

PJ-A3000

SERIES 302 — Vertical Profile Projectors

FEATURES

- The PJ-A3000 Series vertical profile projectors are medium-size 11.8" (300mm) models that feature high versatility and easy operation.
- Easy-to-read digital XY counter is located near the projection screen to minimize eye movement.
- Digital readout protractor screen facilitates angle measurement.



PJ-A3010F-200



PJ-A3005D-50



PJ-A3010F-100



PJ-A3005F-150

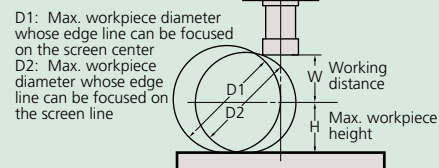


PJ-A3010F-200



Refer to Bulletin No. (2021) for more details.

Projection Capacity



	Magnification			
	10X	20X	50X	100X
View field	ø31.5	ø15.7	ø6.3	ø3.1
W	66 (20)	32.5 (2)	12.6	5
H -50 models*	123.5	123.5	123.5	123.5
-100 models	91	91	91	91
-150 models	103.5	103.5	103.5	103.5
200 models	92.5	92.5	92.5	92.5
D1 -50 models*	224 (198)	87 (61)	27	10
-100 models	182	87 (61)	27	10
-150 models	207 (198)	87 (61)	27	10
200 models	185	87 (61)	27	10
D2	154 (120)	69 (23)	25	10

(): When using surface illumination

Optional Accessories

172-202:	10X projection lens set (Standard accessory)
172-203:	20X projection lens set
172-223:	10X projection lens
172-224:	20X projection lens
172-204:	50X projection lens
172-207:	100X projection lens
172-229:	Oblique illumination mirror for 10X lens
172-230:	Oblique illumination mirror for 20X lens
172-116:	Standard scale (50mm)
172-117:	Standard scale (2")
172-118:	Reading scale (200mm)
172-161:	Reading scale (300mm)
172-119:	Reading scale (8")
172-162:	Reading scale (12")
172-160-2:	Green filter (for PJ-A3000, -50 models)
172-160-3:	Green filter (for -100, -150, -200 models)
512305:	Halogen bulb (24V, 150W)
383876:	Vinyl cover (standard accessory)

Fixture and Stage Accessories

176-106:	Rotary table (Effective diameter: 66mm)
172-196:	Rotary table (Effective diameter: 100mm)
172-198:	Rotary table with fine feed wheel (Effective diameter: 4" / 100mm)
176-105:	Swivel center support (Max. workpiece dia.: 2.7" / 70mm)
172-197:	Swivel center support (Max. workpiece dia.: 3.1" / 80mm)
176-107:	Holder with clamp
172-378:	V-block with clamp (Max. workpiece dia.: 1" / 25mm)
176-317:	Stage adapter C
64PMI167:	Stand 22.4 x 20 x 32" (WxDxH)

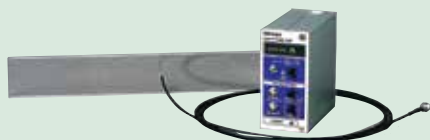
Availability	PJ-A3005D-50	PJ-A3005F-150	PJ-A3010F-100 PJ-A3010F-200
176-106	✓	✓	
172-196		✓	✓*
172-198		✓	✓*
176-105	✓		
172-197		✓	✓*
176-107	✓	✓	✓*
172-378	✓	✓	✓*

* Stage adapter C (176-317) is required for PJ-3010F-200



QM-Data200

264-155A: Stand-mount type
264-156A: Arm-mount type
 2-D data processing unit.
 (Refer to page I-25 for more details.)

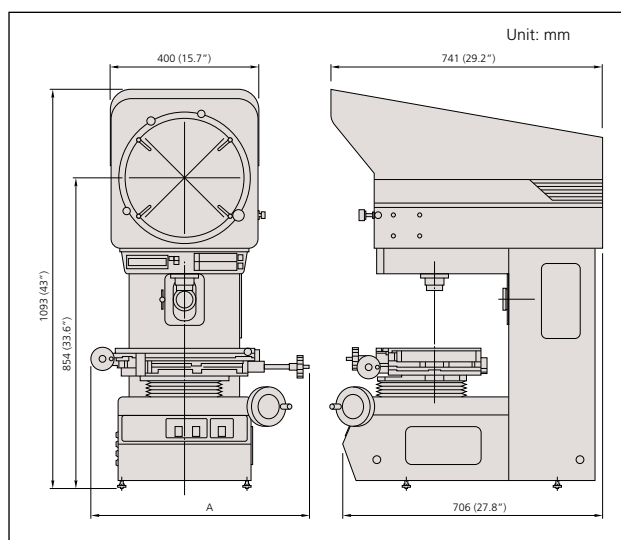


332-151: Optoeye
 Edge detection system for QM-Data200
12AAE671: Detector Attachment

SPECIFICATIONS

					
	Model	PJ-A3010F-200	PJ-A3005F-150	PJ-A3010F-100	PJ-A3005D-50
	Order No.	302-701A	302-702A	302-703A	302-704A
Projected image		Inverted image			
Protractor screen	Effective diameter	12.4" / 315mm			
	Screen material	Fine ground glass			
	Reference line	Cross hair line			
	Angle display (LED)	Resolution: 1° or 0.01° (switchable), Range: ±360° Functions: Absolute/incremental mode switching, Zero Set			
Projection lens		Standard Accessory 10X (172-202)			
Magnification accuracy	Contour illumination	±0.1% or less			
	Surface illumination	±0.15% or less			
Contour illumination	Light source	Halogen bulb (24V, 150W)			
	Optical system	Telecentric system			
	Functions	2-stage brightness switch, Heat-absorbing filter			
Surface illumination	Light source	Halogen bulb (24V, 150W)			
	Optical system	Vertical illumination with a half-reflection mirror			
	XY range	8" x 4" (200 x 100mm)	6" x 2" (150 x 50mm)	4" x 4" (100x100mm)	2" x 2" (50 x 50mm)
	Resolution	.0001" / 0.001mm	.0001" / 0.001mm	.0001" / 0.001mm	.0001" / 0.001mm
	Measuring Unit	Built-in linear scales	Built-in linear scales	Built-in linear scales	Digimatic mic heads
	Table size	14.96x9.84" (380x250mm)	11.02x5.98" (280x152mm)	9.84x9.84" (250x250mm)	5.98x5.98" (152x152mm)
	Effective table area	10.47x6.69" (266x170mm)	7.24x3.23" (184x82mm)	5.6x5.6" (142x142mm)	3.23x3.23" (82x82mm)
	Max. workpiece height	3.64" (92.5mm)	4.07" (103.5mm)	3.58" (91mm)	4.86" (123.5mm)
	Functions	± direction switching, SPC output zero-setting	Zero-setting, ± direction switching, SPC output	Zero-setting, ± direction switching, SPC output	± direction switching, SPC output zero-setting
Power supply		120V AC, 50/60Hz			
Mass		308 lbs. (140kg)	255 lbs. (116kg)	246 lbs. (112kg)	235 lbs. (107kg)
Standard accessories		10X projection lens set, masking shield, power cord, halogen bulb, fuse, grounding wire, allen wrench, vinyl cover			

DIMENSIONS



Model	PJ-A3005D-50	PJ-A3010F-100	PJ-A3005F-150	PJ-A3010F-200
A	17.9" / 455mm	16.8" / 427mm	17.6" / 446mm	23.3" / 593mm

PJ-H30

SERIES 303 — High-Accuracy Profile Projectors

By separating axial motion, and stabilizing the XY measuring table in the vertical direction, high measuring accuracy of $(3+0.02L)\mu\text{m}$ has been achieved on the PJ-H30 Series Profile Projectors. Focusing is accomplished by moving the screen head itself up and down with the hand wheel or motorized unit. The power focusing (PJ-H30D type) provides higher performance.

FEATURES

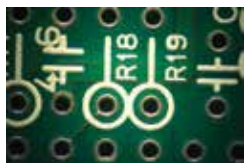
- Newly designed optical system with high NA lenses provides drastically brighter and clearer screen images during surface illumination.
- The three-lens mounting turret includes a 10X lens as standard. Four types of projection lenses (5X, 20X, 50X, 100X) are available.



Switchable surface illumination:
vertical or oblique



Vertical illumination

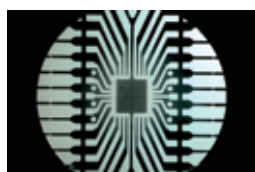
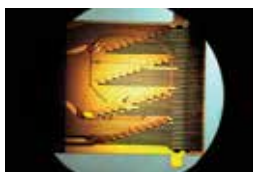
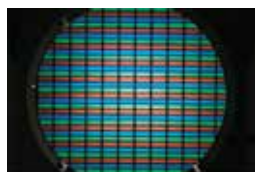


Oblique illumination

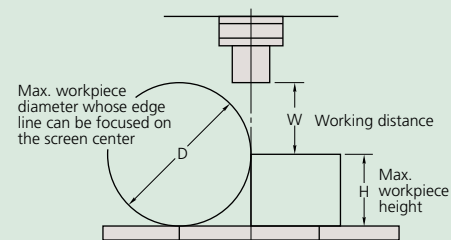


PJ-H30A3017B

XY stage travel range: 12x7" / 300x170mm



Projection Capacity



Unit: mm

	Magnification				
	5X	10X	20X	50X	100X
View field	ø61.2	ø30.6	ø15.3	ø6.12	ø3.06
H	105	105	105	105	105
W	66	70.5	56.5	50	50
D	148	197	137	114	114

Optional Accessories

172-271:	5X projection lens
172-472:	10X projection lens (standard accessory)
172-473:	20X projection lens
172-474:	50X projection lens
172-475:	100X projection lens
172-116:	Standard scale (50mm)
172-117:	Standard scale (2")
172-118:	Reading scale (200mm)
172-161:	Reading scale (300mm)
172-119:	Reading scale (8")
172-162:	Reading scale (12")
12AAG981:	Green filter
172-269:	Machine stand
512305:	Halogen bulb (24V, 150W) (standard accessory)
383876:	Vinyl cover (standard accessory)

Fixture and Stage Accessories

172-198:	Rotary table (Effective diameter: 4" / 100mm)
176-305:	Rotary table (Effective diameter: 7.2" / 183mm)
176-306:	Rotary table (Effective diameter: 9.4" / 240mm)
176-105:	Swivel center support (Max. workpiece dia.: 2.8" / 70mm)
172-197:	Swivel center support (Max. workpiece dia.: 3.1" / 80mm)
176-107:	Holder with clamp
172-378:	V-block with clamp (Max. workpiece dia.: 1" / 25mm)
176-317:	Fixture mount adapter C
176-304:	Fixture mount adapter A

Availability	Models	
	PJ-H30A1010B	PJ-H30A2017B
	PJ-H30D1010B	PJ-H30D2017B
	PJ-H30A2010B	PJ-H30A3017B
	PJ-H30D2010B	PJ-H30D3017B
172-198	✓**	✓****
176-305	✓**	
176-306		✓****
176-107 *	✓**	✓****
172-378 *	✓**	✓****
172-197 *	✓**	✓****
176-105	✓***	✓****

*: Able to attach to a Rotary table 172-198 or 176-305 (172-197 can only attach to 176-305).

** : Fixture mount adapter C (176-317) is required.

***: Rotary table (172-198) is required.

****: Fixture mount adapter A (176-304) is required.

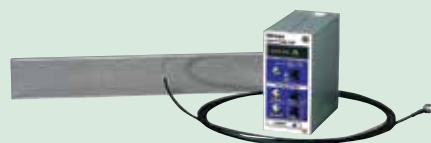
QM-Data200

264-155A: Stand-mount type

264-156A: Arm-mount type*

*Attachment stand (12AAG982) is required.

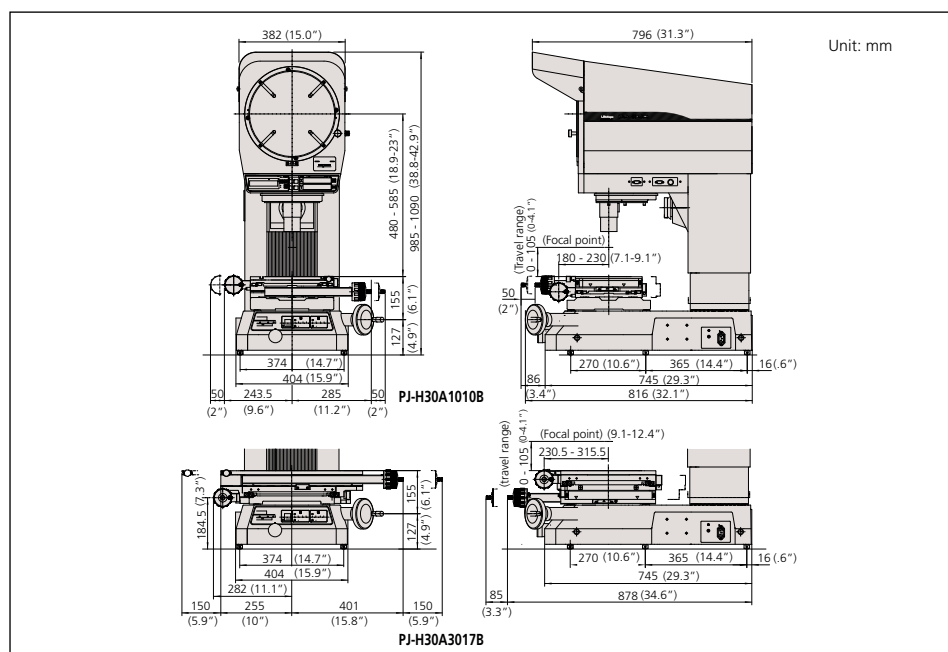
2-D data processing unit.
(Refer to page I-25 for more details.)



332-151:	Optoeye
	Edge detection system for QM-Data200
12AAE671:	Detector Attachment

					
Manual Focus type	Model No.	PJ-H30A1010B	PJ-H30A2010B	PJ-H30A2017B	PJ-H30A3017B
	Order No.	303-712-1A	303-713-1A	303-714-1A	303-715-1A
Power Focus, built-in OPTOEYE type	Model No.	PJ-H30D1010B	PJ-H30D2010B	PJ-H30D2017B	PJ-H30D3017B
	Order No.	303-732-1A	303-733-1A	303-734-1A	303-735-1A
Projected Image		Erect image			
Protractor screen	Effective diameter	12" / 306mm			
	Screen material	Fine ground glass			
	Reference line	Cross hair line			
	Screen rotation	±360°, fine feed and clamp			
	Angle display (LED)	Resolution: 1° or 0.01° (switchable), Range: ±370°, Functions: Absolute/incremental mode switching, Zero set			
Projection lens		Standard accessory: 10x (172-472), Optional accessories: 2X, 5X, 20X, 50X, 100X			
Lens mount		3-lenses mounting turret			
Magnification accuracy	Contour illumination	±0.1% or less			
	Surface illumination	±0.15% or less			
Contour illumination	Light source	Halogen bulb (24V 150W)			
	Optical system	Zoom telecentric system			
	Functions	Brightness adjustment, Heat-absorbing filter, Cooling fan			
Surface illumination	Light source	Halogen bulb (24V 150W)			
	Optical system	Vertical / Oblique illumination with an adjustable condenser lens			
	Functions	Non-stepped brightness adjustment, Heat-absorbing filter, Cooling fan			
	XY Range	4 x 4" 100 x 100mm	8 x 4" 200 x 100mm	8 x 6.7" 200 x 170mm	12 x 6.7" 300 x 170mm
	Resolution	.0001" / 0.001mm			
	Measuring unit	Built-in Linear scale			
	Table size	11.8 x 9.4" 300 x 240mm	13.8 x 11" 350 x 280mm	16.1 x 13.5" 410 x 342mm	20 x 13.5" 510 x 342mm
	Effective table area	7.1 x 5.9" 180 x 150mm	9.8 x 5.9" 250 x 150mm	10.6 x 9.4" 270 x 240mm	14.6 x 9.4" 370 x 240mm
	Max. workpiece ht.	4.1" / 105mm			
	Max. workpiece load	22lbs / 10kg	22lbs / 10kg	44 lbs / 20kg	44 lbs / 20kg
	Power supply		120V AC, 50/60Hz		
Mass		391lbs / 176kg	396lbs / 178kg	556lbs / 205kg	471lbs / 212kg
Standard accessories		10X projection lens set, masking shield, power cord, halogen bulb, tube fuse, grounding wire, allen wrench, vinyl cover			

DIMENSIONS



PV-5110

SERIES 304 — Profile Projectors

FEATURES

- Large 500mm screen
- Floor model uses a downward illumination system.
- Digital readout protractor screen (including zero-setting, ABS/INC coordinate switching functions) for easy and error-free angle measurement.
- Angled screen allows projected images to be easily traced or compared with a template.
- The oblique surface illumination system provides clear and bright images, allowing easy inspection of non-reflective workpieces such as plastic parts or printed materials.

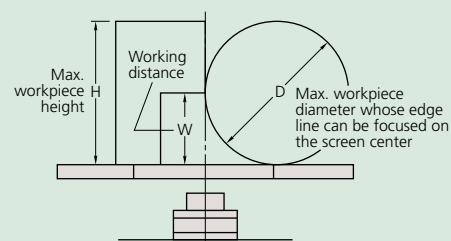


PV-5110



PV-5110

Projection Capacity



Unit: mm

	Magnification				
	5X	10X	20X	50X	100X
View field	ø101.6	ø50.8	ø25.4	ø10.16	ø5.08
H	125	181	206	87	87
W	60 (27)	60	60	32.4	22.5
D	120	120	120	64.8	45

() : When using surface illumination

Optional Accessories

172-401:	5X projection lens set
172-406:	5X projection lens
172-402:	10X projection lens set (standard accessory)
172-409:	10X projection lens
172-403:	20X projection lens set
172-411:	20X projection lens
172-404:	50X projection lens set
172-413:	50X projection lens
172-405:	100X projection lens set
172-415:	100X projection lens
172-422:	Surface illumination unit (standard accessory)
172-116:	Standard scale (50mm)
172-117:	Standard scale (2")
172-118:	Standard scale (200mm)
172-119:	Standard scale (8")
172-161:	Reading scale (300mm)
172-329:	Reading scale (600mm)
172-162:	Reading scale (12")
172-160-2:	Green filter (standard accessory)
172-319:	Canopy
512305:	Halogen bulb (24V, 150W) (standard accessory)
510189:	Vinyl cover

Fixture and Stage Accessories

172-196:	Rotary table* (Effective diameter: 4" / 100mm)
172-198:	Rotary table with fine feed wheel* (Effective diameter: 4" / 100mm)
172-197:	Swivel center support* (Max. workpiece dia.: 3.1" / 80mm)
176-107:	Holder with clamp*
172-378:	V-block with clamp* (Max. workpiece dia.: 1" / 25mm)

*Stage adapter C (**176-317**) is required.



KA Counter (174-183A)

(Refer to page H-7 for more details.)



QM-Data200

264-155A:	Stand-mount type
264-156A:	Arm-mount type

2-D data processing unit.
(Refer to page I-25 for more details.)



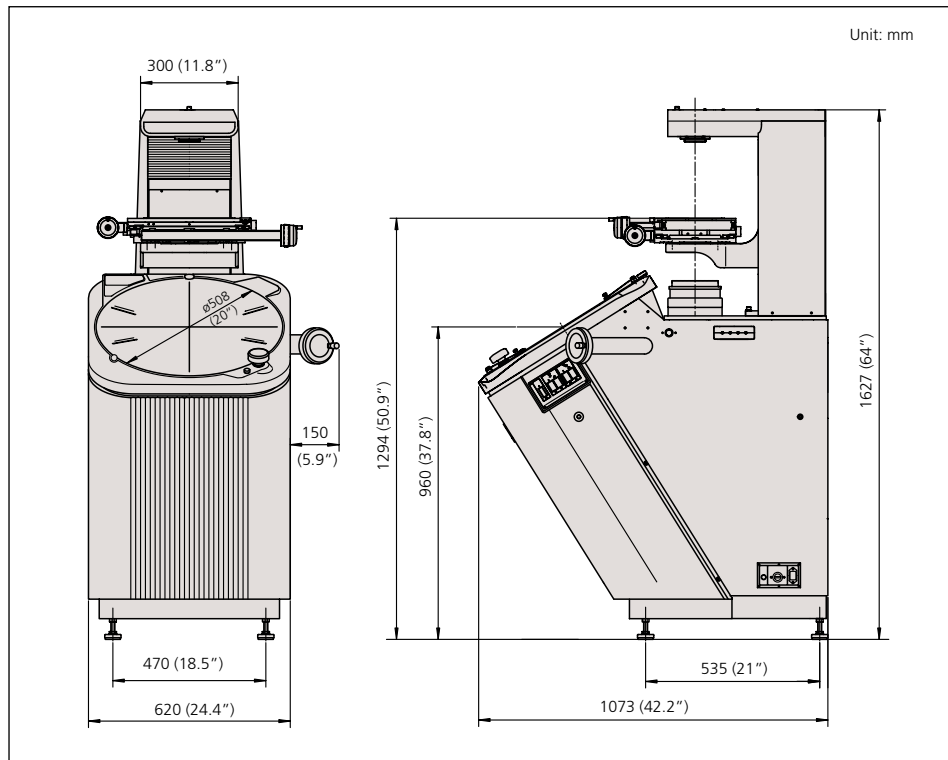
332-151:	Optoeye Edge detection system for QM-Data200
12AAE672:	Detector Attachment (B)

SPECIFICATIONS

Model No.		PV-5110
Order No.		304-919A*
Projected image		Invert image
Protractor screen	Effective diameter	20" / 508mm
	Screen material	Fine ground glass
	Reference line	Cross hair line
	Screen rotation	±360°, fine feed and clamp
Angle display (LED)		Resolution: 1' or 0.01°(switchable), Range: ±370°, Functions: Absolute/incremental mode switching, Zero set
Projection lens		Standard accessory: 10x(172-472), Optional accessories: 5X, 20X, 50X, 100X
Magnification accuracy	Contour illumination	±0.1% or less
	Surface illumination	±0.15% or less
Contour illumination	Light source	Halogen bulb (24V 150W)
	Optical system	Telecentric system
	Functions	2-step brightness switch, Heat-absorbing filter, Cooling fan
Surface illumination	Light source	Halogen bulb (24V 150W)
	Optical system	Vertical illumination
Functions		Adjustable condenser lens. Oblique illumination (for 5X, 10X, and 20X), 2-step brightness switch, Heat-absorbing filter, Cooling fan
XY Range		8 x 4" / 200 x 100mm
Resolution		.0001" / 0.001mm*
Measuring unit		Built-in Linear scale
Table size		15 x 9.8" / 380 x 250mm
Effective table area		10.5 x 6.7" / 266 x 170mm
Max. workpiece height		See (H) on page I-6
Max. workpiece load		17.6 lbs / 8kg
Power supply		120V AC, 50/60Hz
Mass		467lbs / 210kg
Standard accessories		200x100mm (8" x 4") stage, 10X projection lens set, Surface illumination unit. Counter stand for KA counter, power cord, halogen bulb, fuse, grounding wire, allen wrench

* Counter not included

DIMENSIONS



PH-A14

SERIES 172 — Profile Projector

FEATURES

- Benchtop model uses a horizontal optical system.
- Suitable for thread pitch measurements—blurred or distorted images will not be produced when workpiece is angled.
- Inverted image on the day-bright screen.
- 14" (356mm) diameter vernier protractor screen with solid line cross-hairs for easy alignment.
- Heavy-duty workpiece table incorporates linear scales for fast, accurate measurement.

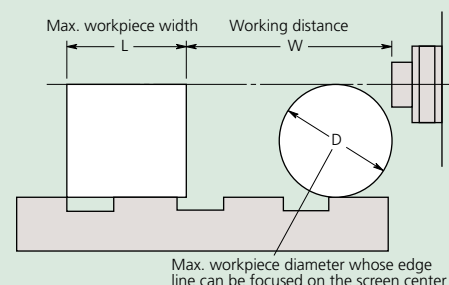


PH-A14



PH-A14 with touch screen M2 geometric measurement display

Projection Capacity



PH-A14

Unit: mm

	Magnification			
	10X	20X	50X	100X
View field	35.6	17.8	7.12	3.56
L	235	235	109	109
W	93	40	14.6	9.5
D	130	116	31.3	19.2



KA Counter (174-183A)

(Refer to page H-7 for more details.)

64AAB149: Counter stand



QM-Data200

2-D data processing unit.

264-155A: Stand mount type

264-156A: Arm mount type

(Refer to page I-25 for more details.)



332-151: Optoeye

Edge detection system for QM-Data 200

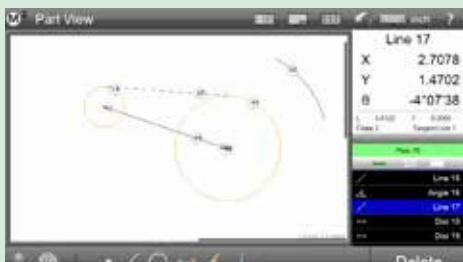
12AAE671: Detector attachment (A)

Optional Accessories

172-011:	10X projection lens (standard accessory)
172-012:	20X projection lens
172-013:	50X projection lens set
172-014:	100X projection lens set
172-116:	Standard scale (50mm)
172-117:	Standard scale (2")
172-118:	Reading scale (200mm)
172-161:	Reading scale (300mm)
172-119:	Reading scale (8")
172-162:	Reading scale (12")
172-286:	Green filter
512305:	Halogen bulb (24V, 150W) (standard accessory)

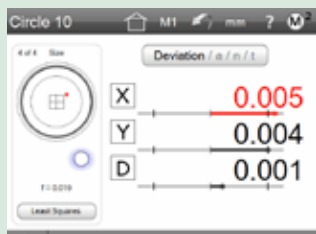
Fixture and Stage Accessories

172-142:	Center support
172-143:	Center support riser
172-144:	Rotary vise
	(Max. workpiece dia.: 2.4" / 60mm)
172-234:	V-block with clamp
	(Max. workpiece dia.: 2" / 50mm)
172-132:	Vertical holder
64AAA129B:	Machine stand 23"W x 45" D x 20"H



Graphics-based "Part View" constructions

Generate popular construction types, like Distances and Tangent Lines, from within the graphical part view.



Geometric tolerancing

Measure features, set nominals, apply tolerances and view deviation results with only a few quick clicks.



Reports Flexibility for report contents and formatting allows for full customization of the data format, header information, and header and footer graphics.

SPECIFICATIONS

Model No.	PH-A14	
Order No.	172-810-10A*	
Package No.	64PKA087	PH-A14 with QM Data Arm Mount
	64PKA086A	PH-A14 with KA Counter and Tray
Projected image	Inverted image	
Protractor screen	Effective diameter	14" / 356mm
	Screen material	Fine ground glass
	Reference line	Cross hair line
	Screen rotation	±360°, fine feed and clamp
Angle display		Vernier reading, Resolution: 2'
Projection lens	Standard accessory: 10X (172-011), Optional accessories: 20X, 50X, 100X	
Magnification accuracy	Contour illumination	±0.1% or less
	Surface illumination	±0.15% or less
Contour illumination	Light source	Halogen bulb (24V 150W)
	Optical system	Telecentric system
	Functions	Heat-absorbing filter, Cooling fan
Surface illumination	Light source	Halogen bulb (24V 150W)
	Optical system	Twin fiber optic illumination
XY Stage	Table travel (X-axis)	8" / 203.2mm
	Table size (X, Z)	16 x 6" / 407 x 153mm
	Vertical travel (Y-axis)	4" / 101.6mm
	Resolution	.00005" / 0.001mm*
	Measuring unit	Built in Linear scale
	Max. workpiece width	See (L) on page I-10
Power supply		120V AC, 50/60Hz
Mass		308lbs / 140kg
Standard accessories		10x projection lens set, work stage, power cord, halogen bulb, fuse, grounding wire, allen wrench

*Counter not included

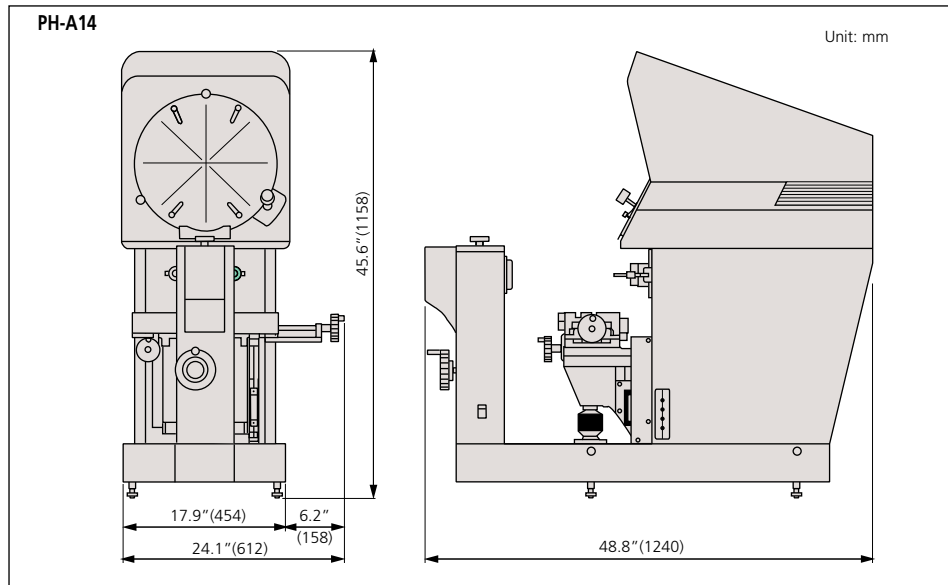
PH-A14 Packages with M2 Geometric Display

Order No.	Description
64PKA154A	PH-A14 PROFILE PROJECTOR - WITH TOUCH SCREEN M2 GEOMETRIC DISPLAY
64PKA155A	PH-A14 PROFILE PROJECTOR - WITH OPTICAL EDGE DETECTION AND TOUCH SCREEN M2 GEOMETRIC DISPLAY

M2 Geometric Display Retrofit Packages

Order No.	Description
64PKA156A	M2 2D Data Processing Unit with software and hardware including a tablet PC. Also includes installation and calibration on the customer's existing PH-A14
64PKA157A	M2 2D Data Processing Unit with Edge Detection software and hardware including a tablet PC. Also includes installation and calibration on the customer's existing PH-A14

DIMENSIONS



PH-3515F

SERIES 172 — Profile Projector

FEATURES

- Benchtop model uses a horizontal optical system.
- Suitable for thread pitch measurements—blurred or distorted images will not be produced when workpiece is angled.
- Erect image on the day-bright screen.
- Standard twin fiber-optic illumination.
- 14" (353mm) diameter protractor screen with cross-hairs and staggered lines for easy alignment.
- Digital angle measurement to 1' or 0.01°.
- Heavy-duty workpiece table incorporates linear scales for fast, accurate measurement.
- Built-in linear scales for use with optional display counters.

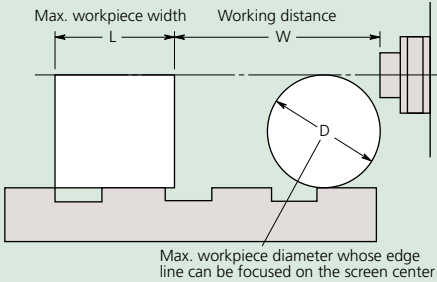


PH-3515F



Refer to Bulletin No. (2210) for more details.

Projection Capacity



PH-3515F					Unit: mm
	Magnification				
	5X	10X	20X	50X	100X
View field	70.6	35.3	17.65	7.06	3.5
L	175	235	235	80	109
W	160 (64)	93 (41)	40	14.6	9.5
D	152.4	152.4	116	30.4	19

(): When using surface illumination

Optional Accessories

172-145:	5X projection lens set
172-175:	5X projection lens
172-184:	10X projection lens set (standard accessory)
172-011:	10X projection lens
172-173:	20X projection lens set
172-165:	50X projection lens set
172-174:	50X projection lens
172-166:	100X projection lens set
172-116:	Standard scale (50mm)
172-117:	Standard scale (2")
172-118:	Reading scale (200mm)
172-161:	Reading scale (300mm)
172-119:	Reading scale (8")
172-162:	Reading scale (12")
172-286:	Green filter
515530:	Halogen bulb (24V, 150W) (standard accessory)
172-423:	Twin surface illumination
12BAAG37	Halogen reflector lamp (standard accessory)
64AAB176	Machine stand
383228:	Vinyl cover (standard accessory)

Fixture and Stage Accessories*

172-142:	Center support
172-143:	Center support riser
172-144:	Rotary vise (Max. workpiece dia.: 2.3" / 60mm)
172-234:	V-block with clamp (Max. workpiece dia.: 2" / 50mm)
172-132:	Vertical holder
172-001:	Tipped-saw support stand
172-002:	Cutter support stand

* See page I-13 for details



KA Counter (174-183A)

(Refer to page H-7 for more details.)

64AAB149: Counter stand



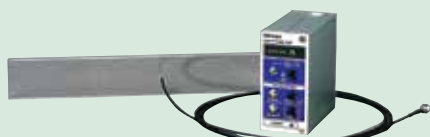
QM-Data200

2-D data processing unit.

264-155A: Stand mount type

264-156A: Arm mount type

(Refer to page I-25 for more details.)



332-151: Optoeye

Edge detection system for QM-Data200

12AAE671: Detector attachment (A)

SPECIFICATIONS

Model No.	PH-3515F	
Order No.	172-868A*	
Projected image	Erect image	
Protractor screen	Effective diameter	14" / 353mm
	Screen material	Fine ground glass
	Reference line	Cross hair line
	Screen rotation	±360°, fine feed and clamp
	Angle display (LED)	Resolution: 1' or 0.01° (switchable), Range: ±370°, Functions: Absolute/incremental mode switching, Zero set
Projection lens	Standard accessory: 10X (172-184), Optional accessories: 5X, 20X, 50X, 100X	
Magnification accuracy	Contour illumination	±0.1% or less
	Surface illumination	±0.15% or less
Contour illumination	Light source	Halogen bulb (24V 150W)
	Optical system	Telecentric system
	Functions	2-step brightness switch, Heat-absorbing filter, Cooling fan
Surface illumination (Optional accessories)	Light source	Halogen bulb (24V 150W)
	Functions	Adjustable condenser lens, Heat-absorbing filter, Cooling fan
XY Stage	Table travel (X-axis)	10" / 254mm
	Table size (X, Z)	17.7"x5.7" / 450x146mm
	Vertical travel (Y-axis)	6" / 152mm
	Resolution	0.001mm/.00005"*
	Measuring Unit	Built-in Linear scale
	Max. workpiece width	See (L) on page I-10
	Max. workpiece load	100lbs / 45kg
Power supply	120V AC, 50/60Hz	
Mass	333lbs / 150kg	
Standard accessories	10X projection lens set, work stage, power cord, halogen bulb, tube fuse, grounding wire, allen wrench, Vinyl cover	

* Counter not included

DIMENSIONS

