

HOW TO USE **STAINED GLASS TOOLS**



Useful Articles

Helpful Hints

Product
Information

TABLE OF CONTENTS

Products by Category

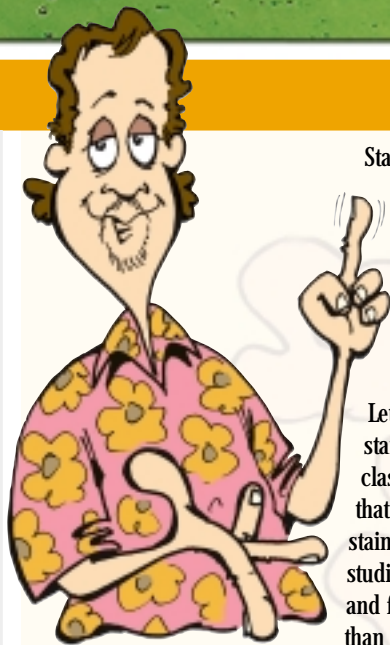
Beveler Wheels	17
Cement and Chemicals	
Cement System	24
RinsesOff Cutter Oil	4
Diamond Coolant	15
Diamond Core Drills	27
Glass Cutters	4
Strip/CircleMaker	4
Glass Grinders	9-11
Wizard IV	
Wiz CG	
Wizling CG	
Aero	
Impulse	
TwinSpin	
SwapTop	
Grinder Accessories	12-15
TwinSpin Retro Fit Kit	
3-Step! Beveler Kit	
SuperJet Cooling System	
BitSerts	
FaceShield	
MagnaShield	
Second Story Work Surface	
Grinder Station	
MagnaLight	
FlexShaft	
ThumbSavers	
Grinder Bits	16
Hand Tools	
Pattern Shears	3
Breaking Pliers	6
Lead Nippers	6
Running Pliers	6
Rulex Square	6
GlassStation	23
EdgeMaster Foiler	19
Electric Engraver	24
Saws and Blades	8-9
DB-100 Band Saw	
SwapTop Table Saw	
Band Saw Blades	
Table Saw Blades	
Flat Laps	
Soldering Irons and Accessories	22-23
InstaHeat Iron	
TempTrol 100 Iron	
Studio Professional Iron	
100W Deluxe Iron	
100W Standard Iron	
Iron Tips	
MiniPhaser Temperature Control	
Solder Iron Stand	
SolderStation	
FumeTrap	

King of Hearts panel fabrication and glass selection by Mary Koehl, Bath MI (custom beveling, lead and copper foil construction; faces by Matt Morse)

Stained Glass on the Web

Need the latest information on new products? How about users' guides, material safety data sheets or product instructions? All this and much more is available whenever you need it on the world wide web at our site. Visit us at www.inlandcraft.com. Your comments and questions can be submitted by e-mail to us at helpdesk@inlandcraft.com.

RANDY SAYS



Stained glass crafting is one of the most interesting and satisfying activities that you'll ever come across. One of the great things about glass crafting is that you really don't need a lot of tools to get started. Of course, as with any hobby, when you become more involved you may choose to add some specialized accessories and equipment that will make some tasks easier or give your work a more professional finish.

Let me introduce myself, my name is Randy Wardell and I started glass crafting in 1976 by taking an 8-session beginner class offered at a local stained glass shop. I knew immediately that this was my calling and within a year I had opened my own stained glass business offering classes, supplies, and a custom studio. Since then I have taught hundreds of students, designed and fabricated thousands of art glass items and published more than 30 books. Currently I am the CEO of Wardell Publications Inc specializing in pattern and instruction books for the art glass industry. In 1985 I wrote a book titled "Introduction to Stained Glass" which is an industry "best seller" instruction book. In 1992 I wrote a second instruction book titled "Quick Success Stained Glass" intended as a course textbook for beginner copper foil classes. Both of these books go into much greater detail than the text presented here and either book would be a great resource for any art glass crafter, regardless of skill level.

If you can find an art glass class anywhere near where you live I strongly advise that you sign up to learn from a pro. You will enjoy a more complete instruction than I can give here, you'll have all your questions answered, you'll have someone to hold your hand when you run into difficulties, plus you'll meet fellow students that share your passion for glass crafting.

Visit Randy online at: www.wardellpublications.com

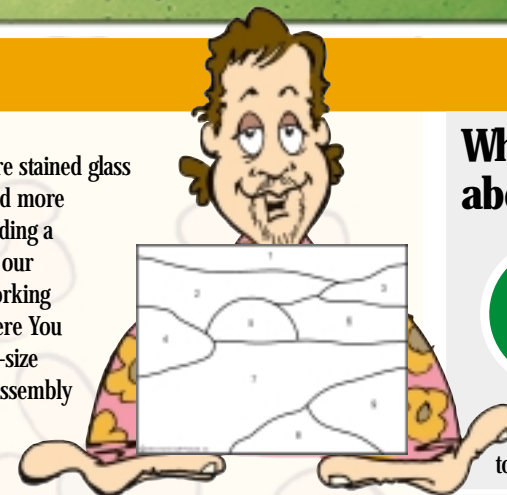
RANDY SAYS

Pattern Making

You will find many books that feature stained glass patterns (my company has published more than 25 pattern books alone) so finding a suitable project should be easy. For our purposes we will concentrate on working with the window pattern pictured here. You will need 2 exact copies of your full-size pattern. One copy will be used for assembly and the other will be cut apart to create the glass cutting templates. Create the copies either by using carbon tracing paper or a photocopier. If you plan to fabricate your project using copper foil assembly you will need to remove a 3/64" (1.2mm) strip of paper between each pattern template to make allowance for the copper foil and solder. You can remove this strip easily by cutting your pattern using pattern shears made for foil assembly. If you plan to fabricate your project using lead came assembly you will need to remove a 5/64" (2mm) strip of paper using lead pattern shears.

There are several ways to accurately cut your glass pieces following the pattern templates you've created. One way is to use rubber cement (or spray adhesive) to coat the backside of your pattern piece and glue it directly to the glass surface. Once the glue has dried, follow the edge of the pattern with your cutter wheel to score the glass. Another method is to use a felt-tipped glass pen and trace around the paper template directly onto the colored glass. Then take away the paper template and score the glass by following along the inside of the traced line.

For more information on Pattern Making refer to *Introduction to Stained Glass*, by Wardell Publications. Visit Randy online at: www.wardellpublications.com



STUDIO NOTES

When you prepare a pattern, think about framing and reinforcing.



Frames vary slightly from one manufacturer to the next, so choose the frame in advance and adjust your pattern to the frame before you cut it. Also, before you cut your pattern, take time to think about reinforcement. Generally, you should reinforce panels over three square feet. You'll need to mark your pattern for placement of reinforcing bars or strips to remind you during cutting and construction.

Pattern tips



- When cutting curves, stay down in the throat of your shears and use short, quick strokes to keep your pattern stock from jamming up the shears.
- Rub candle wax on one blade of your pattern shears to keep the thin strips of the pattern from sticking in the space between the blades.

- Always use the same side of a ruler when measuring and drawing.
- Make extra copies of your pattern before cutting. Use colored pencils to try different color schemes before buying the glass for your project.
- Photo copiers can distort images. Check copied patterns for accuracy before cutting.
- Try copying patterns on transparency film so you can see glass colors, streaks and details before cutting.
- Contact paper makes a great single use pattern that stands up to grinding.
- Drafting tape is handy for holding patterns in place for tracing, but removes cleanly and easily for pattern storage.

Studio Notes



Question and Answer

Why should I use pattern shears?	3
Do I really need a grinder?	13
How many grinder bits do I need?	16
How do I choose between copper foil and lead?	19
Which iron should I use?	23
Do I need a temperature controller?	23
Which solder should I use?	24
What is cement?	25



For Your Information

Pattern preparation	3
Framing and reinforcing	3
Choosing the correct pliers	6
Ceramic core irons	23
How to cement a panel	25



Safety

Cutting glass	5
Grinding glass	13
Soldering	24



Tips and Techniques

Pattern tips	3
Breaking tips	6
Grinding tips	13
Bit tips	17
How to use specialty bits	17
Copper foiling tips	19
Cement application tips	25
Lead came tips	24
Finishing projects tips	24



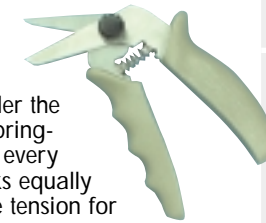
Randy Says

Pattern making	3
Scoring glass	5
Breaking glass	7
Copper foil construction	19
Lead came construction	21
Cementing lead came	25

James EasyCut™ Pattern Shears

James EasyCut Pattern Shears make pattern cutting easier. You can cut patterns without bending, tearing or folding the pattern material. The right angle blade allows you to cut tighter radii and more intricate pattern pieces because you'll work directly under the pattern and closer to the precise cutting location. Spring-loaded handles automatically open the shears after every stroke so you can cut longer with less fatigue. Works equally well right or left handed. You can even adjust blade tension for working with different thicknesses of pattern stocks.

James EasyCut Lead Shears (grey handle) no. 60507
James EasyCut Foil Shears (black handle) no. 60508



DuraLife™ Pattern Shears

DuraLife Pattern Shears are precision-ground, stainless steel to hold an edge longer. The triple blade design removes the right amount of space between your pattern pieces so your project won't "grow" as it is constructed. Available in foil and lead versions.

DuraLife Lead Shears (grey handle) no. 60505
DuraLife Foil Shears (black handle) no. 60506



“Why use pattern shears?”



Did you ever have a project that seemed to "grow" after it was foiled or leaded? A special type of scissors called pattern shears was designed to solve this problem. They have three blades. A center blade automatically removes a strip of pattern material as you cut out the pattern. This compensates for the thickness of the lead or foil which will be placed between the glass pieces.



Pattern preparation

Some stained glass patterns come full-sized and some need to be enlarged—all will need some preparation. So, make two copies of your pattern and keep the original for future projects. Number the pattern pieces on both copies, add arrows to show "streak" direction, indicate glass color and other helpful notes on each piece. Cut one copy for pattern pieces and use the other for layout/assembly.

SCORING

Oil-Fed and Dry Wheel Carbide Cutters

A. PistolType™ Cutter with Narrow Head

This oil-fed carbide cutter is easy to hold and control. The pistol style handle is preferred by some users because it reduces wrist fatigue. The handle design helps maintain a more natural cutting angle.

no. 50078

B. BrassBarrel™ Cutter with Narrow Head

The handle of this oil-fed cutter is precision-machined brass. It has a heavy, substantial feel. The additional weight gives some users a better sense of feel and scoring control. Fine knurling on the barrel improves your grip.

C. HeavyDuty™ Acrylic Cutter with Narrow Head

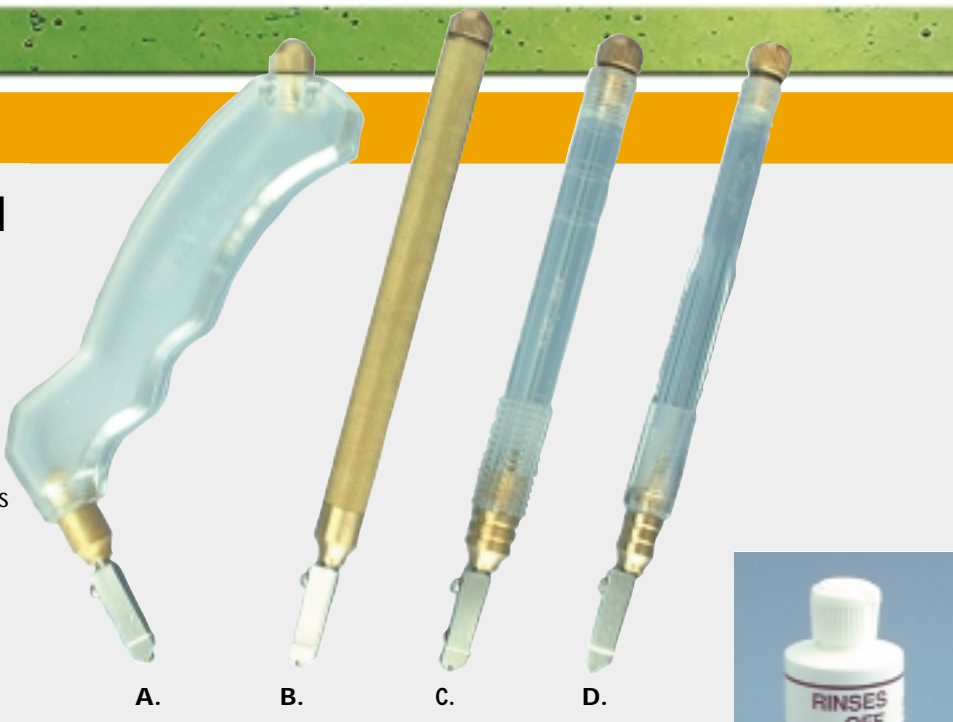
This oil-fed carbide cutter has a lightweight acrylic barrel. The barrel has the feel of the thick barreled brass cutter, but its lighter weight is preferred by some users. It also has ridged rings around the barrel to provide a sure, comfortable grip.

D. SlimLine™ Acrylic Cutter with Narrow Head

This oil-fed carbide cutter is similar to the HeavyDuty Acrylic Cutter with a barrel that is thinner and slightly lighter. The barrel is textured to provide a sure grip. Because it's comfortable to hold for long work sessions, the SlimLine is one of the most popular cutters available.

Replacement Cutter Heads

Narrow (for pattern cutting) no. 50090
Wide (for straight cutting) no. 50091



Strip/CircleMaker™

Here's a double duty tool that every perfectionist will love. Innovative and simple to use, this tool cuts exact circles and perfectly straight strips. Best of all, your favorite cutter will fit in the specially designed cutting fixture. In fact, you can also use marking pens or X-Acto style knives in this tool to do pattern layout or cutting.

A larger strip guide is easier to handle and more stable. The wide, solid brass 11" bar is engraved with both metric and inch designations. For accurate cutting, the bar's markings can be adjusted to a precise point through a viewing window. The brass cutting arm is mounted on the tripod via a universal joint which allows scoring, cutting or marking equally well on smooth or rough surfaces. It's great for just about any graphic, hobby, or craft project.

no. 50060

6 Wheel Turret no. 50043

Turret Holder no. 50062

Turret Holder with Wheels no. 50065

The Score One™ Cutter

Some people find scoring is easier and more accurate with a Score One than a standard glass cutter. Hobbyists who can't hold a standard cutter, due to arthritis for example, can use the Score One. Here's how it works: glass is placed between a spring-loaded cutting head and a glass feed wheel. As the feed wheel knob is turned with one hand, you direct the glass with your other hand. Scoring can be as fast or slow as you like. Scores break out easily because the glass is always scored at 90° angles and you start and finish closer to the edges. The cutting wheel and axle are carbide for long life.

The Score One Plus™ is even more versatile with the addition of a circle and strip cutting accessory.

Score One no. 50050

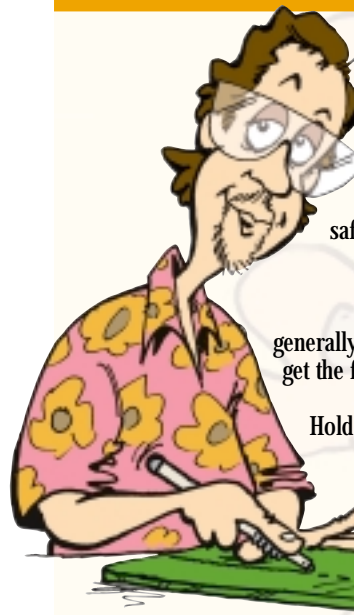
Score One Plus no. 50055

Replacement Carbide Head no. 50051

Score One Strip/Circle Accessory no. 50056



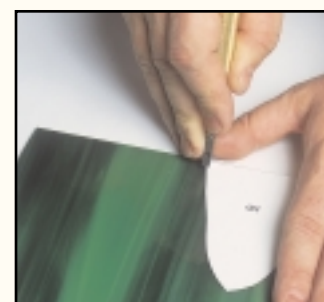
RANDY SAYS



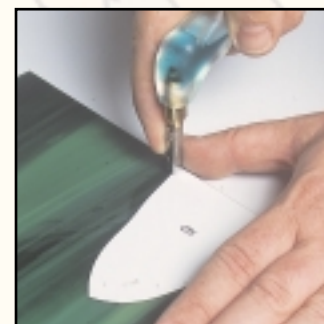
OK – let's cut some glass.

When scoring colored glass, check that you are scoring the smoothest (usually the shiniest) side. For greater stability and a better line of sight, you should be standing in a comfortable position with your work directly in front of you and please wear safety glasses to protect your eyes while scoring and breaking. For practice in scoring and breaking, use standard clear glass window glass. Try shorter length scores at first, as they are generally easier to break out. Continue practicing until you get the feel for scoring and breaking.

Hold the cutter in your favored (tool) hand and place the cutter wheel on the glass about 1/8" (3mm) in from the edge closest to you. Now, place the thumb of your other (guide) hand behind the cutter head to prevent it from rolling back off the glass edge. Apply a firm, constant pressure straight down onto the surface of the glass, with your guide hand.



Now take a moment to observe your score, it should appear as a clean, even, faint white line. If there are small glass chips popping from the score line, or if it appears gritty, then you have exerted too much pressure on the cutter. If you can hardly see it then you didn't apply enough pressure (this is common for beginners). Never go over the same score twice as this could damage the cutter wheel and will not improve the score anyway.



⊕ Safety Considerations

Let's look at some glass handling safety tips. Always carry glass in a vertical position. Never pick it up or move it in a horizontal (flat) position. The correct way to pick up and carry a glass sheet is to grasp it with both hands by the top edge or, for a larger (heavier) sheet, pick it up with one hand on the top edge and the other hand supporting the weight on the bottom edge. Never run your hand along a glass edge. Always release your grip to move your hand to a new position. Just prior to moving a glass sheet, check it for cracks. First, check visually, then lift it slightly and tap the sheet with a fingertip and listen for a crisp ring. If you hear a dull clank, it has a crack. Do not attempt to move a cracked sheet! Get expert advice. To place a sheet safely on your workbench, carry it with one hand on the top edge and the other hand on the bottom edge and place the center of the sheet against the bench edge. Then roll or hinge the glass onto the tabletop, and slide it on fully, never leave an edge hanging off the bench.



Visit Randy online at: www.wardellpublications.com

What Do You Want to Make Today?



these and many other pattern books from SGN Publishing available from your favorite stained glass supplier www.SGNpublishing.com

STUDIO NOTES

Choosing the correct pliers

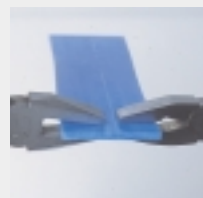


Breaker/Grozier Pliers are dual purpose pliers with a flat serrated jaw and a curved serrated jaw. Both jaws remove flares and tiny pieces of glass. To break out a

score, hold the glass firmly near the score line with the flat jaw up. Use your free hand to hold the other side of the glass and bend downward to break the score.



To groze, hold the pliers curved side up, using a rolling motion to gently scrape the glass edge against the serrated teeth. Use the tips in a chewing motion to nibble glass away, including deep inside curves.



Breaking Pliers have a smooth, flat jaw used for breaking long, thin pieces of glass. To use, hold the glass firmly close to one side of the score line with the pliers and the opposite side of the score line with your other hand. Use a downward,

bending motion with your hands to separate the pieces of glass. If you don't get a clean break or the glass is chipping and shattering, you may be squeezing the pliers too hard.



Running Pliers let you break difficult scores with ease. The curved jaw applies equal pressure to both sides of the score line causing the score to 'run.' There is an adjustment screw for adjusting to the

glass thickness. More pressure runs a score more quickly; less pressure more slowly. Sharp curves are easily broken out by running the score slowly from one end to about half way, and then from the other end until the runs meet.

Breaking tips

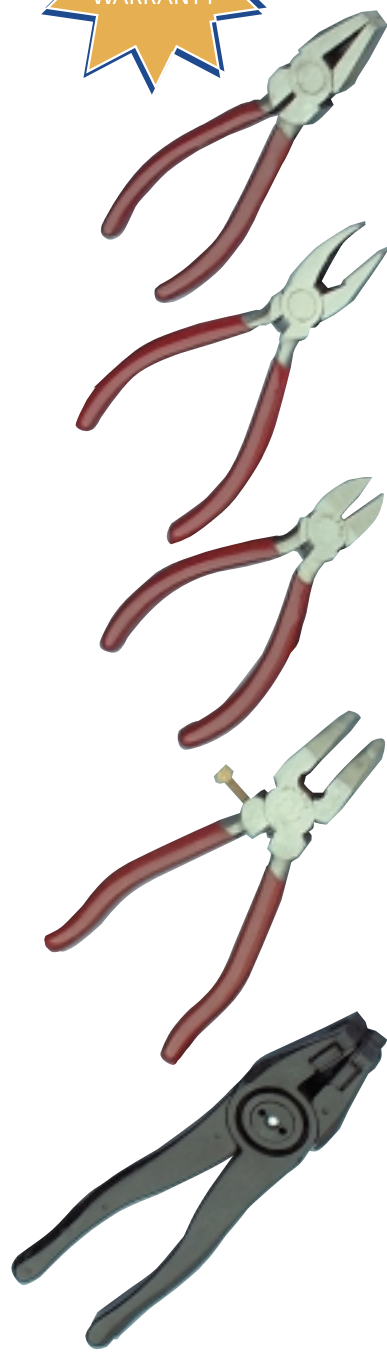


- Holding and bending is the correct action when using breaking or breaker/grozier pliers. Squeezing too hard causes the glass to chip and shatter.
- Instead of holding glass in your hand when using breaking pliers, try holding the glass flat on the table with the score line just off the edge and bend the glass down to separate the score. This is most useful for straight cuts.
- You have more control over how your glass breaks when you squeeze gently with your pliers. Apply pressure in small, increasing amounts until the score runs.
- To prevent tools from rusting, store them away from corrosive chemicals. Wash and dry your tools if they come in contact with flux or patina.

DuraLife™ Glass Working Pliers



Inland drop-forged tools are made from high quality, tempered steel for rugged durability. Buy with confidence. They carry a lifetime warranty.



DuraLife Breaking Pliers

Helps you break away long thin pieces of glass. They are an essential partner for your breaker/grozier. High quality, precision action. no. 60512

DuraLife Breaker/Grozier Pliers

These dual purpose pliers are the most essential of all these hand tools. Use them both to break out scored glass and nibble away excess glass. no. 60511

DuraLife Lead Nippers

Looks like ordinary wire cutters, but the back is ground flat to allow you to cut lead came with a flat finished cut for both straight and angled cuts. no. 60513

DuraLife 8" Metal Running Pliers

These pliers provide the same function as the 6" pliers in a hefty 8" version. Recommended for thicker glass. no. 60510

Replacement Rubber Tips no. 60517

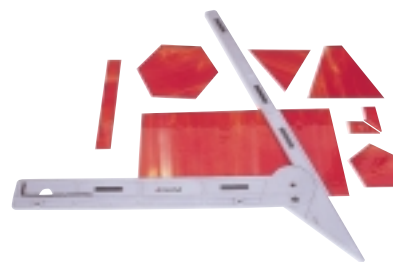
Lightweight Running Pliers

We made these pliers with a strong, lightweight, fiberglass-reinforced material that lets you feel a score run. no. 60025

Replacement Plastic Tips no. 60026

Rulex™ Adjustable Square

Here's a scoring square that puts most other cutting squares to shame. For starters, it's adjustable from 0° to 135° so you can use it for cutting any angle on your glass. Use it to quickly lay out and duplicate angles on any geometric shape, repeated pieces, panel lamps, or border pieces. It also has an angle-finding feature that eliminates the guesswork and helps ensure accurate, better fitting glass pieces. And the ruler can be used for cutting, scribing or marking any material. no. 60518



Stained Glass News

Information & Ideas for the Stained Glass Hobbyist

What is *Stained Glass News*? Some people call it a magazine. Others call it a newsletter.

We call it a newspaper.

But I guess we really don't care what you call it... as long as you enjoy it!



Stained Glass News has been dedicated to informing, entertaining and inspiring stained glass hobbyists for 15 years now.

We fill our newspaper with info on new products, helpful hints, photos of projects sent in by our readers (that could be you!), how-to information, articles by industry experts, and more.

Our goal is to make stained glass easier, more fun and more rewarding for you, the hobbyist.

If you're just getting started in stained glass, you may not have seen *Stained Glass News* before. That's because it's not available on newsstands or by subscription.

Your *free* copy is **only** available from your favorite supplier. (You know... the same place you can find all the Inland tools you see in this booklet.)

Stained Glass News

Ask your favorite retailer for it by name.



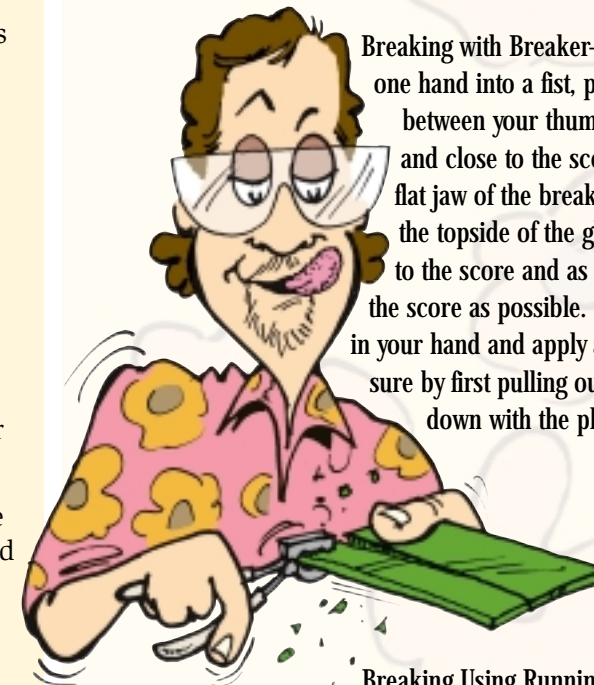
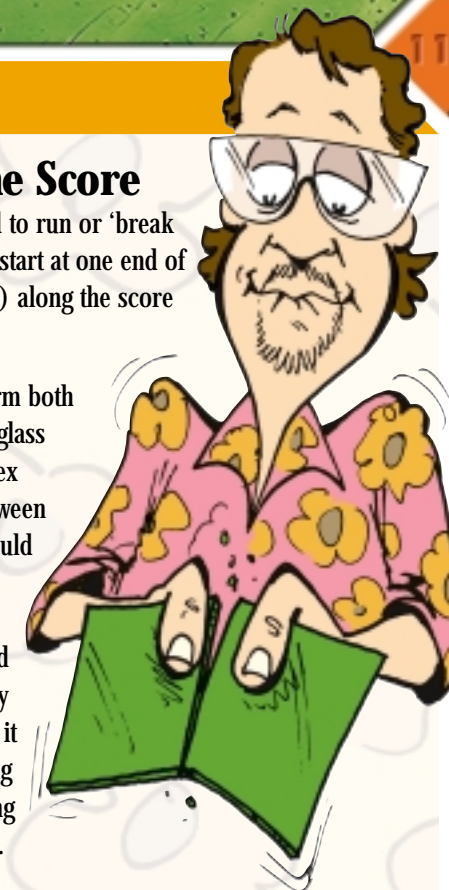
www.StainedGlassNews.com

RANDY SAYS

Breaking Out The Score

After making a score you need to run or 'break out' the score. The break will start at one end of the score line and run (follow) along the score to the other side.

Breaking with Hands only: Form both hands into fists and place the glass between your thumbs and index fingers with the score line between your thumbs. Your fingers should be clenched underneath the glass with knuckles touching. Hold the glass firmly at the end of the score. Apply pressure by first pulling outward then give it a quick even snap by spreading your thumbs apart while rolling your knuckles under the glass.



Breaking with Breaker-grozier Pliers: Form one hand into a fist, placing the glass between your thumb and index finger and close to the score line. Position the flat jaw of the breaker-grozier pliers on the topside of the glass with the jaw 90° to the score and as close to the end of the score as possible. Hold the glass firmly in your hand and apply a quick, even pressure by first pulling outward, then snap down with the pliers.

Breaking Using Running Pliers: Leave the glass flat on your bench and slide the glass until one end of the score is overhanging the bench edge slightly. Align the guide mark on the top jaw of the running pliers with the score and in 1/2" from the glass edge. Gently squeeze the pliers until the break runs (follows) along the score line. If the break travels only part way along the score, as may happen with long narrow pieces or on curves, simply move the breaker pliers to the opposite end of the score and repeat.

Visit Randy online at: www.wardellpublications.com



DB-100™ Diamond Band Saw

Power, Control, Affordability

The DB-100 Diamond Band Saw delivers more and costs less than any other band saw on the market. Don't let the price fool you, this is one tough little saw.

- **Compact and light weight:** Injection molded, structural grade thermoplastic. 18" high, 10" deep, 12" wide and only 11 pounds so you can easily take it anywhere. Rigid housing absorbs and deadens sawing and motor sounds for quiet operation.
- **Versatile:** Saw hundreds of materials, wet or dry. Comes with a diamond blade for sawing glass, marble, rock, shells, plastic, and more. The optional WoodCut and MetalCut blades saw wood, fiberglass, leather, thin non-ferrous metals and more.
- **Dependable:** The frame, cover, and water reservoir are molded entirely from structural grade thermoplastic. All frame and interior support walls are extra thick for maximum strength and durability. 9" x 10" machined aluminum work surface. The coolant flows directly to the diamond blade when wet sawing, ensuring the longest possible blade life.
- **Powerful:** Permanent magnet, speed controlled motor delivers up to 2800 rpm and a full 48 oz.-in. of torque. Available in 115V and 230/240V. Cutting speed is dependent on material type and thickness, surpassing 26" per minute for 1/8" thick glass.
- **Throat depth:** 4 3/4" (12cm) .
- **Maximum material thickness:** 3" (7.6cm).
- **Minimum radius:** 3/16".
- **Two Year Full Confidence Warranty**

DB-100 Mini Band Saw with **two** Diamond Blades no. 91010
 Aluminum Work Surface no. 90023
 Non-scratch Plastic Work Surface no. 90013

Wet/Dry Band Saw Blades

Inland plates select diamond onto seamless, stainless steel blanks for superior strength and life.

37.7" Diamond Blade (Stainless Steel) no. 90007

37.7" MetalCut™ Blade no. 90003

37.7" WoodCut™ Blade no. 90001

SwapTop™ Blades

Wet/Dry Table Saw Blades

DiamondTuff™ blades are made from the same base material as CarbonTuff™ blades, with diamonds plated on the perimeter. They're used for wet sawing with the proper set-up. The 6 1/2" blades fit the SwapTop Table Saw.

- 6 1/2" DiamondTuff Saw Blade .020 no. 40960
- 6 1/2" Diamond ThinCut™ Trim Saw Blade .012" no. 40961
- 6 1/2" Diamond Extra ThinCut™ Trim Saw Blade .008" no. 40968

CarbonTuff blades are precision cut, hardened, high carbon steel with a .500" arbor hole. They're perfect for cutting metal comes.

6 1/2" CarbonTuff Blade no. 90960

WoodCut% blade has offset teeth for cutting hard and soft woods with ease.

6 1/2" WoodCut Blade no. 90964

SwapTop™ 6" Flat Laps

Quality Diamond Disks for Flat Lap Machines

Our electroplated laps are replacement disks which you would use with a Master Lap. They have a 1/2" arbor hole for affixing to a Master Lap.

- 6" Diamond Flat Laps**
- 60 Grit no. 436060
 - 100 Grit no. 436100
 - 170 Grit no. 436170
 - 275 Grit no. 436275



- 325 Grit no. 436325
- 600 Grit no. 436600
- 1200 Grit no. 436120
- 3000 Grit no. 436300

SwapTop™

There's no reason to give up functionality because you're short on space or short on dollars. The SwapTop System has been specially designed with space saving efficiency and portable durability in mind. Whether you plan to take it on the road, or use it in your work room, you'll love how much you can do in so little bench space. The permanent magnet DC motor is in a self-contained housing complete with variable speed control. In the vertical position, it's a 1" grinder or a 6" flat lap machine, in the horizontal position, it's a 6 1/2" trim saw.



SwapTop™ Table Saw

6 1/2" Diamond Saw Configuration: Includes Base, Motor, Water Drip System, Trim Saw Work Surface, and a .020" x 1/2" diamond blade. Optional .012" and .008" blades are also available. Plus, there are WoodCut and MetalCut blades available for dry sawing too. The 10" x 12" aluminum work surface is sturdy, long lasting and won't corrode when used wet.

SwapTop Diamond Saw no.10670
 SwapTop Diamond Saw Conversion Kit no.10675
 (converts any other SwapTop machine into the Diamond Saw)

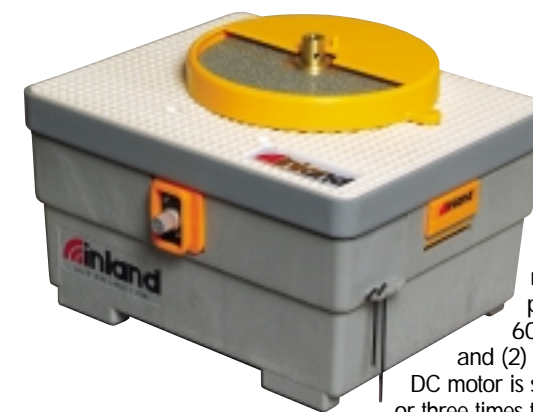
(not shown) **SwapTop Came Saw no.10660**
 SwapTop Came Saw Conversion Kit no.10665
 (converts any other SwapTop machine into the Came Saw)



SwapTop™ Shaper

1" Diamond Glass Grinder Configuration: The ideal tool to edge, shape, grind, or drill, the shaper makes inside and outside curves a breeze to grind. Includes Base, Motor, Shaper Work Surface. Worksurface grid is reversible for extended life.

SwapTop Grinder no.10650
 SwapTop Shaper Conversion Kit no.10655
 (converts any other SwapTop machine into the Glass Grinder)



SwapTop™ Flat Lap

6" Flat Lap Configuration: The most affordable full-featured cold working set-up on the market. Water cooled system means no messy oil to clean up. Faster RPM motor allows you to quickly finish the finest pieces possible. Includes (4) diamond disks (170, 325, 600, 1200), a polishing pad, polishing compound and (2) master laps. Our direct drive Permanent Magnet DC motor is stronger than other machines you will find for two or three times the price. Comes complete with integrated speed controller.

6" Flat Lap Machine no.10680
 SwapTop Flat Lap Conversion Kit no.10685
 (converts any other SwapTop machine into the Flat Lap Machine)

HOW TO SWAP TOPS

3 GREAT MACHINES one compact package

This innovative set of machines uses an interchangeable motor and base to create 3 of the most commonly used tools in the glass industry. Simply swap the tops and convert to each machine in minutes. It's as easy as **1 - 2 - 3!**

How to Swap Tops

1



In the vertical position, the motor shaft powers a grinder bit. To change, remove the top.

2



The motor lifts out from the specially-designed base.

3



Turn the motor horizontally and the shaft will drive a table saw blade.

4



Replace the top and you're ready to saw.

GRINDERS



WOW!
40 oz.-in of torque

Wizard IV™

If you have the bench space and you want to grind larger pieces of glass, the Wizard IV is the right machine for you. Power, size and durability—the Wizard IV has it all, plus more features, bits, and accessories available than any other grinder. **no. 10030**

Features:

- 3500 rpm 40 oz.-in torque thermally protected motor
- Enlarged 14 1/2" x 11 1/2" Work Surface (10 1/2" x 8 1/2" grid)



TwinSpin™ Combination Router and Disc Grinder

Affordability and ease of use have made the TwinSpin the most popular combination shaping router and disc grinder. Its range of capabilities include drilling holes as small as 1/16" and shaping a 1/16" inside radius.



Pattern pieces can be shaped using the 1" bit. Shaping glass is extraordinarily fast on the outer edge of the 5" diamond disc.

Edge grinding and profiling can also be done on the top of the 5" diamond disc.

Complete disc grinding set up:

- 5" diamond disc
- 90°/45° and 22.5°/30° MitreMaker Bars
- Miniwork surface
- Water Drip System
- Can convert to the 3-Step! Beveler.

Convertible into the 3-Step! Beveler. The TwinSpin accepts all Inland accessories, including more than 40 grinding bits. **no. 20070**



Features:

- 3500 rpm 30 oz.-in torque thermally protected motor
- Standard 10 1/2" x 8 1/2" grid



WizCG™ Grinder

This is the most popular mid-priced grinder made. The strong motor can power an excellent assortment of bits and accessories making this a very versatile grinder. Convertible to a TwinSpin™ Disc Grinder and a 3-Step! Beveler™.

The WizCG accepts all Inland accessories, including more than 40 grinding bits. **no. 20030**

Features:

- 3500 rpm 30 oz.-in torque thermally protected motor
- Standard 10 1/2" x 8 1/2" grid



Impulse™ TouchTop Grinder

This is a full-feature machine offering every grinder feature available, including the capability to be converted into a TwinSpin Disc Grinder or 3-Step! Beveler Kit. Includes the patented TouchTop feature which automatically turns the machine on or off, a reversible worksurface and a removable reservoir for fast clean up. Convertible into TwinSpin Disc Grinder and 3-Step! Beveler. The Impulse accepts all Inland grinder accessories, including more than 40 grinding bits. **no. 20050**

Features:

- 3500 rpm 30 oz.-in torque thermally protected motor
- Standard 10 1/2" x 8 1/2" grid



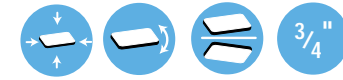
WizlingCG™ Grinder

More stained glass hobbyists have purchased Wizling grinders than any other grinder made. That's a testimony to its dependability and value.

The WizlingCG accepts most Inland accessories and more than 30 grinding bits. **no. 30030**

Features:

- 3450 rpm 15 oz.-in torque thermally protected motor
- Standard 10 1/2" x 8 1/2" grid



Aero™ TouchTop Grinder

This grinder is the TouchTop version of the popular WizlingCG. It adds the convenience of the TouchTop automatic work surface, a motor-prolonging feature.

The Aero accepts most Inland accessories and more than 30 grinding bits. **no. 30050**

Features:

- 3450 rpm 15 oz.-in torque thermally protected motor
- Standard 10 1/2" x 8 1/2" grid



GLASS GRINDERS

As the largest glass grinder manufacturer in the world, we offer the most versatile, powerful and affordable line for all hobbyists and professionals. We also offer the most complete assortment of accessories and an unrivaled choice of diamond grinding bits. Most importantly, Inland is the only grinder manufacturer who makes diamond tools and bits, which makes them the most affordable. Inland grinders are the world's best sellers in every price/class category!

LiftOff™ Reservoir

Inland's LiftOff reservoir feature allows you to take the the reservoir to your utility sink for cleaning, leaving the base (containing the motor and electrical parts) on your work bench. Don't risk putting your whole machine under the faucet just to rinse out the reservoir. The LiftOff reservoir is exclusive to all current Inland glass grinders!

Reversible Grid

Only Inland's grinders have the reversible grid surface. Over time, the open grid surface wears away from the sharp glass pieces sliding across it. When your Inland machine's grid wears out, simply turn it over - for twice the life, and one less purchase down the road. The reversible grid is exclusive to all current Inland glass grinders.

TouchTop™ Surface

Inland's patented TouchTop surface allows you to control the Grinder's motor just by applying pressure to the work surface. Rest your hands and glass on the surface, and the motor turns on. Take your hands and glass away, and the motor turns off. Sensitivity is adjustable. Over-ride of the TouchTop feature is possible with the three position (on - off - TouchTop) switch.

Consider the following to decide which features are most important to you—now and in the future.

Size: grinders are made in two basic sizes: large, with a 12" x 11" work surface and mid-size with a 10" x 9" work surface. Consider your bench space and the type of projects you'll be making. Large pieces of glass are easier to handle on a large work surface.

Power: the more torque (measured in oz.-in.) that your grinder motor has, the faster and more efficiently it grinds. More powerful grinders operate large diameter grinder bits more efficiently.

Accessories: Face shields, straight-edge guides and Second Story work surfaces are just a few of the many accessories available.

Bits: There are also many different grits, sizes and types of grinding bits. Select a machine that won't limit your future choices or your workshop's capabilities.

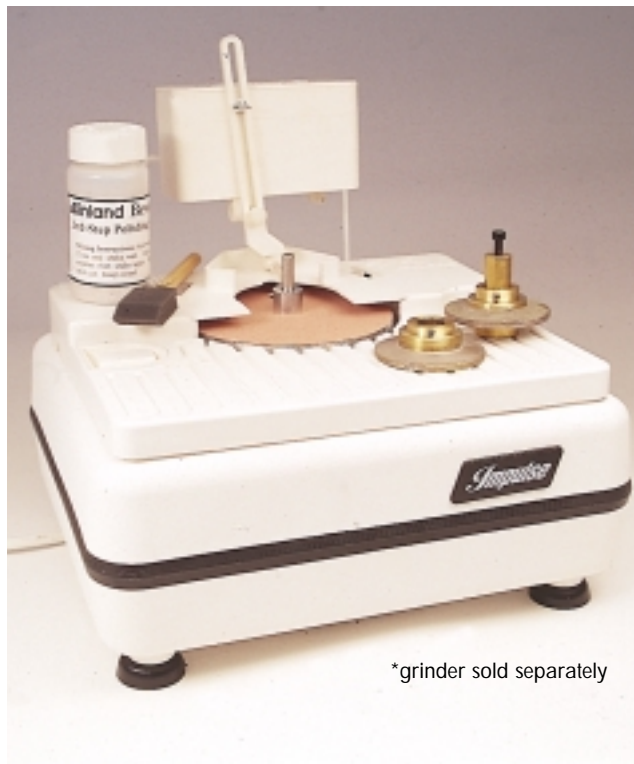
Convertibles: some grinders convert into other useful machines. This greatly expands their value to you. The Impulse and WizCG can be converted into disc grinders or beveler/polishers.

5 Year Warranty

Inland's North American grinders are covered by a Five Year Full-Confidence Warranty!

See page 30 for Warranty

GRINDER CONVERSION KITS



*grinder sold separately

3-Step! BevelerKit™

This affordable system converts your Wizard IV, Impulse, TwinSpin, or WizCG into a mini-beveling machine. An exclusive process lets you modify stock bevels and clusters to your own design needs, remove small scratches and polish in only 3 steps. Most conventional systems require 4, 5 or even 6 steps.

The 3-Step! rough and fine wheels are angled to automatically grind a 14° bevel which takes the guess work out of beveling. The kit includes:

- A rough diamond beveling wheel (Step 1)
- A fine diamond beveling wheel (Step 2)
- A 5" polishing disc (Step 3)
- Inland polishing compound
- A disc-polishing work surface and a mini-beveling worksurface
- A coolant feed system.

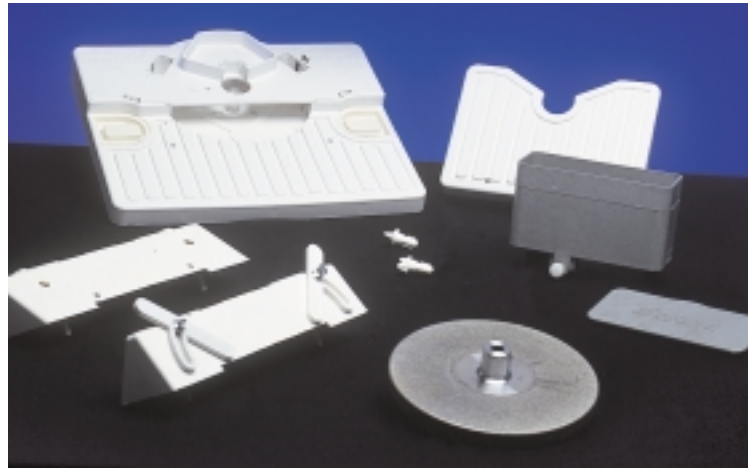
3-Step! BevelerKit no. 50006

Inside curves can be ground and polished with the optional polishing cone.

Inside Curves Polishing Cone no. 40835

**5 Year
Warranty**

Inland's North American grinders are covered by a Five Year Full-Confidence Warranty! See page 30 for Warranty

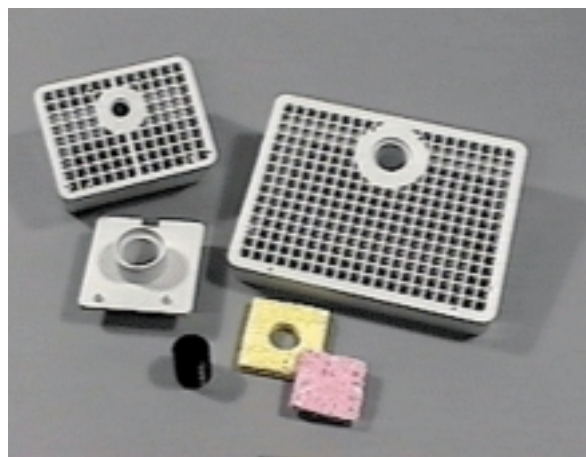


TwinSpin™ RetroFitKit™

The RetroFitKit converts the Wizard IV, Impulse or WizCG into a versatile TwinSpin Disc Grinder. This kit also allows you to convert your Wizard machine into a disc grinder. The kit includes:

- A full-size work surface with a large water drip coolant system
- 5" diamond disc
- Mini work surface for standard bits
- 90°/45° and 22.5°/30° MitreMaker™ Bars
- Two Compound Angle Bars

TwinSpin RetroFitKit no. 50005



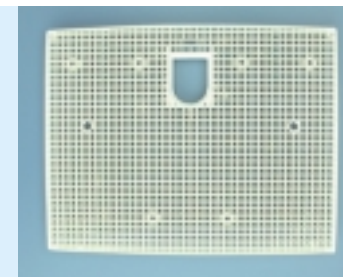
SuperJet™ Cooling System

The patented SuperJet cooling system greatly improves bit performance by delivering coolant more efficiently to the bit's surface. By optimizing lubrication, bits grind faster and wear longer. Drilling holes is easier by eliminating hand held sponges to keep the bit wet. SuperJet fits all grinders. Glastar impeller sold separately.

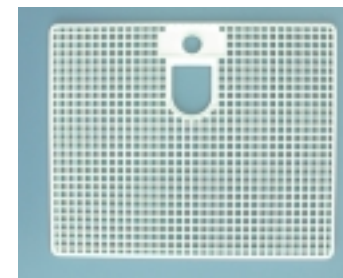
SuperJet no. 50002
Inland Replacement Impeller no. 50003I
Glastar Impeller no. 50003G

Grinder Replacement Work Surfaces



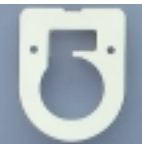
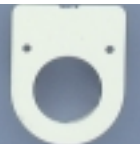

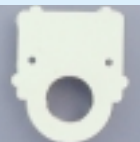



Wizard Deluxe/Plus Surface
Fits model years 1981–2002
no. 50004



Wizard IV, TwinSpin, Aero,
Impulse, WizlingCG and WizCG
Fits model years 1994–current
no. 50081



BitSert Reference Guide

Model	Year	Standard	Invisible Sponge
Aero WizlingCG, WizCG PopTop Wizling, Wiz Wizard IV	1994–current 1997–current 1996–1997 2002–current		
		¾" no. 40036	¾" no. 40035
Impulse, TwinSpin Wizard Deluxe/Plus Wizard IV	1994–current 1996–2002 2002–current		
		1" no. 40041	1" no. 40040
PopTop Wizling, Wiz	1986–1996		
		¾" no. 40046	¾" no. 40045
Wizling, Wiz Wizard Deluxe/Plus	1984–1986 1983–1996		
		¾" no. 40051 1" no. 40056	¾" no. 40050 1" no. 40055
SwapTop	1998–current		
		1" no. 40032	

STUDIO NOTES



Grinding tips

- Position the grinder at a comfortable height to work at. Elevating one foot on a foot stool can alleviate back strain during extended grinding sessions.
- Use a backdrop around your grinder to help contain overspray.
- Keep a towel handy for drying pieces before putting them on your pattern paper.
- Use a paint pen to mark pattern lines on glass. It's more likely to stay on while you grind.
- Lay glass flat on the work surface while grinding to prevent angled edges—unless you want them.
- White build up around the grinder bit means there is not enough water/coolant on the bit. Make sure the sponge contacts the bit and the water/coolant in the reservoir below. Add more water/coolant as necessary.
- If you are pushing so hard that the glass cuts your fingers when grinding, ease up and check the bit for wear. ThumbSavers™ will also help protect your fingers when grinding.
- Always secure the bit to the flat side of the motor shaft. To prevent the bit from seizing on the shaft, use Motor Shaft Lubricant™ regularly, and remove the bit when you're not using the grinder for extended periods.
- Remove hard water deposits from the grid or reservoir by cleaning with vinegar or a lime removal product.
- Rinse your FaceShield/MagnaShield clean under cool water after every use. Be careful not to scratch it by rubbing the glass dust into the surface while cleaning.
- Rinse out the water reservoir after every use. Glass dust is harmful to your motor.
- Keep the water reservoir correctly filled while grinding.
- Periodically rinse the grid surface to prevent scratching your glass.
- Lubricate the motor shaft each time you replace a bit.
- Rinse out the sponge frequently to remove accumulated glass residue.
- Remove the bit before storing your grinder.

Safety: grinding glass



- Always wear safety glasses.
- A face shield is extra protection to be used in conjunction with safety glasses.
- Do not wear loose clothing, neckties, or hanging jewelry, and pull back long hair that could get caught in your machine.

"I'm just starting out in stained glass. Do I really need a grinder?"



Grinders are an important tool for doing good work. They improve the shape and accuracy of glass pieces which make your projects look more professional. A grinder can make your work less frustrating from the start. They also help reduce waste due to inaccurate scoring. Copper foil sticks better to an edge created by a grinder. Finally, a grinder fitted with specialty bits makes jobs like drilling holes, cutting intricate shapes and mitering edges much easier.

GLASS ART Magazine



Subscribe Today!

- United States:
 Canada/Mexico: (U.S. Funds)
 One Year (6 Issues) \$30
 Two Years (12 Issues) \$48
 Three Years (18 Issues) \$60
 Foreign: (U.S. Funds)
 One Year (6 Issues) \$56
 One Year (AIRMAIL) \$70
 Sample issues are available for \$6.
 Back issues also available for \$6.

GLASS ART
 P.O. Box 260377
 Highlands Ranch, CO 80163-0377
 (303) 791-8998 Fax: (303) 791-7739
 glassartm@aol.com

www.glassartmagazine.com

Beautiful, four-color reproduction of glass works by the nation's finest artists and craftspeople.

Practical and easy-to-read technical articles on cold and hot glass processes.

Features on successful, professional artists, addressing their philosophies and lifestyles as well as their techniques and secrets for success.

Business articles for the retailer and professional studio.

The latest in Industry News, Products, Catalogs, Pattern Books and resource materials.

The annual Directory To Industry Supplies, intended to link products and services to people in the industry.

GRINDER ACCESSORIES



FaceShield™

The FaceShield is added protection against grinder chips. The large 12" x 9" acrylic plastic shield fits all Inland grinders. no. 50017



MagnaShield™

The MagnaShield has an optical quality convex magnifying surface. It magnifies the area around the grinding bit, making grinding easier and less tiring. Fits all Inland grinders. no. 50018



Second Story WorkSurface™

This handy elevated work surface sits on top of your existing work surface. It makes grinding with small bits easier. The self contained coolant reservoir keeps the bits lubricated. It fits all Inland and Glastar grinders with open grid surfaces. no. 50001



FlexShaft™

Turn your grinder into a handheld engraving, drilling, shaping tool. The FlexShaft accessory fits all grinders with a 5/16" motor shaft. Simply plug it on and it's ready to go. Drill-style chuck holds up to 1/8" shaft. no. 50019

Optional Engraver Tips:
 Small Ball no. 50107 Cone Shape no. 50111
 Large Ball no. 50110 Inverted Cone no. 50112
 20 pcs Diamond Tip Set no. 50115



ThumbSavers™

These synthetic rubber devices fit on your thumbs and lock into the edge of your glass to push it safely and easily against the grinding bit. no. 60531

Diamond Coolant™

Use this water soluble coolant to grind faster and make your bits and blades last longer. It reduces grinding friction. Just add it to the water in your grinder or saw reservoir. Get up to 50% more bit and blade life. no. 50011



MagnaLight™

MagnaLight is a combination magnifying glass and worklight that makes all your work easier to see by providing light exactly where you need it. You'll work longer with less eye strain.

A jointed arm and pivot base make it adjustable and it swings out of the way when it's not needed. Two mounts are included to easily move it between work areas. no. 76020



GrinderStation™

This vinyl covered backdrop helps contain overspray that sometimes occurs when you grind. It keeps your surrounding work area clean and dry. This washable, foldable accessory is also imprinted with helpful information and tips that you would want to have handy as you work. no. 50014



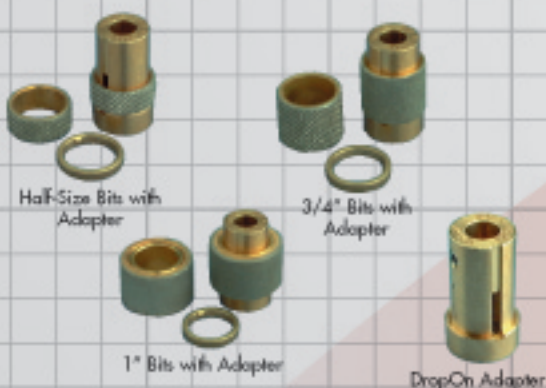
"How many bits do I need?"

The selection of bits you need depends on the type of work you do. Grinder heads (bits) are made in a variety of sizes and shapes for specific grinders and specific applications. Inland makes a bit suitable for every grinder and grinding application, including:

- SuperFineGrit (270/325): for mirror or when the edge will be exposed.
- FineGrit (200/230): for soft glass and mirror; eliminates most chipping.
- Standard Grit (100/120): for normal grinding.
- SpeedGrit (80/100): for fast removal of large areas with minimal chipping.
- SuperSpeedGrit (60/80): for extremely fast removal when the edge won't be seen.

Start with good, blocky diamond crystal, the purest of nickel alloys, and Swiss-precision CNC parts. Couple them with the controls offered by an ISO 9001:2000 quality system... your result is the finest electroplated bits that can be made.

DropOn: electroplated sleeves quickly mount onto a reusable brass core and come in a variety of sizes and grits.



DropOn™ Bit Sizes and Grits

Stock No.	Description
40112	DB-1.5SG 1/2" Half-size SpeedGrit
40111	DB-1.5, 1/2" Half-size Standard Grit
40113	DB-1.5F, 1/2" Half-size FineGrit
40105	DB-1SSG, 1/2" SuperSpeedGrit
40102	DB-1SG, 1/2" SpeedGrit
40101	DB-1, 1/2" Standard Grit
40103	DB-1F, 1/2" FineGrit
40104	DB-1SF, 1/2" SuperFineGrit
40131	DB-1DD, 1/2" DoubleDiamond
40902	DB-9SG, 1" SpeedGrit
40901	DB-9, 1" Standard Grit
40903	DB-9F, 1" FineGrit
40931	DB-9DD, 1" DoubleDiamond
40100	DB-ADP, DropOn Adapter



SuperBond: patented brazing process (also known as P.B.S.®) that bonds the diamond to the metal for the longest possible bit life.

Inland SuperBond Bits

Stock No.	Description
40201	WB-1SB 1/2" SuperBond
40211	WB-1SBF 1/2" SuperBond FineGrit
40221	WB-1SBSG 1/2" SuperBond SpeedGrit
40209	WB-9SB 1" SuperBond
40219	WB-9SBF 1" SuperBond FineGrit
40229	WB-9SBSG 1" SuperBond SpeedGrit

Standard Bit Sizes and Grits

Stock No.	Description
40391	WB-1SSG 1/2" SuperSpeedGrit
40291	WB-1SG 1/2" SpeedGrit
40001	WB-1 1/2" Standard Grit
40192	WB-1F 1/2" FineGrit
40492	WB-1SF 1/2" SuperFineGrit
40399	WB-9SSG 1" SuperSpeedGrit
40299	WB-9SG 1" SpeedGrit
40009	WB-9 1" StandardGrit
40196	WB-9F 1" FineGrit
40496	WB-9SF 1" SuperFineGrit
40298	WB-8SG 1/2" SpeedGrit
40008	WB-8 1/2" Standard Grit
40197	WB-8F 1/2" FineGrit
40024	WB-24 1/2" Bit and Core Drill
40018	WB-18 LampBit
40193	WB-1R RippleBit
40006	WB-6 1/2" and 3/4" Combo Bit
40317	WB-ADP Drill Head Adapter
40318	WB-318 1/2" Drilling Head
40314	WB-314 1/2" Drilling Head
40338	WB-338 1/2" Drilling Head

Inland DoubleDiamond Bits

Stock No.	Description
40301	WB-1DD 1/2" DoubleDiamond
40131	DB-1DD 1/2" DropOn DoubleDiamond
40309	WB-9DD 1" DoubleDiamond
40931	DB-9DD 1" DropOn DoubleDiamond

DoubleDiamond: has two electroplated layers of standard grit diamond that last more than twice as long as conventional heads.



Bit tips

To get the best performance and life from your diamond grinding bits, discs, beveling wheels and core drills, use Diamond Coolant. A couple of capfuls added to the water in the reservoir reduces friction, speeds up the grinding action, and adds up to 50% to the life of a grinder bit.

- Store bits in their original packaging to protect the diamond and identify the grit.
- Keep the set screws from old bits for back up.
- Always secure the bit to the flat side of the motor shaft.
- When changing bits, lubricate the motor shaft with Motor Shaft Lubricant or a petroleum based lubricant.
- Remove bits if you're not using the machine for long periods of time.
- Bits frozen onto the shaft can be removed by carefully using a plumber's faucet puller.

P.B.S is a registered brand of Abrasive Technology inc.



Jewelry Bits

Instead of a flat band of grinding surface, this specialty bit has a narrow wheel that can be used to grind a narrow groove into the edge around the outside of your materials. Perfect for wire wrapping of fused cabochons, beads, and buttons. The grab of the groove means you can keep your wire wrapping motifs simple and elegant without needing to resort to glue or drilling holes.



Key Features:

- 1.0 mm rim grinds a groove for 20/22 ga. wires.
- 1.4 mm rim grinds a groove for 16/18 ga. wires.
- Fine Grit diamond for smooth, chip free grooves.
- Fits any machine with a 5/16" motor shaft, including Inland's SwapTop machines and glass grinders.

1.0 mm Jewelry Bit no. 40190
1.4mm Jewelry Bit Grit no. 40194

Beveling, Polishing Wheels, Pads & Grinding Discs



Stock No. Description

40500	5" Diamond (140 grit)
40501	5" Diamond (275 grit)
40502	5" Diamond (600 grit)
40505	5" Polishing Disc
50007	5" Polishing Pad (replacement)*
40800	Beveling Wheel Adapter

Stock No. Description

40815	2 1/2" Beveling Wheel— Coarse Grit (200/230 grit)
40825	2 1/2" Beveling Wheel— Fine Grit (1200 grit)
40835	2 1/2" Polishing Cone (for Inside Curves)
50010	2 1/2" Polishing Pad (replacement)

How to use specialty bits



LampBit: This double duty bit has two angled sides to grind lamp pieces that fit on a miter. Mitered edges that meet properly give a thinner, more professional looking solder seam. The 9° side is for lamps with 20 panels, the 18° side is for 10 panels. Pick the angle that comes closest to the number of panels in your lamp.

RippleBit: Use this bit to thin textured or thick glasses, to fit lead and metal comes, or to make pieces easier to foil. Taper the glass edge and remove texture by passing it through the groove in the bit.

Drilling Bits: Start by holding the glass at an angle to the top of the bit with a sponge held against the bit and the underside of the glass. As you grind, work the glass around the point of contact. It's important to keep the bit and glass wet. Frequently, remove the bit from the hole to wet the hole and remove residue. Just before the bit comes through the glass, decrease grinding pressure to prevent chipping.



A Very Fine Line...

Tapes for Stained Glass Art and Production

Venture Pressure Sensitive Products for the Glass Artisan include:

MasterFoil™ Plus and New Wave™ Copper and Brass Foils, Silvered, Silver Back and Black Back Copper Foils, Copper Foil Sheets, Copper Restrip, Lead Foil, Sandblast and Acid Etch Resist Films, Cork/Rubber Strip, Felt Pads and Sheet, Polyester Surface Protection Tape, Foam and Paper Mounting Tapes, Mosaic Mount™ Glass/Stone Assembly Tape and new BriteBak™ Reflective Tapes.

Available through distributors, worldwide.

VentureTape®

Venture Tape Corp. 30 Commerce Road, Box 384 Rockland, Massachusetts 02370 U.S.A.
 Tel 781 331-5900 800 343-1076 (U.S.A.) 800 544-1024 (Canada) Fax 781 871-0065
 Website: <http://www.venturetape.com> E-mail: sales@venturetape.com Manufactured and Printed in U.S.A.

RANDY SAYS

Constructing A Copper Foil Panel

Copper foil is a thin copper sheet manufactured in tape form with an adhesive back available in assorted widths. To construct a project using copper foil, the edge of each glass piece must be wrapped with the tape. The pieces are then placed on the pattern and soldered together. Beginning crafters will find the 1/4" (6.4mm) width easier to wrap while experienced crafters will more often use or 7/32" (5.6mm).

Cut your pattern using foil shears. Score and break out all glass components for your project. Check your glass pieces by laying them on the assembly drawing to verify the size and shape. If a glass component is too large you should grind it to fit, if it's too small you may need to re-cut.

When all glass pieces are cut and shaped the next step is to wrap each piece with the copper foil tape. Pull a length of foil tape from the roll and peel back several inches of the protective paper backing. Center the glass on the foil leaving the same overhang on either side. Wrap the foil around the entire glass piece, pressing it to the edges with your fingers as you go. When you get all the way around your piece, simply cut the foil allowing an overlap of 1/4" (6mm). Now, fold the foil edge overhang down onto the glass by pinching it with your thumb and index finger. The foil edge overhang should be equal on both the front and backsides of your glass piece. If it isn't you can remove the uneven foil section and re-wrap it or you could trim away too much overlap with a craft knife or add a short strip of foil to patch an area with not enough overlap. Foil-wrap all glass components in your project.



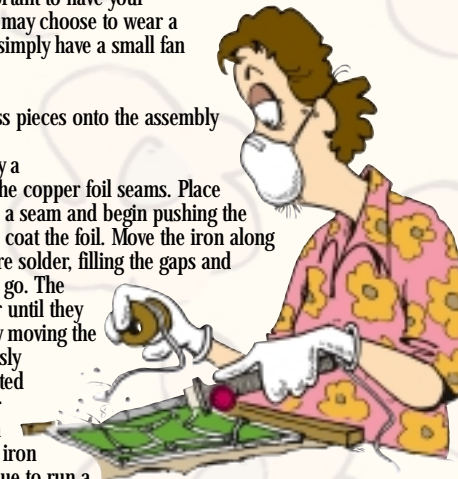
The final step is to use a wooden or plastic a burnishing tool (e.g. a wood dowel or an old toothbrush) to press the foil down onto all edges until it is smooth and tight against the glass. The foil must be burnished on the edge and on both the front and backsides to ensure it does not pull away from the glass while being soldered.

Soldering Copper Foil

Soldering is the most important step in the copper foil technique because the solder will be the metal web that will hold your project together. You will require a soldering iron, wire solder and soldering flux. Soldering does produce some amount of smoke & fumes and it is very important to have your work area well ventilated. Depending on your sensitivity you may choose to wear a filter mask, purchase a soldering fume ventilation device or simply have a small fan blowing across your work as you solder.



Place the foiled and burnished glass pieces onto the assembly drawing and secure them with pushpins or squaring blocks. Apply a small amount of soldering flux to the copper foil seams. Place the tip of the hot soldering iron on a seam and begin pushing the solder into the iron tip to melt and coat the foil. Move the iron along the seam, continuously adding more solder, filling the gaps and completely covering the foil as you go. The seams must be built up with solder until they are rounded and raised. Do this by moving the iron along a seam while continuously adding solder in a slow uninterrupted motion. If you add sufficient solder and fully heat the seam, the molten solder will flow off the end of your iron into a rounded raised bead. Continue to run a solder bead until all seams on the front side are completed. Then turn the panel over and solder the backside. Finish by soldering the perimeter edge. Clean your project, and apply an antique patina to the solder if desired.



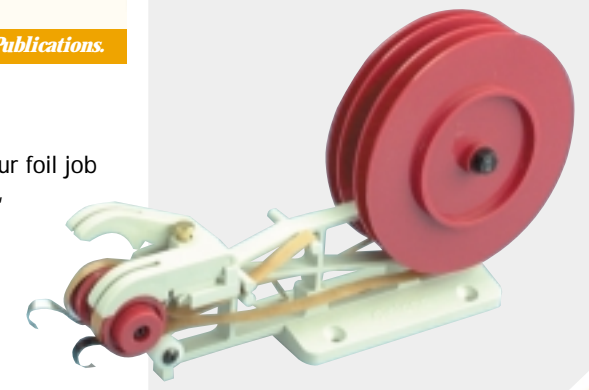
For more information on the this Technique refer to Introduction to Stained Glass, by Wardell Publications.

EdgeMaster™ Foiler

The EdgeMaster makes centering foil easier than doing it by hand. It also makes your foil job look more attractive with more uniform solder lines. It crimps the foil as it is applied, saving you time, so all you do is burnish.

The unit can overhang your bench which keeps it handy without being in your way. Improved glass guides keep glass perfectly straight for even application. The application wheels are small, so even tight inside curves are easy to foil.

The EdgeMaster comes with wheels that accommodate the most popular foil sizes: 1/16", 7/32" and 1/4". no. 70000



STUDIO NOTES

Copper foil tips



- When using glass that you can see through, choose a foil with the same color backing as the patina you intend to use.
- Foil comes in different thicknesses.

- 1 mil is good for inside curves because it folds easily. 1.5 mil is good for unground edges. It's harder to tear, so it holds up to sharp edges better. 1.25 mil is a good foil for everyday use.
- Burnish your foil down tightly, leaving no air bubbles. This prevents flux from seeping under the foil.
- If you have to put a project away when it's partially foiled, tape a small piece of foil to it so you use the same size later.
- Store opened copper foil in a zipper bag to help prevent oxidation.

"How do I choose between copper foil and lead?"



Choosing is really a matter of looks and technique preference. Either method is equally strong when properly reinforced.

Lead construction lends itself nicely to geometric, straight line, or gently curving patterns. It is easy to create uniform lines with lead or metal came. Panels that will be exposed to the elements are best made with lead. They can be weatherproofed and the lead allows for expansion and contraction. It is not advisable to make large, 3-dimensional projects with lead came.

Copper foil is more appropriate for projects with many small pieces, intricate details, patterns that are more organic and larger 3-dimensional pieces. Use different foil sizes to achieve different size solder lines.

You can combine the two techniques in a single piece to get detail in some areas and uniform lines in others.

Classique

The Stained Glass Tradition of Excellence



A full range of profiles in two collections

Continental & European

giving distinctive class to your
Stained Glass Creations

PK M · E · T · A · L

P. KAY METAL CANADA INC.

9221 Edison, Anjou, Quebec H1J 1T4
Tel.: (514) 645-2375 • Fax: (514) 645-7574

Toll-Free (U.S. & Canada) 1-800-363-0495

RANDY SAYS

Constructing A Lead Panel

The traditional lead method involves the assembly of glass pieces using lead came (channels) extruded in the shape of an U or H. The lead came is cut and fitted between the glass pieces and soldered together at all lead intersection joints.

Lead is a potentially hazardous material. Lead and lead oxides are not normally absorbed into the body through unbroken skin, but can enter through an open cut or by ingestion. Always wash your hands thoroughly with soap and water after working with lead, never eat while working at the glazing bench, always protect an open cut with a bandage and keep lead away from children (obviously).

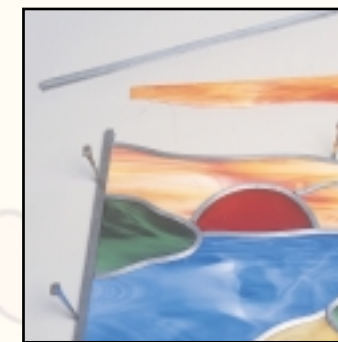
Cut your pattern using shears for lead assembly. Score and break out all glass components for your project. Check your glass pieces by laying them on the assembly drawing to verify the size and shape. If a glass component is too large you should grind it to size if it's too small you may need to re-cut.



When all glass pieces are cut and shaped, place your working drawing on your work-surface and tape it down. Use two pieces of glazing blocks (or wood trim), one to fit along the left hand side and one for the bottom of your drawing. Nail or pin them to the surface so the outside line of the drawing is just showing.

Use 1/4" (6.4mm) U lead for the outside perimeter and 7/32" (5.6mm) H lead for the internal seams (actually narrower lead (3/16" /4.8mm) looks better but may be more difficult to work with). Lead came must be stretched just prior to use by placing one end of the came in a lead vise, grasp the other end with pliers and pull straight back. A 6' (1.8m) length of lead will stretch between 3"-5" (7-12 cm). You will use lead nippers to cut the lead came for your project. Position the jaws 90° to the lead and cut into the channel for both 'H' and 'U' came. Nippers leave one end of the lead cut flat and the other end pointed. Experiment on some scrap lead to find the side of the nippers that leave a clean flat end. This is the side you will usually use to cut your lead piece.

Cut two pieces of U came, one for the bottom edge and one for the side of the panel. Place them on the drawing against the glazing blocks at the left and bottom. Now place and seat the first corner glass piece into the channel. You should be able to see the drawing lines around the exposed edges of this glass piece. If you don't, remove and grind the glass until it fits properly.



Measure and cut a piece of H lead to fit along the exposed glass edge of the installed piece. Insert the adjoining glass piece into this channel and secure it with a pushpin. Cut another piece of 'H' lead to fit along the edge of this second glass piece. Insert the next glass piece according to your pattern and continue positioning lead and fitting glass to complete your panel. You will find a tool called a "fid" (a special stick

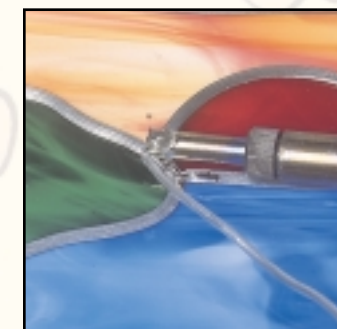
for lead working) very useful to help you position the glass and seat the lead channel. You'll discover the need to mark and cut your lead about 1/16" shorter than the end of the glass. The lead is cut short to allow for the channel overlap of the adjoining lead. Depending on the angle of the adjoining lead, a miter (angled) cut may be necessary. As you move along leading your project, be sure to frequently check that all lead joints are tight, that the drawing lines are visible around the edge of each glass piece as it is placed and that your work is secured with sufficient pushpins to keep it tight.

When all the inside leading is complete, use more U came to finish the outside edge on the two remaining sides and secure the lead with pushpins or two additional squaring blocks.

Soldering Lead Came

Soldering is required where two or more leads butt together. You will need your soldering iron, flux and solder to complete the project and make sure your work area is well ventilated (see "Soldering Copper Foil" section for safety ventilation details).

Apply flux to each lead joint, brushing the flux only on the area where solder is required as the hot molten solder will flow and stick to the lead wherever flux is applied. Place the end of the wire solder on the joint and touch it with the flat side of your hot soldering iron tip to melt the solder down onto the joint. Take away the solder keep the iron down on the joint and move it in a small circular motion for a second longer, then pull the iron away. The solder should flow into a gently rounded bead. If it appears rough, place your iron tip back on the soldered joint and move it in a slow circular motion until the solder is completely molten pull the iron away again. Note: it is very easy to melt the lead came if your iron is too hot. Always test-touch your iron on a scrap lead to ensure it is not too hot before soldering your finished panel.



Solder all joints on the topside of the panel, clean it to remove excess flux, turn your panel over and solder the joins on the other side. Inspect and clean both sides and your project is ready for cementing.

For more information on the lead Came Technique refer to *Introduction to Stained Glass*, by Wardell publications. Visit Randy online at: www.wardellpublications.com

SOLDER LIKE A PRO

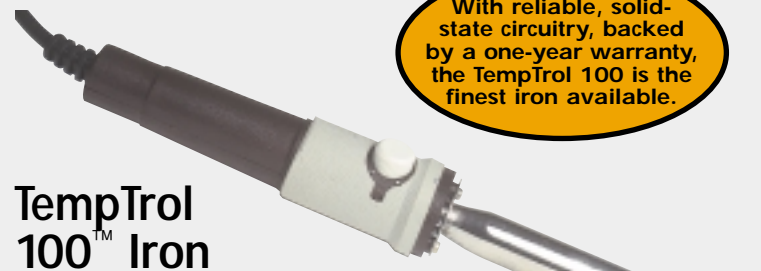


Lightweight and powerful, the InstaHeat is the premier iron without a built-in temperature control.

InstaHeat™ Iron

This iron heats to soldering temperature in less than 45 seconds. It contains a ceramic heater that holds temperatures stable longer than conventional irons. You can solder as fast and as long as you want. A MiniPhaser™ Temperature Control is extremely helpful because it helps you maintain exact control at lower temperatures. A 1/4" (6mm) heavy-duty tip is included. One Year Full-Confidence Warranty. **no. 60121**

These optional tips are available:
 1/8" (3mm) **no. 60126**
 1/4" (6mm) **no. 60128**



With reliable, solid-state circuitry, backed by a one-year warranty, the TempTrol 100 is the finest iron available.

TempTrol 100™ Iron

This iron has a temperature controller built in the handle! It has the best quality, conventional iron heater available. It will reach 1200°F and will give you professional results because of the built-in temperature controller. A 3/16" (10mm) heavy-duty tip is included. One Year Full-Confidence Warranty. **no. 60100**

The temperature controller is built into the handle.

You don't have to change tips or use a separate controller on this iron. Inland's TempTrol 100 has a miniature control device with solid-state circuitry built right into the handle. With the TempTrol 100, tip temperature control is right at your finger tips. You can adjust the tip temperature right while you are soldering.

The TempTrol 100:

- Operates from 200° to 1200°F.
- Is lightweight and perfectly balanced.
- Is less costly and easier to use than irons with tip-controlled temperature.
- Contains reliable, solid-state circuitry.

These optional tips are available:

- 1/8" (3mm) **no. 60110**
- 3/16" (5mm) **no. 60111**
- 1/4" (6mm) **no. 60112**
- 3/8" (10mm) **no. 60113**

Available On-Line

HOW TO SOLDER LIKE A PRO:

For an in depth explanation of glazing your stained glass panels, you can download a free copy of this brochure from our web site at www.inlandcraft.com. Just follow the links to the How To Brochures.

Studio Professional™ Iron

This is the highest quality conventional iron. It can reach 1200°F. You'll get professional results using a MiniPhaser Temperature Control. A 3/8" (10mm) heavy-duty tip is included. One Year Full-Confidence Warranty. **no. 60105**

These optional tips are available:
 1/8" (3mm) **no. 60110**
 3/16" (5mm) **no. 60111**
 1/4" (6mm) **no. 60112**
 3/8" (10mm) **no. 60113**

100W™ Deluxe Iron

This iron is a step above a basic 100W iron. It will heat up to 1000°F. Use it with a MiniPhaser Temperature Control to get the best soldering control for all projects. A 5/16" (9mm) heavy-duty tip is included. One Year Full-Confidence Warranty. **no. 60008**

These optional tips are available:
 1/8" (3mm) **no. 60018**
 3/16" (5mm) **no. 60007**
 1/4" (6mm) **no. 60017**
 5/16" (9mm) **no. 60035**

100W Standard Iron

This is the best value in a 100W iron. It heats to 1000°F. Use it with a MiniPhaser Temperature Control to get the best results for all projects. A 1/4" (6mm) heavy-duty tip is included. Six Month Full-Confidence Warranty. **no. 60015**

These optional tips are available:
 1/8" (3mm) **no. 60018**
 3/16" (5mm) **no. 60007**
 1/4" (6mm) **no. 60017**

FumeTrap™

This lightweight, benchtop filter system absorbs soldering fumes, paint fumes, wood smoke, glue vapors and about 400 other noxious fumes, and vapors you can't even smell. Use it for your safety and comfort.

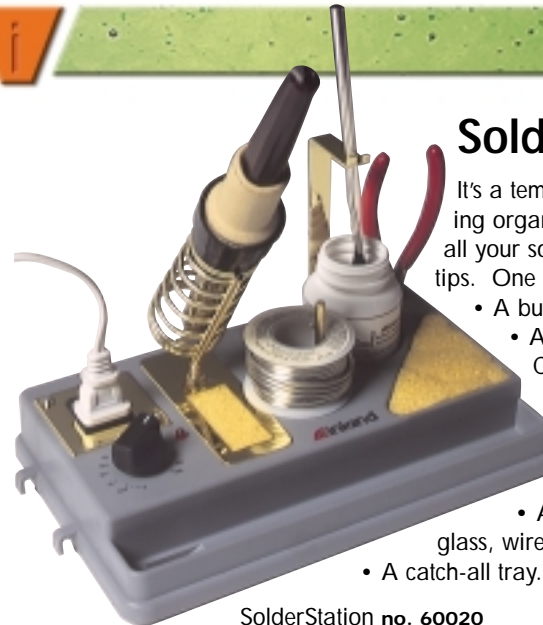
- Put it where you need it most. It's compact and lightweight.
- An activated carbon filter absorbs vapors, gases and particles.
- Safety should not be a luxury. The FumeTrap makes safety affordable.
- Trouble-free operation. Designed for long life with a 110 CFM axial fan motor and easy-to-change, snap-in filters.
- Easy-to-replace filters. Keep your FumeTrap operating at maximum levels with replaceable filters, sold three to a pack.
- One Year Full-Confidence Warranty.

FumeTrap **no. 60010**
 3-Pack Replacement Filters **no. 60006**

SolderStation™

It's a temperature control, iron stand and soldering organizer all in one! The SolderStation keeps all your soldering tools and supplies at your finger tips. One Year Full-Confidence Warranty.

- A built-in outlet for your iron.
- A built-in MiniPhaser Temperature Controller.
- A 6-foot power cord.
- A solder iron stand with tip cleaner.
- A solder roll holder.
- A flux bottle well with brush holder.
- A fluxing sponge to quickly flux foiled glass, wire, rings, etc.
- A catch-all tray.



SolderStation **no. 60020**

The GlassStation™

Keep all your tools handy and organized. Specially-sized compartments hold pens, knives and glass cutters, pattern shears and all types of pliers. A well holds a flux bottle securely with a flux brush holder. Keeps four sizes of foil neat and ready for use. Iron stand with drip plate and tip cleaning sponge. Two catch-all trays hold all those miscellaneous tools and items. Retractable handles make it easy to transport. **no. 60501**



Soldering Iron Stand

Steel coil safely holds your hot iron when you are not using it. The heavy metal base prevents the stand from tipping over. Use the handy tip-cleaning sponge to keep your tip free of debris for easier soldering. **no. 60009**



MiniPhaser™

This solid-state, electronic controller is used to increase and decrease the temperature of the iron. Use more power when soldering for long periods of time, or dial down for lower temperature soldering jobs. A MiniPhaser is an essential soldering tool. One Year Full-Confidence Warranty. **no. 60014**

STUDIO NOTES

“Which iron should I use?”



The best irons for stained glass are between 80 and 150 watts. A wattage lower than 80 won't melt solder fast enough for consistent glass projects.

The iron should have a chisel tip to distribute solder evenly and consistently.

You can match the tip size to the width of the copper foil seams or lead came, or for the specific decorative effects you want.

There should also be a way to control the temperature of the iron. It can be built into the iron or you can use a separate temperature controlling device, like the MiniPhaser. Controlling the temperature allows you to work at the speed you are comfortable with. It also allows you to work with different types of solder and create special effects.

The iron should be comfortable to hold. Consider the weight, balance and handle style. Inland offers a wide range of iron sizes, weights and styles.

Ceramic core irons use advanced technology.



Ceramic core irons have two distinct advantages over conventional soldering irons: They maintain consistent tip temperature while soldering and they offer the user more flexibility. A ceramic core iron uses a more efficient

way to generate and maintain heat than conventional wound wire heaters. The heater core extends into the tip for faster heat transfer. This keeps the tip hot longer, so you can solder faster.

By pulling in a burst of power and distributing it as needed, ceramic irons maintain the tip temperature without heat-recovery lag time. You can solder as fast as you want without stopping and waiting while your iron reheats! Ceramic irons heat to temperature in about 45 seconds. Tips can't freeze into the barrel on a ceramic core iron.

When you use a ceramic iron with a temperature control device, like the MiniPhaser, you have infinite temperature adjustment, and you can solder more effectively. You can match the tip temperature to the type of solder, your soldering style and the material you are working on without changing tips. With a ceramic iron and temperature controller, you'll have a combination that grows with your soldering needs and skills.

“Do I need a temperature controller?”



A temperature control delivers a regulated flow of voltage to the iron to maintain a lower tip temperature. Some irons function like a thermostat. They reach a preset temperature and draw power when the tip falls below that point. A temperature controller

works similar to a dimmer switch, allowing you to achieve a variety of tip temperatures to suit your soldering needs.

STUDIO NOTES



Lead came tips

- For small projects, try putting your project in a plastic trash bag to clean with whiting.
- Used cement brushes can be stored in a zipper bag in the freezer. When needed, simply thaw and use.
- To prevent damage, don't cut wire, chain or anything except lead with your lead dykes.

Finishing tips

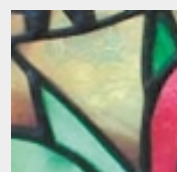
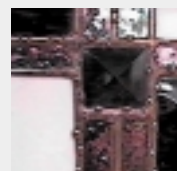


- Spotting on the edge of a mirror is caused by oil, flux, patinas and other chemicals penetrating the silvered back. You can reduce this effect by wiping the edge clean after cutting and applying a mirror edge sealant.
- Never mix patinas and always use proper ventilation and skin protection.
- To turn brass comes black, add a dash of table salt to a little black patina in a glass or plastic container. Mix well, apply to brass and let it dry. Clean and finish as usual.
- When patina doesn't take evenly, remove it using fine (0000 gauge) bronze wool, then clean, rinse and reapply the patina.

"Which solder should I use?"



Your selection will depend on how fast you solder, what you solder, and the look you want to achieve. Stained glass crafters use a soft solder of tin and lead. The numbers on the roll identify the percent of tin and lead. Tin is the first number listed. Different solders melt and resolidify at different temperatures. 50/50 solder (50% tin/50% lead) melts at the highest temperature. Lower melting solders are 60/40 and 63/37. 60/40 solidifies slightly faster than 50/50 and is often easier to use. 63/37 has no pasty stage making it great for decorative soldering. 60/40 usually makes a taller, shinier bead. 50/50 works better on 3-dimensional pieces.



Safety: soldering



- Always solder in a well ventilated area.
- Never eat, drink or smoke while working with stained glass. Wash your hands thoroughly before doing anything else.
- Keep your work area off limits to children.
- Never leave your soldering iron plugged in when not in use or unattended.
- Never override the grounding system on your soldering iron (or any other tool).



Inland Cement System™

Many professional studios and production manufacturers use Inland Cement, day in and day out. It's available in three sizes and two colors: Black, which darkens lead comes or Natural, for other metal comes where a neutral color is desired.

Size	Black	Natural
1 lb. tub	no. 50031	no. 50032
4 lb. can	no. 50035	no. 50036
15 lb. can	no. 50033	no. 50034



Electric Engraver™

The lightweight Electric Engraver is a powerful tool you can use to engrave designs, sign your work, or permanently mark just about anything. The thin handle makes it comfortable to hold and easy to control. This is a genuine rotary engraver, not a noisy vibrating type marker.

This engraver kit includes a small ball-shape diamond tip. Other tips are available to expand design capabilities. No tools are required to change tips. Available in 115V and 230V/240V versions with all plug configurations. no. 50105

Diamond Tip Set

20 diamond tips in assorted shapes and sizes for use with Inland's Electric Engraver or other rotary tools. no. 50115

Optional Engraver Tips:
Small Ball no. 50107
Large Ball no. 50110
Cone Shape no. 50111
Inverted Cone no. 50112



RANDY SAYS

Cementing

This is the final stage in completing a leaded panel. Cement must be forced under all lead channels (between the lead and glass) to strengthen and weatherproof the window. This step is necessary even if the window is for an indoor display due to the valuable strength that it adds.



You will require a tub of Inland cement, some whiting (or sawdust), and two natural bristled brushes. Spread some newspaper to cover your workbench and place the panel on it. Gather some cement on the end of the brush and scrub, using a circular motion across each lead came to sufficiently push the cement under all channels.

When you have applied enough cement, sprinkle some whiting onto the panel to lightly cover it. The whiting will soak up the oils and help to dry the cement. Use the second brush to vigorously scrub the surface of the panel first in a circular motion and then following along parallel to the lead came. Continue until all excess cement is removed. Buffing the panel with whiting will darken the lead and solder joints; the longer you scrub the darker they will become. As a side benefit, the abrasive action also cleans and polishes the glass.

When the first side is complete, turn your panel over to cement the other side. Leave your panel lying flat for 24 to 48 hours to allow the cement to set. During this time some cement may ooze out from under the leads. Remove this excess cement by using a finishing nail or a sharpened stick to follow along the leads and around the perimeter of each glass piece.

Visit Randy online at: www.wardellpublications.com

Available On-Line

CEMENTING:

How to weatherproof and strengthen leaded glass panels

For an in depth explanation of glazing your stained glass panels, you can download a free copy of this brochure from our web site at www.inlandcraft.com. Just follow the links to the How To Brochures.

STUDIO NOTES

"What is cement and why do I need it?"



Cementing is necessary with lead or metal came to secure the glass in the comes to prevent rattling. It also makes the window solid and weatherproof.

Many glazing compounds crack or pull away from the glass. Inland's cement system has a suspension agent that allows the cured cement to breath with changes in the weather for a window that remains solid and stable.

How to cement a stained glass panel



Step 1: Cementing is messy, so cover your work surface with newspaper. Mix the cement thoroughly, until it's the consistency of thick cake batter. Pour a ribbon of cement onto the panel. Use a natural bristle brush to force the cement under the face of the comes.

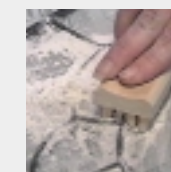
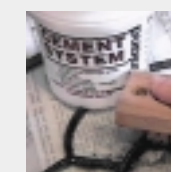
Turn the panel over and repeat on the other side. Make sure to work the cement under all the comes and edging.

Step 2: Sprinkle whiting over the entire panel. Using a clean, natural bristle brush, rub whiting over the panel, working parallel to the came. This will remove excess cement and clean the panel. Repeat on the other side. Use a fid to clean out the corners. Let the panel dry flat for 48 hours. Remove any cement that has run out with a fid, cuticle stick or a similar tool.

Cement application tips



- If working with glue chip or glass with heavy textures, mask off glass areas so that cement doesn't get into crevices. It's impossible to clean cement from those areas.
- Wear a snug-fitting filter mask of good quality while cementing to protect against respiratory or asthma problems, or the possibility of inhaling lead oxides, which may be scrubbed from the comes by the brushing action.
- Immediately after soldering your panel, wash it with warm water and dishwashing soap to remove flux, lead oxides, solder pellets and other grime or dirt. Remember that the panel is weak before cementing, so be sure to keep it supported at all times.



- Because the cement dries to a hard consistency, be sure to allow enough time to complete the entire process all at once.
- Once you have completed the process, be sure to clean up any excess cement from the table, bench, etc. Dried cement is very hard to remove once it dries.

The best of both worlds



Lisa Vogt holds one of her kiln formed vessel sinks.

To find your local distributor or for more information, visit us at www.skutt.com, email skutt@skutt.com, or call 503-774-6000



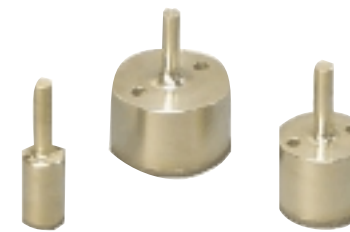
Nationally recognized glass artist and instructor, Lisa Vogt demands a lot of herself, her art, and her kiln. "Precise control is critical to the success of my artwork. The Ramp and Hold Mode on the Skutt GlassMaster controller allows me to customize my own programs and gives me the freedom to push the technical boundaries of my art."

"As an instructor, I also appreciate the convenience and ease of the pre-programmed firing schedules in the GlassFire Mode. My students can successfully fuse and slump most beginning projects themselves. And, when they are ready to push their own boundaries, the Ramp and Hold Mode is there for them. It truly offers the best of both worlds!"

Diamond Core Drills

Diamond-coated Core Drills have a 3/8" (10mm) shaft and fit most hand drills and drill presses. Numerous diameters make them valuable for drilling a wide range of materials including glass, ceramic, marble, plastic, and fiberglass.

For best results, core drills larger than 1/2" should only be used in a drill press.



Stock No.	Description	Stock No.	Description
40060	3/8" (3mm)	400675	1 3/8" (35mm)
40061	3/16" (5mm)	40068	1 1/2" (38mm)
40062	1/4" (6mm)	40069	1 3/4" (44mm)
40063	3/8" (10mm)	40070	2" (51mm)
40064	1/2" (13mm)	400705	2 1/8" (53mm)
400645	5/8" (16mm)	40071	2 1/4" (57mm)
40065	3/4" (19mm)	40072	2 1/2" (64mm)
400655	7/8" (22mm)	40073	2 3/4" (70mm)
40066	1" (25mm)	40074	3" (76mm)
400661	1 1/16" (27mm)	40075	3 1/2" (89mm)
400665	1 3/16" (30mm)	40076	4" (102mm)
40067	1 1/4" (32mm)		

What can you do with Inland's diamond core drills?
Lisa Vogt of Originals in Glass (see facing page) uses the 1 1/2" and the 2 1/4" drills to turn her fused bowls into fused sinks!

Small Diameter Piano Wire Drills

Diamond coated piano wire drills are used for drilling tiny holes in glass, stone, shells, or other hard materials. Available singly, in 6 packs, and in an assortment pack. These tiny drills can be used with the Inland FlexShaft!

NOTE: Because of their small size they have less diamond surface and therefore a more limited life compared to the larger carving points, core drills, and diamond drums.



Small Diameter Piano Wire Drills

- 450140 Wire Drills Assortment
- 450141 0.75mm Wire Drill
- 450142 1.0mm Wire Drill
- 450143 1.25mm Wire Drill
- 450144 1.5mm Wire Drill
- 450145 1.75mm Wire Drill
- 450146 2.0mm Wire Drill
- 450147 2.5mm Wire Drill

Add a -6 to the single drills above to order a six pack of that size drill.

STUDIO NOTES

Users Guide for Inland Core Drills

EQUIPMENT REQUIRED:

- Hand held electric drill, or drill press. Drill press is recommended for larger drills (3/4"+).
- Water or coolant; a squeeze bottle is ideal.
- Level work surface (a piece of cardboard placed between the work surface and material being drilled works well).
- Always wear safety glasses.

OPERATING SPEEDS:

- 800 RPM is desirable. Do not exceed 1200 RPM.
- When using a standard or variable speed hand drill refer to the operating instructions to determine its RPM.

DRILLING PROCEDURES:

- Securely fasten core drill into drilling equipment.
- Apply water/coolant to diamonds and to the surface of the material being drilled.
- To hold the material being drilled, use your fingertips and locate them around the drilling area. Do not hold the material by its edges.
- Drill slowly at first, until you become familiar with the proper speed and pressure required.
- When using a drill press, use light pressure. Allow the diamonds to do the cutting (too much pressure will fracture the material being drilled).
- When using a hand drill, start drilling with the core drill at a 45 degree angle to the material being drilled. As drilling proceeds, slowly adjust the drill until it is at a right angle to the material being drilled. The weight of the hand drill itself should provide sufficient cutting pressure.
- Frequently remove core drill from the material being drilled while drilling and flush out the ground material with fresh water/coolant. Also, rinse ground material from the core drill itself.

CLEANING:

- Inside diameter of the core drill must be kept clear of cored slugs. To accomplish this, push a nail or stout wire through the hole provided in the side of the core drill (on larger drills) through the back of the core.
- If slugs become wedged in the barrel, first secure the core drill in a vise. Using a hand drill with a small twist drill, drill the slug out of the barrel.

GRINDER AND SAW POWER CORD CHART

Inland produces machines for virtually every country. This chart shows stock numbers for the most frequently requested voltage/plug configurations. Choose the appropriate stock number from this chart.

Voltage/Plug Cross Reference Chart for 115V and 230/240V Products

Description	USA 115V	Canada 115V	Europe 230V	Australia 240V	India/RSA 240V	Switzerland 230V	UK 240V
DB-100 Diamond Band Saw	91010	—	91012	91011	91019	91013	91018
Wizard IV	10030	—	—	—	—	—	—
Impulse	20050	20054	20052	20051	20059	20053	20058
Aero	30050	30054	30052	30051	30059	30053	30058
WizCG	20030	20034	20032*	20031	20039*	20033*	20038*
WizlingCG	30030	30034	30032**	30031	30039**	30033**	30038**
TwinSpin	20070	20074	20072	20071	20079	20073	20078
Inland100™ 100W Iron	60008	60008	60002	—	—	—	—
InstaHeat Iron	60121	60121	60122	—	—	—	60123
FumeTrap	60010	—	60012	60011	60001	60013	60019
SolderStation	60020	—	60022	60021	60049	60023	60024
Electric Engraver	50105	—	50106	50109	—	—	50108
SwapTop Grinder	10650	—	10652	10651	10659	10653	10658
SwapTop Came Saw	10660	—	10662	10661	10669	10663	10668
SwapTop Diamond Saw	10670	—	10672	10671	10679	10673	10678
SwapTop Flat Lap Machine	10680	—	10682	10681	10689	10683	10688
Kristall 1	—	—	35032	35031	35039	35033	35038
Kristall 1S	—	—	35052	35051	35059	35053	35058
Kristall 2000	—	—	25032	25031	25039	25033	25038
Kristall 2000S	—	—	25052	25051	25059	25053	25058

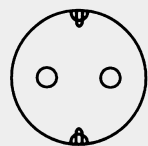
*In Europe, the WizCG is sold as the ContourGT **In Europe, the WizlingCG is sold as the Contour.

Plug Faces:

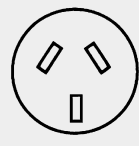
Below are representative drawings of the plug face or socket for each country/region. For other plug designs where you will need a plug converter, choose the US or European models depending on voltage requirements. If you are not sure of your destination country's voltage or plugs, visit our web site for an expanded plug chart. (www.inlandcraft.com)



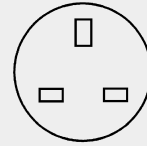
United States



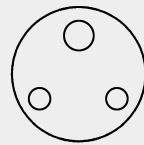
Continental Europe



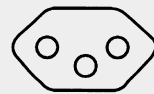
Australia



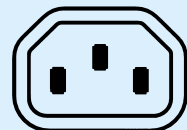
United Kingdom



India/South Africa



Switzerland



SwapTop Cordsets

SwapTop PowerUnits have detachable cordsets allowing a quick change for countries with plugs not shown above.



The “Beginner’s Glass” that Professionals Swear By.

Ever see a beginner's face light up the first time they run a score? That's why the teacher recommends Spectrum. Even in the awkward hands of a novice, those first few cuts are more likely to break clean and true. And, though they may struggle with the mechanics of early projects, the aesthetics are virtually assured.

So why is it, do you think, that professionals so often turn to this “beginner's glass” to execute their custom designs? Easy. A great cutting glass reduces waste and minimizes grinding. Choices of color, texture and special effects are outstanding, and you can always go back for more. The price is right, too.

Plus, when you choose a glass with working characteristics as predictable and forgiving as spectrum, you just might find yourself creating things you never thought possible.

Join the Spectrum E-mail List!

Stay up-to-date on colorful new products and programs from the industry's #1 Art Glass maker:
www.spectrumglass.com/ElistManager.asp



Spectrum Glass

Visit us at: www.SpectrumGlass.com

*Marbles® 52 x 21" Bill Hillman, Marston Glass, Olympia, WA photo Roger Suter

WARRANTY

Five Year Full-Confidence Warranty

This warranty is granted by INLAND CRAFT PRODUCTS, CO. for five years from the original date of purchase. If your Inland grinder fails under appropriate use during the warranty period, Inland Craft will repair or replace it at our discretion. Inland Craft guarantees to replace (after receipt and inspection) your diamond bit, if the diamond cutting surface peels off due to any manufacturing defect.

How Glass is Made

The most beautiful sheet of stained glass starts with the most common materials: sand, soda ash, limestone and other compounds. In the hands of skilled glassmakers, these unlikely items become extraordinarily beautiful. The process begins when the correct mixture of ingredients becomes molten at more than 2400° F. Then the molten glass is poured as liquid sheets using one of several methods.

Handcast glass is ladled onto a table. The glass is then rolled to a consistent thickness. The sheets cool in seconds to a semi solid state and are transferred to the lehr. The lehr is a chamber where the newly formed sheets are cooled very slowly in a highly controlled environment to relieve stress in the glass. This is where a sheet of glass develops its cutting characteristics.

Machine rolled glass is very consistent in size, thickness, and color. Typically, the molten glass is fed into a pair of counter-rotating metal rollers onto a moving line towards the cooling chamber. Sheet sizes can be quite large with this method of manufacturing. Various textures and surface patterns can be made on the glass with specially designed rollers.

Mouth-blown "antique" glass is made in the traditional manner by highly skilled craftsmen. A "gather" of molten glass is taken from the furnace on the end of a punti, or blow pipe. The gather is enlarged to a cylindrical shape. Next, the ends are cut off. Then the cylinder is cut lengthwise before reheating to flatten into a

sheet. While giving the glass its first shape, the glass blower imparts the characteristic crystalline striations that identify a particular glass as mouth blown. Rich and saturated color are also typical of antique glass.

Cathedral Glass is transparent and often a single color. It is named for its resemblance to the glass used in traditional church windows.

Opalescent Glass is not transparent, although some sheets may contain relatively transparent areas. A sheet of opalescent glass can be a single color or a swirl of two or more colors. Opalescents are well suited for lamp shades since their colors are enhanced by the direct light of a bulb.

Mottled Glass is named for the crystal growth that forms round or circular patterns of color characteristic of this glass. Mottled glass usually contains many colors and is seen very often in original Tiffany works. The mottled colors have a very dynamic, organic appearance; and thus, work extremely well in floral designs or realistic imagery. Mottled glass has a certain dimensional quality due in part to the color mix, the variations in color density, and the textural surface created by the mottling.

Antique and Flashed Glass are made in the traditional way; that is, mouth blown by teams of experienced glass blowers. Antique glass is transparent, yet distorts images because of the crystalline qualities of the glass. Flashed glass is a mouth-blown sheet of glass that has an extremely thin layer of another color of glass "flashed" on one side. This combination gives these sheets a dense, flat color. Flashed glass is often used for sandblasting, since the artist can remove one color to expose the other.

Streaky, Cloudy and Wispy Glass are names that describe a mostly transparent, cathedral-style glass that also has mellow opalescent streaks of color throughout.

Seedy Glass is a cathedral glass that has a very slight texture and distinct appearance caused by the "seeds" in the glass. These seeds are actually tiny air bubbles trapped in the sheet during the manufacturing process. Seedies are generally single-color sheets.

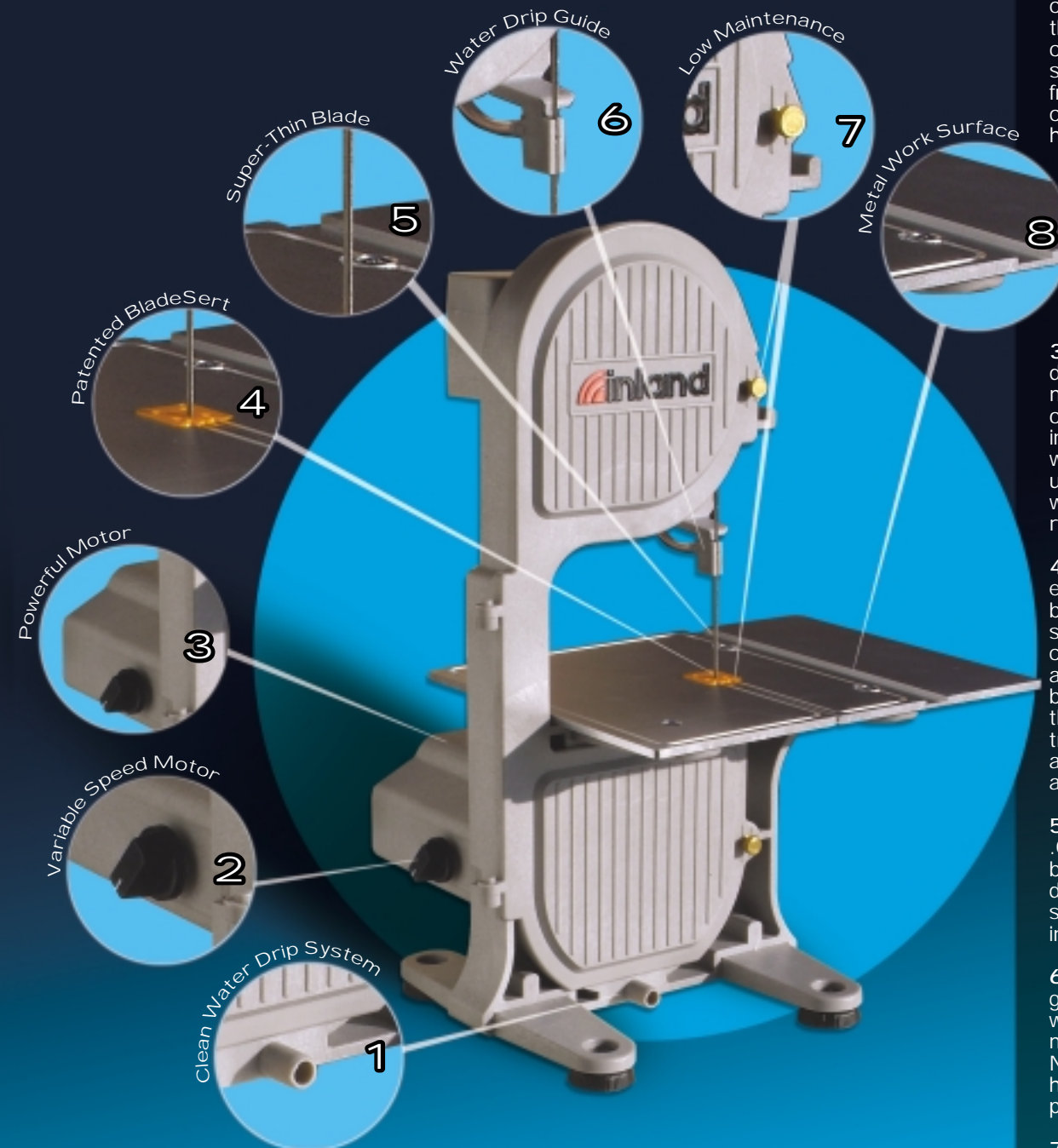
Glue Chip Glass has a unique surface texture. Some describe the pattern as "feathered", and some say the pattern resembles the look of frost on a window pane. The name describes the process used to achieve the look. A thin coat of glue is applied to clear glass which is then heated in an oven. As the glue dries, it pulls away from and chips the surface of the glass.

Textured Glass is available in a wide variety of patterns including Ripple, Hammered, Granite, Flemish and many others. The texture is created by one, or both of the rollers as the molten glass passes through them.

Dichroic Glass is made by vacuum depositing a special coating onto almost any uncoated glass sheet. Appearing as brilliant colors, the coating also offers an almost mirror like finish. The main characteristic of Dichroic glass is that it has a transmitted color and completely different reflective color. Further, these two colors shift depending on the viewing angle.

LOOK BEFORE YOU BUY

DB-100



1. Clean Water Drip System, clean water is gravity fed onto the blade where it provides cooling and then flushes the swarf of cutting out and away from your diamonds and your cutting area. You shouldn't have to lug a tub of water around every time you need to fire up your saw.

2. Variable Speed Motor, built in speed control lets you slow down to make the most intricate cuts in the most delicate materials.

3. Powerful Motor, the direct drive permanent magnet DC motor delivers a true 48 oz/in of torque. All the horsepower in the world is meaningless without the torque to back it up. Compare torque when you want to know what a saw can really do.

4. Patented BladeSert™, eliminates the need for upper blade guides by providing blade support where it is most crucial. It supports the blade at the point of sawing for better control, and helps keep the blade tracking straight and true while sawing, which allows you to make more accurate cuts.

5. Super-thin Blade, at only .022" wide the DB-100's true band saw blade is so thin it doesn't NEED diamonds on all sides to produce the most intricate cuts.

6. Cut Thick, the water drip guide raises up and out of the way if you need to cut thick materials (up to 3" thick!). Need to saw a wine bottle in half the long way? No problem.

7. Low Maintenance, the blade and BladeSert can be changed in seconds. No video to watch, no training required, no grommets, bearings, widgets or whatsits to interfere with your machine's uptime.

8. Metal Work Surface, machined aluminum is the ideal material for a wet saw's worksurface. It's durable, won't rust, and is light weight.

• **Affordable Replacement Blades**, check the prices on replacement blades before you choose your saw. Ours will last as long or longer than any blade on the market, at a fraction of the cost.

• **2 Blades!**, Check what you're getting for your money. The Inland DB-100 comes with TWO seamless stainless steel diamond blades.

• **Wet/Dry**, the DB-100 can be run wet with the included diamond blades, or dry with the optional MetalCut and/or WoodCut blades.



From *Mosaic Sundials* by SGN Publishing



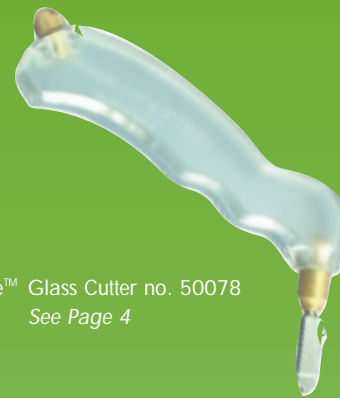
SolderStation™ no. 60020
See Page 23



Wizard IV™ Grinder no. 10030
See Page 10



InstaHeat™ Ceramic Soldering Iron
no. 60121 See Page 22



PistolType™ Glass Cutter no. 50078
See Page 4



Strip/CircleMaker™ no. 50060
See Page 4



DB-100™ Diamond Band Saw no. 91010
See Page 8



SwapTop™ Diamond Saw no. 10670
See Page 9



EdgeMaster™ Foiler no. 70000
See Page 19