

# Starrett®

Precision, Quality, Innovation

## SURFACE ROUGHNESS TESTING EQUIPMENT SR SERIES

SR160

SR300

SR400

TalyProfile

Accessories



## SURFACE ROUGHNESS TESTING

Starrett surface roughness testing equipment is simple, accurate and of high quality. It performs the complex analysis required to meet or exceed your customers specifications. The SR160, SR300, and SR400 units are tough, shock tested, and capable of withstanding the demands of a shop environment. Our surface roughness testers meet the increasing requirements across industries like safety, aerospace, automotive, precision bearings, and general manufacturing.

When our customers speak, we listen. And that is why the new Starrett SR160 is one of our most well developed tools yet. Regardless of your application, an investment in a Starrett surface roughness tester will give you the peace of mind that your shop deserves.

## ROUGHNESS STANDARDS

ASME 46.1, ISO4287, ISO13565-1/2, JIS 0601, N331007

## APPLICATIONS

- Incoming inspections
- Final inspection before shipment
- Process control on the production line
- Checking large components or structures

## USB MINI CHARGING

The mini USB port can be used for charging with the included charger and international adapters.



## SR160

**MEASURE**  
Tactile measurement button great for challenging orientations



## SR300 AND SR400

**LIFT/LOWER**  
Standard 50mm height adjustment, 70mm reach into bore, and right angle measurement.

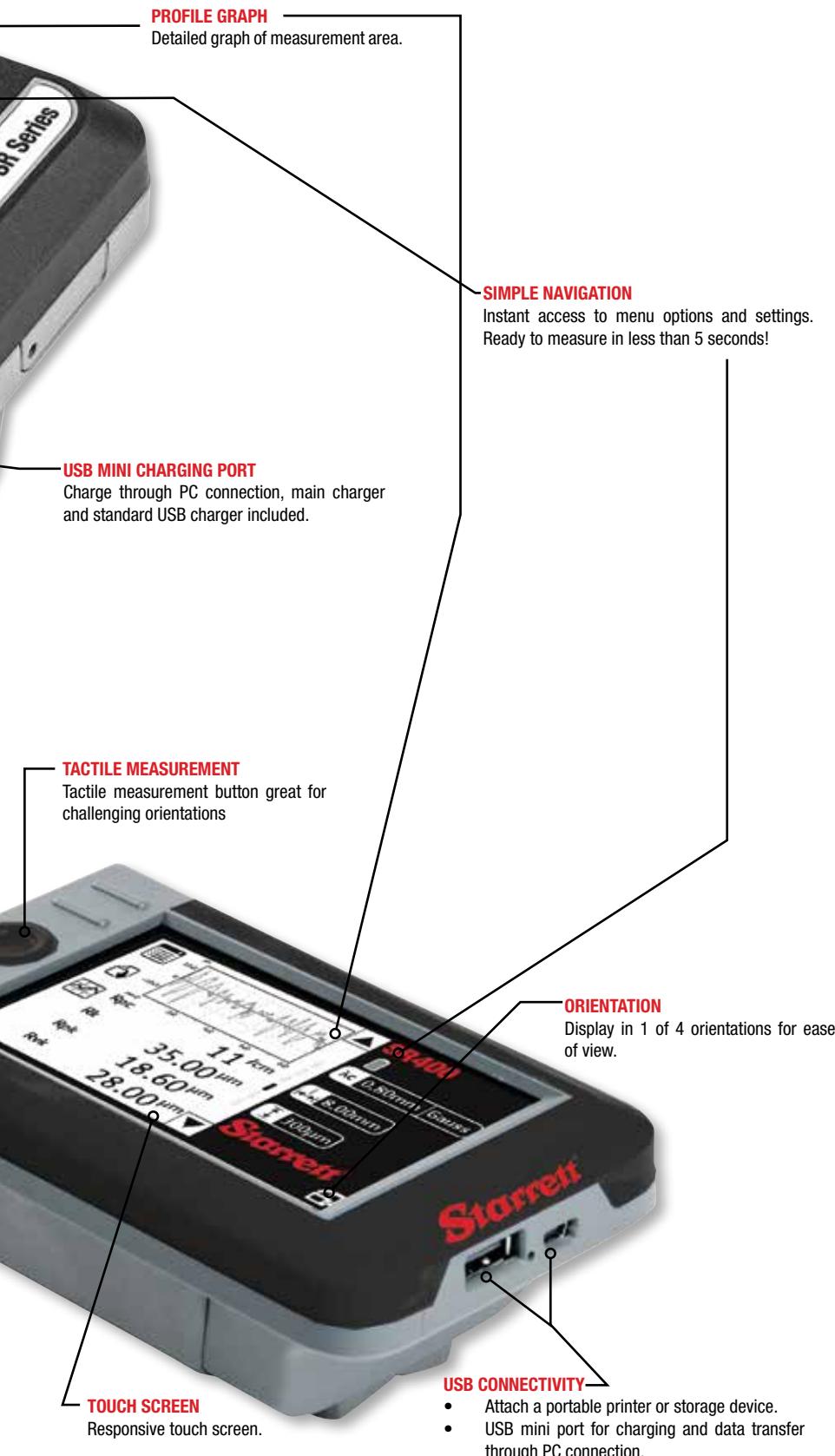
**ANTI-SLIP**  
Perfect for mounting on flat or curved surfaces. Contact design aligns measurement with cylinder axis.





#### BLUETOOTH TECHNOLOGY

Quick, reliable communication between traverse and display/control unit.



#### SEPARATES

The SR160 splits into a display/control unit and traverse unit via a slide and lock mechanism. The SR160 has the smallest form factor in its class.

#### BENEFITS

- Improved throughput
- Reduce part scrappage
- Monitor tool wear
- Ensure traceability
- Measure without the need for expensive riser blocks, stands or fixtures
- Use on flat or curved surfaces
- Measure upside down



#### STANDARDS AND TRACEABILITY

The supplied reference standard can be used to consistently achieve a proper calibration.

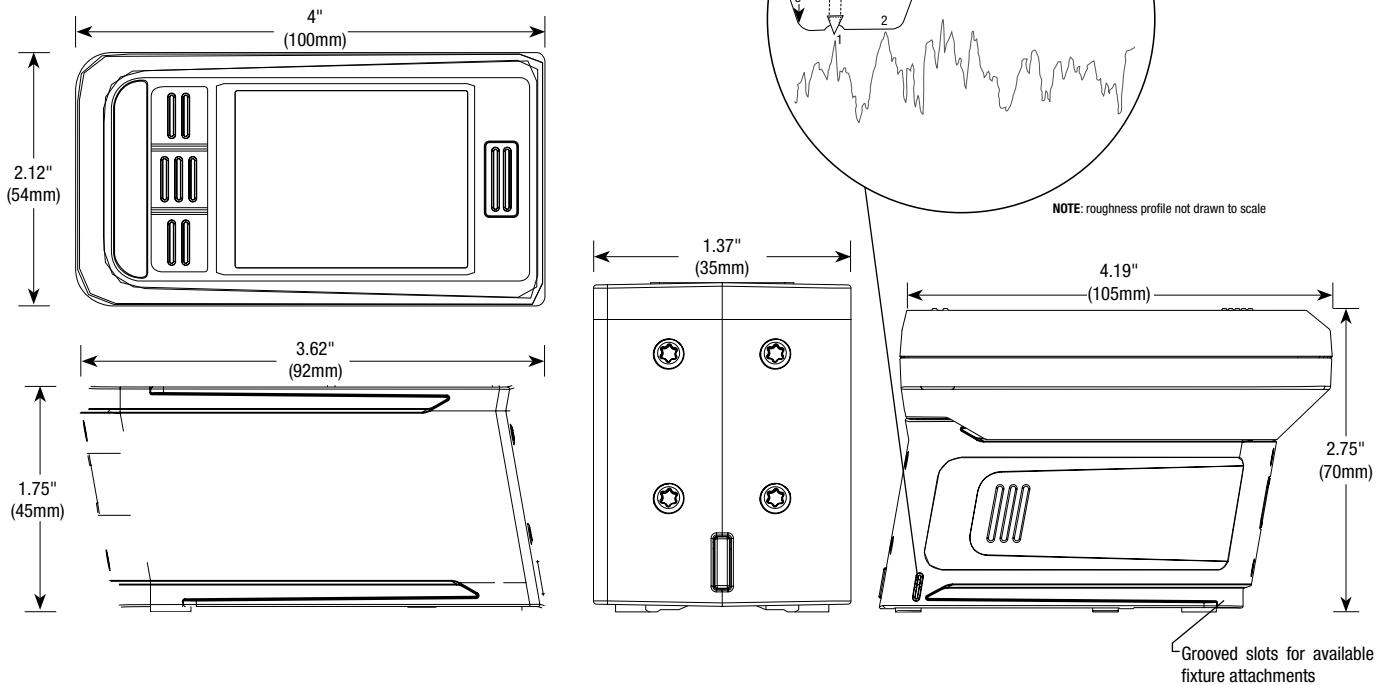
Measurement	Best capability
Roughness standards (Ra)	$\pm(2\% + 0.004 \mu\text{m})$
Workpiece or component surface texture (Ra)	$\pm 3\%$ of measured value per trace

## TECHNICAL SPECIFICATIONS

		SR160	SR300	SR400
<b>Instrument Performance</b>				
Measurement	Gage Resolution	0.4μin (10nm)	100nm, 20nm, 10nm	50nm, 10nm, 5nm
	Range	200μm	200μm, 100μm, 10μm	400μm, 100μm, 10μm
	Repeatability (Ra)	2% of value + noise	1% of value + noise	0.5% of value + noise
	Accuracy	5% of reading + 4μin (0.1μm)	±2% of reading + noise	±2% of reading + noise
	Noise	0.8μin (20nm)	250nm, 150nm, 100nm	150nm, 100nm, 50nm
Calibration	Process	Automated software calibration routine	Automated software calibration routine	Automated software calibration routine
	Standard	Able to calibrate to ISO 4287 roughness standards	Able to calibrate to ISO 4287 roughness standards	Able to calibrate ISO 4287 standards
Data Storage	Internal	None	100 measurement results, 1 raw profile	100 measurement results, 1 raw profile
	USB Type A (4GB supplied)	None	>39,000 raw profiles, up to 100,000 results per batch (>70 batches)	>39,000 raw profiles, up to 100,000 results per batch (>70 batches)
	PC connection	None	Unlimited data storage	Unlimited data storage
Data Output	On-screen Output	Up to 5 results per page, selectable on-screen graph	Up to 7 results per page, selectable on-screen graph	Up to 7 results per page, selectable on-screen graph
	PC connection	None	Full SPC and tolerancing of all parameters using TalyProfile software	Full SPC and tolerancing of all parameters using TalyProfile software
	Printer (USB Type A) Output	None	Output settings, results and high resolution profile graph	Output settings, results and high resolution profile graph
<b>Technical</b>				
Languages	Basic	English	English, French, German, Italian, Spanish	English, French, German, Italian, Spanish
Battery	Charger	Mini USB 5V 1A 110-240 VAC 50/60 Hz	USB 5V 1A 110-240VAC 50/60Hz	USB 5V 1A 110-240VAC 50/60Hz
	Charging time	4 hours	4 hours	4 hours
Power	Battery life	>10,000 measurements	>2,000 measurements	>2,000 measurements
	Standby time	5000 hours	5000 hours	5000 hours
	InstantOn	Max 5 sec from off to ready to measure	Max 1 sec from standby to ready to measure	Max 1 sec from standby to ready to measure
	Auto-sleep function	5 min.	30 sec. - 6 hours (user-selectable)	30 sec. - 6 hours (user-selectable)
	Internal SPC/STATS	None	Optional	Min, Max, Mean, StdDev of stored results
	External SPC/STATS (4GB USB Supplied)	None	Optional	ASCII export of all results for SPC
<b>Instrument Capability</b>				
Pick-up Assembly	Pick-up type	Piezoelectric	Inductive	Inductive
	Stylus type Radius	Diamond, 200μin (5μm)	200μin (5μm) defalut/80μin (2μm) or 400μin (10μm) optional	200μin (5μm) defalut/80μin (2μm) or 400μin (10μm) optional
Gage	Gage force	200 mg	150-300mg	150-300mg
	Measurement type	Skidded	Skidded	Skidded
Filter	Filter type	Gaussian	2CR/Gaussian	2CR/Gaussian
	Filter cut-off	0.8mm	0.25mm/0.8mm/2.5mm	0.25mm/0.8mm/2.5mm
Measuring	Traverse length	0.2in (5mm)	17.5mm	25.6mm
	Measuring speed	0.08in/sec (2mm/sec)	0.04in/sec (1mm/sec)	0.04in/sec (1mm/sec)
Display	Evaluation Length		0.01in-0.49in (0.25mm-17.5mm)	0.01in-0.89in (0.25mm-25.6mm)
	Units	μin/μm	μin/μm	μin/μm
	Returning speed	.08in/sec (2mm/sec)	0.06in/sec (1.5mm/sec)	0.06in/sec (1.5mm/sec)
<b>Environmental/Physical</b>				
Physical Specifications	Weight including pickup	14 oz (0.4Kg)	1.1lbs (0.5Kg)	1.1lbs (0.5Kg)
	Power source	Li-Poly rechargeable battery	Li-Poly rechargeable battery	Li-Poly rechargeable battery
Operating Conditions	Temperature	41-104°F (5-40°C)	41-104°F (5-40°C)	41-104°F (5-40°C)
	Humidity	0-80% non-condensing	0-80% non-condensing	0-80% non-condensing
Storage Conditions	Temperature	32-122°F (0-50°C)	32-122°F (0-50°C)	32-122°F (0-50°C)
	Humidity	0-80% non-condensing	0-80% non-condensing	0-80% non-condensing
<b>Parameters - ISO 4287, ISO 13565-1, ISO 13565-2, ASME 46.1, JIS 0601, N331007 (N31007 for SR300 and SR400 only)</b>				
Total		14	19	39
	ISO basic	Ra, Rv, Rp, Rz, Rt, Rsk, Rz1max, Rq, Rku	Ra, Rv, Rp, Rz, Rt, Rsk, Rmr, Rdq, Rpc, RSm, Rz1max, Rdc	Ra, Rv, Rp, Rz, Rt, Rsk, Rmr, Rdq, Rpc, RSm, Rz1max, Rdc
	ISO advanced		Optional	Rk, A1, A2, Mr1, Mr2, Rpk, Rvk
	ASME			Ra, Rv, Rp, Rz, Rt, Rq, Rsk, Rdq, RSm, Rpm, Rda
	JIS			Ra, Rv, Rp, Rz, Rt, Rq, Rsk, Rmr, Rdq, RSm, RzJIS, Rc, Rku, Rdc
	Other		R3z (Daimler Benz)	R3z (Daimler Benz)
	ISO Primary	Pa, Pv, Pp, Pz, Pt	Optional	Pa, Pv, Pp, Pz, Pt, Pq, Psk, Pmr, Pdq, Ppc, PSm, Pz1max, Pdc

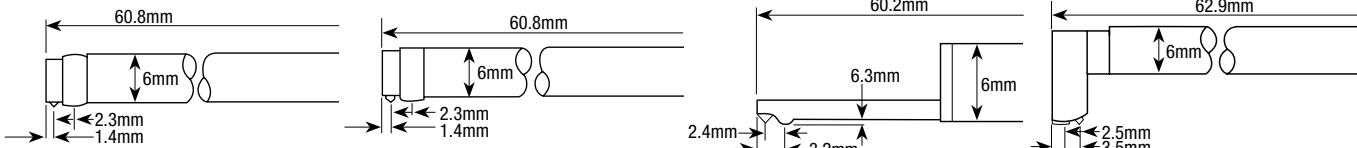
# DIMENSIONS

## SR160



DIMENSIONS

## SR300 and SR400



### STANDARD PICK-UP

For general surface roughness measurement  
**code SR-112-1502** (5µm tip radius)  
**code SR-112-1503** (10µm tip radius)  
**code SR-112-4700UB** (2µm tip radius)

### RIGHT ANGLE PICK-UP

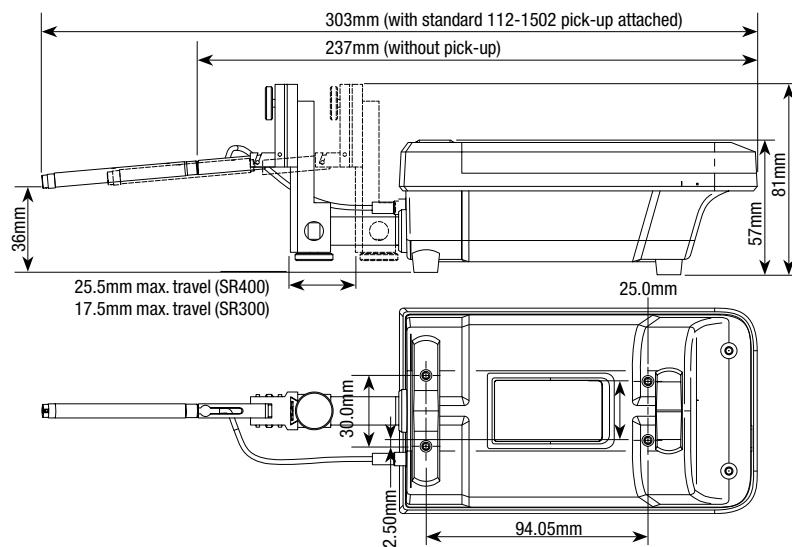
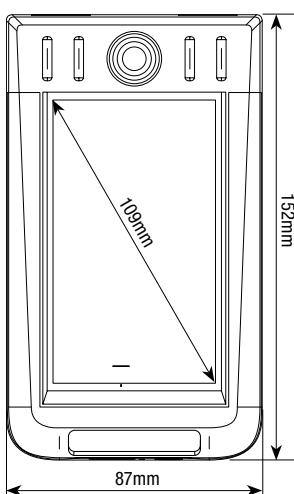
For measurement at right angles to the  
 direction of traverse  
**code SR-112-1505**

### SMALL BORE PICK-UP

For general use in small bores, grooves  
 and on narrow surfaces  
**code SR-155-P28495**

### RECESS PICK-UP

For measuring into deep recesses  
**code SR-112-1506** recess 0.23in (5.7mm)





## TALYPROFILE

### ADVANCED SURFACE FINISH ANALYSIS

TalyProfile is a dedicated PC based software package designed for use with the SR300 and SR400 series instruments. Three versions are available. TalyProfile "Lite" has all functions typically used for a shopfloor inspection, TalyProfile "Silver" has enhanced features for R&W parameters, a statistics module and full report printing and TalyProfile "Gold" has complete laboratory analysis functions:

- Outstanding graphics
- Advanced time-saving analysis templates
- Desktop publishing facility
- In depth analysis
- Full compatibility

#### TalyProfile parameters

Roughness parameters obtained by filtering: Ra, Rq, Rt, Rp, Rku, Rsk, RSm, Rz, RΔq, RTp, RHTp, Rlo, RPC, RzJIS, R3z.

Parameters on the raw profile (unfiltered): Pa, Pq, Pt, Pp, Pv, Pku, Psk, PSm, Pz, PΔq, PTp, PHTp, PLo\*, PPC.

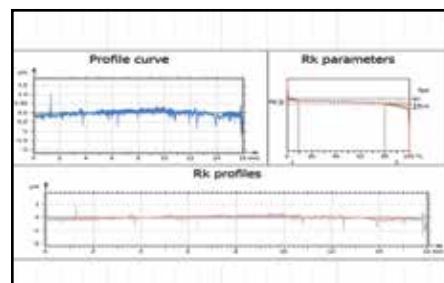
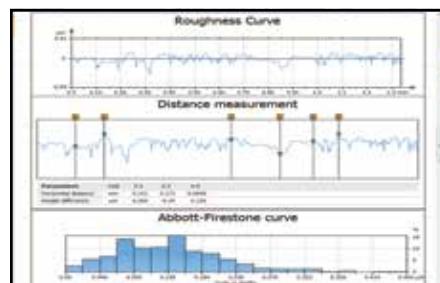
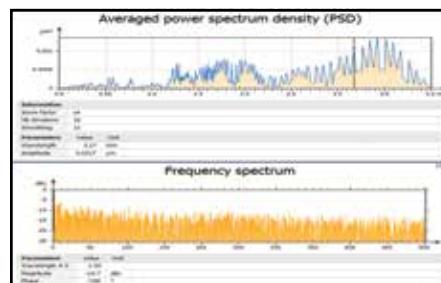
Parameters obtained by double filtering (DIN 4776)\*: Rk, Rpk, Rvk, MR1, MR2, A1, A2, Rpk, Rvk

Parameters obtained by the motifs method ("R&W")\*: R, AR, Pt, Rx, SR, SAR, Nr, Kr, W, AW, Wte, Wx, SW, SAW, Nw, Kw, Rke, Rpke, Rvke, Trc, HTrc.

\*Only with gold or silver versions

PC specification	Minimum	Recommended
Operating system	Windows XP	Windows 8
Memory (RAM)	1GB	3 GB
CPU speed	1GHz	2 GHz
Screen resolution	1024 x 768	1920 x 1080
USB port	1.1	2.0

Talyprofile	Lite	Silver	Gold
Surtronic S-series acquisition	X	X	X
Desktop publishing templates	X	X	X
Multi-language support	X	X	X
EN, FR, DE, ES, IT, PL, CN, KR	X	X	X
Levelling	X	X	X
Symmetries	X	X	X
Zoom	X	X	X
ISO 4287	X	X	X
Material Ratio Curve	X	X	X
Area of a hole/peak	X	X	X
Profile parameters and curves	X	X	X
Roughness and waviness curves	X	X	X
Distance measurement	X	X	X
Multiple file format reports	X	X	X
Report printing	X	X	X
Form TalySurf data import	X	X	X
Tolerance limits (pass/fail)	X	X	X
Data file explorer	X	X	X
ISO 13565 Automotive	X	X	X
Interactive Mr curve	X	X	X
Step height measurement	X	X	X
Form removal			X
Filtering by FFT			X
Thresholding			X
Frequency spectrum			X
Power spectrum density			X
Retouch profile point			X
Rk parameters			X
Rk Parameters curves			X
ISO 12085 R&W motifs			X



# PRODUCT LISTING

## Surface Roughness Testers

Cat. No.	EDP	Description
SR160	72584	SR160 display with 5mm traverse unit, pick-up, diamond stylus, calibration standards, manual, and carrying case.
SR300	21000	SR300 display with 17.5mm traverse unit, TalyProfile Lite software, pick-up, diamond stylus, calibration standard, manual and carrying case.
SR400	21001	SR400 display with 25mm traverse unit, TalyProfile Lite software, pick-up, diamond stylus, calibration standard, manual and carrying case.

## Accessories - SR160

Cat. No.	EDP	Description
SR-112-3188	72667	Magnetic base
SR-112-4545	72668	USB charger
SR-112-5085	72666	Hard transport case
SR-112-2937	20968	Extra reference standard

## Accessories - SR300 and SR400

Cat. No.	EDP	Description
SR-112-1510	20961	7.875" (200mm) extension rod with lead
SR-112-1534	20962	Reference standard
SR-112-1517	20963	Support stand
SR-112-2693	20964	Column and stand
SR-112-4545	72668	USB charger
SR-112-1502	20956	Standard pickup with 200 $\mu$ in (5 $\mu$ m) stylus
SR-112-1503	20957	Standard pickup with 400 $\mu$ in (10 $\mu$ m) stylus
SR-115-P28495	21004	Small bore pickup
SR-112-1505	20959	Right angle pickup
SR-112-1506	20960	Recess pickup
SR-112-3680	20952	TalyProfile Gold - 2D analysis
SR-112-3681	20953	TalyProfile Silver - 2D analysis
SR-112-4570	21002	USB thermal printer
SR-112-4571	21003	Thermal paper

All accessories listed above are available for order. Please contact your local Starrett representative for additional or special requirements.

## SR160



SR160 with included accessories

## SR300/SR400



SR400 with included accessories