

XK20 Hardware guide



Contents

Applications	3
Assemblies	4
M unit on a low profile magnetic base	4
M unit on a rotary magnetic base with a lowering bracket	5
M unit on rotary magnetic base without a lowering bracket	6
M unit on a reference mount (fixed)	7
M unit on a reference mount (rotating)	8
M unit with a 90 degree transceiver bracket	9
Launch unit on a low profile magnetic base	11
Pentaprism optic on a low profile magnetic base	12
Pentaprism optic on a low profile magnetic base with a pentaprism translation stage	13
Setting up the tripod	14
Launch unit on a tripod (horizontal set-up on a tripod translation stage, and Launch L-bracket)	15
Launch unit on a tripod (vertical set-up with a tripod translation stage)	16
Launch unit on a tripod (horizontal set-up on a Launch L-bracket)	17
Adjusting the equipment	18
Launch unit	18
Pentaprism optic	19
Tripod translation stage	20
M unit	20
Key set up points	21
Golden rules of alignment	25
Translate in the 'near field'	25
Pitch and yaw in the 'far field'	25
Fixturing kit	26
Good practice guide	26
Horizontal set up example	28
Vertical set up example	32

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.

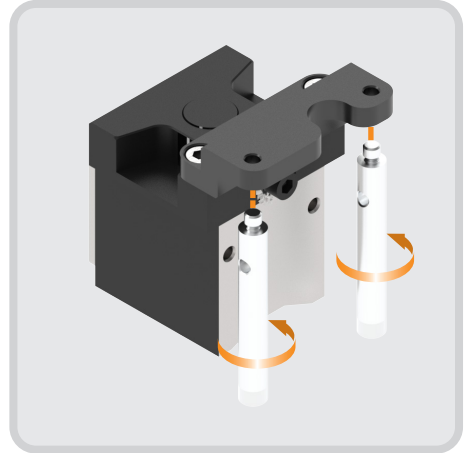
Slide the M unit onto the pillars and use the thumbscrews to secure.



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



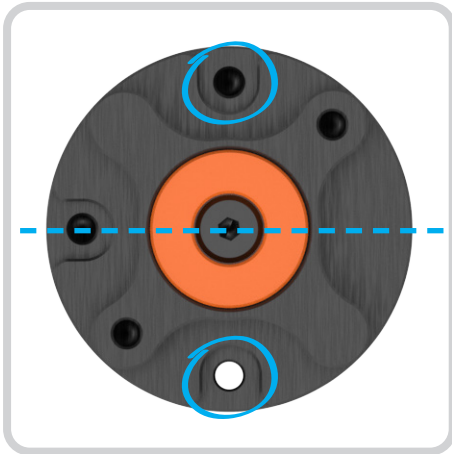
Screw the pillars into the rotary base.



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.

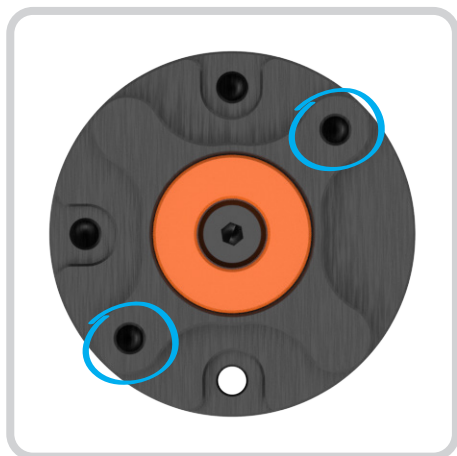


Screw the pillars into the rotary base.

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.



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

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



M unit with a 90 degree transceiver bracket continued



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

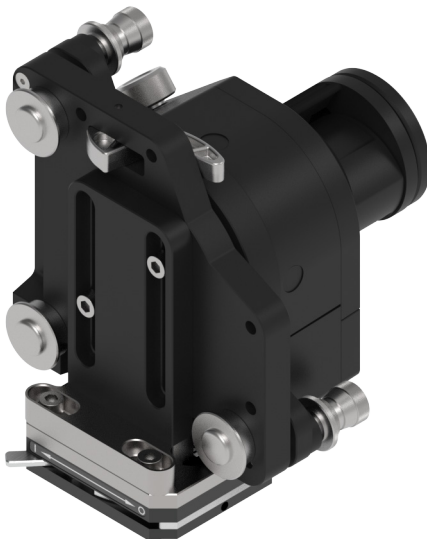
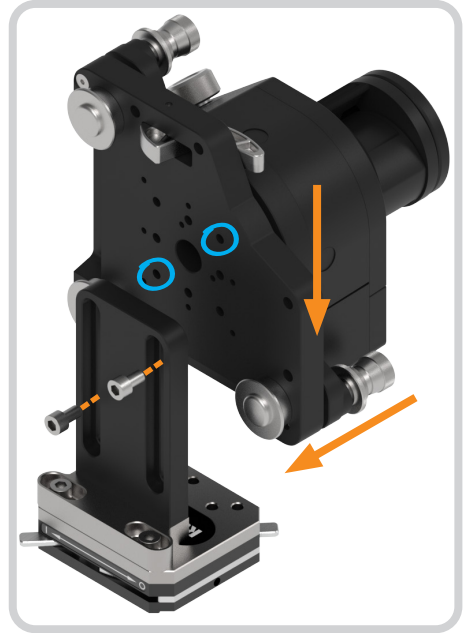


Launch unit on a low profile magnetic base



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.

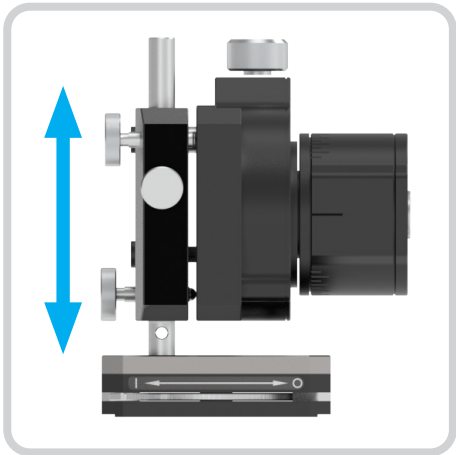


Pentaprism optic on a low profile magnetic base



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.



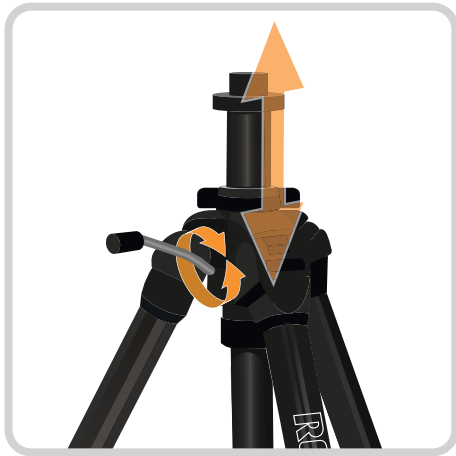
Screw the pillars into the pentaprism translation base.

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. Consider the access needed to the pentaprism translation base in the set up.

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.

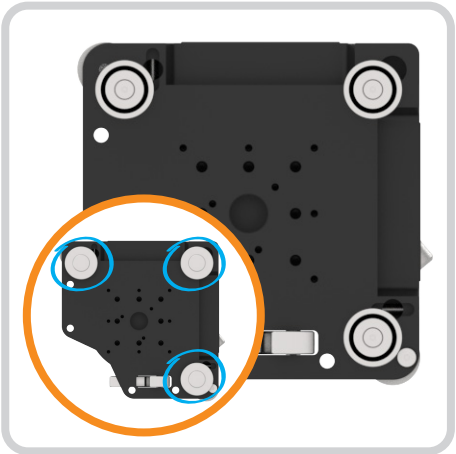
Add on the 90 degree bracket using the screws.



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)



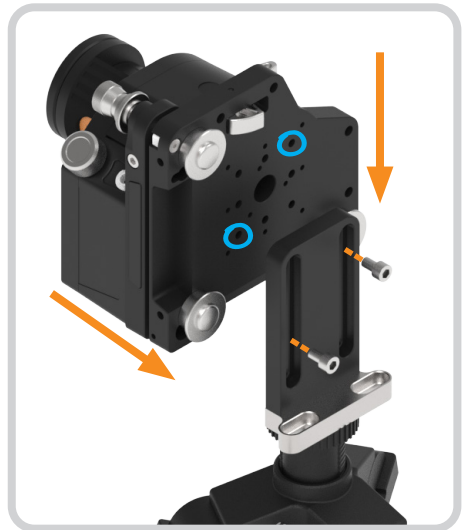
Remove the tripod stage adaptor from the top of the tripod.



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



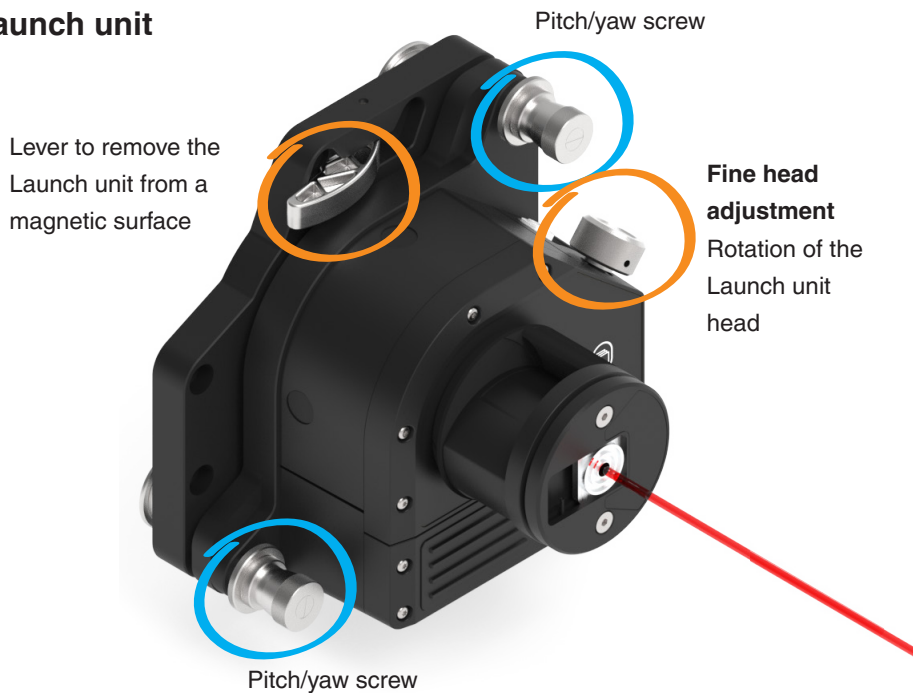
Screw the 90 degree bracket onto the tripod.



Attach the Launch unit using the screws.

Adjusting the equipment

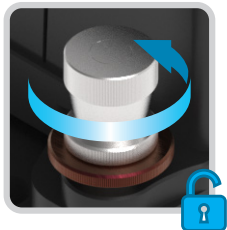
Launch unit



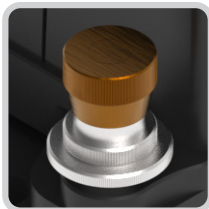
The pitch and yaw screws are used to align the output beam to the axis.

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

Coarse adjustment



Fine adjustment



Pentaprism optic



Rotational pitch screw



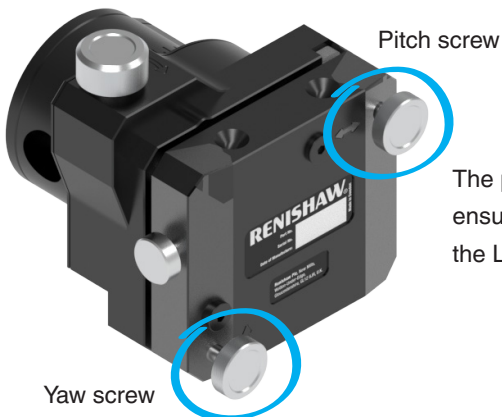
90 degrees



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.

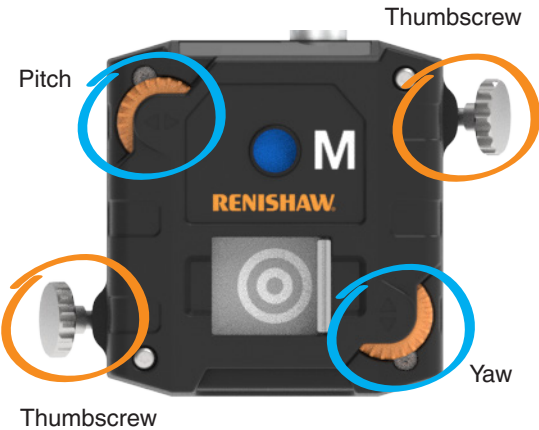


Pitch screw

Yaw screw

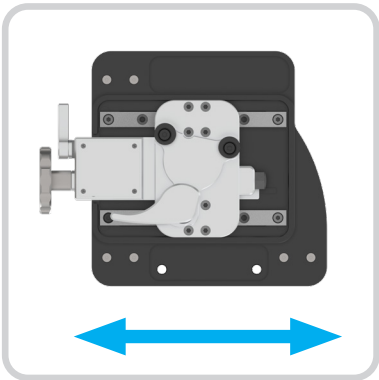
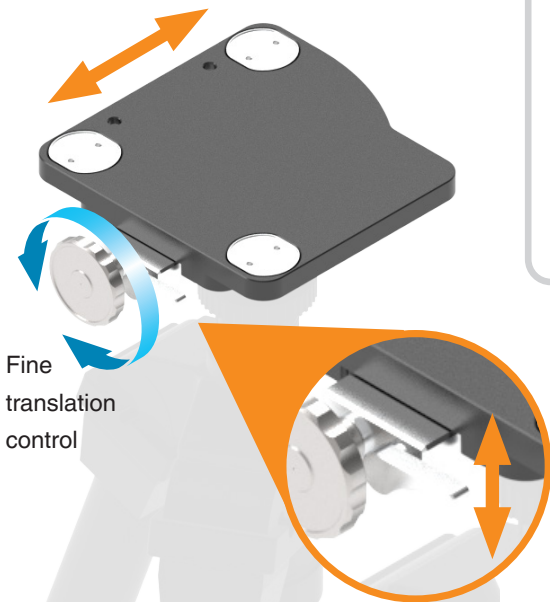
The pitch and yaw screws are used to ensure the pentaprism optic is parallel to the Launch unit and measurement rail.

M unit



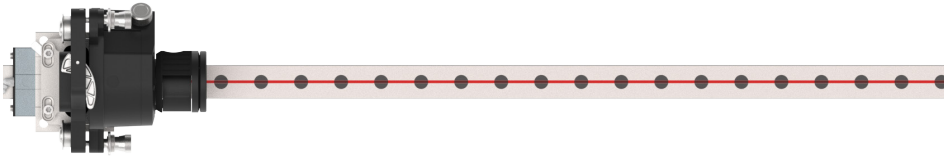
Tripod translation stage

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

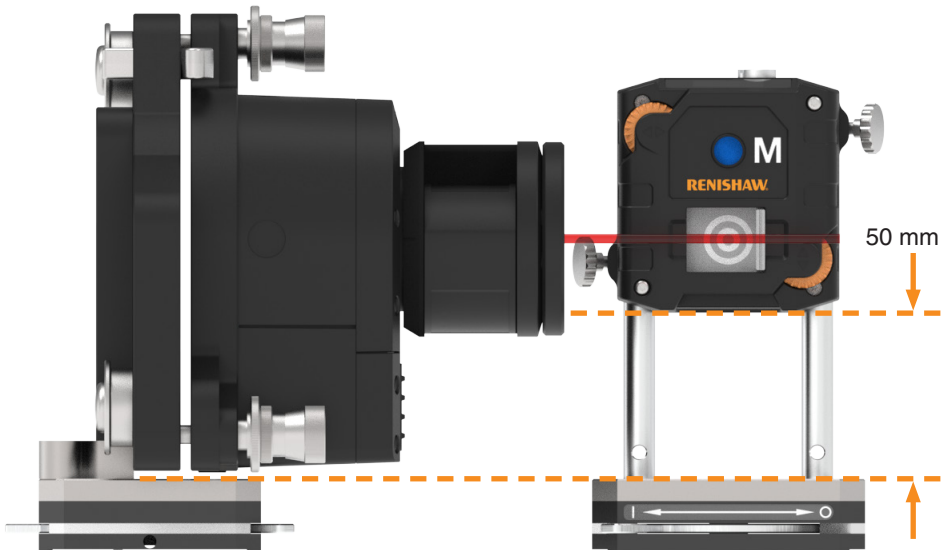


Key set up points

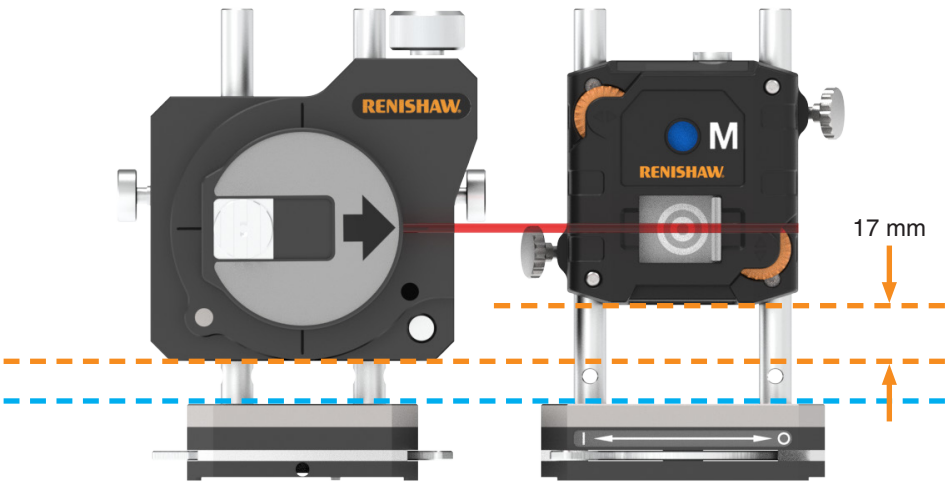
Straightness: ensure the Launch unit is positioned with the fixed beam pointing along the reference rail.



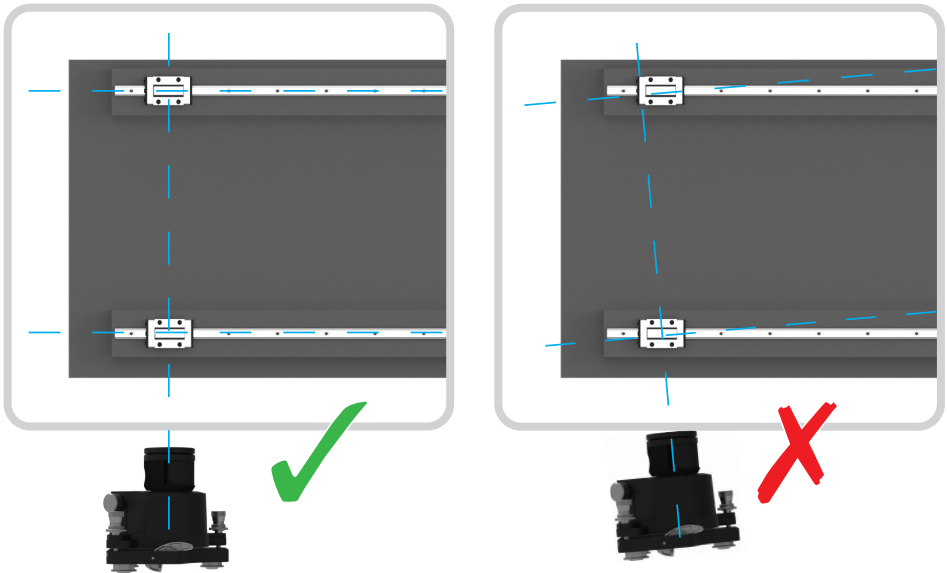
Straightness: ensure the centre of the M unit's target is in line with the Launch unit's beam.



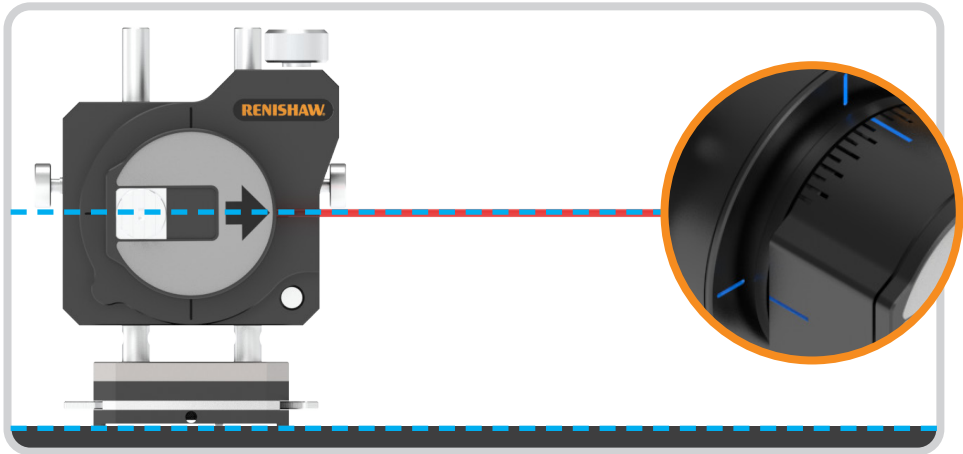
Parallelism: ensure the centre of the M unit's target is in line with the pentaprism optic's beam.



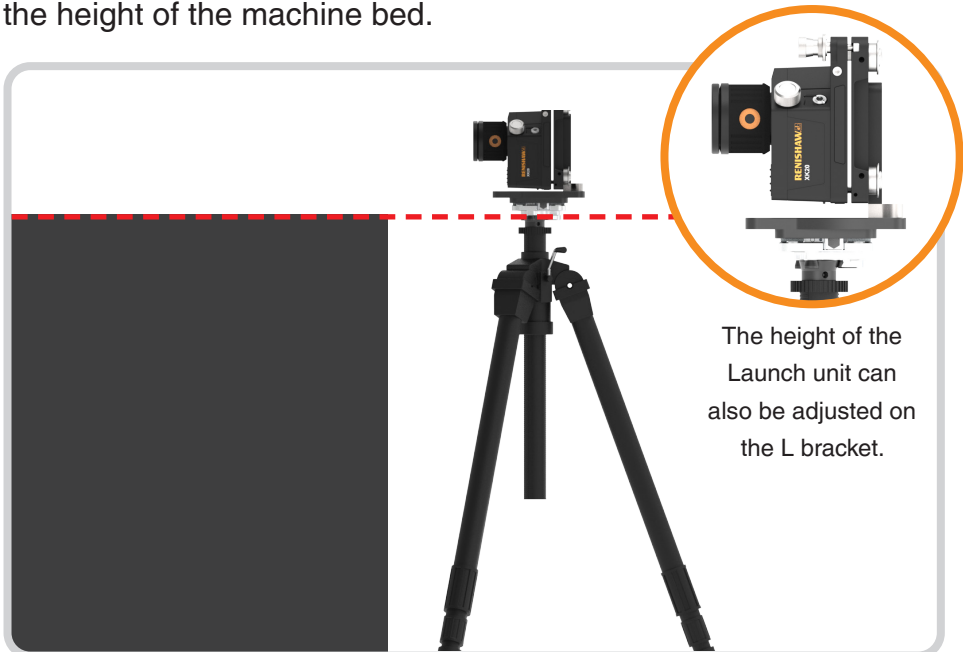
Parallelism: ensure the Launch unit is set up square to the rails.



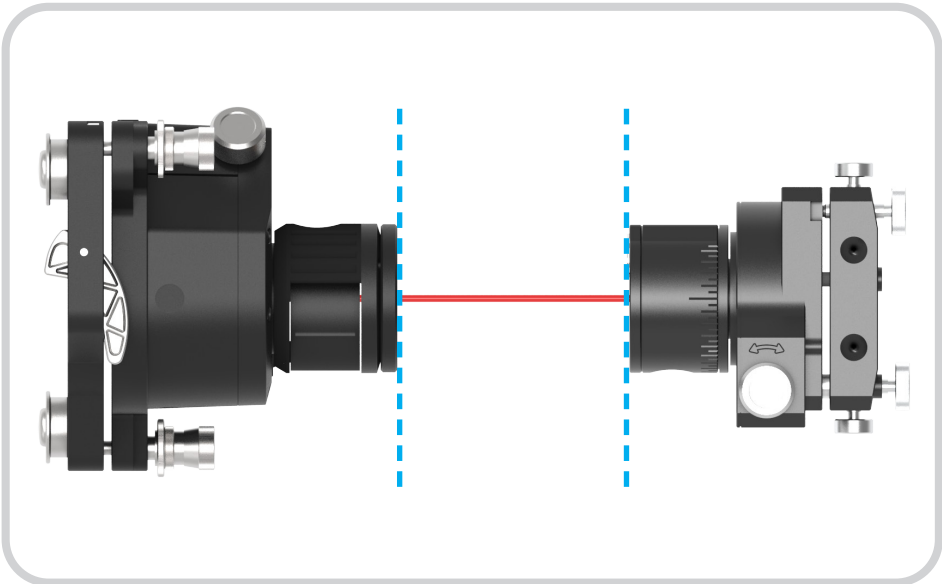
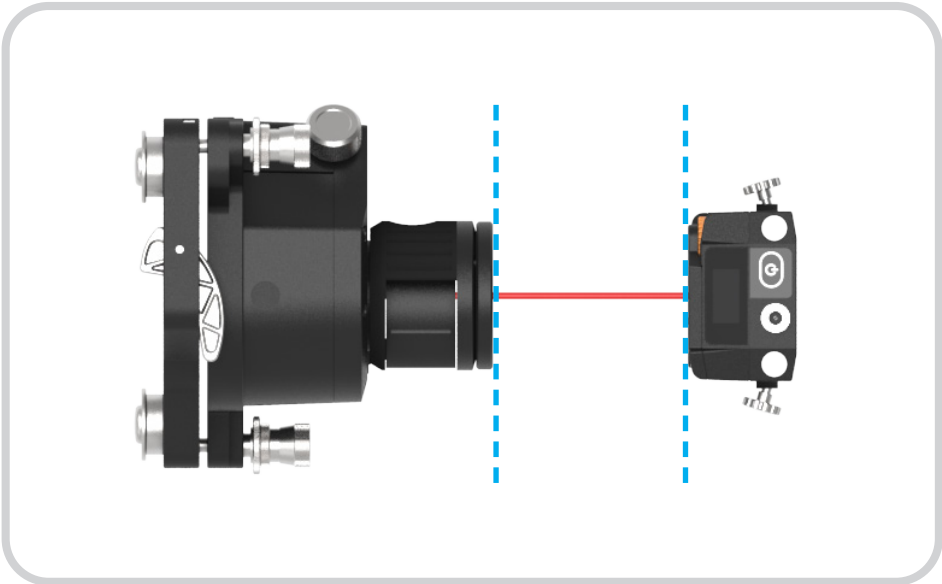
Parallelism: use the incremental marks to ensure the pentaprism optic's output is nominally parallel to the mounting face.



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

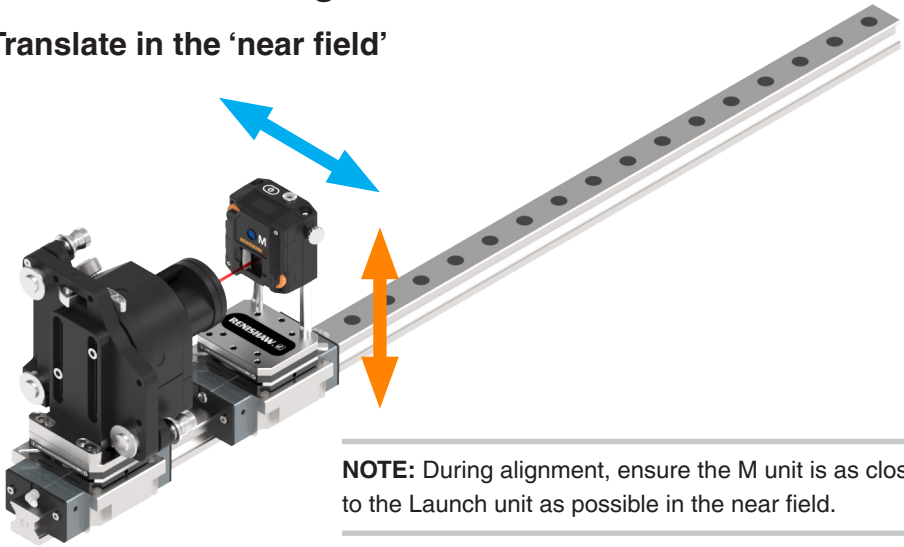


Positioning the M unit or pentaprism optic visually ‘parallel’ to the Launch unit

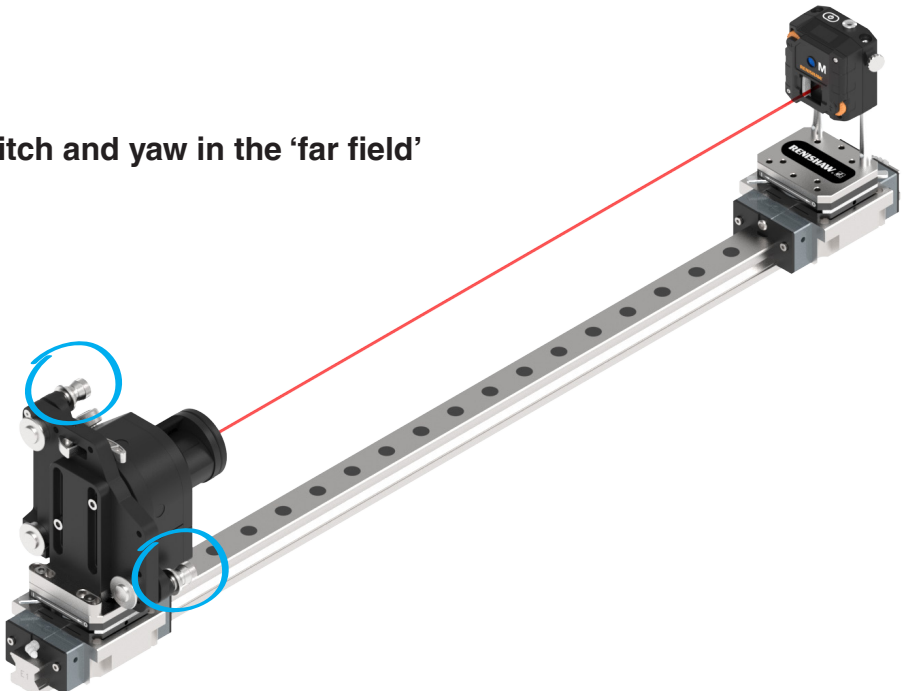


Golden rules of alignment

Translate in the 'near field'

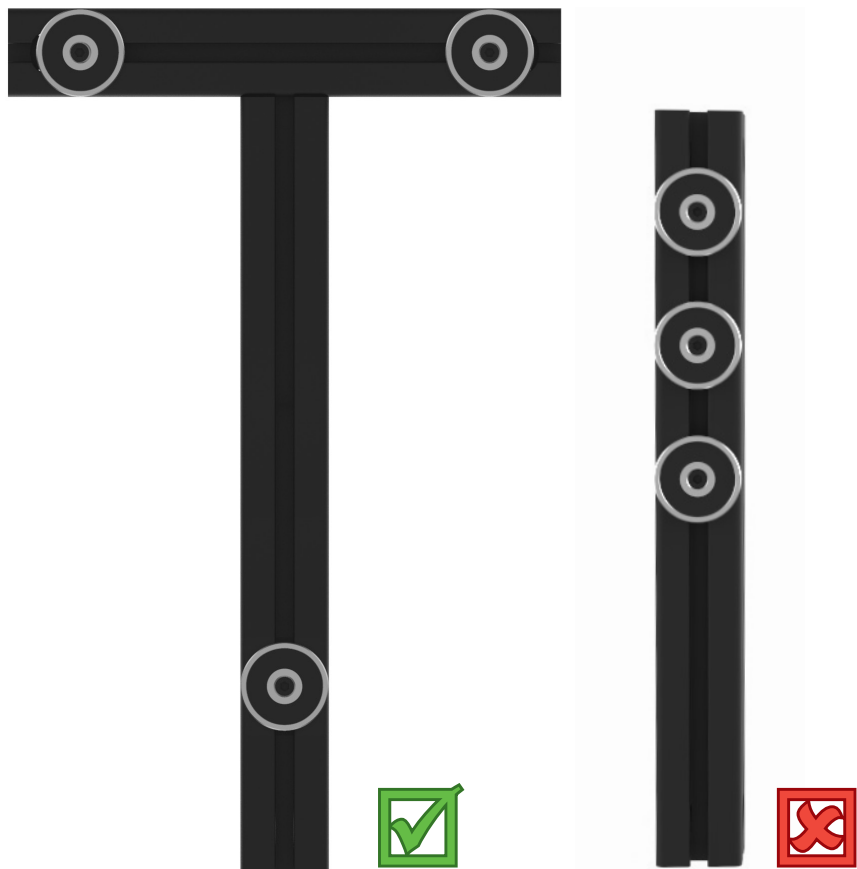


Pitch and yaw in the 'far field'



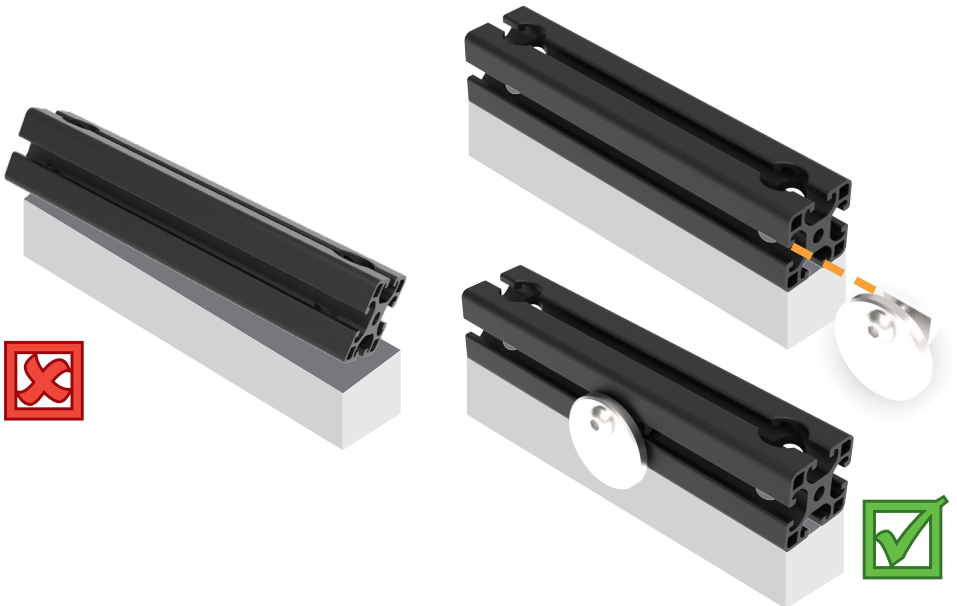
Fixturing kit

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



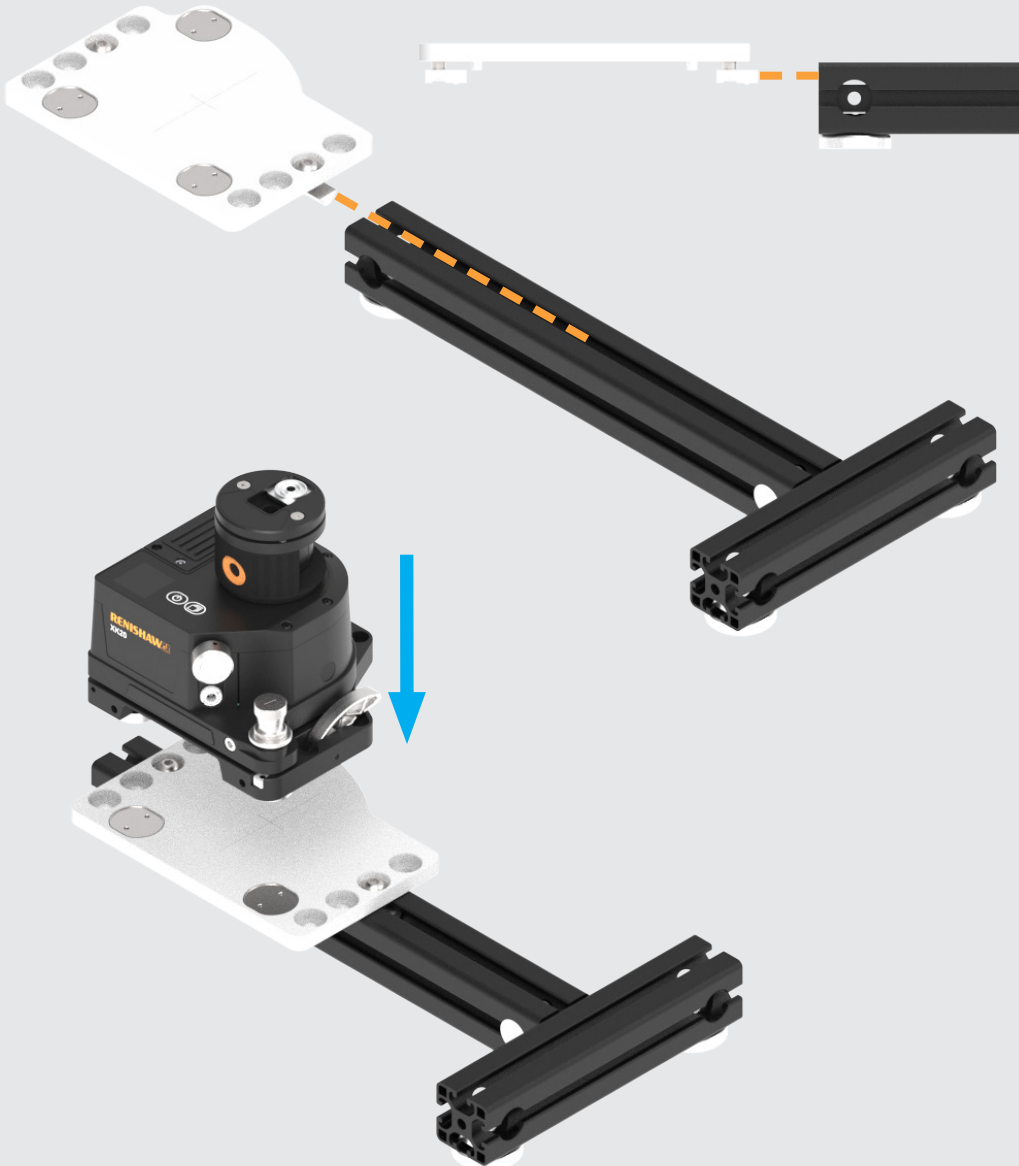
Horizontal set up continued



Horizontal set up continued



Horizontal set up continued



Vertical set up example



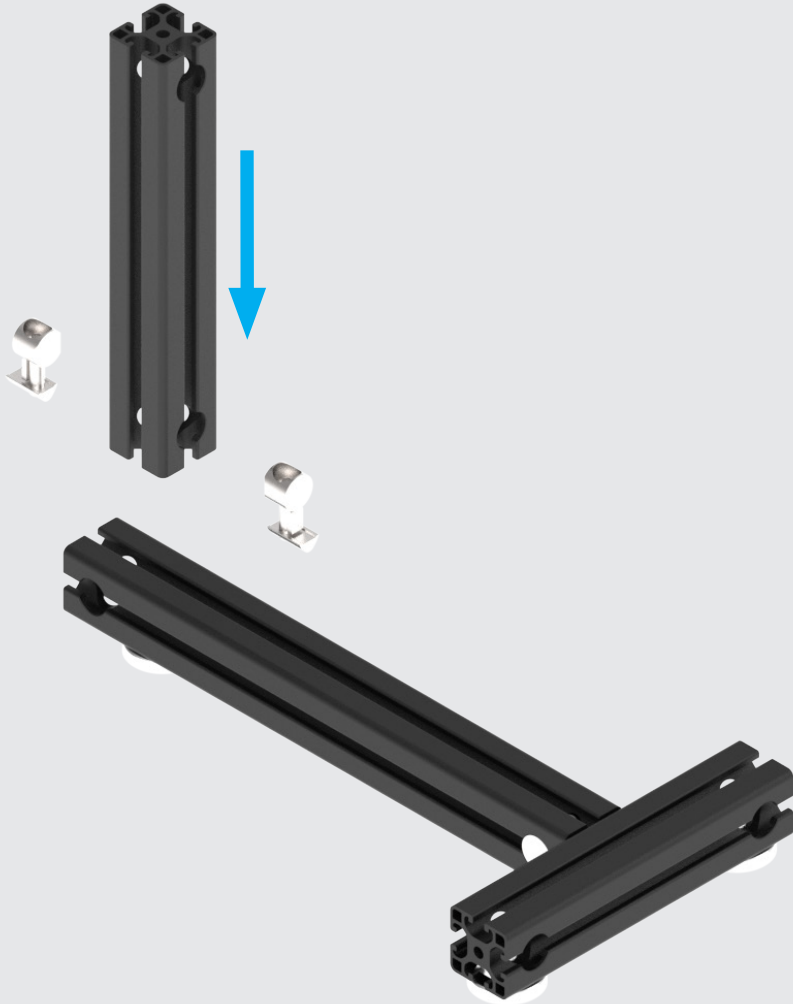
Vertical set up continued



Vertical set up continued



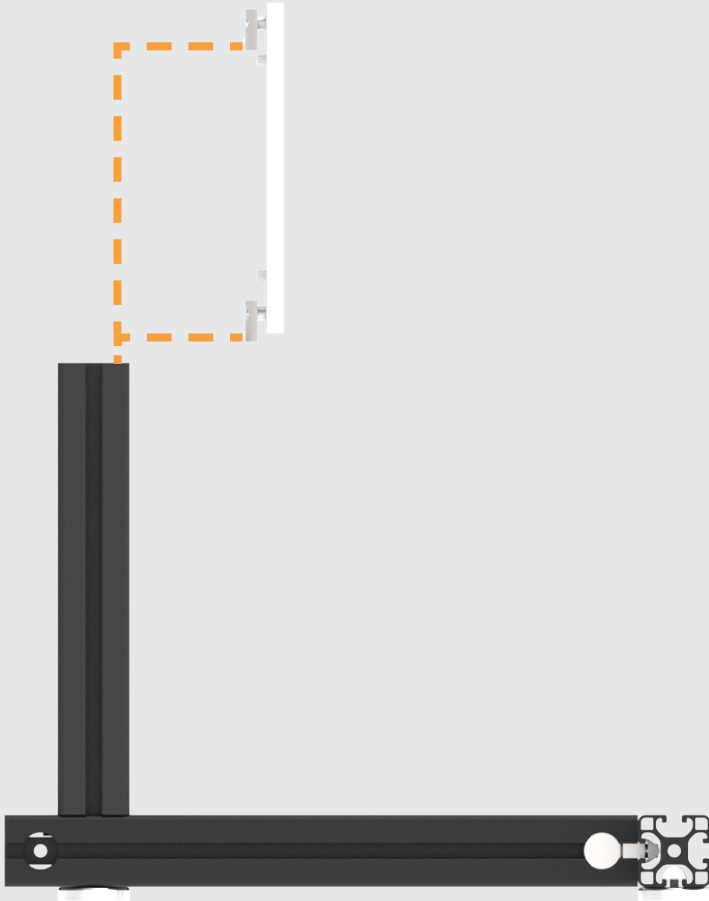
Vertical set up continued



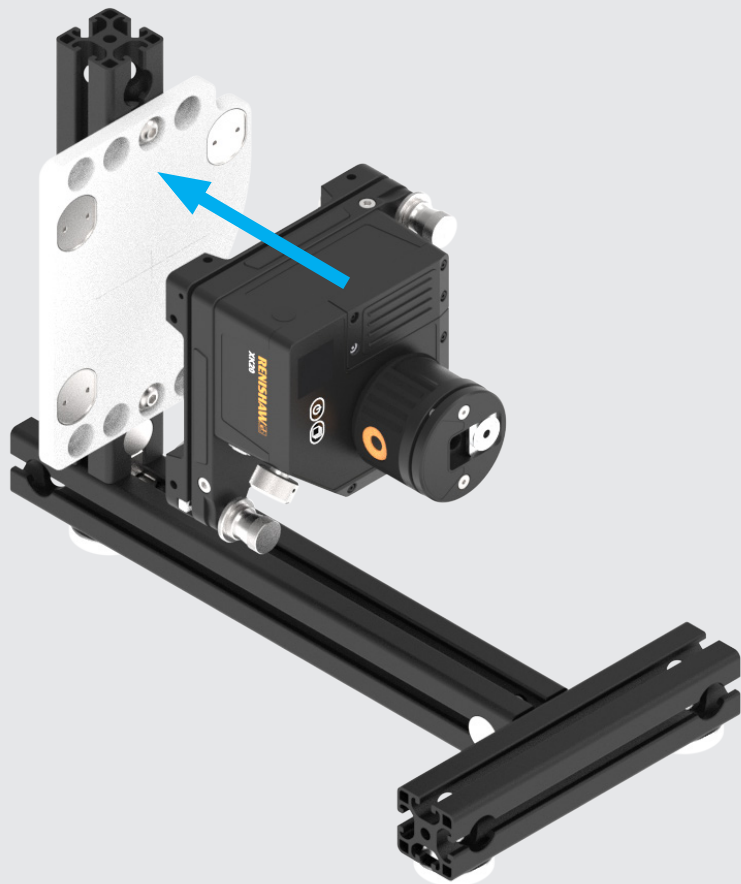
Vertical set up continued



Vertical set up continued



Vertical set up continued





Офіційний партнер в Україні:
УА ТОВ Фірма «КОДА»

www.koda.ua

+38 (057) 714 26 54

RENISHAW 
apply innovation™

www.renishaw.com/xk20



#renishaw



+44 (0) 1453 524524



uk@renishaw.com

© 2025 Renishaw plc. All rights reserved. This document may not be copied or reproduced in whole or in part, or transferred to any other media or language by any means, without the prior written permission of Renishaw.

RENISHAW® and the probe symbol are registered trade marks of Renishaw plc. Renishaw product names, designations and the mark 'apply innovation' are trade marks of Renishaw plc or its subsidiaries. Other brand, product or company names are trade marks of their respective owners.

WHILE CONSIDERABLE EFFORT WAS MADE TO VERIFY THE ACCURACY OF THIS DOCUMENT AT PUBLICATION, ALL WARRANTIES, CONDITIONS, REPRESENTATIONS AND LIABILITY, HOWSOEVER ARISING, ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW. RENISHAW RESERVES THE RIGHT TO MAKE CHANGES TO THIS DOCUMENT AND TO THE EQUIPMENT, AND/OR SOFTWARE AND THE SPECIFICATION DESCRIBED HEREIN WITHOUT OBLIGATION TO PROVIDE NOTICE OF SUCH CHANGES.

Renishaw plc. Registered in England and Wales. Company no: 1106260. Registered office: New Mills, Wotton-under-Edge, Glos, GL12 8JR, UK.

Part no.: H-9971-9037-01-A

Issued: 06.2025