



SPARTAN

468 Root Cutter Owner's Manual

Record the Serial Number of your
468 Root Cutter

and give the number to the factory
when ordering parts.

Serial Number

SPARTAN TOOL L.L.C.

800.435.3866

www.spartantool.com

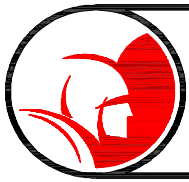
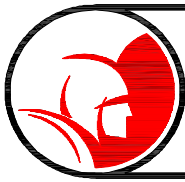


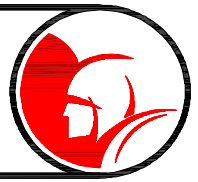
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Technical Data



NOTE: The correct root cutter model must be selected for proper operation.

OPERATING PRESSURES:	800 - 2000 PSI
FLOW RATE REQUIRED:	10 - 15 GPM
CONNECTION REQUIRED:	Connects with 1/2", 5/8", 3/4" or 1" Hose
WEIGHT:	8 lbs.
PIPE SIZES:	4" to 10"
INCLUDES:	4", 6" and 8" Blades and Skids



Warnings



Do not start root cutter unless it is contained inside the drain line! Severe injury will result from contact with cutter blades.

- Drain and sewer cleaning can be dangerous. Always read the safety precautions and owner's manual before using the equipment.
- When operating any high velocity water jetter with root cutter, always wear safety goggles, rubber boots, rubber gloves, and rain coat. A full face shield is recommended.
- Insure that the hose and root cutter has been placed in the pipe a minimum of 3' before engaging the water pressure to prevent the root cutter from coming out of the pipe and causing injury.
- Always shut the water pressure off before pulling the root cutter out of the pipe. Mark the hose a minimum of 3' from the root cutter to insure the hose is not accidentally pulled out of the pipe while still under pressure. Shut off the water pressure when the hose mark is encountered.



Warnings



WARNING: Read the “Owner’s Manual” thoroughly before using any Spartan tool product. Drain/Sewer cleaning can be dangerous if proper procedures are not followed. Know the proper operation, correct applications and the limitations of all Spartan Tool products **before** use.

Safety must always be the operator’s prime concern. The operator must read and understand this manual and all safety signs on the machine before operating the equipment. Failure to follow these safety precautions could result in property damage and/or personal injury or death. This safety summary describes basic safety measures which apply to the use and maintenance of the machine. Further safety measures are described in other sections throughout this manual.

The precautions listed in this manual and on the equipment are not all-inclusive. The operator must be satisfied that the use of any procedure, method, tool or part not specifically recommended by Spartan Tool is safe for personnel, and will not damage or make the equipment unsafe.

Safety decals have been placed at operating points on the equipment to remind operators to observe safety precautions. All standard decals and their proper locations are documented in a later section of this manual. These decals must be visible at all times. Check these decals on a regular basis and during machine set-up prior to the first operation. Replace damaged or unreadable decals.

Remember, your ability as a professional operator is critical to ensuring your safety and that of your co-workers.

The following safety alert symbols are used throughout this manual:



DANGER: Indicates immediate hazards which **WILL** result in severe personal injury or death.



WARNING: Indicates hazards or unsafe practices which **COULD** result in severe personal injury or death.



CAUTION: Indicates hazards or unsafe practices which **COULD** result in minor personal injury, or machine damage.

NOTE: Indicates special features or operation of the machine.

“California Prop. 65: This product may contain an extremely small amount of lead in the coating. Lead is a material known to the State of California to cause cancer or reproductive toxicity.”



Operating Instructions



WARNING

Follow all safety and operating instructions provided with your high pressure water jet unit as well as applicable local and OSHA standards. Always wear goggles, gloves and other safety attire.

The Spartan 468 Root Cutter is designed to operate on water jet units equipped with 1/2" to 1" high pressure hose, and flow rates of 10 GPM (37.8 l/min) to 15 GPM (56.7 l/min) with a minimum of operating pressure of 800 psi (57 bars) to a maximum operating pressure of 2000 psi (140 bars).



Proper Orifice Selection

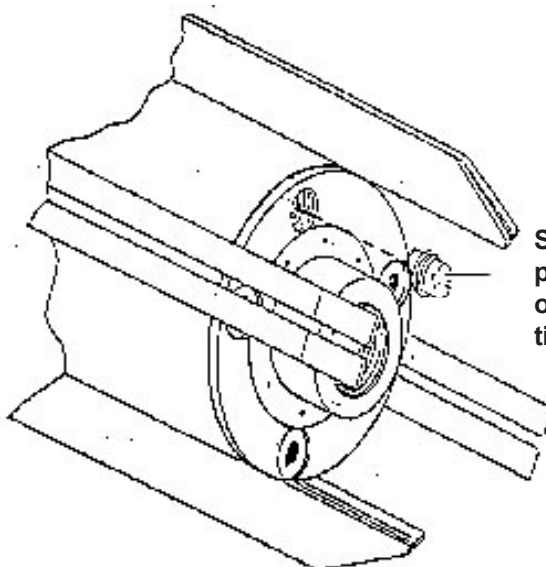


The Spartan Model 468 Root Cutter is supplied with two special bypass orifice grease fittings. One style must be selected and screwed into the jet head for proper root cutter operation (see fig. 1). The orifice fittings are color coded for easy identification. One red (standard), the other plain finish (high pressure). If your jet unit operates in the 800 psi (57 bars) to under 1500 psi (140 bars) range, select the red or standard orifice. If your jet unit operates at 1500-2000 psi (140 bars) or more, use the plain orifice. **NOTE:** Operation with this orifice may require pressure regulator to be turned down so as not to exceed 2000 PSI (140 bars) in operation.



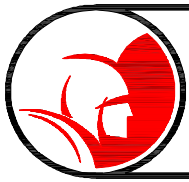
DANGER

In no case should pressures greater than 2000 PSI (140 bars) be applied to the root cutter unit. Damage to equipment or personal injury including death could result.



Standard red or plain high pressure combination bypass orifice grease fitting (screw in tight)

Fig. 1



Cutter Blade Selection



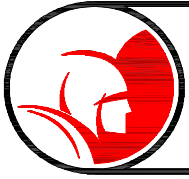
Saw blades for the Model 468 root cutter are available in 4", 6" and 8" sizes, and with the exception of the 4" saw blade will allow about 1/2" clearance in the pipeline. All skid assemblies are designed smaller than the cutter blades to allow unit to pass through openings cut by the saw blade. The 4" 468 Root Cutter assembly with 4" saw blade attached is designed for straight or gently sweeping lines and will not traverse elbows. The following indicate the size cutter and skids for the size pipe being cleaned.

Pipe Size	Skid Sizes	Cutter Size
4"	4"	4"
6"	4" or 6"	4" or 6"
8"	6" or 8"	6" or 8"
10"	8"	10"



DANGER

Always ensure (engine of water jet) unit is off and hose reel pressure depleted before attaching blades or root cutter to hose or while root cutter is out of pipe line. The rotating cutter blades and high pressure water jet discharge are dangerous and could cause severe injury and/or death.



Skid Mounting



The Spartan Model 468 root cutter offers in a unique design, the mounting of plate runners to the body shell of the root cutter by means of four removable pins which are locked in place by cotter keys (fig. 3). The main motor need never be removed from the body shell to change skid sizes. By attaching the skid plates in this manner, the hose end of the plates are projected downward and rearward to offer a large angle projection over twice that of conventional skid units, thus offering greater protection to root cutter removal in the event an offset or dropped line is encountered. Skid plates are stamped with pipe size of pipe for easy selection. **NOTE:** Do not intermix skid plates on body shell. To simplify skid plate removal and change, the snipping off of the end of the cotter key is recommended to remove same. Use only new cotter keys for assembly (extra keys provided). As these are standard cotter keys, they may be purchased locally for replacement.

We highly recommend the use of the red leader hose - (P/N: 34003701).

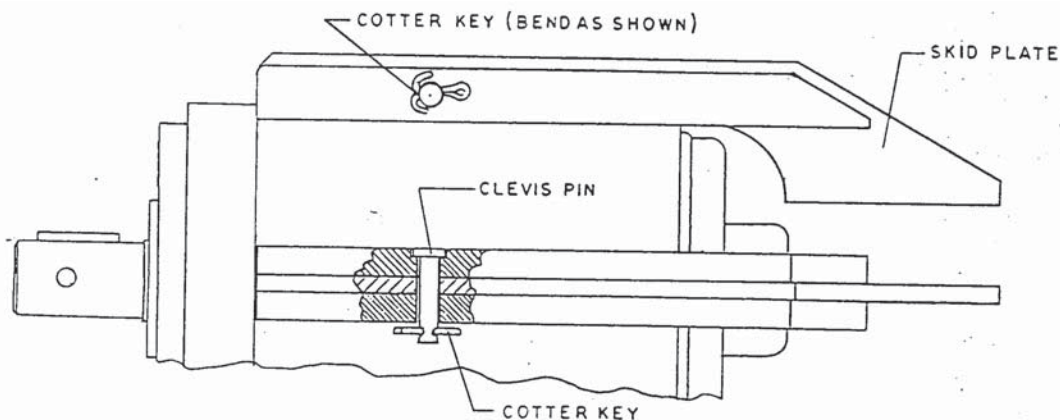


Fig. 2



Attachment of Cutters



CAUTION: Wear protective gloves when handling root cutter blades.

The Spartan 468 root cutter offers a compact design of cutter blades with ease of changing blades not offered in competitor's units. The Spartan 468 root cutter blade is driven by a key located on the motor shaft (see fig. 3). The hub of the cutter blade is fitted with a keyway slot which, when placed in line with the shaft key, will allow the cutter to slide down the shaft. A washer stop is provided at the end of the hub. The cutter should be pushed on to this stop. Using the allen wrench provided, place one of the stainless steel socket head screws from the kit, along with a lock washer, through the hole in the stop washer on the hub end. Thread the screw into the tapped hole provided in the end of motor shaft and tighten securely. This screw prevents the cutter pulling off the shaft when retracting the root cutter from the line. This method of assembly allows the Spartan 468 Root Cutter units to be made more compact in design than any other, and offers ease of cutter change as all work is done at the front of the unit. The hub is provided with clearance between the motor face to allow for the prying-off of stubborn cutter blades if rust occurs. It is good practice to place a light film of oil on the motor shaft and in the cutter blade hole after each use to prevent rust formation.

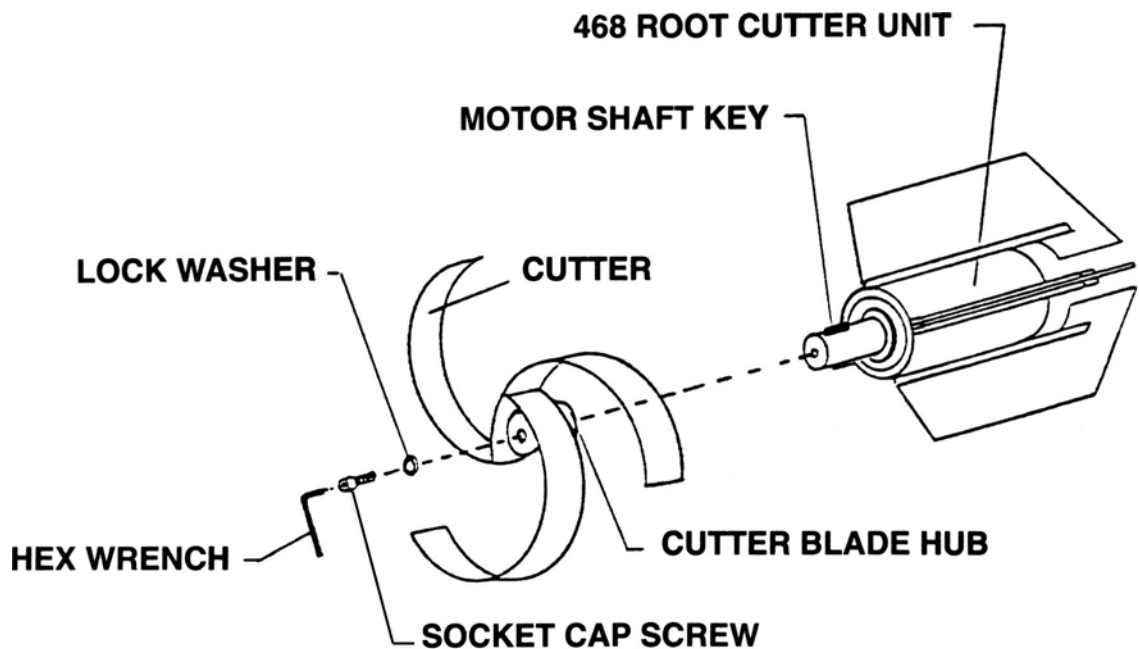
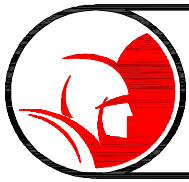


Fig. 3



468 Root Cutter Operation



After assembly of the 468 root cutter with skid and cutter blade as outlined in previous sections, attach the high pressure hose. **NOTE:** If tubular tiger tail hose guide is used, slide it over the hose before attaching hose to root cutter. Attach placement tool and lower root cutter unit into manhole and position it at the pipe entrance with cutter blade facing in the direction of travel. **NOTE:** If possible, cutting should always be done against the flow to allow debris to be carried back to the working manhole. Start jet unit engine and turn on water pressure momentarily to allow root cutter to enter line several feet. Turn off pressure and position hose guide/guard at pipe entrance. Tie safety rope to jet or clamp in place, avoiding trip area. Mark hose top of manhole entrance with white waterproof tape.

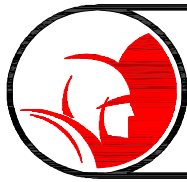
Begin cleaning operation by running engine at low RPM. Back off or reduce output pressure at regulator if unit is so equipped, and increase throttle setting on jet unit to operate at full RPM. Adjust pressure regulator for maximum pressure (never exceeding 2000 psi). Feed root cutter hose slowly into pipe allowing cutter to cut obstructions and to avoid jamming blade. Jamming of cutter into obstruction could cause cutter and shaft to lock in the obstruction and the body of the motor to rotate in the pipe, causing jet hose twist and damage. When hose is in the pipe, it should be tight against the hose guide to avoid slack. Slacking of the hose indicates the root cutter has encountered an obstruction. *Immediately* pull back on the hose by hand. Gradually *feed* root cutter hose forward *by hand* allowing cutter to cut into and through obstruction. Use care to keep your body well balanced and maintain stable footing when performing the above.

If root cutter does not penetrate blockage after several minutes, you may have encountered a lateral or a collapsed pipe and should consider other options. Continued operation without penetration can damage root cutter and/or blade or cause root cutter to lockup in pipe. After penetration is made through a blockage, no slack should be felt or seen at hose. Continue feeding root cutter slowly a few feet up pipe and if no slack is seen or felt on the hose, you are through blockage. For every 2 to 3 feet of blockage, pull root cutter back to manhole to clear pipeline of debris. The marking of white tape on the hose will indicate the root cutter distance of exit from the line. *Do not* pull unit all the way into manhole at this time, but reduce water pressure and flow to root cutter to prevent debris from washing into another pipe and clogging. If debris is not excessive, root cutter may be allowed to advance further into pipeline as outlined above and the procedure continued until complete line is cleaned. However, if debris is excessive with first run, pull root cutter toward pipe entrance after turning down pressure to allow debris to build up in bottom of manhole. *Turn off* water pressure *and* engine.

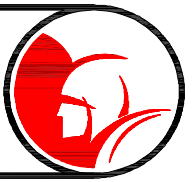


DANGER:

Failure to turn off engine could result in inadvertent activation of root cutter, resulting in serious bodily injury.

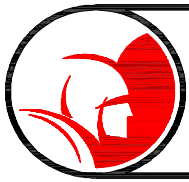


468 Root Cutter Operation (cont)



Remove root cutter from manhole by hand, lifting with the hose. Remove debris from root cutter and blade. Clean debris from manhole. If entrance into manhole is required, observe NIOSHA safety rules. After cleaning of debris from first run, root cutter can be reinserted into line and following outline as above, continue procedure until complete pipe is clean.

When job is complete, retrieve root cutter as outlined. Remove root cutter from hose. If root cutter will not be used within a 6 hour period, remove cutter blade and with special grease coupler (supplied) attached to grease gun, pump a light weight grease into the orifice grease fitting. Motor shaft will be turned by the grease as this is done. When grease can be seen at hose connection, greasing is complete and root cutter can be stored. In freezing conditions, keep root cutter motor unit warm or service with grease immediately. As grease may become thick in extreme cold, and if warming is not possible, service root cutter motor with S.A.E. #10 motor oil. This is done in the following manner. Place "T" wrench provided on motor shaft, orient root cutter motor so shaft is pointing down, pour oil into hose connection at jet nozzle a little at a time while turning motor shaft in a clockwise direction as viewed from hose connection end. When oil is forced out of orifice grease fitting, oiling is complete.



468 Root Cutter Parts List



Item	Req'd	Part #	Description
1	1	04529400	Allen Wrench
2	1	44234400	Hook, Hanger
3	1	44236000	Vial W/ Parts
4	1	44234100	T-Wrench
5	4	44235100	4" Skid Mini
6	4	44235200	6" Skid Mini
7	4	44235300	8" Skid Mini
9	1	44235800	Body Weldment w/ Decals
10	1	44235500	Assy, Mini Root Cutter
12	1	44236800	4" Cutter Blade
13	1	44236900	6" Cutter Blade
14	1	44237000	8" Cutter Blade
16	1	44235900	Tool Box w/ Decals
17	1	44237300	Decal Pkg. 468
18	1	34003701	Hose Attachment

Optional Accessories

Item	Part #	Description
1	44260600	10" Skid Set of 4
2	44260500	10" Cutter Blade



468 Root Cutter Parts List (cont)



18 *Optional Leader Attachment - 34003701



ONE YEAR WARRANTY



Spartan Tool warrants its equipment to be free from defects in material and workmanship for one year from the date of purchase. To obtain warranty service, a purchaser should notify Spartan Tool in writing, at the address provided below, within the warranty period, and Spartan Tool will direct where to take or send the equipment for service. If the defect is covered by the warranty, Spartan Tool will repair or replace, at its option, the defective equipment, without charge for labor or materials. (Freight and insurance are the purchaser's responsibility.)

This warranty is limited to the original retail purchaser and is not transferable. Spartan Tool assumes no responsibility for damage due to accident, neglect, abuse, tampering or misuse, nor damage from repairs or alterations by others. This warranty does not cover damage to the equipment resulting from the use of replacement parts other than Spartan Tool parts.

Spartan Tool's sole obligation and the original retail purchaser's exclusive remedy under this warranty shall be for repair or replacement as described above. ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL SPARTAN TOOL BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

SPARTAN TOOL L.L.C.
MENDOTA, ILLINOIS 61342

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