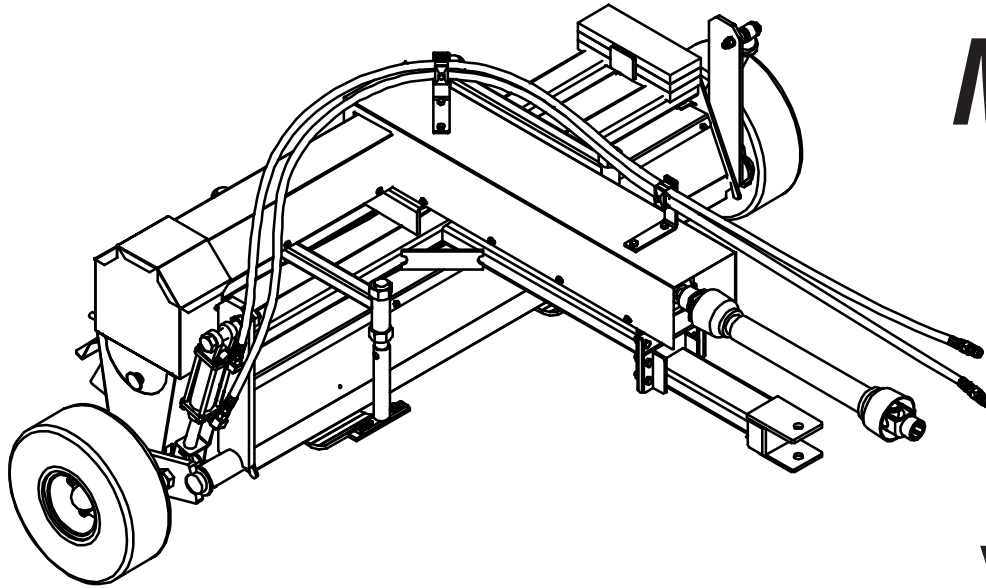




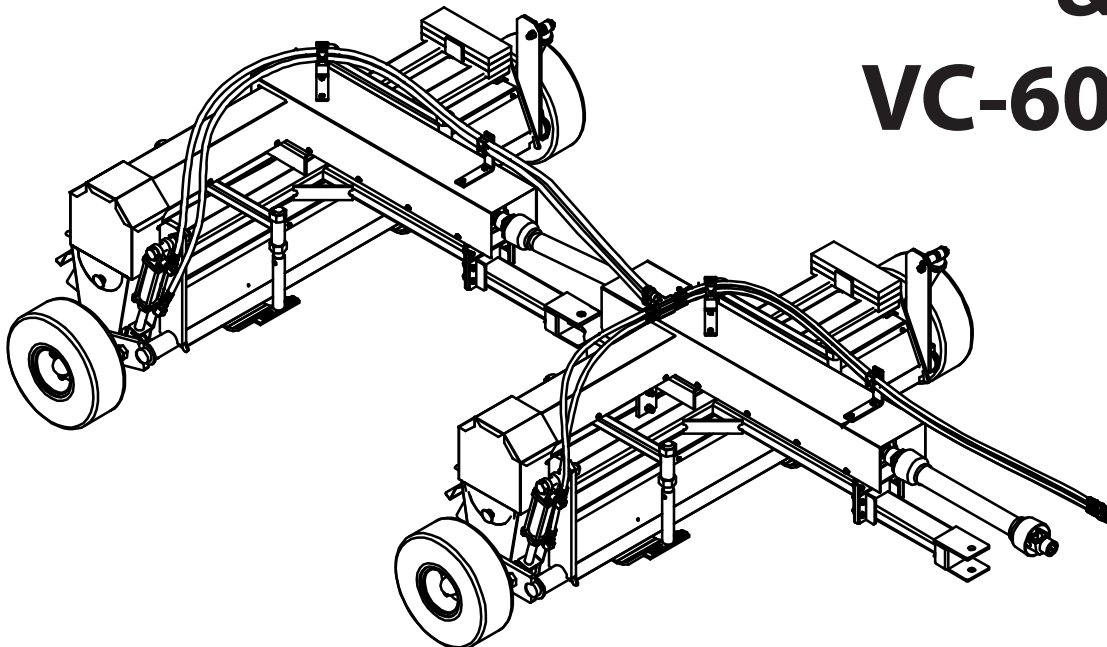
VERTI-CUTTER

Vertical Mower

Operator's Manual



VC-60 & VC-60 Plus



Thank you for purchasing a Harper/Goossen Verti-Cutter.

As with all Harper/Goossen products, the Harper/Goossen Verti-Cutter has been developed through tough design and testing procedures to provide a quality machine. This manual gives assembly, operating, and service information for the VC-60 and VC-60 Plus.

Please read and understand all instructional material included with the Verti-Cutter or its components before assembling and operating the equipment.

A vertical mower such as the Verti-Cutter can present hazards to an operator who follows unsafe procedures in either the operation or maintenance of the unit. Therefore, **SAFETY WARNINGS** are presented at certain locations in the text.

THIS SYMBOL:  SAFETY WARNING!

MEANING: Failure to understand and obey this warning may result in injury to you or others.

Whenever this symbol is used, please pay very close attention to the information presented, and make sure you fully understand. If you do not, contact your Goossen dealer or Harper Industries for clarification.

 SAFETY WARNING!

ALL SHIELDS AND GUARDS MUST BE IN PLACE FOR PROPER AND SAFE OPERATION OF THIS EQUIPMENT. WHERE THEY ARE SHOWN REMOVED IN THIS MANUAL, IT IS FOR PURPOSES OF ILLUSTRATION AND INSTRUCTION ONLY. DO NOT OPERATE THIS EQUIPMENT UNLESS ALL SHIELDS AND GUARDS ARE IN PLACE.

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All other brand and product names are trademarks or registered trademarks of their respective companies.

LIMITED WARRANTY

The Harper/Goossen Verti-Cutter is warranted against defects in workmanship and materials for a period of **TWELVE MONTHS** from the date of retail purchase to the original purchaser.

Harper Industries will repair or replace, at our option, any part that our examination shows to be defective. Warranty is limited to parts, labor and ground freight delivery of replacement parts. The user will pay freight charges for parts submitted under this warranty.

No product or part may be returned for warranty consideration without prior approval from Harper Industries.

This warranty does not apply to parts subjected to misuse, abuse, alteration, improper or inadequate maintenance, or normal wear (including belts, chains and knives).

Harper Industries, its agents or representatives, make or imply no other warranties. Contact Harper Industries with any questions regarding this warranty.

FOR YOUR RECORDS

DATE OF PURCHASE ____/____/____

DEALER'S NAME _____

DEALER'S PHONE # _____

SERIAL # _____

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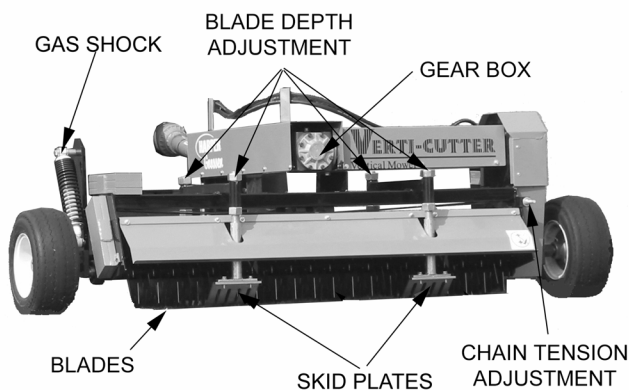
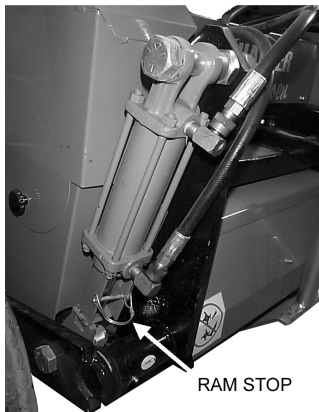
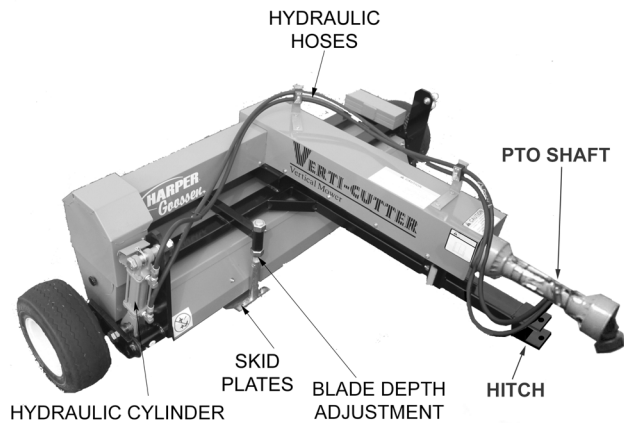
Specifications

Model	VC-60 & VC-60 Plus
Swath	60"
Blades	40 - 12 gauge / 10 point / 12" diameter blades
Blade Spacing	1.5" standard, 2" or 2.5" spacing is optional
Blade Shaft Rotation	VC-60 – forward rotation VC-60 Plus – front unit: forward rotation rear unit: backward rotation
Blade Depth	0" to 1"
Blade Depth Adjustment	Large jacking bolts on no maintenance skids
Draw Bar	Two position adjustable tow bar
Hitch	Adjustable quick pin tag along
Drive	540 RPM PTO to gear box, sprockets with #60 chain to blade shaft with shear bolt
Required Horsepower:	25 to 45 hp
Transport System	Single hydraulic lift cylinder with E-Z ram lock, quick disconnect from tractor auxiliary valve
Tires	2 – foam-filled 16 x 6.50 x 8
Frame	All-welded steel construction
Weight	800 lbs
Dimensions	Length - 62" Height - 38" Width - 89"

Harper Industries, Inc. is continually striving to improve the design and performance of its products. We reserve the right to make changes in specifications and design without thereby incurring any obligation relative to previously manufactured products.

Control Identification

VC-60



PTO SHAFT – transfers power from the tractor to the Verti-Cutter.

SKID PLATES – control depth of blades and prevents the blades from gauging.

HITCH – connects to tractor draw bar with standard 3/4" hitch pin.

BLADE DEPTH ADJUSTMENT – adjusts the height of the skids which controls the depth of the blades.

HYDRAULIC CYLINDER – lifts the blades for transport.

HYDRAULIC HOSES – provide power to raise and lower the blades. They are connected to the tractor hydraulic remotes.

RAM STOP – secures cylinder ram in extended position for transport. ALWAYS USE RAM STOP WHEN TOWING VERTI-CUTTER.

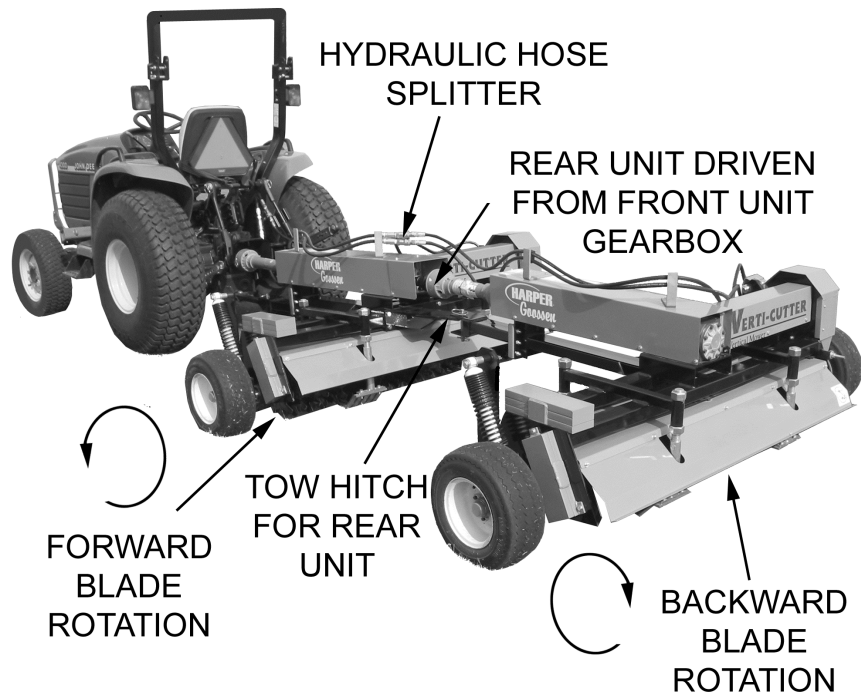
GAS SHOCK – puts pressure on the axle which reduces the drag of the skids.

GEARBOX – transfers power from PTO shaft to chain drive with a 90° turn.

BLADES – rotate forward to de-thatch and aerate turf.

CHAIN TENSION ADJUSTMENT – adjusts the tension on the chain.

VC-60 Plus



FRONT UNIT – PTO driven from the tractor. The blades are forward rotating. A tow hitch is attached to its frame in order to pull the rear unit. The gearbox has an output shaft to power the rear unit.

BLADE ROTATION – The forward blade rotation of the front unit and the backward blade rotation of the rear unit work together to more thoroughly de-thatch and aerate the turf.

REAR UNIT – PTO driven from the front unit. The rear unit is the same as the VC-60 except that it has a shorter PTO shaft and a reverse rotation gearbox which reverses the blade rotation.

HYDRAULIC HOSE SPLITTER – provides outlets for hydraulic hoses on rear unit.

Safety Guidelines



SAFETY WARNING!

Use genuine factory parts or parts with equivalent characteristics, including type, strength and material. Failure to do so may result in product malfunction and possible injury to the operator and/or others.

- Replace locknuts and locking screws if you can tighten them without feeling considerable resistance for several turns before they are completely tight. Replace them with factory authorized parts or their equivalent.
- If hardware is not secure, or if some of the hardware is over-tightened, equipment failure may result, posing possible safety hazards.
- To prevent possible eye injury, always wear **SAFETY GLASSES** while operating and servicing the equipment.

Guards & Shields

- Keep the equipment and attachments in good operating condition, and keep all safety devices in place. Replace all worn, damaged, unusable, missing or lost safety shields and guards before operating the equipment.

Safety Decals

- If safety related or instructional decals become illegible or are removed, replace them immediately.

- If you replace parts that have such decals attached to them, make sure the decals are replaced with current versions, and that the decals are on the replacement parts before the machine is operated again.
- New decals may be obtained from your local Harper/Goossen Dealer.

Equipment & Controls

- Altering this equipment in any manner which adversely affects its operation, performance, durability, or use will void the warranty and may cause hazardous conditions.
- Know the location and function of all controls and how to stop this equipment quickly in an emergency. Read and understand the owner's manual before you operate the equipment.
- Keep all nuts, bolts and screws tight to help ensure safe operation of this equipment.

Before Operation

- Before operating this equipment, read and understand the Owner's Manual.
- Do not allow children to operate this machine.
- Never operate this machine in the vicinity of bystanders.
- Before servicing or inspecting the machine, make certain that the power source is shut down, make certain all moving parts have stopped and disconnect the spark plug or PTO shaft.
- Never allow hands, clothing or any part of the body near the blades or moving parts.
- Avoid wearing loose-fitting clothing.

- Wear approved eye and ear protection while operating the machine.
- The machine should be operated on level surfaces only.
- Before starting the machine, visually inspect all nuts, bolts and other fasteners to see that they are properly secured. Nuts, bolts and other fasteners should be checked every 8 to 10 hours of operation for proper alignment and tightness.

Operation

- Make certain the blades are clear of debris before starting the machine.
- If a foreign object should strike the blades of the machine and cause an unusual noise or vibration, shut the engine or PTO off immediately and allow it to come to a complete stop. Disconnect the spark plug wire from the spark plug, or PTO from the power unit, and then do the following:
 1. Inspect for damage.
 2. Repair or replace any damaged parts.
 3. Check for and tighten any loose bolts, nuts, fasteners or parts.
- Keep debris or foreign material from building up in the mower, as this may inhibit proper operation or cause poor performance.
- Keep all safety shields and guards in place and in good working condition.
- Keep your face and all body parts away from moving parts.
- Stay away from the discharge area when machine is in operation.
- If the vertical mower should become clogged, shut off the engine or PTO and

allow it to come to a complete stop. Disconnect the spark plug wire from the spark plug or PTO shaft before clearing debris.

- Do not allow hands, clothing or any part of the body to enter near any moving parts.
- Replace damaged or missing safety decals.
- Keep hands, feet and clothing away from PTO driven parts.
- Keep all guards and shields in place during operation. Disengage PTO and shut off the engine before removing guards or shields.
- Never attempt to adjust, clean or lubricate the machine while PTO is connected to tractor.
- Operator should never wear loose clothing when working around PTO.
- Before starting tractor, make sure that the transmission and PTO are disengaged.
- Make sure the tractor's engine is at idle speed before engaging the PTO.

Transport

- Always use the ram stop when towing the Verti-Cutter.
- **SPEEDS SHOULD NOT EXCEED 10 MPH FOR MORE THAN 2 MINUTES WHEN TOWING VERTI-CUTTER.**
- The Verti-Cutter should be transported on a trailer when moving distances greater than 2 miles.

Hook Up & Operation



SAFETY WARNING!

- Wear approved eye and ear protection while operating the Verti-Cutter.
- Keep all guards in place during operation. Never operate the vertical mower with safety shields removed.
- Before operating the machine, check to ensure that the chain is tight to prevent the chain from slipping off the sprockets.
- Keep clothing and all body parts away from rotating parts.
- Never operate the vertical mower beyond the suggested 540 PTO speed.

IMPORTANT: To avoid damage to the machine, lawn or pavement, always raise blades into transport position when moving from one location to another.

Hook Up

1. Mount Verti-Cutter to hitch of tractor and connect PTO shaft to tractor output shaft.
2. Connect hydraulic hoses to auxiliary connections on tractor.
3. With the tractor and unit on level ground, adjust so that the skid plates are parallel to the ground. This allows the Verti-Cutter to glide smoothly over turf. The hitch can also be adjusted to adjust for different tractor hitch heights.

Starting Operation

1. Engage PTO lever on the tractor AT IDLE SPEED of the tractor.
2. Lower machine with lever on tractor that controls auxiliary hydraulics and place in "float" position.
3. Increase tractor engine speed to rated operating RPM and begin operation of the vertical mower.

Stopping Operation

1. Move throttle on tractor to the slow position and disengage the PTO lever on the tractor.
2. Shut off the tractor engine and allow the machine to come to a complete stop.
3. If it is necessary to inspect or service the Verti-Cutter, always disengage the PTO and shut off the tractor before doing so.

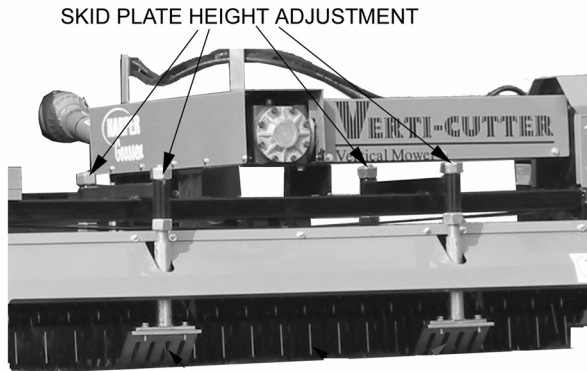
NOTE: On initial operation of the machine, the chain may stretch and need re-adjusted after the first hour of use. When re-adjusting chain tension, use a straightedge across the faces of the sprockets to make sure they are properly aligned and the chain will run true.

Tips for Successful Operation

- Rake across slopes, never up and down.
- Use caution when changing direction on slopes.
- Avoid raking very steep slopes or areas where safety might be in doubt.
- Do not rake water-soaked lawns. This will pull turf off the surface.
- Mow tall grass before raking.

Adjustment

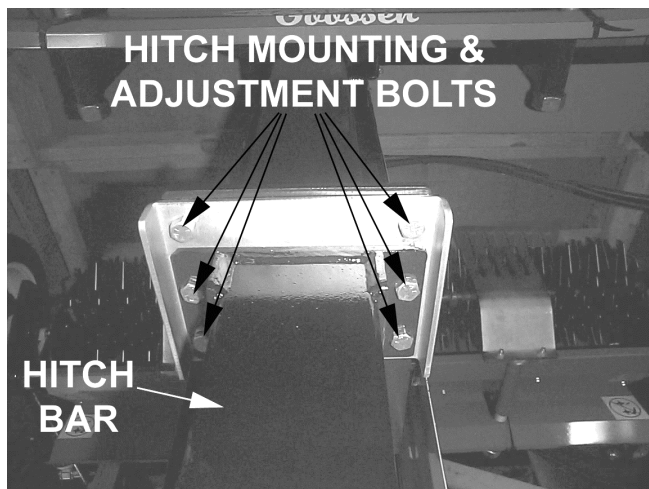
Blade Depth



The skid plate height determines the cutting depth of the blades.

- Tighten or loosen the nuts on the skid plate height adjustment to raise or lower the blades.
- Make sure both skid plates are adjusted equally and parallel to the ground to get an even cut and ensure the unit glides smoothly.

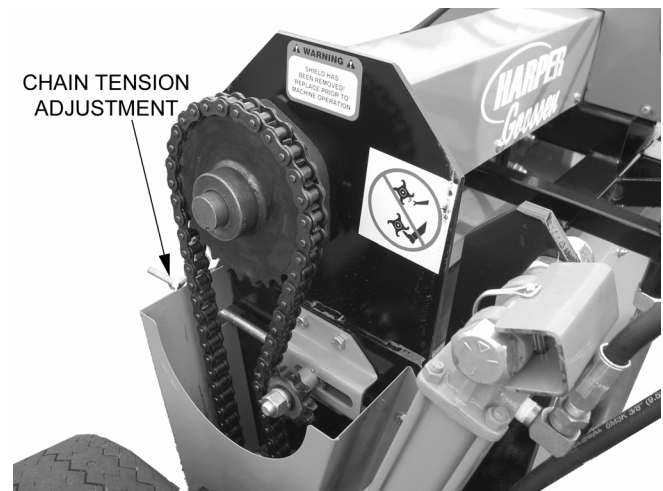
Level Hook Up



Level hook up between the Verti-Cutter and the tractor will prevent the skid plates from digging into the ground.

- The hitch bar is adjusted up or down depending on which holes it is bolted into.
- The hitch can be mounted in the top two holes to raise the hitch position or the bottom two holes to lower the hitch position.
- The position of the hitch depends upon the height of the tractor hitch.

Chain Tension



Check the condition of drive chain before each use or after every 25 hours of operation.

- Adjust chain by moving tensioner adjustment nut to achieve proper tension.

NOTE: Do not over-tighten chain. Excessive tension can cause premature bearing and chain failure.

NOTE: Use a straightedge to check alignment across the faces of sprockets after adjusting chain tension to ensure that the chain will run true.

Service & Maintenance



SAFETY WARNING!

- Before servicing or inspecting the Verti-Cutter, make sure the power source is shut off and all parts have stopped moving.
- Disconnect the PTO shaft from the tractor.
- Always wear safety glasses and protective gloves when servicing the vertical mower.

Break-in Service

After the first hour of use:

- Check chain. Tighten if needed.
- Tighten set screws on bearings.
- Check nuts, bolts and fasteners to see that they are secure.

Lubrication

Grease every 10 hours:

- 2 bearings on axle

Grease every 40 hours:

- 2 bearings on blade shaft
- 2 U-joints on PTO shaft

NOTE: Follow the recommended greasing requirements to ensure long life for bearings and joints.

Standard Torque Chart

Size	In.-Lb.	Ft.-Lb.	N-m
No. 10-24	25-35	5-7	2.8-4.0
1/4 in.	60-80	18-20	7-9
5/16 in.	120-140	28-30	14-16
3/8 in.	340-360	64-74	24-27
1/2 in.		126-150	90-100

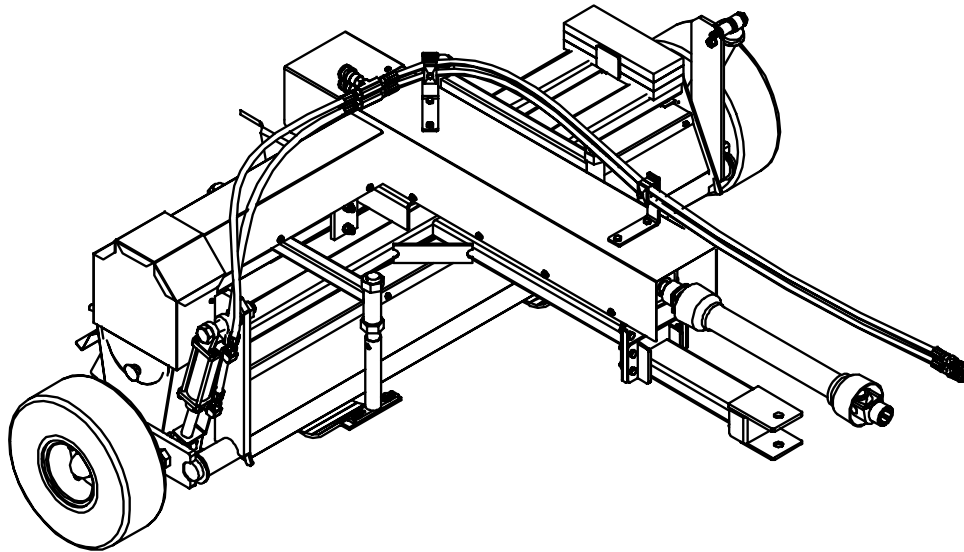
NOTE: When tightening two or more screws or bolts on the same part, **DO NOT** tighten screws completely right away, or one at a time. To avoid distortion, first tighten all screws in sequence to one-third of torque value, then tighten to two-thirds of torque value, then tighten to full value.

Troubleshooting

Problem	What to Check
Chain comes off.	<ul style="list-style-type: none">• Tension adjustment.• Load may be excessive.• Bearings may have seized.
Chain wears rapidly, jump, catches or twists.	<ul style="list-style-type: none">• Sprockets may not be properly aligned.• Check sprockets w/ straightedge across faces of sprockets.
Skid plates dig into the ground.	<ul style="list-style-type: none">• Verti-Cutter may not be hooked up level w/ tractor.• Skid plates may not be adjusted level w/ ground.

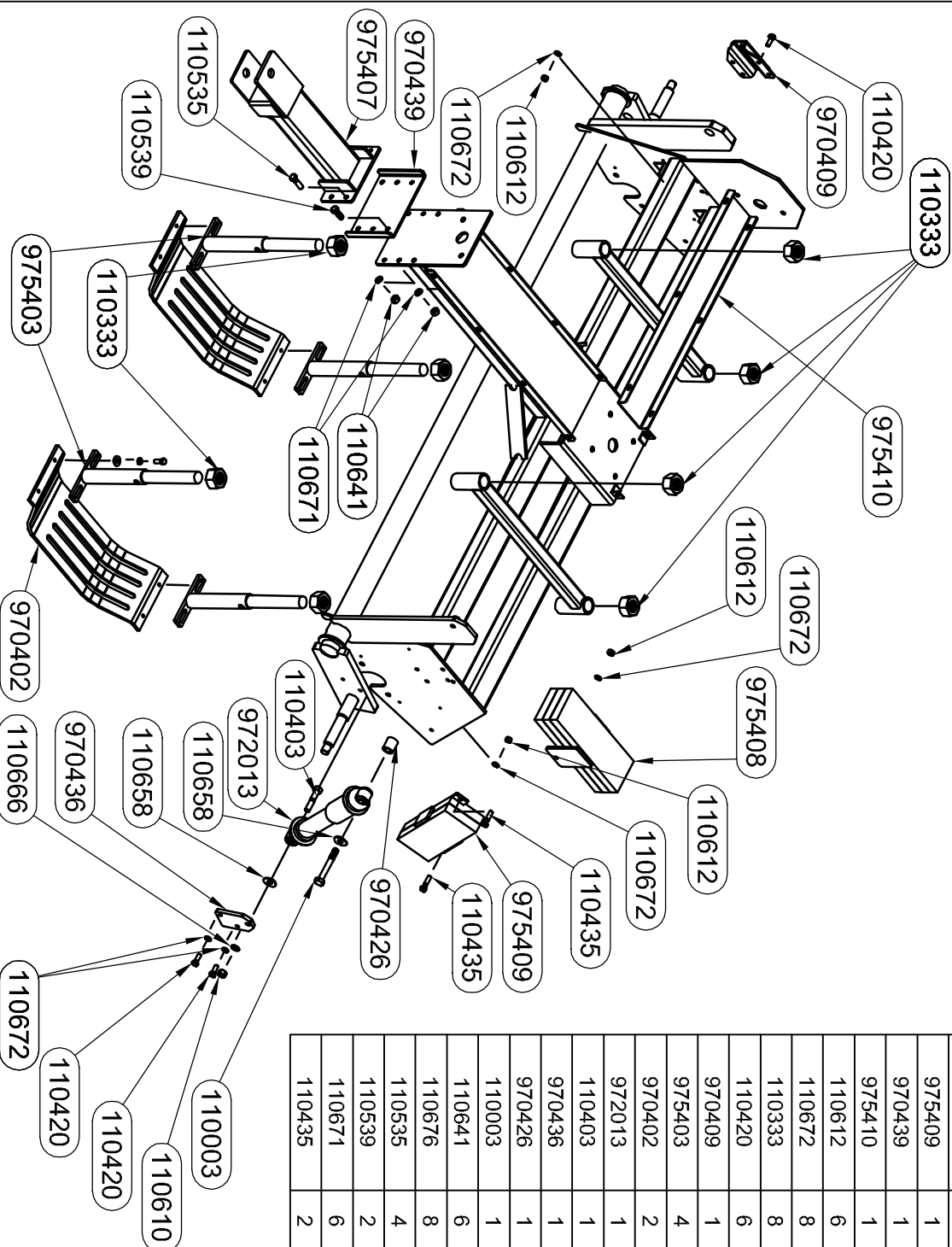
VERTI-CUTTER

Vertical Mower



VC-60
PARTS

FRAME ASSY.

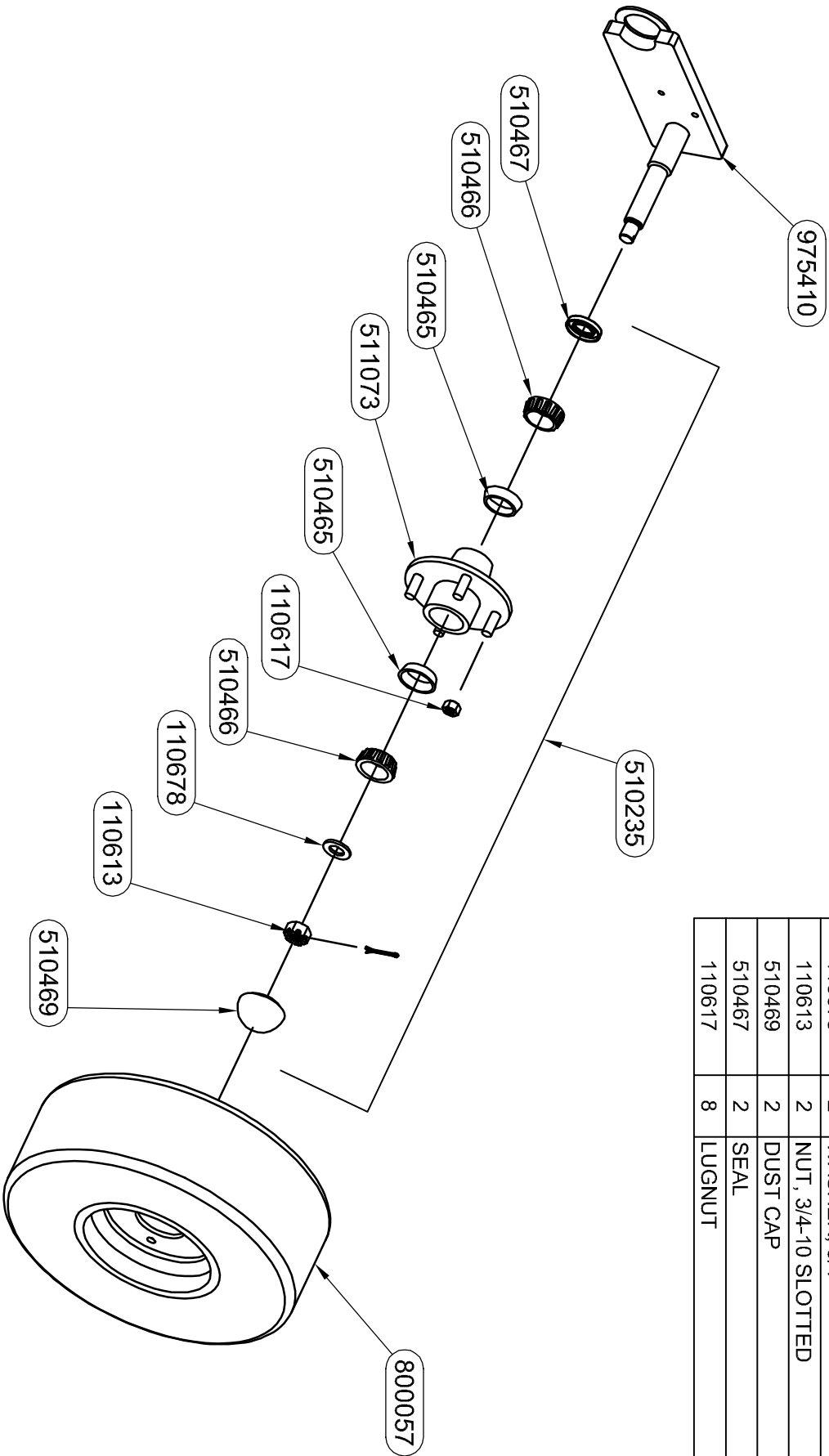


PART #	QTY	NAME
110666	8	WASHER, 1/2 LOCK
110610	8	NUT, 1/2-13
110658	2	WASHER, 1/2 FLAT
975407	1	HITCH ABR WELDMENT
975408	1	TOP COUNTERWEIGHT WELDMENT
975409	1	SIDE COUNTERWEIGHT WELDMENT
970439	1	ADJUSTER PLATE
975410	1	FRAME WELDMENT
110612	6	NUT, 3/8-16
110672	8	WASHER, 3/8 LOCK
110333	8	NUT, 1 1/4-7
110420	6	BOLT, 3/8-16 X 1
970409	1	CHAIN ADJUSTER PLATE
975403	4	SKID POST WELDMENT
970402	2	SKID PLATE
972013	1	SHOCK, GAS W/HELPER SPRING
110403	1	BOLT, 1/2-13 X 2.5
970436	1	LOWER SHOCK MNTG. BRKT.
970426	1	UPPER SHOCK SPACER
110003	1	BOLT, 1/2-13 X 4
110641	6	NUT, 7/16-14
110676	8	WASHER, FLAT .375 STANDARD
110535	4	BOLT, 7/16-14 X 1.5
110539	2	BOLT, 7/16-14 X 1.25
110671	6	WASHER, 7/16 LOCK
110435	2	BOLT, 3/8-16 X 1.5

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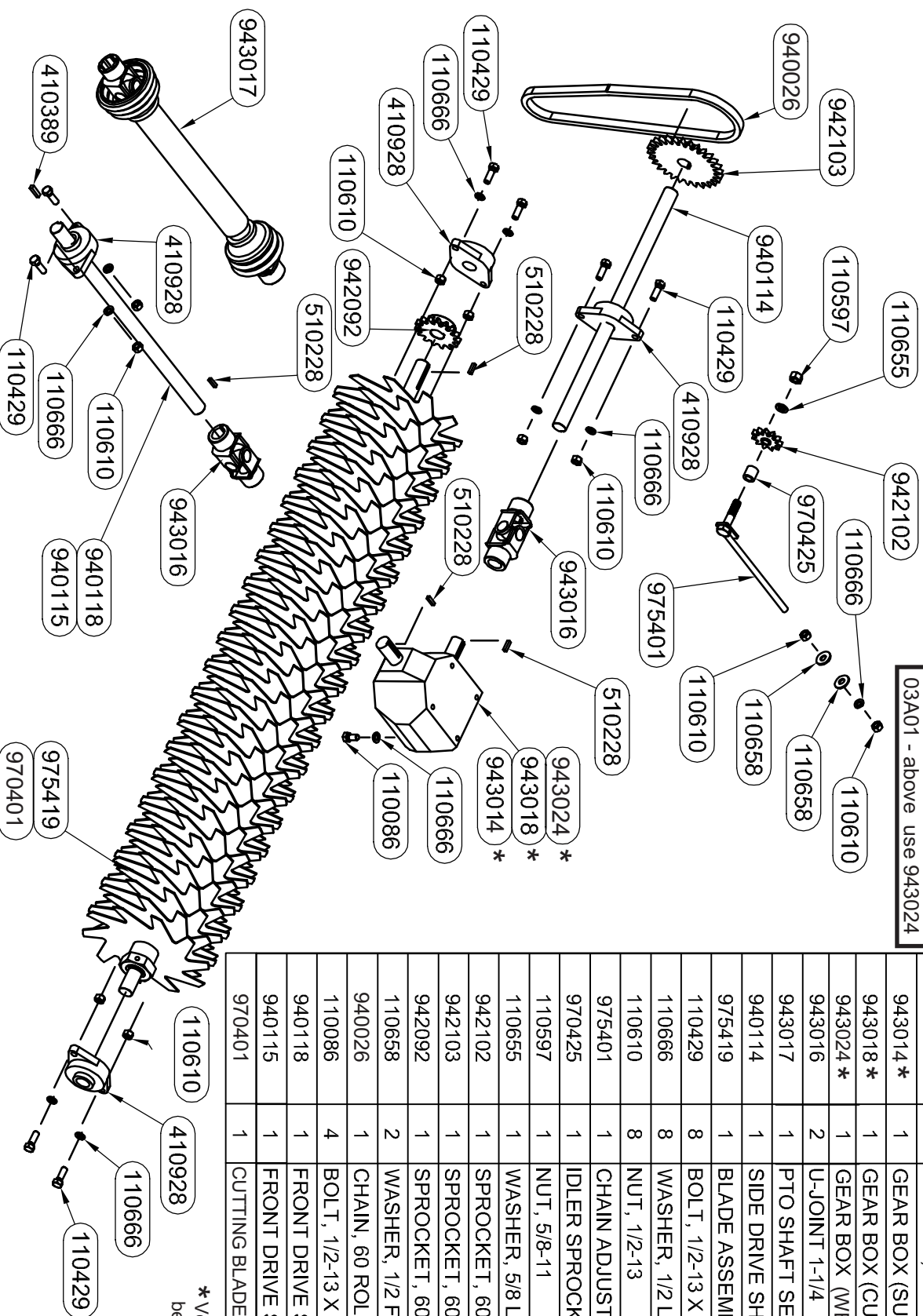
WHEEL & HUB ASSY.

PART #	QTY	NAME
510235	1	WHEEL HUB COMPLETE
975410	1	FRAME WELDMENT
800057	2	FILLED TIRE
511073	2	HUB W/RACES
510465	4	RACE
510466	4	BEARING
110678	2	WASHER, 3/4
110613	2	NUT, 3/4-10 SLOTTED
510469	2	DUST CAP
510467	2	SEAL
110617	8	LUGNUT



SHAFT ASSY.

*VC-60 GEARBOX
 SERIAL NO. BREAKS:
 02A01 - 02A03 use 943018
 02A04 - 02A20 use 943014
 03A01 - above use 943024



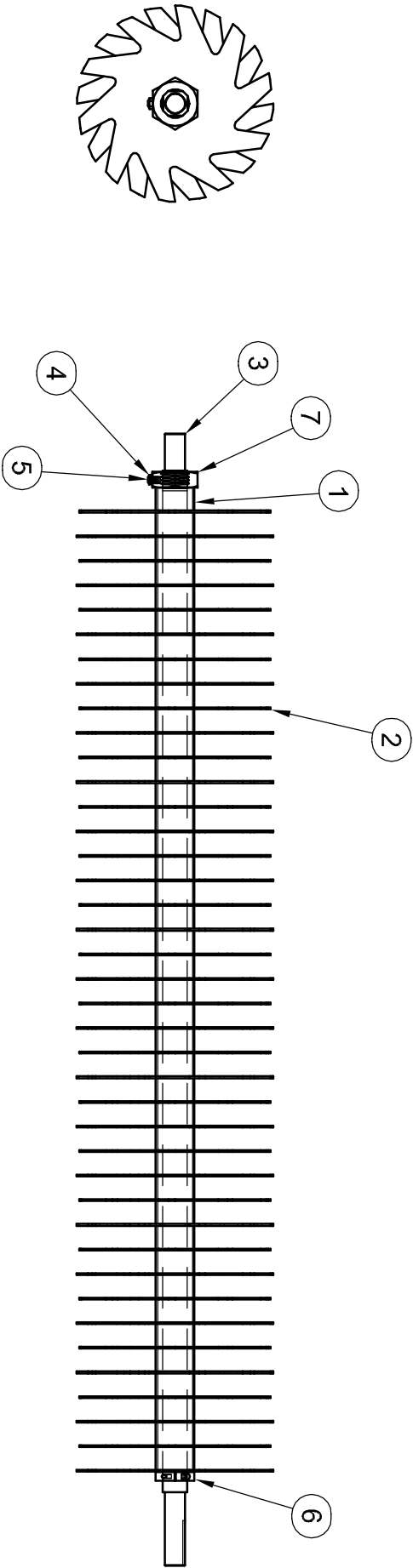
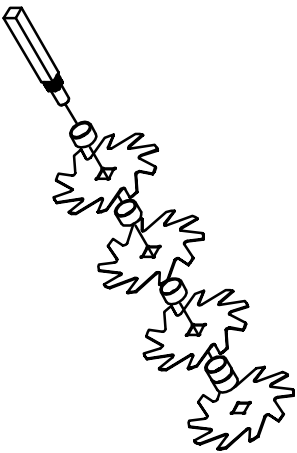
PART #	QTY	NAME
510228	6	KEY, 1/4 X 1/4 X 1
410389	1	KEY, 5/16 X 5/16 X 1.25
410928	4	BEARING, SLAT DRIVE 1.25 SHAFT
943014 *	1	GEAR BOX (SUPERIOR) TEE
943018 *	1	GEAR BOX (CURTIS)
943024 *	1	GEAR BOX (WEASLER)
943016	2	U-JOINT 1-1/4
943017	1	PTO SHAFT SERIES 4 (VC)
940114	1	SIDE DRIVE SHAFT
975419	1	BLADE ASSEMBLY
110429	8	BOLT, 1/2-13 X 1.5
110666	8	WASHER, 1/2 LOCK
110610	8	NUT, 1/2-13
975401	1	CHAIN ADJUST WELDMENT
970425	1	IDLER SPROCKET SPACER
110597	1	NUT, 5/8-11
110655	1	WASHER, 5/8 LOCK
942102	1	SPROCKET, 60T 1E10 5/8" IDLER
942103	1	SPROCKET, 6028B 1-1/4 2KSS
942092	1	SPROCKET, 6015B 1-1/4 2KSS
110658	2	WASHER, 1/2 FLAT
940026	1	CHAIN, 60 ROLLER W/ CONN. LINK
110086	4	BOLT, 1/2-13 X 1
940118	1	FRONT DRIVE SHAFT - 26" (SUPERIOR)
940115	1	FRONT DRIVE SHAFT - 28" (CURT. & WEAS.)
970401	1	CUTTING BLADE, CORTEN STEEL

* Verify gearbox manufacturer
 before ordering part number.

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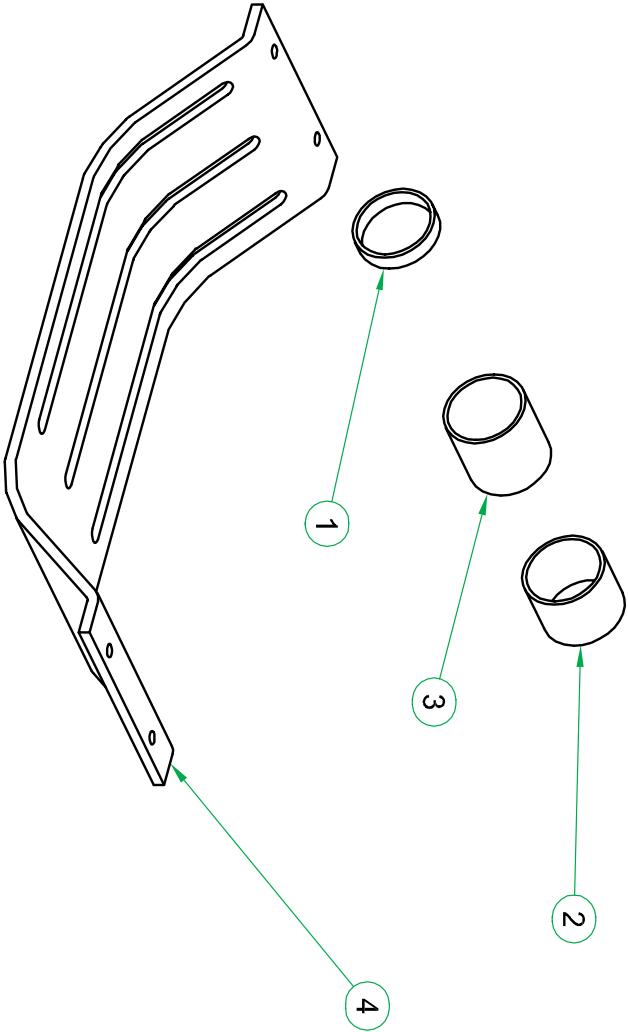
NOTE: TIGHTEN DOWN THE 1.75 NUT UNTIL A SETSCREW HOLE IS LINED UP WITH A FLAT FACE ON THE SHAFT, THEN TIGHTEND DOWN THE SET SCREW AND JAM NUT.

ITEM	QTY	PART #	NAME
1	40	970420	BLADE SPACER, 1.4"
2	40	970401	CUTTING BLADE
3	1	970400	BLADE SHAFT, VERTICUTTER
4	1	110107	NUT, 3/8-16 JAM
5	1	110325	BOLT, 3/8-16 X 3/4 SET SCREW
6	1	110332	LOCK COLLAR, 2 BOLT
7	1	970475	HEX JAM, 1.75-5, 2 TAPPED HOLES



ITEM	QTY	PART #	NAME
1	1	970419	BLADE SPACER .5"
2	1	970421	BLADE SPACER, 1.875"
3	23	970489	BLADE SPACER, 2.4"
4	2	970490	SKID PLATE, 2.5" BLADE SPACING

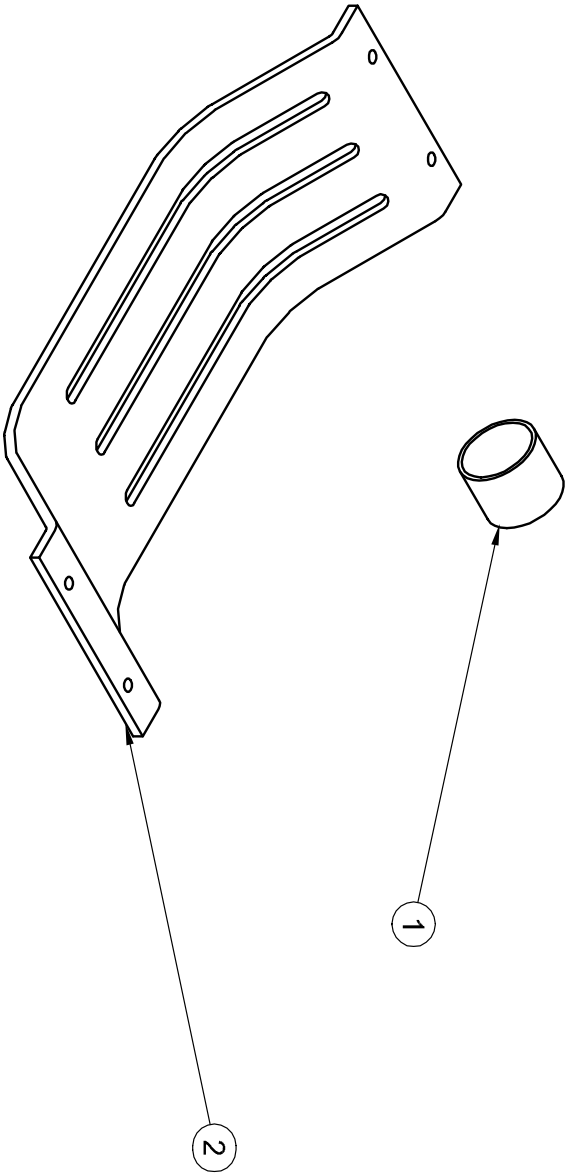
1. REMOVE BLADE AND SHAFT ASSEMBLY AND SKID PLATES.
2. DISASSEMBLE BLADE AND SHAFT ASSEMBLY, AND REASSEMBLE USING THE 1/2" SPACER (970419) AGAINST THE COLLAR, THEN THE FIRST BLADE. USE THE 2.4" SPACERS (970489) BETWEEN THE BLADES. FINISH WITH THE 1.875" SPACER (970421) AFTER THE LAST BLADE.
3. BE SURE TO TIGHTEN THE 1.75" NUT UNTIL THE SET SCREW WILL TIGHTEN FLAT ON THE FACE OF THE SHAFT.
4. REINSTALL BLADE AND SHAFT ASSEMBLY. INSTALL AND ADJUST NEW SKID PLATES (970490).



***OPTIONAL 2.5" BLADE SPACING KIT INSTALLATION**

ITEM	QTY	PART #	NAME
1	30	970421	BLADE SPACER, 1.875"
2	2	970491	SKID PLATE, 2" BLADE SPACING

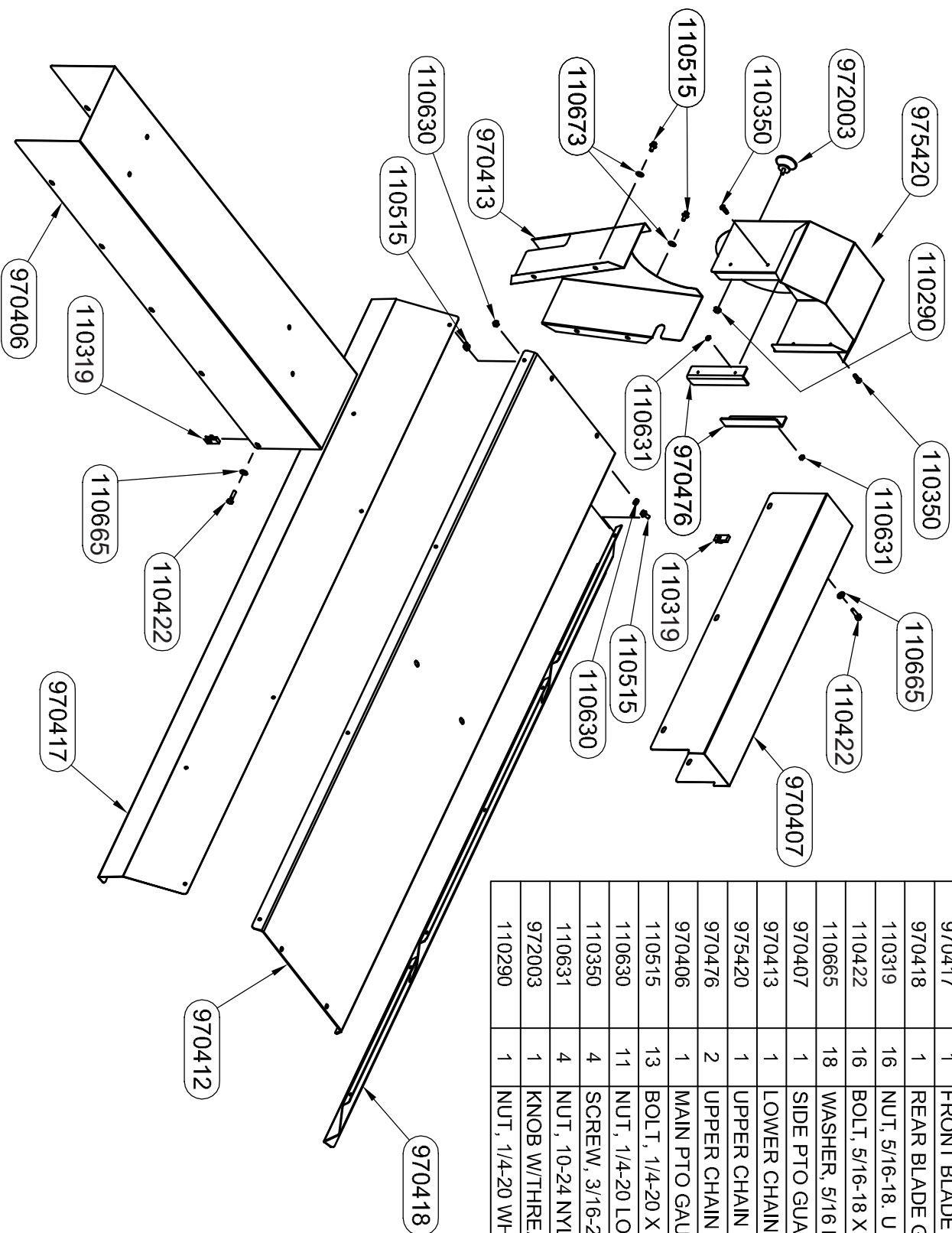
- 1. REMOVE BLADE AND SHAFT ASSEMBLY AND SKID PLATES.
- 2. DISASSEMBLE BLADE AND SHAFT ASSEMBLY, AND REASSEMBLE USING 1.875" SPACERS (970421).
- 3. BE SURE TO TIGHTEN THE 1.75" NUT UNTIL THE SET SCREW WILL TIGHTEN FLAT ON THE FACE OF THE SHAFT.
- 4. REINSTALL BLADE AND SHAFT ASSEMBLY. INSTALL AND ADJUST NEW SKID PLATES (970491).



***OPTIONAL 2" BLADE SPACING KIT INSTALLATION**

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SHIELD ASSY.

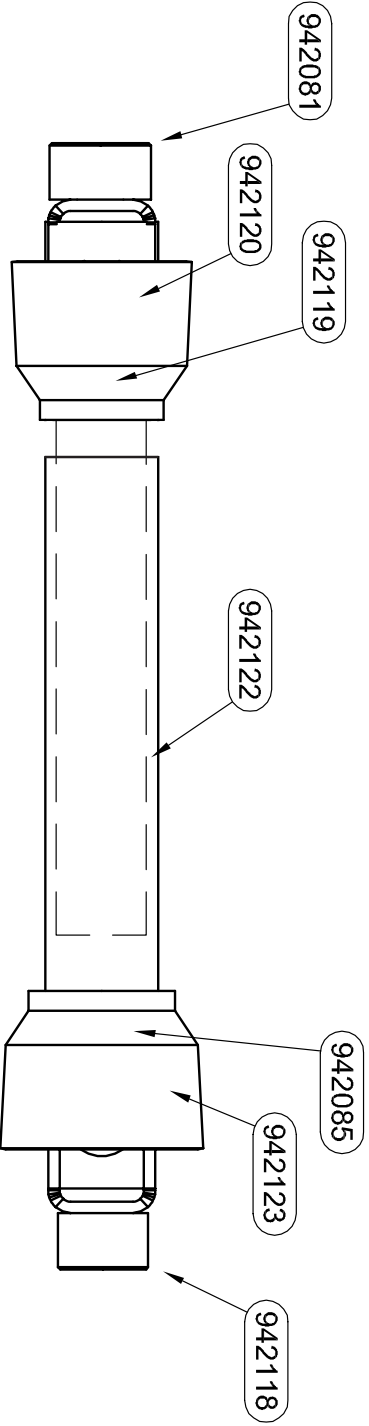


PART #	QTY	NAME
970412	1	BLADE PAN
970417	1	FRONT BLADE GUARD
970418	1	REAR BLADE GUARD
110319	16	NUT, 5/16-18. U TYPE
110422	16	BOLT, 5/16-18 X .75
110665	18	WASHER, 5/16 FLAT
970407	1	SIDE PTO GUARD
970413	1	LOWER CHAIN GUARD
975420	1	UPPER CHAIN GUARD WELDMENT
970476	2	UPPER CHAIN GUARD HOLD DOWN
970406	1	MAIN PTO GAURD
110515	13	BOLT, 1/4-20 X .5
110630	11	NUT, 1/4-20 LOCK(NYLON)
110350	4	SCREW, 3/16-24 X 3/4 SLOTTED
110631	4	NUT, 10-24 NYLOCK
972003	1	KNOB W/THREADED STUD
110290	1	NUT, 1/4-20 WHIZ FLANGE

VC-60

NOTE: 1. 943020 CAN BE MADE FROM 943017 BY CUTTING 3 INCHES OFF THE ENDS OF BOTH TUBES.

PART #	QTY	NAME
400036	1	DECAL, SAFETY, PTO SLICER (NOT SHOWN)
400037	1	DECAL, "DANGER", PTO (NOT SHOWN)
942081	1	YOKE, IMPLEMENT END, 1.25" BORE
942085	2	REPAIR KIT, PTO 12N
942118	1	YOKE, SNAP HITCH 12N
942119	2	CROSS KIT
942120	1	YOKE, SHAFT WELD 12N
942122	1	GUARD, INNER PALSTIC 12N
942123	1	YOKE, TUBE WELD 12N



PTO SHAFT - Part No. 943017
VC-60, VC-60 PLUS (FRONT UNIT)

HARPER**VERTICAL-CUTTER**

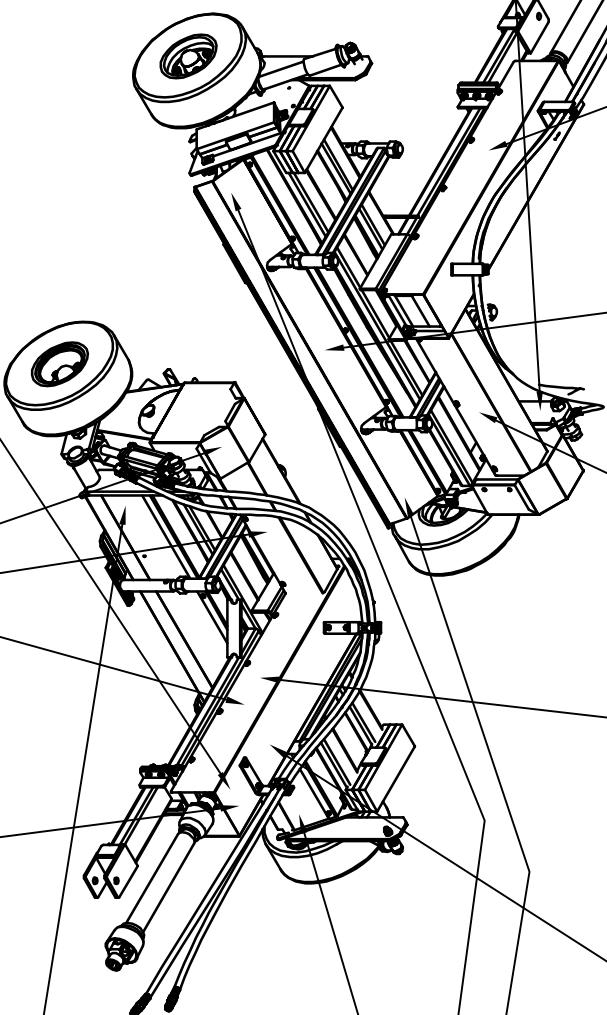
Vertical Mower

902080

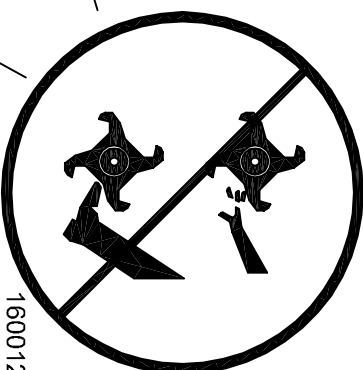
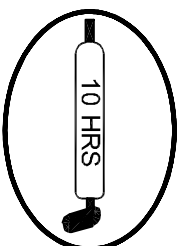
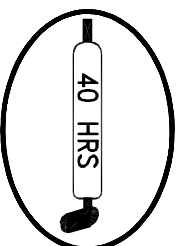
900017

HARPER
GOODER HARPER, KANSAS

902072

**CAUTION**

- KEEP ALL SHIELDS IN PLACE.
- KEEP HANDS, FEET AND LOOSE CLOTHING CLEAR OF ROTATING PARTS.
- BE AWARE OF ALL WARNING CAUTION LOCATIONS.
- BEFORE OPERATING, MAKE SURE EVERYONE INCLUDING CHILDREN IS CLEAR OF MACHINE AND IMMEDIATE AREA.
- USE EXTREME CAUTION ON SLOPED AREAS. LOSS OF CONTROL MAY OCCUR.
- LUBRICATE MACHINE BEFORE EACH USE.
- TRACTOR ENGINE MUST BE AT IDLE SPEED BEFORE ENGAGING PTO.
- PTO SPEED NOT TO EXCEED 540 RPM.
- BEFORE CLEARING, ADJUSTING OR SERVICING, DISengage PTO AND WAIT FOR ALL MOVEMENT TO STOP. SECURE TRANSPORT SAFETY LOCK.
- TRACTOR HYDRAULICS CONTROL THE TRANSPORT SYSTEM.
- NOT FOR HIGHWAY USE.

LOCATED NEAR
AXLE GREASE ZERKSLOCATED NEAR ALL
BEARINGS, AND
U-JOINTS.

12/02

**CAUTION**

THIS EQUIPMENT DESIGNED FOR
NORMAL OPERATING SPEED
540 RPM
KEEP U-JOINT ANGLE SMALL AND
EQUAL. DO NOT EXCEED 15°
ANGLE ON EACH U-JOINT.

902001

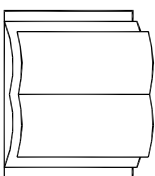
WARNING

SHIELD HAS
BEEN REMOVED!
REPLACE PRIOR TO
MACHINE OPERATION

400014

CAUTION

Read Operator's Manual before using machine.

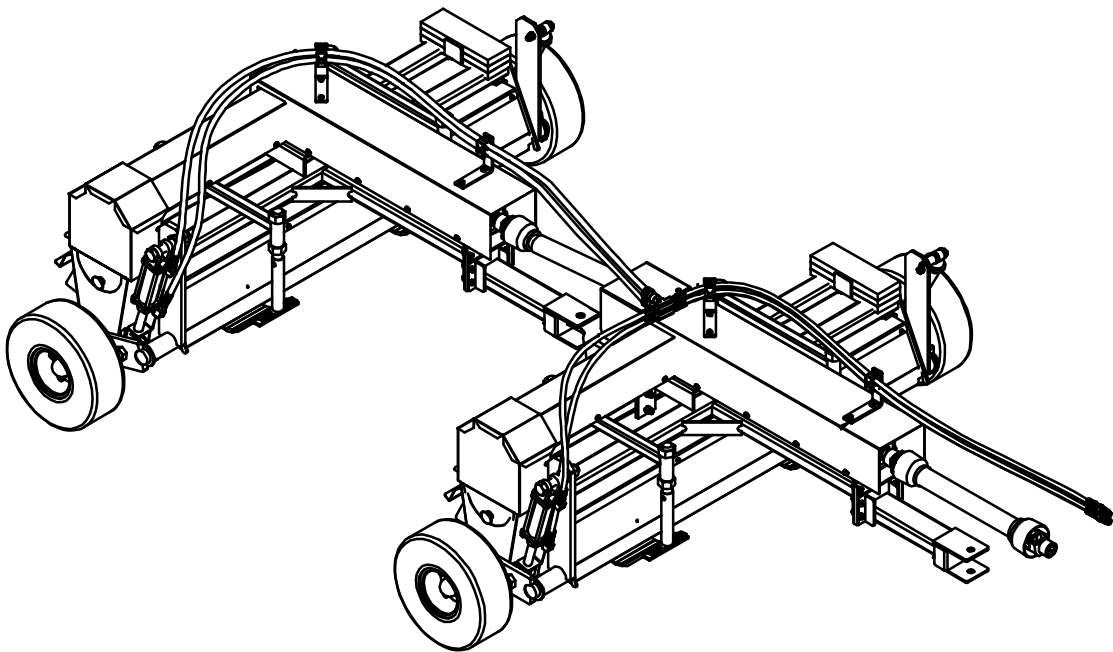


160010

NOTES

VERTI-CUTTER

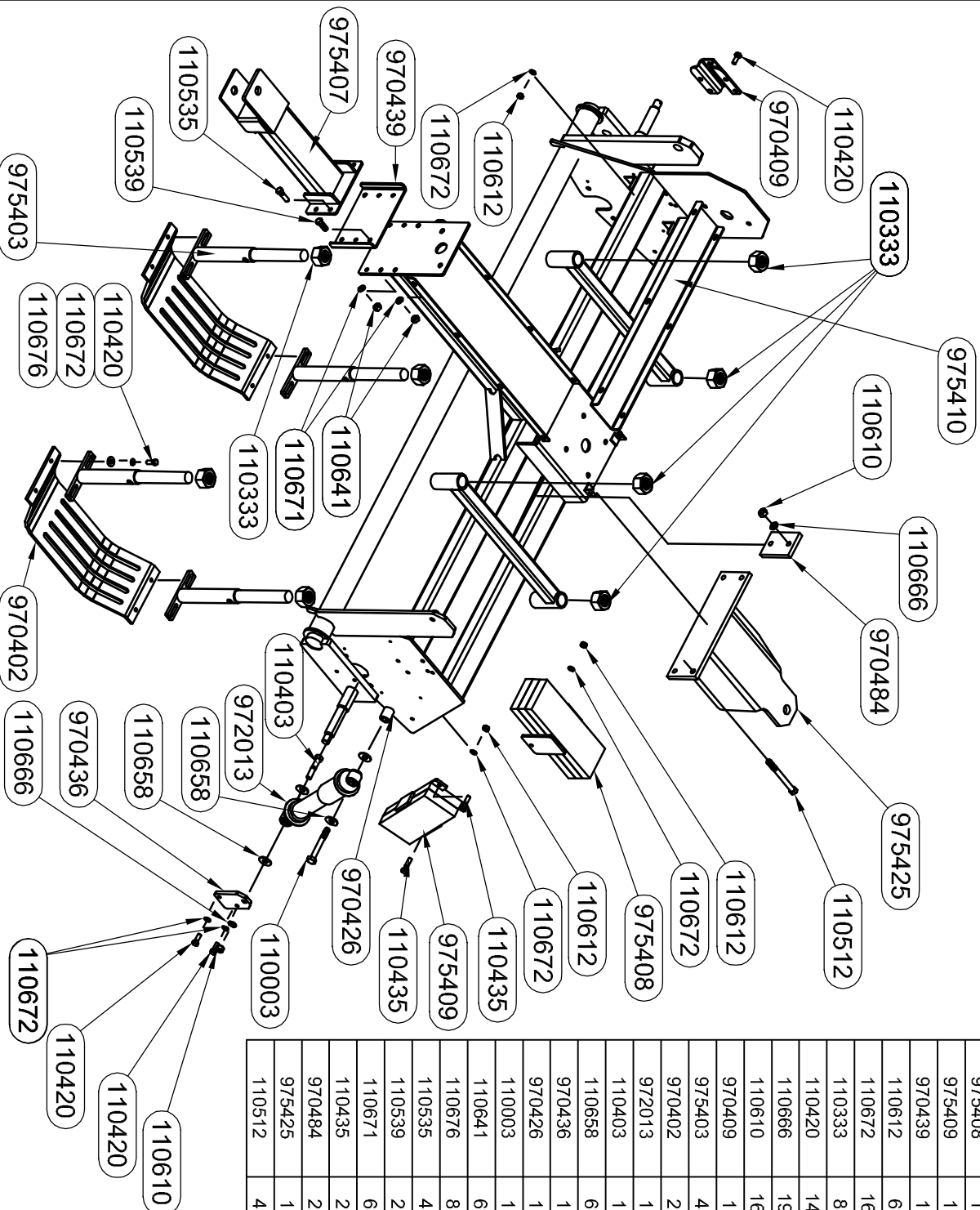
Vertical Mower



VC-60 PLUS
PARTS

(Rear unit frame is same as front unit frame except for absence of rear hitch assembly.)

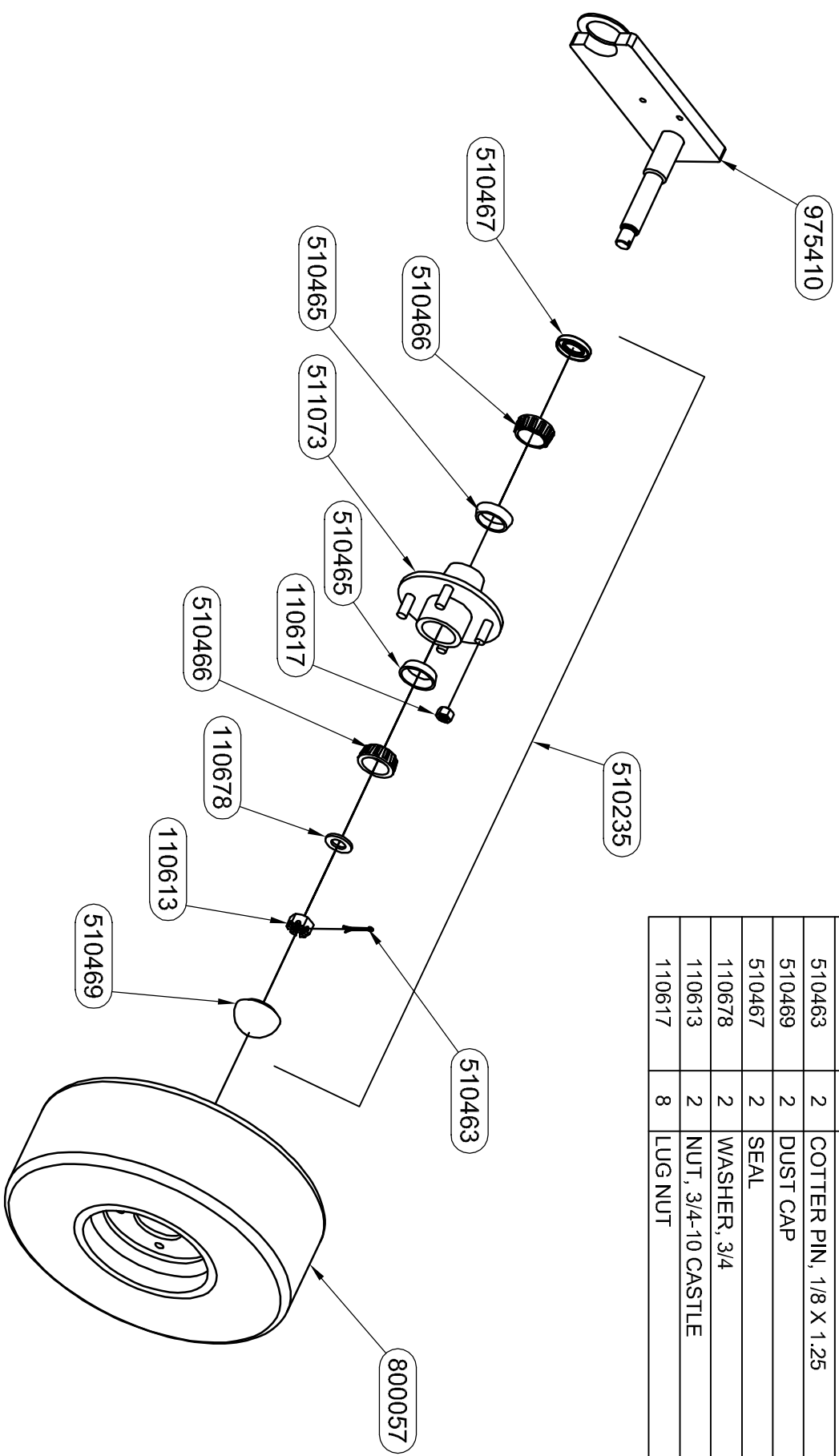
FRAME ASSY.



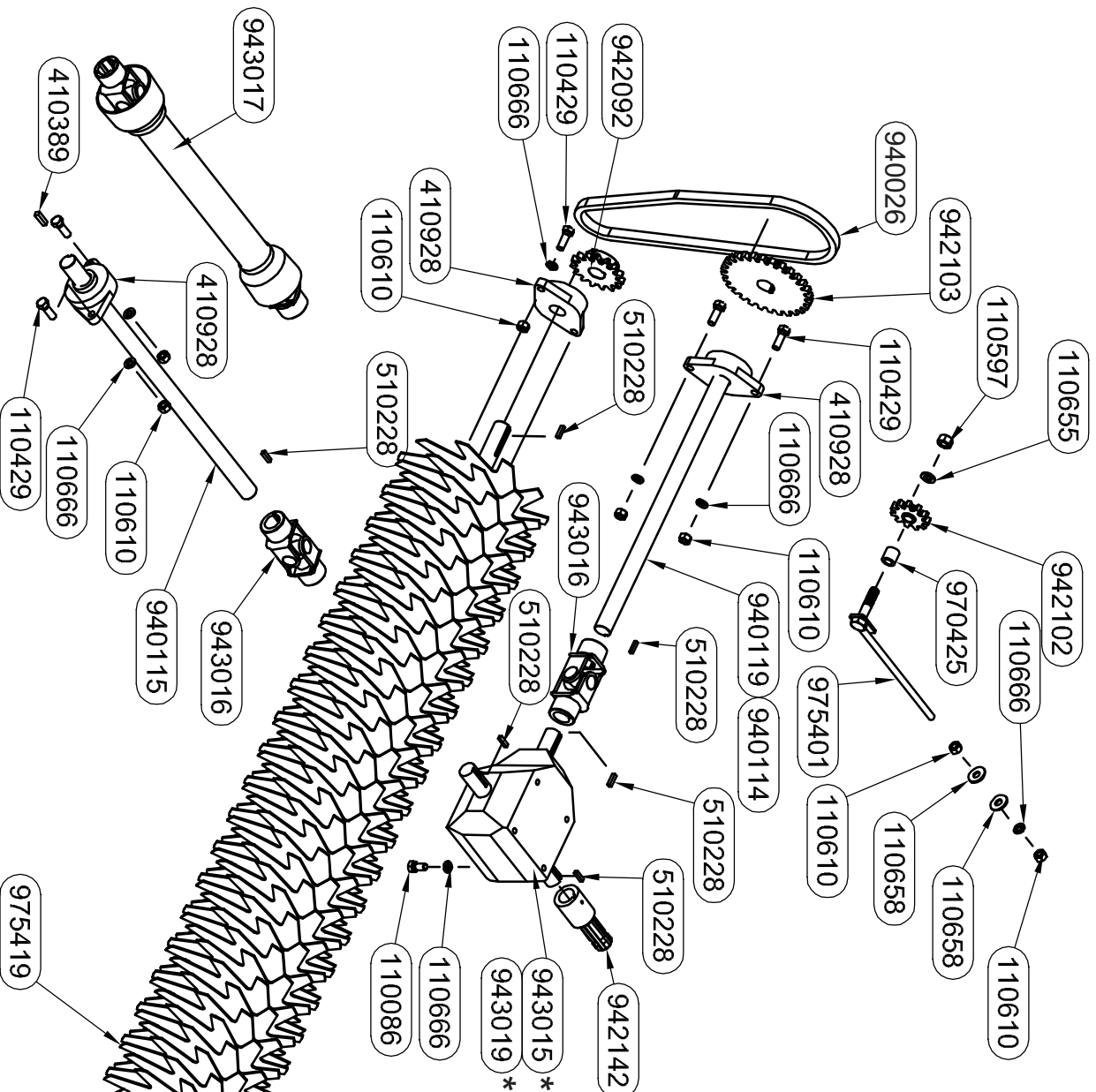
PART #	QTY	NAME
975410	1	FRAME WELDMENT
975407	1	HITCH ABR WELDMENT
975408	1	TOP COUNTERWEIGHT WELDMENT
975409	1	SIDE COUNTERWEIGHT WELDMENT
970439	1	ADJUSTER PLATE
110612	6	NUT, 3/8-16
110672	16	WASHER, 3/8 LOCK
110333	8	NUT, 1 1/4-7
110420	14	BOLT, 3/8-16 X 1
110666	19	WASHER, 1/2 LOCK
110610	16	NUT, 1/2-13
970409	1	CHAIN ADJUSTER PLATE
975403	4	SKID POST WELDMENT
970402	2	SKID PLATE
972013	1	SHOCK, GAS W/HELPER SPRING
110403	1	BOLT, 1/2-13 X 2.5
110658	6	WASHER, 1/2 FLAT
970436	1	LOWER SHOCK MNTG. BRKT.
970426	1	UPPER SHOCK SPACER
110003	1	BOLT, 1/2-13 X 4
110641	6	NUT, 7/16-14
110676	8	WASHER, FLAT .375 STANDARD
110535	4	BOLT, 7/16-14 X 1.5
110539	2	BOLT, 7/16-14 X 1.25
110671	6	WASHER, 7/16 LOCK
110435	2	BOLT, 3/8-16 X 1.5
970484	2	HITCH RETAINER
975425	1	REAR HITCH, VC PLUS FRONT UNIT
110512	4	BOLT, 1/2-13 X 5.0

WHEEL & HUB

PART #	QTY	NAME
510235	2	WHEEL HUB COMPLETE
975410	1	FRAME WELDMENT
800057	2	FILLED TIRE
511073	2	HUB W/RACES
510465	4	RACE
510466	4	BEARING
510463	2	COTTER PIN, 1/8 X 1.25
510469	2	DUST CAP
510467	2	SEAL
110678	2	WASHER, 3/4
110613	2	NUT, 3/4-10 CASTLE
110617	8	LUG NUT



SHAFT ASSY.

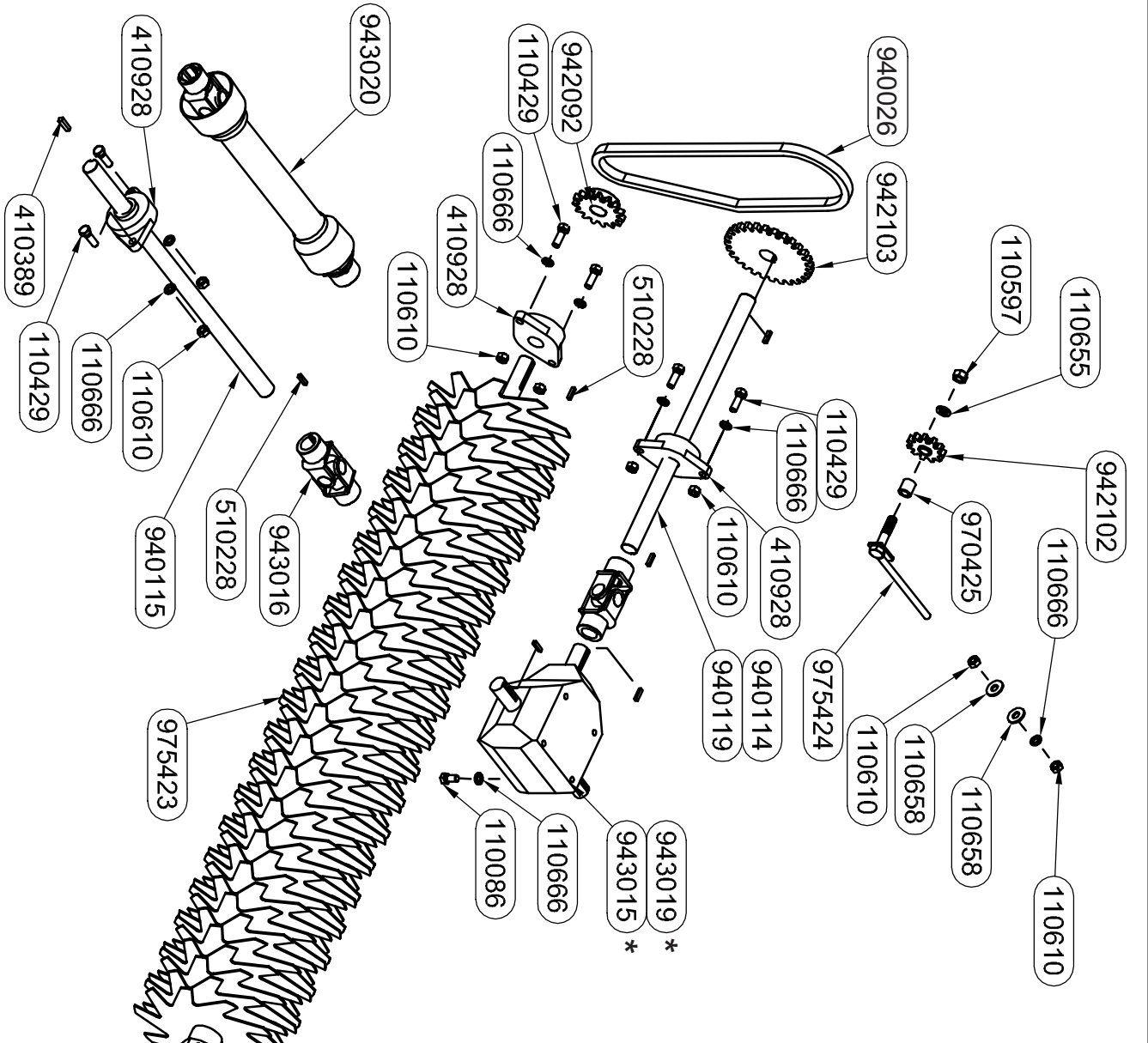


PART #	QTY	NAME
410928	4	BEARING, SLAT DRIVE 1.25 SHAFT
943015 *	1	GEAR BOX (SUPERIOR) TEE
943016	2	U-JOINT 1-1/4
943017	1	PTO SHAFT SERIES 4 (VC)
975419	1	BLADE ASSEMBLY
510228	7	KEY, 1/4 X 1/4 X 1
110429	8	BOLT, 1/2-13 X 1.5
110666	13	WASHER, 1/2 LOCK
110610	10	NUT, 1/2-13
975401	1	CHAIN ADJUST WELDMENT
970425	1	IDLER SPROCKET SPACER
110597	1	NUT, 5/8-11
110655	1	WASHER, 5/8 LOCK
942102	1	SPROCKET, 6011E10 5/8" IDLER
942103	1	SPROCKET, 6028B 1-1/4 2KSS
942092	1	SPROCKET, 6015B 1-1/4 2KSS
110658	2	WASHER, 1/2 FLAT
940026	1	CHAIN, 60 ROLLER W/ CONN. LINK
410389	1	KEY, 5/16 X 5/16 X 1.25
110086	4	BOLT, 1/2-13 X 1
940119	1	SIDE DRIVE SHAFT, VC PLUS, SUPERIOR
940115	1	FRONT DRIVE SHAFT - 28"
942142	1	PUMP ADAPTER
940114	1	SIDE DRIVE SHAFT, CURTIS
943019 *	1	GEARBOX, CURTIS, 3 SHAFT

* Verify manufacturer of gearbox before ordering part number.

VC-60 PLUS

REAR UNIT

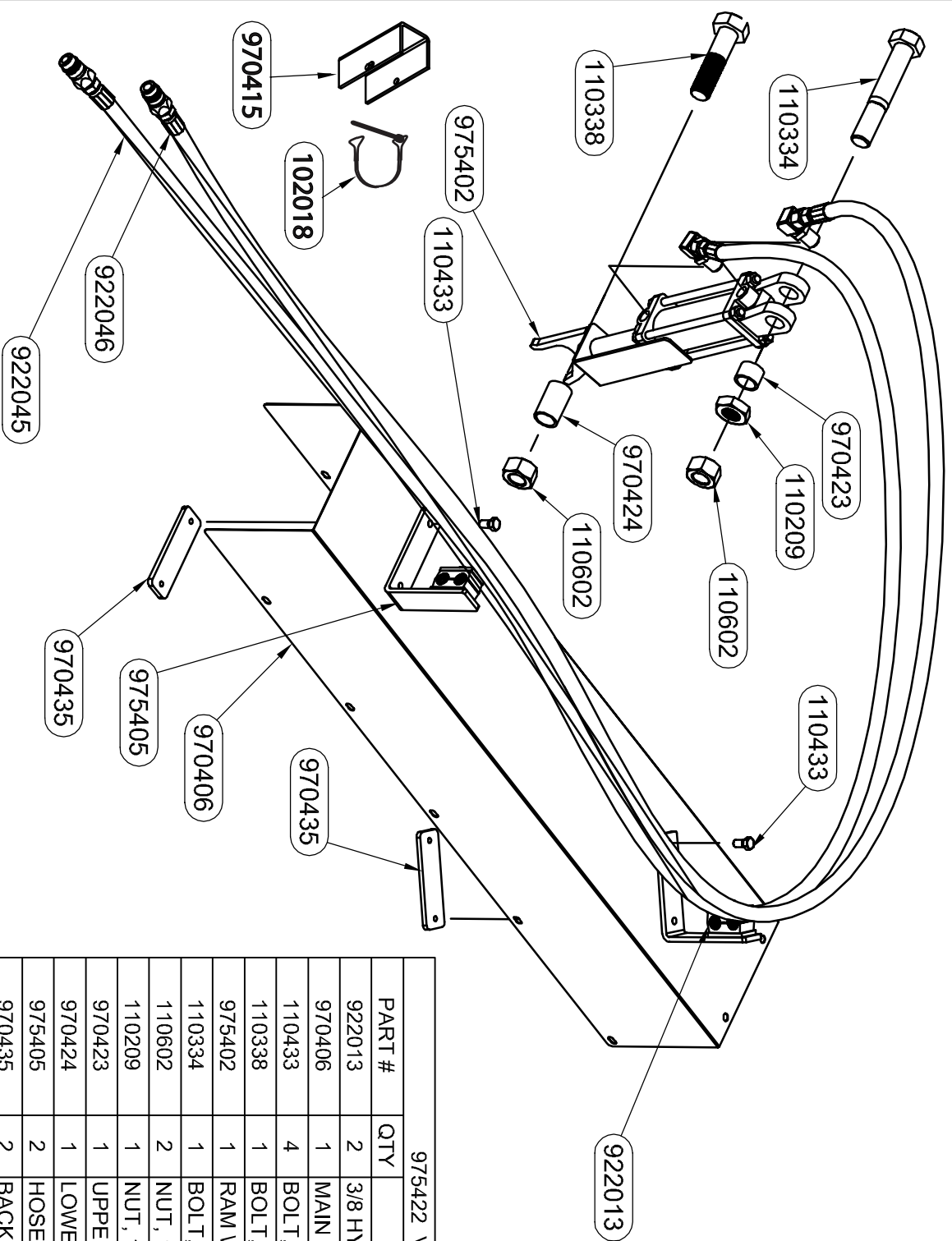


975422 VC PLUS REAR UNIT		
PART #	QTY	NAME
943019 *	1	GEAR BOX, CURTIS, 3 SHAFT
940114	1	SIDE DRIVE SHAFT, CURTIS
410928	4	BEARING, SLAT DRIVE 1.25 SHAFT
943015 *	1	GEAR BOX (SUPERIOR) TEE
943016	2	U-JOINT 1-1/4
510228	6	KEY, 1/4 X 1/4 X 1
110429	8	BOLT, 1/2-13 X 1.5
110666	15	WASHER, 1/2 LOCK
110610	12	NUT, 1/2-13
970425	1	IDLER SPROCKET SPACER
110597	1	NUT, 5/8-11
110655	1	WASHER, 5/8 LOCK
942102	1	SPROCKET, 6011E10 5/8" IDLER
942103	1	SPROCKET, 6028B 1-1/4 2KSS
942092	1	SPROCKET, 6015B 1-1/4 2KSS
110658	6	WASHER, 1/2 FLAT
940026	1	CHAIN, 60 ROLLER W/ CONN. LINK
410389	1	KEY, 5/16 X 5/16 X 1.25
110086	4	BOLT, 1/2-13 X 1
940119	1	SIDE DRIVE SHAFT, VC PLUS, SUPERIOR
940115	1	FRONT DRIVE SHAFT - 28"
943020	1	PTO SHAFT, VC PLUS REAR UNIT
975423	1	BLADE ASSY, VC PLUS REAR UNIT
975424	1	CHAIN ADJUST ROD W/DMNT

NOTE: 1. GEARBOX ROTATION IS REVERSED.
SWITCH THE GEARBOX DRAIN PLUG AND
GEARBOX BREATHER PLUG PLACES.

* Verify manufacturer of gearbox
before ordering part number.

VC-60 PLUS REAR UNIT



975422 VC PLUS REAR UNIT		
PART #	QTY	NAME
922013	2	3/8 HYD. HOSE CLAMP
970406	1	MAIN PTO GAURD
110433	4	BOLT, 3/8-16 X .75
110338	1	BOLT, 1-8 X 4
975402	1	RAM WELDMENT
110334	1	BOLT, 1-8 X 6.0
110602	2	NUT, 1-8 LOCK(NYLON)
110209	1	NUT, 1-8 JAM
970423	1	UPPER RAM SPACER
970424	1	LOWER RAM SPACER
975405	2	HOSE TOWER WELDMENT
970435	2	BACKING PLATE
922045	1	ROD END HOSE (VC)
922046	1	CYLINDER END HOSE (VC)

FRONT UNIT

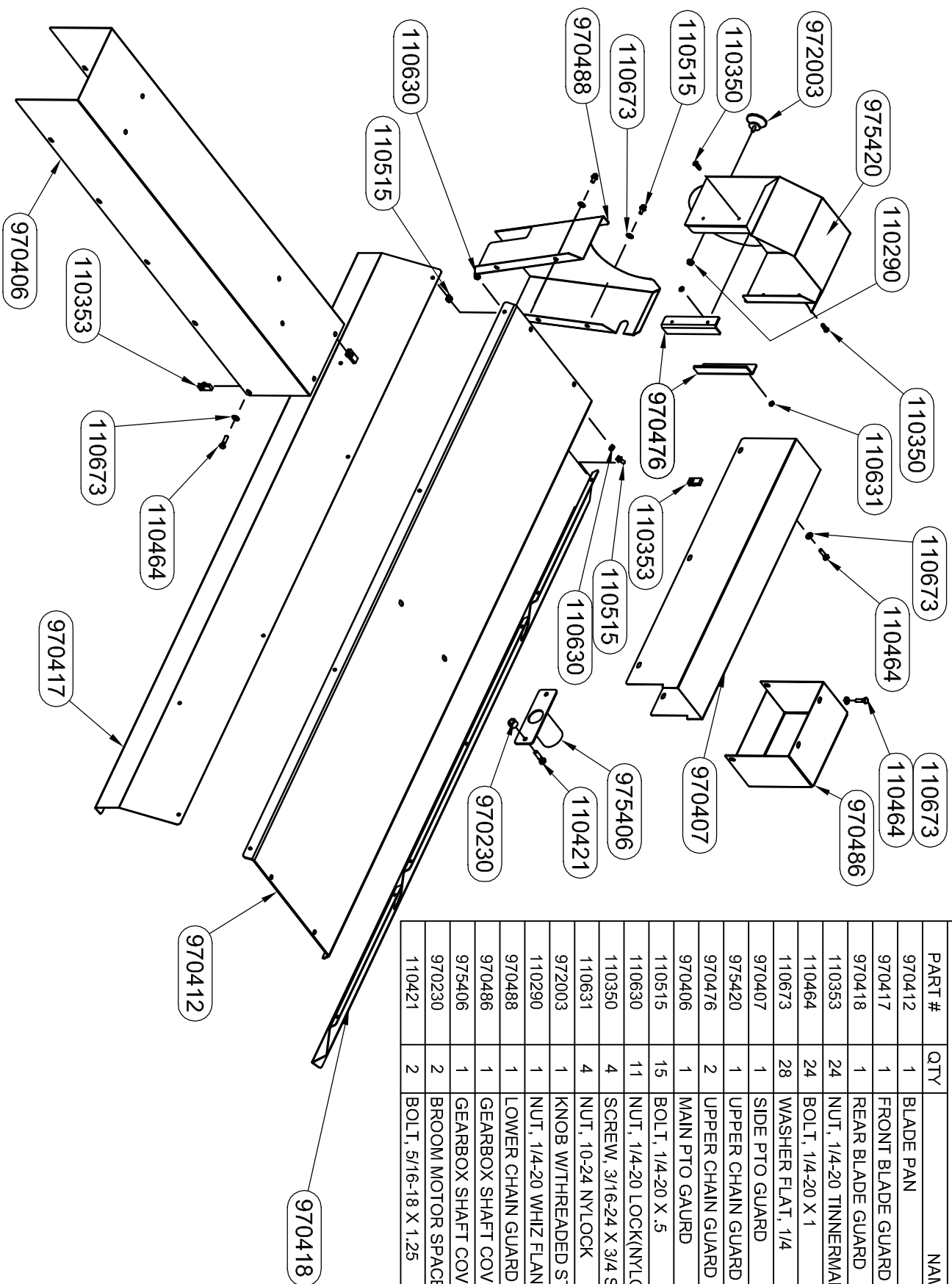
SHIELD ASSY.

- 970406
- 110319
- 110665
- 110422
- 970417
- 110515
- 110353
- 110630
- 970413
- 110673
- 110515
- 110350
- 972003
- 975420
- 110290
- 110350
- 110631
- 110665
- 110422
- 970407
- 110673
- 110464
- 970487
- 110631
- 970476
- 110319
- 110515
- 110630

PART #	QTY	NAME
970412	1	BLADE PAN
970417	1	FRONT BLADE GUARD
970418	1	REAR BLADE GUARD
110319	24	NUT, 5/16-18. U TYPE
110422	24	BOLT, 5/16-18 X .75
110665	28	WASHER, 5/16 FLAT
970407	1	SIDE PTO GUARD
970413	1	LOWER CHAIN GUARD
975420	1	UPPER CHAIN GUARD WELDMENT
970476	2	UPPER CHAIN GUARD HOLD DOWN
970406	1	MAIN PTO GAURD
110515	15	BOLT, 1/4-20 X .5
110630	11	NUT, 1/4-20 LOCK(NYLON)
110350	4	SCREW, 3/16-24 X 3/4 SLOTTED
110631	4	NUT, 10-24 NYLOCK
972003	1	KNOB W/THEADED STUD
110290	1	NUT, 1/4-20 WHIZ FLANGE
970487	1	PTO COVER, VC PLUS FRONT UNIT

The diagram shows an exploded view of a PTO assembly. Callouts point to the following parts:

- 970418**: Points to the main PTO housing.
- 110353**: Points to a nut on the input shaft.
- 110673**: Points to a knob/washer assembly on the input shaft.
- 110464**: Points to a nut on the input shaft.
- 970412**: Points to the PTO cover.



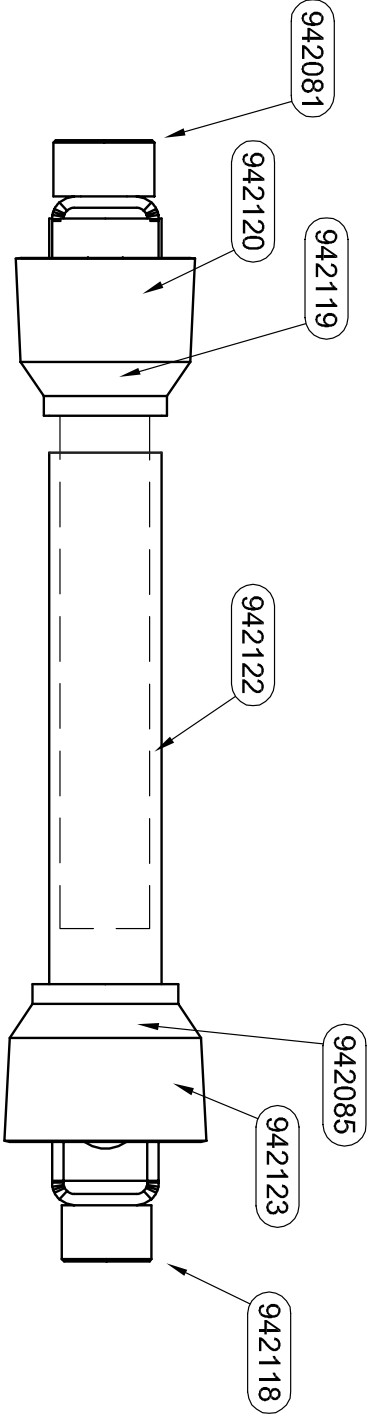
975422 VC PLUS REAR UNIT		
PART #	QTY	NAME
970412	1	BLADE PAN
970417	1	FRONT BLADE GUARD
970418	1	REAR BLADE GUARD
110353	24	NUT, 1/4-20 TINNERMAN
110464	24	BOLT, 1/4-20 X 1
110673	28	WASHER FLAT, 1/4
970407	1	SIDE PTO GUARD
975420	1	UPPER CHAIN GUARD WELDMENT
970476	2	UPPER CHAIN GUARD HOLD DOWN
970406	1	MAIN PTO GAURD
110515	15	BOLT, 1/4-20 X .5
110630	11	NUT, 1/4-20 LOCK(NYLON)
110350	4	SCREW, 3/16-24 X 3/4 SLOTTED
110631	4	NUT, 10-24 NYLOCK
972003	1	KNOB W/THREADED STUD
110290	1	NUT, 1/4-20 WHIZ FLANGE
970488	1	LOWER CHAIN GUARD
970486	1	GEARBOX SHAFT COVER
975406	1	GEARBOX SHAFT COVER W/LDMNT
970230	2	BROOM MOTOR SPACER
110421	2	BOLT, 5/16-18 X 1.25

VC-60 PLUS

FRONT UNIT

NOTE: 1. 943020 CAN BE MADE FROM 943017 BY CUTTING 3 INCHES OFF THE ENDS OF BOTH TUBES.

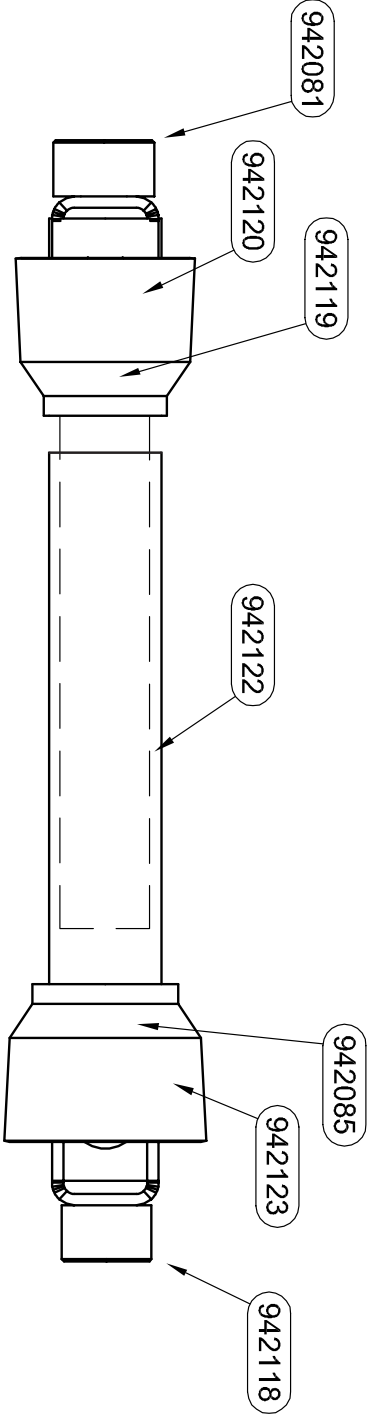
PART #	QTY	NAME
400036	1	DECAL, SAFETY, PTO SLICER (NOT SHOWN)
400037	1	DECAL, "DANGER", PTO (NOT SHOWN)
942081	1	YOKE, IMPLEMENT END, 1.25" BORE
942085	2	REPAIR KIT, PTO 12N
942118	1	YOKE, SNAP HITCH 12N
942119	2	CROSS KIT
942120	1	YOKE, SHAFT WELD 12N
942122	1	GUARD, INNER PALSTIC 12N
942123	1	YOKE, TUBE WELD 12N



PTO SHAFT - Part No. 943017
VC-60, VC-60 PLUS (FRONT UNIT)

NOTE: 1. 943020 CAN BE MADE FROM 943017 BY CUTTING 3 INCHES OFF THE ENDS OF BOTH TUBES.

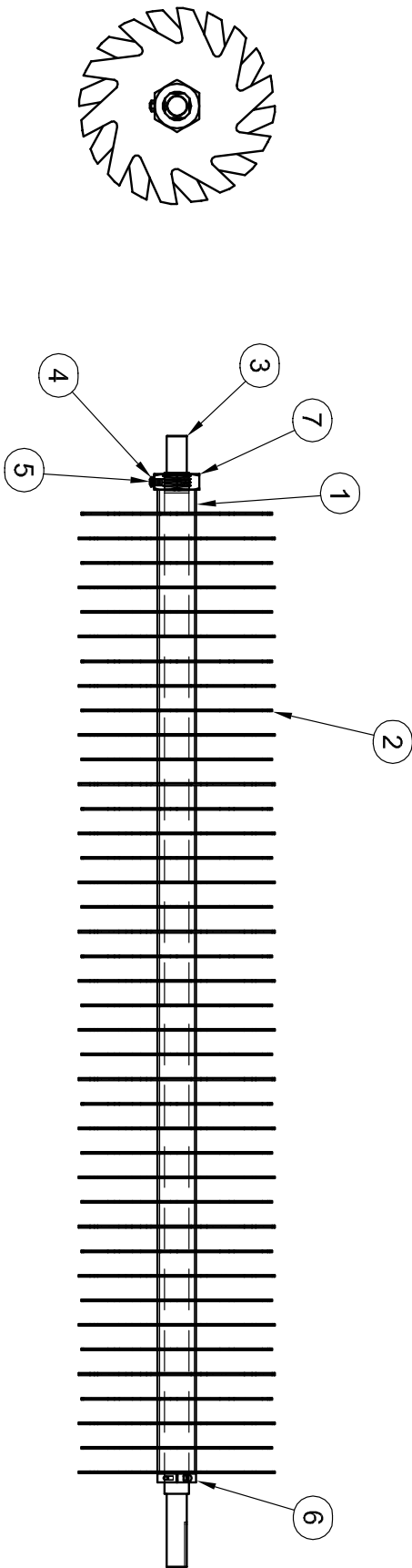
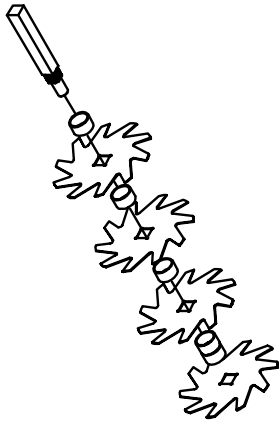
PART #	QTY	NAME
400036	1	DECAL, SAFETY, PTO SLICER (NOT SHOWN)
400037	1	DECAL, "DANGER", PTO (NOT SHOWN)
942081	1	YOKE, IMPLEMENT END, 1.25" BORE
942085	2	REPAIR KIT, PTO 12N
942118	1	YOKE, SNAP HITCH 12N
942119	2	CROSS KIT
942120	1	YOKE, SHAFT WELD 12N
942122	1	GUARD, INNER PALSTIC 12N
942123	1	YOKE, TUBE WELD 12N



PTO SHAFT - Part No. 943020
VC-60 PLUS (REAR UNIT)

NOTE: TIGHTEN DOWN THE 1.75 NUT UNTIL A SETSCREW HOLE IS LINED UP WITH A FLAT FACE ON THE SHAFT, THEN TIGHTEND DOWN THE SET SCREW AND JAM NUT.

ITEM	QTY	PART #	NAME
1	40	970420	BLADE SPACER, 1.4"
2	40	970401	CUTTING BLADE
3	1	970400	BLADE SHAFT, VERTICUTTER
4	1	110107	NUT, 3/8-16 JAM
5	1	110325	BOLT, 3/8-16 X 3/4 SET SCREW
6	1	110332	LOCK COLLAR, 2 BOLT
7	1	970475	HEX JAM, 1.75-5, 2 TAPPED HOLES



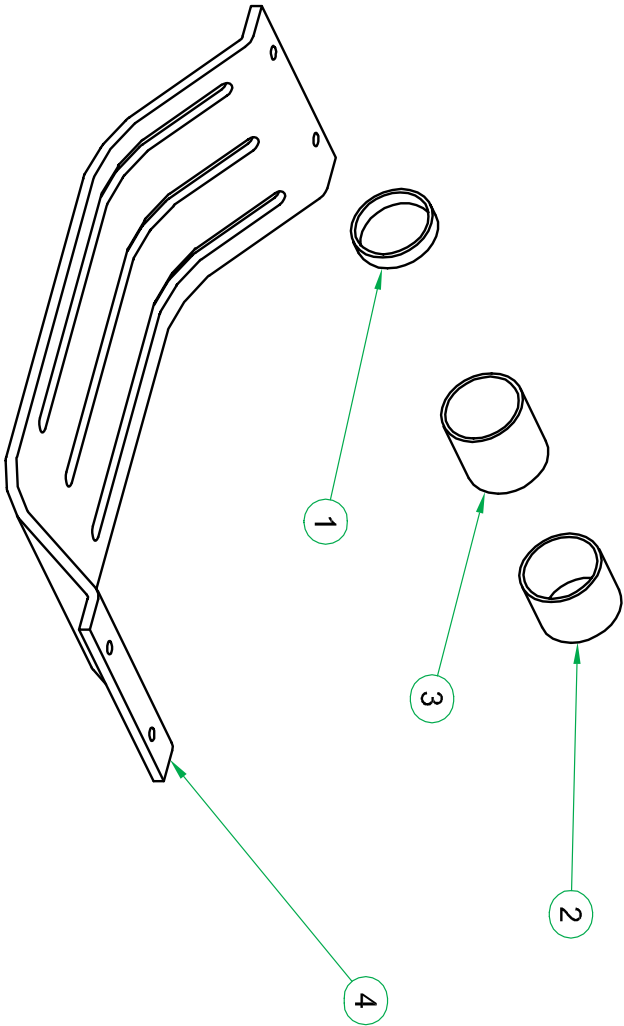
NOTE: BLADES ARE FLIPPED OVER ON REAR UNIT FOR REVERSE ROTATION.

FRONT & REAR UNIT

975426

ITEM	QTY	PART #	NAME
1	1	970419	BLADE SPACER .5"
2	1	970421	BLADE SPACER, 1.875"
3	23	970489	BLADE SPACER, 2.4"
4	2	970490	SKID PLATE, 2.5" BLADE SPACING

- 1. REMOVE BLADE AND SHAFT ASSEMBLY AND SKID PLATES.
- 2. DISASSEMBLE BLADE AND SHAFT ASSEMBLY, AND REASSEMBLE USING THE 1/2" SPACER (970419) AGAINST THE COLLAR, THEN THE FIRST BLADE. USE THE 2.4" SPACERS (970489) BETWEEN THE BLADES. FINISH WITH THE 1.875" SPACER (970421) AFTER THE LAST BLADE.
- 3. BE SURE TO TIGHTEN THE 1.75" NUT UNTIL THE SET SCREW WILL TIGHTEN FLAT ON THE FACE OF THE SHAFT.
- 4. REINSTALL BLADE AND SHAFT ASSEMBLY. INSTALL AND ADJUST NEW SKID PLATES (970490).



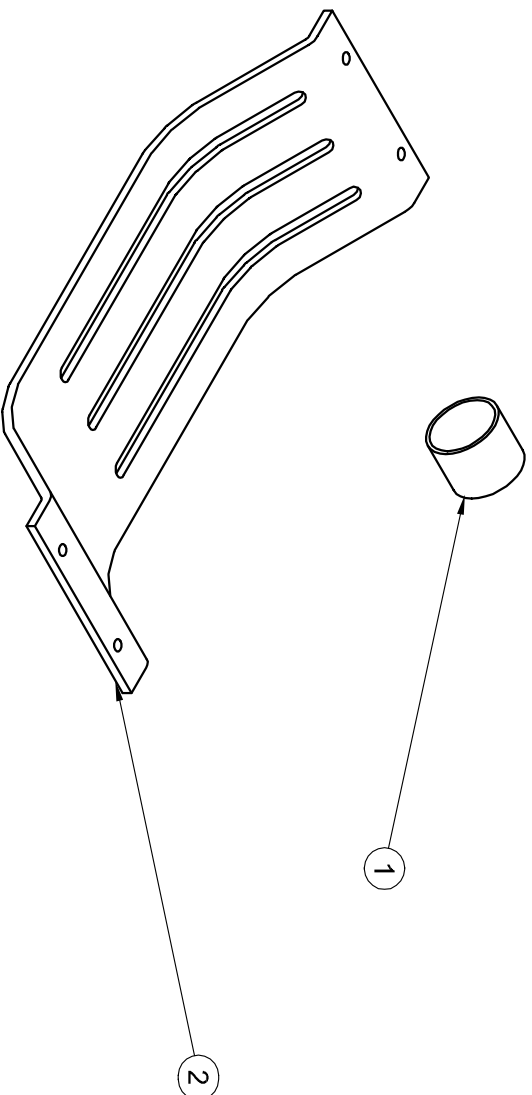
***OPTIONAL 2.5" BLADE SPACING KIT INSTALLATION**

FRONT & REAR UNIT

9 7 5 4 2 7

ITEM	QTY	PART #	NAME
1	30	970421	BLADE SPACER, 1.875"
2	2	970491	SKID PLATE, 2" BLADE SPACING

1. REMOVE BLADE AND SHAFT ASSEMBLY AND SKID PLATES.
2. DISASSEMBLE BLADE AND SHAFT ASSEMBLY, AND REASSEMBLE USING 1.875" SPACERS (970421).
3. BE SURE TO TIGHTEN THE 1.75" NUT UNTIL THE SET SCREW WILL TIGHTEN FLAT ON THE FACE OF THE SHAFT.
4. REINSTALL BLADE AND SHAFT ASSEMBLY. INSTALL AND ADJUST NEW SKID PLATES (970491).



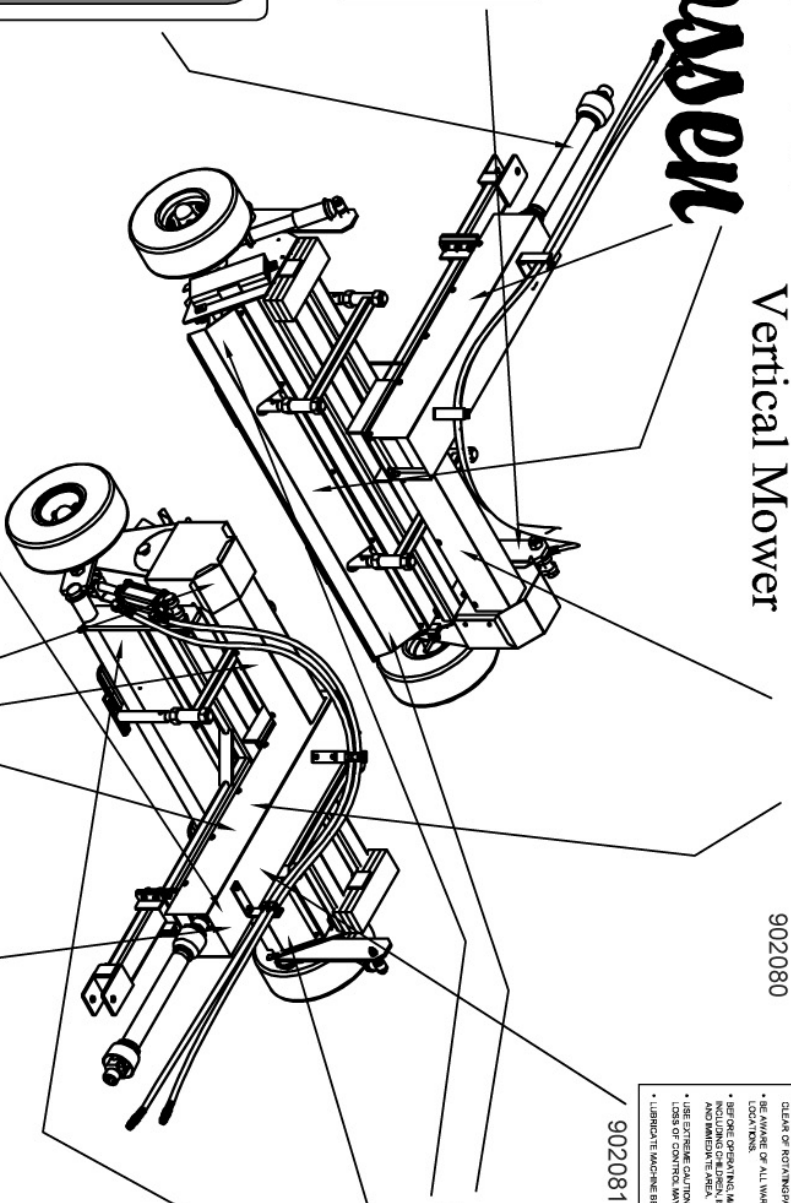
***OPTIONAL 2" BLADE SPACING KIT INSTALLATION**

HARPER

Gooden

VERTI-CUTTER

Vertical Mower



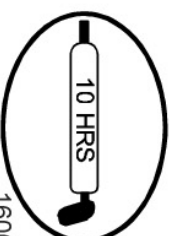
CAUTION

- KEEP ALL SHIELDS IN PLACE.
- KEEP HANDS, FEET AND LOOSE CLOTHING CLEAR OF MOVING PARTS.
- BE AWARE OF ALL WARNING/CAUTION LOCATIONS.
- BEFORE OPERATING, MAKE SURE EVERYONE AND ANIMALS ARE AWAY.
- NO LOADING OR UNLOADING IS ALLOWED WHILE THE TRANSPORT SYSTEM IS IN USE.
- USE EXTREME CAUTION ON SLOPED AREAS.
- LOSS OF CONTROL CAN OCCUR.
- LIBERATE MACHINE BEFORE EACH USE.
- BEFORE ENGINE START BE AT FULL SPEED BEFORE ENGAGING PTO.
- PTO SPEED NOT TO EXCEED 540 RPM.
- BEFORE CLEANING, ADJUSTING OR REPAIRING, MOVEMENT TO STOP - SECURE TRANSPORT SAFETY LOCK.
- TRACTOR HYDRAULICS CONTROL THE TRANSPORT SYSTEM.
- NOT FOR HIGHWAY USE.



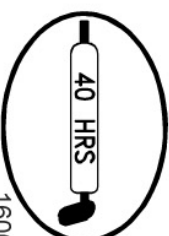
160012

LOCATED NEAR AXLE
GREASE ZERKS - 2



160007

LOCATED NEAR ALL
BEARINGS, AND
U-JOINTS - 6



160008

12/02

CAUTION

Read Operator's Manual before using machine.

160010

400014

WARNING

SHIELD HAS
BEEN REMOVED!
REPLACE PRIOR TO
MACHINE OPERATION

902001

902001

CAUTION

THIS EQUIPMENT DESIGNED FOR
NORMAL OPERATING SPEED
540 RPM
KEEP U-JOINT ANGLE SMALL AND
EQUAL. DO NOT EXCEED 15°
ANGLE ON EACH U-JOINT.

160009

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

COMPLETE DECAL KIT - 905041
(ONE PER UNIT)



151 E Hwy 160
Harper, KS 67058
800-835-1042