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XK20 Hardware guide

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Contents

Applications **NOTE:** This chart is for reference only and lists multiple options for each measurement mode. The user must decide which assemblies are the most appropriate for the application.	Straightness	Long range straightness	Horizontal parallelism	Vertical parallelism	Combined parallelism	Horizontal squareness	Vertical squareness
M unit on a low profile magnetic base	✓	✓	✓		✓	✓	✓
M unit on a rotary magnetic base with a lowering bracket	✓	✓	✓		✓	✓	✓
M unit on a rotary magnetic base without a lowering bracket				✓			
M unit on a reference mount (fixed)	✓	✓	✓		✓		
M unit on a reference mount (rotating)				✓			
M unit with a 90 degree transceiver bracket					✓		
Launch unit on a low profile magnetic base	✓	✓	✓		✓	✓	✓
Pentaprism optic on a low profile magnetic base			✓			✓	✓
Pentaprism optic on a low profile magnetic base with a pentaprism translation stage			✓			✓	✓
Launch unit on a tripod (horizontal set up on a translation stage and Launch L-bracket)	✓	✓	✓		✓	✓	✓
Launch unit on a tripod (vertical set up on a translation stage)				✓			
Launch unit on a tripod (horizontal set up on a Launch L-bracket)	✓	✓	✓		✓	✓	✓

Assemblies

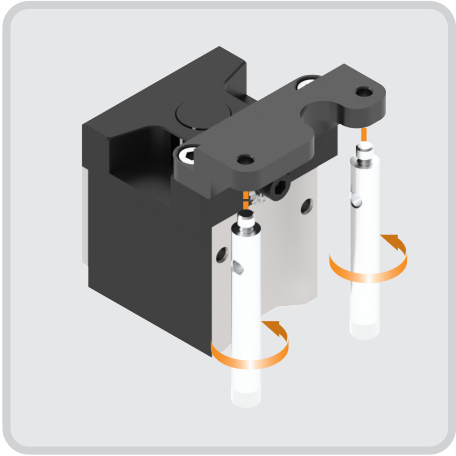
M unit on a low profile magnetic base

Screw the pillars into the low profile magnetic base.

Slide the M unit onto the pillars and use the thumbscrews to secure.

M unit on a rotary magnetic base with a lowering bracket

Attach the lowering bracket to the rotary magnetic base with the screws.



Screw the short pillars into the lowering bracket.

Slide the M unit onto the pillars and use the thumbscrews to secure.

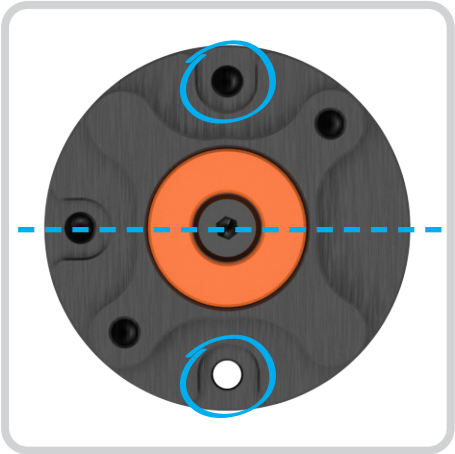
NOTE: This assembly can be used on curved surfaces, such as a spindle.

M unit on rotary magnetic base without a lowering bracket

Screw the pillars into the rotary base.

Slide the M unit onto the pillars and use the thumbscrews to secure.

M unit on a reference mount (fixed)

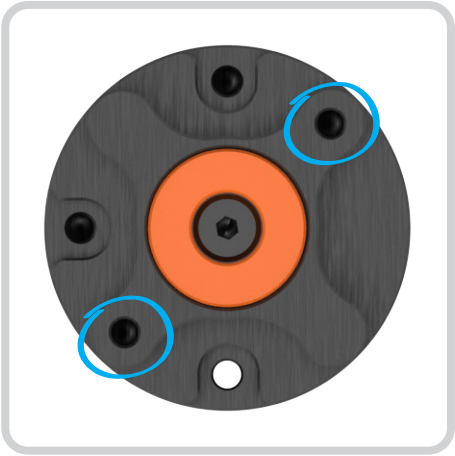


Ensure opposite screw holes are visible on the base of the reference mount, perpendicular to the reference edge.

Screw the pillars into the rotary base.

Slide the M unit onto the pillars and use the thumbscrews to secure.

M unit on a reference mount (rotating)



Screw the pillars into the holes on the moving top of the reference mount.

Screw the pillars into the rotary base.

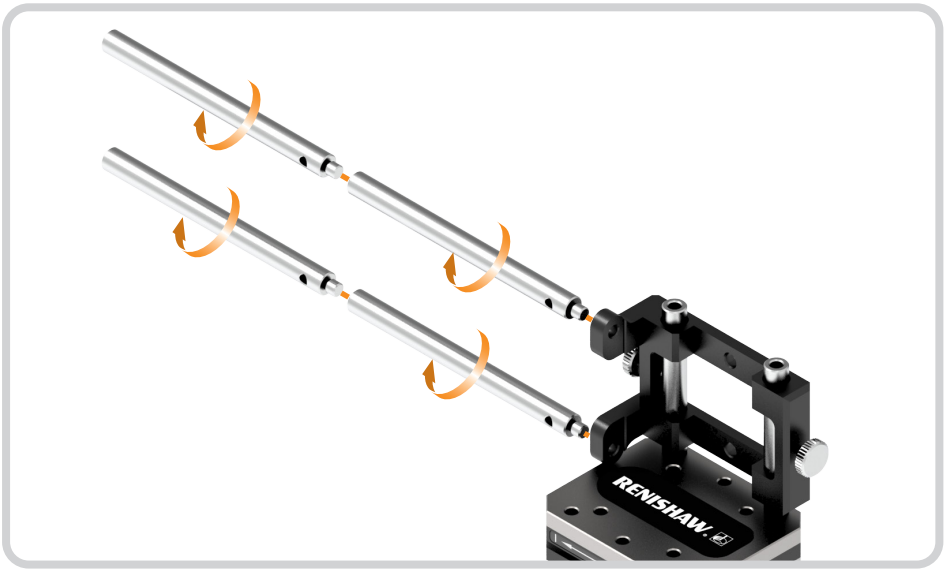
Slide the M unit onto the pillars and use the thumbscrews to secure.

M unit with a 90 degree transceiver bracket

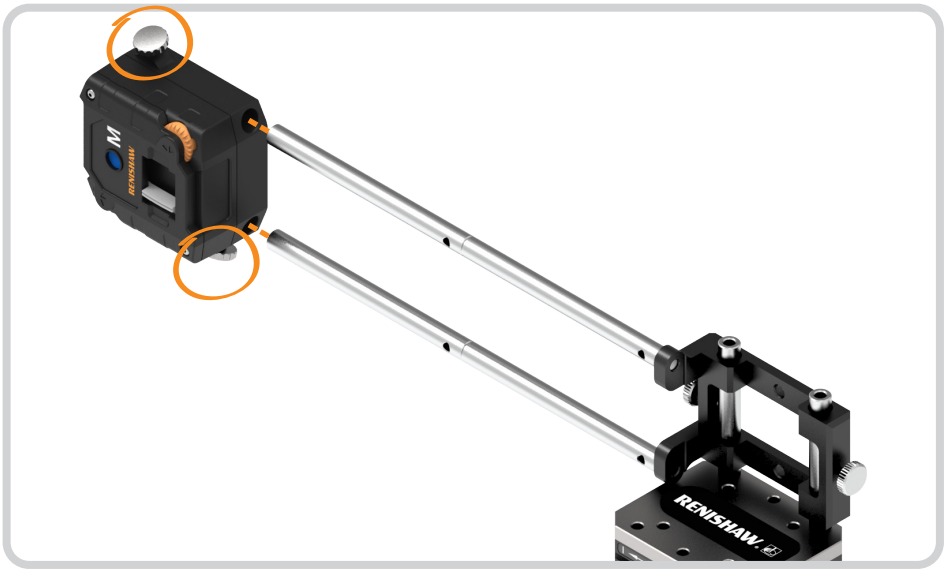
Screw the pillars into the low profile magnetic base.

Slide the 90 degree transceiver bracket onto the pillars and use the thumbscrews to secure.

Screw the pillars together, then screw the assemblies into the 90 degree transceiver bracket.



M unit with a 90 degree transceiver bracket continued

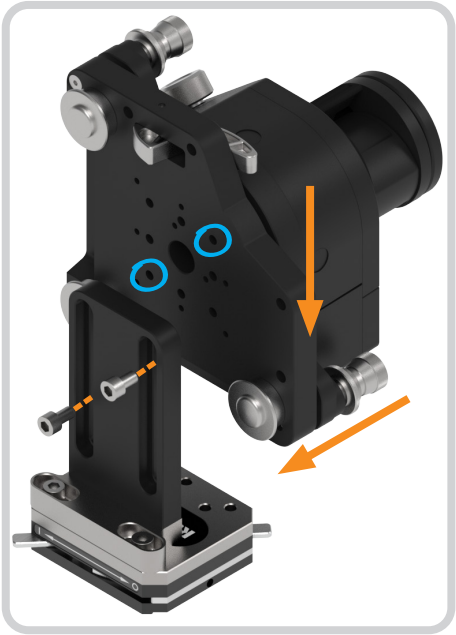


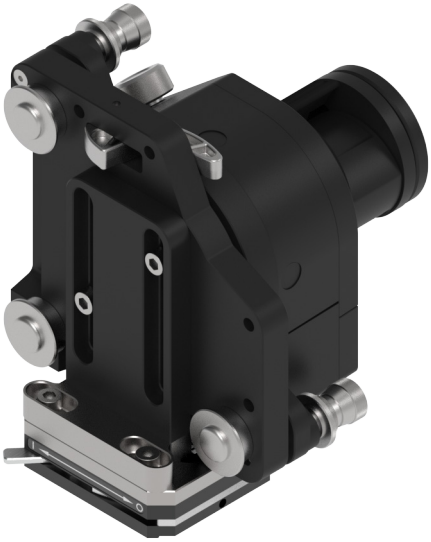
Slide the M unit onto the pillars and use the thumbscrews to secure.

Launch unit on a low profile magnetic base

Add the 90 degree bracket to the low profile magnetic base using the screws.

Add the Launch unit to the base, against the 90 degree bracket using the screws.

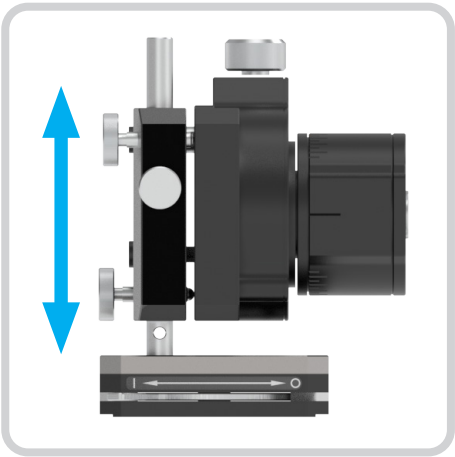




Pentaprism optic on a low profile magnetic base

Screw the pillars into the low profile magnetic base.

Then, slide the pentaprism optic onto the pillars and use the thumbscrews to secure.



NOTE: Ensure the pentaprism optic is as low as possible, leaving room for vertical translation.

Pentaprism optic on a low profile magnetic base with a pentaprism translation stage

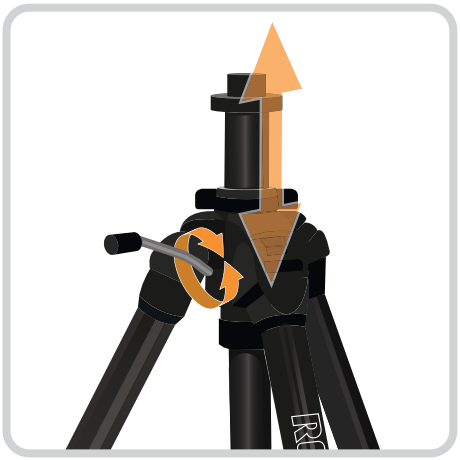
Screw the pentaprism translation stage onto the low profile magnetic base using the four inner holes.

Screw the pillars into the pentaprism translation base.

Then, slide the pentaprism optic onto the pillars and use the thumbscrews to secure.

NOTE: The low profile magnetic base can be used in either orientation. Ensure the setup allows adequate access to the pentaprism translation base.

Setting up the tripod



NOTE: The tripod should only be used where it is not possible to suitably fixture the Launch unit to the machine structure. The Launch unit is the reference, and as such, any instability in the tripod will impact the accuracy of any testing.

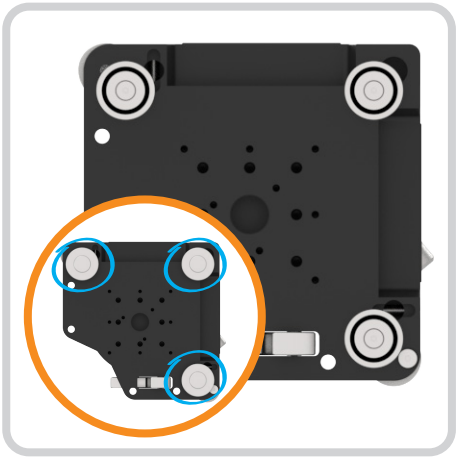
Launch unit on a tripod (horizontal set-up on a tripod translation stage, and Launch L-bracket)

Use the lever to clip the translation stage onto the tripod adaptor.

Add on the 90 degree bracket using the screws.

Add the Launch unit to the stage, against the 90 degree bracket using the screws.

Launch unit on a tripod (vertical set-up with a tripod translation stage)



Use the lever to clip the tripod translation stage onto the tripod adaptor.

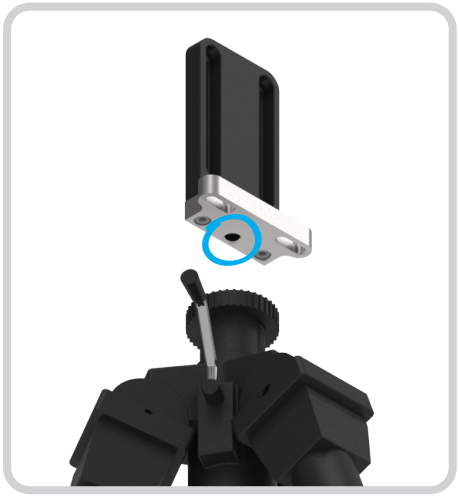
Ensure the magnetic feet cups have been removed from the bottom of the Launch unit.

Line up the magnetic feet with the pads.

Place the Launch unit onto the tripod translation stage.

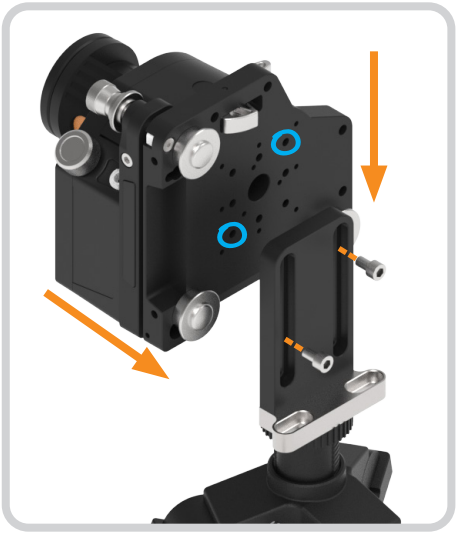
Launch unit on a tripod (horizontal set-up on a Launch L-bracket)

Remove the tripod stage adaptor from the top of the tripod.



Align the middle hole on the base of the 90 degree bracket with the screw of the tripod.

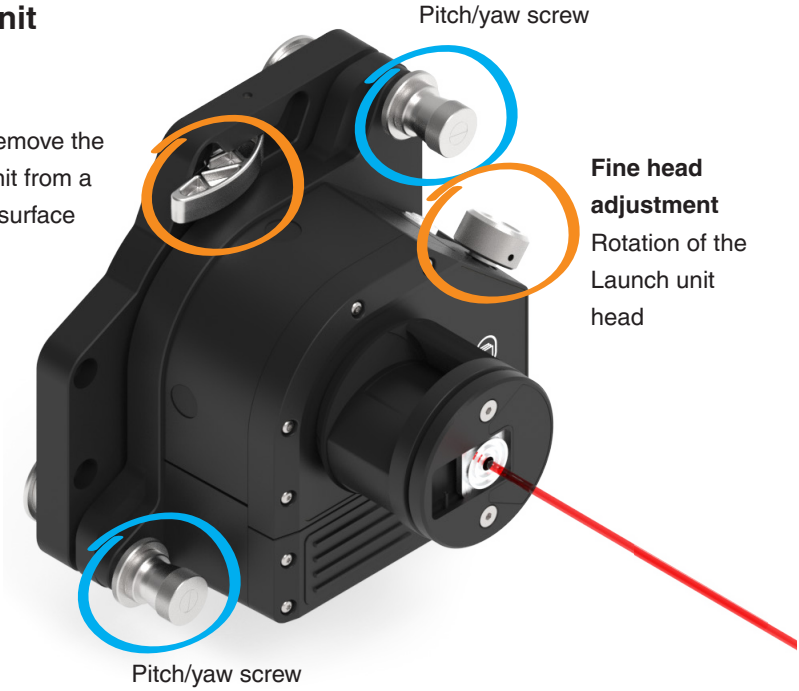
Screw the 90 degree bracket onto the tripod.



Attach the Launch unit using the screws.

Adjusting the equipment

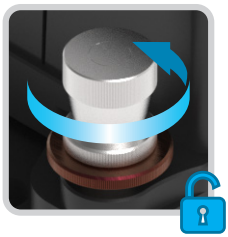
Launch unit



The pitch and yaw screws are used to align the output beam to the axis.

NOTE: The pitch and yaw screws may switch depending on the orientation of the Launch unit.

Coarse adjustment



Fine adjustment

Pentaprism optic

90 degrees

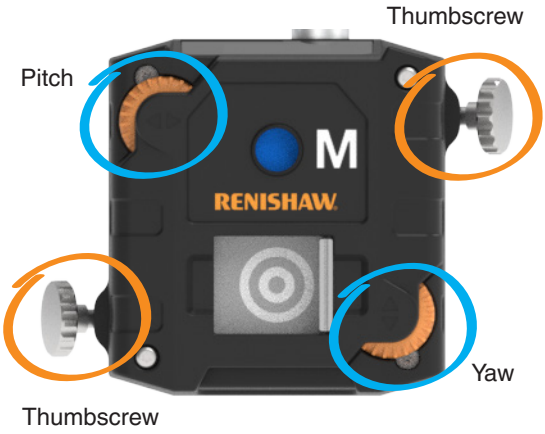
5 degrees

The pentaprism optic's head can be rotated using rotational pitch screw for fine adjustment or by hand for coarse adjustment.

The rotating head of the pentaprism optic features incremental marks to ensure accurate positioning.

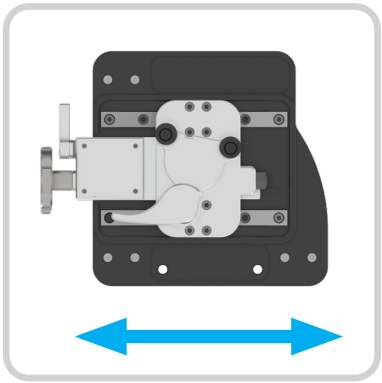
The pitch and yaw screws are used to ensure the pentaprism optic is parallel to the Launch unit and measurement rail.

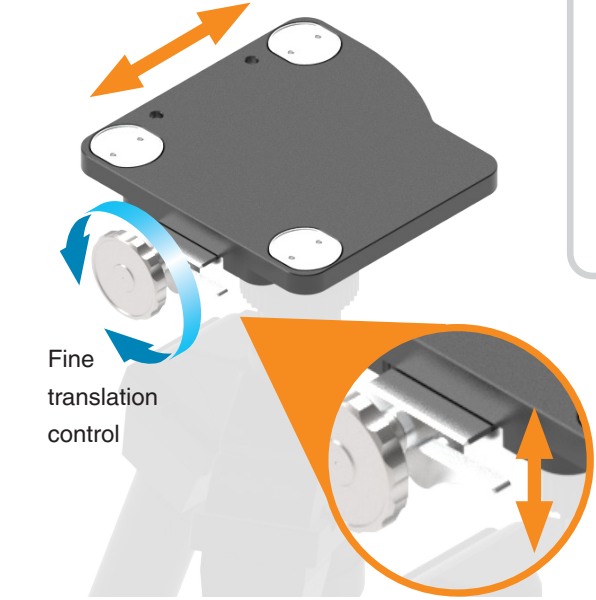
M unit



Tripod translation stage

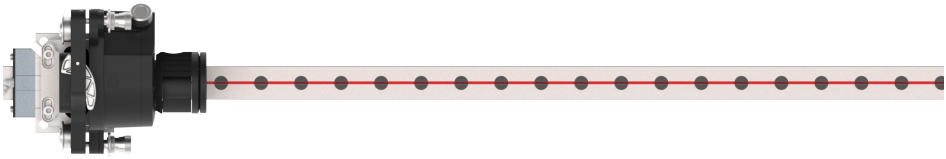
Ensure the tripod translation stage is in the middle of the axis of travel before each set up.



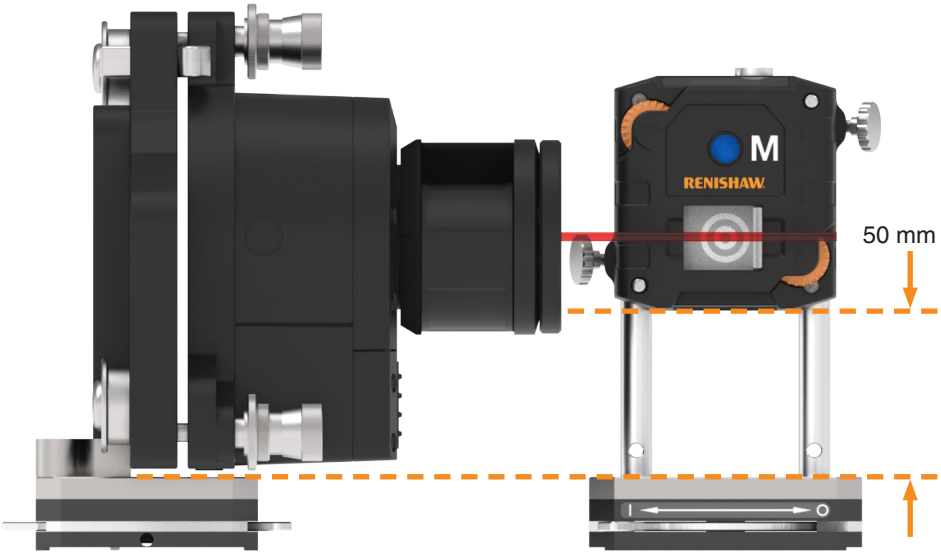


Key set up points

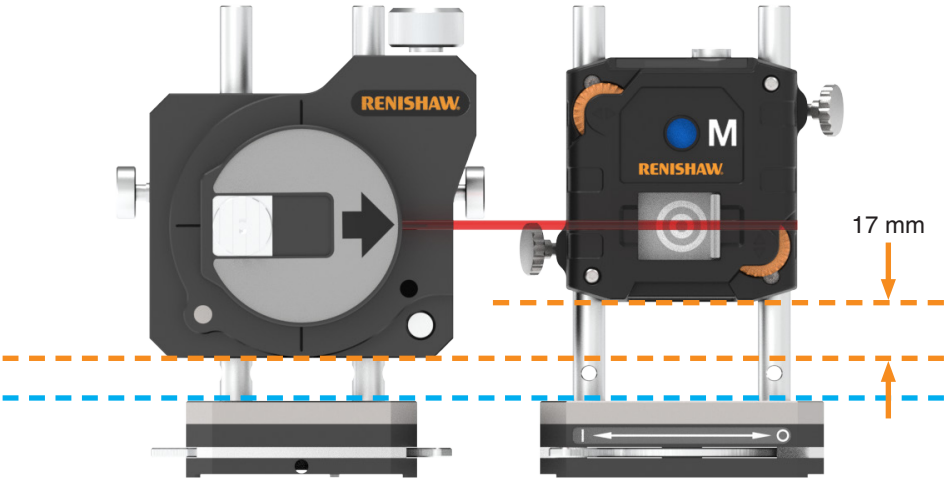
Straightness: ensure the Launch unit is positioned with the fixed beam pointing along the reference rail.



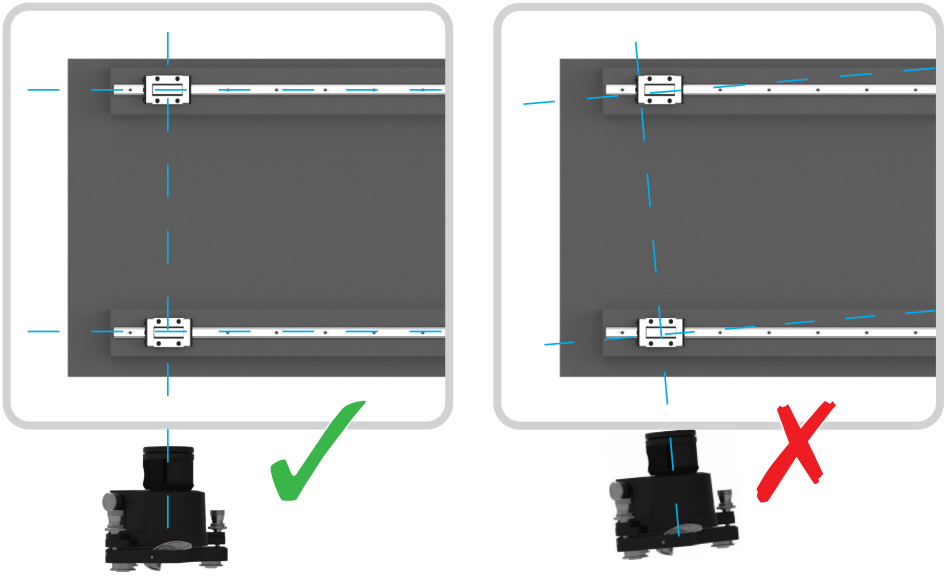
Straightness: ensure the centre of the M unit's target is in line with the Launch unit's beam.



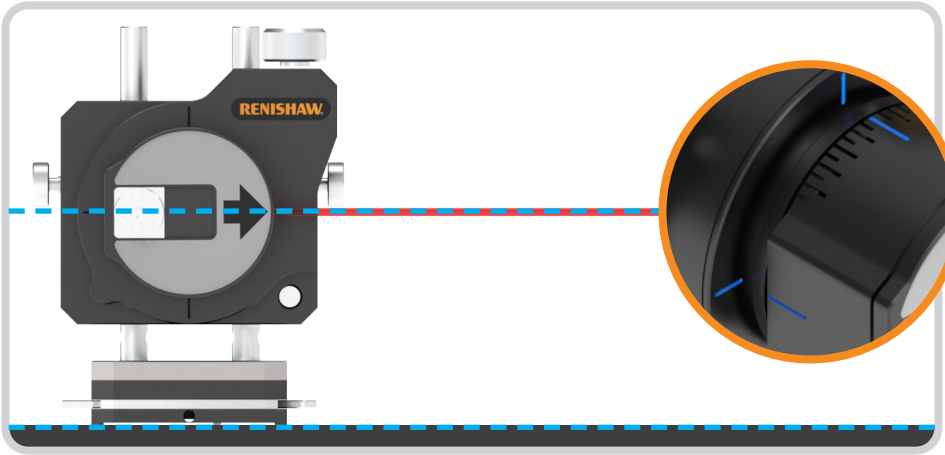
Parallelism: ensure the centre of the M unit's target is in line with the pentaprism optic's beam.



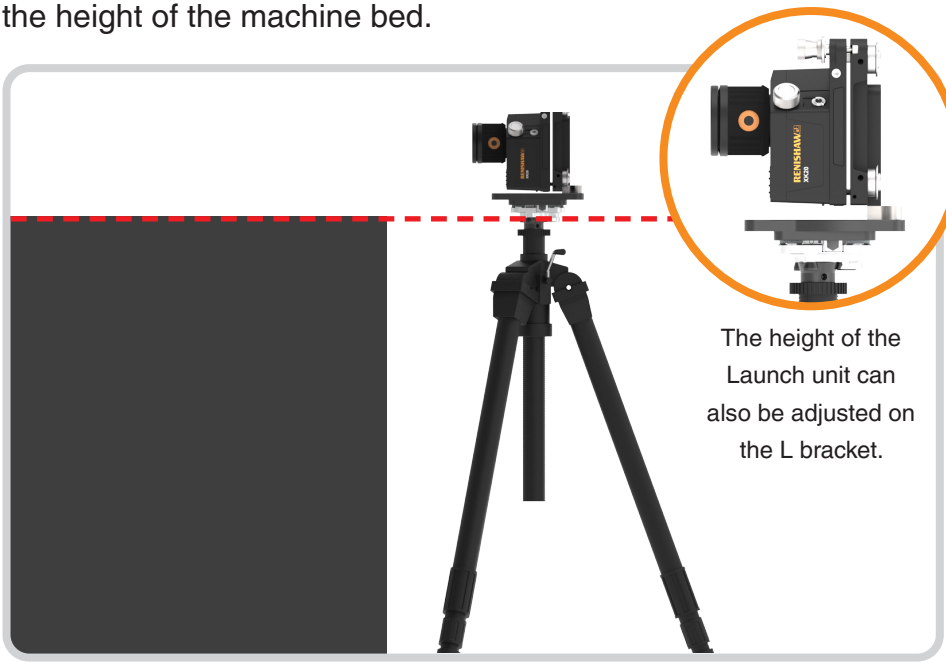
Parallelism: ensure the Launch unit is set up square to the rails.



Parallelism: use the incremental marks to ensure the pentaprism optic's output is nominally parallel to the mounting face.

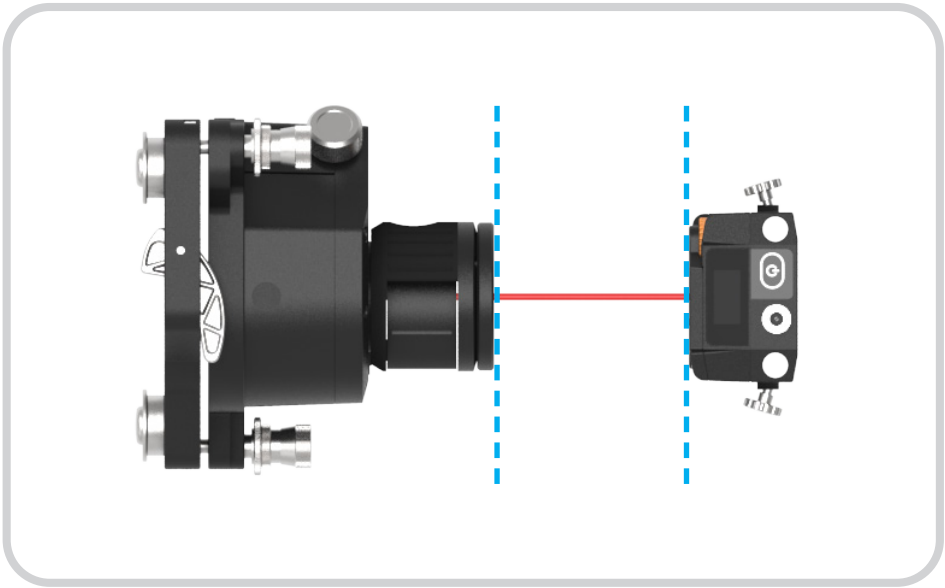


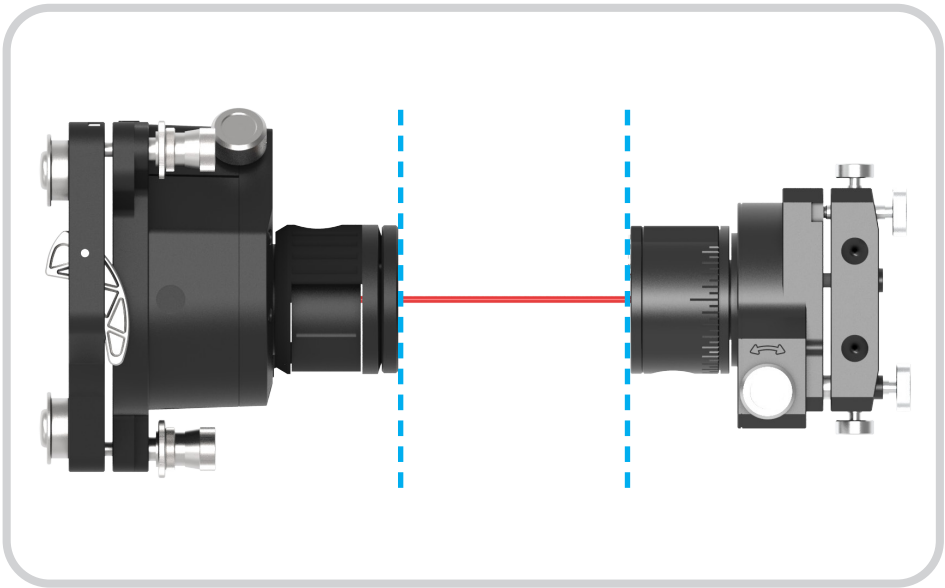
Parallelism: ensure the height of the tripod is approximately the height of the machine bed.



The height of the Launch unit can also be adjusted on the L bracket.

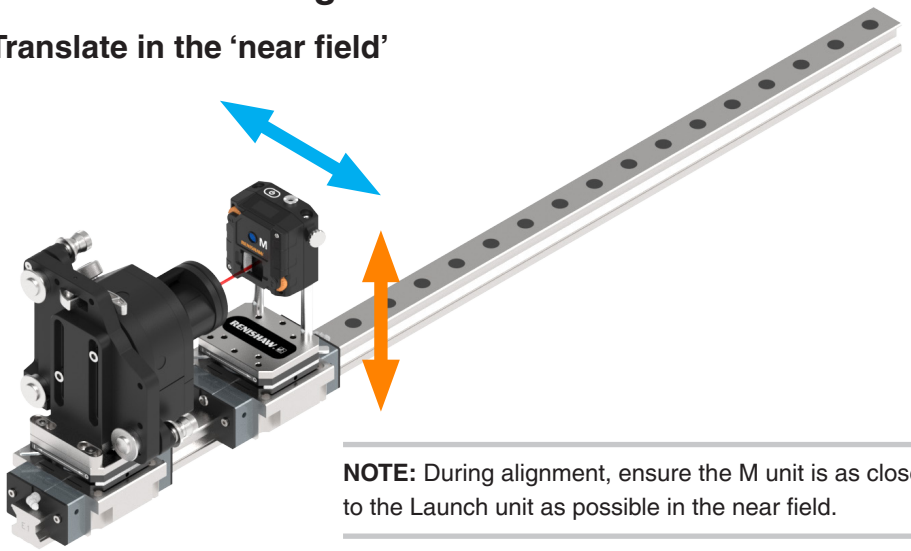
Positioning the M unit or pentaprism optic visually ‘parallel’ to the Launch unit





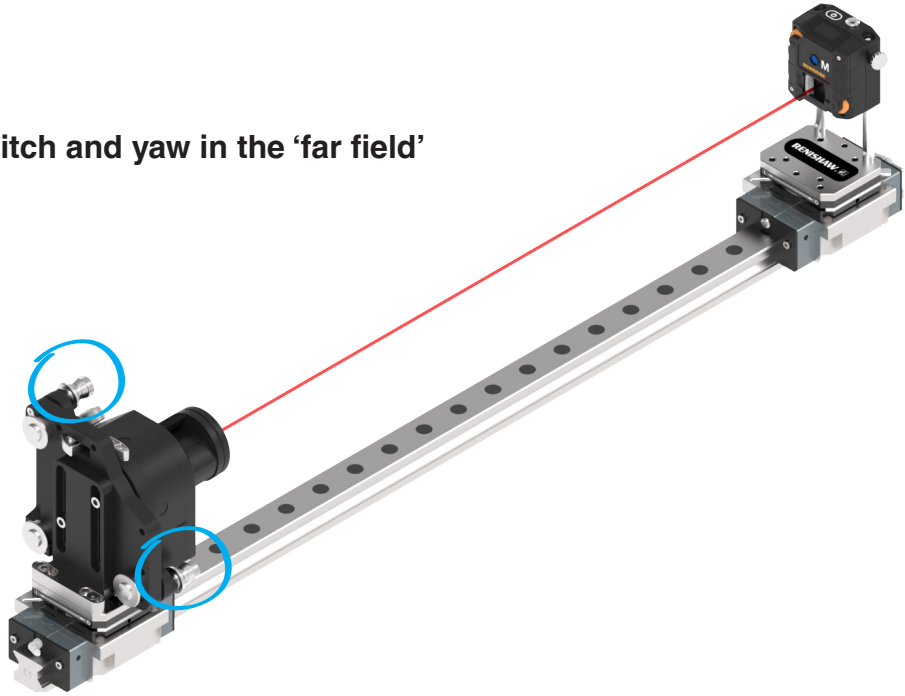
Golden rules of alignment

Translate in the ‘near field’



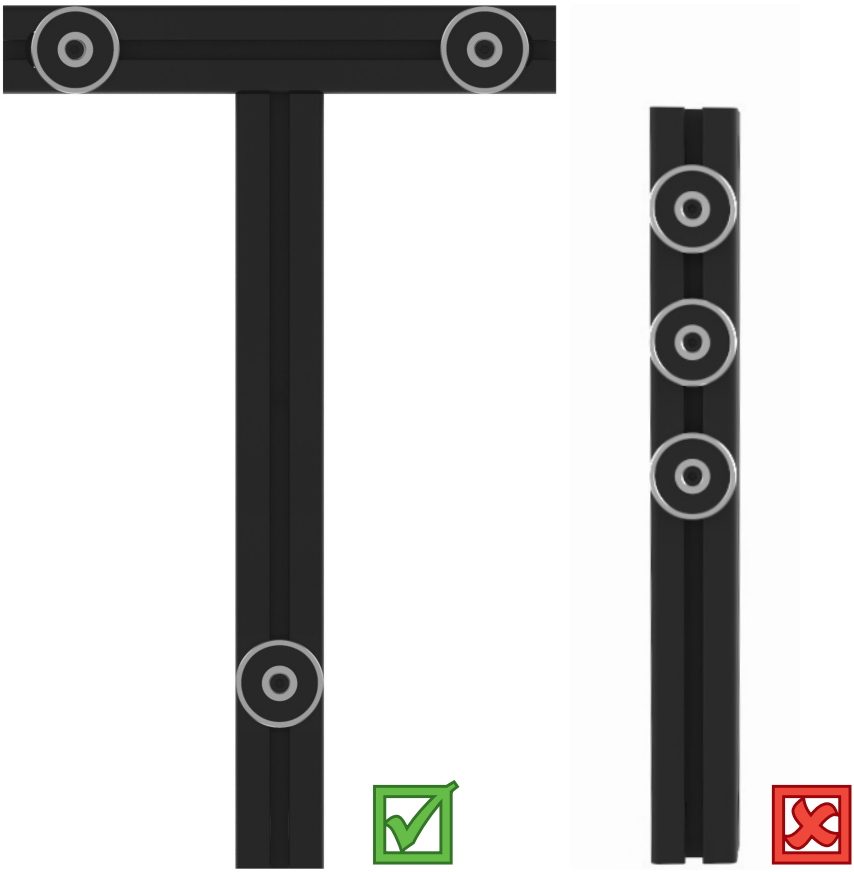
NOTE: During alignment, ensure the M unit is as close to the Launch unit as possible in the near field.

Pitch and yaw in the ‘far field’



Fixturing kit

Good practice guide



NOTE: For stability, it is advised to have at least three points of contact on the machine structure.

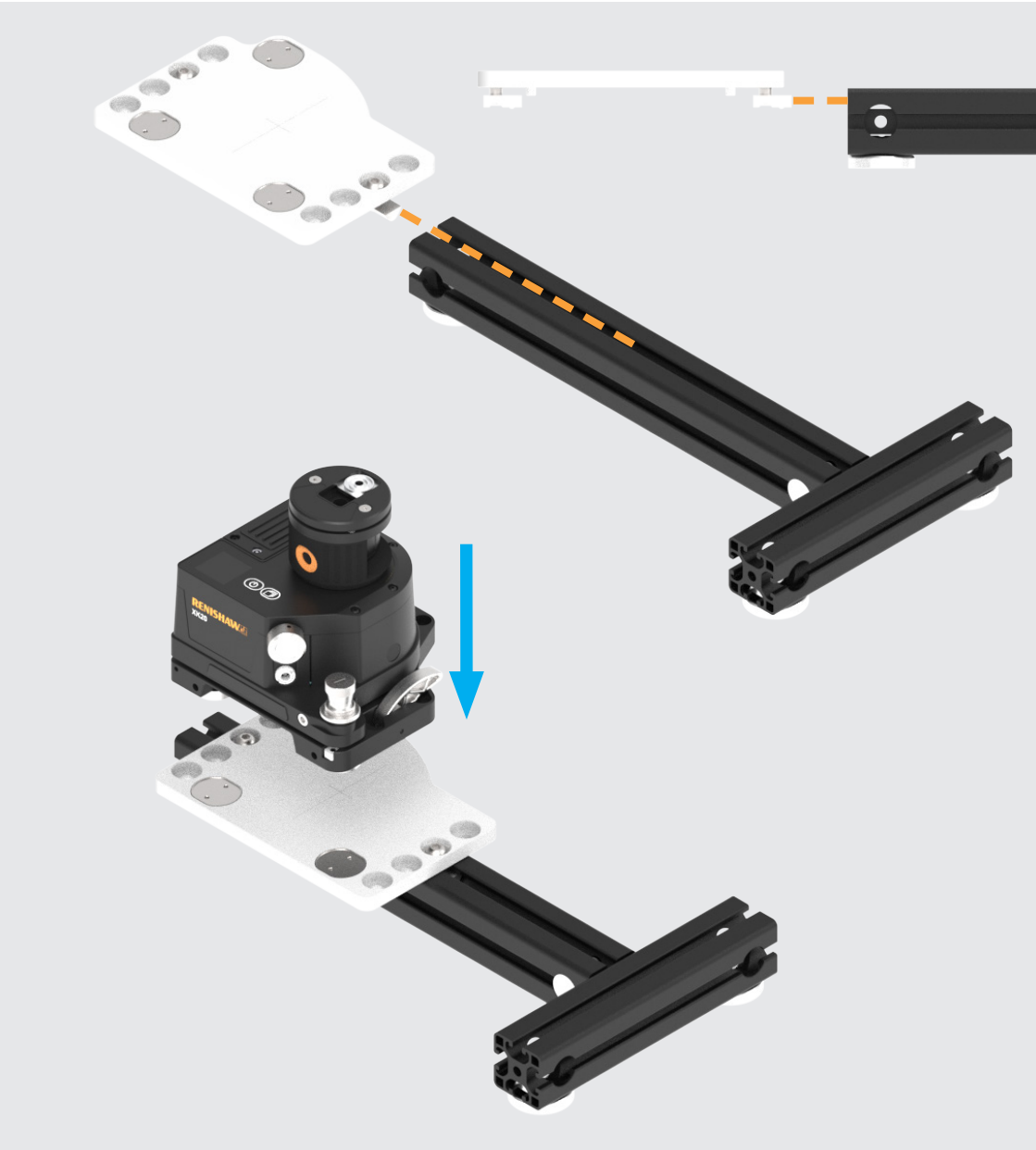
Good practice guide

Horizontal set up example

Horizontal set up continued

Horizontal set up continued

Horizontal set up continued

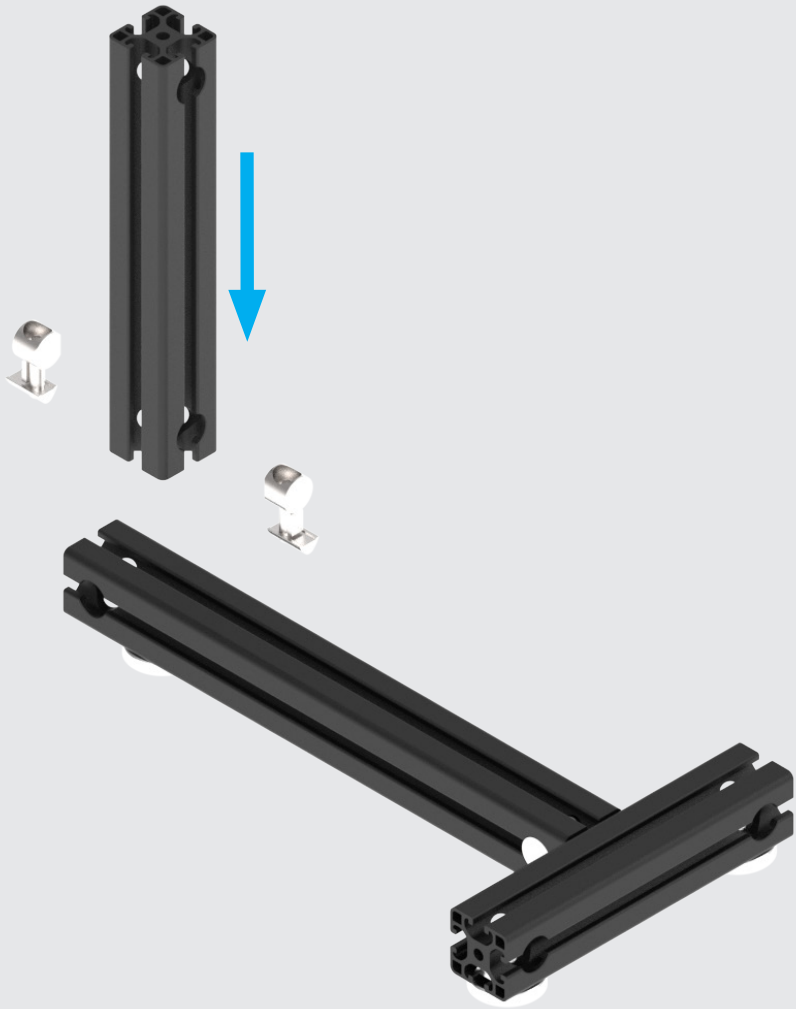


Vertical set up example

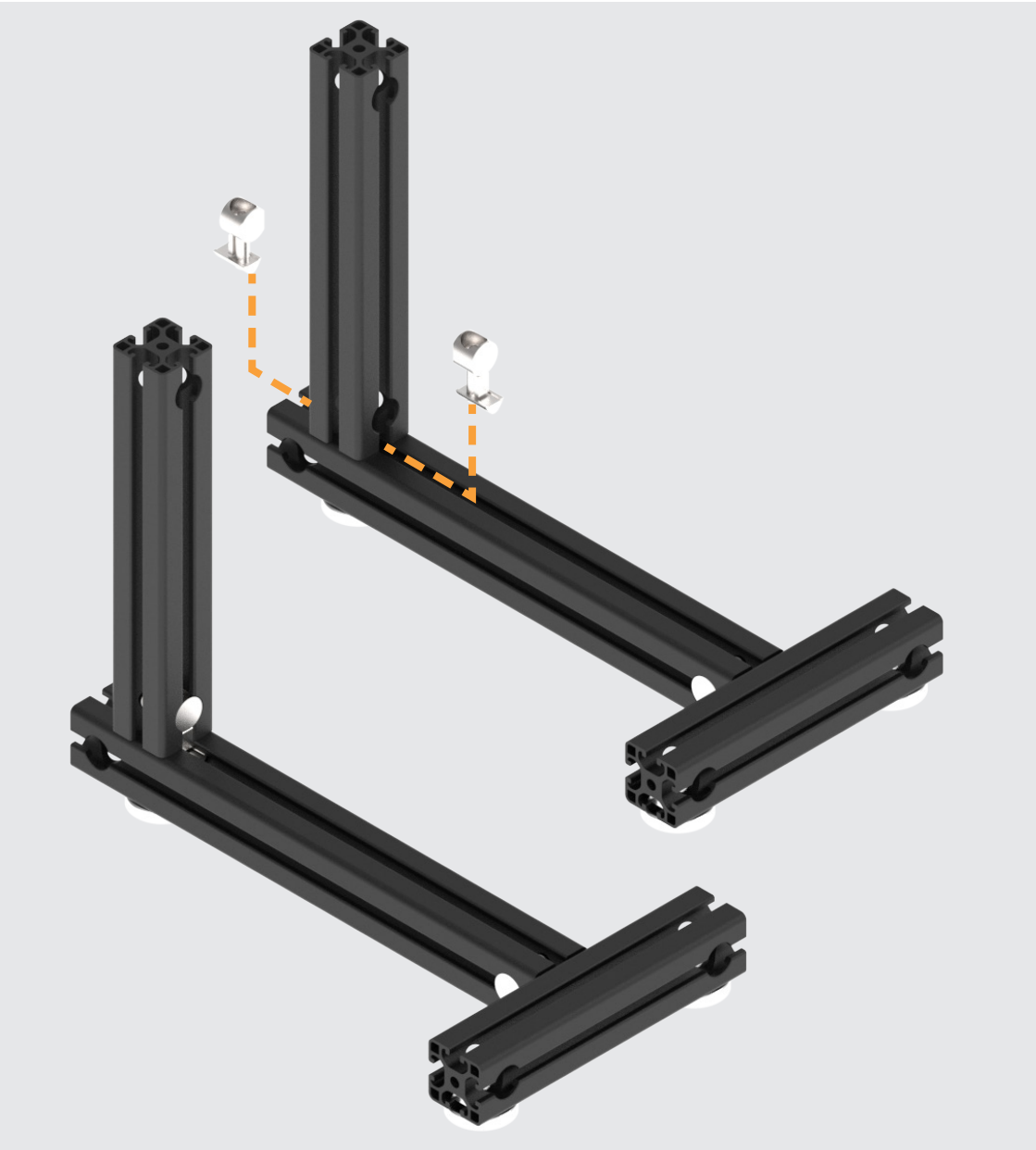
Vertical set up continued

Vertical set up continued

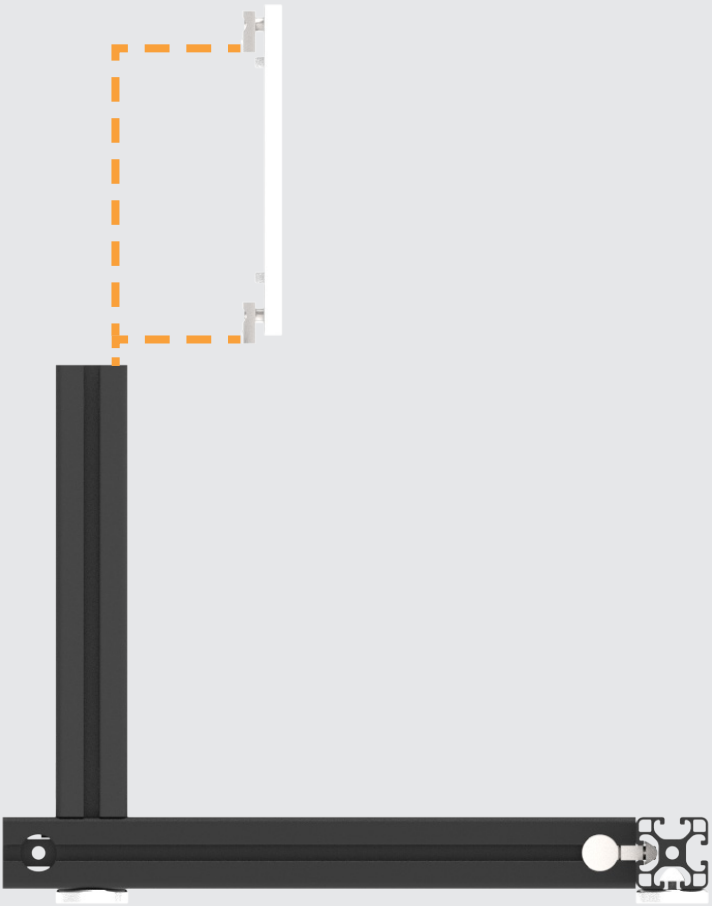
Vertical set up continued



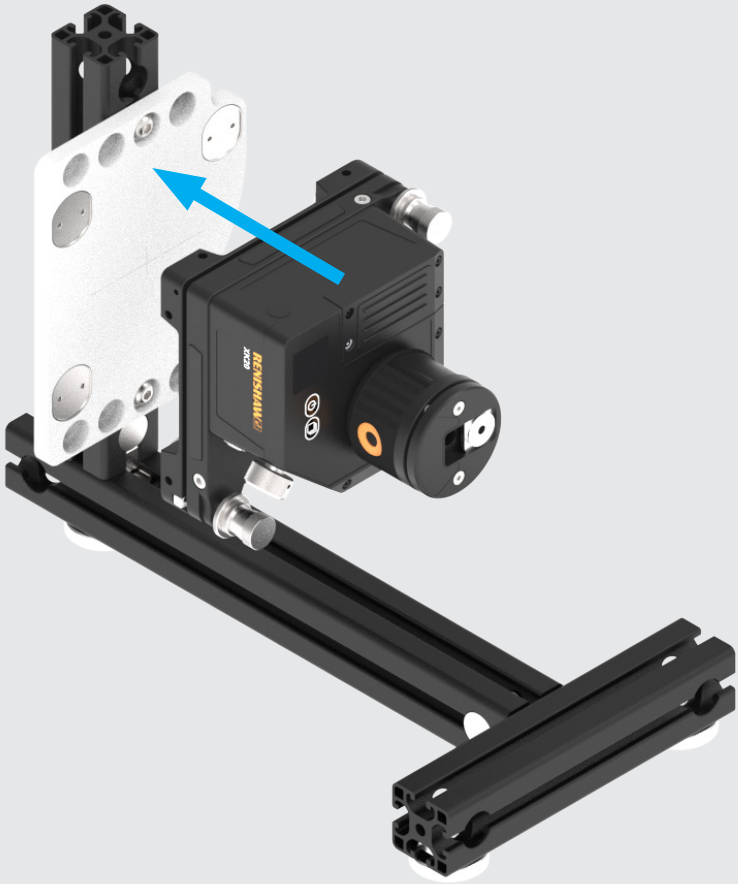
Vertical set up continued



Vertical set up continued



Vertical set up continued



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