

Phone: (402) 573-8651

Fax: (402) 573-1111

PO Box 34063

Omaha, NE 68134

VARIABLES AFFECTING DIAMOND BLADE AND CORE BIT PERFORMANCE

VARIABLES	CONDITION	CUTTING SPEED	BLADE LIFE	CORE BIT LIFE
BOND HARDNESS	HARDER	HARDER	LONGER	LONGER
	SOFTER	SOFTER	SHORTER	SHORTER
DIAMOND QUALITY	LOWER	SLOWER	SHORTER	SHORTER
	HIGHER	FASTER	LONGER	LONGER
DIAMOND AMOUNT	LOWER	FASTER	SHORTER	SHORTER
	HIGHER	SLOWER	LONGER	LONGER
SEGMENT WIDTH	THINNER	FASTER	SHORTER	SHORTER
	THICKER	SLOWER	LONGER	LONGER
HORSEPOWER	LOWER	SLOWER	LONGER	LONGER
	HIGHER	FASTER	SHORTER	SHORTER
BLADE RPM	LOWER	FASTER	SHORTER	LONGER
	HIGHER	SLOWER	LONGER	SHORTER
WATER VOLUME	LOWER	FASTER	SHORTER	LONGER
	HIGHER	SLOWER	LONGER	SHORTER
CUTTING DEPTH	SHALLOW	FASTER	LONGER	LONGER
	DEEP	SLOWER	LONGER	NO EFFECT
MATERIAL HARDNESS	HARDER	SLOWER	LONGER	CAN BE CHANGED
	SOFTER	FASTER	SHORTER	CAN BE CHANGED
ABRASIVENESS	MORE	FASTER	SHORTER	CAN BE CHANGED
	LESS	SLOWER	LONGER	CAN BE CHANGED
AGGREGATE SIZE	LARGER	SLOWER	SHORTER	SHORTER
	SMALLER	FASTER	LONGER	LONGER
STEEL	LESS	FASTER	LONGER	LONGER
	MORE	SLOWER	SHORTER	SHORTER

- Increasing the diamond concentration, reducing diamond size and increasing the cutting depth or blade width will make the blade act harder. On the other hand, increasing diamond size, reducing the amount of water will make the core bit cut easier. This is caused by the decreased pressure on each cutting diamond particle.
- Increased bond hardness will make a blade or core bit act harder because of increased resistance to abrasion or increased capacity to hold the diamonds.
- Higher RPM on the blade will make it act harder because each diamond is in contact with the material for a shorter time, reducing its penetration depth and amount of material removed per revolution. It will also cause the diamond to shatter and no new ones to be exposed, hence a glazed segment. This is frequently seen with quickie saws that turn an excessive amount of RPMs, or exceed blade speed maximums.
- Higher feed rates will glaze the segment and make it act harder. The increased pressure on each diamond causes deeper penetration and higher material removal rates. This increase in pressure also causes the diamonds to break down and be removed from the blade faster.
- Increased horsepower will cause a blade to act softer. The increased pressure per stone will cause the diamonds to break down faster, allowing the bond to wear faster and expose new sharp diamonds.
- Increased coolant volume will make a core bit act harder. On a core bit, it causes the diamond to not be exposed. On a blade it aids the removal of cuttings, reducing the amount of wear on the segment. With a core bit, higher volumes of water are not good.
- Remember, it takes a special blade or a special core bit to do the job right.