# MONKEY BARS INSTALLATION

## THE ESTIMATE

#### WHAT SHOULD HAPPEN AT THE ESTIMATE?

Shelf height should be determined by measuring from the ceiling down.



**1.** Measure totes and other items that will be placed on shelves. If totes with be stacked, measure double or triple their height and add a few inches for good measure.



**2.** The customer should be directed to the wall to see the proposed shelf height. Measuring from the ceiling down, hold the bracket at proposed height.

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| MONKEY BARS |  |

**3.** "Determined height(s)" should be on the work sheet. Add one inch to allow for the melamine and ceiling inconsistencies.

#### WHAT SHOULD HAPPEN AT THE INSTALLATION?

#### IMPORTANT: BEFORE THE CUSTOMER LEAVES, VERIFY ALL WORK TO BE DONE.

**CUSTOMER NOTE(s):** To avoid misunderstanding about shelf height and other things, meet with the home owner to go over the garage layout, to make sure they understand what was previously agreed upon, and to incorporate any last-minute changes the client may want to make. Hold up the bracket at the determined height, and confirm this is the height the customer wants the brackets. Mark the wall at the agreed height with a pencil, letting them see you do this. This way your customer will not be disappointed with the shelf being too high or too low. This process is the best way to manage customer expectations.

**MEASURMENT NOTE(s):** Other measurements may include measuring for the height of a workbench. Ergonomically the back should be straight up when working at any surface to avoid back strain, whether on a chair or standing. The ideal height is a few inches below the elbow, bent at 90 degrees. For example, about 40" would be an ideal standing height for a measurement of 42-1/2."



**INSTALLATION TEMPLATE** MB has developed a "template" to simplify the bracket installation process. The template is used for 16", 24" Shelf/Rack and Inverted shelves. Templates can be ordered from the Monkey Bar Resource Center.



#### TOP SMALL HOLE

This hole is used for aligning the laser light, representing the top of the bracket. A "drywall punch" through the hole into the drywall holds the "Template" in a level position so the bracket holes can be marked prior to drilling.

#### 24" S/R HOLE

This hole represents the top hole of the 24" bracket.

#### **INVERTED HOLE**

This hole represents the bottom Inverted bracket hole. A "drywall punch" through the "TOP HOLE" as outlined. The Template is turned around the drywall punch until "upside down." Using a small level on the side of the Template, once level, mark the INVERTED holes prior to drilling. Doing it this way, the top of the inverted bracket should be level with the laser line.

#### LOWER SMALL HOLE

This hole represents the top of the 16" S/R bracket. When installing only 16" S/R brackets, this hole can be used the same as the "TOP SMALL HOLE" only for the 16" brackets.

#### 16", 24" S/R HOLE

This hole represents the top hole for the 16" S/R and the middle hole for the of the 24" S/R bracket.



### INVERTED HOLE

*This hole represents the top Inverted bracket hole. See first "***INVERTED HOLE**."



16", 24" S/R HOLE This hole represents the bottom hole for the 16" and 24" S/R Brackets.

## THE INSTALLATION

INSTALLATION NOTE(s): Steps 1-27 may vary in order and/or necessity for different shelves



**1.** Make a mark for the shelf height. Add an inch to allow for board and ceiling variance. Do the same for any other shelves that may be a different height.



**2.** Set up saw horses centered near shelf walls and load up with all the melamine needed for shelves.



**3.** Set up self-leveling laser light with tri-pod on top of the melamine.







**4.** Shoot the laser line on top of the mark.

**NOTE(s):** Verify calibration of laser light often by measuring several ceiling locations, or put a level even with the laser line. The laser light can easily be pivoted to go around the room. Be sure to check that it aligns with the last laser mark. **5.** Using a stud finder, determine & mark known bracket locations near windows, doors, and corners.

**NOTE(s):** Avoid putting brackets directly by doors so they are not intrusive.

Avoid installing directly into corners to enable better bracket installation and ease of Monkey Bar use. **6.** Determine and mark remaining bracket locations.

**NOTE(s):** Where possible, map out all bracket locations to 48" on center.

Consider placement of items like upright freezers/refrigerators, wall shelves, existing cabinets, etc. Otherwise, determine the most symmetrical layout possible.



**TOOL NOTE(s):** Drywall Punch - recommended tool for locating the exact side of a stud, and to hold marking template in place. Use: 1. Duct tape, 2. Packing/Padding, 3. Small shafted tool such as the shown O-ring pullers. Cut shaft to less than 2". Construct as shown above. Cut a strip of foam, fold around tool handle and tape in place. Finish taping pad (foam) to tool handle.

WARNING: Remove sharp points or edges. Sometimes the end can be near electric wires



**7.** Use the drywall punch to determine the true sides of the studs. Stud finders can't always be trusted.

**NOTE(s):** The 3/4" melamine shelf will cover all holes that are punched (or drilled) just above the laser line. If there is a firewall on the home wall, you may need to drill through it for stud verification. DO THIS ONLY AFTER CHECKING FOR ELECTRICITY AND DRILL NO FURTHER THAN 1" INTO THE WALL.



**8.** Re-mark stud sides as determined by the drywall punch by drawing the line below the laser line, or laser line mark. Repeat steps 7 and 8 for all bracket locations.

**NOTE(s):** The small line just above the laser line indicates which side the stud is on. When putting a bracket near a window the line may need to be on the opposite side.



**9.** Using the bracket template, line up the bottom of the small top hole with the bottom of the laser line, and the side of the template with the stud side mark. Use drywall punch to set template in place through the top hole.

**NOTE(s):** The small hole is centered in the template which enables it to hang straight down without the need of a level.



**10.** Trace the holes in the template for 16" or 24" shelf brackets. Repeat steps 9 and 10 for all bracket locations.

**NOTE(s):** The lower two holes in the 24" bracket is in the same location as the two holes in the 16" bracket. The template can be used to change from a 24" shelf to a 16" as you continue with the laser line along the wall.



**11.** Check all bracket locations for electrical wires and other utilities.

**NOTE(s):** Use an instrument which has a transmitter and receiver. (Tempo 508s or similar) There are always new products. Looking for that infallible "sonar" instrument!



**12.** Pre-drill all bracket holes with a 9/32" drill bit. Place all shelf brackets at each drilled location.

**NOTE(s):** A smaller bit is hard to drive in. Bits larger than 9/32" can potentially strip the hole out when driving the bolt in.



- 13. Prepare extension brackets: (If applicable)
- 1. Position extensions on each bracket.
- 2. Insert and tighten flathead screws while keeping the extension aligned with the bracket.
- 3. Clamp the bracket to a table or melamine edge.
- 4. Drill out the hole for the brace attachment.

**NOTE(s):** It may be easier to start with a 3/16" pilot hole followed by a 9/32" bit. Drill as close toward the bottom of the hole, so when the bolt is tightened the extension will push up rather than pull down in the front.

5. Finish the brackets by inserting and tightening the bolt(s).



**14.** Count out 3/8"x 3" lag screws for all brackets and slide on the 5/16" washers.





**15.** Using a 9/16" socket, insert lag screws and drive brackets on the wall, leaving all the lag screws loose with the top of the bracket 1/8" gap from the wall.



**16.** Place all 48" angle on the front of brackets that are spaced about 48" (+ or -  $\frac{1}{2}$ ") and finger tighten to secure them with  $\frac{1}{4}$ " x  $\frac{3}{4}$ " flat head bolts.

**NOTE(s):** Place the screws through the holes first to keep angle from sliding off. Do not cut any angle (yet) that run into a corner wall.



**SHELF NOTE(s):** This shelf only has one 48" angle to start with. We could have chosen to move the third bracket over 16" and have a second 48" space, and therefore put on a second angle. (see step #6 NOTE(s)) Depending on your preference, the second angle could also have been cut at 32-5/16" and installed before putting up the first board. (see step #20)

With shelves like this going into a corner, installing the open-end board first provides a way to keep the open-end bracket square with the wall and even with the melamine (as shown in left pictures above). This will make it easier for an accurate measurement of the angle going to the corner wall when this first angle is secure (See Step #21). This arrangement will require two front angles to be cut.

When both ends are open on a shelf, the angles would all be installed first (finger tight) before putting any melamine on the brackets. The two outer brackets, in this case, should be parallel to each other after the angle is installed. To determine the length of the front angle, measure the distance of the brackets at the wall, center to center. The melamine joints do not necessarily need to be even with the angle joints.

With pre-edge banded boards determine how they can be used best (Another reason to start at the open end). The melamine does not necessarily need to be exactly centered on the brackets (+ or  $-\frac{1}{4}$ ").



**17.** Cutting Melamine: The template also serves as a nice straight edge for cutting boards. Bend the middle so it will have a slight, arc so it will pivot at the sides of the board. Position the template, measuring both sides, and subtracting the saw guide difference by moving the template under the tape measure. When both sides are in place, clamp and cut.



**18.** Installing T-molding: (If applicable)

Order Information: OUTWATER PLASTICS INDUSTRIES, INC. – www. outwater.com PART # SJ-065 - Arbor and t-molding blade kit (order extra blade(s), S065) PART#105-679-243 - ¾" Storm Gray T-molding (order by 250 or 1,000 foot)

**NOTE(s):** Center router blade to 3/4" Melamine.

**CAUTION:** Make sure arbor is tight in machine. Hold router to melamine surface and avoid tipping over the edge. Keep the router moving or the blade may overheat which reduces the life of the blade. Start T-Molding at the wall side of the melamine. With plastic mallet, tap in T-Molding. Prior to corner, cut 90 degree notch, then continue around corner.

**S055** 

**S065** 

2

2

.055"

.065"







**19.** Using a 7/16" socket, Secure the melamine to the wall by pushing the angle tight against the melamine and tighten the 1/4"x3/4" flat head bolts.

If the shelf is ready with melamine and angle, tighten the whole shelf at once. Move on to step #23.

**NOTE(s):** Make sure the board(s) are tight against the wall, and the end bracket(s) are even with the melamine edge. Clamps can be used on ends, especially on longer shelves to ensure no movement.

**20.** Cutting angle: Determine length of front angle by measuring from the same side of brackets near wall. (bracket center to center)

**NOTE(s):** For 32" (+ or - ½"), cut the angle within 1/4" of the hole or the bolt will not fit well. A typical distance total is about 32-5/16"



#### SAW NOTE(s): Metal Saws:

1. The Evolution 15" saw is the fastest and best we have found. It is nice to have on a work bench in a work vehicle. The Evolution has a more portable, less robust model, The Rav 4 7-1/4" saw. Purchase steel cutting blades (blue). Use this saw for most of the angle cutting. Band saws are nice for custom cutting (optional).

- 2. Cordless, battery powered band saws are convenient especially if the battery can power other tools.
- 3. The corded Milwaukee Compact is a nice-sized, dependable model that is easy to use.





NOTE(s): File all corners and sharp edges to ensure customers safety.

For abnormal size stud spaces, a bolt hole occasionally needs to be drilled. It may be easier to start with a 3/16" pilot hole followed by a 9/32" bit.



**21.** Finishing corner wall angle: After **22.** Finish boards to the corner all other angles are in place, measure (if applicable) to the wall from the last angle. Cut and install angle (see step #16). The 64" angle can come in handy for this area.

23. Finish securing the angle to the brackets: While pushing the angle tight against the melamine, tighten the 1/4" x 3/4" flat head bolts. (see step #19)

NOTE(s): Try to use 8' boards where possible. Measure center to center on the brackets. When measuring to a corner, measure front and back. In most cases the corner is not 90 degrees because of the tape and joint compound build-up. Cut the board longer in the front, or at an angle to allow for the difference. In many cases, a small board can be used in the corner. (A good practice is to put a 3' or 4' piece of melamine on the corner bracket to check the corner for square.)

To avoid wall gaps, the corner board is often cut to fit. The board going into the corner can be short like this one or longer depending on the bracket layout. Several 2" tabs provide ample support for the corner area.







**NOTE(s):** Always drill seam locations last, after all other bolts are tightened. Drill at a slight angle so when the bolt is tightened, it will pull the melamine. If the drill is on the right side of the bracket and at the wall, the melamine will pull to the right and toward the wall.





## **25.** Secure with 1/4"x1-1/2" carriage bolts.

**NOTE(s):** Avoid over-tightening the bolts. Always use (1/4") washers to prevent breaking the powder-coating. When there are gaps in the seams on top of the shelf, a 5/16" washer is recommended. With tight seams a washer is not needed.





#### **26.** Pull shelf tight to the wall.

**NOTE(s):** In many cases, it is best to not tighten the lag screws all the way at first by going down the line of brackets and back to finish them off. This will pull the shelf more uniform, much like you would "crisscross" to tighten a tire. When finished run you hand along the front of the angle to make sure they are all even.



**27.** Tab Installation: If studs are consistent, measure from the far side of the bracket 16-3/4" and 32-3/4" (16" centered studs). Make a pencil mark at each location. If stud locations are questionable, verify the stud locations (centers) with a stud finder.

**NOTE(s):** Use either a #3 or a medium square point tip for driving the 1/4"x 2" wood screws. Using a #2 will strip the screw head. There is no need to pre-drill for tab install. It is important that the screw is snug and doesn't strip (keep turning).

Place the screw at the top of the hole with the driver touching the shelf bottom. This will ensure there will be no gap between the tab and the shelf. If it hits the side of the stud, move the tab over 1/2" and try again. The tab should cover the missed attempt.



**Corner Option #1:** Most corners are done by starting the second shelf at the first stud out from the first (corner) shelf, and "butting" the melamine and angle into the first shelf as shown above.



#### Corner Option #2: Overhang shelf attachment (Pictures above shows completed)

**NOTE(s):** This option is used when the shelf has 10" or more of overhang. This option can also be used for going over doors, cabinets or upright freezer/refrigerators.

Install complete shelf: brackets, angle and melamine shelf, including tightening shelf to wall and tabs.

1. Measure the distance between the angle and the front of the shelf and add 1-1/2".



2. Mark and cut the angle as shown so there is an 1-1/2'' flap to slide under shelf front. File sharps edges and corners.



3. Slide angle on top of bracket under melamine and clamp in place.



4. Drill through melamine at the approximate center of angle and "flap." A pilot hole can be drilled first with a 3/16" drill bit to make it easier for the larger drill bit.

5. Insert and tighten 1-1/2"x1/4" carriage bolt.



#### Corner Option #3: Over door shelf (Unpainted to show stud locations).

**NOTE(s):** Most shelves will be lined up with the top of the door trim so that the shelf will use the trim as back support. Tabs can be used for back support when the door has no trim like the example below. For angle preparation, see picture above of installed angle. This can be done at the end of any shelf going into a wall. It can be especially helpful for finishing an inverted shelf instead of using a bracket next to the wall.

1. Cut angle 25" or longer.

**NOTE(s):** The access will provide back support for the second shelf.

2. Shoot laser line even with door trim (If applicable) and mark bracket and angle end locations (see above picture).

3. Mark the angle at the location of stud centers and drill with smaller drill bit(s), graduating to a 3/8" drill bit final hole size.

4. Position angle so the top of the lower leg is lined up with the laser line marks (see #2.) Mark the holes for drilling.

5. Check for utilities, then drill holes with 9/32" drill bit, put angle in position and drive in 3/8"x3" Lag screws (washer not needed).



**NOTE(s):** Complete both 1<sup>st</sup> and 2<sup>nd</sup> shelves by using the corner option #1 instructions 1 through 9. With the exception of the angle going into the wall, the angle can be placed on top, or preferably, notched out to be even on the bottom with the wall angle. Clamp in place as shown and drill 9/32" holes through melamine and angle. Drill both angles in the front corner a few inches from the corner, and on the back of the wall angle a few inches from the back wall. Insert and tighten 1/4"x1-1/2" carriage bolts.

When installing the second shelf, notch the back corner of the melamine so the board will be against the wall and on top of the wall angle (see #1 above).

## MB UTILITY RACK INSTALLATION

**NOTE:** The small lines are to show the center of the stud for this training. Actual marks should be made so they are covered by the brackets.



Install 1<sup>st</sup> bracket

- 1. Determine and mark proper height. Find and mark the center of the stud.
- 2. Drive the bracket into wall using 1/4"x2" wood screws.
- 3. Insert and fasten Monkey Bar and slide a second bracket on the end.



Install 2<sup>nd</sup> bracket

- 4. Using a level, position second bracket at the correct level height.
- 5. Find and mark the center of the stud. Drive the bracket into wall using 1/4"x2" wood screws.

Intallations Notes(s): Use the same installation method for installing the Extended MB Utility Rack System.

**FINAL NOTE(s):** For all installations: clean, pick-up, wipe-off, sweep, and vacuum. Leave the garage better than you found it.