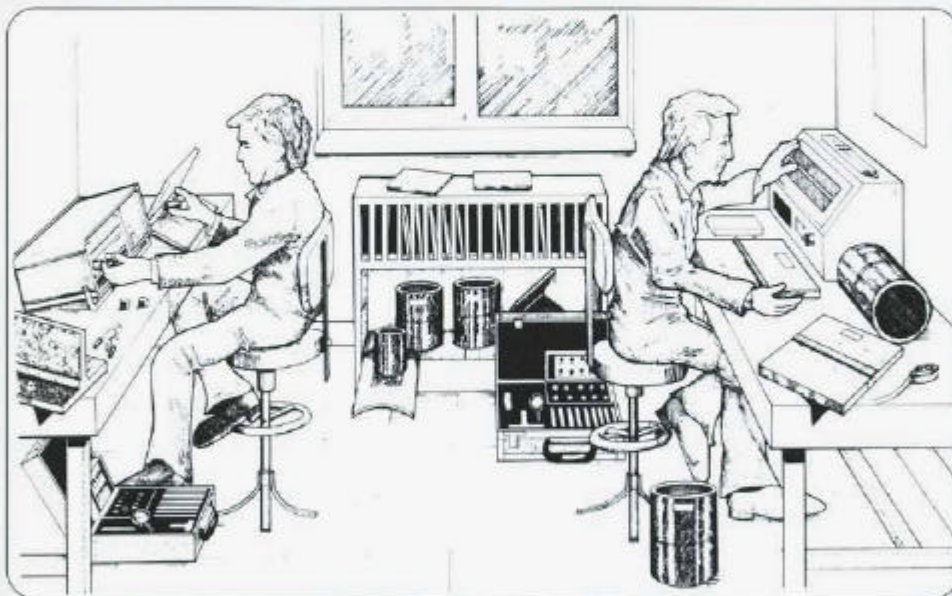




TECHNICAL CATALOGUE OF STANDARD SIZE SPECIMENS

**Carbon-Steel NDE Weld-Flawed Specimens
for the following test disciplines:**

**ULTRASONIC • RADIOGRAPHIC
VISUAL • MAGNETIC/PENETRANT**



Standard Size Weld Flaw Specimens are high-quality welds containing purposely induced accurately located real flaws for the training and certification of NDE personnel to operator level.

Sonaspection Standard Size Weld Flaw Specimens have now been available for over 10 years and during that time have been continually improved, with quality and product range both increased.



The revised product range has been designed to cater for the increasing demand for all types of specimens. Also, ordering is now much simpler, particularly for flaw selection.

Specimens are available in either Full or Custom Sets which have been carefully compiled to give a wide variety of flaw types, sizes and locations suitable for training and certification. The specimens are also available individually.

"Quality Flaws Assured"

USEFUL INFORMATION

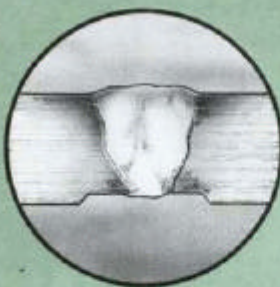
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Using this Catalogue

- 1 Decide which type of specimen you require — eg Ultrasonic;
- 2 Then turn to the correct section;
- 3 Now decide the type and number of flaws you need. These can be supplied either individually or in sets — see 'Specimens Available';
- 4 Finally select the weld configurations which are most suitable and decide how many you need.

Some Examples

- A If you require more than one example of each flaw type choose a **Full Set**.
Example: Order Set 8.
- B If you require only one example of each flaw type choose a **Custom Set**. With 12 possible flaws and an average of three per specimen, you will need to include at least four Individual Specimens in your Custom Set to ensure a complete selection of flaws.
Example: Order Items 6, 10, 15 and 22.
- C If you require only a few flaws choose **Individual Specimens**.
Example: Order Item 25.
- D If you require specific flaw types choose up to any three from the flaw table per specimen.
Example: Order Item 6 with two toe cracks and one porosity.
- E If you require **Secure Specimen(s)** state the specimen item number, examination(s) type and number of specimens required.
Example: Order Item 49, 66 for PCN, giving nominated company representative and addresses and stipulate 'secure' specimen(s) on order.

Important Note

A few flaws are unsuitable for certain weld configurations: eg Incomplete Penetration DV is not suitable for SV specimens.

Specimens Available

Sonaspection International's flawed specimens are sold either individually or in sets, as detailed below.

Individual Specimens

- Are manufactured to Sonaspection International drawings and specifications;
- Contain three different flaws randomly selected by Sonaspection, all with predetermined size and locations;
- Are all different: no two specimens are made the same;
- Are uniquely numbered;
- Are supplied with NDE Report;
- Are supplied with acceptance/rejection criteria.

Full Sets

- Contain a selection of Individual Specimens as described 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 weld length of 360cm (144);
- Are specially compiled to be used in conjunction with Sonaspection Training Modules.

Custom Sets

- Are suitable for customers who don't need a Full Set but need at least one of each flaw type;
- Must contain a minimum of any four individual specimens of purchaser's choice;
- Contain one of each flaw type.

Note: Custom Sets are not listed in this catalogue. However, an example is given in the left-hand column of this page.

Secure Specimens (for Examinations)

Are similar to individual specimens as described above except that:

- Contents are randomly selected;
- Flaw contents and distribution are to a specified standard;
- They are supplied in a sealed container;
- Reports are sealed and kept separate from the specimens;
- Reports are sent under separate cover to customer's nominated representative.

Training Modules













- Are designed to follow the training syllabus requirements of all the major international certification standards and practices including ISO9712, EN473, CP189, SNT-TC-1A, and PCN/GEN/92.
- Students following these training modules can be satisfied that they are suitably prepared, assuming relevant work experience, to progress to take Qualification Examinations at any Level II.
- These modules are ideally suited to form part or all of a company's training programme.
- Separate Secure Specimens may be purchased for examinations.

Sonaspection offers the service of Level III technicians to assist in conducting training or examinations either at our or your premises. (This service is offered through an approved subcontract agent.)





If in doubt, contact us for more details

MAGNETIC / PENETRANT TEST SPECIMENS (MT/PT)

INDIVIDUAL SIZES MT/PT

Item No.	Specimen Type	Weld Preparation Type	Approx. Dimensions: cm (inch) (or nearest commercial size)			Approx. Weight kg (lb)
			Diameter	Thickness	Size	
1	Plate 		N/A	1 (3/8)	30x30 (12x12)	5 (11)
2	Pipe 		8 (3)	1 (3/8)	30 (12) long	4 (9)
3			15 (6)	1 (3/8)	30 (12) long	8 (17)
4			20 (8)	1 (3/8)	30 (12) long	10 (22)
5			30 (12)	1 (3/8)	30 (12) long	21 (46)
6	Tee 		N/A	1 (3/8)	15x15x30 (6x6x12)	8 (17)
7	Y 		N/A	1 (3/8)	15x15x30 (6x6x12)	8 (17)
8	Nozzle 		Penetration Dia. x Thick.	Carrier Plate Dimensions L x W x Thickness		15 (33) 20 (44)
9			10x1 (4x3/8) 20x1 (8x3/8)	40x40x1.2 (16x16x1/2) 40x40x1.2 (16x16x1/2)		
10	Node 		Stub Dia. x Thick.	Carrier Plate Dimensions L x W x Thickness		26 (57) 30 (66)
11			20x1 (8x3/8) 25x1 (10x3/8)	40x40x1.2 (16x16x1/2) 40x40x1.2 (16x16x1/2)		

FULL SET MT/PT

Item No.	Specimen Types	Contents	Approx. Wt: kg (lb)
12	Set 1    	1 ea. Item 1 2 ea. Item 3 2 ea. Item 5 1 ea. Item 6 1 ea. Item 7	129 (284)

TRAINING MODULE MT/PT

13	Starter Module — Weld Inspection (to give 40 hours training). General Theory of Magnetic or Penetrant Inspection, with typical questions and answers. Also includes: <ul style="list-style-type: none"> • <i>Practical related theory:</i> procedure writing and a series of assignments. • <i>Basic practical work:</i> flux strength, flux direction, ink concentrates etc. • <i>Further practical work:</i> various specimens as per Set 1.
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FLAW TABLE MT/PT



Toe crack



Root crack



Centre line crack



Transverse crack



Surface porosity





















Lack of root fusion

Size range: 0.6-3 (1/16-1/4) long













All dimensions shown in cm (inch figures in parentheses)

ULTRASONIC TEST SPECIMENS (UT)

INDIVIDUAL SIZES UT

Item No.	Specimen Type	Weld Preparation Type	Approx. Dimensions: cm (inch) (or nearest commercial size)			Approx. Weight kg (lb)
			Diameter	Thickness	Size	
14	Plate 		N/A	0.6 (1/4)	30x30 (12x12)	3 (7)
15			N/A	1.2 (1/2)	30x30 (12x12)	6 (13)
16			N/A	2.5 (1)	30x40 (12x16)	20 (44)
17	Plate 		N/A	2 (3/4)	30x30 (12x12)	10 (22)
18			N/A	2.5 (1)	30x40 (12x16)	20 (44)
19			N/A	3 (1 1/4)	30x44 (12x17 1/4)	25 (55)
20	Pipe 		8 (3)	1.2 (1/2)	30 (12) long	5 (11)
21			15 (6)	1.2 (1/2)	30 (12) long	10 (22)
22			15 (6)	2.5 (1)	30 (12) long	20 (44)
23			20 (8)	1.2 (1/2)	30 (12) long	15 (33)
24			20 (8)	2.5 (1)	30 (12) long	30 (66)
25			30 (12)	1.2 (1/2)	30 (12) long	25 (55)
26			30 (12)	2.5 (1)	30 (12) long	50 (110)
27	Tee 		N/A	2 (3/4)	15x15x30 (6x6x12)	10 (22)
28			N/A	2.5 (1)	20x20x30 (8x8x12)	20 (44)
29	Tee 		N/A	2.5 (1)	20x20x30 (8x8x12)	20 (44)
30			N/A	3 (1 1/4)	22x22x30 (8 3/4x8 3/4x12)	25 (55)
31	Y 		N/A	2.5 (1)	20x20x30 (8x8x12)	20 (44)
32			N/A	3 (1 1/4)	22x22x30 (8 3/4x8 3/4x12)	25 (55)
33	Nozzle 		Penetration Dia. x Thick.	Carrier Plate Dimensions L x W x Thickness		35 (77) 50 (110)
34				10x1.2 (4x1/2) 20x1.2 (8x1/2)		
35	Nozzle 		Penetration Dia. x Thick.	Carrier Plate Dimensions L x W x Thickness		35 (77) 50 (110)
36				10x1.2 (4x1/2) 20x1.2 (8x1/2)		
37	Node 		Stub Dia. x Thick.	Carrier Plate Dimensions L x W x Thickness		40 (88) 50 (110)
38				20x2 (8x3/4) 25x2 (10x3/4)		

FLAW TABLE UT












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

Size range: 1-4.5 (3/8-1 1/4) long & 0.3-0.6 (1/16-1/4) through wall

All dimensions shown in cm (inch figures in parentheses)

ULTRASONIC TEST SPECIMENS (UT)

FULL SETS UT







Item No.	Specimen Types	Contents	Approx. Wt: kg (lb)
39	Set 2 	3 ea. Item 15 1 ea. Item 16 3 ea. Item 17 2 ea. Item 18 3 ea. Item 19	183 (400)
40	Set 3 	2 ea. Item 20 1 ea. Item 21 1 ea. Item 22 1 ea. Item 23 1 ea. Item 24 1 ea. Item 25 1 ea. Item 26	265 (584)
41	Set 4  	4 ea. Item 27 2 ea. Item 28 2 ea. Item 29 2 ea. Item 30	220 (485)
42	Set 5  or 	2 ea. Item 33 2 ea. Item 34 2 ea. Item 35 2 ea. Item 36	255 (562)
43	Set 6 	2 ea. Item 37 2 ea. Item 38	270 (595)
44	Set 7    	1 ea. Item 16 1 ea. Item 19 1 ea. Item 24 1 ea. Item 25 1 ea. Item 26 1 ea. Item 27 1 ea. Item 30 1 ea. Item 31	265 (584)

TRAINING MODULES UT



45	Starter Module — Plate Weld Inspection (to give 80 hours training). Theory of Ultrasound Inspection, with typical questions and answers. Also includes: <ul style="list-style-type: none"> • <i>Practical related theory:</i> procedure writing and a series of assignments. • <i>Basic practical work:</i> beamspread construction and lamination check blocks. • <i>Further practical work:</i> plates as per Set 2.
46	Supplementary Module — Pipe Weld Inspection. <ul style="list-style-type: none"> • <i>Practical related theory:</i> procedure writing and a series of assignments. • <i>Practical work:</i> pipes as per Set 3.
47	Supplementary Module — Tee and Y Weld Inspection. <ul style="list-style-type: none"> • <i>Practical related theory:</i> procedure writing and a series of assignments. • <i>Practical work:</i> tees and Ys as per Set 4.
48	Supplementary Module — Nozzle Weld Inspection. <ul style="list-style-type: none"> • <i>Practical related theory:</i> procedure writing and a series of assignments. • <i>Practical work:</i> nozzles as per Set 5.
49	Supplementary Module — Node Inspection. <ul style="list-style-type: none"> • <i>Practical related theory:</i> procedure writing and a series of assignments. • <i>Practical work:</i> nodes as per Set 6.

RADIOGRAPHIC TEST SPECIMENS (RT)

INDIVIDUAL SIZES RT

Item No.	Specimen Type	Weld Preparation Type	Approx. Dimensions: cm (inch) (or nearest commercial size)			Approx. Weight kg (lb)
			Diameter	Thickness	Size	
50	Plate 		N/A	0.6 (1/4)	30x30 (12x12)	3 (6)
51			N/A	1 (3/8)	30x30 (12x12)	5 (11)
52			N/A	1.5 (5/8)	30x30 (12x12)	7 (15)
53			N/A	2 (1/2)	30x30 (12x12)	10 (22)
54			N/A	2.5 (1)	30x40 (12x16)	20 (44)
55			N/A	3 (1 1/4)	30x44 (12x17 1/4)	25 (55)
56	Plate 		N/A	0.6 (1/4)	30x30 (12x12)	3 (6)
57			N/A	1 (3/8)	30x30 (12x12)	5 (11)
58			N/A	1.5 (5/8)	30x30 (12x12)	7 (15)
59			N/A	2 (1/2)	30x30 (12x12)	10 (22)
60			N/A	2.5 (1)	30x40 (12x16)	20 (44)
61			N/A	3 (1 1/4)	30x44 (12x17 1/4)	25 (55)
62	Pipe 		2.5 (1)	0.3 (1/16)	30 (12) long	0.5 (1)
63			5 (2)	0.5 (3/16)	30 (12) long	1 (2)
64			8 (3)	0.6 (1/4)	30 (12) long	3 (6)
65			15 (6)	0.6 (1/4)	30 (12) long	5 (11)
66			15 (6)	1.2 (1/2)	30 (12) long	10 (22)
67			20 (8)	1.2 (1/2)	30 (12) long	150 (33)
68			20 (8)	2 (3/4)	30 (12) long	22 (48)
69			30 (12)	1.2 (1/2)	30 (12) long	25 (55)
70			30 (12)	2.5 (1)	30 (12) long	50 (110)

FULL SET RT

Item No.	Specimen Type	Contents	Approx. Wt: kg (lb)
71	Set 8  	2 ea. Item 50 1 ea. Item 55 1 ea. Item 56 1 ea. Item 61 3 ea. Item 62 2 ea. Item 63 1 ea. Item 64 1 ea. Item 70	140 (308)

TRAINING MODULE RT

- 72 **Starter Module** — Weld Inspection (to give 80 hours training). General Theory of Radiographic Inspection, with typical questions and answers. Also includes:
- *Practical related theory:* procedure writing and a series of assignments.
 - *Safety:* theoretical and practical aspects both covered.
 - *Basic practical work:* image quality indicators, film types, density etc.
 - *Further practical work:* various specimens as per Set 8.

FLAW TABLE RT



Root crack



Transverse crack



Porosity



Lack of root fusion



Root concavity



Incomplete Penetration (SV)



Excess Penetration



Slag line



Undercut



Mismatch



Tungsten Inc















Burn through

Size range: 1-4.5 (1/8-1 1/2) long & 0.3-0.6 (1/16-1/4) through wall

All dimensions shown in cm (inch figures in parentheses)

VISUAL **TEST SPECIMENS (VT)**

INDIVIDUAL SIZES VT

Item No.	Specimen Type	Weld Preparation Type	Approx. Dimensions: cm (inch) <small>(or nearest commercial size)</small>			Approx. Weight kg (lb)
			Diameter	Thickness	Size	
73	Plate 		N/A	1 (3/8)	30x30 (12x12)	5 (11)
74	Pipe 		8 (3)	1 (3/8)	30 (12) long	4 (9)
75			15 (6)	1 (3/8)	30 (12) long	8 (17)
76			20 (8)	1 (3/8)	30 (12) long	10 (22)
77			30 (12)	1 (3/8)	30 (12) long	21 (46)
78	Tee 		N/A	1 (3/8)	15x15x30 (6x6x12)	8 (17)
79	Y 		N/A	1 (3/8)	15x15x30 (6x6x12)	8 (17)
80	Nozzle 		Penetration Dia. x Thick.		Carrier Plate Dimensions L x W x Thickness	
81			10x1 (4x3/8) 20x1 (8x3/8)			
					40x40x1.2 (16x16x1/2) 40x40x1.2 (16x16x1/2)	15 (33) 20 (44)
82	Node 		Stub Dia. x Thick.		Carrier Plate Dimensions L x W x Thickness	
83			20x1 (8x3/8) 25x1 (10x3/8)			
					40x40x1.2 (16x16x1/2) 40x40x1.2 (16x16x1/2)	26 (57) 30 (66)













FULL SET VT

Item No.	Specimen Type	Contents	Approx. Wt: kg (lb)
84	Set 9	1 ea. Item 73 2 ea. Item 75 2 ea. Item 77 1 ea. Item 78 1 ea. Item 79	129 (284)

TRAINING MODULE VT

85	Starter Module — Weld Inspection (to give 40 hours training). General Theory of Visual Inspection, with typical questions and answers. Also includes: <ul style="list-style-type: none"> • <i>Practical related theory:</i> procedure writing and a series of assignments. • <i>Practical work:</i> various specimens as per Set 9.
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FLAW TABLE MT/PT

			
Porosity	Lack of root fusion	Root concavity	Incomplete Penetration
			
Excess Penetration	Irregular penetration	Undercut	Mismatch
			
Weld Spatter	Excess cap	Concave cap	Cold lap
Size range: 0.6-3 (1/16-1 1/2) long			

All dimensions shown in cm (inch figures in parentheses)

Summary of Flaw Specifications

Types/Range	The range of flaws available depends on the type of testing being used. See appropriate Flaw Table for full details.
Sizes	Flaws range in length from 1cm ($\frac{3}{8}$) to 4.5cm ($\frac{3}{4}$) and from 0.3cm ($\frac{1}{8}$) to 0.6cm ($\frac{1}{4}$) through wall height.
Tolerances	Flaw length ± 0.3 cm ($\frac{1}{8}$). Flaw height ± 0.2 cm ($\frac{1}{16}$). Distance from datum ± 0.3 cm ($\frac{1}{4}$). Depth from surface ± 0.2 cm ($\frac{1}{4}$).
Materials	
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.) <i>All pipe sizes are measured outside diameter.</i>
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) $\pm 5\%$. Weld length for pipes, nozzles and nodes, all as per diameter. Thickness $\pm 10\%$. Diameters $\pm 10\%$.

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 packed in wooden crates.

Sonaspection reserves the right to alter specifications without notice.