flaw detection and in-line material velocity measurements. All Transducers are supplied as flat, cylindrical or spherically focused. Spherically focused transducers substantially increase sensitivity to small reflectors and are particularly useful for the accurate measurement of thickness of thin wall materials. Cylindrically focused transducers are widely used in the high speed testing of tubing, pipe, bar stock and similar cylindrical objects. Specify the type of focus, required focal length in water and/or the material to be tested. A properly specified transducer can increase test sensitivity and testing speed to a very significant degree.

Type S-Standard, general purpose		
I-F Flange Housing	**Frequency (MHz)**	**Element Dia. (in)**
IF-0112-S	1.00	.750
IF-0212-S	2.25	.750
IF-0312-S	3.50	.750
IF-0512-S	5.00	.750
IF-1012-S	10.0	.750
I-R Housing		
IR-0108-S	1.00	.500
IR-0208-S	2.25	.500
IR-0308-S	3.50	.500
IR-0508-S	5.00	.500
IR-1008-S	10.0	.500

Type P-Penetration Power		
I-F Flange Housing	**Frequency (MHz)**	**Element Dia. (in)**
IF-0012-P	0.50	.750
IF-0112-P	1.00	.750
IF-0212-P	2.25	.750
IF-0312-P	3.50	.750
IF-0512-P	5.00	.750
I-R Housing		
IR-0008-P	0.50	.500
IR-0108-P	1.00	.500
IR-0208-P	2.25	.500
IR-0308-P	3.50	.500
IR-0508-P	5.00	.500

Type R-High Resolution		
I-F Flange Housing	**Frequency (MHz)**	**Element Dia. (in)**
IF-0212-R	2.25	.750
IF-0312-R	3.50	.750
IF-0512-R	5.00	.750
IF-1012-R	10.0	.750
I-R Housing		
IR-0208-R	2.25	.500
IR-0308-R	3.50	.500
IR-0508-R	5.00	.500
IR-1008-R	10.0	.500





Style I-F			
Element Dia. (in)	**A**	**B**	**C**
.750	.990	1.63	1.25

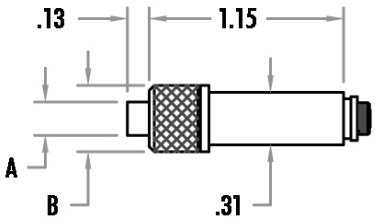
Style I-R			
Element Dia. (in)	**A**	**B**	**C**
.500	.75	.75	.94

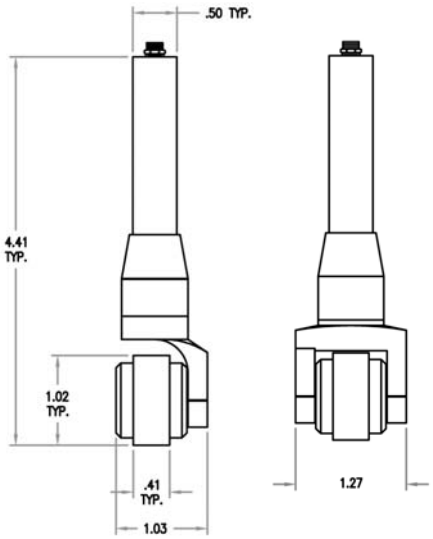
Dry Coupled Contact & Roller Transducers

For testing metallic or non-metallic materials for bonding/segregation in CFRP/GRP including Kevlar, rubber friction materials and high density products such as glass, wood, concrete, and metallic and plastic weldments. This series includes roller and contact type transducers at 0.5 MHz and 1.25 MHz. Contact units are available in 5, 10, and 15 mm diameters while the roller transducers incorporate a 5 mm crystal giving a 10 mm "footprint" through the replaceable tire. Both styles are fitted with axial mounted microdot connectors. (Other connectors available on request.) The roller transducer can be chosen from either a "single" or "dual" yoke design. (SY= single, DY= dual)

CONTACT TRANSDUCERS				
Part Number	**Frequency (MHz)**	**Crystal Size (mm)**	**A (in)**	**B (in)**
HDC-8702-1	1.25	5	0.20	0.39
HDC-8702-0	0.50	5	0.20	0.39
HDC-8703-1	1.25	10	0.37	0.60
HDC-8703-0	0.50	10	0.37	0.60
HDC-8704-1	1.25	15	0.59	0.87
HDC-8704-0	0.50	15	0.59	0.87

Replacement Tips	
Part Number	**Size (mm)**
HAX-1869-5T	5
HAX-1869-10T	10
HAX-1869-15T	15





ROLLER TRANSDUCERS			
Part Number	**Frequency (MHz)**	**Wheel Diameter (mm)**	**Crystal Size (mm)**
RT-0105-16SY	1.25	25	5
RT-0105-16DY	1.25	25	5
RT-0005-SY	0.50	25	5
RT-0005-DY	0.50	25	5

Spare Tires		Cable	
Part Number	**Wheel Diameter (mm)**	**Part Number**	
RT-16-10T	25	MB-6	6' long, BNC/Microdot

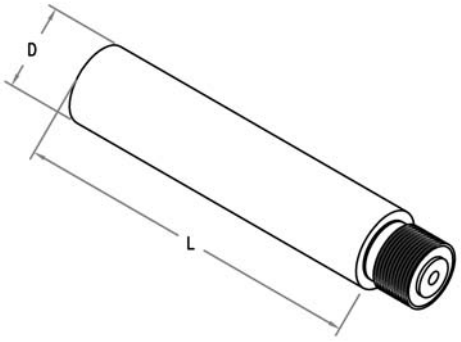
Fixtures: Special fixtures for holding either contact or roller transducers available upon request.

Cables, Supplies & Accessories

Cables, Supplies and Accessories.

The selection below includes the most widely used transducer cables for standard flaw detectors and thickness gauges. Special lengths or connectors can be supplied on special order.

Transducer Cables		
Part Number	**Description**	**Length (ft)**
MB	Microdot-BNC	6
MU	Microdot-UHF	6
ML	Microdot-Lemo	6
BB	BNC-BNC	6
BU	BNC-UHF	6
BUW	BNC-UHF Waterproof	6
BL	BNC-Lemo	6
UU	UHF-UHF	6
UUW	UHF-UHF Waterproof	6
UL	UHF-Lemo	6
LL	Lemo-Lemo	6
Note: When ordering, specify part number, single or dual cable and , if nonstandard, cable length.		



Immersion Search Tubes		
Part Number	**Length (in)**	**Diameter (in)**
IST-212	2	.745
IST-412	4	.745
IST-612	6	.745
IST-1212	12	.745
IST-1812	18	.745
IST-2412	24	.745
IST-1222	12	1.375
IST-2422	24	1.375
IST-3622	36	1.375

Special Application Transducers

Harisonic® designs and builds custom transducers for a wide range of special applications.

When you come to Staveley Sensors, you can count on the benefits of long-term field tested product experience, and advanced application engineering facilities with the capabilities to meet the most exacting customer requirements.

Staveley Sensors designs and builds custom types of transducers: bore probes, variable angle, shear wave, dual longitudinal angle beams, special gauging units, and a variety of other transducers. Shown here are some examples of special application transducers recently supplied by Staveley Sensors.

Calibration Blocks

The best in calibration blocks

Harisonic® Ultrasonic Calibration Blocks are unsurpassed in quality and reliability. Listed below are some standard calibration blocks for a number of categories of ultrasonic nondestructive inspection. If you prefer, Staveley Sensors will custom make special blocks to suit your individual material and design specifications.

Calibration blocks are precision machined from a broad range of ultrasonic tested materials including anodized aluminum; nickel-plated steel and stainless steel. Staveley Sensors also provides calibration blocks of other materials via special order-nickel based alloys, tool steels, alloy steel, titanium and plastics. All blocks are also available in metric dimensions.

Calibration reports verifying appropriate specifications are issued for each block. ASTM Reference Blocks are provided with ultrasonic response curves. All blocks are traceable to the National Bureau of Standards. Moreover, Staveley Sensors offers sturdy hardwood cases for safe storage of standard or special customized calibration blocks.

IIW Block Type 1: This versatile block is excellent for calibration of shear and longitudinal transducers. Use it also to check resolution, sensitivity and verification of the shear wedge exit point and refracted angle. 12" x 4" x 1". In accord with International Institute of Welding and American Welding Society D1.0-69, D2.0-69 specifications.

IIW Block Type 2: Modified version of the IIW Type 1 Block. Type 2 features a 2.0" radius x .250" deep cut-out and additional side-drilled holes for accurate resolution studies. 12" x 4" x 1". Accords with International Institute of Welding and American Welding Society D1.0-69, D2.0-69 specifications.

Angle Beam: ($^1/_2$ in & 1 in) This block excels in general angle beam calibrations. Meets U.S. Bureau of Public Roads Type B specifications. Contains a 1.0" radius opposite a 2.0" radius, and a $^5/_{64}$" side-drilled, flat-bottom hole .750" deep.

Type DSC: (AWS Type) Recommended for shear wave distance and sensitivity calibration. Contains a 1.0" radius opposite a 3.0" radius. The 3.0" radius includes a radi used slot .375" deep x .032" wide. The Type DSC also has a 0° reference point for corresponding markings at 45°, 60° and 70° for measuring the actual refracted angle. The block is 1.0" thick. Per BRR/ AWS requirements.

4- & 5- Step Blocks: For thickness and linearity calibration. The 4-step version comes in thicknesses of .250", .500", .750" and 1.00". The 5-step version is available in thicknesses of .100", .200", .300", .400" and .500".

ASTM Distance/ Area Amplitude Set: Available in 8, 10, or 19 Block Set. Per ASTM E127, E428 Distance/Area Amplitude specifications.

Many other blocks available.

Transducer Kits

Keep your NDT Equipment Organized.

Now get your NDT equipment in one portable container ready to “grab and go” to any testing location in the plant or on the job site. Our transducer kits are assembled with the most commonly requested groups of transducers, wedges, cables, testing blocks, couplant, and reference standards to get you up and running immediately. Each item is protected from damage, nestled within a custom-formed housing cavity. Get organized. Perfect for new personnel, quality control and NDT inspectors. Standard kits, as well as custom kit configurations are available.

Basic Transducer Kit: K-001
Especially designed for customers with “basic” ultrasonic testing needs. This portable kit includes a variety of transducers and accessories to satisfy common inspection requirements. Included are contact transducers, angle beam transducers with associated wedges, cables, couplant, testing blocks and reference standards all in a protective hard shelled carrying case.

AWS Weld Inspection Kit: K-020
Designed for inspections in accordance with AWS Structural Welding Code D1.1. This kit contains the transducers necessary for common weld inspections (2.25 MHz), varying sizes with corresponding Lucite wedges, cables, couplant and an AWS DSC calibration block (carbon steel) in a hard shelled carrying case.

Spot-Weld Transducer Kit: K-022
Staveley Sensors’ “Spot Weld Transducer Kit” features the HGR style, hard tip Spot Weld Transducers. It contains a variety of sizes ranging from 2.3mm diameter to 6.5mm, popular with some automotive manufacturers. Included are Spot Weld transducers, cables and spare delay tips in a protective hard shelled carrying case. This kit is also available with PowerLink™ Technology.

Ultrasonic Couplant

Ultrasonic Couplant.

Multi-purpose Ultrasonic Couplant is specially formulated for ultrasonic coupling in general contact applications.

Multi-purpose Ultrasonic Couplant has the following properties:

- Provides high coupling efficiency particularly on rough surfaces.
- Ideal for thickness gauging applications.
- Nontoxic and nonflammable.
- Available in handy 5 oz. tubes, 2 oz. bottles, or 12 oz. bottles.
- Optically clear.
- Water soluble.
- Suitable for high temperature work.

Temperature Range	Viscosity	Part Number	Size
0 - 150° F	Light*	50A4086	5 oz.
0 - 700° F	Heavy	50A4084	5 oz.
0 - 260° F	Med (gel)	3317450	2 oz.
0 - 260° F	Med (gel)	3303964	12 oz.

* Light viscosity couplant is suitable for use between transducers and wedges or fixtures.

Near Field Table

NEAR FIELD TABLE*

FREQUENCY (MHz)

ELEMENT DIAMETER (INCHES)	0.4	0.5	1.0	1.5	2.25	3.5	5.0	10.0	15.0	20.0	25.0
.125	.027	.033	.067	.100	.150	.234	.334	.669	1.00	1.34	1.67
.250	.107	.134	.268	.401	.602	.936	1.34	2.68	4.01	5.35	6.69
.375	.241	.301	.602	.903	1.35	2.11	3.01	6.02	9.03	12.0	15.0
.500	.428	.535	1.07	1.61	2.41	3.75	5.35	10.7	16.1	21.4	26.8
.625	.669	.836	1.67	2.51	3.76	5.85	8.36	16.7	25.1	33.4	41.8
.750	.963	1.20	2.41	3.61	5.42	8.43	12.0	24.1	36.1	48.2	60.2
.875	1.31	1.64	3.28	4.92	7.37	11.5	16.4	32.8	49.2	65.6	81.9
1.000	1.71	2.14	4.28	6.42	9.63	15.0	21.4	42.8	64.2	85.6	107
1.125	2.17	2.71	5.42	8.13	12.2	19.0	27.1	54.2	81.3	108	135
1.250	2.68	3.34	6.69	10.0	15.0	23.4	33.4	66.9	100	134	167
1.375	3.24	4.05	8.09	12.1	18.2	28.3	40.5	80.9	121	162	202
1.500	3.85	4.82	9.63	14.4	21.7	33.7	48.2	96.3	144	193	240

*(N) Near Field Length (inches in water).

FORMULA: $N = \frac{D^2F}{4C}$

N = Near field length (Yo^+)
D = Active element diameter
F = Frequency of Search Unit
C = Velocity of medium (water)

To find the approximate Near Field length in:

STEEL	--	--	3.94
ALUMINUM	-- Divide "N" by	--	4.25
PLEXIGLAS	--	--	1.83

Beam Spread Table

BEAM SPREAD TABLE*

ELEMENT DIAMETER (INCHES) \ FREQUENCY (MHz)	0.4	0.5	1.0	1.5	2.25	3.5	5.0	10.0	15.0	20.0	25.0
.125	71.5	55.8	26.8	17.9	11.9	7.80	4.58	2.75	1.53	1.38	.92
.250	34.0	27.1	13.3	8.95	5.96	3.90	2.75	1.38	.92	.69	.46
.375	22.5	17.9	8.87	5.96	3.97	2.60	1.83	.92	.61	.46	.31
.500	16.8	13.4	6.65	4.47	2.98	1.95	1.38	.69	.46	.34	.23
.625	13.4	10.7	5.32	3.58	2.38	1.56	1.10	.55	.37	.28	.18
.750	11.2	8.95	4.43	2.98	1.99	1.30	.98	.46	.31	.23	.15
.875	9.57	7.67	3.80	2.55	1.70	1.11	.79	.39	.26	.20	.13
1.000	8.37	6.71	3.32	2.23	1.49	.97	.69	.34	.23	.17	.11
1.125	7.44	5.96	2.95	1.99	1.32	.87	.61	.31	.20	.15	.10
1.250	6.70	5.36	2.66	1.79	1.19	.78	.55	.28	.18	.14	.09
1.375	6.09	4.88	2.42	1.63	1.08	.71	.50	.25	.17	.13	.08
1.500	5.58	4.47	2.22	1.49	.99	.65	.46	.23	.15	.11	.07

* Beam Spread angle (degrees) @ -6dB point (in water).

FORMULA: $\theta = 2 \sin^{-1} (.5 \frac{\lambda}{D})$

WHERE: θ = Included angle
λ = Wavelength①
D = Active element diameter
① $\lambda = {}^{C}/_{F}$

To find the approximate Beam Spread angle in:

STEEL	--	--	3.94
ALUMINUM	--	multiply “θ” by --	4.25
PLEXIGLAS	--	--	1.83

Table Of Ultrasonic Properties

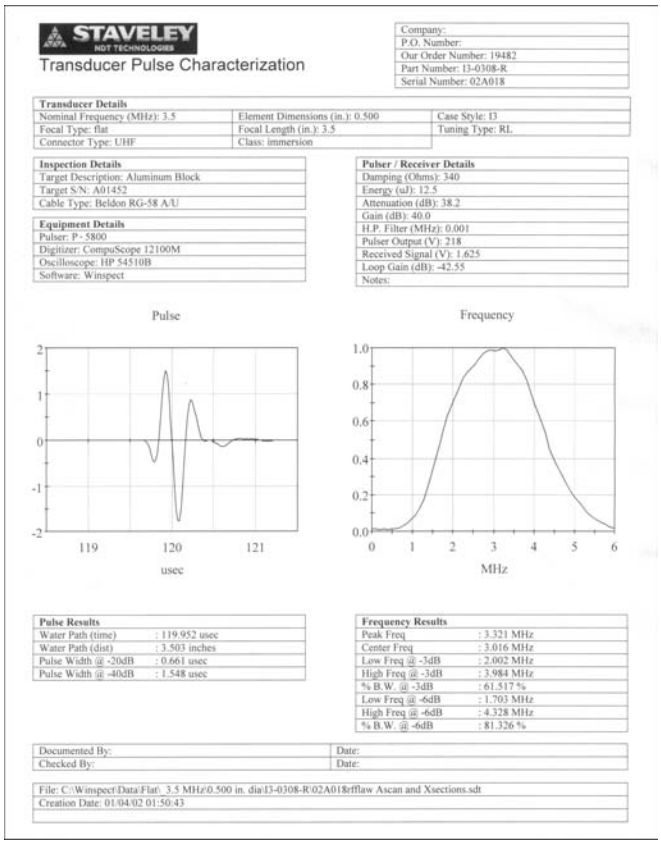
Materials	Velocity Longitudinal		Velocity Shear		Velocity Surface		Density	Acoustic Impedance
	(cm / µsec)	(in / µsec)	(cm / µsec)	(in / µsec)	(cm / µsec)	(in / µsec)	gm/cm^3	gm/cm^2-sec ($x10^5$)
Air (20°C)	.0343	.0135						
Alcohol, Ethyl	.118	.0465					.789	.930
Alcohol, Isopropyl	.117	.0461					.786	.919
AL 1100-0 (2S0)	.635	.250	.310	.1220			2.71	17.2
Bakelite	.259	.102					1.40	3.63
Brass	.428	.168	.203	.0799			8.56	36.7
Copper	.466	.183	.226	.0890	.193	.0760	8.93	41.6
Glass, Crown (reg.)	.566	.223	.342	.1346			2.50	14.2
Glass, Quartz	.557	.219	.352	.1386			2.60	14.5
Glass, Plate	.571	.225	.343	.135				14.5
Glycerine	.192	.0757					1.260	2.42
Gold	.324	.128	.120	.0472			19.32	62.6
Ice	.399	.157	.198	.078				
Iron, Cast	.480	.189	.240	.0945			7.80	37.4
Lead	.216	.085	.070	.0276	.0630	.0248	11.4	24.6
Lucite	.268	.106	.126	.0496			1.18	3.16
Magnesium	.631	.248					1.74	11.0
Micarta (Linen base)	.300	.118						
Molybdenum	.629	.248	.335	.132	.311	.122	10.2	64.2
Monel	.602	.237	.272	.107	.196	.0772	8.83	53.2
Nickel	.563	.222	.296	.117	.264	.104	8.88	50.0
Nitrogen (20°C)	.0350	.0130					$1.16x10^{-3}$	.000406
Nylon	.262	.103						2.9
Oxygen (20°C)	.0328	.0129					$1.32x10^{-3}$	.000433
Plutonium	.179	.0705						28.2
Potassium (100°C)	.186	.0735					.818	1.5
Quartz, Natural	.575	.226					2.65	15.2
Sapphire	.980	.386						
Silver	.360	.142	.159	.0626			10.5	37.8
Sodium (100°C)	.253	.0996					.926	2.3
Steel, 302 Cres	.566	.223	.312	.123	.312	.123	8.03	45.4
Steel, 347 Cres	.574	.226	.309	.122			7.91	45.4
Steel, 410 Cres	.739	.291	.299	.118	.216	.0850	7.67	56.7
Steel, 1020	.589	.232	.324	.128			7.71	45.4
Steel, 1095	.590	.232	.319	.126			7.80	46.0
Tantalum	.410	.161	.290	.114			16.6	54.8
Tim	.332	.131	.167	.0657			7.29	24.2
Titanium	.607	.239	.311	.122			4.50	27.3
Tungsten	.518	.204	.287	.113	.265	.104	19.25	99.7
Uranium	.338	.133	.196	.0770				64.0
Uranium Dioxide	.518	.205						56.7
Water (20°C)	.1483	.0584					1.000	1.483
Zinc	.417	.164	.241	.0949			7.10	29.6
Zircaloy 2	.472	.186	.236	.093				44.2
Zirconium	.465	.183	.225	.0886			6.48	30.1

NOTE: The information presented above has been gathered from a wide variety of sources, over a period of many years. Much of the data has not been verified, however, the data is believed to be accurate and reliable. Information is supplied for the convenience of the user and Staveley Sensors Inc. assumes no responsibility for inaccuracies.

Transducer Certification Sheets

Transducer Pulse Characterization & Flaw / Resolution Test

In addition to the standard documentation, Harisonic® offers the following types of certifications, at a nominal charged. **Flaw / Resolution Test, Axial (On-Axis) Beam Profile, Transverse Beam Profiles.**



STAVELEY NDT TECHNOLOGIES

Transducer Pulse Characterization

Company:	
P.O. Number:	
Our Order Number: 19482	
Part Number: I3-0308-R	
Serial Number: 02A018	

Transducer Details		
Nominal Frequency (MHz): 3.5	Element Dimensions (in.): 0.500	Case Style: I3
Focal Type: flat	Focal Length (in.): 3.5	Tuning Type: RL
Connector Type: UHF	Class: immersion	

Inspection Details
Target Description: Aluminum Block
Target S/N: A01452
Cable Type: Beldon RG-58 A/U

Pulser / Receiver Details
Damping (Ohms): 340
Energy (uJ): 12.5
Attenuation (dB): 38.2
Gain (dB): 40.0
H.P. Filter (MHz): 0.001
Pulser Output (V): 218
Received Signal (V): 1.625
Loop Gain (dB): -42.55
Notes:

Equipment Details
Pulser: P - 5800
Digitizer: CompuScope 12100M
Oscilloscope: HP 54510B
Software: Winspect

Pulse

Frequency

Pulse Results	
Water Path (time)	: 119.952 usec
Water Path (dist)	: 3.503 inches
Pulse Width @ -20dB	: 0.661 usec
Pulse Width @ -40dB	: 1.548 usec

Frequency Results	
Peak Freq	: 3.321 MHz
Center Freq	: 3.016 MHz
Low Freq @ -3dB	: 2.002 MHz
High Freq @ -3dB	: 3.984 MHz
% B.W. @ -3dB	: 61.517 %
Low Freq @ -6dB	: 1.703 MHz
High Freq @ -6dB	: 4.328 MHz
% B.W. @ -6dB	: 81.326 %

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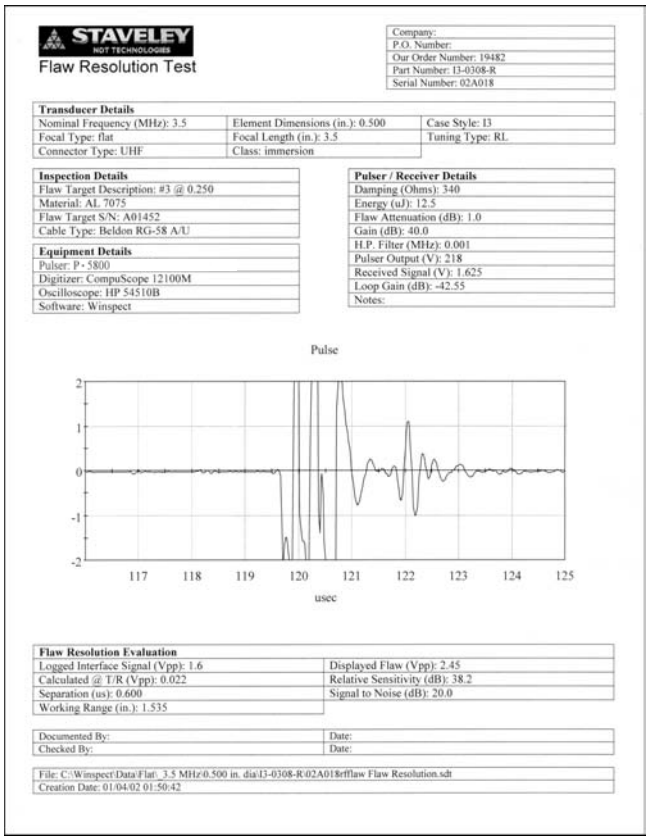
Transducer Pulse Characterization

The Transducer Pulse Characterization data sheet is our standard documentation, and is provided with every Harisonic® transducer, free of charge. The RF Waveform and Frequency Spectrum information is recorded and stored in our database, for future reference. Important parameters such as Peak and Center Frequency, Bandwidth, Pulse Width and Loop Gain are measured per ASTM E-1065 guidelines. All Harisonic® test equipment is calibrated and certified to MIL-C-45662A standard.

Flaw / Resolution Test

The optional Flaw / Resolution Test certifies the resolving power of Harisonic® transducers. This test is typically performed on Immersion type transducers, with the target being specified by the customer. Near or Far Surface resolution can be measured.



STAVELEY NDT TECHNOLOGIES

Flaw Resolution Test

Company:	
P.O. Number:	
Our Order Number: 19482	
Part Number: I3-0308-R	
Serial Number: 02A018	

Transducer Details		
Nominal Frequency (MHz): 3.5	Element Dimensions (in.): 0.500	Case Style: I3
Focal Type: flat	Focal Length (in.): 3.5	Tuning Type: RL
Connector Type: UHF	Class: immersion	

Inspection Details
Flaw Target Description: #3 @ 0.250
Material: AL 7075
Flaw Target S/N: A01452
Cable Type: Beldon RG-58 A/U

Pulser / Receiver Details
Damping (Ohms): 340
Energy (uJ): 12.5
Flaw Attenuation (dB): 1.0
Gain (dB): 40.0
H.P. Filter (MHz): 0.001
Pulser Output (V): 218
Received Signal (V): 1.625
Loop Gain (dB): -42.55
Notes:

Equipment Details
Pulser: P - 5800
Digitizer: CompuScope 12100M
Oscilloscope: HP 54510B
Software: Winspect

Pulse

Flaw Resolution Evaluation	
Logged Interface Signal (Vpp): 1.6	Displayed Flaw (Vpp): 2.45
Calculated @ T/R (Vpp): 0.022	Relative Sensitivity (dB): 38.2
Separation (us): 0.600	Signal to Noise (dB): 20.0
Working Range (in.): 1.535	

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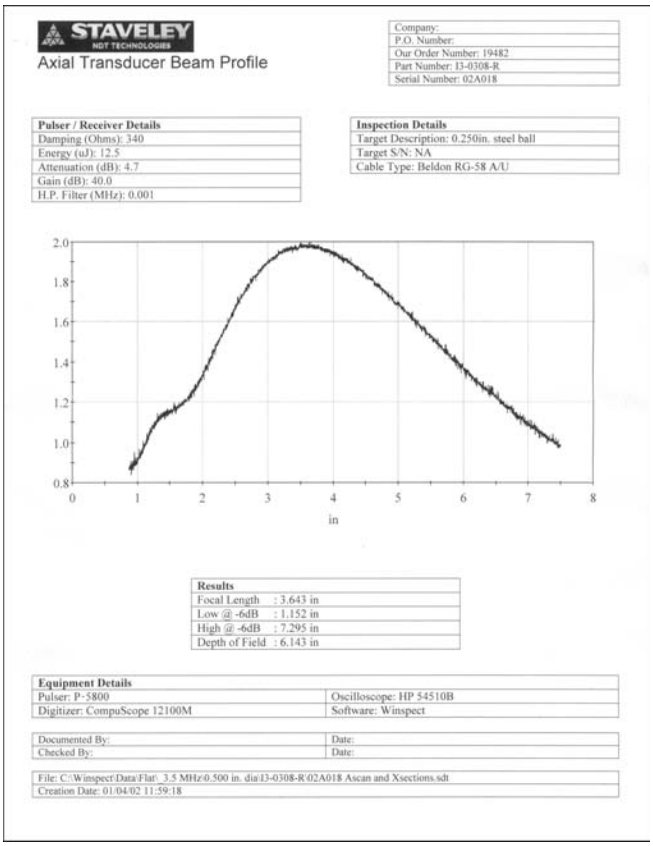
Transducer Certification Sheets

Axial (On-Axis) Beam Profile & Transverse Beam Profiles

Axial (On-Axis) Beam Profile

The optional Axial or On-Axis Beam Profile is typically done on Immersion type transducers, and provides critical information about the transducer's Sound Field. This test is performed with the transducer face starting close to the target and then moving away along the Z-Axis. Pulse Echo Amplitude vs Distance, Focal Length, and Depth of Field are measured.



STAVELEY NDT TECHNOLOGIES

Axial Transducer Beam Profile

Company:	
P.O. Number:	
Our Order Number:	19482
Part Number:	I3-0308-R
Serial Number:	02A018

Pulser / Receiver Details	
Damping (Ohms):	340
Energy (uJ):	12.5
Attenuation (dB):	4.7
Gain (dB):	40.0
H.P. Filter (MHz):	0.001

Inspection Details	
Target Description:	0.250in. steel ball
Target S/N:	NA
Cable Type:	Beldon RG-58 A/U

Results	
Focal Length	: 3.643 in
Low @ -6dB	: 1.152 in
High @ -6dB	: 7.295 in
Depth of Field	: 6.143 in

Equipment Details	
Pulser: P-5800	Oscilloscope: HP 54510B
Digitizer: CompuScope 12100M	Software: Winspect

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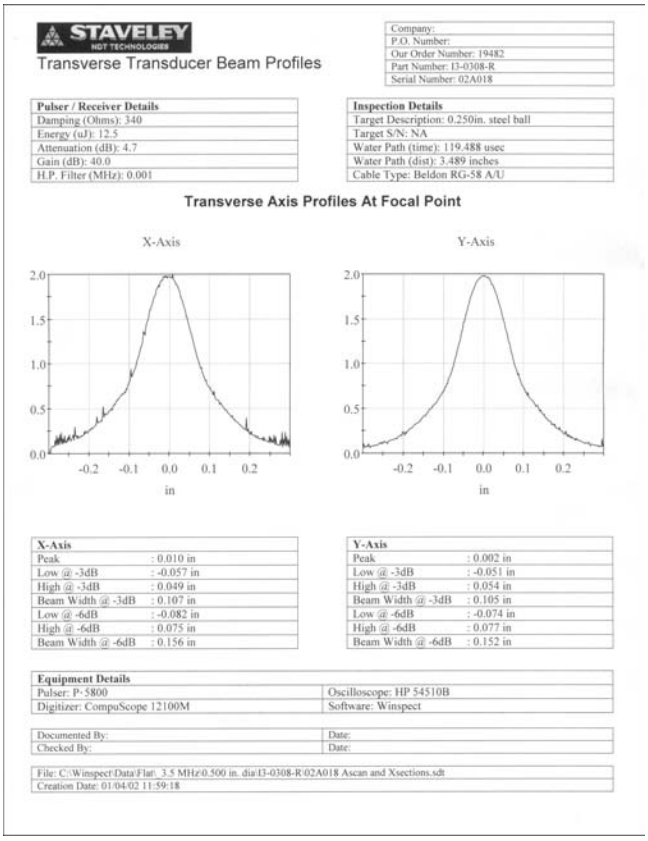

STAVELEY NDT TECHNOLOGIES

Transverse Transducer Beam Profiles

Company:	
P.O. Number:	
Our Order Number:	19482
Part Number:	I3-0308-R
Serial Number:	02A018

Pulser / Receiver Details	
Damping (Ohms):	340
Energy (uJ):	12.5
Attenuation (dB):	4.7
Gain (dB):	40.0
H.P. Filter (MHz):	0.001

Inspection Details	
Target Description:	0.250in. steel ball
Target S/N:	NA
Water Path (time):	119.488 usec
Water Path (dist):	3.489 inches
Cable Type:	Beldon RG-58 A/U

Transverse Axis Profiles At Focal Point

X-Axis	
Peak	: 0.010 in
Low @ -3dB	: -0.057 in
High @ -3dB	: 0.049 in
Beam Width @ -3dB	: 0.107 in
Low @ -6dB	: -0.082 in
High @ -6dB	: 0.075 in
Beam Width @ -6dB	: 0.156 in

Y-Axis	
Peak	: 0.002 in
Low @ -3dB	: -0.051 in
High @ -3dB	: 0.054 in
Beam Width @ -3dB	: 0.105 in
Low @ -6dB	: -0.074 in
High @ -6dB	: 0.077 in
Beam Width @ -6dB	: 0.152 in

Equipment Details	
Pulser: P-5800	Oscilloscope: HP 54510B
Digitizer: CompuScope 12100M	Software: Winspect

Documented By:	Date:
Checked By:	Date:

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Creation Date: 01/04/02 11:59:18

Transverse Beam Profiles

The optional Transverse Beam Profiles are typically done on Immersion transducers, and provide critical information on the transducer's Sound Field. This test is performed at the measured Focal Length, along the X and Y Axes. Beam Width and Symmetry are measured.