

Operator's Manual

NV360

V-Blade





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A downloadable parts manual is also available.

To the Owner Contact Information and Product Identification

If you need to contact an authorized Ventrac dealer for information on servicing your product, always provide the product model and serial numbers.

Please fill in the following information for future reference. See the picture(s) below to find the location of the identification numbers. Record them in the spaces provided.

Date of Purchase: _____

Dealer: _____

Dealer Address: _____

Dealer Phone Number: _____

Dealer Fax Number: _____

Model # (A): _____

Serial # (B): _____

Affix Part/Serial Number label here.



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INTRODUCTION



Venture Products Inc. is pleased to provide you with your new Ventrac NV360 V-blade! We hope that Ventrac equipment will provide you with a ONE Tractor Solution.

Listed below are just some of the items that can provide you *versatility* as you use your NV360. Please visit our website, or contact your authorized Ventrac dealer for a complete list of items available for your new NV360 V-Blade.

Accessories	Item Description	Part Number
	Polyurethane Cutting Edge Kit	70.8220

Product Description

The NV360 V-blade is designed for the sole purpose of snow removal. The V-blade is an excellent tool for snow removal with all the capabilities of a straight blade, plus the added versatility of sweeping both wings back for single pass clearing of sidewalks or sweeping both wings forward to clear larger areas without the need for repeated cleanup passes.

Each blade wing can be angled forward or backward 30 degrees using the power unit's hydraulic control lever. The angle of each wing is controlled independently. The power unit must be equipped with a dual front hydraulic auxiliary kit.

Why Do I Need an Operator's Manual?

This manual has been created to help you gain the important knowledge of what is needed to safely operate, maintain, and service your machine. It is divided into sections for convenient reference of the appropriate section.

You must read and understand the operator's manual for each piece of Ventrac equipment you own. Reading the operator's manual will help you become familiar with each specific piece of equipment. Understanding the operator's manual will help you, as well as others, avoid personal injury and/or damage to the equipment. Keep this manual with the machine at all times. The manual should remain with the machine even if it is sold. If this manual becomes damaged or unreadable, it should be replaced immediately. Contact your local Ventrac dealer for a replacement.

When using a Ventrac attachment, be sure to read and follow the safety and operating instructions of both the power unit and the attachment being used to ensure the safest operation possible.

The information in this manual provides the operator with the safest procedures to operate the machine while getting the maximum use out of the unit. Failure to follow the safety precautions listed in this manual may result in personal injury and/or damage to the equipment.

INTRODUCTION

Using Your Manual

Throughout this manual, you will encounter special messages and symbols that identify potential safety concerns to help you as well as others avoid personal injury or damage to the equipment.

SYMBOL DEFINITIONS



ATTENTION

This symbol identifies potential health and safety hazards. It marks safety precautions. Your safety and the safety of others is involved.

There are three signal words that describe the level of safety concern: Danger, Warning, and Caution. Safety should always be the #1 priority when working on or operating equipment. Accidents are more likely to occur when proper operating procedures are not followed or inexperienced operators are involved.

Note: Right-Hand and Left-Hand orientations may be referred to at different places throughout this manual. Right-Hand and Left-Hand is determined as if facing forward from the operator station.

SIGNAL WORD DEFINITIONS

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme cases.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or property damage. It may also be used to alert against unsafe practices.

Manual Glossary

- Power Unit** A Ventrac tractor or other Ventrac engine powered device that may be operated by itself or with an attachment or accessory.
- Attachment** A piece of Ventrac equipment that requires a Power Unit for operation.
- Accessory** A device that attaches to a Power Unit or Attachment to extend its capabilities.
- Machine** Describes any "Attachment" or "Accessory" that is used in conjunction with a power unit.

SAFETY



General Safety Procedures for Ventrac Power Units, Attachments, & Accessories



Training Required

- The owner of this machine is solely responsible for properly training the operators.
- The owner/operator is solely responsible for the operation of this machine and prevention of accidents or injuries occurring to him/herself, other people, or property.
- Do not allow operation or service by children or untrained personnel. Local regulations may restrict the age of the operator.
- Before operating this machine, read the operator's manual and understand its contents.
- If the operator of the machine cannot understand this manual, then it is the responsibility of this machine's owner to fully explain the material within this manual to the operator.
- Learn and understand the use of all controls.
- Know how to stop the power unit and all attachments quickly in the event of an emergency.



Requirements for Personal Protective Equipment (PPE)

The owner is responsible for ensuring that all operators use the proper PPE while operating the machine. Whenever you use the machine, use the following PPE:



- Certified eye protection and hearing protection.
- Closed toe, slip resistant footwear.
- Long pants.
- A dust mask for dusty conditions.

Operation Safety

- Inspect machine before operation. Repair or replace any damaged, worn, or missing parts. Be sure guards and shields are in proper working condition and are secured in place. Make all necessary adjustments before operating machine.
- Some pictures in this manual may show shields or covers opened or removed in order to clearly illustrate any instructions. Under no circumstance should the machine be operated without these devices in place.
- Alterations or modifications to this machine can reduce safety and could cause damage to the machine. Do not alter safety devices or operate with shields or covers removed.
- Before each use, verify that all controls function properly and inspect all safety devices. Do not operate if controls or safety devices are not in proper working condition.
- Check parking brake function before operating. Repair or adjust parking brake if necessary.
- Observe and follow all safety decals.
- All controls are to be operated from the operator's station only.
- Always wear a seat belt if the machine has a roll cage/bar installed and in upright position.
- Ensure the attachment or accessory is locked or fastened securely to the power unit before operating.
- Ensure that all bystanders are clear of the power unit and attachment before operating. Stop machine if someone enters your work area.
- Always be alert to what is happening around you, but do not lose focus on the task you are performing. Always look in the direction the machine is moving.
- Look behind and down before backing up to be sure of a clear path.
- If you hit an object, stop and inspect the machine. Make all necessary repairs before operating machine again.
- Stop operation immediately at any sign of equipment failure. An unusual noise can be a warning of equipment failure or a sign that maintenance is required. Make all necessary repairs before operating machine again.
- If equipped with a high/low range feature, never shift between high and low range while on a slope. Always move the machine to level ground and engage the parking brake before shifting range.

SAFETY



General Safety Procedures for Ventrac Power Units, Attachments, & Accessories



Operation Safety (continued)

- Do not leave machine unattended while it is running.
- Always park the machine on level ground.
- Always shut off engine when connecting attachment drive belt to the power unit.
- Never leave the operator's station without lowering the attachment to the ground, setting the parking brake, shutting off the engine, and removing the ignition key. Make sure all moving parts have come to a complete stop before dismounting.
- Never leave equipment unattended without lowering the attachment to the ground, setting the parking brake, shutting off the engine, and removing the ignition key.
- Only operate in well-lit conditions.
- Do not operate when there is a risk of lightning.
- Never direct the discharge of any attachment in the direction of people, buildings, animals, vehicles, or other objects of value.
- Never discharge material against a wall or obstruction. Material may ricochet back towards the operator.
- Use extra caution when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
- Do not run the engine in a building without adequate ventilation.
- Do not touch the engine or the muffler while the engine is running or immediately after stopping the engine. These areas may be hot enough to cause a burn.
- Do not change the engine governor settings or over-speed the engine. Operating engine at excessive speed may increase the hazard of personal injury.
- To reduce the hazard of fire, keep the battery compartment, engine, and muffler areas free of grass, leaves, excessive grease, and other flammable materials.
- Secure long hair and loose clothing. Do not wear jewelry.

Preventing Accidents



- Clear working area of objects that might be hit or thrown from machine.
- Keep people and pets out of working area.
- Know the work area well before operation. Do not operate where traction or stability is questionable.
- Reduce speed when you are operating over rough ground.
- Equipment can cause serious injury and/or death when improperly used. Before operating, know and understand the operation and safety of the power unit and the attachment being used.
- Do not operate machine if you are not in good physical and mental health, if you will be distracted by personal devices, or are under the influence of any substance which might impair decision, dexterity, or judgment.
- Children are attracted to machine activity. Be aware of children and do not allow them in the working area. Turn off the machine if a child enters the work area.



Keep Riders Off

- Only allow the operator on the power unit. Keep riders off.
- Never allow riders on any attachment or accessory.

SAFETY

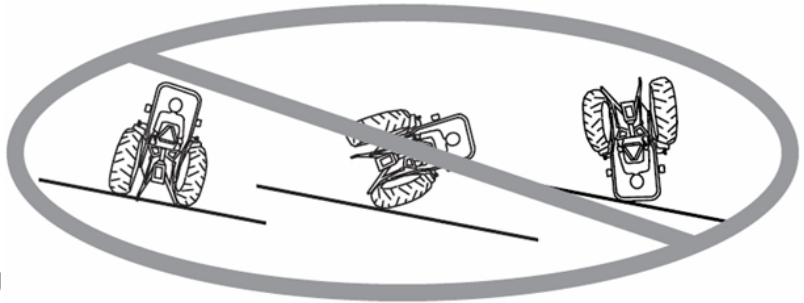


General Safety Procedures for Ventrac Power Units, Attachments, & Accessories



Operating On Slopes

- Slopes can cause loss-of-control and tip-over accidents, which can result in severe injury or death. Be familiar with the emergency parking brake, along with the power unit controls and their functions.
- If power unit is equipped with a fold down roll bar, it must be locked in the upright position when operating on any slope.
- Use low range (if equipped) when operating on slopes greater than 15 degrees.
- Do not stop or start suddenly when operating on slopes.
- Never shift between high and low range while on a slope. Always move the power unit to level ground and engage the parking brake before shifting range or placing the power unit in neutral.
- Variables such as wet surface and loose ground will reduce the degree of safety. Do not drive where machine could lose traction or tip over.
- Keep alert for hidden hazards in the terrain.
- Stay away from drop-offs, ditches, and embankments.
- Sharp turns should be avoided when operating on slopes.
- Pulling loads on hills decreases safety. It is the responsibility of the owner/operator to determine loads that can safely be controlled on slopes.
- Transport machine with attachment lowered or close to the ground to improve stability.
- While operating on slopes, drive in an up and down direction when possible. If turning is necessary while driving across slopes, reduce speed and turn slowly in the downhill direction.
- Ensure a sufficient supply of fuel for continuous operation. A minimum of one-half tank of fuel is recommended.



Roadway Safety

- Operate with safety lights when operating on or near roadways.
- Obey all state and local laws concerning operation on roadways.
- Slow down and be careful of traffic when operating near or crossing roadways. Stop before crossing roads or sidewalks. Use care when approaching areas or objects that may obscure vision.
- If there is doubt of safety conditions, discontinue machine operation until a time when operation can be performed safely.
- When operating near or on roadways, have a Slow Moving Vehicle Emblem clearly displayed.



Truck Or Trailer Transport

- Use care when loading or unloading machine into a truck or trailer.
- Use full width ramps for loading machine into a truck or trailer.
- The parking brake is not sufficient to lock the machine during transport. Always secure the power unit and/or attachment to the transporting vehicle securely using straps, chains, cable, or ropes. Both front and rear straps should be directed down and outward from the machine.
- Shut off fuel supply to power unit during transport on truck or trailer.
- If equipped, turn the battery disconnect switch to the Off position to shut off electrical power.

SAFETY



General Safety Procedures for Ventrac Power Units, Attachments, & Accessories



Maintenance

- Keep all safety decals legible. Remove all grease, dirt, and debris from safety decals and instructional labels.
- If any decals are faded, illegible, or missing, contact your dealer promptly for replacements.
- When new components are installed, be sure that current safety decals are affixed to the replacement components.
- If any component requires replacement, use only original Ventrac replacement parts.
- Always turn the battery disconnect to the Off position or disconnect the battery before performing any repairs. Disconnect the negative terminal first and the positive terminal last. Reconnect the positive terminal first and the negative terminal last.
- Keep all bolts, nuts, screws, and other fasteners properly tightened.
- Always lower the attachment to the ground, engage parking brake, shut off engine, and remove the ignition key. Make sure all moving parts have come to a complete stop before cleaning, inspection, adjusting or repairing.
- If the power unit, attachment, or accessory requires repairs or adjustments not instructed in the operator's manual, the power unit, attachment, or accessory must be taken to an authorized Ventrac dealer for service.
- Never perform maintenance on the power unit and/or attachment if someone is in the operator's station.
- Always use protective glasses when handling the battery.
- Check all fuel lines for tightness and wear on a regular basis. Tighten or repair them as needed.
- To reduce the hazard of fire, keep the battery compartment, engine, and muffler areas free of grass, leaves, and excessive grease.
- Do not touch the engine, the muffler, or other exhaust components while the engine is running or immediately after stopping the engine. These areas may be hot enough to cause a burn.
- Allow the engine to cool before storing and do not store near an open flame.
- Do not change the engine governor settings or over-speed the engine. Operating engine at excessive speed may increase the hazard of personal injury.
- Springs may contain stored energy. Use caution when disengaging or removing springs and/or spring loaded components.
- An obstruction or blockage in a drive system or moving/rotating parts may cause a buildup of stored energy. When the obstruction or blockage is removed, the drive system or moving/rotating parts may move suddenly. Do not attempt to remove an obstruction or blockage with your hands. Keep hands, feet, and clothing away from all power-driven parts.

Fuel Safety



- To avoid personal injury or property damage, use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive.
- Do not refuel machine while smoking or at a location near flames or sparks.
- Always refuel the machine outdoors.
- Do not store machine or fuel container indoors where fumes or fuel can reach an open flame, spark, or pilot light.
- Only store fuel in an approved container. Keep out of reach of children.
- Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.
- Remove machine from the truck or trailer and refuel it on the ground. If this is not possible, refuel the machine using a portable container, rather than from a fuel dispenser nozzle.
- Never remove fuel cap or add fuel with the engine running. Allow engine to cool before refueling.
- Never remove fuel cap while on a slope. Only remove when parked on a level surface.
- Replace all fuel tank and container caps securely.

SAFETY



General Safety Procedures for Ventrac Power Units, Attachments, & Accessories



Fuel Safety (continued)

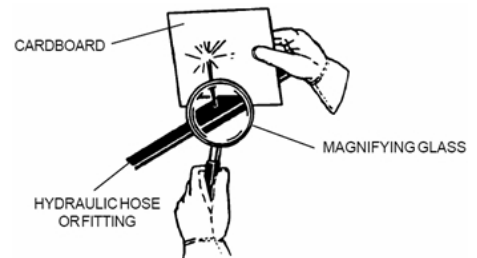
- Do not overfill fuel tank. Only fill to bottom of fuel neck, do not fill fuel neck full. Overfilling of fuel tank could result in engine flooding, fuel leakage from the tank, and/or damage to the emissions control system.
- If fuel is spilled, do not attempt to start the engine. Move the power unit away from the fuel spill and avoid creating any source of ignition until fuel vapors have dissipated.
- If the fuel tank must be drained, it should be drained outdoors into an approved container.
- Check all fuel lines for tightness and wear on a regular basis. Tighten or repair them as needed.
- The fuel system is equipped with a shut-off valve. Shut off the fuel when transporting the machine to and from the job, when parking the machine indoors, or when servicing the fuel system.

Hydraulic Safety

- Make sure all hydraulic connections are tight and all hydraulic hoses and tubes are in good condition. Repair any leaks and replace any damaged or deteriorated hoses or tubes before starting the machine.
- Hydraulic leaks can occur under high pressure. Hydraulic leaks require special care and attention.
- Use a piece of cardboard and a magnifying glass to locate suspected hydraulic leaks.



- Keep body and hands away from pinhole leaks or nozzles that eject high pressure hydraulic fluid. Hydraulic fluid escaping under high pressure can penetrate the skin causing serious injury, leading to severe complications and/or secondary infections if left untreated. If hydraulic fluid is injected into the skin, seek immediate medical attention no matter how minor the injury appears.



- Hydraulic system may contain stored energy. Before performing maintenance or repairs on the hydraulic system, remove attachments, engage parking brake, disengage weight transfer system (if equipped), shut off engine, and remove ignition key. To relieve pressure on the auxiliary hydraulic system, shut off the power unit engine and move the hydraulic control lever left and right before disconnecting the auxiliary hydraulic quick couplers.

SAFETY



NV360 Safety Procedures



- Always block up the V-blade securely when adjusting the skid shoes.
- Operators should be familiar with the area they are clearing and make preparations ahead of time. Place guide stakes appropriately and remove stones, markers, or other debris that may be hidden after a snowfall. Curbs, offsets, steps, man hole covers, broken or raised pavement, etc. should be noted. Operators should map areas to be cleared before the winter season so they can review potential hazards prior to clearing snow in the area.
- If an area to be cleared is unfamiliar to the operator, travel slowly and use **EXTREME CAUTION**. Inquire of anyone who might know of potential hazards.
- Never travel at speeds that would cause injury to the operator or damage to the machine if the machine were to be stopped suddenly by an unseen, immovable object.
- Ensure there are no objects between the back of the blade wings and the hitch frame. When wings are angled to the swept back position, objects may be pinched or crushed between the blade wing and the hitch frame.
- Do not change the blade angle while driving. Stop the power unit before making blade wing angle adjustments.
- Do not proceed if visibility is poor. If the power unit is equipped with a windscreen, the windshield must be kept clean.
- Use caution when operating around objects that can obstruct your vision.
- Attachment hydraulic system may contain stored energy. Before performing maintenance or repairs on the hydraulic system, the attachment's auxiliary hydraulic hoses must be disconnected from the power unit. Lower the attachment to the ground and shut off power unit engine. Turn the key to the On position and move the hydraulic control lever left and right to relieve auxiliary hydraulic pressure on the first circuit. Hold the switch on the hydraulic control lever and move the hydraulic control lever left and right to relieve auxiliary hydraulic pressure on the second circuit. Turn the key to the Off position and disconnect the auxiliary hydraulic quick couplers from the power unit.

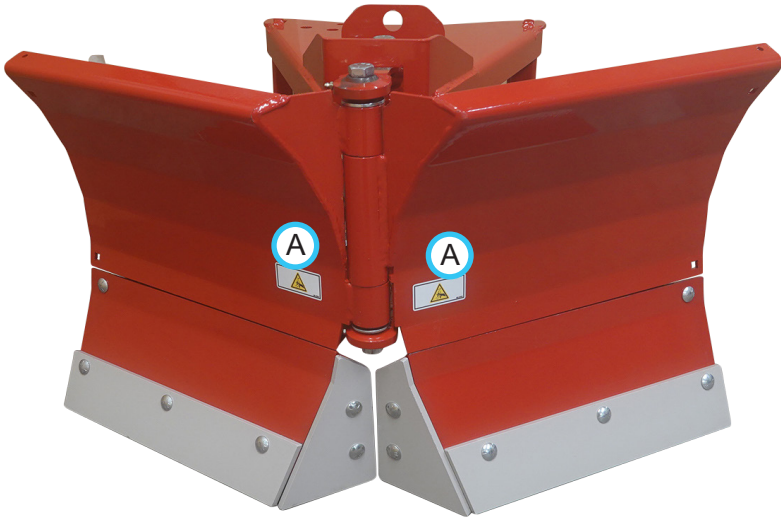
SAFETY

Safety Decals

The following safety decals must be maintained on your NV360 V-blade.

Keep all safety decals legible. Remove all grease, dirt, and debris from safety decals and instructional labels. If any decals are faded, illegible, or missing, contact your dealer promptly for replacements.

When new components are installed, be sure that current safety decals are affixed to the replacement components.



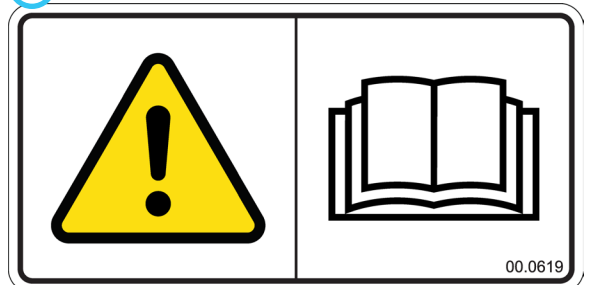
SAFETY

A



Pinching hazard - Stay away from center pivot and cutting edge safety trip areas. Do not attempt to manually reset the cutting edge when it has been tripped.

B



Warning - Read the operator's manual.

C



Pinching or crushing hazard - Keep out of the area between the blade wings and the hitch frame.

D



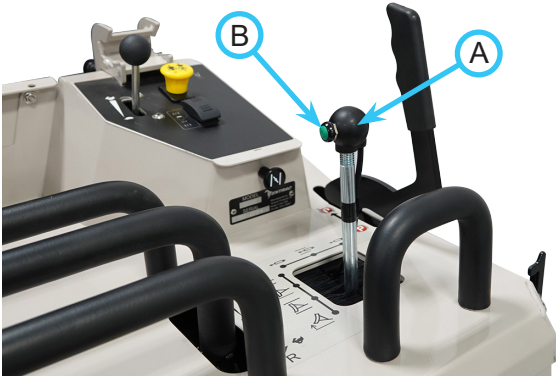
High pressure fluid hazard - keep body and hands away from suspected hydraulic leaks. Wear eye protection when inspecting hydraulic system for leaks.

Decal	Description	Part Number	Quantity
A	Warning - Pinch Point	00.0364	2
B	Read Operator's Manual	00.0619	1
C	Warning - Pinching or Crushing Hazard	00.0620	2
D	High Pressure Fluid Hazard	00.0621	1

OPERATIONAL CONTROLS

Operational Control Locations

Use the following images to help identify the locations of operational controls. The letter next to each control can be referenced to the list that follows these images.



- A. Hydraulic Control Lever
- B. Dual Hydraulic Auxiliary Switch

V-Blade Control Functions

The hydraulic control lever* (A) on the power unit controls the functions of the V-blade.

Push forward on the hydraulic control lever to lower the V-blade to the ground. To place in the float position, continue pushing the lever forward until the detent engages. Pull back on the hydraulic control lever to raise the V-blade.

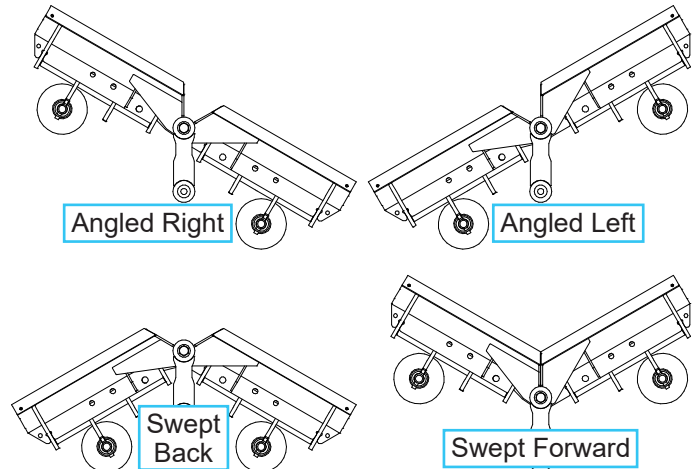
Move the hydraulic control lever to the right to rotate the selected blade wing back. Move the hydraulic control lever to the left to rotate the selected blade wing forward.

The dual hydraulic auxiliary switch (B) controls the blade wing selection. By default, the hydraulic control lever angles the right blade wing. Press and hold the dual hydraulic auxiliary switch to control the left blade wing angle using the hydraulic control lever.

⚠ WARNING

Angling the blade wings to the swept back position creates a pinching or crushing hazard between the blade wing and the hitch frame.

Ensure the area between the blade wing and the hitch frame is clear before angling the blade wing to the rear.



The blade wings can be angled independently from 30° forward to 30° backward. Angle the blade wings to the right or left to push snow to that side. Sweep the blade wings back to push snow to both sides. Sweep the blade wings forward to clear areas without the need for repeated cleanup passes.

* Refer to power unit operator's manual for operation of power unit controls.

GENERAL OPERATION

Daily Inspection

WARNING

Moving parts could cause bodily injury or death.

Engage the parking brake, shut off the power unit engine, remove the ignition key, and ensure all moving parts have come to a complete stop before inspecting components or making any repair or adjustment.

1. Park machine on a level surface, with the engine shut off and all fluids cold.
2. Perform a visual inspection of both the power unit and the V-blade. Look for loose or missing hardware, damaged components, or signs of wear.
3. Inspect hydraulic hoses, hydraulic fittings, and fuel lines to ensure tight, leak free connections.
4. Inspect the cutting edge and skid shoes for wear and service as required.
5. Refer to the power unit operator's manual. Check the power unit's engine oil, hydraulic oil, tire pressure, and fuel level. Add fluid or service as required.
6. Test the power unit's operator safety interlock system*.

Attaching

1. Align the power unit squarely with the V-blade. Lower the power unit front hitch until the hitch tabs are below the top plate on the hitch frame.
2. Drive forward slowly until the power unit hitch tabs are aligned with the hitch point slots in the hitch frame. Raise the power unit hitch to engage the tabs in the frame plate. Continue to raise the hitch until the V-blade is lifted off the ground.
3. Engage the parking brake* and shut off the engine.
4. Rotate the attachment latch handle* forward to the latched position. Make sure the latch tabs are engaged in the lower latch plates and the latch handle lock is engaged to prevent accidental disengagement of the latch handle.
5. Wipe hose ends clean, and connect to the power unit's hydraulic quick couplers. Connect the hoses and quick couplers so the colored indicators are paired together.

Detaching

1. Park the power unit on a level surface and set the parking brake.*
2. Adjust the blade wings to the swept back position.
3. Lower the V-blade to the ground.

4. Shut off the power unit engine.
5. Turn the power unit key to the On position.
6. Move the hydraulic control lever to the left and right, then press the switch on the control lever and move to the left and right again to release pressure from the auxiliary hydraulic circuits.
7. Turn the power unit key to the Off position.
8. Disconnect the hydraulic quick couplers from the power unit and store the hose ends in the holes in the top plate of the hitch frame.
9. Disengage the latch handle lock* and rotate the attachment latch handle* back to unlatch from the lower hitch point on the V-blade.
10. Restart the power unit and lower the front hitch to clear the top plate on the hitch frame while slowly backing the power unit away from the V-blade.

Operating Procedure

Before operation, perform the daily inspection and verify the skid shoes are set at the desired height. Set the weight transfer (if equipped) to the Off position. Use the power unit's hydraulic control lever and switch to set the blade wings to the desired position or angle.

Move the machine into position and lower the V-blade to the ground. Place the power unit's hydraulic control lever in the float position by pushing it forward until the detent engages. The lever will stay in this position until intentionally removed.

When cleaning hard packed snow from hard surfaces, slight down pressure on the V-blade may be used. Push the hydraulic control lever forward until there is slight down pressure on the V-blade and then release.

Drive forward slowly while keeping a close watch for potential hazards.

WARNING

Sudden deceleration caused by a large amount of snow or hidden objects could cause bodily injury and machine damage.

Do not push snow at high speeds or attempt to gain momentum and ram a snow pile.

Do not change the blade angle while driving. Stop the power unit before making blade wing angle adjustments.

* Refer to power unit operator's manual for operation of power unit controls.

GENERAL OPERATION

Transport of the V-blade

Transport the V-blade in the raised position to reduce wear of the machine and to prevent the V-blade from catching on curbs or other obstacles. Travel slowly over rough or slippery surfaces in order to maintain control of the power unit.

V-blade Safety Trip

The V-blade is equipped with a safety trip feature that allows the cutting edge to rotate back or slide away from an obstacle.

⚠ WARNING

When the V-blade safety trip is activated, it may suddenly return to the operating position causing personal injury from pinching.

When the safety trip feature is activated, do not leave the operator's platform or attempt to manually reset the cutting edge.

When the safety trip is activated, it will reset itself unless it is caught on an obstacle. Do not raise the V-blade. Back slowly away from the obstacle to allow the cutting edge to return to the operating position.

Skid Shoe Adjustment

Skid shoes are provided to keep the cutting edge off the surface being cleared, especially when clearing snow from gravel driveways or walkways.

The skid shoe height is determined by the placement of spacer washers between the skid shoe and the skid shoe mount. Extra spacer washers are stored on top of the skid shoe mount.

1. Park the power unit and V-blade on a level surface and engage the parking brake.
2. Determine the number of spacer washers that need to be moved to reach the desired skid shoe height.

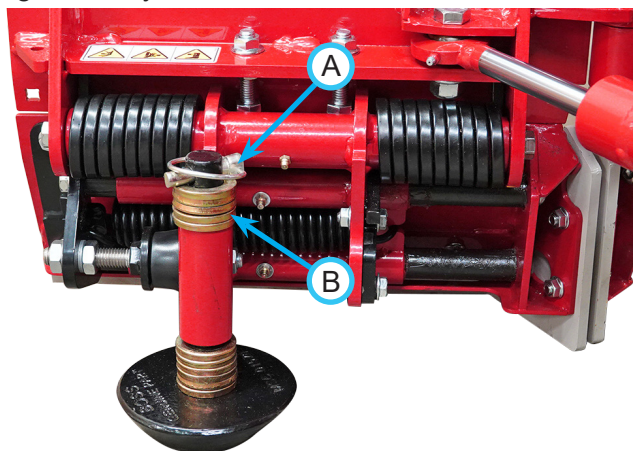
⚠ WARNING

Hydraulic drift or accidental release of hydraulic pressure could cause the V-blade to lower and trap a person or appendage.

Use blocks or jack stands to securely support the V-blade when adjusting the skid shoes.

3. Raise the V-blade to the highest position and adjust the blade wings so they are swept forward. Support the V-blade securely with blocks or jack stands.

4. Shut off the power unit engine and remove the ignition key.



5. Remove the linch pin (A) and the spacer washers (B) from the top of the skid shoe mount.
6. Remove the skid shoe from the bottom of the skid shoe mount. Add or remove spacer washers to reach the desired skid shoe height.
7. Insert the skid shoe back into the skid shoe mount, place any extra spacer washers on top of the skid shoe mount, and fasten the skid shoe in place with the linch pin. Both the left and right skid shoes should be set at the same height.
8. Remove the blocks or jack stands and lower the V-blade to the ground.

SERVICE

⚠ WARNING

Moving parts could cause bodily injury or death.

Engage the parking brake, shut off the power unit engine, remove the ignition key, and ensure that all moving parts have come to a complete stop before inspecting any components or making any repair or adjustment.

Attention

If any component requires replacement, use only original Ventrac replacement parts.

Cleaning and General Maintenance

For best results, and to maintain the finish of the V-blade, clean or wash the V-blade to remove dirt, salt deposits, and snow or ice accumulations.

Attention

To maintain the finish of the power unit and attachment, thoroughly wash the equipment after each use to remove any corrosive agents (e.g., salt). Failure to clean the equipment may result in corrosion of (including but not limited to) steel, aluminum, and electrical components. Equipment that will experience repeated exposure to corrosive agents should be pretreated with a corrosion preventative.

Cutting Edge Replacement

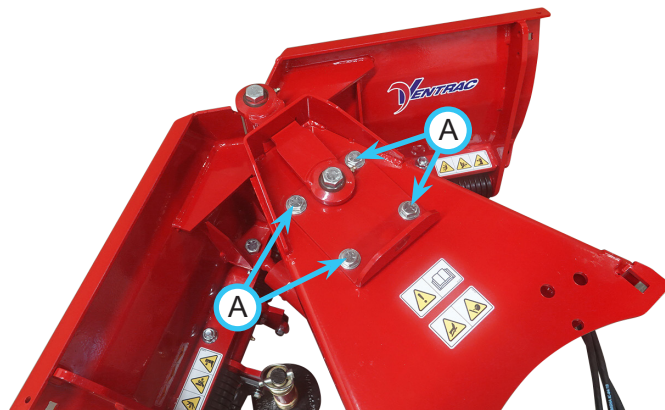
Replace the cutting edges when they wear down near the blade frame structure. Replace all the cutting edges at the same time.

Skid Shoe Replacement

Replace the skid shoes when the wear surface is less than 3 mm (1/8 inch) thick.

Blade Leveling - Front to Rear

1. Park the power unit and V-blade on a level surface and adjust both blade wings to the swept back position.
2. Set the weight transfer (if equipped) to the Off position.
3. Lower the V-blade to the ground and place the hydraulic control lever in the float position.
4. Engage the parking brake, shut off the power unit engine, and remove the ignition key.
5. Check to see if the cutting edges are making even contact with the ground.
6. If the cutting edges are not making even contact with the ground, loosen the four bolts (A) that fasten the pivot link mounting plate to the hitch frame.



7. Slide the pivot link mounting plate forward or backward until the cutting edges make even contact with the ground.
8. Tighten the four bolts to 102 Nm (75 ft-lbs).

SERVICE

Lubrication Locations

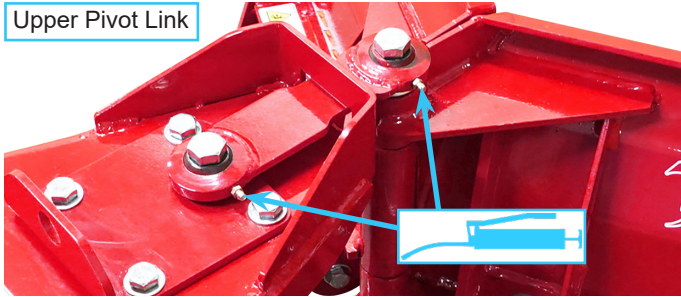
Lubrication is required at the following locations using a lithium complex NLGI #2 grease.

Wipe the grease fittings clean before applying grease to the grease fittings.

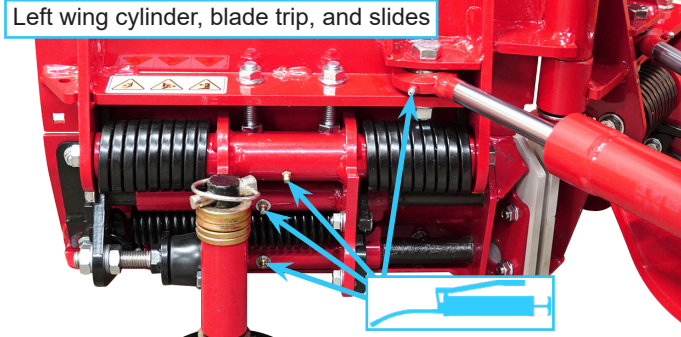
Refer to the maintenance schedule for service intervals and amount of grease.

Adjust the blade wings to the swept forward position.

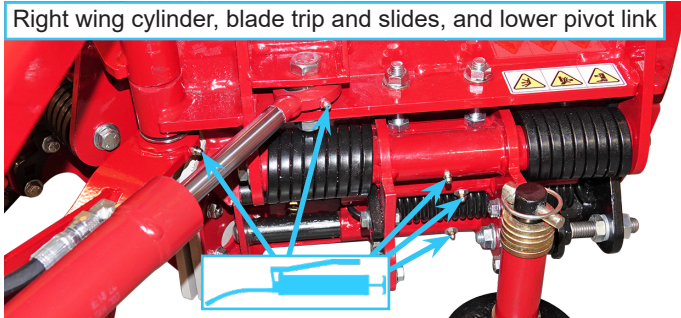
Upper Pivot Link



Left wing cylinder, blade trip, and slides

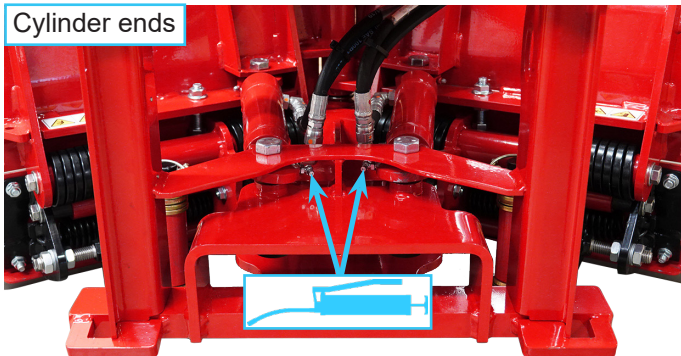


Right wing cylinder, blade trip and slides, and lower pivot link



Adjust the blade wings to the swept back position and detach the V-blade from the power unit.

Cylinder ends



Storage

Preparing the V-blade for Storage

1. Clean the V-blade.

Attention

To maintain the finish of the power unit and attachment, thoroughly wash the equipment to remove any corrosive agents (e.g., salt). Failure to clean the equipment may result in corrosion of (including but not limited to) steel, aluminum, and electrical components.

2. Inspect for loose or missing hardware, damaged components, or signs of wear. Repair or replace any damaged or worn components.
3. Inspect safety decals. Replace any decals that are faded, illegible, or missing.
4. Inspect cutting edges and skid shoes for wear and service as required.
5. Apply grease to all grease points. Wipe off any excess grease.
6. Adjust the blade wings to the swept back position.
7. Inspect painted surfaces for chips, scratches or rust. Clean and touch up surfaces as needed.

Removing the V-blade from Storage

1. Clean the V-blade to remove any accumulated dust or debris.
2. Inspect the V-blade as instructed in the daily inspection section of this manual.
3. Test the V-blade to ensure all components are working properly.

SPECIFICATIONS

Dimensions

Overall Height	54.6 cm (21-1/2 inches)
Overall Length	61 cm (24 inches)
Overall Width	91.4 cm (36 inches)
Overall Width (wings swept back)	91.4 cm (36 inches)
Overall Width (wings swept forward)	81.3 cm (32 inches)
Weight	115.6 kg (255 pounds)
Blade Wing Angle - Forward and Backward	30 degrees

Features

- Independent left and right blade movement is controlled by separate cylinders.
- Switch on hydraulic control lever to select left or right blade.
- Adjustable skid shoes.
- Spring controlled cutting edge safety trip mechanism.

Visit ventrac.com/manuals for the latest version of this operator's manual.

A downloadable parts manual is also available.

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WARRANTY



LIMITED WARRANTY - VENTRAC COMMERCIAL EQUIPMENT

Venture Products, Inc., (henceforth referred to as V.P.I.) warrants on the terms and conditions herein, that it will repair, replace, or adjust any part manufactured by Venture Products Inc., and found by Venture Products, Inc., to be defective in material and/or workmanship during the applicable warranty term.

All Ventrac commercial equipment purchased and registered on or after January 1, 2019 will carry a 2-year commercial warranty. The warranty period begins on the date of original customer purchase:

Ventrac Commercial Equipment	Warranty Term
2100 SSV & Attachments	2-year
3000 Series Tractors & Attachments	2-year
4000 Series Tractors & Attachments	2-year

All Ventrac add-on kits and accessories such as: 3-point hitch, 12V front & rear power outlets, foot pedal, dual wheel kit, etc., will be covered under the above warranty periods provided they are installed by an Authorized Ventrac Dealer. This warranty may be transferred and will carry the remainder of the warranty starting from the original purchase/registration date with the dealership and/or V.P.I.

The engine warranty is covered by its respective engine manufacturer. Please refer to the engine manufacturer's warranty statement that is included in the owner's manual.

For warranty consideration on Ventrac commercial equipment, including any defective part, must be returned to an Authorized Ventrac Dealer within the warranty period. The warranty shall extend to the cost to repair or replace (as determined by V.P.I.) the defective part. The expense of pickup and delivery of equipment, service call drive time or any transportation expense incurred for warranty repair is the sole responsibility of the owner and is not covered under warranty by Ventrac and/or V.P.I. Ventrac and V.P.I.'s responsibility in respect to claims is limited to making the required repairs or replacements, and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Ventrac equipment. Proof of purchase may be required by the dealer to substantiate any warranty claim. Only warranty work performed and submitted by an Authorized Ventrac Dealer may be eligible for warranty credit.

This warranty extends only to Ventrac commercial equipment operated under normal conditions and properly serviced and maintained. The warranty expressly does NOT cover: (a) any defects, damage or deterioration due to normal use, wear and tear, or exposure; (b) normal maintenance services, such as cleaning, lubrication, oil change; (c) replacement of service items, such as oil, lubricants, spark plugs, belts, rubber hoses, bearings or other items subject to normal service replacement; (d) damage or defects arising out of, or relating to abuse, misuse, neglect, alteration, negligence or accident; (e) repair or replacement arising from operation of, or use of the equipment which is not in accordance with operating instructions as specified in the operator's manual or other operational instructions provided by V.P.I.; (f) repair or replacement arising as a result of any operation from Ventrac equipment that has been altered or modified so as to, in the determination of V.P.I., adversely affect the operation, performance or durability of the equipment or that has altered, modified or affected the equipment so as to change the intended use of the product; (g) repair or replacement necessitated by the use of parts, accessories or supplies, including gasoline, oil or lubricants, incompatible with the equipment or other than as recommended in the operator's manual or other operational instructions provided by V.P.I.; (h) repairs or replacements resulting from parts or accessories which have adversely affected the operation, performance or durability of the equipment; or (i) damage or defects due to or arising out of repair of Ventrac equipment by person or persons other than an authorized Ventrac service dealer or the installation of parts other than genuine Ventrac parts or Ventrac recommended parts.

WARRANTY



LIMITED WARRANTY - VENTRAC COMMERCIAL EQUIPMENT

The sole liability of V.P.I. with respect to this warranty shall be the repair and replacement as set forth herein. V.P.I. shall have no liability for any other cost, loss, or damage. In particular V.P.I. shall have no liability or responsibility for: (i) expenses relating to gasoline, oil, lubricants; (ii) loss, cost or expense relating to transportation or delivery of turf equipment from the location of owner or location where used by owner to or from any Authorized Ventrac Dealer; (iii) travel time, overtime, after hours' time or other extraordinary repair charges or charge relating to repairs or replacements outside of normal business hours at the place of business of an Authorized Ventrac Dealer; (iv) rental of like or similar replacement equipment during the period of any warranty repair or replacement work; (v) any telephone or telegram charges; (vi) loss or damage to person or property other than that covered by the terms of this warranty; (vii) any claims for lost revenue, lost profit or additional cost or expense incurred as a result of a claim of breach of warranty; or (viii) attorney's fees.

The remedies of buyer set forth herein are exclusive and are in lieu of all other remedies. The liability of V.P.I., whether in contract, tort, under any warranty, or otherwise, shall not extend beyond its obligation as set forth herein. V.P.I. shall not be liable for cost of removal or installation nor shall V.P.I. be responsible for any direct, indirect, special or consequential damages of any nature. In no event shall V.P.I. be liable for any sum in excess of the price received for the goods for which liability is claimed.

There are no representations or warranties which have been authorized to the buyer of the Ventrac commercial equipment other than set forth in this warranty. Any and all statements or representations made by any seller of this equipment, including those set forth in any sales literature or made orally by any sales representative, are superseded by the terms of this warranty. Any affirmation of fact or promise made by V.P.I. or any of its representatives to the buyer which relates to the goods that are the subject to this warranty shall not be regarded as part of the basis of the bargain and shall not be deemed to create any express warranty that such goods shall conform to the affirmation or promise.

No employee, distributor, or representative is authorized to change the foregoing warranties in any way or grant any other warranty on behalf of V.P.I.

Some states do not allow limitations on how long an implied warranty lasts or allow the exclusion on limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty applies to all Ventrac commercial equipment sold by Venture Products Inc.