STAR DIAMOND INDUSTRIES

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DIAMOND BLADE OPERATING INSTRUCTIONS
(Based on American 'Star-Diamond' instructions as supplied with their blades.)

We believe you have purchased one of the finest blades, manufactured in the world. Your blade has been individually tensioned to run true at the proper operating speed and conditions. In addition, your blade has been thoroughly tested and is ready for use. However, like any precision tool, proper care is essential in achieving satisfactory cutting and long life. May we suggest a few minutes be taken to read the following suggestions.

1. INSTALLATION: BEFORE installing new blade.

A. Shaft of your machine should be checked for looseness that may indicate worn bearings. Replace with new bearings to avoid blade pounding that causes uneven and rapid wear. Also, check diameter of shaft to make certain that it is not worn. Blade should fit snugly.

B. A pair of the same size flanges or collars with proper relief should be approximately 1/4 of the diameter of the blades. Collars must be free of rust and dirt. Your blade should turn perfectly true after collar nut is tightened.

C. Carriage alignment: For slabbing, accurate table alignment with blade is essential. Carriage must move parallel with the blade to prevent bending of the blade.

D. Speeds: The same blade speed may be used for all work. Most lapidary materials such as agate can be most satisfactorily cut at a peripheral speed of approximately 3,150 surface feet per minute (S.F.P.M.). To obtain 3,150 S.F.P.M. simply divide 12,000 by the diameter of your blade, the result will be your shaft speed. Thin blades for faceting (0.10" and .012" in thickness) will perform more satisfactorily at higher speeds of 4,500 to 6,000 S.F.P.M. This would mean running 6" diameter thin blades from 2,700 R.P.M. to 36,000 R.P.M.

2. COOLANTS:

A. Never run a diamond blade dry. It can immediately damage your blade.

Coolant does three things:

1. Keeps the blade cool. Coolant temperatures should be below 100 °F. to avoid expansion of the blade centre that will cause the blade to flutter or vibrate.

2. Cleanses cut of abrasive particles.

3. Provides lubrication when slabbing or cutting large pieces. Water soluble oil, which is only a rust inhibitor, is generally not satisfactory for slabbing. However, it may sometimes be used for trimming - though a film may form over the actual diamond grit and must be cleansed.

B. Best Coolants are:

1 .Commercial cutting oils such as: Shell Oil Company Pelia Oil 21 or the Texas Company Aimag (use undiluted). Other major oil companies provide similar products.

2. An unacceptable coolant is Kerosene (or deodorized spray base) and light machine oil in a mixture of two to three parts of Kerosene to one part of machine oil.
CAUTION - Kerosene is inflammable: the commercial light cutting oils listed are recommended.

3. Water is not recommended - it does not lubricate.

C. Coolant must be kept clean. Sludge should be removed periodically and replaced with fresh coolant so that your cut will be clean.

3. OPERATING HINTS:

A. Cutting:
Feed material slowly into the blade so that the blade does not lead off. NEVER FORCE A DIAMOND BLADE.
Using excessive pressure can cause your blade to bend or "dish". In addition, the rate of feed should never be so great that the blade slows down. When slabbing with a weight feed saw, be careful in starting a cut in a rock. Weight should be removed near the last 1/2" of cut. Finish feeding by hand to avoid breaking out of material.

B. Sharpening:
If you are slabbing at too low an R.P.M. speed, your blade can become "charged". In addition, any diamond blade my occasionally require "dressing" to remove surplus metal and expose new diamond particles. Simply make four or five cuts through an old 220 grit silicon carbide lapidary grinding wheel stub, or abrasive 'dressing stick', using coolant as usual. Brick or sandstone will work as an alternative but is not recommended as it has a tendency to be too abrasive causing unnecessary wear of the diamond particles.

C. CAUTIONS:
Never cut with a damaged blade ... one that is dished, bent, flutters or is not running true. Continued use could possibly damage the diamonds, pull the matrix out and/or excessively wear your blade.

D. Reversing:
Unlike some blades, a Star Diamond Blade can be reversed. To insure even wear of the cutting edge, reverse your diamond blade occasionally (about three or four times during its life). Simply remove and replace the blade so that it cuts in the opposite direction. The rim of a diamond blade is slightly wider than the core. This side clearance is similar to the "set" in wood saw. Your blade will bind and no longer cut if this edge is worn off one side.

E. Uneven Cuts
If your blade has tendency to pull to one side making uneven cuts - reverse the blade. After you have reversed the blade and the cut is off as before the problem could be the vise alignment. However if, after reversing, the blade cuts to the opposite side it is the fault of blade. Using it in this condition will cause the blade to wear out prematurely.

F.Stone Size
A primary source of damage is attempting to cut too large a rock. (Maximum rock size should be 3/8 of the blade diameter).

G. Protection:
NOTE: Wear glasses when cutting protect your eyes from coolant splash or abrasive rock chips.