

THE
BARRETO

MODEL 13STK & 16STK

SMALL TRACK TRENCHER
OPERATOR'S MANUAL

STK INTENDED USE

The STK is designed for digging trenches in “normal” ground of reasonably soft dirt and stones up to 6” (15cm) in diameter. Ground with larger stones, high clay content, very hard packed, very dry or frozen may be unsuitable for normal trenching. Consider using a backhoe or other heavier equipment for such conditions.

OPERATOR TRAINING / INSTRUCTIONS

Everyone who operates (or assists) an STK must know the following aspects of machine operation BEFORE operating the STK. Each aspect must be a part of operator training. Each operator must be at least 21 years old, mentally and physically able to safely operate the STK.

Rental companies need to explain and demonstrate all machine operations to each rental customer.

- **KNOW AND UNDERSTAND ALL SAFETY POINTS AND CONSIDERATIONS**
- Check that all guards/covers and safety decals are in place.
- Understand the STK capabilities and intended use.
- Know all safety points.
- Know how to properly load and secure the STK to a trailer or truck bed.
- Know how to properly connect and secure the trailer to a towing vehicle.
- Know and understand all STK controls including:
 - Operator working area & areas to stay clear
 - Operator controls – Control panel layout
 - Engine controls: start, stop & throttle
 - Track drive controls
 - Adjustable trenching controls
 - Raise and lower the digging boom
 - Dig chain controls
- Know how to start a trench.
- Understand lubrication requirements.



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TABLE OF CONTENTS

STK INTENDED USE.....	1
OPERATOR TRAINING / INSTRUCTIONS.....	1
TABLE OF CONTENTS	2
SAFETY MESSAGES	2
SAFETY INSTRUCTIONS OVERVIEW.....	3
BATTERY SAFETY INSTRUCTIONS.....	5
TOWING - HAULING INSTRUCTIONS	6
OPERATORS WORKING AREA.....	7
STK OPERATOR CONTROLS	7
ENGINE CONTROLS	8
TRACK DRIVE CONTROLS	9
BOOM CONTROLS	9
DIG CHAIN CONTROLS	10
START A TRENCH.....	10
TRENCHING.....	10
STUCK TRENCHER CHAIN	11
LUBRICATION / GREASE REQUIREMENTS	12
RECOVERY TOWING	13

SAFETY MESSAGES

This section covers the method used to announce safety messages. Safety messages appear as appropriate in this manual and on decals affixed to the machine where a hazard may occur if procedure or instructions are not followed correctly and completely.



This is the ISO general warning symbol
Standard No.: 7010:2011

It is used in conjunction with the following signal words to communicate a hazard.

Safety signal words **DANGER WARNING CAUTION**, definitions from: ISO 3864-2.2016

- **DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE:** (Not safety related) Damage to property may occur. The situation is not considered hazardous, injury is unlikely. The general warning symbol will not be used.

Study ALL decals on the STK before operating the STK.

ALWAYS USE COMMON SENSE AND THINK SAFETY FIRST!

SAFETY INSTRUCTIONS OVERVIEW

READ ALL SAFETY AND OPERATING INSTRUCTIONS BEFORE OPERATING!
FOLLOW ALL SAFETY INSTRUCTIONS WHILE OPERATING!
MAKE SURE OTHERS FOLLOW THEM TOO!



DANGER: Avoid underground utility lines. Before you dig contact appropriate authorities.
USA: call 811; **Australia:** call 1100; **Canada:** www.clickbeforeyoudig.com
UK: www.beforeyoudig.nationalgrid.com

Contact: _____ (fill in local number)



DANGER: Never operate any machinery while under the influence of drugs, alcohol or impairing prescription drugs.



DANGER: Do not operate the STK if any oil leaks are present. Hydraulic oil gets hot and is under extreme pressure, which will burn and cut. If injected with hydraulic oil seek medical attention immediately.



DANGER: Stay clear of moving parts. Dig chains, tracks, booms, lift cylinders and other moving parts can cut off fingers, arms, legs and other body parts. Contact with moving parts while the machine is operating will cause death or serious injury.



DANGER: Never attempt to clear debris from the chain or auger while the engine is running or capable of running.



DANGER: Only operate outdoors and avoid breathing engine exhaust fumes. Engine exhaust contains toxic carbon monoxide gas. Breathing it can cause unconsciousness and death.



DANGER: Never permit anyone to ride, sit or stand on the STK. The STK is NOT intended to carry a driver or passenger. Carrying people on the STK will result in death or serious injury.



DANGER: Never operate the STK with any guards or flaps removed.



DANGER: Do not leave the STK unattended with the engine running. Always turn off the engine and never leave the STK where non-authorized persons have access to the machine.



WARNING: Wear appropriate personal protective equipment, safety glasses, ear plugs, hard hat, gloves, and boots. DO NOT wear loose clothing, jewelry, long hair or anything that may get caught in a moving part.



WARNING: Stay clear of the front of the STK while in operation. Cease operation if anyone comes within 30 feet of the front of the STK.




WARNING: DO NOT operate the STK on steep grades. On any grade keep the boom as low as possible. Never stand downhill of the STK.



WARNING: Park and store the STK on level ground, use tire chocks to prevent the STK from moving. The STK is not equipped with brakes, tracks may (roll) crawl on an incline.

SAFETY INSTRUCTIONS OVERVIEW CONTINUED

We recommend having a fire extinguisher capable of extinguishing class A, B & C fires in the operating area.


 **WARNING:** Do not operate the STK near any source of flammable dust or vapor. Sparks from the engine can cause a fire or explosion in a flammable atmosphere.

WARNING: Shut off engine and allow it to cool before refueling. Sparks and heat from the engine may ignite fuel.

Work site preparation:

DO NOT dig until all utility lines have been identified and authorized to dig. Identify and remove or avoid all safety hazards. Ensure worksite is well lit. Keep others away from the STK while operating. Select job sites free from bystanders. If the job site is near a road or a pedestrian pathway and cannot be moved, warn and divert both motorized and pedestrian traffic. As appropriate and legal, use traffic flag personnel, signs, cones and lighting devices to ensure safety. Diverting traffic and working in congested public areas may require permits or other such legal considerations. It is your responsibility to know and follow all applicable laws.

Contact with underground utilities:

 **WARNING:** If you hit any underground utility line or pipe immediately evacuate the area and call 911 (emergency services). There are numerous types of dangerous underground utilities.

IF AT ANY POINT AND FOR ANY REASON YOU DO NOT FEEL CONFIDENT ABOUT OPERATING THE STK OR RECOGNIZE THAT YOU CANNOT SAFELY OPERATE THE STK, STOP IMMEDIATELY. RELEASE THE TRENCH DIG CHAIN CONTROL LEVER, TURN OFF THE ENGINE AND CONTACT THE STK OWNER.

Utility Contact: CONTACT BEFORE DIGGING

USA: call 811; **Australia:** call 1100; **Canada:** www.clickbeforeyoudig.com

UK: www.beforeyoudig.nationalgrid.com

Contact: _____ (fill in local number)

Emergency & Medical Contacts:

USA & CANADA: Emergency dial: **911**

USA & CANADA: American Association of Poison Control Centers: **1-800-222-1222**

Outside the USA & Canada (fill in the appropriate number)

National Emergency number: _____

Poison Control Center: _____

Other: _____



**Know what's below.
Call before you dig.**

BATTERY SAFETY INSTRUCTIONS

Only trained and qualified personnel should perform maintenance or repairs of the STK or the battery. In normal operation the STK battery does not require handling or maintenance.



WARNING: The battery contains sulfuric acid that can cause blindness and severe burns. Avoid contact with eyes, skin and clothing.



WARNING: Battery fumes are flammable and explosive. Avoid exposing the battery to sparks and flames. Sparks can be created near the battery when handling battery cables or jumper cables.



WARNING: The battery, posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.



WARNING: Wear appropriate personal protective equipment when handling the battery. Shield entire face, especially your eyes, wear rubber gloves and a rubber apron to reduce the risk of acid burns. Battery caps must be tightly in place if the battery has removable caps.

First Aid Measures from Material Safety Data Sheet, for sulfuric acid: ScienceLab.com

- **Eye Contact:** Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.
- **Skin Contact:** Immediately flush skin with plenty of water for 15 minutes while removing contaminated clothing and shoes. Cover irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
- **Serious Skin Contact:** Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
- **Inhalation:** If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
- **Serious Inhalation:** Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt, or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention



WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive.

- **Ingestion:** DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- **Serious ingestion:** Not available. Get medical attention immediately.

Emergency & Medical Contacts:

USA & CANADA: Emergency dial **911**

USA & CANADA: American Association of Poison Control Centers: **1-800-222-1222**

Outside the USA & Canada (fill in the appropriate number)

National Emergency number: _____

Poison Control Center: _____

Other: _____

TOWING - HAULING INSTRUCTIONS

While towing or hauling the STK, obey all traffic laws and never exceed the trailers rated towing speed. The towing vehicle and trailer must be in legal, road worthy condition.

Refer to and check each of the following before towing.

- The trailer must be rated to tow loads of 1500lbs (680kg) or more.
- The towing vehicle must be rated to tow the tongue weight and weight of the fully loaded trailer.
- Tie down straps or chains must be rated for 1500lbs (680kg) or more.

Inspect the following components, replace any damaged component and fill tires.

- Inspect towing vehicle: hitch, hitch ball, safety chain attachment points and tires (see tire sidewall for correct tire pressure).
- Inspect the trailer: coupler, safety chains and attachment point, tie down attachment points, tires and tire pressure (see tire sidewall for correct tire pressure).
- Inspect STK tie down attachment points.

Follow trailer manufacturer instructions for connecting the trailer to the towing vehicle.

General instructions provided: If instructions conflict, follow trailer manufacturer instructions.

- Securely fasten the coupler to the hitch ball.
- Ensure the safety chain is securely fastened to the trailer.
- If equipped with lights, connect the wiring adapter on the trailer to the plug on the towing vehicle. Make sure that all lights, on both vehicles work. If NOT equipped with lights do not tow at night or other low light conditions.
- Cross the safety chains under the tongue and secure them to the towing vehicle. Crossing the safety chain helps prevent the tongue from dropping to the ground should the hitch come off.
- **DO NOT LET THE CHAINS TOUCH THE GROUND OR BE DRAWN TOO TIGHT.** Allow only enough slack to permit proper turning of the towing vehicle. Slack in the safety chain should be reduced until the tongue cannot hit the ground should the coupler come loose.

Load and secure the STK to the trailer.

- Load and unload the STK from a trailer with the tongue secured in place such as to a vehicle.
- Secure the STK to trailer or hauling bed from each of the 4 tie down eyes.
- Make sure each tie down chain is taut before towing.

After towing for a few blocks stop and check:

- All tie down chains, re-tighten if necessary.
- All connections between vehicle and trailer: re-tighten if necessary.

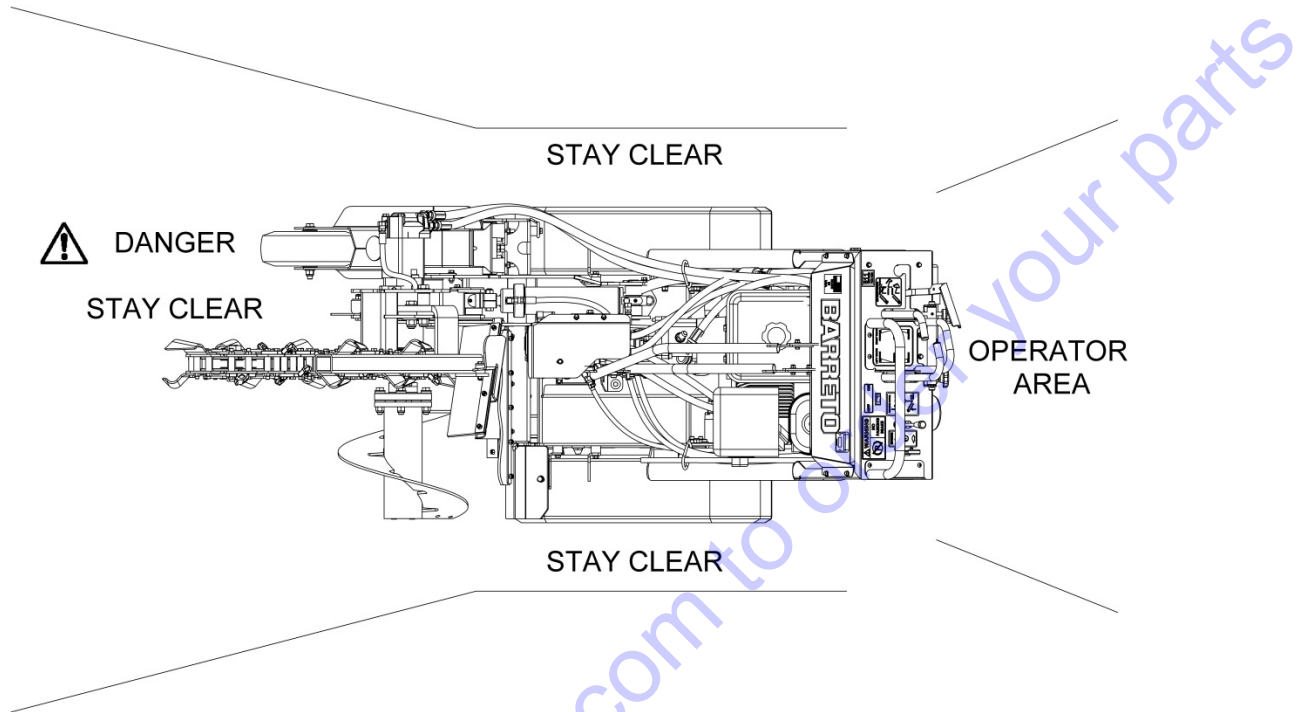
WHILE TOWING, EXERCISE EXTREME CAUTION, ALLOW EXTRA SPACE BETWEEN VEHICLES, AND EXPECT LONGER STOPPING DISTANCES.

LOCAL LAWS VARY. IT IS YOUR RESPONSIBILITY TO KNOW AND OBEY ALL LAWS ON THE ROAD.

OPERATORS WORKING AREA

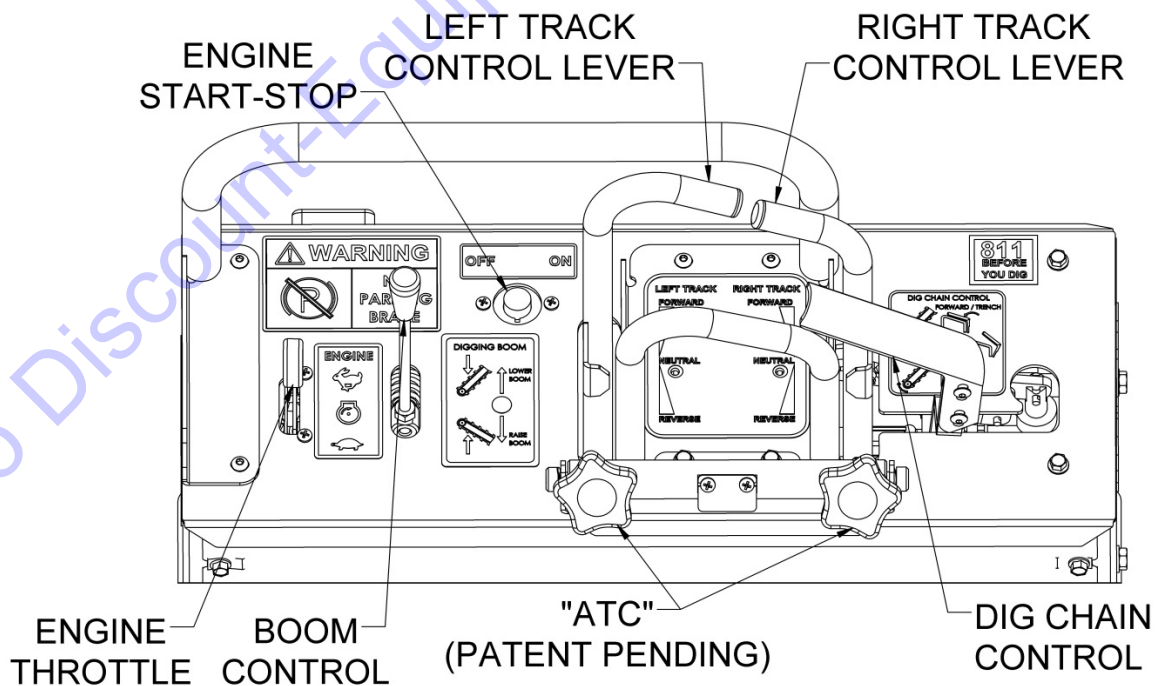


DANGER: Stay clear of the areas marked STAY CLEAR on the diagram below while the STK is running. Death or serious injury may occur.



STK OPERATOR CONTROLS

STK CONTROL PANEL



ENGINE CONTROLS

Check engine oil:

Check the engine oil daily, prior to use and after every 8 hours of use. Keep the engine oil level at FULL. Do not overfill.

Recommended oil: **Vanguard** synthetic 5W-30; **Honda** 10W-30 (below 85°F (30°C), 10W-40 (above 85°F (30°C)).

Use the ENGINE OIL DIPSTICK, located on the engine.

1. Engine must be off and on level surface, clean around oil fill port and dipstick.
2. Remove dipstick and wipe clean with a clean cloth.
3. **Vanguard**: Insert dipstick all the way back in and remove to check oil level.
Honda: Insert dipstick into the oil filler neck but do not screw it in.
4. If oil is needed add a small amount of oil, wait one minute and recheck level with dipstick.
5. Fill to FULL line on dipstick. (If needed)
6. Replace dipstick firmly.

Starting the engine:

Release all controls.

1. Open fuel shut-off valve.
2. Move choke control to CHOKE or START.
3. Move throttle to FAST.
4. Push rocker switch to ON or RUN (IF EQUIPPED)
5. Insert key and turn to START, release key after engine has started but do not remove.
 - a. OR turn key to run and pull – pull-start handle.
6. Allow engine to warm up.
7. Slowly adjust the choke toward RUN position. Wait until engine runs smoothly before each choke adjustment.

Stopping the engine / STK parking:

1. Park trencher on level surface, use chocks to prevent tracks from crawling (rolling).
2. Lower boom until it rests on the ground.
3. Move throttle to slow / idle.
4. Turn key to OFF, remove key and store where non-authorized persons cannot access.
5. Close fuel shut-off valve.

Notice: Failure to close the fuel shut off valve may permit internal fuel leaks into the cylinder and crankcase. Resulting damage is not covered by the engine warranty.

Engine Throttle:

The engine throttle is controlled by a lever on the far left of the operator controls. Push the throttle forward, away from the operator, to increase engine speed. Pull the throttle back, toward the operator, to decrease engine speed. Keep engine speed at full while trenching.

TRACK DRIVE CONTROLS



Warning: Avoid operating the STK on hills or grades. If unavoidable keep the boom low and stand uphill of STK. At 20° (36%) slope the engine oil sensor may shut the engine down.

Driving the STK:

The tracks are controlled by two track control levers, the left lever controls the left track and the right lever controls the right track.

Forward:

When a lever is pushed forward, away from the operator, the corresponding track will crawl forward with a speed that directly corresponds to how far the lever is pushed. To drive forward, push both levers forward, away from the operator.

Reverse:

When a lever is pulled back, toward the operator, the corresponding track will crawl backward with a speed that directly corresponds to how far the lever is pulled back. To drive in reverse, pull both levers back, toward the operator.

Steering:

The STK will turn when either track crawls faster than the other. Wide turns can be made by pushing both levers forwards at different angles. Sharp turns can be made by pushing one lever forward while leaving the other in neutral. The sharpest turns are made by pushing one lever forward while pulling the other lever back. The same is true for making turns in reverse.

If the left control lever is pushed further than the right the STK will turn to the right and if the right control lever is pushed further than the left the STK will turn to the left.

Familiarize yourself with controlling the STK in an open area before attempting to control the STK in a confined area such as driving off of or on to a trailer or through a gate.

Adjustable trenching control: (ATC) - patent pending

The STK is equipped with Barreto Manufacturing's adjustable trenching control system. To engage the adjustable trenching controls, rotate the ATC knobs down so that when the control lever is pulled back it is limited by the screw end of the knobs. Hold both control levers against the adjustable trenching control, turning a knob clockwise will slow the corresponding track, while turning a knob counterclockwise will speed up the corresponding track. This gives the operator the ability to fine tune the controls in reverse on the fly, allowing for straight trenching and controlled turns.

To disengage the adjustable trenching control, rotate the knobs up so that the control levers can reach their full rear movement.

BOOM CONTROLS

Boom controls:

The boom is controlled by a lever to the left side of the hand rest. Pull the lever back, toward the operator to raise the boom, push the lever forward, away from the operator to lower the boom.

DIG CHAIN CONTROLS

Dig chain controls:

The dig chain control lever is to the right side of the hand rest.

Trench direction:

To run the dig chain to trench, place the palm of your hand on the lever and rotate the lever down so that your hand rests on the hand rest while holding the dig chain control lever. When the chain is running in the trench direction, the chain on top of the boom will move away from the operator.

Reverse direction:

To reverse the dig chain, rotate the dig chain control lever to the right, away from the hand rest. When the chain is running in the reverse direction, the chain on top of the boom will move towards the operator.

Stop the dig chain:

To stop the dig chain, release the dig chain control lever. It will return to the stop position and the dig chain will stop.

START A TRENCH

To start a trench: “The plunge cut”

Run the engine with the throttle in the full / fast position. Run the dig chain in the trench direction and slowly lower the boom. If the boom bounces, stop lowering the boom and let the dig chain clear the dirt before continuing to slowly lower the boom. A little ground travel in reverse, toward the operator, can help smooth the plunge cut.

Do not overload the engine. If the engine lugs down or the digging chain slows down, raise the boom until the chain speed increases, then continue slowly lowering the boom.

NOTICE: Do not force the boom down faster than the digging chain can remove material.

TRENCHING

Digging a trench: THE STK TRENCHES IN REVERSE

Run the engine with the throttle in the full / fast position. With the plunge cut already made and the boom in the plunge cut slowly pull the control levers back, towards yourself. The STK will crawl in reverse and begin trenching. While trenching if the engine lugs or the chain slows, stop the STK to allow the chain and engine to get back up to speed. The speed at which you can trench is dependent on soil conditions, harder soil requires slower trenching. Use the adjustable trenching controls to make trenching easier. It is especially useful for trenching in a straight line.

STUCK TRENCHER CHAIN



DANGER: Never reach into the trench while trenching, or near the chain, boom or auger while the STK is running or capable of running. Reaching into the chain, auger or trench will result in death or serious injury.

If the dig chain gets stuck on an obstacle such as a large root or rock, to prevent damage to the machine, hydraulic fluid will automatically by pass the dig chain motor, which can make a loud squeal and shut down the engine.

If the engine has shut down start it back up using the engine start-up procedure.

Briefly run the chain in the reverse direction, this will free most instances of a stuck chain. If still not unstuck raise the boom a few inches and again briefly run the dig chain in the reverse direction. When re-engaging the obstacle, go very slow and keep the engine and chain speed up. Raising the boom will also help to reduce chain resistance and make the cut easier.

The STK will remove or cut most in trench obstacles. However with very large obstacles the trench may need to go over the obstacle to get around it in which case the obstacle may need to be removed manually or with larger digging equipment. Optionally the trench route may be re-selected to get around the obstacle. The alternate route must be within safe digging bounds determined by inspection after your call to 811.

LUBRICATION / GREASE REQUIREMENTS

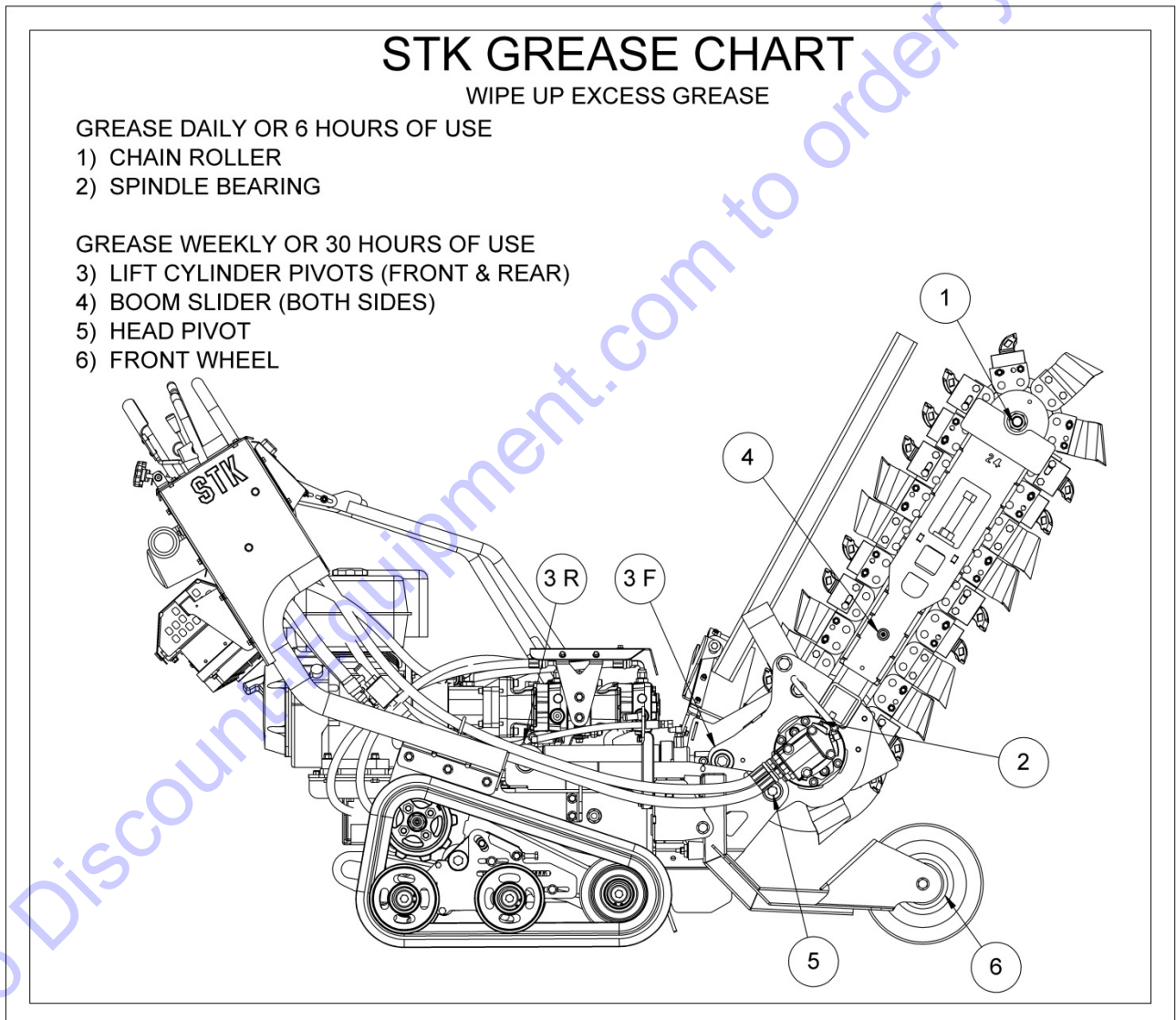
Maintenance is the responsibility of the owner. Exceptions should be made for multiple day rental agreements especially with engine oil and machine grease points. You must have the owner's authorization before beginning any maintenance on the STK. If you do not have the owner's authorization, return the STK so that the owner can ensure proper engine and machine lubrication.

NOTICE: Do not run the STK if low on engine oil or if it needs to be greased.



WARNING: The engine, exhaust pipe and hydraulic components get hot and can cause severe burns. Turn off engine, remove key and allow to cool before checking engine oil or greasing.

Grease at the intervals indicated in the following illustration of grease points.



RECOVERY TOWING



DANGER:

- Before beginning recovery towing engine startup must be prevented (EVEN IF ENGINE “WON’T START”). Turn off engine switch, remove key and zip tie pull start handle.
- Engine, hydraulic components and hydraulic fluid get hot, allow adequate cooling time.
- Avoid lifting heavy components.

Recovery towing: Not considered normal operation,

If there is a malfunction that prevents the STK from providing its own mobility, such as an engine failure, the STK may be towed a short distance (1/8 mile or 1/4 km). Select a path that minimizes recovery towing distance and avoids hills.

- Chock the tracks to prevent crawling (rolling).
- Loosen both bypass valves, turn counterclockwise 2 turns. (DO NOT REMOVE)
- Tie down attachment points can be used for recovery towing.
- Remove chocks and tow as necessary.

NOTICE:

- DO NOT remove bypass valves: only turn counterclockwise 2 full turns.
- DO NOT exceed 2mph (3kph).
- When done towing, **tighten bypass valves to 100 in-lb. (11.3 Nm).**

Manually raise boom: IF NECESSARY

- Loosen hose on rear port of the boom cylinder. If necessary loosen hose on front port.
 - Oil will leak from port / hose, use rags to help minimize spilled oil.
- Lift the boom with mechanical means such as a jack or fork lift.
- If no mechanical means is available use at least 3 people, 2 strong workers to lift the boom from the boom guard, 1 to tighten hoses.
- With the boom raised tighten both boom cylinder hoses.

RECOVERY TOWING

