

nexus 21

CONCEALMENT SYSTEMS

**TV Lift System Model AL-250
Installation Instructions**



Below is a parts list describing all of the items included with the Model AL-250 Lift System. Before beginning assembly and installation, please make sure that you have all items included on the list. If any parts are missing or damaged, please contact Nexus 21. Our contact information is shown at the top of this page.

Parts List



1. **Lift Column (2)**
(20 ½" x 4" x 2 ½")



2. **Base Mount (2)**
(7" x 3 ½")



3. **Load Support Bracket (2)**
(19 ¾" x 6 ¼")



4. **Control Box**
(8 ¼" x 3 ¾" x 1 ½")



5. **Vertical Stabilizer – Accuride Model 3607-26**
(26" x 2" ¾")

Cables

- **Motor Cable** – Black cable with white, six-pin connector (2 Meters). Use this cable to connect the Lift Column to the Control Box (using port 1 on the Control Box). Six feet long.
- **Power Cable** – Connects Control Box to power outlet (1 Meter). Three feet long.
- **RF Cable (only present if you ordered the RF version of the Lift System)** – Use to connect the RF Receiver to the Control Box. Ends have telephone-style (RJ45) connectors. One foot long.



TIP: You may want to install a power strip (not included) in the bottom of your cabinet to plug in the Lift System Control Box and any other components/appliances in the cabinet.

Hardware

- Two (2) -- #10 x 1 ¾" Flat Head Wood Screw (FHWS)
- Four (4) -- #8 x ¾" Flat Head Wood Screw (FHWS)
- Sixteen (16) -- 6mm x 20mm Flat Head Machine Screw (FHMS)
- Thirty Two (32) -- #10 x ¾" Truss Head Wood Screw (THWS)
- Four (4) -- Lid Catch Brackets w/ (8) #8 x ¾" (THWS)
- Four (4) – Tapered Pins
- One (1) -- Allen Wrench – 4mm

Cable Management

- Four (4) -- Wire Clips
- Four (4) – Zip Ties

Types of Controls for Nexus 21 Lift Systems

All Nexus 21 Lift Systems come standard with a **wireless remote control** and receiver. We offer a choice of two different type of remotes: IR and RF (both of which are explained in detail below). Our standard control type is RF, so unless you specifically requested the IR version when you made your purchase, you probably received the RF controls with this Lift System. The method of installation for each type of remote control is slightly different, so you should now identify which type of remote you have by reading below, and then follow the instructions for that type of remote.

NOTE: If you will be using the Lift with a home control system (like the ones made by companies such as Crestron or Control 4) the most common form of control is to WIRE IT DIRECTLY to the relays of your home control system. This direct-wire method is called **Integration by Contact Closure**, and is accomplished by using the Backup Control Switch (Height Limit Switch) that was supplied with the Lift System to connect the Lift to the control unit from your home control system.

Before You Begin the Installation: Identify Your Control Type

IR (Infrared) – This control option allows you to utilize a 3rd party universal style remote control to raise and lower the TV Lift. Your universal remote will “learn” the IR codes from the provided IR Handset, which will enable you to control the lift. The universal remote will then communicate with the “eye” located on the IR Receiver via your 3rd party emitter (or flasher). Instructions for mounting the IR controls are on page 10. Instructions for setting the TV Lift’s travel limit are on Supplemental Page B.

NOTE: If you are NOT planning on using a 3rd party Universal Remote, switch to the RF setup. (There is no charge for swapping)

These are the parts included with IR controls:



Contact Closure Hardware



IR Receiver



IR Handset



Height Limit Insert

RF (Radio Frequency) - This system utilizes a wireless remote control handset that sends a radio signal to the RF Receiver. The radio signal can go through cabinet walls and does not require line-of-sight. Instructions for mounting the RF controls are on page 11. Instructions for setting the Lift System travel limit are on Supplemental Page B.

TIP: Planning to integrate the TV Lift with your UNIVERSAL REMOTE CONTROL? The RF version of the Nexus 21 controls won't do it. Switch to IR.

These are the parts included with RF controls:



Backup Switch



RF Receiver



RF Handset



Height Limit Insert

Integration by Contact Closure – To direct-wire the TV Lift controls to a home control system (Crestron, Control 4, AMX, etc.) you will use the Back-up Control Switch (Height Limit Switch). You won't use any Nexus 21 receiver or handset for this type of control because you will use the handset or control pad that comes with your home control system. **Instructions for setting up the System using Contact Closure are on “Supplemental Page C”.**

IMPORTANT SAFETY AND BOX DESIGN INFORMATION

SEVERE PERSONAL INJURY AND PROPERTY DAMAGE CAN RESULT FROM IMPROPER INSTALLATION OR ASSEMBLY. READ THE FOLLOWING WARNINGS BEFORE BEGINNING.

The Lift Box Assembly **MUST** be built with safety as a top priority. The anti-collision feature included with the AL-250 Lift should not be the only safety measure considered to prevent personal injury or damage. Safety must be designed into the box itself. This means the Lift Box Assembly **MUST** be constructed with a “break-away” lid, which allows the lid to lift away if it encountered an object when the AL-250 Lift retracts.

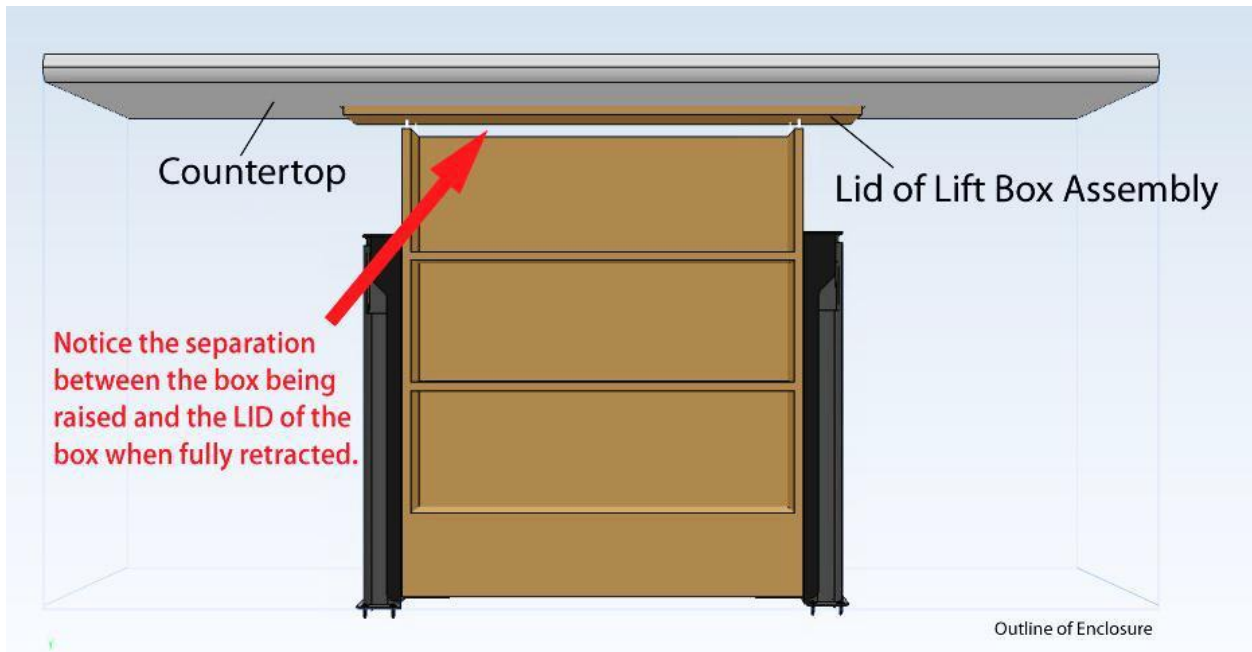


What is the “lid” of the Lift Box Assembly? The lid is the piece of material that closes the hole that is required for the box to hide away back inside the enclosure. It is typically constructed of stone, metal, wood, tile, or concrete and combined with a wood sub-top (see image above).

What other benefits does the “break-away” lid give me? The “break-away” lid feature is also very helpful when it comes to making sure your lid lands perfectly flush with the top of your countertop when the Lift retracts. This is accomplished by creating a small “lip” or “catch” around your countertop opening that will allow the lid to essentially “drop-off” and rest on the countertop when lowered, like a manhole cover. The Steel Tapered Pins allow the lid to release onto the “catches” and the Lift will travel an additional $\frac{1}{4}$ ” to $\frac{1}{2}$ ”. This means you will not need to rely on the Lift to fully retract into the exact position for the lid to be flush with the countertop.

How does the Lid “break-away”? The AL-250 Lift comes with four $1\frac{1}{2}$ ” Steel Tapered Pins that are used in the place of screws to hold the lid onto the Lift Box Assembly. These pins are thread into the underside of the Lift Box Assembly lid and will allow the lid to remain engaged with the box at all times, but also allow it to “break-away” from the box if something, like a hand or finger, gets in the way when the box lowers (see image above).





What other benefits does the “break-away” lid give me? The “break-away” lid feature is also very helpful when it comes to making sure your lid lands perfectly flush with the top of your counter when the Lift retracts. This is accomplished by creating a small “lip” or “catch” around your countertop opening that will allow the lid to essentially “drop-off” and rest on the countertop when lowered, like a manhole cover. The Steel Tapered Pins allow the lid to release onto the “catches” and the Lift will travel an additional $\frac{1}{4}$ ” to $\frac{1}{2}$ ”. This means you will not need to rely on the Lift to fully retract into the exact position for the lid to be flush with the countertop.

RECOMMENDED - Lift Column Covers. We recommend building a simple 3-sided cover to conceal the Lift Columns when extended. This will also finish off the box being raised and give it a much cleaner look.



SAFETY INFORMATION

SEVERE PERSONAL INJURY AND PROPERTY DAMAGE CAN RESULT FROM IMPROPER INSTALLATION OR ASSEMBLY. READ THE FOLLOWING WARNINGS BEFORE BEGINNING.

WARNINGS:

1. Do not use this product for any application other than those specified by Nexus 21.
2. Do not exceed the weight capacity. This can result in serious personal injury or damage to the equipment. It is the installer's responsibility to ensure that the total combined weight of all attached components does not exceed that of the maximum figure stated.
3. Follow all technical specifications and instructions during the installation.
4. Only use attachments/accessories specified by the manufacturer.
5. Close supervision is necessary when this system is being used by, or near, children, or disabled persons.
6. It is the responsibility of the installer to warn all potential users of the dangers of interfering with the mechanism during operation.
7. Read all technical instructions fully before installation and use. It is the installer's responsibility to ensure that all documentation is passed on the users and read fully before operation.
8. Failure to provide adequate structural strengthening, prior to installation can result in serious personal injury or damage to the equipment. It is the installer's responsibility to ensure the structure to which the Lift System is affixed can support four times the weight of the system.
9. Risk of electric shock. Do not attempt to open the Control Box.
10. To reduce risk of fire or electric shock, do not expose parts to rain or other liquids.
11. Protect the power cord from being walked on or pinched.
12. Keep all documentation.
13. Heed all warnings.
14. Clean only with a dry cloth.
15. Refer all service questions to Nexus 21 if the system does not operate normally.

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Assembly and Mounting Instructions – You Are Ready to Start

Please perform the following steps, in order:

Step 1: Inventory the Parts List. Carefully inspect all items, making sure you have everything shown in the Parts List.



Step 2: Attach both Base Mounts to the bottom of each lift column. Find the Base Mount (Part #2). Using the small Allen Wrench and eight (8) of the 6mm x 20mm Flat Head Machine Screws (4 FHMS Per Side) attach the Base Mount to the bottom of the lift column (the end with the pigtail). Each Base Mount has 8 holes – use the 4 innermost holes, which will align with the 4 threaded holes at the bottom of the Lift Column. **DO NOT OVER TIGHTEN!**



Step 3: Mounting the Load Support Brackets to each side of the Lift Box Assembly: Using (16) #10 x 3/8" THWS (8 THWS per side) attach the Load Support Brackets to each side of your Lift Box Assembly. Use two screws towards the top, middle and bottom of each bracket. Now use two screws on the bottom side of the box, to fasten the L-shaped bracket to the bottom of the Lift Box Assembly.



Step 3 Continued:



NOTE: You may need to use a block between the Load Support Bracket and the bottom of the Lift Box Assembly, depending on the height of the box.

IMPORTANT NOTE: When installing your cabinet, make sure it rests 1/8"-1/4" below the lip edge of the countertop where the lid will sit. This will make sure our collision detection software is not engaged from the lift running into your lid suddenly when operated.
YOU CANNOT ATTACH THE LID TO THE CABINET; YOU MUST USE OUR TAPERED PINS.

Step 4: Attach Vertical Stabilizers to the Back of the Lift Box Assembly. Using (6) #8 x 3/4" FHWS attach both Vertical Stabilizers (Part #5) to the back of the Lift Box Assembly. Make sure to make sure to mount both Stabilizers in the center of the Lift Box Assembly, equal distance from side to side. The inner slide of the Vertical Stabilizers should mount to the back of your Lift Box Assembly.



Step 5: Create two Vertical Stabilizer support beams on the inside of the cabinet to attach the bottom half of each Stabilizer. Using 2x4 wood beams, create a structure to fasten each Vertical Stabilizer to.

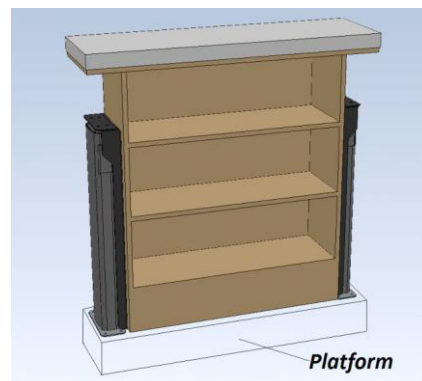
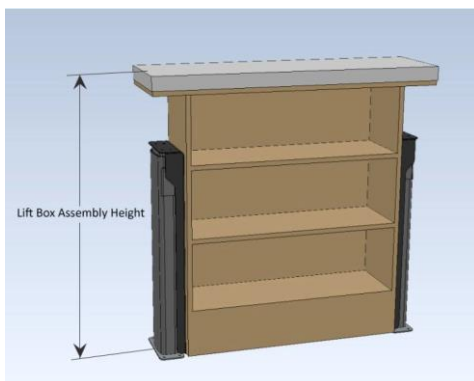
NOTE: Depending on the size of your Lift Box Assembly you may need to create a notch in the lip of the opening to allow each Vertical Stabilizer to operate correctly.



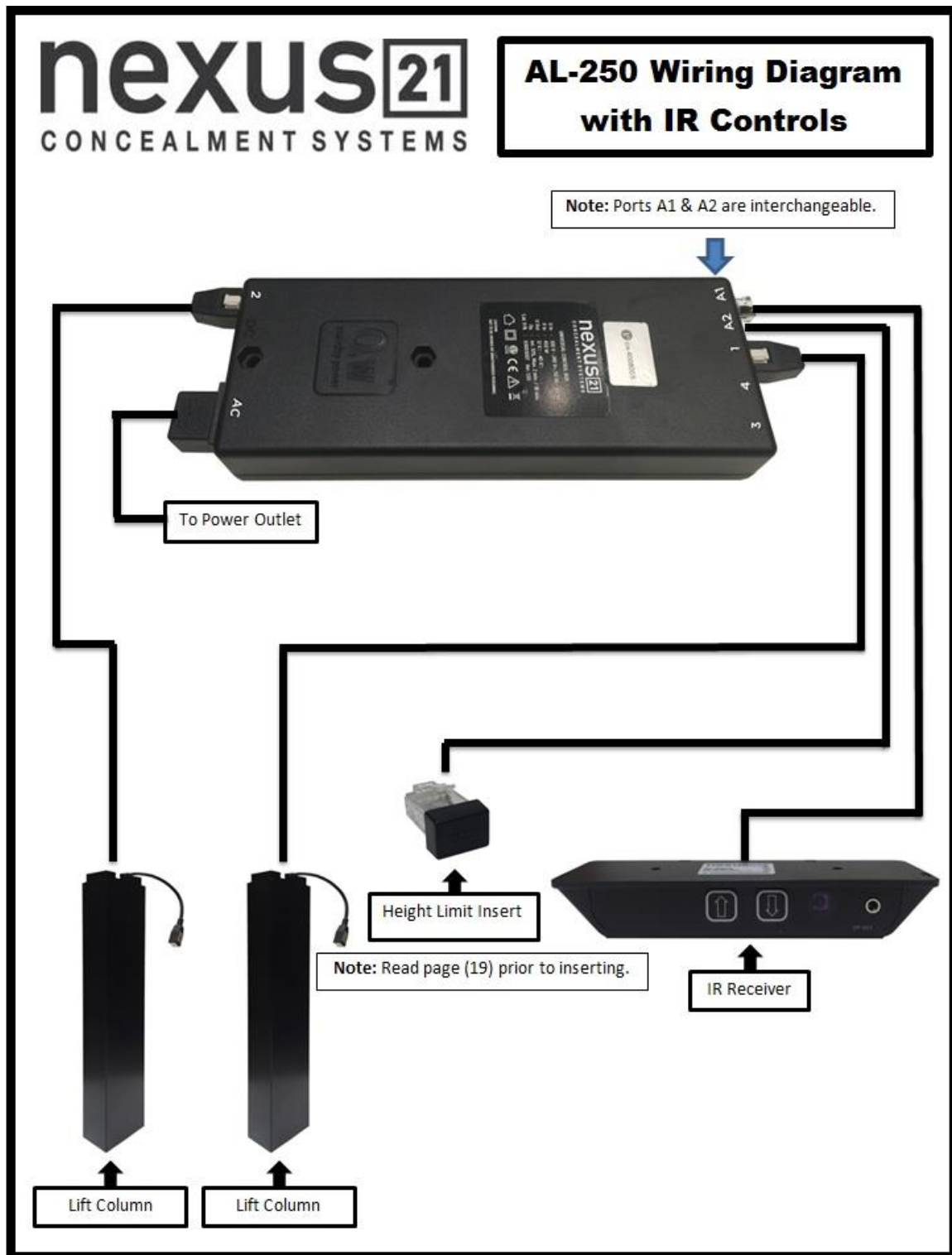
Step 6: Place each lift column inside the cabinet to determine if you will need to block each column away from the interior cabinet walls.



$$\text{Platform Height} = (\text{Enclosure Interior Height} + \text{Lid Thickness}) - \text{Lift Box Assembly Height}$$



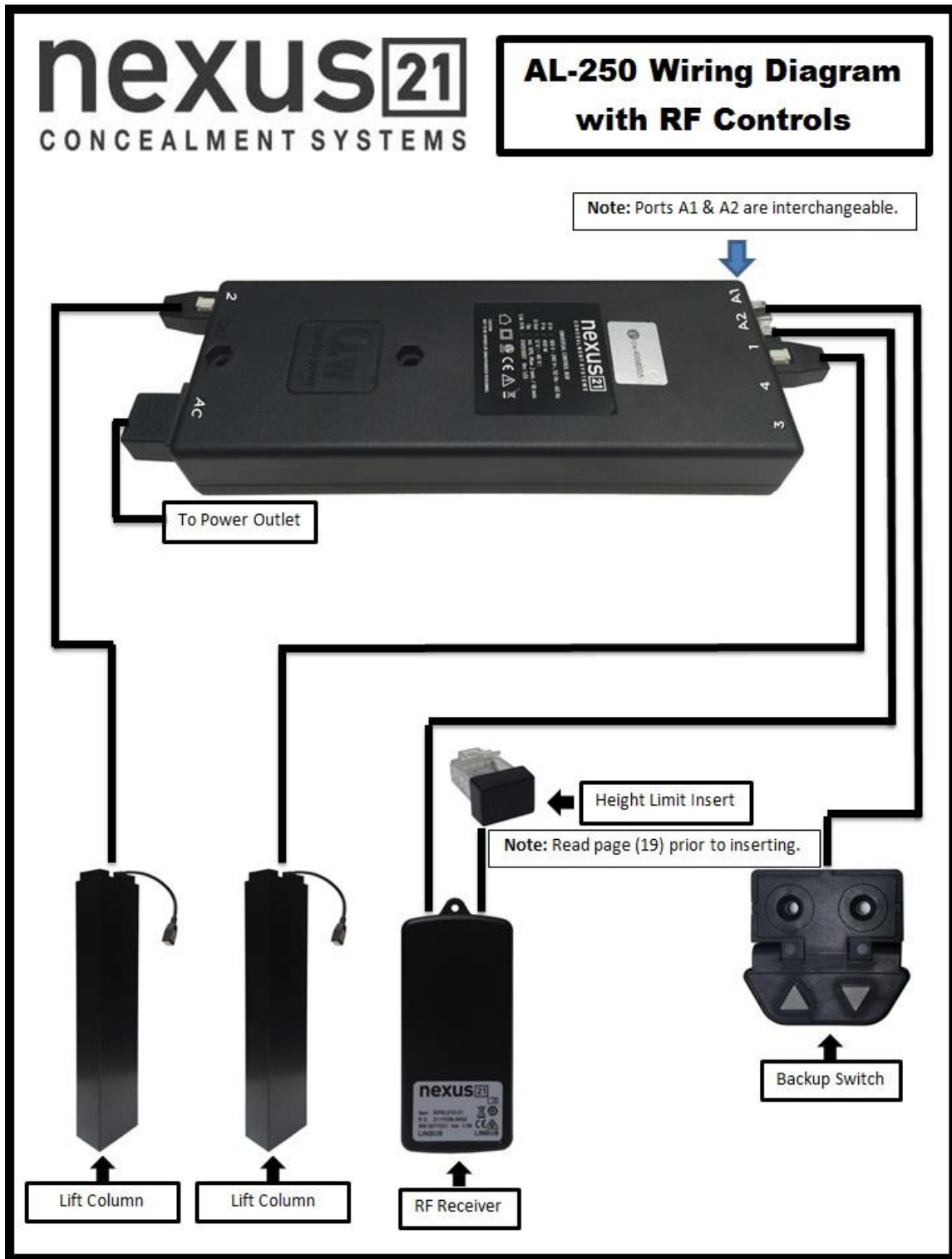
Step 7: Connect the controls. Refer to the wiring diagram on the following page to connect the **IR Controls** and **Control Box**. The diagram for the **RF controls** can be found on page 12.



Once you have connected the controls, test the Lift Column as follows:

First, you need to “initialize” the Lift System. If you have already raised the Lift Column, lower it again, since this step must be performed in the “down” position. Find the Backup Control Switch, which has two triangle-shaped buttons - an UP (with raised dot) and a DOWN. Press the DOWN button and HOLD IT DOWN for approximately 5 seconds. You should see a slight movement in the Lift Column. If you do not see the movement, release the Down button, and repeat the process - press and hold the Down button again for 5 seconds. Once you have seen the slight movement, the Lift System is now functional. Test it by pressing the Up button (no need to hold the Up button) and the lift will go up. You may let it go to the top, or stop it at any time by pressing the Down button.

IF YOU HAVE RF CONTROLS, USE THIS DIAGRAM (for IR Controls, see the previous page)



Once you have connected the controls, test the Lift Column as follows:

First, you need to “initialize” the Lift System. If you have already raised the Lift Column, lower it again, since this step must be performed in the “down” position. Find the Height Limit Switch, which has two triangle-shaped buttons - an UP (with raised dot) and a DOWN. Press the DOWN button and HOLD IT DOWN for approximately 5 seconds. You should see a slight movement in the Lift Column. If you do not see the movement, release the Down button, and repeat the process - press and hold the Down button again for 5 seconds. Once you have seen the slight movement, the Lift System is now functional. Test it by pressing the Up button (no need to hold the Up button) and the lift will go up. You may let it go to the top, or stop it at any time by pressing the Down button.

Step 8: Reinitialize/Reset the lift system. With the lift in the fully retracted position, hold the down button on the manual back up switch (the grey pad with two triangle-shaped buttons) for 3-5 seconds. You should see the lift column make a slight up and down jog motion; this will let you know the lift system has successfully been reset. If you do not see the jog motion within the first 3-5 seconds, then release the down button and try again. Once you have successfully reset the lift system then proceed to the next step.



Step 9: Extend the lift columns while they're positioned inside the cabinet.

NOTE: Do not bump into column while it is in the "extended position", as the column may tip over.

IMPORTANT NOTE: Make sure when the lift is fully retracted, the cabinet rests $1/8'' - 1/4''$ below your lip edge. This will make sure our collision detection software is not engaged from the lift running into your lid suddenly when operated. **YOU CANNOT ATTACH THE LID TO THE CABINET; YOU MUST USE OUR TAPERED PINS.**

Step 9: Attach your Lift Box Assembly to the top of each lift column. Using (8) 6mm x 20mm FHMS attach your Lift Box Assembly to the top of the Load Support Bracket while the lift is fully extended.



Step 10: Make necessary position adjustments to the Lift Box Assembly with lift columns attached. Make sure to leave a $1/2''$ gap around the sides and front of your Lift Box Assembly, to ensure finger safety.



Step 11(Optional): Blocking lift columns away from the interior walls. Block each lift column away from the side walls of the cabinet to create a mounting point for the rear of the Base Mounts, using 2 x 4" wood blocks.



Step 12: Fasten the Base Mount of each lift column to the block and base of cabinet. Using (16) #10 x 3/4" THWS (8 THWS per Base Mount) fasten each Base Mount to the block (created in step 11) and the base of the cabinet.



Step 13: Mount both Vertical Stabilizers to the interior back wall of the cabinet. Using (6) #8 x 3/4" FHWS (3 Per Vertical Stabilizer) attach the bottom half of the Stabilizers to the back wall of the cabinet.



Step 14a: Mount the Control Box in an accessible place within the enclosure. YOU MUST BE ABLE TO ACCESS THE CONTROL BOX AT ALL TIMES FOR TROUBLESHOOTING PURPOSES. Using four (4) #10 x 3/4" FHWS mount the Control Box to the interior wall of the cabinet. Make sure the Motor Cables don't bind when the Lift rises.



Step 14b: Using (2) #6 x 3/4" RHWS located in the RF Kit, mount the RF Receiver next to the Control Box.



Step 14c: Using (2) #8 x 3/4" FHWS, mount the manual back-up switch under the counter top lip or a nearby location.



Step 15a: Attaching Tapered Pins to the underside of your Lid: Use a 7/32" bit to drill four 1/2" holes on the underside of your lid.

Step 15b: Screw Tapered Pins into the bottom side of your lid. Use a Phillips Screwdriver to screw the tapered pins into the underside of your lid. Once you have the tapered pins installed on the lid (one Tapered Pin for each corner), mark the same position on the top of your Lift Box Assembly, where the Tapered Pins will go through. The Tapered Pins provide a "Break-Away" Lid

Design to prevent serious injuries when the lift travels down.



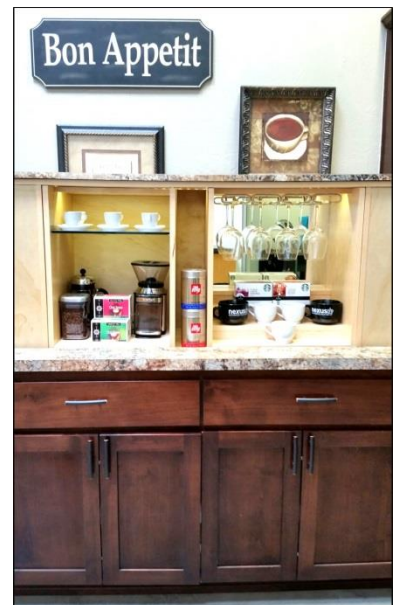
Step 15c: Drill Four holes into the top of the Lift Box Assembly. Drill four 1/4" holes through the top of your Lift Box Assembly at the positions you marked to allow the Tapered Pins to slide into.



NOTE: You should not solely rely on the Tapered Pins for finger safety. We suggest that the lid hangs over the front edge of the Lift Box Assembly by at least 3/4" on the front side to also prevent finger injuries.

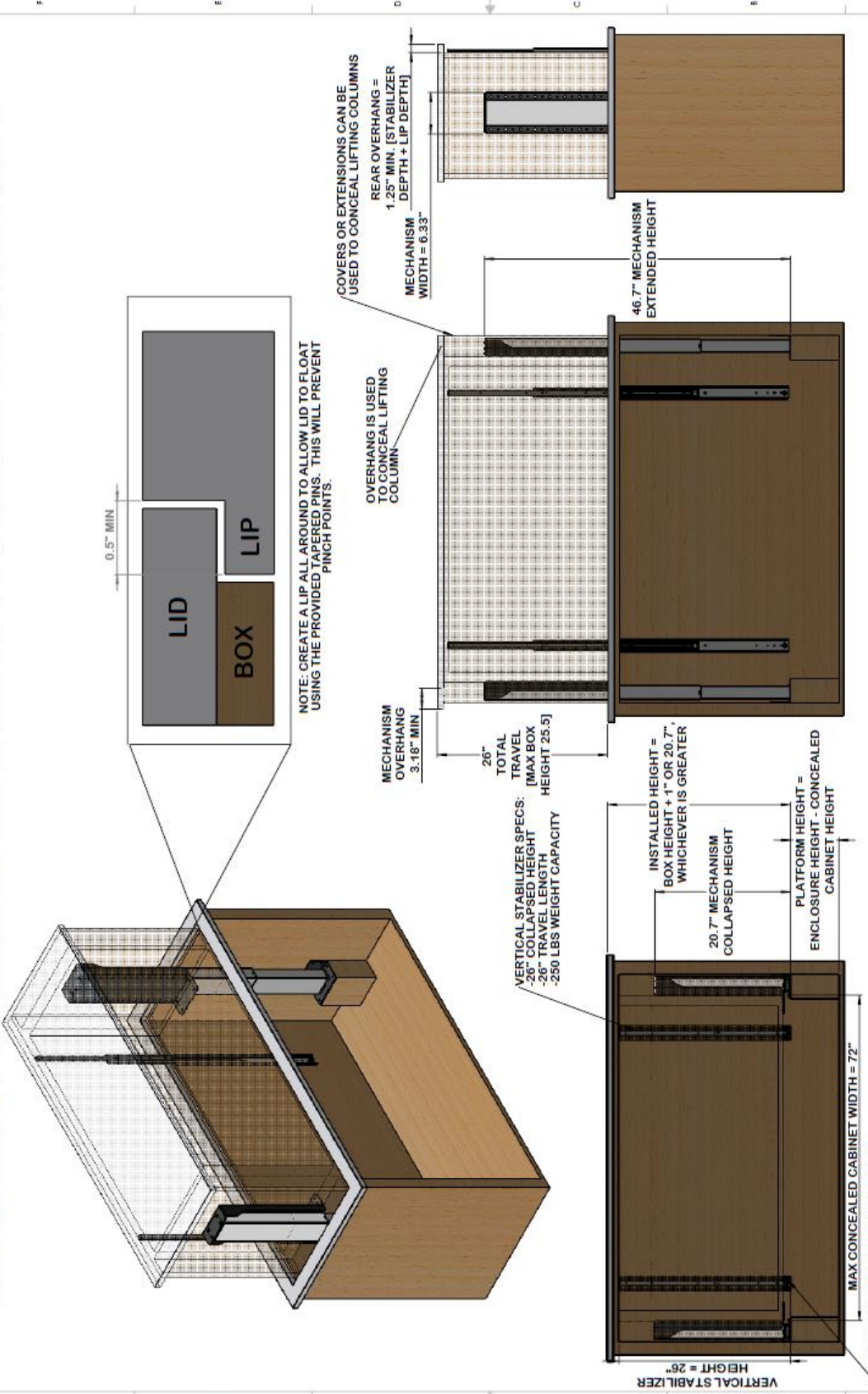
IMPORTANT NOTE: Make sure when the lid rests 1/8"-1/4" above your cabinet when the lift is FULLY retracted. This will make sure our collision detection software is not engaged from the lift running into your lid suddenly when operated. **YOU CANNOT ATTACH THE LID TO THE CABINET; YOU MUST USE OUR TAPERED PINS.**

Step 16: Setting a Height Limit. If you need the lift to stop at any position before fully extended, please refer to page 19 for directions on how to set a height limit.



**Congratulations your AL-250 Hidden Storage
Lift System is now installed!**

MODEL AL-250 CONCEALED STORAGE LIFT STANDARD CONFIGURATION



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- NOTES:**
1. THE CABINET BOX SHOWN IN THE DIAGRAM IS FOR REFERENCE ONLY AND IS NOT PROVIDED WITH THE LIFT SYSTEM.
 2. FOR THIS LIFT MODEL, THE LENGTH OF ITS TRAVEL (EXTENSION LENGTH OR STROKE) IS 26"
 3. FOR THIS LIFT MODEL, THE WEIGHT CAPACITY IS 250 LBS.
 4. COVERED VERTICAL STABILIZERS ARE REQUIRED FOR THIS INSTALLATION, TO ENSURE MINIMAL DEFLECTION AND IDEAL PERFORMANCE.
 5. BOX DIMENSIONS MUST BE AS FOLLOWS:
 6. **MAXIMUM BOX DIMENSIONS: 72 W" X 25.5" H X 30" D.**
 7. **THE LID MUST BE REMOVABLE FOR SAFETY, ALTHOUGH THE AL-SERIES HAS AN EXTREMELY SENSITIVE COLLISION DETECTION SYSTEM, PINCHPOINTS CAUSE AN UNNECESSARY DANGER.**
 8. BOX INTERIOR SPACE NOT TO EXCEED 24.5" IN HEIGHT.
 9. INTERIOR CABINET HEIGHT IS CALCULATED AS THE ENCLOSURE WITHOUT THE COUNTERTOP OR LID.

Supplemental Page B: Setting a Height Limit

Please follow this procedure if you would like to limit the distance that your TV Lift extends.

To set your Travel Limit with IR Controls:

If you want the lift system to always go to its full extension, do NOT use the Height Limit Insert. Simply leave it unplugged and the system will always travel to the full extension. To limit the travel, follow the procedure below:



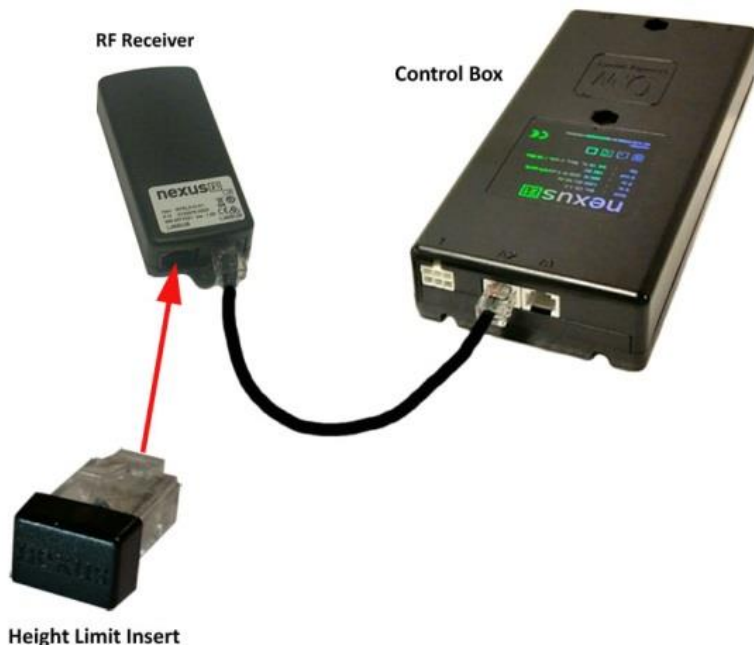
1. Using the IR Receiver, run the lift to the ideal height limit position and stop it

2. With the lift system stopped, plug the Height Limit Insert into the available RJ45 port on the Control Box. This will set the height limit at this position for both the IR Remote (or 3rd party universal remote) and the IR Receiver.

3. If the height limit is set at the incorrect position, remove the Height Limit insert and repeat the procedure.

To set your Travel Limit with RF Controls:

If you want the lift system to always go to its full extension, do NOT use the Height Limit Insert. Simply leave it unplugged and the system will always travel to the full extension. To limit the travel, follow the procedure below:



1. Using the Wired Backup Switch, run the lift system to the ideal height limit position and stop it there.

2. With the lift system stopped, plug the Height Limit Insert into the available RJ45 port on the RF Receiver. This will set the height limit at this position for both the RF Remote and Backup Switch.

3. If the height limit is set at the incorrect position, remove the Height Limit insert and repeat the procedure.

Supplemental Page C: Connect the Lift to Home Control System

Connecting the Nexus 21 Lift System to Other Control Systems

Use these instructions if you need to wire the Lift System directly to a Home Control System, like those made by Crestron, AMX, Control 4, RTI, etc. A common term for this method of integration is “connection by contact closure.”

Contents of Contact Closure Hardware Pack:

Step 1: Contact Closure Hardware Pack

This pack contains the following parts:

1 – *Contact Closure Cable, RJ-45 to Relays*

1 – *Height limit Insert*



Contact Closure Cable, RJ-45 to Relays



Height Limit Insert

Step 2: Connecting the Lift System to the Control System

Using the *Contact Closure Cable* to connect the three wires directly to the relays on your control module (see image below). Then connect the RJ-45 plug on the *Contact Closure Cable* to the Nexus 21 system, using either one of the two RJ-45 ports on the side of the Nexus 21 Control Box.

The colored wires function as follows:

BLUE = common (Pin 4 from RJ45) **GREEN** = Extend (Pin 5 from RJ45) **RED** = Retract (Pin 8 from RJ45)

Wire combinations for the relays:

The lift system uses two relays. One for “extend” and one for “retract.” The common wire runs between both relays, by using the **BLUE common wire**, together with a jumper wire you supply.

Relay 1 Extend: **BLUE** common wire with **GREEN** normally open.

Relay 2 Retract: **BLUE** common wire (use jumper) with **RED** normally open.



Close-up View of RJ-45 Pins



Step 3: Setting a Height Limit for the Lift System

Begin with the Height Limit Insert UNPLUGGED. Then send the “UP” command from your control system and run the Lift System up to your desired height. Once the Lift System is at the desired height, send the “DOWN” command to stop the lift at the point. Now PLUG the Height Limit Insert into the available RJ45 port on the Nexus 21 Control Box. The Lift will now remember the height and always stop at that point. To change, unplug the Height Limit Insert and repeat Step 3.

For technical support or to ask questions, call Nexus 21 Customer Service, toll-free at (866) 500-5438.

Contact Closure Integration Document for L-90

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Supplemental Page D: Creating a Lid Catch

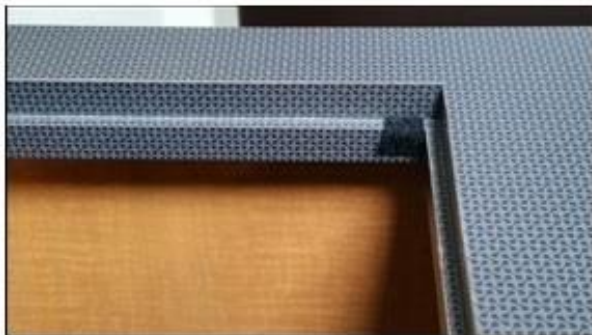
How to Properly Install a Lid "Catch" with a Nexus 21 Lift System

There are multiple ways to properly create a "catch" for the lid to rest on, when the lift is fully retracted. Down below are a few examples.

Using the provided Lid Catch Brackets with (8) #10 x 3/4" THWS attach the brackets to each corner of the lid opening. This provide a support point for the lid to rest on while the lift is in the fully retracted position, assuring the lid is flush with the rest of the cabinetry every time.



Here are a few other examples on how to properly create a "catch" for the cabinet lid.



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