KEG Super Cutter Plus 150

Archived manufacturer manual | March 2014 edition

Historical reference - confirm your unit before use
This is a dated manufacturer manual, not confirmation of a current setup or approval for a particular unit. The original KEG pages follow without changes. Match the model, serial number and fitted equipment with JPS before using configuration-dependent procedures.

Model reference: 0020 0242 (Super Cutter Plus 150)
Original edition: Volume 3, March 2014

Known differences to confirm

Operating minimum. This 2014 manual lists 35 GPM and 1,200 PSI. The current catalog lists 40 GPM and 1,700 PSI, within a 40-80 GPM / 1,700-3,000 PSI range. Confirm the unit requirements before operation.

Expanded setup. The base pipe range is 6-16 inches. Operation up to 24 inches requires the appropriate expansion equipment. The manual gives separate requirements for 20/24 inch operation; match those procedures to the actual kit.

Supplied equipment. Confirm the swivel, inserts, chains, skids and expansion parts fitted to the actual unit. The historical parts list is not a promise of demo/used package contents.

Get the setup checked

Send the model/serial number, photos of the unit and fitted parts, machine GPM and working PSI, hose inside diameter and length, pipe size, and expansion equipment. Confirm the exact unit and setup before operation.

Contact JPS: jetterprosupply.com/pages/contact

Historical warranty statements and kit contents in the manufacturer manual do not establish the supplied demo/used package or JPS sale terms.

Technical comparison: SBK-F26, printed page 46; original manual, pages 11 and 16. The source dates and product specifications do not establish a serial-specific revision match.

The Difference Is Performance!

KEG Technologies, Inc.
Super 150 Chain Cutter Manual



Member

Volume 3

March 2014

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MISSION STATEMENT

KEG Technologies' commitment is to our customers and our industry by providing quality products supported through continuous education and technology improvement.

SCOPE

This manual is intended to provide the user with a comprehensive description of, and safe operation instructions and maintenance instructions for, sewer maintenance tools in the KEG Chain Cutter Family of products.

INTRODUCTION

You have purchased a high quality tool that can be used for removing deposits, scale and/or roots in pipes and sewers of all kinds. Careful use per these guidelines should afford accident free operation, efficient performance and long service life.

WARRANTY

Warranty Overview

- KEG offers a Limited Lifetime Warranty against Manufacturing Defects,
- Five (5) Years on all Ceramic Inserts,
- Three (3) Years on all Tool Bodies (Nozzles, Floor Cleaners, Chain Cutter/Running Axles) with replaceable inserts,
- Two (2) Years on Distance Plate Fin and Tube Assemblies. (Chain Cutter),
- Two (2) Years on Rotating Bodies (Chain Cutter/Rotor Nozzles),
- One (1) Year on Chain Cutter Skids and Distance Plates,
- One (1) Year on Swivels. (When shipped with Original Tool),
- One (1) Year on Tier 1 Nozzle, Steel Inserts and Holders,
- One Hundred Eighty (180) Days on Remanufactured Tools,
- Ninety (90) Days on NEW Replacement Warranty Items,
- **All KEG chain cutters shipped after January 1, 2007 are accompanied by a "birth certificate" that indicates the user and seller information, configuration details, serial number, etc.**

Wear Items – Not Under Warranty

- Nuts, Bolts and Washers
- Cross Cutters
- Rotating Nozzles
- Cutting Chains (Both Roller & Link)
- Chain Breakers
- Grease Guns
- Hand Tools
- Seals and/or Spacers

KEG Technologies offers a limited lifetime warranty on tools and items manufactured by KEG. This warranty applies against manufacturing defects. Limited warranties exist on all additional bodies, inserts and components. KEG Technologies will not warranty items against loss, failure and/or damaged due to: improper set-up, improper assembly, abnormal wear (e.g. dragging the tool), improper use (INCLUDING FAILURE TO CLEAN AND VIDEO BEFORE EACH USE OF THESE TOOLS), use outside of the design parameters of these tools, unauthorized modification of these tools, or failure to perform recommended maintenance.

SAFETY

Safe usage and operation of a KEG Chain Cutter is the main focus of this manual. Improper set-up, improper use, and use of the tool outside its intended design purposes **WILL** result in damage to the tool and/or injury to the operator(s) of the equipment.

Federal, State & Local Regulations

Safe work practices, environmental guidelines and standard operating practices must be adhered to at all times. Always use these tools in accordance with Federal, State, and Local regulations (e.g. OSHA and EPA regulations, traffic control and signage, local ordinances and safe work practices).

Signage

Always observe and follow the signage found on the tool box in which the unit is stored. At any time, should the signage become worn, faded, damaged or otherwise unreadable please contact KEG Technologies, Inc. for replacement decals. *Below, please find the safety signage found on the outside of the toolbox.*



Figure 1 - Clean and Video label



Figure 2 - Warning label

Design

The KEG chain cutter family incorporates both high rotational speeds and high rotational torque. The devices' combination of speed and torque gives these units the edge over other style cutters/scrapers. As many sewer equipment operators have not had extensive experience with this type of cutting device, proper care and use of the unit, plus adequate training in setup, maintenance, and operation of these tools is paramount to the safe use and life of the tool(s).

Modification and OEM Parts

Modification of the tool **WILL** result in operator, tool and/or infrastructure damage. Modification of the tool by persons other than KEG employees VOIDS the manufacturer's warranty. Use of non-OEM parts, without KEG Technologies' consent, will damage the unit or infrastructure, and void the manufacturer's warranty. Use of link style chain, without the consent and training by KEG Technologies' personnel, will damage the tool and infrastructure. Use of additional items (knockers) affixed to the ends of the roller chain, without the consent and training by KEG Technologies' personnel will damage the tool and infrastructure. ***Improper use of the tool in any of the above described way(s) relieves KEG of any and all liability or any other responsibility, both legal and monetary, for damage to infrastructure, equipment, or physical harm to any person operating or otherwise involved in the use of these tools.***

Cleaning and Inspection

Cleaning and visual inspection (specifically, by use a CCTV crawler or other types of sewer inspection camera systems) of the infrastructure prior to the use of a KEG chain cutter **is required** for multiple reasons.

- Cleaning removes material that may impede the movement of the unit through the infrastructure,
- Cleaning removes the small particulate material that may damage the unit's rotating element,
- Cleaning removes large materials that may abnormally wear the cutting chains, thus shorting the life expectancy of the chains,
- Visual inspection allows the user to see the real condition of the infrastructure. (e.g. off-set joints, line deformation and/or damage, protruding services, misaligned joints, lateral utility bores, etc.),
- Visual inspection allows the user to see what materials are present in the pipe conduit and that may be removed from the infrastructure,
- Visual inspection allows the user to verify the absence of foreign and/or unknown or undocumented infrastructure(s) passing through the line or lines to be cleared. (e.g. telecommunication cables, other fiber optic cable, gas and water lines, electrical services, etc.).

Warranty Disclaimer – Failure to Clean and Inspect Before Operations

Warning:

Failure to clean and visually inspect the infrastructure with a camera system prior to the operation of the chain cutter may result in damage and/or failure of the tool and/or infrastructure. Failure to follow these precautions may also result in the serious injury or death of the equipment operator as well. Use of the tool prior to cleaning and visual inspection of the pipe conduit will also void all warranties offered by KEG Technologies, Inc.

Set-up

Proper set-up is vital to safe operation of the chain cutter products. Improper setup, for the infrastructure size being worked, will result in damage and/or failure of the tool, and may also damage the infrastructure. Proper set-up of all the chain cutter products is further explained in the Set-Up and Operations section of this manual.

Maintenance

Proper and regular maintenance will further assure the safe operation and long life of the tool. If periodic maintenance is not performed on the unit, this lack of care will result in the tools failure to effectively operate, and shorten the expected life of the tool. *Failure to perform the recommended service/maintenance may void all warranties if it is determined by KEG that the tool(s) in question were not properly maintained.* Proper and recommended maintenance is further explained in the Maintenance Section of this manual.

Prior to Using A KEG Chain Cutter

- Flush the truck or trailer's water system, at full volume capacity (in GPM), without restriction, i.e. with no tool attached, for thirty (30) to sixty (60) seconds before every operation. This initial flushing removes sediment and /or rust that may have accumulated in the tank or hose during inactive periods,
- Visually inspect the chain cutter tool for damage, cracking, excessive wear, etc.,
- Set-up the tool for the diameter of the infrastructure (e.g. an 8" line requires an 8" set-up. ***NOTE: OPERATING A KEG CHAIN CUTTER IN A PIPE DIAMETER LARGER THAN THE MACHINE'S (e.g. 8" setup in 12" pipe, etc.) SETUP WILL ALLOW THE CUTTER TO WOBBLE WITHIN THE PIPE, BECOME UNBALANCED, AND MAY ALLOW THE CUTTER TO TURN SUFFICIENTLY IN THE PIPE TO APPLY TORQUE AGAINST ITSELF. THIS ACTION CAN CAUSE A CATOSTRAUPHIC FAILURE OF THE TOOL, DAMAGE TO SURROUNDING PIPE AND INFRASTUCTURE, VIDOE EQUIPMENT, AND MUST BE AVOIDED,***
- Verify that the rotating nozzles have sufficient clearance (approx. ¼") between the end of the nozzle and inner edge of the skid before engaging the tool under pressure,
- Check and ensure that the chains are of equal length on each side of the chain retainer,
- Check and ensure that the chain ends are the same configuration (i.e. Open/Open link or Closed/Closed link),
- Ensure that the chains do not extend more than three quarters of a link length beyond the skids,
- Check all fasteners' (nuts/bolts/washers, swivels, etc.) "tightness" prior to every usage of the tool,
- Place the tool fully in the pipe (a minimum of two feet inside the manhole) **prior** to engaging the water system. **Never operate the tool(s) at pressure outside the sewer line or in the open area of the manhole**,
- Reset the hose footage counter on the truck or trailer's hose reel prior to usage in a pipeline.

Start-up and Use

- Never operate the tool outside the confines of a pipe or in the open or bench area of the manhole,
- Engage the water system slowly, ensuring that the unit starts to "spin-up" (rotate properly and freely),
- Operate the water system at the recommended pressures prior to moving the tool,
- Do not allow the tool to be stationary while rotating for more that 5 seconds,
- Limit the travel of the tool to not more than two (2) feet per second,
- Engage the debris to be removed slowly,
- Move the tool "back and forth" while engaged in the debris,
- Never retrieve the tool without the water system in use and the chain cutter under power,

- Never allow the tool to exit the confines of the pipe in the "upper manhole", i.e. the next manhole away from the operator's station in the direction in which the tool is traveling in the pipeline,
- Never pass the cutter through an "upper manhole" under power,
- Clean and inspect the tool after each use.

PRODUCTS

Overview

All KEG Chain Cutters "spin" on a thin film of water, between the stator shaft and rotating element. A rotating bushing, inside the rotating element, protects the cutter from galling the stator or rotor due to steel-to-steel contact. *The use of oils or petroleum products to displace the residual water in the tool post usage IS NOT REQUIRED and will damage the cutter's rotational bushings, thus increasing the chance of tool failure. This practice will also void the KEG warranty on the tool.*

All KEG chain cutters are provided as a kit. Basic hand tools and sufficient spare wear items are provided with each cutter kit. This kit provides the user with tools and spares in order to configure/reconfigure the unit in the field, at the workbench, or at the jobsite.

All KEG chain cutters are shipped with fixed or adjustable skid assemblies, depending on the style cutter. In the Micro Cutter or Hummingbird series (½" swivel), the unit is shipped with one (1) fixed skid. In the Mini-Cutter series (½" or ¾" swivel), each unit is shipped with a set of three (3) fixed skids, one each in 4", 6" and 8" diameters. *It should be noted that the 4" skid in the Micro Cutter and Mini Cutter are not interchangeable!* Finally, the Super Cutter Plus 150 series and Super Cutter Plus 200 series are shipped with adjustable skid assemblies depending on the model cutter and the pipe diameter setup(s) purchased. Each unit is designed to pass through infrastructure with a single offset [(1)] of the pipe. *Design and configuration of the cutter skids are based upon the following rule of thumb.*

> ***Pipe / sewer diameter x 0.95 = adjustment diameter of skid assemblies***
> ***(Example: pipe diameter 12" x 0.95 = 11.4" adjustment diameter)***

Micro Chain Cutter

The Micro Chain Cutter, or Hummingbird, is KEG's latest addition to our chain cutter family. The Micro is suitable for ½" applications where light grease, scaling or vegetation is the major problem. As with all KEG cutters, cleaning and video inspection should take place **BEFORE** operating this unit. The Micro is supplied with one (1) 4" fixed skid and can be operated with or without this skid attached. See below for more information.

Mini Chain Cutter

KEG's Mini Chain Cutter is a long time staple of the Chain Cutter family. Our Mini Cutter is available with a ½" swivel or a ¾" swivel. The ¾" unit can also be operated with a 1" expander fitting to operate to flows up to 60 GPM. Mini Cutters are supplied with three fixes skids in the 4", 6", and 8" configurations.

Super Cutter Plus Series

The Super Cutter Plus (SCP) series is suitable for use with a number of different waters systems and hose sizes. The SCP series uses a set of five (5) skid and distance plate assemblies, unlike many other cutters/scrapers found in the marketplace. The use of five individual skid assemblies reduces the tilt angle[3], while still maintaining the unit's ability to pass through a single offset[1] in the pipe. With the use of special additional items these units can operate in a number of different pipe diameters above the basic kit configurations. This series of cutters also may be configured for operations in Egg-Shaped Pipe[2].

Since all sewer hose has a natural twist in its construction, the units are shipped with a high pressure swivel connection. This swivel allows the release of the twist without transferring it to the cutter. Periodic maintenance and inspection of the swivel, including lubrication with the grease gun provided by KEG, is necessary in order to ensure trouble free operations. *Lubricating the swivel is the only lubrication these tools require.*

Table 1 - Chain Cutter Pipe Size and Operating Ranges

Chain Cutter Type	Nominal Pipe Diameter (Inches)														Egg-shaped profile
	2	3	4	6	8	10	12	15	16	19	20	24	36	48	
Micro – Cutter (Hummingbird)	X	X	X												
Mini-Cutter			X	X	X										
Super Cutter Plus 150				X	X	X	X	X	X		X(2)	X(2)			X(2)
Super Cutter Plus 200					X	X	X	X	X	X	X	X(2)	X(2)	X(2)	X(2)
Super Nova 4000				X	X	X	X	X	X		X(2)	X(2)		X(2)	

(1) Single Offset – Infrastructure joint misalignment not greater than an infrastructure's single wall thickness

(2) Additional equipment required

(3) Tilt angle – The included angle measured when a single skid is in contact with the wall and allowed a side to side "rocking" motion

SUPER CUTTER PLUS 150

The Super Cutter Plus 150 (SCP 150) series of chain cutters allow the user to operate the unit in many different nominal pipe diameters, ranging from 6" to 24"[(2)]. The unit requires a minimum of 35 GPM and 1,200 PSI to a maximum of 80 GPM and 3,000 PSI. The unit comes with a 1" hose connection but is able to operate on both ¾" and 1¼" water systems with the use of either a reducing bushing or expander coupling. The base unit has an operating pipe diameter range from 6" to 16".

Table 2 - SCP 150 - Basic Kit Contents – 200242-C

Part #	Qty	Description
00200242	1	Super Cutter Plus 150 - Main Body
00200070	1	Cross Cutter - Stainless Steel
00200007	1	Dismantling Key
00210016	5	Distance Plate 6" x 4"
00210045	5	Standard Skid - Super Cutter 150
00200033	15	Hex Head Bolt - 8mm - Short
00210082	15	Hex Head Bolt - 8mm - Long
00210083	30	Hex Head Nut - 8mm
00210084	30	Lock Washer - 8mm
00200017	4	Rotating Nozzle 16mm - 0.65"
00100134	4	Insert - M6 - Ceramic - Rotation
00200018	4	Rotating nozzle 30mm - 1.2"
00100175	4	Insert - M6 - Ceramic - Rotation
00100130	5	Insert - M14 - Ceramic - Propulsion
00200022	1	Chain - Replacement - 15 ft.
00800064	1	Chain Breaker
00800012	1	Swivel Joint - HP - 1" NPT
00800024	1	Bushing - Reducing - 1" x 3/4" – ***Optional Part***
00800055	1	Grease Gun
00800057	1	Tool Box 26"
00900018	1	1" Leader Hose, 12" long
9 pc Wrench Set	1	9 Pc Wrench Set
00900035	1	Loc-Tite - Anti-Seize - 1 oz. Tube
00900034	1	Loc-Tite – Blue, non hardening
00900030	1	6mm Allen Wrench
00900031	1	5mm Allen Wrench
00900032	1	4mm Allen Wrench
00900033	1	3mm Allen Wrench
	1	Operating Instructions

Set-Up and Operations

Basics

A cross cutter should be fitted to the front of the chain retainer. For this purpose, a quick fastener is provided at the top of the cutter. Additional tools may only be used only with the manufacturer approval; otherwise any warranty claims will be rejected,

- In order to prevent the high pressure hose from being twisted/turned, and the chain cutter body rotating in pipe, it should only be used with the high pressure swivel joint fitted at the rear of the cutter.
- Before putting the device into operation, as well as after each use, all screws and screw connections must be checked for tightness and possible damage. Loose and/or damaged items must be retightened or replaced,
- It is more efficient if the operator work the tool against the direction of flow, allowing the flow to remove debris as it is cut from the pipe,
- Use of a Chain Cutter in either high water or underwater conditions is discouraged. Either of these conditions will reduce the power and rotational speed of the unit. Pipes in these conditions should be de-watered, plugged, or otherwise have the flow bypassed before operating the cutting unit,
- In order to prevent damage to the unit, the chain cutter should never be pulled out of the working area (pipe/sewer) without water pressure being applied; otherwise dirt could penetrate into the unit, and cause a rotational lockage,
- The units should *NEVER* be allowed remain stationary and laboring upon the debris being removed. A slow back and forth motion is suggested,
- Always have the chain in a balanced condition. Never operate the unit without an equal number of links on each side of the chain retainer. Also, never operate the unit without the chain ends either being "open/open" or "closed/closed". Further details may be found in the chain section of this article,

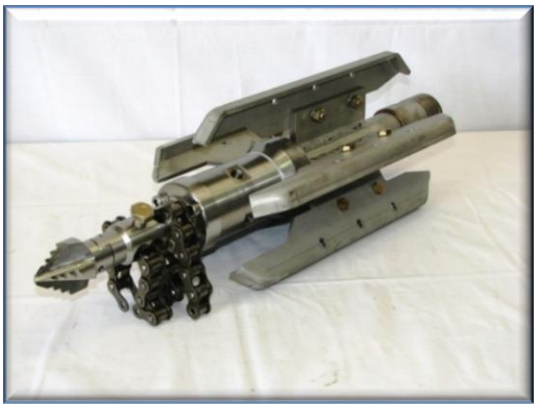


Figure 3: SCP 150

- Use only the supplied inserts for both the rotational and propulsion nozzle. Use of other inserts or mixing inserts will cause the unit to operate improperly. The calculation of the nozzle sizes should be made according to the performance parameters of the pump (water flow per minute, pressure, diameter and length of hose).

Use of Hand Tools

- Use the appropriate sized tools for all fasteners (e.g. 13mm wrench fitted to a 13mm bolt head),
- Fully engage all open or closed ended wrenches with the fastener,
- Fully engage the hex-wrench inside the hex sockets of all socket hex-headed cap screws,
- Place the lock washer between the nut and fin/plate assemblies,
- Tighten only the nut when locking a "Nut & Bolt" assembly,
- Do not over tighten fasteners (excessive elongation or "stripping" may occur),
- Use only a "drop" of medium grade "Loc-Tite",

- Apply a light coat when using anti-seize compounds,
- Never re-use a "flat" lock washer,

Chain Set-up

- Always have the chain in a balanced condition,
- Never operate the unit without an equal number of links on each side of the chain retainer,
- Never operated the unit without the chain ends either being "open/open" or "closed/closed",
- Check and ensure that the unit's chains do not extended, beyond the unit's centering skid assembly, more than ¾ of a chain link. The type of materials to be removed dictates how to setup the chains.

For removing light roots and deposits the chains should be adjusted with the same length on both sides of the chain retainer, and the rear chains being adjusted with the same number of chain links (as pictured below).



Figure 4: Open/Open Configuration



Figure 5: Closed/Closed Configuration

Application for light roots (e.g. hairline or curtain roots in joints and service connections) prior to finishing or reconstruction – Note: Forward chain is one link smaller. Set-up also used for "final" pass. *NOTE THAT THE ABOVE PHOTO SHOWS THREE CHAINS; A SCP 150 USES ONLY TWO.*

Application to "light" deposits (e.g. grease, hardened silts, mortar, etc) up to a 20% debris load – Note: Forward chain is one link smaller. Set-up also used for "final" pass. *NOTE THAT THE ABOVE PHOTO SHOWS THREE CHAINS; A SCP 150 USES ONLY TWO.*

For removing total root growth and/or hard deposits the chains should have equal lengths on both sides of the chain retainer, and have the lengths varied (short to long) from the front of the chain retainer to the rear, i.e. staggered length.



Figure 6: Root Removal Configuration



Figure 7: Blockages & Hard Deposits Configuration

Set-up for total root growth, blockages by rags, paper, wood pulp, and grease – Note: Chains are in staggered lengths with open/open ends. A final "finishing" pass may be required prior to reconstruction.

Set-up for blockages with hard deposits (e.g. cement, mortar, granite-like deposits, etc.) – Note: Chains are staggered length, with ends reinforced. A final "finishing" pass may be required before reconstruction.

General

The Super Cutter Plus 150 series basic kit has an operating range of 6" to 16" infrastructures. The SCP 150 series use an adjustable five (5) skid assembly in order to "center" the unit in the infrastructure. Additional assemblies can be added in order to use the tool in other infrastructures other than that supplied in the basic kit. The SCP 150 series basic kit is packed with the necessary hardware and spares to setup the unit in all of the pipe size configurations that the unit is designed to operate. The rotating nozzles supplied *do not* have to be positioned at a perfect 90° alignment, as the unit is designed to have ample torque when the rotating nozzles are within 20° degrees of the center facing position.

6" Pipe Operations

The 6" setup requires connection and use of the flexible extension hose, supplied with the basic kit; this will allow easy attachment to the sewer hose. Use only the 16mm rotating nozzles, install using the 17mm wrench and lubricate the threads with a "silver" anti-seize. The skid assemblies are placed further back on the unit and the front skid recess is close to the rotating barrel. Use of the "long" 8mm bolts is required to ensure proper thread engagement, also always use the supplied lock washers with the nuts and bolts. Check and ensure that the unit's chains do not extended, beyond the unit's centering skid assembly, more than ¾ of a chain link.



Figure 8: SCP150 in 6" Configuration

8” Pipe Operations



Figure 9: SCP in 8" Configuration

The use of the flexible extension is not required in the 8” set-up, although use of the extension will not hinder the unit’s performance. **Use only the 16mm rotating nozzles, install using the 17mm wrench and lubricate the threads with a “silver” anti-seize.** The skid assemblies are placed on the unit using the middle bolt holes. The unit’s skids will be centered on each fin assembly. Use of the “long” 8mm bolts is required to ensure proper thread engagement, also always use the supplied lock washers with the nuts and bolts. Check and ensure that the unit’s chains do not extended, beyond the unit’s centering skid assembly, more than ¾ of a chain link.

10” & 12” Pipe Operations

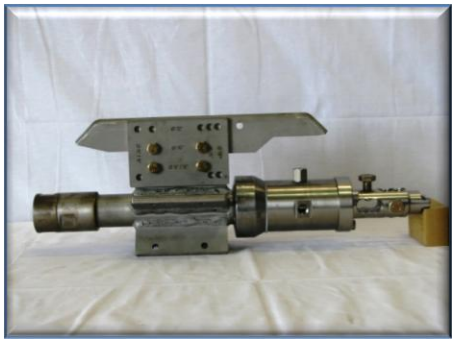


Figure 10: SCP150 in 10/12" Configuration

The use of the flexible extension is not required or suggested in the 10” & 12” set-up. **Use only the 16mm rotating nozzles for the 10” setup and either the 16mm or 30mm rotating nozzles in the 12” setup, install using the 17mm wrench and lubricate the threads with a “silver” anti-seize.** The use of the distance plate is required for proper assembly. The distance plates are marked corresponding to the nominal pipe diameter. Bolt the distance plate marked 10”/12” to the outside of the fin assembly using a “long” 8 mm bolt. Bolt the skid to the inside of the distance plate, locating it with the corresponding holes, either 10” or 12”. Use of the “short” 8mm bolts are required, use of “long” bolts may result in damage to the exposed threads while the unit is in operation. Also, always use the supplied lock washers with the nuts and bolts. Check and ensure that the unit’s chains do not extended, beyond the unit’s centering skid assembly, more than ¾ of a chain link.

15” & 16” Pipe Operations

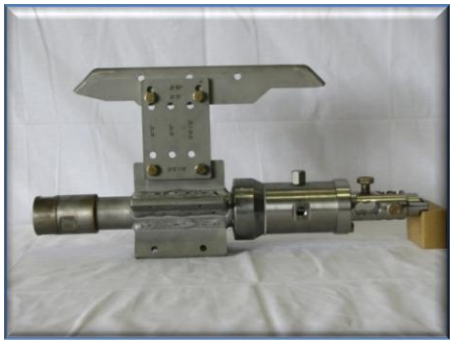


Figure 11: SCP150 in 15/16" Configuration

The use of the flexible extension is not required or suggested in the 15” & 16” set-up. **Use only the 30mm rotating nozzles for these setups. Install the rotating nozzles using the 17mm wrench and lubricate the threads with a “silver” anti-seize**. The use of the distance plate is required for proper assembly. The distance plates are marked corresponding to the nominal pipe diameter. Bolt the distance plate marked 15”/16” to the outside of the fin assembly using a “long” 8 mm bolt. Bolt the skid to the inside of the distance plate, locating it with the corresponding holes, either 15” or 16”. Use of the “short” 8mm bolts are required, use of “long” bolts may result in damage to the exposed threads while the unit is in operation. Also, always use the supplied lock washers with the nuts and bolts. Check and ensure that the unit’s chains do not extended, beyond the unit’s centering skid assembly, more than ¾ of a chain link.

20”/24” Pipe Operations

***NOTE: 20”/24” pipe operations require a minimum of 80 GPM and 2000 PSI*.** **For a complete set of parts for the 20” and 24” operation, see Table 10 below.**

In able to use the SCP 150 in either the 20” or 24” configurations an additional kit is required. Additional longer skids and longer distance plates plus a set of 50mm rotating nozzles are supplied with the expansion kit. **Use only the 50mm rotating nozzles for this set-up**. Install the rotating nozzles using the 17mm wrench and lubricate the threads with a “silver” anti-seize. The single long distance plate is attached to the fin assemblies’ outer edge using the “long” 8mm fasteners. The longer skid is attached to the inner side of the long distance plate using the “short” 8mm fasteners. The skid must be installed with the “shortest” edge placed towards the chains.

Egg-Shaped Pipe Operations

The SCP 150 is able to operate in Egg Shaped pipe with the addition of the Egg Shaped Pipe Expansion Kit. The kit may be use with either the basic kit or in conjunction with the 24” Expansion Kit. Use the recommended rotating nozzle for the nominal pipe size set-up. The cutter’s lowest/longest leg must be extended to engage the “valley” of the pipe. The additional skids should be set to the nominal pipe diameter. Always use the inside/outside mounting configuration for distance plate additions.

Spray Bar Operations

The SCP 150’s rotating nozzles may be replaced with a set of spray bars, thus allowing the unit to be used a large diameter 360^{o} rotating nozzle. Rotational speed of the unit may be controlled by directing the “angle of attack” either facing forward or aft. The spray bars should not be closer than 2” to the wall. When using the spray bars the chains are **NOT** to be used. Use of chains and spray bars together will damage the cutter and **VOID** the warranty.

Maintenance

General

Any tool that incorporates moving parts must be maintained in some manner. The KEG Chain Cutter family has been designed to require a minimal amount of maintenance. All of the KEG Chain Cutters do not require being “de-watered” with a petroleum or organic based oil. De-watering is completed by holding the tool in a vertical attitude and allowing the water to drain from the tool. At no time should any oil or petroleum based products be used to lubricate the rotating element. ***Use of oil will void the tool warranty.*** Clean the KEG cutters using soap & water or a bio-degradable de-greaser.

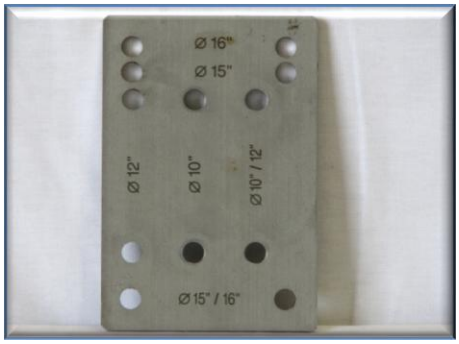


Figure 12: SCP150 Distance Plate

Prior to Initial Use

- Verify all parts and tools are present prior to initial use,
- If parts or tools are missing inform KEG Technologies for immediate replacement,
- Check the swivel and ensure that it is smooth and feels free of binding,
- Insure that no foreign material is present inside the body of the cutter,
- Check that the internal hose threads of the swivel are free of foreign materials,
- Check that all inserts are secure in both the body and rotating nozzles.

Set-up

- Ensure that all parts are available for the required pipe diameter set-up prior to assembly,
- Do not use any non-KEG approved spare parts when assembling the tool,
- Check the skids for cracks or damage,
- Check the distance plates for cracks or damage also,
- Ensure that the plates are flat and square,
- Inspect all weld points for cracking or damage prior to use.

Post Use

- Wash the tool with clean water removing dirt, grease and foreign materials remaining on the tool,
- Use of a bio-degradable degreaser may be required to remove grease from the tool,
- A bio-degradable degreaser may be poured through the tool allowing cleaning the inner sections of the tool,
- Remove the skids and distance plates when cleaning between the fin assembly and skid/plates. Clean and remove any material in the internal and exterior threads of all fasteners.

Swivel

The swivel is a vital part of the chain cutter; the swivel allows the sewer hose's natural curl to be relieved without placing the "twist" on the tool's body. Proper care will ensure long life. *The swivel is the only part of the tool that requires lubrication.* KEG provides the user with a grease gun (as pictured at right) in order to lubricate the swivel. The grease gun supplied is a disposable unit that comes pre-loaded with grease. Periods between lubrication are based upon time and number of uses. During general to light usage – two or three times a week- the swivel should be greased at the end of each week when further disassembly, cleaning and inspection takes place. During heavy usage periods - when the tool is used daily for long periods of time - the swivel should be greased at least every two days. Additional disassembly, cleaning and inspections will also be necessary.

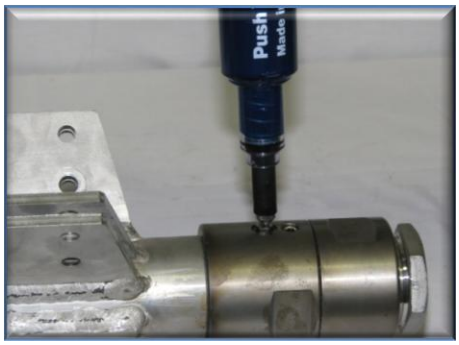


Figure 13 - Grease gun and swivel

Disassembly

Disassembly and cleaning of the tool may be needed in the field. The tool should first be cleaned with water and if necessary cleaned with a bio-degradable degreaser. It is advisable to handle the cross cutter with gloved hands in order to lessen the chance of injury to the user. Use the cross cutter dismantling key to remove the cross-cutter. Insert the removal tool through the hole in the cross cutter and depresses the locking pin on the chain retainer. The cross cutter should first be removed in order to prevent cuts and/or other injuries. **Note: a rubber hammer or such tool may be necessary to gently remove the cross cutter from the chain retainer.**

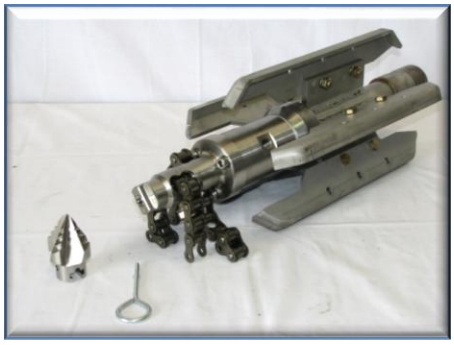


Figure 14 - SCP150 with cross cutter removed

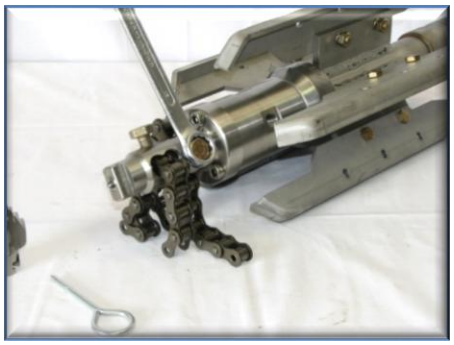


Figure 15 - SCP150 removing chain retainer bolts

The chain retainer and rotating element may be removed by:

- Removing the chain retaining bolts (2) from the chain retainer (19mm wrench required),
- Remove all cutting chain(s),
- Remove the M8 x 20mm socket hex cap screws (3 each) holding the chain retainer to the rotating element,
- Using a 17mm wrench, remove the rotating nozzles (4 each) from the rotating element,
- Remove the M6 x 20mm socket hex cap screws (2 each) holding the bearing plate and spacer to the stator axle,
- Remove the rotating element from the running axle,
- Remove the Teflon spacer ring,
- Clean and inspect all parts,
- Inspect the running axle and body for surface cracks and/or galling,
- If the removal of the propulsion inserts are necessary, use an open end 14mm wrench.

Reassembly

- Clean all remnants of Loc-Tite from the internal and external threads,
- During reassembly, use only a drop of Loc-Tite on the screw threads,
- Place the smoothest "by touch" side of the Teflon spacer ring next to rotating element,
- Replace the rotating element ensuring that the three threaded holes are facing forward,
- Apply a thin amount of "silver" anti-seize to the threads of the rotating nozzles prior to reassembly. **Note: the nozzles may be positioned within 20^{o} of perpendicular to the rotating element.** All rotating nozzles should only be "man" tight. **Do not over torque.** Applying too much torque will cause damage to the rotating nozzle's threads. If necessary, the threads can be re-tapped using the M14 tap provided in the chain cutter kit,
- *DO NOT* use Loc-Tite on the chain retaining screws.

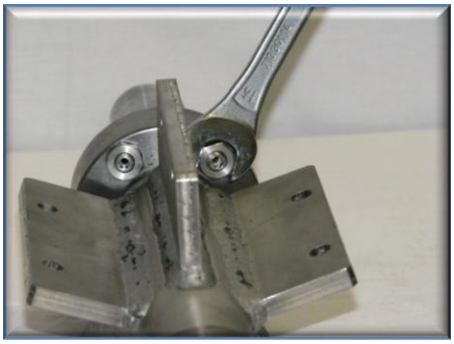
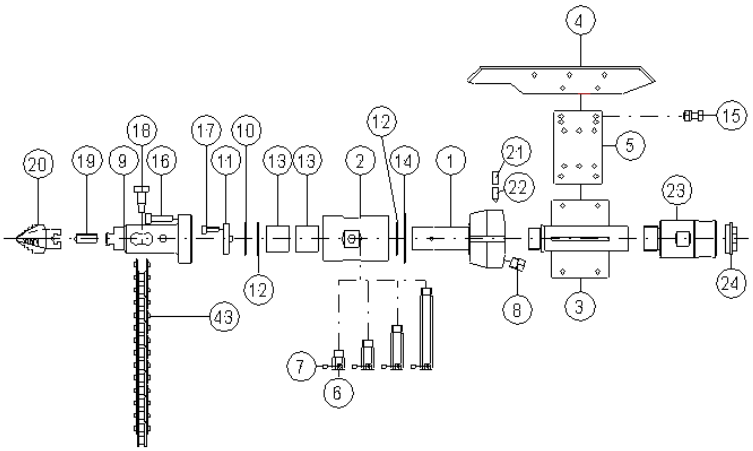


Figure 16 - SCP150 installing/removing propulsion jets

Schematic and Parts List

SCP 150 – Basic Set-up



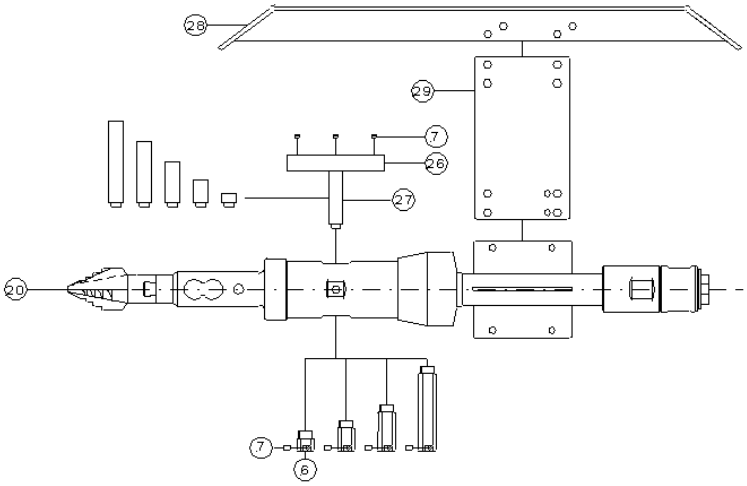
Super Cutter Plus 150 - Basic Set-up 6" - 16"

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Table 3 - Parts List - SCP 150 – Basic – 200242-C

Ref. Number	DESCRIPTION	Part Number	Quantity
1	Running Axle - SCP150	00210042	1
2	Rotating Body - SCP150	00210043	1
3	Fin Assembly - SCP150	00210044	1
4	Skid - Short - 15 inch - SCP150	00210045	5
5	Plate - Distance - DP1 - SCP150	00210016	5
6	Rotation Nozzle - 16 mm - SCP150/200 - ***Basic 150 Kit***	00200017	4
	Rotation Nozzle - 30 mm - SCP150/200 - ***Basic 150 Kit***	00200018	4
	Rotation Nozzle - 50 mm - SCP150/200 - ***20"/24" Exp. 150 Kit***	00200019	4
7	Insert - Ceramic - M6 – Rotation	00100175	8
8	Insert - Ceramic - M14 – Propulsion	00100174	5
9	Chain Retainer - SCP150	00210047	1
10	Spacer - Bearing Plate - Bronze Plated - SCP150	00210049	1
11	Plate - Bearing - SCP150	00210046	1
12	Snap Ring - Retaining - SCP150	00210101	2
13	Bushing - SCP150	00210050	2
14	Ring - Protective - Teflon - SCP150	00210051	1
15	Bolt - Hex head - M8 x 20mm – Short	00200033	15
	Bolt - Hex head - M8 x 25mm – Long	00200082	15
	Nut - Hex head - M8	00200083	30
	Washer - Lock - M8	00200084	30
16	Screw - Socket Hex Cap - M8 x 30mm	00210052	3
17	Screw - Socket Hex Cap - M6 x 18mm	00200073	2
18	Screw - Cap - Chain Retention - SCP150/200	00200035	2
19	Pin - Locking - for Cross Cutter - SCP150/200	00200036	1
20	Cross Cutter - Stainless Steel - SCP150/200	00200070	1
21	Screw - Socket Hex - M8 x 12mm - Lock - Stainless Steel	00210103	1
22	Screw - Socket Hex - M8 x 12mm- Fuse- Stainless Steel - w/ 90° Point	00210102	1
23	Swivel - HP - 1"	00800012	1
24	Plug - 1"	00800059	1
43	Chain Replacement - 5m	00200022	1

SCP 150 – Spray Bars & 24” Set-up



Super Cutter Plus 150 - Accesories - Up to 24"

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Table 4 - Parts List - SCP 150 - Spray Bars

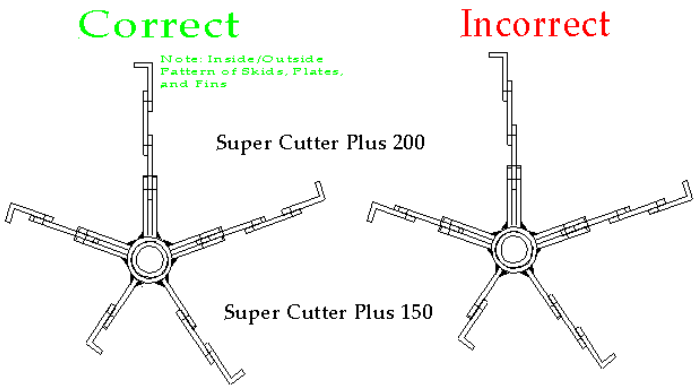
Ref. Number	DESCRIPTION	Part Number	Quantity
7	Insert - Ceramic - M6 - Spray Bar	00100175	12
26	Spray Bar	00200041	4
27	Tube Extension - 2"	00200076	4
	Tube Extension - 4"	00200038	4
	Tube Extension - 6" - ***Requires 20"/24" Exp. 150 Kit***	00200039	4
	Tube extension 10" - ***Requires 20"/24" Exp. 150 Kit***	00200040	4
	Tube Extension - 16" - ***Not Available in a 150 Kit***	00200077	4

Table 5 - Parts List - SCP 150 - 20" to 24" Expansion Kit – 200903-C

Ref. Number	DESCRIPTION	Part Number	Quantity
6	Rotation Nozzle - 50 mm - SCP150/200 - ***20"/24" Exp. 150 Kit***	00200019	4
7	Insert - Ceramic - M6 - Rotation - ***20"/24" Exp. 150 Kit***	00100175	4
28	Skid - Long - 20 inch - SCP150/200 - ***20"/24" Exp. 150 Kit***	00210011	5
29	Plate - Distance - 4" x 9" - SCP150/200 - ***20"/24" Exp. 150 Kit***	00210015A	5
20	Cross Cutter - Stainless Steel - SCP150/200 - ***Basic 150 Kit***	0020 0070	1

Skids and Distance Plates: Set-up Drawings

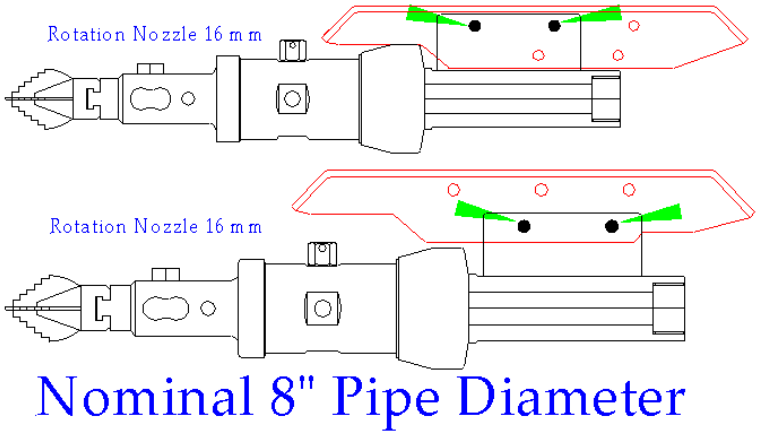
SCP 150/200 - Skid and Distance Plate Orientations



Assembly Instructions for Distance Plates and Skids

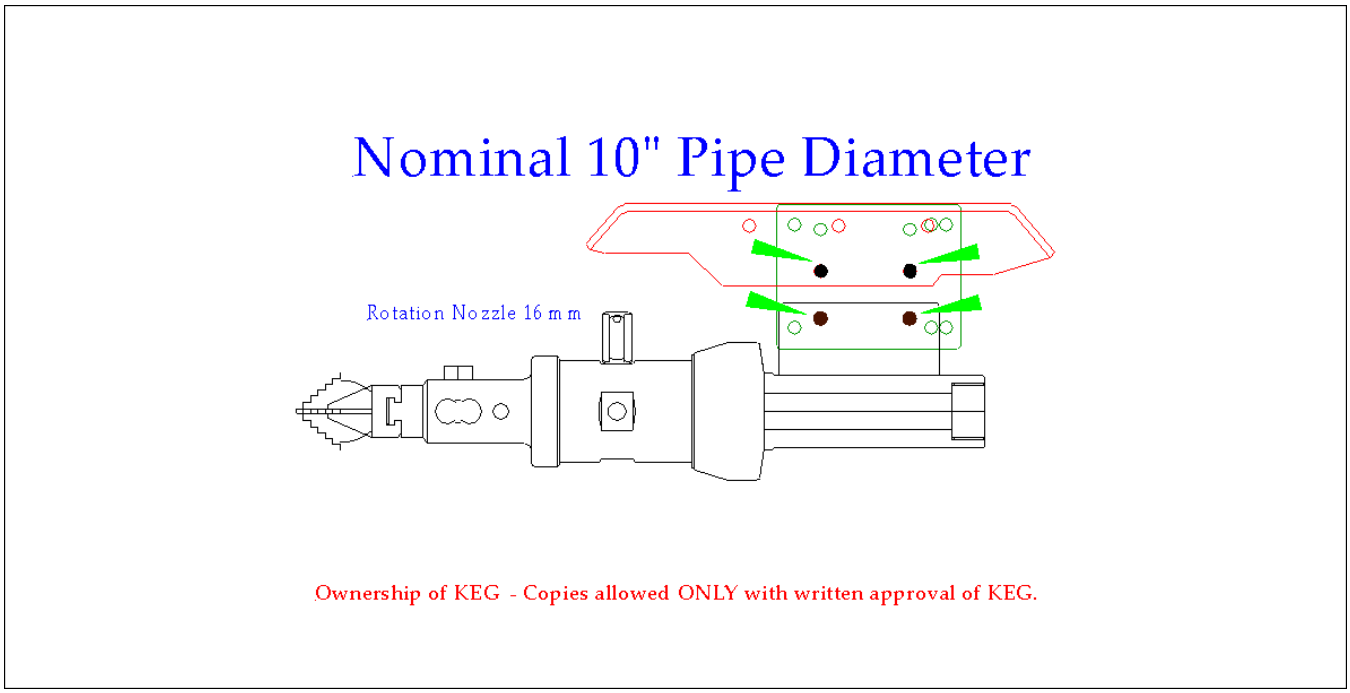
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SCP 150 – 6"& 8" Skid Configuration and Rotation Nozzle

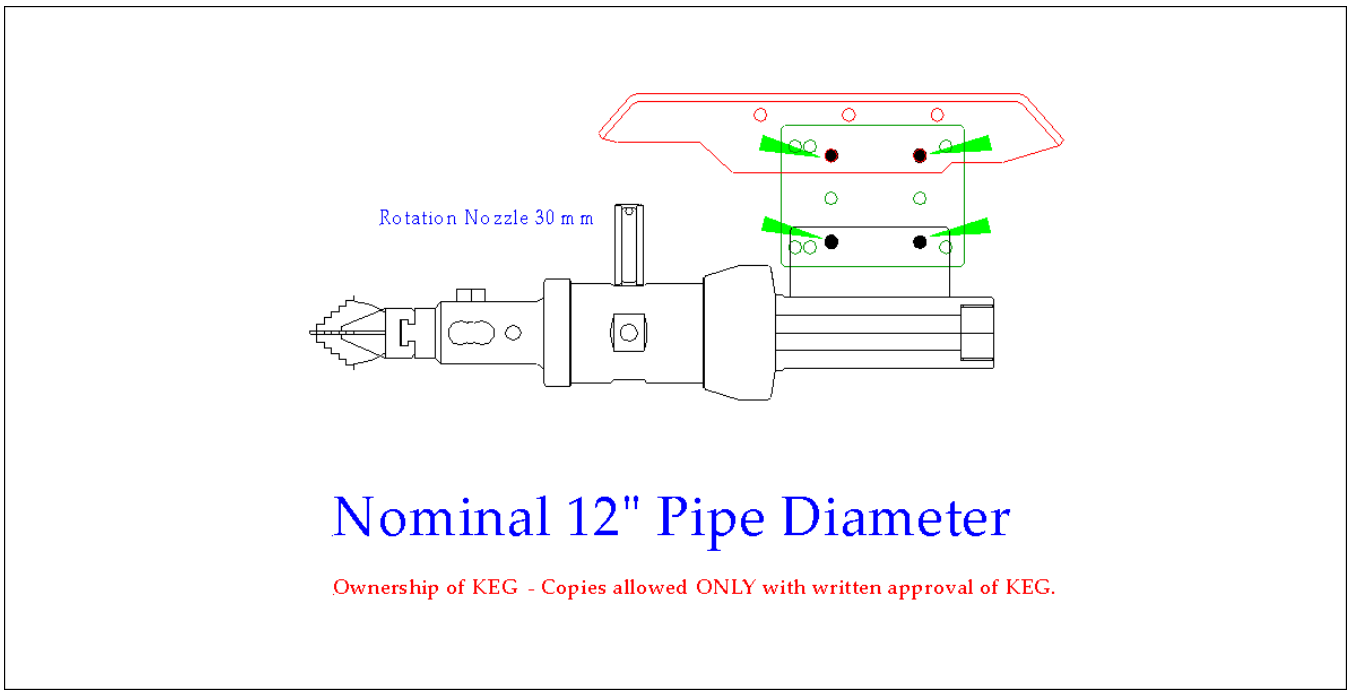


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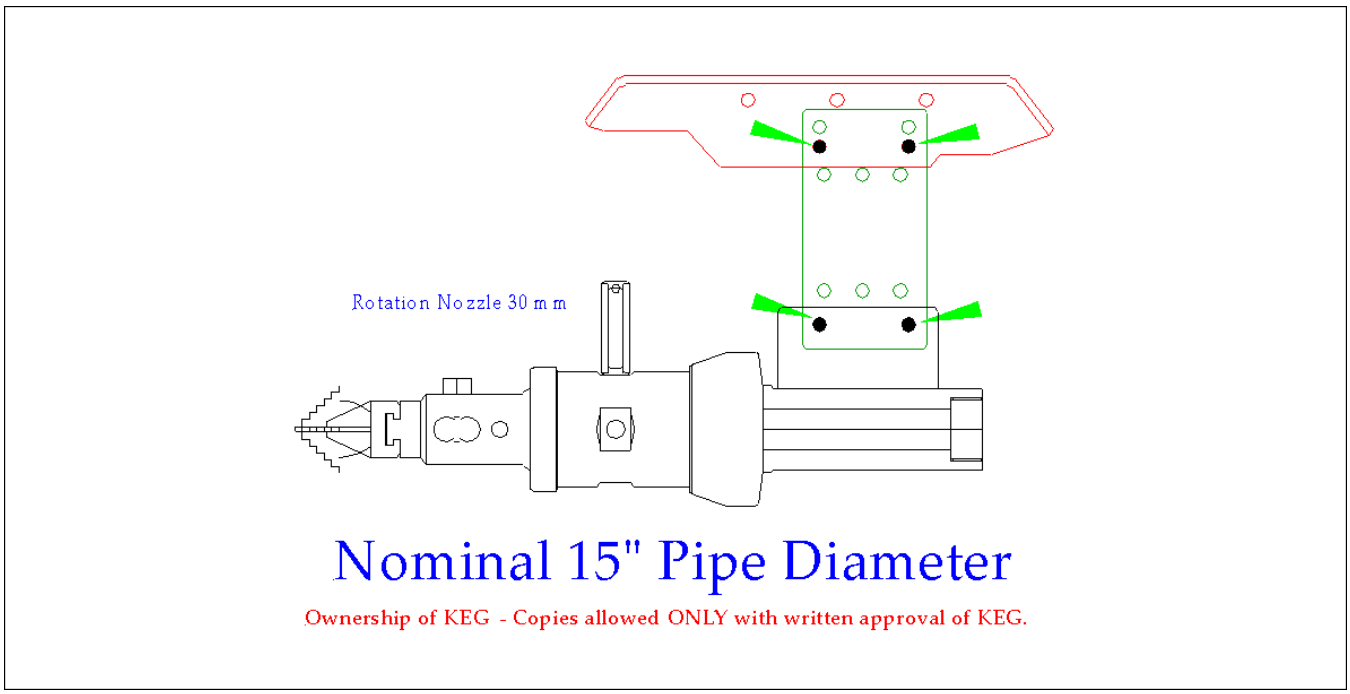
SCP 150 – 10” Skid Configuration, Distance Plate, and Rotation Nozzle



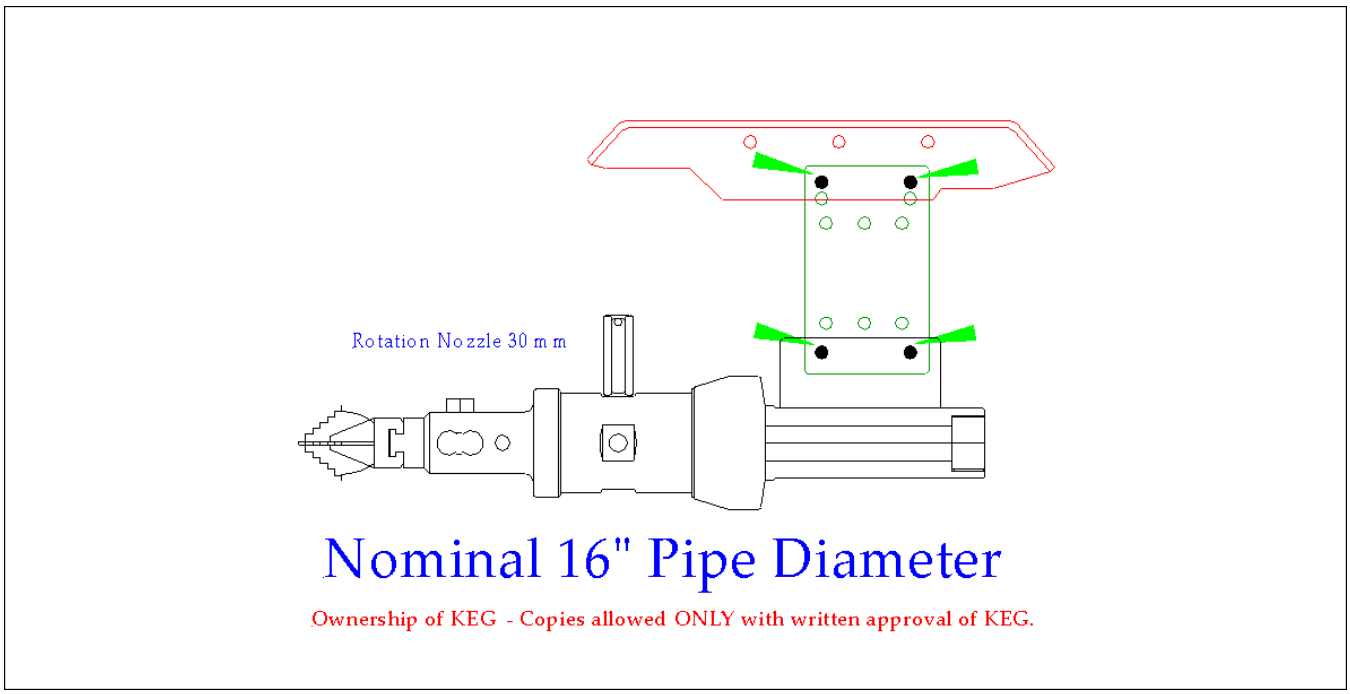
SCP 150 - 12” Skid Configuration, Distance Plate, and Rotation Nozzle



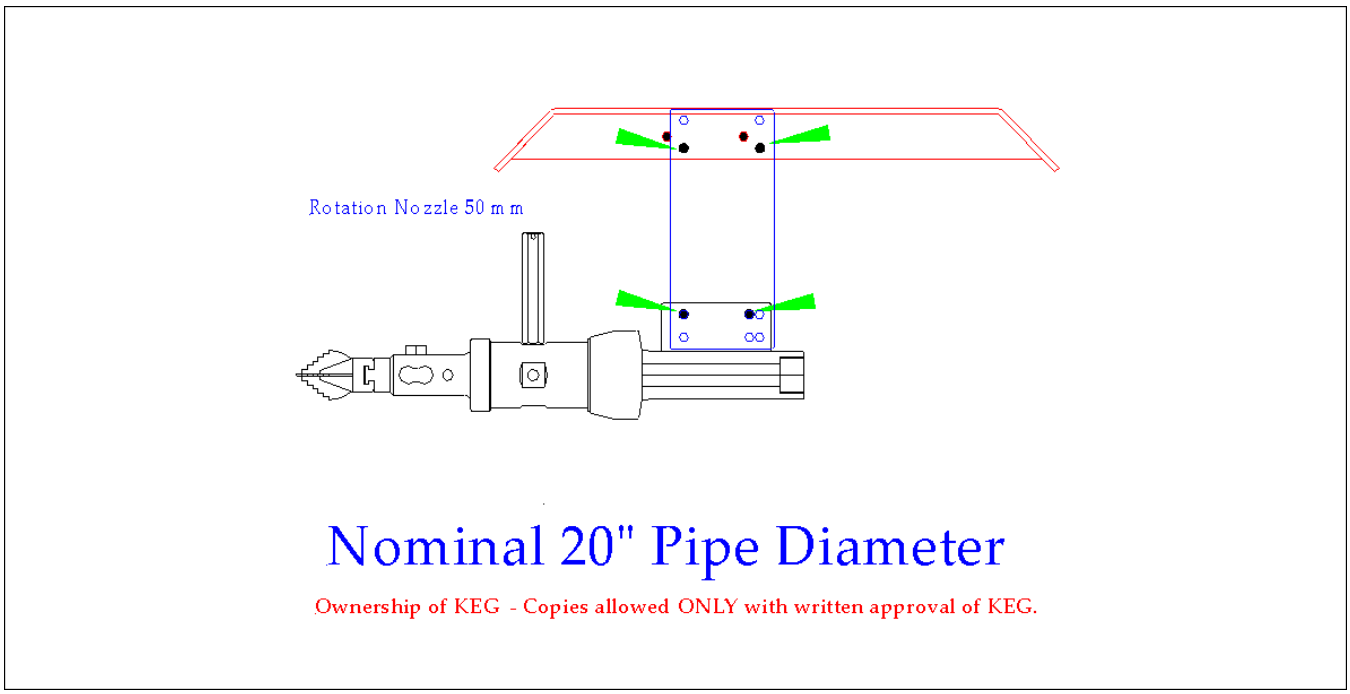
SCP 150 – 15” Skid Configuration, Distance Plate, and Rotation Nozzle



SCP 150 – 16” Skid Configuration, Distance Plate, and Rotation Nozzle



SCP 150 – 20” Skid Configuration, Distance Plate, and Rotation Nozzle



SCP 150 – 24” Skid Configuration, Distance Plate, and Rotation Nozzle

