

Couplant Solutions Catalog

ECHO
ultrasonics

The couplant experts

EchoPure™

The most universal water-soluble UT couplant

Operating Range: -60° to 350°F / -51° to 176°C

- Couplant of choice for phased array manual inspections (PAMUT)
- Complies with P91 steel requirement for water-free couplant
- Ideal for very cold and very warm inspection
- Four viscosities (fluids and gels)
- Very slow drying
- All ingredients approved for incidental food contact
- Water-free / water-soluble



EchoTrack™ A

Broadest operating range and slowest evaporation rate in a water-based, high performance couplant

Operating Range: -10° to 200°F / -23° to 93°C

- Slow drying
- Compatible with most materials
- Medium & high viscosity
- No nitrates, nitrites, glycol ethers or formaldehyde
- Water-soluble



EchoTrack™

Lowest price, high performance UT couplant

Operating Range: 18° to 180°F / -8° to 82°C

- Medium & high viscosity
- No nitrates, nitrites, glycol ethers or formaldehyde
- Water-soluble
- Acrylic polymer, least residue



UltraSonix™

High performance – Aircraft grade

Operating Range: 10° to 220°F / -12° to 104°C

- Glycerin-free – meets FAA AC 25-29 requirement of no glycerin for aluminum inspections
- Compatible with most materials
- Medium & high viscosity
- No nitrates, nitrites, glycol ethers or formaldehyde



Sonix™

Best choice for a low-cost general purpose ultrasonic couplant

Operating Range: 18° to 120°F / -8° to 50°C

- Strong coupling film, salt stable
- Good ferrous corrosion inhibition
- No nitrates, nitrites, glycol ethers or formaldehyde
- Water-soluble



ECONOgel™

Lowest cost water-soluble ultrasonic couplant

Operating Range: 26° to 120°F / -3.3° to 48°C

- Strong coupling film, salt stable
- Good ferrous corrosion inhibition
- No nitrates, nitrites, glycol ethers or formaldehyde
- Water-soluble



Glycerin

GE Approved Glycerol, Batch 205 for CFM56-7B engine fan blades

Operating Range: 65° to 500°F / 18° to 260°C

- Packaged from USP glycerin, 99+%
- Higher acoustic impedance
- Will not harden on equipment
- Pumpable fluid
- Compatible with plastics

Echo Shear Wave™

Transmits normal incidence shear wave

Operating Range: 40° to 90°F / 4° to 32°C

- Water-soluble
- Easily removed with water wash
- Low toxicity, non-irritating

Echo 8 ZH™

For flow metering and long term monitoring at elevated temperatures

Operating Range:

Short Term: -45° to 750°F / -42° to 398°C
Long Term: -45° to 400°F / -42° to 204°C

- Enhanced acoustic impedance
- Reduces surface roughness acoustic noise

Echo Z+™

High acoustic impedance

Operating Range: 0° to 200°F / -18° to 93°C

- Ideal for rough surfaces and concrete
- Very high viscosity
- Excellent ferrous corrosion inhibition

Phased Array Couplants

Forever Wedge™

- Facilitates more reproducible inspections, less artifacts and longer wedge coupling.
- High viscosity fluid couplant for use between phased array and angle beam transducers and the wedge.

EchoPure™

- Reduces noise and artifacts from couplant failure between the wedge and the test object.
- Eliminates dry spots under the wedge.
- See ABOVE for more information

Powder Couplants

EchoMix® Powder

Operating Range: 32° to 120°F / 0° to 50°C

- Easily mixed in water
- Salt resistant
- No formaldehyde
- Compact for shipping & storage



EchoMix®

- 2-part (two packets)
- Strongest coupling film
- Blue mixing tracer

EchoMix® Clear

- 2-part (two packets)
- No blue tracer

EchoMix® Single

- 1-part powder
- Easiest mixing
- Blue mixing tracer

High Temperature Couplants

Operating range printed on every label

VersaSonic®

Lowest cost, multiple viscosities

Operating Range: -10° to 700°F / -23° to 371°C

Auto Ignition: 788°F

- Fast response, no wait time
- No plastic polymers
- Low toxicity
- Non-irritating
- Three viscosities: fluid, medium and high viscosity gel
- Does not contain peanut oil



HiTempco

No residue, fast response

Operating Range: -50° to 775°F / -45° to 412°C

Auto Ignition: 820°F

- Fast response, no wait time
- No residue or varnish
- Less smoke than VersaSonic
- No plastic polymer or char
- Excellent corrosion inhibition
- Non-toxic, non-irritating



EchoTherm™

Lowest cost for use above 800°F

Operating Range: 200° to 1000°F / 93° to 538°C

Auto Ignition: 1300°F

- Less expensive couplant for use over 800°F and in inspection ports
- Ultra-high temperature
- Contains a plastic polymer which delays response time 2 seconds
- Leaves plastic residue (char)



EchoTherm Extreme™

The best – no residue, instant, stable response to 1250°F

Operating Range: -40° to 1250°F / -40° to 675°C

Auto Ignition: 1300°F

- Ultra-high temperature
- Fast response, no wait time
- No plastic polymer
- No plastic char residue
- Broadest operating range
- Low smoke



Fluid Couplants

Echo 8HT™

Most universal AUT fluid

Operating Range: -50° to 800°F / -45° to 425°C

Auto Ignition: 850°F

- Pumpable fluid
- Three viscosities (Grades 1, 4 & 10)
- Little or no residue
- Low toxicity
- Non-irritating



SpectrumGlide™

Highest performance AUT fluid

Operating Range:

Thickness Gaging: -50° to 730°F / -45° to 387°C

Flaw Detection: 0° to 600°F / -17° to 315°C

Auto Ignition: 752°F

- Least run off of all pumpable fluids
- Minimal residue
- Low toxicity
- Non-irritating



EchoPure Fluid™

Operating Range: -60° to 350°F / -51° to 176°C

- Best for very low to ambient temperatures
- Water-soluble (does not form oil slick)
- Least expensive fluid couplant
- Lowest viscosity fluid



ECHO
ultrasonics

The
couplant
experts



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June 2018



NONDESTRUCTIVE TESTING EQUIPMENT

SONOTECH

ULTRASONIC COUPLANTS



6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748
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Industry Standard Series

The Industry Standard Series of water-based couplants features high surface wetting capabilities to optimize transmission on dirty or oily surfaces. Ferrous corrosion inhibition factors for each are the highest in their performance class. The Industry Standard Series meets nuclear specifications for Halogens, Sulfur and low melting point metals and many aircraft and military specifications. The following products have established the standard by which other UT couplants are judged.

ULTRAGEL® II NSN 6850-01-157-4348 **The Performance Standard**

A gel couplant for use in ultrasonic inspections where corrosion inhibition is an important criterion and Halogens, Sulfur and low melting point metals must be kept to a minimum.

Since 1976, Ultragel II has been the NDT industry's most specified and used ultrasonic couplant because of its outstanding acoustic performance, chemical characteristics and corrosion inhibition. Ultragel II is ideal for flaw detection, thickness gaging, flow metering and acoustic emission testing from -10° to 210°F.

Ultragel II contains a ferrous corrosion inhibitor with a relative effectiveness rating of 90 (p15 & 16), meets a range of ASTM, military and industry specifications partially summarized below, and is compatible with most metals except magnesium. See Gel 3000 for Mg compatible couplant. (p12)



Tested and Approved:

ASTM: F519 Hydrogen Embrittlement Testing on high strength steel, F945 Stress Corrosion Cracking Testing on Titanium alloys

Boeing Specifications: BAC 5968 (adhesive bonds), 5980 (composites), 5439-PSD622 (welds, tubing and wrought material)

Pratt & Whitney: PWA 36604, MCL E-205 Type II (ASTM F945), PWA 36700/36604 Hot corrosion testing on high temperature alloys AMS 5544 (Waspalloy), 5536 (Hastelloy X), 6359 (Ferrous based alloys) 4037 (Aluminum), 5608 (Haynes 188), 5508 (Greek Ascoloy), 4375 (Magnesium), PWA 286 & 275 (Gas turbine blade coatings), 1484 PWA turbine blade alloy

Ultrasonic Couplant Storage

Couplant should be stored in the original container above freezing and out of direct sunlight. Once opened, the container must be closed when not in use. Never put unused couplant back into the original container. If pumps or valves are used on bulk couplant, wash thoroughly between drums to avoid contamination of new product.



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Industry Standard Series

SONOTRACE®

*For use in ultrasonic inspection where a **glycerine-free couplant** is required.*



Sonotrace is a moderately priced, ambient temperature (25° to 175°F), water-based, glycerine-free couplant for flaw detection and thickness gaging where Halogens, Sulfur and low melting point metals must be kept to a minimum. Available in three viscosities from low viscosity fluid to very high viscosity gel.

Sonotrace contains a ferrous corrosion inhibitor with a relative effectiveness rating of 80 (p15 & 16) and is compatible with most composites and metals.

Tested and Approved:

Boeing Specifications: BAC 5968 (adhesive bonds) and BAC 5980 (composites).

ECHOGEL®

*A **glycerine-free couplant** for use in inspection where salt cake or metal corrosion salts are present.*

An industry standard since 1974, Echogel is an economically priced, glycerine-free couplant for flaw inspection in volume use at ambient temperatures from 27° to 140°F. Echogel resists viscosity breakdown on salt-caked boiler and corroded surfaces.

Echogel contains a ferrous corrosion inhibitor with a relative effectiveness rating of 65 (p15 & 16) and is compatible with most composites and metals.

Tested and Approved:

ASTM F519 Hydrogen Embrittlement Testing on high strength steel

Boeing Specifications: BAC 5439-PSD622

NAVSHIPS MIL-STD 767, 2041

ECHOGEL® XP

Extended Performance

*Slow drying, **glycerine-free couplant** recommended for extended temperature range (5° to 190°F), or where slow drying is desired in flaw inspection on salt-caked boiler surfaces, corroded pipe or structural steel.*

Echogel XP is an economically priced, glycerine-free couplant with a longer drying time designed for volume flaw detection over extended temperature ranges. Echogel XP resists viscosity breakdown on salt-caked boiler surfaces and corroded metals. Echogel XP contains a ferrous corrosion inhibitor with a relative effectiveness rating of 80 (p15 & 16) and is compatible with most composites and metals.



Tested and Approved: ASTM F519-05 Hydrogen Embrittlement Testing on high strength steel.



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Environmentally Benign Couplant Series



Environmental Awareness

Sonotech developed environmentally benign couplants to minimize the impact of NDT on the environment. These environmentally benign couplants contain biodegradable materials safe for leave-on applications. Sonotech's environmentally benign couplants have low skin irritation potential, contain no dye or fragrance and will not stain clothing.

The Environmentally Benign Couplant Series meets nuclear power specifications for Halogens, Sulfur and low melting point metals. These couplants contain an environmentally benign ferrous corrosion inhibition system for steel. When ferrous corrosion is the most important criterion, Ultragel II and Sonotrace provide superior corrosion inhibition.

SONOGLIDE® UP (Ultra Pure)

Compatible with titanium, aluminum, copper, stainless steel, plastics, many magnesium alloys, and many composites.

Select when Halogens and Sulfur must be at a minimum, broad material compatibility, slow drying, water wash removability and a broad temperature range (-60° to 250°F) are desired.

Tested and Approved:

Pratt & Whitney: PWA 36604, MCL E-205 Type II, ASTM F945 Stress Corrosion Cracking testing on Titanium Alloys, PWA 36700/36604 Hot corrosion testing on high temperature alloys AMS 5544 (Waspalloy), 5536 (Hastelloy X), 6359 (Ferrous based alloys), 4037 (Aluminum), 5608 (Haynes 188), 5508 (Greek Ascoloy), 4375 (Magnesium), and PWA 286 & 275 (Gas turbine blade coatings), and 1484 PWA turbine blade alloy

SONOGLIDE® FE

For use with cast iron, steel and its alloys.

SonoGlide FE is a special grade of SonoGlide developed for **ferrous metals** where short-term corrosion is a concern. SonoGlide FE performs over a wide temperature range (-60° to 250°F) and is slow drying. SonoGlide FE remains stable on corroded or salt covered surfaces.

Corrosion Inhibition: There is low short-term corrosion potential with SonoGlide FE on cast iron, steel, and its alloys. SonoGlide contains a ferrous corrosion inhibitor with a relative effectiveness rating of 75 (p15 & 16).



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Environmentally Benign Couplant Series

Ambient Temperature Couplants

SOUNDSAFE® & SOUNDSAFE® HV (High Viscosity) **The Environmental Standard** **NSN 6850-01-157-4348**

A high performance couplant for use in overhead, vertical and horizontal applications where environmental concerns are a primary consideration.

Soundsafe offers the highest performance of the environmentally benign family of couplants. Soundsafe has a high humectant level to slow drying, increase acoustic impedance and provide transducer lubrication, and has a temperature range of 0° to 200°F.



Soundsafe Tested and Approved:

Pratt & Whitney: PWA 36604, MCL E-205 Type II or ASTM F945 Stress Corrosion Cracking Testing on titanium alloys, PWA 36700/36604 Hot corrosion testing on high temperature alloys AMS 5544 (Waspalloy), 5536 (Hastelloy X), 6359 (Ferrous based alloys) 4037 (Aluminum), 5608 (Haynes 188), 5508 (Greek Ascoloy), 4375 (Magnesium), PWA 286 & 275 (Gas turbine blade coatings) and 1484 PWA turbine blade alloy

Both Soundsafe and Soundsafe HV contain a ferrous corrosion inhibitor with a relative effectiveness rating of 75 (p15 & 16) and are compatible with most composites and metals except magnesium.

SOUNDCLEAR®

A good price to performance ratio couplant for flaw detection and thickness gaging where environmental concerns are a primary consideration. Fills depressions in rough surfaces.

Soundclear contains humectants to slow drying, increase acoustic impedance and provide an operating temperature range of 20° to 200°F.

Soundclear contains a corrosion inhibitor for steel with a relative effectiveness rating of 45 (p15 & 16) and is compatible with aluminum, titanium, and plastics. Not recommended for magnesium.



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Environmentally Benign Couplant Concentrates



Environmentally Benign Couplant Concentrates

are cost effective powders that are to be mixed with water at the inspection site. The compact and lightweight packets are easy to transport or store against unanticipated shortages.

UT-X and UT-X FE Powders are supplied in a two packet system to provide homogenous distribution of antimicrobial agents and corrosion inhibitors and to minimize air during mixing.



UT-X® POWDER

The most economical couplant, mix on site.

UT-X Powder is a couplant concentrate useful for flaw detection and thickness gaging. UT-X Powder resists viscosity breakdown from salts and has a ferrous corrosion inhibition rating of 10. (p15 & 16) For increased ferrous corrosion inhibition, select UT-X FE.

UT-X® FE POWDER

An economical, mix on site couplant for use where ferrous corrosion inhibition is required.

UT-X FE Powder is a couplant concentrate useful for flaw detection and thickness gaging. UT-X FE Powder incorporates a ferrous corrosion inhibitor, a preservative, and a viscosity building polymer. UT-X FE has a ferrous corrosion inhibition rating of 40. (p15 & 16)

UT-X Powders Storage & Shelf Life

UT-X and UT-X FE Powder couplants should be stored in the original zip-top bags out of sunlight. Once opened and prepared, store mixed couplant in a closed container.

The shelf life for unopened packets of UT-X Powder couplants is three (3) years from the date of manufacture. A prepared container of UT-X Powder has an approximate shelf life of one (1) month.

Cost Effective

- Costs significantly less than standard couplants
- Minimizes shipping charges
- Reduced storage requirements
- No drum disposal expense

Easy to use

- Pre-measured 1-gallon and 5-gallon packets
- Extremely compact storage: A drum's volume can fit in a drawer or briefcase
- Viscosity can be varied for exact job requirements simply by adjusting the amount of water
- Mixes quickly, uniformly and without lumps



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Specialty Couplants



HIGH Z

A very high acoustic impedance couplant which optimizes acoustic transmission and reduces surface noise on curved, rough, pitted or heavily corroded surfaces.

Provides the highest acoustic impedance of all Sonotech couplants, reducing surface noise and improving coupling performance on rough and curved surfaces. Many times, High Z will facilitate flaw inspection or thickness gaging when no other couplant will function. Available in two viscosities.



SHEAR GEL®

For use in true shear wave applications.

Provides coupling for shear wave generated by **normal incidence** (zero degree) shear wave transducers.



GEL 3000®

A water-soluble couplant with a fluorescent tracer to assure complete application and/or removal in flaw detection and thickness gaging over a broad temperature range.

Developed to test the space shuttle, Gel 3000 contains a fluorescent tracer that enables the inspector to monitor transducer overlap and ensure complete coverage and removal by illumination with ultraviolet light. Gel 3000 is water and humectant-free, enables testing verification and is available in a range of viscosities.

Gel 3000 has excellent corrosion inhibiting characteristics on most metals including magnesium, and has a ferrous corrosion inhibition rating of 95.

(p15 & 16)



THERMASONIC®

For use where rapid wetting, slow drying, broad temperature range and easy water removal are required.

Thermasonic is a water and humectant-free formula for flaw detection and thickness gaging where water solubility is required. Thermasonic, like Gel 3000, has excellent corrosion inhibiting characteristics on most metals.



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Extended and Extreme Temperature Couplants



Selection Tip

To achieve the most consistent results, select the couplant having the broadest temperature range overlap with the expected test temperature. For example, at 600°F (315°C) Pyrogel® will give the most consistent results, even though several other products will work at this temperature.

What to Expect

Smoke: All liquids and greases decompose above a certain temperature. Smoke does not mean that the couplant is not working, but does indicate that effective coupling time is limited.

Evaporation: At high temperatures couplants dry relatively quickly; the temperature range for flaw detection is narrower because of this evaporation. More couplant may be required near the upper temperature limit to compensate for drying.

Clean up: Wipe still hot transducers on a dry rag folded into several layers to protect skin. Clean room temperature oily residues with common solvents such as acetone, if required. (Do not use solvents on hot pipes!)

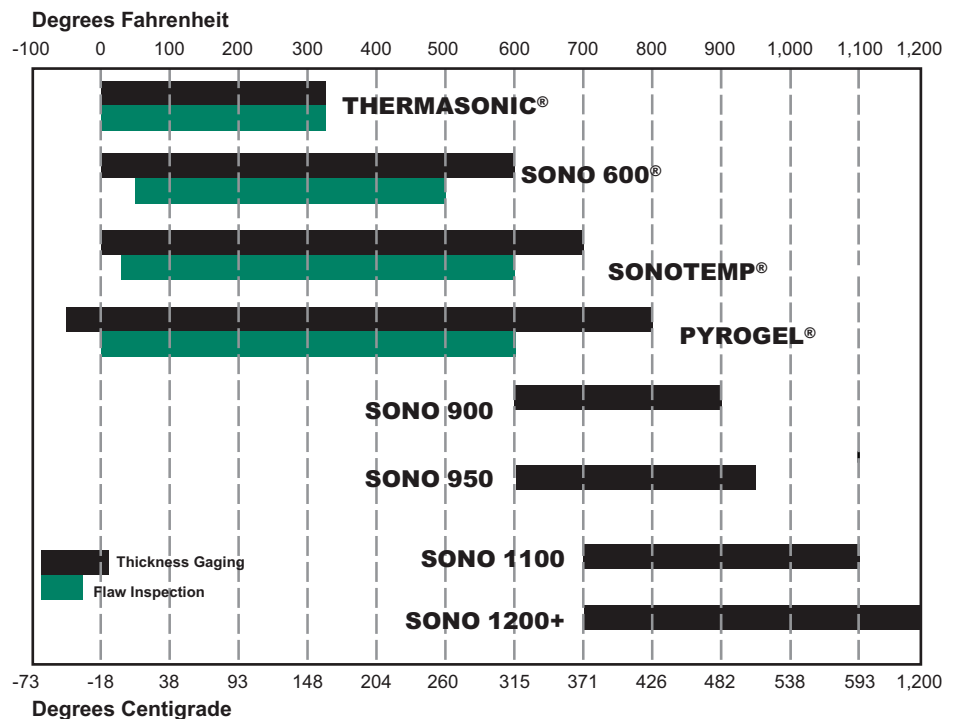
Flash Point vs. Auto-Ignition

Auto-Ignition is the temperature at which a substance ignites without other sources of energy. This is usually the temperature of interest in UT inspections, as inspections are seldom done in the presence of spark or flame.

The **Flash Point** of a product is the lowest temperature at which vapors arising from the product will ignite momentarily when exposed to a flame.

Selection and Use Tips

- Pyrogel and Sono 600 are available in low viscosities to enable pumping of couplant to remote transducers in crawlers.



- When testing on vertical surfaces, a thicker grade of couplant is more likely to stay in place. A thinner grade generally gives better performance on flat surfaces.



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Extended and Extreme Temperature Couplants

Sonotech manufactures a wide variety of couplants with proven performance in flaw detection, thickness gaging, flow metering, and acoustic emission testing at extreme temperatures.



THERMASONIC®

Water-free formula for flaw detection, thickness gaging, flow metering, and acoustic emission testing where long inspection time and/or water solubility are required. 0° to 325°F

Polymer Fume Fever

Sonotech couplants do **NOT** contain perfluorocarbons found in many "high temperature" greases. "Polymer fume fever" is not an operator hazard with Sonotech Couplants.



SONO 600

Biodegradable formula for flaw detection, thickness gaging, and acoustic emission testing in petrochemical, power generating industries, food processing machinery, and pharmaceutical manufacturing and storage equipment. 0° to 600°F



PYROGEL®

Provides coupling over a wide temperature range for thickness gaging, flow metering, acoustic emission testing, and flaw detection. -50° to 800°F



SONOTEMP®

Useful in high temperature thickness gaging and flow metering where elevated temperature, curved or very rough surfaces present coupling difficulties. Sonotemp is our highest acoustic impedance high temperature couplant. 0° to 700°F



SONO 900

A thick, gritty, stay in place paste for thickness gaging. Used worldwide since 1977. 600° to 900°F



SONO 950

Sono 950 will maintain acoustic coupling to give ample time for obtaining good thickness readings at temperatures between 600° and 950°. Thinner, smoother consistency than Sono 900.



SONO 1100

Sono 1100 will maintain acoustic coupling to give ample time for obtaining good thickness readings from 700° to 1100°F



SONO 1200+

Provides coupling for thickness gaging from 700° to well over 1200 °F



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PHASED ARRAY TEST BLOCKS

PACS™ Block



New Phased Array calibration block used for angle beam verification, probe angle exit point, calibration for wedge delay, sensitivity, DAC/TCG for thicknesses up to 2", and crack sizing. The three radii (0.200", 1.000", and 2.000") allow for velocity and sound path calculations. Block contains five holes at 3/64" diameter drilled through the 1.000" width, located at .100, .200, .400, .600, .800, 1.200, 1.400, 1.600, 1.800, and 1.900" from the respective scanning surface. Generous hole spacing eliminates "ghost" images from adjacent holes. Also includes an engraves scale from 30° to 70° associated with the .800" hole. Dimensions: 18.0" x 2.0" x 1.0"

Mini PACS™ Block



Mini PACS™ Block is a smaller, portable version of the original PACS™ Block. The block includes a total of four holes at 3/64" diameter drilled through the 1.000" width, located at .200, .400, .600, .700, .800, .900, 1.100, and 1.300" from the respective scanning surface. Dimensions: 1.500" tall x 1.000" wide x 10.00" long.

PACS™ Notch Block



The PACS™ Notch Block has been specially designed for use with Phased Array instruments used for sizing of OD and ID-connected cracks. The block contains four EDM slots at depths of 20, 40, 60, and 80% and a width of .031". Standard thickness is 1.000"; however, other sizes can be ordered. Dimensions: 1.000" thick x 2.000" wide x 7.00" long.

ASTM E2491 PA Assessment Block



The PH Tool ASTM E2491 Phased Array Assessment Block is a general purpose Phased Array calibration block used for beam characterization and evaluation of system performance characteristics. Use it as baseline block to determine long-term instrument performance changes, generate DAC curves, and evaluate linear/angular resolution, focusing ability and beam steering capability. With a variety of targets, this small, lightweight block is also perfect for customer demonstrations of phased array ultrasonics capabilities. This block is also referred to as a "Type B" block. Dimension: 150mm x 100mm x 25mm. In accordance with ASTM E2491.



Phased Array Type A Block (IIW-Type)



The Phased Array "Type A" Calibration Block is used during the initial setup and calibration of a phased array ultrasonic unit. This block can be used to perform tasks such as beam angle verification, calibration for wedge delay, sensitivity calibration, performing DAC/TCG, and more. This block has similar dimensions to an IIW-Type Block, but has been

specially-engineered for phased array applications. Blocks include both 50.0mm and 25.0mm radii, (19) through holes at 1.0mm diameter, (1) through hole at 2.0mm diameter, (4) FBHs at 2.0mm diameter x 2.0, 4.0, 6.0, and 8.0mm deep, (4) FBHs at 4.0mm diameter x 1.0, 3.0, 5.0, and 7.0mm deep, (3) FBHs at 2.0mm diameter x 3.0mm deep machined into the 25mm radius, and (4) EDM notches at 0.1, 0.2, 0.3, and 0.4mm deep x 0.5mm wide x 25.0mm long. Block dimensions are 25.0mm thick x 100.0mm tall x 300.0mm long.

Phased Array Calibration Block No. 2



This new Phased Array calibration block contains all of the required features on the ASME Section V, Article 4 Basic Calibration Block yet spaces the holes out on a longer, narrower block. The block contains three holes at 3/32" diameter drilled through the 1.500" width,

located at 114T, 112T, and 3/4T. It also contains two EDM notches at 2% deep x .010" wide x 1.500" long on opposite surfaces of one end. Dimensions: 14.0" x 1.5" x .75" thick.

Phased Array NAVSHIPS Block



This special Phased Array version of the popular NAVSHIPS block solves the problem of too many holes interfering with one another. The block contains four holes at 3/64" diameter drilled through the 1.250" width. The holes are located at .250, .750, 1.250, 1.750, 2.250, and 2.750".



NONDESTRUCTIVE TESTING EQUIPMENT

ULTRASONIC CALIBRATION BLOCKS



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DETEK provides a full line of calibration blocks to all American standards and International Institute of Welding (IIW).

Standard blocks are readily available fabricated from:

Aluminum	7075-T6	(Clear Anodized)
Steel	A36, 1018 or 4340 VM	(Nickel Plated)
Stainless Steel	Type 304	

All raw material is ultrasonic inspected prior to manufacture of blocks.

Many other materials are kept on shelf and available for immediate fabrication to customer specifications. All blocks are available in metric geometry.

Blocks are precision manufactured to tolerances well within the allowable limits of their respective codes. All blocks pass a comprehensive quality control inspection in accordance with ISO 9002 (formerly Mil I 45208A) with instruments calibrated in accordance with ANSI/NCSL Z540 (formerly MIL C 45662-A) and traceable to the National Institute of Standards and Technology (NIST).

All blocks are permanently engraved with:

- Degree marks and numbers,
- Block identifications,
- Material and,
- Serial numbers

Handsome, durable hardwood cases are available for all standard blocks.

In addition to blocks illustrated here, DETEK provides the full line of Calibration Blocks to many other specifications such as MIL-STD- 2154 and McDonnell Douglas 21211.3 are also available.

DETEK also has wire and plunge type E.D.M. capabilities and can give prompt turnaround for customer notch and slot standards.

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Block Type:
DSC

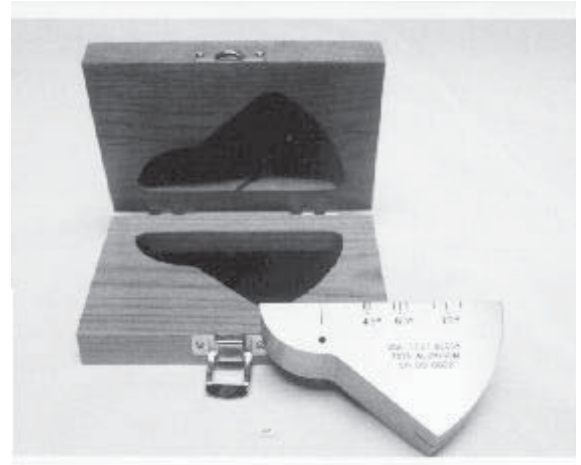
Application:
Shear wave distance and sensitivity calibration.

Geometry:
1" thick, 4" long with 1" radius and 3" radius. Contains a 1/2" deep X 1/32" radius notch and a 1/8" diameter side drilled hole for 45°, 60°, and 70°.

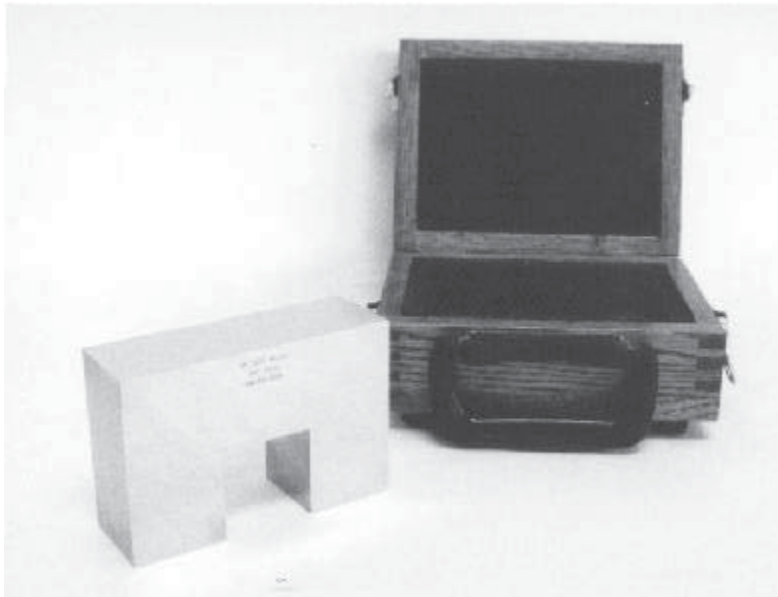
Per AWS and ASTM-E-164

Standard Materials:

Aluminum 7075-T6	P/N UTB-301
Steel A36/ 1018	P/N UTB-300
Stainless Steel 304	P/N UTB-302



Case for DSC Block P/N UTB-303



Block Type:
DS

Application:
Distance and sensitivity.

Geometry:
2" x 2" x 6" with a 2" wide cutout. Per ANSI/ AWS

Standard Materials:

Aluminum 7075-T6	P/N UTB-311
Steel 1018	P/N UTB-310
Stainless Steel 304	P/N UTB-312

Case for DS Block P/N UTB-313

Block Type:**DC****Application:**

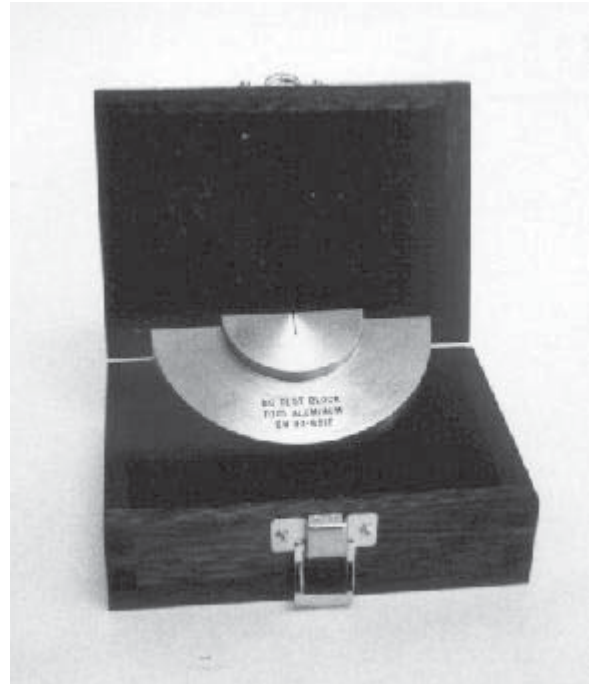
Distance Calibration (shear wave)

Geometry:

1" radius overlying 2" radius on
180° half circle. Per AWS and
ASTM-E-164

Standard Materials:

Aluminum 7075-T6	P/N UTB-101
Steel 1018	P/N UTB-100
Stainless Steel 304	P/N UTB-102
Case for DC block	P/N UTB-103

**Block Type:****Angle Beam****Application:**

Angle Beam Calibration (Rompas)

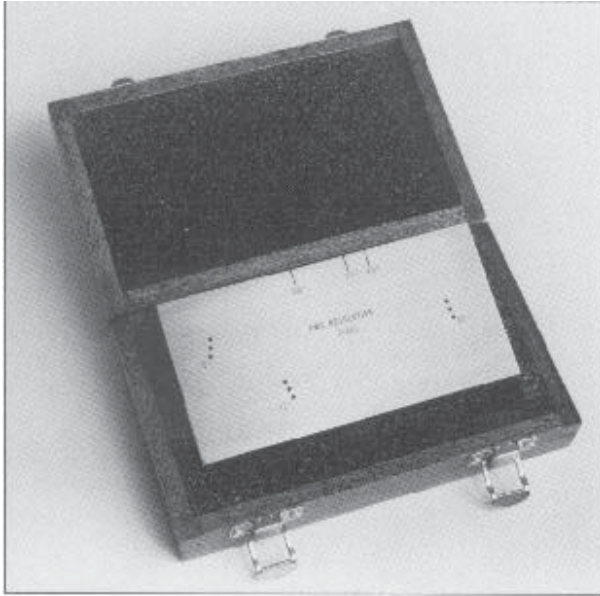
Geometry:

$\frac{1}{2}$ " or 1" thick, 1"
radius opposite 2"
radius with $\frac{5}{64}$ "
diameter by $\frac{3}{4}$ "
deep flat bottom
hole (1" thick only).

Per ASTM-E-164 and
U.S.A.F.T.O. 33B-1-1 (6-1-84)

Standard Materials:

Aluminum 7075 T-6	P/N UTB-901
Steel A36/ 1018	P/N UTB-900
Stainless Steel 304	P/N UTB-902
Case for angle Beam Block	P/N UTB-903



Block Type:

ANSI/ AWS RESOLUTION

Application:

Checking resolution capabilities of angle beam transducers.

Geometry:

1" x 3" x 6". Contains nine .062" diameter holes for 45°, 60°, and 70°. Per AWS and BPR

Standard Materials:

Aluminum 7075 T-6	P/N UTB-401
Steel A36 / 1018	P/N UTB-400
Stainless Steel 304	P/N UTB-402
Case for AWS Block	P/N UTB-403

Block Type:

SC

Application:

Sensitivity Calibration
(Shear wave)

Geometry:

.905" x 1.25" x 3"
Contains two .062" diameter side drilled holes.
Per AWS / ASTM-E-164

Standard Materials:

Aluminum 7075-T6	P/N UTB-201
Steel A36 / 1018	P/N UTB-200
Stainless Steel 304	P/N UTB-202
Case for SC Block	P/N UTB-203



Block Type:
IIW Type 1

Application:

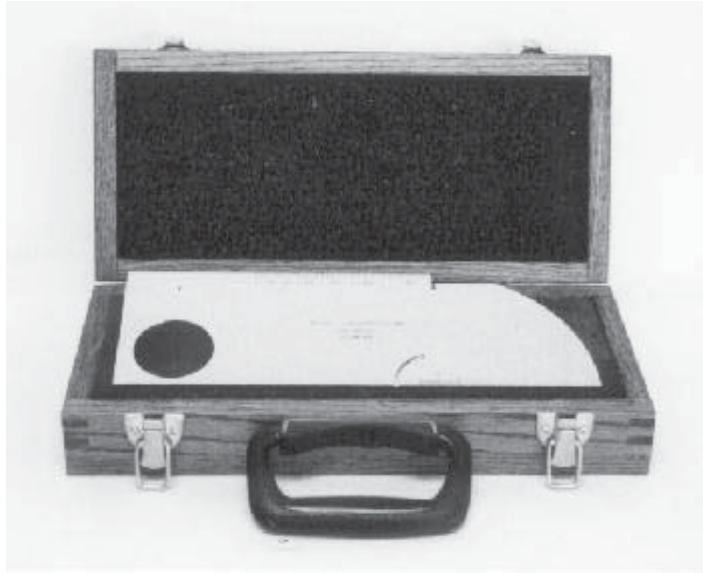
Calibration of transverse and longitudinal wave distance setting determination of the sound beam point of incidence and exact angle of propagation.

Geometry:

1" x 4" x 12". Contains 2" diameter hole and 4" radius. Also 1/8" x 1" radius alternate reflector 1/16" deep on echo side. Per Int'l Institute of Welding (IIW), ASTM-E-164, and MIL-STD-2154

Standard Materials:

Aluminum 7075 T-6	P/N UTB-501
Steel A36 / 1018	P/N UTB-500
Stainless Steel 304	P/N UTB-502
Case for IIW Block Type 1	P/N UTB-503



Block Type:
IIW Type 2

Application:

Modified version of IIW Type 1, with a 2" radius 1/4" deep cut out test side, and 3 extra side drilled resolution holes. Per IIW and U.S.A.F.T.O.33B-1-1 (6-1-84)

Standard Materials:

Aluminum 7075 T-6	P/N UTB-511
Steel A36 / 1018	P/N UTB-510
Stainless Steel 304	P/N UTB-512
Case for IIW Block Type 2	P/N UTB-513

Special USAF Block FSN 6635-00-148-5477

Aluminum P/N UTB-514

Special USAF Block FSN 6635-00-415-9225

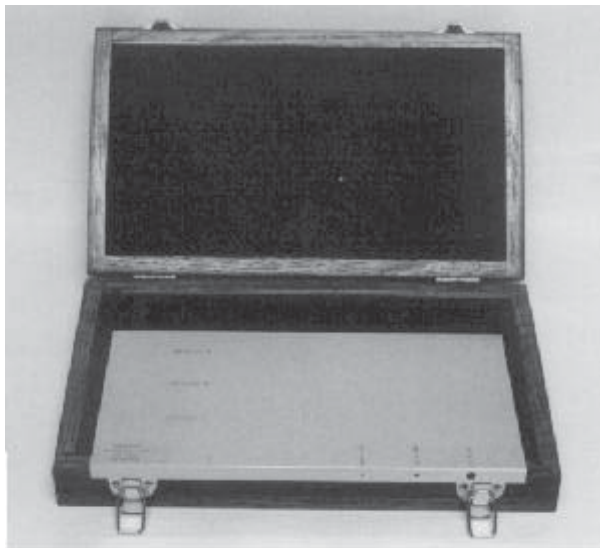
Steel P/N UTB-519

Block Type:
Mini IIW

Application:
Miniature version of IIW type
blocks resembling the Type 2

Geometry:
1"x 2" x 6". Contains 1" diameter hole,
2" radius, 1" radius 1/4" deep cut out
test side 3 side drilled resolution holes,
and 3/4" sq X .100" deep cut out.

Steel P/N UTB-560
Case for Mini IIW P/N UTB-565



Block Type:
ASME-N-625 Reference Plate

Application:
For longitudinal shear
and surface wave
sensitivity calibration.

Geometry:
1/2" x 6" x 12". Contains five flat
bottom holes and one through hole;
three each .062" diameter holes at
depths of .050", .250" and through,
one .062" diameter hole at 1.5"
depth; .125" diameter hole at 1.625
depth; one .250" diameter hole at
1.750" depth. Also contains one
.002" deep surface wave notch.

Per ASME Boiler & Pressure Vessel Code
Sect. III

Standard Materials:

Aluminum 7075-T6 P/N UTB-001
Steel 1018 P/N UTB-000
Case for ASME N-625 P/N UTB-003

Stainless Steel P/N UTB-002

Block Type:**30 FBH Resolution Block****Application:**

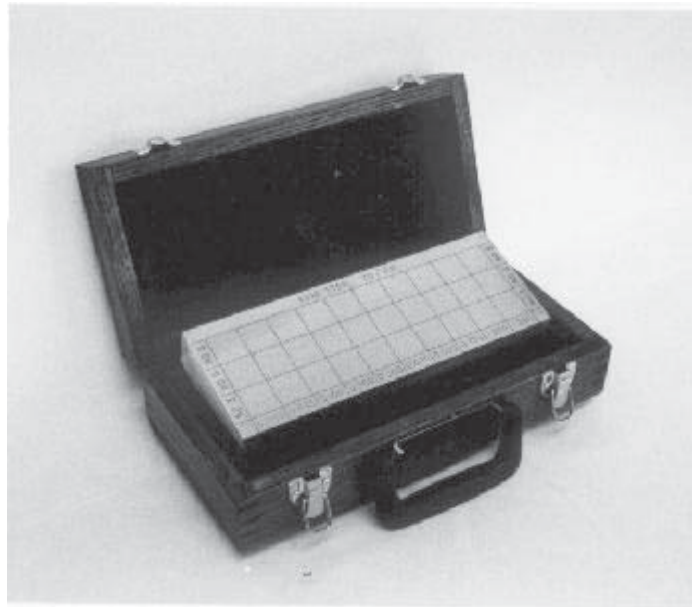
Area/ Amplitude plots for normal beam transducer and determining resolution and sensitivity capabilities.

Geometry:

1½" x 4" x 11". Contains three series of 3/64", 5/64", and 8/64" diameter holes at metal travel distances of .050" thru 1.250". Per ASTM-E-428; ASTM-E-127 D/A spec.

Standard Materials:

Aluminum 7075T-6	P/N UTB-405
Steel 4340	P/N UTB-404
Stainless Steel 304	P/N UTB-406
Case for 30 FBH	P/N UTB-407

**Block Type:****Navships****Application:**

Distance correction and sensitivity levels.

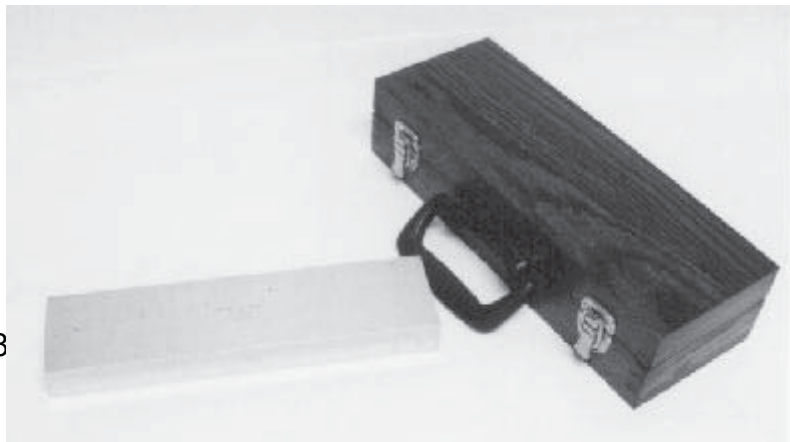
Geometry:

1¼" X 3" x 12". Contains seven 3/64" diameter side drilled holes at distances of 1/8" thru 2¾". Per NAVSEA T 9074-AS-GIB-010/271

(Formerly Navships 0900-006-3010sec. 6 & MIL-STD-271F)

Standard Materials:

Aluminum 7075 T-6	P/N UTB-409
Steel 1018	P/N UTB-408
Stainless Steel 304	P/N UTB-410
Case for NAVSHIPS Block	P/N UTB-411



Block Type:
IOW BEAM PROFILE

(English or Metric)

Application:

Beam profile measurement of Angle beam transducer. Per BS 2704

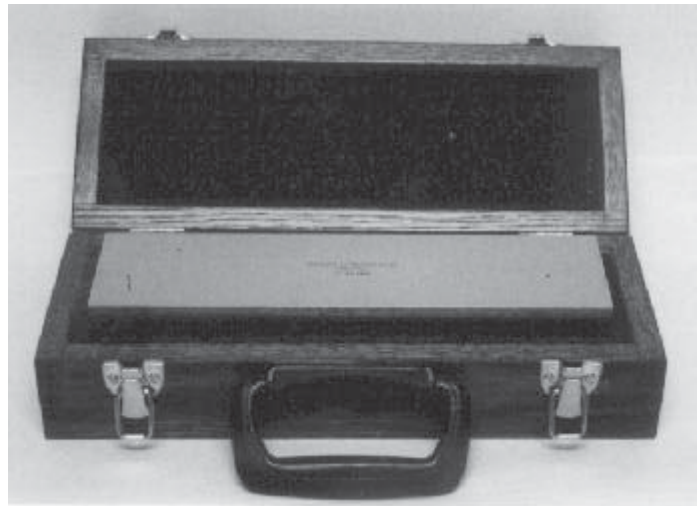
Geometry:

2" x 3" x 12".

Contains two 1/16" diameter x 7/8" deep calibration holes on near side; two 1/16" diameter x 7/8" deep calibration holes on far side. Contains five 1/16" diameter resolution holes drilled on a 10° slope, far side only.

Standard Materials:

Steel P/N UTB-550



Case for IOW Block P/N UTB-555

Block Type:

Step Blocks

Applications:

Thickness and linearity calibration.

Geometry:

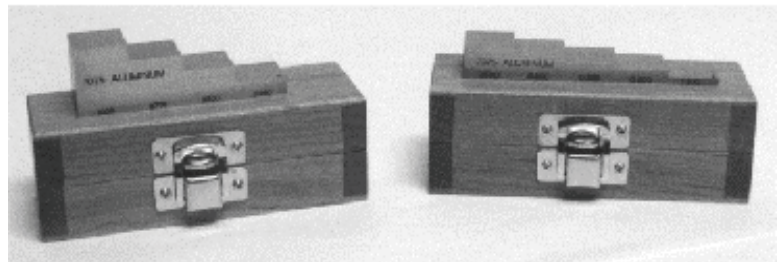
Available in a variety of step size, most common being a four step version with thickness of .250", .500", .750", and 1.00" or a five step version with thickness of .100", .200", .300", .400", and .500". Standard step dimensions are .750" square. Custom step blocks are available. Utility step blocks are fabricated from 1018 steel Per ASTM-E-797

Standard Materials: 4 Step 5 Step

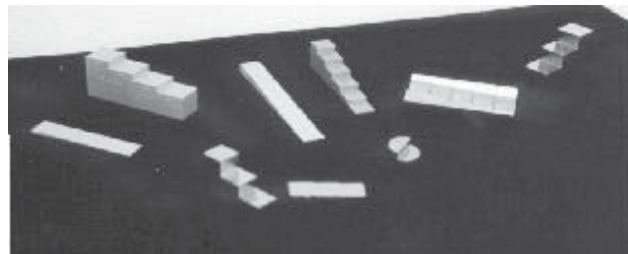
Aluminum 7075-T6 UTB-805 UTB-801

Steel 4340* UTB-804 UTB-800

Stainless UTB-806 UTB-802



Case for Step Block UTB-807 UTB-803



Block Type:**Miniature Resolution Block****Application:**

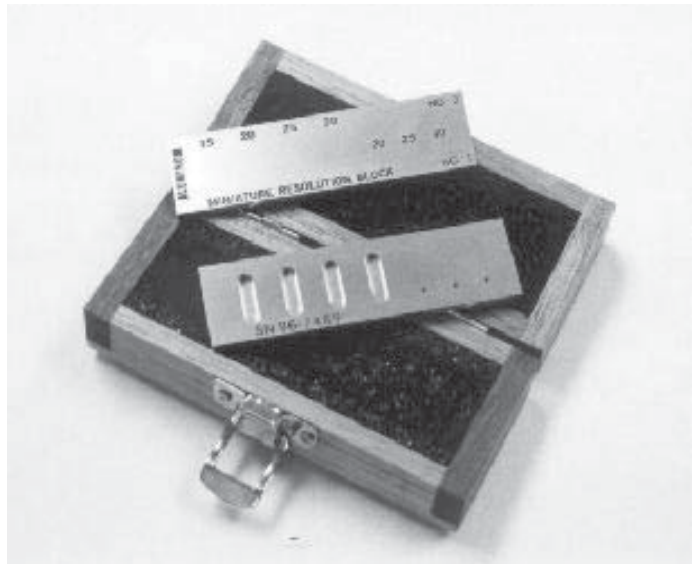
To check resolution capabilities and calibrate high resolution test equipment.

Geometry:

Contains four milled slots $\frac{3}{16}$ " wide X $\frac{5}{8}$ " long and six flat bottomed holes; three $\frac{3}{64}$ " diameter holes and three $\frac{1}{64}$ " holes:

Standard Materials:

Aluminum 7075 T-6	P/N UTB-315
Steel 1018	P/N UTB-314
Stainless Steel 304	P/N UTB-316
Case for Mini Res Block	P/N UTB-317

**Block Type:****ASME Basic Calibration Block****Application:**

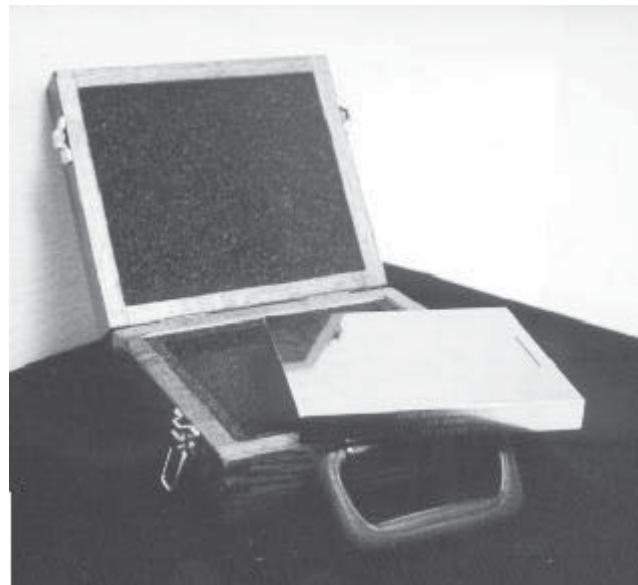
Angle beam calibration

Geometry:

Material: Block Dimensions:
1" or less .750" X 6" X 7"
Over 1" thru 2" 1.5" X 6" X 10"
Over 2" thru 4" 3" X 6" X 10"
Contains 2 slots; one on each face, and three side drilled holes 1.5" deep X (diameter is determined by the thickness of the block).
Per ASME SEC V Article 23
T-542.1.1

Standard Materials:

Aluminum 7075 T-6	P/N UTB-021
Steel 1018	P/N UTB-020
Stainless Steel 304	P/N UTB-022
Case for ASME Block	P/N UTB-024





**ASTM
DISTANCE/AMPLITUDE
Set of 19 with Case**

ALUMINUM	P/N UTB-671
STEEL	P/N UTB-670
STAINLESS STEEL	P/N UTB-672

**ASTM
DISTANCE/ AREA AMPLITUDE
Set of 10 with Case**

ALUMINUM	P/N UTB-601
STEEL	P/N UTB-600
STAINLESS STEEL	P/N UTB-602



**ASTM
AREA/ AMPLITUDE
Set of 8 with Case**

ALUMINUM	P/N UTB-701
STEEL	P/N UTB-700
STAINLESS STEEL	P/N UTB-702

ASTM-E-127 or ASTM-E-428

ASTM DISTANCE/AMPLITUDE Set of 19

Contains hole diameters of 3/64", 5/64", or 8/64" with metal travel distances of:

.06"	(X-0006)	1.25"	(X-0125)
.12"	(X-0012)	1.75"	(X-0175)
.25"	(X-0025)	2.25"	(X-0225)
.37"	(X-0037)	2.75"	(X-0275)
.50"	(X-0050)	3.25"	(X-0325)
.62"	(X-0062)	3.75"	(X-0375)
.75"	(X-0075)	4.25"	(X-0425)
.87"	(X-0087)	4.75"	(X-0475)
1.0"	(X-0100)	5.25"	(X-0525)
		5.75"	(X-0575)

ASTM DISTANCE/AREA AMPLITUDE Set of 10

Contains the following hole diameters and metal travel distances:

3/64"	- 3.0"	(3-0300)
5/64"	- .12"	(5-0012)
5/64"	- .25"	(5-0025)
5/64"	- .50"	(5-0050)
5/64"	- .75"	(5-0075)
5/64"	- 1.5"	(5-0150)
5/64"	- 3.0"	(5-0300)
5/64"	- 6.0"	(5-0600)
8/64"	- 3.0"	(8-0300)
8/64"	- 6.0"	(8-0600)

ASTM AREA / AMPLITUDE Set of 8

Contains the following hole diameters and metal travel distances:

1/64"	- 3.0"	(1-0300)
2/64"	- 3.0"	(2-0300)
3/64"	- 3.0"	(3-0300)
4/64"	- 3.0"	(4-0300)
5/64"	- 3.0"	(5-0300)
6/64"	- 3.0"	(6-0300)
7/64"	- 3.0"	(7-0300)
8/64"	- 3.0"	(8-0300)

Standard Materials:

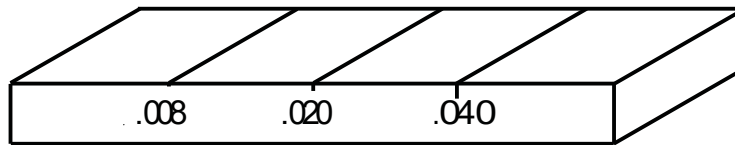
Aluminum 7075 T-6 Individual Blocks

Steel 4340 Vac. Melt Individual Blocks

Stainless Steel 304 Individual Blocks

EDDY – CURRENT BLOCKS

Detek, Inc provides a wide variety of Eddy Current standards in addition to the standard block shown here.



Block Type:

Eddy-Current Standard

Block dimensions:

.312" thick X 1.375" wide X 3.156" long

Contains three slots; .008", .020", and .040" deep

Standard Materials:

Steel 4340

Aluminum 7075 T-6

Titanium 6Al-4V

Stainless Steel 304

Magnesium AZ-31

P/N ESA-FETB1

P/N ESA-ALTB1

P/N ESA-TITB1

P/N ESA-SSTB1

P/N ESA-MGTB1



DETEK

NONDESTRUCTIVE TESTING EQUIPMENT

FLAWTECH STANDARD KITS

**RT KIT
UT KIT
MT/PT KIT
VT KIT**

EACH KIT CONTAINS

- 20 "REAL" FLAWS PER KIT
- 10 LARGE 4" X 8" CARBON STEEL SPECIMENS PER KIT
- "FREE" CARRYING CASE
- DETAILED DOCUMENT PACKAGE WITH CAD DRAWINGS

DEMONSTRATION KIT

- 5 SPECIMENS & 11 FLAWS

REFERENCE RADIOGRAPHS

- FILM ONLY - 16 RADIOGRAPHS SHOWING 20 REAL FLAWS
- CUSTOM KITS AVAILABLE ●

**SPECIAL
KITS**

FLAWTECH STANDARD KIT SPECIMENS ARE DESIGNED TO:

- ENHANCE THE TRAINING & QUALIFICATION OF LEVEL I & II PERSONNEL WITH REGARDS TO SNT-TC-1A, EN473 & PCN.
- ASSIST WITH BASIC FLAW DETECTION, SIZING AND INTERPRETATION USING COMMON WELD GEOMETRIES AND FLAW TYPES.



**6805 COOLRIDGE DR ■ TEMPLE HILLS MD 20748
301-449-7300 ■ 800-638-0554 ■ FAX 301-449-7011**

EMAIL: sales@detek.com



NONDESTRUCTIVE TESTING EQUIPMENT

#	FLAW TYPE	WELD	NDT METHOD
10	TOE CRACK	SV / DV	- MT/PT UT RT
11	TOE CRACK	FILLET	- MT/PT UT -
12	ROOT CRACK	SV	- MT/PT UT RT
13	UNDERBEAD CRACK	FILLET	- - UT -
14	CENTER LINE CRACK (SURFACE)	SV / DV	- MT/PT UT RT
15	CENTER LINE CRACK (SUB-SURFACE)	SV / DV	- - UT RT
16	CIRCUMFERENTIAL CRACK (FLUSH CROWN)	SV / DV	- MT/PT UT RT
17	TRANSVERSE CRACK (FLUSH CROWN)	SV / DV	- MT/PT UT -
18	BASE METAL CRACK (CROWN HAZ AREA)	SV / DV	- MT/PT UT -
19	BASE METAL CRACK (ROOT HAZ AREA)	SV	- MT/PT UT -
20	CRATER CRACK (CROWN STOP/START AREA)	SV / DV VT	MT/PT - -
30	POROSITY (SUB-SURFACE)	SV / DV	- - UT RT
31	POROSITY (SUB-SURFACE)	FILLET	- - UT RT
32	POROSITY (SURFACE)	SV / DV VT	MT/PT - -
33	POROSITY (SURFACE)	FILLET VT	MT/PT - -
34	SINGLE GAS PORE	SV / DV	- - UT RT
35	SINGLE GAS PORE	FILLET	- - - RT
36	SLAG INCLUSION (ROOT AREA)	SV	- - UT RT
37	SLAG INCLUSION (WELD GROOVE AREA)	SV / DV	- - UT RT
38	SLAG INCLUSION (ROOT AREA)	FILLET	- - UT RT
39	TUNGSTEN INCLUSION (ROOT AREA)	SV / DV	- - - RT
50	LAMINATION (BASE METAL)	SV	- - UT -
51	LAMINATION (BASE METAL)	WP FACE	- MT/PT - -
52	LACK OF FUSION (SUB-SURFACE)	SV / DV	- - UT -
53	LACK OF FUSION (SURFACE BREAKING)	SV / DV	- MT/PT UT -
54	LACK OF FUSION (SURFACE BREAKING)	FILLET	- MT/PT - -
55	LACK OF FUSION (ROOT AREA)	SV	- MT/PT UT -
56	INCOMPLETE ROOT PENETRATION	SV VT	MT/PT UT RT
57	INCOMPLETE ROOT PENETRATION	DV	- - UT RT
58	INCOMPLETE ROOT PENETRATION (BRIDGING)	FILLET	- - UT -
59	INCOMPLETE GROOVE WELD (CROWN AREA)	SV / DV VT	MT/PT UT RT
70	ROOT CONCAVITY	SV VT	- - - RT
71	EXCESS ROOT PENETRATION	SV VT	- - - RT
72	MISALIGNMENT (ROOT & CROWN AREA)	SV VT	- - - RT
73	UNEVEN LEG LENGTH	FILLET VT	- - -
74	EXCESS CROWN	SV / DV VT	- - -
75	EXCESS CROWN	FILLET VT	- - -
76	CONCAVE CROWN	SV / DV VT	- - -
77	CONCAVE CROWN	FILLET VT	- - -
78	UNDERCUT	SV / DV VT	- - -
79	UNDERCUT	FILLET VT	- - -
80	OVERLAP	FILLET VT	MT/PT - -
90	WELD SPATTER	SV / DV VT	- VT RT
91	WELD SPATTER	FILLET VT	- VT RT
92	CHIPPING HAMMER MARKS	SV / DV VT	- VT RT
93	CHIPPING HAMMER MARKS	FILLET VT	- VT -

HOW TO REQUEST A CUSTOM SPECIMEN

1ST	2ND	3RD
SELECT A TOLERANCE	SELECT YOUR FLAWS	SELECT THE MATERIAL
STANDARD +/-0.150" (4MM)	FROM THE ABOVE TABLE	TYPE, WELD PREP GEOMETRY
ADVANCED +/-0.080" (2MM)	OR SPECIFY YOUR	AND THE REQUIRED NDT
CRITICAL +/-0.040" (1MM)	SPECIAL REQUIREMENTS	METHOD OF INSPECTION