

# LF-D

Large Format  
Digital Platform



Get More From  
Your Microscope

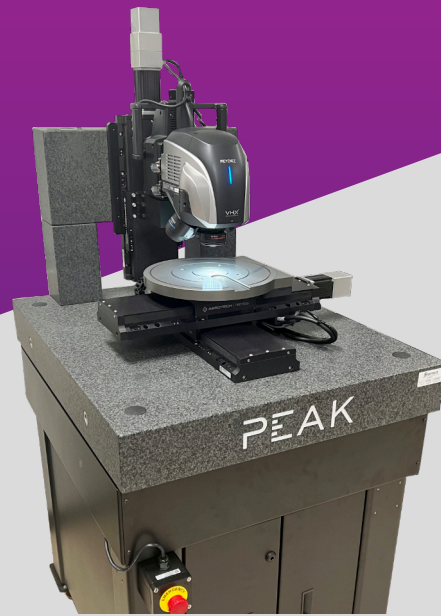
**PEAK**<sup>TM</sup>  
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# LF-D

## Large Format Digital Platform



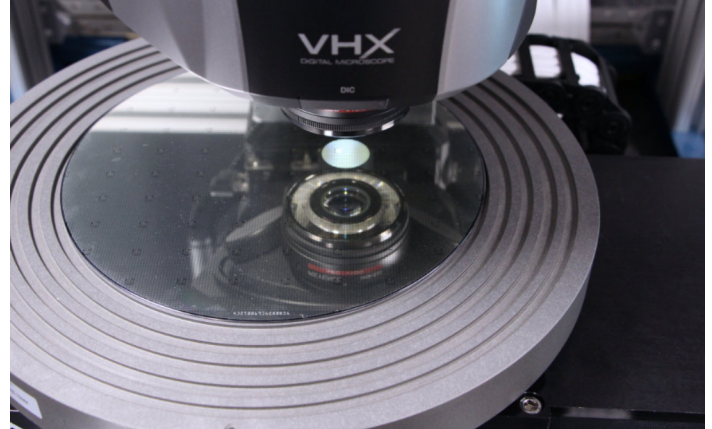
600 x 600 mm Inspection Area System

### Many Standard Options to Choose From

A variety of accessories are available to meet the needs of customers in environments spanning from R&D to production. Configure a system that works best for your application.

### High Resolution. Large Travel.

Larger stages increase the working area and sample payload capacity while ScanX software enables advanced features, such as: increased vertical travel, motorized tilt control, extra large stitching capabilities, and more! Bring your VHX microscope to the next level with Peak's LF-D Platform.



Wafer imaging with the VHX-7100 microscope

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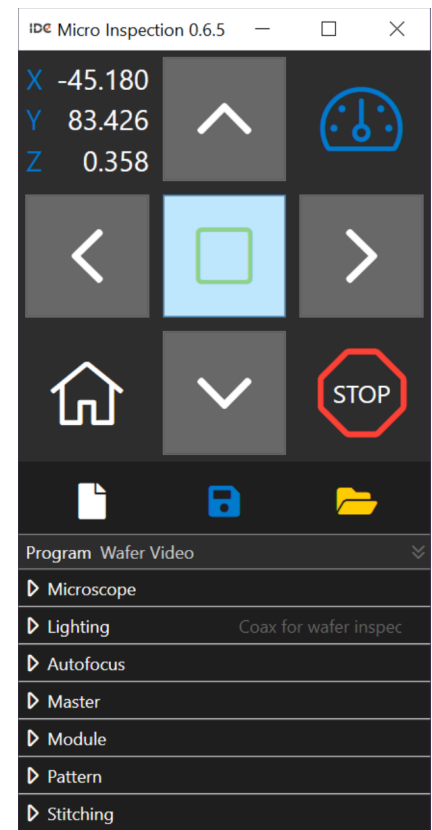
# ScanX

## Better Together

Peak Metrology is proud to partner with IDC MicroInspection to offer the ScanX Automated VHX Software with LF-D systems. This powerful combination allows you to leverage advanced automation techniques via ScanX on large and heavy parts on the LF-D motion platform.

Make quick work of those large parts via Teaching, Stitching, and Patterning. Take control of your inspection workflow with custom image and folder name outputs and an optional manual classifier.

Click [here](#) for a full list of features.



CellType	CellID	X	Y	Size-X	Size-Y	Row	Column
Reference	Ref-1	85257	36246	0	0		
Reference	Ref-2	-108450	48128	0	0		
Block 1	R001_C001	-63322	115993	500	500	1	1
Block 1	R001_C002	-35327	115901	500	500	1	2
Block 1	R001_C003	-17332	115816	500	500	1	3
Block 1	R001_C004	660	115717	500	500	1	4
Block 1	R001_C005	18652	115624	500	500	1	5
Block 1	R002_C001	18501	94028	500	500	2	5
Block 1	R002_C002	510	94120	500	500	2	4
Block 1	R002_C003	-17486	94213	500	500	2	3
Block 1	R002_C004	-35482	94308	500	500	2	2
Block 1	R002_C005	-53474	94395	500	500	2	1

## Key Features

- Unlimited image stitching
- Arbitrarily programmable scan positions
- Programmable Autofocus for reduced cycle times
- Customizable file/image naming and folder structure
- Import position lists including reference points for pattern shifting
- Pattern positions for quick processing of batch parts

## Your Routines, Your Way

With ScanX, you can easily program thousands of positions (X,Y,V,T axes). For features larger than your field of view, simply specify any image size and have the stitching requirements computed automatically!

Stay organized by choosing image names that make sense for your team.

Use reference locations to align batch parts or a single part measured over long time periods - ScanX will automatically adjust the spatial coordinates.



# ScanX

Feature/Application	ScanX	VHX
<b>Large Area Stitching</b> Ability to stitch final images > 55,000 pixels	X	
<b>Depth Stacking</b> Combine images from multiple depths to generate a focused image over tall features		X
<b>Advanced Servomotor Motion</b> Use more accurate stages and more stage selection options (flexibility for purpose-built designs)	X	
<b>Work in a Single Application</b> Control stage motion and imaging from within a single program		X
<b>Advanced Teaching/Recipe Capabilities</b> Ability to use a programmable autofocus and include many stitched areas inside a teaching routine	X	
<b>Pre-mapping Navigation</b> Create a macro-scale map of your surface and use it to quickly move the microscope to areas of interest		X
<b>Index-list Navigation</b> Load a position list of coordinates and quickly move between positions with a single click	X	
<b>Teaching Auto Measurement</b> Program a measurement to be made on an image automatically		X
<b>3D Image Stitching</b> Stitch multiple, adjacent 3D images into a single 3D image larger than the field of view		X
<b>Peak Product</b>	LF-D	LF-DN

## Is ScanX right for you?

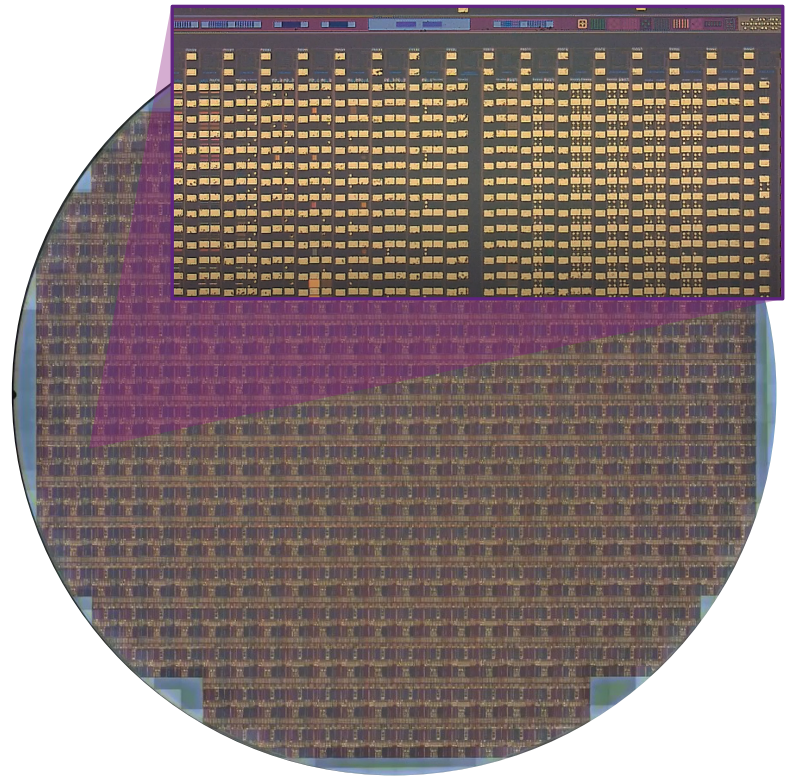
The table above provides a general overview of the type of applications that are best suited for ScanX or the standard VHX software. A complete list of all features and their availability in both pieces of software can be found [here](https://www.peakmetrology.com/vhx-feature-comparison/) (https://www.peakmetrology.com/vhx-feature-comparison/).

Still not sure which is right for you? [Contact us](#) today! We'll work with you to review your application in detail to determine which solution best meets your needs. No matter which solution you choose, Peak has you covered. This catalog details the features of the ScanX software package paired with the LF-D motion platform. For more information about systems with large measurement volumes while still working within the standard VHX software: please see our LF-DN product catalog.

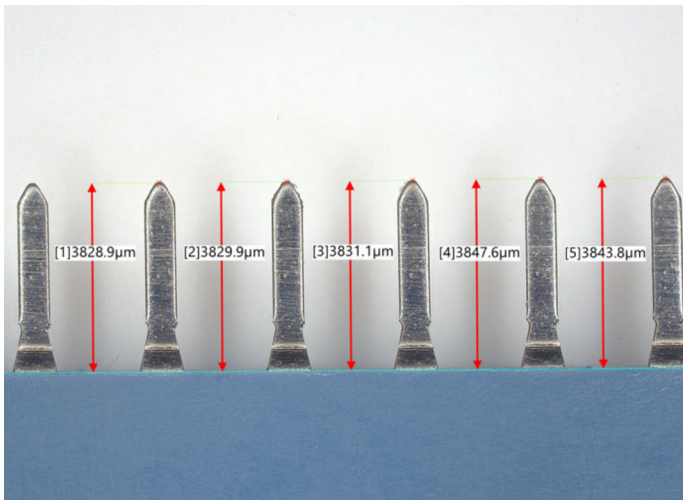
## Larger Stitching Capabilities

The LF-D motion platform provides the larger travel distances required, while ScanX software enables image stitching beyond standard Keyence limitations. Stitch a full wafer at your choice of magnification level and create a single output image with the ability to zoom in as needed.

Excessive numbers of images can, however, bog down the VHX PC and reduce overall throughput. For these applications, Peak recommends the use of a dedicated ScanX PC to divide the image capture and image processing tasks. Doing so also adds a second monitor, making it easy to capture images on one and analyze on the other.



Full 300 mm as a single stitched image



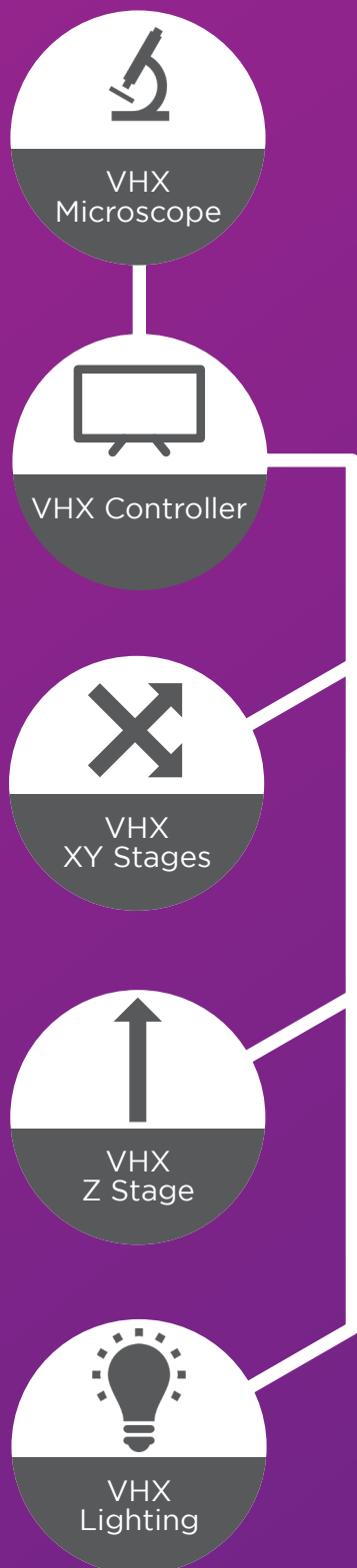
VHX Software: distances from reference line

## Analysis

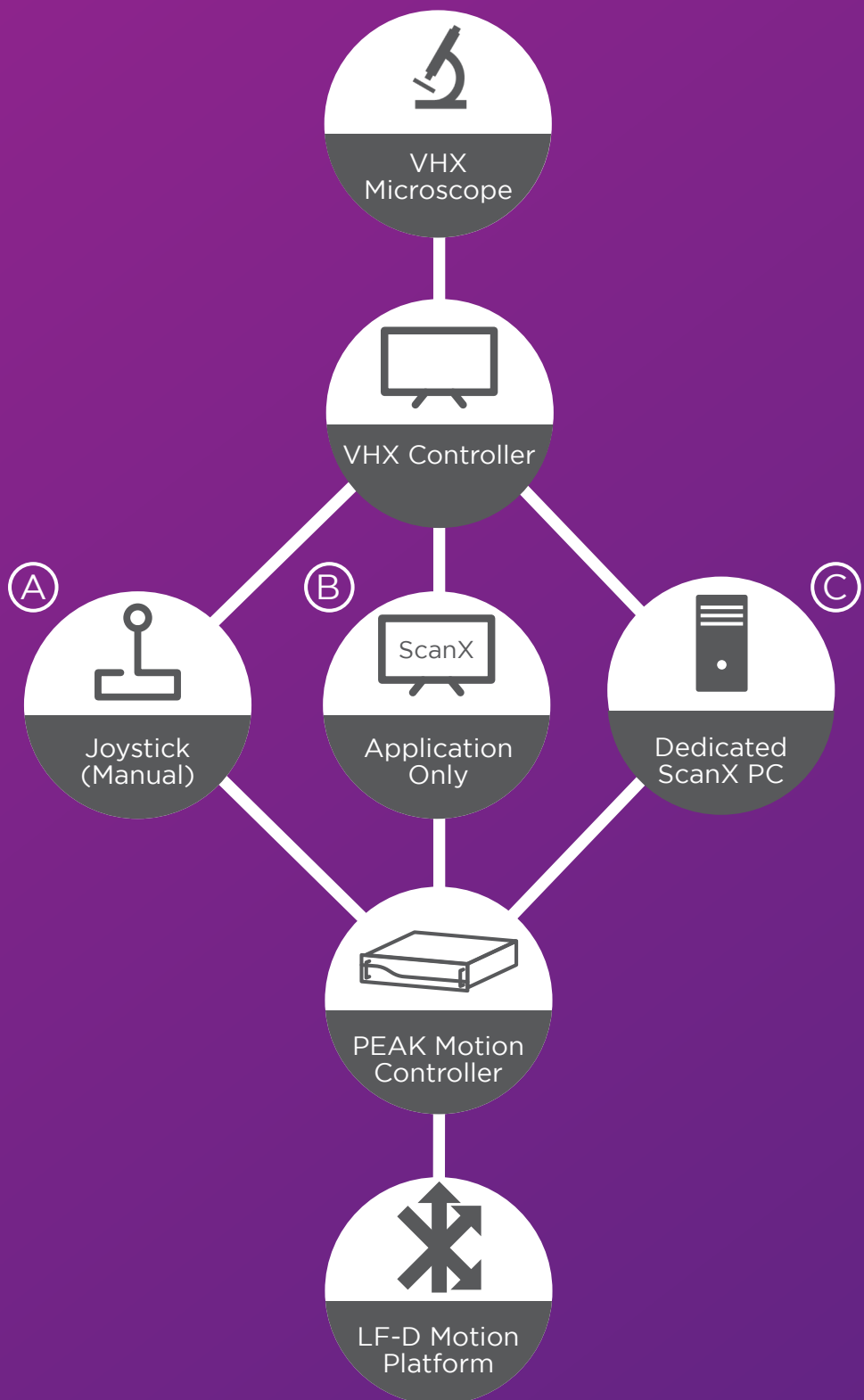
Inspect your parts with the analysis tool of your choice. ScanX works with the standard, built-in VHX analysis tool, which comes with many easy-to-use measurement tools. Tools include: point-to-point, diameters, angles, areas, and many more (including tools to create reference geometry). See VHX manual for full details.

Or choose a 3rd party software suit your needs. Consult with Peak for more details.

# KEYENCE



# PEAK™



When to select:

- (A) Automation not required
- (B) Automation required, moderate stitching requirements
- (C) Automation, large stitching areas / high throughput required

# Specs

## LF-D Specifications

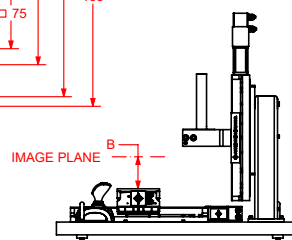
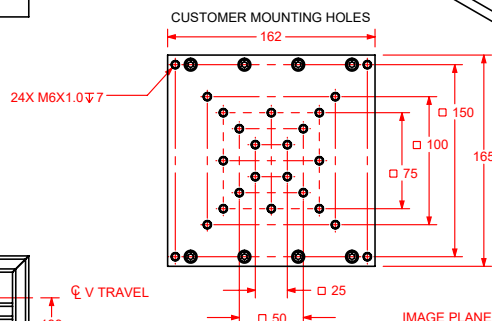
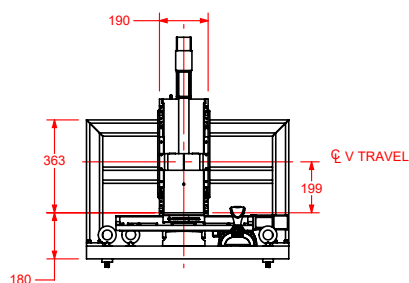
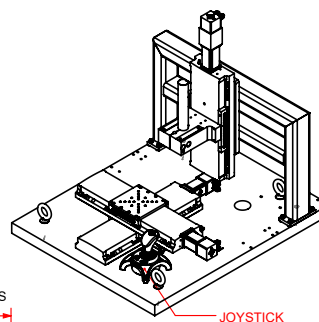
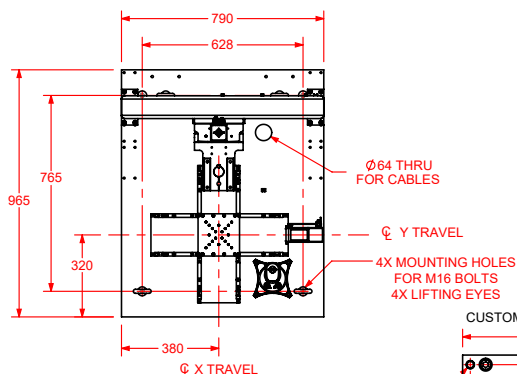
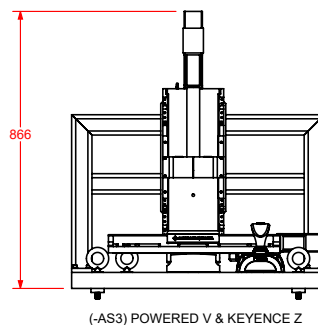
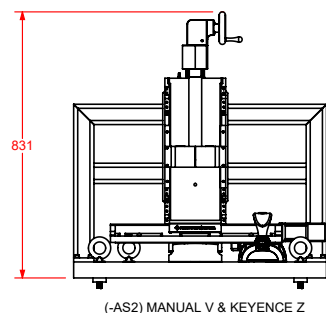
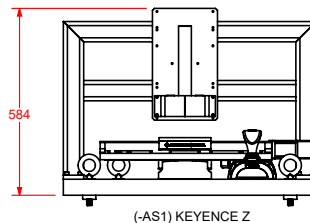
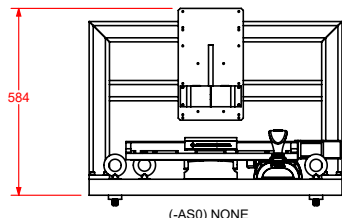
Travel	300 x 300 mm	600 x 600 mm
XY Performance		
Accuracy	± 10 μm	± 16 μm
Repeatability	± 1 μm	
Max Jog Speed	100 mm/sec	
Z-Axis (Optional) Performance		
Travel	200 mm	
Accuracy	± 8 μm	
Repeatability	± 1 μm	
Minimum Incremental Motion	1.0 μm	
Max Jog Speed	25 mm/sec	
Tilt-Axis (Optional) Performance		
Travel	+/- 90°	N/A
Accuracy	120 arcsec	N/A
Repeatability	45 arcsec	N/A
Mechanical Specifications		
Payload Capacity	35 kg	45 kg
MTBF (Mean Time Before Failure)	20,000 Hours	



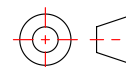
# Dimensions

AXIS	NOMINAL TRAVEL
X	300
Y	300
KEYENCE Z	49
V	200

ADDITIONAL STAGES	IMAGE PLANE ADJUSTABILITY	B
(-AS0) NONE	±29.5 (USING POST)	25
(-AS1) KEYENCE Z	±24.5	25
(-AS2) MANUAL V & KEYENCE Z	±124.5	125
(-AS3) POWERED V & KEYENCE Z	±124.5	125



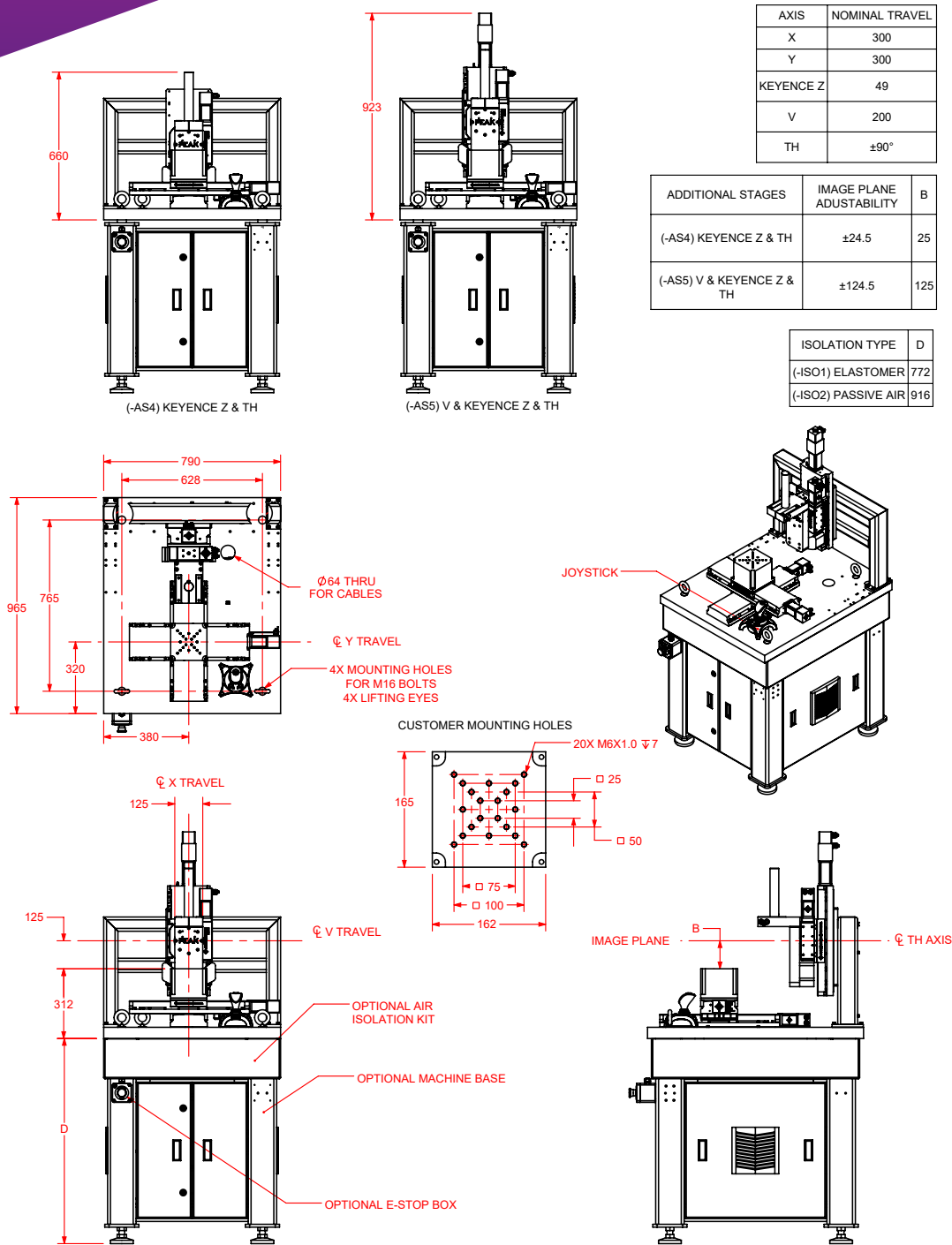
DIMENSIONS: MILLIMETERS



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# Dimensions

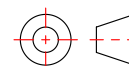


AXIS	NOMINAL TRAVEL
X	300
Y	300
KEYENCE Z	49
V	200
TH	$\pm 90^\circ$

ADDITIONAL STAGES	IMAGE PLANE ADJUSTABILITY	B
(-AS4) KEYENCE Z & TH	$\pm 24.5$	25
(-AS5) V & KEYENCE Z & TH	$\pm 124.5$	125

ISOLATION TYPE	D
(-ISO1) ELASTOMER	772
(-ISO2) PASSIVE AIR	916

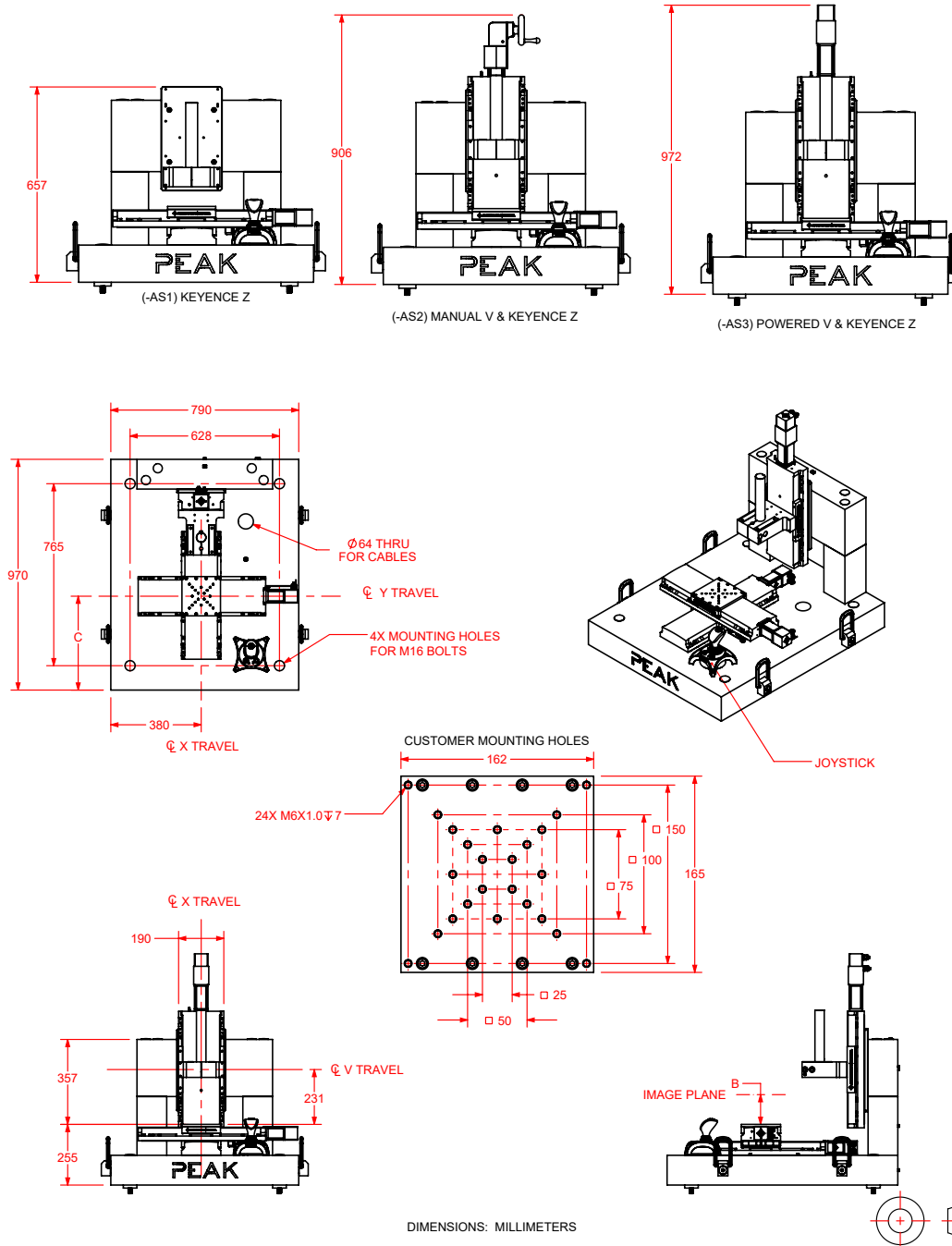
DIMENSIONS: MILLIMETERS



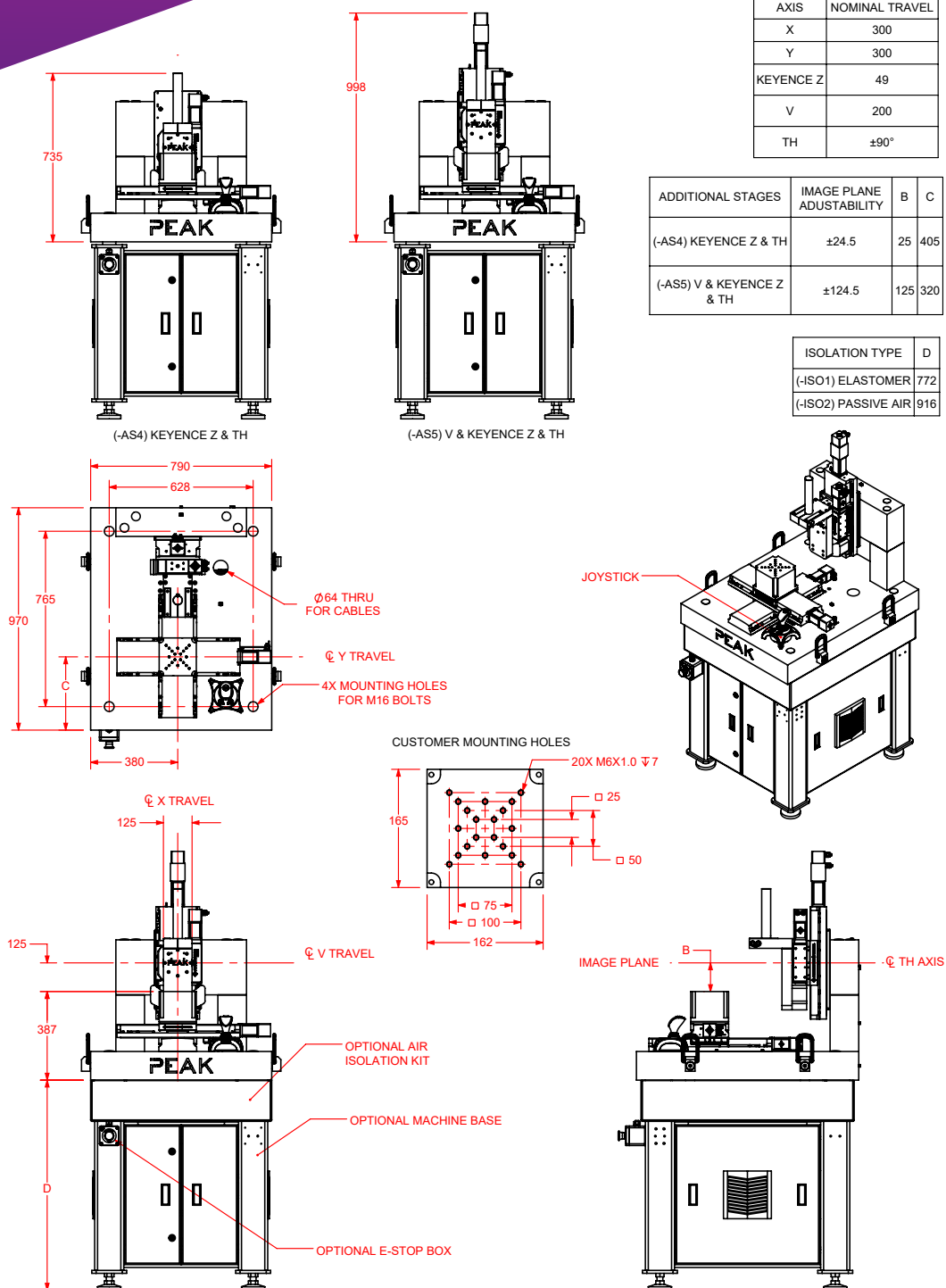
# Dimensions

AXIS	NOMINAL TRAVEL
X	300
Y	300
KEYENCE Z	49
V	200

ADDITIONAL STAGES	IMAGE PLANE ADJUSTABILITY	B	C
(-AS1) KEYENCE Z	$\pm 24.5$	25	468
(-AS2) MANUAL V & KEYENCE Z	$\pm 124.5$	125	395
(-AS3) POWERED V & KEYENCE Z	$\pm 124.5$	125	395



# Dimensions



AXIS	NOMINAL TRAVEL
X	300
Y	300
KEYENCE Z	49
V	200
TH	±90°

ADDITIONAL STAGES	IMAGE PLANE ADJUSTABILITY	B	C
(-AS4) KEYENCE Z & TH	±24.5	25	405
(-AS5) V & KEYENCE Z & TH	±124.5	125	320

ISOLATION TYPE	D
(-ISO1) ELASTOMER	772
(-ISO2) PASSIVE AIR	916

DIMENSIONS: MILLIMETERS



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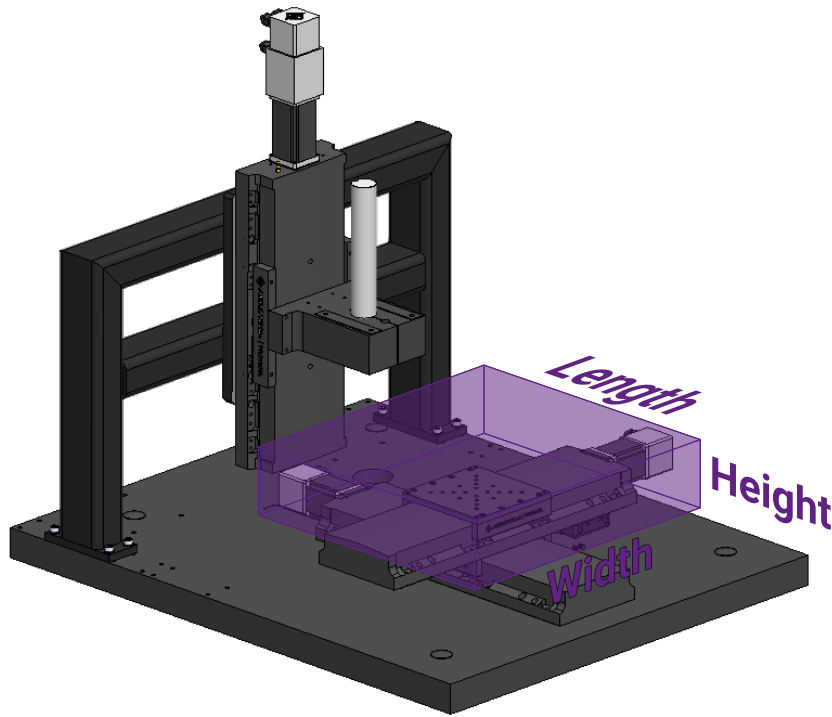
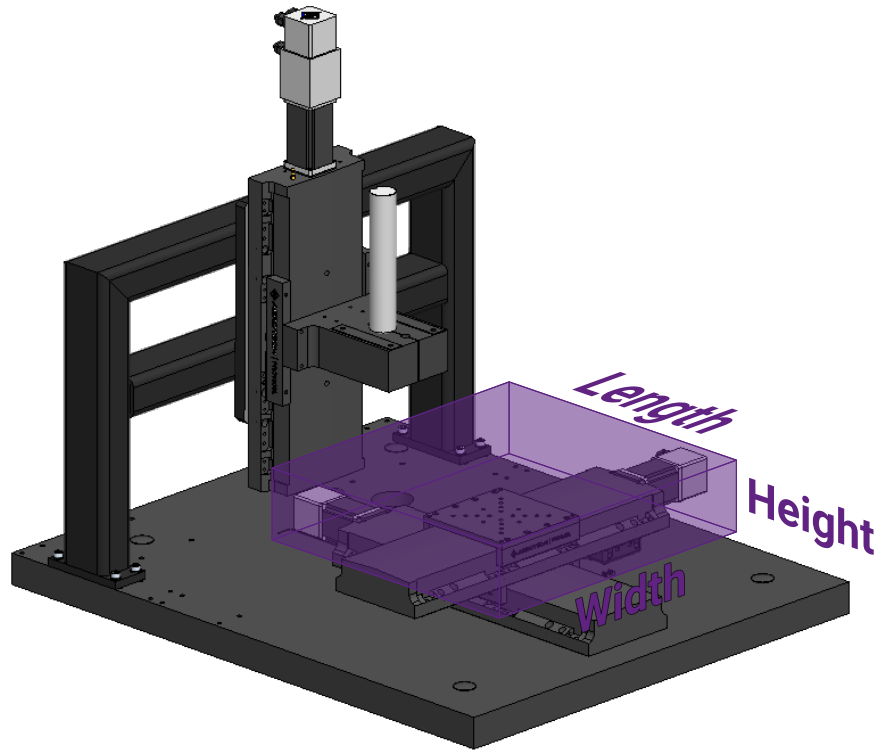
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# Part Sizes

## LF-D-300-MT

Option	Height (mm)	Max Width (mm)	Max Length (mm)
-AS0	0 to 52	307	315 <sup>1</sup> (500)
-AS1	0 to 52	434	315 <sup>1</sup> (437)
-AS2	0 to 250	434	315 <sup>1</sup> (399)
-AS3	0 to 250	434	315 <sup>1</sup> (399)
-AS4	0 to 50	434	304
-AS5	0 to 250	434	304



## LF-D-300-GR

Option	Height (mm)	Max Width (mm)	Max Length (mm)
-AS1	0 to 52	434	429
-AS2	0 to 250	434	462 <sup>1</sup> (575)
-AS3	0 to 250	434	462 <sup>1</sup> (575)
-AS4	0 to 50	434	304
-AS5	0 to 250	434	304

\* All dimensions assume part is centered on travel.  
Consult Peak about non-symmetric parts.

<sup>1</sup> Parts exceeding this size will extend beyond front edge of base when Y-axis reaches extent of travel. See parentheses for max size with overhang.

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# Ordering

## Step 1 - Select your travel

-300 (300 x 300 mm)	Stacked XY axes, with 300 mm of square travel
-600 (600 x 600 mm)	Lower axis mounted to base, upper axis mounted to the bridge

## Step 2 - Select your base material

-MT (Aluminum/Steel) <sup>3</sup>	Lightweight, aluminum base with welded steel bridge
-GR (Granite)	Granite used for vibration isolation concerns

## Step 3 - Choose your options

### VHX Camera<sup>2</sup> (Required)

-V1 (VHX-7100)	Keyence VHX-7100 Fully Integrated Camera Head
-V2 (VHX-7020)	Camera unit with manual lens changes for the VHX-7000 series
-V3 (VHX-6020)	Camera unit with manual lens changes for the VHX-6000 series

### Additional Stages (Required)

-AS0 (None)	No additional stages provided
-AS1 (Small Z)	49 mm of motorized vertical travel range with Keyence VHX-S700F <sup>3</sup>
-AS2 (Large Manual Z)	200 mm vertical travel via handwheel; 49 mm of fine adjustment with Keyence VHX-S700F <sup>3</sup>
-AS3 (Large Motorized Z)	200 mm of motorized vertical travel; 49 mm of fine adjustment with Keyence VHX-S700F <sup>3</sup>
-AS4 (Small Z with Tilt) <sup>3</sup>	Same as -AS1 with +/- 90° motorized tilt adjustment
-AS5 (Large Motorized Z with Tilt) <sup>3</sup>	Same as -AS3 with +/- 90° motorized tilt adjustment

### Machine Base (Optional)

-MB (Machine Base)	Steel weldment with leveling feet, doors, and mounting features for electronics
--------------------	---

### Isolation (Required)

-IS01 (Elastomer)	Vibration reduction via elastomer pads designed to provide high damping
-IS02 (Passive Air) <sup>1</sup>	Increased isolation of environmental vibrations with self-leveling air isolators
-IS03 (Active) <sup>1</sup>	Highest level of isolation from environmental vibrations with active isolation

### Emergency Stop (Optional)

-ESTOP (Emergency Stop)	Mushroom button to cut power to stage motors
-------------------------	--

### Line Cord (Required)

-LC0 (None)	No line cord
-LC1 (US115VAC)	US (115VAC) compatible line cord
-LC2 (US230VAC)	US (230VAC) compatible line cord
-LC3 (German)	Germany compatible line cord
-LC4 (UK)	UK compatible line cord

<sup>1</sup> Requires "Machine Base" option

<sup>2</sup> Provided by Keyence

<sup>3</sup> Only available with -300 Travel Option

# Ordering

## Required

**LF-D**   **-300**   **-GR**   **-V1**   **-AS3**   **-MB**   **-ISO1**   **-ESTOP**   **-LC1**

### Product

#### Travel

**-300:** 300 x 300 mm  
**-600:** 600 x 600 mm

### Base Material

**-MT:** Aluminum/Steel<sup>3</sup>  
**-GR:** Granite

#### VHX Camera<sup>2</sup>

**-V1:** VHX-7100  
**-V2:** VHX-7020  
**-V3:** VHX-6020

### Additional Stages

**-AS0:** None  
**-AS1:** Small Z<sup>2</sup>  
**-AS2:** Large Manual Z  
**-AS3:** Large Z  
**-AS4:** Small Z<sup>2</sup> with Tilt<sup>3</sup>  
**-AS5:** Large Z with Tilt<sup>3</sup>

#### Machine Base\*

**-MB:** Machine Base

### Isolation

**-ISO1:** Elastomer  
**-ISO2:** Passive Air<sup>1</sup>  
**-ISO3:** Active<sup>1</sup>

#### Emergency Stop\*

**-ESTOP:** Emergency Stop

### Line Cord

**-LC0:** None  
**-LC1:** US115VAC  
**-LC2:** US230VAC  
**-LC3:** German  
**-LC4:** UK

\* Optional - omit if not desired

<sup>1</sup> Requires "Machine Base" option

<sup>2</sup> Provided by Keyence

<sup>3</sup> Only available with -300 Travel Option

# Ordering



Showing -ISO2 (Passive Air) Option

## Control for your environment

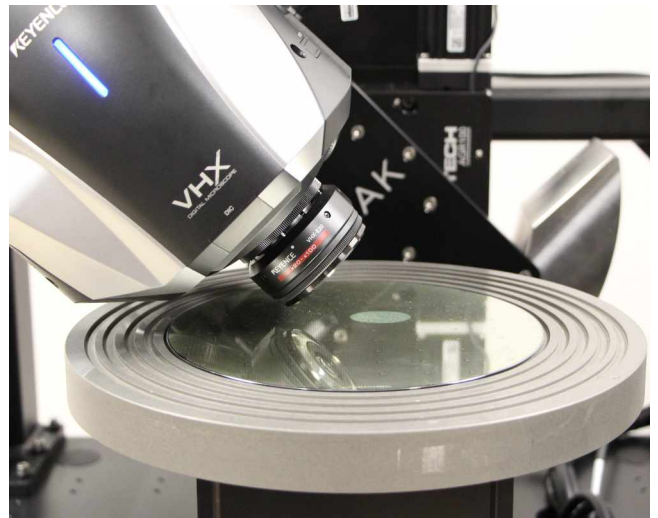
We'll work with you to characterize your floor vibrations and identify any necessary isolation measures to preserve measurement performance. Our standard air and active isolation systems are available to make sure your measurements are rock solid. Please see [this video](#) for more details.

## Finishing touches

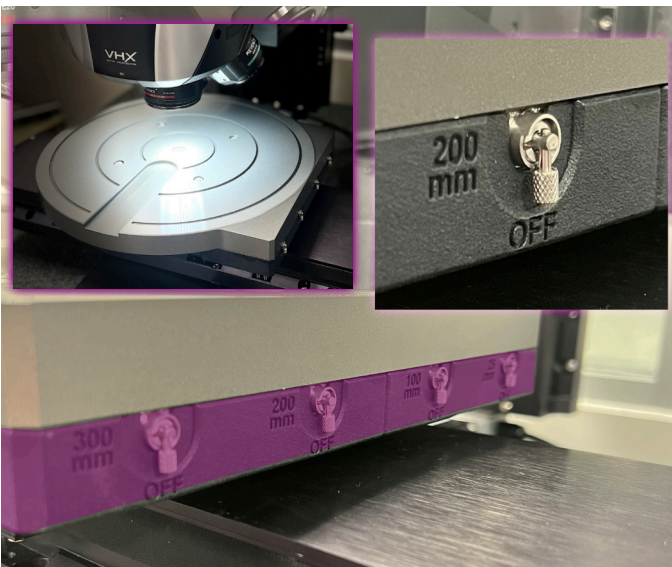
Choose from available ordering options to get exactly what you need.

The optional machine base provides storage for all PCs and control electronics - all within the envelope of the machine.

Get only the stages you need by selecting from our combinations of different vertical and tilt stage offerings.



Showing tilt stage as part of the -AS4/5 Option



Showing Zone-Selectable Vacuum Chuck  
PM-FP-VZR

## Accessories

Choose from our standardly available accessories such as: fixture plates, wafer chucks, and more!

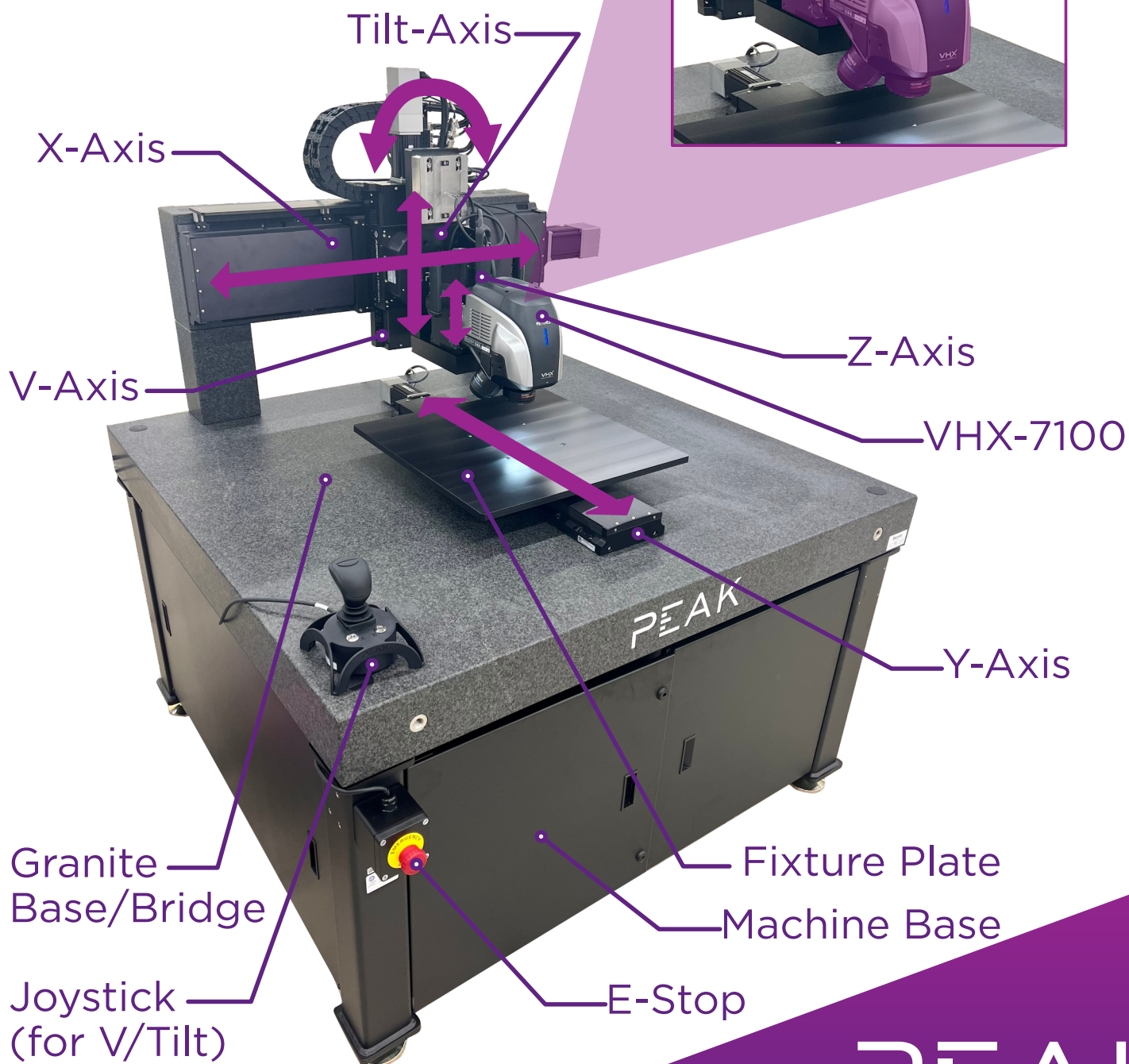
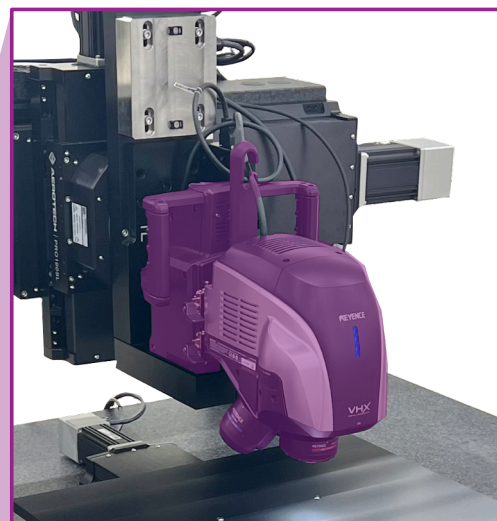
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# Anatomy

Fine Focus Z and  
Microscope  
(from Keyence)



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# Customize

## Squeaky clean

We offer various levels of clean room preparation. From material selection and design to component cleaning and assembling/bagging in our own clean room - no matter your room's requirements, we have a solution for you.

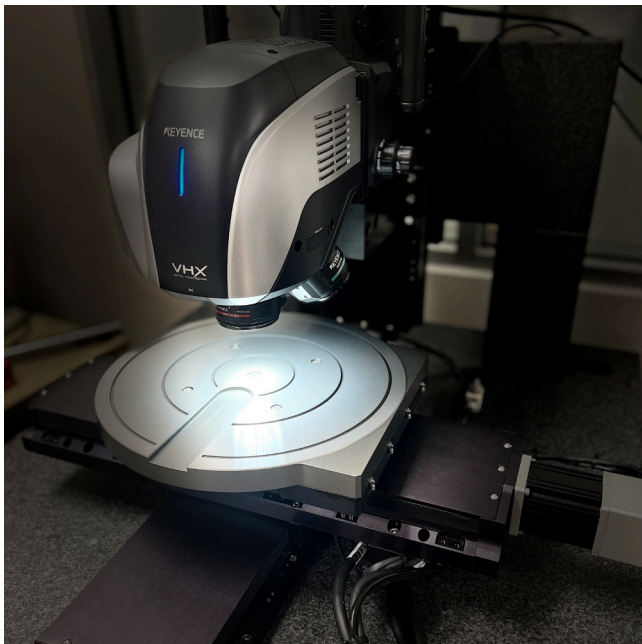


Cleanroom Facility

## Have it your way

Don't see exactly what you need? Don't compromise, customize. At Peak, nearly half of our machines are customized per our customers' requirements - so don't hesitate to [contact us](#) to find out how we can deliver exactly what you need.

Are your parts difficult to hold? We'll work with you to design custom part fixturing to make sure your inspections are reliable and repeatable.



300 mm, zone-selectable wafer chuck

## Above and beyond

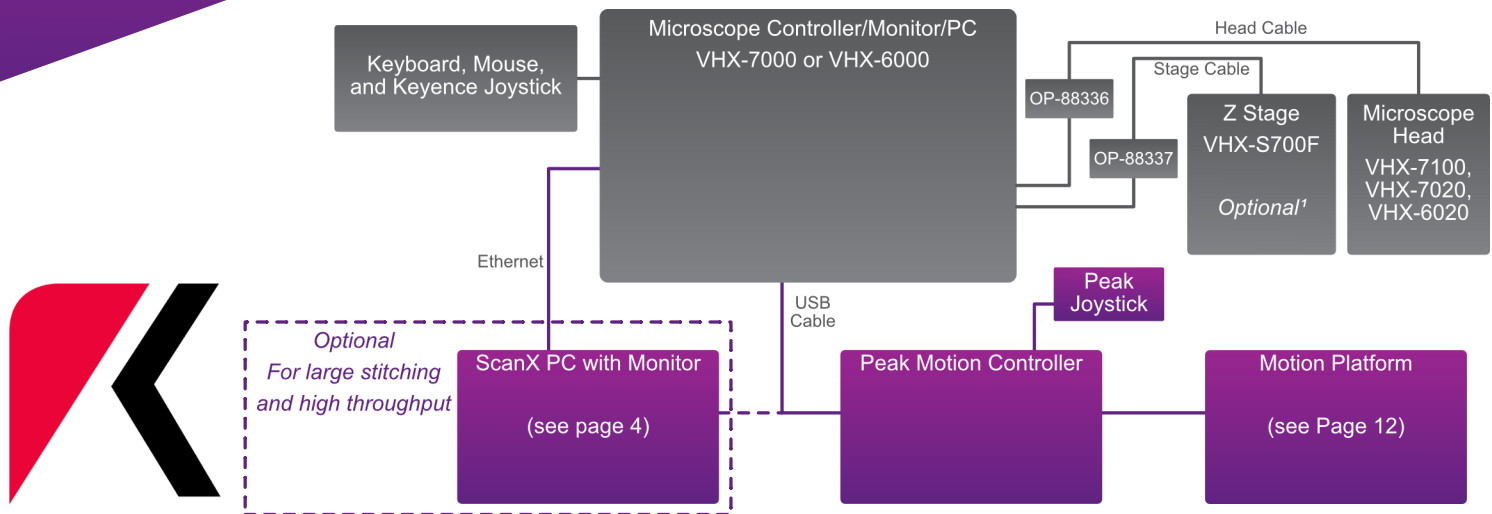
Parts still too big to move? We've still got you covered! With our overhead gantry design, extra-large parts or parts too delicate to move can still be inspected. Load parts onto the flat granite base (available with customer-specified mounting patterns and features) and move the microscope overhead. All the same, great ScanX features are still available with this design.



Overhead gantry system

We're here to make your measurements easy. Leverage our decades of experience building custom motion platforms to make sure you get exactly what you need.

# Keyence Kit



## Complete the system

Peak provides all the motion equipment you need to be up and running in no time. The Keyence equipment listed below is required to complete the system. Have questions? Don't hesitate to [contact us](#) for answers on what is required.

### Microscope Head

VHX-7100, VHX-7020, or VHX-6020

### Microscope Controller

VHX-7000 or VHX-6000

### Z Stage

VHX-S700F¹ (as needed)

### Software

VHX Software (comes standard)

VHX-H3M3 XY Measurement Module

VHX-H5M 3D Profile Measurement Module (as needed)

### Other

OP-88338 Lens Joint²

OP-88336 & OP-88337 Cable Repeaters

Head and Stage Cables

<sup>1</sup> Required for Additional Stages options -AS1-5

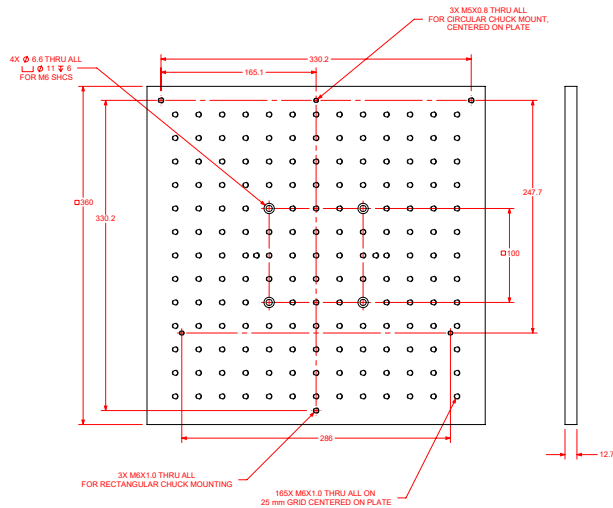
<sup>2</sup> Required for Camera Type -V2/3 options



# Fixtures

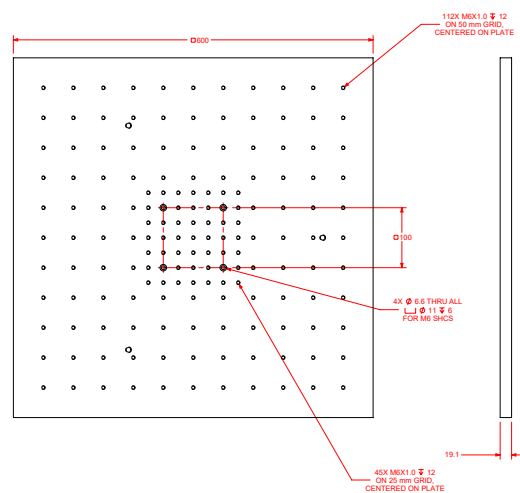
## PM-FP-P360

360 mm Square Tooling Plate



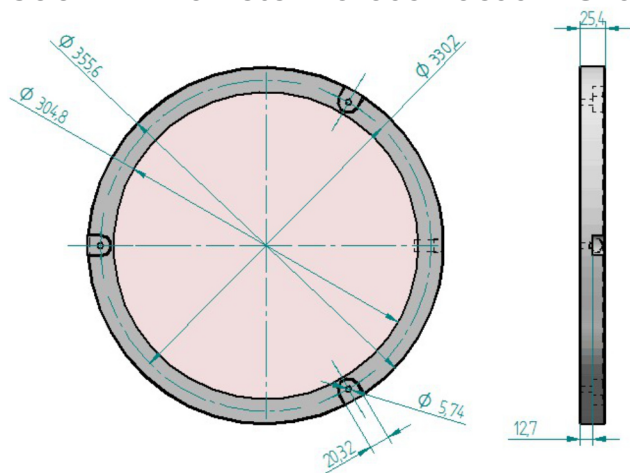
## PM-FP-P600

600 mm Square Tooling Plate



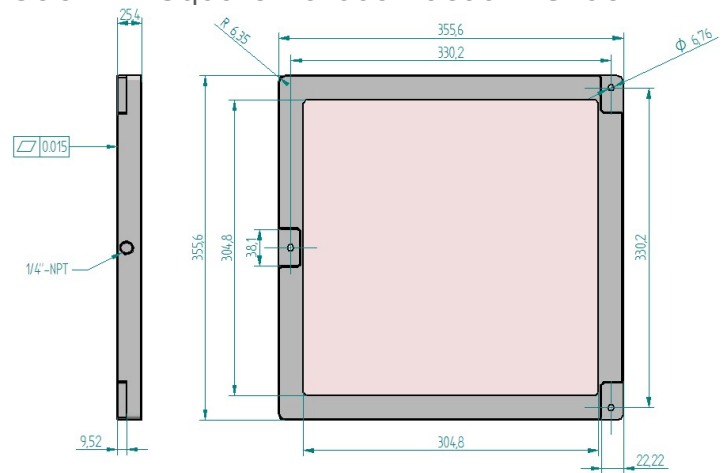
## PM-FP-VPR

300 mm Diameter Porous Vacuum Chuck



## PM-FP-VPS

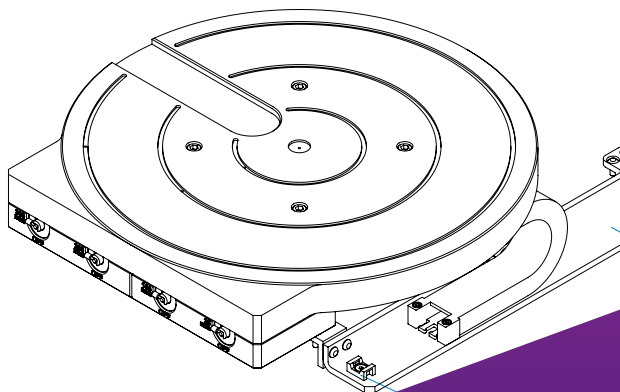
300 mm Square Porous Vacuum Chuck



## PM-FP-VZR

300 mm Diameter Zone-Selectable Vacuum Chuck

Zones: 25 mm, 100 mm, 200 mm, and 300 mm Diameters



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