

Mitre Saw Operation Guide

Applications

- This product has been designed only for the purposes listed below:
- Cross cutting wood and plastic (do not cut metals, ceramics or masonry products.)
- Cross cutting miters, joints, etc., for picture frames, moldings, door casings, and fine joinery
- Bevel and compound cutting
- Cross cutting wide work pieces

NOTE: The blade provided is fine for most wood cutting operations, but for fine joinery cuts or cutting plastic, use one of the accessory blades available from the RYOBI dealer.

WARNING: Before starting any cutting operation, clamp or bolt the compound miter saw to a workbench. Never operate the miter saw on the floor or in a crouched position. Failure to heed this warning can result in serious personal injury.

WARNING: To avoid serious personal injury, always tighten the miter lock handle and bevel lock handle securely before making a cut. Failure to do so could result in movement of the miter table or saw head while making a cut.

WARNING: To avoid serious personal injury, keep hands outside the no hands zone, at least 4 in. (100 mm) from the blade. Never perform any cutting operation freehand (without holding workpiece against the fence). The blade could grab the workpiece if it slips or twists.

NOTICE:

Do not start the compound miter saw without checking for interference between the blade and the miter fence. Damage could result to the blade if it strikes the miter fence during operation of the saw.

Installing/Removing The Battery Pack

- Place battery pack in the saw. Align raised rib on battery pack with groove inside saw.
- Make sure the latches on each side of the battery pack snap in place and that the battery pack is secured in the tool before beginning operation.

WARNING: Always remove battery pack from your tool when you are assembling parts, making adjustments, cleaning, transporting, or when not in use. Removing battery pack will prevent accidental starting that could cause serious personal injury.

- Locate and depress the latches on each side of the battery pack to release the battery pack from the saw.
- Remove the battery pack.

To Make Non-Sliding Cuts

WARNING: Securely tighten the slide lock knob when making any non-sliding cuts. Failure to tighten the knob could result in the saw head moving during the cutting operation.

To Miter Cut/Cross Cut

A cross cut is made by cutting across the grain of the workpiece. A straight cross cut is made with the miter table set at the 0° position. Miter cross cuts are made with the miter table set at some angle other than 0°.

NOTE: It may be necessary to adjust the partial sliding fence to ensure proper clearance prior to making the cut.

- Slide the saw head to its most rearward position and tighten the slide lock knob securely.
- Raise saw arm to its full height.
- Loosen the miter lock handle approximately one-half turn and squeeze the detent release lever.
- Rotate the control arm until the pointer aligns with the desired angle on the miter scale.
- Release the detent release lever, then tighten the miter lock knob to secure the miter table.

NOTE: You can quickly locate 0°, 15°, 22-1/2°, 31.6°, and 45° left or right by releasing the detent release lever as you rotate the control arm. The control arm will seat itself in one of the positive stop notches, located in the miter table base.

- Place the workpiece flat on the miter table with one edge securely against the fence. If the board is warped, place the convex side against the fence. If the concave edge of a board is placed against the fence, the board could collapse on the blade at the end of the cut, jamming the blade.
- When cutting long pieces of lumber or molding, support the opposite end of the stock with a roller stand or with a work surface level with the saw table.
- Press the LED switch.
- Lower the blade and align the cutting line on the workpiece with the edge of saw blade or the blade shadow.
- Grasp the stock firmly with one hand and secure it against the fence. Use the work clamp, C-clamp, or other suitable clamp to secure the workpiece when possible.
- Before turning on the saw, perform a dry run of the cutting operation to make sure that no problems will occur when the cut is made.
- Grasp the saw handle firmly. Depress the trigger lockout lever and squeeze the switch trigger. Allow several seconds for the blade to reach maximum speed.
- Slowly lower the blade into and through the workpiece.
- Release the switch trigger and allow the saw blade to stop rotating before raising the blade out of workpiece and removing the workpiece from the miter table.

To Bevel Cut

A bevel cut is made by cutting across the grain of the workpiece with the blade angled to the workpiece. A straight bevel cut is made with the miter table set at the zero-degree position and the blade set at an angle between 0° and 45°.

NOTE: It may be necessary to adjust the partial sliding fence to ensure proper clearance prior to making the cut.

- Slide the saw head to its most rearward position and tighten the slide lock knob securely.
- Pull out the lock pin and lift saw arm to its full height.
- Loosen the miter lock handle approximately one-half turn and squeeze the detent release lever.
- Rotate the control arm until the scale indicator is positioned at 0°.
- Release the detent release lever, engaging the positive stop notch, then tighten the miter lock knob to secure the miter table.
- Loosen the bevel lock knob and move the saw arm to the desired bevel angle.
- Bevel angles can be set from 0° to 45°.
- Align the indicator point for the desired angle.
- Once the saw arm has been set at the desired angle, securely tighten the bevel lock knob.
- Place the workpiece flat on the miter table with one edge securely against the fence. If the board is warped, place the convex side against the fence. If the concave edge of a board is placed against the fence, the board could collapse on the blade at the end of the cut, jamming the blade.
- When cutting long pieces of lumber or molding, support the opposite end of the stock with a roller stand or with a work surface level with the saw table.
- Press the LED switch.
- Lower the blade and align the cutting line on the workpiece with the edge of saw blade or the blade shadow.
- Grasp the stock firmly with one hand and secure it against the fence. Use the work clamp, C-clamp, or other suitable clamp to secure the workpiece when possible.
- Before turning on the saw, perform a dry run of the cutting operation just to make sure that no problems will occur when the cut is made.
- Grasp the saw handle firmly. Depress the trigger lockout lever and squeeze the switch trigger. Allow several seconds for the blade to reach maximum speed.
- Slowly lower the blade into and through the workpiece.
- Release the switch trigger and allow the saw blade to stop rotating before raising the blade out of workpiece. Wait until the electric brake stops blade from turning before removing the workpiece from miter table.

To Compound Miter Cut

A compound miter cut is a cut made using a miter angle and a bevel angle at the same time. This type of cut is used to make picture frames, cut molding, make boxes with sloping sides, and for certain roof framing cuts.

To make this type of cut the control arm on the miter table must be rotated to the correct angle and the saw arm must be tilted to the correct bevel angle. Care should always be taken when making compound miter setups due to the interaction of the two angle settings.

Adjustments of miter and bevel settings are interdependent with one another. Each time you adjust the miter setting you change the effect of the bevel setting. Also, each time you adjust the bevel setting you change the effect of the miter setting.

It may take several settings to obtain the desired cut. The first angle setting should be checked after setting the second angle, since adjusting the second angle affects the first.

Once the two correct settings for a particular cut have been obtained, always make a test cut in scrap material before making a finish cut in good material.

NOTE: It may be necessary to adjust the partial sliding fence to ensure proper clearance prior to making the cut.

- Slide the saw head to its most rearward position and tighten the slide lock knob securely.
- Pull out the lock pin and lift saw arm to its full height.
- Loosen the miter lock handle approximately one-half turn and squeeze the detent release lever.
- Rotate the control arm until the pointer aligns with the desired angle on the miter scale.
- Release the detent release lever, then tighten the miter lock knob to secure the miter table.
- Loosen the bevel lock knob and move the saw arm to the left to the desired bevel angle.
- Bevel angles can be set from 0° to 45°.
- Once the saw arm has been set at the desired angle, securely tighten the bevel lock knob.
- Recheck miter angle setting. Make a test cut in scrap material.
- Place the workpiece flat on the miter table with one edge securely against the fence. If the board is warped, place the convex side against the fence. If the concave edge of a board could collapse on the blade at the end of the cut, jamming the blade. **See Figures 42 - 43.**
- When cutting long pieces of lumber or molding, support the opposite end of the stock with a roller stand or with a work surface level with the saw table. **See Figure 35.**
- Press the LED switch.
- Lower the blade and align the cutting line on the workpiece with the edge of saw blade or the blade shadow.
- Grasp the stock firmly with one hand and secure it against the fence. Use the work clamp, C-clamp, or other suitable clamp to secure the workpiece when possible.
- Before turning on the saw, perform a dry run of the cutting operation just to make sure that no problems will occur when the cut is made.
- Grasp the saw handle firmly. Depress the trigger lockout lever and squeeze the switch trigger. Allow several seconds for the blade to reach maximum speed.
- Slowly lower the blade into and through the workpiece.
- Release the switch trigger and allow the saw blade to stop rotating before raising the blade out of workpiece. Wait until the electric brake stops blade from turning before removing the workpiece from miter table.

To Support Long Work pieces

Long work pieces need extra supports. Supports, roller stand, or work surface level with the saw table should be placed along the workpiece so it does not sag. The support should let the workpiece lay flat on the base of the saw and work table during the cutting operation. Use the work clamp, C-clamp, or other suitable clamp to secure the workpiece when possible.

WARNING: Never make a cut by pulling the saw toward you as the blade can climb on top of the workpiece and come toward you. Failure to heed this warning could result in serious personal injury.

To Slide Cut

The sliding feature will cut work pieces 12 in. wide by 1-1/2 in. thick or 3-1/2 in. wide by 3-1/2 in. thick. With the saw off, pull the saw arm forward. Turn the saw on (let blade reach maximum speed), push the blade down cutting into the workpiece then back toward the rear of the saw to make a cut. Cuts are made by pushing the saw blade away from you and toward the bevel scale at the back of the saw stopping when the full rear position has been reached after each cut. When the saw is running (turned on), **NEVER** pull the saw blade toward you or toward the front of the saw.

- Raise saw arm to its full height.
- Place the workpiece flat on the miter table with one edge securely against the fence. If the board is warped, place the convex side against the fence. If the concave edge of a board is placed against the fence, the board could collapse on the blade at the end of the cut, jamming the blade. **See Figures 42 - 43.**
- When cutting long pieces of lumber or molding, support the opposite end of the stock with a roller stand or with a work surface level with the saw table. **See Figure 35.**
- Press the LED switch.
- Lower the blade and align the cutting line on the workpiece with the edge of saw blade or the blade shadow.
- Loosen the slide lock knob by turning the knob counter clockwise.
- Grasp the stock firmly with one hand and secure it against the fence. Use the work clamp, C-clamp, or other suitable clamp to secure the workpiece when possible.
- Before turning on the saw, perform a dry run of the cutting operation to make sure that no problems will occur when the cut is made.
- With the saw off, grasp the saw handle firmly then pull the saw forward until the blade arbor (center of the saw blade) is over the front of the workpiece or until the saw is fully extended.
- Depress the trigger lockout lever and squeeze the switch trigger. Allow several seconds for the blade to reach maximum speed.
- Slowly lower the blade into and through the front edge of the workpiece.
- Push the saw handle away from you and toward the bevel scale at the back of the saw.
- Release the switch trigger and allow the saw blade to stop rotating before raising the blade out of workpiece and removing the workpiece from miter table.

NOTE: A cross cut is made by cutting across the grain of the workpiece. A straight cross cut is made with the miter table set at the 0° position. Miter cross cuts are made with the miter table set at some angle other than 0°.

Making An Auxiliary Fence

Depending on the size and position of the workpiece, certain unusual cuts may benefit from the additional support that can be provided by an auxiliary fence. The holes provided in the miter fence are used to secure an auxiliary fence in place.

NOTE: The auxiliary fence can only be used when the bevel is set at 0°. When making a bevel cut, the auxiliary fence **MUST** be removed.

To attach the auxiliary fence to the saw:

- Loosen the fence screw and move the partial sliding miter fence toward the blade so both holes are visible.
- Place the 3-1/2 in. x 10 in. long piece of wood against the miter fence and aligned with the left edge of the miter table.

NOTE: The appropriate height and thickness of the fence will vary based on the miter angle and the material being cut.

- Clamp the wood tightly against the fence and drive wood screws from the back of the fence through the two holes and into the auxiliary fence. If necessary, drill a pilot hole into wood first to prevent splitting. Remove clamp when finished.

NOTE: Make sure the screws you use to attach the auxiliary fence do not pass through the front face of the fence, have a flat head to allow unrestricted movement of the partial sliding miter fence, and the length of the screws will not put them in the path of the blade at any angle.

- Return the partial sliding miter fence to its home position so it is no longer in the blade path.
- Make full left miter cut through the auxiliary fence.

NOTE: Check for interference between the auxiliary fence and the lower blade guard. Correct any interference before proceeding.

- Repeat steps with second board by aligning with right side of miter table and making a full right miter cut through the auxiliary fence.

Cutting Compound Miters

To aid in making the correct settings, the compound angle setting chart below has been provided. Since compound cuts are the most difficult to accurately obtain, trial cuts should be made in scrap material, and much thought and planning made, prior to making the required cut.

PITCH OF SIDE	NUMBER OF SIDES						
	4	5	6	7	8	9	10
0°	M- 45.00° B- 0.00°	M- 36.00° B- 0.00°	M- 30.00° B- 0.00°	M- 25.71° B- 0.00°	M- 22.50° B- 0.00°	M- 20.00° B- 0.00°	M- 18.00° B- 0.00°
5°	M- 44.89° B- 3.53°	M- 35.90° B- 2.94°	M- 29.91° B- 2.50°	M- 25.63° B- 2.17°	M- 22.42° B- 1.91°	M- 19.93° B- 1.71°	M- 17.94° B- 1.54°
10°	M- 44.56° B- 7.05°	M- 35.58° B- 5.86°	M- 29.62° B- 4.98°	M- 25.37° B- 4.32°	M- 22.19° B- 3.81°	M- 19.72° B- 3.40°	M- 17.74° B- 3.08°
15°	M- 44.01° B- 10.55°	M- 35.06° B- 8.75°	M- 29.15° B- 7.44°	M- 24.95° B- 6.45°	M- 21.81° B- 5.68°	M- 19.37° B- 5.08°	M- 17.42° B- 4.59°
20°	M- 43.22° B- 14.00°	M- 34.32° B- 11.60°	M- 28.48° B- 9.85°	M- 24.35° B- 8.53°	M- 21.27° B- 7.52°	M- 18.88° B- 6.72°	M- 16.98° B- 6.07°
25°	M- 42.19° B- 17.39°	M- 33.36° B- 14.38°	M- 27.62° B- 12.20°	M- 23.56° B- 10.57°	M- 20.58° B- 9.31°	M- 18.26° B- 8.31°	M- 16.41° B- 7.50°
30°	M- 40.89° B- 20.70°	M- 32.18° B- 17.09°	M- 26.57° B- 14.48°	M- 22.64° B- 12.53°	M- 19.73° B- 11.03°	M- 17.50° B- 9.85°	M- 15.72° B- 8.89°
35°	M- 39.32° B- 23.93°	M- 30.76° B- 19.70°	M- 25.31° B- 16.67°	M- 21.53° B- 14.41°	M- 18.74° B- 12.68°	M- 16.60° B- 11.31°	M- 14.90° B- 10.21°
40°	M- 37.45° B- 27.03°	M- 29.10° B- 22.20°	M- 23.86° B- 18.75°	M- 20.25° B- 16.19°	M- 17.60° B- 14.24°	M- 15.58° B- 12.70°	M- 13.98° B- 11.46°
45°	M- 35.26° B- 30.00°	M- 27.19° B- 24.56°	M- 22.21° B- 20.70°	M- 18.80° B- 17.87°	M- 16.32° B- 15.70°	M- 14.43° B- 14.00°	M- 12.94° B- 12.62°
50°	M- 32.73° B- 32.80°	M- 25.03° B- 26.76°	M- 20.36° B- 22.52°	M- 17.20° B- 19.41°	M- 14.91° B- 17.05°	M- 13.17° B- 15.19°	M- 11.80° B- 13.69°
55°	M- 29.84° B- 35.40°	M- 22.62° B- 28.78°	M- 18.32° B- 24.18°	M- 15.44° B- 20.82°	M- 13.36° B- 18.27°	M- 11.79° B- 16.27°	M- 10.56° B- 14.66°
60°	M- 26.57° B- 37.76°	M- 19.96° B- 30.60°	M- 16.10° B- 25.66°	M- 13.54° B- 22.07°	M- 11.70° B- 19.35°	M- 10.31° B- 17.23°	M- 9.23° B- 15.52°
65°	M- 22.91° B- 39.86°	M- 17.07° B- 32.19°	M- 13.71° B- 26.95°	M- 11.50° B- 23.16°	M- 9.93° B- 20.29°	M- 8.74° B- 18.06°	M- 7.82° B- 16.26°
70°	M- 18.88° B- 41.64°	M- 13.95° B- 33.53°	M- 11.17° B- 28.02°	M- 9.35° B- 24.06°	M- 8.06° B- 21.08°	M- 7.10° B- 18.75°	M- 6.34° B- 16.88°
75°	M- 14.51° B- 43.08°	M- 10.65° B- 34.59°	M- 8.50° B- 28.88°	M- 7.10° B- 24.78°	M- 6.12° B- 21.69°	M- 5.38° B- 19.29°	M- 4.81° B- 17.37°
80°	M- 9.85° B- 44.14°	M- 7.19° B- 35.37°	M- 5.73° B- 29.50°	M- 4.78° B- 25.30°	M- 4.11° B- 22.14°	M- 3.62° B- 19.68°	M- 3.23° B- 17.72°

85°	M- 4.98° B- 44.78°	M- 3.62° B- 35.84°	M- 2.88° B- 29.87°	M- 2.40° B- 25.61°	M- 2.07° B- 22.41°	M- 1.82° B- 19.92°	M- 1.62° B- 17.93°
90°	M- 0.00° B- 45.00°	M- 0.00° B- 36.00°	M- 0.00° B- 30.00°	M- 0.00° B- 25.71°	M- 0.00° B- 22.50°	M- 0.00° B- 20.00°	M- 0.00° B- 18.00°

Cutting Crown Molding

The compound miter saw does an excellent job of cutting crown molding. In general, compound miter saws do a better job of cutting crown molding than any other tool made.

In order to fit properly, crown molding must be compound mitered with extreme accuracy.

The two contact surfaces on a piece of crown molding that fit flat against the ceiling and the wall of a room are at angles that, when added together, equal exactly 90°. Most crown molding has a top rear angle (the section that fits flat against the ceiling) of 52° and a bottom rear angle (the section that fits flat against the wall) of 38°.

Laying Molding Flat On The Miter Table

To use this method for accurately cutting crown molding for a 90° inside or outside corner, lay the molding with its broad back surface flat on the miter table and against the fence.

When setting the bevel and miter angles for compound miters, remember that the settings are interdependent; changing one angle changes the other angle as well.

Keep in mind that the angles for crown molding are very precise and difficult to set. Since it is very easy for these angles to shift, all settings should first be tested on scrap molding. Also most walls do not have angles of exactly 90°; therefore, you will need to fine tune your settings.

When cutting crown molding by this method, the bevel angle should be set at 33.85°. The miter angle should be set at 31.6° either right or left, depending on the desired cut for the application. See the chart below for correct angle settings and correct positioning of crown molding on miter table.

The settings in the chart below can be used for cutting All Standard (U.S.) crown molding with 52° and 38° angles. The crown molding is placed flat on the miter table using the compound features of your miter saw.

Bevel Angle Setting	Type of Cut
33.85°	Left side, inside corner 1. Top edge of molding against fence 2. Miter table set right 31.62° 3. Save left end of cut
33.85°	Right side, inside corner 1. Bottom edge of molding against fence 2. Miter table set left 31.62° 3. Save left end of cut
33.85°	Left side, outside corner 1. Bottom edge of molding against fence 2. Miter table set left 31.62° 3. Save right end of cut

33.85°	Right side, outside corner 1. Top edge of molding against fence 2. Miter table set right 31.62° 3. Save right end of cut
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Nesting Crown Molding Against The Miter Fence

NOTE: This method of cut is for crown molding between 4-5/8 in. and 5-1/4 in. tall. Do not attempt to cut molding that is larger than 5-1/4 in. tall.

NOTE: It may be necessary to adjust the partial sliding fence to ensure proper clearance prior to making the cut.

- Set the bevel angle at 0° and the miter angle at 45° to either the left or the right. (For making 90° corners.)
- Nest and secure the crown molding against miter fence using a spring clamp and hold crown molding securely.
- Before turning on the saw, perform a dry run of the cutting operation to make sure that no problems will occur when the cut is made.
- Grasp the saw handle firmly. Depress the trigger lockout lever and squeeze the switch trigger. Allow several seconds for the blade to reach maximum speed.
- Slowly lower the blade into and through the crown molding.
- Release the switch trigger and allow the saw blade to stop rotating before raising the blade out of the workpiece and removing the workpiece from the miter table.

The compound miter saw has been adjusted at the factory for making accurate cuts. However, some of the components might have been jarred out of alignment during shipping. Also, over a period of time, readjustment will probably become necessary due to wear. After unpacking the saw, check the following adjustments before you begin using saw. Make any readjustments that are necessary and periodically check the parts alignment to make sure that the saw is cutting accurately.

Pivot Adjustments

NOTE: These adjustments were made at the factory and normally do not require readjustment.

Travel Pivot Adjustment

- The saw arm should rise completely to the up position by itself.
- If the saw arm does not raise by itself or if there is play in the pivot joints, have saw repaired at your nearest **AUTHORIZED SERVICE CENTER**.

To Adjust The Bevel Pivot

- The compound miter saw should bevel easily by loosening the bevel lock knob and tilting the saw.
- If movement is tight or if there is play in the pivot, have saw repaired at your nearest **AUTHORIZED SERVICE CENTER**.

Positive Stop Adjustments

NOTE: These adjustments were made at the factory and normally do not require readjustment.

To adjust:

- Remove the battery.
- Loosen the bevel lock knob by turning the knob counter clockwise.
- Square the blade to the miter table as described in the **Assembly** section of this manual.

- If the blade is out of square, loosen the lock nut and hold in place while loosening or tightening the positive stop adjustment screw using the blade wrench provided. After adjusting, tighten the lock nut to secure.
- Retighten bevel lock knob. Recheck blade-to-table alignment.

NOTE: The above procedure can be used to check blade squareness of the saw blade to the miter table at both 0° and 45° angles.

The saw has several scale indicators. After squaring adjustments have been made, it may be necessary to loosen the indicator screws and reset them to zero.

