

DIY Alpha Murphy Bed

(Horizontal Spring Mechanism)



It's like having your own shop!

Assembly Instructions

Questions call 501.753.9699

Designed to exceed International ISO 9002
Standards for Residential Specifications
Revised 2/3/23

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Check Your Components

Thank you for your purchase of this DIY Murphy bed. We try to make this projects as easy as possible for you. Take a minute and check your contents.

Hardware

Qty.	Frame Carton Items	Comments	✓
2	Frame End Sections	Identical Head & Foot	<input type="checkbox"/>
2	Frame Side Sections	Identical, Right or Left	<input type="checkbox"/>
3(5)	Stiffeners - Bed Face (King Size)	Space evenly between Frame Sides	<input type="checkbox"/>
2	Fold-away Legs	One Left - One Right	<input type="checkbox"/>
1	Leg Connector Rod	Stabilizes and Eases Leg Operation	<input type="checkbox"/>
Hardware Card #3			
14	Bolt 10-24x1/2" (M6x12mm) Black	Bolt Frame corners	<input type="checkbox"/>
2	Bolt 10-24x1 1/4" (M6 x 32mm) Black	Bolt Leg Stop Foot corners	<input type="checkbox"/>
16	Nut 10-24 (M6) Black Nylock	Use with #1214 & #1213	<input type="checkbox"/>
4	Angle 1"x1"x1 3/4" (25x25x44mm) Black	Use inside Frame corners	<input type="checkbox"/>
2	1/2"x3/4" (13x19mm) Round Black Cylinder	Use with #1213 as Leg Stop	<input type="checkbox"/>
Hardware Card #4			
2	1 1/2"x5/16" (T1.5x40mm) Black Washer	Secure Leg inside Frame	<input type="checkbox"/>
2	1 1/2"x.765" (T2.5x40mm) Black Washer	Secure Leg inside Frame	<input type="checkbox"/>
2	1 1/2"x.765" (T2.5x40mm) Black Nylon Washer	Between Leg & outside of Frame	<input type="checkbox"/>
2	Nut 5/16" (M8) Black Nylock	Secure Leg inside Frame	<input type="checkbox"/>
2	Bolt 1/4"-20 Black Hex Head	Attach Leg to Leg Rod	<input type="checkbox"/>
2	Star Washer for #1210	Attach Leg to Leg Rod	<input type="checkbox"/>
Hardware Card #5			
1	Nylon Web Strap with Buckle	Secure Mattress to Bed Frame	<input type="checkbox"/>
2	3/4"x1/4" (T1.5x25mm) Washer	Secure Nylon Web Strap to Bed Face Panel under Mattress	<input type="checkbox"/>
2	#8x5/8" (M4x15mm) Wood Screw	Secure Nylon Web Strap	<input type="checkbox"/>
Hardware Card #7 - King size includes 2 bags			
110	#8x5/8" (M4x15mm) Wood Screw	Attach Steel Bed Frame to Bed Face	<input type="checkbox"/>

Qty.	Mechanism Carton Items	Comments	
1	Lift Mechanism - Right Side	Attach to Right Side Panel	<input type="checkbox"/>
1	Lift Mechanism - Left Side	Attach to Left Side Panel	<input type="checkbox"/>
2	#1 Bags containing 9 Springs each	Install correct number in each Mechanism	<input type="checkbox"/>
1	13" Plastic Pipe	Used to set the Lift Mechanisms	<input type="checkbox"/>
Hardware Card #2			
10	Machine Screw 5/16-18 x 1 1/4"	To attach Lift Mechanisms to Side Panels	<input type="checkbox"/>
4	Hex Head Bolt 5/16-18 x 1"	Attach Mechanism to Frame Side section	<input type="checkbox"/>
2	Allen Head Bolt 5/16-18 x 1"	Position Mechanism Arm on Frame Side section	<input type="checkbox"/>
16	Hex Head Nylock Nut	Secure Bolts and Screws	<input type="checkbox"/>
1	Allen Wrench 5/16"	For Allen Head bolts	<input type="checkbox"/>

Single/Twin Horizontal

Overall Cabinet Dimensions

Mattress Size: 39" x 75" (12" Max Thickness) 80"w x 49 3/4"h x 16"d (Projection from wall: 49")

Qty.	Description	Width	Length	Material
4	(A) Bed Face Panels	19 1/2"	41 3/4"	(3/4" Plywood)
2	(B) Side Panels	16"	49"	(3/4" Plywood)
1	(C) Top Panel	16"	80"	(3/4" Plywood)
1	(D) Top Facia	2"	78 1/2"	(3/4" Plywood)
1	(E) Top Facia Stiffener	3"	78 1/2"	(3/4" Plywood)
1	(F-1) Top Rear Stiffener	4"	78 1/2"	(3/4" Plywood)
1	(F-2) Bottom Rear Stiffener	4"	78 1/2"	(3/4" Plywood)
1	(G) Kick & Kick Stiffener (1 1/2" thick)	4"	78 1/2"	(3/4" Plywood)
1	(H) Head Board	15"	78 1/2"	(3/4" Plywood)
1	(I) Head board Stiffener	4"	78 1/2"	(3/4" Plywood)
3	(J) Panel Connectors	3"	37"	(3/4" Plywood)
2	(K) Top Cleats	1"	13 13/16	(3/4" Solid Wood)
8	1 1/2" Pocket screws (Top Build)			
40	1 1/4" finish nails (Top Build)(Headboard Build)			
8	Brackets	1 x 1 x 1 3/4" Other sizes can be substituted		
Various	3/4" Screws			
16	1 1/2" Screws (Top Install)			
8	1 1/2" Pocket Screws (Headboard Install)			
50'	Veneer Tape	Match the species of wood you are using.		

Full/Double Horizontal

Overall Cabinet Dimensions

Mattress Size: 54" x 75" (12" Max Thickness) 80"w x 64 3/4"h x 16"d (Projection from wall: 64")

Qty.	Description	Width	Length	Material
4	(A) Bed Face Panels	19 1/2"	56 3/4"	(3/4" Plywood)
2	(B) Side Panels	16"	64"	(3/4" Plywood)
1	(C) Top Panel	16"	80"	(3/4" Plywood)
1	(D) Top Facia	2"	78 1/2"	(3/4" Plywood)
1	(E) Top Facia Stiffener	3"	78 1/2"	(3/4" Plywood)
1	(F-1) Top Rear Stiffener	4"	78 1/2"	(3/4" Plywood)
1	(F-2) Bottom Rear Stiffener	4"	78 1/2"	(3/4" Plywood)
1	(G) Kick & Kick Stiffener (1 1/2" thick)	4"	78 1/2"	(3/4" Plywood)
1	(H) Head Board	15"	78 1/2"	(3/4" Plywood)
1	(I) Head board Stiffener	4"	78 1/2"	(3/4" Plywood)
3	(J) Panel Connectors	3"	52"	(3/4" Plywood)
2	(K) Top Cleats	1"	13 13/16	(3/4" Solid Wood)
8	1 1/2" screws (Top Build)			
40	1 1/4" finish nails (Top Build)(Headboard Build)			
8	Brackets (with 32 - 3/4" screws)	1 x 1 x 1 3/4" Other size brackets can be substituted.		
16	1 1/2" Screws (Top Install)			
4	Hardwood Dowels (Headboard Installation)			
8	1 1/2" Pocket Screws (Headboard Install)			

Queen Horizontal

Overall Cabinet Dimensions

Mattress Size: 60" x 80" (12" Max Thickness) 85"w x 70 3/4"h x 16"d (Projection from wall: 70"

Qty.	Description	Width	Length	<input checked="" type="checkbox"/>
4	(A) Bed Face Panels	20 3/4"	62 3/4"	
2	(B) Side Panels	16"	70"	
1	(C) Top Panel	16"	85"	
1	(D) Top Facia	2"	83 1/2"	
1	(E) Top Facia Stiffener	3"	83 1/2"	
1	(F-1) Top Rear Stiffener	4"	83 1/2"	
1	(F-2) Bottom Rear Stiffener	4"	83 1/2"	
1	(G) Kick & Kick Stiffener (1 1/2" thick) <i>Or 2 3/4" thick pieces nailed together after they are edge banded.</i>	4"	83 1/2"	
1	(H) Head Board	15"	83 1/2"	
1	(I) Head board Stiffener	4"	83 1/2"	
3	(J) Panel Connectors	3"	58"	
2	(K) Top Cleats	1"	13 13/16"	
8	1 1/2" Pocket screws (Top Build)			
40	1 1/4" finish nails (Top Build)(Headboard Build)			
8	Brackets (with 32 - 3/4" screws)			
16	1 1/2" Pocket Screws (Top Install)			
4	Hardwood Dowels (Headboard Installation)			
8	1 1/2" Pocket Screws (Headboard Install)			

Step 1: Edge Band your parts

Most home stores will have rolls of veneer edge banding to match your plywood. This edge banding can be ironed on using a household iron.

If using iron, empty all the water out to eliminate any steam. Turn the steam settings off and use the Cotton setting.

Not all edges need to be banded. Only those that will be seen. Below is a list of what edges should receive the edge banding.

Step 1-1

Cut a piece of edge banding about 1" longer than the length of the panel that you are banding. You can use scissors to cut it or simply fold it in half and it will snap apart.

Step 1-2

Turn on the clothes iron and set the temperature to the "medium" or "cotton" setting. If possible clamp the panel in the upright position so the iron can be held horizontally.

Step 1-3

Starting at one end of the banding and work towards the opposite end. Move the iron slowly along the banding while applying downward force



You should be able to see a small bead of adhesive expand out from the underside of the banding if the adhesive is activating. To get the best bond possible, pressure should be applied behind the iron with a block of wood.

Step 1-4

Apply pressure until the adhesive cools and hardens.

Occasionally the side edges of the banding can lift slightly from the substrate. To fix this, simply use the block of wood (held at a 45 degree angle) to press the edge back onto the substrate while the adhesive is still warm.

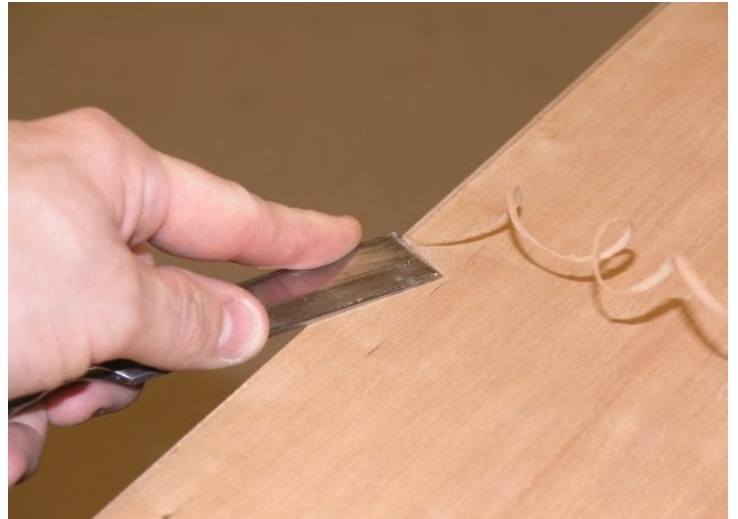
Step 1-5

End trim the overhang by using a razor knife. Put the block on top that you were using to apply pressure and use the razor knife to trim off the ends.

Step 1-6

A flush trimming tool is inexpensive and definitely makes the trimming process easy and 99% fool-proof.

Simply press the trimmer against on to the face of the panel and slide it forward so that the blade cuts off the excess banding. To get a clean edge, you must pay attention to the direction of the grain. Most edge banding has a reasonably straight grain but there is always a slight angle. The best cut comes from sliding the trimmer in the direction of the grain as shown below. Cutting in any other direction will cause tear out.



A sharp chisel can also be used to trim the edges. Be sure to skew the chisel so that the pressure forces the banding against the wood edge as shown. This method often leaves a bit of tear-out on the banding but the next step will smooth them out with very little effort.

What to edge band?

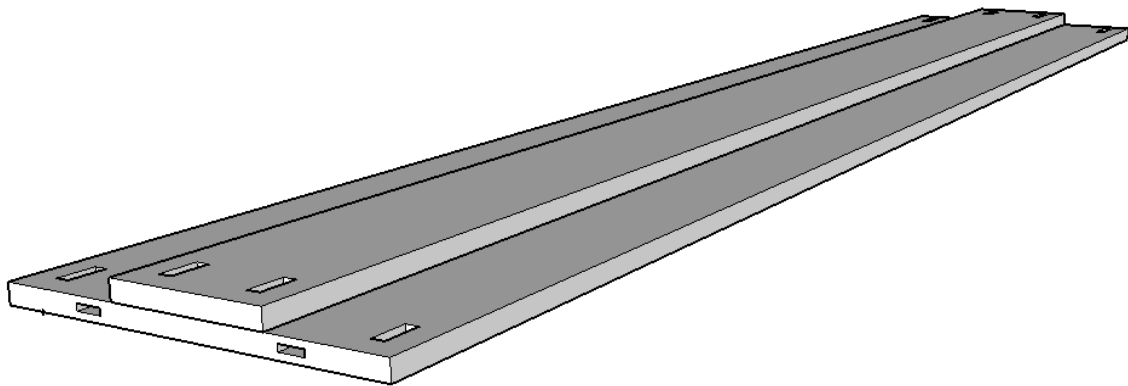
- 4-(A) Bed Face Panels
 - All outside edges.
 - On the outside panels the top (short) and outside (long) edge
 - On the inside panels just the top (short) edge
- 2-(B) Side Panels/Verticals
 - One long edge
- (C) Top Panel
 - 3 edges
 - One long edge and two short sides
- (D) Top Panel
 - One long edge
- (E) Top Facia Stiffener
 - One long edge
- (F-1) Top Rear Stiffener
 - One long edge
- (F-2) Bottom Rear Stiffener
 - One long edge
- (G) Kick & Kick Stiffener
 - One long edge on both
- (H) Headboard
 - One long edge

Pocket Option

If you have access to a Pocket Hole Jig pockets can be placed in components. If you don't have access to one small corner "L" brackets can be used in the place of the pocket in the rest of these plans.

Items to Pocket (all pockets will be placed on the back or worse side of the panel)

- (E) Top Facia Stiffener
 - Two pockets on each end
 - One centered (1-½")
 - One ¾" from the banded edge
- (F-1) Top Rear Stiffener
 - One centered (1-½")
 - One ¾" from the banded edge
- (H) Headboard
 - Two on each end
 - 2" from each long edge
- (I) Headboard Stiffener
 - Two on each end
 - 1" from each end



Example of Headboard (H) and Headboard Stiffener (I)

Step 2: Build the Header

Using the (C) Top Panel, (D) Top Facia, (E) Top Facia Stiffener, (F-1) Top Rear Stiffener, K) Top Cleats assemble the Header.

2-1 Attach the Top Facia to the Top Panel with glue and 1 ¼" finish nails. Make sure the banded edge of the (D) Top Facia is down and the Top Fascia is attached to the banded edge of the Top Panel. Flush with the front and ¾" off each side (see figure 2-1)

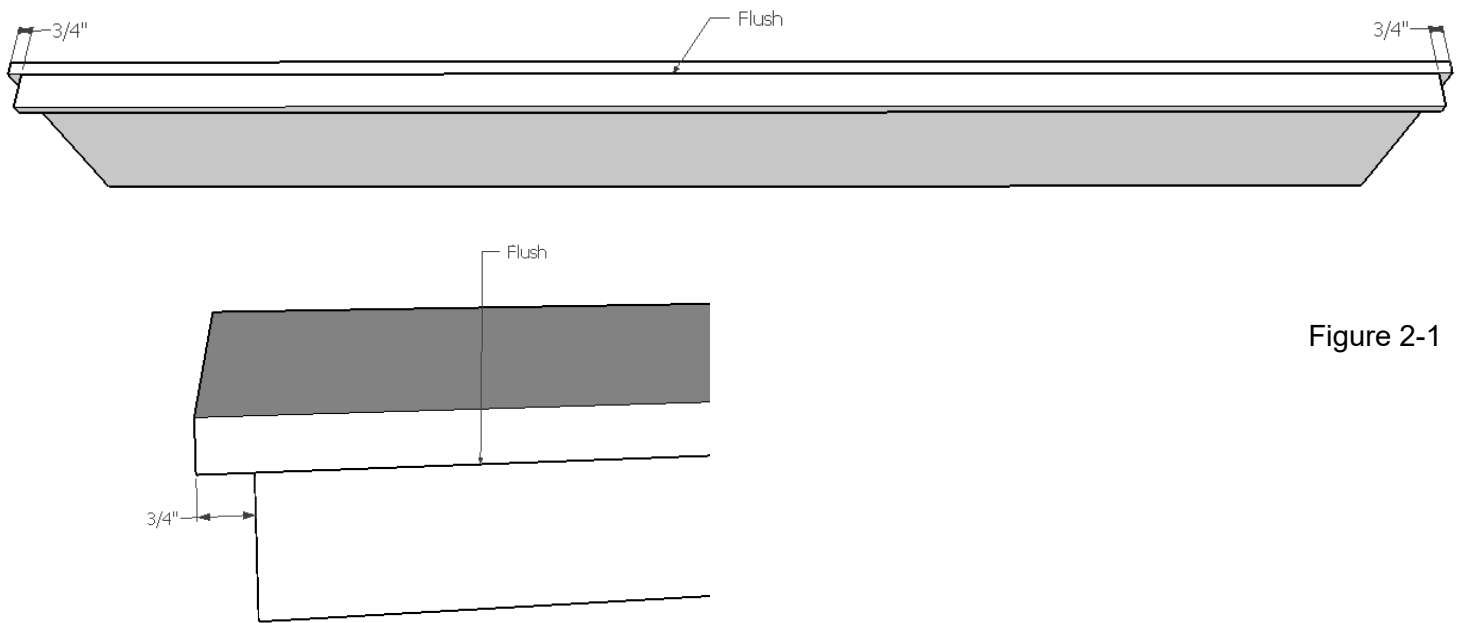


Figure 2-1

2-2 Attach the Top Facia Stiffener to the Top Facia using glue and 1 ¼" nails. Nail from the inside. Make sure banded edge is down. Note: make sure the pockets are facing toward the back. You will use those pockets during the installation step. This will be ¾" off the sides.

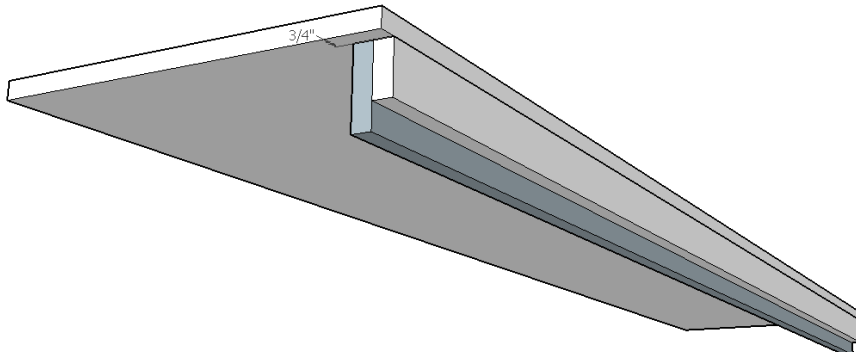


Figure 2-2

2-3 Attach the Top Rear Stiffener (F-1) to the back using glue and 1 ¼" nails. Make sure the banded edge is down and the pockets are facing toward the back. This will be ¾" off each side as in the previous two steps.

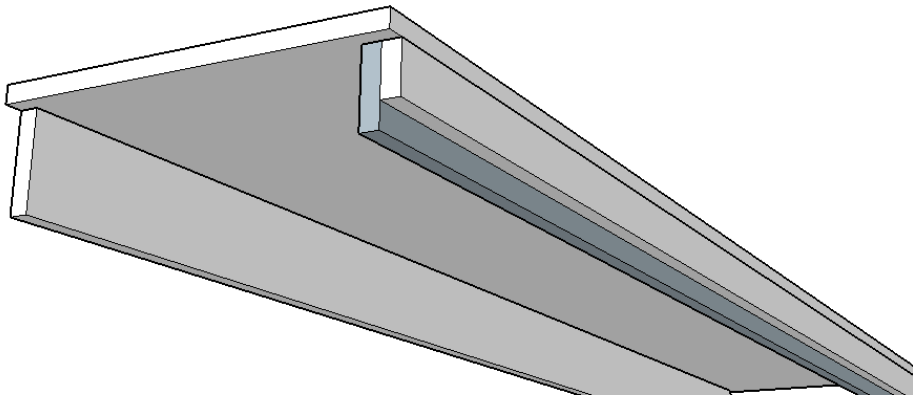


Figure 2-3

2-4 Add the Top Cleats (K) to the Top Panel in between the Top Rear Stiffener and the Top Facia Stiffener using glue and 1 ½" screws.

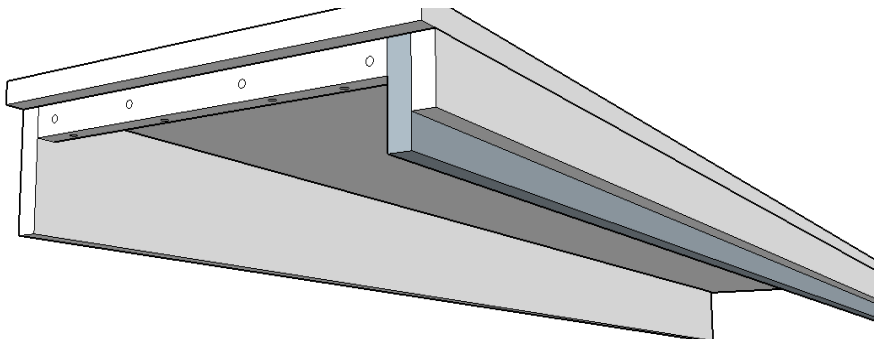
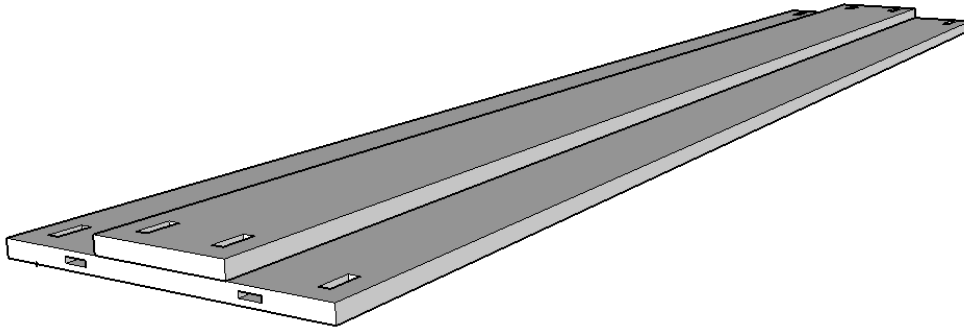


Figure 2-3

Your header is now complete!

Step 3: Attach the Head Board Stiffener (I) to the Head board (H).

3-1 Center the Head Board Stiffener on the back side of the Head Board. Glue and nail it down using 1 1/4" nails. Note: Some applications may have all pockets on the Head Board panel. See Figure 3-1

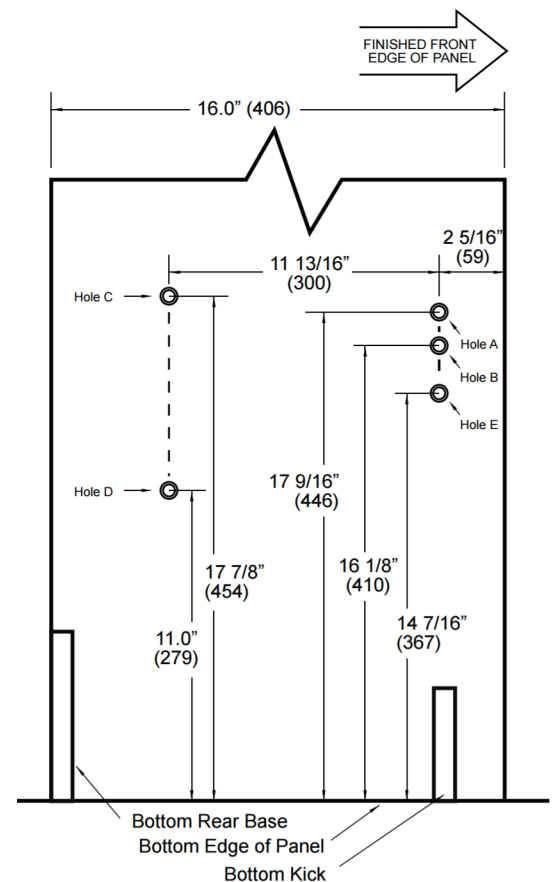


Step 4: Verticals

- 4-1. Exactly mark the mounting holes on the inside of each side panel. (NOTE: the 11 13/16" measurement is in addition to the 2 5/16")
- 4-2. Drill a 1/16" (2mm) pilot hole for each mounting bolt. Drill the final hole with a 5/16" (8mm) bit.
- 4-3. Counter sink 5/8" (15mm) on the outside of the panels just deep enough for the 5/16" x 1 1/4" (8x32mm) Machine Screws.

Tip: Cut out for your base molding:

On the back lower corner of the verticals a cut can be made to accommodate existing base molding so the cabinet can fit flush against the wall. This will keep you from having to remove the base molding on the wall.



Step 5: Finish all components

-Finish both sides of all components.

Tip: By placing pieces like the verticals, headboard and header on legs made from scrap material, you can finish both sides at the same time and save time flipping.

Install the Murphy Bed

Step 6: Mount the Lift Mechanism

6-1: The left and right mechanism hole pattern will line up with the hole pattern on the Side Panel (B). The bolts will be fed through the side that has the counter sinks drilled.

6-2 Hole A will not have a standard nut. It is either a threaded hole or it will use a disk like bolt “Arm Lock Stop”. Get Hole A started.

6-3 Insert the bolt in the other holes and loosely tighten onto the nuts.

6-4 Once all are in place, securely tighten using the Allen Wrench provided and a ½” wrench.

Step 7: Install the springs on the Lift Mechanism

SPRING APPLICATION CHART

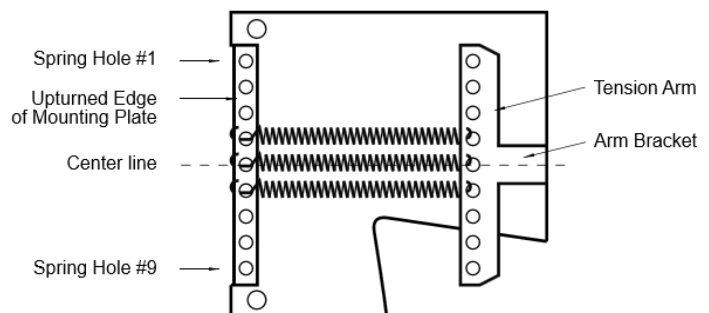
Please Note: These are recommendations only. Actual number of springs required will depend on the total weight of the bed face unit including the mattress and all bedding

BED SIZE	STANDARD FACE (NO DESK)	STANDARD FACE (ADDED DESK)
Single/Twin	4 Springs Vertical (3 Horizontal)	5 Springs Vertical (4 Horizontal)
Double/Full	5 Springs Vertical (4 Horizontal)	6 Springs Vertical (5 Horizontal)
Queen	6 Springs Vertical (5 Horizontal)	7 Springs Vertical (6 Horizontal)
King	8 Springs Vertical	9 Springs Vertical

After you have completed installing and checking the operation of your bed, you may find it necessary to add or remove springs to achieve the correct lift effort of between 5 to 10 pounds.

There are nine locations for springs. If the bed requires an even number of springs, do not use the center hole (#5 from the top). If the bed requires an odd number of springs, start with the center hole (#5 from the top) and work outward in both directions evenly.

Hook the springs so the open ends are facing outward. You may have to gently pry up the



tension arm and slide the spring under and snap them into place in the proper hole, matching the same numbered hole from the top of the mechanism back plate. You should have an equal number of springs on each side of the center hole.

Use the same number of springs and the same layout on both the left and right mechanisms.

Step 8: Assemble the Bed Cabinet

- If possible, the Bed Cabinet should be assembled in the room where it will be used.
- The following installation will be done with the bed face down on the floor.

Place the verticals finished edge down and dowel holes toward the inside on a clean floor. You may even lay a soft blanket down to protect the finish from being scratched.

Headboard installation

8-1. Add two brackets to each end of the headboard. 1 x 1 x 1 3/4" are shown but other sizes can be used.

8-2. Lay the verticals on the floor with the mechanism facing up and the foot of the bed toward the wall.

8-3. Place a mark each vertical to locate the bottom corner of the headboard position. See drawing (20" from bottom and 3" from back).

8-4. Secure headboard to the verticals through the brackets with 3/4" screws. Lower part of the headboard should be on the mark made in step

8-3, and the top should be flush with the back.

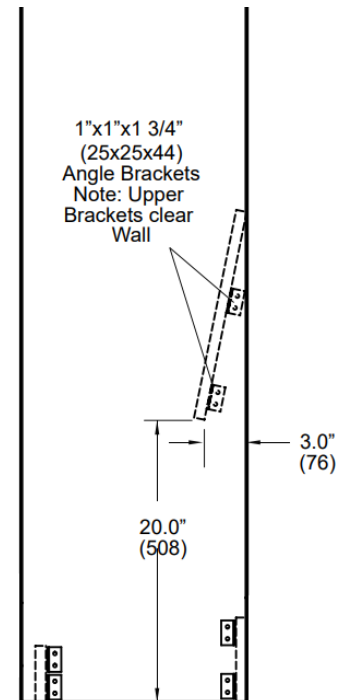
8-5. Carefully rotate the headboard and the one vertical so that the other end of the headboard/dowels can be inserted into the second vertical. The unit should now be face down.

8-6. Secure this other end of the headboard to the verticals with 3/4" screws

8-7 Stand up the unit consisting of the two verticals and headboard.

8-8: Use Brackets to assemble Bottom Rear Stiffener and Bottom Kick & Kick Stiffener in position shown in Figure 8-1 and Figure 8-2. Use two Angle Brackets on each end. Attaching using supplied 3/4" screws. NOTE: The Bottom Rear Stiffener can be moved closer to the front if there is a cutout for base molding on the back of the verticals.

8-9: Attach header as shown in Figure 8-2. Be sure the front edge of the header is flush with front and top of the Side Panels. Attach with 1 1/2" supplied screws.



8-10: Put 1 ½" screws in the pockets that are in the Top Rear stiffener and the Top Facia Stiffener.

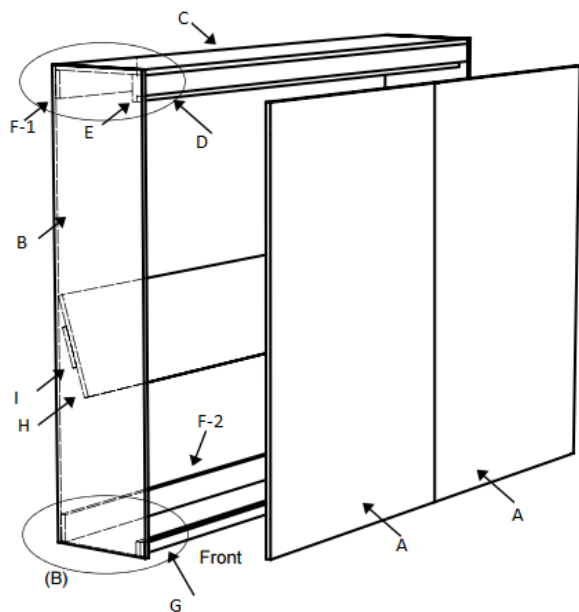


Figure 8-1

Brackets not shown in the drawing

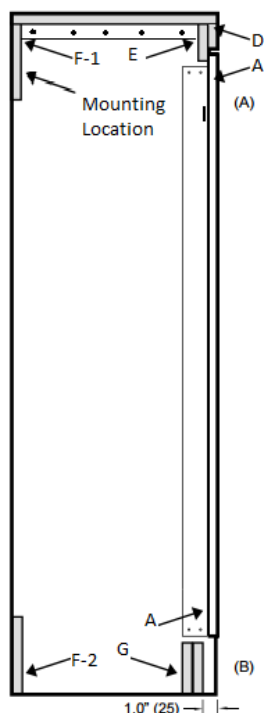


Figure 8-2

Step 9: Attach Bed Cabinet Securely to Wall

9-1: Find Studs

Prior to placing cabinet against the wall, locate 3 studs or other wall frame members at the level of the Top Panel (top of bed). Alert: The cabinet must be secured to studs or other wall structural members. If the wall is not a wood stud wall, use metal stud screws, toggle bolts or concrete expansion bolts if necessary.

9-2: Attach to wall

Now that the cabinet is square and plumb, **pre-drill hole in the Top Rear Stiffener at the stud location**
Secure with 3" screws. Repeat this for two other stud locations. See figure 8-2.

Assemble the Face

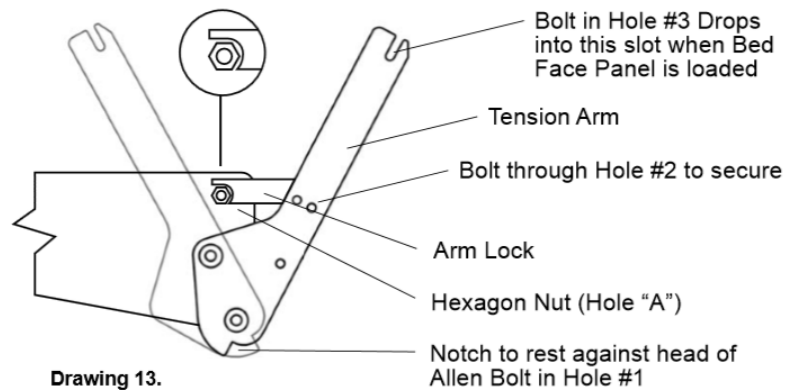
Lock the arm into place

Videos: [Locking Spring](#) and [Frame Bolts and Straps](#)

Caution: If possible have a helper assist in the setting of the mechanism and loading of the bed face panel. DO NOT reach behind the tension arm when you are doing the setting procedure. To avoid reaching behind the Tension Arm, use a pencil or screw driver to move the Arm Lock into place.

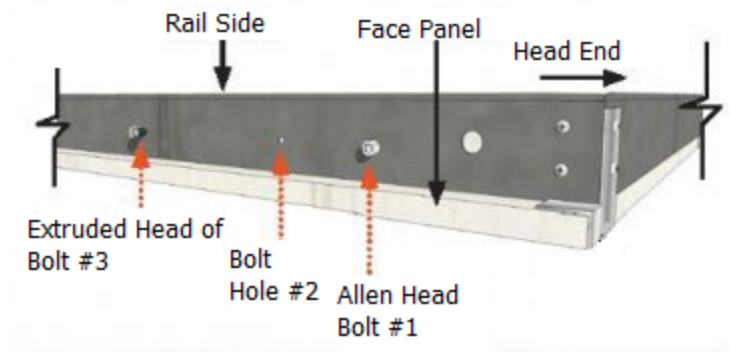
Holding one foot against the bottom front edge of the side panel and using the “Tension Arm Lever Tool”, pull the tension arm out until you can set the arm lock to the hex nut at the hole A (see drawing 13.). This is the hex nut at the top front corner of the mechanism.

Tip: If you set the “Arm Lock” on top of the bolt before you pull the Tension Arm back it will fall into place. Do not put your fingers back there while pulling it back!



9-3: Insert a Allen Head Bolts through Hole #1 (This hole should be the one about 6 3/4” from the end of the side frame) on both the left and right side frames (see Drawing).

NOTE: On some Models this Allen Head Bolt may already be installed.



9-4 On each side, install 5/16” (M8x20mm) Hex Head Bolts from the outside of the frame through Hole #3. Only thread the nut until it is flush with the Nut end. Do not tighten.

Step 10: Install the Bed Face Panel Unit

Video: [Face Part 1](#)

Video: [Face Part 2](#)

(shown is a vertical, but the horizontal should be similar just proportions turned 90 degrees)

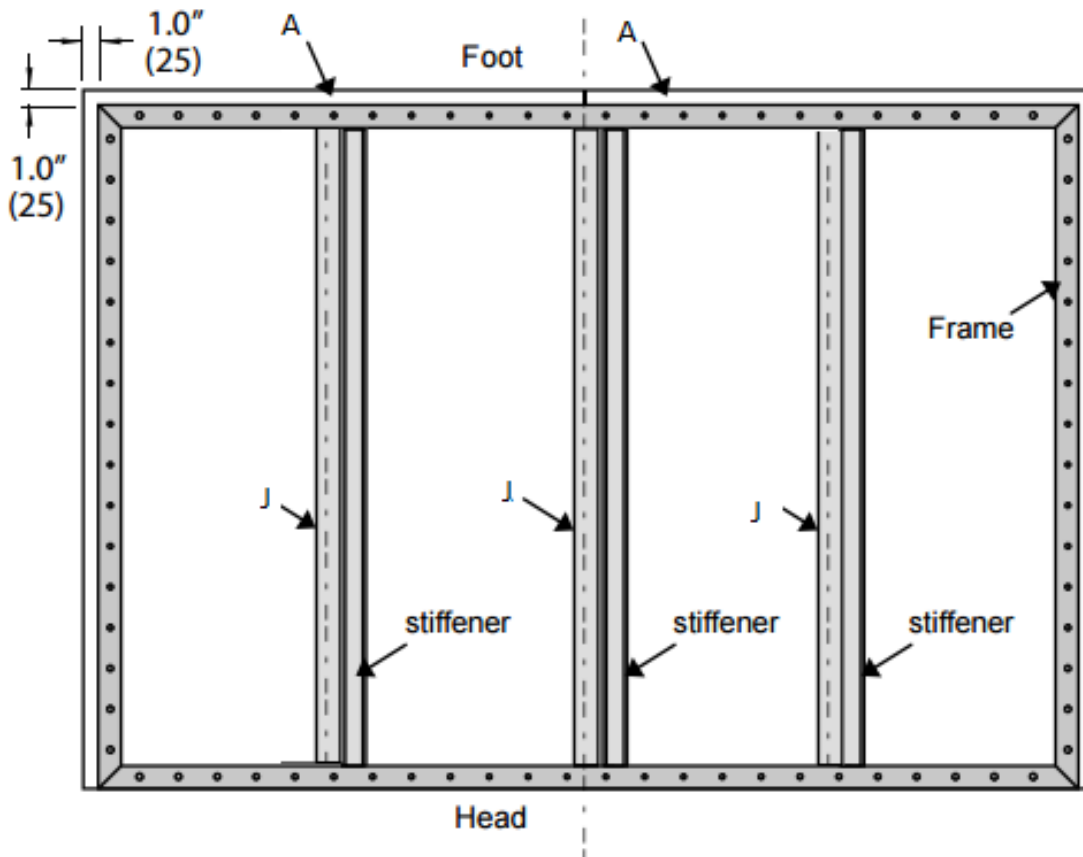


Figure 7-1

10-1 Lay the Bed Face Panels down on a non-scratch surface such as a carpet or blanket.

10-2: Completely assemble the 4 Frame Sections with the corner brackets and the 3/16"x1/2" (M5x12mm) black bolts provided. Refer to Drawing 17 below to properly place the leg stops at outer right and left bottom holes at the foot of the bed frame.

10-3: Position the bed frame on the bed face panels. With the Head Frame section flush with the head end of the Bed Face Panels. Refer to Figure 7-1. Carefully attach the Bed Frame so it is centered on the Bed Face Panels; you will have approximately 1" (25mm) space from the bed frame to the panel edges right and left and at the bed foot.

Note: It is very important to have the Bed Frame centered on the Bed Face Panels.

Any error will be noticed in the vertical sight lines when the bed is closed.

10-4: Three steel stiffeners are provided for all beds (5 for King). These notched stiffeners should be located and attached to divide the Bed Face length into four Sections. Locate them approximately 1 1/2" from the seam of each pane. This will leave room for the Panel Connectors (J). Use caution not to damage raised panels by putting screws in recessed areas.

10-5: Attach the Panel Connectors (J) to support the seams. They should fit against the stiffeners installed in step 10-4.

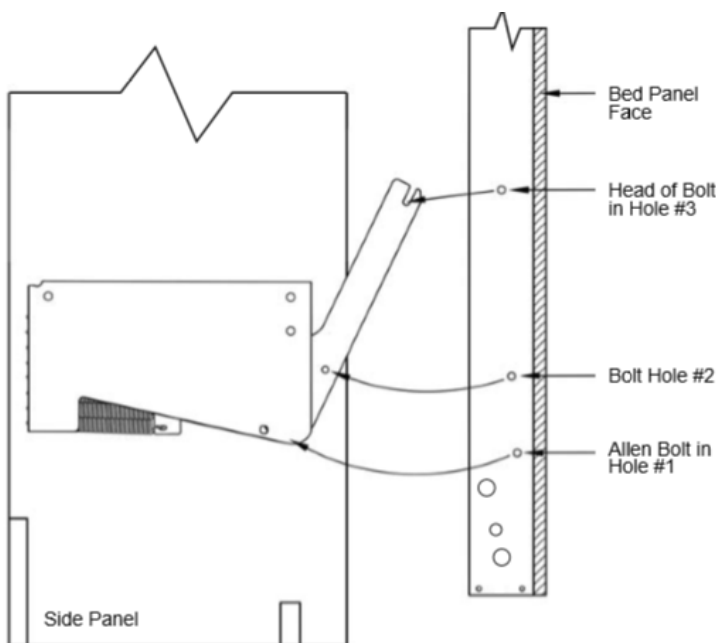
10-6: Attach the Nylon Web Strap approximately 18" (460mm) down from the foot of the bed and 6" (150mm) in from the sides, for tucking in sheets. The Straps help secure the mattress in the vertical position (see drawing above)

10-8: From hardware card 2, insert a Allen Head Bolts through Hole #1 (6 3/4" from end of side frame) on both left and right side frames (see Drawing 14).

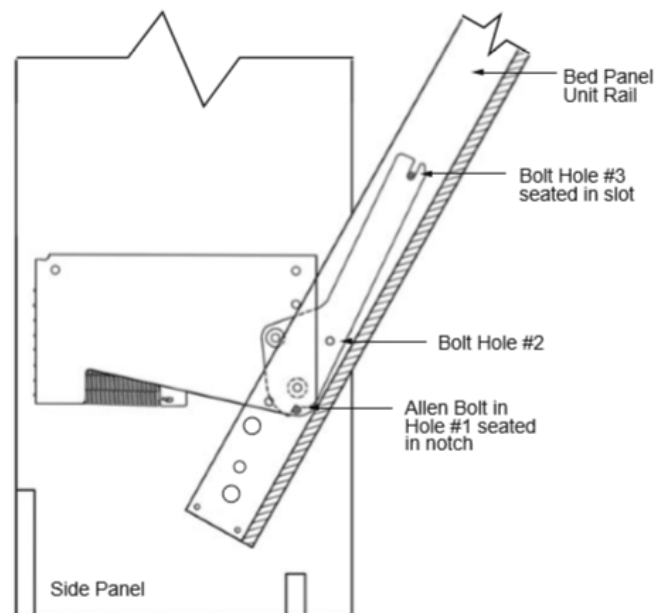
10-8 Also Inserted two 5/16" (M8x20mm) Hex Head Bolts from the outside of the frame through Hole #3. We have left these loose.

Video: [Mounting the Face](#) (Vertical is shown but horizontal will assemble the same way)

10-9 Stand the Bed Face Panel in vertical position between the tension arms, lift evenly until the bolt in Hole #3 drops in the slotted end of each tension arm. Gently tilt the bed face toward you until the Allen Bolts in Hole #1 are completely seated in the bottom notch of the tension arms. Insert the remaining 5/16" (8mm) Hex Head Bolts through tension arms into Holes #2 and fasten with 5/16" (8mm) Nylock Nuts; securely tighten these and the nuts on Hole #3.



Drawing 14.



Drawing 15.

10-10 When all bolts are securely tightened, you may tilt the panel outward to approximately 45 degrees to release the arm locks. You will hear a click as they disengage.

Caution:

Hold the Face Panel securely, Do Not let it slam shut. Balance is not achieved until the mattress is loaded in the bed.

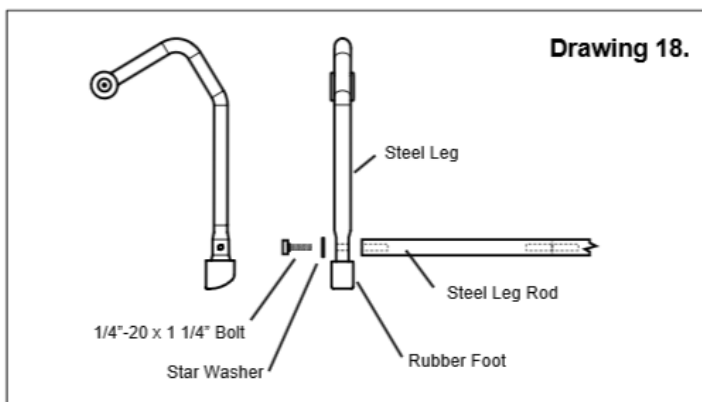
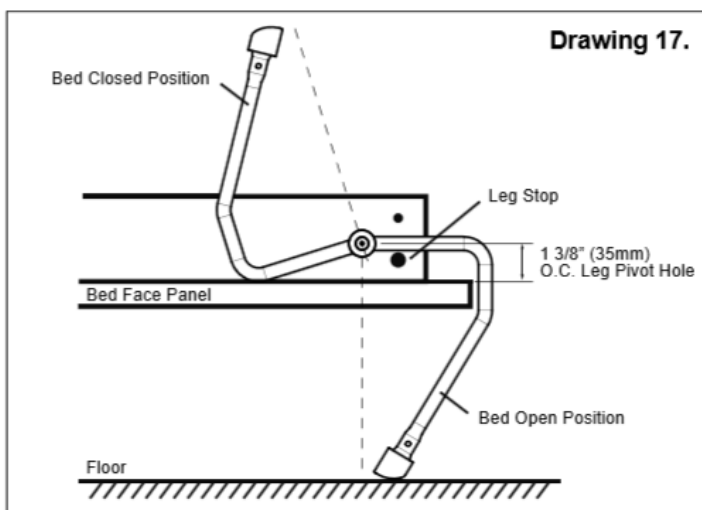
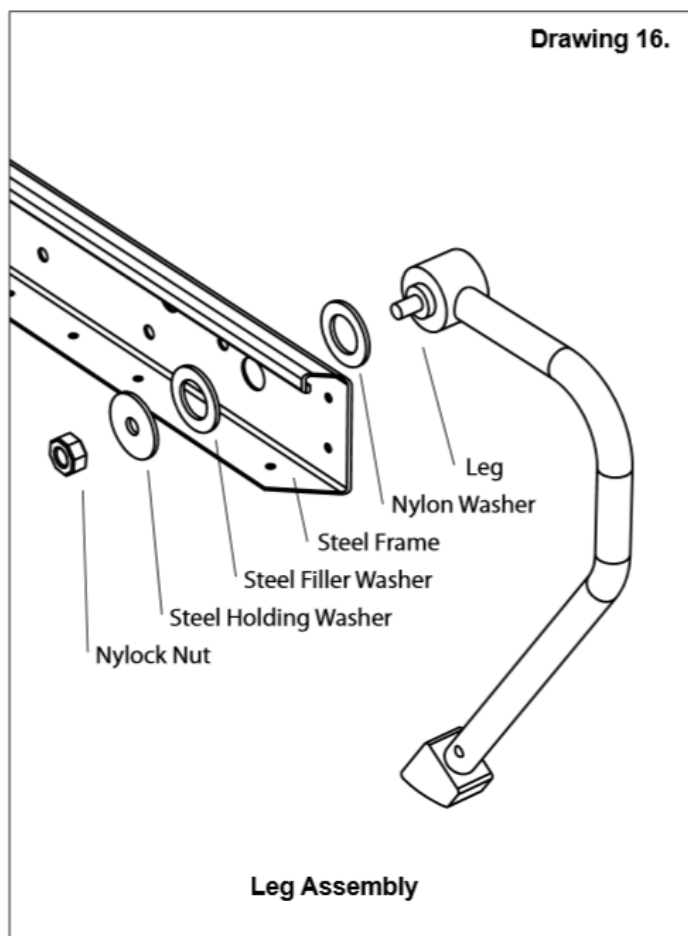
Leveling of the bed cabinet is essential. Check the level both side to side and front to back. Proper leveling will facilitate proper closure and exact sight lines of the fit of the Face Panel to the Cabinet.

Step 11: Install Handle = Legs - Mechanism Covers - Mattress

Video: [Legs](#) (Vertical is shown but horizontal will assemble the same way)

11-1 Position and secure handles for ease of operation. Measure down approximately 36" (914mm) from the panel top to the top of the handles.

11-2 Install legs with the washers on the inside of the Rails and the Nylon washer on the outside. Tighten nut to have a small amount of friction when leg assembly is rotated from the up to down position.



11-3 Install leg connector rod between legs and secure with 1/4"x1 1/4" (M4x32mm) Hex head bolts and star washers. Be sure they are securely tightened so not to become loose.

11-4 Install the mattress and secure with previously installed Nylon Straps.

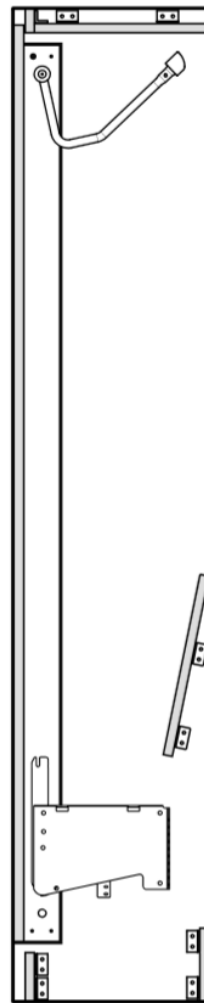
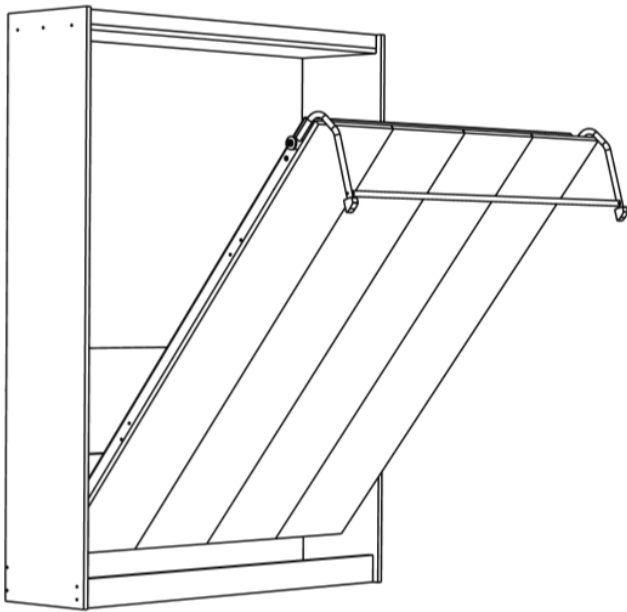
11-5 Snap the powder coated steel mechanism covers in place - secure with #8x1 1/4" (M4x32mm) black wood screws through the standoff on the backer plate

Complete Bed Assembly

Follow up to Initial Assembly

Video: [Finishing Up](#) (Vertical is shown but horizontal will assemble the same way)

Check that the Bed Cabinet is level and square so the Bed Face has equal clearance of the Cabinet on both sides, top to bottom. If the Cabinet is leaning to one side, nudge it at the floor level. If the top is uneven, place shims under the Side Panels. If bed is too heavy to operate easily or slams shut, remove the Bed Face Panel and add or subtract springs. At this time, you may decide to use one more or less spring(s) on the left or right side Lift Mechanism. *Vertical example is shown but applies the horizontal unit as well.*



Right Side
Looking through Side Panel.