

CHRIS CUTTER

150 TON MODELS



IMPORTANT: Read and understand the entire contents of this manual prior to setting up, operating or maintaining the Chris Cutter. Special attention should be paid to the safety section as well as the safety highlights located throughout this manual. Contact the factory if you do not understand anything in these instructions.

NOTICE

This manual and the examples contained herein are provided “as is” and are subject to change without notice. Cee-Jay Tool Company Inc. makes no warranty of any kind with regard to this manual, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose. Cee-Jay Tool Company shall not be liable for any errors or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual or the examples contained herein.

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CEE-JAY TOOL COMPANY

ONE YEAR LIMITED WARRANTY

For one (1) full year from the date of delivery, any part, excluding the carbide inserts in the teeth, which fails as a result of defective material or workmanship under normal use and service, will be replaced or repaired free of charge when the Chris Cutter is located in the 48 continental United States.

ONE YEAR LIMITED WARRANTY OUTSIDE THE CONTINENTAL UNITED STATES

For one (1) full year from the date of delivery, any part, excluding the carbide inserts in the teeth, which fails as a result of defective material or workmanship under normal use and service, will be replaced or repaired free of charge for the parts itself, with the owner paying all other costs, including labor when the Chris Cutter is located outside of the continental United States.

This warranty is valid only when products covered by this warranty are installed, used and maintained according to the accompanying written instructions. This warranty does not cover 1) component parts which have been damaged by accident, mishandling or improper use, 2) component parts which have been subjected to negligent operation, 3) damage resulting from improper installation, or 4) damage caused by fire, flood, act of God, earthquake, storm, tornado, or other cause beyond the control of Cee-Jay Tool Company, Inc.

THIS WARRANTY SETS FORTH CEE-JAY TOOL COMPANY'S MAXIMUM LIABILITY FOR THE COVERED CHRIS CUTTER. CEE-JAY TOO COMPANY SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES.

TO RECEIVE WARRANTY SERVICE

Call or write:

Cee-Jay Tool Company, Inc
5100 Boyd Lake Avenue
Loveland, CO 80537-0698

1-800-350-9313
1-970-962-9594
FAX 1-970-962-9074
PARTS 1-877-962-9594

When contacting us concerning warranty information be sure to provide the model and serial number of your Chris Cutter

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that will vary from state to state.

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SAFETY GUIDELINES: Cee-Jay Tool Company recognizes that the safe operation of the Chris Cutter is the most important responsibility shared by management and employees. This section of the manual is intended as a guide for those who operate, service and supervise the operation of the Chris Cutter. It is not intended to be a safety code. Our purpose is to alert operators, service personnel and supervisors to the importance of establishing safe operating and maintenance procedures.

Read and understand these guidelines before attempting to install, operate, or service the Chris Cutter. Failure to observe these guidelines may cause serious injury or death.

CAUTION

Never place your hand or any other part of your body into the splitting area of the Chris Cutter unless the main power supply has been disconnected and “Locked and Tagged.”

The Chris cutter uses very high pressures to execute a split. This splitting process will severely injure persons who do not recognize this danger. The power unit should be turned off and the power locked and tagged according to OSHA regulations prior to reaching into the jaw area.

Do not let the desire for increased production overcome the essential need for safety. Failure to follow this simple rule can result in serious bodily injury or death.

CAUTION

Never expose any part of the body to a high pressure leak in the hydraulic system.

The hydraulic system is under high pressure and high pressure fluids can be injected into the body if proper precautions are not taken.

CAUTION

Always wear proper protective clothing when operating the Chris Cutter.

Eye Protection: Splitting stone can produce splinters of stone that can harm the unprotected eye. All personnel operating or working near the Chris Cutter should wear

safety glasses with side shields. Some stone splits with a force that warrants additional protective measures such as full face shields.

Hand Protection: The splitting process can produce a number of razor sharp edges that can seriously injure the unprotected hand. All operators should wear a good pair of protective gloves.

Foot Protection: Whenever split stone is handled, the risk of a serious foot injury exists. Safety- toe shoes should be worn by all operators to protect against falling stone.

Ear Protection: Hearing protection may be necessary depending on the power unit as well as the work environment,. Contact your local health official for specifics on required levels of hearing protection.

CAUTION
**The Chris Cutter as well as the area around
it should be kept free of debris at all times.**

The Chris Cutter can produce a large amount of debris in the course of a day, both on the machine and around the machine. Some means should be devised to remove the stone chips from the area.

The rollers and splitting area should be kept clear of stone fragments at all times. We recommend using a broom or long handled brush to remove stone fragments from the tooth area. Do not remove these fragments with your hands without first turning off the power unit. Operating the Chris Cutter with stone fragments piled up under the teeth can result in machine damage or personal injury.

The area around the Chris Cutter should be kept clear to reduce the risk of tripping.

CAUTION
**Never remove or deface any placard or
decal that instructs the operator or others
of safety precautions.**

The Chris Cutter was shipped from the factory with certain warning placards in place. These placards provide information critical to the safe and efficient operation of the splitter and should not be removed, covered or defaced. If replacement signs are needed, contact the factory.

CAUTION

Inspect all hydraulic hoses and connections daily for leaks or damage.

The hydraulic system is designed for up to 2000 psi of operating pressure. When a leak occurs with fluids under this kind of pressure, as serious hazard exists. All worn or damaged fittings and hoses should be replaced immediately.

CAUTION
Only qualified technicians should be allowed to make adjustments to or perform service on the hydraulic system.

The Chris Cutter has been shipped from the factory with the pressure relief valves set for optimal operation. Altering these adjustments can severely damage the splitter and or cause serious bodily injury. Altering the pressure settings on the pressure relief valves will void the manufacturers warranty.

CAUTION
**Improper lifting or moving of this
equipment can result in personal injury and
equipment damage.**

The Chris Cutter is top heavy and prone to tip over if caution is not exercised whenever the splitter is moved. The top jaw should be lowered as far as it will go whenever the splitter is moved.

If the Chris Cutter is going to be lifted be sure to use equipment of adequate capacity to lift the unit. Lift only from the designated lifting points shown in Fig. 1 and Fig. 2.

When moving the splitter using the available towing package be sure to use a vehicle capable of safely handling the tongue weight of the splitter. Never tow the splitter on public roads using the towing package. It is intended to move the Chris Cutter within the quarry at low speeds and not designed for use on public roads. The electric brakes should always be connected prior to towing the splitter.

Arrangements can be made to have a factory representative come to your site and assist in setting the machine up and training personnel in the proper use of the splitter.

If at any time you encounter problems or have questions please contact the factory directly at 1-800-350-9313.

LOCATION: Before your Chris Cutter arrives at your facility, how and where it will be positioned should be determined. There are several available options:

Permanent Installation: The Chris Cutter will be placed in a permanent location and the stone will always be brought to the splitter. A level reinforced concrete pad or foundation capable of supporting about 30000 pounds should be designed and constructed. If the hydraulic power unit is not mounted on the Chris Cutter, then the pad should be large enough to accommodate the hydraulic power unit as well. It may be desirable to have concrete pads under each of the legs on the conveyors also. Provisions should be made to bolt the Chris Cutter to the foundation or concrete pad to prevent it from moving or tipping over.

Semi-Permanent Installation: The Chris Cutter will need to be moved from time to time. In this type of installation it is ideal to have a pad or foundation similar to the one described above to mount the Chris Cutter onto and remove the towing axle and tongue. The splitter is easier to work with when the axle and tongue are removed and out of the way. If the Chris Cutter cannot be placed on a concrete pad then it may be necessary to leave the towing axle on the machine to add stability to it. Another option is to purchase a pair of support legs that will widen the base of the splitter and add stability to the installation.

CAUTION
Position the Chris Cutter on a hard level surface as it is top heavy and prone to tipping over.

Mobile Installation: The Chris Cutter will be moved frequently from place to place. In this situation it may be easiest to leave the towing axle in place. The axle will prevent the Chris Cutter from tipping over and make it easy to move the splitter whenever necessary. The operator may still want to remove the tongue so that it is easier to move

from the operator position to the out bound table. Always locate the Chris Cutter on a hard level surface and block the wheels in place to prevent it from rolling. If the splitter is to be moved on public roads it is recommended to use a licensed carrier with an appropriate trailer to carry the Chris Cutter. The towing package is not designed to be used on public roads.

CAUTION

The splitter is top heavy and could tip over if proper precautions are not taken. When using the optional towing package, the splitter should not be towed at speeds above 10 mph on hard level surfaces. If the towing surface is not hard and level, slower speeds will be necessary. The towing package is used to aid in moving the splitter within the quarry and not intended for use on public roads.

TOW PACKAGE (optional): The tow package consists of a tongue plate and an axle plate, which are interchangeable and can be mounted on either end of the splitter. The tongue plate can also be mounted with either end up to give some flexibility on the height of the pendle hitch. The tongue plate is held in place using 6 one inch diameter bolts and the axle is held in place using 8 one inch diameter bolts. Follow these steps to remove the towing package.

- 1- Lower the tongue end of the splitter onto the foundation or some other hard level surface.
- 2- The tongue and mounting plate are very heavy. Prior to removing any bolts, place some blocks of wood under the end furthest from the splitter to support it while the bolts are removed.
- 3- Using two 1½ inch wrenches remove the eight bolts holding the tongue in place starting with the bottom two bolts and removing the top two bolts last.
- 4- Use a forklift or other appropriate equipment to move the tongue away from the Chris Cutter.
- 5- With the tongue end of the splitter placed down on a hard level surface, place the jack in the center of the axle as shown in Fig. 3. Raise the axle end until the weight of the splitter comes off the tires. It is not necessary to raise the

tires completely off the ground. Do not raise the Chris Cutter any higher than is absolutely necessary.

6- Block the tires in place.

7- Place some supporting blocks under the Chris Cutter.

8- Lower the Chris Cutter onto the supporting blocks.

9- Remove the six bolts holding the axle in place starting with the bottom two bolts and removing the top two bolts last. Be sure to keep the blocks in place

on both sides of each tire to prevent it from rolling when disconnected from the splitter. Store the bolts in a safe location so that they may be used to reattach the tow package.

- 10- Use a forklift or other appropriate equipment to move the axle away from the Chris Cutter.
- 11- Place a 20-ton hydraulic jack in the place provided and raise the Chris Cutter off of the supporting blocks. Fig. 4.

- 12- Remove the supporting blocks and lower the splitter onto its foundation. The Chris Cutter can now be bolted to its foundation.

To reattach the tow package to the Chris Cutter proceed in the reverse of the removal instructions. Start with the axle plate, bolting from the top down. Do not tighten the bolts until all of the bolts for the axle plate are in place and then torque to a minimum of 500 ft-lbs. If replacement bolts are needed, use only Grade 5 or better. Reconnect the electric brakes and test them prior to moving the Chris Cutter. Be certain that the tires are inflated to at least 55 psi in accordance with the manufacturers inflation recommendations.

LEVELING THE CHRIS CUTTER: Once the Chris Cutter has been moved into position it will be necessary to level the machine. If the tow package is to remain bolted to the splitter, it will be necessary to block the wheels to prevent the splitter from moving. It is preferable to remove the tow package and bolt the splitter down on a hard level foundation.

The operator side of the splitter should be raised $\frac{1}{4}$ to $\frac{1}{2}$ inch above level. This will make it easier for any entrapped air to work its way out of the hydraulic system.

If the Chris Cutter is being fastened to a foundation, use four $\frac{3}{4}$ inch diameter bolts.

Because of the large weights involved and the vibrations caused by the splitting action some settling may occur. It may be necessary to check the level of the machine from time to time and make any required adjustments.

CONNECTING THE HYDRAULIC POWER UNIT: Locate the hydraulic power pack near the splitter in an area that will protect the connecting hoses from falling rocks and excessive foot traffic. If this is not possible it may be necessary to construct a protective cover for the hoses.

There are three hydraulic hoses that need to be connected. Two of the hoses are attached to the splitter and need to be screwed into the appropriate fitting on the hydraulic tank. The third hose is already attached to the tank and needs to be screwed into the appropriate fitting on the splitter. The hoses should lay flat. Do not twist or kink the hydraulic hoses.

Be sure to clean the ends of the hydraulic hoses prior to removing the protective caps. Dirt and other debris may have accumulated on the hoses during shipment and could cause serious damage if allowed to enter the hydraulic system.

CAUTION Do not over tighten the hydraulic fittings.
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Teflon tape or other thread sealing compounds are not necessary on these hydraulic fittings.

CONNECTING THE CONVEYORS: Using the supplied hardware, bolt the conveyor with the hydraulic lift table to the in bound table on the Chris Cutter. The lift table should be located closest to the inbound table. Attach the second conveyor to the back of the first conveyor. The conveyors should be level or have a slight slope towards the splitter and all of the conveyor legs should be properly supported. Each leg has approximately 5 inches of adjustment with the screw out leg support.

CAUTION
An excessive slope on the conveyor could cause stone to roll in an uncontrolled manner causing equipment damage or serious personal injury.

Follow these steps to install the lift table cylinder.

- 1- Remove the lift table top from its holder in the conveyor.
- 2- The hydraulic cylinder for the lift table is fastened to the in-bound table for shipping. Remove it from the in-bound table and pin the clevis end of the cylinder into the bottom of the lift table frame.
- 3- Replace the turn table top making sure the shaft on the hydraulic cylinder seats into the hole in the lift tabletop. The lift tabletop should drop completely down onto the cross brace.

ELECTIC MOTOR INSTALLATIONS: A qualified electrician should be consulted if the hydraulic power pack is powered by an electric motor. All federal and local electrical codes should be strictly adhered to. On three phase power applications, be sure that the hydraulic pump is turning the correct direction.

CAUTION
High voltage may be present in the control cabinet on electrical units. Never attempt

**to service the electrical components
without first disconnecting the power
source.**

GASOLINE OR DIESEL ENGINE INSTALLATIONS: If a gasoline or diesel engine powers the hydraulic power unit it will be necessary to fill the fuel reservoir. Consult the literature provided for your specific engine to review specific starting, break in and maintenance procedures.

CAUTION

**Never remove any guards or enclosures
while the engine is running. Moving parts
can cause serious injury.**

CAUTION

**Never add fuel to a running engine. Hot
engine surfaces and sparks produced from
the engine are possible sources of ignition.**

CAUTION

**Never service the engine when the splitter
is operating.**

CAUTION

**If an engine is used in an enclosed area
some means of exhausting the engine will
be necessary. Inhalation of exhaust gases
will result in serious illness or death.**

CAUTION

**Hot exhaust surfaces may cause personal
injury.**

OPERATING INSTRUCTIONS: Be sure to read the section on safety prior to operating the Chris Cutter. Before starting the hydraulic power pack be sure to check all fluid levels. The oil sight gage on the side of the hydraulic tank has a black mark near the top and a red mark near the bottom. The oil level in the tank should remain between these two lines at all times. If the unit is powered by a gas or diesel engine be sure to check the coolant and engine oil levels.

Start the power pack by either depressing the start button on electric units or by following the start up procedures in the manual for your specific engine. Let the pump circulate the hydraulic oil for a few minutes prior to operating the splitter. DO NOT adjust the throttle cable on engine driven power packs. The RPM is factory set and unauthorized adjustment will void the manufacturers warranty.

CAUTION: The working parts of the hydraulic power pack may get hot when in use. DO NOT TOUCH.
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The control valve operates as follows (see Fig. 5):

Handle #1 In	Raises upper jaw.
Handle #1 Out	Lowers upper jaw.

Handle #2 In	Raises in bound table, extends upper and lower teeth and raises veneer gages if applicable.
Handle #2 Out	Locks teeth in place and lowers the veneer gages
Handle #3 In	Lift table up.
Handle #3 Out	Lift table down.

SPLITTING PROCEDURE: The following steps are the general steps taken to split stone. These steps may vary depending upon the stone and the experience of the operator.

CAUTION:
Always wear safety glasses and protective clothing to protect against splintering stone.

- 1- Raise the upper jaw far enough to get the stone into the machine.
- 2- Extend the teeth and raise the inbound table. The veneer gages will also rise into position if the veneer gage valve is in the open position.
- 3- Insert the stone to the desired depth while keeping the inbound table raised. If the control valve is equipped with a detent kit then the inbound table will remain raised until the handle is pulled to the neutral position. If the operator does not want to engage the detent feature of the valve then do not push the handle all the way forward. In this case the handle will return to the neutral position as soon as the operator lets go of the handle and the inbound table will return to the lower position. Always raise the inbound table prior to moving the stone into the splitter so as to prevent the stone from dragging across the bottom teeth. The carbide in the lower teeth will show premature wear if the stone is allowed to drag across them.

CAUTION:
Always wear safety glasses and protective clothing to protect against splintering stone.

CAUTION:
Always center stone prior to splitting.
Splitting stone off of center could damage
the splitter.

4- Release the center lever used in step 3 to return the in-bound table to the lower position. If the detent feature was used then the operator will need to manually pull back on the lever to return it to the neutral position.

5- Pull the first lever towards the operator to lower the upper jaw until all of the teeth come into contact with the stone. The upper and lower teeth will retract into the upper and lower jaws as the upper jaw is lowered onto the stone. Do not allow any of the teeth to be pushed all the way into the upper or lower jaw. Always leave at least 1/8 inch of clearance between the head of the tooth and the jaw.

6- Lock the teeth in place by pulling the center lever towards the operator.

CAUTION:
Failure to lock the teeth in place prior to
splitting the stone will seriously damage
the splitter.

7- Pull the first lever towards the operator to bring the upper jaw down to split the stone. Start at step one to begin the next split.

TIPS FOR SPLITTING: Every type of stone splits differently and experience is the best teacher. We can only offer general guidelines for stone splitting.

- Whenever possible try to split with the grain of the stone. Although it is possible to split against the grain, the best split quality is obtained when splitting with the grain.
- Remove loose rock and other debris from the stone prior to splitting. Loose layers of stone stacked on top of each other will not split properly.
- Bring the top jaw down on the stone so that as many teeth as possible are in contact with the stone.
- Place the flat side down. Although both the top and bottom teeth will equalize two inches, placing the flat side down makes it easier to ensure that as many teeth as possible are in contact with the stone because the top jaw can be seen by the

operator. Placing the flat side down also makes it easier to roll the stone on the conveyors.

- To improve efficiency only move the upper jaw up as far as is needed to get the next piece of stone into the Chris Cutter to be split. Moving the upper jaw too far up can be a waste of time.
- When splitting fieldstone or other irregular shaped stone, let the teeth equalize up into the jaw beam as far as possible. This will help support the teeth on difficult splits.
- When splitting thin or weak stone, do not lower the top jaw onto the stone at full speed. The stone will most likely break before the split is made. To avoid this, bring the top jaw down onto the stone slowly by letting up on the control lever.

VDNEER GAGES: To activate the veneer gages the veneer gage valve shown in Fig. 6 must be opened. The veneer gages will rise with the inbound table when this valve is in the open position. Close this valve to deactivate the veneer gages. Depending on the type of veneer gage that your machine is equipped with, it is adjustable from 4 inches

up to 18 inches in 1-inch increments. Follow these steps to change the veneer gage setting:

- 1- Turn the hydraulic power unit off.
- 2- Remove the bolts marked “A” and “B” in Fig. 6.
- 3- Slide the veneer gage assembly forward to the desired length of cut and replace bolts “A” and “B”.
- 4- Remove the retaining pin on the hydraulic cylinder shown in Fig. 7 and move it the corresponding location. Bolts “A” and “B” and the retaining pin should be in the same corresponding holes on the respective support brackets.

FLOW CONTROL VALVE: The flow return valve pictured in Fig. 6 regulates the rate of flow of the hydraulic oil back to the hydraulic tank for the inbound table and veneer gages which in turn regulates the speed which they return to the neutral position. The oil supporting each tooth also flows through this valve when the teeth are being pushed up into the jaw beam during the equalization cycle. This valve also allows the

operator to adjust the performance of the splitter to account for different viscosities of hydraulic oil. Do NOT close this valve all the way.

Situation	Reason	Solution
The inbound table will not lift the larger pieces of stone above the bottom teeth.	The flow control valve is open too far and not allowing enough pressure to build up in the hydraulic system to create enough force to lift the stone.	Close the flow control valve until the inbound table will lift the stone above the bottom teeth.
The veneer gages are not coming up into position fast enough. They are moving slowly.	The flow control valve is open too far and allowing too much oil to return back to the tank.	Close the flow control valve until the veneer gages extend at an acceptable speed.
On the extend teeth cycle, the teeth extending too slowly.	The flow control valve is open too far and allowing too much oil to return back to the tank.	Close the flow control valve until the teeth extend at an acceptable speed.
When the hydraulic oil heats up, the inbound table gets weaker and the veneer gages to not move slow.	The viscosity of the oil goes up with temperature.	Close the flow control valve until the situation is corrected.
When cutting thin or weak stone, the stone breaks before the teeth fully equalize.	The flow control valve is closed too far and not allowing the oil to return from the teeth back to the tank	Open the flow control valve up until the teeth equalize without breaking the stone. refer to "Tips for splitting"
When the hydraulic oil is cold, the teeth seem to be stiff and do not equalize as easily as when the oil is warm.	The viscosity of the oil goes down with temperature.	Open the flow control valve up to allow the lower viscosity oil to return to the tank.
The inbound table stays in the up position and does not lower during the split cycle	The flow control valve is closed too far and not allowing the oil to return back to the tank	Open the flow control valve up to allow the inbound table to return to the neutral position.

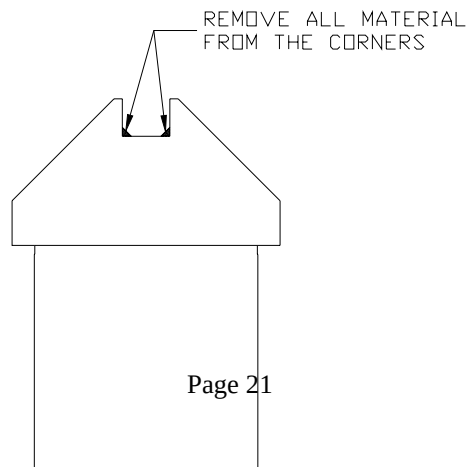
TOOTH REPLACEMENT: It may become necessary to replace a tooth at some time. The following will describe the necessary steps.

- 1- Thoroughly clean the area around the tooth that is to be removed.

- 2- Raise the top jaw up at least 10 inches from the bottom position.
- 3- Remove the retaining bolt located directly inline with the tooth that is to be removed.
- 4- Slide the tooth out of the jaw beam.
- 5- Examine the wiper inside the jaw beam and replace it if it is worn.
- 6- Wipe out the top portion of the tooth hole down to the wiper.
- 7- Clean the replacement tooth making sure there is no debris on the shank of the tooth.
- 8- Insert the replacement tooth into the hole in the jaw beam. In temperatures below 40 degrees Fahrenheit it may be difficult getting the tooth past the wiper. Be sure the new tooth lines up with the other teeth.
- 9- Replace the retaining bolt and torque the top lock nut to 90 ft-lbs.
- 10- Extend the teeth and lock them
- 11- Grease the new tooth prior to using.

CARBIDE INSTALLATION

- 1) Remove any of the carbide remaining in the tooth by heating it with a torch to break the bond of the glue. Do not over heat the tooth because this will remove the temper on the tooth and cause it to develop stress cracks and break. This will only take a few minutes.
- 2) Remove any glue from the corners of the groove with a file, a wire brush, etc. We sand blast the groove. Any remaining material will cause a weak bond and point loading on the carbide which will either cause the carbide to fracture or fall out.
- 3) The bottom edge of the carbide should be rounded slightly to reduce the chance of

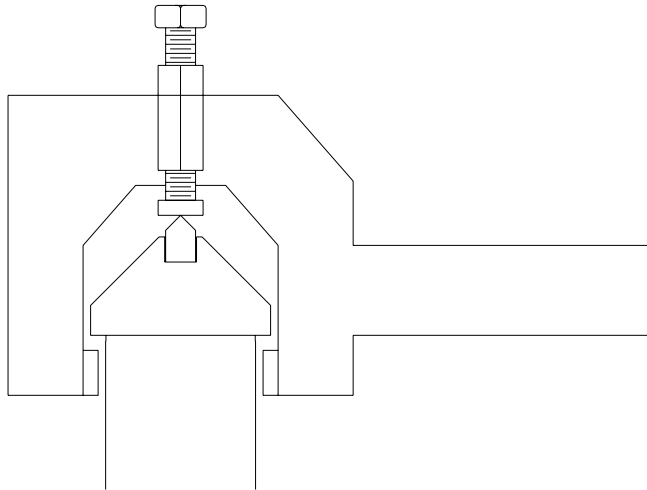


point loading. This can be done on a grinder with a green wheel installed. (Green wheel stones are used to grind carbide.) Cee-Jay Tool Company sends out carbide pre-ground.

4) Roughen the groove with sandpaper and remove any grease and rust with Acetone.

TEMPERATURE FOR STEP 5 IS VERY IMPORTANT. IF THE TOOTH HAS ANY “COLD FEEL” TO IT, AT CEE-JAY TOOL WE RUN HOT WATER ON THE TOOTH TO MAKE SURE THE EPOXY IS GOING TO WORK WELL.

5) Mix the 2 part JB Weld thoroughly. Spread the epoxy on the bottom and sides of both the carbide and the tooth groove, and let it cure under medium clamping pressure for a minimum of 15 hours (24 hours is preferred) in a heated area no less than 55° F.



PREVENTATIVE MAINTENANCE: Proper maintenance will extend the life of the Chris Cutter and result in lower overall operating costs. The following chart describes recommended maintenance items and intervals:

Greasing the teeth is the single most important maintenance on the Chris Cutter. Prior to greasing the teeth, extend and lock them. The grease lubricates the teeth and helps prevent sand and other abrasive material from getting into the jaw. Failure to grease the teeth will damage the splitter and void the manufacturers warranty. Wipe away any excess grease to avoid getting the grease on any stone product.

The hydraulic system has a return line filter with a color-coded pressure gage. When the needle on the gage is in the red zone, it is time the replace the filter element. Use replacement element number CSG-100-P25A or equivalent.

If additional hydraulic oil is needed use Conoco Super Hydraulic Oil 32 or some other equivalent ISO Grade 32 hydraulic oil.

Refer to the following chart for maintenance items and intervals.

Interval	Item	Quantity
Daily	Check hydraulic oil level	1
Daily	Check engine coolant level	1
Daily	Inspect all hydraulic hoses & fittings for leaks	-
Daily	Check engine oil level	1
Daily	Grease the teeth	36
Daily	Cleanliness around jaws and teeth	-
Daily	Check the hydraulic filter	2
Daily	Check for cracked or broken carbide	36
Weekly	Air cleaner on engine	1
Weekly	Brass filter on bottom of in bound table cylinders	2
Weekly	Grease the side guides	14
Semi-Annual	Condition of the hydraulic oil	-
Semi-Annual	Overall condition of the hydraulic system	-
Semi-Annual	Wear on the brass guides	-