

Engrave-A-Crete®



Mongoose X

Operating Manual

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Be sure to see more equipment, tools and products to make your
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Mongoose X™

Patents Pending!



Cut beautiful patterns and designs with little effort.

Cut faster and straighter.

Cut with great accuracy and create perfect circles, too!

A precision, compact decorative concrete engraving saw with a powerful electric motor.

Reduced Noise

Mongoose X is precision milled from solid blocks of 6061 aluminum.

Features include:

- ◆ Spring loaded head. Press down to cut. Let up and the blade pops out of the cut.
- ◆ Vacuum port makes dust-less cutting a pleasure. Connects to most standard shop vacs.
- ◆ Precision front and rear pointer flips up out of the way to cut closer to walls.
- ◆ Powerful 10,000 RPM, double-insulated motor. 120 V, 8 AMP.
- ◆ Cutting depth is adjustable on the fly with a turn of the screw.
- ◆ 3.100" x .125" Premium made in USA diamond blade is included.

Accessories



Mongoose X Diamond Concrete Engraving Blades

Item	Model #
3.1" x .090"	BL-31090

3.1" x .125"	BL-31125
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3.1" x .250"	BL-31250
--------------	----------

3.1" x .375"	BL-31375
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Center Pivot

Engrave perfect circles using the center pivot and connecting tubes. The unique base is machined out of rigid, non-marring plastic with cross hair sighting slots and mounting holes.

Model #: MG-505



Upright Handle

Allows for stand up operations
Model #: MGX-80



60" Connecting Tube

More stability when making larger circles. Use one tube for 10' diameter circles. Connect more tubes for larger diameters. Connects with 20" tubes. *Model #: MG-519*

20" Connecting Tube

Each connecting tube is 20" long and screws together to form extensions for any size circle you need to cut.

2 Connecting Tubes = 7' diameter circle
6 Connecting Tubes = 20' diameter circle
10 Connecting Tubes = 33' diameter circle
Model #: MG-502



Non-Marking Wheel Kit

Specifically designed for cutting overlays, micro-toppings and other surfaces which tend to mark easily. Sealed bearings. Set of 4.

Model #: MG-513

Additional Accessories

On/Off Switch for handle *Model #: MGX-86*

Laser Sight *Model #: MGX-91*

Laser Sight Bracket *Model #: MGX-92*

Spanner Wrench *Model #: MGX-93*

Wear Respiratory Protection

Wear Eye Protection

Wear Hearing Protection

Wear personal protective equipment appropriate to the tool and the material worked.

WARNING

General Product Safety Information

Read and understand this manual before operating this product. It is your responsibility to make this safety information is available to others that will operate this product.

Failure to observe the following warnings could result in injury.

SAVE THESE INSTRUCTIONS

WARNING:

MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

Always install, operate, inspect and maintain this product in accordance with all applicable standards and regulations (local, state, country, federal, etc.).

Always disconnect power supply before performing maintenance on the tool.

Keep work area clean, uncluttered, ventilated and illuminated.

Do not remove any labels. Replace any damaged label.

Product Safety Information

When Using the Tool:

Always wear eye protection when operating or performing maintenance.

Always wear hearing protection when operating this tool.

Always use personal protective equipment appropriate to the tool and the material worked. This may include dust mask or other breathing apparatus, safety glasses, ear plugs, gloves, apron, safety shoes, hard hat and other equipment.

Prevent exposure and breathing of harmful dust and particles created by power tool use. Some dust created by cutting, sawing, grinding, drilling, and other construction activities contains chemicals known to cause

cancer, birth defects or other reproductive harm. Some examples of these chemicals are: lead from lead based paints, crystalline silica from bricks and cement and other masonry products, and arsenic and chromium from chemically treated lumber. Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

Keep others (bystanders, children and visitors) a safe distance from your work area, or ensure they use appropriate Personal Protective Equipment.

This tool is not designed for working in explosive environments, including those caused by fumes and dust, or near flammable materials.

Be aware of buried, hidden or other hazards in your work environment. Do not contact or damage cords, conduits, pipes or hoses that may contain electrical wires, explosive gases or harmful liquids.

Keep hands away from cutting area and the blade. Keep all loose clothing, long hair and jewelry away from the tool.

Power tools can vibrate in use. Vibration, repetitive motions or uncomfortable positions may be harmful to your hands and arms. Stop using any tool if discomfort, tingling feeling or pain occurs. Seek medical advice before resuming use.

Product Safety Information, continued

Keep your body stance balanced and firm. Do not overreach when operating this tool.

Maintain a firm grip with both hands on the saw and position your body and arm to allow you to resist KICKBACK forces

Anticipate and be alert for sudden changes in motion, reaction torques, or forces during start up and operation.

The blade may briefly continue rotating after the motor is turned off. Allow the blade to come to a complete stop before picking up the tool.

Do not carry or drag the tool by the cord.

Do not use power tools when tired, or under the influence of medication, drugs, or alcohol.

Never use a damaged or malfunctioning tool or accessory.

Do not modify the tool, safety devices, or accessories.

Do not use this tool for purposes other than those recommended.

Do not use any blade whose maximum operating speed, as defined by its manufacturer, is less than the rated speed of the tool.

Inspect all diamond blades for chips or cracks prior to mounting. Do not use a blade that is chipped, cracked or otherwise damaged.

Inspect the arbor, threads & hub nuts for damage & wear prior to mounting a blade.

Make certain the diamond blade properly fits the spindle.. Do not use reducing bushings to adapt a blade to any arbor unless such bushings are supplied by and recommended by the blade manufacturer.

Ensure that the blade is correctly mounted and tightened before use.

Before starting this tool, the operator shall make sure that no one is in the plane of rotation.

Wear Personal Protective Equipment and remove flammable objects from the work area to ensure that sparks and debris do not create a

hazard when using this tool.

After mounting a diamond cutting blade, place the tool securely on its wheels on concrete or similar hard surface in a protected enclosure, run the motor for at least 90 seconds. Make certain no one is in front of or in line with the blade. Be aware that a blade may fail at this or any other time if it is defective, improperly mounted or the wrong size and speed. Stop immediately if considerable vibration or other defects are detected.

Do not use this tool on materials whose dust or fumes can cause a potentially explosive environment.

Make smooth blade contact with the surface and avoid any bumping action or excessive sudden pressure.

If the tool is dropped or bumped, disconnect the power supply and carefully examine the diamond blade. Discard it if damaged, chipped or cracked. Before reuse, run the tool in a protected enclosure following the same precautions used after first mounting the blade.

Do not use the tool without the blade guards and covers in place.

Blade guard opening must face toward the pavement and away from the operator.

Do not use other types of grinding wheels. Do not use wire wheels, cut-off wheels, composite or non-metallic-grinding wheels on this tool.

Always use blades with correct size and shape arbor holes. Blades that do not match the mounting hardware of the saw will run eccentrically causing loss of control.

The use of other than original manufacturers replacement parts may result in safety hazards, decreased tool performance and increased maintenance, and may invalidate all warranties.

Tool repairs and service should be performed only by qualified authorized trained personnel.

Product Safety Information, continued

The diamond blades used with all Engrave-A-Crete Engravers are made to run dry.

All blades supplied by Engrave-A-Crete have segments that are laser welded to the core.

Blades of unknown origin may have soldered on segments and are very dangerous to use when cutting dry.

Cutting dry has many advantages and has little effect on blade life.

Operate with a shop vacuum as a dust collector. (5 to 6 1/2 hp shop-vacs work well)

Tip: Make operations easier by adding on extra sections of vacuum hose. Also, install a Gortex® Clean Stream filter on the vacuum for better operation.



Mongoose X Operating Adjustments



Adjusting the depth of cut

Turn the depth limiting screw in or out depending on whether more or less depth of cut is desired.

Fig. 1



Turn the depth limiting screw clockwise to reduce cut depth.

Turn the depth limiting screw counter-clockwise to increase cut depth.

The depth limiting screw has 20 threads per inch.

5 Revolutions = $\frac{1}{4}$ inch = 0.250"

2 $\frac{1}{2}$ Revolutions = $\frac{1}{8}$ th inch = 0.125"

1 $\frac{1}{4}$ Revolutions = $\frac{1}{16}$ th inch = 0.0625"

1 Revolution = $\frac{1}{20}$ th inch = 0.050"

Fig. 2

Depth Limiting Assembly



Fig. 3

The depth limiting assembly should cause the blade to “hover” about 1/4th inch above the surface.

Adjustments are needed if the blade does not spring out of the cut properly or if it is difficult to hold the blade down in the cut

If an adjustment is required,

1. Disconnect the power supply before making repairs or adjustments
2. Make reference marks to indicate the current depth limiting assembly location.
3. Slightly loosen the two screws holding the assembly
4. Slide the assembly up or down as required.
5. Re-tighten the screws.
6. Be sure the blade completely disengages from the concrete when downward pressure is released.

Depth Limiting Assembly adjustment may be needed when installing a new blade.



Fig. 4

Checking pointer and sight alignment

Before each project check sight and pointer alignment.

On a stable surface, place the Mongoose X upside down.



Fig. 5



Fig. 6

Use a framing square to verify the alignment of the sight and pointers



Fig. 7



Fig. 8



Fig. 9

Check for Lateral Head Play:

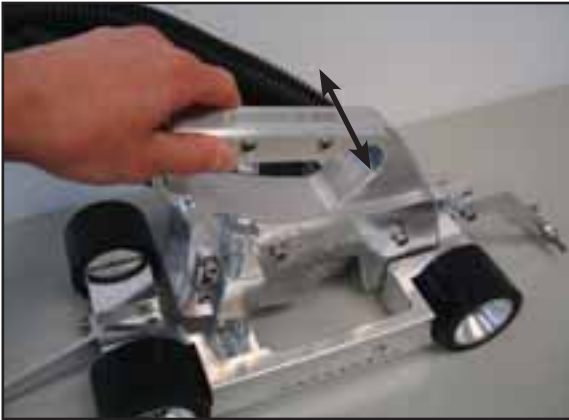


Fig. 10

Disconnect the power supply.

Feel for head play while pushing back and forth, sideways on handle

Adjusting for Lateral Head Play:

Should the ball bearing pivot hinge between the chassis and the blade guard assembly need tightening:

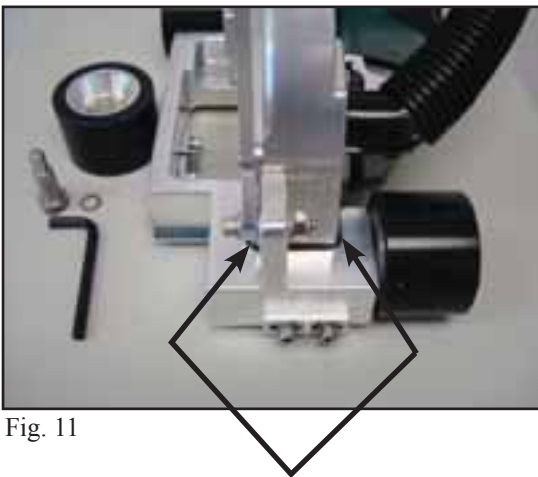


Fig. 11

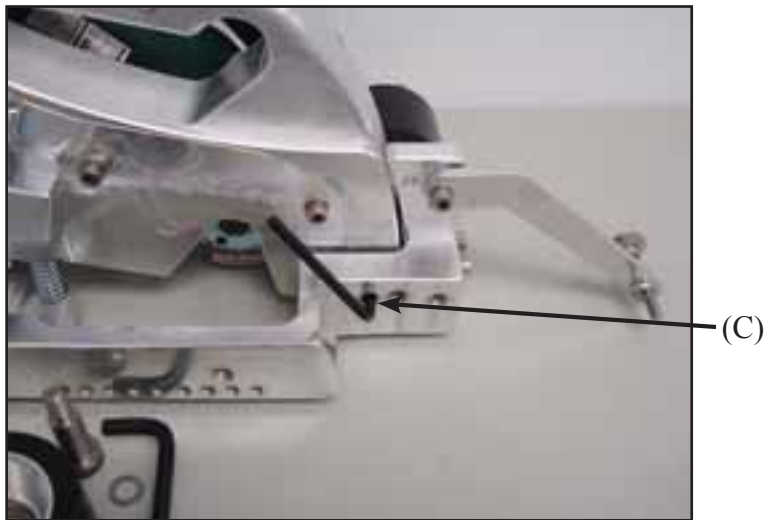


Fig. 12

Figure 11:

1. Visually determine that the guard assembly is centered between the mounting points on the chassis.

Figure 12:

2. If a gap difference is noted, remove the wheel on the side with the least gap.
3. Using a 3/16th inch hex key, tighten the screw (C) enough to remove the lateral play.
4. Note: The screws are assembled using blue Loctite so they will resist turning.
5. Reinstall the wheels.
6. Check that the blade hovers properly and the pivot hinge operates smoothly.

Chassis clearance adjustment.

The wheels may need to be elevated or lowered to:

- Keep the chassis from dragging on a rough surface.
- Adjustment to get complete blade life.
- Elevate the blade hover clearance.

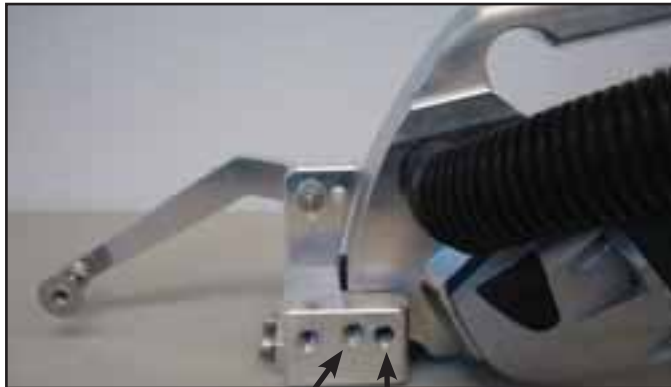


Fig. 13

Factory setting is in hole (A), which gives a 5/16" (8mm) ground clearance.

To lower the ground clearance, move the front wheels to hole (B).

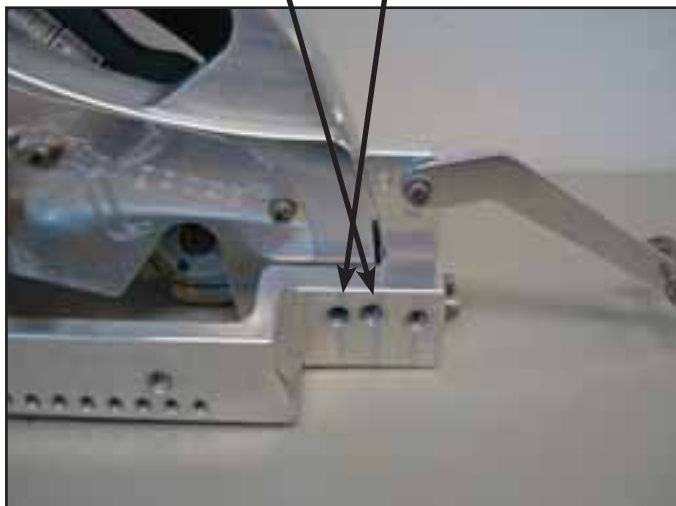


Fig. 14

Changing Blades

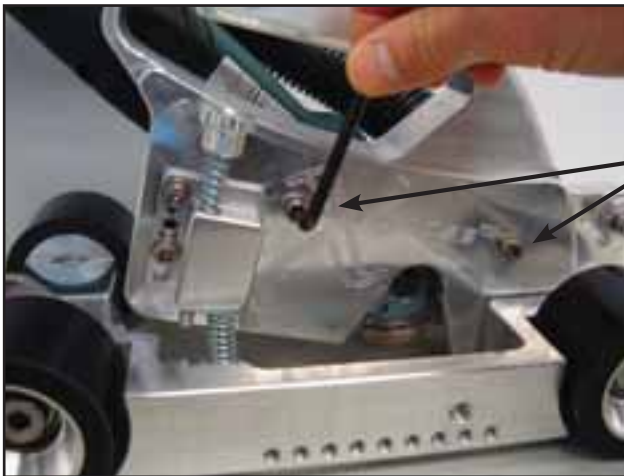


Fig. 15

Using the supplied 3/16" hex wrench remove the two screws holding the blade guard cover in place

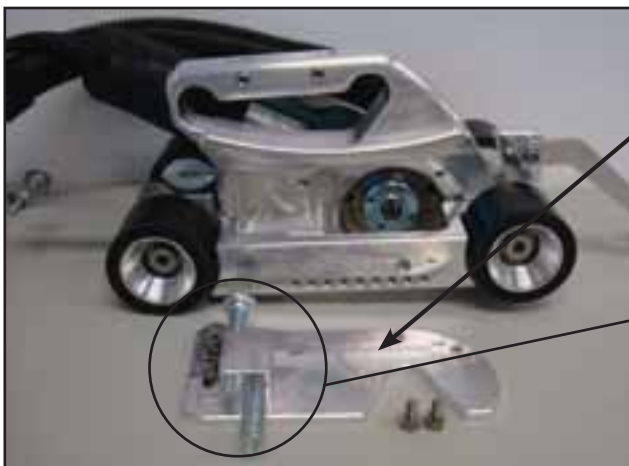


Fig. 16

Remove the blade guard cover.

Note: it is not necessary to remove the depth limiting assembly from the blade guard cover



Fig. 17



Fig. 18

While pressing the spindle lock button on the motor (Fig. 17) use the supplied spanner wrench to remove the hub nut. (Fig. 18)



Fig. 19



Fig. 20

When installing the new blade make sure the rotation direction of the blade matches the motor rotation. The arrow should be visible when installed correctly.



Fig. 21

Install the the hub nut with the raised flange facing outward.

Replace the blade guard cover and adjust the depth limiting assembly height as needed, refer to page 10. Check and adjust pointers and sights, refer to page 11.

Straight Line Cutting

1. Align the flip pointer plus the front and rear line-guides with the snap line.



Fig. 22



Fig. 23

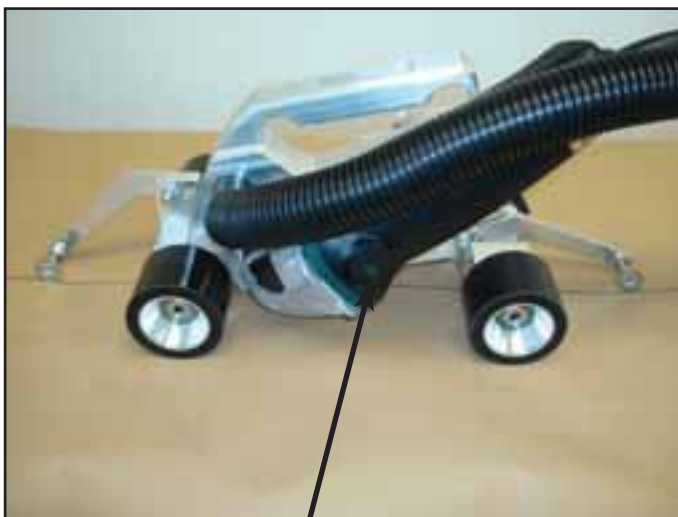


Fig. 24



Fig. 25

2. Switch the motor on.

3. Grasp a wheel to prevent a sudden reverse movement when initially engaging the blade with the surface.

4. Press down on the handle to cut.

Intersections: Coming and Going, Starting and Stopping.

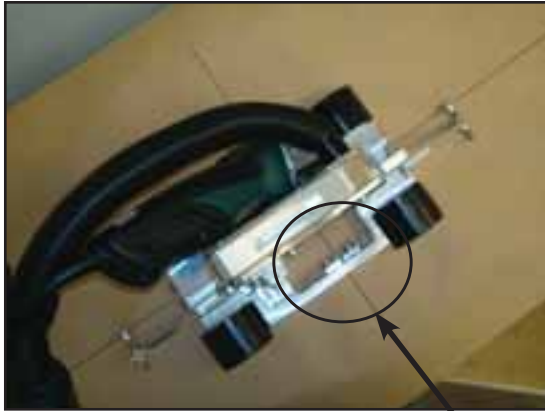


Fig. 26

The blade's front and aft cutting edges can be viewed thru the port in the blade guard. An operator can visually complete intersecting cuts or make accurate stops at designated points. When cutting the vertex of angles or cutting to an intersecting arc or circle, using the viewing port may be the quickest method. See Figure 28.

When cutting to an intersection at a right angle line it is always faster to use the side mounted line-guides.

The line-guides, attached to the inside of the chassis, indicate the rear and front cutting edges of the blade as it enters and exits the cut.



Fig. 27

Line-guide positioning may be inaccurate if:

- Cutting deeper than the lines-guides were set for
- Cutting shallower than the lines-guides were set for
- Blade diameter has reduced due to wear
- A new blade is installed



Fig. 28

Viewing port.

Tip: Make operations easier by adding on extra sections of vacuum hose. Also, install a Gortex[®] Clean Stream filter on the vacuum for better operation.

Geometry: Names of Angles

As the angle increases the name changes

- Acute Angle: an angle that is less than 90 degrees
- Right Angle: an angle that is 90 degrees exactly
- Obtuse Angle: an angle that is greater than 90 degrees but less than 180 degrees
- Reflex Angle: an angle that is greater than 180 degrees

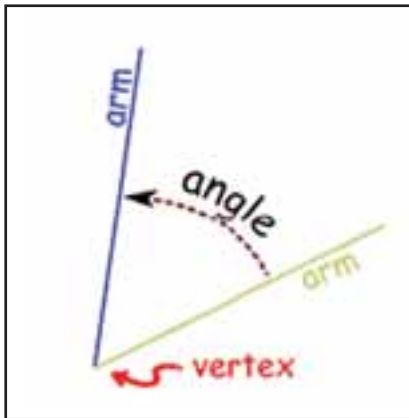


Fig. 29

Parts of an Angle

- The corner point of an angle is called the vertex
- The two straight sides are called arms
- The angle is the amount of turn between each arm.

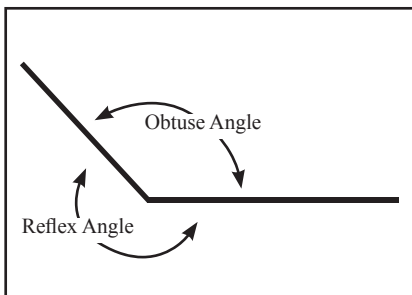


Fig. 30

Cutting Circles and Arcs

Assemble the connecting tube to the chassis using the upper hole.



Fig. 31



Fig. 32

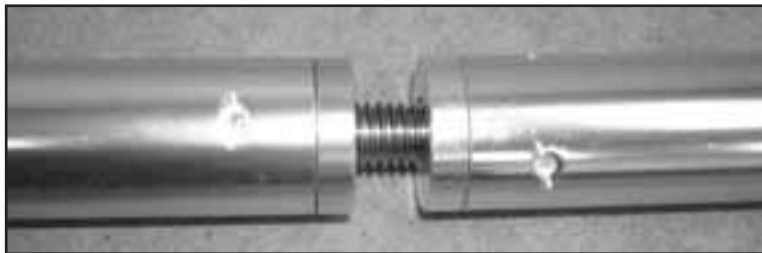


Fig. 33

Assemble enough connecting tubes for the desired radius.



Fig. 34

Slide the connecting tube into the center pivot.

Securely hand tighten the knobs. Slippage of this connection during cutting will result in an ugly circle.

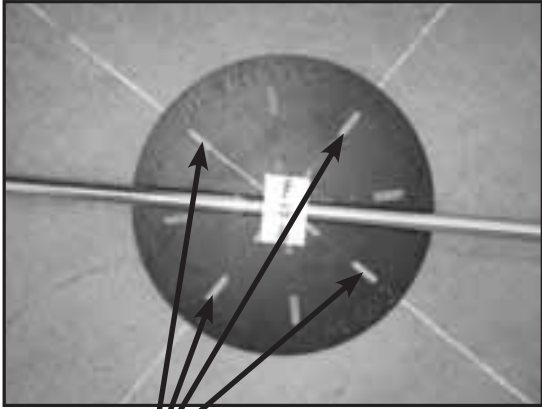


Fig. 35

View the chalk lines through these slots to align the pivot.

A lone operator can stand on the center pivot base and cut small circles.



Fig. 36

For larger circles have someone stand on the base or screw it in place as shown on the next page.



Fig. 37

Anchoring a Center Pivot in Place



Fig. 38

Screw It Down

For large circles or arcs, large number of concentric circles, or anytime the circle may need to be re-cut at a later date, use concrete screws to anchor the pivot in place.

The Concrete Anchoring Kit (Part # ME-301) available from Engrave-A-Crete makes this quick and easy work

Through the hole in the base, drill the concrete.



Slide the screw driver sleeve over the drill bit and insert the screw.

Concrete Anchoring Kit from Engrave-A-Crete (Part # ME-301)



Fig. 39



Fig. 40

Use two screws to anchor the base.

If it will be necessary to chase the cut later, scratch a directional mark on the base for exact relocation.

Reattach the pivot using the same base holes with the directional mark pointing in the correct direction.

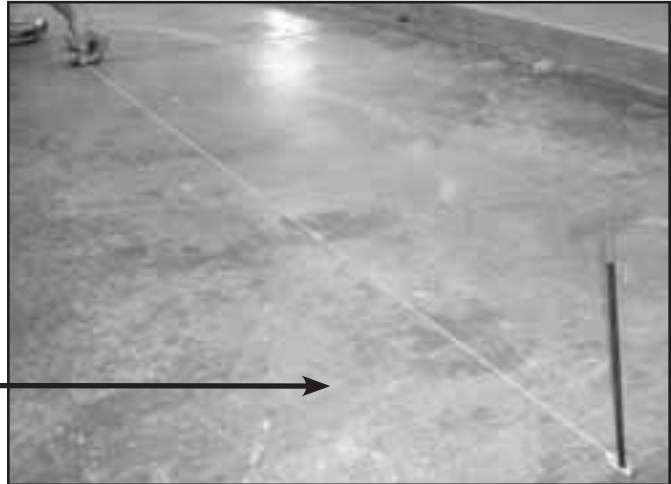
Securely hand tighten the pivot knobs. Slippage of this connection during cutting will result in an ugly circle.

Snapping Chalk Lines Single Handed



For border layout, measure and mark the corners of the borders then drill a hole at the point of the intersecting sides.

Hook the end of the chalk line with a nail or the 3/16" hex T-handle in the hole and snap a line.



Chalk lines often disappear when applying differing colors side by side. Drilled corner holes are helpful in relocating the lines.

Note: Drilled holes can be filled with a concrete patch material or simply left open



Fig. 43

Tips, Tricks, & Troubleshooting

- Tip:** Make operations easier by adding on extra sections of vacuum hose. Also, install a Gortex[®] Clean Stream filter on the vacuum for better operation.
- Tip:** The pointers and line-guides should be checked if:
It's the first cut of the day.
The tool was accidentally kicked or bumped.
The blade was changed.
- Tip:** Drilled anchor holes in the concrete can be filled with a concrete patch material or just left.
- Tip:** It is a good idea to snap all lines prior to cutting. This allows you to check that the layout is visually pleasing.
- Tip:** When cutting free form curves, start on a straight line that leads into a curve. It makes alignment much easier.
- Tip:** To draw a line parallel to the edge of a slab, a handy tool is the trammel point/edge parallel marker produced by Engrave-A-Crete. (*Part #ME-406*)
- Tip:** If a screw will not seat to the base plate when anchoring the center pivot:
The hole is not deep enough.
Debris is remaining in the hole, or.
The drill bit is worn from drilling too many holes.
- Tip:** Mark the center pivot base with an arrow pointing to a screw hole. Always anchor the center pivot starting with that hole first. Also, keep a mental or written note of the direction this arrow is pointing. This will allow you to exactly reposition the center pivot if it is necessary to remove it before the engraving operations are completed.
- Tip:** Hoses and cords dragging behind will make it difficult to maintain straight cuts. When cutting straight lines, have a helper control the vacuum hose and extension cords. If assistance is not available, place vacuum hose and extension cord over your shoulder.
- Tip:** Smile at those who pass by your jobsite! They may be your next customer!

Diamond Blade MSDS

MATERIAL SAFETY DATA SHEET Diamond Blade MSDS

SECTION I

Product Identification and General Information

Product Name: Metal Bond for Diamond Segments

Product Class: Diamond Segmented Saw Blades

HMIS Codes: Health: 0

Flammability: 0

Reactivity: 0

Date Prepared: 1/20/2011

24 Hour Emergency Assistance

Chemtrec: 1-800-424-9300

SECTION II

<u>Hazardous Ingredients</u>		<u>CAS#</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Cobalt	50-100%	7440-48-4	0.1	0.1
Copper/Tin (Bronze)	50-100%	7440-50-8	1	1
Chromium	5-15%	7440-47-3	1	0.5
Manganese	-1%	7439-96-5	C5	C5
Molybdenum	5-20%	7439-98-7	15	10
Nickel	5-25%	7440-02-0	1	1
Tungsten	10-30%	7440-33-7	-	5,S10

SECTION III

Physical Data

Boiling Point: N/A

Solubility in Water: 0

Vapor Pressure N/A

Evaporation Rate: 0

Vapor Density: N/A

Appearance: Grey or gold appearance (solid metal)

Specific Gravity: Varies 6-14G/CM³

Odor: 0

Percent Volatiles: 0

Melting Point: 800° C

Solubility in Other Solvent: Will dissolve in strong acids

SECTION IV

Fire and Explosion Hazard Data

Flash Point: N/A

Flammable Limits: N/A

LEL: N/A

UEL: N/A

Extinguishing media: Non-Flammable.

Hazardous Combustion Products: N/A

Special Fire Fighting Procedures: N/A

Breathing N/A

Fire and Explosion Hazards: N/A.

SECTION V

Reactivity Data

Stability: Highly Stable

Hazardous Polymerization: Will not occur

Incompatibility: No known "conditions or materials to avoid".

SECTION VI

Health Hazard Data

Primary Route of Entry: During cutting

Eye Contact: Dust may irritate eyes.

Skin Contact: Some may experience skin irritation from dust

Inhalation: Active: Coughing, shortness of breath Chronic: Affects breathing capacity

Ingestion: No evidence of adverse effects.

Chronic Overexposure: Cutting may create elevated sound levels which may affect hearing

SECTION VII

First Aid

Eyes: Flush eyes with water. Obtain medical assistance.

Skin: Wash skin with soap and water.

Ingestion: No known adverse effects but ingestion not recommended.

Inhalation: Remove to fresh air. Artificial respiration as needed.

SECTION VIII

Special Protection Information

Respiratory Protection: As needed, approved dust respirators. See OSHA 29CFR1910.134

Ventilation: General mechanical room ventilation is adequate.

Eye Protection: Use safety glasses. See OSHA 29CFR1910.133

SECTION IX

Spill or Leak Procedures: N/A

SECTION X

Shipping Data

D.O.T. Shipping Name: Diamond Segmented Saw Blade

Technical Shipping Name Diamond Segmented Saw Blade

D.O.T. Hazard Class: Not Regulated

UN/NA Number: N/A

Reportable Quantity: None

D.O.T. Labels Required: None

N/A = Not Applicable, N/E = Not Established, N/D = No Data, N/R = Not Required

Glossary of Terms

Arcuate- a cut that bends or curves like a bow or an arch.

Groove- a long, narrow cut, kerf or indentation in a surface formed there by some means.

Long cut- a continuous cut or groove. May be arcuate, straight, serpentine or any combination.

Short cut- any cut or groove beginning and/or ending between long cuts.

Engraving- 1: the art of forming designs by cutting.
2. a series of cuts, grooves, and kerfs forming a pattern.
3. to chase letters, designs, etc. on a hard surface.

Embossed Pattern- 1: to raise or represent surface designs in relief.
2: to remove cured concrete from around an area to represent a raised design or pattern.

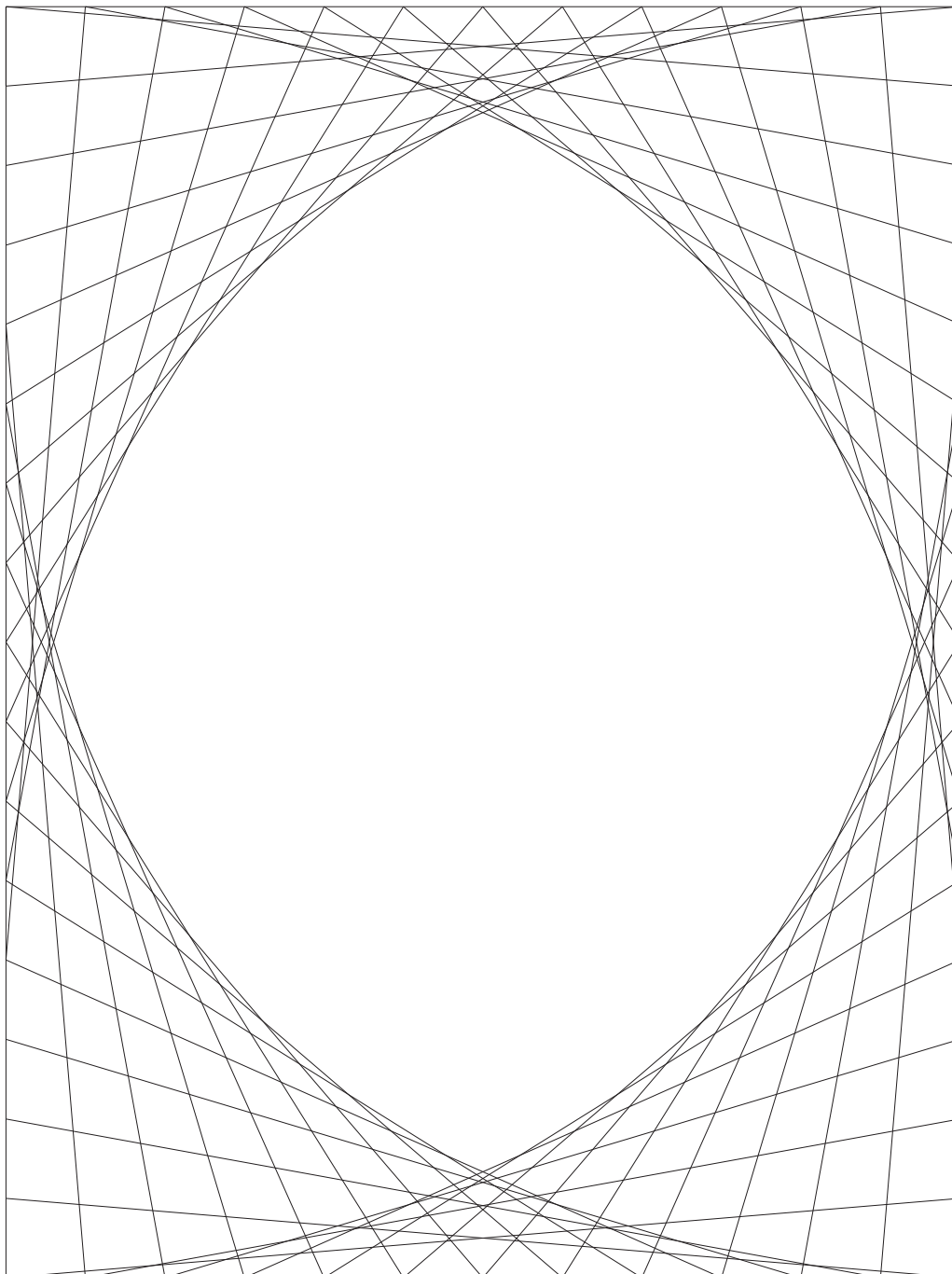
Tracked cutting- a method of mechanically controlling a concrete cutting device to produce specific patterns in a concrete surface.

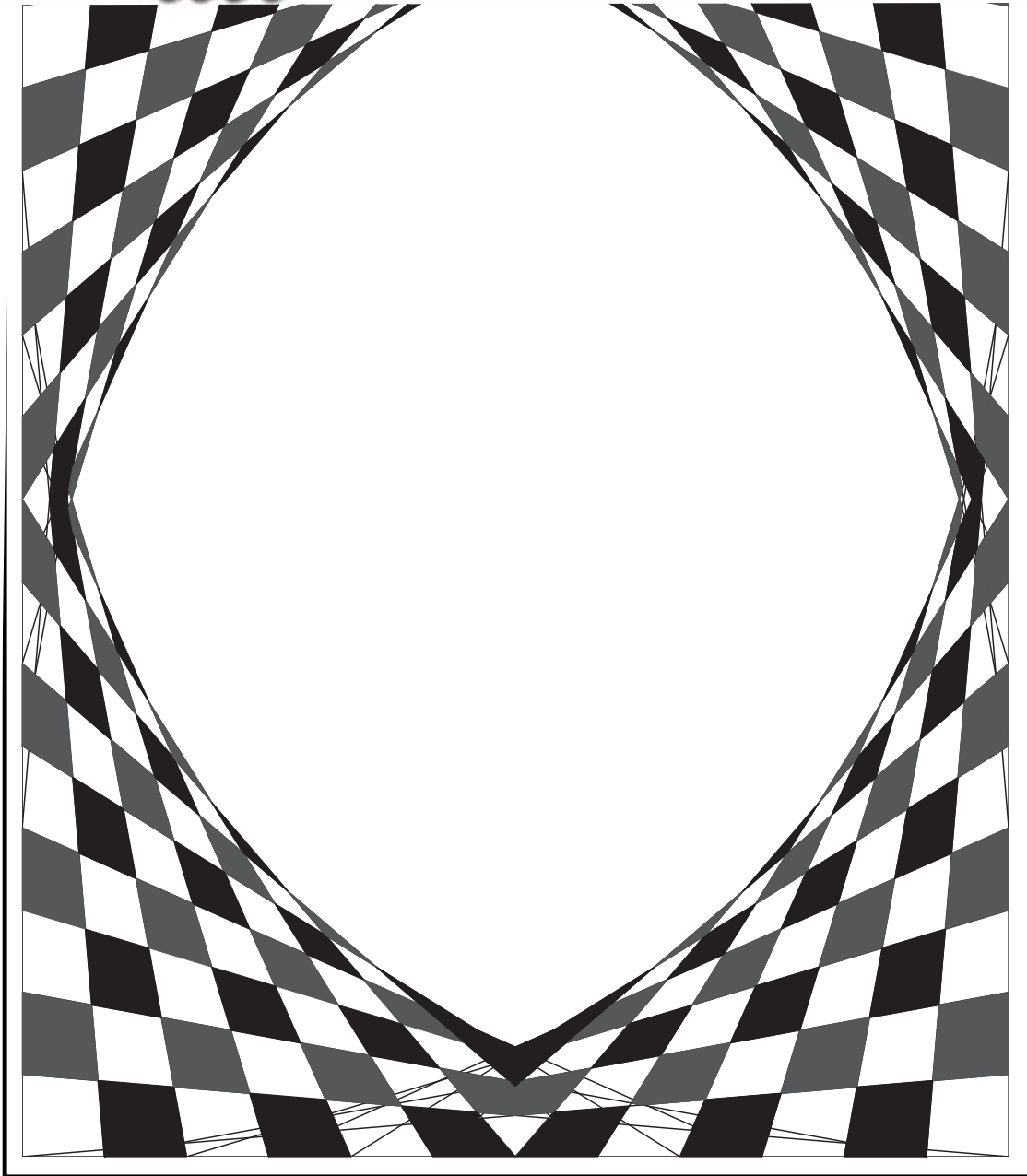
Track free cutting- a method of manually controlling a wheeled concrete engraving tool to produce patterns in a concrete surface

Free hand cutting- a method using cutting tools like the Wasp[™] to produce artistic patterns or designs in a concrete surface.

Engrave-A-Crete System- generally described as a process producing standard building product (brick, tile, cobblestone) patterns in cured concrete using diamond saw blades with or without tracking devices.

Sample Design Ideas





Note: This pattern is constructed of all straight lines.

