Portable Glass Shop

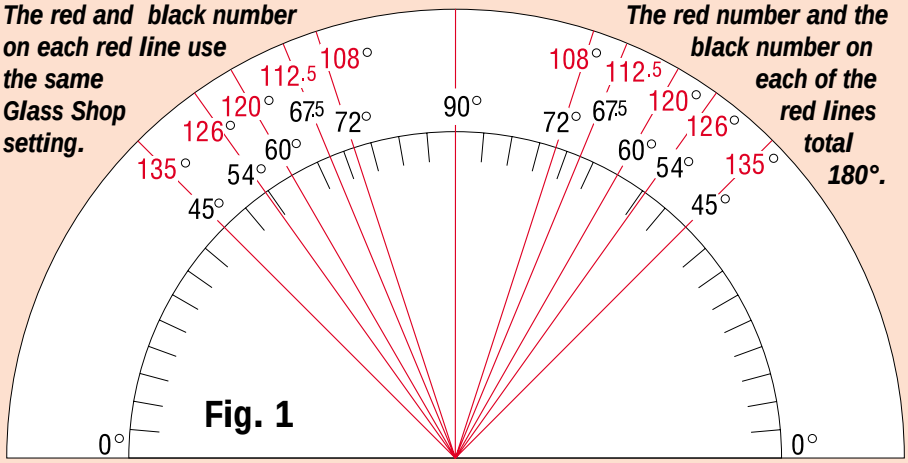
Getting Started

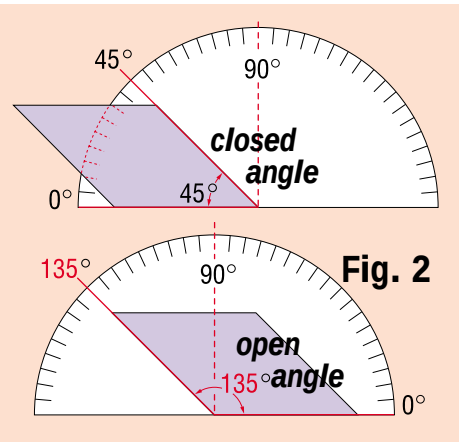
Part One

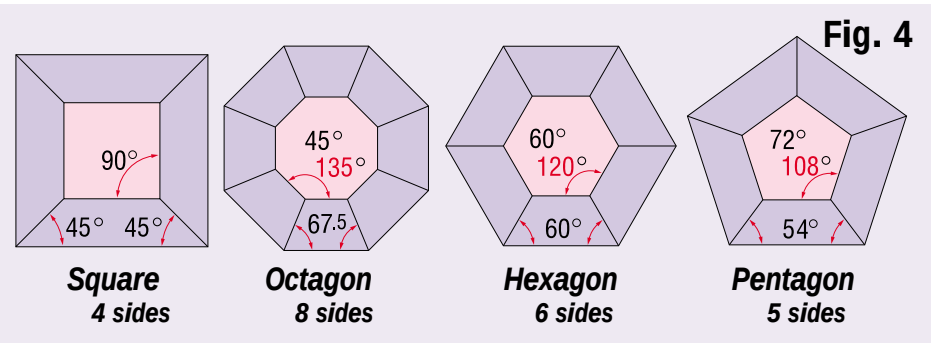
Angles... the more you know about angles the easier it is to understand the Glass Shop.

Don't let fig. 1 overwhelm you... the 21 angles are only six glass shop settings. The 90° line divides fig. 1 into left and right sides... red and black numbers on each ***red line*** use the same Glass Shop setting... angles on the left use the same Glass Shop setting as the same angle on the right.

In fig. 2, 45° being less than 90° is called a closed angle... 135° being greater than 90° is an open angle.







The three shapes in fig. 3 were created with the same length lines... think of the square as 2" by 2" and it becomes obvious that you will need 2" wide strips to make several squares. The angle makes the side lines look shorter than that of the square but they are the same. When you make the diamonds, the width of the glass strip needed is less than the square... the importance of this is... ***the strips needed to make the diamonds must be measured from one side to the opposite side at a 90° angle***.

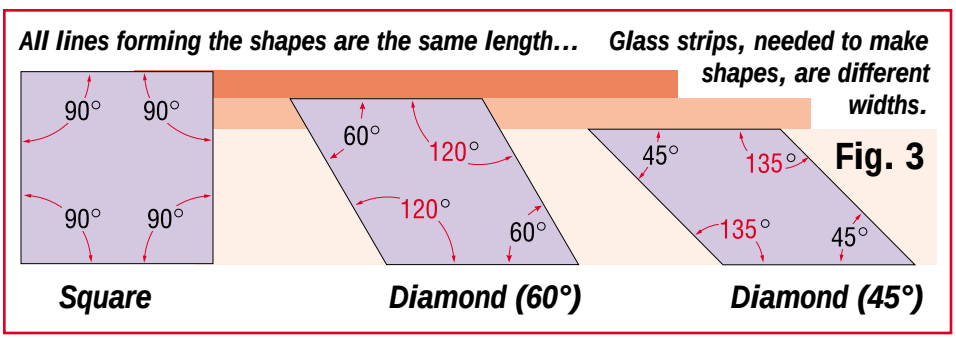
The mitered borders and the four shapes shown in fig. 4 use all six settings shown in fig. 1. Because practice is what will make you accomplished with the Glass Shop, use the four shapes shown in fig. 4 as tutorial projects.

To use fig. 4 for practice, you must round up a substantial supply of double strength window glass... often stores that replace broken house windows have a lot of scrap that can be bargained for.

The size of the practice projects is not important... make a square, octagon, hexagon or pentagon... next make a border around the shape... the width of the border can be any size you want.

Resist the temptation to start right now... read all of the getting started section first... most of your questions will be answered with a few simple glass cutting exercises.

Proper use of the glass cutter and learning to score well on either side of the Cutting Bar are important things to learn first.



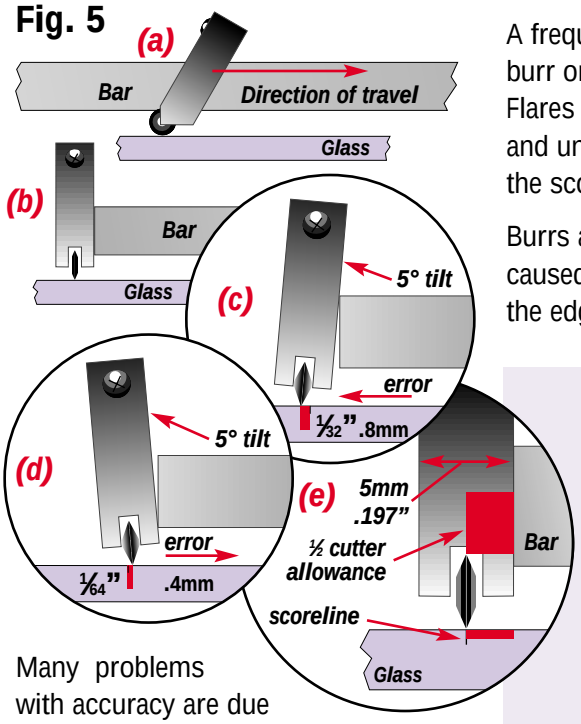
Portable Glass Shop

Getting Started

Part One

Accuracy with the Glass Shop is the combination of good scoring and glass breaking technique combined with the correct setup. The easy part is the setup... the Glass Shop instructions will show you how to setup for strips or trapezoids... the harder part is the scoring and breaking... good technique for scoring against the cutting bar and then breaking the score will require some playful practice on window glass... playful practice will give you a chance to make a few mistakes and learn from them.

Fig. 5



Many problems with accuracy are due to a lack of knowledge about how the glass cutter is held against the cutting bar.

In **fig. 5a** the glass cutter is being pulled down the bar with the cutter wheel following... ***lean the cutter handle back in the direction of the score and pull the cutter toward yourself***.

In **fig. 5b** the cutter has no side tilt. Keeping the cutter from tilting is very important both for accuracy and a good score.

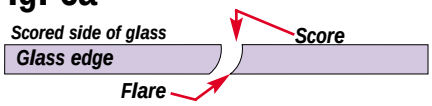
Fig. 5c is showing the effect of tilting the cutter toward the bar... just 5° of tilt will result in a 1/32" error... in fig. 5d with the cutter tilted away from the bar the error is less but still a 1/64" error.

The cutter wheel runs ½ cutter width away from the cutting bar and it is important this allowance be made accurately. The Glass Shop has features that allow for glass cutter but the cutter must be the correct width. The Toyo Supercutter and Fletcher Scoremaster were used to develop the Glass Shop and are examples of cutters that work well... ***study fig. 5e***.

A frequent cause of inaccuracy is a burr or flare... **fig. 6a** shows a flare. Flares are often caused by poor scores and uneven pressure on each side of the score during the break.

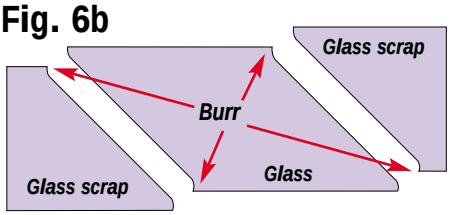
Burrs are like flares but are usually caused by the angle of the scoreline to the edge of the glass... ***see fig. 6b***.

Fig. 6a



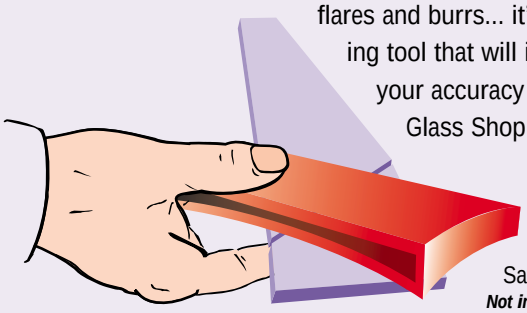
The 60° angle used to make the equal triangle will usually not yield a burr... however, uneven pressure during the break can cause a burr and often a flare. The 45° angle used in a mitered corner will almost always yield a burr when you make the break... a good score and good breaking technique will give less burr.

Fig. 6b



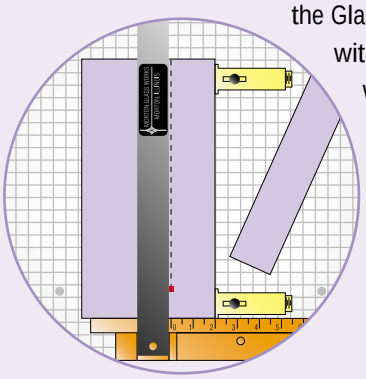
The Safety Break and the Quick Angle Kit are tools that will help you be more accurate... ***see box below***.

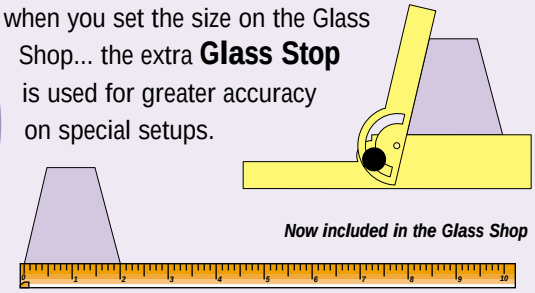
The **Morton Runner** was developed to prevent flares and burrs... it's a breaking tool that will improve your accuracy with the Glass Shop.



part of the Safety Break (SB01)
Not included in Glass Shop

With the **Angle Copy** you copy an angle from a pattern and set the angle on the Glass Shop... the **Sizing Scale** is a 10" ruler with a feature that allows for the glass cutter when you set the size on the Glass Shop... the extra **Glass Stop** is used for greater accuracy on special setups.





The Angle Copy, Scale and Glass Stop are parts of the Quick Angle Kit (PG02).

Portable Glass Shop

Surface Markings

Part One

Use a lead pencil to mark your surface... this is important and it will take only a few minutes.

The surface dots divide the surface into left and right sides... the numbers you add will connect the dots... a dot assumes the number between two numbers ***(dot between 6 and 8 is 7)***.

Top numbers and dots are used with the Bar Locks to set angles... lower numbers and dots are used with the Glass Stop to set sizes... Bar Lock and Glass Stop settings on one side can easily be transferred to the other side.

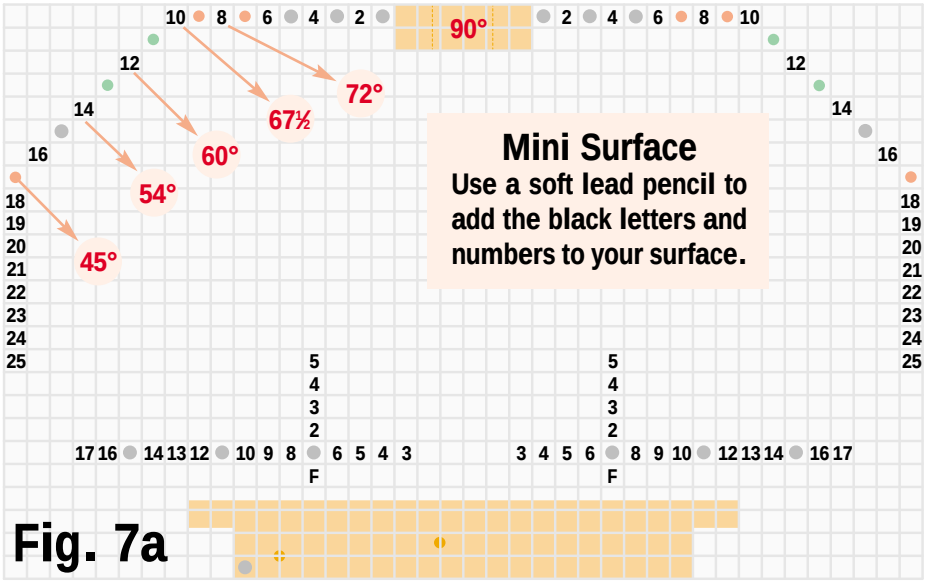


Fig. 7a

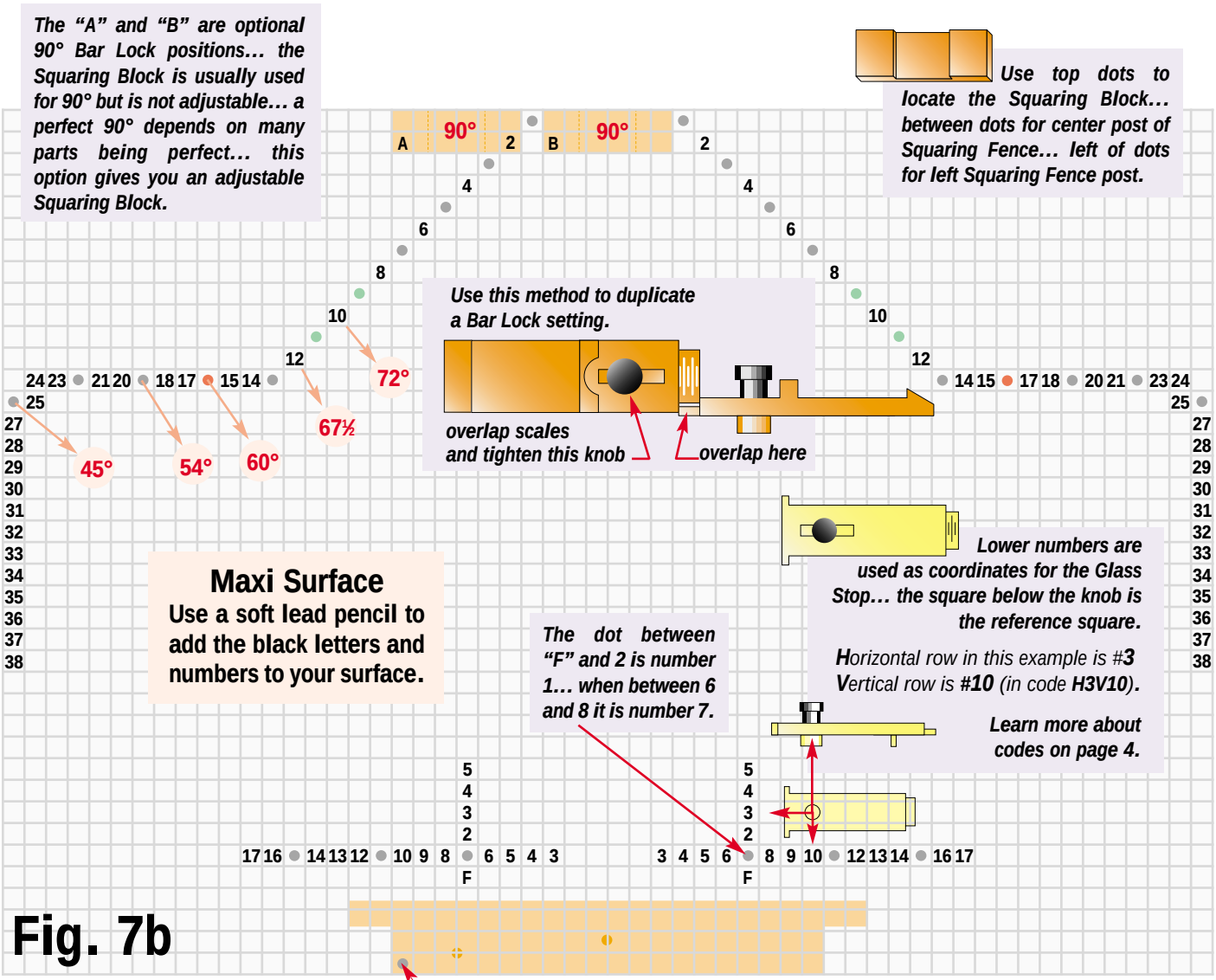
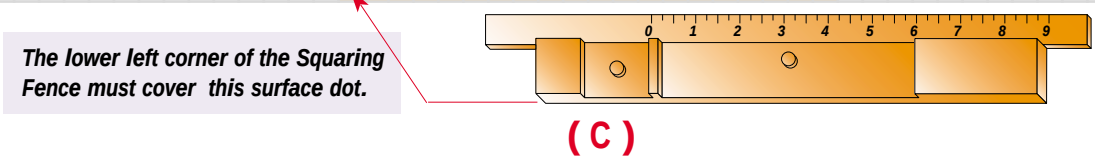


Fig. 7b



Portable Glass Shop

Tutorial Exercise

Part One

Practice... the secret to understanding the Glass Shop is practice... the following exercise should be helpful. Before you get started you should look over pages 1 - 12... don't let the information overwhelm you. One of the problems with trying to learn by reading the directions has to do with too much information.

Too much information... if you wanted to make a simple jewelry box you would already know the general size and color of the box... since all the parts are various sizes of rectangles you only have to know about strips and rectangles... the instructions for strip cutting is on pages 2 and 3... instructions for rectangles is on page 5. The rest of the directions can be left for another day... why stew over a pentagon when the rectangle will do.

We find that most problems are related to scoring and breaking glass. Hopefully you will gain a great deal of general information by doing the following exercise. As you become comfortable with scoring against the cutting bar you will have less trouble following the directions.

Your success with the Glass Shop will be directly related to your glass working skills. How much time you spend on the following exercise has a lot to do with your glass experience. If you have been working with glass for years, you may feel comfortable scoring on both sides of the bar after a few minutes. If you are just learning, you may need several hours of scoring and breaking practice before you go on to make something.

You will need a supply of double strength (⅛") window glass. The Safety Break (SB01), shown on page B, is optional, but strongly recommended as a breaking tool... now let's get started.

Most shapes, made on the Glass Shop, start with a glass strip. You will be no more accurate with the Glass Shop than the glass strips you start with. The strip cutting, shown on page 2 and 3, is the most important and the most difficult part of the Glass Shop. Even though this exercise starts with 3" strips, strip cutting is not a good place to start your practice session. If cutting the strips is a problem for you, get some help.

Step 1... Cut at least two 3" glass strips... any length *(see pages 2 & 3)*.

Step 2... Set a 90° angle using your Squaring Block *(see page 5)*.

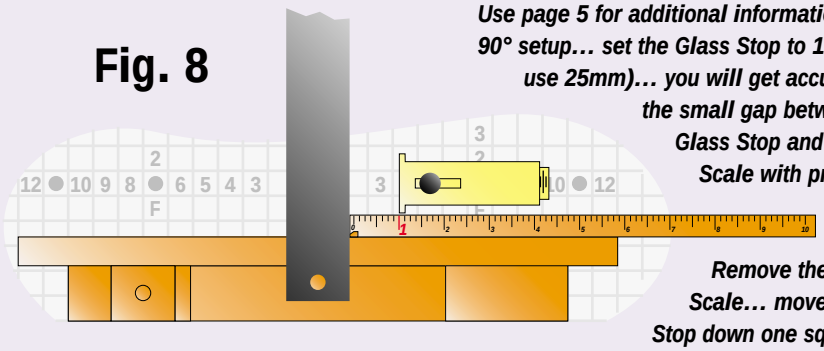
Step 3... Use your Sizing Scale to set the Glass Stop at 1"... the raised post on the Sizing Scale is allowing for the glass cutter *(see fig. 8)*.

Step 4... Position your glass strip as seen in fig. 9a if you are right handed. If you are left handed you may want to start with fig. 9b. Score and break 1" pieces until you are automatic and completely comfortable with the score and break... have someone watch you score to be sure you are not tilting your glass cutter... show them fig. 5 on page B so they know what to look for.

Step 5... When you are sure that step 4 is going great... reverse the setup as in 9b and start learning to score on the opposite side of the Cutting Bar. Have someone watch you score again... tilting the cutter will make your settings inaccurate.

Note... Keep comparing your pieces... the goal is to make them all the same.

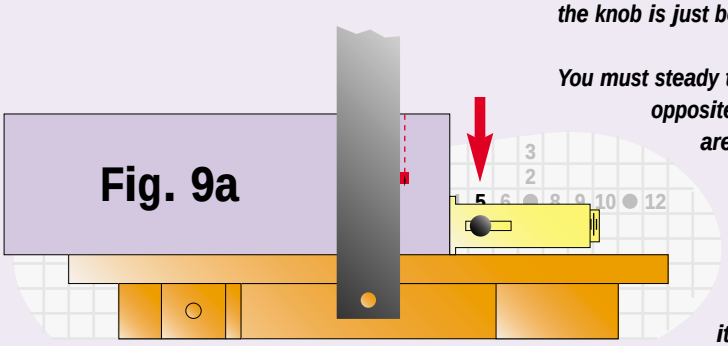
Fig. 8



Use page 5 for additional information on this 90° setup... set the Glass Stop to 1" (metric use 25mm)... you will get accustomed to the small gap between the Glass Stop and the Sizing Scale with practice.

Remove the Sizing Scale... move the Glass Stop down one square... the knob is just below the #5.

Fig. 9a

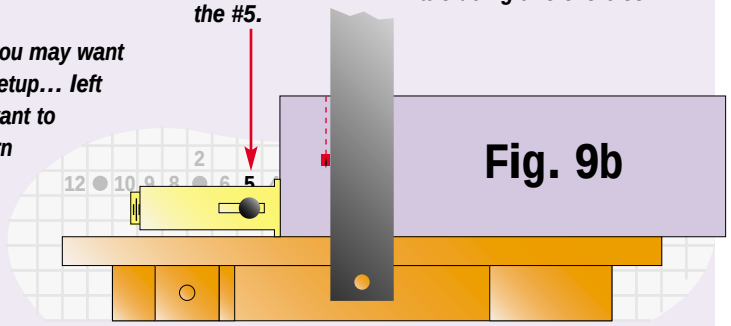


You must steady the glass with your opposite hand... when you are scoring on the opposite side of the Cutting Bar... hold the glass steady by crossing your free hand up and over... it will feel awkward at first but this is why you are doing this exercise.

Knob is below the #5.

If you are right handed you may want to start with the fig. 9a setup... left handed people may want to start with fig. 9b... learn to score well on both sides ... you will have fewer problems with the Glass Shop.

Fig. 9b



Portable Glass Shop

Components

Part Two

The Glass Shop is made up of several components... they have names that describe the function each performs. You may find it helpful to write the name on the fixture with a lead pencil.

Quick Reference Guide

Part One...

Part Two...

Part Three...

Part Four...

Part Five...

Squaring Block

Cutting Bar

The Bar Spacer is used with the Bar Locks... it is not needed with the Squaring Block.

The Bar spacer holds the Cutting Bar even while setting angles.

Bar Spacer

The Bar Locks are used to set angles... an angle set to the left has the tail to the left.

Bar Locks

An angle set to the right has the tail to the right.

MORTON GLASS WORKS
MORTON, ILLINOIS

The Cutter Gauge allows for the ½ glass cutter allowance against the Cutting Bar.

Cutter Gauge

The long leg is always on the right unless specified.

The post on the Sizing Scale holds the "0" out from the Cutting Bar ½ cutter width.

See Part Five, pages 13 & 14 for detailed user instructions on the Sizing Scale and Angle Copy.

Sizing Scale

Glass Stop

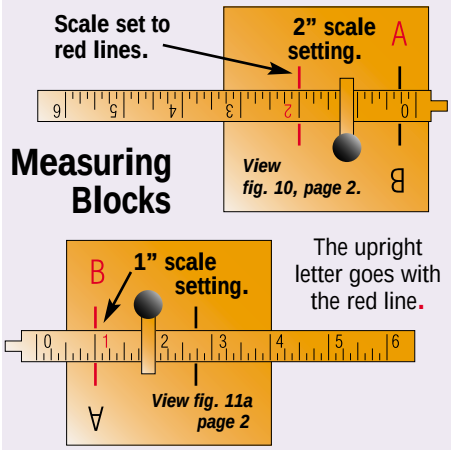
Angle Copy

Squaring Fence

Right-handed Setup

Skip... if left-handed.

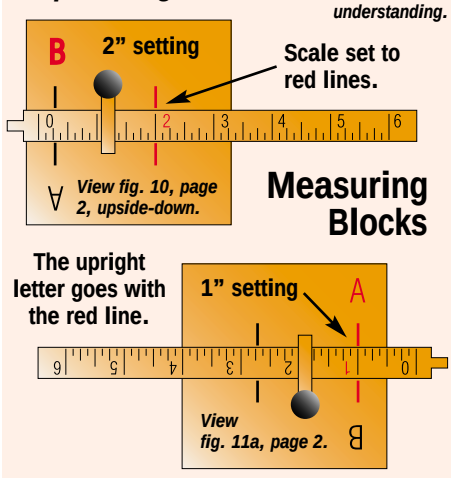
Red and black colors used for understanding.



Left-handed Setup

Skip... if right-handed.

Red and black colors used for understanding.



Strip Cutting

Fig. 10 can only be used with strips wider than 1¼"… it should be used as an optional setup when the standard setup, shown in fig. 11, cannot be used.

Fig. 10

The Measuring Blocks allow for the glass cutter when you use the mark indicated by the arrows.

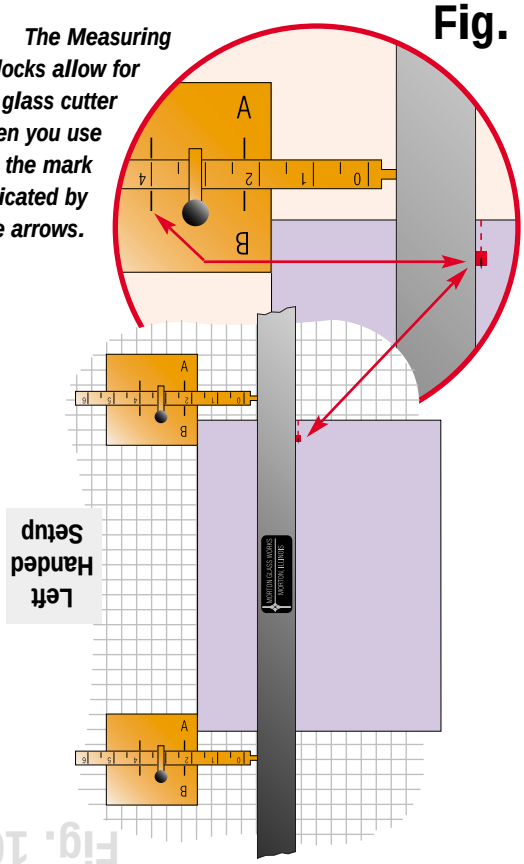


Fig. 13 is used when the starting edge is not straight… because it is easier to remove the starting scrap from a smaller strip, you should do the following: Set the both Blocks larger than the strip size needed (usually about ½" to ¾" will do)… setup as shown and score and break the piece… note the arrow… in Fig. 14 you see the strip turned end for end… Blocks set to the needed strip size… you will use the extra glass to hold the #1 strip in place while you make the 2nd score… remove the starting scrap.

If your starting edge is straight, you need only set the Blocks to the size needed as shown in fig. 11 … skip figs. 13 and 14 and use fig. 15 if it applies.

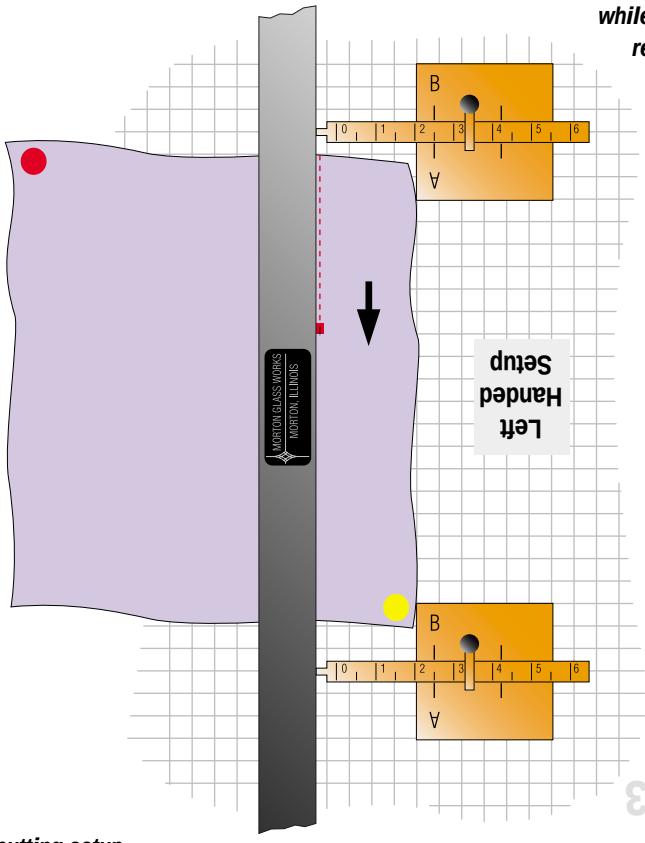


Fig. 13

Make this your standard strip cutting setup… once you are accustomed to holding the glass and Cutting Bar to the Blocks you will find it a very efficient strip cutting method… you must use this setup for strips less than 1¾".

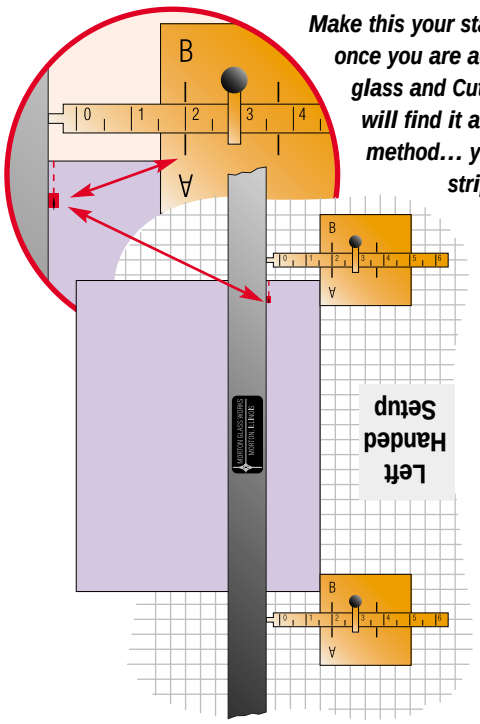
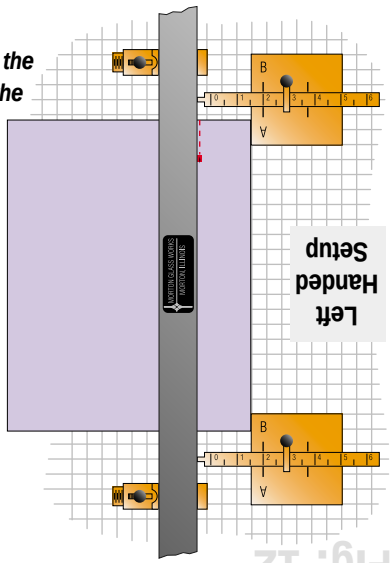


Fig. 11

The Measuring Blocks allow for the glass cutter when you set to the mark indicated by the arrows… see page B for more about the cutter against the Cutting Bar.

Fig. 12

You can use the Bar Locks to hold the Cutting Bar… this is an option that some users find helpful.



Left Handed… *turn page upside down*

Strip Cutting, with the Measuring Blocks, is reversed for left handed people… when you see the "Left Handed Setup" box… turn the page upside down for your setup. The only thing wrong is the starting location of the glass cutter… just remember you pull the cutter toward yourself.

Set to the strip size needed… turn the strip end for end… hold the strip to the Blocks with the extra glass… score and remove the scrap from the #1 strip.

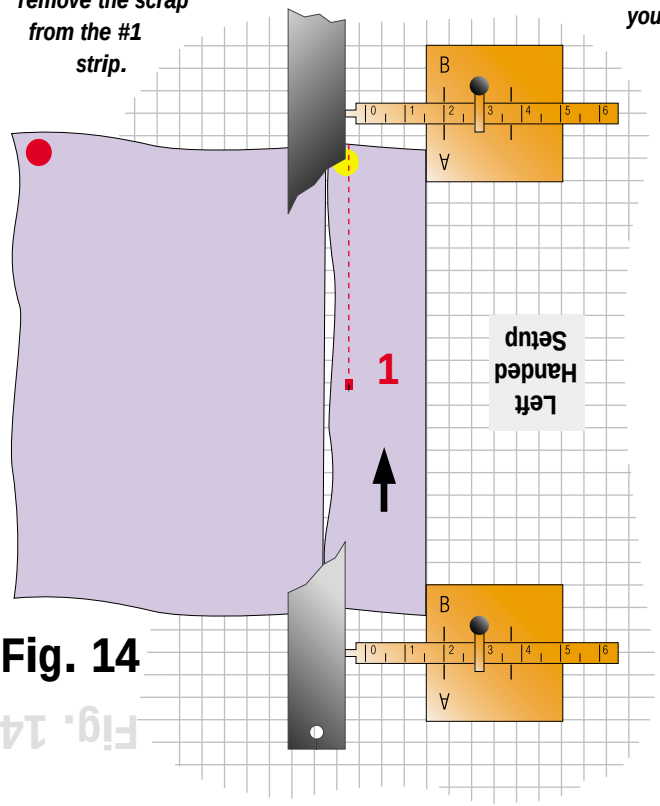


Fig. 14

You can now continue making as many strips as needed… often, to score the last strip, you must use one of your earlier strips to hold the last strip to the Blocks.

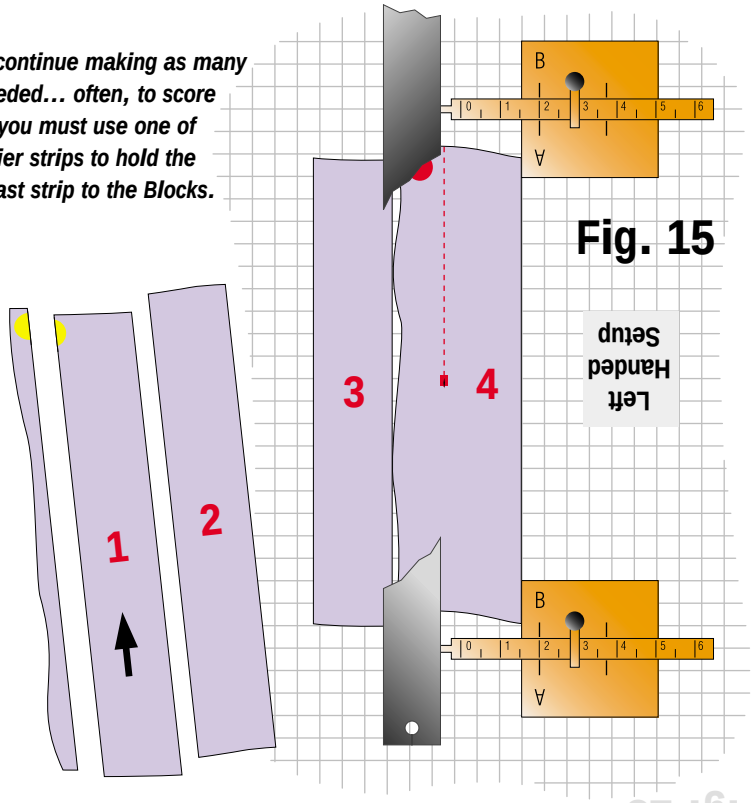


Fig. 15

Fig. 16*

You can use the "A" Bar Lock position by replacing the Squaring Block with the Bar Lock… plug into square "A" and set to S3Sm… adjust if needed.

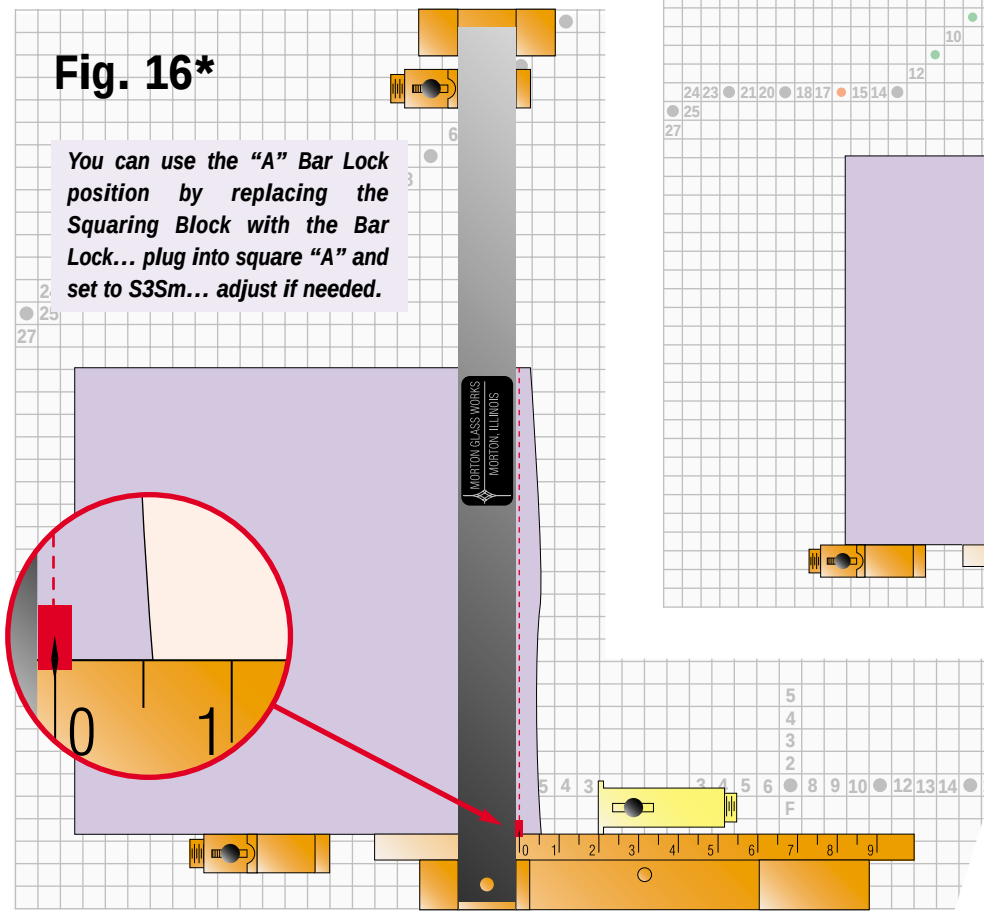
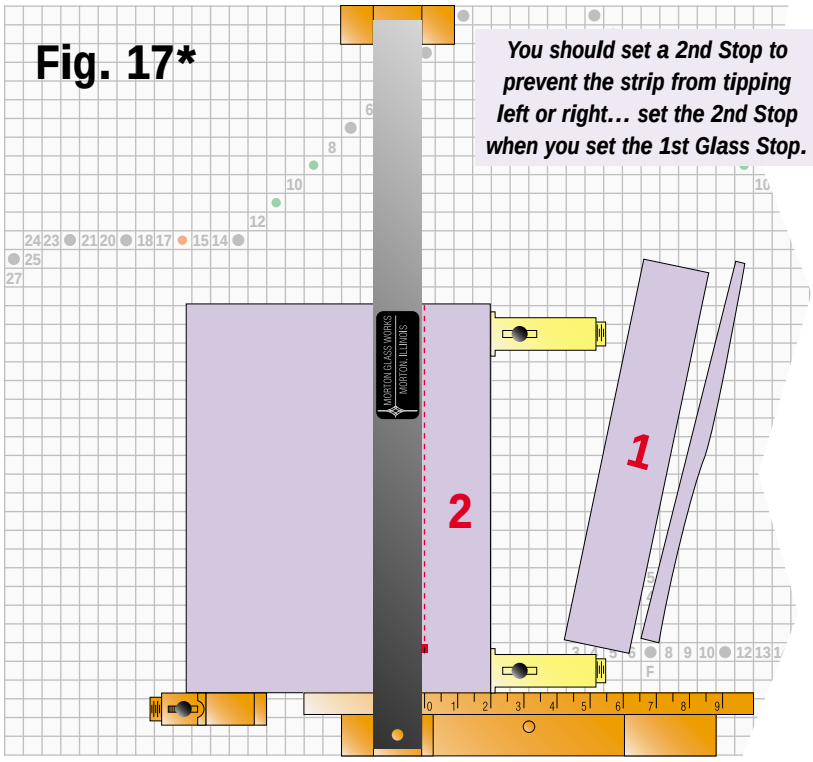


Fig. 17*

You should set a 2nd Stop to prevent the strip from tipping left or right… set the 2nd Stop when you set the 1st Glass Stop.



…u can use the Bar Lock to extend the …uaring Fence… figs. 16 and 17 are useful …ptions but the more standard 90° setup is fig. 18 in Part Three… a drawback to using the Squaring Fence for your strip cutting is that any burs or flares will alter the settings as strips are removed… as a strip cutting method, fig. 11 is the most accurate method.

Portable Glass Shop

Angle and Size Codes

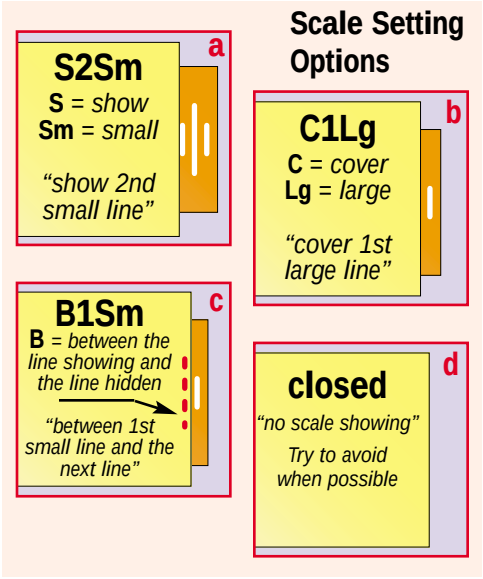
Part Two

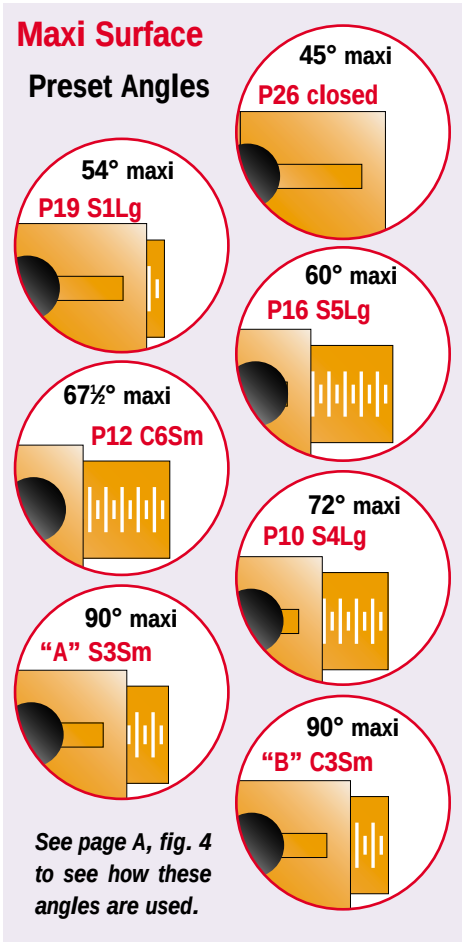
Angle and size settings with the Glass Shop are recorded in a simple code. The code gives the surface square location and the scale setting of the Bar Locks and Glass Stop.

You can quickly learn how to make angle and size settings by making the settings on your Glass Shop. With your Glass Shop and Surface ready, find **page C** and **page 9**... we will refer to diagrams on these pages.

Four things you must remember! ***(one)*** Angle settings for the Mini Surface and Maxi Surface are different. ***(two)*** The round post, of the Bar Lock and Glass Stop, is plugged into the square you are told to use. ***(three)*** When the Cutting Bar is angled to the left, the black knob of the Bar Lock is on the left side of the Bar. ***(four)*** When the Bar is angled to the right, the knob is on the right.

On the preset angle diagrams, the red print is the code that tells where to place Bar Lock. The **P** simply means **P**osition and the number is one of the numbers you added to the upper part of your surface. ***A number on the left has the same number on the right***.





See page A, fig. 4 to see how these angles are used.

The **S4Lg** on the Maxi 72° and **S4Sm** on the Mini 72° are scale settings. Study the diagram above... it shows all the options for scale settings. Use **"closed"** sparingly... usually you can move to a square that will give you a scale setting... this is better because you can increase or decrease without moving to a new square.

You can learn a great deal about your Glass Shop by setting the five preset angles. Use **page 9** as a setup guide... your Bar Lock positions will differ from **page 9** but the general setup is the same as the following instructions:

1) Setup Squaring Fence, Cutting Bar and Bar Spacer on your Surface.

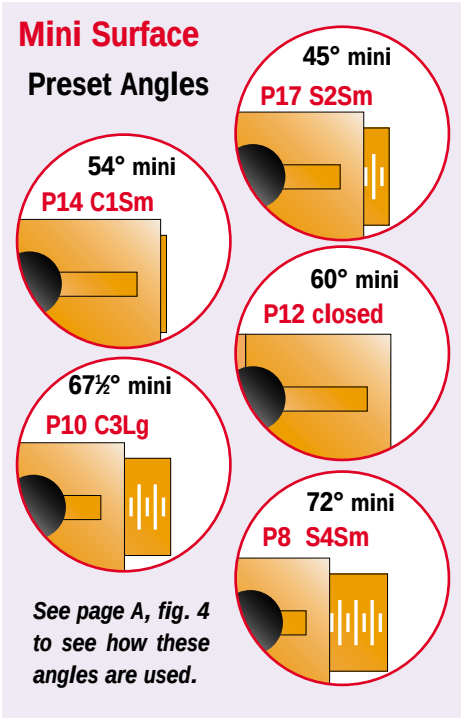
2) Set the Bar Lock scale to a 72° setting... use the code... check to see if you match the diagram.

3) Use the Position number to locate the square used for 72° on the left side of the Surface... correct locations are shown on the left side of fig. 7a or fig. 7b... plug in the Bar Lock and swing the Cutting Bar into position.

4) When both left and right angle is needed... set the 1st Bar Lock... duplicate scale setting to the 2nd Bar Lock using the overlap method... plug into the opposite marked square. Use the diagram in the center of fig. 7b to duplicate your 1st 72° setting.

5) The lower numbers and dots are used with the Glass Stop. Study the lower right section of fig. 7b... place your Glass Stop on the Surface as shown in fig. 7b. Use the black knob as your reference point... the **H**orizontal row is **3**... the **V**ertical row is **10**... a simple code for this is **H3V10**.

6) Move the Stop down 3 rows... you are now in the **F**ence row... use this row most of the time... the code can be simplified to **F10**... since the Stop is on the **R**ight side of center the Stop is at **F10R**... if your scale setting is **S1Lg** the size setting is **F10R S1Lg.**

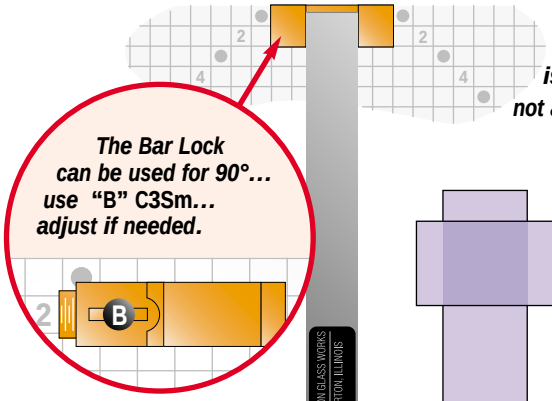


See page A, fig. 4 to see how these angles are used.

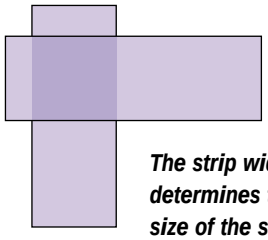
Portable Glass Shop

90° Squares & Rectangles

Part Three



The Squaring Block is a fast 90° but is not adjustable .

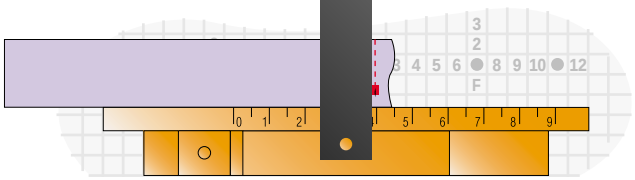


The strip width determines the size of the square.

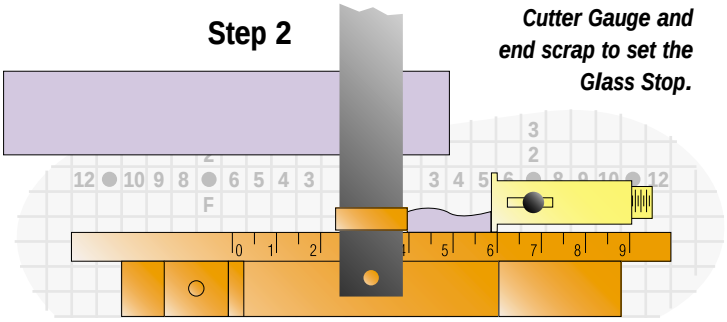
Fig. 18

Square the strip end by removing about ½" of glass.

Step 1

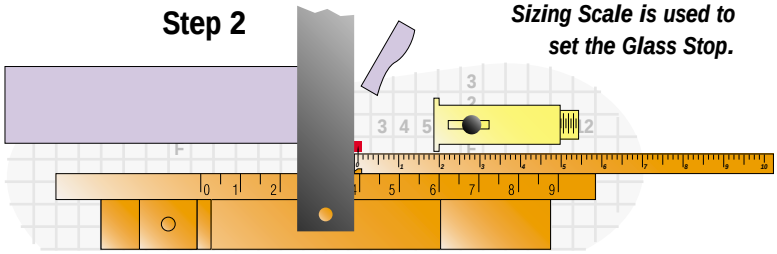


Step 2



For a square, use the Cutter Gauge and end scrap to set the Glass Stop.

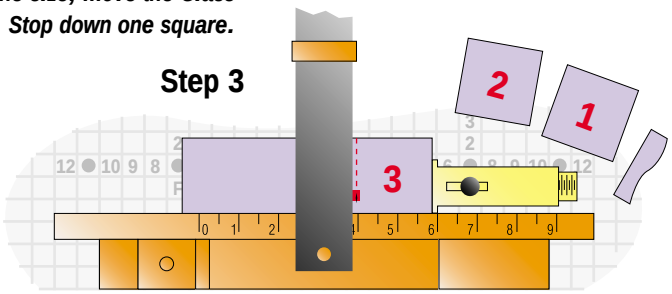
Step 2

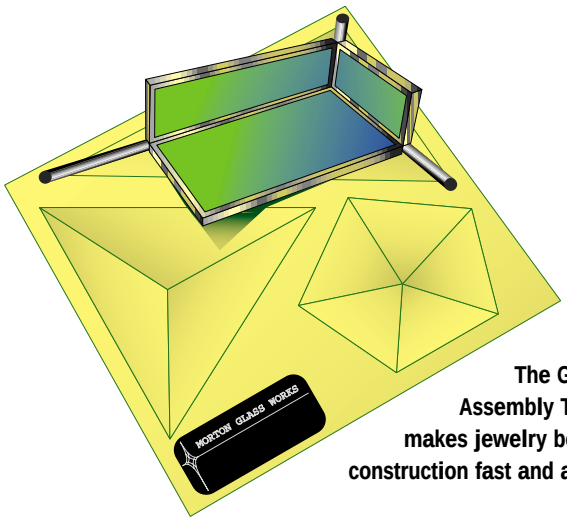


For rectangles, the Sizing Scale is used to set the Glass Stop.

After using the Sizing Scale to set the size, move the Glass Stop down one square.

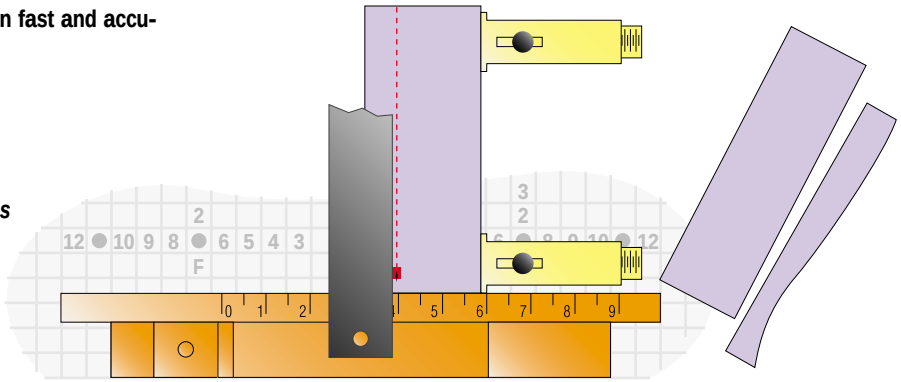
Step 3





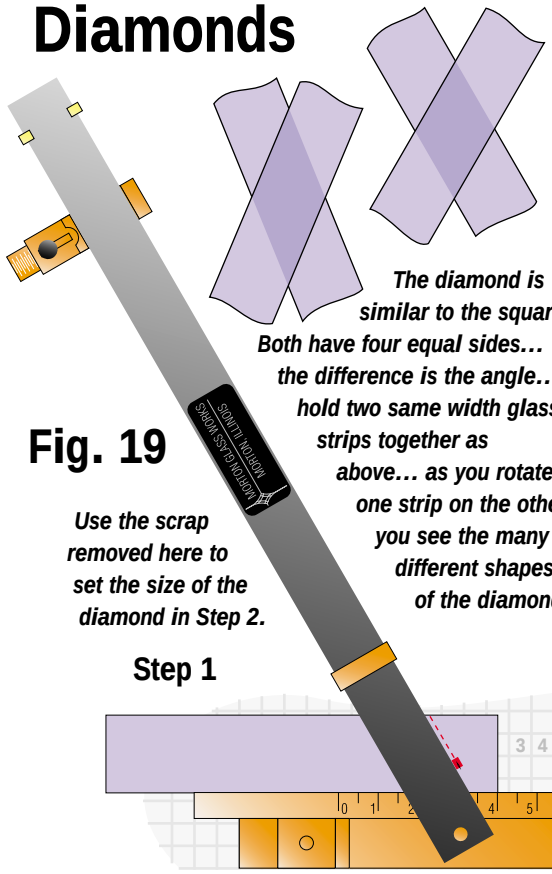
The GS Assembly Tray makes jewelry box construction fast and accu-

Taller than Wide Rectangles



With taller than wide rectangles it is necessary to set the 2nd Glass Stop… the best time to set the 2nd stop is just before you are ready to score the first rectangle.

Diamonds



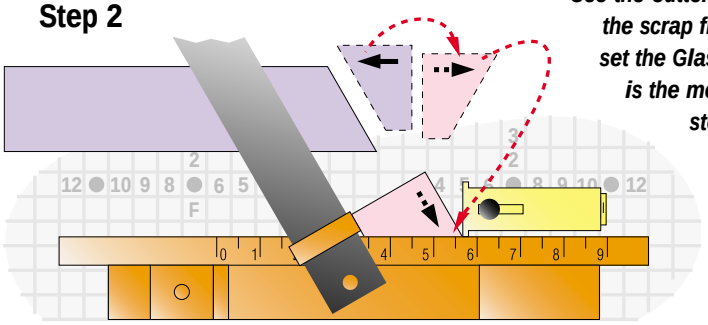
The diamond is similar to the square. Both have four equal sides… the difference is the angle… hold two same width glass strips together as above… as you rotate one strip on the other you see the many different shapes of the diamond.

Fig. 19

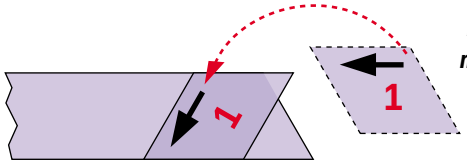
Use the scrap removed here to set the size of the diamond in Step 2.

Step 1

Step 2

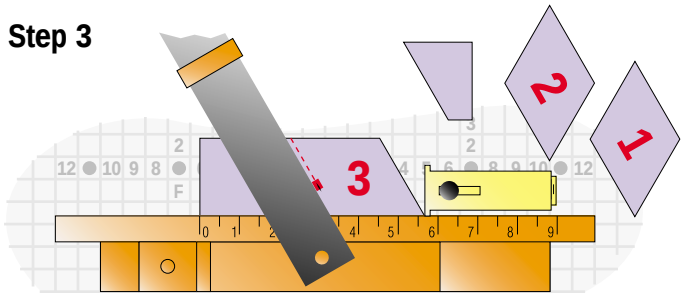


Use the Cutter Gauge and the scrap from Step 1 to set the Glass Stop… this is the most important step in making a diamond.

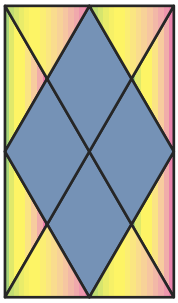


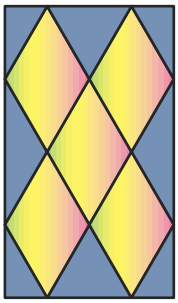
In Step 3, after making the 1st diamond, you can check your accuracy by rotating the diamond to the strip… both must be the same width… adjust if needed.

Step 3

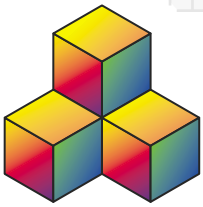


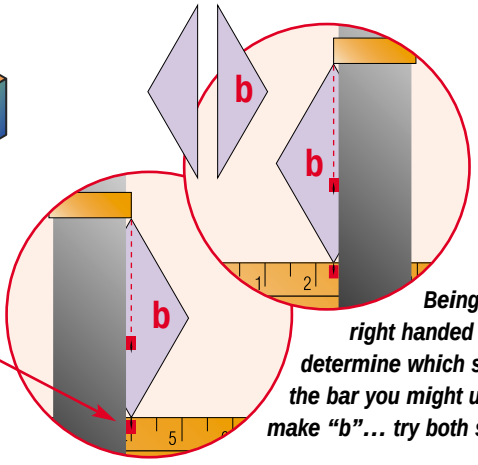
Splitting Diamonds





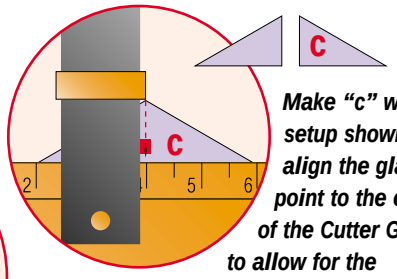
The outer border of a well designed diamond panel is made up of ½ or ¼ diamonds. The bigger the diamonds the easier they are to split… burrs can be greatly reduced with a good point to point score and correct use of the Morton Runner… see page B.



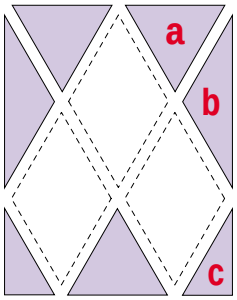


Use your glass cutter to align the bottom point.

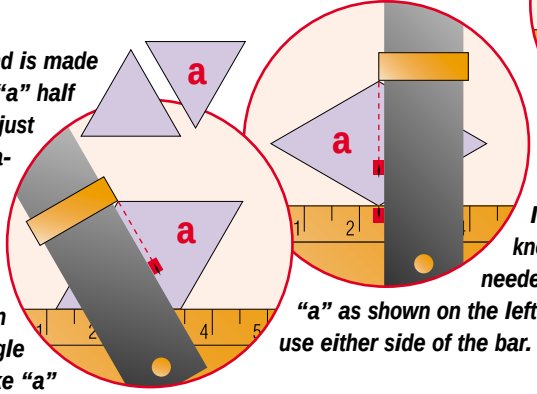
Being left or right handed will determine which side of the bar you might use to make "b"… try both setups.



Make "c" with the setup shown… align the glass point to the edge of the Cutter Gauge to allow for the glass cutter.



If the diamond is made with 60° the "a" half is easy… just turn the diamond and score… if you made the diamond with 45° you can set a 67½° angle to make "a"

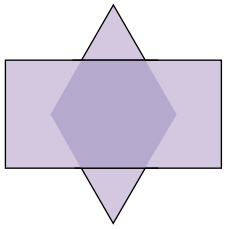


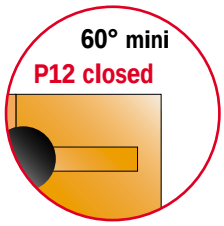
If you do not know the angle needed to make "a" as shown on the left, use 90°… use either side of the bar.

This color shows the side of the glass scored first.

This color is the glass turned over. Arrows… show direction.

Hexagon 60°





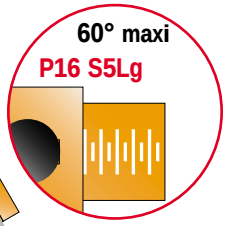
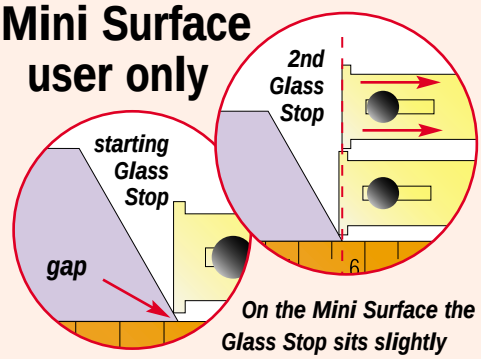


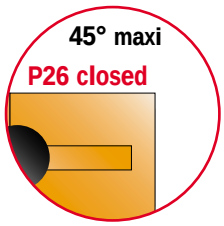
Fig. 20

Step 1 *Follow fig. 19… make diamonds using the 60° setting.*

Mini Surface user only



On the Mini Surface the Glass Stop sits slightly higher and leaves a gap… this is only a problem with the Hexagon and is easy to allow for… use your 2nd Glass Stop and set it about ½ scale mark to the right… adjust if needed… remove the 1st Stop with smaller diamonds.



Step 2 *Do not change the Glass Stop setting used to make the diamonds in Step 1… rotate the diamond so the right tip is up… move the Glass Stop straight up… move the tip to the Glass Stop… score… rotate the diamond and score again for a hexagon… make just the 1st score for a pentagon shape (see lamp, page 12).*

Octagon 45°

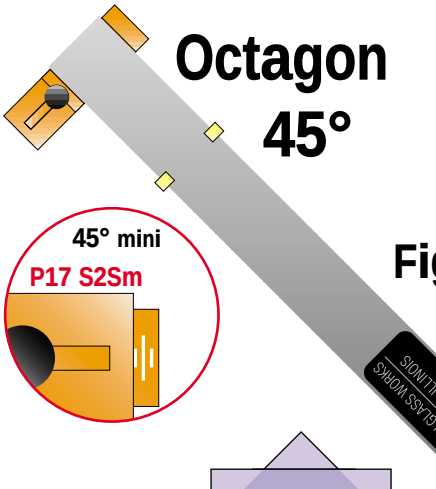
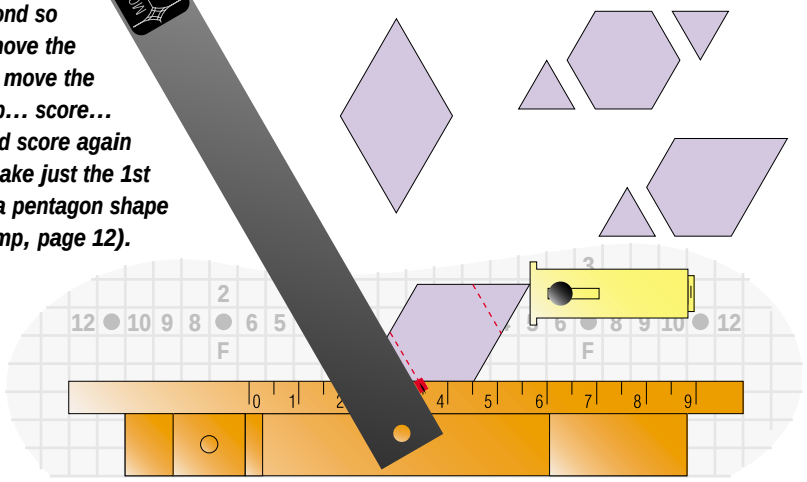
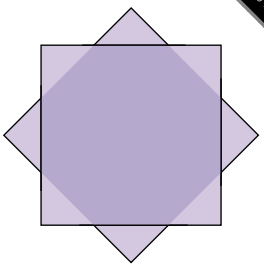
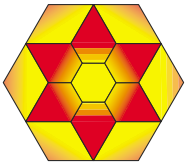
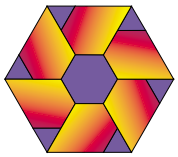


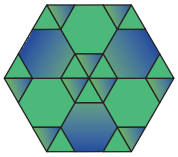
Fig. 21



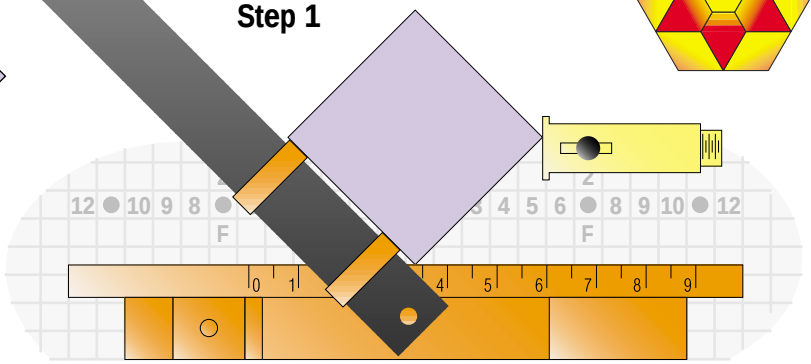


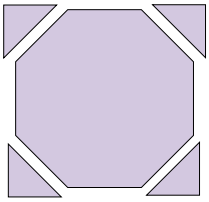






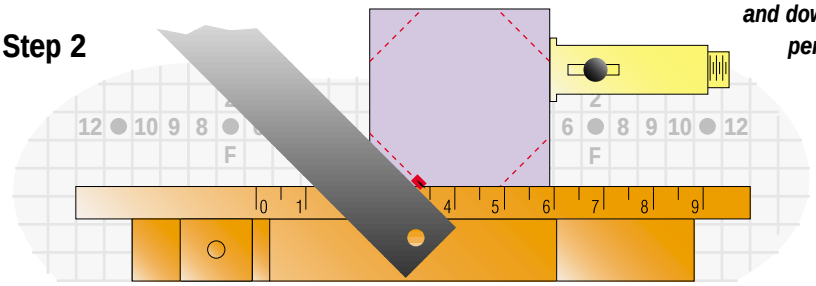
Step 1





Start with a square… in Step 1 you see two Cutter Gauges and this would be ideal if you choose to purchase a 2nd one… if you make the setting with one Cutter Gauge, move it up and down the Cutting Bar to get the square positioned perfect… set the Glass Stop as shown.

Step 2



Position the square as shown in Step 2… score and rotate the square to the next corner… score all four corners.

You will almost always get burrs … that's what grinders are for.

Mitered Borders

45°

Part Three

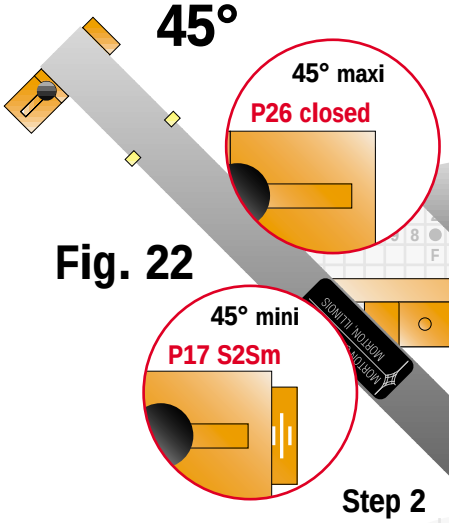
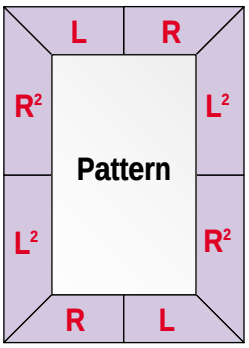
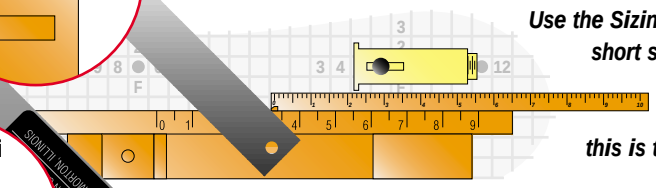


Fig. 22

A well designed border will have four corners that match… one left angle and one right angle per corner … make the 8 pieces from 4 strips… we will use this pattern and strip layout for the instruction.



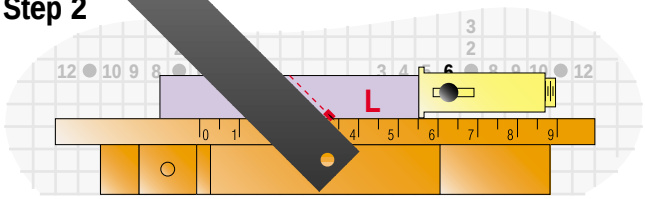
Step 1



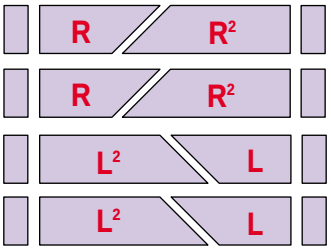
Use the Sizing Scale to measure the short side of "L" plus the long side of "L²" and add one inch for scrap… this is the length of the 4 strips.

Set the Glass Stop… the short side of "L" + ½" is the size. Score the two "L" strips… use Step 2… If you can score on both sides of the glass, skip Step 3a and go to Step 3b… When only one side can be scored, use Step 3a… skip 3b.

Step 2

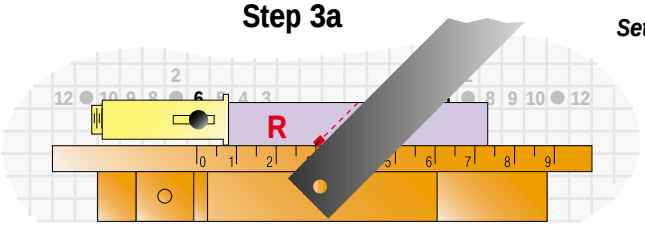


Strip Layout



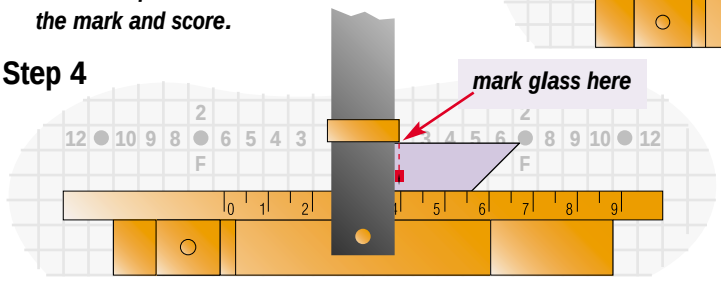
Burrs are always a problem with a 45° and the tip is not reliable as a locating point… many borders have additional rectangles between the corner pieces… leave sizing the 8 corner pieces until last… using your pattern, mark the length needed… use the 90° setup below… set to the mark and score.

Step 3a



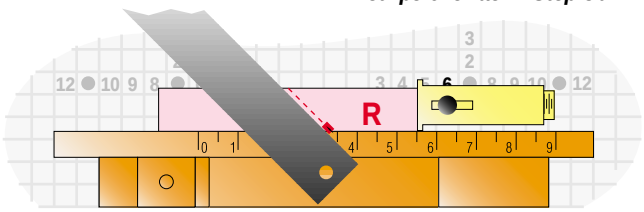
Set the right 45°… reverse the Glass Stop to the same but opposite square… score the two "R" glass strips.

Step 4



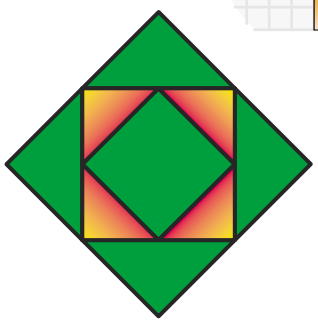
Step 3b

When either side can be scored… turn the "R" strips over as in Step 3b.

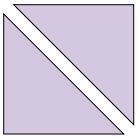


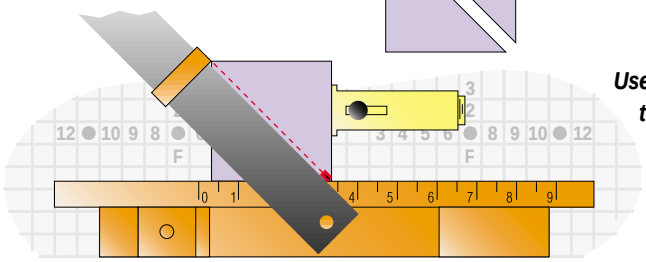
Triangles from Squares

45° / 45° / 90°



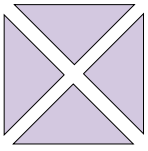
This triangle is made from a square to eliminate burrs… with a good point to point score and the Morton Runner, described on page B, you will have excellent results.

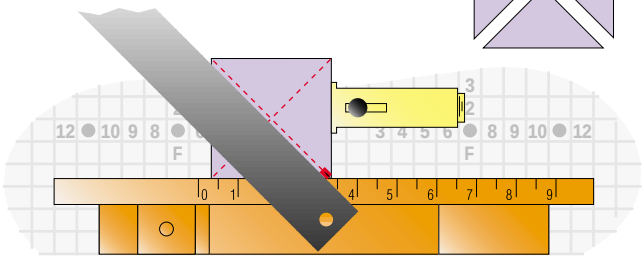




Use the Cutter Gauge to set the Glass Stop… you must start the score on the corner.

Rotate the square 90° after the 1st score… make a 2nd score… practice with window glass… the Morton Runner will increase your success with this kind of procedure.





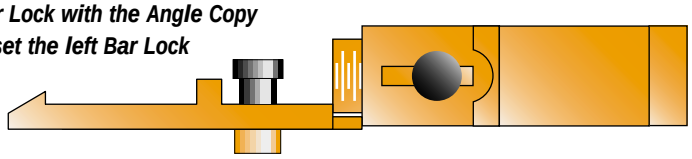
Portable Glass Shop

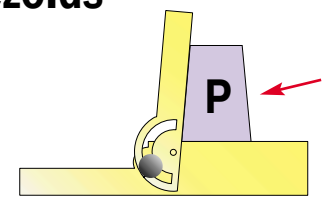
Trapezoids

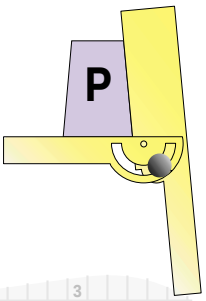
Part Four

Use when only one side of the glass can be scored

Set the right Bar Lock with the Angle Copy (see Step 1)… set the left Bar Lock by matching the scales… place the Bar Lock in opposite marked square.

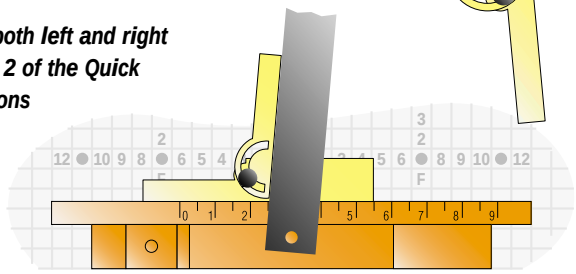






Step 1

Always check both left and right angles… page 2 of the Quick Angle instructions explains this in detail.



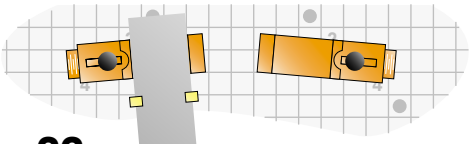
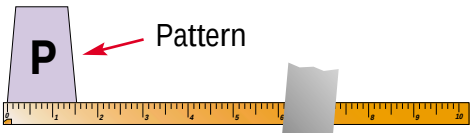
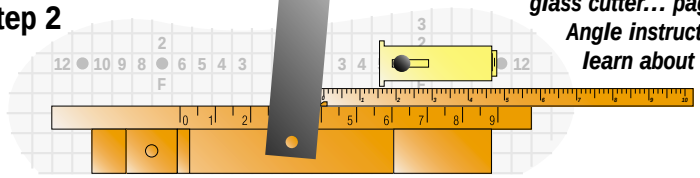


Fig. 23a



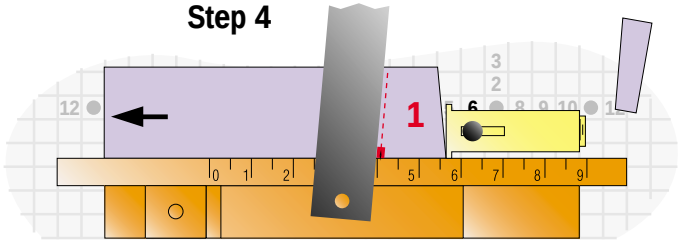
Step 2

The Sizing Scale will allow for the glass cutter… page 2 of the Quick Angle instructions will help you learn about this valuable tool.

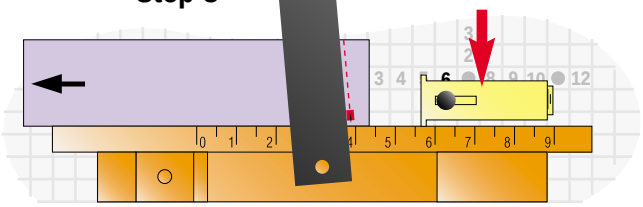


After setting the Glass Stop with Sizing Scale you must move the Glass Stop down one square.

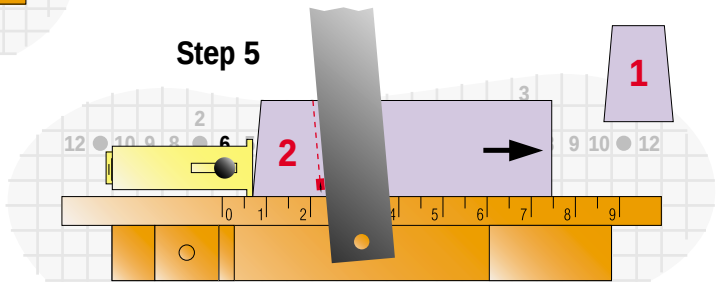
Step 4



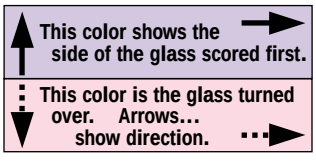
Step 3



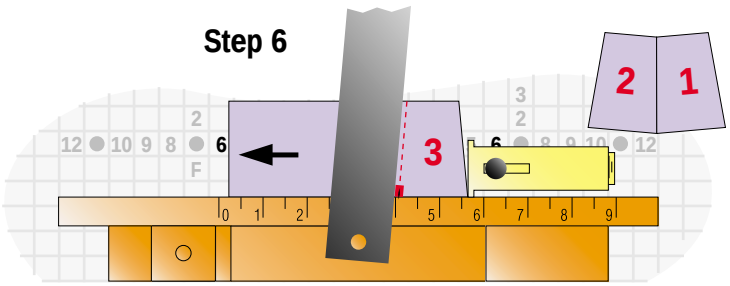
Step 5



After you remove the 1st trapezoid… turn the glass end for end… move the Bar to the right… use the surface numbers to reverse the Glass Stop to the left side… note the #6 above the knob in Step 4 and in Step 5.



Step 6



After you remove the 2nd trapezoid… turn the glass end for end… move the Bar to the left… reverse the Glass Stop to the right side.

Portable Glass Shop

Trapezoids

continued from page 9

Use when either side of the glass can be scored

Review **Step 1** *and* **Step 2** *on page 9… always set both angles… in this option you only use the left angle to start the strip… learn to set the 2nd Bar Lock with the scale matching method… it is fast and accurate.*

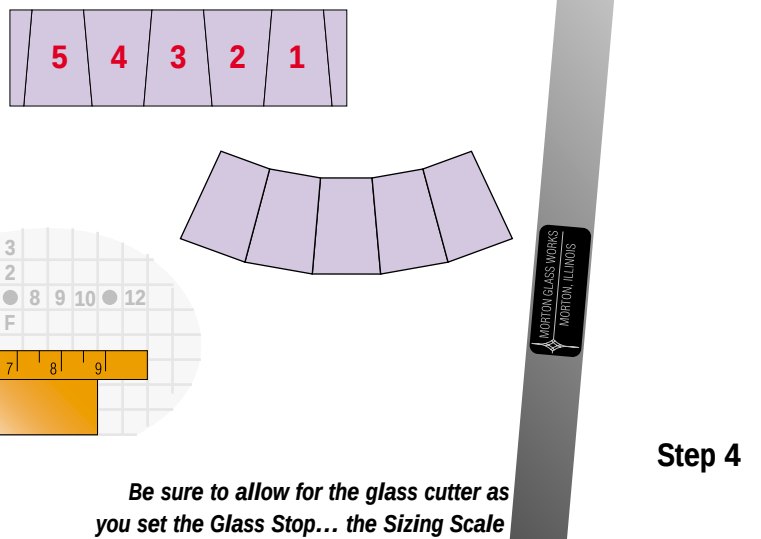
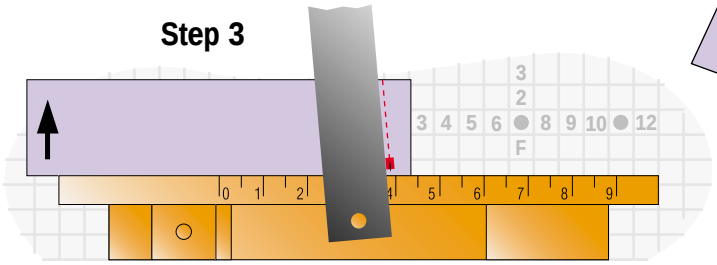


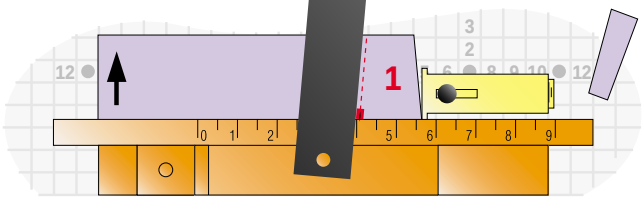
Fig. 23b

Step 3



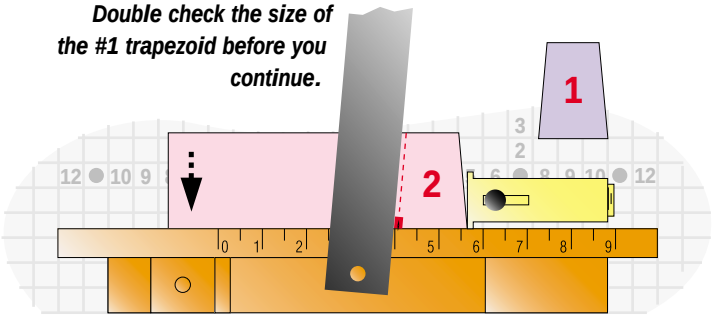
Step 4

Be sure to allow for the glass cutter as you set the Glass Stop… the Sizing Scale does this for you.



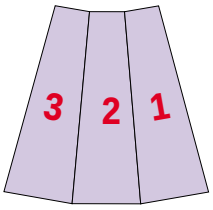
Step 5

Double check the size of the #1 trapezoid before you continue.

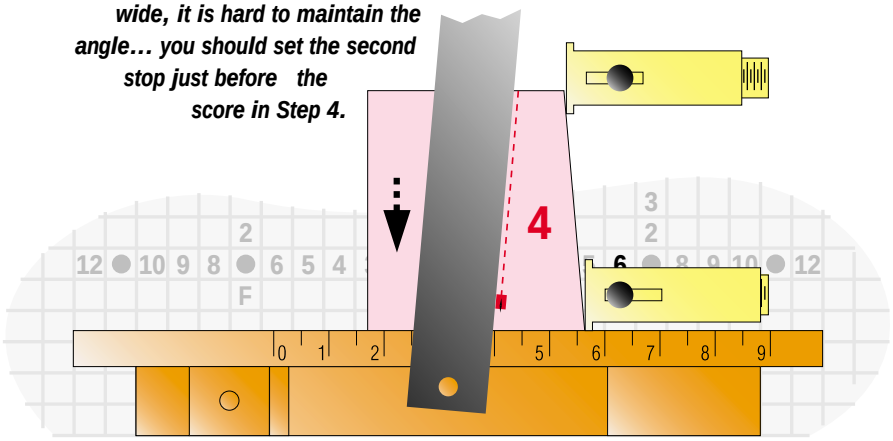


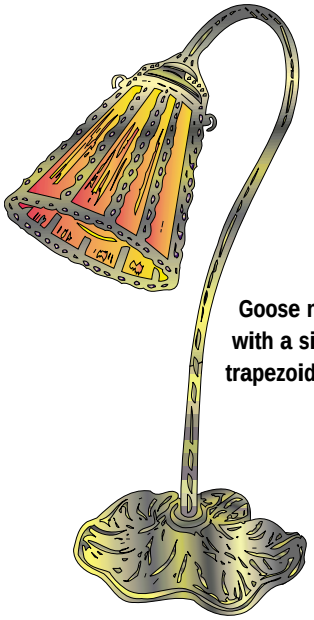
Taller Trapezoids

Fig. 24



As the strip becomes taller than it is wide, it is hard to maintain the angle… you should set the second stop just before the score in Step 4.



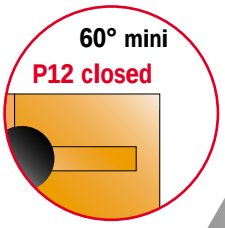


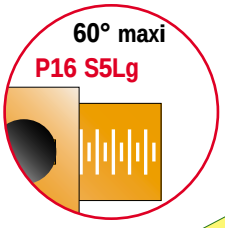
Goose neck lamp with a simple trapezoid shade.

This color shows the side of the glass scored first. →

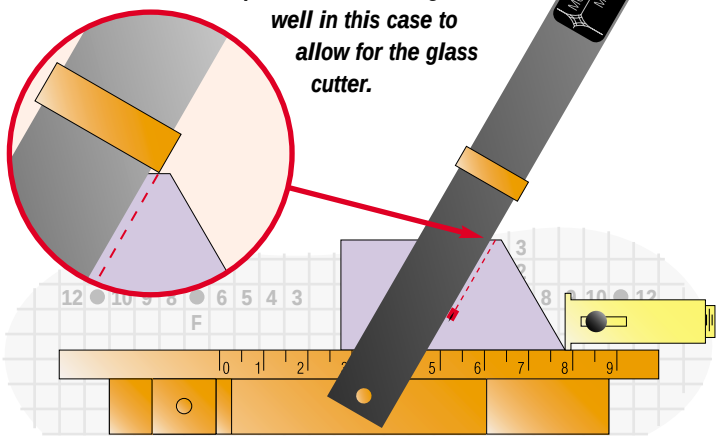
This color is the glass turned over. Arrows… show direction. ⋯→

Equal Triangle
60°
Fig. 25

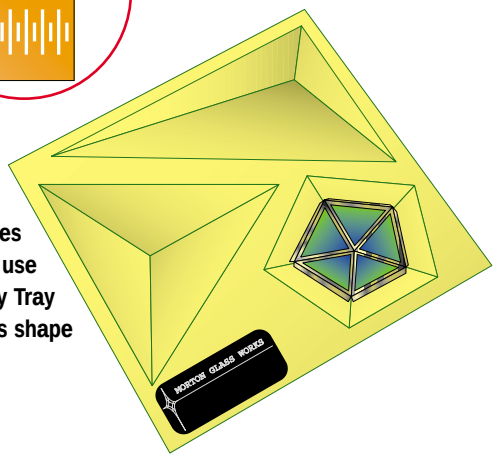




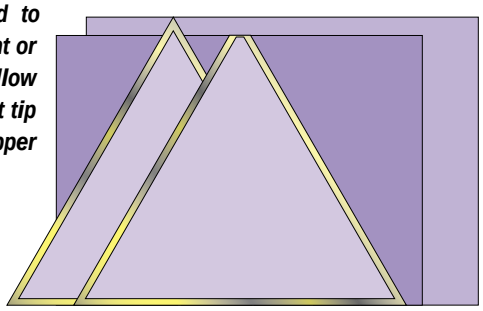
A problem with making the equal triangle is the top tip… if you setup for a perfect point you will lose the point and leave a burr on the strip… to eliminate this, make the triangle like a trapezoid with a very narrow top… the Cutter Gauge works well in this case to allow for the glass cutter.



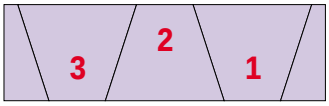
20 equal triangles make a ball… use the GS Assembly Tray to make this shape

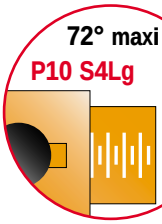


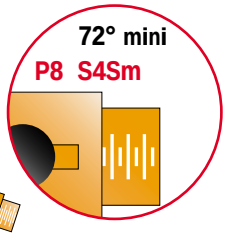
This diagram shows the strip widths used to make a blunt or full point… allow for the short tip with your copper



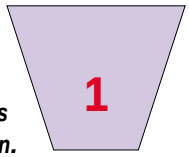
Pentagon
72°
Fig. 26





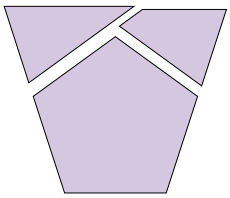


Make the pentagon by first making a variation of the trapezoid… it is important to make the trapezoids with the small end down.



The strip must be wider than the pentagon is tall… use the diagram on page 12 to determine strip width.

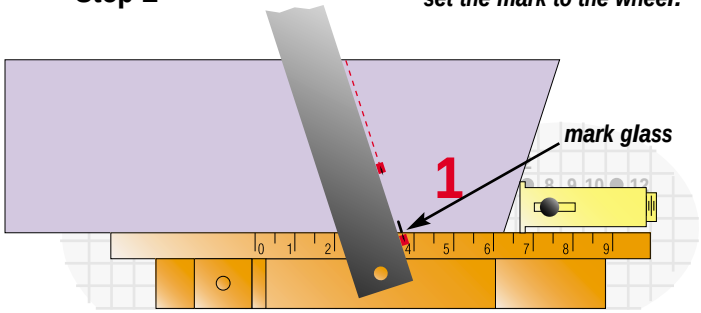
Step 3
on next page



Step 2 is where the pentagon will be sized… a small pentagon may require an optional setup… review both the pentagon diagram and the optional Step 2 shown on page 12. You must allow for the glass cutter and there is no easy method… mark glass at the bottom… use your cutter and set the mark to the wheel.

Step 1

Step 2



Pentagon 72°

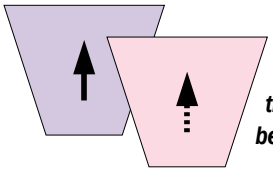
Part Four

Steps 1 and 2 on page 11

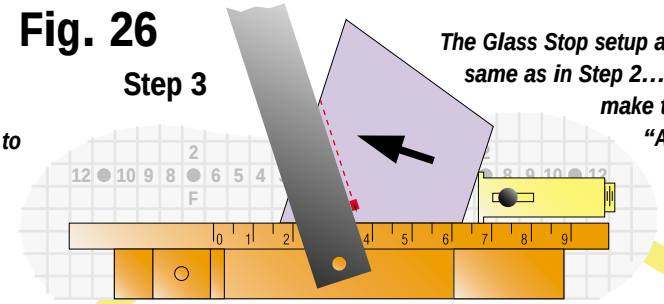
Fig. 26

Step 3

The Glass Stop setup and setting must be the same as in Step 2… position the trapezoid and make the 1st score… pick option "A" or "B" to continue.



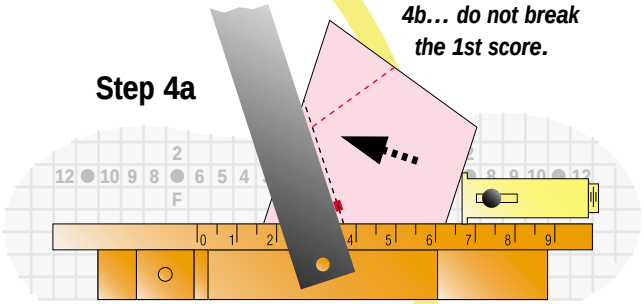
Add arrows to front and back of trapezoid before



Option A

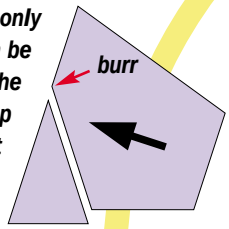
When either side can be scored, use option "A" … proceed to Step 4b… do not break the 1st score.

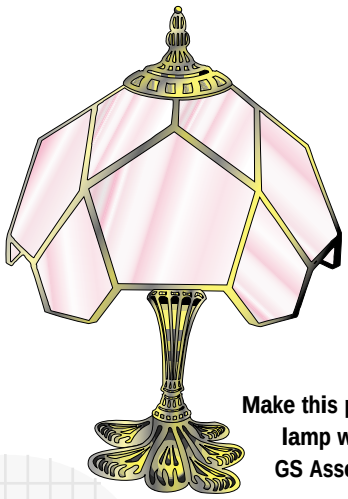
Step 4a



Option B

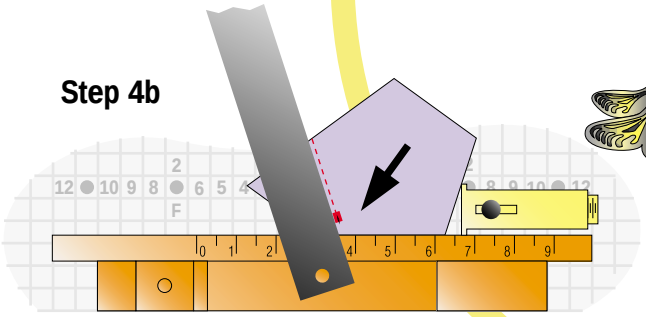
Option "B" is used only when one side can be scored… break the score made in Step 3… you must remove the burr before proceeding to Step 4b.



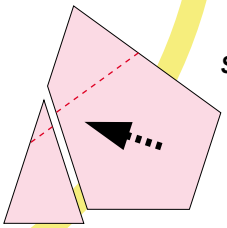


Make this pentagon lamp with the GS Assembly Tray

Step 4b

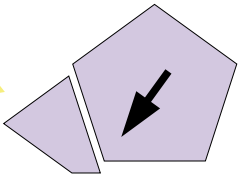


Break the score from Step 4b first.

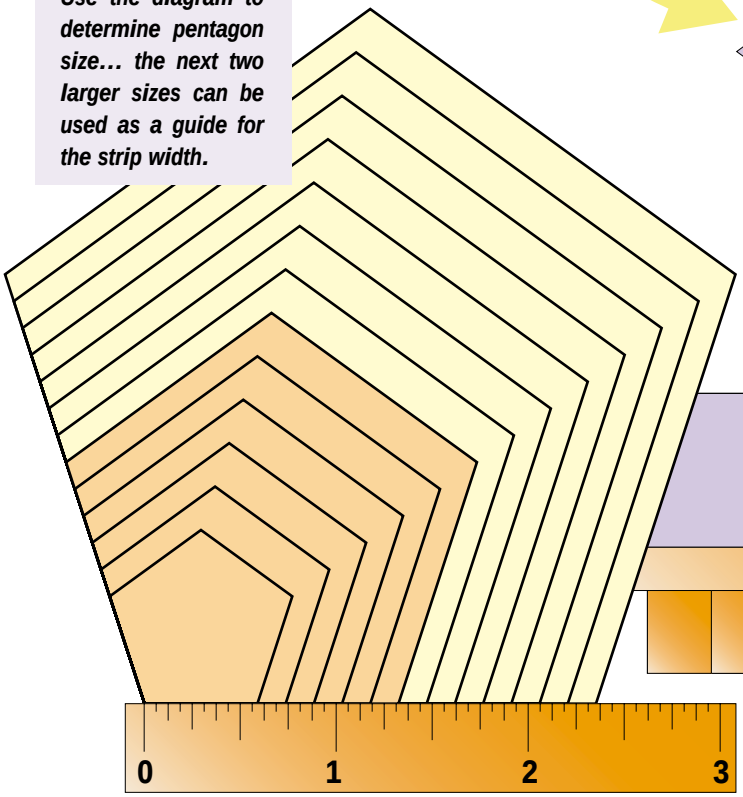


Complete the final score and break.

The final break is the Step 3 score… turn the scored side up and make the break.



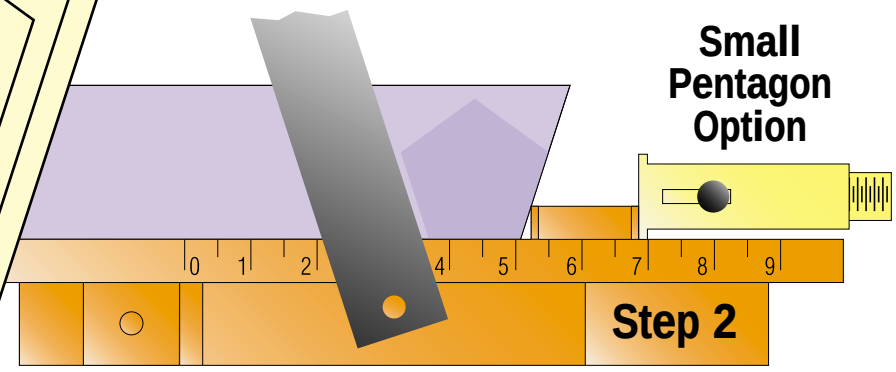
Use the diagram to determine pentagon size… the next two larger sizes can be used as a guide for the strip width.



This color shows the side of the glass scored first.

This color is the glass turned over. Arrows… show direction.

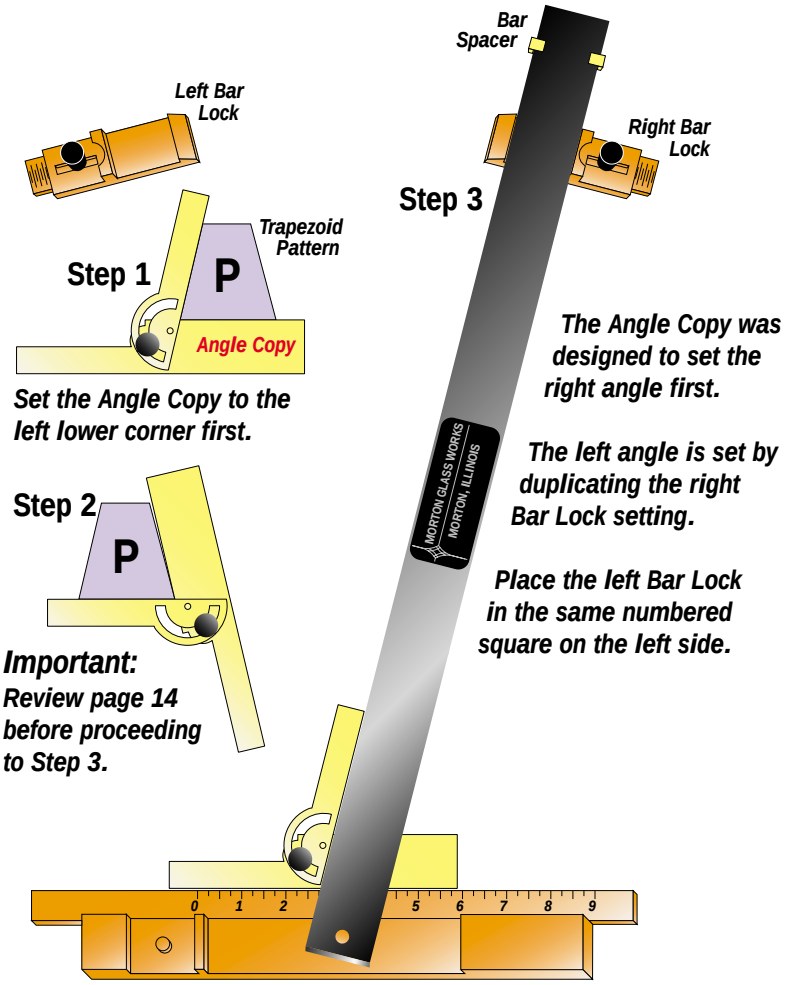
Small Pentagon Option



You must replace Step 2 on page 11 with this setup if your pentagon size is small… use your Cutter Gauge with the Glass Stop as shown. The orange pentagons in the diagram need this setup.

Angle Copy & Sizing Scale

Part Five



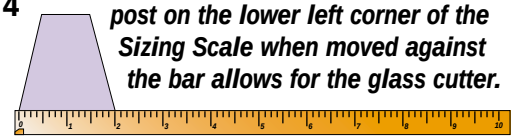
In **Step 3**, use the Angle Copy without the Bar Lock to determine the correct square for the Bar Lock. ***The correct square will be the first numbered or dotted square to the right of the Cutting Bar that is completely exposed.*** With the Bar Lock in the correct square... black knob loosened... use the Angle Copy to adjust the Cutting Bar to the correct angle... tighten the black knob.

Step 4, 5 and **6** will help you learn to use the Sizing Scale.

Page 14 is a tutorial... do it a few times you will know how to use the Angle Copy and the Sizing Scale.

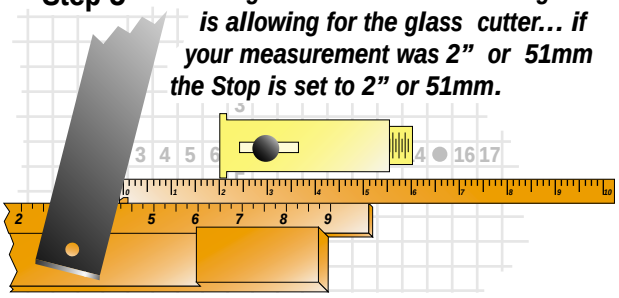
Step 4

Measure the base of the trapezoid... the post on the lower left corner of the Sizing Scale when moved against the bar allows for the glass cutter.



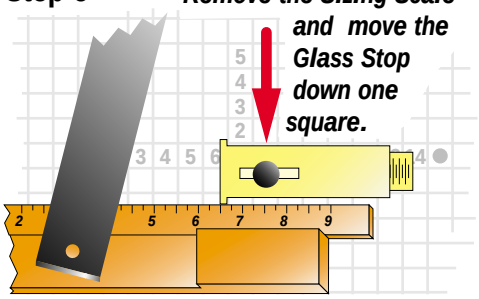
Step 5

Set the Glass Stop to the size needed and tighten the knob... the Sizing Scale is allowing for the glass cutter... if your measurement was 2" or 51mm the Stop is set to 2" or 51mm.



Step 6

Remove the Sizing Scale and move the Glass Stop down one square.



Patterns can be distorted... the Angle Copy will help you find and correct the angle... the Sizing Scale will help set the size and allow for the glass cutter.

Number your Mini Surface or Maxi Surface first *(See Part One, page C)*. Numbers on the left are the same as numbers on the right.

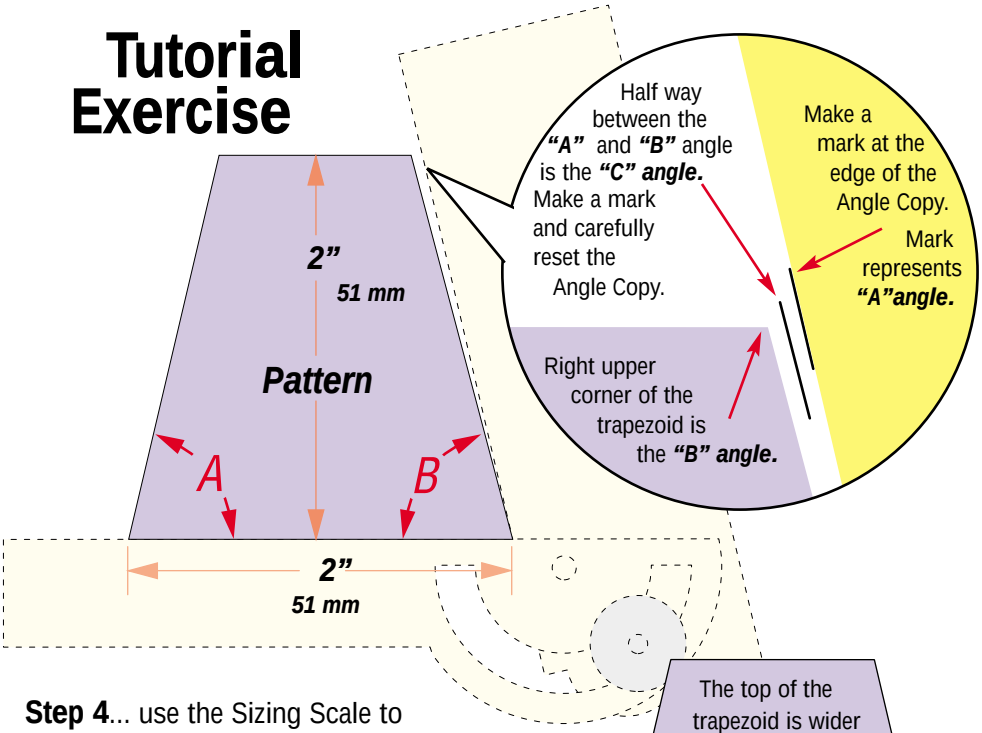
The Angle Copy and Sizing Scale set the angle and size on the right side first. Any angle or size can be easily transferred to the opposite side by duplicating the tail setting of the set Bar Lock or Glass Stop and placing it in a square with the same number or dot on the opposite side.

In **Step 1** the Angle Copy is matched to the baseline and the left side of the pattern... tighten the knob.

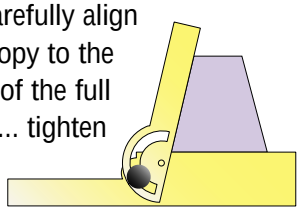
In **Step 2** *(without changing the setting from Step 1)* check the right lower corner... if it does not match the left corner you must correct the trapezoid angles before proceeding. ***Page 14 has detailed instructions on making the correction.***

Tutorial Exercise

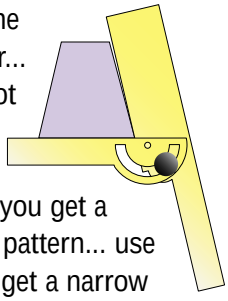
Get started by cutting one or two glass strips... you will need double strength window glass and your Glass Shop Instructions *(GSI)*.
Make 2" *(51 mm)* wide strips . *Use Part Two, pages 2 & 3, figs. 13, 14 and 15 as a guide for strip cutting.*



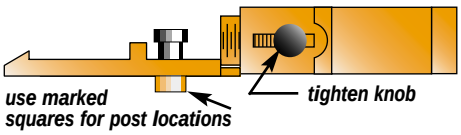
Step 1... carefully align the Angle Copy to the ***"A"*** corner of the full size pattern... tighten the black knob.



Step 2... rotate the Angle Copy to the ***"B"*** corner... do not change the setting... align the Angle Copy to the baseline and the ***"B"*** corner... the ***"B"*** angle is not the same as the ***"A"***angle. If you use the ***"A"*** angle you get a wider top than the pattern... use the ***"B"*** angle you get a narrow top *(see the three patterns on the right side of the page)*. The problem is the pattern... to make the correct size top with the Glass Shop you must change both angles... *(see the circle in upper right corner for directions on angle correction)*.

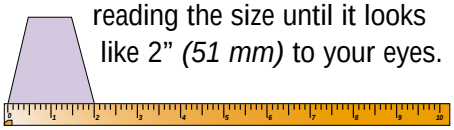


Step 3... the last step corrects both ***"A"*** and ***"B"*** to create a new ***"C"*** angle... use Step 3, page 13 to set the Glass Shop with the ***"C"*** angle *(review fig. 23a & fig.23b, GSI)*.

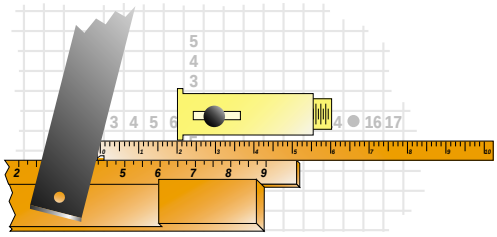


Once you have the right Bar Lock set you can duplicate the setting... butt the tail of the unset Bar Lock to the tail of the set Bar Lock... tighten the knob.

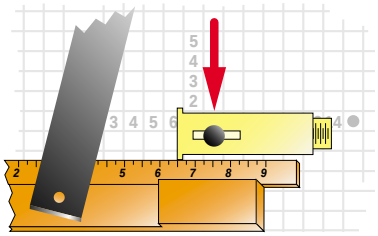
Step 4... use the Sizing Scale to measure the base of the pattern... the base measures 2" *(51 mm)*... practice reading the size until it looks like 2" *(51 mm)* to your eyes.



Step 5... use the Sizing Scale to set the Glass Stop to 2" *(51 mm)*... with practice your eyes will adjust to a small gap between the Stop and Scale.



Step 6... remove the Scale and move the Stop down one square.



Step 7... use *fig. 23, GSI* as a guide... make trapezoids with the ***"A"***, ***"B"*** and ***"C"*** angles and compare them to the examples on the right side.