

# 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

### Materials

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

### Methods

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

### 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



A magnetic particle kit containing 10 macro sections of various flaws

### 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

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