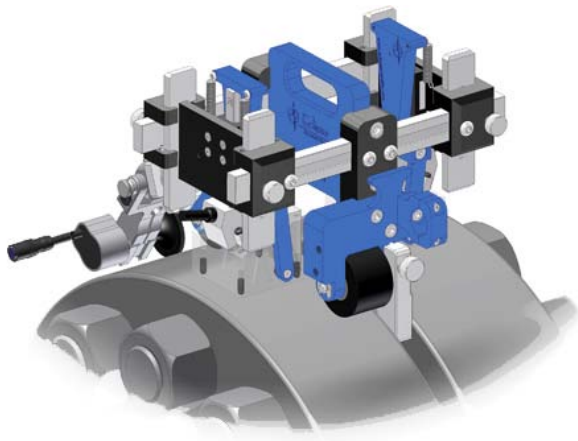


# ESFlangeScanner

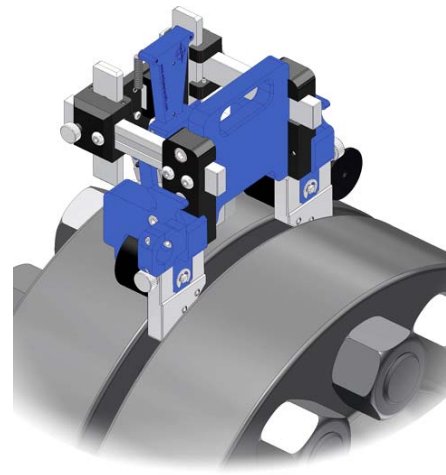
## Magnetic Flange Seal-face Scanner for Phased Array Product Information Guide

---

*Eclipse Scientific Model: ESFS*



Dual Face Scanner Configuration



Single Face Scanner Configuration

The ESFlangeScanner is capable of inspection of one or of both flange seal face surfaces simultaneously to determine the extent of corrosion without removing the bolts or disassembling the flange, thereby eliminating possible downtime.

Wedge and probe positions can be independently adjusted to the optimal location on flanges ranging from class #150 to #2500. An adjustable downslide system coupled with two strong magnetic wheels keeps the wedges in close contact with the flange outer surface at any orientation around the flange. The scanner can be adapted to use a large range of standard wedge sizes and probe types. Eclipse procedure, techniques and step by step instruction set ensure you complete the job in the shortest possible time and with the greatest amount of accuracy and repeatability.

---

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St. Albert, Alberta, Canada, T8N 5C9  
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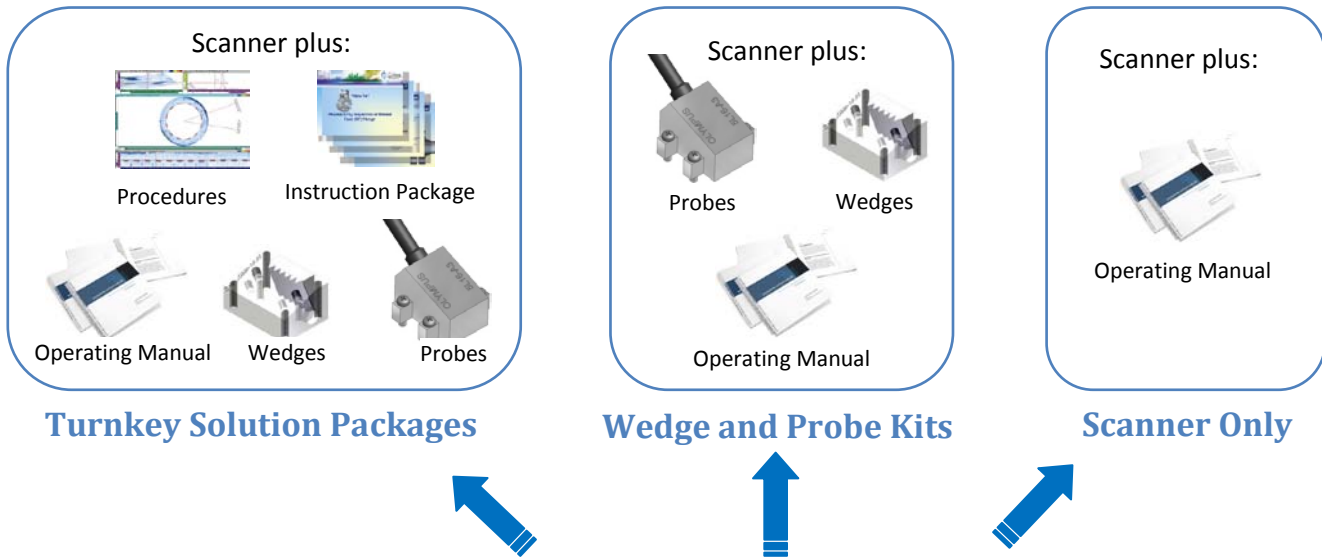
**Accounting & Application Lab**

255352 Concession 1, RR#1  
Williamsford, Ontario, Canada, N0H 2V0  
Phone (519) 794-0110 • Fax (519) 794-4437

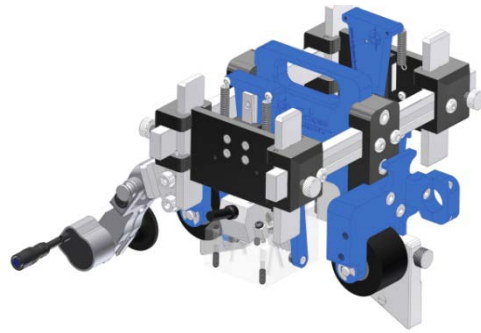
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Owen Sound, Ontario, Canada, N4K 5N3  
Phone (519) 372-1831 • Fax (519) 372-2039

## Product Selection

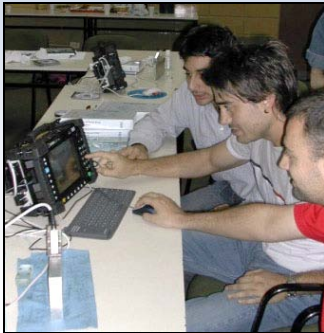


Standard Product Packages Include:

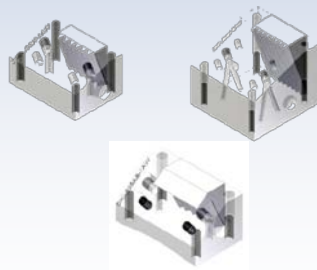


### Additional Options

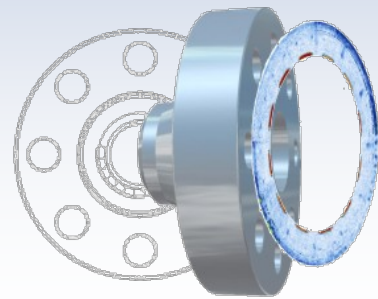
On-site Support Training Program for ESFlangeScanner



Wedges



Calibration and Target Blocks



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### Please Note:

The purpose of this guide is to provide information for product mechanical aspects and parts ordering only. It is not intended as a user guide for NDT procedures, techniques, data collection or data interpretation.

It is the responsibility of the end user to use this product in a safe manner and in accordance with any local or regional safety legislation.

The information provided by Eclipse Scientific is believed to be accurate however Eclipse Scientific accepts no responsibility for the use of this product, nor any patent infringement or other rights of third parties. Eclipse Scientific reserves the right to change specifications without notice. Please contact Eclipse Scientific for the most current product information.

## Scanner Features

- Easy to use
- Rugged & lightweight
- Capable of simultaneous inspection of both flange seal face surfaces
- Straightforward analysis using either the inspection system or external software
- Non-motorized

## Available Productivity Features

- On-site start-up support
- Step-by-step instructions
- Procedures & techniques
- Flange inspection training
- Expert personnel to perform inspections
- Calibration blocks

## Packages Tailored to Your Specific Requirements

An array of in-stock flange scanner packages and kits are available to suit your immediate needs. Choose from scanner only, scanner with probes and wedges, or complete turnkey solution package. Customized scanners and components built to your specifications are also available.

## Calibration and Setup Blocks

Custom made flange assemblies will match your specified requirements. Accurately machined targets calibrate the flange scanner to provide operators with known flaw responses, complete with drawing specification package showing flaw dimensions and positions.

## Report Generation

A detailed report is easily produced with clear scan display layout options: the comprehensive defect table will clearly show defect dimensions and location.

## Overall ESFlangeScanner Specifications

### Intended Scanner Use

The ESFlangeScanner is meant to use Phased Array UT technology to inspect the integrity of the seal face on ferrous flanges, ranging from #150 to #2500 classes. The scanner will show the condition of the seal face from the pipe ID outward where in contact with the gasket. The scanner is capable of determining the extent of corrosion on the seal face of either one or both connected flanges without the need to remove the bolts or disassemble the flange.

The flange must:

- Be made of a ferrous material that allows good contact with the magnetic wheels
- Be clear of obstructions on the surface of the flange OD within the scanning area
- Be larger than 4.5 in (114 mm) overall flange diameter
- Have a flange thickness larger than 0.88 in. (22 mm) to fit recommended phased array wedges
- Be clear of obstructions within 6" of the flange OD to allow the free movement of the scanner to fully circumnavigate the flange.

### Intended User

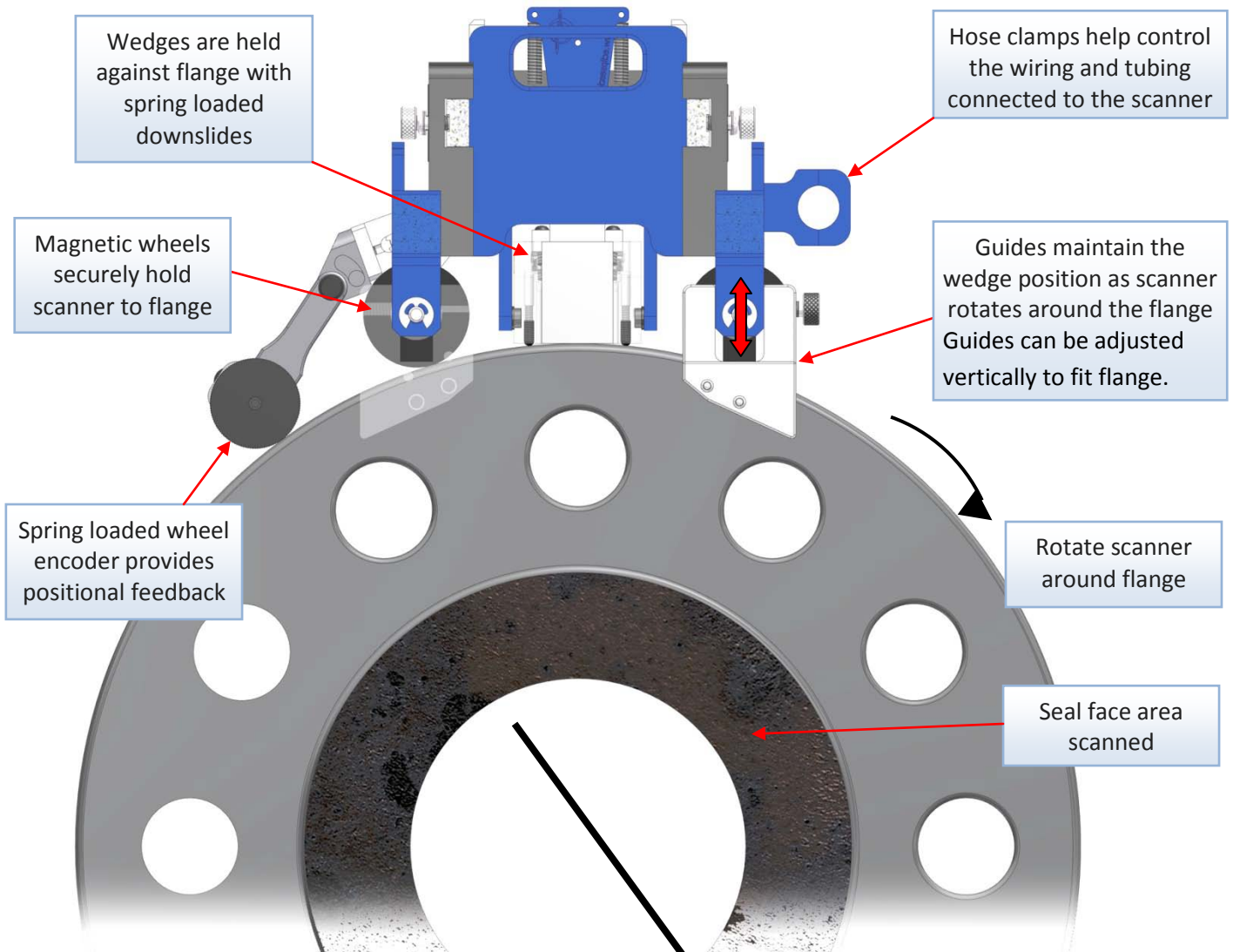
The ESFlangeScanner is a manual scanner, intended to be used by one or more personnel being without limitations in the physical abilities of the upper and lower limbs, sight, or hearing and who are fully trained in the handling of UT, flange scanning equipment.

### Approximate Dimensions and Weight

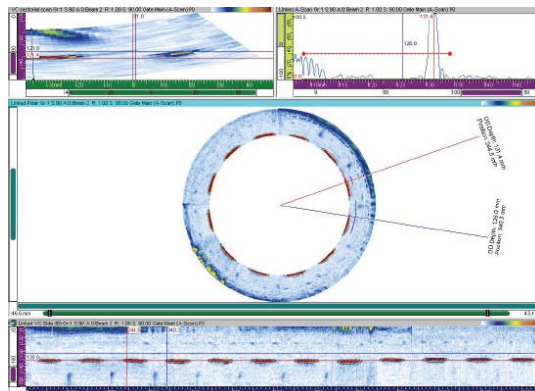
Scanner Weight*:	2.3 kg	5 lbs
Scanner Dimensions*:	254 x 203 x 160 mm	10" x 8" x 6 3/16"

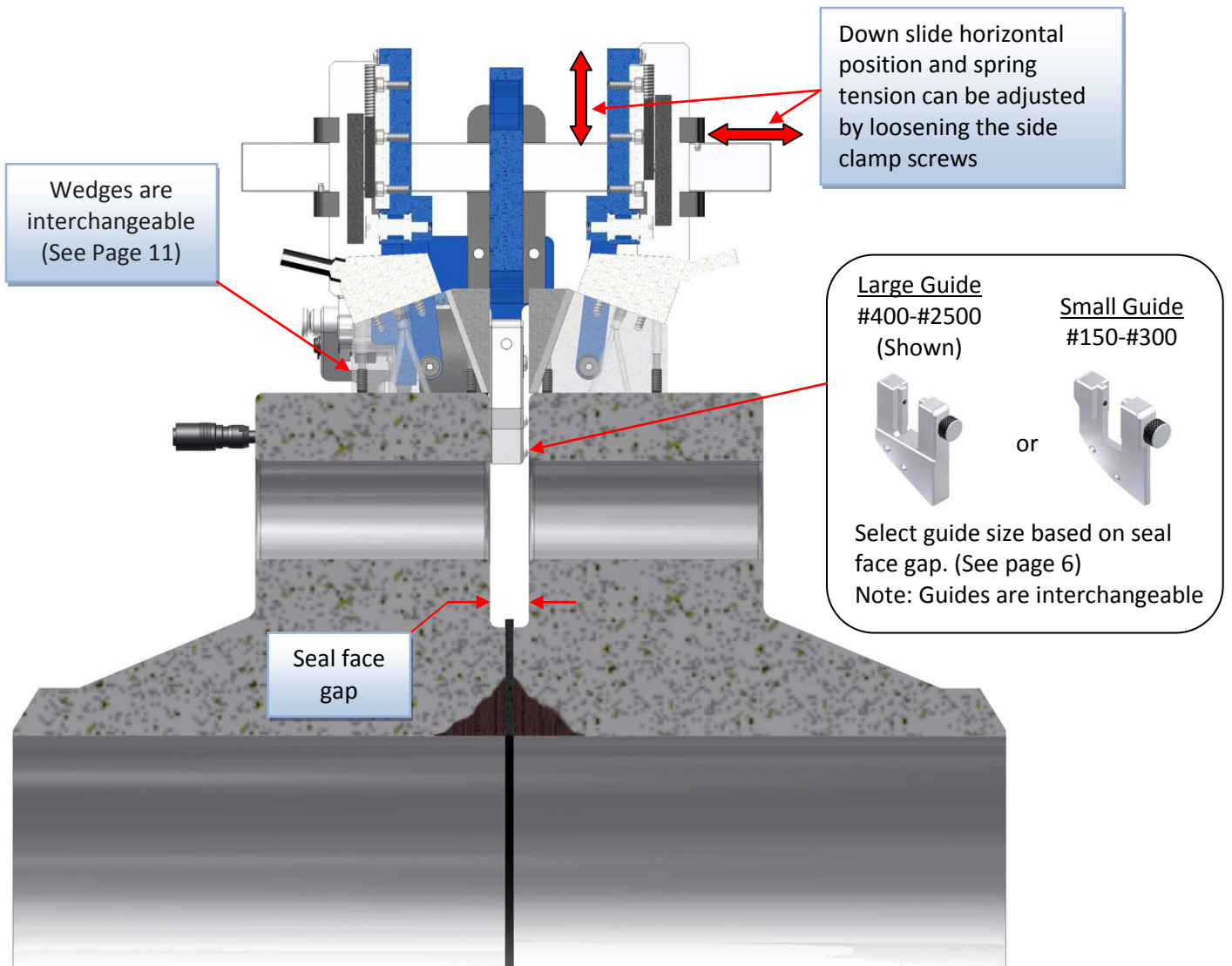
\*excluding case and any attachments

## ESFlangeScanner Overview

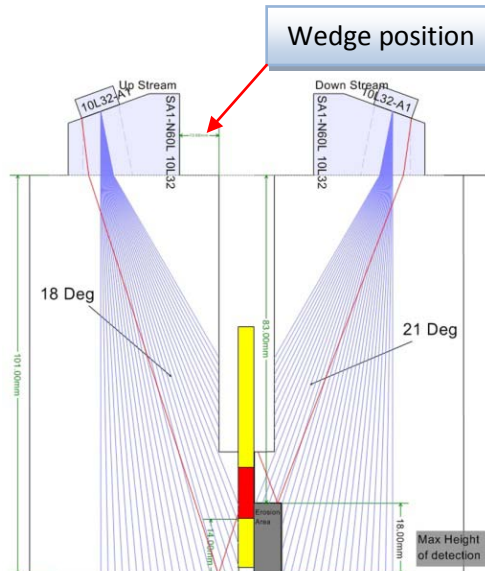


Analysis data showing seal face corrosion is easily obtained

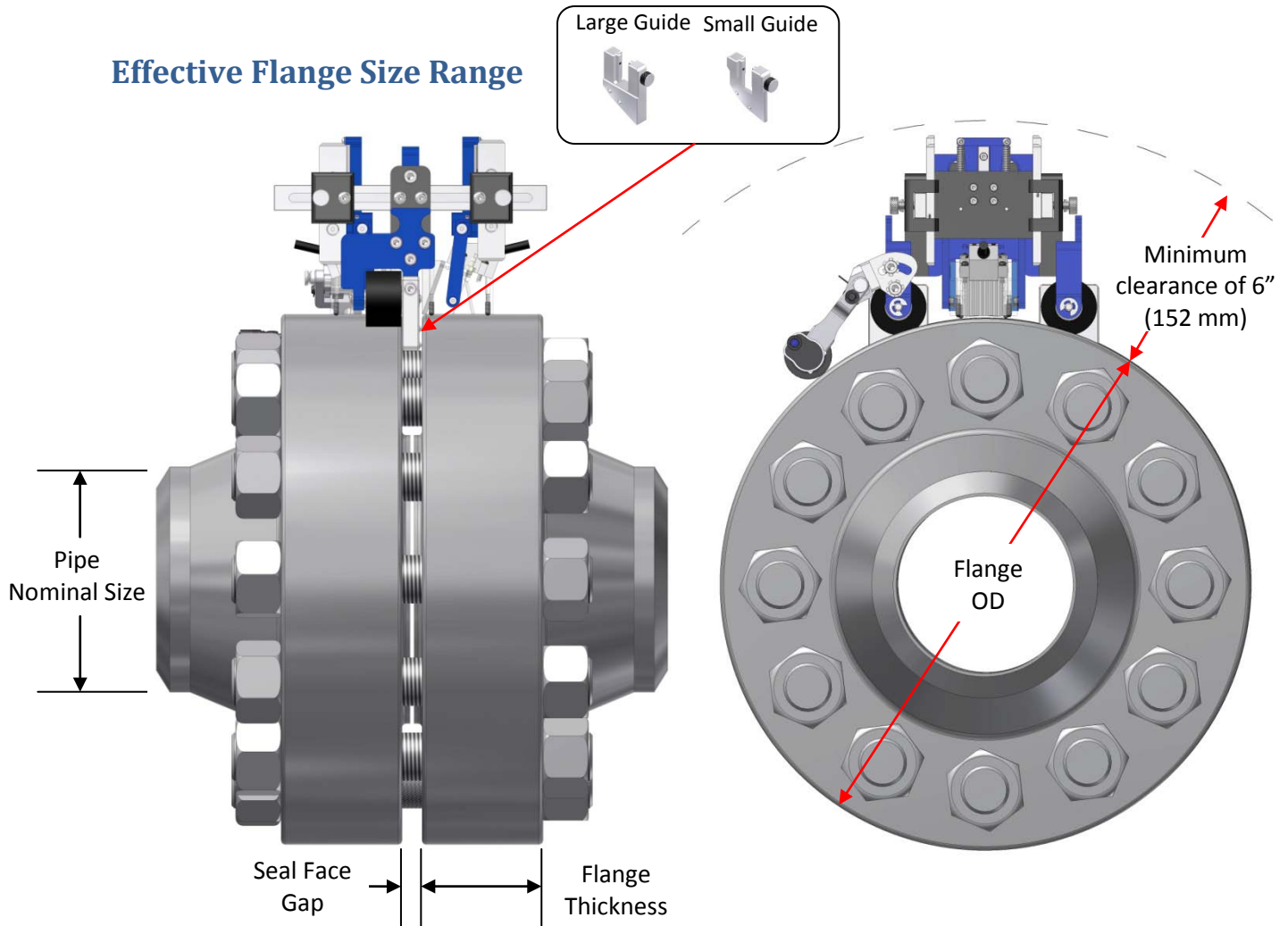




ESBeam Tool representation showing a sample sound path dependent upon wedge positioning. (will vary depending on wedge, probe and flange size)





### Effective Flange Size Range



Use the chart below to determine scanner type and probe type for the various flange classes and sizes.

\*Flange dimensions shown below are based on ASME B16.5 flanges.

Guide Size	Flange #Class	Suggested Wedge & Probe type	Flange OD		Flange Thickness		Pipe Nominal Size		Seal Face Gap
			Max.	Min.	Max.	Min.	Max.	Min.	
<b>Small</b> 	150	WA1-SA60L (Short approach)	11 in. (279 mm)	7 in. (178 mm)	1 in. (25.4 mm)	0.88 in. (23 mm)	6 in.	2.5 in.	0.18 in. (4.8 mm)
		WA1-N60L	27.5 in. (699 mm)	13.5 in. (343 mm)	1.69 in. (43 mm)	1.12 in. (28 mm)	20 in.	8 in.	
		WA3-N60L	32 in. (813 mm)		1.88 (48 mm)		24 in.		
	300	WA1-SA60L (Short approach)	7.5 in. (190 mm)	6.5 in. (165 mm)	1 in. (25.4 mm)	0.88 in. (23 mm)	2.5 in.	2 in.	
		WA1-N60L	15 in. (381 mm)	8.25 in. (210 mm)	1.62 in. (41 mm)	1.12 in. (28 mm)	8 in.	3 in.	
		WA3-N60L	36 in. (381 mm)	17.5 in. (445 mm)	2.75 in. (70 mm)	1.88 in. (48 mm)	24 in.	10 in.	

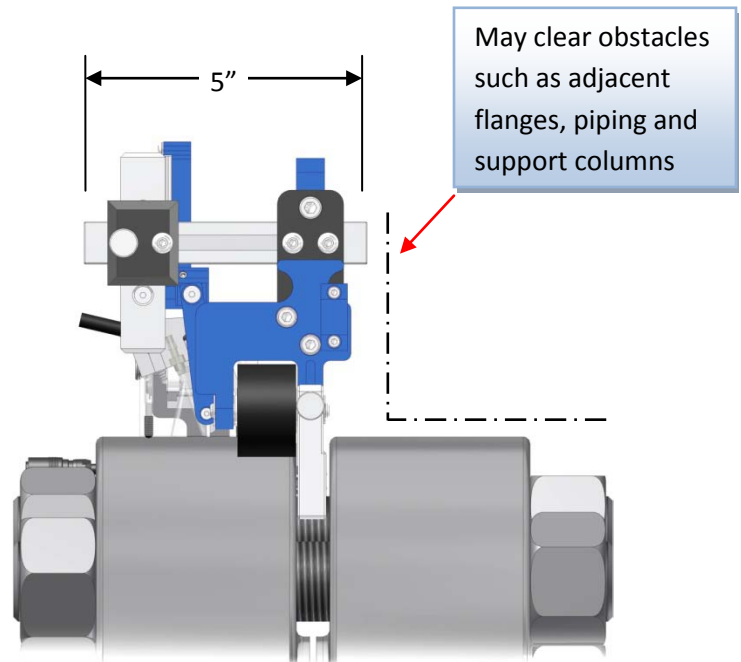
Guide Size	Flange #Class	Suggested Wedge & Probe type	Flange OD		Flange Thickness		Pipe Nominal Size		Seal Face Gap
			Max.	Min.	Max.	Min.	Max.	Min.	
<b>Large</b> 	400	WA1-SA60L (Short approach)							0.6 in. (15 mm)
		WA1-N60L	12.5 in. (318 mm)	10 in. (254 mm)	1.62 in. (41 mm)	1.38 in. (35 mm)	6 in.	4 in.	
		WA3-N60L	36 in. (381 mm)	15 in. (381 mm)	3 in. (76 mm)	1.88 in. (48 mm)	24 in.	8 in.	
	600	WA1-SA60L (Short approach)	6.5 in. (165 mm)	6.12 in. (155 mm)	1 in. (25.4 mm)	0.88 in. (23 mm)	2 in.	1.5 in.	
		WA1-N60L	13 in. (330 mm)	7.5 in. (191 mm)	1.75 in. (44 mm)	1.12 in. (28 mm)	5 in.	2.5 in.	
		WA3-N60L	37 in. (940 mm)	14 in. (356 mm)	4 in. (102 mm)	1.88 in. (48 mm)	24 in.	6 in.	
	900	WA1-SA60L (Short approach)							
		WA1-N60L	11.5 in. (292 mm)	9.5 in. (241 mm)	1.75 in. (44 mm)	1.5 in. (38 mm)	4 in.	3 in.	
		WA3-N60L	41 in. (1041 mm)	13.75 in. (349 mm)	5.5 in. (140 mm)	2 in. (51 mm)	24 in.	5 in.	
	1500	WA1-SA60L	5.12 in. (130 mm)	4.75 in. (121 mm)	1 in. (25.4 mm)	0.88 in. (23 mm)	0.75 in.	0.5 in.	
		WA1-N60L	9.62 in. (244 mm)	5.88 in. (149 mm)	1.62 in. (41 mm)	1.12 in. (28 mm)	2.5 in.	1 in.	
		WA3-N60L	46 in. (1168 mm)	10.5 in. (267 mm)	8 in. (203 mm)	1.88 in. (48 mm)	24 in.	3 in.	
	2500	WA1-SA60L (Short approach)							
		WA1-N60L	8 in. (203 mm)	5.25 in. (133 mm)	1.75 in. (44 mm)	1.19 in. (30 mm)	1.5 in.	0.5 in.	
		WA3-N60L	30 in. (762 mm)	9.25 in. (235 mm)	7.25 in. (184 mm)	2 in. (51 mm)	12 in.	2 in.	

## Scanner Configurations:

The ESFlangeScanner comes with two sets of rail guides:

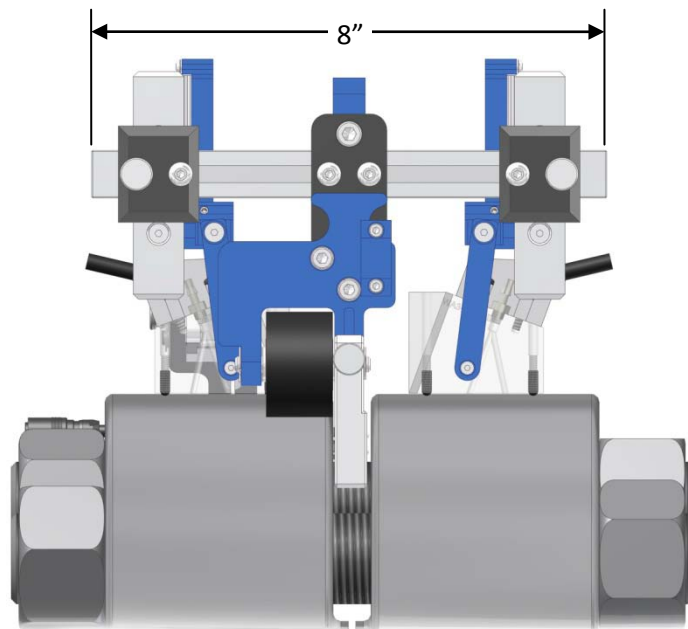
### Single Probe

The restricted access, 5" rail guide can be used to shorten the width of the Flange Scanner, allowing the scanner to fit into smaller spaces and avoid obstructions. The rail guide allows for the attachment of one

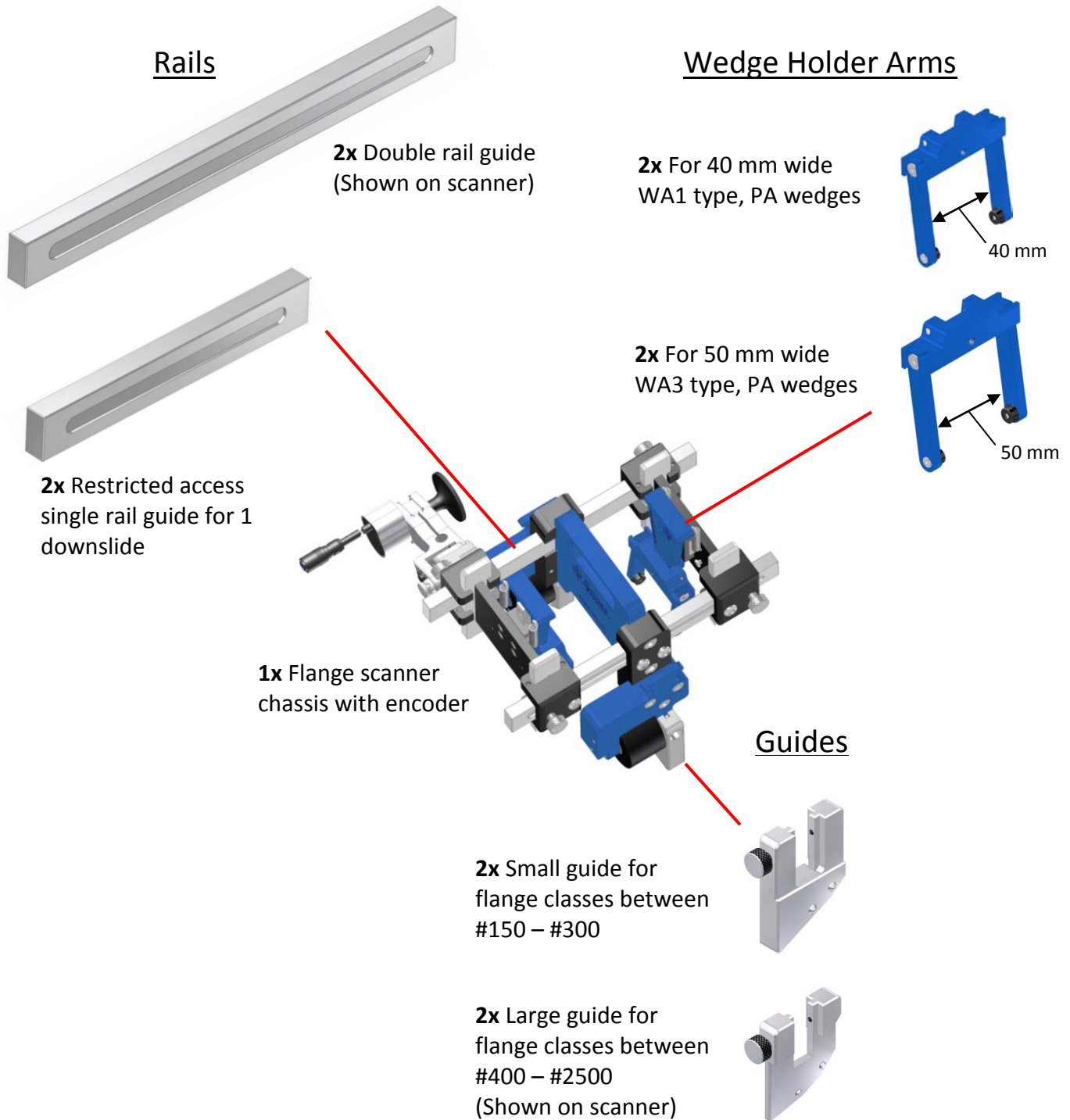


### Double Probe

The 8" rail guide can be used to attach two down slide assemblies for the simultaneous scanning of both flange faces.



## ESFlangeScanner Components



## Order Configurations for Flange Scanners

### Kits with Wedges & Probes

---

Note: See *Effective Flange Size Range* on page 5 to determine the best wedge/probe configuration

#### **ESFS-WA3-K**, A3 Probe & Wedge Kit

- 1x ESFS flange scanner
- 2x Olympus 5L16-A3 probes
- 2x Profiled wedges, WA3-N60L-IHC-AOD, profiled to specified flange diameter
- 1x Flat setup wedge, WA3-N60L-IHC

#### **ESFS-WA1-K**, A1 Probe & Wedge Kit

- 1x ESFS Flange Scanner
- 2x Olympus 5L16-A1 probes
- 2x Profiled wedges, WA1-N60L-IHC-AOD, profiled to specified flange diameter
- 1x Flat setup wedge, WA1-N60L-IHC

#### **ESFS-WA1SA-K**, A1 Probe & Short Approach Wedge Kit

- 1x ESFS Flange Scanner
- 2x Olympus 10L32-A1 probes
- 2x Profiled wedges, WA1-SA60L-IHC-AOD, profiled to specified flange diameter
- 1x Flat setup wedge, WA1-SA60L-IHC

#### **ESFS -K**, Full Probe & Wedge Kit

- 1x ESFS Flange Scanner
- 2x Olympus 5L16-A3 probes
- 2x Olympus 5L16-A1 probes
- 2x Profiled wedges, WA3-N60L-IHC-AOD, profiled to specified flange diameter
- 1x Flat setup wedge, WA3-N60L-IHC
- 2x Profiled wedges, WA1-N60L-IHC-AOD, profiled to specified flange diameter
- 1x Flat setup wedge, WA1-N60L-IHC
- 2x Profiled wedges, WA1-SA60L-IHC-AOD, profiled to specified flange diameter
- 1x Flat setup wedge, WA1-SA60L-IHC

#### **ESFS -KPT**, Full Probe & Wedge Kit with Procedures & Techniques Package

- 1x ESFS-K Flange Scanner, with Full Probe & Wedge Kit (shown above)
- 1x ESFS-P Procedure & Technique Package for Flange Seal-face Scanner
- 1x ESFS-T Instruction Package for Flange Seal-face Scanner

### Scanner Only, No Probes or Wedges

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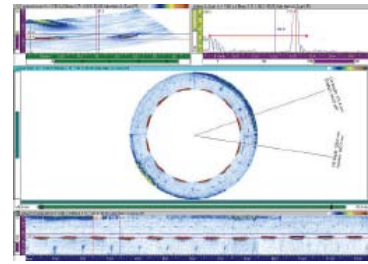
Note: See *Effective Flange Size Range* pages above to determine the best wedge/probe configuration

#### **ESFS**, Scanner Alone

- 1x ESFS Flange Scanner
-

## Options for Flange Scanners

**ESFS-P**, Procedure and Techniques Package,  
Procedures specifically designed to ensure accurate, reliable results to match your scanning requirements.  
Includes setup files and ESBeamTool samples files



**ESFS-T**, “How To” Instruction Package,  
A clear and simple instruction package showing how to inspect seal-face flanges using Phased Array.  
The program has an easy to follow, step-by-step, graphical format presented using MS PowerPoint showing,  
-Planning Inspection and acquisition  
-Basic background knowledge – layout and principles  
-Principles of analysis, OmniScan and TomoView  
-Flange data review detailed  
Does NOT include hands on or onsite instructor training.



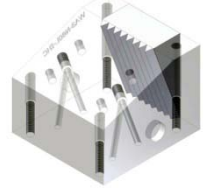
**ESFS-TOS**, On-site Support Training Program, for Flange Seal-face Scanner,  
An intensive on-site and/or in-house training program for the inspection of seal-face flanges using Phased Array which includes:  
Expert, hands on training, done by an with an Eclipse Phased Array expert, showing how to use the flange seal-face scanning system on actual flange target blocks.  
Training can be done either on-site of in-house at the Eclipse Scientific training center and is specifically tailored to match your flange scanning job requirements.  
The training course will follow an easy to use instruction package with a step-by-step, graphical format presented using MS PowerPoint showing,  
-Planning Inspection and acquisition  
-Basic background knowledge – layout and principles  
-Principles of analysis, OmniScan and TomoView  
-Flange data review detailed  
-Preparing for the inspection (quality management)  
-More acquisition and analysis detail  
Please call Eclipse for a customized quotation for this item.

## Components for Flange Scanners

### Wedges

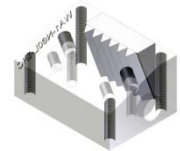
**WA3-N60L-IHC-AOD**, wedge for A3 probe, profiled to specified flange diameter

**WA3-N60L-IHC**, flat setup wedge for A3 probe



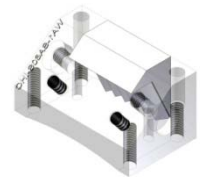
**WA1-N60L-IHC-AOD**, wedge for A1 probe, profiled to specified flange diameter

**WA1-N60L-IHC**, flat setup wedge for A1 probe



**WA1-SA60L-IHC-AOD**, short approach wedge for A1 probe, profiled to specified flange diameter

**WA1-SA60L-IHC**, flat setup, short approach wedge for A1 probe



### Calibration & Target Blocks

Distance and beam index calibration blocks for flange scanners.

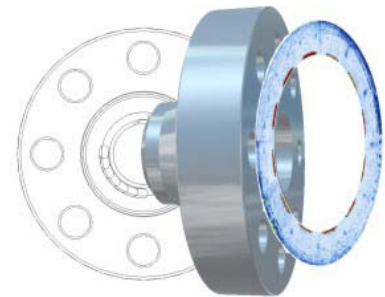
**CBK-11018**, metric block

**CBK-21018**, imperial block

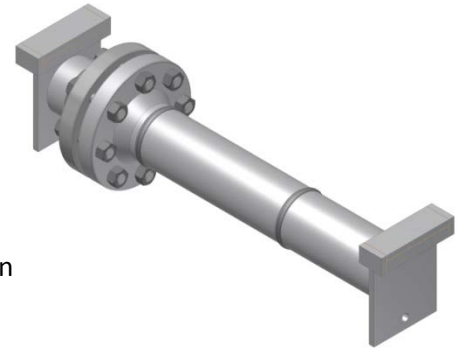


### Flange Target Blocks

Each custom made flange target block includes a set of UT target location specifications. Accurately machined targets calibrate the flange scanner to provide operators with known flaw responses. Each target block includes a set of UT target location specifications.



**CBK-15000-TB1**, target block with pipe  
-with hanging brackets for demo stand



**CBK-15000-TB1A**, target block with pipe and pipe targets  
-with two hanging brackets for demo stand  
Note: pipe target locations to be specified. Call for more information

**CBK-15000-TB2**, target block  
-with one hanging bracket for demo stand

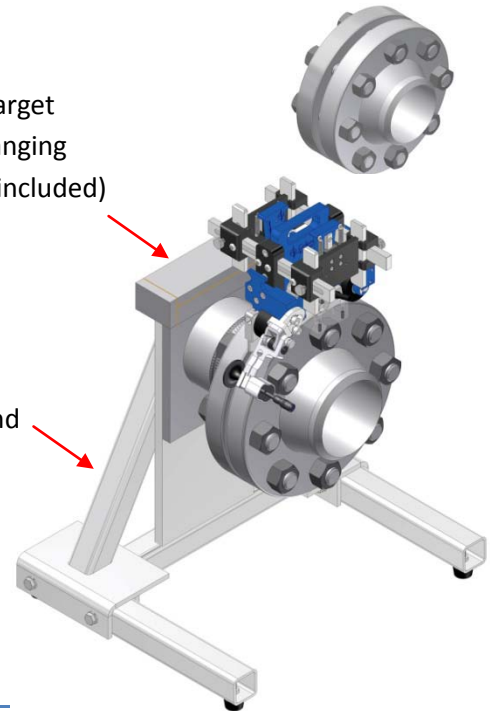


**CBK-15000-TB3**, target block only  
Note: hanging bracket not included

**ESFS-DS**, Demo stand for flange scanner  
Note: target block and scanner not included

Made to fit target  
block with hanging  
bracket (not included)

Demo stand



**CBK-15000-DWG**, Flange Target Block, standard drawing set

Specifications to machine and use a flange target block

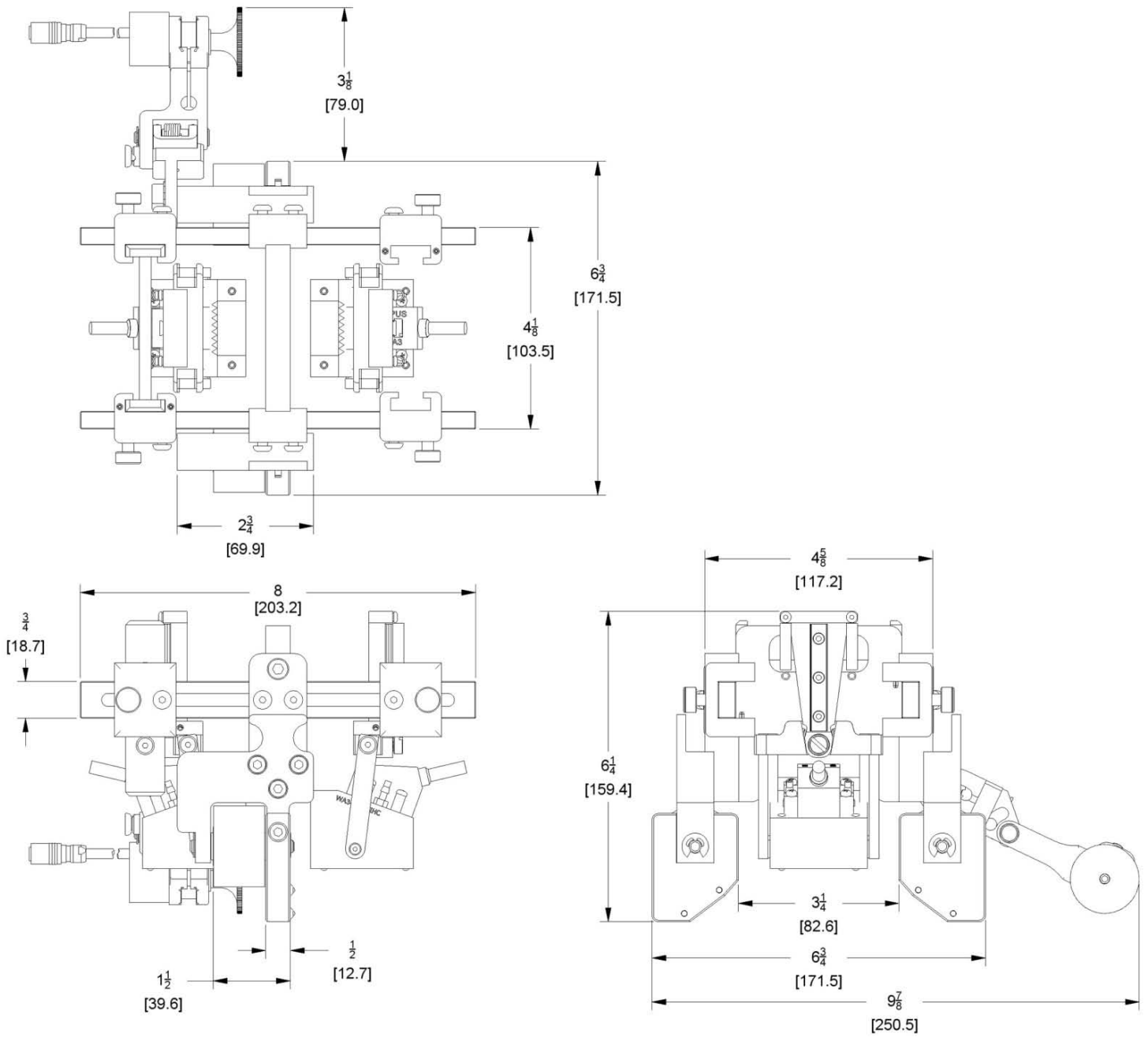
Set includes:

(1) Drawing for machining standard Eclipse targets

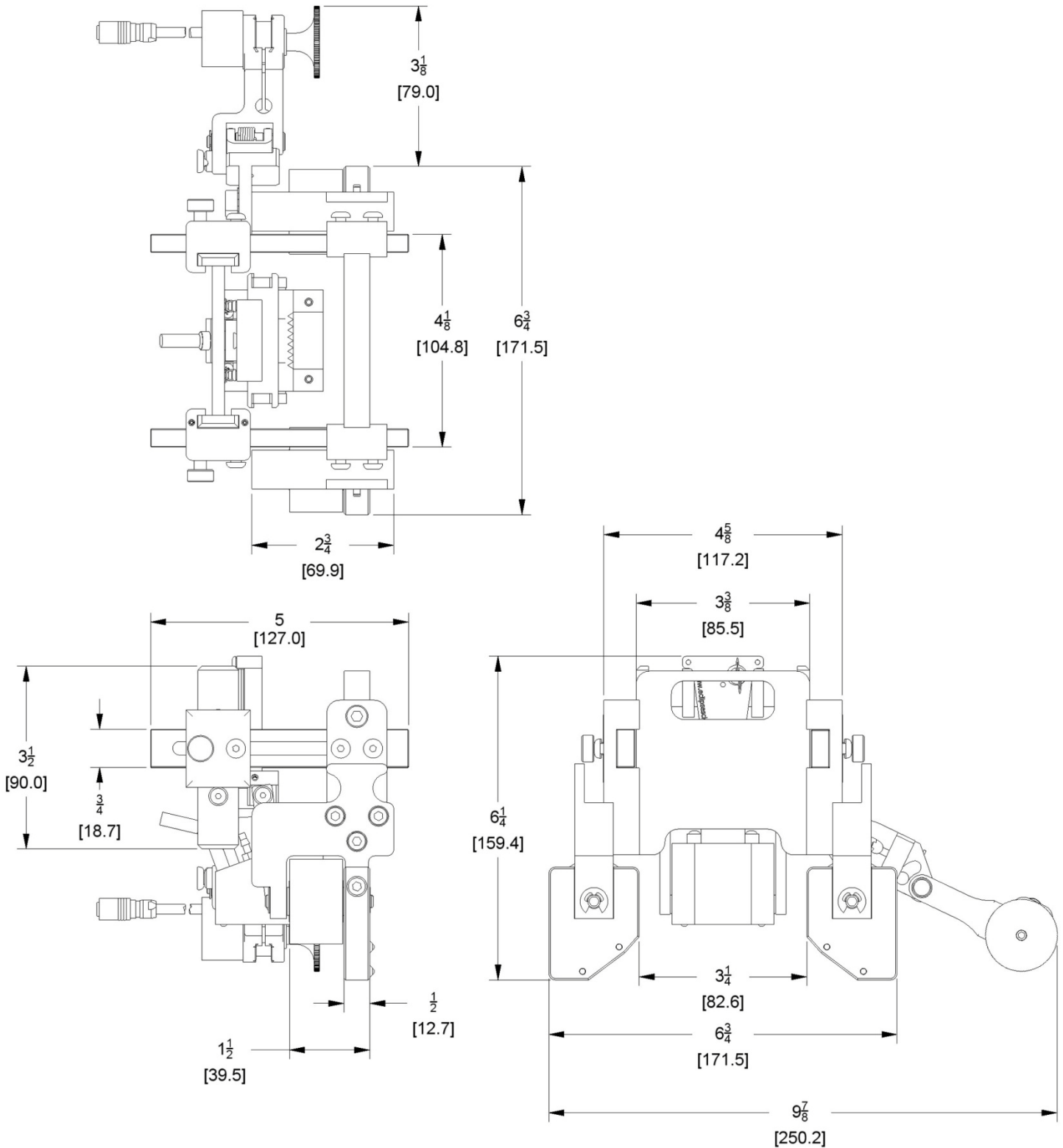
(1) Drawing for UT use showing target locations

## Overall Scanner Dimensions

### Two Probe Scanner



## Single Probe Scanner



## Contact



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