PRO CUTTER Frequently Asked Questions:

What type of loader do I need to connect to the PRO-CUTTER?

There are several manufactures and models of skid steer and track loaders that are capable of operating the PRO-CUTTER. The minimum loader requirements are: lifting Rated Operating Capacity (R.O.C.) of 2,900 lbs (1,315 kg), connection plate compatible with 'Universal 1994' standard, 25 – 40 gpm at 3,000 psi (114 – 151 l/m at 207 bar) high flow remote hydraulic system with 5 gpm (18.9 l/m) case drain line, and 12 VDC remote electrical connection receptacle. A list of compatible loaders is available on Elk River Machine Company web site or can be down loaded as a PDF file. This list is by no means complete, but can be used as benchmark for comparison to a loader that you may have.

Do I need any other parts to connect the loader to the PRO-CUTTER?

Yes. You will need the hydraulic quick couplings for the high flow lines and case drain line and remote electrical control cable. Hydraulic quick couplings and remote electrical control cables are loader specific and can be purchase from Elk River Machine Company.

Can I still operate the PRO-CUTTER if my loader does not have remote electrical connection receptacle?

Yes. A universal remote control cable with pendant is available that can be purchased and field installed for skid steer and track loaders that do not have remote electrical connection. All Bobcat models equipped with the new seven pin electronic signal type remote connector, which is designed exclusively for operating Bobcat attachments, must use this universal remote control cable with pendant.

Do I need to remove the operator's cab door in order to get in and out of loader cab when connected to the PRO-CUTTER?

No. The PRO-CUTTER has been designed so that it can be connected to loaders that are equipped with or without cab doors.

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Can the PRO-CUTTER be connected to the wheel loader that I have?

Yes in most cases this can be done. A custom adapter plate can be designed to connect the PRO-CUTTER to your loader. However, the loader must still have the proper hydraulic flow and pressure capacity required to operate the PRO-CUTTER, along with using the universal remote control cable and pendant. Contact Elk River Machine Company for further details.

Can the loader operator center the PRO-CUTTER over the manhole cover by himself?

Yes. By paint marking a 76-inch (1930 mm) diameter circle around the manhole cover, the loader operator would then maneuver the PRO-CUTTER so that the back two frame legs are on the inside edge on the painted circle, which automatically will set the third front frame leg inside the edge of painted line. (See figure 1)

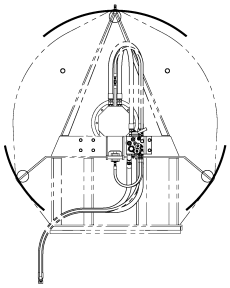

Figure 1

How do I know how deep I have cut?

A depth scale indicator with both imperial and metric units is a standard feature on the PRO-CUTTER. The scale allows the operator to accurately control the depth of cut thereby eliminating the guesswork about cutting deep enough through the road material.

PRO CUTTER Frequently Asked Questions:

How do I control the cutting rate?

By pressing a button on the loader joystick, the PRO-CUTTER will automatically control the cutting process for you, which eliminates the guesswork by the operator and leads to longer core bit life. All you have to do is press a button on the loader joystick.

Does the PRO-CUTTER have cutting bit options?

Yes. The PRO-CUTTER is designed for cutting asphalt and concrete. Three types of coring bits are available; carbide tooth for cutting asphalt, diamond segmented for cutting concrete, and diamond segmented for cutting asphalt.

What is the correct cutting rate for the different coring bits?

There is no simple answer for this question. The cutting rate depends on several factors such as type of road material, temperature, amount of water used, and condition of core bit. The following rates are based on field cutting trials under average condition that can be encountered.

Cutting asphalt with carbide tooth core bit you can expect about one inch (25 mm) per minute. The biggest factors are the temperature and hardness of the asphalt, and the condition of the carbide teeth. As the teeth wear down and/or the temperature of the asphalt decreases, so will your cutting rate.

Cutting asphalt with a diamond segmented core bit you can expect about 1/2 to 3/4 inch (13 to 19 mm) per minute. The biggest factors here are the temperature and hardness of the asphalt, and the amount of water used. If you are cutting at a rate of one inch per minute, or greater your cutting is too aggressive and will wear the diamond segments much quicker.

Cutting concrete with a diamond segmented core bit you can expect about 1/2 inch (13 mm) per minute. The biggest factors here are the type of concrete material and the amount of water used. If cutting through reinforcement steel expect the cutting time to increase. If you are cutting at a rate above 1/2 inch (13 mm) per minute may be too aggressive and will wear the diamond segments much quicker.

PRO CUTTER Frequently Asked Questions:

Can carbide tipped coring bits cut dry?

Yes. Carbide tooth coring bits are made to cut dry or wet. Using water while cutting will increase the life expectancy of the cutting teeth because they run cooler and will also eliminate dust.

Can diamond segmented coring bits cut dry like carbide tooth coring bits?

No. Coring bits with diamond segments require water for the cutting process. The water functions to cool the diamond segments and remove the ground material.

How much water should diamond core bit use while cutting?

To achieve optimum performance when using diamond-coring bits, water must be used. The right amount of water will keep the core bit cool and remove the slurry keeping the cut area clean. The color of the slurry depends on the roadbed material being cut. Asphalt produces black/tan slurry, while concrete slurry will be milky white/light gray, however, concrete slurry color will change to a darker gray when cutting through reinforcement steel. The dark gray is actually the metal particles in the slurry. When the core bit cuts through the bottom of the roadbed material into the dirt, the slurry will turn to a tan or brown color. At this point stop cutting and retracted the core bit. The dirt below the roadbed is very abrasive and will wear on the weld joints between the diamond segments and the steel drum. If too little water is used the slurry will be thick with a paste like consistency. If the diamond segments become overheated, the matrix material does not wear away, instead it "glazes over' the diamond. With the diamond coated or covered, the matrix material then becomes the cutting agent rather than the diamond, which will generate more heat. The heat will damage the diamond segment by causing heat cracks in the matrix material. The rule of thumb here is approximately eight gallons (30 liters) per minute for a 60-inch (1524 mm) diameter core bit, but may need to be increased the deeper you cut.

PRO CUTTER Frequently Asked Questions:

Can I cut asphalt with a diamond core bit made for cutting concrete, or cut concrete with a diamond core bit made for cutting asphalt?

The diamond segment matrixes vary widely due to material type and cutting conditions. The basic rule is the harder the material to be cut the softer the diamond matrix will need to be used. While the softer the material to be cut the harder the diamond matrix must be used. Concrete is considered to be a hard material, so a coring bit with a soft matrix diamond segment must be used. The soft matrix will wear down continuously exposing new diamonds to maintain the best cutting performance. On the other hand, asphalt is considered to be a soft material, but very abrasive, so a hard matrix diamond segment must be used. The hard matrix will stand up to the abrasiveness of asphalt without wearing down prematurely releasing the diamonds too soon while cutting. A coring bit that has a diamond segment matrix that is neither soft nor hard for cutting both concrete and asphalt (combination core bit) is available, but will wear quickly, which economically makes it a poor choice. Using a coring bit with the wrong matrix will result in a poor cutting rate and excessive wear to the diamond segments. There are cases where roads have been resurfaced with a different type of material. A common practice is a road resurfaced with asphalt over concrete. Usually the asphalt is a thinner layer than the concrete, so the best choice is to use a diamond core bit segmented for concrete. Another example, but less likely to occur is asphalt over cobblestone. Here again the best choice is to use a diamond core bit segmented for concrete. Cobblestone in most cases is a hard material and can be more abrasive than concrete, so the core bit life will be reduced.

How long will a diamond core bit last?

With all the variables in cutting with diamond core bits such as rotational speed, cutting force, amount of water used, operator skill level, and the material being cut there is no simple answer to this question. Cutting concrete should average about 50 feet (15.25 meters), while asphalt should average about 50 to 60 feet (15.25 to 18.29 meters). To translate total cutting depth in to number holes cut in road bed use this formula; Total Cutting Depth Feet X (12 / Inches of Road Bed Thickness) = Number of Holes Cut. This cutting data is a combination of information from the manufacturer of the diamond segments, in field trials, and customer feedback.

PRO CUTTER Frequently Asked Questions:

Do I have to buy a new coring bit when the diamond segments are worn out?

No. Diamond tipped coring bits can be re-segmented. Typically you can re-segment the core bit twice, but by the third time the drum will need to be replaced. So the rule of thumb is a coring drum can be segmented a total of three times before replacing the drum.

If I break off a diamond segment can I replace it in the field myself?

Yes. A jig fixture device for holding the diamond segment in place while being welded along with replacement diamond segments are available for purchase. After welding the diamond segment in place, it must be ground down to approximately the same height as the other segments.

When carbide teeth wear out or break off can I replace it in the field myself?

Yes. The carbide teeth are inserted into holding blocks, which allows for easy removal and replacement in the field. Replacement carbide teeth inserts and a tool for extracting them are available for purchase.