OPERATOR'S MANUAL & PARTS LIST

MULTI-drill
MODEL ND-60

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ND-60 SER. 1001 thru ___
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PBREV 1222

INTRODUCTION

Thank you for purchasing a First Products Multi-Drill. This piece of equipment has been carefully engineered and manufactured to provide years of reliable service.

The Multi-Drill is one of the most unique and versatile pieces of equipment on the market today. It is designed for no-till and conventional seeding in various soil conditions.

We recommend that you carefully read the operators manual prior to operation. Also ensure that all future operators read this manual and become fully trained before allowing them to use or maintain this equipment. Time spent becoming acquainted with the safe operation, performance, and maintenance of the Multi-Drill will add longer life and greater satisfaction to your new purchase.

This machine is designed with safety in mind. However, if the machine is handled carelessly and not as instructed, it can be a dangerous piece of equipment. Observe all safety information in this manual and decals on the equipment.

The illustrations and data used in the manual were current at the time of printing. The manufacturer reserves the right to make changes or add improvements to its products at any time without incurring any obligation to make such changes to products manufactured previously.

Use only genuine First Products parts. Substituting parts will void warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided below:

MODEL: _____
SERIAL NUMBER: _____
DATE OF PURCHASE: _____

REMEMBER SAFETY IS ALWAYS FIRST!

- **Read and understand the instructions and warnings carefully before using this machine.**

- **Read the warranty located on page 19. Fill in the required information on the warranty registration provided and return to the address on the front of this manual. The warranty registration must be returned to validate warranty.**

TABLE OF CONTENTS

GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your Multi-Drill. Read it carefully. It furnishes information and istructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some informatin may be general in nature due to unknown and variying operating conditions. However, through experience and these instructions, you should be able to develp procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing, but due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

⚠ Warning

Multi-Drill should never be operated with any safety shielding removed.

Throughout this manual, references are made to right and left locations. These are determined by standing behind the equipment facing the direction of forward travel.

SPECIFICATIONS for ND-60

Working Width	54”
Overall Width	80”
Disc Diameter	Coulter disc: 16” / Seed disc: 13.5”
Disc Spacing	9”
Hitch Category	N/A
Quick Hitch Compatible	N/A
Hydraulic Lift Compatible	Yes
Towing Hitch Compatible	Yes
Guage Tires	20 ½ X 8 X 10 (Implement Tire – 20 mph max)
Weight w/ all options	2200 Lbs
Primary Seedbox Capacity	7 ½ Bushels
Small Seedbox Capcity	2 ¾ Bushels
Primary Seed Distribution Method	Gravity metered into rows
Seed Depth Gauge Method	Gauge Wheels / Adjustable Row Unit

SAFETY SYMBOLS

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

This is a standard safety alert symbol meaning

CAUTION — **Indicates hazardous situation, injury may occur, used to alert against carelessness.**

WARNING — **Indicates potentially hazardous situation. Death or serious injury may occur if proper procedures are not followed.**

DANGER — **Indicates most hazardous situation. Death or serious injury will occur if proper procedures are not followed.**

SAFETY RULES

Safety is a primary concern in the design and manufacturing of our products. However, our efforts to provide safe equipment can be avoided by an operator's careless act. Accident prevention ultimately is dependent upon the awareness, concern, judgement, and proper training of the personnel involved in the operation, transport, maintenance, and storage of the equipment. It is incumbent upon every operator to practice proper safety protocol to avoid life-threatening situations.

Training

Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. Failure to follow instructions or safety rules can result in serious injury or death.

Know your controls and how to stop engine and attachment quickly in an emergency.

Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.

Never allow children or untrained persons to operate equipment.

Preparation

Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.

Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear proper personal protective equipment for eyes, hair, hands, hearing, and head.

Make sure all safety decals are installed. Replace if damaged. See Safety Decals section for location and part numbers for ordering replacements.

A minimum 20% of tractor and equipment weight must be on the tractor's front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up and result in loss of steering.

Operation

Keep bystanders away from equipment.

Do not operate or transport equipment while under the influence of alcohol or drugs.

Operate only in daylight or good artificial light.

Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.

Always comply with all state and local lighting and marking requirements.

Never allow riders on power unit or attachment.

Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in "locked up" position at all times.

Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other

controls are disengaged before starting power unit engine.

Look down and to the rear and make sure area is clear before traveling in reverse.

Do not operate seeder in reverse.

Use extreme care when working close to fences, ditches, other obstructions, or on hillsides.

Do not operate or transport on steep slopes.

Do not start, stop, or change directions suddenly on slopes.

Use extreme care and reduce ground speed on slopes and rough terrain.

Watch for hidden hazards on the terrain during operation.

Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.

Transportation

Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.

A minimum 20% of tractor and equipment weight must be on the tractor's front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up and result in loss of steering. The weight may be attained with front wheel weights, ballast in tires, front tractor weights, or front loader. Weigh the tractor and equipment. Do not estimate.

Do not operate or transport on steep slopes.

The ND-60 is not designed for highway transport.

Maintenance

Before dismounting power unit or performing any service or maintenance, follow these steps: 1) disengage power to equipment 2) lower unit to ground 3) operate valve levers to release any hydraulic pressure 4) set parking brake 5) stop engine 6) remove key 7) unfasten seat belt.

NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly resulting in severe injury or death. (Service work does not require going underneath).

Make sure attachment is properly secured, adjusted, and in good operating condition.

Keep all persons away from operator control area while performing adjustment, service, or maintenance.

Tighten all bolts, nuts, and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.

Make sure all safety decals are installed. Replace if damaged. See Safety Decals section for location and corresponding part numbers.

Storage

Block equipment securely for storage.

Disconnect all electrical power sources.

Cover with tarp included with seeder.

Keep children and bystanders away from
storage area.

SAFETY DECALS

Your implement comes equipped with all safety labels in place. They were designed to help you safely operate your implement.

1. Read and follow decal directions.
2. Keep all safety decals clean and legible.
3. Replace all damaged or missing decals.
4. Refer to this section for proper decal placement.

Avoid spraying too close to decals when using a pressure washer; high pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

To install new decals, clean the area the decal is to be placed. Peel backing from decal. Press firmly on surface being careful not to cause air bubbles under label.

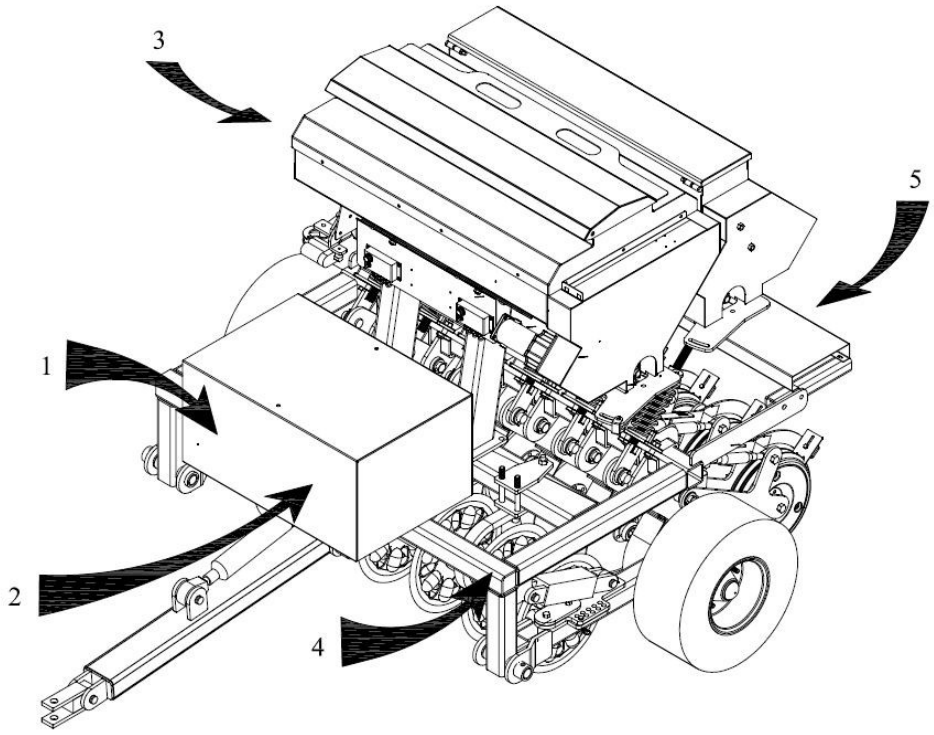
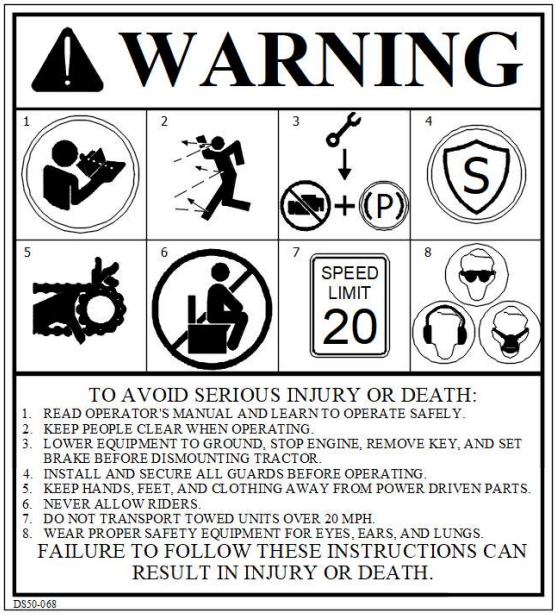


Figure 1. Safety Decal placement on Multi-Drill

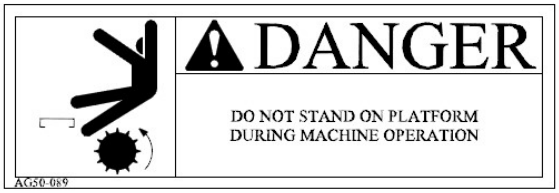
1 – General Warning (DS50-067)



2 – Operator Warning (DS50-068)

3 – Pinch Point (AE50-075)

4 – Hydraulic Pressure (AE50-194)



5 – No Riders (AG50-089)

OPERATION

The operator is responsible for the safe operation of this seeder. The operator must be properly trained. Operators should be familiar with the equipment, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals provided in this operator's manual.

The Multi-Drill is an excellent primary seeder, food plot seeder, and conservation seeder. Its primary function is to deliver a variety of seed to the soil at the desired depth with minimal ground disturbance. The Multi-Drill does this utilizing a series of discs to cut narrow slits in the ground where seed is precisely positioned at the proper depth and packed down via closing wheels. The Multi-Drill is capable of planting multiple seed varieties at once due to its optional second seed box attachment. Seed plates are adjusted on the hoppers to achieve the desired seed rates while electric actuators shuttle the hopper outlets open and closed. When the electric actuators open the hopper outlets, an electric motor stirs the seed over every outlet to encourage the free flow of seed at the measured rate. The speed of the electric motor can be manipulated to finetune the seed rate.

⚠ WARNING

Power unit must be equipped with Roll Over Protection System (ROPS) or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in" locked up" position at all times.

Never allow children or untrained persons to operate equipment.

Keep bystanders away from equipment.

Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.

⚠ CAUTION

Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, set parking brake, remove key, inspect, and repair any damage before resuming operation.

Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear proper personal protective equipment for eyes, hair, hands, hearing, and head.

Front Coulter Disc Shaft

The Multi-Drill is equipped with a coulter disc shaft mounted to the front of the frame. The function of this shaft is to cut a narrow slit in the ground in preparation for the seed delivery to follow. The cutting depth of the shaft is manipulated using the gauge wheels on the sides of the frame. The ND-60 gauge wheels are set by lifting the machine and selecting one of the numbered holes to pin located on each side of the machine beneath the hydraulic cylinders. Whatever the desired depth of the final seed delivery may be, it is recommended that these coulter discs be set to cut ¼" deeper to allow adequate room for the seed to easily fall in and be packed into place.

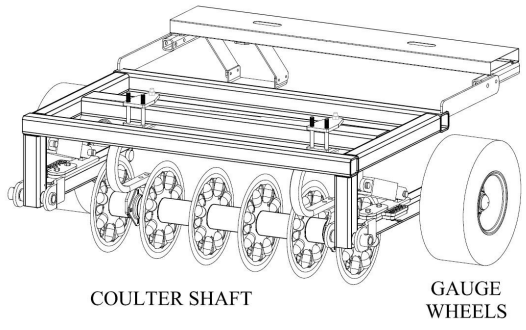


Figure 2. Coulter Disc Shaft

Seed Disc Assembly

Often referred to as double disc openers, the Multi-drill sports offset discs which follow directly behind each coulter disc and are specifically designed to open the slit made by the preceded coulter and drop seed from the primary hopper in the trench made. Each seed disc assembly is comprised of two angled discs, pressure spring, turnbuckle, seed tube, and press wheel. The seed depth is adjusted utilizing the turnbuckle. Shortening the turnbuckle shallows the seed while lengthening the turnbuckle pushes the seed deeper into the slit cut by the coulter disc. The seed tube receives the hose from the primary box and drops the seed directly between the discs at the measured depth created by the discs. The press wheel utilizes the force from the spring to firm up the soil over the seed.

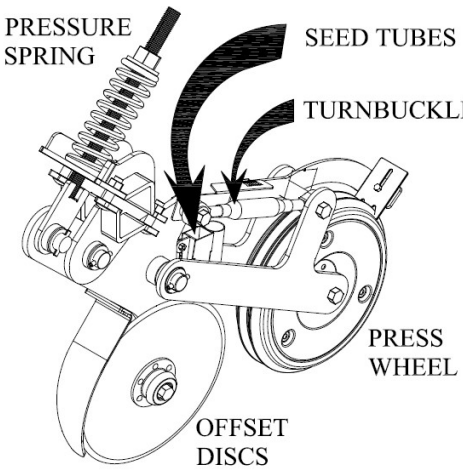


Figure 3. Seed Disc Assembly

Seeders

The Multi-drill is equipped with a standard hopper, referred to as "primary", while having the capability of adding a smaller hopper for simultaneous applications. The seeders are comprised of a hopper, seed plates, electric actuator, motor, and one handheld control harness. Each seeder utilizes the same metering principle and delivery system. The outlets on the bottom of the seeders have their sizes adjusted

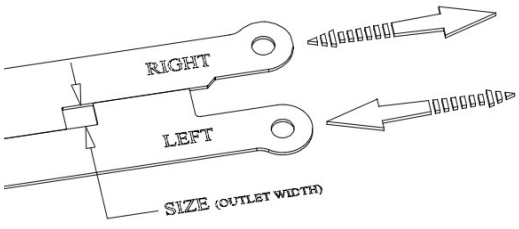


Figure 4. Seed plates

manually by sliding the seed plates past one another, Figure 4. There are different sizes of seed plates to account for the various seeds which are specified in the calibration instructions. A handheld control harness tethered to the seeders turns the seeder on and off. When the seeder is energized, an electric

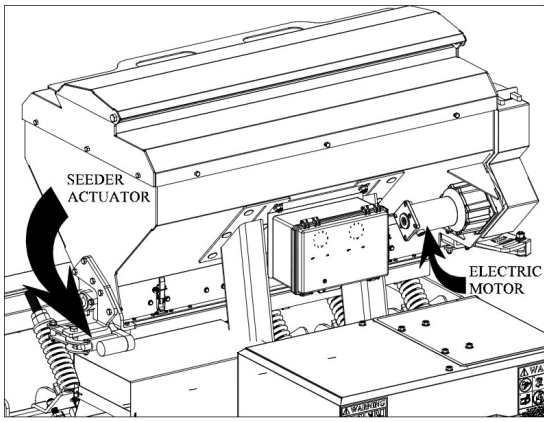


Figure 5. Seeder Actuator and Motor

actuator opens the bottom of the seeder exposing the outlets while an electric motor stirs the seed inside the hopper as shown in Figure 5. The speed of the electric motor is adjusted sprockets in the Agitator Transmission, Figure 6, mounted to the Left Side of the hopper (some seed rates require agitation speed changes).

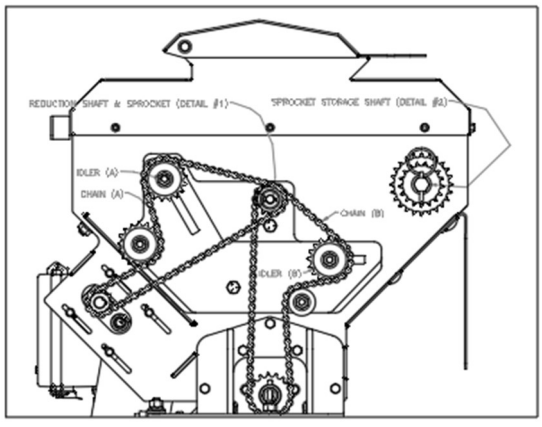


Figure 6. Agitator Transmission

Attaching Multi-Drill

Note: The ND-60 Model is designed to be pulled by a power unit where it can be safely operated from the operator's station. The operator uses the control box tethered from the Multi-Drill to lift, lower, and manipulate its seeder(s). The pull hitch is illustrated in Figure 7.

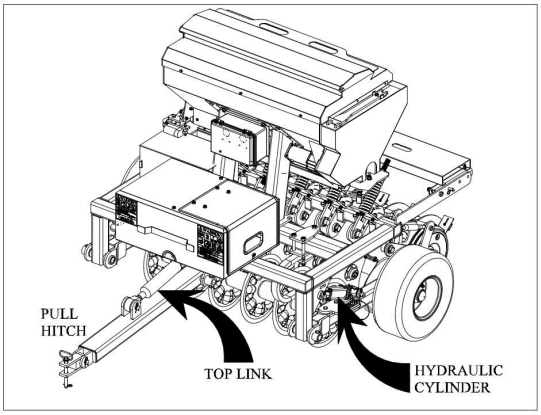


Figure 7. Pull Hitch w/ hydraulics

Pin the hitch tongue to the power unit used for transporting the Multi-Drill and adjust the top link on the hitch until the frame is level with the ground while in the operating position.

Multi-drill Setup

The Multi-Drill is capable of planting a large variety of seeds over a wide range of seeding rates. Several variables have to be taken into account when planting: seed depth, ground speed, and seed rate. These all have to come together in order to achieve the optimum stand desired.

The Multi-drill seeder utilizes a gravity feed system combined with variable seed agitation and adjustable outlets to achieve consistent and precise seed rates. The size of the outlets is primarily a function of what size seed plate is used during calibration. The speed of the seed agitator is manipulated toward the end

of the calibration process to finetune the desired rate.

Setting Seed Depth

After attaching Multi-drill to towing vehicle, the seed depth must be set before seed calibration rates are set. The following steps must be done to set the seed depth.

1, Make proper electrical connections.

2. Level Multi-drill frame.

3. Set coulter depth.

4. Check seed depth and adjust.

Each of these steps is detailed below:

1. *Make proper electrical connections.*

Note: *Check the on-board batteries shown in Figure 8 to ensure they are properly charged. A properly charged battery will read over 12.9 Volts. If batteries need charging, ensure Multi-drill is not connected to the towing vehicle's battery.*

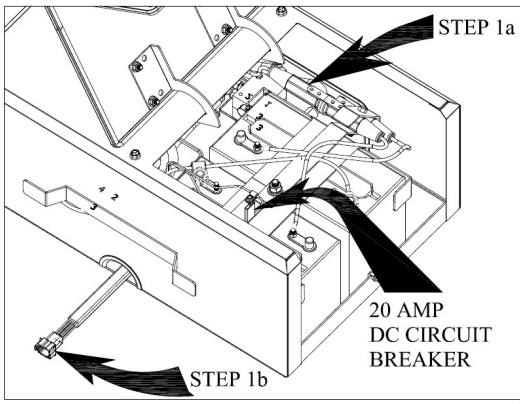


Figure 8. ND-60 Battery Box

Important: *When the on-board battery being used is drained, the 20 AMP DC Circuit Breaker, Figure 8, will be tripped. Simply moved the main power lead (illustrated as STEP 1a in figure 8) from one battery to the other and reset the breaker to continue operation. Other helpful battery tips are located on a decal under the lid of the battery cover.*

First, connect the main power lead to one of the two charged batteries (Figure 8**, STEP 1a**). Next, install wiring harness connecting the battery box (Figure 8, **STEP 1b**) to the towing vehicle's battery. This harness includes the lanyard tethering the switch box to the operator. Ensure this wiring harness is clear of any moving parts or obstructions during operation and the operator can easily access the switch box at all times.

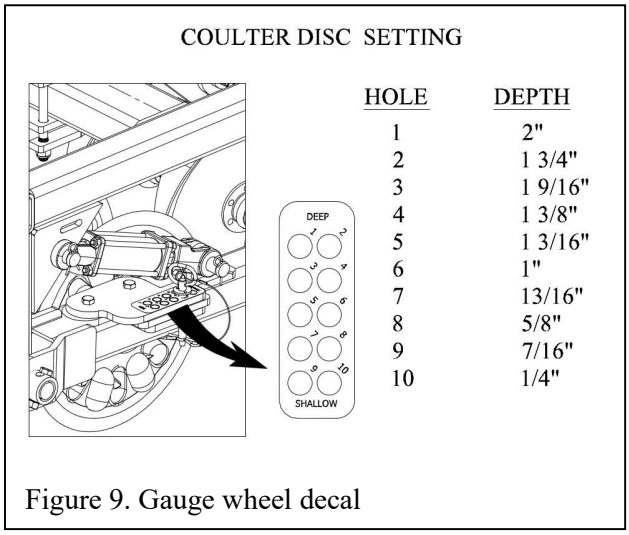


Figure 9. Gauge wheel decal

2. *Level Multi-drill frame.*

On each side of the frame are hydraulic cylinders tied to the means of controlling the coulter disc depth of cut. Pinning a selected hole restricts the movement of the gauge wheels allowing for consistent depth control when the wheels are lifted.

Determine what seed depth is desired. The coulter discs cut ¼" deeper than the seed discs which follow, so to plant a seed 1" deep, the operator should target 1 ¼" deep coulter disc depth.

3. Set Coulter Depth.

Use Figure 9 as a starting point to determine what hole to pin. Use the switch box at the operator's station to lower the Multi-drill to

the ground and manipulate until the holes align for the desired pinned position.

Once the selected holes are pinned, the Multi-drill should be operated for a few feet in the ground to check the frame for level operation as illustrated in figure 10, **STEP**

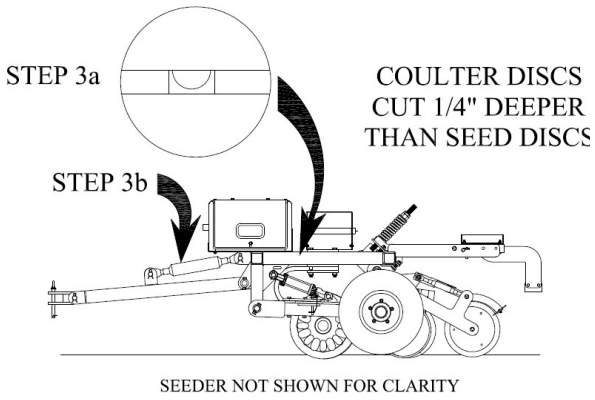


Figure 10. Leveling ND-60 Frame

3a. If not, the top link can be used to adjust accordingly, **STEP 3b**.

4. Check Seed Depth and Adjust.

After leveling the frame, use a scale to determine how deep the cuts in the ground are from the coulter discs. If they need to be lifted or lowered, select different hole to pin and repeat leveling process until desired coulter disc depth is reached.

Once the frame is level and the desired depth of cut is obtained, a short pass can be made operating the seeder at the desired speed (typically the seeder is calibrated at this point – see next section for instructions). This allows the operator to check the seed depth.

After checking the depth of the seed in the ground, adjustments can be made by adjusting the pressure on the Press Wheel (Figure 11). The seed can be slightly lowered or lifted rotating the Top Link on the attached Row Unit. Shorten the Top Link to lower the seed deeper and lengthen the Top Link to raise the seed closer to the surface. The Scraper Gauge is used as a point of reference for this final adjustment. Simply repeat this step until the proper seed depth is obtained.

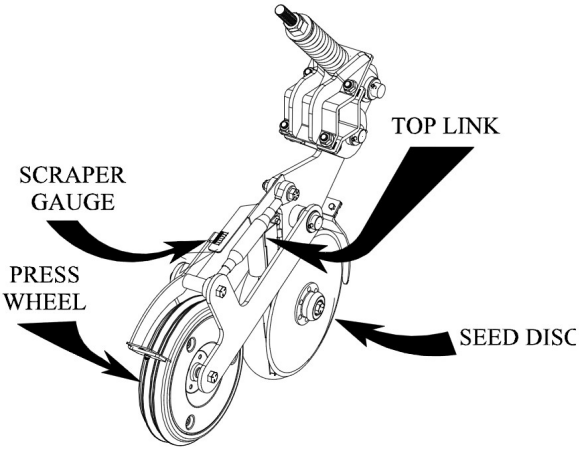


Figure 11. Seed disc adjustment

Seeder Calibration

Before operating the seeder, calibration has to be done in order to take all variables into account and maximize efficiency of the seeder. The following steps must be done to calibrate the seeder:

1. Determine ground speed.
2. Select seed rate.
3. Set seed plates and electric motor setting (use Figure 12 as starting point).
4. Use calibration chart to find target seed weight (Figure 14).
5. Position calibration trough to catch seed and only put enough seed in hopper to catch.
6. Operate seeder in air for 1 minute.
7. Compare weight of seed caught to the target weight in step 4.
8. Manipulate seed plates or electric motor speed to reach target weight.
9. Repeat steps 5 thru 8 until target weight is achieved.
10. Check for consistent seed metering.

Each of these steps is detailed below:

1. Determine ground speed

Determining ground speed usually depends on the terrain in which the seeding is done. In order to help set a ground speed, it is recommended the operator make a test pass without operating the seeder to determine a good starting point. If the tractor isn't equipped with a speedometer, a smartphone app may prove useful.

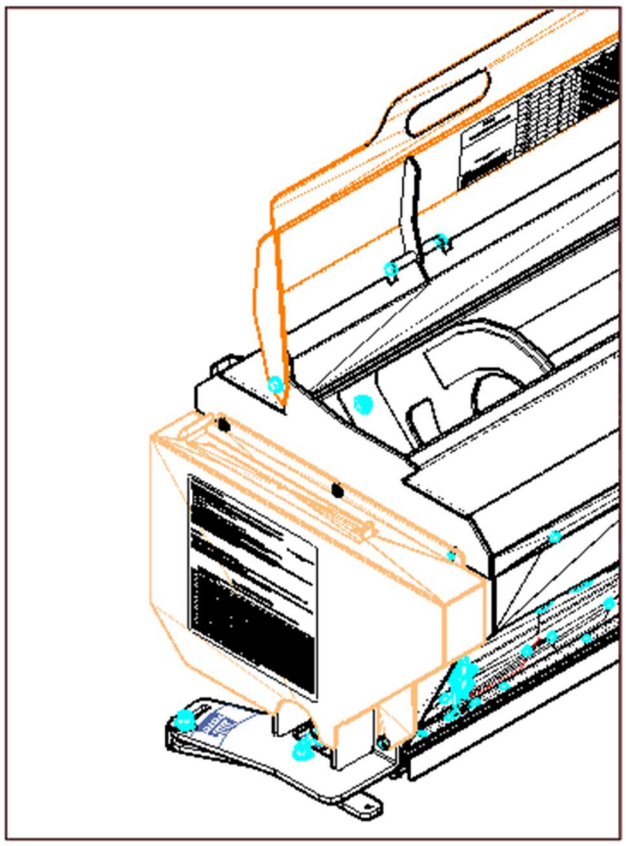


Figure 12. Quick Start Setting Guide - Step 3

2. Select seed rate

Most seed varieties have a set standard for what rate works best. Investigate the seed and determine what the recommended rate would be for the particular application. The calibration chart uses pounds per acre.

3. Set seed plates and Agitator sprocket

Determine the seed plates needed to achieve the desired seed rate. The seed plates come in four different sizes identified with laser etching on one end. Figure 12 displays the Quick Start Setting Guide location inside the Primary Hopper Lid and the Calibration Chart located on the Chain Gaurd. This chart is used as a point of reference to help select the proper seed plate, set them in the right position, and start the electric motor at the right speed.

If the Quick Start Setting Guide is not helpful for selecting a seed plate, below is a list of common seeds under the corresponding seed plates:

¼" Seed Plate: Clover, Grain, Sorghum, Canola

3/8" Seed Plate: Soybeans **(low rates)**

½" Seed Plate: Wheat and Rye Grass Peas, Beans **(under 60 lbs/acre)**, Soybeans **(moderate rates)**

¾" Seed Plate: Wheat and Rye Grass, Oats, Mixes, medium to large Grains, Peas, Beans **(over 60 lbs/acre)**, Soybeans **(high rates)**

If the current plates inside the hopper are not the desired set to use, refer to "Changing Seed Plates" for step-by-step instructions.

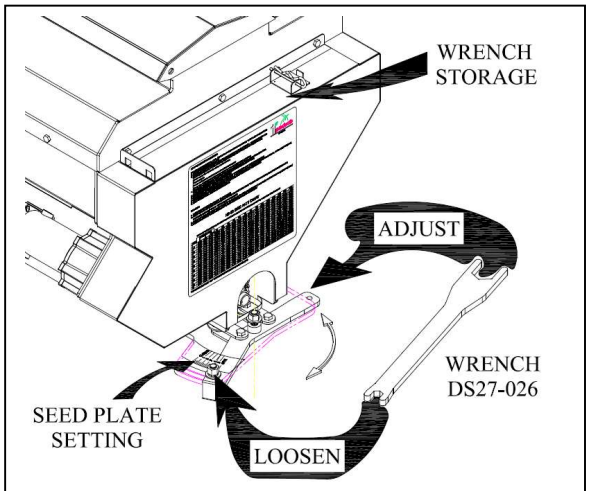


Figure 13. Seed Plate Setting/Adjustment

To set the seed plates, the Multi-Drill is supplied with a wrench, DS27-026, to help as shown in Figure 13. Use the wrench to loosen the Setting Bolt sporting the arrow; the wrench also adds leverage for shifting the plates to the desired

setting. When the setting is adjusted, retighten the Setting Bolt and store the wrench for future use.

While checking the Quick Chart Setting Guide recommendations, determine the correct sprocket size needed for the seed you are planting. To change sprockets, disconnect the drill from power source, remove the chain guard, and follow instructions on decal inside of the chain guard.

5. Position Calibration Trough & add seed

Every Multi-Drill is equipped with calibration trough which is used to catch the seed. In order to do so, the trough should be positioned directly under the seed discs while the machine is lifted. **Only add enough seed to catch and weigh**. Filling the seeder now may result in unnecessary work if the Seed Plates need to be changed in later steps. **Only use clean seed free of trash, debris, and husks which may inhibit seed flow through the seeder.**

ND-60 Calibration Chart

This Chart Lists the Weight of Seed Captured for One Minute (Target Weight) - *STEP 4*

Ground Speed (MPH) - *STEP 1* \ Desired Seed Rate (Pounds/Acre) - *STEP 2*	3	5	10	20	30	40	50	60	70	80	90	100	120	140	160	180	200
1	0.03	0.05	0.10	0.19	0.29	0.38	0.46	0.55	0.64	0.73	0.82	0.91	1.09	1.27	1.45	1.64	1.82
1.5	0.04	0.07	0.13	0.26	0.40	0.53	0.68	0.82	0.95	1.09	1.24	1.37	1.64	1.91	2.18	2.47	2.74
2	0.05	0.10	0.19	0.38	0.58	0.77	0.91	1.09	1.27	1.45	1.64	1.82	2.18	2.54	2.90	3.29	3.65
2.5	0.07	0.11	0.23	0.46	0.68	0.91	1.14	1.37	1.59	1.82	2.06	2.28	2.73	3.18	3.63	4.11	4.56
3	0.08	0.14	0.28	0.55	0.83	1.10	1.37	1.64	1.91	2.18	2.47	2.73	3.28	3.82	4.36	4.93	5.47
3.5	0.10	0.16	0.31	0.62	0.94	1.25	1.60	1.91	2.23	2.54	2.88	3.19	3.82	4.45	5.08	5.75	6.38
4	0.11	0.18	0.36	0.72	1.08	1.44	1.82	2.18	2.54	2.90	3.29	3.65	4.37	5.09	5.81	6.58	7.30
4.5	0.12	0.20	0.41	0.82	1.22	1.63	2.05	2.46	2.86	3.27	3.70	4.10	4.91	5.72	6.53	7.40	8.21
5	0.14	0.23	0.46	0.91	1.37	1.82	2.28	2.73	3.18	3.63	4.11	4.56	5.46	6.36	7.26	8.22	9.12
5.5	0.15	0.25	0.49	0.98	1.54	1.97	2.51	3.01	3.50	3.99	4.52	5.02	6.01	7.00	7.99	9.04	10.03
6	0.17	0.27	0.54	1.08	1.62	2.16	2.74	3.28	3.82	4.36	4.93	5.47	6.55	7.63	8.71	9.86	10.94
6.5	0.18	0.29	0.59	1.18	1.76	2.35	2.96	3.55	4.13	4.72	5.35	5.93	7.10	8.27	9.44	10.69	11.86
7	0.19	0.32	0.64	1.27	1.91	2.54	3.19	3.82	4.45	5.08	5.75	6.38	7.64	8.90	10.16	11.51	12.77
7.5	0.20	0.34	0.67	1.34	2.02	2.69	3.42	4.10	4.77	5.45	6.17	6.84	8.19	9.54	10.89	12.33	13.68
8	0.22	0.36	0.72	1.44	2.16	2.88	3.65	4.37	5.09	5.81	6.58	7.30	8.74	10.18	11.62	13.15	14.59
8.5	0.23	0.39	0.78	1.56	2.34	3.12	3.88	4.64	5.41	6.17	6.99	7.75	9.28	10.81	12.34	13.97	15.50
9	0.25	0.41	0.83	1.66	2.48	3.31	4.10	4.91	5.72	6.53	7.40	8.21	9.83	11.45	13.07	14.80	16.42
9.5	0.26	0.44	0.88	1.75	2.63	3.50	4.33	5.19	6.04	6.90	7.81	8.66	10.37	12.08	13.79	15.62	17.33
10	0.28	0.46	0.91	1.82	2.74	3.65	4.56	5.46	6.36	7.26	8.22	9.12	10.92	12.72	14.52	16.44	18.24

Figure 14. ND-60 Calibration Chart used for Step 4

Most seeds use the 24 tooth sprocket, the 12 tooth is for Oats and high rates at high speeds of cereal grains. The 17 tooth is for fine tuning if needed.

4. Find Target Seed Weight

Finding the Target weight is simply done using the calibration chart seen in Figure 14. Knowing the ground speed (left side of chart) and the desired seed rate (top of chart), a target weight to be caught can be selected.

6. Operate Seeder for One Minute

With seed loaded in Multi-Drill, use the handheld control harness to operate the seeder in the air for one minute. The seed should flow through the seed discs and be captured by the calibration trough.

7. Weigh and Compare Seed Weight

The seed caught in the calibration trough from step 6 will need to be weighed on an accurate

digital scale capable of producing pounds (in decimal form is preferred). If the scale displays pounds and ounces, divide the ounces by 16 and add the decimal to the pounds to get the complete weight.

8. Manipulate Seed Plates

The seed plates can be repositioned to dial the seed rate in closer to the target using the same method outlined in step 3. If the rate needs to increase, the setting will be increase; and likewise, the setting will decrease if the rate needs to be cut down.

9. Repeat Steps as Necessary

Until the target weight is achieved, steps 5 through 8 should be repeated. In some instances, the seed plates may need to be changed during this process.

10. Check for consistent seed metering

Particularly with large seed being metered with small Seed Plates, it is recommended to check for consistent seed metering to produce a good stand. To do so, simply make a short pass with the Multi-drill slightly lifted in the air so the seed can fall on the ground at the desired ground speed. If the seed appears to be dropping at even increments, the seeder is ready; however, if the seed placement is not consistent, a larger setting may need to be considered.

Changing Seed Plates

The seed plates are strategically positioned between the hopper's outlet holes (seen when the hopper is empty) and the "cutoff plate" which the linear actuator shuttles back and forth to start and stop seed flow.

Each set of plates are labeled with laser etching on one side: "left", "right", and their respective sizes (Figure 16).

In order to change the seed plates, the hopper must be clean. If the plates are removed with seed in the hopper, the seed can wedge between the "cutoff plate" and the hopper outlets making it impossible to slide the next set of plates into place. Water can be used to clean; however, the hopper must be completely dry before any calibration or operation can continue. If water is used, compressed air is recommended for thoroughly drying before continuing.

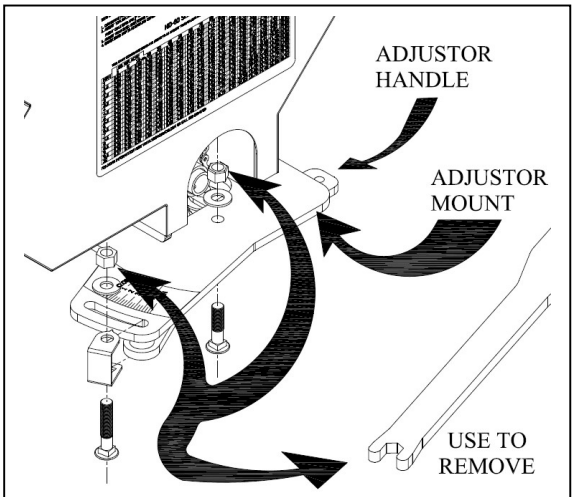


Figure 15. Seed Plates – *Step 1*

The seed plates are changed using the following steps:

1. Clean hopper and remove any loose impediments or debris that may interfere with Seed Plates being removed from seeder.
2. To change plates you will need two 9/16" wrenchs and the Adjuster Wrench, DS27-026. Using the small end of the Adjuster Wrench, located on top of chain cover as shown in Figure 13. Loosen and remove the two ½" carriage head bolts connecting the adjuster handle to the Adjuster mount as shown Figure 15.
3. Pull straight out on the adjuster handle and slide the seed plate assembly out of the seed box as shown in Figure 16.
4. Using the 9/16" wrenches, loosen and remove the 3/8" bolts connecting both

seed plates to the adjuster linkages as shown in Figure 16.

5. Slide the plates and bushings out of linkages, set plates to the side, hold onto the bushings.
6. Select plates you want in machine and be sure to read etchings on plate ensuring both plates have the same size with corresponding sides.
7. When reassembling the seed plate assembly, be sure the left and right plates are oriented as shown in Figure 16.
8. Take seed plate assembly and slide back into machine; be sure to put seed plates on top of cut off plate when starting to push them into the machine as shown in Figure 17. Compressed air may be used to blow out any debris impeding the new seed plates from sliding into place.

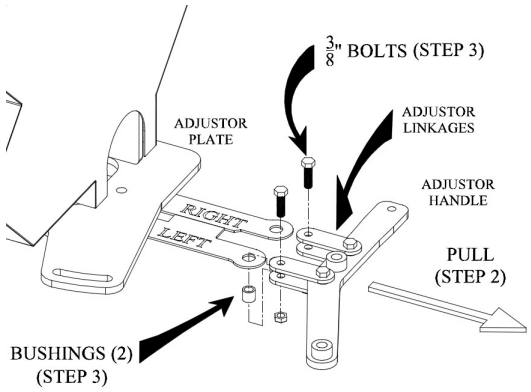


Figure 16. Seed Plates – *Steps 2,3 & 6*

9. Reattach the Adjuster Handle to the Adjuster Mount as shown in Figure 13, and fasten bolts.

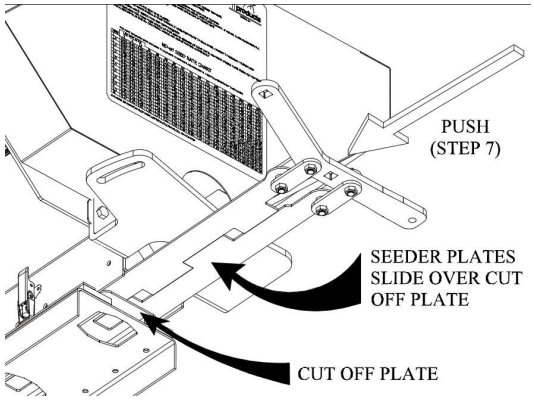


Figure 17. Seed Plates – *Step 7*

CLEANING

After Each Use

Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.

Inspect machine and replace worn or damaged parts.

Replace any safety decals that are damaged, missing, or not legible.

Grease bearings located on Coulter Disc shaft.

Oil and tighten (if necessary) all chains driving powered components.

Thoroughly clean hopper(s) vacuuming out all seed and debris from previous use.

Periodic or Before Extended Storage

Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.

Remove the remaining debris with a low-pressure washer spray:

1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
2. Be careful when spraying near chipped or scratched paint as water spray may lift paint.
3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.

Inspect machine and replace worn or damaged parts.

Check all hardware and ensure proper torque is present.

Sand down scratches and the edges of area of missing parts and coat with First Products spray paint of matching color.

Replace any safety decals with that are missing or not legible. See Safety Decals section for location drawing.

Cover the seeder with supplied tarp when the Multi-drill is being stored.

NOTE: Occasionally, it may be necessary to lower the trough as illustrated in Figure 18 to thoroughly clean all the moving components in the hopper to promote easier calibration and functionality in the future.

1. Remove Seed Plates as explained in previous section.
2. Use the latches to lower and hold the trough in place while using water or compressed air to clean all moving parts and their corresponding surfaces. If water is used do not reassemble until everything is thoroughly dry.
3. It is best to use the latches on the front and back to simultaneously lift the trough back into place making sure not to pinch the Cut Off Plate between the trough and the hopper.
4. Install desired Seed Plates for future use.

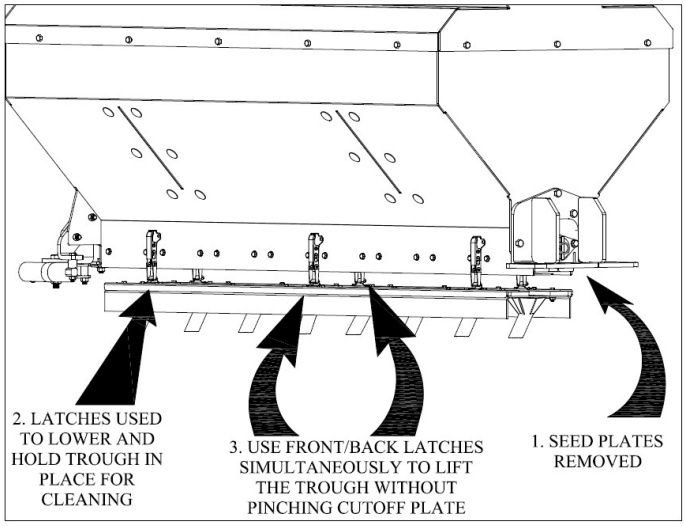


Figure 18. Trough lowered and cleaned

WARRANTY INFORMATION

ONE YEAR LIMITED WARRANTY

FIRST PRODUCTS INC. WARRANTS THIS PRODUCT TO BE FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF TWELVE MONTHS FROM THE ORIGINAL DELIVERY DATE. THIS WARRANTY DOES NOT COVER PARTS CAUSED TO BE DEFICIENT DUE TO NORMAL WEAR, MISUSE, ACCIDENTS, OR LACK OF PROPER MAINTENANCE.

ANY PARTS THOUGHT TO BE DEFECTIVE MUST BE RETURNED TO FIRST PRODUCTS FOR WARRANTY CONSIDERATION JOINTLY WITH FACTORY REPRESENTATIVES. A RETURN AUTHORIZATION NUMBER MUST BE OBTAINED AND CLEARLY MARKED ON ALL PACKAGES OF PARTS REQUIRING RETURN TO THE FACTORY.

THE OBLIGATION OF FIRST PRODUCTS INC. UNDER THIS WARRANTY SHALL BE EXCLUSIVELY LIMITED TO REPLACEMENT OF PARTS DETERMINED TO BE DEFECTIVE BY FIRST PRODUCTS INC. WITH FREIGHT PREPAID. IN NO EVENT SHALL FIRST PRODUCTS INC. BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OF THIS PRODUCT.

FIRST PRODUCTS INC. RESERVES THE RIGHT TO MAKE CHANGES OR ADD IMPROVEMENTS TO ITS PRODUCTS AT ANY TIME WITHOUT OBLIGATION TO MAKE SUCH CHANGES OR IMPROVEMENTS ON PRODUCTS SOLD PREVIOUSLY.

WARRANTY CLAIMS ARE PAID USING A JOB STANDARD (AUTHORIZING MAN HOURS) USING THE APPROPRIATE TIME FRAME ALLOWED FOR EACH PART REPLACED OR LABOR FUNCTIONS PERFORMED. THIS JOB STANDARD LIMITS THE MAN HOURS AUTHORIZED BY TASK. IT DOES NOT SET A SPECIFIC HOURLY RATE BUT LIMITS THE AUTHORIZED MAN HOURS THAT WILL BE PAID BY EACH TASK. MILEAGE IS NOT PAID.

FIRST PRODUCTS INC.

WARRANTY REGISTRATION CARD

WARRANTY VOID IF THIS CARD IS NOT ON FILE AT FIRST PRODUCTS INC.

DATE OF SALE_____

MODEL NUMBER_____**SERIAL NUMBER**_____

CUSTOMBER INFORMATION

NAME_____

ADDRESS_____

CITY_____STATE_____ZIP_____

ATTACHMENTS: TOW HTICH ☐ SMALL BOX ☐

UNIT TO BE USED INWHAT APPLICATION (CHECK ALL THAT APPLY)

CITY/COUNTY ☐	EQUESTRIAN ☐	COM. LANDSCAPE ☐
TURF/SOD FARM ☐	SPORTS FIELDS ☐	COVER CROP ☐
FOOD PLOT ☐	PASTURE ☐	RENTAL ☐

PLEASE HELP US DETERMINE THE BEST WAY TO ADVERTISE OUR PRODUCTS & BREIFLY EXPLAINED WHERE YOU HEARD ABOUT THIS EQUIPMENT:

REAL TREE ☐	KILLIN THE GAME ☐	SOCIAL MEDIA ☐
ORGANIC SEARCH ☐	WORD OF MOUTH ☐	OTHER_____ ☐

RETURN THIS PORTION

(warranty card can be mailed removing this page, emailing it to sales@1stproducts.com or faxed to 229-382-0506)

CUT ALONG LINE TO REMOVE

CUSTOMER'S RECORD

MODEL NUMBER_____

SERIAL NUMBER_____

DATE PURCHASED_____

FIRST PRODUCTS INC.
1-800-363-8780
E-mail: sales@1stproducts.com

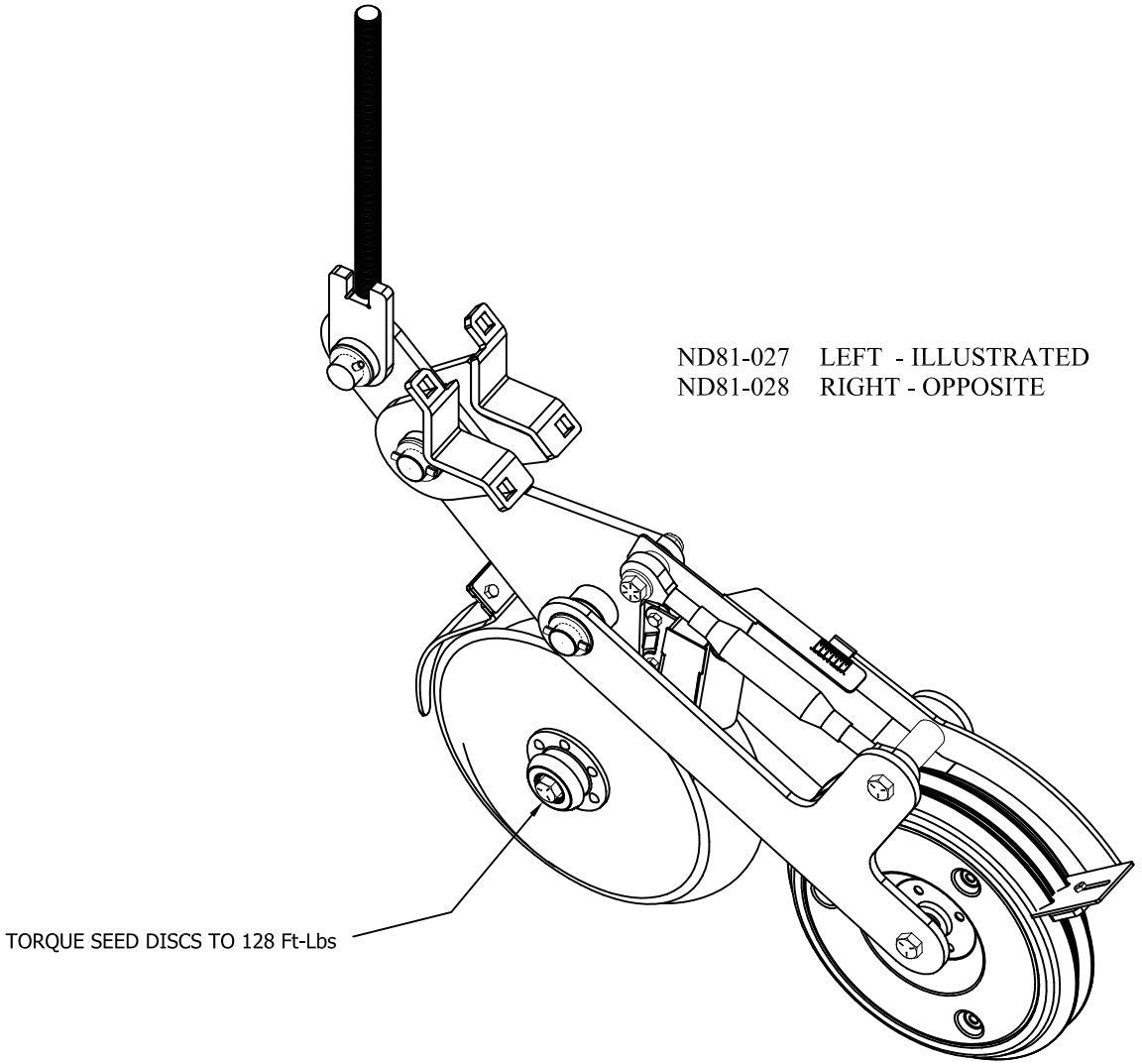
AFTER COMPLETING, REMOVE MANUFACTURERS CARD, FOLD, STAPLE CORNERS, STAMP & MAIL.

PLACE
STAMP
HERE

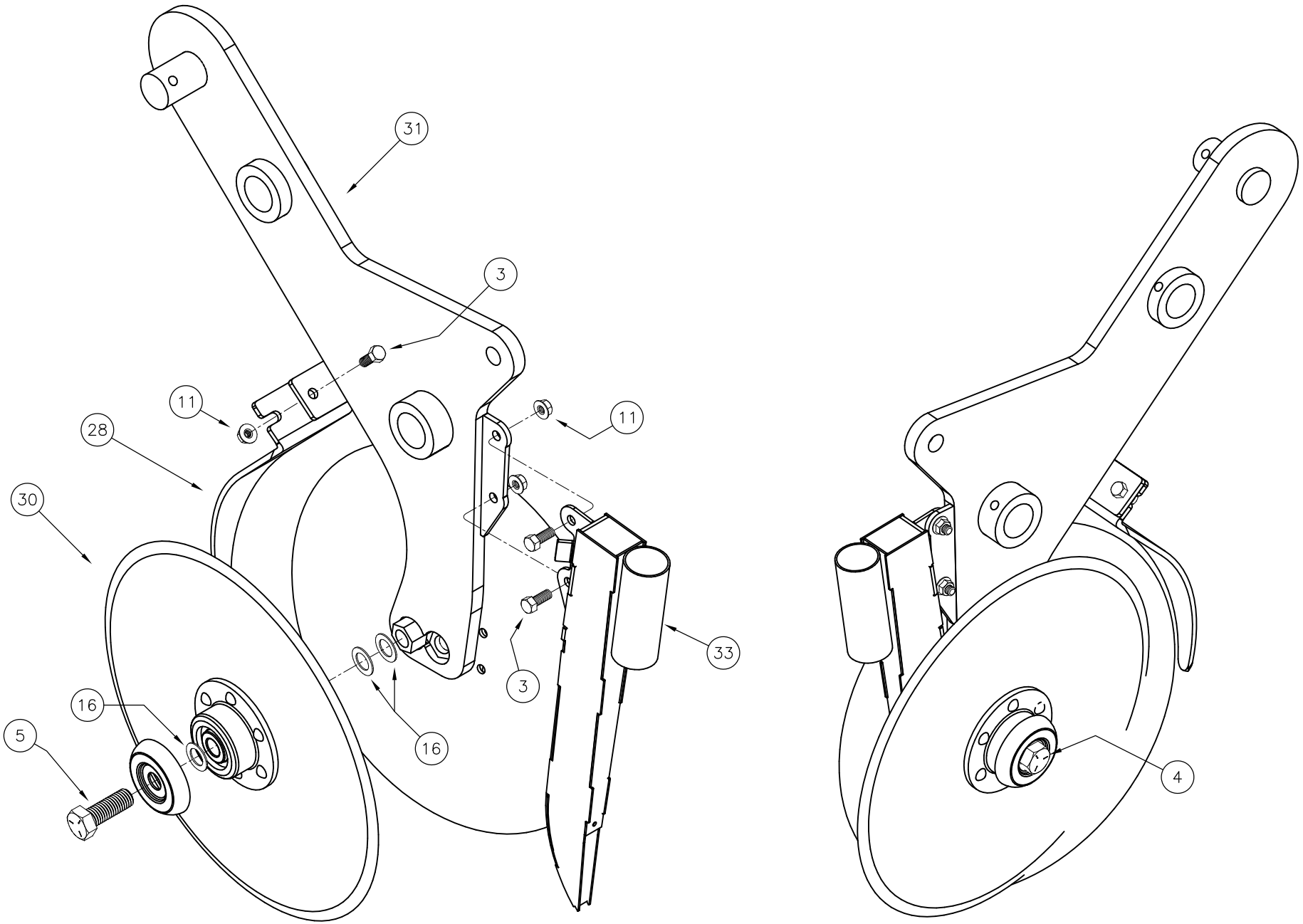
FIRST PRODUCTS INC.
164 OAKRIDGE CHURCH RD.
TIFTON, GA 31794

ROW UNIT GROUP

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	FL50-008	CAT. 0 TOP LINK	1	14	HW32020TAZP	5/8 Lockwasher	2	27	ND27-071	SCRAPER GAUGE, RT (ND81-028)	1
2	HW01008024G2ZPC	1/4 X 3/4 HHCS	1	15	HW42010064ZP	5/16 X 2 ROLL PIN	5	28	ND27-076	No-Till Rock Gaurd 13.5"	1
3	HW01010024G5PLC	5/16 X 3/4 HHCS	4	16	HW6002003218GZP	5/8 ID X 1 OD 18 GA. M.B.	6	29	ND50-001	DUAL RIB PRESS WHEEL	1
4	HW01020056G5ZPC	5/8 x 1 3/4 HHCS G5	1	17	HW6004006010GZP	1 1/4 x 1-7/8 x 10 GA. M.B.	5	30	ND50-006	13.5" SEED DISK	2
5	HW01020056G5ZPD	5/8 x 1 3/4 HHCS G5 Left hand	1	18	ND24-005	GAUGE ARM SPACER 1	1	31	ND80-005	OFFSET DISK OPENER LEG; LT (ND81-027)	1
6	HW01020096G5ZPC	5/8 X 3 HHCS	1	19	ND24-006	GAUGE ARM SPACER 2	1	32	ND80-006	OFFSET DISK OPENER LEG; RT (ND81-028)	1
7	HW01020160G5ZPC	5/8 X 5 HHCS	2	20	ND24-007	PRESS WHEEL SPACER	2	33	ND80-046	SEED TUBE; Left (ND81-027)	1
8	HW08010016PLC	5/16 X 1/2 SET SCW	2	21	ND26-020	MASTER PIN: R.U.	1	34	ND80-047	SEED TUBE; Right (ND81-028)	1
9	HW20020G5ZPC	5/8 HEX NUT	2	22	ND26-021	FULCRUM PIN: R.U.	1	35	ND81-001	SEE DIAMOND MOUNT GROUP	1
10	HW22008G5ZPC	1/4 FLG. LOCK NUT	1	23	ND27-015	SCRAPER	1	36	ND81-002	SEE DIAMOND MOUNT GROUP	1
11	HW22010G5PLC	5/16 FLG. LOCK NUT	4	24	ND27-068	SCRAPER ARM; LT (ND81-027)	1	37	ND81-003	SEE PRESS WHEEL ARM GROUP	1
12	HW24020GBZPC	5/8 STOVER LOCK NUT	1	25	ND27-069	SCRAPER ARM; RT (ND81-028)	1	38	ND81-004	SEE PRESS WHEEL ARM GROUP	1
13	HW30020G8ZPC	5/8" Flatwasher G8	1	26	ND27-070	SCRAPER GAUGE, LT (ND81-027)	1	39	ND81-009	SEE SPRING ROD GROUP	1



ROW UNIT GROUP



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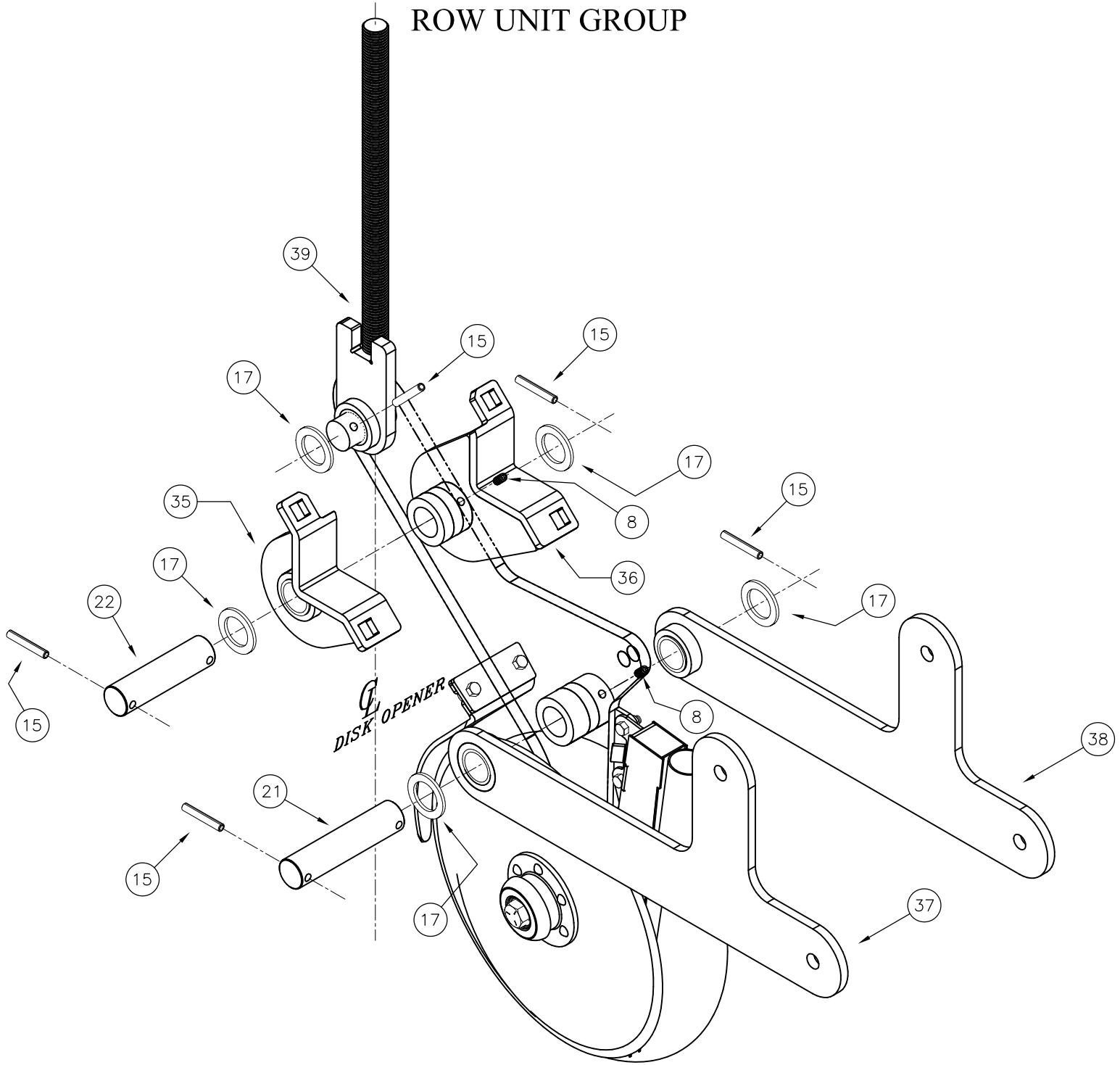

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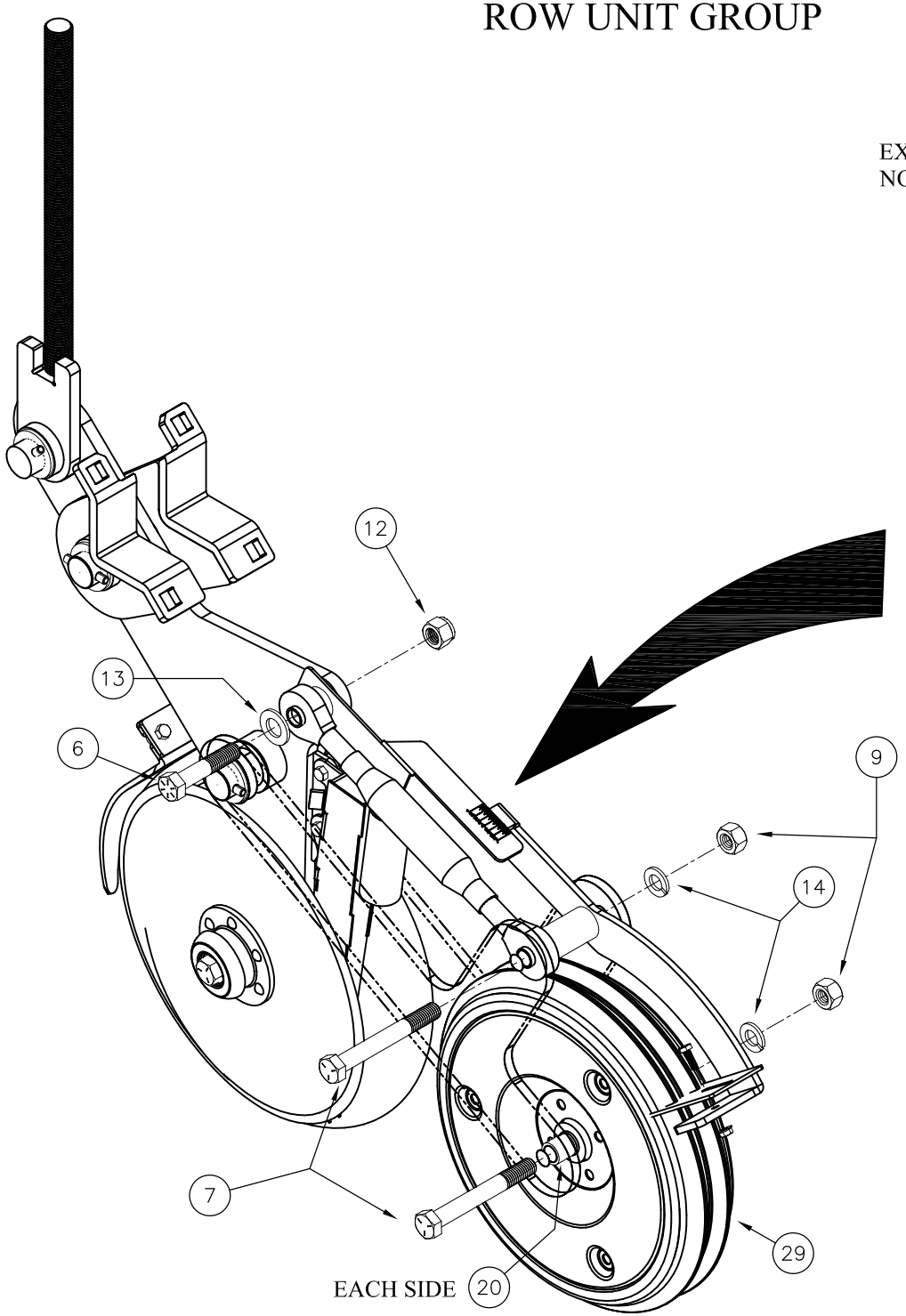
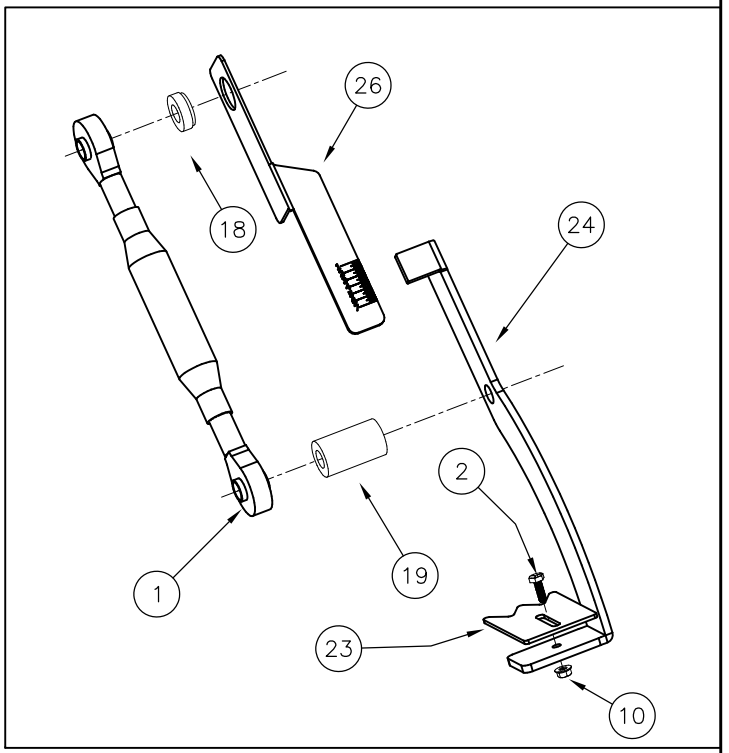
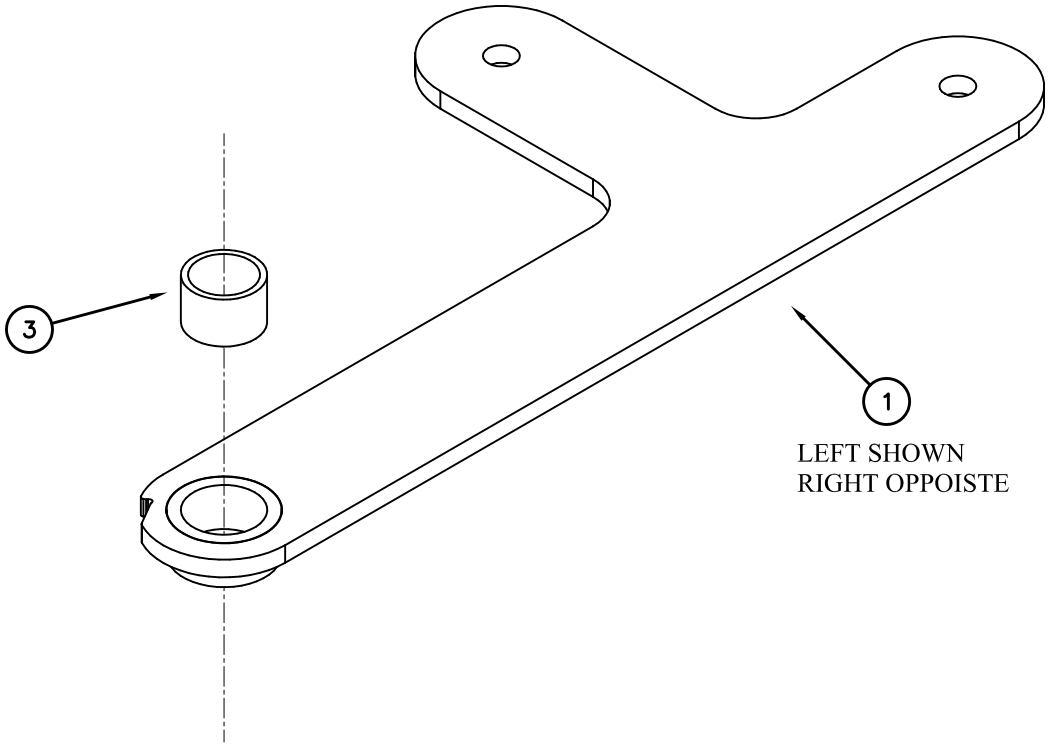


EXPLODED VIEW BETWEEN PRESS WHEEL ARMS:
NOTE SHOULDER OF SPACER ORIENTED INTO GAUGE ARM



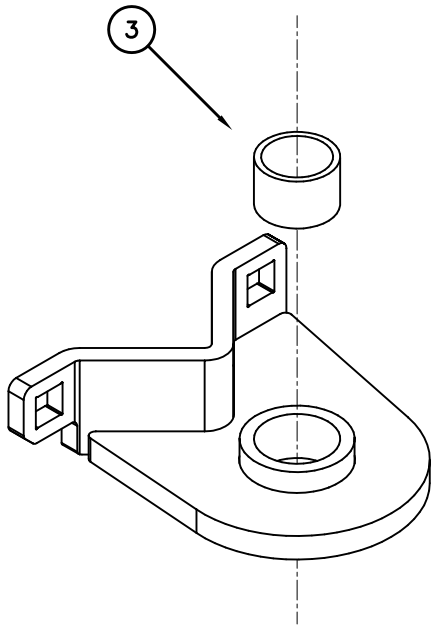
PRESS WHEEL ARM GROUP

ITEM	PART NO	DESCRIPTION	QTY
1	ND80-009	PRESS WHEEL ARM; LT (003)	1
2	ND80-010	PRESS WHEEL ARM; RT (004)	1
3	ND50-009	1-1/4" ID PLASTIC BUSHING	1



DIAMOND MOUNT GROUP

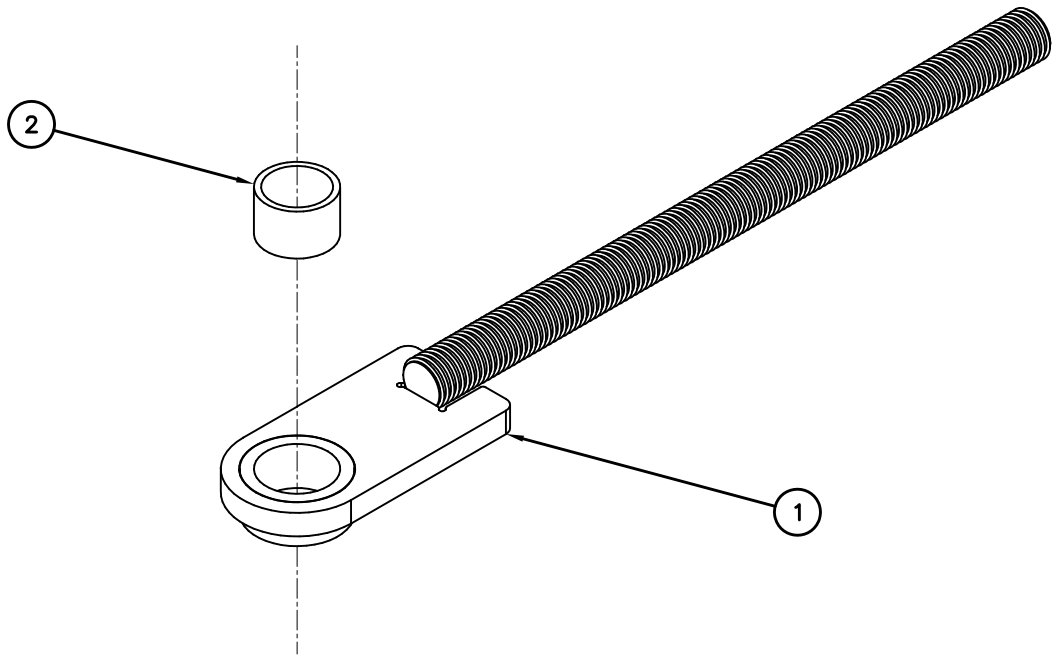
ITEM	PART NO	DESCRIPTION	QTY
1	ND80-007	BTTM. DIAMOND MT; LT (use 001)	1
2	ND80-008	BTTM. DIAMOND MT; RT (use 002)	1
3	ND50-009	1-1/4" ID PLASTIC BUSHING	1



LEFT SHOWN
RIGHT OPPOISTE

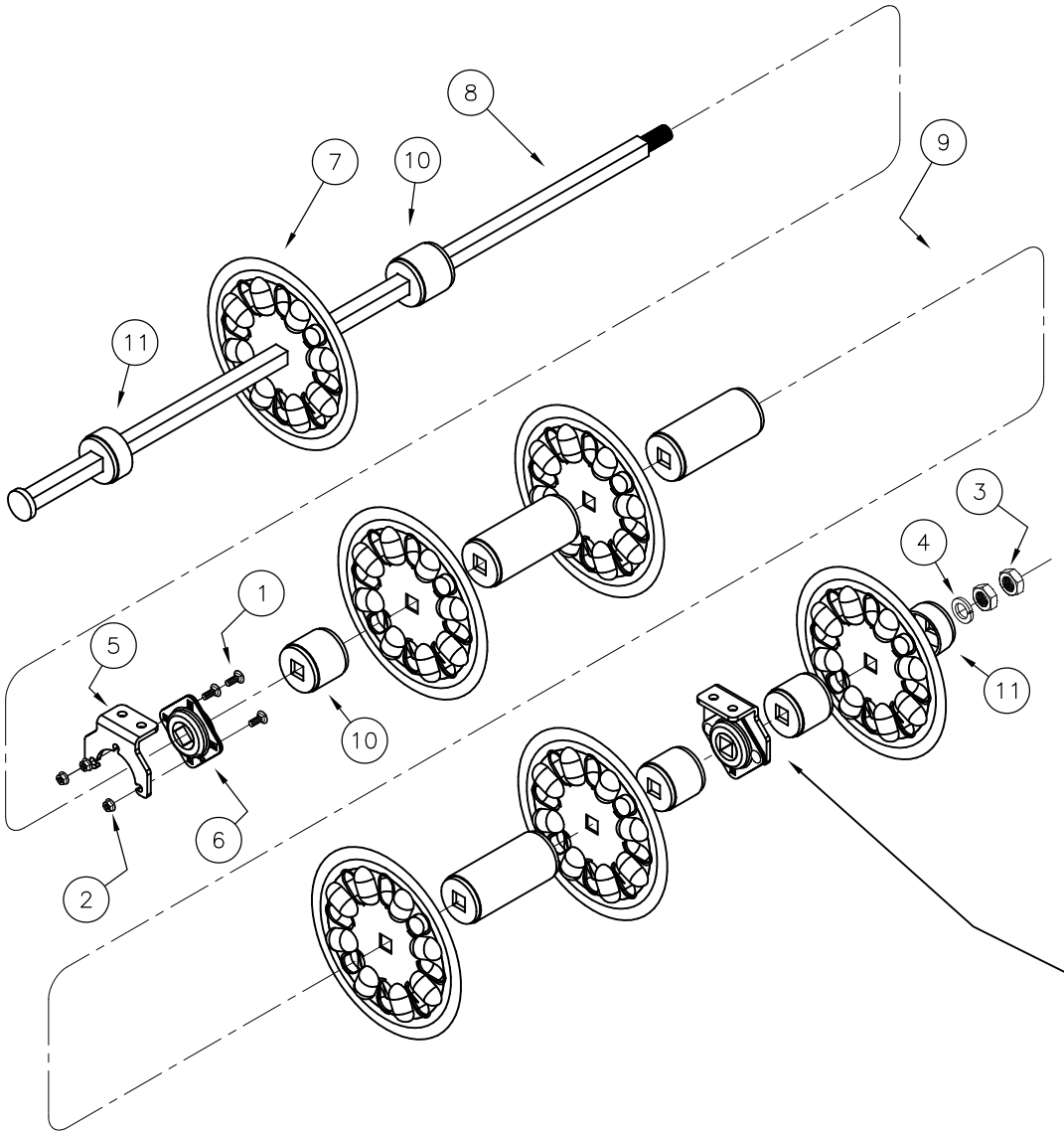
SPRING ROD GROUP

ITEM	PART NO	DESCRIPTION	QTY
1	ND80-004	SPRING ROD	1
2	ND50-009	1-1/4" ID PLASTIC BUSHING	1



COULTER SHAFT GROUP

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	HW03016040G5ZPC	1/2" X 1-1/4" CARR. BOLT	6	5	ND27-041	BEARING HANGER	2	9	ND80-029	9" SPACER	3
2	HW22016G5ZPC	1/2" FL. NUT	6	6	ND50-003	1-1/4" BORE BEARING	2	10	ND80-030	9" BEARING SPACER	4
3	HW25040G5ZPC	1-1/4" JAM NUT ZPL	2	7	ND50-007	16" BUBBLE COULTER	6	11	ND80-031	AXLE END CAP	2
4	HW33040G8ZP	1-1/4" LOCK WASHER HVY	1	8	ND50-040	5 FT 9" SPAC. DISK AXLE	1				

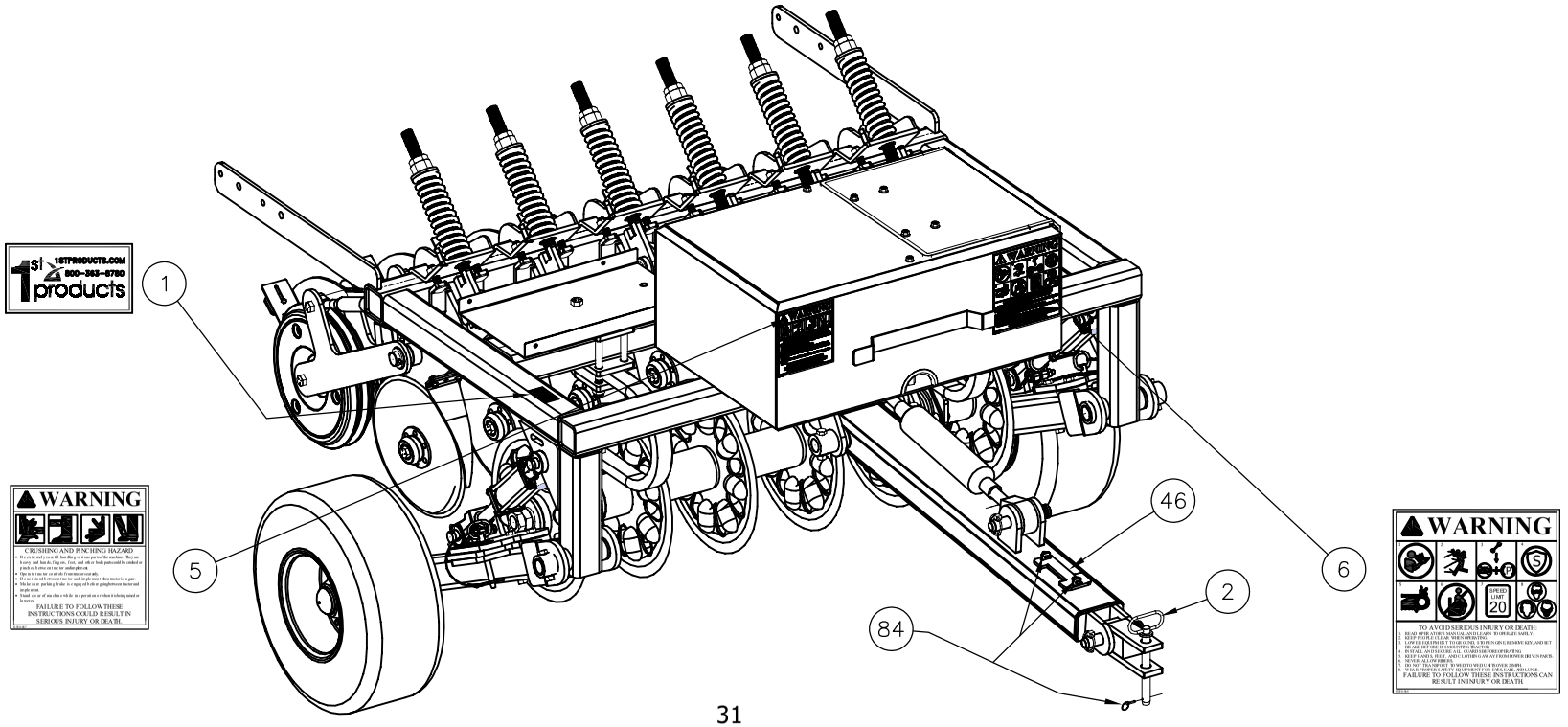


TORQUE 1 $\frac{1}{4}$" JAM NUT TO 475-500 FT-LBS (RECOMMENDED)

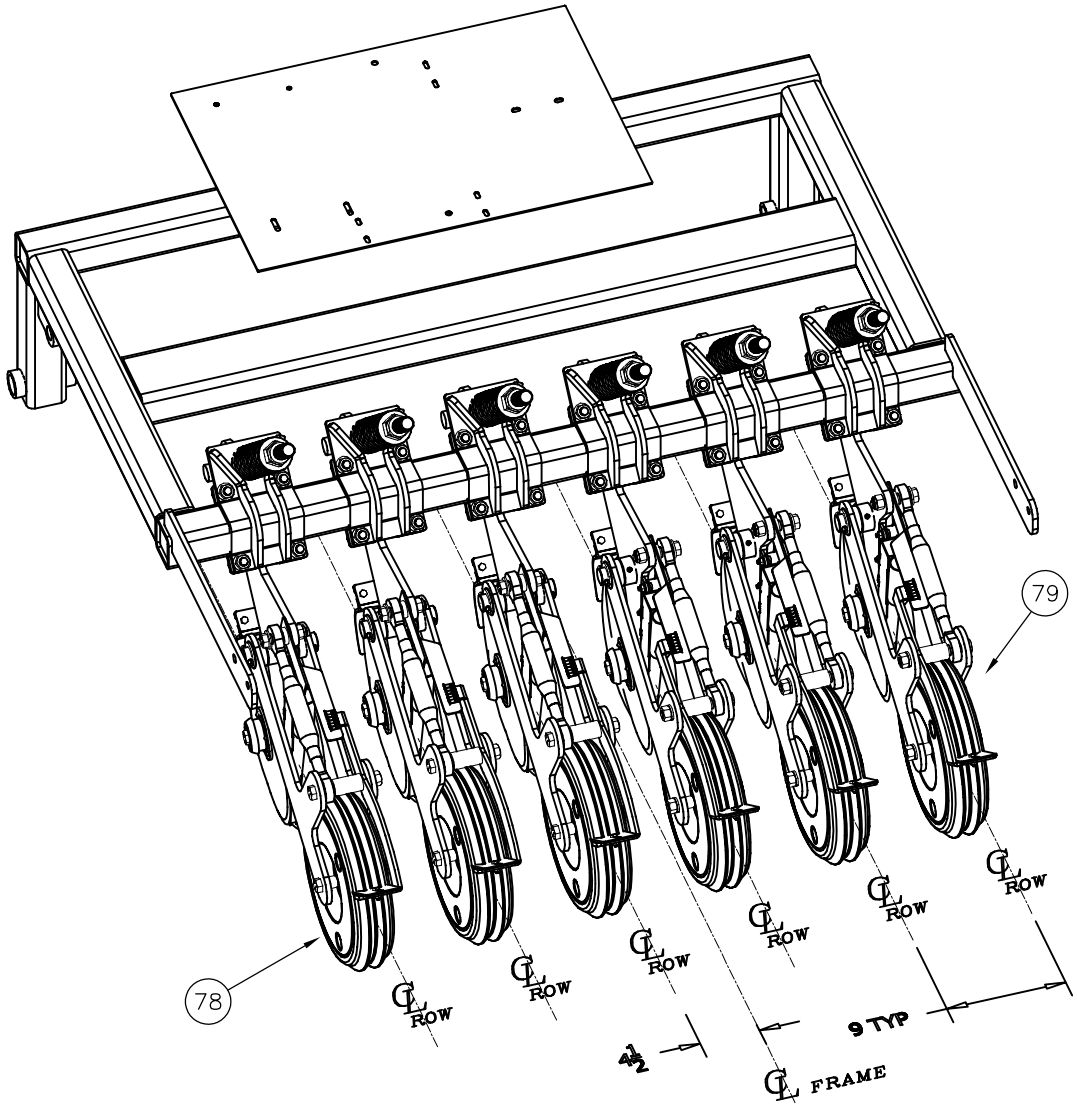
ORIENT GREASE FITTINGS IN SAME DIRECTION OF TRAVEL AND POINTING OUTWARDLY FOR EASIER MAINTENANCE BY USER

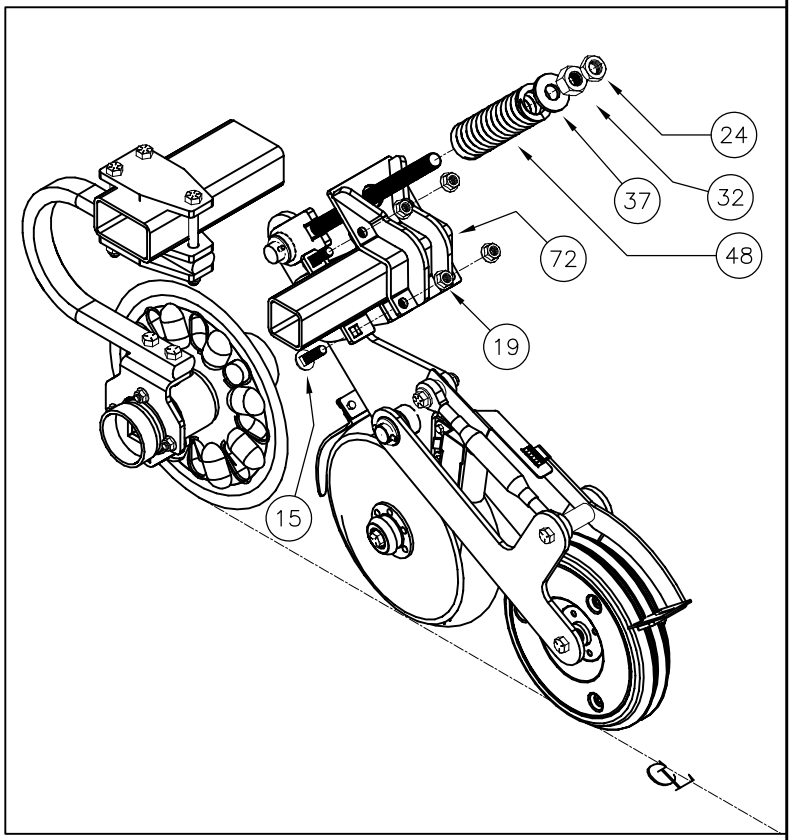
FRAME GROUP: PULL TYPE

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	AE50-059	SMALL FP DECAL	2	30	HW32016G5ZP	1/2 LOCK WASHER	2	59	ND50-140	LC-40HD MALE	1
2	AG50-109	3/4 X 6-1/4 PIN	1	31	HW34012G5ZPC	3/8 2-WAY LOCKNUT	2	60	ND50-141	LC-40HD FEMALE	2
3	DS24-028	LID BUSHING	2	32	HW36032G8ZPC	1" HEAVY HEX NUT ZINC PL.	6	61	ND50-142	20 AMP DC CIRCUIT BREAKER	1
4	DS50-064	ND60 MACHINE HARNESS	1	33	ND26-015	HYDRAPAK COVER STANDOFF	2	62	ND50-144	TRIM - ACCESS DOOR	1
5	DS50-067	DECAL - GENERAL WARNING	1	34	ND26-016	GAUGE WHEEL PIVOT PIN ND-60	2	63	ND50-145	TRIM - ACCESS DOOR HANDLE	1
6	DS50-068	DECAL - OPERATOR WARNING	1	35	ND26-017	Pull Tongue PIVOT PIN ND-60	1	64	ND50-146	TRIM - BATTERY BOX; FRONT	1
7	FA50-088	WHEEL ASSEMBLY	2	36	ND26-023	1/2 X 11 THREADED ROD	1	65	ND50-147	TRIM - BATTERY BOX; BACK	1
8	HW01008040G5ZPC	1/4 x 1-1/4 HHCS	4	37	ND27-016	SPRING WASHER	6	66	ND50-148	3/16 WIRE CLAMP	2
9	HW01008128G5ZPC	1/4 X 4 HHCS	2	38	ND27-099	C-SHANK MOUNT PLATES	6	67	ND50-149	ND-60 NEGATIVE TERMINAL GROUP	1
10	HW01012032G5ZPC	3/8 X 1 HHCS	2	39	ND27-100	COVER BOX BOTTOM	1	68	ND50-164	ADAPTER: 90 deg. #6 MP - #6 MJIC	4
11	HW01012064G5ZPC	3/8 X 2 HHCS	1	40	ND27-163	5/8 HOSE CLAMP TOP	6	69	ND50-165	ND-60 HOSE A	2
12	HW0101680G5ZPC	1/2 X 2 1/2 HHCS	4	41	ND27-166	ND-60 BATTERY BOX LID HINGE	2	70	ND50-166	ND-60 HOSE B	2
13	HW01020064G5ZPC	5/8 X 2 HHCS	4	42	ND27-167	ND-60 BATTERY BOX LID	1	71	ND50-167	ND-60 HOSE C	2
14	HW01020208G5ZPC	5/8 X 6-1/2 HHCS	6	43	ND27-174	ND-60 POSITIVE LEAD CAP	1	72	ND80-013	TOP DIAMOND BAR MOUNTS 3 X 3	6
15	HW03020072G5ZPC	5/8 X 2 1/4 CARR. BOLT	24	44	ND27-175	ND-60 POSITIVE LEAD HOLDER	1	73	ND80-035	ND-60 FRAME	1
16	HW06008016G5ZPC	1/4 X 1/2 FLANGE LOCK SCREW	2	45	ND27-176	ND-60 BATTERY HOLDER	1	74	ND80-036	ND-60 Pull Toungue	1
17	HW06012024G5ZPC	3/8 X 3/4 FLANGE LOCKSCREW	10	46	ND27-212	HITCH CATCH	1	75	ND80-042	ND-60 CLEVIS HITCH	1
18	HW20016G5ZPC	1/2 HEX NUT	2	47	ND50-002	C-FLEX SHANK	2	76	ND80-060	ND-60 BATTERY BOX LID MNT	1
19	HW22020G5ZPC	5/8 FLANGE LOCK NUT	24	48	ND50-008	2.5" X 9.5" COMP. SPRING	6	77	ND80-061	ND-60 BATTERY BOX MAIN	1
20	HW24008GBZP	1/4 STOVER LOCKNUT	8	49	ND50-023	CAT. 2 TOPLINK PIN	3	78	ND81-027	SEE ROW UNIT GROUP	3
21	HW24012GBZPC	3/8 STOVER LOCKNUT	5	50	ND50-038	2500PSI 2 BORE X 4 STROKE X 1 1/8 ROD	2	79	ND81-028	SEE ROW UNIT GROUP	3
22	HW24016GBZPC	1/2 STOVER LOCKNUT	4	51	ND50-042	HYDRAPAK DC-4942, DBL ACTING UNIT	1	80	ND81-031	ND-60 GAUGE ARM; LEFT	1
23	HW24020G5ZPC	5/8 STOVER LOCK NUT	10	52	ND50-043	Cat. 2 Toplink 20"-30"	1	81	ND81-032	ND-60 GAUGE ARM; RIGHT	1
24	HW25032G5ZPC	1 JAM NUT	6	53	ND50-055	ND-60 BATTERY	2	82	ND81-033	ND60 SHAFT ASS'Y - 16" DISC X 9"	1
25	HW26016G5ZPC	1/2 LUG NUT	10	54	ND50-064	IGUS 1-1/4 Flanged Bushing	6	83	SE50-035	HITCH PIN	3
26	HW30008TAZP	1/4 FLATWASHER	4	55	ND50-114	INTEGRATED FLOW DIVIDER AND PTOC	1	84	UA50-007	3/16 X 1 1/4 LYNCH PIN	12
27	HW30012TAZP	3/8 FLAT WASHER	2	56	ND50-131	ADAPTER ORIFICE 0.040	2	85	WB50-029	ADAPTER, STRAIGHT #6MJIC-#6MORB	5
28	HW30016TAZP	1/2 FLAT WASHER	2	57	ND50-135	ND-60 POSITIVE BATTERY CABLE	3	86	WB50-031	ADAPTER: 90 deg	1
29	HW31020TAZP	5/8 SAE WASHER	3	58	ND50-138	ND-60 BATTERY DECAL	1				



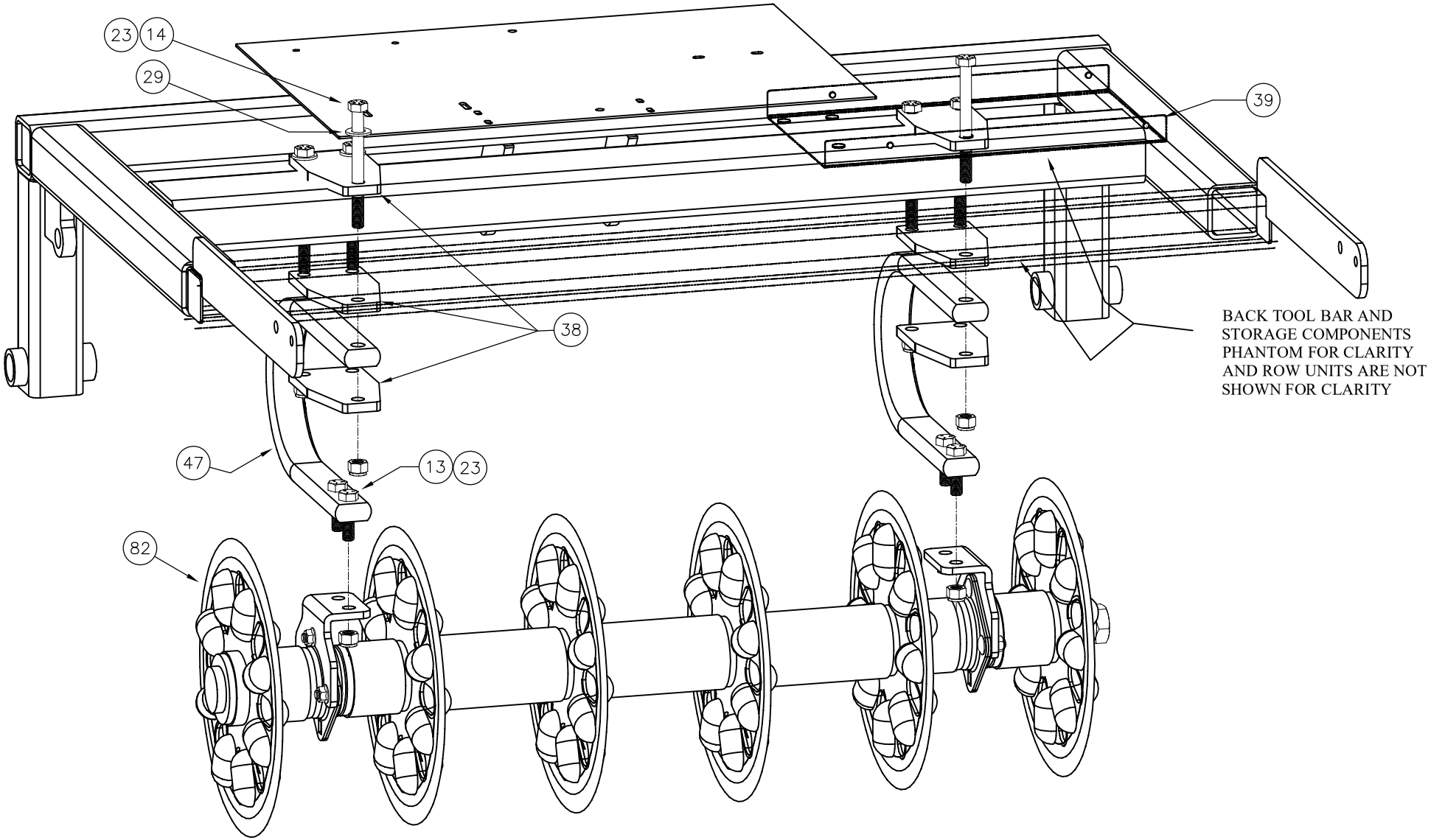
FRAME GROUP: PULL TYPE



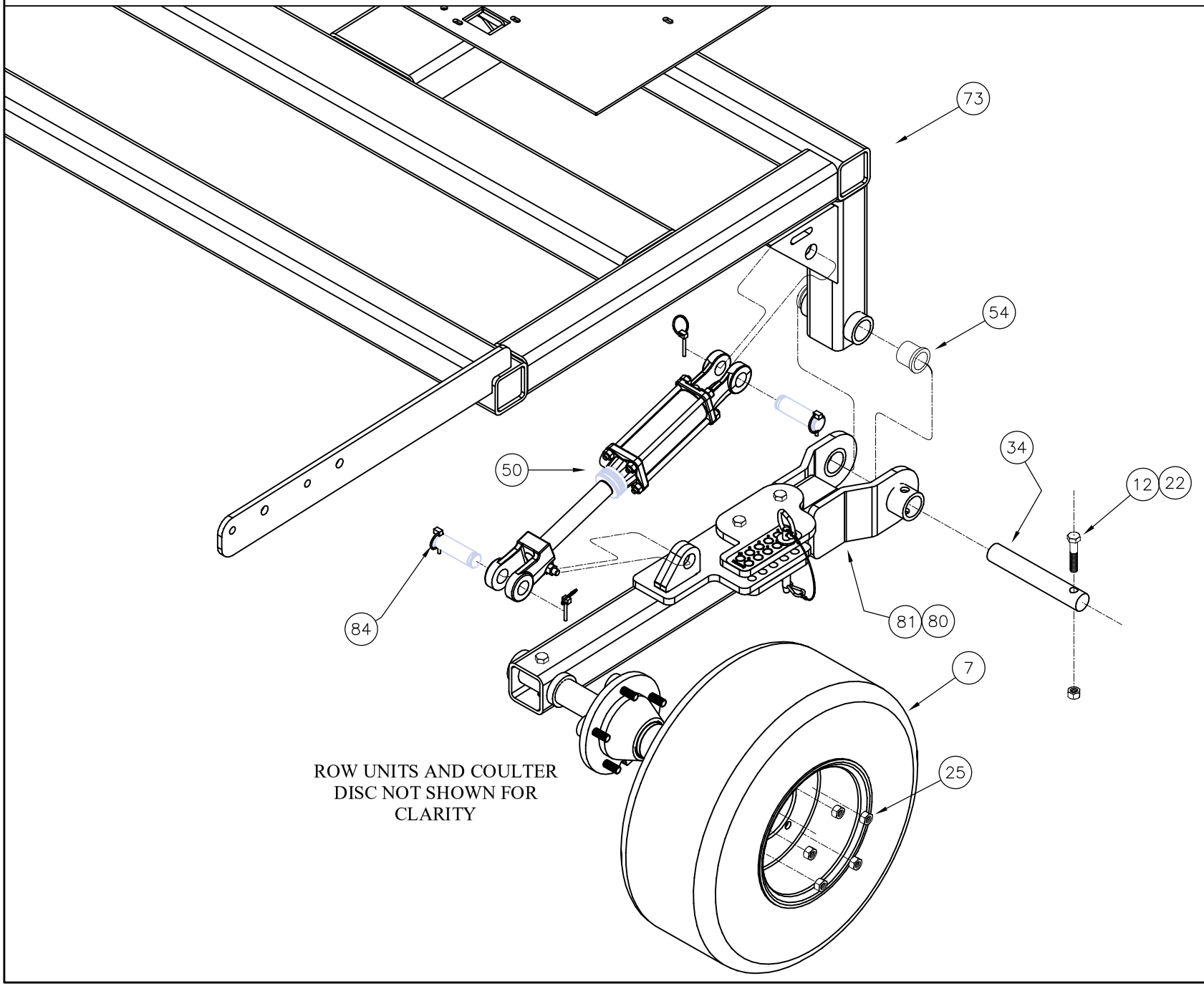


CUT AWAY (LEFT HAND ASSEMBLY SHOWN ABOVE)
VIEW SHOWING COMPONENTS TO ASSEMBLE EACH
ROW UNIT ON TOOLBAR AS SHOWN LEFT

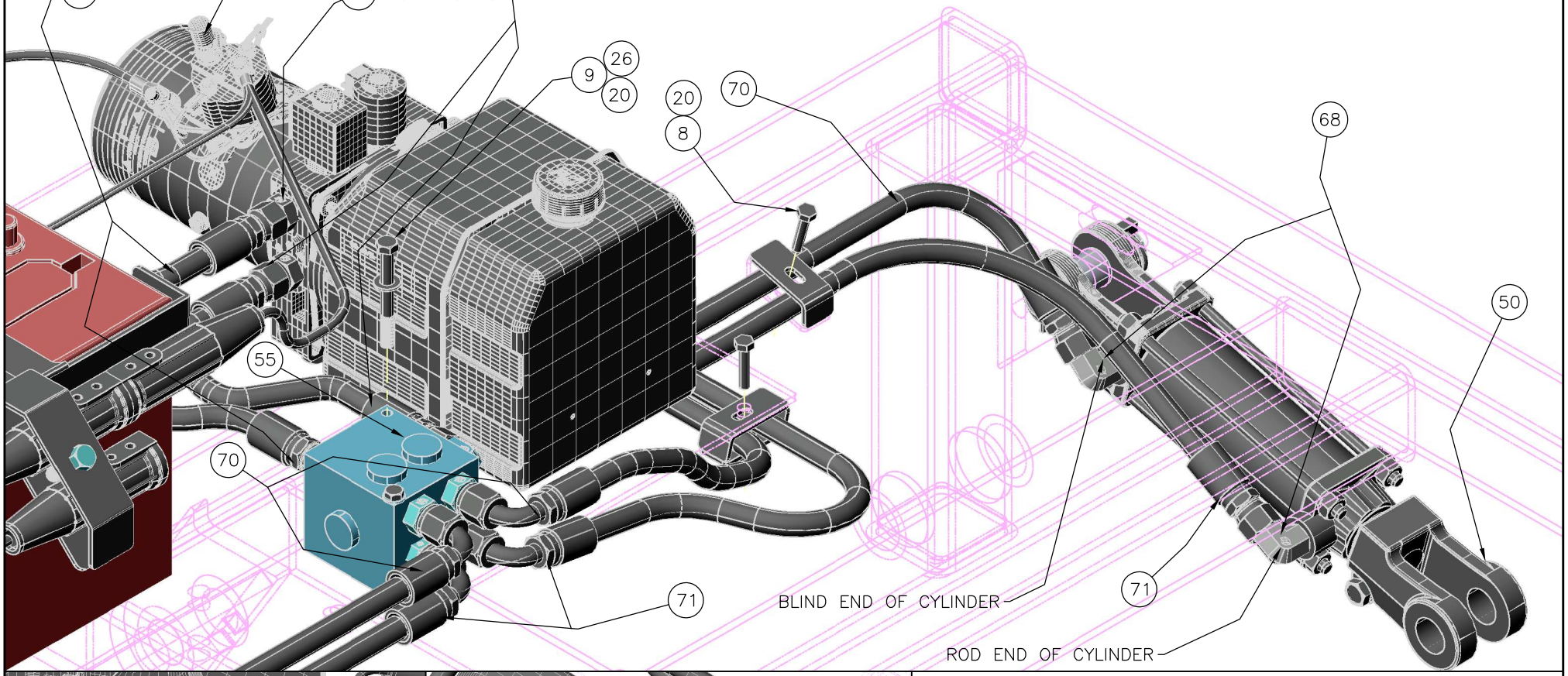
FRAME GROUP: PULL TYPE

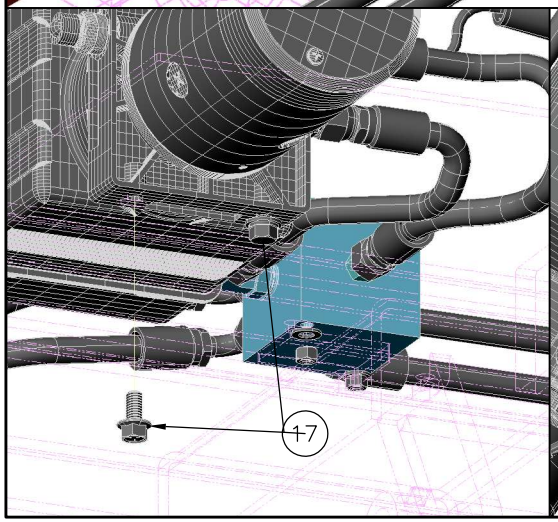


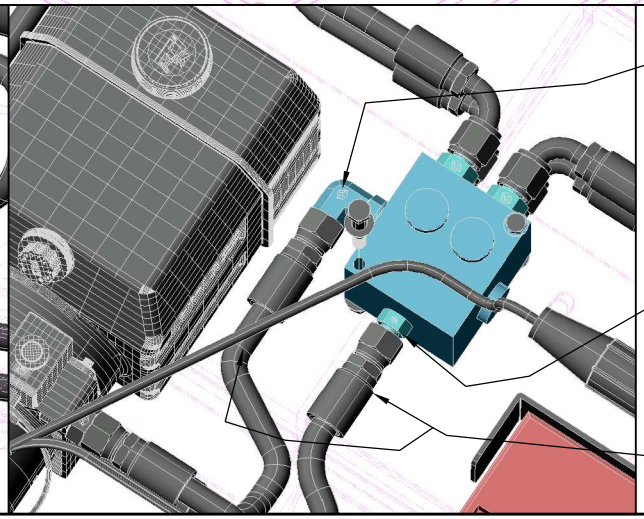
FRAME GROUP: PULL TYPE

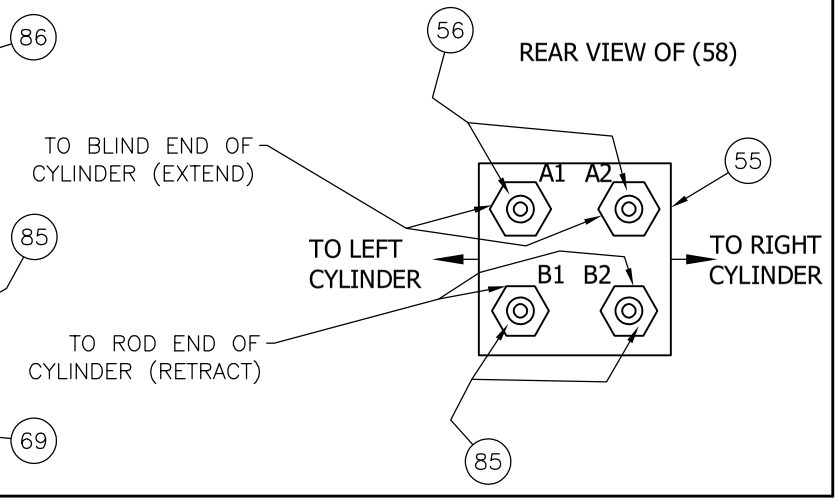


FRAME GROUP: PULL TYPE

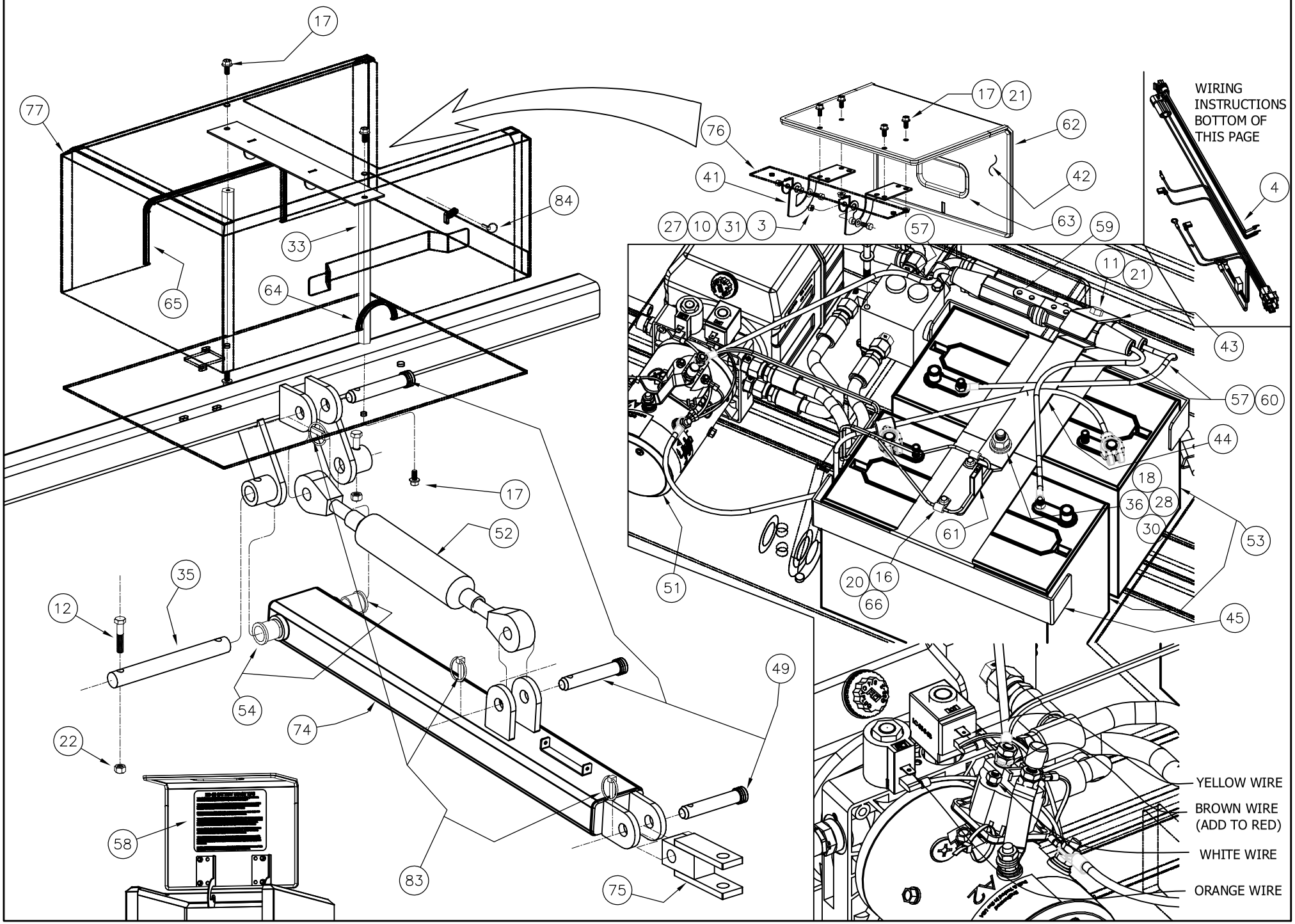






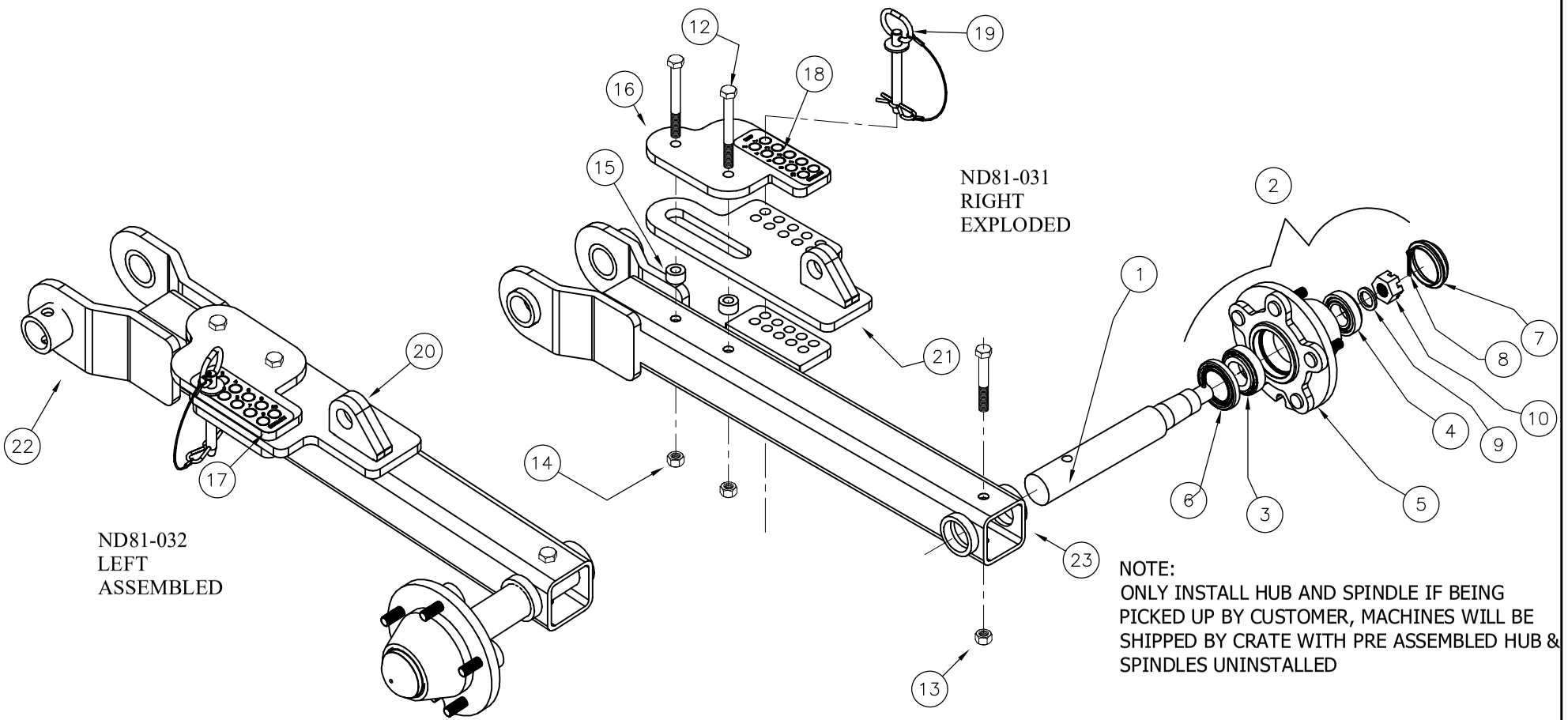


FRAME GROUP: PULL TYPE



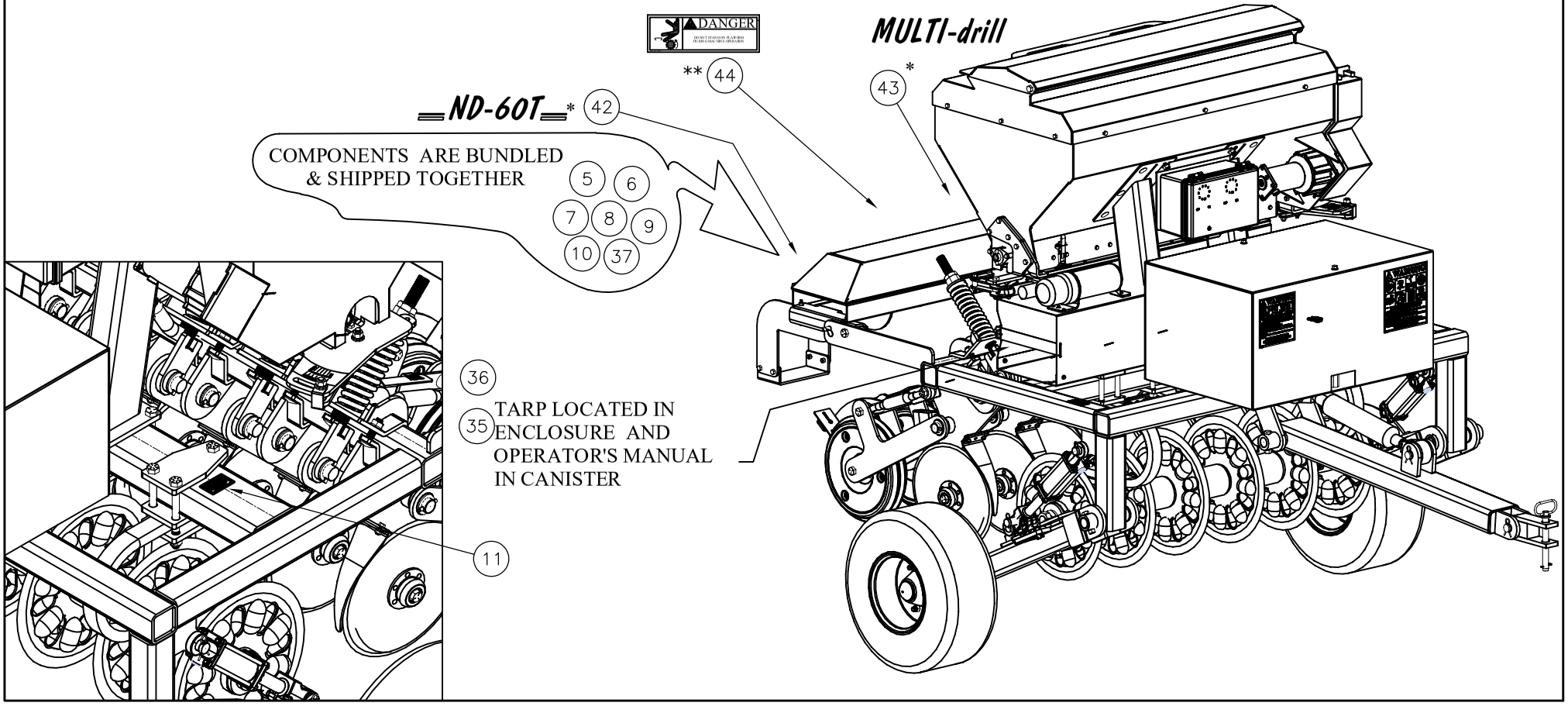
GAUGE WHEEL ARM GROUP : PULL TYPE

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	FA50-057	2500lb Spindle	1	13	HW24016GBZPC	1/2 STOVER LOCKNUT	1
2	FA50-087	HUB ASSM., 2500 LBS 5 on 5-1/2B.C.	1	14	HW34016G5ZPC	1/2 2-WAY LOCKNUT	2
3	FA50-098	1 3/8 TAPER ROLLER BEARING	1	15	ND26-013	GAUGE WHEEL STOPS	2
4	FA50-099	1 1/4 TAPER ROLLER BEARING	1	16	ND27-110	HEIGHT ADJUST SLIDE CATCH	1
5	FA50-100	5 x 5 1/2 HUB	1	17	ND50-136	ND-60 GW STOP DECAL; LEFT (ND81-031)	1
6	FA50-101	1 3/4 x 69mm SEAL	1	18	ND50-137	ND-60 GW STOP DECAL; RIGHT (ND81-032)	1
7	FA50-102	2 7/16 DUST CAP	1	19	ND50-139	ND-60 GAUGE WHEEL STOP PIN	1
8	HW40008080ZP	1/4 x 2 1/2 COTTER PIN	1	20	ND80-037	ND-60 HEIGHT ADJUST SLIDE; LEFT (ND81-031)	1
9	HW6002405607GPL	3/4 1 3/4 7 GA M.B.	1	21	ND80-038	ND-60 HEIGHT ADJUST SLIDE; RIGHT (ND81-032)	1
10	HW70024G5PLF	3/4 CASTLE NUT	1	22	ND80-039	ND-60 GAUGE WHEEL; LEFT (ND81-031)	1
11	HW01016112G5ZPC	1/2 x 3 1/2 HHCS	1	23	ND80-040	ND-60 GAUGE WHEEL; RIGHT (ND81-032)	1
12	HW01016144G5ZPC	1/2 X 4 1/2 HHCS	2				

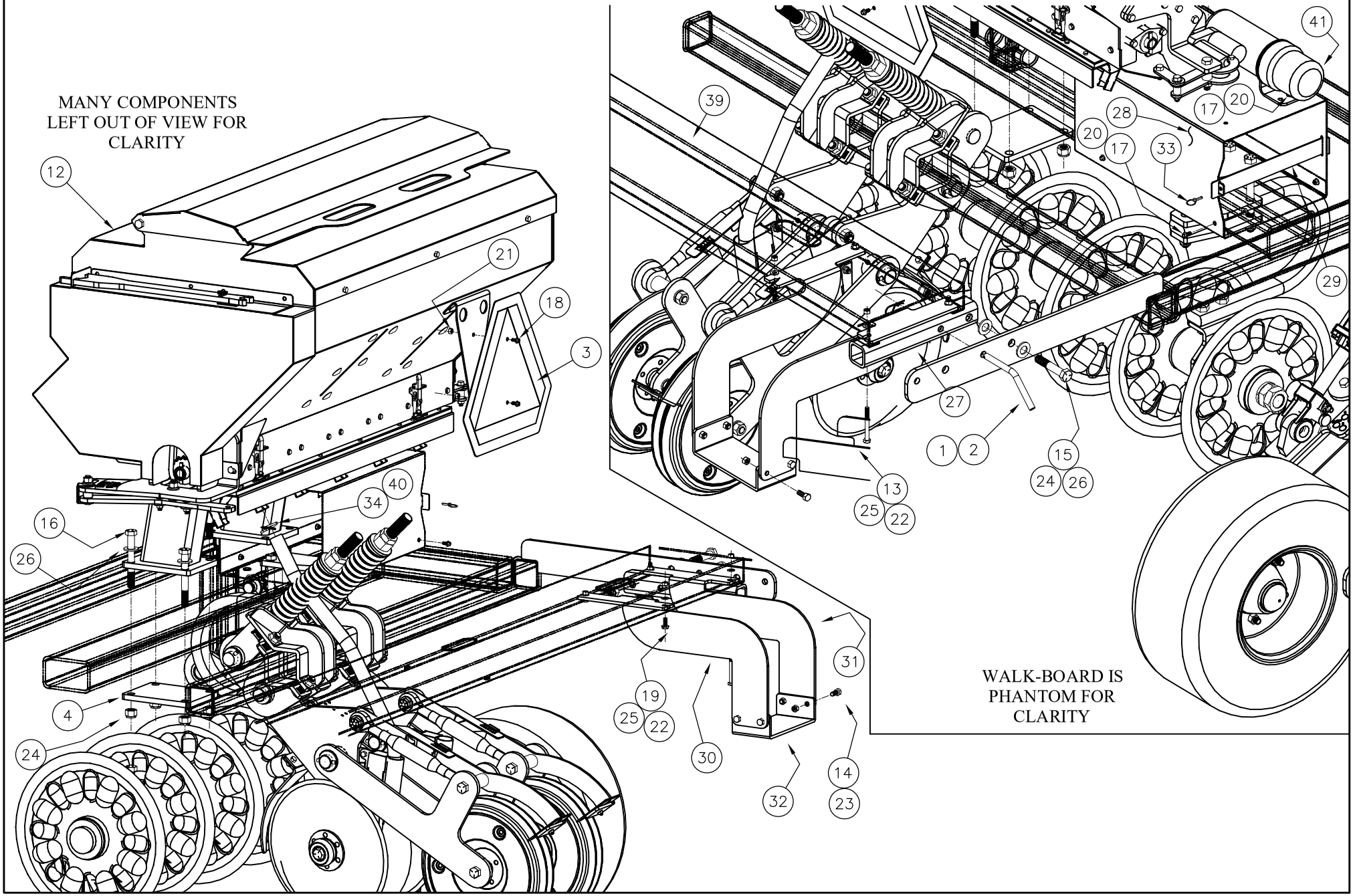


SEEDER TO FRAME GROUP: PULL TYPE

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	AE50-156	BRIDGE PIN	2	16	HW01020160G5ZPC	5/8 X 5 HHCS	8	31	ND27-134	ND STEP SIDE; RIGHT	1
2	AG26-003	STAND PIN	2	17	HW06008016G5ZPC	1/4 X 1/2 FLANGE LOCK SCREW	6	32	ND27-135	STEP - ND	1
3	AG50-084	SMV SIGN	1	18	HW06008024G5ZPC	1/4 X 3/4 FLANGE LOCK SCREW	2	33	UA50-007	3/16 LYNCH PIN	1
4	DS27-055	SEEDBOX BOTTOM MNT.	2	19	HW06010024G5ZPC	5/16 X 3/4 FLANGE LOCK SCREW	2	34	ND50-024	1" ID X 1 1/4" OD CVT	6
5	DS27-111	5 FT RIGHT SEED PLATE 1/4"	1	20	HW22008G5ZPC	1/4 FLANGE LOCK NUT	6	35	ND50-061	5 FT TARP	1
6	DS27-112	5 FT LEFT SEED PLATE 1/4"	1	21	HW24008G5ZPC	1/4 STOVER LOCK NUT	2	36	ND50-091	ND60 PARTSBOOK	1
7	DS27-113	5 FT LEFT SEED PLATE 3/8"	1	22	HW24010GBZPC	5/16 STOVER LOCK NUT	6	37	ND80-043	ND-60 CALIBRATION TROUGH	1
8	DS27-114	5 FT RIGHT SEED PLATE 3/8"	1	23	HW24012G5ZPC	3/8 STOVER LOCK NUT	4	38	ND81-019	ND60 FRAME ASSEMBLY	1
9	DS27-115	5 FT LEFT SEED PLATE 1/2"	1	24	HW24020G5ZPC	5/8 STOVER LOCK NUT	10	39	ND81-025	5' Walk Board ASSM.	1
10	DS27-116	5 FT RIGHT SEED PLATE 1/2"	1	25	HW30010TAZP	5/16 FLATWASHER	6	40	SB50-062	1 3/8 HOSE CLAMP	6
11	ND50-080	ND-60 SERUAL # TAG	1	26	HW31020TAZP	5/8 SAE WASHER	12	41	UA50-009	OM CANISTER	1
12	DS81-020	PRIMARY HOPPER - DS60	1	27	ND24-013	WALK BOARD MOUNT	2	42	ND50-168	ND-60T DECAL	1
13	HW01010096G5ZPC	5/16 X 3 HHCS	4	28	ND27-101	COVER BOX TOP	1	43	ND50-054	MULTI-DRILL DECAL	1
14	HW01012032G5ZPC	3/8 X 1 HHCS	4	29	ND27-102	COVER BOX CATCH	1	44	AG50-089	RIDER HAZARD DECAL	1
15	HW01020112G5ZPC	5/8 X 3 1/2 HHCS	2	30	ND27-133	ND STEP SIDE; LEFT	1	45	ND50-161	DIGITAL SCALE; ND	1

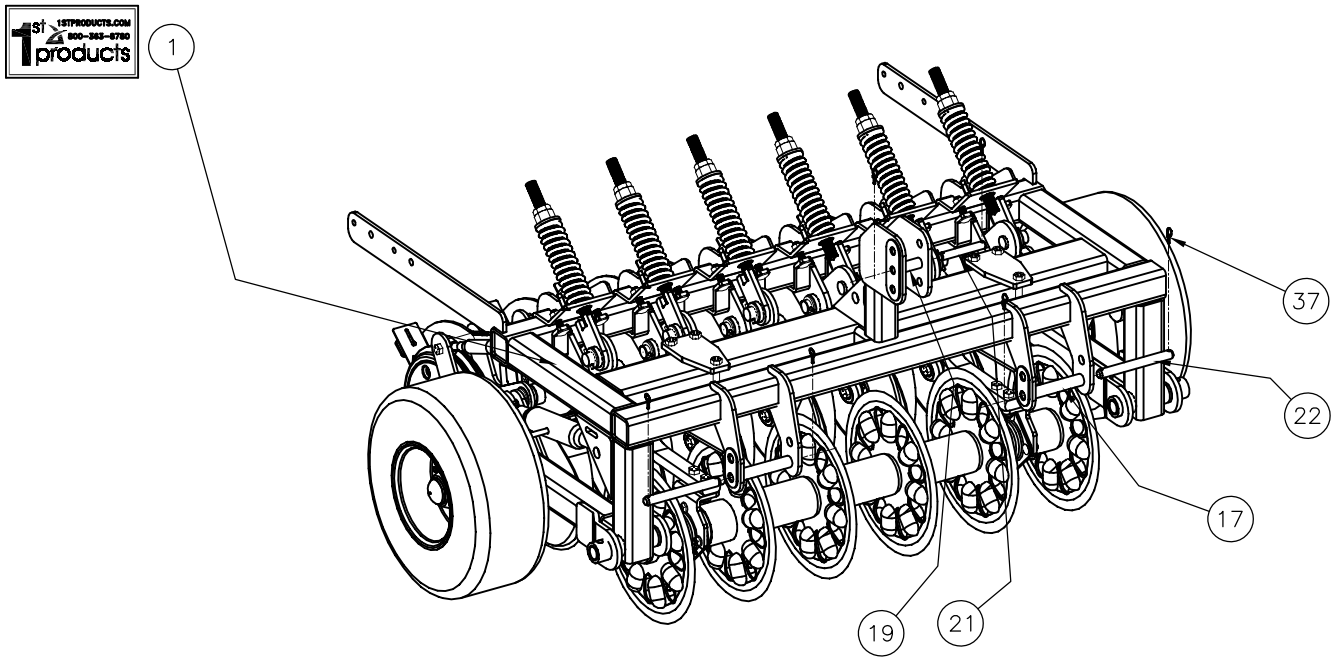


SEEDER TO FRAME GROUP: PULL TYPE

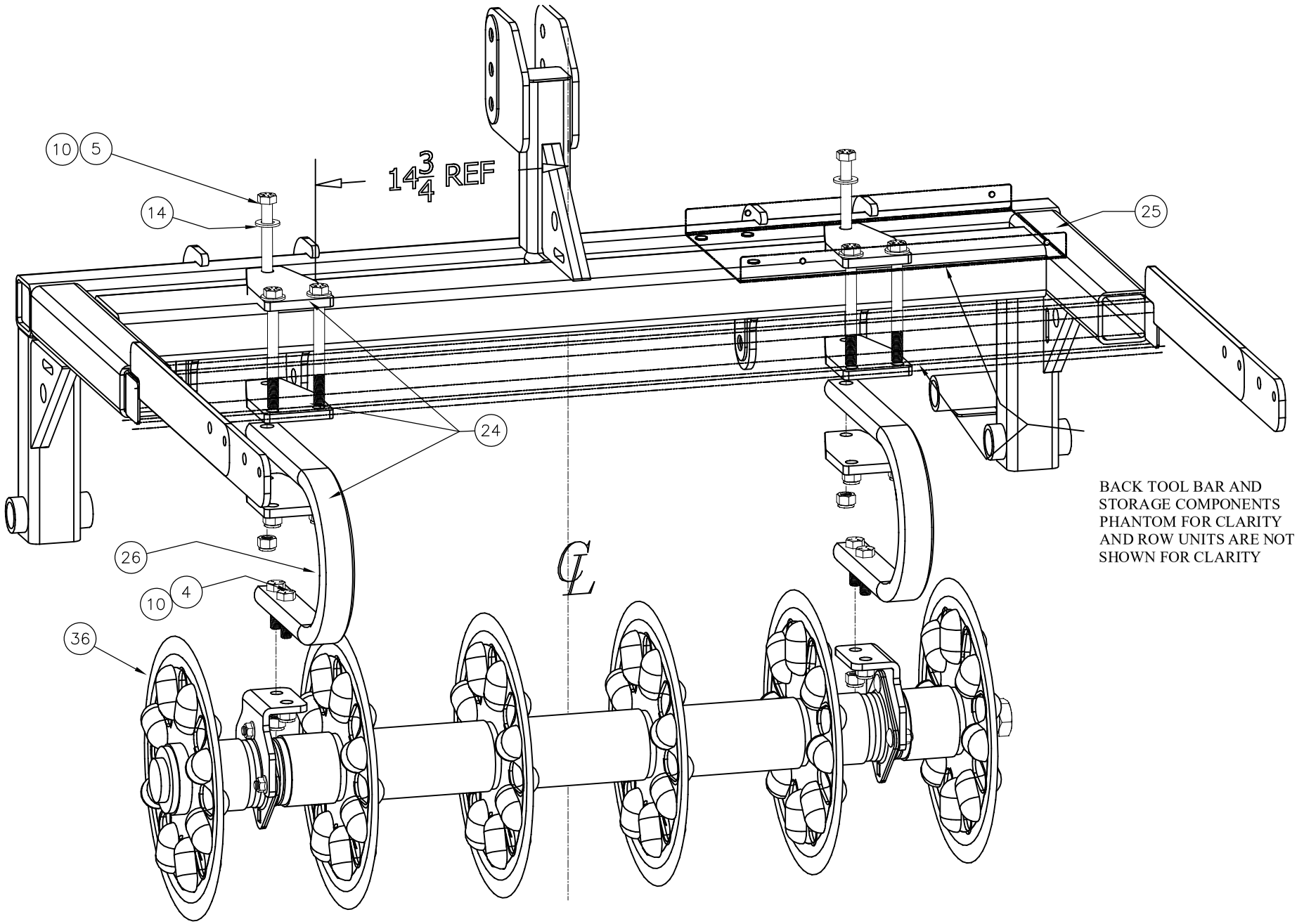


FRAME GROUP: 3 POINT HITCH

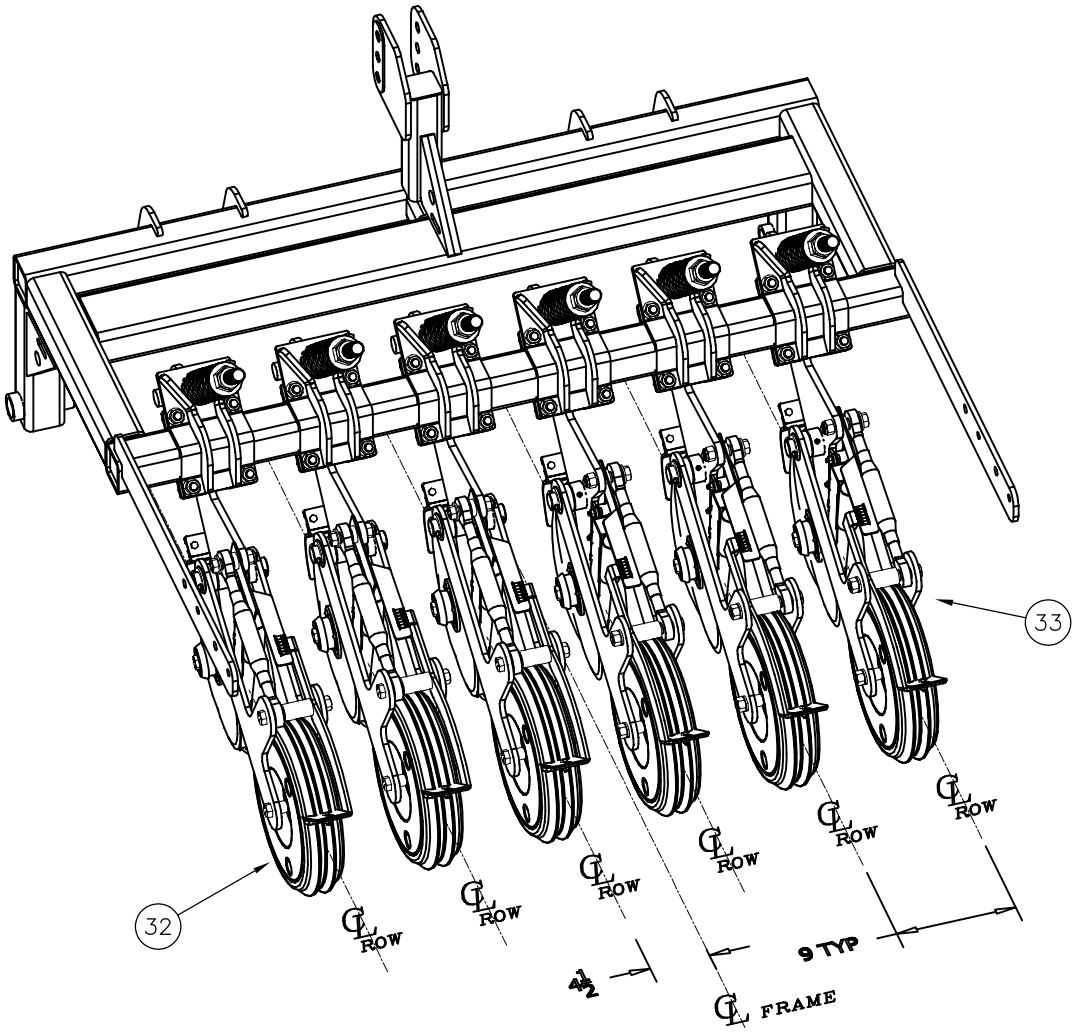
ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	AE50-059	SMALL FP DECAL	2	14	HW31020TAZP	5/8 SAE WASHER	3	26	ND50-002	C-FLEX SHANK	2
2	FA50-088	WHEEL ASSEMBLY	2	15	HW31024TAZP	3/4" SAE WASHER	4	27	ND50-008	2.5" X 9.5" COMP. SPRING	6
3	HW0101680G5ZPC	1/2 X 2 1/2 HHCS	2	16	HW36032G8ZPC	1" HEAVY HEX NUT ZINC PL.	6	28	ND50-064	IGUS 1-1/4 Flanged Bushing	4
4	HW01020064G5ZPC	5/8 X 2 HHCS	4	17	ND24-079	CAT 2/1 REDUCER BUSHING BOT.	2	29	ND50-159	Cat. 1 Toplink 17"-26"	2
5	HW01020208G5ZPC	5/8 X 6-1/2 HHCS	6	18	ND24-080	15/16 BUSHING	2	30	ND80-013	TOP DIAMOND BAR MOUNTS 3 X 3	6
6	HW01024112G5ZPC	3/4" x 3-1/2" G5 HHCS	2	19	ND24-081	CAT 2/1 REDUCER BUSHING TOP	1	31	ND80-066	ND-60 3PT	1
7	HW03020072G5ZPC	5/8 X 2 1/4 CARR. BOLT	24	20	ND26-016	GAUGE WHEEL PIVOT PIN ND-60	2	32	ND81-027	ND ROW UNIT: LEFT	3
8	HW22020G5ZPC	5/8 FLANGE LOCK NUT	24	21	ND26-025	CAT. 1 TOP LINK PIN 4-1/8"	3	33	ND81-028	ND ROW UNIT: RIGHT	3
9	HW24016GBZPC	1/2 STOVER LOCKNUT	2	22	ND26-026	CAT. 1 BOTTOM LINK PIN 7-1/4"	2	34	ND81-069	ND-60 GAUGE ARM; LEFT	1
10	HW24020G5ZPC	5/8 STOVER LOCK NUT	10	23	ND27-016	SPRING WASHER	6	35	ND81-070	ND-60 GAUGE ARM; RIGHT	1
11	HW24024GBZPC	3/4" STOVER LOCKNUT	2	24	ND27-099	C-SHANK MOUNT PLATES	6	36	ND81-033	ND60 SHAFT ASS'Y - 16" DISC X 9"	1
12	HW25032G5ZPC	1 JAM NUT	6	25	ND27-100	COVER BOX BOTTOM ND-60	1	37	UA50-007	3/16 X 1 1/4 LYNCH PIN	10
13	HW26016G5ZPC	1/2 LUG NUT	10								

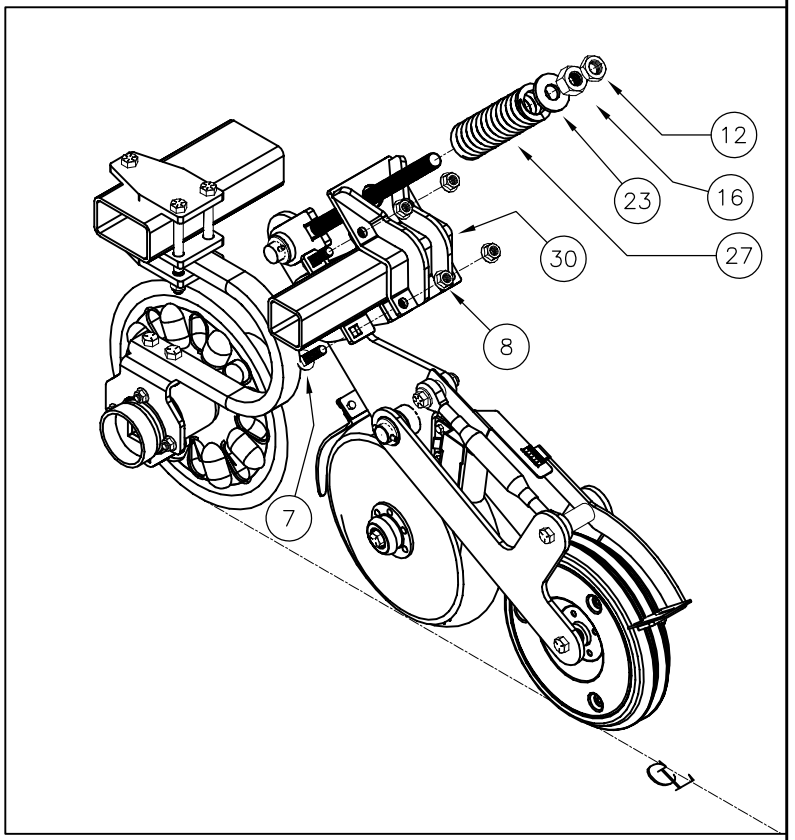


FRAME GROUP: 3 POINT HITCH



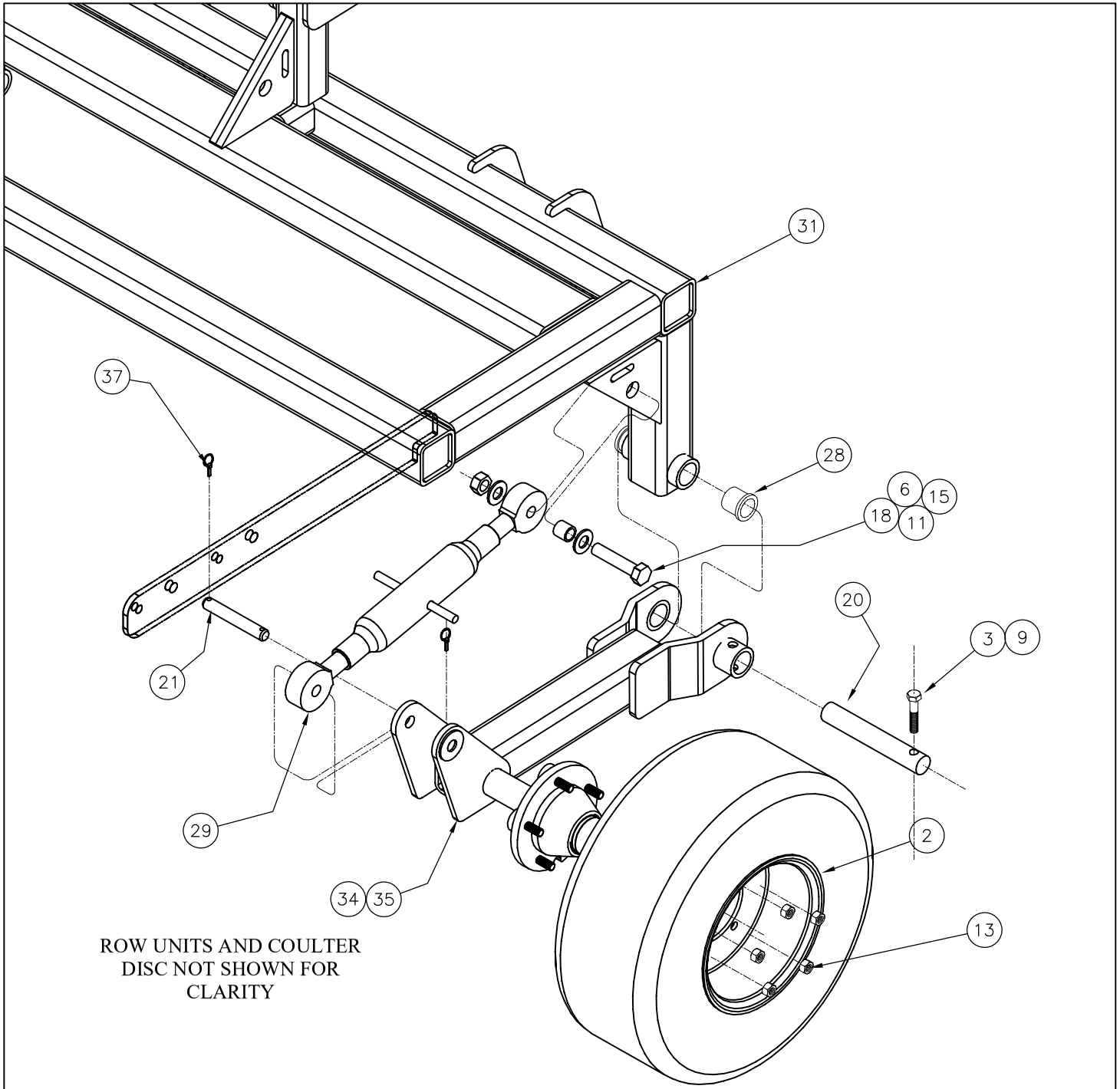
FRAME GROUP: 3 POINT HITCH





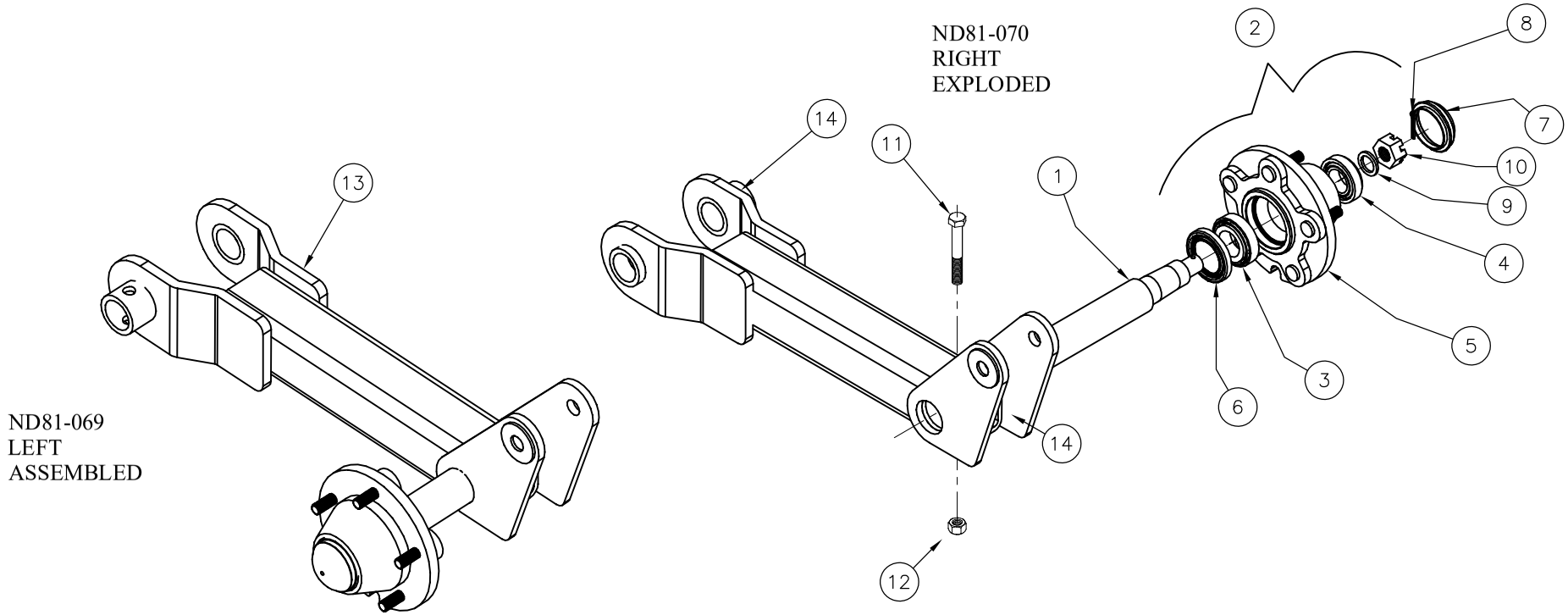
CUT AWAY (LEFT HAND ASSEMBLY SHOWN ABOVE)
VIEW SHOWING COMPONENTS TO ASSEMBLE EACH
ROW UNIT ON TOOLBAR AS SHOWN LEFT

FRAME GROUP: 3 POINT HITCH



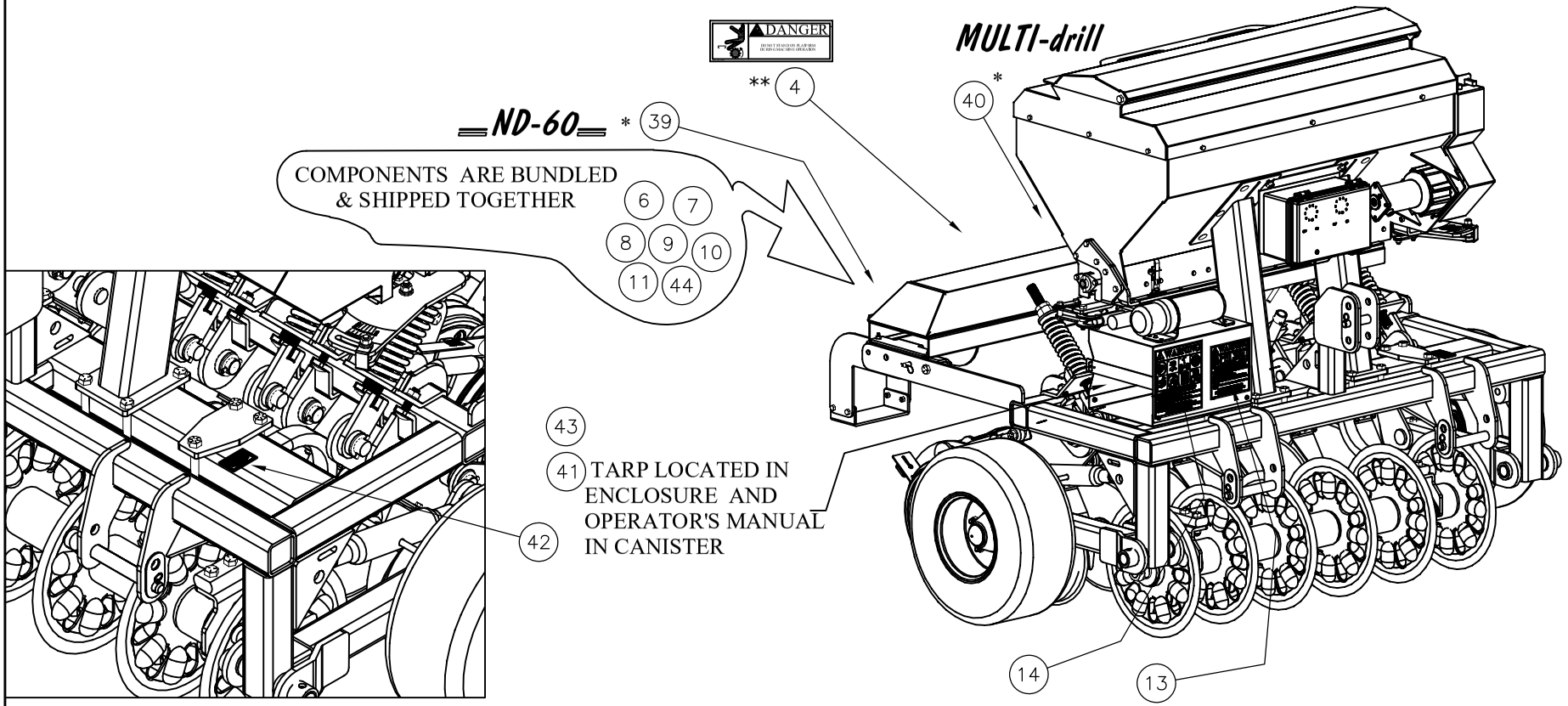
GAUGE WHEEL ARM GROUP : 3 POINT HITCH

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	FA50-057	2500lb Spindle	1	8	HW40008080ZP	1/4 x 2 1/2 COTTER PIN	1
2	FA50-087	HUB ASSM., 2500 LBS 5 on 5-1/2B.C.	1	9	HW6002405607GPL	3/4 x 1 3/4 7 GA M.B.	1
3	FA50-098	1 3/8 TAPER ROLLER BEARING	1	10	HW70024G5PLF	3/4 CASTLE NUT	1
4	FA50-099	1 1/4 TAPER ROLLER BEARING	1	11	HW01016112G5ZPC	1/2 x 3 1/2 HHCS	1
5	FA50-100	5 x 5 1/2 HUB	1	12	HW24016GBZPC	1/2 STOVER LOCKNUT	1
6	FA50-101	1 3/4 x 69mm SEAL	1	13	ND80-067	ND-60 3PT GAUGE WHEEL; LEFT (ND81-069)	1
7	FA50-102	2 7/16 DUST CAP	1	14	ND80-068	ND-60 3PT GAUGE WHEEL; RIGHT (ND81-070)	1

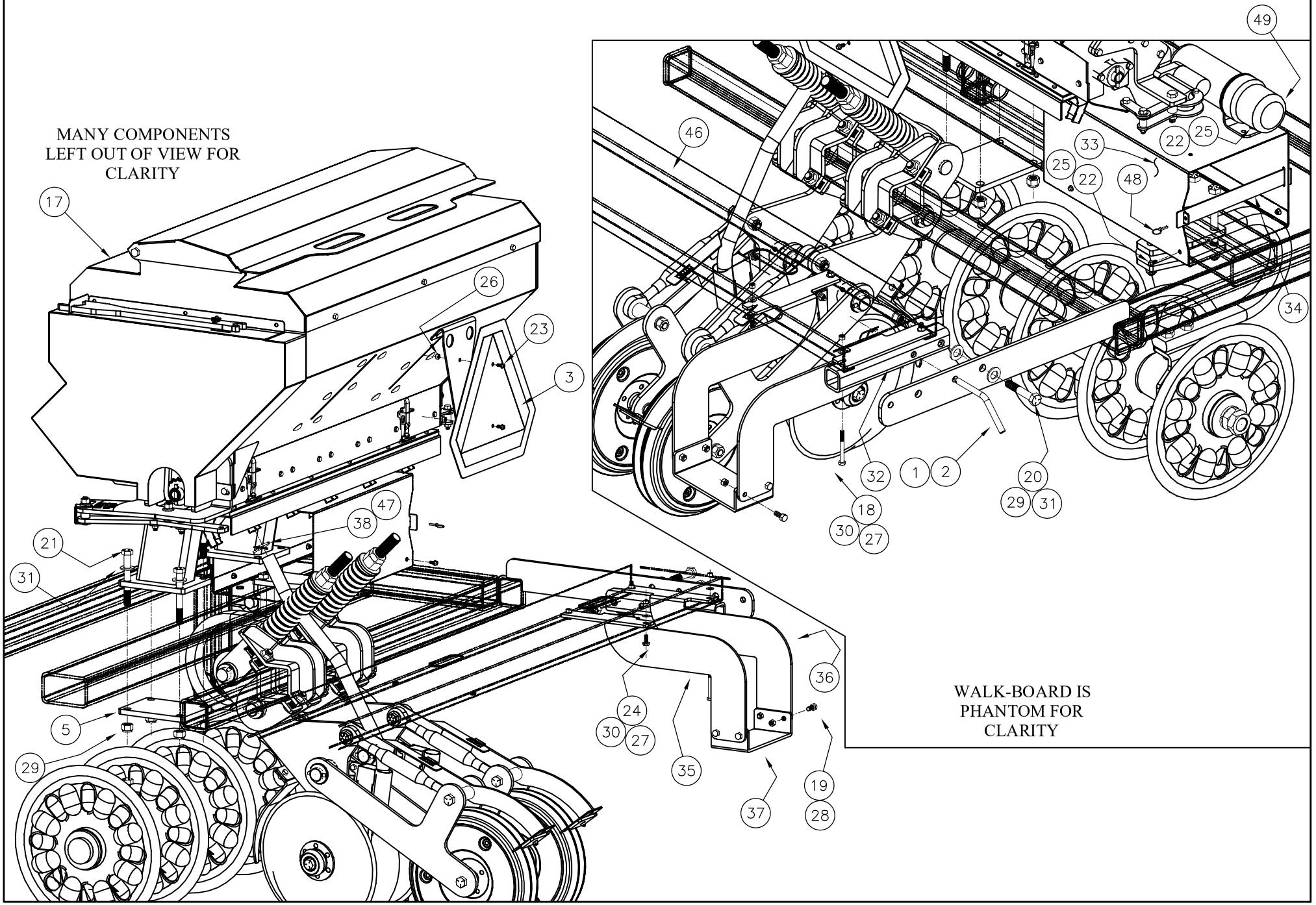


SEEDER TO FRAME GROUP: 3 POINT HITCH

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	AE50-156	BRIDGE PIN	2	18	HW01010096G5ZPC	5/16 X 3 HHCS	4	34	ND27-102	COVER BOX CATCH	1
2	AG26-003	STAND PIN	2	19	HW01012032G5ZPC	3/8 X 1 HHCS	4	35	ND27-133	ND STEP SIDE; LEFT	1
3	AG50-084	SMV SIGN	1	20	HW01020112G5ZPC	5/8 X 3 1/2 HHCS	2	36	ND27-134	ND STEP SIDE; RIGHT	1
4	AG50-089	RIDER HAZARD DECAL	1	21	HW01020160G5ZPC	5/8 X 5 HHCS	8	37	ND27-135	STEP - ND	1
5	DS27-055	SEEDBOX BOTTOM MNT.	2	22	HW06008016G5ZPC	1/4 X 1/2 FLANGE LOCK SCREW	6	38	ND50-024	1" ID X 1 1/4" OD CVT	6
6	DS27-111	5 FT RIGHT SEED PLATE 1/4"	1	23	HW06008024G5ZPC	1/4 X 3/4 FLANGE LOCK SCREW	2	39	ND50-050	ND-60 DECAL	1
7	DS27-112	5 FT LEFT SEED PLATE 1/4"	1	24	HW06010024G5ZPC	5/16 X 3/4 FLANGE LOCK SCREW	2	40	ND50-054	MULTI-DRILL DECAL	1
8	DS27-113	5 FT LEFT SEED PLATE 3/8"	1	25	HW22008G5ZPC	1/4 FLANGE LOCK NUT	6	41	ND50-061	5 FT TARP	1
9	DS27-114	5 FT RIGHT SEED PLATE 3/8"	1	26	HW24008G5ZPC	1/4 STOVER LOCK NUT	2	42	ND50-080	ND-60 SERUAL # TAG	1
10	DS27-115	5 FT LEFT SEED PLATE 1/2"	1	27	HW24010GBZPC	5/16 STOVER LOCK NUT	6	43	ND50-091	ND60 PARTSBOOK	1
11	DS27-116	5 FT RIGHT SEED PLATE 1/2"	1	28	HW24012G5ZPC	3/8 STOVER LOCK NUT	4	44	ND80-043	ND-60 CALIBRATION TROUGH	1
12	DS50-046	POWER HARNESS W/ TEST CLIPS	1	29	HW24020G5ZPC	5/8 STOVER LOCK NUT	10	45	ND81-071	ND60 3PT FRAME ASSEMBLY	1
13	DS50-067	DECAL - GENERAL WARNING	1	30	HW30010TAZP	5/16 FLATWASHER	6	46	ND81-025	5' Walk Board ASSM.	1
14	DS50-068	DECAL - OPERATOR WARNING	1	31	HW31020TAZP	5/8 SAE WASHER	12	47	SB50-062	1 3/8 HOSE CLAMP	6
15	DS81-013	DS SWITCH HARNESS	1	32	ND24-013	WALK BOARD MOUNT	2	48	UA50-007	3/16 LYNCH PIN	1
16	DS50-161	DIGITAL SCALE; ND	1	33	ND27-101	COVER BOX TOP	1	49	UA50-009	OM CANISTER	1
17	DS81-020	PRIMARY HOPPER - DS60	1								

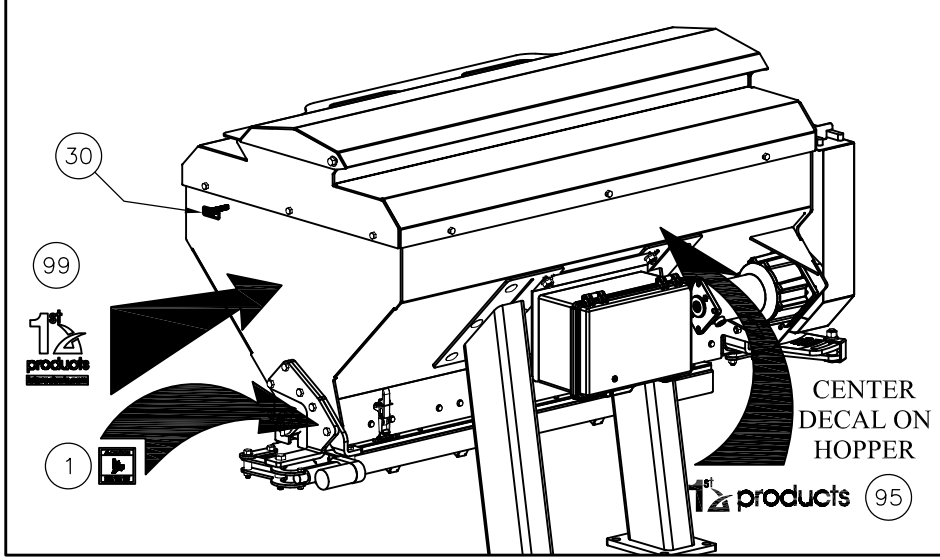


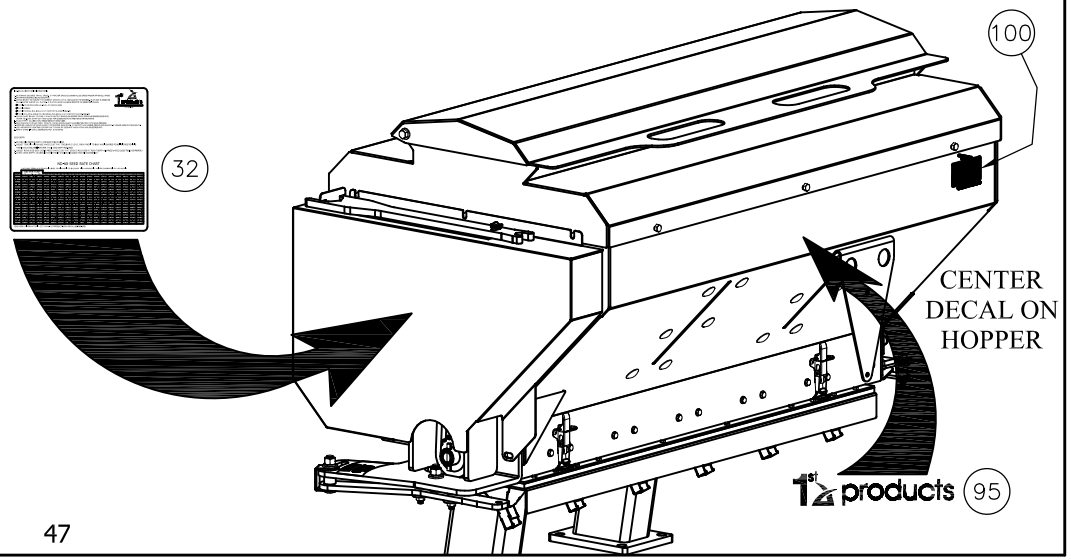
SEEDER TO FRAME GROUP: 3 POINT HITCH



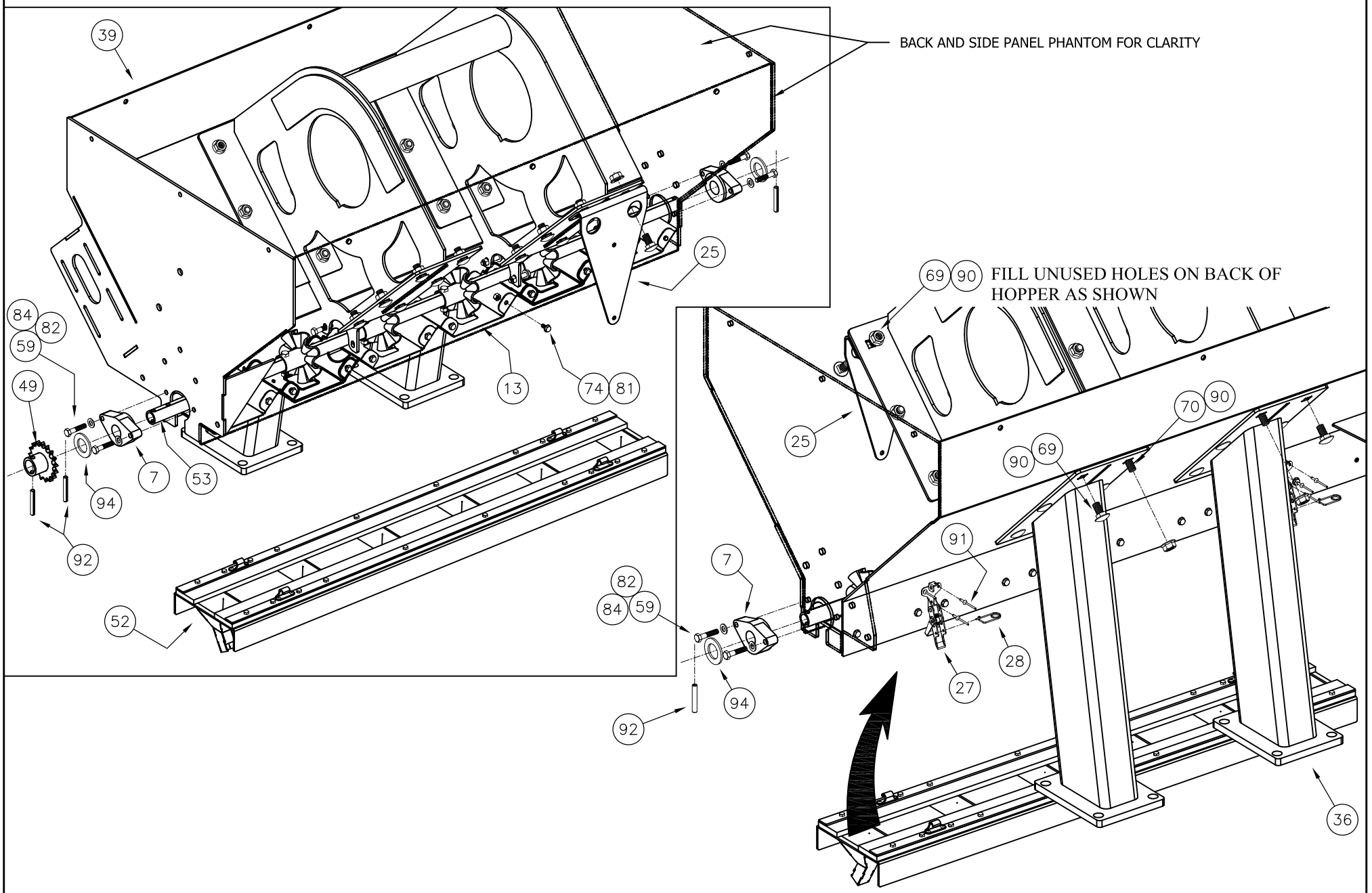
HOPPER GROUP - PRIMARY

ITEM	PART NO	DESCRIPTION	QTY
1	AE50-075	PINCH POINT CAUTION DECAL	1
2	AE50-149	1/4 LYNCH PIN	1
3	DS24-004	METER PLATE BUSHINGS	4
4	DS24-011	CUT OFF PLATE BUSHINGS	2
5	DS24-028	LID BUSHING	2
6	DS24-039	IDLER TUBE 1-1/16 LG	3
7	DS26-001	AGITATOR SHAFT BEARING	2
8	DS26-003	ACTUATOR SPACER 1	1
9	DS26-004	ACTUATOR SPACER 2	1
10	DS26-005	ACTUATOR SPACER 3	1
11	DS26-020	IDLER, 1-3/4 x 13/16 LG x 25/32 BORE	1
12	DS26-021	SPROCKET STORAGE SHAFT	1
13	DS27-012	SEED FUNNEL 1	6
14	DS27-020	Actuator Mount	1
15	DS27-021	Actuator Linkage Pivot	1
16	DS27-022	METER PLATE LINKAGES	4
17	DS27-024	CUT OFF PLATE LEVER ACTION	2
18	DS27-026	METER ADJ. HANDLE COMBO WRENCH	1
19	DS27-027	METER SCALE POINTER	1
20	DS27-083	CUT OFF PLATE BUSHING LINKAGE	1
21	DS27-109	6 OUTLET CUT OFF PLATE	1
22	DS27-117	5 FT LEFT SEED PLATE 3/4"	1
23	DS27-118	5 FT RIGHT SEED PLATE 3/4"	1
24	DS27-121	CONTROLLER PLATE; UTV	1
25	DS27-123	SMV BRACKET - ND	1
26	DS27-314	SPACER WASHER	1
27	DS50-001	TOGGLE LATCH	4
28	DS50-003	TOGGLE LATCH RETAINING PIN	4
29	DS50-044	ADJUSTER DECAL	1
30	DS50-082	DS PATENT DECAL	1
31	DS50-153	ND-60 QUICK CHART DECAL	1
32	DS50-155	ND-60 CHART DECAL	1
33	DS50-164	SPROCKET CHANGE DECAL	1
34	DS50-166	#40 ROLLER CHAIN x 76 LINKS	1
35	DS80-006	Meter Adj. Bracket	1
36	DS80-009	SEEDBOX MOUNT	2
37	DS80-019	CHAIN GAURD	1
38	DS80-035	METER ADJUSTER	1
39	DS80-040	DS-60 PRIMARY HOPPER	1
40	DS80-041	DS-60 CAP	1
41	DS80-029	DS-60 LID	1
42	DS80-043	DS-60 SPLASH GUARD	1
43	DS80-104	PRIMARY BOX AGITATOR TRANS. BASE	1
44	DS80-106	12 T DRIVE REDUCTION SHAFT	1
45	DS80-107	12 TOOTH REDUCTION SPROCKET	1
46	DS80-108	17 TOOTH REDUCTION SPROCKET	1
47	DS80-109	24 TOOTH REDUCTION SPROCKET	1
48	DS80-111	DS MOTOR SPROCKET	1
49	DS80-112	AGITATOR DRIVE SPROCKET, LONG	1
50	DS81-005	ACTUATOR ASSEMBLY	1
51	DS81-006	MOTOR ASSEMBLY	1
52	DS81-042	SPOUT TRAY - DS60	1
53	DS81-044	AGITATOR - DS60 (SMALL BOX)	1
54	DS81-004	CONTROL BOX	1
55	HW01008048G5ZPC	1/4 X 1 1/2 HHCS	1
56	HW01008072G5ZPC	1/4 X 2 1/4 HHCS	1
57	HW01010024G5ZPC	5/16 X 3/4 HHCS	9
58	HW01010040G5ZPC	5/16 x 1-1/4 HHCS	3
59	HW01010048G5ZPC	5/16 x 1 1/2 HHCS	4
60	HW01012032G5ZPC	3/8 X 1 HHCS	6
61	HW01012040G5ZPC	3/8 x 1-1/4 HHCS	2
62	HW01012048G5ZPC	3/8 X 1 1/2 HHCS	9
63	HW01012064G5ZPC	3/8 X 2 HHCS	1
64	HW01012144G5ZPC	3/8 X 4 1/2 HHCS	2
65	HW01016040G5ZPC	1/2 x 1-1/4 HHCS	1
66	HW01016048G5ZPC	1/2 x 1-1/2 HHCS	1
67	HW01016080G5ZPC	1/2 X 2 1/2 HHCS	1
68	HW01016096G5ZPC	1/2 X 3 HHCS	2
69	HW03016032G5ZPC	1/2 X 1 Carriage Bolt	22
70	HW03016040G5ZPC	1/2 X 1 1/4 CARRIAGE BOLT	2
71	HW03016072G5ZPC	1/2 x 2 1/4 CARRIAGE BOLT	2
72	HW03016080G5ZPC	1/2 X 2 1/2 CARRIAGE BOLT	1
73	HW03016088G5ZPC	1/2 x 2-3/4 CARR. BOLT	2
74	HW06008016G5ZPC	1/4 X 1/2 FLANGE LOCK SCREW	24
75	HW06008024G5ZPF	1/4 X 3/4 HEX FLG LK SC. FINE	4
76	HW06010024G5ZPC	5/16 x 3/4 HEX FLG. LOCK SCREW	1
77	HW20012G5ZPC	3/8 HEX NUT	2
78	HW20016G5ZPC	1/2 HEX NUT	2
79	HW22010G5ZPC	5/16 HEX FLG. LOCK NUT	6
80	HW22012G5ZPC	3/8 HEX FLG. LOCK NUT	4
81	HW24008GBZPC	1/4 Stover Lock Nut	26
82	HW24010GBZPC	5/16 Stover Lock Nut	16
83	HW24012GBZPC	3/8 Stover Lock Nut	18
84	HW31010TAZP	5/16 SAE Flat Washer	4
85	HW31012TAZP	3/8 SAE FLATWASHER	4
86	HW31016TAZP	1/2 SAE FLATWASHER	4
87	HW32012G5ZP	3/8 LOCKWASHER	2
88	HW32016G5ZP	1/2 LOCK WASHER	2
89	HW34016G5ZPC	1/2 2-WAY LOCKUT	1
90	HW35016G5ZPC	1/2 FLANGE STOVER LOCKNUT	30
91	HW41005008SS	5/32 X 1/8 - 1/4 RIVETS SS	12
92	HW42010048G5ZP	5/16" x 1 1/2" Roll Pin Zinc Plated	3
93	HW60016G14PL	1/2 ID x 7/8 OD x 14 GA BUSHING	4
94	HW6003204810GZP	1" ID x 1 1/2" OD 10GA Machine Bushing	2
98	UA50-007	3/16 LYNCH PIN	1
95	ND50-035	1st PRODUCTS DECAL - LONG - SPING 2020	2
96	SB50-016	1/2 x 1/2 FLG BEARING	2
97	SB50-023	#40 CHAIN IDLER	3
99	UA50-012	UA BELT COVER DECAL	1
100	UA50-180	USA FLAG DECAL	1

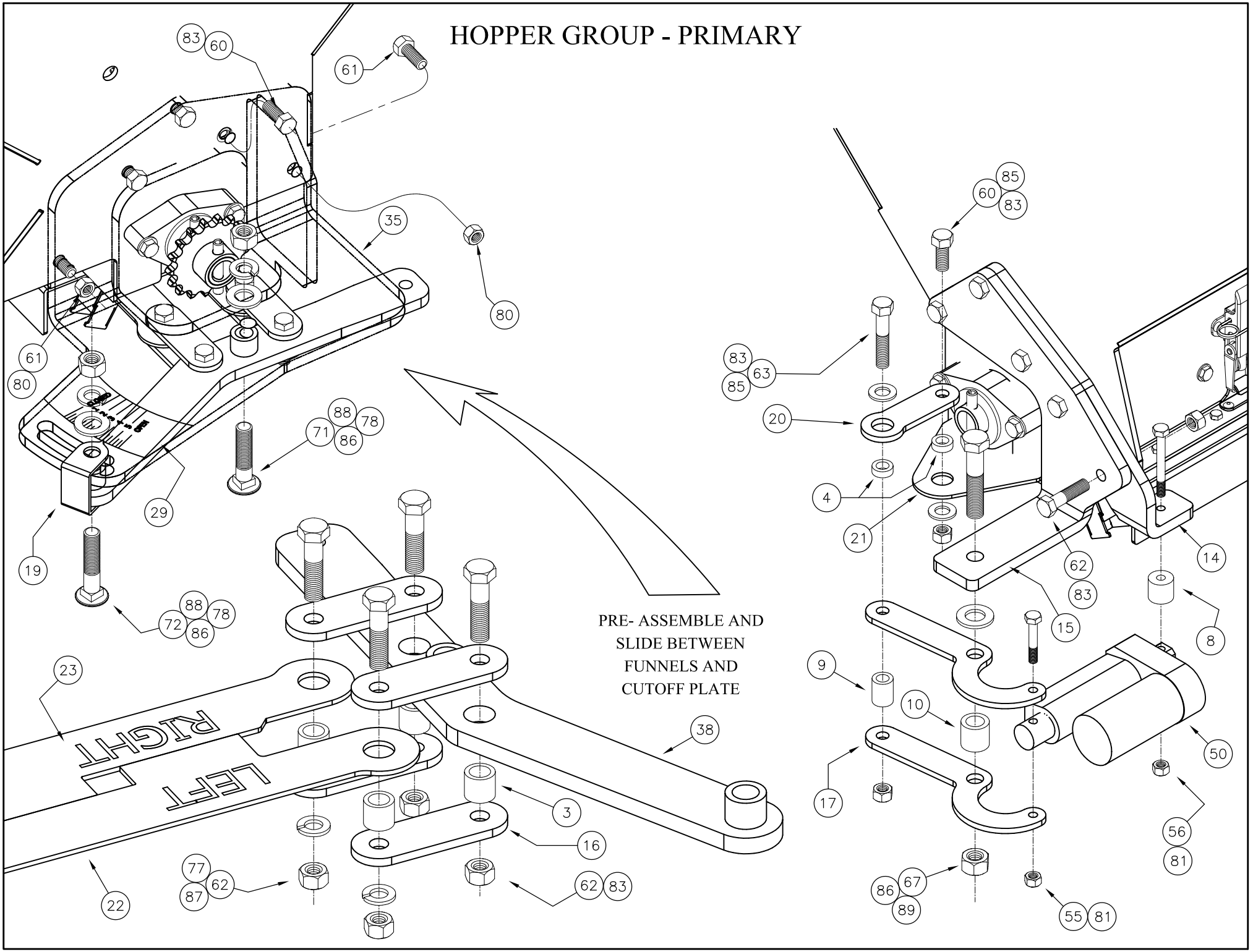




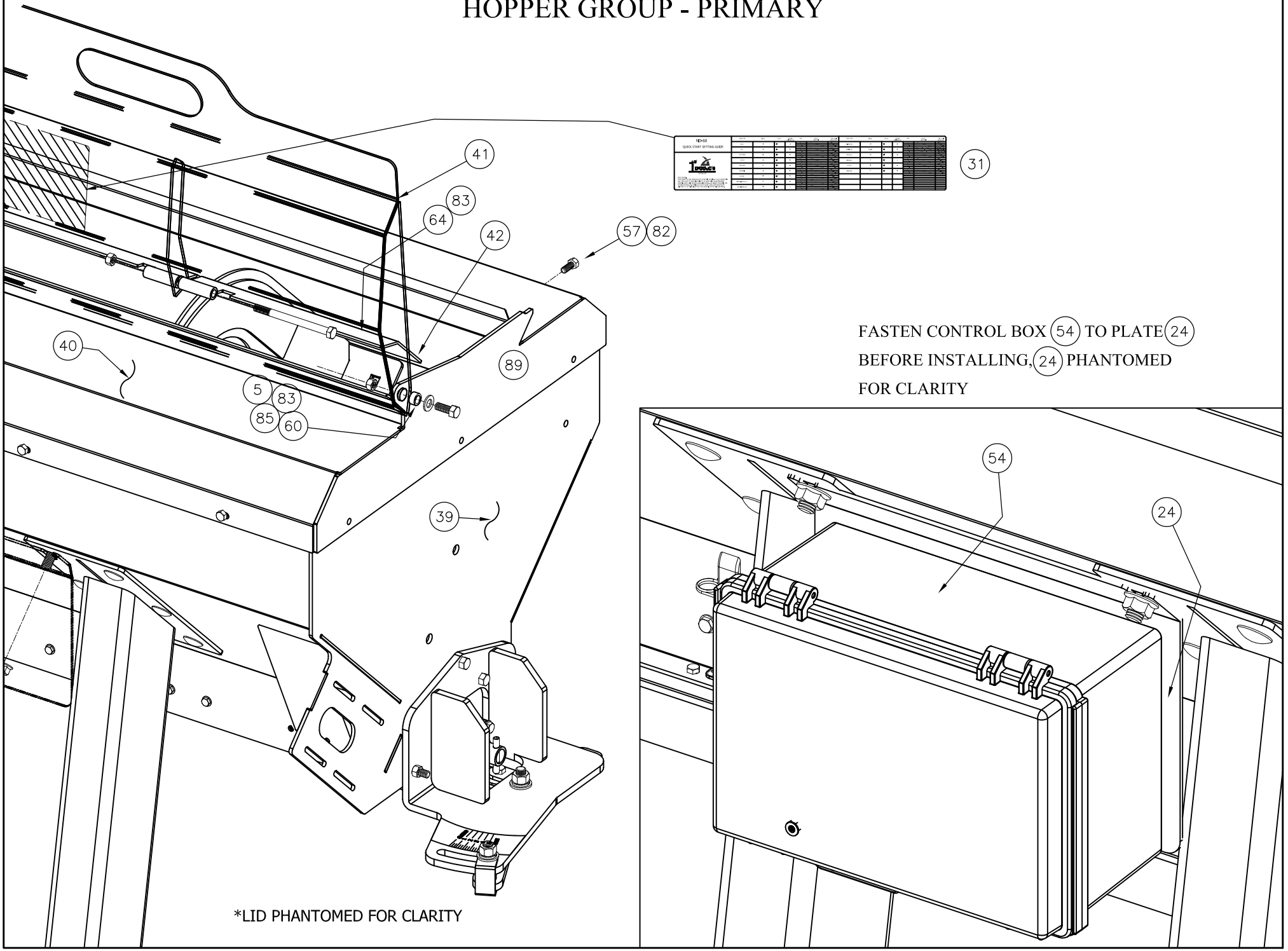
HOPPER GROUP - PRIMARY



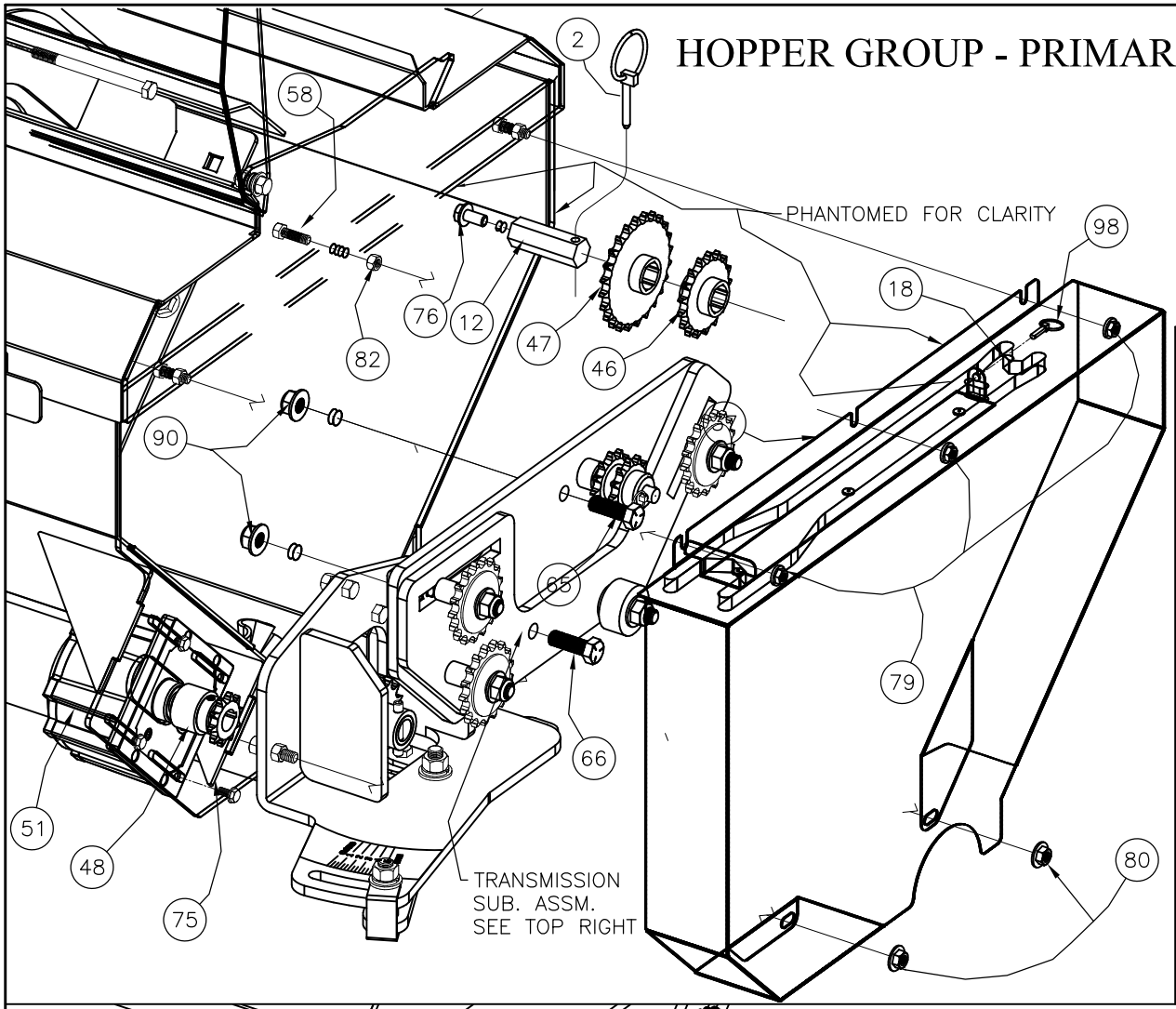
HOPPER GROUP - PRIMARY

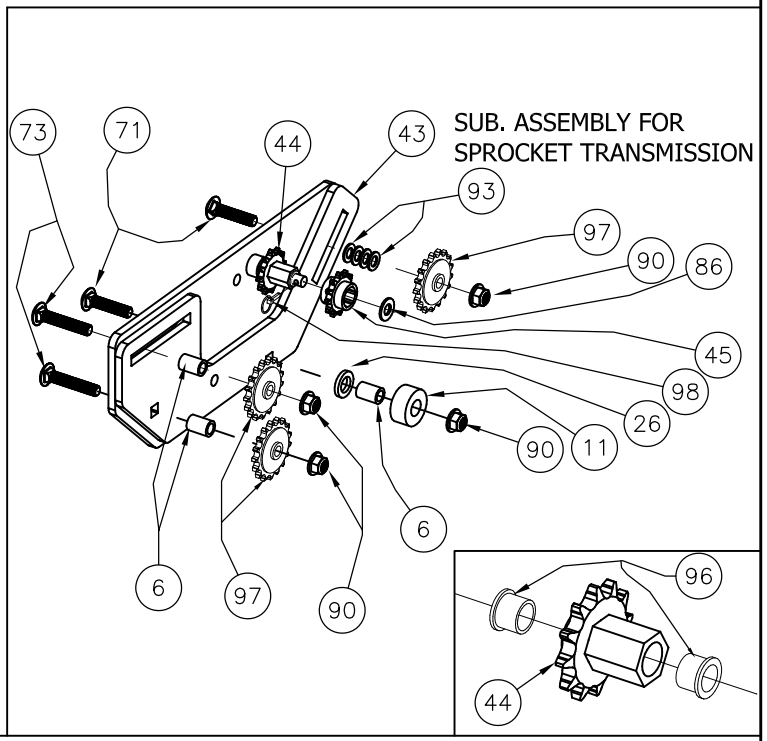


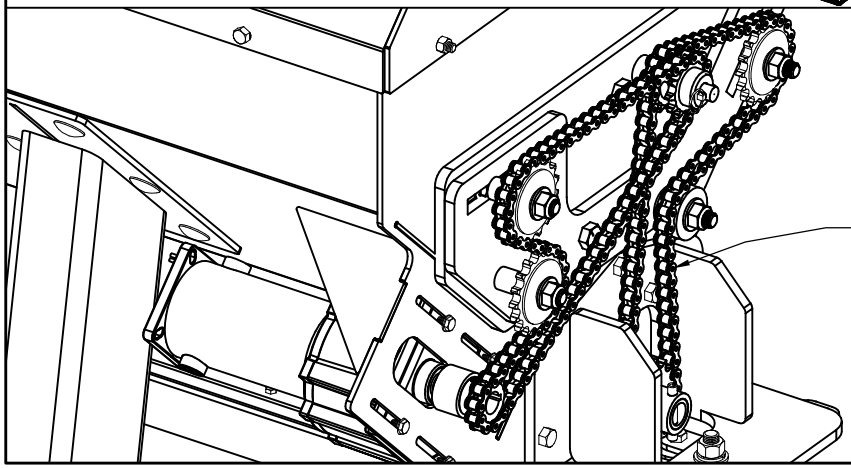
HOPPER GROUP - PRIMARY



HOPPER GROUP - PRIMARY

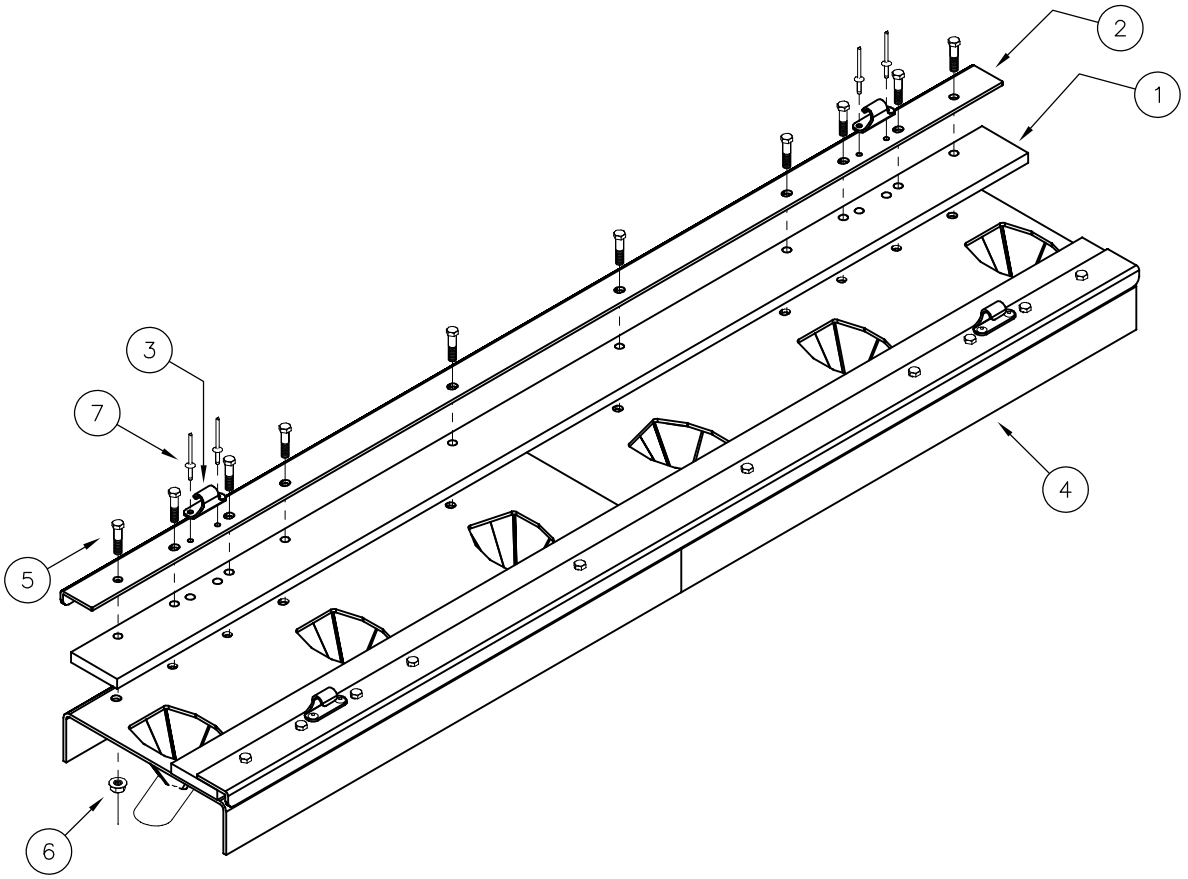






SPOUT TRAY GROUP

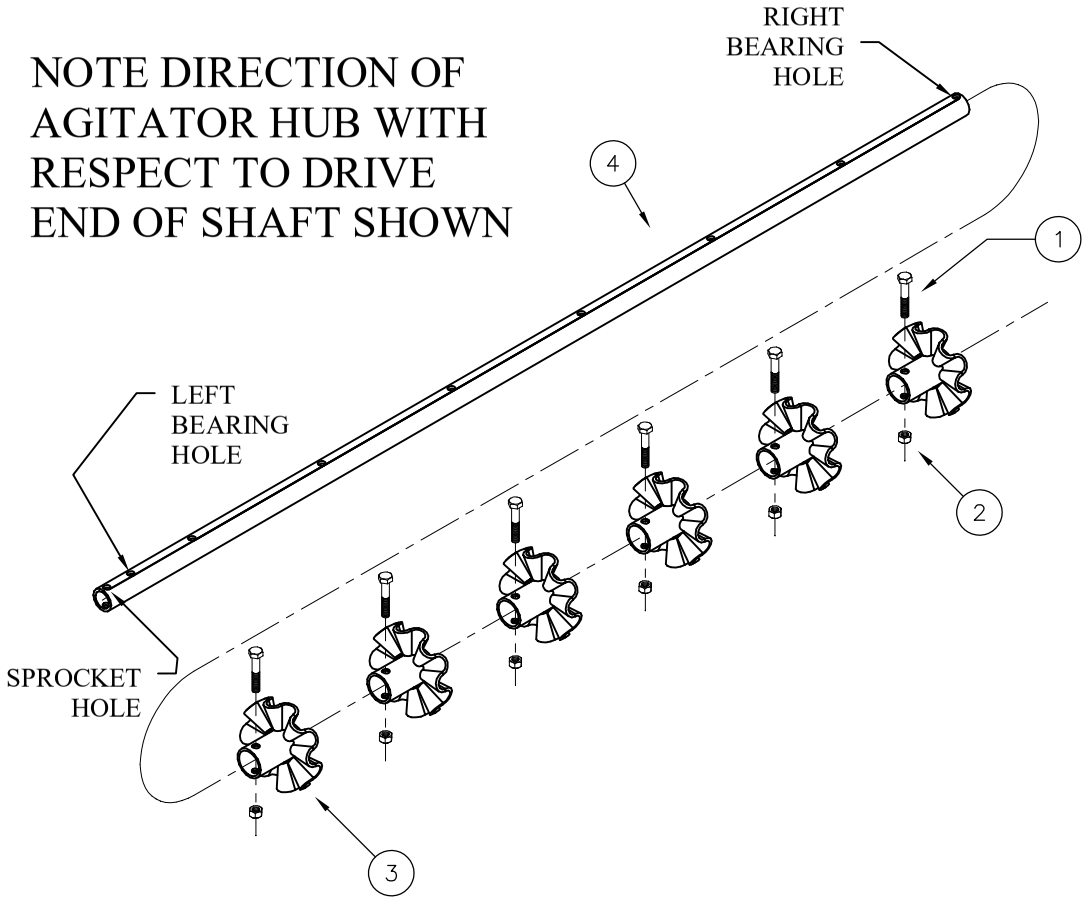
PARTS LIST			
ITEM	PART NO	DESCRIPTION	QTY
1	DS26-010	6 OUTLET CUT OFF PLATE SLIDE	2
2	DS27-098	6 OUTLET CATCH PLATE SLIDE	2
3	DS50-002	TOGGLE LATCH PLATE	4
4	DS80-030	6 OUTLET SPOUT WELDMENT	1
5	HW01008032G5ZPC	1/4 X 1 HHCS	20
6	HW22008G5ZPC	1/4 FLANGE LOCK NUT	20
7	HW41005008SS	5/32 X 1/8-1/4 RIVET SS	8



AGITATOR GROUP

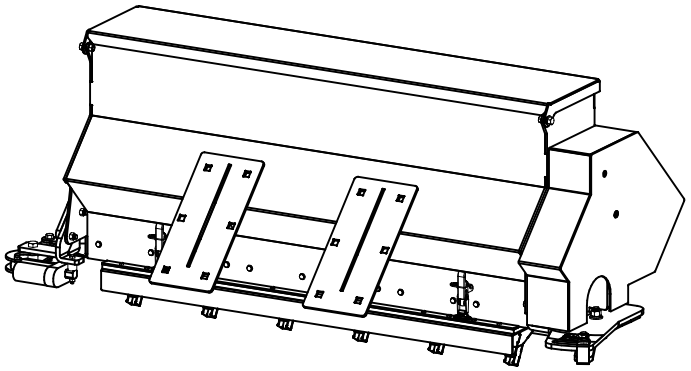
PARTS LIST			
ITEM	PART NO	DESCRIPTION	QTY
1	HW01010056G5ZPC	5/16 1 3/4 HHCS	6
2	HW24010GBZPC	5/16 STOVER LOCKNUT	6
3	DS80-010	AGITATOR	6
4	DS24-018	AGITATOR SHAFT - DS60	1

NOTE DIRECTION OF AGITATOR HUB WITH RESPECT TO DRIVE END OF SHAFT SHOWN



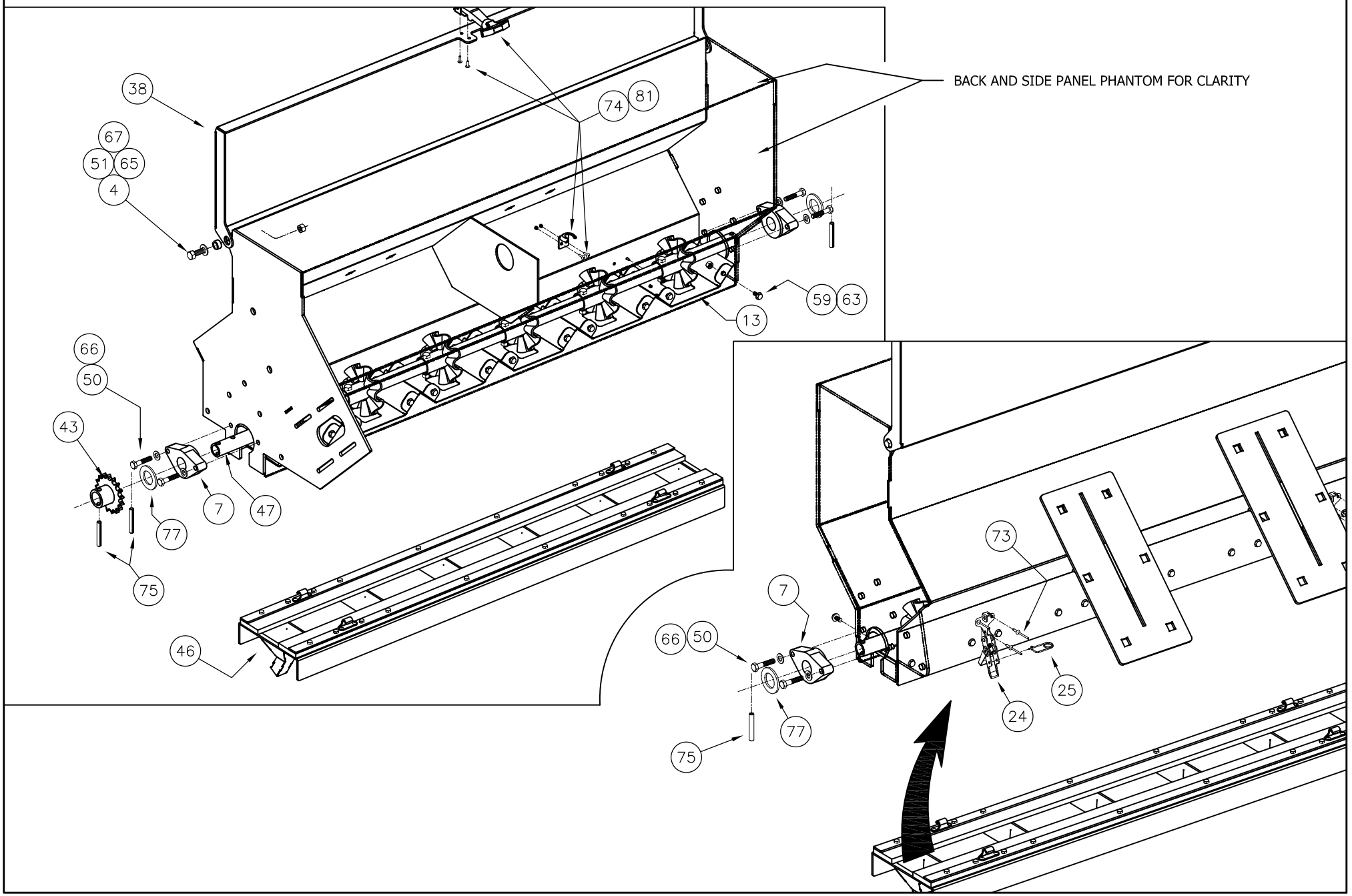
HOPPER GROUP - AUXILIARY

ITEM	PART NO	DESCRIPTION	QTY
1	AE50-075	PINCH POINT CAUTION DECAL	1
2	DS24-004	METER PLATE BUSHINGS	4
3	DS24-011	CUT OFF PLATE BUSHINGS	2
4	DS24-028	LID BUSHING	2
5	DS24-039	IDLER TUBE, 1-1/16 LG	3
6	DS24-040	IDLER TUBE, 1-7/8 LG	1
7	DS26-001	AGITATOR SHAFT BEARING	2
8	DS26-003	ACTUATOR SPACER 1	1
9	DS26-004	ACTUATOR SPACER 2	1
10	DS26-005	ACTUATOR SPACER 3	1
11	DS26-020	IDLER, 1-3/4 x 13/16 LG x 25/32 BORE	4
12	DS26-022	CHAIN GAURD MOUNT	2
13	DS27-012	SEED FUNNEL 1	6
14	DS27-020	Actuator Mount	1
15	DS27-021	Actuator Linkage Pivot	1
16	DS27-022	METER PLATE LINKAGES	4
17	DS27-024	CUT OFF PLATE LEVER ACTION	2
18	DS27-027	METER SCALE POINTER	1
19	DS27-083	CUT OFF PLATE BUSHING LINKAGE	1
20	DS27-109	6 OUTLET CUT OFF PLATE	1
21	DS27-111	5 FT LEFT SEED PLATE 1/4"	1
22	DS27-112	5 FT RIGHT SEED PLATE 1/4"	1
23	DS27-314	SPACER WASHER	2
24	DS50-001	TOGGLE LATCH	4
25	DS50-003	TOGGLE LATCH RETAINING PIN	4
26	DS50-044	ADJUSTER DECAL	1
27	DS50-051	3/4" ID LOOP CLAMP	1
28	DS50-069	3/8" ID LOOP CLAMP, INSULATED	2
29	DS50-140	SMALL BOX MOTOR HARNESS	1
30	DS50-165	#40 ROLLER CHAIN x 72 LINKS	1
31	DS50-167	#40 ROLLER CHAIN x 63 LINKS	1
32	DS50-173	SPROCKET CHANGE DECAL - AUX.	1
33	DS50-177	RING SHIM	1
34	DS80-006	Meter Adj. Bracket	1
35	DS80-027	SMALL BOX CHAIN COVER	1
36	DS80-035	METER ADJUSTER	1
37	DS80-045	DS-60 SMALL HOPPER	1
38	DS80-046	SMALL HOPPER LID - DS60	1
39	DS80-105	SECONDARY BOX AGITATOR TRANS. BASE	1
40	DS80-106	12T DRIVE REDUCTION SHAFT	1
41	DS80-109	24 TOOTH REDUCTION SPROCKET	1
42	DS80-111	DS MOTOR SPROCKET	1
43	DS80-112	AGITATOR DRIVE SPROCKET - LONG	1
44	DS81-005	ACTUATOR ASSEMBLY	1
45	DS81-006	MOTOR ASSEMBLY	1
46	DS81-042	SPOUT TRAY - DS60	1
47	DS81-044	AGITATOR - DS60 (small box)	1
48	HW01008048G5ZPC	1/4 X 1 1/2 HHCS	1
49	HW01008072G5ZPC	1/4 X 2 1/4 HHCS	1
50	HW01010048G5ZPC	5/16 x 1 1/2 Hex Head Cap Screw	4
51	HW01012032G5ZPC	3/8 X 1 HHCS	8
52	HW01012048G5ZPC	3/8 X 1 1/2 HHCS	9
53	HW01012064G5ZPC	3/8 X 2 HHCS	1
54	HW01016080G5ZPC	1/2 X 2 1/2 HHCS	1
55	HW03016072G5ZPC	1/2 x 2 1/4 CARRIAGE BOLT	2
56	HW03016080G5ZPC	1/2 X 2 1/2 CARRIAGE BOLT	1
57	HW03016088 G5ZPC	1/2 x 2-3/4 CARR. BOLT	1
58	HW03016096G5ZPC	1/2 x 3 CARR. BOLT	1
59	HW06008016G5ZPC	1/4 X 1/2 FLANGE LOCK SCREW	24
60	HW06008024G5ZPF	1/4 X 3/4 HEX FLG LK SC. FINE	4
61	HW20012G5ZPC	3/8 HEX NUT	2
62	HW20016G5ZPC	1/2 HEX NUT	2
63	HW24008GBZPC	1/4 Stover Lock Nut	26
64	HW24010GBZPC	5/16 Stover Lock Nut	4
65	HW24012GBZPC	3/8 Stover Lock Nut	16
66	HW31010TAZP	5/16 SAE Flat Washer	4
67	HW31012TAZP	3/8 SAE FLATWASHER	4
68	HW31016TAZP	1/2 SAE FLATWASHER	4
69	HW32012G5ZP	3/8 LOCKWASHER	2
70	HW32016G5ZP	1/2 LOCK WASHER	2
71	HW34016G5ZPC	1/2 2-WAY LOCKUT	1
72	HW35016GFZPC	1/2 STOVER FLANGE NUT	8
73	HW41005008SS	5/32 X 1/8 - 1/4 RIVETS SS	12
74	HW41006008SS	3/16 X 1/16-1/8 RIVET	4
75	HW42010048G5ZP	5/16" x 1 1/2" Roll Pin Zinc Plated	3
76	HW60024040010GZP	3/4 x 1-1/4 x 10 GA BUSHING	1
77	HW6003204810GZP	1" ID x 1 1/2" OD 10GA Machine Bushing	2
78	ND50-035	1st PRODUCTS DECAL - LONG - SPING 2020	1
79	SB50-019	1/2 x 1/2 FLG. BEARING	2
80	SB50-023	#40 CHAIN IDLER	1
81	SB50-053	T-HANDLE DRAW LATCH	1
82	UA50-180	USA FLAG DECAL	1
83	UA50-007	3/16 x 1-1/4 LYNCH PIN	1

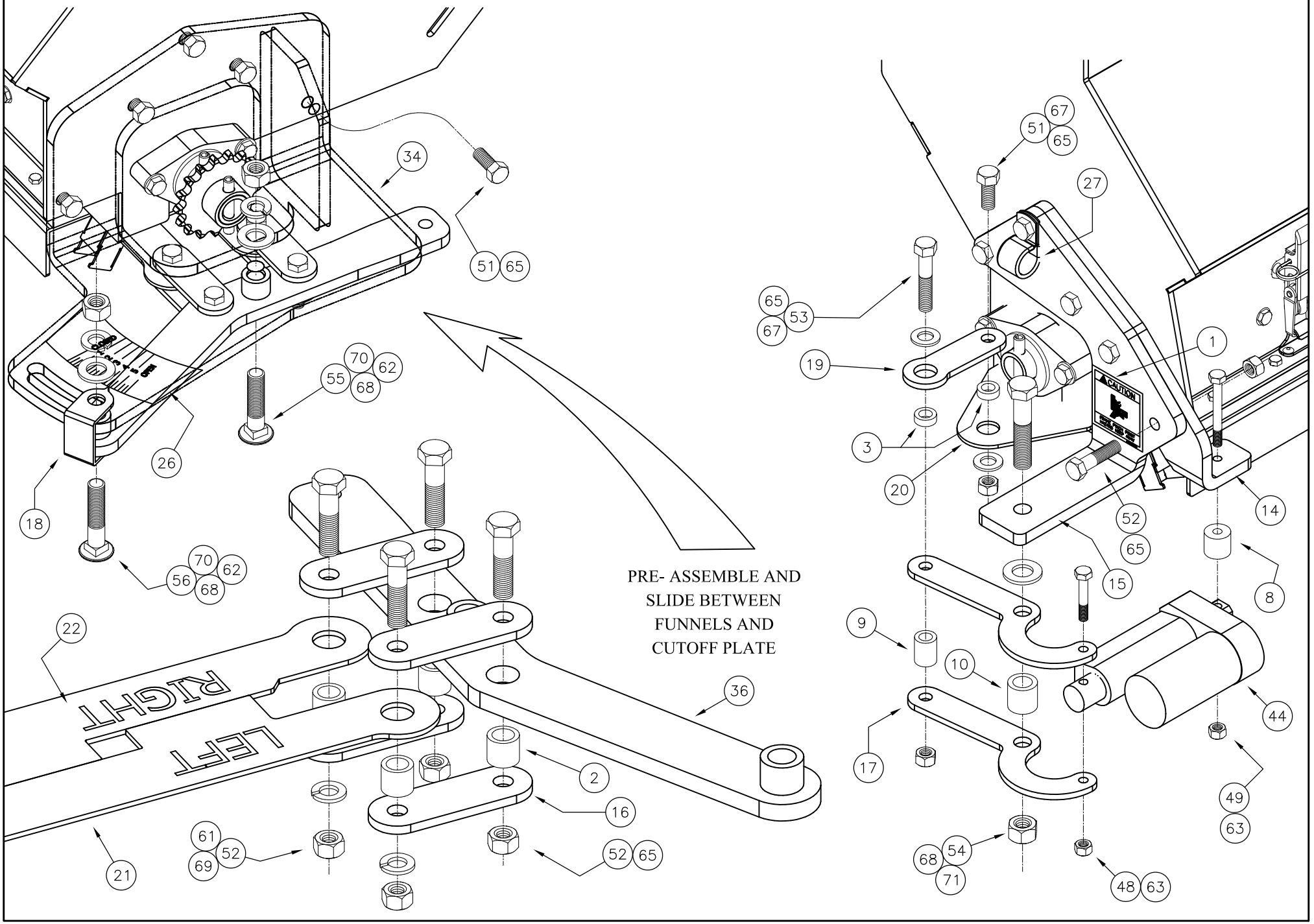


***ALL ELECTRICAL COMPONENTS
ARE ILLUSTRATED FURTHER IN
ELECTRICAL GROUP PAGES***

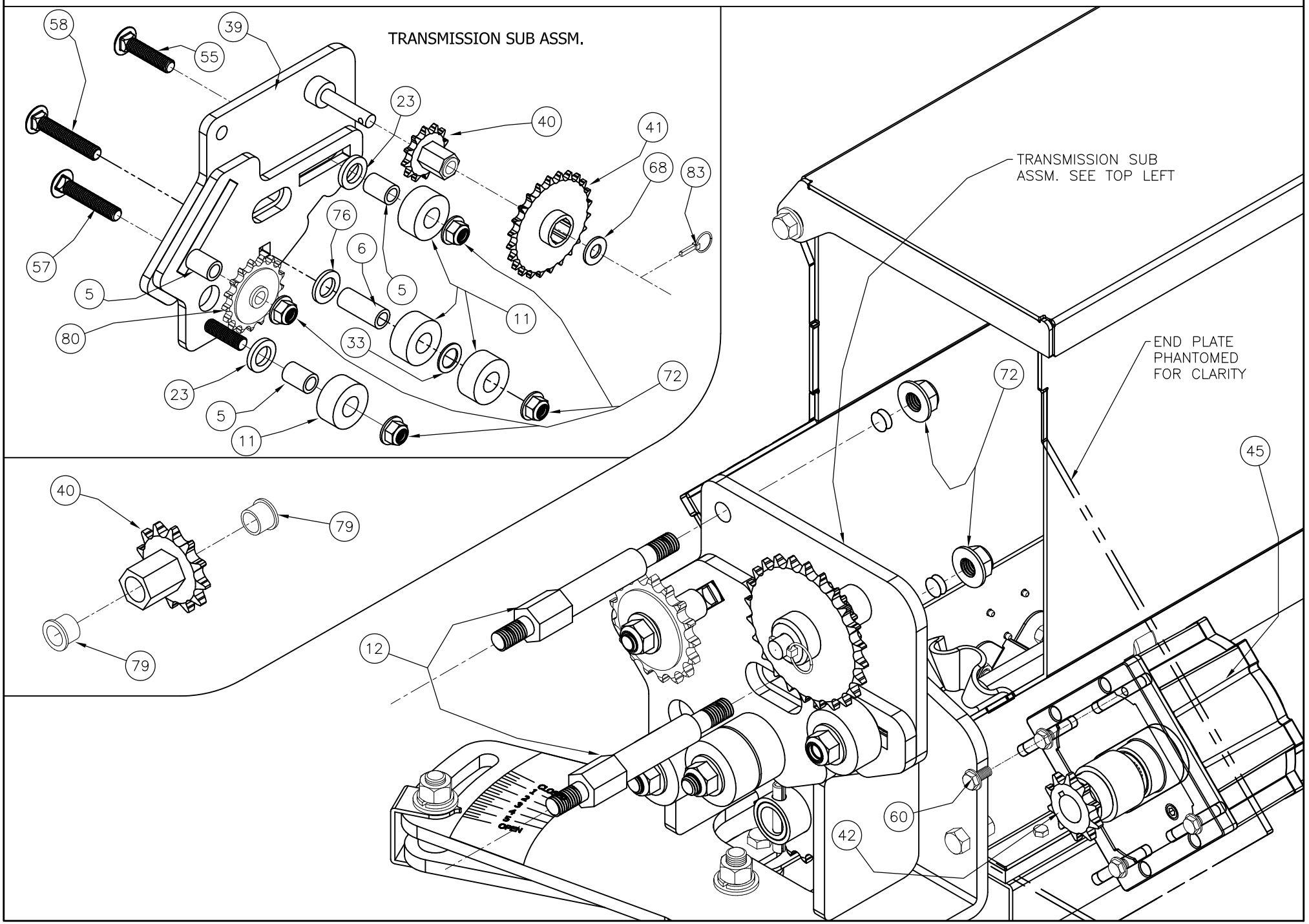
HOPPER GROUP - AUXILIARY



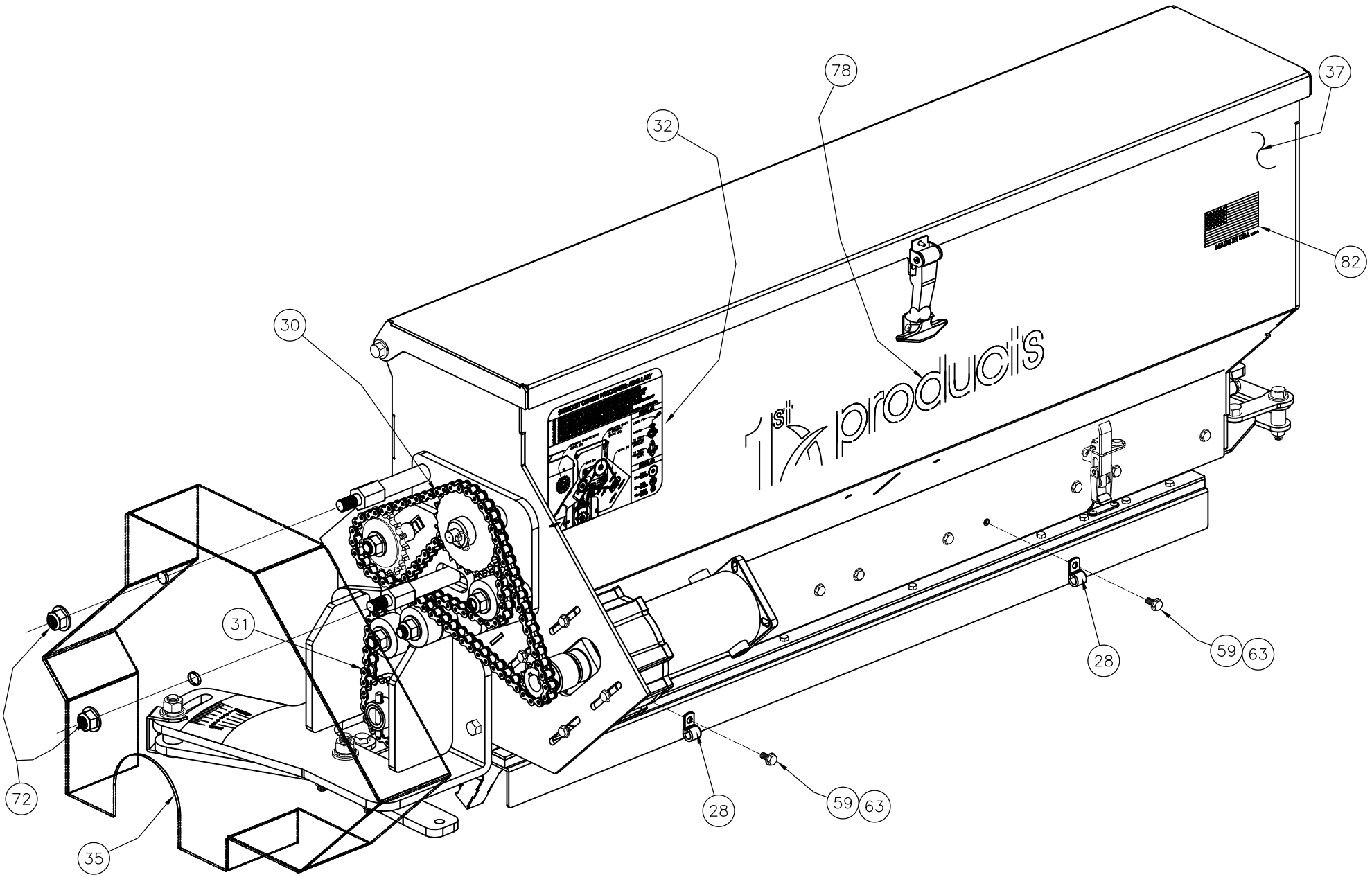
HOPPER GROUP - AUXILIARY



HOPPER GROUP - AUXILIARY

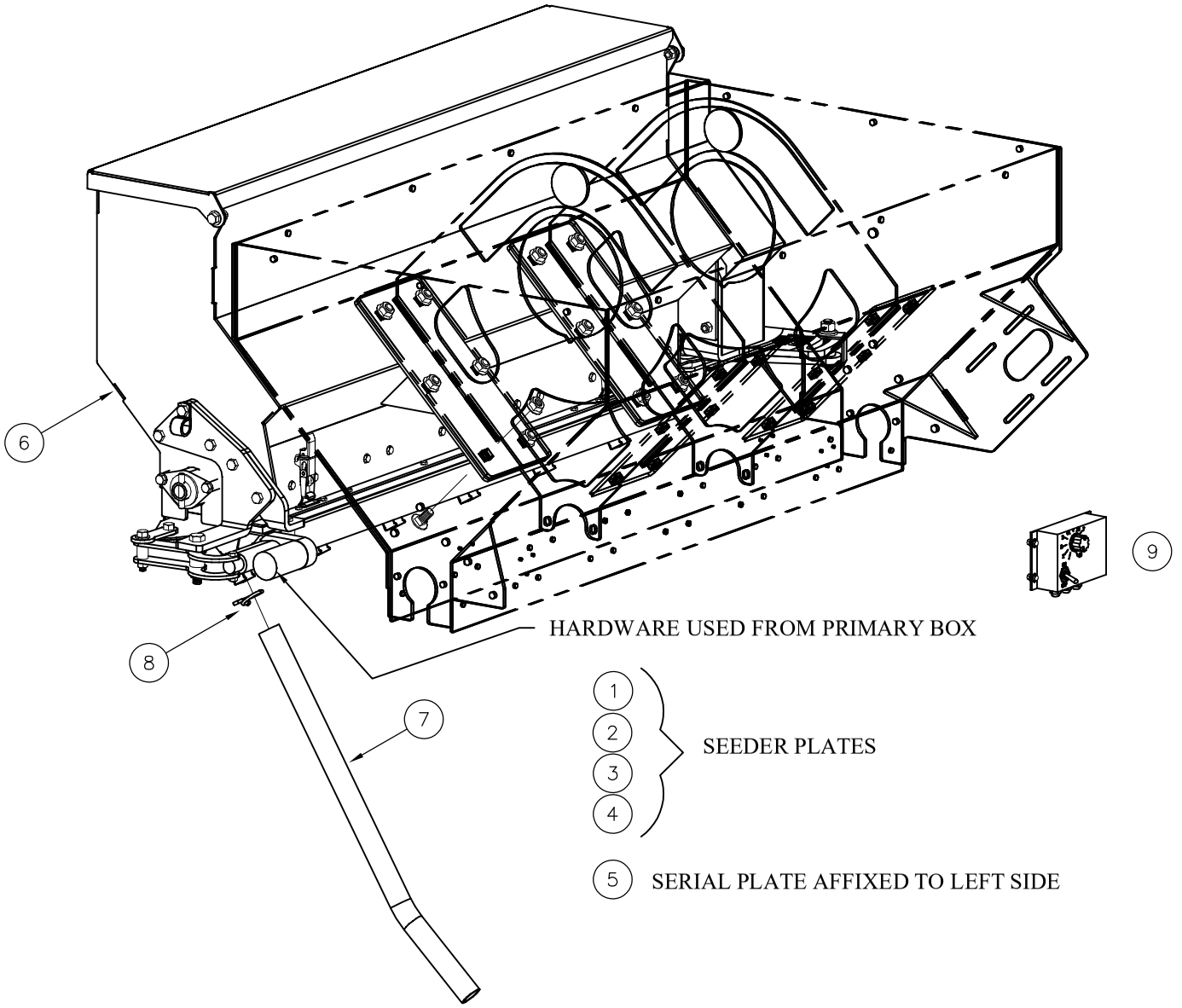


HOPPER GROUP - AUXILIARY



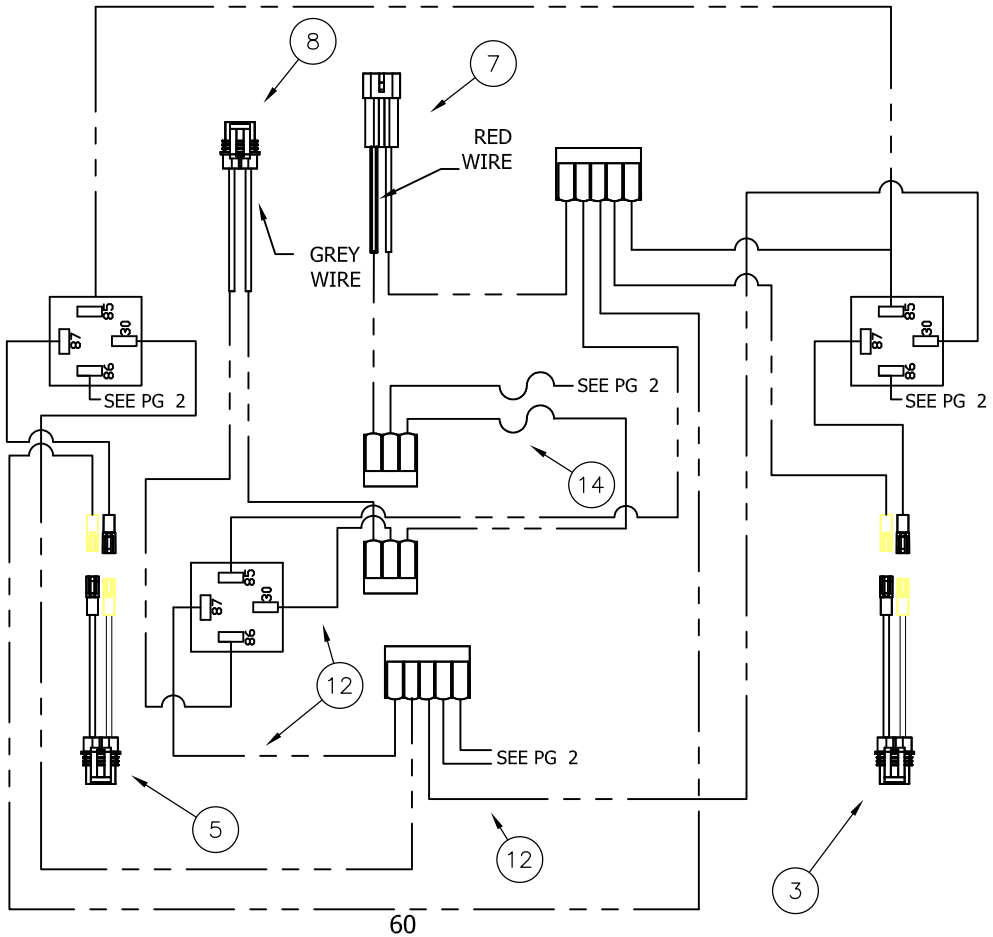
AUXILIARY BOX TO PRIMARY GROUP

ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	DS27-113	5 FT LEFT SEED PLATE 3/8	1	4	DS27-116	5 FT RIGHT SEED PLATE 1/2	1	7	ND50-102	1 ID X 1 1/4 OD CLEAR VINYL DS SB	6
2	DS27-114	5 FT RIGHT SEED PLATE 3/8	1	5	ND50-084	DS-60 SERIAL # TAG	1	8	SB50-062	1 3/8 HOSE CLAMP	6
3	DS27-115	5 FT LEFT SEED PLATE 1/2	1	6	DS81-023	SEE SMALL BOX GROUP	1	9	DS81-065	25 AMP MT CONTROLLER	1

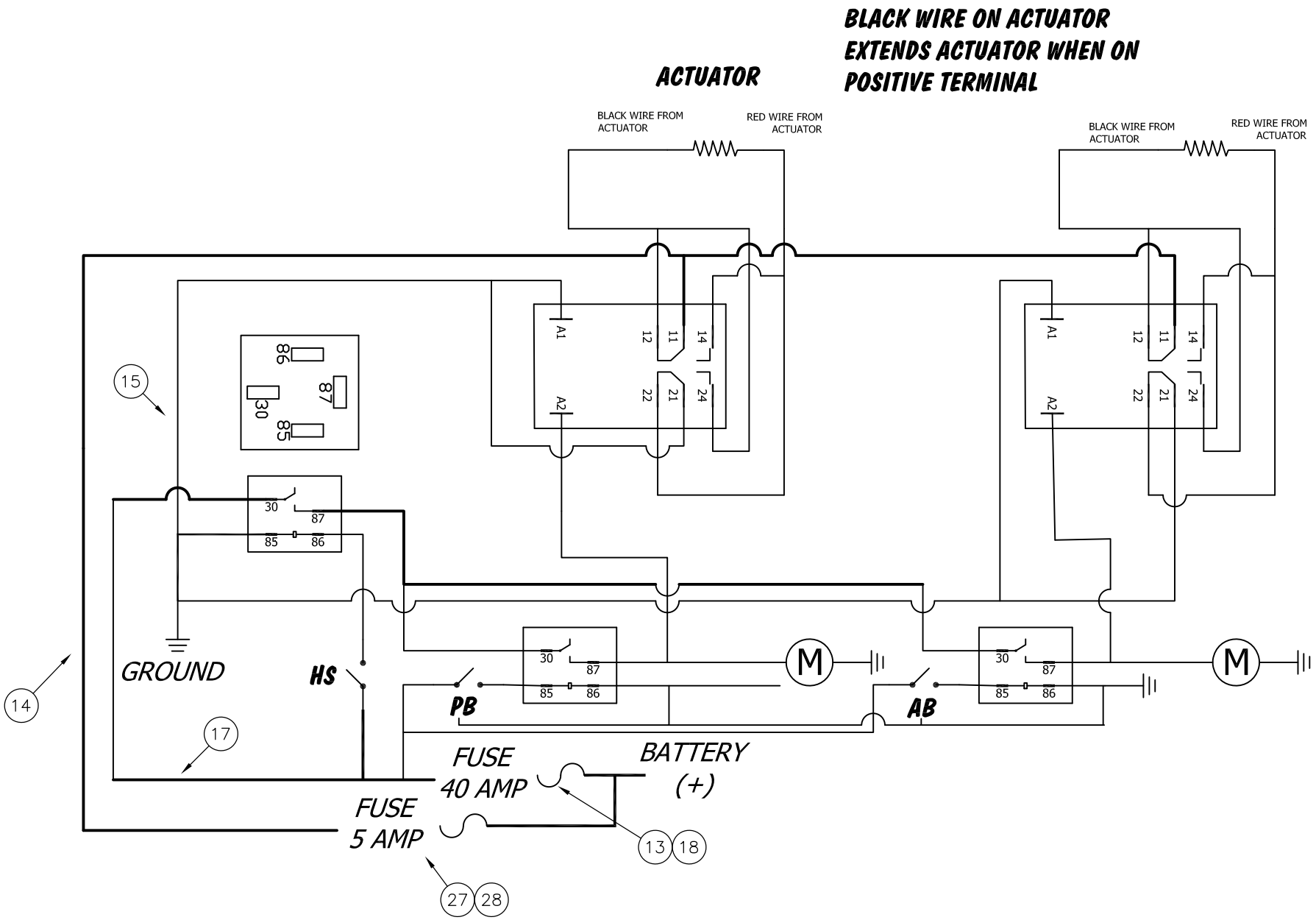


ELECTRICAL GROUP

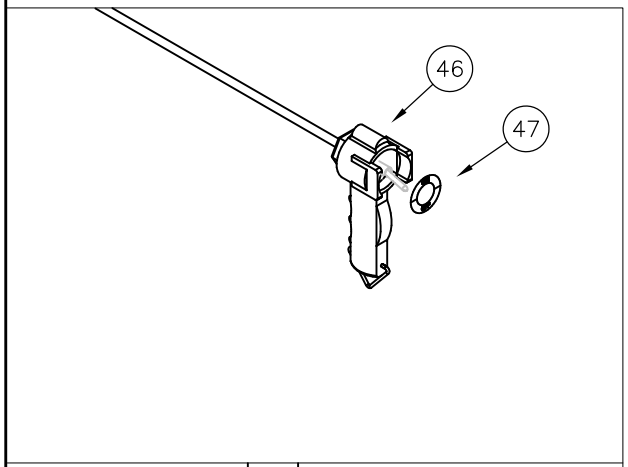
ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	AE50-129	2-7/8 TEST CLIP	2	19	DS50-074	RELAY, DPDT	2	37	DS50-174	CONTROL BOX DECAL	1
2	AE50-130	RED INSULATOR	1	20	DS50-075	CONTROL ENCLOSURE	1	38	DS50-175	2 WAY LEVER LOCK CONNECTOR	1
3	AE50-131	BLACK INSULATOR	1	21	DS50-076	GLAND NUT	3	39	DS50-176	ON-OFF ILLUMINATED ROUND SWITCH RED	2
4	DS27-309	SWITCH PLATE	1	22	DS50-077	GROUND EXTENSION WIRE	1	40	DS81-005	ACTUATOR WITH PLUG	1
5	DS27-315	FUSE STRAP	2	23	DS50-078	RELAY, 4 PIN	1	41	DS81-006	MOTOR WITH PLUG	1
6	DS50-009	MOTOR POWER HARNESS, BOX 1	1	24	DS50-079	CONTROLLER POWER HARNESS	2	42	HW16#10016G5ZPC	#10 X 1/2 CROSS HEAD SCREW	4
7	DS50-013	ACTUATOR HARNESS, BOX 1	1	25	DS50-139	MOTOR EXTENSIN HARNESS, BOX 1	1	43	HW16M5012ZPC	M5X.8 X 12 MM LG CROSS HEAD SCREW	4
8	DS50-014	MOTOR POWER HARNESS, BOX 2	1	26	DS50-140	MOTOR HARNESS, SMALL BOX	1	44	HW34#10G5ZPC	#10 2-WAY LOCK NUT	4
9	DS50-015	CABLE GLAND	3	27	DS50-145	FUSE, 5 AMP STANDARD	1	45	HW62#08010ZP	#8 X 5/16 THREAD FORMING SCREW	4
10	DS50-016	CONTROL BOX POWER IN HARNESS	1	28	DS50-146	FUSE LINK, 16 GA STRANDED	1	46	ND50-095	PIERCE ON/OFF SWITCH	1
11	DS50-017	CONTROL BOX SWITH HARNESS	1	29	DS50-147	3 WAY LEVER LOCK CONNECTOR	2	47	ND50-100	ON/OFF DECAL	1
12	DS50-018	ACTUATOR HARNESS, BOX 2	1	30	DS50-148	5 WAY LEVER LOCK CONNECTOR	2	48	DS50-087	TOGGLE SWITCH, ON-OFF	1
13	DS50-023	FUSE LINK	1	31	DS50-149	RELAY POWER WIRE	1	49	DS50-088	TOGGLE SWITCH, (ON)-OFF-(ON)	1
14	DS50-030	RELAY POWER WIRE	1	32	DS50-168	RELAY SWITCH WIRE	2	50	DS50-089	4-WAY CONTROL BOX ENCLOSURE	1
15	DS50-033	RELAY GROUND WIRE ASSM	1	33	DS50-169	SWITCH POWER WIRE	2	51	ND50-096	4WAY CONTROL BOX (PULL TYPE)	1
16	DS50-046	POWER HARNESS W/ TEST CLIPS	1	34	DS50-170	RELAYWITCH GROUND WIRE	1	52	ND50-101	ON/OFF UP/DOWN DECAL (PULL TYPE)	1
17	DS50-052	SYSTEM POWER WIRE	2	35	DS50-171	RELAY AMD MOTOR WIRE	2	53	DS50-064	ND60 MACHINE HARNESS	1
18	DS50-066	ATC FUSE, 40 AMP	1	36	DS50-172	MOTOR GROUND WIRE	2				

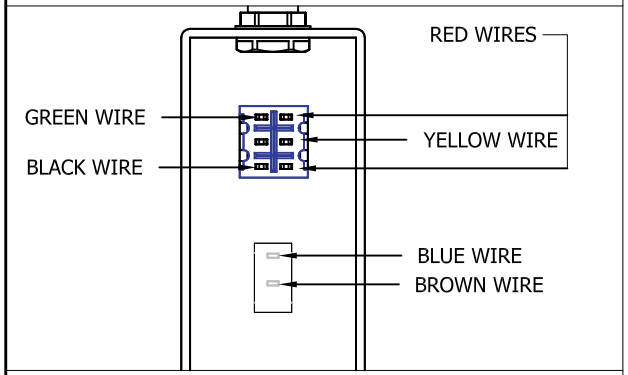


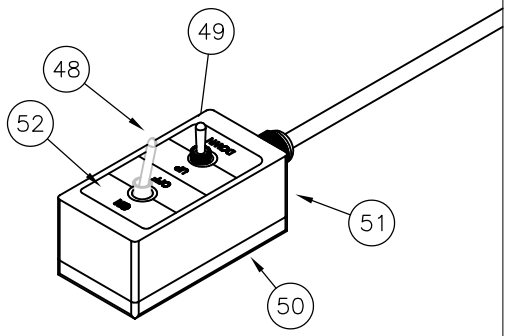
ELECTRICAL GROUP: CONTROL BOX SCHEMATIC

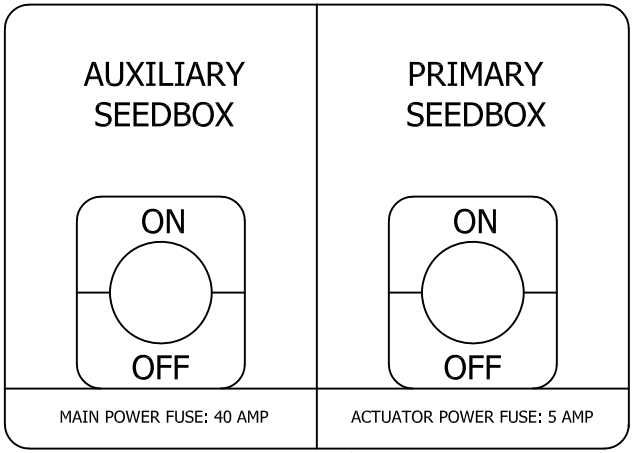


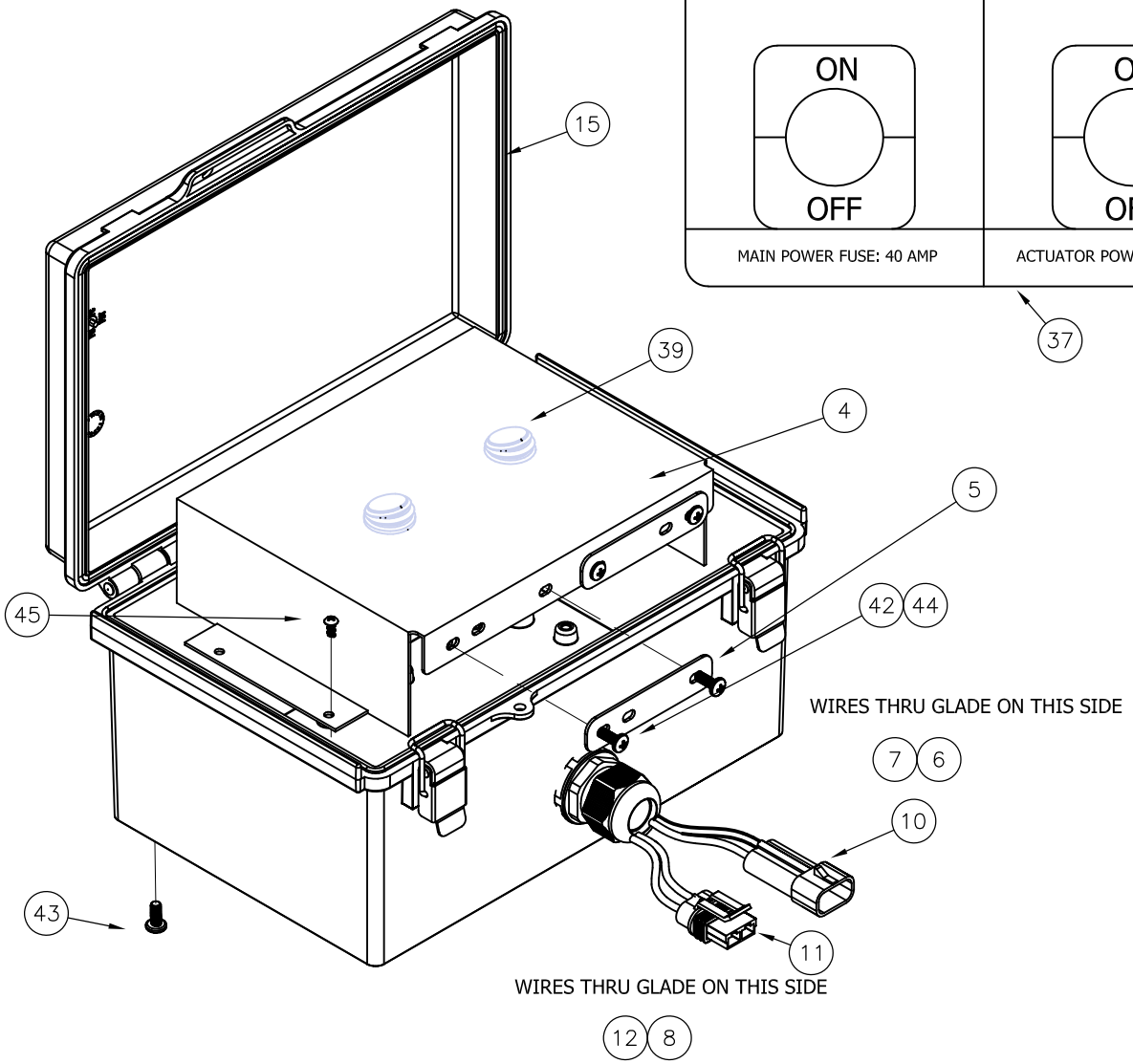
ELECTRICAL GROUP: BULK COMPONENTS









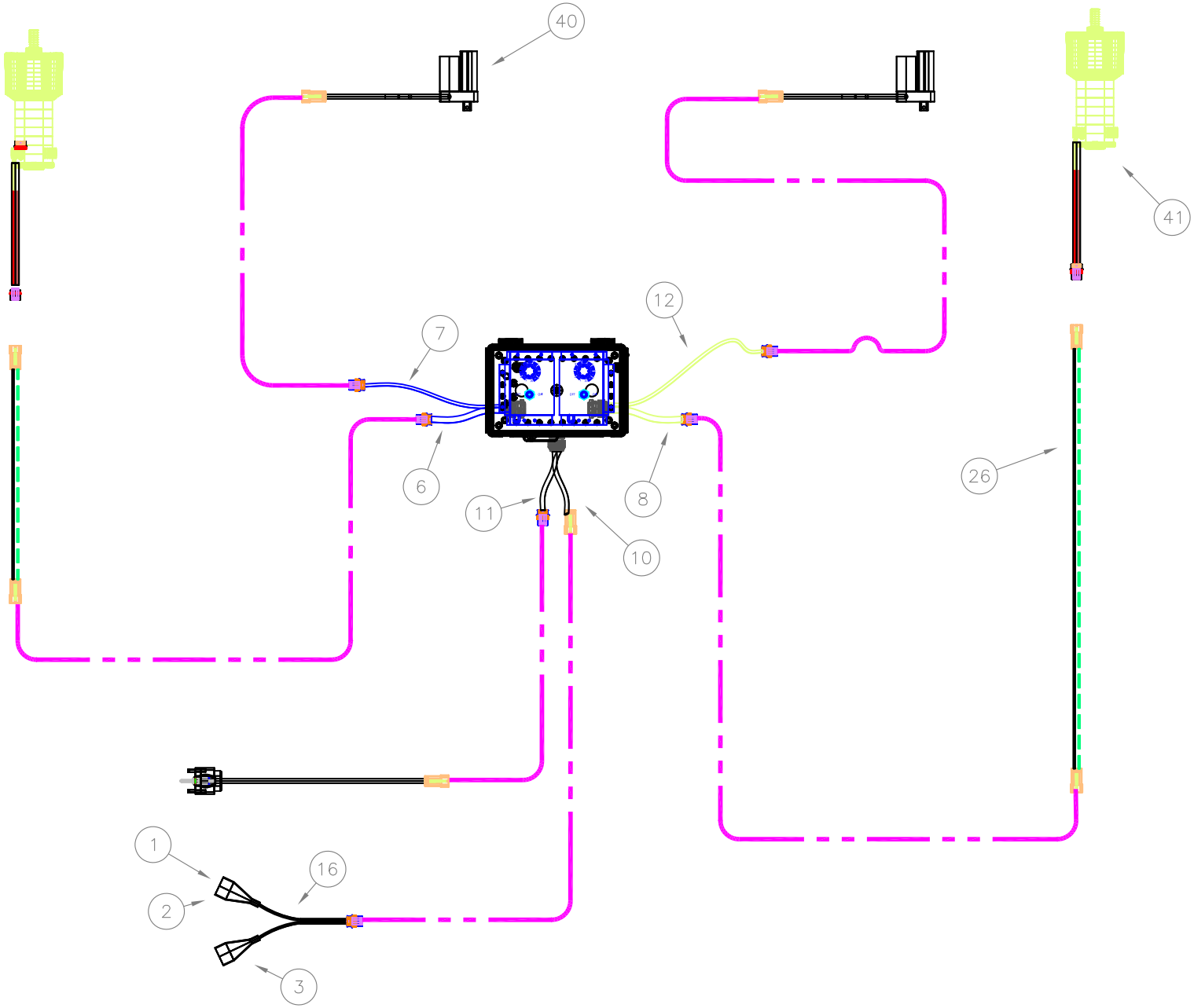


ELECTRICAL GROUP: BOX WIRE LAYOUT

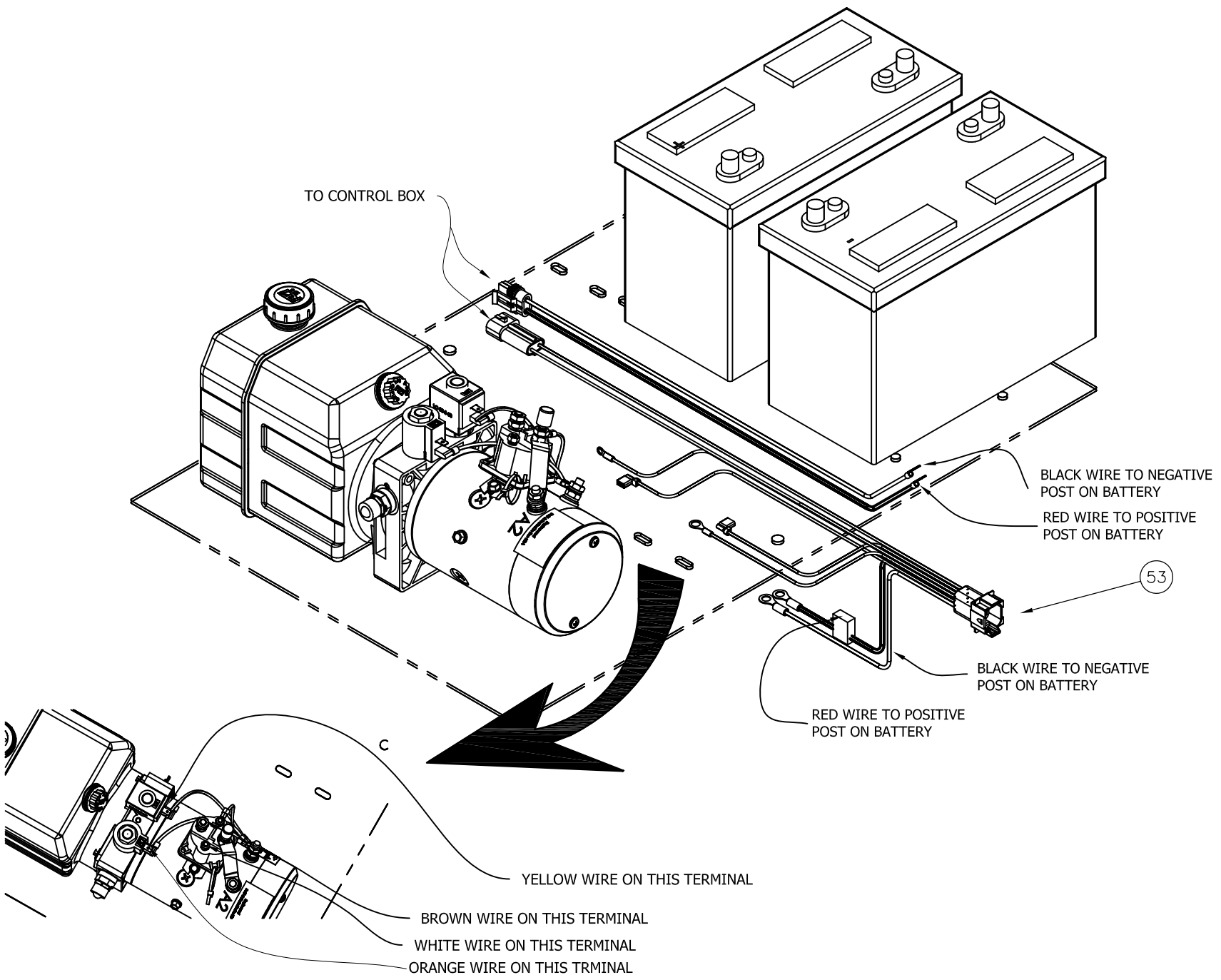
SMALL BOX

WIRES WRAPPED WITH BLUE LOOM ARE
FOR THE LARGE BOX

WIRES WRAPED WITH YELLOW LOOM ARE
FOR THE SMALL BOX



ELECTRICAL GROUP: HYDRA-PAK LAYOUT



ND-60 CORN PLATE KIT

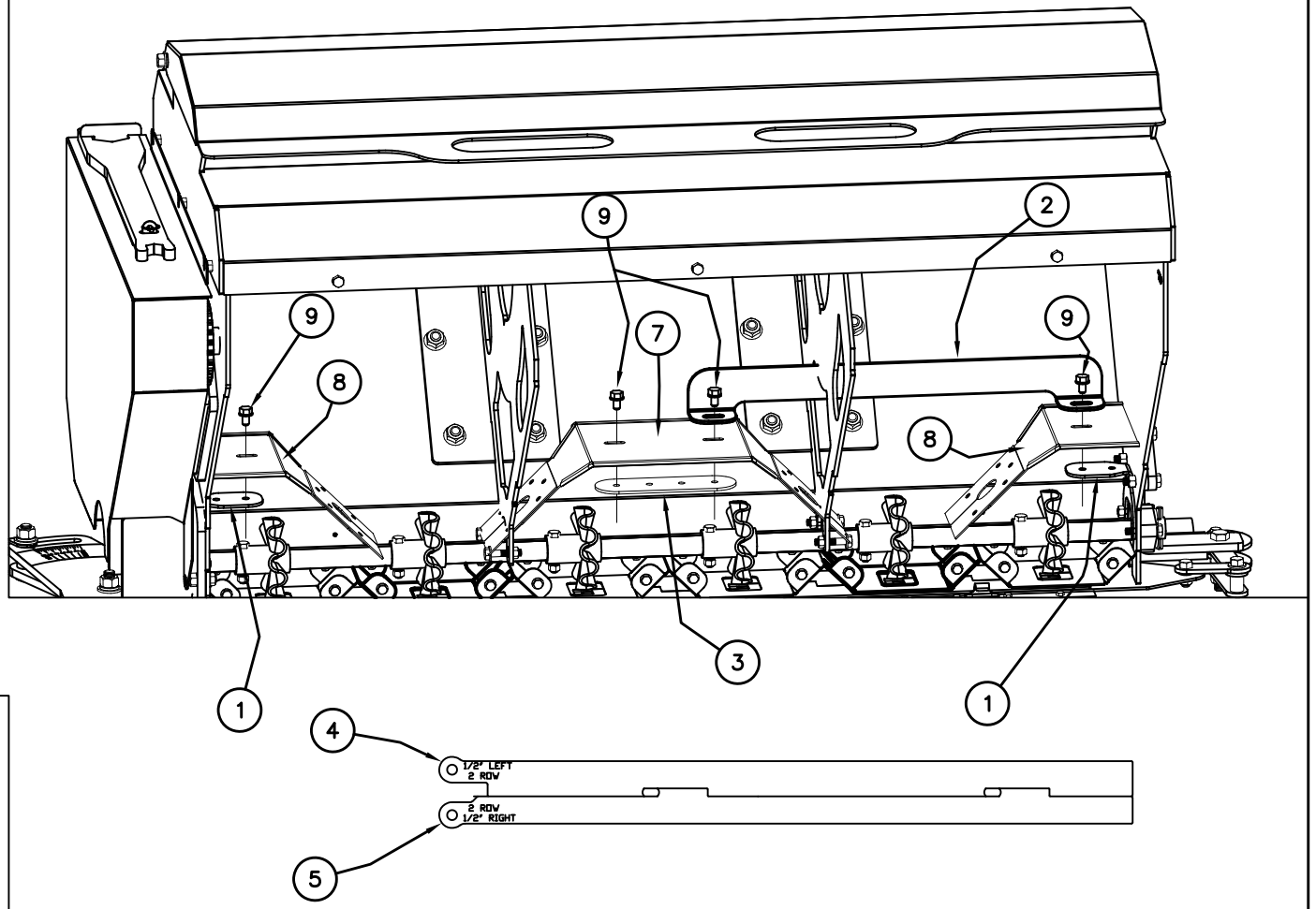
ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY	ITEM	PART NO	DESCRIPTION	QTY
1	DS27-316	CORN FUNNEL - MOUNT - END	2	4	DS27-325	ND-60 CORN PLATES - LEFT	1	7	DS81-090	CORN FUNNEL-MID-2 OUTLET ASSM.	1
2	DS27-337	CORN FUNNEL - BRIDGE - ND-60	1	5	DS27-326	ND-60 CORN PLATES - RIGHT	1	8	DS81-091	CORN FUNNEL-END-1 OUTLET ASSM.	2
3	DS27-319	CORN FUNNEL - BACKING PLATE	1	6	DS50-150	CORN QUICK START CHART	1	9	HW04010016ZPLC	5/16" x 1/2" SELF TAP. SCREW	3

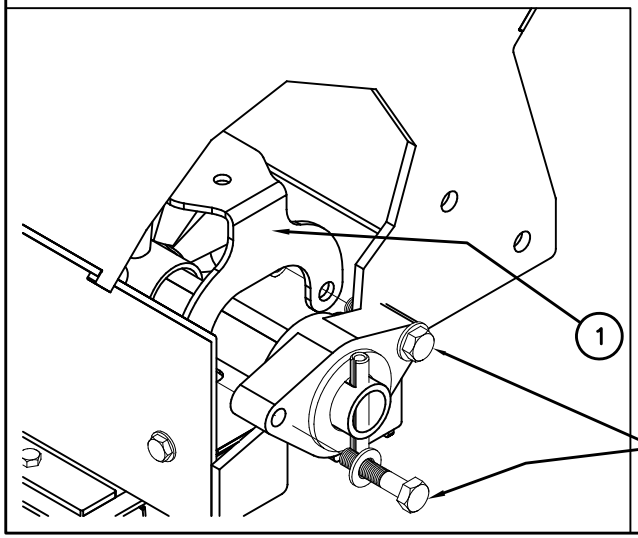
MANY ITEMS PHANTOMED FOR CLARITY

CORN PLATE KITS ARE DESIGNED FOR USE IN PRIMARY BOXES ONLY. DO NOT INSTALL KITS IN AUXILIARY BOXES

AFTER USE REMOVE ALL PIECES EXCEPT DS27-316 TO RETURN MULTI-drill TO NORMAL OPERATION

DS27-316 ARE MEANT FOR PERMANENT MOUNTING IN BOX, ALL OTHER PARTS ARE MEANT TO BE REMOVEABLE



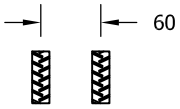


USE EXISTING HARDWARE

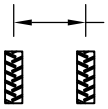
CORN QUICK START GUIDE

CORN QUICK START CHART

1st products
TIFTON, GA



60" TRACTOR WHEEL SPACING



72" TRACTOR WHEEL SPACING

CORN SEED SIZE	SEED/AC	MPH	60" PLATE POSITION	60" LBS / MIN COLLECTED	72" PLATE POSITION	72" LBS / MIN COLLECTED
SMALL (2000 SEED/LB)	27,000	4	1	0.54	1 2/3	0.66
	30,000		1 1/3	0.60	2	0.73
	33,000		1 2/3	0.66	2 1/3	0.80
MEDIUM (1600 SEED/LB)	27,000	4	1 2/3	0.67	2 1/3	0.82
	30,000		2	0.75	2 1/3	0.91
	33,000		2 1/3	0.83	2 2/3	1.00
LARGE (1100 SEED/LB)	27,000	4	2 2/3	0.94	3 1/3	1.19
	30,000		3	1.05	3 2/3	1.32
	33,000		3 1/3	1.16	3 2/3	1.45

CALIBRATION INSTRUCTIONS

1) Install $\frac{5}{8}$" 2 outlet plates, Install Corn Sprocket in Agitator Transmission
2) Calculate (LBS/MIN) to catch for correct population using steps A-D (see below)
3) Determine seed size using answer from step B (see below) compared to the CORN SEED SIZE RANGE CHART
4) Set plate position according to quick start chart (see left)
5) Perform catch procedure(see bottom right) and adjust if necessary

RECOMMENDED SPEED: 4 MPH

RECOMMENDED POPULATION: 27,000 - 33,000 SEED/ACRE

PLATES: 1/2" 2 OUTLET

AGITATOR SPROCKET: 12 TOOTH

HOW TO CALCULATE (LBS/MIN)]

A) WEIGH 100 SEED FOR YOUR (100 CWT) IN OUNCES

B) (SEED/LB) = 1600 / (100 CWT)

C) (LBS/AC) = (SEED/ACRE) / (SEED/LB)

D) (LBS/MIN) = (LBS/AC) / (MIN/AC) (SEE BELOW (MIN/AC)

60" TRACTOR WHEEL SPACING = 24.7 (MIN/AC)

72" TRACTOR WHEEL SPACING = 20.6 (MIN/AC)

CORN SEED SIZE RANGE CHART

SMALL = 2200 - 1800 (SEED/LB)
MEDIUM = 1750 - 1350 (SEED/LB)
LARGE = 1300 - 900 (SEED/LB)

CATCH PROCEDURE

CATCH SEED FROM MACHINE FOR 5 MINUTES. DIVIDE LBS CAUGHT BY 5 TO DETERMINE THE AVERAGE (LBS/MIN)

SEED SELECTION AND MACHINE SETUP TIPS

When selecting Corn Seed to plant with a MULTI-drill, look for a **Small Round** or **Small Flat** corn seed for best spacing results.

Although many Corn Seed vendors will have the (seed/lb) noted on the information tag on the end of the bag, we recommend calculating for yourself to be sure you are getting as accurate of information as you can for the most accurate calibration.

After calibrating your MULTI-drill find a clean area and lower your multi drill till the row units are about an inch off the ground. Then drive at the speed you calibrated for and switch your drill on for 20-30 feet. Once stopped and with tractor or tow vehicle in park, walk behind your drill and see how far apart on average your seed is dropping and look for excessive skips or bunching of seeds. Excessive skips could mean bridging due to plates not being open enough for seed to fall through, and bunching of seed could mean the plates are to open and allowing to many seed out at once. For recalibration to reduce skips it is best to calibrate either for a higher rate at the same speed or the same rate at a higher speed by opening the plates to help flow seed more Consistently. To recalibrate for excessive bunching it is best to calibrate for a lower rate at that speed or the same rate at a lower speed by closing the plates for more consistent seed flow.

If further analysis of spacing and population is desired count the amount of seed in a 20 foot long section of row to determine final population and spacing. For example, at a 30,000 seed population on 30" rows seed should average 7" apart and there should be 34 seed in 20ft of 1 row, on 36" rows seed should average 5.75" apart and there should be 41 seed in 20ft of 1 row. Due to the MULTI-drill metering system, seed doubles, skips, and irregular spacing can occur often. Therefore we do not recommend using a MULTI-drill to plant corn as a production cash crop.

For correct seed depth consult with your local extension agent or seed supplier. Once desired seed depth is determined set the MULTI-drill front coulters at 1/4" to 1/2" below desired seeding depth the machine frame running level. Then fine tune the row units that are to be used to plant with for correct planting depth.

BOLT TORQUE SPECIFICATIONS

	DIAMETER	THD/INCH	GRADE 2	GRADE 5	GRADE 8
COURSE	1/4	20	37 IN-LBS	86 IN-LBS	122 IN-LBS
	5/16	18	75	178	251
	3/8	16	11 FT-LBS	26 FT-LBS	37 FT-LBS
	7/16	14	18	42	59
	1/2	13	27	64	90
	9/16	12	39	92	130
	5/8	11	54	128	180
	3/4	10	96	227	320
	7/8	9	155	365	515
	1	8	232	547	772
	1 1/4	7	463	952	1545
	1 1/2	6	806	1657	2688
FINE	1/4	28	42 IN-LBS	99 IN-LBS	139 IN-LBS
	5/16	24	83	197	278
	3/8	24	13 FT-LBS	30 FT-LBS	42 FT-LBS
	7/16	20	20	47	66
	1/2	20	31	72	102
	9/16	18	44	103	146
	5/8	18	61	144	204
	3/4	16	107	253	357
	7/8	14	171	403	568
	1	14	260	614	867
	1 1/4	12	513	1055	1710
	1 1/2	12	907	1865	3024