

Installation Manual

D89-UST01 / 124-318 Ultra Short T/R 0.31~0.33 Throw Lens





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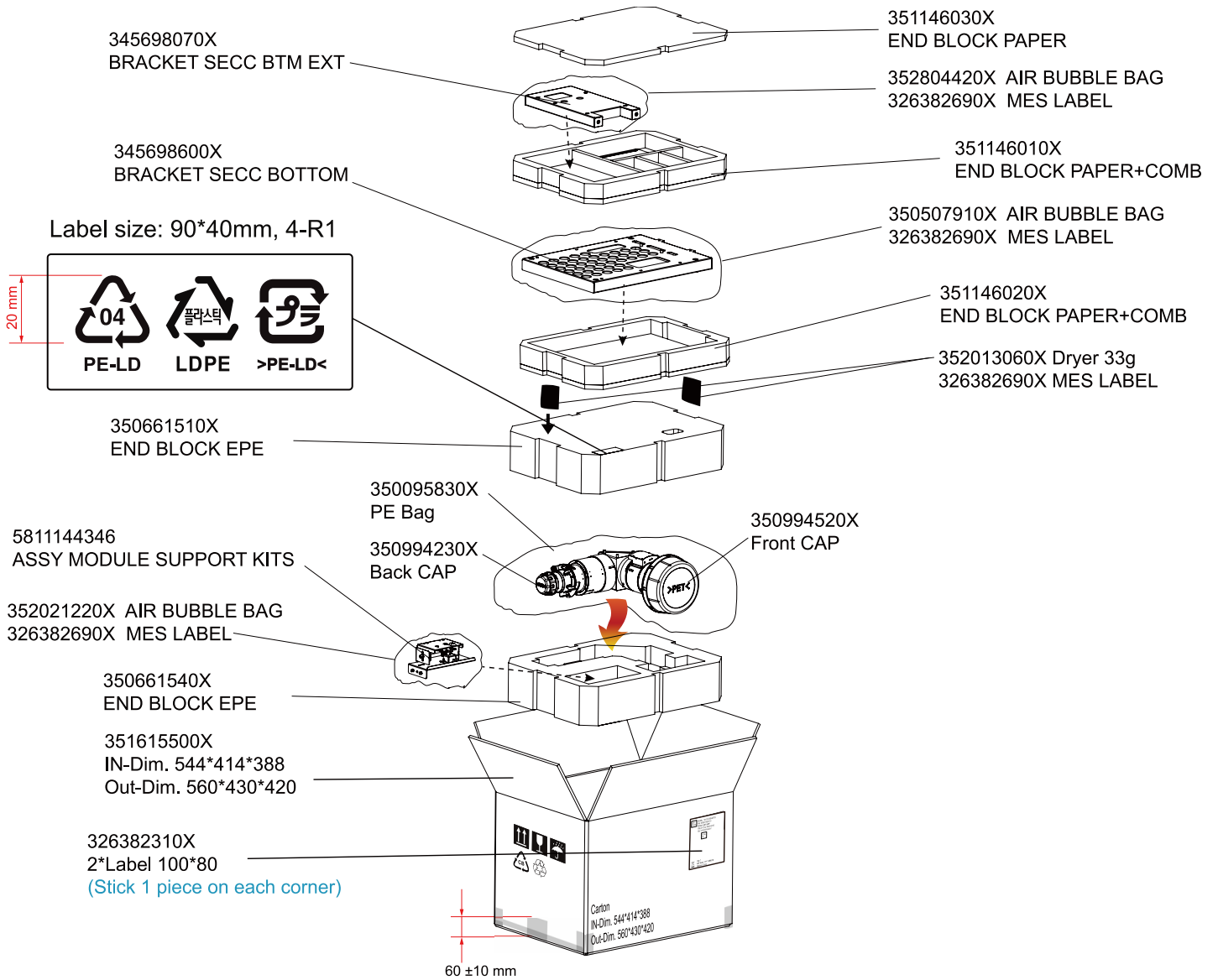
Important Notice

Before using the Ultra Short Lens, make sure to read below important notice.

- Be sure to turn the power off and disconnect the power cable from the wall outlet before replacing the Lens. Improper operation may cause to electrical shock or injury to eyes by intense light from the projector.
- Please remove the lens cap before installing the lens to the projector, the projection light may heat the lens cap and melt it, this may raise safety issue or damage the projector.
- Do not place any object near the projection light path, the intense light from the projection lens may result in fire or burn injuries.
- Use a clean, soft and dry cloth or Lens cleaning wipes to wipe away dirt or dust adhered on the lens.
- Do not use the cloth containing oil, dust or water for cleaning. Once dust and dirt adhered on the lens surface, please clean the glass with lens cleaning wipe.
- Keep all the original packing material even you finish the installation, the packing material may be used for avoiding damage during transportation.

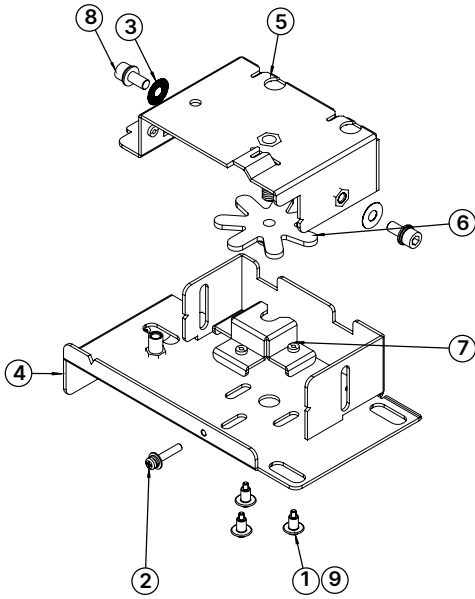


Packing Check List

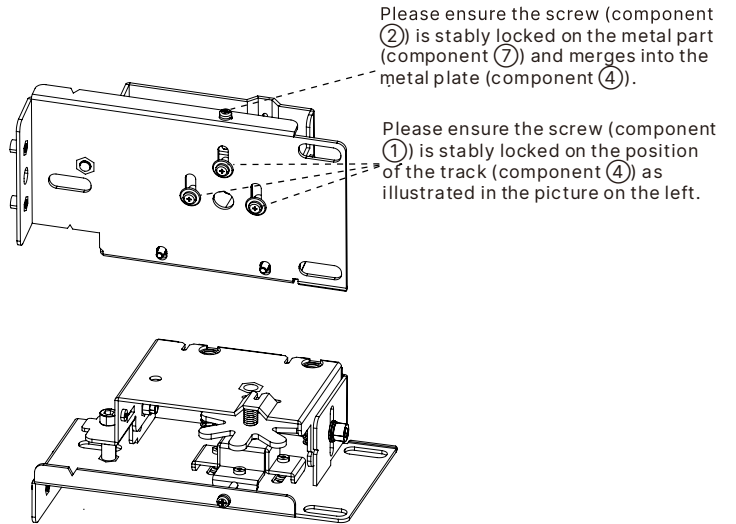


(1) Part Assembly A: (P/N:5811146085)

Item	Part Number	Part Description	Q'ty	Note
1	310108360X	SCREW M M3*0.5*11.5 FPH+CY C SWRCH18A NI	3	
2	310535590X	SCREW M M4*0.7*22 PAN C S+P S18C NI BLK	1	
3	324998320X	WASHER PC V-0 16*6.5*0.4 BLK	2	
4	345699600X	BRACKET SECC SUPKIT DOWN PAINT BLK	1	
5	345698620X	BRACKET SECC SUPKIT HOLDER PAINT BLK	1	
6	345697760X	BRACKET SECC WRENCH S PAINT BLK	1	
7	345698080X	BRACKET SECC SCREW HOLDER PRINT BLK	1	
8	310552900X	SCREW M M6*1*15 FF HEXI S+P S45C EPD BLK	2	
9	402411500X	ADHESIVE THREEBOND 1401C(CV) RED	0.3g	



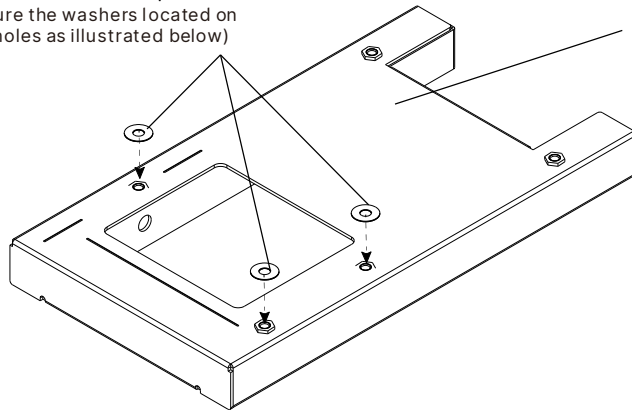
After Assembly

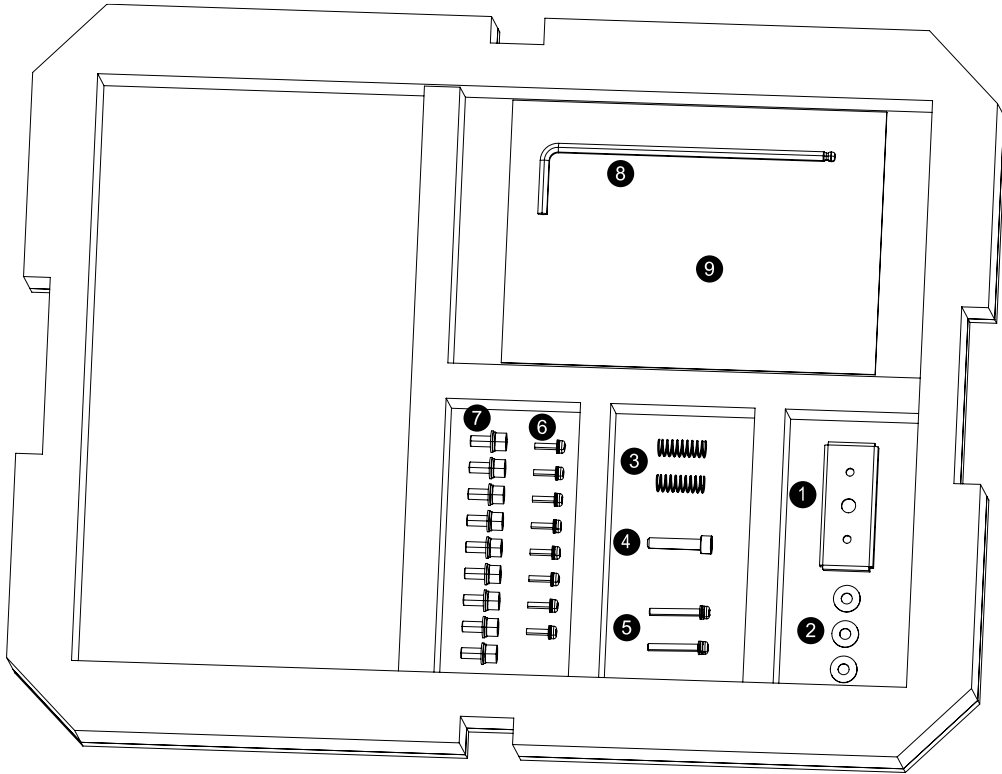


(2) Part Assembly B:

324998320X WASHER 3pcs
(Please ensure the washers located on the screws holes as illustrated below)

345698070X
BRACKET SECC BTM EXT





Item	P/N	Description	Q'ty	Note
1	345697670X	BRACKET SECC SUPKIT SIDE (3522003503 Air Bubble Bag PE 160*120 CLR)	1	Content Labeling (326382690X MES LABEL)
2	311023070X	WASHER 15*6.6*1.1 (3522003503 Air Bubble Bag PE 160*120 CLR)	3	Content Labeling (326382690X MES LABEL)
3	348944190X	SPRING (3522003503 Air Bubble Bag PE 160*120 CLR)	2	Content Labeling (326382690X MES LABEL)
4	310524430X	SCREW MM 6*1*25 (3522003503 Air Bubble Bag PE 160*120 CLR)	1	Content Labeling (326382690X MES LABEL)
5	310535830X	SCREW MM 4*0.7*38 (3522003503 Air Bubble Bag PE 160*120 CLR)	2	Content Labeling (326382690X MES LABEL)
6	310512100X	SCREW MM 4*0.7*14 (3522003503 Air Bubble Bag PE 160*120 CLR)	8	Content Labeling (326382690X MES LABEL)
7	310552900X	SCREW MM 6*1*15 (3522003503 Air Bubble Bag PE 160*120 CLR)	9	Content Labeling (326382690X MES LABEL)
8	315016150X	WRENCH HEX 160MM (3505030800 Air Bubble Bag PE 200*200 CLR)	1	Content Labeling (326382690X MES LABEL)
9	501418390X	CARD INFO D89-UST01/124-318 LENS QSG (3502304300 BAG LDPE 254*178*0.06 CLR)	1	



6.85kg



0.85kg



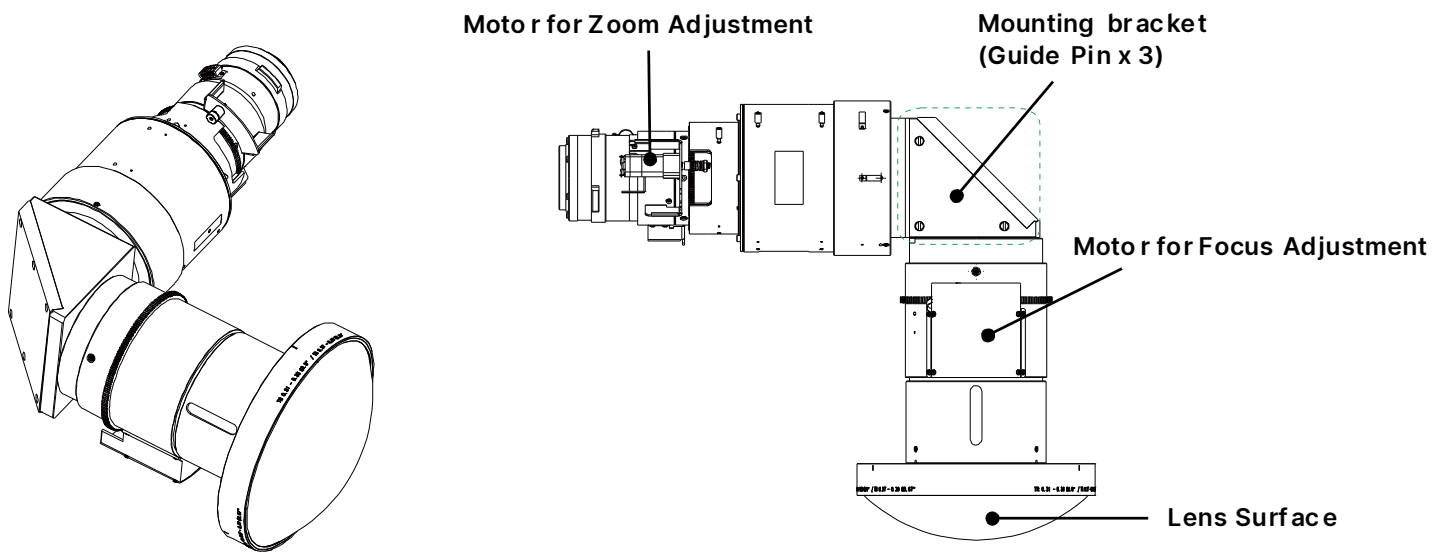
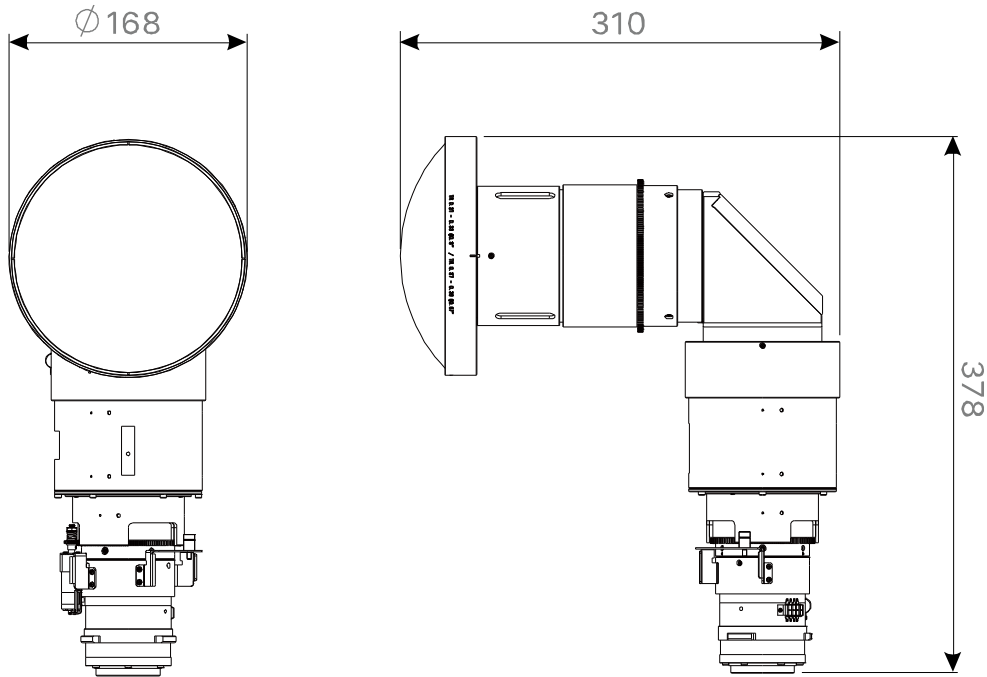
1.64kg



3.58Kg



Projection Lens Overview



Note

- There are two lens caps to cover the lens, please remove the lens cap before installing the lens to the projector. The projected light may heat the lens cap and melt it; it may raise safety issue or damage the projector.



Installing the Projection Lens

Before Installing the Projection Lens

Notice on the following points:

- Make sure all the accessories are ready.
- Make sure that the projector power supply is switched off before attaching or detaching the projection lens
- Place the projector on a flat table; this can be helpful to install the projection lens more convenient.
- Do not touch the electric contact points of the projection lens or it may cause to contact malfunctions.
- Do not touch the glass of the lens, the fingerprints or smudges on the glass may be magnified and lower the quality of Projected image.
- After removing the projection lens, store it safely away from vibration or impacts. Suggest you to keep it in the original package after you take it out from the projector
- Make sure to loosen the screws at the joints of support kits before fine tuning the lens position or performing Center Lens function, improper operation may cause to malfunctioned Lens shift or damage the projection lens.
- Make sure Lens type setting is changed to Non-UST Lens from OSD menu once you change to other projection lens. The default lens position of Ultra short Throw Lens (UST Lens) is different to other zoom lenses; the setting may limit the lens shift range and move the lens to different initial lens position after you perform Center Lens function.
- Make sure Lens Control Lock on OSD is disabling before performing lens adjustment. The Lens Shift, Zoom, Focus and Center Lens functions are disabled if turning on Lens Control Lock.
- When this 0.31~0.33 UST Lens is installed, projector will automatically disable lens memory function. The auto disable may not be available in early installed software and please contact service if you need software upgrade for this feature.
- For best projection effect, recommend to use flat screen and place the projector in parallel with the projector. The image may be distorted if the projection screen is not flat or not in parallel with the rear of projector,
- Check if the support kit is installed properly if the projection image is not clear after adjusting the focus and focus plane

IMPORTANT:

- After the screws of support kit are fixed, please do not use Lens Shift, Center lens and Lens memory functions.

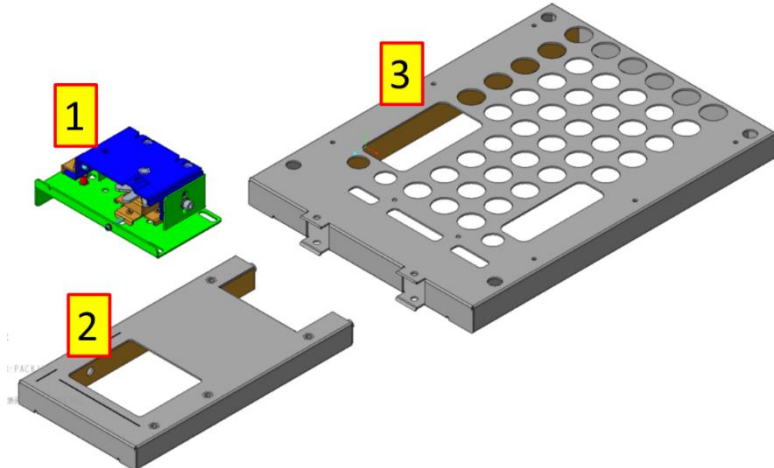
Starting the lens Installation

1. Turn over the projector as below figure, the front of the projector is aligned with the edge of the table. This can help you installing the projection lens more convenient.

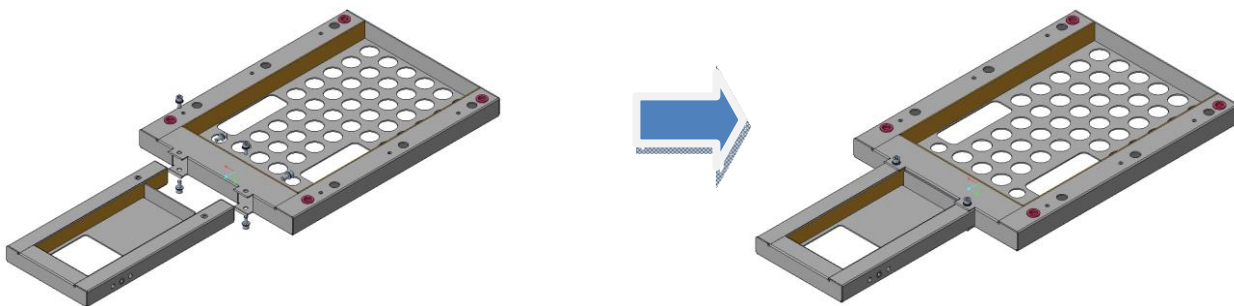


SUPPORT KIT Installation ---Assemble the bracket

Support kits consists of three main components



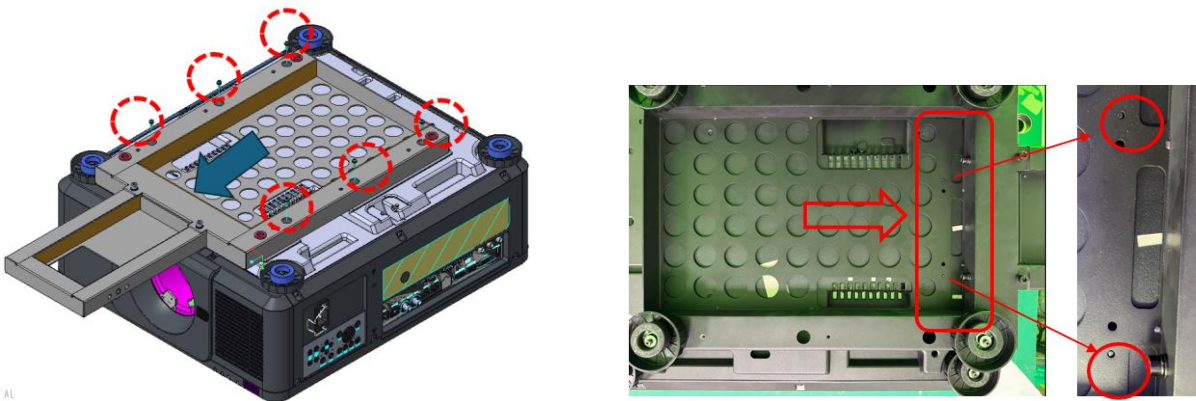
Assemble the bracket



SUPPORT KIT Installation ---Install on the projector

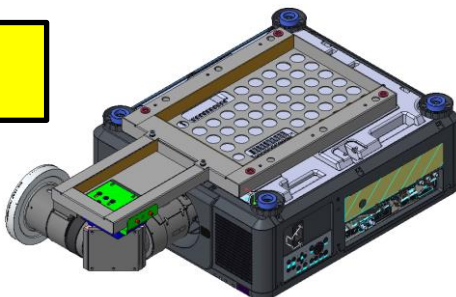
6 screws for fixing to the bottom case of the projector.

The metal base should be positioned as far forward as possible toward the lens direction.

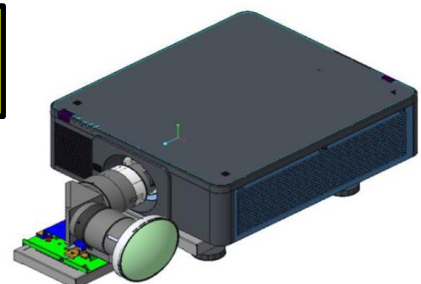


SUPPORT KIT Installation ---Separated into desktop and ceiling models

Ceiling
P10-P13



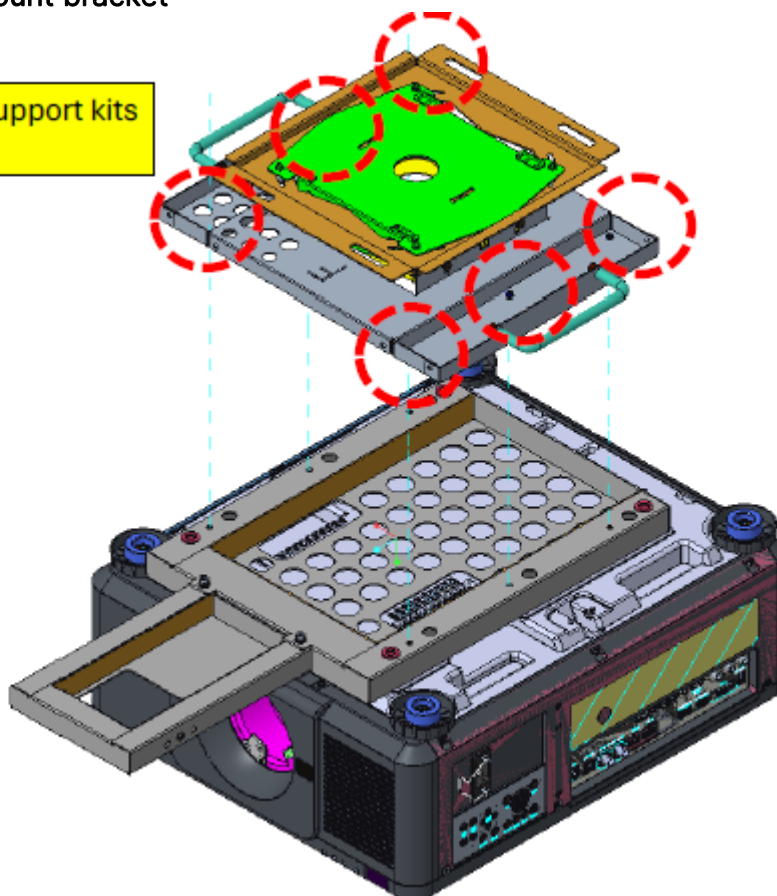
Desktop
P14-P16



SUPPORT KIT Installation --- FOR CEILING, PORTRAIT

STEP1 – Install the ceiling mount bracket

6 screws for fixing to the support kits metal plate.

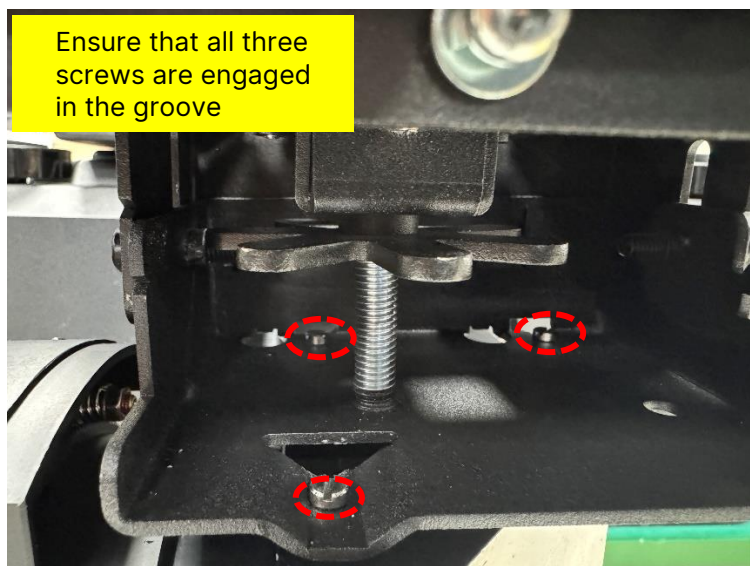


STEP2 – Install the adjustment module

1. Install the lens



2. Install the adjustment module

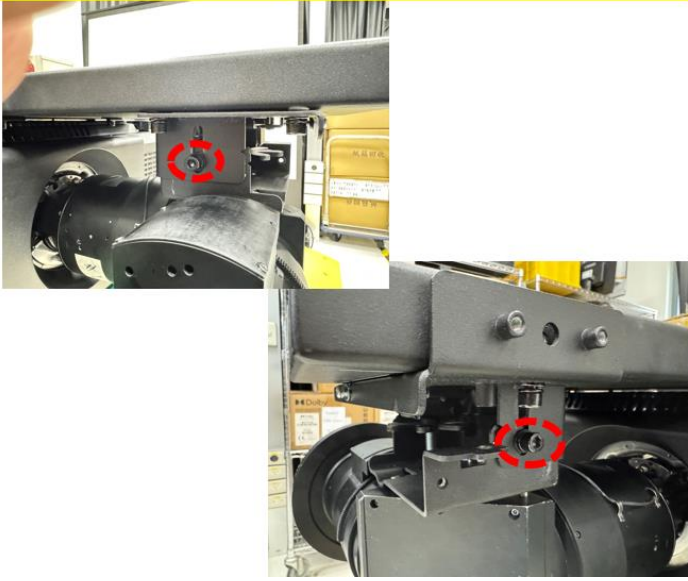


3. Tighten the screw but do not fully tighten it

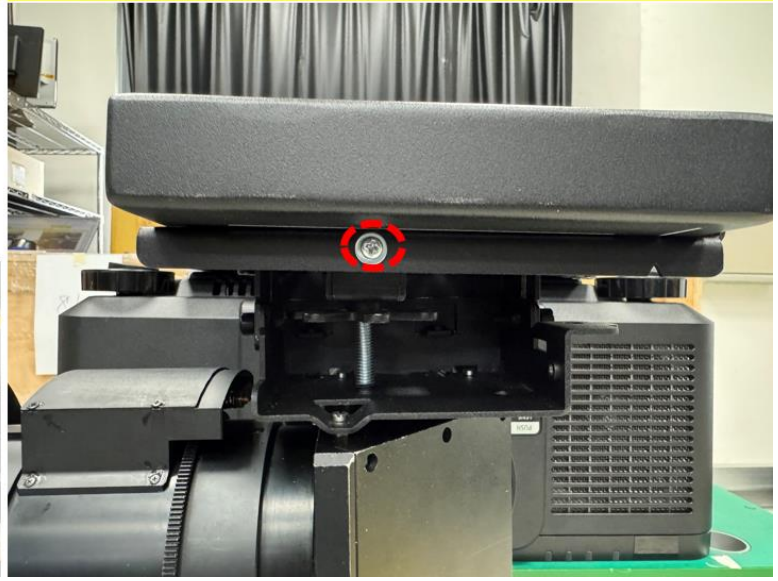


STEP3 – Prepare for lens shift & center lens

1. Loosen the screw slightly

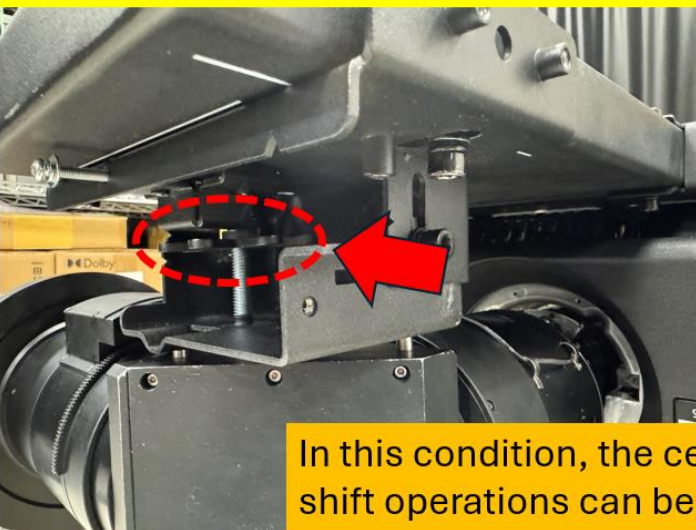


2. Remove the screw

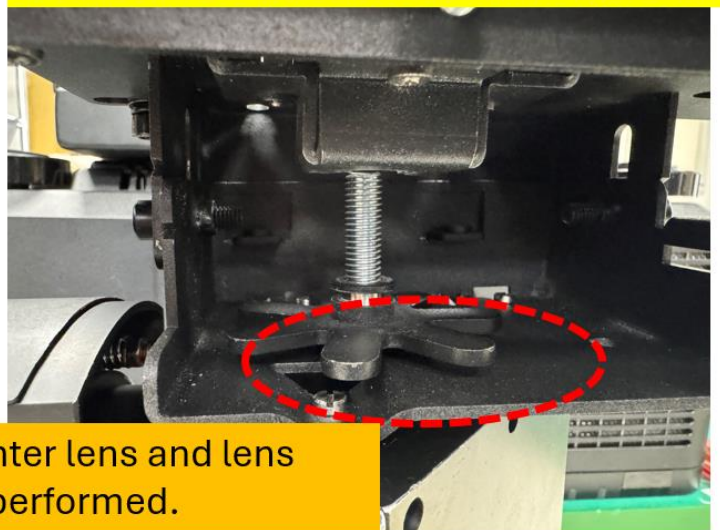


STEP4 - Prepare for lens shift & center lens operation

1. Push out this fastener



2. Turn the knob to the position shown in the figure below

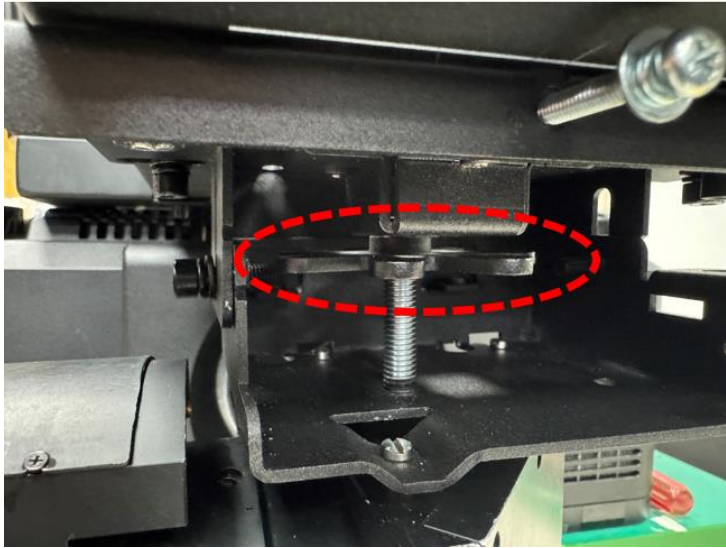


In this condition, the center lens and lens shift operations can be performed.

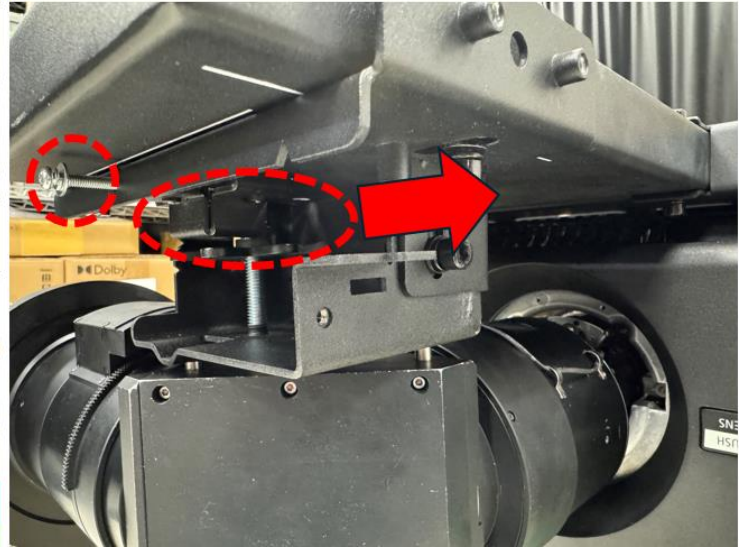


**STEP5 - After center lens and lens shift operations,
Adjust the lens vertical by knob**

1. Turn the knob to the position shown in the figure below

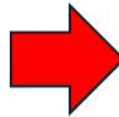


2. Push the fastener until it locks onto the knob, and install the screw shown below, but do not fully tighten it

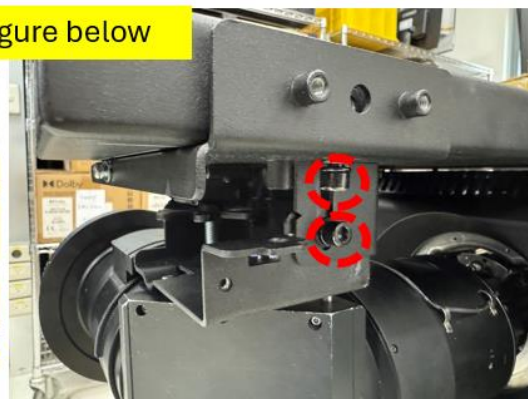
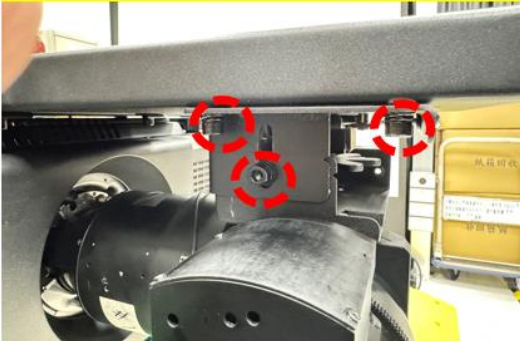


Adjust the lens vertical by knob

1. Adjust the lens vertical using the knob



2. Tighten the screws shown in the figure below

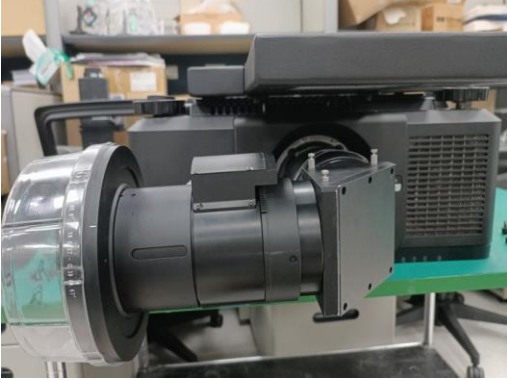


Ceiling installation

1. Projector lens shift default is setting 0% position.
2. Install 0.31 ~0.33 lens in Projector.
3. Install adjustment module (The adjustment knob supports the lens).
4. Lock lens support kit.
5. Pre-lock the three screws of the adjustment module.
6. Power on check “English characters” pattern focus. (from .ppt file)
7. Roughly adjust the focal surface (focus ring & field curvature).
8. Adjust the screen keystone.
9. Adjust the knob change upper and lower focus surfaces of the image to balanced.
10. Move base plate change left and right focus surfaces of the image to balanced.
11. Adjust the focal plane in the center of the image “English characters” to clear.
12. Field curvature ring adjust the focal planes in the four corners of the image “English characters” to clear.
13. Repeat steps 9 to 12 until the entire focal surface is balanced.
14. Lock five fixing screws.
15. Confirm whether the focal surface is okay.

1. Projector lens shift default is setting 0% position.
2. Install 0.31 ~0.33 lens in Projector.
3. Install adjustment module (The adjustment knob supports the lens).

Install the lens



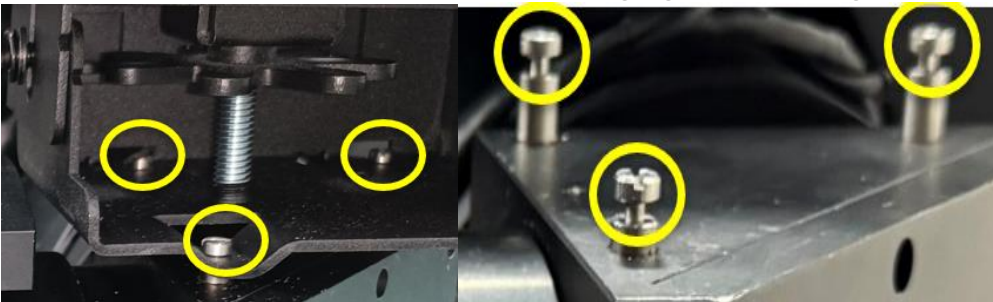
Note: The Lens should not be installed on the machine for a long time without a support piece; otherwise, the 7kg weight lens may cause damage to the Lens Mount.

Install the adjustment module



After the "L" -shaped Lens is installed on the projection machine, the Support KIT should be installed and debugged within no more than 10 minutes to support and fix the lens and eliminate overloading of the Lens mount.

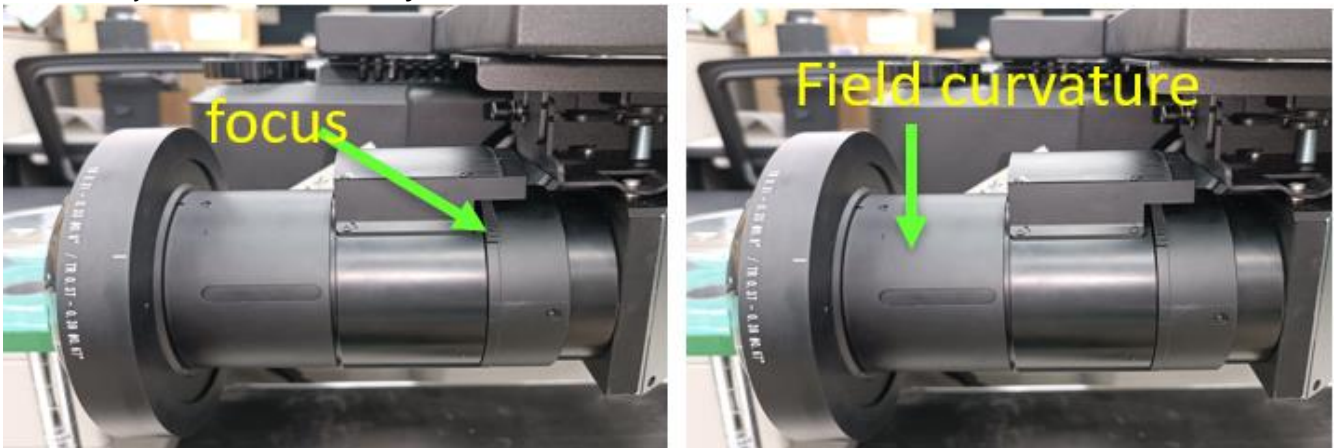
Ensure that all three screws are engaged in the groove



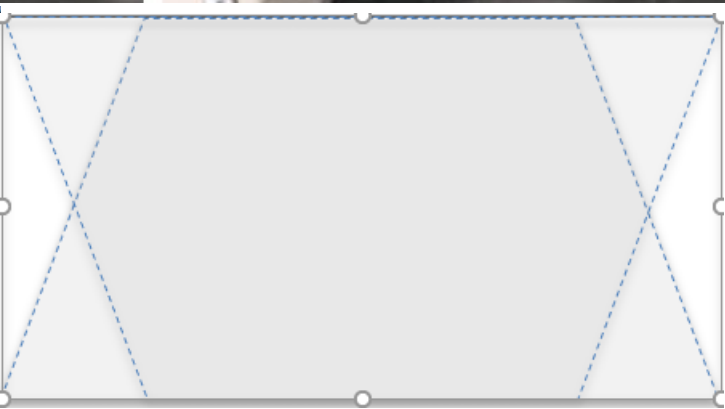
4. Lock lens support kit.
5. Pre-lock the three screws of the adjustment module.



6. Power on check “English characters” pattern focus (from .ppt file).
7. Roughly adjust the focal surface (focus ring & field curvature).
8. Adjust the screen keystone.



sometimes conflicting and confusing, meanings for terms like color. That means an amber or green (only) monitor is a monitor controller does not set the color of the monitor and can be determined. The confusion comes when some people or manufacturer refer to a shades-of-gray or grayscale display controller as a display controller. Technically they are correct. The confusing factor in a display controller is the bit-depth, or bits per pixel, and white, two or more bits per pixel is shades of gray. Monochrome controllers typically use 1, 2, 4, and 8 bits per pixel. A monochrome controller typically has a look-up table between the frame buffer and the DAC output. A color controller is differentiated from a monochrome controller by having a look-up table and a color look-up table. The look-up table is a small, memory array combined with the DAC to form what is commonly referred to as a color DAC. Color DACs come with 4, 8, 12, 16, and 24 bits per pixel.





focal surface is balanced

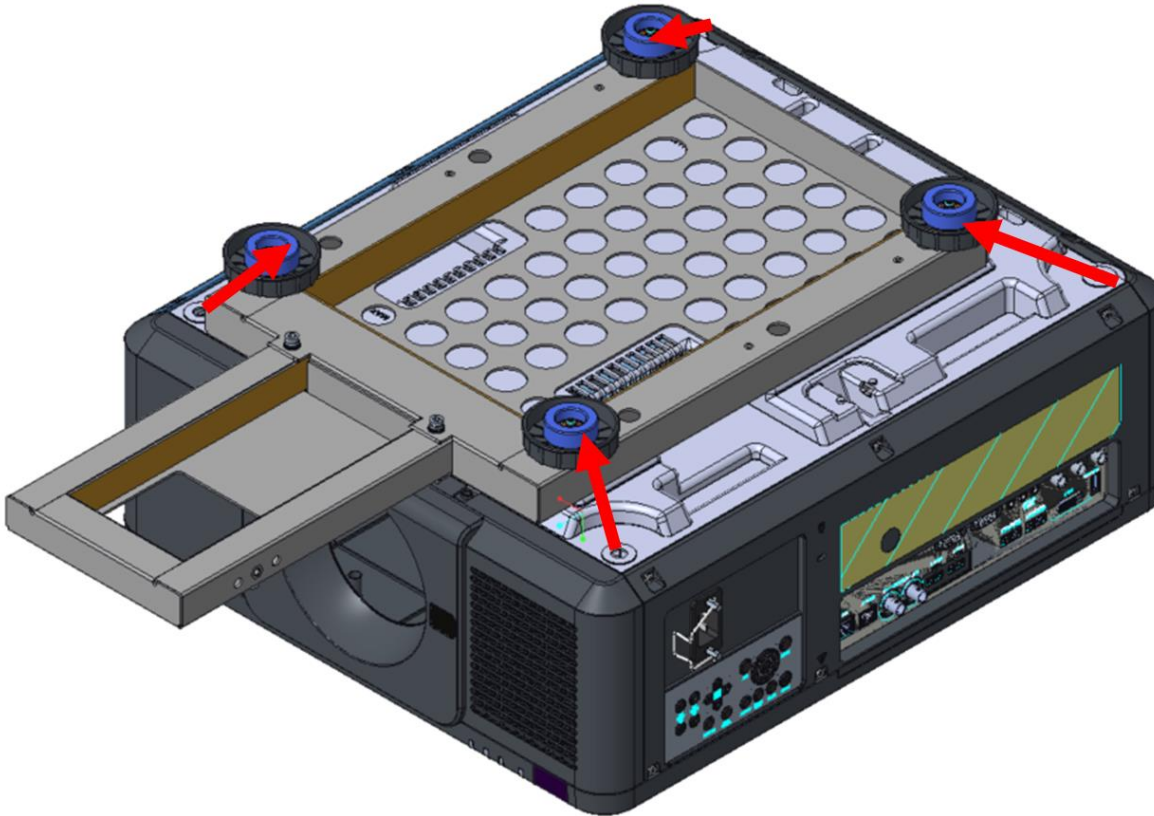
sometimes conflicting and confusing, meanings for them. Monochrome means one color. That means an amber or green (only) monitor is a monochrome monitor. A display controller does not set the color of the monitor and can be called a monochrome controller. The confusion comes when some people or manufacturer refer to a display or controller as monochrome. Technically they are correct. A monochrome display controller refers to a shades-of-gray or grayscale display controller as a monochrome controller. A differentiating factor in a display controller is the bit-depth, or bits per pixel. A monochrome controller has one bit per pixel and white, two or more bits per pixel is shades of gray. Monochrome controllers come with 1, 2, 4, and 8 bits per pixel. A monochrome controller typically has a look-up table between the frame buffer and the DAC output. A color controller is differentiated from a monochrome controller by having a color look-up table per pixel and a color look-up table. The look-up table is a small, memory array that, when combined with the DAC to form what is commonly referred to as a color DAC, can come with 4, 8, 12, 16, and 24 bits per pixel.

Ceiling installation

1. Setting lens shift -50% position.
2. Remove the fixed structure screw.
3. Push fixed structure outward.
4. Turn the knob to the topmost position.
5. Loosen the 5 screws, leaving a gap of 2-3 turns.
6. Lens shift move -50%.
7. Turn the knob to be level with the fixed structure.
8. Push the fixed structure all the way in to ensure it locks with the knob.
9. Tighten the fixed structure screw.
10. Roughly adjust the focal surface (focus ring & field curvature).
11. Adjust the screen keystone.
12. Adjust the knob change upper and lower focus surfaces of the image to balanced.
13. Move base plate change left and right focus surfaces of the image to balanced.
14. Adjust the focal plane in the center of the image “English characters” to clear.
15. Field curvature ring adjust the focal planes in the four corners of the image “English characters” to clear.
16. Repeat steps 12 to 15 until the entire focal surface is balanced.
17. Lock five fixing screws.
18. Confirm whether the focal surface is okay.

SUPPORT KIT Installation ---FOR DESKTOP

STEP1 - Move the adjustment foot onto the support kit metal part

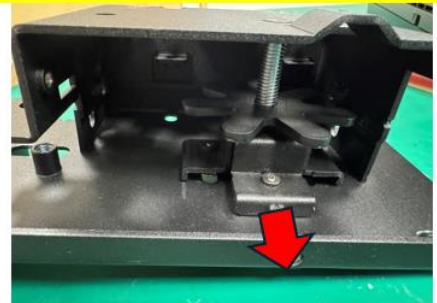


STEP2 - Add springs and screws in the adjustment module
Only for the Desktop (For the ceiling, the springs and screws need to be removed)

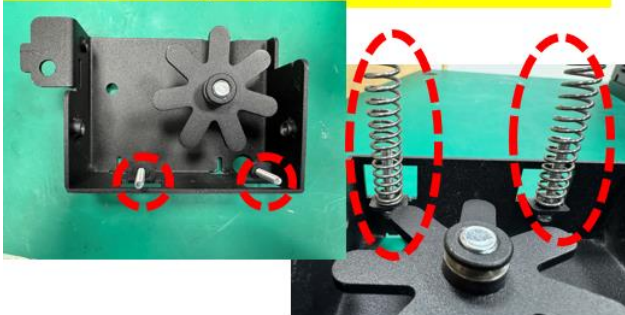
1. Remove the three screws



2. Push the fastener outward



3. Install the spring and screws



4. Install the fastener to lock onto the knob, and tighten the screw



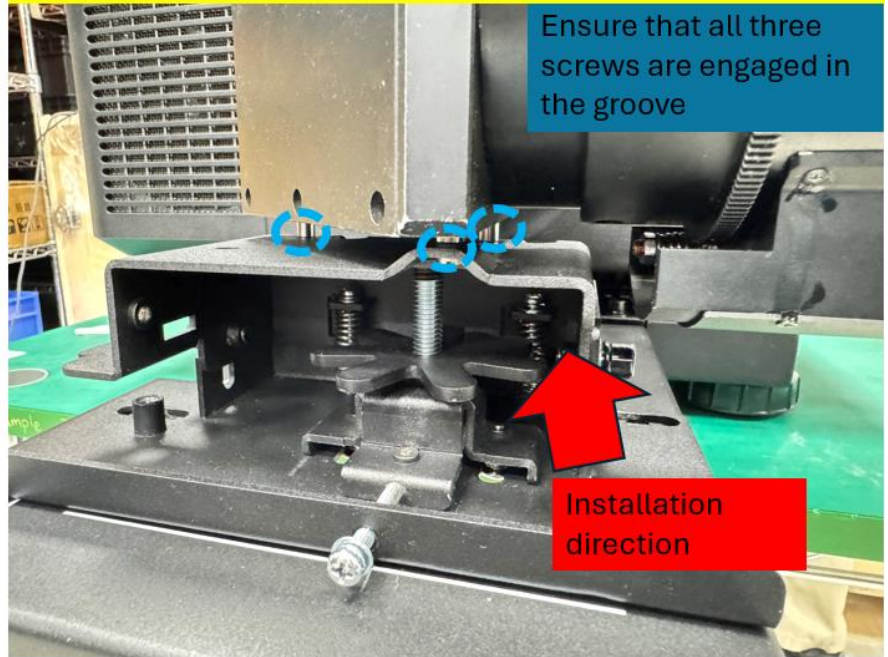


STEP3 - Install the adjustment module

1. Install the lens

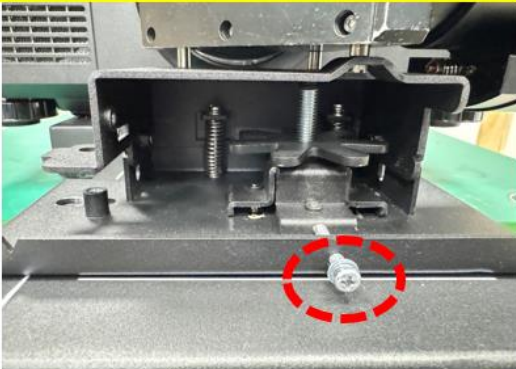


2. Install the adjustment module

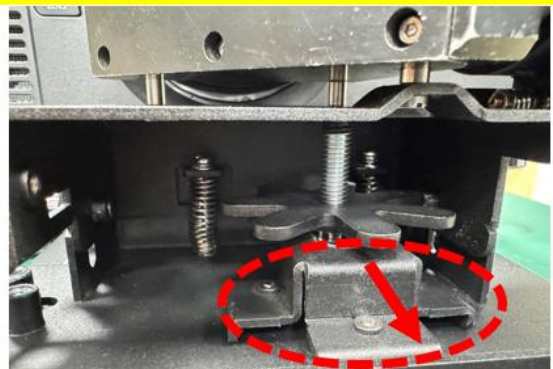


STEP4 - Loosen the screw of knob's locking structure

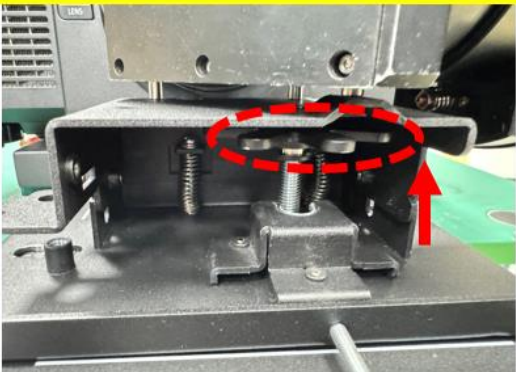
1. Remove the screw



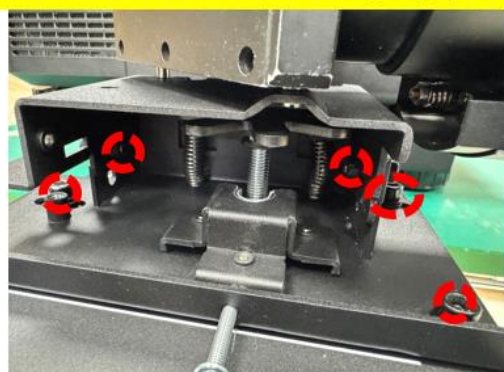
2. Push the fastener outward



3. Turn the knob to the topmost position



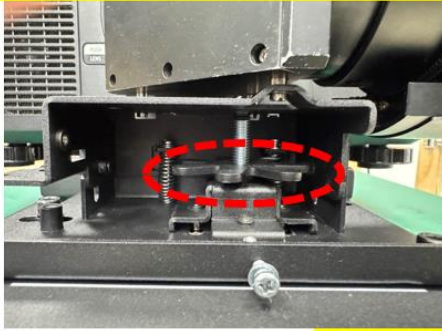
4. Loosen the 5 screws, leaving a gap of 1-2 turns



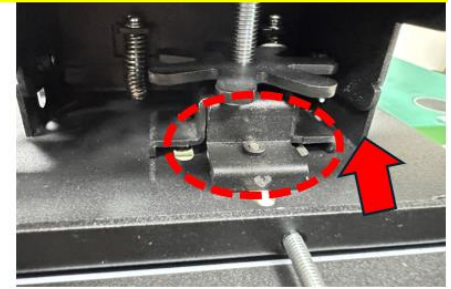


STEP5 - After center lens and lens shift operations, Locking knob

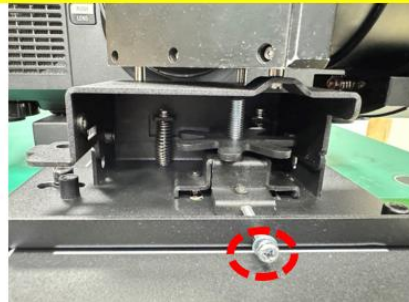
1. Turn the knob to be level with the fixed structure



2. Push the fixed structure all the way in to ensure it locks with the knob

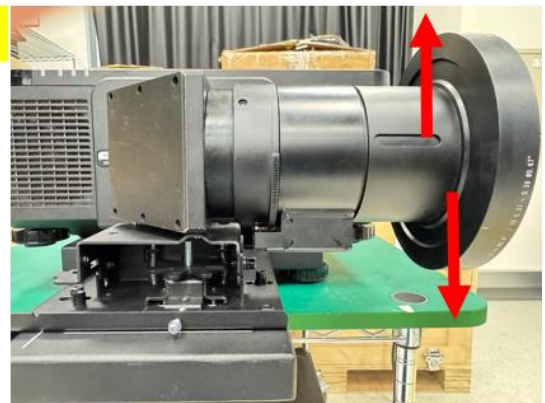
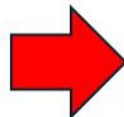
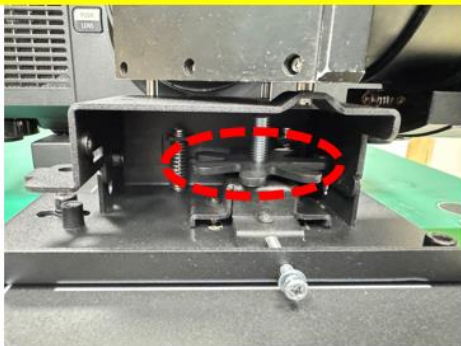


3. Tighten the screws shown in the figure below

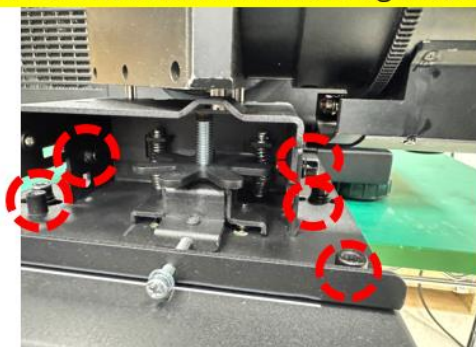


STEP6 - Adjust the lens horizontally by knob

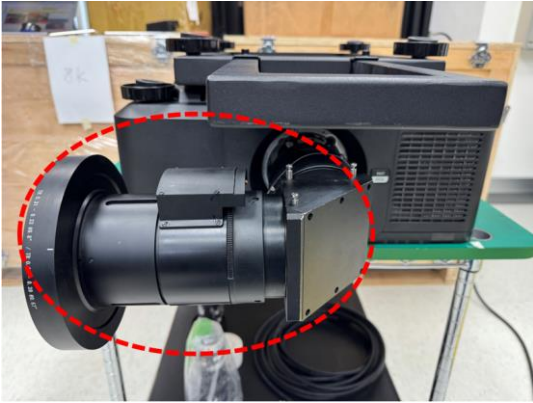
1. Adjust the lens horizontally using the knob



2. Tighten the screws shown in the figure below



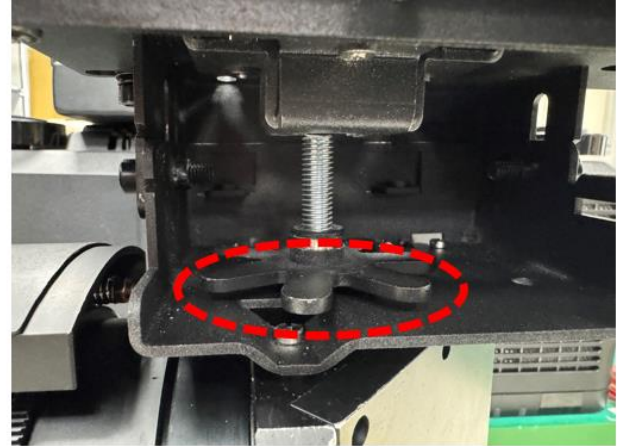
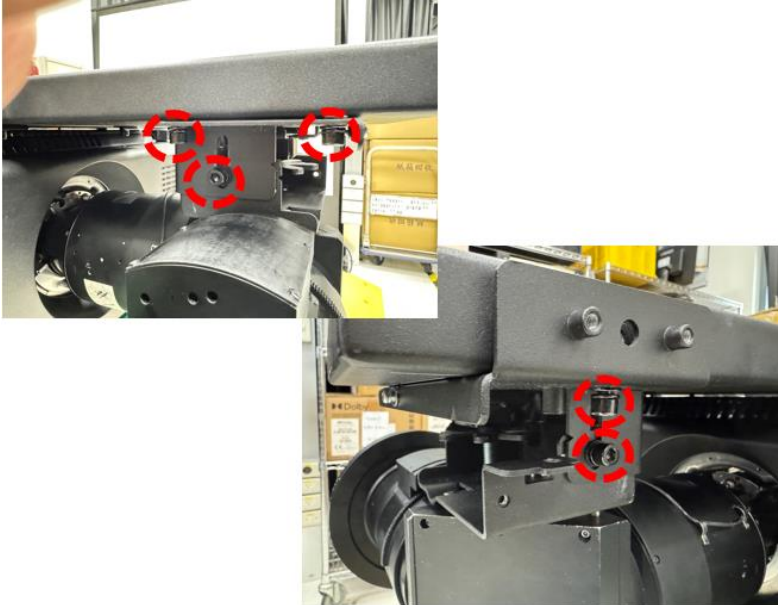
Note - The lens should not be installed on the machine for an extended period of time without the support kit.



The lens should not be installed on the machine alone for more than **one hour** without the support kit.

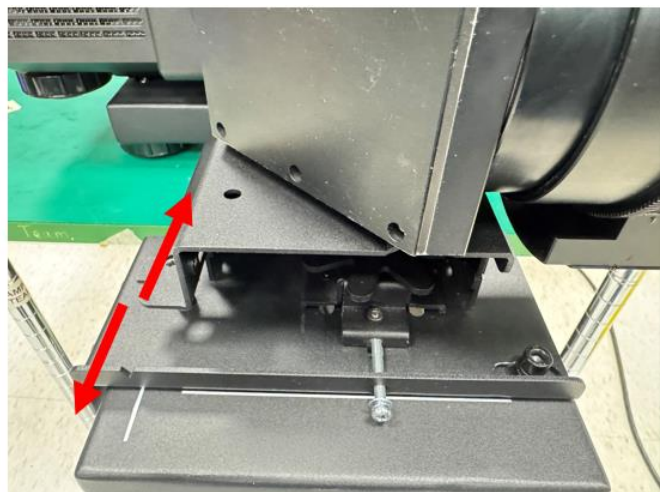
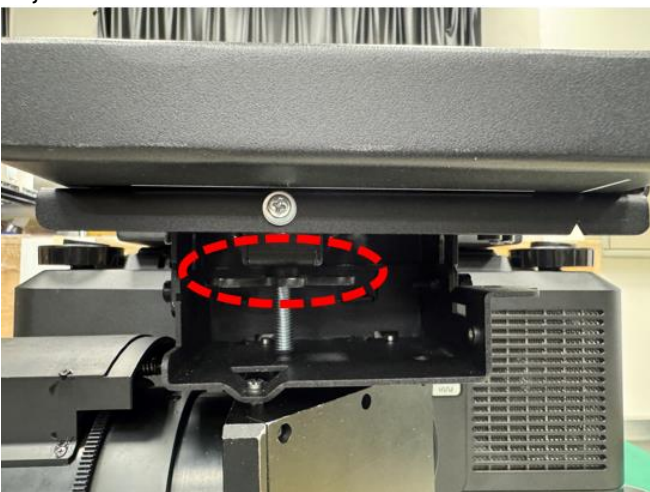
Note – About center lens and lens shift operations

The screw in the figure below is slightly loosened, and the knob is in the position shown below. Only then can the center lens or lens shift operation be performed

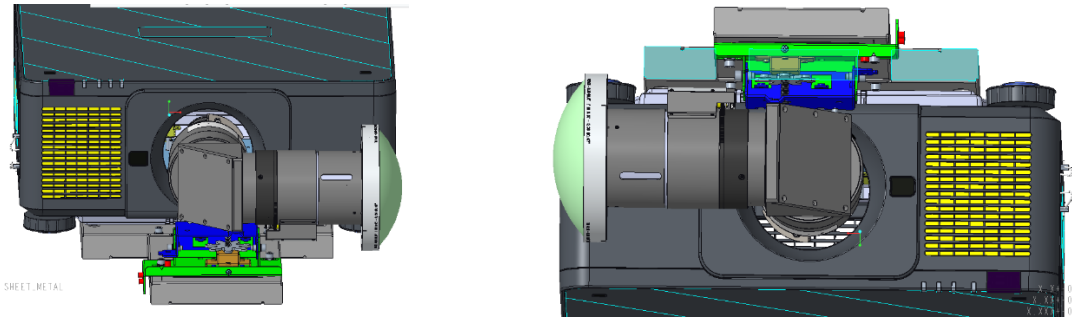


Note - About focus adjustment

Turning the knob can improve focus. If you cannot achieve focus, it is recommended to make slight lateral adjustments to the structure



2. Align the "↑" symbol on the lens label with the "*" symbol on the top cover of the projector (align to the center of the lens hole), and pull in the lens. Make sure the lens is pushed into the holder and turn it clockwise to the "Lock" position.

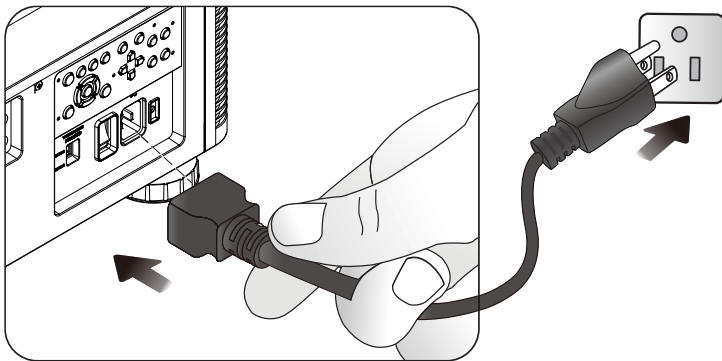


Note:

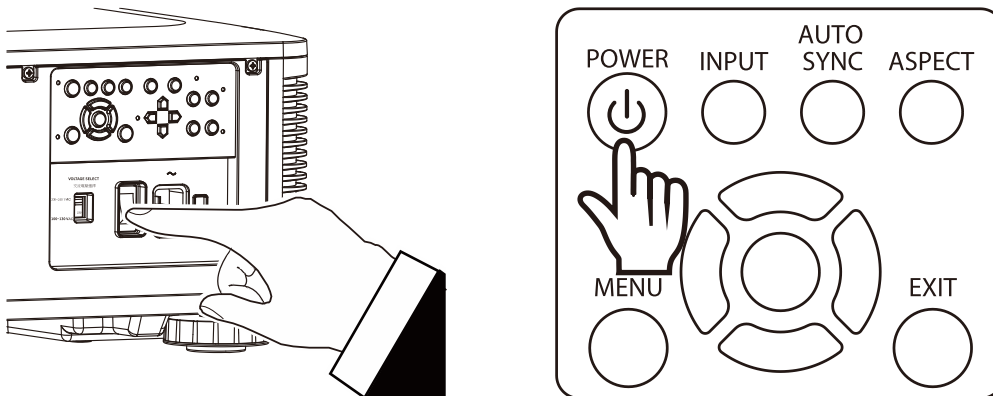
- Before installing the lens on the projector, recommend to place the projector on a table and the front of the projector is aligned with the edge of the table. This can help you installing the projection lens

3. Adjust the projecting position of Lens:

- a. Plunge in the power cable



- b. Turn on the AC switch then turn the projector on by power button.



CAUTION:

Make sure the projective film on the Lens is removed before turning on the projector; the protective film may be melt during projection then resulting in damage or deformation.

- c. Enter OSD menu then select Lens type option on ALIGNMENT page, press Enter or ► button to choose UST Lens option. The projector can move the lens to initial workable position for Ultra Short Throw lens automatically after performing Center Lens function as following step.

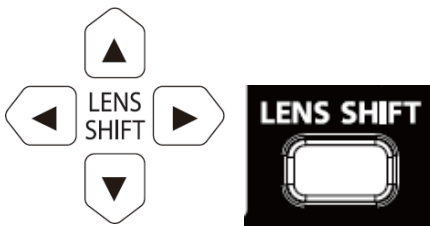
INPUT	PICTURE	ALIGNMENT	CONTROL	SERVICE	
			Lens Lock	Off	↔/▶
			Lens Control		↔/▶
			Lens Type	non-UST Lens	↔/▶
			Lens Memory		↔/▶
			Center Lens		↔/▶
			Digital Zoom		↔/▶
			Warp		↔/▶
			Blanking		↔/▶
			Edge Blend		↔/▶
			Screen Format	16:10	
EXIT = Back		Item Adjust ◀▶		Scroll ▲▼	

- d. Perform Center Lens function to calibrate projection lens by the control button or OSD menu, the calibration can get more precise lens adjustment and move the lens to workable position automatically for the projection.

Note:

- Setting Lens type option to UST Lens will change the default lens position after performing Center Lens function, please select UST Lens in this option if using ultra short throw lens. Otherwise, please select non-UST lens. Improper setting may limit the lens shift range and move the lens to incorrect default position after performing Center Lens function.

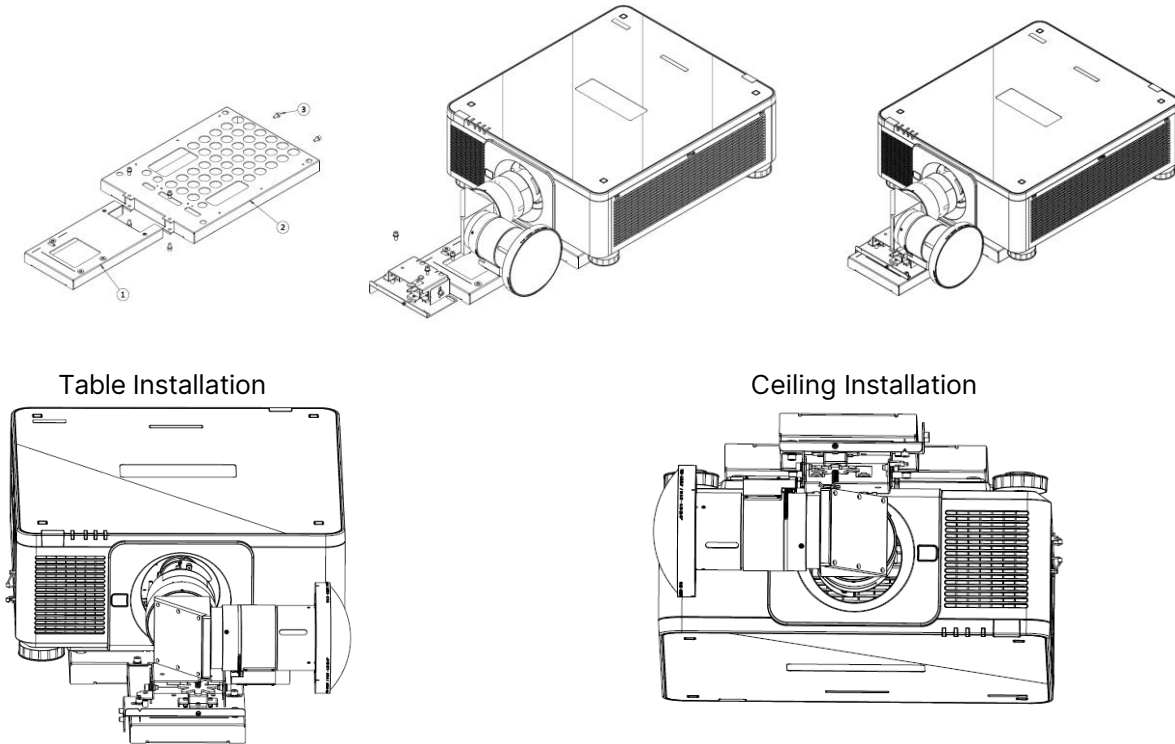
4. Fine tune the projected image position
 The initial position can get best projection performance, some of Vivitek projectors may offers wider adjustable shift range for flexibility in installation, the adjustable shift range are ±5% in horizontal shift, +7% for moving up, -3% for moving down. Please tune the lens shift to desired position by Lens Shift buttons on the control panel or remote control, and check the projection performance.



Note:

- Make sure to loosen the screws at the joints of support kits before fine tuning the lens position or performing Center Lens function, improper operation may cause to malfunctioned Lens shift or damage the projection lens.

5. Tighten the screws to fix the projection lens
 Hold the lens and lift it a little in the opposite direction of gravity and use wrench to tighten each screw according to the sequence as below illustration.

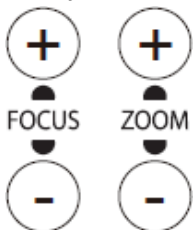


Note:

- The projection lens is fixed firmly after you tighten the screws; make sure to loosen all of the screws on the support kits before operating Lens Shift or Lens Center function.
- Some of Vivitek projectors may offer wider adjustable shift range for flexibility in installation, the initial position by Center Lens can get best projected performance please check the performance of the projected image if adjusting the lens position.

6. Adjust the focus and focus plane.

The lens is equipped with powered adjustment for the focus and focus plane, you can adjust the focus effect by ZOOM or FOCUS button on the remote control or control panel.



Focus Adjustment: Adjust focus effect by FOCUS +/- buttons

ZOOM +/- buttons: Adjust the focus plan by ZOOM +/- buttons

- Press FOCUS+ or FOCUS- button and check the focus effect on central area of the screen till the image becomes clear and the focus effect is acceptable.
- Check top and bottom area of the projected image if the image is clear. If not, press ZOOM+ or ZOOM – button to adjust the focus plane to get the clear image on top or bottom area.
- Repeat a and b till full image becomes clear.

Note:

- For best projection effect, recommend to use flat screen and place the projector in parallel with the projector. The image may be distorted if the projection screen is not flat or not in parallel with the rear of projector,
- Check if the support kit is installed properly if the projection image is not clear after adjusting the focus and focus plane.

7. Lock the Lens control

If your projector is with Lens Lock function on OSD, recommend to lock the Lens Control for avoiding disoperation or unauthorized lens adjustment after you finish the installation and adjustment.

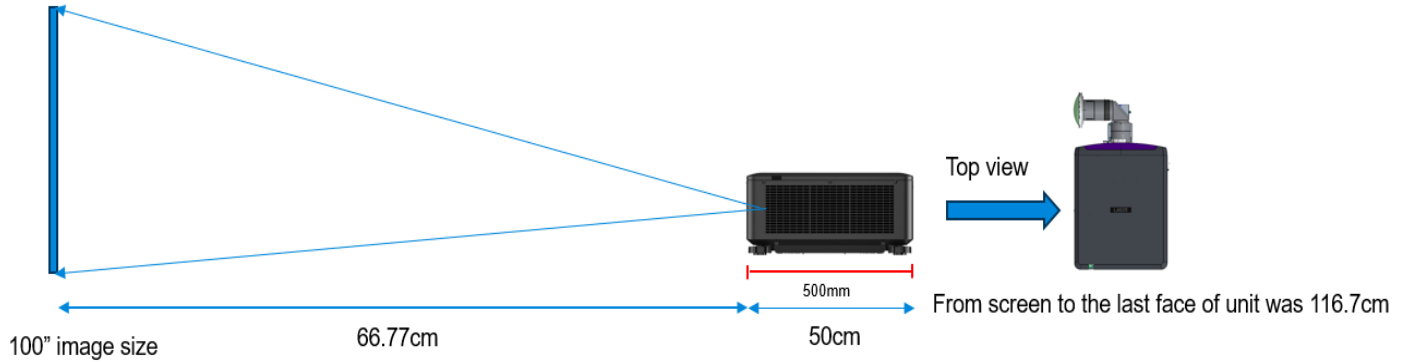
INPUT	PICTURE	ALIGNMENT	CONTROL	SERVICE
			Lens Lock	Off ↔/▶
			Lens Control	↔/▶
			Lens Type	non-UST Lens ↔/▶
			Lens Memory	↔/▶
			Center Lens	↔/▶
			Digital Zoom	↔/▶
			Warp	↔/▶
			Blanking	↔/▶
			Edge Blend	↔/▶
			Screen Format	16:10
EXIT = Back		Item Adjust ◀▶		Scroll ▲▼

Note:

- After the projection lens is fixed by support kit, improper lens shift operation may cause to imprecise lens shift adjustment or damage. Before adjusting the lens position, please make sure all of hex socket cap screws at the joints are loosen, the arm or bracket can be moved.
- In case of disoperation on lens control function happens, please detach the hex socket cap screw then perform Center Lens function to calibrate the lens parameter for precise lens adjustment.

Projection Distance and Size

Project Distance and Image Size



Screen Size						Distance from screen			
Diagonal Size		Width		Height		Wide		tele	
inch	cm	inch	cm	inch	cm	inch	m	inch	m
60	152	50.9	129	31.8	81	15	0.38	16	0.41
80	203	67.8	172	42.4	108	21	0.53	22	0.56
80	203	67.8	172	42.4	108	21	0.53	22	0.56
100	254	84.8	215	53.0	135	26	0.67	28	0.72
120	305	101.8	258	63.6	162	32	0.81	34	0.87
150	381	127.2	323	79.5	202	40	1.02	43	1.10
200	508	169.6	431	106.0	269	54	1.38	58	1.48
250	635	212.0	538	132.5	337	68	1.73	73	1.86
300	762	254.4	646	159.0	404	82	2.09	88	2.25
400	1016	339.2	862	212.0	538	110	2.80	119	3.01
100	254	84.8	215	53.0	135	26	0.67	28	0.72

$$y = 0.00710x + -0.04257$$

x: Diagonal Size of Screen (inch)

$$y = 0.00765x + -0.04873$$

y: Throw Distance (m)

Optical performance range 80"~300"

ME adjustable range 60"~400"



Projection Lens Specifications

F Value	2.0
Focus Length(f)	5.8(wide)~6.16(Tele) _mm
Throw Ratio	0:31~0.33:1, WUXGA, at 100" screen
Image Size (Minimum/ Maximum Image Diagonal)	80" – 300"
Focus Adjustment	Powered focus and focus plane adjustment
Dimensions	310(W) x 378(D) x 168(H)mm
Net Weight	Approx. 6.85Kg

Projection Lens Dimensions

(Unit: mm)

