

## DIAMOND BLADE SAFETY

All diamond blade manufacturers are very concerned that their products are used safely. Please follow the Do's and Don'ts listed below for use of diamond saw blades. This material is taken from the Diamond Wheel Manufacturer's Institute published pamphlet on correct use of diamond blades and is intended to prevent the hazardous operation of diamond saw blades.

### Wet Cutting Do's

1. Do follow the manufacturers recommended blade specifications for material being cut
2. Do inspect the diamond blade for damage that may have occurred during shipment or due to previous use.
3. Do check mounting flanges for equal diameter, excess wear or flatness. Mounting flanges must have adequate relief around the arbor.
4. Do be sure that the diamond saw blade is mounted on a correct diameter blade shaft between proper blades flanges and is securely hand-tightened with a wrench.
5. Do check the saw for proper operating conditions:
  - A. All fluids are at proper level.
  - B. Blade shaft bearing should be free of end and radial Play.
  - C. V-belts should be properly tensioned and pulleys checked for excessive wear.
  - D. Lead off adjustment is set correctly, to allow the blades to travel straight.
  - E. Do operate with blade guard in place and properly secured.
6. Do be sure there is a continuous water flow to each side of the blade. Gravity feed does not supply a sufficient water flow. The water pumps on concrete saws are "booster" pumps only and are not adequate as a primary pressure source. An adequate coolant supply is required for wet cutting blades to maintain blade life and cutting efficiency.
7. DO FOLLOW THE MANUFACTURER'S RECOM-MENDED PULLEY SIZES AND OPERATING SPEEDS. FOR SPECIFIC BLADE DIAMETERS, REFER TO MANUFACTURER'S OPERATING MANUAL.
8. Do operate saw with proper safety attire, i.e. safety glasses, safety helmet, safety shoes, hearing protection.
9. Do examine blade periodically for cracks in the steel center or segments, or excessive wear under the segments.

### Wet Cutting Don'ts

1. Don't use a diamond blade without checking manufacturer's recommendations for the material to be cut. Improper selection can cause excessive blade wear and possible damage to the diamond saw blade and/or machine and create an unsafe operating condition.
2. Don't use a new diamond blade or remount a used blade which has a core that is not flat or is cracked, which shows segment damage or loss, or which has a damaged arbor hole.
3. Don't use mounting flanges on which the bearing surfaces are not clean and flat.
4. Don't force blade onto machine blade shaft or mount blade on undersized blade shaft. Either condition can result in unsafe operating conditions and excessive blade wear.
5. Don't mount blade on machine that does not meet the minimum requirements set forth in the manufacturer's machine

### Dry Cutting Do's

1. Do follow the manufacturers recommended blade specifications for material being cut and suitability for dry cutting applications
2. Do inspect the diamond blade for damage that may have occurred during shipment or due to previous use.
3. Do inspect the diamond blade periodically during use for core flatness, fatigue cracks, segment damage, undercutting and damage to the arbor hole.
4. Do check mounting flanges for equal and correct diameter, excess wear or flatness. Mounting flanges must have adequate relief around the arbor.
5. Do be sure that the diamond saw blade is mounted on a correct diameter blade shaft between proper blades flanges and is securely hand-tightened with the wrench provided or an adjustable wrench no longer than 8".
6. Do check for proper saw machine conditions. Spindle bearings should be free of end and radial play. Consult the operating manual from the saw manufacturer for proper machine maintenance conditions.
7. Do follow the manufacturer's recommendation for operating speeds for specific blade diameters.
8. Do maintain a firm grip on hand-held saws during cutting operation.
9. Do wear proper safety equipment at all times. Always wear safety glasses, footwear, snug fitting clothing, hearing and head protection and respiratory equipment where required.

### Dry Cutting Don'ts

1. Don't dry cut except with a blade specifically designed for dry cutting by the manufacturer.
2. Don't force blade onto machine blade shaft, alter the size of the mounting hole, or tighten mounting nut excessively. Use of bushing to reduce arbor hole size is not recommended for diamond blades used on high-speed saws.
3. Don't exceed the maximum operating speed established for the blade.
4. Don't operate a saw without proper safety guards in place. NEVER OPERATE ANY SAW, WET OR DRY, WITHOUT A BLADE GUARD!
5. Don't stand in direct line with dry diamond or abrasive blades during start-up or operation.
6. Don't cut or grind with the sides of a diamond blade.
7. Don't force the blade into the material; allow the blade to cut at its own speed. Forcing the blade may cause over heating or blade damage.
8. Don't make long continuous cuts with a dry blade. Allow the blade to cool by turning in air every 10 to 15 seconds. The harder the material being cut the longer the cooling periods should be.
9. Don't use the blade to cut material other than that specified by the manufacturer.
10. Don't use the blade on a type of saw other than that specified by the manufacturer.
11. Don't allow the blade to deflect in the cut.
12. Don't attempt to cut curves or radii.

**The following is a guide designed to help you identify, diagnose and correct a problem with a diamond blade. Listed are examples of common problems, their cause and a plan to remedy the problem.**

#### **Overheated Blade**

CAUSE: Adequate coolant was not provided.

REMEDY: Check water supply for adequate volume and for obstructions through water system. Use dry-cutting blades ONLY for shallow cutting (1"-2") or step cutting. Allow the blade to spin freely every 10 - 15 seconds to increase cooling air flow.

#### **Segment Loss**

CAUSE: The material slips during cutting which twists or jams the segments loose.

REMEDY Hold the material securely while cutting.

CAUSE: Blade is too hard for the material being cut, causing excessive dullness, which in turn causes the segments to pound off or fatigue.

REMEDY Use a softer blade specification.

CAUSE: Worn blade flanges fail to protect the core from deflecting, improper support.

REMEDY: Replace both blade flanges.

CAUSE: Out-of-round blade rotation resulting in pounding, caused by worn arbor or bad bearings.

REMEDY Replace worn arbor shaft and/or bearings.

CAUSE: Overheating, usually detected by a bluish color on the steel core.

REMEDY Check water system on wet-cutting saws. For dry-cutting make shallower cuts and allow the blade to air-cool properly, free of pressure or excessive dulling condition.

REMEDY Replace worn bearings or arbor shaft as needed.

#### **Eccentricity**

CAUSE: the bond is too hard for the material being cut. This hardness causes the blade to dull. The dull blade then begins to "pound", causing the blade to wear out-of-round.

REMEDY Change to a softer bond which will wear more readily, allowing the dull diamond to be released and the blade to become sharp.

CAUSE: The saw blade shaft may have a groove scored in it, caused by a blade spinning in-between the flanges. A new blade, installed on the arbor shaft will seat in the groove and immediately run eccentrically saw starts.

REMEDY Replace worn shaft.

CAUSE: If the blade shaft bearings are worn, the shaft and mandrel will run eccentrically, causing the blade to wear out-of-round. This happens most often with concrete saws when proper lubrication of the bearings is neglected.

REMEDY Install new blade shaft bearings. In some cases it might also be necessary to replace the blade shaft if it is worn or out of alignment.

#### **Arbor Hole Out-of-Round**

CAUSE: Saw arbor badly worn due to improperly seated blade.

REMEDY Be certain the blade is properly seated on the arbor before tightening the flange.

CAUSE: Blade flanges are not properly tightened, permitting blade to rotate on the shaft.

REMEDY Always wrench tighten arbor nut. Never hand tighten.

Always use hex nuts, never use wing nuts.

CAUSE: Blade flanges are worn and not providing support.

REMEDY Check flanges for wear, replace worn flanges. will crack.

REMEDY The saw operator should use steady, even in-feed pressure, and be careful not to twist or jam the blade in the cut.

CAUSE: Overheating through inadequate water supply or improper use of dry-cutting blade.

REMEDY: Use adequate water to cool wet-cutting diamond blades. Allow adequate airflow around dry-cutting blades to prevent overheating.

**NEVER USE A BLADE WITH A CRACKED CORE!!**

#### **Cracked Segments**

CAUSE: Blade is too hard for material being cut.

REMEDY Use correct blade with softer bond.

#### **Uneven Segment Wear**

CAUSE: Segments are worn on one side, reducing side clearance. It's usually caused by misalignment of the saw or uneven water flow on both sides of the blade.

REMEDY Check saw alignment. Clean the water system, making certain that water is applied evenly to the leading edge of the blade. Check pump for supply of sufficient water.

CAUSE: Blade is worn out-of-round due to bad bearings, worn arbor.

#### **Excessive Wear**

CAUSE: Using the wrong blade on abrasive material.

REMEDY Consult the dealer or manufacturer for the proper blade specifications for material being cut.

CAUSE: Lack of sufficient coolant to the blade. Often detected by excessive wear in the center of the segment. (NOTE: In both cases, diamonds will be highly exposed.)

REMEDY Clean the water system, checking the pump works correctly.

CAUSE: Wearing out-of-round accelerates wear. Usually caused by bad bearings, worn shaft or using a blade too hard for material.

REMEDY Check bearings and arbor. If worn, replace with new parts before operating.

CAUSE: Insufficient power caused by loose V-belts, inadequate voltage or improper RPM's.

REMEDY Tighten belts (taut). Replace worn belts. Check voltage. Use proper size extension cord.

#### **Cracked Core**

CAUSE: Blade too hard for material being cut.

REMEDY Use correct blade with softer bond.

CAUSE: Excessive cutting pressure, or jamming or twisting the blade in the cut can cause the blade core to bend or flex. When subjected to extreme stress and metal fatigue, the blade's steel core

#### **Blade Won't Cut**

CAUSE: Blade is too hard for material being cut.

REMEDY Consult dealer or factory for proper blade to cut materials on the job.

CAUSE: Insufficient power to permit blade to cut properly (loose v-belts, low voltage, horsepower).

REMEDY Check belts, voltage, and horsepower.

CAUSE: Blade has become dull because of continuous use on fairly hard or vitrified material.

REMEDY Dress with abrasive material until diamonds are exposed again. (This may be needed occasionally, if it is often occurring blade is probably too hard.)



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