sonaspection

Quality Flaws Assured

Flawed Specimens for

NDE Training | NDE Qualifications | NDE Performance Demonstrations

Internationally accepted as the standard for NDE training and qualifications

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Introduction

If your company is involved with NDE training or certification, then it is important that you are aware of Sonaspection and their products. Sonapection have manufactured thousands of flawed specimens for all the major performance demonstration, training and qualification centres around the world.

What are Flawed Specimens

Sonaspection's flawed specimens contain purposely induced real flaws which are accurately sized and located. Each specimen is supplied with documentation detailing flaw types, sizes and location.

NDE Training & Certification

NDE authorities around the world are striving to harmonise NDE training and certification by introducing and working to the new ISO standards.There is now more emphasis on the use of flawed specimens to give hands-on practical training and conduct more meaningful and representative certifications.

What are flawed specimens used for

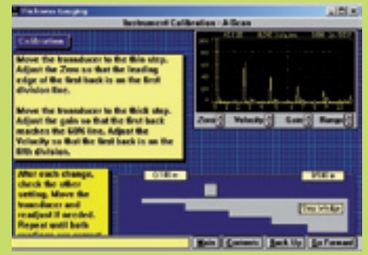
As part of a quality training programme to make sure students are aware of flaws and how they can be detected, identified and sized using NDE. Flawed specimens can also be used to perform practical personnel qualification, procedure and equipment development.

Why Sonaspection

Sonaspection is the longest established manufacturer of flawed specimens starting in 1980, and is the pioneer on many well recognised 'industry standard' flaw manufacture and implanting techniques.

Contents

Thickness Gauge Training



Eliminate the costs and inconvenience of outside courses by using this revolutionary and exciting computer based in-house training package.

This training software and test specimens provide the formal education necessary for technicians to effectively use ultrasonic thickness gauges. Interactive simulations and test samples let the trainee practice and record findings, with immediate feedback from the program. Colourful animated graphics bring the theoretical concepts to life. The program tracks, examines and questions the trainee's progress from start to completion.

- **Interactive computer-based training with hands-on training sample kit**
- **Animated diagrams, interactive simulations, pop-up definitions, interlinked topics**
- **Avoid scheduling problems, travel time and expense, lost work time**
- **Train in-house at your convenience**
- **Course curriculum developed by ASNT Level III's based on SNT-TC-1A**

Metric/Imperial version included.
Please visit www.ndt-interactive.com to download demo.

NDT *Interactive*
A REVOLUTION IN **NDT TRAINING**

NDE EDUCATIONAL KIT

Introduction to Weld Flaws

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

- **Introduction to weld flaws**
- **Demonstrate principles of flaw detection**
- **Demonstrate typical NDE flaw responses**
- **Demonstrate principles of flaw interpretation**
- **Basic flaw sizing**

Kit contents

- 10 miniature flawed specimens
- Flaw location details
- Testing and acceptance criteria
- Photo-radiographs (where applicable) for each specimen
- 10 Macro sections
- Magnifying glass
- Certificate of conformance

NDE methods

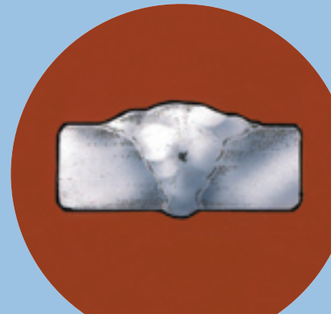
UT, RT, MT, PT and VT methods plus a there is a demonstration kit which covers a little of each NDE method.

Materials

- Carbon Steel
- Stainless Steel
- Aluminium

Kits are presented in a durable polypropylene case with high density black moulded inserts.

For Level I training and qualification ie ASNT-TC-IA, PCN, EN473 and others



NDE EDUCATIONAL KIT

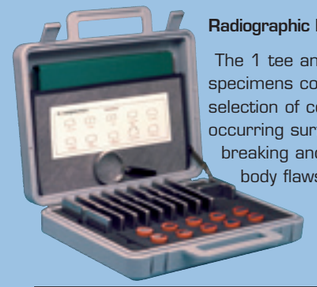
Kit types and contents

Visual Kit (KTCS87)

The 3 tee and 7 plate specimens contain a selection of commonly occurring visual welding flaws and irregularities

Magnetic Particle (KTCS88) & Penetrant Kit (KTCS89)

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



Radiographic Kit (KTCS90)

The 1 tee and 9 plate specimens contain a selection of commonly occurring surface-breaking and weld-body flaws

Demonstation Kit (KTCS91)

The 1 tee and 9 plate specimens are a variety of pieces carefully selected from each of the other kits in order to provide an overview of flaw types and their detection using various NDE techniques.

Ultrasonic Kit (KTCS86)

The 1 tee and 9 plate specimens contain a selection of commonly occurring surface-breaking and weld-body flaws.

EACH KIT CONTAINS THESE FLAWS

				MT Kit	PT Kit	VT Kit	Demo Kit	UT Kit	RT Kit
Def 1		Toe Crack		MT	PT		DM	UT	
Def 1A		Toe Crack		MT	PT				
Def 1B		Toe Crack		MT	PT				
Def 1C		Toe Crack (Full Pen)						UT	
Def 2		Root Crack		MT	PT		DM	UT	RT
Def 3		Side Wall Crack							
Def 4		Centre Line Crack Surface		MT	PT				
Def 5		Centre Line Crack Weld Body						UT	
Def 6		Porosity Weld Body					DM	UT	RT
Def 6A		Porosity Surface Breaking		MT	PT	VT			
Def 7		Slag					DM	UT	RT
Def 8		Lack of Side Wall Fusion					DM	UT	
Def 9		Lack of Root Fusion		MT	PT				RT
Def 10		Root Concavity				VT	DM		RT
Def 11		Incomplete Root Penetration SV				VT		UT	RT
Def 12		Over Penetration				VT			RT
Def 13		Incomplete Root Penetration DV						UT	
Def 14		Lamination		MT	PT				
Def 14A		Lamination Weld Preparation		MT	PT				
Def 14B		Lamination						UT	
Def 15		Irregular Root Penetration				VT	DM		RT
Def 16		Weld Spatter				VT			RT
Def 17		Undercut				VT			
Def 18		Excess Cap				VT	DM		RT
Def 21		Crack Subsurface Weld Cap Removed		MT	PT		DM		
Def 22		Concave Cap				VT			
Def 23		Uneven Leg Lengths				VT	DM		

Macro sections for UT, RT, VT, PT and MT kits correspond with the above list.
The demonstration kit contains macro sections 1 to 14 from the above list.

Basic Weld Flaw Evaluation

A set of small lightweight and convenient to handle welds specimens, each containing either one or two flaws and a minimum of 15 flaws per set. The sets are designed for practical training to provide an introduction to flaw detection, sizing and interpretation.

- **Introduction to basic flaw detection**
- **Introduction to basic flaw sizing**
- **Introduction to basic flaw interpretation**
- **Simple weld geometry's**

Set contents

- 10 small flawed specimens
- Average 15 real flaws
- Flaw location details
- Testing and acceptance criteria
- Certificate of conformance

A sturdy storage box is available for each set.

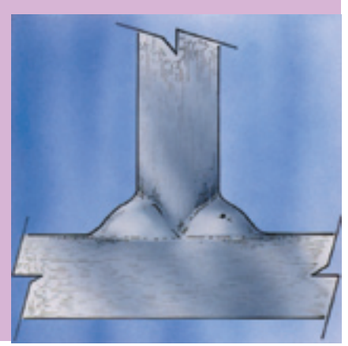
NDE methods

Sets are available in UT, RT, MT, PT and VT methods.

Materials

- Carbon Steel
- Stainless Steel
- Aluminium

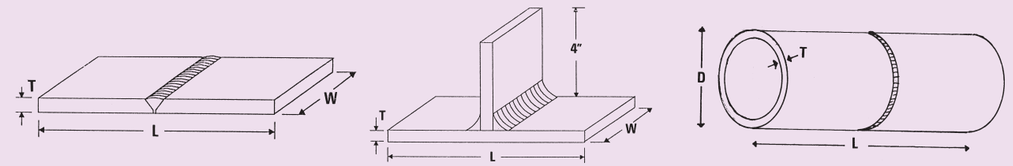
For Level II training and qualification ie ASNT-TC-IA, PCN, EN473 and others



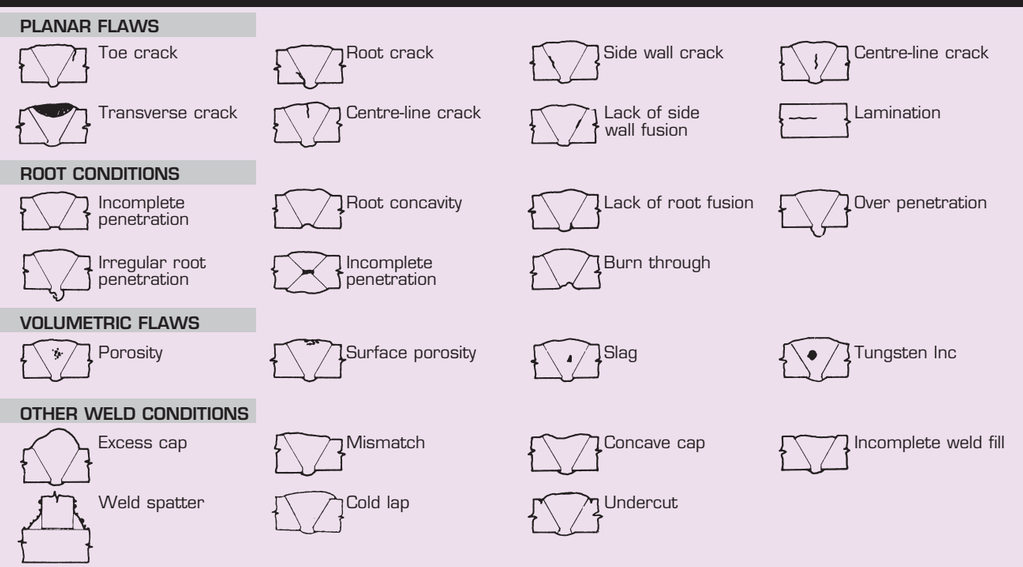
UT & RT SET CONTENTS			
Discription	Thickness	Width	Length
1 Tee	1 (3/8)	10 (4)	20 (8)
3 Plates	1 (3/8)	10 (4)	20 (8)
4 Plates	1.5 (5/8)	10 (4)	20 (8)
2 Pipes	1 (3/8)	10 (4)	20 (8)

MT/PT & VT SET CONTENTS			
Discription	Thickness	Width	Length
7 Plates	0.6 (1/4)	10 (4)	20 (8)
3 Tees	0.6 (1/4)	10 (4)	20 (8)

INDIVIDUAL SPECIMENS Dimensions: cm (inch)						
Specimen	Thk's (T)	Width (W)	Dia (D)	Length (L)	MT/P & VT	UT & RT
Pipe	1 (3/8)	-	10 (4)	20 (8)	Yes	Yes
Pipe	1.8 (3/4)	-	15 (6)	20 (8)	No	Yes
Tee	0.6 (1/4)	10 (4)	N/A	20 (8)	Yes	No
Tee	1 (3/8)	10 (4)	N/A	20 (8)	No	Yes
Plate	0.6 (1/4)	10 (4)	N/A	20 (8)	Yes	No
Plate	1 (3/8)	10 (4)	NA	20 (8)	No	Yes
Plate	1.5 (5/8)	10 (4)	NA	20 (8)	No	Yes
Plate	2.5 (1)	15 (6)	NA	25 (10)	No	Yes



FLAW TABLE



MATERIALS			
	Carbon Steel	Stainless Steel	Aluminium
Set type	Grade A36*	Grade 304*	Grade 7075*
Ultrasonic	Yes	Yes	Yes
Visual	Yes	–	–
Magnetic	Yes	–	–
Penetrant	Yes	Yes	Yes
Radiographic	Yes	Yes	Yes

* Or similar/equivalent materials

SPECIMEN DETAILS	
Description	Dimensions: cm (inch)
Flaw length range	1 (3/8) to 1.8 (3/4)
Flaw height range	0.3 (1/8) to 0.6 (1/4)
Flaw size tolerance	+ or - 0.3 (1/8)
Specimen size tolerance	+ or - 5%
Specimen thickness tolerance	+ or - 10%
Specimen diameter tolerance	+ or - 10%

Advanced Weld Flaw Evaluation

Standard Flawed Specimens are designed and manufactured to meet the requirements of all known internationally recognized Qualification Programs.

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

Sonaspection flawed specimens are avaliable either individually or in sets.

Individual specimens

Contain three different flaw types and are:

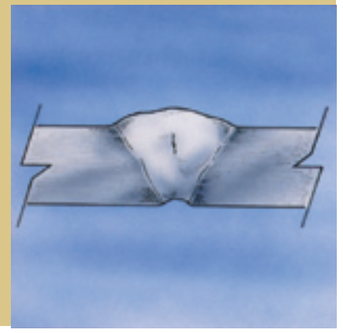
- All different sizes
- Uniquely numbered
- Supplied with NDE reports
- Supplied with acceptance/ rejection criteria

Recommended sets

- Contain a selection of individual specimens as above, with an average of three flaws per specimen
- Contain at least one example of each flaw type listed in the flaw table
- Contain a minimum total weld length of 360cm (144")

Custom sets

Are manufactured specifically for recognised qualification schemes - for example ASNT ACCP and API



For Level II training, practice and qualification ie ACCP, ASNT-TC-IA, PCN, EN473, API and others

INDIVIDUAL SPECIMENS

Part No	Specimen Type	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size) Diameter	Thickness	Size	Approx Weight kg (lb)
UC-14	Plate		N/A	0.6 (1/4)	30x30 (12x12)	4 (9)
UC-15			N/A	1.2 (1/2)	30x30 (12x12)	8 (18)
UC-16			N/A	2.5 (1)	30x40 (12x16)	23 (51)
UC-17			N/A	2 (3/4)	30x30 (12x12)	14 (31)
UC-18			N/A	2.5 (1)	30x40 (12x16)	23 (51
UC-19			N/A	3 (1 1/4)	30x44 (12x17 1/4)	31 (68)
UC-20	Pipe		8 (3)	1.2 (1/2)	30 (12) long	7 (15)
UC-21			15 (6)	1.2 (1/2)	30 (12) long	14 (30)
UC-22			15 (6)	2.5 (1)	30 (12) long	28 (62)
UC-23			20 (8)	1.2 (1/2)	30 (12) long	18 (39)
UC-24			20 (8)	2.5 (1)	30 (12) long	37 (82)
UC-25			30 (12)	1.2 (1/2)	30 (12) long	27 (59)
UC-26			30 (12)	2.5 (1)	30 (12) long	56 (122)
UC-27	Tee		N/A	2 (3/4)	15x15x30 (6x6x12)	14 (31)
UC-28			N/A	2.5 (1)	20x20x30 (8x8x12)	23 (51)
UC-29			N/A	2.5 (1)	20x20x30 (8x8x12)	23 (51)
UC-30			N/A	3 (1 1/4)	22x22x30 (9x9x12)	31 (68)
UC-31	Y		N/A	2.5 (1)	20x20x30 (8x8x12)	23 (51)
UC-32			N/A	3 (1 1/4)	22x22x30 (9x9x12)	31 (68)

Part No	Specimen Type	Weld Preparation Type	Penetration Dia. x Thick	Carrier Plate Dimensions L x W x Thickness	Approx Weight kg (lb)
UC-33	Nozzle		10x1.2 (4x1/2)	50x50x2.5 (20x20x1)	54 (120)
UC-34			20x1.2 (8x1/2)	50x50x2.5 (20x20x1)	54 (120)
UC-35			10x1.2 (4x1/2)	50x50x2.5 (20x20x1)	43 (94)
UC-36			20x1.2 (8x1/2)	50x50x2.5 (20x20x1)	54 (120)

Part No	Specimen Type	Weld Preparation Type	Stub Dia. x Thick	Carrier Plate Dimensions L x W x Thickness	Approx Weight kg (lb)
UC-37	Node		20x2 (8x3/4)	50x50x2.5 (20x20x1)	75 (165)
UC-38			25x2 (10x3/4)	50 x 50 x 2.5 (20x20x1)	103 (228)

RECOMMENDED SETS

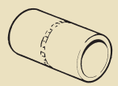
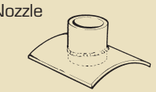
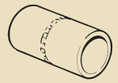
Specimen Types	Contents	Approx Weight kg (lb)
Set 2 UC-39	3 x UC-15 1 x UC-16 3 x UC-17 2 x UC-18 3 x UC-19	229 (505)
Set 3 UC-40	2 x UC-20 1 x UC-21 1 x UC-22 1 x UC-23 1 x UC-24 1 x UC-25 1 x UC-26	193 (426)
Set 4 UC-41	4 x UC-27 2 x UC-28 2 x UC-29 2 x UC-30	211 (464)
Set 5 UC-42	2 x UC-33 2 x UC-34 2 x UC-35 2 x UC-36	412 (907)
Set 6 UC-43	2 x UC-37 2 x UC-38	357 (784)
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)

FLAW TABLE

Toe crack · Root crack · Side–wall crack · Centre–line crack · Transverse crack · Incomplete penetration (SV) · Incomplete penetration (DV) · Porosity · Lack of root fusion · Lamination · Lack of side–wall fusion · Slag

MAGNETIC & PENETRANT SPECIMENS

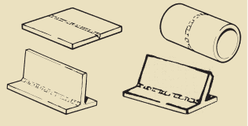
INDIVIDUAL SPECIMENS

Part No	Specimen Type	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size) Diameter	Thickness	Size	Approx Weight kg (lb)
MC-01	Plate		N/A	1 (3/8)	30x20 (12x8)	5 (10)
MC-02	Pipe	 	8 (3)	1 (3/8)	20 (8) long	4 (9)
MC-03			15 (6)	1 (3/8)	20 (8) long	8 (17)
MC-04			20 (8)	1 (3/8)	20 (8) long	10 (21)
MC-05			30 (12)	1 (3/8)	20 (8) long	22 (48)
MC-06	Tee	 	N/A	1 (3/8)	15x15x30 (6x6x12)	7 (15)
MC-07	Y	 	N/A	1 (1 3/8)	15x15x30 (6x6x12)	7 (15)
	Nozzle	 	*Penetration Dia. x Thick*		*Carrier Plate Dimensions L x W x Thickness*	
MC-08			10x1 (4x3/8)		40x40x1.2 (16x16x1/2)	17 (38)
MC-09			20x1 (8x3/8)		40x40x1.2 (16x16x1/2)	22 (49)
	Node	 	*Stub Dia. x Thick*		*Carrier Plate Dimensions L x W x Thickness*	
MC-10			20x1 (8x3/8)		40x40x1.2 (16x16x1/2)	32 (70)
MC-11			25x1 (10x3/8)		40x40x1.2 (16x16x1/2)	37 (81)
PC-01	Plate	 	N/A	1 (3/8)	30x20 (12x8)	5 (10)
PC-02	Pipe	 	8 (3)	1 (3/8)	20 (8) long	4 (9)
PC-03			15 (6)	1 (3/8)	20 (8) long	8 (17)
PC-04			20 (8)	1 (3/8)	20 (8) long	10 (21)
PC-05			30 (12)	1 (3/8)	20 (8) long	22 (48)
PC-06	Tee	 	N/A	1 (3/8)	15x15x30 (6x6x12)	7 (15)
PC-07	Y	 	N/A	1 (1 3/8)	15x15x30 (6x6x12)	7 (15)
	Nozzle	 	*Penetration Dia. x Thick*		*Carrier Plate Dimensions L x W x Thickness*	
PC-08			10x1 (4x3/8)		40x40x1.2 (16x16x1/2)	17 (38)
PC-09			20x1 (8x3/8)		40x40x1.2 (16x16x1/2)	22 (49)
	Node	 	*Stub Dia. x Thick*		*Carrier Plate Dimensions L x W x Thickness*	
PC-10			20x1 (8x3/8)		40x40x1.2 (16x16x1/2)	32 (70)
PC-11			25x1 (10x3/8)		40x40x1.2 (16x16x1/2)	37 (81)

MAGNETIC

PENETRANT

RECOMMENDED SET



70Kg 155lbs

MC-12 Magnetic	PC-12 Penetrant
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

FLAW TABLE

 Toe crack

 Root crack

 Centre line crack

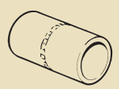
 Transverse crack

 Surface porosity

 Lack of root fusion

VISUAL SPECIMENS

INDIVIDUAL SPECIMENS

Part No	Specimen Types	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size) Diameter	Thickness	Size	Approx Weight kg (lb)
VC-73	Plate	 	N/A	1 (3/8)	30x20 (12x8)	5 (10)
VC-74	Pipe	 	8 (3)	1 (3/8)	20 (8) long	4 (9)
VC-75			15 (6)	1 (3/8)	20 (8) long	7 (16)
VC-76			20 (8)	1 (3/8)	20 (8) long	10 (21)
VC-77			30 (12)	1 (3/8)	20 (8) long	15 (32)
VC-78	Tee	 	N/A	1 (3/8)	15x15x30 (6x6x12)	7 (15)
VC-79	Y	 	N/A	1 (1 3/8)	15x15x30 (6x6x12)	7 (15)
	Nozzle	 	*Penetration Dia. x Thick*		*Carrier Plate Dimensions L x W x Thickness*	
VC-80			10x1 (4x3/8)		40x40x1.2 (16x16x1/2)	17 (38)
VC-81			20x1 (8x3/8)		40x40x1.2 (16x16x1/2)	22 (49)
	Node		*Stub Dia. x Thick*		*Carrier Plate Dimensions L x W x Thickness*	
VC-82			20x1 (8x3/8)		40x40x1.2 (16x16x1/2)	32 (70)
VC-83			25x1 (10x3/8)		40x40x1.2 (16x16x1/2)	37 (81)

RECOMMENDED SETS

Part No	Specimen Types	Contents	Approx Weight kg (lb)
VC-84	Set 9	2 x VC-73 2 x VC-75 1 x VC-77 1 x VC-78 1 x VC-79	45 (100)

FLAW TABLE

 Surface porosity

 Lack of root fusion

 Root concavity

 Excess penetration

 Incomplete penetration

 Irregular penetration

 Undercut

 Concave cap

 Excessive cap

 Weld spatter

API TRAINING & PRACTICE

Sonaspection manufactured all the original qualification specimens for API, so these specimens are ideal for training and pre-qualification practice. Sets available for UT.

The set includes:

4 weld specimens as recommended by API

- 1/2" thk SV plate 15" long
- 1" thk DV plate 15" long
- 8" Dia Sch 80 pipe 8" long (360°)
- 12" Dia Sch 80 pipe 10" long (180°)

Typical flaws: porosity, slag inclusion, lack of fusion, lack of penetration, root cracks and centre-line cracks.

RADIOGRAPHIC SPECIMENS

INDIVIDUAL SPECIMENS

Part No	Specimen Type	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size) Diameter	Thickness	Size	Approx Weight kg (lb)
RC-50	Plate		N/A	0.6 (1/4)	30x20 (12x8)	3 (6)
RC-51			N/A	1 (3/8)	30x20 (12x8)	5 (10)
RC-52			N/A	1.5 (5/8)	30x20 (12x8)	7 (15)
RC-53			N/A	2 (3/4)	30x20 (12x8)	9 (21)
RC-54			N/A	2.5 (1)	30x20 (12x8)	13 (26)
RC-55			N/A	3 (1 1/4)	30x20 (12x8)	14 (31)
RC-56	Plate		N/A	0.6 (1/4)	30x20 (12x8)	3 (6)
RC-57			N/A	1 (3/8)	30x20 (12x8)	5 (10)
RC-58			N/A	1.5 (5/8)	30x20 (12x8)	7 (15)
RC-59			N/A	2 (3/4)	30x20 (12x8)	9 (21)
RC-60			N/A	2.5 (1)	30x20 (12x8)	12 (26)
RC-61			N/A	3 (1 1/4)	30x20 (12x8)	14 (31)
RC-62	Pipe		2.5 (1)	0.3 (1/8)	20 (8) long	0.3 (0.7)
RC-63			5 (2)	0.5 (3/16)	20 (8) long	1 (2)
RC-64			8 (3)	0.6 (1/4)	20 (8) long	2 (5)
RC-65			15 (6)	0.6 (1/4)	20 (8) long	4 (10)
RC-66			15 (6)	1.2 (1/2)	20 (8) long	8 (18)
RC-67			20 (8)	1.2 (1/2)	20 (8) long	11 (25)
RC-68			20 (8)	2 (3/4)	20 (8) long	18 (40)
RC-69			30 (12)	1.2 (1/2)	20 (8) long	17 (37)
RC-70			30 (12)	2.5 (1)	20 (8) long	33 (74)

RECOMMENDED SETS

Part No	Specimen Type	Contents	Approx Weight kg (lb)
RC-71	Set 8	2 x RC-50 3 x RC-62 1 x RC-55 2 x RC-63 1 x RC-56 1 x RC-64 1 x RC-61 1 x RC-70	78 (172)

FLAW TABLE

Root crack

Transverse crack

Porosity

Lack of root fusion

Incomplete penetration

Excess penetration

Root concavity

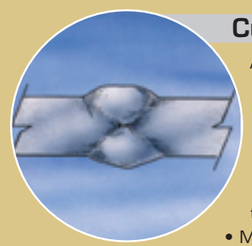
Slag line

Undercut

Tungsten inc

Mismatch

Burn through



Custom Sets

Are manufactured to the customer's requirements and are ideal for companies who do not need a full set but need at least one example of each flaw type:

- Contain a minimum of four specimens
- Contain an example of each flaw from the flaw table
- May be used for one or more NDT method

Secure Specimens (for Examinations)

Are 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 nominated person

STANDARD SIZE SPECIMENS

STANDARD SPECIMEN SPECIFICATIONS

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 1cm (3/8") to 4.5cm (3/4")
Flaw through wall height 0.3cm (1/8") to 0.6cm (1/4")

TOLERANCES

Flaw length ± 0.3cm (1/8")
Flaw height ±0.2cm (5/64")
Distance from datum ±0.3cm (1/8")
Depth from surface ±0.2cm (5/64")

MATERIAL TYPES

All standard-size specimens are manufactured from carbon steel. For plate, tee and Y specimens material is to BS 4360 Grade 43A or equivalent and for pipe specimens is 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.

TOLERANCES

Weld length for plates, tees and Ys, all 30cm (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

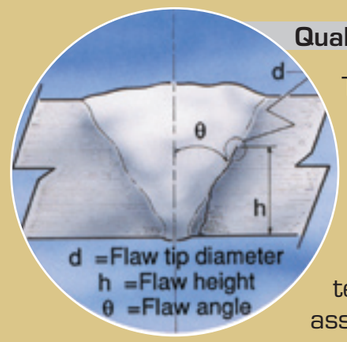
CORROSION PROTECTION

All specimens are coated with a clear corrosion-resistant material before leaving the factory

PACKING

All export orders are suitably packed

Sonaspection reserves the right to alter specifications without notice



Quality Flaws Assured

The high quality of our flaws is achieved by a combination of first class workmanship a unique blend of welding and non-destructive testing skills plus a full understanding of the product.

Sonaspection adopt a policy of setting new standards and developing new techniques to improve quality and reliability in order to assure the quality of our flaws.

Sonaspection - setting new standards in flaw manufacture and implanting

Specialised Training and Qualification

For specific NDE training, procedure development, personnel training and qualification, specialists training and performance demonstration, for example ASME XI Appendix VII training and ASME XI Appendix VIII.

- **Advanced training and qualifications (Performance Demonstrations)**
  - **– Flaw detection**
  - **– Flaw sizing**
- **Complex weld geometries**
- **Exotic materials**
- **Equipment, procedures and personnel**

Custom specimens are supplied with documentation which clearly identifies the flaw types, sizes and locations (flaw truth)

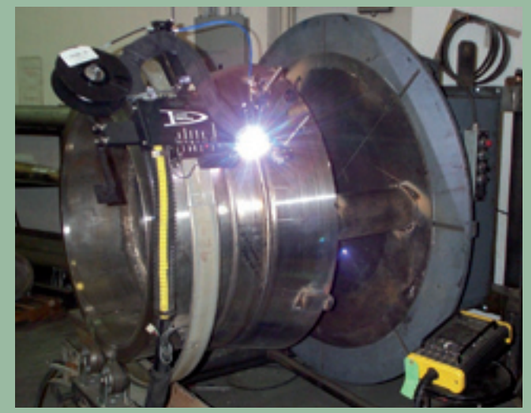
All specimens are supplied with as a minimum:-

- As built CAD drawing
- Flaw size statement optional:-
- Flaw photographs
- Flaw tracings
- Inspection reports
- Material certificates
- Certificate of conformance

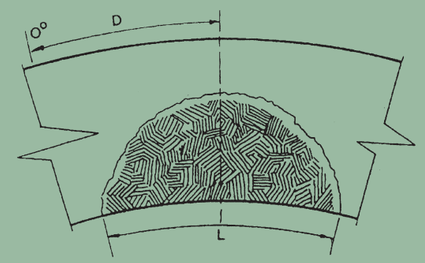
Specimen types

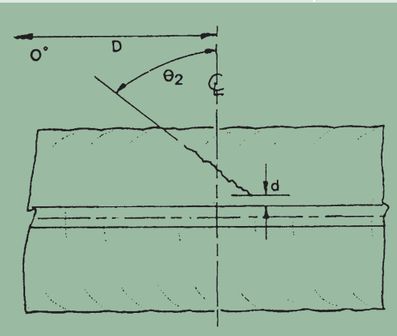
- Ferritic pipes
- Austientic pipes
- Dissimilar weld metals
- Weld overlay specimens
- Reactor vessel & nozzles
- Core shroud & spray specimens
- Pressurizer mock-ups
- CRDM mock-ups
- Bolting & studs
- Erosion/Corrosion

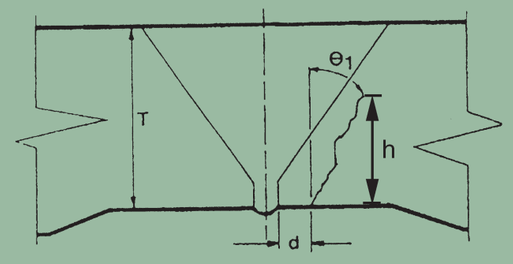
Ideal for NDE training and PDI qualifications



TOLERANCES		
Dimension	Working	Final/Reported
Flaw Length (L)	± 4mm (0.160")	± 1.5mm (0.060")
Flaw Height (h)	± 1.5mm (0.060")	± 0.75mm (0.030")
From Weld Centre (d)	± 1mm (0.040")	± 0.5mm (0.020")
From Pipe Datum (D)	± 2mm (0.080")	± 1mm (0.040")
Tilt (ø1)	± 5°	± 5°
Skew (ø2)	± 5°	± 5°







Dissimilar Welds

Dissimilar weld specimens are one of the most difficult welded specimens to produce. They are also one of the most challenging to examine with ultrasound. Sonaspection have developed procedures to overcome these challenges and produce high quality specimens with accurate flaws.

We have both the experience and capability to design and manufacture either individual or a set of specimens, which are customised to your specific requirements.

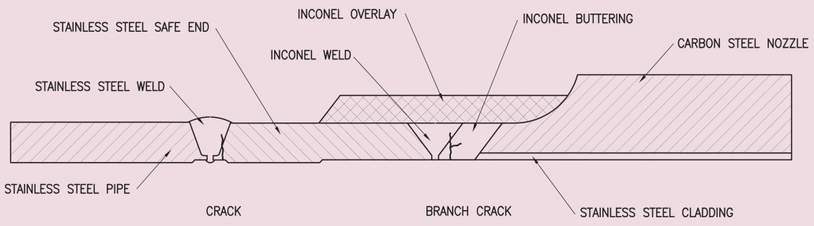
The specimens provide:-

- **Specialist training and qualifications (Performance Demonstrations)**
- **Flaw detection**
- **Flaw sizing**
- **Complex weld geometries**
- **Exotic materials**
- **Equipment, procedure and personnel**

Dissimilar welds specimens are uniquely numbered and supplied with:-

- As built CAD drawing
- Flaw size statement
- Inspection reports (optional)
- Flaw photographs (optional)
- Flaw Tracings (optional)
- Material Certificates (optional)
- Certificate of conformance

EXAMPLE OF DISSIMILAR WELD SPECIMEN



The specimens can be used as part of ASME XI Appendix VII training and VIII PDI program.

Casting and Forging Flaws

Sonaspection have developed these small and lightweight specimens which contain typical flaws found in cast and forged components. The specimens are designed for practical training to provide experience in flaw detection, sizing and interpretation.

The specimens provide:-

- **Basic flaw detection and sizing**
- **Representative geometry's**
- **An awareness of reporting difficulties**

Specimens to choose from:-

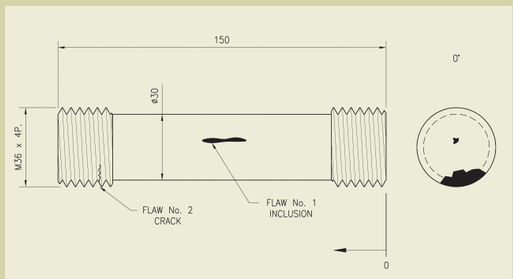
Flange Blank, Ingot, Ingot Blank, Stud, Wasted Bolt, Tee Blank, 4 Spigot Blanks, Recessed Flange and Tapered Ingot Blank.

Sonaspection casting and forgings are available either individually or in sets.

Recommended set contains:-

- 12 Individual specimens
- Average of 20 flaws
- Total weigh of 59Kg (130 lbs)

EXAMPLE OF WASTED BOLT



Individual specimens

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

NDE methods

Individual Specimens or Sets available in either – MT, PT or UT

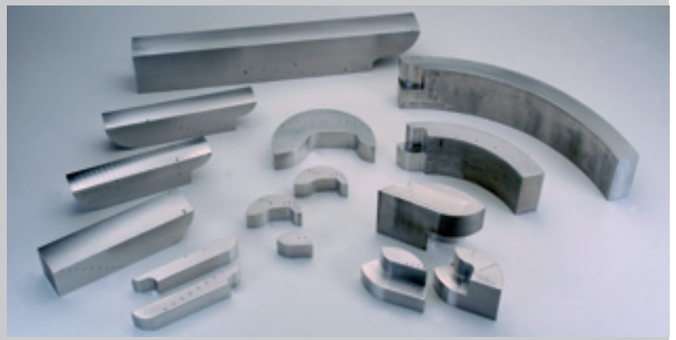
Customised specimens

Available on request

For Level I or II training, practice and qualification i.e. ACCP, ASNT-TC-1A, PCN, EN473 and others

Reference Blocks for the Power Generating Industry

If you are involved with NDE Performance Demonstrations then you should be aware of these reference blocks. Sonaspection's in-depth knowledge of NDE and Performance Demonstration give them a unique insight into the requirements of these specialty reference blocks.



Sonaspection 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**

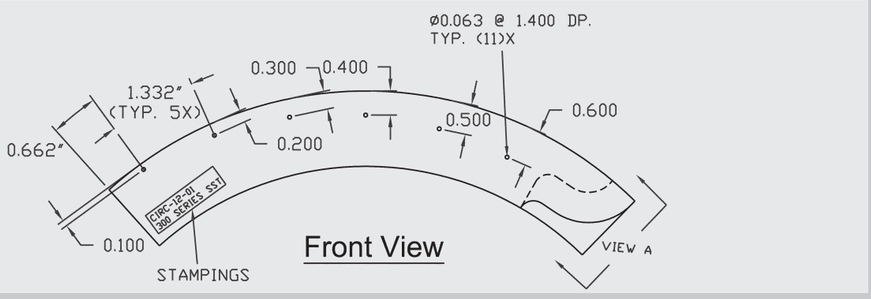
Customised blocks available on request.

The blocks are:-

- **Machined to exacting standards**
- **Are manufactured from ultrasonically clean steel**
- **Are supplied with a CAD drawing**
- **Custom made to your exact requirements**
- **Uniquely numbered**

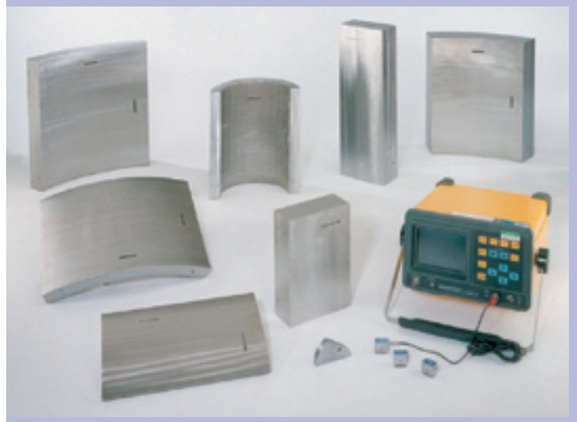
Sonaspection also offer PDI Alternative ASME calibration blocks

TYPICAL 12" STAINLESS STEEL PIPE SEGMENT BLOCK



For advanced calibration of inspection equipment prior to NDE Performance Demonstrations and inspection of pipe welds in the Power Generating Industry.

Custom Reference Blocks



Sonaspection are experienced at manufacturing custom blocks to meet your exact requirements.

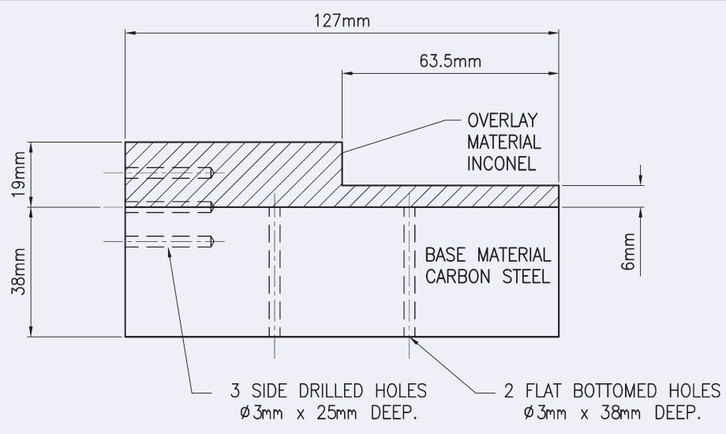
Our capabilities include NDE, Mechanical Inspection, CAD, Specialist Welding, Cladding Overlay, Machining, Bending/ Rolling and Heat Treatment.

We manufacture the following reflector types:

- **EDM**
- **Slots**
- **Notches**
- **Side Drilled Holes**
- **Flat Bottom Holes**

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

EXAMPLE OF CUSTOM CLAD BLOCK



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In-depth practical knowledge of non-destructive examination
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