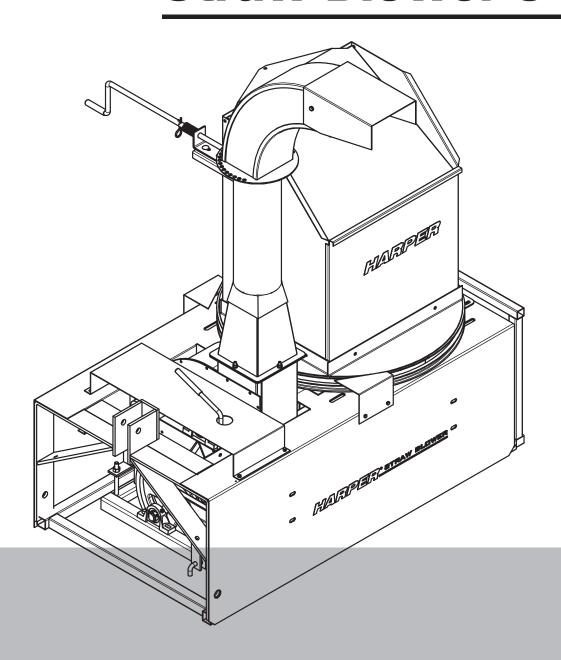
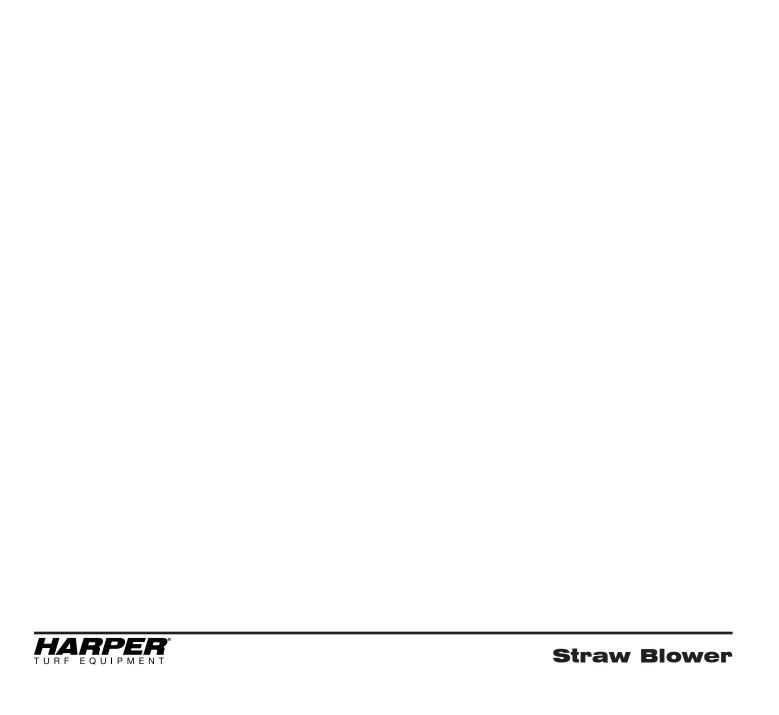
Straw Blower 5400



OPERATOR'S MANUAL



Thank you for purchasing a Harper Straw Blower.

As with all Harper products, the Straw Blower has been developed through tough design and testing procedures to produce a top quality machine. This manual gives assembly, operating, and service information for the model 5400. Please read and understand all instructional material included with the Straw Blower or its components before assembling and operating the equipment.

A Straw Blower 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 dealer or Harper Industries, Inc. 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.

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 name is a registered trademark of Harper Industries, Inc. All other brand and product names are trademarks or registered trademarks of their respective companies.



LIMITED WARRANTY

Harper Industries, Inc. (HII) warrants to each purchaser of a new Harper Straw Blower 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 Straw Blower 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 (inculding belts, sickles, and battery).

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 Straw Blower dealer.

Evaporative Emissions Control System Warranty

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Harper Industries are pleased to explain the evaporative emission control system's warranty on your 2019 Harper Straw Blower. In California, new equipment that use small off-engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. Harper Industries must warrant the evaporative emission control system on your small Straw Blower for the period listed below provided there has been no abuse, neglect or improper maintenance of your equipment leading to the failure of the evaporative emission control system.

Your evaporative emission control system may include parts such as: carburetors, fuel tanks, fuel lines (for liquid fuel and fuel vapors), fuel caps, valves, canisters, filters, clamps, connectors, and other associated components.

MANUFACTURER'S WARRANTY COVERAGE:

This evaporative emission control system is warranted for two years. If any evaporative emission-related part on your equipment is defective, the part will be repaired or replaced by Harper Industries.

OWNER'S WARRANTY RESPONSIBILITIES:

- 1. As the Straw Blower owner, you are responsible for performance of the required maintenance listed in your owner's manual. Harper Industries recommends that you retain all receipts covering maintenance on your Straw Blower, but Harper Industries cannot deny warranty coverage solely for the lack of receipts.
- 2. As the Straw Blower owner, you should be aware that Harper Industries may deny you warranty coverage if your Straw Blower or a part has failed due to abuse, neglect, or improper maintenance or unapproved modifications.
- 3. You are responsible for presenting your Straw Blower to a Harper Industries dealer as soon as the problem exists. The warranty repairs shall be completed in a reasonable amount of time, not to exceed 30 days. If you have a question regarding your warranty coverage, you should contact your authorized Harper Straw Blower dealer or Harper Industries at (620) 896-7381.

	RECORDS
Date of Purchase / / / /	Serial Number Machine
Dealer's Name	Serial Number Engine
Dealer's Ph	one



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Specifications

Drive	540 RPM PTO
Dimensions	Width - 31" Height - 51" Length - 60"
Weight	525 lbs (shipping weight 600 lbs)
Cutting Device	4 blade impeller - 16.5" diameter
Knives	32
Discharge	6" x 30' Super-flex hose or directional spout

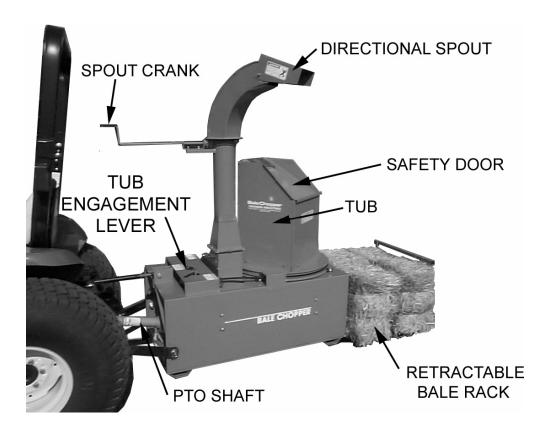
Harper Industries, Inc. is continually striving to improve the design and performance of its products. We reserve the right to make changes in specifications and design without thereby incurring any obligation relative to previously manufactured products.

The Harper Straw Blower chops and applies straw for erosion control, bedding and mulching. The depth of the cut is easily adjustable while in operation to handle a variety of materials* and conditions. The standard 30' hose provides even layering and pinpoint placement. The hose is pliable down to 20° F. Temperatures below 20° may cause polyurethane to crack when stretched. A 360° directional spout is available for broadcast operations.

***NOTE:** Do not shred cardboard with a Harper Straw Blower. The density of cardboard will cause damage to the cutting knives and the rotor.



Control Identification



PTO Shaft – transfers power from the tractor to the Straw Blower.

Tub – the bale is placed in the tub and when engaged the tub rotates and feeds the bale down into the cutting knives.

Tub Engagement Lever – engages the rotation of the tub.

Safety Door – the door on the tub is spring loaded to prevent objects from falling into the cutting knives, and debris from flying out of hopper when no bale is present.

Retractable Bale Rack – pulls out to hold an extra bale.

Directional Spout (option) - Directs the straw to the desired area. The hose adapter may also be mounted in the same location.

Spout Crank – turns the directional spout to discharge straw to the desired area.



Safety Guidelines

- 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.
- 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 equipment.
- 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.

Guards & Shields

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

Safety Decals

- If safety related or instructional decals become illegible or are removed, replace them immediately. New decals may be obtained from your local Harper Dealer.
- If you replace parts that have such decals attached to them, make sure the decals are replaced with current versions, and are on the replacement parts before the machine is operated again.



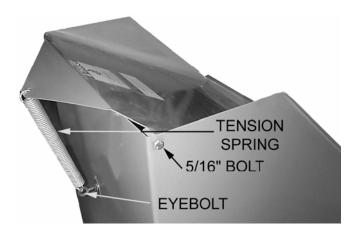
Assembly

All Models

TUB COVER SAFETY SHIELD

Using the Hardware supplied:

- Install the eyebolt through the top hole in the rear tub wall with a flat washer, lock washer and nut on each side of the wall.
- Mount the tub to the tub base with the truss-head bolts, lock washers and nuts provided. Put the bolt heads inside the tub to provide a smooth inside surface.
- 3. Insert a 5/16" nut just past the first thread of each bolt. Put the front lip of the safety shield (lid) down inside the tub and screw one bolt into each coupler on the lid. Center the shield in the opening, and then lock it into position by tightening the 5/16" nuts against the edges of the shield.
- Connect the tensioning spring from the eyebolt to the hole in the rear of the safety shield.



SUPER-FLEX HOSE INSTALLATION

Using the hardware supplied:

1. Mount the hose adapter to the Straw Blower.



2. Attach the hose to the hose adapter with a 6" hose clamp, and secure the hose handle to the other end of the hose with two 6" hose clamps.

DIRECTIONAL SPOUT INSTALLATION

Using the hardware supplied:

- 1. Follow the instructions given in the Parts Section of this manual for the Directional Spout Assembly.
- 2. Mount the directional spout to the Straw Blower as shown in the photograph on page 6.



- Connect the PTO shaft to the jackshaft of the Straw Blower.
- Install the pins provided and connect your three point hitch to the Straw Blower.
 IMPORTANT: Do not connect the PTO shaft at this time.
- 3. Raise the Straw Blower to the height where the PTO shaft would be level if installed (shortest length).
- 4. Hold the PTO shaft yoke level with the 540 output shaft of the tractor.
- 5. Allow for ³/₄" clearance between the outer shield and the bell housing at the Straw Blower end of the PTO shaft.
- 6. If the PTO shaft is too long, separate the halves and cut the full amount of excess length from both the male and female half.



Note: If you cut only one end of the drive shaft, the other end will bottom out during operation. Cut the inner and outer shields as necessary to compensate for the length adjustment.

7. Connect the yoke of the PTO shaft to the 540 output shaft of the tractor.



Operation



SAFETY WARNING!



- Wear approved eye and ear protection while operating the machine.
- Keep all guards in place during operation. Never operate machine with the tub removed.
- Before operating the machine, check to ensure that all the belt guides and snubbers are in place, to prevent belts from slipping off the pulleys and systems from being accidentally engaged.
- Check the bale tub for children, pets and foreign objects before operating.
- Never push material onto the cutters with your hands or feet.
- Periodically clean chopped material away from engines to lessen the possibility of fire.
- Always keep the fire extinguisher near the Straw Blower during operation.

To begin operation:

- 1. Make sure the tub engagement lever is disengaged.
- 2. Engage the PTO, to start blade rotation.
- 3. Set the first bale into the tub.
- 4. Engage the rotor by turning the engagement lever to the front of the machine.
- 5. Add another bale when there is about 1/3 bale left in the tub.

To stop operation:

- 1. Disengage the tub.
- 2. Disengage the tractor PTO to stop rotor.

NOTE: The Straw Blower is gravity-fed and it is natural for the rate of chopping to slow as the bale becomes lighter and until another bale is added.

NOTE: If bales are bound by wire instead of string or plastic, remove the wire before putting the bales in the tub.

NOTE: On initial operation, the belts will become stretched and need readjustment after the first 10-15 bales. When adjusting belt tension, use a straightedge across the faces of the pulleys to make sure they are properly aligned and the belts run true.



Adjustments

BELT TENSION

NOTE: Use only industrial V-belts. Do not use automotive belts.

NOTE: Use a straightedge to check alignment across the faces of pulleys after adjusting belt tension, to ensure that the belts will run true.

IMPORTANT: Do not over tighten belts. Excessive tension can cause premature bearing, gearbox and clutch failure.

- The blade shaft drive belt can be adjusted by means of two ½" threaded rods.
- The gear box belt can be adjusted by moving the idler pulley in the slotted hole.



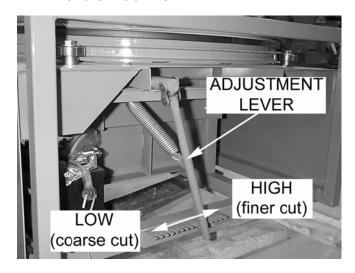
 The belt that rotates the tub can be adjusted by moving the two idler pulleys in the slotted holes.





CUTTING DEPTH

The cutting depth is adjusted by moving a lever and putting it into the slot that gives the desired cutting depth.
 The adjustment is located at the rear of the machine.



KNIFE REPLACEMENT



SAFETY WARNING!



- Wear protective gloves whenever handling blades or working near them.
- Knives and their retaining hardware rotate at high speeds. It is essential that they be mounted securely to prevent accidents.

NOTE: If the serrations are worn down but the tip of the knife is still intact, the knife may be turned around and remounted.

To maintain balance:

- Mount replacement knives only in the places from which the worn knives were removed.
- Mount additional knives only as opposing pairs on each plate, and in the patterns shown below.
- Do not remove nuts and bolts installed as weights, unless mounting knives in those holes.

NOTE: Mount the knives with bevel facing impeller and alternate between the front and back side of the plate.



IMPELLER

To replace knives:

- 1. Remove the belt from around the tub.
- 2. Loosen the bolts mounting the rear tub carrier bearings.
- 3. Slide the loosened bearings toward the rear and remove the tub from the Straw Blower.
- 4. Unbolt and remove the grate guide.
- 5. With the grate adjustment lever, rotate the grate upwards and clear of the knives.
- 6. Remove and replace the knives as necessary, using only Grade 5, ½"-20 x ½" bolts and lock nuts, treated with Loctite® (or equivalent). Tighten lock nuts to 18 in. lbs.
- 7. Return the grate to its original position.
- 8. Reinstall the tub.

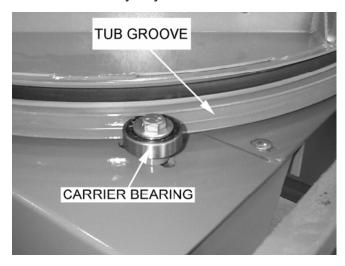


Service & Maintenance

BREAK-IN SERVICE

After the first 10-15 bales:

- 1. Check belts, tighten if necessary.
- 2. Tighten setscrews on bearings.
- 3. Check the tub carrier bearings and make necessary adjustments.



 The carrier bearing should run in the tub bearing grove. This keeps the tub spinning even.

All Models

BEARINGS

 The bearings are sealed and require no lubrication.

GEARBOX

At 100 hours & every 6 months:

- 1. Drain the gearbox while warm.
- 2. Thoroughly flush the gearbox housing with a light, flushing oil.
- 3. Refill the gearbox with 6 oz of 80-90 weight gear oil.

More Information

Your Harper dealer is the best source of upto-date information concerning Harper products.

Additional information is also available from the Harper Industries Service Department at 800-835-1042.



Troubleshooting

BELTS

Problem:	What to Check:
Belts slip	Tension Adjustment
	Load may be excessive
	Knives may be too dull
	Grate setting may be too low (cutting too deeply)
	Foreign material may be lodged in the chopper (on
	knives or blower paddles)
	Bearings may have seized
Belts wear rapidly, jump, catch or twist	Pulleys may not be properly aligned. Check with a
	straightedge across the faces of pulleys.

CUTTING AND DISCHARGE

Problem:	What to Check:
Hose plugs	 Material being chopped may have too much moisture in it. RPM may not be high enough. (540 RPM max is recommended for PTO model. Adjust throttle to increase RPM to required levels. DO NOT adjust engine governor on engine models. Foreign material may be lodged in the hose Grate setting may be set too low
Slow cutting time	 Grate setting may be too high Material being cut may be too wet Knives may be too dull RPM may be too low

GEARBOX

Problem:	What to Check:
Oil leaks	Housing bolts may be looseOil seals may need replaced
Gearbox overheats	Oil level may be too low Dirt or grease may have accumulated around the gearbox
Gearbox vibrates, is very noisy	 Oil level may be too low Components may be worn or damaged Load may be excessive

Standard Torque Chart



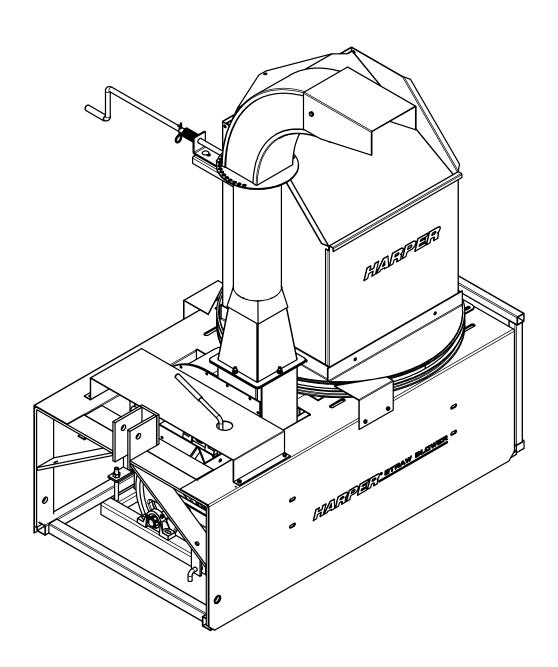
SAFETY WARNING!



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.



PARTS

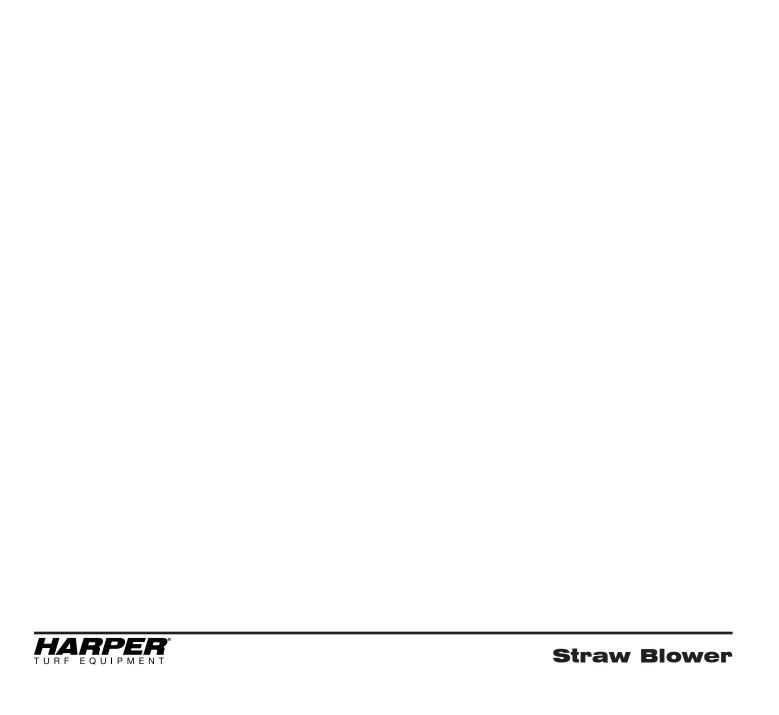


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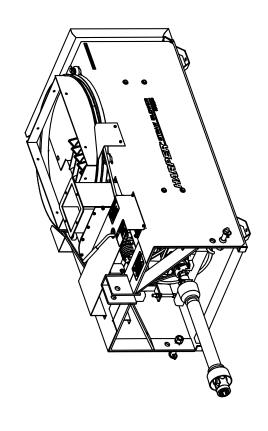
PARTS

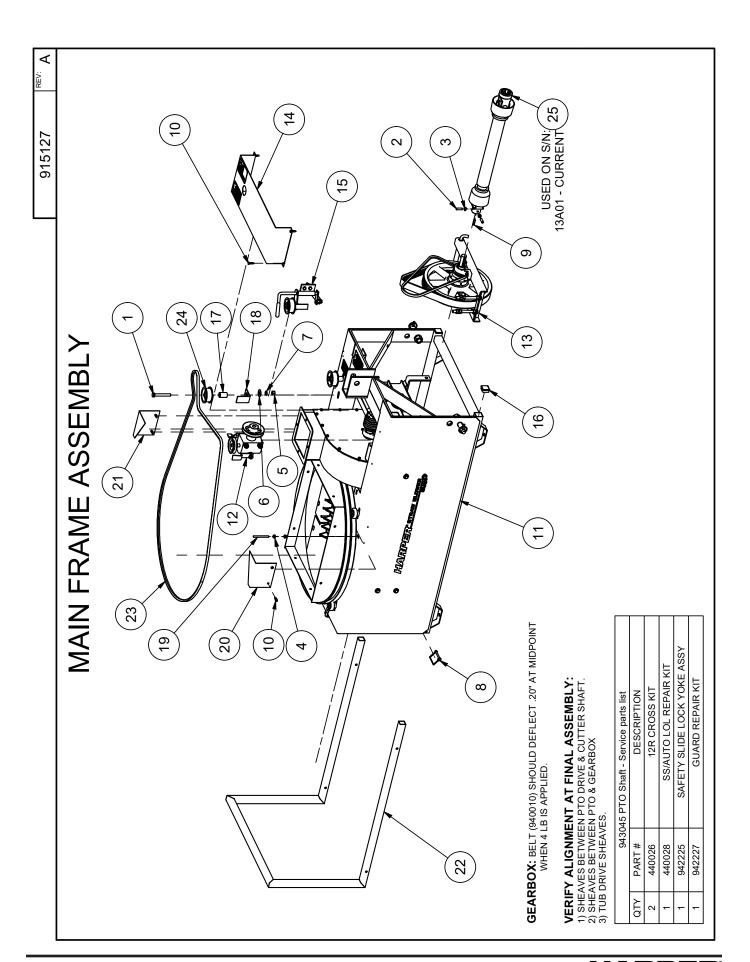
Main Frame Assembly	1.1
Base Assembly	1.2
Blower Through Assembly	1.3
Tub Shift Assembly	
Drive Assembly	1.5
Gear Box Assembly	1.6
Decal Installation	



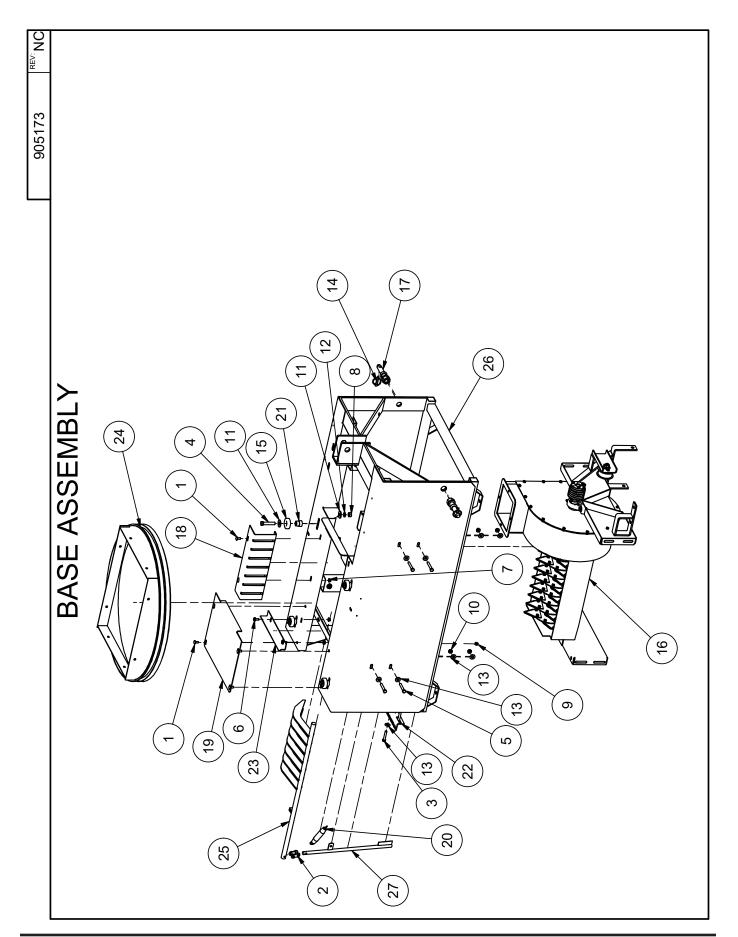
MAIN FRAME ASSEMBLY

\top																									
DESCRIPTION	BOLT, 1/2-13 X 3.5	SetScrew, 3/8-16 X 1.25	NUT, 3/8-16 HEX JAM GR 2	NUT, 5/16-18 WIZ FLANGE	NUT, 1/2-13	WASHER, 1/2" FLAT STANDARD	WASHER, 1/2" LOCK	PIN, LOCK, 1/4 X 2-1/4, SQ WIRE	KEY, 1/4 X 1/4 X 1.25 in	SCREW, 1/4 X 1 TEK SELF-TAP	ASSEMBLY, BASE W/DECALS	ASSEMBLY, GEAR BOX	ASSEMBLY, DRIVE	ASSEMBLY, SHIELD W/DECALS	ASSEMBLY, TUB SHIFT	PLUG, CAP 1-1/2" X 1-1/2"	IDLER PULLEY SPACER	BELT GUIDE	GUIDE, BELT	SHIELD, TUB BELT	SHIELD, TUB BELT	BALE CARRIER	DRIVE BELT, BLOWER TUB (A128)	IDLER ASSY. 2.75 FLAT X 1.125 WLD	PTO shaft
PART #	110002	110093	110107	110606	110610	110658	110666	140016	510089	710586	905172	905175	905176	905177	905178	910003	910005	910006	910027	910056	910330	915037	940002	940027	943045
ΔTY	2	2	2	4	2	2	2	2	1	8	1	1	1	1	1	2	2	1	2	1	1	1	1	2	-
ITEM	_	2	3	4	5	6	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

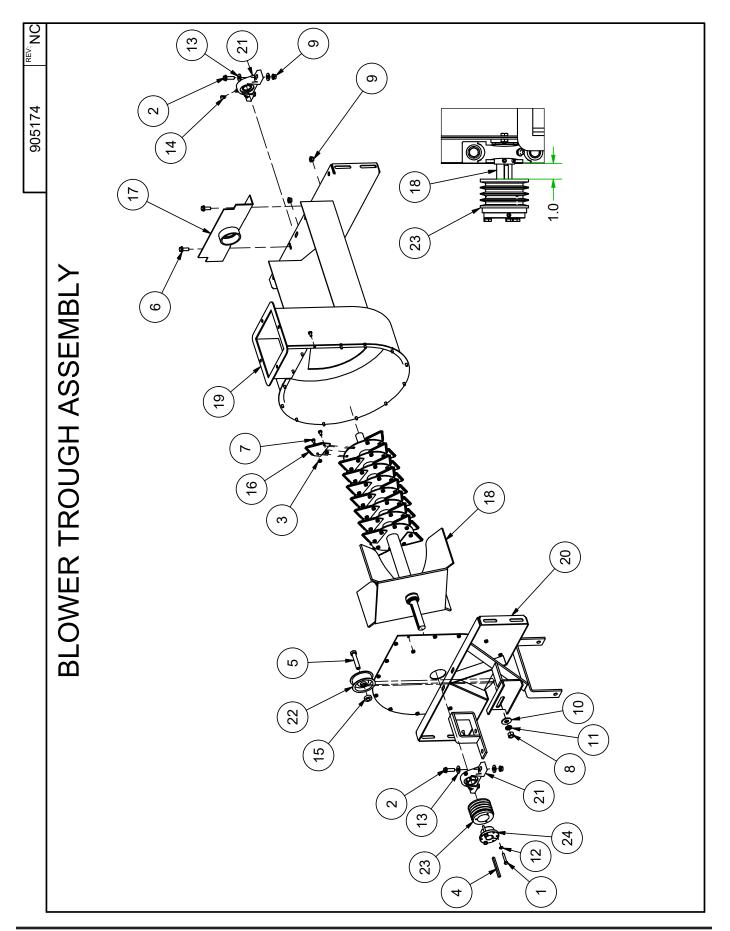


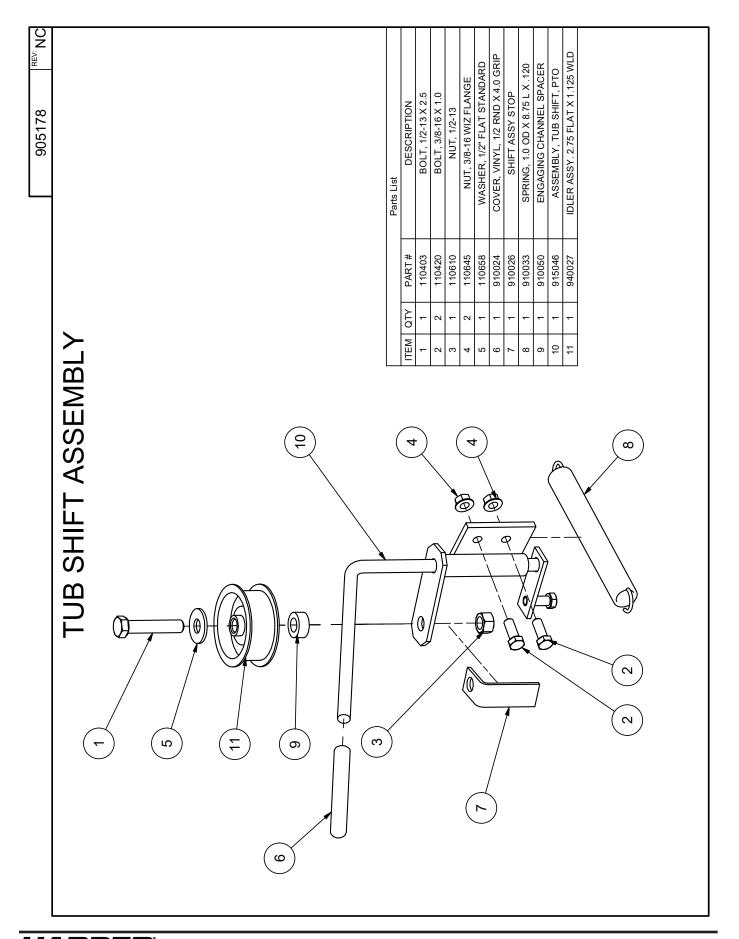


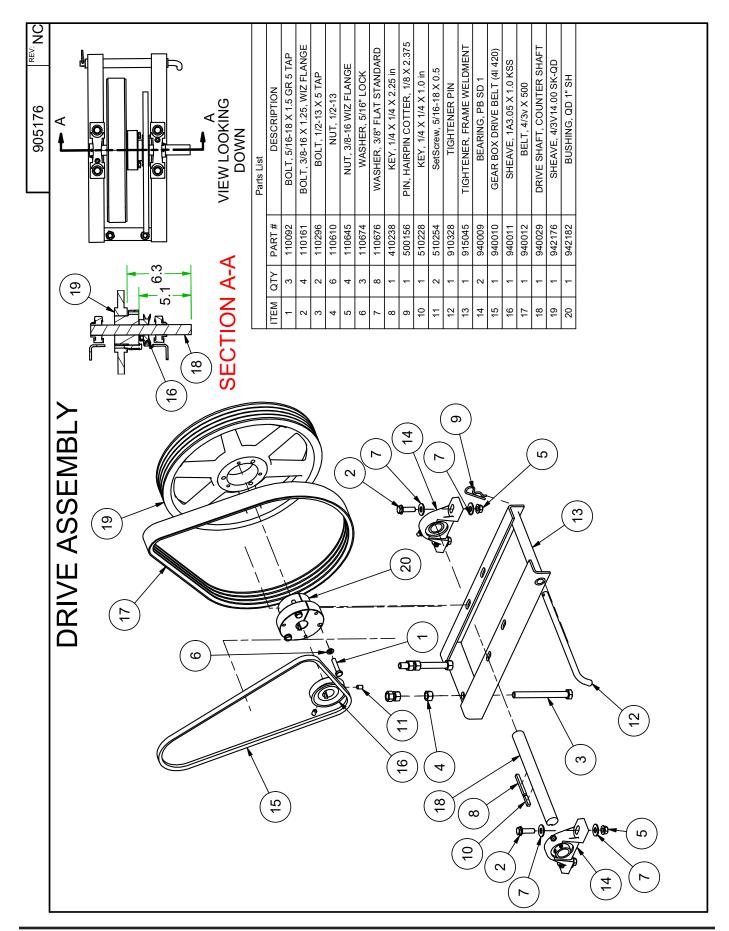
			DESCRIPTION	Bolt, 5/16-18 X 0.75 in Carriage	CONNECTING LINK, #80	BOLT, 3/8-16 X 2.0	BOLT, 1/2-13 X 2.5	BOLT, 3/8-16 X 2.5	BOLT, 5/16-18 X 0.75, WIZ FLANGE	NIIT 1/2-13	NUT, 3/8-16, UNITORQUE LOCK	NUT, 3/8-16 WIZ FLANGE	WASHER, 1/2" FLAT STANDARD	WASHER, 1/2" LOCK	WASHER, 3/8" FLAT STANDARD	Pin, Lynch 5/16 x 1 3/4	BEARING, 52M OD X 25M ID 6205	ASSEMBLY, BLOWER TROUGH	3-POINT PIN W/HARDWARE	GUIDE, / FINGER GRATE	SPRING, FINGER ADJUSTER	TUB BASE SPACER	BRACKET, GRATE ADJUSTMENT	GRATE ALIGNMENT BRACKET	TUB BASE ASSY	ADJUSTABLE GRATE, 7-FINGER	MAIN FRAME ASSY, PTO	GRATE LEVER ASSY, PTO
	:	Parts List		Bolt, (00				BOLT, 5	2	NUT, 3	N	WASH	<i>></i>	WASH	Ь	BEARIN	ASSE	3-PC	0.5	SPRI		BRACK	GRAT		ADJUS	MA	GR
			PART#	110020	110287	110400	110403	110436	110444	110610	110621	110645	110658	110666	110676	411287	742054	905174	910002	910014	910018	910019	910021	910322	915002	915035	915041	915047
ı			ΔTΥ	9	-	2	4	8	7 0	0 4	2	80	8	4	18	2	4	-	7			4	-	_	-	-	-	-
			ITEM	-	2	3	4	2	9 1	- a	6	9	11	12	13	14	15	16	17	2 5	2 8	21	22	23	24	22	56	27
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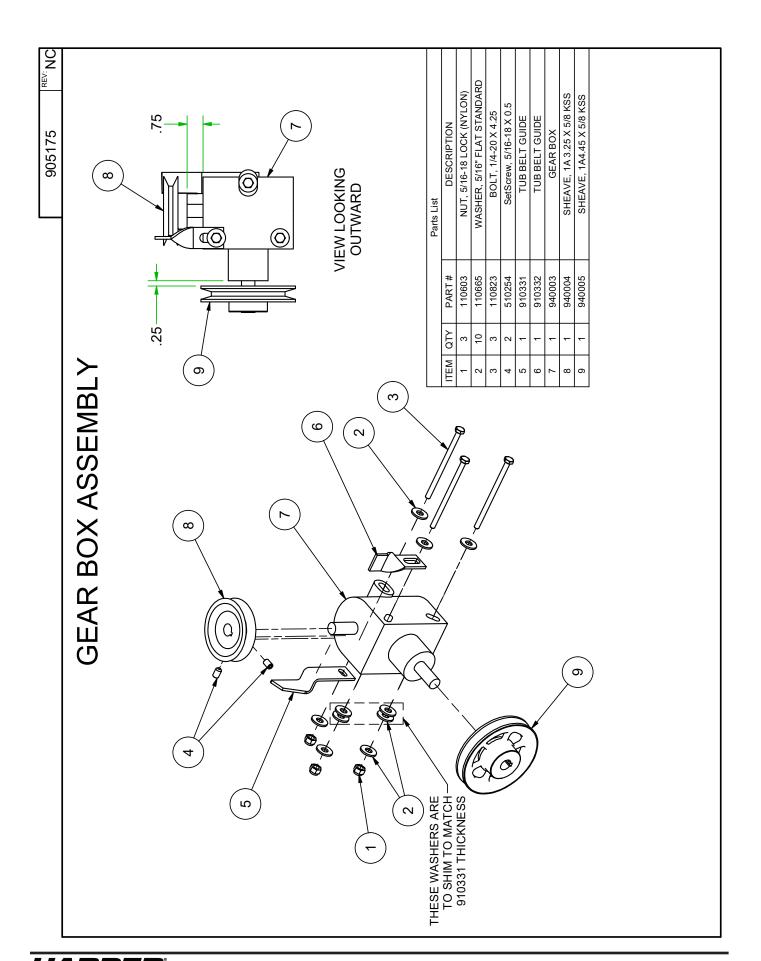


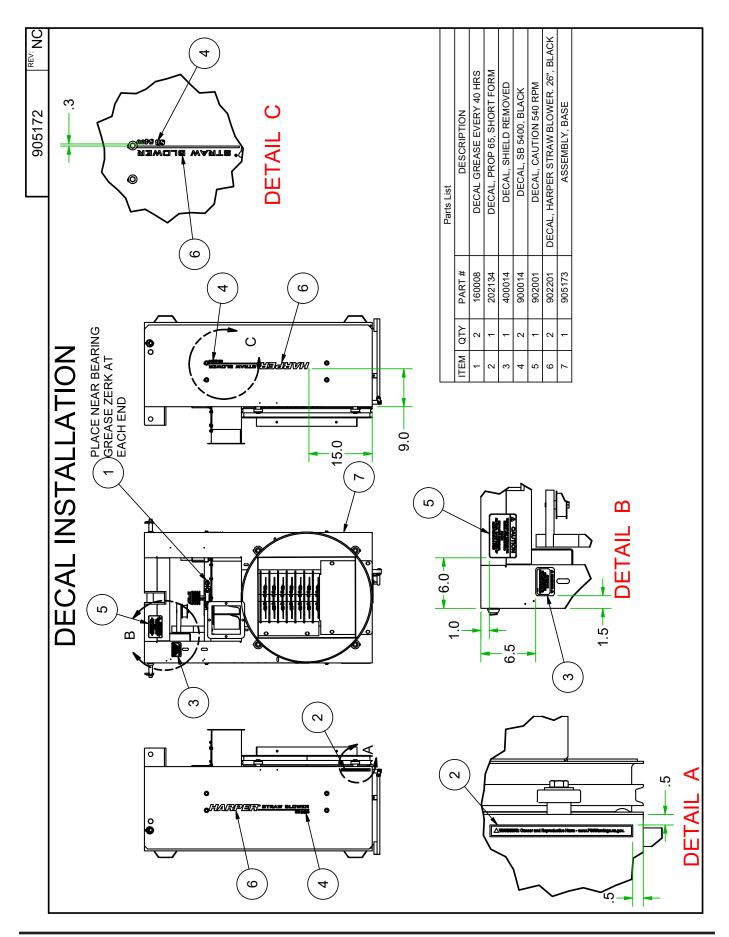
905174 REV: NC	Parts List	DESCRIPTION	BOLT, 1/4-20 X 1.5 TAP	BOLT, 3/8-16 X 1.25, WIZ FLANGE	NUT, 1/4-20, UNITORQUE LOCK	KEY, 1/4 X 1/4 X 3.25	BOLT, 1/2-13 X 2.5	BOL1, 3/8-16 A 1, WIZ FLANGE	BOLT, 1/4-20 X .50	NI T 3/9 46 WIZ EI ANCE	WOT, 3/8-18 WIZ FLANGE WASHER, 1/2" FLAT STANDARD	WASHER, 1/2" LOCK	WASHER, 1/4" LOCK	WASHER, 3/8" FLAT STANDARD	GREASE ZERK, 1/4-28 90deg	SPACER, .320	STRAW BLOWER KNIFE	ASSY, REAR BEARING GUARD	ROTOR AND FAN ASSY	BLOWER TROUGH ASSY, PTO	BLOWER COVER WELDMENT	BEARING, PB SD 1	IDLER ASSY. 2.75 FLAT X 1.125 WLD	QD SHEAVE QUOTE# 21.10814_13.0921 GATES# 7	BUSHING, QD 1" SH
		PART #	110077	110161	110174	110340	110403	110440	110515	110645	110658	110666	110667	110676	500230	900277	910039	915011	915026	915034	915043	940009	940027	942173	942179
B		QTY F	3	\dashv	_	-		+	, 78		0 -	-	3	8	-	1	32 8	1 6	1	-	-	2	-	\dashv	-
		ITEM	-	7	ဗ	4	2	ا ه	<u>_</u> α		9 C	1	12	13	14	15	16	17	18	19	20	21	22	23	24
BLOWER TROUGH ASSEMBLY																					o /		<i>₹</i> 7		











NOTES

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