



M296025D

MODEL NUMBER: 296025

SERIAL NUMBER: _____

Owner's Manual

Instructions for Installation/Set-up, Operation, Servicing, & Storage **Portable Outdoor Use-Only, Power Take-Off (PTO) Chipper**

Make sure you completely read and understand this manual before using the chipper for the first time. If you have any questions, contact your retail or rental dealer or NorTrac Customer Service at 1-800-521-0438

⚠ WARNING

READ and UNDERSTAND this manual completely before using the chipper! Failure to properly set up, operate, and maintain this chipper could result in *serious injury or death* to the operator or bystanders. In addition, *PTO shaft can become airborne and cause severe injury* if improperly secured.

In particular, be aware of the following hazards:

- Failure to properly mount and secure the chipper to the tractor may cause the unit to flip violently during use, which could cause severe injury to the operator or bystanders, or damage to surrounding objects.
- Never operate the chipper without proper PTO guarding, including a freely rotating shaft guard. Clothing or hair can become rapidly entangled in unguarded rotating PTO shaft or connections, resulting in *serious injury or death*.
- Make sure PTO driveline shaft is securely locked at both ends. An unlocked PTO shaft can whip or become dangerously airborne.
- Keep hands and feet away from inlet and discharge openings.
- Do not allow children under the age of 18 or untrained adults to operate.
- Wear eye protection and other personal protection against flying debris.
- Do not attempt to perform adjustments, declog or clean unit while engine is running.
- Make sure no children or bystanders are within 100' (feet) of chipping operation.
- Protect cars, windows and other objects within 100' from flying debris.
- Be aware of potential for carbon monoxide (CO) poisoning.
- Avoid using in slippery, muddy, wet or icy conditions where falls may occur.

These and other hazards in the manual and summarized at the end under "Important Safety Information."

STOP!

ASSEMBLY REQUIRED: This product requires assembly before use. Some of the components in this unit are heavy and cannot be lifted by one person safely. Please plan on assembling this product when another person can be available to help out. See "Assembly Instructions" section for instructions.

INSPECT COMPONENTS: Closely inspect to make sure no components are missing or damaged. See the "Receiving and Transporting" section for instructions on whom to contact to report missing or damaged parts.

Any Questions, Comments, Problems, or Parts Orders
Call your dealer or NorTrac Customer Service 1-800-521-0438

Hazard Signal Word Definitions






	<p>This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.</p>
	<p>DANGER (red) indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.</p>
	<p>WARNING (orange) indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</p>
	<p>CAUTION (yellow) indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.</p>
	<p>CAUTION (yellow) used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.</p>

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About Your Chipper

Owner/Operator/Renter Training

Read and follow all instructions and safety precautions presented throughout this manual. A summary of important safety information can be found at the end of the manual. Keep this manual for reference and review. If the owner of this unit is different than the operator, give a copy of this manual to any operator. Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people, their property, and themselves.

Rental Companies

Check the storage tube on the cutter guard side (beneath hopper) to make sure the chipper manual is inside. All persons to whom you rent/loan this chipper must have access to this manual. Advise all persons who will operate the machine to read it. You should also provide personal instruction on how to safely operate the chipper and remain available to answer any questions a renter/borrower might have. If videos are available, have renter watch training video.

Product Suitability

Your chipper is designed to only chip wood. A chipper knife is mounted on a revolving flywheel and converts branches fed into the chipper hopper into “chips”. Make sure you completely read and understand this manual before using the chipper for the first time.

Before using, the user shall determine the suitability of this product for the job it will be used for. The user assumes liability for any non-intended or misuse of the product.

As is common with all manufacturers, NorTrac is constantly improving its products. The specifications outlined herein, while believed to be accurate at publication, are subject to change without prior notice or obligation. Do not modify or alter this chipper. The purchaser and/or user shall assume the potential liability for any modification and/or alterations of this equipment from its original design and manufacture.

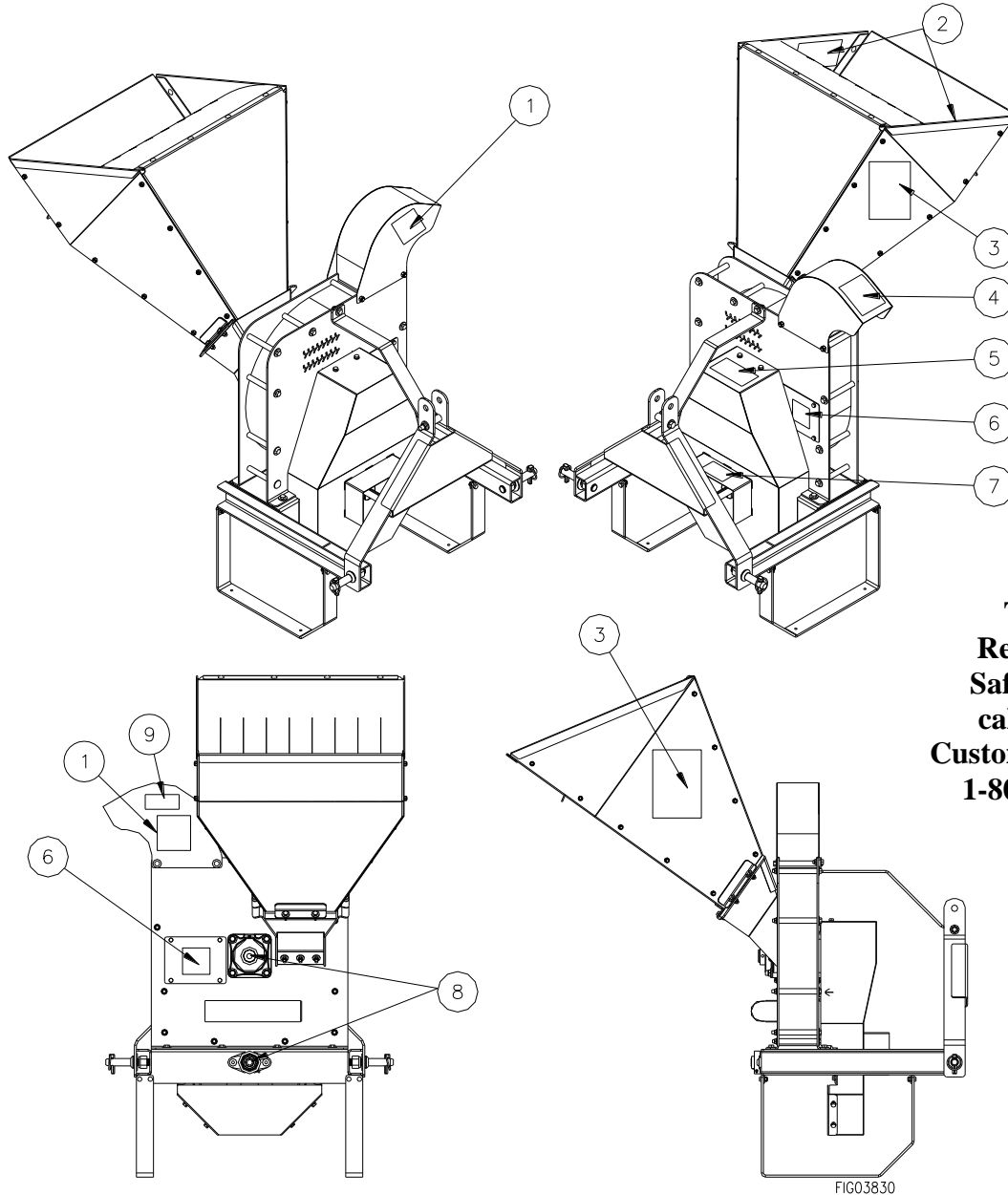
Contact your rental or retail dealer or NorTrac Customer Service at 1-800-521-0438 for any questions about the appropriate use of this chipper or about optional accessories.

Warranty Registration

Please fill out and submit the warranty registration card so that we may contact you with updated information regarding product literature, replacement parts, or safety information.

Safety Label Locations

The following safety labels appear on your chipper. These are warnings and instructions particularly important for proper safety and functionality. Other warnings and instructions also appear throughout this manual. Reading and understanding these labels below will expedite your safe use of the product. The labels on the machine will then serve to further remind you of important safety and operation procedures.



**To order
Replacement
Safety Labels,
call NorTrac
Customer Service at
1-800-521-0438**

⚠ WARNING: Replace Missing Labels

ALWAYS make sure safety labels are in place and in good condition. If a safety label is missing or not legible, order new labels.

Safety Label Locations

Part #	Ref #	Description	Qty
796191	2	Infeed Hazard, Danger	2
	3	General Precautions and Operation	2
796192	1	Flying Debris, Warning	2
	4	Amputation Hazard, Discharge Chute	1
	5	Belt Entanglement, Warning	1
	6	Amputation Hazard, Guard	2
	7	PTO Hazard, Danger	1
786689	8	Spiral	2
799952	9	Spark-Strike Warning	1

2

DANGER

Infeed Hazard
No Hands, Arms, or Feet Inside the Hopper!
Serious Injury Or Death Can Result

You can be drawn into the knife if limbs catch gloves, hands, or loose clothing.
Long sleeve loose fitting shirts and jackets are not recommended.
Wear no gloves or wear tight fitting gloves without cuffs.
Do not reach or kick into feed hopper for any reason.



1

WARNING




Flying Debris Hazard
Chips can cause serious injury or property damage.

ALWAYS wear eye protection.
POINT discharge chute into a safe area and away from people, animals, cars, & houses.
DO NOT discharge on a slick surface where chips will travel 3 to 4 times further.
KEEP bystanders 100 ft from machine while in use.
DO NOT walk in front of discharge chute while engine is operating.

4

DANGER




Amputation Hazard
Do not operate with discharge chute removed.
Keep Hands Out. Rotating knife within will cause very severe personal injury.

PRECAUTIONS:
DO NOT operate chipper with discharge chute removed.
DO NOT place hands, body parts, or other objects in or near the discharge chute while machine is running and parts are moving.
DO NOT try to clear clogs while machine is running and parts are moving.

TO SERVICE:
1. Shut off engine.
2. Wait for all parts to come to a complete stop.
3. Disconnect PTO shaft from tractor and wait 5 minutes before opening.
4. Install clamp or other device to keep chipper disc from turning.

TO RESTART:
Secure all guards with guard bolts torqued following instructions in the owner's manual.

3

WARNING

General Precautions
DO NOT operate this machine unless you have read the operators manual, read decals, and have been thoroughly trained in safe operating procedures.
If you are renting the chipper, your rental agent should provide you with personal instructions and make sure that both the engine and chipper owner's manuals are attached to the unit.
Keep children away. Chipper should be operated only by properly and fully trained adults.
Replace worn or unreadable labels or missing manuals.

Personal Protection Equipment
Never attempt to use this machine without wearing proper personal protection.
It is recommended that you wear the following:
* No gloves or tight fitting work gloves without cuffs.
* Eye and face protection that conforms to ANSI Z87.1.
* Ear and hearing protection.
* A protective helmet that conforms to ANSI Z89.1.
* Sturdy non-slip footwear, preferably safety boots or shoes.
* Tight fitting and tucked-in clothing. No long sleeve shirts with button cuffs.
* No jewelry or clothing with stray straps or strings.

Preparation for Chipping
Precautions should be taken while using chipper in other areas where persons and property might be damaged by the discharge.
* Keep bystanders 100 ft from machine while in use.
* Ensure no foreign objects or tripping hazards are in the infeed area.
* Ensure all guards & covers are secure and in place.

Operating Procedure
Operate this machine only after you have read the operators manual, read and understood the labels, and have been thoroughly trained in safe operating procedures.
Follow the procedures below for starting and operating the chipper components.
Wear recommended personal protective equipment.

Chipping Procedure
Materials: Wood products only! (Tree limbs, branches, etc.)
Always stand to the side of the infeed hopper per illustration.
Keep clothing away so limbs can snag your clothing and pull you into the knives!
Check the materials to be chipped for any foreign objects, particularly metal tools.
Feed wood into hopper with larger end (butt-end) first. DO NOT reach into the infeed hopper for any reason.
Feed small wood debris with wooden push paddle, or throw material on top of big wood as it feeds, or throw it in the trash!

Vine-Like Materials: Special Feeding Instructions
Vine-like materials are particularly hazardous because they can be rapidly and unexpectedly drawn into the hopper after being entangled in other brush. They can also entangle and draw the operator towards the hopper as well.
Cut vine-like material into 4 to 5 foot pieces before bringing to the hopper area.
Do not allow vine-like material to even pile near the infeed hopper!

Maintenance
Regular maintenance is required based on hours of operation. A schedule is provided within the owner's manual.
The following daily checks are required to prevent major damage to your chipper:
* Chipper Belt Tension
* Condition of Knife



KEEP BYSTANDERS 100 FT.
FROM MACHINE

6

DANGER



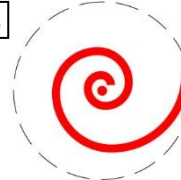

Amputation Hazard
Do not operate with guards removed.
Keep Hands Out. Rotating knife and flywheel within will cause very severe personal injury.

PRECAUTIONS:
DO NOT start or operate chipper with guards removed.
DO NOT try to clear clogs while machine is running and parts are moving.

TO SERVICE:
1. Shut off engine.
2. Wait for all parts to come to a complete stop.
3. Disconnect PTO shaft from tractor and wait 5 minutes before opening.
4. Install clamp or other device to keep chipper disc from turning.

TO RESTART:
Secure all guards with guard bolts torqued following instructions in the owner's manual.


8



7

5

WARNING



Belt Entanglement Hazard

KEEP belt guard closed while operating.
BEFORE opening guard: wait for all moving parts to come to a complete stop, disconnect PTO shaft from tractor, then wait 5 minutes before opening.

9

WARNING



FIRE HAZARD

- Sparks can occur if blade/rotor strikes rocks, metal or other hard objects.
- Do NOT use in high/very high fire hazard severity zones.
- Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws and regulations relating to fire prevention requirements.

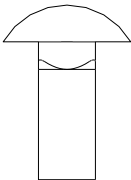
Receiving & Transporting

Initial Inspection

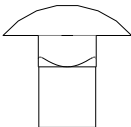
You should inspect the chipper immediately after taking possession and before use. See the “Machine Component Identification” section of this manual for a diagram of the chipper and all its components.

If you have missing components, contact your retail or rental company or NorTrac Customer Service at 1-800-521-0438.

Fastener Bag Contents



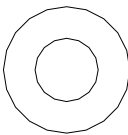
5/16" x 3/4"
CARRIAGE BOLT
QTY: 4
PART# 82088



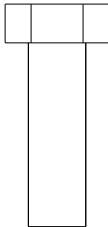
5/16" x .625"
CARRIAGE BOLT
QTY: 18
PART# 82425



5/16" NYLOC NUT
QTY: 28
PART# 82020



5/16" USS FLAT
WASHER
QTY: 12
PART# 82021



5/16" x 1" BOLT
QTY: 6
PART# 82091

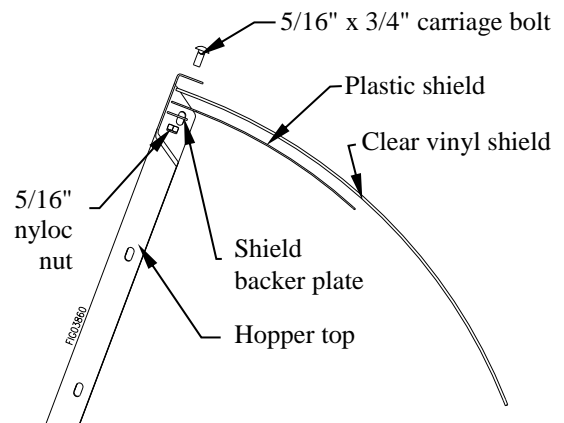
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Receiving & Transporting

Assembly Instructions

1. Attach Shields to Top Hopper

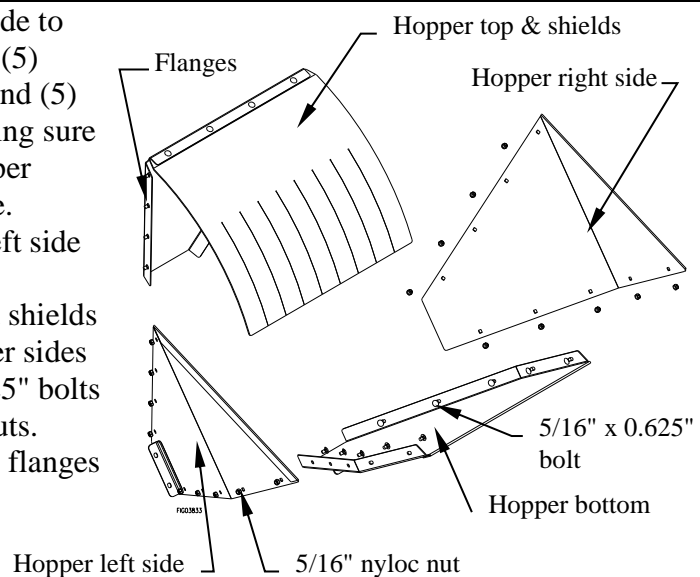
- Using (4) 5/16" x 3/4" carriage bolts and (4) 5/16" nyloc nuts, assemble in order shown.
- Torque to 11 ft./lbs.



3. Assemble Hopper Sides

Note: Carriage bolt heads are inside the hopper, nyloc nuts are outside the hopper.

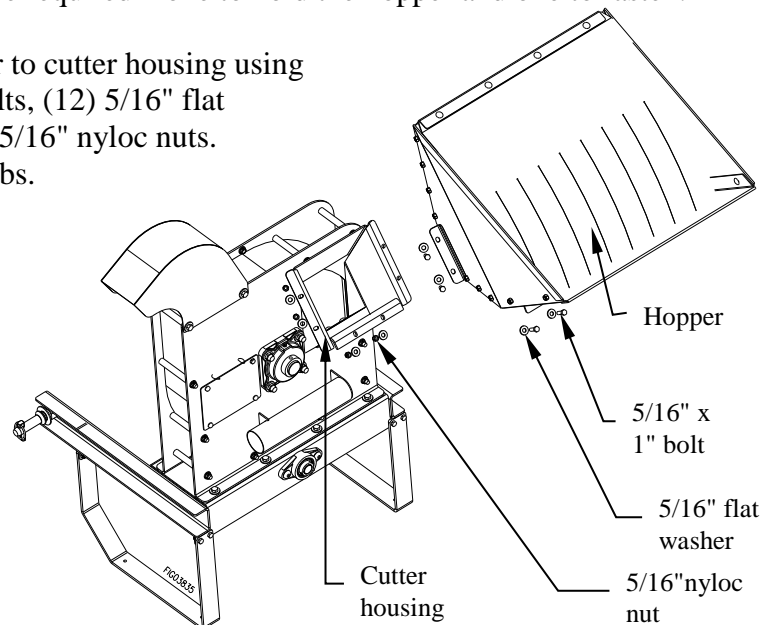
- Attach hopper right side to hopper bottom, using (5) 5/16" x 0.625" bolts and (5) 5/16" nyloc nuts making sure the flange on the hopper bottom is in the inside.
- Repeat with hopper left side to hopper bottom.
- Install hopper top and shields to left and right hopper sides using (8) 5/16" x 0.625" bolts and (8) 5/16" nyloc nuts. Make sure hopper top flanges are in the inside.
- Torque to 11 ft./lbs.



5. Attach Hopper to Chipper

Note: Two people are required – one to hold the hopper and one to fasten.

- Assemble hopper to cutter housing using (6) 5/16" x 1" bolts, (12) 5/16" flat washers, and (6) 5/16" nyloc nuts. Torque to 11 ft./lbs.

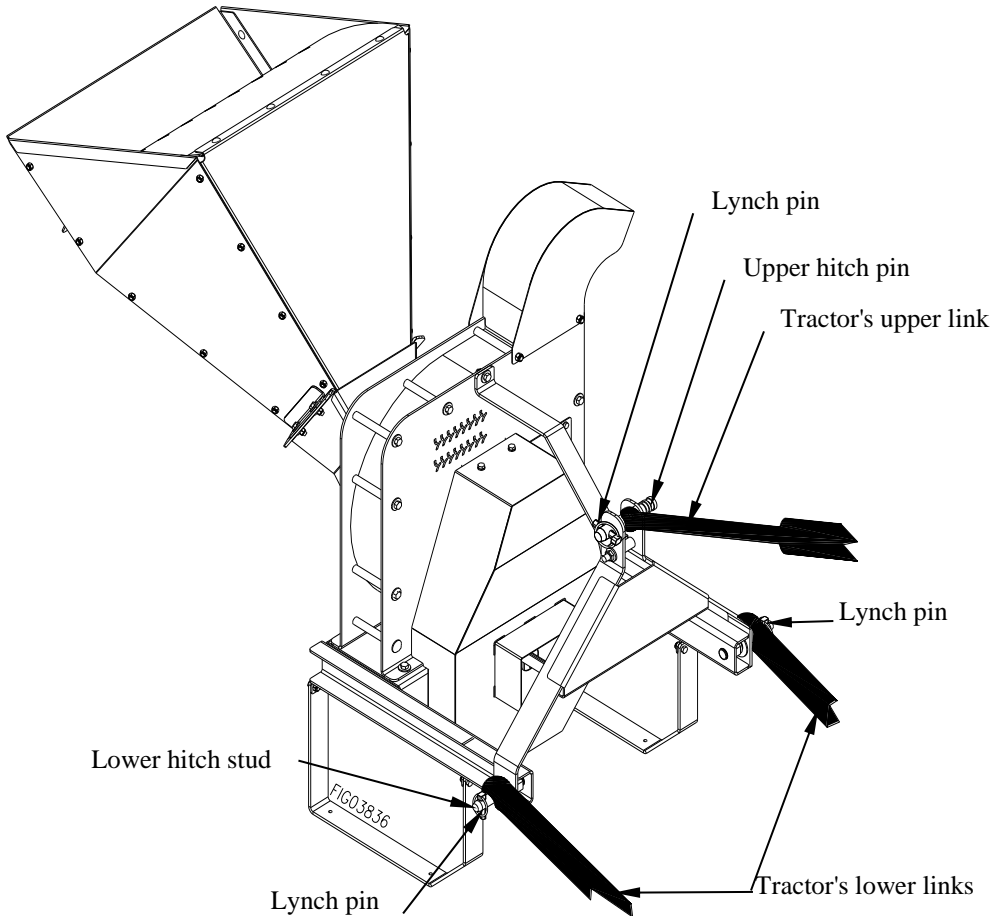


Receiving & Transporting

Connecting to your Tractor

⚠ WARNING

The chipper must be correctly mounted and then attached to the tractor 3-point hitch for safe operation. Follow the instructions below for safely mounting and connecting the chipper.

1. Read instructions	Review your tractor manual or check with your dealer for instructions and safety information about how to properly connect the chipper to your tractor's 3-pt hitch and PTO shaft. Ensuring a correct hook-up to your tractor is your responsibility.
2. Tractor turned off & parking brake engaged	Turn off the tractor and engage the parking brake before attaching the chipper.
3. Attach to tractor 3-point hitch links	Attach chipper to tractor's 3-point hitch links. a. Connect the tractor's lower link to the lower hitch studs of the chipper. Secure with lynch pins. b. Connect the tractor's upper link to the upper hitch pin of the chipper. Secure with lynch pin. 

Receiving & Transporting

⚠ WARNING

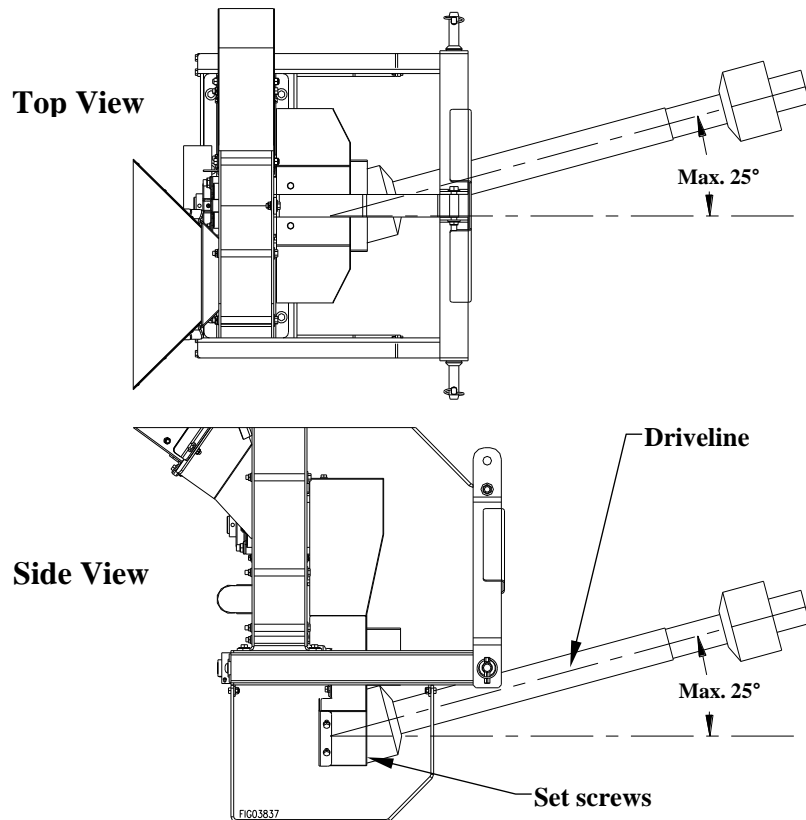
An improperly attached chipper could become dislodged during transportation or operation, which could result in serious injury to the operator or bystanders. Do not drive the tractor or operate the chipper until you are sure the chipper is properly attached and hitch pins are fully engaged.

Attach PTO driveline shaft

Connect the PTO driveline shaft to the tractor:

1. Align the tractor and chipper to minimize the driveline angle in both the horizontal and vertical planes; it should be as near to a direct line in all directions as possible. The angle should never exceed 25° in any direction.

Note: Proper alignment will increase the life of the power takeoff shaft, reduce wear on the bearings of the PTO and chipper, and reduce vibration.



2. Ensure that the tractor PTO is disengaged and the tractor is turned OFF.
3. One half of the PTO driveline is already attached to the chipper's input shaft.
4. Slide the other half of the PTO driveline into the half connected to the chipper.
5. Connect the other end to the tractor PTO stub. Pull back on collar and slide coupler onto 6-tooth spline PTO stub. Push collar forward to lock onto PTO stub. Pull on driveline to ensure proper connection.

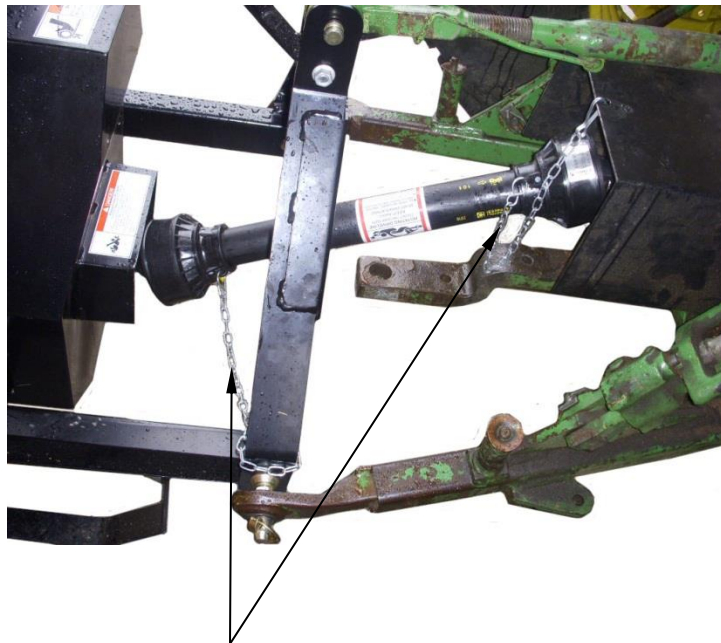
Receiving & Transporting

⚠ WARNING

Make sure PTO driveline shaft is securely locked at both ends. Unlocked PTO shafts can whip or become dangerously airborne.

Secure driveline guard, check shields & attach safety chains

1. A driveline GUARD must ALWAYS be used with the driveline shaft. Secure the driveline guard according to manufacturer's instructions.
2. Make sure the tractor and chipper shields are in place at both ends of the driveline shaft:
 - On the tractor where the driveline connects to the PTO stub.
 - On the chipper where the driveline connects to the input shaft.
3. Secure PTO safety chains to a stationary part of the chipper frame and tractor to prevent guards from turning.



Safety chains

⚠ WARNING


Never operate the chipper without proper PTO guarding, including a freely rotating shaft guard as well as tractor and chipper shields at both ends. Clothing or hair can become rapidly entangled in unguarded rotating PTO shaft or connections, resulting in *serious injury or death*.

Receiving & Transporting

Moving Instructions:

WARNING

Serious injury can occur if the tractor on which the chipper is mounted is driven unsafely.

<p>1. Drive to desired location</p>	<p>Drive tractor and chipper carefully to desired work site.</p> <p><u>Important safety instructions:</u></p> <ul style="list-style-type: none"> • Read tractor instructions. Review safety instructions in your tractor manual with regard to driving with 3-point hitch mounted equipment attached. • Securely attached. Be sure chipper is securely attached before transporting. • Make sure chipper is raised as to not contact the ground or objects on the ground. Damage can occur if chipper is dragged on the ground • Added length. Be aware of the added length of the chipper. • Never operate the machine at high transport speeds on hard or slippery surfaces. • Reduced road stability. Be aware that heavy, 3-point hitch mounted equipment can reduce road stability, regardless of the amount of front-end counterweight added. Drivers should take extra caution when driving with the chipper attached. Reduce your speed and take extra caution during turns or while driving on rough or sloped terrain. • On public roads. If transporting the chipper on a public road, make sure to comply with all local, state, and federal requirements. • Exercise extreme caution when operating on or crossing gravel drives, walks or roads. Stay alert for hidden hazards or traffic. • No riding or cargo on chipper. Never ride or transport cargo on the chipper. • Unattended. Turn off the tractor before leaving the chipper unattended. • Under the influence. Never transport or operate this chipper while under the influence of alcohol, drugs, or medication.
<p>2. Engage parking brake</p>	<p>Make sure the tractor's parking brake is engaged before operating the chipper.</p> <div data-bbox="824 1514 1065 1556">  WARNING </div> <p>If the parking brake is not engaged, the tractor could roll while you are operating the chipper. Personal injury could result. Always engage the parking brake before leaving the tractor while the chipper is attached.</p>

Operation

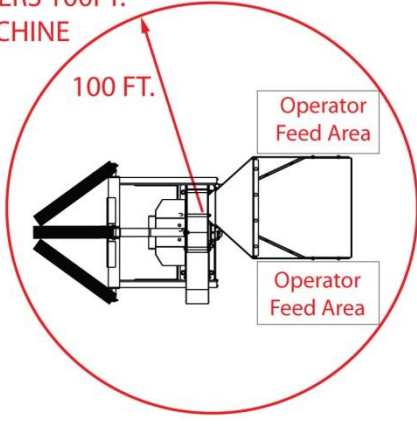
1. Pre-start Check List & Procedures

⚠ WARNING: High Energy Machine

This is a high-powered machine. It has moving parts operating with high energy and at high speeds. Safe procedures must be used to avert serious injury or death. Unsafe operation will create serious hazards for you, as well as anyone else in the nearby area.

Each time you get ready for a chipping session and before starting the engine you should follow these items:

- Wear Personal Protection
- Establish Safe Working Area
- Remove Hazardous Chipping Materials
- Only Work During Daylight

Wear Personal Protection	<p>Use approved protective clothing and approved protective equipment when using the machine.</p> <ul style="list-style-type: none"> • Wear ANSI-approved and OSHA-compliant safety glasses with side shields and a hard hat. • Use of earplugs or another hearing protection device if working within 15-20 feet of the running chipper for longer than a few minutes. Hearing can be damaged from prolonged close-range exposure to the type of noise produced by this chipper. • Wear long pants to protect legs from flying debris. • Wear gloves with no cuffs. • Never wear jewelry or loose-fitting clothing when starting or operating the chipper or any mechanical device. Loose or dangling apparel, jewelry or hair can become entangled in moving parts.
Establish Safe Working Area	<p>Layout a safe working area that best fits your project and/or situation by:</p> <ul style="list-style-type: none"> • Using safety tools such as barricade signs, safety cones and caution tape. • Determining placement of equipment and brush pile (i.e. on or off the street) that will minimize interference with auto traffic. • Keeping children, pets and onlookers at a safe distance. <div data-bbox="852 1459 1453 1900"> <p>KEEP BYSTANDERS 100FT. FROM MACHINE</p>  <p>100 FT.</p> <p>Operator Feed Area</p> </div>

Operation

Remove Hazardous Chipping Materials	Thoroughly inspect the area where you will be working and remove all foreign objects. Look for rope, wire, etc. and remove these objects before chipping. (Inserting these objects into the chipper could damage the machine and/or cause injury)
Work During Daylight Hours	Use the machine only in daylight or in well-lit conditions. Never operate the chipper after dark.

2. Starting the Chipper

For detailed engine operation and maintenance information, always refer to the specific tractor's Owner's Manual.	
1. Engage parking brake	Secure chipper from unintended movement—make sure the tractor's parking brake is engaged before operating the chipper. ⚠️ WARNING: If the parking brake is not engaged, the tractor could roll while you are operating the chipper. Personal injury could result.
2. Lower chipper to level ground	The driveline angle should never exceed 25°.
Warm-Up Checks	<ul style="list-style-type: none"> • Slowly bring the PTO speed up. • Listen for any unusual metal to metal sounds as chipper wheel is rotating. • Listen for any belt squealing indicating belt needs to be tightened or replaced • (Unusual sounds may mean a need for repair or cleaning out foreign material stuck in chipper. STOP engine and refer to "Maintenance and Repairs" section of this manual) • If you don't hear any unusual sounds, slowly bring PTO speed up to 540 rpm.
Normal Operation	Always operate the PTO at 540 rpm . Proper chipping requires 540 revolutions per minute.

3. Stopping the Tractor

- Move throttle slowly to decrease engine speed until RPM is at its minimum.
- Turn off PTO.
- Turn tractor OFF.
- Chipper knife will continue to rotate for a short time.

Operation

4. Feeding Material/ Clearing Jam

Feeding Material

DANGER: Amputation Hazard

Never place your hands, feet or any part of your body in the chipper hopper, discharge opening, or near any moving part while the machine is running. If a feeding problem should occur, shut the machine down and see Maintenance and Repair” section to address the problem.

WARNING: Feed brush from the side of the chute

Never stand directly in front of hopper opening. This will reduce the risk of you being caught and dragged into the machine.

WARNING: Flying Debris Hazard

Stones, chips, and debris can cause serious injury or property damage. Debris can fly 100 ft in any direction out of the chute and bounce off objects and hit operator, bystanders or breakable objects.

Chipping

- The chipper is designed to accept wood only.
- Feed branches in butt end first to keep the chipper from getting jammed and to reduce the kickback of material.
- Let go of the material once placed in the hopper.
- Use a push stick to help feed small pieces and brush through the chipper. Keep your distance from the machine’s moving parts. Do not push material into the chute with your hands or feet, pitch fork, etc. Lay shorter pieces on top of longer branches when feeding them through the machine.
- Do not force material into the chipper. If the machine does not chip well, the chipper knife may need to be sharpened or replaced, or the belts may need to be replaced or tightened.
- Overloading the chipper hopper will cause the rotor speed to decrease. If you hear the engine RPM decreasing, stop feeding material into the hopper until the material already in the machine is chipped and the engine has returned to full speed.
- Never allow an accumulation of processed material to build up in the discharge area as this will prevent proper discharge and can result in kickback from the chipper hopper.
- After striking a foreign object, stop the tractor, wait for all moving parts to come to a complete stop, and disconnect the driveline from the tractor's PTO shaft. Thoroughly inspect the machine for any damage, repair the damage before restarting and operating the machine.
- If the machine should start to vibrate abnormally, stop the tractor, wait for all moving parts to come to a complete stop, disconnect the driveline from the tractor's PTO shaft, and check immediately for the cause. Vibration is generally a warning sign for trouble.

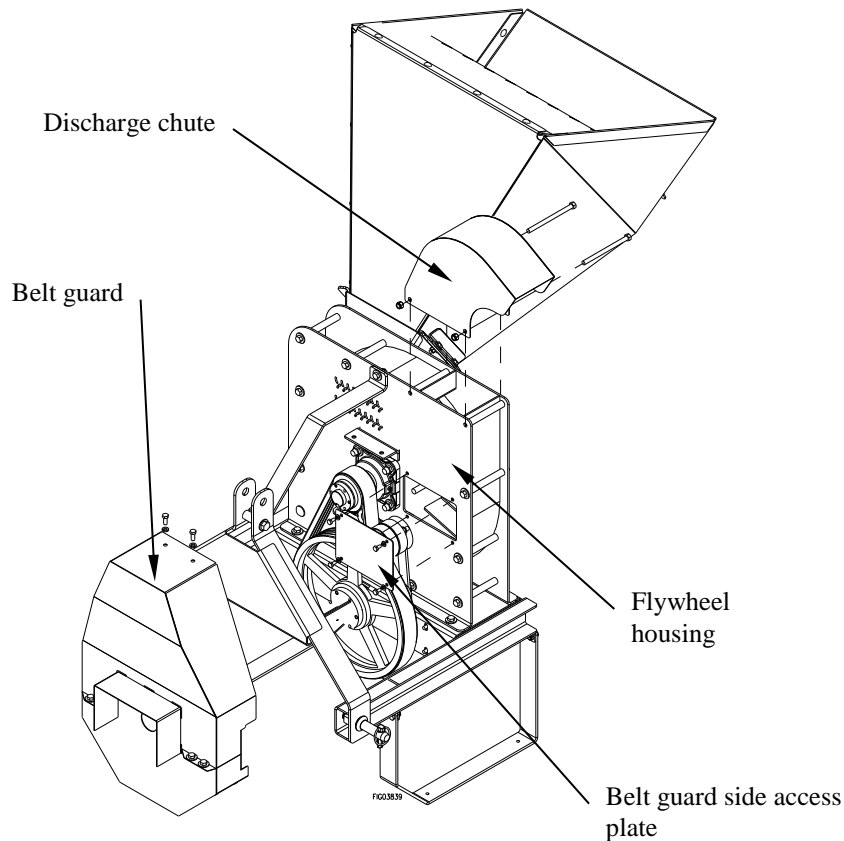
Clearing Jam

WARNING: Shut Off Engine to Clear Jam

Before attempting to unclog debris or clear a jam:

1. Shut off engine.
2. Wait for all rotating parts to come to a complete stop.
3. Disconnect PTO shaft from tractor and wait 5 minutes before servicing.

Operation



1. Remove belt guard, discharge chute and belt guard side access plate.
2. Wearing gloves and safety glasses; use a piece of wood to push/pull clogged material up and out of the cutter housing.
3. Reinstall belt guard, discharge chute and belt guard side access plate. Torque fasteners according to torque chart before operating.

7. Storing the Chipper

Storage Procedures

- Clean the chipper.
- Inspect for worn or damaged parts.
- Choose a covered storage location.

Storage Procedures

Clean chipper	Clean any dirt, debris and other foreign matter from the machine, discharge chute and hopper.
Inspect chipper	Inspect the machine for worn or damaged parts and tighten any nuts or screws that may have become loose.
Choose a storage location	Store the chipper in a location that is: <ul style="list-style-type: none"> • Clean and dry. • Away from extreme high or low temperatures. • Covered for extra protection

Maintenance and Repair

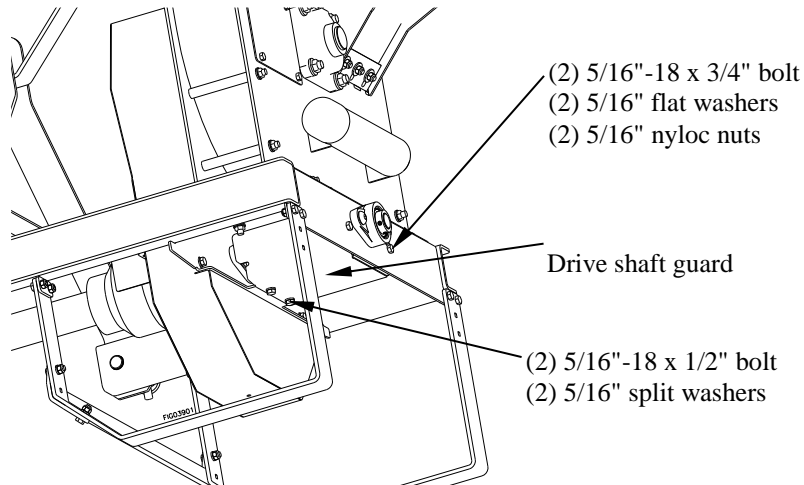
WARNING

ALWAYS shut off the tractor, make sure flywheel comes to a complete stop, and disconnect the drive shaft before cleaning, adjusting, or servicing the chipper. Make sure all guards and shields are replaced before using.

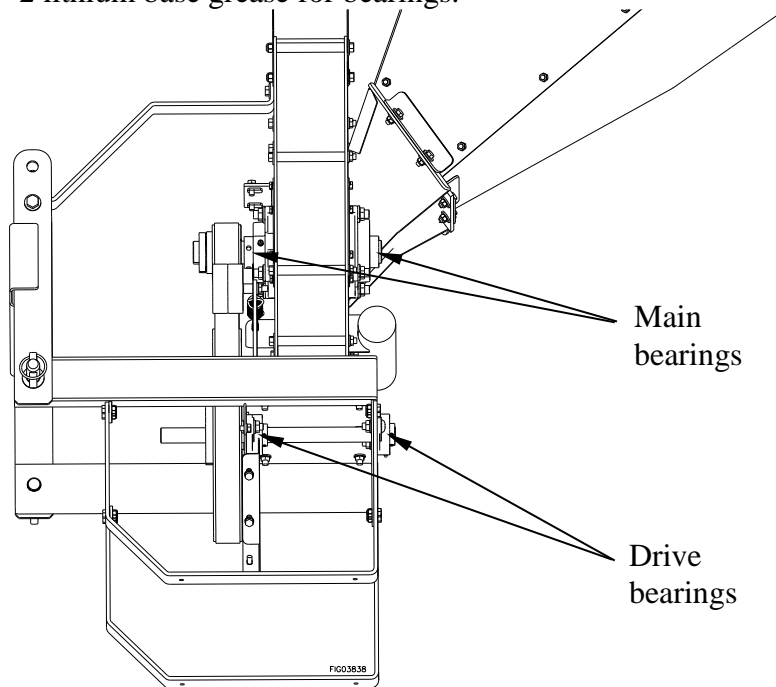
Maintenance safety rules	<p>Read and follow these safety rules whenever you will be servicing the chipper:</p> <ul style="list-style-type: none"> • Turn off chipper. Always turn off chipper, wait for all parts to come to a complete stop, and disconnect PTO shaft from tractor before opening. • Replace guards/shields. Make sure all guards and shields are replaced after servicing the chipper. • Repair. Major service, including the installation or replacement of parts, should be performed only by a qualified service technician. Obtain factory approved parts from NORTRAC at 1-800-521-0438. • Replacement parts. If a part needs replacement, only use factory approved repair parts. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the chipper and will void the warranty. • After servicing. Make sure all tools and wrenches have been removed. Start tractor and run chipper at low RPM. Listen for any metal against metal noise or squealing noises from belts. If you should hear any foreign noise stop engine and solve problems. Re-start and slowly bring PTO to 540 RPM and run for 10 minutes to assure that repair was successful.
Checking and adjusting belt tension	Drive Belts: Check and adjust according to pages 22-24.
Lubrication	<p>Your chipper was greased at the factory. The operator needs to lubricate the chipper main bearings periodically. Bearings should be greased weekly or every 10 hours of use.</p> <p>There are two chipper main bearings (in the front and rear) and two drive shaft bearings (on the front and underneath).</p>

Maintenance and Repair

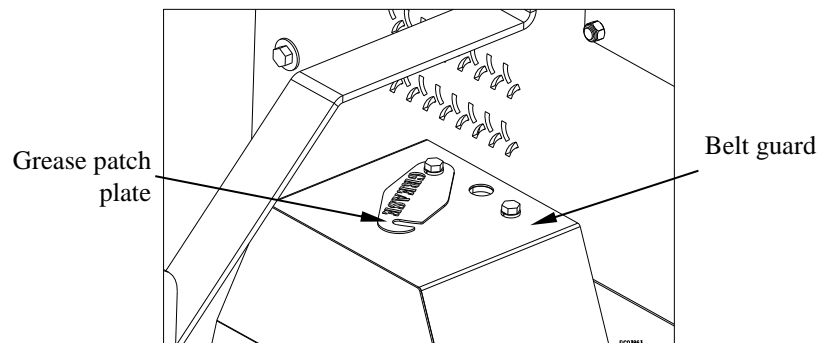
To access drive shaft bearings, remove drive shaft guard. See pg. 19 for belt guard removal instructions.



Note: Do not over grease. Too much grease will damage bearing seals. Use EP-2 lithium base grease for bearings.



To access belt guard side main bearing's grease zerk, remove grease patch plate attached to top of belt guard.



Maintenance and Repair

1. Chipping Knife

The blade (or knife) is called the flywheel blade. It is mounted on the large spinning wheel which drives the blade (knife) past the incoming material at a high rate of speed and causes the “chipping” action. Routine inspection of the chipper blade for sharpness will ensure the chipper is operating at full efficiency. Operating with a worn or damaged knife or blade will cause extreme stress and vibration to the machine and make chipping difficult for the operator.

While the chipper knife is made from the highest grade of chipper knife steel, which is heat treated and ground to a very sharp edge, its life is relative to what is chipped. It may dull the first day or last for months. The life span depends on the amount of dirt and rocks that enter the chipper.

Sometimes trees will have nails or wire embedded into the surface.

The knife should be checked for damage before each use. It should be turned or changed as necessary.

A dull knife can:

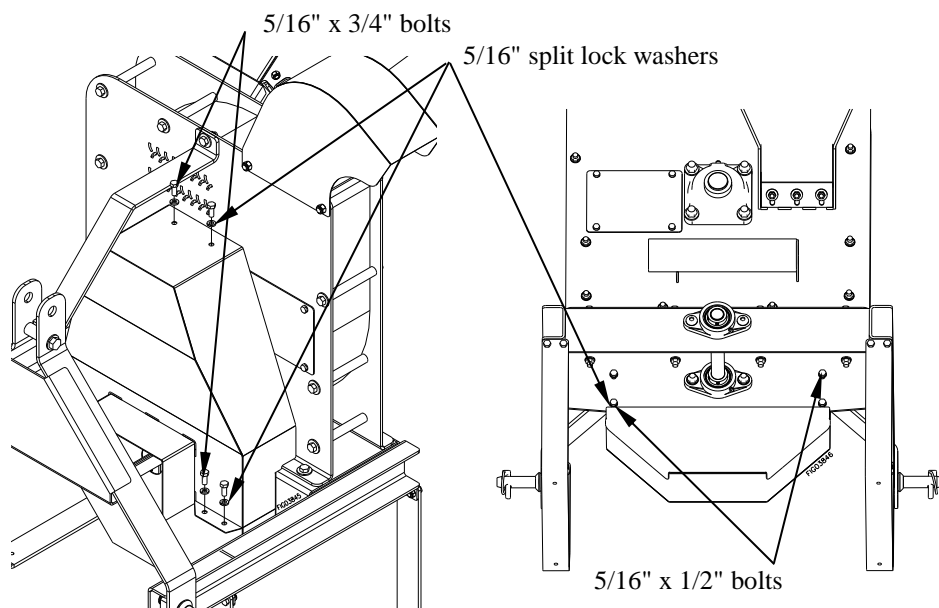
- Cause excessive fuel consumption.
- Cause unnecessary stress and strain on the machine.
- Produce poor quality chips.
- Reduce production rate slowing the feed rate.
- Actually wear further and faster.

To check, turn or change the chipper wheel knife you will have to remove the access plates.

Removing Belt Guard and Access Plates

Remove Belt Guard

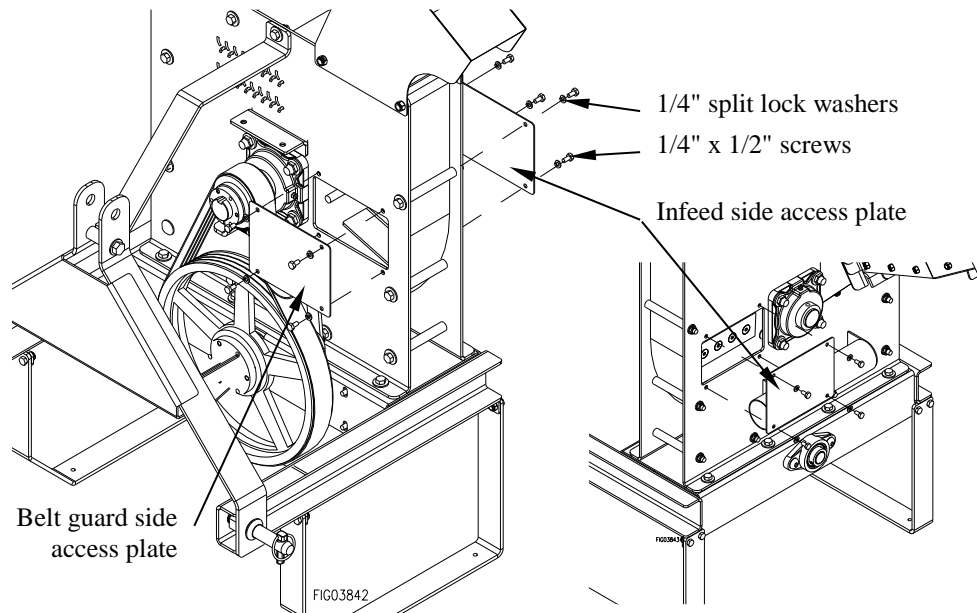
- Remove (6) 5/16-18 x 3/4" bolts and (6) 5/16" split lock washers from the top and toward the bottom of the belt guard.
- Remove (4) 5/16-18 x 1/2" bolts and (4) 5/16" split lock washers from underneath the frame.



Maintenance and Repair

Remove Access Plates

- Remove (8) 1/4"-20 x 1/2" screws and (8) 1/4" split lock washers.



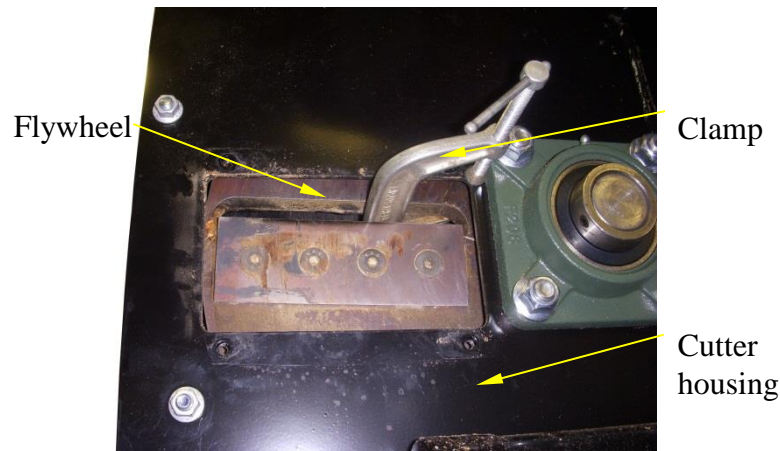
Removing the Chipper Knife

Removing Knife

CAUTION

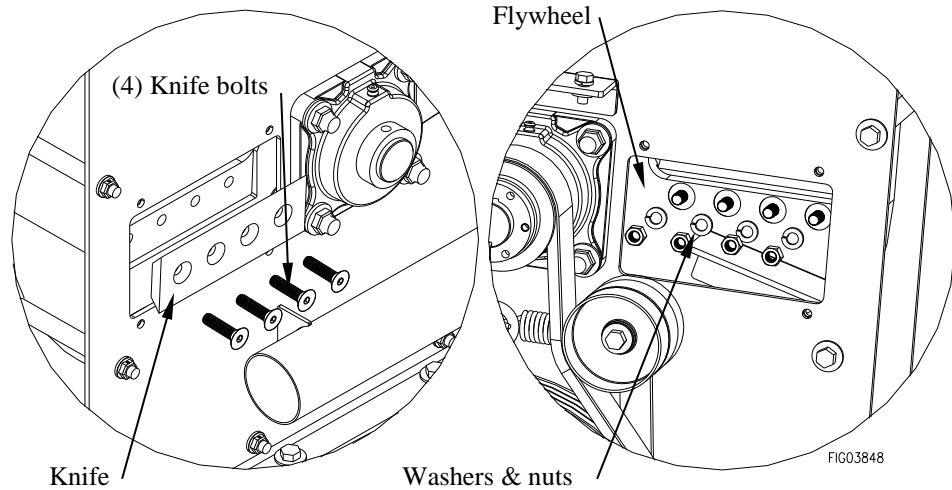
Wear gloves while changing the knife.

1. Clamp the flywheel to the wall of the cutter housing via the infeed side access panel.



2. To remove knife, hold bolt heads stationary with 3/8" hex wrench and loosen nuts with a ratchet and deep socket.
3. Clean knife and knife pocket on flywheel.
4. Sharpen, turn; or if it has nicks or damage, replace the knife.
5. Install all (4) knife bolts, washers and nuts before tightening. Hold bolt heads stationary with 3/8" hex wrench and tighten nuts to 44 ft./lbs.

Maintenance and Repair



Adjust Bed Knife

After changing or turning the knife, it will need to be re-adjusted to the bed knife plate. If the gap is not set correctly, you will have excessive vibration when chipping and the knife will seem to be dull.

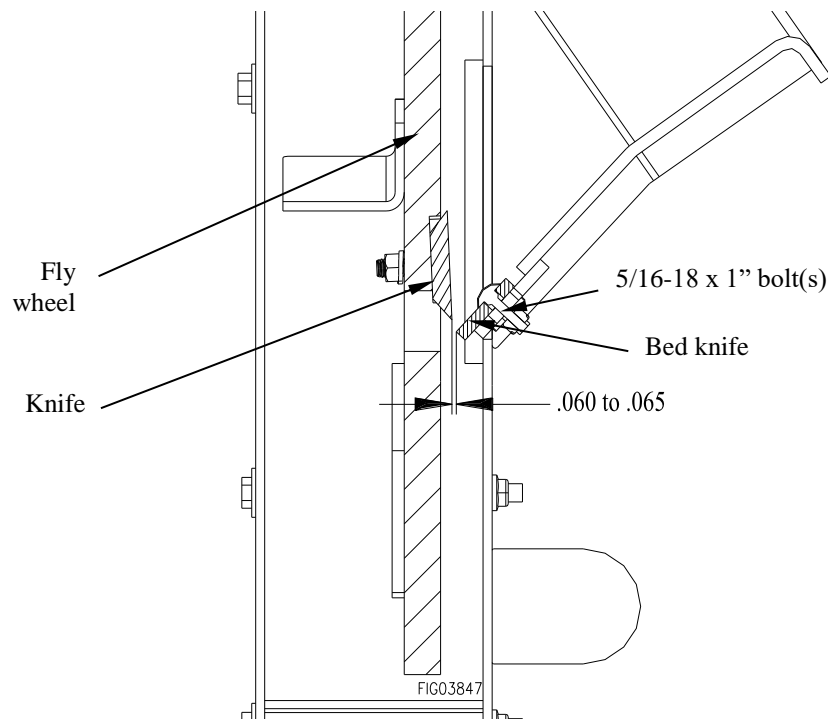
Hopper removal is necessary to access the bed knife. See assembly instructions on page 8 for more information.

To adjust the bed knife:

- Loosen bed knife using a socket wrench enough so it will move but still have a slight resistance.
- You can now slide it up or down (in or out) to achieve the correct gap setting.

Adjust bed knife to proper gap of .060" to .065".

When adjusted, tighten 5/16"-18 x 1" bed knife bolts. (See torque chart.)

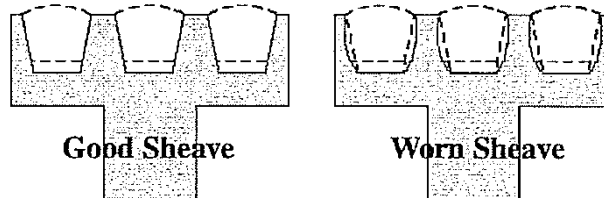


Maintenance and Repair

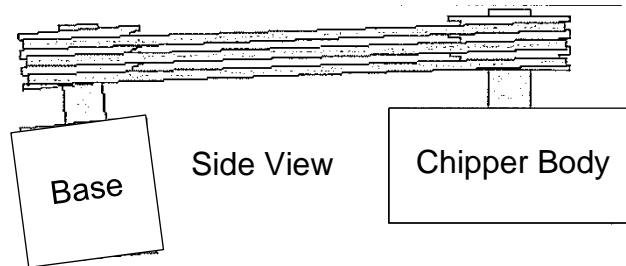
3. Belt and Sheave Care

Proper belt tension and sheave alignment is vital to chipper performance. Here are a few problems that can occur when belts and sheaves are not properly maintained or cared for.

Loose Belt: A loose belt will slip and then glaze over. Once this happens the belt will not transmit power to the flywheel which can cause the chipper to clog and also cause excess sheave wear.



Misaligned Sheaves: When sheaves are not aligned properly the belts will glaze very quickly and slipping will occur. This will also cause the belt to bounce or vibrate causing metal stress on the machine.

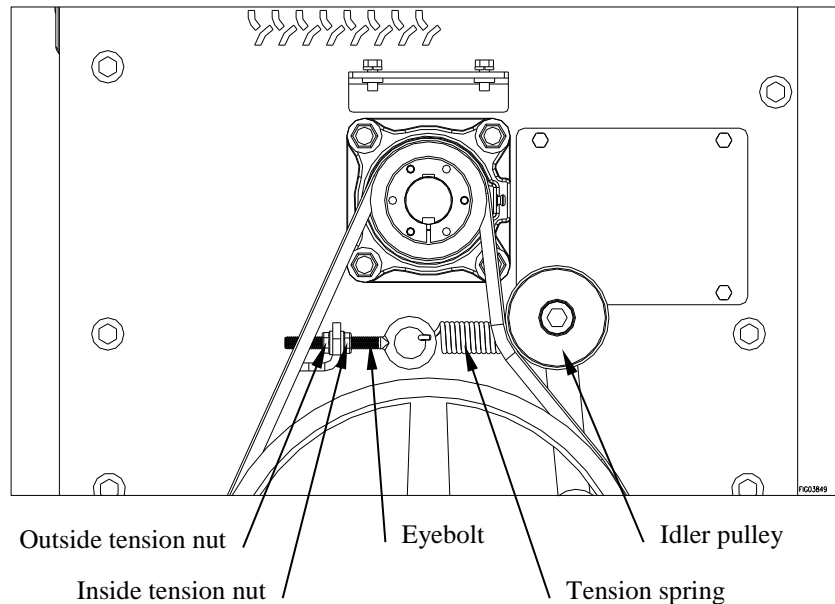


Maintenance and Repair

Chipper Belt Tension Adjustment

Note: Belt tension and alignment are inter-related. Do not adjust one without checking the other. Because of the spring, the belt tension should remain constant.

1. Remove belt guard.
2. Loosen inside tension nut on eyebolt
3. Turn inside tension nut clockwise until proper tension is achieved.
4. Tighten outside tension nut.



Note: Proper alignment is for the front and back of both sheaves (all 4 faces) to be in a straight line. Use a long straight edge to check alignment.

Things to inspect:

- a. Idler aligned correctly with belt (belt rides on center of pulley).
 - b. Bolts and nuts that hold eyebolt to frame, idler to arm, arm to frame all need to be tight.
5. Check for proper belt tension using a belt tension gauge.
 - a) If belt has been used, 3lb force results in 0.156" deflection
 - b) If belt is new, 5-7lb force results in 0.125" deflection
 6. When belt tension is proper, retighten tension nuts to 20 ft./lbs. torque.
 7. Close belt guard.

WARNING:

Do not operate the machine without making sure all guards are in place after servicing.

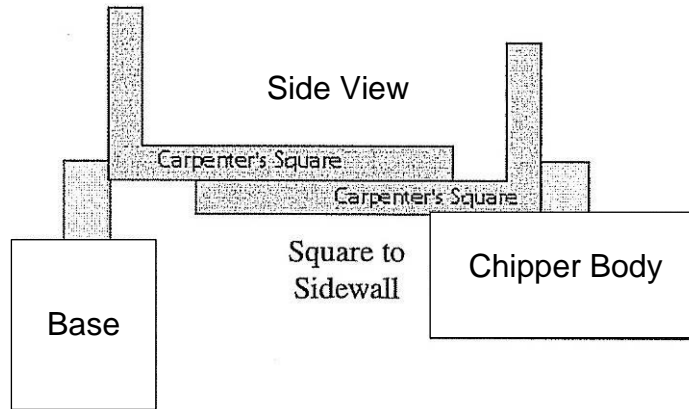
Note: New belts require a "break-in" period of approximately 2 hours. Readjustment may be necessary after "break-in."

Note: Use only factory recommended belts. Contact your NORTAC dealer.

Maintenance and Repair

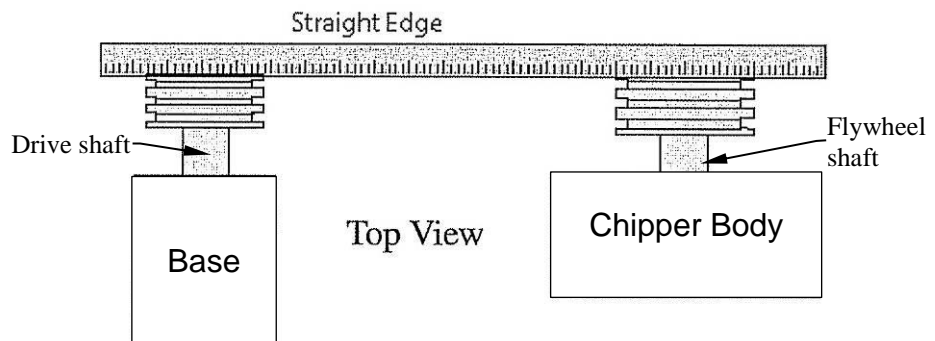
Sheave Installation & Alignment

Before installing sheaves, make sure the flywheel shaft and drive shaft are clean and square or parallel to each other. This can be done by using two large contractor's squares.



Assemble bushings into sheaves by leaving them loose, then slide them on the shafts and install the key. Be sure to consider belt guard and cover clearance.

Slide the sheaves on and off the drive shaft and flywheel shaft as needed to make sure they are in line. Use a long straight edge to align them with each other.



Tighten all screws evenly. Drive shaft bushing set screws should be tightened to 10 ft./lbs. Flywheel shaft bushing set screws should be tightened to 6 ft./lbs.

Maintenance and Repair

4. Maintenance Schedule

⚠ CAUTION:

Before attempting any maintenance, be sure that the tractor is shut off , the flywheel comes to a complete stop, and the drive shaft is removed!

Item (What to check or action req'd)	Daily	Each Use	10 hours	40 hours
Bearings, Shaft - Grease			X	
Belt Tension				X
Bolts – Tightness		X		
Knife – Condition		X		
Warning Decals – Legible	X			
Bearing Set Screws		X		

IMPORTANT:

If a part needs replacement, only use parts that meet the manufacturer's specifications. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the chipper.

**Contact NorTrac Customer Service at 1-800-521-0438
for any questions, problems, or parts orders.**

Maintenance and Repair

5. Bolt Torque Chart

Bolt Size	Location	Bolt Grade	Torque, ft./lbs.
5/16-18 NC	Hopper & Legs	5	17
3/8-16 NC	Knife bolts (4)	8	44
7/16-14 NC	Drive shaft flange bearing	5	35
5/16-18 NC	Bed knife (4)	5	17
3/8-16 NC	Discharge chute	5	31
5/16-18 NC	Belt & Drive shaft guards	5	17
M14-2.0	Flywheel shaft bearing	8.8	50
1/4-20 NC	Patch plates	5	7
3/8-16 NC	Cutter housing	5	15
3/8-16 NC	Driveline set screw	8	26
5/16-18 NC	Drive shaft bushing screw	5	10
1/4-20 NC	Flywheel shaft bearing screw	5	6

Note: These values are based on clean, dry threads

Specifications

FRAME

Width	34"
Height	60"
Length	54"
Machine Weight	350 lbs.

TRACTOR

Size	CAT 1, 3-pt hitch, 1-3/8" 6-spline PTO @ 540 rpm.
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CHIPPER HOPPER

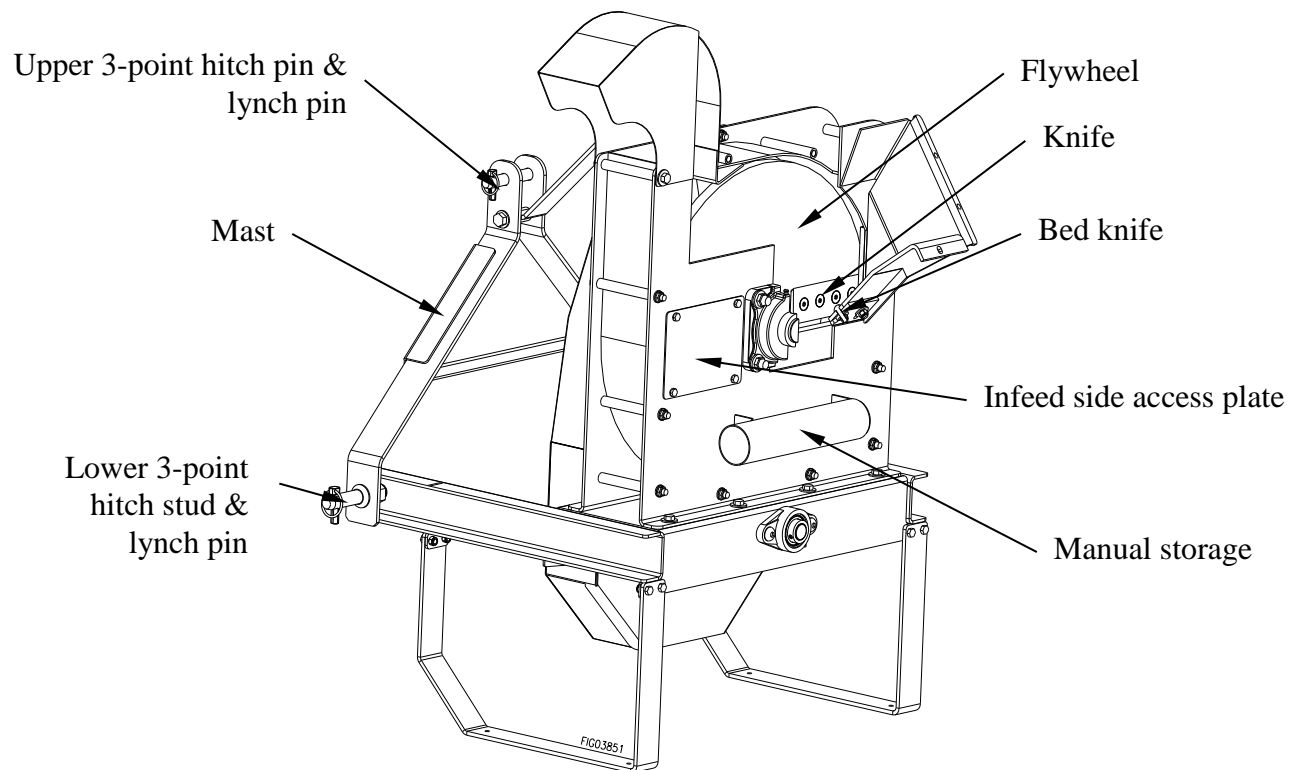
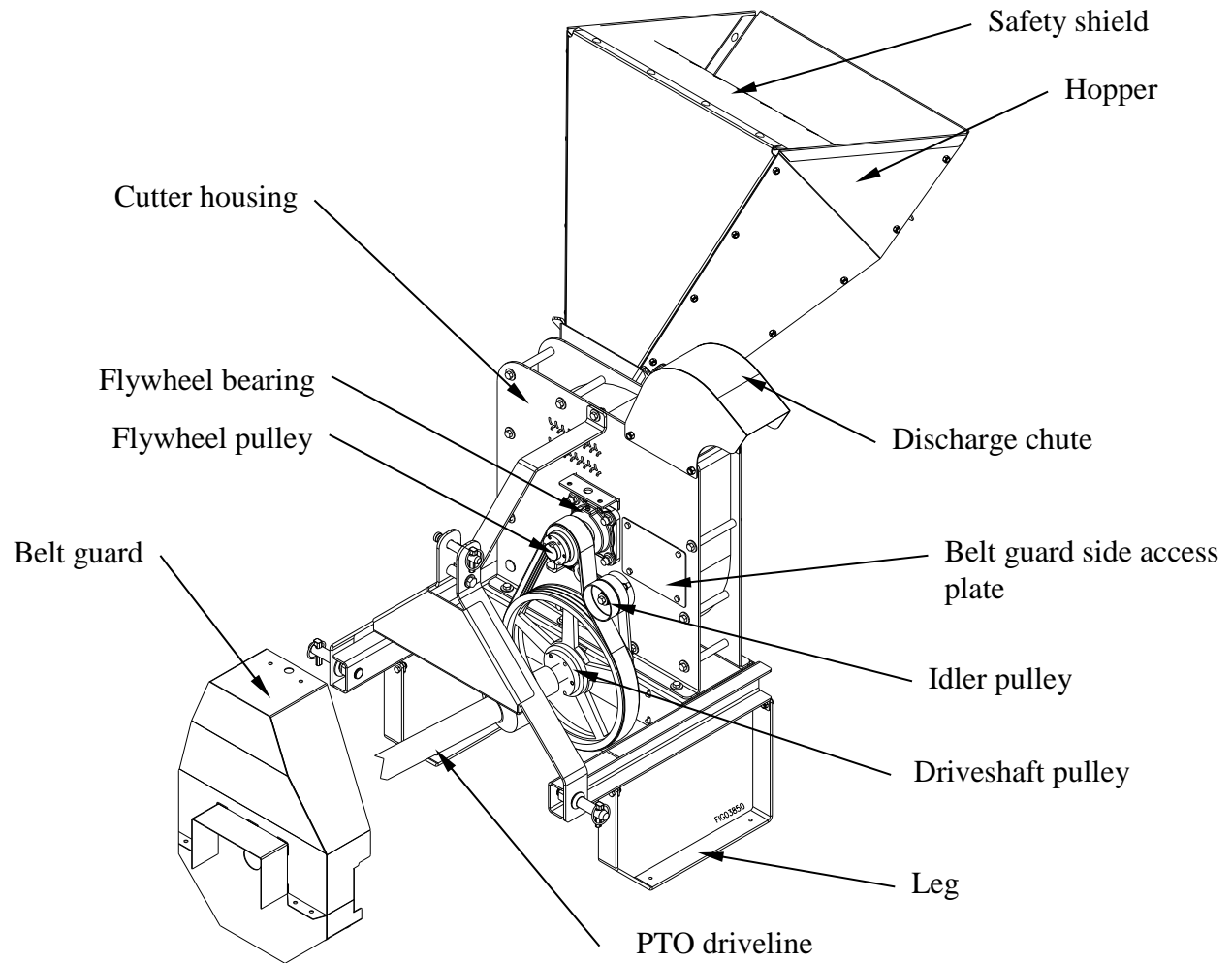
Hopper Material	12 gauge w/ reinforced opening (bottom) 14 gauge w/ reinforced opening (sides)
Size:	24" x 22"
Feed Opening	5-1/2" x 8-3/4"
Capacity	5-1/2" diameter

FLYWHEEL

Size	3/4" thick x 20" diameter
Knife	(1) 2-1/4" x 6-1/2" x 3/8" thick, reversible cutting edge
Bed knife	2" x 5-1/2" x 1/4" thick
Shaft	2-3/8" diameter
Bearings, shaft	Two (2) 1-1/2" four bolt flange style
Belt size	Banded , 4 groove, 3VX560
Grease type	EP-2 lithium base grease

**Contact NorTrac Customer Service at 1-800-521-0438
for any questions, problems, or parts orders.**

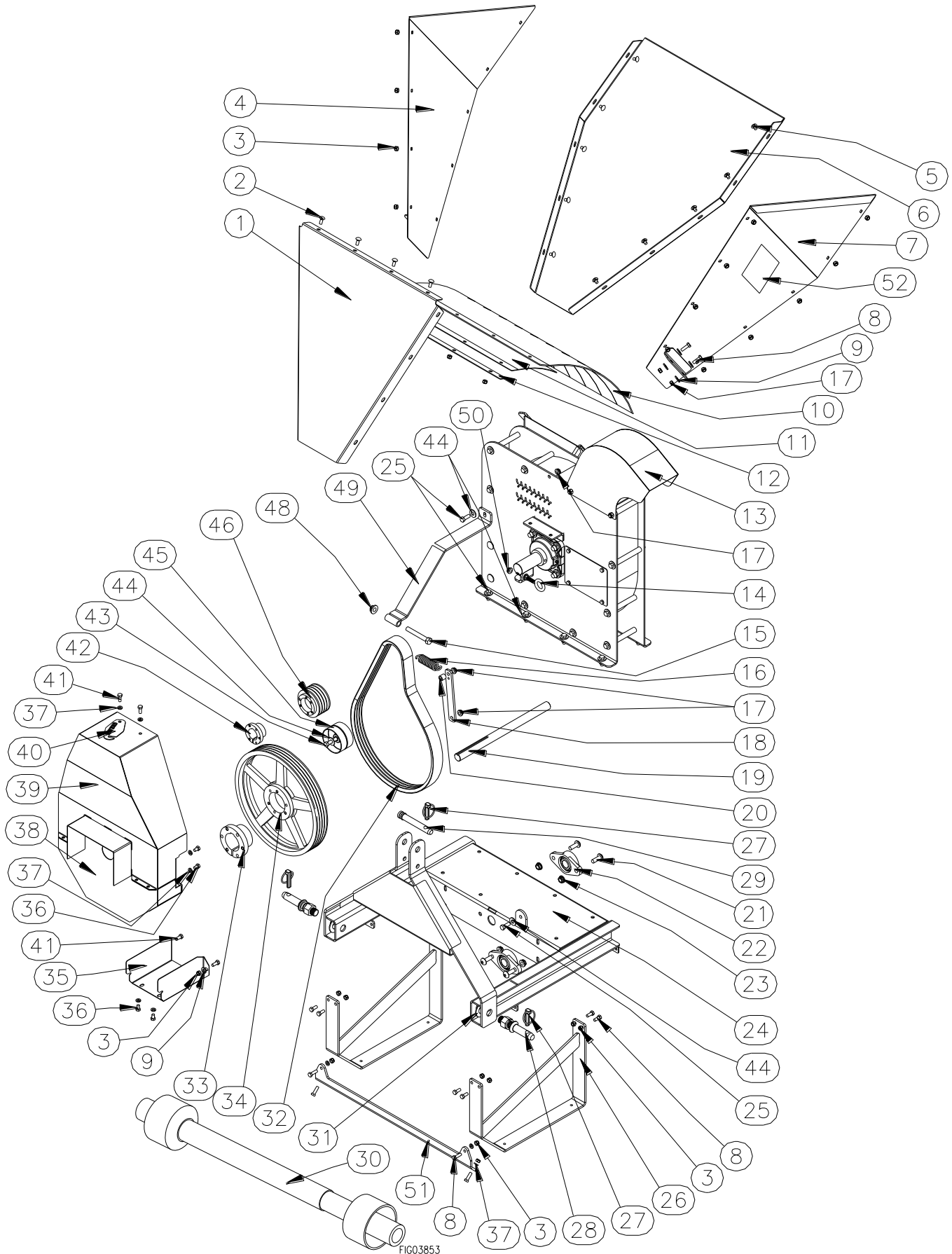
Machine Component Identification



Machine Component Identification

- **Safety shield** – Protects user from chip kick-back.
- **Hopper** – Brush enters machine here. Maximum size is 5-1/2" diameter wood.
- **Cutter housing** – Contains flywheel, knife and bed knife.
- **Flywheel bearing** – Bearings for the rotating flywheel. Grease weekly or every 10 hours.
- **Flywheel pulley** – Transmits power from belt to flywheel.
- **Discharge chute** – Chipped material is discharged here.
- **Belt guard side access plate** – Allows access to flywheel and knife.
- **Idler pulley** – Maintains correct tension on belt.
- **Driveshaft pulley** – Transmits power from PTO driveline to the belt.
- **Leg** – Provides solid stance and sets the correct height for chipping operation.
- **PTO driveline** – Connects to tractor's PTO shaft. Requires a 1-3/8" six-tooth spline on tractor.
- **Belt guard** – Prevents access to belts and moving parts.
- **Flywheel** – Knife is mounted to the rotating flywheel.
- **Knife** – Reversible, sharpenable, made of through-hardened chipper knife steel.
- **Bed knife** – Two sided, adjustable.
- **Infeed side access plate** – Allows access to flywheel and knife.
- **Manual storage** – Provides an on product location to store the owner's manual.
- **Upper 3-point hitch pin & lynch pin** – Connects to top arm of tractor's 3-point hitch.
- **Mast** – Sets spacing for hitch pins to mount to a Category 1 tractor's 3-point hitch.
- **Lower 3-point hitch stud & lynch pin** – Connects to lower arms of tractor's 3-point hitch.

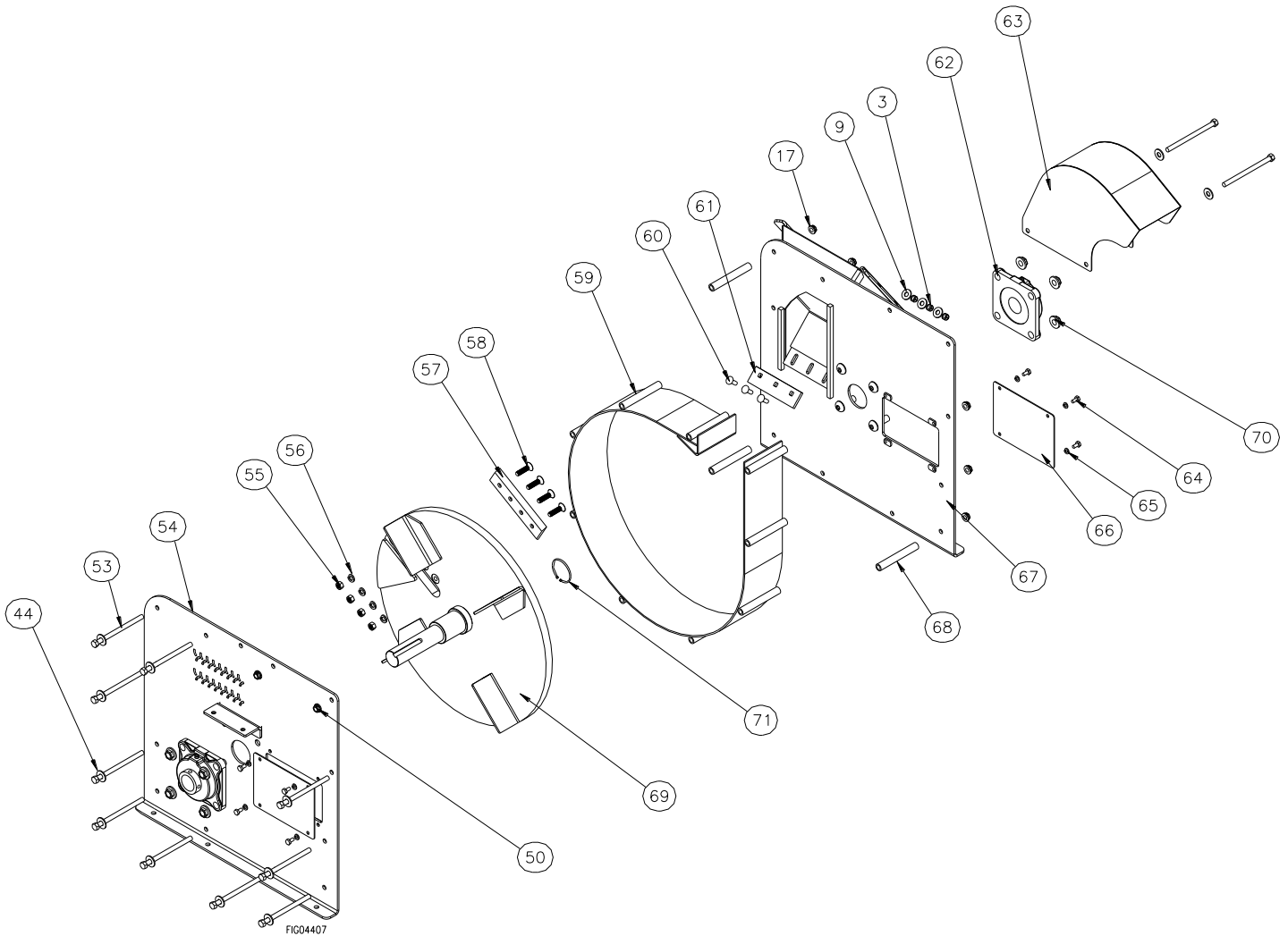
296025 Parts Explosion - Rev D



296025 Parts Explosion - Rev D

Item		Part #	Description	Qty
1	Order # 786173 Hopper Sub Assembly	N/A	Hopper top	1
4		N/A	Hopper right side	1
6		N/A	Hopper bottom	1
7		N/A	Hopper left side	1
10		786404	Clear vinyl shield	1
11		786405	Plastic shield	1
12		786301	Shield backer plate	1
2		82088	5/16"-18 x 3/4" carriage bolt	4
3		82020	5/16"-18 nyloc nut	38
5		82425	5/16"-18 x 0.625" carriage bolt	18
8		82091	5/16"-18 x 1" HHCS	14
9		82021	5/16" USS flat washer	12
13		N/A	Cutter housing assembly	1
14		82448	3/8"-16 x 5" eyebolt	1
15		82118	1/2"-13 x 3" HHSF	1
16		786418	Tension spring	1
17		82290	3/8"-16 flange lock nut	3
18		N/A	Belt tension swing arm	1
19		785968	Drive shaft	1
20		786417	Standoff, idler pulley	1
21		N/A	7/16"-14 x 1-1/4" BHCS	4
22		786556	1", 2 bolt flange bearing	2
23		82430	7/16"-14 flange lock nut	4
24		785966	Frame	1
25		N/A	3/8"-16 x 1" HHCS	10
26		786630	Leg	2
27		39159	Lynch pin	3
28		2501930	Draw pin cat 1 forged	2
29		777919	CAT 1 top link pin	1
30		786419	PTO shaft	1
31		82129	1" SAE flat washer	2
32		786537	Belt, banded 4 groove, 3VX560	1
33		785990	Bushing, SK-1"	1
34		785988	Sheave, 4groove, /3V14.0-SK	1
35		786677	Drive shaft guard	1
36		N/A	5/16"-18 x 1/2" HHCS	10
37		82085	1/4" USS flat washer	12
38		786649	Belt guard bottom	1
39		786653	Belt guard top	1
40		786627	Grease plate	1
41		82087	5/16"-18 x 3/4" HHCS	4
42		785991	Bushing, SH 1-1/2"	1
43		N/A	3/8"-16 x 3" SHCS	1
44		82028	3/8" USS flat washer	11
45		786416	Idler pulley	1
46		785989	Sheave, 4groove /3V3.65-SH	1
48		82291	1/2"-13 flange lock nut	1
49		786206	Mast reinforcement	1
50		82026	3/8"-16 flange nut	2
51		786628	Leg brace	1
52		786508	NorTrac decal	2

Cutter Housing Assembly – Rev D



Item	Part #	Description	Qty
44	82028	3/8" USS flat washer	12
53	N/A	3/8"-16 x 5-1/2" HHCS	12
54	786201	Belt guard side plate, cutter housing	1
55	Kit # 795987	3/8"-16 hex nut	4
56		3/8" split lock washer	4
57		Knife	1
58		3/8"-16 x 1-1/2" FHCS	4
59	785973	Flywheel wrap	1
60	Kit # 786900	5/16" x 1" carriage bolt	3
61		Bed knife	1
9		5/16" USS flat washer	3
3		5/16"-18 nyloc nut	3

Item	Part #	Description	Qty
17	82290	3/8"-16 flange lock nut	12
62	786408	1-1/2" bore, 4-bolt flange bearing	2
63	786208	Discharge chute	1
64	N/A	1/4"-20 x 1/2" HHCS	8
65	82084	1/4" split lock washer	8
66	786305	Access plate	2
67	785979	Infeed side plate, cutter housing	1
68	786613	3/8" pin pipe	3
69	N/A	Flywheel	1
70	784412	14mm flange lock nut	8
50	82026	3/8"-16 flange nut	2
n/a	783715	2.5"x1.5" blk cap (not shown)	1
71	82475	Snap Ring 1.5"	1

Summary of Important Safety Information

This section provides a summary of the various safety procedures and measures that have been presented throughout the manual. Keep this summary handy and refer to it to refresh your memory about how to safely use your chipper.

WARNING

Carefully read and make sure you understand the following safety information before using the chipper. Improper use or maintenance of the chipper can result in serious injury or death from amputation, lacerations, entanglement, burns, or fire/explosion. Damage can also occur to windows, siding, vehicles, and bystanders from chips and debris which can become projectiles.

Prohibition Against Modifications

- **Never modify or alter the chipper in any way.** Modifications can create serious safety hazards and will also void the warranty.
- **Guards.** Do not operate chipper unless all guards and cover shields, which prevent access to moving parts and entanglement and pinch points, are in place. Failure to guard the power transmission mechanisms may result in serious injury or death.

Safety – Before Use

General

- **Instruct operators.** The chipper owner or rental company must instruct all operators in safe chipper set-up and operation. Do not allow anyone to operate the chipper who has not read the Owner's Manual and been instructed on its safe use. Make sure Owner's manual is on the chipper.
- **Adults only.** Only trained adults should operate and service the chipper. Do not let children operate.
- **Under the influence.** Never operate, or let anyone else operate, the chipper while under the influence of alcohol, drugs, or medication.
- **Intended use.** Use this machine only for chipping wood and mulching shreddable items. Do not use for other purposes, as unforeseen hazards or equipment damage may result.
- **Controls and safety labels.** Learn how to use the machine and its controls safely. Understand and follow all safety labels. Replace any labels that are missing or have become unreadable.
- **Weather.** Never use in foul, bad or questionable weather, which causes a slippery ground condition.

Getting Ready

- **Tripping.** Clear all brush and debris from work walking area to eliminate tripping hazards.
- **Flying debris.** Clear area of foreign objects such as wire, rope, etc. that could become caught in moving machine parts and ejected as a projectile. Inserting these objects into the chipper hopper could damage the flywheel and cause injury.
- **Operate OUTSIDE only – dangerous carbon monoxide exhaust!** Engines give off carbon monoxide exhaust, a poisonous gas that can kill. You CANNOT smell it, see it, or taste it. ONLY run chipper outdoors and away from building air intakes. NEVER run chipper engine inside homes, garages, sheds, or other semi-enclosed spaces. These spaces can trap poisonous gases.
- **Cooling ventilation.** The chipper needs adequate, unobstructed flow of air to allow for proper cooling of chipper. Do not allow debris to accumulate and block airflow.

Summary of Important Safety Information

- **Transporting.** Never move, load or transport the chipper while flywheel is turning. Shut down the engine, wait for all moving parts to come to a complete stop and then wait five minutes before moving.
- **Fire extinguisher.** Keep a fire extinguisher rated “ABC” by the National Fire Protection Association nearby. Keep it properly charged and be familiar with its use.
- **Passengers.** Never carry passengers or allow people to sit on the chipper while it is running or being transported.

Personal Protective Equipment

- **Eye protection.** Wear ANSI approved eye protection when operating the chipper.
- **Hearing protection.** The use of ear-plugs or other hearing protection device is recommended for those in close proximity to the chipper while it is operating.
- **Head protection.** Wear a hard hat to protect your head from material that may be kicked out of the machine.
- **Hand protection.** Wear snug-fitting gloves. Do not wear gloves with loose cuffs.
- **Loose / dangling.** Loose or dangling apparel, jewelry or hair can become entangled in moving parts. Never wear jewelry or loose-fitting clothing when operating the chipper.
- **Long pants.** Wear long, heavy-duty pants to protect legs from ejected materials.
- **Sturdy Shoes.** Wear sturdy, non-slip shoes to help you keep a firm footing on the ground and reduce the risk of slipping and falling into the chipper. Do not use the machine while barefoot or wearing open sandals.

Safety – During Use

- **Safety equipment / controls.** Always operate the chipper with all safety covers, guards, and barriers in place and in good working order, and all controls properly adjusted for safe operation.
- **Guard chipper discharge.** Never use the machine with the chipper hopper or discharge chutes removed.
- **Controls.** Stay in the OPERATOR POSITION while actuating controls.
- **Know how to stop.** Be thoroughly familiar with proper use of the equipment and all chipper controls. Know how to stop the chipper and tractor quickly
- **Feeding branches.** Never stand directly in front of the hopper opening. Stand to the side of the chipping hopper when feeding brush into the chipper. Feed material only when chipper is operating at full operating speed.
- **Climbing on.** Never climb or sit on the chipper while it is running.
- **“Bounceback”.** Keep your face and body away from the chipper hopper in the event of accidental bounce back of any material.
- **Slipping/Falling.** Operating in slippery, muddy, wet or icy conditions could lead to losing your footing and slipping or falling.
- **Damaged.** Do not operate the chipper with damaged, missing, incorrectly adjusted, or broken parts.
- **Carbon monoxide exhaust.** The running engine gives off carbon monoxide, a poisonous gas that can kill you. You CANNOT smell it, see it, or taste it. If you start to feel sick, dizzy, or weak while using the chipper, shut off the engine and get to fresh air RIGHT AWAY. See a doctor. You may have carbon monoxide poisoning.

Summary of Important Safety Information

- **Machine's moving parts.** Keep hands, feet, and apparel away from knife, belts, flywheel, and other moving parts. Never remove any drive belt or guard while the unit is operating. Contact with belt or knife will cause personal injury.
- **Malfunction during operation.** Always shut the machine off if any unusual noise or vibration occurs.
- **Vibration.** Overexposure to machine vibration on a daily basis may lead to circulatory or nerve damage.
- **Adjusting / repairing.** Always turn off tractor, make sure flywheel comes to a complete stop, and remove drive shaft before working on the chipper to prevent accidental starting.

Safety – After use

- **Prevent accidental starting.** When chipper is not in use, remove drive shaft in order to ensure that chipper cannot be started in a storage location or by untrained persons.

Safety - Inspection/Maintenance

Inspect and maintain your chipper on a regular basis and repair as needed to keep it in safe working condition:

- **Turn off chipper.** Always turn off chipper, make sure flywheel comes to a complete stop, and remove drive shaft – to prevent accidental starting- before working on the engine or chipper.
- **Replace guards / shields.** Make sure all guards and shields are replaced after servicing the chipper.
- **Replacement parts.** If a part needs replacement, only use parts specified by the manufacturer. Replacement parts that do not meet specifications may result in a safety hazard or poor operation of the chipper and will void the warranty.

Limited Warranty

Dear Valued Customer:

The NorTrac Product you just purchased is built with the finest material and craftsmanship. Use this product properly and enjoy the benefits from its high performance. By purchasing a NorTrac product, you show a desire for quality and durability. Like all mechanical equipment this unit requires a due amount of care. Treat this unit like the high quality piece of machinery it is. Neglect and improper handling may impair its performance. Please thoroughly read the instructions and understand the operation before using your product.

NorTrac shall warranty any piece of equipment manufactured, or parts of equipment manufactured, to be free from defects in material or workmanship for a period of 2 years for noncommercial/nonrental use and a period of 90 days for commercial/rental use from the date of purchase by user.

NorTrac shall warranty any wear item, including, but not limited to, valves, seals, pump diaphragms, hoses, and filter elements to be free from defects in material or workmanship for a period of 90 days from the date of purchase by user. This warranty applies to the original purchaser of the equipment and is nontransferable. Verification of purchase is the responsibility of the buyer. Parts will be replaced or repaired at no charge, except when the equipment has failed due to lack of proper maintenance. Any misuse, abuse, alteration or improper installation or operations will void warranty. Determining whether a part is to be replaced or repaired is the sole decision of NorTrac.

NOTE: Some services performed by parties other than NorTrac may void warranty.

This warranty covers parts only. It will not provide for replacement of complete products due to defective parts.

Components not manufactured by NorTrac are guaranteed by their manufacturer and can be serviced at factory-authorized locations near you. Any costs incurred due to replacement or repair of items outside of a NorTrac approved facility is the responsibility of the buyer and not covered under warranty. NorTrac can supply you with the service center location in your area.

This warranty specifically excludes the following; failure of parts due to damage caused by accident, fire, flood, windstorm, acts of God, applications not approved by NorTrac in writing, corrosion caused by chemicals, use of replacement parts which do not conform to manufacturer's specifications, and damage caused by vandalism. Additional exclusions: loss of running time, inconvenience, loss of income, or loss of use, including any implied warranty of merchantability of fitness for a specific use.

Warranty does not cover items subject to normal wear such as tires, receptacles or any part subject to direct physical contact by the public. This warranty does not cover any personal injury or damage to surrounding property caused by failure of any part.

This warranty is in lieu of any other warranty expressed or implied and NorTrac assumes no other responsibility or liability outside that expressed within this warranty.

Please fill in the following information and have it on hand when you call in on a warranty claim.

Customer Number: _____

Date of Purchase: _____

NorTrac Serial Number: _____

Item Number: _____

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Manufactured by
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Made in the USA