

## CRL DIAMOND ROUTER CAT. NO. ADR2 • CAT. NO. ADR2T

### CONGRATULATIONS

You have just purchased a superior fabrication tool that will greatly increase your glass fabrication capabilities. This machine will plunge cut and route virtually any shape in glass or mirror. Our machine features a built in coolant delivery system that cools the diamond bit during operation. A complete understanding of the operation of this machine is required to achieve good performance. Please read this instruction manual completely before you use your new machine. **Follow all safety precautions before using this tool. Failure to do so can result in operator injury. Safety glasses must be worn at all times.**

### SYSTEM COMPONENTS

- |  |  |
|--|--|
| 1 Coolant Pressure Tank                      | 1 Template Guide Bushing (ADR2T only)        |
| 1 CRL Diamond Router (110V AC) With GF1      | 1 Diamond Coolant 8 Oz. (Cat. No. DTC80Z)    |
| 1 Diamond Router Bit (Cat. No. ADRB40)       | 1 Glass Protect Film 25 Ft. (Cat. No. GPF25) |
| 5 Diamond Router Bits (Cat. No. ADRB120)     | 2 Wrenches                                   |
| 1 Seam and Flat Bit 220 (Cat. No. SFRB14220) | 1 Instruction Manual                         |
- If you have purchased an ADR2 Router, an optional Template System is available, CRL Cat. No. TPS.

### SYSTEM CAPABILITIES

The CRL Diamond Router is designed primarily for working on 1/4" (6.3 mm) thick material. It may also be used on 3/8" (9.5 mm) thick material at a slower cutting rate. The machine can be used on glass, mirror, and some laminated glass. A unique feature of the machine is its ability to plunge cut its own starter hole for internal cut-outs. You will find this system invaluable for holes, cut-outs, notches, and the creation of any unique shape.

### SAFE WORKING

All power tools require a complete understanding of the controls and machine capabilities to provide safe operation. In addition, the material being worked, glass, presents its own hazards. The user must fully understand the nature of glass and observe all established safety handling practices for this material. All safety apparel including safety glasses, insulated gloves and forearm guards must be worn when using this machine.

110 Volt electrical current powers the CRL ADR2 Diamond Router, and care must be used to keep the motor section dry during use. A Ground Fault Circuit Interrupter is attached to the power cord and must be used with this machine at all times. If after plugging the cord into a power outlet, your machine does not turn on, then you must press the reset button located on the GF1.

### WORK AREA

You may need to modify your work area to provide a proper environment for the CRL Diamond Router. The router uses diamond coolant and the router bit protrudes through the glass being worked. The best approach is to provide a 12" x 12" (30 x 30 cm) cut-out area in a large flat table. Then the material being worked can be moved over the cut-out area and the used coolant can drain into a 5-gallon bucket located below the cut-out area. For cut-outs on edges, the sheet may be pulled over the table's edge a small amount with the bucket located below. If this is done, take down the sharp edge of the glass with a CRL Diamond Handpad before routing to help avoid getting cut accidentally. In all cases, the glass must be laying flat and stress free to prevent breakage. For mobile work, a portable table may be used. Routing can even be performed on the side rack of the truck if the glass is properly secured.

### DIAMOND ROUTER BODY

The ADR2's body is also the motor, which contains a variable speed control (Figure A) to allow the user to route at the optimum speed. The speed control dial is a reference only. You will find the best way to set the speed is by the sound the unit is making. We use the router at about 10,000 rpm for routing and 8,000 rpm for plunging. The maximum speed of the router is 30,000 rpm so you will want to set your machine to run at about 1/3 speed. Do not run faster than the recommended speeds or rpm. You will destroy the diamond bits by overheating them and may possibly cause your glass to break. **NOTE:** A lock lever (Figure B) is provided that you can easily access with your right thumb to lock the machine at a specified depth while routing.



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### DIAMOND ROUTER BITS

CRL has developed a special Diamond Router Bit for use with this machine (Cat. No. ADRB120). We have included five of them with your system. The work surface is 1/8" (3.2 mm) in diameter and 'flats' have been machined on the router bit blank to allow coolant penetration. The diamond abrasive is 120 grit, which allows the best travel speed and results in a fine ground finish. The tip of the bit is rounded to allow efficient plunge cutting.



Cat. No. ADRB120

Also included is a special Diamond Router Bit (Cat. No. SFRB14220) that produces a classic "flat with seams" profile. This can be used on 1/4" (6 mm) thick glass to go over previously routed areas to produce a finely honed flat edge with polished seams. To use this bit, install it in the machine, then hold a small piece of 1/4" (6 mm) glass against the base. Position the bit depth so the seam will be even on top and bottom, and then lock the flip handle to hold this position. The finer 220-grit diamond used on this bit produces a chip-free ground finish. To use the bit, go over previously routed edges with light pressure several times allowing the bit to create the seam and flat edge shape.

To install the 1/4" shaft diameter bits, the power cord **MUST** be disconnected. Then use one of the two wrenches provided to loosen the collet nut while depressing the spindle lock button (Figure C). If the bit seems stuck after loosening the nut, strike the side of the bit with the wrench and the collet will release.

CRL also offers a variety of Diamond Router Bits in different shapes and grits for specialty applications such as pencil edges, and special effects. See page 4.

### DIAMOND COOLANT SYSTEM

A built in coolant chamber (Figure D) and valve is provided to deliver a constant flood of coolant at the area where the diamond meets the glass. A set of quick disconnects are provided to allow connection to the coolant supply tank. This allows for quick disconnect while maintaining the pressure inside the coolant tank. To refill the tank, this pressure must be released by slowly loosening the nut where the hose enters the tank. After the pressure has escaped, the top handle is depressed and rotated counterclockwise to remove for filling. Mix three ounces (90 ml) of CRL Diamond Coolant (Cat. No. DTC8OZ) to one gallon (3.81 L) of water to fill the one gallon tank. After the handle assembly is screwed tightly into the tank, five or six pumps of the handle will supply proper pressure. Pump as needed during routing to maintain this pressure.

**NOTE:** Coolant must be kept flowing to the coolant chamber where your router bit and glass meet. Failure to do this can overheat your bit, causing it to burn out within a few seconds. Overheating your glass can cause it to crack, rendering it useless.

### PREPARING TO WORK

It will take you a few hours of work with your new machine to become comfortable with its operation and understand its capabilities. Never jump right into a special job that's behind schedule! Always practice on scrap glass until you "bond" with the machine. Take the time to set up your work area to allow efficient routing. Listen to the sound of your machine to judge the correct speed of operation. If you hear a metallic sound while routing, your bit is not receiving the correct amount of coolant. Pump the container and make sure the coolant chamber is flooded.

### PLUNGE CUTS

This machine performs a plunge cut to drill a small 1/8" (3.2 mm) diameter starter hole. This can be used for small holes or to provide the starting point for larger holes and various shaped internal cut-outs. To plunge, reduce speed slightly, provide good coolant flow, and press down on base handles. The base of the router provides a coolant retaining ring so your concentration can be focused on plunging while your coolant "puddles", providing proper plunging conditions. You want to alternate downward pressure between each of the handles, creating a rocking motion. This method causes the bit to move slightly from side to side while plunging which greatly improves the plunging performance. The diamond abrasive located right at the center of the bit is moving slower than the diamond at the outside of the bit. This is known as zero tip speed and this slight rocking action allows good material removal in this zero tip speed area. Always reduce downward pressure just as you hear the bit breaking through to produce a clean chip free hole.



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### ROUTING

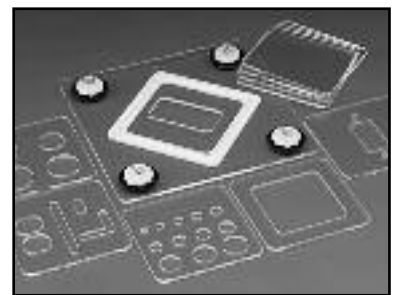
Once you have completed a plunge, you can lock the depth lever by using your thumb and begin routing in any direction. Unlike a wood router, which pulls in all directions, the grinding action of the diamond abrasive responds to pressure. You can actually remove your hands from the machine while it is running, and it will just sit there (not recommended). As you apply sideways pressure, the router will begin moving. In 1/4" (6 mm) thick glass you will experience a travel speed of about 5-7 inches (125 to 175 mm) per minute. When you wish to stop, unlock the depth lever, allowing the router bit to come up before shutting off the power switch and turning off the coolant flow. This will prevent the diamond bit from sticking into the cut. You will find the best place to hold the router for general routing is to locate one of your hands on the ADR2's power switch and the other on the base near the glass surface (Figure E). This lets you control the direction of the machine while keeping a low center of gravity.

The router can be used freehand, next to a clamped straight edge, or with templates. When using freehand, where the base of the router is in contact with the glass, always apply the Glass Protect Film (Cat. No. GPF25) provided to prevent scratching of the glass surface. When using a template, where the machine base is riding on top of the template, the use of Glass Protect Film is not required.



### USING TEMPLATES

If you have purchased the ADR2 Router (without templates), CRL offers a template option for use with this router. The template option (Cat. No. TPS) features a frame that locks to the glass with four rubber cups in the corners. Then the proper insert is put into the template frame based on the desired shape to cut. Two of the template inserts have cut-outs for four large and 12 small circles. There is one standard Decora Plate, one standard Toggle, and a combination template that contains a standard Duplex Outlet Plate, a 90° corner, Basic Toggle, and a Dimmer Sliding Switch cut-out. Before using the templates, the guide bushing must be mounted to the base of the router. This guide bushing mounts with two screws and rides against the template material to guide its travel. You may also make your own special templates out of polycarbonate, phenolic plastic, thin wood or plywood. Cut the desired shape out with a jigsaw and allow for the distance of the guide bushing. Your custom template can then be clamped to the work surface.



Cat. No. TPS

### MAINTENANCE

With proper care, your machine will give you years of service with minimal maintenance. After routing, the ground glass on the base will harden like a rock if left unattended. Remove the motor from the base and rinse the base in hot water to remove all grindings. Dry off with compressed air and store router unit in a clean dry place. Always replace a damaged power cord immediately. If the reset keeps tripping on the GFI, determine the reason before using. **Never operate the ADR2 without the GF1.** Keep the coolant nozzle delivery system clean. Do not pump coolant with large glass particles through the coolant system. This can clog the manifold and quick disconnect valves. Reduced coolant flow will affect diamond bit life. CRL Diamond Coolant (Cat. No. DTC80Z) is a mineral-based product and may be disposed of in any drain.

### WARRANTY

Your CRL Diamond Router System is sold with a 90-day warranty against any manufacturer's defects. We agree to repair or replace any component that fails during this time period. The exception is Diamond Router Bits that should be considered a consumable item with life span based upon the operating environment provided by the user. If your Router develops problems after the 90-day warranty period, all parts and service for the ADR2 are available through CRL. Please contact our Customer Service Department for details.

### SPARE PARTS LIST

**Replacement Diamond Coolant** – Coolant may be ordered in various size containers and mixes 50:1 ratio, or approximately 1/4 cup of coolant to gallon of water.

- 8 Ounce (236 ml) **Cat. No. DTC80Z**
- 1 Quart (.95 l) **Cat. No. DTC80QT**
- 1 Gallon (3.78 l) **Cat. No. DTC80GL**

**Glass Protect Film** 12" x 25' (305 mm x 7.6 m) **Cat. No. GPF25**

## CRL DIAMOND ROUTER CAT. NO. ADR2 • CAT. NO. ADR2T

### CRL DIAMOND ROUTER BITS - 1/4" (6 MM) SHANK - FOR USE IN CRL ADR2 DIAMOND GLASS ROUTER

CRL Diamond Router Bits are available in four distinct styles. Round Tip Bits are the first choice for plunge cutting and are available in a variety of grits. The more coarse the grit, the faster the cut, but the rougher the edge will be. Flat Tip Bits are primarily used for routing or actually cutting through the glass, whether from the glass edge or from a plunge cut starting hole. Flat tip Bits are also offered in a wide range of grits. 2-Step Bits offer a small diameter tip to plunge cut, then go to an increased diameter which is faster for routing. These Bits also give you double the diamond surface for extended routing life. Profile Bits come in both flat/seam and pencil edge profiles. These Bits allow the user to finish the edges of the cuts for a smooth machined look.

#### ROUND TIP

**Cat. No. ADRB40**  
40 Grit 1/8" High Speed



**Cat. No. ADRB120**  
120 Grit 1/8" High Speed



**Cat. No. BRTRB40**  
40 Grit Brazed



**Cat. No. BRTRB100**  
100 Grit Brazed



**Cat. No. RTRB60**  
60 Grit Plated



**Cat. No. RTRB100**  
100 Grit Plated



**Cat. No. RTRB220**  
220 Grit Plated



**Cat. No. SBRB60**  
60 Grit Plated High Speed



**Cat. No. SBRB100**  
100 Grit Plated High Speed



**Cat. No. SBRB220**  
220 Grit Plated  
High Speed



#### FLAT TIP

**Cat. No. BFTRB40**  
40 Grit Brazed



**Cat. No. BFTRB100**  
100 Grit Brazed



**Cat. No. FTRB60**  
60 Grit Plated



**Cat. No. FTRB100**  
100 Grit Plated



**Cat. No. FTRB220**  
220 Grit Plated



#### 2-STEP

**Cat. No. BTSRB40**  
40 Grit Brazed



**Cat. No. BTSRB100**  
100 Grit Brazed



**Cat. No. TSRB60**  
60 Grit Plated



**Cat. No. TSRB100**  
100 Grit Plated



**Cat. No. DTRB100**  
100 Grit Plated Detail



**Cat. No. DTRB220**  
220 Grit Plated



#### PROFILE DETAIL - FLAT/SEAM, PENCIL EDGE

**Cat. No. SFRB18100**  
100 Grit 1/8" Plated



**Cat. No. SFRB18220**  
220 Grit 1/8" Plated



**Cat. No. SFRB14100**  
100 Grit 1/4" Plated



**Cat. No. SFRB14220**  
220 Grit 1/4" Plated



**Cat. No. SFRB38100**  
100 Grit 3/8" Plated



**Cat. No. SFRB38220**  
220 Grit 3/8" Plated



**Cat. No. SFRB12100**  
100 Grit 1/2" Plated



**Cat. No. SFRB12220**  
220 Grit 1/2" Plated



**Cat. No. PERB100**  
100 Grit 1/4" Plated



**Cat. No. PERB220**  
220 Grit 1/4" Plated

