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Elcometer Protovale 331 Model S Covermeter

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At a glance

- *Precisely identify the depth, location & orientation of rebars.*
- *Automatic bar sizing modes for immediate bar diameter estimation.*
- *Maxpip™ and Under Cover Modes for additional surveying functionality*
- *1,000 reading memory – with statistics*

Elcometer Protovale 331 Model S Covermeter
The Elcometer Protovale 331 Model S Covermeter includes all of the features, flexibility and ease of use of the Model B, and has additional functionality making it the gauge of choice for structural and civil engineers and surveyors alike.

Measuring concrete cover thickness with a very high level of accuracy, the Elcometer Protovale 331 Model S is an intermediate level gauge for users who want greater accuracy in measuring the depth of rebar together with a simple data storage capability for recording and downloading data at a later date.

Concrete Covermeters
Locating steel reinforcement bars and metal pipes is essential in the construction and maintenance of structures. Damage caused when a drill or a fastener makes contact with a pipe is costly. A drill making contact with rebar or tendon ducts, however, not only destroys the drill bit but also can lead to serious structural damage.

Before carrying out any maintenance work, it is vital to identify the location, orientation and depth of sub-surface metalwork. Elcometer has three covermeters in their range.

Can be used in accordance with:	
ACI 318	BS 1881:204
CP 110	DIN 1045
EC 2	SIA 162

- ***Automatic Rebar Sizing*** - the Elcometer Protovale 331 Model S has two modes of rebar estimation: *Autosize* - a quick estimation of the bar size, displayed in the main measurement mode; and *Orthogonal* – a more accurate method to determine the size of unknown bars.
- ***Under Cover Mode*** - the gauge's buzzer only sounds when a minimum cover has been detected.
- ***Maxpip™ Mode*** - the buzzer only sounds when the search head has passed the centre of the rebar, ideal for fast identification of the layout of the rebar.
- ***Min / Max Cover Limits*** - program in minimum and/or maximum cover thickness values to monitor whether depth of cover is within specification.
- ***Data Logging and Statistics*** - 1,000 individual cover readings, and measurement statistics can be stored in the gauge's memory and either printed to on a directly connected printer or uploaded into your PC using Elcometer's free software EDTS^{+} Excel Link or CoverMaster® software, supplied as standard with each instrument, for further evaluation and report generation.

Following the Elcometer philosophy of flexibility, the Elcometer Protovale 331 Covermeters have a wide range of optional accessories to meet many specialist needs:

- ***Identify subsequent layers of rebars & tendon ducts*** – connected to our *Borehole Probe* the Elcometer Protovale 331 Model S is able to detect rebars or tendon ducts behind layer after layer of rebar up to 100cm (40") deep.
- ***Measure in a wide range of congested situations*** – using the optional *Narrow Pitch Search Head*, the Elcometer Protovale 331 Model S can measure close to corners, castellated concrete surfaces, and pre-cast concrete units. Reinforced cages in concrete pipes can also be investigated.
- ***Extended Measurement Range*** – using the *Deep Cover Search Head*, the Elcometer Protovale 331 Model S's measurement range can be extended to 180 mm (7") of concrete cover.

ELCOMETER PROTOVALE 331 RANGE FEATURES

	Model B	Model S	Model T
Rebar Location, Orientation & Depth of Cover	●	●	●
Large Cover Thickness Reading in mm & inches	●	●	●
Large Graphics Display with Backlight	●	●	●
Multiple Language Menu Structure	●	●	●
Signal Strength Bar	●	●	●
Interchangeable Heads with LED & keypad	●	●	●
User Selectable Bar Range Sizes & Numbers	●	●	●
Measurement Sound Modes:	●	●	●
Locate *(tone increases as head approaches rebar)*	●	●	●
Under Cover *(tone only sounds for low cover)*		●	●
Maxpip™ *(tone only as head passes rebar centre)*		●	●
Autosize Mode Bar Diameter Determination		●	●
Orthogonal Mode Bar Diameter Determination		●	●
RS232 Output - Direct to Printer or PC		●	●
EDTS+ Excel Link Software		●	●
CoverMaster® Software		●	●
Data Logging – with Alpha Numeric Batch Identification		*1,000 readings in a linear batch*	*65,000 readings in linear or grid type batches*
Statistics		●	●
Minimum & Maximum Cover Limits		●	●
Date and Time			●
Rugged Waterproof Case (IP65)	●	●	●
Adjustable Beep Volume & Earphone Socket	●	●	●
Upgradeable models	●	●	

Bar Diameter Ranges	Metric: USA Bar Numbers: ASTM/Canadian: Japanese:	5 - 50mm bar diameters in 21 values #2 - #18 bar diameters in 16 values 10 - 55M bar diameters in 8 values 6 - 57mm bar diameters in 17 values
Rechargeable Power Supply	7.4V lithium ion battery pack provides up to 32 hrs of continuous use (20 hrs if backlight switched on). Rechargeable in 4hrs either inside or outside the gauge, using an external charger.	
Maximum Operating Temperature	50°C (122°F)	
Unit Dimensions *(including standard head & lead)*	Size: 230 x 130 x 125mm (9 x 5 x 5”)	
Weight:	1.54kg (3.4lb)	
Packing List	Model B: Plastic ABS case complete with covermeter, standard head, rechargeable battery pack & charger, PC / printer cable, shoulder harness, instruction book and software Model S & T: As Model B plus EDTS+ Excel Link & CoverMaster® Software.	

Model	**Description**	**Part Number**		
		UK 240V	**EUR 220V**	**US 110V**
Elcometer 331 B	Elcometer Protovale 331 Model B	W331B---1	W331B---2	W331B---3
Elcometer 331 S	Elcometer Protovale 331 Model S	W331S---1	W331S---2	W331S---3
Elcometer 331 T	Elcometer Protovale 331 Model T	W331T---1	W331T---2	W331T---3
Accessories	Elcometer Dot Matrix Mini Printer	X4569964B	X4569964C	X4569964D
	CoverMaster® Software *(model S & T only)*	TW33119221		
	Calibration Certificate	TWCAL-331		
	Spare / Additional Battery Pack	TW33119038		
	Straight Cable - 1.8m (5.9ft)	TW33119201		
	USB Interface Cable	T99916716		

ELCOMETER PROTOVALE 331 SEARCH HEADS AND ACCESSORIES

Supplied with all gauges this search head is designed to meet almost all your measurement requirements.

STANDARD SEARCH HEAD			
Dimensions	Overall	155 x 88 face x 42mm	6.10 x 3.5 face x 1.65”
	Sensing Area	120 x 60mm	4.72 x 2.36”
Cover Range	40mm (1.57”) Diameter Bar	15 – 95mm (0.6 – 3.75")	
	8mm (0.32”) Diameter Bar	8 – 70mm (0.2 – 2.75")	
Accuracy	Up to 65mm (2.56”) of Cover	±2mm (±0.08”)	
	70mm (2.76”) of Cover and Over	±3%	
Resolution	16mm (0.63”) bars at 50mm (2”) cover, 75mm (2.95”) pitch or 60mm (2.36”) separation		
Part Number	TW33119124-1		

This search head is designed to accurately measure cover thickness when the gaps between each rebar (the pitch) are very small.

NARROW PITCH SEARCH HEAD			
Dimensions	Overall	155 x 88 face x 42mm	6.10 x 3.5 face x 1.65”
	Sensing Area	120 x 60mm	4.72 x 2.36”
Cover Range	40mm (1.57”) Diameter Bar	8 – 80mm (1 – 3.2")	
	8mm (0.32”) Diameter Bar	5 – 60mm (1 – 2.4")	
Accuracy	Up to 65mm (2.56”) of Cover	±2mm (±0.08”)	
	70mm (2.76”) of Cover and Over	±3mm (±0.12”)	
Resolution	10mm (0.4”) bars at 30mm (1.2”) cover, 50mm (2.0”) pitch or 40mm (1.57”) separation		
Part Number	TW33119124-2		

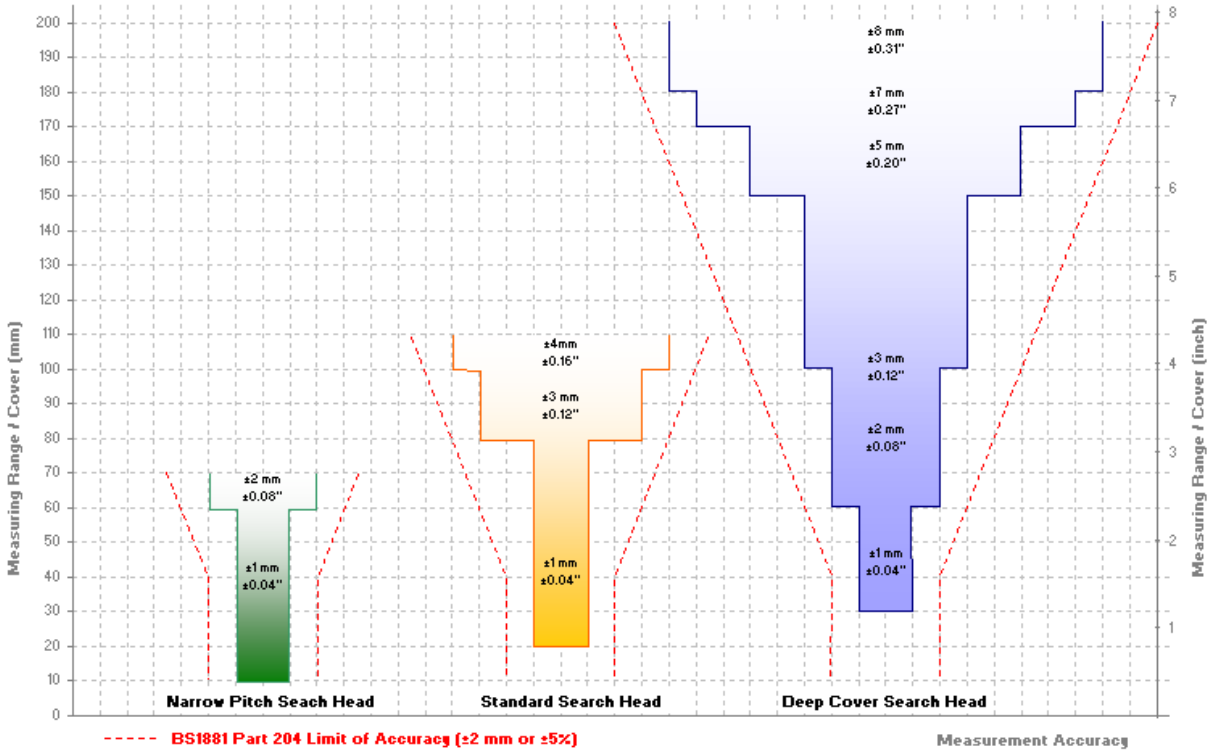
When you need to search for rebars that are deep within the structure this search head is ideal.

DEEP COVER SEARCH HEAD			
Dimensions	Overall	170 x 94 x 54mm	6.7 x 3.7 x 2.1”
	Sensing Area	160 x 80mm	6.30 x 3.15”
Cover Range	40mm (1.57”) Diameter Bar	35 – 180mm (1 – 7")	
	8mm (0.32”) Diameter Bar	25 – 160mm (1 – 6.3")	
Accuracy	Up to 65mm (2.56”) of Cover	±2mm (±0.08”)	
	70mm (2.76”) of Cover and Over	±3%	
Resolution	16mm (0.63”) bars at 50mm (2”) cover, 75mm (2.95”) pitch at 60mm (2.36”) separation		
Part Number	TW33119171		

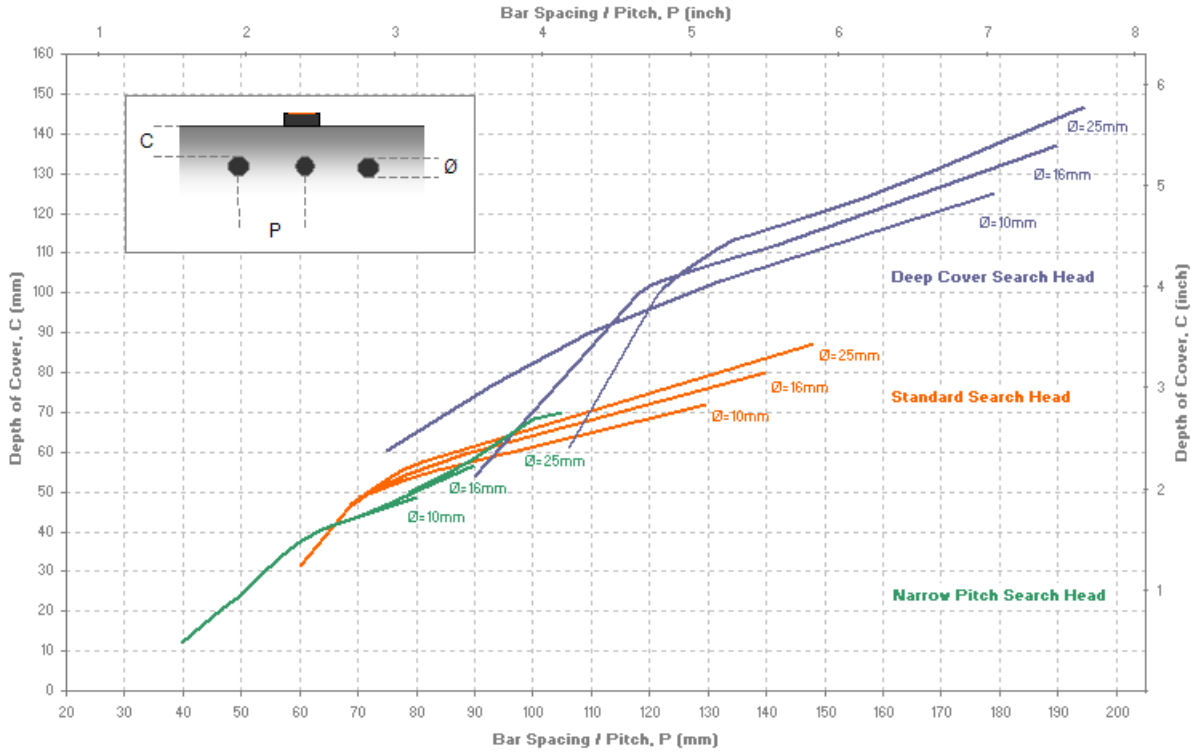
EXTENSION ARM KIT	
This allows the operator simple access to areas normally requiring ladders or scaffolding. Reduces the need to kneel down and allows the User to scan bridge decks and floor areas from a standing position. It can be connected to either the Standard or Narrow Pitch Search Head.	
Part Number	TW33119222

ELCOMETER PROTOVALE CALIBRATION TEST BLOCK	
This simple test block allows the user to confirm the measurement accuracy of their gauge using the four different cover thickness values identified on the test block.	
Part Number	TW33119218

Elcometer Protovale 331 Covermeter Measurement Accuracy



Elcometer Protovale 331 Covermeter Measurement Resolution

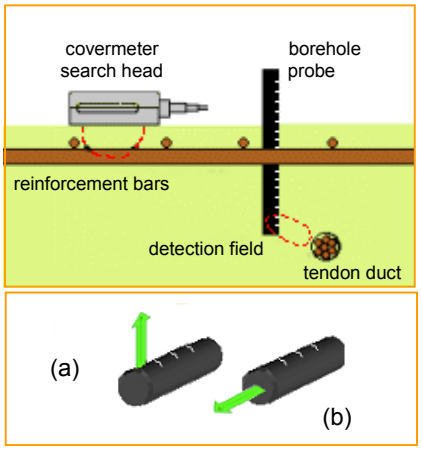


ELCOMETER PROTOVALE BOREHOLE PROBE

The range of Protovale by Elcometer Concrete Covermeters are unequalled at finding the precise location and orientation of the first layers of reinforcing bars (rebars) with the transverse bar tied to it.

No covermeter will find subsequent layers of steel reinforcement deep within the concrete. Nor can they locate pre-stressing or post tensioning tendons underneath the top reinforcement. When the Elcometer Borehole Probe is connected to the Elcometer Protovale 331 the user can now locate rebar and tendon ducts at greater depths than any other covermeter on the market today.

- *Reduce unnecessary boreholes* - Significantly reduces abortive drilling that not only costs both time and money but also weakens structural integrity.
- *Protect drills and reinforcement* - The Probe warns you before you hit metal, reducing damage to drills, tendons and rebars.
- *Drill holes faster and more safely* - Drill with confidence knowing that you're safe from hitting metal in the concrete over a measured distance
- *Install anodes accurately* - Use the Probe to install anodes at the correct distance from steel reinforcement.
- *Directional location field* - Rocker switch on probe head allows fast, easy change between forwards or sideways detection
- *Measures depth of hole* - The probe shaft is calibrated to measure depth drilled.



The 'easy' solution for finding tendon ducts and 'hidden' layers of rebar using a simple and reliable detection method.

Using the Elcometer Protovale 331 Covermeter, identify an area between the first layers of rebar - allowing you to drill a hole with a large enough diameter to fit the shaft of the Elcometer Borehole Probe.

The Elcometer Borehole Probe is then carefully pushed into the hole and information about the 'hidden' reinforcement, either (a) to the side of, or (b) in front of, the end of the probe, can be determined - see diagram. By rotating the probe and selecting the forwards or sideways sensing mode, reinforcement lying below the first layer of rebar can be quickly located.

By increasing the depth of the hole (if possible), and re-inserting the probe as necessary, the operator can quickly find steel rebars or tendon ducts deep within the concrete.

APPROXIMATE DETECTION RANGES TO THE SIDE AND IN FRONT OF THE BOREHOLE PROBE		
Steel Object	Probe Orientation (see diagram above)	
Reinforcement Bar	side of the probe (a): 45mm (1.77")	in front of probe (b): 60mm (2.36")
Tendon Duct - 70mm (2.75") Dia.	side of the probe (a): 60mm (2.36")	in front of probe (b): 90mm (3.54")

Measurement Length	**Metric**	**Imperial**	**Shaft Marking**	every 1cm or 0.5"
Short Probe	0 – 34cm	0 – 16"	**Shaft Diameter**	16mm (0.62")
Long Probe	0 – 100cm	0 – 40"	**Optimum Hole Dia.**	20mm (0.78")

Model	Description	Part Number	
		Metric	Imperial
Borehole Probe (Short)	Elcometer Borehole Probe: Short Version	TW33119223-1	TW33119223-3
Borehole Probe (Long)	Elcometer Borehole Probe: Long Version	TW33119223-2	TW33119223-4

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Related Products

Elcometer 331 Model B

Measuring concrete cover thickness with unparalleled accuracy the Elcometer Protovale 331 Model B is an entry level gauge for users who simply want to identify and measure the depth of the rebar.

Elcometer 331 Model T

Incorporating all the features and functionality of the Model B and Model S Covermeters, the Model T comes with the additional ability to store in excess of 65,000 readings in either individual batches or multiple spreadsheet (grid) style batch surveys.

Elcometer 331 Borehole Probe

When the Elcometer Borehole Probe is connected to the Elcometer Protovale 331 the user can now locate rebar and tendon ducts at greater depths than any other covermeter on the market today.

Elcometer Covermaster Software

Supplied free with each Elcometer Protovale 331 Model T and as an optional extra for the Model S, Elcometer's CoverMaster® software is designed to further simplify the setting up of your covermeter.

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