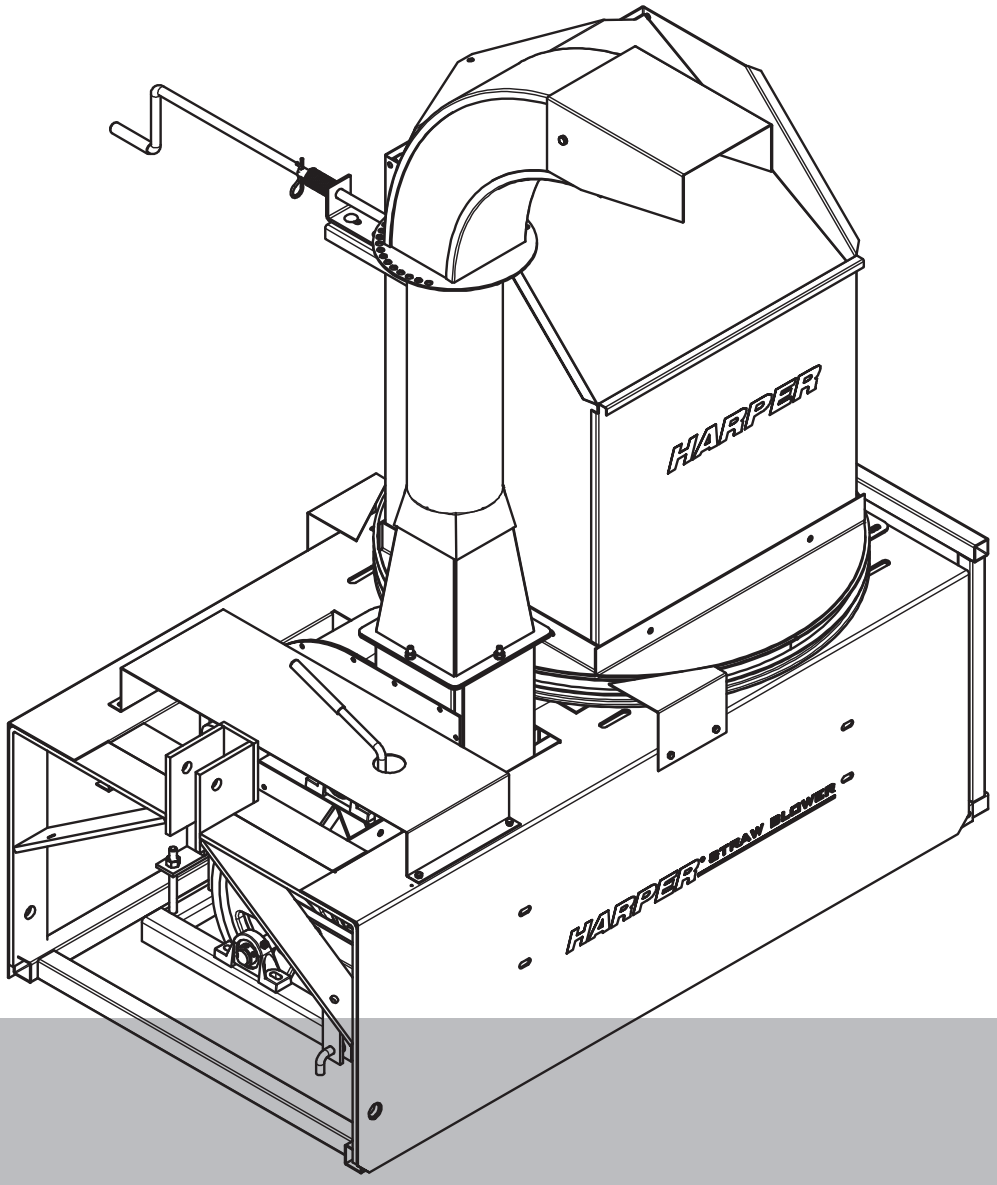
Straw Blower 5400



OPERATOR'S MANUAL

1-2019

HARPER INDUSTRIES INC

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.

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 Phone _____

Table of Contents

Specifications

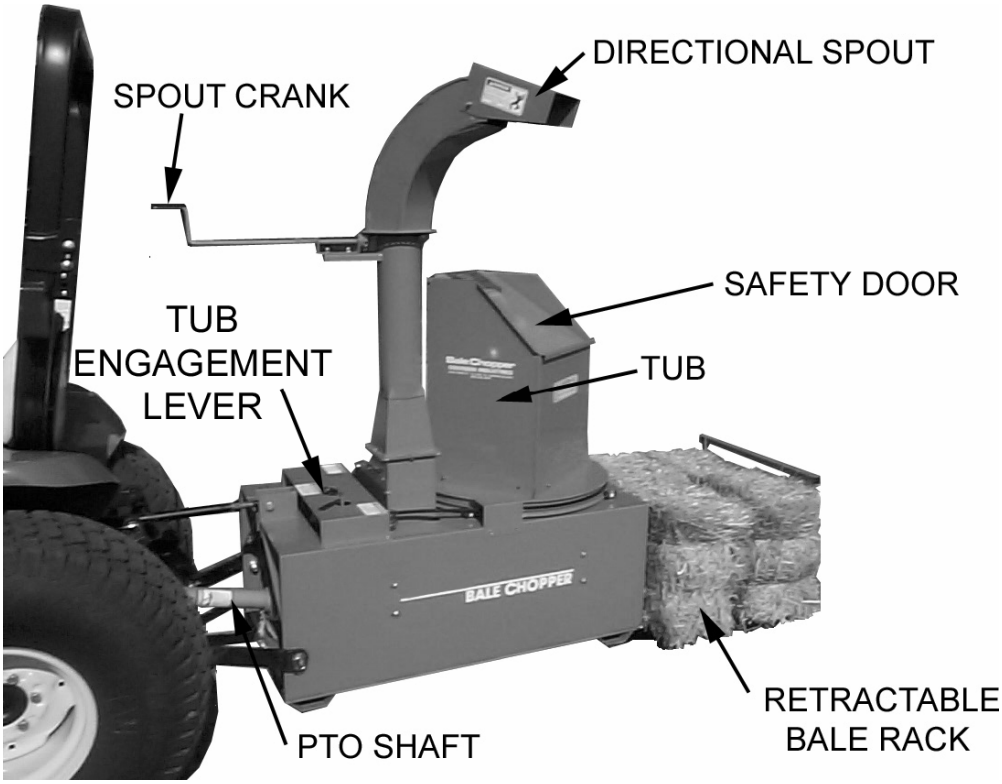
Drive	540 RPM PTO
Dimensions	Width - 31” Height - 51” Length - 60”
Weight	525 lbs (shipping weight 600 lbs)
Cutting Device	4 blade impeller - 16.5” diameter
Knives	32
Discharge	6” x 30’ Super-flex hose or directional spout

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

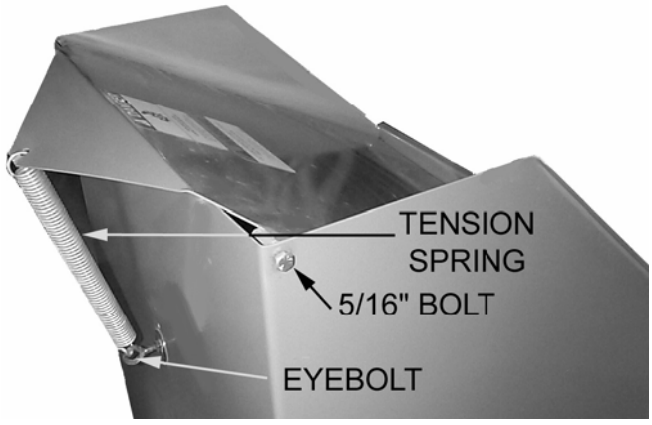
Using the Hardware supplied:

1. 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.

2. 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.

4. 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.

1. Connect the PTO shaft to the jackshaft of the Straw Blower.

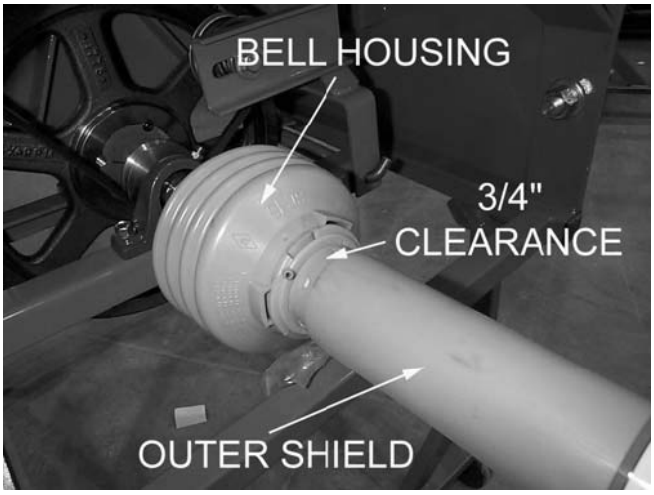
2. Install the pins provided and connect your three point hitch to the Straw Blower. **IMPORTANT:** Do not connect the PTO shaft at this time.

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 ¾" 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

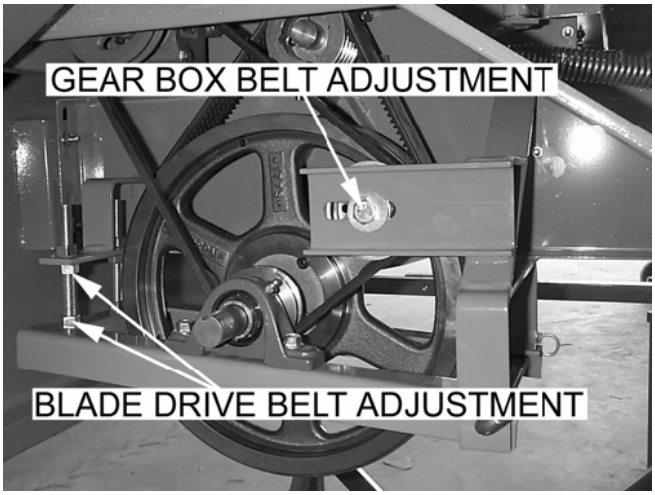
BELT TENSION

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

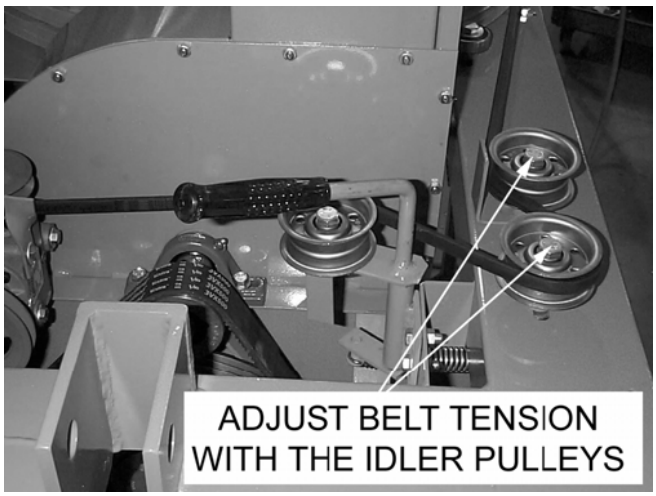
NOTE: Use a straightedge to check alignment across the faces of pulleys after adjusting belt tension, to ensure that the belts will run true.

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.

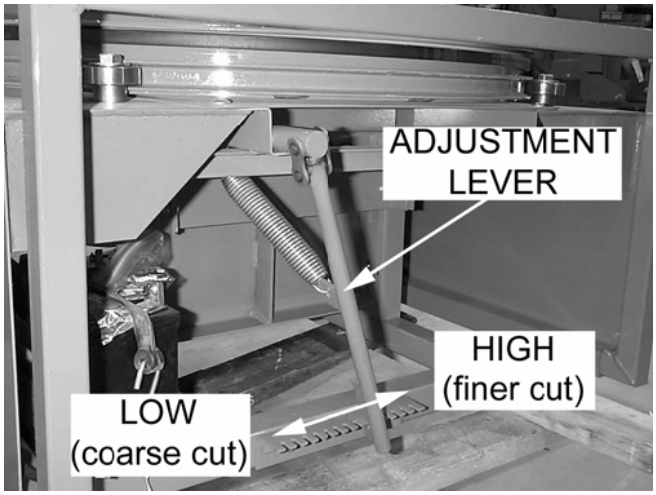


- The belt that rotates the tub can be adjusted by moving the two idler pulleys in the slotted holes.



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.

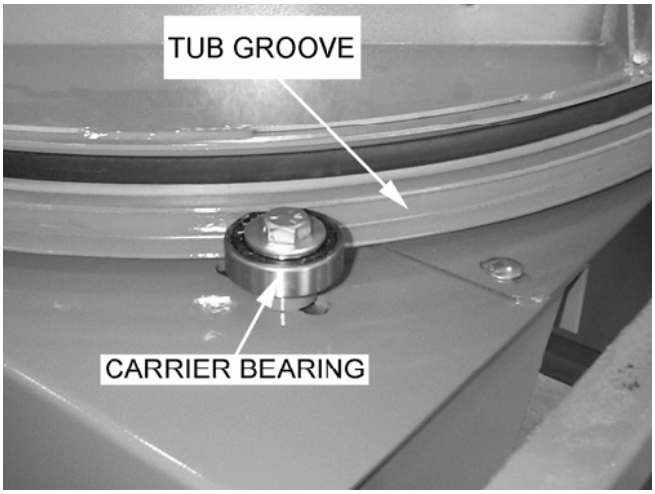
To replace knives:

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, ¼”-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 up-to-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 loose • Oil 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

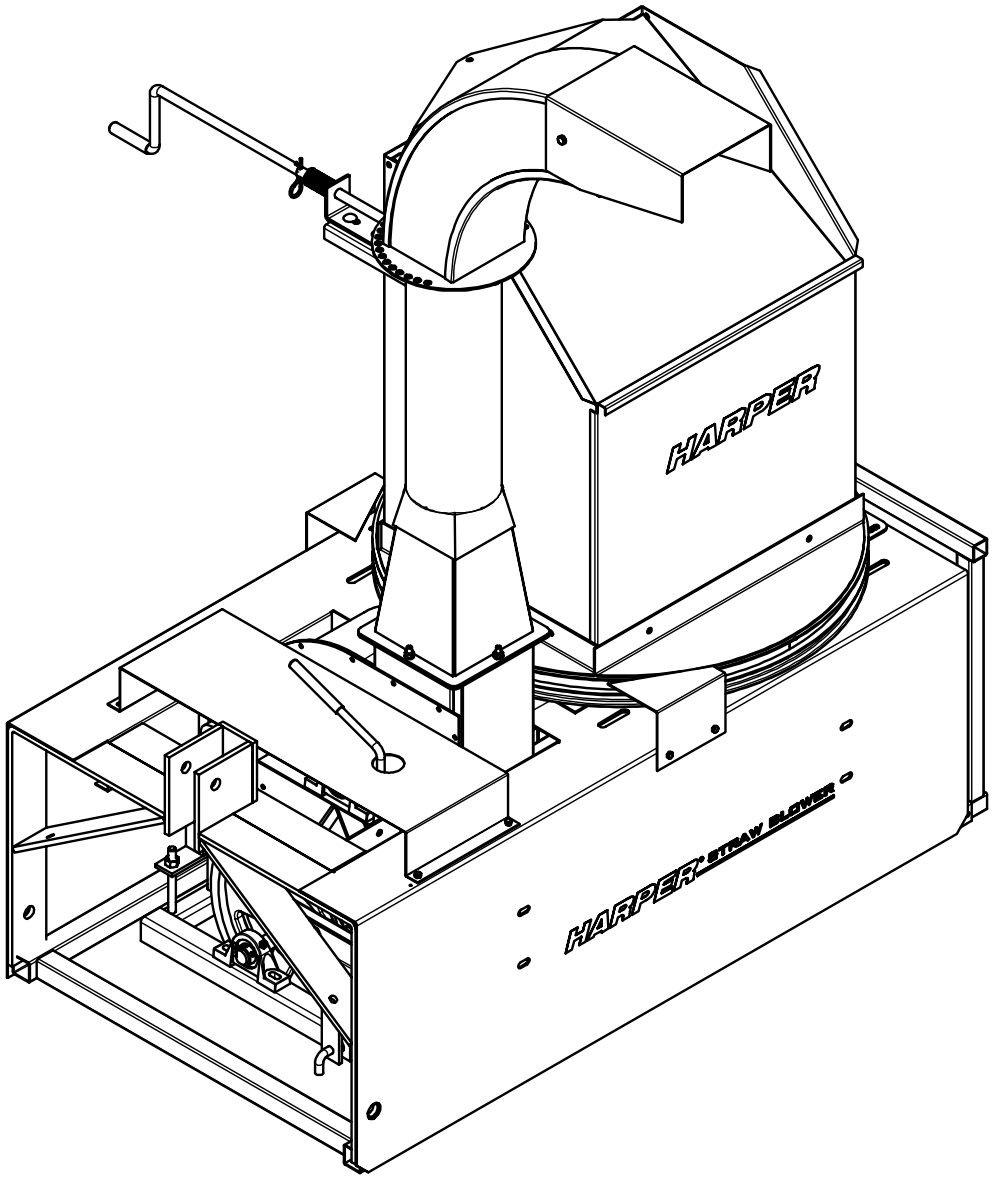
Standard Torque Chart

SAFETY WARNING!

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

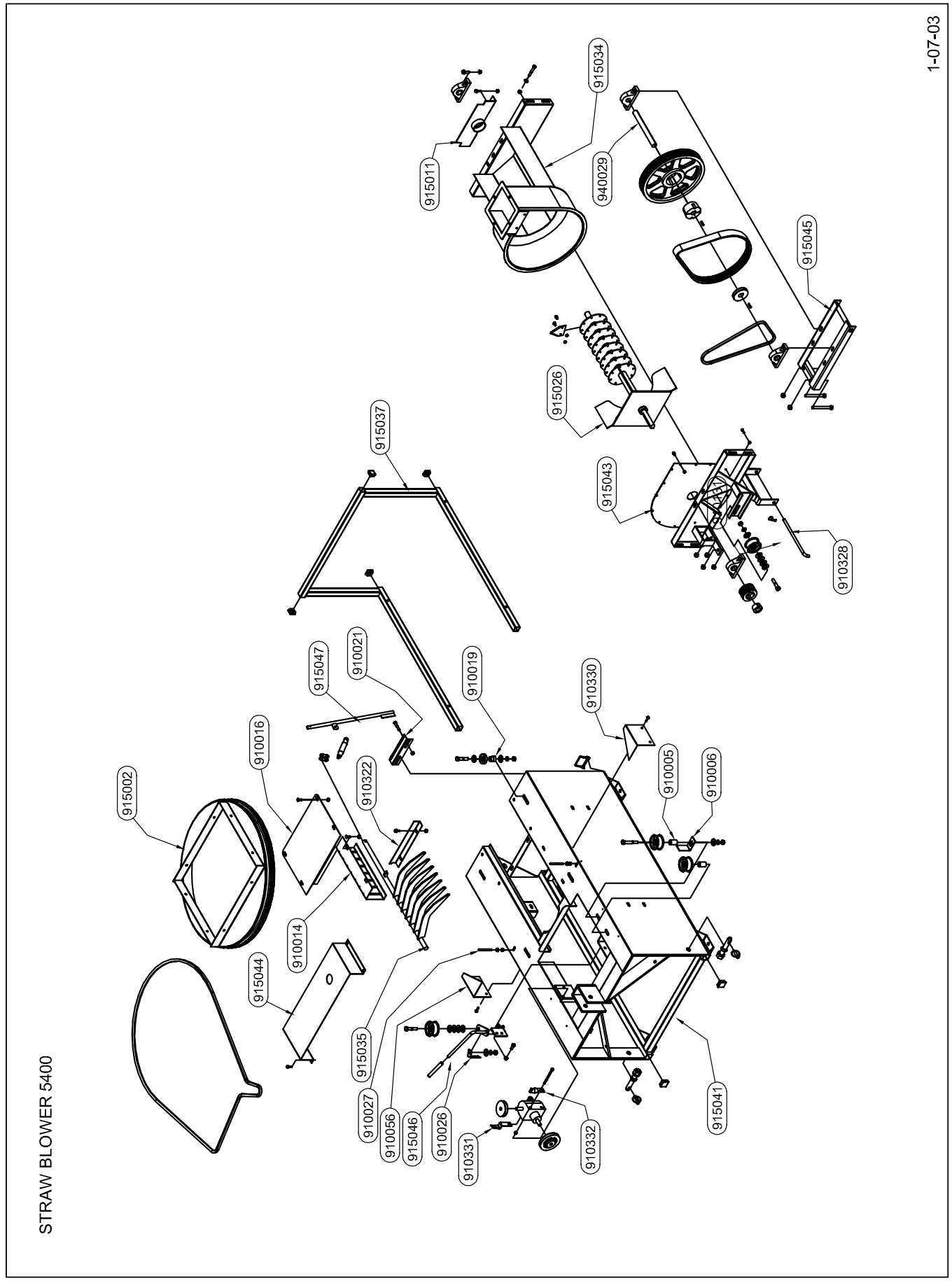
Size	In-Lbs	Ft-Lbs	N-m
No. 10-24	25-35	5-7	2.8-4.0
1/4 in.	60-80	18-20	7-9
5/16 in.	120-140	28-30	14-16
3/8 in.	340-360	64-74	24-27
1/2 in.		126-150	90-100

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

Table of Contents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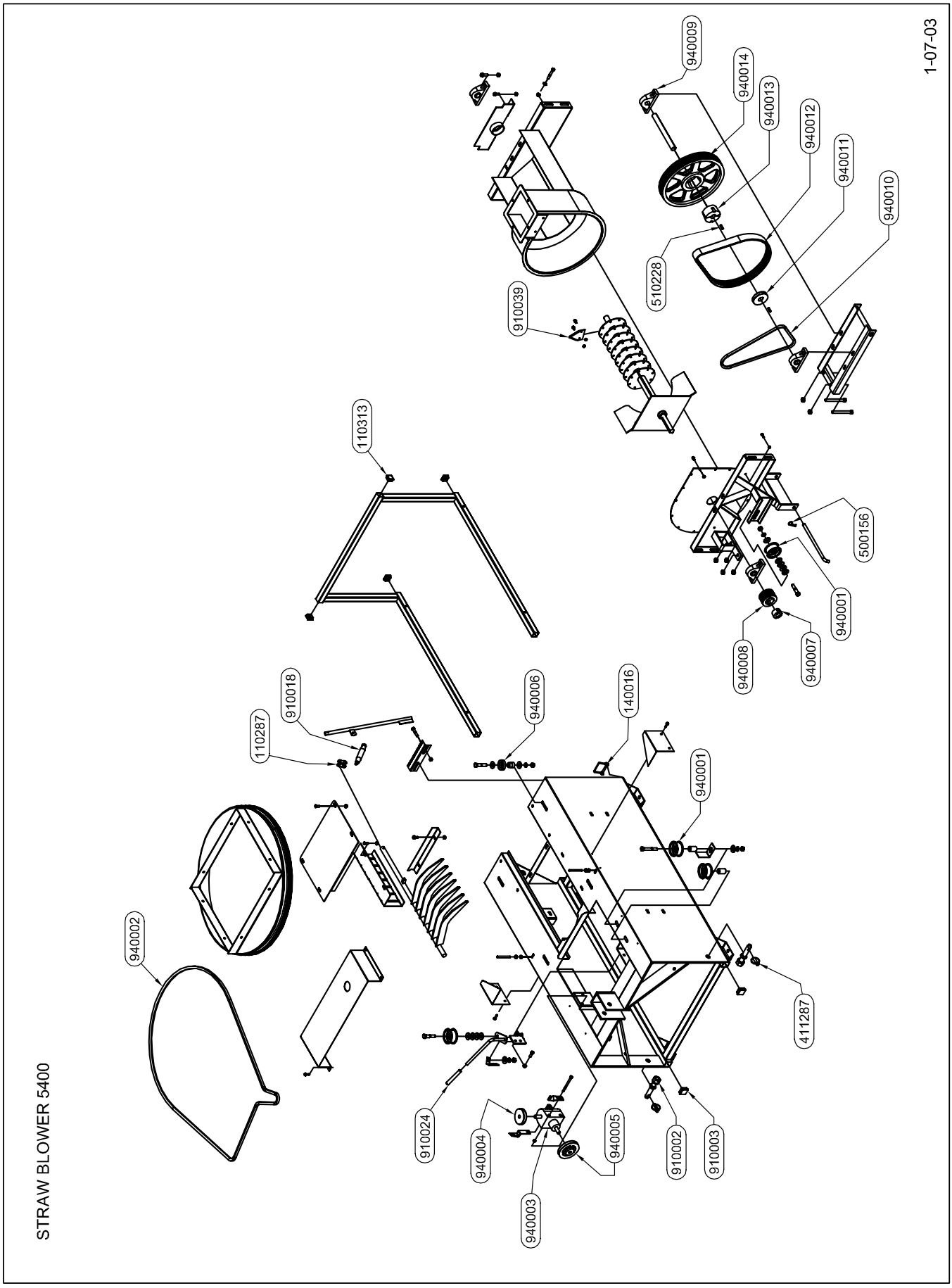
915002
910016
915047
910021
910322
910019
910330
910005
910006
915037
915034
915011
940029
915045
915026
915043
910328
910014
915044
915035
910027
910056
915046
910026
910331
910332
915041

STRAW BLOWER 5400

PART #	QTY	NAME
910005	2	IDLER PULLEY SPACER
910006	1	BELT GUIDE
910014	1	GUIDE, 7 FINGER GRATE
910016	1	COVER, REAR ROTOR
910019	4	SPACER, TUB BASE BEARING
910021	1	BRACKET, GRATE ADJUSTMENT
910026	1	SHIFT ASSY STOP
910027	2	GUIDE, BELT
910131	1	HANDLE, HOSE
910322	1	GRATE ALIGNMENT BRACKET
910328	1	TIGHTENER HINGE PIN
910330	1	SHIELD, TUB BELT, PTO
910331	1	BELT GUIDE
910332	1	BELT GUIDE
915002	1	TUB BASE ASSY
915011	1	REAR BEARING GAURD
915026	1	ROTOR AND FAN ASSY
915034	1	BLOWER TROUGH ASSY, PTO
915035	1	ADJUSTABLE GRATE, PTO
915037	1	BALE CARRIER
915041	1	MAIN FRAME ASSY, PTO
915043	1	BLOWER COVER WELDMENT
915044	1	FRONT BELT SHIELD
915045	1	TIGHTENER FRAME WELDMENT
915046	1	TUB SHIFT ASSY, PTO
915047	1	GRATE LEVER ASSY, PTO
940029	1	DRIVE SHAFT
910056	1	SHIELD, TUB BELT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1-07-03
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940014
940013
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940010
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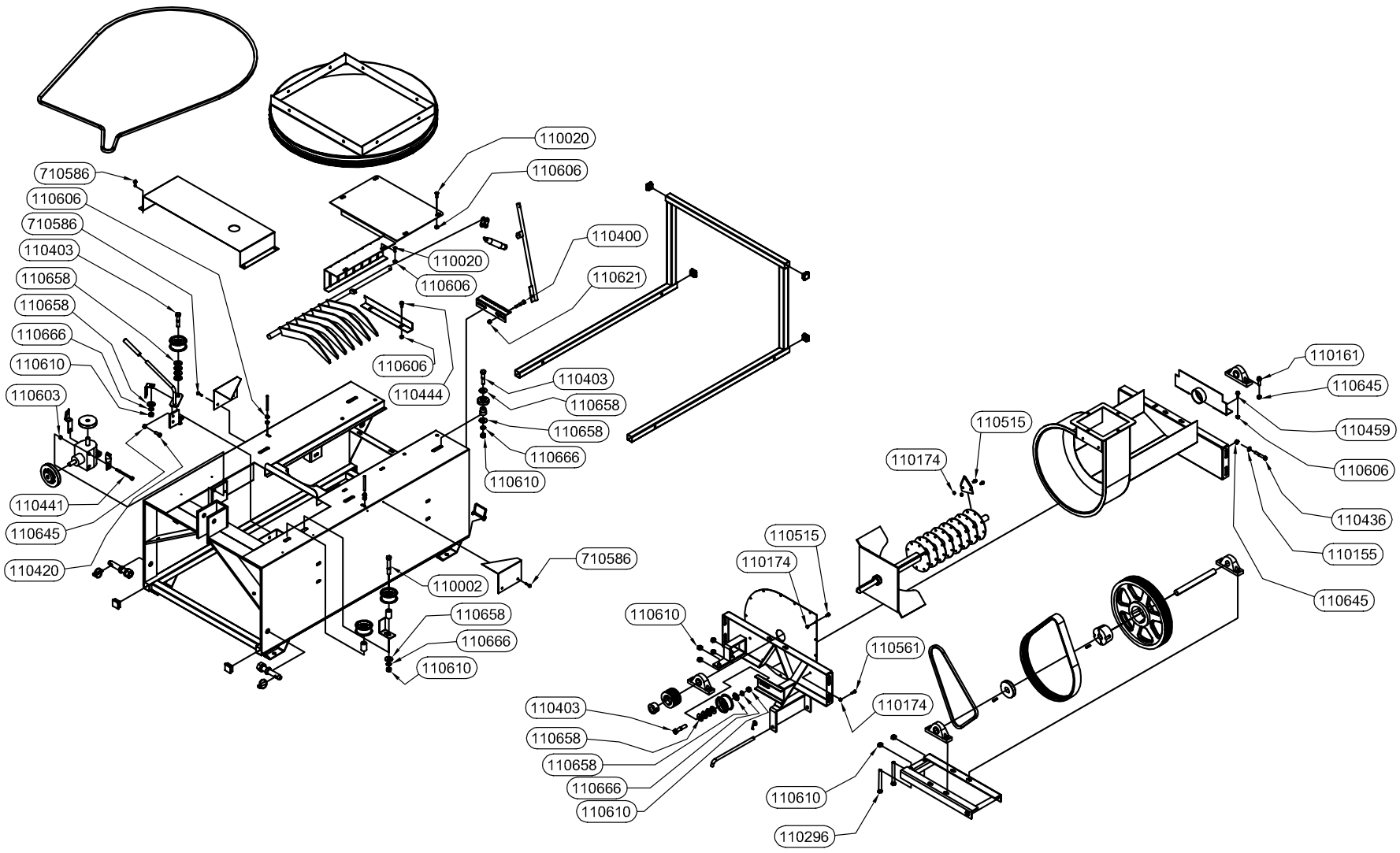
110313
500156
940001
940008
940007
910018
110287
940006
140016
940001
940002
411287
910024
940004
940005
910002
910003
940003

STRAW BLOWER 5400

PART #	QTY	NAME
110287	1	CONNECTING LINK, #80
110313	4	PLUG, 1-1/4 SQ TUBE
140016	1	LOCK PIN, WIRE 1/4 X 2-1/4
411287	2	PIN, LYNCH 7/16-14QP
500156	1	PIN, HAIRPIN COTTER
510228	2	KEY, .25 X .25 X 1.0
910002	2	3-POINT PIN W/ HARDWARE
910003	2	CAP PLUG
910018	1	SPRING
910024	1	SHIFT ROD COVER
910039	32	CUTTING KNIFE
940001	4	NARROW IDLER PULLEY
940002	1	TUB DRIVE BELT
940003	1	GEAR BOX
940004	1	GEAR BOX TOP SHEAVE
940005	1	GEAR BOX SIDE SHEAVE, PTO
940006	4	TUB BASE BEARING
940007	1	TAPER LOCK BUSHING
940008	1	ROTOR SHEAVE
940009	4	PILLOW BLOCK BEARING
940010	1	GEAR BOX DRIVE BELT
940011	1	SHEAVE 3.0 X 1
940012	1	BANDED DRIVE BELT
940013	1	TAPER LOCK BUSHING
940014	1	DRIVE SHEAVE

STRAW BLOWER 5400
BOLTS, NUTS & WASHERS

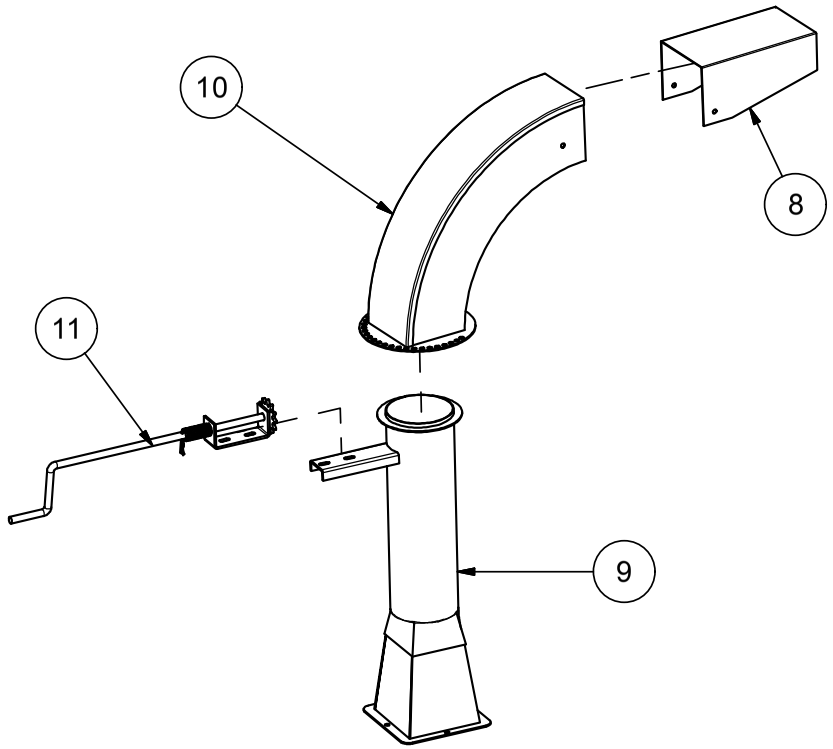


1-07-03

STRAW BLOWER 5400
BOLTS, NUTS & WASHERS

PART #	QTY	NAME
110002	2	BOLT, 1/2-13 X 3.5
110020	6	BOLT, 5/16-18 X .75 CARRIAGE
110155	8	WASHER, 3/8 FLAT, "SAE"
110161	8	BOLT, 3/8-16 X 1.25 WIZ FLANGE
110174	78	NUT, 1/4-20, LOCK (2-WAY)
110296	2	BOLT, 1/2-13 X 5, FULL THREAD
110658	20	WASHER, 1/2 FLAT
110400	2	BOLT, 3/8-16 X 2
110403	6	BOLT, 1/2-13 X 2.5
110603	3	NUT, 5/16-18 LOCK (NYLON)
110420	2	BOLT, 3/8-16 X 1
110606	14	NUT, 5/16-18 WIZ FLANGE
110666	8	WASHER, 1/2 LOCK
110610	14	NUT, 1/2-13
110436	8	BOLT, 3/8-16 X 2.5
110441	3	BOLT, 5/16-18 X 4
110444	2	BOLT, 5/16-18 X .75 WIZ FLANGE
110621	2	NUT, 3/8-16 LOCK
110459	2	BOLT, 5/16-18 X 1 WIZ FLANGE
110515	74	BOLT, 1/4-20 X .5
710586	8	SCREW, 1/4 X 1 TEK SELF TAP
110561	4	BOLT, 1/4-20 X .75
110645	18	NUT, 3/8-16 WIZ FLANGE

DIRECTIONAL SPOUT ASSY
P/N: 905005



Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	1	902012	COVER, CRANK HANDLE
2	1	902026	BOX, 6.5 X 6.5 X 32
3	1	902028	BOX 22 X 19 X 32
4	2	902036	DECAL, STAY CLEAR OF CHUTE
5	1	902049	BOX, 13 X 9 X 32
6	1	905016	HARDWARE, DIRECTIONAL SPOUT
7	1	910165	KIT, BOLT
8	1	910400	DEFLECTOR, DIRECTIONAL SPOUT
9	1	915060	SPOUT ASSY, LOWER DIRECTIONAL
10	1	915062	SPOUT ASSY, UPPER DIRECTIONAL
11	1	915119	CRANK ASSY, LONG HANDLE

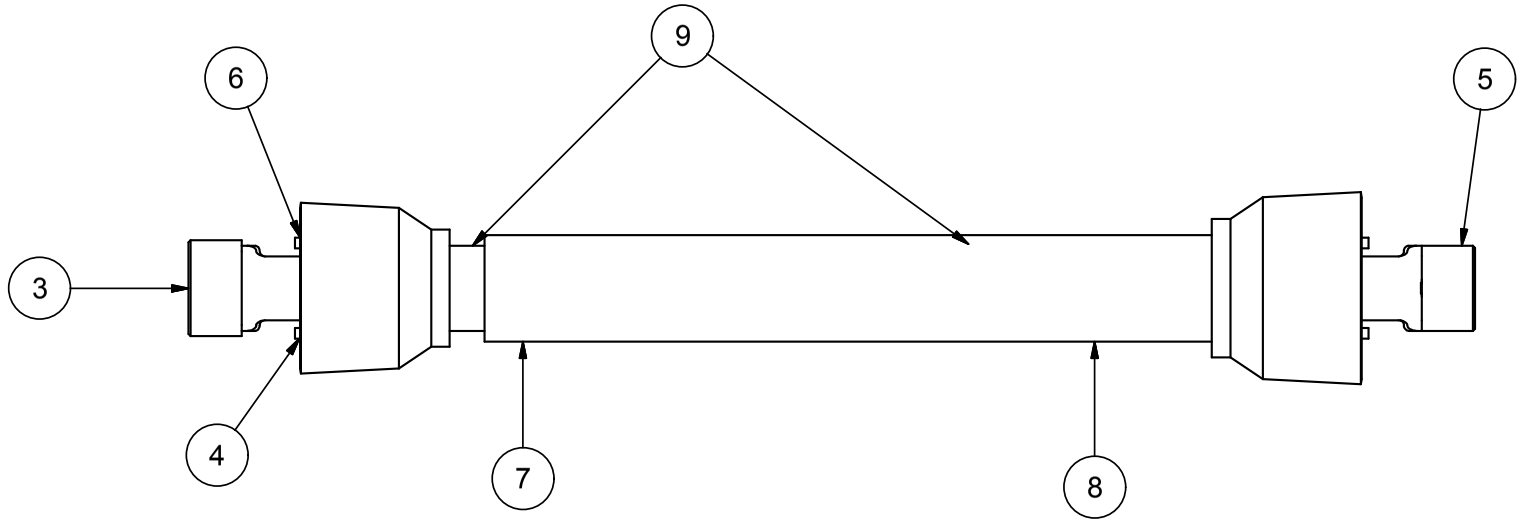
5/3/2013

SB5400 PTO SHAFT

PART NO. 940015

(OBSOLETE - PTO ASSY REPLACED BY 942217)

Service Parts List			
ITEM	QTY	PART #	DESCRIPTION
1	1	160009	DECAL, DANGER ROTATING DRIVE (NOT SHOWN)
2	1	500251	DECAL, DANGER (NOT SHOWN)
3	1	942038	YOKE, IMPLEMENT END 1" BORE
4	2	942085	BEARING SET, COMPLETE AW20
5	1	942118	YOKE, SNAP HITCH AW20
6	2	942119	CROSS & BEARING KIT, AW20
7	1	942120	YOKE, SHAFT WELD AW20
8	1	942123	YOKE, TUBE WELD AW20
9	1	942162	GUARD SET



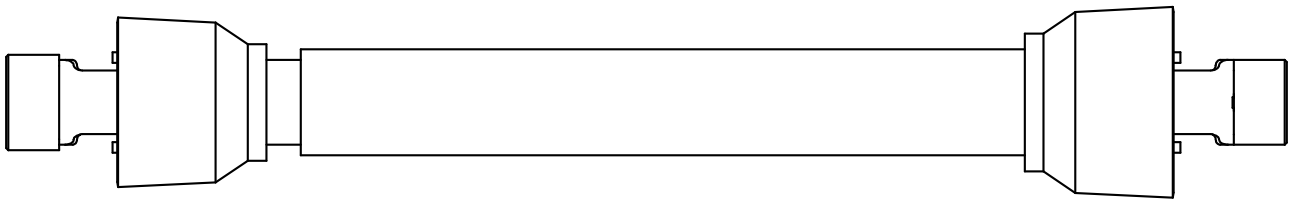
5/2/2013

SM5400 PTO SHAFT

PART NO. 942217

USED ON S/N: PRIOR TO 11A25 & SC12A28
(OBSOLETE - PTO ASSY REPLACED BY 943045)

Table		
QTY	PART #	DESCRIPTION
1	942221	JOINT & SHAFT HALF ASM. W/ GUARD
1	942222	JOINT & SHAFT HALF ASM
1	942223	JOINT & TUBE HALF ASM W/ GUARD
1	942224	JOINT & TUBE HALF ASM
1	440028	SPRING-LOK REPAIR KIT
1	942225	SPRING-LOK YOKE ASM
2	440026	12R CROSS KIT
1	942226	YOKE & SHAFT (1.00 X 1.12 RECT.)
2	942227	GUARD REPAIR KIT
1	942228	OUTER GUARD
1	640017	SAFETY SIGN
1	942229	SAFETY SIGN
1	942230	INNER GUARD
1	942231	YOKE, TUBE, & SLIP SLEEVE
1	942232	YOKE
1	510161	SET SCREW, 3/8-16 X .50 LNGTH



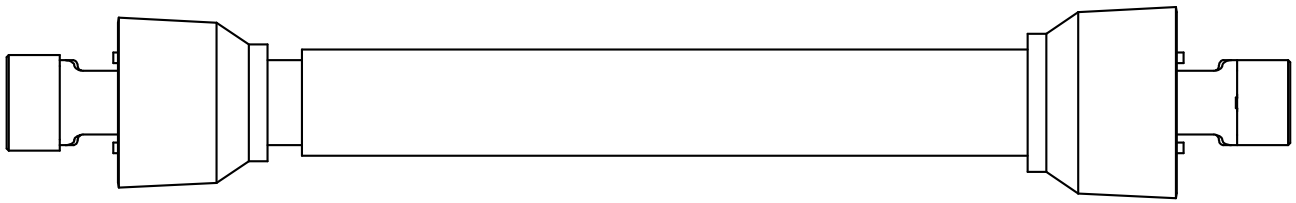
5/2/2013

SB5400 PTO SHAFT

PART NO. 943045

USED ON S/N: 13A01 - CURRENT

Table		
QTY	PART #	DESCRIPTION
1	942252	JOINT & SHAFT HALF ASM W/ GUARD
1	942253	JOINT & SHAFT HALF ASM
1	942254	JOINT & TUBE HALF ASM W/ GUARD
1	942255	JOINT & TUBE HALF ASM
1	440028	SPRING-LOK REPAIR KIT
1	942225	SPRING-LOK YOKE ASM
2	440026	12R CROSS KIT
1	942256	YOKE & SHAFT (1.OO X 1.12 RECT)
1	942257	OUTER GUARD
2	942227	GUARD REPAIR KIT
1	640017	SAFETY SIGN
1	942229	SAFETY SIGN
1	942258	INNER GUARD
1	942259	YOKE & TUBE
1	942232	YOKE
1	510161	SET SCREW, 3/8 X .50 LGTH



5/2/2013

NOTES

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