

RAPTOR BOOM ARM OPERATORS MANUAL



TABLE OF CONTENTS

INTRODUCTION	3
SAFETY NOTES	4
COMPONENT IDENTIFICATION	6
MOUNTING	7
Attaching to Skid Steer	7
HYDRAULIC CONNECTIONS	8
Hose/Cable Routing	8
Flat Face Coupler Connections	8
OPERATION	9
Pre-Operation Checklist	9
FIRST TIME USE GUIDE	10
GENERAL USE TIPS/INFO	13
Operational Positions	15
TRANSPORTATION & STORAGE	16
Transportation Within The Job Site	16
Storage	17
MAINTENANCE & LUBRICATION	18
Lubrication	18
Maintenance	19
Valve Adjustments	19
VALVE BLOCK DIAGRAM	20
ATTACHING MOWER HEADS	21
CONTROLLER INSTALLATION	22
Rental Kits	22
Permanent Super Controller Installation	23
RAPTOR SICKLE ASSEMBLY	25
TROUBLESHOOTING	27
PARTS DIAGRAMS	28
Raptor Boom Arm Parts Diagram	28

INTRODUCTION

Eterra thanks you for purchasing a new Eterra product. This operating manual has been prepared to enable you to operate your equipment in a safe manner and provide proper care & maintenance.

NOTE:

This operating manual should be used in conjunction with the parent machine's operating instructions.

Instruction books should be regarded as part of the machine. They should always be kept safe with the machine for easy and quick reference.

New or extra copies can be obtained from your Eterra dealer or directly from Eterra.

Eterra continually strives to improve and increase their range of products and therefore reserves the right to alter their specifications at any time without notice or obligation. The company accepts no responsibility for discrepancies which may occur between specifications of their machines and descriptions thereof contained in their publications.

Purpose

This Eterra product is intended to be used with skid steer loaders or mini skid steer loaders in the appropriate weight class. It is intended to be used by operators of all experience levels. To accomplish this feat, a very simple design has been used which is unlike anything else found in the industry.

You must read and understand the theory of operation so that you can operate this attachment safely and so you can maintain the safety of the operators and bystanders.

This product was designed to be sold online and out of the box ready to operate with a minimal amount of assembly.

This Document:

The sole purpose of this manual is to help you train yourself to be a responsible operator and troubleshooter of the operation of the attachment so that you can identify safety issues before anything serious can happen. Failure to follow the directives noted in this document may lead to serious injury or death.

SAFETY NOTES

Protect Yourself

Make sure you wear protective clothing and personal safety items. **DO NOT** wear items of loose clothing, jewellery or other items and tie up any long hair which could entangle in the controls or other parts of the machine.

You May Need

- A Hard Hat
- Safety Goggles
- Hearing Protection
- Foul Weather Clothing
- Reflective Clothing
- Protective Gloves
- Safety Boots

Know Your Equipment

Get to know all you how to operate all controls on the machine and the attachments
IF THERE IS SOMETHING IN THE MANUAL WHICH YOU DO NOT UNDERSTAND, CONTACT THE MACHINE AGENT OR MANUFACTURER AND ASK THEM TO EXPLAIN IT TO YOU.

Danger, Warning And Caution

This symbol below has 3 important meanings when used with the following captions.



DANGER: An IMMINENTLY HAZARDOUS situation that WILL result in DEATH or VERY SERIOUS INJURY

WARNING: A POTENTIALLY HAZARDOUS situation that COULD result in DEATH or VERY SERIOUS INJURY

CAUTION: A POTENTIALLY HAZARDOUS situation that MAY result in MINOR INJURY

Protective And Safety Devices

Keep all protective devices in place and securely fastened. Make sure all guards, shields and safety signs are properly installed and are in good condition.

Check The Equipment

Before you operate the equipment, take time to check your machine and ensure that all systems are in good operational order.

- Never operate the equipment with worn, damaged or missing parts. Use only genuine replacement parts.
- Always ensure that the parent machine is secure and stable with its engine switched off and hydraulic lines disconnected before carrying out any maintenance work.
- Check for loose, broken, missing or damaged parts. Ensure all items are in good repair and make sure all safety devices are in place.
- Perform all maintenance procedures outlined for the equipment.
- Always protect hands. Select appropriate gloves when handling the equipment during fitting, removing or adjusting
- Always protect feet with safety boots.

Safety Precautions

WARNING: Hydraulic fluid under pressure can penetrate the skin or eyes and cause serious PERSONAL INJURY, BLINDNESS OR DEATH.
Fluid leaks under pressure may not be visible. Use a piece of wood or thick cardboard to find leaks. DO NOT USE YOUR BARE HANDS.



Wear safety goggles for eye protection.

If any fluid is injected into the skin, it MUST be surgically removed.

SEE A DOCTOR IMMEDIATELY

Make sure all hydraulic lines are correctly installed

Before applying pressure to the hydraulic system be sure all connections are tight and that lines, pipes and hoses are not damaged. Before disconnecting hydraulic lines, be sure to relieve all pressure.

ETERRA recommends you receive dealer or factory instruction before operating the unit.

NEVER operate or assemble the equipment without **fully** understanding the operating instructions of both the equipment unit and the parent machine.

NEVER operate the equipment unless you are in good physical condition and mental health.

NEVER operate the equipment under the influence of any substance (including drugs & alcohol) which might impair vision.

NEVER proceed with works before completing a site risks assessment immediately before commencing work. Nominating the safe work exclusion zone radius for persons and animals as part of identifying risks and implementing controls.

NEVER allow minors to operate the equipment.

ALWAYS survey the work area before commencing operations. Check for potential hazards. E.G. Electricity or communication cables etc.

ALWAYS ensure that the parent machine is secure and stable with it's engine switched off before carrying out any maintenance work.

ALWAYS ensure the hydraulic oil supply to the attachment is disconnected by uncoupling the hydraulic hose connectors before fitting, removing or adjusting the equipment

ALWAYS wear head protection and eye protection when working on the unit.

ALWAYS protect hands. Select appropriate when handling the equipment during fitting, removing or adjusting the unit.

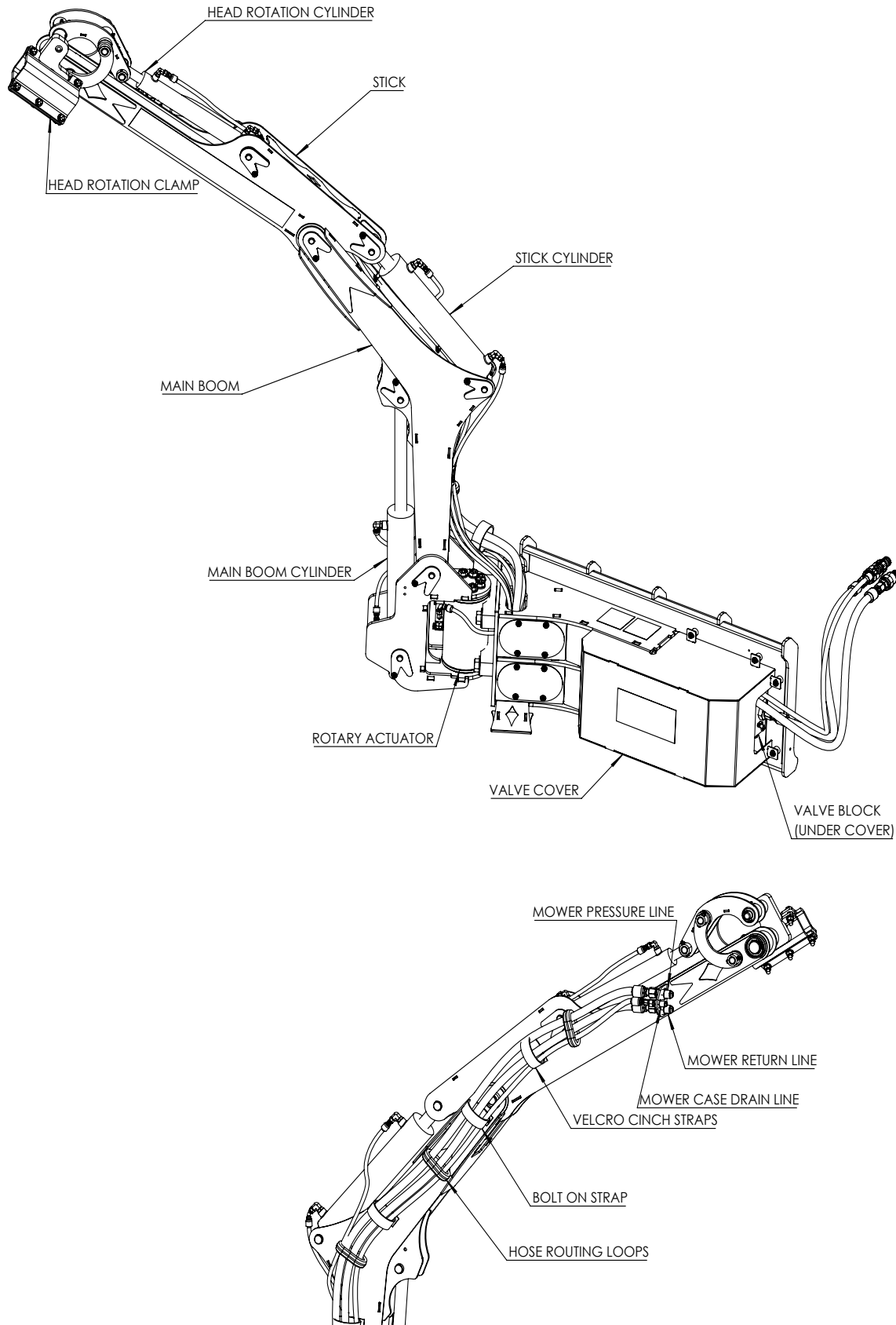
ALWAYS protect feet. Wear approved safety boots.

ALWAYS follow the parent machine instructions regarding noise protection.

STAY ALERT. Should something break, come loose or fail to operate on your equipment, STOP WORK, lower equipment to the ground, shut off the engine and lock out hydraulic supply, inspect the machine and have repairs or adjustments made before resuming operation.

COMPONENT IDENTIFICATION

Raptor Boom Arm



MOUNTING

SAFETY FIRST



ALWAYS Always check the weight of the attachment and ensure you have the correct equipment for handling it.



ALWAYS check parent machine:

- Is in correct working order
- Is parked correctly on flat ground
- Has its hand brake **ON**, its hydraulic circuit locked out and its engine switched **OFF**.

Attaching to Skid Steer

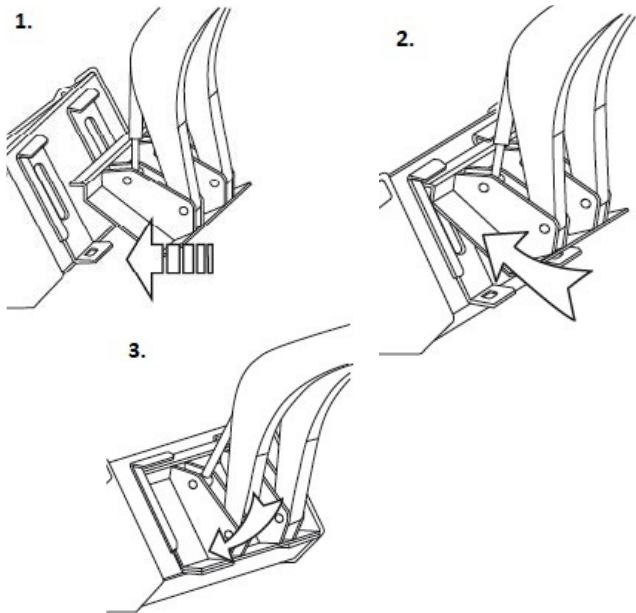
Check that the skid steer mounting plate fits properly and allows the locking pins to be engaged. You **MUST** engage your locking pins before operation to prevent the mower from coming off. If your locking pins do not stay locked down they may need to be adjusted or repaired before continuing.

1. Slowly position your skid steer loader towards the rear of the mounting plate.

2. Slowly insert the top edge of your quick attach into the top rail of the backhoe from underneath.

3. As the top of the quick attach aligns into the mounting plate, slowly roll your quick attach back towards the machine until the entire quick attach locks into the mount.

4. Using either your power attach or manual levers, lock the mounting plate in place and check for proper pin engagement.



HYDRAULIC CONNECTIONS

WARNING:



Hydraulic fluid under pressure can penetrate the skin or eyes and cause serious personal injury, blindness or death. Fluid leaks under pressure may not be visible. Use a piece of card or wood to find leaks. **DO NOT** use your bare hands. Wear safety goggles to protect your eyes. If any fluid is injected into the skin, it **MUST** be surgically removed. Seek immediate medical attention.

Standard Flat Face Couplers required for connection to the parent machine, are included for all attachments. Non-standard couplers are not supplied with the unit. These should be sourced locally and should be compatible with the auxiliary hydraulic Quick Release Couplers on the parent machine. The parent machine auxiliary hydraulic connections are normally located near the end of the loader arms, excavator dipper or truck crane booms.

Hose/Cable Routing

You should check the best hose routing for your machine prior to use and adjust accordingly. Damage to hydraulic hoses or electrical cables due to improper length or routing is not covered under warranty.

Flat Face Coupler Connections

Attach all lines supplied from the mower by pushing the flat face couplers on the lines to the ones on your machine. If connection is difficult, you may need to release pressure from the couplers on your machine side. See your machine user manual for how to do this.



When the flat face couplers are attached, spin the collar away from the ball detent in order to “lock” the coupler in place. This will prevent a line from accidentally getting pulled off by brush/debris. If a line becomes detached during operation, you will damage the hydraulic motor/valves, so take care to ensure your hydraulic connections are secure before operating.

The boom arm operates in only one direction. If pressure/flow is applied to the opposite direction, then the boom arm will not operate. If your arm does not move when flow/pressure is applied to it, then the connections may be backwards. Simply swap the Male and Female couplers on the hose ends going to your machine, and try again.

Most manufacturers use the male connector on their machine as the output. This means on the attachment, the female coupler will correspond to the pressure/input line. If you have a Bobcat brand machine, they are the opposite, and they use the female on the machine as the output.

OPERATION

Pre-Operation Checklist

- Give the machine a “once-over” for any loose bolts, worn parts, cracked welds, hydraulic leaks, frayed hoses etc. and make necessary repairs. Double check plate pins and mower mounting to ensure nothing has come loose as you risk the mower head falling off if not properly inspected.
- Check for excessive blade & bolt wear as well as cracks in the rear of the blades. Replace as needed. Generally when the blades are worn out, so are the bolts so you should be replacing as a set. If you only replace the blades, the bolts may fail and allow the blades to fly away uncontrollably. This is not a situation you want to find yourself in and you should do everything to make sure this will never happen.
- If you feel any kind of vibration from the mower head, it is likely one of the mower blades has been broken. Stop using the mower and do not use until the blade has been changed.
- Lubricate the main bearings/bushings daily or after each 8 hours of use.
- Make sure all hoses are clear of cuts, abrasions, worn spots and pinch points before operating. Check that hoses do not get caught in the pinch areas of your machine boom.
- Connect to machine and check mechanical machine connection point/pins for wear that could cause the Raptor Boom Arm to fall off. Repair any damage as needed.
- Check that your mower is properly connected to your machine by lightly pushing the nose down into the ground to see if it will become dislodged. If there is any excessive movement in the connection point – STOP! Try to figure out why it is not mating properly and contact ETERRA or your dealer prior to operation. You do not want the mower to fall off while in use so you must establish a positive connection to your machine.
- It is imperative that your machine be equipped with penetration proof protection. Debris can fly out and injure or kill you if you do not have proper guards in place on your machine. Make sure your machine is setup accordingly before operation.
- It is important that you check and recheck your hose routing each time you connect the attachment to your machine. Each machine is different so you need to make sure that you have routed the hoses away from any potential pinch points. Check that there are no pinch points around the main skid steer pivot. Average length hoses are provided with each unit, but it is the customers responsibility to modify these if needed for their machine.
- Watch this video to become familiar with the basics of the operation and adjustment of the Raptor Boom Arm System. Anyone operating, working on, or working with the system should be familiar with the basics described in this video

<https://youtu.be/uzbq51zpfkc?si=6BAvvcl2z13-dl8X>



FIRST TIME USE GUIDE

Step One:

Install Electrical control system

Along with your Raptor Boom Arm System, you will have ordered an electrical control system to go along with it. Machines currently do not have enough electrical controls within their cabs to operate as many functions as are required by the Raptor Boom Arm, so a secondary control system is needed. The two main options are:

Skid Steer Genius Super Controller

Skid Steer Genius JCB-400 Controller

These are both offered in a Rental Kit and Permanent Kit option, allowing either a short cable that can be moved between machines, or a long cable that can be routed down your machine's boom for a seamless permanent installation. Install your chosen system per the instructions provided with it, or see some videos on the Skid Steer Genius Youtube page for examples:

Super Controller Install on CAT299D: <https://www.youtube.com/watch?v=W6FWv0o6W5Q>



Super Controller Install on Bobcat: <https://youtu.be/u73OZKUKEKk?si=UMDSEptwaeop2r8T>



Super Controller Install on Kubota SVL: <https://youtu.be/fkMhMEyHwgU?si=EoWxyvYbbu95MI79>



While machines and kit contents change slightly, the basic principles are the same throughout. Don't hesitate to call us with any questions regarding installation or troubleshooting. An abbreviated install guide for the super controllers is available at the end of this manual.

Step Two:

Attaching Boom Arm

Hook your machine up to the mounting plate and engage locking pins. Verify pins are engaged both visually, and by putting light pressure on the boom arm to make sure it doesn't move on your mounting plate. After the mounting plate is attached securely, attach your hydraulic flat face couplers, and your electrical connector.

Step Two (continued):

Make sure that you connect all three hydraulic lines (Pressure, Return, and Case drain lines) as well as the 14 pin electrical connector. Do NOT connect the electrical to your machines built in electrical connector, and make sure you instead hook it up to the 14-pin connector from your newly installed control system in step one.

Step Three: Familiarizing yourself with the controls

Before turning on the machine, ensure that you are familiar with the boom arm controls and how they operate.

See the video here for an overview of the operation of both types of controllers.
<https://youtu.be/uzbq51zpfkc?si=mcCSa7ew7M8ejG6C&t=514>

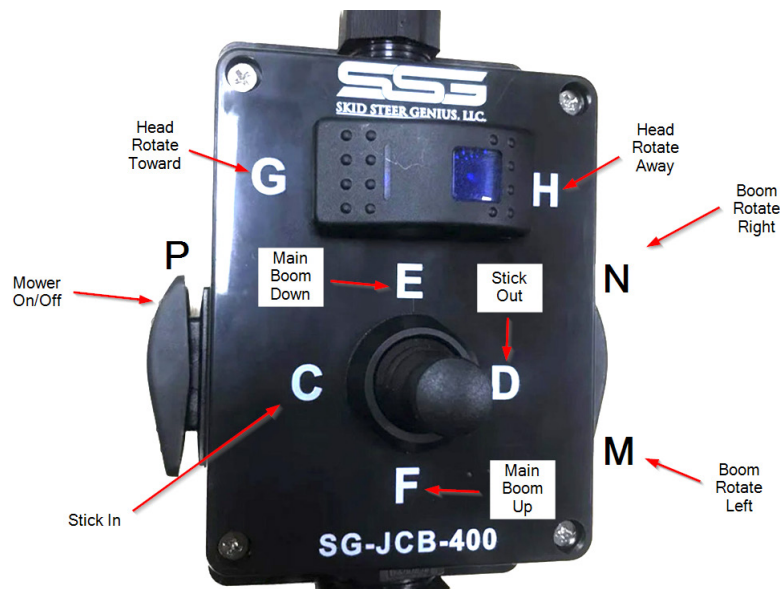


These images below also show what controls operate the various functions of the Raptor Boom Arm system.

Super Controller Joysticks:

Left Stick			Right Stick		
UP			UP		
Main Boom Down			Head Rotate Toward		
Cyl Retract			Cyl Extend		
Pin E			Pin G		
Main Boom Pin 2			Head Rotate Pin 3		
LEFT	Center Click	RIGHT	LEFT	Center Click	RIGHT
Stick In		Stick Out	Boom Rotate Left	Mowern On/Off	Boom Rotate Right
Cyl Extend		Cyl Retract		6 sec hold on/click off	
Pin C		Pin D	Pin M	Pin P	Pin N
Jib Boom Pin 3		Jib Boom Pin 2	Boom Rotate Pin 3	Mower Pin 3	Boom Rotate Pin 2
DOWN			DOWN		
Main Boom Up			Head Rotate Away		
Cyl Extend					
Pin F			Pin H		
Main Boom Pin 3			Head Rotate Pin 2		

JCB-400 Controller



Step Four: Operating Boom Arm

With all of your connections established, and a familiarity with the controls, you are now ready to operate the boom arm. Ensure you are in a safe open area with no bystanders or objects to hit. This is especially important while you are first getting a feel for the controls.

Start by turning on your hydraulic flow on your machine in the forward direction and latching it on, as if you were operating a mower or other continuous flow attachment. Your hydraulics will turn on but nothing should be moving at this point.

Now slowly operate the controls to move the arm. The easiest controls to manipulate are the main boom and stick controls to lift the mower and arm off of the ground. Gradually operate all of the movement controls until you are familiar and comfortable with them. Do NOT operate the mower control yet until you have a good feel for the machine.

If any movement controls seem too fast or too slow, these can be adjusted. See the valve adjustment guide portion of this manual.

Step Five: Operating Mower Head

Now that you are familiar with your controls you are ready to operate the mower head. Make sure you are in a safe operating area with no bystanders or objects to hit, as well as an area that is safe for operating the mower.

Position the mower head level to the ground, and low to, but off of the ground so that you do not throw any loose debris when turning on the mower. Ensure that your hydraulic flow settings are set appropriately for the flow rating of the mower you are operating (for sickles this is especially important as they have a max flow of 20 GPM)

Starting at idle, turn on the mower head using the P switch on the JCB-400 controller, or by pressing and holding the center click on the right stick for 6 seconds on the Super Controller. Let the mower spin up. Slowly increase your machine RPM's until max flow for your mower head is achieved. At this point you should be able to manipulate the rest of the movement controls for the boom arm.

Your boom arm should be tuned so that the movement controls only operate at maximum flow with the mower head running. If they do not operate at all even at max flow with the mower running, you may need to make some final adjustments to the valve for your machine. See the valve adjustment guide portion of this manual.

Step Six: Storing

Once you are done with operation, adjust the mower into the parking position (see Operational Positions section of the manual). Ensure the mower head has spun down to a complete stop.

Now in a safe storage location, disconnect the hydraulic and electrical connections from your machine. Stow these away and disconnect the Raptor Boom Arm from your machine and gently rest it on the ground. Failure to store the Raptor Boom Arm system in an appropriate parking position could cause the Boom Arm to become unstable and tip over, causing damage to the boom arm or bystanders. It is your responsibility to follow the Operation Positions and park it in an appropriate manner.

GENERAL USE TIPS/INFO

Safety:



Flail and Rotary mower heads are dangerous pieces of equipment. If used improperly or without adequate safety perimeters, death or serious injury can occur. Keep a safety perimeter of a minimum of 100 yards away from all people, or objects that could sustain damage from thrown debris or objects.

The Raptor Boom Arm system along with your machine lift arms has much more reach than a typical skid steer. Be aware of this and very cautious around overhead lines. Do not lift or operate the Raptor Boom Arm system in proximity to electrical overhead lines, or death or serious injury may occur.

Machine Requirements:

The Raptor Boom Arm system is designed for use with Skid Steers of 40hp or more with a lifting capacity of 2000 lbs or more, and appropriate hydraulic flow for your chosen mower head. Do not use the Raptor Boom Arm on a parent machine that does not meet these requirements.

Rotary Actuator Relief:

The rotation of the boom arm on its rotary actuator is protected by a built in bypass valve. This means when you are working off to the right side of your machine, if you hit a solid object, the boom arm will hit the pressure relief and swing back. This protects the Raptor Boom Arm from immediate damage, HOWEVER, it is the operators responsibility to notice this is happening, and stop and make the appropriate adjustments to their positioning. If it is allowed to relieve all the way to the maximum travel, damage can occur. It is your responsibility as an operator to maintain awareness of this at all times.

Arm Positioning:

In order to achieve maximum flexibility and movement in the boom arm system, as well as options for mower heads, the arm can be placed in positions where the mower deck can contact other parts of the boom arm or hydraulic fittings. These are not normal operational positions, and should be avoided. Protections have been built in where possible, but it is ultimately the operators responsibility to be aware of how and where they are moving the arm and mower head to prevent damage to the arm, mower head, or parent machine.

Damage:

Any time that the boom arm or mower head contacts a solid object, stop operation and inspect for damage immediately. Do not continue operation if there is damage to the structure of the Raptor Boom Arm, mower head/deck, or mower blades. Repair any damage before continuing. If you are unsure, please contact us for assistance before continuing operation.

Cutting Sidewinder/Cyclones:

The Sidewinder is capable of cutting up to 4" material.
The Cyclone is capable of cutting up to 6" material.

DO NOT cut larger than recommended material size or you risk clogging up or damaging your mower head. Always keep the blades no more than 4 feet from the ground, and never lift the deck so that the blades are on the same plane as the operator. When cutting grass and small brush, lift the deck up to approximately a 20 degree angle. For larger brush and small trees, bring it to about 30 degrees and push at the same time, lowering the deck onto the stump that is left to keep cutting it away.

General Use Tips/Info (cont.)

Cutting Guidelines - Sickles:

The Sickles are capable of cutting up to 2" material.

Sickles are especially susceptible to damage when mis-used. Always keep visual contact with the tip/end of the sickle to make sure you are not contacting anything you don't intend to cut.

Never use near power lines as a sickle will cut through most hanging wires and cables, causing an electrocution hazard that can result in injury or death.



Do not force anything larger than 2" material into the guards of the sickles or you can damage them.

Care should be taken with sickles around gravel areas. Always make a first cut with the bar above the ground to be sure you are not drawing rocks into the cutters. Rocks will destroy sickle segments very quickly. If you want the cutters to last, beware of rocks.

The rotary actuator breakaway circuit is designed for horizontal use with force applied to the arm. This puts the sickle at a disadvantage and it is possible to damage the sickle before engaging the actuator relief if you hit something with the end of the sickle. **Be aware of this and maintain visual contact with what you are cutting at all times with the sickle so that you do not damage the sickle bar. Damage done to the sickle in this manner is not covered under warranty.**

This also means it is at a disadvantage when operating the sickle vertically, as the leverage is in the wrong place to engage the actuator relief. **Be extra cautious when mowing vertically with a sickle. Severe damage can occur to the sickle otherwise, and is not covered under warranty.**

Operational Positions

Shown below are different positions of operation for the Raptor Boom Arm system and when they are used.



High Mowing Position - Do not transport



Low Bank Mowing Position - Do not transport



Relief Position - Stop and adjust



Parked or Transport Position



Front Mowing or Blade Service Position



Side Mowing - Do not Transport

TRANSPORTATION & STORAGE

Transportation Within The Job Site

The Raptor Boom Arm System should only be transported around the job site in the transport position, raised off of the ground.

On hilly or uneven terrain, carry the mower with the front rolled up slightly and watch your speed. You can easily tip forward and drive the mower into the ground. Be aware if your mounting plate has a tendency to droop as well, as this can dip the mower into the ground as well when driving forward.

Never drive at high speed with the boom arm extended to the side. The skid steer could hit a bump in the path and cause the mower to drop suddenly and impact the ground causing serious damage.



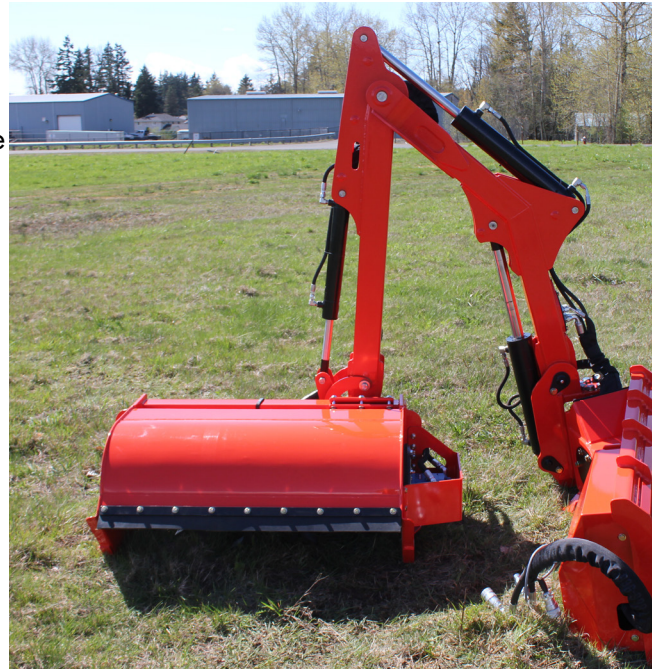
Storage

Storage of the Raptor Boom Arm system is the same as the transport position out in front. Because of the way the boom arm is weighted, you must park it in this position or else you risk the boom arm tipping over.

Minor adjustments may have to be made depending on the terrain you are parking on, so ensure you always park it on as flat and level of a surface as possible to minimize variables in parking it.

Do NOT park it or remove it from the machine with the boom arm extended out to the side.

The operator is responsible for following these guidelines when parking the Raptor Boom Arm and removing it from the parent machine, and assumes all risk for damage if they do not follow these guidelines.



MAINTENANCE & LUBRICATION

Safety at all times



Ensure environmentally safe disposal of waste oil:

-Do not pour down drain!



Avoid Fire or Explosion:



-Do not smoke near, or expose lubricants to, any possible sources of ignition

-(e.g. fire, electrical sparks or heat sources.)



All lubricants are toxic and potentially carcinogenic (cancer causing).



Avoid contact with skin and eyes:

-Wear suitable protective clothing and gloves.



-Always use a suitable barrier cream in case of skin contact.



Always wear eye protection:

-In the event of skin contact wash with soap and water.

-In the event of eye contact wash with water and seek medical advice.



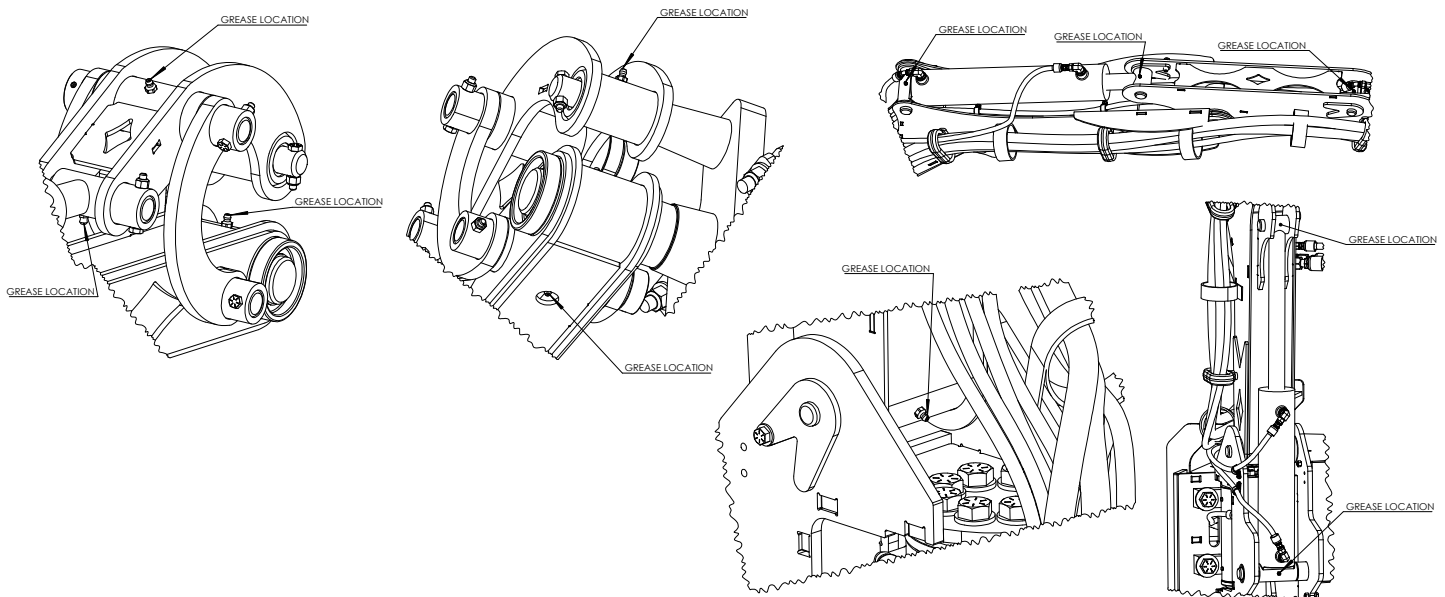
Do not ingest:

-If swallowed seek medical advice immediately.

Lubrication

Lubrication of the Raptor Boom Arm system should be done daily or after every 8 hours of use. There are many pivot points and they should each get one pump of any NGLI 2 grease at this interval to maintain sufficient lubrication. See the diagram for all grease point locations.

For mower heads, please see the separate user manual for your mower head for guides on lubrication and maintenance intervals.



Maintenance Table

Task	Before Each Use	Weekly	Monthly	Yearly
Grease all pivot points.	X			
Inspect mower head fittings and attachment hardware. Tighten as needed.		X		
Inspect & tighten hydraulic fittings/hoses.			X	
Check & fill skid steer loader hydraulic fluid level.	X			
Check condition of cutter blades and hardware. Replace as needed.	X	X	X	
Inspect and replace any worn, torn, or missing safety decals.	X			
Clean attachment			X	
Inspect for damage to arm, cracked welds, or other damage from impacts. (If impacts do occur, carry this check out immediately before continuing operation)			X	X
Check mower head user manual and carry out any necessary maintenance checks listed there.	X			

Be sure to log maintenance checks and findings in the notes section at the end of the user manual.

Valve Adjustments

Mower speed and control speed adjustments can be made on the valve to optimise operation of the Raptor Boom Arm system. Variances in machine flow can even require adjustment upon delivery of the unit to ensure everything is working properly. The easiest way to learn how to adjust the valves is to watch our video linked here: <https://youtu.be/uzbq51zpfkc?si=i5m49a10iEdwZDcu&t=1062>



Diagram for making adjustments located on next page

Adjusting Mower Flow Control:

If your boom arm controls are activating too quickly or slowly (or not at all) while the mower is running, you can adjust the rate of flow on the hydraulic valve block for the mower flow control circuit. Note that any flow taken out of this circuit is taken away from the mower head. Care should be taken to allow as much flow to the head as possible while maintaining adequate boom arm movement.

To adjust, remove the cap on the adjuster. Use a 3mm hex head/allen key to hold the adjuster in place while you loosen the 12mm lock nut with an open end wrench. With the lock nut loosened, turn the allen key to adjust the flow. Make sure you tighten the locknut down again before removing the allen key to ensure that the adjuster does not turn when locking it down.

Turning the adjuster to the right (clockwise) will reduce flow to the mower, and speed up your controls during mower operation. Do this if the arm is struggling to move while spinning the mower at full speed.

Turning the adjuster to the left (counter-clockwise) will increase flow to the mower, and slow down your controls during mower operation. We recommend only adjust this by 1/4 turn at a time, and then testing your controls afterwards.

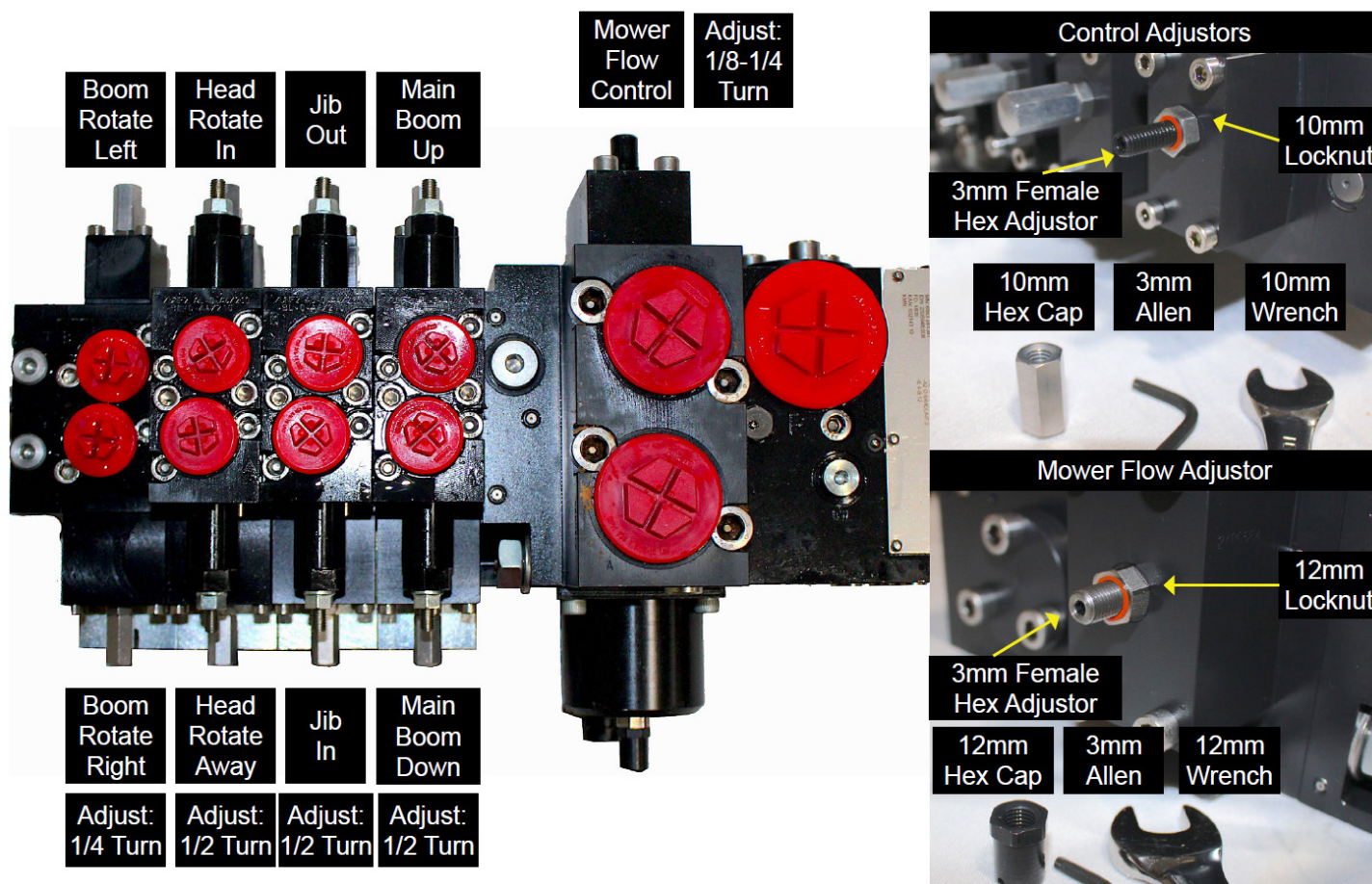
Individual control adjustments:

You can also adjust the controls for each individual control hydraulic circuit as well. To adjust, remove the cap on the control you would like to adjust, and use a 3mm allen key and 10mm wrench to adjust just like the mower flow control circuit.

Turning these adjusters right (clockwise) will restrict flow to that control, and slow down the operation of that control.

Turning these adjusters left (counter-clockwise) will allow more flow to that control, and speed up the operation of that control.

Recommended adjustments increments are located on the next page for each circuit.



VALVE BLOCK DIAGRAM

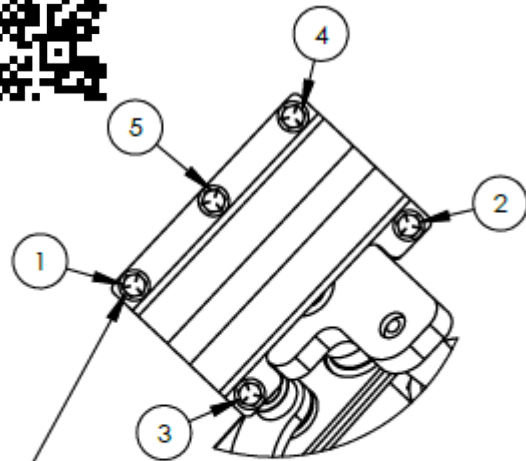
Please note that by adjusting the control circuits, you are adjusting the overall speed of the control circuit. When the mower head is turned on the controls will not operate as quickly, but if you speed up a circuit too much during mower operation, that control can operate at dangerous speeds when the mower is turned off. Take care to only allow just enough flow for operation during mowing, and keep these turned down as much as possible to ensure safe operation of your Raptor Boom Arm.

Valve Block Service

If any valve block parts require service besides basic adjustment, or replacement of damaged seals and o-ring, contact your dealer for assistance.

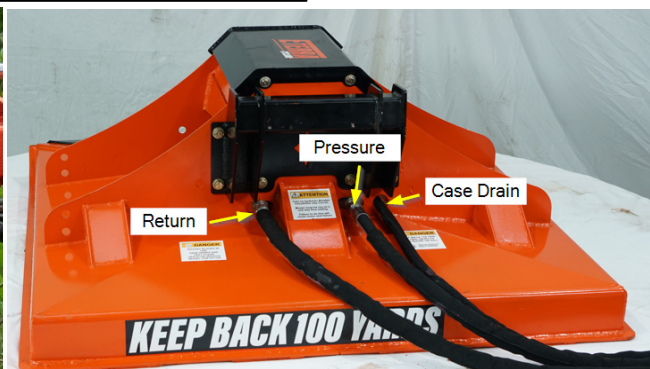
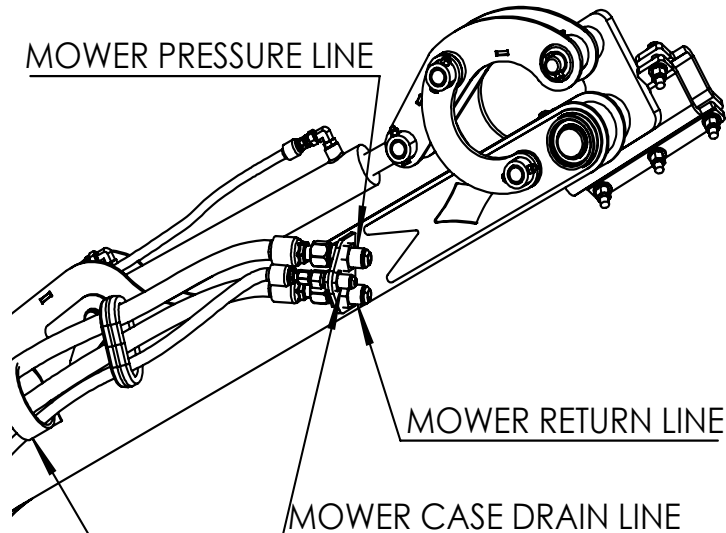
ATTACHING MOWER HEADS

For a video guide on how to attach mower heads, see here:
<https://youtu.be/uzbq51zpfkc?si=8b9087UgiC8E6vVV&t=665>



When attaching mower head follow this torque sequence. Move through the sequence incrementally tightening at least three times. Do not Loctite Torque to 80 ft-lbs

Hose connections on are as follows for Sidewinders and Cyclones. Sickles are omnidirectional and do not require a case drain. For sickles, simply cap off the case drain on the boom arm and hook up both hoses in the best orientation for hose routing.



CONTROLLER INSTALLATION

Rental Kits

The rental kits ship with a cigarette lighter input so they can be easily plugged into most modern machines and moved from machine to machine as necessary. If you do not have this type of power port it is advisable to add one. If this is not possible, you can cut the plug off and install any other means of 12 volt connection you desire. Be careful to observe the polarity so that you do not damage your controller. Any modification should only be done by a qualified professional.

The super controller rental kit consists of a magnetic box which can be placed on the cab between your knees. The cable can then be carefully run outside the window in a safe manner to where the Raptor Boom Arms electrical connector can reach to. The joysticks are meant to be clamped to your existing handles using the included 1" ball RAM mounts with the cables being run safely in a manner where they can not be pulled on or damaged. Example photos shown below.



For JCB-400 Rental kits, simply magnet the box to a convenient location inside of your cab where you can reach and use the controls. Route the cable out the window in a safe manner where the Raptor Boom Arms electrical connector can reach to. Route the power cable to a 12 volt cigarette lighter and you're all set.

Permanent Super Controller Installation

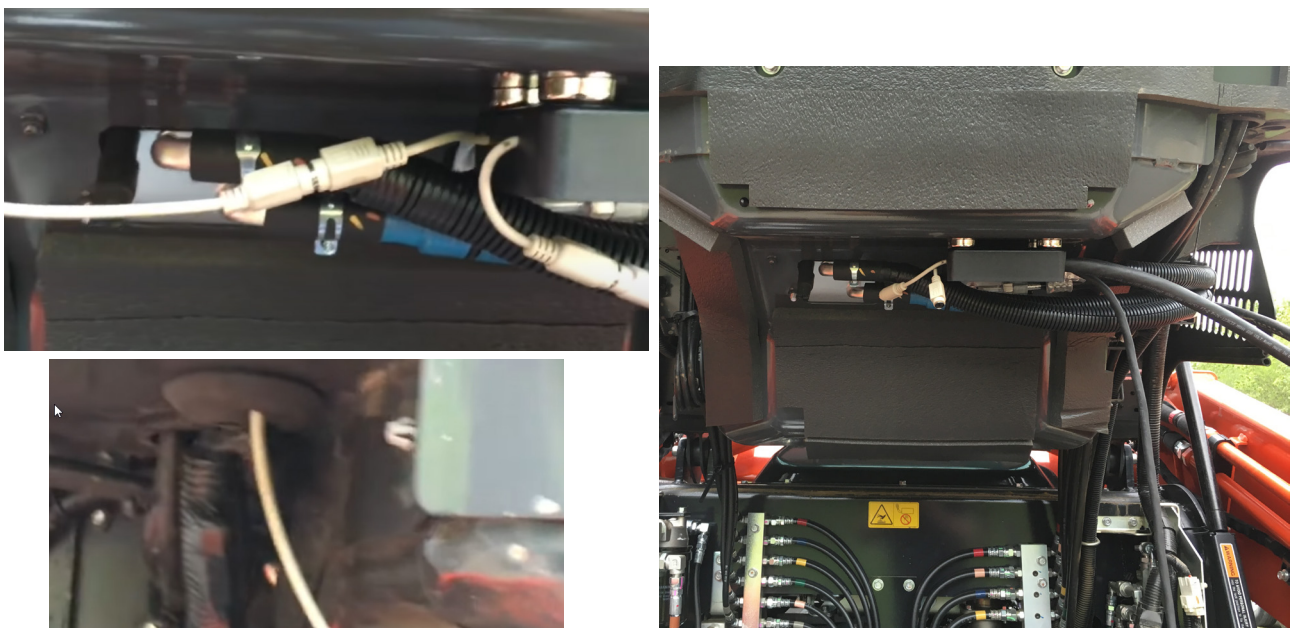
Step 1: Install joysticks onto hand controls. Pull the base rubber boot up and over the stock joysticks to access the main base so that you can install the Ram Mount base clamp. Install the clamp tightly over the base locking nuts onto the control rods. Make sure you angle the mount forward at about a 45 degree angle. Pull the rubber boot down over the Ram Mount and cut a small X in the boot between the second and third rib in the boot just large enough to slide over the Ram Mount ball.



Slide the control cable down through the base of the joysticks to access the grommets between the cab and the engine compartment. You will likely have to remove some of the screws in the plastic shrouds under the hand controls to get access to these grommets.

Depending on where your power connector is located, you will want to route the power cable along with either the left or right side joystick if possible. If not, ensure that it is also routed through a grommet as required to protect the power cable as it goes from the cab down to under the ROPS.

Step 2: Installing control box and routing cables. At this point you will need to access the engine compartment. Do this by removing the ROPS hold down bolts so that you can push the cab back out of the way and access the engine compartment. Find an appropriate place down here to mount the Super Controller control box. Ideally it will magnet under the seat base area. Ensure where you mount it that none of the cables will get pinched or pulled or damaged. Route the joystick cables the rest of the way from grommets through the cab to the control box and plug them into the appropriate connector for each side. Do the same with the power cable.



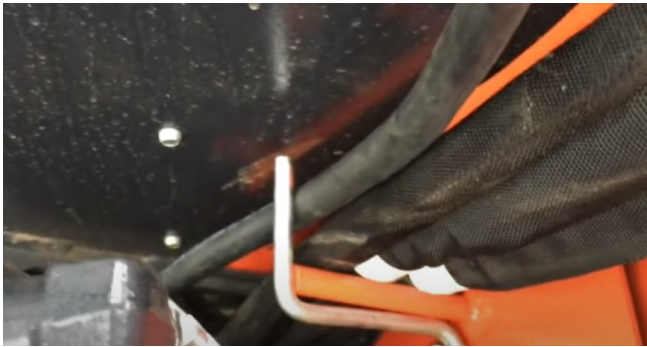
Step 3: Routing 14-Pin Cable

Attach the 14-pin cable to the super controller box and identify a route to the back of your machine where you can follow the location where the hydraulic hoses enter your boom arm. This will vary greatly from one machine to the next and it is up to the installer to choose an appropriate path that will not let the cable get damaged.

Generally speaking, the route will be through the engine compartment towards the back left side of the machine, following the hydraulic hoses up to the boom. Continue routing cable as much as possible between the hydraulic lines so that they are protecting the cable from damage.

Route down the boom in a way that protects the cable from debris and damage. The kit comes with a mounting tab for mounting the 14-pin connector at the end of your boom. Identify a location for this to mount to near your flat face couplers, and attach the 14-pin connector from the super controller to it, and install the dust cover on the connector.

Tie wrap the cable all the way back down the boom to secure it and take up any excess (without going so tight that you create strain points). Take up any excess under the cab near the super controller and wrap it in a safe manner that protects it from damage.



RAPTOR SICKLE ASSEMBLY

For 7' and 9' Sickles

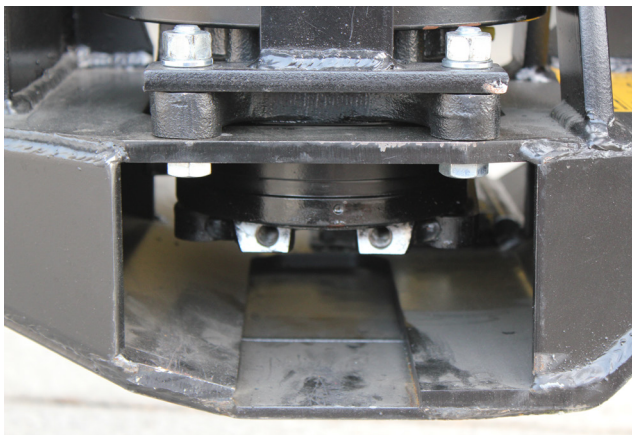
Lay the sickle guard bar into place as shown and align the upper plate with the lower locking plates. As you tighten the bar, it will be pulled tightly into the slots in the lower shoe. After you have tightened to 150 ft. lbs. lift the arm up and look to see that the guard bar is seated into the slots fully. You may have to tighten the bolts a few times to ensure that the bar is fully seated.



After you are sure the guard bar is fully seated, it is time to install the sickle bar cutter.

Lift the arm so the sickle is about 2 feet off of the ground. Make sure the spud drive is facing the back so that the corresponding portion on the sickle can be aligned and inserted into it once the sickle is all of the way in.

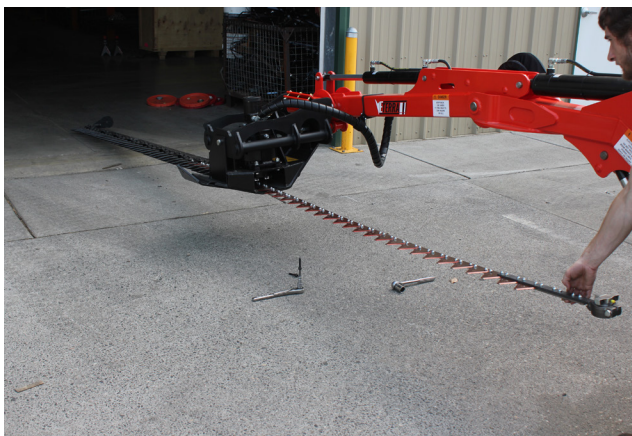
If it is not aligned you can use the boom controls to carefully adjust the head until it is.



Two people are required for the next steps

One person holds the sickle bar on the backside, close to the end and another supports it from the drive section.

Guide the sickle into the guard from the back end. The knife sections should easily glide inside the guards for the first few feet. After that there will be a little more friction so you will need to push from the drive end or use a rubber mallet to lightly tap and jiggle the unit into place.



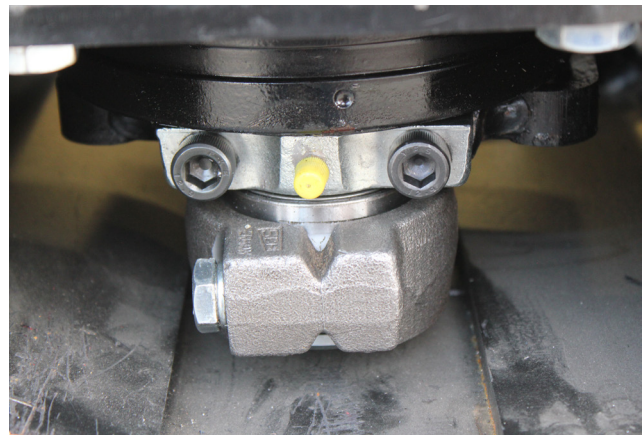
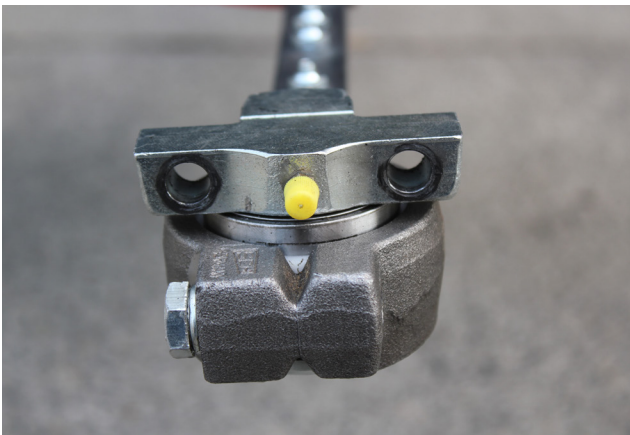
Once the sickle is all of the way in, you will need to carefully tap it into place in the drive section and carefully use the supplied hex tool to tighten it to 59 ft. lbs. Do not over tighten or leave too loose or the drive end will self-destruct.



Run the sickle for a few minutes and re-tighten the drive to 59 ft. lbs. Grease every 4 hours of use at the grease point located under the yellow cap between the hex screws.

Operation of the sickles are similar to any mower, but because the reach is so long, if the sickle tip cannot be seen, extra care should be used to make sure you are not contacting electrical wires or any kind of fixed object.

When you are done cutting, make sure that you rotate the mower forward and park it in a 3 point contact stance as most skid steer loaders have a bleed through on the main cylinders allowing the attachments to droop. If you leave the boom parked with the arm up, when you come back the next day, it will be laying face down on the ground or up against anything that is in the way.



TROUBLESHOOTING

IF IN DOUBT ASK! - Seek Eterra / parent machine dealer for advice & repair.

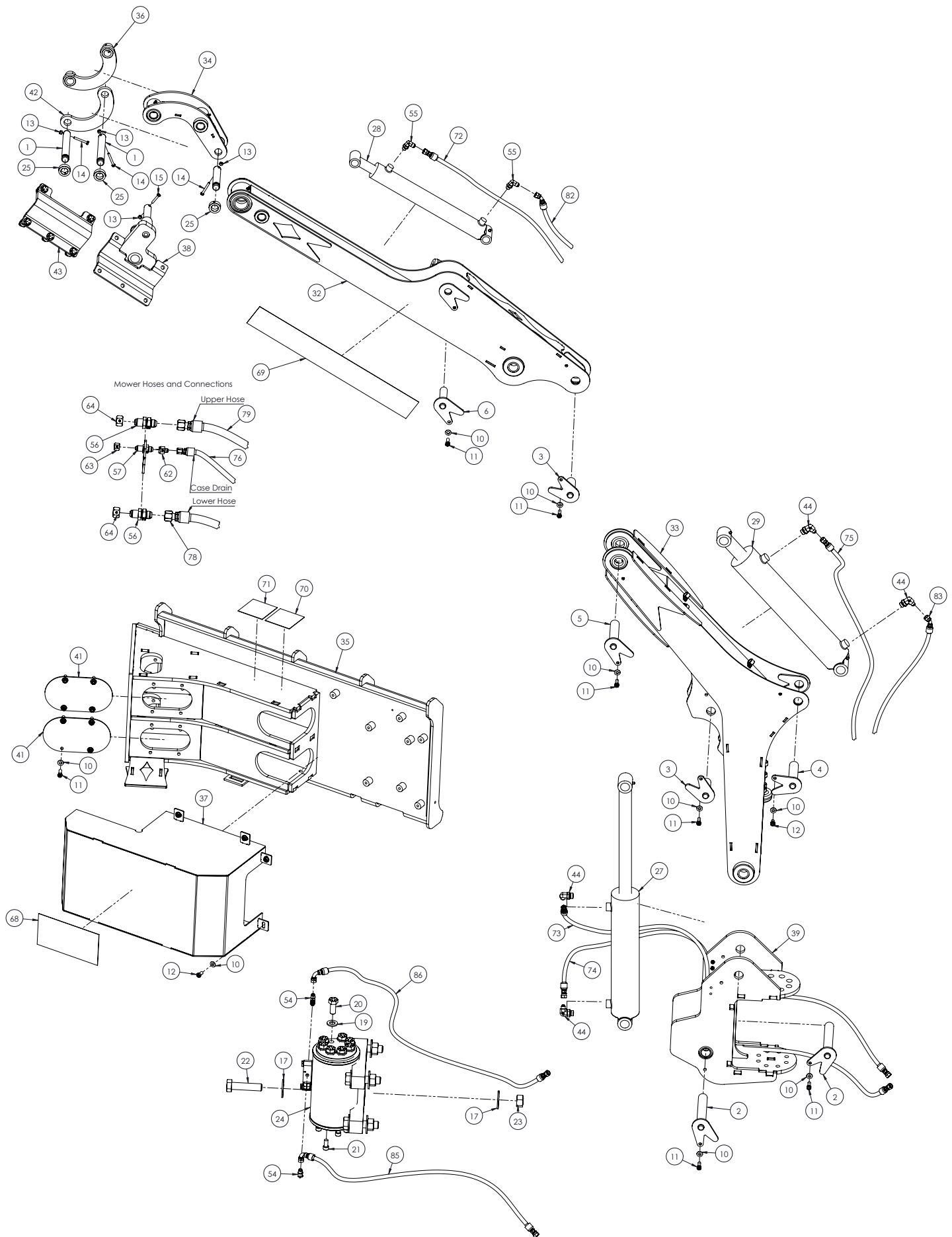
BE SAFE - only use genuine Eterra / parent machine spare parts.

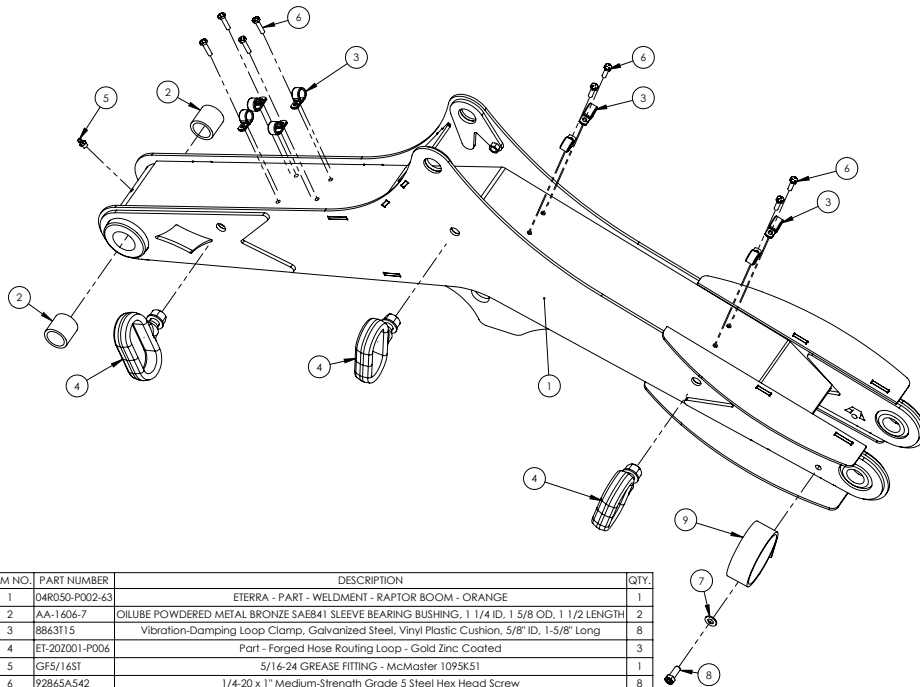
Cannot Move Boom		Mower Lacks Power	
POSSIBLE CAUSE	ACTION	POSSIBLE CAUSE	ACTION
Electrical Controller Issue	Ensure controller has power	Inadequate flow	Valve mower circuit restricted too much.
Inadequate flow/adjustment	Ensure throttle is at max. Adjust valve controls.		Machine flow settings set improperly.
Flow backwards	Swap M/F Couplers		
Only some controls work		Boom Moves too slowly	
POSSIBLE CAUSE	ACTION	POSSIBLE CAUSE	ACTION
Electrical controller issue	Contact dealer or Skid Steer Genius to troubleshoot	Control adjusters restricting too much flow	Follow valve adjustment/guide to increase flow to slow controls.
Oil Leaking inside cover		Mower/Boom Shaking	
POSSIBLE CAUSE	ACTION	POSSIBLE CAUSE	ACTION
Loose fitting	Tighten fittings	Unbalanced blades	Inspect blades for bends/damage. Replace as needed.
Bad O-Rings	Replace O-rings	Damaged blade bar/shaft	Inspect blade bar/shaft for damage, repair or replace as needed.

PARTS DIAGRAMS

Raptor Boom Arm Parts Diagram

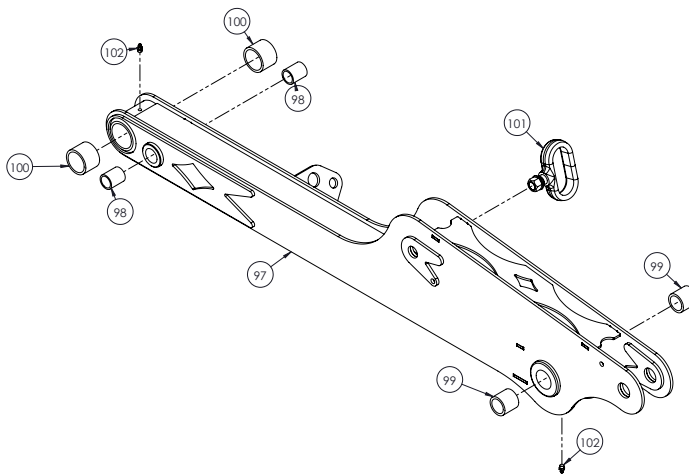
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Replacement Code	Vendor	Vendor Number	EpicorPN
1	04R050-P025	ETERRA - PART - MACHINED - RAPTOR BANNANA LINK PIN	2	2	Ningbo Jinshi Solar Electrical	04R050-P025	04R050-P025
2	04R050-P026	ETERRA - WELDMENT - PIN, LOWER PIVOT	2	2	Ningbo Jinshi Solar Electrical	04R050-P026	04R050-P026
3	04R050-P027	ETERRA - WELDMENT - PIN, BOOM/STICK CYLINDER ROD	2	2	Ningbo Jinshi Solar Electrical	04R050-P027	04R050-P027
4	04R050-P028	ETERRA - WELDMENT - PIN, CYLINDER BASE	1	2	Ningbo Jinshi Solar Electrical	04R050-P028	04R050-P028
5	04R050-P029	ETERRA - WELDMENT - PIN, STICK UPPER	1	2	Ningbo Jinshi Solar Electrical	04R050-P029	04R050-P029
6	04R050-P030	ETERRA - WELDMENT - PIN, head rotate cylinder base	1	2	Ningbo Jinshi Solar Electrical	04R050-P030	04R050-P030
7	04R050-P031	ETERRA - PART - MACHINED - END OF ARM SHORT PIN	1	2	Ningbo Jinshi Solar Electrical	04R050-P031	04R050-P031
8	90126A033	1/2" SAE Flat Washer - Yellow Zinc Coated	10	1	McMasterCarr	90126A033	50NWSA8Y
9	90430A125	1/2"-13 Top Lock/Stover Lock Nut	5	1	Fastenal	1137268	50CNST07
10	98023A031	3/8" SAE Flat Washer - Yellow Zinc	27	1	McMasterCarr	98023A031	37NWSA8Y
11	92620A626	3/8"-16 x 1.25" Hex Bolt Grade 8 Yellow Zinc Finish	14	1	McMasterCarr	92620A626	37C125HCS8Y
12	92620A622	3/8"-16 x 0.75" Hex Bolt Grade 8 Yellow Zinc Finish	13	1	McMasterCarr	92620A622	37C75HCS8Y
13	90630A110	1/4"-20 UNC Top Lock Nut	4	1	Fastenal	1137260	25CNST02
14	92620A550	1/4"-20 x 2.00" Hex Bolt Grade 8	3	1	McMasterCarr	92620A550	25C200HCS8Y
15	92620A546	1/4"-20 x 1-1/2" Long, Fully Threaded Grade 8 Steel	1	1	McMasterCarr	92620A546	25C150HCS8Y
16	91665A530	Heavy Duty Spiral External Retaining Ring for 1-3/4" OD, 1060-1090 Spring Steel	1	2	McMasterCarr	91665A530	91665A530
17	90476A121	1" USS Steel Washer	8	1	McMasterCarr	90476A121	100NWUS02
18	92865A722	1/2-13 x 2.5 hex bolt Grade 8 Yellow Zinc Finish	5	1	McMasterCarr	92865A722	50C250HCS8Y
19	98023A036	3/4" SAE Flat Washer - Yellow Zinc Coated	8	1	McMasterCarr	98023A036	75NWSA8Y
20	92620A834	3/4"-10x 1.75" Hex Bolt - Grade 8 Yellow Zinc Finish	8	1	McMasterCarr	92620A834	75C175HCS8Y
21	91251A712	1/2"-13 Thread Size, 1" Long Steel Socket Head Screw	8	1	McMasterCarr	91251A712	50C100KCS
22	91257A962	1"-8 x 4-1/4" Hex Bolt Grade 8 Yellow Zinc Finish	4	1	McMasterCarr	91257A962	100C425HCS8Y
23	92501A519	1"-8 Distorted Thread/Top Lock Nut	4	1	Fastenal	37278	100CNST02
24	SRB-140-180-CN-FT-SE-S	Etterra - Part - Rotary Actuator used in Raptor	1	2	Sungji Hydraulics	SRB-140-180-CN-FT-SE-S	SRB-140-180-CN-FT-SE-S
25	Fastenal 33378	Etterra - Part - Fixed Backhoe Rear Cylinder Pin Collar - Silver Zinc Coated	3	1	Fastenal	33378	CID3337
26	6963 0877-55.HW	Description: Have - Raptor HF - Part - Control Valve - Rev B, PSL UNF 6 2/340-5 -A2 H 160/160/E/UNF 5 -ZPL 52 -A2 O 16/16/E/UNF 2AL -0-A 4/210 -A2 O 16/16/E/UNF 2AL -0-A 4/210 -A2 O 16/16/E/UNF 2AL -0-A 4/210 -A2 O 16/16/E/UNF 2	1	2	Hawe	6963 0877-55.HW	6963-0813-81.HW
27	288353	MAXIM WT WELDED HYDRAULIC CYLINDER: 3.5 BORE X 14 STROKE - 1.75 ROD	1	2	BAILEY HYDRAULICS	288353	CID3063
28	288312	MAXIM WT WELDED HYDRAULIC CYLINDER: 2 BORE X 14 STROKE - 1.25 ROD	1	2	BAILEY HYDRAULICS	288312	CID3049
29	288354	MAXIM WT WELDED HYDRAULIC CYLINDER: 3.5 BORE X 16 STROKE - 1.75 ROD	1	2	BAILEY HYDRAULICS	288354	CID3067
30	ET-RCH-14-5CH	TCA - Part - Raptor Control Harness - 10 Output - 14 pin to valve	1	2	Technical Cable Applications	ET-RCH-14-5CH-TCA	ET-RCH-14-5CH
31	04R050-P032	ETERRA - FLAT - VALVE MOUNTING PLATE	1	3	MANUFACTURED	04R050-P032	04R050-P032
32	04R050-S001-63	ETERRA - SUBASSEMBLY - RAPTOR STICK WITH BUSHINGS - ORANGE	1	3	MANUFACTURED	04R050-S001-63	04R050-S001-63
33	04R050-S002-63	ETERRA - SUBASSEMBLY - RAPTOR BOOM WITH BUSHINGS - ORANGE	1	3	MANUFACTURED	04R050-S002-63	04R050-S002-63
34	04R050-S003-63	ETERRA - SUBASSEMBLY - RAPTOR TOP LINK WITH BUSHINGS - ORANGE	1	2	MANUFACTURED	04R050-S003-63	04R050-S003-63
35	04R050-P004-63	ETERRA - PART - WELDMENT - RAPTOR BASE - ORANGE	1	3	MANUFACTURED	04R050-P004-63	04R050-P004-63
36	04R050-P005-63	ETERRA - WELDMENT - BANNANA LINK-ORANGE	1	2	MANUFACTURED	04R050-P005-63	04R050-P005-63
37	04R050-P006-63	ETERRA - WELDMENT - RAPTOR VALVE COVER - ORANGE	1	2	MANUFACTURED	04R050-P006-63	04R050-P006-63
38	04R050-P007-63	WELDMENT - RAPTOR HEAD ROTATION LINKAGE - ORANGE	1	2	MANUFACTURED	04R050-P007-63	04R050-P007-63
39	04R050-P008-63	ETERRA - WELDMENT - RAPTOR LOWER PIVOT BRACKET - ORANGE	1	3	MANUFACTURED	04R050-P008-63	04R050-P008-63
40	04R050-P009	ETERRA - PART - MACHINED - RAPTOR CLIP PROTECTOR	1	2	Ningbo Jinshi Solar	04R050-P009	04R050-P009M
41	04R050-P010	ETERRA - PART - FLAT - RAPTOR ACCESS COVER	2	3	MANUFACTURED	04R050-P010	04R050-P010
42	04R050-P033-63	WELDMENT PIECE - FLAT - BANNANA LINK BRACKET - ORANGE	1	2	MANUFACTURED	04R050-P033-63	04R050-P033-63
43	04R050-P011-63	PART - FORMED - RAPTOR BAR CLAMP - ORANGE	1	2	MANUFACTURED	04R050-P011-63	04R050-P011-63
44	6801-06-08-NWO-FG	-8 Male ORB to -6 Male JIC 90 Deg Fitting	7	1	Pressure Connections/WWF	6801-06-08-4	HY1023
45	6400-06-08-O	-6 Male JIC to -8 Male ORB Straight Fitting	5	1	Pressure Connections/WWF	6400-06-08	HY1048
46	6500-06-06-FG	-6 Male JIC to -6 Female JIC Swivel 90deg	6	1	Pressure Connections/WWF	6500-06-06-4	HY1039
47	6801-12-16-NWO-FG	-12 Male JIC to -16 Male ORB 90deg Fitting	1	1	Pressure Connections/WWF	6801-12-16	HY1051
48	6400-12-16-O	-16 Male ORB to -12 Male JIC Straight Fitting	1	1	Pressure Connections/WWF	6400-12-16	HY1007
49	6500-12-12-FG	-12 Male JIC to -12 Female JIC Swivel 90deg Fitting	2	1	Pressure Connections/WWF	6500-12-12-4	HY1038
50	6400-12-20-O	-12 Male JIC to -20 Male ORB Straight Fitting	2	1	Pressure Connections/WWF	6400-12-20	HY1002
51	6809-12-12-NWO-FG	-12 Male ORB to -12 Female JIC Swivel 90deg Fitting	1	1	Pressure Connections/WWF	6809-12-12	HY1006
52	98V304-P001-01	Check Valve 3/4" SAE Threads - VU34 SAE 5 PSI	1	1	Stucchi	810504103	CID3047
53	6801-12-12-NWO-FG	-12 Male JIC to -12 Male ORB 90deg Fitting	1	1	Pressure Connections/WWF	6801-12-12-4	HY1084
54	6801-06-04-NWO-FG	-6 Male JIC to -4 Male ORB 90deg Fitting	2	1	Pressure Connections/WWF	6801-06-04-4	HY1004
55	6801-06-06-NWO-FG	-6 Male JIC to -6 Male ORB 90deg Fitting	2	1	Pressure Connections/WWF	6801-06-06-4	HY1003
56	2700-LN-12-12	-12 Male JIC to -12 Male JIC Bulkhead Fitting	2	1	Pressure Connections/WWF	2700LN-12-12	HY1010
57	2700-LN-08-08	-8 Male JIC Bulkhead Fitting	1	1	Pressure Connections/WWF	2700LN-08-08	HY1012
58	6400-12-12-O	-12 Male ORB to -12 Male JIC Straight Fitting	2	1	Pressure Connections/WWF	6400-12-12	HY1024
59	6400-06-06-O	-6 MORB to -6 MJIC Straight Fitting	1	1	Pressure Connections/WWF	6400-06-06	HY1015
60	6400-06-04-O	-4 Male ORB to -6 Male JIC Straight Fitting	1	1	Pressure Connections/WWF	6400-06-04	HY1008
61	2603-06-06-06-FG	-6 Male JIC Tee Fitting	1	1	Pressure Connections/WWF	2603-06-06-06	HY1061
62	2406-08-06	-8 Female JIC to -6 Male JIC Reducer	1	1	Pressure Connections/WWF	2406-08-06	HY1011
63	0304-C-08	-8 Female JIC Cap for Male Fitting	1	1	Pressure Connections/WWF	0304-C-08	HY1019
64	0304-C-12	-12 Female JIC Cap for Male Fitting	2	1	Pressure Connections/WWF	0304-C-12	HY1017
65	ET-FFF-6-6-SAE	Female Flat Face Coupler 3/8" Body -6 Female ORB Threads	1	1	Holmbury	HQ10-F-06S	CID1080
66	ET-FFM-CUP-12-12-SAE	Male Connect Under Pressure Flat Face Coupler 3/4" Body -12 Female ORB Threads	1	1	Holmbury	HCP19-M-12S	CID1026
67	ET-FFF-12-12-SAE	Female Flat Face Coupler 3/4" Body -12 Female ORB Threads	1	1	Holmbury	HQ19-F-12S	CID1086
68	ETERRA-raptor	Sticker - Logo - Etterra Raptor	1	2	Barnes Printing	SS-02	SS-02
69	ETERRA-keep back big	Sticker - Warning - Keep back 100 yards large 27" x 3.25"	1	2	Barnes Printing	SS-01	SS-01
70	warning-electrical hazard	Sticker - Danger - Electrocuton hazard do not operate boom mower near power lines death or injury can occur	1	2	Barnes Printing	SS-04	SS-04
71	warning-travel position	Sticker - Warning - Travel Position - Boom storage instructions	1	2	Barnes Printing	SS-03	SS-03
72	0606-0606-04-139	1/4" Hose - 139" Long - #6 Female JIC Straight Both Ends - #3	1	2	MANUFACTURED	0606-0606-04-139	0606-0606-04-139
73	0606-0606-04-81	1/4" Hose - 81" Long - #6 Female JIC Straight Both Ends - #7	1	2	MANUFACTURED	0606-0606-04-81	0606-0606-04-81
74	0606-0606-04-85	1/4" Hose - 85" Long - #6 Female JIC Straight Both Ends - #8	1	2	MANUFACTURED	0606-0606-04-85	0606-0606-04-85
75	0606-0606-04-94	1/4" Hose - 94" Long - #6 Female JIC Straight Both Ends - #5	1	2	MANUFACTURED	0606-0606-04-94	0606-0606-04-94
76	0606-0606-06-137	3/8" Hose - 137" Long - #6 Female JIC Straight Both Ends - #13	1	2	MANUFACTURED	0606-0606-06-137	0606-0606-06-137
77	0606-0606-06-92	3/8" Hose - 92" Long - #6 Female JIC Straight Both Ends - #14	1	2	MANUFACTURED	0606-0606-06-92	0606-0606-06-92
78	0606-1212-12-142	3/4" Hose - 142" Long - #12 Female JIC Straight Both Ends - #9	1	2	MANUFACTURED	0606-1212-12-142	0606-1212-12-142
79	0606-1212-12-146	3/4" Hose - 146" Long - #12 Female JIC Straight Both Ends - #10	1	2	MANUFACTURED	0606-1212-12-146	0606-1212-12-146
80	0606-1212-12-66	3/4" Hose - 66" Long - #12 Female JIC Straight Both Ends - #11	1	2	MANUFACTURED	0606-1212-12-66	0606-1212-12-66
81	0606-1212-12-77	3/4" Hose - 77" Long - #12 Female JIC Straight Both Ends - #12	1	2	MANUFACTURED	0606-1212-12-77	0606-1212-12-77
82	0637-0606-04-126	1/4" Hose - 126" Long - #6 Female JIC Straight x #6 Female JIC 45Deg - #4	1	2	MANUFACTURED	0637-0606-04-126	0637-0606-04-126
83	0637-0606-04-84	1/4" Hose - 84" Long - #6 Female JIC Straight x #6 Female JIC 45Deg - #6	1	2	MANUFACTURED	0637-0606-04-84	0637-0606-04-84
84	0637-0606-04-9	1/4" Hose - 9" Long - #6 Female JIC Straight x #6 Female JIC 45Deg - #15	1	2	MANUFACTURED	0637-0606-04-9	0637-0606-04-9
85	0639-0606-04-39	1/4" Hose - 39" Long - #6 Female JIC Straight x #6 Female JIC 90Deg - #1	1	2	MANUFACTURED	0639-0606-04-39	0639-0606-04-39
86	0639-0606-04-50	1/4" Hose - 50" Long - #6 Female JIC Straight x #6 Female JIC 90Deg - #2	1	2	MANUFACTURED	0639-0606-04-50	0639-0606-04-50



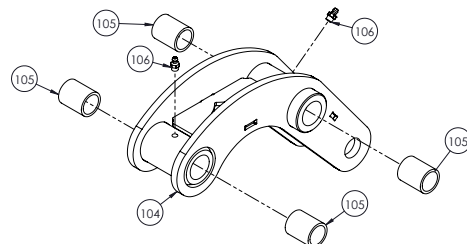


ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	04R050-P002-63	ETERRA - PART - WELDMENT - RAPTOR BOOM - ORANGE	1
2	AA-1606-7	OILUBE POWDERED METAL BRONZE SAE841 SLEEVE BEARING BUSHING, 1 1/4 ID, 1 5/8 OD, 1 1/2 LENGTH	2
3	8863T15	Vibration-Damping Loop Clamp, Galvanized Steel, Vinyl Plastic Cushion, 5/8" ID, 1-5/8" Long	8
4	ET-20Z001-P006	Part - Forged Hose Routing Loop - Gold Zinc Coated	3
5	GF5/16ST	5/16-24 GREASE FITTING - McMaster 1095K51	1
6	92865A542	1/4-20 x 1" Medium-Strength Grade 5 Steel Hex Head Screw	8
7	98023A031	3/8" SAE Flat Washer - Yellow Zinc	1
8	92620A624	3/8"-16 x 1.00" Hex Bolt Grade 8 Yellow Zinc Finish	1
9	HS416H	Bolt on Velcro Strap w hole - 16"	1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
97	04R050-P001-63	ETERRA - PART - WELDMENT - RAPTOR STICK - ORANGE	1
98	AA-1232-7	OILUBE POWDERED METAL BRONZE SAE841 SLEEVE BEARING BUSHING, 1 ID 1 1/4 OD 1 1/2 LENGTH	2
99	AA-1606-7	OILUBE POWDERED METAL BRONZE SAE841 SLEEVE BEARING BUSHING, 1 1/4 ID, 1 5/8 OD, 1 1/2 LENGTH	2
100	AA-2112-1	OILUBE POWDERED METAL BRONZE SAE841 SLEEVE BEARING BUSHING, 1 3/4 ID, 2 1/8 OD, 1 1/2 LENGTH	2
101	ET-20Z001-P006	Part - Forged Hose Routing Loop - Gold Zinc Coated	1
102	GF5/16ST	5/16-24 GREASE FITTING - McMaster 1095K51	3



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
104	04R050-P003-63	ETERRA - WELDMENT - RAPTOR HEAD ROTATION TOP LINK - ORANGE	1
105	AA-1232-7	OILUBE POWDERED METAL BRONZE SAE841 SLEEVE BEARING BUSHING, 1 ID 1 1/4 OD 1 1/2 LENGTH	4
106	GF5/16ST	5/16-24 GREASE FITTING - McMaster 1095K51	2



ETERRA WARRANTY STATEMENT

LIMITED PRODUCT WARRANTY

If you find physical defects in the materials or the workmanship used in making the product described in this document; Eterra will repair, or at its option, replace, the product at no charge to you, provided it is returned (freight prepaid, with proof of your purchase from the original reseller) within 1 year of the date of original purchase. Some Eterra products may have longer, partial, or more specific additional warranties, please contact your dealer for more information.

RMA REPLACEMENT PRODUCT WARRANTY

If you find physical defects in the materials or the workmanship used in the refurbishment of an RMA (Return Merchandise Authorization) product replacement; Eterra will repair, or at our option replace the product at no charge to you for a period of 90-days from the date the RMA was created, or until the end of your original warranty period (whichever is greater).

REFURBISHED PRODUCT WARRANTY

If you find physical defects in the materials or the workmanship used in a product sold as a refurbished unit; Eterra will repair, or at our option replace, the product at no charge to you for a period of 90-days from the original date of purchase.

LEGAL TERMS

Eterra warrants that the equipment delivered by seller will be of the kind and quality described in the order or contract and will be free from defects in workmanship or material. Should any failure to conform with this warranty occur, and the buyer having given written notice to seller within 180 days from the date of purchase, the manufacturer shall correct such nonconformity at its option by either repairing the defective part(s) or making available F.O.B. at sellers locations.

This warranty is in lieu of all warranties of merchantability, fitness for particular purpose or any other warranties, express or implied. Correction and nonconformities in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of seller to buyer, whether based on contract, negligence or otherwise respect to or arising out of such goods.

Neither party shall be liable for special, indirect, or consequential damages. The remedy set forth in this instrument are exclusive, and the liability of seller with respect to any contract or sale of anything done in connection with the same, whether in contract, in tort, under warranty, or otherwise, shall not exceed the price of the goods or part upon which such liability is allegedly based.

All exclusions and limitations of this warranty are made only to the extent permitted by applicable law and shall be of no effect to the extent of conflict with the express requirements of applicable Washington State law.

Notes

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Notes

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....



YOUR DEALER IS

Eterra
2316 East Bakerview Rd.
Bellingham,
Washington 98226
USA

Tel: 360-203-7730
sales@eterraattachments.com

www.eterra-usa.com