

OPERATOR'S MANUAL TKV 20 Material Collection System TK95044

3/1/2019

For your safety, please read and save all safety and operating instructions prior to using equipment.

Introduction

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Using Your Operator's Manual

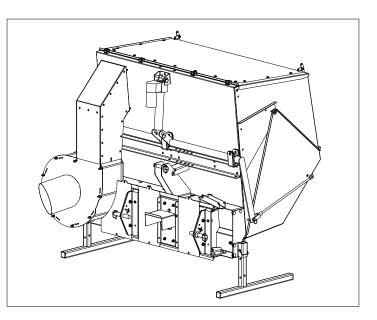
Read this entire manual in its entirety, especially the safety information, before operating.

This manual is an important part of your TKV 20 Material Collection System (MCS). Keep this manual in a convenient location so that it can be accessed easily.

Use the safety and operating information in this manual in order to operate and service the attachment safely and correctly.

If you have any questions or concerns with the assembly, installation, or operation of the TKV 20, contact TerraKing at 717-286-1444 or sales@terraking.com.

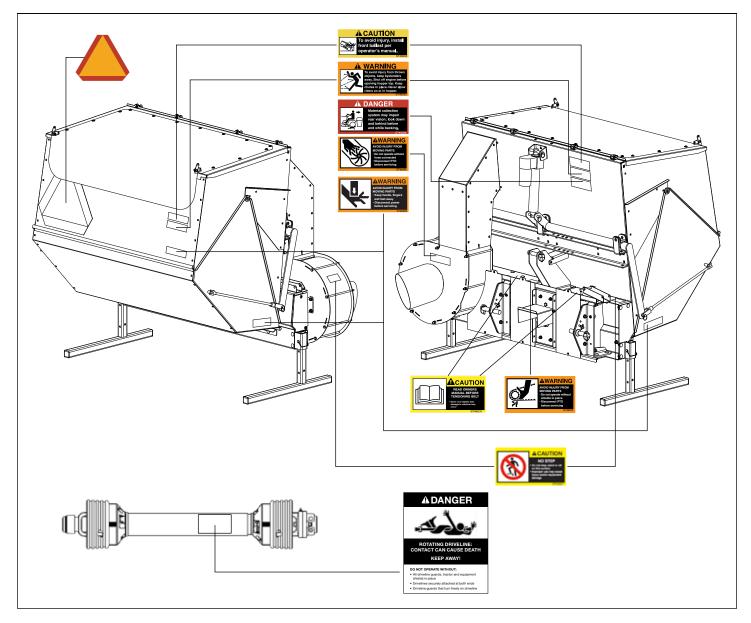
Warranty information regarding the TKV 20 can be found in the Warranty section of this manual.



Product Compatibility

The TKV 20 is designed for use on sub-compact and compact tractors with mid-mount side discharge mower decks. Refer to the Tractor Requirements section on page 7 and to your tractor's operators manual to determine compatibility.

Safety Labels



Understanding the Machine Safety Labels

Safety labels shown in this section are placed in important areas on your machine to draw attention to potential safety hazards.

On your machine safety labels, the words DANGER, WARNING, and CAUTION are used with this safety-alert symbol. DANGER identifies the most serious hazards.

This manual explains potential safety hazards whenever necessary in special messages that are identified with the word, CAUTION, and the safety-alert symbol. Be sure to replace missing or damaged safety labels. Use this manual for correct safety label placement.

Additional safety information on parts and components sourced from suppliers might not be represented in this section.

Safety Labels

WARNING



To avoid injury from thrown objects, keep bystanders away. Shut off engine before opening hopper top. Keep chutes in place. Never allow riders on or in hopper.

WARNING

To Avoid Injury From Thrown Objects

- Keep bystanders away
- Shut off engine before opening hopper top
- Keep chutes in place
- Never allow riders on hopper top or on frame
- Disconnect power before servicing

A CAUTION To avoid injury, install

front ballast per operator's manual.

ST48293

CAUTION

To Avoid Injury

• Install front ballast per tractor's operator's manual



Material collection system may impair rear vision; look down and behind before and while backing.

ST48294

DANGER

Bagger May Impair Rear Vision

Look down and behind before and while backing



AWARNING

AVOID INJURY FROM MOVING PARTS • Do not operate without hose connected • Disconnect PTO before servicing

ST48454

WARNING

To Avoid Injury From Moving Parts

- Do not operate without hose connected
- Disconnect PTO shaft before servicing

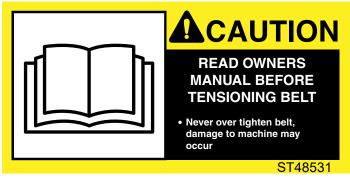


ST48295

WARNING

Avoid Injury From Moving Parts

- Keep hands, feet and clothing away
- Disconnect mechanical and electrical power before servicing



CAUTION

Read Owner Manual before tensioning belt

• Never over tighten belt, damage to machine may occur

Safety Labels



AWARNING

AVOID INJURY FROM

- MOVING PARTS • Do not operate without
- shields in place
- Disconnect PTO
- before servicing

ST48453

WARNING

- To Avoid Injury From Moving Parts
- Do not operate without shields in place
- Disconnect PTO shaft before servicing



CAUTION No Step

- Do not step, stand or sit on this surface
- Improper use may cause injury and/or equipment damage

A DANGER



ROTATING DRIVELINE: CONTACT CAN CAUSE DEATH

KEEP AWAY!

DO NOT OPERATE WITHOUT:

- All driveline guards, tractor and equipment shields in place
- Drivelines securely attached at both ends
- Driveline guards that turn freely on driveline

DANGER

Rotating Driveline: Contact Can Cause Death Keep Away!

Do Not Operate Without:

- All driveline guards, tractor and equipment shields in place
- Drivelines securely attached at both ends
- Driveline guards that turn freely on driveline

PLEASE READ: CRITICAL SAFETY WARNINGS

- DO NOT operate with the Steel Coil Hose off or with the chute removed.
- DO NOT remove the Steel Coil Hose or open the lid while the tractor is running.
- DO NOT get near the rear of the tractor when the PTO is engaged.
- DO NOT operate without front ballast.

General Safety

- The TKV 20 is limited to collecting only grass or leaves.
- Be aware when maneuvering your machine because the TKV 20 increases vehicle length and also alters its center of gravity.
- Be aware of the potential pinch point when closing the tailgate and lid.
- DO NOT allow anyone to ride in or on the TKV 20.

Operating Safely

- Read the tractor and this operator's manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment. Know how to stop the tractor and disengage the controls quickly.
- The TKV 20 is only intended for use in lawn and property maintenance applications. TerraKing does not advise or recommend this product for any other uses.
- Do not modify the TKV 20's safety devices. Unauthorized modifications may impair its function, safety, and void the warranty.
- Do not let children or an untrained person operate machine.
- Make any necessary adjustments before you operate. Never attempt to make any adjustments while the engine is running, unless if recommended in adjustment procedure.
- Look behind machine before and while you back up. Back up carefully.
- Do not let anyone, especially children, ride on machine or attachment. Riders are subject to injury such as being struck by foreign objects and being thrown off. Riders may also obstruct the operator's view and alter weight distribution, resulting in the machine being operated in an unsafe manner.
- Disengage any power to the attachment when the machine is transported or not in use.

Parking Safety

- 1. Stop machine on a level surface
- 2. Lock the park brake
- 3. Stop the engine
- 4. Remove the key
- 5. Wait for engine and all moving parts to stop before leaving the operator's seat

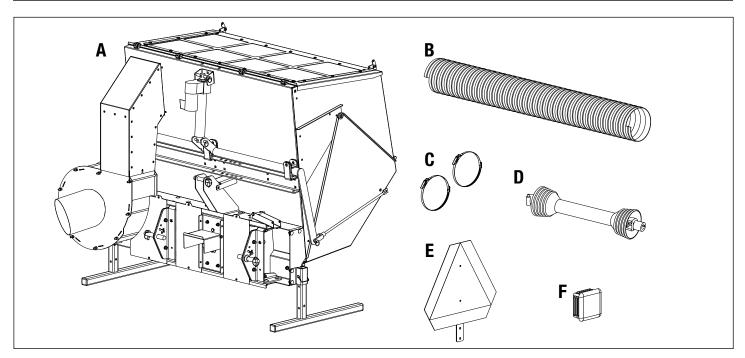
Practice Safe Maintenance

- Only qualified, trained adults should service this machine.
- Understand service procedure before doing work. Keep area clean and dry.
- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.
- Never lubricate, service or adjust the machine or attachment while it is moving. Keep safety devices in place and in working condition. Keep hardware tight and check regularly.
- Keep hands, feet, clothing, jewelry, and long hair away from any moving parts, to prevent them from getting caught.
- Lower the TKV 20 completely to the ground or to an existing attachment mechanical stop before servicing. Disengage all power and stop the engine. Lock park brake and remove the key. Let machine cool.
- Before servicing machine or attachment, carefully release pressure from any components with stored energy, such as hydraulic components and springs.
- Release hydraulic pressure by lowering attachment or cutting units to the ground or to a mechanical stop and move hydraulic control levers.
- Securely support any machine or attachment elements that must be raised for service work. Use jack stands or lock service latches to support components when needed.
- Keep all parts in good condition and properly installed.
 Fix damage immediately. Replace worn or broken parts.
 Replace all worn or damaged safety and instruction decals.
- Check all hardware at frequent intervals to be sure the equipment is in safe working condition.

Wear Appropriate Safety Equipment

- Always wear eye protection when operating the machine.
- Wear close fitting clothing and safety equipment appropriate for the job.
- While operating this machine, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Wear a protective hearing device such as earplugs. Loud noise can cause impairment or loss of hearing.

Parts in Kit



Main Components

	Description	Qty.
А	TKV 20 Main Assembly	1
В	5' of 8" dia. Steel Coil Hose	1
С	Hose Clamps	2
D	PTO Shaft	1
E	SMV Sign	1
F	Plastic End Cap	4

Other Requirements

Front Ballast

A full TKV 20 can weigh upwards of 600 pounds. Refer to the manufacturer or dealership for proper ballasting requirements.

Accessory Kits

For complete list of required and recommended kits go to www.terraking.com or call us at 717-286-1444

Tractor Requirements

Tractor horsepower should be within the range noted below. Tractors outside the horsepower range must not be used.

Horsepower Rating	20-60 HP			
Rear PTO Shaft	1-3/8" 6-Spline			
Rear PTO Speed	540 RPM			
Hitch TypeCategory 1 3-Pc	oint, Quick-Hitch Ready			
3-Point Lift Capacity (24 in. behind link arms) 650 lb.				



WARNING: If the PTO shaft is cut too short, it can disengage during operation and cause injury. If PTO shaft is too long damage to the tractor and TKV20 will occur. If you are unsure how to properly cut the PTO shaft, please see your dealership.

Initial Set Up

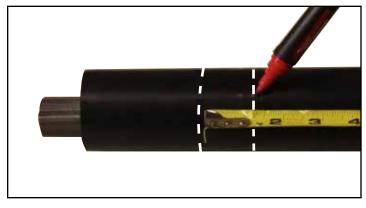
Attach TKV 20 to the tractor's 3-point arms or Category 1 quick hitch.

Sizing the PTO Shaft

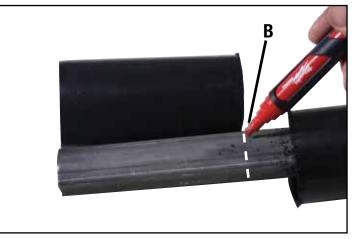
- 1. Slide PTO Shaft apart and connect the half with the round hole to the TKV 20 and the spline half to the tractor's PTO shaft.
- 2. Lift and lower the 3-point arms to find the position where the two ends are closest together. Position the two halves of the PTO shaft side by side and measure or mark the amount to be cut noted by dashed line (A).



 Remove both halves of the PTO shaft. Cut the guard an additional 1.25 - 1.5 inches than the amount measured or marked.

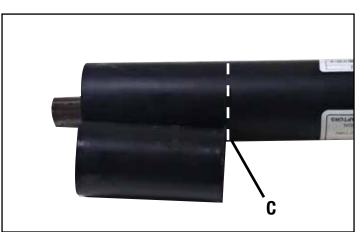


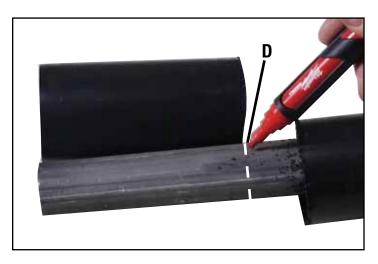
4. Using the cut off portion of the guard mark (B) and cut that distance from the driveline tube.



Note: The driveline tube should protrude approx. 1.25 - 1.5 in. past the guard.

5. Using the cut off portion of the guard, mark and cut that distance from the guard (C) and driveline tube (D) of the other half of the PTO shaft.

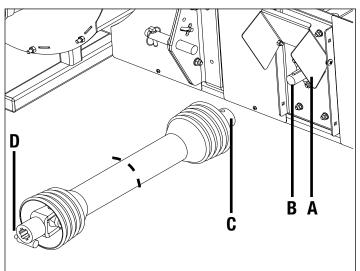




- Round off sharp edges and remove any burrs on the driveline tubes. Apply good quality lithium soap compatible E.P. grease (meeting the N.L.G.I. #2 specification and containing no more than 1% molybdenum disulfide) to the outside of the smaller diameter driveline tube.
- 7. Reassemble PTO halves together making sure they slide (telescope) easily and ensure guards rotate freely.

Connecting the PTO Shaft

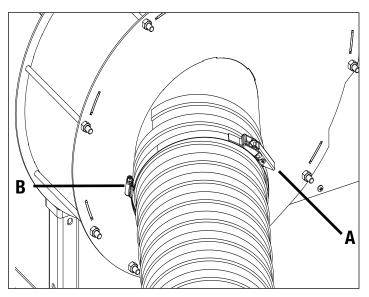
- 1. Flip up the shield (A). With square key (B) in keyway of the shaft, slide the PTO shaft onto the TKV 20 and tighten the setscrew (C) to 28 +/-2 ft. lbs.
- 2. Connect the PTO shaft to the tractor's PTO and ensure lock pin (D) is engaged.



3. Lift the tractor's 3-point arms up and down to ensure that the PTO telescopes freely, does not come apart and does not bind.

Blower Inlet Hose

- 1. Position mower deck in lowest mowing position.
- 2. Slide hose on front of blower as far as possible. Lay other end beside the boot. Lift and lower the 3-point arms to observe the distance between the boot and the blower inlet. Cut the hose long enough to fit in all positions. The plastic can be cut with a utility knife, but the wire requires wire cutters or a saw.
- Slide clamp over hose and hose onto blower inlet. Close the latch (A) to clamp. If clamp is too loose, tighten the screw (B). To prevent stripping the screw, unlatch (A) before tightening (B).



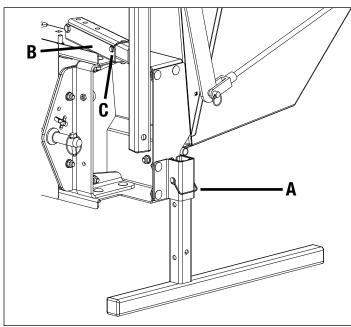
- 4. Repeat step #3 on boot end.
- 5. Lift the tractor's 3-point arms up and down to ensure that the blower hose moves freely.
- 6. Ensure that the blower hose does not contact the ground during operation as this could cause excessive wear or damage.

Machine Set Up



WARNING: Place storage stands in storage channel before mowing to prevent damage.

- 1. Install the two plastic end caps onto each foot of the storage legs.
- Lift TKV 20 with 3-point, and remove the wire lock pin (A) stand. With the shorter end of the leg down slide the stand into the storage channel (B), and fasten with the wire lock pin (C). Repeat this step for the storage stand on the other side.



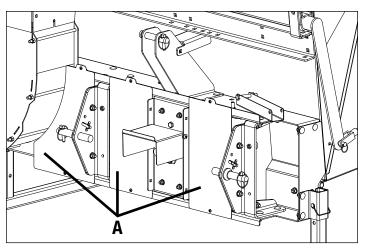
- 3. Set the 3-point lever where the PTO shaft sits horizontally. Adjust sway chains and adjustable lift link on 3-point arms to level attachment.
- 4. For hydraulic systems without position control, it is recommended that the 3-point arms are chained to ensure that the TKV 20's PTO shaft remains horizontal.

CAUTION: Operating PTO on an angle will cause excessive wear or damage.

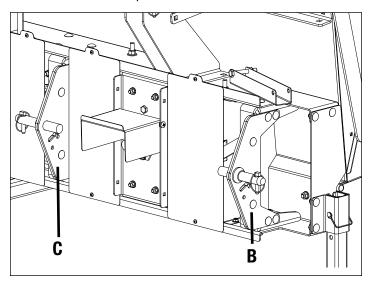
Repositioning the TKV 20's 3-Point Hitch Pins

For wider tractors, the hose from the boot to the blower may get close or touch the rear tire of the tractor. The positioning of the TKV 20's 3-point hitch pins can be shifted to the right by 2-1/2" by following the steps below.

1. Remove the three shields (A).



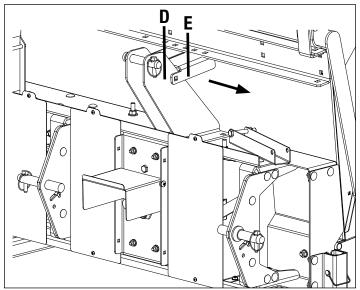
2. Remove the side pin brackets (B and C), flip them over and reinstall them in the opposite positions. B is now reinstalled where C was, and vice versa. (This allows the side pin to stay on the bracket). Reinstall hardware and torgue to 30 +/-1 ft. lbs.





CAUTION: This configuration is not compatible with the stay chain kit.

 Remove the four bolts on the top pin brackets (D) and support bracket (E) and slide them over to the next set of holes on the frame. Reinstall hardware and torque to 30 +/-1 ft. lbs.



4. Reinstall the shields.

Before Operation

- 1. Make sure the lid is latched, the hose firmly connected and lid extension is free to rotate outward.
- 2. Ensure that the tractor's PTO Selection Lever on the side console is in the position to allow the mid PTO (mower deck) and the rear PTO (TKV 20) to operate.
- 3. Slowly lower the 3-point arms to a position where the PTO shaft is horizontal for mowing.
- For longer belt life on the mower deck and the TKV 20, engage the PTO with the tractor at idle and throttle up to full PTO RPMs. Lower the RPMs back to idle before disengaging the PTO.

How to Determine If the Hopper is Full

NOTE: The rate at which the hopper fills is dependent upon many factors including the type of material being collected as well as its depth, moisture content and the tractor's speed.

NOTE: It is normal to have fine, dry grass escape from the side panels during operation.

- 1. The lid fabric cover will begin to deflate.
- 2. There will be a slight increase in the pitch of the blower.

Emptying the Hopper

1. To empty, disengage the PTO, lift the 3-point arms all the way up and hold the rocker switch in the open position until the tailgate is fully opened. Drive forward away from the pile before closing. To close, hold the rocker switch in the close position until fully closed.

NOTE: It is normal to hear the electric actuator make a ratcheting sound when the PTO shaft is fully extended or retracted while operating the rocker switch.

- To prevent damage to the TKV 20, do not back up the tractor while emptying material. Do not use the TKV 20's tailgate to push material as damage may occur.
- 3. Lower the 3-point arms to position the PTO shaft horizontally, engage PTO, and resume mowing.

Removal and Storage



WARNING: The TKV 20 will become unbalanced when material is inside the hopper. Do not disconnect the TKV 20 from the 3-point arms or rest it on the storage stands while there is material in the hopper.



IMPORTANT: Do not leave material inside the hopper between uses and during storage. Moisture can damage the hopper and damp material is a fire hazard.

- 1. Empty the hopper.
- 2. Lift the 3-point arms to the highest position.
- 3. Ensure that the storage stands are installed at the lowest position and the tractor position labels (shown at right) on both storage stands are pointing towards the tractor.
- If chains or a Stay Chain Kit were used to prevent the TKV 20 from lowering below the PTO horizontal position, unhook the chains from the tractor.



- 5. Disconnect and remove the wire to the actuator switch.
- 6. Unlatch the hose clamps and remove the hose.
- 7. Lower the TKV 20 onto the storage stands.
- 8. Disconnect the PTO shaft from the tractor.
- 9. Disconnect the tractor's 3-point arms or quick hitch from the TKV 20. This may require loosening the tractor's sway chains/links on the 3-point arms.

Transportation

1. Ensure that the SMV sign on the back of the TKV 20 visible from the rear.

Troubleshooting

Below are common symptoms that may be experienced when the TKV20 is in operation. Suggested solutions are listed to help remedy the situation.

Blower Inlet Hose or Boot is Clogging Frequently



WARNING: Rotating blades are dangerous.

- Ensure the rear PTO is engaged and set at 540 RPM.
- Verify that the inlet hose and boot are not clogged. If they are, consult the Unclogging Fan and Chute section on page 14.
- Check the belt's tension and inspect the belt for wear. If the belt is loose, apply tension according to Belt Tension section on page 15. If the belt needs to be replaced, please see Belt Replacement Instructions on page 15.
- If problem persists, operate the tractor at a slower speed. If the grass you are collecting is too tall, consider raising the deck height. If the material you are collecting is too damp or wet, consider waiting until it dries further.

Material is Blowing Out of the Vent on the Back of the Chute or Side of the Hopper Lid

- Ensure that the hopper is not being overfilled. If full, empty the hopper.
- Verify that the holes in the screen of the hopper lid are not filled with material. If plugged, clean screen by wiping material from screen.
- Verify that hopper tailgate and its side panels do not have lodged grass which can prevent the tailgate from closing tightly.
- Verify the lid extension is free to rotate.

Belts are Slipping/Smoking During Startup

- Check to see if the fan is jammed. If so, consult Unclogging Fan and Chute section on page 14.
- Check the belt tension and inspect for belt wear. If the belt is loose, apply tension according to Belt Tension section on page 15. If the belt needs to be replaced, please see Belt Replacement Instructions on page 15.

Fan or Drive System is Vibrating Excessively

- Check for loose hardware.
- Inspect fan blade for material buildup. If debris is present, clean off the fan blades, supports, and plate.
- Check the tightness of the bolt on the center of the fan shaft. If loose, apply red thread lock and re-tighten to 18 +/- ft. lbs.
- Check the belt tension and inspect for belt wear. If the belt is loose, apply tension according to Belt Tension section on page 15. If the belt needs to be replaced, please see Belt Replacement Instructions on page 15.
- If vibration continues, contact TerraKing for support.

Bin Not Opening to Dump Collected Material

- Check the inline fuse located on the positive wire near the battery. If the fuse is blown, replace it with a ATO/ATC 30 amp slow-blow fuse.
- Make sure all wire connections are tight and clean.
- Make sure the wiring harness is not damaged and is free of nicks.
- Using a voltmeter, verify that 12 volts DC is present at the actuator connector when the rocker switch is pressed in either direction. The voltage will be either positive or negative depending on the switch position.
- If bin still does not open, contact TerraKing for support.

Troubleshooting

A DANGER



ROTATING DRIVELINE: CONTACT CAN CAUSE DEATH KEEP AWAY!

DO NOT OPERATE WITHOUT:

- All driveline guards, tractor and equipment shields in place
- Drivelines securely attached at both ends
- Driveline guards that turn freely on driveline



DANGER: Contact with rotating driveline (PTO) can cause death or serious injury. Do not attempt to service while tractor is running.

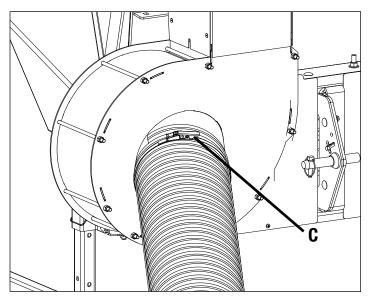
Unclogging Fan and Chute



CAUTION: Do not overfill hopper. Overfilling can result in grass clogging chute. Material stuck in chute may also fall into blower causing fan to jam or vibrate on restart.

The common symptoms of a clog include:

- Loss of tractor power
- Slipping belts
- Throwing material out from under deck
- Heavy and/or wet material
- 1. Ensure that the PTO and the mower deck have stopped moving and turn off the tractor. Remove the tractor's key, set the parking brake and disconnect the PTO shaft.



- 2. Unlatch the hose clamp (C) and remove the hose.
- 3. Remove the clogged material from inside of the blower housing.
- 4. Rotate the fan to ensure it is not stuck. Fan should rotate with minimal resistance clockwise or counterclockwise. If fan is stuck, contact TerraKing for support.

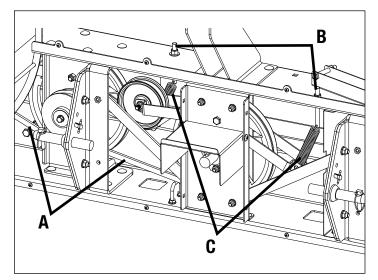
Maintenance

Maintenance Schedule

	Each Use	Initial 5 Hrs	8 Hrs	50 Hrs	Annually
Belt tension: Check and adjust/replace		х		х	х
PTO shaft cross and bearing, lube			Х		х
PTO shaft telescoping member, lube			х		х
Hopper screen, cleanout	х				х
Fan and chute, cleanout					х
Drive frame housing, cleanout					х

Belt Tension

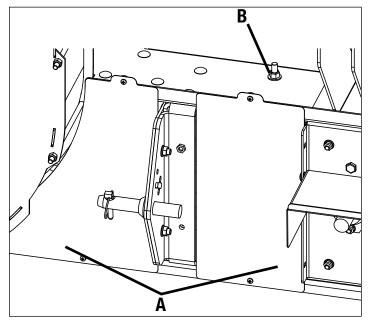
- Remove the front shields. Tension the belts (A) by tightening the nuts (B) until the springs (C) are stretched to 4.6" (inside hooks). Belt tension can be verified using a spring gauge. Deflection at center of belt should be 4 lbs. at 1/4" deflection.
- 2. Check the belt tension after 5 hours of initial use. Check the belt for wear and re-tension if necessary every 50 hours of use or annually (if less than 50 hours per year).



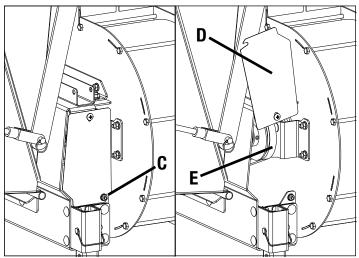
Belt Replacement

Blower Belt

- 1. Disconnect PTO shaft.
- 2. Remove the two shields from locations (A) and loosen the idler bolt (B).



3. Loosen nut (C) and rotate the shield (D) as shown. Remove the belt (E) from the pulley behind the blower.



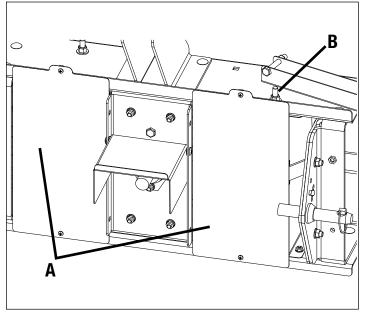
- 4. Remove the belt from the large pulley and install a new belt. (B52 V-belt)
- 5. Re-tighten the idler to proper belt tension and reinstall the shields.

Maintenance

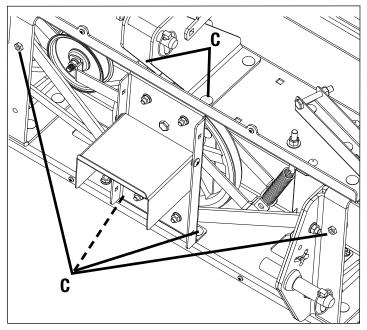
Belt Replacement

PTO Belt

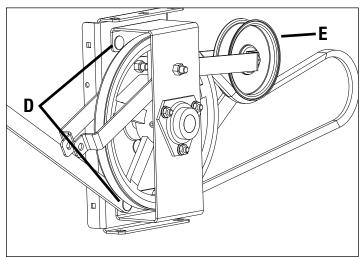
- 1. Disconnect the PTO shaft.
- 2. Remove the two shields (A) and loosen the idler bolt (B)



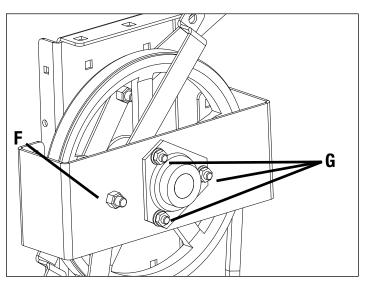
3. Remove the six bolts (C) to remove the center drive pulley assembly.



4. Remove the four bolts (D) and the idler pulley (E).



5. Rotate the bracket (F) and remove the belt from the pulley around the bracket. It may be necessary to loosen the nuts (G) to allow the bearing to rotate in the flanges.



- Install a new belt (B52 V-belt) onto the pulley and reassemble the center drive-pulley assembly. Torque the 3/8" bolts to 30 +/- ft. lbs.
- Reinstall center drive-pulley assembly into drive frame and torque bolts to 30 +/- ft. lbs.
- 8. Wrap the belt around the small pulley and reassemble the idler to the proper belt tension.
- 9. Reinstall the two shields.

Maintenance

PTO Shaft Lubrication

NOTE: See page 15 for recommended service intervals in Maintenance Schedule table.

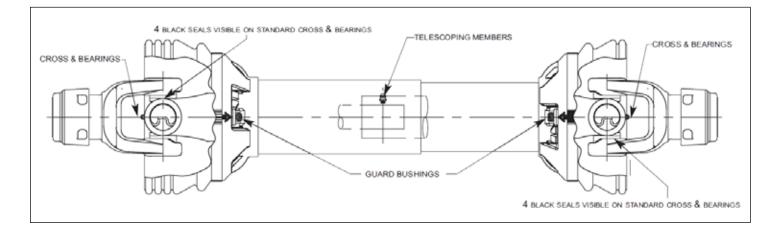
- 1. Lubricate all fittings with lithium soap compatible E.P. grease meeting the N.L.G.I. #2 specifications and containing no more than 1% molybdenum disulfide.
- 2. An E.P. grease meeting N.L.G.I. #2 specifications and containing 3% molybdenum disulfide may be substituted in the telescoping members only.
- 3. The rotating guard bushings should be lubricated upon replacement.



CAUTION: Replacement parts are not lubricated. Replacement parts must be lubricated at time of assembly and during use, per the lube manufacturer's recommendations.

Cleaning and Seasonal Storage

- 1. Empty the hopper before removing from the tractor.
- 2. Raise the hopper lid and clean the screen using a cloth or soft-bristle brush.
- 3. Carefully remove any debris from the fan and spray with a light oil to prevent rusting.
- 4. Remove shields and clean out debris in drive frame. Reinstall the shields before storing.



Specifications

Hopper				
Capacity	20 bu. (705 L)			
	25 cu ft (0.7 m3)			
Weight	Empty: 390 lb. (177 kg)			
	Full: 650 lb. (295 Kg); Varies based on material			
Ground Clearance	6-3/8 in. (162 mm.) (Distance between lower 3-point pins to bottom of hopper)			
Material	Sides: 1/16 in. (1.58 mm) aluminum			
	Gate: 1/16 in. (1.58 mm) steel			
Storage Stands	1-1/2 in. (38.1 mm) square 11 gauge tubular steel			
Blower System				
Drive Type	Belt			
Belts	Blower Belt: B52 V-belt			
	PTO Belt: B52 V-belt			
Materials	Fan: 7 gauge steel			
	Fan Housing Front and Rear: 11 gauge steel			
	Fan Housing Ring: 11 gauge 304 stainless steel			
Fan Diameter	15-in. (381 mm.)			
Number of Fan Blades	5			
Fan Speed	3,000 RPM			
Hose				
Material	Steel-coil vacuum hose			
Diameter	8 in. (203 mm)			
Length	5 ft (1.5 m)			
Tractor Requirements				
Horsepower	Engine: 20+ HP			
	PTO: 17+ HP			
Power Take-Off	540 RPM rear PTO shaft			
3-Point Hitch	Category 1 with 650+ lb. lift capacity			
Electrical	12V / 30A connection			
Mower Deck	Mid-mount side-discharge deck			
Counterweight	Refer to the manufacturer or your dealer for proper ballasting requirements			

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Limited Warranty

TerraKing's products are guaranteed to be free from defects in material and/or workmanship and to perform as advertised when properly assembled, installed, used, and maintained in accordance with written instructions. Failure to adhere to this will void the warranty. TerraKing will not be responsible for labor, loss, or consequential damage of any kind or character caused by defective parts, or for charges incurred in the replacement or repair of defective parts.

Warranty Period

The TerraKing TKV 20 Material Collection System is warranted for a period of 1 (one) year after the purchase date for residential use, and 6 (six) months after the purchase date for commercial use. This product is warranted by TerraKing to the original purchaser/ customer against defects in material and workmanship under normal operating conditions.

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. TerraKing reserves the right to make changes at any time without notice.

For service parts and customer support, contact TerraKing at 717-286-1444 or sales@terraking.com.

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