

WALLENSTEIN

BY EMB MFG INC.

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RANCHO SERIES BACKHOE GE605, GX620, GX720, GX920 & GX920XT OPERATOR'S MANUAL



Warning Underground Utility Hazard

Contacting underground utilities can cause electrocution. You must contact an underground utility locating/marketing service before digging.



Caution Stability Hazard

The tractor must have a front bucket loader installed before installing the subframe and backhoe. The front loader is required to offset the weight of the backhoe, as well as provide the stability required to operate the backhoe safely.

NOTICE Operation Hazard

Wallenstein backhoes are designed to operate at a specific flow rate. **Operating the backhoe above the specified flow rate will cause damage to the seals and will void the warranty.**

GE605 3.5-6 gpm (13.3-22.8 lpm)

GX Series 5-7 gpm (18.9-26.5 lpm)

NOTICE

When mounting a **GE605 or GX620 backhoe** to a skid steer that has a flow rate **greater than 8 GPM (32 lpm)**, **BFC501 Flow Divider Kit** is required to prevent damage to the seals and voiding the warranty. **Do not run the skid steer in high flow mode.**

**Keep this manual with the
Machine at all times**





WARRANTY

Effective on products retailed on or after January 1, 2015.

Register your product online at www.wallensteinequipment.com
within 30 days of purchase to activate warranty.

This product is warranted to be free of defects in materials and workmanship
under normal use and service, for a period of

Five (5) Years for Consumer Two (2) Year for Commercial/Rental

from the date of purchase, when operated and maintained in accordance with the Operating and Maintenance Instructions supplied with this unit. Warranty is limited to the repair of the product and/or replacement of parts.

This warranty does not cover the following items:

- 1) Machines or parts lost or damaged during shipment,
- 2) Normal maintenance or adjustments after initial pre-service and set up is completed
- 3) Normal replacement of service items.
- 4) Accessory items / parts not supplied by EMB MFG INC.
- 5) Damages resulting from:
 - misuse, negligence, accident, theft or fire
 - use of improper or insufficient fuel, fluids or lubricants
 - use of parts or after market accessories other than genuine EMB MFG INC. parts
 - modifications, alteration, tampering or improper repair performed by parties other than an authorized dealer
 - any device or accessories installed by parties other than an authorized EMB dealer or distributor

Engines are covered by the manufacturer of the engine and covered by the warranty period specified by that manufacturer.

Engine warranty must be registered at the engine manufactures website. For service contact your local engine dealer.

Under no circumstances will the manufacturer be liable for any consequential damage or expense of any kind, including loss of profits. The manufacturer is under no circumstances liable for tow vehicle of any kind. The manufacturer is not liable for the maintenance of the product.

This warranty is extended only to the original purchaser and is not transferable. Warranty is void if repairs are attempted by anyone other than a Wallenstein Authorized Service Centre.

If a difficulty develops with the product, contact the local dealer from which you purchased the unit. Only Wallenstein authorized dealers are authorized to make repairs to the product or affect the replacement of defective parts, which will be done at no charge within a reasonable time after the receipt of the product. Unit or parts shall be returned at the customer's expense to the Authorized Service Centre. Damage in transit is not covered by warranty. Include the original purchase receipt with any claim (keep a copy of the receipt for your files).

The distributor's liability under warranty is limited to the repair of the product and/or replacement of parts and is given to the purchaser in lieu of all other remedies including incidental and consequential charges. There are no warranties, expressed or implied, other than those specified herein.

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Phone: 519-699-9283 Fax: 519-699-4146 : attention to Warranty Dept
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WALLENSTEIN
GE & GX Rancho BackHoes
DELIVERY INSPECTION REPORT

To activate warranty, register your product online at
www.embmfg.com

Customer's Name _____

Contact Name _____

Dealer Name _____

(_____) _____
 Phone Number

Serial Number _____

_____/_____/_____
 Delivery Date

I have thoroughly instructed the buyer on the equipment care, adjustments, safe operation and applicable warranty policy and reviewed the manual.

Dealer's Rep. Signature _____

_____/_____/_____
 Date

The product manuals have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Owner's Signature _____

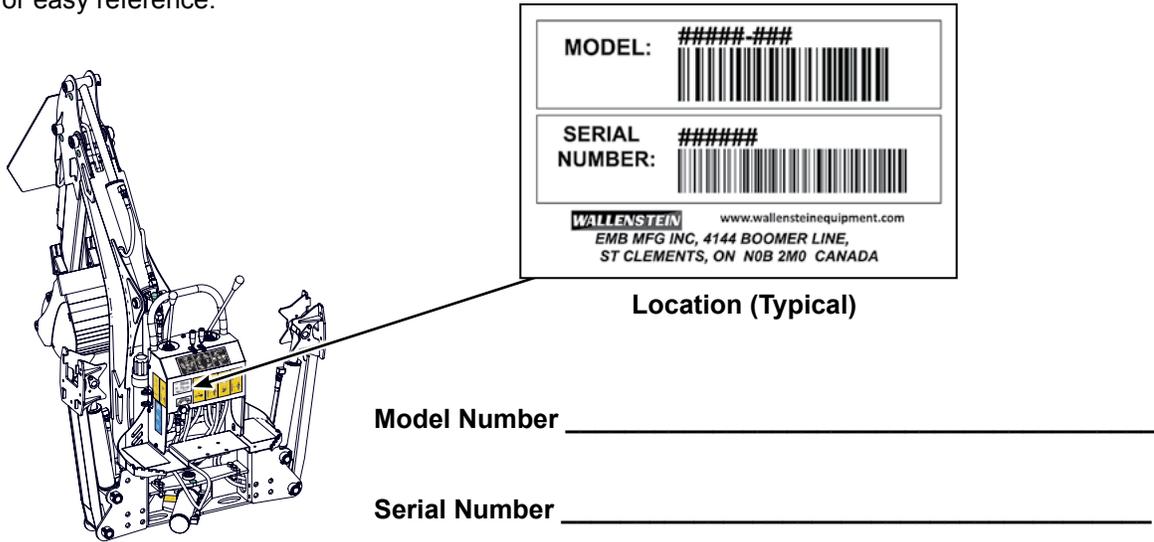
_____/_____/_____
 Date

✓	Dealer Inspection Check
	GE - GX Series BackHoe
	Check Hydraulic Hoses
	Boom Function
	Grease Zerks / Lubricate Pivot Points
	Check All Fasteners
	Bucket Function
	Fasteners Tight
	Hydraulic Controls Move Freely
	Check SubFrame included
	Check Oil Level in Reservoir (If so Equipped)
	Review Operating and Safety Instructions
	Safety Checks
	All Safety Decals Installed
	Guards and Shields Installed and Secured
	Stabilizers Function
	Retainer Installed Through Hitch Points
	Hydraulic Fittings Tight - No Leaks
	Hydraulic Lines Free and in Good Condition
	Boom Lock Pin Installed
	Review Operating and Safety Instructions
	Optional Equipment (see accessories page)
	Vertical Stabilizers
	Ripper Tooth
	Quick change bucket adapter
	Street Pads
	Thumb Kits
	PTO Pump Kit

SERIAL NUMBER LOCATION

Always give your dealer the serial number of your Wallenstein Backhoe Attachment when ordering parts or requesting service or other information.

The machine is equipped with a serial plate where indicated. Please mark the number in the space provided for easy reference.



LABEL INFORMATION

As you begin to get familiar with your Wallenstein product, you will notice that there are numerous labels located on the machine. Here is a brief explanation of what they are for and how to read them.

There are three different types of labelling: safety, informative and product labels.

Safety Labels are pictorial with a yellow background and generally 2 panel. The top panel shows the safety alert (the potential hazard) and the bottom panel shows the message (how to avoid the hazard).

Safety Notice Labels are pictorial with a blue background and generally rectangular with single or multiple symbols. The label illustrates requirements for safe operation (safety equipment, housekeeping etc). These labels are accompanied by detailed instructions in the owners manual, with the label illustrated along side.

Informative Labels are generally pictorial with a white background and can vary to the number of panels. The label will illustrate the function of a feature and is accompanied by detailed instructions in the owners manual, with the label illustrated along side.

Product Labels are associated with the product and carry various messages (model, serial, etc).

Maintenance Labels are associated with the product and carry various messages. They are generally pictorial. They may be round or rectangular, have a green background and can vary to the number of panels. The label may illustrate the type maintenance and frequency in time between services. Labels are accompanied by detailed instructions in the owners manual, with the label illustrated along side.

See the section on safety signs for safety label definitions. For a complete illustration of labels and label locations, download the parts manual for your model product at www.embmfg.com.

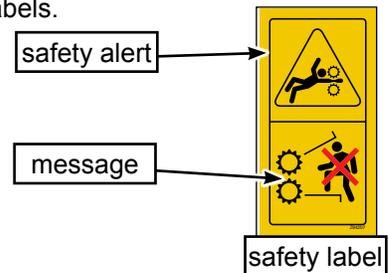


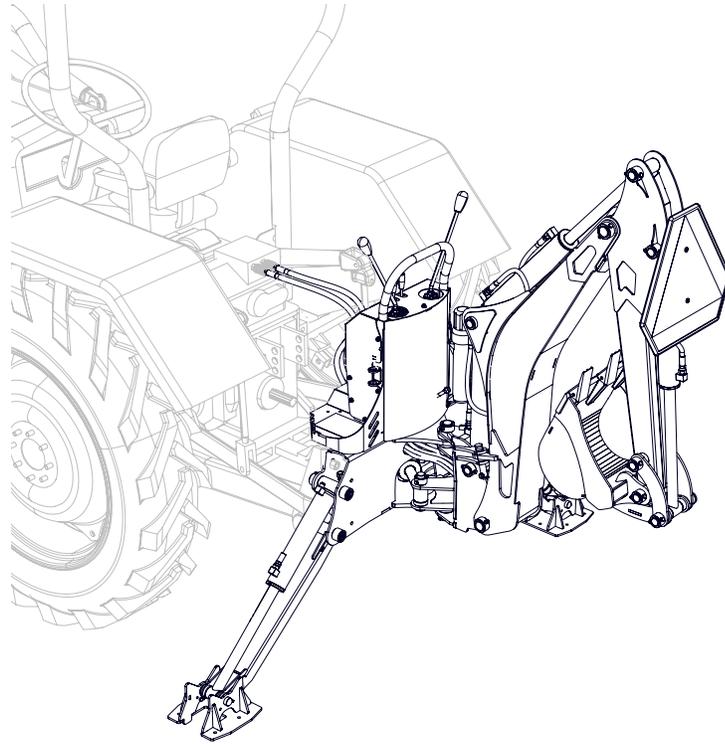
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1 INTRODUCTION

Congratulations on your choice of a Wallenstein Backhoe to compliment your operation. This equipment has been designed and manufactured to meet the needs of a discerning property owner planning on digging, excavating or trenching.

Designed for sub compact, compact, utility tractors and skidsteers, Wallenstein gives you precision and power at your fingertips. Digging depths range from 6'4" to 11'4" depending on your backhoe model. Wallenstein is a rugged backhoe that's ready to sink its teeth into any task you give it, from landscaping to concrete footings. The over-arching design of the new curved boom allows a deep dig without impacting the edge of the excavation. This protects the backhoe from unnecessary damage and prevents ground from falling back into the hole. The 920XT features an extendible boom, capable of hydraulically extending an extra 24"



Safe, efficient and trouble free operation of your Wallenstein Backhoe requires that you and anyone else who will be operating or maintaining the machine, read and understand the Safety, Operation, Maintenance and Trouble Shooting information contained within the Operator's Manual.

The tractor must have a front bucket loader installed before installing the subframe and backhoe. The front loader is required to offset the weight of the backhoe, as well as provide the stability required to operate the backhoe safely.

This manual covers the Models GE605, GX620, GX720, GX920 and GX920XT manufactured by Wallenstein. Use the Table of Contents or Index as a guide to locate required information.

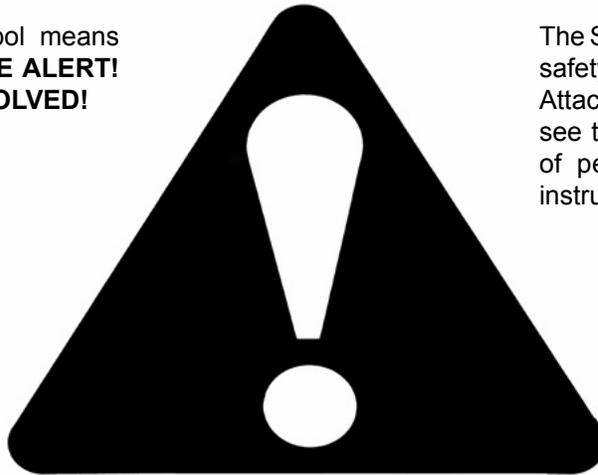
Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Wallenstein dealer or the Distributer if you need assistance, information or additional copies of the manuals.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout this manual, are determined when sitting in the operator's seat and facing toward the boom.

2 SAFETY

SAFETY ALERT SYMBOL

This Safety Alert symbol means
ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!



The Safety Alert symbol identifies important safety messages on the Bush Hog Backhoe Attachment and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.

Why is SAFETY important to you?

3 Big Reasons

Accidents Disable and Kill
Accidents Cost
Accidents Can Be Avoided

SIGNAL WORDS:

Note: The use of the signal words **DANGER**, **WARNING**, **CAUTION** and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the following guide-lines:

DANGER - Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING - Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION - Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE - Indicates a situation that could result in damage to the machine or other property.

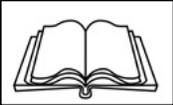
If you have any questions not answered in this manual or require additional copies or the manual is damaged, please contact your dealer or Wallenstein, 4144 Boomer Line, St. Clements, ON, N0B 2M0. Phone (519) 699-9283 or Fax (519) 699-4146.

SAFETY

YOU are responsible for the SAFE operation and maintenance of your Wallenstein Backhoe Attachment. **YOU** must ensure that you and anyone else who is going to use, maintain or work around the Backhoe be familiar with the using and maintenance procedures and related **SAFETY** information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be used while using the Backhoe.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** using this equipment is familiar with the recommended using and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

2.1 SAFETY DO'S & DON'TS'

- **DO** give operating instructions to operators or employees before allowing them to operate the machine, and REVIEW annually thereafter.
- **DO** read and understand ALL Safety and Operating instructions in the manual and follow them. Most accidents can be avoided. The most important safety device on this equipment is a SAFE operator. 
- **DO NOT** expect a person who has not read and understood all use and safety instructions to operate the machine. An untrained operator is not qualified and exposes himself and bystanders to possible serious injury or death. It is the owners responsibility to the operator to ensure familiarity and understanding of the machine.
- **DO** wear suitable ear protection for prolonged exposure to excessive noise. 
- **DO NOT** modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- **DO NOT** allow riders.
- **DO NOT** risk injury or death by ignoring good safety practices.
- **DO** review safety related items annually with all personnel who will operating or maintaining the equipment.
- **DO** have a first-aid kit available for use should the need arise and know how to use it. 

- **DO** have a fire extinguisher available for use should the need arise and know how to use it. 
 - **DO** read and understand all safety signs located on the machine before using, maintaining, adjusting or cleaning the skidding winch.
 - **DO** inspect and secure all guards before starting.
 - **DO** wear appropriate protective gear. This list includes but is not limited to:
 - A hard hat
 - Heavy gloves
 - Hearing Protection
 - Protective shoes with slip resistant soles
 - Protective glasses, goggles or face shield
 - **DO** set Safe Condition procedure before any service, maintenance work or storage preparation.
- Safe Condition** involves the following procedure:
- shut off hydraulics
 - shut off the engine
 - ensure all components have stopped moving
 - remove and pocket the ignition key
 - ensure boom and swivel pins are in place, or bucket is resting on the ground
- **DO** check hoses and booms that they are clear of debris prior to starting the machine
 - **DO** think SAFETY! Work SAFELY!

2.2 EQUIPMENT SAFETY GUIDELINES

Safety of the operator and bystanders is one of the main concerns in designing and developing equipment. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you to follow them.

1. In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be used in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.
2. Replace any safety sign or instruction sign that is not readable or is missing. Location of such safety signs is indicated in this manual.
3. Never use alcoholic beverages or drugs which can hinder alertness or coordination while using this equipment. Consult your doctor about using this machine while taking prescription medications.
4. **Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to use or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.** Review the safety instructions with all users annually.
5. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with machinery and trained in this equipment's operations. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.
6. Operate the machine only with a tractor equipped with an approved Roll-Over-Protective-Structure (ROPS) and a front loader installed. Always wear your seat belt when operating the tractor. Serious injury or even death could result from falling off the tractor - - particularly during a turnover when the operator could be pinned under the ROPS or the tractor.
7. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - **DON'T TRY IT.**
8. Do not modify the equipment in any way. Unauthorized modification may result in serious injury or death and may impair the function and life of the equipment.
9. In addition to the design and configuration of this implement, including Safety Signs and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of personnel involved in the operation, transport, maintenance, and storage of the machine. Refer also to Safety Messages and operation instruction in each of the appropriate sections of the tractor and machine manuals. Pay close attention to the Safety Signs affixed to the tractor and the machine.
10. **Safe Condition** involves the following procedure:
 - Shut off hydraulics.
 - Shut off the engine.
 - Ensure all components have stopped moving.
 - Remove and pocket the ignition key.
 - Ensure boom and swivel pins are in place, or bucket is resting on the ground.Safe Condition procedure should be performed before any service, maintenance work or storage preparation.



CAUTION

Operation Hazard

Wallenstein backhoes are designed to operate at a specific flow rate. **Operating the backhoe above the specified flow rate will cause damage to the seals and will void the warranty.**
GE605 3.5-6 gpm (13.3-22.8 lpm)
GX Series 5-7 gpm (18.9-26.5 lpm)



CAUTION

Operation Hazard

Wallenstein backhoes have been designed to rigidly attach to the frame of the tractor / skidsteer. **Operating the tractors hydraulic 3 point hitch or bucket/loader controls on a skidsteer while the backhoe is attached should be avoided and will cause damage to the tractor sub frame / skidsteer tieback.**

NOTICE

When mounting a **GE605 or GX620 backhoe** to a skid steer that has a flow rate **greater than 8 GPM (32 lpm)**, **BFC501 Flow Divider Kit** is required to prevent damage to the seals and voiding the warranty.
Do not run the skid steer in high flow mode.

2.3 SAFETY TRAINING

1. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.
3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Using instructions in the manual and to follow these. Accidents can be avoided.
4. **Working with unfamiliar equipment can lead to careless injuries. Read this manual before assembly or using, to acquaint yourself with the machine. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to using:**
 - Reads and understands the operator's manuals.
 - Is instructed in safe and proper use of the equipment.
 - Understands and knows how to perform the "Safe Condition" procedure:
 - shut off hydraulics
 - shut off the engine
 - ensure all components have stopped moving
 - remove and pocket the ignition key
 - ensure boom and swivel pins are in place, or bucket is resting on the ground
5. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will use the machinery. A person who has not read and understood all use and safety instructions is not qualified to use the machine. An untrained operator exposes himself and bystanders to possible serious injury or death. If the elderly are assisting with the work, their physical limitations need to be recognized and accommodated.

6. Know your controls and how to stop tractor and machine quickly in an emergency. Read this manual and the one provided with tractor.

2.4 HYDRAULIC SAFETY

1. Make sure that all the components in the hydraulic system are kept in good condition and are clean.
2. Before applying pressure to the system, make sure all components are tight, and that lines, hoses and couplings are not damaged.
3. Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tapes, clamps or cements. The hydraulic system operates under extremely high pressure. Such repairs will fail suddenly and create a hazardous and unsafe Condition.
4. Wear proper hand and eye protection when searching for a high pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.
5. If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
6. Relieve pressure on hydraulic system before maintaining or working on system.

2.5 STORAGE SAFETY

1. Store the unit in an area away from human activity.
2. Do not children to play on or around the stored machine.
3. Store the unit in a dry, level area. Support the frame with planks if required.

2.6 PREPARATION

1. Never use the engine and machine until you have read and completely understand this manual, the Tractor Operator's Manual and each of the Safety Messages found on the safety signs on the tractor and machine.
2. Personal protection equipment (PPE) including hard hat, safety glasses, safety shoes, and gloves are recommended during assembly, installation, operation, adjustment, maintaining, repairing, removal, cleaning, or moving the unit. Do not allow long hair, loose fitting clothing or jewelry to be around equipment.
3. **PROLONGED EXPOSURE TO LOUD NOISE MAY CAUSE PERMANENT HEARING LOSS!**
4. Power equipment with or without equipment attached can often be noisy enough to cause permanent, partial hearing loss. We recommend that you wear hearing protection on a full-time basis if the noise in the Operator's position exceeds 80db. Noise over 85db on a long-term basis can cause severe hearing loss. Noise over 90db adjacent to the Operator over a long-term basis may cause permanent, total hearing loss. **NOTE:** Hearing loss from loud noise (from tractors, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime without hope of natural recovery.
5. Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.

6. Operate the machine only with a tractor equipped with an approved Roll-Over-Protective Structure (ROPS). Always wear your seat belt when operating the tractor. Serious injury or even death could result from falling off the tractor, particularly during a turnover when the operator could be pinned under the ROPS or the tractor.
7. Do not install backhoe and required counterweights on tractor if the total tractor and equipment weight then exceeds the ROPS weight certification of the tractor.
8. Review maps of underground utilities before starting to dig. Remove all sticks, stones, roots, and wires from working area before starting. Take care not to contact overhead and underground obstructions during operation.
9. Keep boom and bucket away from overhead and underground power lines. Electrocutation can occur without direct contact with an overhead power line.
10. Operate only in daylight or good artificial light.
11. Be sure machine is properly mounted, adjusted and in good operating condition.
12. Ensure that all safety shielding and safety signs are properly installed and in good condition.

2.7 OPERATING SAFETY

1. Please remember it is important that you read and heed the safety signs on the Backhoe. Clean or replace all safety signs if they cannot be clearly read and understood. They are there for your safety, as well as the safety of others. **The safe use of this machine is strictly up to you, the operator.**
2. All things with moving parts are potentially hazardous. There is no substitute for a cautious, safe-minded operator who recognizes potential hazards and follows reasonable safety practices. The manufacturer has designed this Backhoe to be used with all its safety equipment properly attached, to minimize the chance of accidents. **Study this manual to make sure you have all safety equipment attached.**
3. If a safety shield or guard is removed for any reason, it must be replaced before the machine is again operated.
4. Attach the tractor side plate to reinforce the frame if required. Do not overload the tractor frame.
5. Ensure sub frame is firmly attached and all hardware is torqued to specifications to prevent backhoe from moving when digging.
6. Contact an underground utility locating/marketing service before digging.
7. Keep boom and bucket away from overhead and underground power lines and utilities. Electrocution can occur without direct contact with an overhead power line.
8. Remove all sticks, stones, roots, wires or debris from working area before starting.
9. Never operate controls from the ground. Operate only from the operator's seat to prevent unexpected boom movement that can lead to crushing between frame members.
10. Do not dig under machine or stabilizers. A cave-in could result and the machine could fall into the excavation.
11. Do not exceed machine lift capacity. Overloading can cause structural damage and lead to unsafe operating conditions.
12. Position Backhoe so that loads extend directly behind machine when lifting or placing heavy objects.
13. When digging or lifting, Be aware of overhead obstructions such as:
 - Power lines
 - Telephone lines
 - Tree branches
 - Roof overhang
 - Washlines, ropes or cables.
14. Do not allow riders on this machine at any time. There is no safe place for any riders.
15. Never carry, lift or move people on boom or bucket.
16. Always use two people to handle heavy, unwieldy components or accessories during assembly, installation, removal or moving.
17. Never place any part of your body where it would be in danger if movement should occur during assembly, installation, operation, maintaining, repairing, removal or moving.
18. Do not walk or work under a raised machine or attachment unless it is securely blocked or held in position. Do not depend on the tractor hydraulic system to hold the machine or attachment in place.
19. Never use alcoholic beverages or drugs which can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
20. Before you operate the machine, check over all hydraulic lines, hoses, connections and components. Replace any worn or damaged parts immediately. Tighten all leaking fittings.
21. Keep hands, feet, hair, jewelry, and clothing away from all moving and/or rotating parts.
22. Review safety and operating instructions annually.
23. A front loader is required to counter-balance backhoe and provide stability. Unbalanced machines can tip during operation.
24. Carefully lower stabilizers and front bucket to the ground to stabilize the machine before starting to dig.
25. For maximum stability the tractor wheels must be resting on the ground during operation, using the backhoe with wheels raised up could result in serious injury or death and may cause damage to the machine.



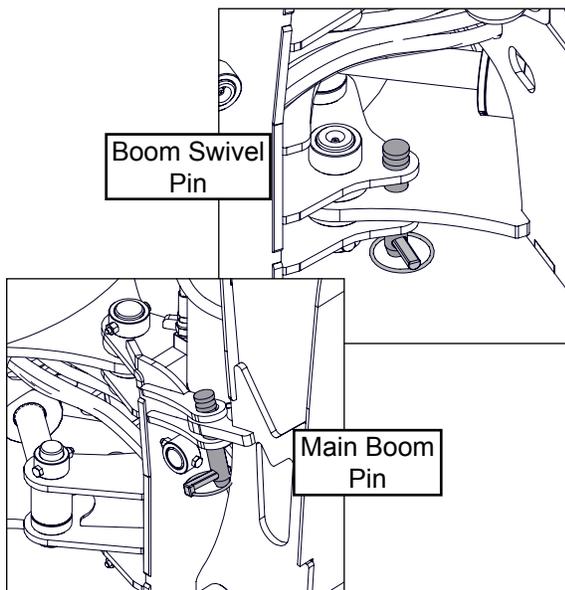
Warning

Underground Utility Hazard

Contacting underground utilities can cause electrocution. You must contact an underground utility locating/marketing service before digging.

2.8 TRANSPORT SAFETY

1. Comply with provincial / state and local laws governing safety and transporting of machinery on public roads.
2. The use of flashing amber lights is acceptable in most localities. However some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
3. At all times, when driving the tractor and equipment on the road or highway under 20 mph (32 kph) use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem. Do not exceed 20 mph (32 kph). Reduce speed on rough roads and surfaces.
4. Plan your route to avoid heavy traffic.
5. Do not drink and drive.
6. Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc. Watch for traffic when operating near or crossing roadways.
7. Turn into curves or go up or down hills only at a low speed and a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steering. Slow down on rough or uneven ground.
8. Never allow riders on either tractor or machine.
9. Ensure the backhoe is in **transport mode**: main boom and boom swivel pins and retainers installed before transporting.



2.9 MAINTENANCE SAFETY

1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
2. Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
3. Make sure there is plenty of ventilation. Never operate the tractor in a closed building. The exhaust fumes will cause asphyxiation.
4. Place the backhoe in "**Safe Condition**":
 - shut off hydraulics
 - shut off the engine
 - ensure all components have stopped moving
 - remove and pocket the ignition key
 - ensure boom and swivel pins are in place, or bucket is resting on the ground
5. Never work under equipment unless it is blocked securely.
6. Use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work.
7. Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
8. A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
9. Periodically tighten all bolts, nuts and screws and check that all fasteners are properly torqued.
10. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.



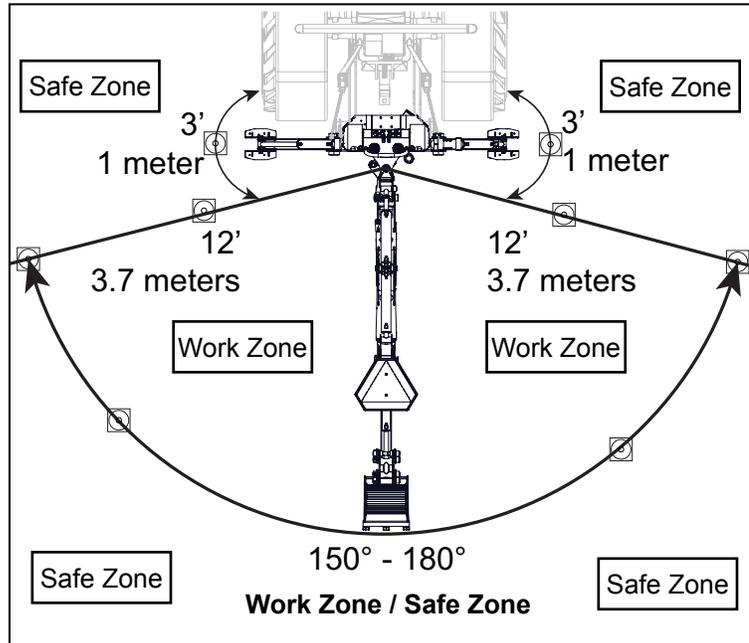
2.10 BACKHOE SAFETY

While using your backhoe be aware of bystanders in the area, set up your work zone and safety zone according to your model specifications.

2.10.1 WORK ZONE:

Follow these important points to keep operators and workers safe from potential hazards.

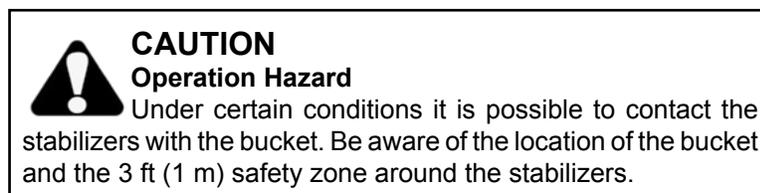
- Operator safety zone is in the operators seat. Always operate the backhoe controls from the operators seat.
- Always be aware of the position of the boom and material being handled.
- Always be aware of bystanders & workers when lowering the stabilizers, ensure they are in the safe zone.
- Always be aware of hazards when excavating, inspect your work zone to take these hazards into account:
 - underground utilities
 - tree roots
 - structures close to the excavation site
 - excavating on a slope
 - excavating too close to the stabilizers
- Always be aware of overhead hazards, modify your work zone to take these hazards into account:
 - telephone lines
 - tree branches
 - roof overhang
 - washlines, ropes or cables
 - power lines - maintain a 15m (50 ft) distance - electrocution can occur with out direct contact(arcng).



2.10.2 SAFE ZONE:

Injury may occur from heavy material falling / dropping or large material on a rotating boom creates a collision hazard if workers or bystanders are inside the working zone. Follow these important points to keep workers and bystanders safe from potential hazards:

- Operator safety zone is in the operators seat. Always operate the backhoe controls from the operators seat.
- A 3m (10') radius work zone perimeter should be established, and clearly marked with safety cones.
- A 1m (3') radius around the stabilizers should be established, and clearly marked with safety cones.
- Workers and bystanders should never approach the backhoe while in operation with out first signaling the operator.
- Always know where all workers and bystanders are located when operating the backhoe.
- All bystanders should be kept outside of the work zone until the machine is in safe mode:
 - the worker has made eye contact with the backhoe operator.
 - backhoe is in transport position, or backhoe bucket is resting on the ground.
 - shut off the engine.

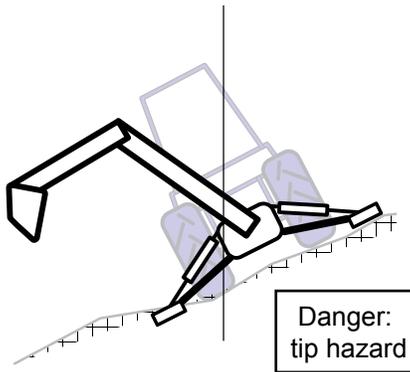


2.10.3 SAFE USE:

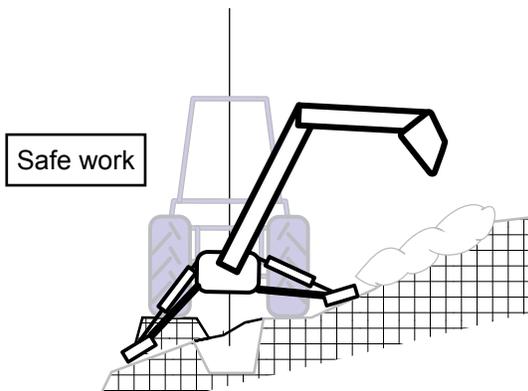
Injury may occur from improper placement of the backhoe in the work area, operator, workers or bystanders in the area could be injured. Follow these important points to keep workers and bystanders safe from potential hazards:

Use extreme caution when excavating on a slope,:

- always lower the stabilizers and bucket, if the ground is soft use pads or timbers under the stabilizers.
- do not attempt to begin excavating on a slope while the backhoe is positioned on an angle, danger of tip over is much greater since the centre of gravity moves to the down side of the backhoe.



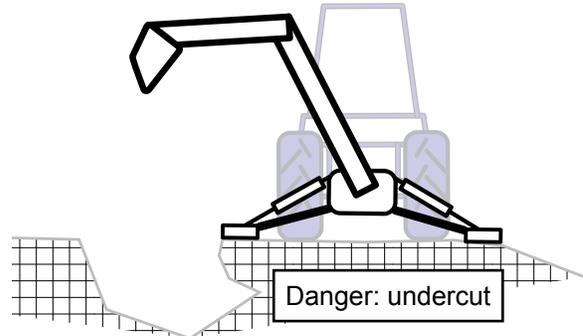
- refrain from swinging the boom to the down-side of the hill, danger of tip over is much greater since the centre of gravity moves to the further to the downside of the backhoe as swing increases.
- do level the backhoe using the stabilizers so the centre of gravity is closer to the middle of the backhoe, making the backhoe more stable during excavating (ensure all four wheels are touching the ground).



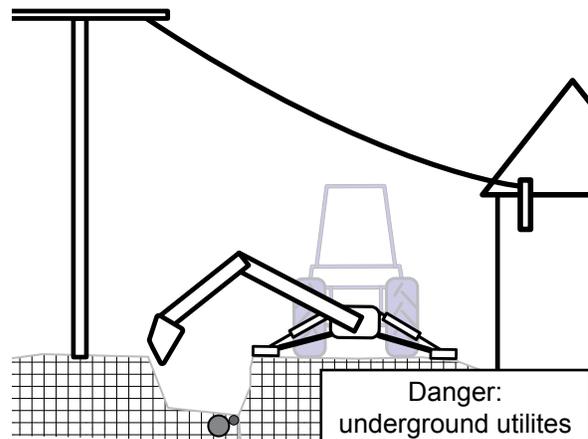
- for greatest stability, swing the boom upside the slope, but if swing downside is required, do so with extreme caution and swing only as far as necessary to dump the bucket.

When excavating be aware:

- always lower the stabilizers and bucket, if the ground is soft use pads or timbers under the stabilizers.
- do not undercut your stabilizers, this could cause the stabilizer to give way and the backhoe will tip into the excavation.

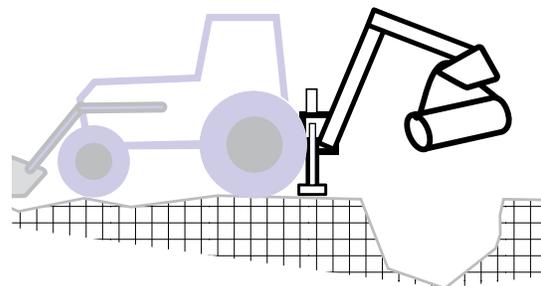


- know before hand of buried cable and utilities
- be aware of overhead hazards, utility lines tree's etc.



When using the backhoe for lifting:

- always lower the stabilizers when lifting.
- do not lift objects that are beyond the lifting limits of the backhoe.
- when moving a load, travel slowly and be aware of objects and people along the travel path, use a tag line to keep the load from swinging.



3 SAFETY SIGNS

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs in Section 3 each have a part number displayed with it. Use this part number when ordering replacement parts.
5. Safety signs are available from your authorized Distributor or Dealer Parts Department or the factory.

3.1 HOW TO INSTALL SAFETY SIGNS:

- Be sure that the installation area is clean and dry.
- Be sure temperature is above 50°F (10°C).
- Determine exact position before you remove the backing paper.
- Remove the smallest portion of the split backing paper.
- Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
- Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
- Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

3.2 SAFETY SIGN EXPLANATIONS:



Caution: read and understand ALL safety and operating instructions in the manual, read and understand ALL safety labels located on the machine. The most important safety device on this equipment is an informed SAFE operator.



Caution: Hydraulic fluid under pressure, do not check for leaks with you hand or fingers when the system is pressurized. Serious injury will result. Concealed hydraulic connection: use caution when removing panels or guards.



Caution: be aware of collision hazard of an unsecured boom. Install main boom and boom swivel lock pin to prevent injury from potential movement of the boom during transport.



Caution: be aware of buried utilities (cable, pipes, electrical conduit) damage to the backhoe or injury could result



Caution: be aware of collision / pinch hazards from moving parts: boom, grapple, and stabilizers.



Caution: before performing any service or repairs, ensure backhoe is in transport mode and boom pins are in place, or bucket is resting on the ground



Caution: Be aware of and keep 15 meters (50ft) or more away from overhead electrical cables. Serious injury or death from electrocution could occur. Electrocution is possible with out direct contact (arcing).

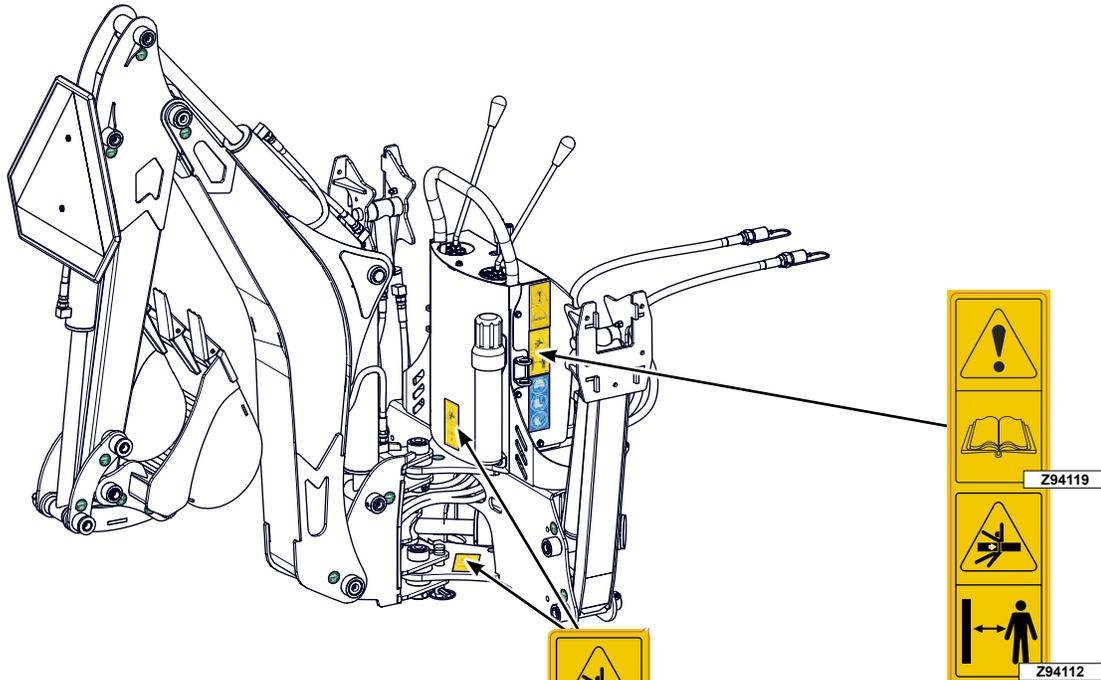


Caution: Personal Protection Equipment (PPE) is required when operating this machine. Failure to wear PPE will result in personal injury

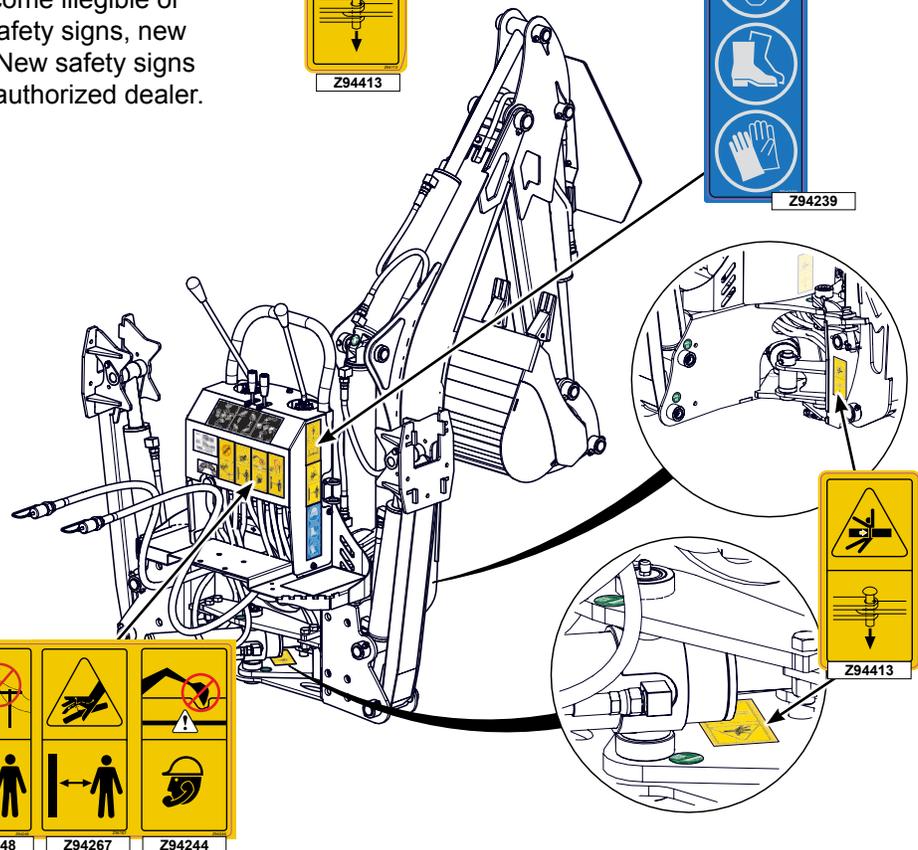
3.3 SAFETY SIGN LOCATION

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

- Think SAFETY! Work SAFELY!



REMEMBER - If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.



4 OPERATION



OPERATING SAFETY

1. Please remember it is important that you read and heed the safety signs on the Backhoe.
2. Ensure sub frame is firmly attached and all hardware is torqued to specifications to prevent Backhoe from moving when digging.
3. Attach the tractor side plate to reinforce the frame if required. Do not overload the tractor frame.
4. Review maps of underground utilities before starting to dig. Remove all sticks, stones, roots, and wires from working area before starting. Take care not to contact overhead and underground obstructions during operation.
5. Never operate controls from the ground. Operate only from the operator's seat to prevent unexpected boom movement that can lead to crushing between frame members.
6. Do not dig under machine or stabilizers. A cave-in could result and the machine could fall into the excavation.
7. Lower stabilizers to the ground to support machine before starting to dig.
8. Do not exceed machine lift capacity. Overloading can cause structural damage and lead to unsafe operating conditions.
9. Position Backhoe so that loads extend directly behind machine when lifting or placing heavy objects.
10. Never carry, lift or move people on boom or bucket.
11. Never place any part of your body where it would be in danger if movement should occur during assembly, installation, operation, maintaining, repairing, removal or moving.
12. Do not walk or work under a raised machine or attachment unless it is securely blocked or held in position. Do not depend on the tractor hydraulic system to hold the machine or attachment in place.
13. Do not allow riders on this machine at any time. There is no safe place for any riders.
14. Before you operate the machine, check over all hydraulic lines, hoses, connections and components. Replace any worn or damaged parts immediately. Tighten all leaking fittings.
15. Do not allow anyone who is not familiar with the safety rules and operation instructions to use this machine. Review safety instructions annually.

NOTICE

Wallenstein backhoes are designed to operate at a specific flow rate. **Operating the backhoe above the specified flow rate will cause damage to the seals and will void the warranty.**

GE605 3.5-6 gpm (13.3-22.8 lpm)

GX Series 5-7 gpm (18.9-26.5 lpm)

NOTICE

When mounting a **GE605 or GX620 backhoe** to a skid steer that has a flow rate **greater than 8 GPM (32 lpm)**, **BFC501 Flow Divider Kit** is required to prevent damage to the seals and voiding the warranty.

4.1 TO THE NEW OPERATOR OR OWNER

The Wallenstein Rancho Backhoes are a light duty machine that attaches to the subframe of a sub compact, compact or utility tractor or a mini skidsteer or skidsteer and can be used for all light duty digging, trenching and excavating. Be familiar with the machine before starting.

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working

environment is provided for the operator, bystanders and the area around the work site. Untrained operators are not qualified to use the machine.

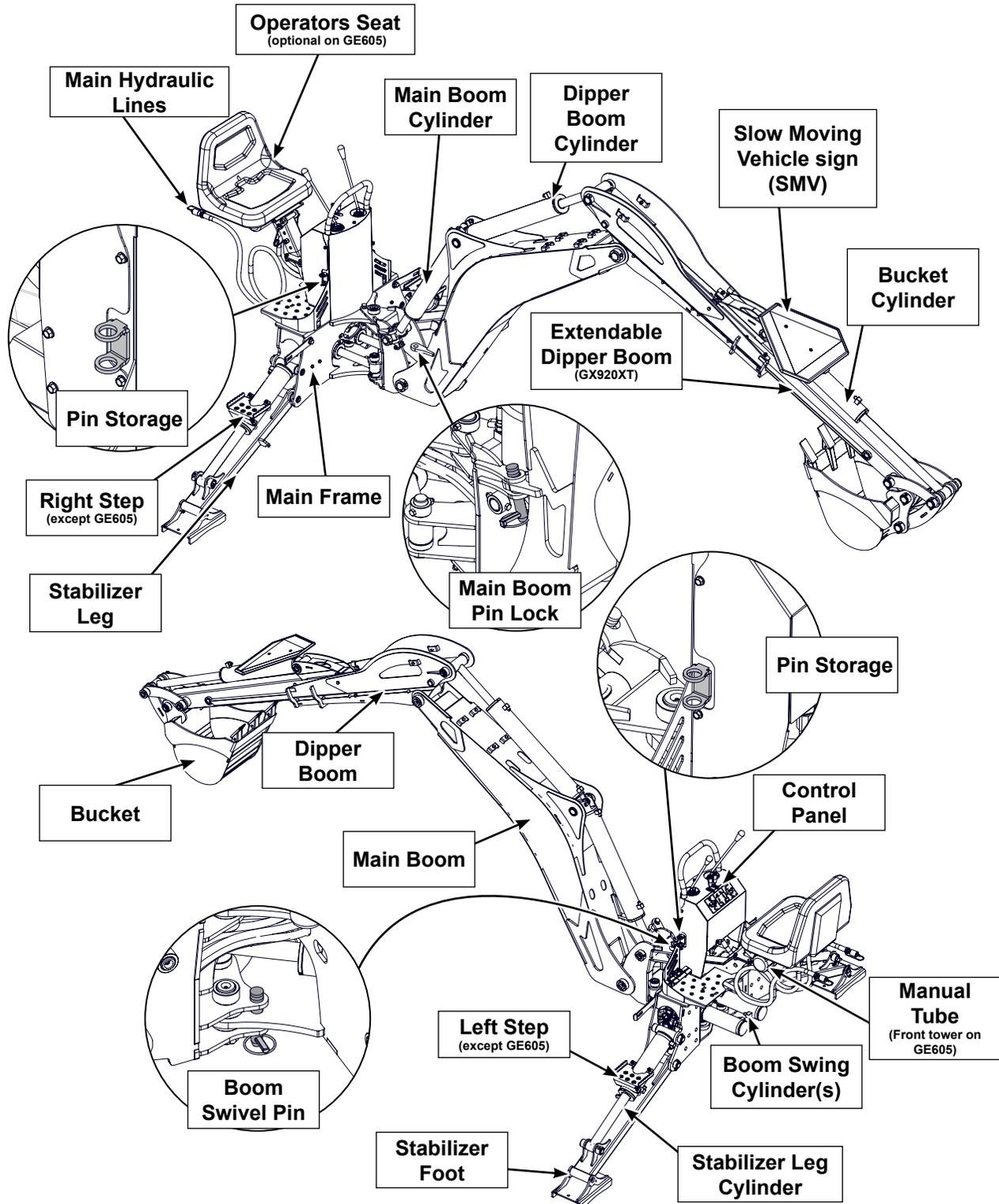
Many features incorporated into this machine are the result of suggestions made by customers like you. Read this manual carefully to learn how to use the Backhoe safely and how to set it to provide maximum field efficiency. By following the using instructions in conjunction with a good maintenance program, your Backhoe will provide many years of trouble-free service.

4.2 MACHINE COMPONENTS

Wallenstein Backhoe attachments are designed to work with sub compact tractors and mini skidsteers. Featuring heavy duty components for maximum performance with light duty backhoe jobs.

Options available include hydraulic pump and oil reservoir, streetpads, operators seat (GE605), & bucket thumb.(see accessories page)

Power to drive the backhoe is provided through the hydraulic lines, which connected to the tractors rear hydraulic ports. Optimum flow is 5 GPM (GPM range: 3.5 - 6) for GE & 5-7 gpm (18.9-26.5 lpm) for GX series



4.3 MACHINE BREAK-IN

Although there are no operational restrictions on the Backhoe when used for the first time, it is recommended that the following mechanical items be checked:

- A. After operating for 1/2 hour:**
1. Check all nuts, bolts and other fasteners. Tighten to their specified torque.
 2. Check the condition of all hydraulic lines, hoses and fittings. Replace any that are damaged or leaking. Re-route those that are rubbing, pinched or crimped. Tighten any fitting that is leaking.
 3. Check the condition of the teeth on the bucket. Replace any that are bent, chipped, broken or missing.
 4. Check the oil level in the hydraulic reservoir if so equipped. Add as required.
 5. Check the boom, dipper and bucket pivot pins. Be sure all are anchored securely in position.
 6. Check the stabilizer pins are in place and have held position.
 7. Lubricate all grease points if required.
- B. After operating for 5 and 10 hours:**
1. Repeat steps 1 through 7 of Section A.
 2. Go to the normal servicing and maintenance schedule as defined in the Maintenance Section.

4.4 TRAINING:

Each operator must be trained in the proper operating procedures prior to being allowed to operate the machine.

- Review control location, function and movement directions.
- Move the unit to a large open area to allow the operator to become familiar with control function and machine response.
- When a new operator is familiar and comfortable with the machine, they can proceed with the work. Do not allow untrained operators to use the machine. They can endanger themselves and others or damage property and the machine.

4.5 PRE-OPERATION CHECKLIST

Efficient and safe operation of the Backhoe requires that each operator reads and understands the operating procedures and all related safety precautions outlined in this section. A pre-operation checklist is provided for the operator. It is important for both the personal safety and maintaining good mechanical condition that this checklist is followed.

Before operating the machine and each time thereafter, the following areas should be checked off:

Pre-Operation Checklist		✓
Backhoe		
Check that the machine is properly attached to the tractor. Be sure retainers are used on the mounting pins and mounting hardware is tightened to their specified torque.		
Check all parts for entangled material. Remove entangled material.		
Lubricate the machine per the schedule outline in the Maintenance Section.		
Check that all boom & dipper pivot points move freely.		
Check that the bucket pivot move freely.		
Check that stabilizers move freely.		
Check that hydraulic hoses are not rubbing, pinched or crimped. Re-route as required.		
Check for leaks in the hydraulic system. Tighten leaking fittings, check cylinders. Repair or replace any damaged components.		
Make sure that all guards and shields are in place, secured and functioning as designed		
Check all fasteners and hardware, retorque if required.		

4.6 EQUIPMENT MATCHING

To insure the safe and reliable operation of the Backhoe, it is necessary to match the backhoe with the machine (tractor or skidsteer). Consult your owners manual for machine specifications and use the following list as a guide to ensure your machine matches the backhoes requirements.

- 1. Horsepower:** Horsepower of the equipment establishes the size of the backhoe, and weight of the machine for optimum stability during operation. Stay within the backhoe HP power specification range:

GE605: **18 - 28 hp**
GX620: **18 - 30 hp**
GX720: **30 - 60 hp**
GX920: **45 - 100 hp**
GX920XT: **45 - 100 hp**
- 2. Hydraulic Flow:** Wallenstein backhoes are designed to operate at a specific flow rate. Operating the backhoe above the specified flow rate will cause damage to the seals and will void the warranty.
GE605 3.5-6 gpm (13.3-22.8 lpm)
GX Series 5-7 gpm (18.9-26.5 lpm)
Connection to the spare hydraulic ports
- 3. Tractor Weight:** By following the recommendations for the tractor HP, the tractor will have sufficient weight to provide stability for the unit when transporting. It is also recommended that each tractor be equipped with a front end loader. This will provide the required weight on the front for transport stability and to counter-balance the dynamic loads during operation.
- 4. Belly or Four Point Mount:** Rancho backhoes are designed to be attached to a tractor model specific subframe and is made up of these components:
 - 4 point mount: left and right braces that extends along the bottom of the tractor and 4 point link mount
 - Belly mount, that extends along the bottom of the tractor to the backhoe
- 5. Skid Steer Tieback:** An adaptor plate called a tieback is used to mount the Wallenstein backhoe to a skid steer.
 - The tieback mounts to the backhoe, allowing the back hoe to be attached to the skidsteer.
- 6. Three Point Hitch:** in certain cases Rancho Backhoe's may be mounted on a 3 point hitch with one of the three point hitch kits:
 - PT300 3 Point hitch CAT I: for older low HP tractors equipped with CAT I 3PH for which there is no sub frame available, for lite duty only.
 - PT322 3 Point hitch CAT II: for tractors above 100hp that do not require a sub-frame.

The GE605 Backhoe is not designed or equipped to be used with a 3 point hitch.
- 7. PTO Shaft (for Optional Power Pack):** The tractor must have a 1 3/8 inch 6 spline 540 RPM PTO shaft to fit the pump drive coupler available with the kit. Do not use shaft adapters or operate at any other speed.

It is not recommended that tractors with variable speed PTOs be used on the Backhoe. Operating at speeds faster than 540 RPM will overspeed the pump and lead to early failures.

Complete instructions on installation are included with the power pack kit.

NOTICE

When mounting a **GE605 or GX620 backhoe** to a skid steer that has a flow rate **greater than 8 GPM (32 lpm)**, **BFC501 Flow Divider Kit** is required to prevent damage to the seals and voiding the warranty.

4.7 PREPARATION AND ASSEMBLY

The Rancho is shipped from the factory in a basic, universal configuration that allows it to be mounted to any model tractor / mini skidsteer with the appropriate mounting kit. This section will cover the mounting basics. **Complete mounting instructions for your model tractor / mini skidsteer are covered in the mounting kit instructions that came with your backhoe mount kit. Have the instructions on hand when mounting your backhoe.**

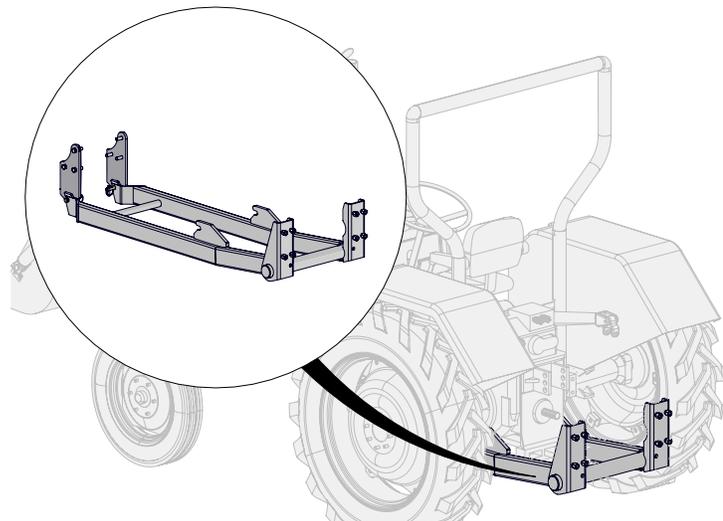
4.7.1 FOUR POINT OR BELLY MOUNT SUBFRAME KIT

On tractors, dynamic loading during operation can introduce high structural loads into the tractor frame and require a reinforcing sub frame.

A Wallenstein sub frame is designed specifically for your tractor model. The sub frame, which you have received as part of the backhoe, must first be installed before you can install the backhoe to your tractor.

If you intend on using this backhoe on a different model tractor, contact your dealer or the factory for details on the subframe kit for your specific tractor.

Your model specific subframe comes with installation instructions that illustrate how to assemble the sub frame to your tractor and how to assemble the backhoe to the sub frame. Find and follow the instructions when you install your sub frame.



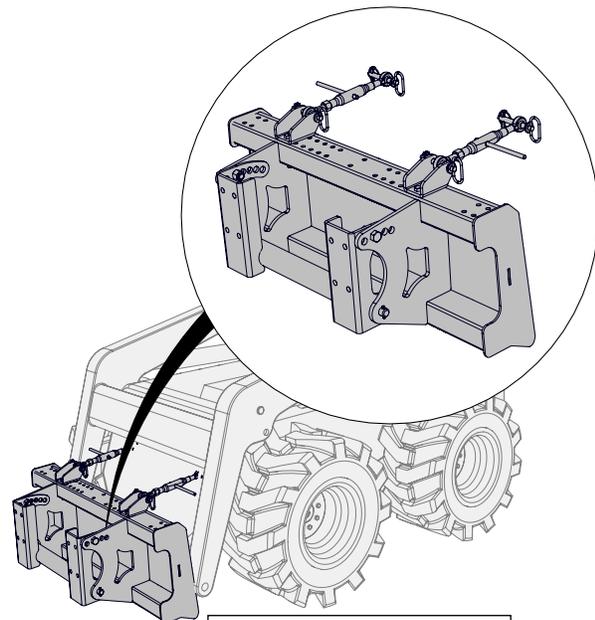
for illustration purposes only, your mount may appear differently

4.7.2 TIEBACK KIT

On Mini Skidsteers, a model specific Wallenstein Tieback kit is part of your backhoe purchase.

Your model specific tieback kit comes with installation instructions that illustrate how to assemble the tieback to your mini skidsteer and how to assemble the backhoe to the mini skidsteer. Find and follow the instructions when you install your tieback kit.

If you intend on using this backhoe on a different model mini skidsteer, contact your dealer or the factory for details on the tieback kit for your specific mini skidsteer.

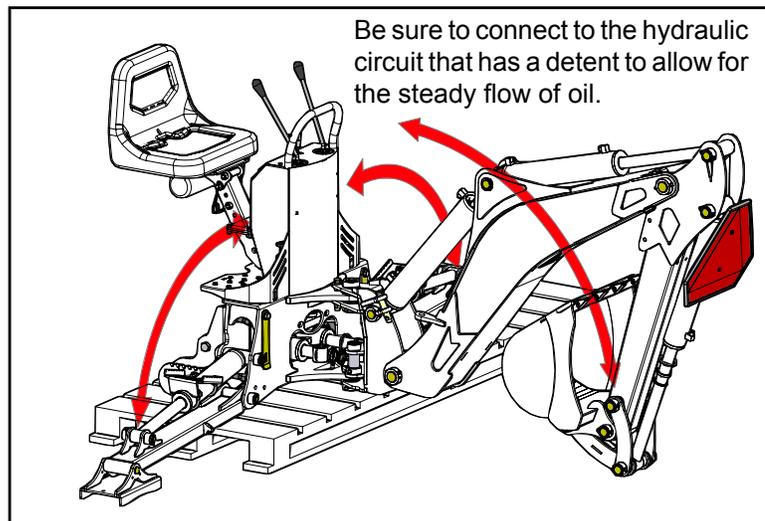


for illustration purposes only, your mount may appear differently

4.7.3 BACKHOE MOUNTING

The Backhoe should always be located on a level, dry area that is free of debris and other foreign objects. When attaching the Backhoe to the machine, follow this procedure:

1. Make sure that all bystanders, especially small children are clear of the work area.
2. For ease of attachment, have the backhoe on its shipping skid.
3. Make sure there is enough room and clearance to safely back up to the Backhoe.
4. Stop close enough to the backhoe so the hydraulic lines can reach the couplers on the tractor.
5. Attach the hydraulic system:
 - Use a clean rag or paper towel to clean any dirt from around the coupler on the hose end and on the tractor.
 - Be sure to connect to the circuit that has a detent to allow for the steady flow of oil.
 - Connect the hoses to the tractor couplers.
 - Return line has a black nipple cover,
 - Pressure line has a red nipple cover.
 - **Note:** the backhoe is equipped with a directional valve and will not allow reverse flow if lines are mis-connected.
 - Be sure the couplers are securely seated.
6. Carefully use the dipper arm/stabilizer legs to tilt the bracket / backhoe on an angle, so that the bottom attach points line up with the attach points on the tractor / skidsteer.
7. Follow the model specific instructions that came with the backhoe mounting kit to complete the hookup.



WARNING

Collision Hazard

During setup, when operating the boom and stabilizers, ensure the area is clear of bystanders and operator is safely positioned: see **work zone / safe zone**. Run the engine at low RPM and proceed cautiously.



WARNING

High Pressure Fluid Hazard

To prevent serious injury or death from high pressure fluid:

- receive pressure on the system before repairing or adjusting.
- wear proper hand and eye protection when searching for leaks
- keep all components in good repair



CAUTION

Operation Hazard

Wallenstein backhoes have been designed to rigidly attach to the frame of the tractor / skidsteer. **Operating the tractors hydraulic 3 point hitch or bucket/loader controls on a skidsteer while the backhoe is attached should be avoided and will cause damage to the tractor sub frame / skidsteer tieback.**

4.8 CONTROLS

All main controls on the Backhoe are mounted on top of the main frame within easy reach of the operator sitting in the seat. It is recommended that all operators review this section of the manual to familiarize themselves with the location and function of all machine controls before starting.

Hydraulic Controls:

Main backhoe hydraulic control controls are mounted on top of the main frame. The two middle levers control the position of the stabilizers, the outer joy sticks control the function of the boom, dipper and bucket and the dial controls the flow for boom swing.

4.8.1 MAIN BOOM CONTROL:

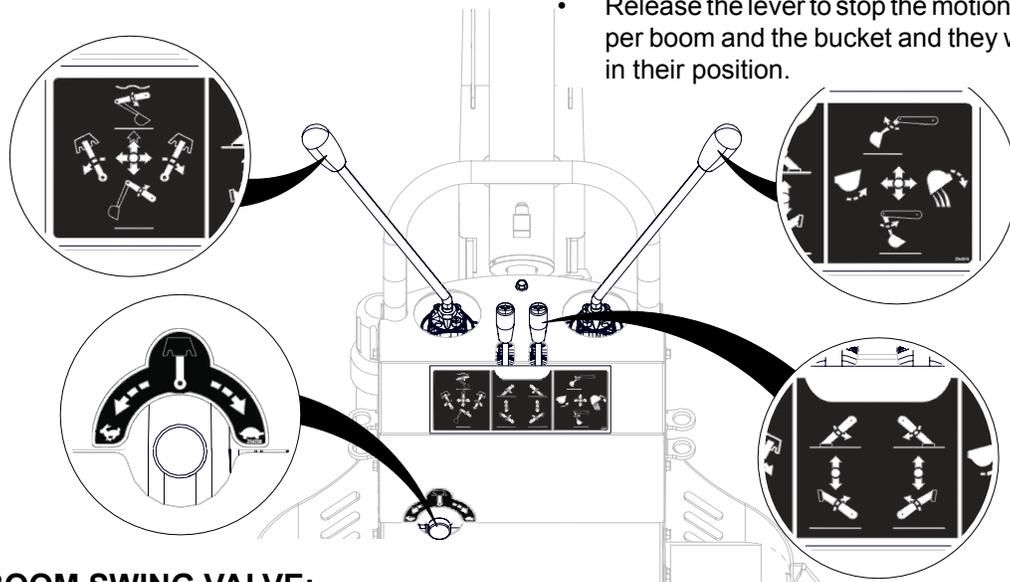
This 4 position spring-loaded-to-neutral-center lever (joy stick) controls the angular position of the boom.

- Move and hold the lever to the left to swing the boom to the left.
- Move and hold the lever to the right to swing the boom to the right.
- Push and hold the lever to extend the boom.
- Pull and hold the lever to pull the boom toward the main frame.
- Release the lever to stop the motion of the boom and it will stay in position.

4.8.2 DIPPER BOOM AND BUCKET CONTROL:

This 4 position spring-loaded-to-neutral-center lever (joy stick) controls the position of the dipper, boom and bucket.

- Move and hold the lever to the left to close the bucket.
- Move and hold the lever to the right to open the bucket. Push and hold the lever to extend or raise the dipper boom.
- Pull and hold the lever to retract or lower the dipper boom.
- Release the lever to stop the motion of the dipper boom and the bucket and they will remain in their position.



4.8.3 BOOM SWING VALVE:

Boom swing speed. This dial sets the flow control valve that controls the amount of oil to the boom swing circuit.

- Turn the dial clockwise to reduce the amount of oil flow and slow the speed of the boom swing.
- Turn the dial counterclockwise to increase the speed of the boom swing.

4.8.4 STABILIZER CONTROLS:

Left Stabilizer Position / Right Stabilizer Position. This 2 position spring-loaded-to-neutral-center lever controls the flow of oil to the left stabilizer cylinder. In its centred position, the stabilizer does not move.

- Push and hold to lower the left stabilizer to the desired position. Release the lever to stop the stabilizer movement.
- Pull and hold the lever to raise the left stabilizer. Release the lever when the stabilizer is in its desired position.

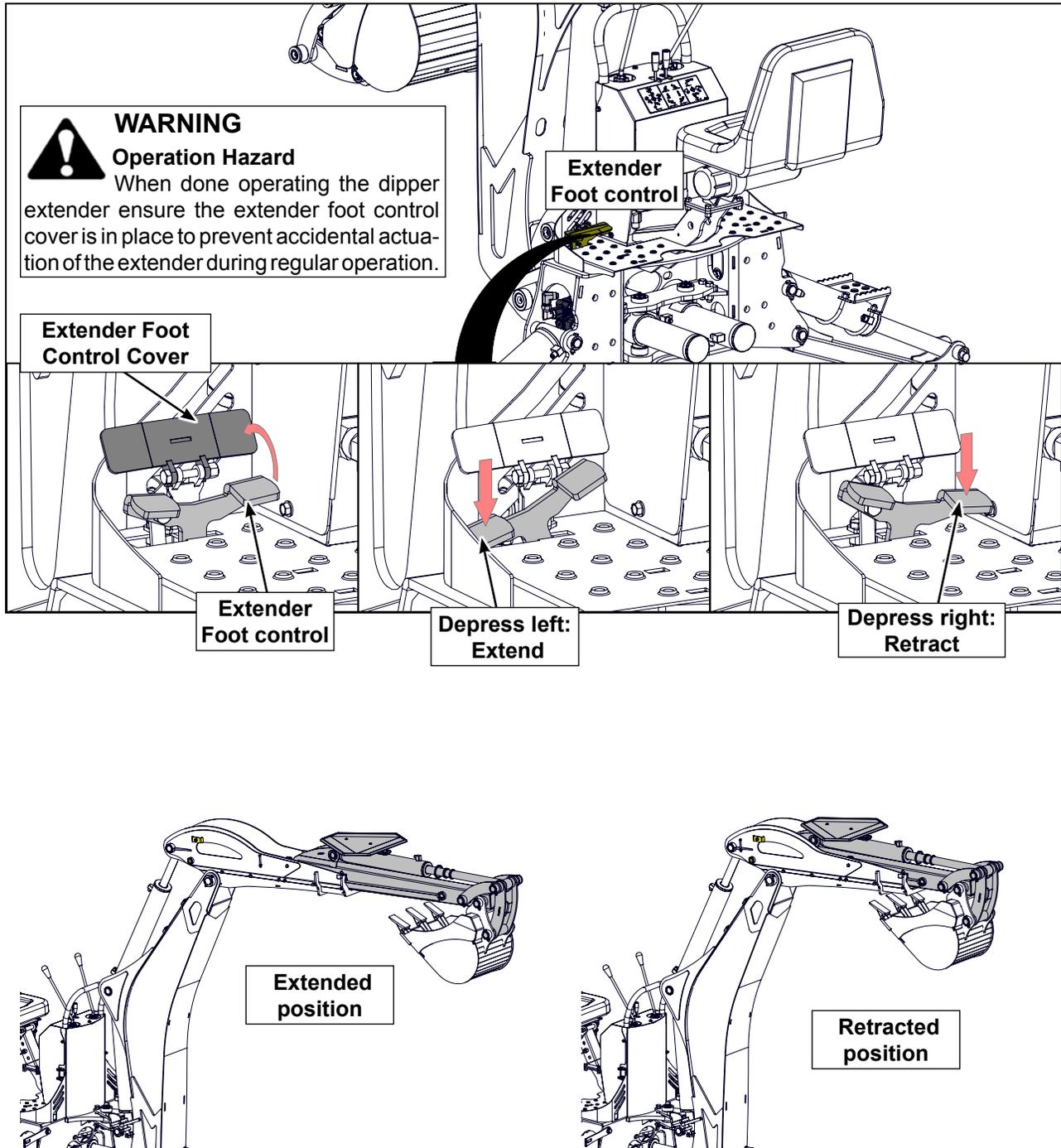
4.8.5 GX920XT EXTENDIBLE DIPPER CONTROL:

GX920XT extendible dipper stick gives you the extra reach, and is capable of hydraulically extending an extra 24" to dig 11' 4" deep. When contracted, the bucket and dipper stick curl up tight to the boom for easy travel and compact storage.

This 2 position spring-loaded-to-neutral-center foot pedal lever controls the flow of oil to the extender cylinder. In its centred position, the extender is stationary.

- Flip up the pedal cover to use the extender pedal
- Push down with your foot on the left and hold to extend the boom to the desired position. Lift your foot to stop the extender movement.
- Push down with your foot on the right and hold to retract the boom to the desired position. Lift your foot to stop the extender movement.

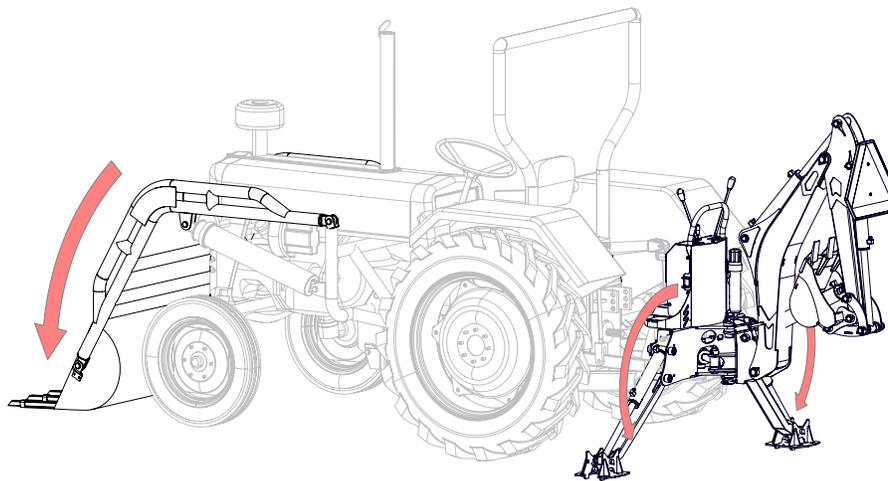
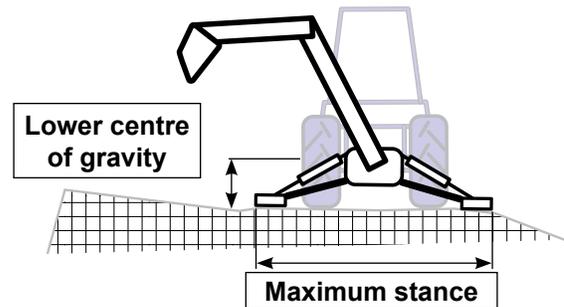
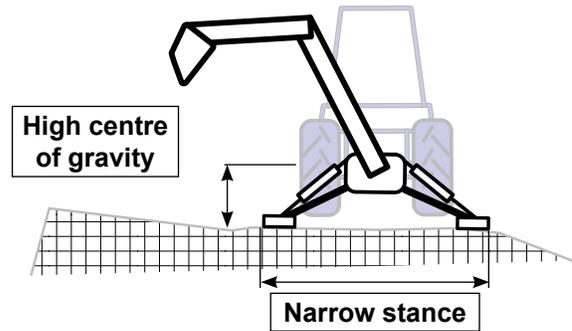
When done operating the extender control, replace the extender foot control cover



4.9 MACHINE SETUP

Follow this procedure to prepare and set-up the machine at the work site: the backhoe is attached to the tractor / miniskidsteer, and hydraulics are connected.

1. Position the backhoe at the work site.
2. Set the tractor / mini skidsteer brake.
3. Stabilize the tractor:
 - Lower the front bucket, and set the stabilizers to remove only some of the weight from the wheels.
 - The wheels must remain in contact with the ground as this provides the widest stabilizer stance and the lowest centre of gravity.
 - Raising the wheels off the ground will reduce stability and digging depth, and will cause unnecessary stress on the stabilizers and backhoe.
4. With the feed table in position, engage the spring loaded table lock pin to secure the table.
5. Turn the discharge chute to the desired position and adjust the deflector as required.



WARNING **Stability Hazard**

For maximum stability the tractor wheels must be resting on the ground during operation, using the backhoe with wheels raised up is dangerous and could result in damage to the machine.

5 FIELD OPERATION



OPERATING SAFETY

- Please remember it is important that you read and heed the safety signs on the Backhoe.
- Check all mounting bolts. Do not overload the tractor frame.
- Review maps or locate underground utilities before starting to dig. Remove all sticks, stones, roots, and wires from working area before starting.
- Take care not to contact overhead and underground obstructions during operation.
- Never operate controls from the ground. Operate only from the operator's seat to prevent unexpected boom movement that can lead to crushing between frame members.
- Do not dig under machine or stabilizers. A cave-in could result and the machine could fall into the excavation.
- Lower front bucket and stabilizers to the ground to stabilize the machine before starting to dig.
- Do not exceed machine lift capacity. Overloading can cause structural damage and lead to unsafe operating conditions.
- Position Backhoe so that loads extend directly behind machine when lifting or placing heavy objects.
- Never carry, lift or move people on boom or bucket.
- Never place any part of your body where it would be in danger if movement should occur during assembly, installation, operation, maintaining, repairing, removal or moving.
- Do not walk or work under a raised machine or attachment unless it is securely blocked or held in position. Do not depend on the tractor hydraulic system to hold the machine or attachment in place.
- Do not allow riders on this machine at any time. There is no safe place for any riders.
- Before you operate the machine, check over all hydraulic lines, hoses, connections and components.
- Replace any worn or damaged parts immediately. Tighten all leaking fittings.
- Do not allow anyone who is not familiar with the safety rules and operation instructions to use this machine. Review safety instructions annually.

The operator has the responsibility of being familiar with all operating and safety procedures and following them.

Although the Ranch series backhoes are easy to use, each operator should review this section to familiarize himself with the detailed safety and operating procedures. When preparing this machine for use, follow this procedure:

5.1 PREPARE

- Clear the area of bystanders, especially small children.
- Each operator must be trained and familiar with the set up and operation of the backhoe and its components.
- Review the machine components (see Section 4.2)
- Review and follow the Pre-Operation Checklist (see Section 4.5).
- Review operation and function of the controls (see section 4.8)
- Survey the work site, remove debris and make note of nearby or overhead obstructions.
- Each person must wear appropriate **Personal Protective Equipment (PPE)** whenever operating the Winch or working in the vicinity. This equipment is designed to prevent injury to any personnel in the area. This list includes but is not limited to:
 - Safety shoes with slip resistant soles.
 - Safety goggles or face shield.
 - Hearing protection.
 - Heavy or leather gloves

5.1.1 TRACTOR / MINI SKIDSTEER

- a. Ensure all the backhoe access covers are secured
- b. Inspect hydraulic connectors for positive connection.
- c. Start tractor / mini skidsteer and run the engine for a few minutes to allow it to warm.
- d. Ensure machine is stable, with no unusual vibration and proceed with work.

5.1.2 STOPPING:

when pausing or work is done:

- a. Rest the bucket on the ground **or** if the machine will be moved to a new location set the boom and bucket to **transport mode** and insert lock pins and their retainers.
- b. Slow the engine to idle.
- c. Turn the hydraulic circuit to OFF or disengage the PTO clutch.
- d. Stop engine, remove ignition key and place in your pocket and wait for all moving parts to stop.

5.1.3 EMERGENCY STOPPING:

If an emergency occurs:

- **Carefully rest bucket on the ground.**
- **Release all hydraulic controls, return to neutral.**
- **Shut off the engine**
- **Correct emergency situation before restarting engine and resuming work.**

Ensure all operators understand how to put the machine in **Safe Condition** before working with this machine,

- shut off hydraulics
- shut off the engine
- ensure all components have stopped moving
- remove and pocket the ignition key
- ensure boom and swivel pins are in place, or bucket is resting on the ground.



CAUTION

Operation Hazard

Wallenstein backhoes have been designed to rigidly attach to the frame of the tractor / skidsteer. **Operating the tractors hydraulic 3 point hitch or bucket/loader controls on a skidsteer while the backhoe is attached should be avoided and will cause damage to the tractor sub frame / skidsteer tieback.**



WARNING

Stability Hazard

For maximum stability the tractor wheels must be resting on the ground during operation, using the backhoe with wheels raised up is dangerous and could result in damage to the machine.

5.1.4 JOB SITE

It is the responsibility of the operator to be thoroughly familiar with the work site prior to starting. Prevent the chance or possibility of problems or accidents by not being in the situation to start with. Some items the operators should check include but are not limited to:

- **Planning:** Before any excavating is started, it is always a good idea to plan out the job first. There should be a complete understanding of the tasks expected to perform. Plan what will be done with the spoil (excavated soil). Layout the excavation site and determine the soil conditions.
- **Underground:** wires, cables, pipes or other obstructions if digging. Contact your local utility to identify exactly the location of the lines, pipes, etc. Turn off, disconnect, etc. as required to prevent a problem if contact is made.
- **Overhead:** power lines, obstructions or overhangs. Power lines can lead to electrocution if the machine gets too close without contacting the line. Overhead obstructions can cause a loss of control or tipping from the contact. Overhangs can collapse or give way covering the machine or causing it to move as the footing gives way.
- **Lifting Objects:** in addition to the overhead considerations mentioned, be aware of people and objects when lifting, do not lift objects that are beyond the lifting limits of the backhoe. When moving a load, travel slowly and be aware of objects and people along the travel path, use a tag line to keep the load from swinging. Refrain from swinging the boom when transporting a load, a uncontrolled swinging load could cause serious injury or death.
- **Close or cramped work site:** be sure there is sufficient space and clearance for the machine to dig, swing and dump while working. If the working area is cramped, modify the work site to provide more area. Unplanned contact with adjacent buildings, equipment or terrain can cause the operator to lose control of the machine leading to injury or damage to buildings or equipment
- **Work Site Lay-Out:** organize the work site to minimize the distance the bucket has to travel between digging and dumping. The shorter the travel distance the faster the dig / dump cycle will be and the more that can be done.
- **Prevailing Winds:** set-up the work site so the prevailing winds will blow dust, dirt, debris, etc. away from the operator safe zone. As a result, the work zone will be made safer because vision will not be obscured while digging and dumping.
- **Smooth the Surfaces:** a rough surface will require slow speeds of support equipment while working. Smoothing the surface prior to starting to work will shorten the work cycle and result in safer productivity.
- **Working Inside a Building:** some jobs require that the backhoe be operated inside a building. The machine can be operated inside a building providing that the engine exhaust is piped outside and/or there is adequate ventilation. Gas and diesel engines produce carbon monoxide that can asphyxiate operators and bystanders if not supplied with fresh air. Do not take chances with carbon monoxide poisoning.
- **Bystanders:** do not place the backhoe where there will be any bystanders, on-lookers or unauthorized personnel. Stop the machine whenever unauthorized personnel enter the working area. Unauthorized personnel can get in the way or get pinched / caught by components. Do not resume work until the unauthorized people have left.
- **Slopes:** have special placement requirements when locating the machine. The machine is designed to carry the operating loads when the frame is vertical. Normally this can be set by the stabilizer extension length. Large blocks or planks can be placed under the low stabilizer to assist in setting the frame angle. Swing the boom up the slope when dumping the bucket to minimize the chance of tipping. Always keep the bucket close to the ground when swinging the boom to reduce tipping loads. **The wheels must remain in contact with the ground as this provides the widest stabilizer stance and the lowest centre of gravity.**

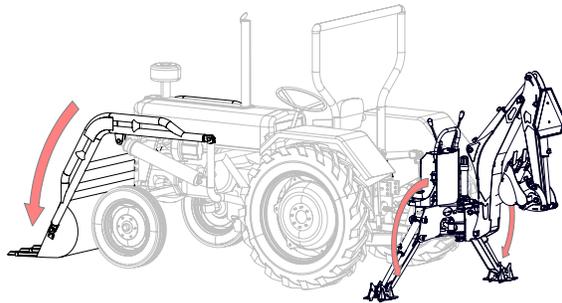
5.2 BEGIN WORK PROCEDURE

5.2.1 DIGGING SITE

The backhoe should be set up and ready to run tractor / skidsteer is running and all preparation procedures reviewed and done. Tractor / skidsteer manual should also be reviewed before starting.

Follow this procedure to start digging:

- Move the tractor / skidsteer to its appropriate location
- Set the park brake.
- Increase engine speed to mid-range or rated PTO RPM.
- Place hydraulic circuit in detent or if you have the optional PTO pump, engage PTO (refer to tractor manual)
- Lower the front loader to the ground, and lower the stabilizers, as described in machine setup.
- Remove the boom swing and boom lock pins and stow in the pin holders
- Swing the drivers seat around or take position in the operator's seat.
- Use the controls to begin digging.



WARNING

Stability Hazard

For maximum stability the tractor wheels must be resting on the ground during operation, using the backhoe with wheels raised up is dangerous and could result in damage to the machine.

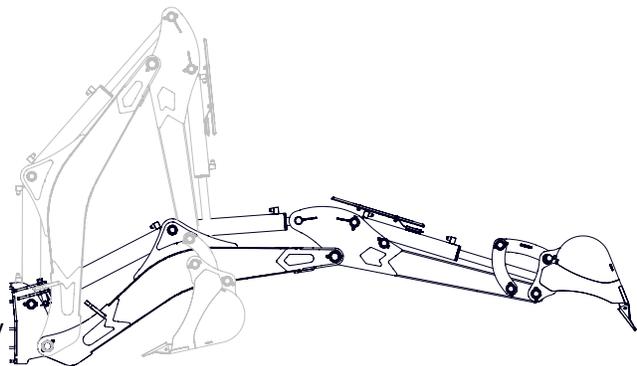
5.2.2 DIGGING ACTION

When starting to dig, make the first cut of each section shallow, being careful to follow the exact layout of the dig site. These first cuts will act as guides for the remaining cuts, so getting the first few cuts as accurate as possible will help in keeping all future cuts in line.

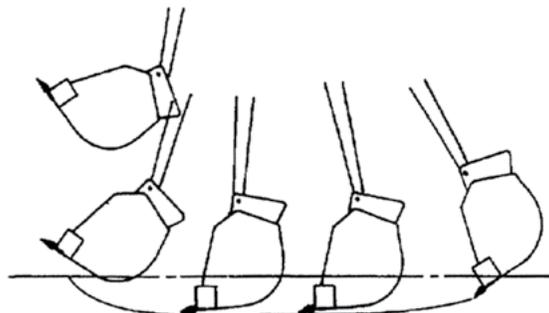
There are two different methods of digging, using the dipper or using the bucket

Digging With Dipper:

1. Set the bucket at the appropriate angle as shown by profile.
2. Set the dipper so the bucket teeth hit the ground approximately 2 feet (0.6 m) ahead of pivot.
3. Retract the dipper to pull the bucket through the soil until it is full.
4. Raise the boom and dump the bucket.
5. Repeat this procedure to continue digging by extending the bucket 3 to 6 inches (75 - 150 mm) further each time.



NOTE: Be sure the dipper and bucket angles are set so that the heel of the bucket does not hit the bottom of the hole.

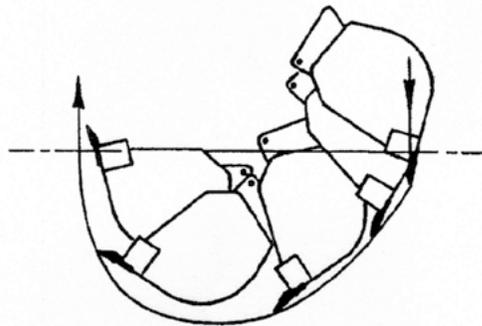
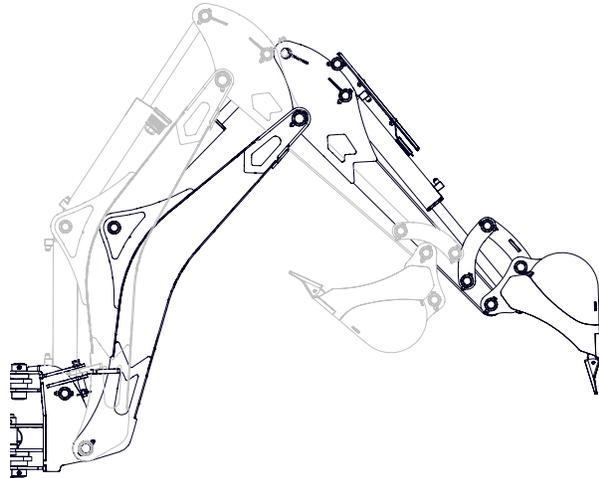


Digging With Bucket:

This is the procedure recommended when a vertical wall is desired at the end of a trench.

NOTE: Avoid constant jarring or hammering contact between the spoil pile and the loaded bucket as this may cause premature wear to the backhoe pins and bushings.

1. Set the bucket so the bucket teeth are nearly vertical.
2. Use the boom to force the bucket into the ground.
3. Use the boom to force the bucket further into the ground and at the same time roll the bucket back (curl) until it is full.
4. Raise the boom and dump the bucket.
5. Continue to dig in the same way by digging 3 to 6 inches (75 to 150 mm) deeper each time.



WARNING **Stability Hazard**

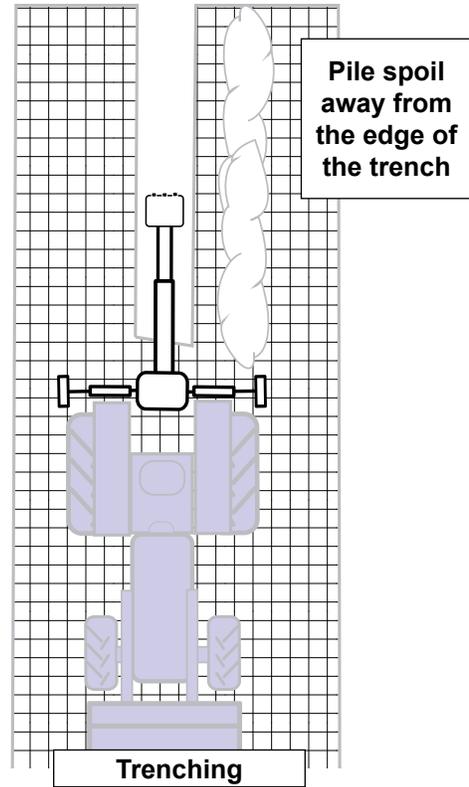
For maximum stability the tractor wheels must be resting on the ground during operation, using the backhoe with wheels raised up is dangerous and could result in damage to the machine.

5.2.3 TRENCHING

Wallenstein backhoe's work well for trenching. Use the dipper or bucket method to dig. Follow these basic steps to digging a trench successfully and safely.

1. Plan your excavation. This step includes selecting the route and depth you will dig, and determining what tools, equipment, and materials you will need. Take your time in the planning process so the layout will serve your purpose and you won't have to change your plan after you start digging.
 - Choose a route that will cause minimum damage plants on the property. Trees, shrubs and other plants may suffer injury or die if their roots are damaged in excavation. Be aware driveways, sidewalks, and structures can collapse if they are undermined
 - Determine the type of soil you will be digging in. Sandy soils, loose stony soils, and wet, mucky material will make excavating a straight, deep ditch difficult and dangerous, so you may have to plan additional measures to prevent trench wall from collapsing.
 - Shoring. This process uses a support structure for your ditch sides so they do not cave in and injure anyone, or undo the digging you have done before the project is complete. Examples may be sheets of plywood with posts to support them for small excavations, or steel trench boxes or sheet piling for very large ones.
 - De-watering. This will remove the excess water from the soil to help stabilize it while working. This can be accomplished either with a sock pipe and mud-hog type diaphragm pump to remove the water as it seeps into the excavation.
 - Benching or sloping the excavation. This is the technique for dealing with loose soils. As the trench is excavated, the sides step down (benching), or slope down (sloping) so the banks do not have to support more material than they are capable of.

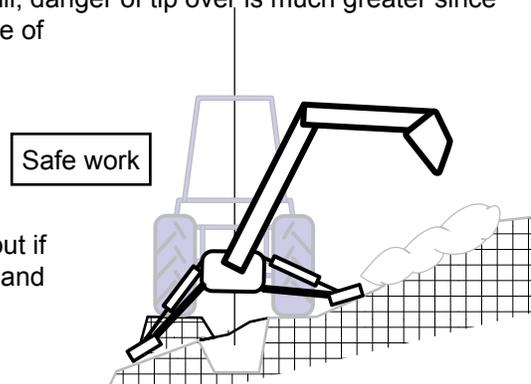
2. To protect workers from injury or liability and prevent damage, call the local utility location service so that underground gas, electric, water, and communications pipes and cables can be located and marked.
3. Get any additional equipment you will use to aid the trenching. Shovels, pickaxes, and other hand tools may be needed for the project.
4. Remove any vegetation you will want to save and replace when the project is finished. Small plants, even turf grasses, can be removed and stored for replanting with proper care.
5. If desired, remove the topsoil to a depth of 10–20 centimeter (3.9–7.9 in), depending on depth of the topsoil layer. Store the topsoil away from other spoil material to avoid contamination. Ensure that the topsoil heap does not exceed 1 - 1.5m in height to avoid compaction.
6. Begin the digging. Line your workers or equipment up with the ditch line, be aware of their location at all times and start to dig. Be careful to observe soil conditions so that the trench embankments do not give way, allowing them to cave in.
7. Dig your first section to the depth you have decided is deep enough to serve the purpose of the trench, or if the trench needs to be benched, to the depth of the first bench.
8. Throw, or cast, the spoil (the removed soil) as far from the trench as possible, so it will not get in your way while doing work in the trench. This will also prevent the spoil from caving in the trench sides).
9. Move along the length of your trench as each section is excavated to the required depth. Checking the depth.
10. Continue digging until the whole trench is complete. Recheck the depth of the trench, check the sides for stability.
11. When work in the trench is complete, backfill the trench. You may want to tamp to pack the soil as it is replaced in the trench. For deep trenches, backfilling in lifts (layers), and compacting the material as it is placed will reduce the amount of settling that will occur after the project is completed.
12. Replace topsoil as soon as all the spoil has been back-filled. This will ensure fertile soil and easy re-vegetation without having to resort to costly fertilizers.



5.2.4 DIGGING ON SLOPES

Use extreme caution when excavating on a slope,:

- always lower the stabilizers and bucket, if the ground is soft use pads or timbers under the stabilizers.
- do not attempt to begin excavating on a slope while the backhoe is positioned on an angle, danger of tip over is much greater since the centre of gravity moves to the down side of the backhoe. Build up one side or dig into the slope to create a stable, level area to work on.
- refrain from swinging the boom to the downside of the hill, danger of tip over is much greater since the centre of gravity moves to the further to the downside of the backhoe as swing increases.
- level the backhoe using the stabilizers so the centre of gravity is closer to the middle of the backhoe, making the backhoe more stable during excavating (ensure all four wheels are touching the ground).
- for greatest stability, swing the boom upside the slope, but if swing downside is required, do so with extreme caution and swing only as far as necessary to dump the bucket.

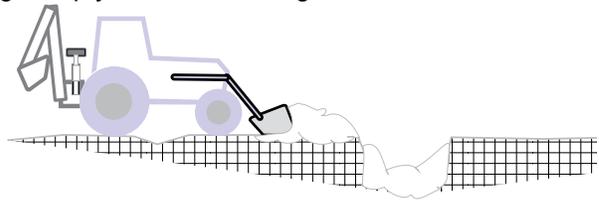


5.2.5 BACKFILLING

When backfilling, ensure there are no cavities remaining, tamp your backfill at regular intervals to avoid settling issues.

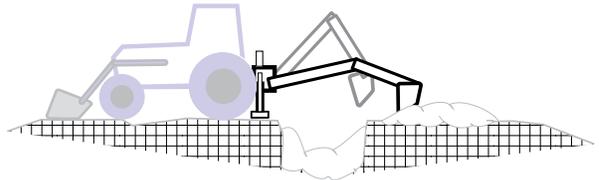
Backfill using your front loader:

- Position the tractor so the spoil pile is between the tractor and the dig
- Push the spoil pile into the dig.



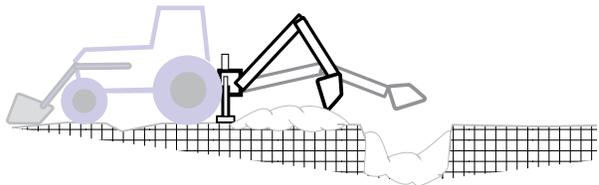
Backfill by dragging:

- Position the tractor so the spoil pile is on the far side of the dig
- Reach over the dig with the boom and drag the spoil pile into the dig.



Backfill with the bucket:

- Position the tractor so the spoil pile is the same distance as the dig
- lower the extended bucket into the spoil pile.
- Curl the bucket to fill with dirt, and lift it clear of the spoil pile.
- Swing the bucket to the excavation and extend the bucket to drop the dirt into the dig .
- Return the bucket to the spoil pile and continue the cycle until the job is completed.
- **IMPORTANT:** Do not backfill by using the swing circuit and dragging the bucket sideways. Doing so could cause damage to the dipper, boom, and swing cylinders or mainframe.



NOTE: Avoid constant jarring or hammering contact between the spoil pile and the loaded bucket as this may cause premature wear to the backhoe pins and bushings.

5.2.6 HARD GROUND

When digging in hard ground, it may be necessary to decrease the bucket angle of entry to the point where the back of the bucket almost contacts the ground. It may also be necessary to apply downward pressure with the boom.

5.2.7 LIFTING

The backhoe can be used to lift and place lines, pipes or other loads into trenches or excavations. The Rancho's boom lift capacity with the boom fully extended 1 meter (3') from ground are:

GE605 113 kg (250 lbs)

GX620 175 kg (385 lbs)

GX720 420 kg (925 lbs)

GX920 340 kg (750 lbs)

GX920XT 322kg (710 lbs) / 263kg (580 lbs) extended

Do not exceed the lifting capacity of the backhoe. Inspect the item to be lifted and do not overload.

- Always position the tractor at right angles to the trench or excavation when moving loads.
- Do not swing loads over people when placing loads in trenches or excavations.
- Use a tag line if transporting the load to prevent the load from swinging.
- If transporting, plan your path and ensure it is clear, free of bystanders and debris.

6 TRANSPORTING

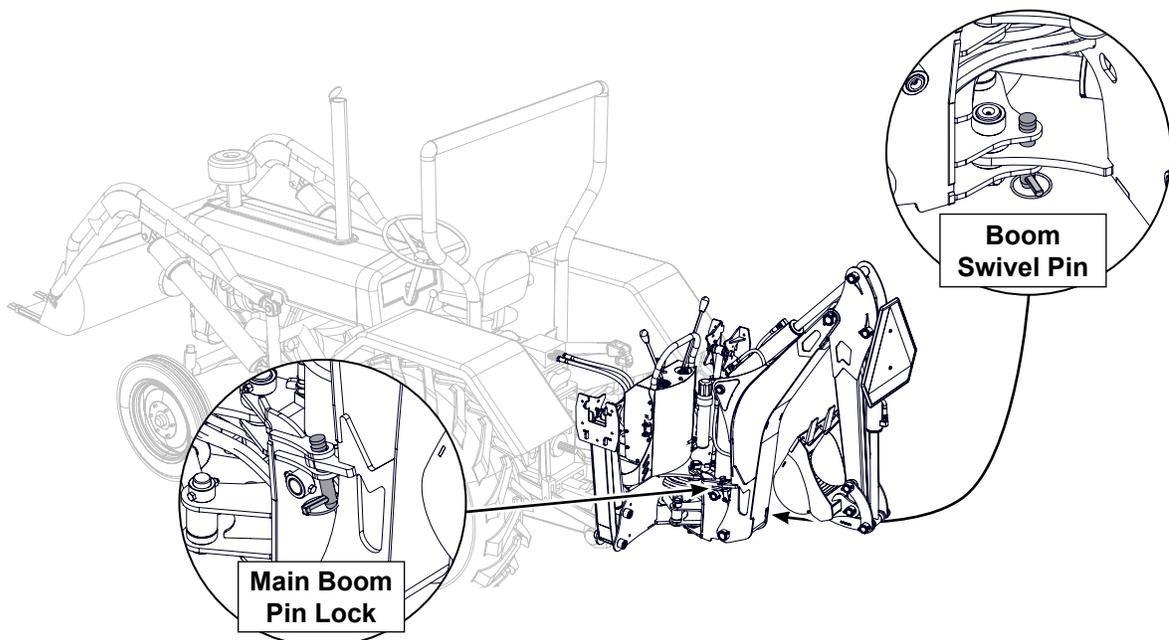


TRANSPORT SAFETY

- Comply with state and local laws governing safety and transporting of machinery on public roads.
- The use of flashing amber lights is acceptable in most localities. However some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
- At all times, when driving the tractor and equipment on the road or highway under 20 mph (32 kph) use flashing amber warning lights and a slow moving vehicle (SMV) identification emblem. Do not exceed 20 mph (32 kph). Reduce speed on rough roads and surfaces.
- Plan your route to avoid heavy traffic.
- Always install transport lock pins and retainers before transporting.
- Do not drink and drive.
- Be a safe and courteous driver. Always yield to oncoming traffic in all situations, including narrow bridges, intersections, etc. Watch for traffic when operating near or crossing roadways.
- Turn into curves or go up or down hills only at a low speed and a gradual steering angle. Make certain that at least 20% of the tractor's weight is on the front wheels to maintain safe steering. Slow down on rough or uneven ground.
- Never allow riders on either tractor or machine.

Wallenstein Backhoes are designed to be easily and conveniently moved from work site to work site. When transporting, follow this procedure:

1. Be sure all bystanders are clear of the machine.
2. Clean off any debris on the backhoe and bucket
3. Fully retract the boom and bucket.
4. Be sure that the the swivel and swing boom pin locks are in place and retainers are installed in each lock pin.
5. Be sure the SMV (Slow Moving Vehicle) sign is on the backhoe dipper..



7 STORAGE



STORAGE SAFETY

- Store the unit in an area away from human activity.
 - Do not permit children to play on or around the stored machine.
 - Store the unit in a dry, level area. Support the frame with planks if required.
- **Set the backhoe in "Safe Condition":**
 - shut off hydraulics
 - shut off the engine
 - ensure all components have stopped moving
 - remove and pocket the ignition key
 - ensure boom and swivel pins are in place, or bucket is resting on the ground

7.1 PLACING IN STORAGE

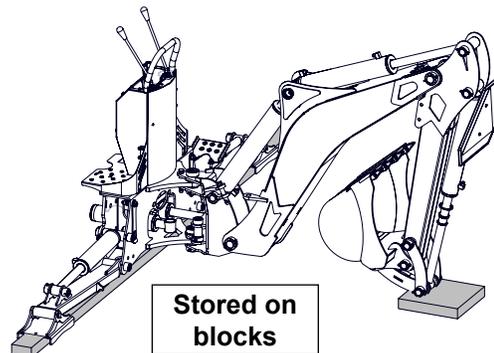
After the season's use, the machine should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at the start of the next season. To ensure a long, trouble-free life, this procedure should be followed when preparing the unit for storage:

1. Clear the area of bystanders, especially small children.
2. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris and residue.
3. Inspect the bucket, dipper and boom for damage or entangled material. Repair or replace damaged parts. Remove all entangled material.
4. Check the oil in the optional reservoir (if so equipped). Add as required.
5. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from washing.
6. Touch up all paint nicks and scratches to prevent rusting.
7. Move to storage area.
8. Select an area that is dry, level and free of debris.
9. Place blocks or planks under the stabilizers and bucket.
10. Unhook from tractor.
11. Stow hydraulic hoses in storage brackets to keep them off the ground.
12. Apply a coat of heavy grease to exposed cylinder rams to prevent rusting.
13. If the machine cannot be placed inside, cover with a waterproof tarpaulin and tie securely in place.
14. Store the machine in an area away from human activity.
15. Do not allow children to play on or around the stored machine.

7.2 REMOVING FROM STORAGE

When removing from storage and preparing to use, follow this procedure:

1. Clear the area of bystanders, especially small children and remove foreign objects from the machine and work area.
2. Attach the tractor to the backhoe by following the procedure in Section 4.8.
3. Check
 - Oil level in optional reservoir. Add as required.
 - All hardware. Tighten as required.
 - All hydraulic lines, fittings and connections. Tighten as required.
4. Lubricate all grease fittings.
5. Remove grease from cylinder rams.
6. Replace any defective parts.
7. Go through the pre-operation checklist before using.



8 SERVICE AND MAINTENANCE



MAINTENANCE SAFETY

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- **Set the backhoe in "Safe Condition":**
 - shut off hydraulics
 - shut off the engine
 - ensure all components have stopped moving
 - remove and pocket the ignition key
 - ensure boom and swivel pins are in place, or bucket is resting on the ground
- Follow good shop practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
- Make sure there is plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
- Before working on this machine, shut off the engine, set the brake, and turn fuel valve off.
- Never work under equipment unless it is blocked securely.
- Always use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work. Use heavy gloves when handling sharp components.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- Periodically tighten all bolts, nuts and screws and check that all electrical and fuel connections are properly secured to ensure unit is in a safe condition.
- When completing a maintenance or service function, make sure all safety shields and devices are installed before placing unit in service.

8.1 SERVICE

By following a careful service and maintenance program for your machine, you will enjoy many years or trouble-free operation.

8.1.1 FLUIDS AND LUBRICANTS

1. **Grease:** Use an SAE multipurpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium base grease.
2. **Storing Lubricants:** Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

8.1.2 GREASING

Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fittings if necessary.

8.1.3 SERVICING INTERVALS

See service record and service illustration for service interval information. The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication or oil changes.

IMPORTANT Do Not over grease.



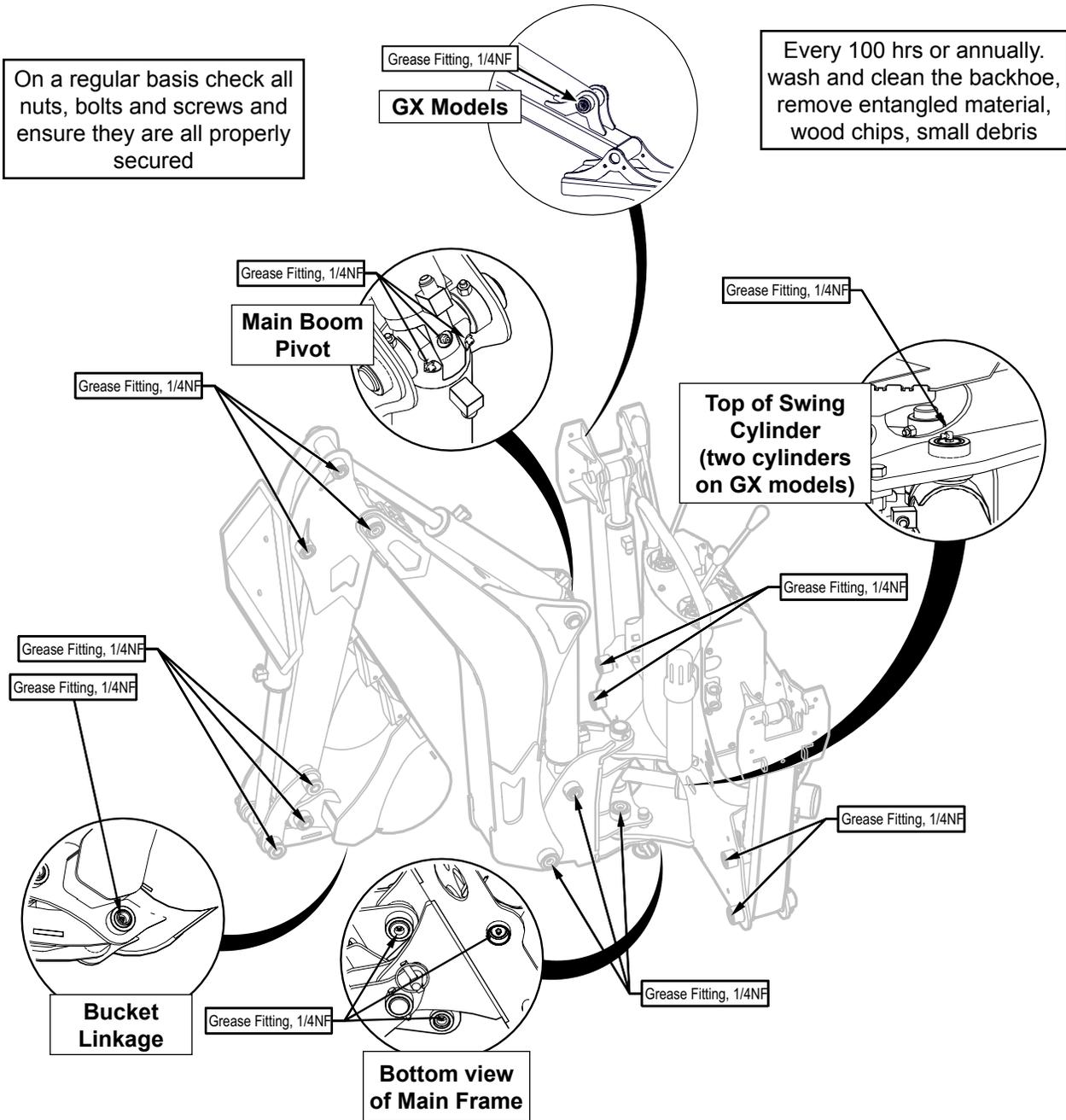
Look for this label on your machine, it indicates a grease point and the number of hours between greasing.

8.1.4 SERVICE ILLUSTRATION

See Service Record Chart (Section 8.1.6)
 This illustration shows the general location of service points for all models in this manual.



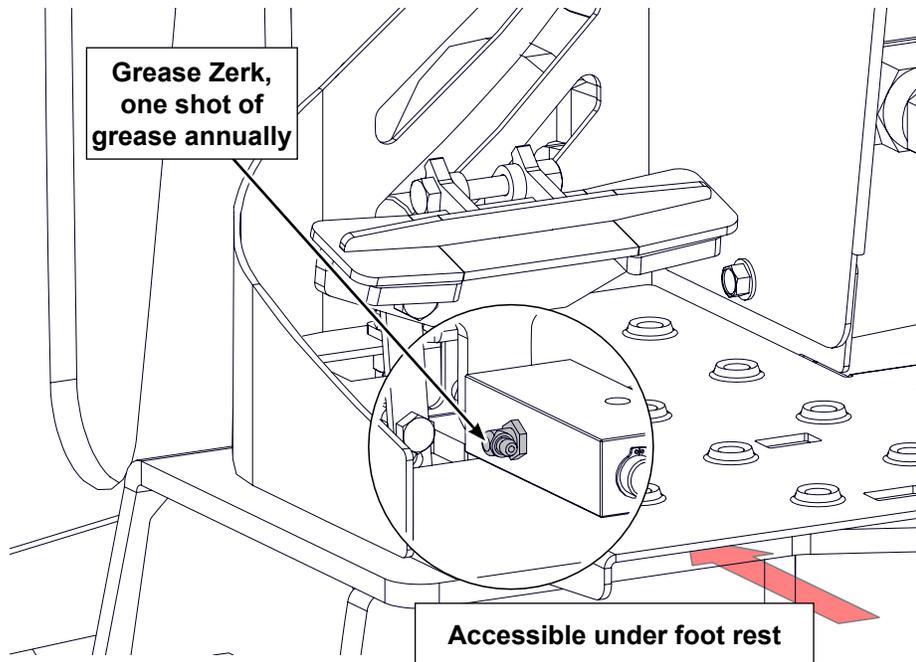
Look for this label on your machine, it indicates a grease point and the number of hours between greasing.



8.2 MAINTENANCE

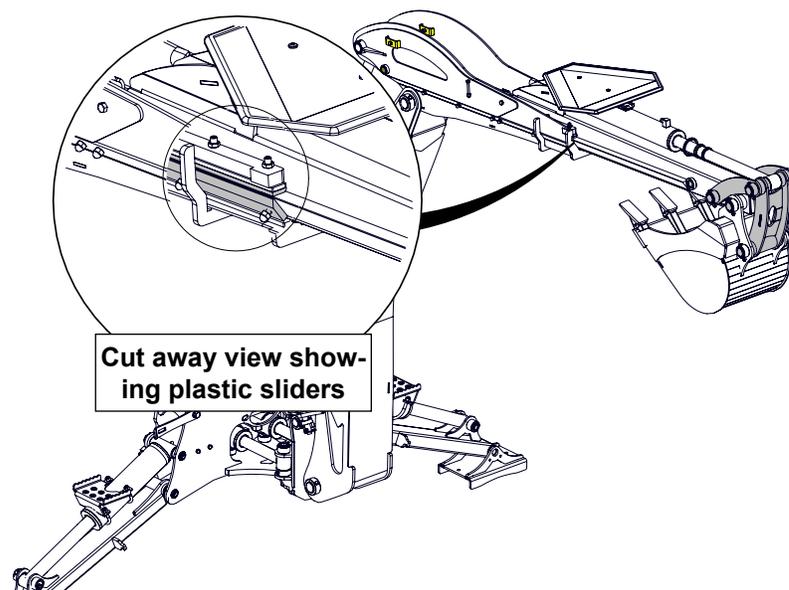
8.2.1 GX920XT DIPPER EXTENDER CONTROL:

The dipper extension feature on the GX920 requires some extra maintenance. There is a grease zerk found on the peddle rocker block, and is accessible from the operators station, just under the foot rest. Grease should be applied annually.



8.2.2 GX920XT DIPPER BOOM EXTENDER:

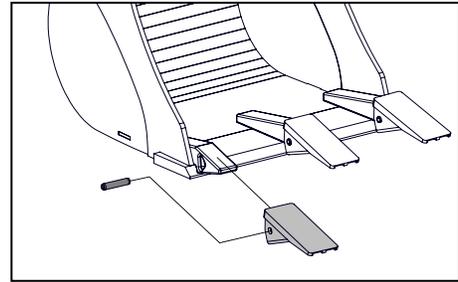
The dipper boom extension features two high strength plastic slides on each side and between the sliding dipper and dipper base. These slides feature good abrasion & wear properties, and therefore **do not require any lubrication**.



8.2.3 BUCKET TEETH:

The bucket teeth can be replaced. Check on their condition weekly. Replace if bent, damaged, or worn out. Bucket teeth are held in place with a roll pin, drive out the roll pin to remove the tooth for replacement. When replacing, follow this procedure:

1. Clear the area of bystanders, especially small children.
2. Lower dipper / bucket to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.
3. Drive out the roll pin to remove the tooth for replacement.
4. Fit the replacement tooth and install the roll pin.



Z14181
Roll Pin,
5/16" x 1-1/2"

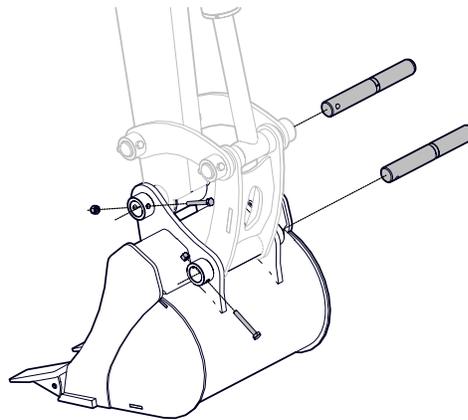
Z19902
Backhoe Pin-on
Cast Tooth

8.2.4 BUCKET REMOVAL:

The Rancho bucket can be easily changed out with another size bucket. Buckets are available from your dealer in a range of sizes from 9" to 24" depending on the backhoe model, See accessories page and your dealer for details.

The Rancho Bucket is held in place with two pins, remove pins to replace the bucket. Be careful not to damage the pins during removal.

- move the boom so that the bucket is resting on the ground and won't move unexpectedly when released.
- remove retaining bolts and nuts that secure the pins
- from one side of the bucket carefully remove the pins (be careful that the bucket doesn't drop)
- carefully remove the old bucket. Position the new bucket in its place.
- clean then lightly grease the pins
- install the pins and secure with retaining bolts and nuts.
- lubricate both pin grease fittings before putting the backhoe into operation.



WARNING **Handling Hazard**

Use caution when handling heavy equipment. Objects may fall and cause crushing injury to hands and feet. Lifting heavy objects may cause back or leg strain injuries.

9 TROUBLE SHOOTING

Wallenstein Backhoes are designed for light digging and trenching duties. It is a simple and reliable system that requires minimal maintenance.

In the following section, we have listed many of the problems, causes and solutions to the problems that you may encounter.

If you encounter a problem that is difficult to solve, even after having read through this trouble shooting section, please call your local distributor or dealer. Before you call, please have this Operator's Manual from your unit and serial number ready.

PROBLEM	CAUSE	SOLUTION	CAUTION	
Cylinder rods move slowly or don't move. (main boom, dipper boom, grapple, stabilizers).	No pressurized hydraulic oil.	Oil filter plugged. Change filter.		Ensure machine is off and cooled down.
	No pressurized hydraulic oil	Low hydraulic oil level, top up.		Ensure machine is off and cooled down.
	Hydraulic hoses switched	connection at backhoe switched, check colour code and match connections.		Ensure machine is off.
	Not enough flow	Flow control set too low, set control higher for more flow.		
	Stuck / Damaged / Mismatched Couplers	Clean or replace couplers, ensure mating couplers are ball style couplers		Ensure machine is off and cooled down.
	Check valve stuck	Clean or replace		Ensure machine is off and cooled down.
	Hydraulic hoses switched	Switch input / output hydraulic hose connections.		Ensure machine is off.
	Low engine speed.	Set engine speed		
Cylinders jerk, don't run smoothly.	Leak in hydraulic system	Air getting into system, tighten all hydraulic connections.		Ensure machine is off.
Control handle doesn't go to neutral when released.	Return springs collapsed.	Check valve return springs, replace if required.		Ensure machine is off.
	Control may be damaged.	Call technician, control may need service or be replaced.		Ensure machine is off and call hydraulic technician.
Leaking hydraulic hose.	Hose worn or damaged.	Replace hose.		Ensure machine is off and cooled down.
Leaking cylinder.	Seals worn.	Call technician, seal replacement may be required.		Ensure machine is off and call hydraulic technician.
Hydraulics behave erratically.	mis-matched valve (open / closed system)	Determine hydraulic system on tractor, ensure valve system matches.		Ensure machine is off and call hydraulic technician / service.
Boom drifts down.	leaking seals	replace seals .		Ensure machine is off and call hydraulic technician / service.
	Counter balance valve defective	repair or replace valve.		Ensure machine is off and call hydraulic technician / service.

Trouble Shooting continued.

PROBLEM	CAUSE	SOLUTION	CAUTION	
Boom Doesn't rotate or rotates slowly.	Boom pin in place	remove boom lock pin before starting work.		
	No pressurized hydraulic oil.	Oil filter plugged. Change filter.		Ensure machine is off and cooled down.
	No pressurized hydraulic oil	Low hydraulic oil level, top up .		Ensure machine is off and cooled down.
	Not enough flow	Flow control set to low, set control higher for more flow.		
	Low engine speed.	Set engine speed		
Power Pack Engine Issues.	See trouble shooting section in engine owners manual.			

10 SPECIFICATIONS

10.1 MECHANICAL

SPECIFICATIONS	GE605	GX620	GX720	GX920	GX920XT	
					Normal	Extended
Digging Depth (2 ft. flat bottom)	6'4"	6'4"	7'8"	9'4"	9'4"	11'4"
Overall Operating Height (fully raised)	91"	92"	119"	135"	135"	152"
Reach from Swing Post	100"	100"	123"	141"	141"	164"
Loading Height (bucket at 60° rotation)	62"	62"	80"	89"	89"	104"
SAE* Dipper Boom Digging Force	1250 lbs.	1250 lbs.	2300 lbs.	3200 lbs.	3100 lbs.	2200 lbs
Boom Lift Capacity (end of dipper 3' from ground)	250lbs	385 lbs.	925 lbs.	750 lbs.	710 lbs.	580 lbs
SAE* Bucket Digging Force	2054 lbs.	2600 lbs.	3800 lbs.	3925 lbs.	3925 lbs.	
Transport Height (with boom fully retracted)	64.5"	63"	79"	92"	92"	
Transport Width (with stabilizers up)	41"	40"	42½"	42½"	42½"	
Ground Clearance	8½"	10½"	10½"	10½"	10½"	
Transport Length	56	68"	80"	81"	81"	
Transport Weight (base unit only - no bucket or mounts)	500 lbs.	575 lbs.	800 lbs.	850 lbs.	1000 lbs.	
Bucket Rotation	180°	180°	180°	180°	180°	
Swing Arc	150°	180°	180°	180°	180°	
Stabilizer Width (Spread)	72"	74"	89"	89"	89"	
Stabilizer Width (Transport)	41"	40"	42½"	42½"	42½"	
Operating Pressure	1800 psi	1800 psi	2250 psi	2250 psi	2250 psi	
Hydraulic Volume Requirements	3½-6 gpm	5-7 gpm*	5-7 gpm*	5-7 gpm*	5-7 gpm*	
Recommended Tractor HP	18-28 HP	18-30 HP	30-60 HP	45-100 HP	45-100 HP	
Recommended Skidsteer Requirements (SSQT)	Mini Skidsteer	Mini Skidsteer	30-60	30-100	30-100	
Main Boom Cylinder Diameter	2.5	2.5	3.0	3.0	3.0	
Dipper Cylinder Diameter	2.25	2.25	2.5	2.5	2.5	
Bucket Cylinder Diameter	2	2.25	2.5	2.5	2.5	
Swing Cylinder Diameter	2.5 (x1)	2.0 (x2)	2.5 (x2)	2.5 (x2)	2.5 (x2)	
Stabilizer Cylinder Diameter	2	2.0	2.5	3.0	3.0	
Extender Cylinder	-	-	-	-	1.75	
Flow Divider Included	no	no	yes	yes	yes	
Bucket Sizes Available	9, 12, 15	9, 12, 15, 18	9, 12, 15, 18, 24	9, 12, 15, 18, 24	9, 12, 15, 18, 24	
3 Point Hitch	n/a	Cat I (PT300)	Cat I (PT300)/ Cat II (PT322)	Cat I (PT300)/ Cat II (PT322)	Cat I (PT300)/ Cat II (PT322)	

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

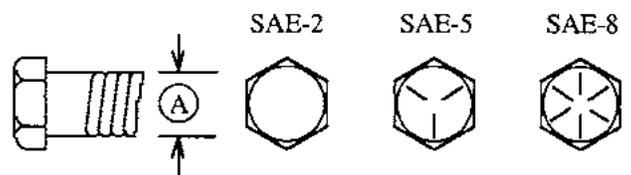
10.2 BOLT TORQUE

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

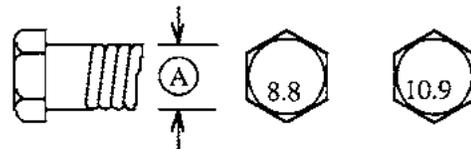
ENGLISH TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*					
	SAE 2 (N.m) (lb-ft)		SAE 5 (N.m) (lb-ft)		SAE 8 (N.m) (lb-ft)	
1/4"	8	6	12	9	17	12
5/16"	13	10	25	19	36	27
3/8"	27	20	45	33	63	45
7/16"	41	30	72	53	100	75
1/2"	61	45	110	80	155	115
9/16"	95	60	155	115	220	165
5/8"	128	95	215	160	305	220
3/4"	225	165	390	290	540	400
7/8"	230	170	570	420	880	650
1"	345	225	850	630	1320	970



METRIC TORQUE SPECIFICATIONS

Bolt Diameter "A"	Bolt Torque*			
	8.8 (N.m) (lb-ft)		10.9 (N.m) (lb-ft)	
M3	.5	.4	1.8	1.3
M4	3	2.2	4.5	3.3
M5	6	4	9	7
M6	10	7	15	11
M8	25	18	35	26
M10	50	37	70	52
M12	90	66	125	92
M14	140	103	200	148
M16	225	166	310	229
M20	435	321	610	450
M24	750	553	1050	774
M30	1495	1103	2100	1550
M36	2600	1917	3675	2710



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

* Torque value for bolts and capscrews are identified by their head markings.

10.3 HYDRAULIC FITTING TORQUE

Tightening Flare Type Tube Fittings *

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

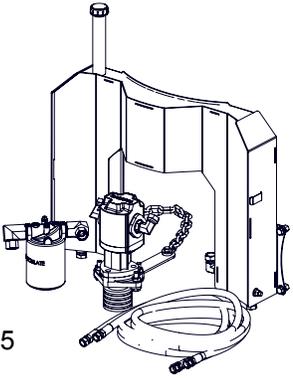
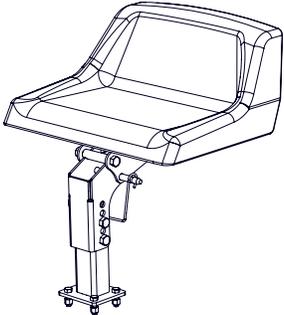
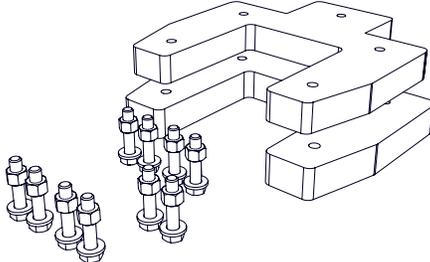
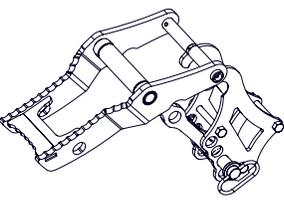
Tube Size OD (in.)	Nut Size Across Flats (in.)	Torque Value*		Recommended Turns To Tighten (After Finger Tightening)	
		(N.m)	(lb-ft)	(Flats)	(Turn)
3/16	7/16	8	6	1	1/6
1/4	9/16	12	9	1	1/6
5/16	5/8	16	12	1	1/6
3/8	11/16	24	18	1	1/6
1/2	7/8	46	34	1	1/6
5/8	1	62	46	1	1/6
3/4	1-1/4	102	75	3/4	1/8
7/8	1-3/8	122	90	3/4	1/8

- The torque values shown are based on lubricated connections as in reassembly.

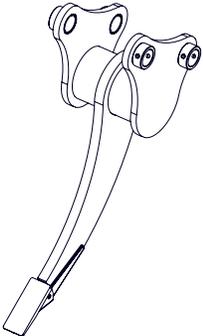
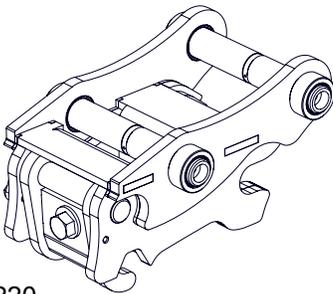
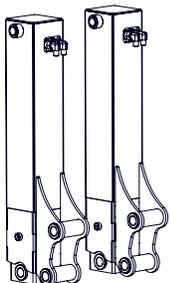
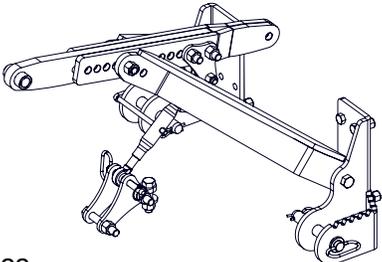
11 ACCESSORIES

Call your dealer for pricing and availability

For replacement parts, go to www.embmfg.com and click on "Parts and Manuals" to download the latest parts manual for you model splitter, then call your dealer to order.

 <p>#PTO605</p>	<p>PTO POWER PACK KITS: #PTO605 GE605 #PTO62 GX620 #PTO72 GX720 / 920 / 920XT</p> <p>Rancho PTO Power Packs provide the means to operate your Rancho Backhoe on tractors without available hydraulics. Easy to install, the power-pack mounts on a 6 spline 1 3/8" PTO output shaft, and the tank bolts on the front of the backhoe.</p>
 <p>#BT7250</p>	<p>#BT7250 OPERATOR'S SEAT, GE605</p> <p>For tractors that don't have a spin around seat. Easily bolts on the GE605, for safe and comfortable operation. Features include adjustable height and forward folding seat when not in use.</p>
 <p>#BP220</p>	<p>STREET PAD KITS: #BP210 - GX620 #BP220 - GE605 #BP230 - GX720 / 920 / 920XT</p> <p>For use on hard surfaces, (pavement cement, etc) Helps to prevent damage from the grippers on the stabilizer feet while working the Rancho backhoe</p>
 <p>#BT5280</p>	<p>CLAMP ON MECHANICAL THUMB KIT: #BT5280 - GE605 / GX620 #BT5290 - GX720 / 920 #BT5330 - GX920XT</p> <p>Adds a gripping claw to your backhoe, makes easy work when moving cement chunks, large rocks, posts or large items too heavy to move by hand.</p>

ACCESSORIES CONT.

 <p>#BT7230</p>	<p>#BT7230 RIPPER TOOTH GX720 / 920 / 920XT</p> <p>With the Rancho ripper tooth freezing weather or hard conditions won't slow you down. The ripper tooth is designed for initial breakup of dense, hard-packed material including frozen ground. Easy to install.</p>
 <p>#BT7220</p>	<p>#BT7220 QUICK CHANGE ATTACH GX720 / 920 / 920XT</p> <p>Rancho Quick Attach Bucket Adapter switches attachments quickly and easily with only one bolt and no hammering pins.</p>
 <p>#BT7240</p>	<p>#BT7240 VERTICAL STABILIZER KIT GX720 / 920 / 920XT</p> <p>With the Rancho vertical stabilizer kit, you can dig closer to objects such as buildings and foundations while maintaining stability. Replaces existing stabilizers.</p>
 <p>#PT322</p>	<p>#PT300 3 POINT CAT I HITCH KIT GX620 / 720 / 920 / 920XT #PT322 3 POINT CAT II HITCH KIT GX720 / 920 / 920XT</p> <p>Turn your tractor into a backhoe with the simple 3-point hitch mount. The 3-point hitch also utilizes your tractor's draw bar for increased rigidity. Not available for GE605</p>

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