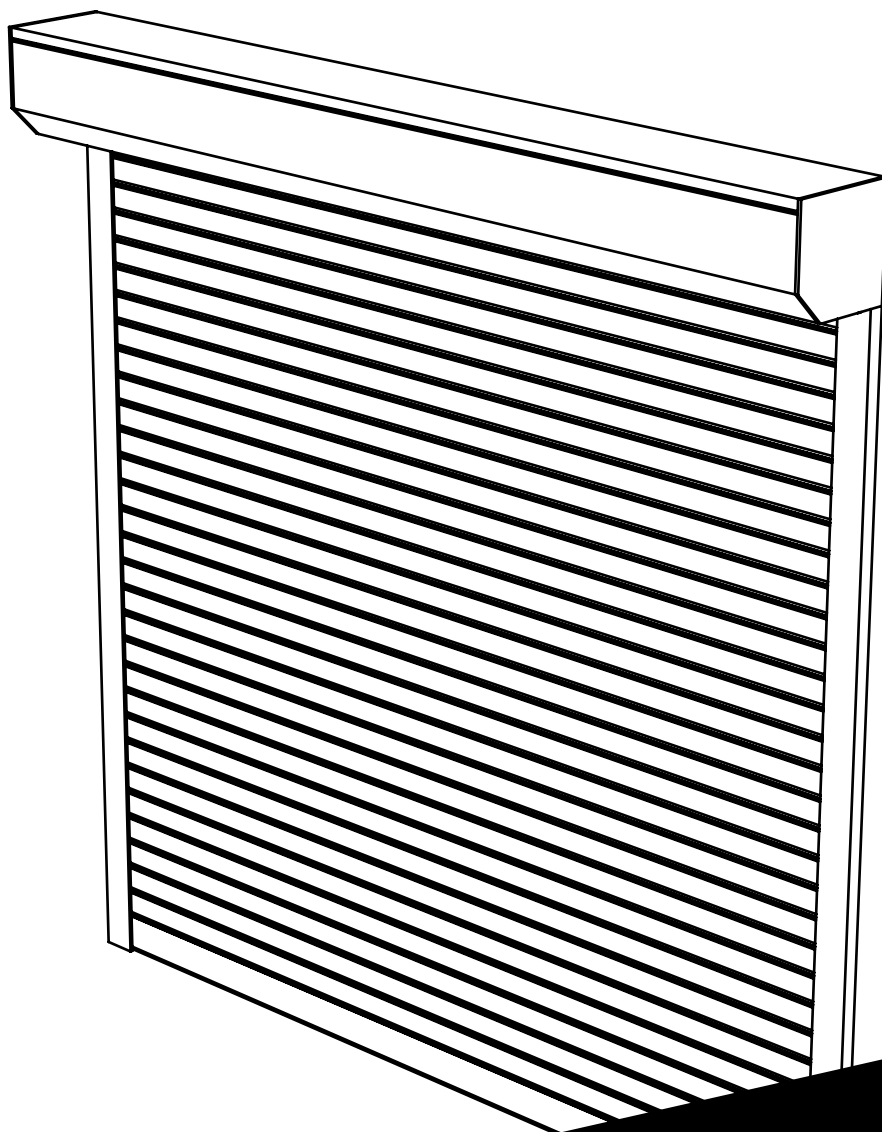




**MOTOR OPERATION**  
Between Jamb | Under Lintel Mount



**DEALER INFORMATION**

**INSTALLATION INSTRUCTIONS**





# PRE-INSTALLATION INFORMATION

## INSTALLATION INDEX

<b>1</b>	<b>Preparation</b>	<b>Page 4</b>
<b>2</b>	<b>Mounting</b>	<b>Page 5</b>
<b>3</b>	<b>Install Curtain (Only applicable if curtain is not pre-installed)</b>	<b>Page 14</b>
<b>4</b>	<b>Complete</b>	<b>Page 23</b>

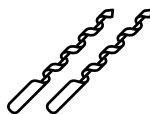
## TOOLS YOU WILL NEED



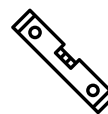
Ladders (If required for height of the opening)



Cordless Drill with #2 Robertson Bit



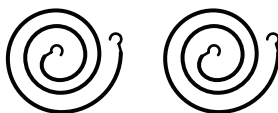
3/4" and 1/8" Drill Bits (Pre-drill holes if desired)



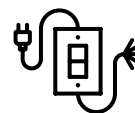
4 Foot Level



Lifting Device (If necessary for curtains that are not pre-installed)



2 Straps (If necessary for curtains that are not pre-installed)



Tester Cable (For testing the shutter during installation)

## IMPORTANT NOTES



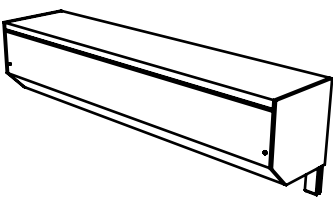
1. The following instructions are meant as a guide to installing your shutter. They cannot cover all applications. You are responsible to use safe work procedures to prevent injury to yourself and others, as well as prevent damage to the shutter. If you encounter a problem or have a question please contact Technical Support at the number provided at the end of these instructions.
2. The legs on the end caps can break. You must take care to not put undue pressure on these legs during the installation to avoid damage.
3. The shutter must be secured to solid backing through the back, top, or sides of the box. Also secure the box housing through the support plates if they are supplied.
4. The shutter has been supplied to be installed onto solid wood backing. The #10 - 2 inch installation screws provided are for mounting onto wood. If you are not installing your shutter onto wood, please substitute these screws for the appropriate fasteners needed for your substraint (backing).
5. If your shutter has a 3-prong grounding receptacle: To reduce the risk of electric shock, this equipment has a grounding type plug that has a third (grounding) pin. This plug will only fit into a grounding type outlet. If the plug does not fit into the outlet, contact a qualified electrician to install the proper outlet. Do not change the plug in any way. Do not use an extension cord. If the power supply cord is too short, have a qualified electrician install an outlet near the shutter operator.

# PARTS

Shutters that weight under 60 pounds will have the curtain and t-clips pre-installed inside the box housing. If the shutter is narrower than the guide rails’ height, the guide rails will be in a separate box labelled ‘Guide Rails’.

**BOX HOUSING**

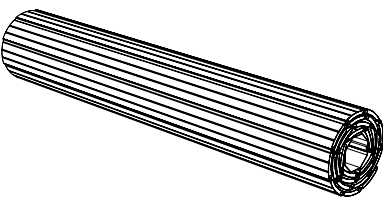
**A**



Size will vary depending on shutter height and width

**CURTAIN**

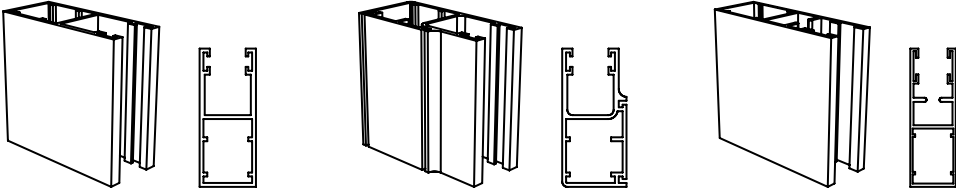
**B**



Pre-installed on shutters under 60 pounds

**GUIDE RAILS**

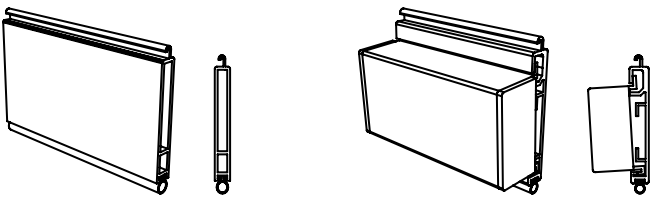
**C**



Standard                      STAX (Buildout)                      AnchorLoc (End Retention)

**BOTTOM BAR (Pre-Installed on Curtain)**

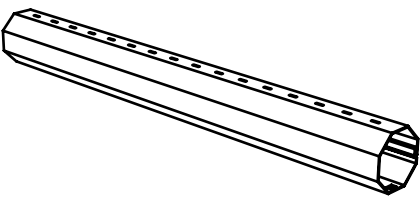
**D**



Standard                      Heavy Duty

**AXLE (Pre-Installed in Box Housing)**

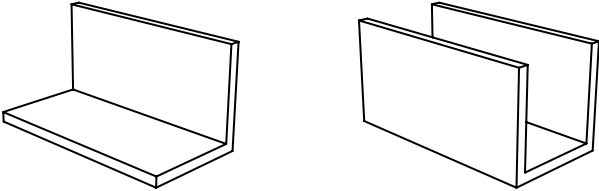
**E**



Size will vary depending on shutter height and width

**SILL (If Required)**

**F**



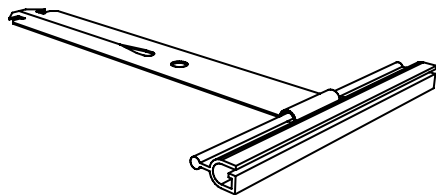
L-Sill                      U-Sill

# HARDWARE

Hardware can be found in the installation package provided with the shutter. If some of the hardware listed below is not included, this means your shutter does not require it.

## T-CLIPS

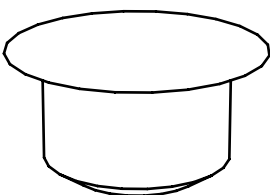
H



Pre-installed on shutters under 60 pounds

## SCREW HOLE COVERS (If Required)

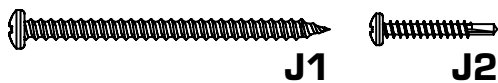
I



Used to cover screw holes on the guide rails

## INSTALLATION SCREWS

J

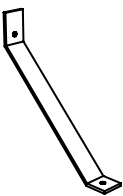


#10 - 2 Inch Screws

Tek Screws

## SUPPORT BRACKETS (If Required)

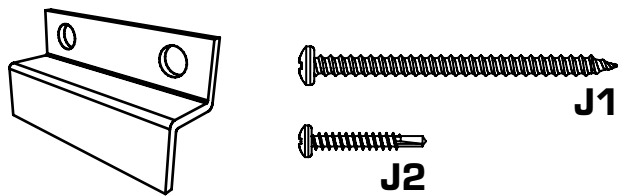
K



Size will vary depending on box housing size

## AUTO-LOCK BRACKETS

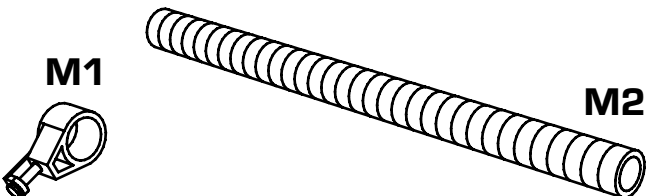
L



Used to prevent the curtain from being forced open

## BX CONDUIT (If Required)

M

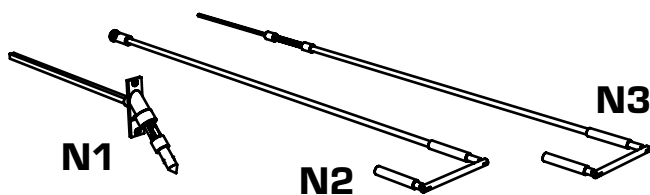


BX Connector

BX Conduit

## CMO SWIVEL/CRANK (If Required)

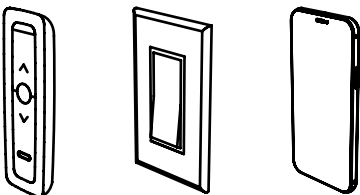
N



Manual override operators (N1+N2 or N3)

## Motor Operator

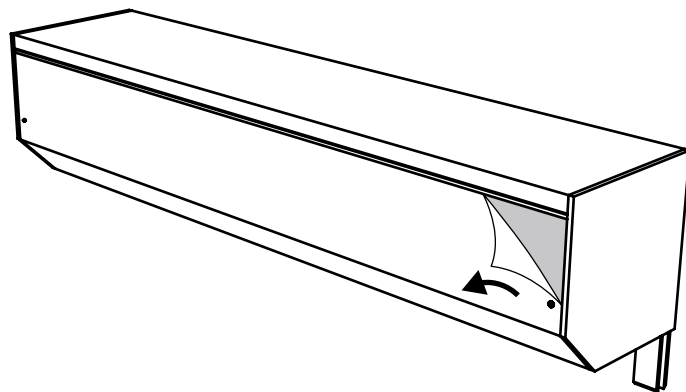
O



Remote, switch, app, or Wi-Fi control.

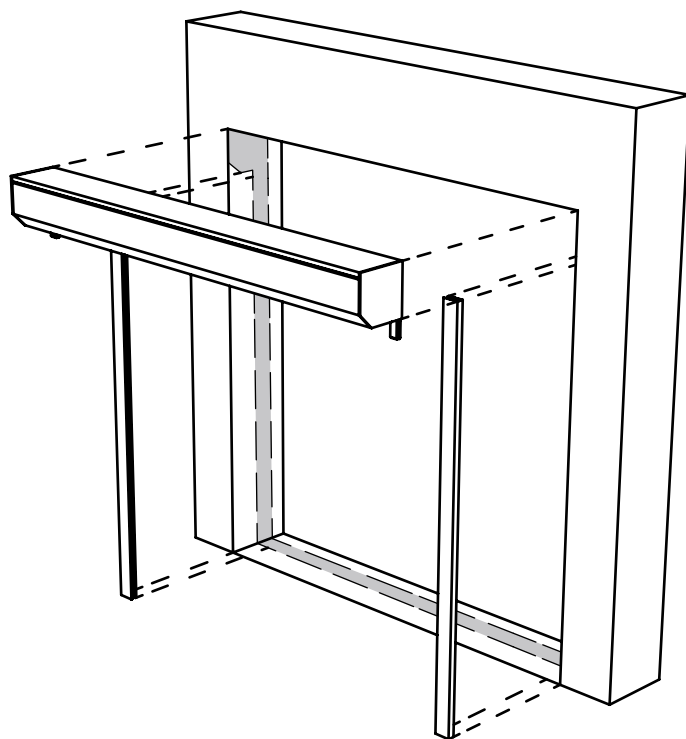
# 1 PREPARATION

1. Remove the protective plastic on the exterior of the box housing (A).

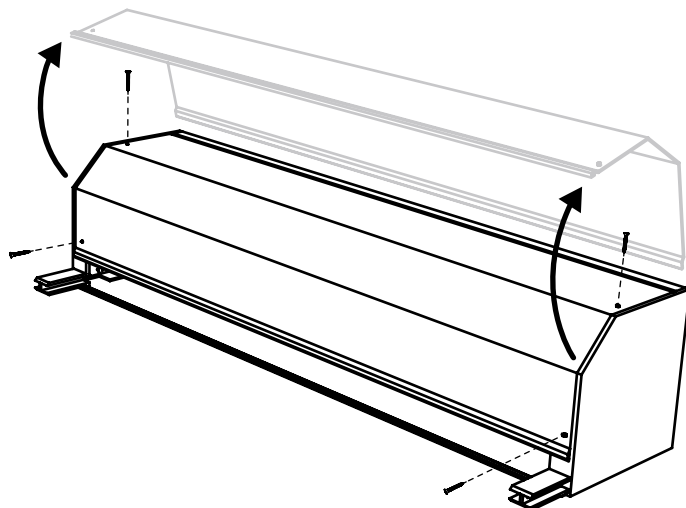


2. Ensure the entire mounting surface is completely flat. You will need the depth of one guide rail (C) on each side of the opening, and the depth of the box housing (A) at the top of the opening.

If necessary, remove the trim around the opening so the mounting surface is completely flat.

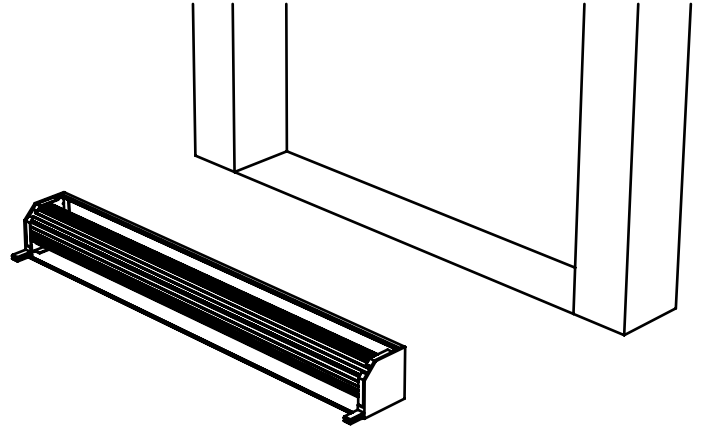


3. Using your #2 Robertson bit, remove the four screws that secure the cover lid to the box housing (A). Carefully remove the lid and store in a safe place until the final stage of the installation.



# MOUNTING **2**

1. Set the box housing (A) on a flat surface with the back (flat) side facing down and top facing towards the opening.



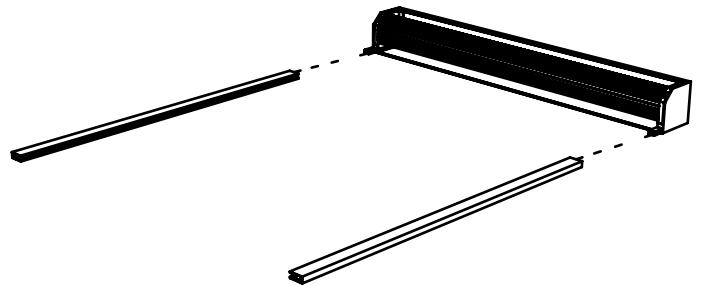
## **SKIP THIS STEP IF YOUR CURTAIN IS NOT PRE-INSTALLED IN BOX HOUSING**

### **2. If you have a locking bottom bar (D):**

Put the lock into the unlocked position.

3. Slide the guide rails (C) onto the box housing (A) legs.

Attach the guide rails to the box housing so that the small mounting holes face outwards on each side of the shutter.



### **If your shutter has a bottom bar lock:**

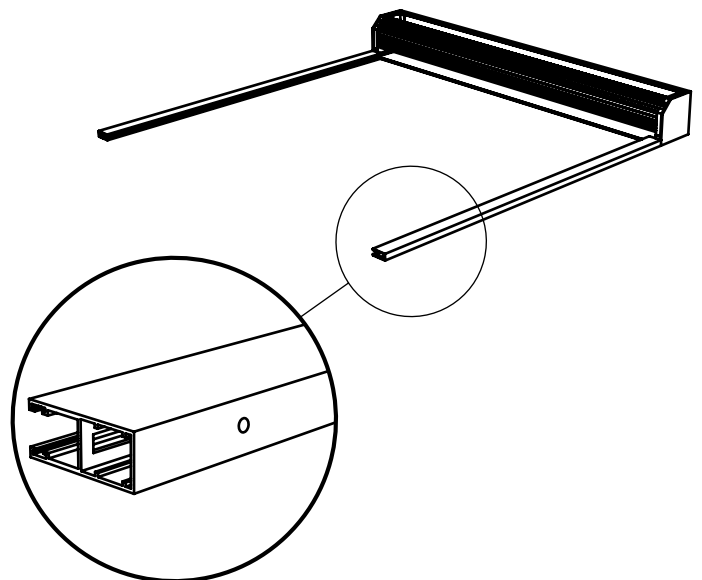
The end of the guide rail with the lock hole on the inside is the bottom.

### **If your shutter has support brackets:**

The end of the guide rail with the threaded insert and screw is the top.

### **If your guide rails have flare outs:**

The end of the guide rail with the flare is the top.



## 2

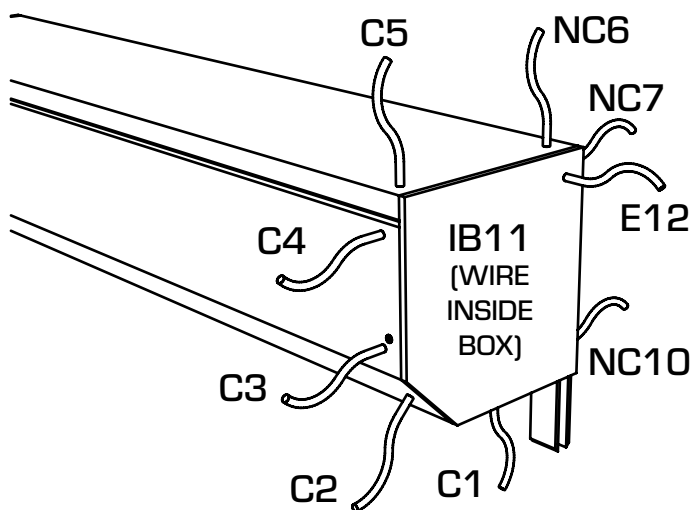
### 4. If your shutter has support brackets:

Mount the support brackets (K) onto the bottom of the box housing (A) and the face of the guide rails (C) on each end of the shutter to protect the box housing legs. Use the tek screws (J2).



### 5. Determine where the wire exit is on the box housing (A) There is a wire exit hole.

The wire exit may be on either end of the shutter box housing.



#### If your wire exit is on the top of the box housing (C5 or NC6):

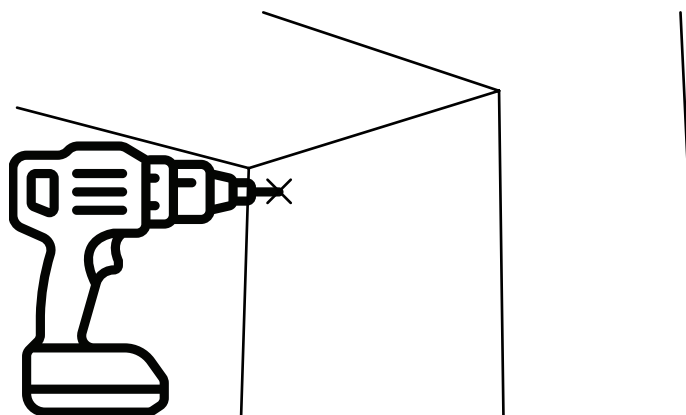
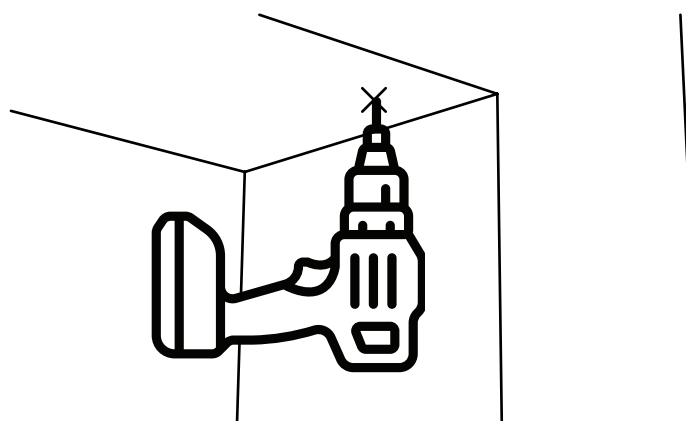
You will need to drill a hole in the ceiling for the wire to go through.

Or

#### If your wire exit is on the side of the box housing (E12):

You will need to drill a hole in the wall for the wire to go through.

Measure the location of the wire exit on the box housing and mark the wall where the hole needs to be. Using your 3/4" drill bit, drill the hole for the wire to fit through.

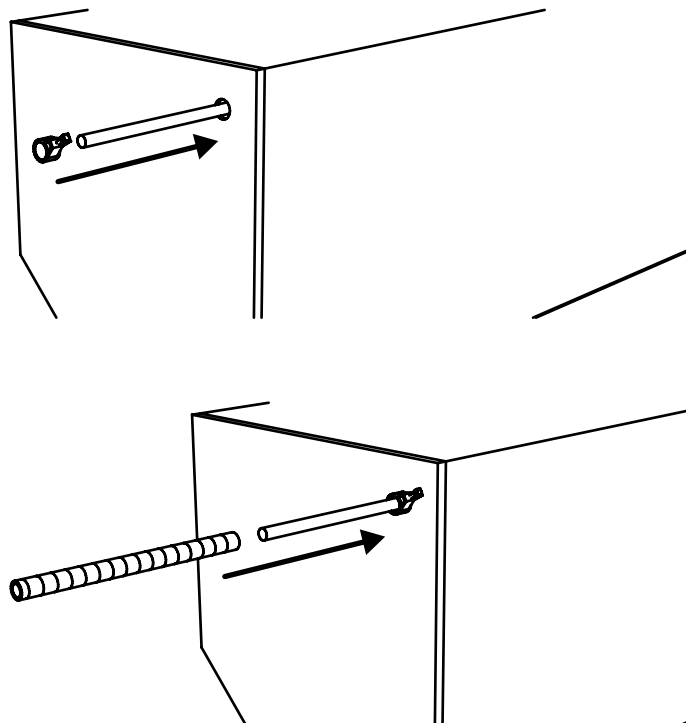




6. Some electrical codes require the shutter motor wire to be protected where it goes through the wall/ceiling.

If required, use the BX connector (M1) provided. Remove the nut from the back side. Feed the wire through the connector from the back side, and thread the connector into the wire exit hole in the box housing (A).

Slide the BX conduit (M2) over the wire and tighten the screw on the connector to hold it in place. Enlarge the first 1/2" of the hole in the wall/ceiling so the BX connector will fit inside the hole.



## 2

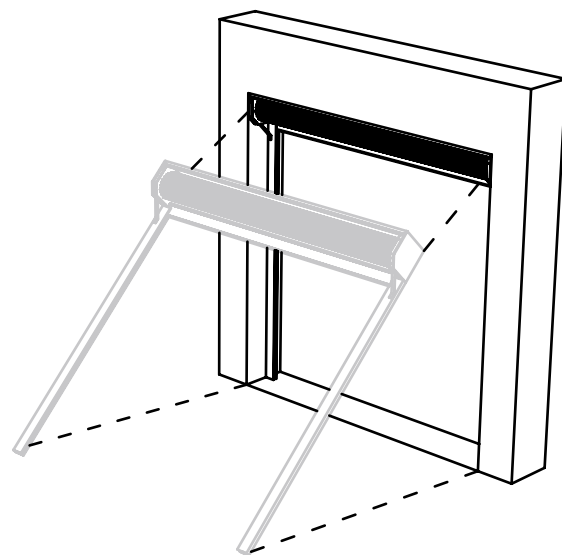
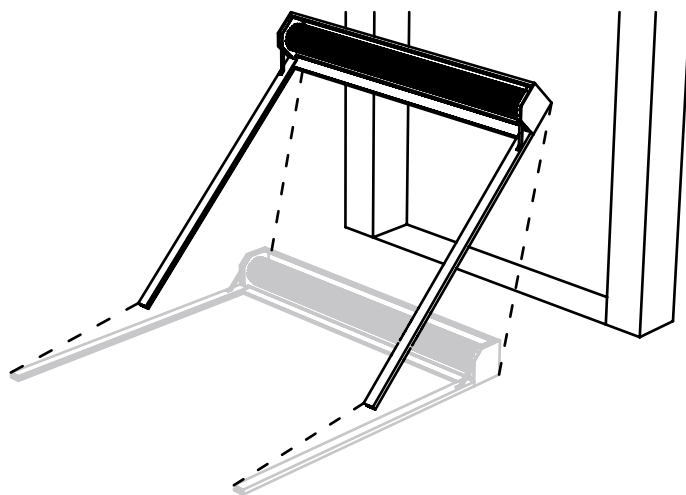
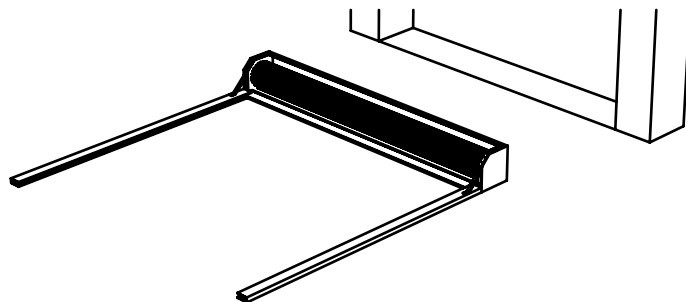
7. Lift the shutter up and into position over the opening by holding the box housing (A) and guide rails (C) and slowly rotating the entire shutter 90 degrees, so it is standing up vertically.

### Important note:

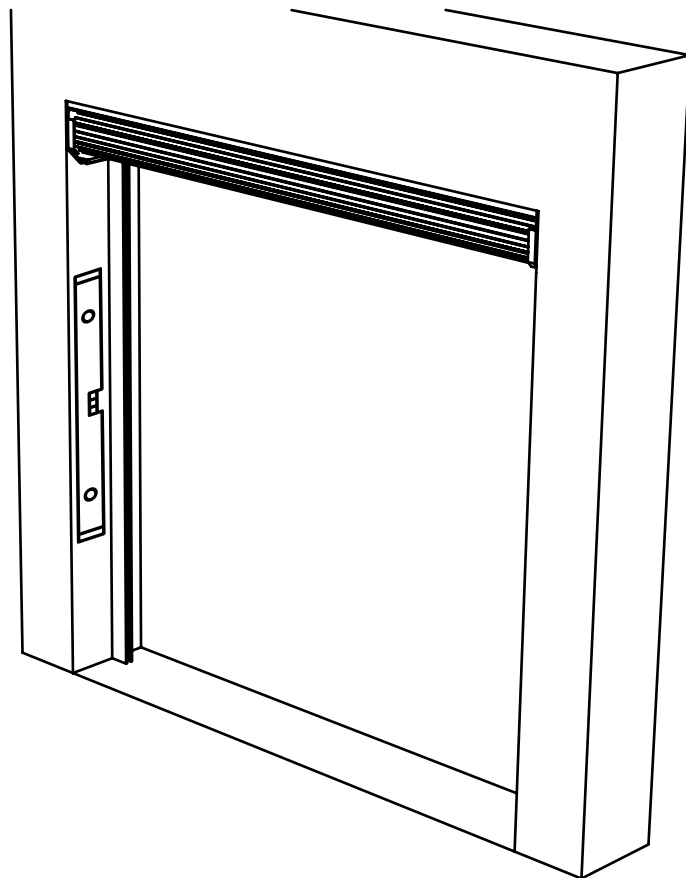
Continue to hold the box housing firmly to avoid breaking the box housing legs. Have one person on each side of the shutter to lift the shutter into place.

### Warning:

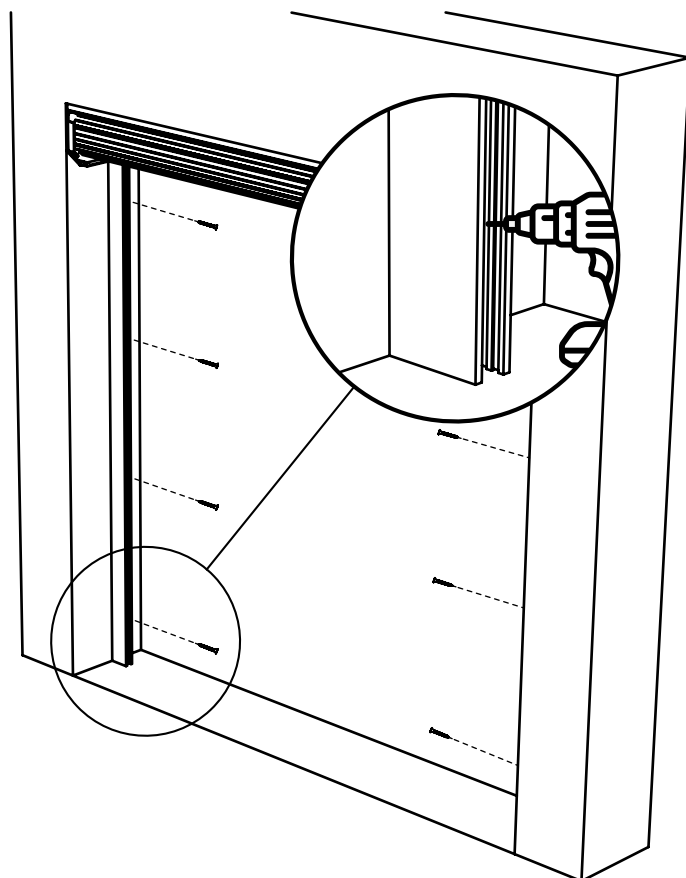
The curtain can be heavy. Ensure you have enough assistance to lift and hold the curtain, or use a lifting device.



8. Ensure the box housing (A) and guide rails (C) are straight and level. Use shims if required to keep the guide rails straight.



9. Mount the guide rails (C) to the sides of the opening. Use the #10 - 2" screws (J1) provided to secure the guide rails to the opening.



## SKIP THIS STEP IF YOUR SHUTTER DOES NOT REQUIRE A SILL

Window or counter shutters with no sill (F) for the curtain to rest on when closed will need a sill installed. If a sill is required, it will be provided.

10. Mount sill (F) at the bottom of the guide rails (C).

### If your shutter has a L-Sill:

Mount sill with one flange under the guide rails and the other in front of the guide rails facing up. Screw the tek screws (J2) through the front of the sill and into guide rails.

Or

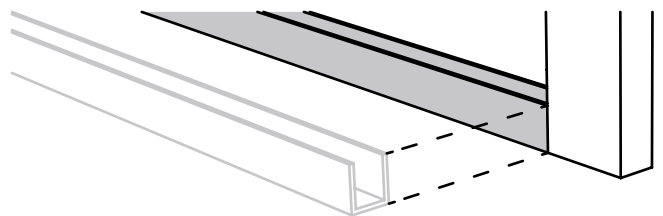
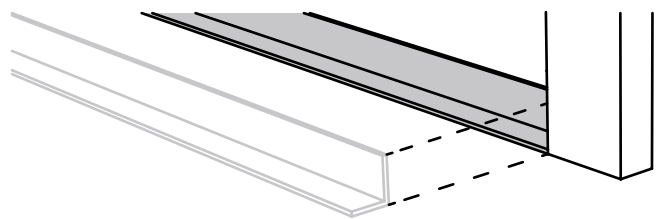
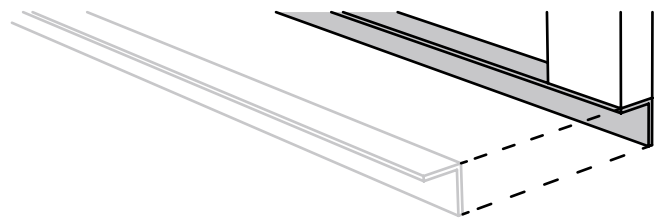
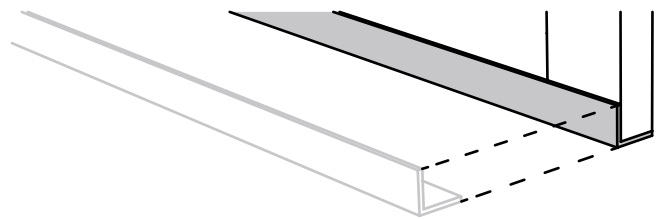
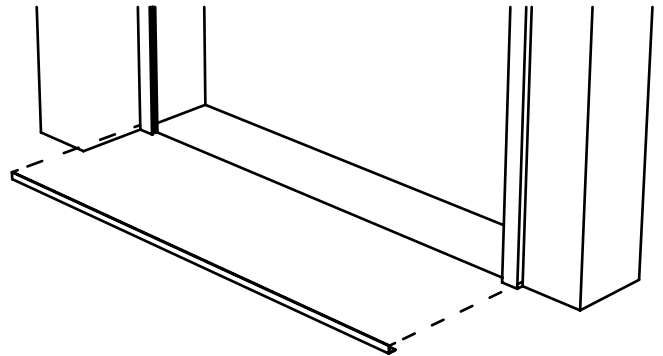
Mount sill with one flange under the guide rails and the other against the wall facing down. Screw the #10 - 2" screws (J1) through the sill and into the solid backing.

Or

Mount sill between the guide rails with one flange facing frontwards and the other against the wall facing up. Screw the #10 - 2" screws (J1) through the sill and into the solid backing.

### If your shutter has a U-Sill:

Mount sill between the guide rails so the bottom of the sill is flush with the bottom of the guide rails. Screw the #10 - 2" screws (J1) through the sill and into the solid backing.

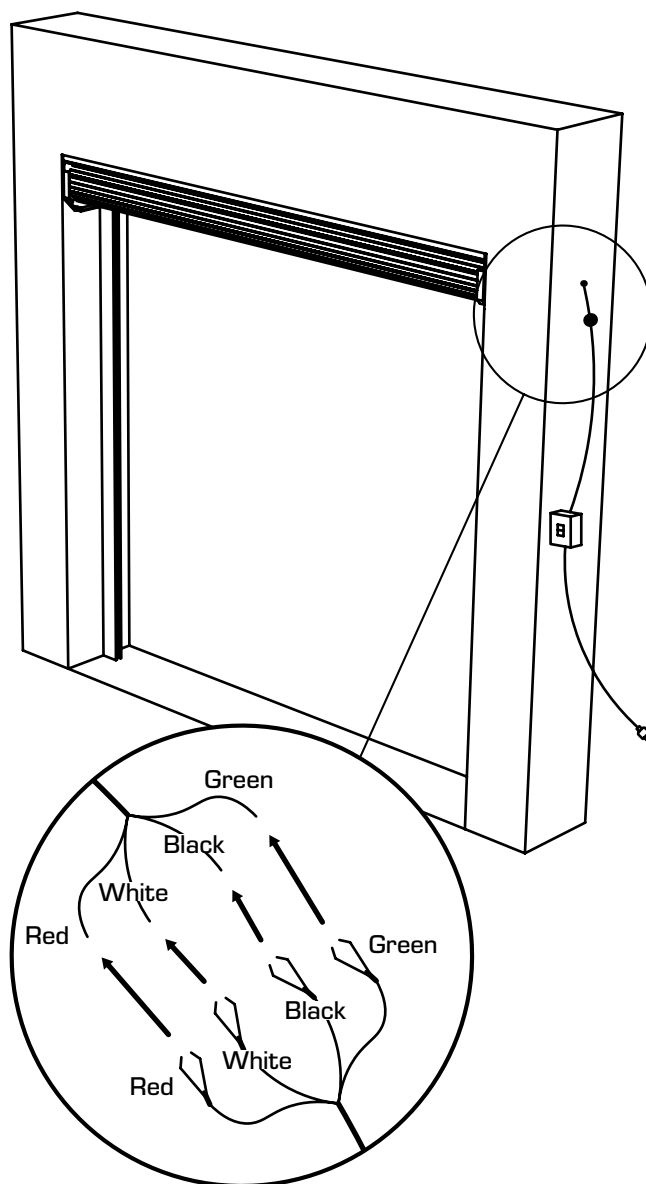


**SKIP THIS STEP IF YOUR CURTAIN IS NOT PRE-INSTALLED IN BOX HOUSING**

11. Before continuing, you will need to supply power to the motor. Use a tester cable.

Match the colors of the wires with the corresponding colors on your tester cable clips.

If the shutter operates in the opposite direction to your tester cable switch, swap the black and red wires (connect the red wire to the black clip, and the black wire to the red clip). Doing this will change the direction that the shutter operates.



## SKIP THIS STEP IF YOUR CURTAIN IS NOT PRE-INSTALLED IN BOX HOUSING

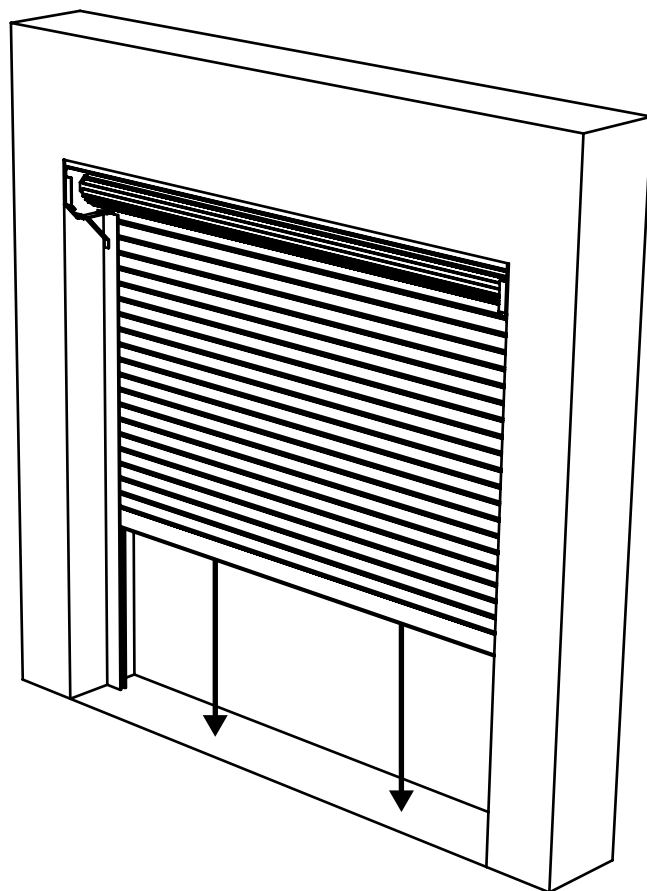
12. Carefully uncoil the curtain down into the guide rails (C) until it is in the closed position.

Refer to the motor programming instructions provided to get your shutter to operate.

Remove the protective foam wrapping on the curtain.

### Important note:

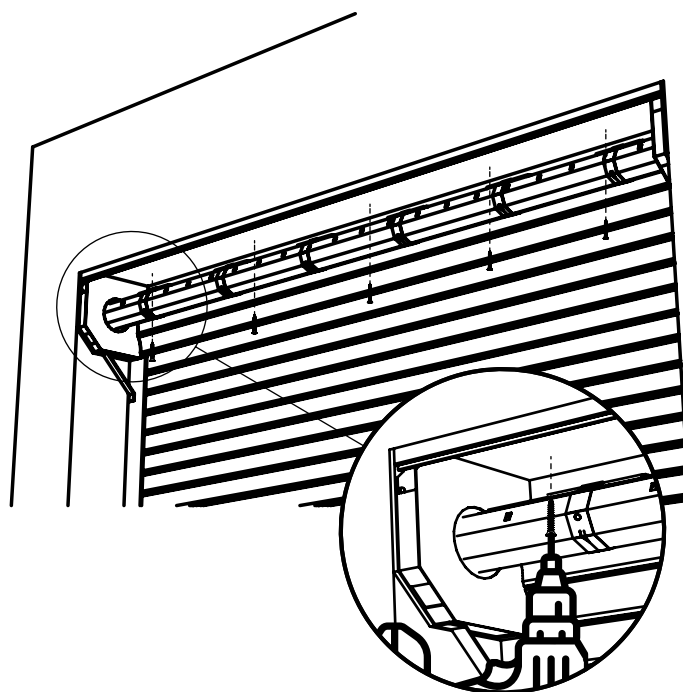
Ensure the box housing (A) is firmly supported to avoid breaking the box housing legs.



13. Mount the box housing (A) to solid backing with a screw at each end, and one screw every 16" across the width. Use the #10 - 2" screws (J1). Insert the screws through the top of the box housing.

### If your shutter has support plates:

Large shutters have steel support plates on each end of the box housing. Insert the #10 - 2" screws (J1) through the 4 mounting holes on each plate, into solid backing.



## SKIP THIS STEP IF YOUR CURTAIN IS NOT PRE-INSTALLED IN BOX HOUSING

14. Install the auto-lock brackets (L) onto each side of the box housing (A). Ensure the shutter is in the closed position.

\*The top of the box housing is not shown for illustration purposes.

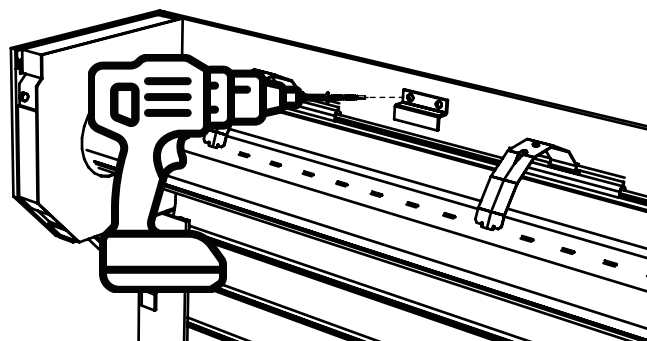
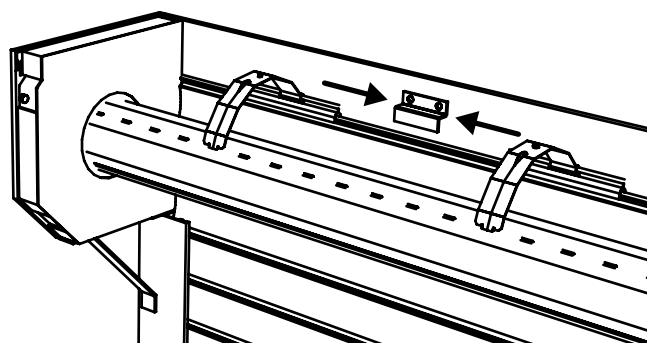
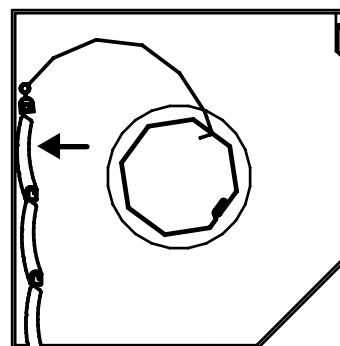
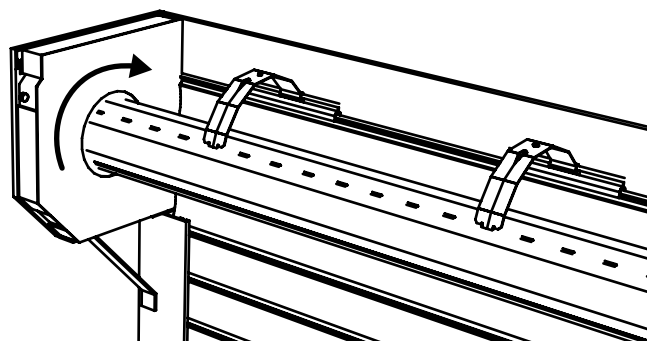
When the shutter is in the closed position, continue operating the shutter downwards allowing the axle (E) to turn until the t-clips (H) push the top of the curtain against the back of the box housing.

### Important note:

This position must be set as the lower limit when setting the limits for your motor later.

Mount the auto-lock brackets  $3/8"$  (10mm) above the top of the curtain and in between the two t-clips closest to the ends of the box housing (one on each end of the box housing).

Use the tek screws (J2) provided for mounting.



# 3 INSTALL CURTAIN

## SKIP THIS STAGE IF YOUR CURTAIN IS PRE-INSTALLED IN THE BOX HOUSING

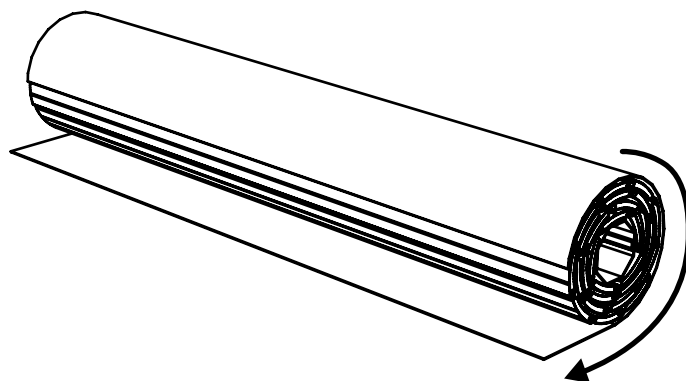
There are two curtain installation options. Option 1 is the easiest and most convenient for curtains that are not too heavy. Option 2 is for larger shutters (skip to page 17).

**Warning:** Bending the curtain backwards will cause damage (not covered by warranty).

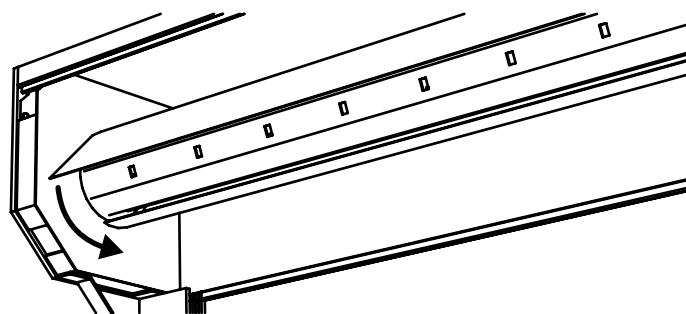
### OPTION #1

- A. Remove the protective foam wrapping around the curtain roll (B).

Unwrap the curtain roll and rewrap it the opposite way so the bottom bar (D) is on the outside of the curtain roll.

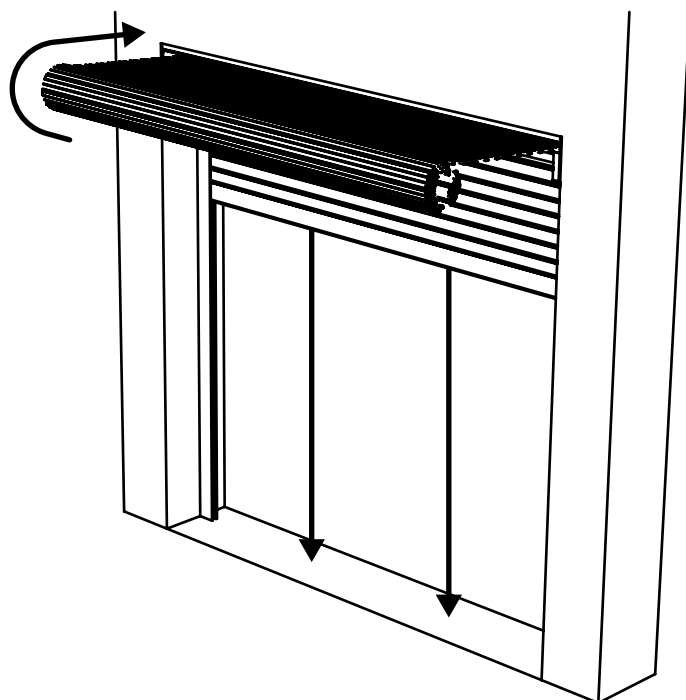


- B. Wrap the axle (E) in the box housing (A) with soft protective material, to avoid damaging the curtain during the next step.



- C. Lift the curtain into the box housing (A), feed it over top of the axle (E), and carefully uncoil the curtain down into the guide rails (C) until it is in the closed position and the bottom bar (D) is at the bottom.

Ensure the curtain does not get scratched or damaged when uncoiling it into the guide rails.

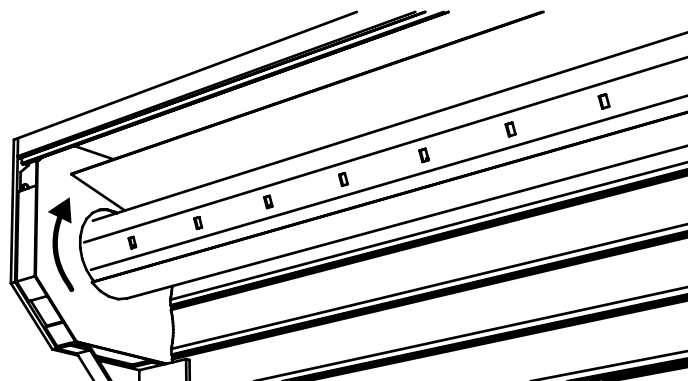


### Warning:

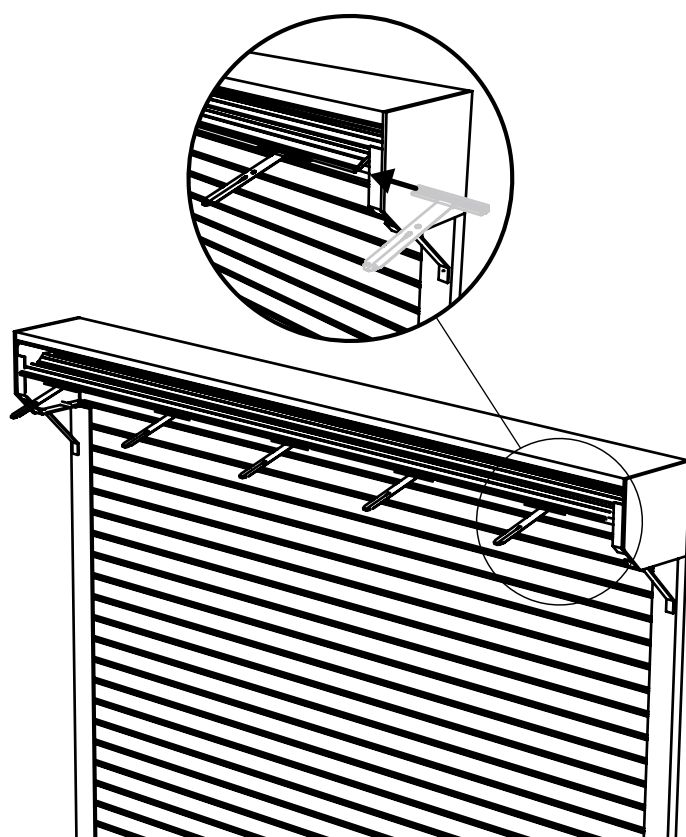
The curtain can be heavy. Ensure you have enough assistance to lift and hold the curtain, or use a lifting device.



- D. Remove the soft protective material you wrapped around the axle (E) in step B on the previous page.

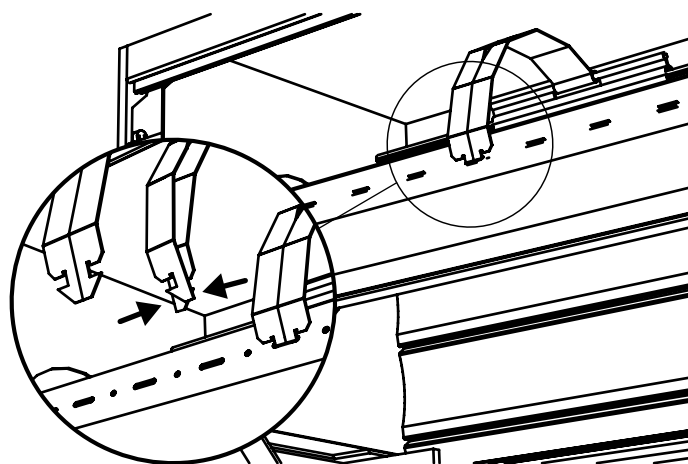


- E. Slide the t-clips (H) provided onto the top of the curtain. Evenly space them along the width of the curtain with the end ones 3" in from each end of the curtain.



- F. Attach the t-clips (H) onto the axle (E) by squeezing the arrow-shaped ends, and inserting them into the long narrow slots in the axle.

Ensure all of the t-clips are inserted into the same row of slots in the axle.



- G. Install the auto-lock brackets (L) onto each side of the box housing (A). Ensure the shutter is in the closed position.

\*The top of the box housing is not shown for illustration purposes.

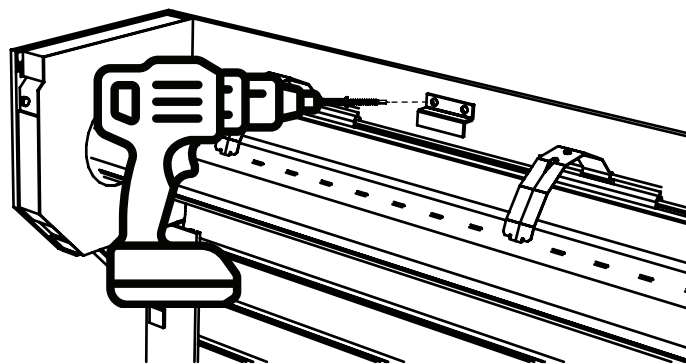
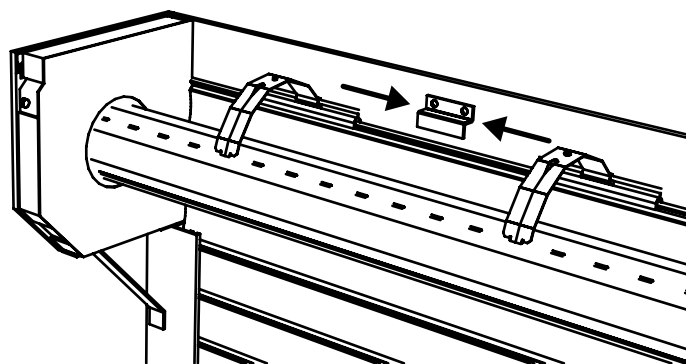
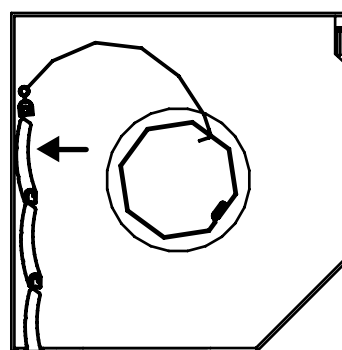
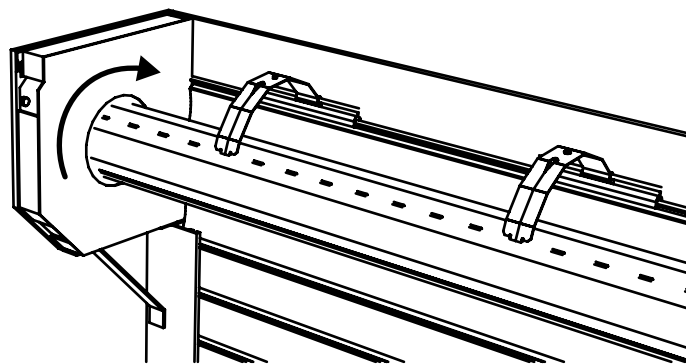
When the shutter is in the closed position, continue operating the shutter downwards allowing the axle (E) to turn until the t-clips (H) push the top of the curtain against the back of the box housing.

**Important note:**

This position must be set as the lower limit when setting the limits for your motor later.

Mount the auto-lock brackets  $3/8"$  (10mm) above the top of the curtain and in between the two straps closest to the ends of the box housing (one on each end of the box housing).

Use the tek screws (J2) provided for mounting.

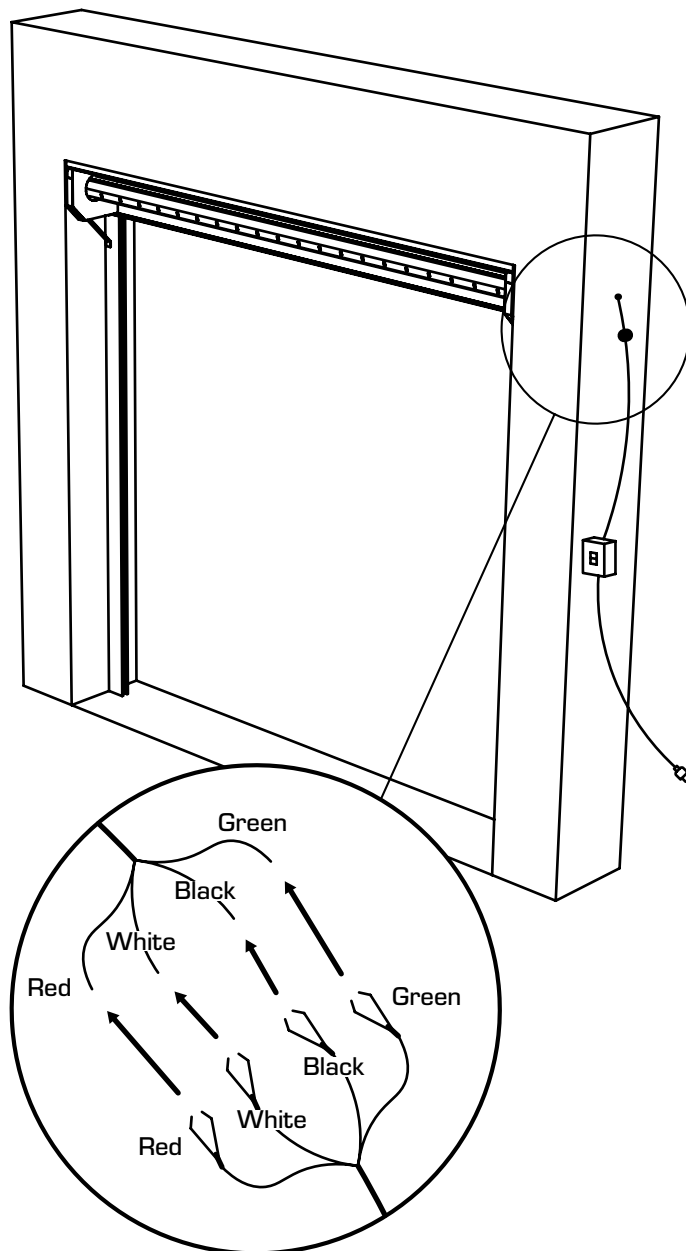


## OPTION #2

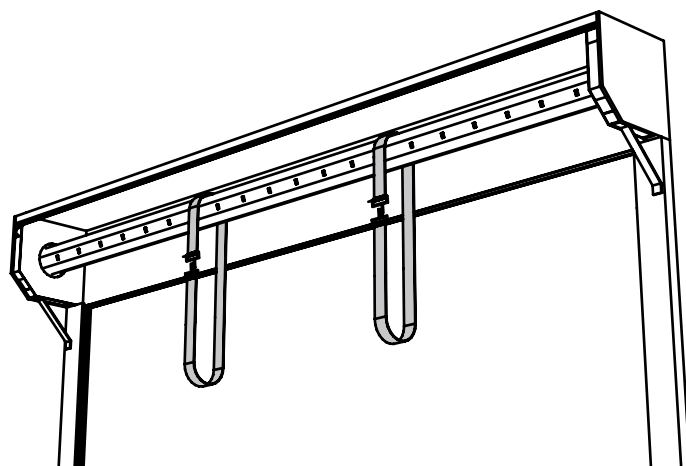
- A. Before continuing, you will need to supply power to the motor. Use a tester cable.

Match the colors of the wires with the corresponding colors on your tester cable clips.

If the shutter operates in the opposite direction to your tester cable switch, swap the black and red wires (connect the red wire to the black clip, and the black wire to the red clip). Doing this will change the direction that the shutter operates.



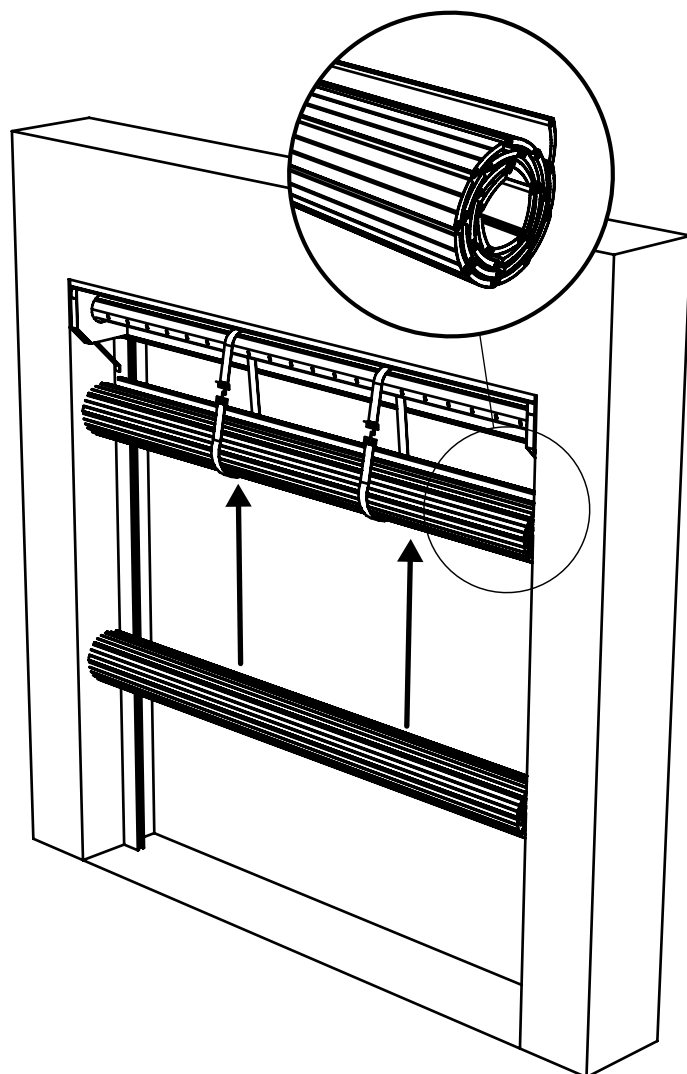
- B. Hang straps in a loop around the axle (E). Place the straps  $1/3$  of the width from each end of the axle.



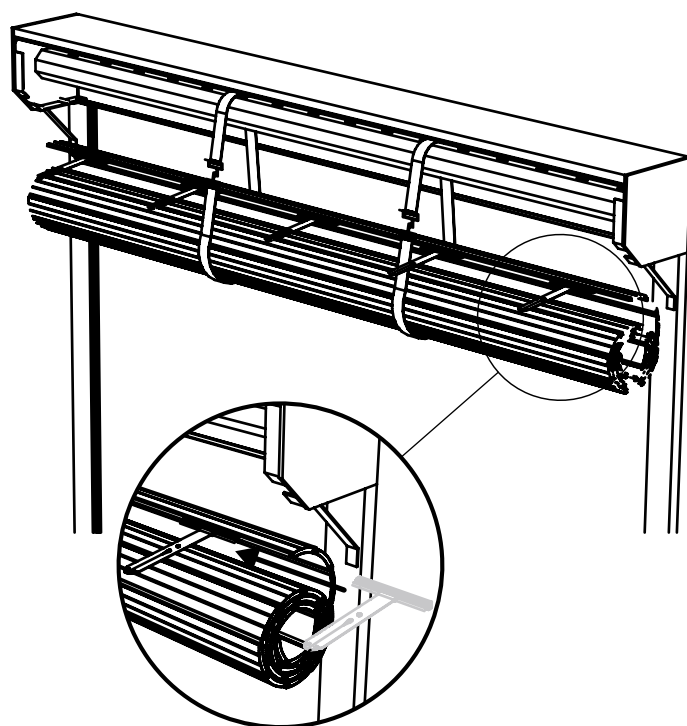
- C. Lift the curtain roll (B) up and into the strap loops. The curtain roll should be orientated so that the loose end of the curtain is coming up the back of the roll. Let the straps take the weight of the curtain roll so that it is hanging from the axle (E). Ensure the straps are in no danger of slipping.

**Warning:**

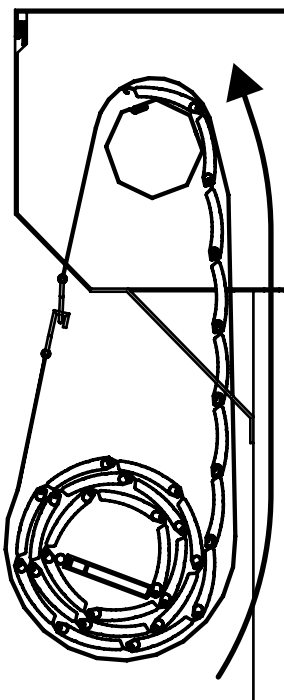
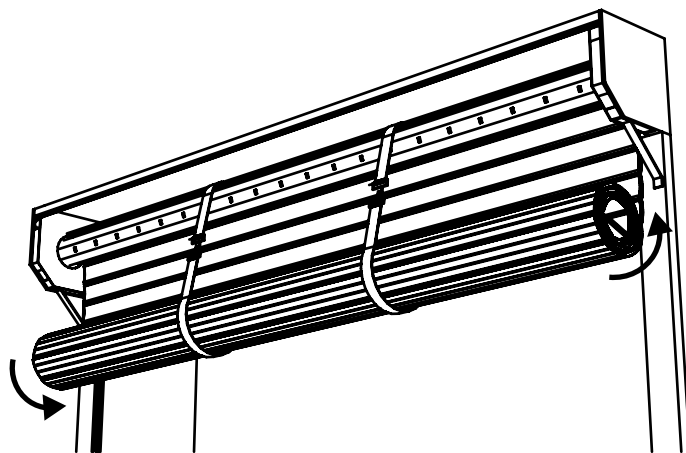
The curtain can be heavy. Ensure you have enough assistance to lift and hold the curtain, or use a lifting device.



- D. Slide the t-clips (H) provided onto the top of the curtain. Evenly space them along the width of the curtain with the end ones 3" in from each end of the curtain.

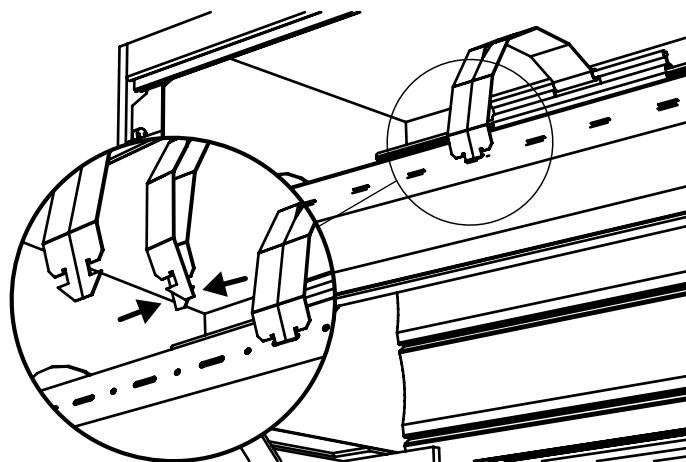


- E. Rotate the curtain roll (B) in the straps and pull the loose end of the curtain roll up behind the axle (E).



- F. Attach the t-clips (H) onto the axle (E) by squeezing the arrow-shaped ends, and inserting them into the long narrow slots in the axle.

Ensure all of the t-clips are inserted into the same row of slots in the axle.



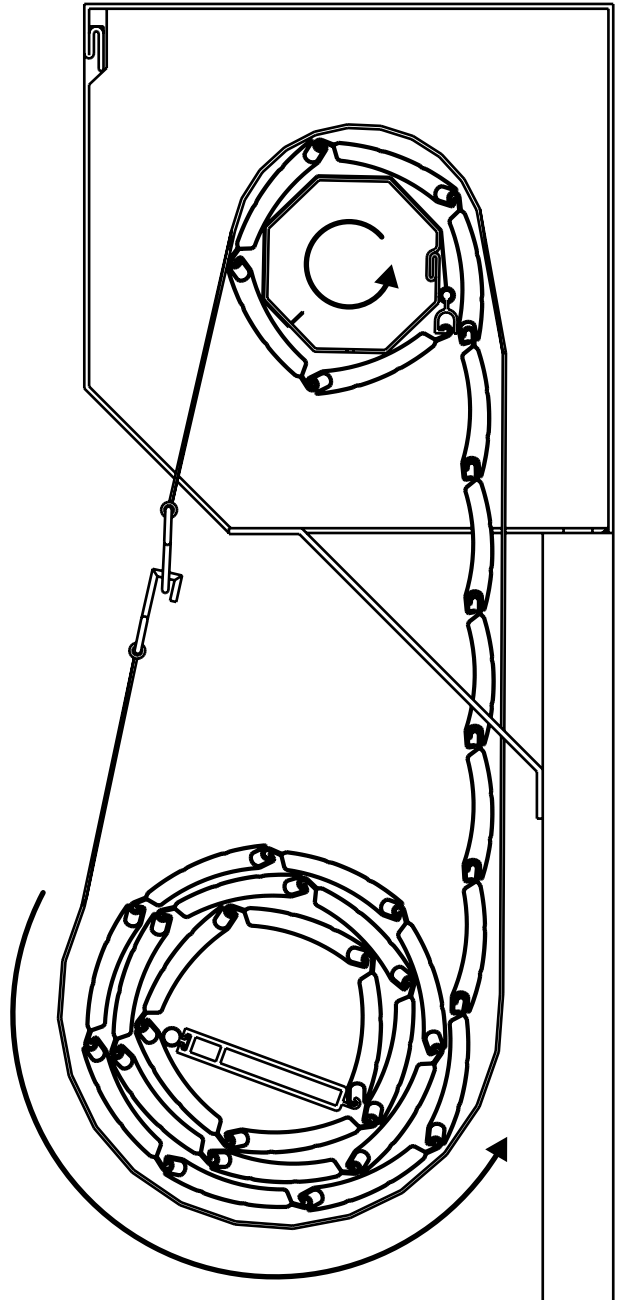
- G. Using the power supply, carefully rotate the axle (E). This will transfer the curtain roll (B) from the straps (C) onto the axle.

**Important notes:**

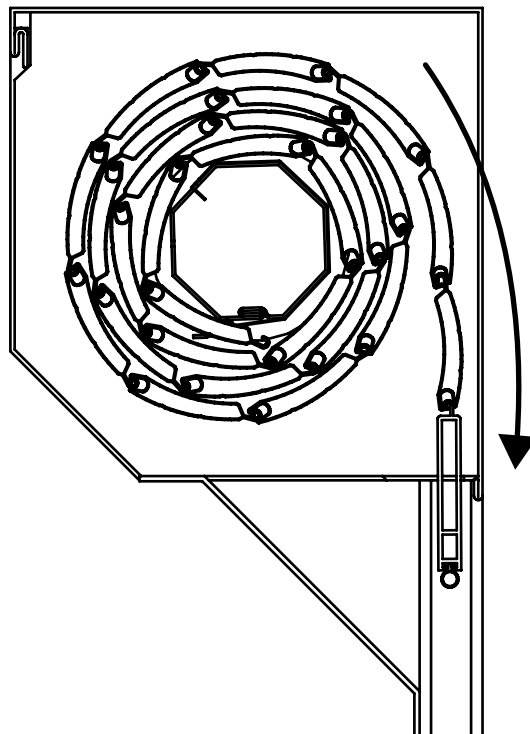
Pull the curtain roll suspended on the strap loops away from the guide rails (C) to prevent it from rubbing and scratching.

Also keep the curtain centered in the box housing (A) to prevent it from hitting each end of the box housing and causing damage.

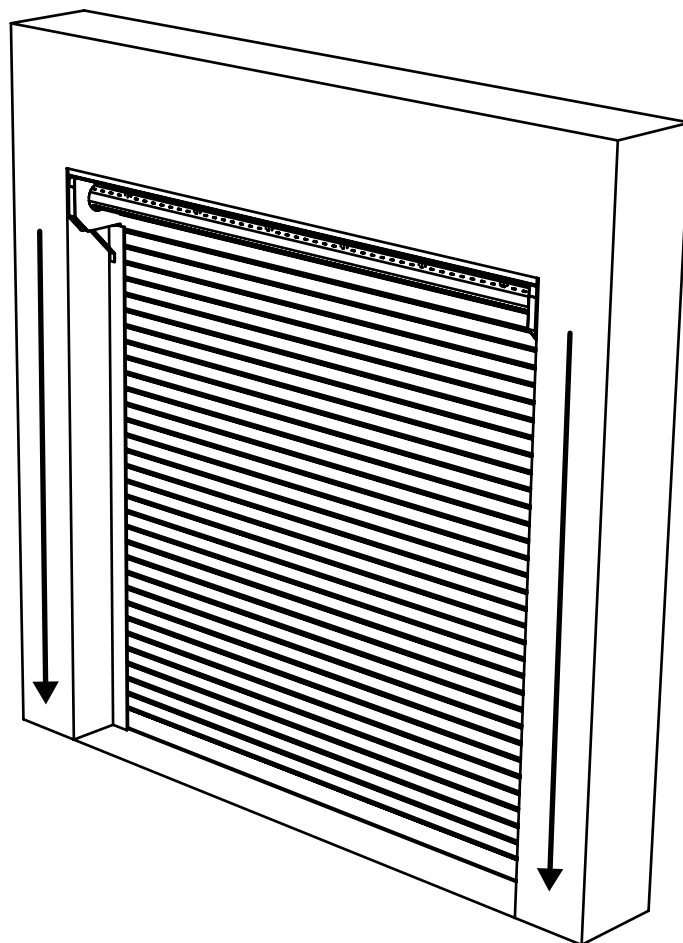
The suspended curtain roll may rotate faster than the axle for the first few rotations. You may need to pause the operation and rotate the suspended curtain roll backwards to correct this 2-3 times.



- H. Once the curtain is almost completely transferred from the straps to the axle (E), you will need to remove the straps and carefully lift the bottom bar (D) and set it into the guide rails (C) and then pull it down inside the guide rails.



- I. Rotate the curtain down into the completely closed position.



- J. Install the auto-lock brackets (L) onto each side of the box housing (A). Ensure the shutter is in the closed position.

\*The top of the box housing is not shown for illustration purposes.

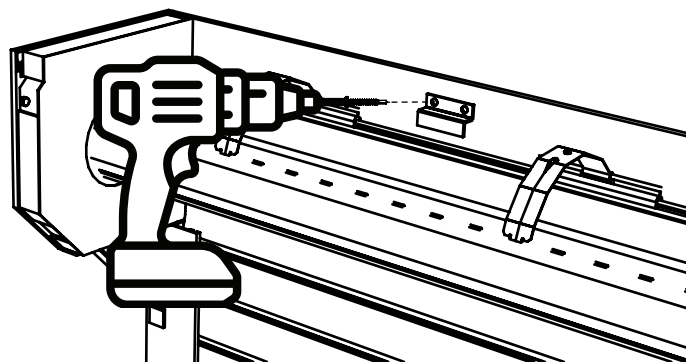
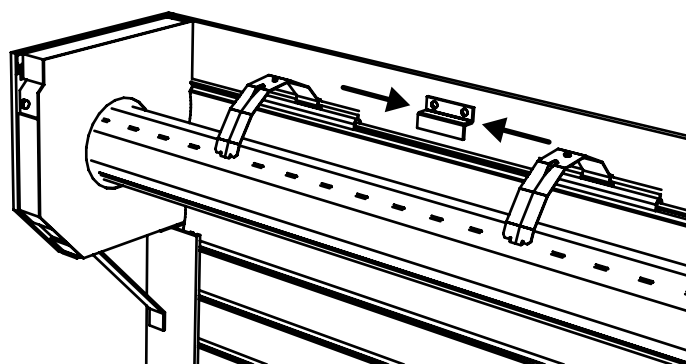
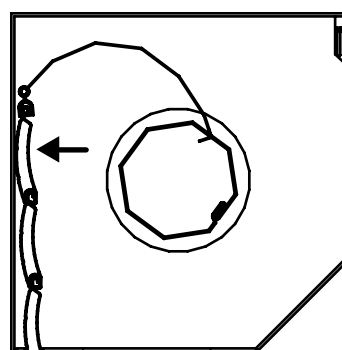
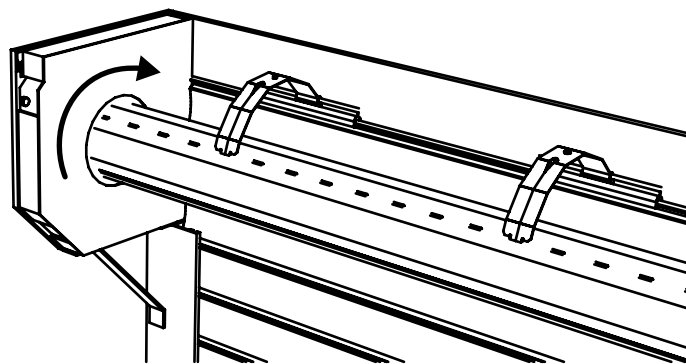
When the shutter is in the closed position, continue operating the shutter downwards allowing the axle (E) to turn until the t-clips (H) push the top of the curtain against the back of the box housing.

**Important note:**

This position must be set as the lower limit when setting the limits for your motor later.

Mount the auto-lock brackets  $3/8"$  (10mm) above the top of the curtain and in between the two t-clips closest to the ends of the box housing (one on each end of the box housing).

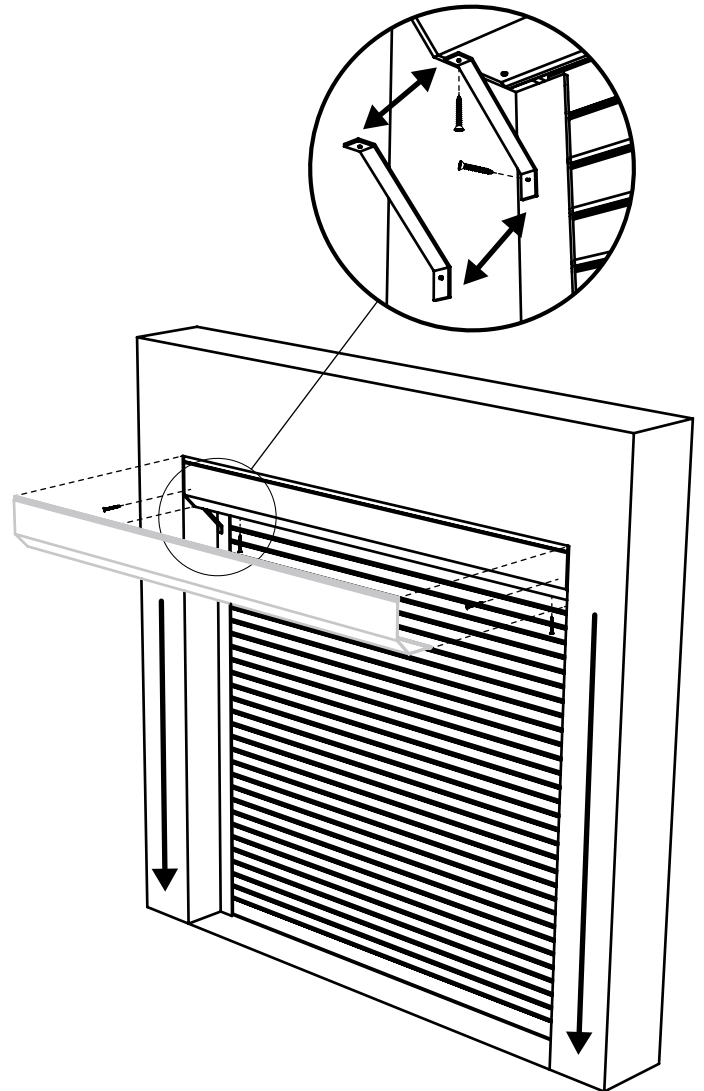
Use the tek screws (J2) provided for mounting.





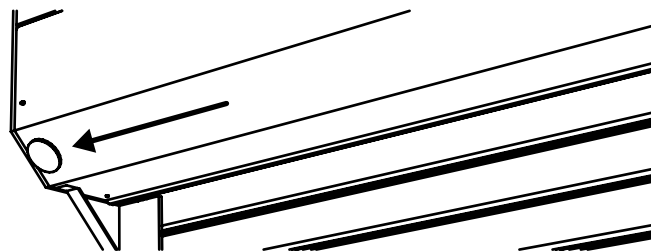
# COMPLETE **4**

1. Put the curtain down into the closed position.
2. **If your shutter has support brackets:**  
Remove the support brackets (K) in order to complete the next step.
3. Replace the box housing (A) cover lid and secure it with the four screws you removed in stage 1 of the installation.
4. **If your shutter has support brackets:**  
Replace the support brackets (K) you removed in step 2.
5. **If your shutter is installed outdoors:**  
The shutter must be sealed to the wall. Put a good bead of suitable exterior caulking where the shutter meets the wall along the top and on both sides of the shutter.
6. Refer to the limit setting and programming instructions provided for setting the open and closed stop limits on your shutter.
7. The shutter should be connected to the switch and power supply by a qualified electrician. Please give the installations instructions and wiring diagrams provided with the shutter to the electrician.

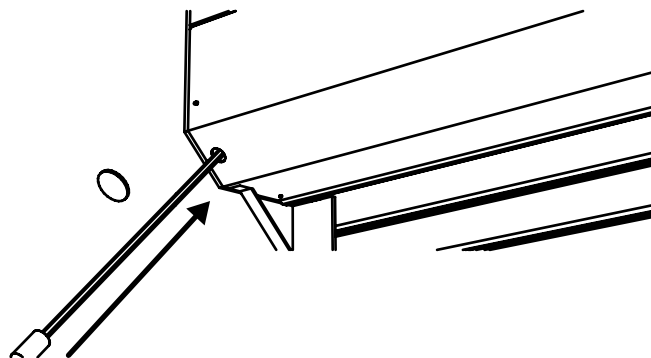


## SKIP THIS STEP IF YOUR MOTOR DOES NOT HAVE MANUAL OVERRIDE (CMO)

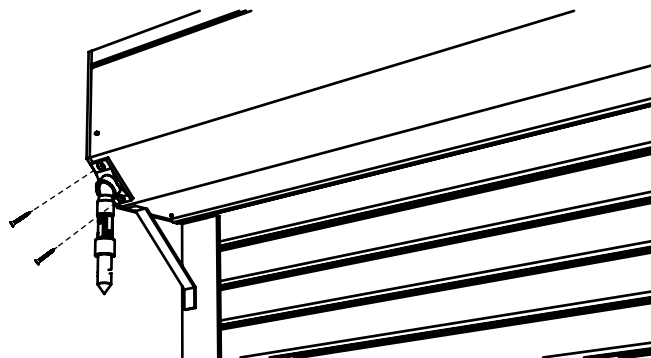
8. If the CMO shaft exit is on the front of your box housing, you will see a cover plate on the lid of the box housing (A). This is where the crank shaft is inserted to engage the manual crank override.



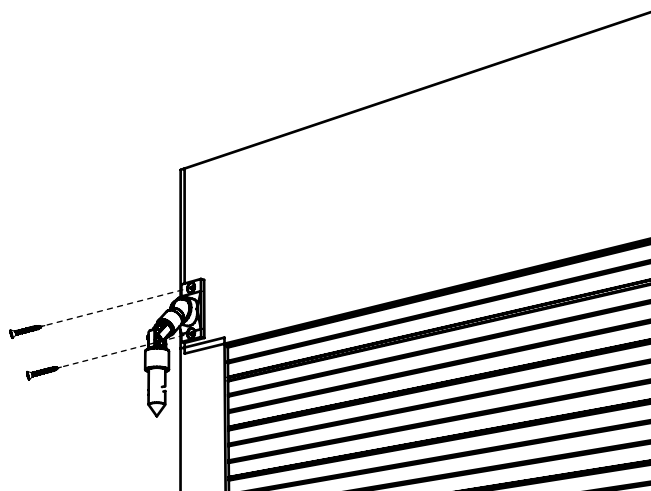
In the event of a power failure the shaft on the end of the crank handle (N2) or flex handle (O) is inserted through this hole in the box housing and engaged with the receiver on the head of the motor, allowing you to operate the shutter using the crank.



If requested, a swivel (N1) that mounts to the box housing will be provided along with a removeable handle (N2). When the CMO shaft exit is on the front of your box housing, there will be a pre-drilled exit hole and mounting screws. Insert the shaft on the swivel into this hole and engage it with the receiver on the head of the motor. Mount the swivel to the box housing using the tek screws (J2) provided.

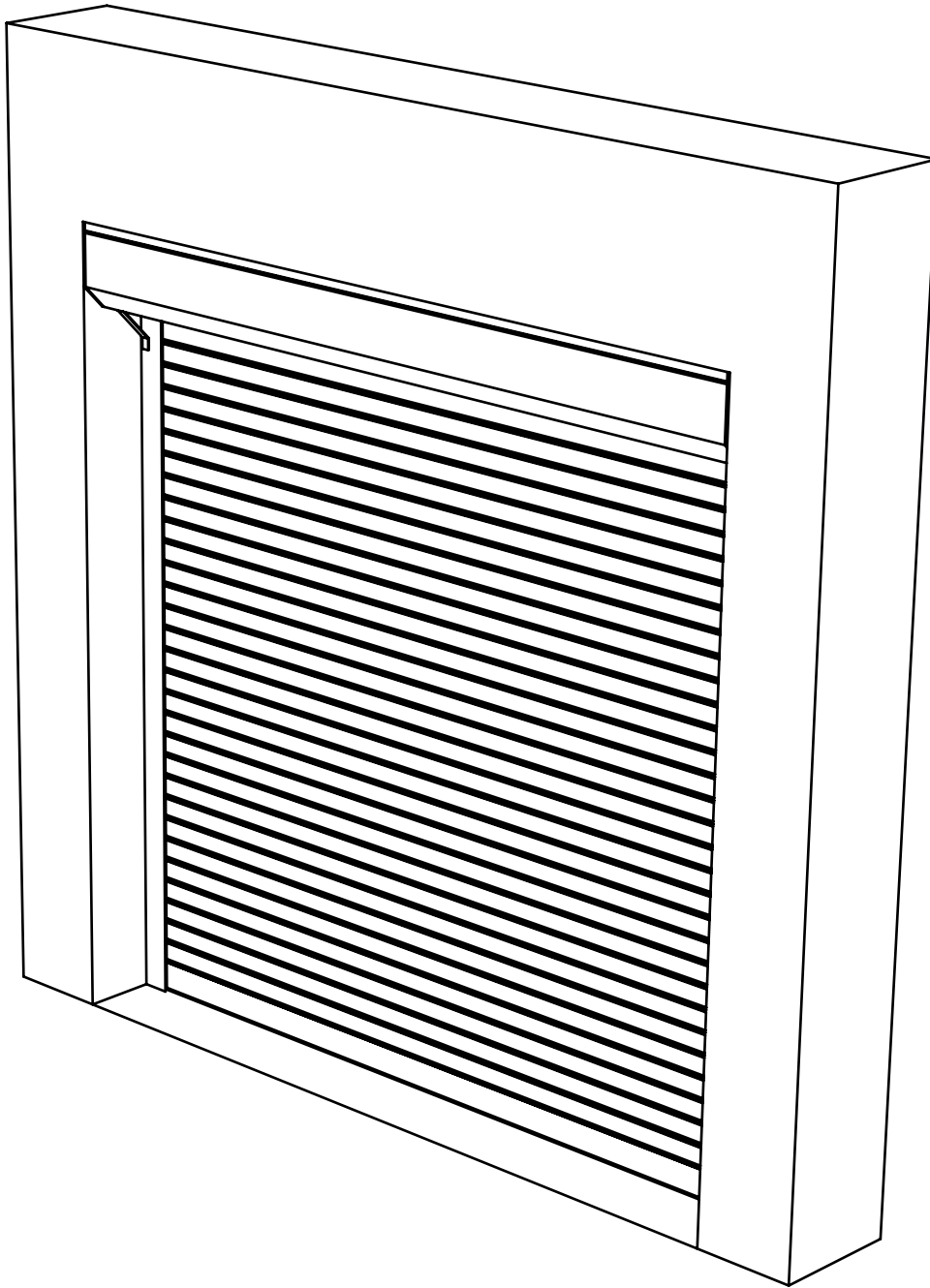


When the CMO shaft exit is on the back of your box housing, there will be a pre-drilled exit location on the box housing. Insert the shaft on the swivel through the hole and engage it with the receiver on the head of the motor. Mount the swivel to the box housing using the tek screws (J2) provided.



**YOU HAVE COMPLETED THE INSTALLATION OF YOUR DEFENDAGUARD SHUTTER, CONGRATULATIONS!**

For technical support on the installation of your shutter, please contact Pentagon.



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