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# INSTALLATION INSTRUCTIONS

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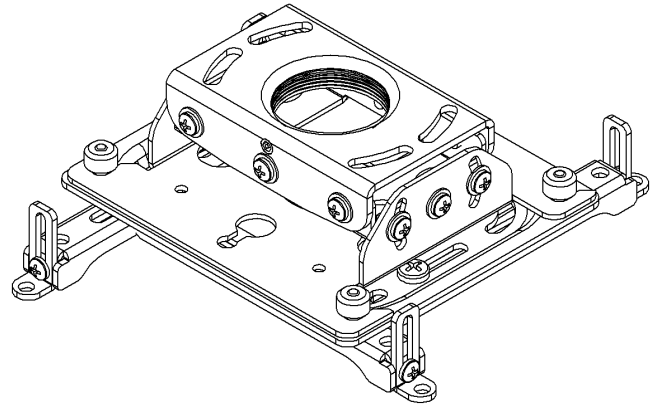
## RPA UNIVERSAL MSP-PRCF (RPA-U)

The MSP-PRCF is an inverted ceiling mount that provides a low profile mounting solution for projectors.

The MSP-PRCF allows for exact alignment with the projector. The projector can be shifted around on the mounting plate until its weight is centered and balanced.

The MSP-PRCF is equipped with adjustable legs and feet, which can be moved to any angle, depending on the mounting-hole pattern on the projector. Leg and foot length, width, and height can readily be adjusted.

The MSP-PRCF is shipped with All-Points™ Security System hardware, which is designed to protect projectors from theft. Chief Manufacturing provides the security kit exclusively.



**MSP-PRCF**

### BEFORE YOU BEGIN

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- **CAUTION:** To prevent damage to your projector, which could affect or void the Factory warranty, thoroughly study all instructions and illustrations before you begin to install the mount brackets. Pay particular attention to the Warnings and Cautions in this document.
- If you have any questions about this installation, contact Chief Manufacturing at 1-800-582-6480 or 952-582-6480.

# IMPORTANT WARNINGS and CAUTIONS!

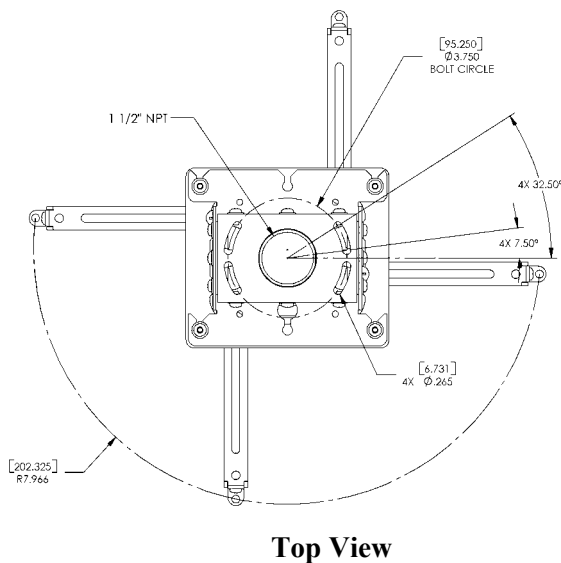
<b>WARNING</b>	A <b>WARNING</b> alerts you to the possibility of serious injury or death if you do not follow the instructions.
<b>CAUTION</b>	A <b>CAUTION</b> alerts you to the possibility of damage or destruction of equipment if you do not follow the corresponding instructions.
• <b>WARNING</b>	Be aware of the potential for personal injury or damage to the equipment if it is not installed correctly. Consider the weight of the projector mount without the projector.
• <b>WARNING</b>	The installer is responsible for verifying that the projector to which the universal mount is fastened will safely support the combined load of all attached components or other equipment.
• <b>WARNING</b>	The combined weight of the projector placed on the universal mount must not exceed the maximum support weight of the projector.
• <b>WARNING</b>	Watch for pinch points. Do not put your fingers between movable parts.
• <b>CAUTION</b>	Check the unit for shipping damage before you begin the installation.

## TOOLS REQUIRED FOR INSTALLATION

- Phillips screwdriver
- 5/32" Allen Wrench
- Level

**NOTE:** Other tools may be required depending on your method of installation.

## DIMENSIONS

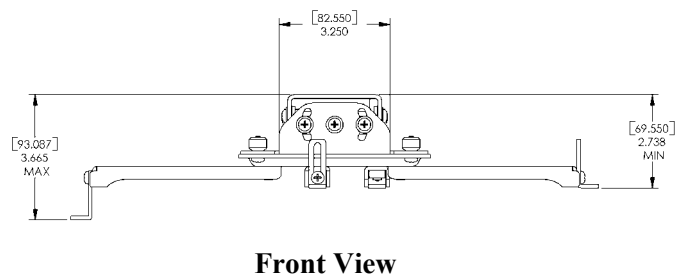


## SHIPPING CONTENTS

**BEFORE PROCEEDING:** Unpack the carton. Verify contents listed in:

- Table 1, Table 2 (shown on page 7) and the SLB-U PARTS section (shown on page 8).
- Table 7 and Figure 23. All-Points™ Security System Kit on page 15.

Read installation instructions completely. If you are missing any of the listed components, contact Customer Service at: 1-800/582-6480.



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# RPA-U INSTALLATION

There are three methods for installing the RPA-U inverted ceiling mount. The RPA-U can be suspended from a 1-1/2" diameter NPT threaded pipe, or mounted using standard fasteners secured to a wood-framing member, or mounted using threaded rods.

### WARNING

**Improper installation can cause serious personal injury! Make sure that the ceiling structural members can support a redundant weight factor *five times* the total weight of the equipment you intend to support overhead. The ceiling must be reinforced before you install the RPA-U if the ceiling cannot support a redundant weight factor *five times* the total weight of the equipment.**

### 1-1/2 Diameter NPT Threaded Pipe

Installation using a 1-1/2" diameter schedule 40 steel pipe with 1-1/2" NPT threads requires securing the pipe to the building structure. We suggest the use of a Chief CMA ceiling plate to secure the pipe to a structural member (see Figure 1 and Figure 2).

Install the RPA-U on the pipe as follows:

1. Thread the RPA-U onto the pipe a minimum of 1/2" to allow for final yaw adjustment.
2. Using an Allen wrench (provided), tighten the set screw to lock the RPA in position (see Figure 3).
3. Proceed to the "ATTACH RPA to SLB-U" procedure on page 6.

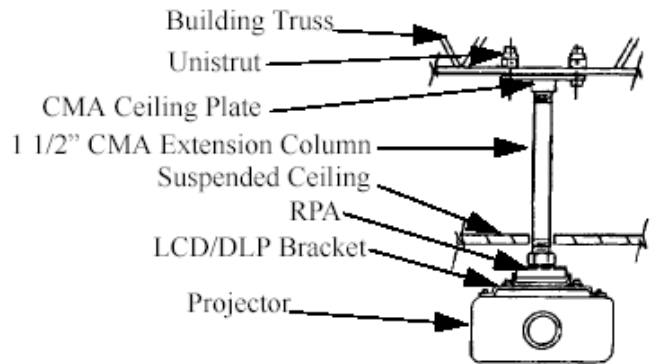


Figure 1. Example – RPA-U Using 1-1/2" NPT Pipe

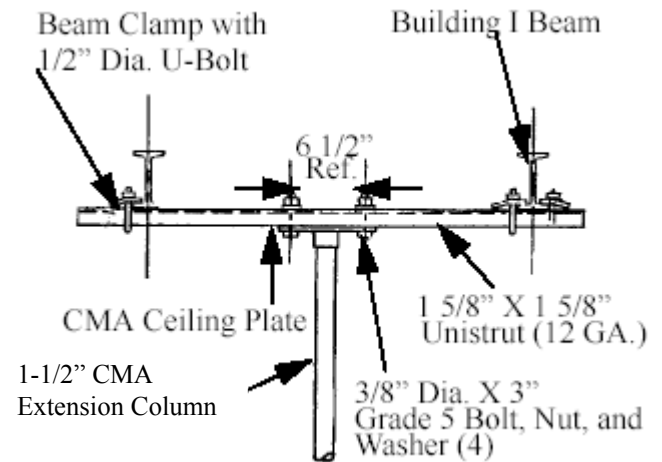


Figure 2. Example – Side View of 1-1/2" NPT Pipe

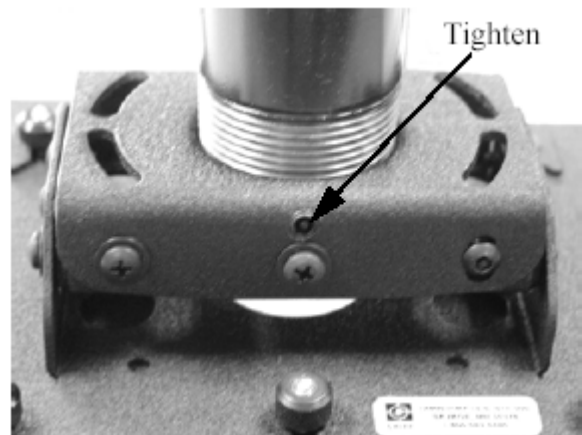


Figure 3. Tighten Set Screw

**Standard Fasteners Secured to a Wood Framing Member**

The RPA can be secured to a wood framing member though four slotted holes in the ceiling bracket using four 1/4" diameter lag screws or, if the area is accessible from above, four 1/4" diameter machine bolts, nuts, and washers (see Figure 4).

Install the RPA as follows:

1. Secure the ceiling bracket to the wood framing member.
2. Proceed to the "ATTACH RPA to SLB-U" procedure on page 6.

**Threaded Rod**

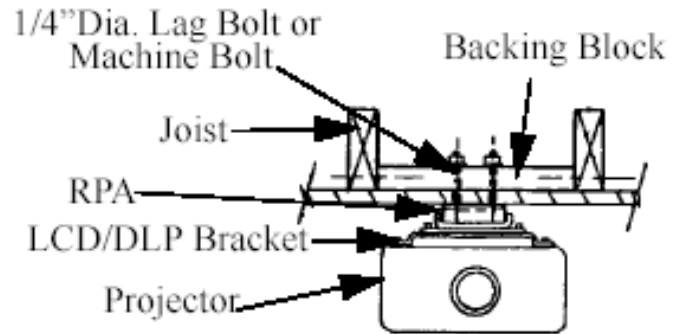
Using four 1/4" diameter threaded rods, the RPA can be secured to a typical Uni-Strut, angle or channel assembly at the overhead structural members (trusses or I-beams). See Figure 5 and Figure 6.

Install the RPA as follows:

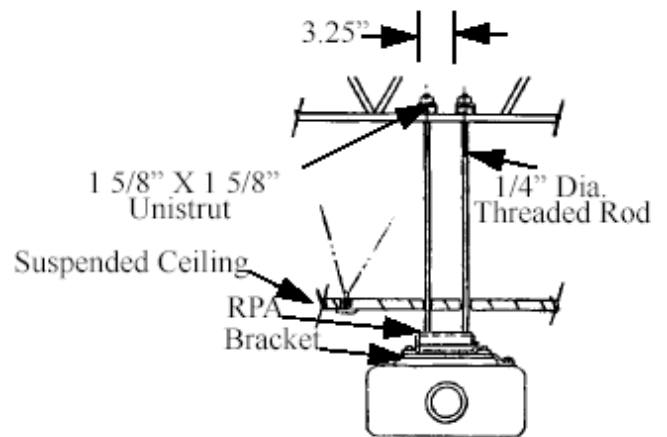
1. Secure one end of the threaded rod to the structural member.
2. Install a 1/4-20 jam nut on each threaded rod.
3. Install the RPA on the threaded rod.

**NOTE:** Holes in the RPA allow socket wrench access without unit disassembly.

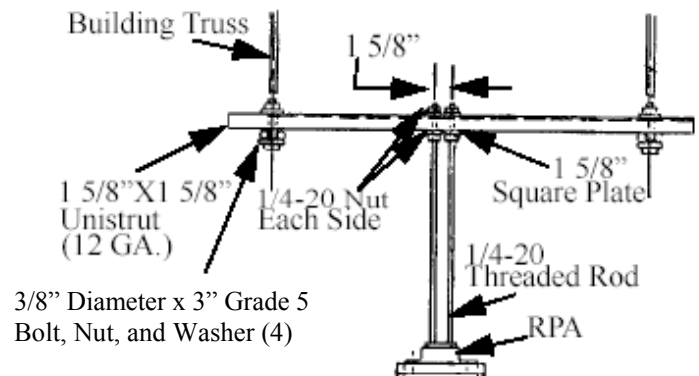
4. Secure the RPA to the threaded rod using four 1/4-20 nuts.
5. Proceed to the "ATTACH RPA to SLB-U" procedure on page 6.



**Figure 4. Example Using Lag Bolts or Machine Bolts**



**Figure 5. 1/4" Threaded Rod (Front View)**



**Figure 6. 1/4" Threaded Rod (Side View)**

## ATTACH RPA to SLB-U

To attach the RPA to the SLB-U, do the following:

**NOTE:** It is unnecessary to remove the thumbnuts from the studs to attach the RPA to the SLB-U.

1. Loosen the 10-24 thumbnuts.
2. Align the locating slots on the RPU with the 10-24 studs on the SLB-U (see Figure 7).

**NOTE:** The tapers of the thumbnuts should seat in the locating slots on the SLB-U.

3. Secure the RPA to the SLB-U using the thumbnuts (tapered side down).
4. Route cables as necessary (see Figure 8).

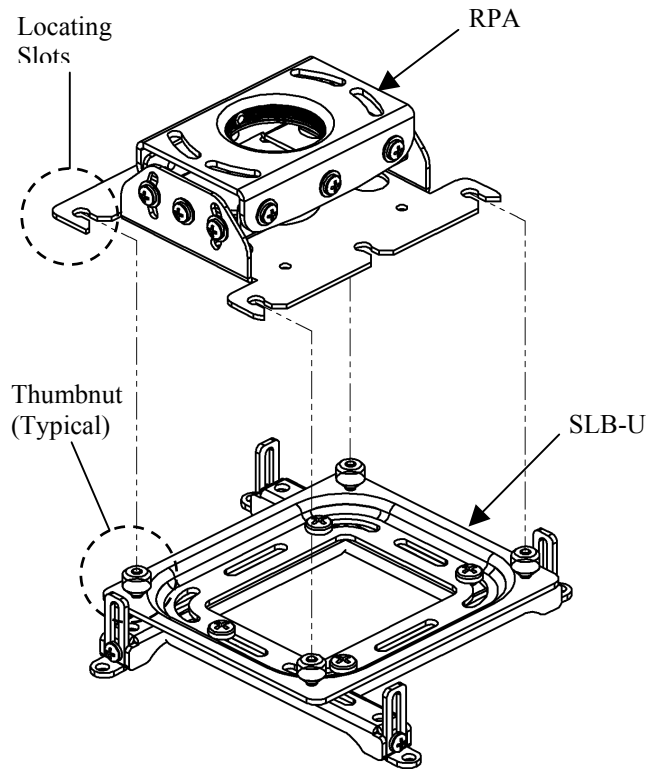


Figure 7. RPA-U to SLB-U Attachment

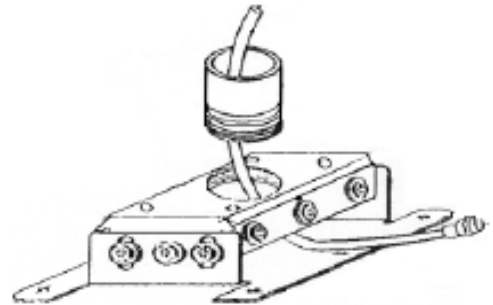


Figure 8. Cable Routing Example

## SLB-U MOUNTING HARDWARE

**Table 1. Mounting Hardware**

ITEM	DESCRIPTION	QTY	NOTES
10	SLB-U Assembly	1	
20	M6 x 12mm Phillips Pan Head Screw	4	Used with M6 Flat Washers (60)
30	M5 x 12mm Phillips Pan Head Screw	4	
40	M4 x 12mm Phillips Pan Head Screw	4	Used with M4 Flat Washers (70)
50	M3 x 10mm Phillips Pan Head Screw	4	
60	M6 Flat Washer Used with screws (20) and (30)	4	
70	M4 Flat Washer Used with screws (40) and (50)	4	
80	10-24 Thumb Nuts	4	Used to attach SLB-U to RPA

**Table 2. Direct Mounting (without foot brackets)**

ITEM	DESCRIPTION	QTY	NOTES
90	M6 x 25mm Phillips Pan Head Screw	4	Used with M6 Flat Washers (60)
100	M5 x 25mm Phillips Pan Head Screw	4	
110	M4 x 25mm Phillips Pan Head Screw	4	Used with M4 Flat Washers (70)
120	M3 x 25mm Phillips Pan Head Screw	4	

# SLB-U PARTS

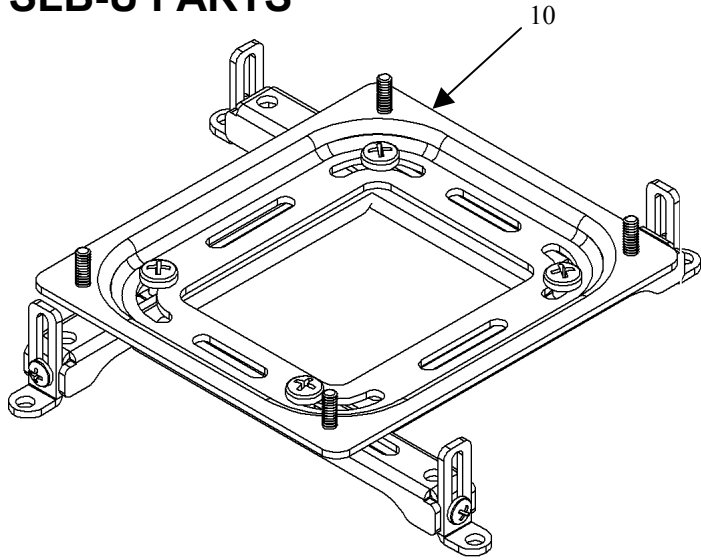


Figure 9. SLB-U Assembly

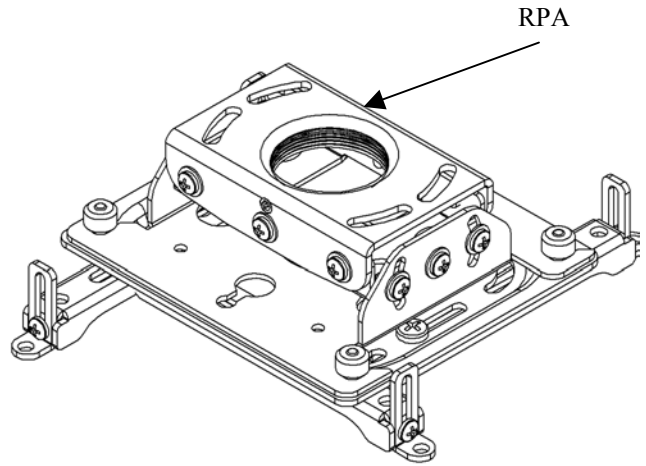


Figure 10. Assembled SLB-U and RPA

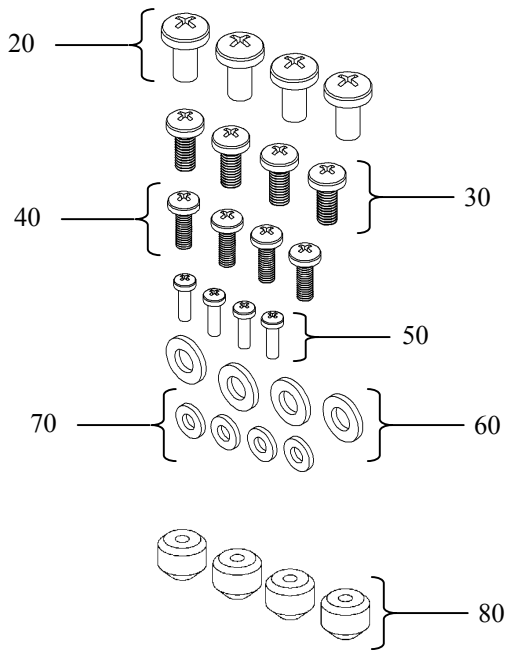


Figure 11. Mounting Hardware Kit

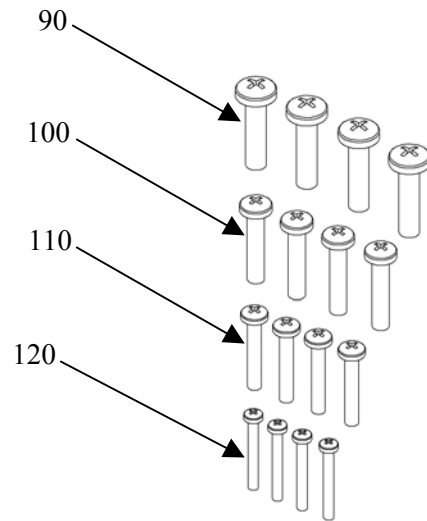


Figure 12. Direct Mounting (without foot brackets)



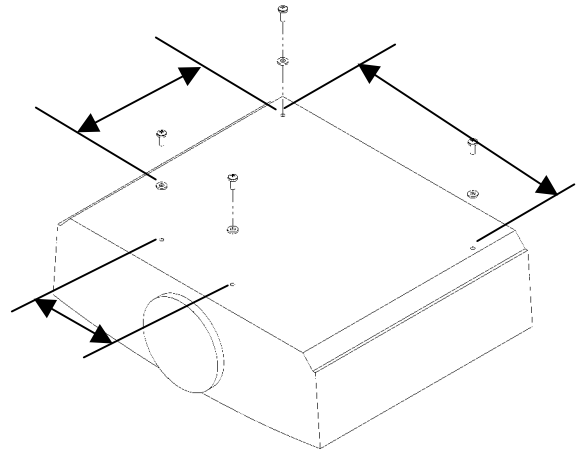
# INSTALLATION INSTRUCTIONS

## STEP 1 (Optional)

### Measuring the Mounting Hole Dimensions On the Projector

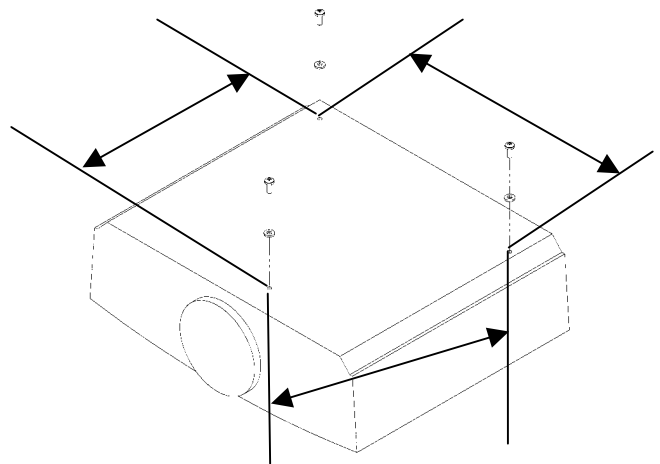
To minimize error, perform the following steps to measure the approximate width and length between the mounting holes on your projector.

1. Determine the width and length between the mounting holes on your projector. If necessary, use a tape measure.
  - a. If your projector is equipped with four mounting holes, measure the width and length between the mounting holes (see Figure 13).
  - b. If your projector is equipped with three mounting holes, measure the width and length between the mounting holes (see Figure 14).
2. Record the dimensions taken in step 1 for later use in the next procedure.



**Figure 13. Measure Width and Length Between Mounting Holes in 4-Hole Projector (Example)**

OR



**Figure 14. Measure Width and Length Between Mounting Holes in 3-Hole Projector (Example)**

## STEP 2

### Adjusting the Legs on SLB-U

The mounting holes on projectors are supplied in a variety of different patterns. There is no standard mounting-hole configuration pattern for projectors.

The SLB-U will generally accommodate the mounting-hole pattern on most projectors, providing that the SLB-U adjustable legs can be configured to match the mounting holes on your projector.

Due to the number of configurations that the SLB-U can accommodate, this instruction guide only provides guidance for the three most commonly used SLB-U configurations on projectors. Select the applicable procedure to mount the SLB-U on your projector:

- Step 2 (Option A). Align the SLB-U on a projector with **4 mounting holes**.
- Step 2 (Option B). Align the SLB-U on a projector with **3 mounting holes**.
- Step 2 (Option C). Align the SLB-U on a projector **using horizontal slot and 3 mounting holes**.
- Step 2 (Option D). Align the SLB-U on a projector **using direct mounting option**.

### STEP 2 (OPTION A)

#### Aligning the SLB-U (as shipped) on a Projector with 4 Mounting Holes

Align the SLB-U on the projector, as follows:

1. Locate the **four mounting holes** on your projector.
2. Using a Phillips screwdriver, loosen the four screws. Do not remove the screws.

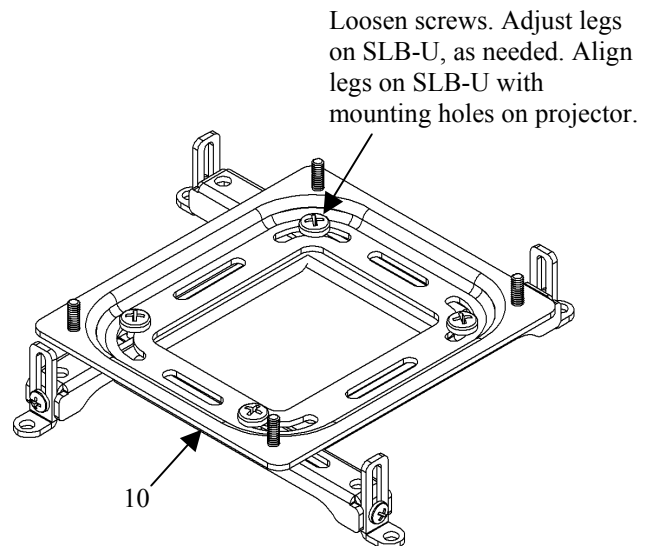
**NOTE:** If necessary, use the measurements that you recorded when you completed Step 1, “Measuring the Mounting Holes On Projector” to help align the adjustable legs with the mounting-hole pattern on the projector.

3. Align the SLB-U on projector, as follows:
  - a. Place the SLB-U (10) on your projector.
  - b. Adjust the legs on the SLB-U (10) as needed. Align the adjustable legs on the SLB-U with mounting holes on your projector.

4. Attach the SLB-U to the projector, as follows:
  - a. Select the screw size that fits the threaded inserts on your projector (see Table 3).
  - b. Select the washer that fits the selected screw.
  - c. Attach the SLB-U to the projector using the selected fasteners in accordance with Table 3. Do not tighten the screws at this time.
5. Attach the SLB-U to RPA (see Figure 10).

**Table 3. SLB-U Mounting Hardware**

ITEM	DESCRIPTION	QTY	NOTES
20	M6 X 12MM SCREW	4	USE ITEM 60 WITH ITEMS 20 AND 30
30	M5 X 12MM SCREW	4	
40	M4 X 12MM SCREW	4	USE ITEM 70 WITH ITEMS 40 AND 50
50	M3 X 10MM SCREW	4	
60	M6 FLAT WASHER	4	
70	M4 FLAT WASHER	4	
80	10-24 THUMB NUT	4	USE TO ATTACH SLB-U TO RPA



**Figure 15. Align the SLB-U on 4-Hole Projector**

## STEP 2 (OPTION B)

### Aligning the SLB-U (minus 1 adjustable leg) on a Projector with 3 Mounting Holes

Align the SLB-U on the projector, as follows:

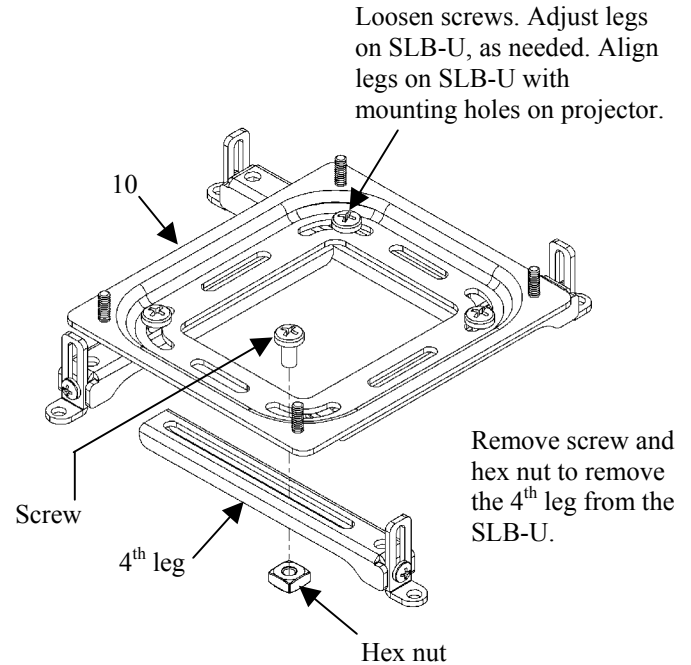
1. Locate the **three mounting holes** on your projector.
2. Using a Phillips screwdriver, remove the screw, hex nut, and one adjustable leg from the SLB-U (10) (see Figure 16).

**NOTE:** Keep unused adjustable leg and attaching hardware in a safe place for future use.

3. Loosen the three remaining screws. Do not remove the screws.

**NOTE:** If necessary, use the measurements that you recorded when you completed Step 1, “Measuring the Mounting Holes On Projector” to help align the adjustable legs with the mounting-hole pattern on the projector.

4. Align the SLB-U on the projector, as follows:
  - a. Place the SLB-U (10) on your projector.
  - b. Adjust the legs on the SLB-U (10) as needed. Align the adjustable feet on the SLB-U with mounting holes on your projector.
5. Attach the SLB-U to the projector, as follows:
  - a. Select the screw size that fits the threaded inserts on your projector (see Table 4).
  - b. Select the washer that fits the selected screw.
  - c. Attach the SLB-U to the projector using the selected fasteners in accordance with Table 4. Do not tighten the screws at this time.



**Figure 16. Align the SLB-U on 3-Hole Projector**

**Table 4. SLB-U Mounting Hardware**

ITEM	DESCRIPTION	QTY	NOTES
20	M6 X 12MM SCREW	4	USE ITEM 60 WITH ITEMS 20 AND 30
30	M5 X 12MM SCREW	4	
40	M4 X 12MM SCREW	4	USE ITEM 70 WITH ITEMS 40 AND 50
50	M3 X 10MM SCREW	4	
60	M6 FLAT WASHER	4	
70	M4 FLAT WASHER	4	
80	10-24 THUMB NUT	4	USE TO ATTACH SLB-U TO RPA

6. Attach the SLB-U to RPA (refer to Figure 10).

## STEP 2 (OPTION C)

### Aligning the SLB-U (using horizontal slot) on a Projector with 3 Mounting Holes

Align the SLB-U on the projector, as follows:

1. Locate the **three mounting holes** on your projector.
2. Using a Phillips screwdriver, remove two screws, hex nuts, and two adjustable legs from the SLB-U (10) (see Figure 17).

**NOTE:** Keep unused adjustable leg and attaching hardware in a safe place for future use.

3. Select the applicable horizontal slot to install the adjustable leg (see Figure 17 and Figure 18).
4. Loosen the three remaining head screws. Do not remove the screws.

**NOTE:** If necessary, use the measurements that you recorded when you completed Step 1, “Measuring the Mounting Holes On Projector” to help align the adjustable legs with the mounting-hole pattern on the projector.

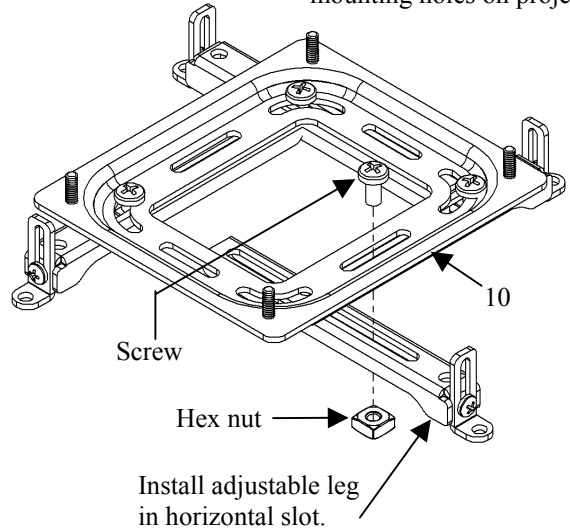
5. Align the SLB-U on the projector, as follows:
  - a. Place the SLB-U (10) on your projector.
  - b. Adjust the legs on the SLB-U (10) as needed. Align the adjustable feet on the SLB-U with mounting holes on your projector.
6. Attach the SLB-U to the projector, as follows:
  - c. Select the screw size that fits the threaded inserts on your projector (see Table 5).
  - d. Select the washer that fits the selected screw.
  - e. Attach the SLB-U to the projector using the selected fasteners in accordance with Table 5. Do not tighten the screws at this time.

**Table 5. SLB-U Mounting Hardware**

ITEM	DESCRIPTION	QTY	NOTES
20	M6 X 12MM SCREW	4	USE ITEM 60 WITH ITEMS 20 AND 30
30	M5 X 12MM SCREW	4	
40	M4 X 12MM SCREW	4	USE ITEM 70 WITH ITEMS 40 AND 50
50	M3 X 10MM SCREW	4	
60	M6 FLAT WASHER	4	
70	M4 FLAT WASHER	4	
80	10-24 THUMB NUT	4	USE TO ATTACH SLB-U TO RPA

7. Attach the SLB-U to RPA (refer to Figure 10).

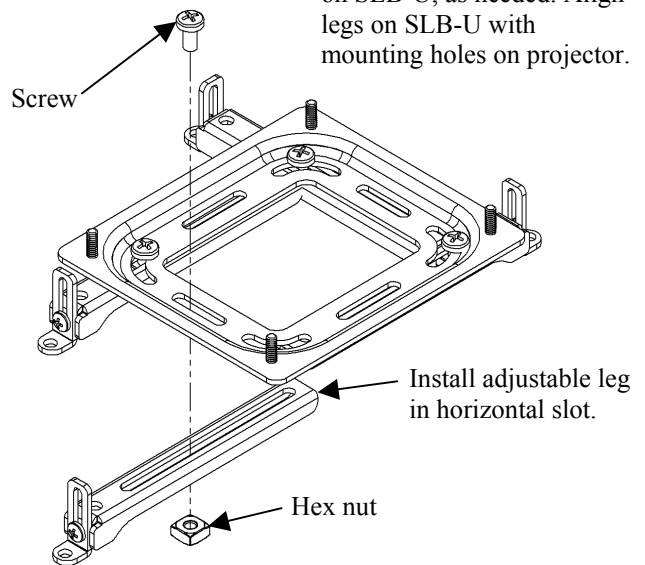
Loosen screws. Adjust legs on SLB-U, as needed. Align legs on SLB-U with mounting holes on projector.



**Figure 17. Align the SLB-U on 3-Hole Projector Using Horizontal Slots**

**OR**

Loosen screws. Adjust legs on SLB-U, as needed. Align legs on SLB-U with mounting holes on projector.



**Figure 18. Align the SLB-U on 3-Hole Projector Using Horizontal Slots**

## STEP 2 (OPTION D)

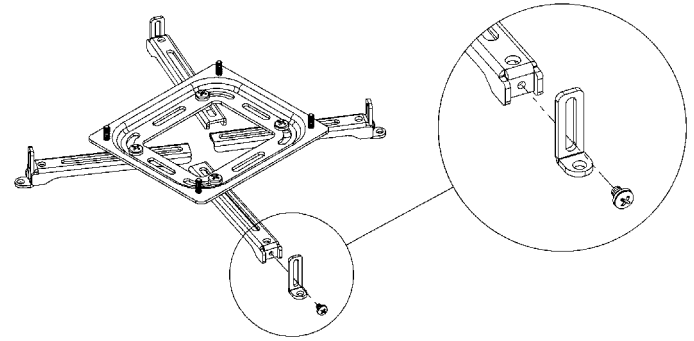
### Aligning the SLB-U on a Projector using direct mounting option

Align the SLB-U on the projector, as follows:

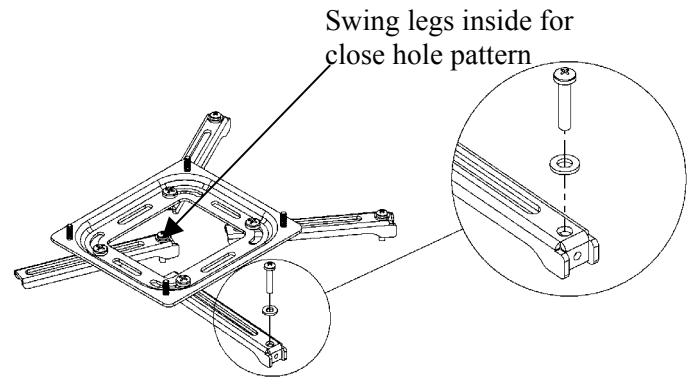
1. Locate the **mounting holes** on your projector.
2. Using a Phillips screwdriver, remove foot bracket screws and foot brackets (see Figure 19).

**NOTE:** Keep the unused adjustable foot brackets and attaching hardware in a safe place for future use.

3. Align the SLB-U on the projector, as follows:
  - a. Place the SLB-U (10) on your projector.
  - b. Adjust the legs on the SLB-U (10) as needed. Align the legs on the SLB-U with mounting holes on your projector.
4. Attach the SLB-U to the projector, as follows:
  - a. Select the screw size that fits the threaded inserts on your projector (see Table 6).
  - b. Select the washer that fits the selected screw.
  - c. Attach the SLB-U to the projector using the selected fasteners in accordance with Table 6 (see Figure 20). Do not tighten the screws at this time.
5. Attach the SLB-U to RPA (refer to Figure 10).



**Figure 19. Remove Feet**



**Figure 20. Install the SLB-U on Projector**

**Table 6. SLB-U Mounting Hardware**

ITEM	DESCRIPTION	QTY	NOTES
90	M6 x 25mm Phillips Pan Head Screw	4	Used with M6 Flat Washers (60)
100	M5 x 25MM PHILLIPS PAN HEAD SCREW	4	
110	M4 x 25mm Phillips Pan Head Screw	4	Used with M4 Flat Washers (70)
120	M3 x 25MM PHILLIPS PAN HEAD SCREW	4	

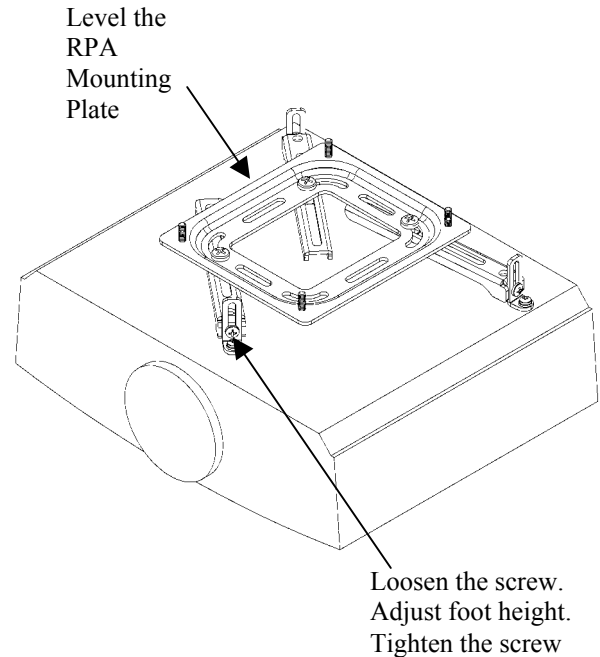
## STEP 3

### Adjusting Foot Height on SLB-U

Adjust the feet on the SLB-U for height, as follows:

**NOTE:** Foot height is adjusted for a variety of reasons, which includes, but is not limited to, ventilation, uneven projector surface, and to level the RPA mounting plate.

1. Visually check the height of the RPA mounting plate on the SLB-U. Review the reasons for foot height adjustment, noted above.
2. Loosen the screw and adjust the foot that is attached to the adjustable leg on the SLB-U (see Figure 21).
3. Adjust foot height as needed. If necessary, use a level to verify that the RPA mounting plate is level.
4. Tighten the screw.
5. Repeat procedure for each foot as needed until the feet on the SLB-U are adjusted to your satisfaction.



**Figure 21. Adjust Leg Height on SLB-U**

## STEP 4

### Positioning the SLB-U on the Projector

Position the on the SLB-U on your projector, as follows:

**NOTE:** When positioning the SLB-U on your projector, take into consideration the weight of the projector and its center of gravity.

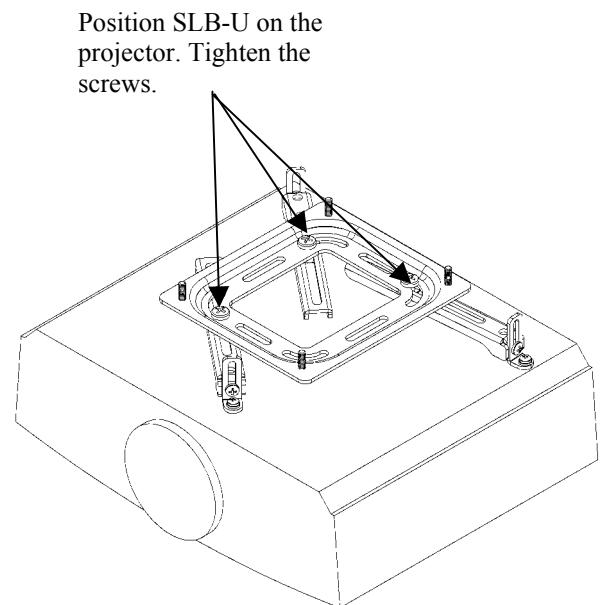
1. Slide the SLB-U into the position that you want on your projector.

#### **WARNING**

Failure to tighten the screws after positioning the SLB-U on your projector could result in damage to your projector.

2. Tighten the screws shown in Figure 22.

**NOTE:** For further instructions, see the applicable RPA and/or Smart-lift™ instruction manuals.



**Figure 22. Position the SLB-U and Tighten the Screws**

## STEP 5 (Optional)

### ALL-POINTS SECURITY KIT

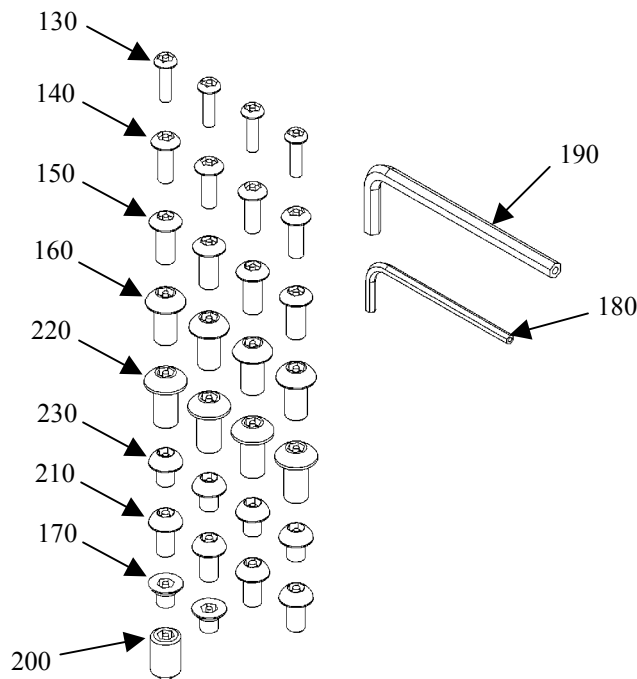
For All-Points™ Security, use the security hardware package inside the All-Points™ Security Kit. Follow the instructions for attaching the bracket to the projector using either standard hardware or security hardware.

**NOTE:** You must retain the Security Allen Wrench if security screws are installed. Do not discard this wrench or leave it where unauthorized persons have access to your Security Allen Wrench.

Table 7 and Figure 23 show the All-Points™ Security Kit parts.

**Table 7. All-Points™ Security Kit Parts**

ITEM	DESCRIPTION	QTY	NOTES
130	M3 x 10mm Button Head Security Screw	4	SLB-U Mounting Hardware
140	M4 x 12mm Button Head Security Screw	4	
150	M5 x 12mm Button Head Security Screw	4	
160	M6 x 12mm Button Head Security Screw	4	
170	10-24 x 1/4" Flat Head Undercut Security Screw	2	RPA to SLB-U
180	3/32" Security Hex Key	1	Special Tools
190	5/32" Security Hex Key	1	
200	5/16-18 Security Set Screw	1	RPA
210	10-24 x 3/8" Button Head Security Screw	4	
220	1/4-20 x 1/2" Button Head Security Screw	4	SLB-U Leg Attachment
230	10-24 x 1/4" Button Head Security Screw	4	SLB-U Feet Attachment



**Figure 23. All-Points™ Security System Kit**

## PROJECTOR ALIGNMENT

The RPA-U can be adjusted for vertical elevation (pitch), horizontal tilt (roll), and rotation (yaw). Once the desired position is located and all the screws of the RPA-U are tightened, the projector may be removed from its location and replaced using the thumbscrews without losing the registration of the projector.

Perform the following procedures to align the projector.

### Pitch

To adjust pitch, do the following:

1. Loosen two 10-24 x 3/8" pitch adjustment screws located on each side of the adjustment plate (see Figure 24).
2. Adjust projector angle to desired pitch.
3. Tighten two 10-24 x 3/8" pitch adjustment screws located on each side of the adjustment plate.

### Roll

To adjust roll, do the following:

1. Loosen two 10-24 x 3/8" roll adjustment screws, two on the front and three on the back, of the adjustment plate (see Figure 25).
2. Adjust the projector to the desired roll position.
3. Tighten two 10-24 x 3/8" roll adjustment screws on each side of the adjustment plate.

### Yaw

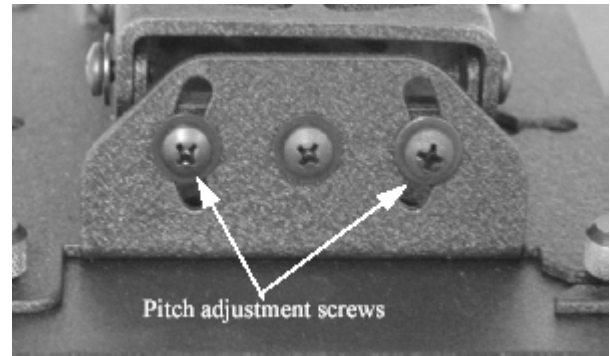
To adjust yaw, do the following:

1. Loosen the set screw (see Figure 26).

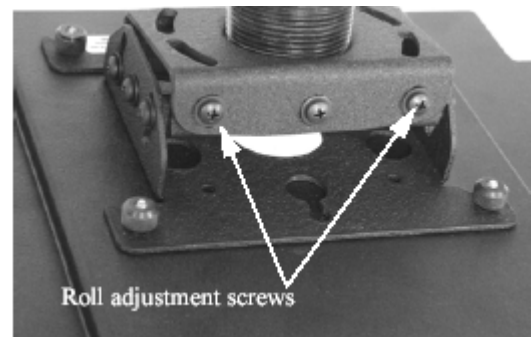
#### WARNING

**Do not turn the RPA-U to the end of the pipe threads. The RPA-U, SLB-U, and projector will fall from the pipe if the RPA-U is unthreaded to the end of the pipe.**

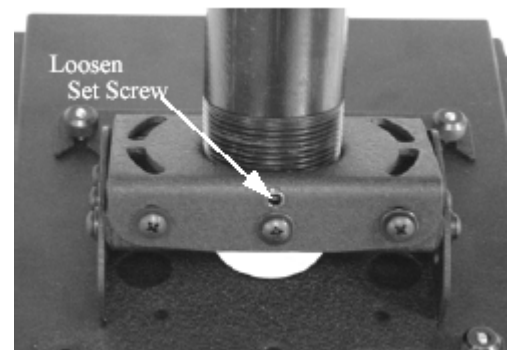
2. Adjust projector by turning the RPA-U on the 1-1/2" pipe to the desired yaw position.
3. Tighten the set screw.



**Figure 24. Pitch Adjustment**



**Figure 25. Roll Adjustment**



**Figure 26. Yaw Adjustment**