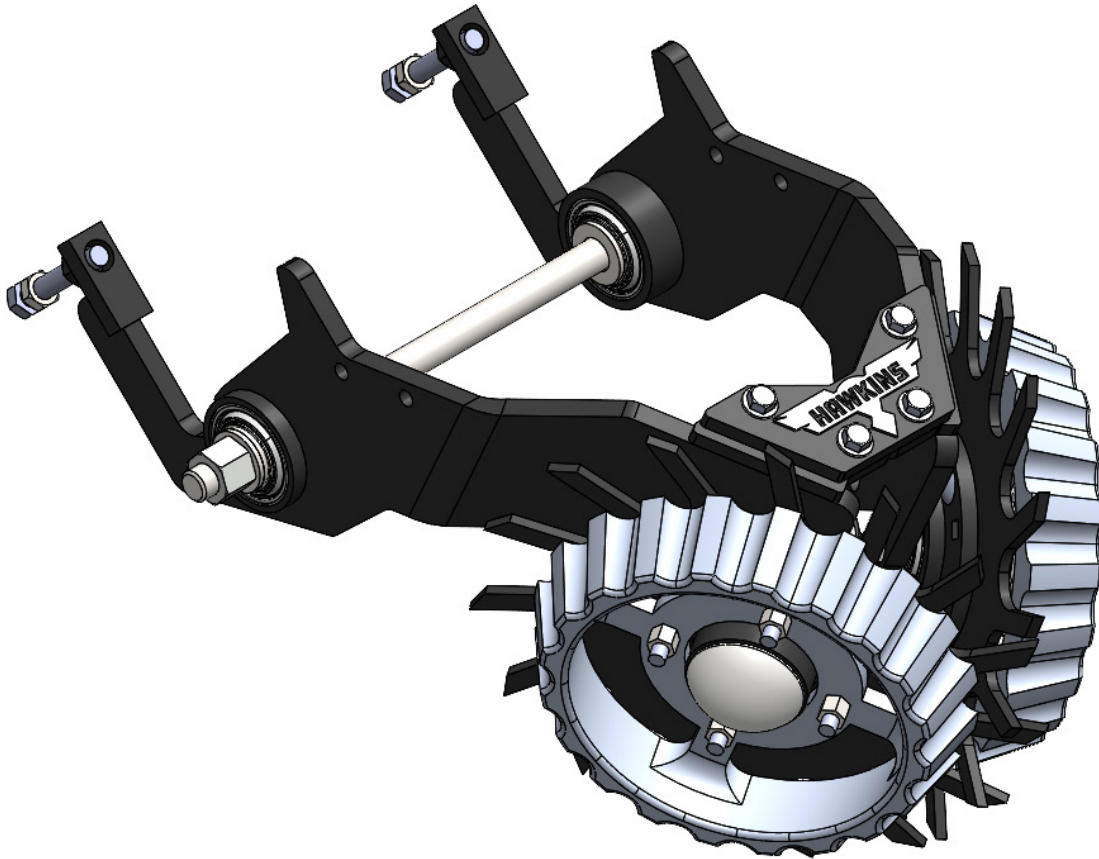




HAWKINS



TRAILBLAZER™ - STO OWNER'S MANUAL

FOR PART NUMBERS 602416, 602421, 602422

REVISED 08.20

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GENERAL INFORMATION



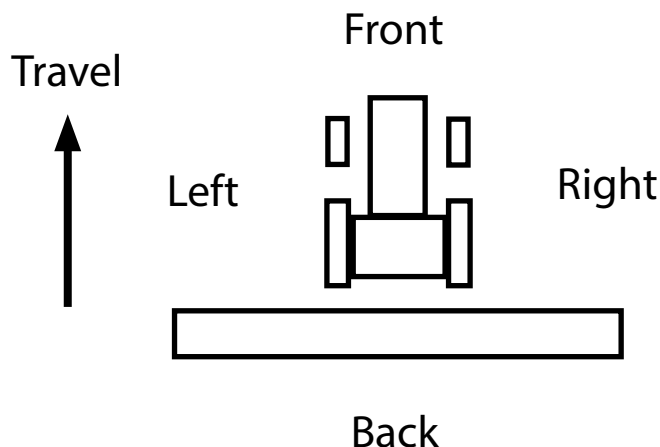
HOW TO USE THIS MANUAL

This manual is divided into sections. The first section contains a Table of Contents, General Information, Installation Guide and a Part Number Index. The remaining sections divide the machine into assemblies and sub-assemblies which illustrate and list all parts.

Hawkins Ag parts in this manual are specially designed for this machine and should be replaced with Hawkins Ag parts only.

Information in this manual was current at time of printing. However, due to Hawkins ongoing product improvement, production changes may cause your machine to appear slightly different in detail. Hawkins Ag reserves the right to change specifications or design without notice and without incurring obligation to install the same on machines previously manufactured.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use.



MANUAL REPLACEMENT INFORMATION

Replacement manuals are available. Call the Hawkins Ag Main Office at 308.708.8185, or download a printable PDF from our website, www.HawkinsAg.com.

MANUAL REVISIONS

When this manual is revised, the modification date is printed on the front cover and on the revised page(s).

TOUCH-UP PAINT

Repaint parts where paint is worn or scratched to prevent rust. Aerosol touch-up paint is available. To order, call Hawkins Ag at 308.708.8185.



INTRODUCTION

Thank you for your purchase of Trailblazer™- STO row units. Putting your trust in our equipment is something we don't take lightly and are humbled that you chose Hawkins Ag. Having designed all of our equipment with farmers like you in mind, we hope you enjoy years of productive use from it. Please read and understand this manual before operation.

WARRANTY INFORMATION

AGROdeviate LLC (AGROdeviate) warrants each Hawkins Ag product it manufactures to be free from defects in material and workmanship for a period not to exceed one (1) year from the date of sale to the original owner. The warranty is valid provided written notice of the alleged defect is received by AGROdeviate during said period and within ten (10) working days after its discovery.

In addition, AGROdeviate warrants each TOOLBAR FRAMEWORK to be free from defects in material and workmanship for a period not to exceed three (3) years from the date of sale to the original owner. The warranty is valid providing written notice of the alleged defect is received by AGROdeviate during said period and within ten (10) working days after its discovery.

This warranty is subject to completion of Product Registration and submission to AGROdeviate. Warranty applies only if product is installed, operated, and maintained according to product manual and instructions. Warranty will be void if the product has been subject to misuse, misapplication, neglect, collision with obstruction, or alteration.

For products, parts, and components NOT manufactured by AGROdeviate, the warranty obligations of AGROdeviate shall be limited to the Original Equipment Manufacturers' warranty. Tires on AGROdeviate equipment are warranted through the respective tire manufacturer and their network of dealers.

All returns must be pre-approved by AGROdeviate and authorization issued before return. All returns must include a copy of the original invoice in order to be processed. Any returns without a copy of the original invoice will not be eligible to receive credit.

If determined that the product is defective in material and/or workmanship, the necessary parts will be replaced and/or repaired. All warranty repair or labor is to be performed by an AGROdeviate authorized party. AGROdeviate obligation under this warranty shall be limited to repairing or replacing parts deemed defective. Warranty does not cover travel expenses. AGROdeviate will bear no other costs including loss, incurred labor, rental fees, nor other.

All returns shall be pre-paid. If warranty is approved by AGROdeviate, return freight will be credited.

This warranty by AGROdeviate LLC is expressly in lieu of all other warranties, expressed or implied, including warranty of merchantability and fitness for use. We neither assume, nor authorize, any other entity to accept for us any liability relating to the sale of our products.



SAFETY

TAKE NOTE! THIS SAFETY ALERT SYMBOL FOUND THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.



THIS SYMBOL MEANS:
-ATTENTION!
-BECOME ALERT!
-YOUR SAFETY IS INVOLVED!

SIGNAL WORDS:

Note the use of signal words DANGER, WARNING, and CAUTION with the safety messages. The appropriate signal word for each has been selected using the following guidelines:



DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.



WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If you have questions not answered in this manual, require additional copies, or the manual is damaged, please contact Hawkins Ag, 2120 4th Ave., Holdrege, NE 68949, 308.708.8185, or visit our website: www.hawkinsag.com.



SAFETY... YOU CAN LIVE WITH IT!



EQUIPMENT SAFETY GUIDELINES

Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. Designers and manufacturers build in as many safety features as possible. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents by observing the following precautions in this section. To avoid personal injury, study the following precautions and insist those working with you, or for you, follow them.

In order to provide a better view, certain photographs or illustrations in this manual may show an assembly with a safety shield removed. However, equipment should never be operated in this condition. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.

Replace any CAUTION, WARNING, DANGER or instruction safety decal that is not readable or is missing. Location of such decals is indicated in this booklet.

Do not attempt to operate this equipment under the influence of drugs or alcohol.

Review the safety instructions with all users annually.

This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible adult familiar with farm machinery and trained in this equipment's operations. Do not allow persons to operate or assemble the unit until they have read this manual and have developed an understanding of the safety precautions and how it works.

To prevent injury or death, use a tractor with a Rollover Protective Structure (ROPS). Do not paint over, remove or deface any safety signs or warning decals on your equipment. Observe all safety signs and practice the instructions on them.

Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question - DON'T TRY IT.



REMEMBER

Your best assurance against accidents is a careful and responsible operator. If there is any portion of this manual or function you do not understand, contact Hawkins Ag.



BEFORE OPERATION

- Carefully study and understand this manual.
- Do not wear loose-fitting clothing which may catch in moving parts.
- Always wear protective clothing and substantial shoes.
- It is recommended that suitable eye protection be worn.
- The operator may come in contact with certain materials which may require specific safety equipment (ie: extremely dusty, molds, fungus, bulk fertilizers).
- Keep bolts tightened to specific torque listed on page 26.
- Give the unit a visual inspection for any loose bolts, worn parts or cracked welds, and make necessary repairs. Follow the maintenance safety instructions included in this manual.
- Be sure that there are no tools lying on or near the equipment.
- Do not use the unit until you are sure that the area is clear, especially children and animals.
- Because it is possible that this equipment may be used in dry areas or in the presence of combustibles, special precautions should be taken to prevent fires and fire fighting equipment should be readily available.
- Don't hurry the learning process or take the unit for granted. Ease into it and become familiar with your new equipment.
- Practice operation of your equipment and its attachments. Completely familiarize yourself and other operators with its operation before using.



DURING OPERATION

- Keep hands, feet, and clothing clear of moving parts.
- Do not clean, lubricate or adjust your equipment while it is moving.
- Be especially observant of the operating area and terrain - watch for holes, rocks or other hidden hazards. Always inspect the area prior to operation.
- Periodically clear the equipment of brush, twigs or other materials to prevent buildup of dry combustible materials.
- Do not walk or work under raised components or attachments unless securely positioned and blocked.
- Keep all bystanders, pets and livestock clear of the work area.
- Never stand alongside of unit with engine running or attempt to start engine and/or operate machine while standing alongside of unit.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems. Follow the maintenance safety procedures.



FOLLOWING OPERATION

- Store the unit in an area away from human activity.
- Do not park equipment where it will be exposed to livestock for long periods of time. Damage and livestock injury could result.
- Do not permit children to play on or around the stored unit.
- Make sure all parked machines are on a hard, level surface.



PERFORMING MAINTENANCE

- Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
- Before working on this machine, stop the towing vehicle, set the brakes, shut off the engine and remove the ignition keys.
- Be certain all moving parts on attachments have come to a complete stop before attempting to perform maintenance.
- Always use the proper tools or equipment for the job at hand.
- Use extreme caution when making adjustments.
- Follow the torque chart in this manual when tightening bolts.
- Replace all shields and guards after servicing and before moving.
- After servicing, be sure all tools, parts and service equipment are removed.
- Never replace hex bolts with less than Grade 5 bolts unless otherwise specified. Refer to bolt torque chart for head identification marking.
- Where replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not claim responsibility for use of unapproved parts and/or accessories and other damages as a result of their use.
- If equipment has been altered in any way from the original design, the manufacturer does not accept any liability for injury or warranty.
- A first aid kit should be kept readily accessible while performing maintenance on this equipment.

INSTALLATION GUIDE



Needed Tools:

- Safety Glasses
- Protective Gloves
- Rubber Mallet
- Impact Driver
- Socket Wrench

For 5/8" Axle Kit, you will need:

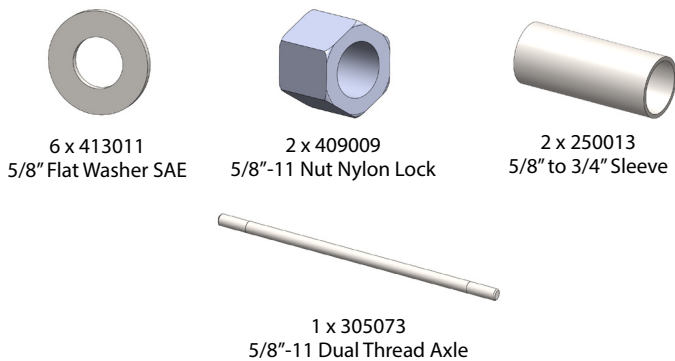
- 15/16" Impact Socket
 - 15/16" Combination Wrench
- ### For 3/4" Axle Kit, you will need:
- 1-1/8" Impact Socket
 - 1-1/8" Combination Wrench

For All Kits

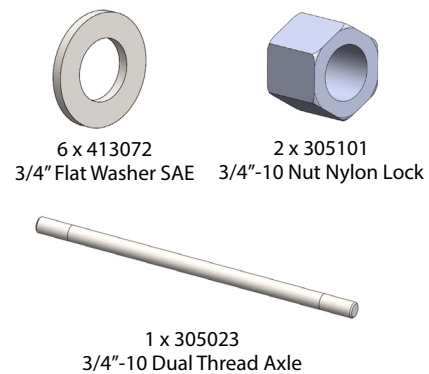
- 3/4" Impact Socket
- 3/4" Combination Wrench
- 9/16" Impact Socket

Included Parts:

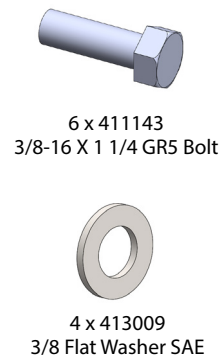
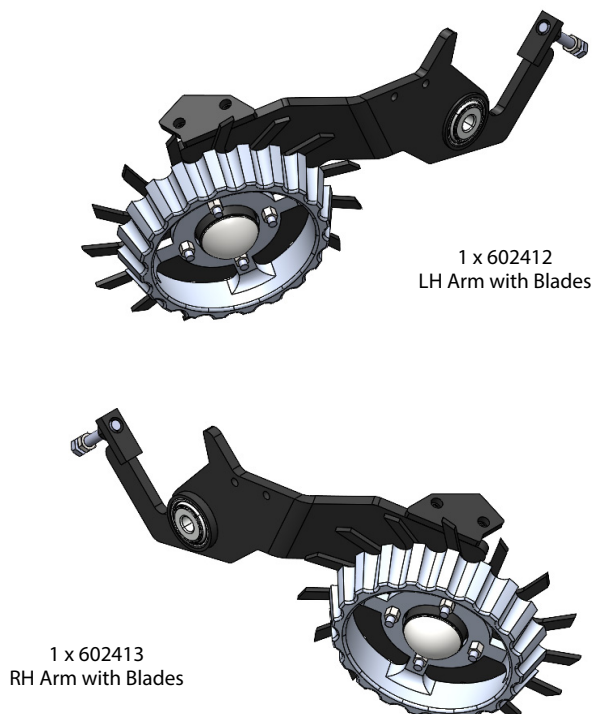
5/8" Axle Kit Hardware



3/4" Axle Kit Hardware

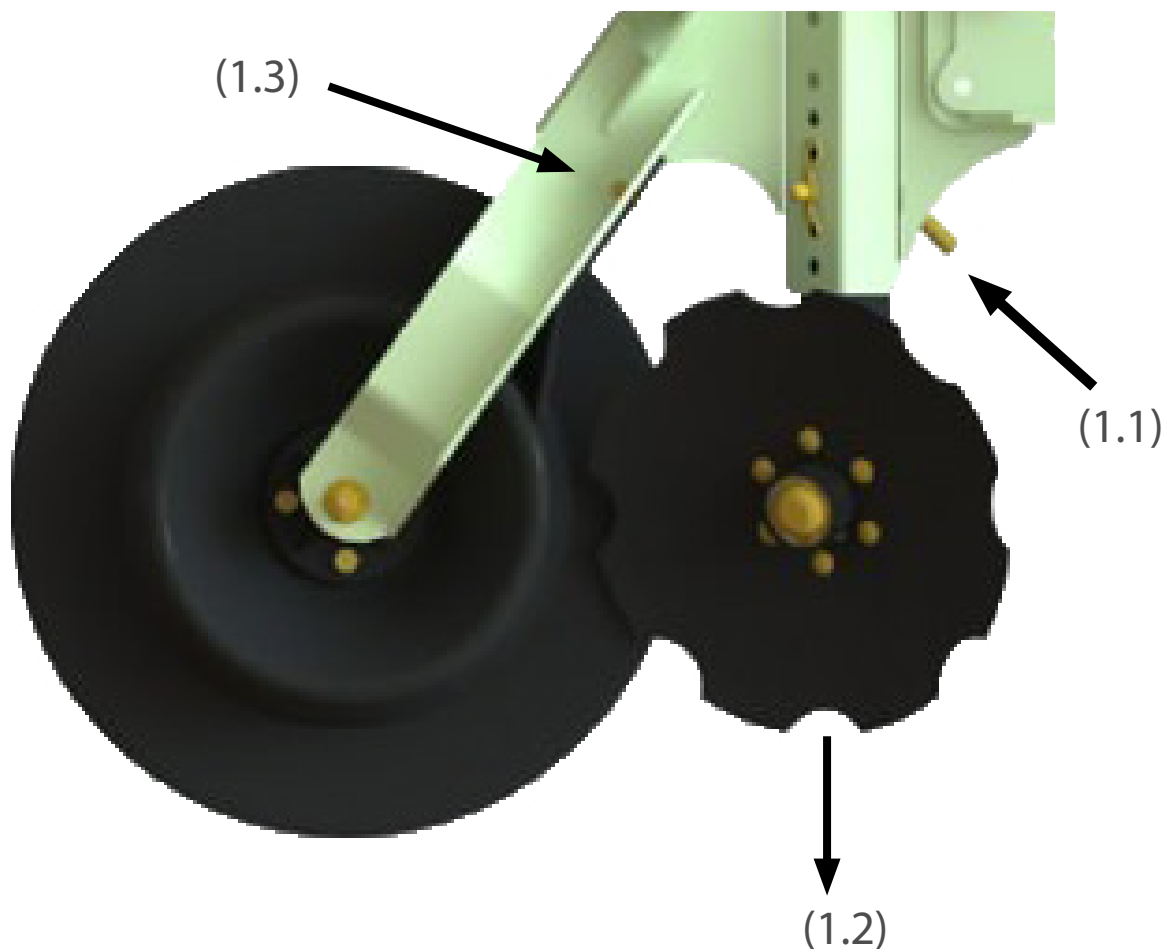


Included In All Kits





(1) Remove Orthman™ 1tRIPr™ Residue Manager



1.1 - Pull pin.

1.2 - Using leather gloves, carefully remove residue manager.

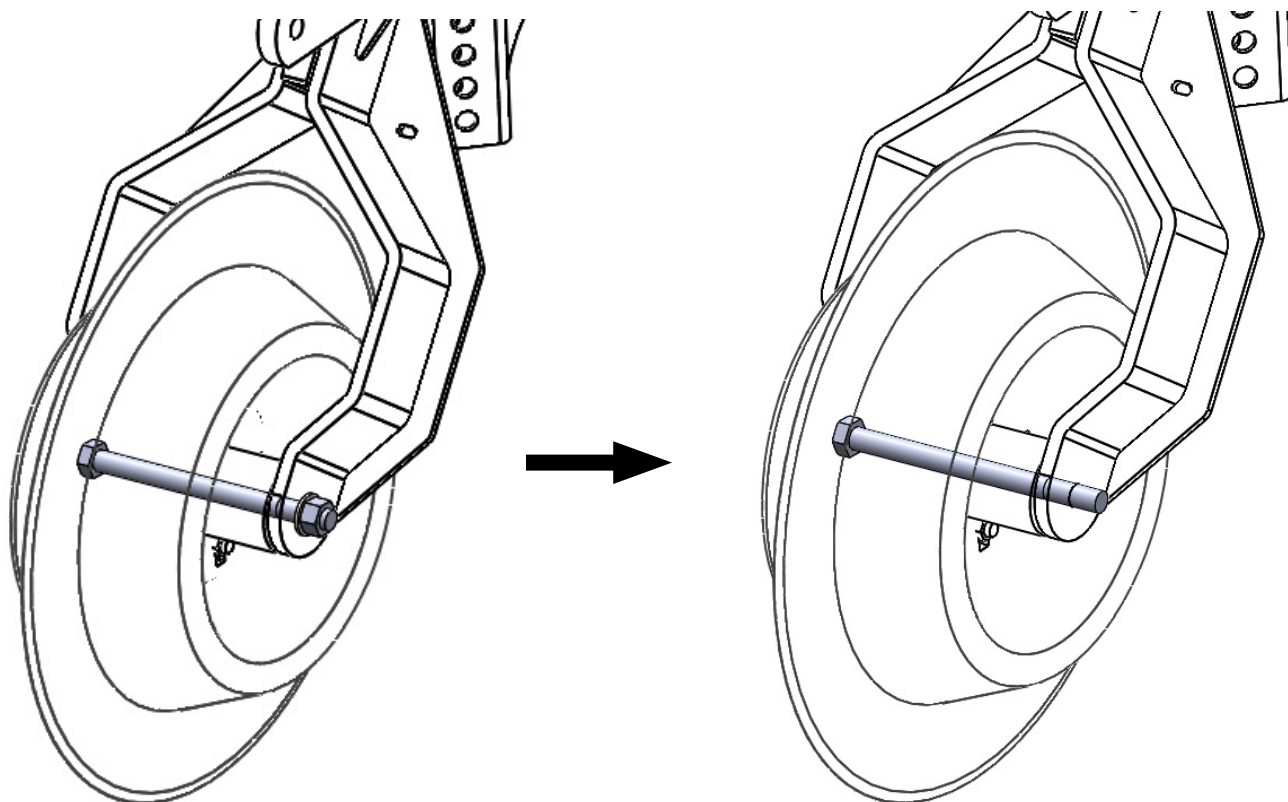
1.3 - Remove the depth band scraper for easier installation of Trailblazer™ - STO.



DO NOT place any body part beneath the residue manager as you remove it.



(2) Remove nut & washer from bolt on depth band



5/8" Axle Kit:

2.1 - Use 15/16" Socket and Wrench to loosen nut and washer. Then remove nut and washer.

2.2 - DO NOT remove the bolt from depth band at this time.

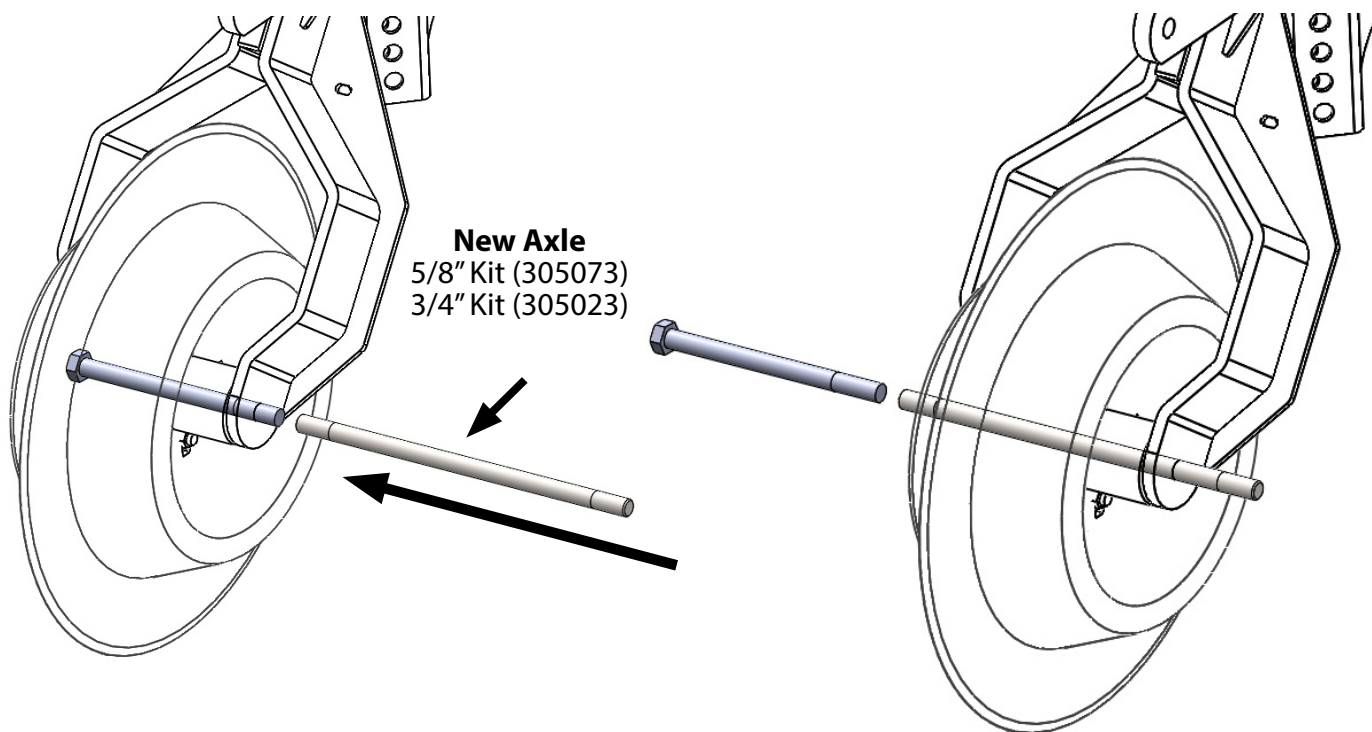
3/4" Axle Kit:

2.1 - Use 1-1/8" Socket and Wrench to loosen nut and washer. Then remove nut and washer.

2.2 - DO NOT remove the bolt from depth band at this time.



(3) - Use new axle & rubber mallet to replace bolt on depth band



5/8" Axle Kit:

3.1 - Aligning the **New Axle (305073)** with the threaded end of the bolt, use rubber mallet to tap in the new axle in place of the bolt. Be careful not to damage the threads on the **New Axle (305073)**.

3.2 - Ensure the **New Axle (305073)** is centered, and the same amount of the **New Axle (305073)** is protruding from each side.

3/4" Axle Kit:

3.1 - Aligning the **New Axle (305023)** with the threaded end of the bolt, use rubber mallet to tap in the new axle in place of the bolt. Be careful not to damage the threads on the **New Axle (305023)**.

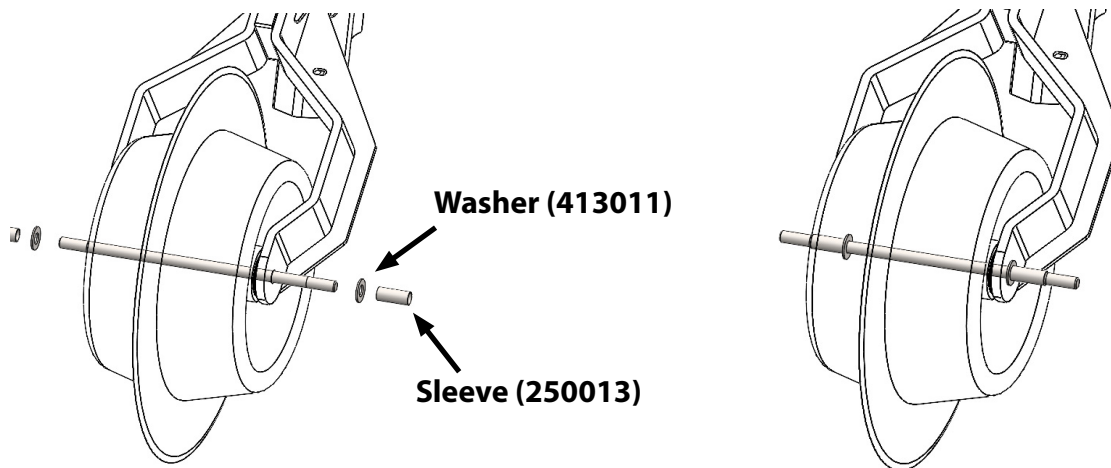
3.2 - Ensure the **New Axle (305023)** is centered, and the same amount of the **New Axle (305023)** is protruding from each side.



DO NOT place any body part beneath the depth band while replacing the bolt



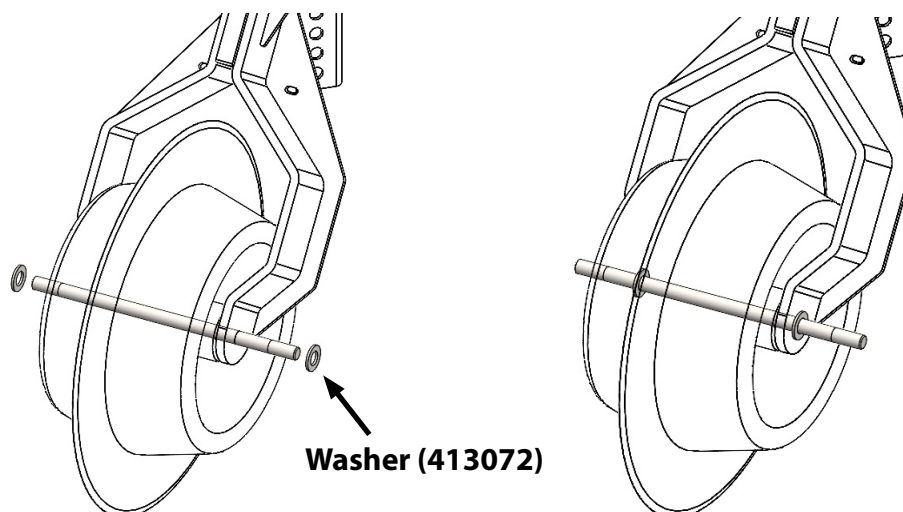
(4) - Add new hardware as shown



5/8" Axle Kit:

4.1 - Slide one (1) **5/8" SAE Washer (413011)** over each end of the axle.

4.2 - Slide one (1) **5/8" to 3/4" Sleeve (250013)** over each end of the axle.

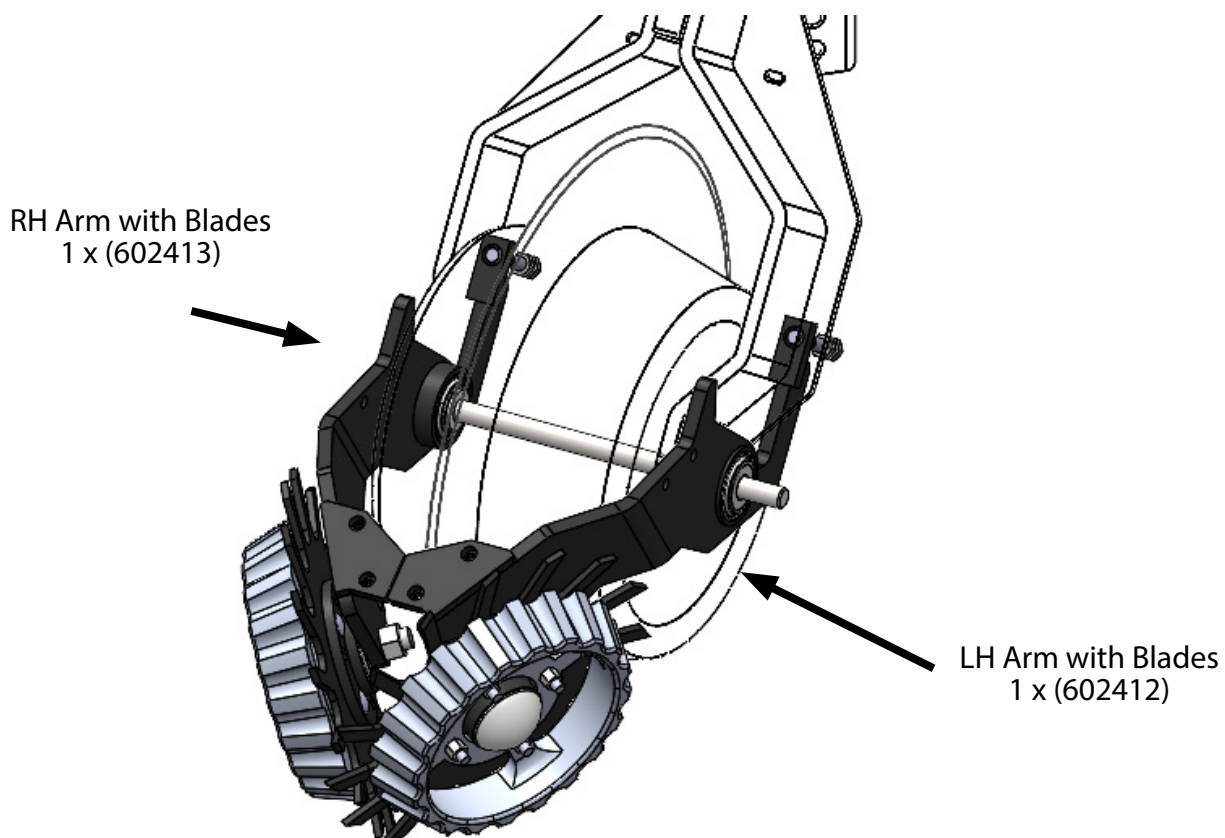


3/4" Axle Kit:

4.1 - Slide one (1) **3/4" SAE Washer (413072)** over each end of the axle.



(5) - Add Arms with Blades



5/8" Axle Kit:

5.1 - Slide RH Arm with Blade (602413) over the 5/8" to 3/4" Sleeve (250013).

5.2 - Slide LH Arm with Blade (602412) over the 5/8" to 3/4" Sleeve (250013)

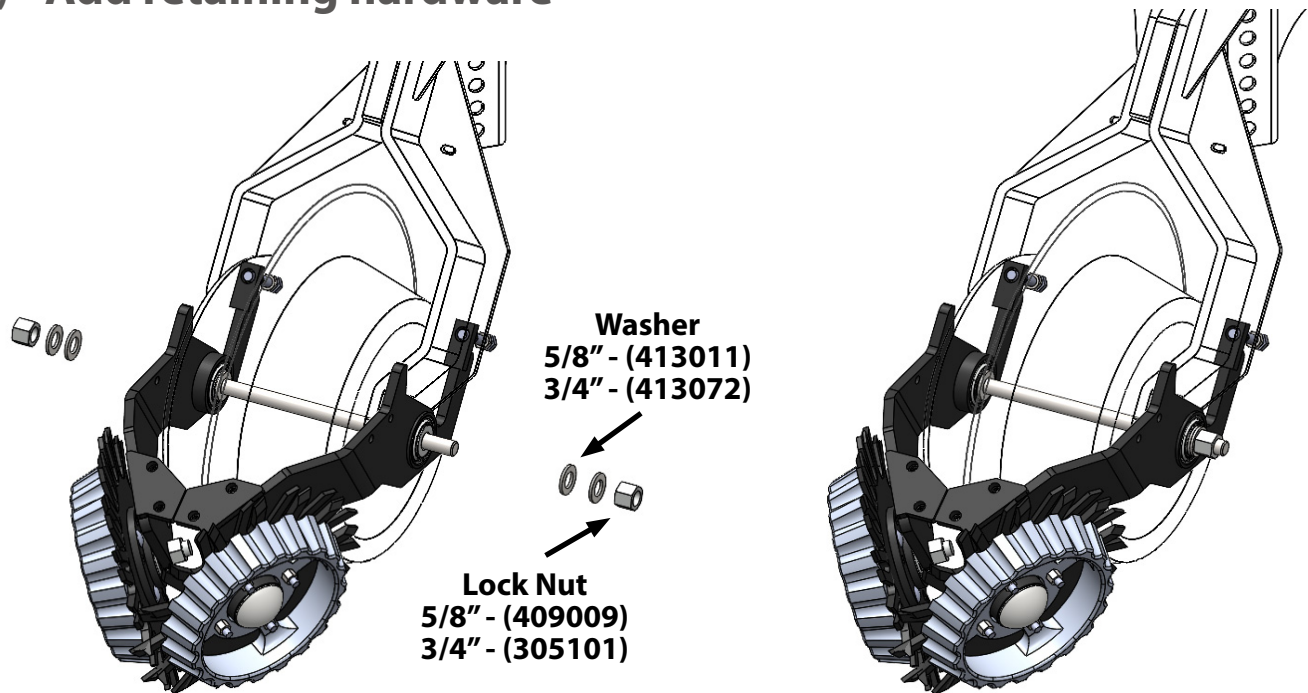
3/4" Axle Kit:

5.1 - Slide RH Arm with Blade (602413) over the axle.

5.2 - Slide LH Arm with Blade (602412) over the axle.



(6) - Add retaining hardware



5/8" Axle Kit:

6.1 - Slide two (2) **SAE Washers (413011)** over the axle.

6.2 - Tighten one (1) **Lock Nut (409009)** on each end of the axle.

6.3 - Start with 15/16" Impact Driver on one side and 15/16" Wrench on the other. When the nut on that side is flush, or slightly past flush with end of axle, switch and use the Impact Driver on the opposite side. Arms should move freely. If arms do not move freely, check that bearings move freely and that the Arms are not obstructed.

3/4" Axle Kit:

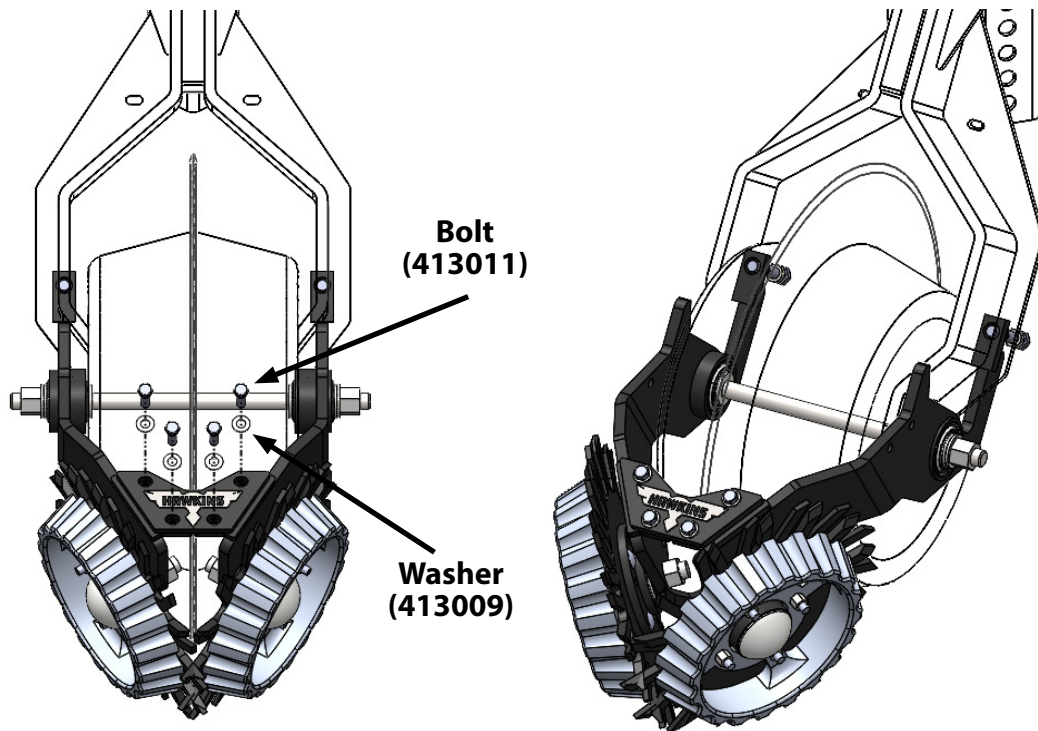
6.1 - Slide two (2) **SAE Washers (413072)** over the axle.

6.2 - Tighten one (1) **Lock Nut (305101)** on each end of the axle.

6.3 - Start with 1-1/8" Impact Driver on one side and 1-1/8" Wrench on the other. When the nut on that side is flush, or slightly past flush with end of axle, switch and use the Impact Driver on the opposite side. Arms should move freely. If arms do not move freely, check that bearings move freely and that the Arms are not obstructed.



(7) - Add rear arms



5/8" AND 3/4" Axle Kits:

7.1 - Place **Top Cap with Logo (321530)** on top of arms.

7.2 - Bolt **Top Cap with Logo (321530)** to both side arms with four (4) **Bolts (411143)** and four (4) **Washers (413009)**. Tighten bolts with impact and 9/16 Socket.



WHAT TO EXPECT IN THE FIELD



NOTE: Pre-Production model shown. Production model may vary.

- Trailblazer™ - STO operates best at speeds above 4 mph. Failure to operate above this speed will cause residue to not move properly
- When set properly, Trailblazer™ - STO will remove the majority of residue
- Trailblazer™ - STO should move freely up and down (see Troubleshooting Guide (page 19) for issues with movement)

NOTE: These settings are recommendations only. Your soil, moisture, and other variables may require you to adjust slightly differently than recommended.



ADJUSTMENTS

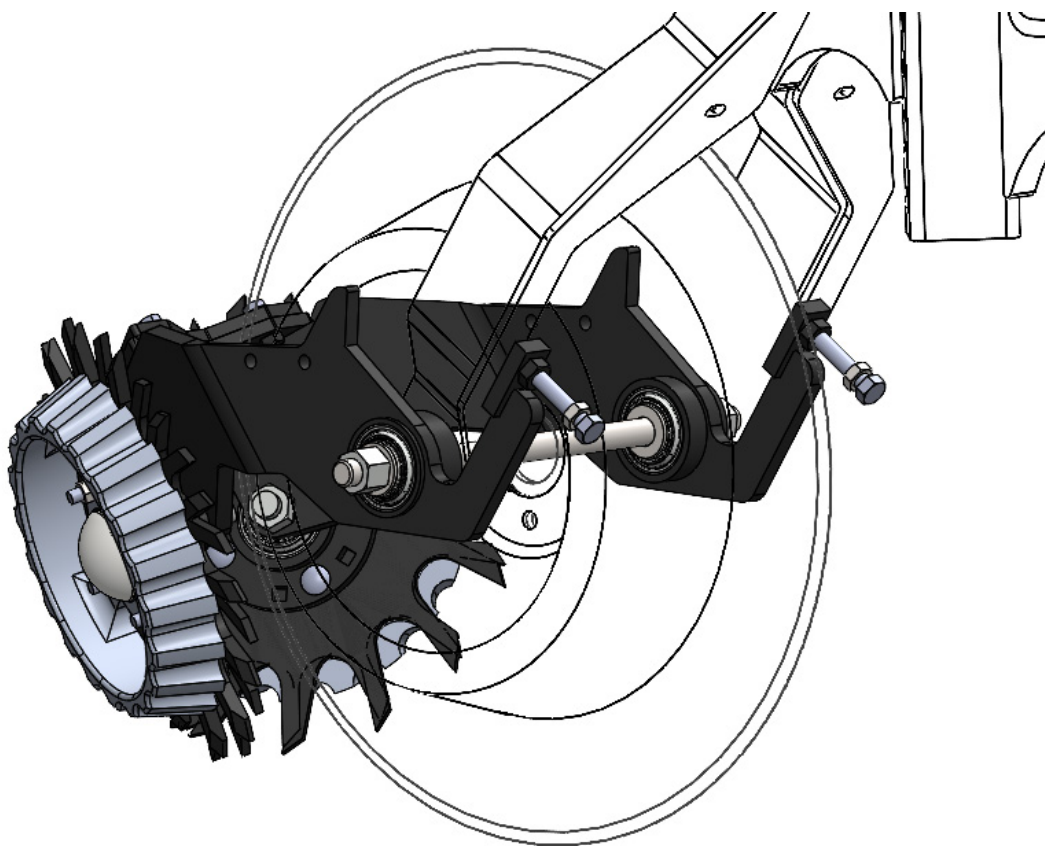
Setting Depth

Your Trailblazer™ – STO unit comes equipped with depth adjustment bolts on each side of the unit. Adjust these bolts on the back to set the desired operating depth.

The Trailblazer™ - STO is designed to run on depth band and float. Bolts limit downward travel to decrease aggressiveness or disengage.

The deeper the finger wheels are set, the more aggressive the row cleaning will be.

By tightening the depth adjustment bolts, the Trailblazer™ - STO can be disengaged from cleaning the residue out of the strip.



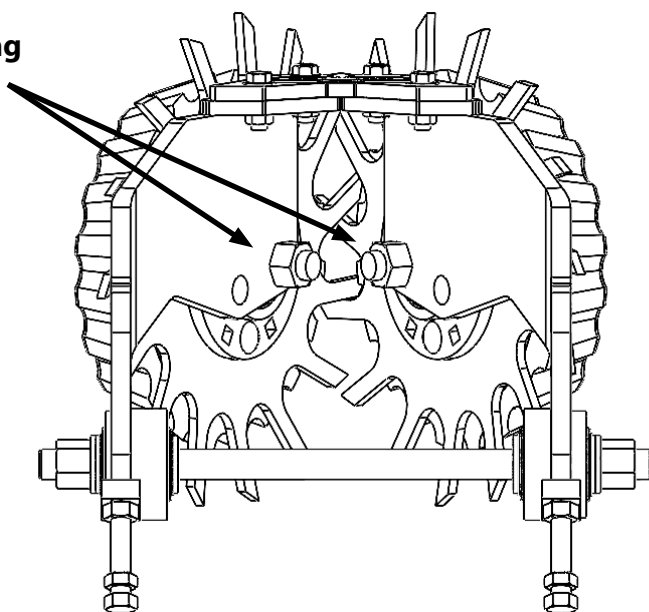


ADJUSTMENTS

Adjust Blade Orientation

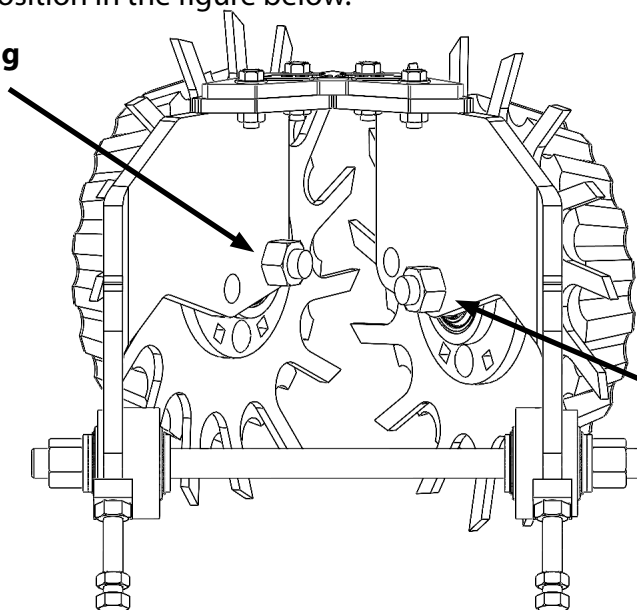
Meshed Option: Factory setting. Both finger blades set to the front hole. This the more aggressive option for moving residue.

Front Hole Setting



Offset Option: This is the less aggressive option for moving lighter residue. In this option, one Finger Blade is set in the front hole while other is set in the rear hole. When choosing the Offset option, we recommend half of the Trailblazer™ - STO row units have the Right Hand Finger Blade in the lead position and half of the Trailblazer™ - STO row units Left Hand Finger Blade in the lead position. The Left Hand Finger Blade lead is shown in the lead position in the figure below.

Front Hole Setting



Rear Hole Setting



BLADE ADJUSTMENT CHART

Trailblazer- STO has two adjustments that can be made that affect how aggressive the residue movement is. Varying soil and residue conditions will require adjustments of both the Blade Orientation and the Aggressiveness of the depth. See chart below for the recommended settings.

CROP	SEASON	FIELD CONDITION	DEPTH AGGRESSIVENESS	BLADE ORIENTATION
CORN	FALL	WORKED	MODERATELY AGGRESSIVE	MESHED
		UNWORKED	HIGHLY AGGRESSIVE	MESHED
	SPRING	WORKED	MILDLY AGGRESSIVE	MESHED
		UNWORKED	MODERATELY AGGRESSIVE	MESHED
SOYBEANS	FALL	WORKED	MILDLY AGGRESSIVE	STAGGERED
		UNWORKED	MODERATELY AGGRESSIVE	MESHED
	SPRING	WORKED	SLIGHTLY AGGRESSIVE	STAGGERED
		UNWORKED	MILDLY AGGRESSIVE	MESHED

DEPTH AGGRESSIVENESS				
HIGHLY	MODERATELY	MILDLY	SLIGHTLY	DISENGAGED
MOST				LEAST

Trailblazer™ - STO Do's and Don'ts

- DO NOT operate at low speeds. Ground speed affects how effective the Trailblazer™ - STO can manage residue; we recommend operating at 4+ mph to maintain good residue flow.
- DO NOT expect crop residue to be completely cleared. Ground conditions, residue conditions, and ground speed can affect the effectiveness of the Trailblazer™ - STO.
- DO work to regularly maintain your Trailblazer™ - STO row units. Keep clean and free of debris, check that bearings move freely and smoothly, and hardware is tight and in good condition. With proper care, you can expect a longer and more effective lifespan for your Hawkins Ag equipment.



TROUBLESHOOTING

Troubleshooting		
Problem	Possible Cause	Solution
Blade is not turning.	Blade not making contact with the ground. Residue build-up is preventing the blade from turning. Bearing hub bolt is bent or warped. The bearing has gone out or is seized.	Adjust depth adjustment bolts to ensure blades touch ground. Remove residue build-up from the row cleaner. Replace bearing hub bolt. Replace bearings in the hub.
Row cleaner is not floating.	Residue build-up on the residue manager. Hardware is binding. Arm is bent or warped. The bearing has gone out or is seized.	Clear residue build-up from the row cleaner. Replace hardware that is binding. Replace arm. Replace bearings in the arm.
Residue is being thrown in the wrong direction or not being thrown at all.	Row cleaner arms are installed incorrectly. Blade assembly being prevented from running correctly due to residue build-up, bearing seizure, or bent/warped hardware. Finger blades are running at an improper depth.	Re-install row cleaner arms using the Installation Guide. Identify issue and either remove residue or replace bearings or hardware. Adjust the depth adjustment bolts to make residue flow more evenly.



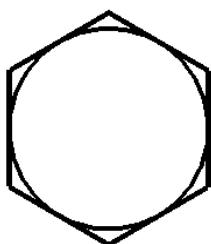
CHECKING BOLT TORQUE

The table shown below gives correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same grade bolt.

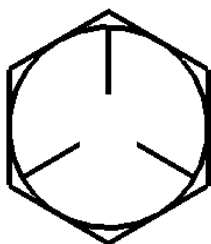
Torque Specifications						
Bolt Diameter	Bolt Torque*					
	SAE Grade 2		SAE Grade 5		SAE Grade 8	
INCH	lb-ft	(N.m)	lb-ft	(N.m)	lb-ft	(N.m)
1/4	6	(8)	9	(12)	12	(17)
5/16	10	(13)	19	(25)	27	(36)
3/8	20	(27)	33	(45)	45	(63)
7/16	30	(41)	53	(72)	75	(100)
1/2	45	(61)	80	(110)	115	(155)
9/16	70	(95)	115	(155)	165	(220)
5/8	95	(128)	160	(215)	220	(305)
3/4	165	(225)	290	(390)	400	(540)
7/8	170	(230)	420	(570)	650	(880)
1	226	(345)	630	(850)	970	(1320)

BOLT HEAD IDENTIFICATION

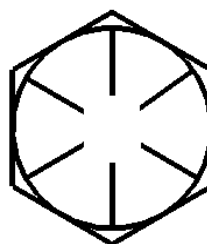
Grade 2



Grade 5

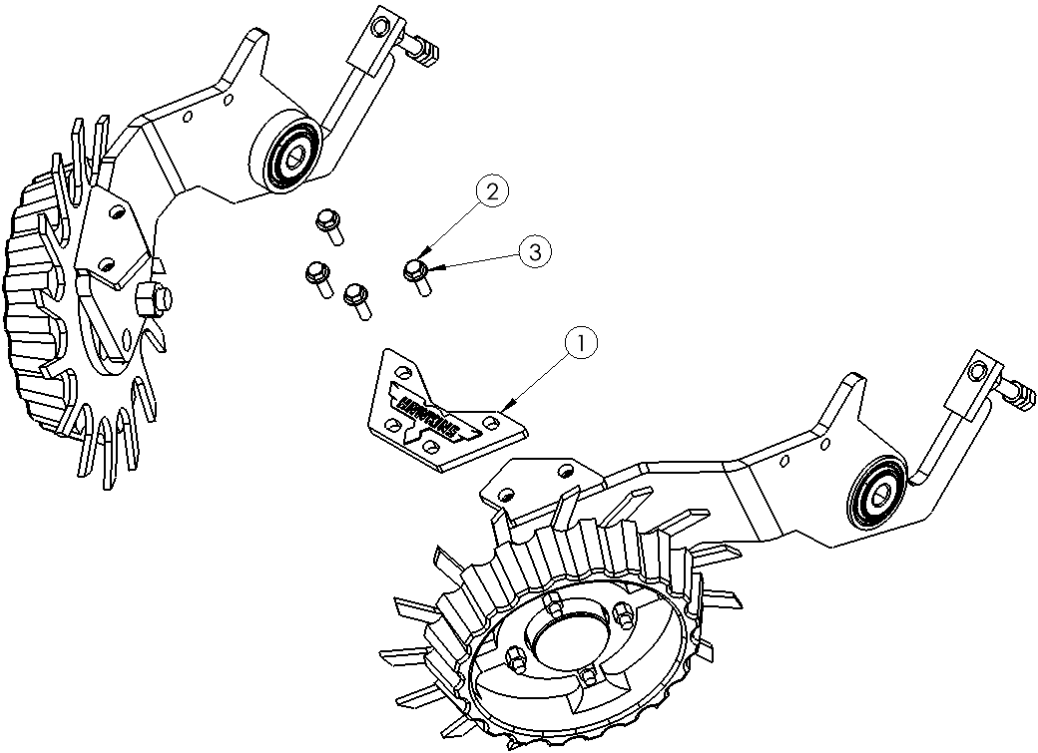


Grade 8





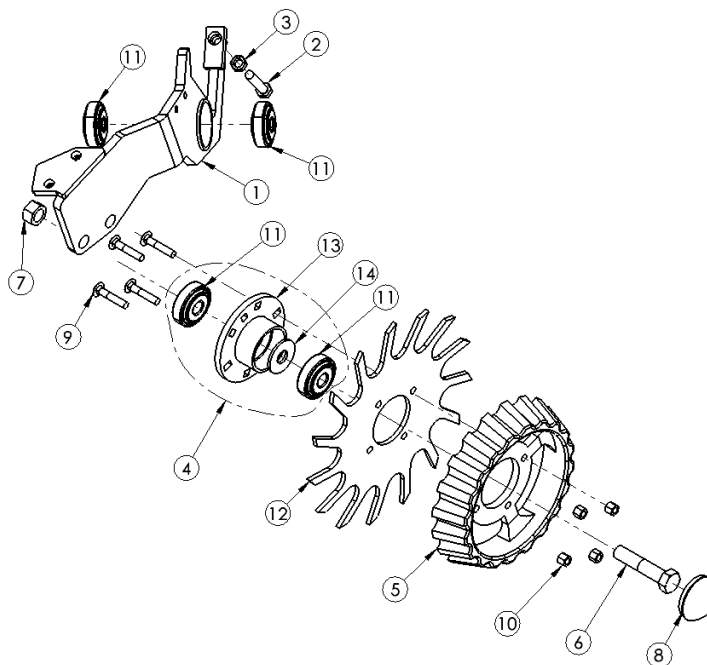
ARM ASSEMBLIES WITH BLADES



Item Number	Part #	Description	Quantity
1	321530	Top Cap with Hawkins Logo	1
2	411143	3/8-16 x 1 1/4 GR5	4
3	413009	3/8 Flat Washer SAE	4



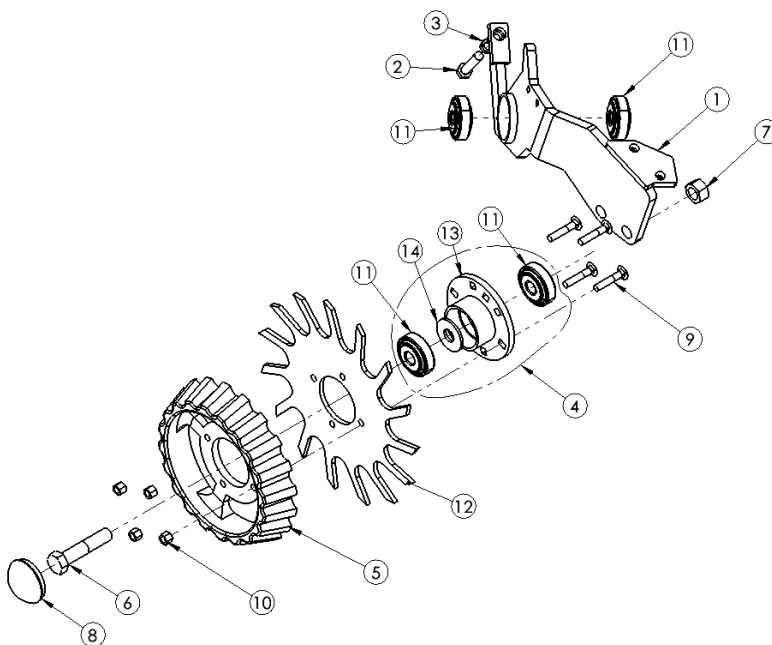
LEFT HAND ARM ASSEMBLY WITH BLADES



Item Number	Part #	Description	Quantity
1	321537	Left Hand Arm Weldment	1
2	305146	1/2-13 X 3 Full Thread GR5	1
3	412408	1/2-13 Jam Nut	1
4	321547	Hub Assembly	1
5	321541	Depth Band	1
6	411590	3/4-10 X 3 1/2 GR5	1
7	410012	3/4-10 Nut Center Lock	1
8	GWX20016	Dust Cap	1
9	305145	3/8-16 X 2 Carriage Bolt	4
10	305106	3/8-16 Nyloc Nut	4
11	305017	3/4 Bore Bearing	4
12	321554	Finger Blade	1
13	321546	Hub Weldment	1
14	413012	3/4 Flat Washer USS	1



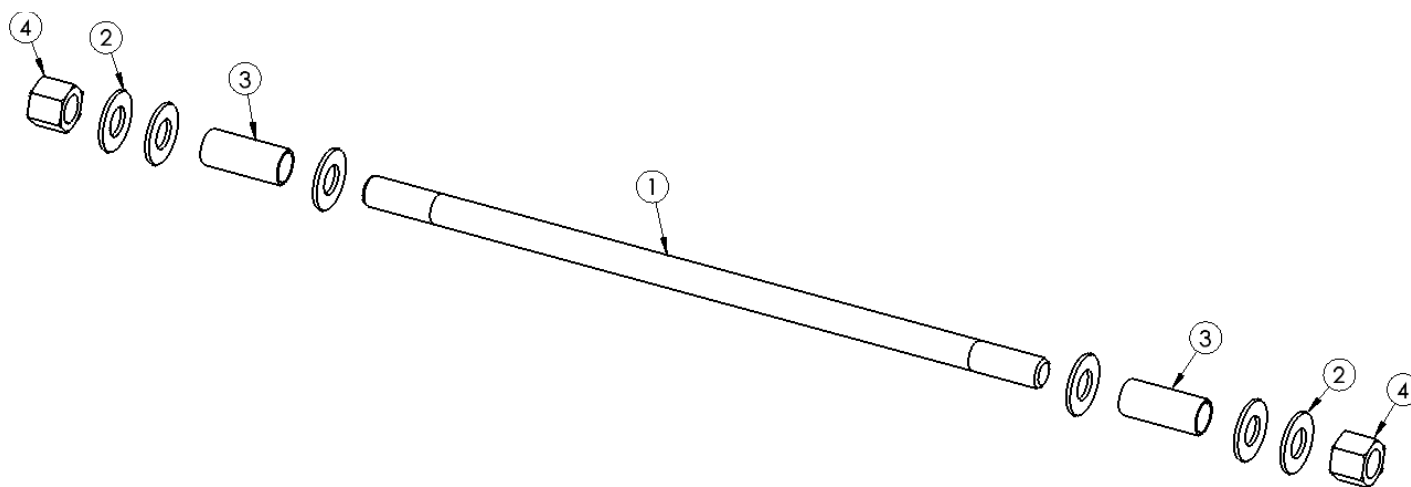
RIGHT HAND ARM ASSEMBLY WITH BLADES



Item Number	Part #	Description	Quantity
1	321540	Right Hand Arm Weldment	1
2	305146	1/2-13 X 3 Full Thread GR5	1
3	412408	1/2-13 Jam Nut	1
4	321547	Hub Assembly	1
5	321541	Depth Band	1
6	411590	3/4-10 X 3 1/2 GR5	1
7	410012	3/4-10 Nut Center Lock	1
8	GWX20016	Dust Cap	1
9	305145	3/8-16 X 2 Carriage Bolt	4
10	305106	3/8-16 Nyloc Nut	4
11	305017	3/4 Bore Bearing	4
12	321554	Finger Blade	1
13	321546	Hub Weldment	1
14	413012	3/4 Flat Washer USS	1



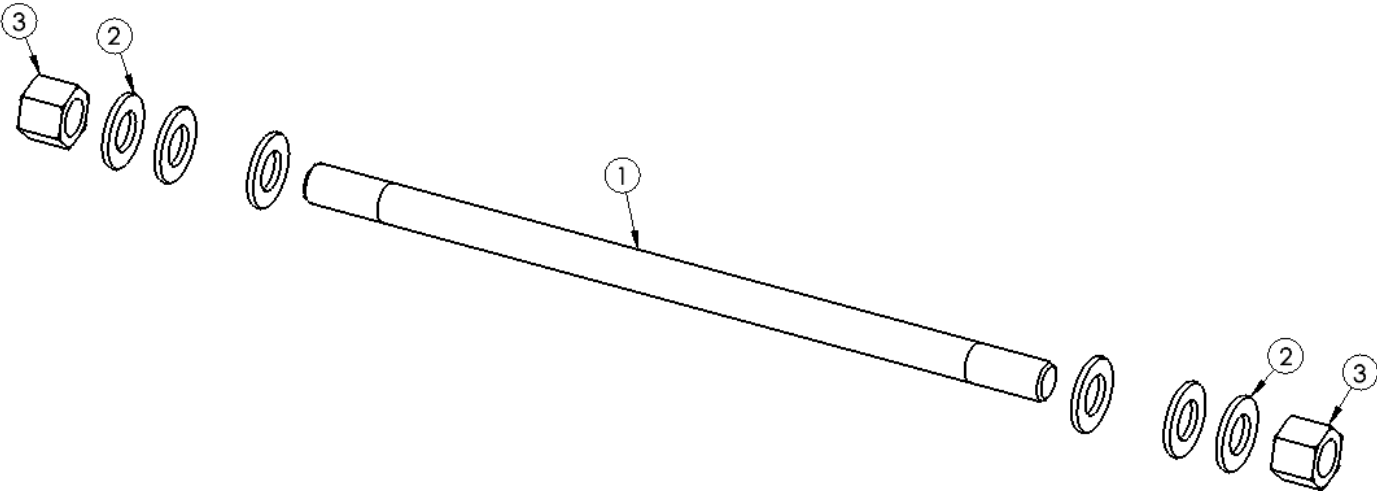
5/8" AXLE KIT



Item Number	Part #	Description	Quantity
1	305073	5/8-11 Dual Thread Axle	1
2	413011	5/8 Flat Washer SAE	6
3	250013	5/8 to 3/4 Sleeve	2
4	409009	5/8-11 Nut Nylon Lock	2



3/4" AXLE KIT



Item Number	Part #	Description	Quantity
1	305023	3/4-10 Dual Thread Axle	1
2	413072	3/4 Flat Washer SAE	6
4	305101	3/4-10 Nut Nylon Lock	2



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