

147C Drill™

S.N. 141600017C & Up



Operating Instructions



and Parts Reference



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147C DRILL™

Serial Number 141600017C & UP

Operating Instructions



and Parts Reference

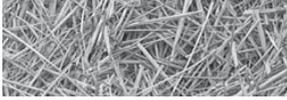
DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the 147C DRILL™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

This manual, as well as materials provided by component suppliers to DuraTech Industries are all considered to be part of the information package. Every operator is required to read and understand these manuals, and they should be located within easy access for periodic review.

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Foreword

All personnel must read and understand before operating unit.

- Foreword and Section 1, important safety information.
- Section 2, "Dealer Preparation," to verify that the machine has been prepared for use.
- Section 3, "Introduction," which explains normal operation of the machine.
- Section 4.1, "Operating Instructions" Pre-Operation Inspection Check List.

Appropriate use of the unit

The 147C Grain Drill is designed to seed No-Till, Minimum Till, or conventionally tilled fields. The two-compartment hopper offers the flexibility of seeding with fertilizer, seeding alone, or planting two different seeds.

Operator protection

As with all machinery, care needs to be taken by the operator in order to ensure the safety of the operator and those in the surrounding area.



WARNING: Operators and those observing the operation of the 147C GRAIN DRILLS are required to wear head, eye, and ear protection. No loose clothing is allowed.

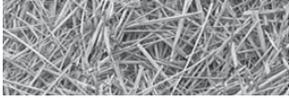


TABLE OF CONTENTS

Part 1: Operating Instructions	1
Introduction	2
Purpose	2
Section 1: Safety	3
1.1 SAFETY-ALERT SYMBOLS.....	3
1.2 OPERATOR - PERSONAL EQUIPMENT	5
1.3 MACHINE SAFETY LABELS	6
1.4 SHIELDING.....	8
1.5 PERSONAL EQUIPMENT	8
1.6 SAFETY REVIEW	8
Section 2: Dealer Preparation	12
2.1 147C DRILL LEGUME BOX ATTACHMENT	12
2.2 LEGUME HOPPER SHIPPING KIT (OPTIONAL).....	16
Section 3: Introduction	17
3.1 ORDERING PARTS	17
3.2 SERIAL NUMBER LOCATIONS	17
3.3 ABOUT YOUR 147C GRAIN DRILL	17
Section 4: Operating Instructions	18
4.1 OPERATING INSTRUCTIONS.....	18
4.2 GRAIN DRILL SETUP	19
4.3 PRESSURE SPRING ADJUSTMENT	19
4.4 PRESS WHEEL ADJUSTMENT	20
4.5 HAYBUSTER 147C DRILL OPENER.....	21
4.5 A CONTROL PLATES	21
4.6 FEED WHEEL SPACE ADJUSTMENT	22
4.7 DRILL CLEANOUT SLIDES.....	23
4.8 CALIBRATION POINTER ADJUSTMENT	24
4.9 SETTING AND CHECKING FEED RATE	25
4.10 CHECKING FEED RATE.....	26
4.11 DRILLING WITH THE GRAIN DRILL	31
4.12 SUGGESTIONS	31
4.13 REAR WHEEL SWIVEL AND ADJUSTMENT	31
4.14 CLEANING GRAIN TANKS AND LEGUME BOXES	32
4.15 PREPARING FOR STORAGE.....	32
4.16 REMOVING FROM STORAGE.....	32

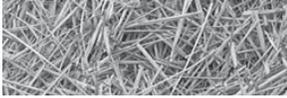


TABLE OF CONTENTS

Section 5: Grass Seeding Reference33

- 5.1 GRASS SEEDING ATTACHMENTS.....33
- 5.2 LEGUME BOX APPLICATIONS.....34
- 5.3 SINGLE AGITATOR APPLICATIONS34

Section 6: Lubrication35

- APPENDIX A: WARRANTY40
- APPENDIX B: SPECIFICATIONS.....41





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Serial Number 141600017C & UP

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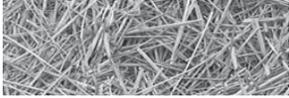


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Introduction

The 147C Grain Drill are designed to seed No-Till, Minimum Till, or conventionally tilled fields.

The two compartment hopper offers the flexibility of seeding with fertilizer, seeding alone, or planting two different seeds. The metering system for each hopper is infinitely adjustable.

Single and swivel hitches are available for the 147C Drill.

Purpose

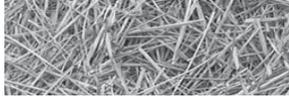
The purpose of this owner's manual is to explain maintenance requirements and routine adjustments for the most efficient operation of your 147C Grain Drill. There is also a trouble shooting section that may help in case of problems in the field. Any information not covered in this manual may be obtained from your dealer.



Special Note: When reference is made as to front, rear, right hand or left hand of this machine, the reference is always made from standing at the rear end of the machine and looking towards the hitch. Always use serial number and model number when referring to parts or problems. Please obtain your serial number and write it below for your future reference.

MODEL: 147C DRILL

SERIAL NO.



Section 1: Safety

The safety of the operator is of great importance to DuraTech Industries/Haybuster. We have provided decals, shielding and other safety features to aid you in using your machine safely. In addition, we ask you to be a careful operator who will properly use and service your Haybuster equipment.



WARNING: FAILURE TO COMPLY WITH SAFETY INSTRUCTIONS THAT FOLLOW WITHIN THIS MANUAL COULD RESULT IN SEVERE PERSONAL INJURY OR DEATH. BEFORE ATTEMPTING TO OPERATE THIS MACHINE, CAREFULLY READ ALL INSTRUCTIONS CONTAINED WITHIN THIS MANUAL. ALSO READ THE INSTRUCTION MANUAL PROVIDED WITH YOUR TRACTOR.

THIS MACHINE IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THOSE EXPLAINED IN THE OPERATOR'S MANUAL, ADVERTISING LITERATURE OR OTHER DURATECH INDUSTRIES WRITTEN MATERIAL PERTAINING TO THE 147C Grain Drill.

1.1 Safety-alert symbols

Decals are illustrated in **Part 2: Parts Reference**.

The safety decals located on your machine contain important and useful information that will help you operate your equipment safely.

To assure that all decals remain in place and in good condition, follow the instructions below:

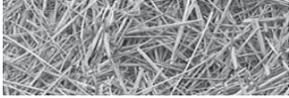
- Keep decals clean. Use soap and water - not mineral spirits, adhesive cleaners and other similar cleaners that will damage the decal.
- Replace all damaged or missing decals. When attaching decals, surface temperature of the machine must be at least 40° F (5° C). The surface must be also be clean and dry.
- When replacing a machine component to which a decal is attached, be sure to also replace the decal.
- Replacement decals can be purchased from your Haybuster dealer.

DuraTech Industries uses industry accepted ANSI standards in labeling its products for safety and operational characteristics.



Safety-Alert Symbol

Read and recognize safety information. Be alert to the potential for personal injury when you see this safety-alert symbol.



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 that, for functional purposes, cannot be guarded.



DANGER:
Signal word - White Lettering/Red Background
Safety Alert Symbol - White Triangle/Red Exclamation Point

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.



WARNING:
Signal word - Black Lettering/Orange Background
Safety Alert Symbol - Black Triangle/Orange Exclamation Point

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.



CAUTION:
Signal word - Black Lettering/Yellow Background
Safety Alert Symbol - Black Triangle/Yellow Exclamation Point

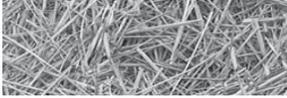
This manual uses the symbols to the right to denote important safety instructions and information.

The **DANGER**, **WARNING** and **CAUTION** symbols are used to denote conditions as stated in the text above. Furthermore, the text dealing with these situations is surrounded by a box with a white background, will begin with **DANGER**, **WARNING**, or **CAUTION**.

The **INFORMATION** symbol is used to denote important information or notes in regards to maintenance and use of the machine. The text for this information is surrounded by a box with a light grey background, and will begin with either **Important** or **Note**.



	<p>1. Yellow warning triangle/black graphical symbol, indicates what the hazard is. Hazard Identification</p>
	<p>2. Red circle-with-slash/black graphical symbol indicates a prohibited action to avoid the hazard. Prohibited Action</p>
	<p>3. Blue mandatory action circles/white graphical symbol - indicates an action to take to avoid the hazard. Mandatory Action</p>



1.2 Operator - personal equipment

THE OPERATOR

Physical Condition

You must be in good physical condition and mental health and not under the influence of any substance (drugs, alcohol) which might impair vision, dexterity or judgment.

Do not operate a **147C DRILL** when you are fatigued. Be alert - If you get tired while operating your **147C DRILL**, take a break. Fatigue may result in loss of control. Working with any farm equipment can be strenuous. If you have any condition that might be aggravated by strenuous work, check with your doctor before operating.

Proper Clothing



Clothing must be sturdy and snug-fitting, but allow complete freedom of movement. Avoid loose-fitting jackets, scarves, neckties, jewelry, flared or cuffed pants, unconfined long hair or anything that could become entangled with the machine.



Protect your head with a hard hat to reduce the risk of injury from flying debris.



Protect your hands with gloves when handling hammers, screens, etc... Heavy-duty, nonslip gloves improve your grip and protect your hands.



Good footing is most important. Wear sturdy boots with nonslip soles. Steel-toed safety boots are recommended.



To reduce the risk of injury to your eyes never operate a **147C DRILL** unless wearing goggles or properly fitted safety glasses with adequate top and side protection.



Tractor noise may damage your hearing. Always wear sound barriers (ear plugs or ear muffs) to protect your hearing. Continual and regular users should have their hearing checked regularly.

1.3 Machine safety labels

The safety decals located on your machine contain important information that will help you operate your equipment. Become familiar with the decals and their locations.



WARNING: FOR YOUR PROTECTION AND PROTECTION OF OTHERS, **PRACTICE THE FOLLOWING SAFETY RULES.**

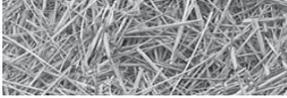
1. BEFORE OPERATING THIS MACHINE, READ THE OPERATOR'S MANUALS SUPPLIED WITH THIS MACHINE AND YOUR TRACTOR.
2. CHECK OPERATOR'S MANUALS TO BE SURE YOUR TRACTOR MEETS THE MINIMUM REQUIREMENTS FOR THIS MACHINE.
3. READ ALL DECALS PLACED ON THIS MACHINE FOR YOUR SAFETY AND CONVENIENCE.
4. NEVER ALLOW RIDERS ON THIS IMPLEMENT OR THE TRACTOR.
5. KEEP OTHERS AWAY FROM THIS MACHINE WHILE IN OPERATION.
6. KEEP ALL SHIELDS IN PLACE WHILE MACHINE IS OPERATING.
7. KEEP HANDS, FEET, LOOSE CLOTHING, ETC., AWAY FROM POWER DRIVEN PARTS.
8. ALWAYS SHUT OFF MACHINE AND ENGINE BEFORE SERVICING, UNCLOGGING, INSPECTING, OR WORKING NEAR THIS MACHINE FOR ANY REASON. ALWAYS PLACE TRANSMISSION IN PARK OR SET PARK BRAKE AND WAIT FOR ALL MOVEMENT TO STOP BEFORE APPROACHING THIS MACHINE.

⚠ WARNING	⚠ ADVERTENCIA
<p>FOR YOUR PROTECTION AND PROTECTION OF OTHERS, PRACTICE THE FOLLOWING SAFETY RULES.</p> <ol style="list-style-type: none"> 1. BEFORE OPERATING THIS MACHINE, READ THE OPERATOR'S MANUALS SUPPLIED WITH THIS MACHINE AND YOUR TRACTOR. 2. CHECK OPERATOR'S MANUALS TO BE SURE YOUR TRACTOR MEETS THE MINIMUM REQUIREMENTS FOR THIS MACHINE. 3. READ ALL DECALS PLACED ON THIS MACHINE FOR YOUR SAFETY AND CONVENIENCE. 4. NEVER ALLOW RIDERS ON THIS IMPLEMENT OR THE TRACTOR. 5. KEEP OTHERS AWAY FROM THIS MACHINE WHILE IN OPERATION. 6. KEEP ALL SHIELDS IN PLACE WHILE MACHINE IS OPERATING. 7. KEEP HANDS, FEET, LOOSE CLOTHING, ETC., AWAY FROM POWER DRIVEN PARTS. 8. ALWAYS SHUT OFF MACHINE AND ENGINE BEFORE SERVICING, UNCLOGGING, INSPECTING, OR WORKING NEAR THIS MACHINE FOR ANY REASON. ALWAYS PLACE TRANSMISSION IN PARK OR SET PARK BRAKE AND WAIT FOR ALL MOVEMENT TO STOP BEFORE APPROACHING THIS MACHINE. 	<p>SIGA LAS REGLAS SIGUIENTES DE SEGURIDAD PARA SU PROTECCION Y LA PROTECCION DE OTROS</p> <ol style="list-style-type: none"> 1. LEA LOS MANUALES DEL OPERADOR INCLUIDOS CON ESTA MAQUINA Y SU TRACTOR ANTES DE OPERAR ESTA MAQUINA. 2. PARA ASEGURARSE QUE SU TRACTOR CUMPLE CON LOS REQUERIMIENTOS MINIMOS PARA ESTA MAQUINA, REVISE LOS MANUALES DEL OPERADOR. 3. PARA SU SEGURIDAD Y CONVENIENCIA, LEA TODAS LAS CALCOMANIAS COLOCADAS EN LA MAQUINA. 4. NUNCA PERMITA PASAJEROS EN ESTA MAQUINA O EN EL TRACTOR. 5. MANTENGA ALEJADOS A LOS ESPECTADORES MIENTRAS ESTA MAQUINA ESTE OPERANDO. 6. MANTENGA TODOS LOS PROTECTORES EN SU LUGAR MIENTRAS LA MAQUINA ESTE OPERANDO. 7. MANTENGA LAS MANOS, PIES, ROPAS HOLOGADAS, ETC., ALEJADAS DE LAS PIEZAS PROPULSADAS. 8. SIEMPRE APAGUE LA MAQUINA Y EL MOTOR ANTES DE PRESTAR SERVICIO, DEBENTRARSE, INSPECCIONAR O TRABAJAR CERCA DE ESTA MAQUINA POR CUALQUIER MOTIVO. ANTES DE ACERCARSE A ESTA MAQUINA COLOQUE SIEMPRE LA TRANSMISION EN ESTACIONAMIENTO O ENGANCHE EL FRENO DE ESTACIONAMIENTO.

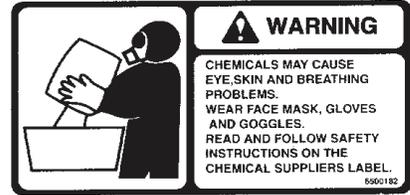


WARNING: FOR YOUR PROTECTION KEEP ALL SHIELDS IN PLACE AND SECURED WHILE MACHINE IS OPERATING MOVING PARTS WITHIN CAN CAUSE SEVERE PERSONAL INJURY.

⚠ WARNING	⚠ ADVERTENCIA
<p>FOR YOUR PROTECTION KEEP ALL SHIELDS IN PLACE AND SECURED WHILE MACHINE IS OPERATING. MOVING PARTS WITHIN CAN CAUSE SEVERE PERSONAL INJURY.</p>	<p>PARA ASEGURAR SU PROTECCION, MANTENGA TODOS LOS PROTECTORES EN SU LUGAR Y ASEGURADOS MIENTRAS LA MAQUINA ESTE OPERANDO. LAS PIEZAS MOVILES INTERNAS PUEDEN CAUSAR LESIONES PERSONALES GRAVES.</p>



WARNING: CHEMICALS MAY CAUSE EYE, SKIN AND BREATHING PROBLEMS. WEAR FACE MASK, GLOVES AND GOGGLES. READ AND FOLLOW SAFETY INSTRUCTIONS ON THE CHEMICAL SUPPLIERS LABEL.



WARNING: NO RIDERS. SERIOUS PERSONAL INJURY COULD RESULT FROM RIDING ON STEP.

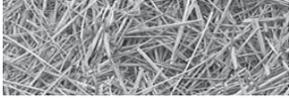


WARNING: DISC BLADES ARE *EXTREMELY* SHARP! WEAR HEAVY GLOVES WHEN SERVICING.



WARNING: Moving parts can crush and cut. Keep hands clear.





1.4 Shielding

Shields are installed for your protection. Keep them in place, and replace damaged shields.

1.5 Personal equipment

Operators of this machine are encouraged to wear head, eye, and ear protection. Loose clothing is discouraged.

1.6 Safety review

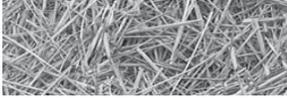
BEFORE OPERATING

- Read and follow all instructions contained in:
 - A. This 147C Drill Operator's Manual.
 - B. Tractor operator's manual.
 - C. Decals placed on the 147C Drill and Tractor.



NOTE: Additional copies of the above-mentioned materials can be obtained from your dealer.

- Be sure all safety shields and covers are securely in place when the machine is running.
- Read all warning and instructional decals placed on the machine for your safety and convenience.
- Allow only responsible, properly instructed individuals to operate the machine. Carefully supervise inexperienced operators.
- Make no modifications to this equipment unless specifically requested or recommended by DuraTech Industries.
- Tighten or replace any loose or cracked bolts, chains, hoses or connections.
- The towing vehicle must be of equal or greater weight than the grain drill for adequate braking capacity.



DURING OPERATION

- Exercise extreme caution while operating the drill on steep slopes or grades.
- Be sure all spectators are clear of the area where the drill is in operation or raised and lowered.
- Be sure the tractor operator is the only person riding the tractor. Allow no one to ride the drill at any time.
- Remember, loose clothing, necklaces and similar items are more easily caught in moving parts. Avoid the use of these items if possible and keep long hair confined.
- Never work under the drill when the drill is lifted up unless the safety stop bar is in position.
- Watch out for and avoid any object that might interfere with the proper operation of the machine.

DURING SERVICE & MAINTENANCE



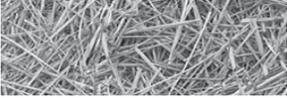
CAUTION: Before performing any maintenance or adjustments make sure machine is NOT running.

- Before working on or near drill for any reason including servicing, lubricating, cleaning, inspecting, or refilling, or if working under drill or detaching from tractor, install safety stop bar on the hydraulic cylinder.
- When replacing any part on your drill, be sure to use only DuraTech Industries authorized parts.
- Relieve all pressure in the hydraulic system before disconnecting the lines or performing other work on the system. Make sure all connections are tight and the hoses and lines are in good condition before applying pressure to the system.



CAUTION: Hydraulic fluid escaping under pressure can be invisible and have enough force to penetrate the skin. When searching for a suspected leak, use a piece of wood or cardboard rather than your hands. If injured, seek medical attention immediately to prevent serious infection or reaction.

- Be careful when using a hoist or other lifting device. Use only devices that have adequate lifting capacity and be sure the chain or cable is securely attached.



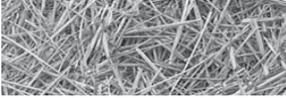
WHEN TRANSPORTING ON PUBLIC ROADS

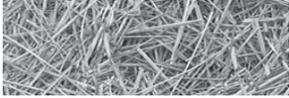
- Use good judgment and drive carefully, especially over rough or uneven roads.
- Be sure tractor brakes are properly adjusted and foot pedals locked together.
- Check your state laws regarding the use of lights, slow moving vehicle sign, safety chain and other possible requirements.
- Do not tow drills at speeds over 20 mph. It is recommended that drills be empty of seed or fertilizer when transporting.



FAILURE TO COMPLY WITH ANY OF THE ABOVE SAFETY INSTRUCTIONS OR THOSE THAT FOLLOW WITHIN THIS MANUAL MAY RESULT IN SEVERE INJURY OR DEATH.

THIS DRILL IS NOT TO BE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS INTENDED AS EXPLAINED IN THE OPERATOR'S MANUAL, ADVERTISING MATERIALS AND OTHER PERTINENT WRITTEN MATERIAL. PREPARED BY DURATECH INDUSTRIES.





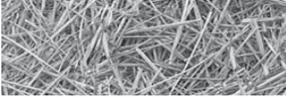
Section 2: Dealer Preparation

2.1 147C Drill Legume Box Attachment

The legume box attachments feature fluted-feed cups which are capable of accurately metering small seeds even at very low rates. The two hoppers will hold a total of 2.9 Bu. of seed.

Installation Instructions

- Step 1:** Using the existing holes, loosely bolt the mounting bracket to the grain box observing left hand and right-hand parts. (See figure 1)
- Step 2:** Install 15-tooth sprocket as shown in figure 2.
- Step 3:** Bolt legume box to grain tank using (12) 3/8" x 1-1/4" bolts (4800098), lock washers and nuts. The mounts welded to the rear of the legume box should go between the mounting brackets installed in step 1. Tighten all mounting bolts securely.
- Step 4:** Using figure 3, bolt the two bearing standards to the brackets on the legume box using (6) 5/16" x 3/4" carriage bolts (4800153), lock washers and nuts observing left hand and right-hand parts. Bolt the center bearing standard to the tank support frame using (4) 3/8" x 3" bolts (4800156), lock washers and nuts. Loosely bolt pillow block bearing to the center standard with (2) 3/8" x 1-3/4" bolts (4800142), flat washer, lock washer and nuts. Align the bearing standards before securely tightening bolts. Loosely bolt the bearings to the outsides of the bearing standards using (4) 5/16" x 3/4" carriage bolts (4800153). Install the 68-1/2" shaft (8700024) with the 17-tooth sprocket between the bearings as shown in Figure 2. Align all sprockets before securing the set screws on the (4) 1/4" x 1" keys (6200010). Install the three drive chains as shown in Figure 2. Install three wooden block chain tighteners using (1) 3/8" x 2-1/2" bolts (4800029), (2) flat washers, lock washer and nuts. Tighten the drive chains.
- Step 5:** Install (24) 5/8" I.D. clear plastic hoses (3700129) on the grain cups first and then to legume box cups. Dipping the ends in a liquid soap solution (1 part soap-1part hot water) will ease installation of the hoses.



Legume Box (Option) Installation

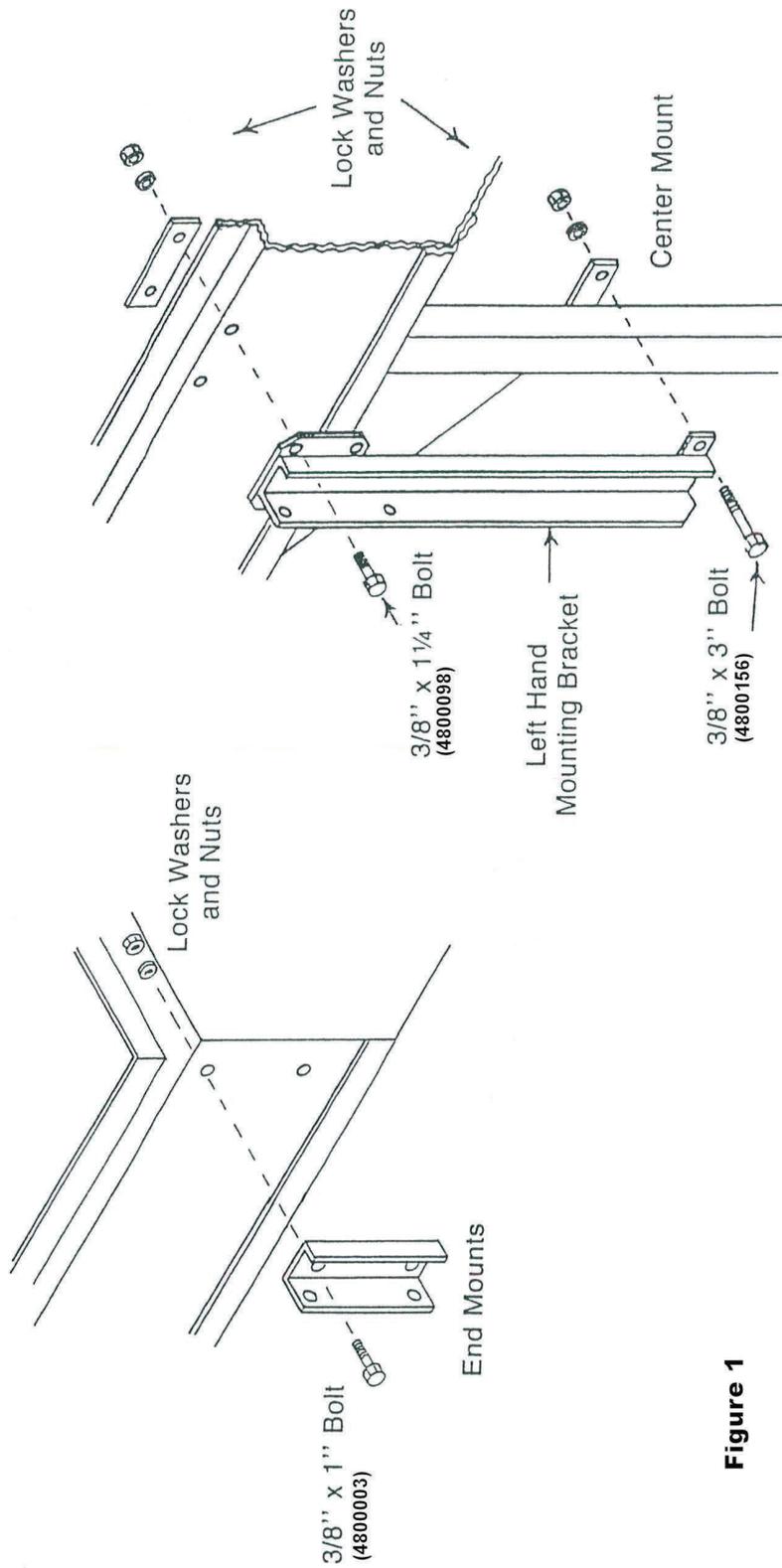
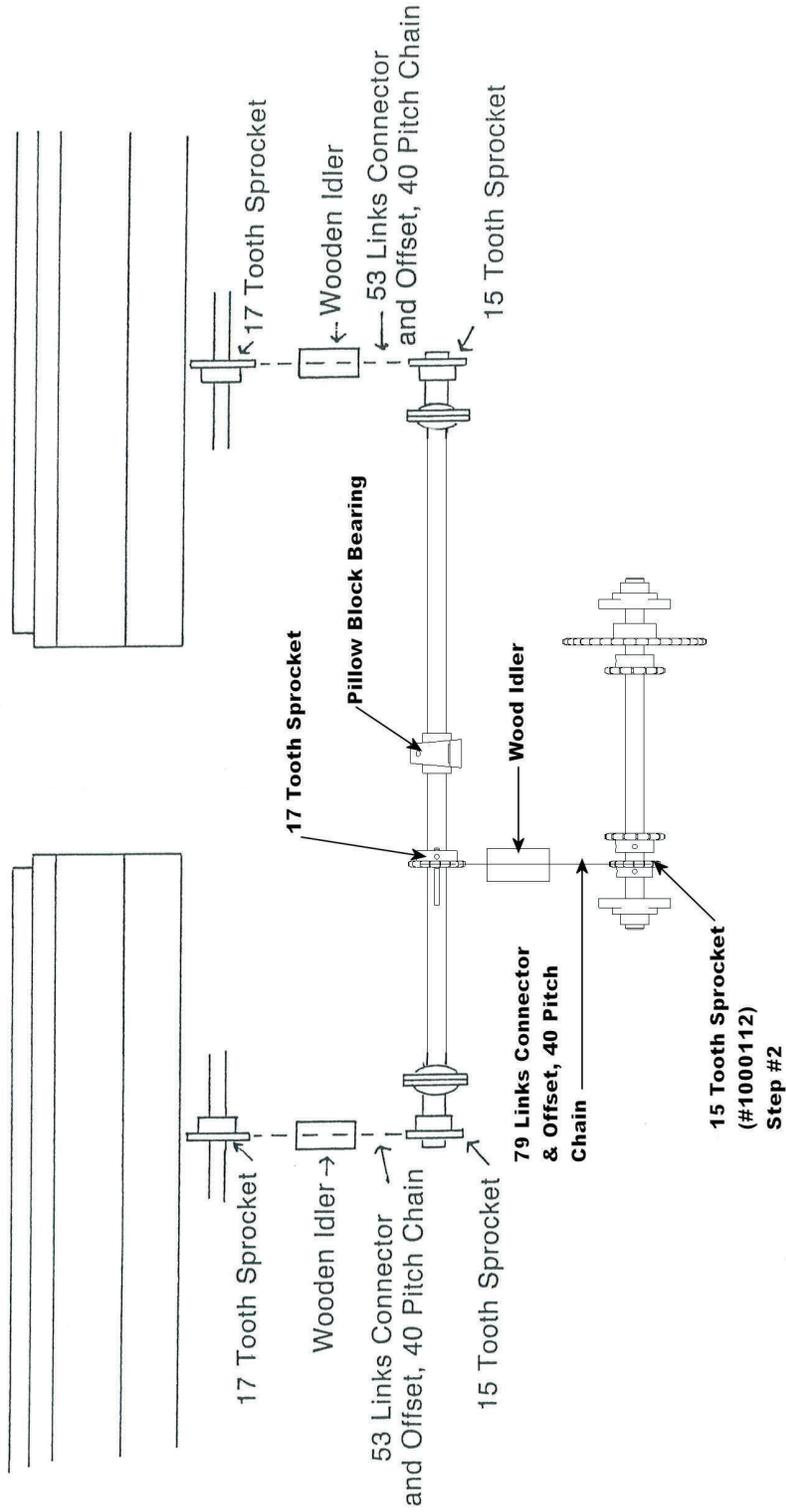
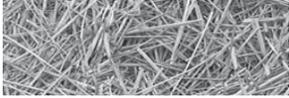


Figure 1



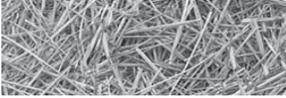
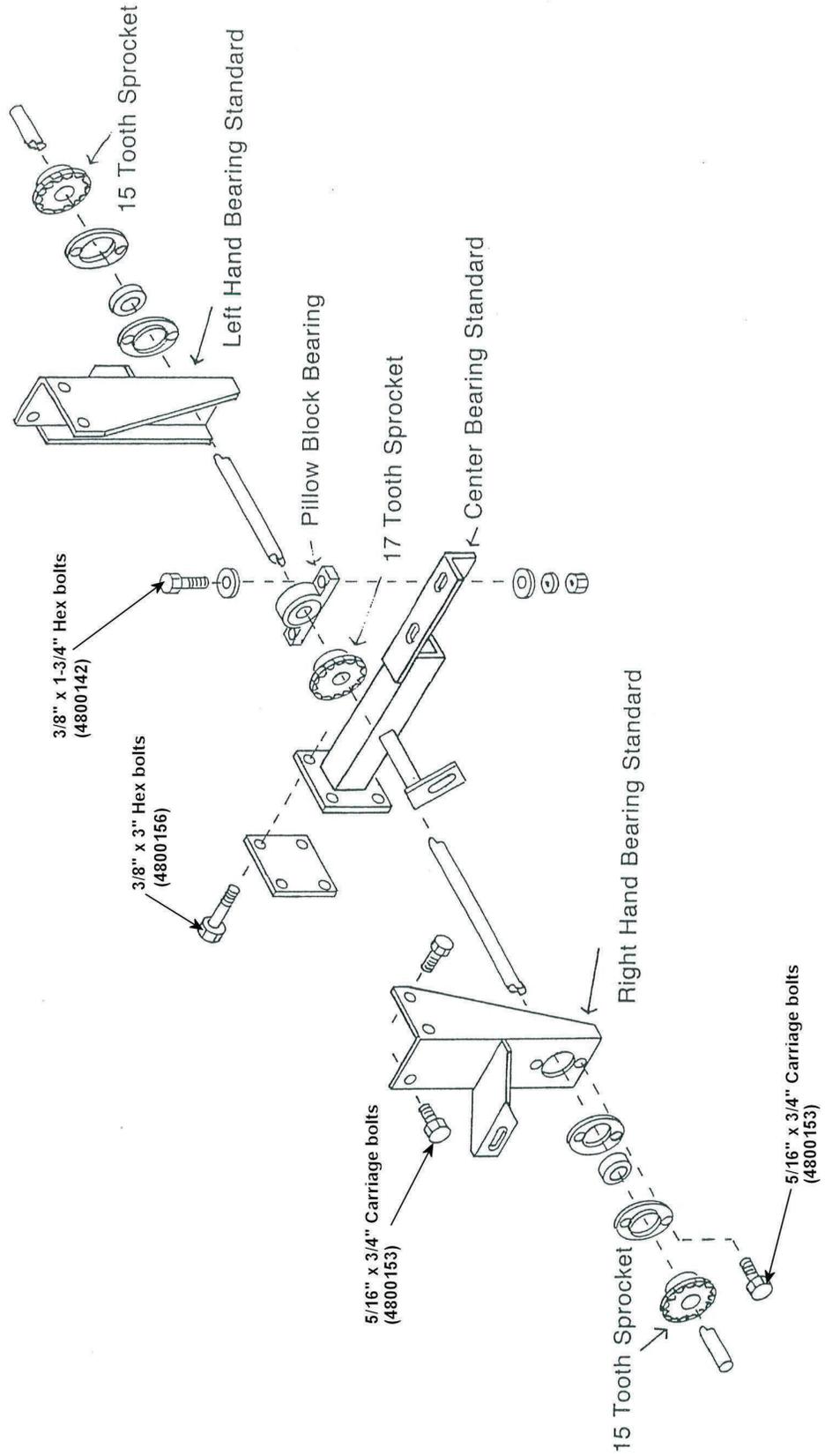
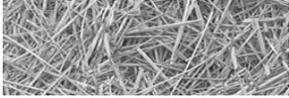


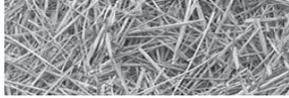
Figure 3





2.2 Legume Hopper Shipping Kit (Optional)

ITEM	PART NO.	QTY.	DESCRIPTION
1	1000111	1	SPKT\40\B\17\1\1\4KW\SOFT
2	1000112	3	SPKT\40\B\15\1\1\4KW
3	1100224	3	40NP PITCH CONNECTOR LINK
4	1100225	3	CHAIN\40NP\OL
5	1100232	2	53 LINKS 40NP PITCH CHAIN
6	1100246	1	79 LINKS 40NP PITCH CHAIN
7	2000002	2	1" BEARING W/ LOCK COLLAR
8	2000016	3	BLK\WOOD\IDLER
9	2000503	1	BRG\PB\1\2BOLT
10	2000703	4	2 HOLE FLANGETTE
11	3700129	24	HOSE\PVC\5\8IDX22-1\2\CLR
12	3800082	4	FTG\LUB\1\4NFXZERK\ADAPT
13	4800098	12	BOLT\HEX\3\8X1-1\4
14	4800029	3	BOLT\HEX\3\8X2-1\2
15	4800142	2	BOLT\HEX\3\8X1-3\4
16	4800153	10	BOLT\CRG\5\16X3\4\NC
17	4800156	4	BOLT\HEX\3\8X3
18	4900002	17	NUT\HEX\3\8\NC
19	4900003	10	NUT\HEX\5\16\NC
20	5000001	10	WASH\FLAT\3\8
21	5000019	17	WASH\LOCK\3\8
22	5000022	10	WASH\LOCK\5\16
23	6200010	4	KEY\SQ\1\4X1
24	8700001	1	BRKT\LEGUME\LH\LEG-BOX
25	8700002	1	BRKT\LEGUME\RH\LEG-BOX
26	8700003	4	BRKT\LEGUME\LH\LEG-BOX
27	8700008	2	BRG\BOX\LEGUME\RH
28	8700009	2	BRG\BOX\LEGUME\LH
29	8700012	1	BRKT\LEGUME\LH\SHFT-BOX
30	8700025	1	BRKT\BRG\RH\147C
31	8700026	1	BRKT\BRG\CNTRL-BOX\147C
32	8700027	1	PL\CENTER\BRG STAND
33	8700028	1	SHFT\1X29\LEGUMEBOX
34	8700029	4	MNT\END\BOX\LEGUME



Section 3: Introduction

Every effort has been made to ensure that the information contained in this manual is correct at the date of publication; but, due to continuous improvements, DuraTech Industries reserves the right to make changes in the contents without notice or obligation.

This manual is shipped with each machine to familiarize the operator with the proper operating, maintenance and lubrication instructions to insure the best possible performance and service from the machine. Study and understand these instructions thoroughly before operating the machine. We recommend that this manual be readily available for reference at all times. Consult your DuraTech Industries dealer if any items in this manual are not understood.

DuraTech reserves the right to make changes in engineering, design and specifications, add improvements, or discontinue manufacture at any time without notice or obligation.

3.1 Ordering Parts

When ordering parts always specify your model number, serial number, and the number of the parts you wish to order.



IMPORTANT: WHEN REPLACEMENT PARTS ARE NEEDED, USE THE LISTED PART NUMBERS AND DESCRIPTIONS TO ENSURE FAST AND ACCURATE SHIPMENT OF YOUR ORDER. WHEN ORDERING PARTS ALWAYS SPECIFY UNIT SERIAL NUMBER.

ONLY AUTHORIZED DURATECH PARTS SHOULD BE USED FOR REPAIR AND/OR REPLACEMENT.

3.2 Serial Number Locations

The serial number can be found in two places. One on the serial number decal and the other is stamped into the frame. The model number and serial number are important when service and/or parts are required.

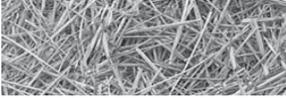
The model number and serial number are required when communicating with DuraTech's service and/or parts department.



decal location of serial number



stamped location of serial number



3.3 About your 147C Grain Drill

The 147C Grain Drill is designed to seed No-Till, Minimum Till, or conventionally tilled fields.

The two-compartment hopper offers the flexibility of seeding with fertilizer, seeding alone, or planting two different seeds. The metering system for each hopper is infinitely adjustable.

Single and swivel hitches are available for the 147C Drill.

Section 4: Operating Instructions

To ensure long life and economical operation, we highly recommend the operator of the 147C Grain Drill be thoroughly instructed in the maintenance and operation of the machine. There is no substitute for a sound, preventative maintenance program and a well-trained operator.

Prior to operating the Grain Drill, we recommend the operator make a visual inspection of the unit. This can be done as the lubrication is being carried out.

4.1 Operating Instructions

Check the following:

- Hydraulic components for leaks or damage.

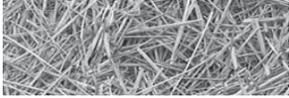


WARNING: Hydraulic fluid escaping under pressure can be almost invisible and can have sufficient force to penetrate the skin. When searching for suspected leaks, use a piece of wood or cardboard rather than your hands. If injured, seek medical attention immediately to prevent serious infection or reaction.

- Lug nuts for tightness.
- Condition of tire rims.
- Tires for proper air pressure.
- Condition of rubber convoluted hoses.
- Adjustment of all chains.
- Installation and condition of shields.
- Installation of Slow-Moving Vehicle (SMV) sign.
- Condition of decals.



WARNING: Before attempting to operate this machine, refer again to Section 1 (pages 3-11) for important safety information.



4.2 Grain Drill Setup

The 147C Grain Drill may be shipped without the hydraulic lift cylinder since the grain drill used a standard 3" x 8" cylinder. The retracted length must be 20-1/4", measured from the center of the mounting holes. When multiple grain drills are used, a cylinder will be required for each grain drill.

- Set the wheels on your tractor out as wide as possible for maximum stability.
- Hitch the grain drill to the tractor.
- Connect the hydraulic hoses to the tractor's hydraulic system.

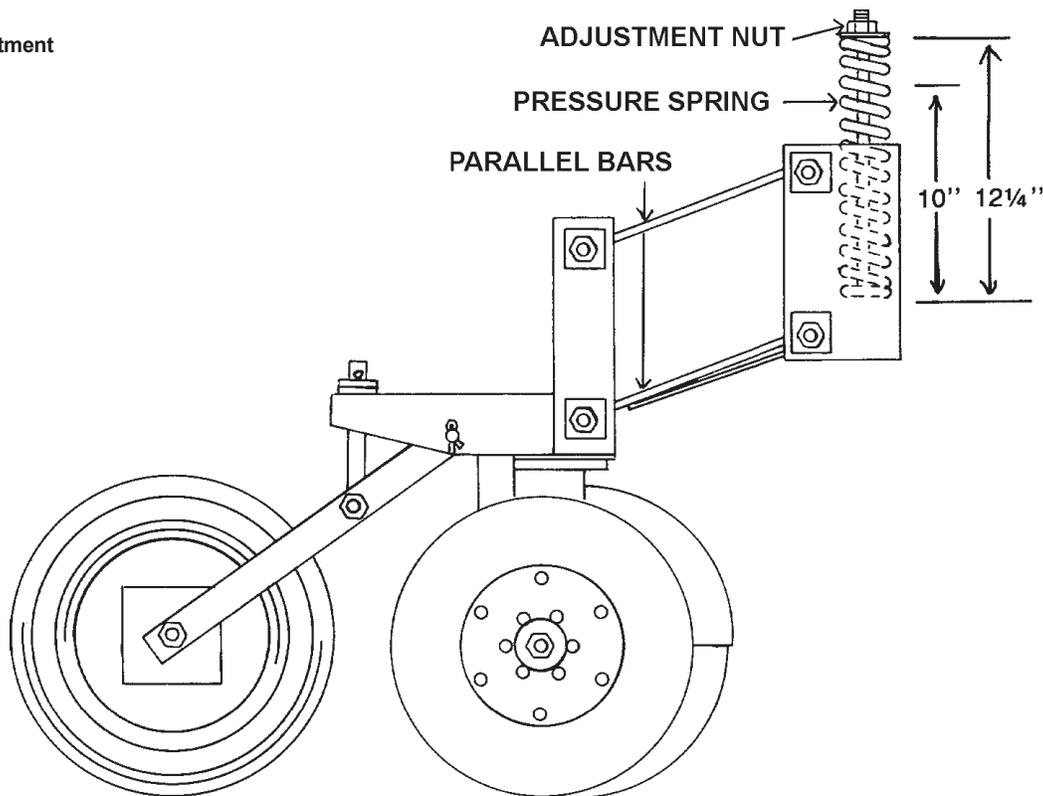
4.3 Pressure Spring Adjustment

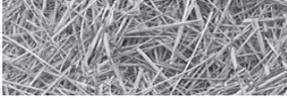
To gain versatility for all types of terrain and soil conditions, it is important to have a considerable amount of up and down travel built into each individual run. When seeding on level terrain, and the openers are seeding at the depth you want/require, adjust hydraulic cylinder stroke to lower movable frame so that the parallel bars are level when viewed from the side. The toolbar height will be about 20" when discs are new. This will allow runs to move up or down according to terrain.

If parallel bars are not level, it will be necessary to adjust pressure spring, or press wheel adjustment.

The proper tension of the pressure spring varies with conditions. No-till seeding may require more down pressure; loose soil requires less. Since the pressure springs work together with the opener depth adjustment controlled by the hydraulic cylinder, make sure that the opener depth adjustment is set correctly.

pressure spring adjustment





In extremely loose soils such as freshly worked summer fallow, it will be necessary to lessen tension on pressure spring instead of lessening hydraulic cylinder stroke.

To adjust the pressure springs:

1. Make sure the movable frame is raised completely up and the safety stop bar is secured.
2. Using the adjustment nut on each pressure spring, adjust the spring to the desired length. See table at right showing the opener pressure obtained at various spring lengths. Under no circumstances should the spring be adjusted to less than 10 inches. This may damage the spring and related parts and will also void the warranty on these parts.

SPRING LENGTH	OPENER PRESSURE
12¼ IN.	135 LBS.
11½ IN.	180 LBS.
11 IN.	205 LBS.
10½ IN.	235 LBS.
10 IN.	300 LBS.

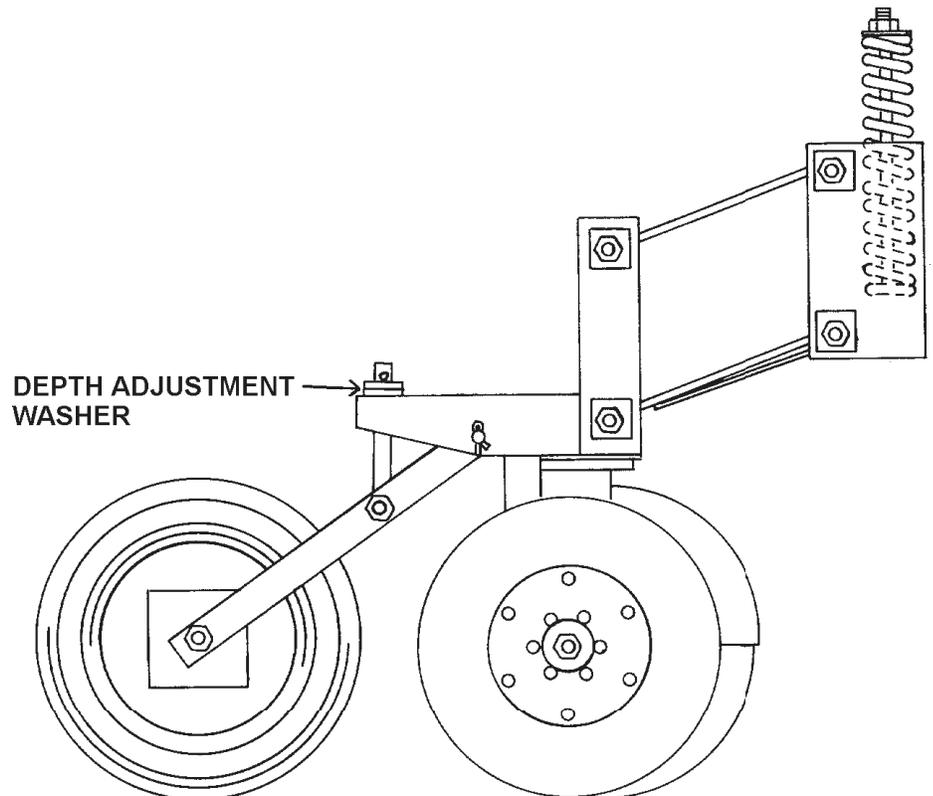
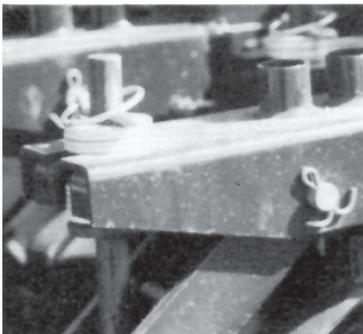
4.4 Press Wheel Adjustment

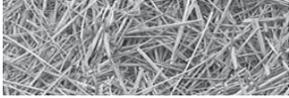
In addition to firming the soil around the seed, the press wheels serve as gauge wheels for the openers. The relationship of each press wheel and opener will remain consistent regardless of terrain or soil density. If the seed is too deep, lower the press wheel. If the seed is too shallow, raise the press wheel.

To adjust the press wheel height:

1. Remove quick attachment pin.
2. To lower the press wheel, relocate shim washers from top to bottom. To raise the press wheel, relocate shim washers from bottom to top.
3. Install quick attachment.

depth adjustment washer for serial numbers 401 and up

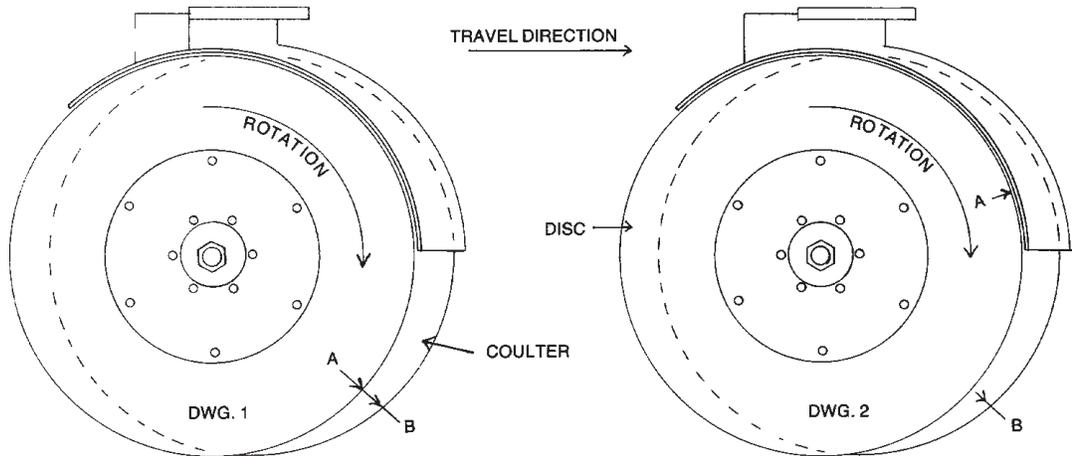




4.5 Haybuster 147C Drill Opener

The 147C Drill uses a couler-disk offset opener. The couler blade leads the disk by 1-1/2". Both blades are the same size and due to the offset, there is some sliding action where the blades contact. This sliding or scissor action provides excellent residue cutting action at ground level, especially in wet residue. The scissor action causes some wear into the couler blade at the point of contact. This wear is normal and the heavier couler blade is bolted to the bearing cage to allow easy replacement.

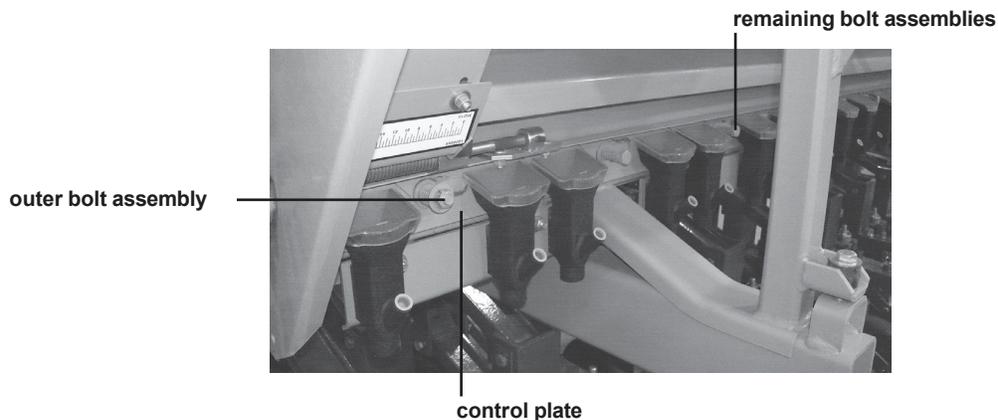
depth adjustment washer for serial numbers 401 and up

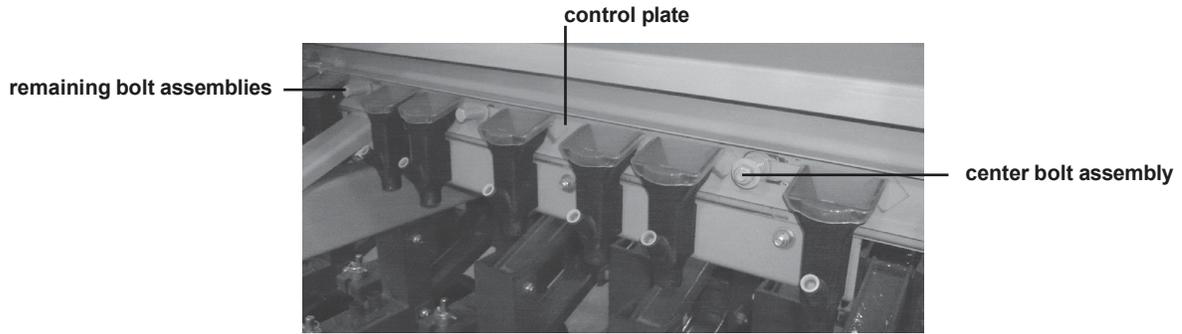
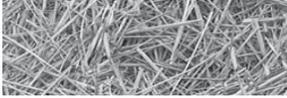


One complete turn changes points A and B (DWG. 1) the amount shown in DWG. 2. It takes 6 turns to bring points A and B back together.

4.5A Control Plates

Control plates are mounted using a spring, bolt, guide tube, washers and nut assemblies. The two outer and center assemblies use a larger washer, guide tube, washer, bolt and top locknut. When installing these assemblies, tighten the bolt until the guide tube is tight against the tank. The remaining assemblies use a spring, washers, bolt and a top locknut. On these remaining assemblies, the springs should be tightened to 1-1/16" - 1-1/8".

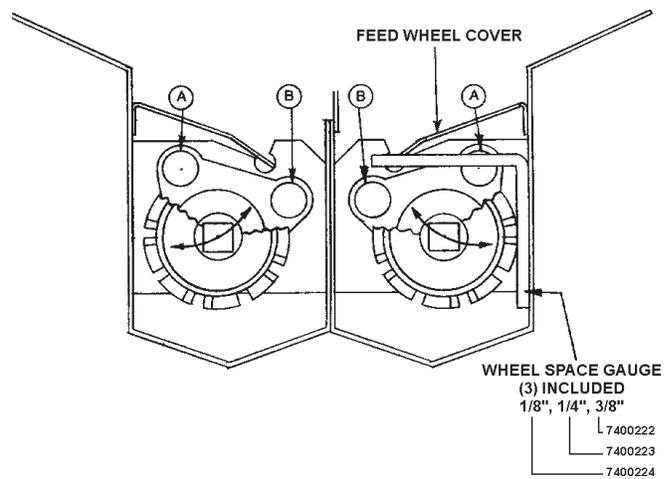




4.6 Feed Wheel Space Adjustment

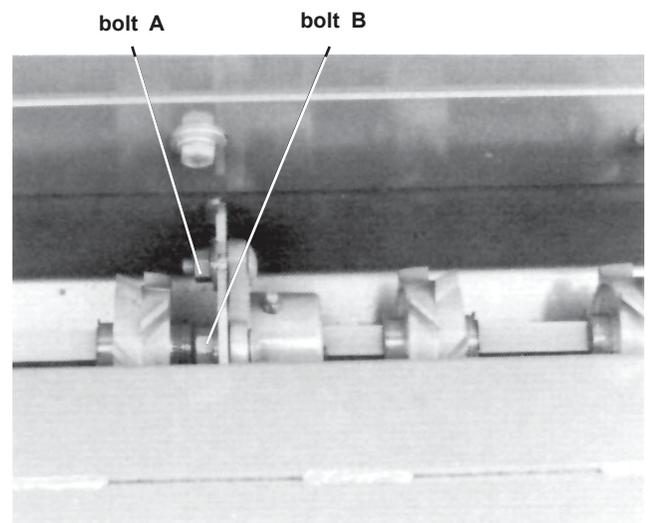
Large seeds require more space between feed wheel lugs and tank wall than small seeds to prevent cracking. Small seeds require less space to provide an even flow. Therefore, each seed listed in the feed rate chart, pages 28 to 31, shows a required wheel space.

feed wheel space adjustment.



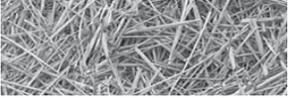
FEED WHEEL SPACE ADJUSTMENT

1. Remove the feed wheel covers.
2. Loosen the eight bolts A and B. There are four sets of bolts for each feed wheel - two on the outer end of the hopper and six inside the hopper.
3. Select the proper space gauge using the wheel space chart.
4. Install the proper space gauge as shown.
5. Slide the feed wheel toward the gauge until the feed wheel lugs, gauge and hopper are pressed together. Tighten the eight bolts.
6. Recheck the feed wheel space adjustment.
7. Install the feed wheel covers.



one set of feed wheel space adjustment bolts

The feed wheel space adjustment provides the proper clearance for the type of seed or fertilizer being used.

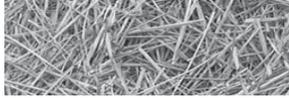


4.7 Drill Cleanout Slides

Cleanout slides are provided on both grain and fertilizer tanks. Handles for opening and closing the slides are located on the left side of the drill.

drill cleanout slides





4.8 Calibration Pointer Adjustment

Grain and fertilizer sliding gates are preadjusted at the factory. In the event any part of the calibrating mechanism is removed or replaced, it can be recalibrated in this order:

1. Place both pointer nut and anchor nut in the center of their respective thread.
2. Insert a short length of 7/16" rod or the shank end of a 7/16" drill bit into the square hole in sliding gate as shown. (figure 4.1)
3. Tighten bearing bolts securing calibration screw to end of tank.
4. Tighten bolts securing anchor nut to sliding gate.
5. Place scale plate on tank so number 8 is directly in line with top of pointer. This will ensure pointer setting to coincide with chart. Scale plate must be parallel with calibration screw to allow pointer to operate smoothly along plate.

calibration pointer adjustment

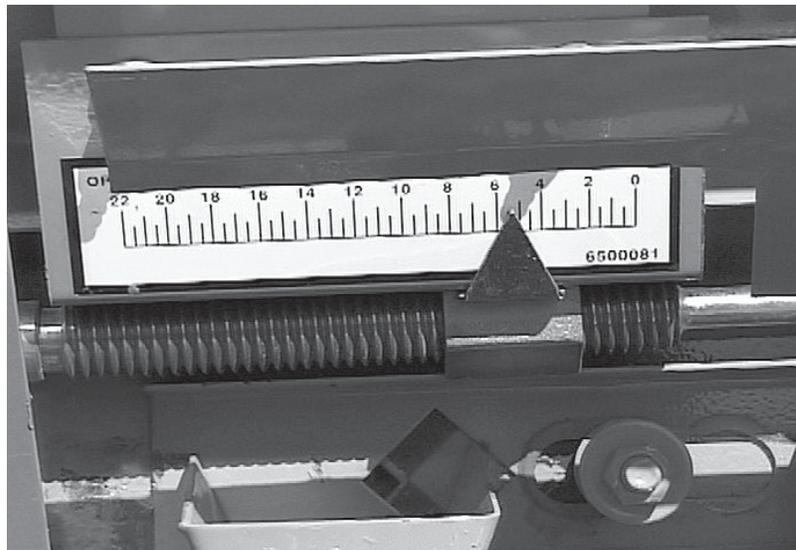
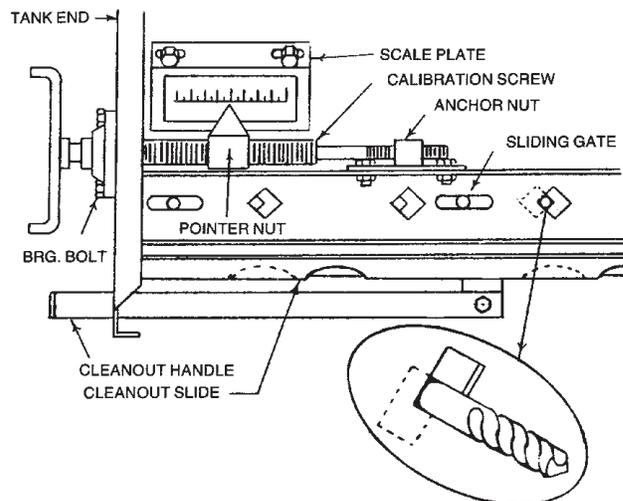
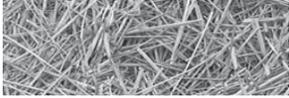


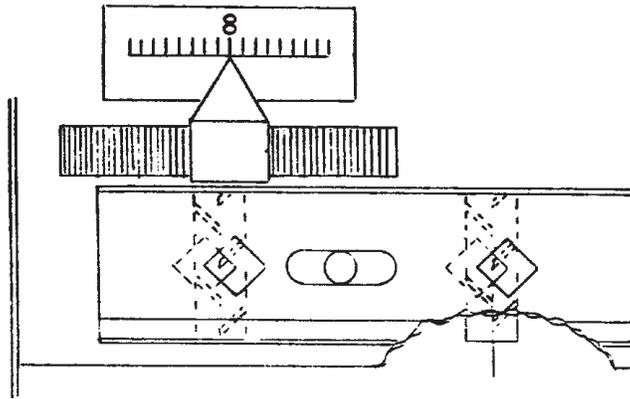
figure 4.1





4.9 SETTING AND CHECKING FEED RATE

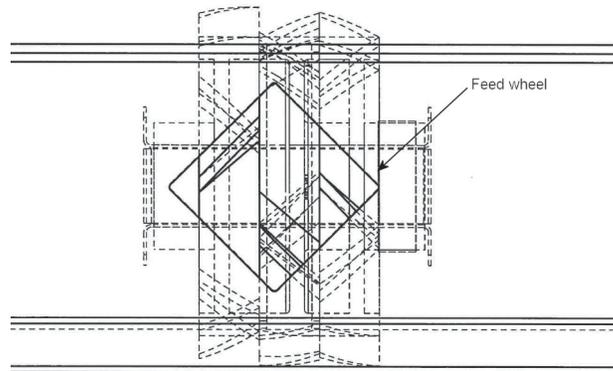
front feed wheel alignment



For most seeding, the front feed wheel should be aligned as shown above. Set the pointer on number 8. The center of the front feed wheel should be centered in the opening as viewed from outside of the box.

Setting the rear feed wheel, set pointer on number 22. The right edge of the rear feed wheel should line up with the right point of the diamond as viewed from outside of the box.

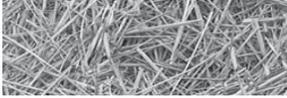
rear feed wheel alignment



The rates shown on the charts serve only as a starting point. Due to variations in material size and density the rates may vary from the chart. The following methods may be used to determine the proper setting for your particular seed or fertilizer.

Setting and checking feed rate using wheat as an example.

1. You want to seed wheat at a rate of 95 lbs. per acre on 7" spacing.
2. Seed rate charts call for a wheel space of 1/8" (page 28). Pointer set on 8 (see illustration above). The adjustment should be made before filling grain tank.
3. Make sure feed wheel cover is in place. Put grain in tank.
4. Seed far enough so you can visually check grain flowing into seed cups.



The addition of the single agitator to the standard drill box will prevent these seeds from bridging above the feed wheels. The single agitator may be added to all 147C Drills.

Alti wildrye
Bromegrass #
Intermediate wheatgrass
Killdeer sideoats #
Pubescent wheatgrass
Streambank wheatgrass
Tall wheatgrass
Western wheatgrass

Extremely trashy samples may require the double agitator.

4.10 CHECKING FEED RATE

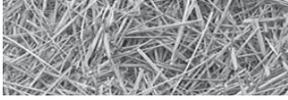
1. Measure a distance of 415' on a drill with 7" spacing and mark. Remove one hose from seed hopper on each drill. Attach a container (cloth or plastic bag) to hopper to collect seed.
2. Operate drill at intended planting speed through entire length of test track.
3. Weigh the sample in ounces (less weight of sample container). Use the following formula to determine lbs./acre for your particular shank spacing.

$$7" \text{ Spacing} - \text{oz.} \times 11.25 = \text{lbs./acre}$$

EXAMPLE

Sample and container weighs	9.9 ounces
Container weighs	- 1.5 ounces
Weight of sample only	8.4 ounces

4. Use formula No. 1 to figure pounds per acre. $8.4 \text{ ounces} \times 11.25 = 94.5 \text{ pounds per acre}$.
5. To calibrate a seed not shown on the chart or a mix of different seeds, compare to a similar charted seed to obtain a trial setting. Recalibrate as necessary.
6. The same method may be used to determine fertilizer rates.



**Series 100
Spacing 7”
Model No. 147C**

CHART FOR DRILLING GRAIN IN POUNDS PER ACRE

POINTER SETTING

POINTER SETTING	**	3	4	5	6	7	8	9	10	11	12	13	14	15	16													
WHEAT	1/8		13	21	29	39	50	63	78	95	111	126	150	173	199	218	250	284										
BARLEY	1/8					22	29	36	46	55	63	74	90	104	117	133	153	176	198									
OATS	1/8						8	11	15	20	25	32	38	48	59	70	82	96	120	133	144	150	163	171	172			
RYE	1/8			15	22	30	40	50	63	78	92	106	124	143	164	185	208	235										
SOYBEANS	3/8				17	20	26	35	46	58	68	82	96	115	129	145	171	186	215	243	275	306	334	357	364			
BUCKWHEAT	1/8			16	22	29	38	49	62	74	87	102	120	138														
SORGHUM OR VETCH	1/8		4	5	9	13	21	27	35	44	56	67	78	93														
ALFALFA OR RAPE	1/8	3	8	13	19	27	35	48	59																			
MILLET	1/8	5	8	15	22	30	40	53	66																			
FLAX OR SUDAN GRASS	1/8		5	7	10	17	24	30	38	49	62	73																
ORCHARD GRASS	1/8			1	2	3	4	5	7	9	11	14	17	20	23	26												
FESCUE	1/8			5	6	8	12	14	19	23																		
SWITCH GRASS	1/8	3	7	12	19	24																						
SUNFLOWER (#3 6500/LB.)	1/8			3	5	6	8	10	14	18	21	26	31	37														
FERTILIZER	1/8	3	6	11	17	24	35	49	62	77	93	116	138	160	185	212	240	275	306	324	353	370	384	393	406	414	420	425
18-46-0																												

** = indicates wheel spacing

100 DRILL DETERMINING SEED POPULATION

The 147C Drill seeds 14' / 168" per pass.

The 147C Drill travels 3113 feet to seed 1 acre.

Following is the lineal feet of seeded row to seed 1 acre.

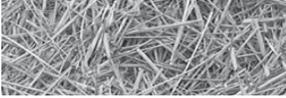
7" rows - 74,700 ft/acre

EXAMPLE:

150,000 bean plants desired per acre on 7" row spacing

150,000 divided by 74,700 = 2.0 beans per ft.

14 ft. of row - 28 beans.



Spacing 7 Inch CHART FOR DRILLING GRAIN IN POUNDS PER ACRE

POINTER SETTING

POINTER SETTING	**	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
BAHIA GRASS	1/8	2.5	5.5	10.3	16.1	24.6	34.2	44.5	53.7	63.9	77.7	89.9	102.0	115.0	131.0	145.0
BUFFALO GRASS*	1/8						2.5	3.8	5.3	6.7	8.6	10.9	13.9	16.0	18.8	21.7
FESCUE	1/8						4.5	6.3	8.1	11.7	14.4	18.9	22.9	27.4	32.0	36.4
GREEN	1/8						3.6	4.8	6.8	9.3	12.1	14.7	17.7	20.7	24.5	28.5
ORCHARD GRASS	1/8								1.3	2.0	2.7	4.1	5.4	7.2	9.0	11.3
RYEGRASS	1/8						3.1	4.5	6.7	9.4	13.5	16.6	21.1	27.0	33.7	45.4
*FEED COVER OFF																

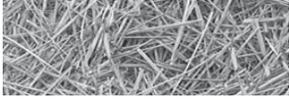
** = indicates wheel spacing

Spacing 7 Inch CHART FOR DRILLING GRAIN IN POUNDS PER ACRE

POINTER SETTING

POINTER SETTING	**	1	2	3	4	5	6	7	8	9	10	11
ALFALFA	1/8		0.4	1.3	3.6	8.1	13.9	19.8	27.0	35.5	48.5	71.1
KENTUCKY BLUEGRASS	1/8			0.7	1.6	2.9	4.4	6.3	8.8	12.1	16.1	20.4
LADINO CLOVER	1/8		1.0	3.4	8.1	15.5	25.0	35.2	46.4	59.8		
LESPEDEZA (KOREAN)	1/8			1.1	4.7	8.3	12.4	17.3	23.6	31.3	39.8	49.2
RED CLOVER	1/8		1.3	4.3	9.5	16.4	24.3	32.8	43.4			
RED TOP	1/8			0.9	1.9	3.5	5.5	7.6	10.5	14.8	20.1	25.8
REED CANARYGRASS	1/8			0.9	2.3	3.8	5.5	7.9	10.9	14.0	17.2	20.6
SERECIA (UNHULLED)	1/8			1.0	2.7	4.7	7.4	10.6	14.1	19.0	25.0	30.8
SWEET CLOVER	1/8		2.7	7.2	14.4	23.4	33.5	44.5	58.9	77.3	97.5	
SWITCHGRASS	1/8		0.9	2.7	7.2	12.1	17.5	24.3	34.1			
TIMOTHY	1/8		0.9	3.6	8.5	15.3	22.9	30.6	39.5	53.0		
LOVEGRASS	1/8		1.0	3.4	8.3	15.5	23.4	33.5	44.5	57.5		

** = indicates wheel spacing



Spacing 7 Inch CHART FOR DRILLING GRAIN IN POUNDS PER ACRE

POINTER SETTING

POINTER SETTING	**	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ALTI WILDRYE	1/8					3.1	5.7	7.6	12.7	18.5	27.1	36.2	46.4	47.4	49.8
BROMEGRASS*	1/8							3.6	5.3	7.5	10.2	13.6	16.5	20.0	20.7
INTERMEDIATE WHEATGRASS	1/8					5.8	8.1	12.1	19.3	28.3	35.0	49.8	55.2		
KILLDEER SIDEOATS*	1/8					2.5	3.8	5.5	7.4	9.6	11.8	14.0	16.4	19.3	22.5
PUBESCENT WHEATGRASS	1/8					4.9	12.6	19.3	28.5	39.7	53.4	69.9	81.1	86.1	
STEAMBANK WHEATGRASS	1/8					2.9	4.5	7.1	10.3	13.4	20.0	27.2	33.4	35.1	
TALL WHEATGRASS	1/8					5.8	8.5	12.1	18.4	25.2	32.3	43.1	53.9		
WESTERN WHEATGRASS	1/8					2.7	4.4	7.3	10.8	15.3	19.9	25.0	30.4	35.5	39.8

*DOUBLE AGITATOR MAY BE REQUIRED FOR EXTREMELY TRASHY SAMPLES

** = indicates wheel spacing

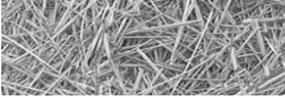


CHART FOR DRILLING LEGUMES AND SMALL GRASSES IN POUNDS PER ACRE

LEGUME BOX ATTACHMENT FOR 147C Drill ON 7" SPACING

NOTCHES ON INDEX	LBS. BU.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ALFALFA; RED, ALSIKE, LADINO CLOVER; VETCH	62	2.2	4.7	7.7	10.7	13.6	17.0	20.4	23.9	27.3	30.9	31.7	37.9	41.3	44.7	47.6	50.6
SWEET CLOVER	64	2.3	5.1	8.4	12.4	17.4	22.5	26.4	30.9	37.1	41.6	46.7	51.2	56.3	59.6	63.0	66.4
BIRDFOOT TREFOIL	64	2.3	4.5	7.9	10.7	14.1	17.4	21.4	25.3	28.1	32.1	36.0	39.4	42.2	46.7	50.1	55.1
MILLIT, TIBBET CLOVER	60	2.1	4.9	7.7	10.7	14.3	17.4	21.2	26.1	28.5	30.9	35.5	39.4	42.8	46.7	51.0	55.9
UNHULLED SERICEA	36	1.1	2.8	4.5	6.8	9.6	11.8	14.6	17.4	20.3	23.1	26.4	28.7	31.5	33.8	36.0	40.5
UNHULLED LESPEDEZA	46	1.7	3.9	5.6	8.4	11.8	15.2	18.0	21.9	25.3	28.7	32.6	35.4	38.3	41.6	45.0	50.1
BAHIA GRASS	46	1.1	2.8	5.1	6.2	8.4	10.7	11.8	14.6	16.9	18.6	20.8	22.5	24.2	25.9	27.6	28.1
LOVEGRASS	64	2.3	5.1	7.9	11.3	16.3	20.3	24.2	28.7	32.6	36.6	42.2	46.7	51.2	55.1	57.9	60.2

SEED MIXTURES

SELECT THE SETTING FOR THE DESIRED QUANTITY OF EACH SEED.

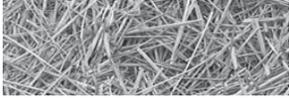
ADD INDIVIDUAL SETTINGS.

EXAMPLE:	LBS/ACRE	NOTCH
ALFALFA	5	2
SWEET CLOVER	5	2
TIMOTHY	2	1
TOTAL		<u>5</u>

WHEN USING HALF SPEED DRIVE DIVIDE CHARTED RATES BY TWO. REPLACE 17 TOOTH SPROCKET ON COUNTERSHAFT WITH 35 TOOTH. (SEE MANUAL FOR DETAILS.)

DENSITY OF THE SAMPLES USED TO PREPARE THIS CHART ARE GIVEN IN THE FIRST COLUMN TO THE RIGHT OF THE CROP NAME IN POUNDS PER BUSHEL.

NOTCHES ON INDEX	LBS. BU.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
TIMOTHY	50	1.7	3.9	6.2	9.6	12.9	16.9	20.9	24.8	28.1	32.6	37.1	40.5	44.4	46.7	49.5	54.6
SWITCHGRASS	55	2.3	4.5	6.8	9.6	12.4	15.8	18.6	20.8	24.2	28.1	30.9	33.8	37.1	39.9	42.2	47.8
FLAX SESAME	55	1.4	3.7	6.2	8.7	11.6	14.7	17.5	20.6	23.1	26.5	29.6	32.4	35.5	37.9	40.5	44.5
RAPE MUSTARD	53	1.7	4.2	7.4	10.2	12.9	16.4	19.2	22.5	25.6	28.2	31.8	34.9	37.7	40.5	43.3	45.9
ORCHARD GRASS	17		0.8	1.7	2.8	3.4	3.9	5.1	5.6	6.8	7.3	8.4	9.0	10.1	10.7	11.3	11.9
PERENNIAL RYEGRASS	31		2.3	3.4	5.6	7.3	9.0	10.7	11.8	13.5	15.2	16.9	18.6	20.8	21.9	23.1	24.8
FESCUE	27		1.1	2.8	3.9	5.6	6.8	8.4	9.6	11.3	12.4	13.5	15.2	16.9	18.0	19.1	21.9
COMMON BERMUDA GRASS		2.7	5.0	7.4	10.6	14.3	17.6	20.8	25.1								



4.11 Drilling with the Grain Drill

At this point the grain drill should be properly set up and adjusted according to the instructions in the preceding sections.

Load the tanks with seed and/or fertilizer. Rotate the drive wheel by hand to make sure that the feed wheel shafts are free to turn. This is particularly important if the drill was transported with fertilizer and seed in the hoppers.

Start the tractor, retract the cylinder completely, and begin drilling.

Periodically check for proper seed depth and feed rate.

When the seeding operation is finished, park the drill over a sheet of plastic, canvas, etc. Pull one of the cleanout side control levers out to empty the remaining seed or fertilizer. Collect the seed or fertilizer. Repeat the procedure for the other hopper.

4.12 SUGGESTIONS

When preparing to sow damp fertilizer that has been sitting in the tank for several hours, stir the fertilizer all the way to the bottom to break up any blocks of fertilizer which have become cemented together.

The amount of fertilizer sown will vary with the moisture content and quality of the fertilizer.

4.13 REAR WHEEL SWIVEL AND ADJUSTMENT

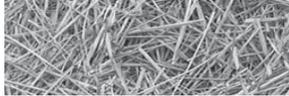
Both rear wheels are designed to swivel 90° for the purpose of transporting drills endways. Adjusting bolts are provided for aligning wheels in transport position as well as in forward position. Transport position is most critical for tire wear due to hard surface roads and faster speeds.



CAUTION: Transporting drills with seed and fertilizer in the tanks is not recommended. If drills are moved any distance with seed or fertilizer in tanks, either in transport or field position, materials will settle around feed wheels. Before starting to seed, operator should check with a wrench on drive end of feed wheel shaft to make sure they are free to turn. Shaft may be turned either clockwise or counterclockwise with openers in raised position.



WARNING: Maximum transport speed should never exceed 20 M.P.H., and should be less where conditions demand.



4.14 CLEANING GRAIN TANKS AND LEGUME BOXES



CLEAN grain tanks and/or legume boxes on the 147C Drill after using inoculated, treated or coated seeds. Failure to clean tanks will cause damage to moving parts. This damage is **NOT** covered by warranty. Always add graphite to treated seeds.

4.15 PREPARING FOR STORAGE

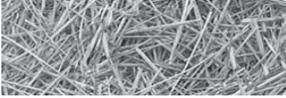
To prepare the 147C Drill for storage, perform the following steps:

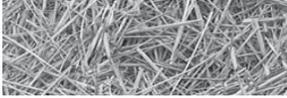
1. Install safety stop bar to keep planting units off the ground and to minimize rusting. Before drill is stored, clean out slides should be opened to remove as much seed and fertilizer as possible. Both tanks should be flushed out thoroughly to prevent any caking of seed or fertilizer. Open and close slides while flushing to allow any fertilizer that might be under the calibration slide to work its way free. Fertilizer can be damaging if left in contact with metal parts for a prolonged period.
2. Clean all mud, dirt, grease and other foreign material from the exterior of the machine. Wash the complete machine. Repaint places where bare metal is exposed - this will inhibit rusting.
3. After inside of the tank is thoroughly dry, apply a coat of oil or diesel fuel to calibration slide, bearings and other parts that have been in contact with fertilizer or seed.
4. Remove the chains and wash them in solvent. Using a clean cloth, wipe off the chains. Soak the chains in engine oil. Drain off the excess oil and install the chains on the grain drill.
5. Coat all chains and exposed hydraulic cylinder rod with a Valvoline Tectyl 506 oil or equivalent.
6. Lubricate machine thoroughly according to the lubrication instructions.
7. Drain water from ballast tanks, if installed.
8. If possible, store the machine in a dry, protected place. If it is necessary to store the machine outside, cover it with plastic, waterproof canvas, or other suitable protective material.
9. Check the machine for any worn or broken parts. By ordering parts now, you will avoid delays when it is time to remove the machine from storage. When ordering parts always specify machine serial number and the part number of the replacement part. Part numbers can be found in the Parts List Manual.

4.16 REMOVING FROM STORAGE

To remove the 147C Drill from storage, perform the following steps:

1. Remove all protective coverings.
2. Remove all excess oil from chains and cylinder rods. Lubricate machine in accordance with lubrication instructions found in this manual.
3. Check all hydraulic hoses for deterioration and, if necessary, replace. Tighten any loose bolts, nuts and hydraulic fittings.
4. Follow prestarting inspection.





Section 5: Grass Seeding Reference

All Haybuster 147C Grain Drill are very versatile. These base drills are capable of accurately metering most common seeds and fertilizer. The seed will be placed at the correct depth in conventional and minimum tillage and most zero-tillage situations. Through the use of special attachments, Haybuster 147C Grain Drill can be used for seeding of various types of grass seeds including small-seed legumes and chaffy native grasses. When grass seeding is complete, each of these drills are capable of seeding and fertilizing your conventional crops. For more information on operating the drill, settings and procedures, see **Section 4: Operating Instructions**.

5.1 Grass Seeding Attachments

The following attachments are available for grass seeding:

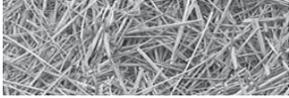
- Legume box
- Single agitator
- 2" I.D. seed tubes
- Depth bands

Many grasses can be metered through the standard seed box with no additional equipment. However, some of the grasses listed below can be metered more accurately by using some of the special attachments listed on the following pages.

*Alfalfa	*Alsike clover	@Altiwild rye	*Bahigrass
*Birdsfoot trefoil	@Bromegrass	Buffalograss	Fescue
Green needlegrass	@Intermediate wheatgrass	*Kentucky bluegrass	@Killdeer sideoats
*Ladino clover	*Lespedeza (unhulled)	*Lovegrass	Orchard grass
@Pubescent wheatgrass	Ryegrass	*Red clover	*Red top
*Reed cararygrass	*Serecia (unhulled)	*Sweet clover	*Switchgrass
@Streambank wheatgrass	*Timothy	@Tall wheatgrass	@Western wheatgrass

* See legume box section, Section 5.2 Legume Box Applications

@ See single agitator section, Section 5.3 Single Agitator Applications



5.2 Legume Box Applications

The legume box attachment is designed to accurately meter the small seeds listed below.

Alfalfa	Alsike clover	Bahia grass	Birdsfoot trefoil
Fescue	Kentucky bluegrass	adino clover Red	Lesoede]a (Korean)
Lovegrass Reed	Orchard grass	clover Serecia	Red top
canarygrass	Rye grass	(unhulled)	Sweet clover
Switchgrass	Tibbet clover	Timothy	Vetch

For more information please see the Chart for drilling legumes and small grasses on page 30.

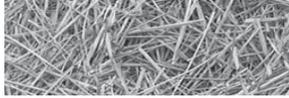
5.3 Single Agitator Applications

The addition of the single agitator to the standard drill box will prevent these seeds from bridging above the feed wheels.

Alti wildrye	Bromegrass #	Intermediate wheatgrass
Killdeer sideosts #	Pubescent wheatgrass	Streambank wheatgrass
Tall wheatgrass	Western wheatgrass	

Extremely trashy samples may require the double agitator.

For more information please see the Chart for drilling grain on page 28-29.



Section 6: Lubrication

All 147C Grain Drill are completely serviced at the factory before shipping. However, the operator should make a check of all grease fittings on the unit before beginning to operate it so as to become familiar with their location and the correct service schedule.

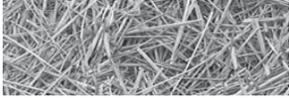
Use only a high quality, multi-purpose grease when lubricating the unit. Make sure all fittings and the nozzle of the grease applicator are clean before applying the grease. If any grease fittings are missing, replace them immediately.

Lubricating of all pillow block and flange-type self-aligning ball or roller bearings should be done slowly to help prevent bearing seal damage. Use caution when using a high pressure, high volume gun.

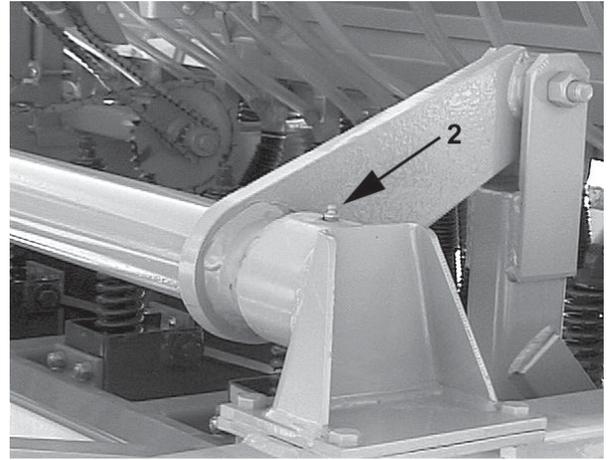
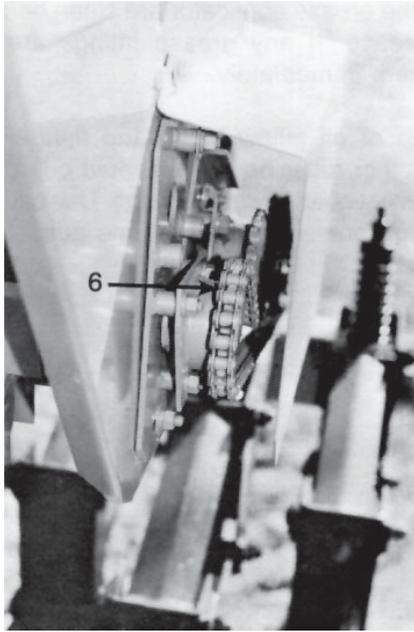
Description	Type	Frequency	No. Zerks
1. Swivel Wheel Pivot	Grease	20 Hrs.	1
2. Torque Tube Bushings	Grease	40 Hrs.	2
3. Universal Joints	Grease	40 Hrs.	2
4. Square Drive Line	Grease	40 Hrs.	2
5. Feed Wheel Shaft	Grease	100 Hrs.	8
6. Roller Chains	Oil	Daily In Dusty Conditions	
7. Tool Bar Bushing	Grease	20 Hrs.	2
8. Lift Arm Bushing	Grease	20 Hrs.	2
9. Lift Arm	Grease	20 Hrs.	2
10. Drive Wheel Frame	Grease	20 Hrs.	2
11. Packer Wheel Bearings and Coulter-Disk Bearings are Non-Relubable.			
12. Cylinder Clevis Pin	Grease	20 Hrs.	1

swivel wheel pivot
lubrication zerk

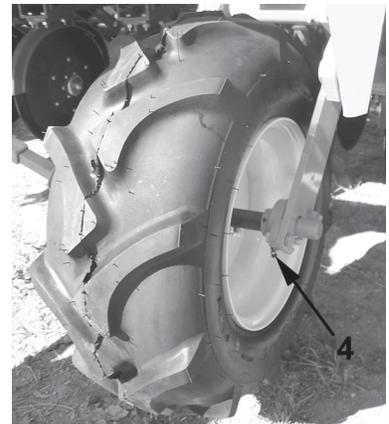
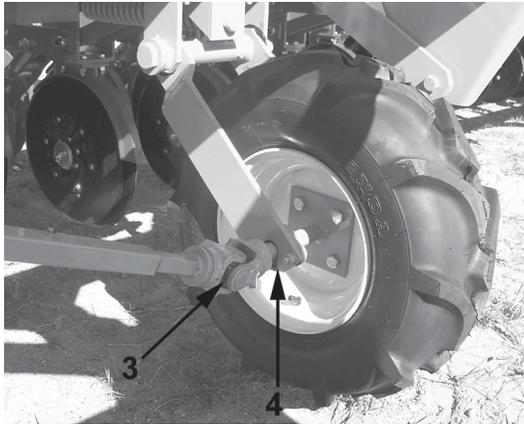




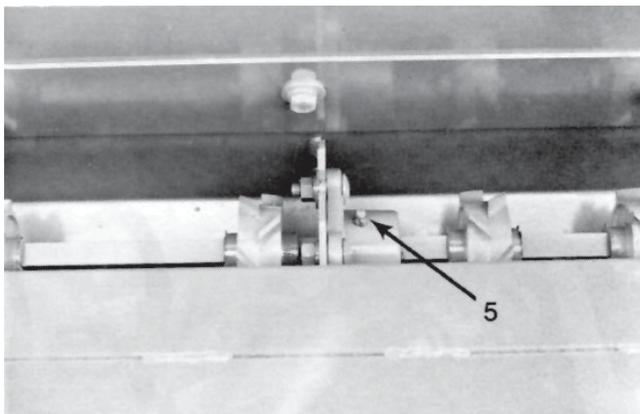
torque tube bushings
lubrication points

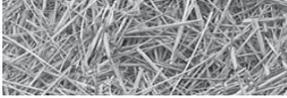


universal joints and
square drive line
lubrication zerk

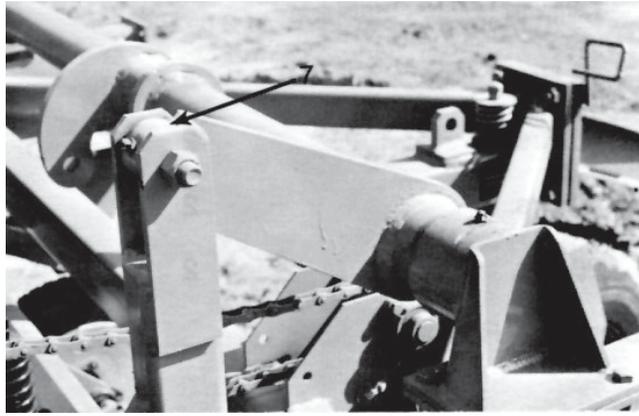


feed wheel shaft
lubrication zerk

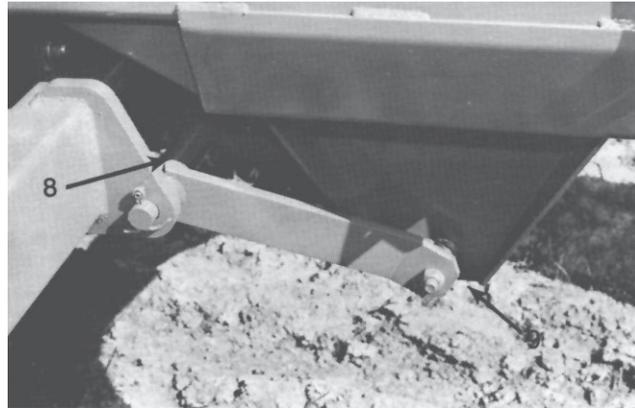




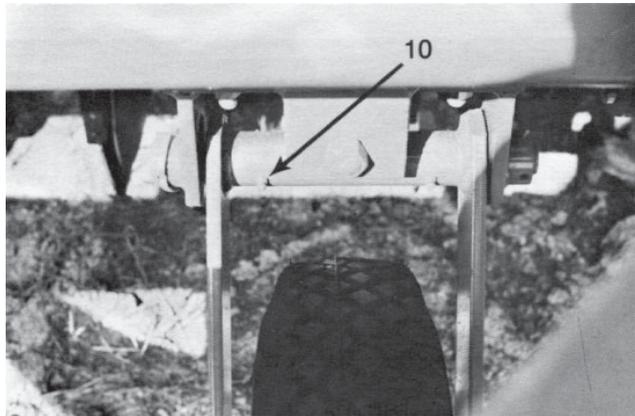
tool bar bushing
lubrication zerk



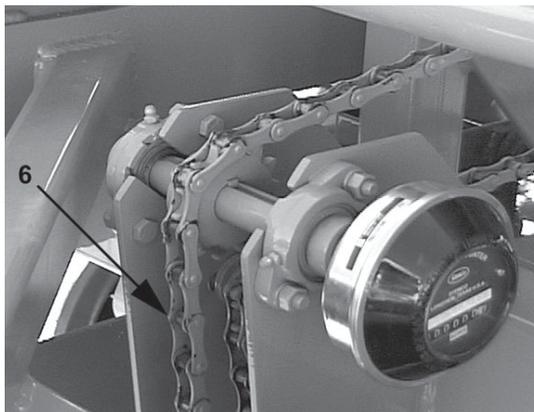
lift arm bushing
lubrication zerk

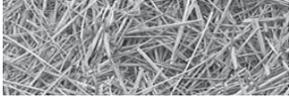


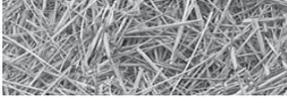
drive wheel frame
lubrication zerk



roller chains lubrication







APPENDIX A: WARRANTY

Duratech Industries International, warrants to the original purchaser for one year from purchase date that this product will be free from defects in material and workmanship when used as intended and under normal maintenance and operating conditions. This warranty is limited to the replacement of any defective part or parts returned to our factory in Jamestown, N.D., within thirty (30) days of failure.

This warranty shall become void if in Duratech Industries International's judgment the machine has been subject to misuse, negligence, alterations, damaged by accident or lack of required normal maintenance, or if the product has been used for a purpose for which it was not designed.

All claims for warranty must be made through the dealer which originally sold the product and all warranty adjustments must be made through same.

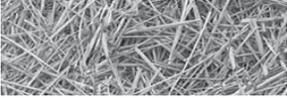
This warranty does not apply to tires or bearings or any other trade accessories not manufactured by Duratech Industries International. Buyer must rely solely on the existing warranty, if any, of these respective manufacturers.

Duratech Industries International shall not be held liable for damages of any kind, direct, contingent, or consequential to property under this warranty. Duratech Industries International cannot be held liable for any damages resulting from causes beyond its control. Duratech Industries International shall not be held liable under this warranty for rental costs or any expense or loss for labor or supplies.

Duratech Industries International reserves the right to make changes in materials and/or designs of this product at any time without notice.

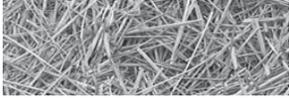
This warranty is void if Duratech Industries International does not receive a valid warranty registration card at its office in Jamestown, N.D., within 10 days from date of original purchase.

All other warranties made with respect to this product, either expressed or implied, are hereby disclaimed by Duratech Industries International.



APPENDIX B: SPECIFICATIONS

	147C Drill
Overall Width:	125"
Seeding Width:	14' (4.27 m)
Height:	6' - 2" (1.87m)
Weight:	5,650 lbs (2,562.8 Kg)
Tire Size:	9.5x14 Implement
Tire Pressure	44 PSI
Tire Size- Drive:	20X8-10 4-Ply
Tire Pressure	28 PSI
Hopper Capacity:	
Seed Box	18 Bu. (493 L)
Fertilizer Box	18 Bu. (493 L)
Feed System:	infinitely adjustable meter
Hoses:	rubber convoluted
Row Spacing:	7"
Openers - Double Disc:	14"
Press Wheels - Standard:	2" x 15-1/2" Steel
Options:	
	Swivel Hitch
	Acre Counter
	Legume Box
	Native Grass Kit
	Gauge Wheels





147C DRILL™

Serial Number 141600017C & UP

Parts Reference



DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the 147C DRILL™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

This manual, as well as materials provided by component suppliers to DuraTech Industries are all considered to be part of the information package. Every operator is required to read and understand these manuals, and they should be located within easy access for periodic review.

 &  are registered trademarks of DuraTech Industries International, Inc. 147C DRILL are trademarks of DuraTech Industries International, Inc.



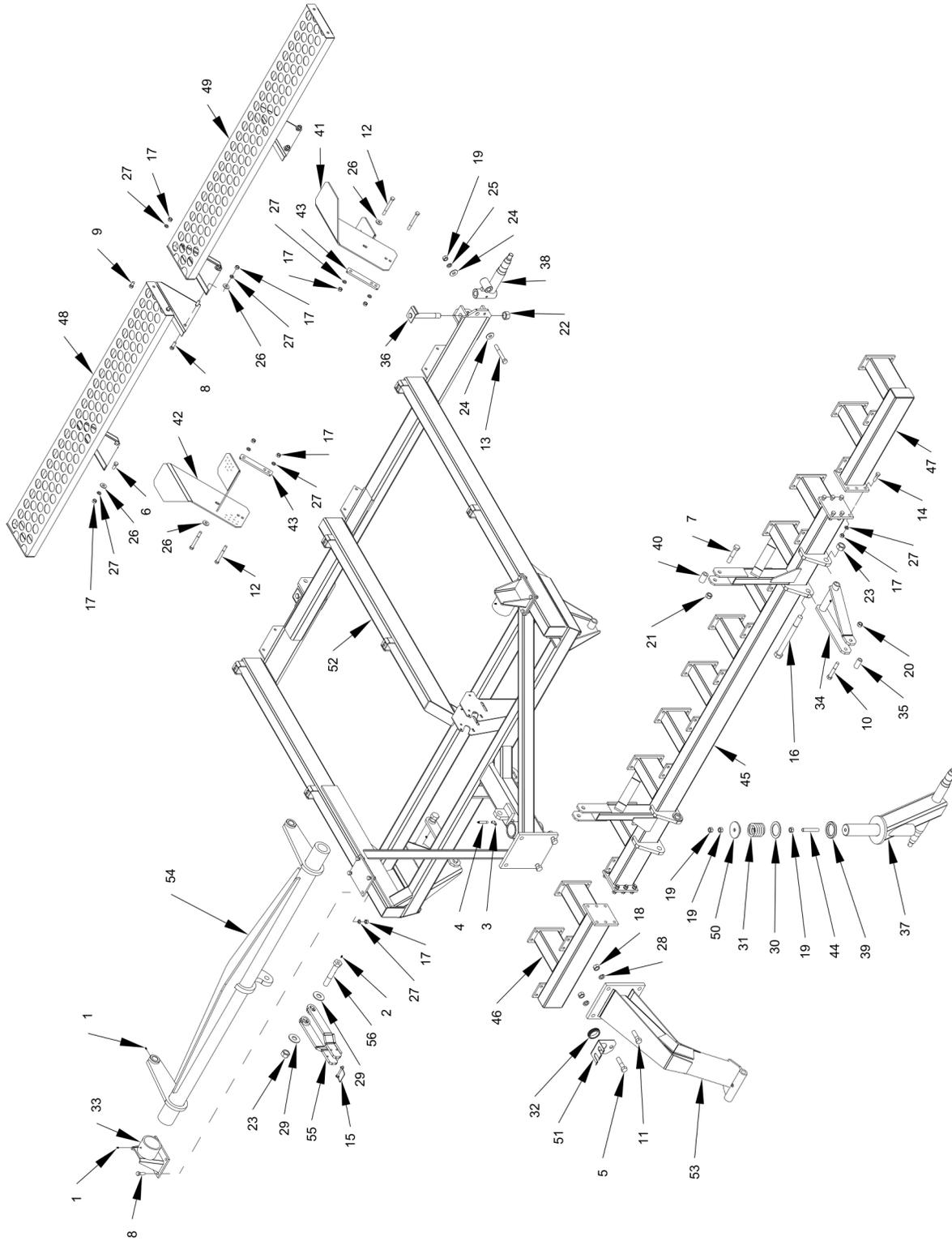


147C Drill Parts Reference

147C Drill Mainframe Assembly	1
147C Drill Tank Assembly-Front	5
147C Tank Assembly-Back (for SN Up to 0060)	7
147C Drill Tank Assembly-Rear (For SN 0061 to 0115)	11
147C Drill Tank Assembly - Rear (for SN 0116 and Up)	15
147C Drill Drive Assembly	19
147C Drill Tank End Drive Assembly	23
Drill Run Assembly	25
Seed and Fertilizer Setting Assembly	29
Scraper Assembly	31
Feed Wheel-Double	33
Feed Wheel-Triple	35
Coulter Assembly	37
Disk Assembly	39
Press Wheel Assembly	41
147C Optional Depth Band Kit Installation	43
Single Drill Hitch	45
Swivel Hitch	47
Single Drill Hydraulic Assembly	49
147C Legume Box Assembly	51
147C Legume Box Assembly-LH	53
147C Legume Box Assembly-RH	55
147C Legume Box Drive Assembly	57
147C Legume Box Cup Assembly	59
147C Light Kit and SMV (for SN up to 0090)	61
147C Light Kit and SMV (for SN 0091 and Up)	63
147C Decals	65
147C Decal Locations	67
147C Decal Locations	68
147C Decal Locations	69
Optional Acre Counter	70
Optional Suitcase Weight Brackets	71
5701180-Taillight Kit Harness	73
5701302 - Taillight Schematic	74

147C Drill Mainframe Assembly

147C Drill Parts Reference



147C Drill Mainframe Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	3800041	FTG\LUB\1\8MPXZERK\ADAPT		4	EA.
2	3800082	FTG\LUB\1\4NFXZERK\ADAPT		3	EA.
3	3800111	FTG\1\8MPX1\8FP\90D\ST;EL		1	EA.
4	3800126	FTG\LUB\1\8MPXZRK\2-5/8		1	EA.
5	4800017	BOLT\HEX\3\4X3		1	EA.
6	4800018	BOLT\HEX\1\2X1-1/4		4	EA.
7	4800063	BOLT\HEX\3\4X4		2	EA.
8	4800082	BOLT\HEX\1\2X1-1/2		10	EA.
9	4800085	BOLT\HEX\1\2X1		2	EA.
10	4800100	BOLT\HEX\5\8X4		2	EA.
11	4800115	BOLT\HEX\3\4X2-1/2		3	EA.
12	4800141	BOLT\HEX\1\2X4-1/2		4	EA.
13	4800158	BOLT\HEX\5\8X4-1/2		2	EA.
14	4800178	BOLT\HEX\1\2X1-3/4		12	EA.
15	4800559	PIN\LYNCH\5\16X2-1\2W\SQ;WIRE;KEEPER		1	EA.
16	4800626	BOLT\HEX\1X11\NC		2	EA.
17	4900001	NUT\HEX\1\2\NC		32	EA.
18	4900004	NUT\HEX\3\4\NC		4	EA.
19	4900005	NUT\HEX\5\8\NC		5	EA.
20	4900012	NUT\TPLCK\5\8\NC		2	EA.
21	4900013	NUT\TPLCK\3\4\NC		2	EA.
22	4900015	NUT\NYLCK\1\NC		2	EA.
23	4900127	NUT\TPLCK\1\NC		3	EA.
24	5000002	WASH\FLAT\5/8		4	EA.
25	5000003	WASH\LOCK\5/8		2	EA.
26	5000004	WASH\FLAT\1/2		8	EA.
27	5000006	WASH\LOCK\1/2		32	EA.
28	5000012	WASH\LOCK\3/4		4	EA.
29	5000014	WASH\FLAT\1		2	EA.
30	5000054	WASH\MACH\1\2IDX10GA		1	EA.
31	6100045	SPG\COMP\2-1\2ID\7\16WDX2-9\16L		1	EA.
32	7500858	GRMT\RBBR\2-1\4X2IDX1\4T		1	EA.
33	8400036	TUBE\TORQUE\PIVOT		2	EA.
34	8400038	ARMLIFT		2	EA.
35	8400039	BUSH\ARMLIFT\1X5\8X2-1\8		2	EA.
36	8400042	BOLT\PIVOT\REAR\WHL		2	EA.
37	8400133	FRM\WHL\SWIVEL\DUAL\147		1	EA.
38	8400134	SPNDL\REAR\WHL\147-ONLY		2	EA.

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147C Drill Mainframe Assembly

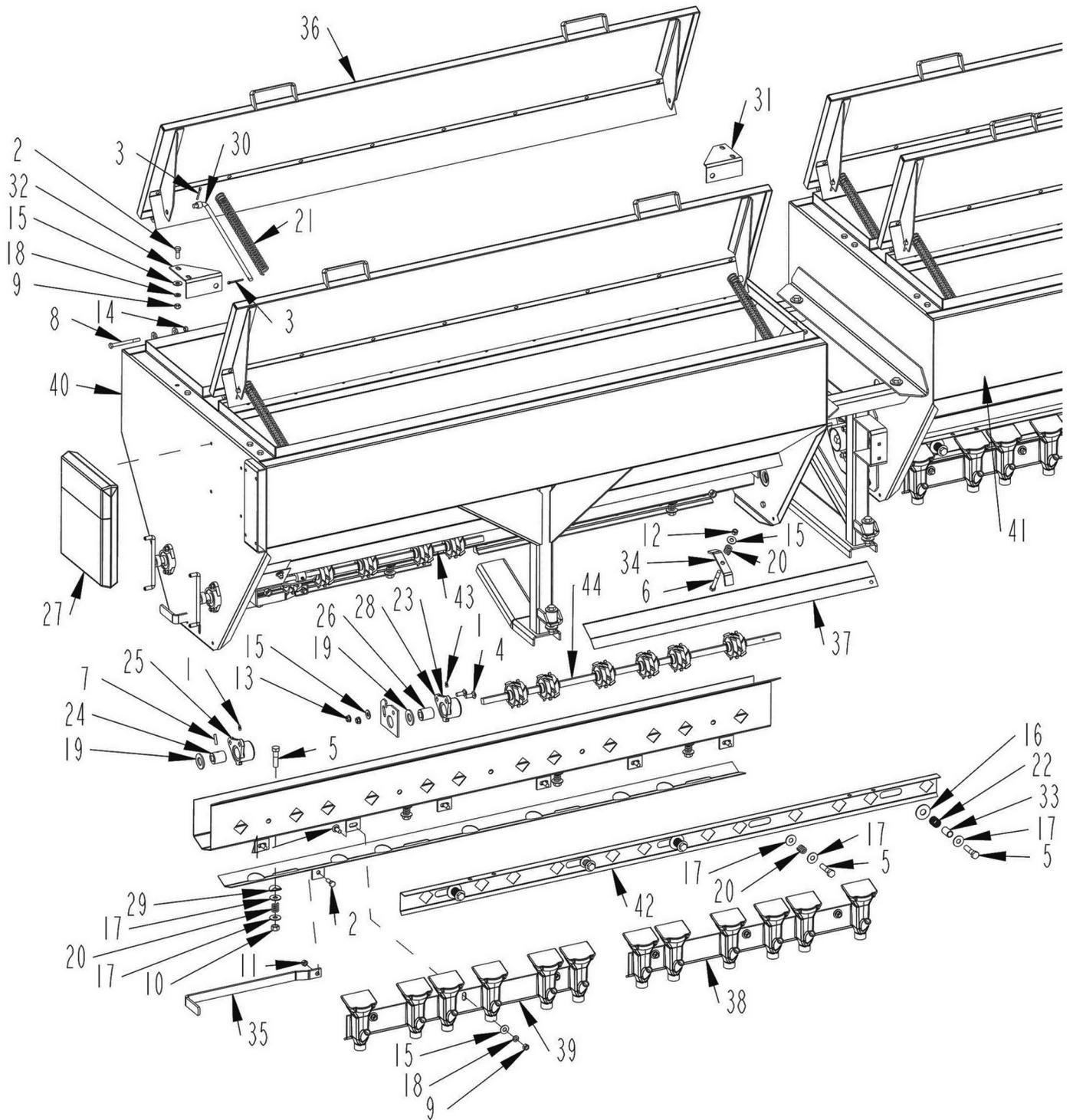
Item	Part No.	Name	Remarks	Qty	Uom
39	8400147	WASH\THRUST2-1/2X3-1/2X1/2\STL\SWIVEL;WHEEL\147		1	EA.
40	8400150	BUSH\TOOL_BAR\1-1/4X3/4X2		2	EA.
41	8400155	STEP\REAR\LH		1	EA.
42	8400156	STEP\REAR\RH\147C		1	EA.
43	8400157	STRAP\REAR\STEP;MOUNT\147C		2	EA.
44	8400282	ROD\THRDD\5/8X4		1	EA.
45	8400290	CNTR\TOOLBAR\147C		1	EA.
46	8400291	STUB\RIGHT\TOOLBAR\147C		1	EA.
47	8400292	STUB\LEFT\TOOLBAR\147C		1	EA.
48	8400293	WLKWY\LH\147C		1	EA.
49	8400294	WLKWY\RH\147C		1	EA.
50	8400296	CAP\RECESSED\WHL\SWIVEL\147		1	EA.
51	8400785	BRKT\HOSE\MINDER		1	EA.
52	8400898	MNFRM\147C		1	EA.
53	8400899	GOOSENECK\147C		1	EA.
54	8400900	TUBE\TORQUE		1	EA.
55	8400901	STOP\CYL\PVT		1	EA.
56	8401007	BOLT\HEX\1X6\CS\GREASE		1	EA.

147C Drill Tank Assembly-Front

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		8	EA.
2	4800018	BOLT\HEX\1\2X1-1/4		4	EA.
3	4800053	BOLT\CRG\3\8X1\NC		42	EA.
4	4800068	BOLT\HEX\1\2X3		6	EA.
5	4800169	PIN\RLLD\1\4X1-1/8		4	EA.
6	4801296	BOLT\FLG\SERR\5\16X1/2		96	EA.
7	4900001	NUT\HEX\1\2\NC		4	EA.
8	4900002	NUT\HEX\3\8\NC		58	EA.
9	4900014	NUT\PLCK\1\2\NC		40	EA.
10	4900076	NUT\FLG\SERR\3\8\NC		16	EA.
11	5000001	WASH\FLAT\3/8		72	EA.
12	5000004	WASH\FLAT\1/2		26	EA.
13	5000006	WASH\LOCK\1/2		4	EA.
14	5000019	WASH\LOCK\3/8		58	EA.
15	5000055	WASH\SPNDL\7/8 FLAT		8	EA.
16	7500108	HSG\CAST\BUSH\TANK\DRILL		8	EA.
17	7500109	SLV\SQ_HL\5\8X1-7\16\W\5\16_THRU_HL		4	EA.
18	7500110	SUP\SHFT\ASSY\SLEEVE\107	(Includes #1, #15, #16 and #17)	4	EA.
19	7500134	GROM 1.25ODX 17\32IDX1.25		6	EA.
20	7500562	SLV\SQ_HL\5\8X1-7\16\W\5\16_PLAIN		4	EA.
21	7501058	SUP\SHFT\ASSY\SLEEVE\107	(Includes #1, #15, #16 and #20)	4	EA.
22	7501401	FNNL\COVER\SEED\SMALL\77-107		48	EA.
23	7501444	#5\CAPLUG		48	EA.
24	8400304	PL\CNTRL\7\FRNT\147C		2	EA.
25	8400305	CLEANOUT\TANK		4	EA.
26	8400765	MNT\SEEDCUP\FRONT\GRAINTANK		4	EA.
27	8400771	CUP\SEED\CNTR\FRNT\ASM		4	EA.
28	8400890	WHL\FEED\2S\37-3\8\DRIVE		2	EA.
29	8400894	WHL\FEED\2S\33\FREE		2	EA.
30	8400896	MNT\TANK\CENTER\147		1	EA.

147C Tank Assembly-Back (for SN Up to 0060)

147C Drill Parts Reference



147C Tank Assembly-Back (for SN Up to 0060)

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		8	EA.
2	4800003	BOLT\HEX\3\8X1		22	EA.
3	4800044	PIN\COT\5\32X1-1/2		16	EA.
4	4800053	BOLT\CRG\3\8X1\NC		42	EA.
5	4800114	BOLT\HEX\1\2X2		38	EA.
6	4800156	BOLT\HEX\3\8X3		8	EA.
7	4800169	PIN\RLLD\1\4X1-1/8		4	EA.
8	4800170	BOLT\HEX\5\16X3-1/2		8	EA.
9	4900002	NUT\HEX\3\8\NC		58	EA.
10	4900014	NUT\TPLCK\1\2\NC		40	EA.
11	4900023	NUT\TPLCK\3\8\NC		4	EA.
12	4900030	NUT\NYLCK\3\8\NC		8	EA.
13	4900076	NUT\FLG\SERR\3\8\NC		16	EA.
14	4900099	NUT\TPLCK\5\16\GR8\NC		8	EA.
15	5000001	WASH\FLAT\3\8		72	EA.
16	5000002	WASH\FLAT\5\8		12	EA.
17	5000016	WASH\FLAT\7\16		64	EA.
18	5000019	WASH\LOCK\3\8		58	EA.
19	5000055	WASH\SPNDL\7\8 FLAT		8	EA.
20	6100002	SPRING\COMP\0.072W\11\16OD\2-1/8LONG		34	EA.
21	6100017	PRESSURE SPRING 12X1 1/8		8	EA.
22	6100031	SPRING\COMP\0.072W\25\32OD		12	EA.
23	7500108	HSG\CAST\BUSH\TANK\DRILL		8	EA.
24	7500109	SLV\SQ_HL\5\8X1-7\16\W\5\16_THRU_HL		4	EA.
25	7500110	SUP\SHFT\ASSY\SLEEVE\107		4	EA.
26	7500562	SLV\SQ_HL\5\8X1-7\16\W\5\16_PLAIN		4	EA.
27	7500590	ENCL\OPS\8-1\2X11X1-5\8		1	EA.
28	7501058	SUP\SHFT\ASSY\SLEEVE\107		4	EA.
29	8300236	WASH\BENT\1\2"		16	EA.
30	8400003	ROD\COV\TANK\SPG		8	EA.
31	8400005	RTNR\TANK\COVER\SPG\RH		4	EA.
32	8400004	RTNR\TANK\COVER\SPG\LH		4	EA.
33	8400007	GUIDE\PL\CNTRL\107		12	EA.
34	8400011	CLMP\WHL\COV\HOLD DOWN		8	EA.
35	8400112	HDL\PL_CLEANOUT		4	EA.
36	8400303	LID\TANK		4	EA.
37	8400306	COV\WHL\FEED\147\		8	EA.
38	8400773	CUP\SEED\CNTRL\REAR\ASM		2	EA.

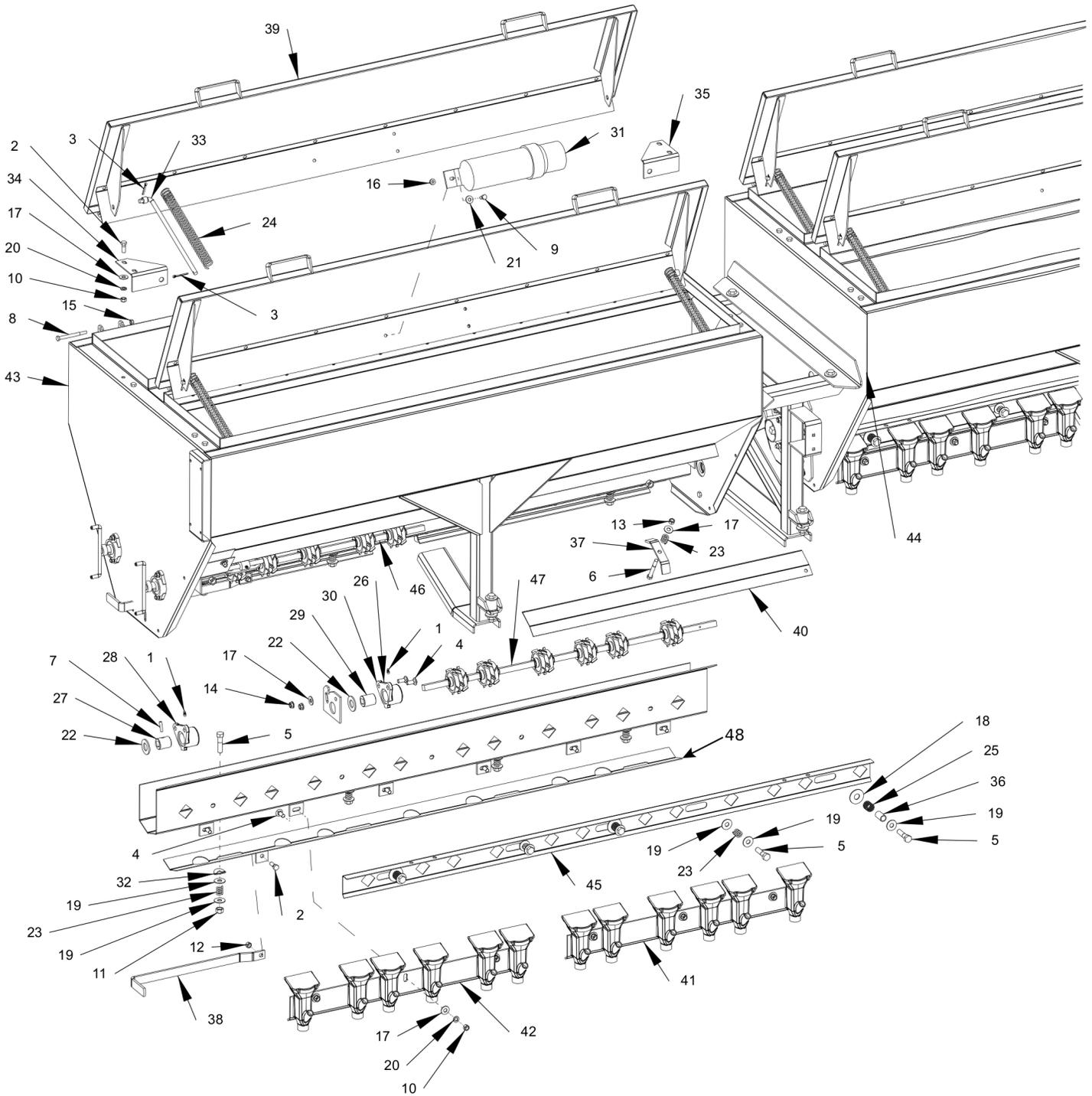
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147C Tank Assembly-Back (for SN Up to 0060)

Item	Part No.	Name	Remarks	Qty	Uom
39	8400774	CUP\SEED\CNTR\RT\REAR\ASM		2	EA.
40	8400884	TANK\WLDMNT\LH\147C		1	EA.
41	8400885	TANK\RH\147		1	EA.
42	8400886	PL\CNTRL\7"N-GRASS\147C		2	EA.
43	8400891	WHL\FEED\3S\33\FREE		2	EA.
44	8400892	WHL\FEED\3S\37-3/8\DRIVE		2	EA.

147C Drill Tank Assembly-Rear (For SN 0061 to 0115)

147C Drill Parts Reference



147C Drill Tank Assembly-Rear (For SN 0061 to 0115)

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		8	EA.
2	4800003	BOLT\HEX\3\8X1		22	EA.
3	4800044	PIN\COT\5\32X1-1/2		16	EA.
4	4800053	BOLT\CRG\3\8X1\NC		42	EA.
5	4800114	BOLT\HEX\1\2X2		38	EA.
6	4800156	BOLT\HEX\3\8X3		8	EA.
7	4800169	PIN\RLLD\1\4X1-1/8		4	EA.
8	4800170	BOLT\HEX\5\16X3-1/2		8	EA.
9	4800643	BOLT\HEX\5\16X3/4		3	EA.
10	4900002	NUT\HEX\3\8\NC		58	EA.
11	4900014	NUT\TPLCK\1\2\NC		40	EA.
12	4900023	NUT\TPLCK\3\8\NC		4	EA.
13	4900030	NUT\NYLCK\3\8\NC		8	EA.
14	4900076	NUT\FLG\SERR\3\8\NC		16	EA.
15	4900099	NUT\TPLCK\5\16\GR8\NC		8	EA.
16	4900108	NUT\FLG\SERR\5\16\NC		3	EA.
17	5000001	WASH\FLAT\3\8		72	EA.
18	5000002	WASH\FLAT\5\8		12	EA.
19	5000016	WASH\FLAT\7\16		64	EA.
20	5000019	WASH\LOCK\3\8		58	EA.
21	5000023	WASH\FLAT\5\16		27	EA.
22	5000055	WASH\SPNDL\7\8 FLAT		8	EA.
23	6100002	SPRING\COMP\072W\11\16OD\2-1/8LONG		34	EA.
24	6100017	PRESSURE SPRING 12X1 1/8		8	EA.
25	6100031	SPRING\COMP\072W\25\32OD		12	EA.
26	7500108	HSG\CAST\BUSH\TANK\DRILL		8	EA.
27	7500109	SLV\SQ_HL\5\8X1-7\16\W\5\16_THRU_HL		4	EA.
28	7500110	SUP\SHFT\ASSY\SLEEVE\107		4	EA.
29	7500562	SLV\SQ_HL\5\8X1-7\16\W\5\16_PLAIN		4	EA.
30	7501058	SUP\SHFT\ASSY\SLEEVE\107		4	EA.
31	7501628	CNSTRS\MANUAL\12X3.5		1	EA.
32	8300236	WASH\BENT\1\2"		16	EA.
33	8400003	ROD\COV\TANK\SPG		8	EA.
34	8400004	RTNR\TANK\COVER\SPG\LH		4	EA.
35	8400005	RTNR\TANK\COVER\SPG\RH		4	EA.
36	8400007	GUIDE\PL\CNTRL\107		12	EA.
37	8400011	CLMP\WHL\COV\HOLD DOWN		8	EA.
38	8400112	HDL\PL_CLEANOUT		4	EA.

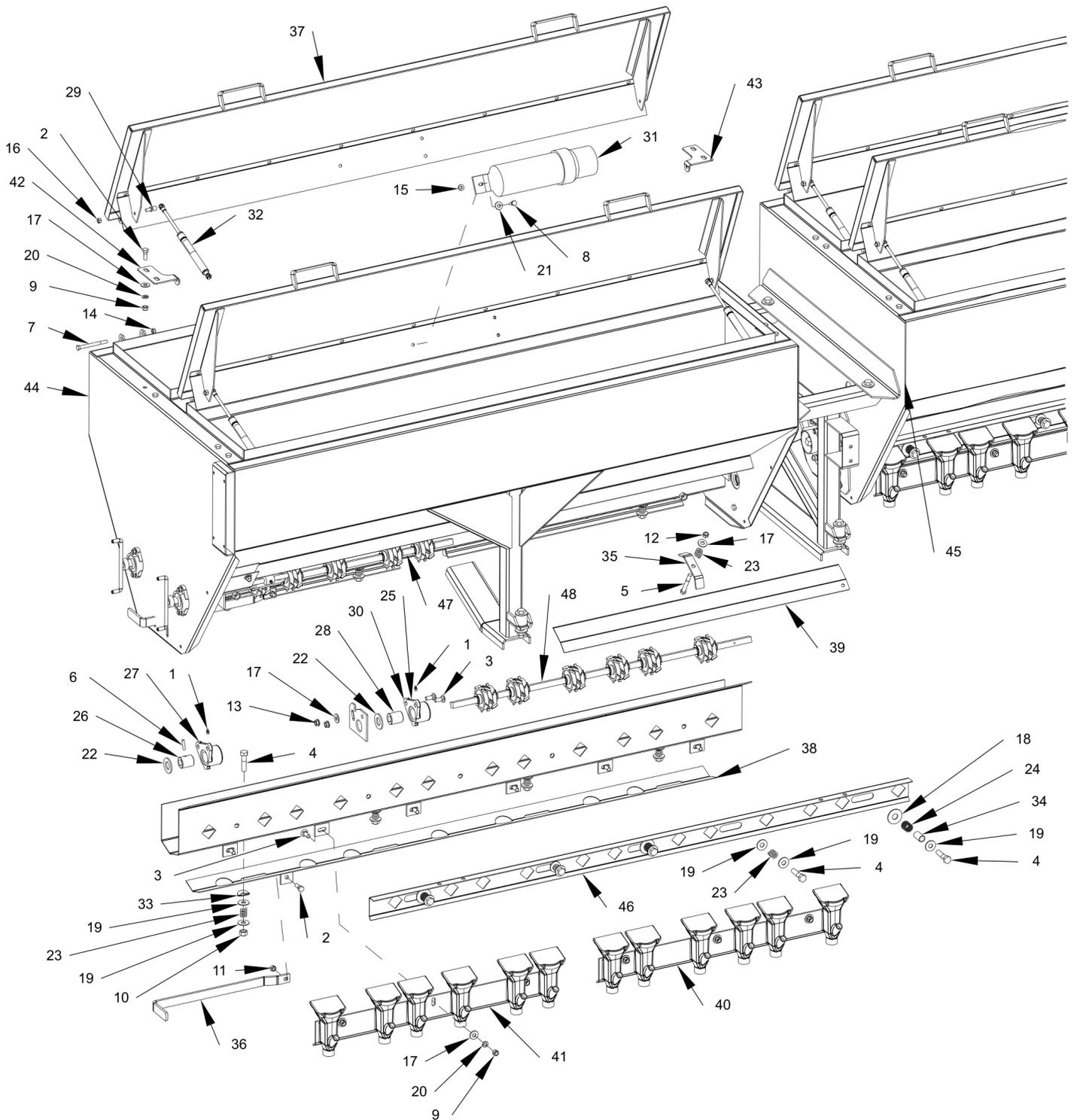
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147C Drill Tank Assembly-Rear (For SN 0061 to 0115)

Item	Part No.	Name	Remarks	Qty	Uom
39	8400303	LID\TANK		4	EA.
40	8400306	COV\WHL\FEED\147\		8	EA.
41	8400773	CUP\SEED\CNTR\LT\REAR\ASM		2	EA.
42	8400774	CUP\SEED\CNTR\RT\REAR\ASM		2	EA.
43	8400884	TANK\WLDMNT\LH\147C		1	EA.
44	8400885	TANK\RH\147		1	EA.
45	8400886	PL\CNTRL\7"N-GRASS\147C		2	EA.
46	8400891	WHL\FEED\3S\33\FREE		2	EA.
47	8400892	WHL\FEED\3S\37-3/8\DRIVE		2	EA.
48	8400305	CLEANOUT\TANK		4	EA.

147C Drill Tank Assembly - Rear (for SN 0116 and Up)

147C Drill Parts Reference



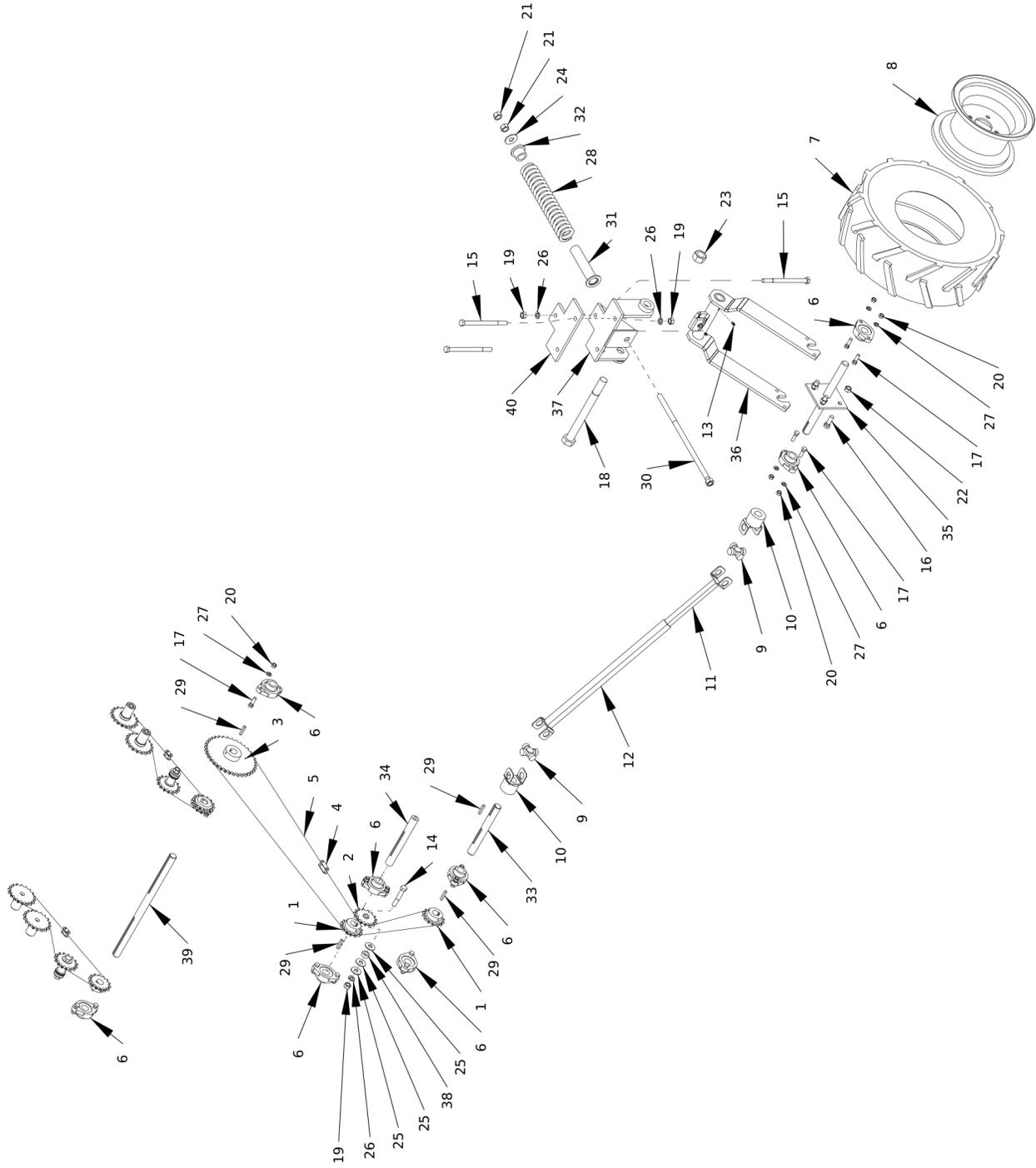
147C Drill Tank Assembly - Rear (for SN 0116 and Up)

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		8	EA.
2	4800003	BOLT\HEX\3\8X1		22	EA.
3	4800053	BOLT\CRG\3\8X1\NC		42	EA.
4	4800114	BOLT\HEX\1\2X2		38	EA.
5	4800156	BOLT\HEX\3\8X3		8	EA.
6	4800169	PIN\RLLD\1\4X1-1/8		3	EA.
7	4800170	BOLT\HEX\5\16X3-1/2		8	EA.
8	4800643	BOLT\HEX\5\16X3/4		3	EA.
9	4900002	NUT\HEX\3\8\NC		58	EA.
10	4900014	NUT\PLCK\1\2\NC		40	EA.
11	4900023	NUT\PLCK\3\8\NC		4	EA.
12	4900030	NUT\NYLCK\3\8\NC		8	EA.
13	4900076	NUT\FLG\SERR\3\8\NC		16	EA.
14	4900099	NUT\PLCK\5\16\GR8\NC		8	EA.
15	4900108	NUT\FLG\SERR\5\16\NC		3	EA.
16	4900142	NUT\PLCK\5\16\NC		16	EA.
17	5000001	WASH\FLAT\3\8		72	EA.
18	5000002	WASH\FLAT\5\8		12	EA.
19	5000016	WASH\FLAT\7\16		64	EA.
20	5000019	WASH\LOCK\3\8		58	EA.
21	5000023	WASH\FLAT\5\16		27	EA.
22	5000055	WASH\SPNDL\7\8 FLAT		8	EA.
23	6100002	SPRING\COMP\072W\11\16OD\2-1/8LONG		34	EA.
24	6100031	SPRING\COMP\072W\25\32OD		12	EA.
25	7500108	HSG\CAST\BUSH\TANK\DRILL		8	EA.
26	7500109	SLV\SQ_HL\5\8X1-7\16\W\5\16_THRU_HL		4	EA.
27	7500110	SUP\SHFT\ASSY\SLEEVE\107		4	EA.
28	7500562	SLV\SQ_HL\5\8X1-7\16\W\5\16_PLAIN		4	EA.
29	7500664	BALL STUD\SHOCK\FITTING\M6		16	EA.
30	7501058	SUP\SHFT\ASSY\SLEEVE\107		4	EA.
31	7501628	CNSTRS\MANUAL\12X3.5		1	EA.
32	7501740	SPRNG\GAS\90LB		8	EA.
33	8300236	WASH\BENT\1\2"		16	EA.
34	8400007	GUIDE\PL\CNTRL\107		12	EA.
35	8400011	CLMP\WHL\COV\HOLD DOWN		8	EA.
36	8400112	HDL\PL_CLEANOUT		4	EA.
37	8400303	LID\TANK		4	EA.
38	8400305	CLEANOUT\TANK		4	EA.

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147C Drill Tank Assembly - Rear (for SN 0116 and Up)

Item	Part No.	Name	Remarks	Qty	Uom
39	8400306	COV\WHL\FEED\147\		8	EA.
40	8400773	CUP\SEED\CNTRLT\REAR\ASM		2	EA.
41	8400774	CUP\SEED\CNTR\RT\REAR\ASM		2	EA.
42	8400814	RTNR\TANK\COVER\SPG		4	EA.
43	8400815	RTNR\TANK\COVER\SPG		4	EA.
44	8400884	TANK\WLDMNT\LH\147C		1	EA.
45	8400885	TANK\RH\147		1	EA.
46	8400886	PL\CNTRL\7"N-GRASS\147C		2	EA.
47	8400891	WHL\FEED\3S\33\FREE		1	EA.
48	8400892	WHL\FEED\3S\37-3/8\DRIVE		1	EA.



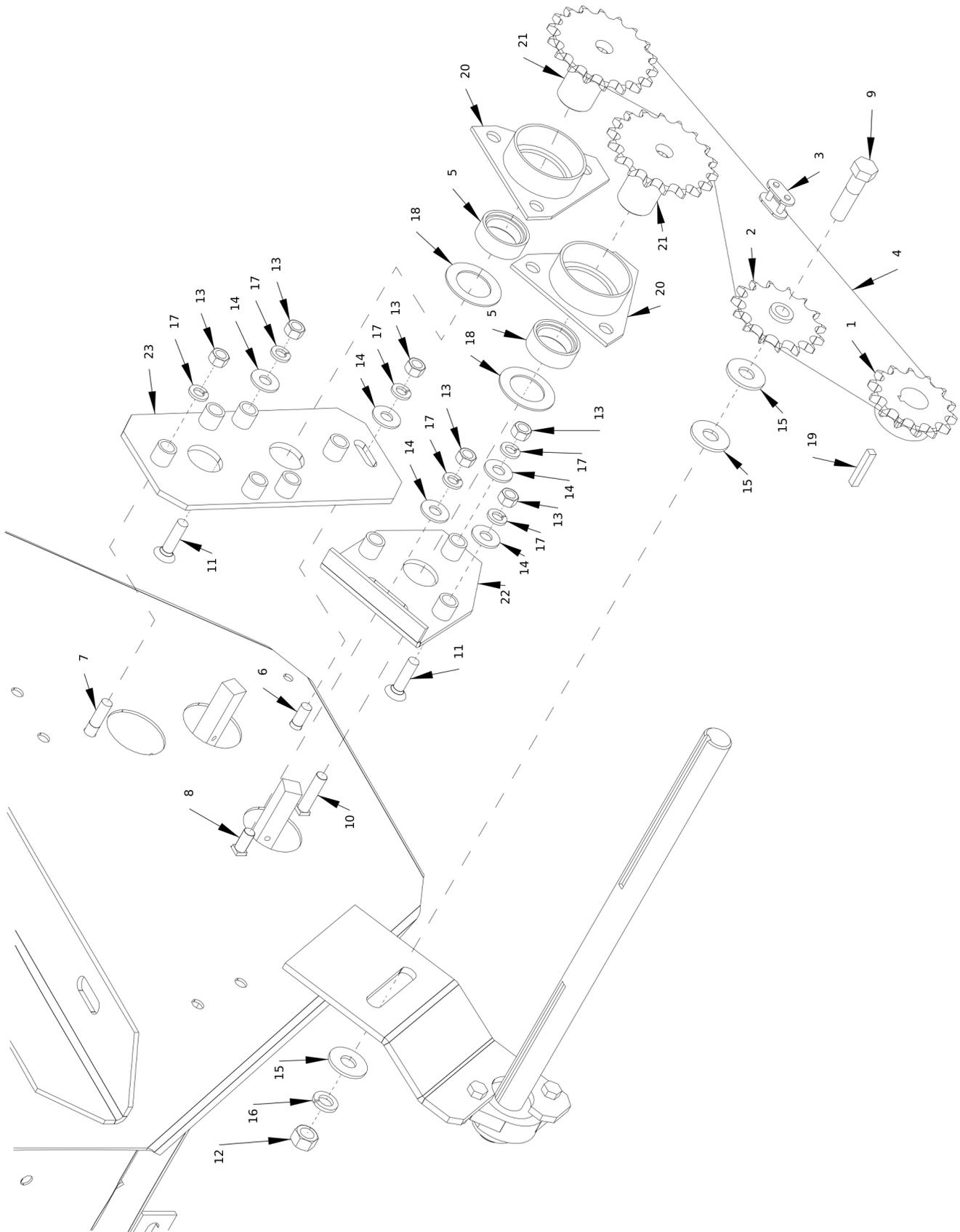
147C Drill Drive Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000029	SPKT\50\B\14\1\1\4KW		4	EA.
2	1000039	SPKT\50\15\1\2\IDLER		3	EA.
3	1000075	SPKT\50\B\36\1\1\4KW		1	EA.
4	1100230	CHAIN\A2050NP\CL		1	EA.
5	1100283	CHAIN\2050NP\87		1	EA.
6	2000310	BRG\FLG\CAST\1\2BOLT		8	EA.
7	2600055	TIRE\20X8-10\LUG\4PLY		1	EA.
8	2600651	WHL\10X6\4HL\4" CRL		1	EA.
CA	2600865	WHL\ASSY\20X8-10\4HL\4CRL	(Includes #7 and #8)		EA.
9	3600008	#6 CROSS & BEARING KIT		2	EA.
10	3600242	1" YOKE		2	EA.
11	3600253	MALE HALF FOR 3600241		1	EA.
12	3600254	FEMALE HALF FOR 3600241		1	EA.
CA	3600241	SHFT\DRV\CMPLT\TR6NA	(Includes #9, #10, #11 and #12)		EA.
13	3800082	FTG\LUB\1\4NFXZERK\ADAPT		2	EA.
14	4800068	BOLT\HEX\1\2X3		1	EA.
15	4800080	BOLT\HEX\1\2X7		3	EA.
16	4800082	BOLT\HEX\1\2X1-1/2		4	EA.
17	4800098	BOLT\HEX\3\8X1-1/4\NC		16	EA.
18	4800626	BOLT\HEX\1X11\NC		1	EA.
19	4900001	NUT\HEX\1\2\NC		4	EA.
20	4900002	NUT\HEX\3\8\NC		16	EA.
21	4900005	NUT\HEX\5\8\NC		3	EA.
22	4900014	NUT\TPLCK\1\2\NC		4	EA.
23	4900015	NUT\NYLCK\1\NC		1	EA.
24	5000002	WASH\FLAT\5/8		1	EA.
25	5000004	WASH\FLAT\1/2		3	EA.
26	5000006	WASH\LOCK\1/2		4	EA.
27	5000019	WASH\LOCK\3/8		16	EA.
28	6100032	SPG\COMP\2.81OD\4.06WD>		1	EA.
29	6200005	KEY\SQ\1/4X1-1/2		4	EA,
30	8400024	ROD\SPRG\WHL\DR		1	EA.
31	8400025	GUIDE\SPRING\LONG		1	EA.
32	8400026	GUIDE\SPRING\SHORT		1	EA.
33	8400415	SHFT\1ST\1X8-3/4\1000		1	EA.
34	8400446	SHFT\1X8-1/2\ACRECTR		1	EA.
35	8400792	SHFT\DR\WHL\13"		1	EA.
36	8400793	BRKT\FRK\WHL\DRV\16-1/2X10-1/8		1	EA.

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147C Drill Drive Assembly

Item	Part No.	Name	Remarks	Qty	Uom
37	8400797	FRM\WHL\DR\WELD		1	EA.
38	8400805	SPCR\DRV\1ODX3/8		1	EA.
39	8400806	SHFT\DR\TANK\1X18-9/16		1	EA.
40	8400023	PL\MNT\WHL\DR		2	EA.

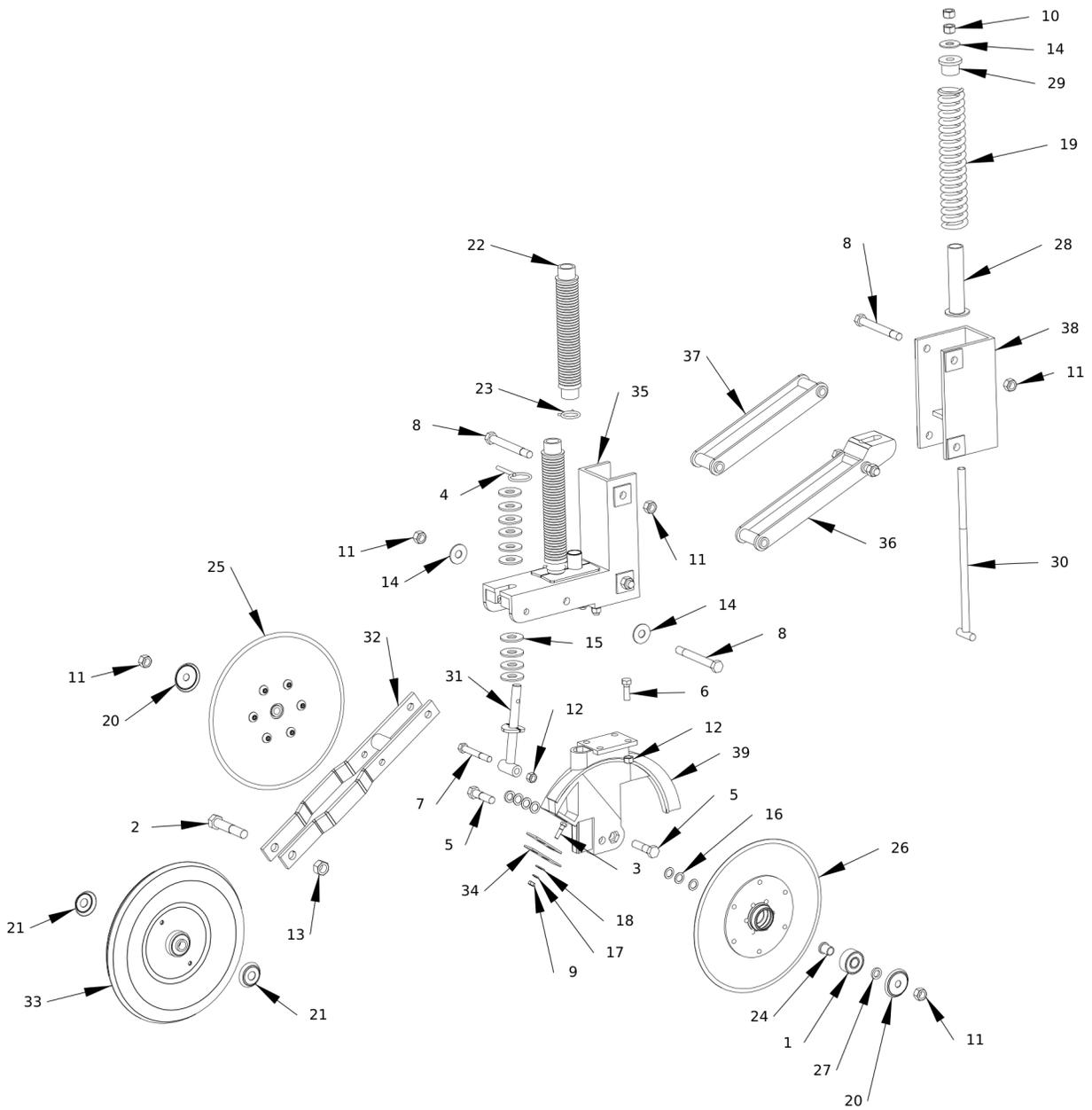


147C Drill Tank End Drive Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000029	SPKT\50\B\14\1\1\4KW		2	EA.
2	1000039	SPKT\50\15\1\2\IDLER		2	EA.
3	1100227	CHAIN\50NP\CL		2	EA.
4	1100234	CHAIN\50NP\73		2	EA.
5	2000824	CLLR\BRG\1-1/4 - FOR 8400070		4	EA.
6	4800003	BOLT\HEX\3\8X1		2	EA.
7	4800034	BOLT\HEX\3\8X1-1/2		2	EA.
8	4800053	BOLT\CRG\3\8X1\NC		2	EA.
9	4800114	BOLT\HEX\1\2X2		2	EA.
10	4800168	BOLT\CRG\3\8X1-3/4\NC		2	EA.
11	4800230	SCR\CSK\ALN\3\8X1-1/2\NC		10	EA.
12	4900001	NUT\HEX\1\2\NC		2	EA.
13	4900002	NUT\HEX\3\8\NC		18	EA.
14	5000001	WASH\FLAT\3\8		16	EA.
15	5000004	WASH\FLAT\1\2		6	EA.
16	5000006	WASH\LOCK\1\2		2	EA.
17	5000019	WASH\LOCK\3\8		18	EA.
18	5000084	2"PD 1-1/4ID OILITE WASHR		4	EA.
19	6200005	KEY\SQ\1\4X1-1/2		2	EA,
20	8400070	BRG\1-1/4W\BRKT\3-HL		4	EA.
21	8400071	SPKT\DRIVEW\SQ_HL_SLV		4	EA.
22	8400074	SEALER PLATE		2	EA.
23	8400242	PL\SEAL\TANK\107		2	EA.

Drill Run Assembly

147C Drill Parts Reference



Drill Run Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	2000031	BRG\ROW\DBL		2	EA.
2	4800063	BOLT\HEX\3/4X4		1	EA.
3	4800071	BOLT\HEX\5/16X1-1/4		1	EA.
4	4800076	PIN\KLIK\5/16		1	EA.
5	4800079	BOLT\HEX\5/8X2-1/2		2	EA.
6	4800082	BOLT\HEX\1/2X1-1/2		4	EA.
7	4800231	BOLT\HEX\1/2X3-3/4		1	EA.
8	4800984	BOLT\HEX\5/8X5-1/2\SHRT\THRD		5	EA.
9	4900003	NUT\HEX\5/16\NC		1	EA.
10	4900005	NUT\HEX\5/8\NC		2	EA.
11	4900012	NUT\PLCK\5/8\NC		7	EA.
12	4900014	NUT\PLCK\1/2\NC		11	EA.
13	4900139	NUT\PLCK\3/4\GR8\NC		1	EA.
14	5000002	WASH\FLAT\5/8		3	EA.
15	5000005	WASH\FLAT\3/4		10	EA.
16	5000009	WASH\1" OD\ SHIM		6	EA.
17	5000022	WASH\LOCK\5/16		1	EA.
18	5000023	WASH\FLAT\5/16		1	EA.
19	6100032	SPG\COMP\2.81OD\4.06WD>		1	EA.
20	7400258	CAP\DUST		2	EA.
21	7400264	CAP\WHL\W/O_PILOT		2	EA.
22	7500097	HOSE\CONVOLUTED\1-1/2 ID		2	EA.
23	7500098	CLAMP\SDHOSE\1-1/4A-24		2	EA.
24	7500160	#6610 BREAINING BUSHING		2	EA.
25	7500187	BLADE\ASSY\14"\COULTER		1	EA.
26	7500188	BLADE\ASSY\14"\DISC\107		1	EA.
27	7500307	CAP\SPACER\BUSHING		2	EA.
28	8400025	GUIDE\SPRING\LONG		1	EA.
29	8400026	GUIDE\SPRING\SHORT		1	EA.
30	8400047	ROD\SPG\5/8X15		1	EA.
31	8400064	ROD\DEPTH\WHEEL\PACKER		1	EA.
32	8400271	BRKT\WHL\PACKER\20"		1	EA.
33	8400617	WHL\PRESS\STL\ASSY\107		1	EA.
34	8400670	SCRPR\DISC		2	EA.
35	8400692	FRM\RUN\LOWER\CAST		1	EA.
36	8400693	LINK\RUN\LOWER\CAST		1	EA.
37	8400694	LINK\RUN\UPPER\CAST		1	EA.
38	8400697	FRM\RUN\FR\CAST		1	EA.

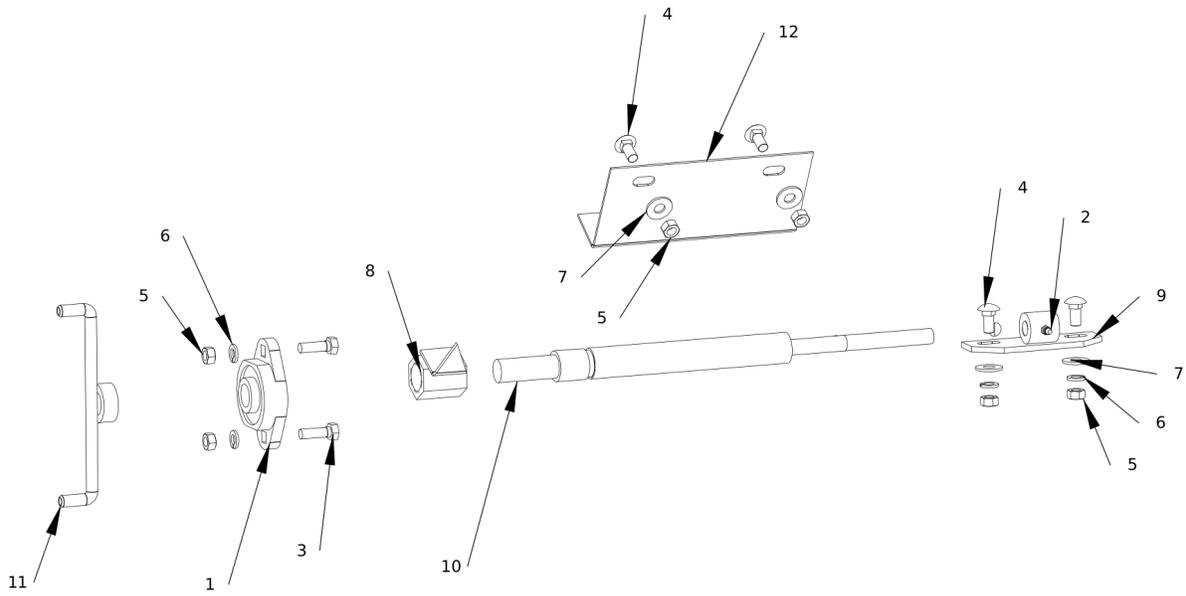
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Drill Run Assembly

Item	Part No.	Name	Remarks	Qty	Uom
39	8400736	BOOT\DR\SUB_WELD\LH\#10		1	EA.
39a	8400737	BOOT\DR\SUB_WELD\RH\#12		1	EA.
CA	8400780	RUN\DRILL\STL\RH\CAST\ASSY			EA.
CA	8400781	RUN\DRILL\STL\LH\CAST\ASSY			EA.

Seed and Fertilizer Setting Assembly

147C Drill Parts Reference

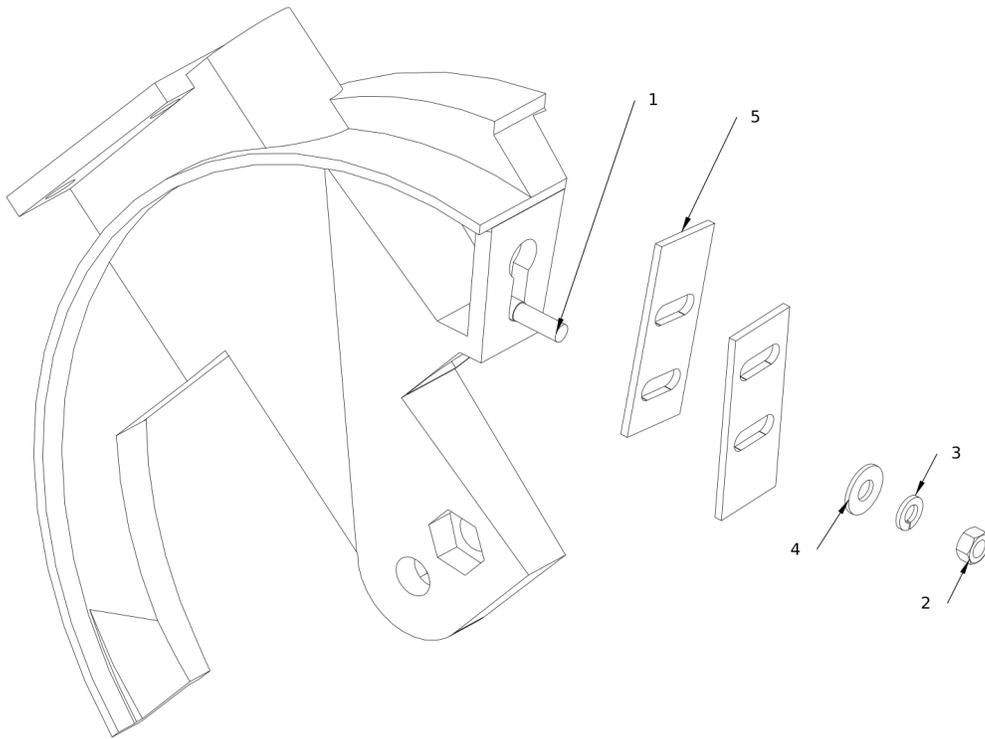


Seed and Fertilizer Setting Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	2000313	BRG\FLG\CAST\3/4\2BOLT		1	EA.
2	3600053	FTG\LUB\1/4NFXZERK\ADAPT		1	EA.
3	4800013	BOLT\HEX\5/16X1		2	EA.
4	4800153	BOLT\CRG\5/16X3/4\NC		4	EA.
5	4900003	NUT\HEX\5/16\NC		6	EA.
6	5000022	WASH\LOCK\5/16		4	EA.
7	5000023	WASH\FLAT\5/16		4	EA.
8	7500071	CALIBRATION POINTER NUT		1	EA.
9	7500072	CALIBRATION CONTRL PL NUT		1	EA.
10	7500073	CALIBRATION SHAFT #6620		1	EA.
11	8400060	HDL\CAL\107		1	EA.
12	8400262	PL\DECAL\CAL\DUAL_USE		1	EA.
12A	8400061	PL\DECAL\CAL\GRAIN		1	EA.
NS	6500016	DECAL\INFO\CAL;SCALE;GRAIN			EA.
NS	6500017	DECAL\INFO\CAL.SCALE;FERT			EA.
NS	6500081	DECAL\INFO\CAL.SCALE\GRASS			EA.

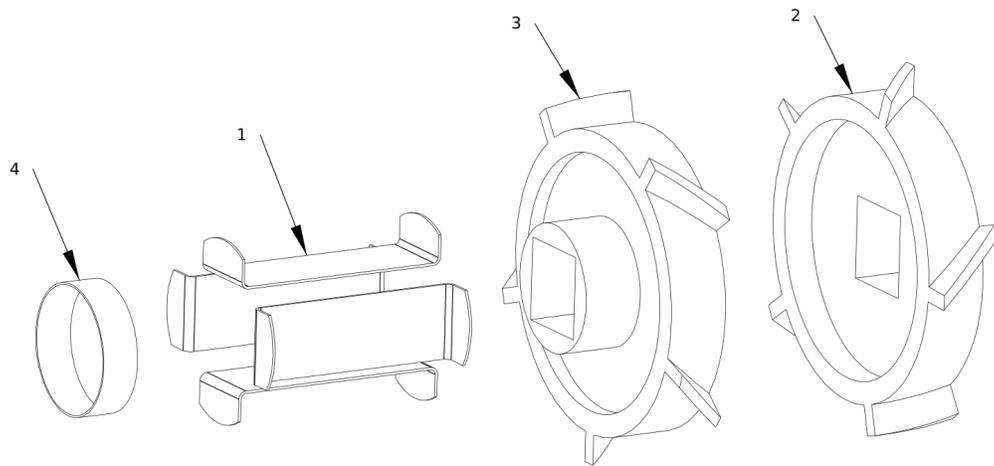
Scraper Assembly

147C Drill Parts Reference



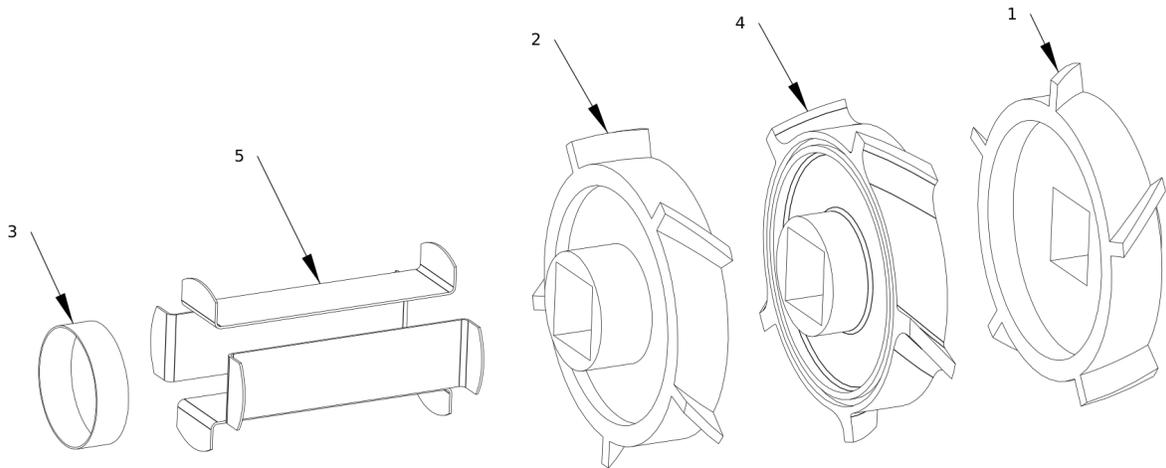
Scraper Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	4800071	BOLT\HEX\5/16X1-1/4		1	EA.
2	4900003	NUT\HEX\5/16\NC		1	EA.
3	5000022	WASH\LOCK\5/16		1	EA.
4	5000023	WASH\FLAT\5/16		1	EA.
5	8400670	SCRPR\DISC		2	EA.
CA	8400091	SCRPR\DISC\COMP	(Boot not Included)		EA.



Feed Wheel-Double

Item	Part No.	Name	Remarks	Qty	Uom
1	7400066	CLIP\RETAINER\WHL\FEED		4	EA.
2	7500007	WHL\FEED\LH		1	EA.
3	7500008	WHL\FEED\RH		1	EA.
4	7500107	CLAMP\HOSE\1-1/4\WORM\SS		1	EA
CA	7500006	WHL\FERT\TANK	(Includes #1-#4)		EA.

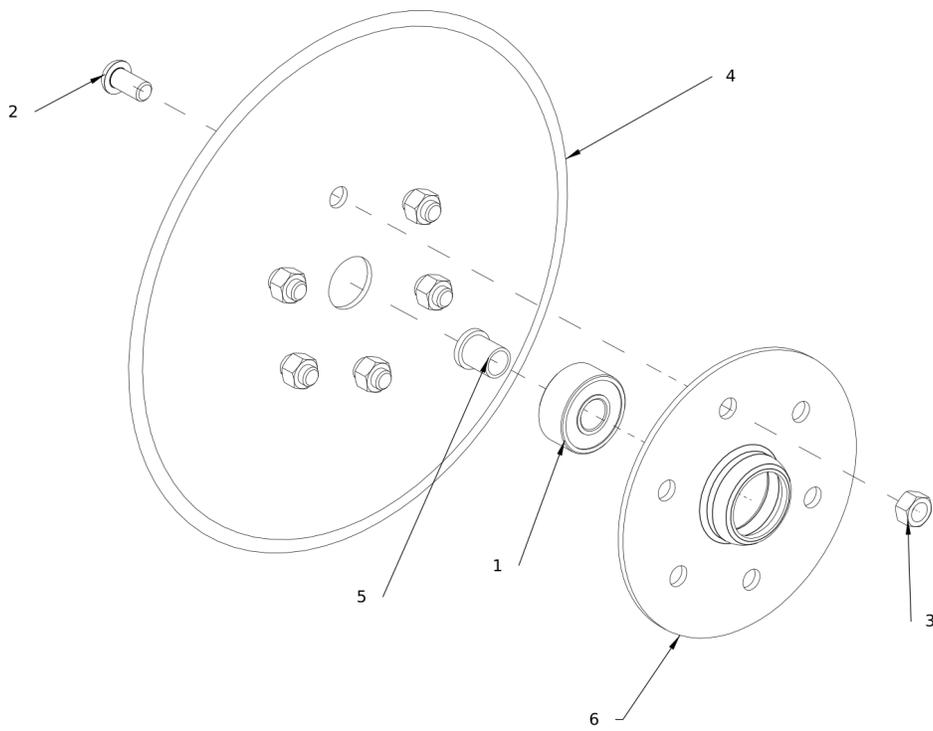


Feed Wheel-Triple

Item	Part No.	Name	Remarks	Qty	Uom
1	7500007	WHL\FEED\LH		1	EA.
2	7500008	WHL\FEED\RH		1	EA.
3	7500107	CLAMP\HOSE\1-1/4\WORM\SS		1	EA
4	7501388	WHL\FEED\CENTER		1	EA.
5	7501407	CLIP\RETAINER\WHL\FEED\TRIPLE		4	EA.
CA	7501453	WHL\FEED\TRIPLE	(Includes #1-#5)		EA.

Coulter Assembly

147C Drill Parts Reference

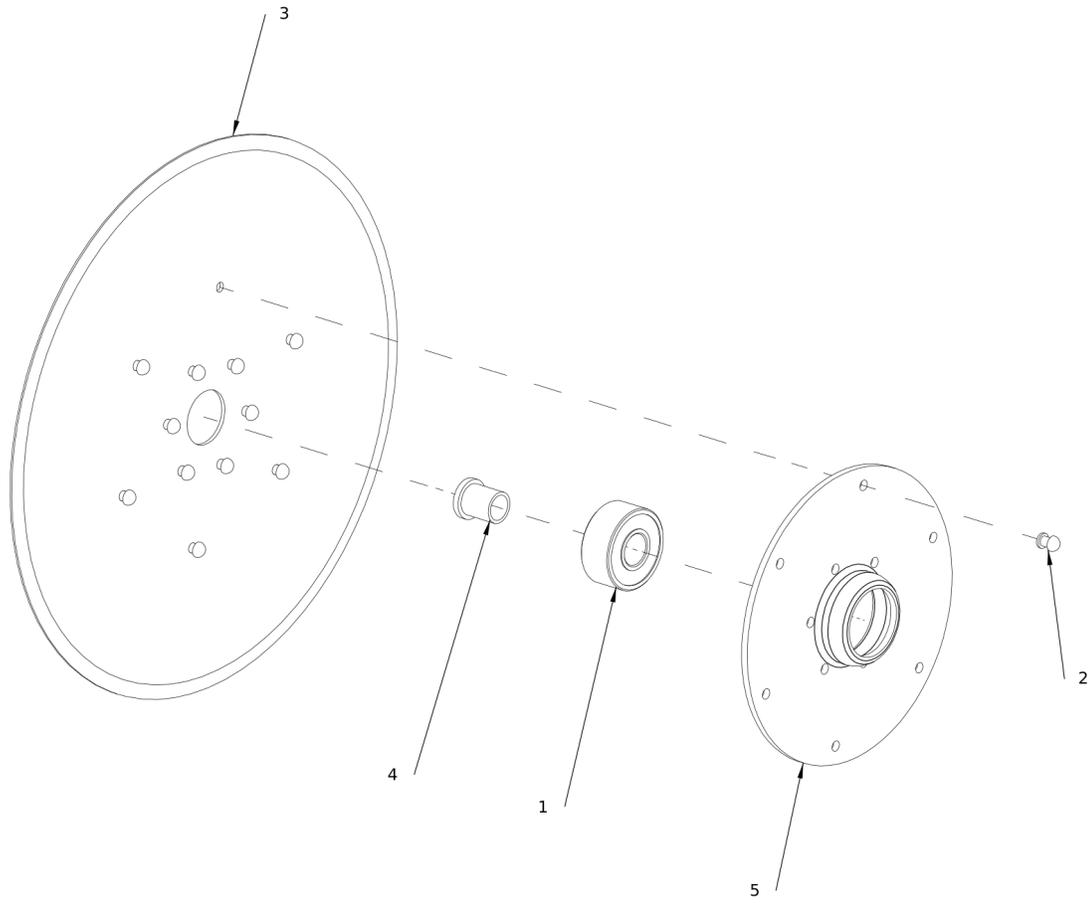


Coulter Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	2000031	BRG\ROW\DBL		1	EA.
2	4800161	SCR\BUT\ALN1/2X1\NC		6	EA.
3	4900014	NUT\TPLCK\1/2\NC		6	EA.
4	7500064	DISK\COLTER\14"\6-HOLE		1	EA.
5	7500160	#6610 BREAINING BUSHING		1	EA.
6	7500165	CAGE\BRG\DBL_ROW\6-HOLE		1	EA.
CA	7500187	BLADE\ASSY\14"\COULTER			EA.

Disk Assembly

147C Drill Parts Reference

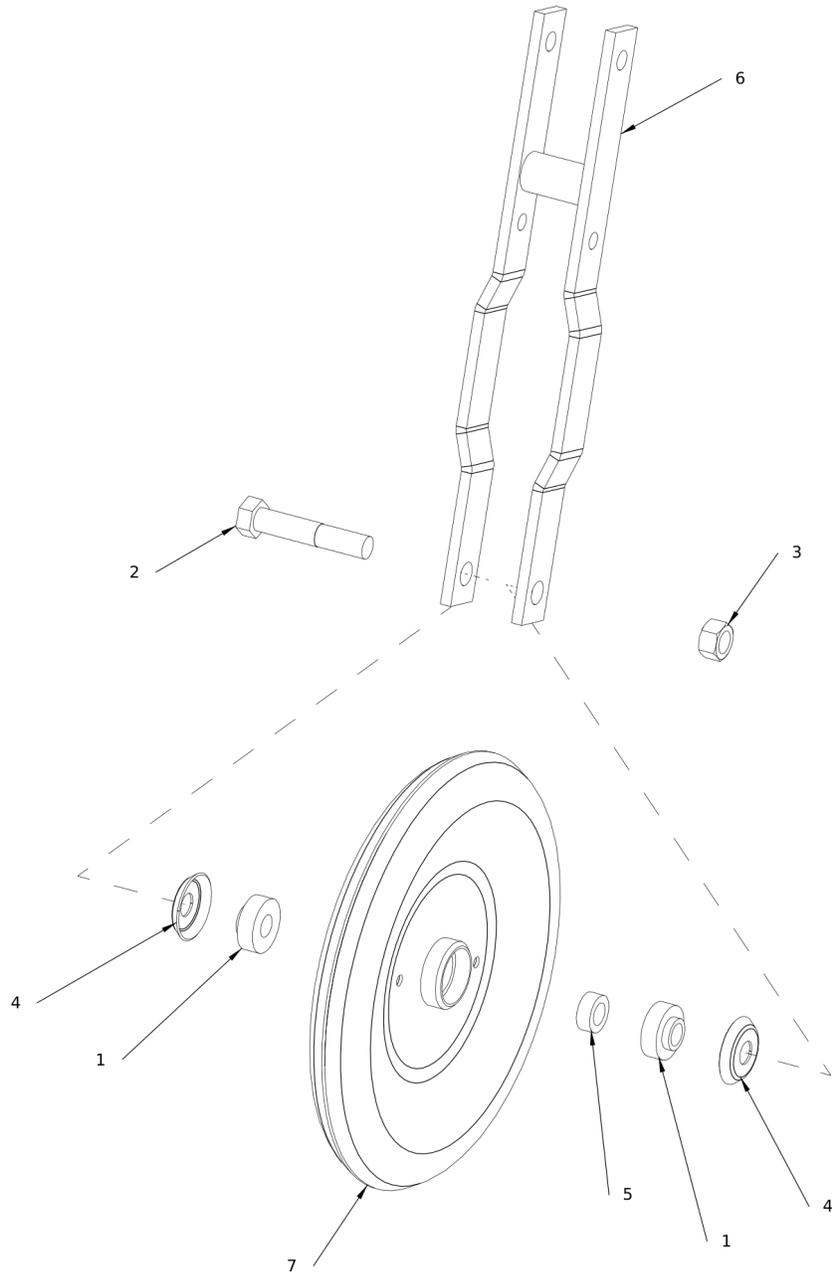


Disk Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	2000031	BRG\ROW\DBL		1	EA.
2	4800039	RIV\RD\STL\1/4X1/2		12	EA.
3	7500010	DISK\PLAIN\14"\12-RIVET		1	EA.
4	7500160	#6610 BREAINING BUSHING		1	EA.
5	7500167	CAGE\BRG\DBL_ROW\12-RIVET		1	EA.
CA	7500188	BLADE\ASSY\14"\DISC\107			EA.

Press Wheel Assembly

147C Drill Parts Reference



Press Wheel Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	2000061	BRG\3/4\FHR204-12		2	EA.
2	4800063	BOLT\HEX\3/4X4		1	EA.
3	4900139	NUT\TPLCK\3/4\GR8\NC		1	EA.
4	7400264	CAP\WHL\W/O_PILOT		2	EA.
5	7500653	SPCR\WHL\PACKER		1	EA.
6	8400271	BRKT\WHL\PACKER\20"		1	EA.
7	8400616	WHL\PRESS\STL\ASSY\107		1	EA.
CA	8400617	WHL\PRESS\STL\ASSY\107	(Includes #1-#5 and #7)		EA.
CA	8400355	WHL\PRESS\STL\SUB-ASY\107W\FRAME\2X15-1/2	(Includes 8400617 and #6)		EA.

Depth Band Kit Installation

Step #1: Remove disk as shown in illustration.

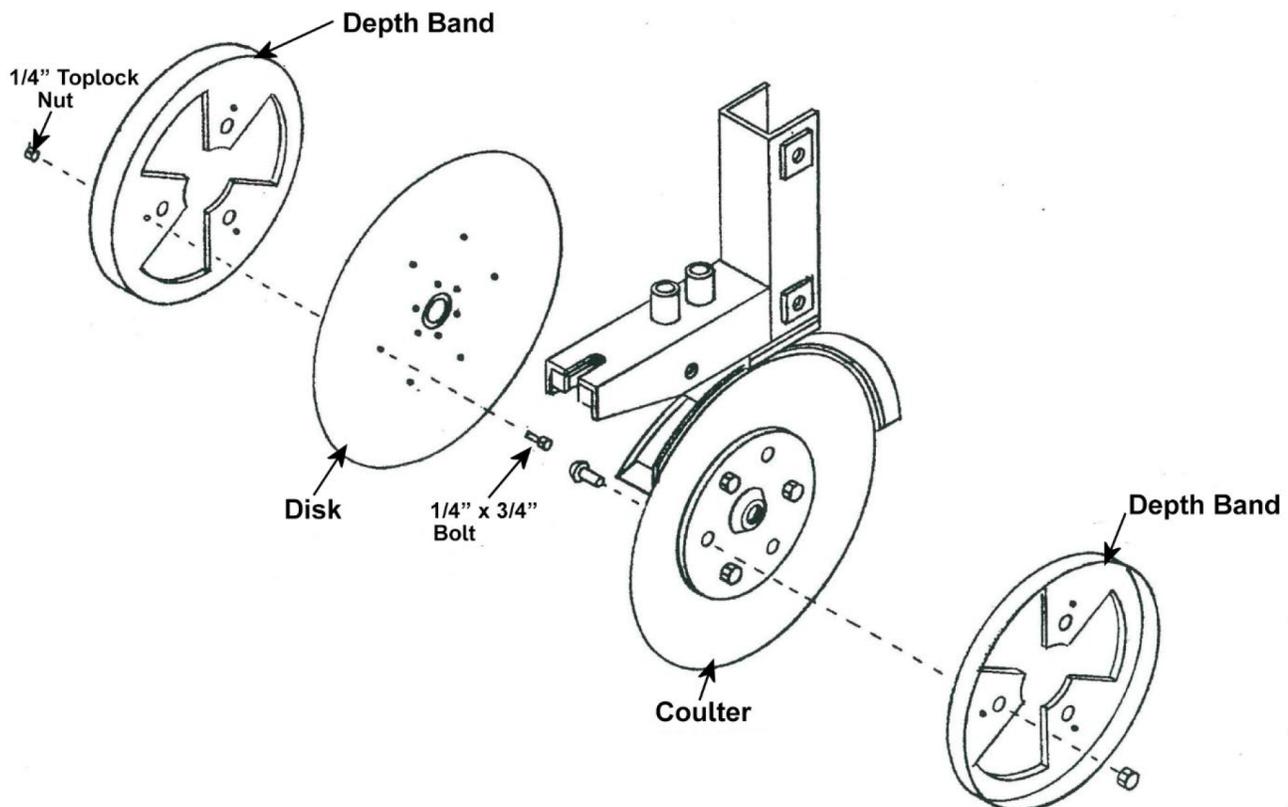
Step #2: Remove the three rivets matching small holes in depth band from the disk.

Step #3: Bolt depth band to disk using (3) 1/4" x 3/4" bolts and (3) 1/4" toplock nuts.

Step #4: Remove the three bolts matching the large holes in depth band from the coulters. It is not necessary to remove coulters from opener.

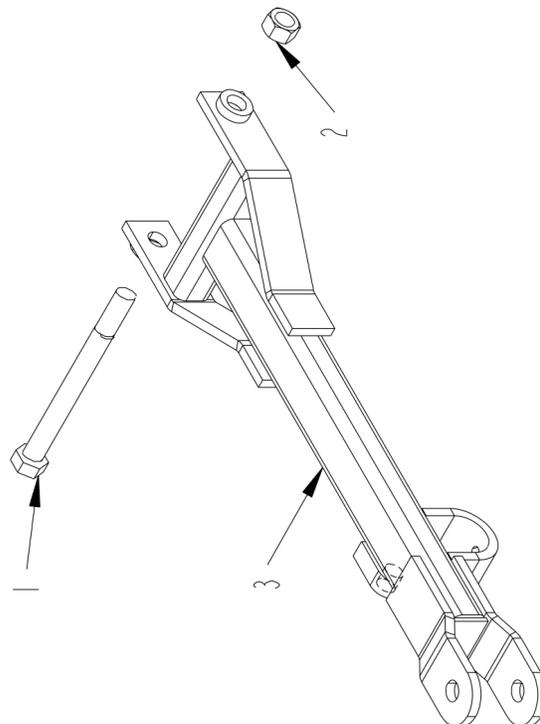
Step #5: Using bolts removed in step #4, bolt depth band to coulters.

Step #6: Reinstall disk on opener.



147C Optional Depth Band Kit Installation

Item	Part No.	Name	Remarks	Qty	Uom
	4800024	BOLT\HEX\1/4X3/4		72	EA.
	4900084	NUT\PLCK\1/4\NC		72	EA.
	8400364	BAND\DEPTH\11-1/2ODX10GA		1	EA
	8400955	DEPTH\BAND\24\KIT\DLR-INS\147C	1 kit equals 24 depth bands. A total of 48 depth bands are needed for a complete machine. No hardware is included in these kits.	2	EA

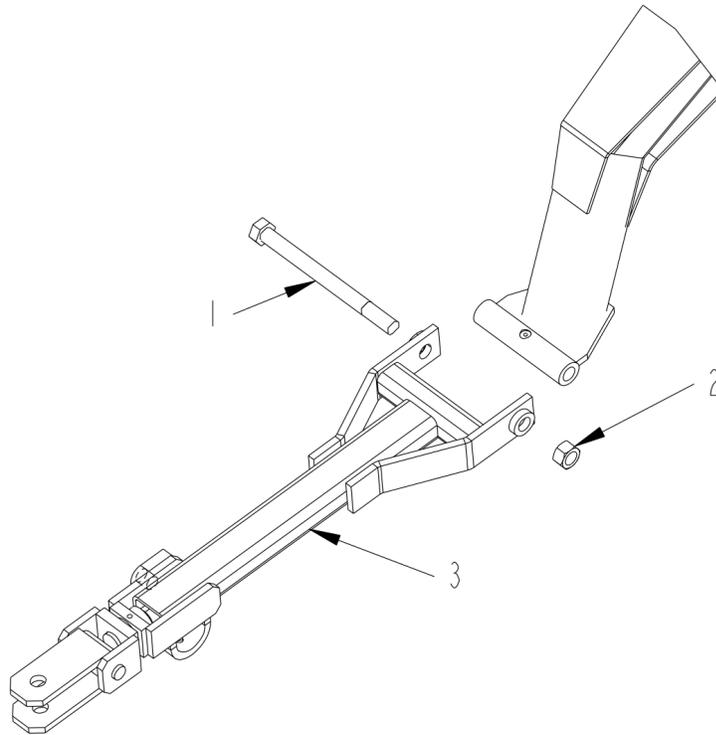


Single Drill Hitch

Item	Part No.	Name	Remarks	Qty	Uom
1	4800663	BOLT\HEX\1X12\NC\GR8\PLTD		1	EA.
2	4900015	NUT\NYLCK\1\NC		1	EA.
3	8400664	HITCH\SINGLE		1	EA.
NS	1100275	CHAIN\1/4\SFTY\AG\11000LB		1	EA.
NS	5000116	WASH\FLAT\1\EXTRTHK\GR8		1	EA.
NS	4800547	BOLT\HEX\1X2\NC		1	EA.

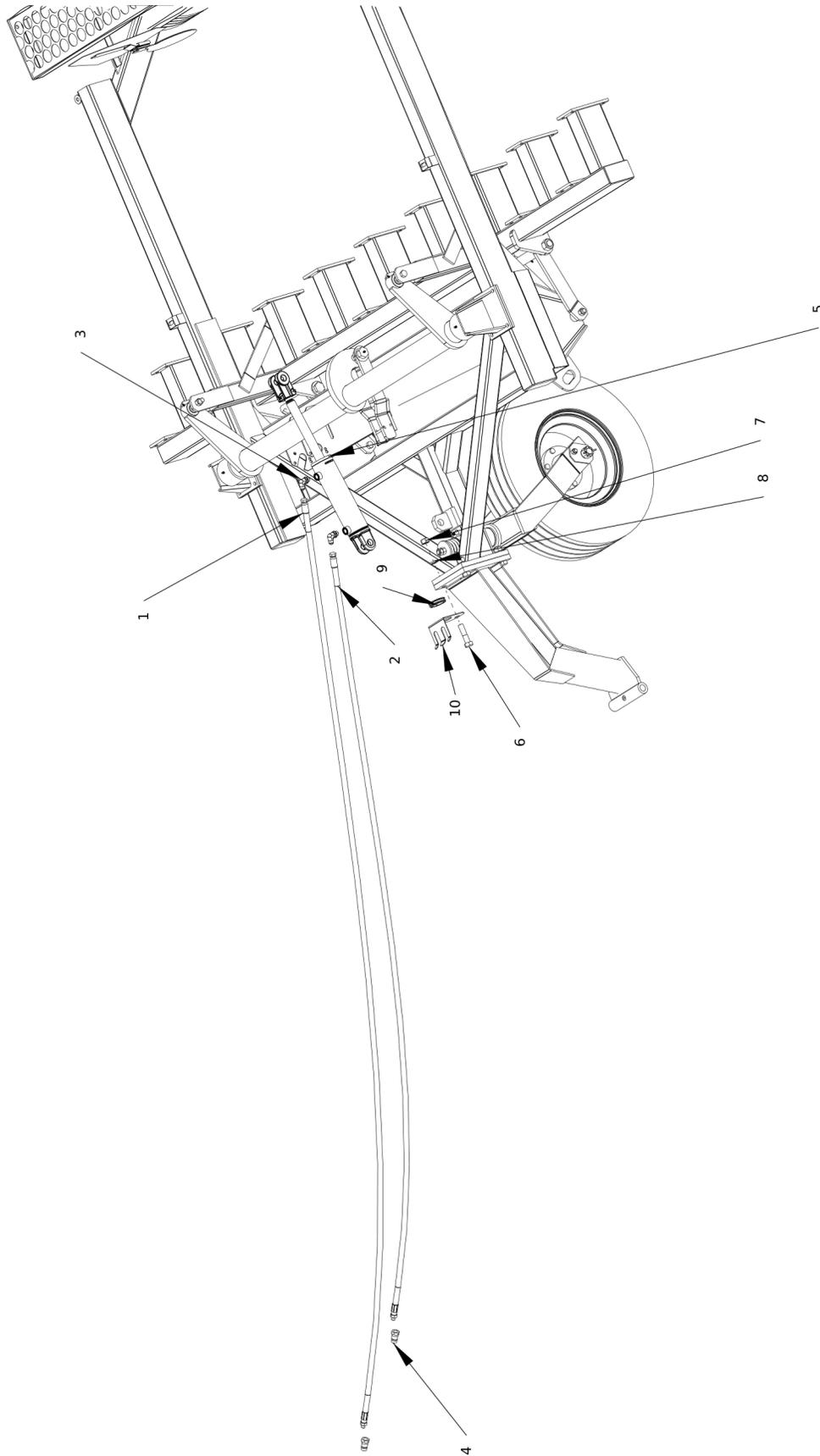
Swivel Hitch

147C Drill Parts Reference



Swivel Hitch

Item	Part No.	Name	Remarks	Qty	Uom
1	4800663	BOLT\HEX\1X12\NC\GR8\PLTD		1	EA.
2	4900015	NUT\NYLCK\1\NC		1	EA.
3	8400650	ORDER 8401024		1	EA.
NS	1100275	CHAIN\1/4\SFTY\AG\11000LB		1	EA.
NS	5000116	WASH\FLAT\1\EXTRTHK\GR8		1	EA.
NS	4800547	BOLT\HEX\1X2\NC		1	EA.

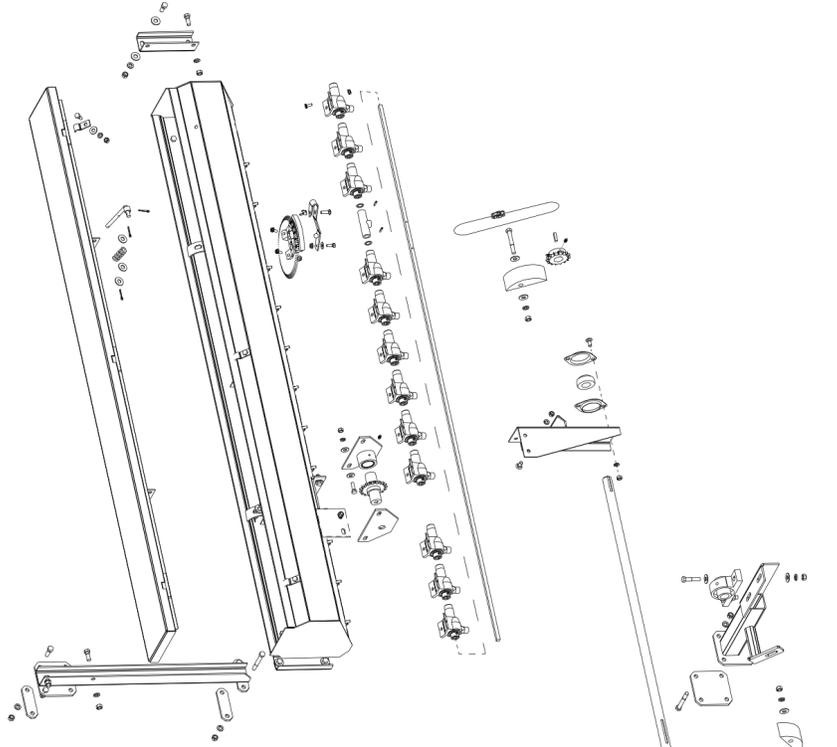


NOTE: THE STROKE OF THE HYDRAULIC CYLINDER IS 20-1/4" TO 28-1/4" FROM CYLINDER PIN TO CYLINDER PIN

Single Drill Hydraulic Assembly

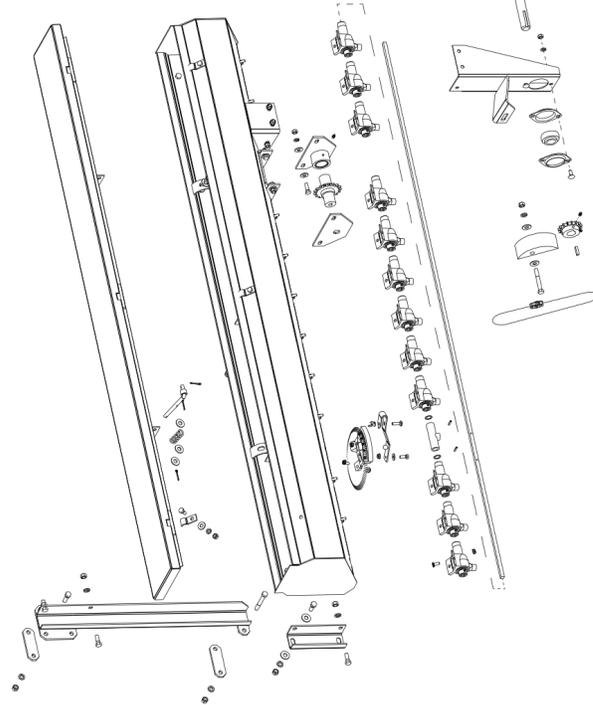
Item	Part No.	Name	Remarks	Qty	Uom
1	3701622	HOSE\HYD\1\2X120\3\4\MORSX3\4\FJIC		1	EA.
2	3701623	HOSE\HYD\1\2X108\3\4\MORSX3\4\FJIC		1	EA.
3	3800537	FTG\3\4\MORX3\4\MJIC\90		2	EA.
4	3800694	FTG\3\4\FOR\QUICK\CPLR\FEMALE		2	EA.
5	4100344	CYL\HYD\3X8\1-3\8\ROD\#8 O-RING		1	EA.
	4100343	SEAL\KIT\CYL\HYD\3X8\3000 PSI	(Seal Kit for 4100344)		EA.
6	4800017	BOLT\HEX\3\4X3		1	EA.
7	4900004	NUT\HEX\3\4\NC		4	EA.
8	5000012	WASH\LOCK\3\4		4	EA.
9	7500858	GRMT\RBBR\2-1\4X2IDX1\4T		1	EA.
10	8400785	BRKT\HOSE\MINDER		1	EA.
11	8400799	PIN\CLEVIS\1X3\GREASE		1	EA.
CA	8400902	CYL\HYD\3X8\KIT\107DRILL>SINGLE\SAE THREAD			EA.
NS	7501600	CYL\DEPTH\STOP\KIT		1	EA.

Legume Box Assembly-RH



Legume Box Drive Assembly

Legume Box Assembly-LH

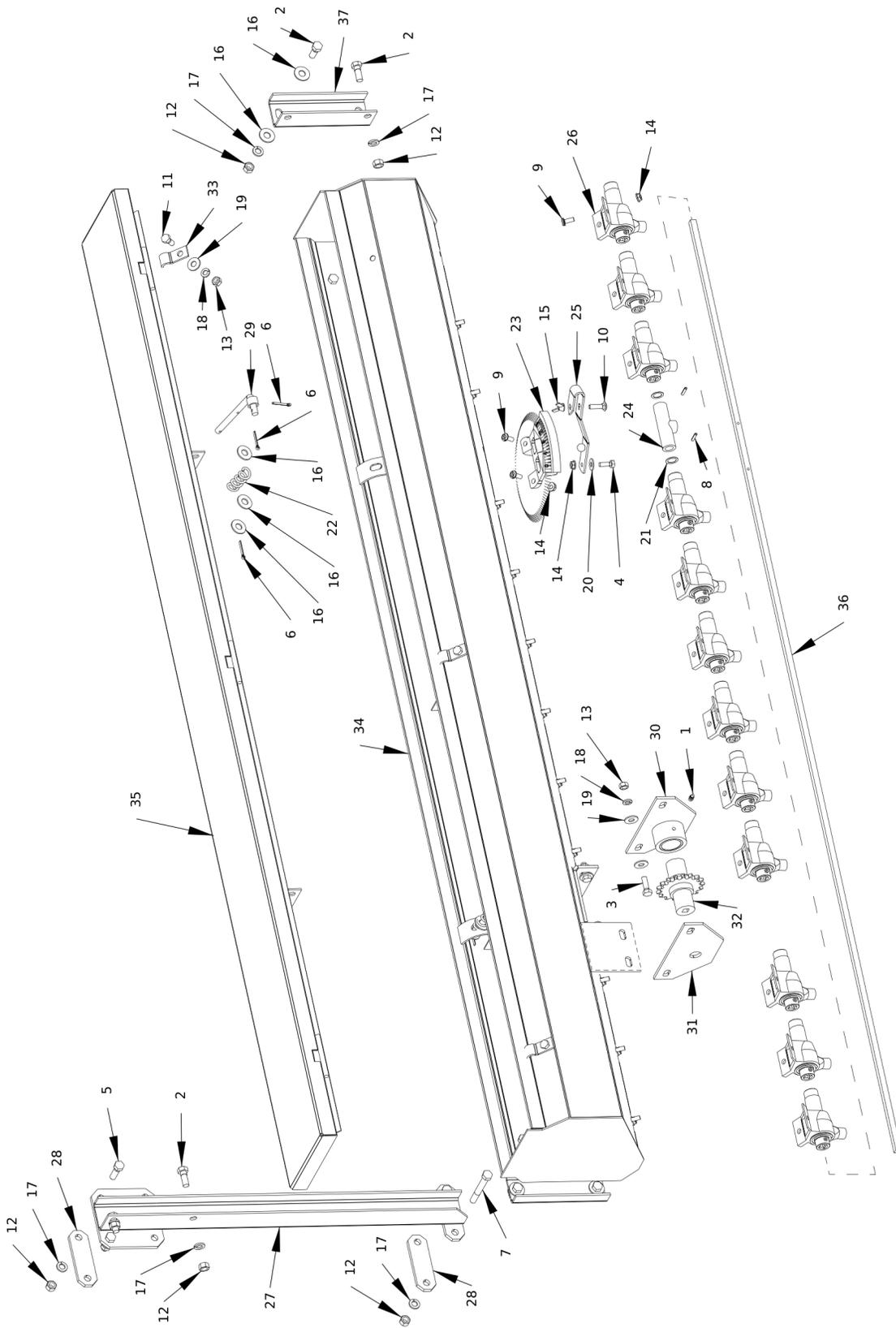


147C Legume Box Assembly

Item	Part No.	Name	Remarks	Qty	Uom
CA	8400957	BOX\LEGUME\KIT\DLR-INS\147C			EA
	8400963	BOX\LEGUME\SHIP\KIT\147C			EA.
	8401005	BOX\LEGUME\ASSY\SUBLH			EA.
	8401006	BOX\LEGUME\ASSY\SUBIRH			EA.

147C Legume Box Assembly-LH

147C Drill Parts Reference



147C Legume Box Assembly-LH

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		2	EA.
2	4800003	BOLT\HEX\3\8X1		10	EA.
3	4800013	BOLT\HEX\5\16X1		4	EA.
4	4800024	BOLT\HEX\1\4X3\4		1	EA.
5	4800127	PIN\COT\1\8X1		6	EA.
6	4800156	BOLT\HEX\3\8X3		2	EA.
7	4800164	BOLT\HEX\3\8X3\4		2	EA.
8	4800212	PIN\RLLD\5\32X3\4		2	EA.
9	4800213	SCR\PAN\SLOT\1\4X5\8\NC		26	EA.
10	4800214	BOLT\CRG\1\4X1\NC		1	EA.
11	4800643	BOLT\HEX\5\16X3\4		3	EA.
12	4900002	NUT\HEX\3\8\NC		14	EA.
13	4900003	NUT\HEX\5\16\NC		8	EA.
14	4900040	NUT\FLG\SERR\1\4\NC		27	EA.
15	4900041	NUT\WING\1\4\NC		1	EA.
16	5000001	WASH\FLAT\3\8		14	EA.
17	5000019	WASH\LOCK\3\8		14	EA.
18	5000022	WASH\LOCK\5\16		8	EA.
19	5000023	WASH\FLAT\5\16		12	EA.
20	5000035	WASH\FLAT\1\4		1	EA.
21	5000118	WASH\FLAT\SPCL\14MM\5MM\20MMOD		2	EA.
22	6100046	SPG\COMP\618OD\800WD\2-5\8L		2	EA.
23	7500183	METER\SEED\INDEX		1	EA.
24	7500184	SHIFTER\SEED\INDEX\ASSY		1	EA.
25	7500185	ARM\SEED\INDEX\ASSY		1	EA.
26	8400600	CUP\ASSY\LEGUME;BOX		12	EA.
27	8700001	BRKT\LEGUME\LH\LEG-BOX		1	EA.
28	8700003	STRAP\LEGUMEBOX\1575		2	EA.
29	8700006	ROD\SPG\COV\BOX\147		2	EA.
30	8700008	BRG\BOX\LEGUME\RH\147		1	EA.
31	8700009	BRG\BOX\LEGUME\LH\147		1	EA.
32	8700010	SPKT\17T\LGM.BOX		1	EA.
33	8700014	HINGE\LEGUMEBOX		3	EA.
34	8700021	BOX\LEGUME\LH		1	EA.
35	8700023	COV\BOX\LEGUME		1	EA.
36	8700024	SHFT\3\8SQX68-1\2\LGM;BX		1	EA.
37	8700029	MNT\END\BOX\LEGUME		4	EA.
CA	8401005	BOX\LEGUME\ASSY\SUB\LH			EA.

147C Legume Box Assembly-RH

147C Drill Parts Reference

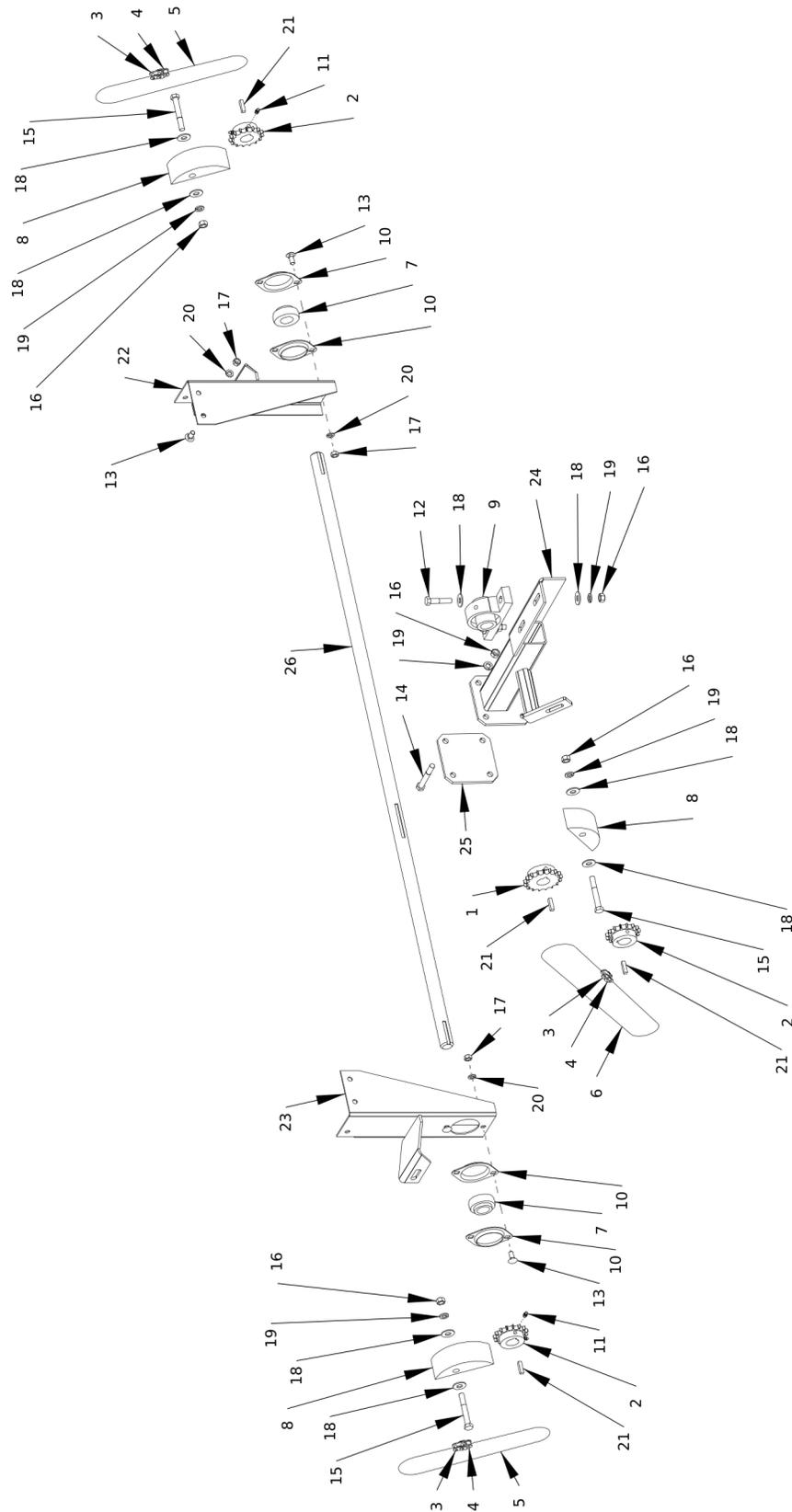


147C Legume Box Assembly-RH

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		2	EA.
2	4800003	BOLT\HEX\3\8X1		10	EA.
3	4800013	BOLT\HEX\5\16X1		4	EA.
4	4800024	BOLT\HEX\1\4X3\4		1	EA.
5	4800127	PIN\COT\1\8X1		6	EA.
6	4800156	BOLT\HEX\3\8X3		2	EA.
7	4800164	BOLT\HEX\3\8X3\4		2	EA.
8	4800212	PIN\RLLD\5\32X3\4		2	EA.
9	4800213	SCR\PAN\SLOT\1\4X5\8\NC		26	EA.
10	4800214	BOLT\CRG\1\4X1\NC		1	EA.
11	4800643	BOLT\HEX\5\16X3\4		3	EA.
12	4900002	NUT\HEX\3\8\NC		14	EA.
13	4900003	NUT\HEX\5\16\NC		8	EA.
14	4900040	NUT\FLG\SERR\1\4\NC		27	EA.
15	4900041	NUT\WING\1\4\NC		1	EA.
16	5000001	WASH\FLAT\3\8		14	EA.
17	5000019	WASH\LOCK\3\8		14	EA.
18	5000022	WASH\LOCK\5\16		8	EA.
19	5000023	WASH\FLAT\5\16		12	EA.
20	5000035	WASH\FLAT\1\4		1	EA.
21	5000118	WASH\FLAT\SPCL\14MM\5MM\20MMOD		2	EA.
22	6100046	SPG\COMP\618OD\800WD\2-5\8L		2	EA.
23	7500183	METER\SEED\INDEX		1	EA.
24	7500184	SHIFTER\SEED\INDEX\ASSY		1	EA.
25	7500185	ARM\SEED\INDEX\ASSY		1	EA.
26	8400600	CUP\ASSY\LEGUME;BOX		12	EA.
27	8700002	BRKT\LEGUME\RH\LEG-BOX		1	EA.
28	8700003	STRAP\LEGUMEBOX\1575		2	EA.
29	8700006	ROD\SPG\COV\BOX\147		2	EA.
30	8700008	BRG\BOX\LEGUME\RH\147		1	EA.
31	8700009	BRG\BOX\LEGUME\LH\147		1	EA.
32	8700010	SPKT\17T\LGM.BOX		1	EA.
33	8700014	HINGE\LEGUMEBOX		3	EA.
34	8700022	BOX\LEGUME\RH		1	EA.
35	8700023	COV\BOX\LEGUME		1	EA.
36	8700024	SHFT\3\8SQX68-1\2\LGM;BX		1	EA.
37	8700029	MNT\END\BOX\LEGUME		4	EA.
CA	8401006	BOX\LEGUME\ASSY\SUB\RH			EA.

147C Legume Box Drive Assembly

147C Drill Parts Reference

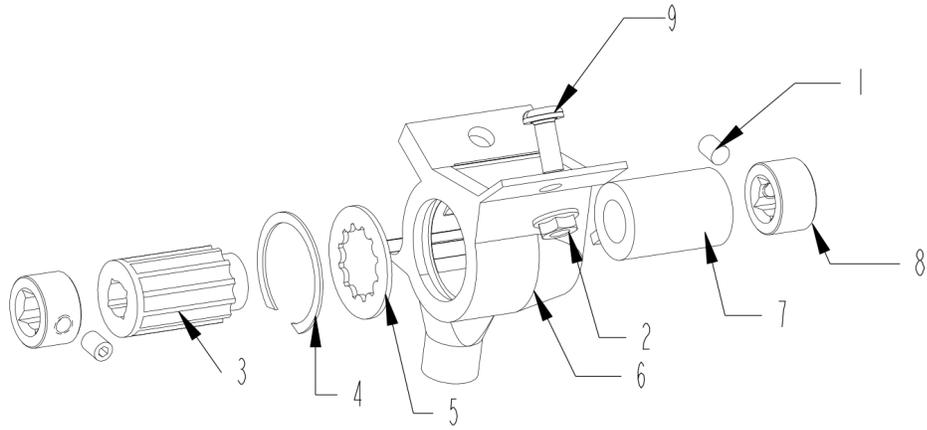


147C Legume Box Drive Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000111	SPKT\B\40\17\1\1/4KW\SOFT		1	EA.
2	1000112	SPKT\B\40\15\1\1/4KW		3	EA.
3	1100224	CHAIN\40NP\CL		3	EA.
4	1100225	CHAIN\40NP\OL		3	EA.
5	1100232	CHAIN\40NP\53		2	EA.
6	1100246	CHAIN\40NP\79		1	EA.
7	2000002	1" BEARING W/ LOCK COLLAR		2	EA.
8	7501667	BLK\PLSTC\IDLER	IN PLACE OF 2000016	3	EA.
9	2000503	BRG\PB\1\2BOLT		1	EA.
10	2000703	2 HOLE FLANGETTE		4	EA.
11	3800082	FTG\LUB\1/4NFXZERK\ADAPT		4	EA.
12	4800514	BOLT\HEX\3/8X2-3/4		3	EA.
13	4800142	BOLT\HEX\3/8X1-3/4		2	EA.
14	4800153	BOLT\CRG\5/16X3/4\NC		10	EA.
15	4800156	BOLT\HEX\3/8X3		4	EA.
16	4900002	NUT\HEX\3/8\NC		9	EA.
17	4900003	NUT\HEX\5/16\NC		10	EA.
18	5000001	WASH\FLAT\3/8		10	EA.
19	5000019	WASH\LOCK\3/8		9	EA.
20	5000022	WASH\LOCK\5/16		10	EA.
21	6200010	KEY\SQ\1/4X1		4	EA.
22	8700012	BRKT\LEGUME\LH\SHFT-BOX		1	EA.
23	8700025	BRKT\BRG\RH\147C		1	EA.
24	8700026	BRKT\BRG\CNTRL-BOX\147C		1	EA.
25	8700027	PL\CENTER\BRG STAND		1	EA.
26	8700028	SHFT\1X29\LEGUMEBOX		1	EA.
CA	8400957	BOX\LEGUME\KIT\DLR-INS\147C			EA.

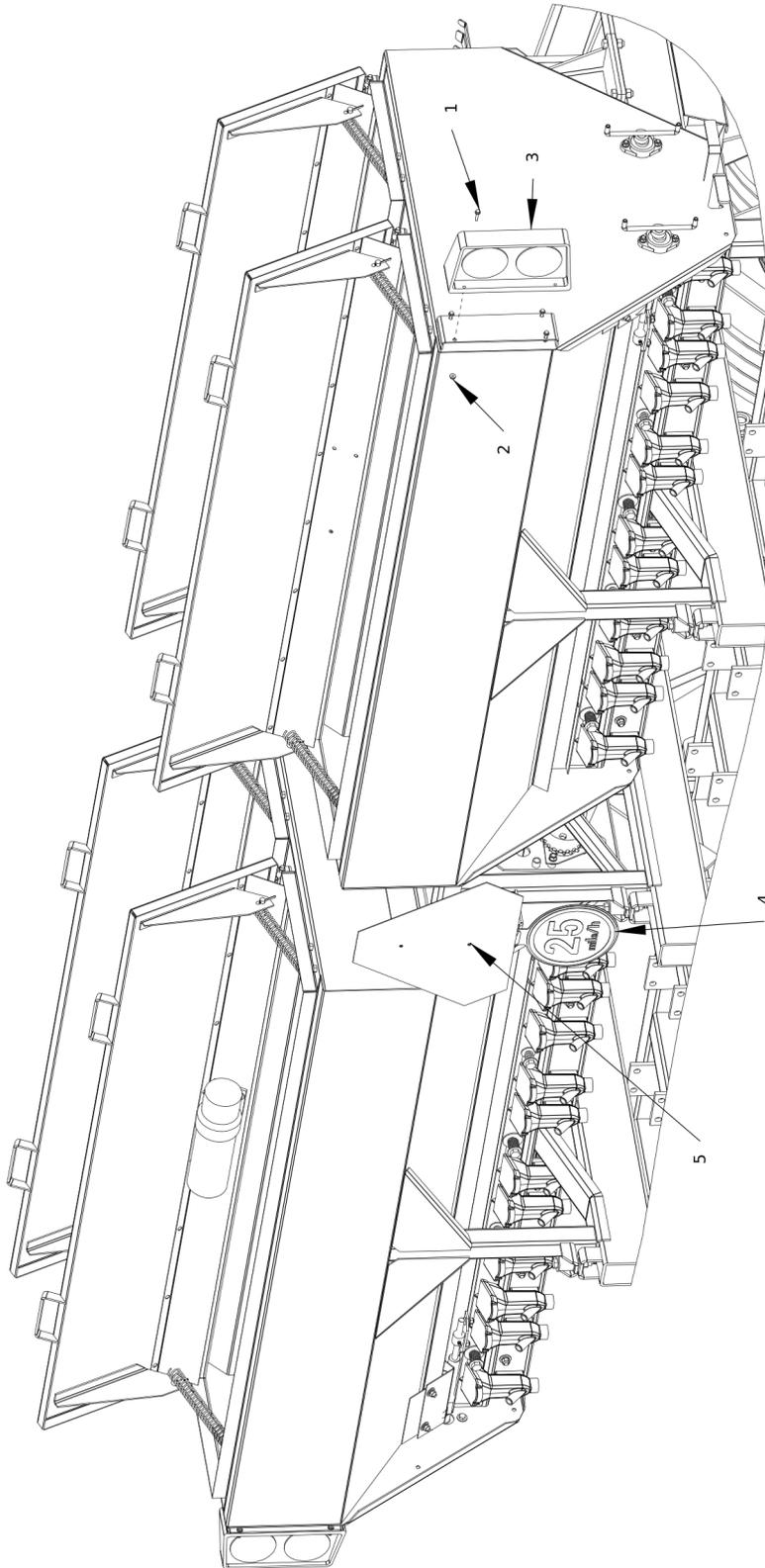
147C Legume Box Cup Assembly

147C Drill Parts Reference



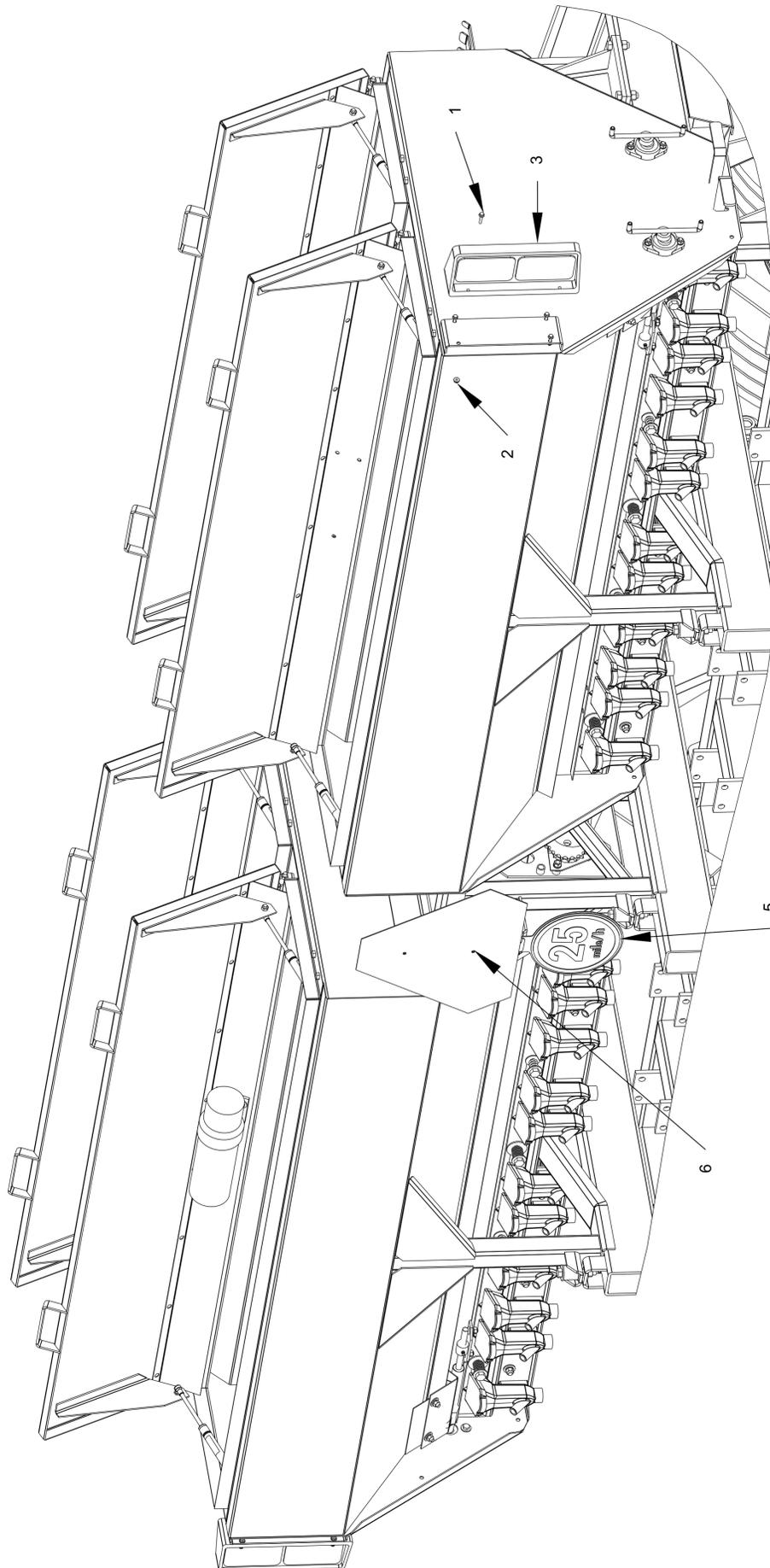
147C Legume Box Cup Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	4800211	SCR\SET\ALN\1/4X5/16\NC		48	EA.
2	4900040	NUT\FLG\SERR\1/4\NC		48	EA.
3	7500177	ROLL\CUP\ASSY\LEGUME BOX		24	EA.
4	7500178	SNAP RING		24	EA.
5	7500179	FEED ROLLER WASHER		24	EA.
6	7500180	FEED CUP ASSEMBLY		24	EA.
7	7500181	GATE\CUP\ASSY\LEGUME BOX		24	EA.
8	7500182	CLLR\7/8OD\3/8SQ		48	EA.
9	4800213	SCR\PAN\SLOT\1/4X5/8\NC		48	EA.
CA	8400600	CUP\ASSY\LEGUME;BOX	(Includes #1-#9)		EA.
NS	3700129	HOSE\PVC\5/8IDX22-1/2\CLR		24	EA.



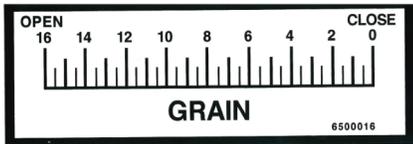
147C Light Kit and SMV (for SN up to 0090)

Item	Part No.	Name	Remarks	Qty	Uom
1	4801321	BOLT\FLG\SERR\#10X1\NC		1	EA.
2	4900190	NUT\FLG\SERR\#10\NC		1	EA.
3	5701180	KIT\LIGHT\LEDS\2 3-PIN 147C		1	EA.
4	7501701	DECAL\ASSY\ID\SPD\25MPH/40KM/H		1	EA.
5	7501353	SIGN\SMV\PLSTC-BCKNG		1	EA.
NS	4800643	BOLT\HEX\5/16X3/4		2	EA.
NS	4900108	NUT\FLG\SERR\5/16\NC		2	EA.



147C Light Kit and SMV (for SN 0091 and Up)

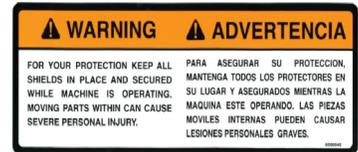
Item	Part No.	Name	Remarks	Qty	Uom
1	4801321	BOLT\FLG\SERR\#10X1\NC		8	EA.
2	4900190	NUT\FLG\SERR\#10\NC		8	EA.
3	5701284	LGHT\TAIL\AMBER-LEFT\4PN-WP\LED		1	EA.
4	5701285	LGHT\TAIL\AMBER-RGHT\4PN-WP\LED		1	EA.
5	7501701	DECAL\ASSY\ID\SPD\25MPH/40KM/H		1	EA.
6	7501353	SIGN\SMV\PLSTC-BCKNG		1	EA.
CA	5701302	KIT\LIGHT\2-4PIN.LED\147-CMF'S	Includes 5701284, 5701285 and 5701297		EA
NS	5701297	HARN\TAIL;LIGHTS\4FLAT for 5700423 AND 5701081			EA.



1 - 6500016



2 - 6500020



4- 6500040

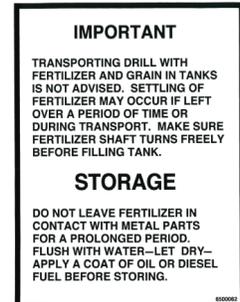
CHART FOR DRILLING GRAIN IN POUNDS PER ACRE
SERIAL NO. 6500016

SPACING 7"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
WHEAT	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
BARLEY	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
OATS	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
RYE	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
BUCKWHEAT	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
SOYBEAN SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
ALFALFA SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
WHEAT	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
GLASS BEAN SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LENS GRASS	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
SOYBEAN SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
WHEAT	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
GLASS BEAN SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LENS GRASS	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
SOYBEAN SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
WHEAT	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
GLASS BEAN SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
LENS GRASS	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
SOYBEAN SEED	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18

3 - 6500022



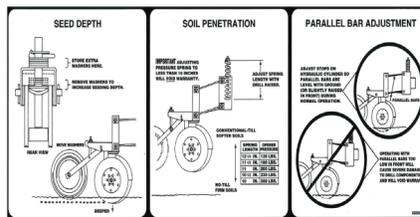
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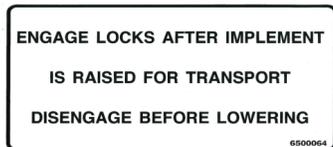
8 - 6500062



6 - 6500060



7 - 6500061



10- 6500064



11-6500081



9 - 6500063

12-6500083



13-6500101



14 - 6500163



18 - 6500434



15- 6500182



16- 6500220



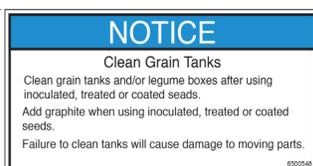
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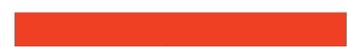
25 - 6500548



22 - 6500532



23 - 6500535



24- 6500541

147C Decals

Item	Part No.	Name	Remarks	Qty	Uom
CA	6500530	DECAL\KIT\147C			EA.
1	6500016	DECAL\INFO\CAL;SCALE;GRAIN		2	EA.
2	6500020	DECAL\LOGO\HYBSTR\SNBRS\3		2	EA.
3	6500022	DECAL\INFO\CHART;SEED\>		1	EA.
4	6500040	DECAL\WARN\SHIELD\PROT		1	EA.
5	6500041	DECAL\WARN\PROTECTION		1	EA.
6	6500060	DECAL\WARN\AVOID;SHRP;TRN		2	EA.
7	6500061	DECAL\INFO\SEED;DEPTH\>		1	EA.
8	6500062	DECAL\INFO\IMPORTANT;STRG		1	EA.
9	6500063	DECAL\INFO\CHART\FEED;WHL		1	EA.
10	6500064	DECAL\INFO\ENGAGE;LOCKS		1	EA.
11	6500081	DECAL\INFO\CAL.SCALE\GRASS		2	EA.
13	6500101	DECAL\WARN\NO RIDERS		1	EA.
14	6500163	DECAL\WARN\DISC;BLADES		1	EA.
15	6500182	DECAL\WARN\AG;CHEMICAL		1	EA.
16	6500220	DECAL\WARN\HI;PRESS;FLUID		1	EA.
18	6500434	DECAL\2X9\RED\REFCT		2	EA.
19	6500435	DECAL\2X9\AMBER\REFCT		2	EA.
20	6500488	DECAL\WARN\PARTS\MOVING		1	EA.
21	6500531	DECAL\LOGO\147C		2	EA.
22	6500532	DECAL\LOGO\STRPNG\BLK+RED-W-BARS		2	FT.
24	6500541	DECAL\2X9\FLRSCNT\NON-REFCT		2	EA.
25	6500548	DECAL\nOTICE\TANKS\CLEAN		1	EA.
CA	6500534	DECAL\KIT\LEGUME\147C			EA.
12	6500083	DECAL\INFO\CHART\LGM\7" SPCG		1	EA.
17	6500304	DECAL\LOGO\HYBST\1-3/4W/		1	EA.
22	6500532	DECAL\LOGO\STRPNG\BLK+RED-W-BARS		1	FT.
23	6500535	DECAL\LOGO\147C\LEGUME		1	EA.
25	6500548	DECAL\nOTICE\TANKS\CLEAN		1	EA.
NS	7500077	Yellow Spray Paint	ORDER 7500980		EA.
NS	7500078	Red Spray Paint			EA.
NS	7500091	Yellow Paint			EA.
NS	7500092	Yellow Paint			EA.
NS	7500104	Red Paint			EA.
NS	7500105	Red Paint			EA.

147C Decal Locations

147C Drill Parts Reference



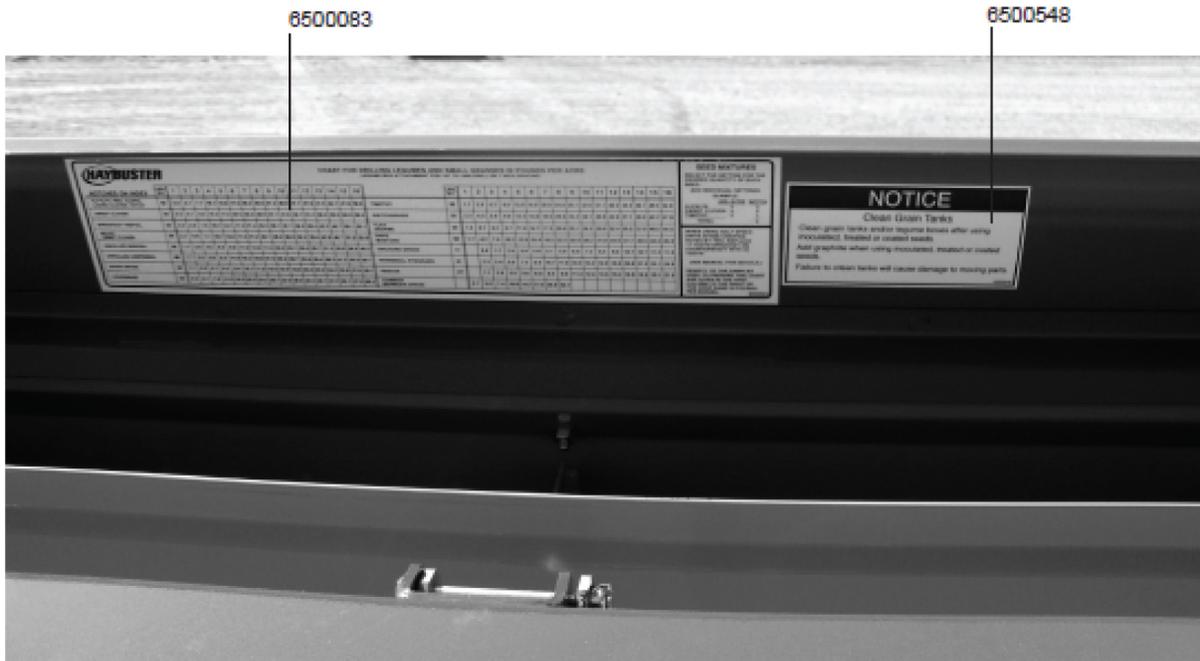
147C Decal Locations

147C Drill Parts Reference



147C Decal Locations

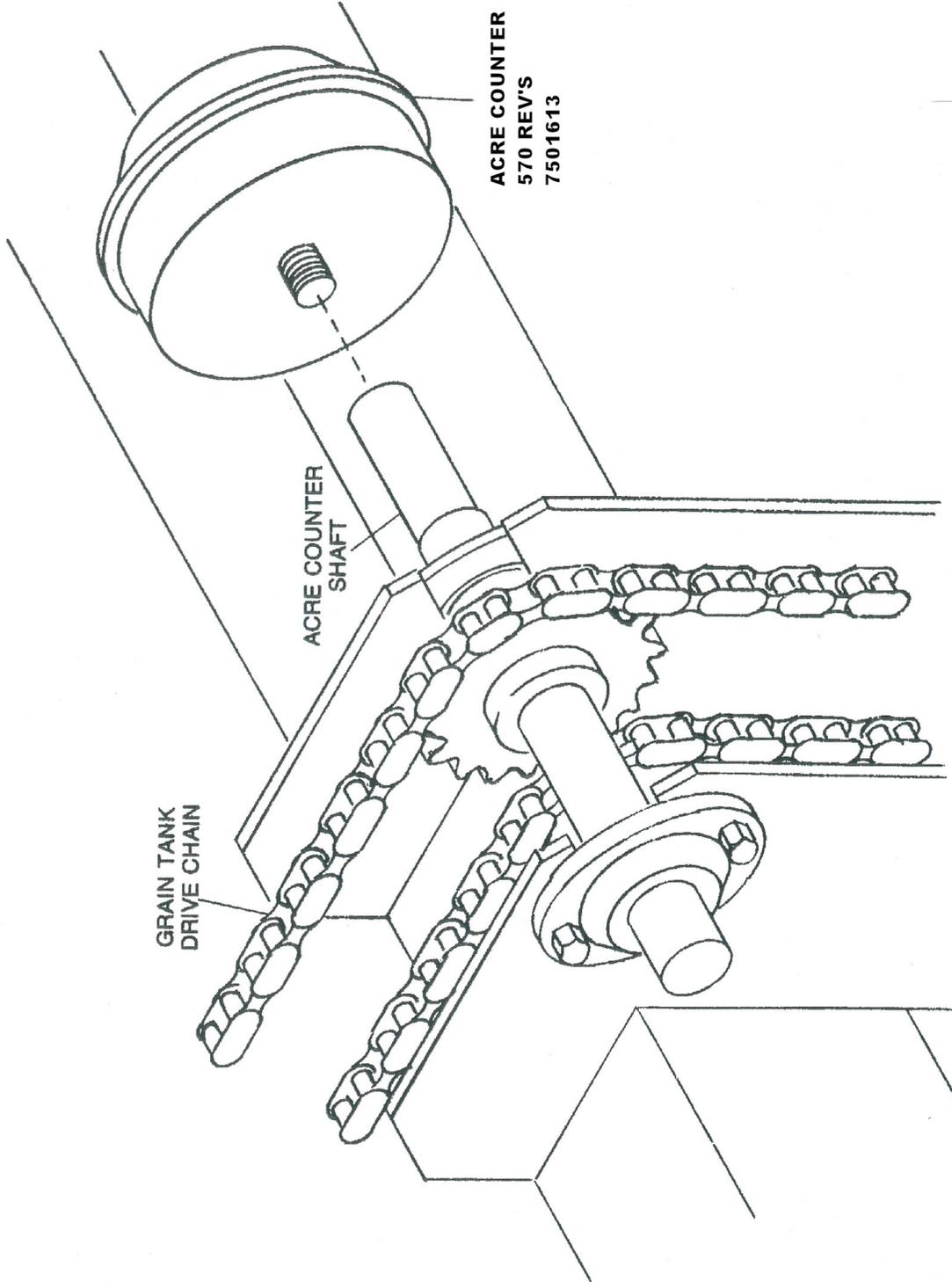
147C Drill Parts Reference



6500435

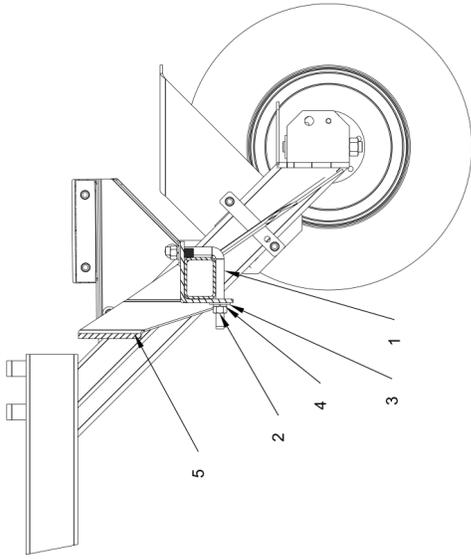


6500435

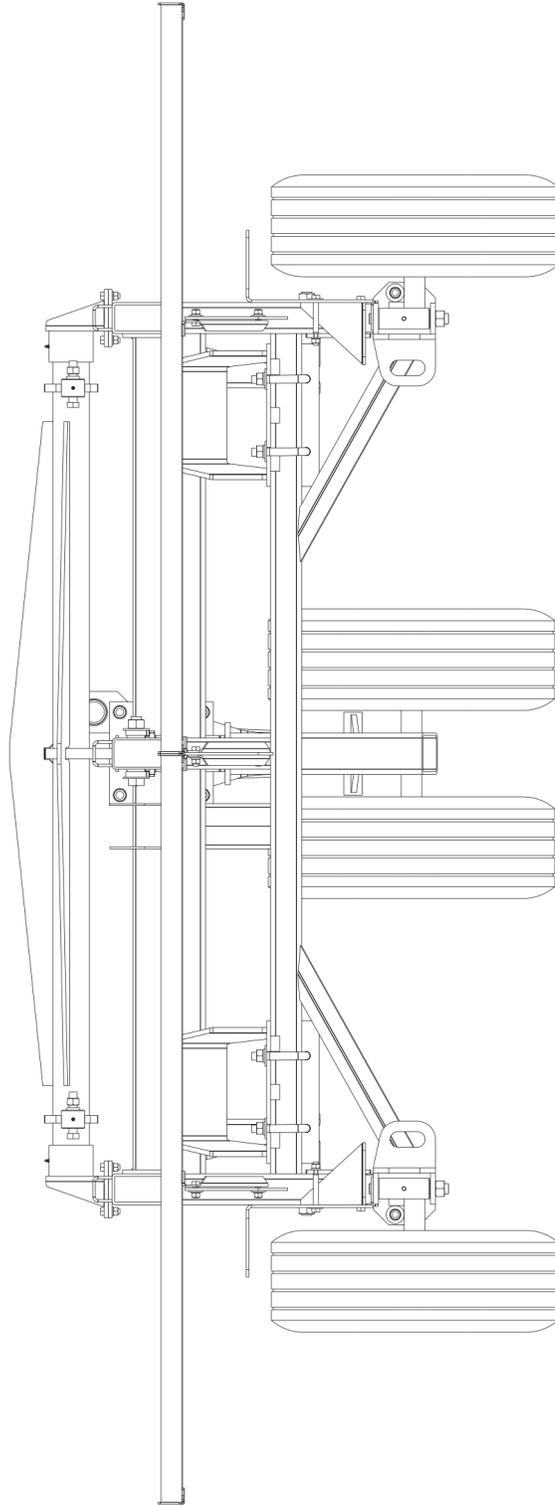


Installation:

1. Turn acre counter into threaded hole in end of acre counter shaft (see illustration).



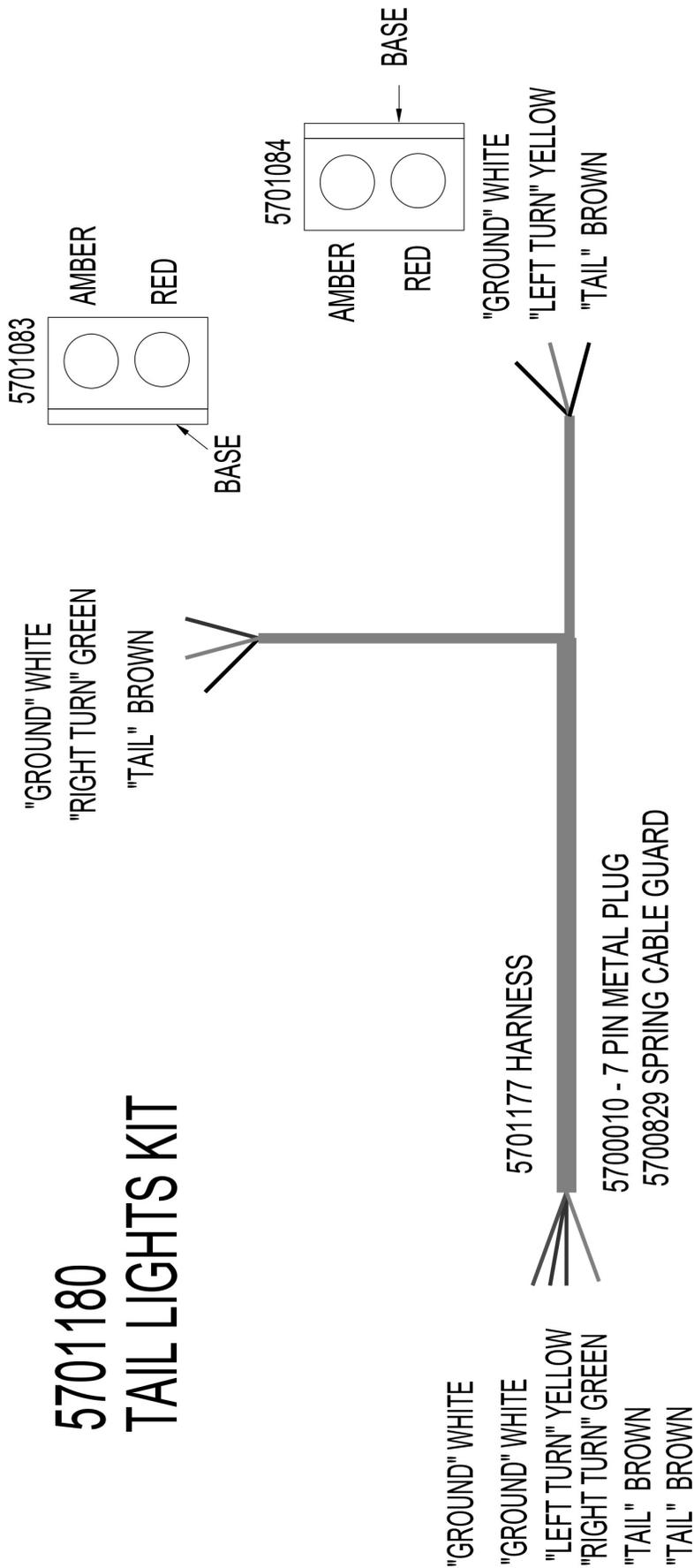
Note: Bolt #4800199 will need to be cut down to 6-1/4"
Mount weight brackets on the outside ends of the 3" x 4"
cross-tube to get maximum support of weight.



 **IMPORTANT:** Each bracket can carry a maximum of 300 lbs. Carrying more than 300 lbs. on each bracket will result in machine damage.

Optional Suitcase Weight Brackets

Item	Part No.	Name	Remarks	Qty	Uom
1	4800199	BOLT\3/4X5-1/4X7-1/4		4	EA
2	4900004	NUT\HEX\3/4\NC		8	EA.
3	5000005	WASH\FLAT\3/4		8	EA.
4	5000012	WASH\LOCK\3/4		8	EA.
5	8400818	BRKT\WGHT\147C		2	EA.
CA	8400819	WGHT\BRKT\KIT\147C			EA.



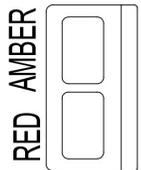
5701302

TAIL LIGHT KIT for 147, AND CMF

"TAIL" BRN (3") 'A'
"RTRN" GRN (3") 'B'
"GRND" WHT (3") 'C'
"STOP" RED (3") 'D'

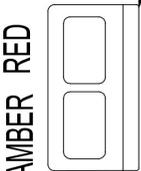
LABEL 'RIGHT'

5701285



RED AMBER

5701284



AMBER RED

"TAIL" BRN (3") 'A'
"LTRN" YEL (3") 'B'
"GRND" WHT (3") 'C'
"STOP" RED (3") 'D'

LABEL 'LEFT'

4 FLAT WEATHERPACK CONNECTOR



"RTRN" GRN (3")
"LTRN" YEL (3")
"TAIL" BRN (3")
"GRND" WHT (3")
"STOP" RED (3")

5700010 - 7 PIN METAL PLUG
5700829 SPRING CABLE GUARD
5701297 HARNESS





147C DRILL™

Serial Number 141600017C & UP

Native Grass Kit

Installation Instruction & Parts Reference

DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the 147C DRILL™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

This manual, as well as materials provided by component suppliers to DuraTech Industries are all considered to be part of the information package. Every operator is required to read and understand these manuals, and they should be located within easy access for periodic review.

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147C Native Grass Kit-Installation Instructions and Parts Reference

147C Native Grass Kit Installation Instructions 1

147C Drill Tank End Drive Assembly 5

147C Native Grass Kit-Dual Agitator Shafts Assembly 7

147C Native Grass Kit-Seed Cups 9

147C Native Grass Kit-Tank End Drive for Dual Agitator Assembly 11

147C Native Grass Kit-Drop Tube Assembly 13

147C Native Grass Kit Installation Instructions

An agitator kit may be necessary when seeding grasses that will not flow freely into the feed wheels after removing feed wheel covers. The following steps and illustrations will enable you to install the agitator kit in the rear compartment of an existing HAYBUSTER 147C drill box.

Step 1. Remove drive chain (#4), rear sealer plate (#23), bearing (#20), and sprocket assembly (#21). Retain bearing and sprocket assembly **See Existing 147C Drill Tank End Drive Assembly.**

Step 2. Remove straight zerks from (4) four existing feed wheel shaft bearings. Install (4) four 45 degree zerks. Remove mounting bolts from same. Replace with 3/8" x 1-1/4" (#2) carriage bolts to enable bolting on agitator mounting plates (#15). Using the 1/8" wheel gauge, adjust feed wheels and tighten bolts. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Installing Feed Shaft Agitator Kits

Item	Quantity	Description
1	16	Rubber paddles
2	16	Paddle reinforcement plate
3	20	Hose Clamps
4	6	Finger agitator

Step 3. Mount the finger agitator (#18) in the center of the large spaces between feed wheels and tighten clamps securely. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 4. Install the rubber paddles (#19) in the center of the small spaces between feed wheels. Make sure the paddle reinforcement plate (#20) is installed between the paddle and the hose clamp (#8). **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 5. Install (6) six small agitators (#12) in sequence on the 37-3/8" (#21) and 33" (#22) shafts for the lower agitator. Install (6) six large agitators (#14) in sequence on 37-3/8" (#21) and 33" (#22) shafts for the upper agitator. **See 147C Native Grass Kit- Dual Agitator Shafts Assembly.**

Note: For a single bottom agitator kit, you will only need to assemble the shafts with the small agitators.

Step 6. Starting with shaft #22 slide cast housing and steel bearing over shaft and drive 1/4" x 1-1/8" (#4) roll pin through bearing and shaft. Insert 5/32" x 1-1/2" (#3) cotter pin in #21 shaft and bend ends of key back over shaft, repeat this step for second agitator. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 7. Place the (2) two assembled shafts with small paddles in tank. For upper agitator, insert second agitator mounting plate (#17) between bearing and agitator mounting plates and bolt each together using 3/8" x 1-1/4" carriage bolts (#2), lock washer, and hex nuts. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Note: For a single bottom agitator kit, assemble a bearing spacer plate (#16) between bearing and second agitator plate (#15).

Step 8. Kit contains 1-1/2" O.D. x 7/8" I.D. washers (#6). Add washers as needed to remove end play from agitator shaft. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 9. Bolt existing bearing and sprocket assembly (removed in step #1) to top end of agitator mounting plate (#29) using (2) existing 3/8" x 1-1/2" aln\csk\screws (#12). Assemble collar (#8), bracket (#22), drive shaft stub (#30) and sprocket (#3) as shown. Bolt above assembly to the bottom end of mounting plate (#29) using (2) 3/8" x 1-1/2" aln\csk\screws (#12). **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 10. Bolt completed assembly (step #9) to end of tank using existing 3/8" x 1-1/2" hex head machine bolt in top end, 3/8" x 1" (#9) hex head in bottom end. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 11. Bolt bearing and sprocket assembly (Detail 8400239) with 24 tooth sprocket to upper agitator shaft using 3/8" x 1-1/2" aln\csk\screw with flat washers, lock washer and hex nuts. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Note: Step #11 used only with a dual agitator.

Step 12. Loosen sprockets and bearings on 1" drive shaft and install drive sprockets. Align all respective sprockets and secure. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator. page 9.**

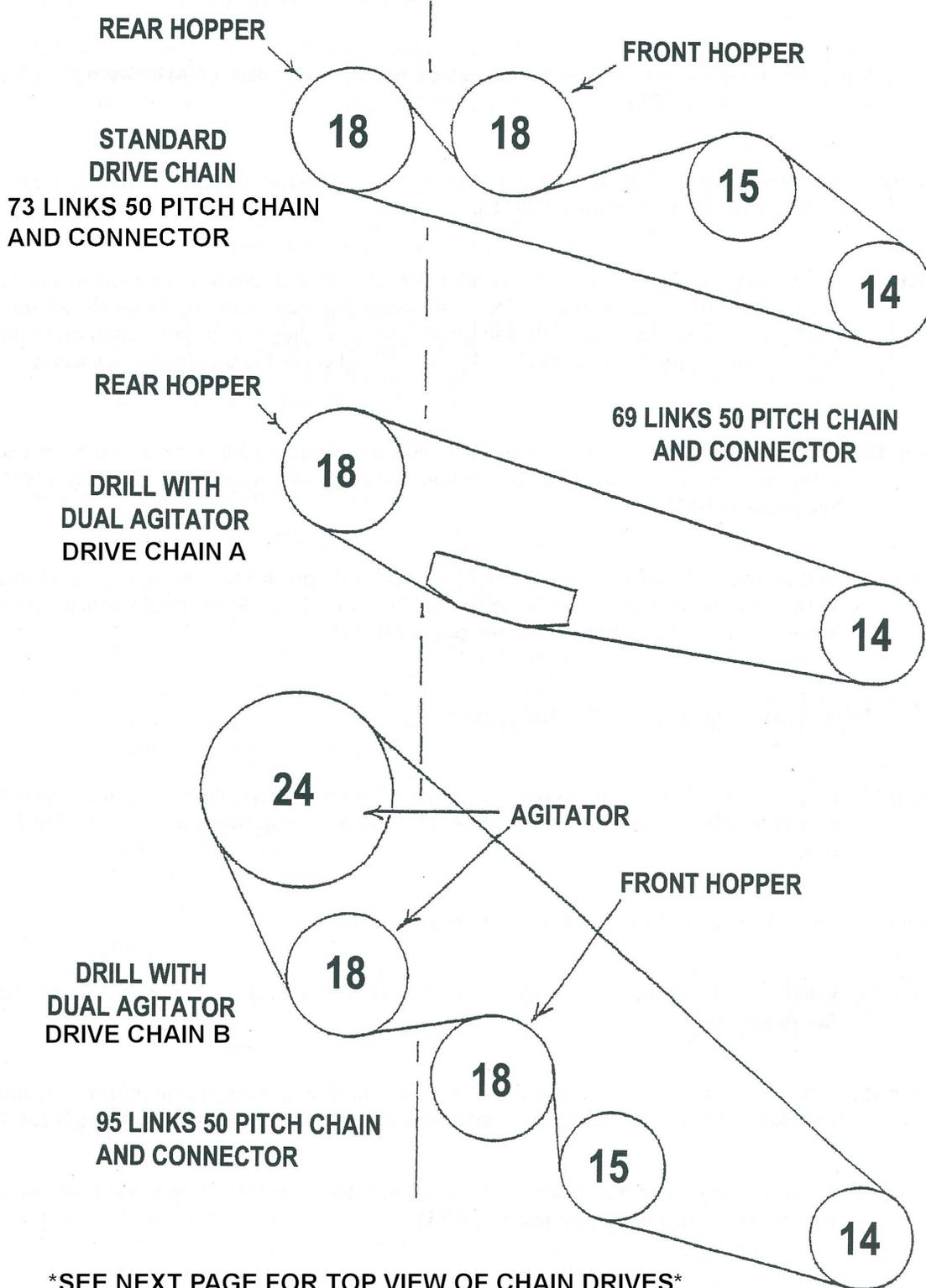
Step 13. Install drive chains (#5 & #6). **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 14. Install wood block idler (#7) using 3/8" x 2-3/4" (#21) hex head machine bolt. Adjust chain tension. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 15. Remove existing idler sprocket and spacer and install idler sprocket mount (#28) and existing idler sprocket using 1/2" x 1-1/2" hex head machine bolts (#10). Adjust chain tension. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

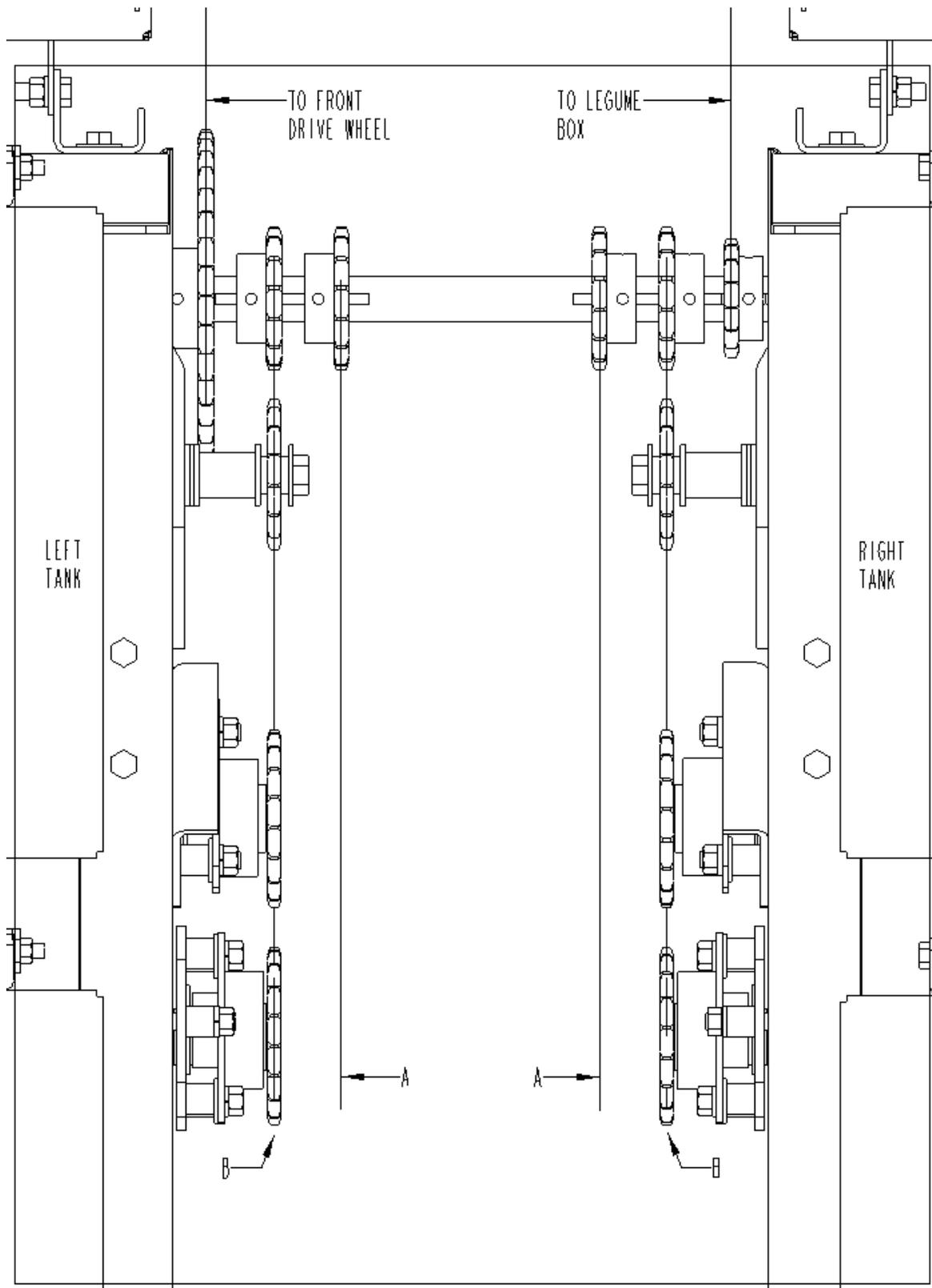
Step 16. Repeat steps 1-15 for the second tank.

Chain Routing



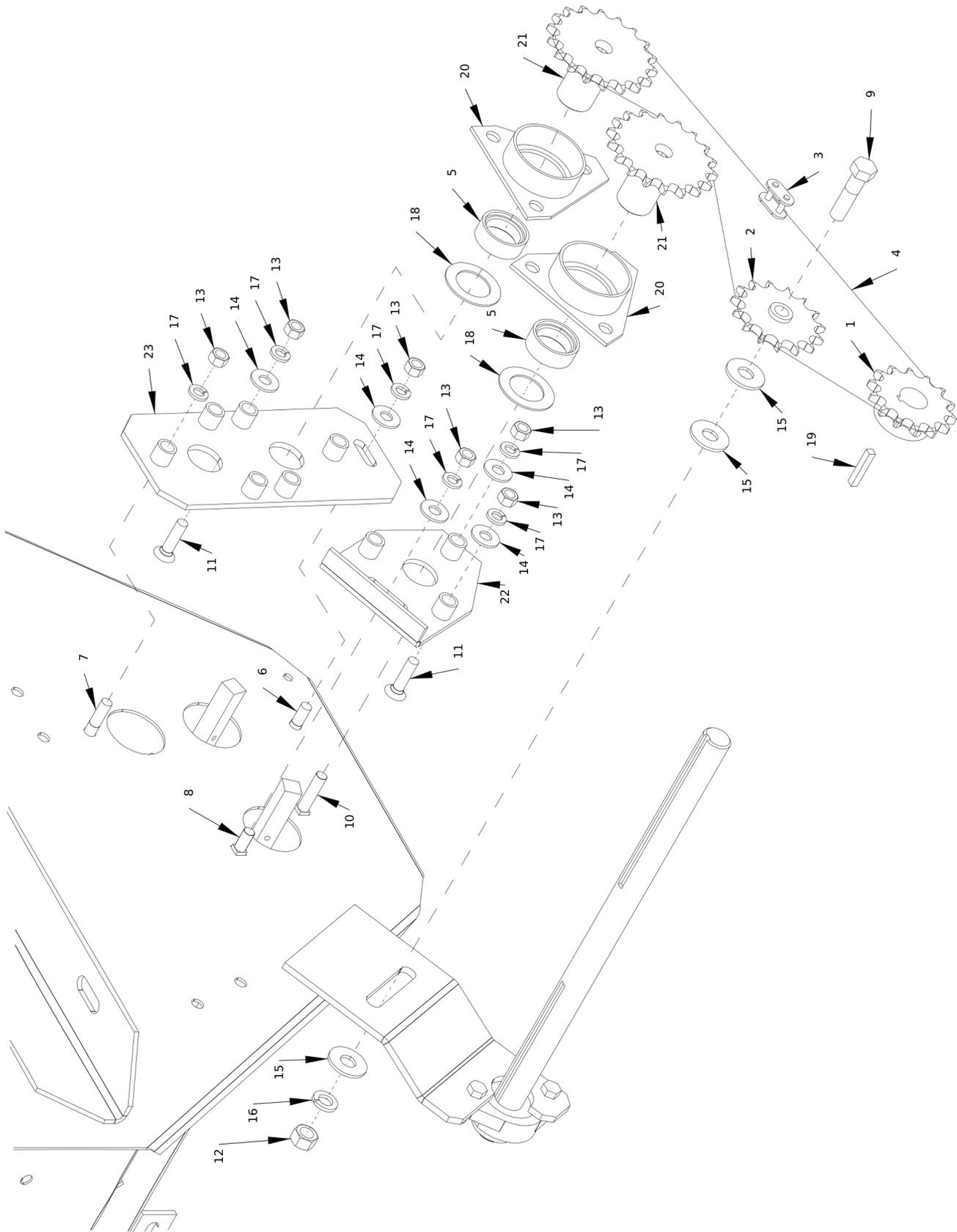
SEE NEXT PAGE FOR TOP VIEW OF CHAIN DRIVES

Top view of Drive Chains



147C Drill Tank End Drive Assembly

147C Native Grass Kit-Installation Instructions and Parts Reference

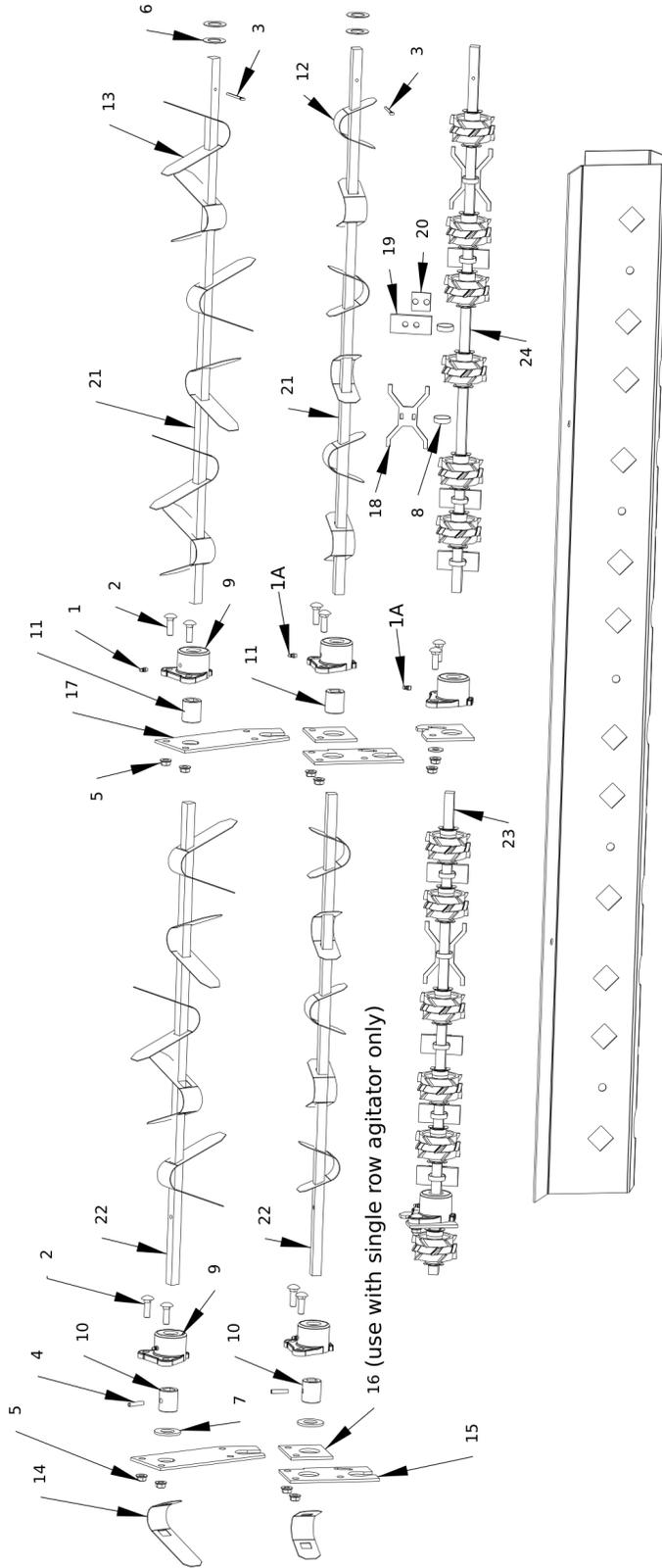


147C Drill Tank End Drive Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000029	SPKT\50\B\14\1\1\4KW		2	EA.
2	1000039	SPKT\50\15\1\2\IDLER		2	EA.
3	1100227	CHAIN\50NP\CL		2	EA.
4	1100234	CHAIN\50NP\73		2	EA.
5	2000824	CLLR\BRG\1-1/4 - FOR 8400070		4	EA.
6	4800003	BOLT\HEX\3\8X1		2	EA.
7	4800034	BOLT\HEX\3\8X1-1/2		2	EA.
8	4800053	BOLT\CRG\3\8X1\NC		2	EA.
9	4800114	BOLT\HEX\1\2X2		2	EA.
10	4800168	BOLT\CRG\3\8X1-3/4\NC		2	EA.
11	4800230	SCR\CSK\ALN\3\8X1-1/2\NC		10	EA.
12	4900001	NUT\HEX\1\2\NC		2	EA.
13	4900002	NUT\HEX\3\8\NC		18	EA.
14	5000001	WASH\FLAT\3\8		16	EA.
15	5000004	WASH\FLAT\1\2		6	EA.
16	5000006	WASH\LOCK\1\2		2	EA.
17	5000019	WASH\LOCK\3\8		18	EA.
18	5000084	2"PD 1-1/4ID OILITE WASHR		4	EA.
19	6200005	KEY\SQ\1\4X1-1/2		2	EA,
20	8400070	BRG\1-1/4\W\BRKT\3-HL		4	EA.
21	8400071	SPKT\DRIVEW\SQ_HL_SLV		4	EA.
22	8400074	SEALER PLATE		2	EA.
23	8400242	PL\SEAL\TANK\107		2	EA.

147C Native Grass Kit-Dual Agitator Shafts Assembly

147C Native Grass Kit-Installation Instructions and Parts Reference



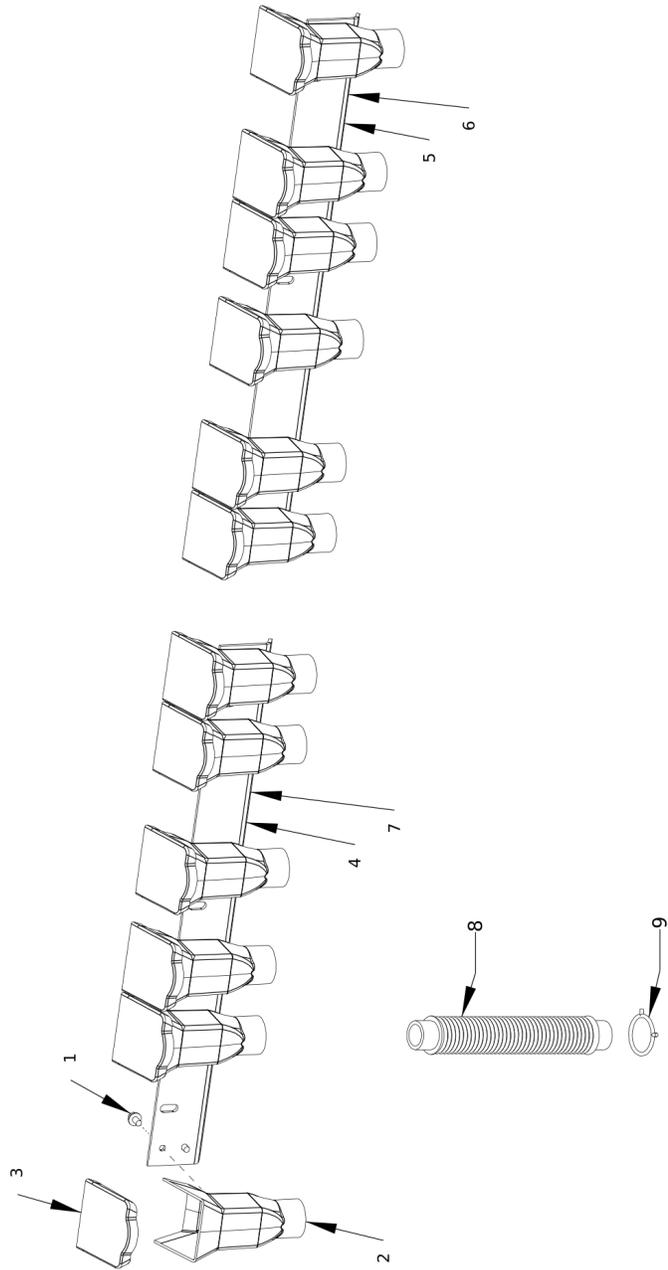
LH TANK SHOWN

147C Native Grass Kit-Dual Agitator Shafts Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		4	EA.
1A	3800098	FTG\LUB\1\4MPXZRK\45D		8	EA
2	4800012	BOLT\CRG\3\8X1-1\4NC		24	EA.
3	4800044	PIN\COT\5\32X1-1\2		4	EA.
4	4800169	PIN\RLLD\1\4X1-1\8		4	EA.
5	4900076	NUT\FLG\SERR\3\8\NC		24	EA.
6	5000027	WASH\7\8\1DX1-1\2OD\20GA SHIM		8	EA
7	5000055	WASH\7\8 X 1.75OD		8	EA.
8	7500107	CLAMP\HOSE\1-1\4\WORM\SS		20	EA
9	7500108	CAST BRACKET HOUSING		8	EA.
10	7500109	1.445 5\8SQ HOLE SLEEVE		4	EA.
11	7500562	SLV\SQ_HL\5\8X1-7\16\W\5\16_PLAIN		4	EA.
12	8400256	SMALL AGITATOR PADDLE 7" SPACING		24	EA
13	8400257	AGTTR\LRG\CTR\DRILL		22	EA
14	8400258	AGTTR\LRG\OFFSET\DRILL		2	EA
15	8400259	LOWER BEARING BRACKET		4	EA
16	8400260	BEARING SPACER PLATE		0	EA
17	8400261	BRKT\BRG\UPPER\DRILL		4	EA
18	8400267	FEED WHEEL SHAFT AGITATOR		6	EA
19	8400396	RUBBER PADDLE		16	EA
20	8400397	PADDLE, REINFORCE PLATE		16	EA
21	8400448	SHFT\TANK\37-3\8\DRILL		4	EA
22	8400449	SHFT\TANK\33\DRILL		4	EA
23	NA	EXISTING SHAFT			EA.
24	NA	EXISTING SHAFT			EA.

147C Native Grass Kit-Seed Cups

147C Native Grass Kit-Installation Instructions and Parts Reference

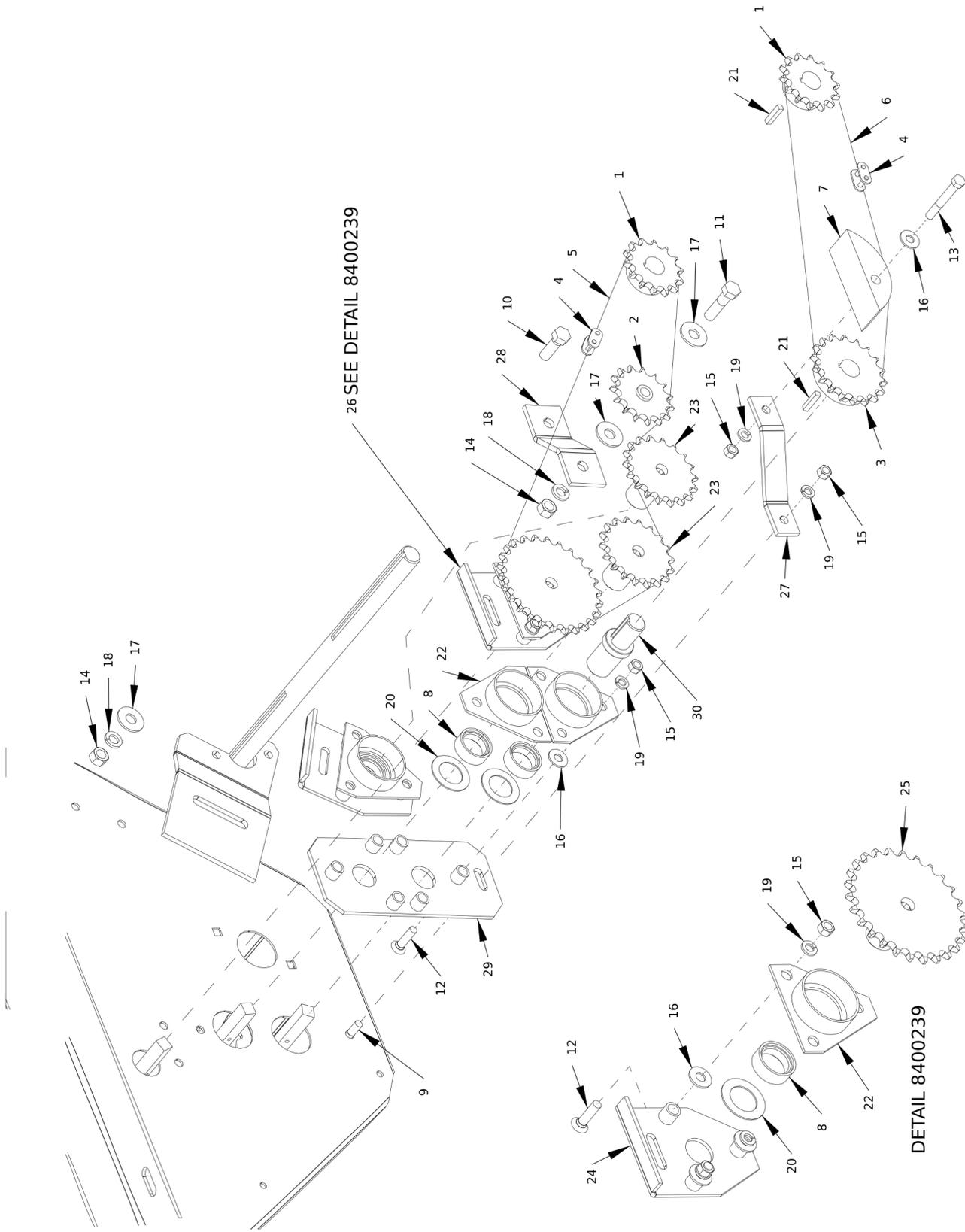


147C Native Grass Kit-Seed Cups

Item	Part No.	Name	Remarks	Qty	Uom
1	4801296	BOLT\FLG\SERR\5\16X1\2		48	EA.
2	7501402	FNNL\SEED\LARGE\77-107		24	EA
3	7501403	FNNL\COVER\SEED\LARGE\77-107		24	EA
4	8400767	MNT\SEEDCUP\REAR\GRAINTANK		2	EA
5	8400768	MNT\SEEDCUP\REAR\GRAINTANK		2	EA
6	8400777	CUP\SEED\CNTR\LT\ASM		2	EA
7	8400778	CUP\SEED\CNTR\RT\ASM		2	EA
8	7500168	HOSE\2"\CONVOLUTED		24	EA
9	7500169	CLAMP\SDHOSE\2\CP-34		48	EA

147C Native Grass Kit-Tank End Drive for Dual Agitator Assembly

147C Native Grass Kit-Installation Instructions and Parts Reference

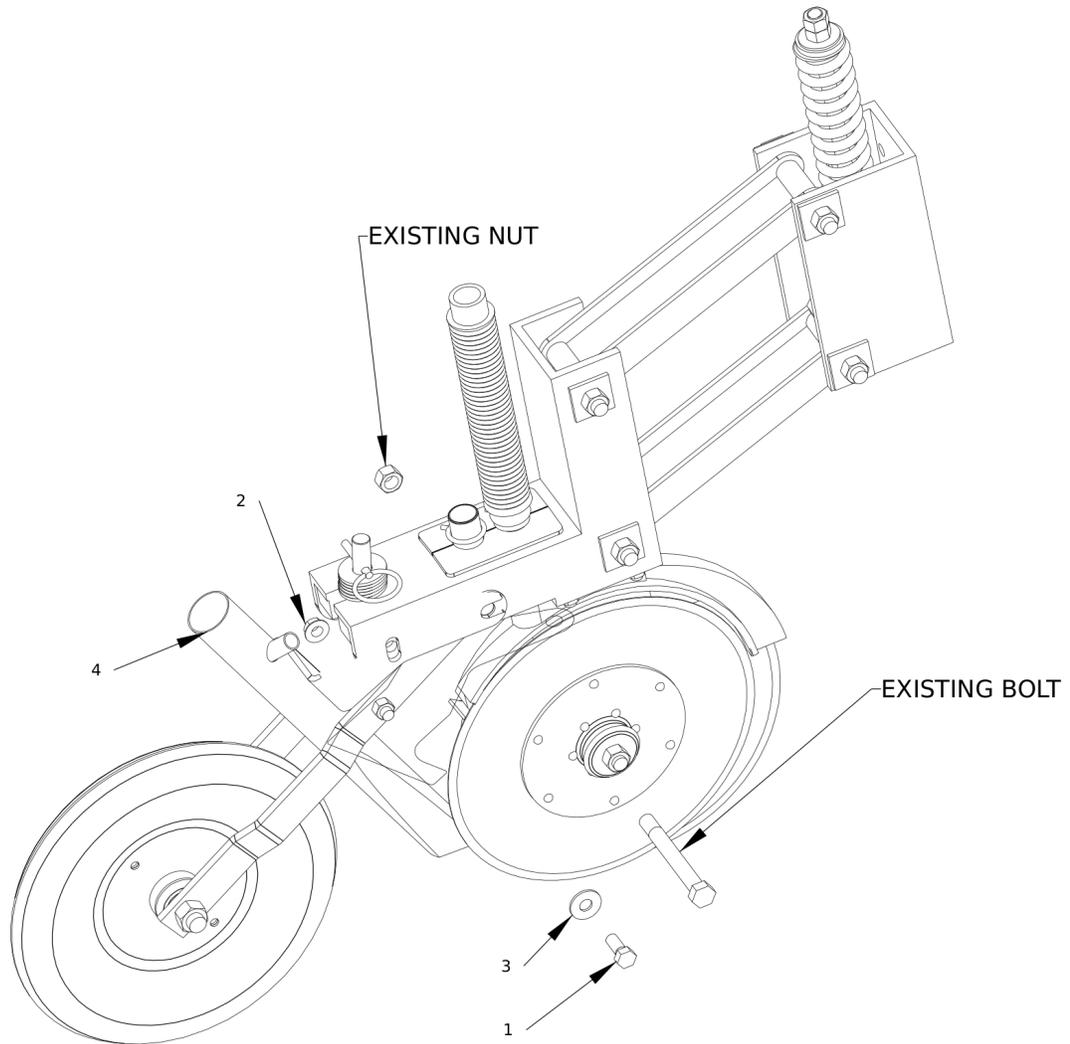


147C Native Grass Kit-Tank End Drive for Dual Agitator Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000029	SPKT\50\B\14\1\1\4KW		2	EA.
2	1000039	SPKT\50\15\1\2\IDLER			EA.
3	1000175	SPKT\50\B\18\1\1\4KW		2	EA
4	1100227	CHAIN\50NP\CL		2	EA.
4A	1100228	CHAIN\50NP\OL		3	EA
5	1100237	CHAIN\50NP\95		2	EA
6	1100282	CHAIN\50NP\69			EA
7	7501667	BLK\PLSTC\IDLER\	IN PLACE OF 2000016	2	EA.
8	2000824	CLLR\BRG\1-1/4 - FOR 8400070		6	EA.
9	4800003	BOLT\HEX\3/8X1			EA.
10	4800082	BOLT\HEX\1/2X1-1/2		2	EA.
11	4800114	BOLT\HEX\1/2X2		2	EA.
12	4800230	SCR\CSK\ALN\3/8X1-1/2\NC		16	EA.
13	4800514	BOLT\HEX\3/8X2-3/4		2	EA.
14	4900001	NUT\HEX\1/2\NC		4	EA.
15	4900002	NUT\HEX\3/8\NC		32	EA.
16	5000001	WASH\FLAT\3/8		14	EA.
17	5000004	WASH\FLAT\1/2		6	EA.
18	5000006	WASH\LOCK\1/2		4	EA.
19	5000019	WASH\LOCK\3/8		32	EA.
20	5000084	2"PD 1-1/4ID OILITE WASHR		4	EA.
21	6200014	Key\Sq\1/4x1-1/4		4	EA.
22	8400070	BRG\1-1/4\W\BRKT\3-HL		6	EA.
23	8400071	SPKT\DRIVEW\SQ_HL_SLV			EA.
24	8400074	SEALER PLATE		2	EA.
25	8400238	50-24 SPRKT W/SQ HOLE SLEEVE		2	EA
26	8400239	SEALER PLATE & BRG COMPLETE		2	EA
27	8400240	MNT\SPKT\IDLER\REAR		2	EA
28	8400241	MNT\SPKT\IDLER\FR		2	EA
29	8400242	PL\SEAL\TANK\107			EA.
30	8400438	SHFT\DRIVE\EXT\DRILL		2	EA

147C Native Grass Kit-Drop Tube Assembly

147C Native Grass Kit-Installation Instructions and Parts Reference



147C Native Grass Kit-Drop Tube Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	4800018	BOLT\HEX\1/2X1-1/4		1	EA.
2	4900133	NUT\FLG\1/2\NC		1	EA
3	5000004	WASH\FLAT\1/2		1	EA.
4	8400883	TUBE\DROP\LARGE\LHW-NIPPL		1	EA
4a	8400882	TUBE\DROP\LARGE\RHW-NIPPL		1	EA
NS	7500220	# 7 CAPLUG			As Needed
NS	7501607	PLUG\CAP\2"\ID\SC2			As Needed
NS	3701669	HOSE\PVC\5/8IDX63\CLEAR			As Needed
NS	7500107	CLAMP\HOSE\1-1/4\WORM\SS			EA
CA	8400981	TUBE\DROP\LRG\W-NPPL\KIT\147C			EA

HAYBUSTER[®]



147C DRILL™

Serial Number 141600017C & UP

Single Bottom Agitator Kit

Installation Instruction & Parts Reference

DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the 147C DRILL™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from time to time. Even in the event of such updates, you should still find this manual to be appropriate for the safe operation and maintenance of your unit.

This manual, as well as materials provided by component suppliers to DuraTech Industries are all considered to be part of the information package. Every operator is required to read and understand these manuals, and they should be located within easy access for periodic review.

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147C Single Bottom Agitator Kit -Installation Instructions and Parts Reference

147C Single Bottom Agitator Kit Installation Instructions	1
147C Drill Tank End Drive Assembly	15
147C Single Bottom Agitator Kit-Single Agitator Shafts Assembly	17
147C Single Bottom Agitator Kit-Tank End Drive for Single Agitator Assembly	19

147C Single Agitator Kit Installation Instructions

An agitator kit may be necessary when seeding grasses that will not flow freely into the feed wheels after removing feed wheel covers. The following steps and illustrations will enable you to install the agitator kit in the rear compartment of an existing HAYBUSTER 147C drill box.

Step 1. Remove drive chain (#4), rear sealer plate (#23), bearing (#20), and sprocket assembly (#21). Retain bearing and sprocket assembly **See Existing 147C Drill Tank End Drive Assembly.**

Step 2. Remove straight zerks from (4) four existing feed wheel shaft bearings. Install (4) four 45-degree zerks. Remove mounting bolts from same. Replace with 3/8" x 1-1/4" (#2) carriage bolts to enable bolting on agitator mounting plates (#15). Using the 1/8" wheel gauge, adjust feed wheels and tighten bolts. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Installing Feed Shaft Agitator Kits

Item	Quantity	Description
1	16	Rubber paddles
2	16	Paddle reinforcement plate
3	20	Hose Clamps
4	6	Finger agitator

Step 3. Mount the finger agitator (#18) in the center of the large spaces between feed wheels and tighten clamps securely. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 4. Install the rubber paddles (#19) in the center of the small spaces between feed wheels. Make sure the paddle reinforcement plate (#20) is installed between the paddle and the hose clamp (#8). **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 5. Install (6) six small agitators (#12) in sequence on the 37-3/8" (#21) and 33" (#22) shafts for the agitator. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Note: For a single bottom agitator kit, you will only need to assemble the shafts with the small agitators.

Step 6. Starting with shaft #22 slide cast housing and steel bearing over shaft and drive 1/4" x 1-1/8" (#4) roll pin through bearing and shaft. Insert 5/32" x 1-1/2" (#3) cotter pin in #21 shaft and bend ends of key back over shaft. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 7. Place the (2) two assembled shafts with small paddles in tank. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Note: For a single bottom agitator kit, assemble a bearing spacer plate (#16) between bearing and second agitator plate (#15).

Step 8. Kit contains 1-1/2" O.D. x 7/8" I.D. washers (#6). Add washers as needed to remove end play from agitator shaft. **See 147C Native Grass Kit-Dual Agitator Shafts Assembly.**

Step 9. Bolt existing bearing and sprocket assembly (removed in step #1) to top end of agitator mounting plate (#7) using (2) existing 3/8" x 1-1/2" aln\csk\screws (#18). Assemble collar (#8), bracket (#9), drive shaft stub (#10) and sprocket (#12) as shown. Bolt above assembly to the bottom end of mounting plate (#7) using (2) 3/8" x 1-1/2" aln\csk\screws (#18). **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 10. Bolt completed assembly (step #9) to end of tank using existing 3/8" x 1-1/2" hex head machine bolt in top end, 3/8" x 1" (#20) hex head in bottom end. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 11. Loosen sprockets and bearings on 1" drive shaft and install drive sprockets. Align all respective sprockets and secure. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

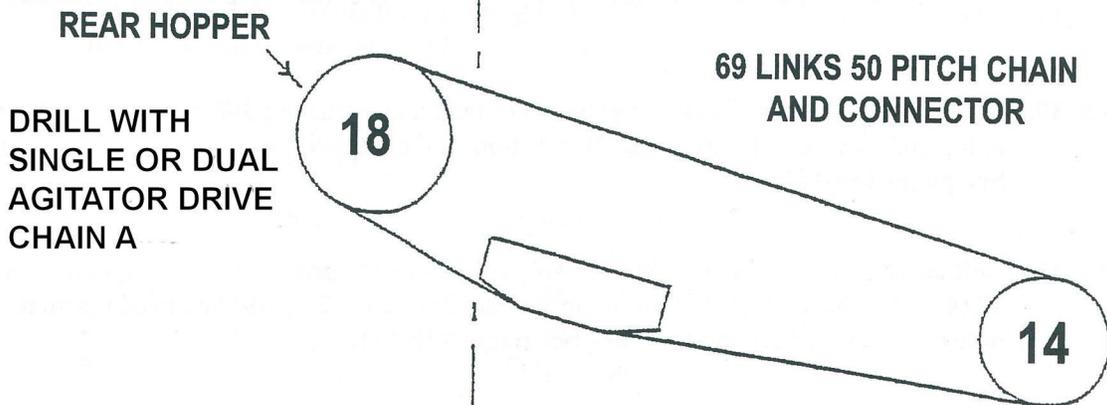
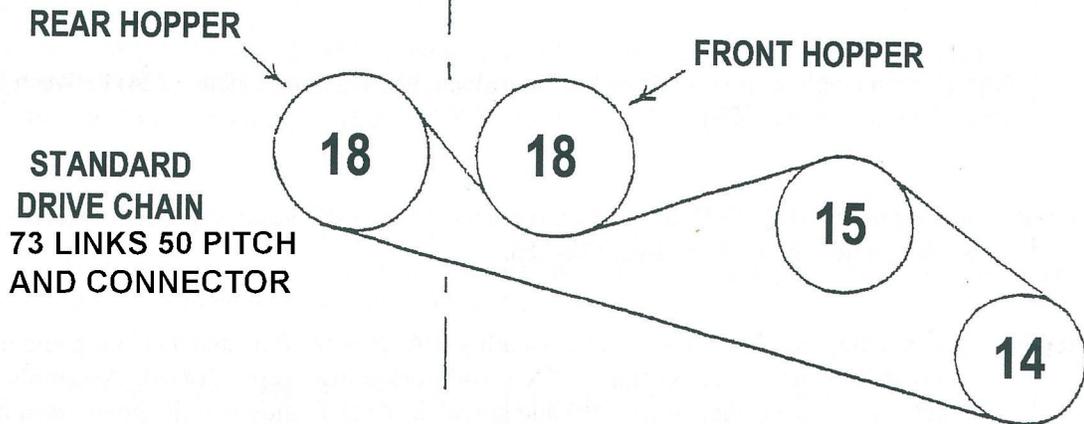
Step 12. Install drive chains (#1 & #2). **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 13. Install wood block idler (#4) using 3/8" x 2-3/4" (#21) hex head machine bolt. Adjust chain tension. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

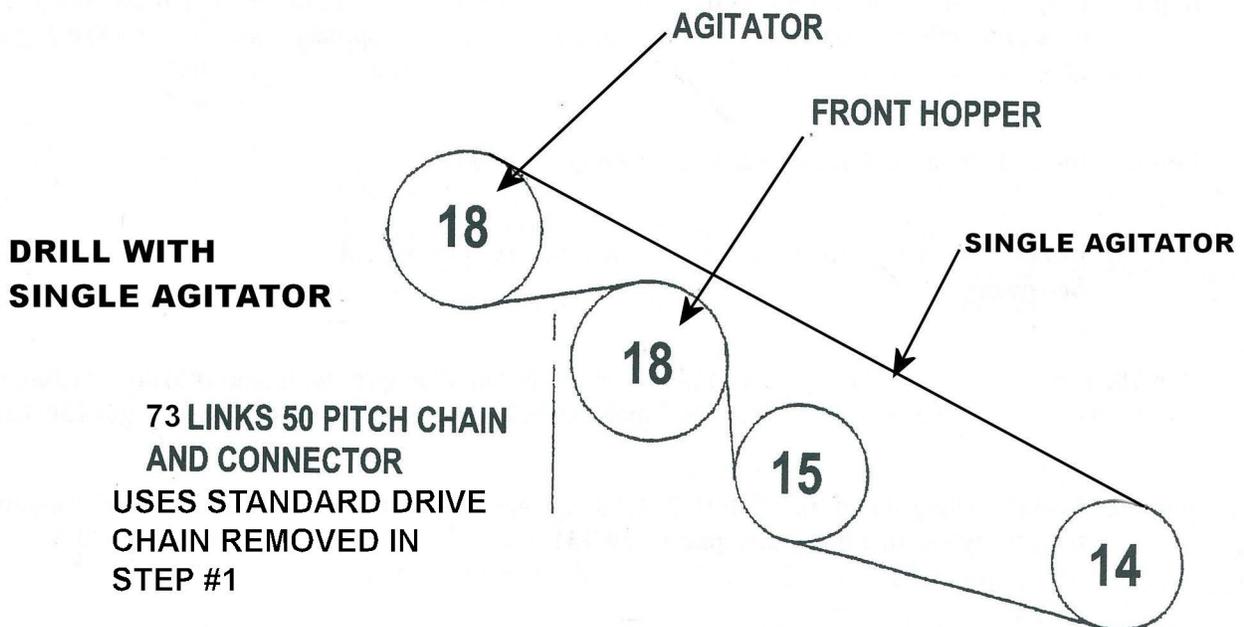
Step 14. Remove existing idler sprocket and spacer and install idler sprocket mount (#5) and existing idler sprocket using 1/2" x 1-1/2" hex head machine bolts (#10). Adjust chain tension. **See 147C Native Grass Kit-Tank End Drive for Dual Agitator.**

Step 15. Repeat steps 1-15 for the second tank.

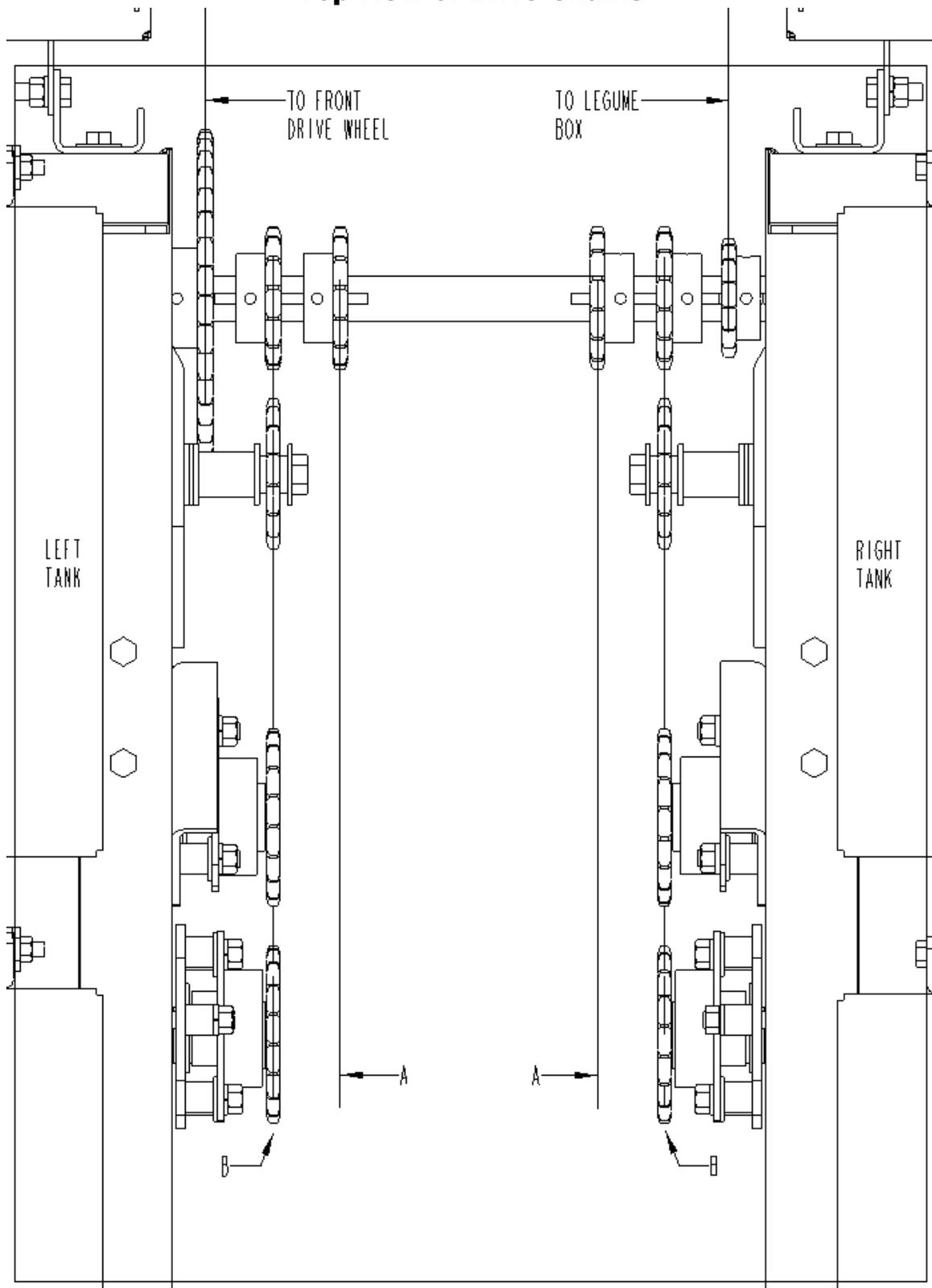
Chain Routing



Chain Routing for Single Agitator

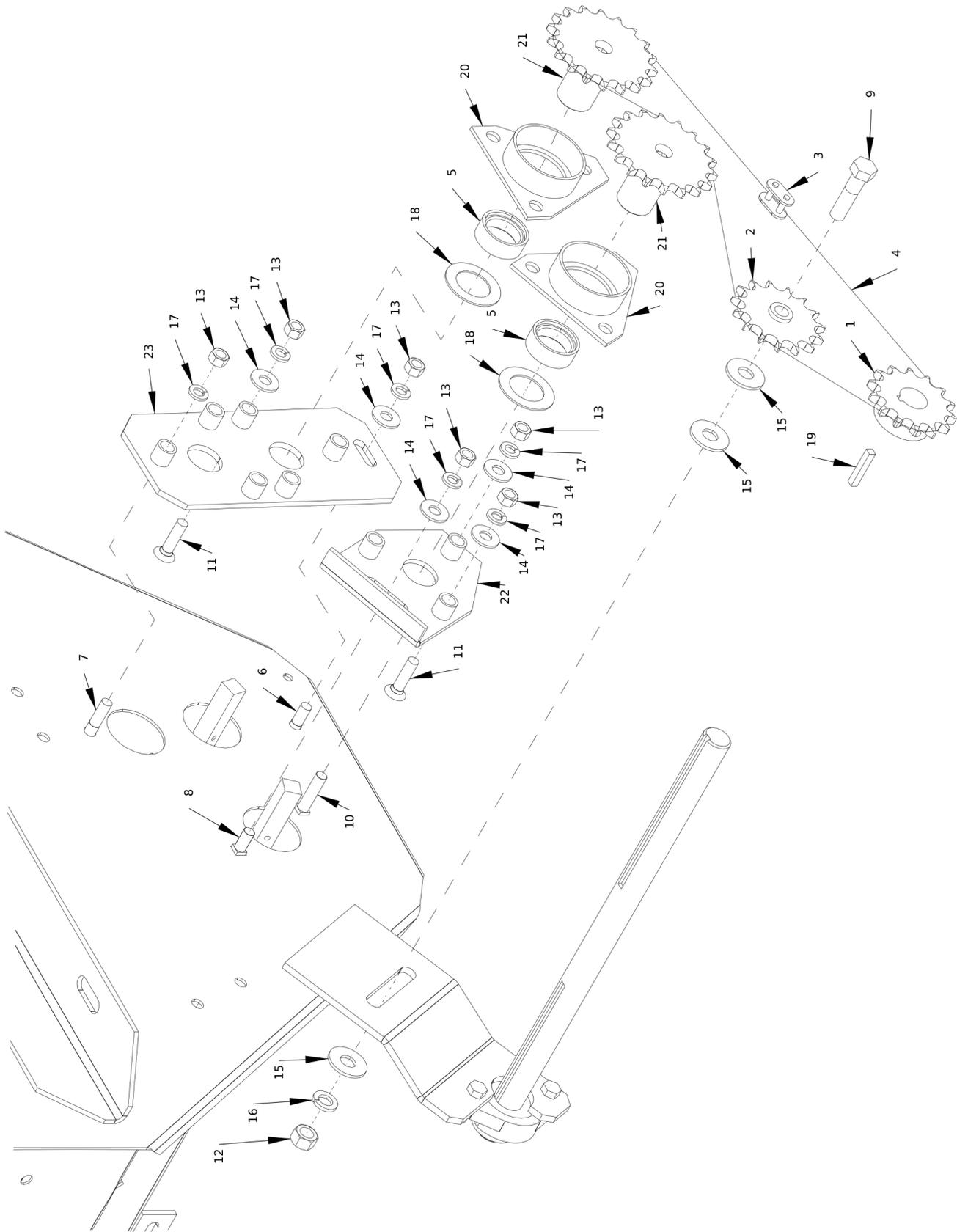


Top view of Drive Chains



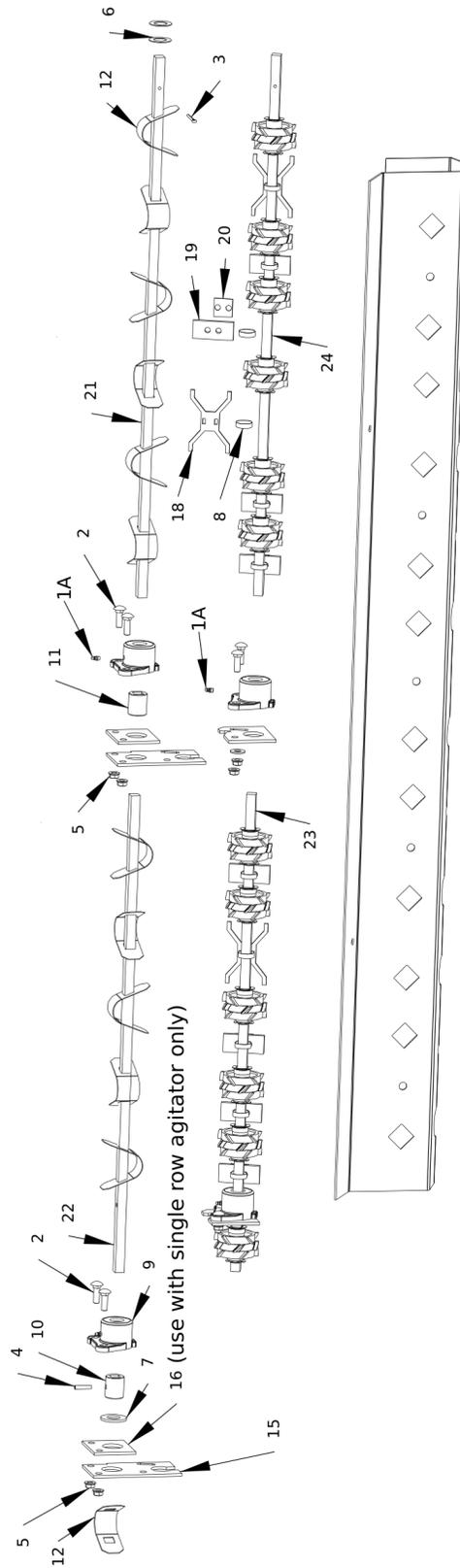
147C Drill Tank End Drive Assembly

147C Single Bottom Agitator Kit -Installation Instructions and Parts Reference



147C Drill Tank End Drive Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000029	SPKT\50\B\14\1\1\4KW		2	EA.
2	1000039	SPKT\50\15\1\2\IDLER		2	EA.
3	1100227	CHAIN\50NP\CL		2	EA.
4	1100234	CHAIN\50NP\73		2	EA.
5	2000824	CLLR\BRG\1-1/4 - FOR 8400070		4	EA.
6	4800003	BOLT\HEX\3\8X1		2	EA.
7	4800034	BOLT\HEX\3\8X1-1/2		2	EA.
8	4800053	BOLT\CRG\3\8X1\NC		2	EA.
9	4800114	BOLT\HEX\1\2X2		2	EA.
10	4800168	BOLT\CRG\3\8X1-3/4\NC		2	EA.
11	4800230	SCR\CSK\ALN\3\8X1-1/2\NC		10	EA.
12	4900001	NUT\HEX\1\2\NC		2	EA.
13	4900002	NUT\HEX\3\8\NC		18	EA.
14	5000001	WASH\FLAT\3\8		16	EA.
15	5000004	WASH\FLAT\1\2		6	EA.
16	5000006	WASH\LOCK\1\2		2	EA.
17	5000019	WASH\LOCK\3\8		18	EA.
18	5000084	2"PD 1-1/4ID OILITE WASHR		4	EA.
19	6200005	KEY\SQ\1\4X1-1/2		2	EA,
20	8400070	BRG\1-1/4\W\BRKT\3-HL		4	EA.
21	8400071	SPKT\DRIVEW\SQ_HL_SLV		4	EA.
22	8400074	SEALER PLATE		2	EA.
23	8400242	PL\SEAL\TANK\107		2	EA.



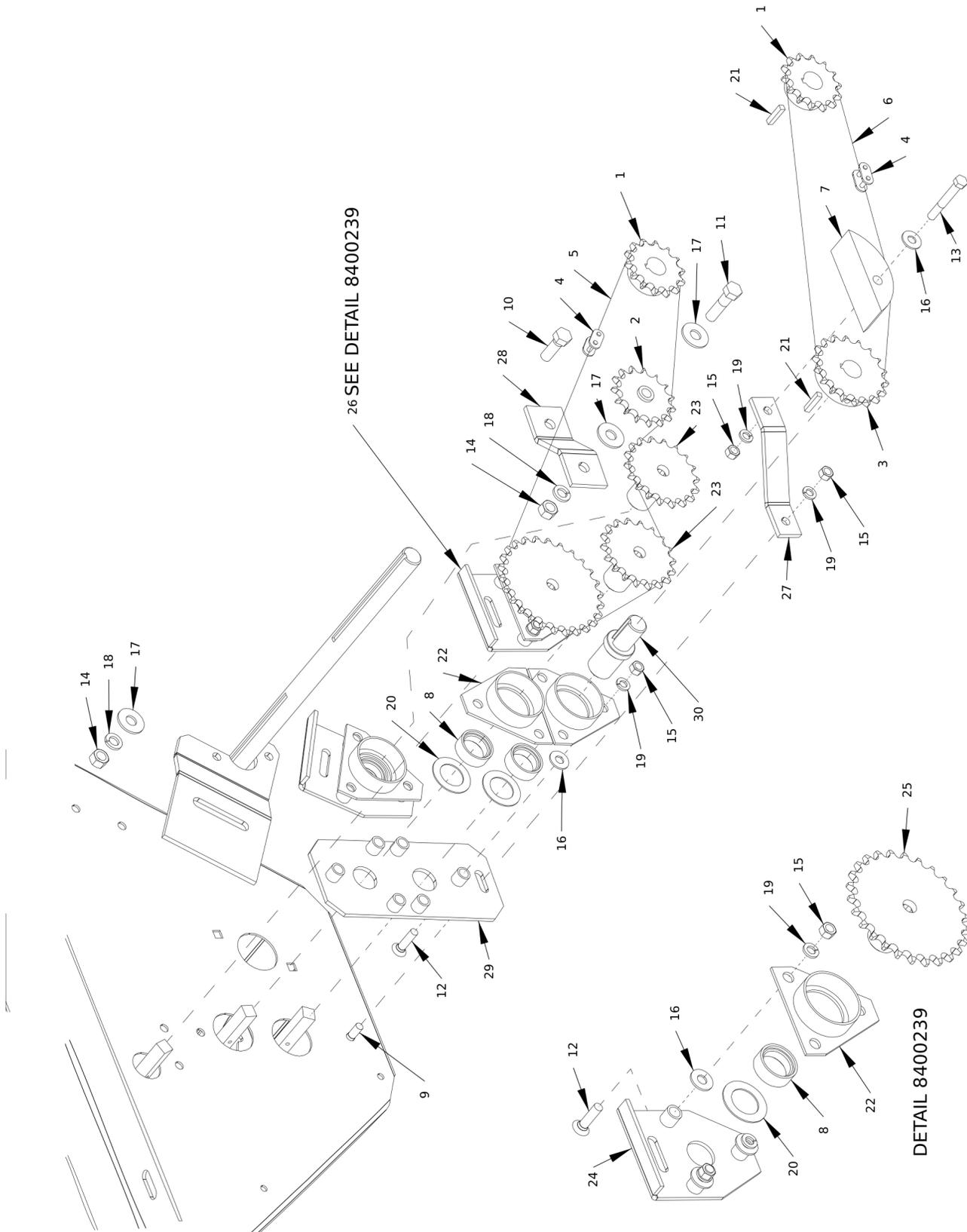
LH TANK SHOWN

147C Single Bottom Agitator Kit-Single Agitator Shafts Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	3800082	FTG\LUB\1\4NFXZERK\ADAPT		4	EA.
1A	3800098	FTG\LUB\1\4MPXZRK\45D		4	EA
2	4800012	BOLT\CRG\3\8X1-1\4NC		16	EA.
3	4800044	PIN\COT\5\32X1-1\2		2	EA.
4	4800169	PIN\RLLD\1\4X1-1\8		2	EA.
5	4900076	NUT\FLG\SERR\3\8\NC		16	EA.
6	5000027	WASH\7\8\1DX1-1\2OD\20GA SHIM		4	EA
7	5000055	WASH\7\8 X 1.75OD		4	EA.
8	7500107	CLAMP\HOSE\1-1\4\WORM\SS		20	EA
9	7500108	CAST BRACKET HOUSING		4	EA.
10	7500109	1.445 5\8SQ HOLE SLEEVE		2	EA.
11	7500562	SLV\SQ_HL\5\8X1-7\16\W\5\16_PLAIN		2	EA.
12	8400256	SMALL AGITATOR PADDLE 7" SPACING		24	EA
13	8400257	AGTTR\LRG\CTR\DRILL		0	EA
14	8400258	AGTTR\LRG\OFFSET\DRILL		0	EA
15	8400259	LOWER BEARING BRACKET		4	EA
16	8400260	BEARING SPACER PLATE		4	EA
17	8400261	BRKT\BRG\UPPER\DRILL		0	EA
18	8400267	FEED WHEEL SHAFT AGITATOR		6	EA
19	8400396	RUBBER PADDLE		16	EA
20	8400397	PADDLE, REINFORCE PLATE		16	EA
21	8400448	SHFT\TANK\37-3\8\DRILL		2	EA
22	8400449	SHFT\TANK\33\DRILL		2	EA
23	NA	EXISTING SHAFT			EA.
24	NA	EXISTING SHAFT			EA.

147C Single Bottom Agitator Kit-Tank End Drive for Single Agitator Assembly

147C Single Bottom Agitator Kit -Installation Instructions and Parts Reference



147C Single Bottom Agitator Kit-Tank End Drive for Single Agitator Assembly

Item	Part No.	Name	Remarks	Qty	Uom
1	1000029	SPKT\50\B\14\1\1\4KW		2	EA.
2	1000039	SPKT\50\15\1\2\IDLER			EA.
3	1000175	SPKT\50\B\18\1\1\4KW		2	EA
4	1100227	CHAIN\50NP\CL		2	EA.
4A	1100228	CHAIN\50NP\OL			EA
5	1100237	CHAIN\50NP\95			EA
6	1100282	CHAIN\50NP\69		2	EA
7	7501667	BLK\PLSTC\IDLER\	IN PLACE OF 2000016	2	EA.
8	2000824	CLLR\BRG\1-1/4 - FOR 8400070		4	EA.
9	4800003	BOLT\HEX\3/8X1			EA.
10	4800082	BOLT\HEX\1/2X1-1/2		2	EA.
11	4800114	BOLT\HEX\1/2X2		2	EA.
12	4800230	SCR\CSK\ALN\3/8X1-1/2\NC		10	EA.
13	4800514	BOLT\HEX\3/8X2-3/4		2	EA.
14	4900001	NUT\HEX\1/2\NC		4	EA.
15	4900002	NUT\HEX\3/8\NC		22	EA.
16	5000001	WASH\FLAT\3/8		12	EA.
17	5000004	WASH\FLAT\1/2		6	EA.
18	5000006	WASH\LOCK\1/2		4	EA.
19	5000019	WASH\LOCK\3/8		22	EA.
20	5000084	2"PD 1-1/4ID OILITE WASHR		2	EA.
21	6200014	Key\Sq\1/4x1-1/4		4	EA.
22	8400070	BRG\1-1/4\W\BRKT\3-HL		4	EA.
23	8400071	SPKT\DRIVEW\SQ_HL_SLV			EA.
24	8400074	SEALER PLATE			EA.
25	8400238	50-24 SPRKT W/SQ HOLE SLEEVE			EA
26	8400239	SEALER PLATE & BRG COMPLETE			EA
27	8400240	MNT\SPKT\IDLER\REAR		2	EA
28	8400241	MNT\SPKT\IDLER\FR		2	EA
29	8400242	PL\SEAL\TANK\107			EA.
30	8400438	SHFT\DRIVE\EXT\DRILL		2	EA

HAYBUSTER[®]

Delivery Report

Delivery Date	Machine Model	Serial No.	
Dealer Name		Engine Serial No.	
Dealer Address		Invoice No.	
Dealer City	State	Zip	
Dealer Email		Phone	

Customer Name			
Customer Address		Phone	
Customer City	State	Zip	
Customer Email			

The following items are to be checked as they are explained to the owner / operator at the time of delivery

- Explain the delivery packet and present the operators manual(s) to the owner / operator.
- Review and inspect the machine safety signs (decals) and the operator's manual.
- Advise the owner that the dealer is the source to obtain operator training, and information regarding the correct application of the machine to the job, as well as service and warranty information.
- Explain the capabilities and restrictions of the machine as it applies to the owner's application as defined in the operator's manual.
- Explain the operation of the controls and start up and shut down procedures of the engine and power transmission components of the machine.
- Explain rated lift or carrying capacity and loading and unloading procedures of the machine to maintain safety and stability of the machine.
- Explain proper folding, unfolding, and transporting procedures to the owner / operator.
- Explain recommended fueling procedures on engine equipped machines.
- Explain proper loading and unloading of materials from the tub or grinding chamber of the machine.
- Objects thrown by shredding or spinning rotors may represent a hazard to personnel and property in the area. Minimize risks by planning and by keeping personnel and property clear of hazaard area.
- Explain the availability and use of the tub cover to further reduce risks of thrown objects.
- Review maintenance and lubrication procedures with the operator / maintenance person as defined in the operators manual.
- Advise never to use the machine in an environment with explosive or flammable materials present.
- Explain warranty policy and limitations to the owner / operator.



Warning

Misuse of the machine or modification or removal of the guards, safety devices, or control interlocks can cause injury or death.

The above delivery information has been explained to me. I understand the operation and maintenance of this machine. I also acknowledge the warranty conditions and limitations as outlined.	
Owner / Operator Signature	Date
Dealer Representative Signature	Date