Fowler ®

HIGH PRECISION

baty

OPTICAL INSTRUMENTS **OPTICAL COMPARATORS**
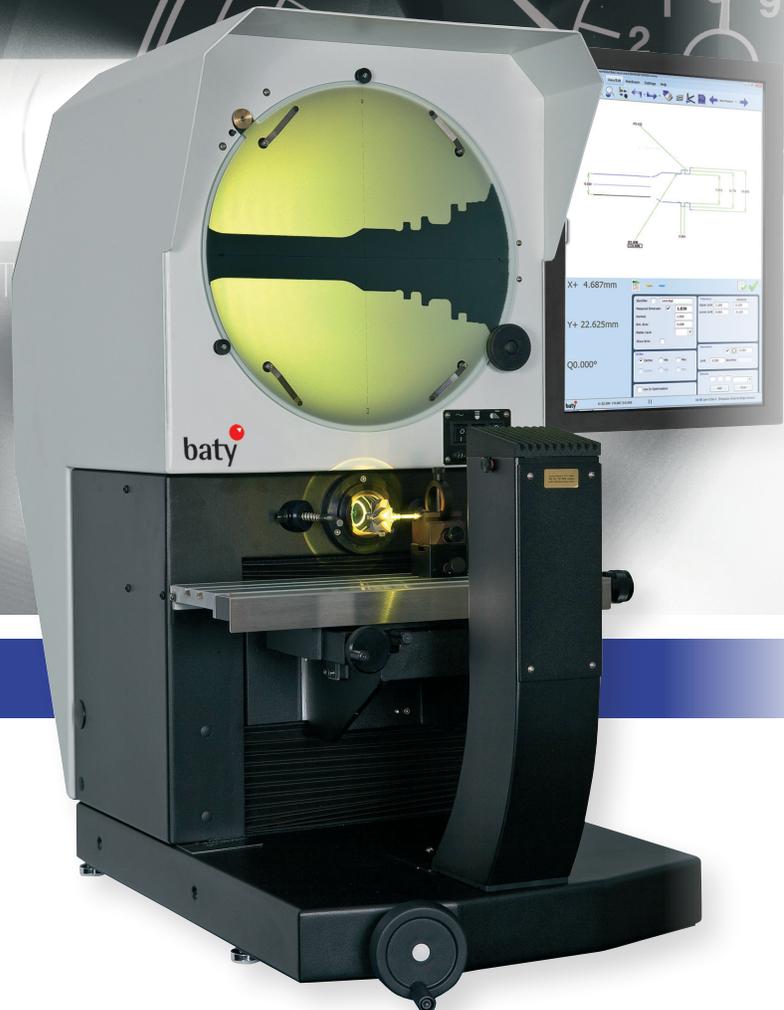
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Fowler Baty Optical Comparator - R14

The Fowler Baty R14 bench mount optical comparator with its 340mm screen combines high accuracy non-contact measurement and inspection with a large 175mm x 100mm measuring range.

Choice of digital readouts and optional automatic profile edge detection ensures that you can have the comparator that fits your requirements. The horizontal light path configuration is ideally suited to turned machined parts that can be secured to the workstage using a range of optional accessories from the Fowler Baty fixture family. The compact and robust lightweight chassis makes the R14 ideal for workshop environments.

Features

- 14"/340mm screen with 90º crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice: 10x, 20x, 25x, 50x and 100x
- Surface illumination (fibre optic)
- Helix adjustment of light source ± 7º for accurate thread form projection
- Workstage with machined slot for holding accessories
- Workstage measuring range of 7"/175mm x 4"/100mm
- Digital angle measurement to 1 minute
- 0.5 micron resolution

Available Options

- Internally fitted automatic edge sensor
- Swing over lamphouse to allow clear access to the workstage
- Various display units are available to suit individual requirements
- Cabinet stand ensures a solid base and provides storage
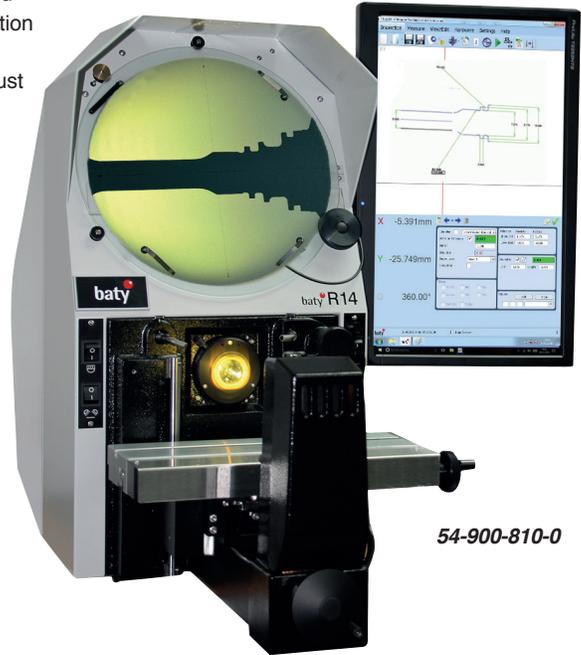
54-900-810-0

Projector Type	R14				
Magnification	10x	20x	25x	50x	100x
Field of view	35	18	14	7	4
Working Distance	82	38	24	15	31
Maximum	half field 103	103	80	45	96
Working Diameter	full field 120	109	56	31	77
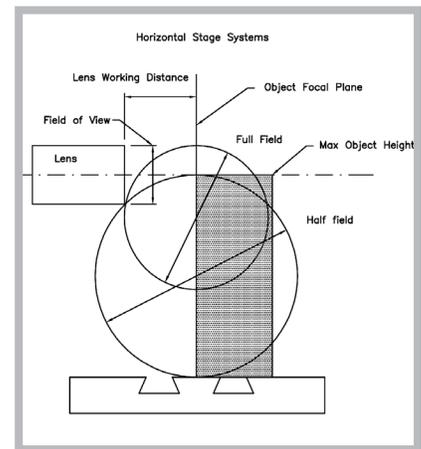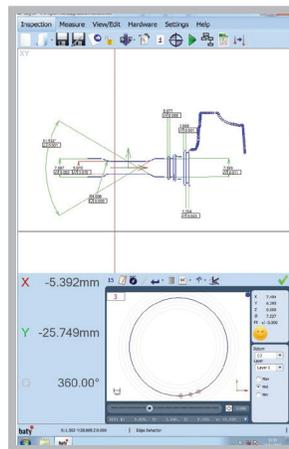
LENS SYSTEMS

Part Number	Description
53-900-860-0	Lens system - magnification 10x
53-900-861-0	Lens system - magnification 20x
53-900-862-0	Lens system - magnification 25x
53-900-863-0	Lens system - magnification 50x
53-900-864-0	Lens system - magnification 100x

Must be ordered separately

R14

Part Number	Description	Functions
53-900-800-5	**R14 - XLS** Horizontal Optical Comparator w/Acu-rite DC 102 Readout - 14" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-800-1	**R14 - GXL** Horizontal Optical Comparator w/ Heidenhain touch screen readout - 14" screen	Same functions as the 53-900-800-5 with added geometric functions and tolerancing
53-900-801-1	**R14 - GXL - E** Horizontal Optical Comparator w/DRO as GXL with added optical edge sensor - 14" screen	Same functions as 53-900-800-1 with added optical edge sensor
53-900-810-0	**R14 - FT2 - E** Horizontal Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 14" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor

Fowler Baty Optical Comparator - R400

The Fowler Baty R400 bench mount optical comparator with its 400mm screen combines high accuracy non-contact measurement and inspection with a large 300mm x 150mm measuring range.

Choice of digital readouts and optional automatic profile edge detection ensures that you can have the projector that fits your requirements.
The horizontal light path configuration is ideally suited to turned machined parts that can be secured to the workstage using a range of optional accessories from the Fowler Baty fixture family. The robust design of the R400 makes it suitable for both the shop floor and the standards room.

Features
- 16"/400mm screen with 90º crosslines and chart clips
- Profile illumination with halogen lamp and green filter
- Lens magnification choice: 10x, 20x, 25x, 50x and 100x
- Surface illumination (fibre optic)
- Helix adjustment of light source for accurate thread form projection
- Workstage with two machined slots for holding accessories
- Workstage measuring range of 300mm (12") x 150mm (6")
- Digital angle measurement to 1 minute
- 0.5 micron resolution

Available Options
- Internally fitted automatic edge sensor (FT2-E model only)
- Swing over lamphouse to allow clear access to the workstage
- Various display units to suit individual requirements
- Cabinet stand ensures a solid base and provides storage
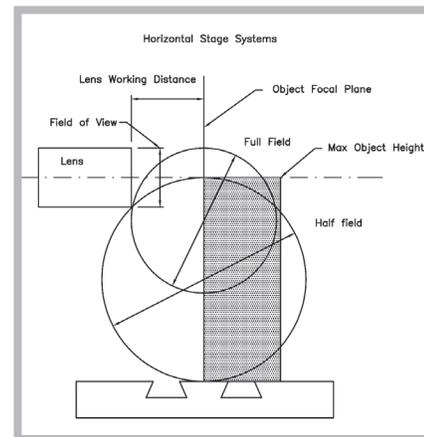- Other options include foot switch control

53-900-900-0

Projector Type	R400			
Magnification	10x	20x	50x	100x
Field of view	40	20	8	4
Working Distance	80	82	53	43
Maximum	184	185	185	143
Working Diameter	179	176	147	122

all dimensions in mm

LENS SYSTEMS

Part Number	Description
53-900-987-1	Lens system - magnification 10x
53-900-988-1	Lens system - magnification 20x
53-900-990-1	Lens system - magnification 50x
53-900-991-1	Lens system - magnification 100x
53-900-992-1	High magnification condenser for 50x and 100x lenses

*Lenses must be ordered separately. Replacement or additional lenses for R400's with serial number 2102 or lower, please contact Fowler Technical Support at 1-800-788-2353.

Horizontal Stage Systems

Lens Working Distance
Object Focal Plane
Field of View
Full Field
Max Object Height
Lens
Half field

R400

Part Number	Description	Functions
53-900-905-0	**R400 - XLS** Horizontal Optical Comparator w/Acu-rite DC 102 readout - 16" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-910-1	**R400 - GXL** Horizontal Optical Comparator w/Heidenhain touch screen readout - 16" screen	Same functions as the 53-900-905-0 with added geometric functions and tolerancing
53-900-915-1	**R400 - GXL - E** Horizontal Optical Comparator w/DRO as GXL with added optical edge sensor - 16" screen	Same functions as 53-900-910-1 with added optical edge sensor
53-900-900-0	**R400 - FT2 - E** Horizontal Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 16" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor

Fowler Baty Optical Comparator - R600

The Fowler Baty R600 with its 24"/600mm screen and high specification presents the capability to make simple comparative non-contact measurement through to complex programmed measuring sequences with SPC capability and automatic edge detection.

The horizontal light beam configuration is ideally suited to large machined or turned workpieces for mounting in vee blocks and centres.

Features
- 24"/600mm screen with 90º cross lines and chart clips
- Heavy duty workstage with 18"/450mm x 8"/200mm measuring range and 2 machine slots for workpiece holders
- Angular rotation of ± 15º on workstage for measuring threadforms or cutting tools
- Vertical 8"/200mm Y axis power driven with joystick control
- Lens magnification choice - 5x (single lens mount), 10x, 20x, 25x, 50x, 100x
- 4 position rotating lens turret for ease of lens changing (excluding 5x)
- Profile illumination with halogen lamp and green filter
- Screen hood and curtains for use in bright ambient light conditions
- Surface illumination (fibre optic)
- Digital angle measurement
- 0.5 micron resolution

Available Options
- Horizontal axis motorization via joystick control
- Internally fitted automatic edge sensor to allow the use of overlay charts on an unobstructed screen
- Various display units are available to suit individual requirements
- SPC to add to your quality control without the purchase of a separate system (FT2-E only)
- 5x lens system as a single lens mount only

53-900-950-0

Projector Type	R600					
Magnification	5x	10x	20x	25x	50x	100x
Field of view	120 (4.72)	60 (2.36)	30 (1.18)	24 (.94)	12 (.47)	6 (1.72)
Working Distance	245 (9.64)	135 (5.31)	132 (5.19)	106 (4.17)	93 (3.15)	50 (1.96)
Maximum	292 (9.64)	343 (13.50)	343 (13.50)	343 (13.50)	343 (13.50)	195 (7.75)
Working Diameter	406 (18.98)	343 (13.50)	343 (13.50)	343 (13.50)	343 (13.50)	235 (9.25)

all dimensions in mm / (inches)

LENS SYSTEMS

Part Number	Description
53-900-185-1	Lens system - magnification 10x
53-900-185-2	Lens system - magnification 20x
53-900-185-3	Lens system - magnification 25x
53-900-185-4	Lens system - magnification 50x
53-900-185-5	Lens system - magnification 100x

*Must be ordered separately
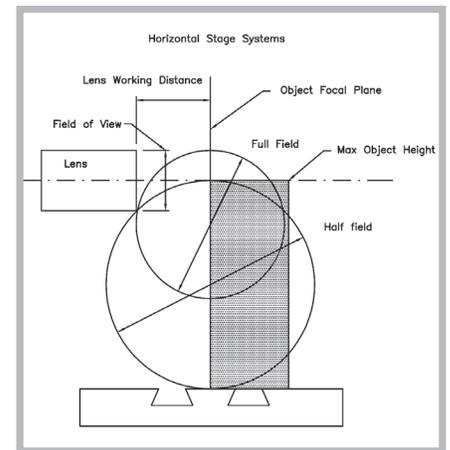
R600

Part Number	Description	Functions
53-900-960-5	**R600 - XLS** Horizontal Optical Comparator w/Acu-rite DC 102 readout - 14" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-960-0	**R600 - GXL** Horizontal Optical Comparator w/Heidenhain touch screen readout - 14" screen	Same functions as the 53-900-960-5 with added geometric functions and tolerancing
53-900-965-1	**R600 - GXL - E** Horizontal Optical Comparator w/DRO as GXL with added optical edge sensor - 14" screen	Same functions as 53-900-960-0 with added optical edge sensor
53-900-950-0	**R600 - FT2 - E** Horizontal Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 14" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor

Fowler Baty Optical Comparator - SM300

12"/300mm screen vertical light path comparator with multi-function readout unit and printer.

Robust design with full geometric measuring functionality ideal for the shop floor.

Features
• Top quality profile projector highly versatile and easy to operate
• Large travel range 150mm x 50mm (6"x 2") as standard
• Linear scale stage with 0.0005mm resolution
• Fine ground glass screen for clear image with cross hairs
• Screen complete with cross hair lines and chart clips
• Built-in profile and surface illumination
• 10x, 20x, 50x, 100x projection lenses available
• Display-readout unit GMR included in standard delivery

Available Options
• Projection lens 10x with half reflecting mirror
• Projection lens 20x with half reflecting mirror
• Projection lens 50x with half reflecting mirror
• Projection lens 100x with half reflecting mirror
• Rotary table 360º
• Swivel centre support
• Holder with clamp
• V-block with clamp

	Projection capacity (unit mm)			
Magnification	10x	20x	50x	100x
View field diameter	30	15	6	3
Working distance W	77.7	44.3	24.5	25.3
Max workpiece height H	80	80	80	80
Max workpiece diameter, edge line can be focused on screen centre D	160	130	55	60

53-900-300-0

LENS SYSTEMS

Part Number	Description
53-900-300-1	Lens system - magnification 10x
53-900-300-2	Lens system - magnification 20x
53-900-300-3	Lens system - magnification 50x
53-900-300-4	Lens system - magnification 100x

Must be ordered separately
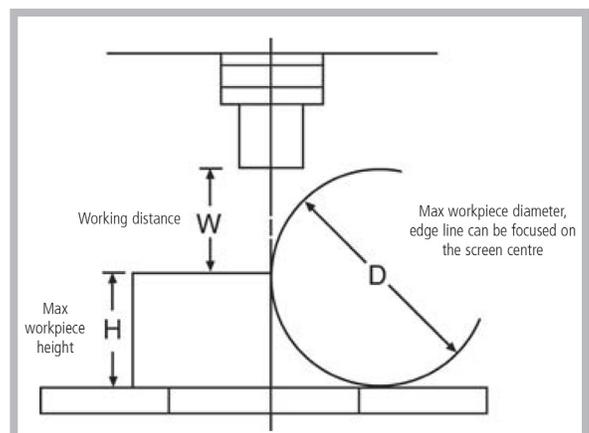
SM300

Part Number	Description
53-900-300-0	**SM300 - GMR** Vertical Optical Comparator w/geometric readout

Fowler Baty Optical Comparator - SM350

This vertical 14"/350mm bench optical comparator features a large, heavy duty high precision workstage with 250mm x 125mm measuring range and 0.5 micron resolution. Another feature is the option of a three lens turret for instant lens changes without re-calibration.

Features
- Fully usable 350mm screen
- Digital screen protractor
- Built in helix adjustment
- Sturdy all-steel design
- Heavy duty cross roller bearings
- Quick release 'X' and 'Y' travel
- Easy-view vertical screen
- Large stage travel 250mm (10") x 125mm (5")
- Rotating chart clips
- Fibre optic illumination for surface measurement
- 0.5 micron resolution

Available Options
- Automatic screen-mounted edge sensing (FT2-E model only)
- Heavy duty cabinet stand
- 3-position rotating lens turret

53-900-354-0

Projector Type	SM350				
Magnification	10x	20x	25x	50x	100x
Field of view	35	17	14	7	3
Working Distance	84	37	29	17	41
Maximum half field	220	162	52	51	140
Working Diameter full field	171	130	75	37	97
Maximum Height Object	114	113	106	111	103

all dimensions in mm

LENS SYSTEMS

Part Number	Description
53-900-860-0	Lens system - magnification 10x
53-900-861-0	Lens system - magnification 20x
53-900-862-0	Lens system - magnification 25x
53-900-863-0	Lens system - magnification 50x
53-900-864-0	Lens system - magnification 100x

Must be ordered separately
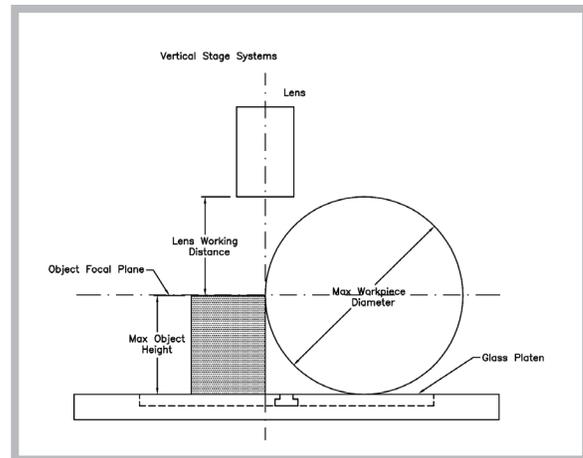
SM350

Part Number	Description	Functions
53-900-350-0	**SM350 - XLS** Vertical Optical Comparator w/Acu-rite DC 102 readout - 14" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-351-0	**SM350 - GXL** Vertical Optical Comparator w/Heidenhain touch screen readout - 14" screen	Same functions as the 53-900-350-0 with added geometric functions and tolerancing
53-900-352-0	**SM350 - GXL - E** Vertical Optical Comparator w/DRO as GXL with added optical edge sensor - 14" screen	Same functions as 53-900-351-0 with added optical edge sensor
53-900-354-0	**SM350 - FT2 - E** Vertical Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 14" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor

Fowler Baty Optical Comparator - SM20

The Fowler Baty SM20 is a vertical light path floor standing optical comparator with a 20"/500mm which features a large heavy duty high precision workstage with 250mm x 125mm measuring range and a 0.5 micron resolution.

Features

• 20"/500mm screen with 90 degree crosslines and chart clips
• Angled screen for easy viewing
• Profile illumination with halogen lamp and green filter
• Surface illumination through twin fibre optics for bright full colour surface inspection
• Single lens mounting
• Lens magnification choice: 5x, 10x, 20x, 25x, 50x and 100x
• Helix adjustment of light source for accurate thread form projection
• Large stage travel 10" (250mm) x 5"(125mm)
• Digital angle measurement
• 0.5 micron resolution

Available Options

• Screen hood and curtains with generous proportions for use in bright ambient light conditions
• Automatic edge sensor
• 3 position lens turret for easy lens changing
• SPC to add to your quality control without the purchase of a separate system (FT2-E only)

53-900-320-4

Projector Type	SM20					
Magnification	10x	20x	25x	25x	50x	100x
Condenser	L	L	L	S	S	S
Field of view	50	25	20	20	10	5
Max diameter	200	200	200	200	180	85
Max focal pane height (profile lighting)	205	203	218	254	240	195
Max end mill height (surface lighting)	150	153	153	153	150	150

LENS SYSTEMS

Part Number	Description
53-900-185-1	Lens system - magnification 10x
53-900-185-2	Lens system - magnification 20x
53-900-185-3	Lens system - magnification 25x
53-900-185-4	Lens system - magnification 50x
53-900-185-5	Lens system - magnification 100x

Must be ordered separately
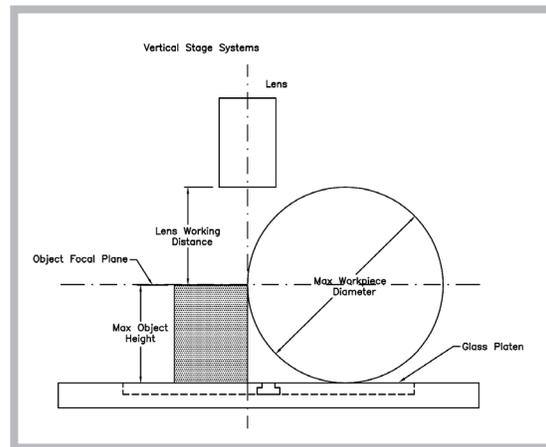
SM20

Part Number	Description	Functions
53-900-320-0	**SM20 - XLS** Vertical Optical Comparator w/Acu-rite DC 102 readout - 20" screen	Basic XY or RA measurement ABS/INC mode, inch/metric conversion
53-900-320-1	**SM20 - GXL** Vertical Optical Comparator w/Heidenhain touch screen readout - 20" screen	Same functions as the 53-900-320-0 with added geometric functions and tolerancing
53-900-320-2	**SM20 - GXL - E** Vertical Optical Comparator w/DRO as GXL with added optical edge sensor - 20" screen	Same functions as 53-900-320-1 with added optical edge sensor
53-900-320-4	**SM20 - FT2 - E** Vertical Optical Comparator w/27" Fusion touch screen DRO, optical edge sensor and 20" screen	Windows based measuring with full reporting options, SPC, CAD import/export with optical edge sensor

Fowler Baty Readout Options

The readout options from Baty include a fully programmable unit with geometrical functions and a software module allowing direct connection to a PC. All units are fully compatible with our full range of profile projectors, allowing for upgrades as required.

XLS Readout

The new Acu-rite DRO-100 Series LCD display unit. A simple two axis digital readout for point to point X,Y or R,A measurements with absolute/incremental readings. Functions also include a zero reset, an instant inch/mm conversion and an instant radius/diameter conversion.

Partr Number: 53-900-500-0

GXL Readout
• Graphical display of measured feature
• Radius, angle, line, point, skew
• Inch, metric, polar, cart
• Data output to PC/printer
• Store inspection routines to prompt operator
• Tolerancing
• Multi-language menu
• On-screen help

Part Number: 53-900-505-0

GXL-E Readout
• Same options as the GXL readout
• Optical edge sensor included

Part Number: 53-900-510-0

Fusion Touch Readout

FT2: Complete TOUCH SCREEN DRO with 2D Fusion touch software. Full geometric functionality, view of measured part can be printed as a fully dimensioned drawing. Full reporting capability includes, SPC, tabulated details with pass / fail analysis, auto link to Excel and auto sequence programming feature. Windows O/S and built in 22" portrait touch screen monitor

Part Number: 53-900-512-0

FT2-E: Complete TOUCH SCREEN DRO with 2D Fusion Touch software as above. Built-in optical edge detection allows data points to be taken 'on the fly' as the projected image is passed under the screen-mounted fibre optic sensor. An internally mounted edge sensor is available as an option on all 'R' series projectors.

Part Number: 53-900-514-0
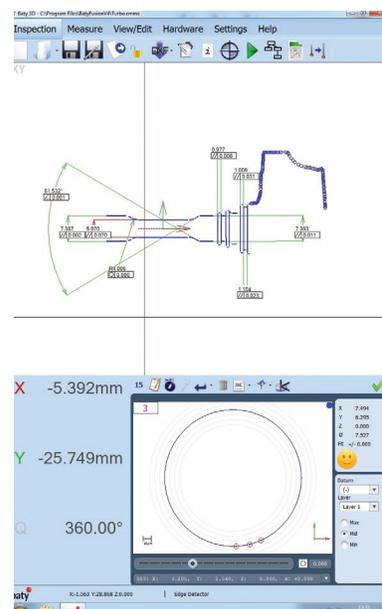
Fowler Baty Options and Accessories

53-900-527-0

53-900-250-0

53-900-824-0

53-900-256-0 / 53-900-258-0

53-900-830-0 / 53-900-827-0

53-900-825-0

53-900-822-0 / 53-900-826-0

53-900-260-0

53-900-829-0

53-900-542-0 Large Vee Blocks and Centres

53-900-543-0 Riser Blocks

Rotary Glass Stage 54-242-606-0

54-242-608-0 Back Stop

54-303-196-0 Dual Vee Blocks and Centres

54-303-251-0 Open Frame Fixturing

54-242-609-0 Side Stop

R14 / R400 Accessories

Part Number	Description
202-1327-1	Footswitch for GXL
ABFS001	Footswitch for FT2 DRO
52-371	Protective cover – R14
53-900-035-0	Protective cover - R400/SM350
53-900-828-0	Cabinet stand
53-900-250-0	Iris diaphragm
53-900-256-0	Vee blocks
53-900-258-0	Spring loaded centres
54-242-607-0	Riser blocks 38mm (1 1⁄2") for SA-256
53-900-825-0	Vice stage and vice
53-900-260-0	Swivel vice
53-900-276-0	Single vee and clamp (Vee parallel to optic axis)
53-900-153-0	Fixture base
53-900-527-0	Glass plate work holder

R600 Accessories

Part Number	Description
53-900-551-0	Iris diaphragm for SM350/R600
53-900-542-0	Large vee blocks and centres
53-900-543-0	Riser blocks
SA-614	Large vice stage and vice
53-900-527-0	Glass plate work holder
SA-617	Heavy duty rotating vice
SA-733	Swing over lamphouse
53-900-606-0	Screen chart rest bar

Fixture Family Accessories

Part Number	Description
53-900-822-0	Self centering vice
53-900-823-0	Dual axis vee block and clamp to Ø 15mm
53-900-824-0	Dual axis vee block and clamp to Ø 30mm
53-900-826-0	Precision rotary base
53-900-827-0	Universal base
53-900-829-0	Precision ground steel alignment feature
53-900-830-0	Dual axis vee block fitted with side base

SM350 / SM20 Accessories

Part Number	Description
54-242-606-0	Rotary glass stage
54-242-608-0	Back stop
54-242-609-0	Side stop
54-303-196-0	Dual vee block and centres
54-303-251-0	Open frame fixturing for 2510 stage
53-900-551-0	Iris disphragm for SM350/R600
53-900-035-0	Protective cover - R400/SM350

FOWLER
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HEADQUARTERS
780 Dedham Street • Canton • Massachusetts 02021
(800) 788-2353 • (617) 332-4137 fax
www.fowlerprecision.com • sales@fowlerprecision.com

DISTRIBUTION CENTER & SHOWROOM
28010 Industry Drive
Valencia, California 91355
(415) 633-5354

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