

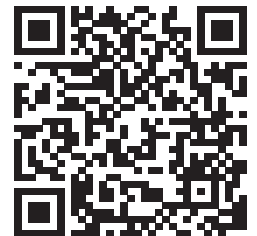
HAYBUSTER[®]



Operating Instructions and Parts Reference

147C DRILL[™]

147C DRILL - S.N. 141600017C & UP

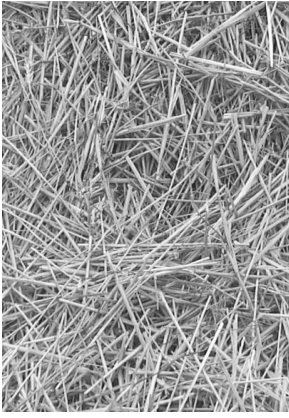


PRODUCT INFORMATION

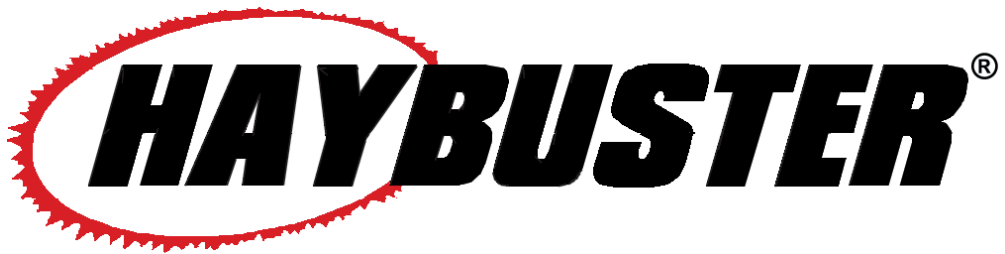
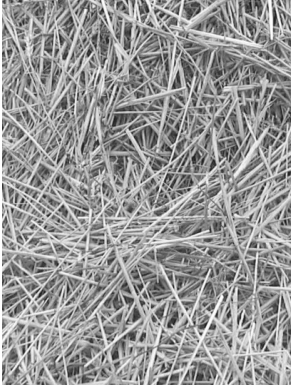


0500157 • FEBRUARY 2020

DURATECH INDUSTRIES INTERNATIONAL INC.
PO Box 1940, JAMESTOWN, ND 58402-1940
TEL: (701) 252-4601 • FAX: (701) 252-0502
WWW.DURATECHINDUSTRIES.NET • WWW.HAYBUSTER.COM



HAYBUSTER[®]
A Tradition of Innovation Since 1966





147C DRILL™

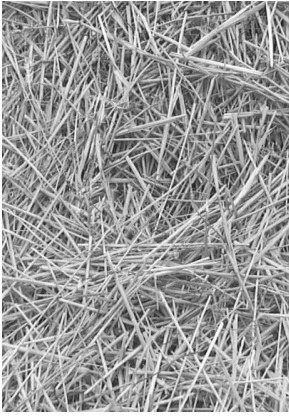
147C DRILL - S.N. 141600017C & UP

Operating Instructions and Parts Reference

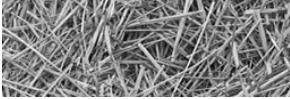
DuraTech Industries International Inc. (DuraTech Industries) has made every effort to assure that this manual completely and accurately describes the operation and maintenance of the 147C DRILL™ as of the date of publication. DuraTech Industries reserves the right to make updates to the machine from 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.

 **DURATECH**® and  are registered trademarks of Duratech Industries International, Inc. 147C DRILL are trademarks of Duratech Industries International, Inc.



HAYBUSTER[®]
A Tradition of Innovation Since 1966



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 explain 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 insure 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.

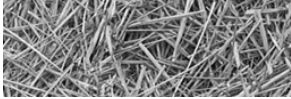


TABLE OF CONTENTS

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 GAUGE WHEEL ATTACHMENT.....	12
2.2 147C DRILL LEGUME BOX ATTACHMENT.....	14
2.3 LEGUME HOPPER SHIPPING KIT (OPTIONAL)	18
Section 3: Introduction.....	19
3.1 ORDERING PARTS	19
3.2 SERIAL NUMBER DECAL.....	20
3.3 ABOUT YOUR 147C GRAIN DRILL	20
Section 4: Operating Instructions	21
4.1 OPERATING INSTRUCTIONS.....	21
4.2 GRAIN DRILL SETUP.....	22
4.3 PRESSURE SPRING ADJUSTMENT	22
4.4 PRESS WHEEL ADJUSTMENT	23
4.5 HAYBUSTER 147C DRILL OPENER	24
4.5A CONTROL PLATES	24
4.6 FEED WHEEL SPACE ADJUSTMENT	25
4.7 DRILL CLEANOUT SLIDES	26
4.8 CALIBRATION POINTER ADJUSTMENT	27
4.9 SETTING AND CHECKING FEED RATE	28
4.10 CHECKING FEED RATE	29
4.11 DRILLING WITH THE GRAIN DRILL.....	34
4.12 SUGGESTIONS.....	34
4.13 REAR WHEEL SWIVEL AND ADJUSTMENT	34
4.14 CLEANING GRAIN TANKS AND LEGUME BOXES.....	35
4.15 PREPARING FOR STORAGE.....	35
4.16 REMOVING FROM STORAGE.....	35

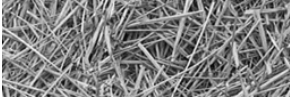


TABLE OF CONTENTS

Section 5: Grass Seeding Reference..... 37

5.1 GRASS SEEDING ATTACHMENTS 37

5.2 LEGUME BOX APPLICATIONS 38

5.3 SINGLE AGITATOR APPLICATIONS..... 38

Section 6: Lubrication 39

APPENDIX A: WARRANTY 43

APPENDIX B: SPECIFICATIONS 44

Part 2: Parts Reference45

MAIN FRAME ASSEMBLY 46

WHEEL AND BEARING 48

TANK ASSEMBLY - FRONT 50

TANK ASSEMBLY - BACK THRU S.N. 0060 52

TANK ASSEMBLY - BACK S.N. 0061 AND UP..... 54

DRIVE ASSEMBLY 56

TANK END DRIVE ASSEMBLY 58

RUN ASSEMBLY 60

SEED & FERTILIZER SETTING ASSEMBLY 62

SCRAPER ASSEMBLY..... 63

FEED WHEEL - DOUBLE..... 64

FEED WHEEL - TRIPLE 65

COULTER & DISK ASSEMBLY..... 66

PRESS WHEEL ASSEMBLY 67

DEPTH BAND INSTALLATION 69

DRILL SINGLE HITCH..... 70

SWIVEL HITCH..... 71

HYDRAULICS 72

HYDRAULICS 73

LEGUME BOX ASSEMBLY 75

LEGUME BOX ASSEMBLY LH..... 76

LEGUME BOX ASSEMBLY RH..... 78

CUP ASSEMBLY - LEGUME BOX 80

LEGUME BOX DRIVE ASSEMBLY..... 82

ACRE COUNTER (OPTION)..... 85

GAUGE WHEELS OPTION 86

LIGHT KIT & SMV..... 88

DECALS 90

DECAL LOCATIONS 92

NATIVE GRASS KIT - AGITATOR SHAFTS 96

NATIVE GRASS KIT - SEED CUPS..... 98

NATIVE GRASS KIT - TANK END DRIVE ASSEMBLY 100

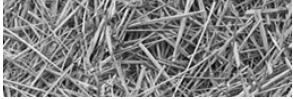
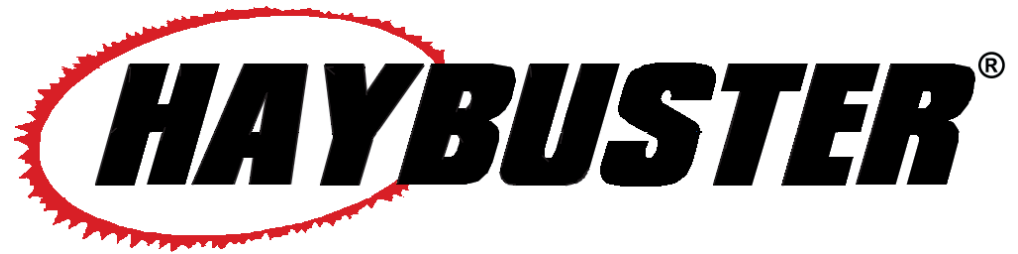
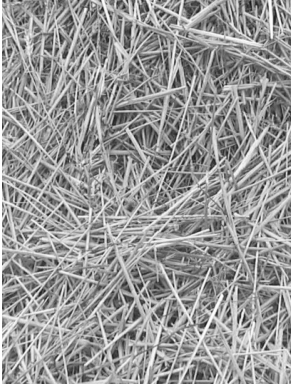


TABLE OF CONTENTS

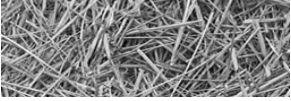
NATIVE GRASS KIT - SEED AND FERTILIZER SETTING ASSEMBLY.....	103
DRIVE CHAIN ROUTINGS.....	104
TOP VIEW OF DRIVE CHAINS.....	105
147C NATIVE GRASS KIT INSTALLATION INSTRUCTIONS.....	106
NATIVE GRASS KIT - SINGLE AGITATOR MASTER PARTS LIST.....	108
NATIVE GRASS KIT - DOUBLE AGITATOR MASTER PARTS LIST.....	109
NOTES.....	110
147C DRILL DOCUMENTATION COMMENT FORM.....	111



147C DRILL

147C DRILL - S.N. 141600017C & UP

PART 1: Operating Instructions



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:

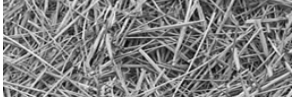
- Keep decals clean. Use soap and water - not mineral spirits, adhesive cleaners and other similar cleaners that will damage the decal.
- Replace all damaged or missing decals. When attaching decals, surface temperature of the machine must be at least 40° F (5° C). The surface must be also be clean and 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

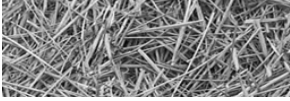
This manual uses the symbols to the right to denote important safety instructions and information.

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 loosefitting jackets, scarfs, 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 muffers) 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.**

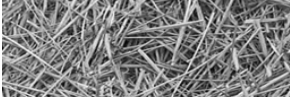
1. BEFORE OPERATING THIS MACHINE, READ THE OPERATOR'S MANUALS SUPPLIED WITH THIS MACHINE AND YOUR TRACTOR.
2. CHECK OPERATORS MANUALS TO BE SURE YOUR TRACTOR MEETS THE MINIMUM REQUIREMENTS FOR THIS MACHINE.
3. READ ALL DECALS PLACED ON THIS MACHINE FOR YOUR SAFETY AND CONVENIENCE.
4. NEVER ALLOW RIDERS 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.



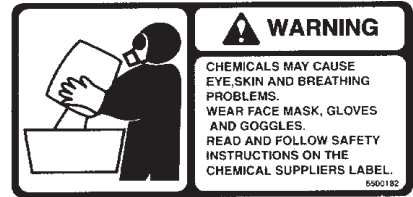
WARNING: FOR YOUR PROTECTION KEEP ALL SHIELDS IN PLACE AND SECURED WHILE MACHINE IS OPERATING MOVING PARTS WITHIN CAN CAUSE SEVERE PERSONAL INJURY.

 WARNING	 ADVERTENCIA
<p>FOR YOUR PROTECTION 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 OPERATORS 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 MÍNIMOS 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 HOLGADAS, ETC., ALEJADAS DE LAS PIEZAS PROPULSORAS.8. SIEMPRE APAGUE LA MAQUINA Y EL MOTOR ANTES DE PRESTAR SERVICIO, DESTRABAR, 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	 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>



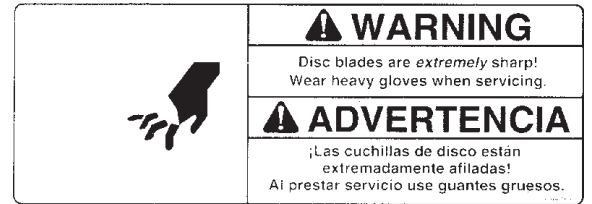
WARNING: CHEMICALS MAY CAUSE EYE, SKIN AND BREATHING PROBLEMS. WEAR FACE MASK, GLOVES AND GOGGLES. READ AND FOLLOW SAFETY INSTRUCTIONS ON THE CHEMICAL SUPPLIERS LABEL.



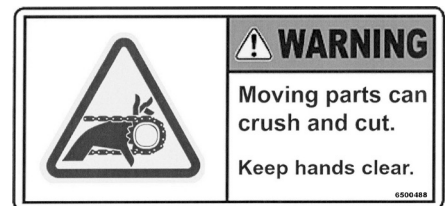
WARNING: NO RIDERS. SERIOUS PERSONAL INJURY COULD RESULT FROM RIDING ON STEP.

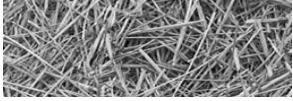


WARNING: DISC BLADES ARE *EXTREMELY* SHARP! WEAR HEAVY GLOVES WHEN SERVICING.



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

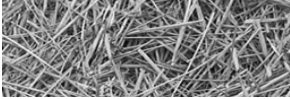
BEFORE OPERATING

- 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 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 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 with 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



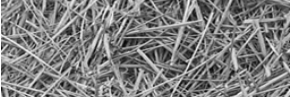
CAUTION: Before performing any maintenance or adjustments make sure machine is NOT running.

- 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.



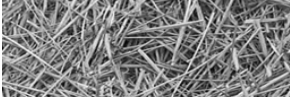
WHEN TRANSPORTING ON PUBLIC ROADS

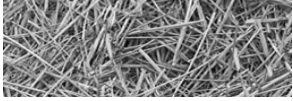
- Use good judgment and drive carefully, especially over rough or uneven roads.
- Be sure tractor brakes are properly adjusted and foot pedals locked together.
- Check your state laws regarding the use of lights, slow moving vehicle sign, safety chain and other possible requirements.
- Do not tow drills 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.





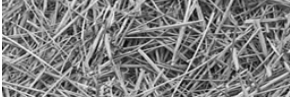
Section 2: Dealer Preparation

2.1 Gauge Wheel Attachment

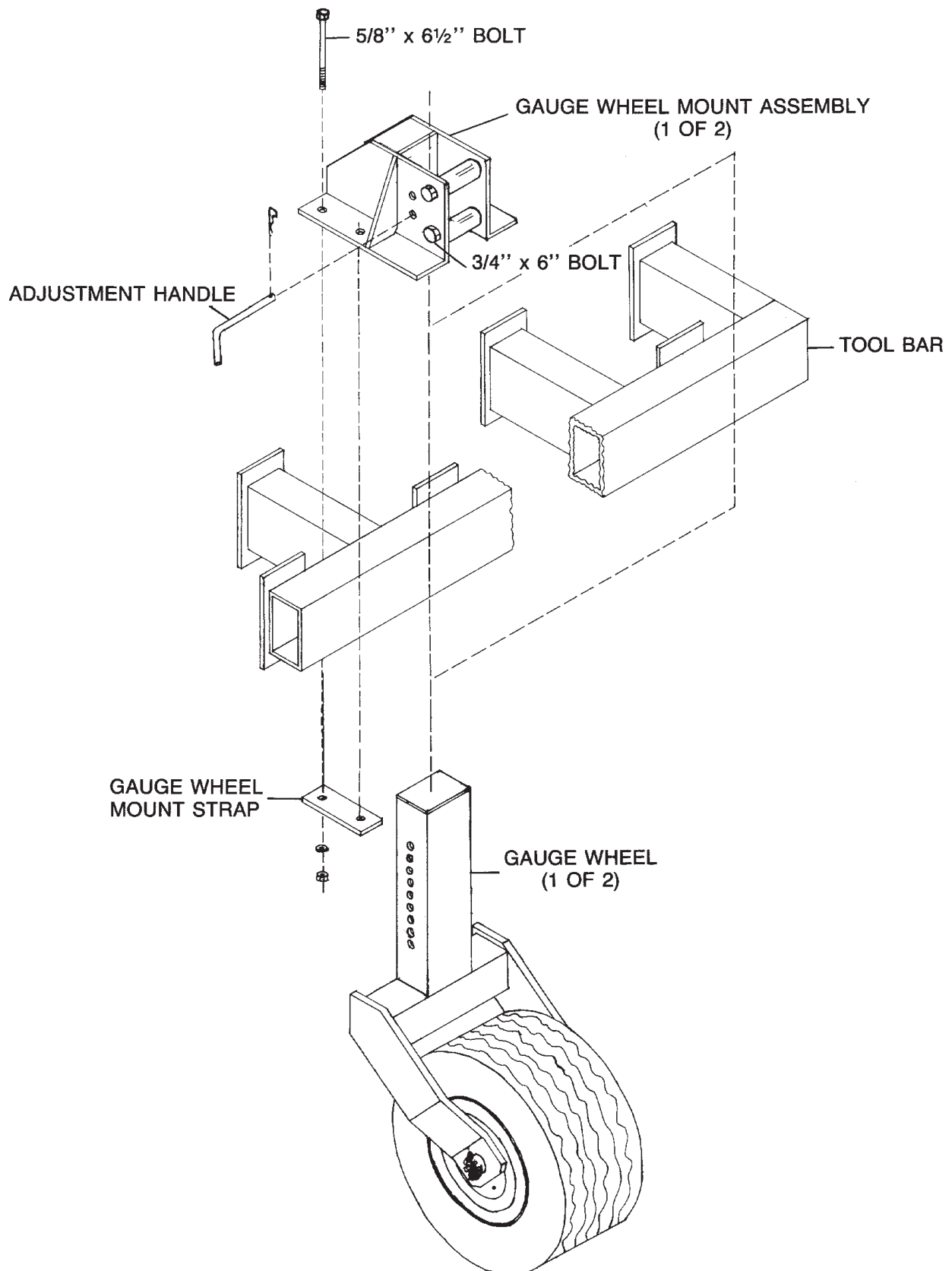
The heavy duty gauge wheels mount on the tool bar in front of the drill. The gauge wheels are adjustable to maintain a uniform planting depth when on side hills.

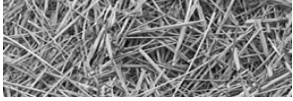
INSTALLATION

- Step 1:** Place the gauge wheel mount assembly in front of the second run assembly from either tool bar end. See the accompanying illustration.
- Step 2:** Mount the gauge wheel mount assembly to the tool bar by using two gauge wheel mount straps and four 5/8" x 6-1/2" hex bolts, lock washer and nuts provided. See accompanying illustration.
- Step 3:** Repeat Step 1 and Step 2 for the gauge wheel on the other side of the tool bar.
- Step 4:** Lift the tool bar using the drill's hydraulics and insert both gauge wheels into the bottom of the gauge wheel mount assemblies. See the accompanying illustration.
- Step 5:** If conditions prevent Step 4 from being done, the gauge wheels can be inserted into the front of the gauge wheel mount assemblies. To do this, remove all four bolt sleeves (two per gauge wheel mount assembly) by unbolting the four 3/4" x 6" hex bolts, lock washers and nuts and push the gauge wheels into the mount assemblies. Bolt the bolt sleeves on to the gauge wheel mount assemblies again.
- Step 6:** Adjust the gauge wheels to the desired position by inserting the adjustment handle through the proper gauge wheel adjustment with the hair pin. This adjustment determines the gauge wheel height that maintains the uniform planting depth on side hills. See the accompanying illustration.



Gauge Wheel (Option) Installation



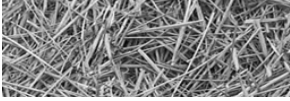


2.2 147C Drill Legume Box Attachment

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

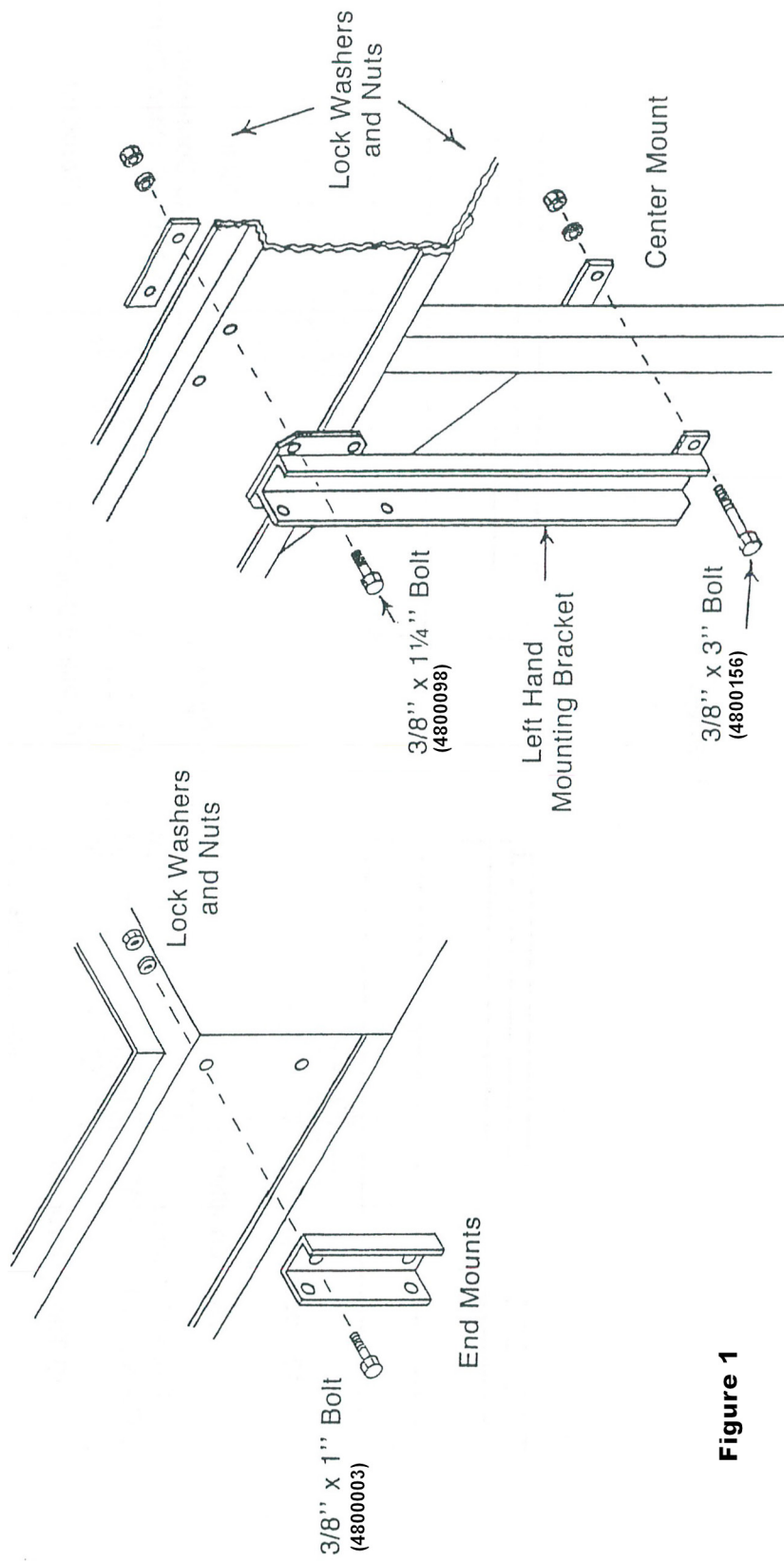
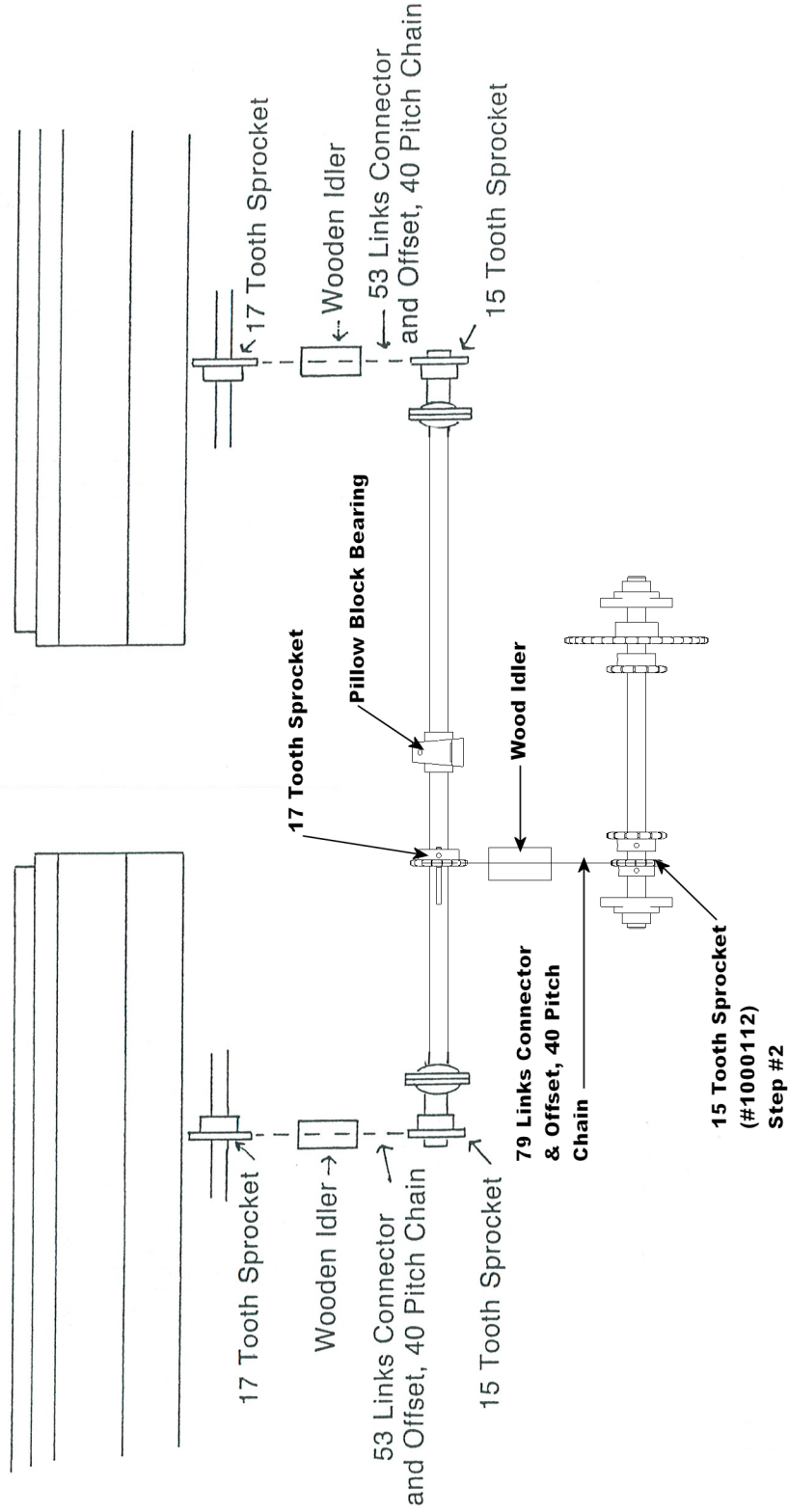
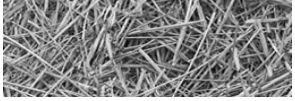


Figure 1



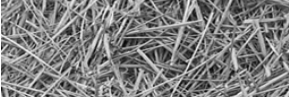
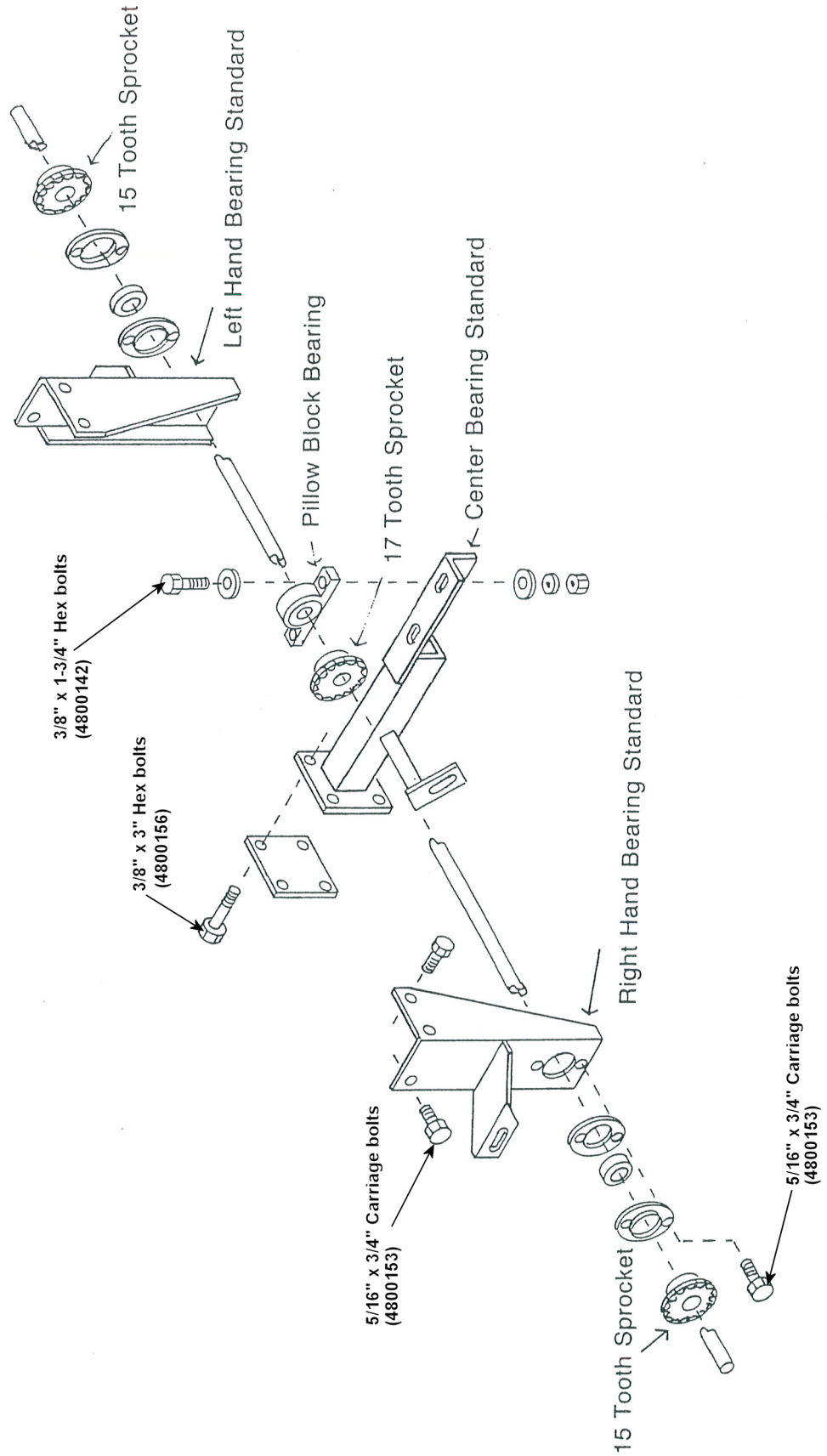
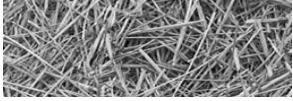


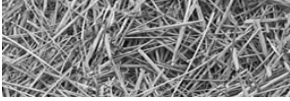
Figure 3





2.3 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\IOL
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.

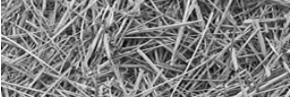
3.1 Ordering Parts

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 INSURE FAST AND ACCURATE SHIPMENT OF YOUR ORDER. WHEN ORDERING PARTS ALWAYS SPECIFY UNIT SERIAL NUMBER.

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



3.2 Serial Number Decal

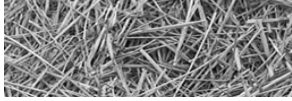
The serial number and the machine model number are stamped on the decal. The model number and serial number are important when service and/or parts are required.

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 insure 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.



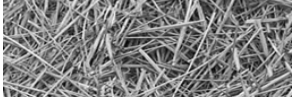
WARNING: Hydraulic fluid escaping under pressure can be almost invisible and can have sufficient force to penetrate the skin. When searching for suspected leaks, use a piece of wood or cardboard rather than your hands.

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.

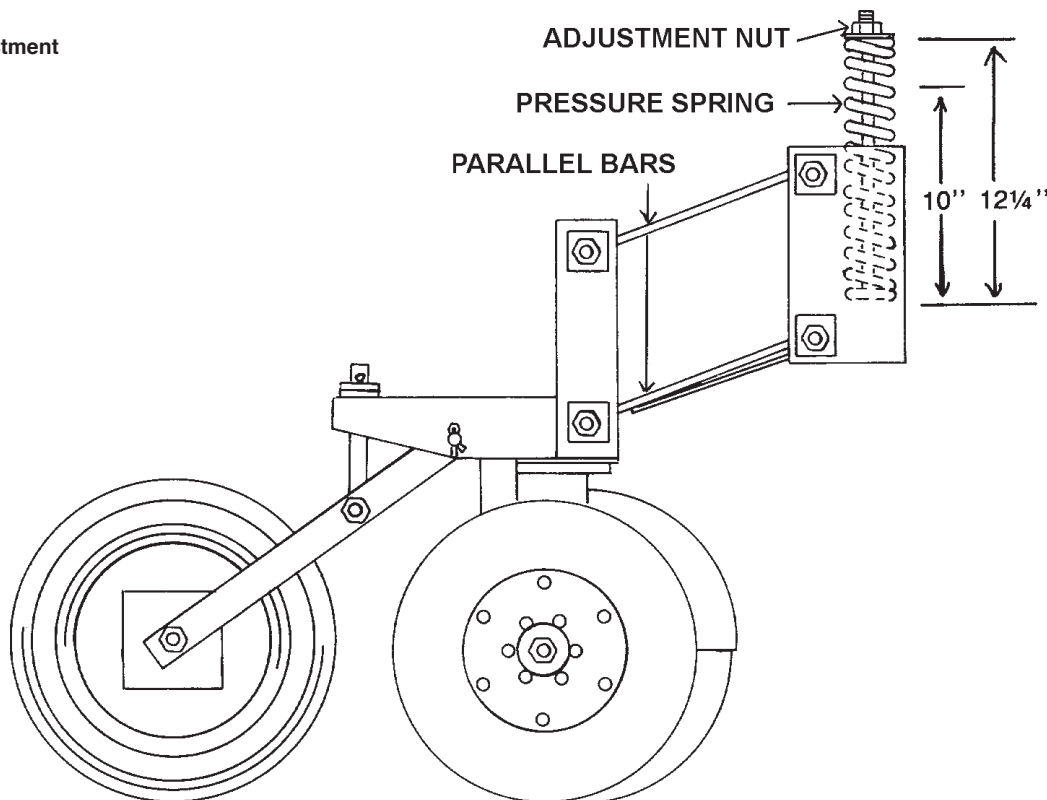
4.3 Pressure Spring Adjustment

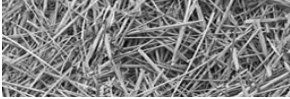
To gain versatility for all types of terrain and soil conditions, it is important to have a considerable amount of up and down travel built into each individual run. When seeding on level terrain, adjust hydraulic cylinder stroke to lower Movable Frame so openers penetrate soil approximately two (2) inches and Parallel Bars are about 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.

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.

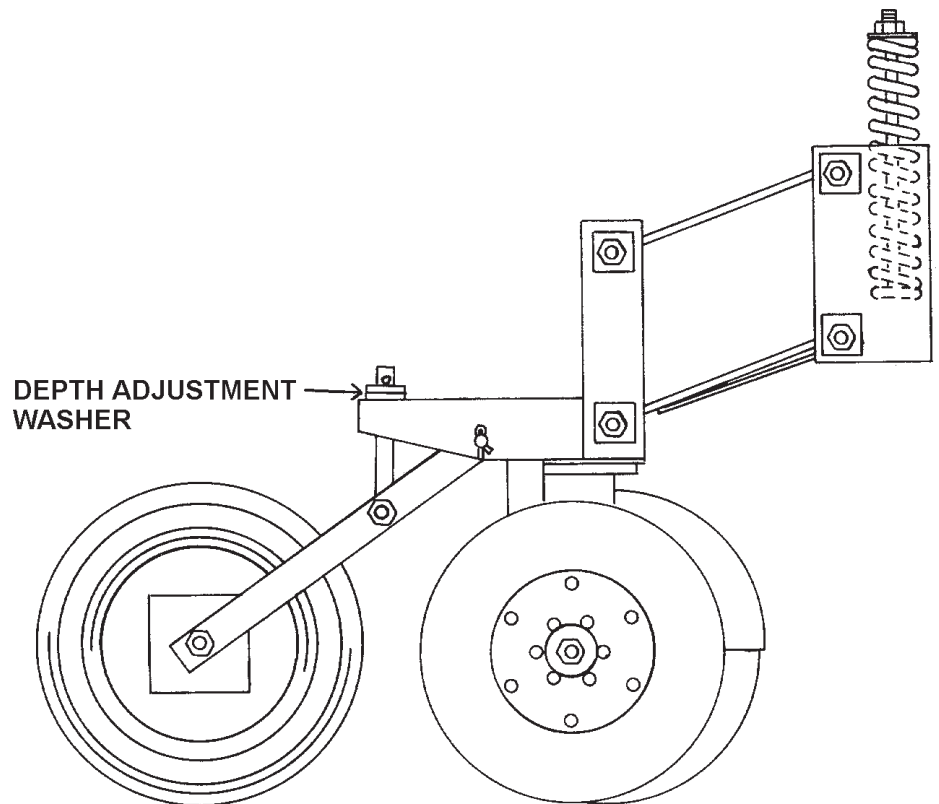
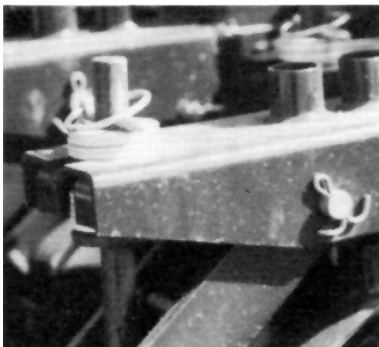
4.4 Press Wheel Adjustment

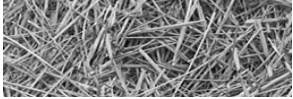
In addition to firming the soil around the seed, the press wheels serve as gauge wheels for the openers. The relationship of each press wheel and opener will remain consistent regardless of terrain or soil density. If the seed is too deep, lower the press wheel. If the seed is too shallow, raise the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

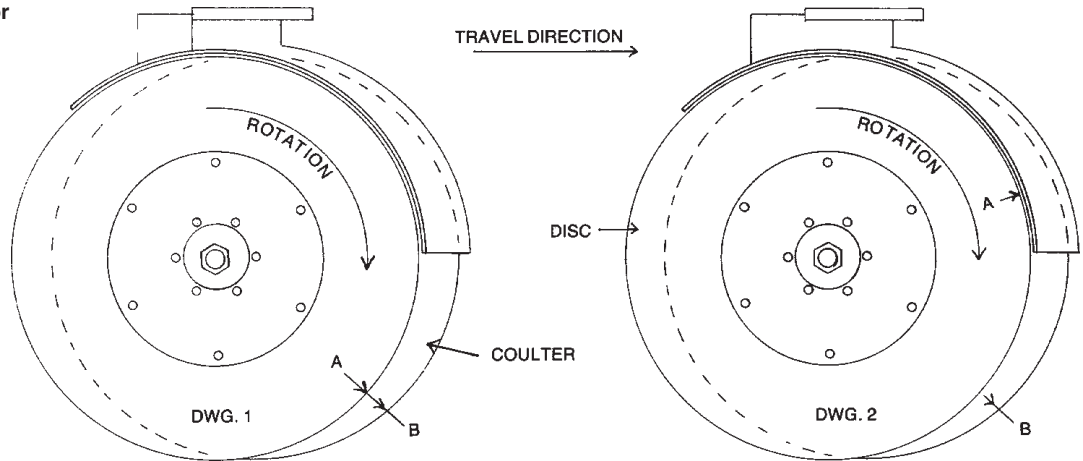




4.5 Haybuster 147C Drill Opener

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.

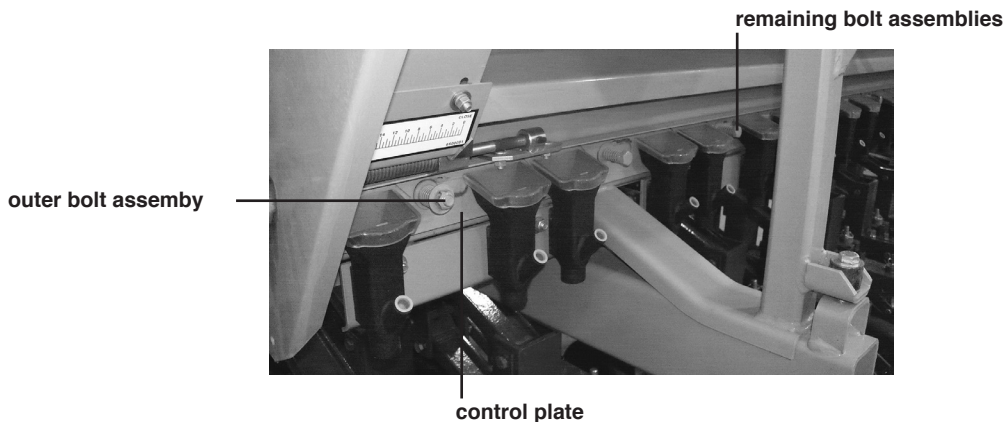
depth adjustment washer for serial numbers 401 and up

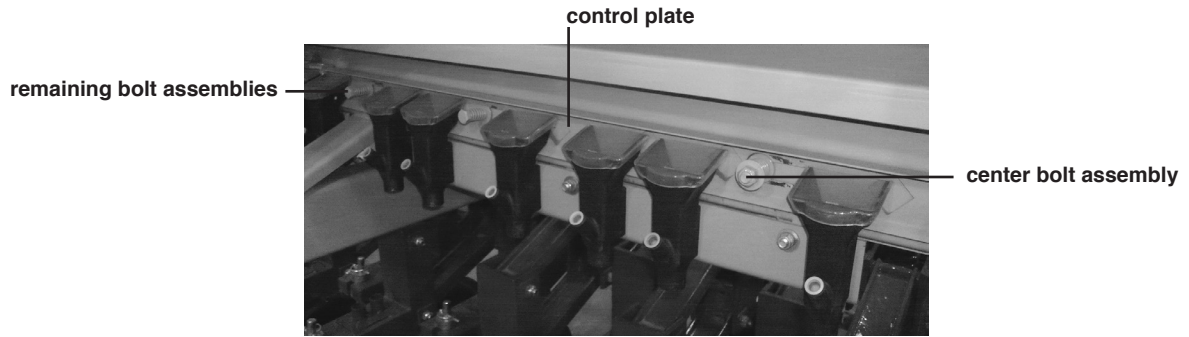
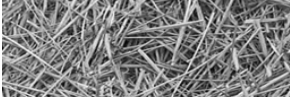


One complete turn changes points A and B (DWG. 1) the amount shown in DWG. 2. It takes 6 turns to bring points A and B back together.

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".

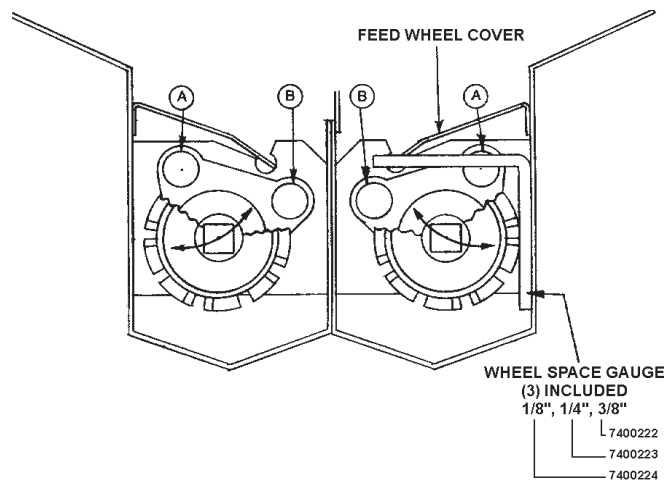




4.6 Feed Wheel Space Adjustment

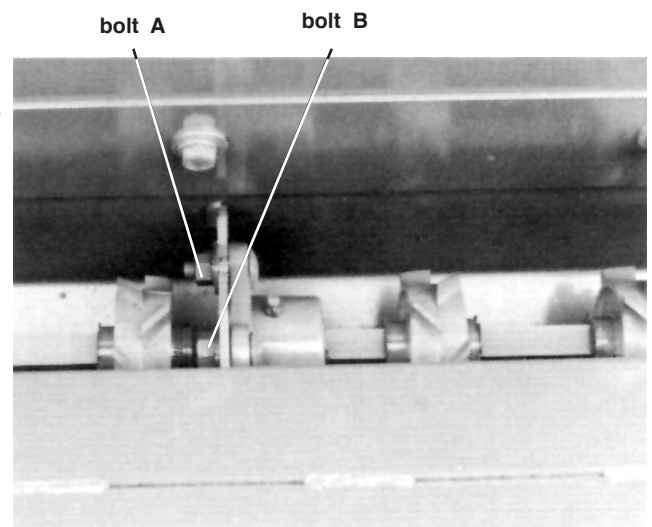
Large seeds require more space between feed wheel lugs and tank wall than small seeds to prevent cracking. Small seeds require less space to provide an even flow. Therefore each seed listed in the feed rate chart, pages 28 to 31, shows a required wheel space.

feed wheel space adjustment.



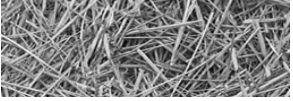
FEED WHEEL SPACE ADJUSTMENT

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.

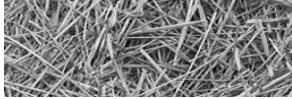


4.7 Drill Cleanout Slides

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 insure 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

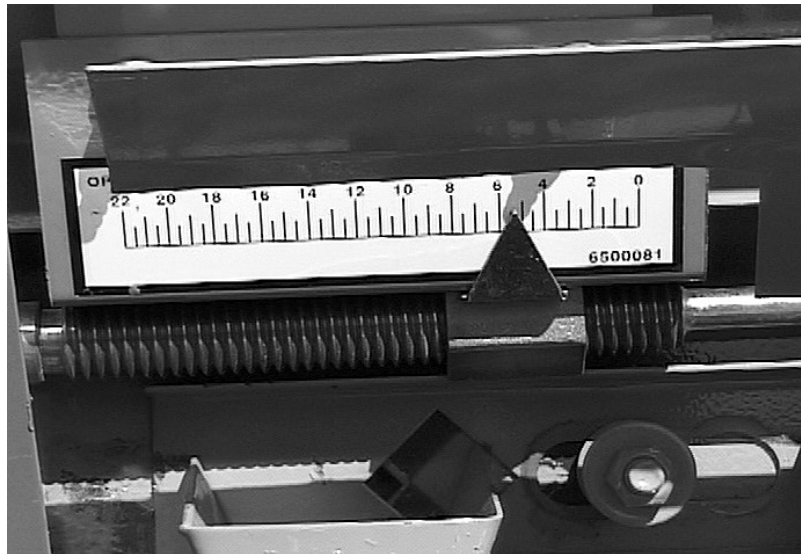
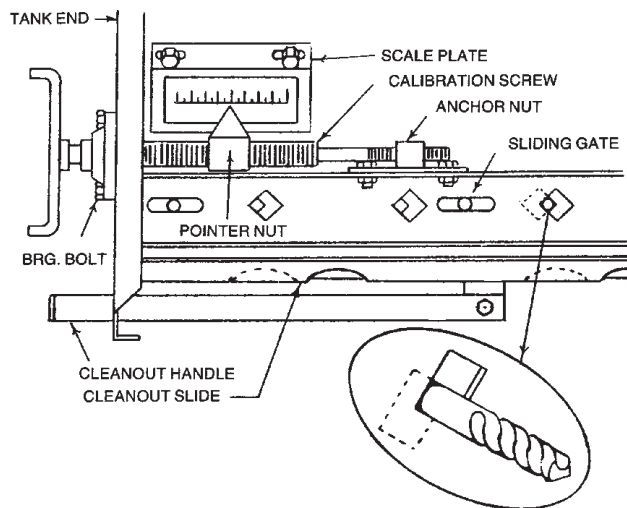
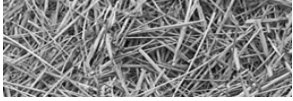


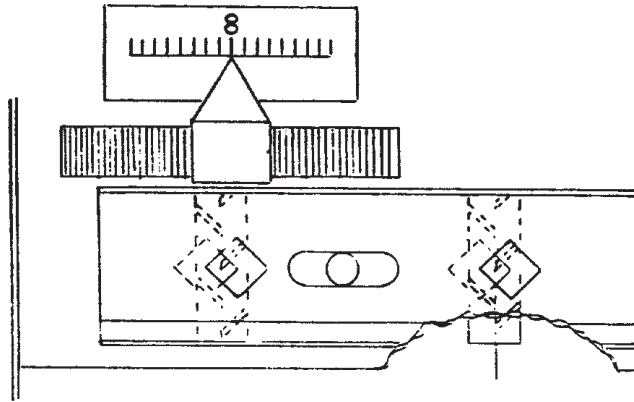
figure 4.1





4.9 SETTING AND CHECKING FEED RATE

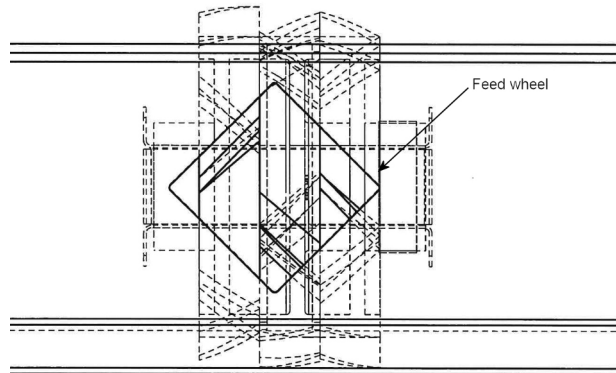
front feed wheel alignment



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.

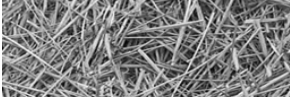
rear feed wheel alignment



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 30). 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

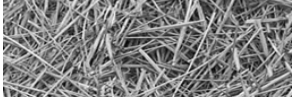
1. Measure a distance of 415' on a drill with 7" spacing and mark. Remove one hose from seed hopper on each drill. Attach a container (cloth or plastic bag) to hopper to collect seed.
2. Operate drill at intended planting speed through entire length of test track.
3. Weigh the sample in ounces (less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

7" Spacing - oz. x 11.25 = 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 ounces x 11.25 = 94.5 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.

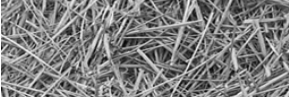
7" rows - 74,700 ft/acre

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
RYEGRASS	1/8						3.1	4.5	6.7	9.4	13.5	16.6	21.1	27.0	33.7	37.7
*FEED COVER OFF																

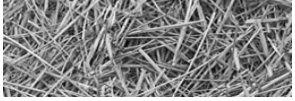
** = indicates wheel spacing

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	57.5
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

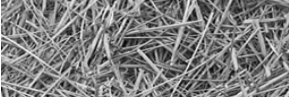


CHART FOR DRILLING LEGUMES AND SMALL GRASSES IN POUNDS PER ACRE

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
BIRDSFOOT 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.

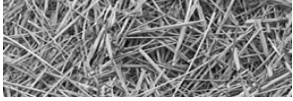
ADD INDIVIDUAL SETTINGS.

EXAMPLE:	LBS/ACRE	NOTCH
ALFALFA	5	2
SWEET CLOVER	5	2
TIMOTHY	2	1
TOTAL	_____	5

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

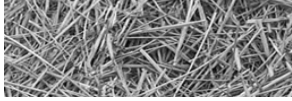
Both rear wheels are designed to swivel 90° for the purpose of transporting drills endways. Adjusting bolts are provided for aligning wheels in transport position as well as in forward position. Transport position is most critical for tire wear due to hard surface roads and faster speeds.



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

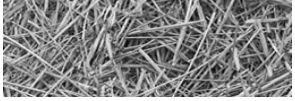
To prepare the 147C Drill for storage, perform the following steps:

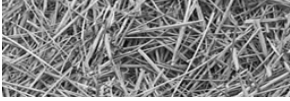
1. Install safety stop bar to keep planting units off the ground and to minimize rusting. Before drill is stored, clean out slides should be opened to remove as much seed and fertilizer as possible. Both tanks should be flushed out thoroughly to prevent any caking of seed or fertilizer. Open and close 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, please see **Section 4: Operating Instructions**.

5.1 Grass Seeding Attachments

The following attachments are available for grass seeding:

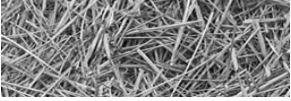
- Legume box
- Single agitator
- Double agitator
- 2" I.D. seed tubes
- Depth bands

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	*Bahagrass
*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, page 38

@ See single agitator section, page 38



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	Ladino clover	Lespedeza (Korean)
Lovegrass	Orchard grass	Red clover	Red top
Reed canarygrass	Rye grass	Serecia (unhulled)	Sweet clover
Switchgrass	Tibbet clover	Timothy	Vetch

For more information please see the Chart for drilling legumes and small grasses on page 33.

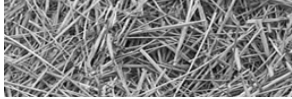
5.3 Single Agitator Applications

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 30.



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.

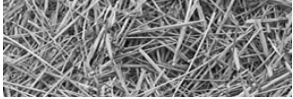
Use only a high quality, multi-purpose grease when lubricating the unit. Make sure all fittings and the nozzle of the grease applicator are clean before applying the grease. If any grease fittings are missing, replace them immediately.

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.

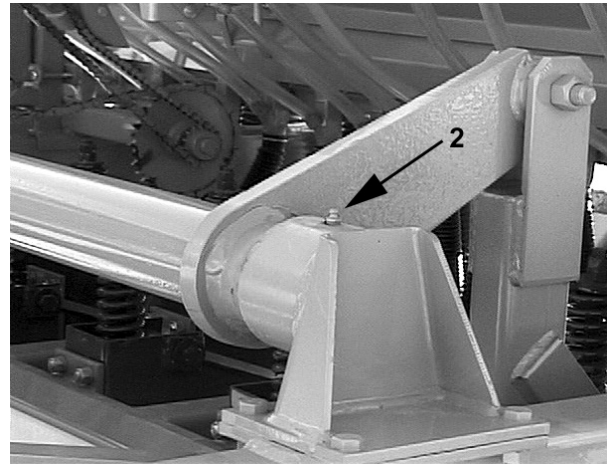
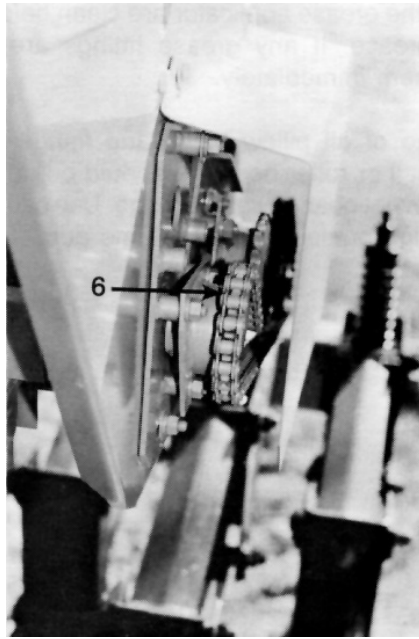
Description	Type	Frequency	No. Zerks
1. Swivel Wheel Pivot	Grease	20 Hrs.	1
2. Torque Tube Bushings	Grease	40 Hrs.	2
3. Universal Joints	Grease	40 Hrs.	2
4. Square Drive Line	Grease	40 Hrs.	2
5. Feed Wheel Shaft	Grease	100 Hrs.	8
6. Roller Chains	Oil	Daily In Dusty Conditions	
7. Tool Bar Bushing	Grease	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

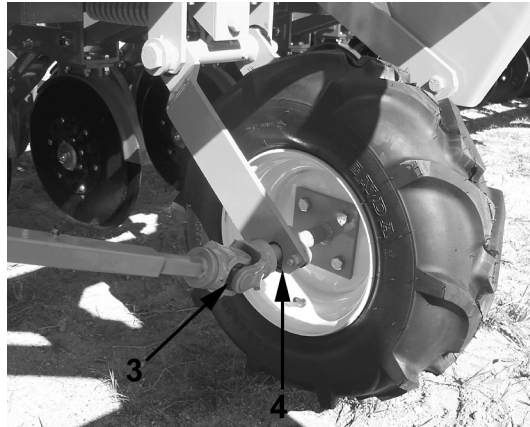




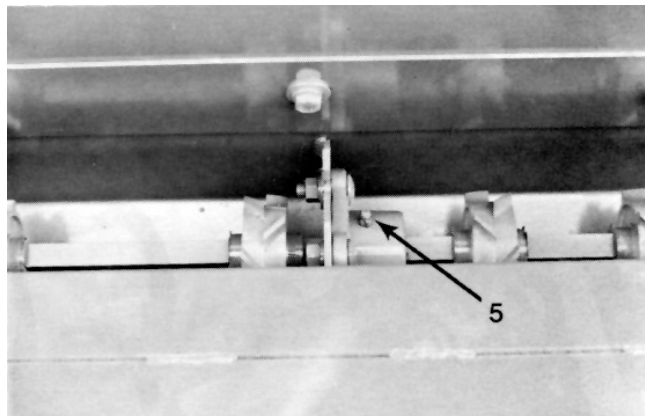
torque tube bushings
lubrication points

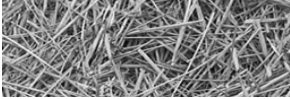


universal joints and
square drive line
lubrication zerk



feed wheel shaft
lubrication zerk





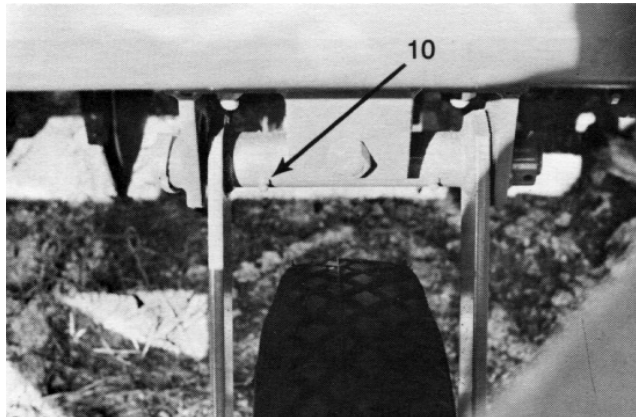
tool bar bushing
lubrication zerk



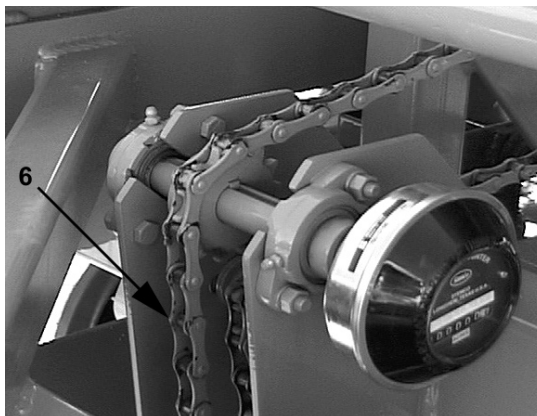
lift arm bushing
lubrication zerk

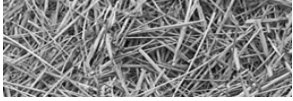


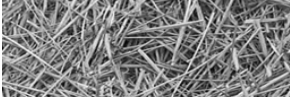
drive wheel frame
lubrication zerk



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.

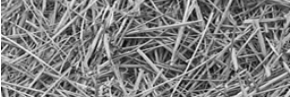
This warranty does not apply to tires or bearings or any other trade accessories not manufactured by Duratech Industries International. Buyer must rely solely on the existing warranty, if any, of these respective manufacturers.

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.

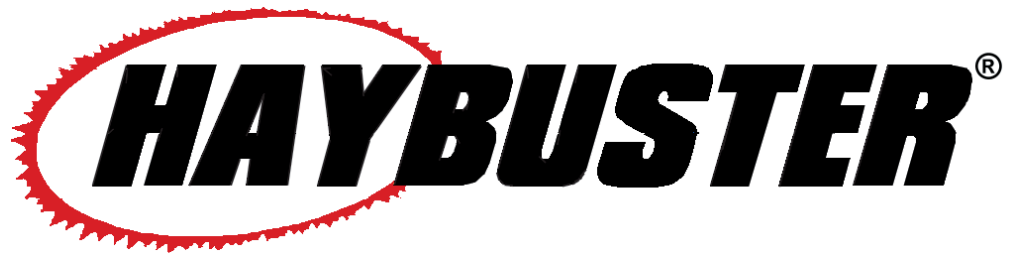
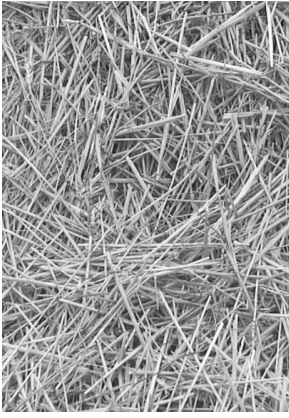
This warranty is void if Duratech Industries International does not receive a valid warranty registration card at its office in Jamestown, N.D., within 10 days from date of original purchase.

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

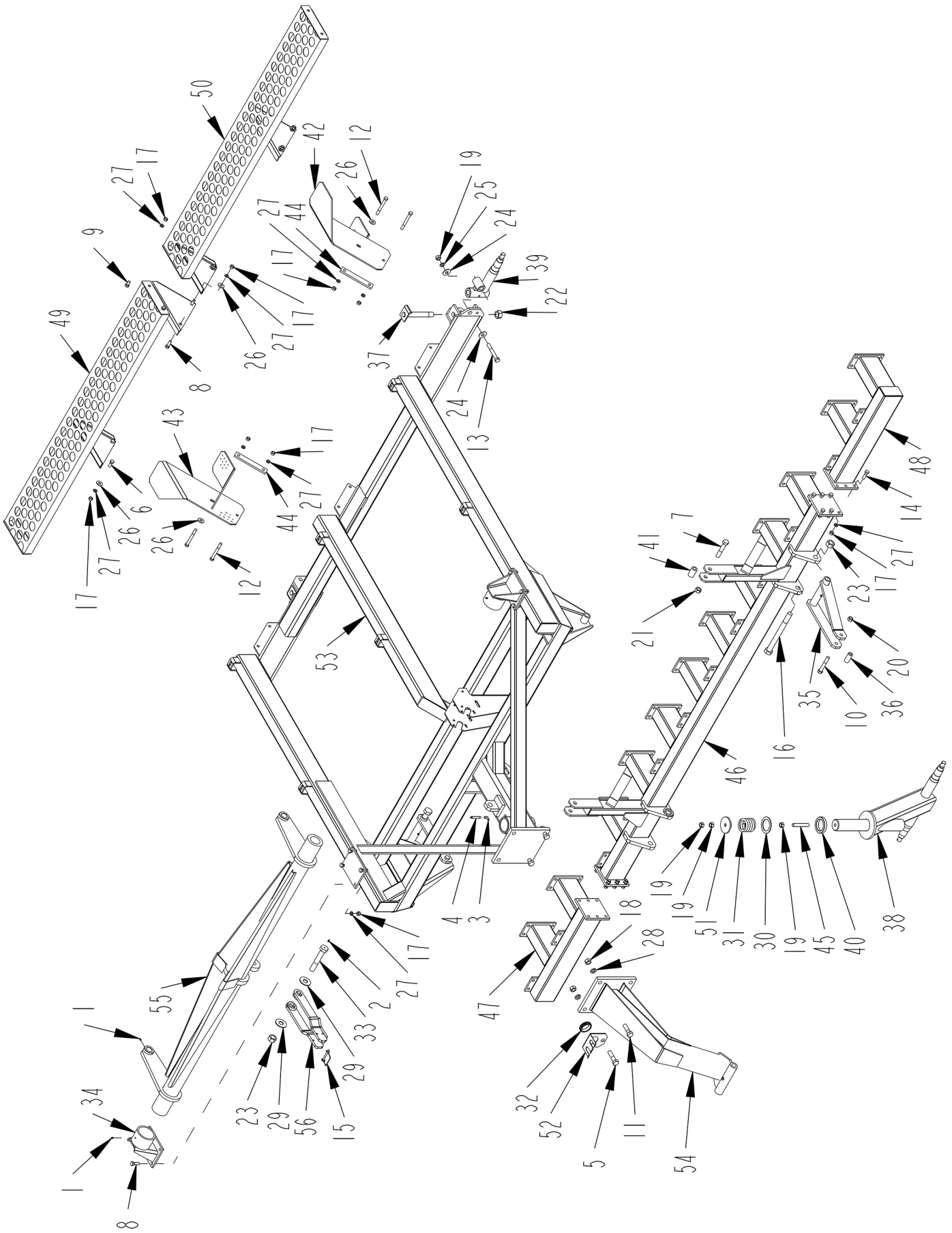


147C DRILLS

147C DRILL - S.N. 141600017C & UP

Part 2: Parts Reference

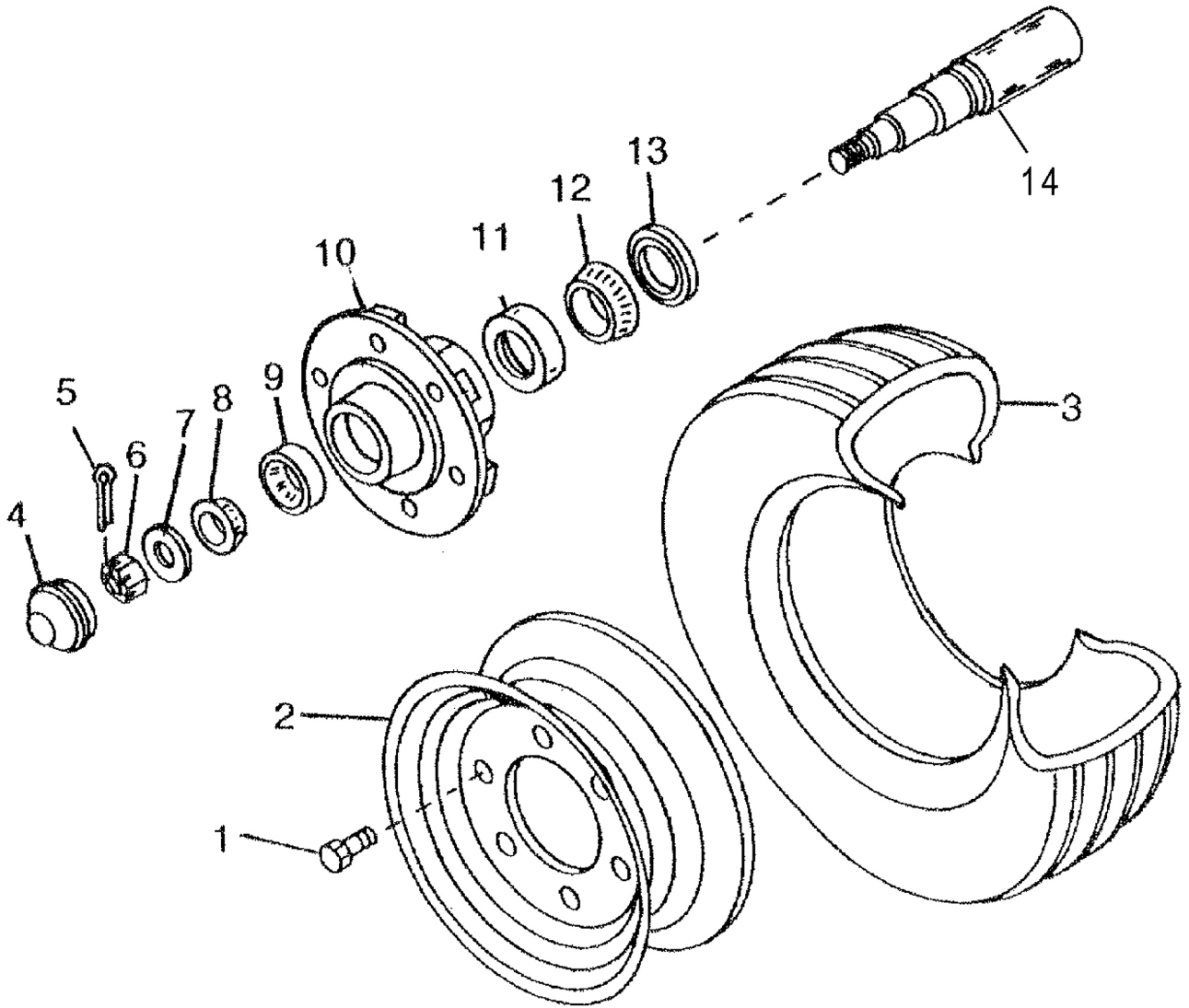
MAIN FRAME ASSEMBLY



MAIN FRAME ASSEMBLY

ITEM	PART	QTY.	PART DESCRIPTION
1	3800041	4	FTG\LUB\1/8MPXZERK\ADAPT
2	3800082	3	FTG\LUB\1/4NFXZERK\ADAPT
3	3800111	1	FTG\1/8MPX1/8FP\90\ST;EL
4	3800126	1	FTG\LUB\1/8MPXZRK\2-5/8
5	4800017	1	BOLT\HEX\3/4X3
6	4800018	4	BOLT\HEX\1/2X1-1/4
7	4800063	2	BOLT\HEX\3/4X4
8	4800082	10	BOLT\HEX\1/2X1-1/2
9	4800085	2	BOLT\HEX\1/2X1
10	4800100	2	BOLT\HEX\5/8X4
11	4800115	3	BOLT\HEX\3/4X2-1/2
12	4800141	4	BOLT\HEX\1/2X4-1/2
13	4800158	2	BOLT\HEX\5/8X4-1/2
14	4800178	12	BOLT\HEX\1/2X1-3/4
15	4800559	1	PIN\LYNCH\5/16X2-1/2\W/SQ;WIRE;KEEPER
16	4800626	2	BOLT\HEX\1X11\NC
17	4900001	32	NUT\HEX\1/2\NC
18	4900004	4	NUT\HEX\3/4\NC
19	4900005	5	NUT\HEX\5/8\NC
20	4900012	2	NUT\TPLCK\5/8\NC
21	4900013	2	NUT\TPLCK\3/4\NC
22	4900015	2	NUT\NYLCK\1\NC
23	4900127	3	NUT\TPLCK\1\NC
24	5000002	4	WASH\FLAT\5/8
25	5000003	2	WASH\LOCK\5/8
26	5000004	8	WASH\FLAT\1/2
27	5000006	32	WASH\LOCK\1/2
28	5000012	4	WASH\LOCK\3/4
29	5000014	2	WASH\FLAT\1
30	5000054	1	WASH\MACH\1/2IDX10GA
31	6100045	1	SPG\COMP\2-1/2ID\7/16WDX2-9/16L
32	7500858	1	GRMT\RBBR\2-1/4X2IDX1/4T
33	8401007	1	BOLT\HEX\1X6\CS\GREESE
34	8400036	2	TUBE\TORQUE\PIVOT
35	8400038	2	ARM\LIFT
36	8400039	2	BUSH\ARM\LIFT\1X5/8X2-1/8
37	8400042	2	BOLT\PIVOT\REAR\WHL
38	8400133	1	FRM\WHL\SWIVEL\DUAL\147
39	8400134	2	SPNDL\REAR\WHL\147-ONLY
40	8400147	1	WASH\THRUST\2-1/2X3-1/2X1/2\STL\SWIVEL;WHEEL\147
41	8400150	2	BUSH\TOOL_BAR\1-1/4X3/4X2
42	8400155	1	STEP\REAR\LH
43	8400156	1	STEP\REAR\RH\147C
44	8400157	2	STRAP\REAR\STEP;MOUNT\147C
45	8400282	1	ROD\THRDD\5/8X4
46	8400290	1	CNTR\TOOLBAR\147C
47	8400291	1	STUB\RIGHT\TOOLBAR\147C
48	8400292	1	STUB\LEFT\TOOLBAR\147C
49	8400293	1	WLKWY\LH\147C
50	8400294	1	WLKWY\RH\147C
51	8400296	1	CAP\RECESSED\WHL\SWIVEL\147
52	8400785	1	BRK\HOSE\MINDER
53	8400898	1	MNFRM\147C
54	8400899	1	GOOSENECK\147C
55	8400900	1	TUBE\TORQUE
56	8400901	1	STOP\CYL\PVT

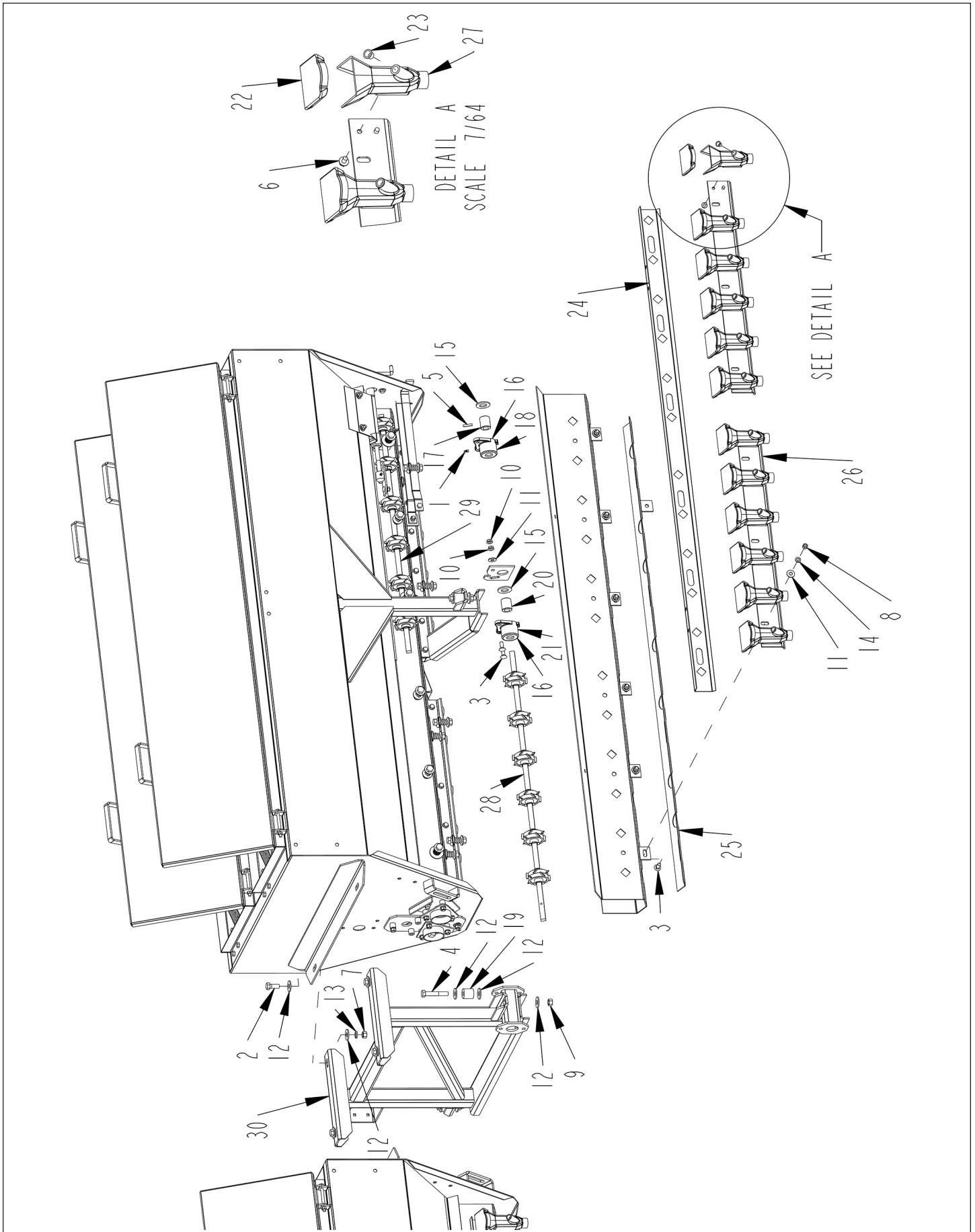
WHEEL AND BEARING



WHEEL AND BEARING

ITEM	PART	QTY.	PART DESCRIPTION
1	2900012	6	Wheel Bolts, Per Hub
2	2600601	1	WHL\6-BOLT\14X8
3	2600013	1	TIRE\9.5LX14\8PLY
2&3	2600825		WHL\IMP\9.5X14\TIRE&RIM
4	2900013	1	Cap
5	4800044	1	Pin\Cot\5/32 x 1-1/2
6	4900054	1	Nut, Spindle
7	5000055	1	Washer, 7/8 Flat
8	2900018	1	Cone, Outer
9	2900004	1	Cup, Outer
10	N.A.	1	Order 2900069
11	2900006	1	Cup, Inner
12	2900007	1	Cone, Inner
13	2900008	1	Grease Seal
14			See "Main Frame Assembly"
	2900069	1	Hub Complete

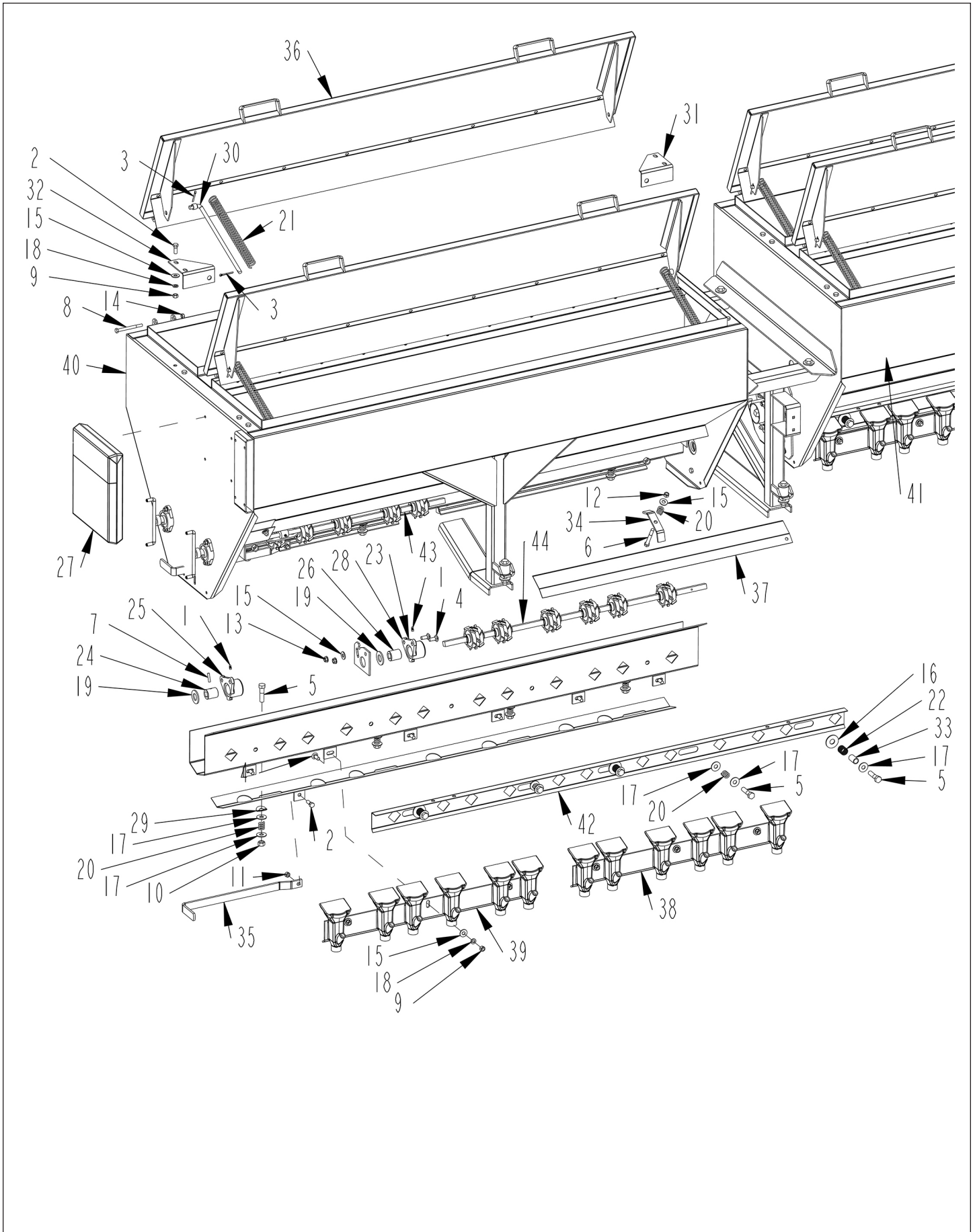
TANK ASSEMBLY - FRONT



TANK ASSEMBLY - FRONT

ITEM	PART	QTY.	PART DESCRIPTION
1	3800082	8	FTG\LUB\1\4NFXZERK\ADAPT
2	4800018	4	BOLT\HEX\1\2X1-1\4
3	4800053	42	BOLT\CRG\3\8X1\NC
4	4800068	6	BOLT\HEX\1\2X3
5	4800169	4	PIN\RLLD\1\4X1-1\8
6	4801296	96	BOLT\FLG\SERR\5\16X1\2
7	4900001	4	NUT\HEX\1\2\NC
8	4900002	58	NUT\HEX\3\8\NC
9	4900014	40	NUT\TPLCK\1\2\NC
10	4900076	16	NUT\FLG\SERR\3\8\NC
11	5000001	72	WASH\FLAT\3\8
12	5000004	26	WASH\FLAT\1\2
13	5000006	4	WASH\LOCK\1\2
14	5000019	58	WASH\LOCK\3\8
15	5000055	8	WASH\SPINDLE\7\8
16	7500108	8	HSG\CAST\BUSH\TANK\DRILL
17	7500109	4	SLV\SQ_HL\5\8X1-7\16\W\5\16_THRU_HL
18	7500110	4	SUP\SHFT\ASSY\SLEEVE\107
19	7500134	6	GROM 1.25ODX 17\32IDX1.25
20	7500562	4	SLV\SQ_HL\5\8X1-7\16\W\5\16_PLAIN
21	7501058	4	SUP\SHFT\ASSY\SLEEVE\107
22	7501401	48	FNNL\COVER\SEED\SMALL\77-107
23	7501444	48	#5\CAPLUG
24	8400304	2	PL\CNTRL\7\FRNT\147C
25	8400305	4	CLEANOUT\TANK
26	8400765	4	MNT\SEEDCUP\FRONT\GRAINTANK
27	8400771	4	CUP\SEED\CNTR\FRNT\ASM
28	8400890	2	WHL\FEED\2S\37-3\8\DRIVE
29	8400894	2	WHL\FEED\2S\33\FREE
30	8400896	1	MNT\TANK\CENTER\147

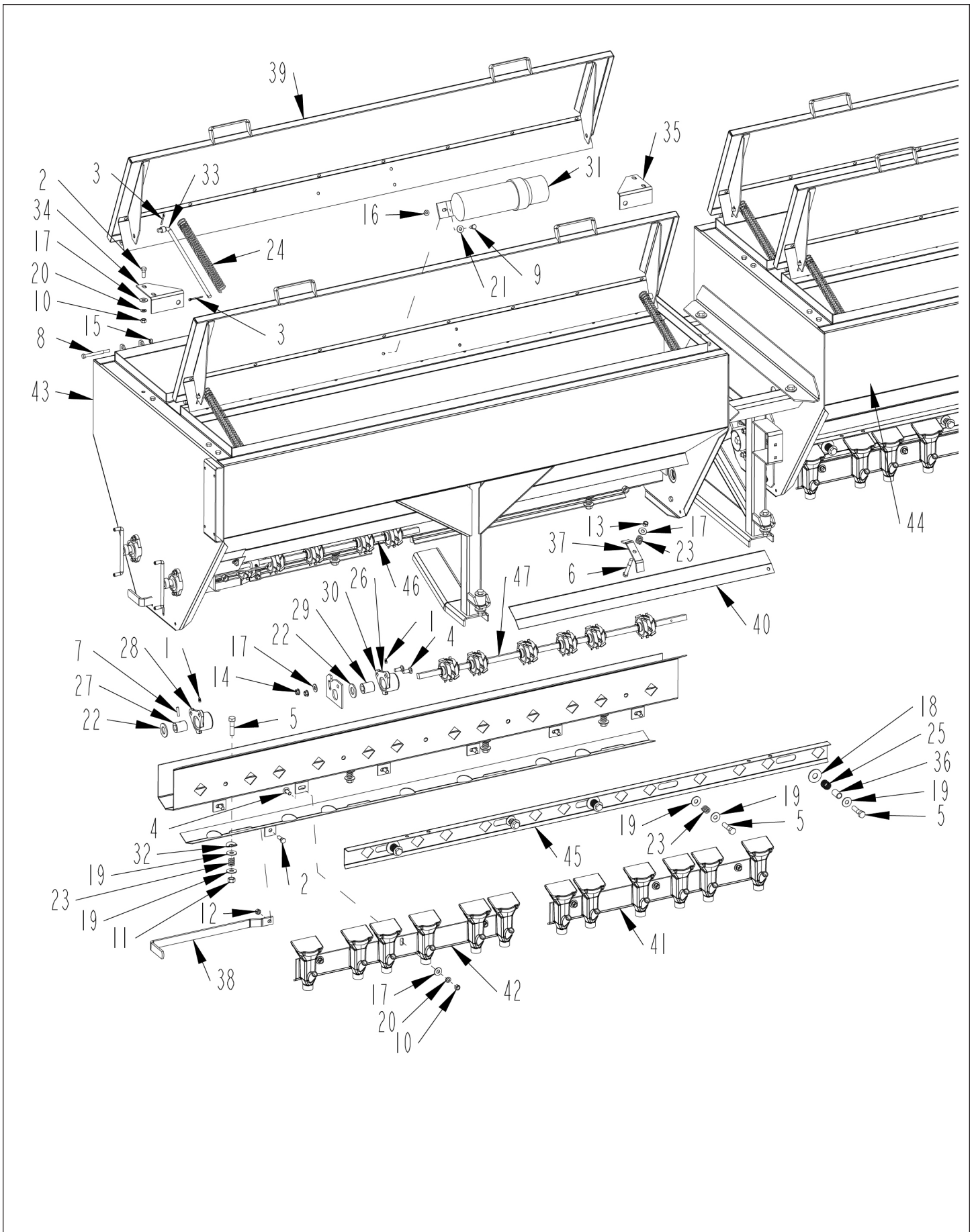
TANK ASSEMBLY - BACK THRU S.N. 0060



TANK ASSEMBLY - BACK THRU S.N. 0060

ITEM	PART	QTY.	PART DESCRIPTION
1	3800082	8	FTG\LUB\1/4NFXZERK\ADAPT
2	4800003	22	BOLT\HEX\3/8X1
3	4800044	16	PIN\COT\5/32X1-1/2
4	4800053	42	BOLT\CRG\3/8X1\NC
5	4800114	38	BOLT\HEX\1/2X2
6	4800156	8	BOLT\HEX\3/8X3
7	4800169	4	PIN\RLLD\1/4X1-1/8
8	4800170	8	BOLT\HEX\5/16X3-1/2
9	4900002	58	NUT\HEX\3/8\NC
10	4900014	40	NUT\TPLCK\1/2\NC
11	4900023	4	NUT\TPLCK\3/8\NC
12	4900030	8	NUT\NYLCK\3/8\NC
13	4900076	16	NUT\FLG\SERR\3/8\NC
14	4900099	8	NUT\TPLCK\5/16\GR8\NC
15	5000001	72	WASH\FLAT\3/8
16	5000002	12	WASH\FLAT\5/8
17	5000016	64	WASH\FLAT\7/16
18	5000019	58	WASH\LOCK\3/8
19	5000055	8	WASH\SPINDLE\7/8
20	6100002	34	SPRING\COMP\.072W\11/16OD\2-1/8LONG
21	6100017	8	PRESSURE SPRING 12X1 1/8
22	6100031	12	SPRING\COMP\.072W\25/32OD
23	7500108	8	HSG\CAST\BUSH\TANK\DRILL
24	7500109	4	SLV\SQ_HL\5/8X1-7/16W/5/16_THRU_HL
25	7500110	4	SUP\SHFT\ASSY\SLEEVE\107
26	7500562	4	SLV\SQ_HL\5/8X1-7/16W/5/16_PLAIN
27	7500590	1	ENCL\OPS\8-1/2X11X1-5/8
28	7501058	4	SUP\SHFT\ASSY\SLEEVE\107
29	8300236	16	WASH\BENT\1/2"
30	8400003	8	ROD\COV\TANK\SPG
31	8400005	4	RTNR\TANK\COVER\SPG
32	8400004	4	RTNR\TANK\COVER\SPG
33	8400007	12	GUIDE\PL\CNTRL\107
34	8400011	8	CLMP\WHL\COV\HOLD DOWN
35	8400112	4	HDL\PL_CLEANOUT
36	8400303	4	LID\TANK
37	8400306	8	COV\WHL\FEED\147\
38	8400773	2	CUP\SEED\CNTR\REAR\ASM
39	8400774	2	CUP\SEED\CNTR\REAR\ASM
40	8400884	1	TANK\WLDMNT\LH\147C
41	8400885	1	TANK\RH\147
42	8400886	2	PL\CNTRL\7"IN-GRASS\147C
43	8400891	2	WHL\FEED\3S\33\FREE
44	8400892	2	WHL\FEED\3S\37-3/8\DRIVE

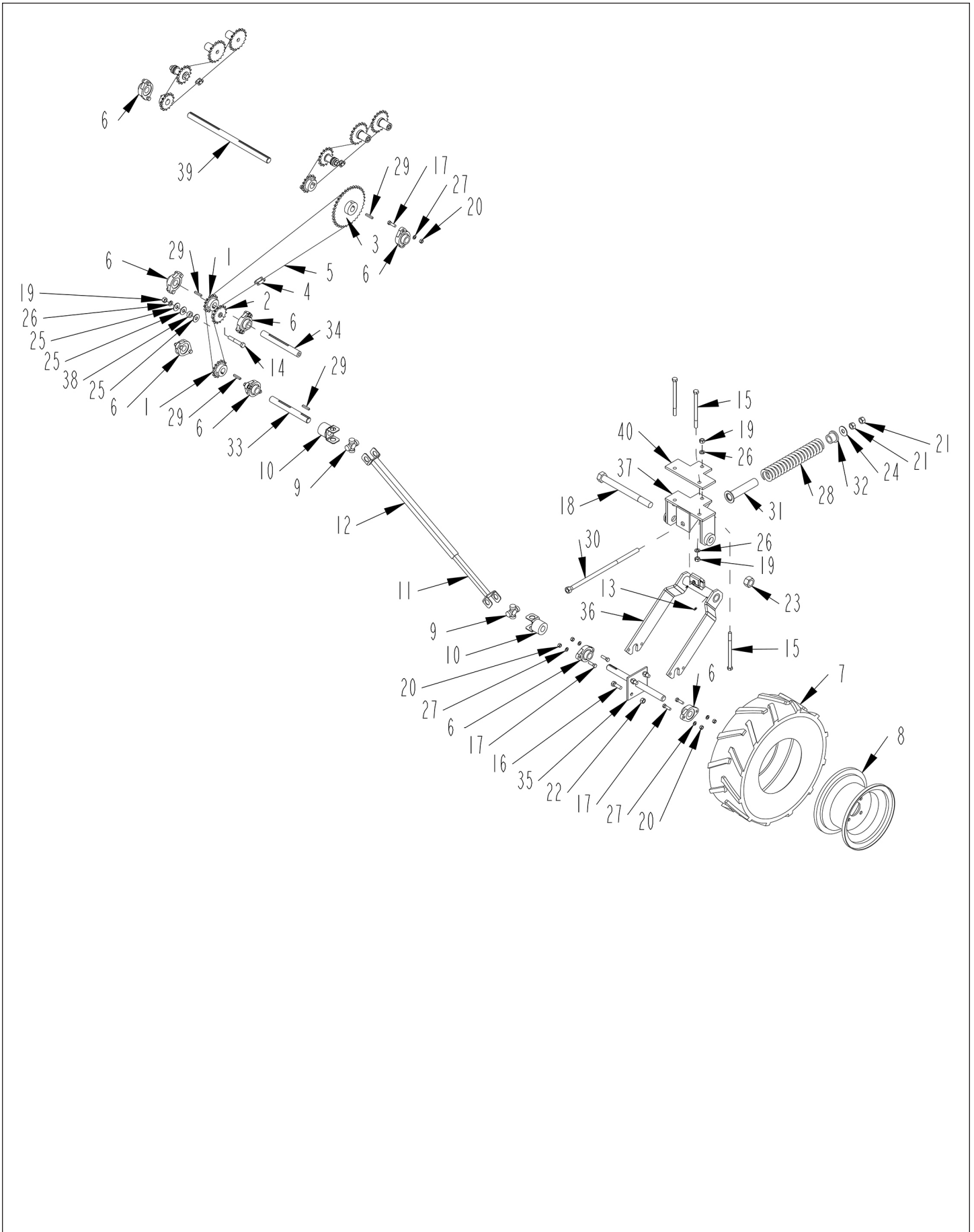
TANK ASSEMBLY - BACK S.N. 0061 AND UP



TANK ASSEMBLY - BACK S.N. 0061 AND UP

ITEM	PART	QTY.	PART DESCRIPTION
1	3800082	8	FTG\LUB\1/4NFXZERK\ADAPT
2	4800003	22	BOLT\HEX\3/8X1
3	4800044	16	PIN\COT\5/32X1-1/2
4	4800053	42	BOLT\CRG\3/8X1\NC
5	4800114	38	BOLT\HEX\1/2X2
6	4800156	8	BOLT\HEX\3/8X3
7	4800169	4	PIN\RLLD\1/4X1-1/8
8	4800170	8	BOLT\HEX\5/16X3-1/2
9	4800643	3	BOLT\HEX\5/16X3/4
10	4900002	58	NUT\HEX\3/8\NC
11	4900014	40	NUT\TPLCK\1/2\NC
12	4900023	4	NUT\TPLCK\3/8\NC
13	4900030	8	NUT\NYLCK\3/8\NC
14	4900076	16	NUT\FLG\SERR\3/8\NC
15	4900099	8	NUT\TPLCK\5/16\GR8\NC
16	4900108	3	NUT\FLG\SERR\5/16\NC
17	5000001	72	WASH\FLAT\3/8
18	5000002	12	WASH\FLAT\5/8
19	5000016	64	WASH\FLAT\7/16
20	5000019	58	WASH\LOCK\3/8
21	5000023	27	WASH\FLAT\5/16
22	5000055	8	WASH\SPINDLE\7/8
23	6100002	34	SPRING\COMP\.072W\11/16OD\2-1/8LONG
24	6100017	8	PRESSURE SPRING 12X1 1/8
25	6100031	12	SPRING\COMP\.072W\25/32OD
26	7500108	8	HSG\CAST\BUSH\TANK\DRILL
27	7500109	4	SLV\SQ_HL\5/8X1-7/16W\5/16_THRU_HL
28	7500110	4	SUP\SHFT\ASSY\SLEEVE\107
29	7500562	4	SLV\SQ_HL\5/8X1-7/16W\5/16_PLAIN
30	7501058	4	SUP\SHFT\ASSY\SLEEVE\107
31	7501628	1	CNSTRS\MANUAL\12X3.5
32	8300236	16	WASH\BENT\1/2"
33	8400003	8	ROD\COV\TANK\SPG
34	8400004	4	RTNR\TANK\COVER\SPG\LH
35	8400005	4	RTNR\TANK\COVER\SPG\RH
36	8400007	12	GUIDE\PL\CNTRL\107
37	8400011	8	CLMP\WHL\COV\HOLD DOWN
38	8400112	4	HDL\PL_CLEANOUT
39	8400303	4	LID\TANK
40	8400306	8	COV\WHL\FEED\147\
41	8400773	2	CUP\SEED\CNTR\LT\REAR\ASM
42	8400774	2	CUP\SEED\CNTR\RT\REAR\ASM
43	8400884	1	TANK\WLDMNT\LH\147C
44	8400885	1	TANK\RH\147
45	8400886	2	PL\CNTRL\7"IN-GRASS\147C
46	8400891	2	WHL\FEED\3S\33\FREE
47	8400892	2	WHL\FEED\3S\37-3/8\DRIVE

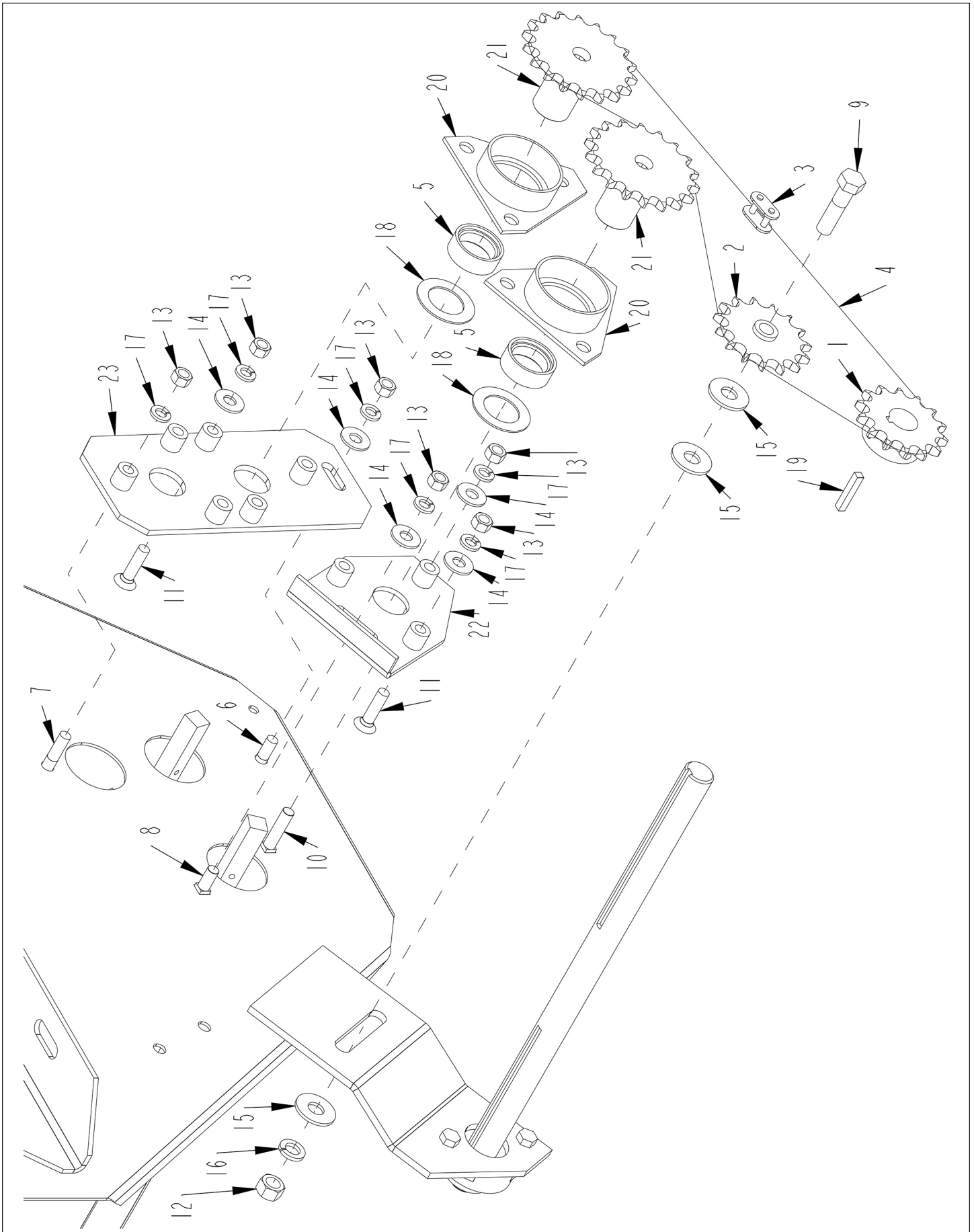
DRIVE ASSEMBLY



DRIVE ASSEMBLY

ITEM	PART	QTY.	PART DESCRIPTION
1	1000029	4	SPKT\50\B\14\1\1/4KW
2	1000039	3	SPKT\50\15\1/2\IDLER
3	1000075	1	SPKT\50\B\36\1\1/4KW
4	1100230	1	CHAIN\A2050NP\CL
5	1100283	1	CHAIN\2050NP\87
6	2000310	8	BRG\FLG\CAST\1\2BOLT
7	2600055	1	TIRE\4.8X12\LUG\4PLY
8	2600651	1	WHL\12X4\4HL\RIM
	2600865		WHL\ASSY\20X8-10\4HL\4CRL (INCLUDES #7 & #8)
9	3600008	2	CROSS BEARING KIT
10	3600242	2	1" YOKE
11	3600253	1	MALE HALF FOR 3600241
12	3600254	1	FEMALE HALF FOR 3600241
	3600241		SHFT\DRV\CMPLT\TR6NA (INCLUDES #9, #10, #11, & #12)
13	3800082	2	FTG\LUB\1/4NFXZERK\ADAPT
14	4800068	1	BOLT\HEX\1/2X3
15	4800080	3	BOLT\HEX\1/2X7
16	4800082	4	BOLT\HEX\1/2X1-1/2
17	4800098	16	BOLT\HEX\3/8X1-1/4\NC
18	4800626	1	BOLT\HEX\1X11\NC
19	4900001	4	NUT\HEX\1/2\NC
20	4900002	16	NUT\HEX\3/8\NC
21	4900005	3	NUT\HEX\5/8\NC
22	4900014	4	NUT\PLCK\1/2\NC
23	4900015	1	NUT\NYLCK\1\NC
24	5000002	1	WASH\FLAT\5/8
25	5000004	3	WASH\FLAT\1/2
26	5000006	4	WASH\LOCK\1/2
27	5000019	16	WASH\LOCK\3/8
28	6100032	1	SPG\COMP\2.81OD\406WD>
29	6200005	4	KEY\SQ\1/4X1-1/2
30	8400024	1	ROD\SPRG\WHL\DR
31	8400025	1	GUIDE\SPRING\LONG
32	8400026	1	GUIDE\SPRING\SHORT
33	8400415	1	SHFT\1ST\1X8-3/4\1000
34	8400446	1	SHFT\1X8-1/2\ACRECTR
35	8400792	1	SHFT\DR\WHL\13"
36	8400793	1	BRKT\FRK\WHL\DRV\16-1/2X10-1/8
37	8400797	1	FRM\WHL\DR\WELD
38	8400805	1	SPCR\DRV\1ODX3/8
39	8400806	1	SHFT\DR\TANK\1X18-9/16
40	8400023	2	PL\MNT\WHL\DR

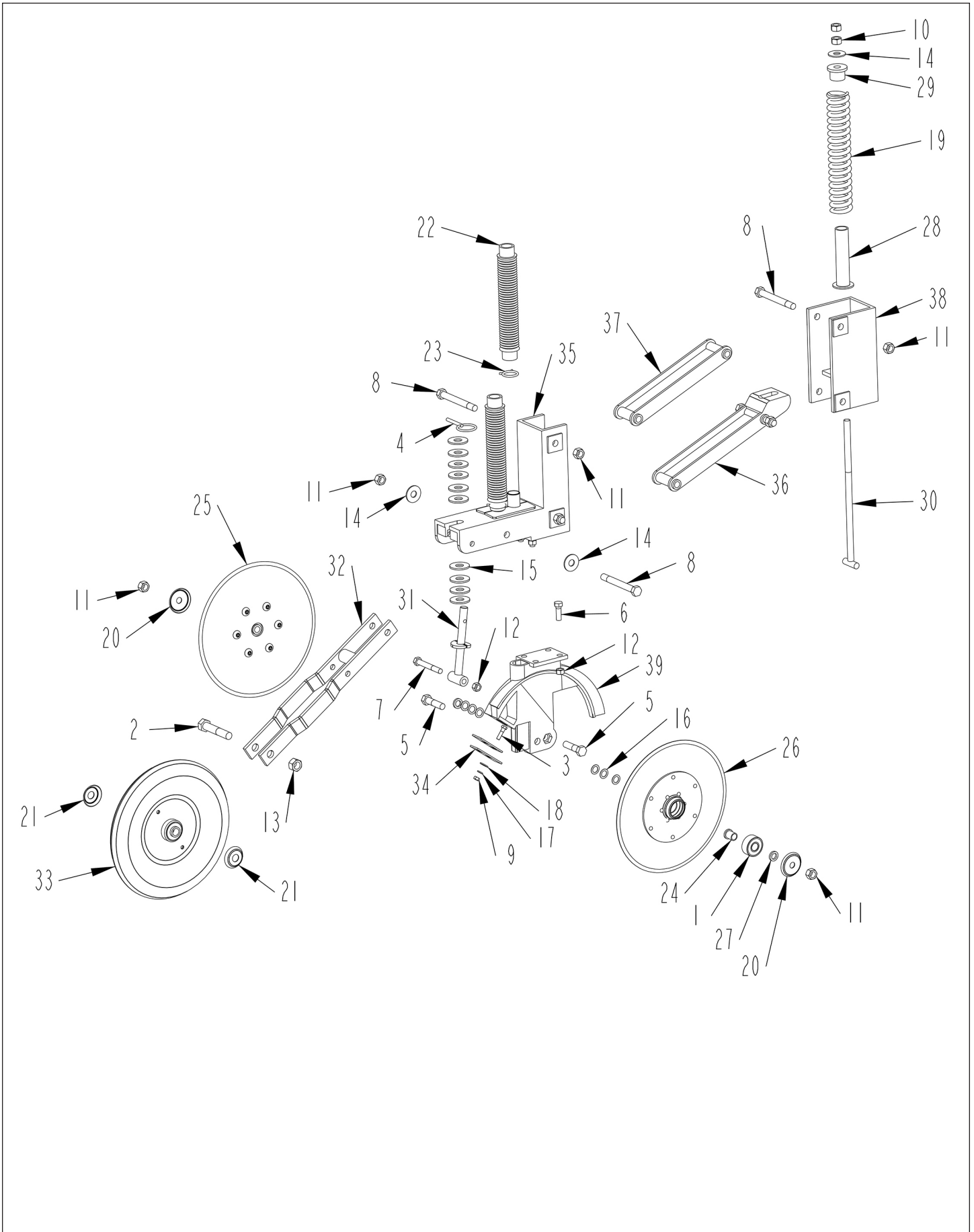
TANK END DRIVE ASSEMBLY



TANK END DRIVE ASSEMBLY

ITEM	PART	QTY.	PART DESCRIPTION
1	100029	2	SPKT\50\B\14\1\1/4KW
2	100039	2	SPKT\50\15\1/2\IDLER
3	1100227	2	CHAIN\50NP\CL
4	1100234	2	CHAIN\50NP\73
5	2000824	4	CLLR\BRG\1-1/4 - FOR 8400070
6	4800003	2	BOLT\HEX\3/8X1
7	4800034	2	BOLT\HEX\3/8X1-1/2
8	4800053	2	BOLT\CRG\3/8X1\NC
9	4800114	2	BOLT\HEX\1/2X2
10	4800168	2	BOLT\CRG\3/8X1-3/4\NC
11	4800230	10	SCR\CSK\ALN\3/8X1-1/2\NC
12	4900001	2	NUT\HEX\1/2\NC
13	4900002	18	NUT\HEX\3/8\NC
14	5000001	16	WASH\FLAT\3/8
15	5000004	6	WASH\FLAT\1/2
16	5000006	2	WASH\LOCK\1/2
17	5000019	18	WASH\LOCK\3/8
18	5000084	4	2"PD 1-1/4ID OILITE WASHR
19	6200005	2	KEY\SQ\1/4X1-1/2
20	8400070	4	BRG\1-1/4\W\BRKT\3-HL
21	8400071	4	SPKT\DRIVE\W\SQ_HL_SLV
22	8400074	2	PL\SEAL\TANK\DRILL
23	8400242	2	PL\SEAL\TANK\107

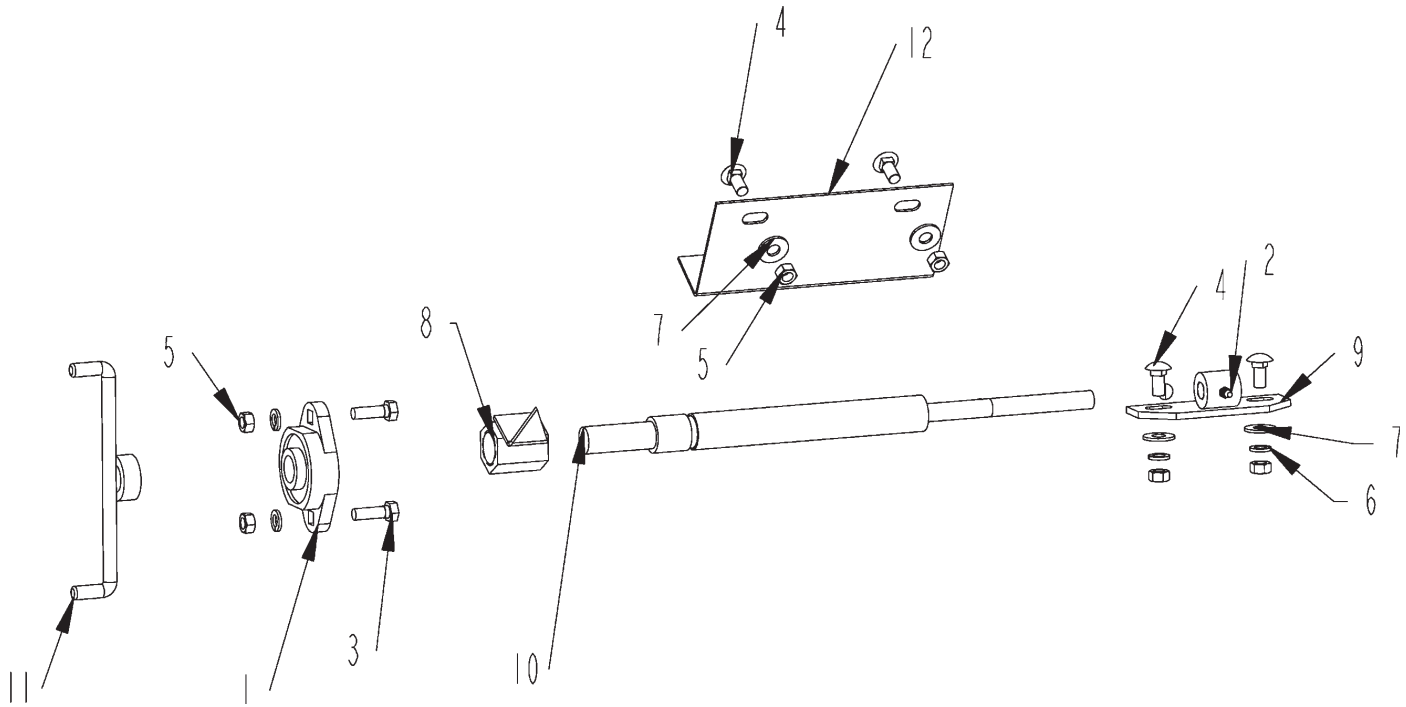
RUN ASSEMBLY



RUN ASSEMBLY

ITEM	PART	QTY.	PART DESCRIPTION
1	2000031	2	BRG\ROW\DBL
2	4800063	1	BOLT\HEX\3/4X4
3	4800071	1	BOLT\HEX\5/16X1-1/4
4	4800076	1	PIN\KLIK\5/16
5	4800079	2	BOLT\HEX\5/8X2-1/2
6	4800082	4	BOLT\HEX\1/2X1-1/2
7	4800231	1	BOLT\HEX\1/2X3-3/4
8	4800984	5	BOLT\HEX\5/8X5-1/2\SHRT\THRD
9	4900003	1	NUT\HEX\5/16\NC
10	4900005	2	NUT\HEX\5/8\NC
11	4900012	7	NUT\TPLCK\5/8\NC
12	4900014	11	NUT\TPLCK\1/2\NC
13	4900139	1	NUT\TPLCK\3/4\GR8\NC
14	5000002	3	WASH\FLAT\5/8
15	5000005	10	WASH\FLAT\3/4
16	5000009	6	WASH\1" OD\ SHIM
17	5000022	1	WASH\LOCK\5/16
18	5000023	1	WASH\FLAT\5/16
19	6100032	1	SPG\COMP\2.81OD\.406WD>
20	7400258	2	CAP\DUST
21	7400264	2	CAP\WHL\W/O_PILOT
22	7500097	2	CONVOLUTED HOSE
23	7500098	2	CLAMP\SDHOSE\1-1/4\A-24
24	7500160	2	#6610 BREAING BUSHING
25	7500187	1	BLADE\ASSY\14"\COULTER
26	7500188	1	BLADE\ASSY\DISC\14"
27	7500307	2	CAP\SPACER\BUSHING
28	8400025	1	GUIDE\SPRING\LONG
29	8400026	1	GUIDE\SPRING\SHORT
30	8400047	1	ROD\SPG\5/8X15
31	8400064	1	ROD\DEPTH\WHEEL\PACKER
32	8400271	1	BRKT\WHL\PACKER\20"
33	8400617	1	WHL\PRESS\STL\ASSY
34	8400670	2	SCRPR\DISC
35	8400692	1	FRM\RUN\LOWER\CAST
36	8400693	1	LINK\RUN\LOWER\CAST
37	8400694	1	LINK\RUN\UPPER\CAST
38	8400697	1	FRM\RUN\FR\CAST
39	8400736	1	BOOT\DR\SUB_WELD\LH\#10
39a	8400737	1	BOOT\DR\SUB_WELD\RH\#12
	8400780		RUN\DRILL\STL\RH\CAST\ASSY
	8400781		RUN\DRILL\STL\LH\CAST\ASSY

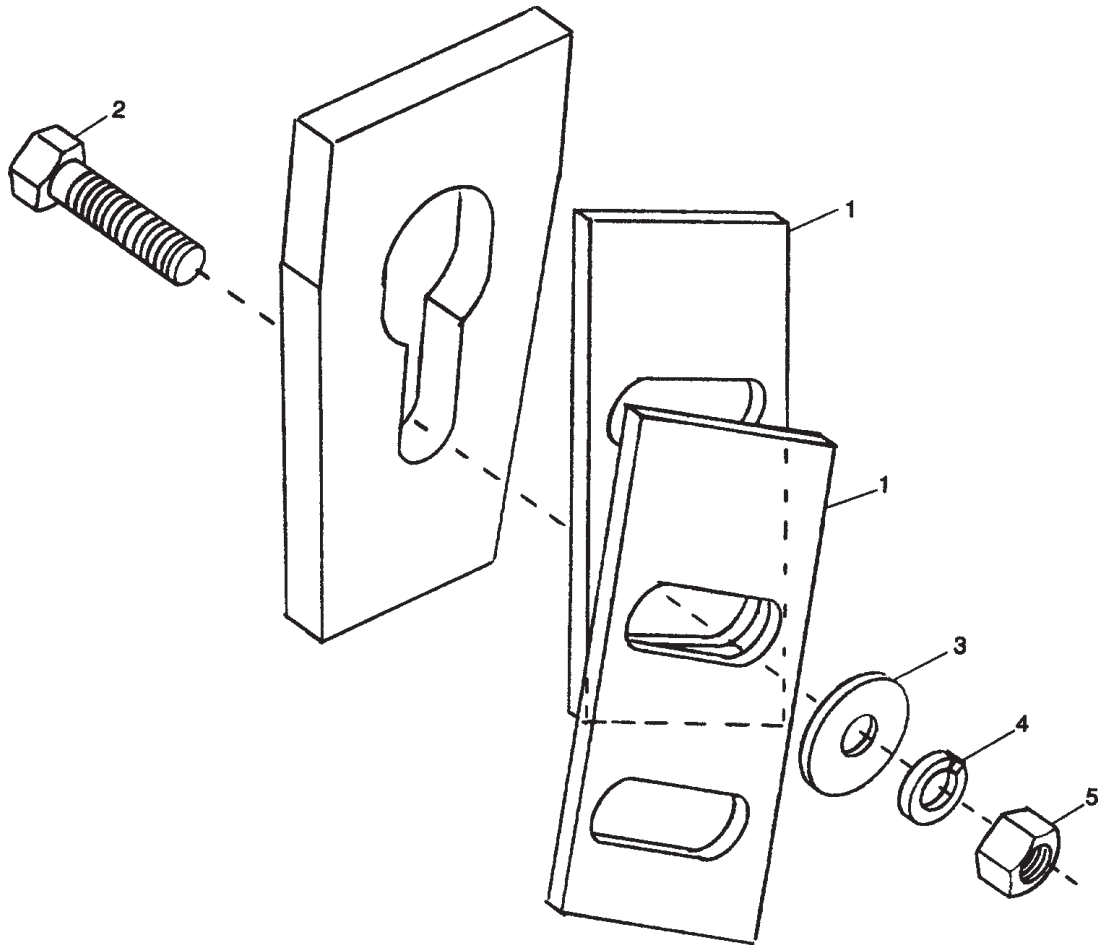
SEED & FERTILIZER SETTING ASSEMBLY



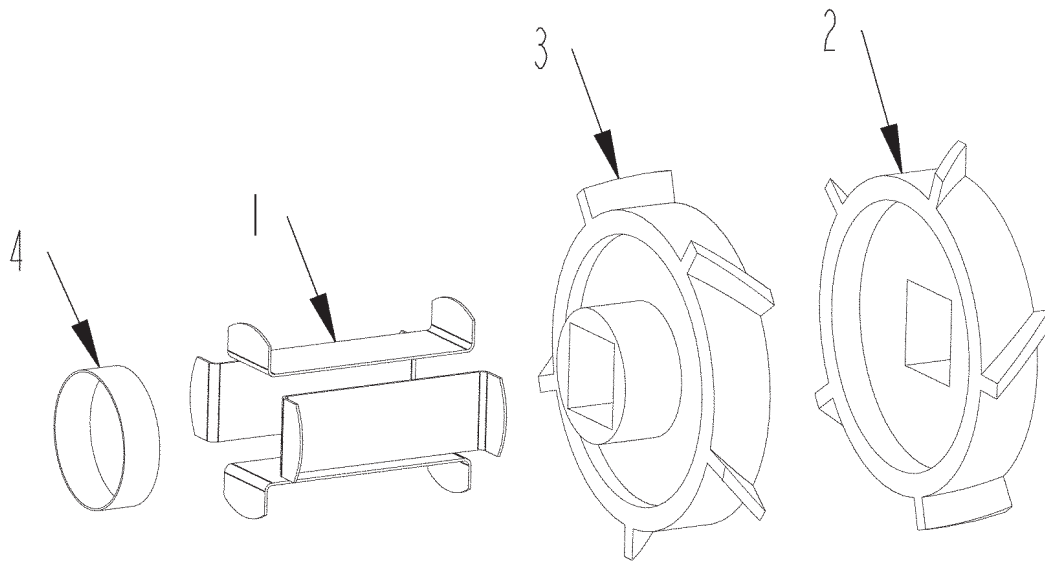
ITEM	PART	QTY.	PART DESCRIPTION
1	2000313	1	BRG\FLG\CAST\3/4\2BOLT
2	3600053	1	FTG\ZERK\STR\1/4K
3	4800013	2	BOLT\HEX\5/16X1
4	4800153	4	BOLT\CRG\5/16X3/4\NC
5	4900003	6	NUT\HEX\5/16\NC
6	5000022	4	WASH\LOCK\5/16
7	5000023	4	WASH\FLAT\5/16
8	7500071	1	CALIBRATION POINTER NUT
9	7500072	1	CALIBRATION CONTRL PL NUT
10	7500073	1	CALIBRATION SHAFT #6620
11	8400060	1	HDL\CAL\107
12	8400262	1	PL\DECAL\CAL\DUAL_USE
12A	8400061	1	PL\DECAL\CAL\GRAIN
NOT SHOWN			
	6500016		DECAL\INFO\CAL;SCALE;GRAIN
	6500017		DECAL\INFO\CAL.SCALE;FERT
	6500081		DECAL\INFO\CAL.SCALE\GRASS

SCRAPER ASSEMBLY

ITEM	PART	QTY.	PART DESCRIPTION
	840091		Scraper Assembly - Complete
1	8400670	2	Scraper\Disc
2	4800071	1	5/16" x 1-1/4" Bolt
3	5000023	1	5/16" Flat Washer
4	5000022	1	5/16" Lock Washer
5	4900003	1	5/16" Hex Nut



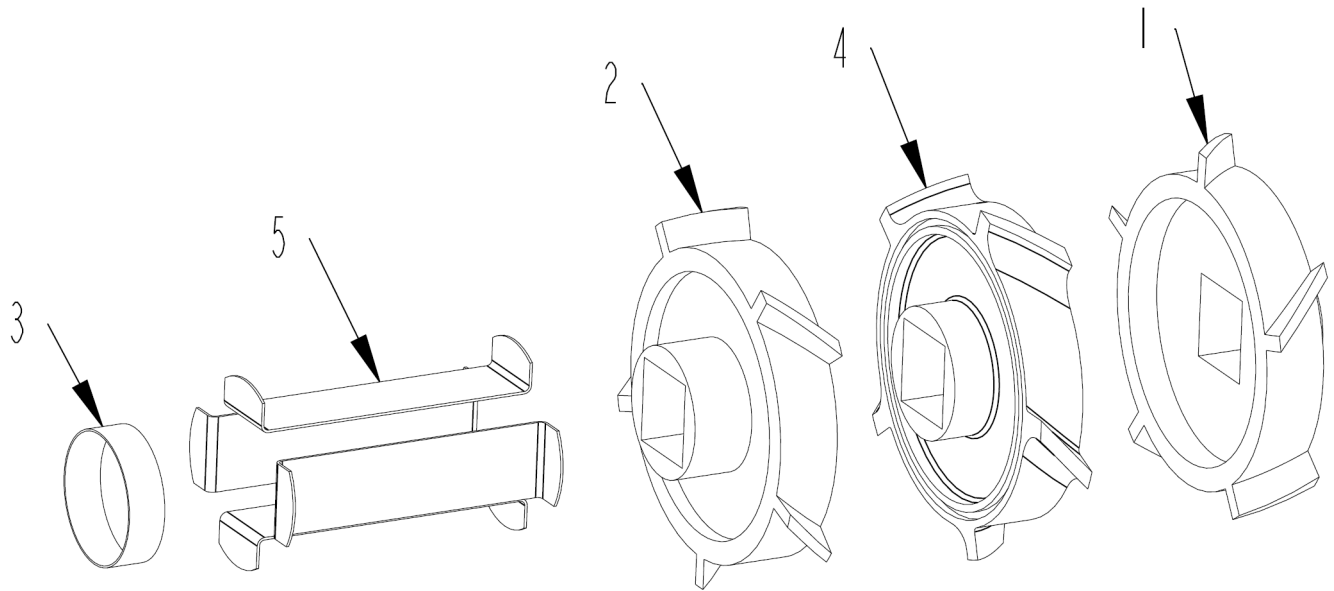
FEED WHEEL - DOUBLE



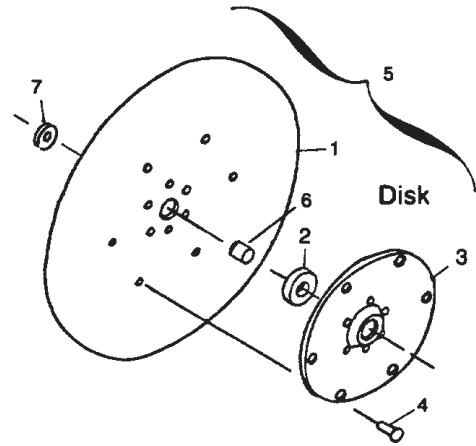
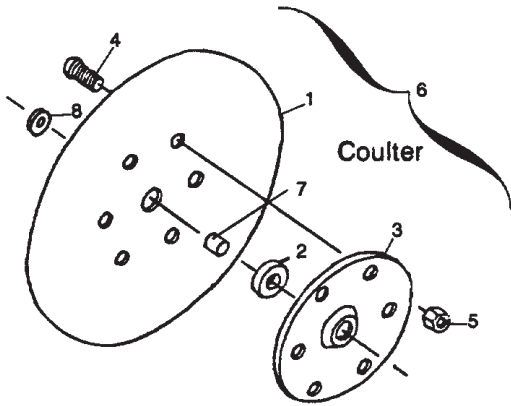
ITEM	PART	QTY.	PART DESCRIPTION
1	7400066	4	CLIP\RETAINER\WHL\FEED
2	7500007	1	WHL\FEED\LH
3	7500008	1	WHL\FEED\RH
4	7500107	1	CLMP\HOSE
	7500006		WHL\FERT\TANK(INCLUDES ALL ABOVE)

FEED WHEEL - TRIPLE

ITEM	PART	QTY.	PART DESCRIPTION
1	7500007	1	WHL\FEED\LH
2	7500008	1	WHL\FEED\RH
3	7500107	1	CLMP\HOSE
4	7501388	1	WHL\FEED\CENTER
5	7501407	4	CLIP\RETAINER\WHL\FEED\TRIPLE
	7501453		WHL\FEED\TRIPLE(INCLUDES ALL ABOVE)

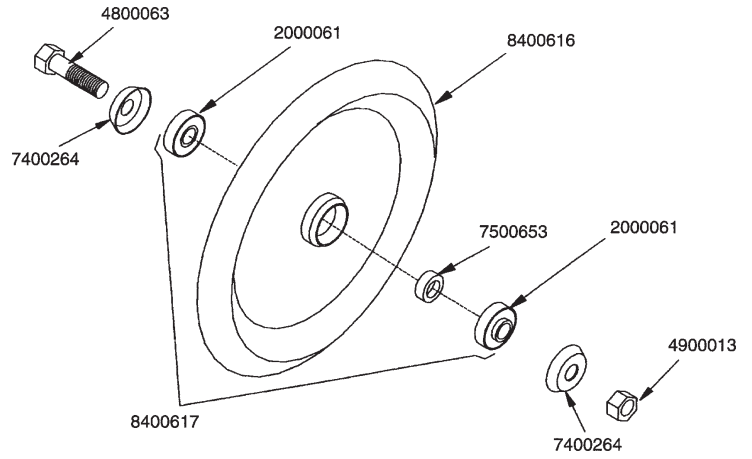


COULTER & DISK ASSEMBLY



ITEM	PART NO.	QTY.	DESCRIPTION	ITEM	PART NO.	QTY.	DESCRIPTION
1	7500064	1	Coulter, 14" - 6 Hole	1	7500010	1	Disk, 14"
2	2000031	1	Brg.	2	2000031	1	Brg.
3	7500165	1	Cage	3	7500167	1	Cage
4	4800161	6	1/2" - 13 x 1" Button Hd. Socket Screw	4	4800039	12	Rivets, 1/4" x 1/2"
5	4900014	6	Lock Nut, 1/2"	5	7500188	1	Disk (Complete)
6	7500187	1	Coulter (Complete)	6	7500160	1	Sleeve
7	7500160	1	Sleeve	7	5000009	2	Shim Washers
8	5000009	2	Shim Washer				

PRESS WHEEL ASSEMBLY



PART NO.	QTY.	DESCRIPTION
8400617		Press Wheel Assembly
2000061	2	Brg/3/4/FHR204-12
7500653	1	Spcr/Wheel/Packer/107
8400616	1	Whl/Stl; Packer/107
7400264	2	Packer Wheel Cap - No Pilot
4800063	1	Bolt\Hex\3/4 x 4
4900139	1	Nut\Toplock\3/4

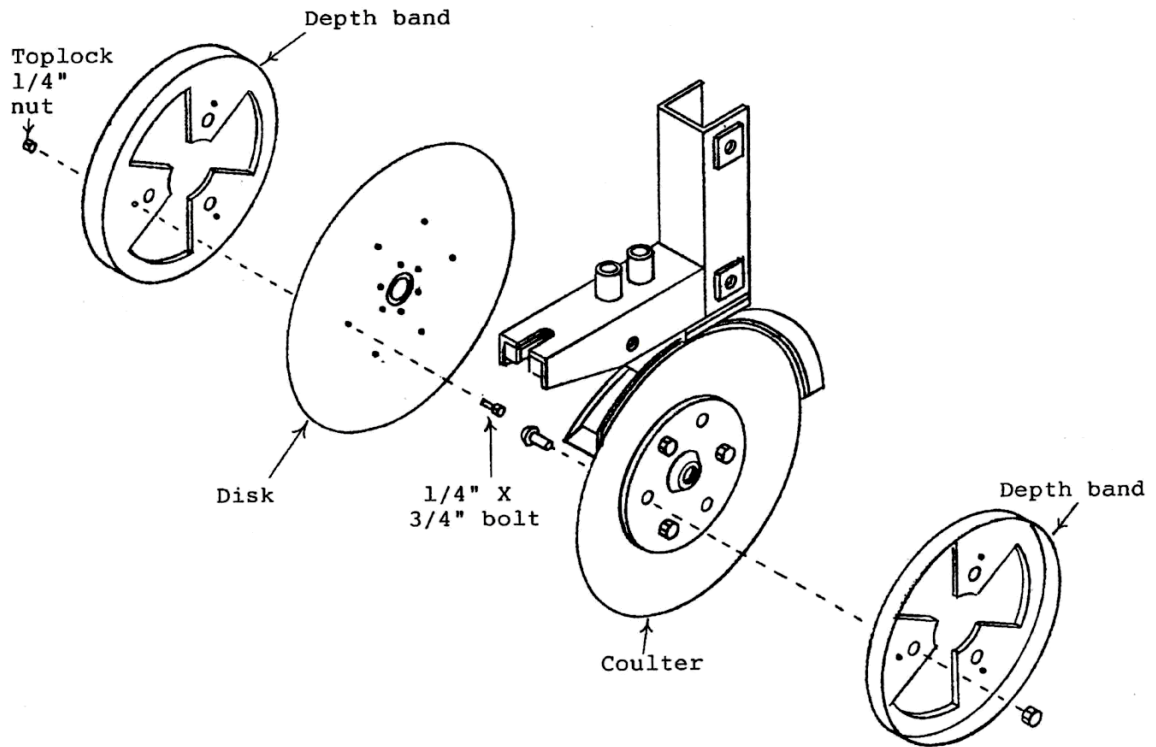


DEPTH BAND INSTALLATION

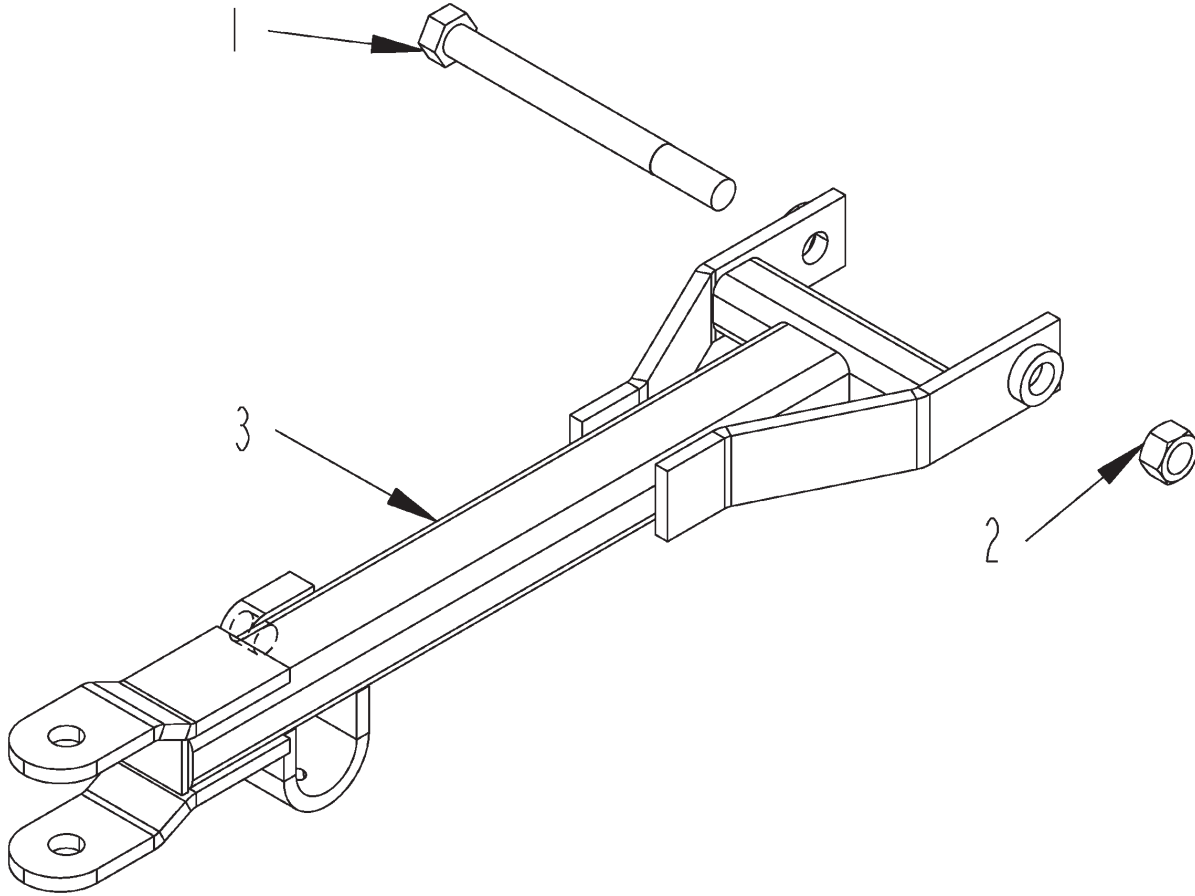
Depth Band Installation Kit # 8400955

- 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 large holes in depth band from the coulter. It is not necessary to remove coulter from opener.
- Step 5. Using bolts removed in step 4, bolt depth band to coulter.
- Step 6. Reinstall disk on opener

Depth Band Kit	
Qty. per drill	Description
48	Depth Bands
72	1/4" x 3/4" bolts
72	1/4" top lock nuts



DRILL SINGLE HITCH



ITEM	PART	QTY.	PART DESCRIPTION
1	4800663	1	BOLT\HEX\1X12\NC\GR8\PLTD
2	4900015	1	NUT\NYLCK\1\NC
3	8400664	1	HITCH\SINGLE

NOT SHOWN

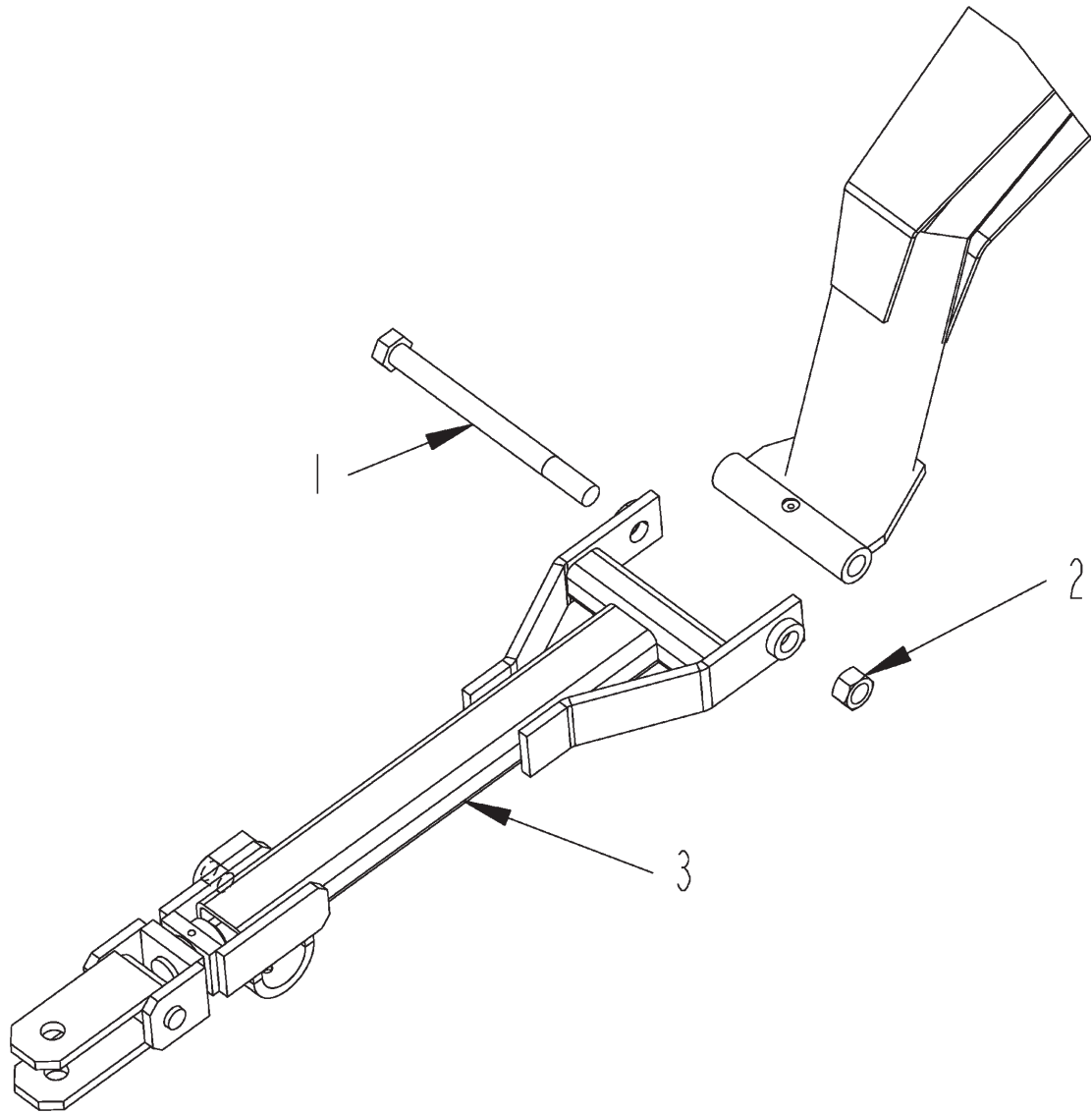
1100275	1	CHAIN\1/4\SFTY\AG\11000LB
5000116	1	WASH\FLAT\1\EXTRTHK\GR8

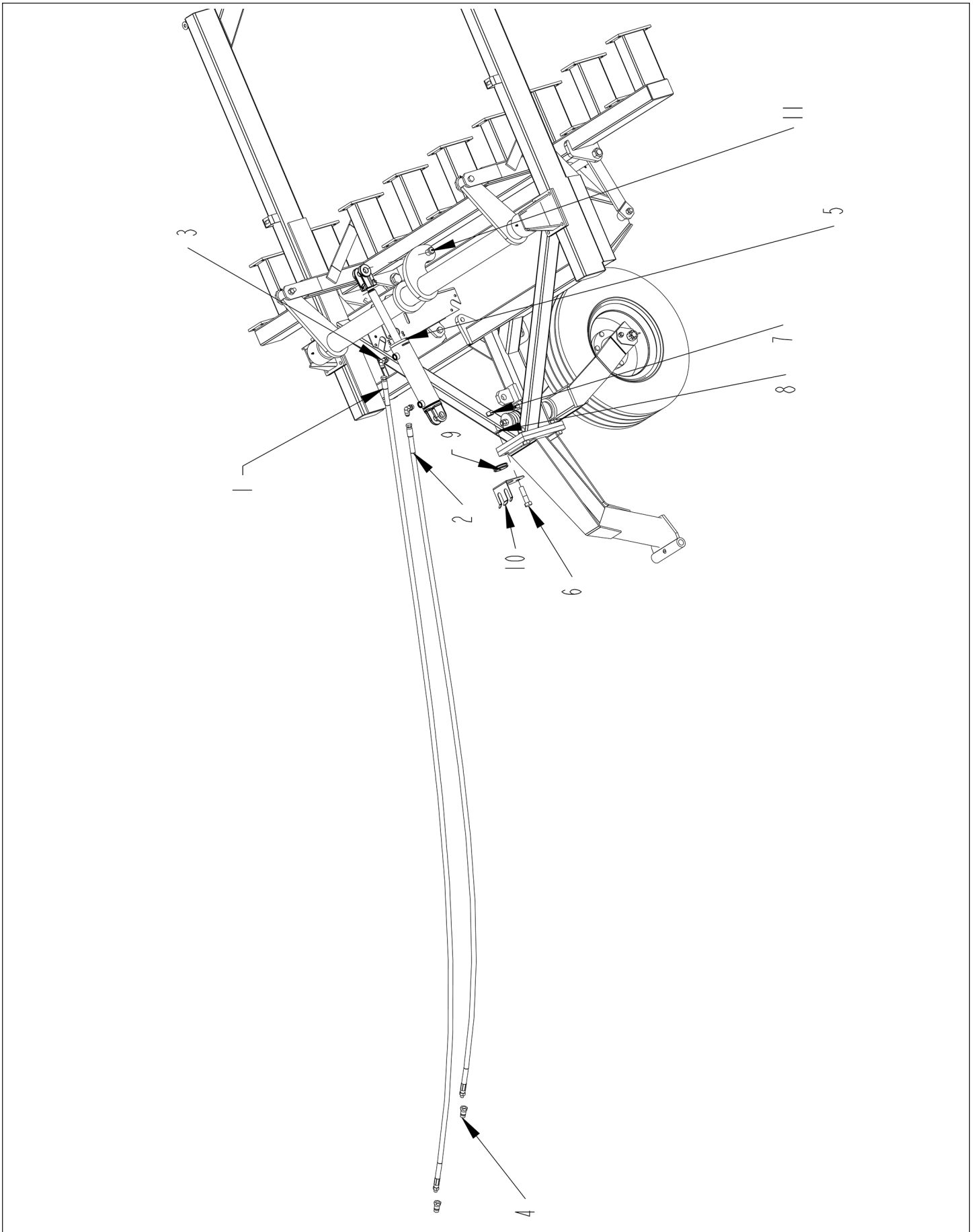
SWIVEL HITCH

ITEM	PART	QTY.	PART DESCRIPTION
1	4800663	1	BOLT\HEX\1X12\NC\GR8\PLTD
2	4900015	1	NUT\NYLCK\1\NC
3	8400650	1	HITCH\W\SWIVEL\SINGLE\107

NOT SHOWN

1100275	1	CHAIN\1/4\SFTY\AG\11000LB
5000116	1	WASH\FLAT\1\EXTRTHK\GR8





HYDRAULICS

ITEM	PART	QTY.	PART DESCRIPTION
1	3701622	1	HOSE\HYD\1/2X120\3/4MORSX3/4FJIC
2	3701623	1	HOSE\HYD\1/2X108\3/4MORSX3/4FJIC
3	3800537	2	FTG\3/4MORX3/4MJIC\90
4	3800694	2	FTG\3/4FOR\QUICK;CPLR\MALE
5	4100344	1	CYL\HYD\3X8\1-3/8ROD\#8 O-RING
6	4800017	1	BOLT\HEX\3/4X3
7	4900004	4	NUT\HEX\3/4\NC
8	5000012	4	WASH\LOCK\3/4
9	7500858	1	GRMT\RBBR\2-1/4X2IDX1/4T
10	8400785	1	BRKT\HOSE\MINDER
11	8400799	1	PIN\CLEVIS\1X3\GREASE

8400902 **CYL\HYD\3X8\KIT\107DRILL>SINGLE\SAE THREAD**

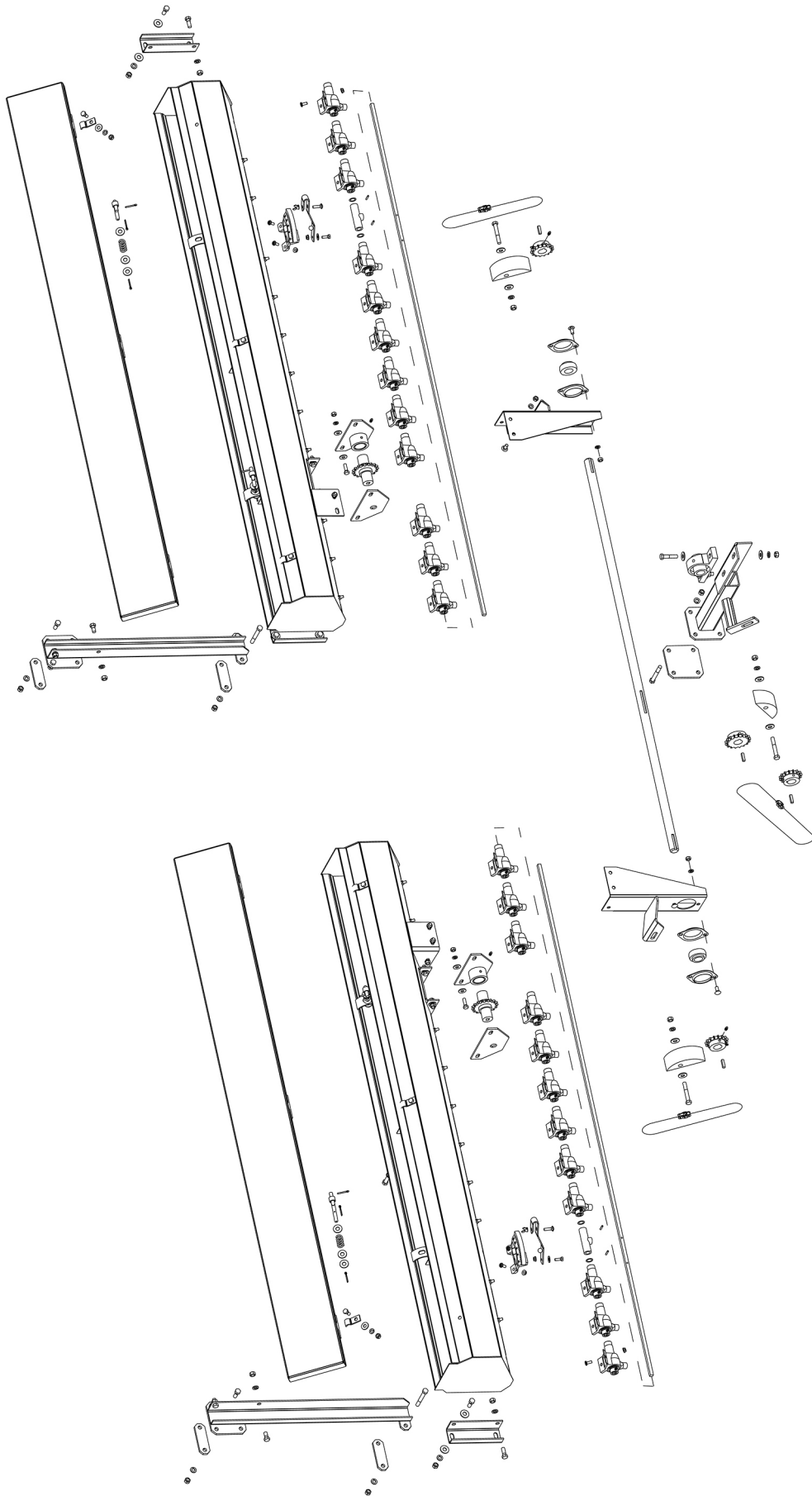
NOT SHOWN

7501600 1 CYL\DEPTH\STOP\KIT

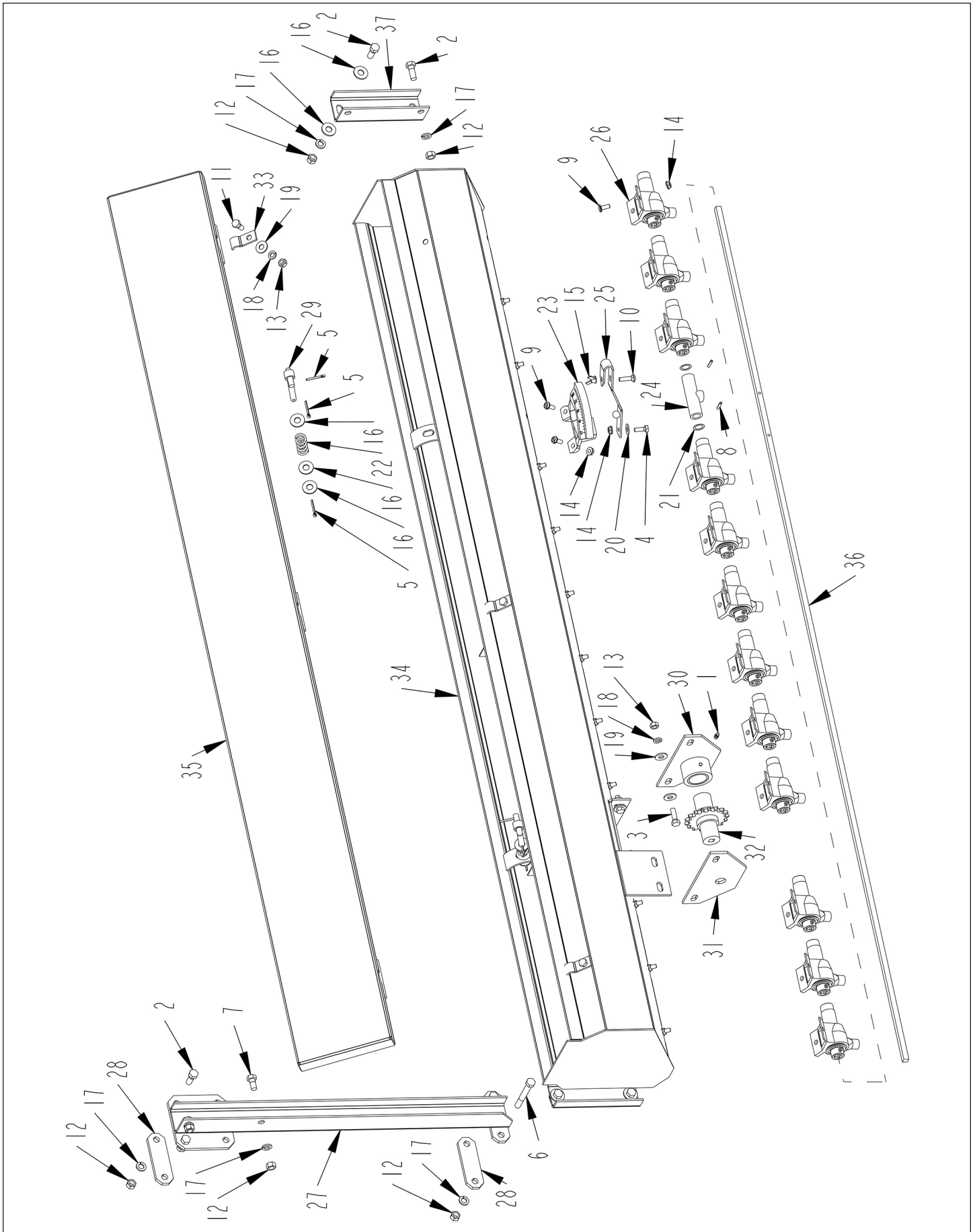
NOTE: THE STROKE OF THE HYDRAULIC CYLINDER IS 20-1/4" TO 28-1/4"
FROM CYLINDER PIN TO CYLINDER PIN.



LEGUME BOX ASSEMBLY



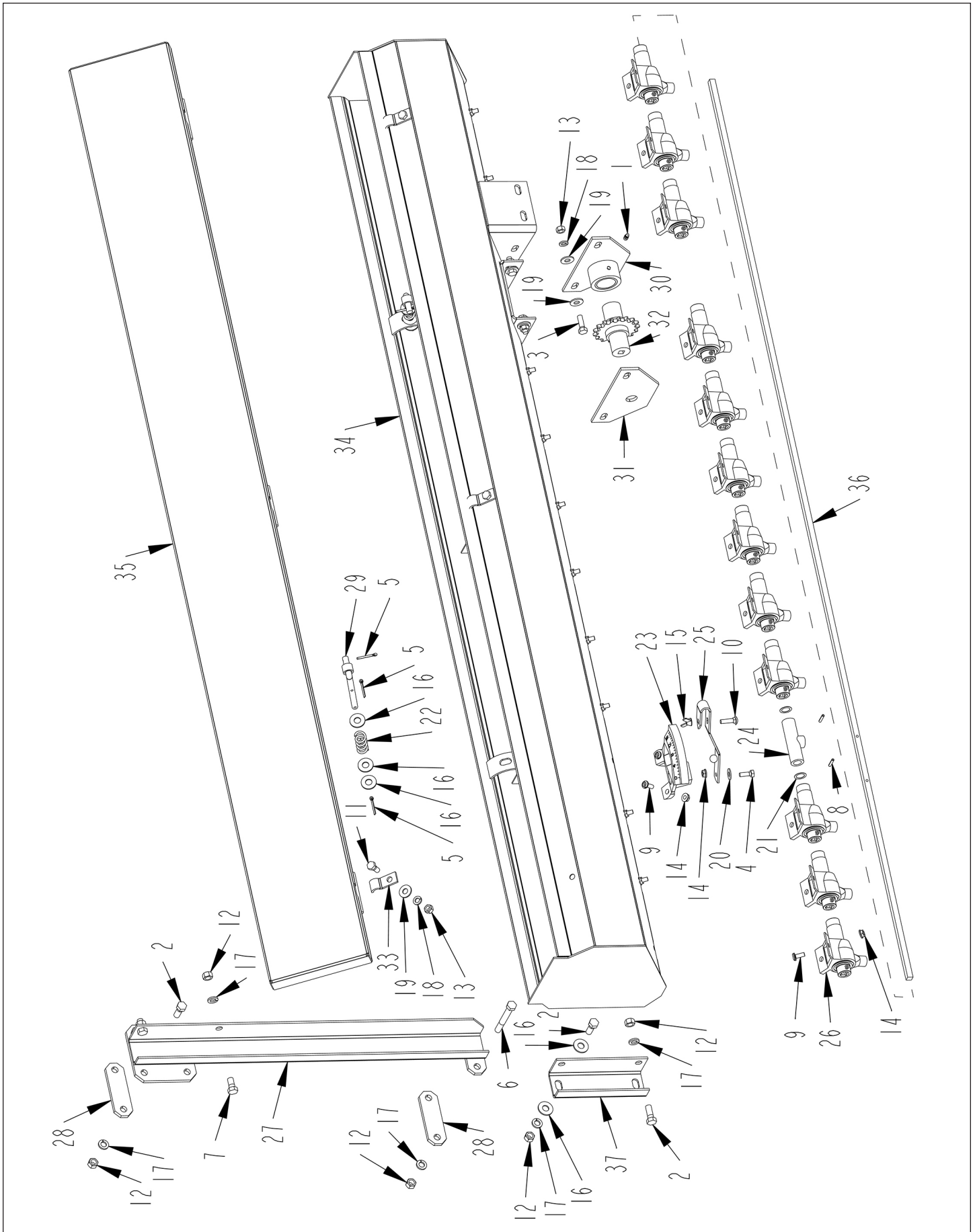
LEGUME BOX ASSEMBLY LH



LEGUME BOX ASSEMBLY LH

ITEM	PART	QTY.	PART DESCRIPTION
1	3800082	2	FTG\LUB\1/4NFXZERK\ADAPT
2	4800003	10	BOLT\HEX\3/8X1
3	4800013	4	BOLT\HEX\5/16X1
4	4800024	1	BOLT\HEX\1/4X3/4
5	4800127	6	PIN\COT\1/8X1
6	4800156	2	BOLT\HEX\3/8X3
7	4800164	2	BOLT\HEX\3/8X3/4
8	4800212	2	PIN\RLLD\5/32X3/4
9	4800213	26	SCRIPAN\SLOT\1/4X5/8\NC
10	4800214	1	BOLT\CRG\1/4X1\NC
11	4800643	3	BOLT\HEX\5/16X3/4
12	4900002	14	NUT\HEX\3/8\NC
13	4900003	8	NUT\HEX\5/16\NC
14	4900040	27	NUT\FLG\SERR\1/4\NC
15	4900041	1	NUT\WING\1/4\NC
16	5000001	14	WASH\FLAT\3/8
17	5000019	14	WASH\LOCK\3/8
18	5000022	8	WASH\LOCK\5/16
19	5000023	12	WASH\FLAT\5/16
20	5000035	1	WASH\FLAT\1/4
21	5000118	2	WASH\FLAT\SPCL\14MMX.5MMX20MMO.D.
22	6100002	2	SPRING\COMP\.072W\11/16OD\2-1/8LONG
23	7500183	1	METER\INDEX\SEED
24	7500184	1	SHFTR\INDEX\SEED
25	7500185	1	ARM\SHFTR\INDEX\SEED
26	8400600	12	CUP ASSY. LEGUME BOX
27	8700001	1	BRKT\LEGUME\LH\LEG-BOX
28	8700003	2	BRKT\LEGUME\LH\LEG-BOX
29	8700006	2	ROD\SPG\COV\BOX
30	8700008	1	BRG\BOX\LEGUME\RH
31	8700009	1	BRG\BOX\LEGUME\LH
32	8700010	1	SPRKT\17T\LEG.BOX
33	8700014	3	HINGE\LEGUMEBOX
34	8700021	1	BOX\LEGUME\LH
35	8700023	1	COV\BOX\LEGUME
36	8700024	1	SHFT\3/8SQX68-1/2\LGUM;BX
37	8700029	4	MNT\END\BOX\LEGUME

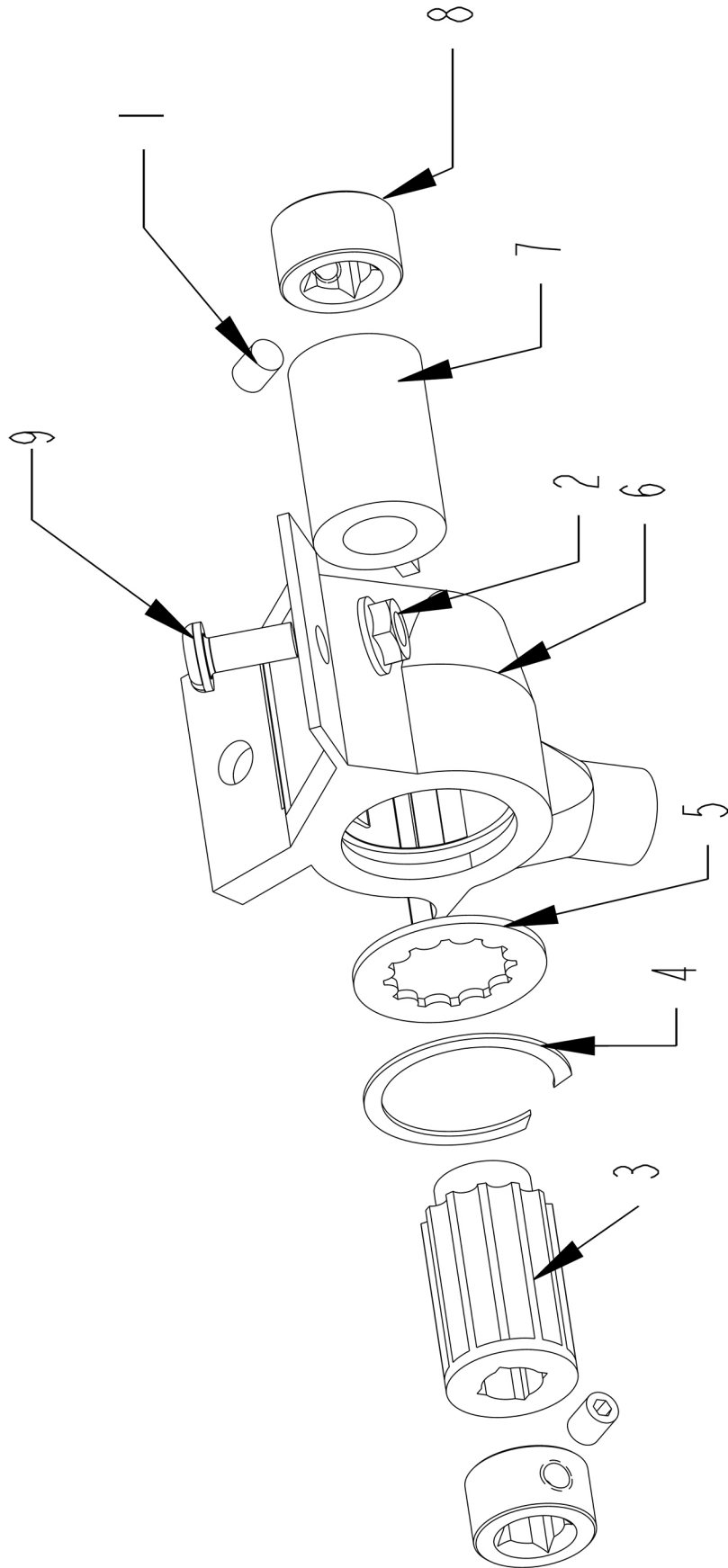
LEGUME BOX ASSEMBLY RH



LEGUME BOX ASSEMBLY RH

ITEM	PART	QTY.	PART DESCRIPTION
1	3800082	2	FTG\LUB\1/4NFXZERK\ADAPT
2	4800003	10	BOLT\HEX\3/8X1
3	4800013	4	BOLT\HEX\5/16X1
4	4800024	1	BOLT\HEX\1/4X3/4
5	4800127	6	PIN\COT\1/8X1
6	4800156	2	BOLT\HEX\3/8X3
7	4800164	2	BOLT\HEX\3/8X3/4
8	4800212	2	PIN\RLLD\5/32X3/4
9	4800213	26	SCRIPAN\SLOT\1/4X5/8\NC
10	4800214	1	BOLT\CRG\1/4X1\NC
11	4800643	3	BOLT\HEX\5/16X3/4
12	4900002	14	NUT\HEX\3/8\NC
13	4900003	8	NUT\HEX\5/16\NC
14	4900040	27	NUT\FLG\SERR\1/4\NC
15	4900041	1	NUT\WING\1/4\NC
16	5000001	14	WASH\FLAT\3/8
17	5000019	14	WASH\LOCK\3/8
18	5000022	8	WASH\LOCK\5/16
19	5000023	12	WASH\FLAT\5/16
20	5000035	1	WASH\FLAT\1/4
21	5000118	2	WASH\FLAT\SPCL\14MMX.5MMX20MMO.D.
22	6100002	2	SPRING\COMP\.072W\11/16OD\2-1/8LONG
23	7500183	1	METER\INDEX\SEED
24	7500184	1	SHFTR\INDEX\SEED
25	7500185	1	ARM\SHFTR\INDEX\SEED
26	8400600	12	CUP ASSY. LEGUME BOX
27	8700002	1	BRKT\LEGUME\RH\LEG-BOX
28	8700003	2	BRKT\LEGUME\LH\LEG-BOX
29	8700006	2	ROD\SPG\COV\BOX
30	8700008	1	BRG\BOX\LEGUME\RH
31	8700009	1	BRG\BOX\LEGUME\LH
32	8700010	1	SPRKT\17T\LEG.BOX
33	8700014	3	HINGE\LEGUMEBOX
34	8700022	1	BOX\LEGUME\RH
35	8700023	1	COV\BOX\LEGUME
36	8700024	1	SHFT\3/8SQX68-1/2\LGUM;BX
37	8700029	4	MNT\END\BOX\LEGUME

CUP ASSEMBLY - LEGUME BOX



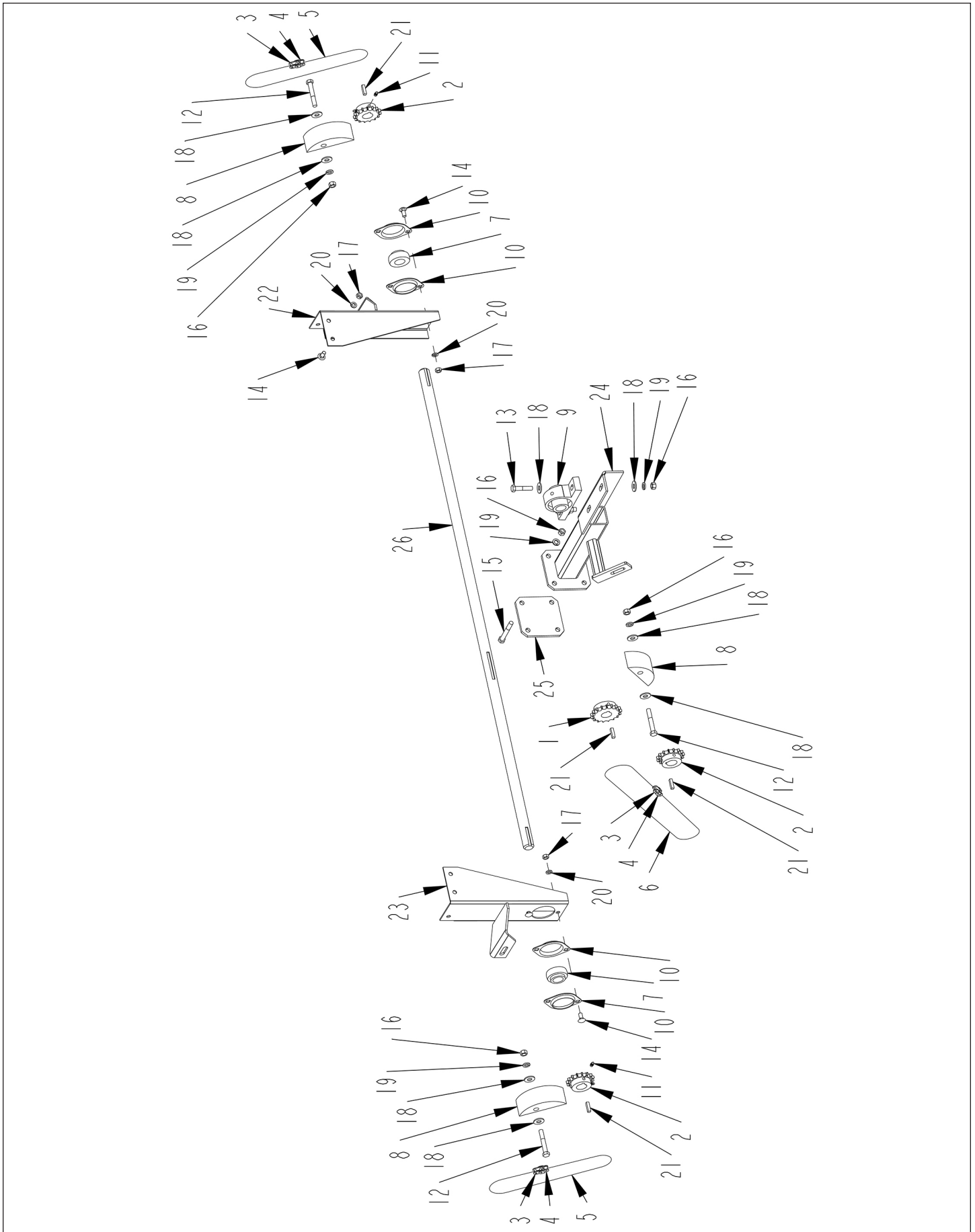
CUP ASSEMBLY - LEGUME BOX

ITEM	PART	QTY.	PART DESCRIPTION
1	4800211	48	SCR\SET\ALN\1/4X5/16\NC
2	4900040	48	NUT\FLG\SERR\1/4\NC
3	7500177	24	ROLL\CUP\ASSY\LEGUME BOX
4	7500178	24	SNAP RING
5	7500179	24	FEED ROLLER WASHER
6	7500180	24	FEED CUP ASSEMBLY
7	7500181	24	GATE\CUP\ASSY\LEGUME BOX
8	7500182	48	CLLR\7/8OD\3/8SQ
9	4800213	48	SCR\PAN\SLOT\1/4X5/8\NC

NOT SHOWN

3700129	24	HOSE\PVC\5/8IDX22-1/2\CLR
---------	----	---------------------------

LEGUME BOX DRIVE ASSEMBLY

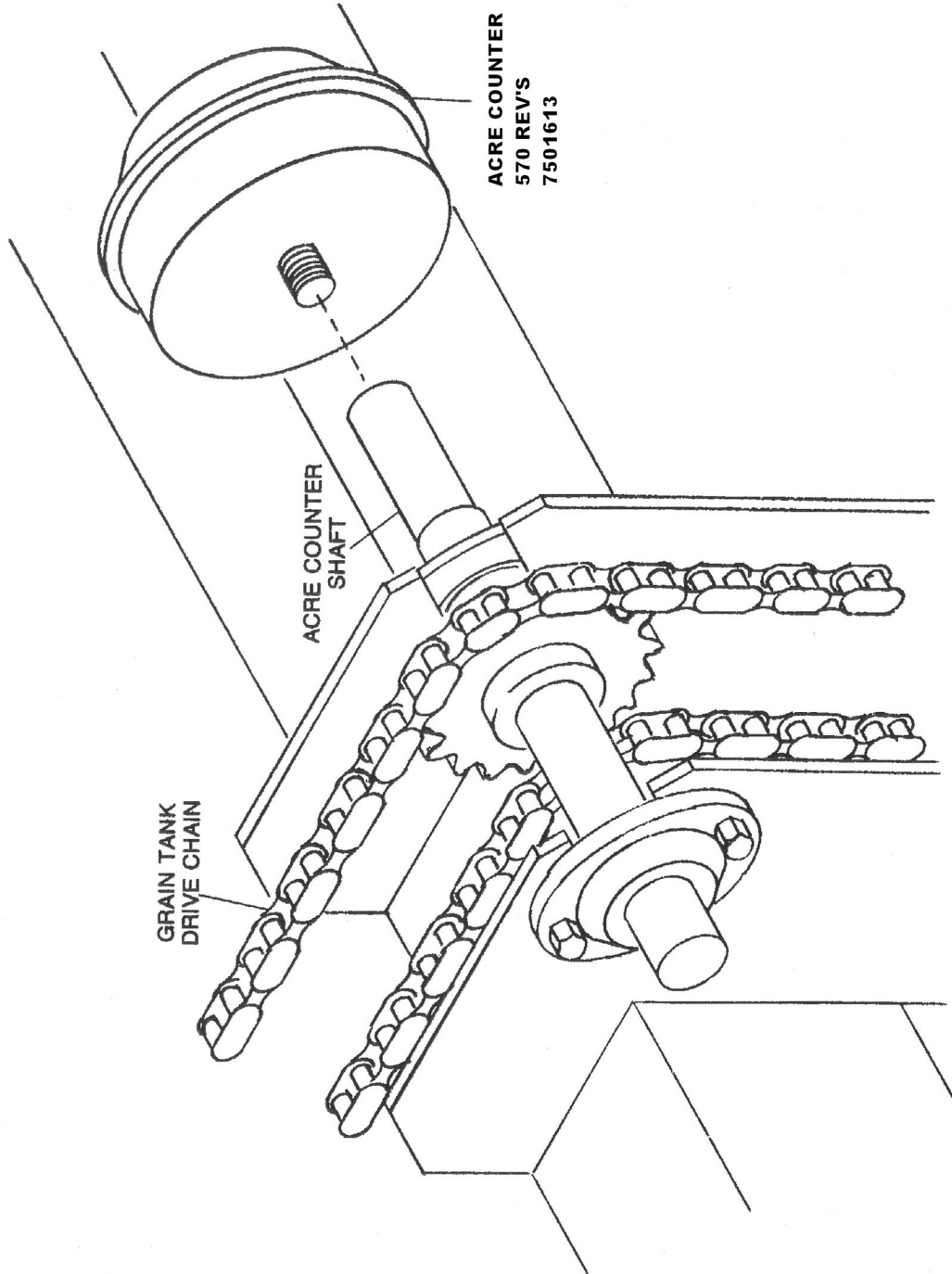


LEGUME BOX DRIVE ASSEMBLY

ITEM	PART	QTY.	PART 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	3800082	4	FTG\LUB\1/4NFXZERK\ADAPT
12	4800514	3	BOLT\HEX\3/8X2-3/4
13	4800142	2	BOLT\HEX\3/8X1-3/4
14	4800153	10	BOLT\CRG\5/16X3/4\NC
15	4800156	4	BOLT\HEX\3/8X3
16	4900002	9	NUT\HEX\3/8\NC
17	4900003	10	NUT\HEX\5/16\NC
18	5000001	10	WASH\FLAT\3/8
19	5000019	9	WASH\LOCK\3/8
20	5000022	10	WASH\LOCK\5/16
21	6200010	4	KEY\SQ\1/4X1
22	8700012	1	BRKT\LEGUME\LH\SHFT-BOX
23	8700025	1	BRKT\BRG\RH\147C
24	8700026	1	BRKT\BRG\CNTRL-BOX\147C
25	8700027	1	PL\CENTER\BRG STAND
26	8700028	1	SHFT\1X29\LEGUMEBOX



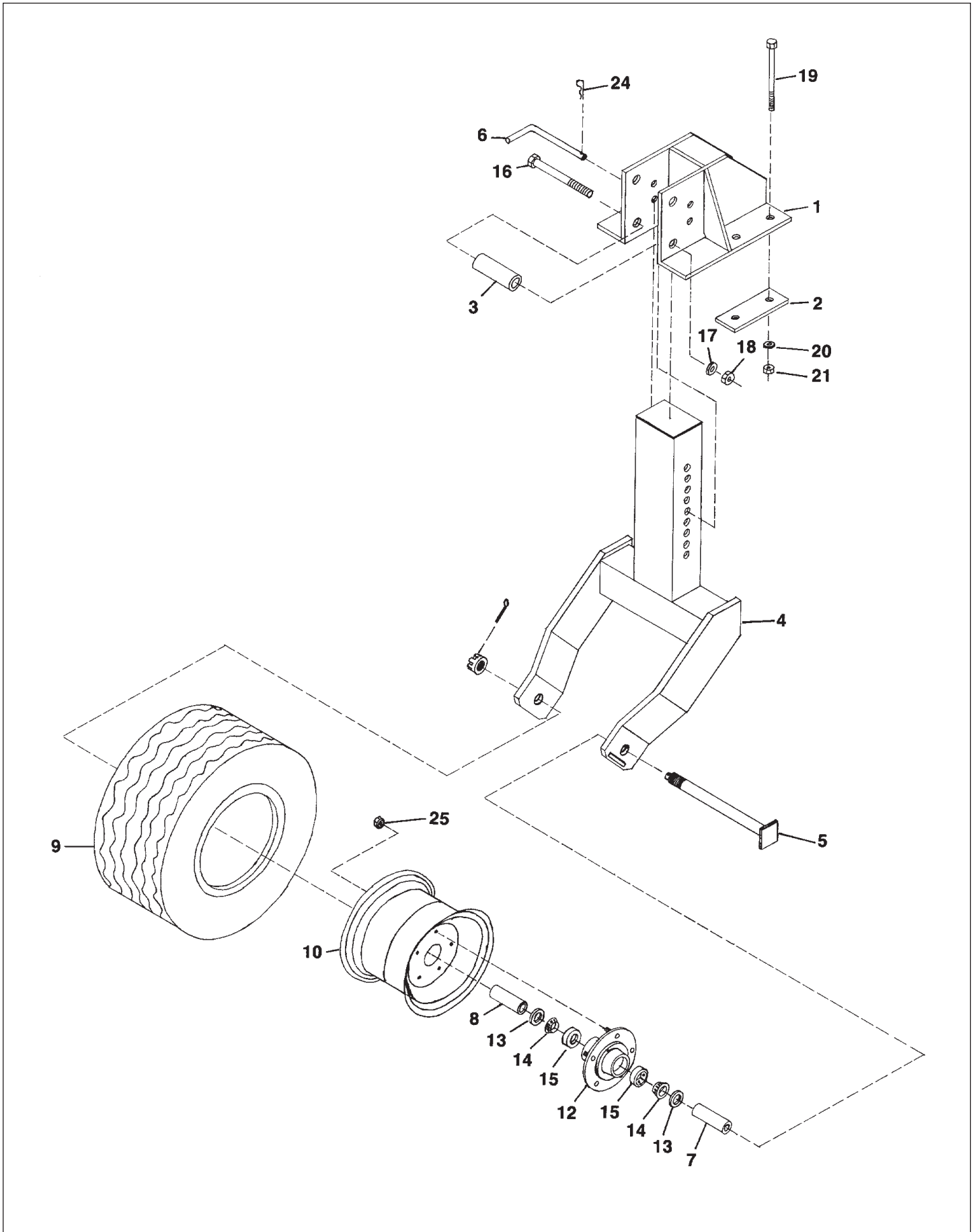
ACRE COUNTER (OPTION)



Installation:

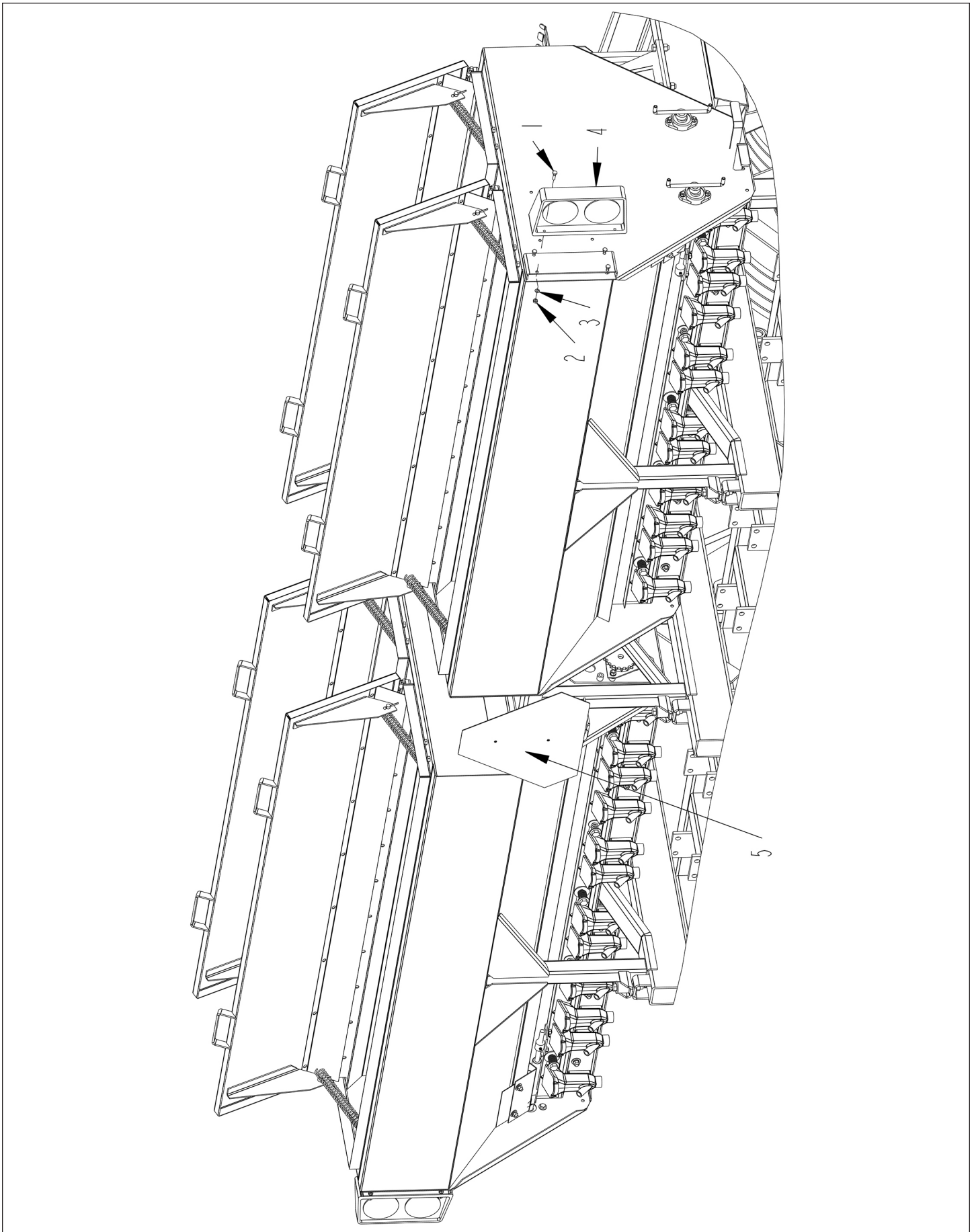
1. Turn acre counter into threaded hole in end of acre counter shaft (see illustration).

GAUGE WHEELS OPTION



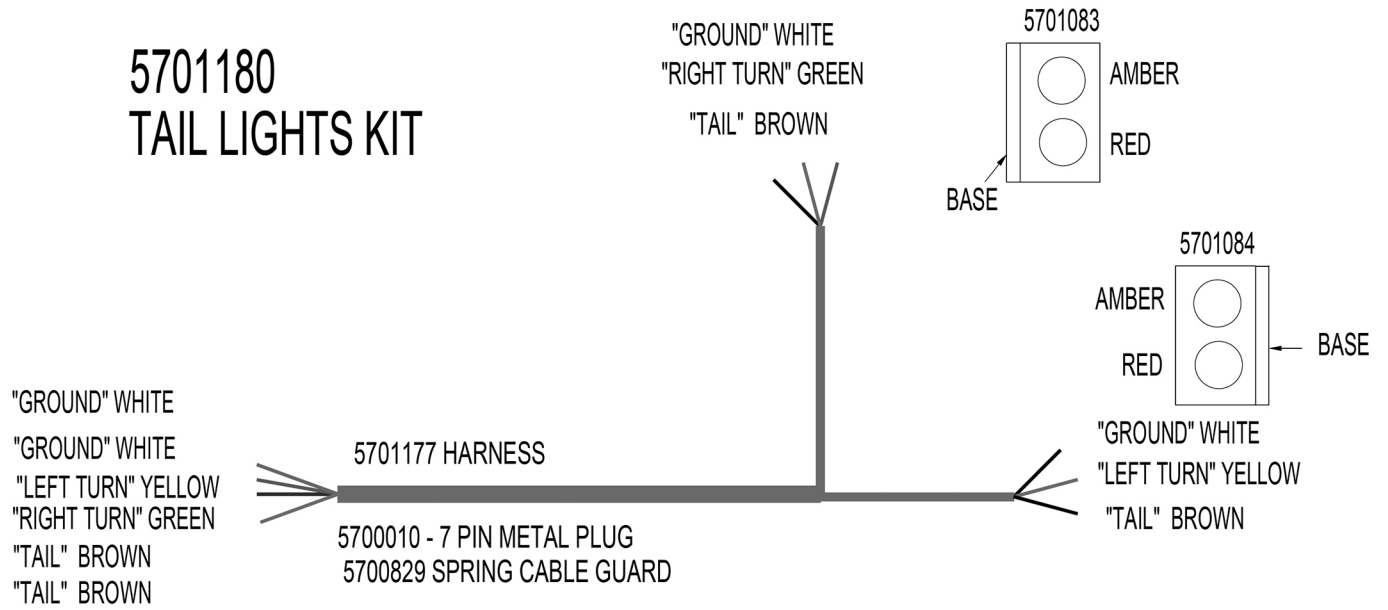
GAUGE WHEELS OPTION

ITEM	PART	QTY.	PART DESCRIPTION
1	8400332	2	Gauge Wheel Mount Frame
2	8400333	4	Gauge Wheel Mount Strap
3	8400334	4	Bolt Sleeve
4	8400335	2	Wheel Folk
5	8400336	2	Spindle
6	8400337	2	Adjustment Handle
7	8400338	2	Short Spacer
8	8400339	2	Long Spacer
9 & 10	2600813		Tire & Rim Assembly
9	2600026	2	Tire 20.5 x 8.0 x 10
10	2600631	2	Wheel 10" - 5 Bolt
11	2900107	2	Hub (Complete Assembly) CMPT 5 Bolt
12	2900108	2	Hub CMPT 5 Bolt
13	2900031	4	Seal/Wheel Hub (R407)
14	2900032	4	Cone/Wheel Hub (44643)
15	2900033	4	Cup/Wheel Hub (44610)
16	4800248	4	3/4" x 6" Hex Bolt
17	5000012	4	3/4" Lock Washer
18	4900004	4	3/4" Nut
19	4800144	8	5/8" x 6-1/2" Hex Bolt
20	5000003	8	5/8" Lock Washer
21	4900005	8	5/8" Nut
22	4800157	2	3/16" x 2" Cotter Pin
23	4900055	2	1" Castle Nut
24	4800107	2	1/8" Hair Pin
25	2500710	10	1/2" - 2 60° Cone Wheel Nut
26	8400348		Gauge Wheel Kit Complete

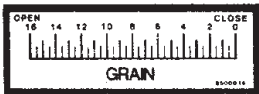


LIGHT KIT & SMV

ITEM	PART	QTY.	PART DESCRIPTION
1	4800277	8	BOLT\HEX\1/4X1
1a	4801321		BOLT\FLG\SERR\#10X1\NC\PLT
2	4900009	8	NUT\HEX\1/4\NC
2a	4900190		NUT\FLG\SERR\#10\NC
4	5000024	8	WASH\LOCK\1/4
5	5701180	1	KIT\LIGHT\LEDS\2 3-PIN 147C
6	7501353	1	SIGN\SMV\PLSTC-BCKNG



DECALS



1



2



5

SERIES 100 CHART FOR DRILLING GRAIN IN POUNDS PER ACRE

DRILL SIZE	PUNTER SETTING															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
GRAIN	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
SOY	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
BEAN	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
PEANUT	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
WHEAT	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
BARLEY	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
RYE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
ORZON	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
TRITICALE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
MAIZE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
SMOOTH BROMUS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
RYEGRASS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
BERMUDA	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
STYRACIS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
COUSCOURS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
ORZON	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
TRITICALE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
MAIZE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
SMOOTH BROMUS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
RYEGRASS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
BERMUDA	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
STYRACIS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
COUSCOURS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12

3

WARNING

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

- BEFORE OPERATING THIS MACHINE, READ THE OPERATOR'S MANUALS SUPPLIED WITH THIS MACHINE AND YOUR TRACTOR.
- CHECK OPERATOR MANUALS TO BE SURE YOUR TRACTOR MEETS THE MINIMUM REQUIREMENTS FOR THIS MACHINE.
- READ ALL DECALS PLACED ON THIS MACHINE FOR YOUR SAFETY AND CONVENIENCE.
- NEVER ALLOW RIDERS ON THIS IMPLEMENT OR THE TRACTOR.
- KEEP OTHERS AWAY FROM THE MACHINE WHILE IN OPERATION.
- KEEP ALL SHIELDS IN PLACE WHILE MACHINE IS OPERATING.
- KEEP HANDS, FEET, LOOSE CLOTHING, ETC., AWAY FROM POWER DRIVEN PARTS.
- ALWAYS SHUT OFF MACHINE AND ENGINE BEFORE SERVICING, UNLOADING, 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.

ADVERTENCIA

SIGA LAS REGLAS SIGUIENTES DE SEGURIDAD PARA SU PROTECCION Y LA PROTECCION DE OTROS

- LEA LOS MANUALES DEL OPERADOR INCLUIDOS CON ESTA MAQUINA Y SU TRACTOR ANTES DE OPERAR ESTA MAQUINA.
- PARA ASEGURARSE QUE SU TRACTOR CUMPLE CON LOS REQUISITOS MÍNIMOS PARA ESTA MAQUINA, REVISAR LOS MANUALES DEL OPERADOR.
- PARA SU SEGURIDAD Y CONVENIENCIA, LEA TODAS LAS CALCOMANIAS COLOCADAS EN LA MAQUINA.
- HUNCA PERMITA PASAJEROS EN ESTA MAQUINA O EN EL TRACTOR.
- MANTÉNGA ALEJADOS A LOS ESPECTADORES MIENTRAS ESTA MAQUINA ESTE OPERANDO.
- MANTÉNGA TODOS LOS PROTECTORES EN SU LUGAR MIENTRAS LA MAQUINA ESTE OPERANDO.
- MANTÉNGA LAS MANOS, PIES, ROPAS HOLLADAS, ETC., ALEJADAS DE LAS PIEZAS PROPULSADAS.
- SIEMPRE APAGUE LA MAQUINA Y EL MOTOR ANTES DE PRESTAR SERVICIO, DESTIBAR, 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.

4

SEED DEPTH

ADJUST SCREW TO INCREASE SEED DEPTH.

SOIL PENETRATION

ADJUST SCREW TO INCREASE SOIL PENETRATION.

PARALLEL BAR ADJUSTMENT

ADJUST SCREW TO INCREASE PARALLEL BAR ADJUSTMENT.

6

IMPORTANT

TRANSPORTING DRILL WITH FERTILIZER AND GRAIN IN TANKS IS NOT ADVISED. SETTLING OF FERTILIZER MAY OCCUR IF LEFT OVER A PERIOD OF TIME OR DURING TRANSPORT. MAKE SURE FERTILIZER SHAFT TURNS FREELY BEFORE FILLING TANK.

STORAGE

DO NOT LEAVE FERTILIZER IN CONTACT WITH METAL PARTS FOR A PROLONGED PERIOD. FLUSH WITH WATER - LET DRY - APPLY A COAT OF OIL OR DIESEL FUEL BEFORE STORING.

7

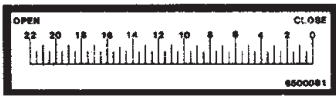
IMPORTANT

FEED WHEEL SHAFT BUSHINGS MUST BE GREASED WEEKLY DURING PLANTING SEASON, AND PRIOR TO STORAGE.

8

ENGAGE LOCKS AFTER DRILLS ARE RAISED FOR TRANSPORT DISENGAGE BEFORE LOWERING

9



10

WARNING

NO RIDERS

SERIOUS PERSONAL INJURY COULD RESULT FROM RIDING ON STEP.

ADVERTENCIA

NO MONTE

SERIAS HERIDAS PERSONAL PUEDEN RESULTAR MONTANDO EL ESCALON.

11

WARNING

Disc blades are extremely sharp! Wear heavy gloves when servicing.

ADVERTENCIA

¡Las cuchillas de disco están extremadamente afiladas! Al prestar servicio use guantes gruesos.

12

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.

13

WARNING

HIGH-PRESSURE FLUID HAZARD

To prevent serious injury or death:

- Relieve pressure on system before repairing or adjusting or disconnecting.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.

14

WARNING

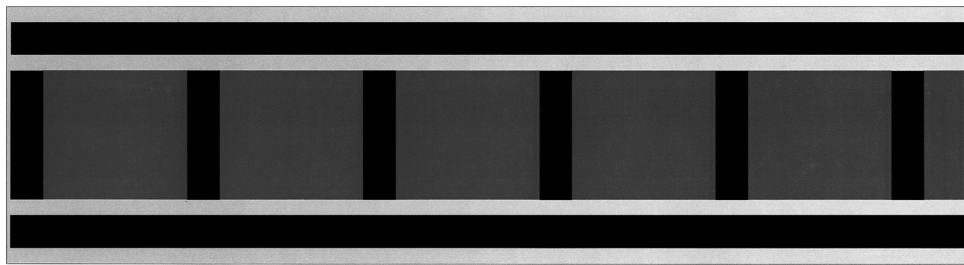
Moving parts can crush and cut.

Keep hands clear.

17

147C

18



19

HAYBUSTER	CHART FOR DRILLING LEGUMES AND SMALL GRASSES IN POUNDS PER ACRE																SEED MIXTURES
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
SOYBEAN	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
PEANUT	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
WHEAT	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
BARLEY	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
RYE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
ORZON	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
TRITICALE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
MAIZE	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
SMOOTH BROMUS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
RYEGRASS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
BERMUDA	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
STYRACIS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
COUSCOURS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	

20



21

147C

22



23

NOTICE

Clean Grain Tanks

Clean grain tanks and/or legume boxes after using inoculated, treated or coated seeds.

Add graphite when using inoculated, treated or coated seeds.

Failure to clean tanks will cause damage to moving parts.

24

DECALS

ITEM	PART	QTY.	PART DESCRIPTION
1	6500016	2	DECAL\INFO\CAL;SCALE;GRAIN
2	6500020	2	DECAL\LOGO\HYBSTR\SNBRS\3
3	6500022	1	DECAL\INFO\CHART;SEED\>
4	6500041	1	DECAL\WARN\PROTECTION
5	6500060	2	DECAL\WARN\AVOID;SHRP;TRN
6	6500061	1	DECAL\INFO\SEED;DEPTH\>
7	6500062	1	DECAL\INFO\IMPORTANT;STRG
8	6500063	1	DECAL\INFO\CHART\FEED;WHL
9	6500064	1	DECAL\INFO\ENGAGE;LOCKS
10	6500081	2	DECAL\INFO\CAL.SCALE\GRASS
11	6500101	1	DECAL\WARN\NO RIDERS
12	6500163	1	DECAL\WARN\DISC;BLADES
13	6500182	1	DECAL\WARN\AG;CHEMICAL
14	6500220	1	DECAL\WARN\HI;PRESS;FLUID
15	6500434	2	DECAL\2X9\RED\REFCT
16	6500435	2	DECAL\2X9\AMBER\REFCT
17	6500488	1	DECAL\WARN\PARTS\MOVING
18	6500531	2	DECAL\LOGO\147C
19	6500532	2	DECAL\LOGO\STRPNG\BLK+RED-W-BARS
23	6500541	2	DECAL\2X9\FLRSCNT\NON-REFCT
24	6500548	1	DECAL\nOTICE\TANKS\CLEAN

6500530

DECAL\KIT\147C

LEGUME BOX DECALS

20	6500083	1	DECAL\INFO\CHART\LGM\7" SPCG
21	6500304	1	DECAL\LOGO\HYBSTR\1-3/4W\SUNBURST
19	6500532	1	DECAL\LOGO\STRPNG\BLK+RED-W-BARS
22	6500535	1	DECAL\LOGO\147C\LEGUME
24	6500548	1	DECAL\nOTICE\TANKS\CLEAN

6500534

DECAL\KIT\LEGUME\147C

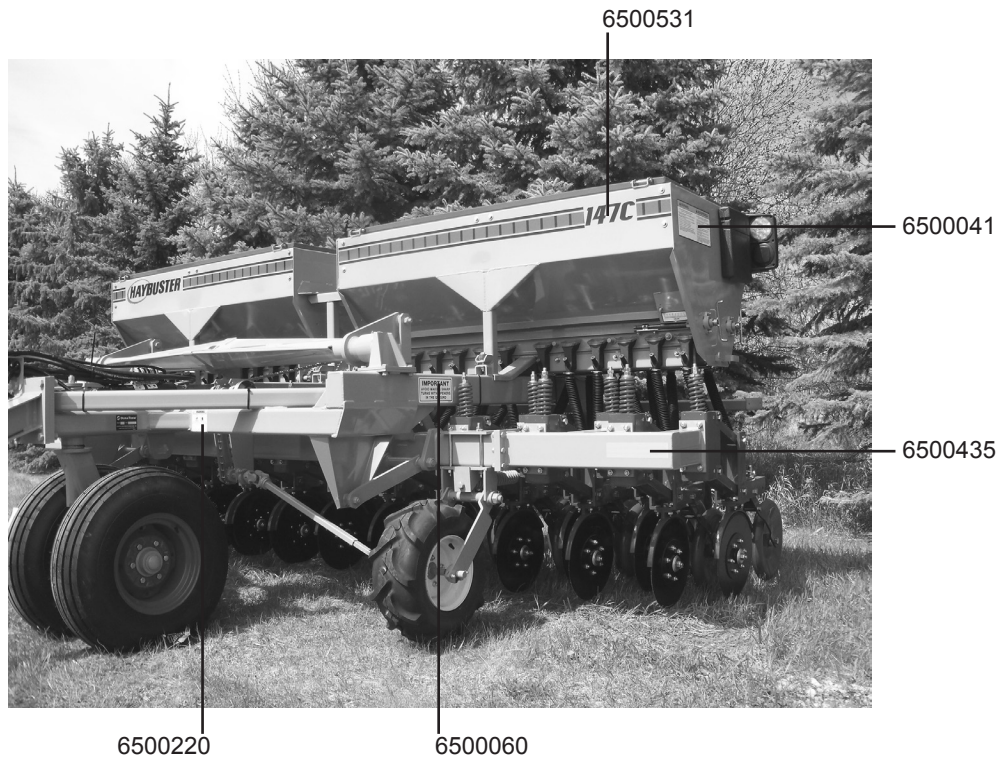
7500077	12 Oz Yellow Spray Paint
7500092	Quart Yellow Paint
7500091	Gallon Yellow Paint
7500078	12 Oz Red Spray Paint
7500105	Quart Red Paint
7500104	Gallon Red Paint

DECAL LOCATIONS



DECAL LOCATION (See pages 90-91 for descriptions)

DECAL LOCATIONS



DECAL LOCATION (See pages 90-91 for descriptions)

DECAL LOCATIONS

6500083

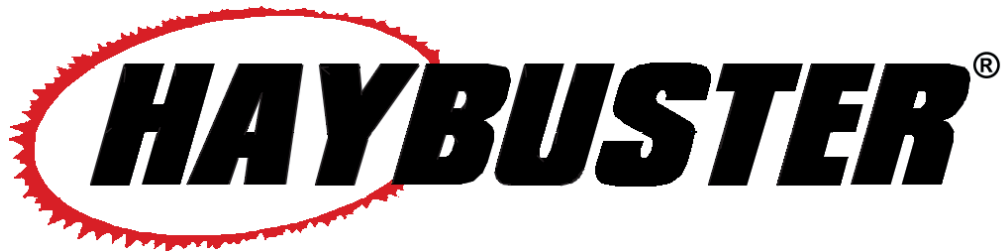
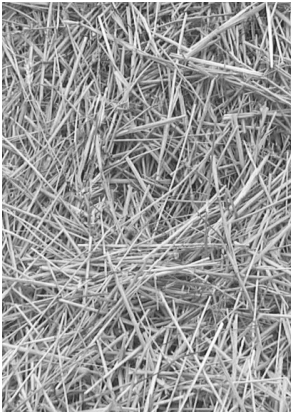
6500548



HAYBUSTER		CHART FOR DRILLING LEGUMES AND SMALL GRASSES IN POUNDS PER ACRE																SEED MIXTURES	
SEEDS PER BOX		SEEDS PER ATTACHMENT FOR 16" TO 18" ROWS OR 7" ROW SPACING																SELECT THE SETTING FOR THE DESIRED QUANTITY OF SEEDS PER BOX	
SEEDS PER BOX	SEEDS PER ATTACHMENT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	SEED MIXTURES	EXAMPLE
100	100	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ALFALFA	100% ALFALFA
200	200	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	CLAY	100% CLAY
300	300	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	SWITCHGRASS	100% SWITCHGRASS
400	400	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	FLAX	100% FLAX
500	500	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	SOYBEANS	100% SOYBEANS
600	600	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	BARLEY	100% BARLEY
700	700	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	ORCHARD GRASS	100% ORCHARD GRASS
800	800	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
900	900	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	RYEGRASS	100% RYEGRASS
1000	1000	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	ORCHARD GRASS	100% ORCHARD GRASS
1100	1100	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
1200	1200	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	RYEGRASS	100% RYEGRASS
1300	1300	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	ORCHARD GRASS	100% ORCHARD GRASS
1400	1400	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
1500	1500	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	RYEGRASS	100% RYEGRASS
1600	1600	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	ORCHARD GRASS	100% ORCHARD GRASS
1700	1700	17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
1800	1800	18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	RYEGRASS	100% RYEGRASS
1900	1900	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	ORCHARD GRASS	100% ORCHARD GRASS
2000	2000	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
2100	2100	21	42	63	84	105	126	147	168	189	210	231	252	273	294	315	336	RYEGRASS	100% RYEGRASS
2200	2200	22	44	66	88	110	132	154	176	198	220	242	264	286	308	330	352	ORCHARD GRASS	100% ORCHARD GRASS
2300	2300	23	46	69	92	115	138	161	184	207	230	253	276	299	322	345	368	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
2400	2400	24	48	72	96	120	144	168	192	216	240	264	288	312	336	360	384	RYEGRASS	100% RYEGRASS
2500	2500	25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	ORCHARD GRASS	100% ORCHARD GRASS
2600	2600	26	52	78	104	128	152	176	200	224	248	272	296	320	344	368	392	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
2700	2700	27	54	81	108	136	162	186	210	234	258	282	306	330	354	378	402	RYEGRASS	100% RYEGRASS
2800	2800	28	56	84	112	140	168	196	224	252	280	308	336	364	392	420	448	ORCHARD GRASS	100% ORCHARD GRASS
2900	2900	29	58	87	116	144	172	200	228	256	284	312	340	368	396	424	452	PERENNIAL RYEGRASS	100% PERENNIAL RYEGRASS
3000	3000	30	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	RYEGRASS	100% RYEGRASS

NOTICE
Clean Grain Tanks

Clean grain tanks and/or legume boxes after using inoculated, treated or coated seeds.
Add graphite when using inoculated, treated or coated seeds.
Failure to clean tanks will cause damage to moving parts.

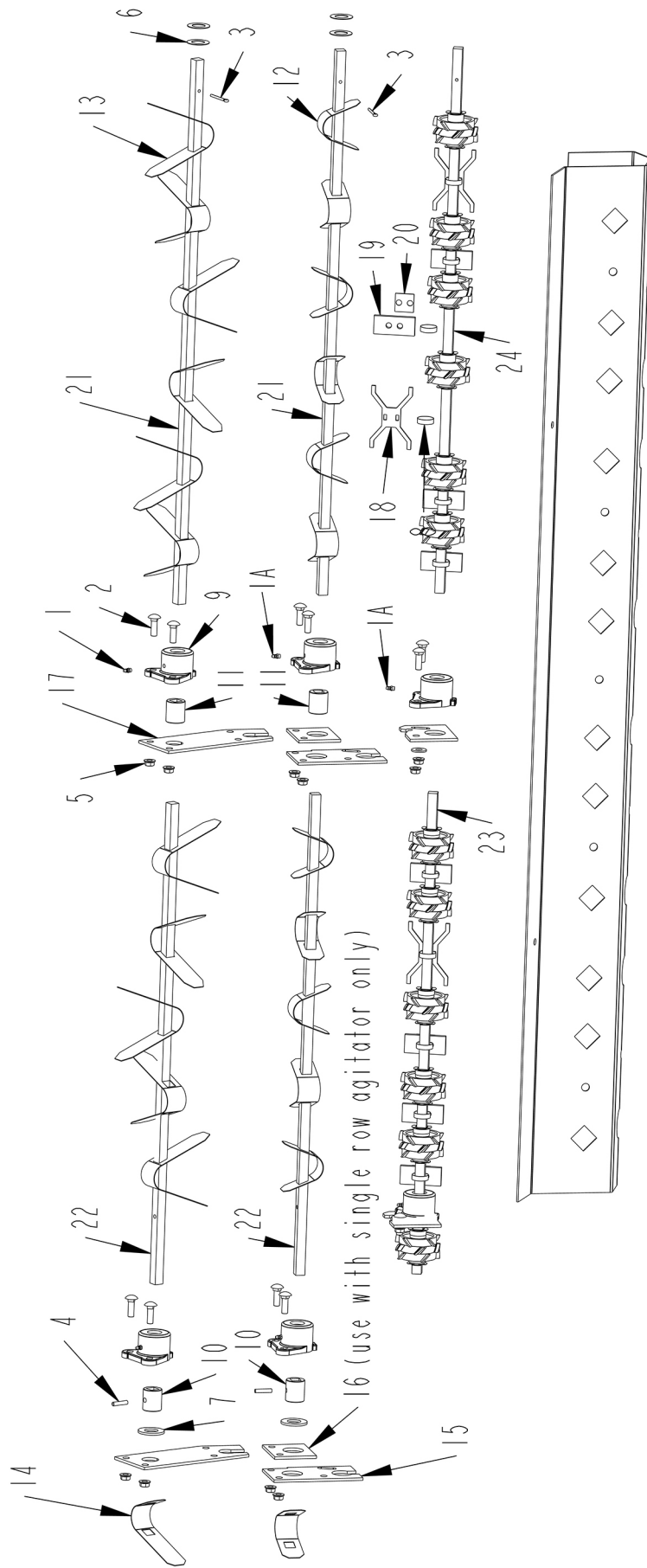


147C DRILLS

147C DRILL - S.N. 141600017C & UP

NATIVE GRASS KIT Parts Reference & Installation Instructions

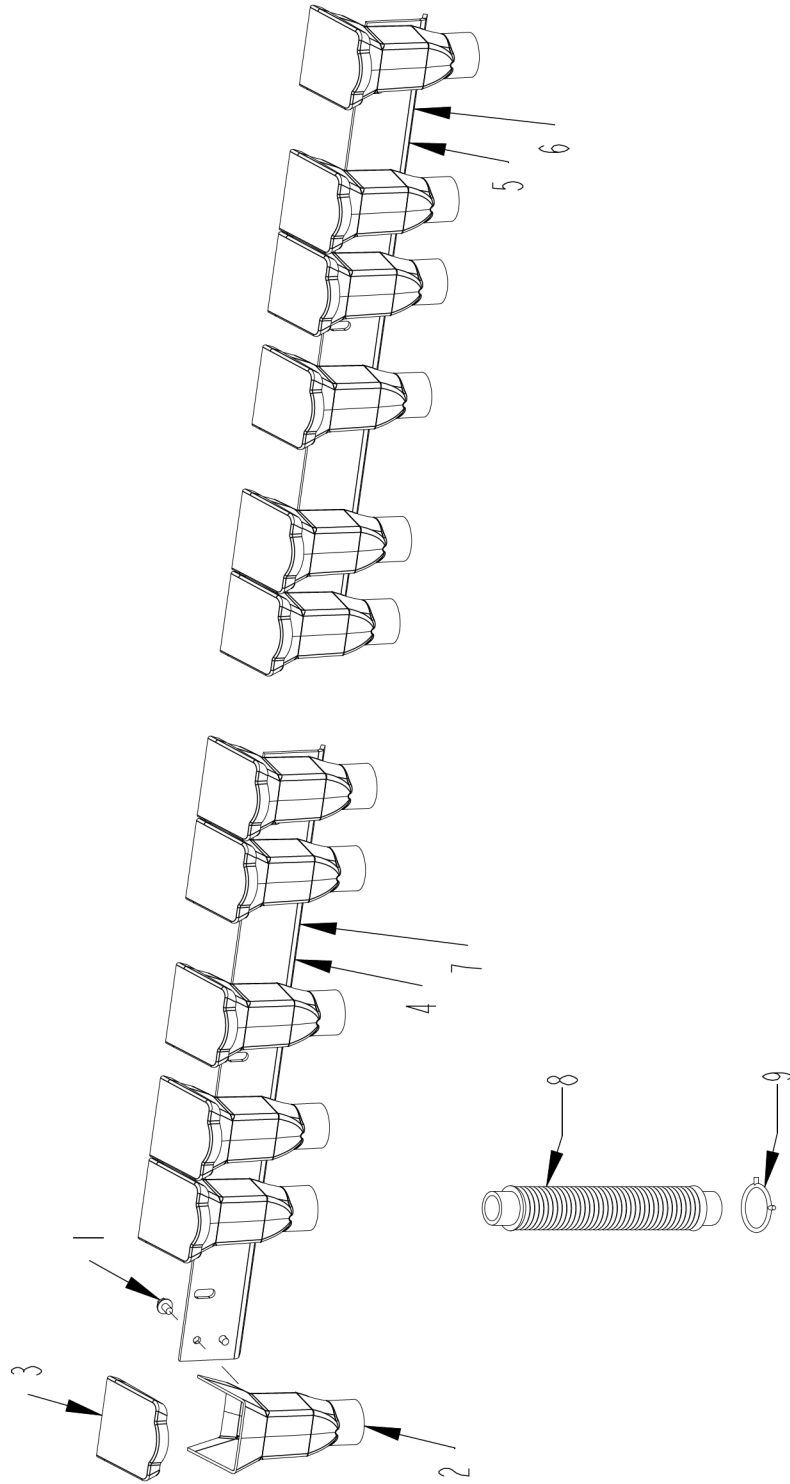
NATIVE GRASS KIT - AGITATOR SHAFTS



NATIVE GRASS KIT - AGITATOR SHAFTS

ITEM	PART	QUANTITY SINGLE AGITATOR	QUANTITY DUAL AGITATOR	DESCRIPTION
1	3800082	4	4	FTG\LUB\1/4NFXZERK\ADAPT
1A	3800098	4	8	FTG\LUB\1/4MPXZRK\45D
2	4800012	16	24	BOLT\CRG\3/8X1-1/4\NC
3	4800044	2	4	PIN\COT\5/32X1-1/2
4	4800169	2	4	PIN\RLLD\1/4X1-1/8
5	4900076	16	24	NUT\FLG\SERR\3/8\NC
6	5000027	4	8	WASH\7/8DX1-1/2OD\20GA SHIM
7	5000055	4	8	WASH\SPINDLE\7/8
8	7500107	20	20	CLMP\HOSE
9	7500108	4	8	HSG\CAST\BUSH\TANK\DRILL
10	7500109	2	4	SLV\SQ_HL\5/8X1-7/16\W/5/16_THRU_HL
11	7500562	2	4	SLV\SQ_HL\5/8X1-7/16\W/5/16_PLAIN
12	8400256	24	24	AGTTR\SM\CTR\DRILL
13	8400257	0	22	AGTTR\LRG\CTR\DRILL
14	8400258	0	2	AGTTR\LRG\OFFSET\DRILL
15	8400259	4	4	BRKT\BRG\LWR\DRILL
16	8400260	4	0	BEARING SPACER PLATE
17	8400261	0	4	BRKT\BRG\UPPER\DRILL
18	8400267	6	6	FNGR\AGTTR\DRILL
19	8400396	16	16	RUBBER PADDLE
20	8400397	16	16	PADDLE, REINFORCE PLATE
21	8400448	2	4	SHFT\TANK\37-3/8\DRILL
22	8400449	2	4	SHFT\TANK\33\DRILL
23		EXISTING SHAFT		
24		EXISTING SHAFT		

NATIVE GRASS KIT - SEED CUPS



NATIVE GRASS KIT - SEED CUPS

ITEM	PART	QTY.	PART DESCRIPTION
1	4801296	48	BOLT\FLG\SERR\5/16X1/2
2	7501402	24	FNNL\SEED\LARGE
3	7501403	24	FNNL\COVER\SEED\LARGE
4	8400767	2	MNT\SEEDCUP\REAR\GRAINTANK
5	8400768	2	MNT\SEEDCUP\REAR\GRAINTANK
6	8400777	2	CUP\SEED\CNTR\ASM
7	8400778	2	CUP\SEED\CNTR\ASM
8	7500168	24	HOSE\2"\CONVOLUTED
9	7500169	48	CLAMP\SDHOSE\2\CP-34

NATIVE GRASS KIT - TANK END DRIVE ASSEMBLY

ITEM	PART	QUANTITY SINGLE AGITATOR	QUANTITY DUAL AGITATOR	DESCRIPTION
1	1000029	2	2	SPKT\50\B\14\1\1/4KW
2	1000039	EXISTING		SPKT\50\15\1/2\IDLER
3	1000175	2	2	SPKT\B\50\18\1BORE\1/4KW
4	1100227	2	2	CHAIN\50NP\CL
4A	1100228		3	CHAIN\50NP\OL
5	1100237		2	CHAIN\50NP\95
6	1100282	2		CHAIN\50NP\69
7	2000016	2	2	BLKWOOD\IDLER
8	2000824	4	6	CLLR\BRG\1-1/4 - FOR 8400070
9	4800003	EXISTING		BOLT\HEX\3/8X1
10	4800082	2	2	BOLT\HEX\1/2X1-1/2
11	4800114	2	2	BOLT\HEX\1/2X2
12	4800230	10	16	SCR\CSK\ALN\3/8X1-1/2\NC
13	4800514	2	2	BOLT\HEX\3/8X2-3/4
14	4900001	4	4	NUT\HEX\1/2\NC
15	4900002	22	32	NUT\HEX\3/8\NC
16	5000001	12	14	WASH\FLAT\3/8
17	5000004	6	6	WASH\FLAT\1/2
18	5000006	4	4	WASH\LOCK\1/2
19	5000019	22	32	WASH\LOCK\3/8
20	5000084	2	4	2"PD 1-1/4ID OILITE WASHR
21	6200014	4	4	KEY\SQ\1/4X1-1/4
22	8400070	4	6	BRG\1-1/4W\BRKT\3-HL
23	8400071	EXISTING		SPKT\DRIVE\W\SQ_HL_SLV
24	8400074		2	PL\SEAL\TANK\DRILL
25	8400238		2	SPKT\50\24W\SQ-HL-SLV
26	8400239		2	PL\SEAL\W\SPKT\W\BRG\ASSY
27	8400240	2	2	MNT\SPKTT\IDLER\REAR
28	8400241	2	2	MNT\SPKT\IDLER\FR
29	8400242	EXISTING	EXISTING	PL\SEAL\TANK\107
30	8400438	2	2	SHFT\DRIVE\EXT\DRILL



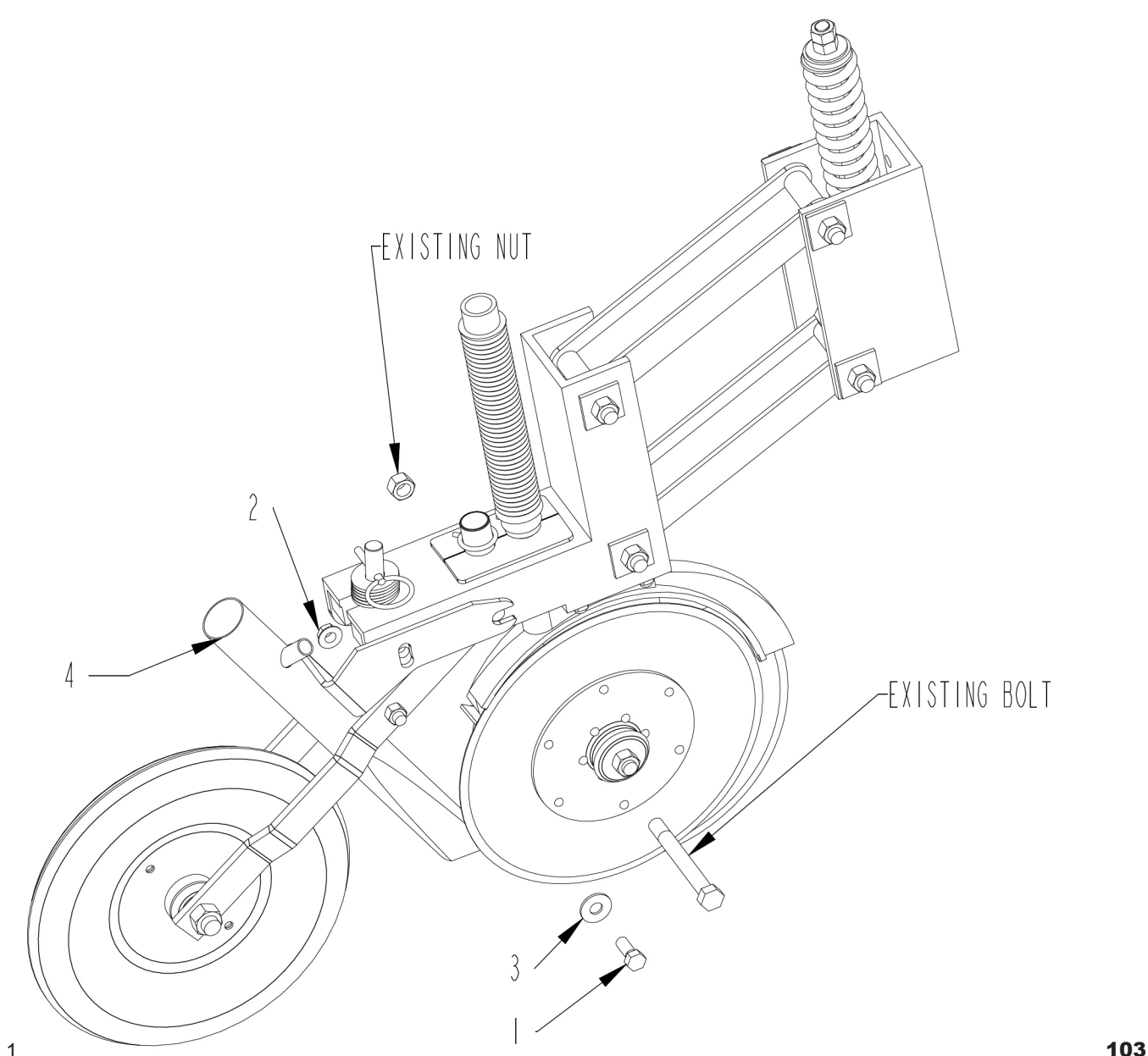
NATIVE GRASS KIT - SEED AND FERTILIZER SETTING ASSEMBLY

ITEM	PART	QTY.	PART DESCRIPTION
1	4800018	1	BOLT\HEX\1/2X1-1/4
2	4900133	1	NUT\FLG\1/2\NC
3	5000004	1	WASH\FLAT\1/2
4	8400883	1	TUBE\DROP\LARGE\LHW-NIPPL
4a	8400882	1	TUBE\DROP\LARGE\RH\W-NIPPL

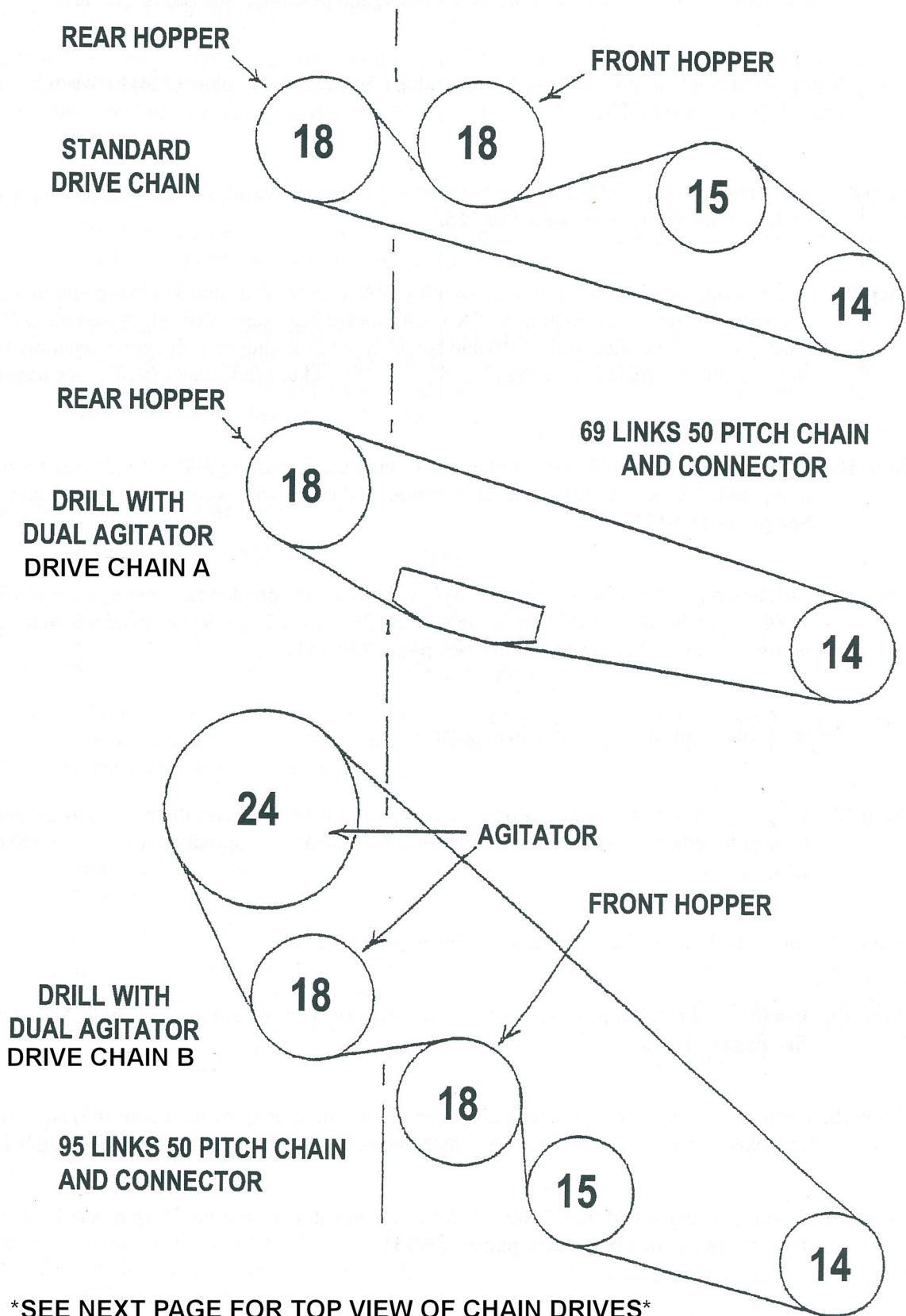
NOT SHOWN

- 7500220AS NEEDED # 7 CAPLUG
- 7501607AS NEEDED PLUG\CAP\2"ID\SC2
- 3701669AS NEEDED HOSE\PVC\5/8IDX63\CLEAR
- 7500107AS NEEDED CLAMP\HOSE\1-1/4\WORM\SS\

- 8400981 TUBE\DROP\LRG\W-NPPL\KIT\147C

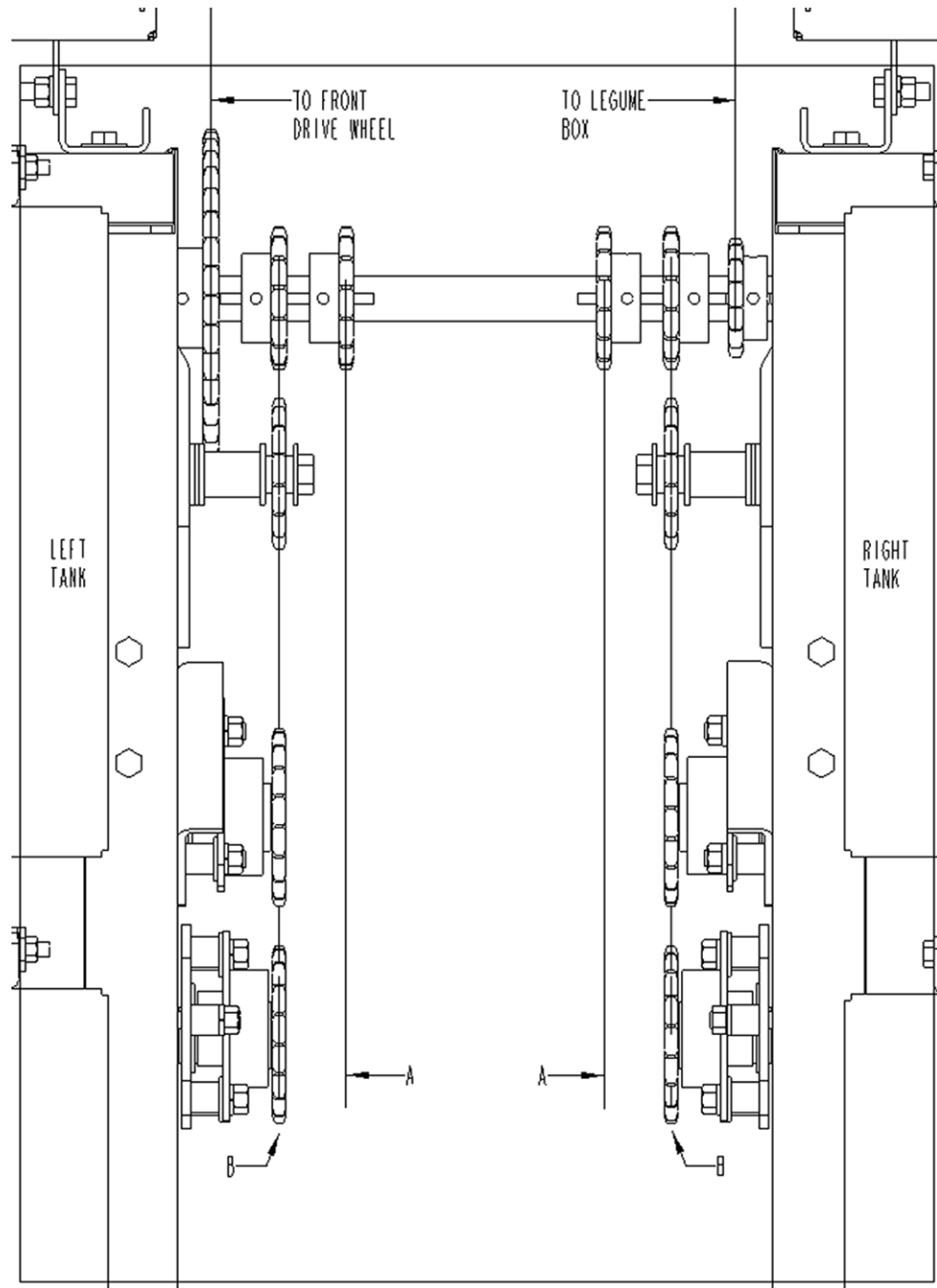


DRIVE CHAIN ROUTINGS



SEE NEXT PAGE FOR TOP VIEW OF CHAIN DRIVES

TOP VIEW OF DRIVE CHAINS



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 re-moving 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 page 56.
- 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 page 96.

Installing Feed Shaft Agitator Kits

<u>Item</u>	<u>Quantity</u>	<u>Description</u>
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 page 96.
- 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 page 96.
- 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 the 37-3/8" (#21) and 33" (#22) shafts for the upper agitator. See page 96.

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 page 96.
- 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 page 96.

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 page 96.

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 page 100.

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 page 100.

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 page 100.

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 page 100.

Step 13. Install drive chains (#5 & #6). See page 100.

Step 14. Install wood block idler (#7) using 3/8" x 2-3/4" (#13) hex head machine bolt. Adjust chain tension. See page 100.

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 page 100.

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

NATIVE GRASS KIT - SINGLE AGITATOR MASTER PARTS LIST)

PART NUMBER	QTY	DESCRIPTION
8400962		AGTTR\KIT\BTTM\SINGLE\147C
1000029	2	SPKT\B\50\14\1BORE\1/4KW
1000175	2	SPKT\B\50\18\1BORE\1/4KW
1100227	2	CHAIN\50NP\CL
1100282	2	CHAIN\50NP\69
2000016	2	BLK\WD\IDLER
3800098	4	FTG\LUB\1/4MPXZRK\45D
4800003	2	BOLT\HEX\3/8X1
4800012	24	BOLT\CRG\3/8X1-1/4\NC
4800029	2	BOLT\HEX\3/8X2-1/2
4800034	2	BOLT\HEX\3/8X1-1/2
4800044	2	PIN\COT\5/32X1-1/2
4800082	4	BOLT\HEX\1/2X1-1/2
4800169	2	PIN\RLLD\1/4X1-1/8
4800230	6	SCR\CSK\ALN\3/8X1-1/2\NC
4900001	4	NUT\HEX\1/2\NC
4900002	36	NUT\HEX\3/8\NC
5000001	12	WASH\FLAT\3/8
5000004	6	WASH\FLAT\1/2
5000006	4	WASH\LOCK\1/2
5000019	36	WASH\LOCK\3/8
5000027	8	WASH\7/8ID\1-1/2OD\18GA
5000055	4	WASH\7/8 X 1.75OD
6200014	4	KEY\SQ\1/4X1-1/4
7500107	20	CLAMP\HOSE\1-1/4\WORM\SS\
7500108	4	HSG\CAST\BUSH\TANK\DRILL
7500109	2	SLV\SQ_HL\5/8X1-7/16\W/5/16_THRU_HL
7500562	2	SLV\SQ_HL\5/8X1-1/4\1-7/16L\PLAIN
8400070	2	BRG\1-1/4W\BRKT\3-HL
8400240	2	MNT\SPKT\IDLER\REAR
8400241	2	MNT\SPKT\IDLER\FR
8400256	24	AGTTR\SM\CTR\DRILL
8400259	4	BRKT\BRG\LOWER\DRILL
8400260	4	PL\SPCR\BRG\107
8400267	6	AGGTR\FINGER\DRILL
8400396	16	PDDL\RBBR\1/4X1-1/4X2-3/4
8400397	16	PL\REIN\PADDLER\1-1/4SQ
8400438	2	SHFT\DRIVE\EXT\DRILL
8400448	2	SHFT\TANK\DRV END\37-3/8
8400449	2	SHFT\TANK\33-1/8

NATIVE GRASS KIT - DOUBLE AGITATOR MASTER PARTS LIST

PART NUMBER	QTY	DESCRIPTION
8400961		ATTACH\NTV-GRASSKIT\DLR-INS\147
0501057	1	INSTR\KIT\147C\NATIVE GRASS
1000029	2	SPKT\B\50\14\1BORE\1\4KW
1000175	2	SPKT\B\50\18\1BORE\1\4KW
1100227	2	CHAIN\50NP\CL
1100228	3	CHAIN\50NP\OL
1100237	2	CHAIN\50NP\95
2000016	2	BLK\WD\IDLER
3800082	4	FTG\LUB\1\4NFXZRK\ADPT
3800098	8	FTG\LUB\1\4MPXZRK\45D
4800003	4	BOLT\HEX\3\8X1
4800012	16	BOLT\CRG\3\8X1-1\4\NC
4800018	24	BOLT\HEX\1\2X1-1\4
4800044	4	PIN\COT\5\32X1-1\2
4800053	2	BOLT\CRG\3\8X1\NC
4800082	2	BOLT\HEX\1\2X1-1\2
4800114	2	BOLT\HEX\1\2X2
4800142	2	BOLT\HEX\3\8X1-3\4
4800169	4	PIN\RLLD\1\4X1-1\8
4800230	20	SCR\CSK\ALN\3\8X1-1\2\NC
4800514	2	BOLT\HEX\3\8X2-3\4
4900001	4	NUT\HEX\1\2\NC
4900002	28	NUT\HEX\3\8\NC
4900076	16	NUT\FLG\SERR\3\8\NC
4900133	24	NUT\FLG\SERR\1\2\NC
5000001	24	WASH\FLAT\3\8
5000004	30	WASH\FLAT\1\2
5000006	4	WASH\LOCK\1\2
5000019	26	WASH\LOCK\3\8
5000027	8	WASH\7\8ID\1-1\2OD\18GA
5000055	8	WASH\7\8 X 1.75OD
5000084	6	WASH\OILITE\2OD\1-1\4ID
6200014	4	KEY\SQ\1\4X1-1\4
7500107	20	CLAMP\HOSE\1-1\4\WORM\SS\
7500108	8	HSG\CAST\BUSH\TANK\DRILL
7500109	4	SLV\SQ_HL\5\8X1-7\16\W\5\16_THRU_HL
7500168	24	HOSE\2"\CONVOLUTED\2GRASS
7500169	48	CLAMP\SDHOSE\2\CP-34
7500562	4	SLV\SQ_HL\5\8X1-1\4\1-7\16\PLAIN
7501219	24	PLUG\PLSTC\1-1\4
8400070	2	BRG\1-1\4\W\BRKT\3-HL
8400239	2	PL\SEAL\W\SPKT\W\BRG\ASSY
8400240	2	MNT\SPKT\IDLER\REAR
8400241	2	MNT\SPKT\IDLER\FR
8400256	24	AGTTR\SM\CTR\DRILL
8400257	22	AGTTR\LRG\CTR\DRILL
8400258	2	AGTTR\LRG\OFFSET\DRILL
8400259	4	BRKT\BRG\LOWER\DRILL
8400261	4	BRKT\BRG\UPPER\DRILL
8400267	6	AGGTR\FINGER\DRILL
8400396	16	PDDL\RBBR\1\4X1-1\4X2-3\4
8400397	16	PL\REIN\PADDLER\1-1\4SQ
8400438	2	SHFT\DRIVE\EXT\DRILL
8400448	4	SHFT\TANK\DRV END\37-3\8
8400449	4	SHFT\TANK\33-1\8
8400677	2	NTV\GRASS\SHIP\KIT
8400696	24	TUBE\DROP\OVERSIZED
8400777	2	CUP\SEED\CNTR\LT\ASM
8400778	2	CUP\SEED\CNTR\RT\ASM

NOTES

