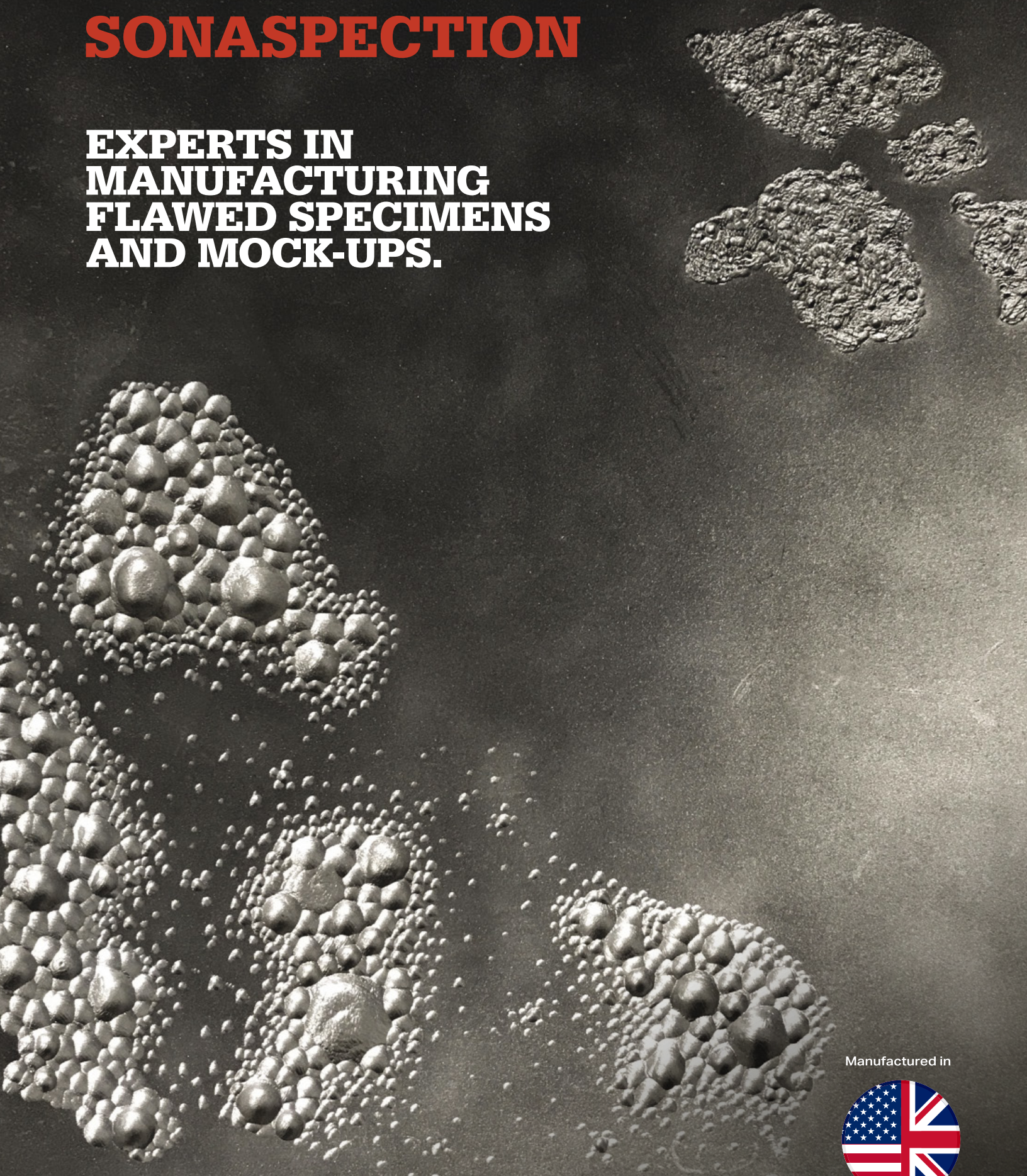
SONASPECTION

EXPERTS IN MANUFACTURING FLAWED SPECIMENS AND MOCK-UPS.



Manufactured in

sonaspection.com

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WHO WE ARE

Globally acclaimed manufacturer of Non-Destructive Testing (NDT) and Evaluation (NDE) flawed specimens.

We work with multinational organizations worldwide, constantly facing requirements and challenges that push us to create new standards and improve the reliability of the industry.

Founded in 1980, and acquired by the Institution of Mechanical Engineers in 2013, we have manufactured thousands of flawed specimens for many of the major performance demonstration, training and qualification centers around the world.

With offices in Charlotte, USA, and Lancaster, UK, we pride ourselves in pioneering many ‘industry standard’ flaw manufacture and implanting techniques.

Our flawed specimens can be found in any reputable organization across a multitude of sectors; including petrochemical, nuclear, aerospace and shipbuilding, providing training and certification of technicians, as well as procedure and equipment development, in non-destructive evaluation.

This, combined with our first-class workmanship, specialized welding and non-destructive evaluation skills, means our promise to you is that your business will receive the best quality and most accurate flawed specimens on the market.

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Timeline

1980 Welder training center in Lancaster, UK, is established alongside Sonaspection, an NDE Inspection service provider (originally named Bowland Scott) to the local power station and beyond. After experiencing a severe gap in the market when performing NDE training at a local college, we undertook several years of research and development to manufacture flawed specimens.

1984 Sonaspection International Ltd is formed by owner Phillip Bisgrove after successfully manufacturing flawed specimens for NDE training for multiple clients and realizing there is a scope for expansion.

1994 Manufacturing facility established in Georgia, USA, following increased demand in the US and surrounding markets.

2002 USA manufacturing facility relocates from Georgia to Charlotte, North Carolina.

2003 Management buyout by Martin Peacock, Steve Berriman and Neil Kelly.

2013 Sonaspection International Ltd is acquired by the Institution of Mechanical Engineers (IMechE) and the head office relocates to a new facility on White Lund Industrial Estate, Lancaster.

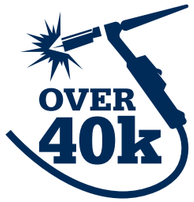
2020 Expansion of UK manufacturing facility in Lancaster, enabling investment in new machinery and significantly increasing capacity to accommodate global demand whilst maintaining a safe working environment for staff.

WHY CHOOSE US

What you can expect

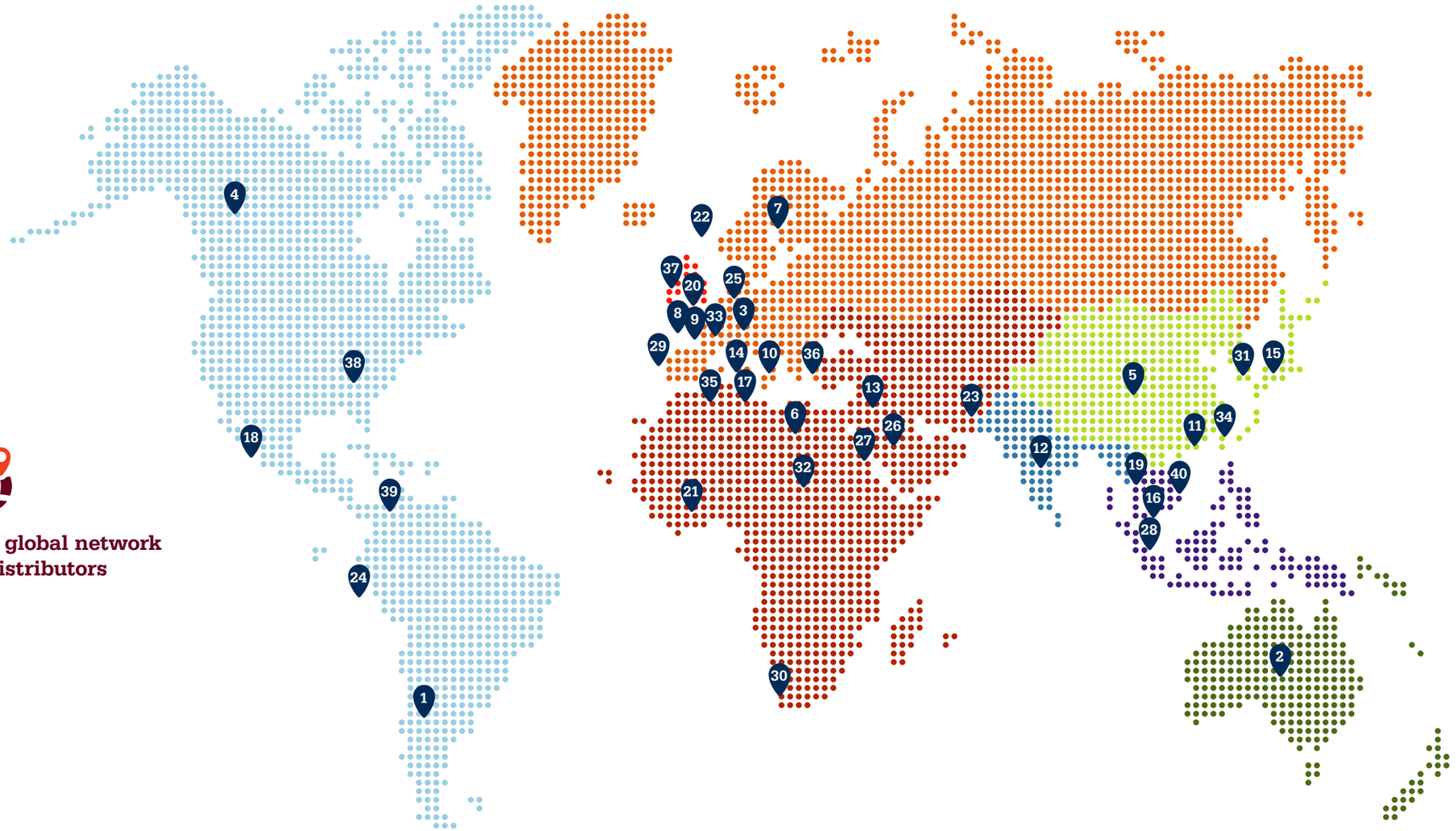
- The most accurate flawed specimens on the market
- Unique specimens containing purposely induced flaws that are accurately sized and located
- All specimens go through a full range of quality control processes to ensure our flaws are of the highest quality
- Documentation detailing flaw types, sizes and location supplied with each specimen
- Excellent customer service from initial contact
- Whatever the challenge, we work hard to find solutions to ensure we can support our customers with exactly what they need

Longest established flaw manufacturer in the world.



Standard specimens manufactured at our facilities.

The weight of the heaviest specimen into which we have implanted flaws.



1	Argentina	21	Nigeria
2	Australia	22	Norway
3	Austria	23	Pakistan
4	Canada	24	Peru
5	China	25	Poland
6	Egypt	26	Qatar
7	Finland	27	Saudi Arabia
8	France	28	Singapore
9	Germany	29	Spain
10	Greece	30	South Africa
11	Hong Kong	31	South Korea
12	India	32	Sudan
13	Iraq	33	Switzerland
14	Italy	34	Taiwan
15	Japan	35	Tunisia
16	Malaysia	36	Turkey
17	Malta	37	UK
18	Mexico	38	USA
19	Myanmar	39	Venezuela
20	Netherlands	40	Vietnam

Our global network of distributors

EDUCATIONAL KITS

A set of miniature welds, macro sections and photo-radiographs to demonstrate the principles of flaw detection, flaw interpretation and basic sizing.

Our educational kits can be made of four different materials: carbon steel, stainless steel, aluminum and 3D printed resin. Our 3D printed resin kits weigh just 3.5kg, making them over 70% lighter than their carbon steel counterpart, and are easier to handle, transport and store. All educational kits are presented in a durable polypropylene carry case with high-density foam inserts to ensure total protection of the specimens.

Recommended for

- Introduction to weld flaws
- Demonstration of principles of flaw detection
- Demonstration of typical flaw responses
- Demonstration of principles of flaw interpretation
- Basic flaw sizing

Methods

- Demonstration kit containing a specimen for each method
- Ultrasonic testing
- Magnetic particle testing
- Penetrant testing
- Visual testing
- Radiographic testing

Materials

- Carbon steel
- Stainless steel
- Aluminium
- 3D printed resin

Kit contents

- 10 miniature flawed specimens, each implanted with one flaw
- Flaw location details
- Testing and acceptance criteria
- Photo-radiographs (where applicable) for each specimen
- 10 macro sections
- Magnifying glass
- Certificate of conformance

An example of a weld flaw identification kit and 3D printed resin visual testing kit

Kit types and contents

Demonstration kit (KTCS91)

1 tee and 9 plate specimens carefully selected from the visual, magnetic, penetrant, ultrasonic, and radiographic kits to provide an overview of flaw types and their detection using various non-destructive testing techniques.

- Carbon steel - 12 kg/29 lbs

Ultrasonic kit (KTCS86)

1 tee and 9 plate specimens containing commonly occurring surface-breaking and weld-body flaws.

- Carbon steel - 12 kg/26 lbs
- Stainless steel - 12 kg/26 lbs
- Aluminium – 7 kg/15 lbs

Visual kit (KTCS87)

3 tee and 7 plate specimens containing commonly occurring visual welding flaws and irregularities.

- Carbon steel - 12 kg/26 lbs
- 3D printed resin – 3.5 kg/7.7 lbs

Magnetic particle kit (KTCS88)

3 tee and 7 plate specimens containing a selection of commonly occurring surface-breaking flaws.

- Carbon steel – 12 kg/26 lbs

Penetrant kit (KTCS89)

3 tee and 7 plate specimens containing a selection of commonly occurring surface-breaking flaws.

- Carbon steel – 12 kg/26 lbs
- Stainless steel – 12 kg/26 lbs
- Aluminium - 7 kg/15 lbs

Radiographic kit (KTCS90)

1 tee and 9 plate specimens containing commonly occurring surface-breaking and weld-body flaws.

- Carbon steel - 12 kg/26 lbs
- Stainless steel - 12 kg/26 lbs
- Aluminium - 7 kg/15 lbs

Weld flaw identification kit (KTCS92)

30 macro sections showing the cross section of flaws.

- Carbon steel - 7 kg/15 lbs

A magnetic particle kit containing 10 macro sections of various flaws

Each kit contains the following flaws as indicated				MT kit	PT kit	VT kit	Demo kit	UT kit	RT kit	Weld ID kit
Def 1		Toe crack		MT	PT		DM	UT		W
Def 1A		Toe crack		MT	PT					W
Def 1B		Toe crack		MT	PT					
Def 1C		Toe crack (full pen)						UT		
Def 2		Root crack		MT	PT		DM	UT	RT	W
Def 3		Side wall crack								W
Def 4		Centre line crack surface		MT	PT					W
Def 5		Centre line crack weld body						UT		W
Def 6		Porosity weld body					DM	UT	RT	W
Def 6A		Porosity surface breaking		MT	PT	VT				W
Def 7		Slag					DM	UT	RT	W
Def 8		Lack of side wall fusion					DM	UT		W
Def 9		Lack of root fusion		MT	PT				RT	W
Def 10		Root concavity				VT	DM		RT	W
Def 11		Incomplete root penetration SV				VT		UT	RT	W
Def 12		Over penetration				VT			RT	W
Def 13		Incomplete root penetration DV						UT		W
Def 14		Lamination		MT	PT					W
Def 14A		Lamination weld preparation		MT	PT					W
Def 14B		Lamination						UT		W
Def 15		Irregular root penetration				VT	DM		RT	W
Def 16		Weld spatter				VT			RT	W
Def 17		Undercut				VT				W
Def 18		Excess cap				VT	DM		RT	W
Def 19		Mismatch plate								W
Def 20		Misalignment plate								W
Def 21		Crack surface breaking			PT		DM			
Def 21A		Crack subsurface cap removed		MT						W
Def 22		Concave cap				VT				W
Def 22A		Incomplete weld fill								W
Def 23		Uneven leg lengths				VT	DM			W
Def 26		Lack of inter run fusion								W
Def 27		Underflush								W

STANDARD FLAWED SPECIMENS

BASIC WELD FLAW EVALUATION

A set of small, lightweight, and convenient to handle weld specimens, each containing either one or two flaws, with a minimum of 18 flaws per set.

Our basic weld flaw evaluation specimens are designed for practical training to provide an introduction to flaw detection, sizing and interpretation. Each set is presented in a durable polypropylene carry case with high-density foam inserts to ensure total protection of the specimens.

Recommended for

- Introduction to basic flaw detection
- Introduction to basic flaw sizing
- Introduction to basic flaw interpretation
- Simple weld geometries

Methods

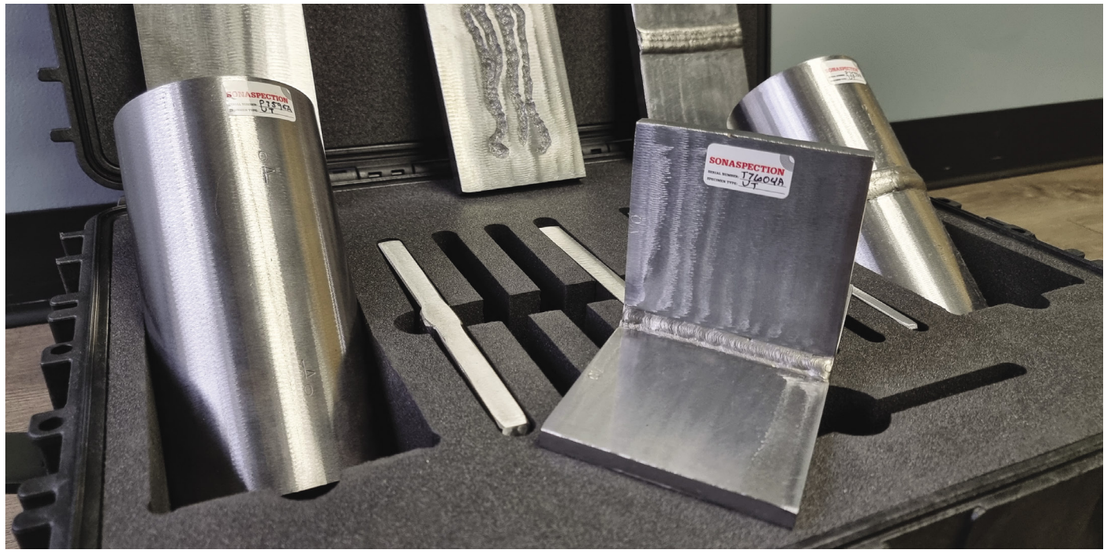
- Ultrasonic testing
- Visual testing
- Magnetic particle testing
- Penetrant testing
- Radiographic testing

Materials

- Carbon steel
- Stainless steel
- Aluminum

Set contents

- 10 small flawed specimens
- An average of 18 real flaws
- Flaw location details
- Testing and acceptance criteria
- Certificate of conformance



An example of a comprehensive ultrasonic testing set (FS-CS-08)

Set types and contents

Basic ultrasonic set (FS-CS-01)

1 tee, 7 plate and 2 pipe specimens containing commonly occurring surface-breaking and weld-body flaws.

- Carbon steel - 35 kg/77 lbs
- Stainless steel - 35 kg/77 lbs
- Aluminium – 18kg/40 lbs

Visual set (FS-CS-02)

3 tee and 7 plate specimens containing commonly occurring visual welding flaws and irregularities.

- Carbon steel - 14 kg/31 lbs

Magnetic particle set (FS-CS-03)

3 tee and 7 plate specimens containing a selection of commonly occurring surface-breaking flaws.

- Carbon steel – 14 kg /31 lbs

Penetrant set (FS-CS-04)

3 tee and 7 plate specimens containing a selection of commonly occurring surface-breaking flaws.

- Carbon steel – 14 kg/31 lbs
- Stainless steel – 14 kg/31 lbs
- Aluminium – 8 kg/15 lbs

Radiographic set (FS-CS-05)

8 plate and 2 pipe specimens containing commonly occurring surface-breaking and weld-body flaws.

- Carbon steel - 35 kg/77 lbs
- Stainless steel - 35 kg/77 lbs

Erosion and corrosion set (FS-CS-06)

8 plate, 1 pipe and 1 elbow specimens containing commonly occurring erosion and corrosion flaws.

- Carbon steel – 32 kg /71 lbs

Dual purpose magnetic and penetrant set (FS-CS-07)

2 tee and 8 plate specimens contain a selection of commonly occurring surface-breaking flaws.

- Carbon steel - 14 kg/31 lbs

Comprehensive ultrasonic testing set (FS-CS-08)

8 plate, 1 pipe and 1 elbow specimens containing commonly occurring surface-breaking and weld-body flaws including some erosion/corrosion.

- Carbon steel - 32 kg/71 lbs

Demonstration set (FS-CS-09)

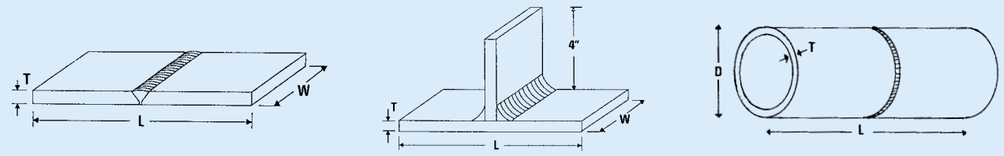
1 tee, 7 plate and 2 pipe specimens carefully selected from the visual, magnetic, penetrant, ultrasonic and radiographic sets to provide an overview of flaw types and their detection using various non-destructive testing techniques.

- Carbon steel - 35 kg/77 lbs

An example of an erosion and corrosion set (FS-CS-06)

Individual specimens. Dimensions: mm (inch)

Specimen	Thickness	Width	Dia	Length
Pipe (SV)	10 (⅜)	N/A	100 (4)	200 (8)
Tee (SV)	6 (¼)	100 (4)	N/A	200 (8)
Tee (SV)	15 (⅜)	100 (4)	N/A	200 (8)
Plate	6 (¼)	100 (4)	N/A	200 (8)
Plate	10 (⅜)	100 (4)	N/A	200 (8)
Plate	15 (⅜)	100 (4)	N/A	200 (8)



Typical flaws

Planar flaw		Root conditions	Volumetric flaw	Erosion and Corrosion	Other weld conditions
Toe crack	Side wall crack	Incomplete penetration	Porosity	Erosion	Excessive cap
Transverse crack	Lack of side wall fusion	Irregular root penetration	Surface porosity	Corrosion	Weld spatter
Transverse crack	Centreline crack	Root concavity	Slag	Pitting	Mismatch
Root crack	Lamination	Incomplete penetration	Tungsten inclusion	Pinholes	Cold lap
Centreline crack	Crater crack	Lack of root fusion			Concave cap
		Burn through			Undercut
		Excess penetration			Incomplete weld fill

ADVANCED WELD FLAW EVALUATION

Flawed specimens designed and manufactured to meet the requirements of all known internationally recognized qualification programs, such as ASNT, ACCP, API and BS EN ISO 9712.

Our advanced weld flaw evaluation specimens are available either individually or as sets. All sets can be customized to include the individual specimens of your choice.

Recommended for

- Advanced training and practice prior to qualifications in:
  - Flaw detection
  - Flaw sizing
  - Flaw interpretation
- Realistic size welds
- Common weld geometries

Methods

- Ultrasonic testing
- Magnetic particle testing
- Penetrant testing
- Visual testing
- Radiographic testing

Materials

- Carbon steel
- Stainless steel
- Aluminum

Individual specimens

Contain two to four different flaw types and are:

- Uniquely numbered
- Supplied with NDE reports
- Supplied with acceptance/ rejection criteria

Secure specimens (for examinations)

Similar to individual specimens, except that:

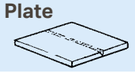
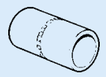
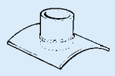
- Specimens are supplied in a sealed container
- Flaw types and distribution are to a specified standard
- Reports are sealed and kept separate from the specimens
- Reports are sent under separate cover to the nominated person

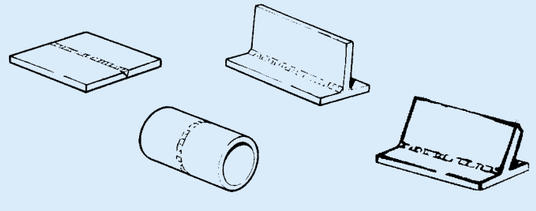
Recommended sets

- Selection of individual specimens, with an average of three flaws per specimen
- At least one example of each flaw type listed in the flaw table
- Minimum total weld length of 360cm (144")

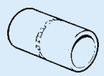
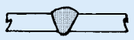
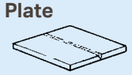
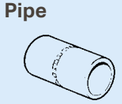
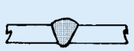
A selection of advanced weld flaw evaluation specimens

Visual specimens

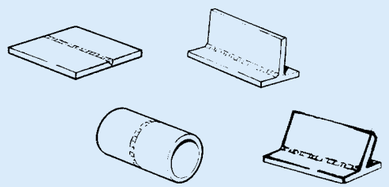
Individual specimens							Typical flaws
Part no.	Specimen type	Weld preparation type	Diameter	Thickness	Size	Approx. weight kg (lbs)	
			Approx. dimensions: mm (inch) or nearest commercial size				
VC-73	Plate 		N/A	10 (⅜)	300x200 (12x8)	5 (10)	Surface porosity
VC-74	Pipe 		80 (3)	10 (⅜)	200 (8) long	4 (9)	Lack of root fusion
VC-75			150 (6)	10 (⅜)	200 (8) long	8 (17)	Root concavity
VC-76			200 (8)	10 (⅜)	200 (8) long	10 (21)	Excess penetration
VC-77			300 (12)	10 (⅜)	200 (8) long	22 (48)	Incomplete penetration
VC-78	Tee 		N/A	10 (⅜)	150x150x300 (6x6x12)	7 (15)	Irregular penetration
VC-79	Y 		N/A	10 (⅜)	150x150x300 (6x6x12)	7 (15)	Undercut
			Penetration Dia x Thick		**Carrier plate dimensions** L x W x Thickness		Concave cap
VC-80	Nozzle 		100x10 (4x⅜)		400x400x12 (16x16x½)	17 (38)	Excessive cap
VC-81			200x10 (8x⅜)		400x400x12 (16x16x½)	22 (49)	Weld spatter
			Stub Dia x Thick		**Carrier plate dimensions** L x W x Thickness		Crater indication
VC-82	Node 		200x10 (8x⅜)		400x400x12 (16x16x½)	32 (70)	
VC-83			250x10 (10x⅜)		400x400x12 (16x16x½)	37 (81)	

Recommended set		Approx. weight kg (lbs)
	VC-84	45 (100)
	2 x VC-73	
	2 x VC-75	
	1 X VC-77	
	1 x VC-78	
	1 x VC-79	

Magnetic and penetrant specimens

Individual specimens							Typical flaws
Part no.	Specimen type	Weld preparation type	Diameter	Thickness	Size	Approx. weight kg (lbs)	Toe indication
			Approx. dimensions: mm (inch) or nearest commercial size				Root indication
MC-01	Plate 		N/A	10 (⅜)	300x200 (12x8)	5 (10)	Centreline indication
MC-02	Pipe 		80 (3)	10 (⅜)	200 (8) long	4 (9)	Transverse indication
MC-03			150 (6)	10 (⅜)	200 (8) long	8 (17)	Surface porosity
MC-04			200 (8)	10 (⅜)	200 (8) long	10 (21)	Lack of root fusion
MC-05			300 (12)	10 (⅜)	200 (8) long	22 (48)	HAZ indication
MC-06	Tee 		N/A	10 (⅜)	150x150x300 (6x6x12)	7 (15)	Crater indication
MC-07	Y 		N/A	10 (⅜)	150x150x300 (6x6x12)	7 (15)	
			Penetration Dia x Thick		**Carrier plate dimensions** L x W x Thickness		
MC-08	Nozzle 		100x10 (4x⅜)		400x400x12 (16x16x½)	17 (38)	
MC-09			200x10 (8x⅜)		400x400x12 (16x16x½)	22 (49)	
			Stub Dia x Thick		**Carrier plate dimensions** L x W x Thickness		
MC-10	Node 		200x10 (8x⅜)		400x400x12 (16x16x½)	32 (70)	
MC-11			250x10 (10x⅜)		400x400x12 (16x16x½)	37 (81)	
PC-01	Plate 		N/A	10 (⅜)	300x200 (12x8)	5 (10)	
PC-02	Pipe 		80 (3)	10 (⅜)	200 (8) long	4 (9)	
PC-03			150 (6)	10 (⅜)	200 (8) long	8 (17)	
PC-04			200 (8)	10 (⅜)	200 (8) long	10 (21)	
PC-05			300 (12)	10 (⅜)	200 (8) long	22 (48)	
PC-06	Tee 		N/A	10 (⅜)	150x150x300 (6x6x12)	7 (15)	
PC-07	Y 		N/A	10 (⅜)	150x150x300 (6x6x12)	7 (15)	

Individual specimens						
Part no.	Specimen type	Weld preparation type	Diameter	Thickness	Size	Approx. weight kg (lbs)
			Approx. dimensions: mm (inch) or nearest commercial size			
			Penetration Dia x Thick		**Carrier Plate Dimensions** L x W x Thickness	
PC-08	Nozzle 		100x10 (4x⅜)		400x400x12 (16x16x½)	17 (38)
PC-09			200x10 (8x⅜)		400x400x12 (16x16x½)	22 (49)
			Stub Dia x Thick		**Carrier Plate Dimensions** L x W x Thickness	
PC-10	Node 		200x10 (8x⅜) 250x10 (10x⅜)		400x400x12 (16x16x½)	32 (70)
PC-11			250x10 (10x⅜)		400x400x12 (16x16x½)	37 (81)

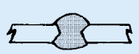
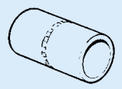
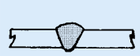
Recommended sets			Approx weight kg (lbs)
	MC-12 Magnetic	PC-12 Penetrant	70 (155)
	1 x MC-01	1 x PC-01	
	2 x MC-03	2 x PC-03	
	2 x MC-05	2 x PC-05	
	1 x MC-06	1 x PC-06	
	1 x MC-07	1 x PC-07	

An example of a magnetic testing tee specimen

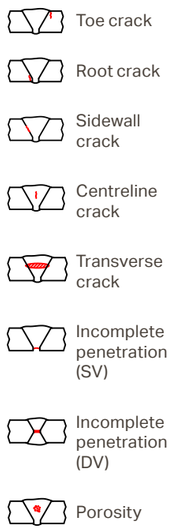
An example of a penetrant testing pipe specimen

Ultrasonic specimens

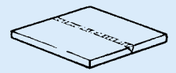
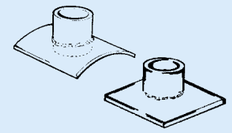
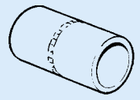
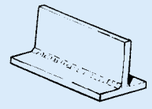
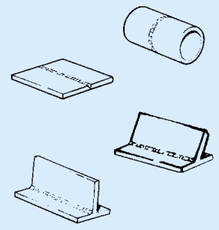
Individual specimens

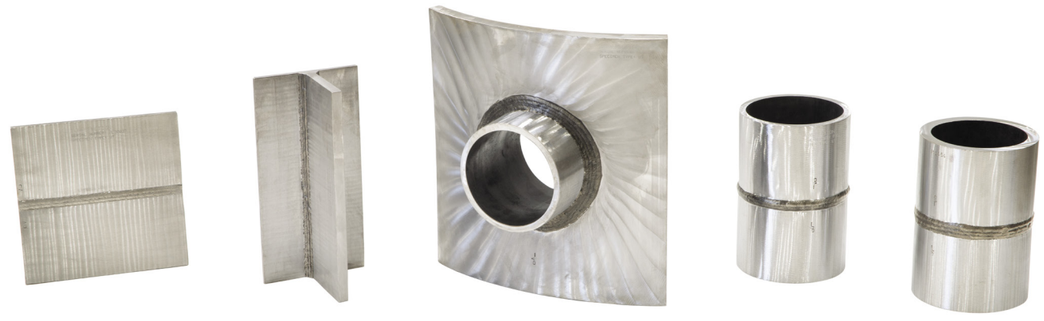
Part No.	Specimen type	Weld preparation type	Diameter	Thickness	Size	Approx. weight kg (lbs)
			Approx. dimensions: mm (inch) or nearest commercial size			
UC-14	**Plate**		N/A	6 (¼)	300x300 (12x12)	4 (9)
UC-15			N/A	12 (½)	300x300 (12x12)	8 (18)
UC-16			N/A	25 (1)	300x400 (12x16)	23 (51)
UC-17			N/A	20 (¾)	300x300 (12x12)	14 (31)
UC-18			N/A	25 (1)	300x400 (12x16)	23 (51)
UC-19			N/A	30 (1¼)	300x440 (12x17¼)	31 (68)
UC-20	**Pipe**		80 (3)	12 (½)	300 (12) long	7 (15)
UC-21			150 (6)	12 (½)	300 (12) long	14 (30)
UC-22			150 (6)	25 (1)	300 (12) long	28 (62)
UC-23			200 (8)	12 (½)	300 (12) long	18 (39)
UC-24			200 (8)	25 (1)	300 (12) long	37 (82)
UC-25			300 (12)	12 (½)	300 (12) long	27 (59)
UC-26			300 (12)	25 (1)	300 (12) long	56 (122)
UC-27	**Tee** 		N/A	20 (¾)	150x150x300 (6x6x12)	14 (31)
UC-28			N/A	25 (1)	200x200x300 (8x8x12)	23 (51)
UC-29			N/A	25 (1)	200x200x300 (8x8x12)	23 (51)
UC-30			N/A	30 (1¼)	220x220x300 (9x9x12)	31 (68)
UC-31	**Y** 		N/A	25 (1)	200x200x300 (8x8x12)	23 (51)
UC-32			N/A	30 (1¼)	220x220x300 (9x9x12)	31 (68)
			Penetration Dia x Thick		**Carrier plate dimensions** L x W x Thickness	
UC-33	**Nozzle** 		100x12 (4x½)		500x500x25 (20x20x1)	43 (94)
UC-34			200x12 (8x½)		500x500x25 (20x20x1)	54 (120)
UC-35			100x12 (4x½)		500x500x25 (20x20x1)	43 (94)
UC-36			200x12 (8x½)		500x500x25 (20x20x1)	54 (120)
			Stub Dia x Thick		**Carrier plate dimensions** L x W x Thickness	
UC-37	**Node** 		200x20 (8x¾)		500x500x25 (20x20x1)	75 (165)
UC-38			250x20 (10x¾)		500x500x25 (20x20x1)	103 (228)

Typical flaws



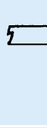
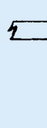
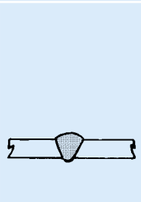
Recommend sets

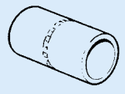
Specimen types	Contents	Approx. weight kg (lbs)	Specimen types	Contents	Approx. weight kg (lbs)
Set 2 UC-39 	3 x UC-15 1 x UC-16 3 x UC-17 2 x UC-18 3 x UC-19	229 (505)	**Set 5 UC-42** 	2 x UC-33 2 x UC-34 2 x UC-35 2 x UC-36	412 (907)
Set 3 UC-40 	2 x UC-20 1 x UC-21 1 x UC-22 1 x UC-23 1 x UC-24 1 x UC-25 1 x UC-26	193 (426)	**Set 6 UC-43** 	2 x UC-37 2 x UC-38	357 (786)
Set 4 UC-41 	4 x UC-27 2 x UC-28 2 x UC-29 2 x UC-30	211 (464)	**Set 7 UC-44** 	1 x UC-16 1 x UC-19 1 x UC-24 1 x UC-25 1 x UC-26 1 x UC-27 1 x UC-30 1 x UC-31	242 (532)



An example of some ultrasonic specimens

Radiographic specimens

Individual specimens							Typical flaws
Part no.	Specimen type	Weld preparation type	Diameter	Thickness	Size	Approx. weight kg (lbs)	
			Approx. dimensions: mm (inch) or nearest commercial size				
RC-50	Plate		N/A	6 (¼)	300x200 (12x8)	3 (6)	Toe crack
RC-51			N/A	10 (⅜)	200 (8) long	5 (10)	Root crack
RC-52			N/A	15 (⅝)	200 (8) long	7 (15)	Transverse crack
RC-53			N/A	20 (¾)	200 (8) long	9 (21)	Porosity
RC-54			N/A	25 (1)	200 (8) long	13 (26)	Lack of root fusion
RC-55			N/A	30 (1¼)	150x150x300 (6x6x12)	14 (31)	
RC-56	Plate		N/A	6 (¼)	300x200 (12x8)	3 (6)	Incomplete penetration
RC-57			N/A	10 (⅜)	300x200 (12x8)	5 (10)	
RC-58			N/A	15 (⅝)	300x200 (12x8)	7 (15)	Excess penetration
RC-59			N/A	20 (¾)	300x200 (12x8)	9 (21)	
RC-60			N/A	25 (1)	300x200 (12x8)	13 (26)	Root concavity
RC-61			N/A	30 (1¼)	300x200 (12x8)	14 (31)	
RC-62	Pipe		25 (1)	3 (⅛)	300x200 (12x8)	0.3 (0.7)	Slag
RC-63			50 (2)	5 (3⁄16)	200 (8) long	1 (2)	Undercut
RC-64			80 (3)	6 (¼)	200 (8) long	2 (5)	
RC-65			150 (6)	6 (¼)	200 (8) long	4 (10)	Tungsten inclusion
RC-66			150 (6)	12 (½)	200 (8) long	8 (18)	
RC-67			200 (8)	12 (½)	200 (8) long	11 (25)	Mismatch
RC-68			200 (8)	20 (½)	200 (8) long	18 (40)	
RC-69			300 (12)	12 (½)	200 (8) long	17 (37)	Burn through
RC-70			300 (12)	250 (1)	200 (8) long	33 (74)	

Recommended set		Approx. Weight kg (lbs)
 	RC-71	78 (172)
	2 x RC-50	
	1 x RC-55	
	1 x RC-56	
	1 x RC-61	
	3 x RC-62	
	2 x RC-63	
	1 x RC-64	
	1 x RC-70	

Standard specifications

Sonaspection reserves the right to alter specifications shown at any time.

Types/Range	The range of flaws available depends on the type of testing being used. See appropriate flaw table for full details.
Flaw size range	Flaw length from 10mm (⅜") to 45mm (1¾") Flaw through wall height 3mm (⅛") to 6mm (¼")
Flaw tolerances	Flaw length ±3mm (⅛") Flaw height ±2mm (5⁄64") Distance from datum ±3mm (⅛") Depth from surface ±2mm (5⁄64")
Material types	For plate, tee and Y specimens carbon steel material conforms to EN 10025. Pipe specimens are to ASTM, ANSI, API or similar (nozzles and nodes are a combination of both). All pipe sizes are measured outside diameter.
Inspection	All materials are subject to 100% visual and non-destructive examination to ensure that they are free from flaws which may interfere with product performance.
Material tolerances	Weld length for plates, tees and Ys, all 300mm (12") ±5%. Weld length for pipes, nozzles and nodes, all as per diameter. Thickness ±10% Diameters ±10%
Surface finish	Parent material adjacent to weld will be a suitable finish for testing the weld profile, either 'as-welded' or ground flush.
Final inspection	All specimens are subject to in-house visual and non-destructive examination. This work is carried out by experienced and approved technicians.
Corrosion protection	All specimens are coated with a clear corrosion-resistant material before leaving the factory.
Packing	All export orders are suitably packed.

CASTING AND FORGING

A series of small and lightweight specimens which contain typical flaws found in cast and forged components.

Our casting and forging specimens are designed for practical training to provide experience in basic flaw detection, sizing and interpretation. Available either individually or as sets, our specimens also provide representative geometries and an awareness of reporting difficulties.

In addition to our standard specimens, we can work with you to create customized specimens on request.

Recommended for

- Training and practice prior to qualifications in:
  - Basic flaw detection
  - Basic flaw sizing
  - Flaw interpretation
- Understanding representative geometries
- Gaining an awareness of reporting difficulties

Methods

- Ultrasonic testing
- Magnetic particle testing
- Penetrant testing
- Visual testing

Materials

- Carbon steel
- Stainless steel
- Aluminum

Our standard specimens

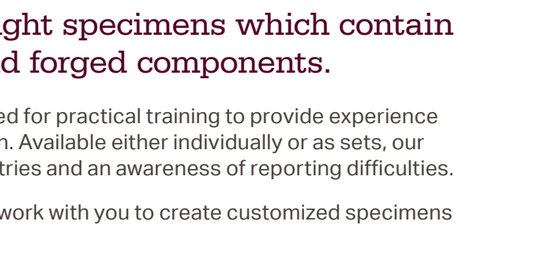
- Flange
- 2 Ingots (various sizes)
- Stud
- Wasted bolt
- Tee
- 4 Spigots (various sizes)
- Recessed flange
- Tapered ingot

Individual specimens

- Contain up to 3 flaws
- Are unique, no two specimens are the same
- Are individually numbered and supplied with:
  - Drawing/NDE report
  - Testing and acceptance criteria
  - Certificate of conformance

Recommended set (014)

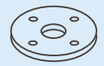
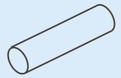
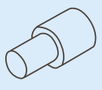
- 12 individual specimens
- Contain an average of 20 flaws
- Total weight of 59kg/130 lbs
- NDE reports
- Testing and acceptance criteria
- Certificate of conformance



Example of a wasted bolt

A selection of casting and forging specimens

Flawed casting/forging specimens

UT/MT/PT/VT individual specimens			
Part no.	**Specimen type**	**Dimension**	**Weight**
001	**Flange** 	250mm diameter x 20mm thick	7 kg / 15.5 lbs
002	**Ingot** 	50mm diameter x 200mm long	3.1 kg / 6.8 lbs
003	**Ingot** 	100mm diameter x 50mm thick	3 kg / 6.6 lbs
004	**Stud** 	20mm diameter x 120mm long head – 50mm diameter x thread length – 30mm	0.6 kg / 1.3 lbs
005	**Wasted bolt** 	36mm diameter x 150mm long thread length – 25mm	0.85 kg / 1.9 lbs
006	**Tee** 	100mm x 150mm x 10mm	2.2 kg / 4.9 lbs
007	**Spigot** 	100mm diameter x 75mm diameter x 150mm long	7.1 kg / 15.6 lbs
008	**Spigot** 	150mm diameter x 50 diameter x 55mm long	4.5 kg / 10 lbs
009	**Spigot** 	50mm diameter x 40mm diameter x 100mm long	1.2 kg / 2.6 lbs
010	**Spigot** 	75mm diameter x 50mm diameter x150mm long	3.75 kg / 8.3 lbs
011	**Recessed flange** 	200mm diameter x 40mm thick recess – 100mm diameter x 10mm deep	9.15 kg / 20 lbs
012	**Tapered ingot** 	200mm diameter x 175mm diameter x 75mm thick	16.55 kg / 36.5 lbs

BEND TEST SETS

A range of bend test specimens that show the impact weld flaws can have on the structural integrity of a welded joint.

Our specimens are supplied as a set of five bars. Each bar measures 10mm wide x 200mm long and is available in either 12, 15 or 20mm wall thickness. They are manufactured to contain one flaw type from the list below and then each bar is bent until the weld starts to fail, and the flaw is exposed.

Recommended for

- Demonstrating the potential impact of weld flaws in a joint

Methods

- Visual testing

Materials

- Carbon steel

Set contents

- Bar 1 – Lack of side wall fusion (LoSWF)
- Bar 2 – Slag
- Bar 3 – Clear
- Bar 4 – Lack of root fusion (LoRF)
- Bar 5 – Toe crack

A selection of bend test bar specimens

CRACK SIZING BARS

A range of carbon steel or stainless steel bars, useful for crack sizing and characterization.

Our crack sizing bars have mechanically induced cracks running the full 30mm length of the weld. They come in a range of wall thicknesses (WT) and percentage crack through wall heights (TWH). We can customize our crack sizing bars to your specific requirements.

Our crack sizing bars can be purchased individually or as a recommended set. Each set contains four bars with a WT of either 12mm, 20mm, 25mm or 30mm, and TWH of 10%, 25%, 50%, and 75%, summarized in the table below.

Recommended for

- Crack sizing also applicable for API
- Crack characterization

Methods

- Ultrasonic testing

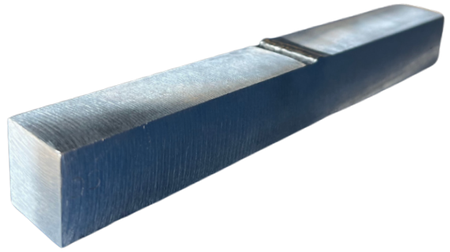
Materials

- Carbon steel
- Stainless steel

Document package contents

- As-built drawing
- Material certificate
- Consumable certificate
- QA release note

Recommended crack sizing bar sets					
Set	WT	TWH			
1	12mm	10%	25%	50%	75%
2	20mm	10%	25%	50%	75%
3	25mm	10%	25%	50%	75%
4	30mm	10%	25%	50%	75%



An example of a crack sizing bar

SPECIALIZED FLAWED SPECIMENS

BOILER TUBES

A standard boiler tube package containing 10 pipes made from carbon or high alloy steel.

We have been involved in trials for phased array in lieu of radiography and have designed a range of boiler tube specimens to help in the training and examination of technicians and equipment.

Each boiler tube measures 50mm (OD) x 5mm (WT) and includes a range of flaws listed in the BS code for boiler tube inspection.

These packs can also be customized in terms of boiler tube pipe pack size, material size, tube diameter, tube wall thickness or the type of flaws you require.

Recommended for

- Training and practice prior to qualifications on:
  - Flaw detection
  - Flaw sizing
  - Flaw interpretation

Methods

- Phased array
- Radiography

Materials

- Carbon steel
- High alloy steel

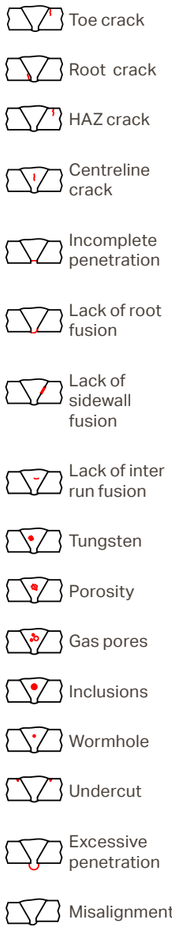
Document package contents

- CAD generated as-built drawing
- Manual UT and MT/PT report
- Material certificates
- Weld log and consumable certificates
- QA release note

Optional extras

- Phased array report
- Radiographs
- Relevant calibration block(s)

Typical flaws



A selection of boiler tube specimens

API TRAINING AND EXAMINATION SETS

All the original qualification specimens for API examinations were manufactured by Sonaspection in the late 1990s. These specimens are ideal for training and pre-qualification practice.

Our sets are available as either training/practice sets or examination sets. In both cases the specimens are manufactured to API requirements. Specimens will contain the flaw types as recommended by API.

Recommended for

- Students preparing for the API examination
- Training organizations or companies setting the API examination

Methods

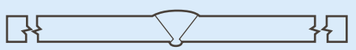
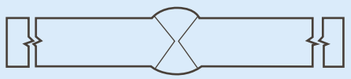
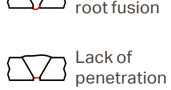
- Ultrasonic testing

Materials

- Carbon steel

Set contents (as recommended by API)

- Four UT specimens with a number of flaws, each flaw size tolerance of +/- 0.080

UT specimens			Typical flaws
1x	0.5″ Plate connection bevel profile (15″ weld length, 10″ wide)		 Slag
1x	1″ Plate connection bevel profile (15″ weld length, 14″ wide)		 Lack of root fusion
1x	8″ NB x Sch. 80 (0.5″ wall) pipe connection bevel profile, 12″ long		 Lack of penetration
1x	12″ NB Sch. 80 (0.688″ wall) half pipe connection bevel profile, 14″ long		Root crack
			Centreline crack

Training / practice sets (API/T1)	Examination sets (API-E1)	Optional extras
Supplied with ‘limited’ documentation – ultrasonic reports and CAD drawings to show the flaw details	Comprehensive documentation package exactly as supplied to API/ EPRI for their qualification specimens, including: • photographs of flaws • material and welding consumable certifications • flaw size statements	• 10% ID and OD notches (API-N) • Radiographs (full set) (API-R)

API RP 2X SET

A recommended practice set typical of those required in API RP 2X for advanced UT training and examination of a technician in flaw detection, sizing and characterization for the offshore industry.

This set contains three weld profiles from the table below as recommended in the code, these can be supplied in any combination as per customer requirements.

Each specimen contains two to four flaws, which can be designed around level ‘C’ or level ‘A’ criteria, although no specific sentencing would be expressed.

Recommended for

- Students preparing for the API examination
- Training organizations or organizations setting the API examination

Methods

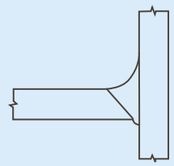
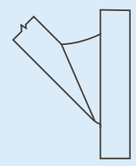
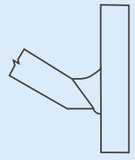
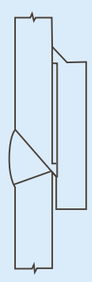
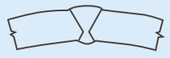
- Ultrasonic testing

Materials

- Carbon steel

Document package contents

- CAD generated as-built drawing
- Manual UT and MT/PT report
- Material certificates
- Weld log and consumable certificates
- QA release note

UT specimens			
‘T’ connection bevel profile		Diagonal connection bevel profile	
Diagonal connection bevel profile		Simulated pipe splice bevel profile	
16″ O.D. pipe longitudinal weld bevel profile			

ASME XI APPENDIX VII SET

Specimens designed for specialist training and performance demonstration.

Suitable for advanced training and qualification in flaw detection, flaw sizing in complex weld geometries and exotic materials, our ASME XI Appendix VII sets can also be used for training technicians on equipment and procedures.

Each custom set contains eight pipe specimens with a minimum of 20 flaws, and is supplied with documentation clearly identifying the flaw types, sizes and locations (flaw truth).

Recommended for

- Advanced training and qualifications in:
  - Flaw detection
  - Flaw sizing
  - Flaw interpretation
  - Exotic materials
- Complex weld geometries
- Training technicians on equipment and procedures

Methods

- Ultrasonic testing

Materials

- Carbon steel
- Stainless steel

Document package contents

- CAD generated as-built drawing
- Flaw size statement(s)
- Manual UT and MT/PT report
- Material certificates
- Weld log and consumable certificates
- QA release note

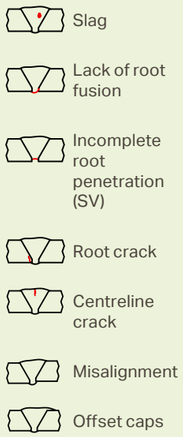
Set contents

- 1 plate weld carbon steel, size 12.5mm WT x 250mm wide x 300mm weld length
- 1 plate stainless steel weld, size 12.5mm WT x 250mm wide x 300mm weld length
- 1 plate weld carbon steel, size 25mm WT x 300mm wide x 300 weld length
- 1 plate stainless steel weld, size 25mm WT x 300mm wide x 300 weld length
- 1 pipe weld stainless steel, size 2" sch160 300mm long
- 1 pipe weld carbon steel, size 4" sch160 300mm long
- 1 pipe weld stainless steel, size 6" sch160 300mm long
- 1 pipe weld carbon steel, size 10" sch160 300mm long (180º segment)

Optional extras

- Radiographs
- Flaw photograph(s) and tracing(s)
- 10% calibration notches (POA)
- Relevant calibration block(s)
- Lockable storage crate

Typical flaws



Example cross section of an Appendix VII set specimen

ASME XI APPENDIX VIII SET

A set of specimens designed for specialist training for ASME boiler and pressure vessel code, section XI, Appendix VIII.

Suitable for advanced training and qualification in crack detection, crack sizing in complex weld geometries and exotic materials, our ASME XI Appendix VIII sets can also be used for training technicians on equipment and procedures.

Produced using carbon steel, stainless steel or dissimilar weld metal joints, each set contains five pipe samples with ID breaking cracks and is supplied with documentation clearly identifying the flaw types, sizes and locations (flaw truth).

Recommended for

- Advanced training and qualifications in:
  - Crack detection
  - Crack sizing
- Complex weld geometries
- Exotic materials
- Training technicians on equipment and procedures

Methods

- Ultrasonic testing

Materials

- Carbon steel
- Stainless steel

Document package contents

- CAD generated as-built drawing
- Flaw size statement(s)
- Manual UT and MT/PT report
- Material certificates
- Weld log and consumable certificates
- QA release note

Optional extras

- Radiographs
- Flaw photograph(s) and tracing(s)
- 10% calibration notches (POA)
- Relevant calibration block(s)
- Lockable storage crate

Set contents and materials

Material	Flaws	Set contents
Carbon steel	10 ID breaking cracks	1 pipe weld, size 2" sch80 600mm long 1 pipe weld, size 4" sch80 600mm long 1 pipe weld, size 6" sch160 600mm long 1 pipe weld, size 12" sch80s 600mm long 1 pipe weld, size 24" sch80s 600mm long **(120º segment)**
Stainless steel	10 ID breaking cracks	1 pipe weld, size 2" sch80 600mm long 1 pipe weld, size 4" sch80 600mm long 1 pipe weld, size 6" sch160 600mm long 1 pipe weld, size 12" sch80s 600mm long 1 pipe weld, size 24" sch80s 600mm long **(120º segment)**
Dissimilar weld	15 ID breaking cracks	1 pipe weld, size 4" sch80 600mm long 1 pipe weld, size 6" sch160 600mm long 1 pipe weld, size 8" sch80s 600mm long 1 pipe weld, size 12" sch80s 600mm long 1 pipe weld, size 24" sch80s 600mm long **(120º segment)**

DISSIMILAR WELDS

Not only one of the most difficult welded specimens to produce, dissimilar welds are also one of the most challenging to examine with ultrasound.

We have developed procedures to overcome these challenges and produce high quality specimens with accurate flaws. Our team has both the experience and capability to manufacture either an individual specimen or a set, which can be customized to your specific requirements.

Recommended for

- Advanced training and qualifications
- Performance demonstrations
- Flaw detection
- Flaw sizing
- Complex weld geometries
- Exotic materials
- Procedure and equipment qualification

Methods

- Ultrasonic testing

Materials

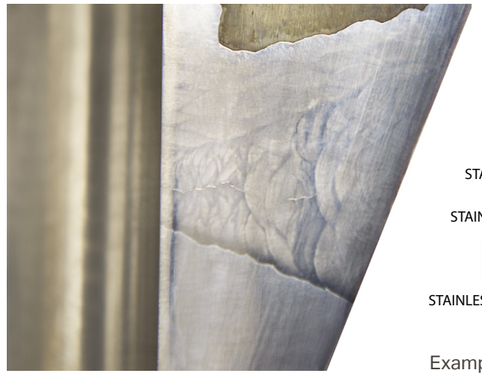
- Carbon steel
- Stainless steel
- Other alloys

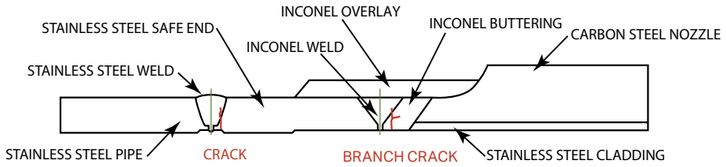
Document package contents

- CAD generated as-built drawing
- Flaw size statement(s)
- NDE inspection reports
- Material certificates
- Weld log and consumable certificates
- QA release note

Optional extras

- Radiographs
- Flaw photograph(s) and tracing(s)
- Relevant calibration block(s)
- Lockable storage crate





Example cross section of a dissimilar weld specimen

Our team of specialist welding experts implant flaws into a wide variety of materials, sizes and geometries.

FLAWED PIPELINE SPOOLS FOR IN-LINE INSPECTION (ILI)

Validation and calibration spools for ILI performance verification.

Our bespoke validation and calibration spools are designed to help you gain a comprehensive understanding of your ILI results, increasing the probability of flaw detection and accuracy.

We manufacture spools of up to 30ft in length, with flaws connected to the OD, ID or mid-wall. These can all be positioned within the electric resistance welded (ERW) seam, parent material or circumferential welds.

We offer a large variety of flaw types in any geometry and will work with you closely to determine the type, size, and location of flaws required to be implanted within the spool. We work hard to ensure we meet your project requirements related to your integrity management objectives to the highest standard.

Recommended for

- Validation of equipment capability
- Training operators for field experience

Methods

- Eddy current array (ECA)
- Phased array (PA)
- Time of flight diffraction (ToFD)

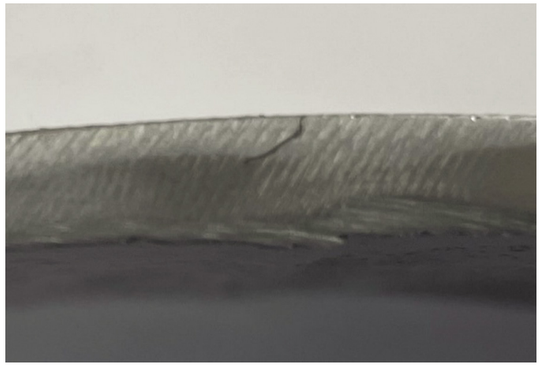
Materials

- Carbon steel

Typical flaws

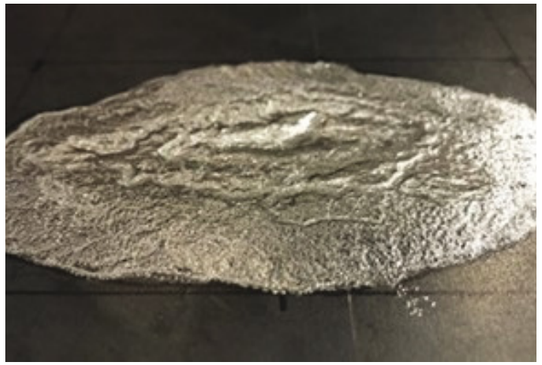
- Hook cracks
- Penetrators
- Electric discharge machining (EDM) notches
- Crack fields (zero weld material)
- Pitting and pinholes
- Corrosion – light, gross and riverbed
- Erosion – grooving and riverbed
- High-low area with associated cracking
- Grinding with associated cracking
- Dents with associated cracking

Hook cracks



Corrosion

Light corrosion



Pitting

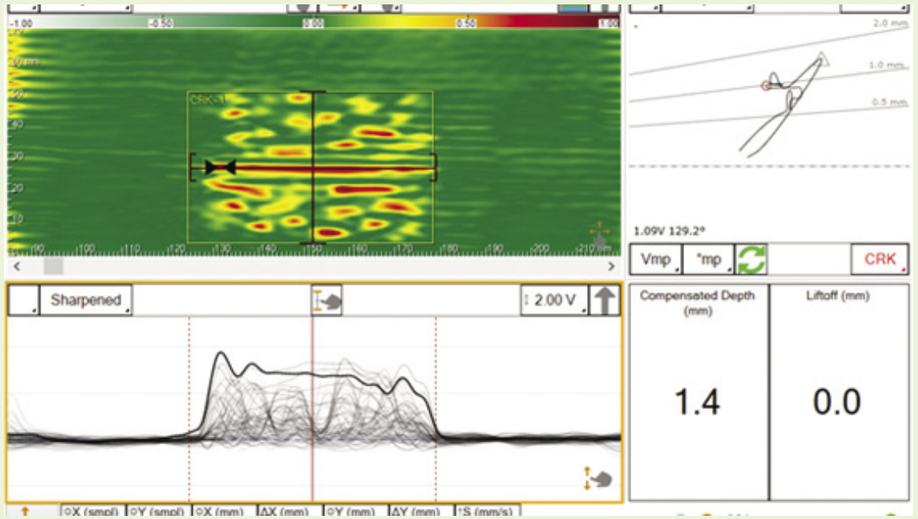
Riverbed erosion

Crack fields

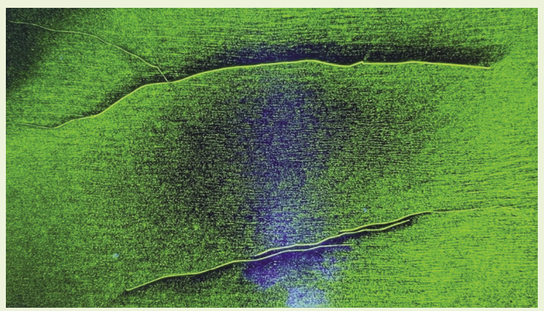
Eddy Current Array (ECA) crack fields

We recognise the limitations of some weld-induced flaws for certain NDE methods and are constantly developing market-leading techniques to overcome these. For Eddy Current Array (ECA), we took on the challenge by creating crack fields with known lengths, heights and locations made without interfering with the performance of the NDE tools applied.

ECA crack field illustration



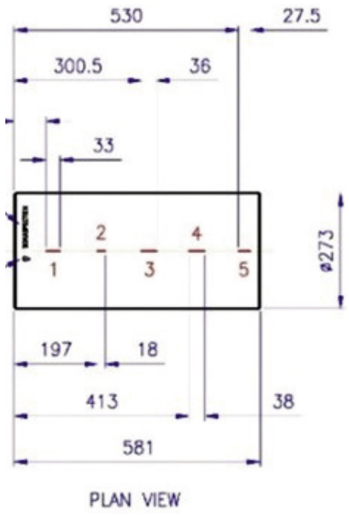
Alternate example of fluorescent crack field



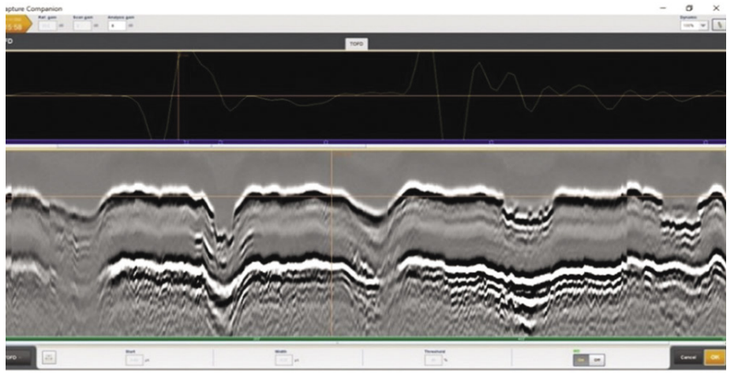
Time of Flight Diffraction (ToFD) hook cracks

The images below demonstrate the accuracy of our validation and calibration spools when implanting flaws into ERW pipe seams.

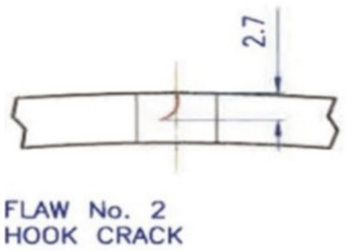
ToFD drawing overview of ERW seam

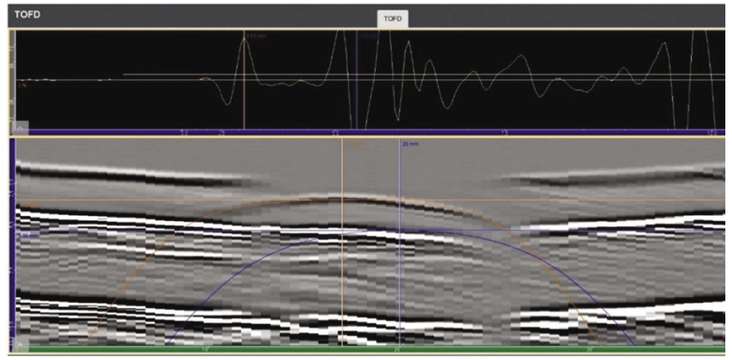


ToFD scan result



ToFD scan result of flaw no.2





CUSTOM SPECIMENS AND MOCK-UPS

Implanting flaws on a nozzle as part of a bespoke custom project.

For specific NDE training, procedure development, personnel training and qualification, specialist training and performance demonstration.

Our custom specimens are manufactured to your design, our team will work with you to make your concept become reality. We will use precision machining and our in-house expertise to create your chosen part, giving you a flawed specimen which suits your needs exactly. This could be to simulate worst-case flaws which can occur during part construction or to replicate particular in-service flaws as seen in the field.

Each specimen is supplied with documentation which clearly identifies the flaw types, sizes and locations (flaw truth).

Recommended for

- Advanced training and qualifications
- Performance demonstrations
- Flaw detection
- Flaw sizing
- Complex weld geometries
- Exotic materials
- Procedure and equipment qualification

Specimen types

Some examples of specimens include,
but not limited to:

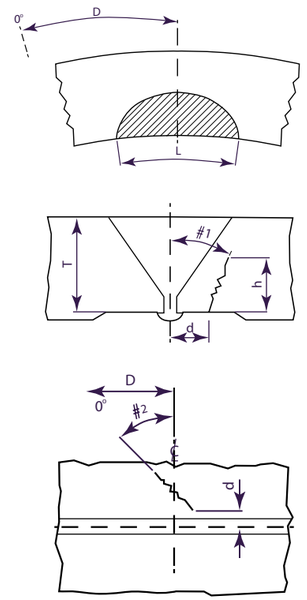
- Ferritic pipes
- Austenitic pipes
- Dissimilar weld metals
- Weld overlay specimens
- Reactor vessel and nozzles
- Core shroud and spray specimens
- Pressurizer mock-ups
- CRDM mock-ups
- Bolting and studs
- Erosion/corrosion

Document package contents

- CAD generated as-built drawing
- Flaw size statement(s)
- Manual UT and MT/PT report
- Material certificates
- Weld log and consumable certificates
- QA release note

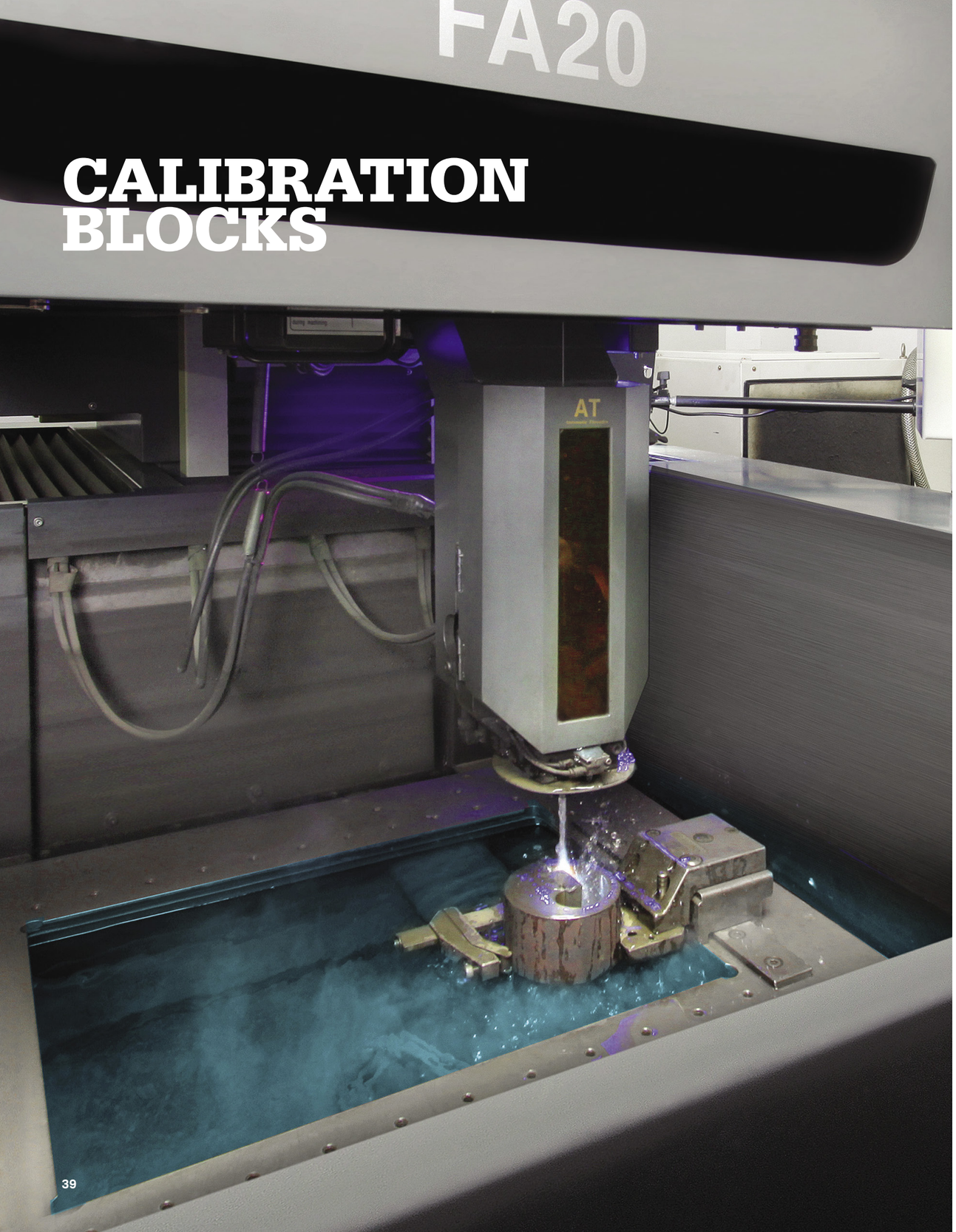
Optional extras

- Radiographs
- Independent NDE fingerprinting
- Flaw photograph(s) and tracing(s)
- 10% calibration notches (POA)
- Relevant calibration block(s)
- Lockable storage crate



Tolerances for custom specimens

Dimension	Working	Final / reported
Flaw length (L)	± 4mm (0.16″)	± 1.5mm (0.06″)
Flaw height (h)	± 1.5mm (0.06″)	± 0.75mm (0.03″)
From weld centre (d)	± 1mm (0.04″)	± 0.5mm (0.02″)
From pipe datum (D)	± 2mm (0.08″)	± 1mm (0.04″)
Tilt (#1)	± 5°	± 5°
Skew (#2)	± 5°	± 5°



CALIBRATION BLOCKS

Individual or sets of ultrasonic and eddy current calibration blocks to suit all site and laboratory inspection requirements.

We manufacture all regular calibration blocks to international standards and any custom designed specialist pieces all to tolerances of +/- 0.1mm.

Our capabilities include NDE, mechanical inspection, 3D CAD, electrical discharge machining (EDM), specialist welding, cladding overlay, machining, bending/rolling and heat treatment.

We manufacture the following reflector types:

- Slots
- Notches
- Side drilled holes
- Flat bottom holes

For a quotation, please supply specification, detailed drawings, code requirements and material type/grade.

Recommended for

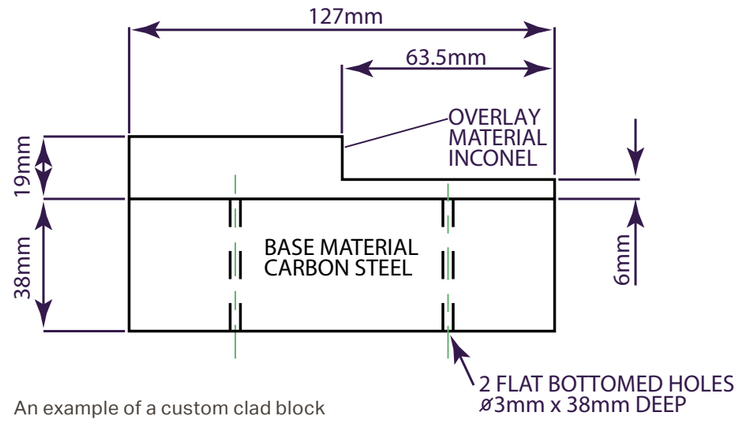
- Calibration of timebase and gain settings
- Calibration of angles for shear wave inspection
- Constructing DAC/TCG curves
- Calibration for specifically designed wedges e.g. boiler tube probes
- Calibration inspection to codes e.g. ASME V
- Evaluation of dominant frequency, pulse length and dead zone

Materials

- Carbon steel
- Stainless steel
- Aluminum
- Custom alloy

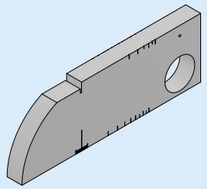
Methods

- Ultrasonic testing
- Eddy current testing

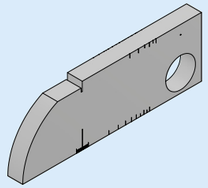


An example of a custom clad block

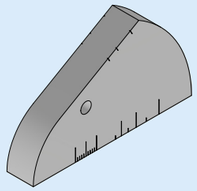
SI-CB-01 – No.1 block



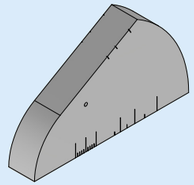
SI-CB-02 – V1/A2 block



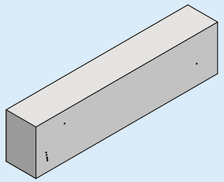
SI-CB-03 – No.2 block



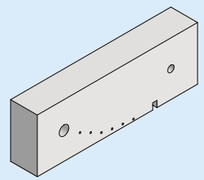
SI-CB-04 – V2/A2 block



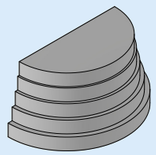
SI-CB-05 – A5/BCB/IOW block



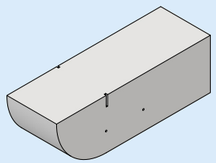
SI-CB-06 – A6 block



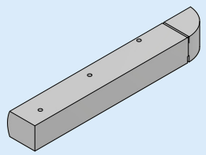
SI-CB-07 – A7/RTB block



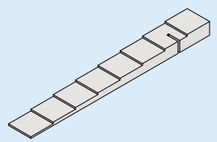
SI-CB-08 – MU block



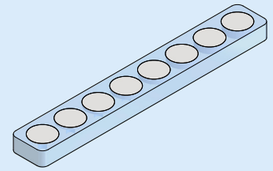
SI-CB-09 – TBR 2 125 block



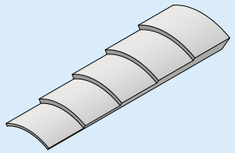
SI-CB-10 – LSW 1-20 (1-8) block



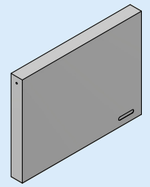
SI-CB-11 – LSW/M block



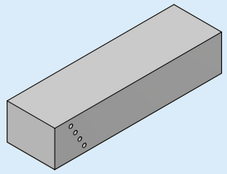
SI-CB-12 – CSW block



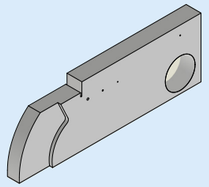
SI-CB-13 – ASME V block



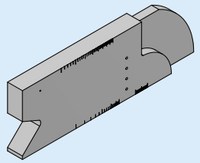
SI-CB-14 – DAC block



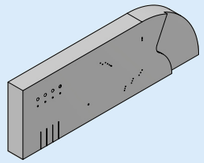
SI-CB-15 – IIW Type 1 or 2 block



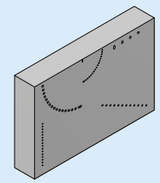
SI-CB-16 – ISO 19675 block



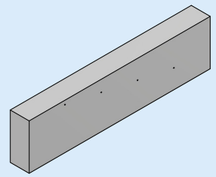
SI-CB-17 – ASTM E 2491 type A Block



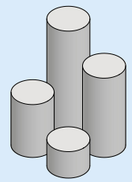
SI-CB-18 – ASTM E 2491 type B block



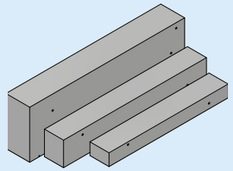
SI-CB-19 – NavShip



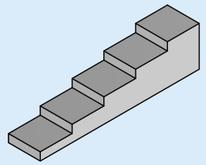
SI-CB-20 – ASTM E 127 blocks



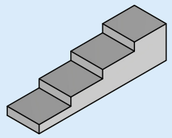
SI-CB-21 - US 319/21 / ACO-0/1/2/3 block



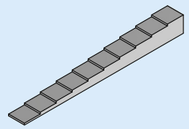
SI-CB-22 - LSW 5-25 block



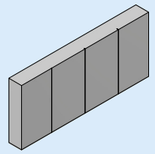
SI-CB-23 - LSW 5-20 block



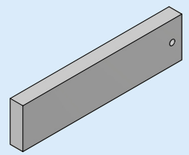
SI-CB-24 - LSW 2-20 block



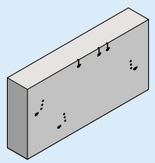
SI-CB-25 - EC block



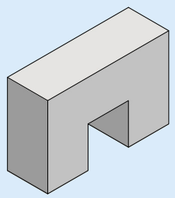
SI-CB-26 - EC Weldscan block



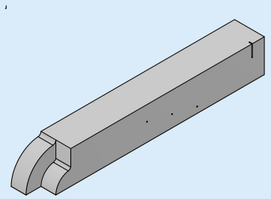
SI-CB-27 - AWS Res block



SI-CB-28 - AWS DC block



SI-CB-29 - Px block



PDI (PERFORMANCE DEMONSTRATION INITIATIVE)

Reference blocks for advanced calibration of inspection equipment prior to performance demonstrations and inspection of pipe welds in the power generation industry.

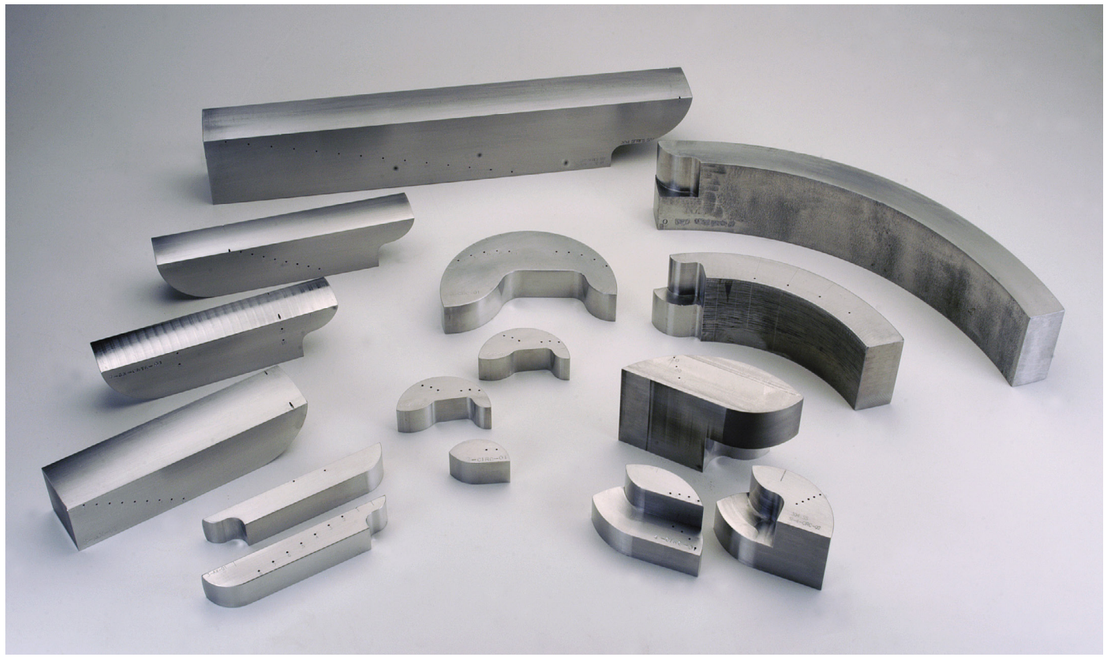
Our in-depth knowledge of non-destructive evaluation (NDE) and performance demonstration provides a unique insight into the requirements of these specialty reference blocks. We offer a range of blocks, including:

- 2″ Circumferential
- 2″ Contour
- 4″ Circumferential
- 4″ Contour
- 6″ Axial
- 6″ Contour
- 8″ Axial
- 8″ Circumferential
- 12″ Pipe segment
- 12″-24″ Contour
- 24″ Pipe segment

All our PDI blocks are:

- Machined to exact standards
- Manufactured from ultrasonically clean steel
- Supplied with a CAD drawing
- Uniquely numbered

Customized versions of the above and PDI alternative ASME calibration blocks are also available on request.



An example of a PDI reference block set

CORROSION AND EROSION

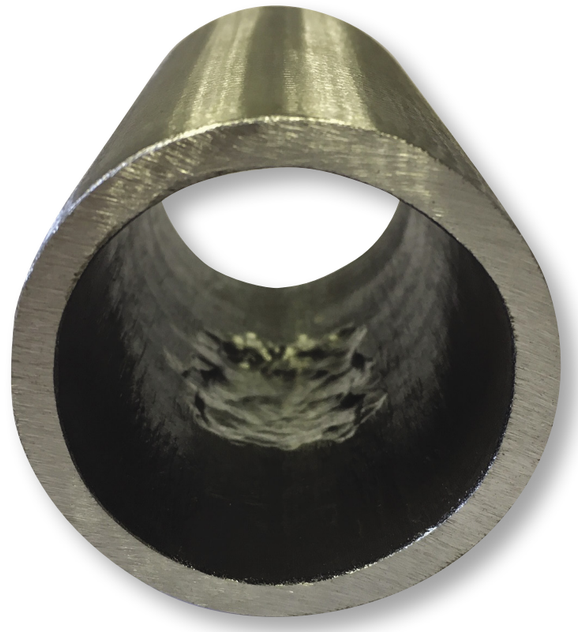
Supporting the development of expertise in corrosion and erosion with real flaws in pipe and plate specimens.

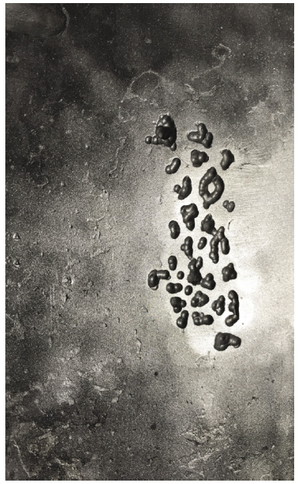
The inspection and management of corrosion and erosion is one of the major lasting issues facing pre and in-service inspection. Testing methods, such as Corrosion Under Insulation (CUI) and UT Corrosion Mapping, alongside developments in equipment are providing the necessary knowledge and tools to address the high annual cost to asset owners.

We can support the development of expertise in corrosion and erosion with real flaws within pipe and plate specimens.

Typical flaws

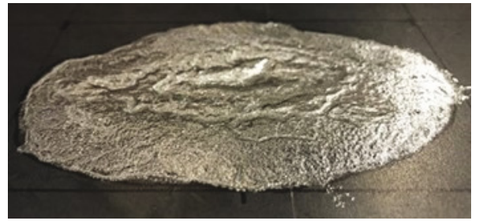
- Erosion
- Corrosion
- Grooving
- Pinholes
- Pitting



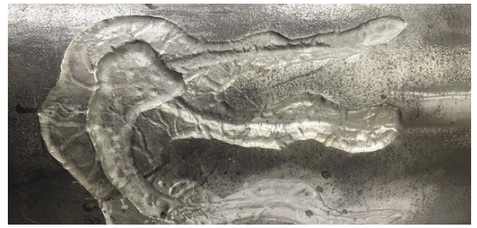


Pitting

Corrosion



Light corrosion



Riverbed erosion

REFERENCE RADIOGRAPH SETS

Training reference radiographs showing welding flaws, mechanical flaws and processing marks.

Our training reference radiographs are specifically aimed at students who have completed basic training on our RT educational kit and are wanting to further develop their skills of locating and identifying flaws in welds, and the process of radiographic inspection as a whole.

A standard set is made up of radiographs of carbon steel pipe and plate specimens. The flaws are intentionally obvious and generally gross in nature, making them easier for the student to differentiate between and learn about the different flaw types, sizes and general locations.

These sets can be customized to your requirements, such as: plate only, pipe only, light or dense material, etc.

Recommended for

- Training and practice prior to qualifications in:
  - Basic RT flaw detection
  - Basic RT flaw sizing
  - Flaw interpretation
- Understanding potential film processing problems
- Gaining an awareness of reporting difficulties

Method

- Radiographic testing

Set content

20 radiographs showing a minimum of 20 flaws, plus a minimum of 6 processing flaws and the following documentation:

- Each radiograph will be provided with a master report showing flaw type, distance from zero, length, any artefacts, sensitivity and film density
- 10 copies of an example student report template and flaw radiograph grid showing examples of what each flaw would look like within a radiograph
- Flaw reference section

RADIOGRAPHIC FILM ILLUMINATORS

Compact 18 LED illuminators using conventional white light or green LED for viewing radiographic films.

Our illuminators are CE marked and meet the requirements of EN25580: 1992; ASTM E 1390-90 and ISO 5580: 1995. They come with a ten-day unconditional money back guarantee if you are not fully satisfied with the product, in addition to three months' guarantee.

Recommended for

- Viewing radiographs either in the lab or in the field

Method

- Radiographic testing

Set content

- 1 illuminator with adjustable support handle, foot switch and dimmer control
- Aluminum / plastic case

Key Features

- Power: 85-264VAC 47~63Hz (full range)
- Power consumption: 120W
- Low heat - will not damage films
- Low power - energy saving
- Compact - small and lightweight
- Safe - sealed and insulated
- Modern design - stylish and simple
- A battery operated option is available on request

Spectralux	Verlux 550
	
Uses conventional white light with an outstanding luminance.	Uses LED light with a narrow wavelength of 550nm which is the maximum sensitivity of the human eye. Therefore, when comparing equal intensity of green and white light, the green appears brighter, and makes the radiographs easier to view.

Light intensity	Dimensions	Viewing area
• Maximum luminance: >100,000 Cd/m2 • Density: > 4.0 Density • Uniformity: 0.95 • No warm up time	• Length 390mm (15.3") • Width 180mm (7.1") • Height 50mm (1.9") • Weight 3kg (6.6lbs)	• Length 200mm (8") • Width 80mm (3⅛")

“”

Thank you for all the work you have done over the past few years. The support you have provided our project has been phenomenal, especially in the face of the constant scope and schedule change that came with the project.

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