

## PZA02 M-545 Series Microscope Stages User Manual

Version: 3.2.1

Date: 6/28/2022



This document describes the following products:

- **M-545.2MO**  
XY stage, 25 mm × 25 mm, Olympus
- **M-545.2MN**  
XY stage, 25 mm × 25 mm, Nikon
- **M-545.2ML**  
XY stage, 25 mm × 25 mm, Leica
- **M-545.2MZ**  
XY stage, 25 mm × 25 mm, Zeiss



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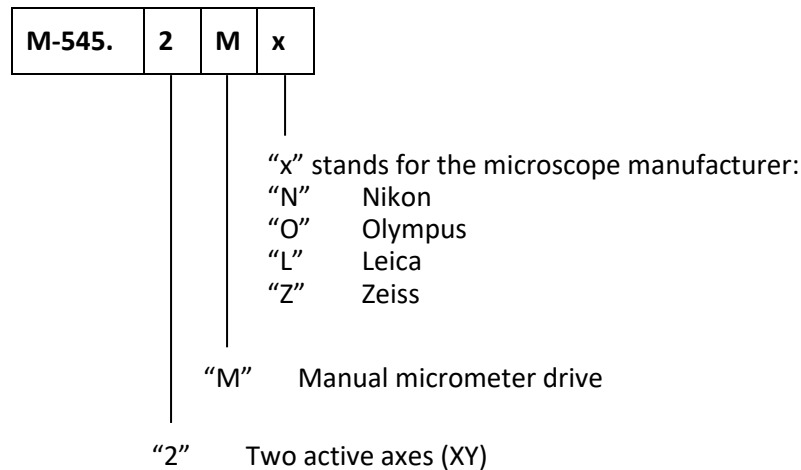
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# 1 Model Survey

The M-545 series of stages is designed for use with inverted microscopes from the leading manufacturers (Nikon, Olympus, Leica and Zeiss). The stages are designed to allow full rotation of the lense turret throughout the Z motion range of the turret.



## 2 Compatibility

The M-545 is designed to provide a highly stable mounting platform for the Plnano® series of piezoelectric nanopositioning stages. The Plnano® was designed for microscopy applications and has accessories that facilitate mounting the sample near the bottom surface of the stage and within the focal range of the microscopes.

The M-545 also has mounting holes for a variety of other PI nanopositioning stages.

The following is a list of PI stages that can be used with the M-545:

P-545	Plnano® series XY and XYZ stages, all versions
P-736.ZR1S and .ZR2S	Plnano® series Z high-speed Z scanner <i>P-736.AP1 adapter plate required</i>
P-5x7 and P-528	PI multi-axis piezo scanner, all versions
P-561 and P-562	PI Mars XYZ nanopositioning stage, all versions
P-541 and P-542	PI low-profile nanopositioning stage, all versions
P-733	Compact, high-precision XYZ nanopositioning stage All versions <i>P-733.AP1 adapter plate required</i>

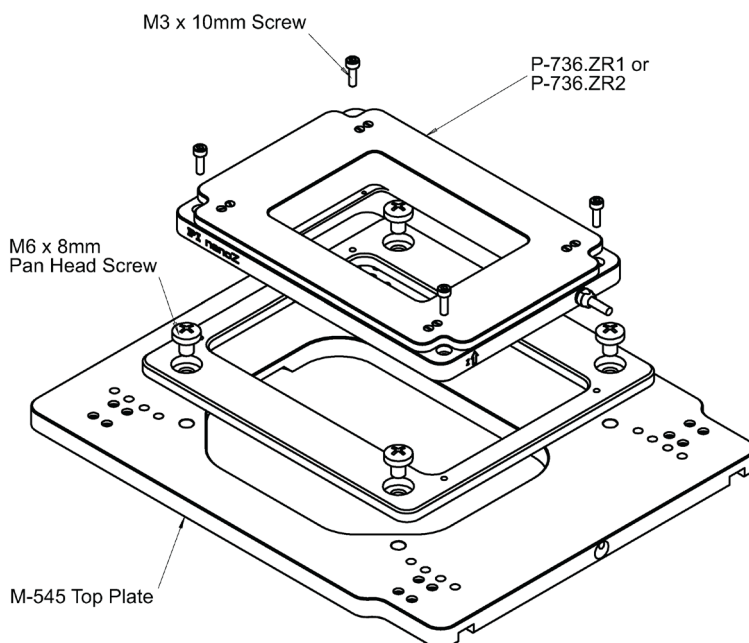
## 3 Accessories

The following accessories are available for the M-545 stage. Accessory kits can be ordered from PI and are supplied with fasteners.

### 3.1 Adapter Plates

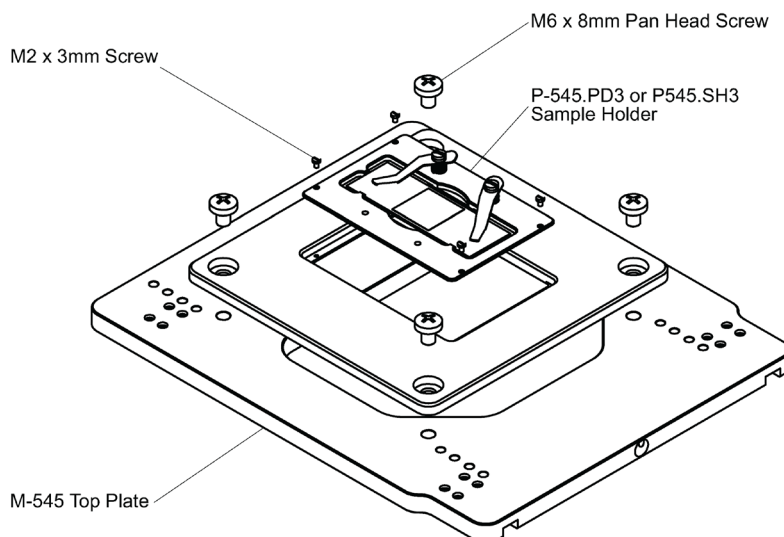
#### P-736.AP1 adapter plate

For mounting P-736.ZRx Plnano® Z piezo scanners onto M-545 XY stages



#### M-545.SHP adapter plate

For microscope sample holders, i.e., for mounting 1" x 3" microscope slides or 35 mm Petri dishes directly to the M-545 XY stage



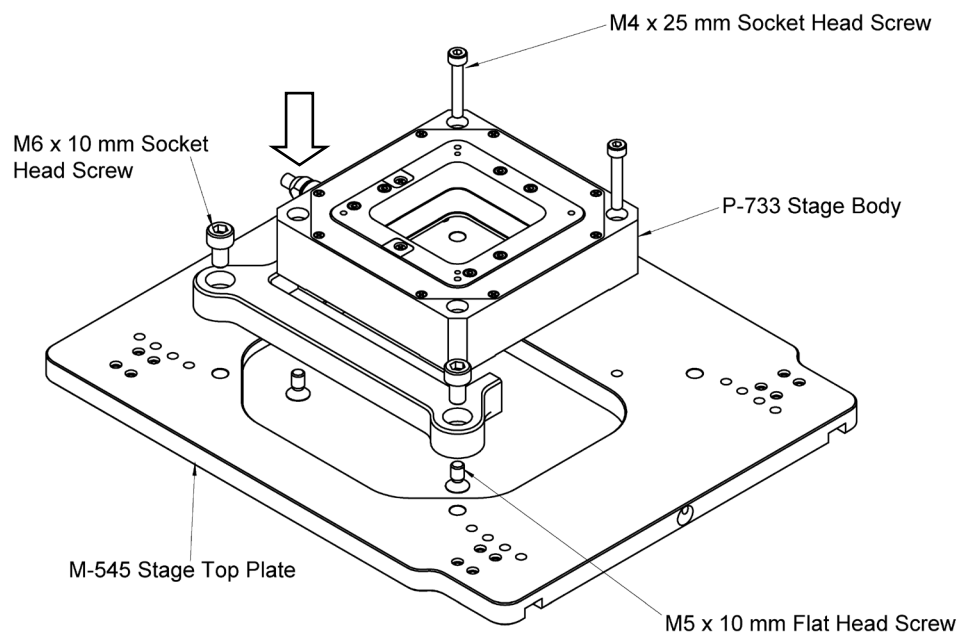
**P-733.AP1 adapter plate**

For mounting a P-733 piezo stage onto the M-545 XY stage

**NOTICE****Damage due to wrong orientation of the P-733 positioner!**

The piezo levers of the P-733 positioner can move beyond the limits of the base body during operation (all models except P-733.xDD / P-733.ZCx). Installing the P-733 in a wrong orientation will block the piezo levers and cause damage.

- Install the P-733 in the direction shown in the figure below only (see the arrow for the position of the cable exit).

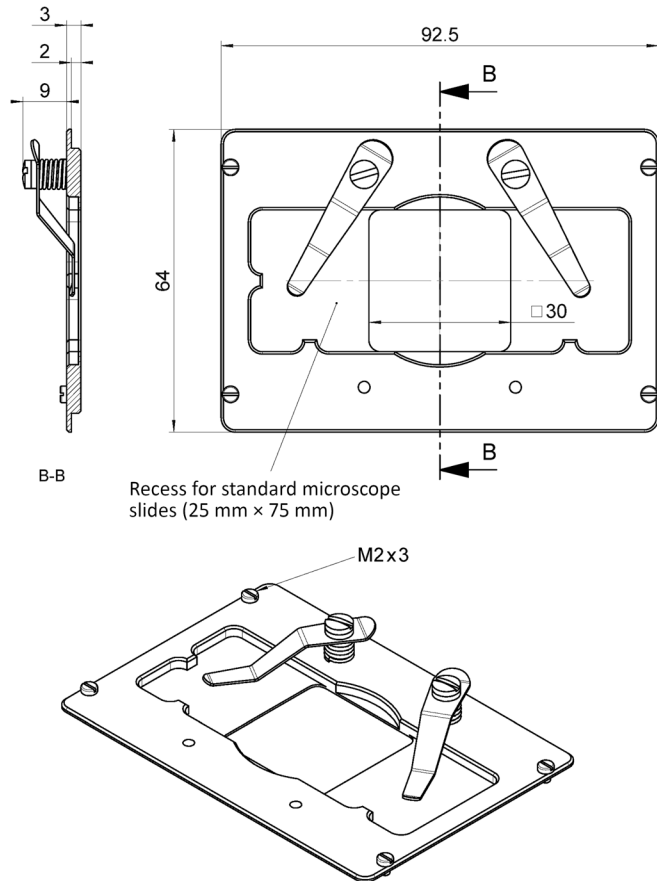


The arrow marks the position of the cable exit.

## 3.2 Sample Holders

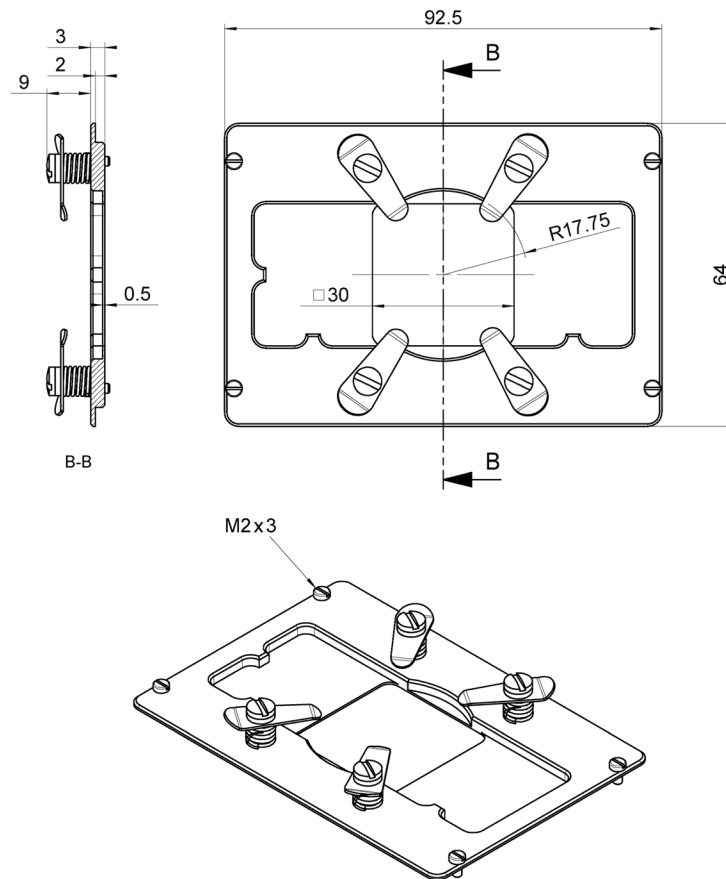
### P-545.SH3

Microscope slide holder for PInano® piezo stages

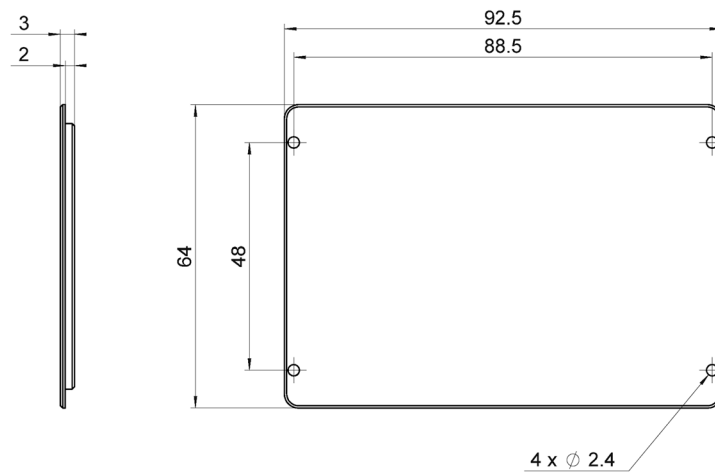


**P-545.PD3**

Petri dish holder, 35 mm, for Plnano® piezo stages

**P-545.PP3**

Universal holding plate for accessory for Plnano® piezo stages





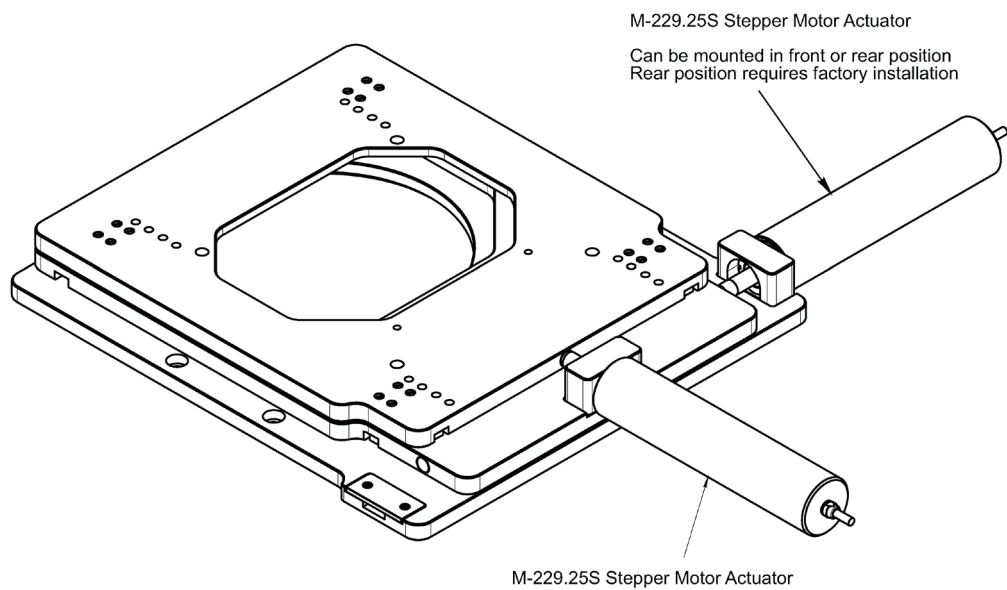
### 3.3 Drive Sets

#### M-545.USx drive sets for M-545 stages (all models except M-545.2MZ)

The following drive sets are available:

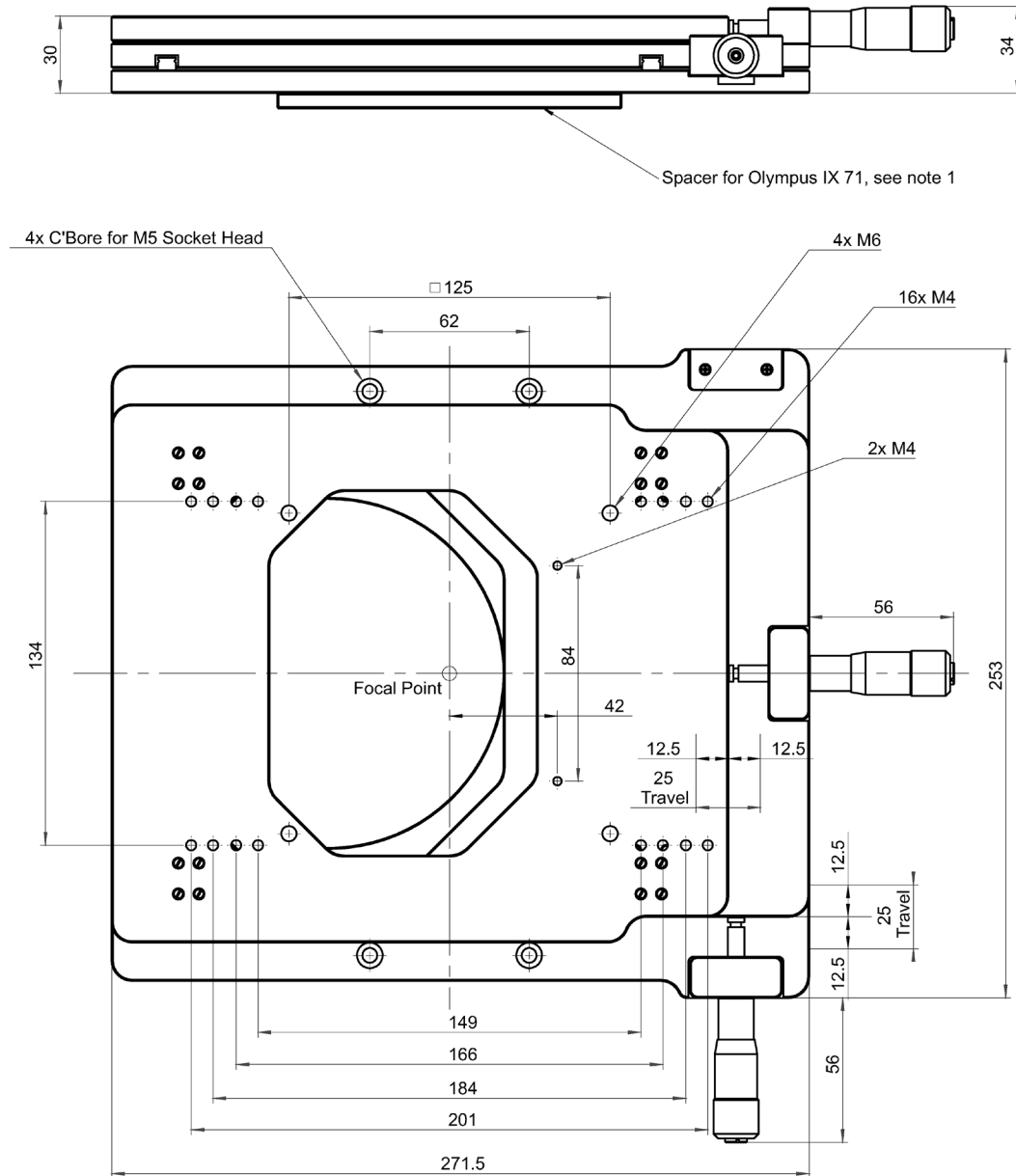
- **M-545.USG**  
Drive set for M-545 XY stage: Includes stepper motor linear actuators\*  
\* A suitable controller can be ordered separately.
- **M-545.USC**  
Drive set for M-545 XY stage: Includes stepper motor linear actuators, controller and joystick

The drive sets include M-229 stepper motor actuators.



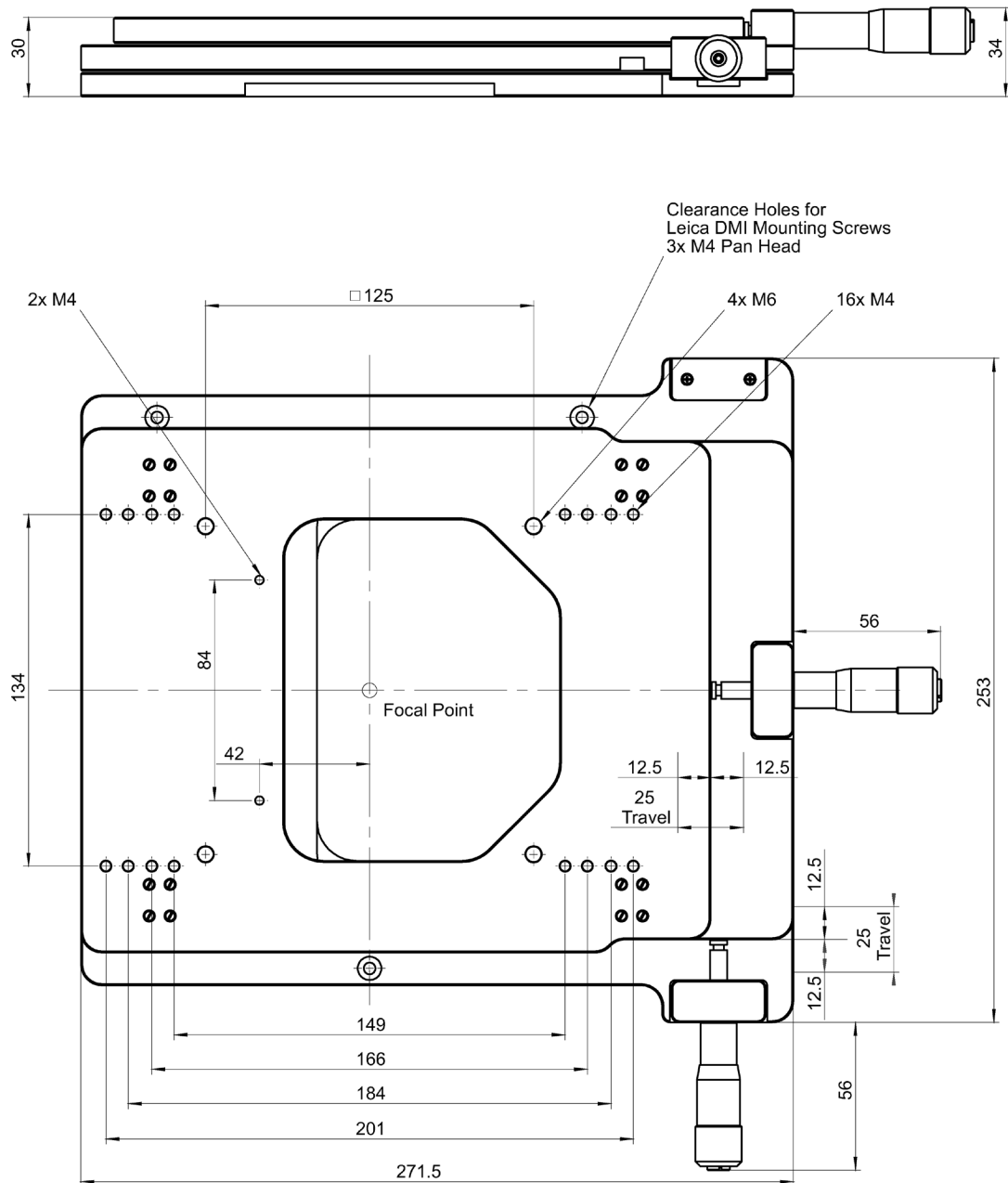
## 4 Dimensions

### 4.1 M-545.2MO and M-545.2MN Dimensions

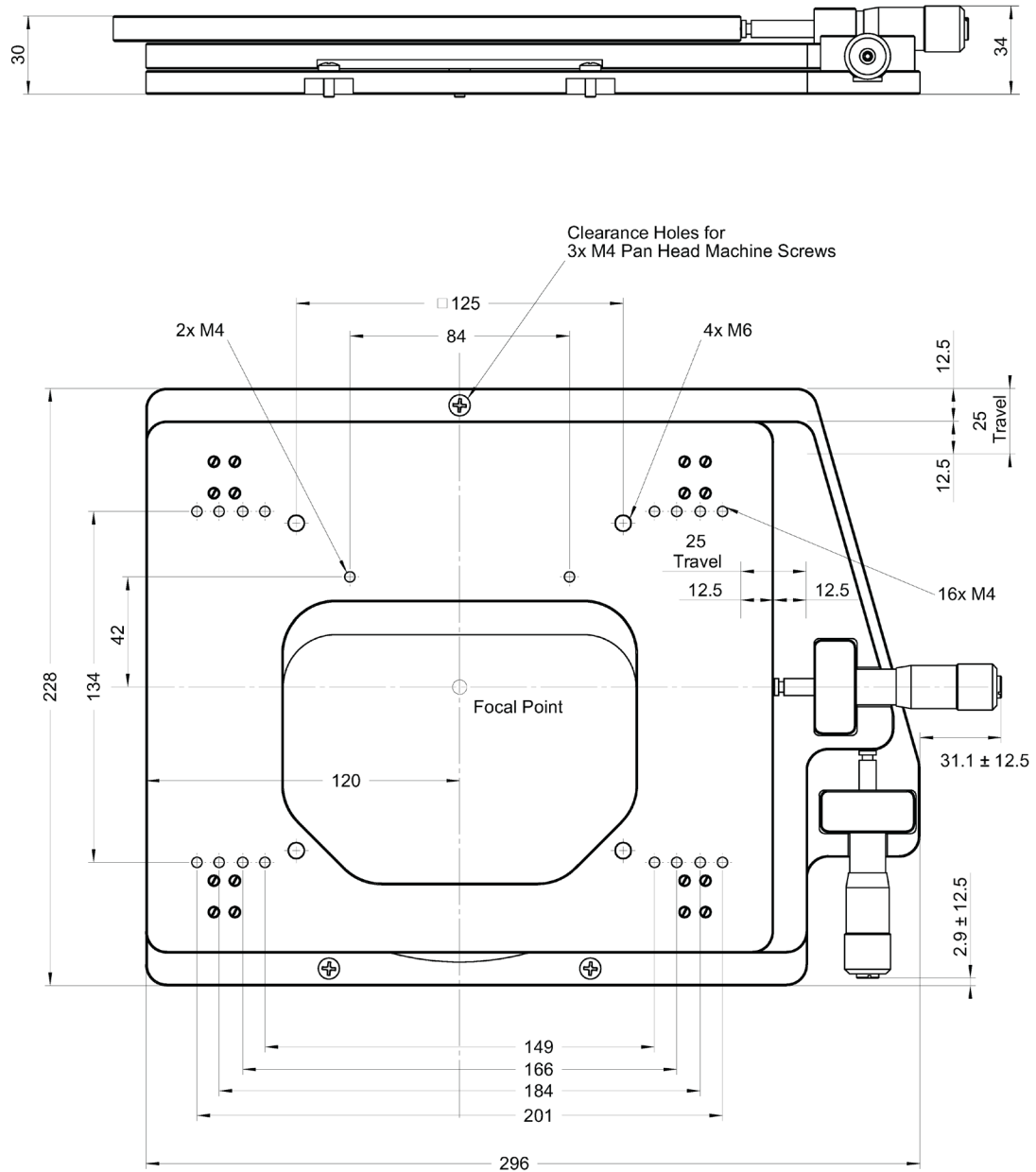


Note 1: Spacer shown for Olympus IX 71. Adapter for Nikon Ti Series Microscopes is available as well.

## 4.2 M-545.2ML Dimensions



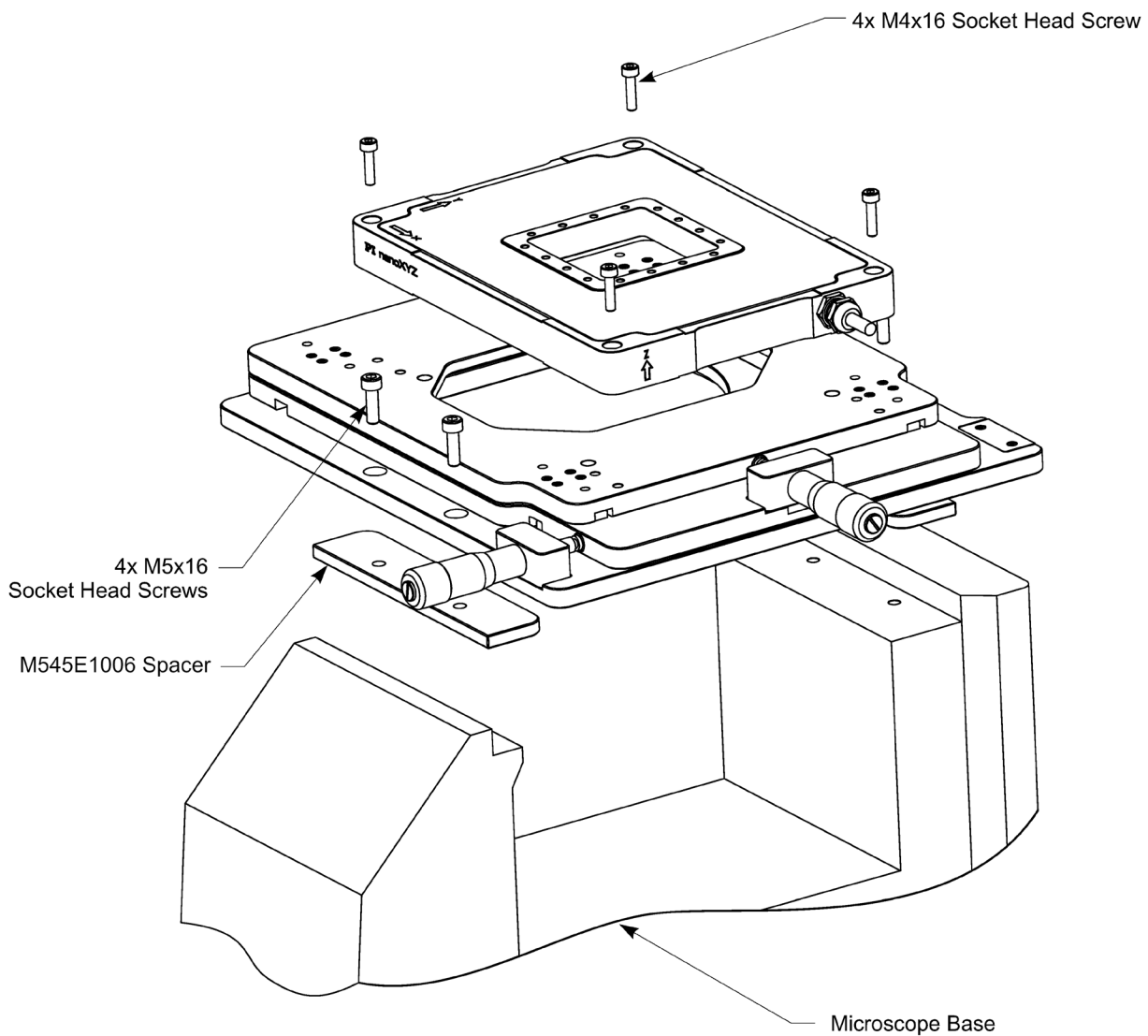
### 4.3 M-545.2MZ Dimensions



## 5 Mounting

### 5.1 M-545.2MO Mounting (for Olympus Microscopes)

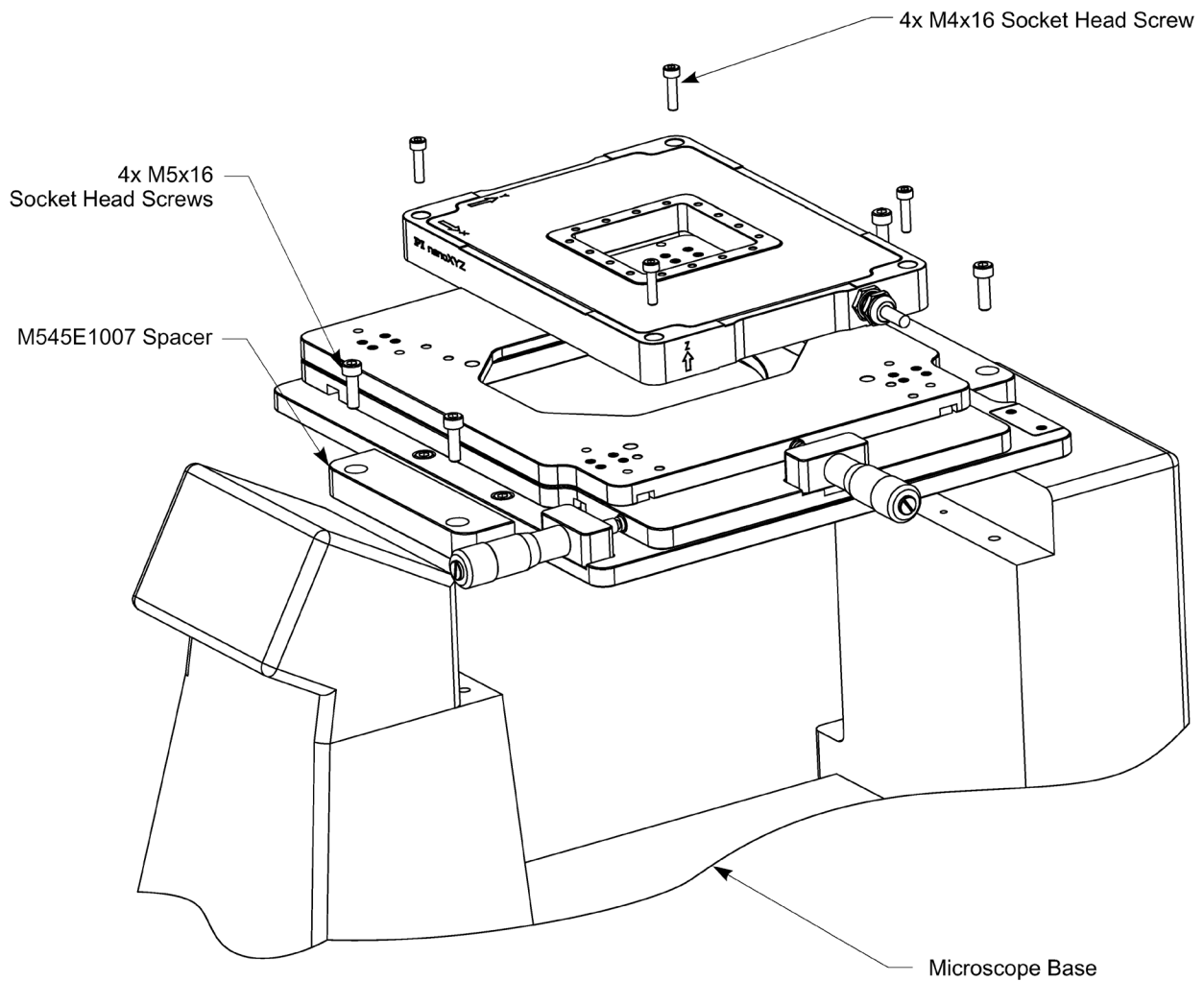
Spacer plates are used to adapt the M-545 stage to the Olympus IX2 / IX3 microscope base. The proper hardware sizes are shown below.



## 5.2 M-545.2MN Mounting (for Nikon Microscopes)

Spacer plates are used to adapt the M-545 stage to the Nikon TI microscope base.

The proper hardware sizes are shown below.

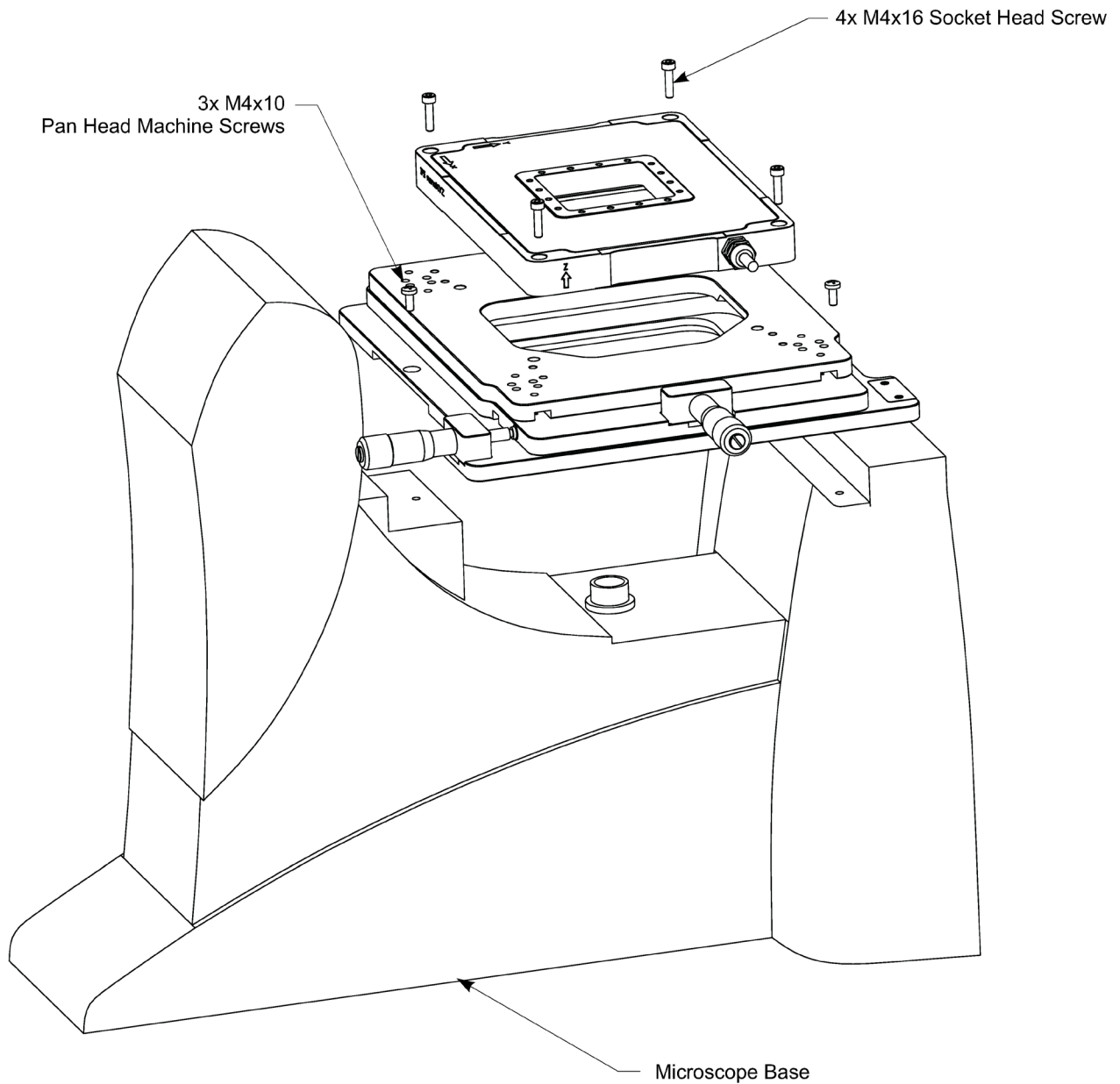


### 5.3 M-545.2ML Mounting (for Leica Microscopes)

No spacers or adapters are required for the Leica DMI microscope base.

Fits Leica models DMI 4000, DMI 5000 and DMI 6000.

The proper hardware sizes are shown below.

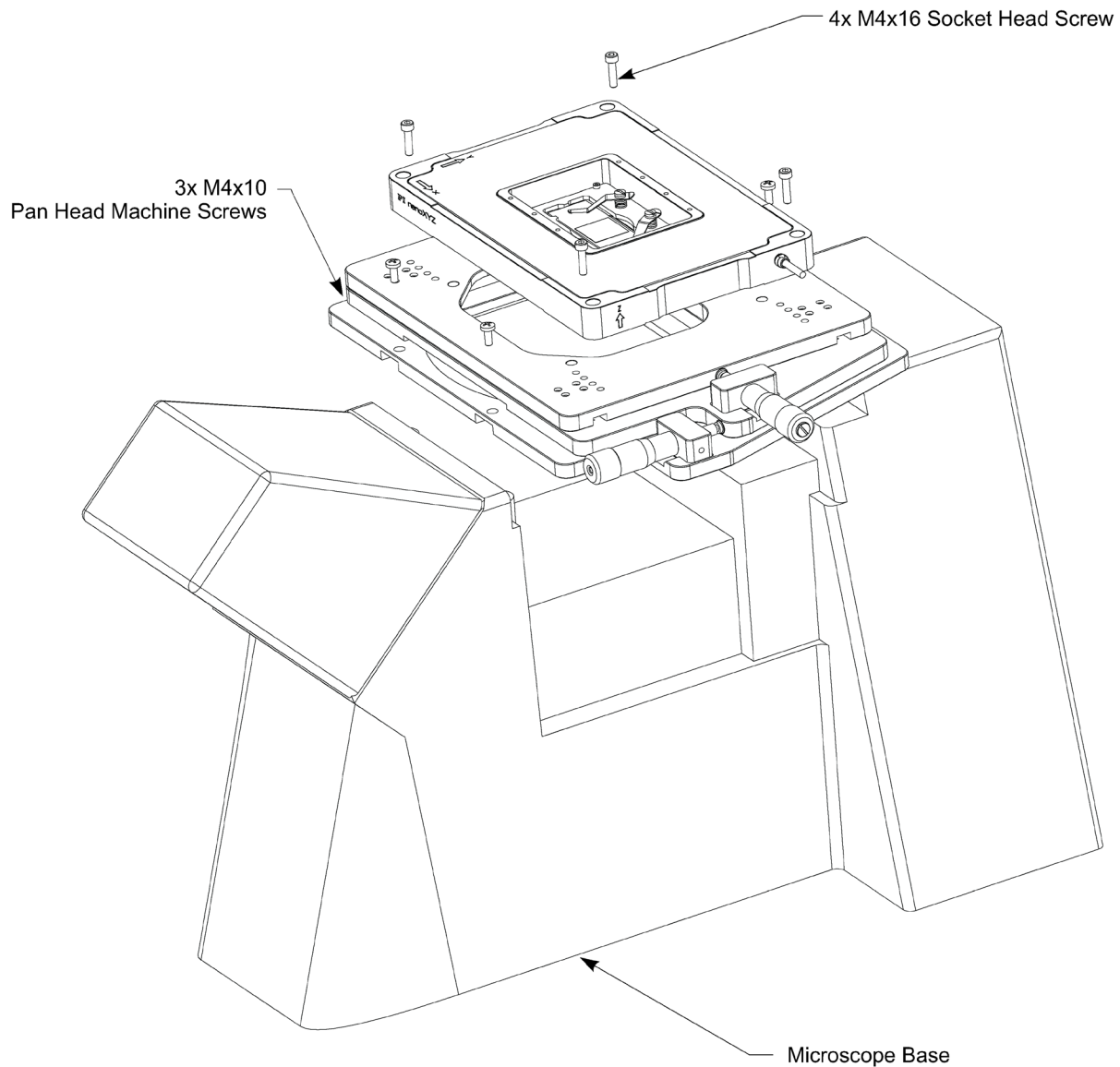


## 5.4 M-545.2MZ Mounting (for Zeiss Microscopes)

No spacers or adapters are required for the Zeiss Observer microscope base.

Fits Zeiss Axio Observer models A1, D1 and Z1 and Z1m.

The proper hardware sizes are shown below.





## 6 Technical Information

### 6.1 Focal Point Location

PI has designed the M-545 stage to easily integrate the P-545 stage into commercial microscopes. M-545 stages are available for Nikon, Olympus, Zeiss and Leica inverted microscopes. These stages mount directly to the microscope base and accept the P-545.3R8H and P-545.2R8H as well as several other PI stages. The M-545 stages can be manually driven through micrometers or using PI's precision motorized actuators. Contact your PI sales representative for details.

When used in a microscope application, the focal plane for the microscope is located near the bottom of the stage. It is for this reason that the stage has a lower mounting surface. The figure below shows the nominal location of the focal plane. Vertical travel of the objective varies based on the microscope used.

A series of accessories is available from PI to assist with mounting a sample holder to the stage. The M-545.SHP is available to hold standard 1" × 3" (25 mm × 75 mm) microscope slides and the P-545.PD3 is offered for holding 35 mm Petri dishes.

