



# PJ-H3000

## Profile Projectors

Mitutoyo PJ-H3000F

Mitutoyo  
PROFILE PROJECTOR  
PJ-H3000F

ANGLE      AXIS

0° 00'

ZERO MODE  
SCALE MODE  
LINE

X      -0.175      ZERO

Y      -0.212      ZERO



# PJ-H3000 Profile Projectors

PJ-H3010FT2-200



10X Projection lens is a standard accessory.

These types are available:

**Economy**  
**Type T1**

Digital Display

Floating Table

**Easy-to-Operate**  
**Type T2**

Power Focus

Floating Table

Digital Display

**High Performance**  
**Type T4**

Auto Edge Finding

Power Focus

Floating Table

### High Accuracy floating table

By separating axial motion, and stabilizing the XY measuring stage in the Z-direction, high measuring accuracy ( $3+L/25\mu\text{m}$ ) has been achieved. Focusing is accomplished by moving the screen head itself up & down with the hand wheel or motorized unit. The power focusing type (T2&T4) provides higher performance.

### Newly Designed Lenses with a High NA

Newly designed lenses with a high NA (10X, 20X, and 50X) provide drastically brighter and clearer screen images during surface illumination.

### Surface Illumination Unit with Variable Emission Angle

By swiveling the condenser lens unit in the vertical direction, the surface illumination angle is adjustable for vertical or oblique illumination allowing easy inspection of non-reflective workpieces.

### Maximum Measuring Range in Its Class

The PJ-H3010FT1-300, PJ-H3010FT2-300, and PJ-H3010FT4-300 have achieved a maximum measuring range of

300x100mm (12"x4"), which is superior to their rivals. Both the X and Y axes of the stage have a floating structure, allowing speedy measurement along with large-diameter feed handles.

### Standard Rotary Tables

The 100x50mm XY stages (for PJ-H3005FT1-100, PJ-H3005FT2-100, and PJ-H3005FT4-100) are provided with the standard rotary table.

### Large-size, Easy-to-use Protractor Screen

The protractor screen has an effective diameter of 306mm (12"), allowing large workpieces to be inspected. The screen rotation can be digitally displayed with a resolution of 1' or 0.01°.

## ADVANCED FEATURES



### Turret Mount with a Wide Range of Projection Lenses

A three-lens mounting turret includes a 10X lens as standard. Four types of projection lenses (5X, 20X, 50X, 100X) are available. These lenses are parfocal, eliminating the need to refocus after changing the magnification.

### Erect Image

Images projected on the screen move in the same direction as the XY stage for efficient and convenient operation.

### Automatic Image Edge Finder

The Optoeye image edge finder eliminates the need for visual alignment and ensures accurate and consistent edge finding, regardless of operator skill. The Optoeye is linked to the built-in XY counter to make the most of the edge finding function using the SET and HOLD modes.



### Power Focusing

A motor moves the screen head up and down to bring the image into focus. The focusing speed is variable. The large-diameter manual focusing wheel can also be used for fine focusing adjustment when a high magnification lens is used.



# PJ-H3000 Profile Projectors

ORDER NO. & XY STAGE SPECIFICATIONS (See the last page for main unit specifications.)



Type T4

Model	PJ-H3005FT4-100		PJ-H3010FT4-200		PJ-H3010FT4-300		
<b>Order No.</b>	100V	303-983	303-993	303-986	303-996	303-989	303-999
(Order number suffix denotes the equipped AC power cord type.)	110V	303-983C	—	303-986C	—	303-989C	—
	120V	303-983A	303-993A	303-986A	303-996A	303-989A	303-999A
	220V	303-983D	303-993D	303-986D	303-996D	303-989D	303-999D
	240V	303-983E	303-993E	303-986E	303-996E	303-989E	303-999E
<b>XY range</b>	100x50mm (4"x2")		200x100mm (8"x4")		300x100mm (12"x4")		
<b>Resolution</b>	0.001mm/ 0.0005mm	.0001"/ 0.001mm/0.0005mm	0.001mm/ 0.0005mm	.0001"/ 0.001mm/0.0005mm	0.001mm/ 0.0005mm	.0001"/ 0.001mm/0.0005mm	
<b>Measuring unit</b>	Built-in linear scales						
<b>Table size</b>	300x240mm (11.81"x9.45")		430x254mm (16.93"x10")		500x254mm (19.69"x10")		
<b>Effective area of table</b>	Ø178mm (7" DIA.)*		280x180mm (11.02"x7.09")		364x180mm (14.33"x7.09")		
<b>Max. workpiece height</b>	105mm (4.13")						
<b>Functions</b>	Zero-setting, +/- direction switching, SPC output, edge signal output, angle display output, XY floating table, power focus (manual feed available)						

\*Rotary table

Type T1

Model	PJ-H3005FT1-100		PJ-H3010FT1-200		PJ-H3010FT1-300		
<b>Order No.</b>	100V	303-981	303-991	303-984	303-994	303-987	303-997
(Order number suffix denotes the equipped AC power cord type.)	110V	303-981C	—	303-984C	—	303-987C	—
	120V	303-981A	303-991A	303-984A	303-994A	303-987A	303-997A
	220V	303-981D	303-991D	303-984D	303-994D	303-987D	303-997D
	240V	303-981E	303-991E	303-984E	303-994E	303-987E	303-997E
<b>XY range</b>	100x50mm (4"x2")		200x100mm (8"x4")		300x100mm (12"x4")		
<b>Resolution</b>	0.001mm	.0001"/ 0.001mm	0.001mm	.0001"/ 0.001mm	0.001mm	.0001"/ 0.001mm	
<b>Measuring unit</b>	Built-in linear scales						
<b>Table size</b>	300x240mm (11.81"x9.45")		430x254mm (16.93"x10")		500x254mm (19.69"x10")		
<b>Effective area of table</b>	Ø178mm (7" DIA.)*		280x180mm (11.02"x7.09")		364x180mm (14.33"x7.09")		
<b>Max. workpiece height</b>	105mm (4.13")						
<b>Functions</b>	Zero-setting, +/- direction switching, SPC output, angle display output, XY floating table						

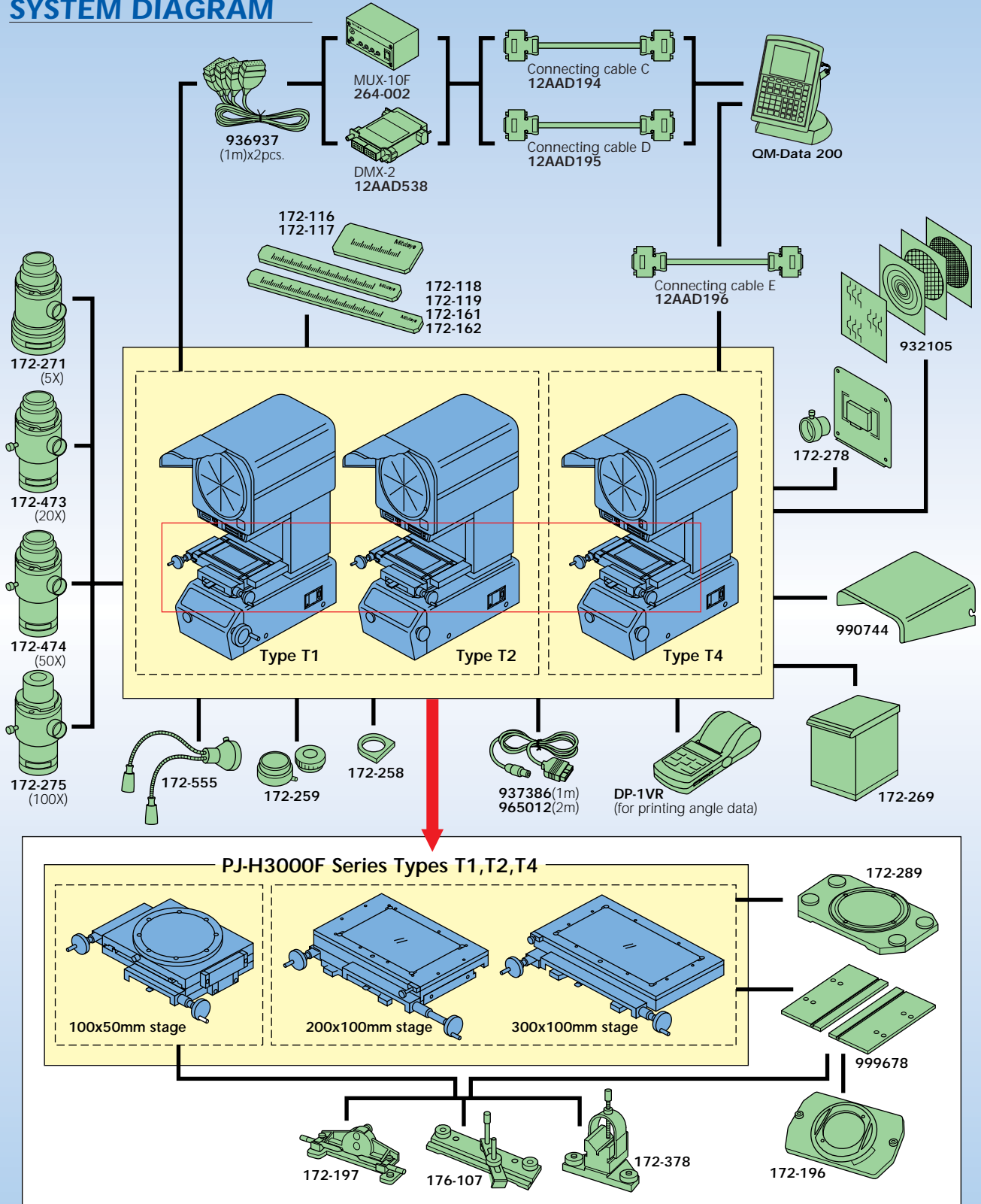
\*Rotary table

Type T2

Model	PJ-H3005FT2-100		PJ-H3010FT2-200		PJ-H3010FT2-300		
<b>Order No.</b>	100V	303-982	303-992	303-985	303-995	303-988	303-998
(Order number suffix denotes the equipped AC power cord type.)	110V	303-982C	—	303-985C	—	303-988C	—
	120V	303-982A	303-992A	303-985A	303-995A	303-988A	303-998A
	220V	303-982D	303-992D	303-985D	303-995D	303-988D	303-998D
	240V	303-982E	303-992E	303-985E	303-995E	303-988E	303-998E
<b>XY range</b>	100x50mm (4"x2")		200x100mm (8"x4")		300x100mm (12"x4")		
<b>Resolution</b>	0.001mm	.0001"/ 0.001mm	0.001mm	.0001"/ 0.001mm	0.001mm	.0001"/ 0.001mm	
<b>Measuring unit</b>	Built-in linear scales						
<b>Table size</b>	300x240mm (11.81"x9.45")		430x254mm (16.93"x10")		500x254mm (19.69"x10")		
<b>Effective area of table</b>	Ø178mm (7" DIA.)*		280x180mm (11.02"x7.09")		364x180mm (14.33"x7.09")		
<b>Max. workpiece height</b>	105mm (4.13")						
<b>Functions</b>	Zero-setting, +/- direction switching, SPC output, angle display output, XY floating table, power focus (manual feed available)						

\*Rotary table

# SYSTEM DIAGRAM



Note: Some optional accessories may not be available in U.S.

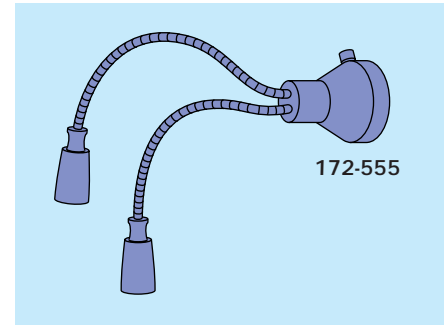
# Optional Accessories

## Projection Lenses



- Clear images due to the high NA design.
- All the lenses come equipped with a built-in half-reflection mirror for surface illumination.

## Oblique Surface Illumination Adapter (Bifurcate Type)



- Suitable for inspecting the surfaces of low-reflection-ratio materials such as plastics.

## Rotary Tables for Larger XY Stage



- Fixture mount adapter (999678) is required to 172-196.
- Holder with clamp (176-107) can be mounted on 172-196.

Order No.	172-196	172-289
Effective dia.	100mm	200mm
Angle reading	2'	—
Height	20.5mm	33mm
Mass	2.5kg	14kg

## V-block with Clamp



- Workpiece diameter: 25mm max.
- Mass: 0.8kg

## Swivel Center Support



- Suitable for clamping cylinders and ball screws, etc.

Order No.	172-197
Workpiece diameter	80mm max.(65mm max.)
Workpiece length	140mm max.
Swivel	±10°
Mass	2.5kg

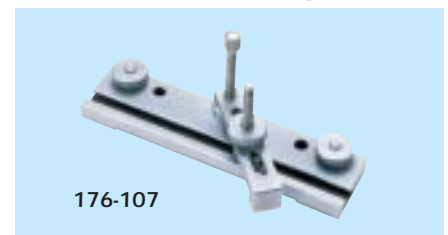
( ) : When swiveled 10°

## Fixture Mount Adapter



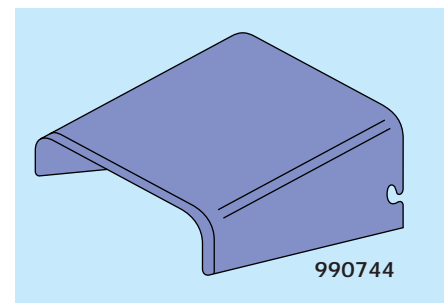
- Used to mount fixtures, such as a rotary table and swivel center supports, on the 200x100mm or 300x100mm stage.
- Mass: 2kg

## Holder with Clamp

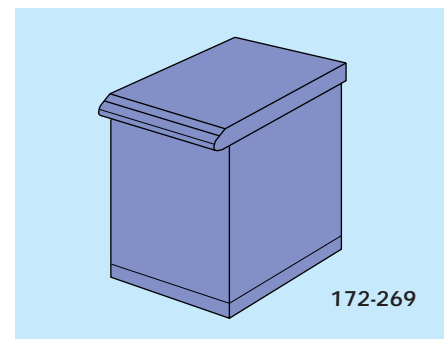


- Workpiece height: 35mm max.
- Mass: 0.42kg

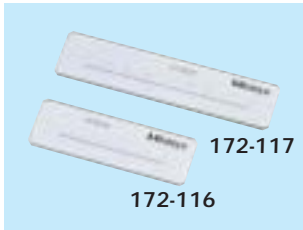
## Hood/Visor (Larger Type)



## Machine Stand



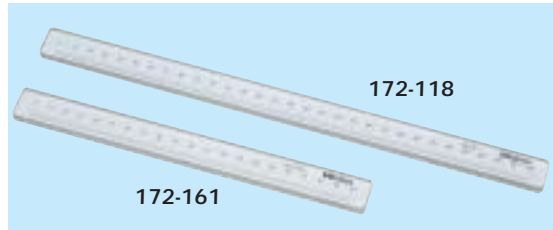
## Standard Scales



- Used for checking magnifying accuracy.

Order no.	172-116	172-117
Range	50mm	2"
Graduation	0.1mm	.01"
Accuracy	3.25 $\mu$ m	.00013"
Mass	15g	

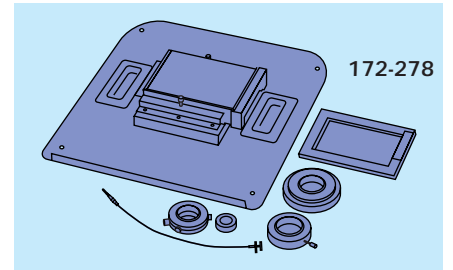
## Reading Scales



- Specially designed for checking the magnified image of a standard scale on the projection screen.

Order no.	172-118	172-119	172-161	172-162
Range	200mm	8"	300mm	12"
Graduation	0.5mm	.02"	0.5mm	.02"
Accuracy	18 $\mu$ m	.00071"	19.5 $\mu$ m	.00077"
Mass	65g		100g	

## Polaroid Photographic Attachment



- The projected surface image can be easily recorded.
- Film: Polaroid #669 (color) or Polaroid #665 (monochrome)

## Green Filter



- Increases the sharpness of a contour image on the screen.

## Angle Counter Printer (DP-1VR)



- Used for recording angle data.
- Optional connecting cable: **937386** (1m) or **965012** (2m).

## Polarizing Unit



- Used for observing a workpiece surface through polarized light.

## Zero Set Switch



## Overlay Chart Set



- Makes inspection of projected images an easy process.
- Twelve different patterns are available in set.

## QM-DATA 200



- The QM-Data 200 is a 2-D data processing unit for optical instruments\*. This features powerful 2-D coordinate measurement capabilities with unmatched simple key operation.

\*Connecting cable (12AAA807) is required for PJ-H3000.

## Dimensions

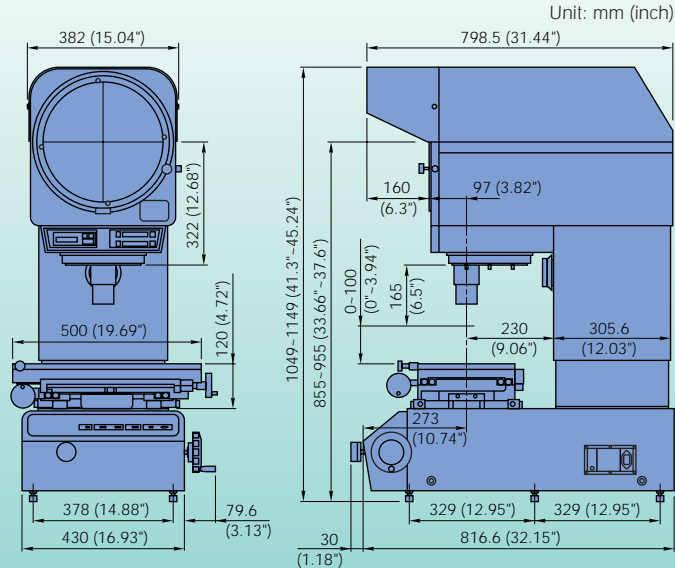
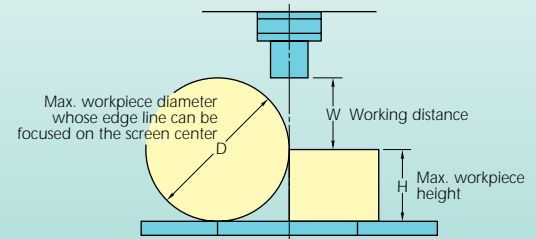


Illustration: PJ-H3010FT1-300

## PROJECTION CAPACITY FOR ALL TYPES (T1, T2, T4)



Unit: mm

Magnification	5X (Optional)	10X (Optional)	20X (Optional)	50X (Optional)	100X (Optional)
View field diameter	61.2	30.6	15.3	6	3
W	66	70.5	56.5	50	50
H	105	105	105	105	105
D	188	206	186	177	182

## MAIN UNIT SPECIFICATIONS

Model	w/100x50mm range w/200x100mm range w/300x100mm range	PJ-H3005FT4-100 PJ-H3010FT4-200 PJ-H3010FT4-300	PJ-H3005FT2-100 PJ-H3010FT2-200 PJ-H3010FT2-300	PJ-H3005FT1-100 PJ-H3010FT1-200 PJ-H3010FT1-300
Power focus		✓	✓	—
Image edge finder (Optoeye)		✓	—	—
Protractor screen	Effective diameter Screen material Reference line Angle display (LED)	306mm (12") Fine ground glass Staggered cross and crosshair Resolution: 1' or 0.01° (switchable), Range: ±370° Functions: Absolute/incremental mode switching, zero-setting, data output		
Lens mount		Three-piece turret mount (bayonet type)		
Projection lens		10X (Options: 5X, 20X, 50X, 100X)		
Focusing travel		105mm (4.13")		
Magnification accuracy	Contour illumination Surface illumination	±0.1% or less ±0.15% or less		
Contour illumination	Light source Optical system Functions	Halogen bulb (24V, 150W) Telecentric system 2-stage brightness switch, heat-absorbing filter, cooling fan, optional green filter		
Surface illumination	Light source Optical system Functions	Halogen bulb (24V, 150W) Vertical (using a half-reflection mirror)/oblique (variable emission angle) Adjustable condenser lens		
Power supply		100/110/120/220/240V AC (switchable), 50/60Hz		
Mass		T4-100: 187kg (411 lbs.) T4-200: 188kg (414 lbs.) T4-300: 189kg (416 lbs.)	T2-100: 186kg (409 lbs.) T2-200: 187kg (411 lbs.) T2-300: 188kg (414 lbs.)	T1-100: 180kg (396 lbs.) T1-200: 181kg (398 lbs.) T1-300: 182kg (400 lbs.)
Standard accessories		10X projection lens (172-472), shield (172-201), halogen bulb 24V 150W (2pcs.), chart clip (4pcs.), power cable, machine cover (383876), user's manual		

**Mitutoyo**  
PRECISION IS OUR PROFESSION



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Specifications are subject to change without notice.

