

CRL Portable Production Glass Diamond Drilling Machine
Catalog No. AMZ1
Operating Instructions

Congratulations. You have just purchased a superior glass drilling machine that will give you years of service with minimum maintenance. The CRL AMZ1 Machine is unique because it is a portable precision drilling machine with electronically adjustable speed control, center water feed, and a locking cup design.

UNPACK AND VERIFY RECEIPT OF THE FOLLOWING COMPONENTS:

- | | |
|---------------------------------|---------------------------------------|
| 1 AMZ1 Diamond Drilling Machine | 1 Retaining ring with rubber base |
| 1 Drilling up-down handle | 1 Allen wrench to install feed handle |
| 2 Wrenches 24mm and 1-1/16" | 1 Coolant supply hose |

The AMZ1 is shipped with the drilling up-down handle removed to prevent shipping damage. To install, slide into side mount and tighten with wrench provided.

NOTE: An optional Coolant Supply Container is available for use with this machine. To order, please contact us and request Catalog No. PTA.

ALSO CHECK TO ENSURE THE FOLLOWING:

- Drilling handle should move up and down smoothly
- Drill chuck should spin freely by hand
- Rubber cups and pads should be smooth with no scratches
- No loose or damaged parts should be evident

Please contact us immediately if parts are missing or defects are noted per above list. In this case, also save all shipping containers, which may be necessary to file damage claim with the shipper.

PRODUCT SPECIFICATIONS

Voltage: 110 / 220 VAC 50 / 60 HZ
Maximum Drilling Capability 4" (102mm)
Motor Speed: 0 to 2900 RPM
Drilling Depth 1-1/2" (40mm)
Net Weight: 34 lbs. (15Kg.)

General Information

CRL has designed this machine specifically for use in glass drilling by industry professionals. You must use the machine only for the designated purposes. We are not responsible for any accident which may be caused by misuse. As you begin familiarizing yourself with the machine, pay attention to the following details:

- Do not work on porous surfaces. This unit is designed for glossy surfaces, such as glass.
- Never change the speed of the machine when the diamond drill is in contact with the glass.
- Make sure you are feeding a sufficient amount of water while drilling.
- Watch the condition of the glass when drilling to determine correct drill speed.
- Keep speed and water feed constant until the drill bit is completely removed.
- Do not disassemble the machine. This will void your warranty.

ELECTRICAL REQUIREMENTS

Your AMZ1 Machine has been shipped ready for 110 VAC power. The machine features a heavy-duty supply cord with grounded 3-prong plug. This machine should always be used on a grounded outlet with built-in ground fault -circuit protection. If you do not have a G.F.C.I. protected outlet, contact us to purchase our portable in-line G.F.C.I. device, CRL Cat. No. GF1. This machine should not be used with extension cords. Plug directly into grounded outlet.

Your AMZ1 Machine features an electronic speed control that will accept 110 or 220 volt input in either 50 or 60 cycle power. To use this machine with a 220 volt circuit, contact a qualified electrician to provide you with a properly fused and grounded circuit, and to supply connections.

SAFETY

This AMZ1 Machine is suited for use by glass industry professionals. The operator must understand the nature of glass and observe safe, accepted handling procedures for glass before use. Incorrect and careless use of this machine will decrease the durability of the product and can cause serious injury. Please read all of the instructions -thoroughly before use.

When working with the AMZ1 Machine, please note the following precautions:

- Wear appropriate eye, hand and body protection.
- Provide properly grounded G.F.C.I. protected electrical connection.
- Adjust RPM to suit diameter of diamond drill being used.
- Never touch diamond drills while in operation.
- Support glass properly before setting machine on glass.
- Glass must lay horizontal and be stress free.
- Never drill glass in the vertical position.
- Use only designated tools to insert a diamond drill in the chuck.
- Unplug machine when changing diamond drills.
- Block small pieces of glass securely.
- Do not use on tempered or wired glass.
- Keep the control box and motor dry at all times.

WORK AREA

This machine is designed to be portable for use at the job site, as well as for in-shop use. Always provide an uncluttered work area and concentrate on the job at hand. Before using your machine, please organize your work area to ensure the following:

- Glass must lay flat without stress.
- Glass must be adequately supported to accept weight of machine.
- The diamond drill must be able to protrude through the bottom of the glass when drilled.
- There must be a collection system for the used coolant.

For in-shop use, drilling can be done on a flat cutting table using a thin piece of Plexiglas between the glass to be drilled and the cutting table. Direct used coolant to a collection area.

For temporary portable work, you can create a work area by laying a plastic sheet over a flat surface, such as a portable cutting table. Use quality straight wood strips (1" x 2" or larger) and place flat on top of the plastic sheet to elevate the glass work piece. Position the flat strips to adequately support the work piece, maintaining a flat plane. Allow the coolant to flow off the plastic sheet into a five gallon bucket for settling and reuse. After use, clean any glass residue or coolant off the drills, drilling machine and the base. Dry completely.

PREPARING TO WORK

Your AMZ1 Diamond Drilling Machine is designed for the water or water/diamond coolant mixture to be fed through the center of the diamond drill via the water coolant chuck. The coolant chuck uses this water flow to provide cooling to the chuck body and seals. Whether you are using the optional coolant supply container, or your building water supply, you should always keep coolant flowing when using the machine.

The operating speed (RPM) is adjustable from 0 to 2900 RPM. This allows user to set the optimum speed for different diameters of diamond drills. Smaller drills run at higher speeds, and larger drills run at lower speeds. See instructions packaged with each diamond drill for optimum speed selection.

The AMZ1 Machine is held to the glass while drilling with two rubber locking cups. You may adjust the holding power of these cups by adjusting the knurled washer on the top side of the cup. To release cups, lift lever and pull up on side of cup with fingers to release pressure. Use care to prevent cutting or scratching of the rubber cup -surface during transport and storage.

USING THE AMZ1 MACHINE

- 1) Mark the glass where you want to drill.
- 2) Using the wrenches provided, install a drill in the machine.
- 3) Plug machine into a properly grounded G.F.C.I. protected outlet.
- 4) Place the machine on the glass and position drill over desired hole location.
- 5) Lock suction cup holders by applying gentle downward pressure; flip levers down.
- 6) Place the retaining ring on the glass under the diamond drill.
- 7) Adjust the coolant valve until you have desired water/coolant flow.

- 8) Turn on the main switch on the control box.
- 9) Set the correct speed by turning the speed dial. (For faster speeds, turn clockwise.)
- 10) Begin drilling by lowering the up-down handle. Use constant pressure. Occasional up and down strokes can help clear the hole of glass swarf.
Lighten pressure at the end of cut to reduce backside chipping.
- 11) When hole is completed, gently lift handle to get a smooth finish.
- 12) Turn off machine, lift the vacuum cup levers, and remove machine.
- 13) Verify glass core has been ejected from drill bit.
- 14) Repeat process as needed.
- 15) Unplug machine from the power supply and clean off any glass/water residue.

ROUTINE MAINTAINANCE

Your AMZ1 Diamond Drilling Machine is designed and built to give you extended service. Drilling of glass presents tough operating conditions due to the abrasive nature of ground glass particles and the damp environment of wet drilling. Great benefits can be received by a quick cleanup with a clean rag after each use. The fresh damp glass slurry will wipe off easily. Left on the machine to dry, it will build up and harden.

This same problem can occur on your drill bits. When the glass swarf hardens inside the drill bit, the next time you use it, this hard material inside the drill bit could prevent you from drilling a hole! Take the short time it takes to rinse, dry, and lightly oil your drill bits after each use. Be sure to include the thread and taper of the drill in this cleanup process. We recommend CRL Cat. No. 1200 Metal Lube for all lubrication maintenance of the AMZ1.

A light coat of oil should also be wiped on the female thread and taper of the spindle. This area is subjected to constant wet use. Failure to clean up will cause rusting, resulting in threading problems and poor seating of -diamond drills.

Occasionally put a light coating of oil on the twin posts your machine travels on. Lower the handle to have access to these posts. A clean rag with light oil can be used on the entire machine to prevent corrosion.

Pay special attention to the rubber cups located on the bottom of the machine. Clean these after each use with a clean cloth to remove the abrasive ground glass. Failure to do this will result in scratched glass or loss of vacuum pressure and holding strength. Cup life can be extended by occasionally wiping cup surfaces with Technical Glycerine, CRL Cat. No. GL22.

After extended use, the motor brushes may need to be replaced. These are externally serviceable for convenience and available as a replacement part. If your machine fails to start, check the 10-amp fuse located on the rear of the machine.

When not using your machine, store in a clean dry place.

DIAMOND DRILLS

This machine is designed to be used CRL Belgian-threaded Mount Multi-layer Drills. The mount uses a male thread on the drill bit and female thread on the spindle to pull matching tapers together. This design assures the tool will be true running. You can use our PDT Series Metal Bond Drills or our HBT Electroformed Drills. The machine will accept drill sizes from 1/8" to 4" (3mm to 102mm). You may also use CRL Threaded Countersinks and Spot Facers in this machine.

COOLANT

Always use proper coolant with your AMZ1 Drilling Machine. Coolant extends the life of your drill bits and -prevents corrosion within the drilling machine. We recommend CRL Diamond Tool Coolant Cat. No. DTC80GL to provide optimum cooling and lubricating performance. CRL Diamond Tool Coolant is sold in concentrated form and is diluted with water in a ratio of 50 parts water to one part concentrated coolant. Delivery of water/coolant solution is provided by an optional Pressure Tank Assembly, CRL Cat. No. PTA.

CRL DIAMOND DRILL SHARPENING STONES

Extend the life of your drill bits by occasionally dressing them, using our CRL Sharpening Stones. For use on multi-layer drills, the sharpening stones expose fresh crystal for prolonged drill life and aggressive cutting action. Always fully saturate stone with water before use. Hold or block stone securely for safety.

DRILL DIAMETER	SHARPENING STONE SIZE	CRL CAT. NO.
1/8" – 1-3/4"	2" x 6" x 1/2"	PDSS
1/8" – 3-1/2"	4" x 6" x 1"	PDSS3
1/8" – 5-1/2"	6" x 8-1/2" x 1/2"	PDSS4

WARRANTY

Your AMZ1 Drilling Machine has a 6-month major component warranty. If during this time, failure occurs during normal use, then CRL will repair or replace at no charge to the Purchaser. This warranty is null and void if machine has been misused or disassembled by customer. Electrical components and base cups are not covered under this warranty.

REPLACEMENT PARTS

CRL maintains a stock of replacement parts for the AMZ1 Machine. Please identify stock number needed from parts list and contact us for availability.

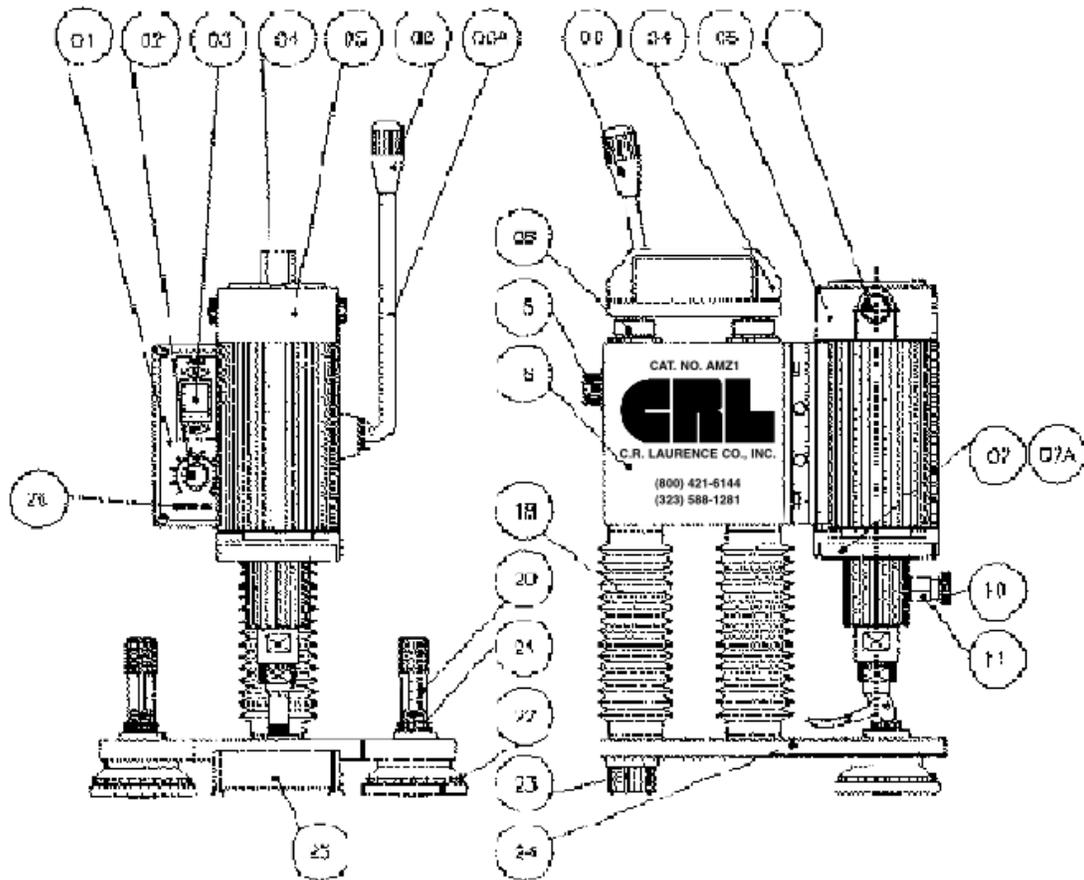
For parts and service contact:

C.R. LAURENCE CO., INC. Phone (323) 588-1281
2503 E. Vernon Avenue Toll Free (800) 421-6144
Los Angeles, California 90058-1897 Fax (323) 581-6522
Fax (800) 262-3299

Web Site: <http://www.crlaurence.com> E-mail: crl@crlaurence.com

CRL PRODUCTION DIAMOND GLASS DRILLING MACHINE

Catalog No. AMZ1 PARTS LIST



DRAWING NO.	DESCRIPTION	CATALOG NO.	QTY. REQUIRED
01	Control box	AMZ201	1
02	Speed control	AMZ202	1
03	Power on-off switch	AMZ203	1
04	Top handle	AMZ204	1
05	DC Motor	AMZ205	1
06	Handle knob only	AMZ206	1
06A	Drilling up-down handle	AMZ206A	1
07	Replacement motor bearings	AMZ207	1
07A	Bearing housing	AMZ207A	1
08	Stroke control washer	AMZ208	2
10	Valve	AMZ210	1
11	Valve housing	AMZ211	1
14	Carbon brush	AMZ214	2
15	Fuse 250V 7A	AMZ215	1
16	Main body	AMZ216	1
18	Bellows cover	AMZ218	2
20	Cup lever assembly	AMZ220	2
21	Knurled nut	AMZ221	2
22	Rubber cup	AMZ222	2
23	Bumper	AMZ223	2
24	Machine base	AMZ224	1
25	Coolant retaining ring	AMZ225	1
26	Speed control circuit board	AMZ226	1

CRL Metal Bond Diamond Drills

CRL Metal Bond Diamond Drills can be used in portable machines and are especially suited for high production -equipment with water coolant chucks such as double opposed drilling machines. Metal bond drills offer the greatest life of all type glass drills. The quality of CRL Metal Bond Diamond Drills is the finest -available and have a 3/8" deep cutting matrix filled with -diamonds and bronze bond that are more fragile than plated drills. Because of this they should always be used in true-- -running machines on flat glass -surfaces. Use a wet -sharpening stone to expose fresh diamonds when drilling actions slows.

CAT. NO.	SIZE (FRACTIONAL)	SIZE (MM)	CAT. NO.	SIZE (FRACTIONAL)	SIZE (MM)	CAT. NO.	SIZE (FRACTIONAL)	SIZE (MM)	CAT. NO.	SIZE (FRACTIONAL)	SIZE (MM)
PDT3MM		3mm	PDT13MM		13mm	PDT27MM		27mm	PDT212	2-1/2"	63mm
PDT18	1/8"	4mm	PDT916	9/16"	14mm	PDT118	1-1/8"	29mm	PDT234	2-3/4"	70mm
PDT316	3/16"	5mm	PDT58	5/8"	16mm	PDT11316	1-3/16"	30mm	PDT3	3"	76mm
PDT6MM		6mm	PDT1116	11/16"	17mm	PDT114	1-1/4"	31mm	PDT314	3-1/4"	83mm
PDT14	1/4"	6.5mm	PDT34	3/4"	19mm	PDT32MM		32mm	PDT312	3-1/2"	89mm
PDT516	5/16"	8mm	PDT20MM		20mm	PDT138	1-3/8"	35mm	PDT334	3-3/4"	96mm
PDT9MM		9mm	PDT1316	13/16"	21mm	PDT112	1-1/2"	38mm	PDT100MM		100mm
PDT38	3/8"	10mm	PDT78	7/8"	22mm	PDT134	1-3/4"	45mm	PDT4	4"	102mm
PDT716	7/16"	11mm	PDT24MM		24mm	PDT2	2"	51mm	Fractional sizes shown is closest to metric size. All CRL diamond drills may be combined for quantity pricing. Please see directions for drill speed.		
PDT12MM		12mm	PDT25MM		25mm	PDT218	2-1/8"	54mm			
PDT12	1/2"	12.7mm	PDT1	1"	26mm	PDT214	2-1/4"	57mm			

CRL Electro Formed Diamond Drills

CRL Electro Formed Diamond Drills are thin walled with 1/2" deep multi-layer of -diamonds and bonding matrix designed for high speed, high production drilling.

The Fragile nature of this type of drill requires use in a precision machine such as our AMZ1.

Sharpening of these drills as required will keep up top speed production.

CAT. NO.	DRILL DIAMETER	CAT. NO.	DRILL DIAMETER	CAT. NO.	DRILL DIAMETER
HBT332	3/32"	HBT58	5/8"	HBT134	1-3/4"
HBT18	1/8"	HBT34	3/4"	HBT2	2"
HBT316	3/16"	HBT1316	13/16"	HBT214	2-1/4"
HBT14	1/4"	HBT78	7/8"	HBT212	2-1/2"
HBT516	5/16"	HBT1	1"	HBT234	2-3/4"
HBT38	3/8"	HBT114	1-1/4"	HBT3	3"
HBT716	7/16"	HBT138	1-3/8"	HBT312	3-1/2"
HBT12	1/2"	HBT1716	1-7/16"	HBT4	4"
HBT916	9/16"	HBT112	1-1/2"	Please see directions for drill speed.	

CRL Belgian Style Diamond Countersinks

These Belgian Style Diamond Countersinks are made with the metal bond diamond process. A groove in the head feeds water to the countersink face. The 90° angle is perfect for putting a chamfer on holes in glass.

CAT. NO.	DIAMETER	DEGREE
BDC12	1/2"	90°
BDC1	1"	90°
BDC112	1-1/2"	90°

CRL

Diamond Spot Facers

- Custom Sizes Available

Designed for drilling flat -bottom holes in glass to a partial depth. Center Coolant feed is required. Belgian mount only. 100 grit plated tool can be replated again when worn. Three popular sizes.

CAT. NO.	TIP DIAMETER
SF14	1/4"
SF38	3/8"
SF12	1/2"

CRL Diamond Tool Coolant

- Maximize Diamond Tool Life
- Designed for Drilling & Cutting
- Non-Hazardous
- Concentrated, Mixes with water 50 to 1!

Mix CRL Diamond Tool Coolant with water to create an excellent solution for drilling or cutting. The coolant lowers the temperature in the contract zone, allowing the tool to retain its diamond crystal longer.

CRL Diamond Tool Coolant is economical to use, because it comes in a concentrated form and dilutes in 50 parts water to one part coolant. Available in gallons, quarts and 8 ounce bottles.

CAT. NO.	SIZE	YIELD
DTC80Z	Gallon	50 Gallons
DTC80QT	Quart	12.5 Gallons
DTC80GL	8 Ounces	3 Gallons

CRL Sharpening Stones

- Use to Expose Fresh Diamonds
- Achieve maximum life from your diamond drills by using the correct sharpening stones. These highly abrasive stones remove worn diamond and bond contact, exposing fresh cutting crystals on the drill. Use on all multilayer drills as needed. Saturate by letting stone sit in bucket of water for 5 minutes before use.

CAT. NO.	SIZE	DRILL SIZES
PDSS	2" x 7" x 1/2"	1/8" - 1-3/4"
PDSS3	4" x 6" x 1"	1/8" - 3-1/2"
PDSS4	6" x 8-1/2" x 1/2"	1/8" - 5-1/2"

A Portable Production Diamond Glass Drilling Machine

Cat. No. AMZ1 Operating Instructions