

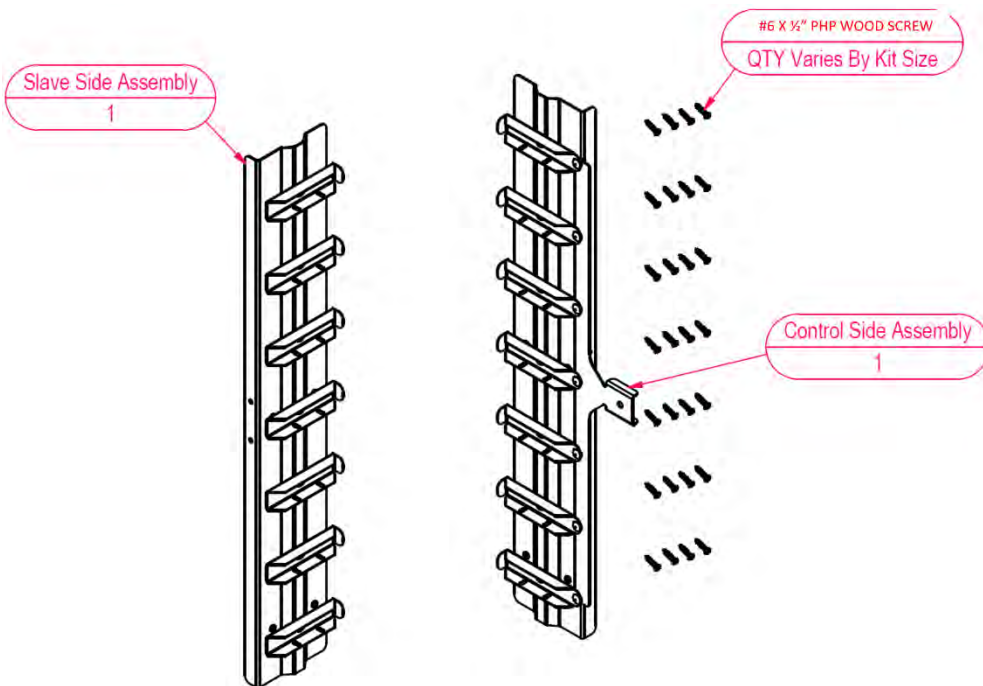


RioOutdoors.com

Installation Instructions

Rotating Louvers Kits

This louver system is not to be considered a safety barrier.



- Thoughtfully engineered system eliminates high level skill requirements.
- Skills required: drilling pilot holes and driving wood screws into slats.
- Super-easy assembly work.
- Self-aligning design positions slats perfectly, automatically.
- Smooth and quiet rotation for a lifetime.
- Estimated Assembly Time is less than 1-hour.

Figure 1: Items included in the kit, ($\frac{\text{Description}}{\text{Quantity}}$).
Items not included in this kit: wood, tools, some hardware.



MADE IN AMERICA

Table of Contents

1 GENERAL INFORMATION	3		
1.1 FEATURES OF THIS LOUVERS SYSTEM	3		
1.1.1 Size of Brackets	3		
1.1.2 Stacking two louver kits to fill taller openings	3		
1.1.2.1 How to stack two louver kits.....	4		
1.1.3 Wood and Wooden Slats Requirements	6		
1.1.4 Definitions of the Louvers Bracket Assemblies	7		
1.1.5 Frame Mounting Orientations	8		
1.1.5.1 Horizontal Orientation	8		
1.1.5.2 Vertical Orientation.....	8		
1.1.6 Ceiling Mounting.....	9		
1.1.7 Wall thickness requirements.....	9		
1.1.8 Various functional mounting option for the louver kits.....	9		
1.1.8.1 Fixed opening mounting	9		
1.1.8.2 Hinging frame mounting	9		
1.1.8.3 Sliding frame mounting.....	9		
1.1.9 Wood Types available	9		
		1.1.10 Drilling pilot holes before driving screws into hardwood slats.....	10
		1.1.11 Gaps on top and bottom when fully closed.	10
		1.1.12 Initial rotation motion ease or difficulty	10
		1.2 TOOLS REQUIRED	11
		1.3 CONTENTS OF LOUVER KITS	12
		1.4 LIST OF MATERIALS THAT YOU WILL SUPPLY.....	13
		1.5 INSTALLATION INSTRUCTIONS.....	13
		1.5.1 Preparing the opening.....	13
		1.5.2 Mounting the Control Side Assembly.....	14
		1.5.3 Mounting the Slave Side Assembly	15
		1.5.4 Adding the 1x4 Slats	16
		1.6 MAINTENANCE	19
2 WARRANTY POLICY STATEMENT	21		
2.1 CONDITIONS	21		
2.2 EXCLUSIONS.....	21		
2.3 LIMITATIONS OF LIABILITY	22		
2.4 HOW TO OBTAIN WARRANTY SERVICE	22		

1 GENERAL INFORMATION

1.1 FEATURES OF THIS LOUVERS SYSTEM

1.1.1 Size of Brackets

The Louver System's side mount brackets are sized as shown in the table, below.

<i>Louver Kit SKU#</i>	<i>Side Bracket Length (in.)</i>	Required Opening Dimensions				Required Materials	
		AS HORIZONTAL LOUVERS		AS VERTICAL LOUVERS		Included in Kit	Customer Supplied
		<i>HEIGHT</i>	<i>WIDTH</i>	<i>HEIGHT</i>	<i>WIDTH</i>	<i># Wood Screws</i>	<i># Of 1X4 Wood Slats</i>
24-RL	23 7/8	24"	60" MAX	60" MAX	24"	28	7
36-RL	35 7/8	36"	60" MAX	60" MAX	36"	44	11
48-RL	47 7/8	48"	60" MAX	60" MAX	48"	60	15

1.1.2 Stacking two louver kits to fill taller openings

Additional taller or longer openings can be filled by stacking one Louver Kit on top of another Louver Kit. The designs of RL24, RL36, and RL48 Louver kits allows stacking one side mount bracket on top of another to create taller or longer louver systems. The table, below, provides the stacked lengths yielded by stacking different lengths or same length louver kits.

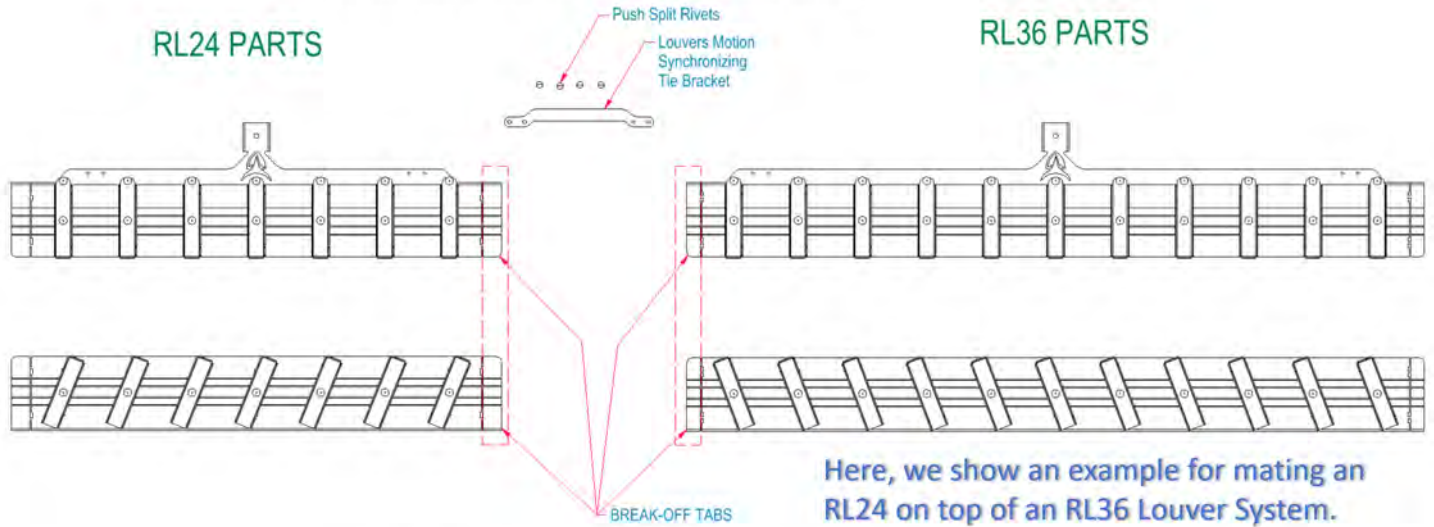
<i>Bottom Louver Kit SKU#</i>	<i>Top Louver Kit SKU#</i>	<i>Combined Side Bracket Length (in.)</i>	Required Opening Dimensions			
			AS HORIZONTAL LOUVERS		AS VERTICAL LOUVERS	
			<i>HEIGHT</i>	<i>WIDTH</i>	<i>HEIGHT</i>	<i>WIDTH</i>
RL24	RL24	45-3/4	45-7/8"	60" MAX	60" MAX	45-7/8"
RL36	RL24	57-15/16	58"	60" MAX	60" MAX	58"
RL36	RL36	70-3/16	70-1/4"	60" MAX	60" MAX	70-1/4"
RL48	RL24	70-3/16	70-1/4"	60" MAX	60" MAX	70-1/4"
RL48	RL36	82-7/16	82-1/2"	60" MAX	60" MAX	82-1/2"
RL48	RL48	94-11/16	94-3/4"	60" MAX	60" MAX	94-3/4"

1.1.2.1 How to stack two louver kits

Lay the two louver mounting brackets for both louver kits on the ground. Orient the brackets as they would be when mounted in the framed opening. Locate the tabs at the mating ends of the brackets. Bend the tabs back-and-forth and break off the tabs.

STEP 1

Lay the parts on the ground oriented as they would be when mounted in the opening.

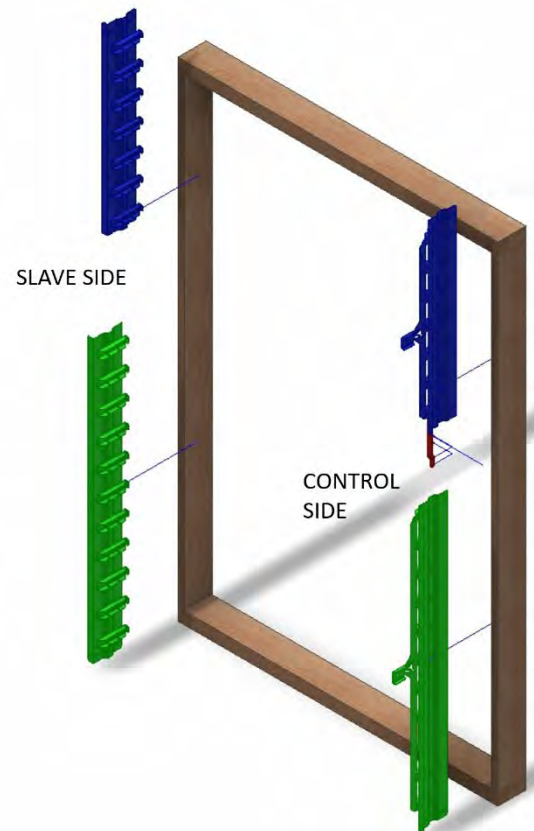


STEP 2

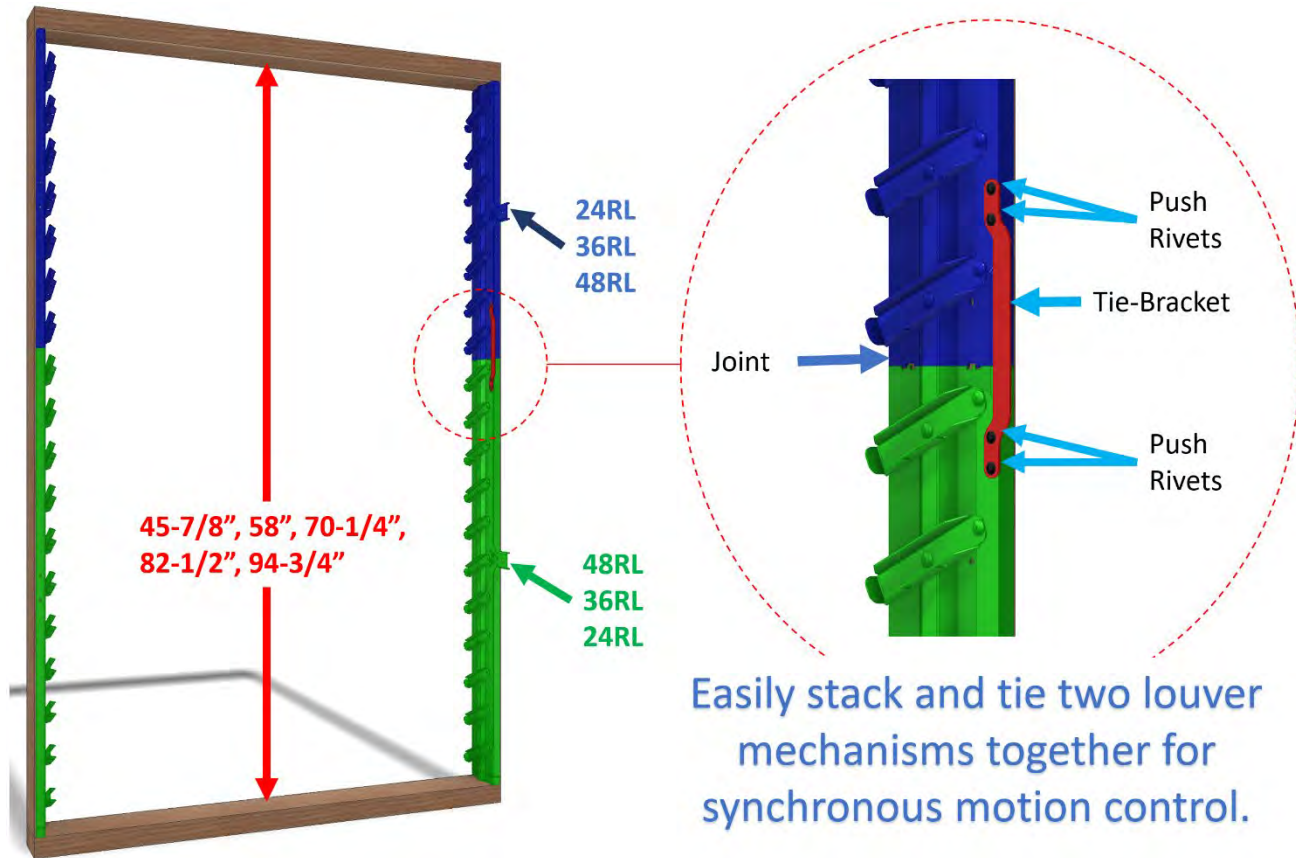
Bend the tabs back-and-forth and break off.

Super-Easy Assembly Work

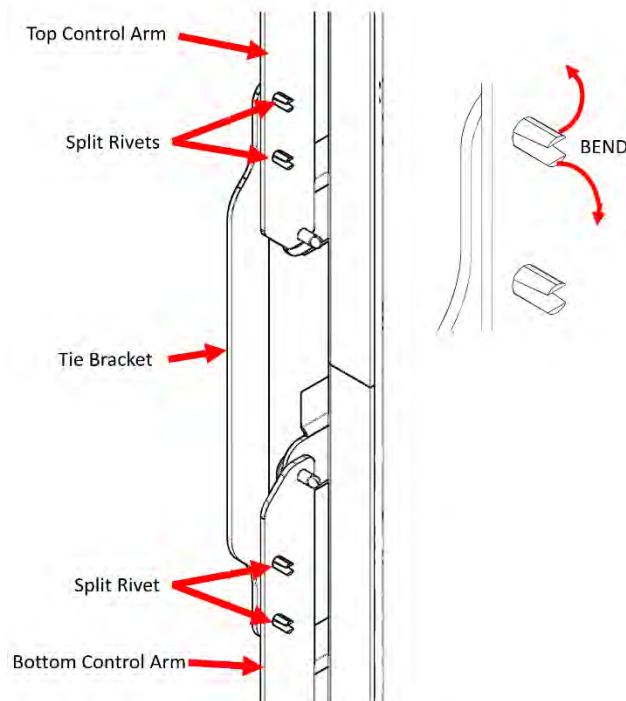
3. Slide bottom section's slave-side bracket into opening and secure to framing.
4. Slide top section's slave side bracket into opening. Slide down so top bracket touches bottom bracket. Secure to framing.
5. Slide bottom section's control-side bracket into opening and secure to framing.
6. Slide top section's control-side bracket into opening. Slide down so top bracket touches bottom bracket. Secure to framing.
7. Tie top and bottom control arms with the simple synchronous motion tie bracket and push rivets.



8. Rotate the top and bottom control arms until the louver slats are at the same angle. Identify two holes in each control arms near the joint between the two louver mounting brackets. Position the Tie- Bracket as shown, below.



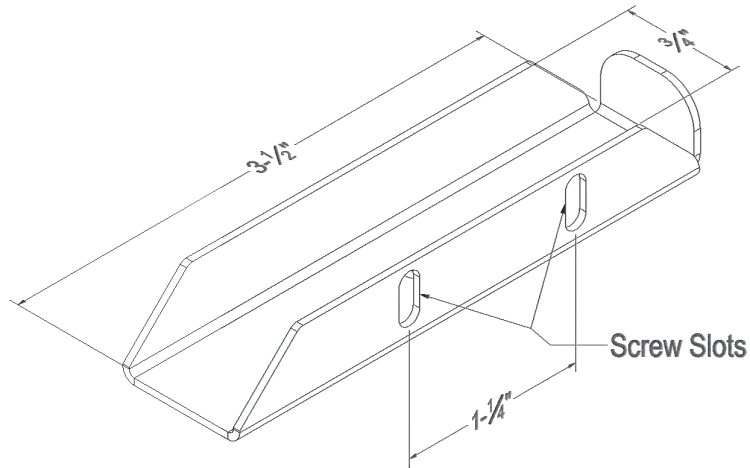
9. Align holes in Tie-Bracket with holes in Control Arms. Push the split rivets through, using a pair of needle nose pliers, bend the split ends over to secure the Tie-Bracket to the Control arms.



1.1.3 Wood and Wooden Slats Requirements

Wood slats are not included with this kit. You will decide upon and supply the wood slats necessary.

The U-clips which hold the wood slats have an inner width of $\frac{3}{4}$ " and length of 3-1/2".



This louver system is designed to accept wood slats that measures $\frac{3}{4}$ " thick, maximum, and up to 3-1/2" wide, maximum. You may use wood slats that are thinner but not less than $\frac{3}{8}$ " thick and narrower but not less than 2-1/2" wide. Using less than $\frac{3}{4}$ " thick X 3-1/2" wide wood slats will leave gaps and you must accommodate for the gaps by using shims between the wood and the insides of the U-clips to hold the thinner wood slats tightly within the U-clips.

Wood which has not been sealed or painted can dry and shrink or can absorb moisture and lengthen. Both shrinking and lengthening can put pressure on the rotation points resulting in binding or high resistance to rotation. We recommend sealing or painting the wooden slats prior to mounting as louvers. This will minimize shrinkage and lengthening by maintaining a constant moisture content in the wood slats.

1.1.4 Definitions of the Louvers Bracket Assemblies

The bracket with the long metal bracket which ties all U-clips together to provide synchronous movement of the louver wood slats is called the *Control Side Assembly*. The other bracket with only the U-clips is called the *Slave Side Assembly*. The Control Side Assembly has a U-shaped control handle in the middle zone. Hold this control handle and move it up or down to rotate the louvers.

Slave Side Assembly

Control Side Assembly



U-CLIPS

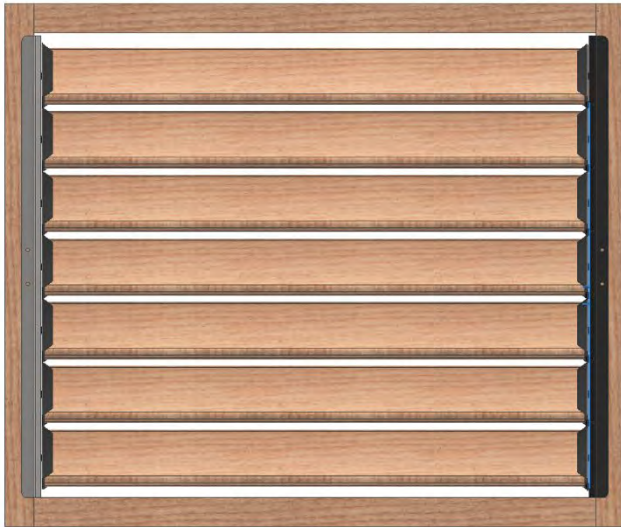
Control Bracket



Control Handle

1.1.5 Frame Mounting Orientations

This louver kit can be mounted in one of two orientations inside a square or rectangle shaped opening, as desired. Mounting orientations are described, here, by the orientation of the 1x4 wood slats. Horizontal Mounting orientation means that the 1x4 wood slats are oriented horizontally, slat length runs left to right. Vertical mounting orientation means that the 1x4 wood slats are oriented vertically, slat length runs top to bottom. Most likely, the horizontal orientation will be more appealing based on your experience with common horizontal louvers. However, vertical louver slats are popular for tall rectangular openings, and you may consider the vertical orientation as a choice.



Horizontal Orientation



Vertical Orientation

1.1.5.1 Horizontal Orientation

In the horizontal orientation, the Control and Slave bracket assemblies are mounted to the vertical sides of a framed opening. The 1x4 wood slats run horizontally. Mount the control side assembly on the right side when facing the opening from the inside of the living space.

1.1.5.2 Vertical Orientation

In the vertical orientation, the Control and Slave bracket assemblies are mounted to the horizontal floor and ceiling of a framed opening. The 1x4 wood slats run vertically. The control side assembly may be mounted at the top or the bottom, depending on which position provides easiest access to control the louvers rotation motion. If the bottom of the framed opening is at least 2 feet above the floor level, mount the control side assembly at the bottom for easy access to the rotation control handle.

1.1.6 Ceiling Mounting

This louver kit can be mounted on ceilings between rafters or in a framed opening to act as sunshades and partial rain shields. Although these louvers will stop rainfall from directly entering the living space when closed, the gaps between the 1x4 slats and the gaps between the U-clips and the main brackets will allow water to drip into the living space.



1.1.7 Wall thickness requirements

The thickness of the frame that you are mounting this louver system on must be a minimum of 3-1/2". This equals the width of a 1x4, 2x4, and 4x4. We have designed the side mounting brackets so that they can be mounted on walls or ceilings with any thickness greater than 3-1/2", but not less than 3-1/2".

1.1.8 Various functional mounting option for the louver kits

1.1.8.1 Fixed opening mounting

This louver kit can be mounted to any fixed square or rectangle opening.

1.1.8.2 Hinging frame mounting

This louver kit can be mounted to a door-type or window-type hinged frame. This will allow you to open and close the frame like a window or a door.

1.1.8.3 Sliding frame mounting

This louver kit can be mounted to a door-type or window-type sliding frame. Sliding mechanisms can be of any type available in the market. Commonly available types are:

1. Bypass Door Type
2. Pocket Sliding Door Type
3. Sliding Bi-Fold Door Type
4. Patio Sliding Door Type
5. Accordion Door Type
6. Barn Door Type

There are many configurations you can consider enhancing your living spaces using these louver kits.

1.1.9 Wood Types available

There are many varieties of wood slats available in dimensional 1x4s which actually measure 3/4" X 3-1/2". The various type of wood you can use are limited only by the availability of the required dimensional wood slats. The wood you select is determined by the cosmetic requirements, durability requirements, and your budget. Research online to discover all your options.

The types of wood available in the market that you can consider using are:

1. Softwood: Birch, Cedar, Fir, Pine, Redwood
2. Hardwood: Alder, Balsa, Beech, Hickory, IPE, Mahogany, Maple, Oak, Teak, Tigerwood, Walnut, and others.

1.1.10 Drilling pilot holes before driving screws into hardwood slats.

We provide #6 x 1/2" wood screws to secure the wood slats to the U-clips. If installing hardwood slats, you must predrill a pilot hole for each screw. Else, the 1x4 hardwood slat board will crack. We recommend drilling a 1/16" pilot hole for each screw. Softwoods, like birch, cedar, fir, pine, and redwood, do not require pilot holes. You may drive the #6 x 1/2" wood screws into the wood without drilling pilot holes.

We have designed our louver systems to provide ultimate ease in drilling and securing the wood slats. **See Section 1.5.4.**

1.1.11 Gaps on top and bottom when fully closed.






It is normal to see an open gap above the top louver and below the bottom louver when the louvers are in their closed positions. This is driven by design constraints and cannot be eliminated. If you wish to eliminate this open gap, we recommend that you add a piece of wood trim the same length as the 1x4 wood slats on the top and bottom frame members to reduce the visible gap. Do so, however, only after testing the louver rotation motion with the trim piece in place but not attached.

1.1.12 Initial rotation motion ease or difficulty

Attempting to rotate the control-side louvers before mounting the control-side assembly to the opening side will be difficult, especially for the longest RL48 DIY louver kit. Once the control-side is mounted on the opening side, it will be easier to rotate. After a few break-in rotation cycles, the rotation motion will get smoother and easier.

1.2 TOOLS REQUIRED

Listed below, are common tools required for this louver project. These tools are not included in this kit. Other tools may be required for preparing the opening structure or routing the 1x4 slat edges.

Description	Tool Purpose	Reference Image
Tape Measure	Measure and verify lengths.	
Framing Level	Verify Level/Plumb	
Drill	Drive screws	
1/16" Drill Bit	Drill pilot holes for #6 woodscrews.	
#2 Phillips Screwdriver Bit	Attaching brackets to wall and attaching 1x4 slats to U-clips	

1.3 CONTENTS OF LOUVER KITS

The contents of this kit are shown in the table, below. Before you begin your project, take an inventory of all items that you received from us. If any items are missing, contact us directly via email at info@RioOutdoors.com. Include your name and shipping address and your order number, if available. We will respond within 24 hours with a resolution to your problem.

Item Description	QTY	RL-24 IMAGE	RL-36 IMAGE	RL-48 IMAGE
Control Side Assembly	1			
Slave Side Assembly	1			
#6 x 1/2" Wood Screw	Varies	 <p style="text-align: center;">28</p>	 <p style="text-align: center;">44</p>	 <p style="text-align: center;">60</p>

1.4 LIST OF MATERIALS THAT YOU WILL SUPPLY

This is the list of required materials which are not included in this kit. You will acquire these items locally for your project. Use this table to help you calculate your total project budget.

Item Description	RL-24 QTY	RL-36 QTY	RL-48 QTY	Item Cost (\$)	Total Item Cost (\$)
1x4 Louver Slats (You determine length)	7	11	15		
The type of hardware required to mount the Brackets to walls depends on the wall material type. For wood framed walls, use #6x1" wood screws. For concrete and masonry, use masonry screws. Screw Head height must be less than ¼." Use hex-flanged or round head screws.	6	6	6		
Grand Total Cost (\$)					

1.5 INSTALLATION INSTRUCTIONS

1.5.1 Preparing the opening

Plan and prepare the opening for the louver system. One especially important dimension to maintain will be the height of the opening for horizontally mounted louvers and the width of the opening for vertically mounted louvers.

The lengths of the Control Side Bracket and Slave Side Brackets are as shown under "Side Bracket Length" in the table, below. The opening Height for Horizontal Louvers and the opening Width for Vertical Louvers are the critical dimensions and must be, at minimum, 1/8" longer than the length of the Side Brackets.

The Width for horizontal louvers and the height for vertical louver can vary to suit your need.

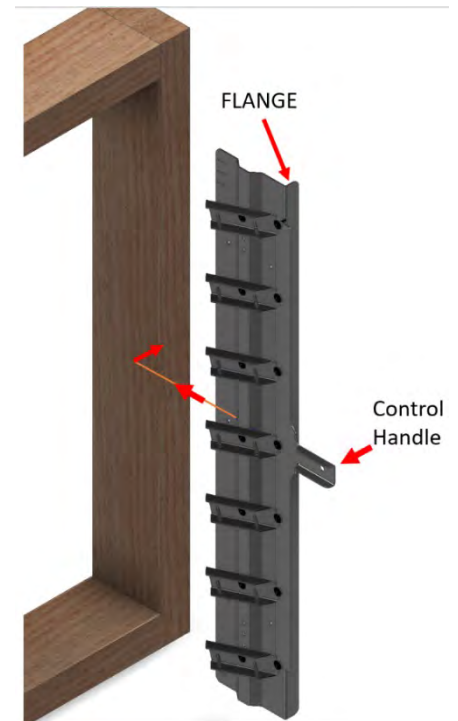
		Required Opening Dimensions				Required Materials	
		AS HORIZONTAL LOUVERS		AS VERTICAL LOUVERS		Included in Kit	Customer Supplied
Louver Kit SKU#	Side Bracket Length (in.)	HEIGHT	WIDTH	HEIGHT	WIDTH	# Wood Screws	# Of 1X4 Wood Slats
24-RL	23 7/8	24"	60" MAX	60" MAX	24"	28	7
36-RL	35 7/8	36"	60" MAX	60" MAX	36"	44	11
48-RL	47 7/8	48"	60" MAX	60" MAX	48"	60	15

1. Check and verify that the opening for the louver system is squared and the wall face is plumb.
2. Check the opening's diagonal corner measurements to verify that the opening is squared-up.
3. Place a level on the bottom of the opening and verify that it is level. If the opening is not squared-up or the bottom surface is not level, the louver rotation system will not function properly. You must make certain that both the Control Side Assembly bracket and the Slave Side Assembly bracket are plumb and level with each other for proper rotation function.

1.5.2 Mounting the Control Side Assembly

These instructions show a Horizontal Louver Installation. The same instructions apply for Vertical Louver Installations. The only difference will be that for Vertical Louver Installations, you will mount the Control Side Bracket to either the top or bottom of the opening based on ease of access to the Control Handle.

1. With the Control Handle pointing towards the living space, slide the Control Side Assembly into the opening.
2. Butt the front flange of the Bracket against the front face of frame.

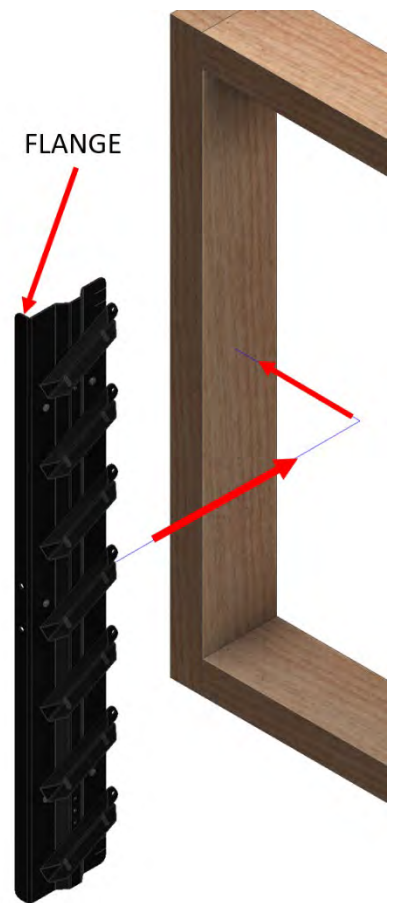


3. Slide Bracket down until it sits on the bottom of the frame.
4. While holding the bracket firmly against the frame, drive appropriate screws through six holes and secure the bracket in place. Please note that the screw head height cannot exceed ¼." A larger screw head will cause interference and prevent rotation of the louvers.

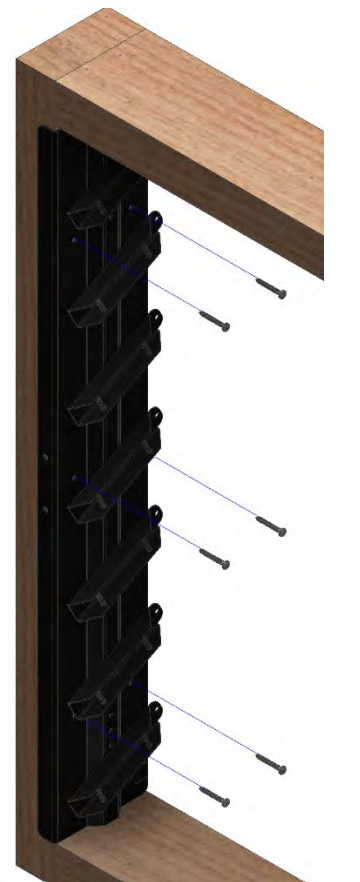


1.5.3 Mounting the Slave Side Assembly

1. With the front flange towards the living space, slide the Slave Side Assembly into the opening.
2. Butt the front flange of the Bracket against the front face of the frame.

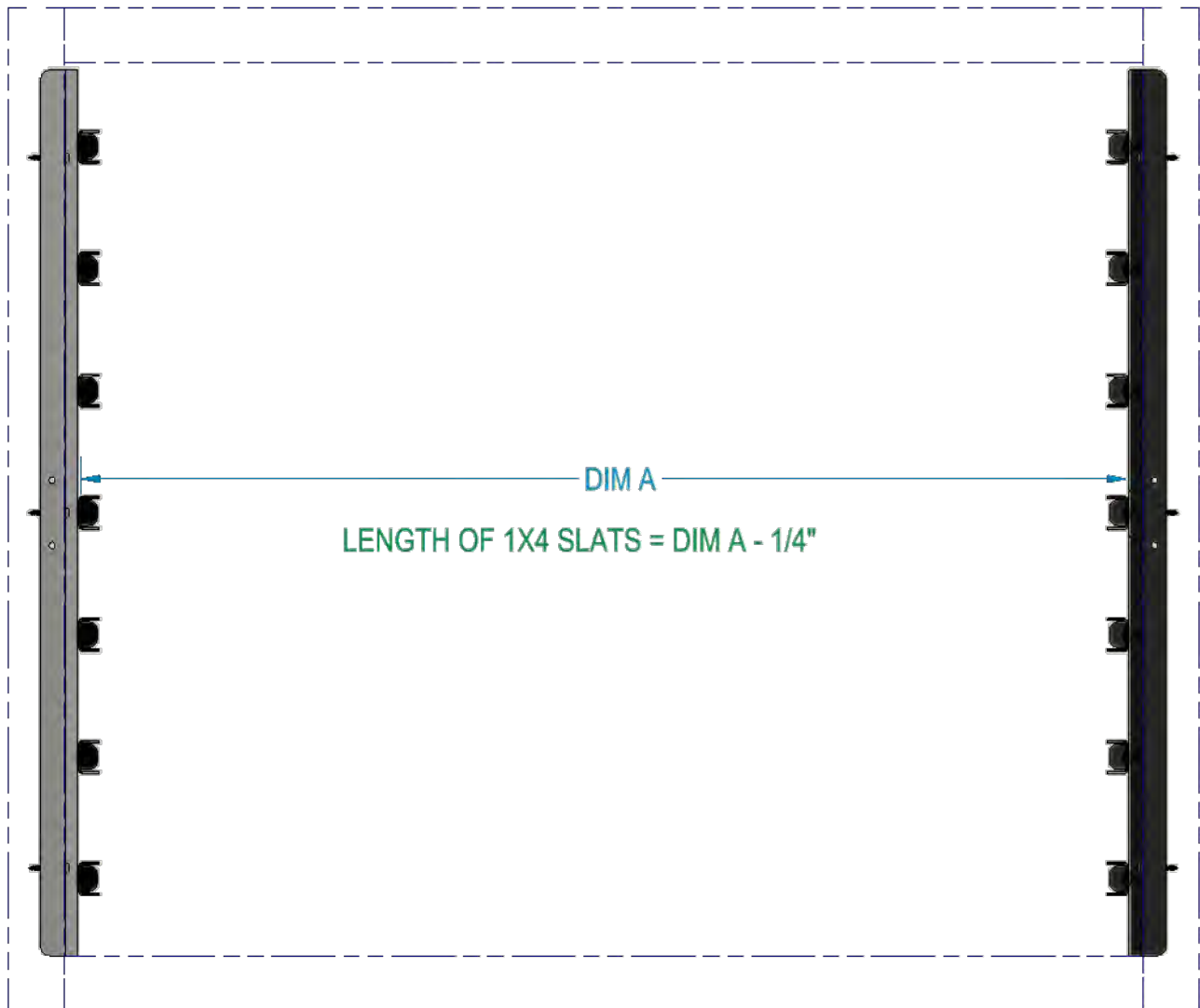


3. Slide Bracket down until it sits on the bottom of the frame.
4. While holding the bracket firmly against the frame, drive appropriate screws through six holes and secure the bracket in place. Please note that the screw head height cannot exceed $\frac{1}{4}$." A larger screw head will cause interference and prevent rotation of the louvers.



1.5.4 Adding the 1x4 Slats

1. Measure the distance between the inner faces (inside the U shape) of the center U-clip pair, DIM A.



2. Calculate the 1x4 Slats Cut Length which equals DIM A minus 1/4".
3. Cut one 1x4 to the calculated Cut Length.
4. Test fit the 1x4 piece you cut in the center U-clip pair, Top U-clip pair, and the Bottom U-clip pair. The 1x4 Slat should easily slide through with a small gap on the opposite side when butted up to one side U-clip. If it is too tight, trim an 1/8" off the end of the 1x4 slat and try again.
5. If the 1x4 piece fits properly in all three pairs of U-clips, it indicates that the two bracket assemblies are plumb to each other and that the calculated Cut Length is proper for all louver U-clip locations.
6. Cut the required number of 1x4s to length. Verify that all 1x4s are the same length.
7. Before you install the 1x4s, consider that wood can warp as it dries due to uneven-drying along the length of the wood or it can lengthen during high humidity seasons. To prevent warping or lengthening, stain, seal, or paint the 1x4s. You may also wish to router an edge design which will enhance the louvers appearance. Palm Routers are easy to use and the appropriate tool for routing the edges of 1x4s.

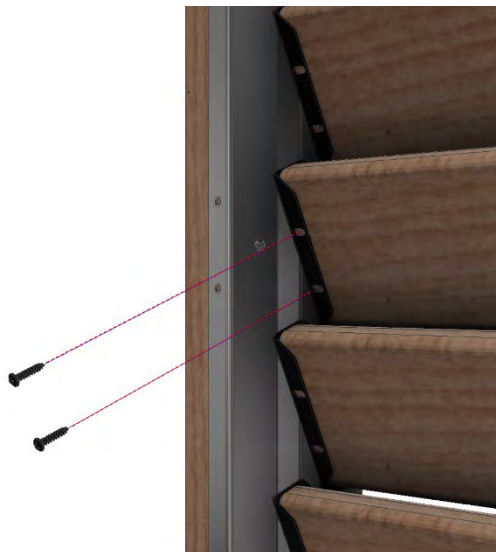
9. On the slave side, rotate all U-clips so the open end of the U-clip is facing the living space. The closed end of the U-clip has a small flange which helps to hold the 1x4 in place and holds the 1x4, effortlessly, in its correct position.
10. Insert all slats in their designated U-clip pairs. Verify that all 1x4 slats slide through easily. If not, trim an 1/8" off.
11. Using the Control Arm, rotate all 1x4 slats upward as far as they can rotate. This will expose two screw-slots in each U-clip.



12. Drill in the middle of the screw-slots using a drill and 1/16" drill bit. Drill all the way through until the drill bit bottoms-out on the U-clip's opposite side.
13. Drill pilot holes through all slot centers in all U-clips for all 1x4 slats, on both control side and slave side.



14. Drive two #6x 5/8" wood screws through the two slots in each U-clip into the drilled pilot holes in the 1x4 to secure it in place. The screw should be near the middle of each slot. If the screw is all the way to one side of the slot, loosen the screws on the opposite end and check for movement sideways. If it slides, move the 1x4 until the screws are near the center of the screw slots. If it does not move, drill a new pilot hole at the center of the screw slot and secure the screw in the new pilot hole.



15. Repeat step 14 for all wood slats.

Finalize by checking the louvers rotation function. Grab the Control Handle and move it up and down to check rotation function. It should rotate quietly and smoothly requiring about 3 to 4 pounds of push strength.

1.6 MAINTENANCE

This louver system is designed to be free of maintenance requirements, except for dusting and cleaning. Do not use any oils or lubricants at louver rotation points. We have employed washers that are self-lubricating. The washers are designed to last a lifetime.

The wood slats may be replaced if the need arises in the future.

Your rotating louver installation project is now complete. Let us know how the construction project went for you. Was it easy to do? Did parts fit easily and properly? Do you like the quality of our products and design styles? Please go to RioOutdoors.com and provide us with your review.



Thank you for being a RioOutdoors.com customer.

2 WARRANTY POLICY STATEMENT

RioOutdoors.com, extends this 1-Year Warranty to the original purchaser, automatically upon purchase from RioOutdoors.com. The items covered by this warranty and the period of such coverage is set forth in the table below.

Some conditions apply (see below).

The policy is not transferable, amendable, or negotiable under any circumstances.

Part	1 year	Labor Coverage
Welded Steel Brackets	✓	Not Included
Painted Finishes	✓	Not Included
All hardware	✓	Not Included

2.1 CONDITIONS

Warranty protects against defect in manufacture only, unless herein specified otherwise.

Any part(s) found to be defective during the warranty period as outlined above will be repaired or replaced at RioOutdoors.com's option provided that the defective part is returned, if requested by RioOutdoors.com. Alternatively, RioOutdoors.com may at its own discretion fully discharge all its obligations under the warranty by refunding the verified purchase price of the product to the original purchaser.

RioOutdoors.com is not responsible for results or costs of workmanship of installers in the negligence of their construction work.

At all times RioOutdoors.com reserves the right to inspect reported complaints on location in the field claimed to be defective prior to processing or authorizing of any claim. Failure to allow this upon request will void the warranty.

All claims must be complete and provide full details as requested by RioOutdoors.com to receive consideration for evaluation. Incomplete claims may be rejected.

All pergola brackets must be installed according to all manufacturers' instructions as per the installation instruction manual by a RioOutdoors.com.

All Local and National required codes must be met.

Repair/replacement parts purchased by the consumer from RioOutdoors.com after the original coverage has expired will carry a 90-day warranty, valid with a receipt only. Any item shown to be defective will be repaired or replaced at our discretion. No labor coverage is included with these parts.

2.2 EXCLUSIONS

This 1-Year Warranty does not extend to paint, rust, or corrosion of any kind due to corrosive chemicals (i.e., chlorine, salt, air, etc.), physical damage to painted surfaces during installation or later.

Malfunction, damage, or performance-based issues of all components as a result of environmental conditions, location, chemical damages, downdrafts, installation error, installation by an unqualified installer, abuse, misuse, use of improper tools, acts of God, weather related problems from hurricanes, tornados, earthquakes, floods, lightning strikes/bolts or acts of terrorism or war, which result in damage are not covered under the terms of this 1-Year Warranty.

RioOutdoors.com has no obligation to enhance or modify any part once manufactured (i.e., as products evolve, field modifications or upgrades will not be performed on existing pergolas).

Any parts showing signs of abuse or misuse will not be covered under the terms of this warranty policy and may void this warranty. This includes parts with rusted or corroded surface or welds which have not been reported as rusted or corroded within three (3) months of installation/purchase.

Parts which show evidence of being used while damaged, or with problems known to the purchaser and causing further damages will void this warranty.

Parts where the RioOutdoors.com logo has been altered, deleted, removed, or made illegible will void this warranty.

Minor movement, expansion and contraction of the steel parts is normal and is not covered under the terms of this warranty.

Freight damages for parts are not covered under the terms of the warranty.

Products made or provided by other manufacturers and used in conjunction with the RioOutdoors.com parts without prior authorization from RioOutdoors.com may void this warranty.

2.3 LIMITATIONS OF LIABILITY

The original purchaser's exclusive remedy under this warranty, and RioOutdoors.com's sole obligation under this warranty, express or implied, in contract or in tort, shall be limited to replacement, repair, or refund, as outlined above. IN NO EVENT WILL RioOutdoors.com BE LIABLE UNDER THIS WARRANTY FOR ANY INCIDENTAL OR CONSEQUENTIAL COMMERCIAL DAMAGES OR DAMAGES TO PROPERTY. TO THE EXTENT PERMITTED BY APPLICABLE LAW, RioOutdoors.com MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY SPECIFIED HEREIN. THE DURATION OF ANY IMPLIED WARRANTY IS LIMITED TO DURATION OF THE EXPRESSED WARRANTY SPECIFIED ABOVE. IF IMPLIED WARRANTIES CANNOT BE DISCLAIMED, THEN SUCH WARRANTIES ARE LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some U.S. states do not allow limitations on how long an implied warranty lasts or allow exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Customers located outside the U.S. should consult their local, provincial, or national legal codes for additional terms which may be applicable to this warranty.

2.4 HOW TO OBTAIN WARRANTY SERVICE

Customers should contact RioOutdoors.com by email at info@RioOutdoors.com . Please include a brief description of the problem and your address, email, and telephone contact information. A representative will contact you to make arrangements for warranty service.

Warrantor:

RioOutdoors.com
United States

Thank you for choosing RioOutdoors.com.

