Model MK 660
Direct Drive Tile Saw
Owner's Manual
Parts List and
Operating Instructions

Serial Number
You should record the serial number of your saw
on this owner's manual and on the warranty
card, which must be sent in to be effective. Be
sure to include all pertinent information
required.

⚠️ Caution: Read safety and general instructions
carefully before using saw for the first time.
Table of Contents

Symbols/Definitions ......................................................1
Safety Instructions .....................................................2
Warranty Information ..................................................3
Features ........................................................................3
Unpacking and Preparation ..............................................3
Installing Blade ..............................................................4
Installing Water Pump ....................................................4
Pump Safety ....................................................................4
Motor Specification .......................................................6
Electrical Requirements ................................................6
Wiring Diagram ..............................................................6
Selecting a Generator .....................................................6
Cord Requirements .........................................................7
Operations:
   Rip Cutting & 45° Cutting ............................................7
   Force Cutting ...............................................................7
   Table Markings ...........................................................8
   Pan Removal ...............................................................8
   Securing Table ...........................................................8
Trouble Shooting ..........................................................9
Maintenance ....................................................................10
   Cleaning the Saw .......................................................10
   Lubricating Linear Bearing/Guide Bar ..........................10
   Adjusting Conveyor Cart/Saw Alignment .....................10
   Blade & Conveyor Cart Squareness .............................11
   Depth of Cut ..............................................................11
Optional Accessories ....................................................12
Stand Safety Instructions ...............................................12
Do's/Don'ts .....................................................................13
Cutting Speed/Depth ......................................................13
Parts Listing ....................................................................14
Exploded View ..............................................................15
Ordering Information .....................................................Back Cover
Returned Merchandise Policy ..........................................Back Cover

Symbols/Definitions

WARNING ELECTRICAL HAZARD

WARNING, DANGER, CAUTION

READ OWNER'S MANUAL

WEAR HEARING PROTECTION WHEN OPERATING EQUIPMENT

WEAR EYE PROTECTION WHEN OPERATING EQUIPMENT

WEAR HEAD PROTECTION WHEN OPERATING EQUIPMENT

ALWAYS OPERATE UNIT WITH BLADE GUARD IN PLACE
General Safety Instructions for Tile Saws

Safety is a combination of operator common sense and alertness at all times when the saw is being used.

WARNING: For your own safety and protection, do not attempt to operate saw until it is completely assembled and installed according to the instructions... And until you read and understand the general safety instructions.

- Take time to read and understand fully the owner’s manual and instructions and all safety/caution labels attached to the saw.
- All saws are equipped with approved 3-pronged electrical cord and plug or the appropriate international plug. Do not remove or use in a 2-prong receptacle.
- Keep blade guard in place at all times.
- Keep work area clean and safe.
- Be sure you have the right saw and blade for the work to be done. Forcing a tool to do a job for which it was not designed invites hazardous results and failure.
- Use safety goggles to comply with ANSI Z87.1 as well as wear dust mask and ear plugs for protection.
- Maintain all tools with care for the safest and best performance.
- Always make sure switch is “OFF” before plugging unit into electrical power.
- Never leave saw running unattended. Turn power off.
- Never stand on saw or use saw on an unsupported surface to avoid accidents.
- Be sure the saw is secure and stable before cutting
- Protect your Eyes, Hands, Face, Ears and Body with the proper clothing and safety equipment.
- Do not attempt to cut pieces too small to hold by hand outside the blade guard.
- Avoid awkward hand positions where a sudden slip could cause a hand to move into the blade.
- When cutting a large piece of material, make sure it is fully supported at cutting height.
- Hold workpiece firmly against cutting table.
- Only feed the material fast enough for blade to cut. DO NOT FORCE.
- Always disconnect motor electrical cord from power source before cleaning, changing blade or any servicing.
- Should any part of this saw be missing or damaged or any electrical component fail to perform properly, shut off power and unplug from power source. Replace damaged, missing, and/or failed part before resuming operation.
- Always keep alert. Do not allow familiarity (gained from frequent use) to cause a careless mistake. Always remember that a careless fraction of a second is sufficient to inflict severe injury.

THINK SAFETY The operation of any power tool can result in foreign objects being thrown into the eyes causing severe damage. Use safety goggles to comply with ANSI Z87.1

FORESIGHT IS BETTER THAN NO SIGHT
Warranty Information

If, within one (1) year from the date of purchase, this MK Diamond saw fails due to a defect in material or workmanship, MK will repair it, free of charge, by returning the unit to the dealer where it was purchased. This warranty DOES NOT cover normal wear or damage resulting from operator abuse. In no event shall MK Diamond Products, Inc. be liable for consequential damages arising out of the failure of any product if operated improperly. Selected components such as motors/engines are excluded from this warranty and are subject to the manufacturer’s warranty. Each manufacturer carries its own warranty conditions which are listed on the literature accompanying the motor/engine at the time of purchase. MK Diamond Products may act as a warranty station for the motors/engine repairs based on individual agreement with the manufacturer. This warranty is in lieu of all other warranties expressed or implied.

Saw Features

- Portable, 50 lbs.
- Durable high torque 3/4 h.p. D.C. motor
- Cuts tile and marble to 14” x 14”
- Blade guard is hinged for safe and easy blade changes
- Includes rip guide and water pump.
- Linear guide bar and nylon bushings offer precision and maintenance free operation

Unpacking, Assembly and Preparation

Carefully open carton. Remove saw and separate all parts from the packing material. Check each item with illustration making certain all items are accounted for and in good condition before discarding any packing material. If there are any missing or damaged parts, call our toll free number 1-(800) 421-5830 for instructions before proceeding with the assembly.

Contents of carton:  
saw  
blade  
water pump  
rip guide  
45° miter fixture  
owner’s manual  
wrenches (2)  
drain plug  
warranty card  
plastic pan
⚠️ WARNING: For your own safety, never connect plug to power source outlet until all assembly steps are complete. Read and understand the safety and operational instructions. Lift the saw by the frame and place onto level work surface or optional stand ....See stand assembly instructions.

Familiarize yourself with the controls and features of this saw shown in the illustration on page 3. (Descriptions and illustrations are as accurate as possible at the time of publication. Illustrations may include optional equipment or accessories and may not show all models covered by this literature.)

Installing the Blade

To install the blade, loosen the blade guard pivot bolt and davies knob and raise the blade guard to its full up position, or completely remove the blade guard. Install the inner blade flange onto the motor shaft making sure that the flange is seated against the shoulder and that the grooved side of the flange is facing toward the blade. Install the blade onto the motor shaft, making sure that the directional arrow on the blade is facing toward the nut and pointing in the “down” direction (counter-clockwise). Install the outer flange with the grooved side against the blade and secure blade and flanges with the blade nut. Using the shaft wrench, hold the motor shaft from turning while tightening the blade nut with the blade nut wrench ¼ turn past finger tight.

To adjust the blade cutting depth, refer to page 11 for detailed instructions.

Installing Water Pump

Unpack and inspect the pump from it’s carton to insure that no damage has occurred in shipping. Attach the adapter nozzle to the pump outlet and attach the plastic tubing to the nozzle. Place the pump in the cradle at the rear of the water pan. Connect pump power cord to the receptacle on the saw. The water pump has sealed bearings and is thermally protected. Water level in the pan should be above pump intake level to ensure proper operation. Cold weather and low voltage may cause pump not to function properly. Be sure that pump inlet is clear of sediment before operation.

⚠️ CAUTION: Disconnect and remove water pump when cutting dry.
Safety Guidelines for Pump

1. Do not use to pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Do not use in explosive atmospheres. Pump should only be used with liquids compatible with pump component materials.
2. Do not handle pump with wet hands or when standing on a wet or damp surface, or in water.
3. Do not pull the pump out of the water by the power cord when the pump is operating or connected to power source.
4. This pump is supplied with a grounding conductor and/or grounding type attachment plug. To reduce the risk of electric shock, be certain that it is connected to a properly grounded grounding type receptacle.
5. Support pump and piping when assembling and when installed. Failure to do so may cause piping to break, pump to fail, motor bearing failures, etc.

Electrical Connections
1. Check the pump label for proper voltage required. Do not connect to voltage other than that shown.
2. The pump is supplied with a 3-prong electrical plug, the third plug is to ground the pump to prevent possible electrical shock hazard. DO NOT REMOVE the third plug from the cord. If the plug is cut or the cord shortened, then this action will void the warranty.

Operation
1. The PE-1 model pumps must be operated with the volute intake below the liquid level.
2. The pumps can be placed in any position.
3. The weight of the pumps must be supported adequately. DO NOT support the pumps by the discharge connection alone.
4. Do not attempt to restrict the intake side of these pumps. Restricting the intake may cause damage to the seat and may starve the pump.
5. Do not let the unit operate dry. It is designed to be cooled by pumping fluid. You may damage the seal and the motor may fail if the pump is allowed to run dry.
6. If the unit is going to be idle for a period of time, follow the cleaning instructions outlined in the next section. Do not let the unit freeze in the wintertime. This may cause cracking or distortion that may destroy the unit.

Service Instructions
1. This unit is permanently lubricated. Oiling is not required.
2. First remove the intake screen from the pump. Screen is snapped on and can be removed by pulling. The remove the 3 screws which attach the volute.
3. Lightly clean any corrosion or debris which may clog the impeller. Use a brush and penetrating oil and lightly scrape to remove encrusted material.
4. Turn the impeller by hand to make sure it turns freely. Set pump down so the pump and impeller are not touching anything. Plug the unit into GFCI circuit for 10 seconds to see if the impeller turns; a) If it is rotating and GFCI did not trip, un-plug unit and install parts in reverse order in which they were removed. b) If it does not rotate, if pump is tripping circuit breaker, or not operating properly after cleaning, return to Little Giant or its authorized service center. DO NOT attempt repairs yourself.
5. Be certain power cord is in good condition and contains no nicks or cuts.
Motor Specifications and Electrical Requirements

- Horsepower 3/4, saw duty
- Volts 110
- Amperes 7.7
- R.P.M. 3400
- Hertz 60/50
- Phase 1
- Class F

Wiring Diagram

Selecting A Generator

A fundamental problem in selecting an engine-driven generator is to determine the power (kilowatt) requirements which must be met under operating conditions.

Undersizing of the equipment can be avoided by considering all of the loads that will be connected to the generator, and by determining the starting requirements (motor start) of electric motor operated devices.

Be sure the generator you select is large enough to handle your present requirements and anticipated needs.

To determine the right size generator, add the total watts of all lights, appliances, tools or other equipment to be connected to the generator.

Check the nameplates to determine wattage. If wattage is not shown, but amps and volts are given, the following simplified formula may be used:

\[ \text{Amps} \times \text{Volts} = \text{Watts} \]

Example: 12.5 Amps \times 120 Volts = 1500 Watts

To determine kilowatts (KW), use the follow formula:

\[ \frac{\text{Watts}}{1000} = \text{Kilowatts} \]

Example: \( \frac{1500}{1000} + 1.5KW \)

\[ 1.5KW \]
Cord Requirements

Before connecting saw to power supply, check that voltage and phase on motor are the same as power supply. The electrical circuit should be 110 volts AC, 50/60 Hertz, 20 amps; protected by 20 amp breaker. (If a generator is necessary, use 5000 KW minimum). **Power supply must be grounded using three conductor extension cords with three prong ground plugs and receptacles.** Using the following as a guide:

<table>
<thead>
<tr>
<th>WIRE GAUGE:</th>
<th>#14</th>
<th>#12</th>
<th>#10</th>
</tr>
</thead>
<tbody>
<tr>
<td>110 VOLTS:</td>
<td>25'</td>
<td>50'</td>
<td>75'</td>
</tr>
</tbody>
</table>

Use only UL listed cords and connect saw as close to power source as possible.

Operations

Rip cutting

Rip cutting is the term used to describe cutting the material flat on the conveyor cart, either on the square or the diagonal. When cutting the material on square, position the material against the conveyor cart back stop and hold firmly in place. Use the rip guide for positioning the material for exact cutting dimensions. When cutting diagonally, position the material using the conveyor cart back stop and the dual 45° fixture (sold separately). For cutting materials at angles other than 45°, use the 0 – 90° protractor (sold separately) to align the material to the desired angle.

45° Cutting (Mitering)

45° miter cutting is the term used to describe cutting the end of the material to a 45° bevel. Loosen the knob & rotate the motor mount against the 45° miter stop. Hold the material firmly against the back stop and push the material completely through the blade. Make sure that the blade depth is properly set with the cutting head in the vertical position prior to positioning the cutting head for mitering.

"Force" Cutting with diamond blades.

In "Force" cutting the head is in a fixed position and the material is pushed into it completing the cut in one pass, as shown in the sketch at right.

1. In cutting, clamp the material securely and hold it firmly against the conveyor cart backstop. If the material is allowed to slip, resulting seizure of the blade may bend the diamond blade center or cause a rim section to be twisted off.

2. Do not force the material or bump into the blade. When nearing comple-
tion of the cut, retard and slightly hold back the conveyor cart. If this is not done, the material may be pulled into the blade so fast that excessive pressure on the rim may cause warping or twisting of the blade.

3. When a new diamond blade is being broken in, make the first few cuts slowly until the blade cuts freely and easily.

4. When the blade is cutting freely and easily, USE IT! As long as it cuts satisfactorily do not dress the diamond blade or remove it from the blade-shaft.

5. After continuous cutting of extremely hard and dense materials, the blade may slow down and it may be necessary to “dress” the cutting edge. To do this:
   a. Make one or two cuts in a soft brick or light weight block material.
   b. A dressing stick may also be used.

However, “dressing” should be done as seldom as possible – too much “dressing” reduces blade life.

6. IMPORTANT – Use proper blade specification for the material being cut.

Table Markings Explanation

The markings on the conveyor cart back stop are used for precision cutting to exact dimensions. Inch markings are on the top line and metric (cm) are on the bottom line. The scale on the top of the back stop is used for setting the rip guide alignment indicator to the desired cutting dimension.

Removal of Pan

The water pan is removed by sliding the pan straight out through the front of the saw frame. When reinstalling the pan, make sure that the lip of the pan is aligned with the notches in the frame brackets and the bottom of the pan rests securely on the frame cross bars.

NOTE: Clean the pan after every use.

Securing table

The conveyor cart may be secured into position for transportation and storage. Rotate the linear bearing guide bar cover in a clockwise direction until the conveyor cart is tight. To unsecure, rotate the conveyor table in a counter clockwise direction until the cart moves freely.

NOTE: This is not a locking device. The conveyor cart may move during transportation.
Trouble Shooting
If Thermal Overload Switch Pops

The thermal overload reset switch is located on the cutting head adjacent to the on/off switch (Fig. 11). If the motor overheats, the thermal protection will cause the motor to shut off. If this should occur, allow approximately 10 minutes for the motor to cool down, then push the switch to reset.

⚠️ NOTE: If saw continues to shut off, check for low voltage, voltage drop, or too long of an extension cord.

If motor won’t stay on

Check thermal overload switch, check for correct extension cord size, check voltage and circuit breaker from power source. Use 20 amp power.

If blade won’t cut

Check for worn out diamond edge, check that blade is rotating in the same direction as the rotation arrows, check that the blade is the correct specification for the material being cut.

If conveyor cart won’t move smoothly

Check that the guide bar cover is not secured, check that the guide bar is clean and free of dirt. Lubricate guide bar periodically with light machine oil per maintenance instructions.

If water won’t flow evenly to both sides of the blade

Check that the water line is clear of dirt, check that the water jets in the blade guard are clear, check that the pump filter is not clogged.
Maintenance

Failure to maintain saw in accordance with the manufacturer's recommendations may void the warranty.

1. Cleaning the saw
   Cleaning the saw after every use will ensure long life and trouble-free cutting. Use fresh, clean water and a non-metallic brush to clean material residue from the cutting head assembly, conveyor cart surface and linear bearing mount and guide bar. Avoid getting water directly on or around electrical switches and the pump receptacle. Wipe off the cutting head and other surfaces.

2. Lubricating the Linear Bearing and Guide Bar
   After cleaning the saw, lubricate the linear bearing and guide bar with a light machine oil. To gain access to the guide bar, loosen the height adjustment knob and raise the cutting head assembly to its full up position. Lift the conveyor cart up and swing it over and past the rear post.

⚠️ WARNING: For your safety, turn switch off and remove plug from power source outlet before maintaining or cleaning your saw. If the power cord is damaged in any way from wear or cuts, replace it immediately. Do not attempt to alter or splice the power cord

3. Adjusting Conveyor Cart and Saw Alignment
   Although the saw is aligned at the factory, alignment in the field may become necessary if components are removed and or replaced. The following procedures must be followed to ensure proper saw cutting alignment:

A. Blade and Conveyor Cart Slot Positioning
   1. Move conveyor cart so that blade is approximately midway between front and back of cart surface.
   2. Set blade to proper depth of cut (approximately ¼ inch or 6.35 mm) below surface of cart.
   3. Loosen guide bar bolts at each end of frame and position conveyor or car assembly so that blade is in the middle of the slot.
   4. Using a machinists square, position the steel rule against the face (diamond rim) of the blade and the square head against the machined surface of the conveyor cart.
   5. With the machinist square in position (step 4), move the conveyor cart back and forth and check to see that the steel rule is flat against the blade at all points along the diamond rim. If not, position one end of the guide bar until square against blade. Tighten guide bar bolts when proper alignment is achieved.
B. Blade and Conveyor Cart Squareness (Vertical Alignment)
2. Remove blade guard (if installed)
3. Position machinist's square in vertical position with the square head flat against the cart top surface and the steel rule edge against the blade rim (approximately 1 inch (25.4 mm) back from front of blade). If steel rule does not rest squarely against blade, loosen wheel bracket bolts and position wheel bracket up or down until conveyor cart and machinist square touch at all points along the steel rule. Tighten wheel bracket bolts.
4. Recheck horizontal and vertical alignment.

NOTE: In the event the frame assembly is damaged during field use, the blade may not center in the conveyor cart slot with adjustments indicated above. To correct this condition, shims may be added between the linear bearing housing and the conveyor cart. If necessary, contact MK Diamond Customer Service Department for further assistance with saw alignment.

⚠️ DO NOT attempt to square or level the conveyor cart as this is preset at the factory.

Adjustments

Depth of Cut

When cutting through material, the blade should penetrate at least 1/4" (6.35mm) below the surface of the conveyor cart. To properly adjust the depth of cut follow these procedures:

1) Loosen the height adjustment knob
2) Raise or lower the cutting head assembly to position the into the slot 3/16" (6.35mm) below the top surface of the conveyor cart.
3) Tighten the height adjustment knob securely.

Note: This adjustment must always be set prior to positioning the cutting head assembly to the 45° miter position. Failure to set the proper depth of cut prior to miter cutting will result in an improper mitered edge on the work piece!
Optional Accessories

Dual 45° Flat Angle Guide – used to align the material for flat diagonal 45° cutting.

90° Protractor – used to align the material for cutting any desired angle.

Folding Stand – Sturdy steel stands allow operator to have work surface at a standing height

Stand Safety Instructions

When setting the saw on the stand, be sure the saw frame seats firmly in the stand brackets. The “point” of the V-strut should fit over the small V-shaped stand bracket, and the strut opposite the point should fit over the large V-shaped stand bracket.

⚠️ CAUTION: Always set the stand on a firm, level surface to prevent tipping or sliding.
Do’s/Don’ts

Inspect all blades daily for any damage before mounting.

Dry Cutting Blades

DO’s
- Follow manufacturer’s blade recommendation for material being cut. Check for suitability of cutting dry.
- Inspect diamond blade for damage before mounting on saw. Check arbor shaft and flanges for damage or uneven wear.
- Be sure blade is mounted on correct diameter shaft with arrow in the proper direction of rotation and blade shaft nut is securely tightened with wrench.
- Inspect blade periodically during use for fatigue cracks and segment damage.
- Wear proper safety equipment and observe safe operating procedures.

DON’Ts
- Never operate any saw without safety guards in place.
- Do not exceed maximum operating speed established for blade diameter.
- Do not force blade into material: allow blade to cut at its own speed.
- Do not make long continuous cuts with dry cutting blades: allow blade to cool by turning in air every few minutes.
- Do not cut or grind with side of blade or cut a curve or radius.

Wet Cutting Blades

DO’s
- Match blade specification with material to be cut.
- Inspect blade for damage before mounting on saw: check arbor shaft and flanges for damage and uneven wear.
- Be sure blade is mounted on correct diameter shaft and the blade shaft nut is securely tightened with wrench.
- Check for continuous flow of water to both sides of the blade.
- Follow manufacturer’s recommended pulley sizes and operating speeds for specific diameter blades.

DON’Ts
- Do not operate any machine without blade guard in place.
- Do not cut dry with blades recommended for wet cutting.
- Do not exceed maximum safe operating speed.
- Do not operate saw with blade diameter larger than machine’s capacity.
- Do not use a blade that has missing or broken segments, is cracked, or that shows signs of overheating.

Always follow all the manufacturer’s safety recommendations as well as complying with the ANSI B7.1, B7.5, OSHA and Safety Guidelines furnished with each product. Using blades and machines in a SAFE manner will assure the long life and cutting quality of your MK Diamond blades.

Blade Cutting Speeds

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Recommended Maximum R.P.M.s*</th>
<th>R.P.M.s</th>
</tr>
</thead>
<tbody>
<tr>
<td>7&quot;</td>
<td>5,184</td>
<td>8,730</td>
</tr>
</tbody>
</table>

* Based on 9,500 SPM optimum performance range + or - 10%.

Maximum Blade Cutting Depth

<table>
<thead>
<tr>
<th>Blade</th>
<th>Maximum Cutting Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>7&quot;</td>
<td>2-1/2&quot; depth (1-1/8&quot; at 45° miter)</td>
</tr>
</tbody>
</table>

Note: Cutting depths are approximate and will vary with different blades and saws.
Note: 45° miter position should allow cutting of most V-caps without interference, however, some V-caps may vary slightly in size depending on manufacturer and process used.
Parts Listing - MK-660 Tile Saw

1. Blade Guard 151731
2. Water Valve 152785
3. Outer Blade Flange 135830
4. Blade, MK-200-7"Tile 139295
5. Splash Shield 139841
6. Splash Shield Bracket 152571
7. Power Cord 153419
8. Cutting Head Assembly 154290
9. Frame 153322
10. Rear Post 153451
11. Adjustment Knob 153422
12. Spacer, Linear Bearing Support 151755
13. Guide Bar Cover 151740
14. Guide Bar 151739
15. Multilube Bearing(2 required) 151781
16. Linear Bearing Mount 151737
17. Conveyor Cart 152680
18. Rip Guide 134551-MK
19. Roller Wheel Mounting Bracket 151800
20. Roller Wheel (nylon) 151799
21. Plastic Pan 151736
22. Drain Plug (2 pack) 133025-MK
23. Water Pump 151271
24. Water Pump Adaptor 128397
25. Water Hose (2ft. required) 132951
26. Inner Flange Spanner Wrench 154362
27. Blade Shaft Nut Wrench 134684
28. Thermal Overload Protector 153420
29. Rocker Switch, with Light 153631
30. 45° Bullnose Miter Plate - Large (not shown) 153201
31. Hex Head Bolt % -16 x 2 (2 required) 153201
32. Wing Nut, % 151746
33. Hex Nut, % - 18 135848
34. Davies Knob 151681
35. Hex Head Bolt, 5/16 -18 x 1 (2 required) 151743
36. Inner Flange 154194
Exploded View -
HOW TO ORDER REPAIR PARTS

Always have the following information ready before calling:

- Serial number of your saw
- Model number of saw
- Where purchased and when
- Part description
- Part number

All parts listed may be ordered from your local distributor or from MK Diamond. If the part is not stocked locally, call our toll free number listed below and ask for our customer service department. There is a $25.00 minimum order.

Returned Merchandise Policy

Should you need to return any product you have purchased from MK Diamond, please observe the following:

Our customer service department should be contacted for approval to return merchandise. Merchandise will not be accepted without a Returned Goods Authorization number. All returned merchandise must be shipped prepaid to destination.

All returned merchandise must have been purchased within the previous 12 months and be in resalable condition. A restocking charge of 15% will be billed.