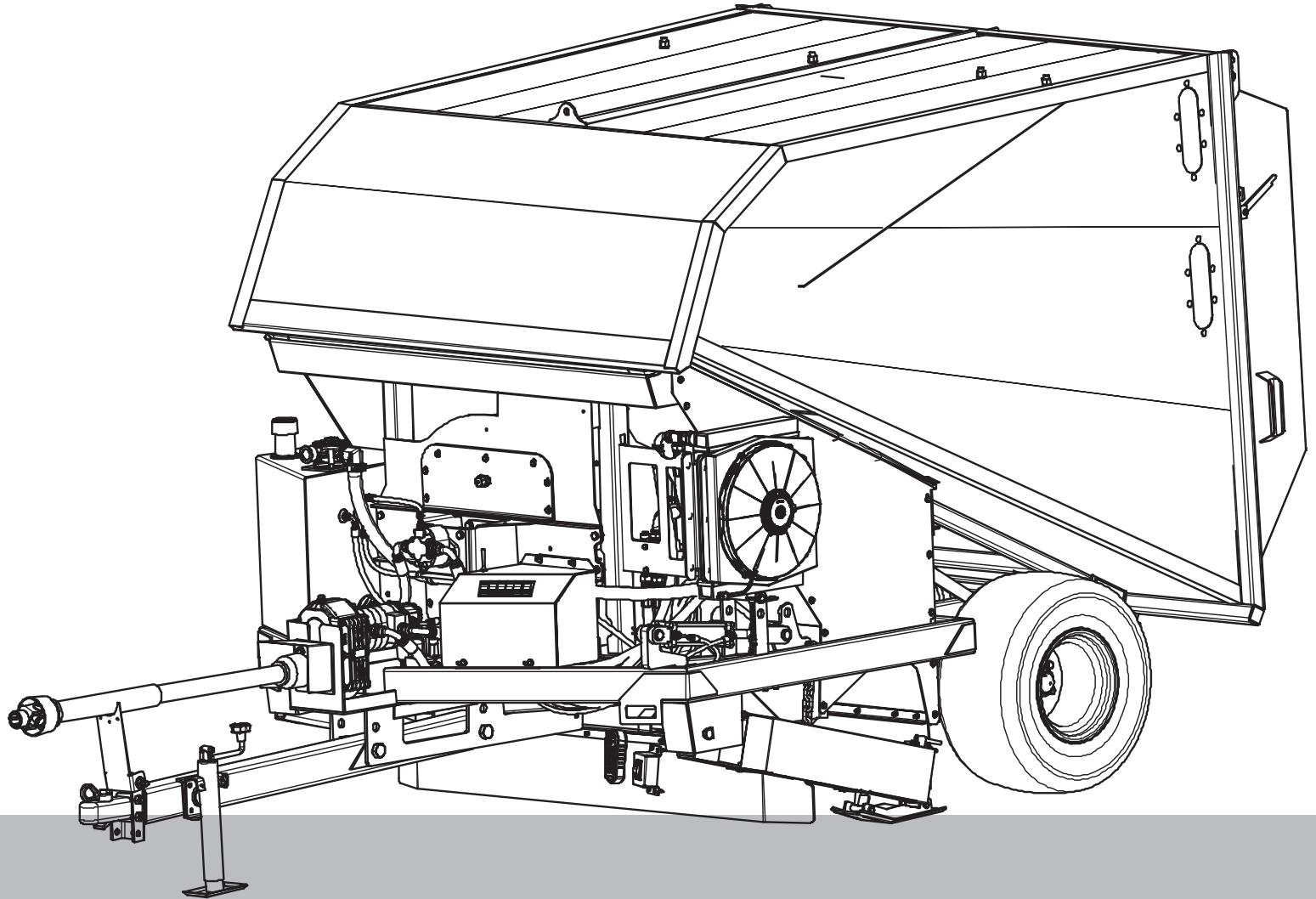


TURBO VAC 60R-HD

Serial Number: 22A01+
Part# 301027



OPERATOR'S & PARTS MANUAL

Thank you for purchasing a Harper Turbo Vac.

TO THE OWNER OR OPERATOR:

As with all Harper products, the Harper Turbo Vac has been developed through tough design and testing procedures to produce a machine that can be relied on. This manual gives assembly, operating, and service information for models **TV60R-HD**. Please read and understand all instructional material included with the Turbo Vac and its components before assembling and operating the equipment.

A Turbo Vac 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.

SYMBOL:



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 dealer or Harper Industries for clarification.



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.

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.

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The Harper and Goossen names are registered trademarks of Harper Industries, Inc. All other brand and productnames are trademarks or registered trademarks of their respective companies.

LIMITED WARRANTY

Harper Industries, Inc. (HII) warrants to each purchaser of a new Harper Turbo Vac from an authorized dealer or representative, that such equipment is free of manufacturer's defects in workmanship and materials which appear while in normal service for a period of ONE YEAR commencing with delivery to the original user.

The obligation of HII under this warranty is expressly limited, at our option, to replacement or repair at a service facility designated by Harper Industries or at the manufacturing plant in Harper, KS. A part will be replaced after inspection discloses it to have been defective. This warranty does not apply to defects caused by damage or unreasonable use (including failure to provide reasonable and necessary maintenance, or by performing functions without genuine Harper Turbo Vac accessories) while in the possession of the consumer.

Warranty is limited to parts, labor and ground freight delivery of replacement parts. HII shall not be liable for the consequential damages of any kind, including but not limited to consequential labor costs or transportation charges in connection with replacement or repair of defective parts.

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

Engines are not covered under this warranty. Refer to manufacturer's warranty for specific warranty information. Harper Industries, its agents or representatives, make or imply no other warranties.

Harper Industries makes no warranty with respect to trade accessories. They are subject to the warranties of their respective manufacturers.

ANY IMPLIED OR STATUTORY WARRANTIES, INCLUDING ANY WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. HII makes no other express warranty, nor is anyone authorized to make any on behalf of HII.

For further information please contact your nearest Harper Turbo Vac dealer.

RECORDS

Date of Purchase _____ / _____ / _____

Dealer's Name _____

Dealer's Phone _____

Serial Number Machine _____

Serial Number Engine _____

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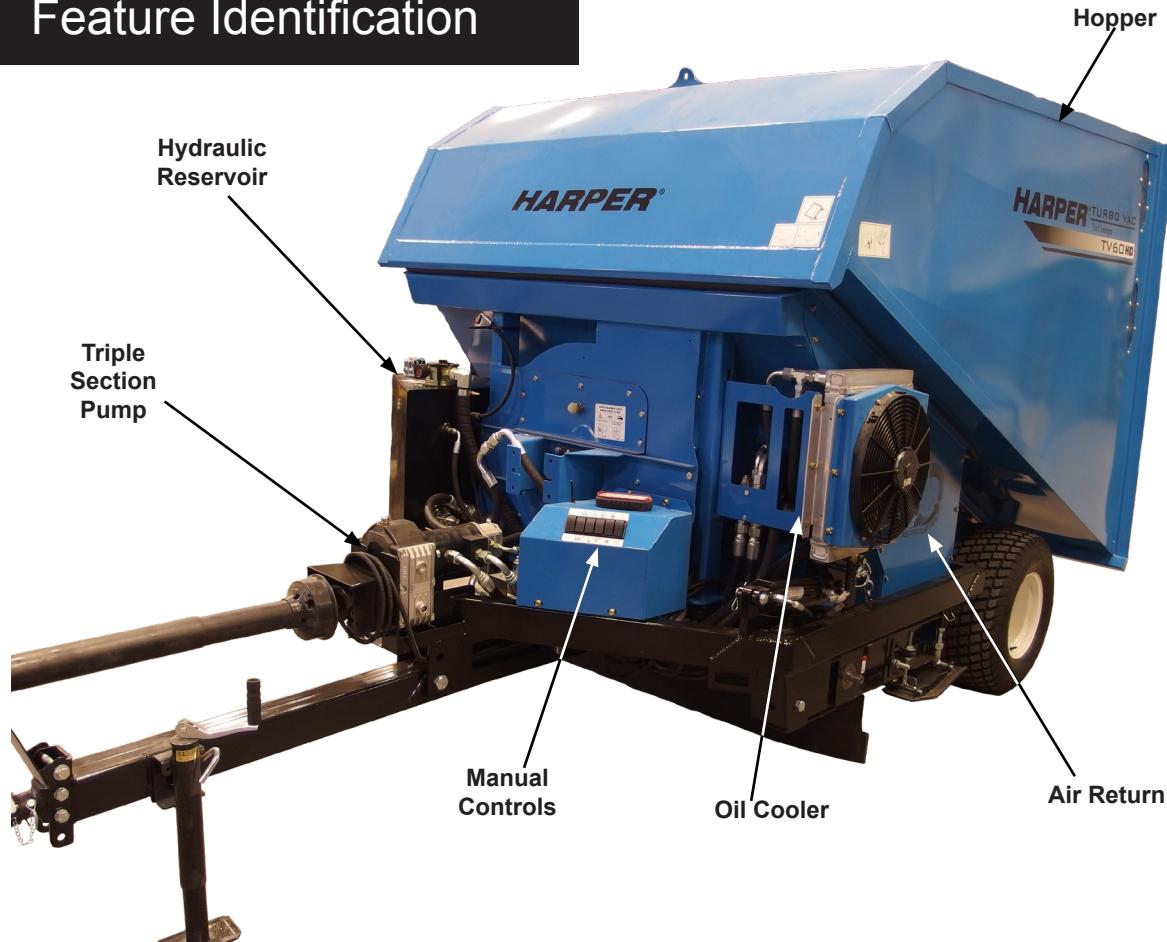
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Specifications

Safety Features	Locking safety latches on all cylinders for service functions
Power	Tractor PTO - 540 RPM - 40 HP Tractor required
Hydraulic System	PTO driven triple-section pump powers fan, deck rotor, and cylinders
Hydraulic Reservoir	20 gallons - Crown AW46
Blower Drive	Hydraulic motor powered by gear pump
Blower Fan & Housing	<ul style="list-style-type: none"> • 25" diameter fan of abrasion-resistant steel
Liner	<ul style="list-style-type: none"> • 1½" shaft with self-aligned bearings supporting both ends • Easy access to housing liner* for inspection and replacement <p>*UHMW poly-liner - Ultra High Molecular Weight Polyethylene</p>
Deck Drive	Hydraulic motor - chain drive
Broom Option	12" diameter X 60" wide pick-up broom with heavy-duty polyethylene bristles
Rubber Finger Option	12" diameter X 60" wide rubber finger pick-up rake
Verticutter Option	12" diameter blades X 56" cutting width <ul style="list-style-type: none"> * 28 - 10 Gauge blades on 2" spacing * adjustable skids for height adjustment
Bearings	Greasable bearings and sealed bearings
Hopper	7 yard capacity
Wheels/Tires	6-bolt steel wheels <ul style="list-style-type: none"> • Turf tires – 26 x 12 (standard) • Radial tires – 225 X 60R15 steel belted (available as an option)
Controls	Wireless RF (radio frequency) remote controls
Discharge	Hydraulic dump with hydraulic powered latches
Hitch	Adjustable height tongue with ball hitch
Paint	Durable 2-part polyurethane
Dimensions	164" long X 85" wide X 85" high
Weight	2250 lbs – 1023 kg

NOTE: Following publication of this manual certain changes in standard equipment and/or options may have occurred that would not be included in these pages. Your Harper/Goosen dealer is the best source for up-to-date information.

Feature Identification



Triple Section Pump – The triple section pump powers the deck, fan, and implement parts of the machine.

Deck Motor – The broom motor turns the broom clock-wise, throwing material forward and upward into the air stream.

Oil Cooler – The oil cooler prevents the hydraulic oil from over-heating. Always keep the fins free of debris.

Hydraulic Reservoir – The hydraulic reservoir on a **TV60R-HD** has a 20 gallon capacity.

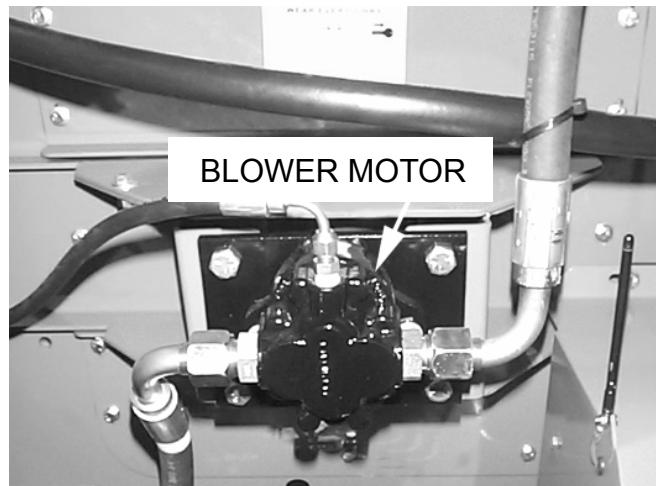
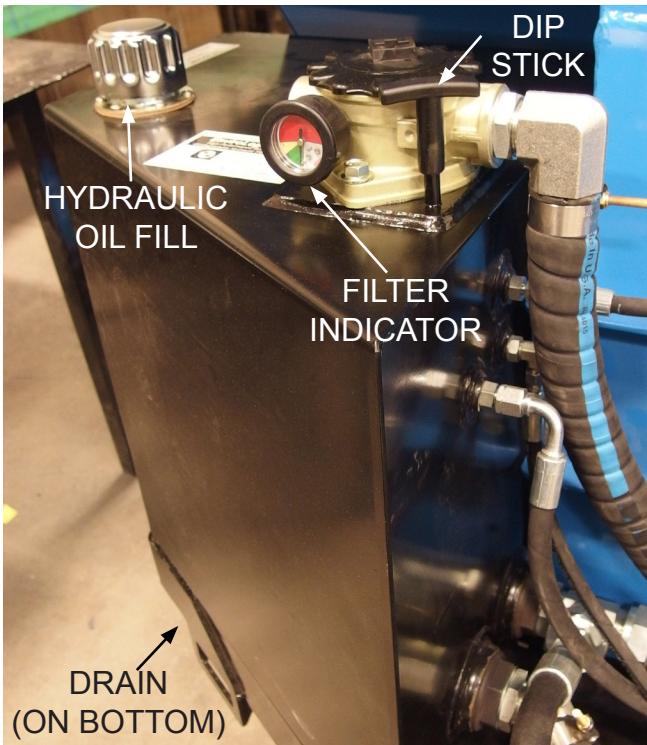
Air Return – The air return allows air to be recirculated, significantly reducing dust.

Hopper – The hopper stores up to seven yards of collected material.

Manual Controls – All of the functions on the Turbo Vac can be operated with the manual controls or the remote controls.

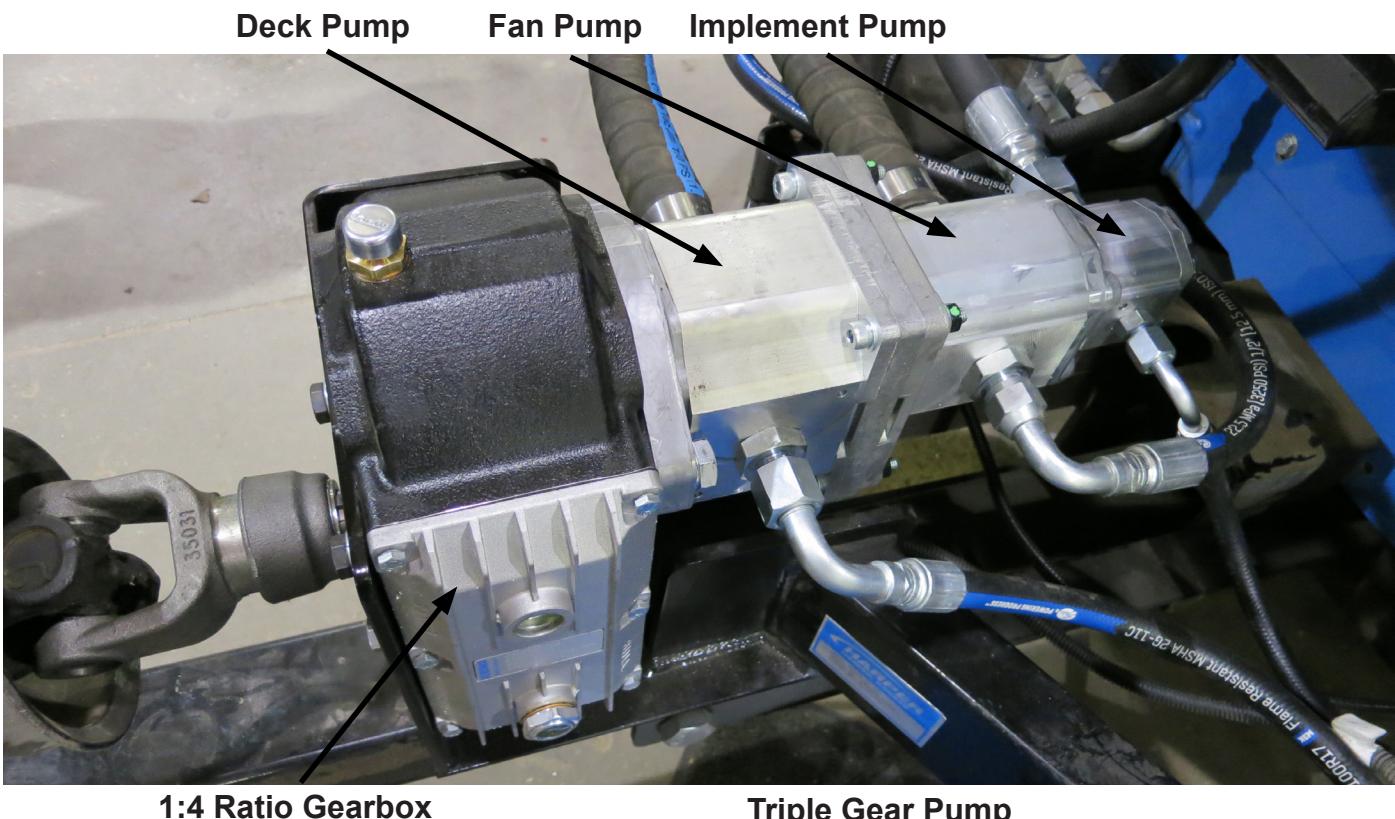


TV60R-HD - Hydraulic System



Blower Motor

Hydraulic Reservoir Assembly



General Safety Guidelines

Equipment & Controls

- Before operating this equipment, read and understand the Owner's Manual.
- Altering the unit in any way that adversely affects its safe operation, performance or durability will void the warranty and may cause hazardous conditions.
- Know the location and function of all controls and how to stop the equipment quickly in an emergency before you operate the Turbo Vac.
- Keep all nuts, bolts and screws tight to ensure safe operation of equipment.

Guards & Shields

- Keep all safety devices in place and in good operating condition.
- Replace all worn, damaged, unusable, missing or lost safety shields and guard before operating unit.

Before Operation

- Do not allow children near this machine.
- Make sure bolts in tongue are secure and jack is in the transport position.
- Tire pressure should be 30-32 psi and equal in both tires.
- Engine governor settings are preset and should not be changed; any change can damage moving parts and void warranty.
- 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 after the first hour of operation and every 8 to 10 hours thereafter for proper alignment and tightness.
- Make sure that all belts are in good condition, and replace if necessary.

During Operation

- While operating the equipment, make sure that no foreign objects such as rocks, bottles or other hard materials are in the path of the Turbo Vac.
- If an object should strike the broom or blower mechanism causing an unusual noise or vibration, shut the engine off immediately and allow it to come to a complete stop. Disconnect the spark plug wire from the spark plug of the power unit, and do the following:
 1. Inspect for damage.
 2. Repair or replace damaged parts.
 3. Check for and tighten any loose bolts, nuts, fasteners or parts.
- Keep the engine area clean and free of debris and other accumulations.
- If the Turbo Vac should become clogged, shut off the engine and allow it to come to a complete stop. Disconnect the spark plug wire from the spark plug of the power unit before attempting to remove the clog.

SAFETY WARNING!

Always keep a fire extinguisher near the Turbo Vac during operation and service.

SAFETY WARNING!

To prevent possible eye injury, always wear SAFETY GLASSES while operating or servicing the equipment.

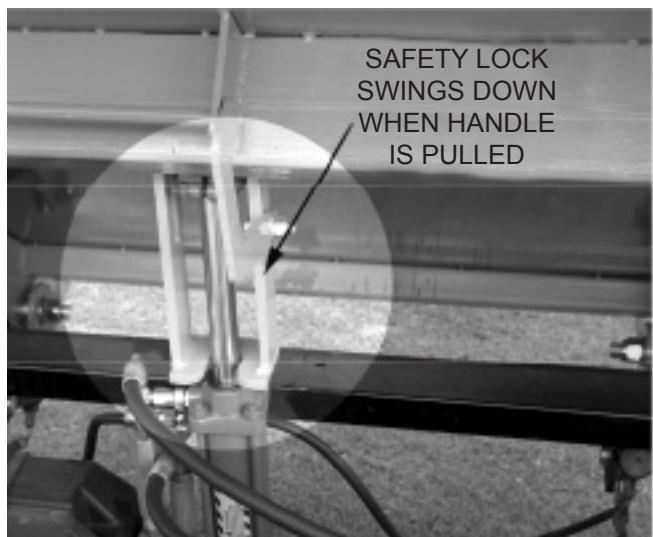
During Service & Maintenance

⚠ SAFETY WARNING! ⚠

When working under the hopper the cylinder safety lock should be engaged to prevent the hopper from falling.



- To engage the cylinder safety lock, take the pin out of the bracket on the hopper and pull the handle down.



- The cylinder safety lock prevents the hopper from being lowered so that maintenance can be performed safely.
- When finished working under the hopper, disengage the safety lock, put the handle back into the bracket on the hopper and replace the pin.

⚠ SAFETY WARNING! ⚠

Attempting to lower the hopper while the cylinder safety lock is engaged may cause damage to the cylinder and/or the safety lock mechanism.

⚠ SAFETY WARNING! ⚠

If it is necessary to get between the hopper and the hopper door, set the door prop to avoid being pinched.

- To set the door prop, pull the door open and insert prop into pre-cut hole in door.



Safety Decals

- If safety related or instructional decals become illegible or are removed, replace them immediately.
- If parts are replaced, make sure all safety related or instructional decals are present before the equipment is operated again.
- New decals may be obtained from your local Harper Dealer.

Replacement Parts

SAFETY WARNING!

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

- Replace locknuts and locking screws if they can be tightened without considerable resistance for several turns before they are completely tight.
- If hardware is not secure, or if some of the fasteners are over-tightened, equipment failure may result, posing possible safety hazards.
- Use proper torque specifications for all fasteners when they are replaced.

Hydraulics

SAFETY WARNING!

HIGH-PRESSURE FLUID HAZARD!

Escaping fluid under pressure can penetrate skin and cause serious injury or death.

To prevent serious injury or death:

- Relieve pressure on system before repairing, adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks.
- Use wood or cardboard instead of hands when looking for leaks.
- Keep all hoses, fittings and components in good repair.
- Do not use any type of heat or flame (welding, soldering, cutting torch, etc.) near pressurized hydraulic lines.

Specific Safety Guidelines

TV60R-HD

- Avoid wearing loose clothing to prevent it from getting caught in the PTO drive.
- Keep clothing and all body parts away from rotating parts.
- The pump stop bar must be properly positioned to keep the hydraulic pump from spinning with the PTO.
- The Turbo Vac hydraulic system operates under high pressure. Be sure the hydraulic system is disabled prior to service.

SAFETY WARNING!

Engage the tractor PTO at low engine RPM when operating the TV60 RHD to prevent premature failure of hydraulic system components.

SAFETY WARNING!

HIGH-PRESSURE FLUID HAZARD!
Escaping fluid under pressure can penetrate skin and cause serious injury or death.

Set-Up and Operation

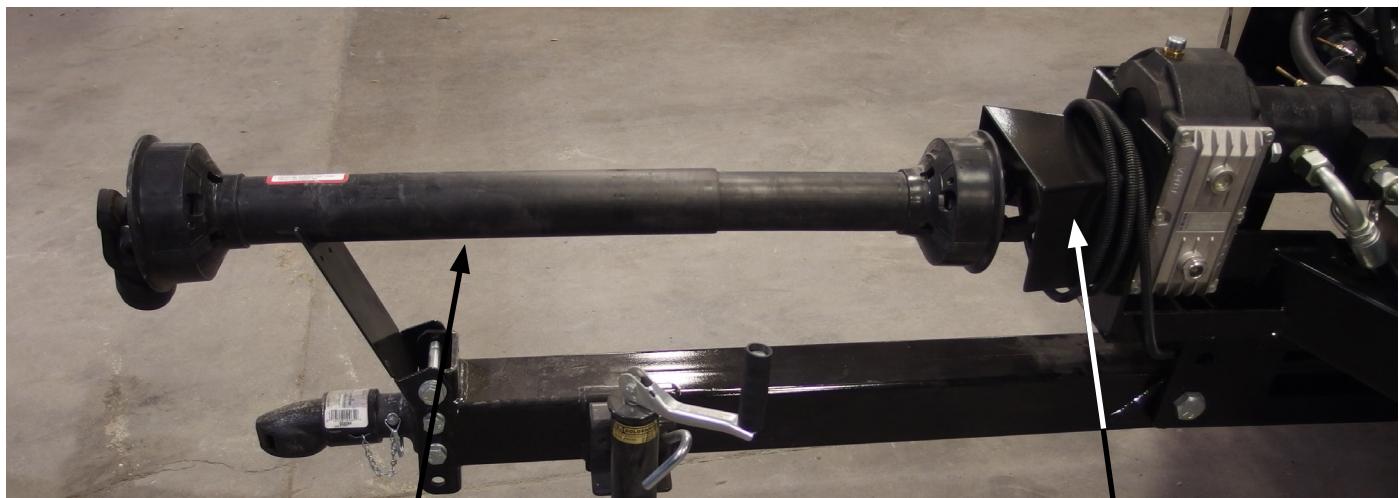
! SAFETY WARNING! !

Periodically clean material away from engine to lessen the possibility of fire.

TV60R-HD

1. Before using the **TV60R-HD** for the first time, install the battery cable onto the tractor battery to supply power to the unit's valve and RF receiver. Connect the black wire of the cable to the negative terminal and the red wire (with 30 amp fuse) to the positive terminal of the battery. When using more than one tractor, other power cords may be ordered (p/n 935017).
2. Attach the unit to a tractor with a PTO. Be sure that the Turbo Vac is level with the ground. (Refer to Adjustments section.)
3. Attach the PTO shaft to the tractor's PTO.

4. Make certain that the case drain hose is on top of the pump and in a vertical position when attached to the tractor.
5. Plug quick connector on battery cable to the quick connector located on the tongue of the **TV60R-HD**.
6. Engage tractor PTO and set to 540 RPM.



540 RPM PTO Shaft

1:4 Ratio Gearbox

Starting Operation

! SAFETY WARNING! !

Before operating the Turbo Vac, perform the daily inspection as described in the Service & Maintenance section.

Before operating the Turbo Vac, the operator should be familiar with the area to be swept, and make sure it is clear of large debris.

1. Push the switches on the remote control or move the manual switches to activate the functions on the Turbo Vac. The tractor PTO must be engaged for the blower to function on the **TV60 RHD**.
2. Engage the tow vehicle and advance slowly at first to test environmental conditions and machine performance.
3. Proceed with caution, steering clear of obstacles that could damage broom.

! SAFETY WARNING! !

Wear approved eye and ear protection while operating the Turbo Vac.

Keep all guards in place during operation. Never operate the Turbo Vac with safety shields removed.

Always keep a fire extinguisher near the Turbo Vac during operation.

Stopping Operation

TV60R-HD

1. Push the BROOM switch only on the remote control to turn off the broom.

Note: The BLOWER switch is not used on the **TV60R-HD** remote control.

2. Move the throttle on the tractor to the "SLOW" position and disengage the PTO lever to turn off the blower.
3. Shut off the tractor engine and allow the unit to come to a complete stop.

! SAFETY WARNING! !

Do not leave the Turbo Vac unattended, or attempt any service or inspection unless the machine has come to a complete stop, the engine has been shut off, and the spark plug has been disconnected.

Unloading Hopper

1. Check the overhead clearance. 8' 6" is required for dumping.
2. To unload, press the OPEN LATCH and LIFT HOPPER buttons on the remote.
3. When unload is complete, press the LOWER HOPPER button. Once the hopper has lowered completely, press the CLOSE LATCH button.

! SAFETY WARNING! !

Do not stand near the back of the Turbo Vac while unloading.

If there is grass stuck in the hopper, do not go in between the hopper and the door without setting the safety lock.

Check overhead clearance during use.

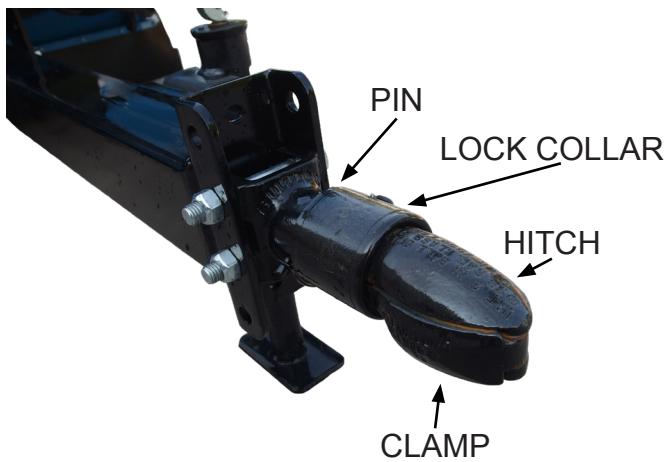
Clearance is: 7' 6" for sweeping
 8' 6" for dumping

Towing

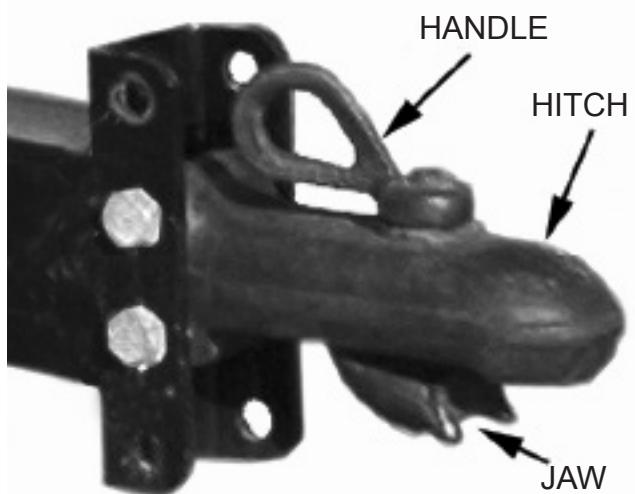
! SAFETY WARNING! !

The Turbo Vac does not meet highway safety codes. Tail lights, turn signals and safety chains must be attached before towing on public roadways.

- Two types of ball hitches have been used on the Turbo Vacs: clamp and jaw.
- For the clamp-type displayed in the following photograph, close the clamp around the ball and secure with the lock collar. Insert the pin to keep the lock collar in place.



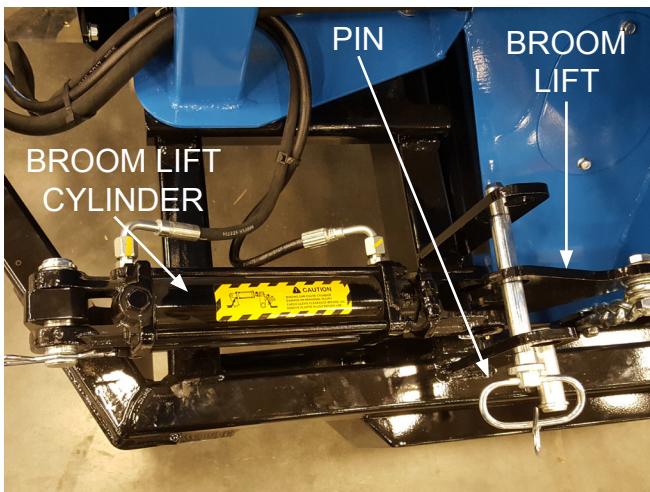
- For the jaw-type displayed in the following photograph, turn the handle until the jaw closes completely around the ball.



- The jack stand should be up whenever the Turbo Vac is connected to a tow vehicle.



- Always use the safety pin to lock the broom lift when towing the unit.

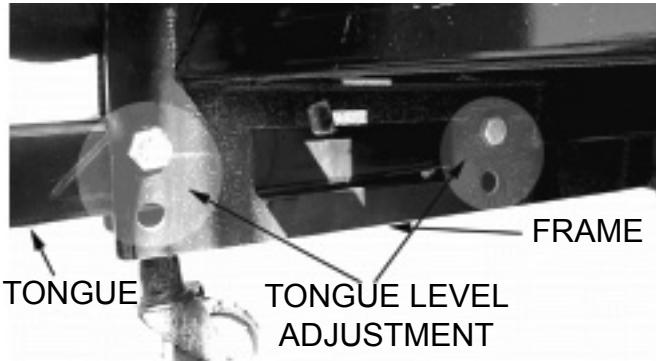


- Tire pressure should be 30-32 psi and equal in both tires.
- Make sure the wheel lug nuts are tight.

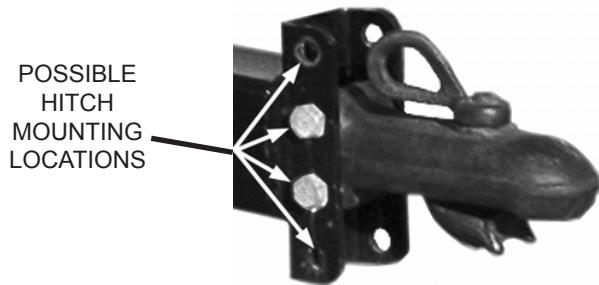
Adjustments

Level Hook-Up

- For the Turbo Vac to work properly, the frame needs to be level with the ground.
- The tongue can be moved up or down depending on which set of holes on the frame are used.

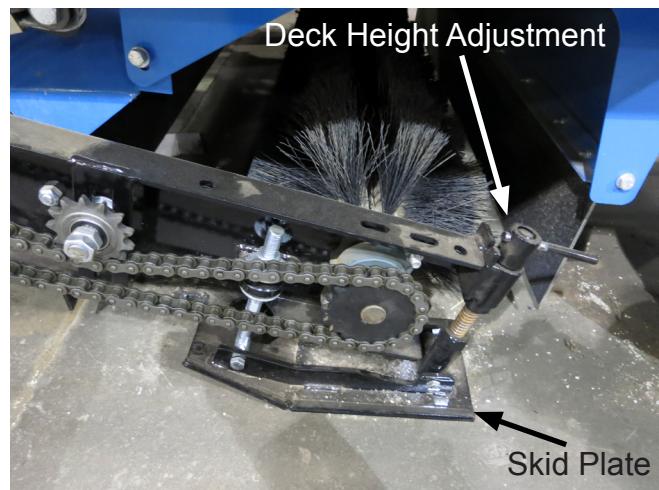


- The hitches on different tow vehicles vary in height, so there are adjustments on the hitch and the tongue to keep the Turbo Vac level.



Deck Height

- The deck height should be adjusted so that the deck barely touches the grass.



- Deck height is easily adjusted tightening or loosening the deck height adjustment tool that is attached.
- Make sure that both skid plates (one per side of unit) are adjusted the same so the deck stays level.

Remote and Receiver

Operation

- Turn on the transmitter, press and hold the POWER button for at least 2 seconds and release.
- To turn the transmitter off, press and hold the POWER button until the LEDs stop toggling.
- The transmitter is designed with a power saving feature which turns the transmitter off after 15 minutes irrespective of receiver status.
- There are red and green LEDs both on the keypad of the transmitter and inside the receiver case. The green LED will double blink when no buttons are pressed, blink rapidly when talking to the receiver & a button is pressed, and it will slowly blink if there is no communication (i.e. - no power to the receiver) when a button is pressed.
- The red LED on the receiver will blink if there is a shorted or open output.
- The transmitter's red LED blinks 1 time per second if the battery is low and needs charging.
- If transmitter is powered off or goes out of range outputs will turn off and be disabled until power on and in range.

Synchronizing Transmitter and Receiver

Each transmitter and receiver pair is synchronized together at the factory. If a new transmitter is needed, synchronizing is required. Use the following procedure:

1. Make sure transmitter and receiver are off.
2. Press and hold transmitter LOWER HOP and BROOM ON/OFF button, then press POWER button until both LEDs start blinking.
3. Release buttons.
4. Apply power to receiver.
5. Wait for 5 seconds or until the green LED on the transmitter starts blinking.
6. Teach complete.

Sleep Time

All transmitters have the ability to change the sleep time from the default to user's preference. The transmitter is factory set to turn off (sleep) after 15 minutes irrespective of receiver status. To change the time the transmitter waits before going to sleep, use the following procedure:

1. With the transmitter off, press and hold buttons RAISE BROOM, LOWER BROOM, BROOM ON/OFF, & POWER (~ 5 seconds)
2. At this point, both lights will blink once per second. Release the buttons.
3. On the transmitter, press one of the following buttons to adjust the sleep time:
 - LOWER HOP = 15 minutes
 - LIFT HOP = 30 minutes
 - LOWER BROOM = 60 minutes
 - RAISE BROOM = 120 minutes
 - BROOM ON/OFF = DISABLED
4. Sleep time programing complete.

Cloning Transmitters



ONLY ONE TRANSMITTER CAN BE ON AT A TIME, THEY CANNOT BE USED SIMULTANEOUSLY - use with CAUTION!

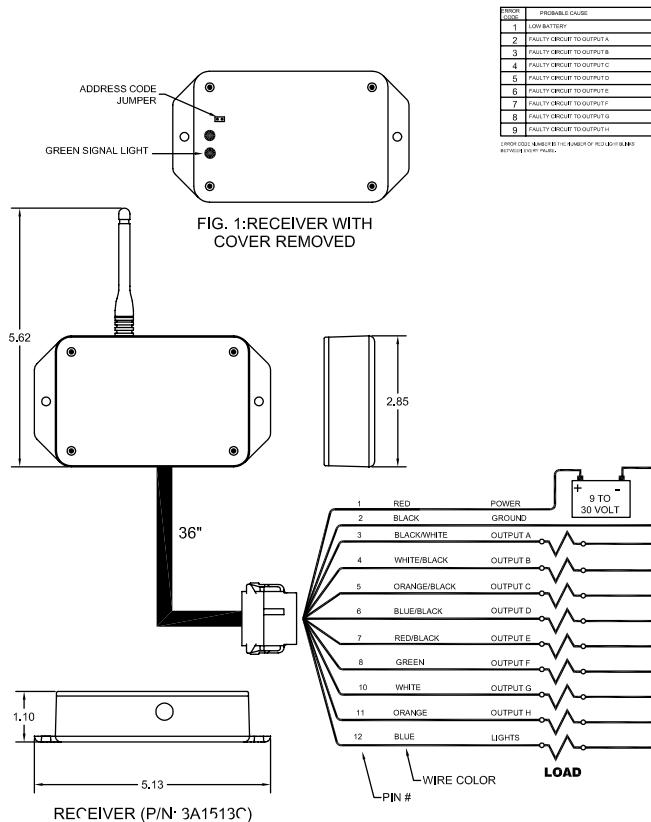
Occasionally, it is desired to have more than one transmitter work with a single receiver. This is accomplished by a process called cloning. Cloning allows an additional transmitter (B) to have the same ID code as the original transmitter (A). If this feature is desired, use the following procedure:

1. Make sure both transmitters and the receiver are off.
2. On Transmitter A, press and hold the POWER button for 10 seconds until LEDs blink, then release. Green and red LEDs will blink together at this point.
3. On Transmitter B, press and hold buttons LIFT HOP, LOWER HOP, and POWER simultaneously until both LEDs start to blink.

4. Wait for a few seconds until the green LED starts to blink on both transmitter A and transmitter B.
5. Turn both the transmitters off.
6. Synchronize one of the transmitters to the receiver using SYNCHRONIZING TRANSMITTER AND RECEIVER instructions.

If the cloning feature has been invoked and is no longer desired, the ID code of one of the transmitters needs to be changed. This will unclone the transmitters. If this is desired, use the following procedure:

- Make sure the transmitter is off.
- Press and hold LIFT HOP, LOWER BROOM, BROOM ON/OFF and POWER buttons for 5 seconds.
- Release all the buttons when GREEN and RED LEDs start toggling.
- Press any button and release. GREEN LED should start to double-blink.
- ID change Sequence complete.



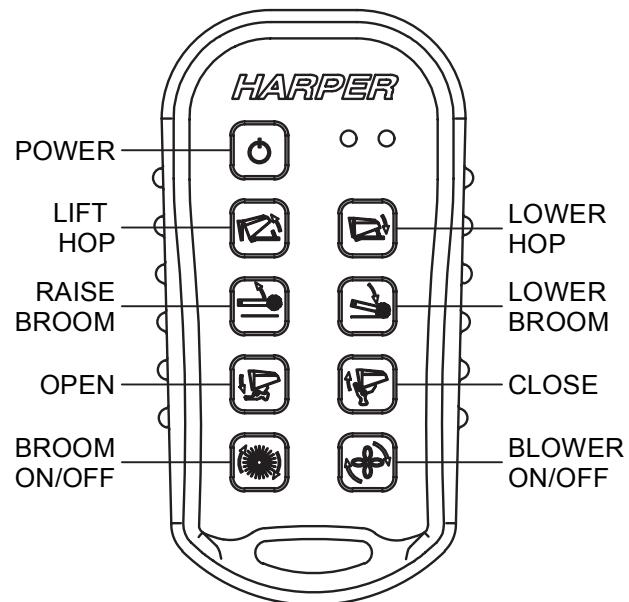
PROGRAMMING OUTPUT FOR TV60

The user can determine the output functionality and program the system as desired. This is determined by the following procedure:

1. Make sure transmitter and receiver are synchronized.
2. Turn off the receiver and turn on the transmitter.
3. Press and hold buttons LOWER HOP, RAISE BROOM, and BROOM ON/OFF simultaneously. Red LED should be blinking at this point. Release buttons.
4. Turn on the receiver. Make sure receiver green LED is blinking indicating communication with transmitter.
5. Hold and release the OPEN switch to select desired logic for outputs below.
6. Hold and release POWER button for one second to save the selection and exit configuration mode.

OPEN

BUTTON PRESS	ENGAGE OUTPUTS
LOWER HOP	A
LIFT HAP	B
LOWER BROOM	C
RAISE BROOM	D
CLOSE	E
OPEN	F
BLOWER ON/OFF	G (LATCHING)
BROOM ON/OFF	H (LATCHING)



Service & Maintenance

⚠ SAFETY WARNING! ⚠

Before servicing or inspecting the Turbo Vac, make sure the power source is shut off and all moving parts have stopped.

⚠ SAFETY WARNING! ⚠

Disconnect the spark plug wire or the negative battery cable to prevent the engine from being turned on.

⚠ SAFETY WARNING! ⚠

Always wear safety glasses and protective gloves when servicing the Turbo Vac.

Break-in Service

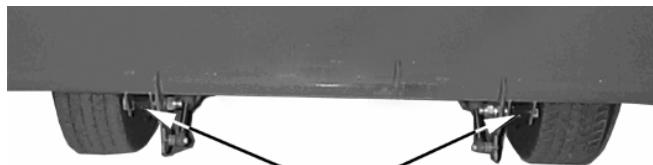
After the first hour of use:

- Check belts. Tighten if needed.
- Tighten set screws on bearings.
- Check nuts, bolts, and fasteners to see that they are secure. Tighten if needed.
- Check hydraulic hoses and fittings for leaks using the method described in the General Safety Guidelines. Tighten or replace if needed.

Lubrication

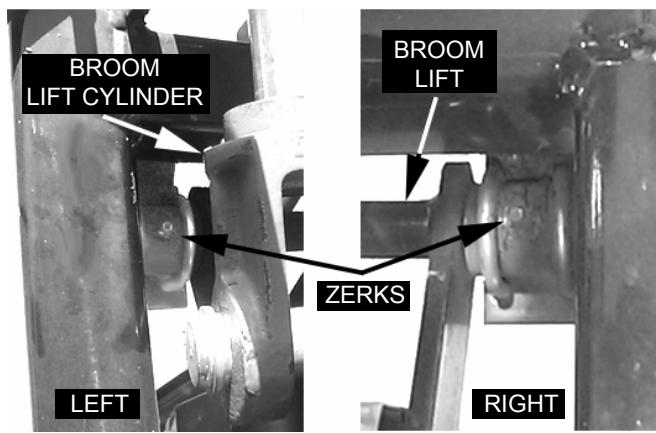
Ten grease zerks in the following locations should be greased daily to reduce wear:

- Hopper door latches (2)

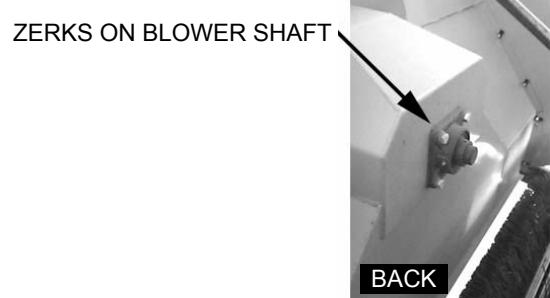


HOPPER DOOR LATCH ZERKS

- Broom lift (2)



- Blower shaft (2)



- Rotor shaft (2) - one on each side
- Deck Hinge Shaft (2) - one on each side



Deck Hinge Shaft

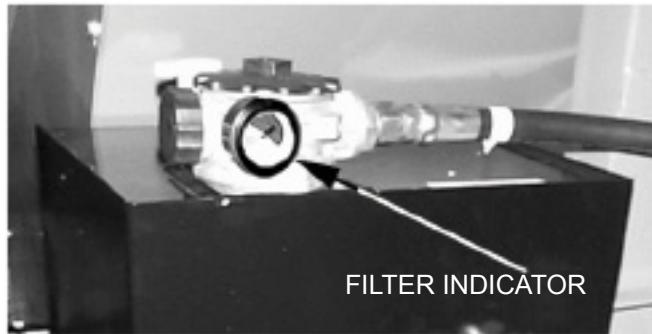
* Located behind frame and must be turned until its visible.

Rotor Shaft

- Replace the safety shields before operating the Turbo Vac.

TV60R-HD Hydraulic Oil Reservoir

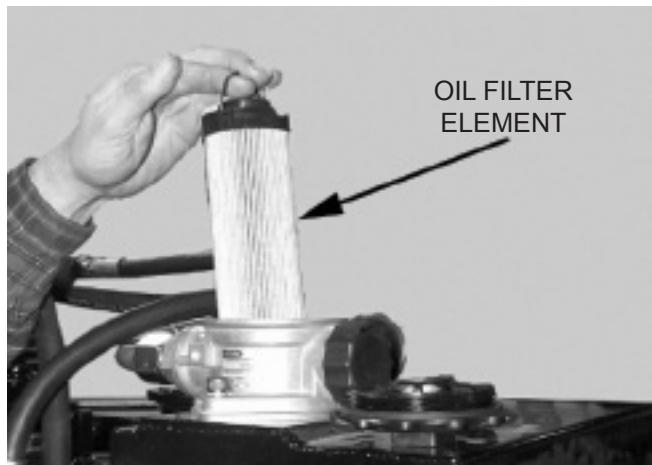
- The **TV60R-HD** is equipped with a HYDAC hydraulic oil filter assembly that is designed for a long service life.
- Monitor the needle in the filter indicator daily. The element (Part no. 822002) does not need replaced until the needle is in the red portion of the gauge.



- To replace the element, unscrew the cover, remove the old element and insert the new one.

To add hydraulic oil to a **TV60R-HD** reservoir:

- For small quantities, simply remove cover and add oil. The oil will seep past the filter element slowly.
- For larger quantities, remove the cover and the filter element. Take extra care that no impurities enter the reservoir.
- Maintain the oil level in the reservoir between the FILL and ADD marks on the dipstick at all times.



Note: The Turbo Vac is filled at the factory with biodegradable hydraulic oil. Mixing with regular oil will reduce biodegradability.

! SAFETY WARNING! !

Escaping hydraulic fluid under pressure can penetrate skin and cause serious injury or death.

Hydraulic System

- The hydraulic system of the **TV60R-HD** is filled at the factory with Crown AW46 hydraulic oil that has an ISO of 46.
- The **TV60R-HD** has a 10 micron, beta rated hydraulic oil filter designed for long life.

The following list of hydraulic fluids are compatible and can be mixed with Crown hydraulic fluid. **MIXING OTHER OILS THAT ARE NOT INCLUDED ON THIS LIST COULD CAUSE GELLING AND DAMAGE TO THE HYDRAULIC COMPONENTS.** If another type of oil is desired, then the system must be completely drained and flushed first.

Appropriate replacements:

ISO 46: Recommend for running in ambient air temperatures of 32°F-110°F, and it contains a kinematic viscosity rating around 46 cSt at 40°C. (1cSt = 1mm²/s)

- Mobil DTE 25
- Mobil DTE 15M
- Amoco Rykon Premium Oil ISO 46
- Chevron Rykon Premium Oil ISO 46
- Conoco Hydroclear AW MV 46
- Exxon Univas N 46
- Pennzoil AWX MV 46
- Shell Tellus 52 M46
- Shell Tellus 52 V46
- Texaco Rando HDZ 46

TV60R-HD Hydraulic Oil Cooler

- Make sure that the oil cooler assembly is kept free of debris. Clean as necessary.



Remote Control

- If the remote control transmitter or receiver should ever be replaced, the dip switches must be set so that the two components match.

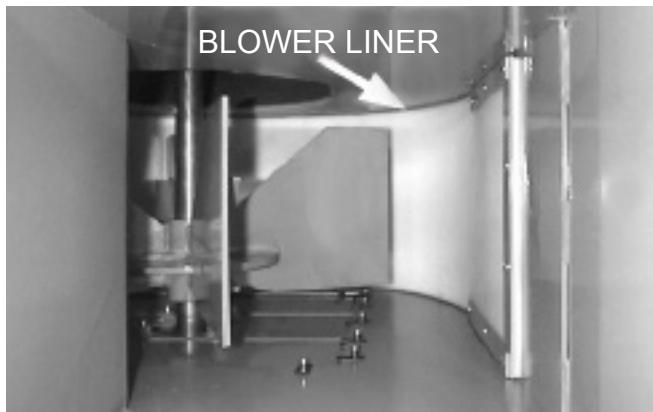


Blower Liner

- Regularly inspect the blower liner in the blower housing for wear.
- If the blower liner wears excessively, damage may result to the blower housing.
- The blower liner is a wear item and is not covered under warranty.
- Sandy conditions will shorten the life of the blower liner.

To check the blower liner:

- Raise hopper and set the safety lock as shown in the General Safety Guide lines.
- Check the blower liner located around the inside of the blower housing.



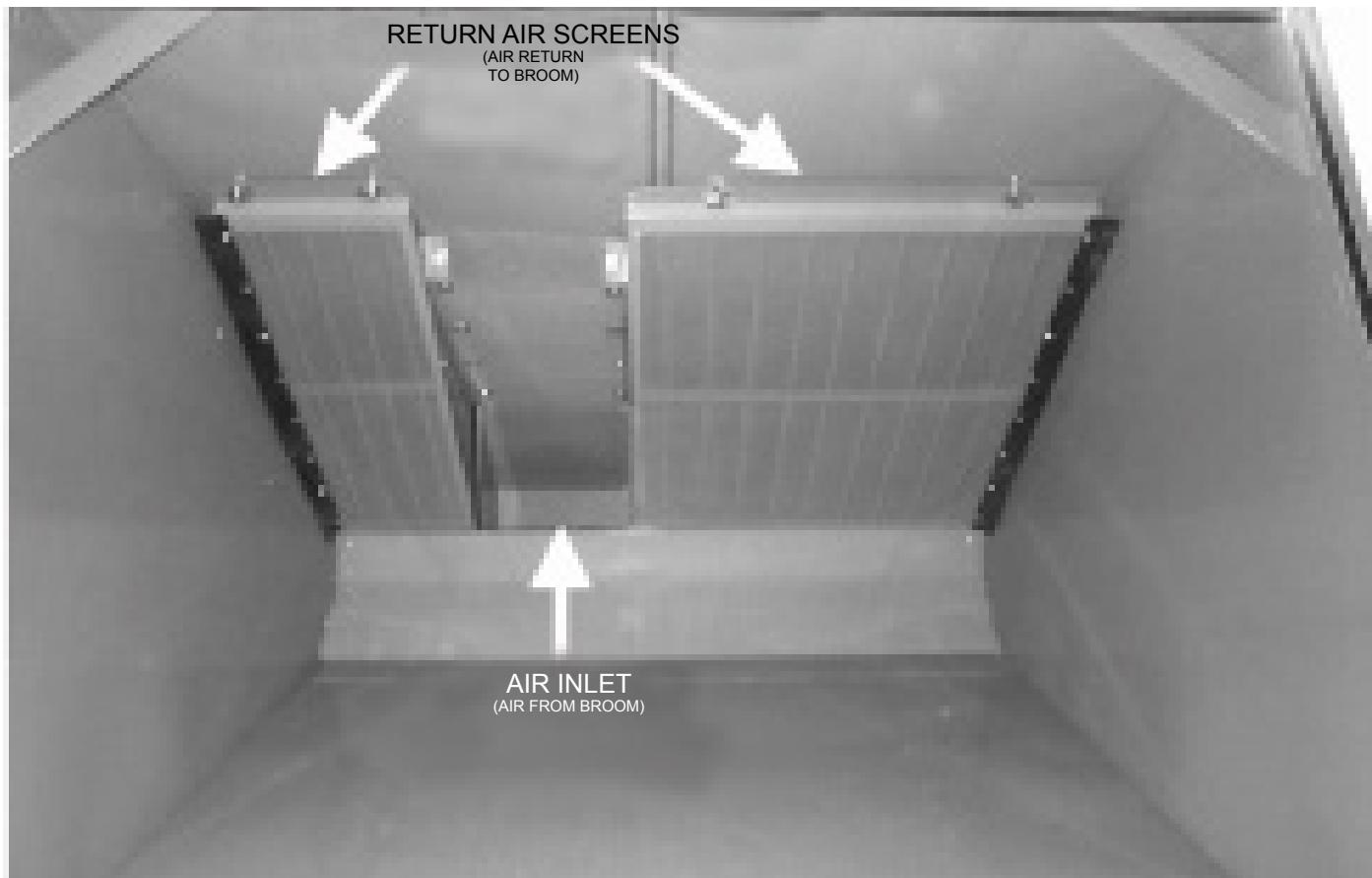
- If the blower liner is damaged or worn through, replace it before damage is done to the blower housing.

SAFETY WARNING!

Before attempting to inspect the liner, make sure the power unit is turned off, the unit has come to a complete stop, and the spark plug wire has been removed.

When working under the hopper the cylinder safety lock should be engaged to prevent the hopper from falling.

Return Air Screens



- The return air screens do not require cleaning on a regular basis.
- Material that sticks to the screens during operation will fall off when the blower is stopped. However, if debris is extremely wet or muddy, plugging may occur.
- If there is a noticeable decline in ability to pick up debris, visually inspect screens for clogging and clean, if necessary.
- The return air screens may be cleaned with a broom or water hose, and may be removed, if necessary.

⚠ SAFETY WARNING! ⚠

When it is necessary to get between the hopper and the hopper door, set the door prop to avoid being pinched.

- To set door prop, pull the door open and insert prop into the pre-cut hole in door.



TV60R-HD Service Schedule

Daily

Check hydraulic oil level..... Crown AW46 or equivalent

Check hydraulic oil filter indicator..... Change filter element when needle is in red portion of gauge.*

Check hydraulic oil cooler..... Clean as necessary.

Visually inspect belts, bolts, fittings, and hoses Tighten or replace if necessary.

Grease..... See Service & Maintenance Section.

Check tire pressure..... Inflate to 30-32 psi.

After first 50 hours

Change 1:4 ratio gear box oil..... SAE90, 2.43 qts (2.3L)

Annually or 500 Hours

Change hydraulic oil..... 20 gallons

Change 1:4 ratio gear box oil..... SAE90, 2.43 qts (2.3L)

- The TV60R-HD is equipped with a Hydac, 10 micron, beta rated, hydraulic filter and is designed for a long service life. When the hydraulic oil is warm and the indicator needle is in the red portion of the gauge, the filter needs to be changed.

Standard Torque Chart



SAFETY WARNING!



Refer to the Standard Torque Chart whenever bolts, nuts or screws are tightened.

Size	In-Lbs	Ft-Lbs	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 fasteners on the same part, DO NOT tighten the fasteners completely one at a time. To avoid distortion, first tighten all fasteners in sequence to one-third of torque value, then tighten to two-thirds of torque value, then tighten to full value.

Troubleshooting

Hydraulic System:

Problem:	What to Check:
Hydraulic function will not respond or hold its position.	<ul style="list-style-type: none">• The RF receiver or transmitter may be malfunctioning.• Hydraulic cylinder seals may be worn and in need of replacement.

Parts

TV60R-HD

TV60R

Turbo Vac TV60R

HARPER
TURF EQUIPMENT

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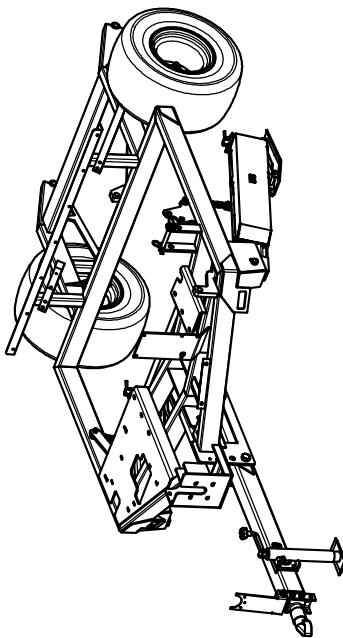
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975431

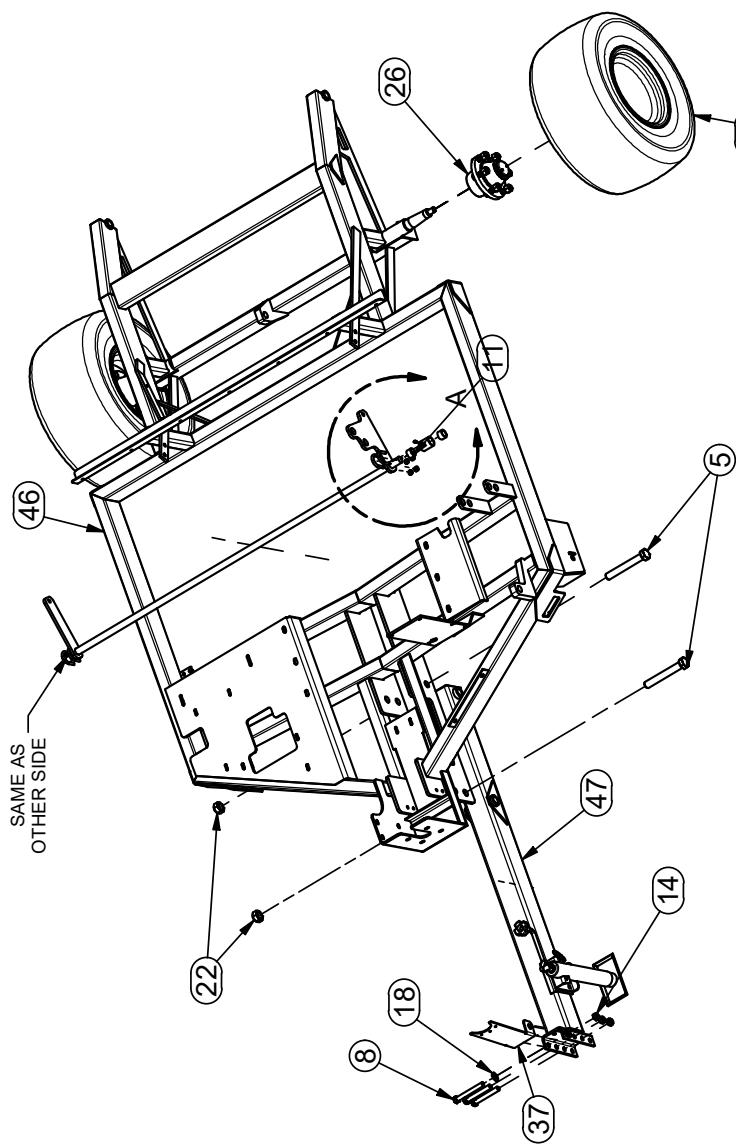
REV: G

Parts List				Parts List				Parts List				Parts List			
ITEM	Q'TY	PART #	DESCRIPTION	ITEM	Q'TY	PART #	DESCRIPTION	ITEM	Q'TY	PART #	DESCRIPTION	ITEM	Q'TY	PART #	DESCRIPTION
1	1	102015	HITCH PIN, 3/4 X 6 WIKEEPER NUT, 5/8-11 JAM	17	8	110662	WASHER, 1/2" FLAT SPECIAL 1.25od	33	2	970841	CHAIN, DECK LIFT, 3/8 X 8 LINKS				
2	6	110039	NUT, 3/4-10 NYLOCK	18	2	110663	WASHER, 5/8" FLAT SAE	34	2	970855	BUSHING, ADJUSTABLE SKID HANDLE, .375 X 4.25				
3	2	110320	U-BOLT, 5/16	19	2	110677	WASHER, 3/4" FLAT STANDARD	35	2	970857	SPACER, IDLER SPROCKET				
4	4	110362	BOLT, 1-8 X 7.0	20	4	110768	NUT, 7/16-14 LOCK 2-WAY	36	1	970862	BRKT, PTO SHAFT HOLDER				
5	2	110364	BOLT, 1/2-13 X 2.0	21	1	110895	Bolt, 5/8-11 X 3 in Carriage	37	1	970863	WELDMENT, HEIGHT ADJUSTMENT				
6	2	110379	BOLT, 3/4-10 X 6.0	22	2	111226	NUT, 1-8, UNITORQUE LOCK	38	2	975015	BROOM LIFT WELDMENT				
7	2	110383	BOLT, 3/4-10 X 6.0	23	2	112070	Bolt, 1/2-13 X 1.25 in Carriage	39	1	975098	WELDMENT, TV60 VERTICAL SKID MOUNT, ADJUSTABLE SKID				
8	1	110407	BOLT, 5/8-11 X 5.0	24	4	112104	ROLL PIN, 1/8 X 0.5625	40	2	975144	WELDMENT, TV60 HD RH ARM				
9	5	110437	BOLT, 3/8-16 X 0.75, WIZ FLANGE	25	2	140016	PIN, LOCK, 1/4 X 2-1/4, SQ WIRE	41	2	975145	WELDMENT, TV60HD LH ARM				
10	4	110527	BOLT, 7/16-14 X 4.0	26	2	413001	HUB COMPLETE, 35-6LM	42	1	975146	WELDMENT, TV60HD LH ARM				
11	8	110606	NUT, 5/16-18 WIZ FLANGE	27	4	510174	GREASE ZERK, 1/4-28 ST	43	1	975147	WELDMENT, TV60HD LH ARM				
12	2	110613	NUT, 3/4-16, CASTLE	28	2	510175	COTTER PIN, 3/16 X 2	44	2	975148	WELDMENT, ADJUSTABLE SCREW				
13	4	110615	NUT, 1/2-13, UNITORQUE LOCK	29	4	800128	BUSHING, IGUS, FOOT PEDAL	45	1	975194	Assy, Chain Shield w/Decal				
14	1	110639	NUT, 5/8-11, UNITORQUE LOCK	30	4	922006	BUSHING, 1.75 X 1 X .75	46	1	975435	FRAME WELDMENT, TV60R HD				
15	4	110650	WASHER, 5/8" FLAT STANDARD	31	2	943053	Tire & Wheel Assy, 26" Grassmaster	47	1	975436	WELDMENT, TV60R HD HITCH				
16	2	110654	Washer, 1.75 X .815 Spindle	32	2	970370	BROOM LIFT BUSHING								

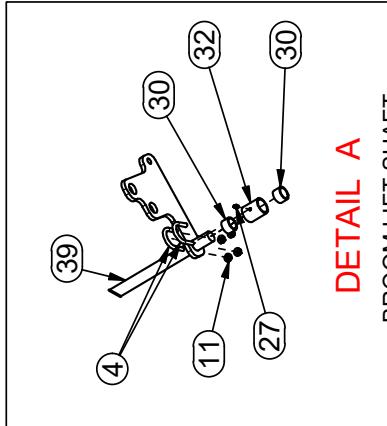


TV60RHD FRAME ASSEMBLY

FRAME ASSEMBLY



SEE WHEEL ASSY
FOR MORE DETAILS

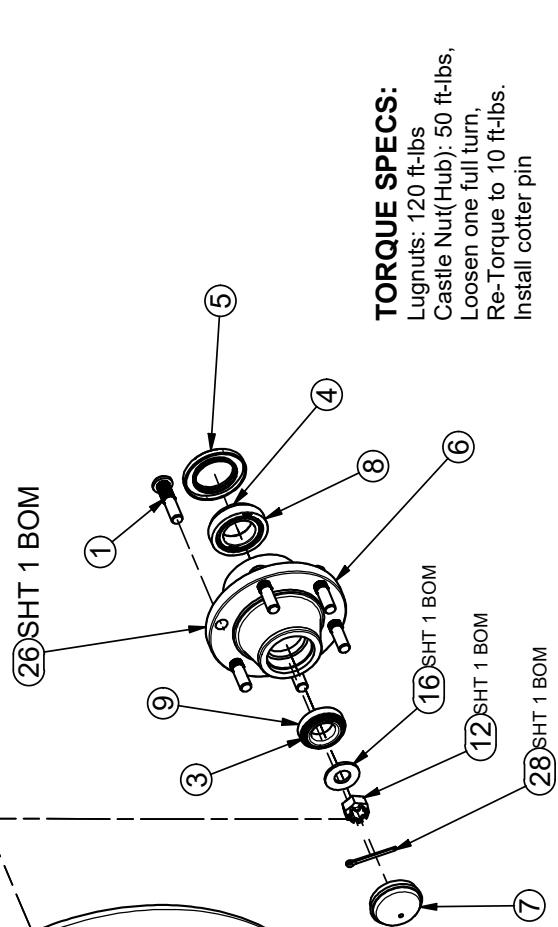


DETAIL A
BROOM LIFT SHAFT
ASSEMBLY VIEW

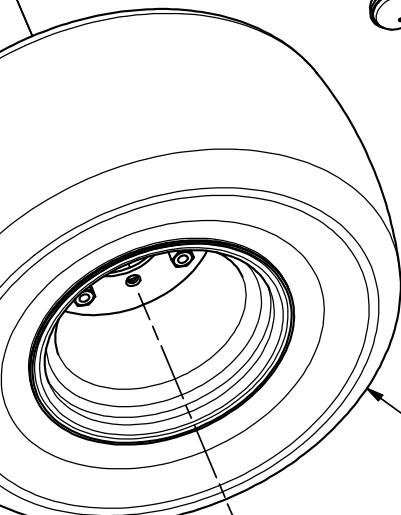
Parts List			
ITEM	QTY	PART #	DESCRIPTION
4	4	110362	U-BOLT, 5/16
5	2	110364	BOLT, 1-8 X 70
8	1	110407	BOLT, 5/8-11 X 5.0
11	8	110606	NUT, 5/16-18 WIZ FLANGE
14	1	110639	NUT, 5/8-11, UNITORQUE LOCK
18	2	110663	WASHER, 5/8" FLAT SAE
22	2	111226	NUT, 1-8, UNITORQUE LOCK
26	2	413001	HUB COMPLETE, 35-6LM
27	4	510174	GREASE ZERK, 1/4-28 ST
30	4	922006	BUSHING, 1.75 X 1 X .75
31	2	943053	Tire & Wheel Assy, 26" Grassmaster
32	2	970370	BROOM LIFT BUSHING
37	1	970863	BRKT, PTO SHAFT HOLDER
39	1	975098	BROOM LIFT WELDMENT
46	1	975435	FRAME WELDMENT, TV60R HD
47	1	975436	WELDMENT, TV60R HD HITCH

WHEEL ASSEMBLY

413001 HUB ASSEMBLY		
ITEM	QTY	PART #
1	6	113006
2	6	113007
3	1	410103
4	1	410104
5	1	410105
6	1	410111
7	1	410112
8	1	410114
9	1	410115



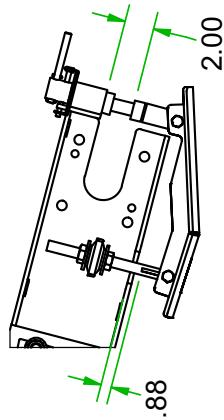
TORQUE LUGNUTS
TO 120 FT-LBS



943053 WHEEL ASSEMBLY	
QTY	PART #
1	342020
1	942072

DESCRIPTION
TIRE, 26x12x12/6
WHEEL, 12 X 10-1/2, 6 ON 6", White, w/ -2/0 Offset

RADIAL TIRE ASSEMBLY
OPTION AVAILABLE
ASSEMBLY: P/N 943013
WHEEL: P/N 410107
TIRE: P/N 942080

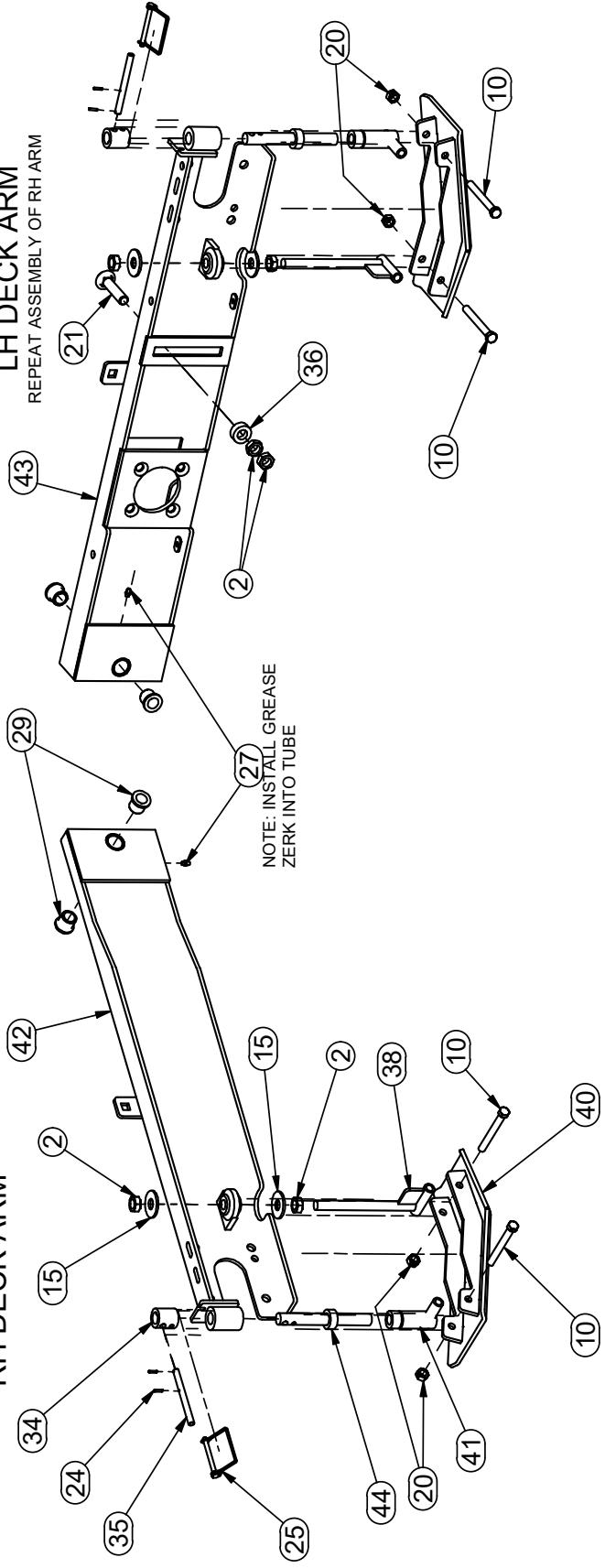


VIEW SHOWING SKID DEPTH SETTINGS

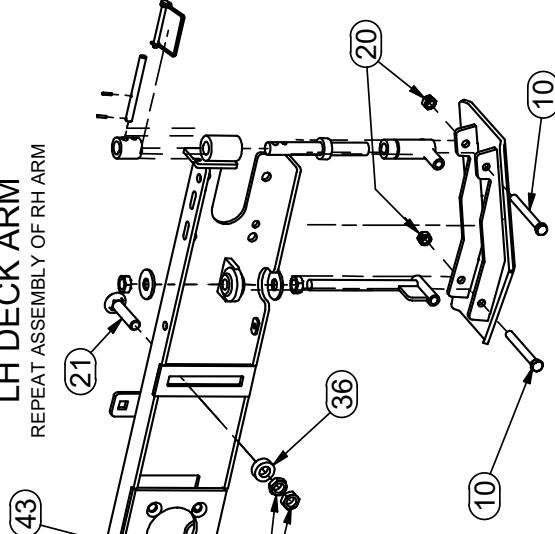
DECK ARM ASSEMBLIES

Parts List			
ITEM	QTY	PART #	DESCRIPTION
2	6	110039	NUT, 5/8-11 JAM
10	4	110527	BOLT, 7/16-14 X 4.0
15	4	110650	WASHER, 5/8" FLAT STANDARD
20	4	110768	NUT, 7/16-14 LOCK 2-WAY
21	1	110895	Bolt, 5/8-11 X 3 in Carriage
24	4	112104	ROLL PIN, 1/8 X 0.5625
25	2	140016	PIN, LOCK, 1/4 X 2-1/4, SQ WIRE
27	4	510174	GREASE ZERK, 1/4-28 ST
29	4	800128	BUSHING, IGUS, FOOT PEDAL
			WELDMENT, ADJUSTABLE SCREW

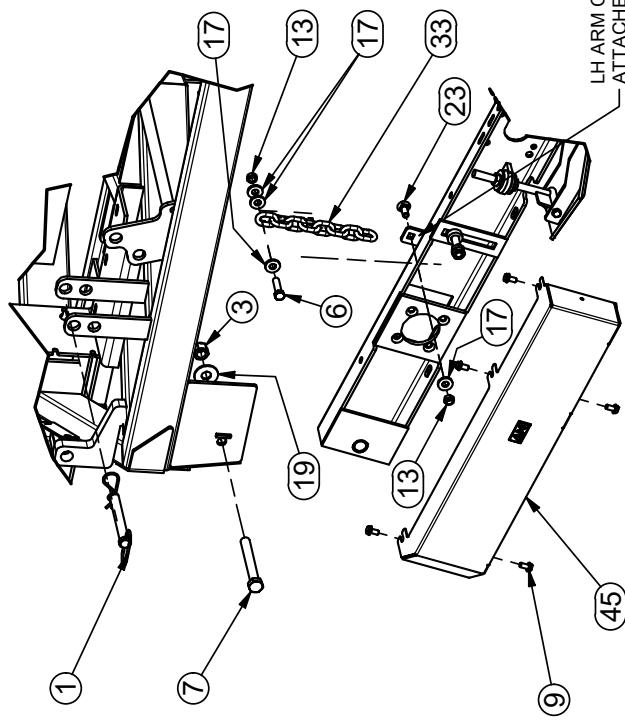
RH DECK ARM



LH DECK ARM REPEAT ASSEMBLY OF RH ARM



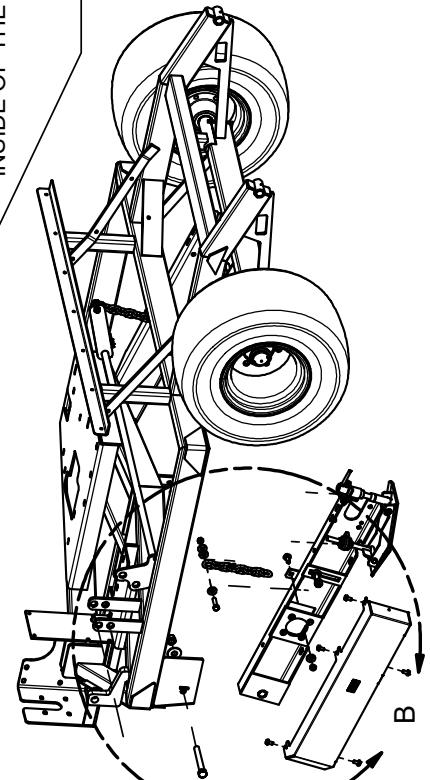
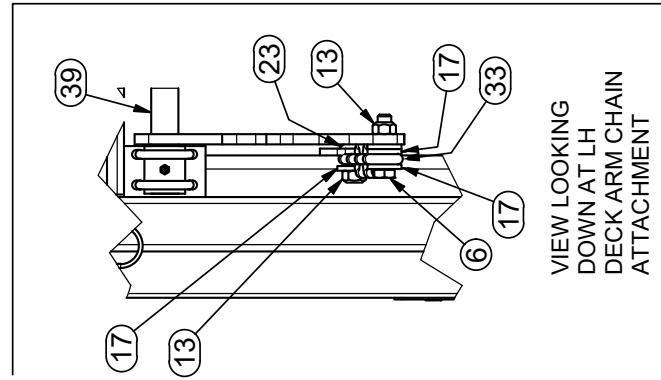
ATTACHING DECK ARMS



DETAIL B

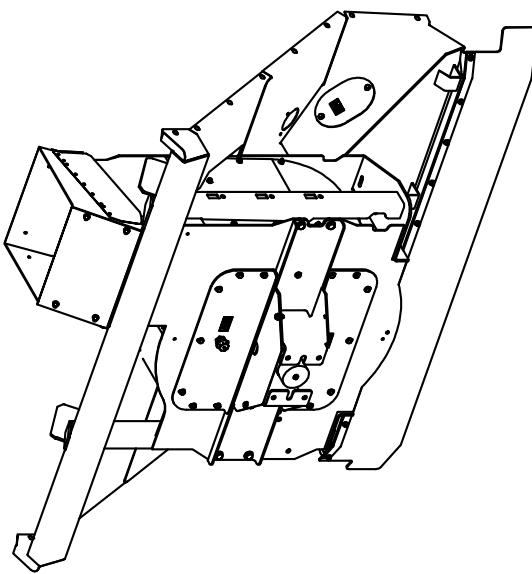
NOTE: ATTACH RIGHT ARM THE SAME WAY
-EXCEPT ATTACH THE CHAIN TO THE
INSIDE OF THE TAB FOR CLEARANCE

VIEW LOOKING
DOWN AT LH
DECK ARM CHAIN
ATTACHMENT



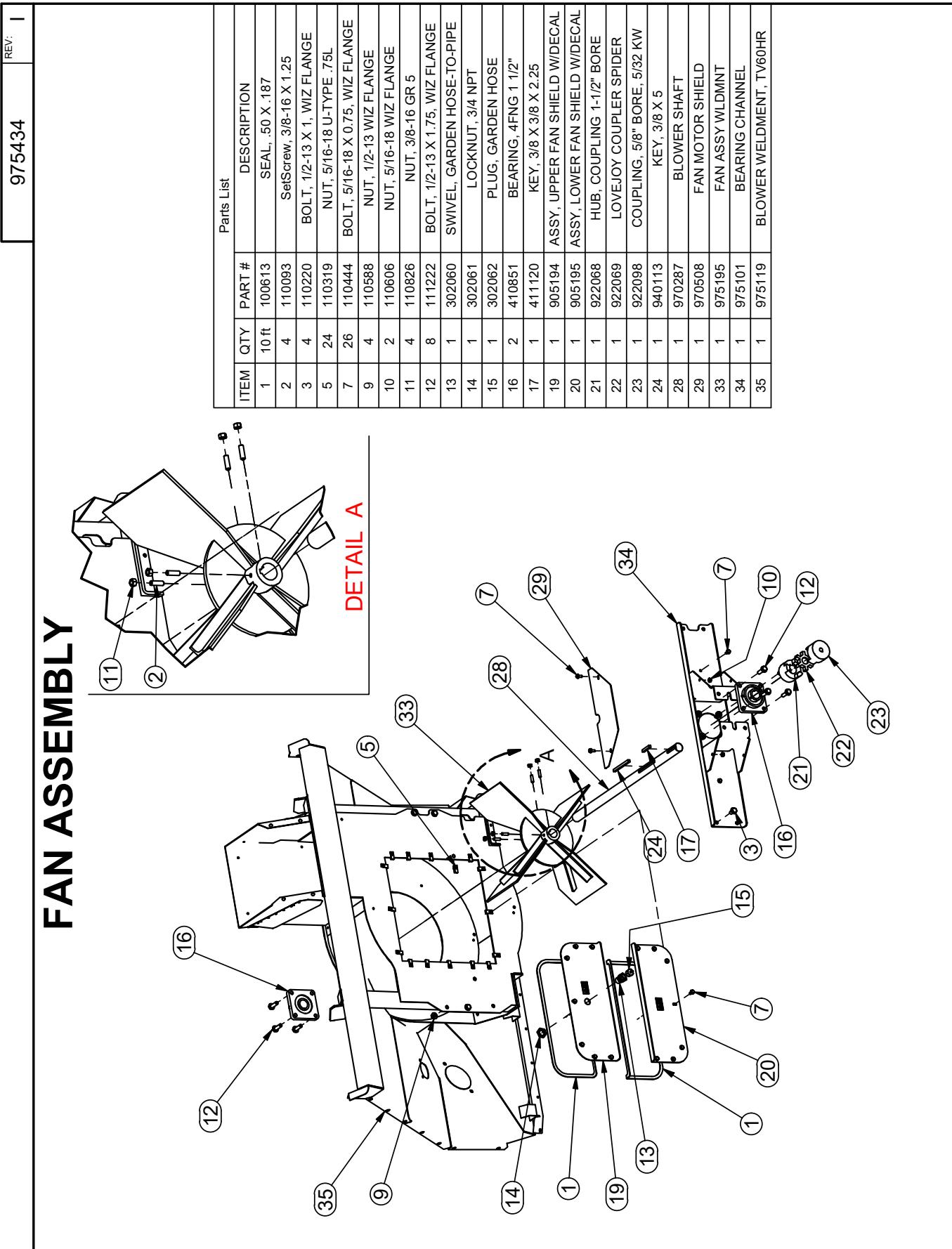
Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	1	102015	HITCH PIN, 3/4 X 6 WIKEKEEPER
3	2	110320	NUT, 3/4-10 NYLOCK
6	2	110379	BOLT, 1/2-13 X 2.0
7	2	110383	BOLT, 3/4-10 X 6.0
9	5	110437	BOLT, 3/8-16 X 0.75, WIZ FLANGE
13	4	110615	NUT, 1/2-13, UNITORQUE LOCK
17	8	110662	WASHER, 1/2" FLAT SPECIAL 1.25od
19	2	110677	WASHER, 3/4" FLAT STANDARD
23	2	112070	Bolt, 1/2-13 X 1.25 in Carriage
33	2	970841	CHAIN, DECK LIFT, 3/8 X 8 LINKS
45	1	975194	Assy., Chain Shield w/Decal

Parts List							Parts List						
ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION		
1	10 ft	100613	SEAL, .50 X 187	13	1	302060	SWIVEL, GARDEN HOSE-TO-PIPE	25	1	970086	CLAMP BAR		
2	4	110093	SetScrew, 3/8-16 X 1.25	14	1	302061	LOCKNUT, 3/4 NPT	26	2	970161	BLOWER LINER RETAINER		
3	4	110220	BOLT, 1/2-13 X 1. WIZ FLANGE	15	1	302062	PLUG, GARDEN HOSE	27	2	970162	BLOWER LINER RETAINER		
4	23	110290	NUT, 1/4-20 WIZ FLANGE	16	2	410851	BEARING, 4FNG 1 1/2"	28	1	970287	BLOWER SHAFT		
5	24	110319	NUT, 5/16-18 U-TYPE .75L	17	1	411120	KEY, 3/8 X 3/8 X 2.25	29	1	970508	FAN MOTOR SHIELD		
6	12	110326	Bolt, 1/4-20 X1 in Carriage	18	2	905122	Assembly, Nozzle Access Cover	30	1	970558	BLOWER PLATE		
7	26	110444	BOLT, 5/16-18 X 0.75, WIZ FLANGE	19	1	905194	ASSY, UPPER FAN SHIELD W/DECAL	31	1	972008	DEBRIS FLAP		
8	11	110464	BOLT, 1/4-20 X 1.0	20	1	905195	ASSY, LOWER FAN SHIELD W/DECAL	32	1	972010	BLOWER LINER, .250 UHMW		
9	4	110588	NUT, 1/2-13 WIZ FLANGE	21	1	922068	HUB, COUPLING 1-1/2" BORE	33	1	975001	FAN ASSY W/LDMNT		
10	2	110606	NUT, 5/16-18 WIZ FLANGE	22	1	922069	LOVEJOY COUPLER SPIDER	34	1	975101	BEARING CHANNEL		
11	4	110826	NUT, 3/8-16 GR 5	23	1	922098	COUPLING, 5/8" BORE, 5/32 KW	35	1	975119	BLOWER WELDMENT, TV60HR		
12	8	111222	BOLT, 1/2-13 X 1.75, WIZ FLANGE	24	1	940113	KEY, 3/8 X 5						

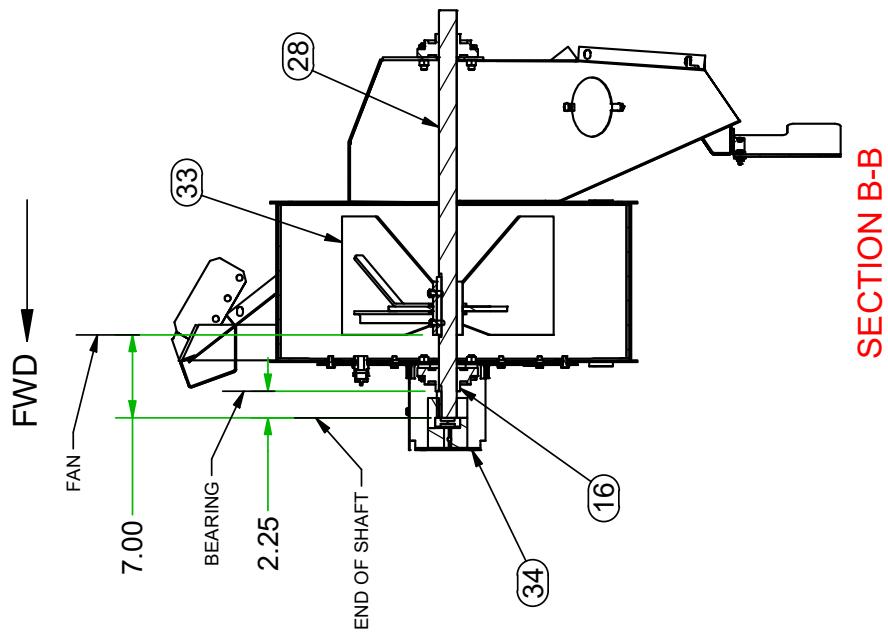


TV60RHD BLOWER HOUSING ASSEMBLY

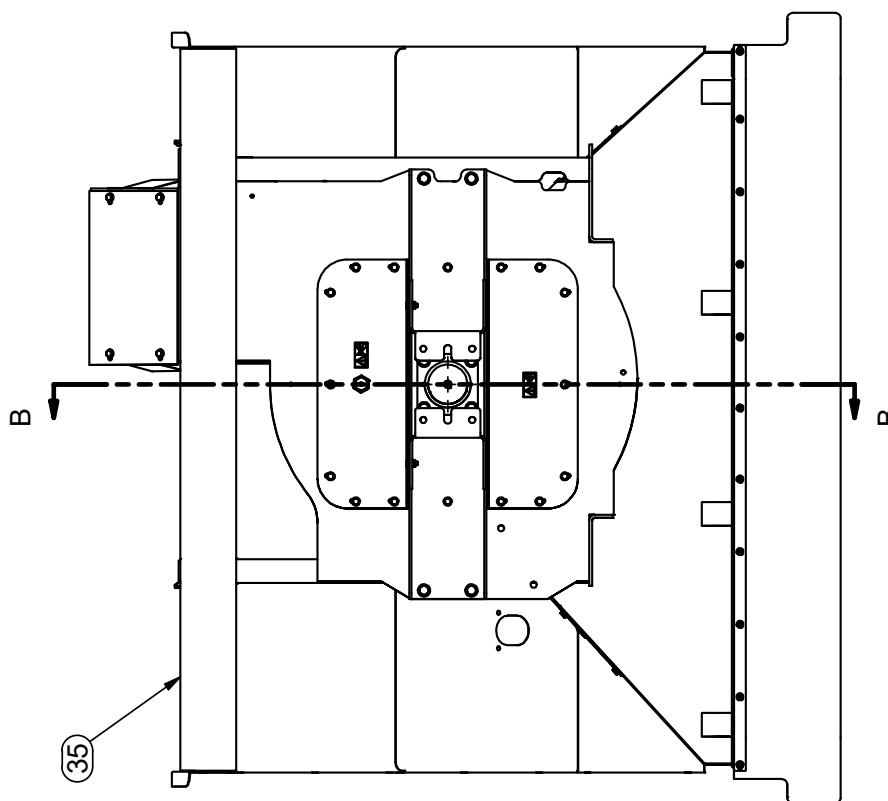
FAN ASSEMBLY



FAN SHAFT ASSEMBLY



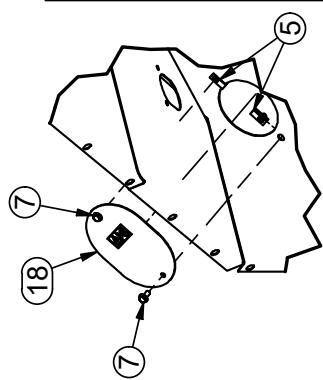
SECTION B-B



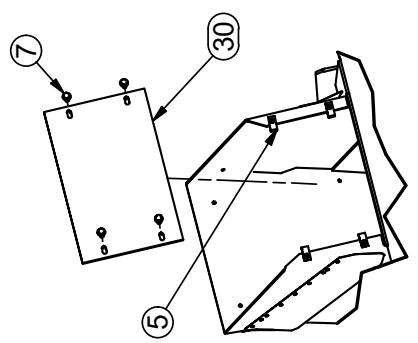
FRONT VIEW OF
BLOWER HOUSING

FAN HOUSING ASSEMBLY

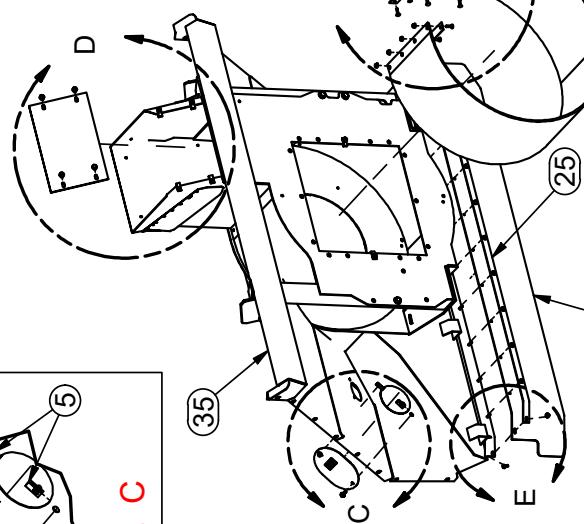
(Liner & Debris Flap)



DETAIL C

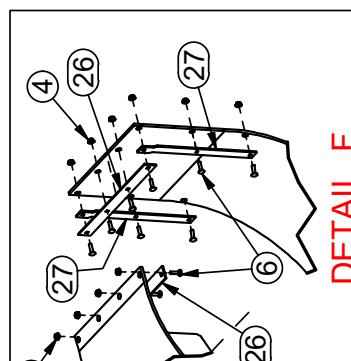


DETAIL D

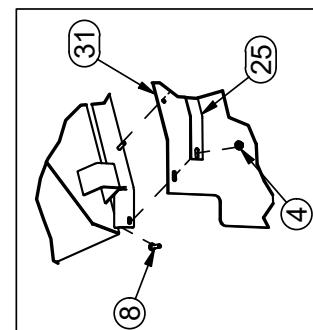


Parts List			
ITEM	QTY	PART #	DESCRIPTION
4	23	110290	NUT, 1/4-20 WIZ FLANGE
5	24	110319	NUT, 5/16-18 U-TYPE .75L
6	12	110326	Bolt, 1/4-20 X 1 in Carriage
7	26	110444	BOLT, 5/16-18 X 0.75, WIZ FLANGE
8	11	110464	BOLT, 1/4-20 X 1.0
18	2	905122	Assembly, Nozzle Access Cover
25	1	970086	CLAMP BAR
26	2	970161	BLOWER LINER RETAINER
27	2	970162	BLOWER LINER RETAINER
30	1	970558	BLOWER PLATE
31	1	972008	DEBRIS FLAP
32	1	972010	BLOWER LINER, 250 UHMW
35	1	975119	BLOWER WELDMENT, TV60HR

HEAVY DUTY
LINER AVAILABLE
P/N: 972021



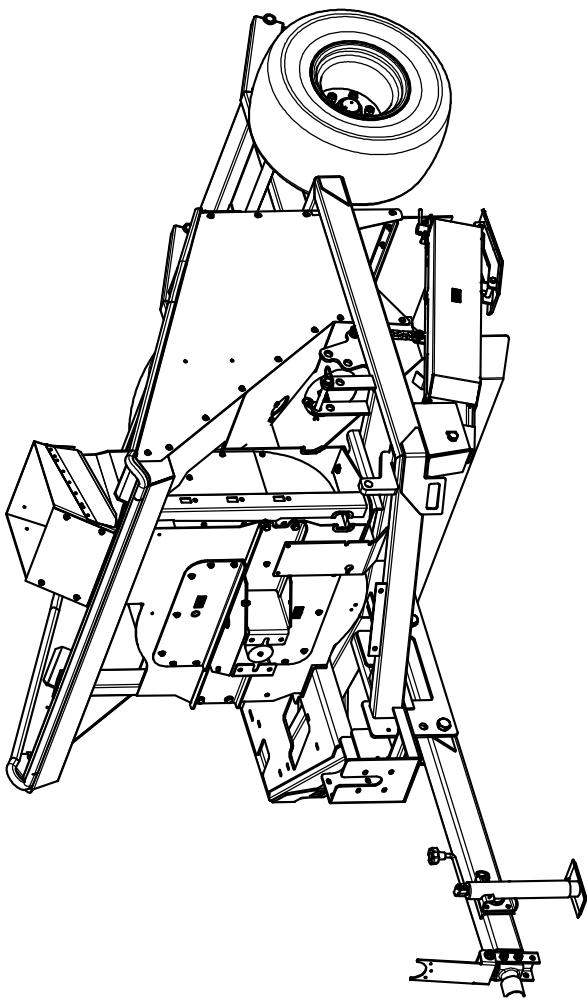
DETAIL E



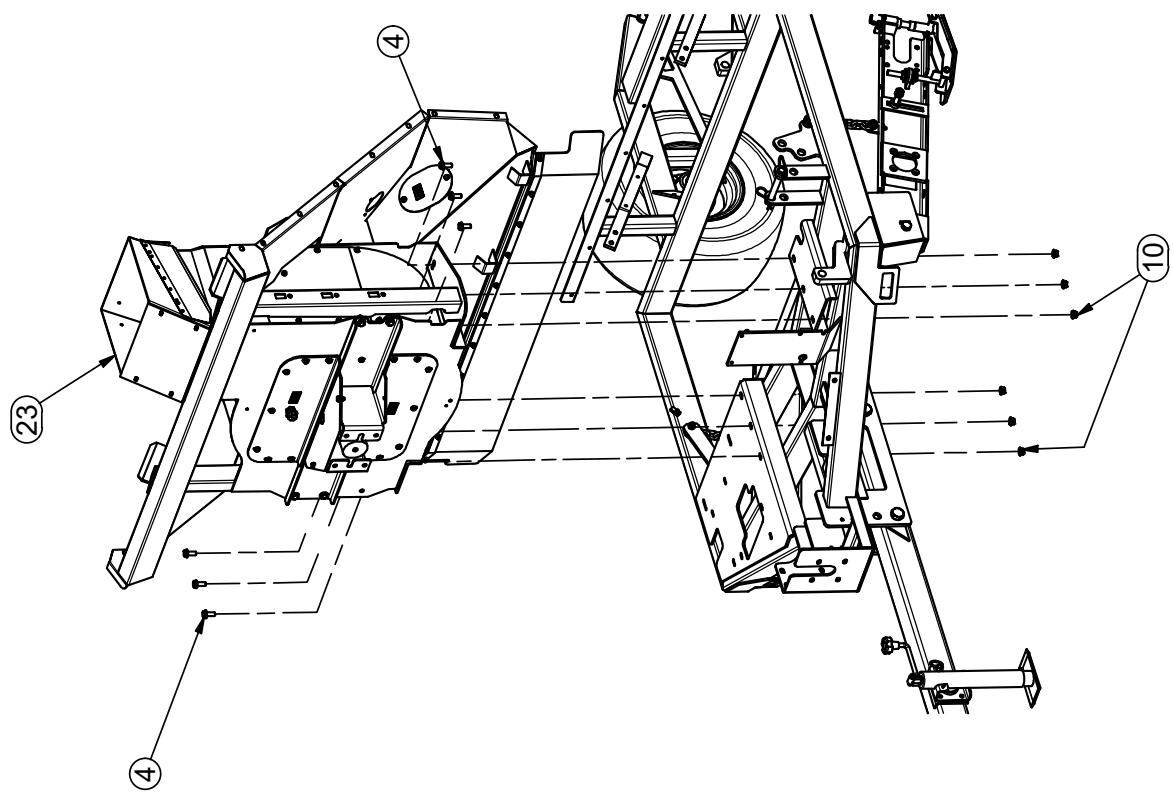
DETAIL F

TV60RHD BLOWER HOUSING INSTALLATION

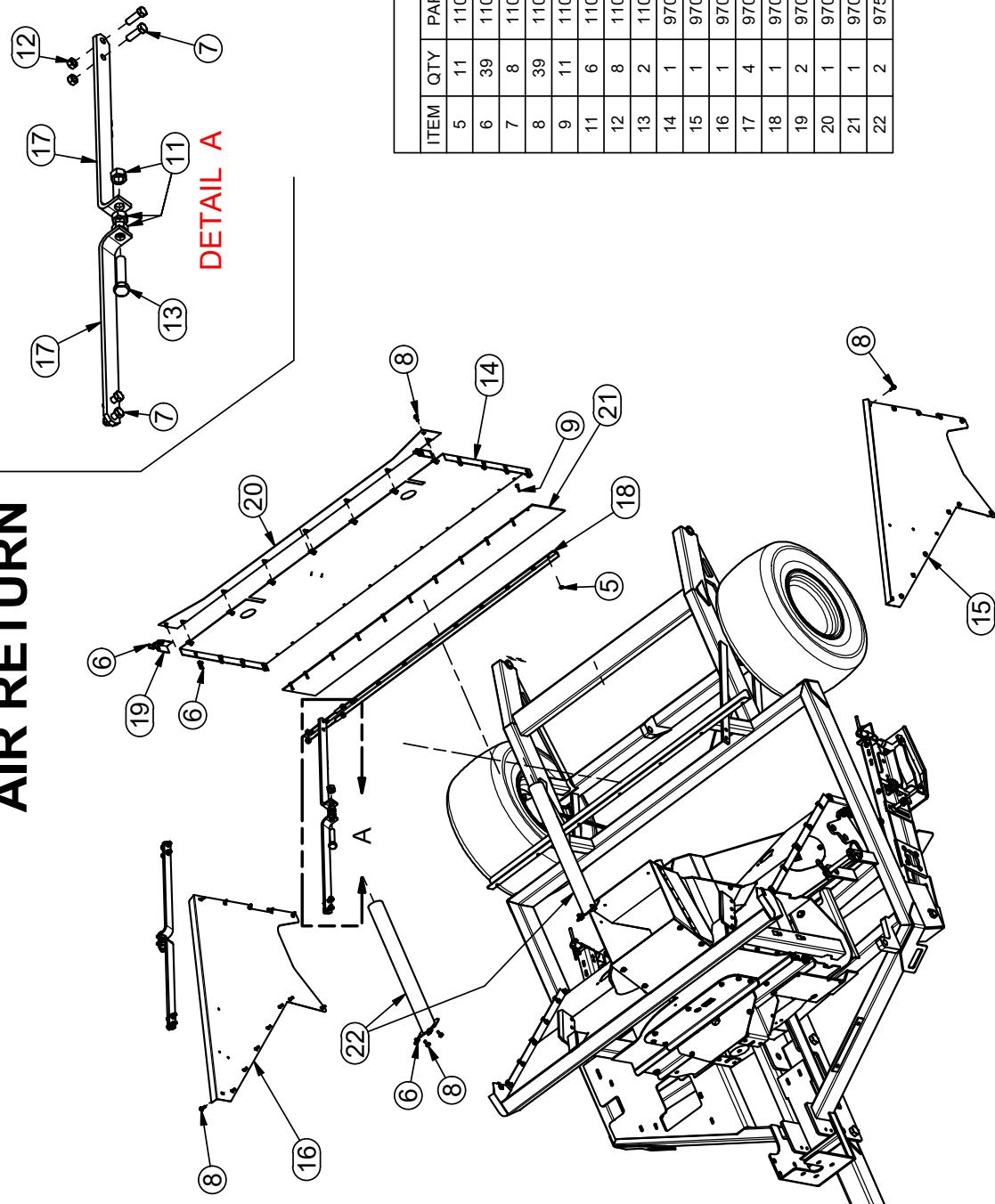
Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	6 ft	103360	MOULDING, EDGE, AIR INLET
2	30 in	103365	TRIM, EDGE, .085 TO .210 THICKNESS
3	15 ft	102004	D SEAL, 1.00 X 1.00
4	6	110001	BOLT, 1/2-13 X 1.25, WIZ FLANGE
5	11	110290	NUT, 1/4-20 WIZ FLANGE
6	39	110319	NUT, 5/16-18 U-TYPE .75L
7	8	110429	BOLT, 1/2-13 X 1.5
8	39	110444	BOLT, 5/16-18 X 0.75, WIZ FLANGE
9	11	110464	BOLT, 1/4-20 X 1.0
10	6	110588	NUT, 1/2-13 WIZ FLANGE
11	6	110596	NUT, 3/4-10
12	8	110615	NUT, 1/2-13, UNITORQUE LOCK
13	2	110713	BOLT, 3/4-10 X 3.5 TAP
14	1	970390	BACK AIR RETURN
15	1	970391	LEFT AIR RETURN
16	1	970392	RIGHT AIR RETURN
17	4	970393	TRUSS BAR
18	1	970394	FLAP RETAINER
19	2	970542	ANGLE, AIR RETURN
20	1	970545	REAR SEAL
21	1	970685	DEBRIS FLAP MAIN
22	2	975111	HOSE TUBE
23	1	975434	ASSEMBLY, TV60HD BLOWER HOUSING



FAN HOUSING INSTALLATION

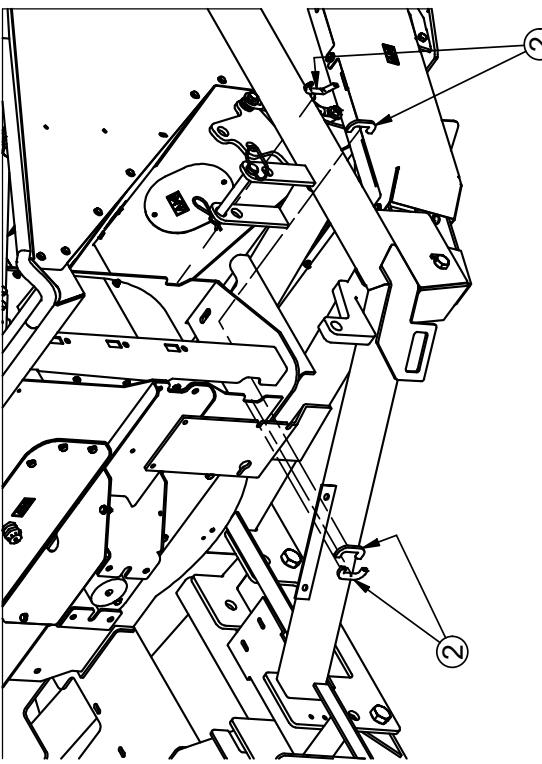


Parts List			
ITEM	QTY	PART #	DESCRIPTION
4	6	110001	BOLT, 1/2-13 X 1 1/2, WIZ FLANGE
10	6	110588	NUT, 1/2-13 WIZ FLANGE
23	1	975434	ASSEMBLY, TV60HD BLOWER HOUSING

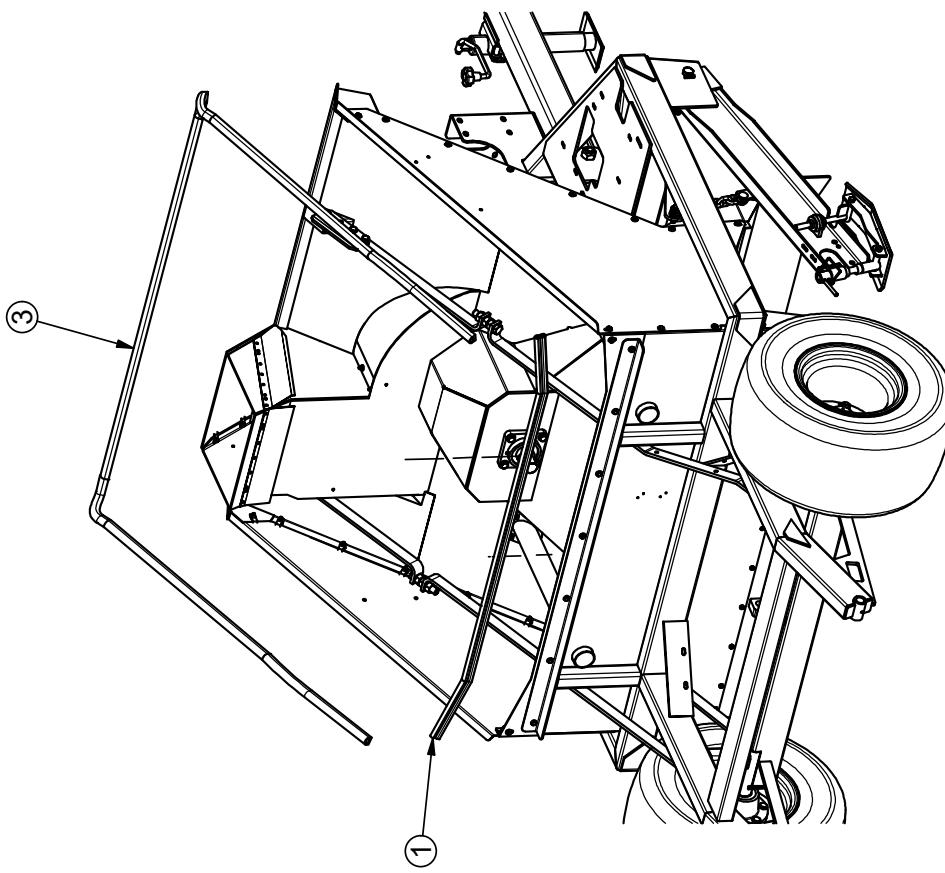
AIR RETURN

Parts List			
ITEM	QTY	PART #	DESCRIPTION
5	11	110290	NUT, 1/4-20 WIZ FLANGE
6	39	110319	NUT, 5/16-18 U-TYPE .75L
7	8	110429	BOLT, 1/2-13 X 1.5
8	39	110444	BOLT, 5/16-18 X 0.75, WIZ FLANGE
9	11	110464	BOLT, 1/4-20 X 1.0
11	6	110596	NUT, 3/4-10
12	8	110615	NUT, 1/2-13, UNITORQUE LOCK
13	2	110713	BOLT, 3/4-10 X 3.5 TAP
14	1	970390	BACK AIR RETURN
15	1	970391	LEFT AIR RETURN
16	1	970392	RIGHT AIR RETURN
17	4	970393	TRUSS BAR
18	1	970394	FLAP RETAINER
19	2	970542	ANGLE, AIR RETURN
20	1	970545	REAR SEAL
21	1	970685	DEBRIS FLAP MAIN
22	2	975111	HOSE TUBE

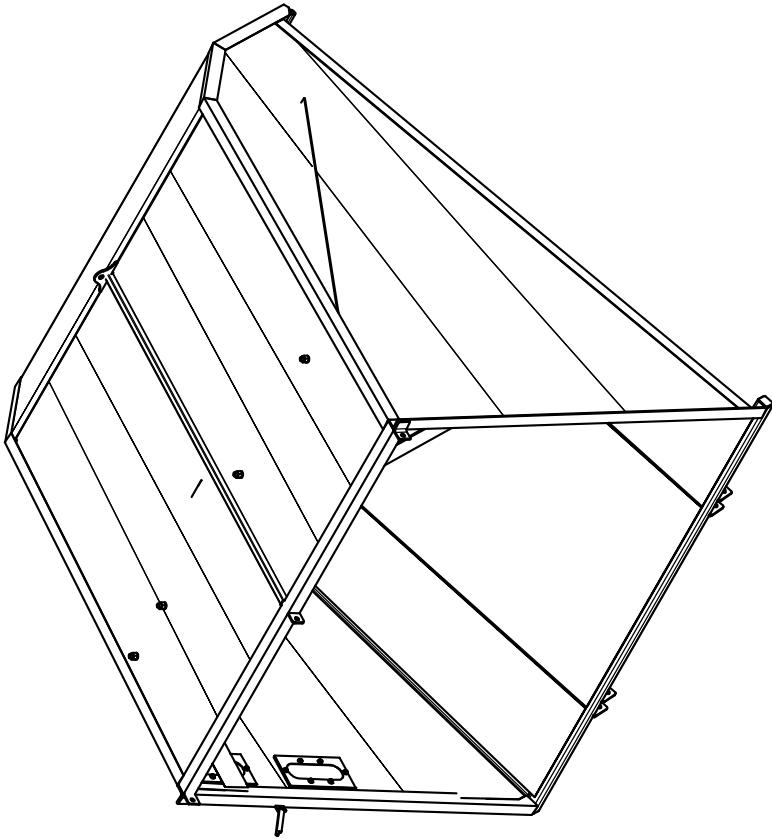
SEAL & TRIM INSTALLATION



Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	6 ft	100360	MOULDING, EDGE, AIR INLET
2	30 in	100365	TRIM, EDGE, .085 TO .210 THICKNESS
3	15 ft	102004	D SEAL, 1.00 X 1.00

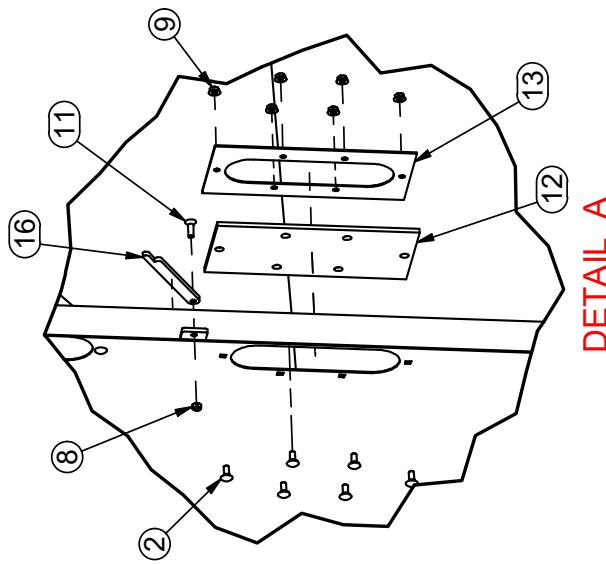


TV60RHD HOPPER ASSEMBLY



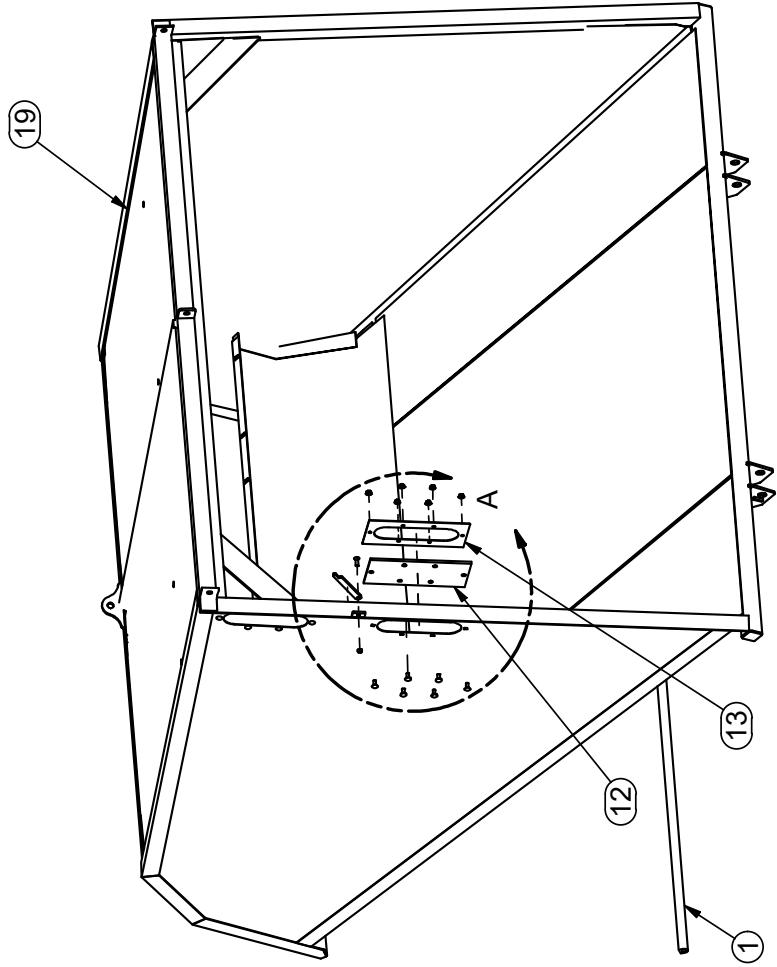
Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	6 ft	102004	SEAL, RUBBER, D 1' X 1'
2	12	110020	Bolt, 5/16-18 X 0.75 in Carriage
3	4	110038	WASHER, 1" FLAT STANDARD
4	10	110049	WASHER, 5/16" X 1 1/2 FENDER
5	4	110305	Pin, Lynch 7/16 x 1 3/4
6	10	110319	NUT, 5/16-18 U-TYPE .75L
7	10	110423	BOLT, 5/16-18 X 1.0
8	1	110600	NUT, 5/16-18, UNITORQUE LOCK
9	17	110606	NUT, 5/16-18 WIZ FLANGE
10	16	110673	WASHER, 1/4" FLAT STANDARD
11	1	110986	SCREW, 5/16-18 UNCX1 FH
12	2	311691	SIGHT GLASS, HOPPER
13	2	311692	Backing Plate, Sight Glass
14	16	710586	SCREW, 1/4 X 1 TEK SELF-TAP
15	4	942161	PIN, STABILIZER
16	1	970211	BAR, PROP
17	1	970366	MIDDLE SCREEN
18	2	970729	DEBRIS FLAP-RETURN SCREEN
19	1	975091	HOPPER WELDMENT
20	1	975099	LEFT RETURN SCREEN
21	1	975100	RIGHT RETURN SCREEN

SIGHT WINDOW INSTALLATION



DETAIL A

Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	6 ft	102004	SEAL, RUBBER, D 1' X 1'
2	12	110020	Bolt, 5/16-18 X 0.75 in Carriage
8	1	110600	NUT, 5/16-18, UNITORQUE LOCK
9	17	110606	NUT, 5/16-18 WIZ FLANGE
12	2	311691	SIGHT GLASS, HOPPER
13	2	311692	Backing Plate, Sight Glass
16	1	970211	BAR, PROP
19	1	975091	HOPPER WELDMENT
11	1	110986	SCREW, 5/16-18 UNCX1 FH

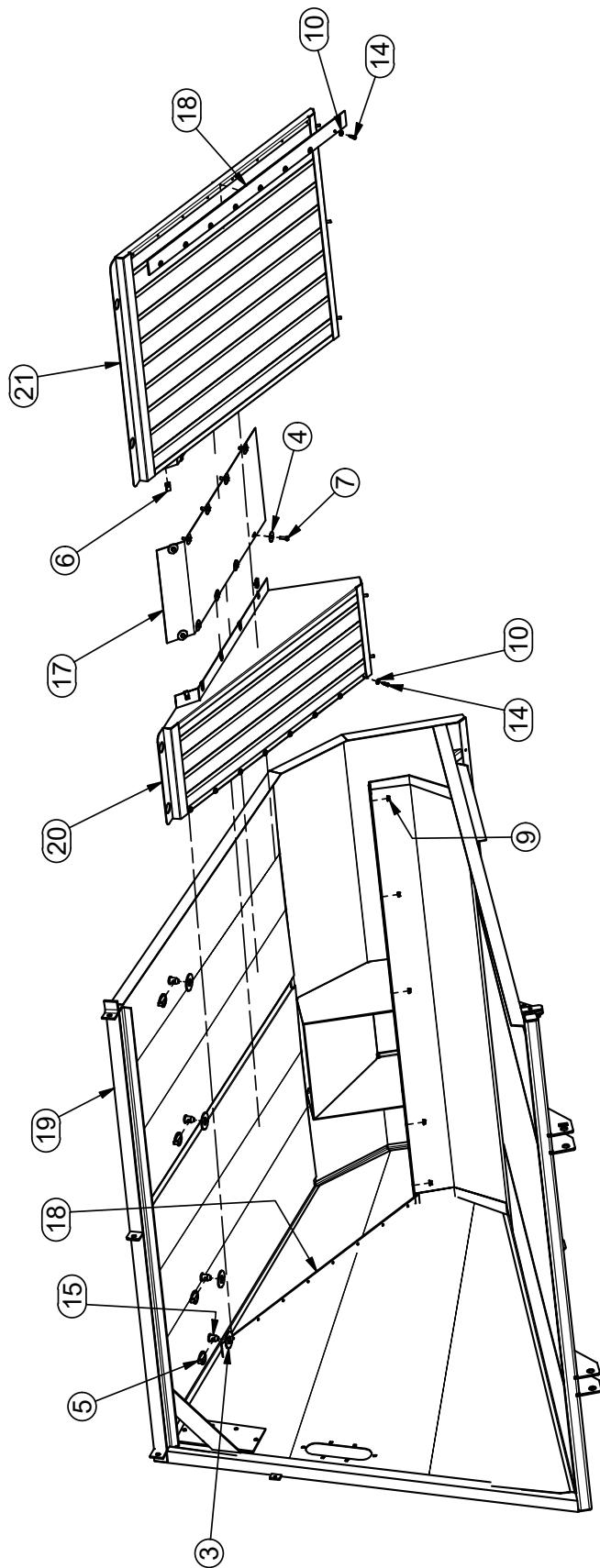


REV: A

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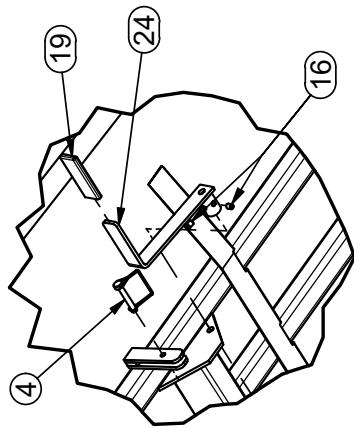
Parts List											
Parts List			Parts List			Parts List					
ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION
3	4	110038	WASHER, 1" FLAT STANDARD	9	17	110606	NUT, 5/16-18 W/W FLANGE	18	2	970729	DEBRIS FLAP-RETURN SCREEN
4	10	110049	WASHER, 5/16" X 1 1/2" FENDER	10	16	110673	WASHER, 1/4" FLAT STANDARD	19	1	975091	HOPPER WELDMENT
5	4	110305	Pin, Lynch 7/16 x 1 3/4	14	16	710586	SCREW, 1/4 X 1 TEK SELF-TAP	20	1	975099	LEFT RETURN SCREEN
6	10	110319	NUT, 5/16-18 U-TYPE .75L	15	4	942161	PIN, STABILIZER	21	1	975100	RIGHT RETURN SCREEN
7	10	110423	BOLT, 5/16-18 X 1.0	17	1	970366	MIDDLE SCREEN				

SCREEN INSTALLATION



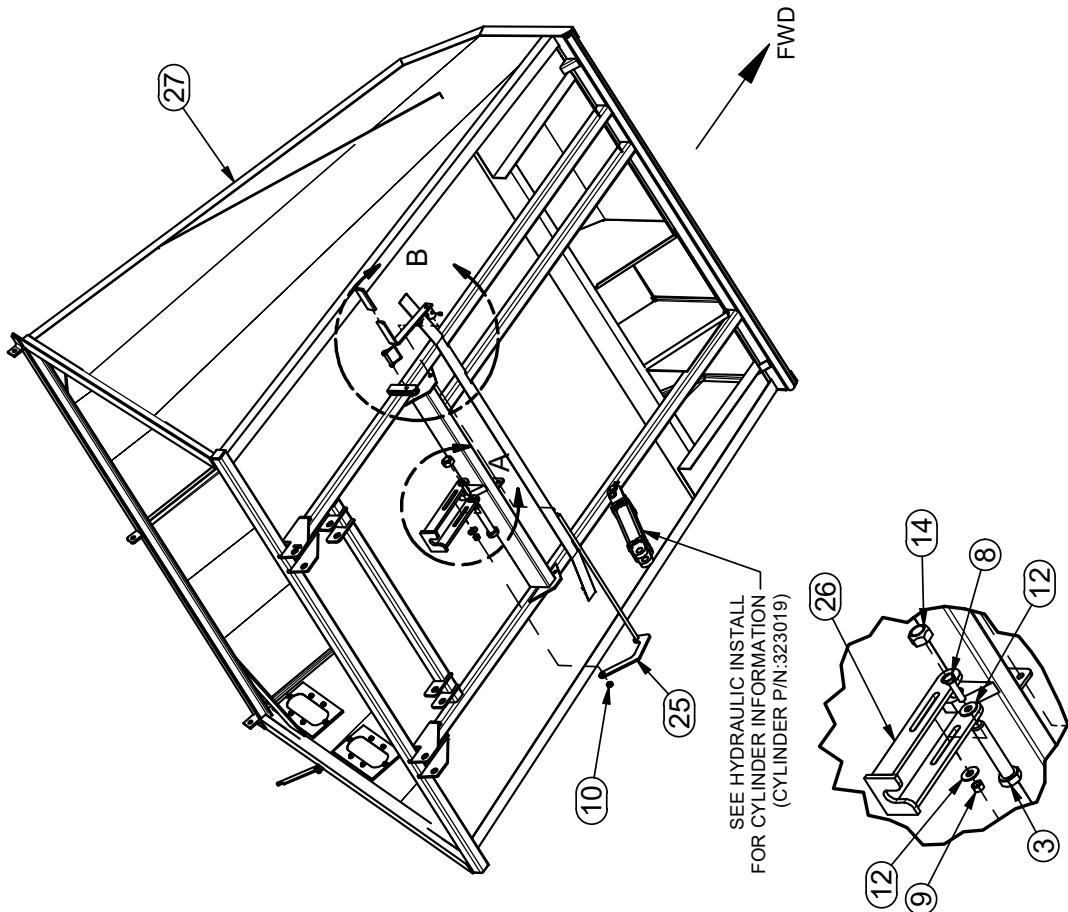
LIFT LOCK INSTALLATION

975433 REV: B



DETAIL B

Parts List			
ITEM	QTY	PART #	DESCRIPTION
3	1	110208	BOLT, 1-8 X 5.0
4	1	110304	PIN, LOCK 3/8 X 2.5 SQ
8	1	110379	BOLT, 1/2-13 X 2.0
9	1	110610	NUT, 1/2-13
10	1	110615	NUT, 1/2-13, UNITORQUE LOCK
12	2	110658	WASHER, 1/2" FLAT STANDARD
14	3	111226	NUT, 1-8, UNITORQUE LOCK
16	2	510161	SetScrew, 3/8-16 X 0.5
19	1	910044	COVER, VINYL .25 X 1.5 X 4 GRIP
24	1	975055	HANDLE WELDMNT, DUMP CYL LOCK
25	1	975056	SHAFT WELDMNT, DUMP CYL LOCK
26	1	975057	STOP WLDMNT, CYLINDER LOCK
27	1	975440	ASSEMBLY, TV60HD HOPPER

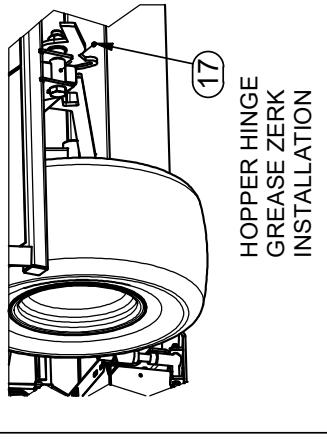


DETAIL A

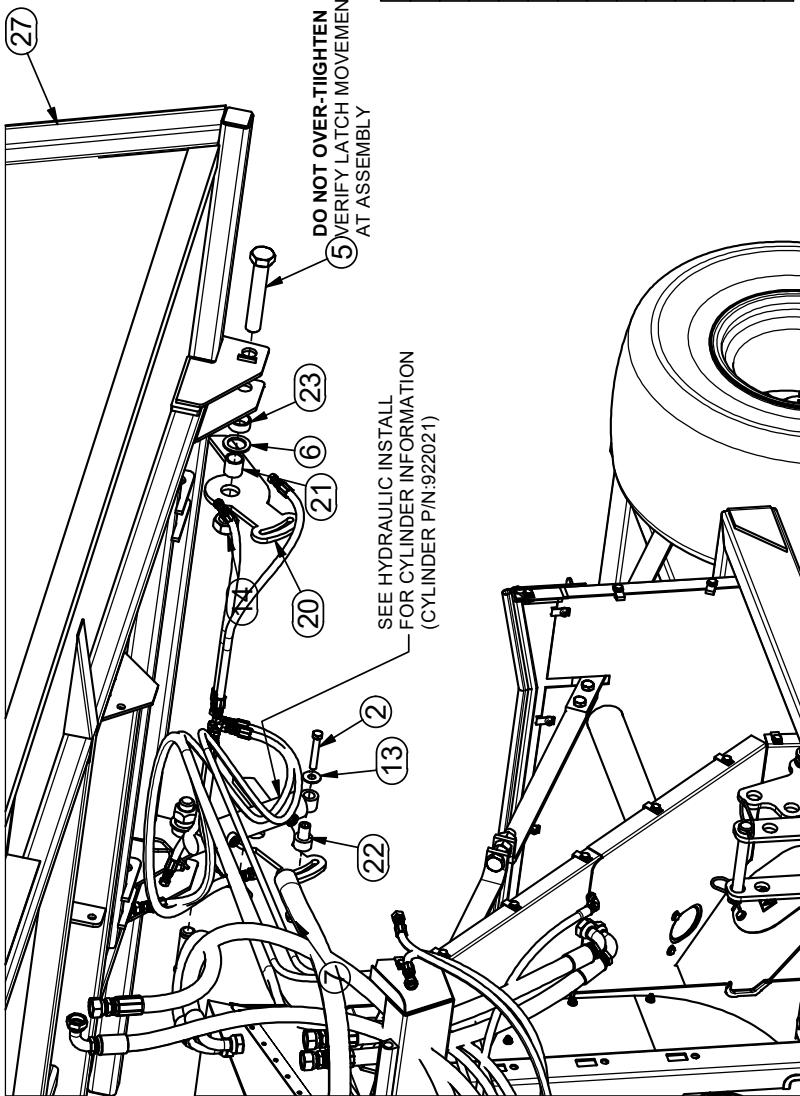
DOOR LATCH INSTALLATION

975433

B



HOPPER HINGE GREASE ZERK INSTALLATION



Parts List			
ITEM	QTY	PART #	DESCRIPTION
2	2	110179	BOLT, 7/16-14 X 2 1/2
5	2	110334	BOLT, 1-8 X 6 0
6	2	110336	WASHER, 1-1/4 FLAT MAC
7	2	110337	NUT, 7/16-14 WIZ FL
13	2	110670	WASHER, 7/16" FLAT ST
14	3	111226	NUT, 1-8, UNITORQUE
17	2	510174	GREASE ZERK, 1/4-20
20	2	970148	HOPPER DOOR LAL
21	2	970149	LATCH PIVOT BUSH
22	2	970150	LATCH SPACER
23	2	970151	LATCH PIVOT SPA
27	1	975440	ASSEMBLY, TV60HD H

**SEE HYDRAULIC INSTALL
- FOR CYLINDER INFORMATION
(CYLINDER P/N:922021)**

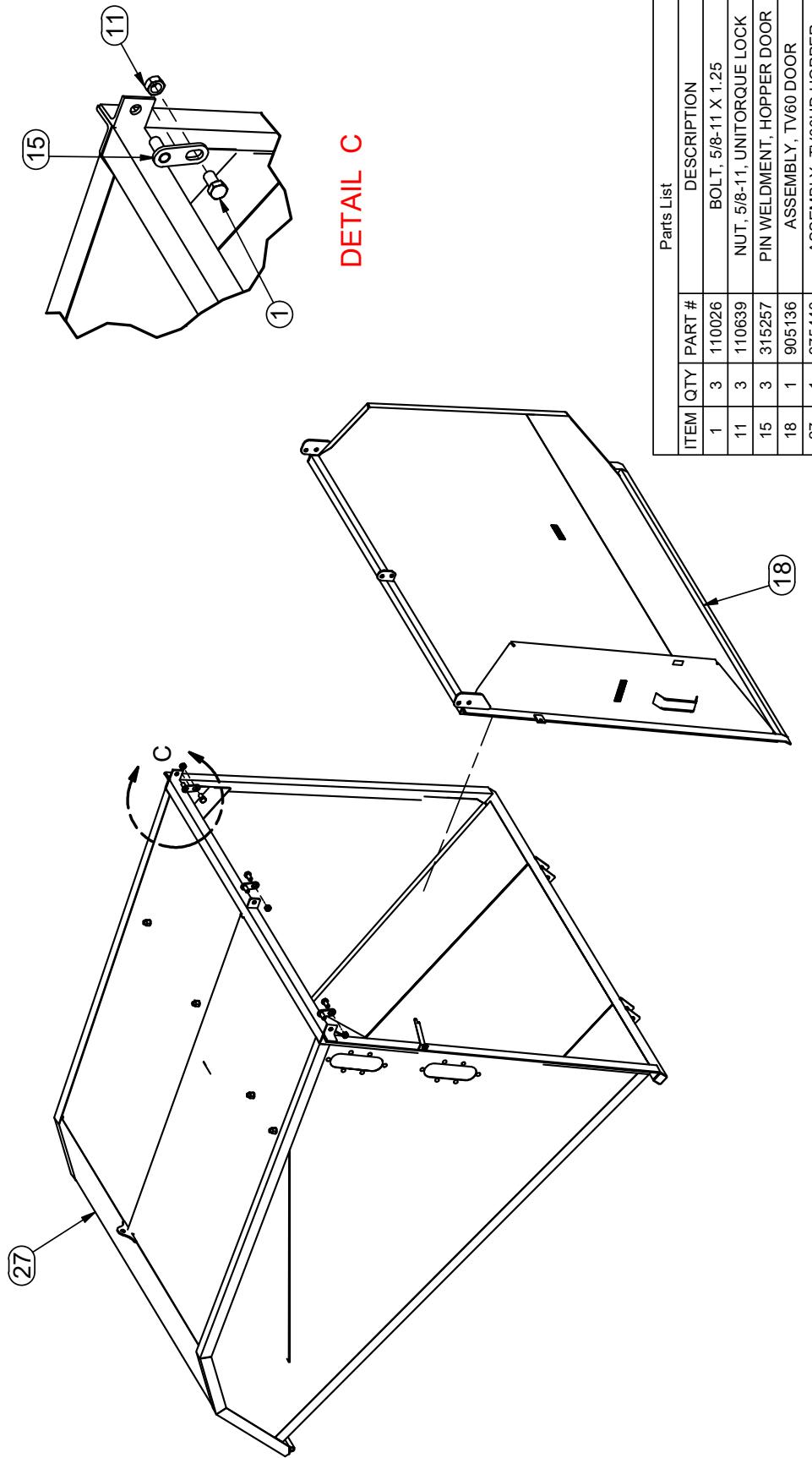
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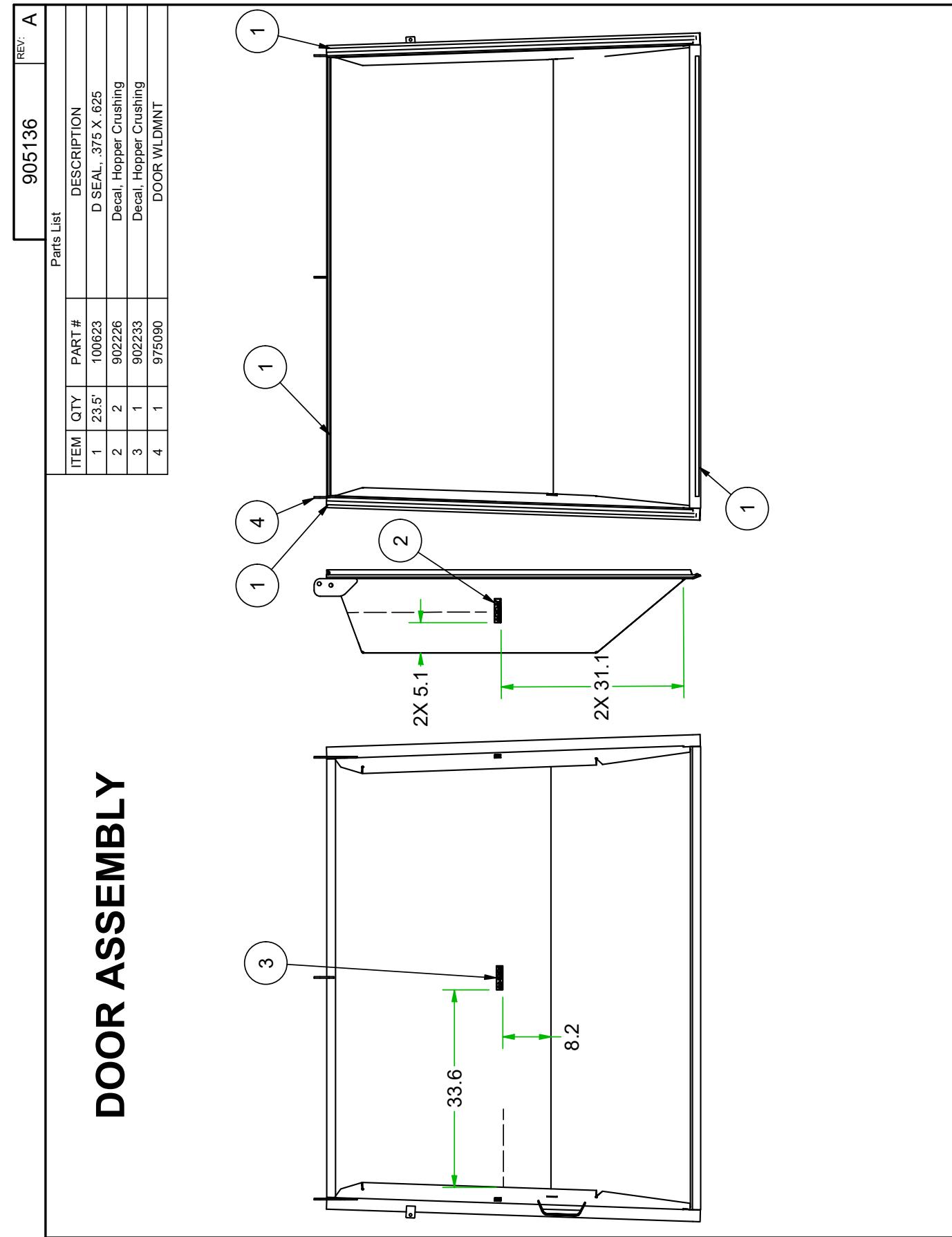
HARPER®
TURF EQUIPMENT

975433

REV: B

DOOR INSTALLATION





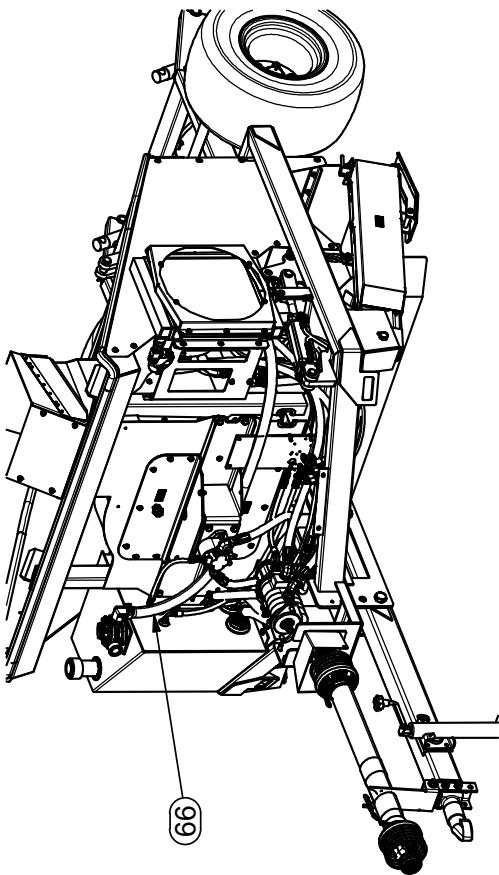
975432

REV: G

Parts List				Parts List				Parts List			
ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION
1	4	110001	BOLT, 1/2-13 X 1.25, WIZ FLANGE	26	1	120031	ADAPTER, 12MJ-12MB45	51	1	322028	COOLER - HYDRAULIC, TV30
2	2	110161	BOLT, 3/8-16 X 1.25, WIZ FLANGE	27	10	120143	ADAPTER, 12MJ-10MB	52	1	322073	FILL NECK ASSY
3	4	110290	NUT, 1/4-20 WIZ FLANGE	28	1	120144	ADAPTER, 6MJ-10MB	53	1	323019	CYLINDER - 2 X 8, SAE-6
4	3	110319	NUT, 5/16-18 U-TYPE .75L	29	2	120189	ADAPTER, 20BH-20MB 45°	54	1	335001	SWITCH ASSY, 140°F TEMP, NC RISING
5	3	110437	BOLT, 3/8-16 X 0.75, WIZ FLANGE	30	1	120220	ADAPTER, 6MJ-6MB90	55	2	522104	DOUBLE HOSE CLAMP
6	4	110440	BOLT, 3/8-16 X 1, WIZ FLANGE	31	3	120222	ADAPTER, 6MJ-6MB90	56	2	522105	DOUBLE COVERPLATE
7	18	110444	BOLT, 5/16-18 X 0.75, WIZ FLANGE	32	3	120233	ADAPTER, 4MJ-4MB	57	2	722076	Seal, Buna Rubber, Pressurized Fill
8	4	110468	BOLT, 1/4-20 X 0.75, WIZ FLANGE	33	2	120235	ADAPTER, 4MJ-4MB90	58	1	723014	FILTER ASSY
9	2	110474	BOLT, 1/4-20 X 1-1/2	34	2	120241	ADAPTER, 4MJ-4MJ-4MJ	59	2	922021	HYDRAULIC CYLINDER
10	4	110529	BOLT, 5/16-18 X 4.5	35	2	120249	ADAPTER, 4MJ-6MB	60	1	923004	MOTOR, 1.76 CI, FAN DRIVE
11	2	110539	BOLT, 7/16-14 X 1.25	36	1	120254	ADAPTER, 12MJ-12MB	61	1	923011	Cylinder, 2 X 6, -6 SAE Cross
12	4	110588	NUT, 1/2-13 WIZ FLANGE	37	1	120256	ADAPTER, 12MJ-16MB	62	1	923014	MOTOR, 4.9 CID
13	18	110606	NUT, 5/16-18 WIZ FLANGE	38	2	120257	ADAPTER, 12MJ-12MB90	63	1	923015	MANIFOLD, TV60R HD CYLINDER
14	4	110610	NUT, 1/2-13	39	1	120267	ADAPTER, 12MJ-12FJX90	64	1	923016	Pump, Triple Section Gear (1.55, 1.55, & 24 cu in)
15	4	110645	NUT, 3/8-16 WIZ FLANGE	40	1	120268	ADAPTER, 12MJ-12FJX-12MJ	65	2	923017	VALVE, TV60HD CONTROL
16	4	110666	WASHER, 1/2" LOCK	41	9	120319	ADAPTER, 6MJ-6MB	66	1	923011	HOSE KIT, TV60R HD
17	2	110667	WASHER, 1/4" LOCK	42	1	120372	PLUG, O-RING -8, EXTERNAL HEX				
18	2	110671	WASHER, 7/16" LOCK	43	2	120545	ADAPTER, 12BH-12MB 45°	67	1	932072	FAN - 16", 12V, 12A, HYDRAULIC COOLER
19	4	111045	Bolt, 1/2-13 x 1.75 FHCS	44	2	120546	ADAPTER, 20BH-16MB90	68	1	942272	Gearbox, MT Bima 1-4
20	4	111223	Bolt, M12-1.75 x 35, Wiz Flange, .88	45	1	120551	ADAPTER, 6MJ-6MB90 R.062	69	1	943060	PTO ASSY, TV60HD CE MARK
21	4	111224	Bolt, M12-1.75 x 25, Wiz Flange, 10.9	46	2	120677	ADAPTER, 20BH-16MB45	70	1	970291	ADAPTER PLATE
22	2	111225	Bolt, M14-2.0 x 35, Wiz Flange, .88	47	1	311493	SHROUD - COOLER FAN	71	1	970839	SUPPORT, REAR COOLER MOUNT
23	6	112007	CLAMP, 1.75", T-BOLT	48	2	312025	MAGNET, 2" x 2" x 1" RECT 15LB	72	1	970840	SUPPORT, FRONT COOLER MOUNT
24	2	112008	CLAMP, 1.25", T-BOLT	49	2	322012	STRAINER, SUCTION, SAE-32/-20, 25 GPM	73	1	970860	SUPPORT, TV60 GEARBOX
25	6	112053	SCREW, 10-32 X 1/2 MACH SEAL	50	1	322025	DIP STICK - TV30, HYDRAULIC TANK	74	1	970864	SHIELD, PTO
								75	1	975437	TANK WELDMENT, TV60R HD HYD

TV60RHD HYDRAULIC INSTALLATION

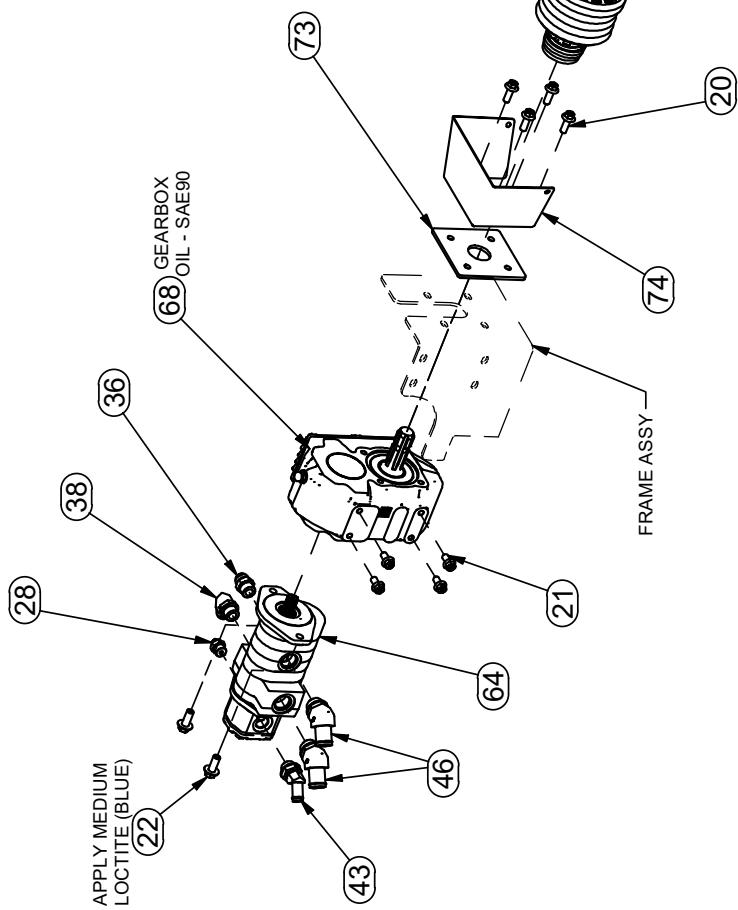
TV60RHD HYDRAULIC INSTALLATION



925011 HOSE KIT PARTS LIST		
QTY	PART #	DESCRIPTION
1	920016	HOSE ASSY, DECK VALVE TO COOLER
2	920019	HOSE, FAN/DECK SUCTION
1	920023	HOSE ASSY, FAN VALVE RETURN
1	920024	HOSE ASSY, FAN MTR CD
1	920026	HOSE ASSY, DECK MTR RET
1	920027	HOSE ASSY, DECK MTR CD
1	920028	HOSE, COOLER RETURN
1	920029	HOSE ASSY, CYL MANIFOLD PRESS
1	920030	HOSE ASSY, CYL MANIFOLD RETURN
1	920031	HOSE ASSY, DECK MTR PRESS
1	920032	HOSE, IMPLEMENT SUCTION
2	922038	HOSE ASSY, HOPPER LIFT
4	922052	HOSE ASSY, DOOR LATCH
2	922133	Hose Assy, Deck Lift
2	922136	Hose Assy, Door Latch
1	922138	HOSE ASSY, FAN VALVE PRESSURE
1	922139	HOSE ASSY, FAN MTR PRESSURE
1	922140	HOSE ASSY, FAN MTR RETURN
1	922141	HOSE ASSY, DECK VALVE PRESS

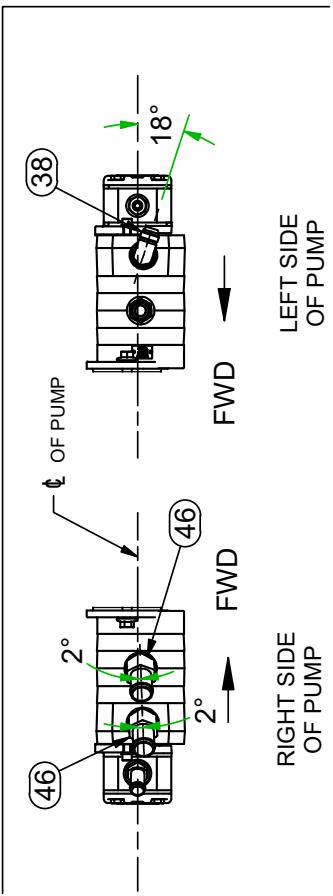
975432				REV: G
Parts List				
ITEM	QTY	PART #	DESCRIPTION	
20	4	111223	Bolt, M12-1.75 x 35, Wiz Flange, 8.8	
21	4	111224	Bolt, M12-1.75 x 25, Wiz Flange, 10.9	
22	2	111225	Bolt, M14-2.0 x 35, Wiz Flange, 8.8	
28	1	120144	ADAPTER, 6MU-10MB	
36	1	120254	ADAPTER, 12MJ-12MB	
38	2	120257	ADAPTER, 12MJ-12MB90	
43	2	120545	ADAPTER, 12BH-12MB 45°	
46	2	120677	ADAPTER, 20BH-16MB45	
64	1	923016	Pump, Triple Section Gear (1.55, &.24 cu in)	
68	1	942272	Gearbox, M7 Bima 1:4	
69	1	943060	PTO ASSY, TV60HD CE MARK	
73	1	970860	SUPPORT, TV60 GEARBOX	
74	1	970864	SHIELD, PTO	

PTO DRIVE & PUMP ASSEMBLY



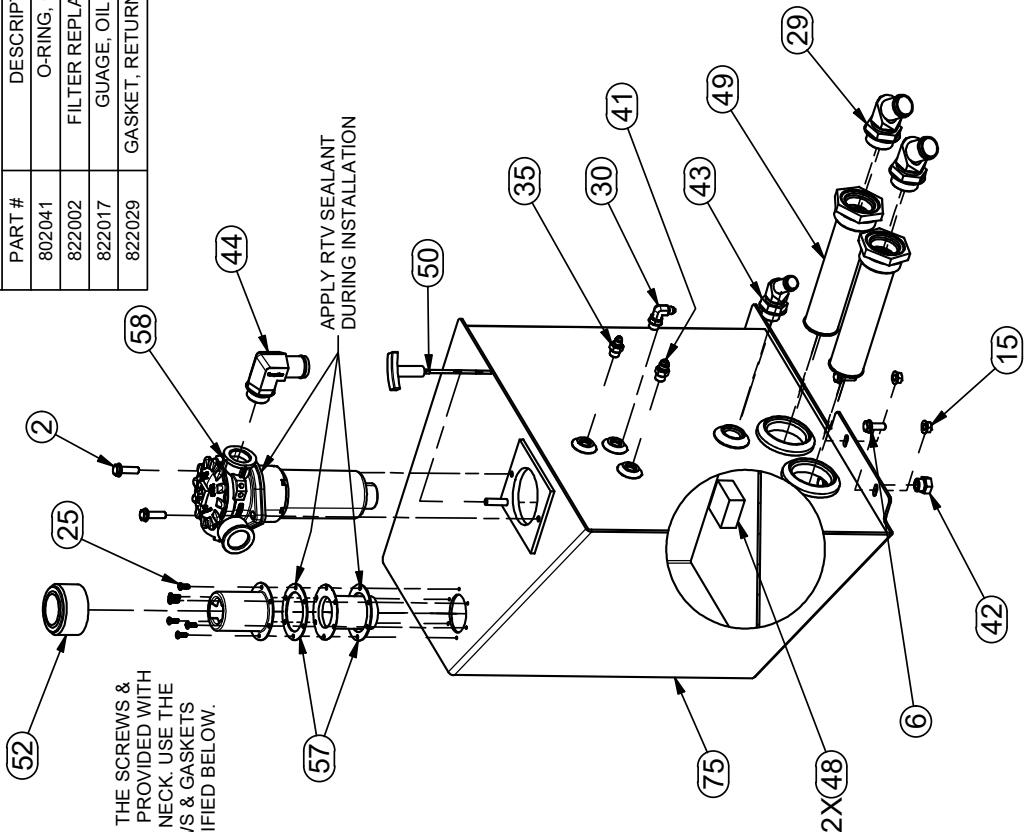
943060 - SERVICE PARTS		
QTY	PART #	DESCRIPTION
2	942294	ASSEMBLY, YOKE
2	942295	KIT, CROSS & BEARING
1	942296	YOKE, INBOARD S4
1	942297	YOKE, INBOARD S5

(SERVICE NOTE: PTO ASSY 945007
USED ON S/N 19A14 & BELOW)

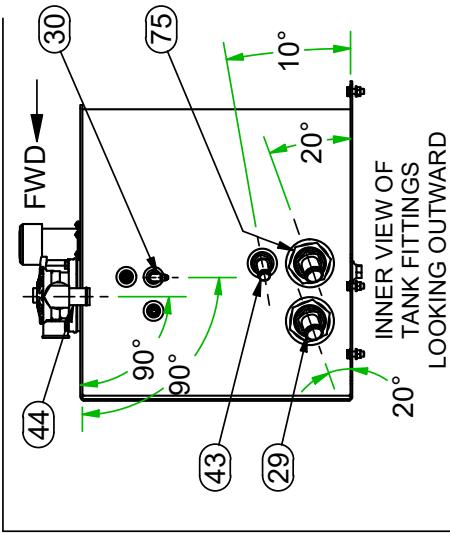


HYDRAULIC RESERVOIR

DISCARD THE SCREWS & GASKETS PROVIDED WITH THE FILL NECK. USE THE SCREWS & GASKETS IDENTIFIED BELOW.



Parts List		PART #	DESCRIPTION
ITEM	QTY		
2	2	110161	BOLT, 3/8-16 X 1.25, WIZ FLANGE
6	4	110440	BOLT, 3/8-16 X 1, WIZ FLANGE
15	4	110645	NUT, 3/8-16 WIZ FLANGE
25	6	112053	SCREW, 10-32 X 1/2 MACH SEAL
29	2	120189	ADAPTER, 20BH-20MB 45°
30	1	120220	ADAPTER, 4MJ-6MBSQ
35	2	120249	ADAPTER, 4MJ-6MB
41	9	120319	ADAPTER, 6MJ-6MB
42	1	120372	PLUG, O-RING -8, EXTERNAL HEX
43	2	120545	ADAPTER, 12BH-12MB 45°
44	2	120546	ADAPTER, 20BH-16MB90
48	2	312025	MAGNET, 2"X2"X1" RECT 15LB
49	2	322012	STRAINER, SUCTION, SAE-32/20.25 GPM
50	1	322025	DIP STICK - TV30, HYDRAULIC TANK
52	1	322073	FILL NECK ASSY
57	2	722076	Seal, Buna Rubber, Pressurized Fill
58	1	723014	FILTER ASSY
75	1	975437	TANK WELDMENT, TV60R HD HYD



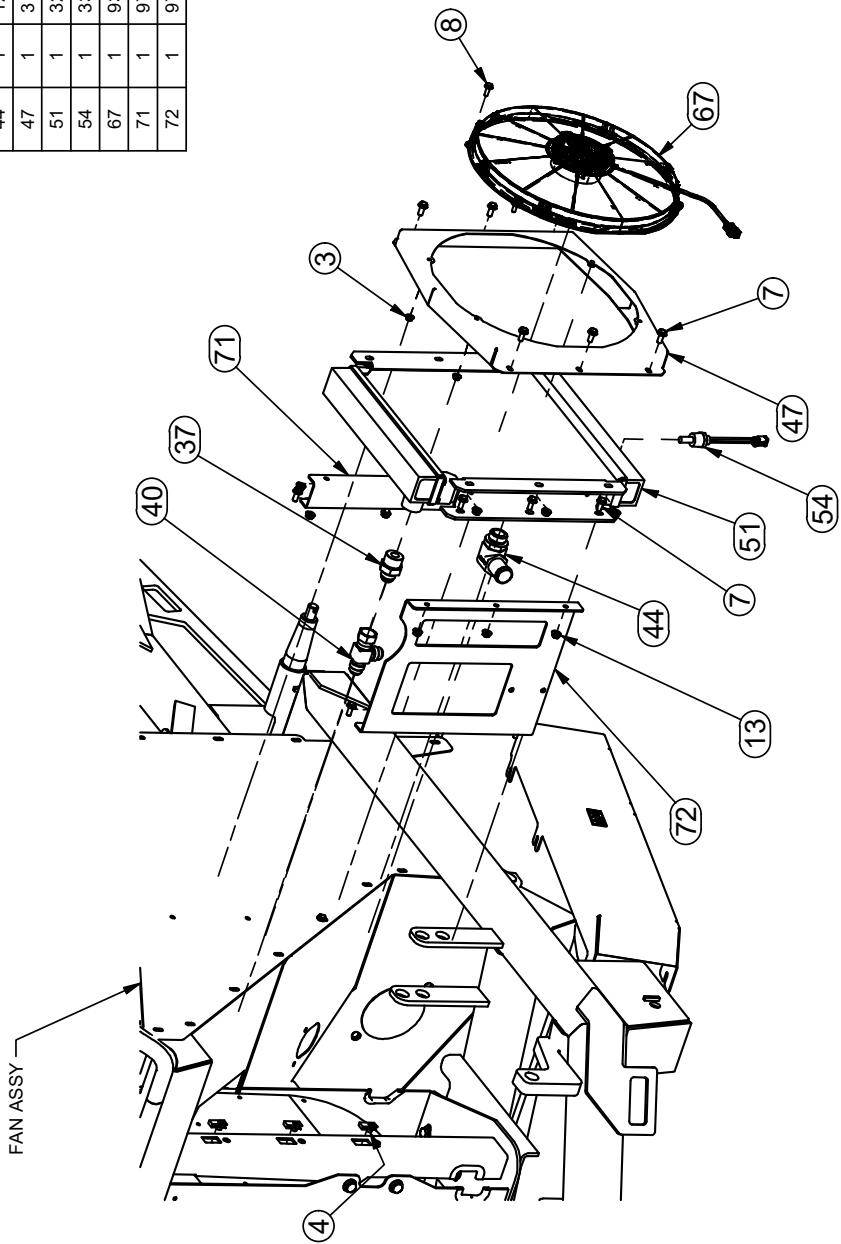
975432

REV: G

Parts List

ITEM	Q'TY	PART #	DESCRIPTION
3	4	110290	NUT, 1/4-20 WIZ FLANGE
4	3	110319	NUT, 5/16-18 U-TYPE .75L
7	18	110444	BOLT, 5/16-18 X 0.75, WIZ FLANGE
8	4	110468	BOLT, 1/4-20 X 0.75, WIZ FLANGE
13	14	110606	NUT, 5/16-18 WIZ FLANGE
37	1	120256	ADAPTER, 12MM-16MB
40	1	120268	ADAPTER, 12MM-12FJX-12NMJ
44	1	120546	ADAPTER, 20BH-16MBB0
47	1	311493	SHROUD - COOLER FAN
51	1	322028	COOLER - HYDRAULIC, TV30
54	1	335001	SWITCH ASSY, 140 F TEMP, NC RISING
67	1	932072	FAN - 16", 12V, HYDRAULIC COOLER
71	1	970839	SUPPORT, REAR COOLER MOUNT
72	1	970840	SUPPORT, FRONT COOLER MOUNT

OIL COOLER ASSEMBLY

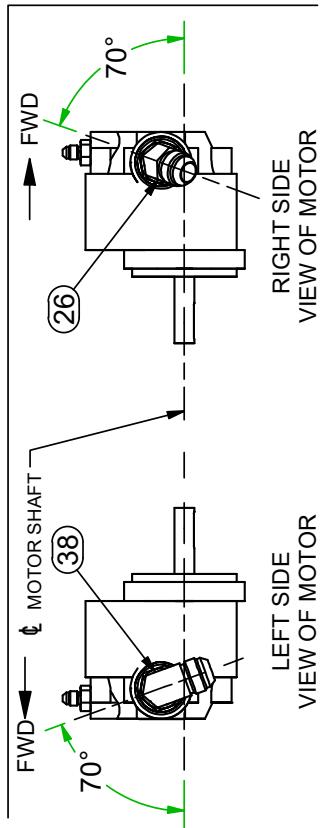
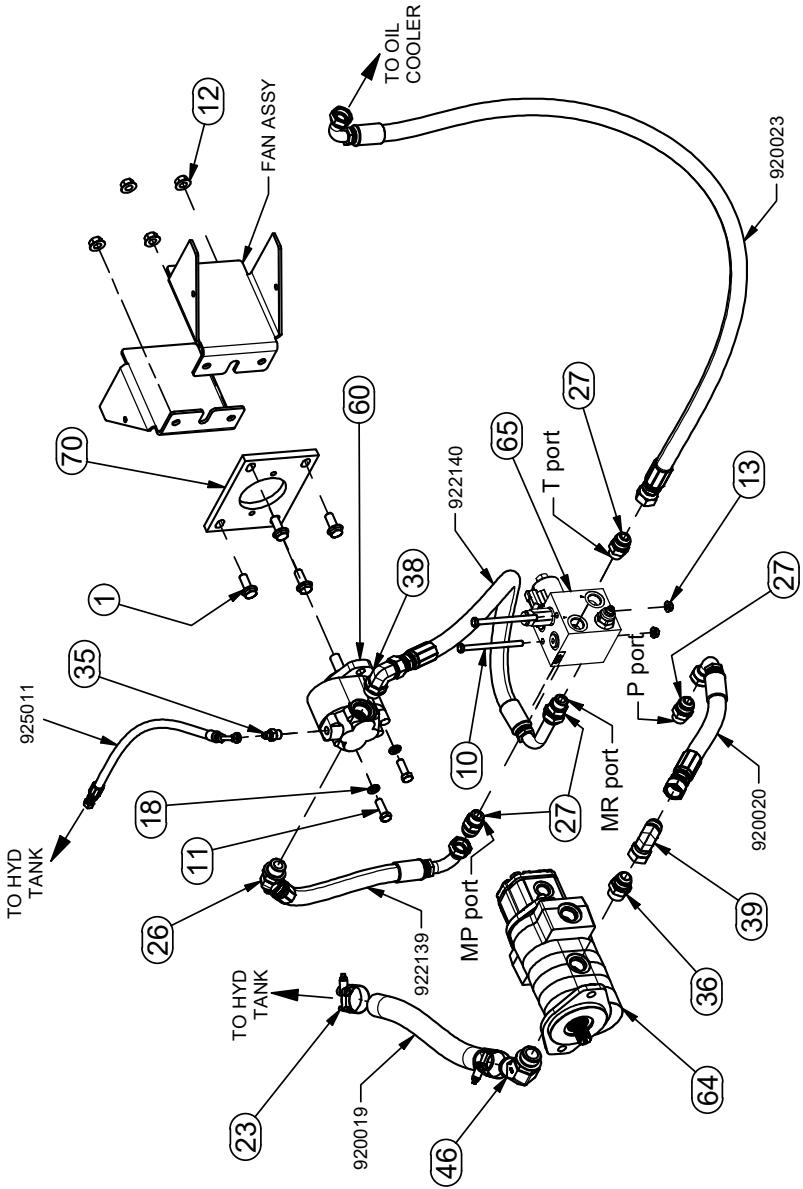


FAN DRIVE HYDRAULICS

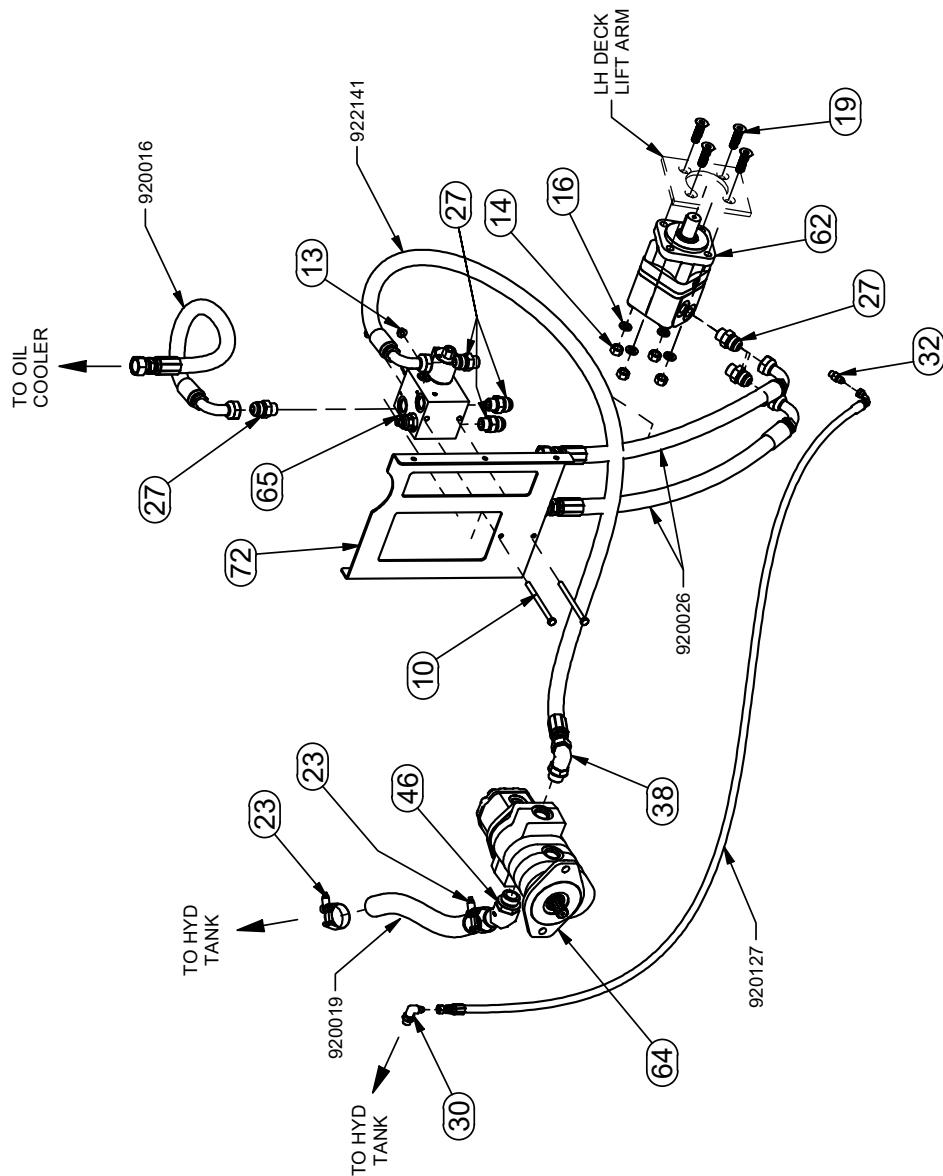
975432

REV. G

Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	4	110001	BOLT, 1/2-13 X 1.25, WIZ FLANGE
10	4	110529	BOLT, 5/16-18 X 4.5
11	2	110539	BOLT, 7/16-14 X 1.25
12	4	110538	NUT, 1/2-13 WIZ FLANGE
13	18	110606	NUT, 5/16-18 WIZ FLANGE
18	2	110671	WASHER, 7/16" LOCK
23	6	112007	CLAMP, 1.75", T-BOLT
26	1	120031	ADAPTER, 12MJ-12MB45
27	10	120143	ADAPTER, 12M-140MB
35	2	120249	ADAPTER, 4M-6MB
36	1	120254	ADAPTER, 12M-1-12MB
38	2	120257	ADAPTER, 12MJ-12MB90
39	1	120267	ADAPTER, 12MJ-12FJX90
46	2	120677	ADAPTER, 20BH-16MB45
60	1	923004	MOTOR, 1.76 CI, FAN DRIVE
64	1	923016	Pump, Triple Section Gear (1.55, 1.55 & .24 cu in)
65	2	923017	VALVE, TV60HD CONTROL
70	1	970291	ADAPTER PLATE

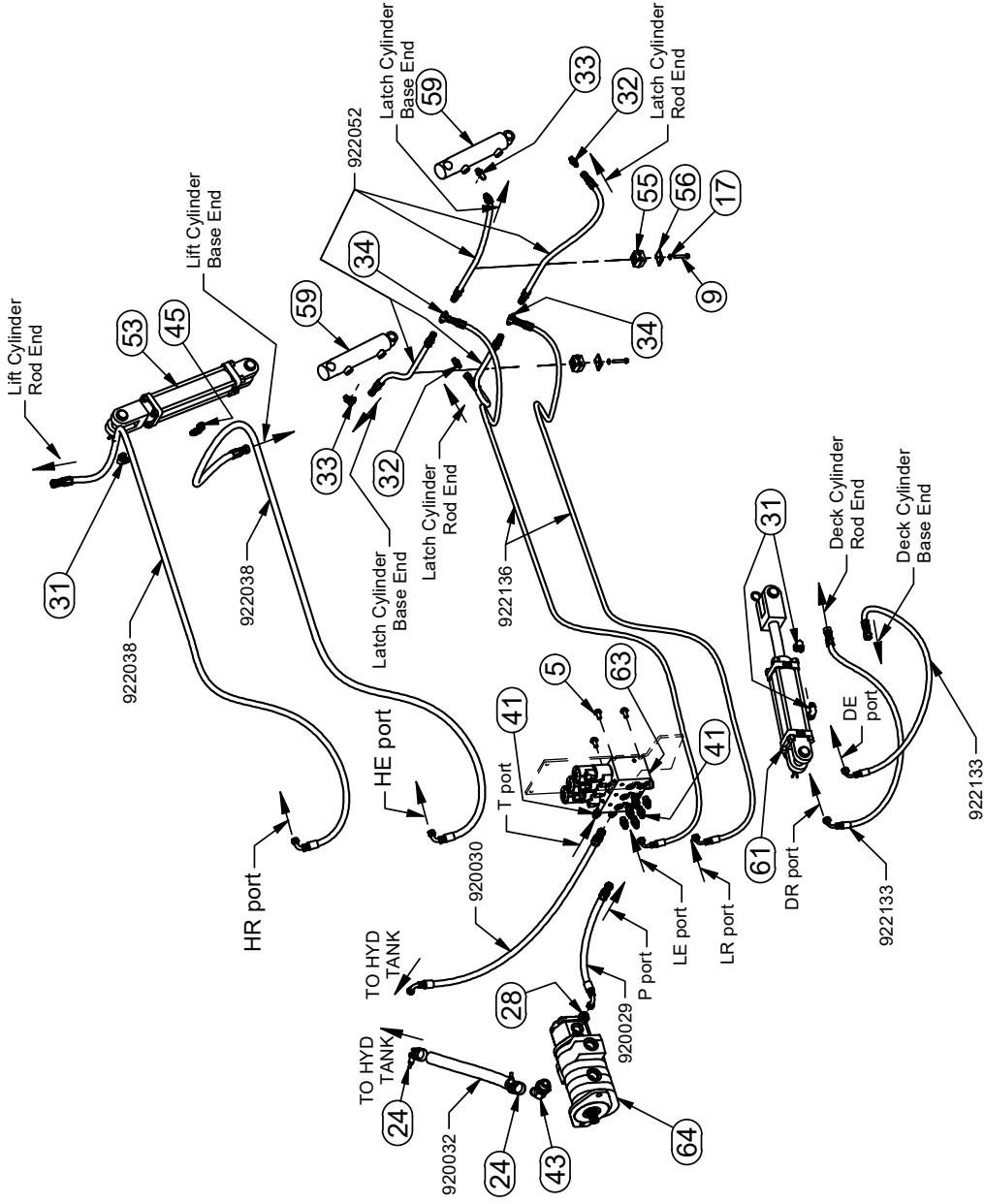


DECK DRIVE HYDRAULICS



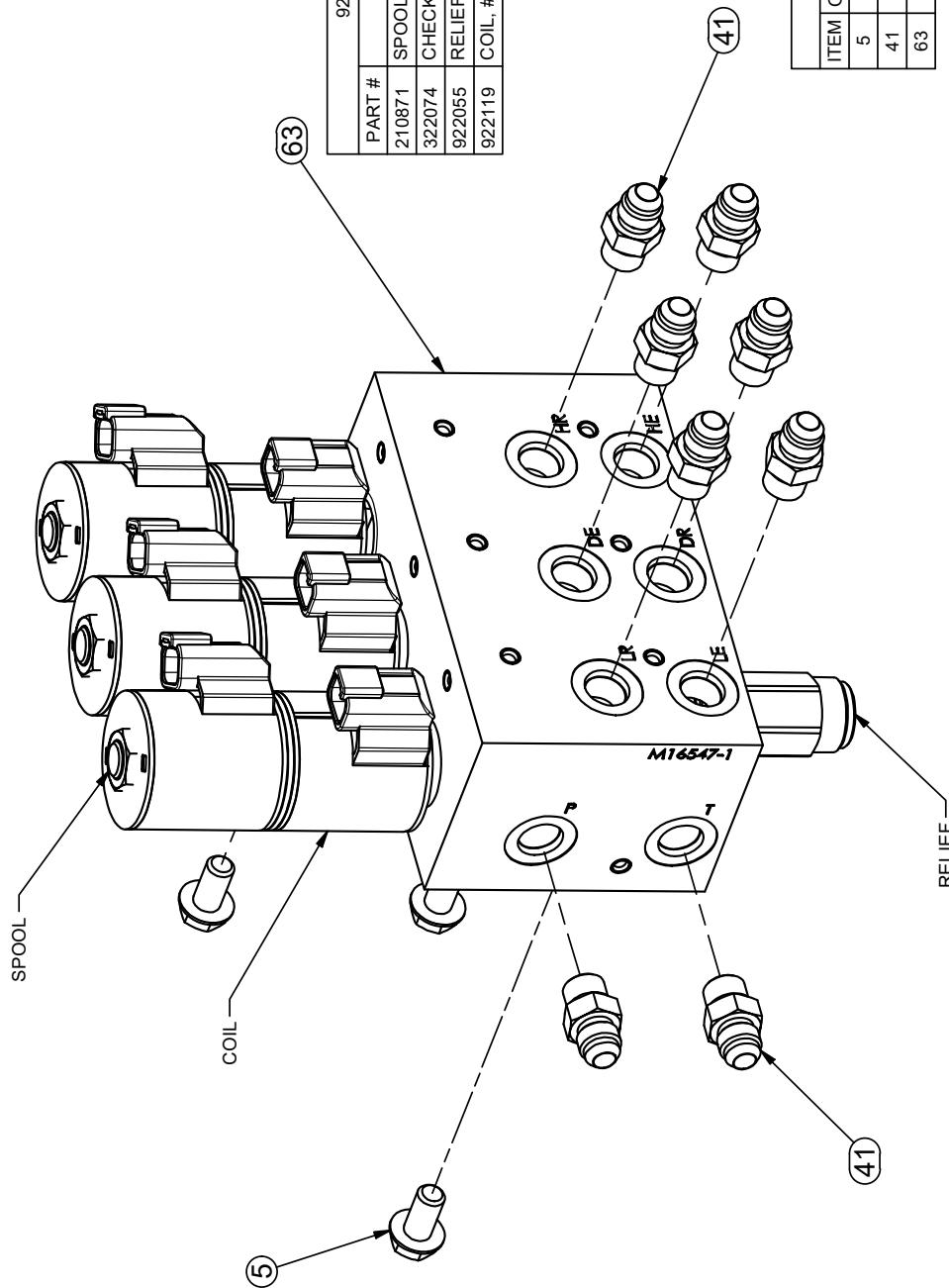
Parts List			
ITEM	QTY	PART #	DESCRIPTION
10	4	110529	BOLT, 5/16-18 X 4.5
13	18	110606	NUT, 5/16-18 WIZ FLANGE
14	4	110610	NUT, 1/2-13
16	4	110666	WASHER, 1/2" LOCK
19	4	111045	Bolt, 1/2-13 x 1.75 FHCS
23	6	112007	CLAMP, 1.75", T-BOLT
27	10	120143	ADAPTER, 12M-J-10MB
30	1	120220	ADAPTER, 4MJ-6MB90
32	3	120233	ADAPTER, 4MJ-4MB
38	2	120257	ADAPTER, 12MJ-12MB90
46	2	120677	ADAPTER, 20BH-16MB45
62	1	923014	MOTOR, 4.9 CID
64	1	923016	Pump, Triple Section Gear (1.55, 1.55 & 24 cu in)
65	2	923017	VALVE, TV60HD CONTROL

IMPLEMENT DRIVE HYDRAULICS

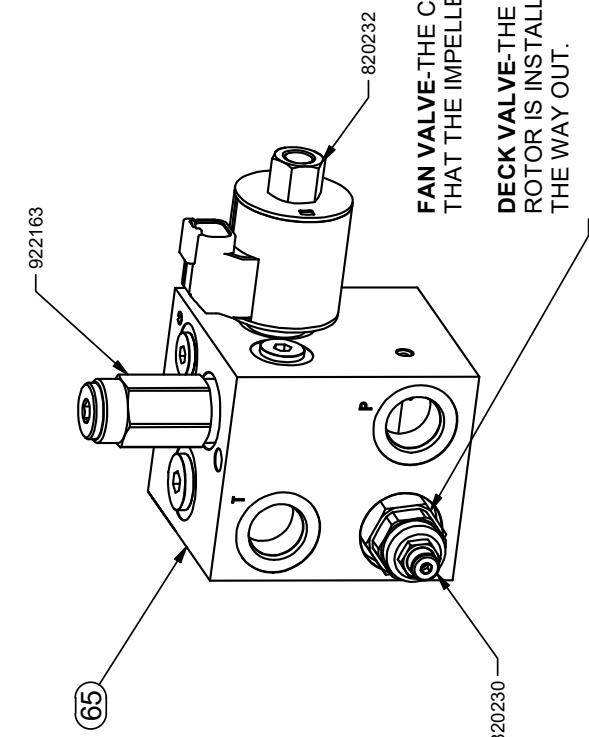


Parts List			
ITEM	QTY	PART #	DESCRIPTION
5	3	110437	BOLT, 3/8-16 X 0.75, WIZ FLANGE
9	2	110474	BOLT, 1/4-20 X 1-1/2
17	2	110667	WASHER, 1/4" LOCK
24	2	112008	CLAMP, 1.25", T-BOLT
28	1	120144	ADAPTER, 6MJ-10MB
31	3	120222	ADAPTER, 6MJ-6MB90
32	3	120233	ADAPTER, 4MJ-4MB
33	2	120235	ADAPTER, 4MJ-4MB90
34	2	120241	ADAPTER, 4MJ-4MJ-4MJ
41	9	120319	ADAPTER, 6MJ-6MB
43	2	120545	ADAPTER, 12BH-12MB 45°
45	1	120551	ADAPTER, 6MJ-6MB90 R.062
53	1	323019	CYLINDER - 2 X 8, SAE-6
55	2	522104	DOUBLE HOSE CLAMP
56	2	522105	DOUBLE COVERPLATE
59	2	922021	HYDRAULIC CYLINDER
61	1	923011	Cylinder, 2 X 6, -6 SAE Cross
63	1	923015	MANIFOLD, TV60R HD CYLINDER
64	1	923016	Pump, Triple Section Gear (1.55, 1.55, & .24 cu in)

IMPLEMENT VALVE ASSEMBLY



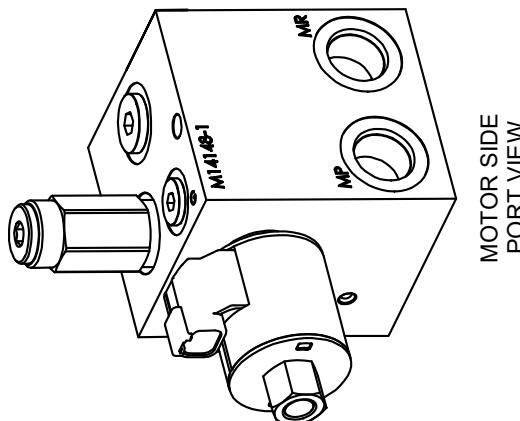
FAN & DECK VALVE



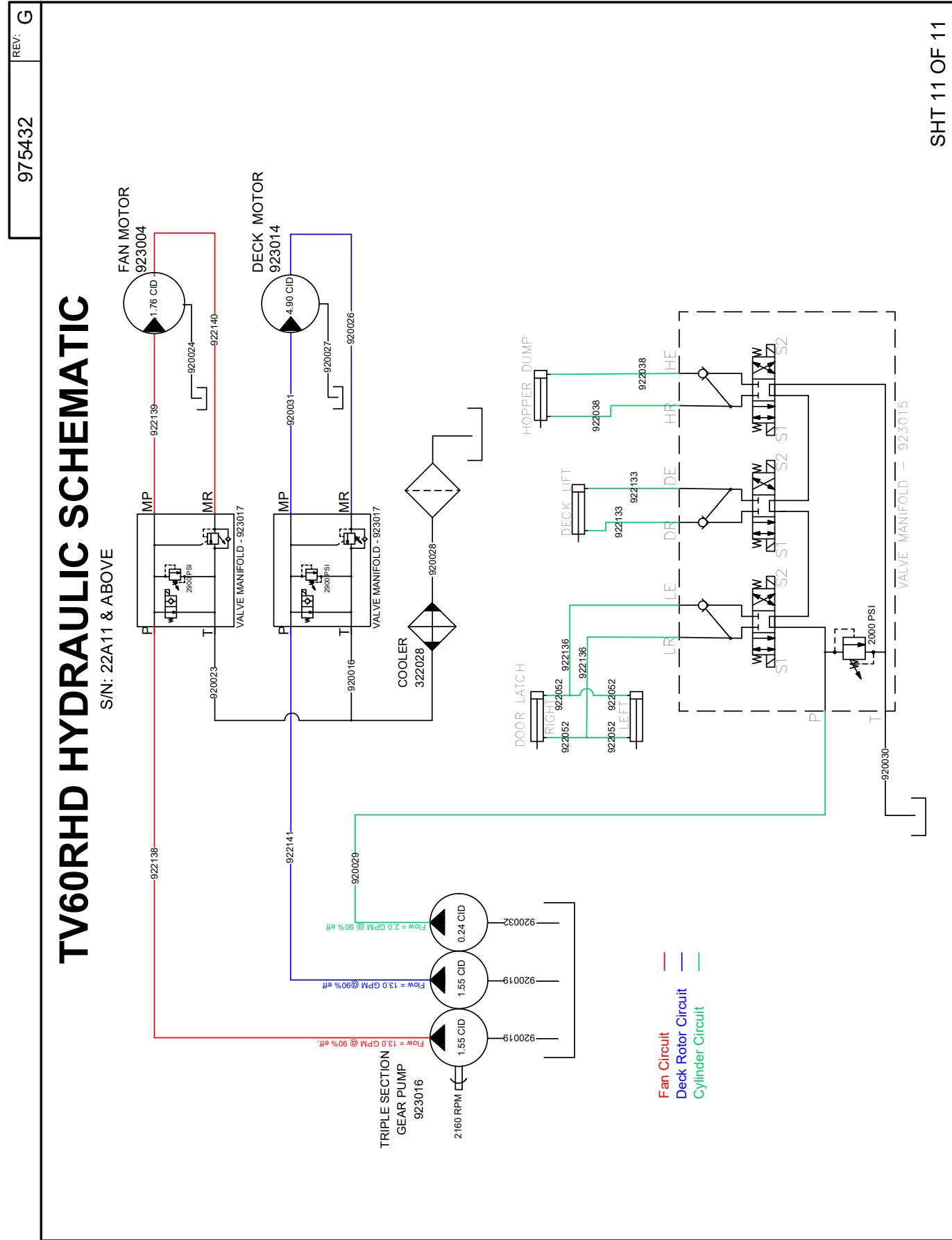
FAN VALVE-THE COUNTER BALANCE VALVE WILL INITIALLY BE SET SO THAT THE IMPELLER FAN HAS APPROXIMATELY A 3-5 SECOND SPINDOWN.

DECK VALVE-THE DECK VALVE WILL NEED TO BE ADJUSTED AFTER THE ROTOR IS INSTALLED. INITIALLY, THE COUNTER BALANCE IS ADJUSTED ALL THE WAY OUT.

ADJUSTING THE COUNTER BALANCE VALVE-THE SPINDOWN FOR THE IMPELLER FAN AND THE DECK ROTOR SHOULD BOTH BE BETWEEN 3-5 SECONDS. FOR ADJUSTMENT, LOOSEN THE JAM NUT AND THEN TURN THE SET SCREW ABOUT A 1/4 TURN. FOR A SLOWER SPINDOWN, LOOSEN THE SET SCREW, FOR A QUICKER SPINDOWN, TIGHTEN THE SET SCREW. REPEAT UNTIL THE SPINDOWN IS BETWEEN 3-5 SECONDS, THEN TIGHTEN JAM NUT.

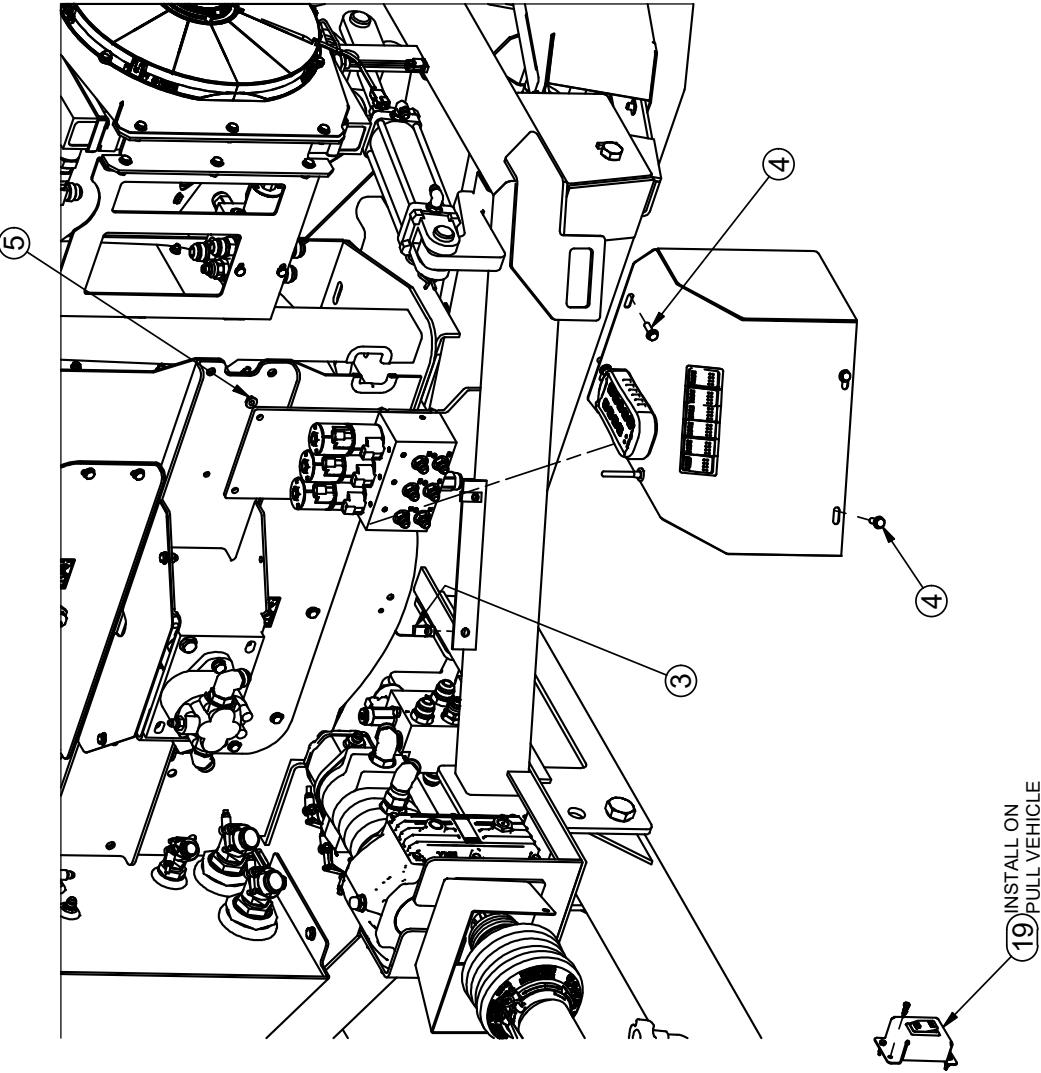


Parts List			
ITEM	QTY	PART #	DESCRIPTION
65	2	923017	VALVE, TV60HD CONTROL



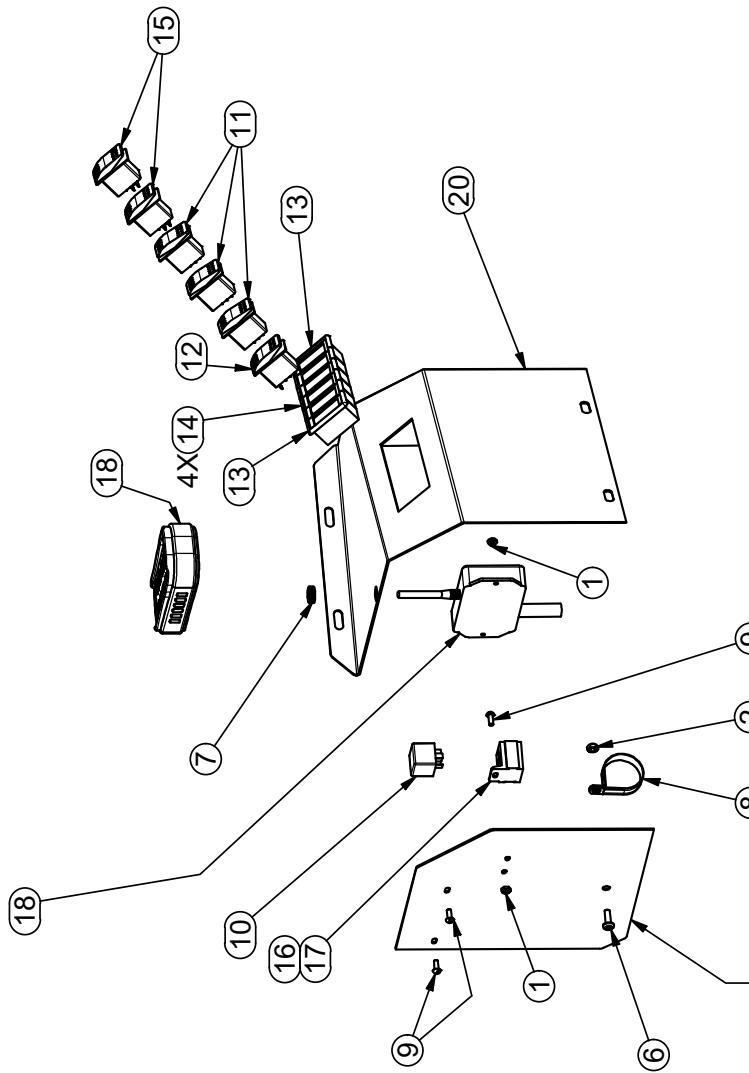
TV60RHD ELECTRONICS INSTALLATION

Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	3	110119	NUT, 10-24 LOCK
2	1	110174	NUT, 1/4-20, UNITORQUE LOCK
3	2	110319	NUT, 5/16-18 U-TYPE .75L
4	4	110459	BOLT, 5/16-18 X 1, WIZ FLANGE
5	2	110606	NUT, 5/16-18 WIZ FLANGE
6	1	110815	SCREW, 1/4-20 X 3/4 STAINLESS PHILLIPS PAN HEAD
7	1	110967	GROMMET, RUBBER 7/16 ID X 3/4 OD
8	1	130012	CLAMP, ADEL AC28 .265 HOLE
9	3	510960	SCREW, 10-24 X 0.5, RHMS
10	1	530111	RELAY
11	3	832004	SWITCH, PADDLE, CARLING (29261)
12	1	832005	SWITCH, PADDLE, CARLING (29253)
13	2	832007	SWITCH MOUNT, END
14	4	832008	SWITCH MOUNT, MIDDLE
15	2	832018	SWITCH, SPDT, ON-ON
16	1	932060	Harness, Vehicle/Remote TV60H
17	1	932078	HARNESS, TV60HD RECEIVER
18	1	933003	TRANSMITTER/RECEIVER, TV60E, KAR-TECH
19	1	935017	KIT, TV40/60H TRACTOR HARNESS
20	1	975438	SHIELD WELDMENT, VALVE



CONTROL PANEL ASSEMBLY

933003 - TRANSMITTER & RECEIVER			
ITEM	QTY	PART #	DESCRIPTION
1	1	932055	TRANSMITTER, RF, TV60, KAR-TECH
2	1	902158	DECAL, TRANSMITTER OVERLAY
3	1	932056	RECEIVER, TV60, KAR-TECH

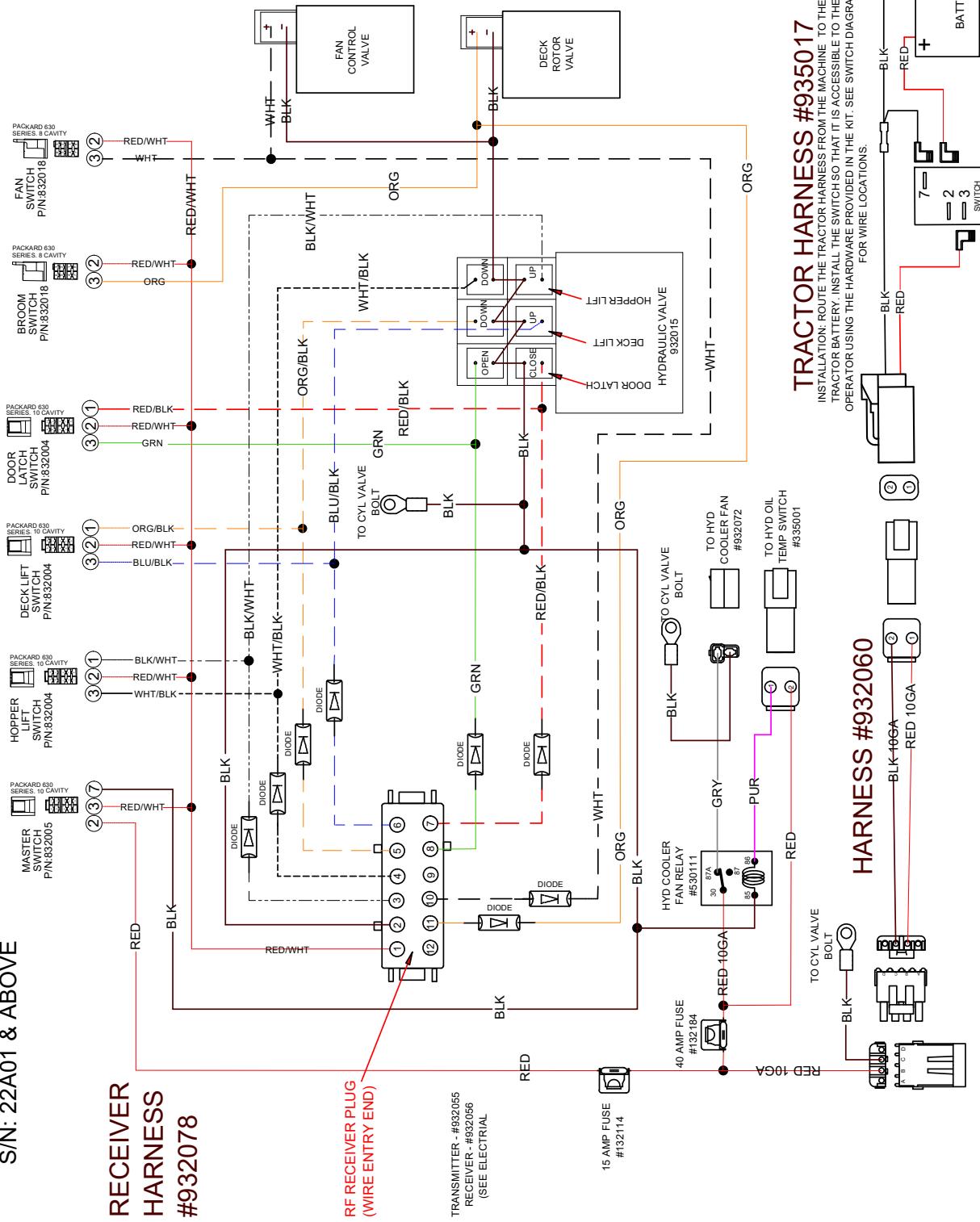


Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	3	110119	NUT, 10-24 LOCK
2	1	110174	NUT, 1/4-20, UNI TORQUE LOCK
6	1	110815	SCREW, 1/4-20 X 3/4 STAINLESS PHILLIPS PAN HEAD
7	1	110967	GROMMET, RUBBER 7/16 ID X 3/4 OD
8	1	130012	CLAMP, ADEL AC28 .265 HOLE
9	3	510960	SCREW, 10-24 X 0.5, RHMS
10	1	530111	RELAY
11	3	832004	SWITCH, PADDLE, CARLING (29261)
12	1	832005	SWITCH, PADDLE, CARLING (29253)
13	2	832007	SWITCH MOUNT, END
14	4	832008	SWITCH MOUNT, MIDDLE
15	2	832018	SWITCH, SPDT, ON-ON
16	1	932060	Harness, Vehicle/Remote TV60H
17	1	932078	Harness, TV60HD RECEIVER
18	1	933003	TRANSMITTER RECEIVER, TV60E, KAR-TECH
20	1	975438	SHIELD WELDMENT, VALVE

TV60RHD WIRING SCHEMATIC WITH KAR-TECH REMOTE

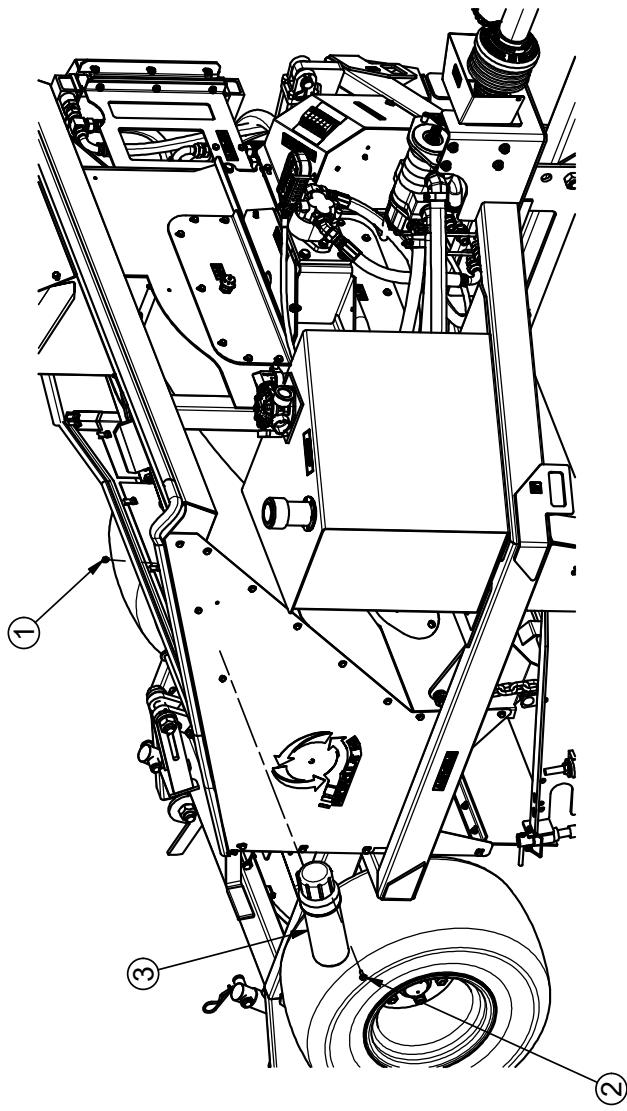
S/N: 22A01 & ABOVE

RECEIVER
HARNESS
#932078



SHT 3 of 3

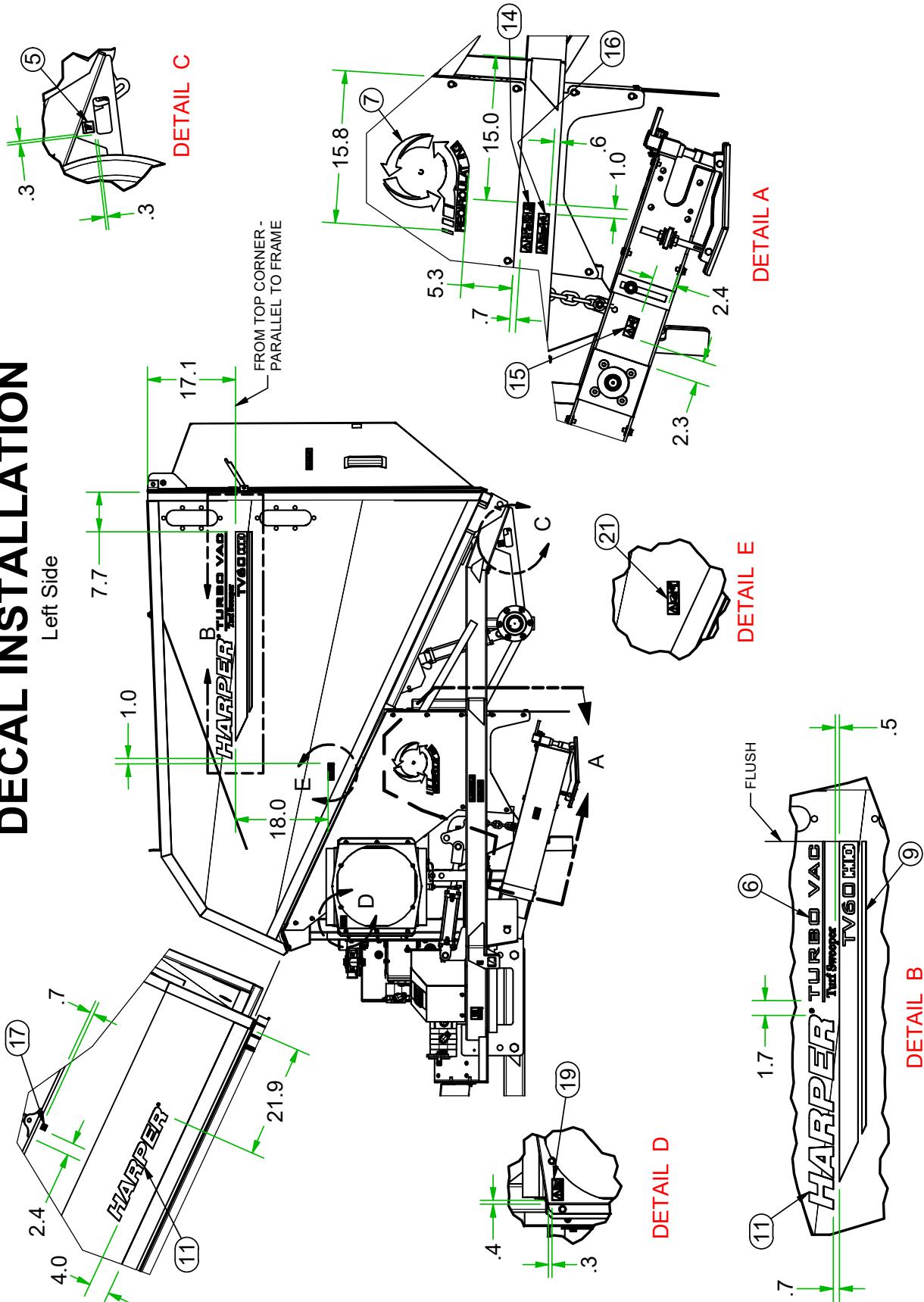
TV60RHD FINAL INSTALLATION



Parts List			
ITEM	QTY	PART #	
DESCRIPTION			
1	3	110290	NUT, 1/4-20 WIZ FLANGE
2	3	110468	BOLT, 1/4-20 X 0.75, WIZ FLANGE
3	1	152005	HOLDER, MANUAL
4	1	202134	DECAL, PROP 65, SHORT FORM
5	4	802067	Decal, Tie Down Point
6	2	902084	Decal, Turbo Vac, Turf Sweeper
7	2	902104	DECAL, RECIRCULATING
8	1	902149	DECAL, READ OPERATORS MANUAL.
9	1	902193	DECAL, STRIPE LEFT TV60R HD
10	1	902194	DECAL, STRIPE RIGHT, TV60R HD
11	3	902195	DECAL, HARPER 2.87 X 24.00, BLACK GLOSS
12	1	902202	DECAL, SWITCHES, TV60R HD
13	1	902204	DECAL, ISO 46 HYDRAULIC OIL
14	2	902227	Decal, Entanglement
15	2	902228	Decal, Do Not Remove Shield
16	3	90232	Decal, High Pressure Injection
17	1	902234	Decal, No Lift
18	1	902235	Decal, Safe Distance, No Slope
19	1	902239	Decal, Hot Surface
20	1	902240	Plate, Serial Number, Harper Turf, Blue
21	2	902245	Decal, Hopper Safety Lock
22	1	902247	Decal, Overhead Clearance

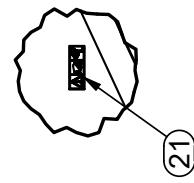
DECAL INSTALLATION

Left Side

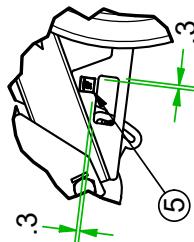
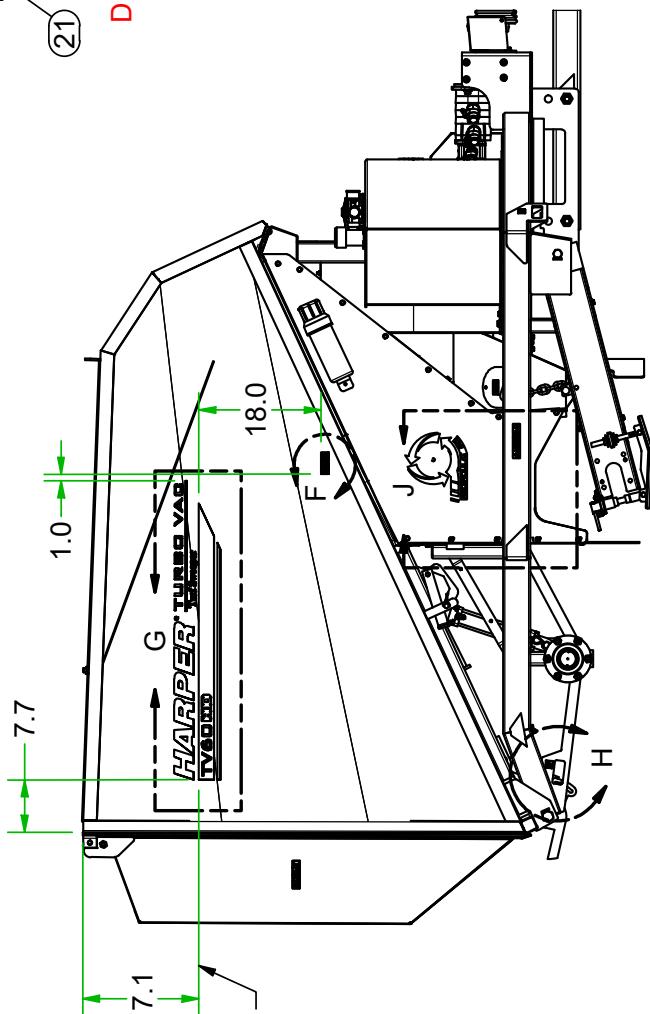


DECAL INSTALLATION

Right Side

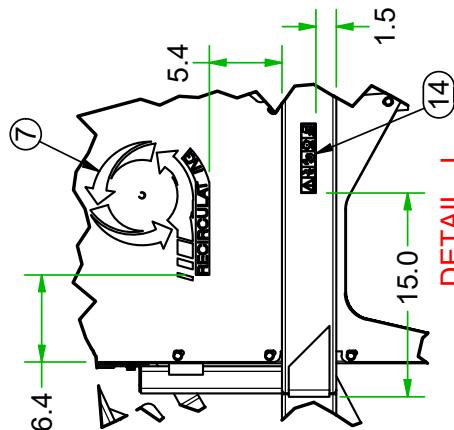


DETAIL F

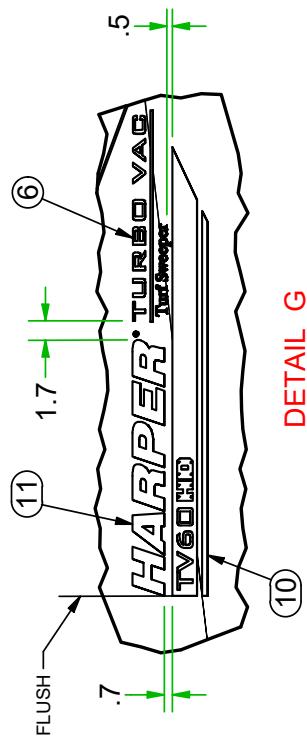


DETAIL H

FROM TOP CORNER
PARALLEL TO FRAME



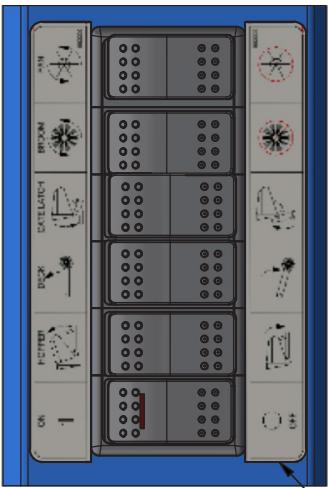
DETAIL J



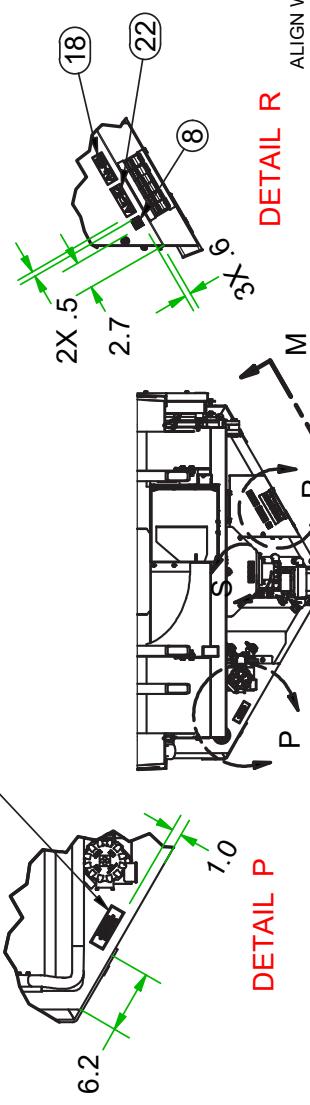
DETAIL G

DECAL INSTALLATION

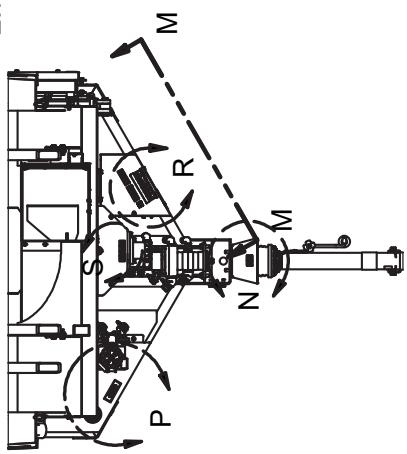
905106 REV: E



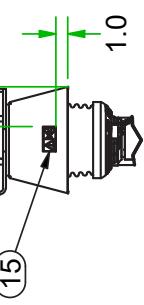
VIEW OF SWITCH PANEL



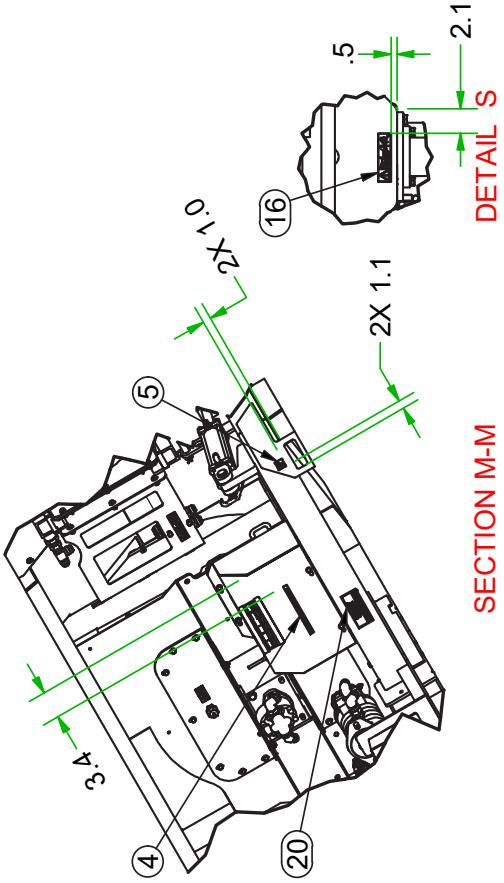
DETAIL P



SECTION K-K



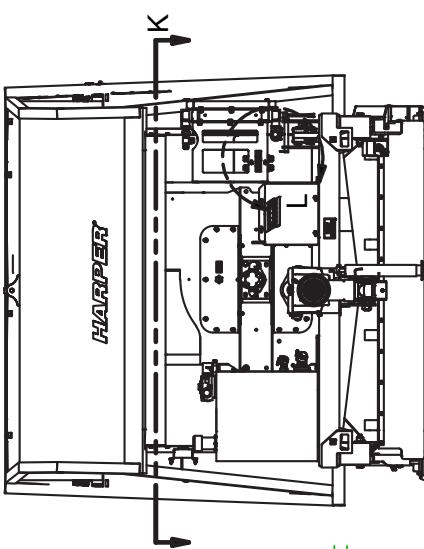
DETAIL N



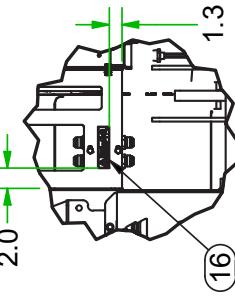
SECTION M-M

DETAIL S

2.1



DETAIL L



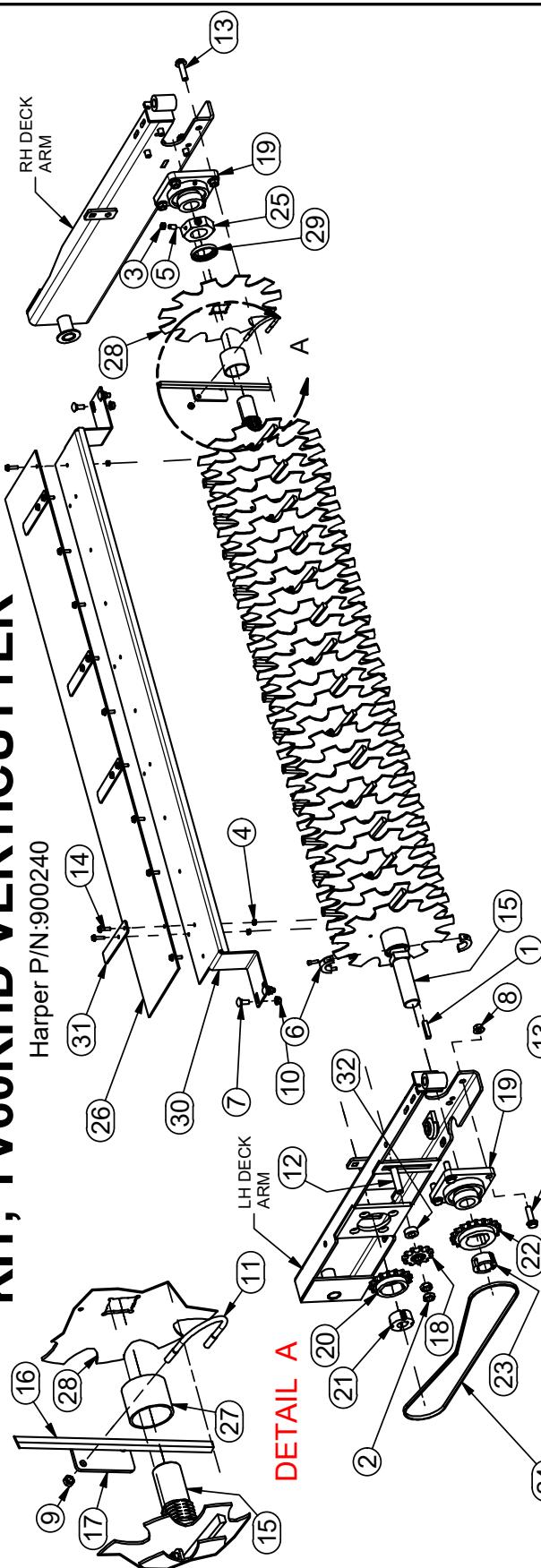
900240

REV: A

Parts List				Parts List				Parts List			
ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION	ITEM	QTY	PART #	DESCRIPTION
1	1	100567	KEY, 3/8 X 3/8 X 1.75 in	12	1	110895	Bolt, 5/8-11 X 3 in Carriage	23	1	942278	Bushing, Taper 1610 1.5" Bore
2	2	110039	NUT, 5/8-11 JAM	13	8	111222	BOLT, 1/2-13 X 1.75, WIZ FLANGE	24	1	942282	CHAIN, TV60HD / verticut #60 ROLLER
3	2	110107	NUT, 3/8-16 HEX JAM GR 2	14	15	111227	BOLT, 1/4-20 X 1, WIZ FLANGE	25	1	970475	NUT - HEX JAM 1-3/4 - 5 UNC
4	15	110174	NUT, 1/4-20, UNITORQUE LOCK	15	1	311400	SHAFT - VERTICUTTER, TV30	26	1	970685	DEBRIS FLAP MAIN
5	2	110325	Setscrew, 3/8-16 X 0.75	16	28	311608	FINGER, 12" - RUBBER	27	29	970803	SPACER - VERTI CUTTER, 2 IN
6	1	110332	COLLAR - 1-1/2" SPLIT	17	28	311609	HOLDER, FINGER	28	29	970804	Blade, Detatch, 10ga, 11 Point
7	4	110556	Bolt, 3/8-16 X 1 in Carriage	18	1	942102	SPROCKET - IDLER, 6011 - 5/8 HARDEN	29	1	970805	WASHER - CUP, ROTOR
8	8	110588	NUT, 1/2-13 WIZ FLANGE	19	2	942273	BEARING, 4FNG VCJ 1 1/2"	30	1	970851	SHIELD, ROTOR DEBRIS
9	56	110600	NUT, 5/16-18, UNITORQUE LOCK	20	1	942274	Sprocket, Roller Chain 60BTB16H - 1610	31	4	970853	SUPPORT, DEBRIS FLAP
10	4	110645	NUT, 3/8-16 WIZ FLANGE	21	1	942275	Bushing, Taper 1610 1.0" Bore	32	1	970862	SPACER, IDLER SPROCKET
11	28	110824	BOLT, U-, 5/16-18 X 2-1/2 X 3-3/16	22	1	942277	Sprocket, Roller Chain 60TB19H-1610				

KIT, TV60RHD VERTICUTTER

Harper P/N:900240



PART #	DESCRIPTION
140002	ROLLER CHAIN, #60 (Length=55.75 in or 70 pins)
410441	CONNECTING LINK, HALF-OFFSET #60
410442	CONNECTING LINK, #60 CHAIN

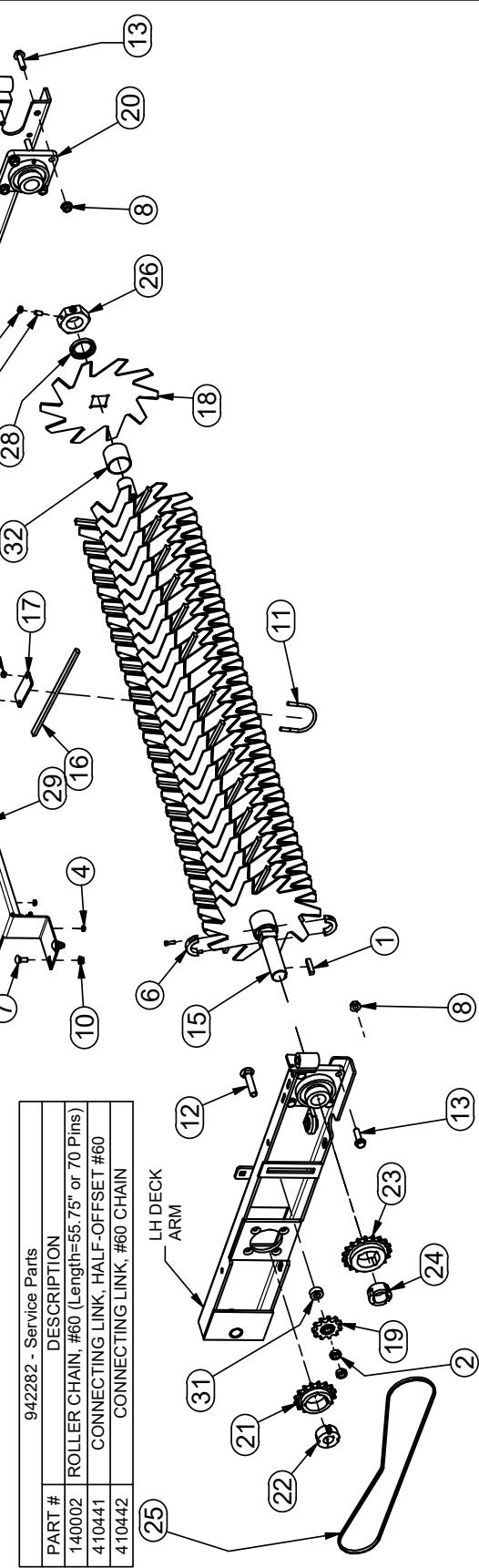
900255

REV: A

Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	1	100567	KEY, 3/8 X 3/8 X 1.75 in
2	2	110039	NUT, 5/8-11 JAM
3	2	110107	NUT, 3/8-16 HEX JAM GR 2
4	15	110174	NUT, 1/4-20, UNITORQUE LOCK
5	2	110325	SetScrew, 3/8-16 X 0.75
6	1	110332	COLLAR - 1-1/2" SPLIT
7	4	110556	Bolt, 3/8-16 X 1 in Carriage
8	8	110588	NUT, 1/2-13 WIZ FLANGE
9	56	110600	NUT, 5/16-18, UNITORQUE LOCK
10	4	110645	NUT, 3/8-16 WIZ FLANGE
11	28	110824	BOLT, U, 5/16-18 X 2-1/2 X 3-3/16
			Bushing, Taper 1610 1.0" Bore
Parts List			
ITEM	QTY	PART #	DESCRIPTION
12	1	110895	Bolt, 5/8-11 X 3 in Carriage
13	8	111222	BOLT, 1/2-13 X 1.75, WIZ FLANGE
14	15	111227	BOLT, 1/4-20 X 1, WIZ FLANGE
15	1	311400	SHAFT - VERTICUTTER, TV30
16	28	311608	FINGER, 12" RUBBER
17	28	311609	HOLDER, FINGER
18	29	912013	BLADE, CARBIDE TIP 12 GA VERTI-CUTTER
19	1	942102	SPROCKET - IDLER, 6011 - 5/8 HARDEN
20	2	942273	BEARING, 4FNG VCJ 1 1/2"
21	1	942274	Sprocket, Roller Chain 60BTB-16H - 16:10
22	1	942275	Bushing, Taper 1610 1.0" Bore

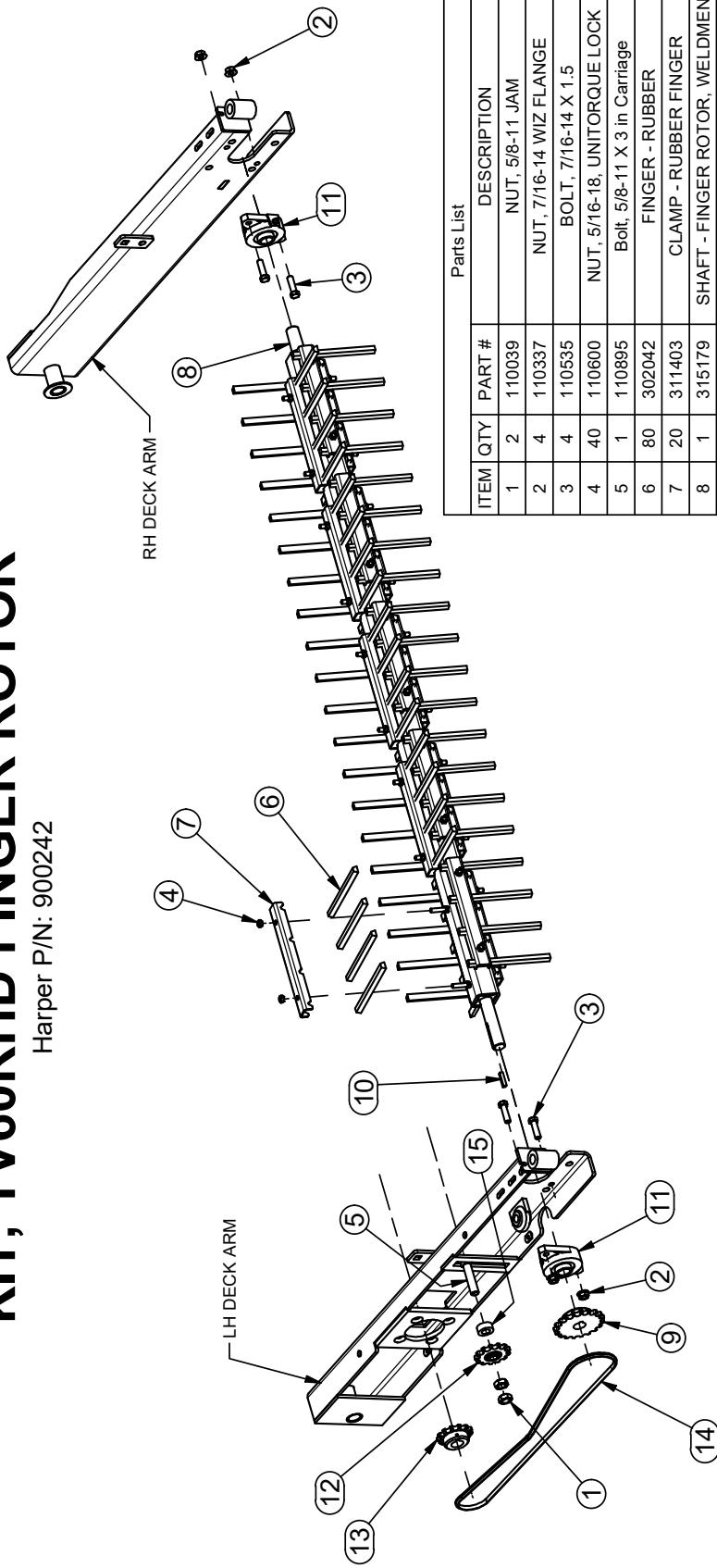
KIT, TV60RHD CARBIDE TIP VERTICUTTER

Harper P/N: 900255



KIT, TV60RHD FINGER ROTOR

Harper P/N: 900242



942281 - Service Parts	
PART #	DESCRIPTION
142006	ROLLER CHAIN, #50 (Length=51.219 in)
140011	CONNECTING LINK, #50 CHAIN
11	2
12	1
13	1
14	1
15	1

942281 - Service Parts	
PART #	DESCRIPTION
142006	ROLLER CHAIN, #50 (Length=51.219 in)
140011	CONNECTING LINK, #50 CHAIN
11	2
12	1
13	1
14	1
15	1

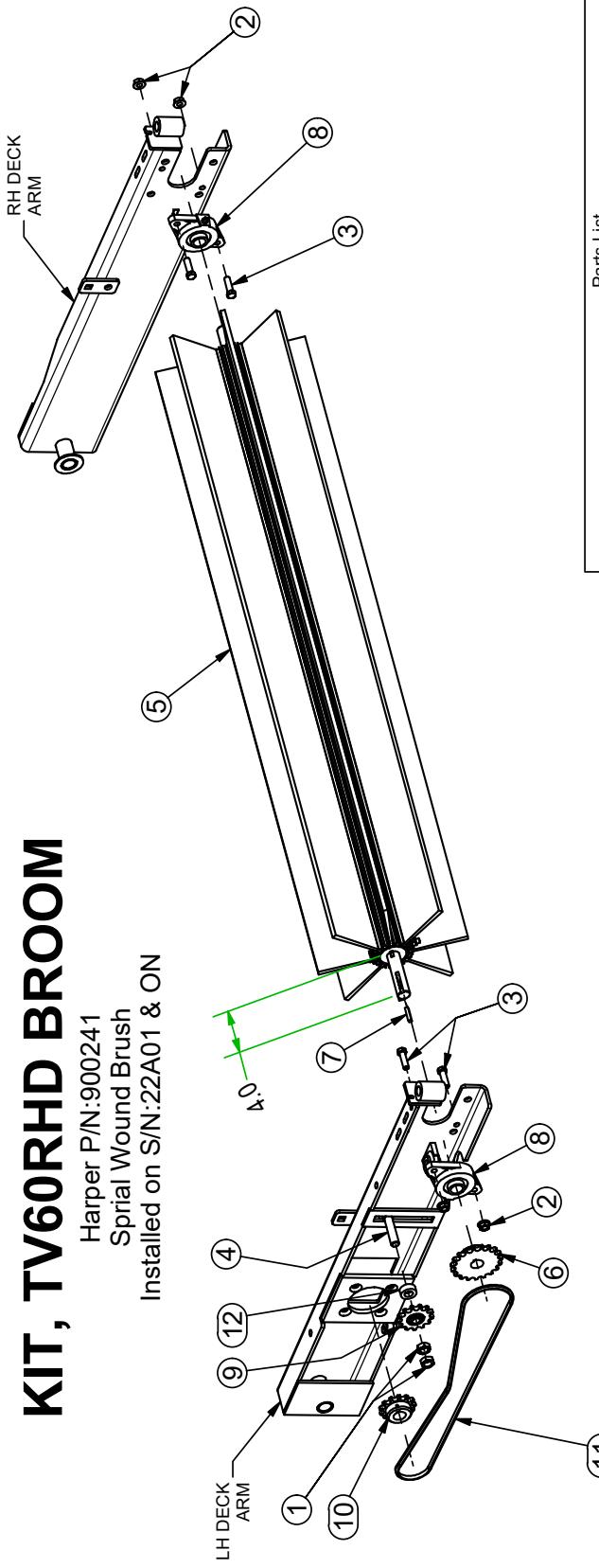
Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	2	110039	NUT, 5/8-11 JAM
2	4	110337	NUT, 7/16-14 WIZ FLANGE
3	4	110535	BOLT, 7/16-14 X 1.5
4	40	110600	NUT, 5/16-18, UNITORQUE LOCK
5	1	110395	Bolt, 5/8-11 X 3 in Carriage
6	80	302042	FINGER - RUBBER
7	20	311403	CLAMP - RUBBER FINGER
8	1	315179	SHAFT - FINGER ROTOR, WELDMENT
9	1	342016	SPROCKET - 50B19 X 1
10	1	510089	Key, 1/4 X 14 X 1.25, Under
11	2	942980	BEARING, 1" 2 BOLT FLANGE
12	1	942279	SPROCKET, IDLER #50 x 13T x 5/8ID
13	1	942280	SPROCKET, ROLLER CHAIN 50BS/13 X 1"
14	1	942281	CHAIN, ROLLER #50 TV60HD
15	1	970362	SPACER, IDLER SPROCKET

KIT, TV60RHD BROOM

Harper P/N:900241

Spiral Wound Brush

Installed on S/N:22A01 & ON

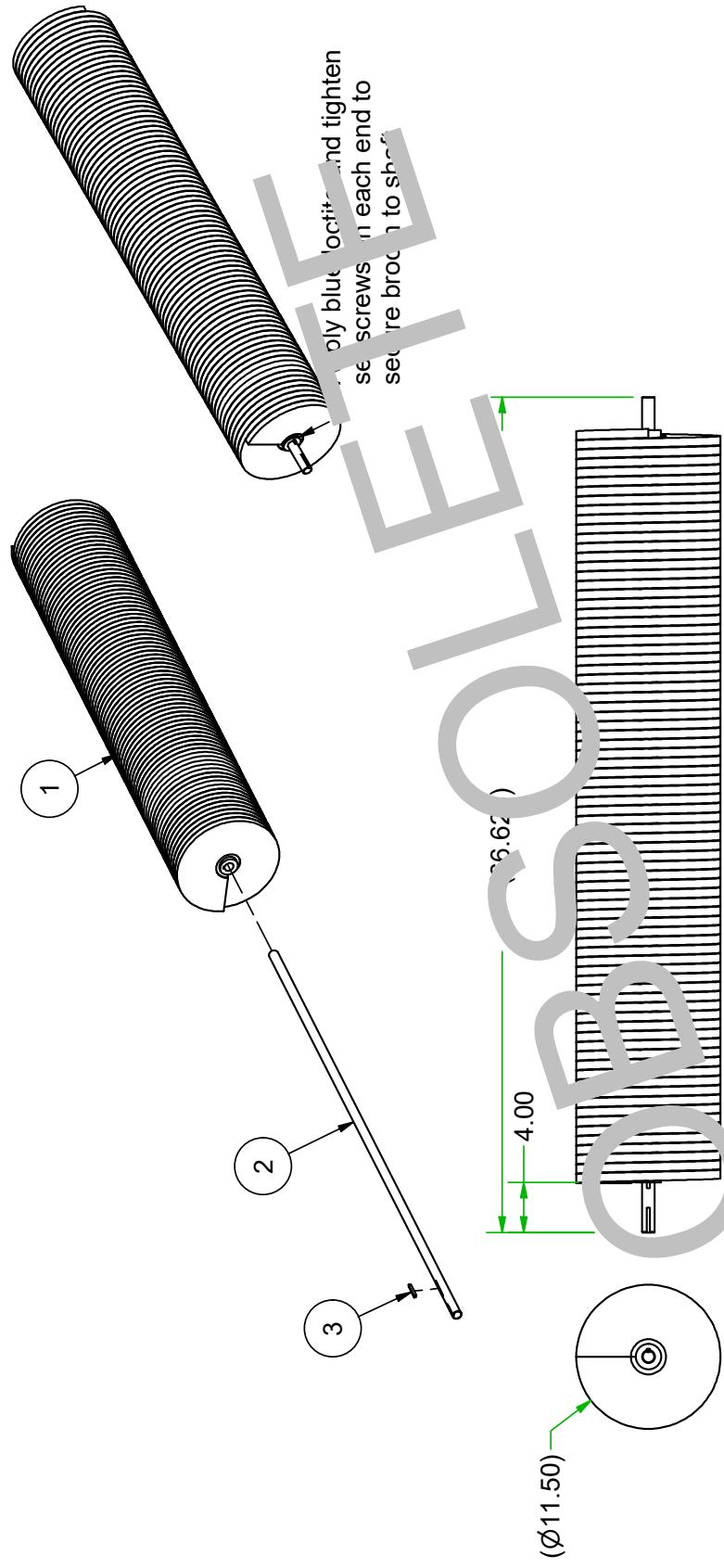


942281 - Service Parts	
PART #	DESCRIPTION
142006	ROLLER CHAIN, #50 - (51.219")
140011	CONNECTING LINK, #50 CHAIN

Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	2	110039	NUT, 5/8-11 JAM
2	4	110337	NUT, 7/16-14 WIZ FLANGE
3	4	110535	BOLT, 7/16-14 X 1.5
4	1	110895	Bolt, 5/8-11 X 3 in Carriage
5	2	305157	ASSY, TV35/TV60HD STRIP BRUSH
6	1	342016	SPROCKET - 50B19 X 1
7	1	510089	KEY, 1/4 X 1/4 X 1.25 in
8	2	942080	BEARING, 1" 2 BOLT FLANGE
9	1	942279	SPROCKET, IDLER #50 x 13T x 5/8ID
10	1	942280	SPROCKET, ROLLER CHAIN 50B13 X 1"
11	1	942281	CHAIN, ROLLER #50 TV60HD
12	1	970862	SPACER, IDLER SPROCKET

Service Note

- Due to part availability, starting at S/N: 22A01, the machine may have been equipped with a Full Brush Rotor (P/N: 305135) or a Strip Brush Rotor (P/N: 305157). See the brush assembly pages for service part details.

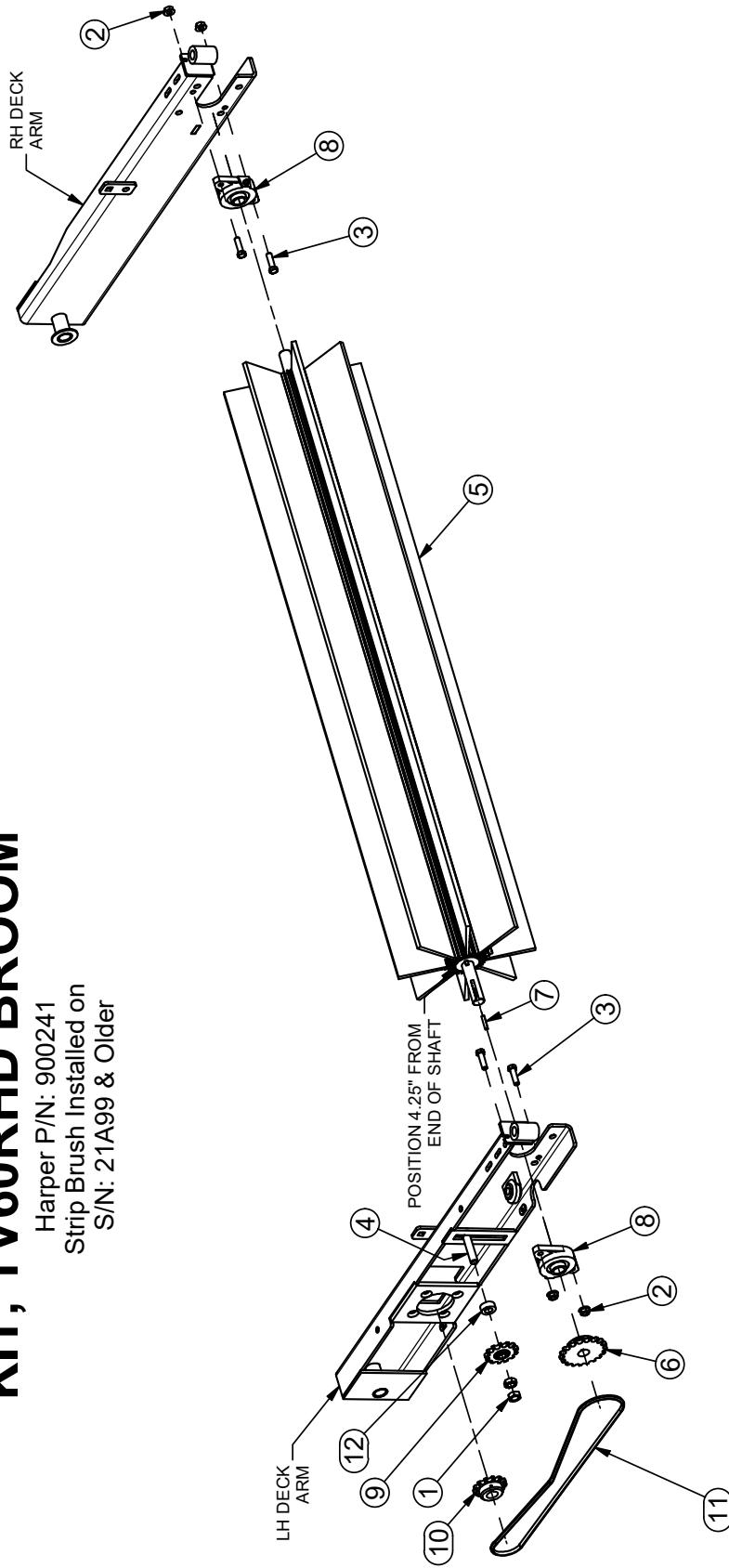
BRUSH ASSEMBLY

Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	1	302170	Brush, Spiral Wound, 60 x 11.50 OD, .030 Poly
2	1	311369	SHAFT - BROOM, DECK
3	1	411481	KEY, 1/4 x 1/4 x 2.0

Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	2	110039	NUT, 5/8-11 JAM
2	4	110337	NUT, 7/16-14 WIZ FLANGE
3	4	110535	BOLT, 7/16-14 X 1.5
4	1	110895	Bolt, 5/8-11 X 3 in Carriage
5	2	305157	ASSY, TV35TV60HD STRIP BRUSH
6	1	342016	SPROCKET - 50B19 X 1

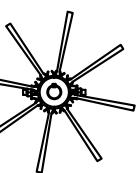
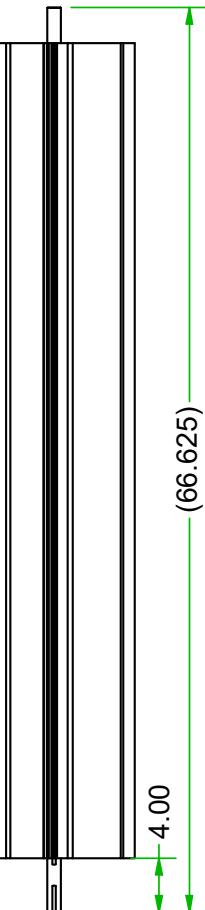
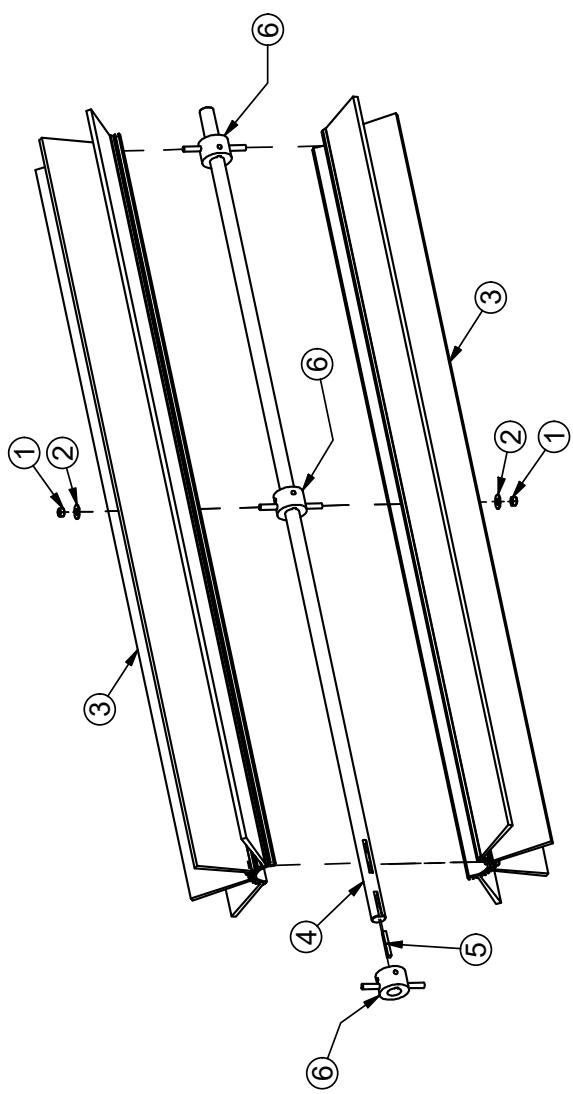
KIT, TV60RHD BROOM

Harper P/N: 900241
Strip Brush Installed on
S/N: 21A99 & Older



PART #	DESCRIPTION
140006	ROLLER CHAIN #50 (length=51.219 in)
140011	CONNECTING LINK #50 CHAIN

BRUSH ASSEMBLY



Parts List

ITEM	QTY	PART #	DESCRIPTION
1	6	110621	NUT, 3/8-16, UNITORQUE LOCK
2	6	110676	WASHER, 3/8" FLAT STANDARD
3	1	302003	Brush, Strip Assembly, 60 x 12.0, .030 Poly
4	1	311369	SHAFT - BROOM, DECK
5	1	411481	KEY, 1/4 x 1/4 x 2.0
6	3	973002	FLANGE, 2 1/8 X 1, TJ-16

NOTES

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151 E. Highway 160
Harper, KS 67058

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E-mail: info@harperindustries.com

HARPER®
TURF EQUIPMENT

Turbo Vac TV60R