Utilicor™
TECHNOLOGIES INC.

Technical Training Guide

Keyhole Coring Equipment
Keyhole Coring & Core Reinstatement Process
Parts and Consumables
Accessories

The cutting edge in keyhole technologies™

Contents

UTILICOR™ Technologies Inc. is the exclusive manufacturer and distributor of the field-proven, keyhole pavement coring and reinstatement system, used by more than 30 major gas utilities and dozens of contractors in the United States, Canada, the United Kingdom, Ireland, France, and Australia.

The Utilicor process combines a purpose-built, field-proven Utilicor coring unit with Utilibond™, a proprietary core bonding compound, which has been specifically developed for the permanent reinstatement of cored pavement coupons in all types of paved roads and sidewalks.

Utilicor Technologies Inc. is the world leader in providing the equipment necessary for the proper implementation of the keyhole coring and reinstatement process for natural gas and other utilities and their contractors, and has successfully helped these companies launch and maintain a cost effective keyhole program to address all their small hole needs.

With keyhole coring and core reinstatement processes, Utilicor is helping the utility industry increase their internal efficiencies, achieve a greater return on their investments, reduce the impact of utility construction practices on the travelling public, and, at the same time, helping utility companies and their contractors worldwide become greener and cleaner while performing necessary utility repairs to their buried underground infrastructure.

The Utilicor coring and reinstatement process has been tested and approved by the National Research Council of Canada, the United States Army Corps of Engineers, and by AASHTO approved laboratories, as well as the materials testing facilities of the Department of Engineering of the University of Illinois.

Utilibond™, our proprietary bonding compound, is an integral part of that reinstatement process and has fast become the industry standard. Independent testing has shown that it creates a bond that is stronger than the original pavement and is capable of supporting the combined weight of six transit buses - more than 50,000 lbs.

This Technical Training Manual is intended to provide the operator with a generalized overview of the keyhole coring process and keyhole core reinstatement procedure and is not intended as a substitute for hands-on training on your Utilicor coring equipment, or a thorough understanding of the Operations Manual included with all Utilicor coring equipment.

Keyhole Coring Equipment - Overview

Series 500 Coring Unit

The Series 500 - ***Heavy Duty* Coring Unit -** from Utilicor Technologies is the most robust coring truck available on the market today. Used by dozens of gas utilities and their contractors for more than a decade, the Series 500 allows its users to quickly cut keyholes through roadways and sidewalks at a rate of one inch per minute due to its 5000 pounds of down-force focused on the coring drum and center pilot bit assembly.

Two independently operated hydraulic stabilizers allows the suspension of the truck to be isolated from the coring process, ensuring quick and accurate core cuts.

MD 300 Coring Unit

Utilicor Technologies MD-300 - ***Multi Directional Coring Unit*** - is equipped with the *Travesacor*™ core-zone extension system, that allows the core drill to extend 12" out from the back of the truck and travel across the full width of the deck, facilitating precise set up without repositioning the vehicle.

Like all Utilicor coring equipment, the powerful core drill effortlessly and accurately cuts up to 24" diameter cores through all kinds of pavement up to 22" deep with an integral central pilot bit that simultaneously cuts a pilot hole to simplify extraction and reinstatement of the core.

MPX Coring Unit - Truck *or* Trailer Mounted with Optional Side-Shift

The MPX – ***Multi Platform Coring Unit*** – is Utilicor's most flexible coring equipment. As its name suggests, it easily mounts on a variety of platforms: **pickup trucks, flat deck trucks, service bodies or trailers**.

Built on a universal base that fits within the width of even the narrowest of pickup trucks, the MPX is a truly revolutionary design. A simple bolt-down pattern allows for a variety of installations, and can be easily swapped between vehicles, or even removed and stored off the truck or trailer when not required. The new, dual-stage mast deployment system accommodates a variety of deck or trailer heights, and the optional side-shift allows for easy positioning of the coring drum.

Minicor-2™ Skid Steer Coring Attachment

The Minicor - ***Skid Steer Coring Attachment*** - works on sidewalks or in other confined spaces where larger truck-mounted machines won't fit. The Minicor works with all skid steer loaders with a Rated Operating Capacity of 2000 lbs. and a hydraulic flow rate of at least 16 G.P.M. (Standard Flow).

Compact size and mobility means fast, accurate work in tight spaces. The large 100-gallon water tank allows you to core a day's work with one fill-up. The integral, universal quick-attach coupler system and quick-connect hydraulic and electrical hook-up, lets you "plug and play" and be ready to core in minutes.

Stability

Because springs are integral to most wheeled vehicles, it is important that the suspension of the truck or trailer on which the unit is mounted, be isolated during the coring process. Otherwise, much of the downward pressure or vertical force required to initiate and sustain the coring action will be lost or absorbed by the suspension causing poor or erratic cutting action.

This problem can be solved by utilizing hydraulic stabilizers fixed to the deck or frame of the vehicle, on either side of the core drill. When deployed, these stabilizers take the spring action out of the suspension and concentrate the weight of the vehicle down through the core drum for an accurate and precise cut. The stabilizers can also be individually adjusted to accurately orient the core drill so that it is perpendicular to the horizon in the plane that parallels the width of road.

Stabilizers create a solid base for coring

Orientation

Utilizing the stabilizers as described above, together with the ability to tilt the coring mast in the vertical plane, all Utilicor equipment can be properly adjusted to compensate for both the transverse camber or slope of the roadway, as well as its longitudinal slope or grade. Proper orientation of the core drum perpendicular to the horizon is essential to cutting a core that can be properly reinstated.

When the coring drum is set up perpendicular to the horizon, *NOT the road surface*, the effect of gravity on the core is eliminated which reduces the chance of the core getting stuck inside the coring drum. Proper orientation of the core cutting process will also ensure that the sides of the hole are plumb so that gravity will not interfere with the uniform flow of the bonding compound around the reinstated core, or cause the material to pool on one side or the other.

Proper horizontal and vertical alignment are important steps during set up

Manipulation

Common to all Utilicor coring equipment is the center pilot bit that simultaneously cuts a 2 3/8" pilot hole through the center of the core while the circumference of the core is being cut by the drum. The pilot bit not only centers and stabilizes the cutting process, but the pilot hole that is created allows for the insertion of a special core puller tool that extends through all the layers right to the bottom of the core. This is important should the layers of pavement come apart or delaminate.

When adjusted, the rubber stopper on the core puller tool expands, friction-tight, inside the pilot hole, allowing the core to be easily and safely removed from the roadway and when the work is complete, reinstated back into the roadway. Without a center pilot hole, cut simultaneously or drilled separately, the only way to get the core out is with some form of clamping device or surface-based extraction method such as sinking lag-bolts or lifting rings, into the core. Not only is this another time consuming step, but it will not work if the pavement layers have delaminated, or on hot days, when the asphalt is soft and there is a real danger in the lag bolts pulling free, causing damage or injury to the operator.

A typical 18" diameter core 10" deep weighs over **200 lbs**. Using a pry bar through the eye of the core puller, two men can share the load and lift the core. A 24-inch diameter core of the same depth weighs over **350 lbs.** and requires a hoist or crane to lift. All truck and trailer mounted Utilicor coring units come with an optional core hoist to assist crews in safely extracting and replacing heavy cores.

Central pilot hole aids in core extraction

Sharing the load for safeties sake

Keyhole Coring Principles

Cutting a core from the roadway or sidewalk which will be safely extracted and saved for future reinstatement requires an understanding of coring principles not commonly employed by most concrete cutting and coring companies.

The orientation of the drum in respect to the horizon is crucial to achieving the desired result. By this we mean the coring drum should be set up to cut a core that is perpendicular to the horizon... **NOT the road surface.**

Coring equipment will seldom be set up on flat surfaces due to both the **grade** and the **camber** inherent in the roadways. To achieve the desired core cutting result you will need to orient the coring drum properly.

As illustrated in the above picture roadways are seldom flat
Always adjust the coring drum so it cuts as close to perpendicular to the horizon as possible

Grade: **The longitudinal inclination of the roadway surface compared to gravitational level.**

Camber: **The transverse curvature of the road surface that allows surface water to run to the curb or gutter the roadway.**

Proper core drum orientation is achieved by manipulating both the truck mounted stabilizers and the angle of the coring mast. Adjusting both of these in unison will allow the operator to set the coring drum to cut perpendicular to the horizon... not the roadway.

The resulting core cut from the pavement has a better chance of being extracted in one piece when cut vertically. This process also results in a core which will be suitable for future reinstatement as it will not be cut on a severe angle. In the case of deeper core cuts there is also a reduced chance of the core becoming stuck inside the core drum as the core drum is set up vertically, and is not cutting against the force of gravity.

To check for level use the two-way level mounted on the pillow block assembly, or place a spirit level on top of the coring drum.

By coring perpendicular to the horizon we have a better chance of extracting the core in one piece, and the reinstatement process becomes simplified as well.

The coring drum needs to be set perpendicular to the horizon not the roadway.

Use the level attached to the pillow block as show above, or a spirit level placed on top of the core drum to make sure the coring drum is set correctly before coring commences.

Core Drum Rotation Speed

Smaller diameter core drums required faster rotation. Larger diameter core drums require slower rotation. When a core drum rotates too fast relative to its diameter diamond segments may glaze, or polish, and new diamonds will not be exposed at a proper rate thus slowing penetration and the time required to cut the core may be extended. Consequently, when a coring drum rotates too slowly for its diameter the result may be premature erosion of the diamond segments, which may result in reduced cutting life of the core drum.

12" drum: 220 rpm to 240 rpm

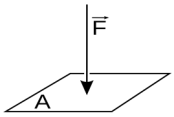
18" drum: 180 rpm to 220 rpm

24" drum: 160 rpm to 180 rpm

Adjusting Core Drum Rotation Speed

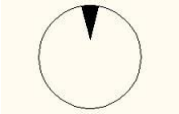
Some Utilicor coring equipment comes equipped with a speed control adjustment dial and R.P.M. gauge. This control allows for adjustment of the coring drums rotational speed. If there is no speed adjustment available on your piece of equipment, coring drum speeds can be adjusted through the proportionate valve assembly.

Feed and Speed



Feed and speed pressures must be closely monitored while cutting a core. The correct down pressure feed rate will depend on the pavement composition. Dash mounted pressure gauges are installed on all Utilicor coring equipment to help monitor pressures while coring. Typical down pressures will range from 200 to 700 P.S.I. depending on the composition of the pavement. Rotational back pressures will range from 700 to 1200 P.S.I. Coring penetration rate will be approximately one inch per minute through asphalt, concrete or composite roadways and sidewalks in ideal circumstances. If it takes longer than this to cut a core one or more parts of the coring equipment may need to be adjusted, or replaced due to excessive wear. (i.e. if the center pilot bit is worn, cutting rate will be slower than desired)

Slow and Steady Pressure



Maintain even steady pressure while coring. Too much pressure will change the angle of approach of the coring drum. This may result in the coring drum becoming stuck, especially on deeper core cuts.

Too little pressure may slow down the cutting process, and result in excessive core barrel wear.

Let the coring drum do the work for you.

Cooling Water and Coring Slurry

The coring process uses water to cool and lubricate core drum segments while coring. Water also carries away slurry which is created during the coring process. An approximate rate of one gallon water to one inch of core cut depth is typical consumption.

As the slurry also aids in exposing the new diamonds in the cutting segments during the coring process, using too much water actually clears away the slurry too quickly, and this may result in the segments not opening, and resulting in a slower cutting process. Consequently, too little water may result in a thick slurry which may causes the core to get stuck inside the core barrel.

Adjust the water flow until the cutting slurry has a milky consistency.

It is difficult to know when the core drum has cut all the way through the base of the pavement. However, by using sound, sight and feel it is possible to determine when to stop coring and check the core. Issues arise when the core barrel penetrates through the pavement and into the subsoil as loose dirt from below the pavement can work its way up between the coring drum and the core itself and may cause the core to become stuck inside the core barrel. Consequently, when the core drum has not cut all the way through the pavement the operator will have to reset the core drum and continue coring until the full depth of the core is cut, which can be problematic. Note that the bottom portion of the pavement is seldom flat, and the core drum will often be cut through only on one side.

A slow and steady coring process, while checking for completion often, will result in a higher success rate.

Sound

As the Utilicor core cutting process incorporates a center pilot bit which simultaneously cuts a center pilot hole through the center of the core, and this pilot bit extends beyond the bottom of the core barrel, the center bit will cut through the bottom of the pavement before the core drum. The operator will hear an audible change sound when this happens, and this in turn will indicate that the bottom of the coring drum is very close to cutting through the base of the pavement. Once the coring drum has cut through the base of the pavement yet another change in sound will occur.

Sight

The slurry from the cutting of asphalt or concrete is a distinct and consistent color. When the core drum cuts through the bottom of the roadway or sidewalk, the slurry coming up to the paved surface will have a different appearance. This change in the color of the slurry indicates that the core barrel is partially or fully through the paved surface. At the same time monitor the hydraulic gauge which measures the rotational pressure on the coring drum. Pressure will often increase, or spike, at the same time that core drum cuts through the last portion of the core.

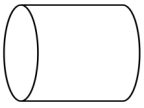
Feel

Utilicor coring equipment is equipped with a proportional orbital feed system wheel which gives the operator feedback from the coring operation. As the operator cuts through different materials they will note different feed pressures as the coring drum is driven downwards. Once the drum penetrates through the pavement and into the soil beneath the steering orbital may become easier to turn, indicating possible completion of the cut. To check when a thicker core is ready for extraction, stop coring and raise the coring drum then insert a pry bar down the center pilot hole, or into the kerf, and gently attempt to rock the core. If it moves easily you will know that the cut is all the way through. This action will also help to break the suction between the bottom of the core and the base of the roadway.

Lifting Cores

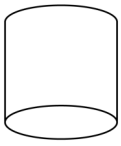
Utilicor's Core Puller Tool is the only safe way to extract a core from the pavement The rubber stopper on the Core Puller expands inside the cores pilot hole which results in a friction tight fit. A pry bar can also be slid through the eye-bolt on the top of the core puller to allow crew members to share the load.

Moving Cores



Cores are circular - turn them on their side and they roll. To move a heavy core, slide a long bar through the pilot hole and use it for leverage to gently tip it on to its side, and roll the core safe location.

Storing Cores



During extremely hot days store cores upside down, and on a flat surface, as the bottom of the core is often uneven and the asphalt is likely to soften and the core may sag or deform. Keeping asphalt cores in the shade or covered with wet burlap will help them from deforming. Do not leave the core puller inserted and expanded in the core as the pressure from the expanded rubber stopper may result in the core separating vertically.

Mark the Core for Orientation

Mark orientation in the roadway *before* you cut the core with paint.
Use two intersecting lines, like the letter "V", which extend across the cutline of the kerf of the core and onto the surrounding pavement.
Avoid using a straight line through the center of the core area to be cut.

Extracting Delaminated Cores

Roadways are often overlaid (resurfaced) with new layers of asphalt. Cores may separate between the layers of asphalt or between the asphalt laid over the concrete road base. If a core delaminates insert the core puller rubber expansion plug to the bottom in the core and extract the core in one piece - or span the separated sections of pavement with the rubber stopped from the core puller.

Reinstating Delaminated Cores

If a core is extracted in layers it is still possible to reinstate the core back into the roadway. The resulting reinstatement can even be more durable than the surrounding roadway it was extracted from.
When ready to reinstate the core with Utilibond start with the lower portion first, allowing the Utilibond to flow up the kerf and onto the top of that portion of the core. Add more Utilibond and lower the top portion of the delaminated core, and set to level. Picture an Oreo cookie with the Utilibond taking place of the Oreo's frosting.

Coring Drum Segments

Coring drum segments are composed of synthetic diamonds impregnated in a specially formulated matrix. The matrix is designed to hold the diamonds in place and allow them to be exposed at an appropriate rate. As the segments are driven into the pavement the diamonds grind away the asphalt or concrete and new diamonds are continually exposed which allows the coring process to continue. Asphalt cutting creates slurry that is very abrasive and requires a matrix that in harder, while concrete cutting slurry is finer and less abrasive and thus requires a matrix which is softer. Failure to match the segments to pavement type may result in decreased segment life.

Saving Multiple Cores for Future Reinstatements

When cutting multiple cores, paint a number on the top of the core and mark the roadway with the same corresponding number. Reinstatement is simplified when you know which core goes in which location. Should cores be stored off-site, numbering them will also help in the reinstatement process.

Do Not Move Equipment Until Coring is Completed

Often roadways compositions involve multiple layers. The top portion may be asphalt which is laid over a concrete base. Once the core is cut and removed make sure the coring process has been completed through the entire pavement structure as repositioning the coring equipment can be difficult.

Do Not Adjust Stabilizers with Core Drum Engaged

Adjusting the stabilizers while the core drum is touching the ground will result in equipment damage. Should the coring drum get stuck in the ground gently try to rock the steering orbital up and down to loosen. If this does not work detach the drum from the drive adaptor and remove manually.

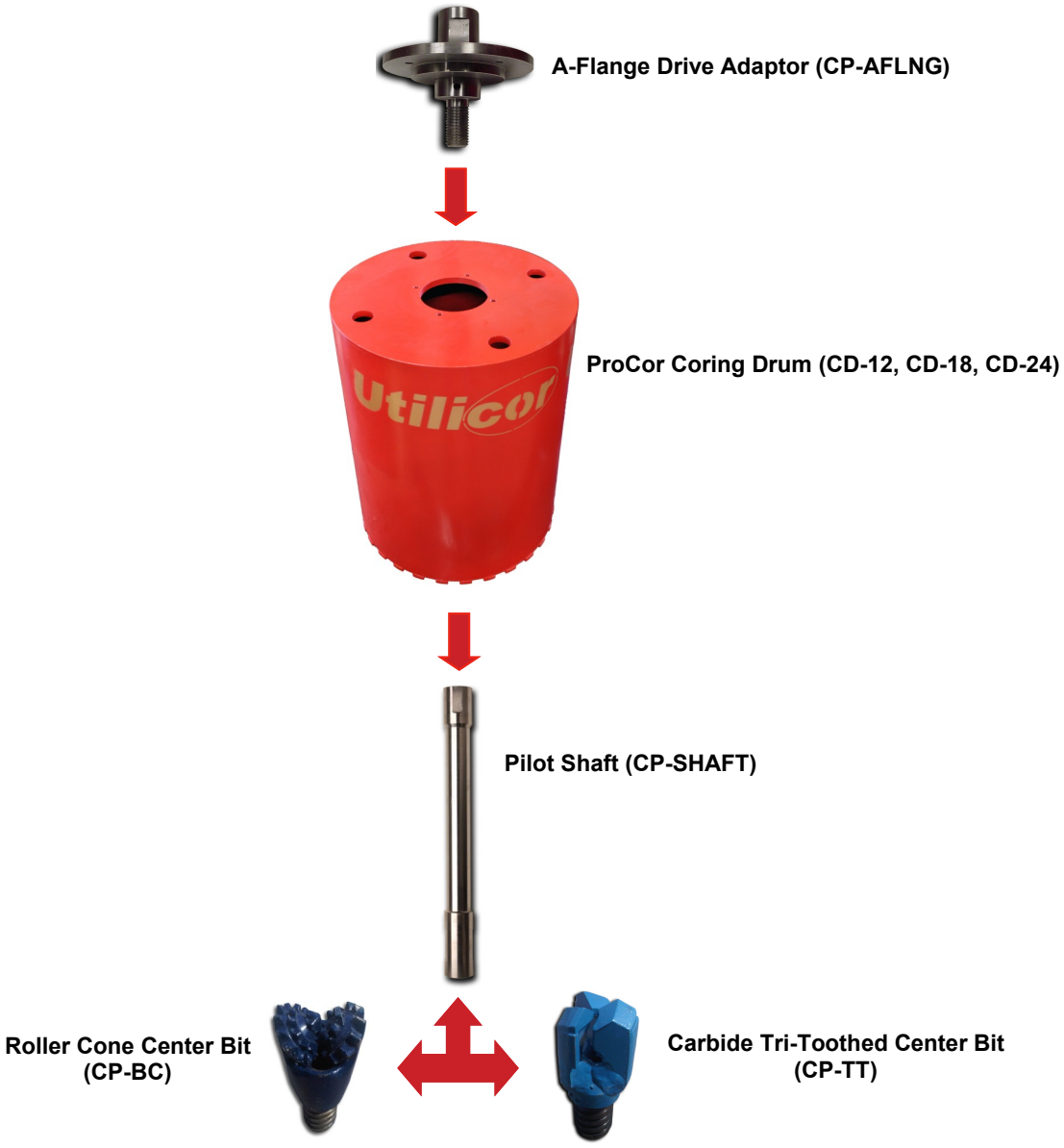
Do Not Cut on a Crack

Avoid cutting directly over a crack or a portion on pavement that shows obvious signs of deterioration. Most often when coring over a crack the pavement may come apart and the resulting pieces may become stuck, or wedged inside the coring drum, causing the core drum to bind or become stuck. The core itself may also become lodged inside the coring drum and be very difficult to remove.

Core Drum Assembly

Utilicor coring equipment utilizes a center pilot hole which is unique to Utilicor and is an essential eliminate in the "keyhole" core reinstatement procedure. The pilot hole, which is cut simultaneously during the coring process, simplifies the process as the pilot hole does not have to be cut separately. The resulting extraction of the core is also a quicker, easier and safer operation for the worker as there are no lag bolts or other unsafe lifting mechanisms involved.

The center pilot extends through the full depth of the core. The center pilot hole allows for the insertion of a Utilicor core puller tool. The rubber stopper, mounted to the end of the core puller tool, expands and becomes friction-tight inside the pilot hole allowing the worker to safely lift the core out of the roadway or sidewalk. Without a center pilot hole there is no safe and practical way to extract heavy cores from the roadway, nor a way to properly manipulate them during the reinstatement process.



- ☑ Center Pilot Shafts stock length is 18" with 1/2" spacer for 18.5" overall length
- ☑ For coring drums that have been cut back use a shorted pilot shaft (17", 16", 15")
- ☑ Roller Cone Center Bits work better in tough concrete applications
- ☑ Carbide Tri-Toothed Bits work well in asphalt applications
- ☑ ProCor Coring Drum stock barrel length is 22" overall with A-Flange top plate
- ☑ Core drums can be re-tipped once the segments have worn down. Contact Utilicor for shipping instructions

Utilicor ProCor Coring Drum

- ProCor diamond segments designed for quick easy cuts through both concrete and asphalt
- ¼" wide segments are silver soldered to the barrel for strength
- Overall core barrel length: 22"
- Stock diameters: 12", 18" and 24"
- A-Flange cut out for Utilicor A-Flange drive adaptor
- 4 push out holes in the top of the drum for allowing removal of stuck cores

A-Flange Drive Adaptor

- Internal side ported water dispersion holes allow for cooling water inside the core drum
- 1 ¼" x 7 TPI threaded (top female, bottom male)
- Four bolt pattern for assembly onto core drum
- Use 3/8" grade 5 bolts, 1 ½" in length, for mounting to core drum

Center Pilot Shaft

- 1 ¼" x 7 TPI female top thread with AW rod female threaded bottom portion for attachment to center cutter bits
- Standard pilot shaft size is 18.5" in length (18" with 1/2" spacers)
- **NOTE:** For core barrels which have been reduced in overall length due to the re-tipping Utilicor stocks shortened center pilot shafts to accommodate shorter barrel
- Sizes available: 18.5", 17", 16", and 15"

Bi-Cone or Tri-Cone Center Bit

- Steel toothed roller bit similar to those used in the oil and gas drilling industry
- Available in 2 3/8" bi-cone, or 2 1/2" tri-cone
- Work well on the Minicor coring attachment and trailer mounted coring units as this bit requires less down force to cut through harder materials like concrete
- Use in tough concrete cutting applications
- AW threads

Carbide Tri-Tooth Center Bit

- Drag bit style with carbide teeth
- 2 3/8" diameter
- Grinds away pavement
- Use on larger truck mounted coring units where plenty of down force is available
- AW threads

Core Puller

The Core Puller comes equipped with a 2 3/8" high density rubber stopper which is designed to fit the pilot hole that is cut through the center of the core during the coring process. The core puller also allows for the operator to safely and securely manipulate the heavy core during the reinstatement process as the core is often lifted in and out of the cored hole a number of times during the "dry fitting" process.

By rotating the lower of the two handles the stopper expands inside the pilot hole and creates a snug friction-tight fit allowing for safe extraction of the core from the roadway.

The core puller is also equipped with an eye hook on the top allowing crews to insert a lifting bar which in turn allows the crew members to lift heavier cores with the load distributed between the two operators. Remember to "share" the load for safe lifting, and always lift with your legs and not your back. An 18" diameter core 10" in depth can weigh over 200 pounds. When using a core lifting device or a crane, the eye hook serves as an anchoring point to attach the lifting hook to.

Insert a bar through the eye hook and share the load between two operators

Note: For cores weighing more than 150 pounds utilize a core hoist or crane system to avoid injury

Keyhole Core Cutting Procedure

While the exact operation of each type of Utilicor coring equipment differs slightly the cutting process remains the same. Below are general steps involved in the core cutting process.

NOTE: Always refer to the operations manual for your specific piece of Utilicor coring equipment before commencing operations. Failure to do so may result in equipment damage, operator injury or death.

1) Mark the area to be cored with paint. Use an orientation mark on the top of the pavement which will allow for the core to be reinstated back into the roadway or sidewalk in the same position as it was extracted.

Use the letter "V", or a single line that only intersects the kerf at one point.

2) Deploy coring unit, positioning the coring drum over area to be cut. Adjust position as needed either with manipulation of the vehicle or through movement available on the coring unit itself.

NOTE: always try to keep the coring drum positioned as close to center of the coring equipment as practical, as the cutting process will be quicker and easier.

3) Level the coring drum so it is perpendicular to the horizon not the road surface. Utilize the stabilizers and the mast tilt function to level in both plains.

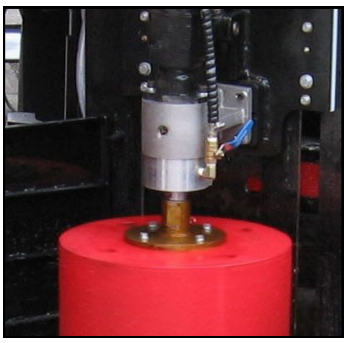
Make sure to engage the stabilizers on the coring unit, which will isolate and remove unwanted suspension from the vehicle and create focused down pressure for the coring operation.

4) Water turned on and adjusted for adequate flow rate.

Too much water will wash away the slurry resulting in the diamond segments glazing and reducing cutting efficiency / too little water and the slurry will become thick and may cause the core to become stuck inside the coring drum.

Slurry created while cutting should be opaque, or milky in colour.

Check that the center bit is not clogged and water is flowing through center bit



5) Coring may commence.

Initially use the auxiliary water hose to wet the outside of the drum.

Once the drum is seated the water from inside the coring drum will be adequate.

Adjust water flow as needed.

6) Seat the center pilot bit and the coring drum slowly using the orbital steering wheel control. Once seated, turn off coring drum, lift and set impact plate on road surface.

Once the coring process is underway the pressure on the drum feed gauge will range from 200 PSI to 700 PSI, and the rotational pressure gauge will read from 700 PSI to 1200 PSI. These reading are a guideline only and will fluctuate with different compositions and core cutting depths.

7) Continue coring procedure until the core is cut completely through the sub straight. Indicators of a completed cut will include a change in the colour of the slurry, a change in the sound of the coring process, and possible increases in the rotational pressure gauge.

Initially the center pilot bit will cut through the bottom of the core, and the sound associated with this process will cease. Once the core drum cuts through the bottom of the core a noticeable change in the coring sound will occur.

8) Check that core has been cut all the way through BEFORE moving the coring equipment. Use a small pry bad to "test" the core for looseness by gently prying down the kerf and attempting to move the core slightly.

Or, on thicker cores, use a spud bar inserted down the center pilot hole to break the core free of any suction which may be holding it to the sub straight before attempting to extract it from the roadway.

9) Lift the core from the hole and set aside. Use the core puller to securely hold the core while lifting from the roadway.

For heavy cores insert a bar through the eye hole at the top of the core puller and share the load between two workers. For very heavy cores attach the core puller to a lifting device (crane or core lift) and remove.

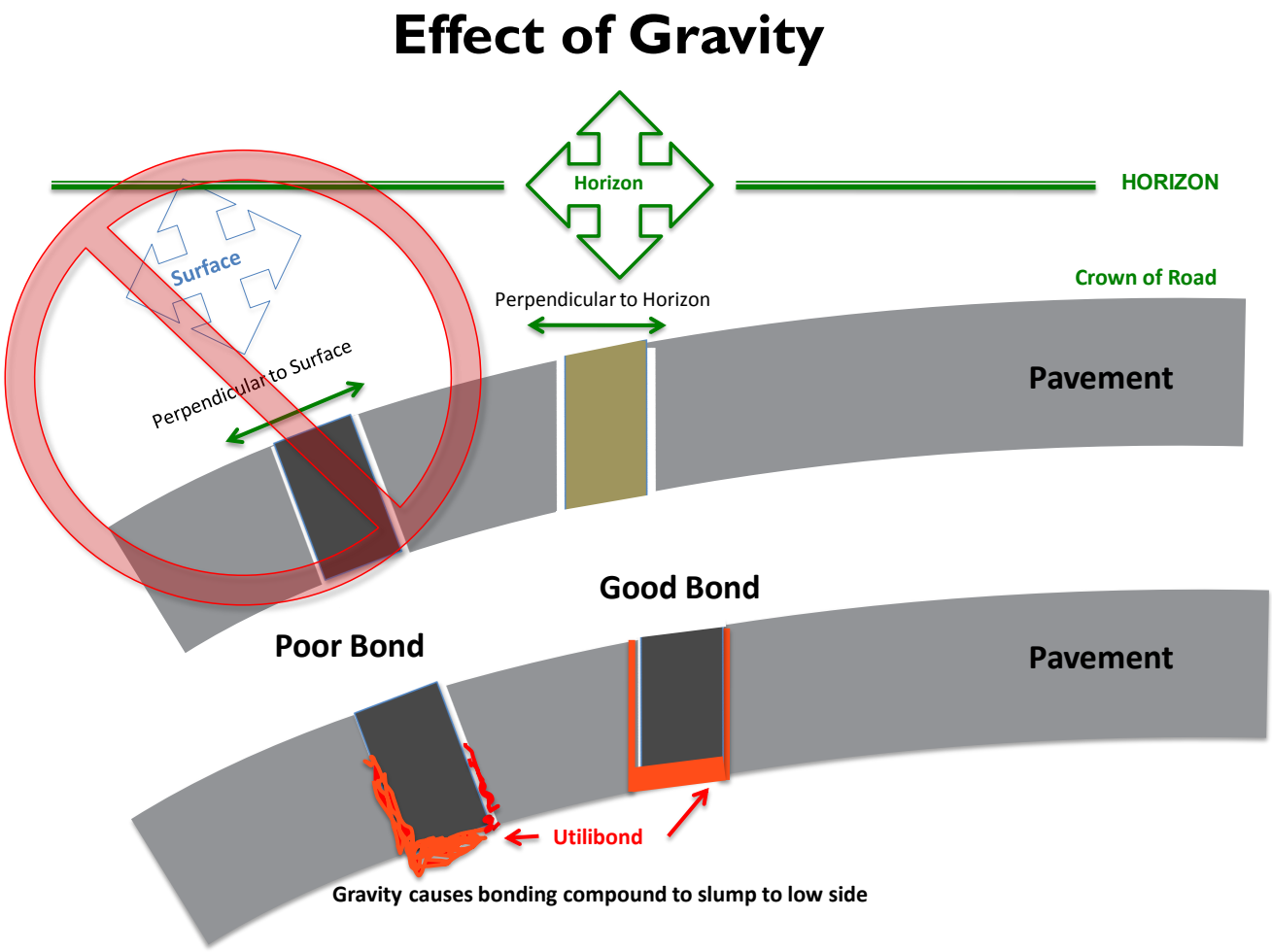
Set the core aside for future reinstatement in a safe place. If temperatures are above 80°F, make sure to store the core out of direct sunlight and place the core top side down on a flat surface to avoid deformation and sagging of the asphalt cores.

10) Wash down the area of all slurry with onboard high pressure was system or use water from onsite vacuum excavation unit.

If required, use a vacuum excavator to vacuum up all slurry from the roadway and prevent it from entering catch basins and sewers.

The keyhole core which has been cut from the roadway or the sidewalk can effectively be reinstated back into the roadway and will result in a permanent repair to the roadway.

Because the core is being reinstated back into the roadway as a permanent repair, and it was cut perpendicular to the horizon, a proper core reinstatement is easy to achieve.



If the core is cut on a severe angle relative to the roadways surface as illustrated on the left side of the diagram, when it comes time to reinstate there will be a tendency for the core to slump to one side. This will displace the Utilibond from one side of the core and not allow the even distribution of Utilibond around the entire outside surface of the core.

However, if the core has been cut perpendicular to the roadway when the core is reinserted into the cored opening the core will sit correctly, and the Utilibond will completely encompass the core which will create a good bond and a waterproof seal.

Alos, visually the kerf line surrounding the core will have an equal amount of Utilibond and the bonding properties will be uniform.

Core Dry Fitting and Offset Depths

Offsetting the core during the dry fitting process is necessary as you will be adding material (Utilibond) to the bottom of the hole, and placing the core on top of the Utilibond.

✓ **Thinner depth cores required less off-set**
✓ **Thicker cores will require more off-set**

A 4" thin core can be set close level compared to the surrounding pavement surface.
A 12" thick core will require 1/4" - 3/8" offset from the surrounding pavement surface.

Reason: A thicker core provide more resistance to the flowing Utilibond

Leveling the Core

As the bottom of the core will often have irregularities, it is recommended to add a layer of pea stone to the bottom of the cored hole during the dry fitting process as it will adjust for these irregularities, and allow the top portion of the core to sit level with the surrounding pavement.
It is easier to scoop a handful of pea stone out from the bottom of the hole should the core be sitting too high after dry fitting, as opposed to digging out compacted back fill.
Pea stone size should be small and round.
Large gravel is not recommended as it is difficult to work with.

Utilibond Hydration

Once the core is reinstated and the excess Utilibond cleared from the road surface it is important to keep the kerf and center pilot hole areas wet. While Utilibond sets up and gains strength it goes through a rapid process of hydration and if the exposed Utilibond surfaces are not kept moist with water or Utilicure there is a chance of cosmetic surface cracks developing.

Fractured or Delaminated Cores

Roadways will often be "mill and overlaid" with new layers of asphalt on top of older roadways and the cores extracted have chance of becoming delaminated. When this happens use the core puller to "span" the two separated sections, and extract as one.

If you are reinstating as two separate pieces, think of an Oreo cookie, with the Utilibond being the icing in between. Dry fit the core a little lower than usual as there will be additional Utilibond between the top and the bottom pieces of the core.

Wash All Surfaces

Utilibond bonds to the aggregate or the concrete portions of the core and the pavement.

Utilibond does not bond to dirt.

Make sure all surfaces are clean before reinstating the core.

Use a large grouting sponge - it works the best and lasts the longest.

Utilibond™ is a specially formulated and engineered multi-component, super-plasticized, cementitious bonding compound specifically designed for permanently reinstating cement and asphalt cores back into the original substrate.

Unlike typical "grouts" which are moderate strength fillers used for filling cavities, voids and cracks, **Utilibond™**
contains special additives designed to enhance the bonding performance of Portland cement-based materials. This unique blend of components results in high cohesive strength, through high density and low water absorption, and improves the mechanical performance, workability, adhesion and resistance to harsh environmental exposures of the product such as freeze-thaw scaling.

A ready-to-use (just add water), fast-setting, high-strength waterproof bonding agent, **Utilibond™** is non-toxic and comes in two colors **(Aged Asphalt and Natural Con-**

Colors

Aged Asphalt (UB-AA) is designed to more closely match the color of an asphalt top roadway, and Natural Concrete (UB-NC) is designed to closely match concrete topped roadways or sidewalks.

Sizes

The standard sized pail of Utilibond™ is 44 lbs. with one plastic lined bag of the Utilibond powder packaged in air tight 5-gallon plastic containers. This single use quantity is designed to reinstate an 18" diameter core up to 18" in depth.

For shallower or smaller diameter cores, Utilibond™ is also packaged as a **"Twin Pack"**, which has two separate bags of the Utilibond powder, each weighing 22 lbs., which can be mixed separately or together to give the worker the flexibility to use just the right amount of Utilibond according to the depth / diameter of core being reinstated.

Shipping

Utilibond™ comes packaged in skid lots of 48 pails, in either Standard or Twin Pack configuration. Smaller quantities are available as required. Utilibond is shipped through one of Utilicor's authorized distributors, resellers, or directly through Utilicor.

Storage

Utilibond has a shelf life of at least 2 years from the date of manufacture. Utilibond should be stored out of direct sunlight as ultraviolet rays can deteriorate the plastic pails. Storage can be either inside or outside. Freezing

temperatures do not affect Utilibond.

Utilibond™ Additives

Utilicure™

Liquid carbon black additive for use with Utilibond when asphalt road surface require a darker finished colour.

Utiliblack™

Acrylic latex emulsion for use with Utilibond in hot weather or valve box installations. Reduces the chances of cosmetic surface cracking.

Utilibond - XL™

Utilibond additive is used during cold weather (below 50°F) to help reduce set times.

Utilibond - Standard and Twin Pack Configuration

One 44 lbs. bag of Utilibond, sealed in 5 gallon polyethylene pail	One 44 lbs. bag of Utilibond, sealed in 5 gallon polyethylene pail	Two 22 lbs. bags of Utilibond, sealed in 5 gallon polyethylene pail	Two 22 lbs. bags of Utilibond, sealed in 5 gallon polyethylene pail
Colour: Aged Asphalt	Colour: Natural Concrete	Colour: Aged Asphalt	Colour: Natural Concrete
Part # UB-AA	Part # UB-NC	Part # UB-TPA	Part # UB-TPC
44 lb	44 lb	44 lb	44 lb

Twin Pack Bags of Utilibond Required Per Core Diameter / Depth (estimated)

Core Diameter (inches)

Core Depth (inches)	24”	22”	20”	18”	16”	14”	12”	10”	8”	6”
20"	3	3	3	3	2	2	2	2	2	1
19"	3	3	3	3	2	2	2	2	2	1
18"	3	3	3	2	2	2	2	2	1	1
17"	3	3	3	2	2	2	2	2	1	1
16"	3	3	2	2	2	2	2	2	1	1
15"	3	3	2	2	2	2	2	2	1	1
14"	3	3	2	2	2	2	2	1	1	1
13"	3	3	2	2	2	2	2	1	1	1
12"	3	3	2	2	2	2	1	1	1	1
11"	3	2	2	2	2	2	1	1	1	1
10"	3	2	2	2	2	1	1	1	1	1
9"	2	2	2	2	2	1	1	1	1	1
8"	2	2	2	2	1	1	1	1	1	1
7"	2	2	2	2	1	1	1	1	1	1
6"	2	2	2	1	1	1	1	1	1	1
5”	2	2	1	1	1	1	1	1	1	1
4”	1	1	1	1	1	1	1	1	1	1

1 twin pack bag 2 twin pack bags 3 twin pack bags

**** Use chart as estimate only due to irregularities in bottom of core, kerf size and pilot hole dimensions**

Core Reinstatement Procedure

1) **Clean** the core cut from the pavement and clean the cored hole opening by wiping with a damp rag or a grouting sponge (recommended). All surfaces of the core and walls of the cored hole must be cleaned of all loose cutting debris, particulate from the cut process, and any build up from the vacuum process. Proper bonding of the core depends on a clean surface for the bonding agent to adhere to.

NOTE: If the core or the cored hole is covered in dirt, slurry, or mud the Utilibond will not bond the core properly back into the roadway or sidewalk.

2) **Level** the bottom of the hole with a 1inch to 2 inch deep layer of pea gravel. Because the pea gravel is added fill that was not present before, the backfill should be left approximately 2 inches lower than the base of the pavement during the backfill procedure. The layer of pea gravel will aid in both leveling the core relative to the surrounding pavement as well as account for any irregularities found on the bottom side of the core which is being reinstated.

NOTE: Pea gravel is easier to remove than compacted backfill. Adding or Removing a handful at a time is the best method for leveling the core.

3) **Dry-fit** the core and check for level with the surrounding pavement.

Adjust the pea gravel until the core is level with the surrounding pavement and approximately 1/8" to 3/8" **below** the surface of the surrounding pavement.

NOTE: Once the Utilibond has been added to the hole and the core has been reinserted you will not have a second chance to change its final level. Proper dry-fitting is crucial to a proper reinstatement. Do it once and do it right.

4) **Mix** the Utilibond by first removing the bag (s) of Utilibond from the pail, and adding water to the level indicted on the outside of the pail. or use the 1-litre container which is supplied in Twin Pack pails. Exact proportions of water to Utilibond are important for strength gain, set up time, and fluidity of the compound.

NOTE: The ONE Litre white plastic cup included in every Twin Pack pail must be filled with water exactly to the TOP of the cup to achieve the proper water ratio required for Utilibond mixing process.

5) **Open** the sealed Utilibond bag, creating a clean opening though which to pour the Utilibond powder from. With the mixing blade inserted into the bottom of the pail, slowly add the Utilibond powder to the water in the pail, while engaging the drill with the four bar mixing blade. Mix for 2 - 3 minutes until smooth and flowing.

NOTE: Use proper PPE while mixing to avoid inhalation of any airborne Utilibond powder.

6) Use a handheld drill and appropriate mixing blade, mix the bonding compound until it is smooth and flowing. (Mixing time is approximately 2- 3 minutes). Once mixed the Utilibond will appear smooth and creamy with a flow characteristic similar to that of pancake batter.

NOTE: Do not add additional water if the mixture looks dry at the beginning of the mixing process. Keep mixing and the Utilibond compound will "turn" after about one minute and begin to smooth out.

7) Carefully pour the entire pail of Utilibond permanent pavement bonding compound into the hole. Be careful not to disturb the layer of leveling pea gravel in the bottom of the hole while you pour the Utilibond in.

NOTE: Always pour more Utilibond compound into the cored opening than less. Excess Utilibond can easily be removed from the surface of the pavement, and it is crucial to make sure the entire core is encompassed by the bonding compound.

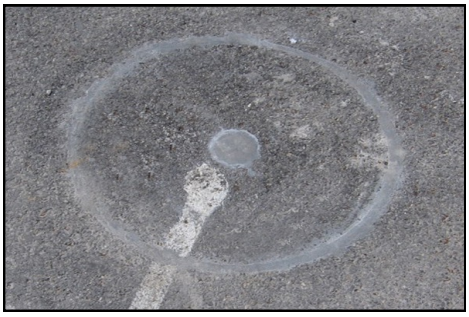
8) Slowly lower the core down into the hole on top of the Utilibond compound. Move the core back and forth with the core puller, while pushing downward and allow the bonding compound to flow up through the cut spaces around the core (the kerf) and over flow slightly onto the surface of the pavement. Remove the core puller and allow the Utilibond to flow up through the centre hole. Ensure the core is level with the pavement by allowing the excess Utilibond to flow up to the surface from the kerf and the pilot hole. Use a flat trowel to clean up any excess Utilibond. Drag the flat edge of the trowel across the edge of the kerf and ensure that the core is flush with the rest of the roadway around the entire circumference of the core.

9) Carefully clean off the excess Utilibond from the surrounding pavement before it dries. The bonding compound will begin to set up within approximately 15 minutes (at 70° F).
Keep the exposed areas of Utilibond "wet" while carefully cleaning off the Utilibond from the surrounding surfaces.
Thoroughly clean all mixing tools and pails before the bonding compound has a chance to set.
Dip a whitewash brush in water and carefully apply moisture to the surface of the Utilibond in the kerf and center pilot hole (or spray with Utilicore) keeping top portion damp until set-up is complete and the surface is firm to the touch.

10) Once the core has set and gained strength (30 minutes at 70° F), use water (high pressure is recommended) to clean off any excess debris and thoroughly sweep the area before leaving.

Properly dispose of all excess Utilibond material and reuse or recycle the Utilibond pail.

NOTE: Empty Utilibond pails are useful for carrying pea stone used in the dry-fitting process, or for water during clean up. Once the excess Utilibond has set in the bucket, turn the bucket over and tap on pavement to remove set Utilibond.



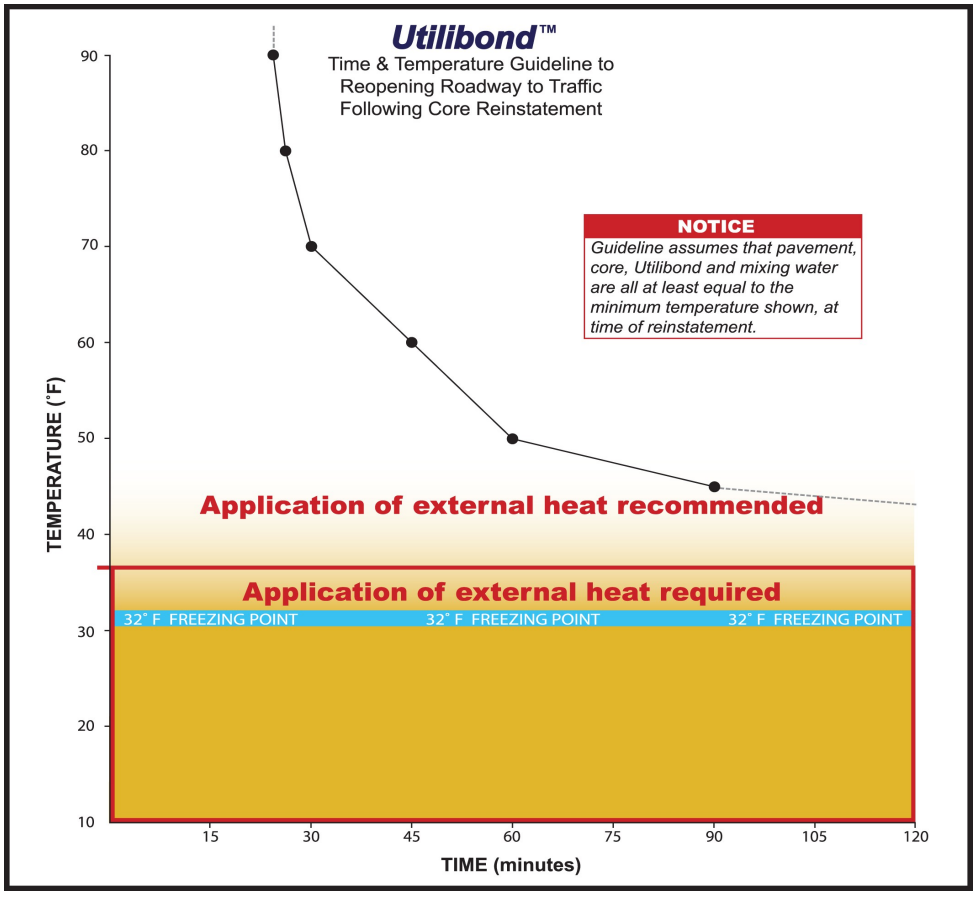
Time and Temperature Guide to Reopen Roadway to Traffic Using Utilibond Core Bonding Compound

Reinstatement at 70°F (21°F) - *30 Minutes* to safely reopen the roadway to traffic
Cores may be safely reinstated with Utilibond and the roadway safely reopened to traffic in approximately 30 minutes when the temperature of the pavement slab, core and bonding materials, including mixing water immediately before placement, are at a minimum of 70°F (21°C).

Reinstatement at 50°F (10°F) - *45 - 90 minutes* to safely reopen the roadway to traffic
Cores may be safely reinstated with Utilibond and the roadway safely reopened to traffic in approximately 60 minutes when the temperature of the pavement slab, core and bonding materials, including mixing water immediately before placement, are at a minimum of 50°F (10°C).

Reinstatement at temperatures BELOW 50°F (10°C)
While reinstatement of cores can be performed with Utilibond at temperatures as low as 40°F (5°C) because of the proximity to freezing temperatures and the danger of frost crystals forming at the bonding interface, it is recommended that a source of external heat, such as a Utilicor Core Heater, be employed to raise the surface temperatures of both the core and the surrounding pavement to 70°F (21°C) at which temperature the bond strength of a typical 18-inch diameter core, 8-inches deep will be capable of supporting a wheel load of at least 30,000 lbs or 3 times the AASHTO H-25 Standard, in approximately **30 minutes** after application, and the roadway can be safely reopened to traffic at that time.

Reinstatement at temperatures BELOW FREEZING - 32°F (0°C)
The Core Heating procedure can also be successfully employed to facilitate core reinstatement with Utilibond at temperatures **below freezing,** providing that the duration and application of external heat from an approved Core Heater is sufficient to raise the temperature of both the core and the surrounding pavement to approximately 70°F (21°C) and the bonding materials, including water, immediately before placement , are at the same minimum temperature of 70°F (21°C)



Cold Weather Core Heater Reinstatement Procedure

The Utilicor Core Heater **should be used** when ambient temperature drop below 50°F as set up times will exceed the 30 minute target. The Core heater **must be used** when ambient temperatures are below 32° F.

Before you begin, make sure the core is dry fitted properly, as per warm weather reinstatement.

Place the core heater base in the hole and connect heater-blower to unit and place core on the base.

Place core cover on top of the Base, and open vents on top of core cover - ignite blower and position into baffle.

Check the temperature occasionally with a non-contact infrared temperature sensor.

When the surfaces of the core reaches at least 70° F, the core reinstatement process can begin. **Note: Make sure the Utilibond powder is stored in a warm location, and use warm water to mix with.**

Remove the core heater and place the core in the opening, which will keep the core warm while mixing the Utilibond. Once ready, remove core, pour in mixed Utilibond, and reinstate the core as per normal procedure.

The reinstated core will begin to set up within 15-20 minutes. Take intermittent temperature readings to better gauge set time.

At 70° F ambient temperatures Utilibond will reach final strength gain in 30 minutes.

Final core reinstated.

As might be anticipated, the duration of heating required to achieve these results at below freezing temperatures, using an approved core heater, will vary inversely with the ambient temperature of the pavement but should not exceed 15-20 minutes in normal circumstances at a temperature down to 10°F (-21°C).

Once the surface temperature of the core and the pavement reach a sustainable 70°F (21°C), normal core reinstatement procedures can be employed and the bond strength of a typical 18-inch diameter core, 8-inches deep will be capable of supporting a wheel load of at least 30,000 lbs or 3 times the AASHTO H-25 Standard, in approximately **30 minutes** after application, and the roadway can be safely reopened to traffic at that time.

Hot Weather Core Reinstatement Procedure

Utilibond™ is specially formulated for permanently replacing excavated cores in asphalt, asphalt and concrete and concrete road systems and sidewalks and other paved surfaces. The rapid hydration and fast strength gain of this product allows the roadway to be reopened within 30 minutes at 70°F/21°C.

However, sometimes cores will need to be reinstated when the ambient temperatures are well above 70° F.

Utilicor deems hot weather to be temperatures when the day time highs exceed 80 °F and extreme hot weather to be above100 °F. When reinstating cores in these hot or extreme hot weather temperatures certain procedures will help the crews attain a proper core reinstatement. Failure to follow these instructions may result in improper or poor reinstatements.

Utilibond™ permanent pavement bonding compound is designed to be mixed with a precise amount of water to the proportion of Utilibond powder. **This ratio should be maintained even in extreme hot weather conditions.** The precise amount of water required is one litre of water for one 22 lbs. bag of Utilibond powder. For a 44 lbs. bag of Utilibond powder, mix with 2 litres of water. Do not alter this ratio the ultimate strength gain and performance of the Utilibond™ will be reduced.

In the case of hot weather and extreme hot weather conditions the following tips will allow for additional working time during the process of reinstating the core:

- **Start with cold water to mix the Utilibond™ and keep the Utilibond™ in a cool place.** As only two litres of water are required for an entire 44 lbs. pail of Utilibond, filling a potable water container with cold tap water before leaving the yard and storing it in the air conditioned cab of a work truck on site until mixing is needed will help to inhibit the set up time of the Utilibond. Make sure the Utilibond powder is as cool as possible before mixing.

- **Reduce overall mixing time**. Utilicor suggests a full three minute mix time of Utilibond™ at 70°F or lower temperatures. At these lower temperatures this with help to accelerate the setting times for the product. However, in hot weather conditions we recommend reducing this time to 1½ minutes, or once the Utilibond™ is mixed through and is lump free, with a flow consistency of pancake batter,

- **Keep everything wet.** This would include the cored portion of the roadway and the core itself before reinstatement occurs. Dampen all portions of the cored roadway and core with a sponge just prior to reinstatement. Spray kerk line and center pilot hole with Utilicure to reduce the chance of cosmetic surface cracking due to rapid hydration of Utilibond.

- **Once the core has been reinstated keep the kerf and pilot hole portions wet**. By using a wet soft bristled brush you can "paint" the top of the reinstated core with cold water – this will help the Utilibond™ to set a little slower and reduce any premature or rapid hydration of the Utilibond. Make sure you keep the kerf and the pilot hole damp. Spray top surface with Utilicure to reduce rates of hydration.

- **Keep the cores cool.** In extreme hot and sunny days the asphalt cores can literally "melt" if left unprotected at the side of the road with the sun beating down on them. An asphalt core will also have the tendency to expand, or "mushroom" due to excessive heat when left in the sun. We recommend storage of cores for short durations in the shade and if possible covered with wet burlap. For longer durations they should be carefully moved to an inside warehouse location.

Remove core puller from core during storage. Once the core has been removed from the roadway it is imperative that the Utilicor puller be extracted from the center of the cut core. If it is left in the core in tightened position it may cause the core to split.

With ambient temperatures of 70°F Utilibond has an initial set in 15 minutes, a final set at 20 minutes and is load bearing at 30 minutes, at which time the roadway can be safely reopened to traffic. At correspondingly higher temperatures set times will be slightly reduced.

Valve Box Reinstatements

1) Core hole through pavement around existing valve box or location of test station.

2) Clean up area. Remove core with core puller or sunken valve box by hand.

3) After test wire is installed and hole is back filled clean the sides of the cored hole.

4) Add 1-2 inches of pea stone and install test box or new valve box

5) Using a straight edge, make sure the top of the valve box is flush with the surrounding pavement.

6) Test box or valve box is flush and ready for reinstatement.

7) Supplies required: Utilibond, water, pea stone, trowels, sponge, whitewash brush, power drill and Utilibond mixing blade.

8) Add one litre of water to the pail. (for larger areas mix both bags of Utilibond)

9) Add bag of Utilibond powder to pail while mixing blade is engaged.

10) Mix for 2 minutes or until Utilibond is smooth and flowing.

11) Add 3 litres (3 full cups) of ¼ to ½ inch pea stone to the Utilibond, mix until blended together. (2/3 Utilibond to 1/3 pea stone)

12) Spray outside of cored hole and test box with Utilicure. Carefully pour Utilibond mixture into the hole around the valve box.

13) Consolidate the mixture into the hole to make sure there are no voids.

14) Smooth and remove excess Utlibond. Trowel smooth.

15) Keep surface wet with whitewash brush to ensure proper hydration. Spray top liberally with Utilicure while setting.

16) Spray top portion liberally with Utilicure.
30 minutes @70°F the roadway may be safely reopened to traffic.

Road Plates - Regular and Securable

- Allows for roadway to be opened temporarily
- Durable 1/4" thick checker plated top
- Precise collar that fits snuggly into cored opening
- Will not tip or spin out of cored hole
- Painted safety yellow for visibility
- Part # 12" / AC-12RP, 18" / AC-18RP, 24" / AC-24RP
- Securable version available with polyurethane expansion ring

Core Heater

- Allows for cores to be reinstated in colder months
- Use when ambient temperatures are below 50°
- Works to below 32° F
- Specially designed baffle heats the cored opening and core at the same time
- Allows for Utilibond set times to be reduced in cold weather
- Available for 18" or 24" diameter cores
- Propane heater not included
- Part # AC-HTR18, (18" cores) AC-HTR24 (18" and 24" cores)

Propane Heater for Core Heater

- Forced air
- 35,000 BTU
- 110 volt or rechargeable battery
- Propane tank not included
- Part # AC-BLR

Infrared Temperature Sensor

- Use to establish ambient core temperatures
- For use with core heater or in extreme temperatures to gauge set times
- Battery operated
- Part # AC-SENSOR

Complete Reinstatement Tool Set

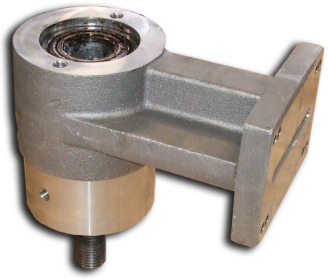
- Tools required to complete core reinstatements
- Includes: 5' lift bar, two flat trowels, one small pointed trowel, sponge, white wash brush, pail opener and Utilibond mixing blade
- Part # AC-SET

Utilibond Mixing Blade

- Four bar mixing blade for proper Utilibond mix
- Fits 1/2" drill chuck
- Part # AC-MIX

Pavement Protection Plate

- Protects top of core from impact when core is stuck inside coring drum
- Part # AC-10IP (12"), AC-16IP (18"), AC-22IP (24")



Complete Pillow Block / Water Swivel Assembly

- Allows water to be channeled to center pilot cutter and coring drum
- Hydraulic motor mounts to top
- 1 1/4 x 7 T.P.I spindle shaft
- Specify shim size in accordance to type of hydraulic motor used (.350 or .420)
- Part # PB-COMP

Pillow Block Spindle Shaft

- Replacement shaft for Pillow block / water swivel
- 1 1/4 x 7 T.P.I spindle shaft
- Part # CP-SHAFT

Pillow Block Water Seals

- Replacement water seals
- Sold as each / two required
- Leather
- Part # PB-WS

Pillow Block Tapered Bearings

- Replacement bearings
- Sold as each / two required
- Tapered
- Part # PB-TB

Pillow Block Bearing Race

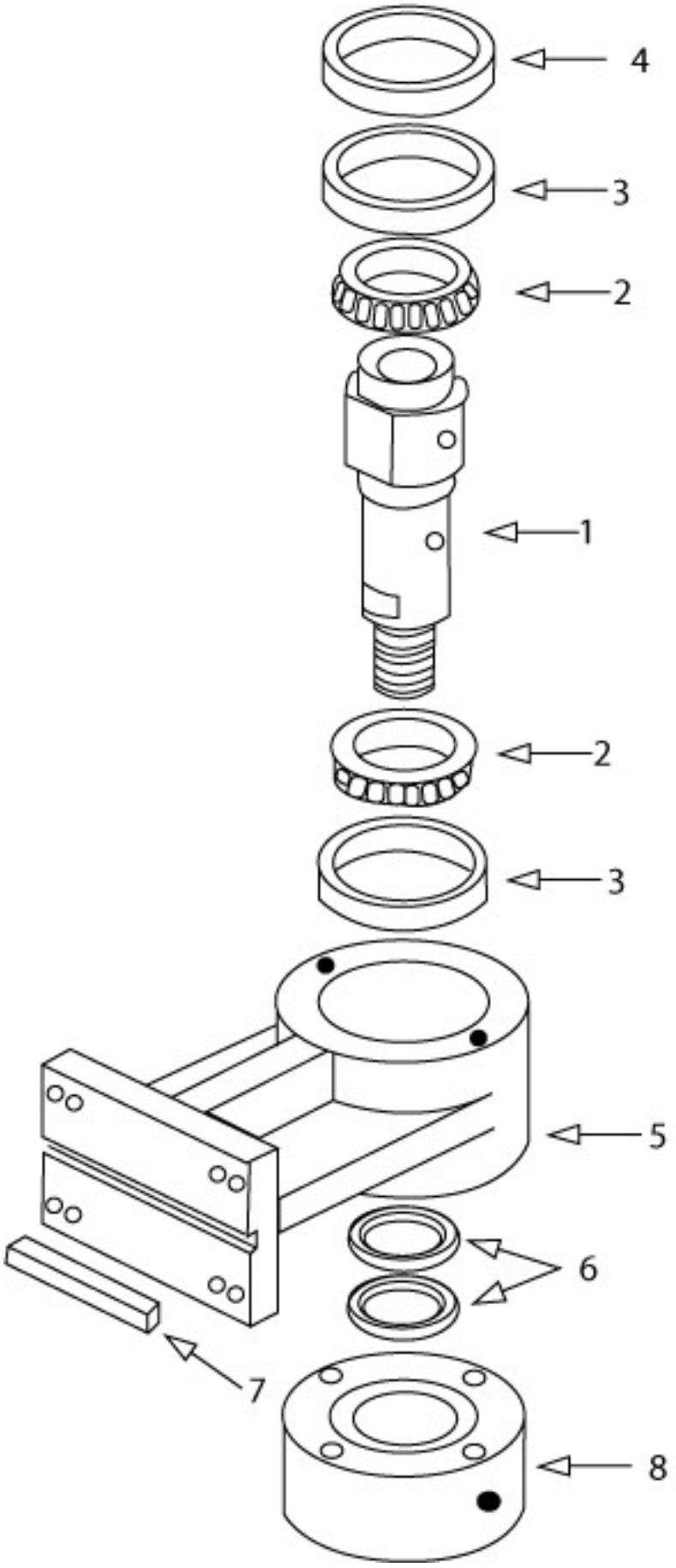
- Replacement tapered bearing race
- Sold as each / two required
- Part # PB-BR

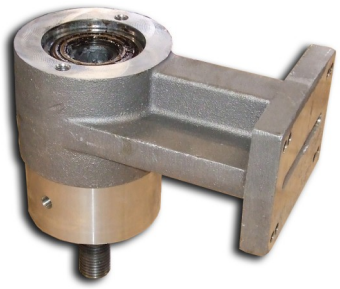
12 Volt Water Pump

- Self priming
- Run dry capable
- Available in 1.8 G.P.M. or 3.2 G.P.M.
- Part # TR-FLOW

Water Filter

- Banjo style
- 50 Micron filter (washable)
- Part # TR-FILTER





1. PB-SS
2. PB-TB
3. PB-BR
4. PB-MS
5. PB-PB
6. PB-WS
7. PB-EX
8. PB-SW

Q: *The kerf line around the core seems to show hairline cracks in it once the Utilibond has set up. What has happened?*
A: The Utilibond has hydrated too quickly. Keep the top portions damp with a brush and water or spray with Utilicure. These are strictly cosmetic cracks and will not effect the bond strength nor the durability of the set core.

Q: *The truck is turned on but there is no hydraulic power / flow. What do I check?*
A: The first thing to do is make sure the E-Stop button is not pushed in. Secondly, make sure the trucks parking brake is engaged. If neither of these things fixes the problem call Utilicor or your distributor to begin troubleshooting.

Q: *We mixed the Utilibond but it looks very thick. What did we do wrong?*
A: Most likely you did not use the proper amount of water. In the twin pack format the white measuring cup must be filled right to the top. Be careful not to "squeeze" the cup as this will displace the water required. Utilibond must be smooth and flowing to allow the core to be set properly. Also make sure to use a proper 4-bar mixing blade. Smaller blades will tend to "whip" the mixture, and wont result in the proper consistency.

Q: *The core drum chatters when we first start cutting an asphalt topped roadway. Why does this happen sometimes?*
A: Some roadways will have a slurry coat applied to the top layer - or the running surface. This slurry coat is sticky and the diamond segments need to get through it to the actual asphalt before the process will become smooth. Try reducing the feed pressure and add some more water via the auxiliary water hose.

Q: *The cores we are cutting seem to be getting stuck more often that not. Why is this?*
A: This can be the result of a number of different factors. First look at the width of the segments on the drum. If they are very worn and getting close to the width of the core barrels tube then the core itself is close to the same width of the core barrel. It may be time to install a new core drum. It is also a factor of what you are cutting through sometimes…. If the roadway is primarily asphalt and it is old and crumbly pieces may break off and get lodged causing the core to become stuck. Try adding more water to flush out the cuttings as well as lifting the core drum up every now and then to help clear the kerf.

Q: *It is taking a long time to cut a core. Longer than it did before. What is happening?*
A: This may be an indication that the center cutter bit is worn out. Check the teeth on the roller cone bit if that is the style you are using - if they are rounded and used up, replace with new. If the center bit is of the carbide style make sure the carbide cutting teeth are not worn out. This is similar to having a dull drill bit…. Dull bits wont cut as fast as sharp ones.

Q: *The core came out in two pieces - it has delaminated. Can we still reinstate it?*
A: This often happens when the asphalt top portion separates from the concrete road base. It may also occur when the asphalt roadway has been overlaid. The cored portions can be lifted out separately, or as one. If the top and bottom piece fit together like a jigsaw puzzle, use the core pullers rubber stopper to bridge both pieces and reinstate as one. However, if they don't fit well together reinstate the two separate pieces individually. When you dry fit the core make sure to fit it lower than usual… reinstate the bottom piece allowing the Utilibond to flow up and on top of the bottom core, then pour in more Utilibond and set the top core portion.

Q: *The cores are a cutting are asphalt and very thin… only 4" thick. Can these be reinstated?*
A: In most cases they can, however there are some extra steps we would recommend. Because asphalt has limited "bridging" strength you will need to create a stable base for the thin core to sit on. When backfilling leave 2" of space below the base of the roadway and dig under the roadway as well. Pour in pea stone and leave the core close to the level of the road during the dry fitting process. Pour the Utilibond and make sure it saturates the bed of pea stone - as this will create a solid concrete plug for the thin asphalt core to sit on.

Q: *The roadway we are reinstating is new, and the asphalt is very black in colour. Can we more closely match this?*
A: Yes. We offer an additive called "Ùtiliblack" which will turn the Utilibond black.

Q: *I have a question that is not listed here. How can I get that answered?*
A: Call Utilicor Technologies directly. We are always happy to help. 1-888-572-6666.

UTILIBOND™ Permanent Pavement Bonding Compound - Non Skid Lot	**Part #**
Utilibond™ Aged Asphalt, 44 lb. bag (per pail)	UB-AA
Utilibond™ Natural Concrete, 44 lb. bag (per pail)	UB-NC
Utilibond™ Aged Asphalt Twin Pack, 2 X 22 lb. bags (per pail)	UB-TPA
Utilibond™ Natural Concrete Twin Pack, 2 X 22 lb. bags (per pail)	UB-TPC
UTILIBOND™ Permanent Pavement Bonding Compound - 48 Pail Skid Lot	
Utilibond™ Aged Asphalt, 44 lb. bag (48 pails @ $75.00 per pail)	UB-AA48
Utilibond™ Natural Concrete, 44 lb. bag (48 pails @ $75.00 per pail)	UB-NC48
Utilibond™ Aged Asphalt Twin Pack, 2 X 22 lb. bags (48 pails @ $80.00 per pail)	UB-TPA48
Utilibond™ Natural Concrete Twin Pack, 2 X 22 lb. bags (48 pails @ $80.00 per pail)	UB-TPC48
UTILIBOND™ Additive	
Utilibond-XL / reduces set time in cold weather	UB-XL
Utiliblack™ Carbon Additive / for "new" asphalt roadways	UB-CB
Utilicure™ Acrylic Latex Emulsion Spray / use with extended Utilibond™ applications / hot weather	UB-UC
Keyhole Coring Equipment (truck, trailer or skid steer not included)	
Minicor-2™ / Coring Attachment for Skid Steers	MINICOR-2
MPX / Multi-Platform Coring Unit - Truck or Trailer Mount	MPX
MPX-*SS / Multi-Platform Coring Unit with "Side Shift" - Truck or Trailer Mount*	MPX-SS
MD-300 / Multi-Directional Coring Unit - Truck Mounted	MD-300
Series 500 / Heavy Duty Coring Unit - Truck Mounted	SERIES 500
Coring Equipment Options	
Deck mounted access steps	TR-DECK
Cold weather winterizing system	TR-CW
MPX truck mount bumper	TR-BUMP
"Stabilizer Deployed" warning system	TR-STAB
Class 5 pintle plate / truck mounted /18,000 lbs. capacity / includes pintle hook and wiring	TR-PINTLE
High Pressure Wash System (1500 P.S.I.)	TR-WASH
Core hoist - 12 volt DC powered, truck mounted 500 pound lift capacity	TR-HOIST
3000 Watt AC/DC Invertor with GFCI bumper mounted receptacle	TR-INVERT
Kohler Diesel engine upgrade for MPX - Model KD6252	TR-DIESEL
Trailer / accommodates MPX coring unit	TR-TRLR
Coring Equipment Storage	
MPX tool boxes	TR-TOOL
36"L x 17"H x 18"D / deck mounted storage box / shelving included (aluminum)	TR-BOXS
84"L x 20"H x 20"D underdeck mounted long handled tool and general storage tool box (aluminum)	TR-BOX
Slidemater heavy duty slide-out storage tray with open storage box (72" x 24")	TR-SLIDE
84"L x 36"H x 18"D / deck mounted storage box / shelving included (aluminum)	TR-BOXL
84"L x 41"H x 24"D / deck mounted box with roll-up doors / shelving included (aluminum)	TR-ROLL
Basic Coring Package	
Includes: core drum, drive adaptor, pilot shaft, center bit, core puller, mixing paddle, impact plate	
18" diameter coring package / Carbide	CR-PKGTT18
18" diameter coring package / Roller cone	CR-PKGBC18
24" diameter coring package / Carbide	CR-PKGTT24
24" diameter coring package / Roller cone	CR-PKGBC24

Coring Drums	Part #
8" diameter Utilicor ProCor coring drum 1 1/4" knuckle or "A" flange cut out / 22" drum depth	CD-8
12" diameter Utilicor ProCor coring drum with "A" flange cut out / 22" drum depth	CD-12
14" diameter Utilicor ProCor coring drum with "A" flange cut out / 22" drum depth	CD-14
16" diameter Utilicor ProCor coring drum with "A" flange cut out / 22" drum depth	CD-16
18" diameter Utilicor ProCor coring drum with "A" flange cut out / 22" drum depth	CD-18
24" diameter Utilicor ProCor coring drum with "A" flange cut out / 22" drum depth	CD-24
36" diameter Utilicor ProCor coring drum "spoke back" top plate with 1 7/8" knuckle / 20" depth	CD-36
48" diameter Utilicor ProCor coring drum "spoke back" top plate with 1 7/8" knuckle / 20" depth	CD-48

Center Pilot Assembly Parts	
Tri-tooth internal pilot bit - 2 3/8" diameter, carbide tipped	CP-TT
Roller cone internal pilot bit - 2 1/2" diameter, tri-cone	CP-BC
Steel internal pilot shaft 18.5" (available in lengths: 15" / 16" / 17" / 18" - all shafts include 1/2" spacer)	CP-SHAFT
"A" Flange drive adaptor / accommodates center pilot shaft	CP-AFLNG

Reinstatement Tools	
Ulilibond mixing blade / 4 bar style	AC-MIX
Steel impact plate for 12" or 18" diameter core drum	AC-IP
Infrared temperature gun	AC-INFRA
Keyhole reinstatement starter tool set (2 flat trowels, 1 pointed trowel, sponge, pail opener, pry bar, 5' lift bar, wash brush, mix blade)	AC-SET
DeWALT 1/2" Chuck, D-Handle Drill for mixing Utilibond™ / Corded / 9 amp	AC-DRILL
Utilicor core puller with 2 3/8" expansion plug, black plated	AC-PULLER
Core puller replacement 2 3/8" expansion rubber plug	AC-PLUG
Core puller replacement handle grips / set of two	AC-GRIP

Road Plates / Core Hole Covers	
Standard / for 12" diameter cored hole / checker plated, 1/4" thick, steel road plate	AC-12RP
Standard / for 18" diameter cored hole / checker plated, 1/4" thick, steel road plate	AC-18RP
Standard / for 24" diameter cored hole / checker plated, 1/4" thick, steel road plate	AC-24RP
Securable / for 12" diameter cored hole / checker plated, 1/4" steel, steel road plate	AC-12RPS
Securable / for 18" diameter cored hole / checker plated, 1/4" steel, steel road plate	AC-18RPS
Securable / for 24" diameter cored hole / checker plated, 1/4" steel, steel road plate	AC-24RPS
Socket tool for 7/8" penta bolt used on securable road plate / 1/2" drive	AC-PENTA

Winter Reinstatement Equipment	
35,000 BTU forced air heater 110 volt (for core heater / propane tank not included)	AC-BLR
35,000 BTU forced air heater cordless / rechargeable (for core heater / propane tank not included)	AC-BLRRC
Core heater - for winter reinstatements of 18”diameter holes (blower not included)	AC-HTR-18
Core heater - for winter reinstatements of 18” & 24” diameter holes (blower not included)	AC-HTR-24
Infrared temperature gun	AC-INFRA

Pillow Block / Water Swivel Parts	
Shim. (.350 or .420 / specify)	PB-SHIM
Tapered bearing race / each (for standard size pillow block)	PB-BR
Tapered bearings / each (for standard size pillow block)	PB-TB
Water seals / each (for standard size pillow block)	PB-WS
Spindle shaft adaptor / 1 7/8" female thread to 1 1/4" male thread	PB-ADPTR
Spindle shaft (1 1/4" x 7 TPI threading / standard size)	PB-SS
Spindle shaft oversized (1 7/8" x 7 TPI threading / oversize)	PB-SSXL
Rebuilt kit (1 1/4" x 7 TPI spindle shaft, water seals, bearing and races for standard size pillow block)	PB-REBUILD
Pillow block assembly complete (1 1/4" x 7 TPI threading / standard size)	PB-COMP
Pillow block assembly complete (1 7/8" x 7 TPI threading / oversized)	PB-COMPXL

Parts and Equipment List

Coring Equipment Parts	PART #
Kohler engine fuel filter - OEM	TR-FUEL
Kohler engine oil filter - OEM	TR-OIL
Outrigger replacement pad / rectangular	TR-PAD
Outrigger replacement pad / round	TR-PADRD
Hydraulic gauge 0-3000 P.S.I.	TR-GAUGE
Hydraulic gauge 0-3000 P.S.I. flush mount style	TR-3000F
Hydraulic tank site glass - Lenz	TR-SITE
Hydraulic replacement filter / hydrapack	TR-HYDFLTR
Core hoist motor / replacement / 12 volt	TR-HSTMTR
Hydraulic motor for high pressure wash pump	TR-HYDMTRW
Splash gaurd doors - one set / accomodates 24" diameter core drums	TR-DOOR
Hydraulic motor for coring drum assembly without R.P.M. sensor	TR-HYDMTR
Hydraulic motor for coring drum assembly with R.P.M. sensor	TR-HYDRTRS
Pendant Parts	
Pendant wire (16/10 or 16/16 - specify) per foot	TR-WIRE
Core hoist remote pendant	TR-PENDHST
Pendant receptacle with hood and mount bracket / 10 or 14 pin (Pendant Side)	TR-PENDF
Pendant receptacle with hood and mount bracket / 10 or 14 pin (Truck Side)	TR-PENDM
Pendant complete / wired / coring equipment	TR-PEND
Water System / Parts	
Low pressure water gun	TR-LPGUN
Water filter / inline (Banjo style)	TR-FILTER
Lid for winterizing water tank (plastic)	TR-LIDW
Lid for 100 gallon water tank (plastic)	TR-LID
High pressure water gun with wand and nozzle	TR-HPGUN
12-Volt demand water pump, self priming (1.8 G.P.M. or 3.0 G.P.M / specify)	TR-FLOW
High pressure water pump (includes unloader / does not include hydraulic motor)	TR-PUMP
Coring Drum Re-toothing	
Re-toothing of 12" core drum	CD-RETIP12
Re-toothing of 18" core drum	CD-RETIP18
Re-toothing of 24" core drum	CD-RETIP24

**Core drum re-toothing includes no charge return shipping