BRADCO
BY PALADIN

OPERATOR'S MANUAL

TRENCHER
640

FOR
SKID STEER LOADERS

SERIAL NUMBER: _____

MODEL NUMBER: _____

Manual Number: OM660
Part Number: 75560
Rev. 6

800-456-7100 I www.paladinattachments.com 503 Gay Street, Delhi, IA 52223, United States of America

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640 TRENCHER

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PREFACE

GENERAL COMMENTS

Congratulations on the purchase of your new BRADCO product! This product was carefully designed and manufactured to give you many years of dependable service. Only minor maintenance (such as cleaning and lubricating) is required to keep it in top working condition. Be sure to observe all maintenance procedures and safety precautions in this manual and on any safety decals located on the product and on any equipment on which the attachment is mounted.

This manual has been designed to help you do a better, safer job. Read this manual carefully and become familiar with its contents.

WARNING! Never let anyone operate this unit without reading the "Safety Precautions" and "Operating Instructions" sections of this manual.
Always choose hard, level ground to park the vehicle on and set the brake so the unit cannot roll.

Unless noted otherwise, right and left sides are determined from the operator's control position when facing the attachment.

NOTE: The illustrations and data used in this manual were current (according to the information available to us) at the time of printing, however, we reserve the right to redesign and change the attachment as may be necessary without notification.

BEFORE OPERATION

The primary responsibility for safety with this equipment falls to the operator. Make sure the equipment is operated only by trained individuals that have read and understand this manual. If there is any portion of this manual or function you do not understand, contact your local authorized dealer or the manufacturer to obtain further assistance. Keep this manual available for reference. Provide the manual to any new owners and/or operators.

SAFETY ALERT SYMBOL

This is the "Safety Alert Symbol" used by this industry. This symbol is used to warn of possible injury. Be sure to read all warnings carefully. They are included for your safety and for the safety of others working with you.

SERVICE

Use only manufacturer replacement parts. Substitute parts may not meet the required standards.

Record the model and serial number of your unit on the cover of this manual. The parts department needs this information to insure that you receive the correct parts.

SOUND AND VIBRATION

Sound pressure levels and vibration data for this attachment are influenced by many different parameters: some items are listed below (not inclusive):

- prime mover type, age, condition, with or without cab enclosure and configuration
- operator training, behavior, stress level
- job site organization, working material condition, environment

Based on the uncertainty of the prime mover, operator, and job site, it is not possible to get precise machine and operator sound pressure levels or vibration levels for this attachment.

NOTE: A list of all Paladin Patents can be found at http://www.paladinattachments.com/patents.asp.

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SAFETY STATEMENTS

THIS SYMBOL BY ITSELF OR WITH A WARNING WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

DANGER — **THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.**

WARNING — **THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.**

CAUTION — **THIS SIGNAL WORD INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE INJURY.**

NOTICE — **NOTICE IS USED TO ADDRESS PRACTICES NOT RELATED TO PHYSICAL INJURY.**

GENERAL SAFETY PRECAUTIONS

WARNING!

READ MANUAL PRIOR TO INSTALLATION

Improper installation, operation, or maintenance of this equipment could result in serious injury or death. Operators and maintenance personnel should read this manual, as well as all manuals related to this equipment and the prime mover thoroughly before beginning installation, operation, or maintenance. **FOLLOW ALL SAFETY INSTRUCTIONS IN THIS MANUAL AND THE PRIME MOVER'S MANUAL(S).**

READ AND UNDERSTAND ALL SAFETY STATEMENTS

Read all safety decals and safety statements in all manuals prior to operating or working on this equipment. Know and obey all OSHA regulations, local laws, and other professional guidelines for your operation. Know and follow good work practices when assembling, maintaining, repairing, mounting, removing, or operating this equipment.

KNOW YOUR EQUIPMENT

Know your equipment's capabilities, dimensions, and operations before operating. Visually inspect your equipment before you start, and never operate equipment that is not in proper working order with all safety devices intact. Check all hardware to ensure it is tight. Make certain that all locking pins, latches, and connection devices are properly installed and secured. Remove and replace any damaged, fatigued, or excessively worn parts. Make certain all safety decals are in place and are legible. Keep decals clean, and replace them if they become worn or hard to read.

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GENERAL SAFETY PRECAUTIONS

WARNING! PROTECT AGAINST FLYING DEBRIS

Always wear proper safety glasses, goggles, or a face shield when driving pins in or out, or when any operation causes dust, flying debris, or any other hazardous material.

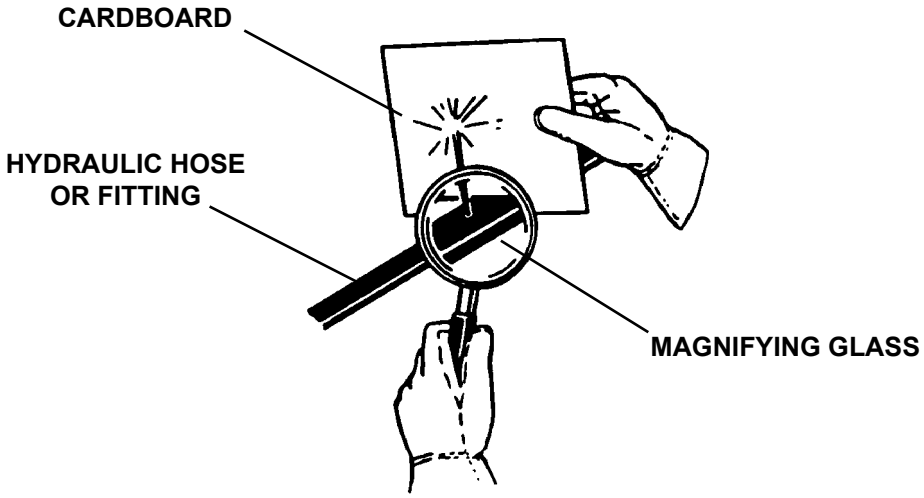
WARNING! LOWER OR SUPPORT RAISED EQUIPMENT

Do not work under raised booms without supporting them. Do not use support material made of concrete blocks, logs, buckets, barrels, or any other material that could suddenly collapse or shift positions. Make sure support material is solid, not decayed, warped, twisted, or tapered. Lower booms to ground level or on blocks. Lower booms and attachments to the ground before leaving the cab or operator's station.

WARNING! USE CARE WITH HYDRAULIC FLUID PRESSURE

Hydraulic fluid under pressure can penetrate the skin and cause serious injury or death. Hydraulic leaks under pressure may not be visible. Before connecting or disconnecting hydraulic hoses, read your prime mover's operator's manual for detailed instructions on connecting and disconnecting hydraulic hoses or fittings.

- Keep unprotected body parts, such as face, eyes, and arms as far away as possible from a suspected leak. Flesh injected with hydraulic fluid may develop gangrene or other permanent disabilities.
- If injured by injected fluid, see a doctor at once. If your doctor is not familiar with this type of injury, ask him to research it immediately to determine proper treatment.
- Wear safety glasses, protective clothing, and use a piece of cardboard or wood when searching for hydraulic leaks. **DO NOT USE YOUR HANDS! SEE ILLUSTRATION.**



GENERAL SAFETY PRECAUTIONS

WARNING!

DO NOT MODIFY MACHINE OR ATTACHMENTS

Modifications may weaken the integrity of the attachment and may impair the function, safety, life, and performance of the attachment. When making repairs, use only the manufacturer's genuine parts, following authorized instructions. Other parts may be substandard in fit and quality. Never modify any ROPS (Roll Over Protective Structure) or FOPS (Falling Object Protective Structure) equipment or device. Any modifications must be authorized in writing by the manufacturer.

WARNING!

SAFELY MAINTAIN AND REPAIR EQUIPMENT

- Do not wear loose clothing or any accessories that can catch in moving parts. If you have long hair, cover or secure it so that it does not become entangled in the equipment.
- Work on a level surface in a well-lit area.
- Use properly grounded electrical outlets and tools.
- Use the correct tools for the job at hand. Make sure they are in good condition for the task required.
- Wear the protective equipment specified by the tool manufacturer.

SAFELY OPERATE EQUIPMENT

Do not operate equipment until you are completely trained by a qualified operator in how to use the controls, know its capabilities, dimensions, and all safety requirements. See your machine's manual for these instructions.

- Keep all step plates, grab bars, pedals, and controls free of dirt, grease, debris, and oil.
- Never allow anyone to be around the equipment when it is operating.
- Do not allow riders on the attachment or the prime mover.
- Do not operate the equipment from anywhere other than the correct operator's position.
- Never leave equipment unattended with the engine running, or with this attachment in a raised position.
- Do not alter or remove any safety feature from the prime mover or this attachment.
- Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.

WARNING!

CALIFORNIA PROPOSITION 65 WARNING

This product may contain a chemical known to the state of California to cause cancer, or birth defects or other reproductive harm. www.P65Warnings.ca.gov

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EQUIPMENT SAFETY PRECAUTIONS

WARNING! KNOW WHERE UTILITIES ARE

Observe overhead electrical and other utility lines. Be sure equipment will clear them. When digging, call your local utilities for location of buried utility lines, gas, water, and sewer, as well as any other hazard you may encounter.

WARNING! EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA DUST ALONG WITH OTHER HAZARDOUS DUSTS MAY CAUSE SERIOUS OR FATAL RESPIRATORY DISEASE.

It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause high levels of dust.

WARNING! REMOVE PAINT BEFORE WELDING OR HEATING

Hazardous fumes/dust can be generated when paint is heated by welding, soldering or using a torch. Do all work outside or in a well ventilated area and dispose of paint and solvent properly. Remove paint before welding or heating.

When sanding or grinding paint, avoid breathing the dust. Wear an approved respirator. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

WARNING! END OF LIFE DISPOSAL

At the completion of the useful life of the unit, drain all fluids and dismantle by separating the different materials (rubber, steel, plastic, etc.). Follow all federal, state and local regulations for recycling and disposal of the fluid and components.

OPERATING THE TRENCHER

- Block off work area from bystanders, livestock, etc. Stop operation if bystanders or livestock enter the work area.
- Operate only from the operator's station.
- Never drop a boom with a rapidly moving digging chain on the ground. The force of the trencher may cause the vehicle to move suddenly and unexpectedly.
- Use caution when operating on slopes. The natural vibration will cause the unit to creep sideways downhill. Try to dig with trencher in a level position.
- Do not adjust relief valve settings. Incorrect valve settings could result in equipment damage and/or personal injury.
- An operator must not use drugs or alcohol, which can change his or her alertness or coordination. An operator taking prescription or over-the-counter drugs should seek medical advice on whether or not he or she can safely operate equipment.
- Before exiting the prime mover, lower the unit to the ground, turn off the prime mover's engine, remove the key and apply the brakes.
- Do not use the trencher crumber bar or chain as a step when climbing in or out of the prime mover.
- Be alert to changes in the work area. Watch out for bystanders, changes in weather and soil conditions.

EQUIPMENT SAFETY PRECAUTIONS

OPERATING THE TRENCHER

- Do not make sharp turns while trenching. Trencher could become wedged in the trench and damaged.
- Keep equipment and bystanders away from the trencher after it has been dug. The weight could cause a cave in.
- If chain becomes jammed, never attempt to free it while the unit is running. Stop the unit, shut off the engine and review the situation.

TRANSPORTING THE TRENCHER

- When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs etc., to prevent accidents. Check local government regulations that may affect you.
- Do not drive close to ditches, excavations, etc., cave in could result.
- Do not smoke when refueling the prime mover. Allow room in the fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.
- When transporting keep the trencher as low as the terrain will allow.

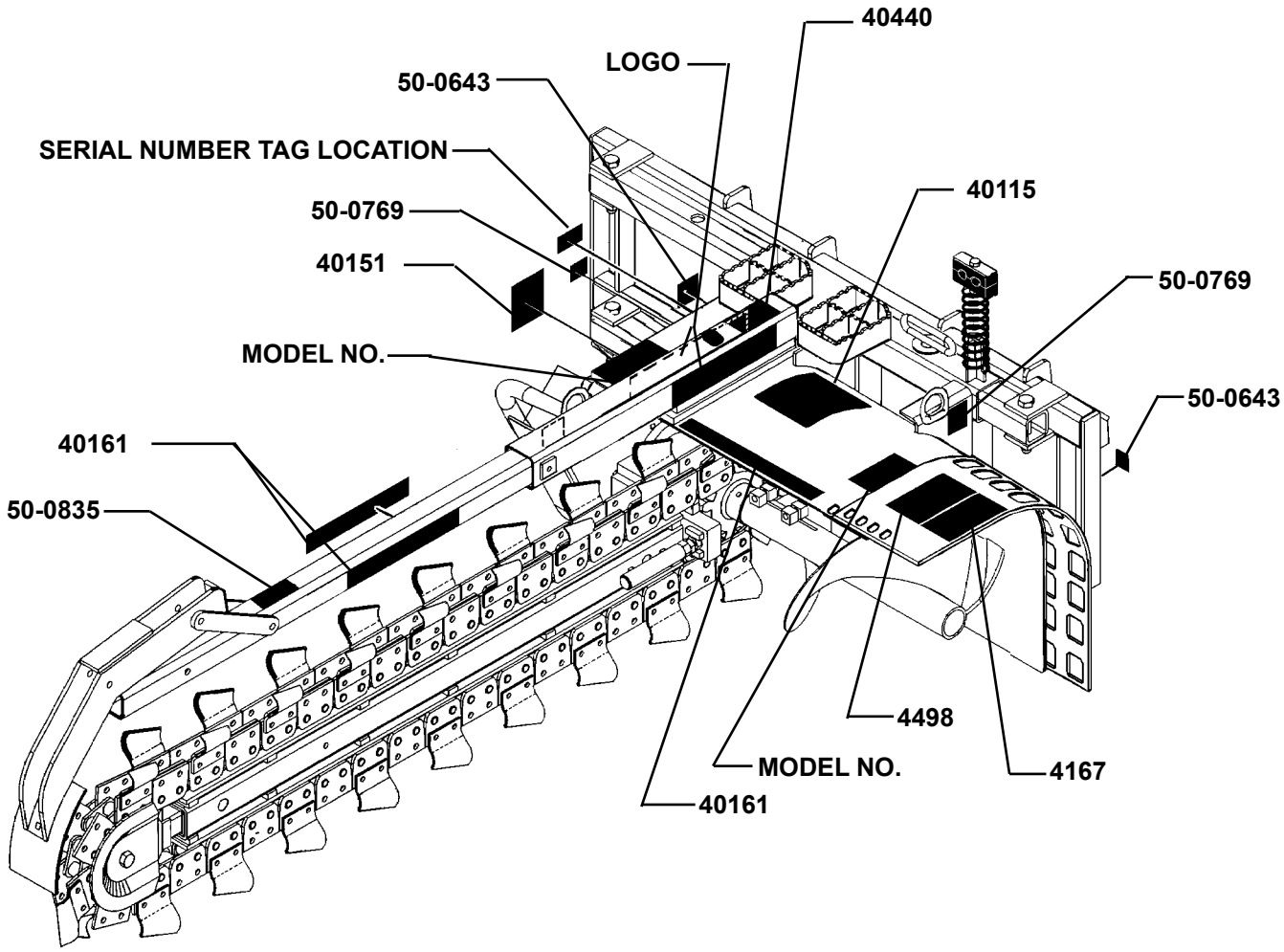
MAINTAINING THE TRENCHER

- Before performing maintenance, lower the attachment to the ground, turn off the engine, remove the key and apply the brakes.
- Never perform any work on the attachment unless you are authorized and qualified to do so. Always read the operator service manuals before any repair is made. After completing maintenance or repair, check for correct functioning of the backhoe. If not functioning properly, always tag “DO NOT OPERATE” until all problems are corrected.
- Worn, damaged, or illegible safety decals must be replaced. New safety decals can be ordered from BRADCO.
- Never make hydraulic repairs while the system is under pressure. Serious personal injury or death could result.
- Never work under a raised attachment.
- Replace all safety shields and guards when done performing maintenance. Do not operate trencher with protective equipment removed.

DECALS
DECAL PLACEMENT

GENERAL INFORMATION

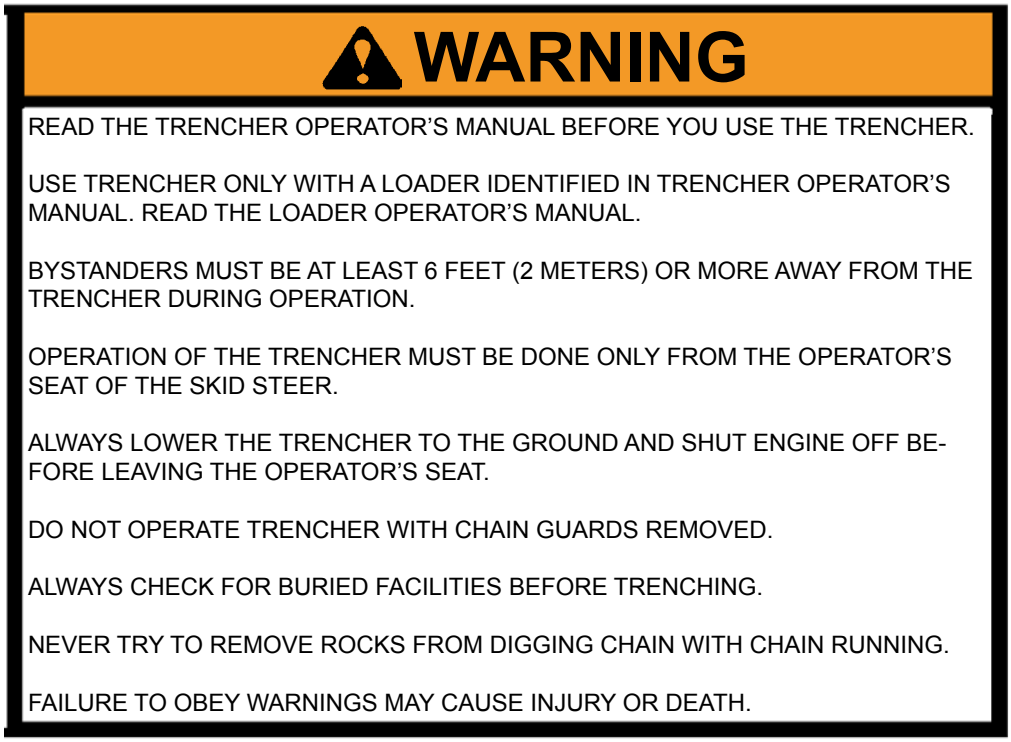
The diagram on this page shows the location of all the decals used on the 640 trencher. The decals are identified by their part numbers, with reductions of the actual decals located on the following pages. Use this information to order replacements for lost or damaged decals. Be sure to read all decals before operating the trencher. They contain information you need to know for both safety and trencher longevity.



IMPORTANT: Keep all safety decals clean and legible. Replace all missing, illegible, or damaged safety decals. When replacing parts with safety decals attached, the safety decals must also be replaced.

REPLACING SAFETY DECALS: Clean the area of application with nonflammable solvent, then wash the same area with soap and water. Allow the surface to fully dry. Remove the backing from the safety decal, exposing the adhesive surface. Apply the safety decal to the position shown in the diagram, and smooth out any bubbles.

DECALS



PART #40115
WARNING! GENERAL

PART #40440
CALL BEFORE YOU DIG

PART #4498
DANGER!

PART #40151
WARNING! HIGH PRESSURE FLUID

PART #40161
STAND CLEAR

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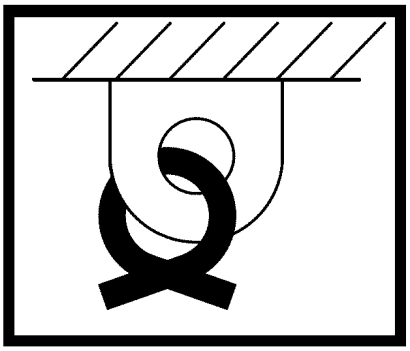
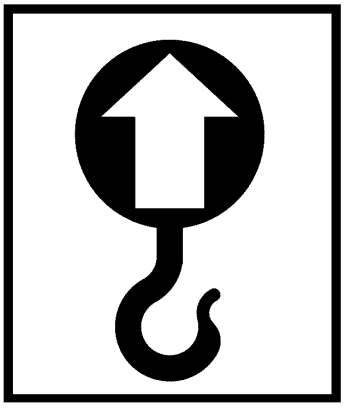
DECALS

PART #4167
NO STEP



TIE DOWN POINT
PART #50-0643



LIFT POINT
PART #50-0769

PART #50-0737
WARNING: PINCH POINT

NOTE: CONTACT YOUR LOCAL DEALER FOR MODEL NUMBER AND LOGO DECALS.

PREOPERATION

640 TRENCHER

GENERAL INFORMATION

The purpose of this manual is to assist in setting up, operating and maintaining your trencher. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance.

Right and left when referred to in this manual are determined by the operator's right and left when seated at the skid-steer controls in the normal operating position facing forward.

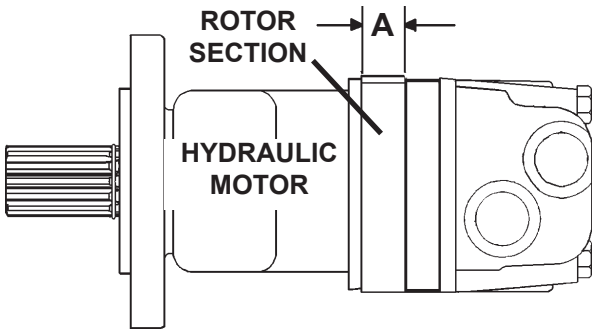
The illustrations and date in this manual were current at the time of printing, however, we reserve the right to redesign and change the trencher as may be necessary without notification.

PREPARING THE SKID STEER LOADER

WARNING! Never let anyone operate this skid-steer loader and trencher without understanding all of the "Safety Precautions" and "Operating Instructions" located in this manual. Always choose hard, level ground to park the skid-steer loader on and set the brake so that the skid-steer loader cannot roll.

There are different motors and hydraulics available on the 640 trencher. The 640(A) and 640(B) are standard flow trenchers and **MUST NOT** be used on high flow systems or damage to the unit will occur. The 640 (C) is a standard flow trencher but can be used in certain high flow applications with the addition of a case drain line. The 640(D) and 640 (E) are high flow trenchers and **MUST NOT** be used on standard flow hydraulic systems due to unsatisfactory performance. Please verify hydraulic flow compatibility between the trencher and the skid-steer before installation.

NOTE: The recommended GPM of your motor can be determined by measuring the rotor thickness which will in turn determine the displacement. Refer to the following chart.



Rotor Dimension "A"	Cubic Inch Displacement	Recommended GPM	Motor Part Number
.77"	7.7	14-17	#101493 (640A)
1.00"	10.0	18-24	#101494 (640B)
1.25"	12.5	25-28	#102311 (640C)
.87"	15.6	29-35	#101763 (640D)
1.00"	17.9	36-44	#101845 (640E)

PREOPERATION
640 TRENCHER

Your skid-steer **MUST** have auxiliary hydraulics (that are compatible with the attachment you have received) to run the trencher. If your unit does not have an auxiliary hydraulic system, contact your skid-steer dealer for information on availability.

The hydraulic kits for the 640 Trencher include the necessary hoses, fittings and couplers that connect the trencher to the auxiliary hydraulic system of your skid-steer. Be sure you have the correct hydraulic kit for your trencher and skid steer.

The 640 trencher was designed to be easy to use and maintain. The trencher mounts to the universal toolbar/attachment plate of the skid-steer. The mounting incorporates the quick attach mechanism of the skid-steer for fast, easy mounting.

See your skid-steer operators manual on "Installing an Attachment" for the correct installation procedure.

OPTIONS

Eventually you may wish to dig a trench of a depth or width other than what your unit was originally equipped to dig. The 640 trencher can be fitted with optional booms, digging chains, sprockets and crumber assemblies to allow you to dig a variety of different sized trenches with a digging chain option of a tooth every station or every other station. The following chart will give you an idea of the different trench depths and widths a properly equipped unit is capable of digging.

TRENCH DEPTHS*	TRENCH WIDTHS			
30" Depth	6.00"	8.00"	10.00"	12.00"
36" Depth	6.00"	8.00"	10.00"	12.00"
42" Depth	6.00"	8.00"	10.00"	NA
48" Depth	6.00"	8.00"	NA	NA
60" Depth	6.00"	NA	NA	NA

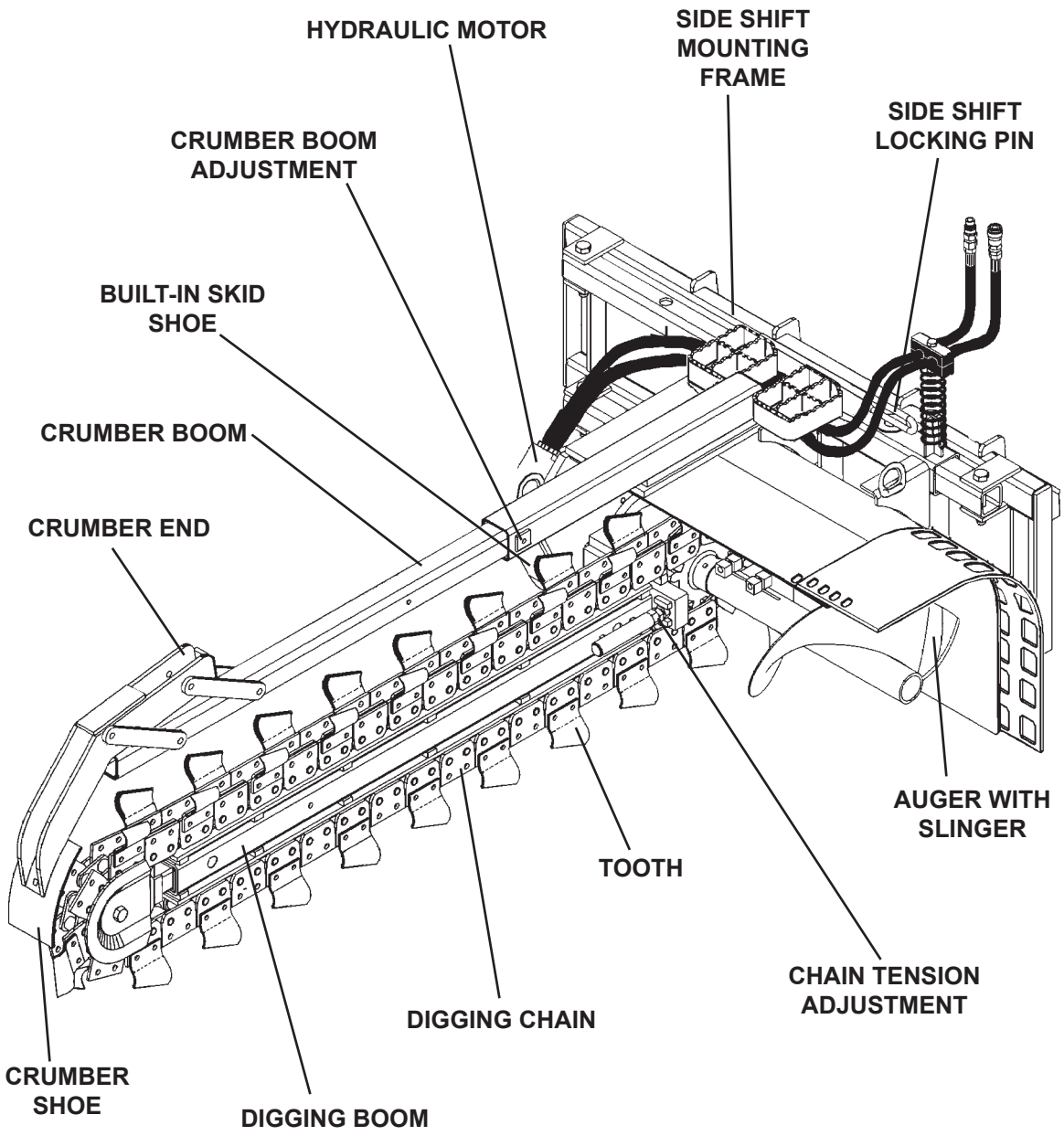
*Trench depths are given with the digging boom at an optimum 65° digging angle and the skid shoe touching the ground. Trenches of various depths can be made by varying the digging angle and raising the trencher up higher. These methods are less efficient however.

PREOPERATION

TRENCHER MAJOR COMPONENT NOMENCLATURE
640TRENCHER

GENERAL INFORMATION

The purpose of this page is to acquaint you with the trencher and the names of its various components. This knowledge will be helpful when reading through this manual or when ordering service parts.



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INSTALLATION

640 TRENCHER INSTALLATION

GENERAL INFORMATION

The following instructions will help you mount your trencher onto your skid steer loader. The trenchers use the quick-attach system for ease of installation.

Remember to read all safety warnings, decals and operations instructions before operating the attachment. If there is any portion of this manual that you do not understand, contact your dealer.

INSTALLATION INSTRUCTIONS

1. Remove shipping banding.
2. Remove any existing attachment from the loader.
3. Following all standard safety practices and the instructions for installing an attachment in your skid steer operator's manual, install the attachment onto your skid steer.

NOTE: IT IS IMPORTANT TO MAKE SURE THE LOCKING MECHANISM ON YOUR QUICK ATTACH IS ENGAGED, THEREFORE LOCKING THE ATTACHMENT ONTO THE SKID STEER

4. Lower the unit to the ground and remove the key.
5. Relieve pressure from the auxiliary hydraulic system and make sure there is not any foreign matter on the hydraulic couplers. If connecting the trencher to a high flow skid steer connect the case drain coupler to the case drain on your skid steer loader. **NOTE: the case drain line much be connected first, and then the power and return hoses. When disconnecting the hoses, it it recommended to disconnect the case drain line last.** If connecting to a standard flow skid steer loader connect the power and return hoses to the auxiliary hydraulic system of your skid steer loader. Route the hoses in such a fashion as to avoid pinching or chafing.

NOTICE: BE SURE THE CASE DRAIN COUPLER (IF SO EQUIPPED) IS COMPLETELY ENGAGED. IMMEDIATE HYDRAULIC MOTOR SEAL FAILURE WILL OCCUR IF CASE DRAIN IS NOT SUCCESSFULLY CONNECTED ON HIGH FLOW LOADERS.

DISCONNECT INSTRUCTIONS

1. Lower the trencher to the ground.
2. Following Safety Shut Down Procedures; stop the engine and set the parking brake, relieve any pressure in the hydraulic lines.
3. Disconnect the power and return hoses from the auxiliary hydraulics and then disconnect the case drain line (if so equipped).
4. Following all standard safety practices and the instructions for disconnecting an attachment in your skid steer operator's manual, disconnect the trencher from your skid steer.
5. Connect the hydraulic couplers on the attachment together to prevent contaminants from entering the hydraulic system. Store the hydraulic hoses off the ground.

MOUNTING KIT INSTALLATION

640 TRENCHER HYDRAULIC SIDE SHIFT

GENERAL INFORMATION

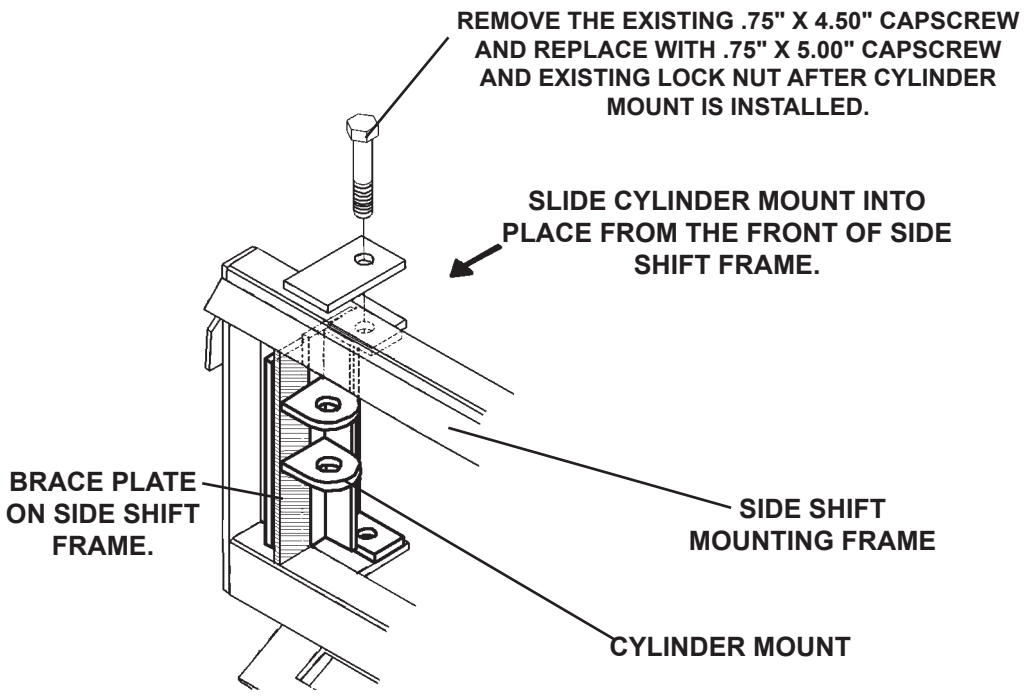
The following instructions are provided to help you install the hydraulic side shift kit (with or without a selector valve) in the event that yours was not installed at the factory.

MOUNTING INSTRUCTIONS

1. Remove the existing top and bottom .75" x 4.50" capscrews from the left side of the side shift mounting frame on the trencher. See Figure #1.

2. Slide the cylinder mount #89101 into position and install the .75" x 5.00" capscrews. Secure in place with the existing lock nut removed in step #1. See Figure #1.

FIGURE #1

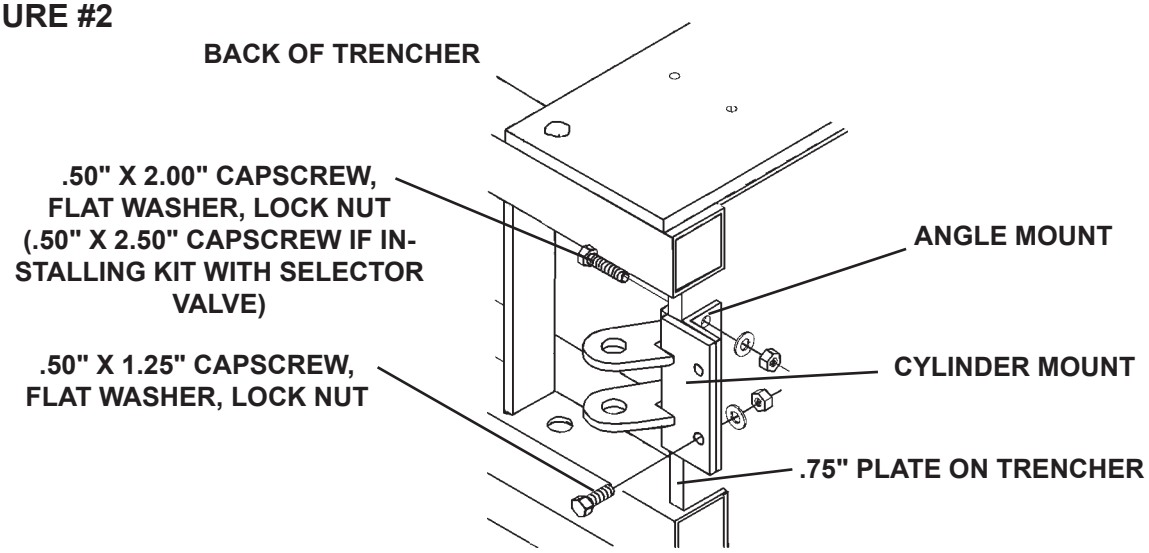


3. Place the remaining cylinder mount on the inside of the .75" plate on the back of the trencher as shown in Figure #2 with the angle mount on the outside of the plate. Align the holes and install the .50" x 2.00" capscrews through the cylinder mount, the trencher and the angle mount while using the .50" x 1.25" capscrews through the cylinder mount and the angle mount. Install the flat washers and lock nuts provided. See Figure #2. **NOTE: If installing Kit #101510 with selector valve use the .50" x 2.50" capscrews through the cylinder mount, trencher and angle mount. The valve mounting bracket will be bolted to this same location in step #8.**

MOUNTING KIT INSTALLATION

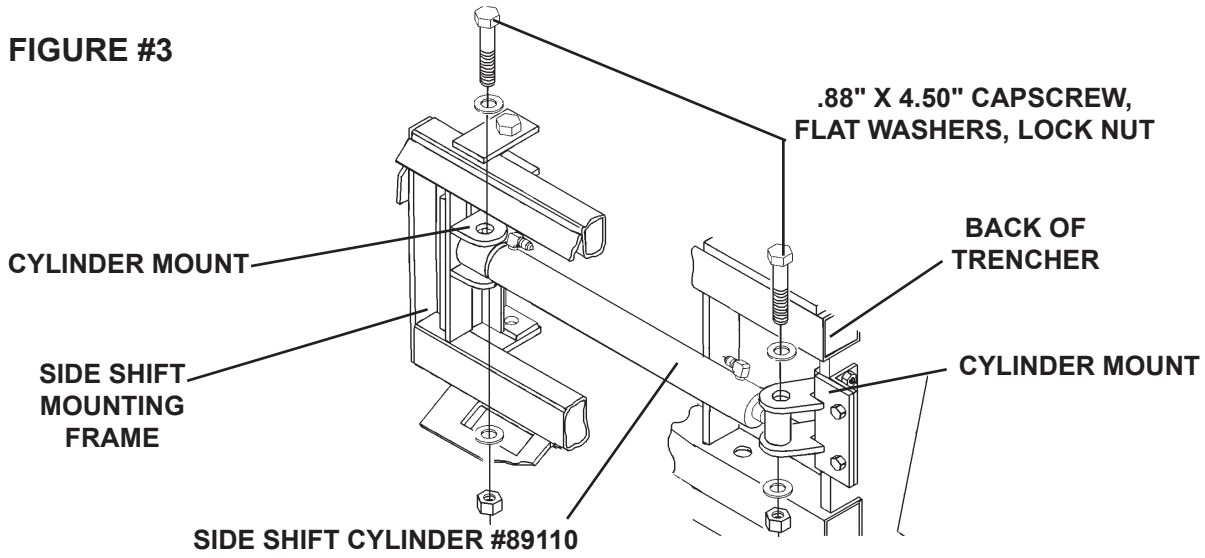
640 TRENCHER HYDRAULIC SIDE SHIFT

FIGURE #2



4. Install the side shift cylinder assembly #89110 into the cylinder mounts and secure in place using the .88" x 4.50" capscrew, flat washers and lock nut provided. See Figure #3

FIGURE #3



5. If you have hydraulic side shift kit #89279 without a selector valve, installation is complete. If you have hydraulic side shift kit #101510 with selector valve continue with step #6.

NOTE: Due to the different locations of the secondary hydraulics on the various skid-steer loaders, hoses are not included in this kit. To determine the hose lengths for your skid-steer, measure the distance from the secondary hydraulic couplers to the side shift cylinder ports when the loader is fully raised and tilted down. The hose connection at the cylinder is #6FJX and the hose size should be .25" diameter with 3000 PSI working pressure. (Route hoses in such a fashion to prevent pinching and chafing.)

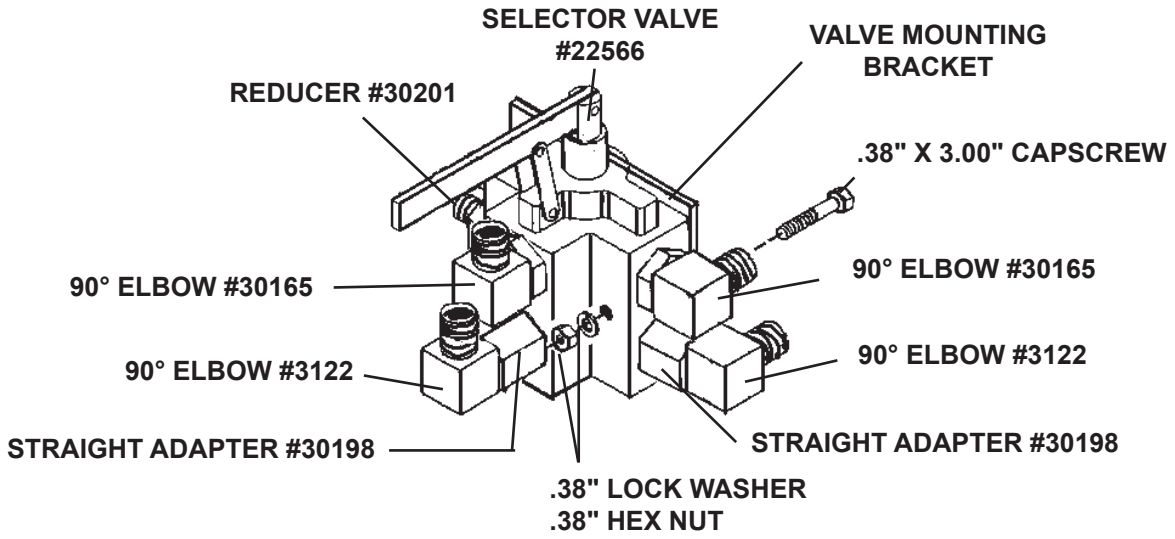
MOUNTING KIT INSTALLATION

640 TRENCHER HYDRAULIC SIDE SHIFT

6. Install the two 90° elbows #30165 into the top ports on the right side and front of the selector valve, the two reducer fittings #30201 into the ports on the left side of the valve and the two straight adapters #30198 followed by two 90° elbows #3122 into the two bottom ports on the right side and front of the valve. See Figure #4

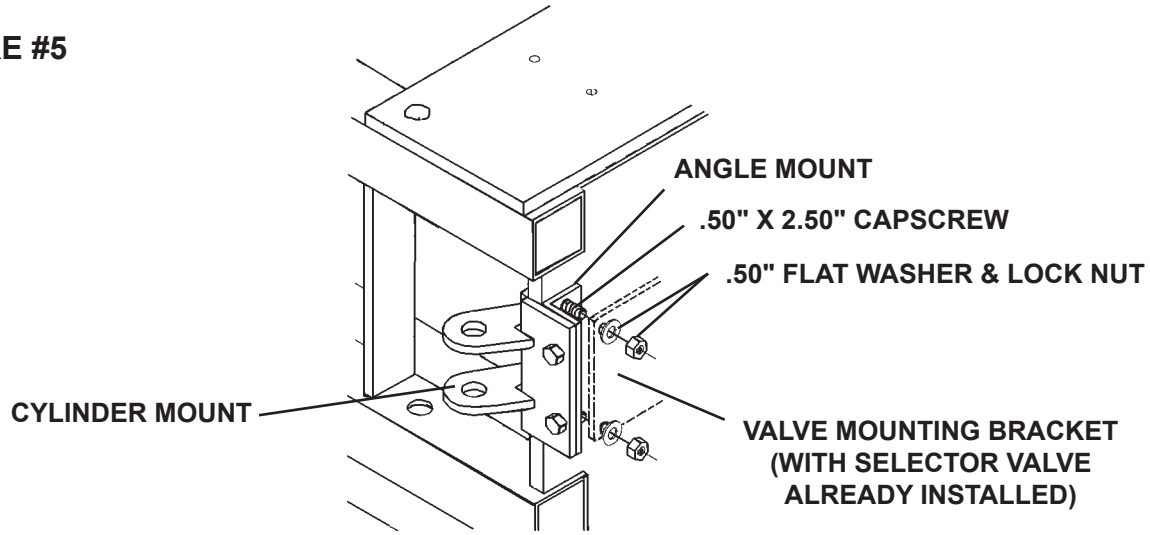
7. Loosely bolt the selector valve to the valve mounting bracket using the two .38" x 3.00" capscrews, lock washers and hex nuts provided. See Figure #4

FIGURE #4



8. Remove the nut and washer from the .50" x 2.50" capscrews on the angle mount (installed in Step #3) and position the valve mounting bracket (with selector valve) onto the top of the angle mount and secure in place by reinstalling the nut and washer. See Figure #5

FIGURE #5



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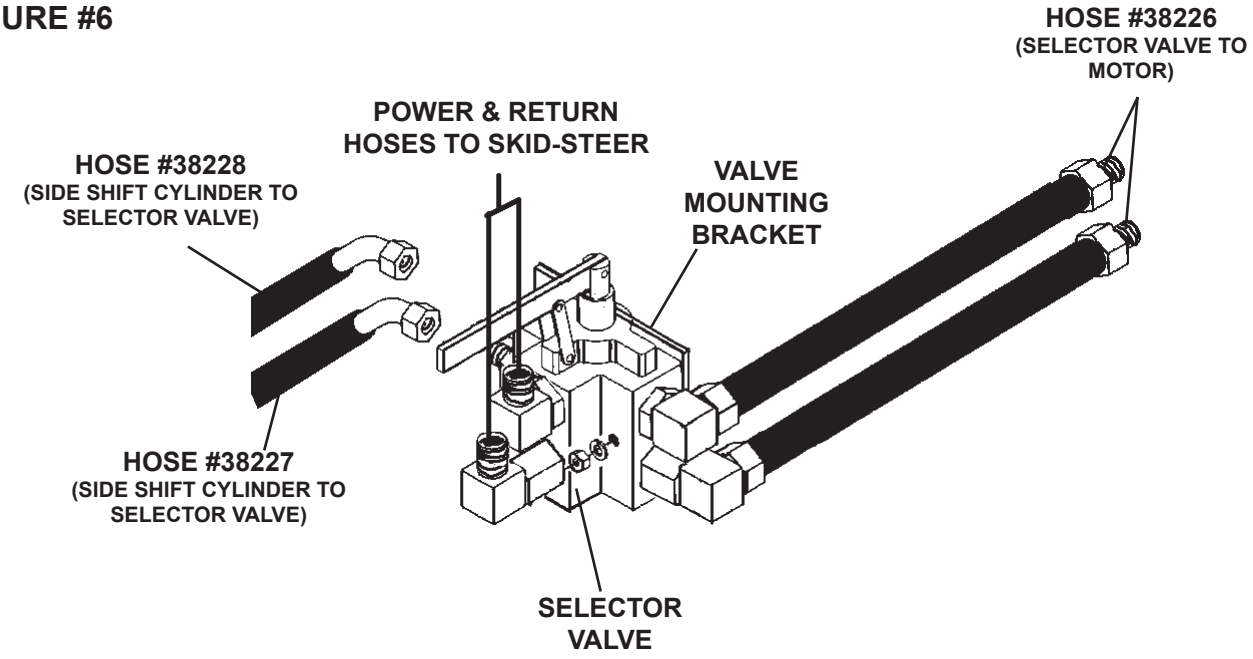
MOUNTING KIT INSTALLATION

640 TRENCHER HYDRAULIC SIDE SHIFT

9. Disconnect the power and return hoses from the trencher motor and connect them to the 90° elbows in the front ports of the selector valve. Remove the straight connector fittings from the motor and install the two 18" hoses #38226 to the trencher motor. See Figure #6

FIGURE #6



10. Connect the 18" hoses to the 90° elbows in the right side ports of the selector valve. See Figure #6

11. Connect the two .25" hoses #38227 and #38228 to the side shift cylinder ports, route hoses through the side shift mounting frame and into the straight adapter fittings in the left side of the selector valve. See Figure #6

12. Tighten all capscrews.

OPERATING INSTRUCTIONS

CONTROLS
640 TRENCHER

GENERAL INFORMATION

Simplicity of operation is one of the key features of the 640 trencher. The trenchers themselves have no controls, just a few adjustments to check. It is important however, to be familiar with, and know the controls and adjustments on both the trencher and the skid steer. Such knowledge is crucial for safe, efficient operation of equipment. Take the time to learn how they operate now.

SKID STEER

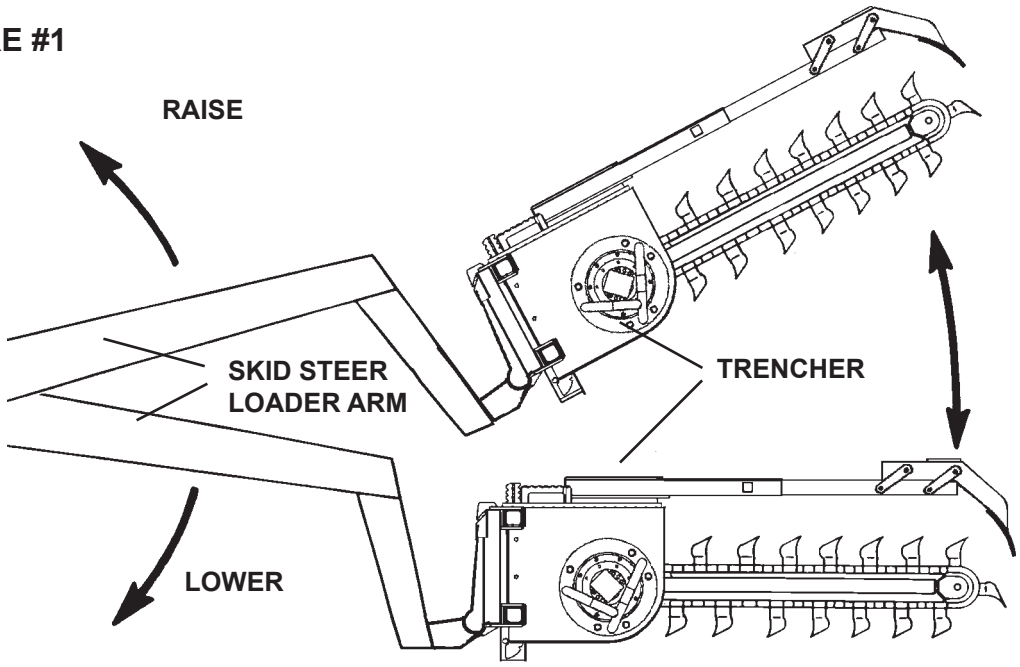
Your trencher mounts to the toolbar / attachment plate of the skid steer. Due to this arrangement, thorough knowledge of the skid steer controls is necessary for trencher operation. Read your skid steer owner's manual for information regarding skid steer operation before attempting to use the trencher.

RAISING / LOWERING THE TRENCHER

Raise / lower the trencher unit by raising / lowering the skid steer loader arms through their appropriate skid steer controls. (See Figure #1)

CAUTION! **Become aware of any overhead power or telephone lines, tree limbs, etc., that the raised trencher could come into contact with. Contact with electrical lines could cause serious injury or death.**

FIGURE #1



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OPERATING INSTRUCTIONS

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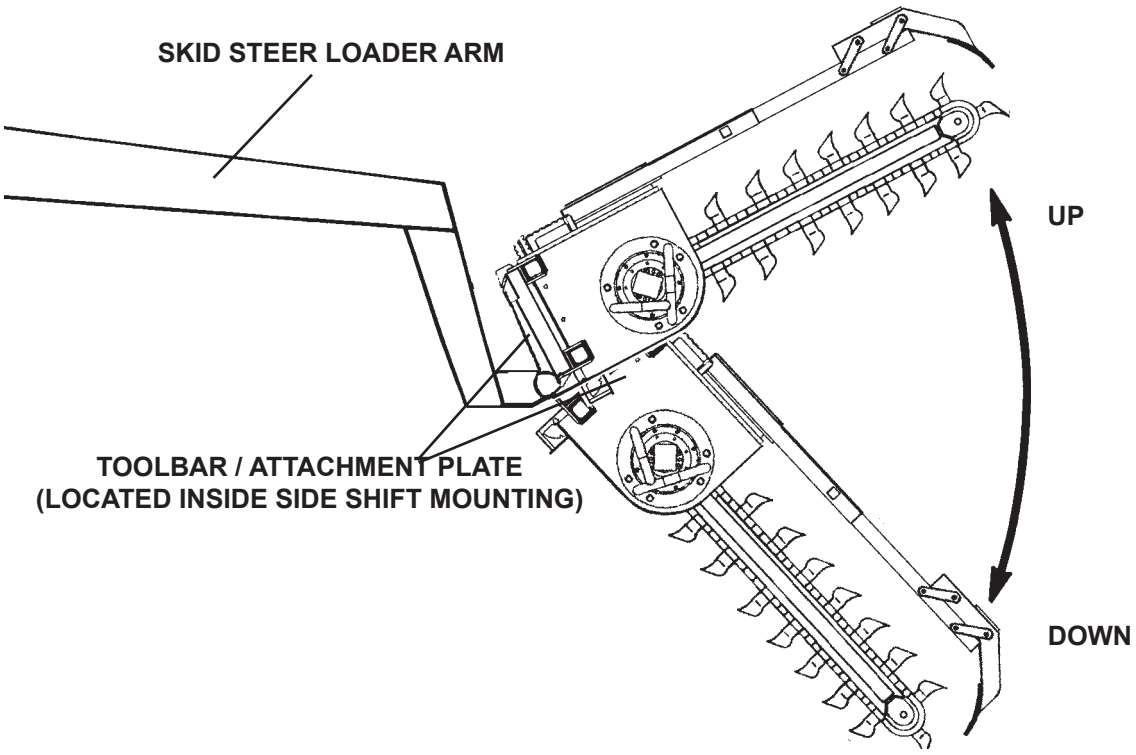
640 TRENCHER

TILTING THE TRENCHER

Tilt the trencher unit up or down by tilting the toolbar / attachment plate back or forward through its skid steer control. We recommend a 60° digging angle for general trenching as measured from ground level (the horizon). (See Figure #2)

FIGURE #2



SIDE SHIFTING THE TRENCHER

Your trencher has an adjustment to shift the whole unit to the side on its own mount. To shift the unit sideways, first remove the locking pin from the back of the unit.

Lower trencher until trencher frame is resting on the ground, then counter-rotate the tires so that the skid steer moves in a sideways motion. Continue moving until side shift holes are aligned and replace locking pin.

IMPORTANT: Always reinstall the locking pin to prevent the trencher from shifting sideways during operation.

NOTE: Slight shifting of the trencher from side to side may be necessary to align the side shift holes for reinstalling the locking pin.

OPERATING INSTRUCTIONS

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640 TRENCHER

STARTING AND STOPPING THE TRENCHER

Power to the trencher is supplied by oil from the skid steer auxiliary hydraulic system, which passes through the hydraulic hoses and into the trencher's hydraulic motor. (Check the hydraulic flow compatibility between the trencher and the skid steer before operation.) See Preoperation section at the front of this manual.

The trencher unit itself does not have an on/off control but is operated by the skid steer auxiliary hydraulic control mechanism. To start the trencher, engage the auxiliary hydraulics. (See your skid steer owner's manual.) To stop the trencher, disengage the auxiliary hydraulics.

TRENCHER SPEED CONTROL

Again it may be noted that power to the trencher is supplied by the skid steer's auxiliary hydraulics. Trencher speed and power are determined by the flow of oil coming out of the auxiliary system, which in turn is dependent upon skid steer engine speed. To increase trencher speed, increase skid steer engine speed, to decrease trencher speed, decrease skid steer engine speed.

When first starting a trench throttle down the skid steer engine to half throttle. This will reduce the shock to the skid steer and trencher when the digging teeth first contact the ground. Once the trench is started, set the engine back to full throttle.

For general use operate the trencher with the skid steer engine at full throttle to provide maximum power to the auxiliary hydraulics and thus the trencher.

AUGER HEIGHT

The auger is fixed to the trencher mainframe and has no separate adjustment. To raise the auger, raise the trencher as previously described. This will raise the auger and thus leave the dirt or spoil closer to the trench.

Lowering the trencher will cause the auger to lower, moving the spoil away from the trench. The built-in skid shoe on the 640 trencher will prevent the auger from being lowered to the extent that the auger itself starts to dig in the ground as this will greatly reduce efficiency.

OPERATING INSTRUCTIONS

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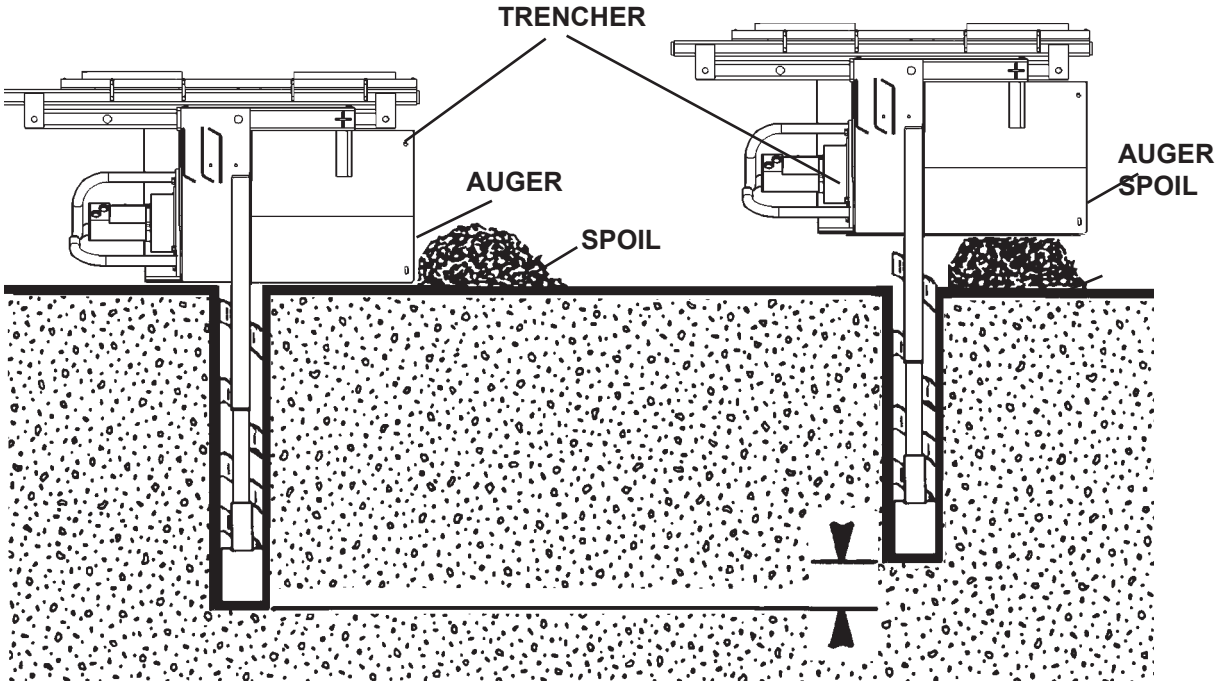
640 TRENCHER

It should be noted that raising or lowering the trencher to change the auger height will also change the trenching depth. You will need to compensate for this by changing the tilt of the trencher down or up accordingly. (See Figure #3)

FIGURE #3



CRUMBER SHOE/BAR ADJUSTMENT

The purpose of the crumber shoe is to keep any loose dirt in the trench close enough to the digging chain so that the digging teeth can grab it and remove it. This will give you a cleaner finished trench. Your trencher has an adjustable crumber bar that can be lengthened or shortened to bring the crumber shoe closer or farther from the digging chain.

To adjust the crumber bar length, loosen the two jam nuts found at the end of the main-frame crumber bar tube. Slide the bar in or out to achieve the desired spacing (we suggest a distance of about 4" between crumber shoe and digging teeth for best overall results). Tighten the set screws and jam nuts when finished. (See Figure #4 on the next page)

OPERATING INSTRUCTIONS

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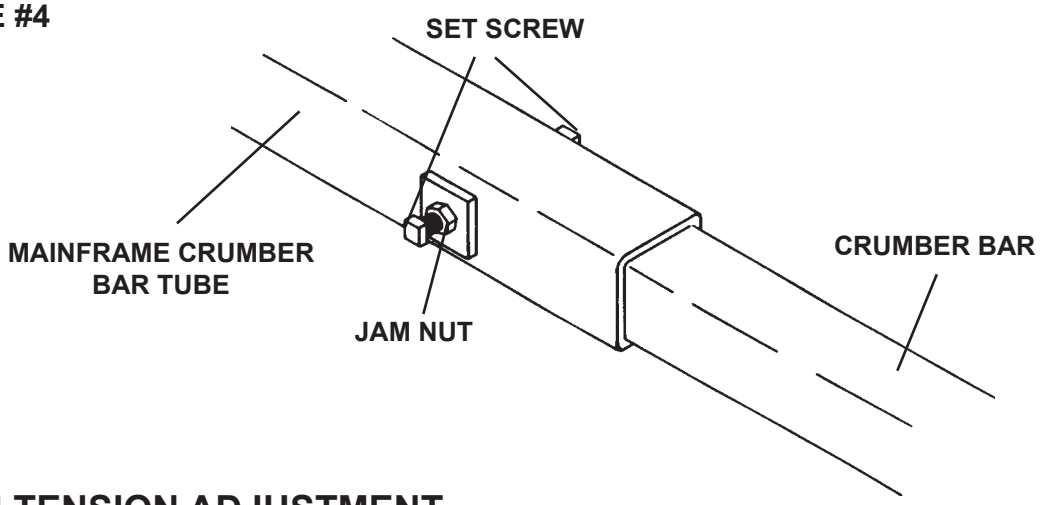
FIGURE #4

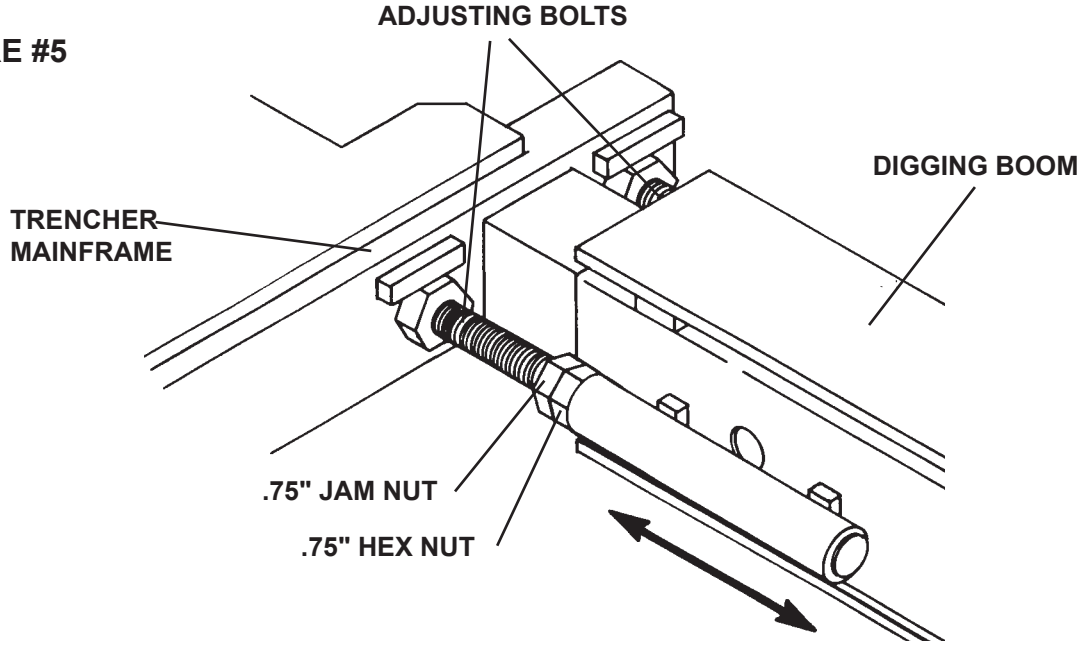


CHAIN TENSION ADJUSTMENT

When trenching, the digging chain tension should be adjusted so that the chain is as loose as possible, without jumping off the sprocket or idler wheel. To do this, an adjustment is provided on the digging boom.

These booms have an adjusting bolt on each side at the trencher end of the boom. The head of the bolts are kept from rotating by special tubes welded onto the mainframe. The end of the bolt rests in a tube welded to the boom. Each bolt has a jam nut and a .75" hex nut on it. To tighten the chain, "back off" the jam nut from the regular nuts. Now turn the standard nuts off the adjusting bolts. This will push the boom out and thus tighten the chain. Retighten the jam nut when finished. To loosen the chain, follow the same procedure, except turn the hex nut onto the adjusting bolt. (See Figure #5)

FIGURE #5



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OPERATING INSTRUCTIONS

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640 TRENCHER

This procedure must be done simultaneously to both adjusting bolts to prevent the boom from becoming wedged onto its mount.

CAUTION! **Never work on, or make adjustments to any part of the trencher while the unit is running. You could get caught in the digging teeth which could cause severe injury or death.**

It is common for your trencher to need its digging chain tightened after the first 10 to 20 minutes of operation as the chain and sprocket seat themselves.

OPERATING INSTRUCTIONS

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SKID STEER TRENCHERS

INTENDED USE: This unit is designed to dig holes and trenchers up to the depth and width of your digging chain. Use in any other way is considered contrary to the intended use.

GENERAL INFORMATION

The design of your trencher makes it relatively simple to use. With the help of the information in this section and a little practice you should become proficient in it's operation in no time. Observe the following points to obtain the best results with the least amount of wear on the machine. Read the "Safety Precautions" section of this manual before you begin.

CAUTION! Operate the trencher only when seated at the skid steer controls.

Do not operate the skid steer without proper ROPS (Roll-Over-Protective-Structure), seat belt, and hard hat.

Pay attention to the job at hand. Be alert to the possibilities of others in the work area.

Never let anyone work around, or perform maintenance on the trencher while it is running.

Always use a crumber assembly on the trencher.

BEFORE YOU START TRENCHING

Before any excavating is started, it is always a good idea to plan out the job first. Various things need to be considered and taken into account prior to the actual trenching. The operator should inspect the job site and take notice on any potential hazards in the area. He should have a complete understanding of the task he is expected to perform. Figure out what will be done with the spoil (excavated soil), will it be used to backfill or be trucked out? What are the soil conditions like? Will you have to work around others? Etc.

WARNING! Check the prospective trenching area for hidden utility lines before operating the trencher. Contacting a utility line with the trencher could cause electrocution resulting in death. Call all utility companies and have them plot out all their lines first. If you damage a utility line, shut off the equipment at once and contact the affected utility immediately.

Once you have become familiar with the job site and understand the job requirements it is time to set up for the actual trenching. Check the soil type (hard, soft, rocky, etc.) and the trenching requirements (how deep, wide, etc.). Install the proper digging chain, sprocket, boom, crumber bar and shoe for the job at hand. Information on chains, sprockets, booms, crumber bars and shoes may be found in this manual.

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OPERATING INSTRUCTIONS

OPERATING TECHNIQUES
SKID STEER TRENCHERS

Locate the trencher on the mount with the side shift mechanism (as explained earlier in this section) where it will be most efficient and easy to use.

Mark off the area to be trenched out. This can be done with powdered lime, chalk, or a guide string and stakes. Block off the area from all bystanders if possible.

STARTING THE TRENCH

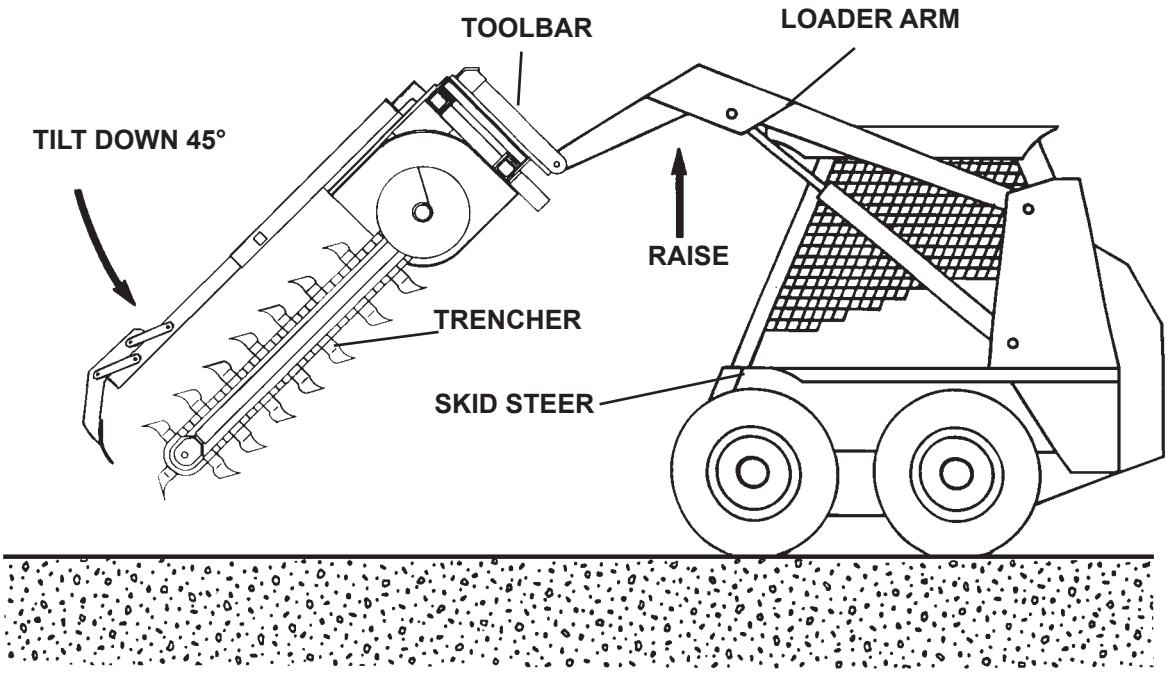
Position the skid steer with the trencher boom directly over the center of the trench layout. It will take about 4' of trenching before the trencher will be able to operate at the desired level, so plan for this and position the trencher about 4' behind where you want the actual trench to start.

NOTE: The skid steer is driven in <u>reverse</u> when trenching. You cannot trench driving the skid steer forward.

Raise the trencher with the skid steer loader arms and tilt the trencher at a 45° angle. (See Figure #6) Position the unit so that the digging teeth are just above ground level.

Set the skid steer throttle at half speed. Start the digging chain by engaging the skid steer auxiliary hydraulic system.

FIGURE #6



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OPERATING INSTRUCTIONS

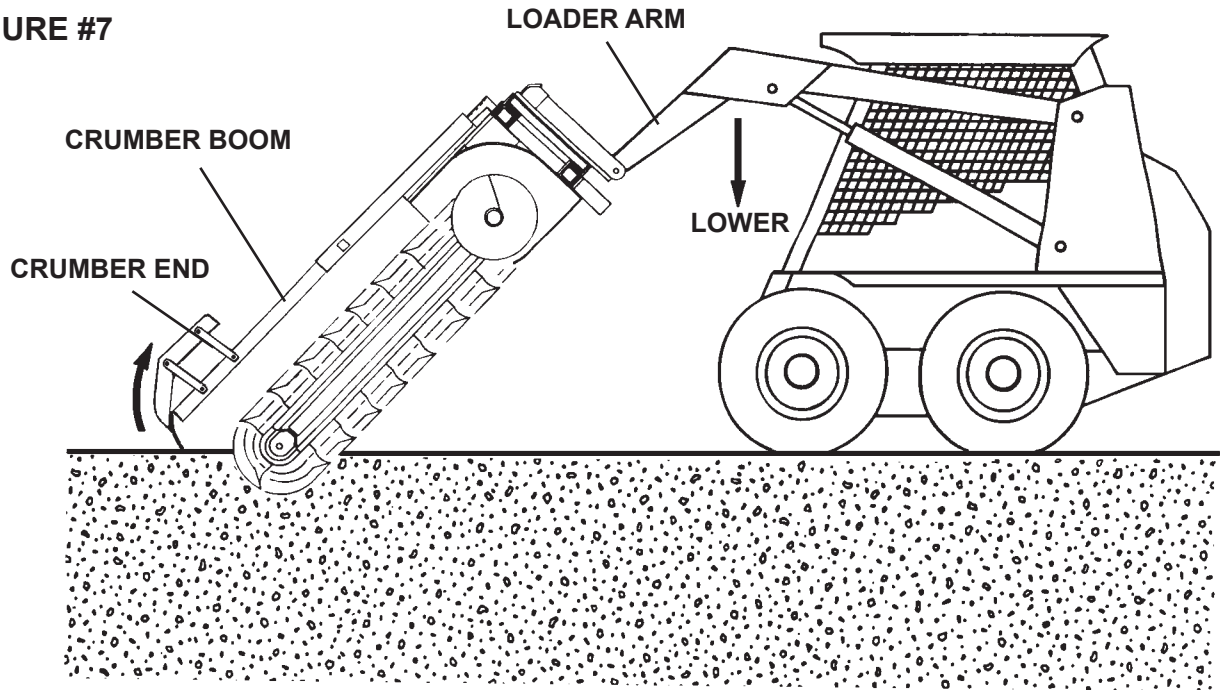
OPERATING TECHNIQUES
SKID STEER TRENCHERS

CAUTION! When lowering a moving digging chain to the ground the force of the teeth grabbing the ground will try to pull the trencher suddenly forward. <u>Be prepared.</u> Have the brake on the skid steer set to help counteract the force.

Slowly lower the digging chain into the ground to start the trench. Do this by lowering the trencher with the loader arms. Continue lowering the unit until the crumber end rolls all the bay back on the crumber bar (See Figure #7)

<u>IMPORTANT:</u> After the crumber end has rolled all the way back, do not lower the trencher any farther without moving the skid steer in reverse. Failure to do so could result in bending of the crumber boom, which is <u>not</u> covered by warranty.

FIGURE #7



Once the crumber end has "bottomed out", begin slowly creeping the skid steer in <u>reverse</u> while continuing to lower the loader arms. When nearing the required depth, stop lowering and tilt the trencher to a 60° to 65° angle. A 60° - 65° angle works best for general trenching. (See Figure #8)

WARNING! Be alert to what is happening around you. Look behind you before reversing the skid steer to trench. Be aware of any person or thing in the path of the skid steer. Observe any terrain changes such as drop-offs or soft ground.

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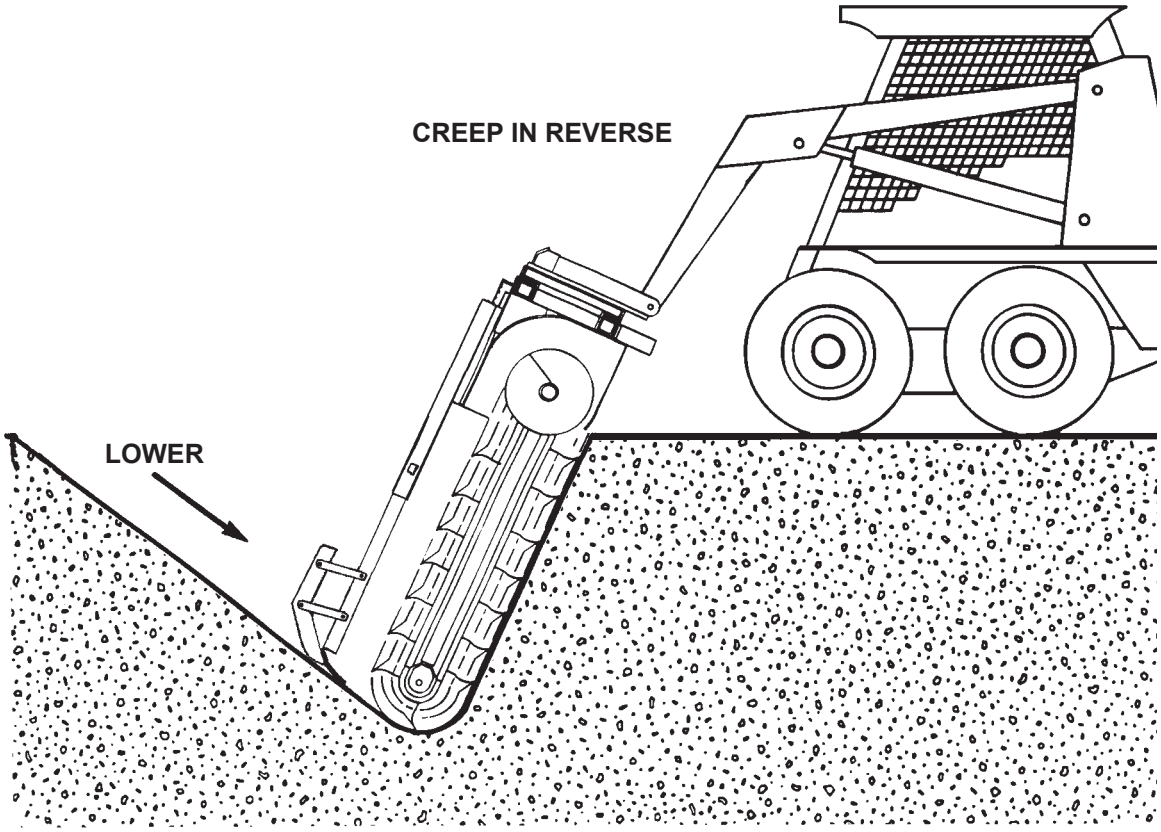
OPERATING INSTRUCTIONS

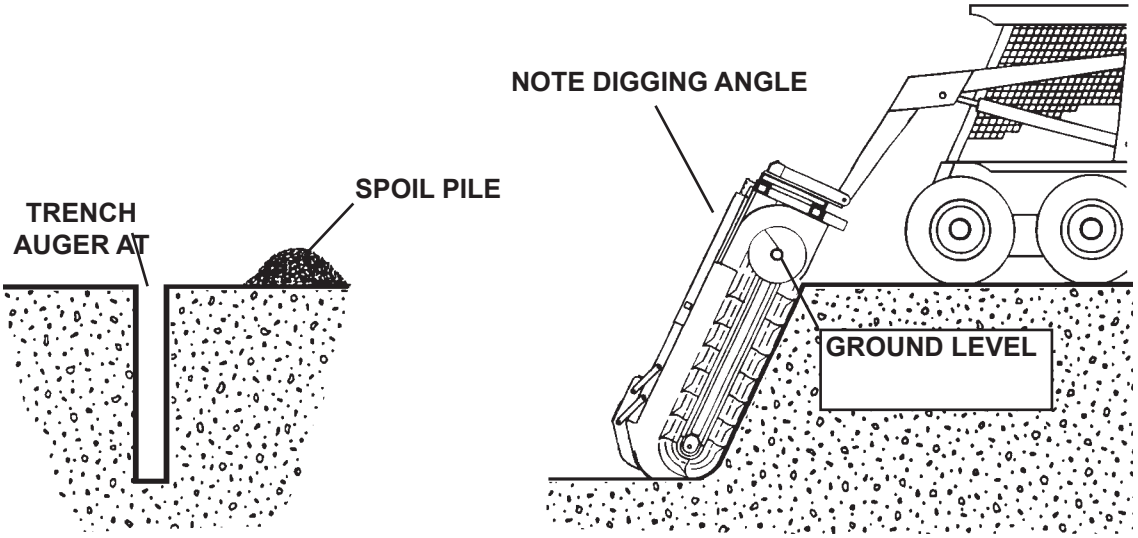
OPERATING TECHNIQUES
SKID STEER TRENCHERS

FIGURE #8



When trenching, remember to keep in mind the spoil placement. Position the trencher so that the auger floats at ground level to move spoil away from the trench. (See Figure #9)

FIGURE #9



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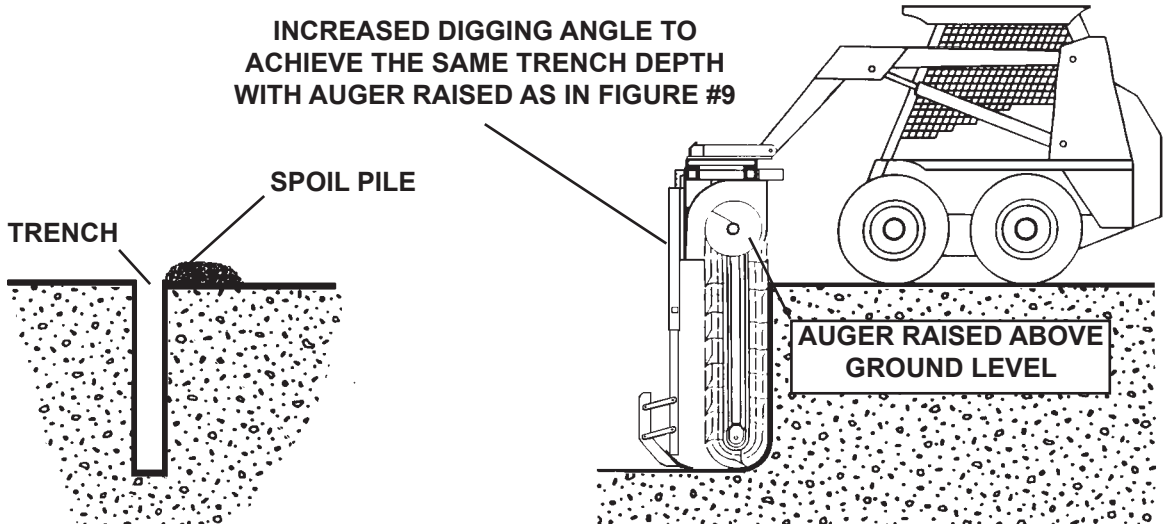
OPERATING INSTRUCTIONS

OPERATING TECHNIQUES
SKID STEER TRENCHERS

Raise the trencher so that the auger rides above the ground level to leave the spoil beside the trench. The higher the auger, the closer to the trench the spoil will be placed. You may find that it generally takes less power to run the digging chain if the auger runs 3" - 6" (inches) off the ground, and thus increasing the potential footage of trench produced per hour. The higher you want the auger, the more vertical you will have to tilt the trencher to achieve the same trench depth. (See Figure #10)

FIGURE #10



With the desired trench depth reached, advance the skid steer throttle to the desired engine RPM (we suggest full throttle for maximum digging power). Continue creeping the skid steer in reverse. Monitor the skid steer hydraulic oil pressure and temperature gauges as you trench. If hydraulic oil temperature or pressure gets too high, reduce skid steer creeping speed to reduce the load on the auxiliary hydraulic system.

IMPORTANT: Trying to trench at a speed faster than the auxiliary hydraulic system can handle could cause the trencher to stall. Continued stalling in a short period of time can cause excessive oil temperature which can lead to pump failure. Do not try to trench too much too quickly. If oil temperature becomes too hot, stop the trencher and allow the oil to cool.

STALLING THE TRENCHER

If the trencher stalls while digging, move the skid steer forward slightly to free the trencher. You may be able to free up the digging chain by changing its direction of travel with the auxiliary hydraulic controls. Repeated stalling of the trencher will cause oil to overheat rapidly and should be avoided.

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TURNING WHILE TRENCHING

Gradual turns can be made while trenching. However, the tightness of the turn is directly proportional to the angle and length of the boom. In other words the greater the angle of the trencher boom to the ground level, the sharper the turn that can be trenched. (See Figures #11 & #12) Also the shorter the boom length the sharper the possible turn. Remember, the greater the increase in boom angle the higher the unit will have to be raised out of the trench to keep a unified trench depth. Shallow boom angles will severely limit turning ability.

IMPORTANT: Turning too tightly while trenching will cause the trencher to jam in the trench and stall, leading to excessive oil temperatures. Turning too tightly can also cause the trencher boom to bend. Take it easy when turning. Proceed slowly with caution.

FIGURE #11

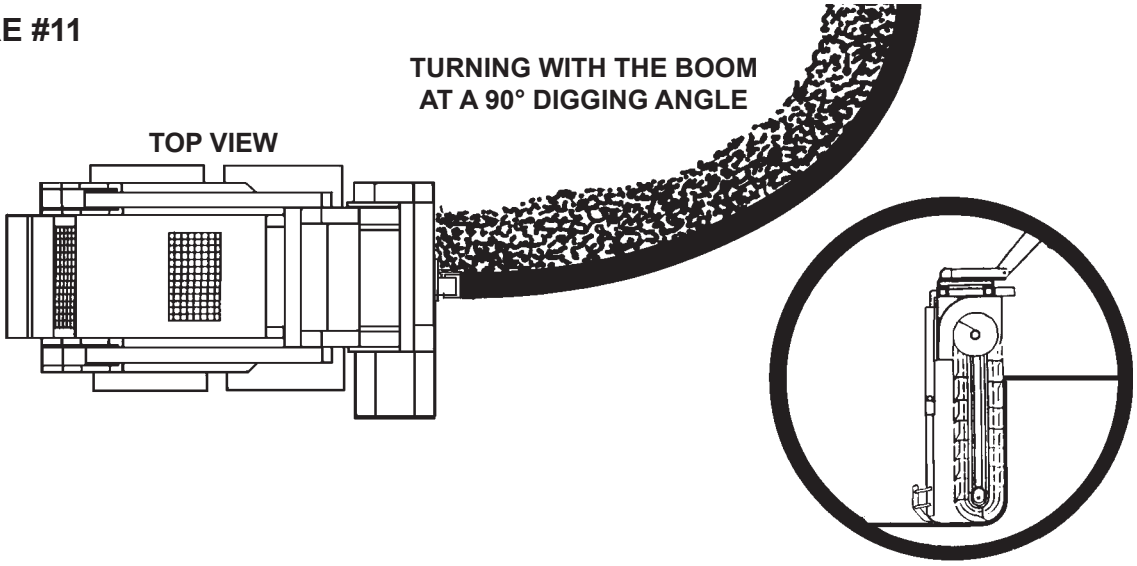
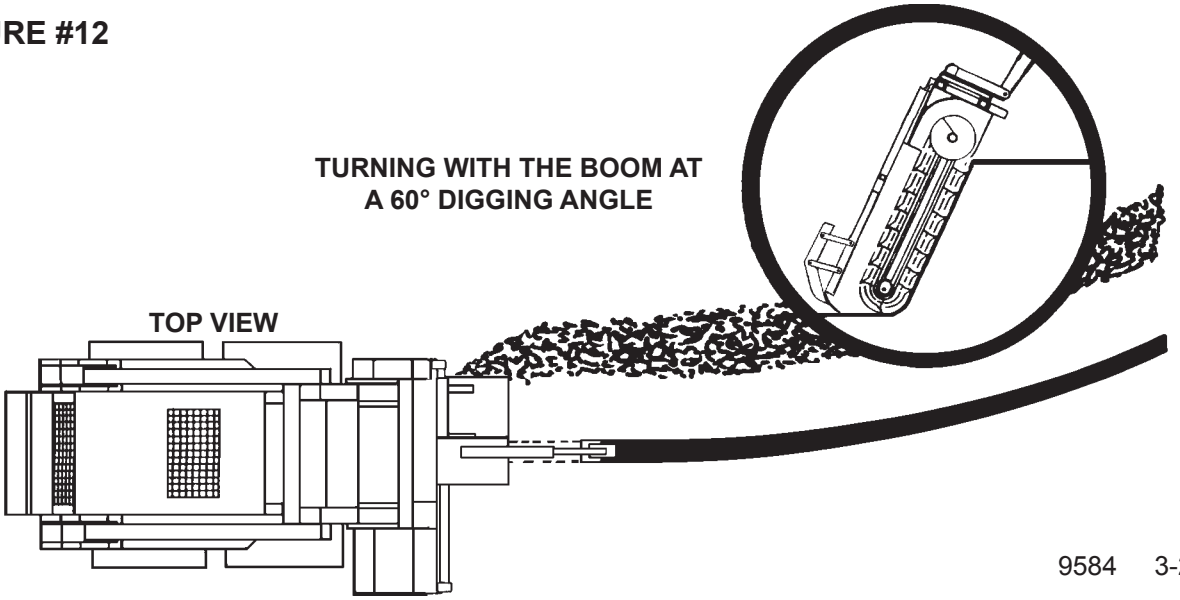


FIGURE #12



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OPERATING INSTRUCTIONS

OPERATING TECHNIQUES
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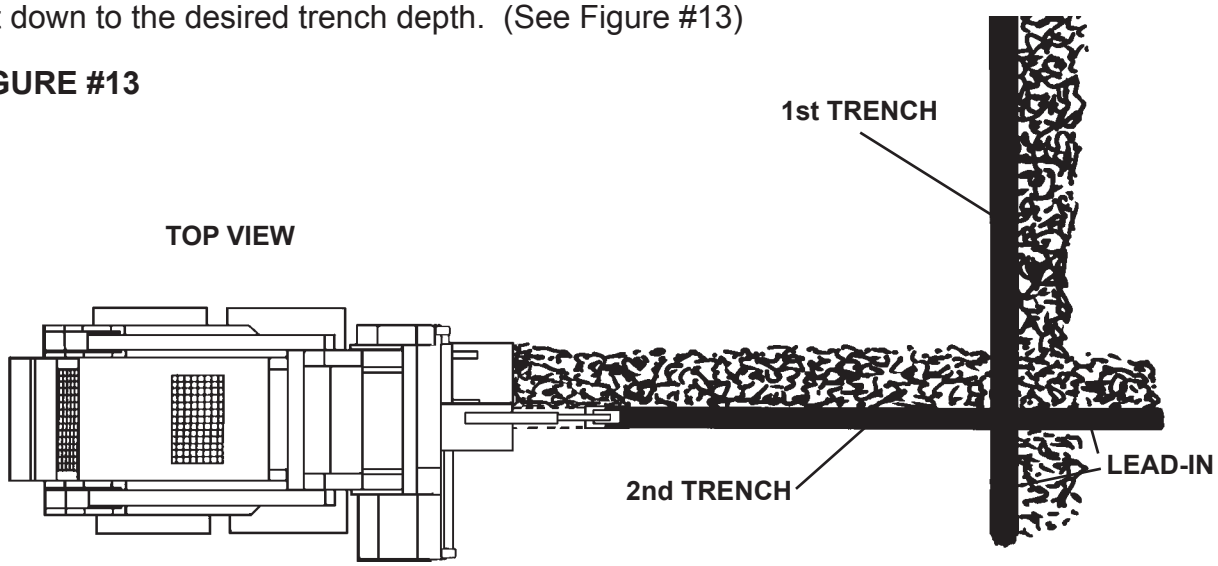
MAKING SHARP TURNS

To make sharp turns and 90° angles you will have to dig two trenches. Dig the first trench as you normally would. Then reposition the unit and dig the second trench at the appropriate angle. Be sure to take into account the extra lead-in space needed for the trencher to get down to the desired trench depth. (See Figure #13)

FIGURE #13

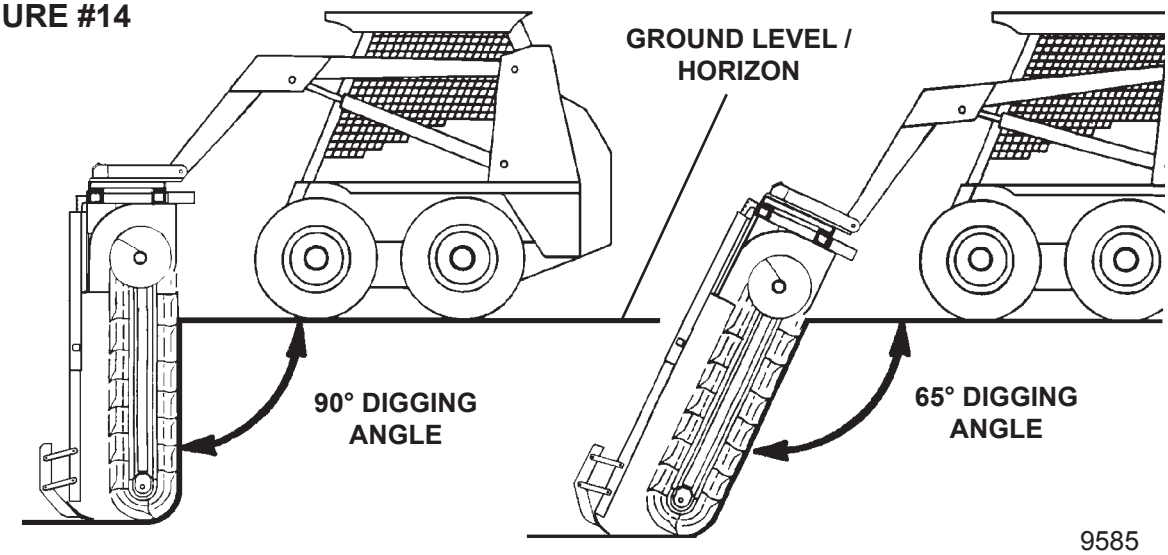


RECOMMENDED DIGGING ANGLES

A 90° digging angle is recommended for use in rock and frost conditions, and when trenching sharp corners. The 90° angle reduces excessive side pressure on the boom and digging chain when trenching corners. (See Figure #14)

A 60° - 65° digging angle is recommended for normal trenching. At this angle there will be less carry-over, and a cleaner trench bottom can be maintained than at a 90° angle. (See Figure #14)

FIGURE #14



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TRENCHING WITHOUT THE CRUMBER ASSEMBLY

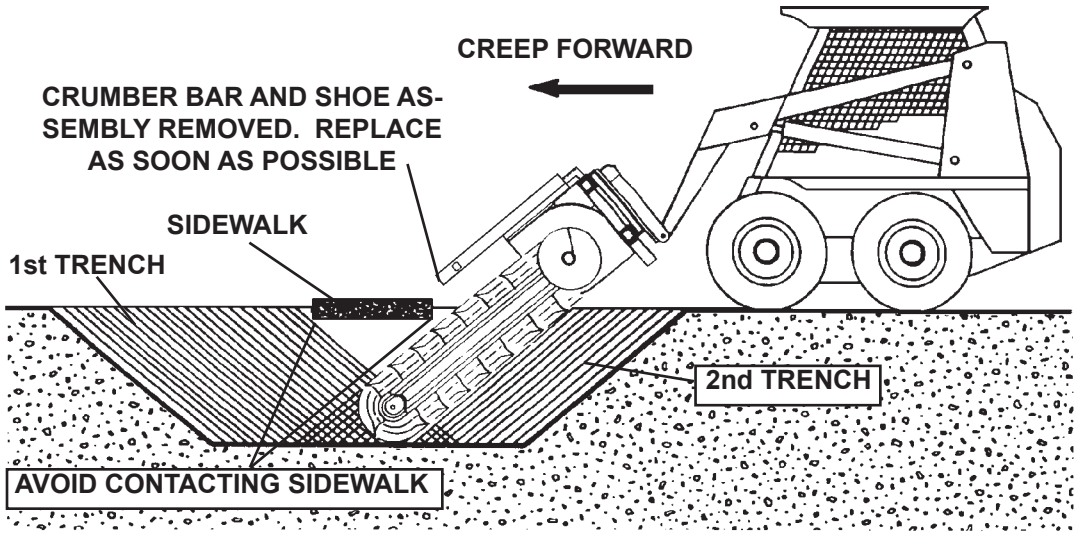
WARNING! The crumber bar and crumber shoe assembly are there for a reason, YOUR SAFETY! There are a few instances where removal may be necessary however. In these cases operate with extreme caution. Reinstall the crumber bar and crumber shoe as soon as possible.

You can use your trencher to dig under obstacles such as sidewalks. To do so, remove the crumber shoe and bar assembly and start your trench as before within a foot of the sidewalk. With the crumber bar and shoe removed you can start the trench vertically without any lead-in space.

When the desired depth has been reached, tilt the trencher at a 60° angle while digging, then creep the skid steer forward and trench under the sidewalk. Be careful not to contact the edge of the sidewalk with the digging teeth.

After you have gone as far as you can without contacting the sidewalk, drive the skid steer in reverse to clear the sidewalk and remove the trencher from the trench. Line up the unit on the other side of the walk and continue to trench as described above until the two trenches are connected. (See Figure #15)

FIGURE #15



Reinstall the crumber bar and crumber shoe assembly immediately. Some spoil will be left in the trench since the crumber was removed during the operation.

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OPERATING INSTRUCTIONS

OPERATING TECHNIQUES
SKID STEER TRENCHERS

ENDING A TRENCH

When you have dug your trench, remember that the trencher boom is at an angle, and that you must continue trenching until the end of the boom has dug past the proposed end of the trench. Once the end of the trench has been dug, keep the trencher running and lift the skid steer loader arms to lift the unit clear of the trench. When the trencher has cleared the trench, disengage the auxiliary hydraulics to stop the trencher. Drive the skid steer away from the trench.

TRANSPORTING THE TRENCHER

When transporting the trencher, remember to keep the trencher as low to the ground as is practical. The lower the trencher rides, the more stable the skid steer will be. You do not want the trencher so low that the digging teeth touch the ground in rough terrain. Shut off the trencher before moving it away from the trench. Never transport the trencher around the job site or anywhere else while the digging chain is moving.

TRENCHER PERFORMANCE

Remember that your trencher's performance is directly related to the power available at you skid steer's auxiliary hydraulic system. If the trencher seems to lack power or speed, it may be due to your skid steer's lack of sufficient auxiliary power.

Trencher performance is also related to how well it's maintained, digging tooth wear, and type and size of digging chain, crumber boom and shoe used. For more information on proper maintenance and chain wear see the Maintenance Section of this manual. If problems arise see Trouble Shooting Section.

PREPARATION FOR STORAGE

- Clean the trencher thoroughly, removing all mud, dirt, and grease.
- Tighten all loose capscrews, nuts, and set screws.
- Coat the digging chain with a thin covering of oil. Operate chain for a short period to work the oil into the pins.
- Store the trencher in a dry and protected place. Leaving the trencher outside, exposed to the elements will materially shorten its life.
- Inspect for visible signs of wear, breakage or damage. Order any parts required and make necessary repairs to avoid delays when starting next season.
- Replace decals if damaged or in unreadable condition.
- Seal hydraulic system from contaminants and secure all hydraulic hoses off the ground to help prevent damage

Additional Precautions for Long Term Storage:

- Touch up unpainted and exposed areas with paint to prevent rust.

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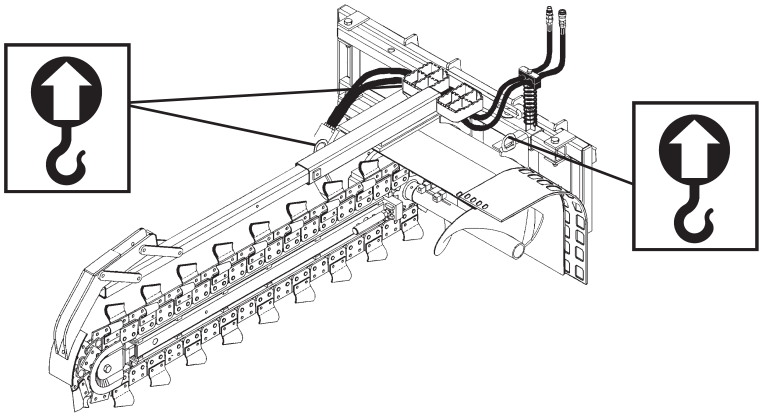
REMOVING FROM STORAGE

- Remove all protective coverings
- Check hydraulic hoses for deterioration and if necessary, replace.
- During cold weather, operate the trencher slowly for a short time before placing the unit under full load.

LIFT POINTS

Lifting points are identified by lifting decals where required. Lifting at other points is unsafe and can damage attachment. Do not attach lifting accessories around cylinders or in any way that may damage hoses or hydraulic components.

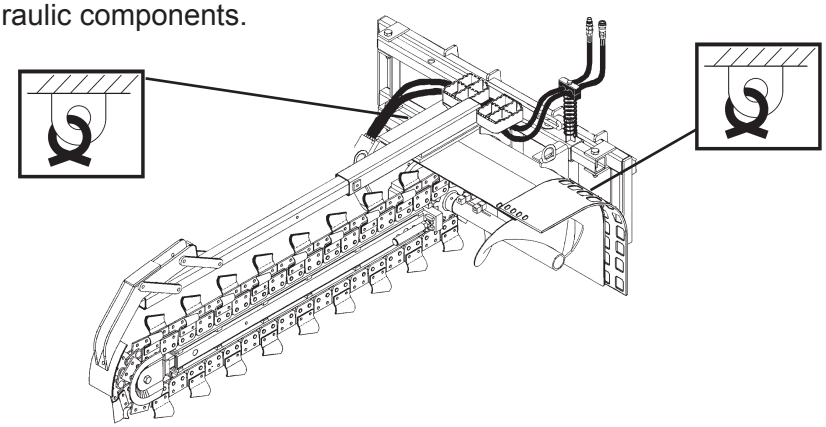


- Attach lifting accessories to unit at recommended lifting points.
- Bring lifting accessories together to a central lifting point.
- Lift gradually, maintaining the equilibrium of the unit.

WARNING! Use lifting accessories (chains, slings, ropes, shackles and etc.) that are capable of supporting the size and weight of your attachment. Secure all lifting accessories in such a way to prevent unintended disengagement. Failure to do so could result in the attachment falling and causing serious personal injury or death.

TIE DOWN POINTS

Tie down points are identified by tie down decals where required. Securing to trailer at other points is unsafe and can damage attachment. Do not attach tie down accessories around cylinders or in any way that may damage hoses or hydraulic components.



- Attach tie down accessories to unit as recommended.
- Check unit stability before transporting.

WARNING! Verify that all tie down accessories (chains, slings, ropes, shackles and etc.) are capable of maintaining attachment stability during transporting and are attached in such a way to prevent unintended disengagement or shifting of the unit. Failure to do so could result in serious personal injury or death.

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DIGGING CHAIN

GENERAL INFORMATION

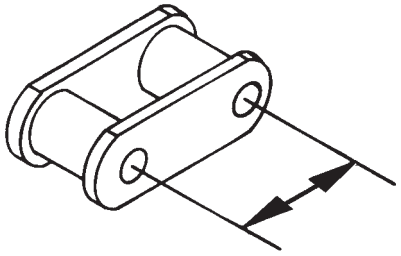
This section is devoted to digging chain options for your trencher. In it you will find a listing of all the chain options available. You will also find information on replacement parts, chain assembly, and chain conversion. These options will increase the flexibility of your equipment, and make your trenching job easier.

There is some basic information about the trencher and it's digging components that you should know before you try to order any options. This information is given here for your convenience. With it you will be able to better understand the rest of this section.

CHAIN PITCH

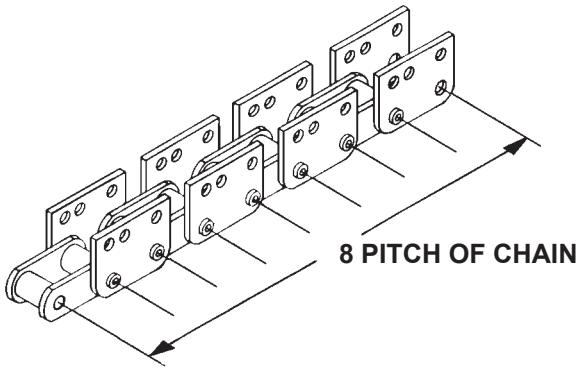
The digging chains may be divided into groups by pitch. The pitch of the chain is the distance between the centers of the holes in the chain links (See Figure 1). The word pitch can also be used to describe the length of the chain.

FIGURE #1



DISTANCE BETWEEN HOLE CENTERS = PITCH

FIGURE #2



The 640 Trencher has a heavy weight chain with a tensil strength of 50,000 pounds and a pitch of 2.00".

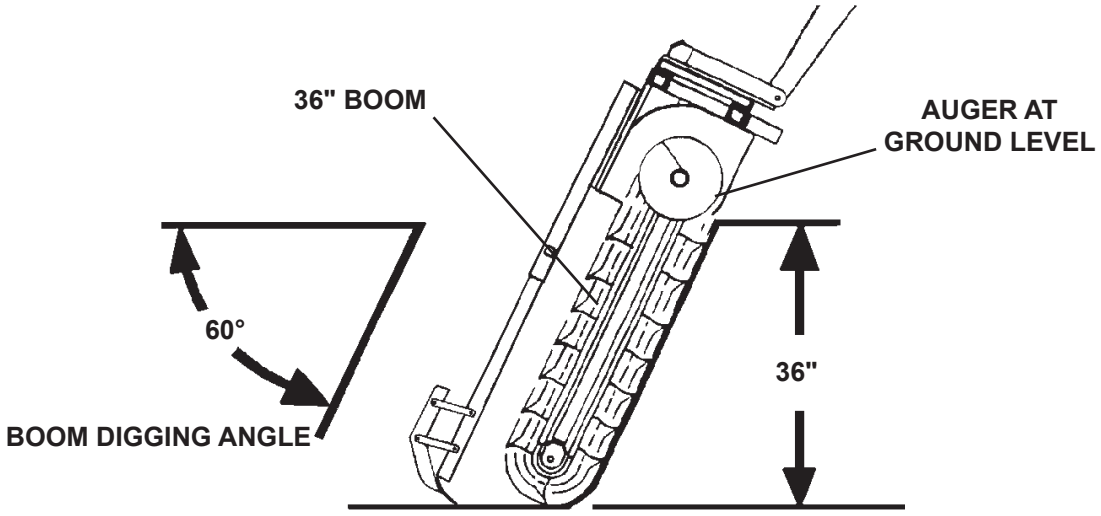
There is one thing that you must understand about chain pitch. You can not intermix components of different pitches. You cannot substitute chain links of different pitches in a digging chain. Nor can you use a digging chain of one pitch, with a driver sprocket of a different pitch. Attempting to do so will cause the chain to "jump" off the sprocket continuously.

DIGGING CHAIN

COMPONENT SIZE

The size of the digging component is based on the depth of the trench it will dig with auger at ground level and a 60° boom digging angle (See Figure 3). For example, a 36" boom is not necessarily 36" long. The 36" length means it will dig a trench 36" deep with the augers in their float position and at a 60° digging angle.

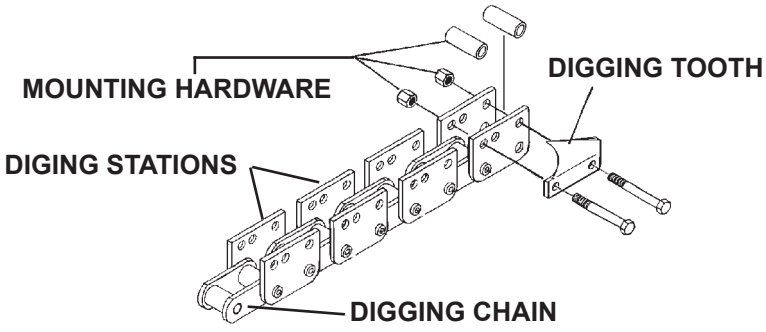
FIGURE #3



DIGGING STATIONS

Digging chains are made up of a series of individual links pinned together. Every link has a special "Digging Station" link. These links are designed so that the digging teeth can be attached to the basic chains (See Figure 4). Digging chains may be purchased in any length, with or without teeth. All chains, teeth, spacers and assorted digging hardware may be purchased separately.

FIGURE #4



This completes the basic information on digging chain options. The rest of this section contains specific information on digging chains and parts available, complete with part numbers. Again it may be noted that these options are designed to increase the flexability of your equipment and to make your trenching jobs easier. We offer them to better serve your trenching needs.

9588 3-26-14-2

DIGGING CHAIN

GENERAL INFORMATION

This page contains a listing of all of the 2.00" pitch digging chain assemblies offered for your trencher. Each chain assembly comes with all necessary teeth and spacers already installed. Just thread the chain onto the trencher and fasten the two ends together with the pin and keeper pin included in the assembly. A crumber shoe of the appropriate width is also included in the chain assembly.

Before you order a new chain, be sure to check for compatibility with corresponding components. You may need to order more than just a chain assembly. You must use a digging boom of the same digging depth as the chain. The crumber bar must also be of the same digging depth. The digging sprocket must also be of the same pitch as the chain. All of these components must match for the trencher to function properly.

Bare 2.00" pitch digging chain (without teeth, spacers, or hardware) can be ordered in any desired length under the part number 79018. Just use this number and then specifiy the length desired in pitches (example, 54 pitches of chain would be needed for a 36" boom).

2.00" PITCH DIGGING CHAIN ASSEMBLIES

Complete chain assemblies. Includes chain with all teeth and spacers attached. Also includes appropriate width crumber shoe.

CHAIN ASSEMBLIES WITH A TOOTH EVERY STATION

DESCRIPTION (boom used X trench width)		LENGTH OF CHAIN (in 2.00" pitches)	TENSIL STRENGTH	PART NO.
For 30" Boom	6" Wide	48 Pitch	50,000#	79154
For 30" Boom	8" Wide	48 Pitch	50,000#	79155
For 30" Boom	10" Wide	48 Pitch	50,000#	79156
For 30" Boom	12" Wide	48 Pitch	50,000#	79157
For 36" Boom	6" Wide	54 Pitch	50,000#	79099
For 36" Boom	8" Wide	54 Pitch	50,000#	79100
For 36" Boom	10" Wide	54 Pitch	50,000#	79158
For 42" Boom	6" Wide	62 Pitch	50,000#	82114
For 42" Boom	8" Wide	62 Pitch	50,000#	82115
For 42" Boom	10" Wide	62 Pitch	50,000#	82116
For 48" Boom	6" Wide	68 Pitch	50,000#	79101
For 48" Boom	8" Wide	68 Pitch	50,000#	79102

8309 2-19-14-2

DIGGING CHAIN

2.00" PITCH DIGGING CHAIN ASSEMBLIES

Complete chain assemblies. Includes chain with all teeth and spacers attached. Also includes appropriate width crumber shoe.

CHAIN ASSEMBLIES WITH A TOOTH EVERY OTHER STATION

DESCRIPTION (boom used X trench width)		LENGTH OF CHAIN (in 2.00" pitches)	TENSIL STRENGTH	PART NO.
For 30" Boom	6" Wide	48 Pitch	50,000#	79181
For 30" Boom	8" Wide	48 Pitch	50,000#	79182
For 30" Boom	10" Wide	48 Pitch	50,000#	79183
For 30" Boom	12" Wide	48 Pitch	50,000#	79184
For 36" Boom	6" Wide	54 Pitch	50,000#	79185
For 36" Boom	8" Wide	54 Pitch	50,000#	79186
For 36" Boom	10" Wide	54 Pitch	50,000#	79187
For 42" Boom	6" Wide	62 Pitch	50,000#	82117
For 42" Boom	8" Wide	62 Pitch	50,000#	82118
For 42" Boom	10" Wide	62 Pitch	50,000#	82119
For 48" Boom	6" Wide	68 Pitch	50,000#	79188
For 48" Boom	8" Wide	68 Pitch	50,000#	79189

70/30 COMBINATION CHAIN ASSEMBLIES

DESCRIPTION (boom used X trench width)		LENGTH OF CHAIN (in 2.00" pitches)	TENSIL STRENGTH	PART NO.
For 30" Boom	6" Wide	48 Pitch	50,000#	31546
For 36" Boom	6" Wide	54 Pitch	50,000#	31547
For 42" Boom	6" Wide	62 Pitch	50,000#	31563
For 48" Boom	6" Wide	68 Pitch	50,000#	31548

COMBINATION CHAIN ASSEMBLIES WITH 50/50 R&F/CUP TEETH

DESCRIPTION (boom used X trench width)		LENGTH OF CHAIN (in 2.00" pitches)	TENSIL STRENGTH	PART NO.
For 30" Boom	6" Wide	48 Pitch	50,000#	83706
For 36" Boom	6" Wide	54 Pitch	50,000#	83707
For 42" Boom	6" Wide	62 Pitch	50,000#	83708
For 48" Boom	6" Wide	68 Pitch	50,000#	83709

SHARK STYLE TOOTH CHAIN ASSEMBLIES

DESCRIPTION (boom used X trench width)		LENGTH OF CHAIN (in 2.00" pitches)	TENSIL STRENGTH	PART NO.
For 30" Boom	6" Wide	48 Pitch	50,000#	31549
For 36" Boom	6" Wide	54 Pitch	50,000#	31550
For 42" Boom	6" Wide	62 Pitch	50,000#	31551
For 48" Boom	6" Wide	68 Pitch	50,000#	31552

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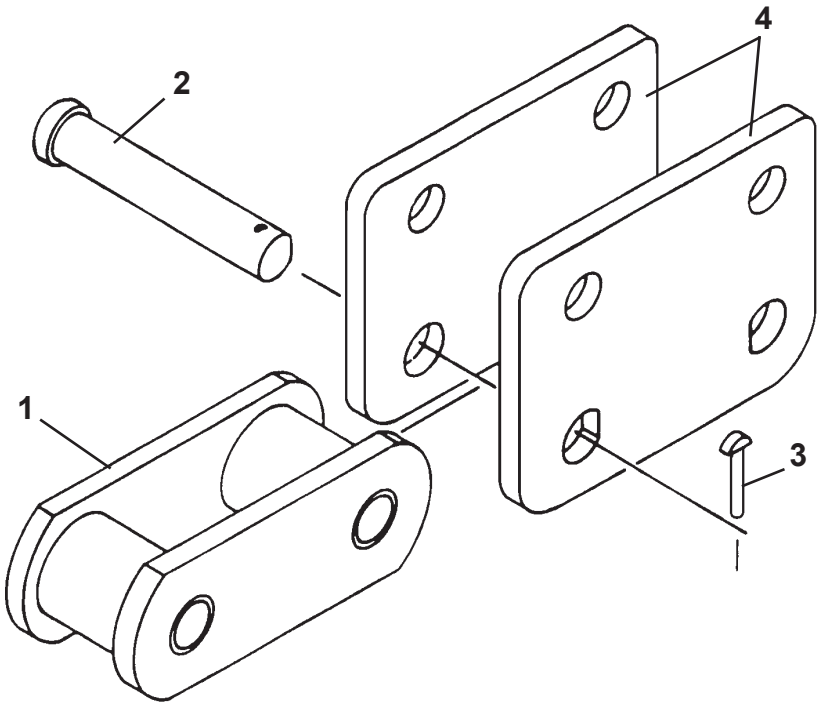
DIGGING CHAIN

GENERAL INFORMATION

You can purchase individual chain links and pins for your trencher. These can be used to repair a damaged chain, or lengthen and modify an existing chain. Below is a diagram of the chain's basic components with their descriptions and corresponding part numbers. Use these numbers when ordering. You can also order a complete bare chain (without teeth and spacers) in any length desired. The chain is ordered under part number 79018 for 2.00" Pitch. Just specify the length you want in pitches. (See "2.00" PITCH DIGGING CHAIN ASSEMBLIES" chart located in this section.)

When pinning links of chain together, first tap the pin through the connector link with the perfectly round holes and then on through the inner link. Place the second connector link in position, you will note that the end of the pin has one side flattened. Rotate the pin until its flat side lines up with the corresponding flat side of the connector link hole and tap the pin on through. Place the chain keeper pin into the hole at the end of the main pin and tap down tight. Finally, bend the end of the keeper pin over to secure it in place.



NO.	REQ'D	PART NO.	DESCRIPTION
1	Varies	54757	Inner Link
2	Varies	54731	Pin
3	Varies	54732	Chain Keeper Pin
4	Varies	54730	Connector Link includes (2) Pins #54731 and (2) Chain Keeper Pins #54732

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DIGGING CHAIN

GENERAL INFORMATION

Every second link on a digging chain is a special link called a digging station. These digging station links are designed so that digging teeth can be bolted onto them in a variety of configurations. It is the number and the make up of these different digging stations that make each chain unique.

The following pages show the various chains available for 2.00" pitch trenchers. The digging tooth make up of each digging station is given in code. The key to the code is listed below. Thus the chain assembly diagrams will show you the order of the digging stations on each digging chain. The actual parts break down of each digging tooth station is also shown on the following pages.

C-D .....CENTER SHARK STYLE TOOTH

CL-C .....CENTER LEFT CUP TOOTH

CL-D .....CENTER LEFT SHARK STYLE TOOTH

CR-C .....CENTER RIGHT CUP TOOTH

CR-D .....CENTER RIGHT SHARK STYLE TOOTH

6L-C.....6" LEFT CUP TOOTH

6L-D.....6" LEFT SHARK STYLE TOOTH

6R-C .....6" RIGHT CUP TOOTH

6R-D .....6" RIGHT SHARK STYLE TOOTH

8L-C.....8" LEFT CUP TOOTH

8L-D.....8" LEFT SHARK STYLE TOOTH

8R-C .....8" RIGHT CUP TOOTH

8R-D .....8" RIGHT SHARK STYLE TOOTH

10-C.....10" CUP TOOTH

10-D.....10" SHARK STYLE TOOTH

12-C.....12" CUP TOOTH

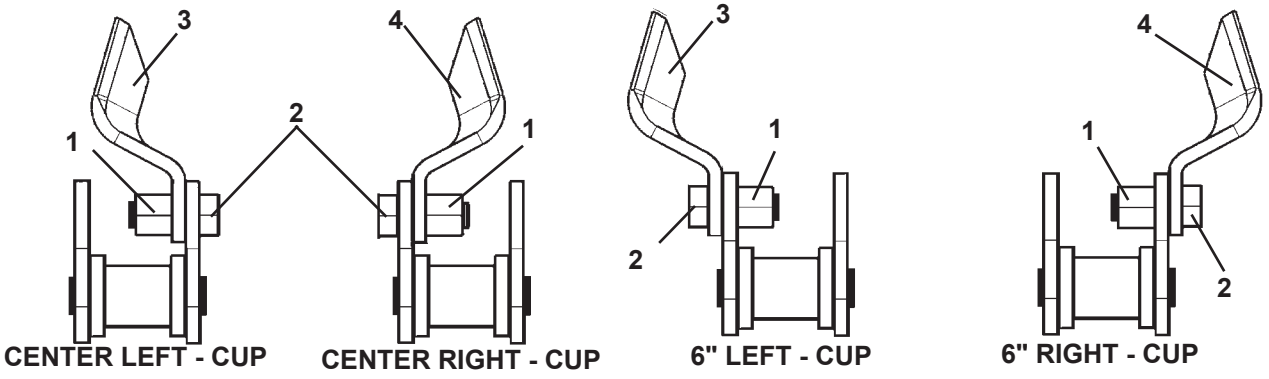
12-D.....12" SHARK STYLE TOOTH

DIGGING CHAIN

2.00" PITCH DIGGING STATIONS

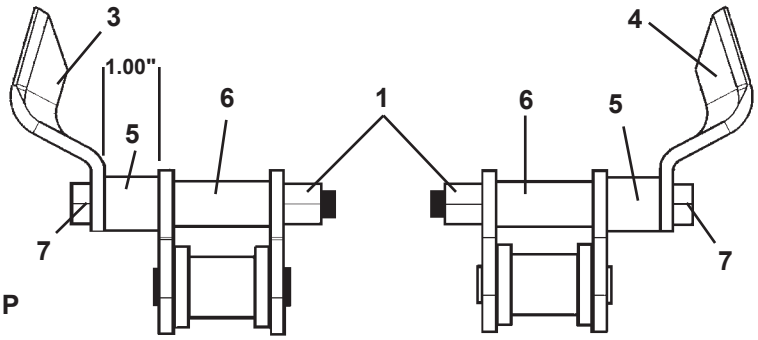
CUP TOOTH DIGGING STATIONS

CL-C **CR-C** **6L-C** **6R-C**



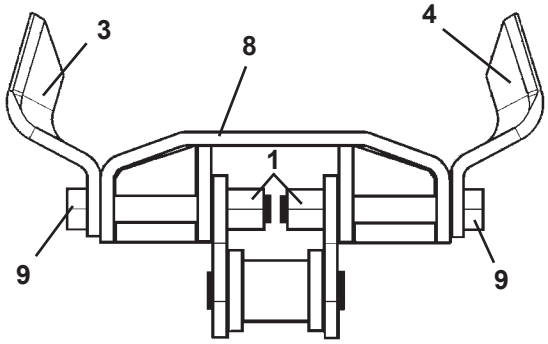
CENTER LEFT - CUP CENTER RIGHT - CUP 6" LEFT - CUP 6" RIGHT - CUP

8L-C **8R-C**



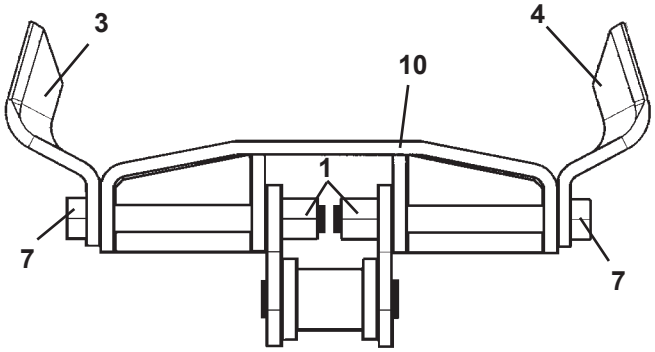
8" LEFT - CUP 8" RIGHT - CUP

10-C



10" - CUP

12-C



12" - CUP

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DIGGING CHAIN

2.00" PITCH DIGGING STATIONS

CUP TOOTH DIGGING STATIONS

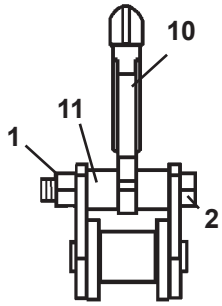
NO	PART NO.	DESCRIPTION
1	1692	.50" UNF Nut
2	1340	.50" UNF X 1.50" Hex Capscrew
3	54431	Left Cup Tooth
4	54432	Right Cup Tooth
5	54439	Tooth Spacer
6	54440	Spacer 1.81"
7	1351	.50" UNF X 4.50" Hex Capscrew
8	54441	10" Tooth Spacer
9	1347	.50" UNF X 3.25" Hex Capscrew
10	54442	12" Tooth Spacer

DIGGING CHAIN

2.00" PITCH DIGGING STATIONS

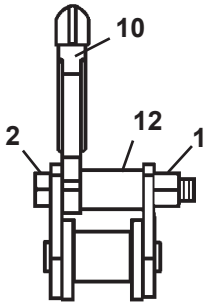
SHARK STYLE TOOTH DIGGING STATIONS

C-D



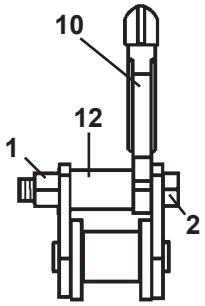
CENTER SHARK STYLE

CL-D



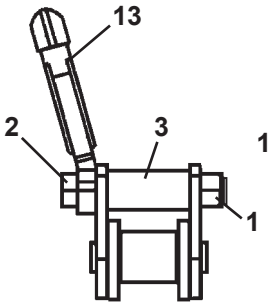
CENTER LEFT SHARK STYLE

CR-D



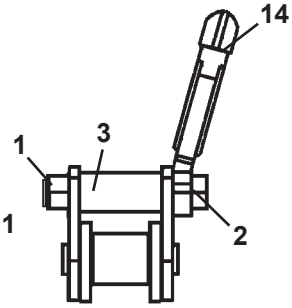
CENTER RIGHT SHARK STYLE

6L-D



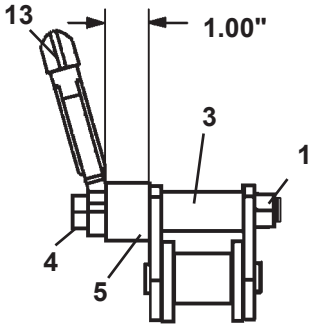
6" LEFT SHARK STYLE

6R-D



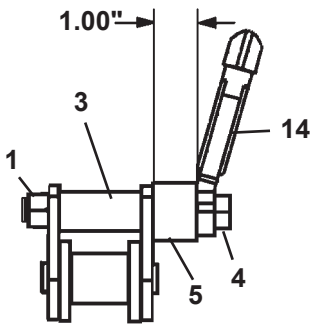
6" RIGHT SHARK STYLE

8L-D



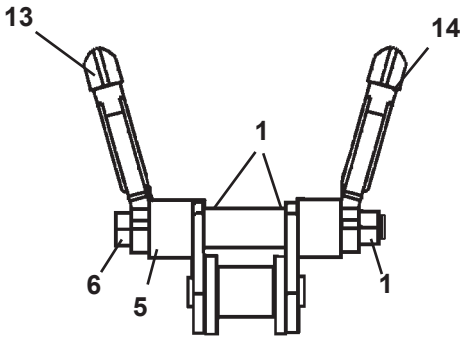
8" LEFT SHARK STYLE

8R-D



8" RIGHT SHARK STYLE

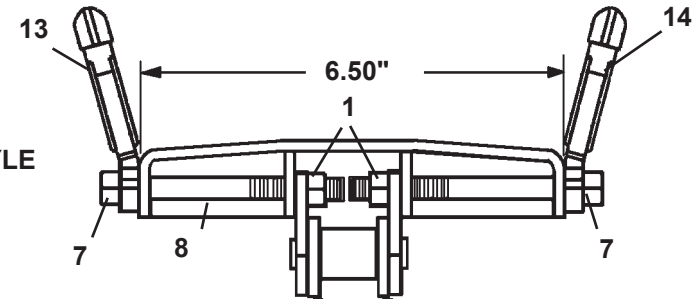
8-D



8" SHARK STYLE

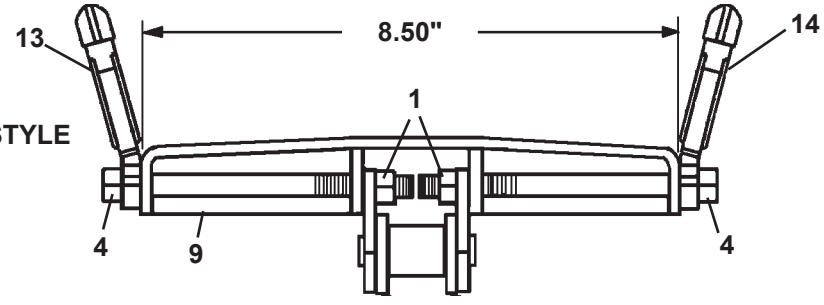
10-D

10" - SHARK STYLE



12-D

12" - SHARK STYLE



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DIGGING CHAIN

2.00" PITCH DIGGING STATIONS

SHARK STYLE TOOTH DIGGING STATIONS

NO	PART NO.	DESCRIPTION
1	1692	.50" UNF Hex Nut
2	22321	.50" UNF X 3.00" Hex Capscrew - Grade 8
3	54440	Spacer
4	22324	.50" UNF X 4.50" Hex Capscrew - Grade 8
5	54439	Tooth Spacer
6	1814	.50" UNF X 6.00" Hex Capscrew - Grade 8
7	22322	.50" UNF X 3.50" Hex Capscrew - Grade 8
8	54441	10" Tooth Spacer
9	54442	12" Tooth Spacer
10	31599	Center Shark Style Tooth
11	15053	Spacer
12	15054	Spacer
13	31600	Left Shark Style Tooth
14	31601	Right Shark Style Tooth

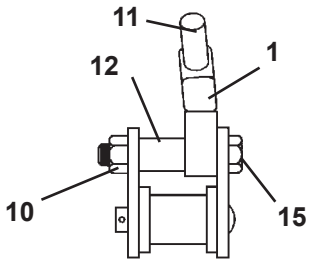
DIGGING CHAIN

COMBINATION ROCK AND FROST CHAIN

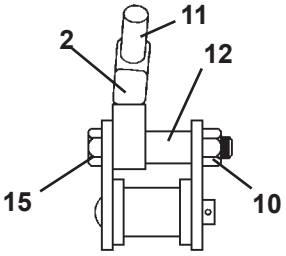
2.00" PITCH - TOOTH EVERY STATION

SERVICE PARTS

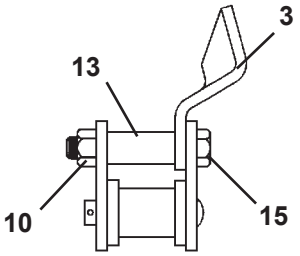
STATION #1



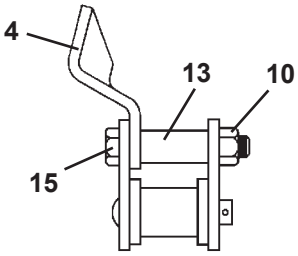
STATION #2



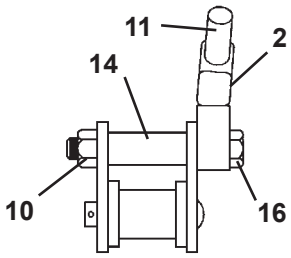
STATION #3



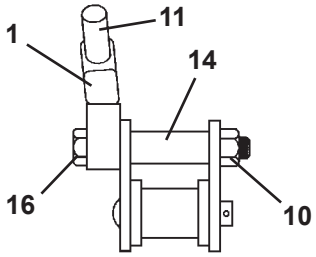
STATION #4



STATION #5



STATION #6



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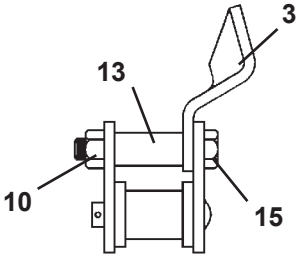

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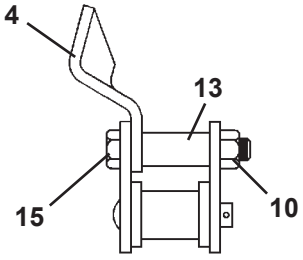
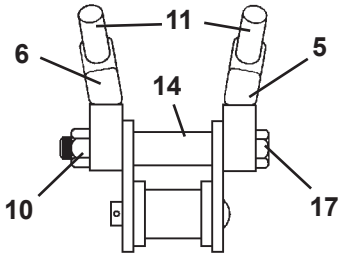
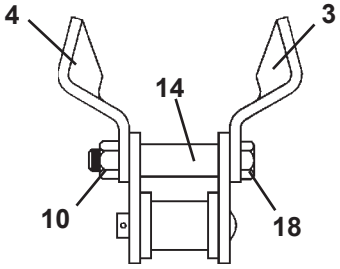


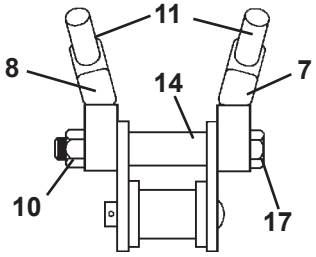
STATION #9



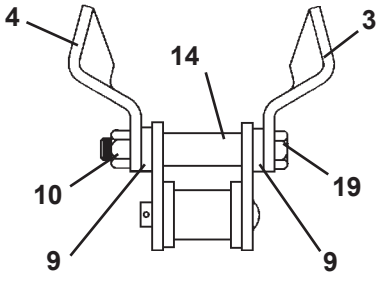
STATION #10



STATION #11



STATION #12



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DIGGING CHAIN

COMBINATION ROCK AND FROST CHAIN

2.00" PITCH - TOOTH EVERY STATION

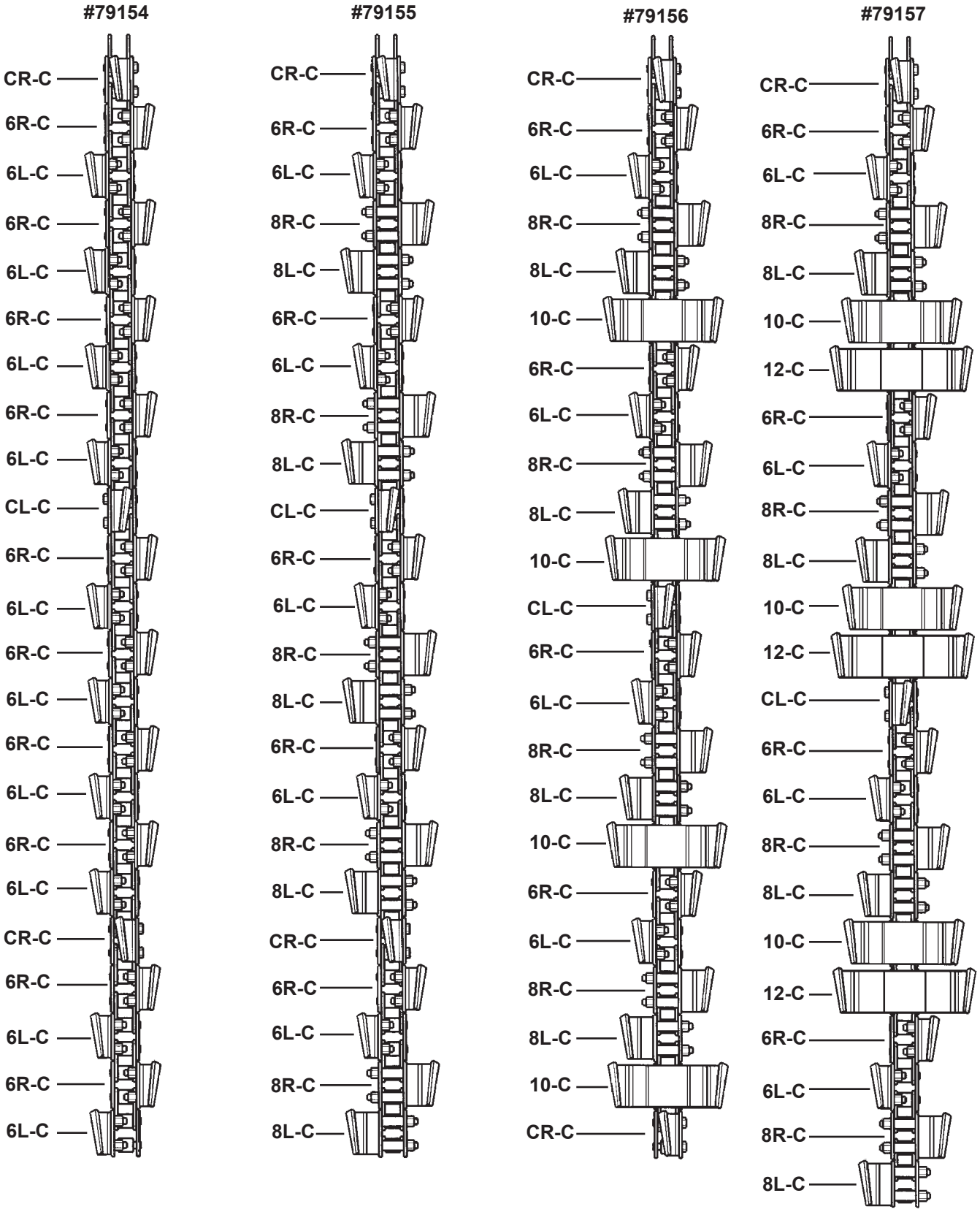
SERVICE PARTS

ITEM	PART NO.	DESCRIPTION
1	21125	Carbide Bit Holder - 4” Right
2	21124	Carbide Bit Holder - 4” Left
3	54432	Cup Cutter - Right
4	54431	Cup Cutter - Left
5	21126	Carbide Bit Holder - 5” Right (1) Weld Spot on Top for Identifying Purposes
6	21127	Carbide Bit Holder - 5” Left (1) Weld Spot on Top for Identifying Purposes
7	21129	Carbide Bit Holder - 6” Right (2) Weld Spots on Top for Identifying Purposes
8	21128	Carbide Bit Holder - 6” Left (2) Weld Spots on Top for Identifying Purposes
9	83800	Spacer - 6” Cut
10	1692	.50” UNF Hex Nut
11	7061	Carbide Bit
12	83798	Tube Spacer (Inside Mount Carbide Bit Holder)
13	54628	Tube Spacer (Inside Mount Cup Cutter)
14	54440	Tube Spacer (Outside Cup or Carbide Bit Holder)
15	1347	.50” UNF X 3.25” Hex Capscrew
16	1349	.50” UNF X 3.75” Hex Capscrew
17	1351	.50” UNF X 4.50” Hex Capscrew
18	1348	.50” UNF X 3.50” Hex Capscrew
19	1350	.50” UNF X 4.00” Hex Capscrew

NOTE: There are weld spots located on the top of the 5" and 6" Carbide Bit Holders to assist in parts identification. One weld spot on the 5" Holders and two weld spots on the 6" Holders.

DIGGING CHAIN

30" BOOM AND CUP TEETH EVERY STATION



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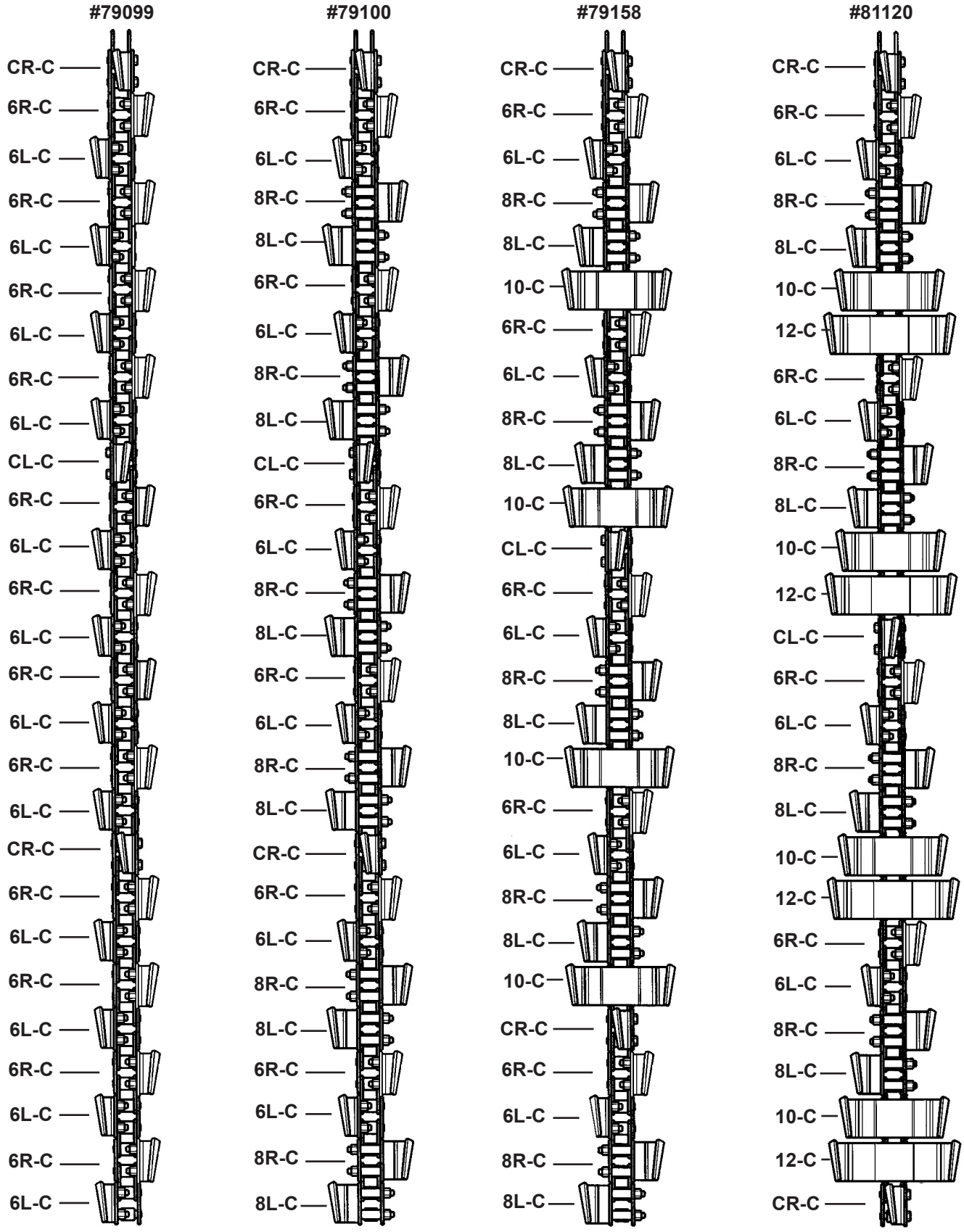
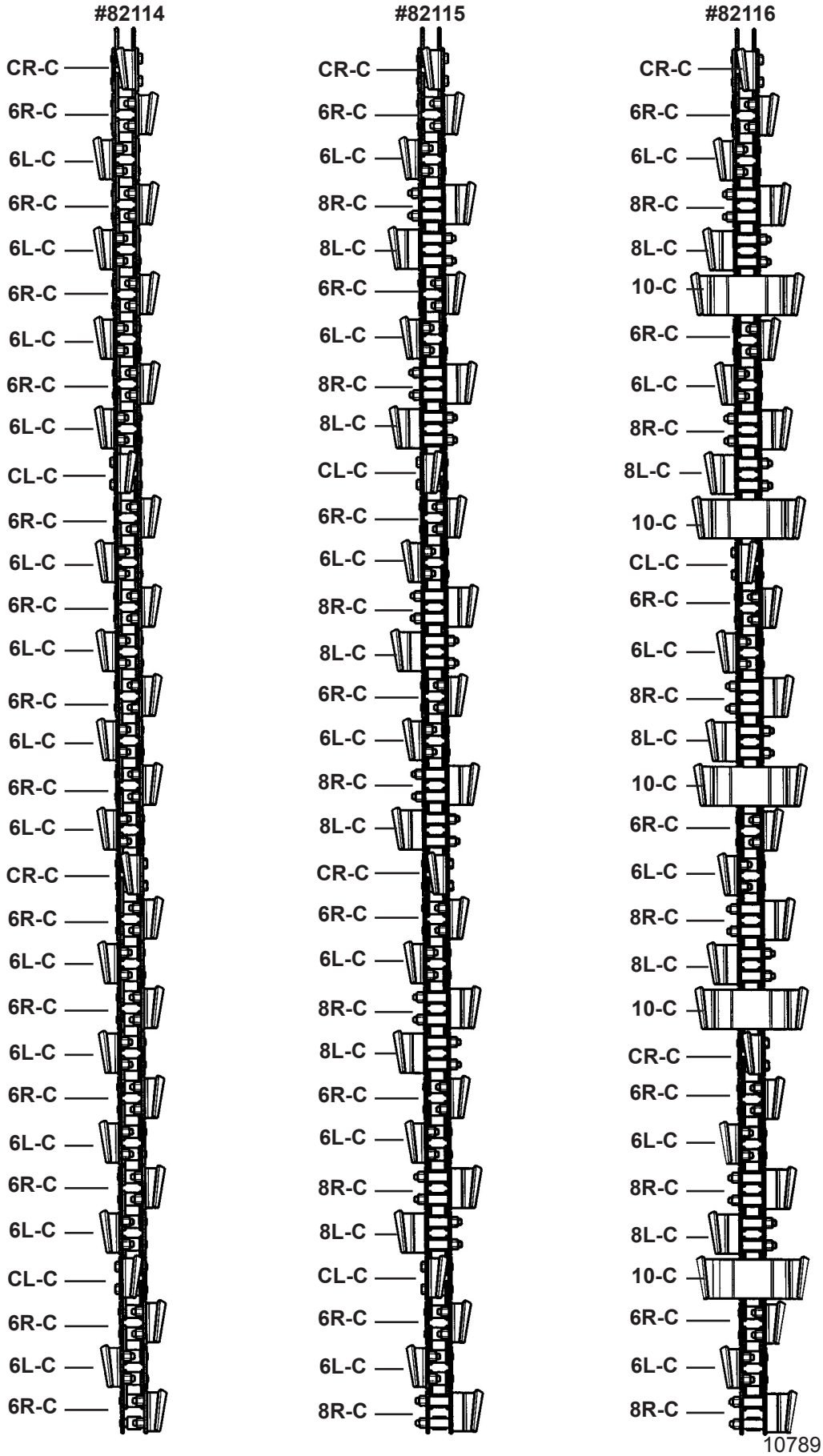
DIGGING CHAIN

36" BOOM AND CUP TEETH EVERY STATION



DIGGING CHAIN

42" BOOM AND CUP TEETH EVERY STATION

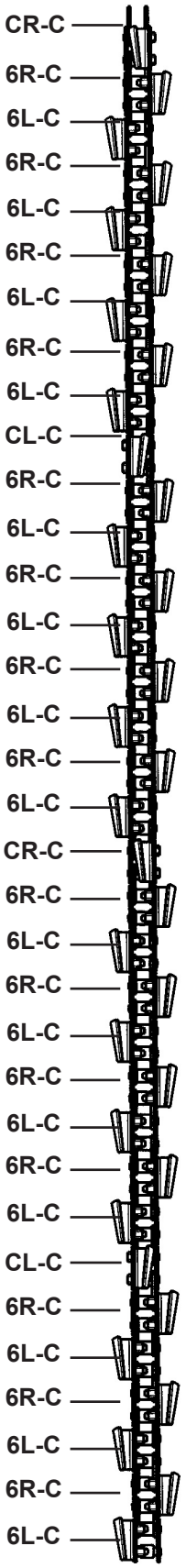


10789 2-19-14-2

DIGGING CHAIN

48" BOOM AND CUP TEETH EVERY STATION

#79101



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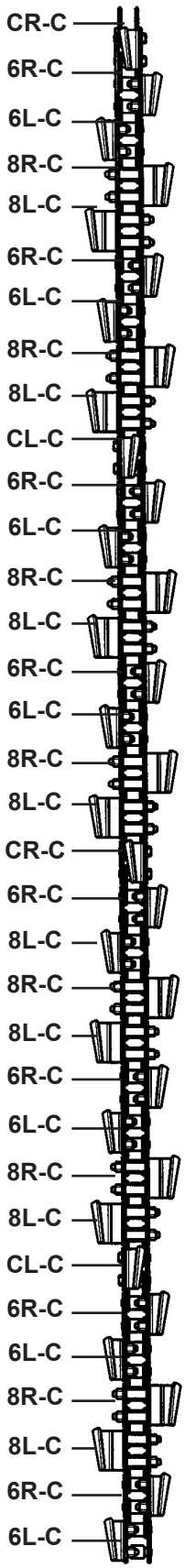

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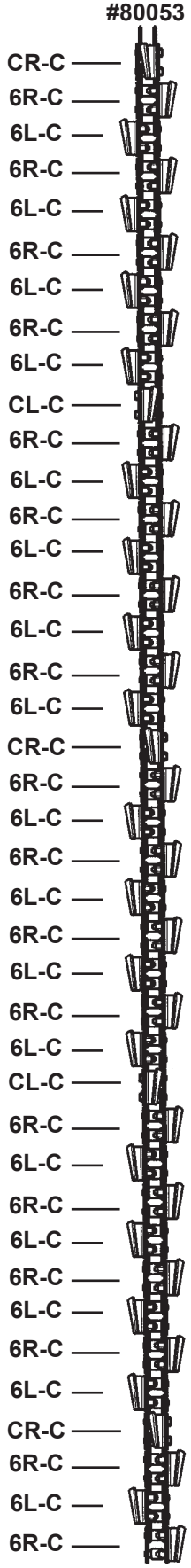
DIGGING CHAIN

60" BOOM AND CUP TEETH EVERY STATION

#80053



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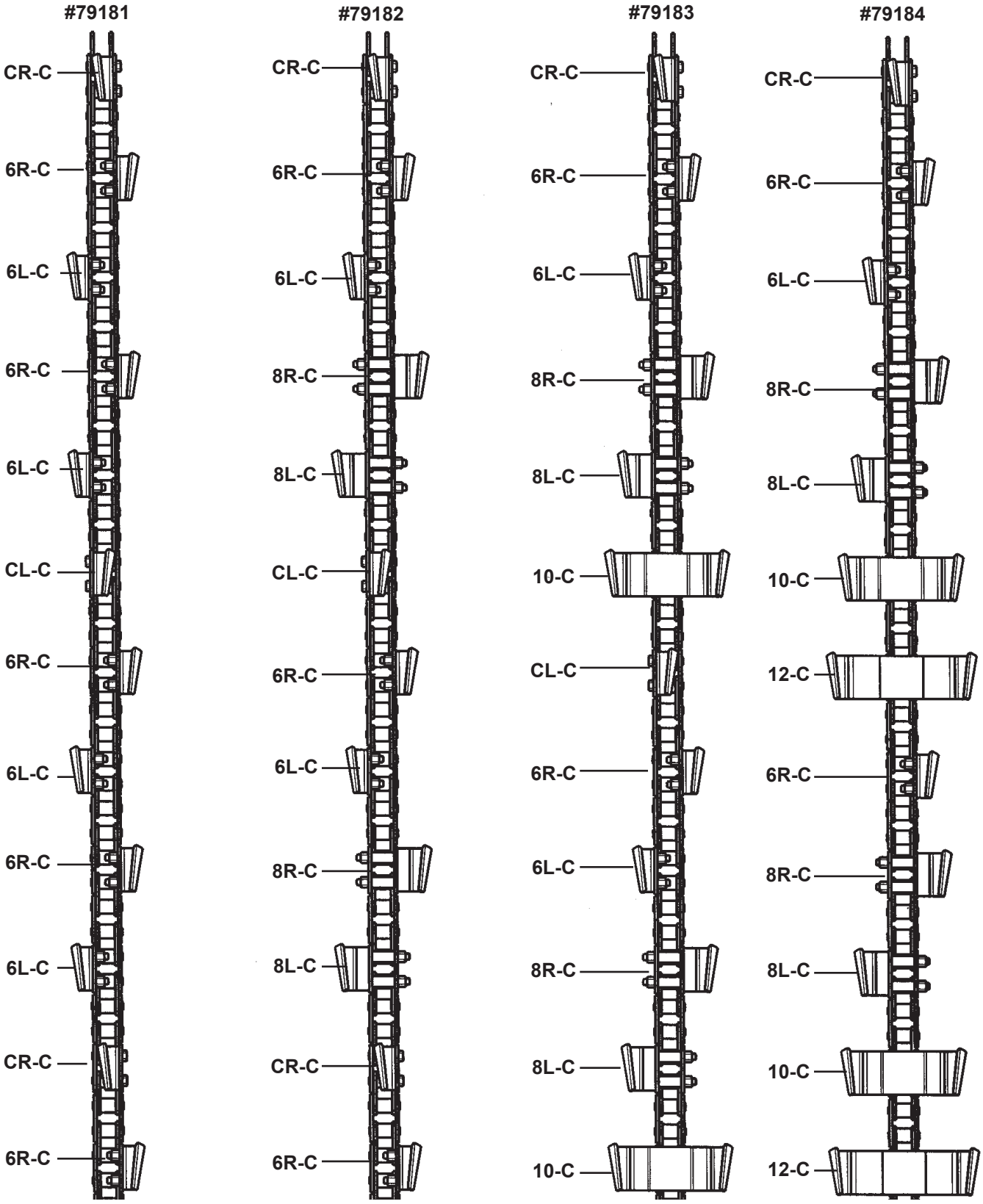
DIGGING CHAIN

30" BOOM AND CUP TEETH EVERY OTHER STATION



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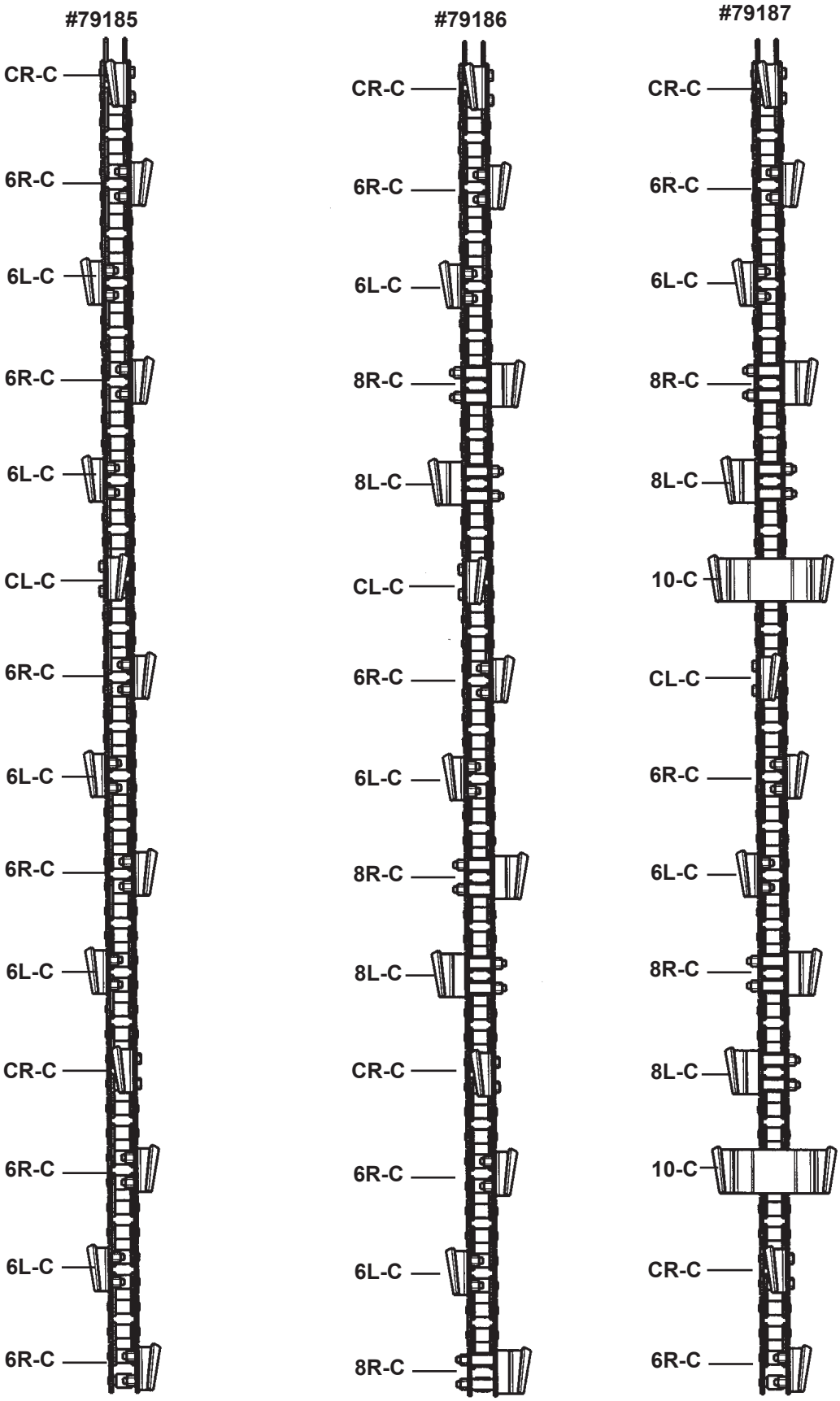
DIGGING CHAIN

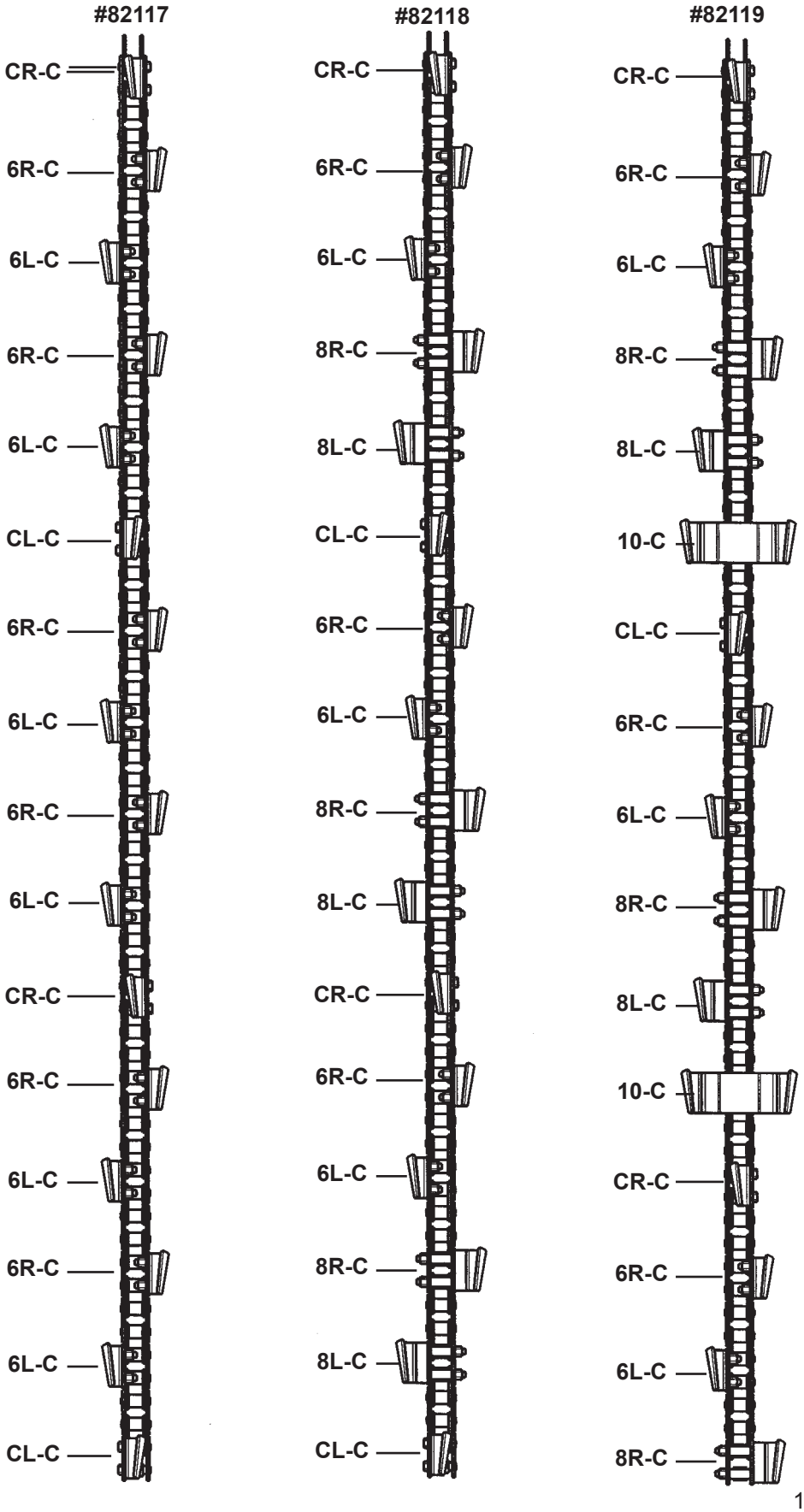
36" BOOM AND CUP TEETH EVERY OTHER STATION



10793 2-19-14-2

DIGGING CHAIN

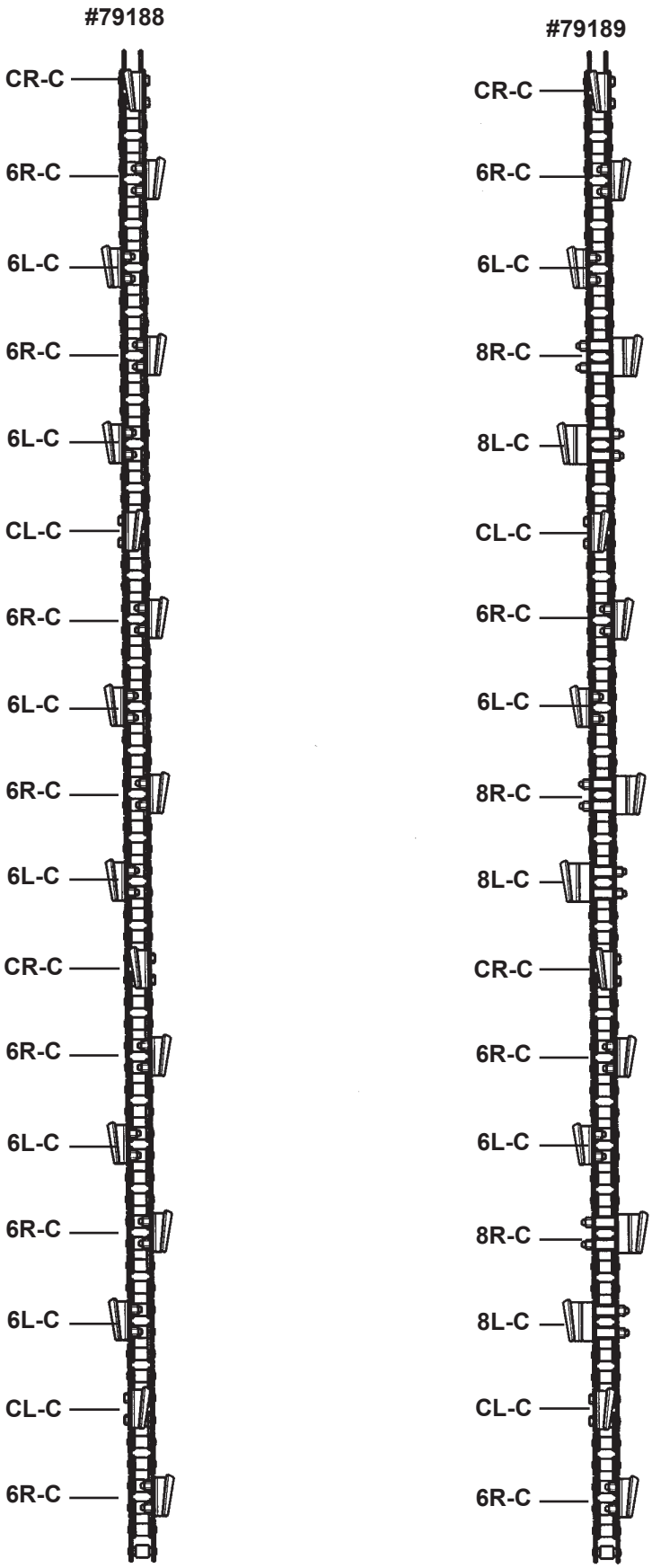
42" BOOM AND CUP TEETH EVERY OTHER STATION



10794 2-19-14-2

DIGGING CHAIN

48" BOOM AND CUP TEETH EVERY OTHER STATION

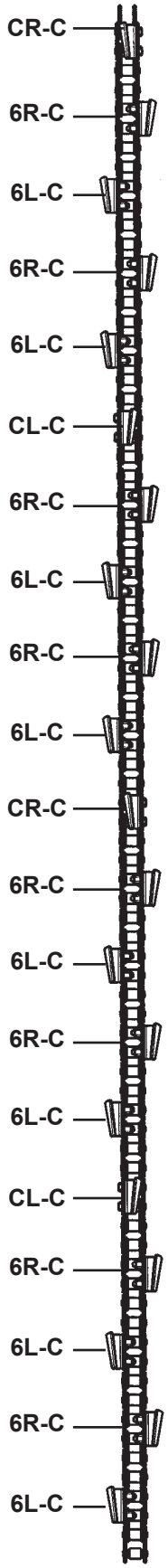


10795 2-19-14-2

DIGGING CHAIN

60" BOOM AND CUP TEETH EVERY OTHER STATION

#80043

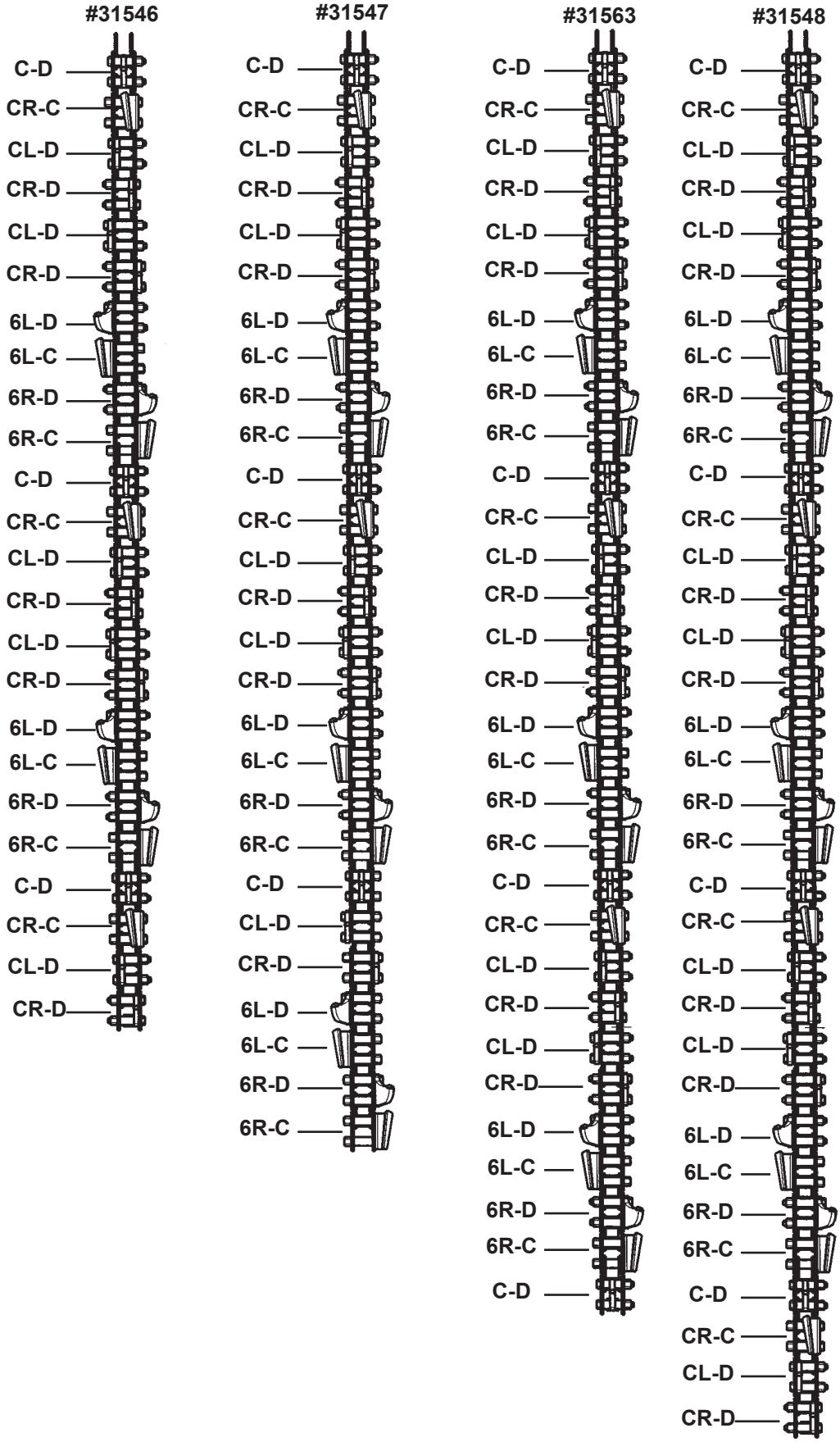


10796 2-19-14-2

DIGGING CHAIN

70/30 COMBINATION CHAINS

(AGGRESSIVE SHARK-STYLE TEETH - CUP TEETH)



10797 2-19-14-2

DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

GENERAL INFORMATION

Digging chains can be modified to dig trenches in a variety of widths. By modifying an existing chain, it can be used to dig the width you want and thus save going the expense of a whole new digging chain assembly. This can be a considerable cost savings, however it is more work than just installing a new digging chain assembly.

The information given below is a complete listing of all the possible chain width conversions for 2.00" pitch chain for your trencher. Included in the listing is a break down of all the parts (including part numbers and quantities) needed to make the conversion. Simply install the new parts (and rearrange the old parts) so that the finished chain construction follows that described in the “Digging Tooth Station Sequence” chart and the “Digging Tooth Station Break Down” diagrams for 2.00" pitch chain (located elsewhere in this section).

It should be noted that this information only applies to modifying chains of the same length and pitch. All components must be of the same pitch. You cannot intermix components of different pitch.

CHAIN CONVERSIONS FOR 30" BOOMS - TOOTH EVERY STATION

1) FROM 6" WIDE TO 8" WIDE

REQ’D	PART NO.	DESCRIPTION
20	1351	.50"UNF X 4.50" Capscrew
20	54440	Spacer Tube
10	54439	8" Spacer
1	53055	8" Crumber Shoe

2) FROM 8" WIDE TO 6" WIDE

REQ’D	PART NO.	DESCRIPTION
20	1340	.50"UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

3) FROM 6" WIDE TO 10" WIDE

REQ’D	PART NO.	DESCRIPTION
8	1692	.50" UNF High Hex Nut
16	1347	.50"UNF X 3.25" Capscrew
16	1351	.50"UNF X 4.50" Capscrew
2	54431	Left Tooth
2	54432	Right Tooth
16	54440	Spacer Tube
4	54441	10" Chain Spacer
1	53058	10" Crumber Shoe
8	54439	8" Spacer

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DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

4) FROM 10" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
24	1340	.50"UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

5) FROM 6" WIDE TO 12" WIDE

REQ'D	PART NO.	DESCRIPTION
12	1692	.50" UNF High Hex Nut
28	1351	.50"UNF X 4.50" Capscrew
12	1347	.50"UNF X 3.25" Capscrew
3	54431	Left Tooth
3	54432	Right Tooth
3	54441	10" Chain Spacer
3	54442	12" Chain Spacer
1	53059	12" Crumber Shoe
8	54439	8" Spacer
16	54440	Spacer Tube

6) FROM 12" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
16	1340	.50"UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

7) FROM 8" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1692	.50" UNF High Hex Nut
16	1347	.50"UNF X 3.25" Capscrew
2	54431	Left Tooth
2	54432	Right Tooth
4	54441	10" Chain Spacer
1	53058	10" Crumber Shoe

8) FROM 10" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1351	.50"UNF X 4.50" Capscrew
4	1340	.50" UNF X 1.50" Capscrew
2	54439	8" Spacer
1	53055	8" Crumber Shoe

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DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

9) FROM 8" WIDE TO 12" WIDE

REQ'D	PART NO.	DESCRIPTION
12	1692	.50" UNF High Hex Nut
12	1347	.50"UNF X 3.25" Capscrew
8	1351	.50"UNF X 4.50" Capscrew
3	54431	Left Tooth
3	54432	Right Tooth
3	54441	10" Chain Spacer
3	54442	12" Chain Spacer
1	53059	12" Crumber Shoe

10) FROM 12" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1340	.50" UNF X 1.50" Capscrew
4	54440	Spacer Tube
2	54439	8" Spacer
1	53055	8" Crumber Shoe

11) FROM 10" WIDE TO 12" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
12	1351	.50"UNF X 4.50" Capscrew
1	54431	Left Tooth
1	54432	Right Tooth
3	54442	12" Chain Spacer
1	53059	12" Crumber Shoe

12) FROM 12" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1347	.50"UNF X 3.25" Capscrew
4	1340	.50" UNF X 1.50" Capscrew
1	54441	10" Chain Spacer
1	53058	10" Crumber Shoe

CHAIN CONVERSIONS FOR 36" BOOMS - TOOTH EVERY STATION

1) FROM 6" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
24	1351	.50"UNF X 4.50" Capscrew
24	54440	Spacer Tube
12	54439	8" Spacer
1	53055	8" Crumber Shoe

DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

2) FROM 8" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
24	1340	.50"UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

3) FROM 6" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1692	.50" UNF High Hex Nut
16	1347	.50" UNF X 3.25" Capscrew
20	1351	.50"UNF X 4.50" Capscrew
2	54431	Left Tooth
2	54432	Right Tooth
4	54441	10" Chain Spacer
1	53058	10" Crumber Shoe
10	54439	8" Spacer
20	54440	Spacer Tube

4) FROM 10" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
28	1340	.50"UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

5) FROM 8" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1692	.50" UNF High Hex Nut
16	1347	.50"UNF X 3.25" Capscrew
2	54431	Left Tooth
2	54432	Right Tooth
4	54441	10" Chain Spacer
1	53058	10" Crumber Shoe

6) FROM 10" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1351	.50"UNF X 4.50" Capscrew
4	1340	.50" UNF X 1.50" Capscrew
4	54440	Spacer Tube
2	54439	8" Spacer
1	53055	8" Crumber Shoe

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DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

CHAIN CONVERSIONS FOR 42" BOOMS - TOOTH EVERY STATION

1) FROM 6" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
26	1351	.50"UNF X 4.50" Capscrew
26	54440	Spacer Tube
13	54439	8" Spacer
1	53055	8" Crumber Shoe

2) FROM 8" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
26	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

3) FROM 6" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
10	1692	.50" UNF High Hex Nut
20	1347	.50" UNC X 3.25" Capscrew
22	1351	.50"UNF X 4.50" Capscrew
2	54431	Left Tooth
3	54432	Right Tooth
5	54441	10" Chain Spacer
1	53058	10" Crumber Shoe
11	54439	8" Spacer
22	54440	Stacer Tube

4) FROM 10" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
32	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

5) FROM 8" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
10	1692	.50" UNF High Hex Nut
20	1347	.50"UNF X 3.25" Capscrew
2	54431	Left Tooth
3	54432	Right Tooth
5	54441	10" Chain Spacer
1	53058	10" Crumber Shoe

DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

6) FROM 10" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1351	.50"UNF X 4.50" Capscrew
6	1340	.50" UNF X 1.50" Capscrew
4	54440	Spacer Tube
2	54439	8" Spacer
1	53055	8" Crumber Shoe

CHAIN CONVERSIONS FOR 48" BOOMS - TOOTH EVERY STATION

1) FROM 6" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
28	1351	.50"UNF X 4.50" Capscrew
28	54440	Spacer Tube
14	54439	8" Spacer
1	53055	8" Crumber Shoe

2) FROM 8" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
28	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

CHAIN CONVERSIONS FOR 30" BOOMS - TOOTH EVERY OTHER STATION

1) FROM 6" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1351	.50"UNF X 4.50" Capscrew
4	54439	8" Spacer
1	53055	8" Crumber Shoe
8	54440	Spacer Tube

2) FROM 8" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

3) FROM 6" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
8	1347	.50" UNF X 3.25" Capscrew
8	1351	.50"UNF X 4.50" Capscrew
1	54431	Left Tooth
1	54432	Right Tooth
2	54441	10" Chain Spacer
1	53058	10" Crumber Shoe
4	54439	8" Spacer
8	54440	Spacer Tube

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DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

4) FROM 10" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
12	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

5) FROM 6" WIDE TO 12" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1692	.50" UNF High Hex Nut
16	1351	.50"UNF X 4.50" Capscrew
8	1347	.50" UNF X 3.25" Capscrew
2	54431	Left Tooth
2	54432	Right Tooth
2	54441	10" Chain Spacer
2	54442	12" Chain Spacer
1	53059	12" Crumber Shoe
4	54439	8" Spacer
8	54440	Spacer Tube

6) FROM 12" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
16	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

7) FROM 8" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
8	1347	.50"UNF X 3.25" Capscrew
1	54431	Left Tooth
1	54432	Right Tooth
2	54441	10" Chain Spacer
1	53058	10" Crumber Shoe

8) FROM 10" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1340	.50" UNF X 1.50" Capscrew
1	53055	8" Crumber Shoe

DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

9) FROM 8" WIDE TO 12" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1692	.50" UNF High Hex Nut
8	1347	.50" UNF X 3.25" Capscrew
8	1351	.50"UNF X 4.50" Capscrew
2	54431	Left Tooth
2	54432	Right Tooth
2	54441	10" Chain Spacer
2	54442	12" Chain Spacer
1	53059	12" Crumber Shoe

10) FROM 12" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
8	1340	.50" UNF X 1.50" Capscrew
1	53055	8" Crumber Shoe

11) FROM 10" WIDE TO 12" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
8	1351	.50"UNF X 4.50" Capscrew
1	54431	Left Tooth
1	54432	Right Tooth
2	54442	12" Chain Spacer
1	53059	12" Crumber Shoe

12) FROM 12" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1340	.50" UNF X 1.50" Capscrew
1	53058	10" Crumber Shoe

CHAIN CONVERSIONS FOR 36" BOOMS - TOOTH EVERY OTHER STATION

1) FROM 6" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
10	1351	.50"UNF X 4.50" Capscrew
5	54439	8" Spacer
10	54440	Spacer Tube
1	53055	8" Crumber Shoe

2) FROM 8" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
10	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

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DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

3) FROM 6" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
8	1347	.50" UNF X 3.25" Capscrew
8	1351	.50"UNF X 4.50" Capscrew
1	54431	Left Tooth
1	54432	Right Tooth
2	54441	10" Chain Spacer
1	53058	10" Crumber Shoe
4	54439	8" Spacer
8	54440	Spacer Tube

4) FROM 10" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

5) FROM 8" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
8	1347	.50"UNF X 3.25" Capscrew
1	54431	Left Tooth
1	54432	Right Tooth
2	54441	10" Chain Spacer
1	53058	10" Crumber Shoe

6) FROM 10" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
2	1340	.50" UNF X 1.50" Capscrew
2	1351	.50"UNF X 4.50" Capscrew
2	54440	Spacer Tube
1	54439	8" Spacer
1	53055	8" Crumber Shoe

CHAIN CONVERSIONS FOR 42" BOOMS - TOOTH EVERY OTHER STATION

1) FROM 6" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
12	1351	.50"UNF X 4.50" Capscrew
6	54439	8" Spacer
12	54440	Spacer Tube
1	53055	8" Crumber Shoe

2) FROM 8" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
12	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

DIGGING CHAIN

2.00" PITCH DIGGING CHAIN WIDTH CONVERSIONS

3) FROM 6" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
8	1347	.50" UNF X 3.25" Capscrew
10	1351	.50"UNF X 4.50" Capscrew
1	54431	Left Tooth
2	54432	Right Tooth
2	54441	10" Chain Spacer
1	53058	10" Crumber Shoe
5	54439	8" Spacer
10	54440	Spacer Tube

4) FROM 10" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
24	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

5) FROM 8" WIDE TO 10" WIDE

REQ'D	PART NO.	DESCRIPTION
4	1692	.50" UNF High Hex Nut
8	1347	.50" UNF X 3.25" Capscrew
1	54431	Left Tooth
1	54432	Right Tooth
2	54441	10" Chain Spacer
1	53058	10" Crumber Shoe

6) FROM 10" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
2	1340	.50" UNF X 1.50" Capscrew
14	1351	.50" UNF X 4.50" Capcrew
1	54439	8" Spacer
2	54440	Spacer Tube
1	53055	8" Crumber Shoe

CHAIN CONVERSIONS FOR 48" BOOMS - TOOTH EVERY OTHER STATION

1) FROM 6" WIDE TO 8" WIDE

REQ'D	PART NO.	DESCRIPTION
12	1351	.50"UNF X 4.50" Capscrew
12	54440	Spacer Tube
6	54439	8" Spacer
1	53055	8" Crumber Shoe

2) FROM 8" WIDE TO 6" WIDE

REQ'D	PART NO.	DESCRIPTION
14	1340	.50" UNF X 1.50" Capscrew
1	53054	6" Crumber Shoe

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MAINTENANCE

GENERAL INFORMATION

Your trencher was designed to be virtually maintenance free. Very little effort is needed to keep it in top condition. It is however important to follow these procedures to get full performance and longevity out of the trencher.

LUBRICATION

The only lubrication your trencher needs is the greasing of the headshaft end bearing. The bearing should be lubricated with an SAE multi-purpose grease every 8 hours of operation. A grease zerk is installed in the bearing to facilitate this task.

NOTE: Not all trenchers require lubricating of the headshaft bearing. Some units have a sealed bearing that requires no maintenance. These units can be identified by the absence of a grease zerk in the bearing.

IMPORTANT: DO NOT lubricate any other part of the trencher! Lubricating parts such as the digging chain or the idler wheel will only attract dirt, resulting in increased wear.

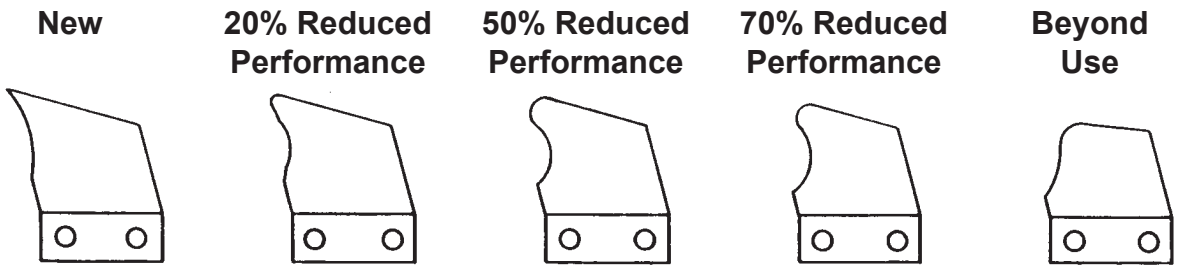
EVERY 40 HOURS OF OPERATION

Every 40 hours of operation the trencher should be inspected for loose nuts, capscrews, bearings etc. Tighten as required, replace where necessary. Clean equipment of all dirt, oil, grease, etc. This will assist you in making visual inspections and help avoid overlooking worn or damaged components. Keep all safety decals clean and legible. Replace if damaged or worn.

DIGGING TOOTH REPLACEMENT

Sharp teeth are important to good performance. When teeth wear out, production will drop sharply, increasing wear and tear on other components.

Cup teeth wear on the tip and side bulge in varying amounts. Wear patterns change with different digging conditions. The following patterns and captions are approximate and should be used as a guide to help you determine your own best cost/benefit tooth replacement time. Normal replacement should be made between 30% and 60% reduction in performance. Replacement is a bolt-on procedure.



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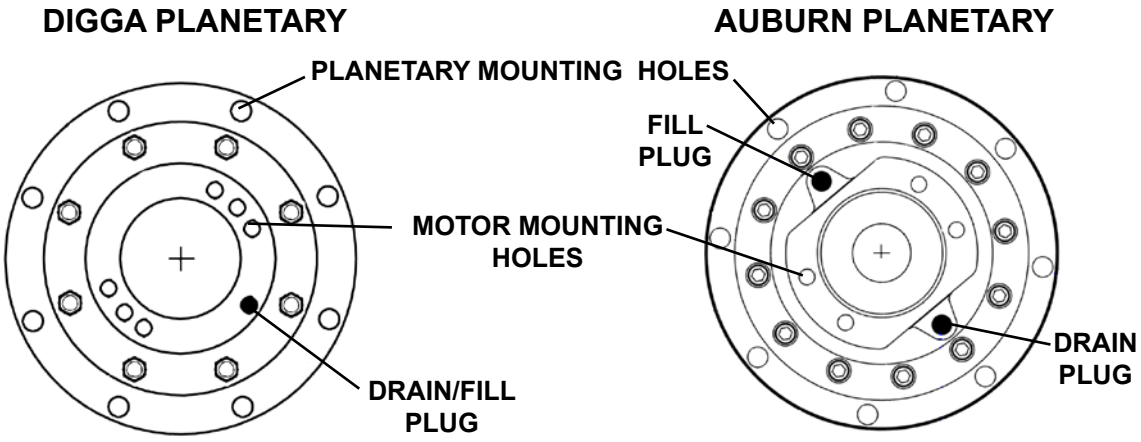
MAINTENANCE

PLANETARY GEARBOX

Change planetary oil using API-GL-5, 80W or 90W lubricant after the first 50 hours of operation and then every 1000 hours or 12 months, whichever comes first. Oil should be at operating temperature when checking or changing oil.



CHANGING PLANETARY LUBRICANT (DIGGA PLANETARIES)

Digga Planetaries have one drain/fill plug located towards the bottom of the planetary.

1. Rotate the trencher up so drain/fill plug is located at the lowest point. Secure in place to avoid any inadvertant movement.
2. Wait 5 minutes to allow all of the oil to drain from the gears and bearings. Remove drain plug.
3. To Fill: Rotate the trencher down so the drain/fill hole is at the top. Secure in place to avoid any inadvertant movement. Add .85 quarts (27oz) of API-GL-5, 80W or 90W lubricant. Do not overfill.

CHANGING PLANETARY LUBRICANT (AUBURN PLANETARIES)

Auburn Planetaries have a drain plug and a fill plug located towards the top and bottom of the planetary.

1. Rotate the trencher up so drainplug is located at the lowest point. Secure in place to avoid any inadvertant movement.
2. Wait 5 minutes to allow all of the oil to drain from the gears and bearings. Remove drain plug.
3. To Fill: Rotate the trencher down so the fill hole is at the top. Secure in place to avoid any inadvertant movement. Add .56 quarts (18oz) of API-GL-5, 80W or 90W lubricant. Do not overfill.

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TROUBLESHOOTING

640 TRENCHER

GENERAL INFORMATION

Your trencher was designed to be as simple and as trouble free as possible. The purpose of this section is to help you in the event that a problem does develop. Why we cannot possibly cover every problem that might occur, you will find that those that are most common are covered here.

PROBLEM: Digging chain will not turn

POSSIBLE CAUSE AND SOLUTION:

1. Quick coupler not completely engaged. Check to see that all couplers are matched pairs and engaged correctly. Check coupler hook-up information (See Installation section) for proper hydraulic hose routing.

2. Quick coupler failure. Check couplers for dirt, rust, or other contaminates that could effect coupler engagement. Clean or replace couplers as needed.

3. Obstruction in hydraulic hose. Remove hydraulic hoses and couplers one at a time and check flow through hose by blowing through the hose or by pouring hydraulic fluid through the hose. Clean or replace hose as needed.

4. Loader auxiliary hydraulics not operating properly. See loader operator's manual or dealer for information and help.

5. Hydraulic motor failed. Be sure you have hydraulic flow to the motor. If oil flow to motor is good, but motor will still not turn when detached from trencher headshaft, remove motor and have it serviced or replaced as needed.

6. Boom end bearing failed. Inspect boom end bearing for free movement. Check for binding or foreign matter jamming bearing. Clean or replace as necessary.

7. Digging chain to tight. Digging chain should only be tight enough to remain on sprockets while turning under load. Their should be some sag in the chain. If too tight, loosen chain by the adjusting nut(s) on the boom.

8. Sand build-up in tooth root of sprocket. Sand can build up in the sprockets effectively increasing the chain tension. Raise the boom out of the ditch and reverse the digging chain on the trencher, then run the trencher out of the trench to clear the sprockets. Reinstall the chain in its correct digging direction and readjust chain tension.

9. Drive sprocket loose on headshaft. Observe if the headshaft is turning. If shaft is turning but sprocket is not, stop the trencher and tighten the sprocket.

PROBLEM: Trencher does not dig fast enough

POSSIBLE CAUSE AND SOLUTION:

1. Digging teeth worn. See maintenance Section L in this manual. Inspect teeth and replace as needed.

2. Loader relief valve set too low. See loader operator's manual and or dealer for proper relief valve service and adjustment.

3. Quick coupler or hose restriction. Inspect couplers and hoses for dirt, rust, and other contaminates and repair or replace as needed.

4. Hydraulic system over heating. Shut the trencher and loader down and allow oil to cool. Repeated stalling of the trencher will cause the oil to over heat. Avoid excessive stalling.

5. Cutting a ditch size beyond the ability of the loader. Your trencher is powered by oil from the loader's auxiliary hydraulic system. The horsepower transmitted through the auxiliary hydraulics is substantially less than that of the engine.

6. Incorrect hydraulic motor application. Check the recommended GPM for the hydraulic motor your trencher is equipped with and compare to the skid-steer auxiliary hydraulic flow.

PROBLEM: Hydraulic oil over heating

POSSIBLE CAUSE AND SOLUTION:

1. Loader relief valve set too low. See loader operator's manual and/or dealer for proper relief valve service and adjustment.

2. Quick coupler or hose restriction. Inspect couplers and hoses for dirt, rust, and other contaminates and repair or replace as needed.

3. Motor or hose size not balanced to loader. A hose or a motor that is too small can cause added internal friction and resultant heat build-up. Check mounting kit parts list and diagram (See Section E) for proper hose size and type.

4. Loader not equipped with oil cooler or sufficient sump capacity. Check with your loader dealer for information and availability of auxiliary cooling and sump kits. Install if available. If not available stop loader and trencher and allow them to cool when they get too hot.

PROBLEM: Excessive chain speed

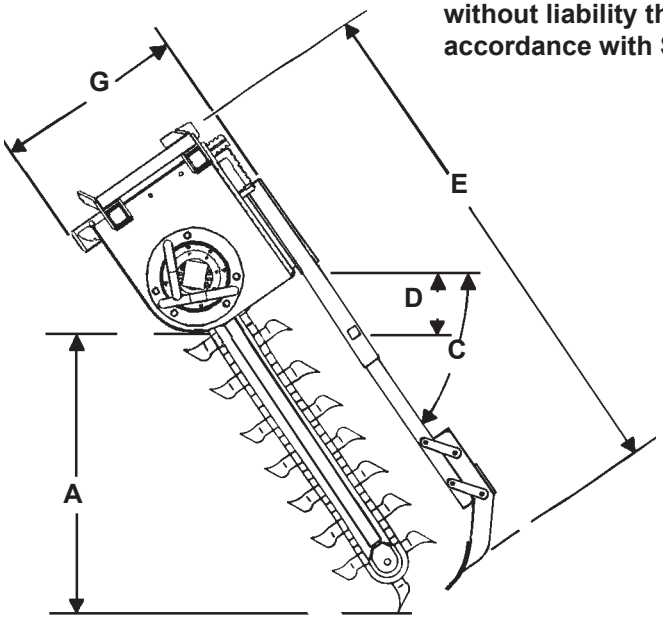
POSSIBLE CAUSE AND SOLUTION:

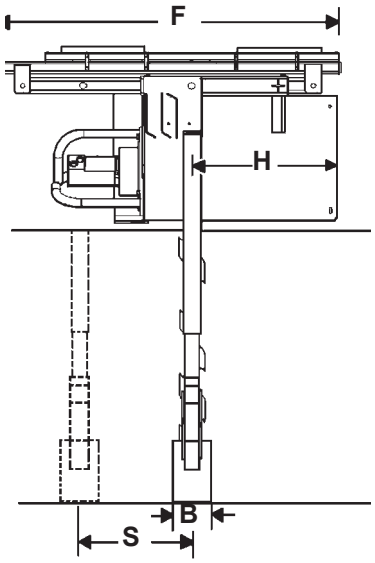
1. Incorrect hydraulic motor application. Check the recommended GPM for the hydraulic motor your trencher is equipped with and compare to the skid-steer auxiliary hydraulic flow.

SPECIFICATIONS

640 TRENCHER

Specifications and design are subject to change without notice and without liability therefore. Whenever applicable specifications are in accordance with SAE standards.





DESCRIPTION	BOOM SIZE 30"	36"	42"	48"
A. Trench Depth w/Auger @ 65° Digging Angle	30"	36"	42"	48"
B. Trencher Widths Available	6"	6"	6"	6"
	8"	8"	8"	8"
	10"	10"	10"	-
	12"	12"	-	-
C. Recommended Trenching Angle	65°	65°	65°	65°
D. Headshaft Height	8"	8"	8"	8"
E. Overall Trencher Length	66"	73"	79"	86"
F. Overall Trencher Width	53"	53"	53"	53"
G. Overall Trencher Height	32"	32"	32"	32"
H. Spoil Discharge Reach	18"	18"	18"	18"
S. Side Shift, Right of Center	17"	17"	17"	17"
Distance From Centerline Drive Sprocket to Back of Mounting Frame	16"	16"	16"	16"

Hydrostatic System:

640(A) GPM Requirements ..... Min. 14 / Max. 17
640(B) GPM Requirements ..... Min. 18 / Max. 24
640(C) GPM Requirements ..... Min. 25 / Max. 28
640(D) GPM Requirements ..... Min. 29 / Max. 35
640(E) GPM Requirements ..... Min. 36 / Max. 44
Operating Pressure ..... 2000 - 3000 PSI

Approximate Overall Shipping Weight ..... 1120 lbs
(with 3' x 6" - 24 pitch anti-back-flex chain)

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BOLT TORQUE SPECIFICATIONS

GENERAL TORQUE SPECIFICATION TABLES

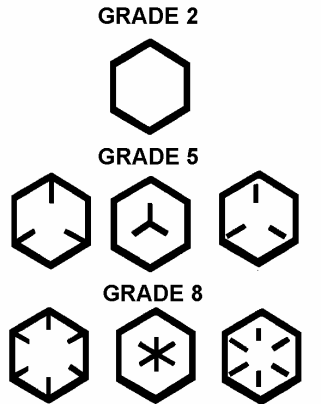
Use the following charts when determining bolt torque specifications when special torques are not given. Always use grade 5 or better when replacing bolts.

SAE BOLT TORQUE SPECIFICATIONS

NOTE: The following torque values are for use with extreme pressure lubricants, plating or hard washer applications Increase torque 15% when using hardware that is unplated and either dry or lubricated with engine oil.

Bolt Size		SAE GRADE 5 TORQUE Pounds Feet		SAE GRADE 5 TORQUE Newton-Meters		SAE GRADE 8 TORQUE Pounds Feet		SAE GRADE 8 TORQUE Newton-Meters	
Inches	Millimeters	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF
1/4	6.35	8	9	11	12	10	13	14	18
5/16	7.94	14	17	19	23	20	25	27	34
3/8	9.53	30	36	41	49	38	46	52	62
7/16	11.11	46	54	62	73	60	71	81	96
1/2	12.70	68	82	92	111	94	112	127	152
9/16	14.29	94	112	127	152	136	163	184	221
5/8	15.88	128	153	174	207	187	224	254	304
3/4	19.05	230	275	312	373	323	395	438	536
7/8	22.23	340	408	461	553	510	612	691	830
1	25.40	493	592	668	803	765	918	1037	1245
1-1/8	25.58	680	748	922	1014	1088	1224	1475	1660
1-1/4	31.75	952	1054	1291	1429	1547	1700	2097	2305
1-3/8	34.93	1241	1428	1683	1936	2023	2312	2743	3135
1-1/2	38.10	1649	1870	2236	2535	2686	3026	3642	4103

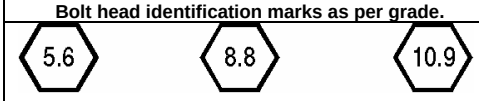
Bolt head identification marks as per grade. NOTE: Manufacturing Marks Will Vary



METRIC BOLT TORQUE SPECIFICATIONS

NOTE: The following torque values are for use with metric hardware that is unplated and either dry or lubricated with engine oil. Reduce torque 15% when using hardware that has extreme pressure lubricants, plating or hard washer applications.

Bolt head identification marks as per grade.



Size of Bolt	Grade No.	Pitch (mm)	Pounds Feet	Newton-Meters	Pitch (mm)	Pounds Feet	Newton-Meters
M6	5.6	1.0	3.6-5.8	4.9-7.9	-	-	-
	8.8		5.8-.4	7.9-12.7		-	-
	10.9		7.2-10	9.8-13.6		-	-
M8	5.6	1.25	7.2-14	9.8-19	1.0	12-17	16.3-23
	8.8		17-22	23-29.8		19-27	25.7-36.6
	10.9		20-26	27.1-35.2		22-31	29.8-42
M10	5.6	1.5	20-25	27.1-33.9	1.25	20-29	27.1-39.3
	8.8		34-40	46.1-54.2		35-47	47.4-63.7
	10.9		38-46	51.5-62.3		40-52	54.2-70.5
M12	5.6	1.75	28-34	37.9-46.1	1.25	31-41	42-55.6
	8.8		51-59	69.1-79.9		56-68	75.9-92.1
	10.9		57-66	77.2-89.4		62-75	84-101.6
M14	5.6	2.0	49-56	66.4-75.9	1.5	52-64	70.5-86.7
	8.8		81-93	109.8-126		90-106	122-143.6
	10.9		96-109	130.1-147.7		107-124	145-168
M16	5.6	2.0	67-77	90.8-104.3	1.5	69-83	93.5-112.5
	8.8		116-130	157.2-176.2		120-138	162.6-187
	10.9		129-145	174.8-196.5		140-158	189.7-214.1
M18	5.6	2.0	88-100	119.2-136	1.5	100-117	136-158.5
	8.8		150-168	203.3-227.6		177-199	239.8-269.6
	10.9		175-194	237.1-262.9		202-231	273.7-313
M20	5.6	2.5	108-130	146.3-176.2	1.5	132-150	178.9-203.3
	8.8		186-205	252-277.8		206-242	279.1-327.9
	10.9		213-249	288.6-337.4		246-289	333.3-391.6

PARTS

In order to provide you with the most UP-TO-DATE part information, all parts for this attachment have been moved to our website at ***www.paladinattachments.com/Manuals***. Please use these diagrams and parts lists to locate replacement parts.

When servicing your attachment, remember to use only original manufacturer replacement parts. Substitute parts may not meet the standards required for safe, dependable operation.

To facilitate parts ordering when contacting the factory, please have the product control number (PCN) or model and serial number of your product ready to ensure that you receive the correct parts for your specific attachment.

The product control number (PCN), model and serial number for your attachment should be recorded in the space provided on the cover of this manual. This information may be obtained from the serial number identification plate located on your attachment.

NOTE: Most daily and emergency parts orders (in stock) received by 10:30 A.M. (Eastern Standard Time) will be shipped UPS Ground the same day received. UPS Next Day orders must be received by 1:30 PM (Eastern Standard Time.)

SERVICE DEPARTMENT
(734) 996-9116
(800) 456-7100

For Fax and E-mail Orders
PLC_Sales@paladinattachments.com
(734) 996-9014

WARRANTY

In order to provide you with the most UP-TO-DATE Warranty information, Paladin Warranty Statement and Warranty Procedures along with Warranty Registration and Claim Forms have been moved to our website at ***www.paladinattachments.com***.

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