



FLAWTECH

SPECIMEN CATALOGUE
[www . FLAWTECH . com](http://www.flawtech.com)

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Flawed Specimen Categories

Standard Specimen

- Have a tolerance of $\pm 0.150"$ (4mm).
- Includes all Standard Kit Specimens and all UT & MT / PT Practical Exam Specimens.
- Designed to enhance the training and development of new and veteran NDT technicians.
- Normally smaller in size and less expensive than Advanced and Critical Specimens.
- Basic Document Package with CAD drawings is included with each kit or exam specimen.
- Custom specimens are available at this level of tolerance.

Advanced Specimen

- Have a tolerance of $\pm 0.080"$ (2mm).
- Includes all Advanced Specimens, API & AWS Kits & all ASME Section XI Appendix VII specimen bank.
- Designed to enhance the training & qualification of level I, II, & III personnel with regards to SNT-TC-1 A, EN473 & PCN.
- Stock Advanced Specimens are larger in size than the standard Practical Exam Specimen and have a higher tolerance.
- Document package with CAD drawings is included with each kit or individual Advanced Specimen.
- Custom specimens are available at this level of tolerance.

Critical Specimen

- Have a tolerance of $\pm 0.040"$ (1mm).
- Includes all ASME Section XI Appendix VIII specimens & most of the custom designed specimens.
- Designed to customer specifications for their training & qualification of NDT personnel, equipment, and procedures.
- Size of specimens range from a small bolt for the Space Shuttle to a 20,000 pound reactor nozzle.
- Detailed documentation is included with specimens. Contact FlawTech for exact details.
- Custom specimens are available at this level of tolerance.

FlawTech Discontinuities List

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

Flaw Cross Section Views



10
Toe Crack in Single Vee
MT/PT, UT



11
Toe Crack in Fillet
MT/PT, UT



12
Root Crack in Single Vee
MT/PT, UT, RT



14
Centerline Crack, Single Vee
(surface breaking) MT/PT, UT, RT



18
Base Metal Crack in Single Vee
(top HAZ area) MT/PT, UT



19
Base Metal Crack in Single Vee
(bottom HAZ area) MT/PT, UT



20
Crater Crack (crown stop-start
area) MT/PT, UT



33
Porosity in Fillet
(surface breaking) VT, MT/PT



34
Single Gas Pore in Single
Vee UT, RT



36
Slag Inclusion in Single
Vee (root area) UT, RT



37
Slag Inclusion in Single Vee
(weld groove area) UT, RT



51
Lamination in Weld Prep
MT/PT, UT



52
Lack of Fusion in Single
Vee (crown area) UT



53
Lack of Fusion in Single Vee (surface
breaking at crown) MT/PT, UT



54
Lack of Fusion in Fillet (surface
breaking at crown) MT/PT



70
Root Concavity in Single
Vee VT, RT



71
Excess Root Penetration in
Single Vee VT, RT



72
Misalignment, Root &
Crown in Single Vee VT, RT



73
Uneven Leg Length in
Fillet, VT



15 Centerline Crack, Single Vee (sub-surface) UT, RT



15 Centerline Crack in Single Vee (sub-surface) UT, RT



16 Circumferential Crack in Single Vee, flush crown MT/PT, UT



17 Transverse Crack in Single Vee, flush crown MT/PT, UT



30 Porosity in Single Vee (sub-surface) UT, RT



30 Porosity in Double Vee (sub-surface) UT, RT



31 Porosity in Fillet (sub-surface) UT, RT



32 Porosity in Single Vee (surface breaking) VT, MT/PT



38 Slag Inclusion in Fillet (root area) UT, RT



39 Porosity in Fillet (sub-surface) UT, RT



50 Lamination in Single Vee (base metal) UT



55 Lack of Fusion in Single Vee (surface breaking at root) MT/PT, UT



56 Incomplete Root Penetration in Single Vee, VT, UT, RT



57 Incomplete Root Penetration in Double Vee, UT, RT



59 Incomplete Groove Weld (crown area) VT, MT/PT, UT, RT



74 Excess Crown in Single Vee, VT



75 Excess Crown in Fillet, VT



76 Concave Crown in Single Vee, VT



77 Concave Crown in Fillet, VT

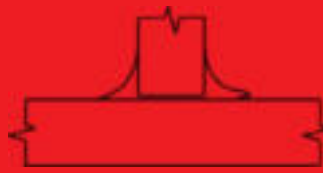
Flaw Cross Section Views



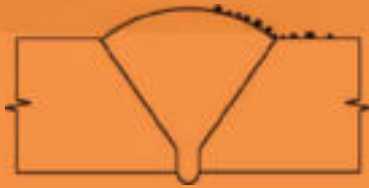
78
Undercut in Single Vee, VT



79
Undercut in Fillet, VT



80
Overlap in Fillet VT, MT/PT



90
Weld Splatter on Single Vee, VT, RT

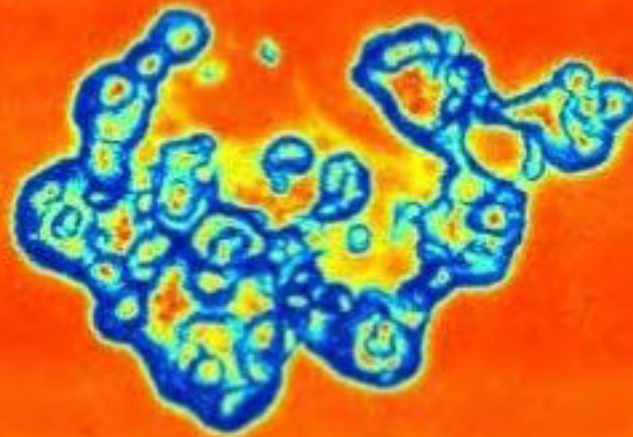


91
Weld Splatter on Filler VT, RT



92
Chipping Hammer Marks on Single Vee, VT, RT

Corrosion



This is a view of a surface corrosion indication manufactured by FlawTech. The geometry and depth of the indication can be controlled and can be manufactured in most any alloy. This image was provided to FlawTech by MISTRAS Products and Programs Division using their ULTRAPAC™ Immersion System with Ultra Win™ data program.

Standard Kits

FlawTech Standard Kit Specimens are designed to enhance the training and development of new and veteran technicians. Kits will assist with basic flaw detection and sizing of real flaws found in common weld geometries

- Each Kit Contains:
- 10 Carbon Steel Specimens per kit / custom alloys available
 - 20 "Real" flaws per kit / 2 per specimen randomly placed
 - "Free" Carrying Case
 - Detailed Document Package with CAD drawings
- RT Kit
- UT Kit
- MT/PT Kit
- VT Kit

Demonstration Kit (Great Introduction to NDT kit)

- 5 Carbon Steel Specimens
- 2 Rt, 1 Ut, 1 Vt & 1 Mt/Pt Specimens
- Total Of 11 Real Flaws

Reference Radiographs

- Total of 16 Radiographs
- Showing 20 Real Flaws
- Plus 6 Processing Defects
- Includes Documentation and Film



See the following pages for Kit details.

Standard Radiographic Kit

THE RADIOGRAPHIC KIT CONTAINS:

8 Plates, 1 Pipe & 1 Tee / Carbon Steel

Each specimen contains 2 "REAL FLAWS," randomly placed

Actual X-Ray film is provided for each specimen. Specimens are packaged in 2 FREE CARRYING CASES. Complete with Document Package with "Flaw Truth" documented by CAD drawings with a Standard Tolerance of (+ / -) 0.150" (4mm).

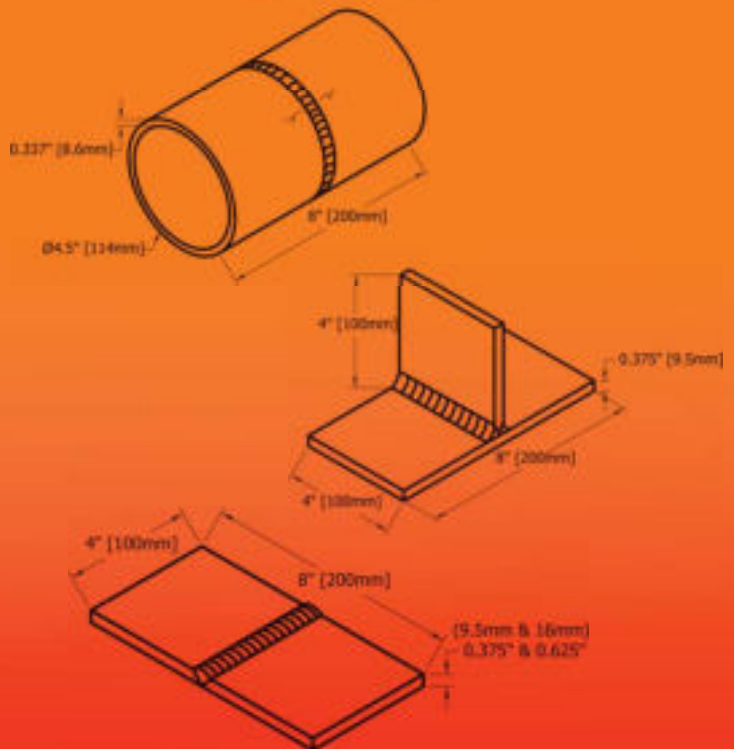
The Standard Radiographic Examination Kit contains 20 flaws similar to those shown in the cross section drawings below.

VISIT FLAWTECH WEBSITE OR CALL FOR PRICE INFORMATION

Kit Includes:

- 12 - Root Crack in SV
- 14 - Centerline Crack SV (Surface breaking)
- 15 - Centerline Crack, SV (Sub-surface)
- 30 - Porosity SV / DV
- 31 - Porosity Fillet (sub surface)
- 34 - Single Gas Pore SV
- 36 - Slag Inclusion SV (root area)
- 37 - Slag Inclusion SV (weld groove area)
- 38 - Slag Inclusion Fillet (root area)
- 39 - Tungsten Inclusion SV (root area)
- 56 - Incomplete Root Penetration SV
- 57 - Incomplete Root Penetration DV
- 59 - Incomplete Groove Weld (crown area)
- 70 - Root Concavity SV
- 71 - Excess Root Penetration SV
- 72 - Misalignment Root & Crown SV
- 90 - Weld Splatter SV
- 92 - Chipping Hammer Marks SV

See Pages 3-5 for Cross Section Views



Shipping Weight 65 lbs
All Specimens Contain Real Flaws

Standard Ultrasonic Kit

THE ULTRASONIC KIT CONTAINS:

8 Plates, 1 Pipe & 1 Tee / Carbon Steel

Each specimen contains 2 "REAL FLAWS," randomly placed

Specimens are packaged in 2 FREE CARRYING CASES. Complete with Document Package with "Flaw Truth" documented by CAD drawings with a Standard Tolerance of (+ / -) 0.150" (4mm).

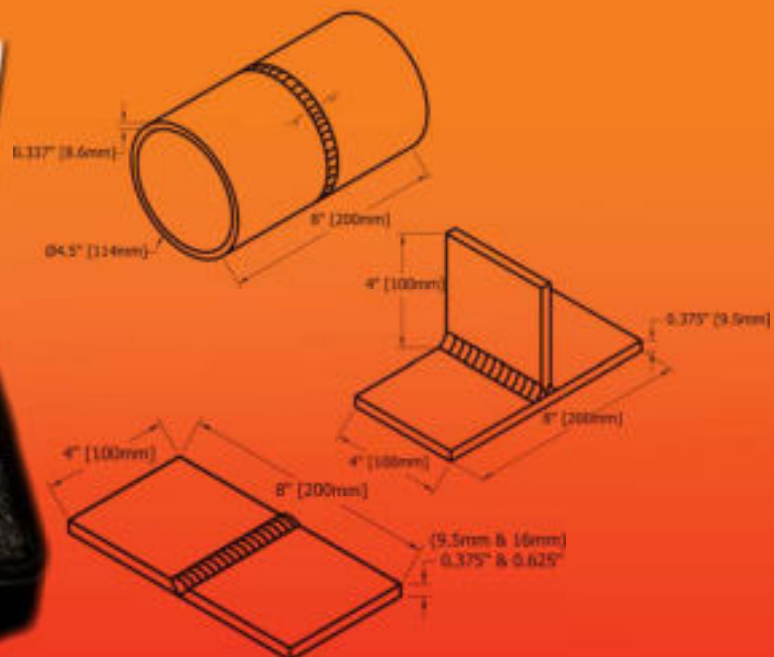
The Standard Ultrasonic Examination Kit contains 20 flaws similar to those shown in the cross section drawings below.

VISIT FLAWTECH WEBSITE OR CALL FOR PRICE INFORMATION

Kit Includes:

- 10 - Toe Crack SV
- 12 - Root Crack in SV
- 15 - Centerline Crack, SV (Sub-surface)
- 16 - Circumferential Crack SV (flush crown)
- 17 - Transverse Crack in SV (flush crown)
- 18 - Base Metal Crack SV (top HAZ area)
- 30 - Porosity DV (sub-surface)
- 31 - Porosity Fillet (sub-surface)
- 34 - Single Gas Pore SV
- 37 - Slag Inclusion SV (weld groove area)
- 38 - Slag Inclusion Fillet (root area)
- 50 - Lamination SV (base metal)
- 52 - Lack of Fusion SV (crown area)
- 55 - Lack of Fusion SV (surface breaking at root)
- 56 - Incomplete Root Penetration SV
- 57 - Incomplete Root Penetration DV
- 59 - Incomplete Groove Weld (crown area)

See Pages 3-5 for Cross Section Views



Shipping Weight 65 lbs
All Specimens Contain Real Flaws

Standard Magnetic Particle Liquid Penetrant Kit

Kit Includes:

- 10 - Toe Crack SV
 - 11 - Toe Crack Fillet
 - 12 - Root Crack in SV
 - 14 - Centerline Crack SV (surface breaking)
 - 16 - Circumferential Crack SV (flush crown)
 - 17 - Transverse Crack in SV (flush crown)
 - 18 - Base Metal Crack SV (top HAZ area)
 - 19 - Base Metal Crack SV (bottom HAZ area)
 - 20 - Crater Crack SV (surface stop-start area)
 - 32 - Porosity SV (surface breaking)
 - 33 - Porosity fillet (surface breaking)
 - 51 - Lamination Weld Prep
 - 53 - Lack of Fusion SV (surface breaking at crown)
 - 54 - Lack of Fusion SV (surface breaking at root)
 - 55 - Lack of Fusion SV (surface breaking at root)
 - 80 - Overlap Fillet
- See Pages 3-5 for Cross Section Views



THE MT/PT KIT CONTAINS:

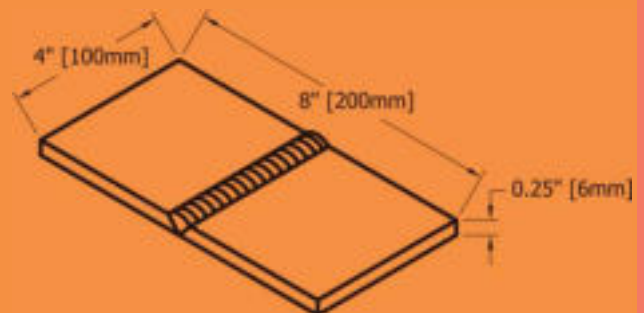
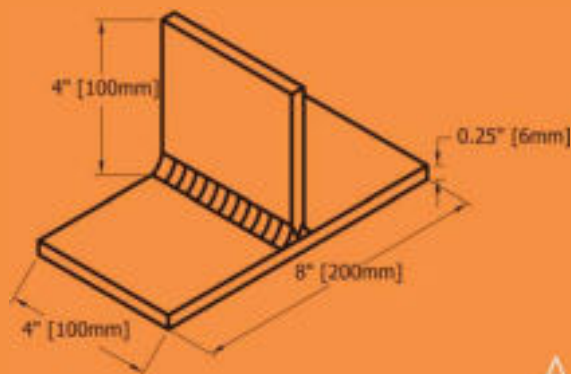
8 plates & 2 Tees / Carbon Steel

Each specimen contains 2 "REAL FLAWS," randomly placed

Specimens are packaged in a FREE CARRYING CASE. Complete with Document Package with "Flaw Truth" documented by CAD drawings with a Standard Tolerance of (+ / -) 0.150" (4mm).

The Standard MT/PT Kit contains 20 "real" flaws similar to those shown in the cross section drawings below.

VISIT FLAWTECH WEBSITE OR CALL FOR PRICE INFORMATION



Shipping Weight 35 lbs
All Specimens Contain Real Flaws
See Pages 3-5 for Cross Section Views

Standard Visual Kit



THE VISUAL KIT CONTAINS:

8 Plates, 1 Pipe & 1 Tee / Carbon Steel

Each specimen contains 2 "REAL FLAWS," randomly placed

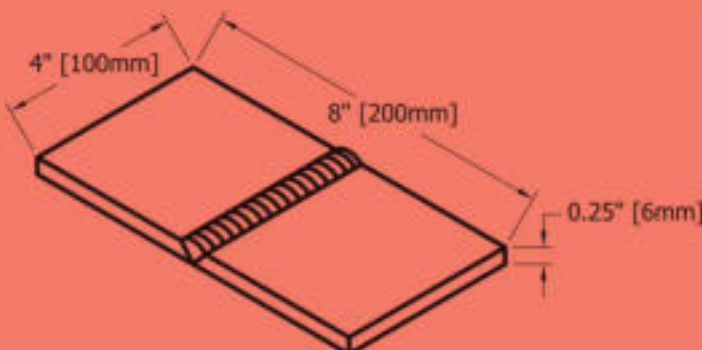
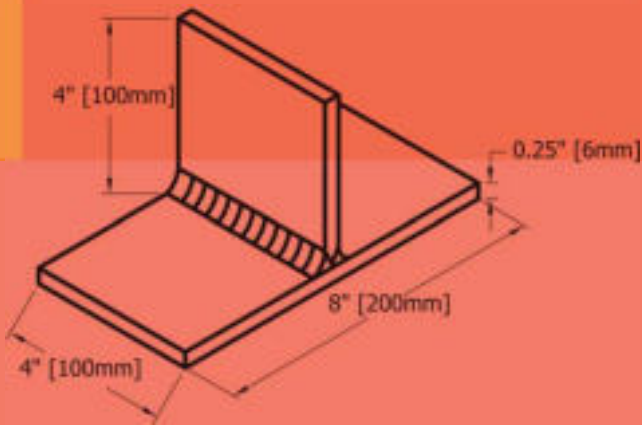
Specimens are packaged in a FREE CARRYING CASE. Complete with Document Package with "Flaw Truth" documented by CAD drawings with a Standard Tolerance of (+ / -) 0.150" (4mm).

The Standard Visual Examination Kit contains 20 flaws similar to those shown in the cross section drawings below.

VISIT FLAWTECH WEBSITE OR CALL FOR PRICE INFORMATION

Kit Includes:

- 20 - Crater Crack SV (surface stop-start area)
- 32 - Porosity SV (surface breaking)
- 33 - Porosity fillet (surface breaking)
- 56 - Incomplete Root Penetration SV
- 59 - Incomplete Groove Weld (crown area)
- 70 - Root Concavity SV
- 71 - Excess Root Penetration SV
- 72 - Misalignment Root & Crown SV
- 73 - Uneven Leg Length Fillet
- 74 - Excess Crown SV
- 75 - Excess Crown Fillet
- 76 - Concave Crown SV
- 77 - Concave Crown Fillet
- 78 - Undercut SV
- 79 - Undercut Fillet
- 80 - Overlap Fillet
- 90 - Weld Splatter SV
- 91 - Weld Splatter on Filler



Shipping Weight 35 lbs

All Specimens Contain Real Flaws
See Pages 3-5 for Cross Section Views

NDT Demonstration Kit



THE NDT DEMONSTRATION KIT CONTAINS:
 3 Plates, 1 Pipe & 1 Tee
 11 Discontinuities, "REAL FLAWS," randomly placed

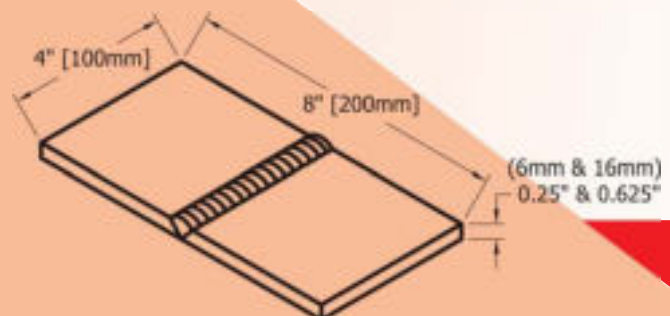
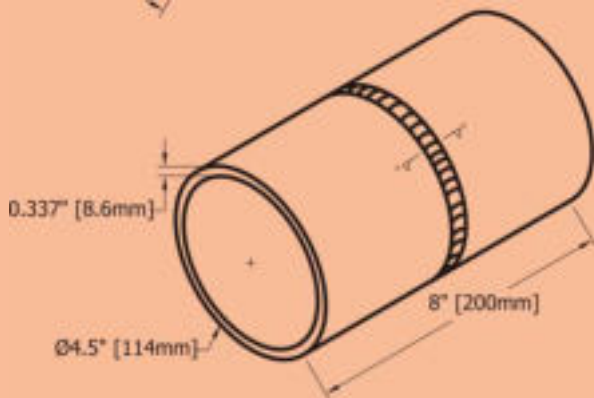
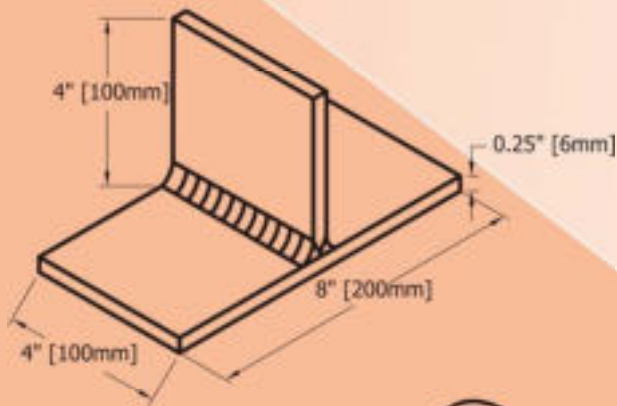
Specimens are packaged in a FREE CARRYING CASE. The "Flaw Truth" is documented on CAD drawings with a Standard Tolerance of (+ / -) 0.150" (4mm).

This Kit contains actual X-Ray film for RT specimens and a "Flaw Locator" for UT specimens.

This standard NDT Demonstration Kit contains 11 flaws in 5 specimens. The flaws in these specimens can be examined by several different NDT methods to demonstrate the advantages and disadvantages of each NDT method. See Kit Price List for cost and listings of other flaw types available only from FlawTech.

VISIT FLAWTECH WEBSITE OR CALL FOR PRICE INFORMATION

- 11 - Toe Crack fillet
- 15 - Center Line Crack DV (sub-surface)
- 18 - Base Metal Crack SV
- 19 - Base Metal Crack in root HAZ
- 20 - Crater Crack (crown stop-start area)
- 30 - Porosity SV (sub-surface)
- 32 - Porosity SV (surface)
- 37 - Slag Inclusion SV
- 54 - Lack of Fusion Fillet (surface breaking)
- 57 - Incomplete Root Penetration DV
- 71 - Excess Root SV



Practical Exam Specimens

DESIGN SPECIFICATIONS

- Practical exam specimens are larger than our “standard” kit specimens
- 12 UT and 12 MT / PT specimens to choose from
- Each specimen will contain 3 randomly placed “real” flaws
- Designed to enhance the training and qualification of level I & II personnel with regards to ISO9712, EN473, PCN & TC - 1A
- Customize your set to meet your requirements
- Purchase any combination of specimens to make your set
- Purchase 3+ specimens and receive a 10% discount & a “free” carrying case
- If you do not see what you need - custom specimens are available



Review the following pages for more details

UltraSonic Practical Exam Specimens

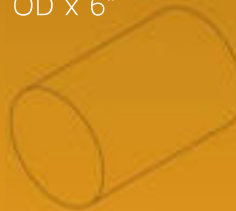
SPECIMEN DETAILS:

- 3 Flaws per specimen
- "REAL FLAWS" in each specimen
- Document Package with each specimen
- Standard tolerance (+/-) 0.150" (4mm)
- Blank specimens available
- Specimens are carbon steel
- Custom specimens available
- Discount & free carrying case with Purchase of 3+ specimens
- Applicable for ISO9712, EN473, PCN & TC - 1A

P101 Plates & Sheets
0.75" x 8" x 10" plate



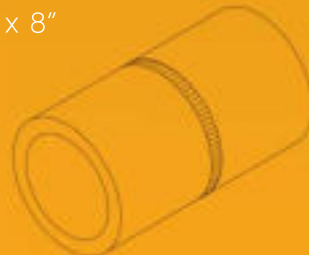
P103 BAR & ROD STOCK
4" OD x 6"



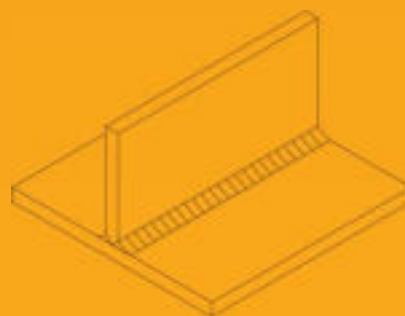
P106 PIPE TO SOCKET WELD
2" SCH160 PIPE to COUPLING



P109 WELDED
PIPING 4" SCH160 (0.53" T)
x 8"



P112 WELDED TEE
0.5" x 8" x 8" x 4"



P102 BAR & ROD STOCK
1.5" OD x 12"



P104 L/R 90° ELBOW TO
PIPE
2" SCH160 (.344" T)



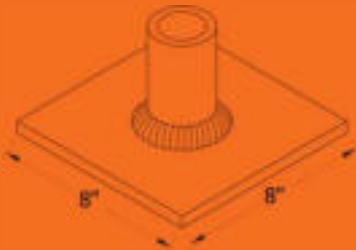
P107 WELDED PLATE
0.5"x8"x12"



P110 LAP JOINT
0.5" x 12" x 6"



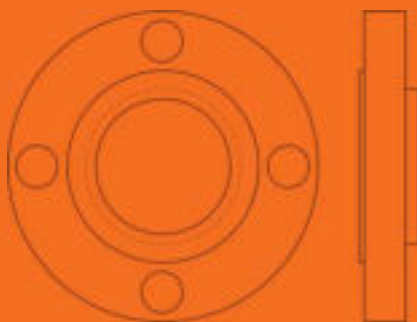
P105 NODE TO PLATE WELD
2" SCH160 to .375" PLATE



P108 WELDED PLATE
1.0"x6"x10"



P111 FORGED PIPE FLANGE
6" OD x 0.75" thick



MT / PT Practical Exam Specimens

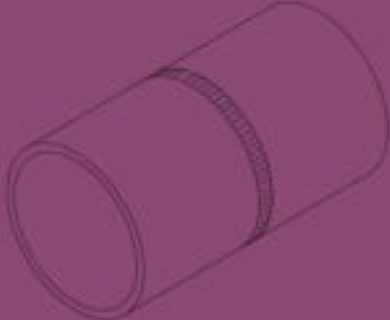
SPECIMEN DETAILS:

- 3 Flaws per specimen
- "REAL FLAWS" in each specimen
- Document Package with each specimen
- Standard tolerance (+/-) 0.150" (4mm)
- Blank specimens available
- Specimens are carbon steel
- Custom specimens available
- Discount & free carrying case with Purchase of 3+ specimens
- Applicable for ISO9712, EN473, PCN & TC - 1A

P005 FORGED SHACKLE & PIN
4.25" with 0.75" pin



P008 WELDED PIPING
4"SCH40(0.25"T)x 8"



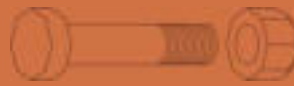
P011 WELDED TEE
0.25" x 8" x 8" x 4"



P001 CAST FITTING
2.0" to 1.3" reducer, 5" long



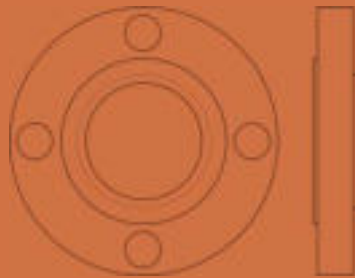
P003 BOLT & NUT
1.25" OD x 6"



P006 FORMED METAL PLATE
0.25" x 4"



P009 FORGED PIPE FLANGE
6"ODx0.75"thick



P012 PIPE to SOCKET WELD 2"
SCH160 PIPE to COUPLING



P002 MACHINED SPINDLE
1.75" diameter x 8"



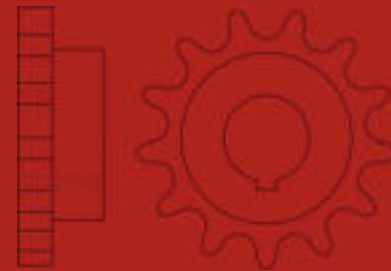
P004 FORGED EYE
HOOK
6" long with
2" eye



P007 WELDED PLATE
0.25"x8"x12"



P010 MACHINED GEAR
4.6" diameter x 1.5"
bore



Advanced Specimens

SPECIMEN DETAILS:

- Larger than our practical exam specimens
- Complete document package included
- 3 Real flaws per specimen randomly placed
- Material carbon steel (custom alloys available)
- Custom specimens available (contact us for details)

	PART NUMBER	SPECIMEN TYPE	DIMENSIONS (INCHES)
UT (DESIGNED FOR SHEAR WAVE)	UA-001	PLATE W/SV	0.5 X 12 X 12
	UA-002	PLATE W/SV	0.75 X 12 X 12
	UA-003	PLATE W/SV	1.0 X 12 X 12
	UA-004	PLATE W/DV	1.25 X 12 X 17
	UA-005	PIPE W/SV	6 SCH120 X 12
	UA-006	PIPE W/SV	6 SCHXXH X 12
	UA-007	PIPE W/SV	8 SCH80 X 12
	UA-008	PIPE W/SV	12 SCH80s X 12
	UA-009	PIPE W/SV	12 SCH120 X 12
	UA-010	TEE W/SV	1.0 X 8 X 8 X 12
	UA-011	TEE W/DV	1.0 X 8 X 8 X 12
	UA-012	TEE W/DV	1.25 X 9 X 9 X 12
	UA-013	Y-JOINT (45°)	1.25 X 9 X 9 X 12
	UA-014	NODE & CARRIER (STUB ON)	10 SCH120 X 10 1.0 X 20 X 20
	UA-015	NOZZLE & CARRIER (STUB IN)	8 SCH80 X 10 1.0 X 20 X 20
RT	RA-001	PLATE W/SV	0.375 X 12 X 12
	RA-002	PLATE W/DV	0.625 X 12 X 12
	RA-003	PLATE W/SV	0.75 X 12 X 12
	RA-004	PLATE W/SV	1.0 X 12 X 16
	RA-005	PLATE W/DV	1.0 X 12 X 16
	RA-006	PIPE W/SV	2 SCH80 X 12
	RA-007	PIPE W/SV	6 SCH120 X 12
	RA-008	PIPE W/SV	12 SCH80 X 12
MT/PT & VT	MA-001	PLATE W/SV	0.375 X 12 X 12
	MA-002	PIPE W/SV	6 SCH80 X 12
	MA-003	PIPE W/SV	12 SCH40 X 12
	MA-004	TEE W/SV	0.375 X 6 X 6 X 12
	MA-005	Y-JOINT (45°)	0.375 X 6 X 6 X 12
	MA-006	NODE & CARRIER (STUB ON)	10 SCH60 X 10 0.5 X 16 X 16
	MA-007	NOZZLE & CARRIER (STUB IN)	8 SCH60 X 10 0.5 X 16 X 16
ET	ET-001	ET-001	0.25 X 4 X 12
	ET-002	ET-002	0.25 X 4 X 12 (4 FLAWS)

THESE SPECIMENS ARE DESIGNED FOR:

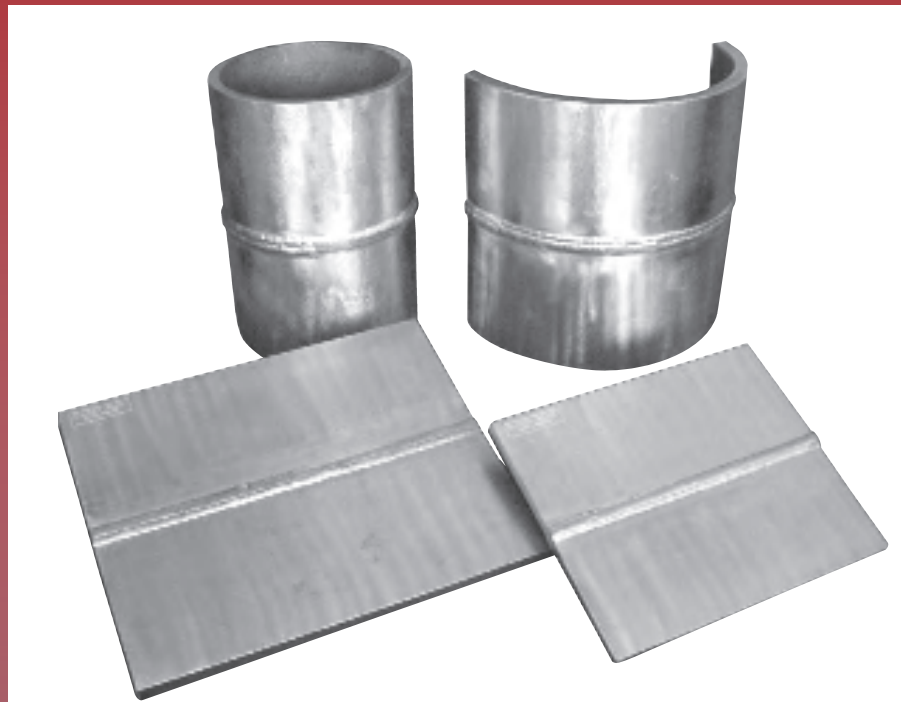
- Training and qualification of level I & II personnel with regards to SNT-TC-1A, EN473 & PCN
- Flaw detection, sizing, & interpretation using common weld geometries and flaw types

API-UT-1 Flawed Specimen

FOR UT EXAMINATION OF FERRITIC WELDS

API KIT CUSTOM OPTIONS

- 10% ID / OD
CALIBRATION NOTCHES
- 0.75" X 4.5 X 6"
ASME SEC. V BASIC
CALIBRATION BLOCK
- 8" SCH 80 (0.5"
WALL) X 8" PIPE ASME
SEC. V ANGLE BEAM
CALIBRATION BLOCK
- LOCKING STORAGE
CONTAINER
- RADIOGRAPHS
"REAL FLAWS" USED IN
KIT SPECIFICATIONS
- LACK OF PENETRATION
- CENTER LINE CRACK
- SLAG INCLUSION
- LACK OF FUSION
- ROOT CRACK
- POROSITY



API-UT-1 KIT CONTAINS:

TOTAL OF 4 SPECIMEN

- 1 - 1.0" THICK PLATE W/ DOUBLE VEE (1" X 12" X 15")
- 1 - 0.5" THICK PLATE W/ SINGLE VEE (0.5" X 10" X 12")
- 1 - 8" SCH 80 PIPE (0.5" WALL X 12", 360°)
- 1 - 12" SCH 80 PIPE (0.688", WALL X 12", 180° SEG.)

API KIT STANDARD FEATURES

- COMPLETE DOCUMENT PACKAGE W/ CAD
DRAWINGS
- 3 "REAL" FLAWS PER SPECIMEN
- FLAWTECH ADVANCED TOLERANCE ± 0.080 "
- SPECIMENS ARE CARBON STEEL

A FlawTech Original Kit



API-UT-1 Mini Kit

COMPACT VERSION OF OUR API-UT-1 KIT

Specimens are Half Size



API-UT-1 MINI KIT CONTAINS:

TOTAL OF 4 SPECIMEN

- 1 - 1.0" Thick Plate W/ Double Vee (1" X 7.5" X 6")
- 1 - 0.5" Thick Plate W/ Single Vee (0.5" X 6" X 5")
- 1 - 8" Sch 80 Pipe (0.5" Wall X 6", 180°)
- 1 - 12" Sch 80 Pipe (0.688", Wall X 6", 90° Seg.)



Note: Specimens may be too small for some UT search units. If this is a concern please consider our standard API-UT-1 Kit.

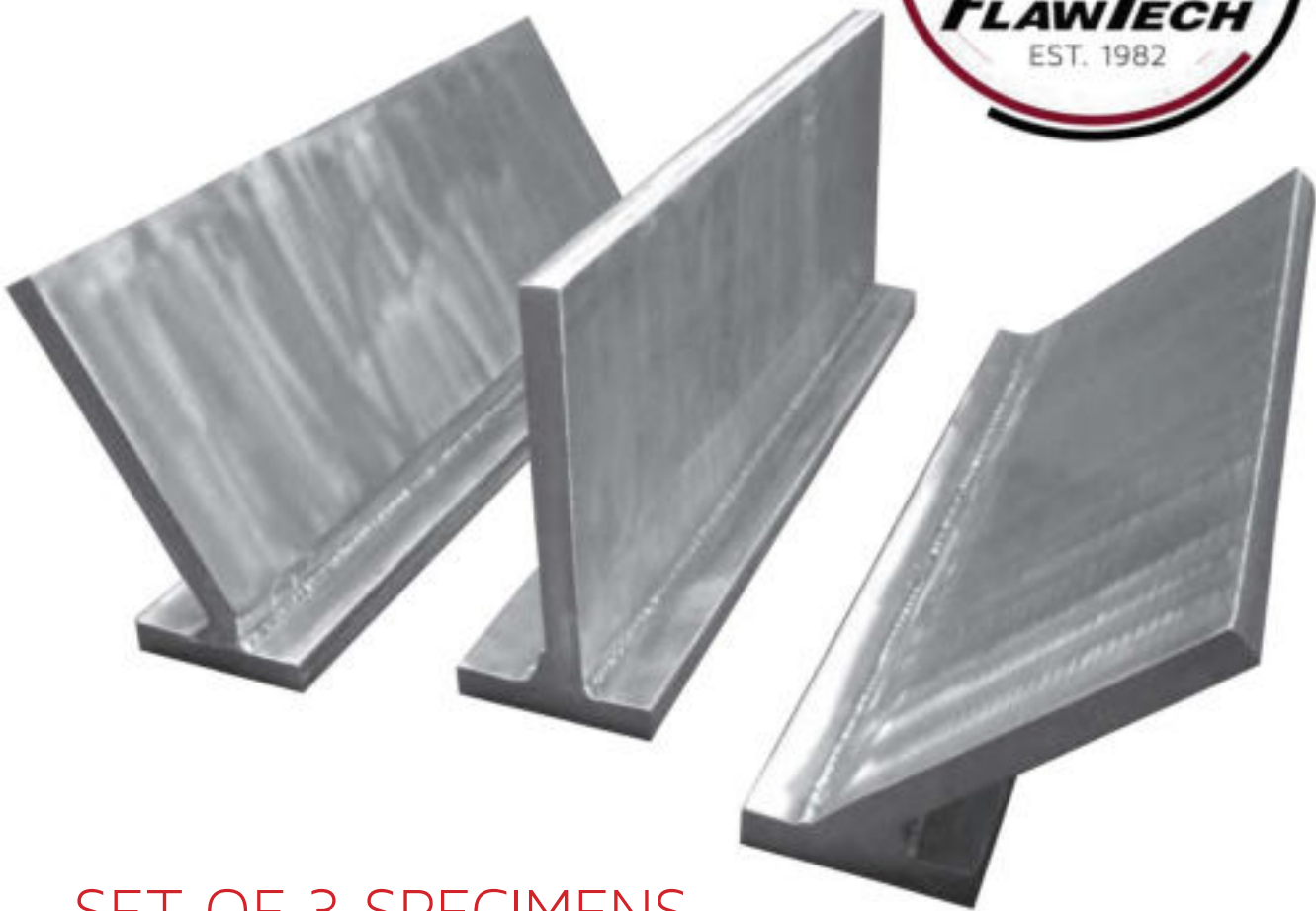
API MINI KIT STANDARD FEATURES

- COMPLETE DOCUMENT PACKAGE W/ CAD DRAWINGS
- 3 "REAL" FLAWS PER SPECIMEN
- FLAWTECH ADVANCED TOLERANCE +/- 0.080"
- SPECIMENS ARE CARBON STEEL
- DESIGNED FOR EASE OF HANDLING AND TRANSPORT
- CARRYING CASE 15" X 13" X 10"
- TOTAL WEIGHT 50lbs

API RP-2X Specimen Kit

API RP-2X PRACTICE SPECIMENS KIT

A FlawTech Original Kit



SET OF 3 SPECIMENS

- 90° "T" CONNECTION - 0.75" (T) X 20" (WELD LENGTH) X 4" X 8"LEG
- 45° CONNECTION - 0.75" (T) X 20" (WELD LENGTH) X 4" X +8"LEG
- 60° CONNECTION - 0.75" (T) X 20" (WELD LENGTH) X 4" X +8"LEG

SPECIMEN DETAILS

- EACH SPECIMEN CONTAINS 4 FLAWS / 12 TOTAL
- API LEVEL "C" CRITERIA USED FOR FLAW DESIGN
- FLAW ACCEPT / REJECT BASED ON API RP-2X, FIG. 45 & 48
- UT SPECIMENS CAN BE USED FOR TECHNICIAN PRACTICE FOR OFFSHORE STRUCTURES
- FLAW ACCEPTABILITY IS NOT DETERMINED BY ULTRASONICS

CUSTOM OPTIONS AVAILABLE

API RP-2X Practice Test Kit

Designed in the spirit of API RP-2X, these specimens offer a technician advanced training in UT flaw detection & sizing in unique configurations. This kit is a great tool for conducting practical examinations, as well as preparing technicians for typical industry exams.

THE AP RP-2X EXAM KIT CONTAINS:

- 0.75" T Tee Specimen w/ Double Vee Weld
- 0.75" T 60° "Y" Specimen
- 1" T Plate Specimen w/ Backing Bar
- 8" Sch40 Pipe Specimen, 180° Segment
- 10-12 Flaws Total, Including Cracks & Weld Discontinuities

A FlawTech Original Kit
FLAWTECH
EST. 1982



AWS / CWI Visual Specimen Kit

Design Specifications Based On Aws D1.1

KIT CONTAINS 10 SPECIMENS

4 - Tees 4" X 6" X 2" X 0.25"

4 - Plates 4" X 6" X 0.25"

2 - Edge & Lap Joints 4" X 6" X 0.3125"

AWS / CWI KIT DESIGN FEATURES

- 2 Flaws Per Specimen
- Flaws Are Randomly Placed
- Flaws Are "Border Line" Acceptable Or Rejectable
- Carbon Steel Specimens
- Welding Process - Smaw
- Document Package W/ Cad Drawings
- "Free" Carrying Case
- Designed Specifically For Visual Weld Inspection Training

AWS / CWI KIT FLAWS

- Undercut
- Crater Crack
- Excessive Convexity
- Undersize Leg
- Cluster Porosity
- Arc Strike
- Overlap
- Longitudinal Crack
- Aligned Porosity
- Incomplete Penetration
- Excessive Reinforcement
- Underfill
- Concavity
- Transverse Crack
- Oversize Leg



A FlawTech Original Kit



AWS /CWI Plus PT Endorsement Kit

Design Specifications Based On Aws D1.1

A FlawTech Original Kit



Kit Contains 10 Specimens

- 2 - PLATES 4" X 6" X 0.25"
- 1 - PIPE 4" SCH80 X 6"
- 1 - TEE 4" X 6" X 2" X 0.25"
- 1 - SOCKET WELD 2" SCH80 X 6"
- 5 - PLATES 1" X 4" X 0.25"

AWS/CWI CERTIFIED KIT

- FlawTech worked in conjunction with AWS and EPRI in the development of this kit.
- This kit has been designed to incorporate both basic penetrant training and testing of the CWI



AWS / CWI KIT DESIGN FEATURES:

- 2 + Flaws Per Specimen
- Flaws Are Randomly Placed
- Flaws Are "Border Line" Acceptable Or Rejectable
- Carbon Steel Specimens
- Welding Process - SMAW
- Document Package W/ CAD Drawings
- "Free" Carrying Case
- Designed Specifically For Visual Weld Inspection Training

AWS Structural Weld Seismic Kit

Based On Aws D1.8 Annex E For Structural Welds



AWS Seismic Supplement for UT Testing

AWS SEISMIC KIT CONTAINS:

TOTAL OF 8 CARBON STEEL SPECIMENS

- 2 - BUTT WELDS w/ V GROOVE (1) at 0.375" T & (1) at 0.75" T X 6" (WELD) X 8"
- 2 - BUTT WELDS w/ V GROOVE & BACKING BAR (1) at 0.375" T & (1) at 0.75" T X 6" (WELD) X 8"
- 2 - TEE WELDS w/ SINGLE GROOVE, (1) at 0.375" T & (1) at 0.75" T X 6" (WELD) X 4" (MAIN) X 7" (BRANCH)
- 2 - TEE WELDS w/ SINGLE GROOVE w/ BACKING BAR, (1) @ 0.375" T & (1) @ 0.75" T X 6" (WELD) X 4" (MAIN) X 7" (BRANCH)

KIT STANDARD FEATURES

- COMPLETE DOCUMENT PACKAGE W/ CAD DRAWINGS ~2-3 "REAL" FLAWS PER SPECIMEN
- FLAWTECH ADVANCED TOLERANCE +/- 0.080"
- AS WELDED CROWNS AND ROOTS
- CARRYING CASE 24" X 16" X 10", ~110lbs

Socket Weld Specimen Kit

Pipe To Fitting & Pipe to Vessel Specimens

SET OF 6 SOCKET WELD SPECIMENS

A FlawTech Original Kit 3 ALLOY OPTIONS



- 304 S/S
- 316 S/S
- 106 C/S

PIPE DIMENSIONS

- 0.75" SCH80
- 1.0" SCH 80
- 2.0" SCH 80

FLAW SPECIFICATIONS

- 2 FLAWS EACH SPECIMEN
- TOTAL OF 12 REAL FLAWS
- FATIGUE, HAZ CRACKS, AND LACKS OF FUSION

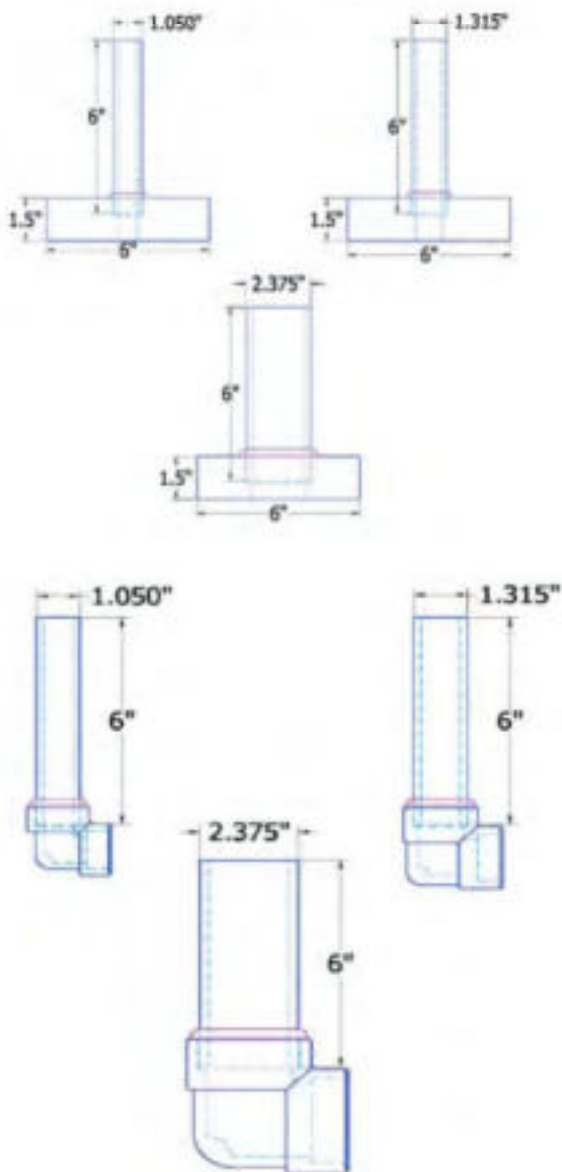
2 SPECIMENS PER PIPE SIZE

- (1) PIPE TO SOCKET COUPLING
- (1) PIPE TO 1.5" X 6" X 6" PLATE w/ MACHINED SOCKET

PURCHASE OPTIONS

- KIT / SET CONTAINS 6 SPECIMENS
- INDIVIDUALLY / PURCHASE 1 OR MORE
- CUSTOMIZE YOUR SET / MIX DIFFERENT ALLOYS

SPECIMENS ARE DESIGNED FOR ULTRASONIC PRACTICE INSPECTION OF PIPE TO FITTING AND PIPE TO VESSEL WELDS



Boiler Tube Damage Kit



KIT CONTAINS

- 19 BOILER TUBES:
 - » Representing a complete range of fossil-fired boiler tube failure mechanisms steam and water touched.
- TUBE SPECIFICATIONS:
 - » 18 Tubes at 2.5" OD X 0.25" WALL X 8" long
 - » 1 Tube at 1.5" X 0.25" WALL X 8" long
- MATERIAL
 - » 17 Tubes are SA513 T5 GR 1020/1026 C/S
 - » 1 Tube is 304/304L
 - » 1 Dissimilar metal weld
- FLAWS / INDICATIONS
 - » Long term overeating/creep
 - » Fire side corrosion (coal)
 - » Toe crack, stress corrosion (stainless)
 - » Soot blower erosion
 - » Fatigue crack (toe)
 - » Maintenance damage
 - » Pitting
 - » Rubbing / Fretting
 - » Chemical cleaning damage (cleaning & pitting)
 - » Material flaw (forging lap)
 - » Corrosion fatigue crack
 - » Fly ash erosion, Hydrogen damage
 - » Acid Phosphate erosion
 - » Caustic gouging
 - » Supercritical waterwall cracking (1.5" OD tube)
 - » Weld defects (lack of fusion and porosity)
 - » Graphitization

Designed and
Manufactured to Replicate
Field Removed Specimens



- EPRI PROGRAM 63
MEMBERS RECEIVE A
SPECIAL DISCOUNT.

- USE THIS KIT TO
ASSIST IN THE TRAINING
AND QUALIFYING OF
NDE TECHNICIANS TO
ACCURATELY IDENTIFY
SPECIFIC BOILER TUBE
DAMAGE FOUND IN
FOSSIL PLANTS.

OFFICIALLY LICENSED BY

EPRI

ELECTRIC POWER
RESEARCH INSTITUTE

FLAW MANUFACTURING TECHNOLOGY

ASME Section XI Appendix VII Kit

8 PIECE SPECIMEN SET
CONTAINS 20 "REAL FLAWS"
FOR TRAINING & QUALIFICATION

A FlawTech Original Kit



2 - WELDED PLATES

ONE CARBON STEEL PLATE: #A7-
CS-005 ONE STAINLESS PLATE:
#A7-SS-005
0.5" X 10" X 12"

2 - WELDED PLATES

ONE CARBON STEEL PLATE: #A7-
CS-010 ONE STAINLESS PLATE:
#A7-SS-010
1.0" X 10" X 12"

1 - WELDED PIPE

ONE STAINLESS PIPE: #A7-SS-020
2" SCH160 X 12"

1 - WELDED PIPE

ONE CARBON STEEL PIPE: #A7-
CS-040
4" SCH160 X 12"

1 - WELDED PIPE

ONE STAINLESS PIPE: #A7-SS-060
6" SCH160 X 12"

1 - WELDED PIPE

ONE CARBON STEEL PIPE: #A7-
CS-100 (180° SEGMENT)
10" SCH160 X 12"



KIT SPECIFICATIONS

- EACH SPECIMEN CONTAINS 2 TO 4 "REAL FLAWS" DESIGNED TO MEET APPENDIX VII SPECIFICATIONS.
- SPECIMENS ARE MANUFACTURED TO FLAWTECH'S ADVANCED TOLERANCE OF +/- 0.080".
- NO TWO SPECIMENS ARE ALIKE. BUY TWO SETS, ONE FOR TRAINING AND ONE FOR TESTING.
- DOCUMENT PACKAGE INCLUDES CAD DRAWINGS, CERTIFICATES OF CONFORMANCE AND NDT REPORTS.
- CUSTOM OPTIONS AVAILABLE SUCH AS 10% NOTCHES, BLANK SPECIMENS AND THE PURCHASE OF INDIVIDUAL FLAWED SPECIMENS. CONTACT FLAWTECH FOR MORE DETAILS.

ASME Section XI Appendix VIII Kits

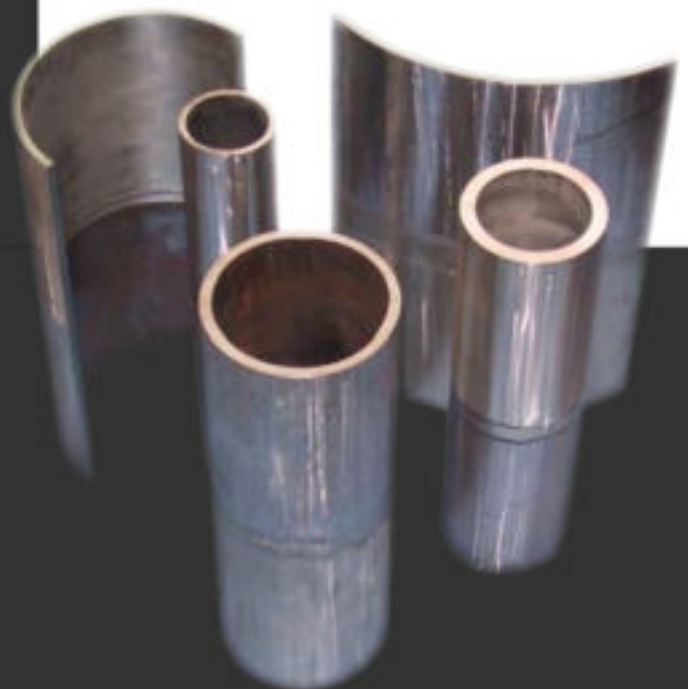
ASME BOILER & PRESSURE VESSEL CODE, SECTION XI, APPENDIX VII, SUPPLEMENTS 2, 3 & 10 KITS



	PIPE SPECIMEN DIMENSIONS	UNFLAWED UNITS	FLAWED UNITS
SUPPLEMENT 2 KIT FOR AUSTENITIC PIPING	2" SCH80 X 24" 360°	1	1
	4" SCH80 X 24" 360°	3	1
	6" SCH160 X 24" 360°	4	2
	12" SCH80s X 24" 360°	9	3
	24" SCH80s X 24" 120°	5	3
	KIT TOTAL - 5 SPECIMENS	22	10
SUPPLEMENT 3 KIT FOR FERRITIC PIPING	2" SCH80 X 24" 360°	1	1
	4" SCH80 X 24" 360°	3	1
	6" SCH160 X 24" 360°	4	2
	12" SCH80s X 24" 360°	9	3
	24" SCH80s X 24" 120°	5	3
	KIT TOTAL - 5 SPECIMENS	22	10
SUPPLEMENT 10 KIT FOR DISSIMILAR METAL WELDS	4" SCH80 X 24" 360°	3	2
	6" SCH160 X 24" 360°	4	2
	8" SCH80 X 24" 360°	6	3
	12" SCH80s X 24" 180°	4	4
	24" SCH80s X 24" 90°	4	4
	KIT TOTAL - 5 SPECIMENS	21	15

KIT AND FLAW DETAILS:

- THE KITS ARE MANUFACTURED TO MEET THE MINIMUM REQUIREMENTS OF ASME, BOILER & PRESSURE VESSEL CODE, SECTION XI, APPENDIX VIII, OF SUPPLEMENTS 2, 3 & 10
- AT LEAST 50% OF THE CRACKS WILL BE COINCIDENT WITH FABRICATED CONDITIONS, SUCH AS: GROUND & AS-WELDED CROWNS, COUNTERBORES & WELD ROOT CONDITIONS.
- FLAW DEPTHS WILL RANGE FROM THE 10-30% THROUGH THE 61 - 100% DEPTH RANGES AS SPECIFIED IN ASME SECTION XI, APPENDIX VIII.
- ALL THE FLAWS WILL BE MECHANICAL FATIGUE OR THERMAL FATIGUE CRACKS, WITH AT LEAST 75% OF THE CRACKS BEING THERMAL FATIGUE.
- KITS MADE TO OUR CRITICAL TOLERANCE $\pm 0.040"$ (1MM).
- CUSTOM APPENDIX VIII SPECIMENS ARE AVAILABLE - CONTACT FLAWTECH FOR DETAILS.



UT Calibration Blocks

Contact Flawtech For All Your Standard And Custom Calibration Block Needs
 All Materials Available Upon Request

IIW
BLOCKS

Type 1



Type 2



V1/5 (A2)



STEP WEDGES
STANDARD &
METRIC

5 Step



4 Step



Custom Step
Blocks



AWS
BLOCKS

DC Block



Resolution
Block (RC)



DSC Block



DS Block



ASTM BLOCKS
DISTANCE / AREA
AMPLITUDE

Set of 8



Set of 10



Set of 19



MINI ANGLE BEAM
BLOCK
STANDARD & METRIC



"PACS"
Phased Array Test
Block



IIW BLOCKS



ISO 7963
Test Block
#2



PDI UT Calibration Blocks

T PDI Alternative ASME Calibration Blocks

The PDI Alternative ASME blocks meet the requirements of the Performance Demonstration Initiative (PDI) Procedure No. PDI-UT-1, Rev. C, Fig. 4(Ferritic) and PDI-UT-2, Rev. C, Fig.4(Austenitic).

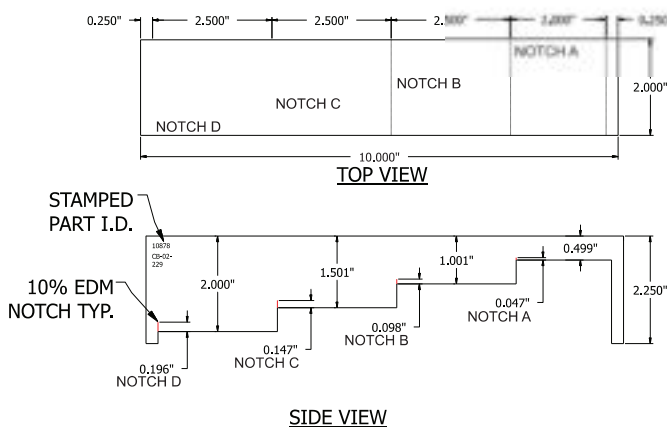
These blocks cover the generic procedures for the ultrasonic examination of both ferritic and austenitic pipe welds.

The blocks offer users an economical alternative to fabricating multiple curved cal blocks (pipe sections) in many diameters and wall thicknesses.

The blocks are normally supplied in sets of 3 individual blocks; A516 Grade 70 Carbon Steel, Type 304/304L Stainless Steel, and also in Type 316/316L Stainless Steel. Individual blocks of any one alloy may also be purchased. The blocks are made from ultrasonically inspected, heat number-traceable material.

The block design consists of four (4) steps (representing wall thicknesses) measuring 0.5", 1.0", 1.5", and 2.0". Each step contains an EDM notch machined to a depth of 10% of wall x .010" wide x 2.0" long. Overall block size is 2.00" wide x 2.25" tall x 10.00" long.

The scanning and reflecting surfaces are intentionally machined to simulate pipe and plate surfaces of 250 Ra maximum finish. Each block is permanently machine-engraved on one edge to include the block description, serial number, alloy, and heat number.



Contact FlawTech for all your Standard and Custom Calibration Block Needs
all materials available upon request

ASME UT Calibration Standards



ASME SEC. V BASIC CALLIBRATION BLOCKS

The block is used for establishment of primary reference responses for UT examination welds. Block contains three (3) DAC side drilled holes at 1.5" deep minimum at diameters between 0.0937" and 0.25" depending on the block thickness (T). Hole locations through the thickness are 1/4, 1/2, and 3/4 T. The block will also two (2) notches measuring 2% (T) deep x 1.0" long minimum. Specification: ASME Section V, Article 4, Figure T-434.2.1. Dimensions: T x 6.25" x 3 (T) minimum. Block is available in normal thicknesses of 0.5", 1.5", 3" and 5".

ASME SEC. V ANGLE BEAM CALIBRATION BLOCKS

The basic callibration block for weldments shall be a section of pipe of the same normal size, schedule, heat treatment and material specification as the material being examined. Standard will contain four (4) notches, two (2) longitudinal and two (2) circumferential on both the OD and ID at a target depth of 9.5% of nominal wall thickness and a minimum of 1" long. FlawTech can provide the material or use customer furnished material. In accordance with ASME Sec V, Article 4, Figure T-434.3 (Callibration Block for Pipe.)



THOSE LISTED ARE JUST A FEW OF THE MANY ASME CALIBRATION STANDARDS AVAILABLE. CONTACT **FLAWTECH** FOR MORE INFORMATION.

PDI UT 10 Calibration Standards

PDI CONTOURED CALIBRATION BLOCKS FOR DISSIMILAR METAL (DM) WELDS

Contoured calibration blocks are used in the manual examination of dissimilar metal (DM) welds and base materials including piping susceptible to Stress Corrosion Cracking (SCC). The blocks are used to establish a reference sensitivity level from which subsequent exams may be compared. The blocks are precisely machined to fit contoured search units for axial and circumferential scanning directions. Customer specifies block contour radius based on diameter of material being inspected. Blocks are manufactured in Type 304 or Type 316 Stainless Steel and are certified to meet Performance Demonstration Initiative PDI-UT-10 and PDI-UT-8.



CONTACT *FLAWTECH* FOR ALL YOUR STANDARD AND CUSTOM CALIBRATION BLOCK NEEDS *ALL MATERIALS AVAILABLE UPON REQUEST*



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